Design Criteria for Span Tables:

Values in the maximum allowable rail span tables provided herein are subject to the following general criteria and additional criteria shown on individual span tables sheets. Values in span tables are based on the same engineering methodology and calculation algorithms used for U-Builder and are provided here for reference.

Building Assumptions

- Building Risk Category: II
- Mean Roof Height: 30 ft
- Roof Pitch: 0°-45°
- Site Elevation: 0 ft

Wind Design Assumptions

- Wind loads used are based on ASCE 7-16 Sec 29.4.4 with Provisions from SEAOC PV2-2017
- Exposure Category B, C, or D
- Basic Wind Speed = 90 – 180 mph
- Level terrain. Topographic factor, kzt = 1.0
- γE = 1.0 for 'Interior' spans, γE = 1.5 for 'Exposed' spans (ASCE 7-16, Fig. 29.4-7)

Snow Design Assumptions

- Ground Snow Load = 0-100 psf
- Exposure Factor coefficients of Partially Exposed condition
- Thermal Factor = 1.0
- Results based on uniform snow load

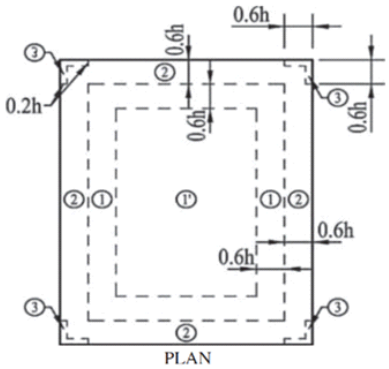
Seismic Design Assumptions

- 0.2-s Spectral Response Acceleration, SS ≤ 3
- S_S = 1.25 and 3 per criteria shown on individual span tables sheets.
- S_1 = 0.5
- Seismic site class D

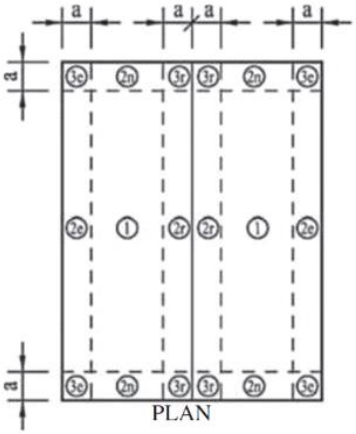
Array Assumptions

- Module orientation and Rail direction per criteria shown on individual span tables sheets.
- Maximum module dimensions of 40.1" x 67" (~19 sq.ft, 47.65 lbs) and 41" x 80" (~23 sq.ft, 58.6 lbs) per criteria shown on individual span tables sheets.
- Minimum distance between modules and roof edge is at least twice the module height above roof surface.
- Modules are parallel to roof surface and maximum height above roof surface is 5" to 10" depending on attachment type.
- Gaps between module rows and columns is 0.25" in to 1" depending on clamp type.
- The most restrictive of all roof zone spans shall be used when any part of the module is attributed to that span.
- 'Exposed' spans as defined in ASCE 7-16 sec. 29.4.4 shall be used when any part of an exposed module or panel as is attributed to that span.

Zone should be considered as per ASCE 7-16, Fig. 30.3-2A to 30.3-2D



Gable Roofs θ ≤ 7°

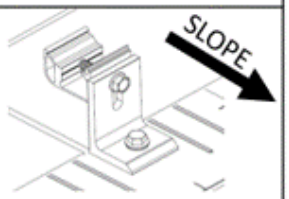
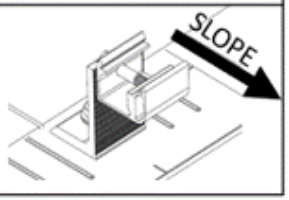


Gable Roofs 7°< θ ≤ 45°

Grouping of ASCE 7-16 Roof Zones (Gable and Flat)

- **Roof Tilt 0°-7°**
  - Roof Zone 1 = 1
  - Roof Zone 2 = 2
  - Roof Zone 3 = 3
- **Roof Tilt 7°-27°**
  - Roof Zone 1 = 1, 2e
  - Roof Zone 2 = 2n, 2r, 3e
  - Roof Zone 3 = 3r
- **Roof Tilt 27°-45°**
  - Roof Zone 1 = 1, 2e, 2r
  - Roof Zone 2 = 2n, 3r
  - Roof Zone 3 = 3e

Rails can be installed in these possible orientations.

	*Flashkit Pro and L-Foot
Y+	
Y-	

UNIRAC

ASCE 7-16	II	30 ft	Ss = 1.25	19 sq.ft	PORTRAIT	CROSS-SLOPE	NXT	NXT COMBO	Flashkit Pro
Design Standard	Risk Category	Roof Height	Seismic	Module Area	Orientation	Rail Direction	Rail Type	Clamp	Attachment

SPAN TABLES

Maximum Allowable Rail Spans for Rooftop Solar Panels Parallel to the Roof Surface (inches)

Ground Snow Load (psf)	Wind Exposure Category	Roof Tilt Angle (deg)	Panel Exposure	Basic Wind Speed (mph)																																						
				90			95			100			105			110			115			120			130			140			150			160			170			180		
				Roof Wind Zone																																						
				1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3
0	B	0-7	Interior	86	86	86	86	86	86	86	86	82	86	86	79	86	86	76	86	83	73	86	80	71	85	75	66	80	71	62	76	67	59	72	64	55	68	61	51	65	58	47
			Exposed	86	86	76	86	82	73	86	79	70	86	76	67	83	73	64	80	70	62	77	68	60	72	64	55	68	60	50	64	56	46	61	52	40	58	48	35	54	45	46
		7-20	Interior	86	86	86	86	86	84	86	86	80	86	83	77	86	79	74	85	76	71	82	74	68	77	69	64	73	65	60	69	61	56	66	58	51	63	53	47	60	49	42
			Exposed	86	79	73	85	76	70	81	72	67	78	69	64	75	67	62	73	64	60	70	62	57	66	58	52	63	53	47	59	48	40	56	43	35	52	38	46	49	33	42
		20-27	Interior	87	87	87	87	87	87	87	87	87	87	87	84	87	85	81	87	82	78	87	79	75	87	74	70	82	69	66	77	66	62	73	62	59	70	59	54	67	55	50
			Exposed	87	85	81	87	81	77	87	78	73	87	75	70	84	72	68	81	69	65	79	67	63	74	62	59	70	59	53	66	54	49	63	50	44	60	46	37	57	40	32
		27-45	Interior	87	87	87	87	87	87	87	87	87	87	87	87	87	87	84	87	87	81	87	86	78	86	80	73	80	75	69	76	71	65	72	68	62	68	64	59	65	61	55
			Exposed	87	87	84	87	87	80	87	84	77	87	81	74	83	78	71	80	75	69	77	72	66	72	68	62	68	64	59	64	60	54	61	57	49	57	53	46	53	49	40
	C	0-7	Interior	86	86	78	86	85	75	86	81	71	86	78	69	85	75	66	82	72	64	79	70	62	74	65	57	70	62	52	66	59	48	63	54	43	60	50	38	56	47	34
			Exposed	85	75	66	81	72	63	78	69	61	75	66	58	72	64	55	69	61	52	67	59	49	63	54	44	59	50	37	55	46	47	51	40	43	47	35	38	42	46	33
		7-20	Interior	86	82	76	86	78	72	83	74	69	80	71	66	77	69	64	75	66	62	72	64	59	68	60	54	64	55	49	61	50	44	58	46	38	54	40	33	50	36	45
			Exposed	77	69	64	74	66	61	71	63	58	68	60	55	66	58	51	64	55	48	62	52	46	58	47	38	53	40	33	49	34	43	46	45	38	40	40	33	36	36	~~30~~
		20-27	Interior	87	87	83	87	84	79	87	80	76	87	77	73	87	74	70	83	71	67	81	69	65	76	64	61	71	60	56	68	56	51	65	52	47	62	48	41	59	44	35
			Exposed	86	74	70	83	70	66	79	67	64	76	65	61	74	62	59	71	60	56	69	58	52	65	52	47	61	47	40	58	41	33	54	36	42	50	47	36	47	43	~~31~~
		27-45	Interior	87	87	87	87	87	83	87	87	79	87	83	76	86	80	73	82	77	71	79	74	68	74	70	64	70	66	60	66	62	56	62	59	52	59	55	48	55	51	44
			Exposed	86	80	73	82	76	70	78	73	67	75	70	64	72	68	62	69	65	60	67	63	58	63	59	52	59	54	47	54	50	41	49	46	35	46	40	45	40	36	40
	D	0-7	Interior	86	83	73	86	79	70	86	76	67	82	73	64	79	70	62	76	68	60	74	65	57	69	61	52	65	57	47	62	53	41	59	49	36	55	45	47	51	40	43
			Exposed	79	70	62	76	67	59	73	64	56	70	62	52	67	60	49	65	57	47	63	54	43	59	49	36	54	44	46	50	38	41	46	33	36	40	44	~~32~~	36	39	~~28~~
		7-20	Interior	85	76	70	81	72	67	78	69	64	75	67	62	72	64	60	70	62	57	68	60	54	64	54	48	60	49	42	56	45	36	52	38	47	49	34	42	46	45	38
			Exposed	72	64	59	69	61	56	67	59	52	64	55	49	62	52	46	60	49	41	58	46	38	53	39	47	48	33	42	44	44	36	38	38	~~32~~	34	34	~~28~~	45	~~30~~	~~25~~
		20-27	Interior	87	82	77	87	78	74	87	75	70	84	72	67	81	69	65	78	66	63	75	64	60	71	60	55	67	55	50	64	51	46	61	47	38	58	41	32	54	36	42
			Exposed	81	69	65	77	66	62	74	63	59	72	61	56	69	58	53	67	55	50	65	52	47	61	47	39	57	40	32	53	35	40	49	46	34	46	41	~~29~~	41	36	~~25~~
		27-45	Interior	87	87	81	87	84	77	87	81	74	83	77	71	80	75	68	77	72	66	74	69	64	69	65	60	65	61	55	61	58	50	58	53	46	53	49	40	49	46	35
			Exposed	79	74	68	76	71	65	73	68	63	70	66	60	67	63	58	65	61	55	62	59	52	58	54	47	53	49	40	48	44	33	43	38	43	38	34	37	33	45	32
10	B	0-7	Interior	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	71	72	72	66	72	71	62	72	67	59	72	64	55	68	61	51	65	58	47
			Exposed	72	72	72	72	72	72	72	72	70	72	72	67	72	72	64	72	70	62	72	68	60	72	64	55	68	60	50	64	56	46	61	52	40	58	48	35	54	45	46
		7-20	Interior	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	71	72	72	68	72	69	64	72	65	60	69	61	56	66	58	51	63	53	47	60	49	42
			Exposed	72	72	72	72	72	70	72	72	67	72	69	64	72	67	62	72	64	60	70	62	57	66	58	52	63	53	47	59	48	40	56	43	35	52	38	46	49	33	42
		20-27	Interior	83	83	83	83	83	83	83	83	83	83	83	83	83	83	81	83	82	78	83	79	75	83	74	70	82	69	66	77	66	62	73	62	59	70	59	54	67	55	50
			Exposed	83	83	81	83	81	77	83	78	73	83	75	70	83	72	68	81	69	65	79	67	63	74	62	59	70	59	53	66	54	49	63	50	44	60	46	37	57	40	32
		27-45	Interior	86	86	86	86	86	86	86	86	86	86	86	86	86	86	84	86	86	81	86	86	78	86	80	73	80	75	69	76	71	65	72	68	62	68	64	59	65	61	55
			Exposed	86	86	84	86	86	80	86	84	77	86	81	74	83	78	71	80	75	69	77	72	66	72	68	62	68	64	59	64	60	54	61	57	49	57	53	46	53	49	40
	C	0-7	Interior	72	72	72	72	72	72	72	72	71	72	72	69	72	72	66	72	72	64	72	70	62	72	65	57	70	62	52	66	59	48	63	54	43	60	50	38	56	47	34
			Exposed	72	72	66	72	72	63	72	69	61	72	66	58	72	64	55	69	61	52	67	59	49	63	54	44	59	50	37	55	46	47	51	40	43	47	35	38	42	46	33
		7-20	Interior	72	72	72	72	72	72	72	72	69	72	71	66	72	69	64	72	66	62	72	64	59	68	60	54	64	55	49	61	50	44	58	46	38	54	40	33	50	36	45
			Exposed	72	69	64	72	66	61	71	63	58	68	60	55	66	58	51	64	55	48	62	52	46	58	47	38	53	40	33	49	34	43	46	45	38	40	40	33	36	36	~~30~~
		20-27	Interior	83	83	83	83	83	79	83	80	76	83	77	73	83	74	70	83	71	67	81	69	65	76	64	61	71	60	56	68	56	51	65	52	47	62	48	41	59	44	35
			Exposed	83	74	70	83	70	66	79	67	64	76	65	61	74	62	59	71	60	56	69	58	52	65	52	47	61	47	40	58	41	33	54	36	42	50	47	36	47	43	~~31~~
		27-45	Interior	86	86	86	86	86	83	86	86	79	86	83	76	86	80	73	82	77	71	79	74	68	74	70	64	70	66	60	66	62	56	62	59	52	59	55	48	55	51	44
			Exposed	86	80	73	82	76	70	78	73	67	75	70	64	72	68	62	69	65	60	67	63	58	63	59	52	59	54	47	54	50	41	49	46	35	46	40	45	40	36	40
	D	0-7	Interior	72	72	72	72	72	70	72	72	67	72	72	64	72	70	62	72	68	60	72	65	57	69	61	52	65	57	47	62	53	41	59	49	36	55	45	47	51	40	43
			Exposed	72	70	62	72	67	59	72	64	56	70	62	52	67	60	49	65	57	47	63	54	43	59	49	36	54	44	46	50	38	41	46	33	36	40	44	~~32~~	36	39	~~28~~
		7-20	Interior	72	72	70	72	72	67	72	69	64	72	67	62	72	64	60	70	62	57	68	60	54	64	54	48	60	49	42	56	45	36	52	38	47	49	34	42	46	45	38
			Exposed	72	64	59	69	61	56	67	59	52	64	55	49	62	52	46	60	49	41	58	46	38	53	39	47	48	33	42	44	44	36	38	38	~~32~~	34	34	~~28~~	45	~~30~~	~~25~~
		20-27	Interior	84	82	77	84	78	74	84	75	70	84	72	67	81	69	65	78	66	63	75	64	60	71	60	55	67	55	50	64	51	46	61	47	38	58	41	32	54	36	42
			Exposed	81	69	65	77	66	62	74	63	59	72	61	56	69	58	53	67	55	50	65	52	47	61	47	39	57	40	32	53	35	40	49	46	34	46	41	~~29~~	41	36	~~25~~
		27-45	Interior	87	87	81	87	84	77	87	81	74	83	77	71	80	75	68	77	72	66	74	69	64	69	65	60	65	61	55	61	58	50	58	53	46	53	49	40	49	46	35
			Exposed	79	74	68	76	71	65	73	68	63	70	66	60	67	63	58	65	61	55	62	59	52	58	54	47	53	49	40	48	44	33	43	38	43	38	34	37	33	45	32
20	B	0-7	Interior	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	59	60	60	55	60	60	51	60	58	47
			Exposed	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	55	60	60	50	60	56	46	60	52	40	58	48	35	54	45	46
		7-20	Interior	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	60	61	61	56	61	58	51	61	53	47	60	49	42
			Exposed	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	60	61	61	57	61	58	52	61	53	47	59	48	40	56	43	35	52	38	46	49	33	42
		20-27	Interior	74	74	74	74	74	74	74	74	74	74	74	74	74	74	74	74	74	74	74	74	74	74	74	70	74	69	66	74	66	62	73	62	59	70	59	54	67	55	50
			Exposed	74	74	74	74	74	74	74	74	73	74	74	70	74	72	68	74	69	65	74	67	63	74	62	59	70	59	53	66	54	49	63	50	44	60	46	37	57	40	32
		27-45	Interior	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78	73	78	75	69	76	71	65	72	68	62	68	64	59	65	61	55
			Exposed	78	78	78	78	78	78	78	78	77	78	78	74	78	78	71	78	75	69	77	72	66	72	68	62	68	64	59	64	60	54	61	57	49	57	53	46	53	49	40
	C	0-7	Interior	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	57	60	60	52	60	59	48	60	54	43	60	50	38	56	47	34
			Exposed	60	60	60	60	60	60	60	60	60	60	60	58	60	60	55	60	60	52	60	59	49	60	54	44	59	50	37	55	46	47	51	40	43	47	35	38	42	46	33
		7-20	Interior	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	59	61	60	54	61	55	49	61	50	44	58	46	38	54	40	33	50	36	45
			Exposed	61	61	61	61	61	61	61	61	58	61	60	55	61	58	51	61	55	48	61	52	46	58	47	38	53	40	33	49	34	43	46	45	38	40	40	33	36	36	~~30~~
		20-27	Interior	74	74	74	74	74	74	74	74	74	74	74	73	74	74	70	74	71	67	74	69	65	74	64	61	71	60	56	68	56	51	65	52	47	62	48	41	59	44	35
			Exposed	74	74	70	74	70	66	74	67	64	74	65	61	74	62	59	71	60	56	69	58	52	65	52	47	61	47	40	58	41	33	54	36	42	50	47	36	47	43	~~31~~
		27-45	Interior	78	78	78	78	78	78	78	78	78	78	78	76	78	78	73	78	77	71	78	74	68	74	70	64	70	66	60	66	62	56	62	59	52	59	55	48	55	51	44
			Exposed	78	78	73	78	76	70	78	73	67	75	70	64	72	68	62	69	65	60	67	63	58	63	59	52	59	54	47	54	50	41	49	46	35	46	40	45	40	36	40
	D	0-7	Interior	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	57	60	60	52	60	57	47	60	53	41	59	49	36	55	45	47	51	40	43
			Exposed	60	60	60	60	60	59	60	60	56	60	60	52	60	60	49	60	57	47	60	54	43	59	49	36	54	44	46	50	38	41	46	33	36	40	44	~~32~~	36	39	~~28~~
		7-20	Interior	61	61	61	61	61	61	61	61	61	61	61	61	61	61	60	61	61	57	61	60	54	61	54	48	60	49	42	56	45	36	52	38	47	49	34	42	46	45	38
			Exposed	61	61	59	61	61	56	61	59	52	61	55	49	61	52	46	60	49	41	58	46	38	53	39	47	48	33	42	44	44	36	38	38	~~32~~	34	34	~~28~~	45	~~30~~	~~25~~
		20-27	Interior	75	75	75	75	75	74	75	75	70	75	72	67	75	69	65	75	66	63	75	64	60	71	60	55	67	55	50	64	51	46	61	47	38	58	41	32	54	36	42
			Exposed	75	69	65	75	66	62	74	63	59	72	61	56	69	58	53	67	55	50	65	52	47	61	47	39	57	40	32	53	35	40	49	46	34	46	41	~~29~~	41	36	~~25~~
		27-45	Interior	79	79	79	79	79	77	79	79	74	79	77	71	79	75	68	77	72	66	74	69	64	69	65	60	65	61	55	61	58	50	58	53	46	53	49	40	49	46	35
			Exposed	79	74	68	76	71	65	73	68	63	70	66	60	67	63	58	65	61	55	62	59	52	58	54	47	53	49	40	48	44	33	43	38	43	38	34	37	33	45	32

* Cells with an astrisks indicates that the L-foot must be oriented in the Y- direction as indicated in the image.

10 Highlighted cell indicate 3-rail system span. Contact Unirac Engineering Services for support.

~~10~~ Highlighted cell with strikethrough indicate 3-rail system span and module clamp allowable capacity exceeds with 3-rails. 4-Rail system required. Contact Unirac Engineering Services for support.

UNIRAC

ASCE 7-16	II	30 ft	Ss = 1.25	19 sq.ft	PORTRAIT	CROSS-SLOPE	NXT	NXT COMBO	Flashkit Pro
Design Standard	Risk Category	Roof Height	Seismic	Module Area	Orientation	Rail Direction	Rail Type	Clamp	Attachment

SPAN TABLES

Maximum Allowable Rail Spans for Rooftop Solar Panels Parallel to the Roof Surface (inches)

Ground Snow Load (psf)	Wind Exposure Category	Roof Tilt Angle (deg)	Panel Exposure	Basic Wind Speed (mph)																																						
				90			95			100			105			110			115			120			130			140			150			160			170			180		
				Roof Wind Zone																																						
				1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3
30	B	0-7	Interior	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	55	59	59	51	59	58	47
			Exposed	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	55	59	59	50	59	56	46	59	52	40	58	48	35	54	45	46
		7-20	Interior	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	60	61	61	56	61	58	51	61	53	47	60	49	42
			Exposed	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	60	61	61	57	61	58	52	61	53	47	59	48	40	56	43	35	52	38	46	49	33	42
		20-27	Interior	67	67	67	67	67	67	67	67	67	67	67	67	67	67	67	67	67	67	67	67	67	67	67	67	67	67	66	67	66	62	67	62	59	67	59	54	67	55	50
			Exposed	67	67	67	67	67	67	67	67	67	67	67	67	67	67	67	67	67	65	67	67	63	67	62	59	67	59	53	66	54	49	63	50	44	60	46	37	57	40	32
		27-45	Interior	71	71	71	71	71	71	71	71	71	71	71	71	71	71	71	71	71	71	71	71	71	71	71	71	71	71	69	70	70	65	68	68	62	66	64	59	64	61	55
			Exposed	71	71	71	71	71	71	71	71	71	71	71	71	71	71	71	71	71	69	71	71	66	71	68	62	68	64	59	64	60	54	61	57	49	57	53	46	53	49	40
	C	0-7	Interior	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	57	59	59	52	59	59	48	59	54	43	59	50	38	56	47	34
			Exposed	59	59	59	59	59	59	59	59	59	59	59	58	59	59	55	59	59	52	59	59	49	59	54	44	59	50	37	55	46	47	51	40	43	47	35	38	42	46	33
		7-20	Interior	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	59	61	60	54	61	55	49	61	50	44	58	46	38	54	40	33	50	36	45
			Exposed	61	61	61	61	61	61	61	61	58	61	60	55	61	58	51	61	55	48	61	52	46	58	47	38	53	40	33	49	34	43	46	45	38	40	40	33	36	36	~~30~~
		20-27	Interior	67	67	67	67	67	67	67	67	67	67	67	67	67	67	67	67	67	67	67	67	65	67	64	61	67	60	56	67	56	51	65	52	47	62	48	41	59	44	35
			Exposed	67	67	67	67	67	66	67	67	64	67	65	61	67	62	59	67	60	56	67	58	52	65	52	47	61	47	40	58	41	33	54	36	42	50	47	36	47	43	~~31~~
		27-45	Interior	71	71	71	71	71	71	71	71	71	71	71	71	71	71	71	71	71	71	71	71	68	69	69	64	67	66	60	64	62	56	62	59	52	59	55	48	55	51	44
			Exposed	71	71	71	71	71	70	71	71	67	71	70	64	71	68	62	69	65	60	67	63	58	63	59	52	59	54	47	54	50	41	49	46	35	46	40	45	40	36	40
	D	0-7	Interior	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	57	60	60	52	60	57	47	60	53	41	59	49	36	55	45	47	51	40	43
			Exposed	60	60	60	60	60	59	60	60	56	60	60	52	60	60	49	60	57	47	60	54	43	59	49	36	54	44	46	50	38	41	46	33	36	40	44	~~32~~	36	39	~~28~~
		7-20	Interior	61	61	61	61	61	61	61	61	61	61	61	61	61	61	60	61	61	57	61	60	54	61	54	48	60	49	42	56	45	36	52	38	47	49	34	42	46	45	38
			Exposed	61	61	59	61	61	56	61	59	52	61	55	49	61	52	46	60	49	41	58	46	38	53	39	47	48	33	42	44	44	36	38	38	~~32~~	34	34	~~28~~	45	~~30~~	~~25~~
		20-27	Interior	69	69	69	69	69	69	69	69	69	69	69	67	69	69	65	69	66	63	69	64	60	69	60	55	67	55	50	64	51	46	61	47	38	58	41	32	54	36	42
			Exposed	69	69	65	69	66	62	69	63	59	69	61	56	69	58	53	67	55	50	65	52	47	61	47	39	57	40	32	53	35	40	49	46	34	46	41	~~29~~	41	36	~~25~~
		27-45	Interior	73	73	73	73	73	73	73	73	73	73	73	71	73	73	68	73	72	66	71	69	64	68	65	60	65	61	55	61	58	50	58	53	46	53	49	40	49	46	35
			Exposed	73	73	68	73	71	65	73	68	63	70	66	60	67	63	58	65	61	55	62	59	52	58	54	47	53	49	40	48	44	33	43	38	43	38	34	37	33	45	32
40	B	0-7	Interior	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	51	54	54	47
			Exposed	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	50	54	54	46	54	52	40	54	48	35	54	45	46
		7-20	Interior	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	51	56	53	47	56	49	42
			Exposed	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	52	56	53	47	56	48	40	56	43	35	52	38	46	49	33	42
		20-27	Interior	62	62	62	62	62	62	62	62	62	62	62	62	62	62	62	62	62	62	62	62	62	62	62	62	62	62	62	62	62	62	62	62	59	62	59	54	62	55	50
			Exposed	62	62	62	62	62	62	62	62	62	62	62	62	62	62	62	62	62	62	62	62	62	62	62	59	62	59	53	62	54	49	62	50	44	60	46	37	57	40	32
		27-45	Interior	66	66	66	66	66	66	66	66	66	66	66	66	66	66	66	66	66	66	66	66	66	66	66	66	66	66	66	65	65	65	63	63	62	62	62	59	60	60	55
			Exposed	66	66	66	66	66	66	66	66	66	66	66	66	66	66	66	66	66	66	66	66	66	66	66	62	66	64	59	64	60	54	61	57	49	57	53	46	53	49	40
	C	0-7	Interior	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	52	54	54	48	54	54	43	54	50	38	54	47	34
			Exposed	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	52	54	54	49	54	54	44	54	50	37	54	46	47	51	40	43	47	35	38	42	46	33
		7-20	Interior	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	54	56	55	49	56	50	44	55	46	38	54	40	33	50	36	45
			Exposed	56	56	56	56	56	56	56	56	56	56	56	55	56	56	51	56	55	48	56	52	46	56	47	38	53	40	33	49	34	43	46	45	38	40	40	33	36	36	~~30~~
		20-27	Interior	62	62	62	62	62	62	62	62	62	62	62	62	62	62	62	62	62	62	62	62	62	62	62	61	62	60	56	62	56	51	61	52	47	60	48	41	58	44	35
			Exposed	62	62	62	62	62	62	62	62	62	62	62	61	62	62	59	62	60	56	62	58	52	62	52	47	61	47	40	58	41	33	54	36	42	50	47	36	47	43	~~31~~
		27-45	Interior	66	66	66	66	66	66	66	66	66	66	66	66	66	66	66	66	66	66	66	66	66	64	64	64	62	62	60	60	60	56	58	58	52	56	55	48	54	51	44
			Exposed	66	66	66	66	66	66	66	66	66	66	66	64	66	66	62	66	65	60	66	63	58	63	59	52	59	54	47	54	50	41	49	46	35	46	40	45	40	36	40
	D	0-7	Interior	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	52	56	56	47	56	53	41	56	49	36	55	45	47	51	40	43
			Exposed	56	56	56	56	56	56	56	56	56	56	56	52	56	56	49	56	56	47	56	54	43	56	49	36	54	44	46	50	38	41	46	33	36	40	44	~~32~~	36	39	~~28~~
		7-20	Interior	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	57	58	58	54	58	54	48	58	49	42	56	45	36	52	38	47	49	34	42	46	45	38
			Exposed	58	58	58	58	58	56	58	58	52	58	55	49	58	52	46	58	49	41	58	46	38	53	39	47	48	33	42	44	44	36	38	38	~~32~~	34	34	~~28~~	45	~~30~~	~~25~~
		20-27	Interior	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	63	64	64	60	64	60	55	64	55	50	62	51	46	61	47	38	58	41	32	54	36	42
			Exposed	64	64	64	64	64	62	64	63	59	64	61	56	64	58	53	64	55	50	64	52	47	61	47	39	57	40	32	53	35	40	49	46	34	46	41	~~29~~	41	36	~~25~~
		27-45	Interior	68	68	68	68	68	68	68	68	68	68	68	68	68	68	68	67	67	66	66	66	64	64	64	60	61	61	55	59	58	50	57	53	46	53	49	40	49	46	35
			Exposed	68	68	68	68	68	65	68	68	63	68	66	60	67	63	58	65	61	55	62	59	52	58	54	47	53	49	40	48	44	33	43	38	43	38	34	37	33	45	32
50	B	0-7	Interior	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	47
			Exposed	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	46	49	49	40	49	48	35	49	45	46
		7-20	Interior	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	47	51	49	42
			Exposed	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	47	51	48	40	51	43	35	51	38	46	49	33	42
		20-27	Interior	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	54	57	55	50
			Exposed	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	53	57	54	49	57	50	44	57	46	37	57	40	32
		27-45	Interior	67*	67*	67*	67*	67*	67*	67*	67*	67*	67*	67*	67*	67*	67*	67*	67*	67*	67*	67*	67*	67*	67*	67*	67*	67*	67*	67*	69*	69*	61	59	59	59	58	58	58	57	57	55
			Exposed	67*	67*	67*	67*	67*	67*	67*	67*	67*	67*	67*	67*	67*	67*	67*	67*	67*	67*	67*	67*	62	67*	67*	62	67*	62	59	61	60	54	59	57	49	57	53	46	53	49	40
	C	0-7	Interior	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	48	49	49	43	49	49	38	49	47	34
			Exposed	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	44	49	49	37	49	46	47	49	40	43	47	35	38	42	46	33
		7-20	Interior	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	49	51	50	44	51	46	38	50	40	33	49	36	45
			Exposed	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	48	51	51	46	51	47	38	51	40	33	49	34	43	46	45	38	40	40	33	36	36	~~30~~
		20-27	Interior	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	56	57	56	51	57	52	47	56	48	41	55	44	35
			Exposed	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	56	57	57	52	57	52	47	57	47	40	57	41	33	54	36	42	50	47	36	47	43	~~31~~
		27-45	Interior	67*	67*	67*	67*	67*	67*	67*	67*	67*	67*	67*	67*	67*	67*	67*	67*	67*	67*	67*	67*	67*	68*	68*	60	59	59	59	57	57	56	55	55	52	53	53	48	52	51	44
			Exposed	67*	67*	67*	67*	67*	67*	67*	67*	67*	67*	67*	62	67*	67*	62	67*	62	60	67*	62	58	60	59	52	59	54	47	54	50	41	49	46	35	46	40	45	40	36	40
	D	0-7	Interior	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	47	51	51	41	51	49	36	51	45	47	51	40	43
			Exposed	51	51	51	51	51	51	51	51	51	51	51	51	51	51	49	51	51	47	51	51	43	51	49	36	51	44	46	50	38	41	46	33	36	40	44	~~32~~	36	39	~~28~~
		7-20	Interior	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	48	53	49	42	52	45	36	51	38	47	49	34	42	46	45	38
			Exposed	53	53	53	53	53	53	53	53	52	53	53	49	53	52	46	53	49	41	53	46	38	53	39	47	48	33	42	44	44	36	38	38	~~32~~	34	34	~~28~~	45	~~30~~	~~25~~
		20-27	Interior	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	55	59	55	50	58	51	46	57	47	38	56	41	32	54	36	42
			Exposed	59	59	59	59	59	59	59	59	59	59	59	56	59	58	53	59	55	50	59	52	47	59	47	39	57	40	32	53	35	40	49	46	34	46	41	~~29~~	41	36	~~25~~
		27-45	Interior	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	63	63	63	62	62	62	60	60	60	58	58	55	56	56	50	54	53	46	52	49	40	49	46	35
			Exposed	64	64	64	64	64	64	64	64	63	64	64	60	64	63	58	63	61	55	62	59	52	58	54	47	53	49	40	48	44	33	43	38	43	38	34	37	33	45	32

* Cells with an astrisks indicates that the L-foot must be oriented in the Y- direction as indicated in the image.

10 Highlighted cell indicate 3-rail system span. Contact Unirac Engineering Services for support.

~~10~~ Highlighted cell with strikethrough indicate 3-rail system span and module clamp allowable capacity exceeds with 3-rails. 4-Rail system required. Contact Unirac Engineering Services for support.

UNIRAC

ASCE 7-16	II	30 ft	Ss = 1.25	19 sq.ft	PORTRAIT	CROSS-SLOPE	NXT	NXT COMBO	Flashkit Pro
Design Standard	Risk Category	Roof Height	Seismic	Module Area	Orientation	Rail Direction	Rail Type	Clamp	Attachment

SPAN TABLES

Maximum Allowable Rail Spans for Rooftop Solar Panels Parallel to the Roof Surface (inches)

Ground Snow Load (psf)	Wind Exposure Category	Roof Tilt Angle (deg)	Panel Exposure	Basic Wind Speed (mph)																																						
				90			95			100			105			110			115			120			130			140			150			160			170			180		
				Roof Wind Zone																																						
				1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3
60	B	0-7	Interior	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45
			Exposed	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	40	45	45	35	45	45	46
		7-20	Interior	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	42
			Exposed	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	40	47	43	35	47	38	46	47	33	42
		20-27	Interior	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	50
			Exposed	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	53	54	54	49	54	50	44	54	46	37	54	40	32
		27-45	Interior	59*	59*	59*	59*	59*	59*	59*	59*	59*	59*	59*	59*	59*	59*	59*	59*	59*	59*	59*	59*	59*	59*	59*	59*	59*	59*	59*	58*	58*	58*	59*	59*	59*	57*	57*	57*	58*	58*	54
			Exposed	59*	59*	59*	59*	59*	59*	59*	59*	59*	59*	59*	59*	59*	59*	59*	59*	59*	59*	59*	59*	59*	59*	59*	59*	59*	59*	59*	58*	58*	54	59*	57*	49	57*	53	46	53	49	40
	C	0-7	Interior	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	43	45	45	38	45	45	34
			Exposed	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	44	45	45	37	45	45	47	45	40	43	45	35	38	42	46	33
		7-20	Interior	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	44	47	46	38	47	40	33	46	36	45
			Exposed	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	46	47	47	38	47	40	33	47	34	43	46	45	38	40	40	33	36	36	~~30~~
		20-27	Interior	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	51	53	52	47	52	48	41	51	44	35
			Exposed	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	52	54	52	47	54	47	40	54	41	33	53	36	42	50	47	36	47	43	~~31~~
		27-45	Interior	59*	59*	59*	59*	59*	59*	59*	59*	59*	59*	59*	59*	59*	59*	59*	59*	59*	59*	59*	59*	59*	60*	60*	60*	58*	58*	58*	58*	58*	54	58*	58*	52	51	51	48	50	50	44
			Exposed	59*	59*	59*	59*	59*	59*	59*	59*	59*	59*	59*	59*	59*	59*	59*	59*	59*	59*	59*	59*	58*	60*	59*	52	58*	54	47	54	50	41	49	46	35	46	40	45	40	36	40
	D	0-7	Interior	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	41	47	47	36	47	45	47	47	40	43
			Exposed	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	43	47	47	36	47	44	46	47	38	41	46	33	36	40	44	~~32~~	36	39	~~28~~
		7-20	Interior	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	48	49	49	42	49	45	36	48	38	47	47	34	42	46	45	38
			Exposed	49	49	49	49	49	49	49	49	49	49	49	49	49	46	49	49	41	49	46	38	49	39	47	48	33	42	44	44	36	38	38	~~32~~	34	34	~~28~~	45	~~30~~	~~25~~
		20-27	Interior	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	55	56	55	50	55	51	46	54	47	38	53	41	32	52	36	42
			Exposed	56	56	56	56	56	56	56	56	56	56	56	56	56	53	56	55	50	56	52	47	56	47	39	56	40	32	53	35	40	49	46	34	46	41	~~29~~	41	36	~~25~~
		27-45	Interior	63*	63*	63*	63*	63*	63*	63*	63*	63*	63*	63*	63*	63*	63*	63*	62*	62*	62*	64*	64*	64*	64*	64*	57	55	55	55	54	54	50	52	52	46	50	49	40	48	46	35
			Exposed	63*	63*	63*	63*	63*	63*	63*	63*	63*	63*	63*	60	63*	63*	58	62*	60	55	59	59	52	57	54	47	53	49	40	48	44	33	43	38	43	38	34	37	33	45	32
70	B	0-7	Interior	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42
			Exposed	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	40	42	42	35	42	42	46
		7-20	Interior	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	42
			Exposed	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	40	43	43	35	43	38	46	43	33	42
		20-27	Interior	53*	53*	53*	53*	53*	53*	53*	53*	53*	53*	53*	53*	53*	53*	53*	53*	53*	53*	53*	53*	53*	53*	53*	53*	53*	53*	53*	53*	53*	53*	53*	53*	53*	53*	53*	53*	53*	53*	50
			Exposed	53*	53*	53*	53*	53*	53*	53*	53*	53*	53*	53*	53*	53*	53*	53*	53*	53*	53*	53*	53*	53*	53*	53*	53*	53*	53*	53*	53*	53*	49	53*	50	44	53*	46	37	53*	40	32
		27-45	Interior	56*	56*	56*	56*	56*	56*	56*	56*	56*	56*	56*	56*	56*	56*	56*	56*	56*	56*	56*	56*	56*	56*	56*	56*	56*	56*	56*	55*	55*	55*	54*	54*	54*	52*	52*	52*	51*	51*	51*
			Exposed	56*	56*	56*	56*	56*	56*	56*	56*	56*	56*	56*	56*	56*	56*	56*	56*	56*	56*	56*	56*	56*	56*	56*	56*	56*	56*	56*	55*	55*	54*	54*	54*	50*	52*	52*	46	51*	49	40
	C	0-7	Interior	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	38	42	42	34
			Exposed	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	37	42	42	47	42	40	43	42	35	38	42	46	33
		7-20	Interior	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	38	43	40	33	43	36	45
			Exposed	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	38	43	40	33	43	34	43	43	45	38	40	40	33	36	36	~~30~~
		20-27	Interior	53*	53*	53*	53*	53*	53*	53*	53*	53*	53*	53*	53*	53*	53*	53*	53*	53*	53*	53*	53*	53*	53*	53*	53*	53*	53*	53*	53*	53*	50	53*	52*	47	52*	48	41	49	44	35
			Exposed	53*	53*	53*	53*	53*	53*	53*	53*	53*	53*	53*	53*	53*	53*	53*	53*	53*	53*	53*	53*	52*	53*	52*	47	53*	47	40	53*	41	33	53*	36	42	50	47	36	47	43	~~31~~
		27-45	Interior	56*	56*	56*	56*	56*	56*	56*	56*	56*	56*	56*	56*	56*	56*	56*	56*	56*	56*	56*	56*	56*	54*	54*	54*	53*	53*	53*	52*	52*	52*	50*	50*	50*	51*	51*	48	51*	51*	44
			Exposed	56*	56*	56*	56*	56*	56*	56*	56*	56*	56*	56*	56*	56*	56*	56*	56*	56*	41	56*	56*	56*	54*	54*	52*	53*	53*	47	52*	50*	41	50*	46	35	46	40	45	40	36	40
	D	0-7	Interior	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	41	44	44	36	44	44	47	44	40	43
			Exposed	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	43	44	44	36	44	44	46	44	38	41	44	33	36	40	44	~~32~~	36	39	~~28~~
		7-20	Interior	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	42	46	45	36	46	38	47	45	34	42	44	45	38
			Exposed	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	41	46	46	38	46	39	47	46	33	42	44	44	36	38	38	~~32~~	34	34	~~28~~	45	~~30~~	~~25~~
		20-27	Interior	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	50	52	51	46	51	47	38	50	41	32	49	36	42
			Exposed	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	50	53	52	47	53	47	39	53	40	32	52	35	40	49	46	34	46	41	~~29~~	41	36	~~25~~
		27-45	Interior	58*	58*	58*	58*	58*	58*	58*	58*	58*	58*	58*	58*	58*	58*	58*	57*	57*	57*	56*	56*	56*	55*	55*	55*	55*	55*	55*	55*	55*	50	57*	50	46	48	48	40	47	46	35
			Exposed	58*	58*	58*	58*	58*	58*	58*	58*	58*	58*	58*	58*	58*	58*	58*	57*	57*	55*	56*	56*	52	55*	54*	47	53	49	40	48	44	33	43	38	43	38	34	37	33	45	32
80	B	0-7	Interior	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39
			Exposed	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	35	39	39	46
		7-20	Interior	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41
			Exposed	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	40	41	41	35	41	38	46	41	33	42
		20-27	Interior	50*	50*	50*	50*	50*	50*	50*	50*	50*	50*	50*	50*	50*	50*	50*	50*	50*	50*	50*	50*	50*	50*	50*	50*	50*	50*	50*	50*	50*	50*	50*	50*	50*	50*	50*	50*	50*	50*	50*
			Exposed	50*	50*	50*	50*	50*	50*	50*	50*	50*	50*	50*	50*	50*	50*	50*	50*	50*	50*	50*	50*	50*	50*	50*	50*	50*	50*	50*	50*	50*	49*	50*	50*	44	50*	46*	37	50*	40	32
		27-45	Interior	52*	52*	52*	52*	52*	52*	52*	52*	52*	52*	52*	52*	52*	52*	52*	52*	52*	52*	52*	52*	52*	52*	52*	52*	52*	52*	52*	52*	52*	52*	51*	51*	51*	50*	50*	50*	49*	49*	49*
			Exposed	52*	52*	52*	52*	52*	52*	52*	52*	52*	52*	52*	52*	52*	52*	52*	52*	52*	52*	52*	52*	52*	52*	52*	52*	52*	52*	52*	52*	52*	52*	51*	51*	49*	50*	50*	46*	49*	49*	40
	C	0-7	Interior	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	38	39	39	34
			Exposed	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	37	39	39	47	39	39	43	39	35	38	39	46	33
		7-20	Interior	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	38	41	40	33	41	36	45
			Exposed	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	38	41	40	33	41	34	43	41	45	38	40	40	33	36	36	~~30~~
		20-27	Interior	50*	50*	50*	50*	50*	50*	50*	50*	50*	50*	50*	50*	50*	50*	50*	50*	50*	50*	50*	50*	50*	50*	50*	50*	50*	50*	50*	50*	50*	50*	50*	50*	47*	49*	48*	41	49*	44	35
			Exposed	50*	50*	50*	50*	50*	50*	50*	50*	50*	50*	50*	50*	50*	50*	50*	50*	50*	50*	50*	50*	50*	50*	50*	47*	50*	47*	40	50*	41	33	50*	36	42	49*	47	36	47*	43	~~31~~
		27-45	Interior	52*	52*	52*	52*	52*	52*	52*	52*	52*	52*	52*	52*	52*	52*	52*	52*	52*	52*	52*	52*	52*	52*	52*	52*	51*	51*	51*	49*	49*	49*	48*	48*	48*	47*	47*	47*	46*	46*	44*
			Exposed	52*	52*	52*	52*	52*	52*	52*	52*	52*	52*	52*	52*	52*	52*	52*	52*	52*	52*	52*	52*	52*	52*	52*	52*	51*	51*	47*	49*	49*	41	48*	46*	35	46*	40	45	40	36	40
	D	0-7	Interior	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	36	41	41	47	41	40	43
			Exposed	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	36	41	41	46	41	38	41	41	33	36	40	44	~~32~~	36	39	~~28~~
		7-20	Interior	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	42	43	43	36	43	38	47	43	34	42	42	45	38
			Exposed	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	41	43	43	38	43	39	47	43	33	42	43	44	36	38	38	~~32~~	34	34	~~28~~	45	~~30~~	~~25~~
		20-27	Interior	53*	53*	53*	53*	53*	53*	53*	53*	53*	53*	53*	53*	53*	53*	53*	53*	53*	53*	53*	53*	53*	53*	53*	53*	53*	53*	50	52*	51*	46	51*	47	38	48	41	32	47	36	42
			Exposed	53*	53*	53*	53*	53*	53*	53*	53*	53*	53*	53*	53*	53*	53*	53*	53*	53*	50	53*	52*	47	53*	47	39	53*	40	32	52*	35	40	49	46	34	46	41	~~29~~	41	36	~~25~~
		27-45	Interior	55*	55*	55*	55*	55*	55*	55*	55*	55*	55*	55*	55*	55*	55*	55*	54*	54*	54*	54*	54*	54*	52*	52*	52*	51*	51*	51*	49*	49*	49*	50*	50*	46	48*	48*	40	50*	45	35
			Exposed	55*	55*	55*	55*	55*	55*	55*	55*	55*	55*	55*	55*	55*	55*	55*	54*	54*	54*	54*	54*	52*	52*	52*	47	51*	49*	40	48*	44	33	43	38	43	38	34	37	33	45	32

* Cells with an astrisks indicates that the L-foot must be oriented in the Y- direction as indicated in the image.

10 Highlighted cell indicate 3-rail system span. Contact Unirac Engineering Services for support.

~~10~~ Highlighted cell with strikethrough indicate 3-rail system span and module clamp allowable capacity exceeds with 3-rails. 4-Rail system required. Contact Unirac Engineering Services for support.

UNIRAC

ASCE 7-16	II	30 ft	Ss = 1.25	19 sq.ft	PORTRAIT	CROSS-SLOPE	NXT	NXT COMBO	Flashkit Pro
Design Standard	Risk Category	Roof Height	Seismic	Module Area	Orientation	Rail Direction	Rail Type	Clamp	Attachment

SPAN TABLES

Maximum Allowable Rail Spans for Rooftop Solar Panels Parallel to the Roof Surface (inches)

Ground Snow Load (psf)	Wind Exposure Category	Roof Tilt Angle (deg)	Panel Exposure	Basic Wind Speed (mph)																																								
				90			95			100			105			110			115			120			130			140			150			160			170			180		
				Roof Wind Zone																																								
				1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3
90	B	0-7	Interior	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37
			Exposed	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	35	37	37	45
		7-20	Interior	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38
			Exposed	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	35	38	38	46	38	33	42			
		20-27	Interior	45*	45*	45*	45*	45*	45*	45*	45*	45*	45*	45*	45*	45*	45*	45*	45*	45*	45*	45*	45*	45*	45*	45*	45*	45*	45*	45*	45*	45*	45*	45*	45*	45*	45*	45*	45*	45*	45*	45*
			Exposed	45*	45*	45*	45*	45*	45*	45*	45*	45*	45*	45*	45*	45*	45*	45*	45*	45*	45*	45*	45*	45*	45*	45*	45*	45*	45*	45*	45*	45*	44*	45*	45*	37	45*	40	32			
		27-45	Interior	47*	47*	47*	47*	47*	47*	47*	47*	47*	47*	47*	47*	47*	47*	47*	47*	47*	47*	47*	47*	47*	47*	47*	47*	47*	47*	47*	47*	47*	47*	47*	47*	47*	47*	47*	47*	47*	47*	47*
			Exposed	47*	47*	47*	47*	47*	47*	47*	47*	47*	47*	47*	47*	47*	47*	47*	47*	47*	47*	47*	47*	47*	47*	47*	47*	47*	47*	47*	47*	47*	47*	47*	47*	46*	47*	47*	40*			
	C	0-7	Interior	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	34
			Exposed	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	43	37	35	38	37	45	33
		7-20	Interior	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	33	38	36	45
			Exposed	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	33	38	34	43	38	45	38	38	40	33	36	36	30
		20-27	Interior	45*	45*	45*	45*	45*	45*	45*	45*	45*	45*	45*	45*	45*	45*	45*	45*	45*	45*	45*	45*	45*	45*	45*	45*	45*	45*	45*	45*	45*	45*	45*	45*	45*	45*	45*	41*	45*	44*	35
			Exposed	45*	45*	45*	45*	45*	45*	45*	45*	45*	45*	45*	45*	45*	45*	45*	45*	45*	45*	45*	45*	45*	45*	45*	45*	45*	45*	40	45*	41*	33	45*	36	42	45*	47	36	45*	43	31
		27-45	Interior	47*	47*	47*	47*	47*	47*	47*	47*	47*	47*	47*	47*	47*	47*	47*	47*	47*	47*	47*	47*	47*	47*	47*	47*	47*	47*	47*	47*	47*	47*	46*	46*	46*	45*	45*	45*	44*	44*	44*
			Exposed	47*	47*	47*	47*	47*	47*	47*	47*	47*	47*	47*	47*	47*	47*	47*	47*	47*	47*	47*	47*	47*	47*	47*	47*	47*	47*	47*	47*	47*	41*	46*	46*	35	45*	40*	45	40*	36	40
	D	0-7	Interior	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	36	39	39	47	39	39	43
			Exposed	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	36	39	39	46	39	38	41	39	33	36	39	44	32	36	39	28
		7-20	Interior	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	36	40	38	47	40	34	42	40	45	38
			Exposed	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	38	40	39	47	40	33	42	40	44	36	38	38	32	34	34	28	45	39	25
		20-27	Interior	50*	50*	50*	50*	50*	50*	50*	50*	50*	50*	50*	50*	50*	50*	50*	50*	50*	50*	50*	50*	50*	50*	50*	50*	50*	50*	50*	50*	50*	46*	49*	47*	38	48*	41	32	47*	36	42
			Exposed	50*	50*	50*	50*	50*	50*	50*	50*	50*	50*	50*	50*	50*	50*	50*	50*	50*	50*	50*	50*	47*	50*	47*	39	50*	40	32	50*	35	40	49*	46	34	46*	41	29	41	36	25
		27-45	Interior	51*	51*	51*	51*	51*	51*	51*	51*	51*	51*	51*	51*	51*	51*	51*	51*	51*	51*	51*	51*	51*	50*	50*	50*	49*	49*	49*	48*	48*	48*	46*	46*	46*	45*	45*	40	44*	44*	35
			Exposed	51*	51*	51*	51*	51*	51*	51*	51*	51*	51*	51*	51*	51*	51*	51*	51*	51*	51*	51*	51*	51*	50*	50*	47*	49*	49*	40	48*	44*	33	43*	38	43	38	34	37	33	45	32
100	B	0-7	Interior	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35
			Exposed	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	43
		7-20	Interior	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37
			Exposed	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	35	37	37	45	37	33	42
		20-27	Interior	43*	43*	43*	43*	43*	43*	43*	43*	43*	43*	43*	43*	43*	43*	43*	43*	43*	43*	43*	43*	43*	43*	43*	43*	43*	43*	43*	43*	43*	43*	43*	43*	43*	43*	43*	43*	43*	43*	43*
			Exposed	43*	43*	43*	43*	43*	43*	43*	43*	43*	43*	43*	43*	43*	43*	43*	43*	43*	43*	43*	43*	43*	43*	43*	43*	43*	43*	43*	43*	43*	43*	43*	43*	43*	43*	43*	37*	43*	40*	32
		27-45	Interior	42*	42*	42*	42*	42*	42*	42*	42*	42*	42*	42*	42*	42*	42*	42*	42*	42*	42*	42*	42*	42*	42*	42*	42*	42*	42*	42*	42*	42*	42*	42*	42*	42*	42*	42*	42*	42*	42*	42*
			Exposed	42*	42*	42*	42*	42*	42*	42*	42*	42*	42*	42*	42*	42*	42*	42*	42*	42*	42*	42*	42*	42*	42*	42*	42*	42*	42*	42*	42*	42*	42*	42*	42*	42*	42*	42*	42*	42*	42*	40*
	C	0-7	Interior	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	34
			Exposed	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	43	35	35	43	35	35	38	35	35	43	35	35	38	35	43	33
		7-20	Interior	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	33	37	36	45
			Exposed	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	33	37	34	43	37	45	38	37	40	33	36	36	30
		20-27	Interior	43*	43*	43*	43*	43*	43*	43*	43*	43*	43*	43*	43*	43*	43*	43*	43*	43*	43*	43*	43*	43*	43*	43*	43*	43*	43*	43*	43*	43*	43*	43*	43*	43*	43*	43*	41*	43*	43*	35
			Exposed	43*	43*	43*	43*	43*	43*	43*	43*	43*	43*	43*	43*	43*	43*	43*	43*	43*	43*	43*	43*	43*	43*	43*	43*	43*	43*	40*	43*	41*	33	43*	36	42	43*	47	36	43*	43	31
		27-45	Interior	42*	42*	42*	42*	42*	42*	42*	42*	42*	42*	42*	42*	42*	42*	42*	42*	42*	42*	42*	42*	42*	42*	42*	42*	42*	42*	42*	42*	42*	42*	42*	42*	42*	42*	42*	42*	42*	42*	42*
			Exposed	42*	42*	42*	42*	42*	42*	42*	42*	42*	42*	42*	42*	42*	42*	42*	42*	42*	42*	42*	42*	42*	42*	42*	42*	42*	42*	42*	42*	42*	41*	42*	42*	35	42*	40*	45	40*	36*	40
	D	0-7	Interior	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	36	37	37	45	37	37	43
			Exposed	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	36	37	37	45	37	37	41	37	33	36	37	44	32	36	39	28
		7-20	Interior	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	36	38	38	47	38	34	42	38	45	38
			Exposed	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	47	38	33	42	38	44	36	38	38	32	34	34	28	45	39	25
		20-27	Interior	45*	45*	45*	45*	45*	45*	45*	45*	45*	45*	45*	45*	45*	45*	45*	45*	45*	45*	45*	45*	45*	45*	45*	45*	45*	45*	45*	45*	45*	45*	45*	45*	38	44*	41*	32	44*	36	42
			Exposed	45*	45*	45*	45*	45*	45*	45*	45*	45*	45*	45*	45*	45*	45*	45*	45*	45*	45*	45*	45*	45*	45*	45*	39	45*	40	32	45*	35	40	45*	46	34	44*	41	29	41*	36	25
		27-45	Interior	47*	47*	47*	47*	47*	47*	47*	47*	47*	47*	47*	47*	47*	47*	47*	47*	47*	47*	47*	47*	47*	47*	47*	47*	47*	47*	47*	46*	46*	46*	45*	45*	45*	44*	44*	41*	43*	43*	35
			Exposed	47*	47*	47*	47*	47*	47*	47*	47*	47*	47*	47*	47*	47*	47*	47*	47*	47*	47*	47*	47*	47*	47*	47*	47*	47*	47*	40*	46*	44*	33	43*	38	43	38	34	37	33	45	32

* Cells with an astrisks indicates that the L-foot must be oriented in the Y- direction as indicated in the image.

10 Highlighted cell indicate 3-rail system span. Contact Unirac Engineering Services for support.

~~10~~ Highlighted cell with strikethrough indicate 3-rail system span and module clamp allowable capacity exceeds with 3-rails. 4-Rail system required. Contact Unirac Engineering Services for support.

UNIRAC

ASCE 7-16	II	30 ft	Ss = 1.25	19 sq.ft	LANDSCAPE	CROSS-SLOPE	NXT	NXT COMBO	Flashkit Pro
Design Standard	Risk Category	Roof Height	Seismic	Module Area	Orientation	Rail Direction	Rail Type	Clamp	Attachment

SPAN TABLES

Maximum Allowable Rail Spans for Rooftop Solar Panels Parallel to the Roof Surface (inches)

Ground Snow Load (psf)	Wind Exposure Category	Roof Tilt Angle (deg)	Panel Exposure	Basic Wind Speed (mph)																																						
				90			95			100			105			110			115			120			130			140			150			160			170			180		
				Roof Wind Zone																																						
				1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3
0	B	0-7	Interior	102	102	102	102	102	102	102	102	101	102	102	96	102	102	92	102	101	88	102	97	84	102	90	78	97	84	73	91	79	68	85	74	65	81	71	62	77	67	60
			Exposed	102	102	91	102	100	87	102	95	82	102	91	79	101	87	75	96	84	72	93	80	70	86	75	65	80	70	62	75	66	59	71	63	55	68	60	52	64	58	59
		7-20	Interior	102	102	102	102	102	102	102	102	98	102	102	93	102	97	88	102	92	84	102	88	81	93	81	74	87	76	69	82	71	65	78	66	62	74	63	59	71	61	57
			Exposed	102	97	88	102	91	83	102	86	79	94	82	75	90	78	72	87	75	69	84	72	66	78	67	62	74	63	59	70	60	55	66	57	52	63	53	59	61	50	56
		20-27	Interior	103	103	103	103	103	103	103	103	103	103	103	103	103	103	100	103	101	95	103	97	90	103	89	83	99	82	77	93	77	71	88	72	67	83	68	63	79	65	60
			Exposed	103	103	100	103	100	93	103	94	88	103	90	84	103	86	80	99	82	76	94	78	73	88	73	67	83	68	63	78	64	60	74	61	56	71	59	52	68	55	49
		27-45	Interior	103	103	103	103	103	103	103	103	103	103	103	103	103	103	103	103	103	99	103	103	95	103	98	88	99	91	82	92	85	76	86	80	72	80	75	68	76	71	65
			Exposed	103	103	103	103	103	98	103	103	93	103	99	89	103	94	85	98	90	81	94	86	78	86	80	72	80	75	67	74	70	64	70	66	61	66	63	58	63	61	54
	C	0-7	Interior	102	102	94	102	102	90	102	98	85	102	94	81	102	90	78	100	86	75	96	83	72	89	77	67	83	72	63	78	68	60	73	64	57	70	62	54	66	59	51
			Exposed	102	90	78	99	85	74	94	81	70	90	78	67	86	75	65	82	72	63	79	69	61	74	65	57	69	61	53	65	59	60	62	55	57	60	52	53	57	59	50
		7-20	Interior	102	101	91	102	95	86	102	90	82	99	85	78	93	81	74	89	78	71	86	74	68	80	69	64	76	64	61	72	61	57	68	59	54	65	55	50	62	52	58
			Exposed	92	81	74	88	77	70	84	73	67	81	70	64	78	67	62	75	64	60	73	62	59	68	59	54	64	55	50	61	51	57	59	59	53	55	55	50	52	52	~~47~~
		20-27	Interior	103	103	103	103	103	97	103	98	92	103	93	87	103	89	83	102	85	79	98	81	75	91	75	70	85	70	65	80	65	61	76	63	58	73	60	54	69	57	51
			Exposed	103	88	82	101	84	78	96	79	74	91	76	70	88	72	67	85	69	64	82	67	62	77	63	58	72	60	53	68	56	49	65	52	57	62	60	53	60	57	49
		27-45	Interior	103	103	103	103	103	102	103	103	96	103	102	92	103	97	88	102	93	84	97	89	80	89	83	75	82	77	70	77	72	65	72	68	62	68	65	59	64	62	56
			Exposed	103	97	87	101	92	83	95	87	79	90	83	75	86	80	72	82	77	69	78	74	67	72	68	62	67	64	59	64	61	55	61	59	51	58	55	59	55	52	55
	D	0-7	Interior	102	100	87	102	95	82	102	91	79	100	87	75	96	83	72	92	80	69	88	77	67	82	72	63	77	67	60	72	64	56	68	61	52	65	58	60	62	55	57
			Exposed	96	83	72	91	79	68	87	75	65	83	72	63	79	69	61	76	67	59	73	65	57	68	61	53	64	58	59	61	54	56	59	50	52	55	58	49	52	55	~~46~~
		7-20	Interior	102	92	84	102	87	79	94	82	75	90	78	72	86	75	68	83	71	66	80	69	64	75	64	60	71	61	56	67	58	53	64	54	60	61	51	57	59	59	53
			Exposed	86	74	68	82	71	65	79	67	63	76	65	61	73	62	59	70	61	56	68	59	54	64	54	60	61	50	56	58	58	52	54	54	49	51	51	46	59	48	~~42~~
		20-27	Interior	103	100	94	103	95	88	103	90	84	103	85	79	98	81	76	94	78	72	90	75	69	84	69	64	79	65	60	75	62	57	71	59	53	68	56	49	65	53	57
			Exposed	98	81	75	93	77	71	89	73	68	85	70	65	82	67	62	79	64	60	76	63	58	72	59	53	67	55	48	64	51	56	61	59	51	59	56	47	55	52	~~42~~
		27-45	Interior	103	103	98	103	103	93	103	98	88	103	94	84	98	90	81	93	86	77	89	82	74	82	76	69	76	71	65	71	67	61	66	64	58	63	61	54	61	59	51
			Exposed	98	89	80	92	85	76	87	81	73	82	77	70	79	74	67	75	71	64	72	68	62	67	64	59	63	61	54	60	58	50	57	54	58	53	51	54	50	59	50
10	B	0-7	Interior	91	91	91	91	91	91	91	91	91	91	91	91	91	91	91	91	91	88	91	91	84	91	90	78	91	84	73	91	79	68	85	74	65	81	71	62	77	67	60
			Exposed	91	91	91	91	91	87	91	91	82	91	91	79	91	87	75	91	84	72	91	80	70	86	75	65	80	70	62	75	66	59	71	63	55	68	60	52	64	58	59
		7-20	Interior	91	91	91	91	91	91	91	91	91	91	91	91	91	91	88	91	91	84	91	88	81	91	81	74	87	76	69	82	71	65	78	66	62	74	63	59	71	61	57
			Exposed	91	91	88	91	91	83	91	86	79	91	82	75	90	78	72	87	75	69	84	72	66	78	67	62	74	63	59	70	60	55	66	57	52	63	53	59	61	50	56
		20-27	Interior	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	95	100	97	90	100	89	83	99	82	77	93	77	71	88	72	67	83	68	63	79	65	60
			Exposed	100	100	100	100	100	93	100	94	88	100	90	84	100	86	80	99	82	76	94	78	73	88	73	67	83	68	63	78	64	60	74	61	56	71	59	52	68	55	49
		27-45	Interior	102	102	102	102	102	102	102	102	102	102	102	102	102	102	102	102	102	99	102	102	95	102	98	88	99	91	82	92	85	76	86	80	72	80	75	68	76	71	65
			Exposed	102	102	102	102	102	98	102	102	93	102	99	89	102	94	85	98	90	81	94	86	78	86	80	72	80	75	67	74	70	64	70	66	61	66	63	58	63	61	54
	C	0-7	Interior	91	91	91	91	91	90	91	91	85	91	91	81	91	90	78	91	86	75	91	83	72	89	77	67	83	72	63	78	68	60	73	64	57	70	62	54	66	59	51
			Exposed	91	90	78	91	85	74	91	81	70	90	78	67	86	75	65	82	72	63	79	69	61	74	65	57	69	61	53	65	59	60	62	55	57	60	52	53	57	59	50
		7-20	Interior	91	91	91	91	91	86	91	90	82	91	85	78	91	81	74	89	78	71	86	74	68	80	69	64	76	64	61	72	61	57	68	59	54	65	55	50	62	52	58
			Exposed	91	81	74	88	77	70	84	73	67	81	70	64	78	67	62	75	64	60	73	62	59	68	59	54	64	55	50	61	51	57	59	59	53	55	55	50	52	52	~~47~~
		20-27	Interior	100	100	100	100	100	97	100	98	92	100	93	87	100	89	83	100	85	79	98	81	75	91	75	70	85	70	65	80	65	61	76	63	58	73	60	54	69	57	51
			Exposed	100	88	82	100	84	78	96	79	74	91	76	70	88	72	67	85	69	64	82	67	62	77	63	58	72	60	53	68	56	49	65	52	57	62	60	53	60	57	49
		27-45	Interior	102	102	102	102	102	102	102	102	96	102	102	92	102	97	88	102	93	84	97	89	80	89	83	75	82	77	70	77	72	65	72	68	62	68	65	59	64	62	56
			Exposed	102	97	87	101	92	83	95	87	79	90	83	75	86	80	72	82	77	69	78	74	67	72	68	62	67	64	59	64	61	55	61	59	51	58	55	59	55	52	55
	D	0-7	Interior	91	91	87	91	91	82	91	91	79	91	87	75	91	83	72	91	80	69	88	77	67	82	72	63	77	67	60	72	64	56	68	61	52	65	58	60	62	55	57
			Exposed	91	83	72	91	79	68	87	75	65	83	72	63	79	69	61	76	67	59	73	65	57	68	61	53	64	58	59	61	54	56	59	50	52	55	58	49	52	55	~~46~~
		7-20	Interior	91	91	84	91	87	79	91	82	75	90	78	72	86	75	68	83	71	66	80	69	64	75	64	60	71	61	56	67	58	53	64	54	60	61	51	57	59	59	53
			Exposed	86	74	68	82	71	65	79	67	63	76	65	61	73	62	59	70	61	56	68	59	54	64	54	60	61	50	56	58	58	52	54	54	49	51	51	46	59	48	~~42~~
		20-27	Interior	101	100	94	101	95	88	101	90	84	101	85	79	98	81	76	94	78	72	90	75	69	84	69	64	79	65	60	75	62	57	71	59	53	68	56	49	65	53	57
			Exposed	98	81	75	93	77	71	89	73	68	85	70	65	82	67	62	79	64	60	76	63	58	72	59	53	67	55	48	64	51	56	61	59	51	59	56	47	55	52	~~42~~
		27-45	Interior	103	103	98	103	103	93	103	98	88	103	94	84	98	90	81	93	86	77	89	82	74	82	76	69	76	71	65	71	67	61	66	64	58	63	61	54	61	59	51
			Exposed	98	89	80	92	85	76	87	81	73	82	77	70	79	74	67	75	71	64	72	68	62	67	64	59	63	61	54	60	58	50	57	54	58	53	51	54	50	59	50
20	B	0-7	Interior	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78	73	78	78	68	78	74	65	78	71	62	77	67	60
			Exposed	78	78	78	78	78	78	78	78	78	78	78	78	78	78	75	78	78	72	78	78	70	78	75	65	78	70	62	75	66	59	71	63	55	68	60	52	64	58	59
		7-20	Interior	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78	74	78	76	69	78	71	65	78	66	62	74	63	59	71	61	57
			Exposed	78	78	78	78	78	78	78	78	78	78	78	75	78	78	72	78	75	69	78	72	66	78	67	62	74	63	59	70	60	55	66	57	52	63	53	59	61	50	56
		20-27	Interior	92	92	92	92	92	92	92	92	92	92	92	92	92	92	92	92	92	92	92	92	90	92	89	83	92	82	77	92	77	71	88	72	67	83	68	63	79	65	60
			Exposed	92	92	92	92	92	92	92	92	88	92	90	84	92	86	80	92	82	76	92	78	73	88	73	67	83	68	63	78	64	60	74	61	56	71	59	52	68	55	49
		27-45	Interior	96	96	96	96	96	96	96	96	96	96	96	96	96	96	96	96	96	96	96	96	95	96	96	88	96	91	82	92	85	76	86	80	72	80	75	68	76	71	65
			Exposed	96	96	96	96	96	96	96	96	93	96	96	89	96	94	85	96	90	81	94	86	78	86	80	72	80	75	67	74	70	64	70	66	61	66	63	58	63	61	54
	C	0-7	Interior	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78	75	78	78	72	78	77	67	78	72	63	78	68	60	73	64	57	70	62	54	66	59	51
			Exposed	78	78	78	78	78	74	78	78	70	78	78	67	78	75	65	78	72	63	78	69	61	74	65	57	69	61	53	65	59	60	62	55	57	60	52	53	57	59	50
		7-20	Interior	78	78	78	78	78	78	78	78	78	78	78	78	78	78	74	78	78	71	78	74	68	78	69	64	76	64	61	72	61	57	68	59	54	65	55	50	62	52	58
			Exposed	78	78	74	78	77	70	78	73	67	78	70	64	78	67	62	75	64	60	73	62	59	68	59	54	64	55	50	61	51	57	59	59	53	55	55	50	52	52	~~47~~
		20-27	Interior	92	92	92	92	92	92	92	92	92	92	92	87	92	89	83	92	85	79	92	81	75	91	75	70	85	70	65	80	65	61	76	63	58	73	60	54	69	57	51
			Exposed	92	88	82	92	84	78	92	79	74	91	76	70	88	72	67	85	69	64	82	67	62	77	63	58	72	60	53	68	56	49	65	52	57	62	60	53	60	57	49
		27-45	Interior	96	96	96	96	96	96	96	96	96	96	96	92	96	96	88	96	93	84	96	89	80	89	83	75	82	77	70	77	72	65	72	68	62	68	65	59	64	62	56
			Exposed	96	96	87	96	92	83	95	87	79	90	83	75	86	80	72	82	77	69	78	74	67	72	68	62	67	64	59	64	61	55	61	59	51	58	55	59	55	52	55
	D	0-7	Interior	78	78	78	78	78	78	78	78	78	78	78	75	78	78	72	78	78	69	78	77	67	78	72	63	77	67	60	72	64	56	68	61	52	65	58	60	62	55	57
			Exposed	78	78	72	78	78	68	78	75	65	78	72	63	78	69	61	76	67	59	73	65	57	68	61	53	64	58	59	61	54	56	59	50	52	55	58	49	52	55	~~46~~
		7-20	Interior	78	78	78	78	78	78	78	78	75	78	78	72	78	75	68	78	71	66	78	69	64	75	64	60	71	61	56	67	58	53	64	54	60	61	51	57	59	59	53
			Exposed	78	74	68	78	71	65	78	67	63	76	65	61	73	62	59	70	61	56	68	59	54	64	54	60	61	50	56	58	58	52	54	54	49	51	51	46	59	48	~~42~~
		20-27	Interior	94	94	94	94	94	88	94	90	84	94	85	79	94	81	76	94	78	72	90	75	69	84	69	64	79	65	60	75	62	57	71	59	53	68	56	49	65	53	57
			Exposed	94	81	75	93	77	71	89	73	68	85	70	65	82	67	62	79	64	60	76	63	58	72	59	53	67	55	48	64	51	56	61	59	51	59	56	47	55	52	~~42~~
		27-45	Interior	97	97	97	97	97	93	97	97	88	97	94	84	97	90	81	93	86	77	89	82	74	82	76	69	76	71	65	71	67	61	66	64	58	63	61	54	61	59	51
			Exposed	97	89	80	92	85	76	87	81	73	82	77	70	79	74	67	75	71	64	72	68	62	67	64	59	63	61	54	60	58	50	57	54	58	53	51	54	50	59	50

* Cells with an astrisks indicates that the L-foot must be oriented in the Y- direction as indicated in the image.

10 Highlighted cell indicate 3-rail system span. Contact Unirac Engineering Services for support.

~~10~~ Highlighted cell with strikethrough indicate 3-rail system span and module clamp allowable capacity exceeds with 3-rails. 4-Rail system required. Contact Unirac Engineering Services for support.

UNIRAC

ASCE 7-16	II	30 ft	Ss = 1.25	19 sq.ft	LANDSCAPE	CROSS-SLOPE	NXT	NXT COMBO	Flashkit Pro
Design Standard	Risk Category	Roof Height	Seismic	Module Area	Orientation	Rail Direction	Rail Type	Clamp	Attachment

SPAN TABLES

Maximum Allowable Rail Spans for Rooftop Solar Panels Parallel to the Roof Surface (inches)

Ground Snow Load (psf)	Wind Exposure Category	Roof Tilt Angle (deg)	Panel Exposure	Basic Wind Speed (mph)																																						
				90			95			100			105			110			115			120			130			140			150			160			170			180		
				Roof Wind Zone																																						
				1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3
30	B	0-7	Interior	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	73	77	77	68	77	74	65	77	71	62	77	67	60
			Exposed	77	77	77	77	77	77	77	77	77	77	77	77	77	77	75	77	77	72	77	77	70	77	75	65	77	70	62	75	66	59	71	63	55	68	60	52	64	58	59
		7-20	Interior	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78	74	78	76	69	78	71	65	78	66	62	74	63	59	71	61	57
			Exposed	78	78	78	78	78	78	78	78	78	78	78	75	78	78	72	78	75	69	78	72	66	78	67	62	74	63	59	70	60	55	66	57	52	63	53	59	61	50	56
		20-27	Interior	86	86	86	86	86	86	86	86	86	86	86	86	86	86	86	86	86	86	86	86	86	86	86	83	86	82	77	86	77	71	86	72	67	83	68	63	79	65	60
			Exposed	86	86	86	86	86	86	86	86	86	86	86	84	86	86	80	86	82	76	86	78	73	86	73	67	83	68	63	78	64	60	74	61	56	71	59	52	68	55	49
		27-45	Interior	90	90	90	90	90	90	90	90	90	90	90	90	90	90	90	90	90	90	90	90	90	90	90	88	90	90	82	90	85	76	86	80	72	80	75	68	76	71	65
			Exposed	90	90	90	90	90	90	90	90	90	90	90	89	90	90	85	90	90	81	90	86	78	86	80	72	80	75	67	74	70	64	70	66	61	66	63	58	63	61	54
	C	0-7	Interior	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	75	77	77	72	77	77	67	77	72	63	77	68	60	73	64	57	70	62	54	66	59	51
			Exposed	77	77	77	77	77	74	77	77	70	77	77	67	77	75	65	77	72	63	77	69	61	74	65	57	69	61	53	65	59	60	62	55	57	60	52	53	57	59	50
		7-20	Interior	78	78	78	78	78	78	78	78	78	78	78	78	78	78	74	78	78	71	78	74	68	78	69	64	76	64	61	72	61	57	68	59	54	65	55	50	62	52	58
			Exposed	78	78	74	78	77	70	78	73	67	78	70	64	78	67	62	75	64	60	73	62	59	68	59	54	64	55	50	61	51	57	59	59	53	55	55	50	52	52	47
		20-27	Interior	86	86	86	86	86	86	86	86	86	86	86	86	86	86	83	86	85	79	86	81	75	86	75	70	85	70	65	80	65	61	76	63	58	73	60	54	69	57	51
			Exposed	86	86	82	86	84	78	86	79	74	86	76	70	86	72	67	85	69	64	82	67	62	77	63	58	72	60	53	68	56	49	65	52	57	62	60	53	60	57	49
		27-45	Interior	90	90	90	90	90	90	90	90	90	90	90	90	90	90	88	90	90	84	90	89	80	89	83	75	82	77	70	77	72	65	72	68	62	68	65	59	64	62	56
			Exposed	90	90	87	90	90	83	90	87	79	90	83	75	86	80	72	82	77	69	78	74	67	72	68	62	67	64	59	64	61	55	61	59	51	58	55	59	55	52	55
	D	0-7	Interior	78	78	78	78	78	78	78	78	78	78	78	75	78	78	72	78	78	69	78	77	67	78	72	63	77	67	60	72	64	56	68	61	52	65	58	60	62	55	57
			Exposed	78	78	72	78	78	68	78	75	65	78	72	63	78	69	61	76	67	59	73	65	57	68	61	53	64	58	59	61	54	56	59	50	52	55	58	49	52	55	46
		7-20	Interior	78	78	78	78	78	78	78	78	75	78	78	72	78	75	68	78	71	66	78	69	64	75	64	60	71	61	56	67	58	53	64	54	60	61	51	57	59	59	53
			Exposed	78	74	68	78	71	65	78	67	63	76	65	61	73	62	59	70	61	56	68	59	54	64	54	60	61	50	56	58	58	52	54	54	49	51	51	46	59	48	42
		20-27	Interior	88	88	88	88	88	88	88	88	84	88	85	79	88	81	76	88	78	72	88	75	69	84	69	64	79	65	60	75	62	57	71	59	53	68	56	49	65	53	57
			Exposed	88	81	75	88	77	71	88	73	68	85	70	65	82	67	62	79	64	60	76	63	58	72	59	53	67	55	48	64	51	56	61	59	51	59	56	47	55	52	42
		27-45	Interior	92	92	92	92	92	92	92	92	88	92	92	84	92	90	81	92	86	77	89	82	74	82	76	69	76	71	65	71	67	61	66	64	58	63	61	54	61	59	51
			Exposed	92	89	80	92	85	76	87	81	73	82	77	70	79	74	67	75	71	64	72	68	62	67	64	59	63	61	54	60	58	50	57	54	58	53	51	54	50	59	50
40	B	0-7	Interior	70	70	70	70	70	70	70	70	70	70	70	70	70	70	70	70	70	70	70	70	70	70	70	70	70	70	70	70	70	68	70	70	65	70	70	62	70	67	60
			Exposed	70	70	70	70	70	70	70	70	70	70	70	70	70	70	70	70	70	70	70	70	70	70	70	65	70	70	62	70	66	59	70	63	55	68	60	52	64	58	59
		7-20	Interior	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	69	72	71	65	72	66	62	72	63	59	71	61	57
			Exposed	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	69	72	72	66	72	67	62	72	63	59	70	60	55	66	57	52	63	53	59	61	50	56
		20-27	Interior	80	80	80	80	80	80	80	80	80	80	80	80	80	80	80	80	80	80	80	80	80	80	80	80	80	80	77	80	77	71	80	72	67	80	68	63	79	65	60
			Exposed	80	80	80	80	80	80	80	80	80	80	80	80	80	80	80	80	80	76	80	78	73	80	73	67	80	68	63	78	64	60	74	61	56	71	59	52	68	55	49
		27-45	Interior	86	86	86	86	86	86	86	86	86	86	86	86	86	86	86	86	86	86	86	86	86	86	86	86	86	86	82	85	85	76	82	80	72	80	75	68	76	71	65
			Exposed	86	86	86	86	86	86	86	86	86	86	86	86	86	86	85	86	86	81	86	86	78	86	80	72	80	75	67	74	70	64	70	66	61	66	63	58	63	61	54
	C	0-7	Interior	70	70	70	70	70	70	70	70	70	70	70	70	70	70	70	70	70	70	70	70	70	70	70	67	70	70	63	70	68	60	70	64	57	70	62	54	66	59	51
			Exposed	70	70	70	70	70	70	70	70	70	70	70	67	70	70	65	70	70	63	70	69	61	70	65	57	69	61	53	65	59	60	62	55	57	60	52	53	57	59	50
		7-20	Interior	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	71	72	72	68	72	69	64	72	64	61	72	61	57	68	59	54	65	55	50	62	52	58
			Exposed	72	72	72	72	72	70	72	72	67	72	70	64	72	67	62	72	64	60	72	62	59	68	59	54	64	55	50	61	51	57	59	59	53	55	55	50	52	52	47
		20-27	Interior	80	80	80	80	80	80	80	80	80	80	80	80	80	80	80	80	80	79	80	80	75	80	75	70	80	70	65	80	65	61	76	63	58	73	60	54	69	57	51
			Exposed	80	80	80	80	80	78	80	79	74	80	76	70	80	72	67	80	69	64	80	67	62	77	63	58	72	60	53	68	56	49	65	52	57	62	60	53	60	57	49
		27-45	Interior	86	86	86	86	86	86	86	86	86	86	86	86	86	86	86	86	86	84	86	86	80	84	83	75	81	77	70	77	72	65	72	68	62	68	65	59	64	62	56
			Exposed	86	86	86	86	86	83	86	86	79	86	83	75	86	80	72	82	77	69	78	74	67	72	68	62	67	64	59	64	61	55	61	59	51	58	55	59	55	52	55
	D	0-7	Interior	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	69	72	72	67	72	72	63	72	67	60	72	64	56	68	61	52	65	58	60	62	55	57
			Exposed	72	72	72	72	72	68	72	72	65	72	72	63	72	69	61	72	67	59	72	65	57	68	61	53	64	58	59	61	54	56	59	50	52	55	58	49	52	55	46
		7-20	Interior	75	75	75	75	75	75	75	75	75	75	75	72	75	75	68	75	71	66	75	69	64	75	64	60	71	61	56	67	58	53	64	54	60	61	51	57	59	59	53
			Exposed	75	74	68	75	71	65	75	67	63	75	65	61	73	62	59	70	61	56	68	59	54	64	54	60	61	50	56	58	58	52	54	54	49	51	51	46	59	48	42
		20-27	Interior	82	82	82	82	82	82	82	82	82	82	82	79	82	81	76	82	78	72	82	75	69	82	69	64	79	65	60	75	62	57	71	59	53	68	56	49	65	53	57
			Exposed	82	81	75	82	77	71	82	73	68	82	70	65	82	67	62	79	64	60	76	63	58	72	59	53	67	55	48	64	51	56	61	59	51	59	56	47	55	52	42
		27-45	Interior	88	88	88	88	88	88	88	88	88	88	88	84	88	88	81	88	86	77	86	82	74	82	76	69	76	71	65	71	67	61	66	64	58	63	61	54	61	59	51
			Exposed	88	88	80	88	85	76	87	81	73	82	77	70	79	74	67	75	71	64	72	68	62	67	64	59	63	61	54	60	58	50	57	54	58	53	51	54	50	59	50
50	B	0-7	Interior	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	62	63	63	60
			Exposed	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	62	63	63	59	63	63	55	63	60	52	63	58	59
		7-20	Interior	66	66	66	66	66	66	66	66	66	66	66	66	66	66	66	66	66	66	66	66	66	66	66	66	66	66	66	66	66	65	66	66	62	66	63	59	66	61	57
			Exposed	66	66	66	66	66	66	66	66	66	66	66	66	66	66	66	66	66	66	66	66	66	66	66	62	66	63	59	66	60	55	66	57	52	63	53	59	61	50	56
		20-27	Interior	74	74	74	74	74	74	74	74	74	74	74	74	74	74	74	74	74	74	74	74	74	74	74	74	74	74	74	74	74	71	74	72	67	74	68	63	74	65	60
			Exposed	74	74	74	74	74	74	74	74	74	74	74	74	74	74	74	74	74	74	74	74	73	74	73	67	74	68	63	74	64	60	74	61	56	71	59	52	68	55	49
		27-45	Interior	80	80	80	80	80	80	80	80	80	80	80	80	80	80	80	80	80	80	80	80	80	80	80	80	80	80	80	79	79	76	77	77	72	75	75	68	73	71	65
			Exposed	80	80	80	80	80	80	80	80	80	80	80	80	80	80	80	80	80	80	80	80	78	80	80	72	80	75	67	74	70	64	70	66	61	66	63	58	63	61	54
	C	0-7	Interior	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	60	63	63	57	63	62	54	63	59	51
			Exposed	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	61	63	63	57	63	61	53	63	59	60	62	55	57	60	52	53	57	59	50
		7-20	Interior	66	66	66	66	66	66	66	66	66	66	66	66	66	66	66	66	66	66	66	66	66	66	66	64	66	64	61	66	61	57	65	59	54	64	55	50	62	52	58
			Exposed	66	66	66	66	66	66	66	66	66	66	66	64	66	66	62	66	64	60	66	62	59	66	59	54	64	55	50	61	51	57	59	59	53	55	55	50	52	52	47
		20-27	Interior	74	74	74	74	74	74	74	74	74	74	74	74	74	74	74	74	74	74	74	74	74	74	74	70	74	70	65	74	65	61	73	63	58	72	60	54	69	57	51
			Exposed	74	74	74	74	74	74	74	74	74	74	74	70	74	72	67	74	69	64	74	67	62	74	63	58	72	60	53	68	56	49	65	52	57	62	60	53	60	57	49
		27-45	Interior	80	80	80	80	80	80	80	80	80	80	80	80	80	80	80	80	80	80	80	80	80	78	78	75	76	76	70	73	72	65	71	68	62	68	65	59	64	62	56
			Exposed	80	80	80	80	80	80	80	80	79	80	80	75	80	80	72	80	77	69	78	74	67	72	68	62	67	64	59	64	61	55	61	59	51	58	55	59	55	52	55
	D	0-7	Interior	66	66	66	66	66	66	66	66	66	66	66	66	66	66	66	66	66	66	66	66	66	66	66	63	66	66	60	66	64	56	66	61	52	65	58	60	62	55	57
			Exposed	66	66	66	66	66	66	66	66	65	66	66	63	66	66	61	66	66	59	66	65	57	66	61	53	64	58	59	61	54	56	59	50	52	55	58	49	52	55	46
		7-20	Interior	69	69	69	69	69	69	69	69	69	69	69	69	69	69	68	69	69	66	69	69	64	69	64	60	69	61	56	67	58	53	64	54	60	61	51	57	59	59	53
			Exposed	69	69	68	69	69	65	69	67	63	69	65	61	69	62	59	69	61	56	68	59	54	64	54	60	61	50	56	58	58	52	54	54	49	51	51	46	59	48	42
		20-27	Interior	77	77	77	77	77	77	77	77	77	77	77	77	77	77	76	77	77	72	77	75	69	77	69	64	77	65	60	75	62	57	71	59	53	68	56	49	65	53	57
			Exposed	77	77	75	77	77	71	77	73	68	77	70	65	77	67	62	77	64	60	76	63	58	72	59	53	67	55	48	64	51	56	61	59	51	59	56	47	55	52	42
		27-45	Interior	83	83	83	83	83	83	83	83	83	83	83	83	83	83	81	82	82	77	81	81	74	78	76	69	75	71	65	71	67	61	66	64	58	63	61	54	61	59	51
			Exposed	83	83	80	83	83	76	83	81	73	82	77	70	79	74	67	75	71	64	72	68	62	67	64	59	63	61	54	60	58	50	57	54	58	53	51	54	50	59	50

* Cells with an astrisks indicates that the L-foot must be oriented in the Y- direction as indicated in the image.

10 Highlighted cell indicate 3-rail system span. Contact Unirac Engineering Services for support.

~~10~~ Highlighted cell with strikethrough indicate 3-rail system span and module clamp allowable capacity exceeds with 3-rails. 4-Rail system required. Contact Unirac Engineering Services for support.

UNIRAC

ASCE 7-16	II	30 ft	Ss = 1.25	19 sq.ft	LANDSCAPE	CROSS-SLOPE	NXT	NXT COMBO	Flashkit Pro
Design Standard	Risk Category	Roof Height	Seismic	Module Area	Orientation	Rail Direction	Rail Type	Clamp	Attachment

SPAN TABLES

Maximum Allowable Rail Spans for Rooftop Solar Panels Parallel to the Roof Surface (inches)

Ground Snow Load (psf)	Wind Exposure Category	Roof Tilt Angle (deg)	Panel Exposure	Basic Wind Speed (mph)																																						
				90			95			100			105			110			115			120			130			140			150			160			170			180		
				Roof Wind Zone																																						
				1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3
60	B	0-7	Interior	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58
			Exposed	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	55	58	58	52	58	58	59
		7-20	Interior	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	59	60	60	57
			Exposed	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	59	60	60	55	60	57	52	60	53	59	60	50	56
		20-27	Interior	70	70	70	70	70	70	70	70	70	70	70	70	70	70	70	70	70	70	70	70	70	70	70	70	70	70	70	70	70	70	70	70	67	70	68	63	69	65	60
			Exposed	70	70	70	70	70	70	70	70	70	70	70	70	70	70	70	70	70	70	70	70	70	70	70	67	70	68	63	70	64	60	70	61	56	70	59	52	68	55	49
		27-45	Interior	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	74	74	74	72	72	72	71	71	68	69	69	65
			Exposed	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	72	76	75	67	74	70	64	70	66	61	66	63	58	63	61	54
	C	0-7	Interior	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	57	58	58	54	58	58	51
			Exposed	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	53	58	58	53	58	58	60	58	55	57	58	52	53	57	59	50
		7-20	Interior	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	57	60	59	54	60	55	50	59	52	58
			Exposed	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	59	60	59	54	60	55	50	60	51	57	59	59	53	55	55	50	52	52	47
		20-27	Interior	70	70	70	70	70	70	70	70	70	70	70	70	70	70	70	70	70	70	70	70	70	70	70	70	70	70	65	70	65	61	68	63	58	67	60	54	66	57	51
			Exposed	70	70	70	70	70	70	70	70	70	70	70	70	70	70	67	70	69	64	70	67	62	70	63	58	70	60	53	68	56	49	65	52	57	62	60	53	60	57	49
		27-45	Interior	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	74	74	74	71	71	70	69	69	65	67	67	62	65	65	59	63	62	56
			Exposed	76	76	76	76	76	76	76	76	76	76	76	75	76	76	72	76	76	69	76	74	67	72	68	62	67	64	59	64	61	55	61	59	51	58	55	59	55	52	55
	D	0-7	Interior	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	60	61	61	56	61	61	52	61	58	60	61	55	57
			Exposed	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	59	61	61	57	61	61	53	61	58	59	61	54	56	59	50	52	55	58	49	52	55	46
		7-20	Interior	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	60	64	61	56	63	58	53	62	54	60	61	51	57	59	59	53
			Exposed	64	64	64	64	64	64	64	64	63	64	64	61	64	62	59	64	61	56	64	59	54	64	54	60	61	50	56	58	58	52	54	54	49	51	51	46	59	48	42
		20-27	Interior	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	69	72	69	64	72	65	60	71	62	57	69	59	53	68	56	49	65	53	57
			Exposed	72	72	72	72	72	71	72	72	68	72	70	65	72	67	62	72	64	60	72	63	58	72	59	53	67	55	48	64	51	56	61	59	51	59	56	47	55	52	42
		27-45	Interior	79	79	79	79	79	79	79	79	79	79	79	79	78	78	78	77	77	77	76	76	74	74	74	69	71	71	65	68	67	61	66	64	58	63	61	54	61	59	51
			Exposed	79	79	79	79	79	76	79	79	73	79	77	70	78	74	67	75	71	64	72	68	62	67	64	59	63	61	54	60	58	50	57	54	58	53	51	54	50	59	50
70	B	0-7	Interior	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54
			Exposed	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	52	54	54	59
		7-20	Interior	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56
			Exposed	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	55	56	56	52	56	53	59	56	50	56
		20-27	Interior	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	63	65	65	60
			Exposed	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	63	65	64	60	65	61	56	65	59	52	65	55	49
		27-45	Interior	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	70	70	70	69	69	69	67	67	67	66	66	65
			Exposed	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	67	70	70	64	69	66	61	66	63	58	63	61	54
	C	0-7	Interior	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	51
			Exposed	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	53	54	54	53	54	54	60	54	54	57	54	52	53	54	59	50
		7-20	Interior	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	54	56	55	50	56	52	58
			Exposed	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	54	56	55	50	56	51	57	56	59	53	55	55	50	52	52	47
		20-27	Interior	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	61	65	63	58	64	60	54	63	57	51
			Exposed	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	64	65	65	62	65	63	58	65	60	53	65	56	49	65	52	57	62	60	53	60	57	49
		27-45	Interior	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	71	71	71	70	70	70	68	68	68	66	66	65	64	64	62	63	63	59	61	61	56
			Exposed	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	69	71	71	67	70	68	62	67	64	59	64	61	55	61	59	51	58	55	59	55	52	55
	D	0-7	Interior	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	56	57	57	52	57	57	60	57	55	57
			Exposed	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	53	57	57	59	57	54	56	57	50	52	55	58	49	52	55	46
		7-20	Interior	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	56	59	58	53	59	54	60	58	51	57	57	59	53
			Exposed	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	56	59	59	54	59	54	60	59	50	56	58	58	52	54	54	49	51	51	46	59	48	42
		20-27	Interior	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	64	68	65	60	67	62	57	65	59	53	64	56	49	63	53	57
			Exposed	69	69	69	69	69	69	69	69	68	69	69	65	69	67	62	69	64	60	69	63	58	69	59	53	67	55	48	64	51	56	61	59	51	59	56	47	55	52	42
		27-45	Interior	75	75	75	75	75	75	75	75	75	75	75	75	74	74	74	73	73	73	72	72	72	70	70	69	68	68	65	65	65	61	64	64	58	62	61	54	60	59	51
			Exposed	75	75	75	75	75	75	75	75	73	75	75	70	74	74	67	73	71	64	72	68	62	67	64	59	63	61	54	60	58	50	57	54	58	53	51	54	50	59	50
80	B	0-7	Interior	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51
			Exposed	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	59
		7-20	Interior	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53
			Exposed	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	52	53	53	59	53	50	56
		20-27	Interior	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	60
			Exposed	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	60	61	61	56	61	59	52	61	55	49
		27-45	Interior	76*	76*	76*	76*	76*	76*	76*	76*	76*	76*	76*	76*	76*	76*	76*	76*	76*	76*	76*	76*	76*	76*	76*	76*	75*	75*	75*	74*	74*	74*	75*	75*	66	77*	64	64	63	63	63
			Exposed	76*	76*	76*	76*	76*	76*	76*	76*	76*	76*	76*	76*	76*	76*	76*	76*	76*	76*	76*	76*	76*	76*	76*	69	75*	75*	67	74*	67	64	66	66	61	64	63	58	63	61	54
	C	0-7	Interior	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51
			Exposed	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	60	51	51	57	51	51	53	51	59	50
		7-20	Interior	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	50	53	52	58
			Exposed	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	50	53	51	57	53	59	53	53	55	50	52	52	47
		20-27	Interior	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	58	61	60	54	60	57	51
			Exposed	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	58	61	60	53	61	56	49	61	52	57	61	60	53	60	57	49
		27-45	Interior	76*	76*	76*	76*	76*	76*	76*	76*	76*	76*	76*	76*	76*	76*	76*	76*	76*	76*	75*	75*	75*	73*	73*	73*	78*	77*	65	63	63	63	62	62	62	60	60	59	59	59	56
			Exposed	76*	76*	76*	76*	76*	76*	76*	76*	76*	76*	75*	76*	76*	69	76*	76*	69	75*	74*	67	66	66	62	65	64	59	63	61	55	61	59	51	58	55	59	55	52	55
	D	0-7	Interior	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	52	53	53	60	53	53	57
			Exposed	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	59	53	53	56	53	53	50	53	53	52	53	58	49	52	55	46
		7-20	Interior	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	53	55	54	60	55	51	57	54	59	53	59	48	42
			Exposed	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	60	55	55	50	56	55	58	52	54	54	49	51	51	46	59	48	42					
		20-27	Interior	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	60	64	62	57	63	59	53	61	56	49	60	53	57
			Exposed	64	64	64	64	64	64	64	64	64	64	64	64	64	64	62	64	64	60	64	63	58	64	59	53	64	55	48	64	51	56	61	59	51	59	56	47	55	52	42
		27-45	Interior	82*	82*	82*	82*	82*	82*	82*	82*	82*	82*	82*	82*	82*	82*	71	84*	84*	70	69	69	69	67	67	67	65	65	65	63	63	61	61	61	58	60	60	54	58	58	51
			Exposed	82*	82*	72	82*	82*	72	82*	72	72	82*	72	70	71	71	67	70	70	64	69	68	62	67	64	59	63	61	54	60	58	50	57	54	58	53	51	54	50	59	50

* Cells with an astrisks indicates that the L-foot must be oriented in the Y- direction as indicated in the image.

10 Highlighted cell indicate 3-rail system span. Contact Unirac Engineering Services for support.

~~10~~ Highlighted cell with strikethrough indicate 3-rail system span and module clamp allowable capacity exceeds with 3-rails. 4-Rail system required. Contact Unirac Engineering Services for support.

UNIRAC

ASCE 7-16	II	30 ft	Ss = 1.25	19 sq.ft	LANDSCAPE	CROSS-SLOPE	NXT	NXT COMBO	Flashkit Pro
Design Standard	Risk Category	Roof Height	Seismic	Module Area	Orientation	Rail Direction	Rail Type	Clamp	Attachment

SPAN TABLES

Maximum Allowable Rail Spans for Rooftop Solar Panels Parallel to the Roof Surface (inches)

Ground Snow Load (psf)	Wind Exposure Category	Roof Tilt Angle (deg)	Panel Exposure	Basic Wind Speed (mph)																																						
				90			95			100			105			110			115			120			130			140			150			160			170			180		
				Roof Wind Zone																																						
				1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3
90	B	0-7	Interior	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48
			Exposed	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	59
		7-20	Interior	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50
			Exposed	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	59	50	50	56
		20-27	Interior	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58
			Exposed	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	56	58	58	52	58	55	49
		27-45	Interior	69*	69*	69*	69*	69*	69*	69*	69*	69*	69*	69*	69*	69*	69*	69*	69*	69*	69*	69*	69*	69*	69*	69*	69*	69*	69*	69*	67*	67*	67*	66*	66*	66*	65*	65*	65*	66*	66*	61
			Exposed	69*	69*	69*	69*	69*	69*	69*	69*	69*	69*	69*	69*	69*	69*	69*	69*	69*	69*	69*	69*	69*	69*	69*	69*	69*	69*	68*	67*	67*	64	66*	66*	61	65*	62	58	61	61	54
	C	0-7	Interior	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48
			Exposed	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	59	48	48	57	48	48	53	48	59	50
		7-20	Interior	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	58
			Exposed	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	57	50	59	53	50	55	50	50	52	47
		20-27	Interior	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	54	57	57	51
			Exposed	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	53	58	56	49	58	52	57	58	60	53	57	57	49
		27-45	Interior	69*	69*	69*	69*	69*	69*	69*	69*	69*	69*	69*	69*	69*	69*	69*	69*	69*	69*	68*	68*	68*	67*	67*	67*	65*	65*	65*	66*	66*	61	67*	67*	60	58	58	58	57	57	56
			Exposed	69*	69*	69*	69*	69*	69*	69*	69*	69*	69*	69*	69*	69*	69*	69*	69*	69*	69*	68*	68*	67*	67*	67*	62	65*	62	59	61	61	55	60	59	51	58	55	59	55	52	55
	D	0-7	Interior	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	60	50	50	57
			Exposed	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	59	50	50	56	50	50	52	50	58	49	50	55	46
		7-20	Interior	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	60	52	51	57	52	59	53
			Exposed	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	60	52	50	56	52	58	52	52	54	49	51	51	46	59	48	42
		20-27	Interior	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	60	61	61	57	60	59	53	59	56	49	58	53	57
			Exposed	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	60	61	61	58	61	59	53	61	55	48	61	51	56	60	59	51	59	56	47	55	52	42
		27-45	Interior	72*	72*	72*	72*	72*	72*	72*	72*	72*	72*	72*	72*	75*	75*	75*	74*	74*	74*	73*	73*	73*	74*	74*	64	63	63	63	61	61	61	60	60	58	58	58	54	57	57	51
			Exposed	72*	72*	72*	72*	72*	72*	72*	72*	72*	72*	72*	68	75*	74*	67	74*	67	64	72*	66	62	64	64	59	63	61	54	60	58	50	57	54	58	53	51	54	50	59	50
100	B	0-7	Interior	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45
			Exposed	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	56
		7-20	Interior	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47
			Exposed	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	58	47	47	56
		20-27	Interior	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55
			Exposed	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	52	55	55	49
		27-45	Interior	62*	62*	62*	62*	62*	62*	62*	62*	62*	62*	62*	62*	62*	62*	62*	62*	62*	62*	62*	62*	62*	62*	62*	62*	62*	62*	62*	62*	62*	62*	61*	61*	61*	60*	60*	60*	61*	61*	61*
			Exposed	62*	62*	62*	62*	62*	62*	62*	62*	62*	62*	62*	62*	62*	62*	62*	62*	62*	62*	62*	62*	62*	62*	62*	62*	62*	62*	62*	62*	62*	62*	61*	61*	61*	60*	60*	58	61*	61*	54
	C	0-7	Interior	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45
			Exposed	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	56	45	45	56	45	45	53	45	56	50
		7-20	Interior	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	58
			Exposed	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	57	47	58	53	47	55	50	47	52	47
		20-27	Interior	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	54	55	55	51
			Exposed	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	53	55	55	49	55	52	57	55	60	53	55	57	49
		27-45	Interior	62*	62*	62*	62*	62*	62*	62*	62*	62*	62*	62*	62*	62*	62*	62*	62*	62*	62*	62*	62*	62*	62*	62*	62*	60*	60*	60*	62*	62*	62*	60*	60*	60*	59*	59*	59*	60*	60*	56
			Exposed	62*	62*	62*	62*	62*	62*	62*	62*	62*	62*	62*	62*	62*	62*	62*	62*	62*	62*	62*	62*	62*	62*	62*	62*	60*	60*	59*	62*	61*	55	60*	59*	51	57	55	59	55	52	55
	D	0-7	Interior	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	59	48	48	57
			Exposed	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	59	48	48	56	48	48	52	48	58	49	48	55	46	48	55	46
		7-20	Interior	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	60	50	50	57	50	59	53
			Exposed	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	60	50	50	56	50	58	52	50	54	49	50	51	46	59	48	42
		20-27	Interior	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	57	58	58	53	57	56	49	56	53	57
			Exposed	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	53	58	55	48	58	51	56	58	59	51	57	56	47	55	52	42
		27-45	Interior	69*	69*	69*	69*	69*	69*	69*	69*	69*	69*	69*	69*	68*	68*	68*	68*	68*	68*	67*	67*	67*	65*	65*	65*	66*	66*	61	69*	59	59	58	58	58	57	57	54	55	55	51
			Exposed	69*	69*	69*	69*	69*	69*	69*	69*	69*	69*	69*	69*	68*	68*	67*	68*	68*	64	67*	67*	62	65*	62	59	61	61	54	59	58	50	57	54	58	53	51	54	50	59	50

*	Cells with an astrisks indicates that the L-foot must be oriented in the Y- direction as indicated in the image.
10	Highlighted cell indicate 3-rail system span. Contact Unirac Engineering Services for support.
~~10~~	Highlighted cell with strikethrough indicate 3-rail system span and module clamp allowable capacity exceeds with 3-rails. 4-Rail system required. Contact Unirac Engineering Services for support.

UNIRAC

ASCE 7-16	II	30 ft	Ss = 1.25	23 sq.ft	PORTRAIT	CROSS-SLOPE	NXT	NXT COMBO	Flashkit Pro
Design Standard	Risk Category	Roof Height	Seismic	Module Area	Orientation	Rail Direction	Rail Type	Clamp	Attachment

SPAN TABLES

Maximum Allowable Rail Spans for Rooftop Solar Panels Parallel to the Roof Surface (inches)

Ground Snow Load (psf)	Wind Exposure Category	Roof Tilt Angle (deg)	Panel Exposure	Basic Wind Speed (mph)																																												
				90			95			100			105			110			115			120			130			140			150			160			170			180		
				Roof Wind Zone																																												
				1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3
0	B	0-7	Interior	79	79	79	79	79	79	79	79	79	79	79	76	79	79	73	79	79	70	79	77	68	79	72	63	77	68	60	72	64	55	69	61	51	65	57	47	62	54	42
			Exposed	79	79	73	79	79	70	79	75	67	79	72	64	79	70	62	76	67	59	74	65	57	69	61	51	65	57	47	61	52	40	58	48	33	54	44	44	50	37	39
		7-20	Interior	79	79	79	79	79	79	79	79	77	79	79	74	79	77	71	79	74	68	79	71	66	74	66	62	69	62	57	66	59	52	63	54	48	60	50	43	57	46	35
			Exposed	79	76	71	79	73	68	79	70	65	75	67	62	72	64	60	69	62	57	67	60	54	63	54	48	59	49	41	55	45	34	51	36	45	48	46	39	44	42	35
		20-27	Interior	79	79	79	79	79	79	79	79	79	79	79	79	79	79	78	79	79	75	79	76	72	79	71	67	78	67	63	74	63	60	70	60	55	67	56	51	64	52	47
			Exposed	79	79	78	79	78	74	79	75	71	79	72	68	79	69	65	78	66	63	75	64	61	70	60	56	66	55	50	63	50	46	60	46	37	56	40	31	53	34	40
		27-45	Interior	80	80	80	80	80	80	80	80	80	80	80	80	80	80	80	80	80	78	80	80	75	80	77	70	78	72	66	73	68	63	69	65	59	66	62	55	63	59	51
			Exposed	80	80	80	80	80	77	80	80	74	80	78	71	80	75	68	77	72	66	75	69	64	70	65	60	65	61	55	62	58	50	58	53	46	54	49	39	50	46	33
	C	0-7	Interior	79	79	75	79	79	72	79	78	69	79	74	66	79	72	63	78	69	61	76	67	59	71	63	54	67	59	49	63	54	44	60	50	36	56	47	46	52	41	42
			Exposed	79	72	63	78	68	61	74	66	58	71	63	54	69	61	51	66	59	48	64	56	46	60	51	37	56	46	46	51	39	41	47	33	36	42	44	31	35	39	28
		7-20	Interior	79	79	73	79	75	70	79	72	67	77	69	64	74	66	61	71	64	59	69	61	56	64	57	51	61	52	46	57	47	37	53	40	46	50	34	42	47	45	37
			Exposed	74	66	61	70	63	59	68	60	55	65	58	51	63	54	48	61	51	45	59	48	39	54	41	32	49	33	41	45	43	36	39	38	31	34	33	28	45	30	25
		20-27	Interior	79	79	79	79	79	77	79	77	73	79	74	70	79	71	67	79	68	65	77	66	62	72	62	58	68	58	53	64	53	48	61	48	42	59	44	34	55	37	44
			Exposed	79	71	67	79	68	64	76	65	61	73	62	59	70	60	55	68	57	52	65	54	49	62	49	43	58	43	33	54	35	41	50	45	35	46	40	30	41	36	26
		27-45	Interior	80	80	80	80	80	79	80	80	76	80	80	73	80	77	70	80	74	68	77	71	65	72	67	61	67	63	57	63	60	52	60	55	48	56	51	44	52	48	36
			Exposed	80	77	70	79	73	67	75	70	64	72	67	62	69	65	60	67	63	57	64	61	54	60	56	49	56	51	43	51	46	34	46	39	44	39	34	38	33	45	33
	D	0-7	Interior	79	79	70	79	75	67	79	72	64	79	69	61	76	67	59	73	65	56	71	62	53	66	59	48	62	53	42	59	49	34	55	45	45	51	38	40	47	33	36
			Exposed	76	67	59	72	64	55	69	61	52	67	59	49	64	56	46	62	53	41	60	50	36	55	46	45	50	37	39	46	47	34	39	42	30	34	37	26	45	33	23
		7-20	Interior	79	73	68	79	70	65	75	67	62	71	64	60	69	62	56	66	59	53	64	57	50	60	51	45	56	46	35	52	38	45	48	32	40	45	43	35	39	38	31
			Exposed	69	62	56	66	59	52	63	55	49	61	52	46	59	49	40	56	46	35	53	40	46	49	32	41	44	42	35	37	36	30	47	32	26	43	28	23	38	25	21
		20-27	Interior	79	79	75	79	75	71	79	72	68	79	69	65	77	66	63	74	64	60	72	62	58	67	57	52	64	52	47	60	47	39	57	41	32	53	34	41	50	45	35
			Exposed	77	66	62	74	63	60	71	60	56	68	58	53	66	54	49	63	51	47	61	49	42	57	42	32	53	34	40	49	44	33	45	38	28	39	34	24	34	30	21
		27-45	Interior	80	80	77	80	80	74	80	78	71	80	74	68	77	72	66	74	69	63	71	67	61	67	62	57	63	59	51	59	54	47	54	50	41	50	46	34	46	40	44
			Exposed	77	71	65	73	68	63	70	66	60	67	63	57	65	61	54	62	59	51	60	55	48	55	50	41	50	46	33	45	37	42	36	47	36	46	43	31	42	38	27
10	B	0-7	Interior	66	66	66	66	66	66	66	66	66	66	66	66	66	66	66	66	66	66	66	66	66	66	66	63	66	66	60	66	64	55	66	61	51	65	57	47	62	54	42
			Exposed	66	66	66	66	66	66	66	66	66	66	66	64	66	66	62	66	66	59	66	65	57	66	61	51	65	57	47	61	52	40	58	48	33	54	44	44	50	37	39
		7-20	Interior	66	66	66	66	66	66	66	66	66	66	66	66	66	66	66	66	66	66	66	66	66	66	66	62	66	62	57	66	59	52	63	54	48	60	50	43	57	46	35
			Exposed	66	66	66	66	66	66	66	66	65	66	66	62	66	64	60	66	62	57	66	60	54	63	54	48	59	49	41	55	45	34	51	36	45	48	46	39	44	42	35
		20-27	Interior	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	75	76	76	72	76	71	67	76	67	63	74	63	60	70	60	55	67	56	51	64	52	47
			Exposed	76	76	76	76	76	74	76	75	71	76	72	68	76	69	65	76	66	63	75	64	61	70	60	56	66	55	50	63	50	46	60	46	37	56	40	31	53	34	40
		27-45	Interior	79	79	79	79	79	79	79	79	79	79	79	79	79	79	79	79	79	78	79	79	75	79	77	70	78	72	66	73	68	63	69	65	59	66	62	55	63	59	51
			Exposed	79	79	79	79	79	77	79	79	74	79	78	71	79	75	68	77	72	66	75	69	64	70	65	60	65	61	55	62	58	50	58	53	46	54	49	39	50	46	33
	C	0-7	Interior	66	66	66	66	66	66	66	66	66	66	66	66	66	66	63	66	66	61	66	66	59	66	63	54	66	59	49	63	54	44	60	50	36	56	47	46	52	41	42
			Exposed	66	66	63	66	66	61	66	66	58	66	63	54	66	61	51	66	59	48	64	56	46	60	51	37	56	46	46	51	39	41	47	33	36	42	44	31	35	39	28
		7-20	Interior	66	66	66	66	66	66	66	66	66	66	66	64	66	66	61	66	64	59	66	61	56	64	57	51	61	52	46	57	47	37	53	40	46	50	34	42	47	45	37
			Exposed	66	66	61	66	63	59	66	60	55	65	58	51	63	54	48	61	51	45	59	48	39	54	41	32	49	33	41	45	43	36	39	38	31	34	33	28	45	30	25
		20-27	Interior	76	76	76	76	76	76	76	76	73	76	74	70	76	71	67	76	68	65	76	66	62	72	62	58	68	58	53	64	53	48	61	48	42	59	44	34	55	37	44
			Exposed	76	71	67	76	68	64	76	65	61	73	62	59	70	60	55	68	57	52	65	54	49	62	49	43	58	43	33	54	35	41	50	45	35	46	40	30	41	36	26
		27-45	Interior	79	79	79	79	79	79	79	79	76	79	79	73	79	77	70	79	74	68	77	71	65	72	67	61	67	63	57	63	60	52	60	55	48	56	51	44	52	48	36
			Exposed	79	77	70	79	73	67	75	70	64	72	67	62	69	65	60	67	63	57	64	61	54	60	56	49	56	51	43	51	46	34	46	39	44	39	34	38	33	45	33
	D	0-7	Interior	66	66	66	66	66	66	66	66	64	66	66	61	66	66	59	66	65	56	66	62	53	66	59	48	62	53	42	59	49	34	55	45	45	51	38	40	47	33	36
			Exposed	66	66	59	66	64	55	66	61	52	66	59	49	64	56	46	62	53	41	60	50	36	55	46	45	50	37	39	46	47	34	39	42	30	34	37	26	45	33	23
		7-20	Interior	66	66	66	66	66	65	66	66	62	66	64	60	66	62	56	66	59	53	64	57	50	60	51	45	56	46	35	52	38	45	48	32	40	45	43	35	39	38	31
			Exposed	66	62	56	66	59	52	63	55	49	61	52	46	59	49	40	56	46	35	53	40	46	49	32	41	44	42	35	37	36	30	47	32	26	43	28	23	38	25	21
		20-27	Interior	77	77	75	77	75	71	77	72	68	77	69	65	77	66	63	74	64	60	72	62	58	67	57	52	64	52	47	60	47	39	57	41	32	53	34	41	50	45	35
			Exposed	77	66	62	74	63	60	71	60	56	68	58	53	66	54	49	63	51	47	61	49	42	57	42	32	53	34	40	49	44	33	45	38	28	39	34	24	34	30	21
		27-45	Interior	80	80	77	80	80	74	80	78	71	80	74	68	77	72	66	74	69	63	71	67	61	67	62	57	63	59	51	59	54	47	54	50	41	50	46	34	46	40	44
			Exposed	77	71	65	73	68	63	70	66	60	67	63	57	65	61	54	62	59	51	60	55	48	55	50	41	50	46	33	45	37	42	36	47	36	46	43	31	42	38	27
20	B	0-7	Interior	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	51	55	55	47	55	54	42
			Exposed	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	51	55	55	47	55	52	40	55	48	33	54	44	44	50	37	39
		7-20	Interior	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	52	55	54	48	55	50	43	55	46	35
			Exposed	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	54	55	54	48	55	49	41	55	45	34	51	36	45	48	46	39	44	42	35
		20-27	Interior	67	67	67	67	67	67	67	67	67	67	67	67	67	67	67	67	67	67	67	67	67	67	67	67	67	67	63	67	63	60	67	60	55	67	56	51	64	52	47
			Exposed	67	67	67	67	67	67	67	67	67	67	67	67	67	67	65	67	66	63	67	64	61	67	60	56	66	55	50	63	50	46	60	46	37	56	40	31	53	34	40
		27-45	Interior	71	71	71	71	71	71	71	71	71	71	71	71	71	71	71	71	71	71	71	71	71	71	71	70	71	71	66	71	68	63	69	65	59	66	62	55	63	59	51
			Exposed	71	71	71	71	71	71	71	71	71	71	71	71	71	71	68	71	71	66	71	69	64	70	65	60	65	61	55	62	58	50	58	53	46	54	49	39	50	46	33
	C	0-7	Interior	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	54	55	55	49	55	54	44	55	50	36	55	47	46	52	41	42
			Exposed	55	55	55	55	55	55	55	55	55	55	55	54	55	55	51	55	55	48	55	55	46	55	51	37	55	46	46	51	39	41	47	33	36	42	44	31	35	39	28
		7-20	Interior	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	51	55	52	46	55	47	37	53	40	46	50	34	42	47	45	37
			Exposed	55	55	55	55	55	55	55	55	55	55	55	51	55	54	48	55	51	45	55	48	39	54	41	32	49	33	41	45	43	36	39	38	31	34	33	28	45	30	25
		20-27	Interior	67	67	67	67	67	67	67	67	67	67	67	67	67	67	67	67	67	67	67	66	62	67	62	58	67	58	53	64	53	48	61	48	42	59	44	34	55	37	44
			Exposed	67	67	67	67	67	64	67	65	61	67	62	59	67	60	55	67	57	52	65	54	49	62	49	43	58	43	33	54	35	41	50	45	35	46	40	30	41	36	26
		27-45	Interior	71	71	71	71	71	71	71	71	71	71	71	71	71	71	70	71	71	68	71	71	65	70	67	61	67	63	57	63	60	52	60	55	48	56	51	44	52	48	36
			Exposed	71	71	70	71	71	67	71	70	64	71	67	62	69	65	60	67	63	57	64	61	54	60	56	49	56	51	43	51	46	34	46	39	44	39	34	38	33	45	33
	D	0-7	Interior	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	53	55	55	48	55	53	42	55	49	34	55	45	45	51	38	40	47	33	36
			Exposed	55	55	55	55	55	55	55	55	52	55	55	49	55	55	46	55	53	41	55	50	36	55	46	45	50	37	39	46	47	34	39	42	30	34	37	26	45	33	23
		7-20	Interior	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	53	55	55	50	55	51	45	55	46	35	52	38	45	48	32	40	45	43	35	39	38	31
			Exposed	55	55	55	55	55	52	55	55	49	55	52	46	55	49	40	55	46	35	53	40	46	49	32	41	44	42	35	37	36	30	47	32	26	43	28	23	38	25	21
		20-27	Interior	69	69	69	69	69	69	69	69	68	69	69	65	69	66	63	69	64	60	69	62	58	67	57	52	64	52	47	60	47	39	57	41	32	53	34	41	50	45	35
			Exposed	69	66	62	69	63	60	69	60	56	68	58	53	66	54	49	63	51	47	61	49	42	57	42	32	53	34	40	49	44	33	45	38	28	39	34	24	34	30	21
		27-45	Interior	72	72	72	72	72	72	72	72	71	72	72	68	72	72	66	72	69	63	71	67	61	67	62	57	63	59	51	59	54	47	54	50	41	50	46	34	46	40	44
			Exposed	72	71	65	72	68	63	70	66	60	67	63	57	65	61	54	62	59	51	60	55	48	55	50	41	50	46	33	45	37	42	36	47	36	46	43	31	42	38	27

* Cells with an astrisks indicates that the L-foot must be oriented in the Y- direction as indicated in the image.

10 Highlighted cell indicate 3-rail system span. Contact Unirac Engineering Services for support.

~~10~~ Highlighted cell with strikethrough indicate 3-rail system span and module clamp allowable capacity exceeds with 3-rails. 4-Rail system required. Contact Unirac Engineering Services for support.

UNIRAC

ASCE 7-16	II	30 ft	Ss = 1.25	23 sq.ft	PORTRAIT	CROSS-SLOPE	NXT	NXT COMBO	Flashkit Pro
Design Standard	Risk Category	Roof Height	Seismic	Module Area	Orientation	Rail Direction	Rail Type	Clamp	Attachment

SPAN TABLES

Maximum Allowable Rail Spans for Rooftop Solar Panels Parallel to the Roof Surface (inches)

Ground Snow Load (psf)	Wind Exposure Category	Roof Tilt Angle (deg)	Panel Exposure	Basic Wind Speed (mph)																																						
				90			95			100			105			110			115			120			130			140			150			160			170			180		
				Roof Wind Zone																																						
				1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3
30	B	0-7	Interior	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	51	54	54	47	54	54	42
			Exposed	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	51	54	54	47	54	52	40	54	48	33	54	44	44	50	37	39
		7-20	Interior	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	52	55	54	48	55	50	43	55	46	35
			Exposed	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	54	55	54	48	55	49	41	55	45	34	51	36	45	48	46	39	44	42	35
		20-27	Interior	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	60	61	60	55	61	56	51	61	52	47
			Exposed	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	60	56	61	55	50	61	50	46	60	46	37	56	40	31	53	34	40
		27-45	Interior	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	63	63	63	59	61	61	55	59	59	51
			Exposed	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	64	65	65	60	65	61	55	62	58	50	58	53	46	54	49	39	50	46	33
	C	0-7	Interior	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	49	54	54	44	54	50	36	54	47	46	52	41	42
			Exposed	54	54	54	54	54	54	54	54	54	54	54	54	54	54	51	54	54	48	54	54	46	54	51	37	54	46	46	51	39	41	47	33	36	42	44	31	35	39	28
		7-20	Interior	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	51	55	52	46	55	47	37	53	40	46	50	34	42	47	45	37
			Exposed	55	55	55	55	55	55	55	55	55	55	55	51	55	54	48	55	51	45	55	48	39	54	41	32	49	33	41	45	43	36	39	38	31	34	33	28	45	30	25
		20-27	Interior	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	58	61	58	53	61	53	48	61	48	42	59	44	34	55	37	44
			Exposed	61	61	61	61	61	61	61	61	61	61	61	59	61	60	55	61	57	52	61	54	49	61	49	43	58	43	33	54	35	41	50	45	35	46	40	30	41	36	26
		27-45	Interior	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	64	64	61	62	62	57	60	60	52	57	55	48	55	51	44	52	48	36
			Exposed	65	65	65	65	65	65	65	65	64	65	65	62	65	65	60	65	63	57	64	61	54	60	56	49	56	51	43	51	46	34	46	39	44	39	34	38	33	45	33
	D	0-7	Interior	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	53	55	55	48	55	53	42	55	49	34	55	45	45	51	38	40	47	33	36
			Exposed	55	55	55	55	55	55	55	55	52	55	55	49	55	55	46	55	53	41	55	50	36	55	46	45	50	37	39	46	47	34	39	42	30	34	37	26	45	33	23
		7-20	Interior	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	53	55	55	50	55	51	45	55	46	35	52	38	45	48	32	40	45	43	35	39	38	31
			Exposed	55	55	55	55	55	52	55	55	49	55	52	46	55	49	40	55	46	35	53	40	46	49	32	41	44	42	35	37	36	30	47	32	26	43	28	23	38	25	21
		20-27	Interior	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	60	63	62	58	63	57	52	63	52	47	60	47	39	57	41	32	53	34	41	50	45	35
			Exposed	63	63	62	63	63	60	63	60	56	63	58	53	63	54	49	63	51	47	61	49	42	57	42	32	53	34	40	49	44	33	45	38	28	39	34	24	34	30	21
		27-45	Interior	67	67	67	67	67	67	67	67	67	67	67	67	67	67	66	67	67	63	66	66	61	63	62	57	60	59	51	58	54	47	54	50	41	50	46	34	46	40	44
			Exposed	67	67	65	67	67	63	67	66	60	67	63	57	65	61	54	62	59	51	60	55	48	55	50	41	50	46	33	45	37	42	36	47	36	46	43	31	42	38	27
40	B	0-7	Interior	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	47	49	49	42
			Exposed	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	47	49	49	40	49	48	33	49	44	44	49	37	39
		7-20	Interior	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	48	51	50	43	51	46	35
			Exposed	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	48	51	49	41	51	45	34	51	36	45	48	46	39	44	42	35
		20-27	Interior	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	55	56	56	51	56	52	47
			Exposed	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	55	50	56	50	46	56	46	37	56	40	31	53	34	40
		27-45	Interior	72*	72*	72*	72*	72*	72*	72*	72*	72*	72*	72*	72*	72*	72*	72*	72*	72*	72*	72*	72*	72*	72*	72*	61	72*	72*	61	72*	60	60	58	58	58	57	57	55	55	55	51
			Exposed	72*	72*	72*	72*	72*	72*	72*	72*	72*	72*	72*	61	72*	72*	61	72*	72*	61	72*	61	61	61	61	60	61	61	55	60	58	50	58	53	46	54	49	39	50	46	33
	C	0-7	Interior	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	44	49	49	36	49	47	46	49	41	42
			Exposed	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	48	49	49	46	49	49	37	49	46	46	49	39	41	47	33	36	42	44	31	35	39	28
		7-20	Interior	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	46	51	47	37	50	40	46	50	34	42	47	45	37
			Exposed	51	51	51	51	51	51	51	51	51	51	51	51	51	51	48	51	51	45	51	48	39	51	41	32	49	33	41	45	43	36	39	38	31	34	33	28	45	30	25
		20-27	Interior	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	53	56	53	48	56	48	42	55	44	34	54	37	44
			Exposed	56	56	56	56	56	56	56	56	56	56	56	56	56	56	55	56	56	52	56	54	49	56	49	43	56	43	33	54	35	41	50	45	35	46	40	30	41	36	26
		27-45	Interior	72*	72*	72*	72*	72*	72*	72*	72*	72*	72*	72*	72*	72*	72*	61	72*	72*	61	72*	61	61	59	59	59	57	57	57	56	56	52	54	54	48	52	51	44	50	48	36
			Exposed	72*	72*	61	72*	72*	61	72*	61	61	72*	61	61	61	61	60	61	61	57	61	61	54	59	56	49	56	51	43	51	46	34	46	39	44	39	34	38	33	45	33
	D	0-7	Interior	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	48	51	51	42	51	49	34	51	45	45	51	38	40	47	33	36
			Exposed	51	51	51	51	51	51	51	51	51	51	51	49	51	51	46	51	51	41	51	50	36	51	46	45	50	37	39	46	47	34	39	42	30	34	37	26	45	33	23
		7-20	Interior	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	50	53	51	45	53	46	35	52	38	45	48	32	40	45	43	35	39	38	31
			Exposed	53	53	53	53	53	52	53	53	49	53	52	46	53	49	40	53	46	35	53	40	46	49	32	41	44	42	35	37	36	30	47	32	26	43	28	23	38	25	21
		20-27	Interior	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	57	52	58	52	47	58	47	39	56	41	32	53	34	41	50	45	35
			Exposed	58	58	58	58	58	58	58	58	56	58	58	53	58	54	49	58	51	47	58	49	42	57	42	32	53	34	40	49	44	33	45	38	28	39	34	24	34	30	21
		27-45	Interior	62	62	62	62	62	62	62	62	62	62	62	62	62	62	62	62	62	62	61	61	61	59	59	57	57	57	51	54	54	47	52	50	41	50	46	34	46	40	44
			Exposed	62	62	62	62	62	62	62	62	60	62	62	57	62	61	54	62	59	51	60	55	48	55	50	41	50	46	33	45	37	42	36	47	36	46	43	31	42	38	27
50	B	0-7	Interior	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	42
			Exposed	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	40	45	45	33	45	44	44	45	37	39
		7-20	Interior	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	46	35
			Exposed	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	41	47	45	34	47	36	45	47	46	39	44	42	35
		20-27	Interior	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	51	53	52	47
			Exposed	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	50	53	50	46	53	46	37	53	40	31	53	34	40
		27-45	Interior	57*	57*	57*	57*	57*	57*	57*	57*	57*	57*	57*	57*	57*	57*	57*	57*	57*	57*	57*	57*	57*	57*	57*	57*	57*	57*	57*	58*	58*	58*	57*	57*	57*	56*	56*	56*	56*	56*	51
			Exposed	57*	57*	57*	57*	57*	57*	57*	57*	57*	57*	57*	57*	57*	57*	57*	57*	57*	57*	57*	57*	57*	57*	57*	57*	57*	57*	55	58*	58*	50	57*	53	46	53	49	39	50	46	33
	C	0-7	Interior	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	44	45	45	36	45	45	46	45	41	42
			Exposed	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	37	45	45	46	45	39	41	45	33	36	42	44	31	35	39	28
		7-20	Interior	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	46	47	47	37	47	40	46	46	34	42	45	45	37
			Exposed	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	45	47	47	39	47	41	32	47	33	41	45	43	36	39	38	31	34	33	28	45	30	25
		20-27	Interior	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	48	52	48	42	51	44	34	50	37	44
			Exposed	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	52	53	53	49	53	49	43	53	43	33	53	35	41	50	45	35	46	40	30	41	36	26
		27-45	Interior	57*	57*	57*	57*	57*	57*	57*	57*	57*	57*	57*	57*	57*	57*	57*	57*	57*	57*	57*	57*	57*	58*	58*	58*	56*	56*	56*	56*	56*	52	58*	51	48	49	49	44	48	48	36
			Exposed	57*	57*	57*	57*	57*	57*	57*	57*	57*	57*	57*	57*	57*	57*	57*	57*	57*	57*	57*	57*	54	58*	56*	49	56*	51	43	51	46	34	46	39	44	39	34	38	33	45	33
	D	0-7	Interior	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	42	47	47	34	47	45	45	47	38	40	47	33	36
			Exposed	47	47	47	47	47	47	47	47	47	47	47	47	47	47	46	47	47	41	47	47	36	47	46	45	47	37	39	46	47	34	39	42	30	34	37	26	45	33	23
		7-20	Interior	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	45	49	46	35	48	38	45	47	32	40	45	43	35	39	38	31
			Exposed	49	49	49	49	49	49	49	49	49	49	49	46	49	49	40	49	46	35	49	40	46	49	32	41	44	42	35	37	36	30	47	32	26	43	28	23	38	25	21
		20-27	Interior	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	52	54	52	47	54	47	39	52	41	32	51	34	41	50	45	35
			Exposed	54	54	54	54	54	54	54	54	54	54	54	53	54	54	49	54	51	47	54	49	42	54	42	32	53	34	40	49	44	33	45	38	28	39	34	24	34	30	21
		27-45	Interior	61*	61*	61*	61*	61*	61*	61*	61*	61*	61*	61*	61*	61*	61*	61*	61*	61*	61*	62*	62*	61*	62*	62*	55	54	54	51	52	52	47	50	50	41	48	46	34	46	40	44
			Exposed	61*	61*	61*	61*	61*	61*	61*	61*	59	61*	61*	57	61*	61*	54	61*	58	51	57	55	48	55	50	41	50	46	33	45	37	42	36	47	36	46	43	31	42	38	27

* Cells with an astrisks indicates that the L-foot must be oriented in the Y- direction as indicated in the image.

10 Highlighted cell indicate 3-rail system span. Contact Unirac Engineering Services for support.

~~10~~ Highlighted cell with strikethrough indicate 3-rail system span and module clamp allowable capacity exceeds with 3-rails. 4-Rail system required. Contact Unirac Engineering Services for support.

UNIRAC

ASCE 7-16	II	30 ft	Ss = 1.25	23 sq.ft	PORTRAIT	CROSS-SLOPE	NXT	NXT COMBO	Flashkit Pro
Design Standard	Risk Category	Roof Height	Seismic	Module Area	Orientation	Rail Direction	Rail Type	Clamp	Attachment

SPAN TABLES

Maximum Allowable Rail Spans for Rooftop Solar Panels Parallel to the Roof Surface (inches)

Ground Snow Load (psf)	Wind Exposure Category	Roof Tilt Angle (deg)	Panel Exposure	Basic Wind Speed (mph)																																								
				90			95			100			105			110			115			120			130			140			150			160			170			180		
				Roof Wind Zone																																								
				1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3
60	B	0-7	Interior	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41
			Exposed	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	40	41	41	33	41	41	44	41	37	39
		7-20	Interior	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	35
			Exposed	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	41	43	43	34	43	36	45	43	46	39	43	42	35			
		20-27	Interior	52*	52*	52*	52*	52*	52*	52*	52*	52*	52*	52*	52*	52*	52*	52*	52*	52*	52*	52*	52*	52*	52*	52*	52*	52*	52*	52*	52*	52*	52*	52*	52*	52*	52*	52*	51*	52*	52*	47
			Exposed	52*	52*	52*	52*	52*	52*	52*	52*	52*	52*	52*	52*	52*	52*	52*	52*	52*	52*	52*	52*	52*	52*	52*	50*	52*	50*	46	52*	46	37	52*	40	31	52*	34	40			
		27-45	Interior	54*	54*	54*	54*	54*	54*	54*	54*	54*	54*	54*	54*	54*	54*	54*	54*	54*	54*	54*	54*	54*	54*	54*	54*	54*	54*	54*	53*	53*	53*	52*	52*	52*	51*	51*	51*	49*	49*	49*
			Exposed	54*	54*	54*	54*	54*	54*	54*	54*	54*	54*	54*	54*	54*	54*	54*	54*	54*	54*	54*	54*	54*	54*	54*	54*	54*	54*	54*	53*	53*	50*	52*	52*	46	51*	49*	39	49*	46	33
	C	0-7	Interior	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	36	41	41	46	41	41	42
			Exposed	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	37	41	41	46	41	39	41	41	33	36	41	44	31	35	39	28
		7-20	Interior	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	37	43	40	46	43	34	42	42	45	37
			Exposed	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	39	43	41	32	43	33	41	43	43	36	39	38	31	34	33	28	45	30	25
		20-27	Interior	52*	52*	52*	52*	52*	52*	52*	52*	52*	52*	52*	52*	52*	52*	52*	52*	52*	52*	52*	52*	52*	52*	52*	52*	52*	52*	52*	52*	52*	48	51*	48	42	50*	44	34	47	37	44
			Exposed	52*	52*	52*	52*	52*	52*	52*	52*	52*	52*	52*	52*	52*	52*	52*	52*	52*	52*	52*	52*	49	52*	49	43	52*	43	33	52*	35	41	50*	45	35	46	40	30	41	36	26
		27-45	Interior	54*	54*	54*	54*	54*	54*	54*	54*	54*	54*	54*	54*	54*	54*	54*	54*	54*	54*	54*	54*	54*	52*	52*	52*	51*	51*	51*	50*	50*	50*	48*	48*	48*	49*	49*	44	49*	48*	36
			Exposed	54*	54*	54*	54*	54*	54*	54*	54*	54*	54*	54*	54*	54*	54*	54*	54*	54*	54*	54*	54*	54*	52*	52*	49*	51*	51*	43	50*	46	34	46	39	44	39	34	38	33	45	33
	D	0-7	Interior	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	42	43	43	34	43	43	45	43	38	40	43	33	36
			Exposed	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	41	43	43	36	43	43	45	43	37	39	43	47	34	39	42	30	34	37	26	45	33	23
		7-20	Interior	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	35	45	38	45	44	32	40	44	43	35	39	38	31
			Exposed	45	45	45	45	45	45	45	45	45	45	45	45	45	45	40	45	45	35	45	40	46	45	32	41	44	42	35	37	36	30	47	32	26	43	28	23	38	25	21
		20-27	Interior	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	47	50	47	39	49	41	32	48	34	41	47	45	35
			Exposed	51	51	51	51	51	51	51	51	51	51	51	51	51	51	49	51	51	47	51	49	42	51	42	32	51	34	40	49	44	33	45	38	28	39	34	24	34	30	21
		27-45	Interior	56*	56*	56*	56*	56*	56*	56*	56*	56*	56*	56*	56*	56*	56*	56*	55*	55*	55*	54*	54*	54*	53*	53*	53*	53*	53*	52*	53*	53*	47	53*	48	41	46	46	34	45	40	44
			Exposed	56*	56*	56*	56*	56*	56*	56*	56*	56*	56*	56*	56*	56*	56*	54*	55*	55*	51	54*	54*	48	53*	50	41	50	46	33	45	37	42	36	47	36	46	43	31	42	38	27
70	B	0-7	Interior	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38
			Exposed	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	33	38	38	44	38	37	39
		7-20	Interior	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	35
			Exposed	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	34	40	36	45	40	46	39	40	42	35
		20-27	Interior	49*	49*	49*	49*	49*	49*	49*	49*	49*	49*	49*	49*	49*	49*	49*	49*	49*	49*	49*	49*	49*	49*	49*	49*	49*	49*	49*	49*	49*	49*	49*	49*	49*	49*	49*	49*	49*	49*	47*
			Exposed	49*	49*	49*	49*	49*	49*	49*	49*	49*	49*	49*	49*	49*	49*	49*	49*	49*	49*	49*	49*	49*	49*	49*	49*	49*	49*	49*	49*	49*	46*	49*	46*	37	49*	40	31	49*	34	40
		27-45	Interior	49*	49*	49*	49*	49*	49*	49*	49*	49*	49*	49*	49*	49*	49*	49*	49*	49*	49*	49*	49*	49*	49*	49*	49*	49*	49*	49*	49*	49*	49*	49*	49*	49*	48*	48*	48*	47*	47*	47*
			Exposed	49*	49*	49*	49*	49*	49*	49*	49*	49*	49*	49*	49*	49*	49*	49*	49*	49*	49*	49*	49*	49*	49*	49*	49*	49*	49*	49*	49*	49*	49*	49*	49*	46*	48*	48*	39	47*	46*	33
	C	0-7	Interior	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	36	38	38	46	38	38	42
			Exposed	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	41	38	33	36	38	44	31	35	39	28						
		7-20	Interior	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	37	40	40	46	40	34	42	40	45	37
			Exposed	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	39	40	40	32	40	33	41	40	43	36	39	38	31	34	33	28	45	30	25
		20-27	Interior	49*	49*	49*	49*	49*	49*	49*	49*	49*	49*	49*	49*	49*	49*	49*	49*	49*	49*	49*	49*	49*	49*	49*	49*	49*	49*	49*	49*	49*	48*	48*	48*	42	48*	44*	34	47*	37	44
			Exposed	49*	49*	49*	49*	49*	49*	49*	49*	49*	49*	49*	49*	49*	49*	49*	49*	49*	49*	49*	49*	49*	49*	49*	43	49*	43	33	49*	35	41	48*	45	35	46*	40	30	41	36	26
		27-45	Interior	49*	49*	49*	49*	49*	49*	49*	49*	49*	49*	49*	49*	49*	49*	49*	49*	49*	49*	49*	49*	49*	49*	49*	49*	49*	49*	49*	47*	47*	47*	46*	46*	46*	45*	45*	44*	44*	44*	36
			Exposed	49*	49*	49*	49*	49*	49*	49*	49*	49*	49*	49*	49*	49*	49*	49*	49*	49*	49*	49*	49*	49*	49*	49*	49*	49*	49*	43*	47*	46*	34	46*	39	44	39	34	38	33	45	33
	D	0-7	Interior	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	34	40	40	45	40	38	40	40	33	36
			Exposed	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	36	40	40	45	40	37	39	40	47	34	39	42	30	34	37	26	45	33	23
		7-20	Interior	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	35	42	38	45	42	32	40	41	43	35	39	38	31
			Exposed	42	42	42	42	42	42	42	42	42	42	42	42	42	42	40	42	42	35	42	40	46	42	32	41	42	42	35	37	36	30	47	32	26	43	28	23	38	25	21
		20-27	Interior	51*	51*	51*	51*	51*	51*	51*	51*	51*	51*	51*	51*	51*	51*	51*	51*	51*	51*	51*	51*	51*	51*	51*	51*	51*	51*	47	50*	47	39	49*	41	32	48*	34	41	45	45	35
			Exposed	51*	51*	51*	51*	51*	51*	51*	51*	51*	51*	51*	51*	51*	51*	49*	51*	51*	47	51*	49*	42	51*	42	32	51*	34	40	49*	44	33	45	38	28	39	34	24	34	30	21
		27-45	Interior	53*	53*	53*	53*	53*	53*	53*	53*	53*	53*	53*	53*	53*	53*	53*	52*	52*	52*	52*	52*	52*	50*	50*	50*	49*	49*	49*	47*	47*	47*	46*	46*	41	46*	46*	34	46*	40	44
			Exposed	53*	53*	53*	53*	53*	53*	53*	53*	53*	53*	53*	53*	53*	53*	53*	52*	52*	51*	52*	52*	48*	50*	50*	41	49*	46*	33	45	37	42	36	47	36	46	43	31	42	38	27
80	B	0-7	Interior	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36
			Exposed	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	33	36	36	44	36	36	39
		7-20	Interior	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	35
			Exposed	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	34	37	36	45	37	46	39	37	42	35
		20-27	Interior	43*	43*	43*	43*	43*	43*	43*	43*	43*	43*	43*	43*	43*	43*	43*	43*	43*	43*	43*	43*	43*	43*	43*	43*	43*	43*	43*	43*	43*	43*	43*	43*	43*	43*	43*	43*	43*	43*	43*
			Exposed	43*	43*	43*	43*	43*	43*	43*	43*	43*	43*	43*	43*	43*	43*	43*	43*	43*	43*	43*	43*	43*	43*	43*	43*	43*	43*	43*	43*	43*	43*	43*	43*	37	43*	40*	31	43*	34	40
		27-45	Interior	43*	43*	43*	43*	43*	43*	43*	43*	43*	43*	43*	43*	43*	43*	43*	43*	43*	43*	43*	43*	43*	43*	43*	43*	43*	43*	43*	43*	43*	43*	43*	43*	43*	43*	43*	43*	43*	43*	43*
			Exposed	43*	43*	43*	43*	43*	43*	43*	43*	43*	43*	43*	43*	43*	43*	43*	43*	43*	43*	43*	43*	43*	43*	43*	43*	43*	43*	43*	43*	43*	43*	43*	43*	43*	43*	43*	39*	43*	43*	33
	C	0-7	Interior	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	44	36	36	42
			Exposed	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	44	36	36	41	36	33	36	36	44	31	35	39	28			
		7-20	Interior	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	46	37	34	42	37	45	37
			Exposed	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	32	37	33	41	37	43	36	37	38	31	34	33	28	45	30	25
		20-27	Interior	43*	43*	43*	43*	43*	43*	43*	43*	43*	43*	43*	43*	43*	43*	43*	43*	43*	43*	43*	43*	43*	43*	43*	43*	43*	43*	43*	43*	43*	43*	43*	43*	42*	43*	43*	34	43*	37	44
			Exposed	43*	43*	43*	43*	43*	43*	43*	43*	43*	43*	43*	43*	43*	43*	43*	43*	43*	43*	43*	43*	43*	43*	43*	43*	43*	43*	33	43*	35	41	43*	45	35	43*	40	30	41*	36	26
		27-45	Interior	43*	43*	43*	43*	43*	43*	43*	43*	43*	43*	43*	43*	43*	43*	43*	43*	43*	43*	43*	43*	43*	43*	43*	43*	43*	43*	43*	43*	43*	43*	43*	43*	43*	43*	43*	43*	42*	42*	37*
			Exposed	43*	43*	43*	43*	43*	43*	43*	43*	43*	43*	43*	43*	43*	43*	43*	43*	43*	43*	43*	43*	43*	43*	43*	43*	43*	43*	43*	43*	43*	34	43*	39*	44	39*	34	38	33	45	33
	D	0-7	Interior	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	34	38	38	45	38	38	40	38	33	36
			Exposed	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	36	38	38	45	38	37	39	38	46	34	38	42	30	34	37	26	45	33	23
		7-20	Interior	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	35	39	38	45	39	32	40	39	43	35	39	38	31
			Exposed	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	35	39	39	46	39	32	41	39	42	35	37	36	30	47	32	26	43	28	23	38	25	21
		20-27	Interior	46*	46*	46*	46*	46*	46*	46*	46*	46*	46*	46*	46*	46*	46*	46*	46*	46*	46*	46*	46*	46*	46*	46*	46*	46*	46*	46*	46*	46*	39	47*	41	32	46*	34	41	45*	45	35
			Exposed	46*	46*	46*	46*	46*	46*	46*	46*	46*	46*	46*	46*	46*	46*	46*	46*	46*	46*	46*	46*	42	46*	42	32	46*	34	40	46*	44	33	45*	38	28	39	34	24	34	30	21
		27-45	Interior	48*	48*	48*	48*	48*	48*	48*	48*	48*	48*	48*	48*	48*	48*	48*	48*	48*	48*	48*	48*	48*	48*	48*	48*	47*	47*	47*	45*	45*	45*	44*	44*	41*	43*	43*	34	42*	40	44
			Exposed	48*	48*	48*	48*	48*	48*	48*	48*	48*	48*	48*	48*	48*	48*	48*	48*	48*	48*	48*	48*	48*	48*	48*	41*	47*	46*	33	45*	37	42	36	47	36	46	43	31	42	38	27

* Cells with an astrisks indicates that the L-foot must be oriented in the Y- direction as indicated in the image.

10 Highlighted cell indicate 3-rail system span. Contact Unirac Engineering Services for support.

~~10~~ Highlighted cell with strikethrough indicate 3-rail system span and module clamp allowable capacity exceeds with 3-rails. 4-Rail system required. Contact Unirac Engineering Services for support.

UNIRAC

ASCE 7-16	II	30 ft	Ss = 1.25	23 sq.ft	PORTRAIT	CROSS-SLOPE	NXT	NXT COMBO	Flashkit Pro
Design Standard	Risk Category	Roof Height	Seismic	Module Area	Orientation	Rail Direction	Rail Type	Clamp	Attachment

SPAN TABLES

Maximum Allowable Rail Spans for Rooftop Solar Panels Parallel to the Roof Surface (inches)

Ground Snow Load (psf)	Wind Exposure Category	Roof Tilt Angle (deg)	Panel Exposure	Basic Wind Speed (mph)																																						
				90			95			100			105			110			115			120			130			140			150			160			170			180		
				Roof Wind Zone																																						
				1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3
90	B	0-7	Interior	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34
			Exposed	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	33	34	34	41	34	34	39
		7-20	Interior	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35
			Exposed	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	34	35	35	43	35	43	39	35	42	35
		20-27	Interior	41*	41*	41*	41*	41*	41*	41*	41*	41*	41*	41*	41*	41*	41*	41*	41*	41*	41*	41*	41*	41*	41*	41*	41*	41*	41*	41*	41*	41*	41*	41*	41*	41*	41*	41*	41*	41*	41*	41*
			Exposed	41*	41*	41*	41*	41*	41*	41*	41*	41*	41*	41*	41*	41*	41*	41*	41*	41*	41*	41*	41*	41*	41*	41*	41*	41*	41*	41*	41*	41*	37*	41*	40*	31	41*	34	40			
		27-45	Interior	39*	39*	39*	39*	39*	39*	39*	39*	39*	39*	39*	39*	39*	39*	39*	39*	39*	39*	39*	39*	39*	39*	39*	39*	39*	39*	39*	39*	39*	39*	39*	39*	39*	39*	39*	39*	39*	39*	39*
			Exposed	39*	39*	39*	39*	39*	39*	39*	39*	39*	39*	39*	39*	39*	39*	39*	39*	39*	39*	39*	39*	39*	39*	39*	39*	39*	39*	39*	39*	39*	39*	39*	39*	39*	39*	39*	39*	39*	39*	33*
	C	0-7	Interior	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	41	34	34	41
			Exposed	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	41	34	34	41	34	33	36	34	41	~~31~~	34	39	~~28~~						
		7-20	Interior	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	43	35	34	42	35	43	37						
			Exposed	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	32	35	33	41	35	43	36	35	38	~~31~~	34	~~33~~	~~28~~	43	~~30~~	~~25~~			
		20-27	Interior	41*	41*	41*	41*	41*	41*	41*	41*	41*	41*	41*	41*	41*	41*	41*	41*	41*	41*	41*	41*	41*	41*	41*	41*	41*	41*	41*	41*	41*	41*	41*	41*	34	41*	37*	44			
			Exposed	41*	41*	41*	41*	41*	41*	41*	41*	41*	41*	41*	41*	41*	41*	41*	41*	41*	41*	41*	41*	41*	41*	41*	33	41*	35*	41	41*	45	35	41*	40	~~30~~	41*	36	~~26~~			
		27-45	Interior	39*	39*	39*	39*	39*	39*	39*	39*	39*	39*	39*	39*	39*	39*	39*	39*	39*	39*	39*	39*	39*	39*	39*	39*	39*	39*	39*	39*	39*	39*	39*	39*	39*	39*	39*	36*			
			Exposed	39*	39*	39*	39*	39*	39*	39*	39*	39*	39*	39*	39*	39*	39*	39*	39*	39*	39*	39*	39*	39*	39*	39*	39*	39*	39*	34*	39*	39*	44	39*	34*	38	33*	45	33			
	D	0-7	Interior	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	34	36	36	44	36	36	40	36	33	36						
			Exposed	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	44	36	36	39	36	44	34	36	42	~~30~~	34	37	~~26~~	44	~~33~~	~~23~~
		7-20	Interior	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	35	37	37	45	37	32	40	37	43	35	37	38	~~31~~			
			Exposed	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	35	37	37	45	37	32	41	37	36	~~30~~	45	~~32~~	~~26~~	43	~~28~~	~~23~~	38	~~25~~	~~21~~			
		20-27	Interior	43*	43*	43*	43*	43*	43*	43*	43*	43*	43*	43*	43*	43*	43*	43*	43*	43*	43*	43*	43*	43*	43*	43*	43*	43*	43*	39*	43*	41*	32	42*	34	41	42*	45	35			
			Exposed	43*	43*	43*	43*	43*	43*	43*	43*	43*	43*	43*	43*	43*	43*	43*	43*	43*	43*	43*	43*	42*	43*	42*	32	43*	34	40	43*	44	33	43*	38	~~28~~	39*	34	~~24~~	34	~~30~~	~~21~~
		27-45	Interior	43*	43*	43*	43*	43*	43*	43*	43*	43*	43*	43*	43*	43*	43*	43*	43*	43*	43*	43*	43*	43*	43*	43*	43*	43*	43*	43*	43*	43*	41*	42*	42*	34	40*	40*	44			
			Exposed	43*	43*	43*	43*	43*	43*	43*	43*	43*	43*	43*	43*	43*	43*	43*	43*	43*	43*	43*	43*	43*	43*	43*	41*	43*	43*	33	43*	37*	42	36*	47	36	46	43	~~31~~	42	38	~~27~~
100	B	0-7	Interior	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32
			Exposed	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	39	32	32	39			
		7-20	Interior	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33
			Exposed	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	41	33	41	39	33	41	35			
		20-27	Interior	37*	37*	37*	37*	37*	37*	37*	37*	37*	37*	37*	37*	37*	37*	37*	37*	37*	37*	37*	37*	37*	37*	37*	37*	37*	37*	37*	37*	37*	37*	37*	37*	37*	37*	37*	37*			
			Exposed	37*	37*	37*	37*	37*	37*	37*	37*	37*	37*	37*	37*	37*	37*	37*	37*	37*	37*	37*	37*	37*	37*	37*	37*	37*	37*	37*	37*	37*	37*	37*	37*	31*	37*	34*	40			
		27-45	Interior	35*	35*	35*	35*	35*	35*	35*	35*	35*	35*	35*	35*	35*	35*	35*	35*	35*	35*	35*	35*	35*	35*	35*	35*	35*	35*	35*	35*	35*	35*	35*	35*	35*	35*	35*	35*			
			Exposed	35*	35*	35*	35*	35*	35*	35*	35*	35*	35*	35*	35*	35*	35*	35*	35*	35*	35*	35*	35*	35*	35*	35*	35*	35*	35*	35*	35*	35*	35*	35*	35*	35*	35*	35*	33*			
	C	0-7	Interior	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	39	32	32	39			
			Exposed	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	39	32	32	39	32	32	36	32	39	~~31~~	32	39	~~28~~						
		7-20	Interior	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	41	33	33	41	33	41	37						
			Exposed	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	32	33	33	41	33	41	36	33	38	~~31~~	33	~~33~~	~~28~~	41	~~30~~	~~25~~			
		20-27	Interior	37*	37*	37*	37*	37*	37*	37*	37*	37*	37*	37*	37*	37*	37*	37*	37*	37*	37*	37*	37*	37*	37*	37*	37*	37*	37*	37*	37*	37*	37*	37*	37*	34*	37*	37*	44			
			Exposed	37*	37*	37*	37*	37*	37*	37*	37*	37*	37*	37*	37*	37*	37*	37*	37*	37*	37*	37*	37*	37*	37*	37*	33*	37*	35*	41	37*	45	35	37*	40	~~30~~	37*	36	~~26~~			
		27-45	Interior	35*	35*	35*	35*	35*	35*	35*	35*	35*	35*	35*	35*	35*	35*	35*	35*	35*	35*	35*	35*	35*	35*	35*	35*	35*	35*	35*	35*	35*	35*	35*	35*	35*	35*	35*	35*			
			Exposed	35*	35*	35*	35*	35*	35*	35*	35*	35*	35*	35*	35*	35*	35*	35*	35*	35*	35*	35*	35*	35*	35*	35*	35*	35*	35*	34*	35*	35*	44	35*	34*	38	33*	45*	33			
	D	0-7	Interior	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	41	34	34	40	34	33	36						
			Exposed	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	41	34	34	39	34	41	34	34	41	~~30~~	34	37	~~26~~	41	~~33~~	~~23~~			
		7-20	Interior	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	43	35	32	40	35	43	35	35	38	~~31~~			
			Exposed	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	43	35	32	41	35	42	35	35	36	~~30~~	43	~~32~~	~~26~~	43	~~28~~	~~23~~	38	~~25~~	~~21~~
		20-27	Interior	41*	41*	41*	41*	41*	41*	41*	41*	41*	41*	41*	41*	41*	41*	41*	41*	41*	41*	41*	41*	41*	41*	41*	41*	41*	41*	39*	41*	41*	32	41*	34	41	40*	45	35			
			Exposed	41*	41*	41*	41*	41*	41*	41*	41*	41*	41*	41*	41*	41*	41*	41*	41*	41*	41*	41*	41*	41*	41*	41*	32	41*	34	40	41*	44	33	41*	38	~~28~~	39*	34	~~24~~	34	~~30~~	~~21~~
		27-45	Interior	39*	39*	39*	39*	39*	39*	39*	39*	39*	39*	39*	39*	39*	39*	39*	39*	39*	39*	39*	39*	39*	39*	39*	39*	39*	39*	39*	39*	39*	39*	39*	39*	39*	39*	39*	44			
			Exposed	39*	39*	39*	39*	39*	39*	39*	39*	39*	39*	39*	39*	39*	39*	39*	39*	39*	39*	39*	39*	39*	39*	39*	33*	39*	37*	42	36*	47	36	46	43	~~31~~	42	38	~~27~~			

* Cells with an astrisks indicates that the L-foot must be oriented in the Y- direction as indicated in the image.

10 Highlighted cell indicate 3-rail system span. Contact Unirac Engineering Services for support.

~~10~~ Highlighted cell with strikethrough indicate 3-rail system span and module clamp allowable capacity exceeds with 3-rails. 4-Rail system required. Contact Unirac Engineering Services for support.

UNIRAC

ASCE 7-16	II	30 ft	Ss = 1.25	23 sq.ft	LANDSCAPE	CROSS-SLOPE	NXT	NXT COMBO	Flashkit Pro
Design Standard	Risk Category	Roof Height	Seismic	Module Area	Orientation	Rail Direction	Rail Type	Clamp	Attachment

SPAN TABLES

Maximum Allowable Rail Spans for Rooftop Solar Panels Parallel to the Roof Surface (inches)

Ground Snow Load (psf)	Wind Exposure Category	Roof Tilt Angle (deg)	Panel Exposure	Basic Wind Speed (mph)																																						
				90			95			100			105			110			115			120			130			140			150			160			170			180		
				Roof Wind Zone																																						
				1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3
0	B	0-7	Interior	101	101	101	101	101	101	101	101	100	101	101	95	101	101	91	101	100	87	101	96	83	101	89	77	96	83	72	90	78	68	85	74	64	80	70	62	76	67	59
			Exposed	101	101	90	101	99	86	101	94	82	101	90	78	100	86	75	96	83	72	92	80	69	85	74	64	79	69	61	75	65	58	71	63	54	67	60	51	64	57	59
		7-20	Interior	102	102	102	102	102	102	102	102	97	102	101	92	102	96	87	102	91	83	102	87	80	92	80	74	86	75	68	81	70	64	77	66	62	74	63	59	70	60	56
			Exposed	102	96	87	102	90	82	100	86	78	93	81	74	89	78	71	86	74	68	83	71	65	78	66	62	73	63	59	69	60	55	66	56	51	63	53	59	60	60	56
		20-27	Interior	102	102	102	102	102	102	102	102	102	102	102	102	102	102	99	102	100	94	102	95	89	102	88	82	98	81	76	92	76	71	87	72	66	83	68	63	79	64	60
			Exposed	102	102	98	102	99	92	102	93	87	102	89	83	102	85	79	98	81	75	94	78	72	87	72	67	82	67	62	78	63	59	74	61	55	70	58	51	67	55	48
		27-45	Interior	103	103	103	103	103	103	103	103	103	103	103	103	103	103	103	103	103	98	103	103	94	103	97	87	98	90	81	91	84	76	85	79	71	79	75	67	75	71	64
			Exposed	103	103	103	103	103	97	103	103	92	103	98	88	102	93	84	97	89	80	93	86	77	85	79	72	79	74	67	73	69	63	69	65	60	65	63	57	63	60	53
	C	0-7	Interior	101	101	94	101	101	89	101	97	84	101	93	80	101	89	77	99	85	74	95	82	71	88	76	66	82	72	63	77	67	60	73	64	56	69	61	53	66	59	60
			Exposed	101	89	77	98	84	73	93	81	70	89	77	67	85	74	64	82	71	62	78	69	61	73	64	57	68	61	53	65	58	60	62	54	56	59	61	53	56	59	~~50~~
		7-20	Interior	102	100	90	102	94	85	102	89	81	98	84	77	92	80	73	88	77	70	85	74	67	80	68	63	75	64	60	71	61	57	67	58	53	64	55	60	62	52	58
			Exposed	92	80	73	87	76	70	84	72	66	80	69	64	77	66	62	75	64	60	72	62	58	68	59	53	64	54	60	61	51	56	58	58	53	55	55	~~50~~	62	51	~~47~~
		20-27	Interior	102	102	102	102	102	96	102	97	91	102	92	86	102	88	82	101	84	78	97	80	75	90	74	69	84	69	64	80	65	61	76	62	57	72	60	53	69	57	50
			Exposed	102	87	81	100	83	77	95	79	73	91	75	70	87	72	66	84	69	64	81	66	62	76	62	58	71	59	53	68	55	49	64	52	57	62	59	52	59	56	48
		27-45	Interior	103	103	103	103	103	100	103	103	95	103	101	91	103	96	87	101	92	83	96	88	80	88	82	74	82	76	69	76	72	65	71	67	62	67	64	59	64	62	55
			Exposed	103	96	86	100	91	82	94	87	78	89	83	75	85	79	71	81	76	69	78	73	66	72	68	62	67	64	59	63	61	54	60	58	50	58	55	59	54	51	55
	D	0-7	Interior	101	100	86	101	94	82	101	90	78	99	86	74	95	82	71	91	79	68	87	76	66	81	71	62	76	66	59	71	63	55	68	60	52	64	58	59	62	54	56
			Exposed	95	82	71	90	78	68	86	75	65	82	72	63	79	69	61	76	66	59	73	64	56	68	61	52	64	57	59	61	53	55	58	60	52	55	57	~~48~~	51	54	~~46~~
		7-20	Interior	102	91	83	100	86	78	93	81	74	89	77	71	85	74	68	82	71	65	79	68	63	74	64	60	70	60	56	66	57	52	63	53	59	61	61	56	58	58	53
			Exposed	85	74	68	82	70	64	78	67	62	75	64	60	72	62	58	70	60	55	67	58	53	64	54	59	60	60	56	57	57	52	53	53	~~49~~	61	~~50~~	~~46~~	58	~~47~~	~~41~~
		20-27	Interior	102	99	93	102	94	87	102	89	83	102	84	78	97	80	75	93	77	72	89	74	69	84	69	64	79	64	60	74	61	56	71	59	52	67	55	49	64	52	57
			Exposed	97	80	75	92	76	71	88	73	67	84	69	64	81	66	62	78	64	60	76	62	57	71	59	52	67	55	48	64	51	55	61	58	51	58	55	47	55	52	~~41~~
		27-45	Interior	103	103	97	103	103	92	103	97	88	102	93	84	97	89	80	92	85	77	88	81	74	81	76	68	75	71	64	70	66	61	66	63	58	63	61	54	60	58	50
			Exposed	96	88	80	91	84	76	86	80	72	82	76	69	78	73	66	74	70	64	71	68	62	66	63	58	62	60	53	60	57	49	56	53	57	53	60	53	60	58	49
10	B	0-7	Interior	90	90	90	90	90	90	90	90	90	90	90	90	90	90	90	90	90	87	90	90	83	90	89	77	90	83	72	90	78	68	85	74	64	80	70	62	76	67	59
			Exposed	90	90	90	90	90	86	90	90	82	90	90	78	90	86	75	90	83	72	90	80	69	85	74	64	79	69	61	75	65	58	71	63	54	67	60	51	64	57	59
		7-20	Interior	91	91	91	91	91	91	91	91	91	91	91	91	91	91	87	91	91	83	91	87	80	91	80	74	86	75	68	81	70	64	77	66	62	74	63	59	70	60	56
			Exposed	91	91	87	91	90	82	91	86	78	91	81	74	89	78	71	86	74	68	83	71	65	78	66	62	73	63	59	69	60	55	66	56	51	63	53	59	60	60	56
		20-27	Interior	99	99	99	99	99	99	99	99	99	99	99	99	99	99	99	99	99	94	99	95	89	99	88	82	98	81	76	92	76	71	87	72	66	83	68	63	79	64	60
			Exposed	99	99	98	99	99	92	99	93	87	99	89	83	99	85	79	98	81	75	94	78	72	87	72	67	82	67	62	78	63	59	74	61	55	70	58	51	67	55	48
		27-45	Interior	101	101	101	101	101	101	101	101	101	101	101	101	101	101	101	101	101	98	101	101	94	101	97	87	98	90	81	91	84	76	85	79	71	79	75	67	75	71	64
			Exposed	101	101	101	101	101	97	101	101	92	101	98	88	101	93	84	97	89	80	93	86	77	85	79	72	79	74	67	73	69	63	69	65	60	65	63	57	63	60	53
	C	0-7	Interior	90	90	90	90	90	89	90	90	84	90	90	80	90	89	77	90	85	74	90	82	71	88	76	66	82	72	63	77	67	60	73	64	56	69	61	53	66	59	60
			Exposed	90	89	77	90	84	73	90	81	70	89	77	67	85	74	64	82	71	62	78	69	61	73	64	57	68	61	53	65	58	60	62	54	56	59	61	53	56	59	~~50~~
		7-20	Interior	91	91	90	91	91	85	91	89	81	91	84	77	91	80	73	88	77	70	85	74	67	80	68	63	75	64	60	71	61	57	67	58	53	64	55	60	62	52	58
			Exposed	91	80	73	87	76	70	84	72	66	80	69	64	77	66	62	75	64	60	72	62	58	68	59	53	64	54	60	61	51	56	58	58	53	55	55	~~50~~	62	51	~~47~~
		20-27	Interior	99	99	99	99	99	96	99	97	91	99	92	86	99	88	82	99	84	78	97	80	75	90	74	69	84	69	64	80	65	61	76	62	57	72	60	53	69	57	50
			Exposed	99	87	81	99	83	77	95	79	73	91	75	70	87	72	66	84	69	64	81	66	62	76	62	58	71	59	53	68	55	49	64	52	57	62	59	52	59	56	48
		27-45	Interior	101	101	101	101	101	100	101	101	95	101	101	91	101	96	87	101	92	83	96	88	80	88	82	74	82	76	69	76	72	65	71	67	62	67	64	59	64	62	55
			Exposed	101	96	86	100	91	82	94	87	78	89	83	75	85	79	71	81	76	69	78	73	66	72	68	62	67	64	59	63	61	54	60	58	50	58	55	59	54	51	55
	D	0-7	Interior	90	90	86	90	90	82	90	90	78	90	86	74	90	82	71	90	79	68	87	76	66	81	71	62	76	66	59	71	63	55	68	60	52	64	58	59	62	54	56
			Exposed	90	82	71	90	78	68	86	75	65	82	72	63	79	69	61	76	66	59	73	64	56	68	61	52	64	57	59	61	53	55	58	60	52	55	57	~~48~~	51	54	~~46~~
		7-20	Interior	91	91	83	91	86	78	91	81	74	89	77	71	85	74	68	82	71	65	79	68	63	74	64	60	70	60	56	66	57	52	63	53	59	61	61	56	58	58	53
			Exposed	85	74	68	82	70	64	78	67	62	75	64	60	72	62	58	70	60	55	67	58	53	64	54	59	60	60	56	57	57	52	53	53	~~49~~	61	~~50~~	~~46~~	58	~~47~~	~~41~~
		20-27	Interior	100	99	93	100	94	87	100	89	83	100	84	78	97	80	75	93	77	72	89	74	69	84	69	64	79	64	60	74	61	56	71	59	52	67	55	49	64	52	57
			Exposed	97	80	75	92	76	71	88	73	67	84	69	64	81	66	62	78	64	60	76	62	57	71	59	52	67	55	48	64	51	55	61	58	51	58	55	47	55	52	~~41~~
		27-45	Interior	102	102	97	102	102	92	102	97	88	102	93	84	97	89	80	92	85	77	88	81	74	81	76	68	75	71	64	70	66	61	66	63	58	63	61	54	60	58	50
			Exposed	96	88	80	91	84	76	86	80	72	82	76	69	78	73	66	74	70	64	71	68	62	66	63	58	62	60	53	60	57	49	56	53	57	53	60	53	60	58	49
20	B	0-7	Interior	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	72	77	77	68	77	74	64	77	70	62	76	67	59
			Exposed	77	77	77	77	77	77	77	77	77	77	77	77	77	77	75	77	77	72	77	77	69	77	74	64	77	69	61	75	65	58	71	63	54	67	60	51	64	57	59
		7-20	Interior	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	74	77	75	68	77	70	64	77	66	62	74	63	59	70	60	56
			Exposed	77	77	77	77	77	77	77	77	77	77	77	74	77	77	71	77	74	68	77	71	65	77	66	62	73	63	59	69	60	55	66	56	51	63	53	59	60	60	56
		20-27	Interior	92	92	92	92	92	92	92	92	92	92	92	92	92	92	92	92	92	92	92	92	89	92	88	82	92	81	76	92	76	71	87	72	66	83	68	63	79	64	60
			Exposed	92	92	92	92	92	92	92	92	87	92	89	83	92	85	79	92	81	75	92	78	72	87	72	67	82	67	62	78	63	59	74	61	55	70	58	51	67	55	48
		27-45	Interior	95	95	95	95	95	95	95	95	95	95	95	95	95	95	95	95	95	95	95	95	94	95	95	87	95	90	81	91	84	76	85	79	71	79	75	67	75	71	64
			Exposed	95	95	95	95	95	95	95	95	92	95	95	88	95	93	84	95	89	80	93	86	77	85	79	72	79	74	67	73	69	63	69	65	60	65	63	57	63	60	53
	C	0-7	Interior	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	74	77	77	71	77	76	66	77	72	63	77	67	60	73	64	56	69	61	53	66	59	60
			Exposed	77	77	77	77	77	73	77	77	70	77	77	67	77	74	64	77	71	62	77	69	61	73	64	57	68	61	53	65	58	60	62	54	56	59	61	53	56	59	~~50~~
		7-20	Interior	77	77	77	77	77	77	77	77	77	77	77	77	77	77	73	77	77	70	77	74	67	77	68	63	75	64	60	71	61	57	67	58	53	64	55	60	62	52	58
			Exposed	77	77	73	77	76	70	77	72	66	77	69	64	77	66	62	75	64	60	72	62	58	68	59	53	64	54	60	61	51	56	58	58	53	55	55	~~50~~	62	51	~~47~~
		20-27	Interior	92	92	92	92	92	92	92	92	91	92	92	86	92	88	82	92	84	78	92	80	75	90	74	69	84	69	64	80	65	61	76	62	57	72	60	53	69	57	50
			Exposed	92	87	81	92	83	77	92	79	73	91	75	70	87	72	66	84	69	64	81	66	62	76	62	58	71	59	53	68	55	49	64	52	57	62	59	52	59	56	48
		27-45	Interior	95	95	95	95	95	95	95	95	95	95	95	91	95	95	87	95	92	83	95	88	80	88	82	74	82	76	69	76	72	65	71	67	62	67	64	59	64	62	55
			Exposed	95	95	86	95	91	82	94	87	78	89	83	75	85	79	71	81	76	69	78	73	66	72	68	62	67	64	59	63	61	54	60	58	50	58	55	59	54	51	55
	D	0-7	Interior	77	77	77	77	77	77	77	77	77	77	77	74	77	77	71	77	77	68	77	76	66	77	71	62	76	66	59	71	63	55	68	60	52	64	58	59	62	54	56
			Exposed	77	77	71	77	77	68	77	75	65	77	72	63	77	69	61	76	66	59	73	64	56	68	61	52	64	57	59	61	53	55	58	60	52	55	57	~~48~~	51	54	~~46~~
		7-20	Interior	77	77	77	77	77	77	77	77	74	77	77	71	77	74	68	77	71	65	77	68	63	74	64	60	70	60	56	66	57	52	63	53	59	61	61	56	58	58	53
			Exposed	77	74	68	77	70	64	77	67	62	75	64	60	72	62	58	70	60	55	67	58	53	64	54	59	60	60	56	57	57	52	53	53	~~49~~	61	~~50~~	~~46~~	58	~~47~~	~~41~~
		20-27	Interior	93	93	93	93	93	87	93	89	83	93	84	78	93	80	75	93	77	72	89	74	69	84	69	64	79	64	60	74	61	56	71	59	52	67	55	49	64	52	57
			Exposed	93	80	75	92	76	71	88	73	67	84	69	64	81	66	62	78	64	60	76	62	57	71	59	52	67	55	48	64	51	55	61	58	51	58	55	47	55	52	~~41~~
		27-45	Interior	96	96	96	96	96	92	96	96	88	96	93	84	96	89	80	92	85	77	88	81	74	81	76	68	75	71	64	70	66	61	66	63	58	63	61	54	60	58	50
			Exposed	96	88	80	91	84	76	86	80	72	82	76	69	78	73	66	74	70	64	71	68	62	66	63	58	62	60	53	60	57	49	56	53	57	53	60	53	60	58	49

* Cells with an astrisks indicates that the L-foot must be oriented in the Y- direction as indicated in the image.

10 Highlighted cell indicate 3-rail system span. Contact Unirac Engineering Services for support.

~~10~~ Highlighted cell with strikethrough indicate 3-rail system span and module clamp allowable capacity exceeds with 3-rails. 4-Rail system required. Contact Unirac Engineering Services for support.

UNIRAC

ASCE 7-16	II	30 ft	Ss = 1.25	23 sq.ft	LANDSCAPE	CROSS-SLOPE	NXT	NXT COMBO	Flashkit Pro
Design Standard	Risk Category	Roof Height	Seismic	Module Area	Orientation	Rail Direction	Rail Type	Clamp	Attachment

SPAN TABLES

Maximum Allowable Rail Spans for Rooftop Solar Panels Parallel to the Roof Surface (inches)

Ground Snow Load (psf)	Wind Exposure Category	Roof Tilt Angle (deg)	Panel Exposure	Basic Wind Speed (mph)																																						
				90			95			100			105			110			115			120			130			140			150			160			170			180		
				Roof Wind Zone																																						
				1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3
30	B	0-7	Interior	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	72	76	76	68	76	74	64	76	70	62	76	67	59
			Exposed	76	76	76	76	76	76	76	76	76	76	76	76	76	76	75	76	76	72	76	76	69	76	74	64	76	69	61	75	65	58	71	63	54	67	60	51	64	57	59
		7-20	Interior	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	74	77	75	68	77	70	64	77	66	62	74	63	59	70	60	56
			Exposed	77	77	77	77	77	77	77	77	77	77	77	74	77	77	71	77	74	68	77	71	65	77	66	62	73	63	59	69	60	55	66	56	51	63	53	59	60	60	56
		20-27	Interior	85	85	85	85	85	85	85	85	85	85	85	85	85	85	85	85	85	85	85	85	85	85	85	82	85	81	76	85	76	71	85	72	66	83	68	63	79	64	60
			Exposed	85	85	85	85	85	85	85	85	85	85	85	83	85	85	79	85	81	75	85	78	72	85	72	67	82	67	62	78	63	59	74	61	55	70	58	51	67	55	48
		27-45	Interior	90	90	90	90	90	90	90	90	90	90	90	90	90	90	90	90	90	90	90	90	90	90	90	87	90	90	81	90	84	76	85	79	71	79	75	67	75	71	64
			Exposed	90	90	90	90	90	90	90	90	90	90	90	88	90	90	84	90	89	80	90	86	77	85	79	72	79	74	67	73	69	63	69	65	60	65	63	57	63	60	53
	C	0-7	Interior	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	74	76	76	71	76	76	66	76	72	63	76	67	60	73	64	56	69	61	53	66	59	60
			Exposed	76	76	76	76	76	73	76	76	70	76	76	67	76	74	64	76	71	62	76	69	61	73	64	57	68	61	53	65	58	60	62	54	56	59	61	53	56	59	50
		7-20	Interior	77	77	77	77	77	77	77	77	77	77	77	77	77	77	73	77	77	70	77	74	67	77	68	63	75	64	60	71	61	57	67	58	53	64	55	60	62	52	58
			Exposed	77	77	73	77	76	70	77	72	66	77	69	64	77	66	62	75	64	60	72	62	58	68	59	53	64	54	60	61	51	56	58	58	53	55	55	50	62	51	47
		20-27	Interior	85	85	85	85	85	85	85	85	85	85	85	85	85	85	82	85	84	78	85	80	75	85	74	69	84	69	64	80	65	61	76	62	57	72	60	53	69	57	50
			Exposed	85	85	81	85	83	77	85	79	73	85	75	70	85	72	66	84	69	64	81	66	62	76	62	58	71	59	53	68	55	49	64	52	57	62	59	52	59	56	48
		27-45	Interior	90	90	90	90	90	90	90	90	90	90	90	90	90	90	87	90	90	83	90	88	80	88	82	74	82	76	69	76	72	65	71	67	62	67	64	59	64	62	55
			Exposed	90	90	86	90	90	82	90	87	78	89	83	75	85	79	71	81	76	69	78	73	66	72	68	62	67	64	59	63	61	54	60	58	50	58	55	59	54	51	55
	D	0-7	Interior	77	77	77	77	77	77	77	77	77	77	77	74	77	77	71	77	77	68	77	76	66	77	71	62	76	66	59	71	63	55	68	60	52	64	58	59	62	54	56
			Exposed	77	77	71	77	77	68	77	75	65	77	72	63	77	69	61	76	66	59	73	64	56	68	61	52	64	57	59	61	53	55	58	60	52	55	57	48	51	54	46
		7-20	Interior	77	77	77	77	77	77	77	77	74	77	77	71	77	74	68	77	71	65	77	68	63	74	64	60	70	60	56	66	57	52	63	53	59	61	61	56	58	58	53
			Exposed	77	74	68	77	70	64	77	67	62	75	64	60	72	62	58	70	60	55	67	58	53	64	54	59	60	60	56	57	57	52	53	53	49	61	50	46	58	47	41
		20-27	Interior	87	87	87	87	87	87	87	87	83	87	84	78	87	80	75	87	77	72	87	74	69	84	69	64	79	64	60	74	61	56	71	59	52	67	55	49	64	52	57
			Exposed	87	80	75	87	76	71	87	73	67	84	69	64	81	66	62	78	64	60	76	62	57	71	59	52	67	55	48	64	51	55	61	58	51	58	55	47	55	52	41
		27-45	Interior	91	91	91	91	91	91	91	91	88	91	91	84	91	89	80	91	85	77	88	81	74	81	76	68	75	71	64	70	66	61	66	63	58	63	61	54	60	58	50
			Exposed	91	88	80	91	84	76	86	80	72	82	76	69	78	73	66	74	70	64	71	68	62	66	63	58	62	60	53	60	57	49	56	53	57	53	60	53	60	58	49
40	B	0-7	Interior	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	68	69	69	64	69	69	62	69	67	59
			Exposed	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	64	69	69	61	69	65	58	69	63	54	67	60	51	64	57	59
		7-20	Interior	71	71	71	71	71	71	71	71	71	71	71	71	71	71	71	71	71	71	71	71	71	71	71	71	71	71	68	71	70	64	71	66	62	71	63	59	70	60	56
			Exposed	71	71	71	71	71	71	71	71	71	71	71	71	71	71	71	71	71	68	71	71	65	71	66	62	71	63	59	69	60	55	66	56	51	63	53	59	60	60	56
		20-27	Interior	79	79	79	79	79	79	79	79	79	79	79	79	79	79	79	79	79	79	79	79	79	79	79	79	79	79	76	79	76	71	79	72	66	79	68	63	79	64	60
			Exposed	79	79	79	79	79	79	79	79	79	79	79	79	79	79	79	79	79	75	79	78	72	79	72	67	79	67	62	78	63	59	74	61	55	70	58	51	67	55	48
		27-45	Interior	85	85	85	85	85	85	85	85	85	85	85	85	85	85	85	85	85	85	85	85	85	85	85	85	85	85	81	84	84	76	81	79	71	79	75	67	75	71	64
			Exposed	85	85	85	85	85	85	85	85	85	85	85	85	85	85	84	85	85	80	85	85	77	85	79	72	79	74	67	73	69	63	69	65	60	65	63	57	63	60	53
	C	0-7	Interior	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	66	69	69	63	69	67	60	69	64	56	69	61	53	66	59	60
			Exposed	69	69	69	69	69	69	69	69	69	69	69	67	69	69	64	69	69	62	69	69	61	69	64	57	68	61	53	65	58	60	62	54	56	59	61	53	56	59	50
		7-20	Interior	71	71	71	71	71	71	71	71	71	71	71	71	71	71	71	71	71	70	71	71	67	71	68	63	71	64	60	71	61	57	67	58	53	64	55	60	62	52	58
			Exposed	71	71	71	71	71	70	71	71	66	71	69	64	71	66	62	71	64	60	71	62	58	68	59	53	64	54	60	61	51	56	58	58	53	55	55	50	62	51	47
		20-27	Interior	79	79	79	79	79	79	79	79	79	79	79	79	79	79	79	79	79	78	79	79	75	79	74	69	79	69	64	79	65	61	76	62	57	72	60	53	69	57	50
			Exposed	79	79	79	79	79	77	79	79	73	79	75	70	79	72	66	79	69	64	79	66	62	76	62	58	71	59	53	68	55	49	64	52	57	62	59	52	59	56	48
		27-45	Interior	85	85	85	85	85	85	85	85	85	85	85	85	85	85	85	85	85	83	85	85	80	83	82	74	80	76	69	76	72	65	71	67	62	67	64	59	64	62	55
			Exposed	85	85	85	85	85	82	85	85	78	85	83	75	85	79	71	81	76	69	78	73	66	72	68	62	67	64	59	63	61	54	60	58	50	58	55	59	54	51	55
	D	0-7	Interior	72	72	72	72	72	72	72	72	72	72	72	72	72	72	71	72	72	68	72	72	66	72	71	62	72	66	59	71	63	55	68	60	52	64	58	59	62	54	56
			Exposed	72	72	71	72	72	68	72	72	65	72	72	63	72	69	61	72	66	59	72	64	56	68	61	52	64	57	59	61	53	55	58	60	52	55	57	48	51	54	46
		7-20	Interior	74	74	74	74	74	74	74	74	74	74	74	71	74	74	68	74	71	65	74	68	63	74	64	60	70	60	56	66	57	52	63	53	59	61	61	56	58	58	53
			Exposed	74	74	68	74	70	64	74	67	62	74	64	60	72	62	58	70	60	55	67	58	53	64	54	59	60	60	56	57	57	52	53	53	49	61	50	46	58	47	41
		20-27	Interior	81	81	81	81	81	81	81	81	81	81	81	78	81	80	75	81	77	72	81	74	69	81	69	64	79	64	60	74	61	56	71	59	52	67	55	49	64	52	57
			Exposed	81	80	75	81	76	71	81	73	67	81	69	64	81	66	62	78	64	60	76	62	57	71	59	52	67	55	48	64	51	55	61	58	51	58	55	47	55	52	41
		27-45	Interior	87	87	87	87	87	87	87	87	87	87	87	84	87	87	80	87	85	77	85	81	74	81	76	68	75	71	64	70	66	61	66	63	58	63	61	54	60	58	50
			Exposed	87	87	80	87	84	76	86	80	72	82	76	69	78	73	66	74	70	64	71	68	62	66	63	58	62	60	53	60	57	49	56	53	57	53	60	53	60	58	49
50	B	0-7	Interior	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	62	63	63	59
			Exposed	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	61	63	63	58	63	63	54	63	60	51	63	57	59
		7-20	Interior	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	64	65	65	62	65	63	59	65	60	56
			Exposed	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	62	65	63	59	65	60	55	65	56	51	63	53	59	60	60	56
		20-27	Interior	73	73	73	73	73	73	73	73	73	73	73	73	73	73	73	73	73	73	73	73	73	73	73	73	73	73	73	73	73	71	73	72	66	73	68	63	73	64	60
			Exposed	73	73	73	73	73	73	73	73	73	73	73	73	73	73	73	73	73	73	73	73	72	73	72	67	73	67	62	73	63	59	73	61	55	70	58	51	67	55	48
		27-45	Interior	79	79	79	79	79	79	79	79	79	79	79	79	79	79	79	79	79	79	79	79	79	79	79	79	79	79	79	78	78	76	76	76	71	74	74	67	72	71	64
			Exposed	79	79	79	79	79	79	79	79	79	79	79	79	79	79	79	79	79	79	79	79	77	79	79	72	79	74	67	73	69	63	69	65	60	65	63	57	63	60	53
	C	0-7	Interior	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	60	63	63	56	63	61	53	63	59	60
			Exposed	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	62	63	63	61	63	63	57	63	61	53	63	58	60	62	54	56	59	61	53	56	59	50
		7-20	Interior	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	63	65	64	60	65	61	57	64	58	53	63	55	60	62	52	58
			Exposed	65	65	65	65	65	65	65	65	65	65	65	64	65	65	62	65	64	60	65	62	58	65	59	53	64	54	60	61	51	56	58	58	53	55	55	50	62	51	47
		20-27	Interior	73	73	73	73	73	73	73	73	73	73	73	73	73	73	73	73	73	73	73	73	73	73	73	69	73	69	64	73	65	61	72	62	57	71	60	53	69	57	50
			Exposed	73	73	73	73	73	73	73	73	73	73	73	70	73	72	66	73	69	64	73	66	62	73	62	58	71	59	53	68	55	49	64	52	57	62	59	52	59	56	48
		27-45	Interior	79	79	79	79	79	79	79	79	79	79	79	79	79	79	79	79	79	79	79	79	79	77	77	74	75	75	69	72	72	65	70	67	62	67	64	59	64	62	55
			Exposed	79	79	79	79	79	79	79	79	78	79	79	75	79	79	71	79	76	69	78	73	66	72	68	62	67	64	59	63	61	54	60	58	50	58	55	59	54	51	55
	D	0-7	Interior	66	66	66	66	66	66	66	66	66	66	66	66	66	66	66	66	66	66	66	66	66	66	66	62	66	66	59	66	63	55	66	60	52	64	58	59	62	54	56
			Exposed	66	66	66	66	66	66	66	66	65	66	66	63	66	66	61	66	66	59	66	64	56	66	61	52	64	57	59	61	53	55	58	60	52	55	57	48	51	54	46
		7-20	Interior	68	68	68	68	68	68	68	68	68	68	68	68	68	68	68	68	68	65	68	68	63	68	64	60	68	60	56	66	57	52	63	53	59	61	61	56	58	58	53
			Exposed	68	68	68	68	68	64	68	67	62	68	64	60	68	62	58	68	60	55	67	58	53	64	54	59	60	60	56	57	57	52	53	53	49	61	50	46	58	47	41
		20-27	Interior	76	76	76	76	76	76	76	76	76	76	76	76	76	76	75	76	76	72	76	74	69	76	69	64	76	64	60	74	61	56	71	59	52	67	55	49	64	52	57
			Exposed	76	76	75	76	76	71	76	73	67	76	69	64	76	66	62	76	64	60	76	62	57	71	59	52	67	55	48	64	51	55	61	58	51	58	55	47	55	52	41
		27-45	Interior	82	82	82	82	82	82	82	82	82	82	82	82	82	82	80	81	81	77	80	80	74	77	76	68	74	71	64	70	66	61	66	63	58	63	61	54	60	58	50
			Exposed	82	82	80	82	82	76	82	80	72	82	76	69	78	73	66	74	70	64	71	68	62	66	63	58	62	60	53	60	57	49	56	53	57	53	60	53	60	58	49

* Cells with an astrisks indicates that the L-foot must be oriented in the Y- direction as indicated in the image.

10 Highlighted cell indicate 3-rail system span. Contact Unirac Engineering Services for support.

~~10~~ Highlighted cell with strikethrough indicate 3-rail system span and module clamp allowable capacity exceeds with 3-rails. 4-Rail system required. Contact Unirac Engineering Services for support.

UNIRAC

ASCE 7-16	II	30 ft	Ss = 1.25	23 sq.ft	LANDSCAPE	CROSS-SLOPE	NXT	NXT COMBO	Flashkit Pro
Design Standard	Risk Category	Roof Height	Seismic	Module Area	Orientation	Rail Direction	Rail Type	Clamp	Attachment

SPAN TABLES

Maximum Allowable Rail Spans for Rooftop Solar Panels Parallel to the Roof Surface (inches)

Ground Snow Load (psf)	Wind Exposure Category	Roof Tilt Angle (deg)	Panel Exposure	Basic Wind Speed (mph)																																						
				90			95			100			105			110			115			120			130			140			150			160			170			180		
				Roof Wind Zone																																						
				1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3
60	B	0-7	Interior	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57
			Exposed	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	54	57	57	51	57	57	59
		7-20	Interior	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	59	60	60	56
			Exposed	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	59	60	60	55	60	56	51	60	53	59	60	60	56
		20-27	Interior	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	66	69	68	63	69	64	60
			Exposed	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	67	69	67	62	69	63	59	69	61	55	69	58	51	67	55	48
		27-45	Interior	75	75	75	75	75	75	75	75	75	75	75	75	75	75	75	75	75	75	75	75	75	75	75	75	75	75	75	73	73	73	72	72	71	70	70	67	68	68	64
			Exposed	75	75	75	75	75	75	75	75	75	75	75	75	75	75	75	75	75	75	75	75	75	75	75	72	75	74	67	73	69	63	69	65	60	65	63	57	63	60	53
	C	0-7	Interior	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	56	57	57	53	57	57	60
			Exposed	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	53	57	57	60	57	54	56	57	61	53	56	59	50	59	59	50
		7-20	Interior	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	57	60	58	53	59	55	60	58	52	58
			Exposed	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	58	60	59	53	60	54	60	60	51	56	58	58	53	55	55	50	62	51	47
		20-27	Interior	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	64	69	65	61	68	62	57	66	60	53	65	57	50
			Exposed	69	69	69	69	69	69	69	69	69	69	69	69	69	69	66	69	69	64	69	66	62	69	62	58	69	59	53	68	55	49	64	52	57	62	59	52	59	56	48
		27-45	Interior	75	75	75	75	75	75	75	75	75	75	75	75	75	75	75	75	75	75	75	75	75	73	73	73	70	70	69	68	68	65	66	66	62	64	64	59	62	62	55
			Exposed	75	75	75	75	75	75	75	75	75	75	75	75	75	75	71	75	75	69	75	73	66	72	68	62	67	64	59	63	61	54	60	58	50	58	55	59	54	51	55
	D	0-7	Interior	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	59	60	60	55	60	60	52	60	58	59	60	54	56
			Exposed	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	59	60	60	56	60	60	52	60	57	59	60	53	55	58	60	52	55	57	48	51	54	46
		7-20	Interior	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	60	63	60	56	62	57	52	61	53	59	60	61	56	58	58	53
			Exposed	63	63	63	63	63	63	63	63	62	63	63	60	63	62	58	63	60	55	63	58	53	63	54	59	60	60	56	57	57	52	53	53	49	61	50	46	58	47	41
		20-27	Interior	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	69	72	69	64	71	64	60	70	61	56	68	59	52	67	55	49	64	52	57
			Exposed	72	72	72	72	72	71	72	72	67	72	69	64	72	66	62	72	64	60	72	62	57	71	59	52	67	55	48	64	51	55	61	58	51	58	55	47	55	52	41
		27-45	Interior	78	78	78	78	78	78	78	78	78	78	78	78	77	77	77	76	76	76	75	75	74	73	73	68	70	70	64	68	66	61	65	63	58	63	61	54	60	58	50
			Exposed	78	78	78	78	78	76	78	78	72	78	76	69	77	73	66	74	70	64	71	68	62	66	63	58	62	60	53	60	57	49	56	53	57	53	60	53	60	58	49
70	B	0-7	Interior	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53
			Exposed	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	51	53	53	59
		7-20	Interior	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56
			Exposed	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	55	56	56	51	56	53	59	56	60	56
		20-27	Interior	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	63	65	64	60
			Exposed	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	62	65	63	59	65	61	55	65	58	51	65	55	48
		27-45	Interior	85*	85*	85*	85*	85*	85*	85*	85*	85*	85*	85*	85*	85*	85*	85*	85*	85*	85*	85*	85*	85*	85*	85*	85*	85*	85*	71	69	69	69	68	68	68	66	66	66	65	65	64
			Exposed	85*	85*	85*	85*	85*	85*	85*	85*	85*	85*	85*	85*	85*	85*	71	85*	85*	71	85*	85*	71	85*	71	71	71	71	67	69	69	63	68	65	60	65	63	57	63	60	53
	C	0-7	Interior	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	60
			Exposed	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	60	53	53	56	53	61	53	53	59	50
		7-20	Interior	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	53	56	55	60	55	52	58
			Exposed	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	53	56	54	60	56	51	56	56	58	53	55	55	50	62	51	47
		20-27	Interior	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	64	65	65	61	64	62	57	63	60	53	62	57	50
			Exposed	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	64	65	65	62	65	62	58	65	59	53	65	55	49	64	52	57	62	59	52	59	56	48
		27-45	Interior	85*	85*	85*	85*	85*	85*	85*	85*	85*	85*	85*	85*	85*	85*	85*	85*	85*	71	85*	85*	71	69	69	69	67	67	67	65	65	65	63	63	62	62	62	59	60	60	55
			Exposed	85*	85*	85*	85*	85*	71	85*	85*	71	85*	71	71	85*	71	71	71	71	69	71	71	66	69	68	62	67	64	59	63	61	54	60	58	50	58	55	59	54	51	55
	D	0-7	Interior	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	55	56	56	52	56	56	59	56	54	56
			Exposed	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	52	56	56	59	56	53	55	56	60	52	55	57	48	51	54	46
		7-20	Interior	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	56	58	57	52	58	53	59	57	61	56	56	58	53
			Exposed	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	55	58	58	53	58	54	59	58	60	56	57	57	52	53	53	49	61	50	46	58	47	41
		20-27	Interior	68	68	68	68	68	68	68	68	68	68	68	68	68	68	68	68	68	68	68	68	68	68	68	64	67	64	60	66	61	56	65	59	52	63	55	49	62	52	57
			Exposed	68	68	68	68	68	68	68	68	67	68	68	64	68	66	62	68	64	60	68	62	57	68	59	52	67	55	48	64	51	55	61	58	51	58	55	47	55	52	41
		27-45	Interior	74	74	74	74	74	74	74	74	74	74	74	74	73	73	73	72	72	72	71	71	71	69	69	68	67	67	64	65	65	61	63	63	58	61	61	54	59	58	50
			Exposed	74	74	74	74	74	74	74	74	72	74	74	69	73	73	66	72	70	64	71	68	62	66	63	58	62	60	53	60	57	49	56	53	57	53	60	53	60	58	49
80	B	0-7	Interior	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50
			Exposed	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	59
		7-20	Interior	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52
			Exposed	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	51	52	52	59	52	60	56
		20-27	Interior	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	60
			Exposed	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	59	61	61	55	61	58	51	61	55	48
		27-45	Interior	71*	71*	71*	71*	71*	71*	71*	71*	71*	71*	71*	71*	71*	71*	71*	71*	71*	71*	71*	71*	71*	71*	71*	71*	71*	71*	71*	73*	73*	73*	74*	74*	65	76*	75*	64	62	62	62
			Exposed	71*	71*	71*	71*	71*	71*	71*	71*	71*	71*	71*	71*	71*	71*	71*	71*	71*	71*	71*	71*	71*	71*	71*	71*	71*	71*	67	73*	66	63	65	65	60	64	63	57	62	60	53
	C	0-7	Interior	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	60
			Exposed	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	60	50	50	56	50	61	53	50	59	50
		7-20	Interior	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	60	52	52	58
			Exposed	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	60	52	51	56	52	58	53	52	55	50	62	51	47
		20-27	Interior	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	57	60	60	53	59	57	50
			Exposed	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	58	61	59	53	61	55	49	61	52	57	60	59	52	59	56	48
		27-45	Interior	71*	71*	71*	71*	71*	71*	71*	71*	71*	71*	71*	71*	71*	71*	71*	71*	71*	71*	71*	71*	71*	72*	72*	72*	73*	73*	64	63	63	63	61	61	61	60	60	59	58	58	55
			Exposed	71*	71*	71*	71*	71*	71*	71*	71*	71*	71*	71*	71*	71*	71*	71*	71*	71*	68	71*	71*	66	72*	66	62	64	64	59	63	61	54	60	58	50	58	55	59	54	51	55
	D	0-7	Interior	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	52	53	53	59	53	53	56
			Exposed	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	52	53	53	59	53	53	55	53	60	52	53	57	48	51	54	46
		7-20	Interior	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	52	55	53	59	54	61	56	54	58	53
			Exposed	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	53	55	54	59	55	60	56	55	57	52	53	53	49	61	50	46	58	47	41
		20-27	Interior	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	60	63	61	56	62	59	52	61	55	49	60	52	57
			Exposed	64	64	64	64	64	64	64	64	64	64	64	64	64	64	62	64	64	60	64	62	57	64	59	52	64	55	48	63	51	55	61	58	51	58	55	47	55	52	41
		27-45	Interior	81*	81*	81*	81*	81*	81*	81*	81*	81*	81*	81*	81*	81*	81*	80*	80*	80*	69	86*	68	68	66	66	66	64	64	64	62	62	61	61	61	58	59	59	54	57	57	50
			Exposed	81*	81*	80*	81*	81*	71	81*	80*	71	81*	71	69	70	70	66	69	69	64	68	68	62	66	63	58	62	60	53	60	57	49	56	53	57	53	60	53	60	58	49

* Cells with an astrisks indicates that the L-foot must be oriented in the Y- direction as indicated in the image.

10 Highlighted cell indicate 3-rail system span. Contact Unirac Engineering Services for support.

~~10~~ Highlighted cell with strikethrough indicate 3-rail system span and module clamp allowable capacity exceeds with 3-rails. 4-Rail system required. Contact Unirac Engineering Services for support.

UNIRAC

ASCE 7-16	II	30 ft	Ss = 1.25	23 sq.ft	LANDSCAPE	CROSS-SLOPE	NXT	NXT COMBO	Flashkit Pro
Design Standard	Risk Category	Roof Height	Seismic	Module Area	Orientation	Rail Direction	Rail Type	Clamp	Attachment

SPAN TABLES

Maximum Allowable Rail Spans for Rooftop Solar Panels Parallel to the Roof Surface (inches)

Ground Snow Load (psf)	Wind Exposure Category	Roof Tilt Angle (deg)	Panel Exposure	Basic Wind Speed (mph)																																						
				90			95			100			105			110			115			120			130			140			150			160			170			180		
				Roof Wind Zone																																						
				1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3
90	B	0-7	Interior	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47
			Exposed	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	58
		7-20	Interior	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49
			Exposed	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	59	49	60	56
		20-27	Interior	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57
			Exposed	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	55	57	57	51	57	55	48			
		27-45	Interior	68*	68*	68*	68*	68*	68*	68*	68*	68*	68*	68*	68*	68*	68*	68*	68*	68*	68*	68*	68*	68*	68*	68*	68*	66*	66*	66*	65*	65*	65*	64*	64*	64*	65*	65*	64*			
			Exposed	68*	68*	68*	68*	68*	68*	68*	68*	68*	68*	68*	68*	68*	68*	68*	68*	68*	68*	68*	68*	68*	68*	68*	67*	66*	66*	63	65*	65*	60	64*	61	57	60	60	53			
	C	0-7	Interior	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	58
			Exposed	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	58	47	47	56	47	58	53	47	58	50			
		7-20	Interior	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	60	49	49	58			
			Exposed	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	60	49	49	56	49	58	53	49	55	50	60	51	47
		20-27	Interior	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	53	57	57	50
			Exposed	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	53	57	55	49	57	52	57	57	59	52	57	56	48			
		27-45	Interior	68*	68*	68*	68*	68*	68*	68*	68*	68*	68*	68*	68*	68*	68*	68*	68*	68*	68*	68*	68*	68*	66*	66*	66*	64*	64*	64*	65*	65*	65*	64*	64*	59	58	58	58	57	57	55
			Exposed	68*	68*	68*	68*	68*	68*	68*	68*	68*	68*	68*	68*	68*	68*	68*	68*	68*	68*	68*	68*	66*	66*	66*	62	64*	64*	59	60	60	54	59	58	50	58	55	59	54	51	55
	D	0-7	Interior	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	59	50	50	56			
			Exposed	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	59	50	50	55	50	60	52	50	57	48	50	54	46			
		7-20	Interior	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	59	52	61	56	51	58	53			
			Exposed	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	59	52	60	56	52	57	52	52	53	49	61	50	46	58	47	41
		20-27	Interior	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	56	59	59	52	58	55	49	57	52	57
			Exposed	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	57	60	59	52	60	55	48	60	51	55	59	58	51	58	55	47	55	52	41
		27-45	Interior	71*	71*	71*	71*	71*	71*	71*	71*	71*	71*	71*	71*	70*	70*	70*	73*	73*	73*	72*	72*	72*	73*	73*	64	62	62	62	61	61	61	59	59	58	57	57	54	56	56	50
			Exposed	71*	71*	71*	71*	71*	71*	71*	71*	71*	71*	71*	68	70*	70*	66	73*	66	64	71*	65	62	64	63	58	62	60	53	60	57	49	56	53	57	53	60	53	60	58	49
100	B	0-7	Interior	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45
			Exposed	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	55
		7-20	Interior	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47
			Exposed	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	57	47	57	56			
		20-27	Interior	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55
			Exposed	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	51	55	55	48			
		27-45	Interior	61*	61*	61*	61*	61*	61*	61*	61*	61*	61*	61*	61*	61*	61*	61*	61*	61*	61*	61*	61*	61*	61*	61*	61*	61*	61*	61*	61*	61*	61*	60*	60*	60*	59*	59*	59*	61*	61*	61*
			Exposed	61*	61*	61*	61*	61*	61*	61*	61*	61*	61*	61*	61*	61*	61*	61*	61*	61*	61*	61*	61*	61*	61*	61*	61*	61*	61*	61*	61*	61*	61*	60*	60*	60*	59*	59*	57	61*	60*	53
	C	0-7	Interior	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	55
			Exposed	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	55	45	45	55	45	45	55	45	55	53	45	55	50			
		7-20	Interior	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	57	47	47	57			
			Exposed	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	57	47	47	56	47	57	53	47	55	50	57	51	47			
		20-27	Interior	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	53	55	55	50			
			Exposed	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	53	55	55	49	55	52	57	55	59	52	55	56	48			
		27-45	Interior	61*	61*	61*	61*	61*	61*	61*	61*	61*	61*	61*	61*	61*	61*	61*	61*	61*	61*	61*	61*	61*	61*	61*	61*	60*	60*	60*	61*	61*	61*	60*	60*	60*	58*	58*	58*	59*	59*	55
			Exposed	61*	61*	61*	61*	61*	61*	61*	61*	61*	61*	61*	61*	61*	61*	61*	61*	61*	61*	61*	61*	61*	61*	61*	61*	60*	60*	59*	61*	61*	54	60*	58*	50	58*	55	59	54	51	55
	D	0-7	Interior	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	58	47	47	56
			Exposed	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	58	47	47	55	47	58	52	47	57	48	47	54	46			
		7-20	Interior	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	59	49	60	56	49	58	53
			Exposed	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	59	49	60	56	49	57	52	49	53	49	60	50	46	58	47	41
		20-27	Interior	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	56	57	57	52	56	55	49	55	52	57
			Exposed	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	52	57	55	48	57	51	55	57	58	51	56	55	47	55	52	41
		27-45	Interior	68*	68*	68*	68*	68*	68*	68*	68*	68*	68*	68*	68*	68*	68*	68*	67*	67*	67*	66*	66*	66*	64*	64*	64*	65*	65*	64*	66*	66*	59	57	57	57	56	56	54	55	55	50
			Exposed	68*	68*	68*	68*	68*	68*	68*	68*	68*	68*	68*	68*	68*	66*	67*	67*	64*	66*	66*	62	64*	62	58	60	60	53	59	57	49	56	53	57	53	60	53	60	58	49	

* Cells with an astrisks indicates that the L-foot must be oriented in the Y- direction as indicated in the image.

10 Highlighted cell indicate 3-rail system span. Contact Unirac Engineering Services for support.

~~10~~ Highlighted cell with strikethrough indicate 3-rail system span and module clamp allowable capacity exceeds with 3-rails. 4-Rail system required. Contact Unirac Engineering Services for support.

UNIRAC

ASCE 7-16	II	30 ft	Ss = 3.00	19 sq.ft	PORTRAIT	CROSS-SLOPE	NXT	NXT COMBO	Flashkit Pro
Design Standard	Risk Category	Roof Height	Seismic	Module Area	Orientation	Rail Direction	Rail Type	Clamp	Attachment

SPAN TABLES

Maximum Allowable Rail Spans for Rooftop Solar Panels Parallel to the Roof Surface (inches)

Ground Snow Load (psf)	Wind Exposure Category	Roof Tilt Angle (deg)	Panel Exposure	Basic Wind Speed (mph)																																						
				90			95			100			105			110			115			120			130			140			150			160			170			180		
				Roof Wind Zone																																						
				1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3
0	B	0-7	Interior	86	86	86	86	86	86	86	86	82	86	86	79	86	86	76	86	83	73	86	80	71	85	75	66	80	71	62	76	67	59	72	64	55	68	61	51	65	58	47
			Exposed	86	86	76	86	82	73	86	79	70	86	76	67	83	73	64	80	70	62	77	68	60	72	64	55	68	60	50	64	56	46	61	52	40	58	48	35	54	45	46
		7-20	Interior	86	86	86	86	86	84	86	86	80	86	83	77	86	79	74	85	76	71	82	74	68	77	69	64	73	65	60	69	61	56	66	58	51	63	53	47	60	49	42
			Exposed	86	79	73	85	76	70	81	72	67	78	69	64	75	67	62	73	64	60	70	62	57	66	58	52	63	53	47	59	48	40	56	43	35	52	38	46	49	33	42
		20-27	Interior	87	87	87	87	87	87	87	87	87	87	87	84	87	85	81	87	82	78	87	79	75	87	74	70	82	69	66	77	66	62	73	62	59	70	59	54	67	55	50
			Exposed	87	85	81	87	81	77	87	78	73	87	75	70	84	72	68	81	69	65	79	67	63	74	62	59	70	59	53	66	54	49	63	50	44	60	46	37	57	40	32
		27-45	Interior	87	87	87	87	87	87	87	87	87	87	87	87	87	87	84	87	87	81	87	86	78	86	80	73	80	75	69	76	71	65	72	68	62	68	64	59	65	61	55
			Exposed	87	87	84	87	87	80	87	84	77	87	81	74	83	78	71	80	75	69	77	72	66	72	68	62	68	64	59	64	60	54	61	57	49	57	53	46	53	49	40
	C	0-7	Interior	86	86	78	86	85	75	86	81	71	86	78	69	85	75	66	82	72	64	79	70	62	74	65	57	70	62	52	66	59	48	63	54	43	60	50	38	56	47	34
			Exposed	85	75	66	81	72	63	78	69	61	75	66	58	72	64	55	69	61	52	67	59	49	63	54	44	59	50	37	55	46	47	51	40	43	47	35	38	42	46	33
		7-20	Interior	86	82	76	86	78	72	83	74	69	80	71	66	77	69	64	75	66	62	72	64	59	68	60	54	64	55	49	61	50	44	58	46	38	54	40	33	50	36	45
			Exposed	77	69	64	74	66	61	71	63	58	68	60	55	66	58	51	64	55	48	62	52	46	58	47	38	53	40	33	49	34	43	46	45	38	40	40	33	36	36	~~30~~
		20-27	Interior	87	87	83	87	84	79	87	80	76	87	77	73	87	74	70	83	71	67	81	69	65	76	64	61	71	60	56	68	56	51	65	52	47	62	48	41	59	44	35
			Exposed	86	74	70	83	70	66	79	67	64	76	65	61	74	62	59	71	60	56	69	58	52	65	52	47	61	47	40	58	41	33	54	36	42	50	47	36	47	43	~~31~~
		27-45	Interior	87	87	87	87	87	83	87	87	79	87	83	76	86	80	73	82	77	71	79	74	68	74	70	64	70	66	60	66	62	56	62	59	52	59	55	48	55	51	44
			Exposed	86	80	73	82	76	70	78	73	67	75	70	64	72	68	62	69	65	60	67	63	58	63	59	52	59	54	47	54	50	41	49	46	35	46	40	45	40	36	40
	D	0-7	Interior	86	83	73	86	79	70	86	76	67	82	73	64	79	70	62	76	68	60	74	65	57	69	61	52	65	57	47	62	53	41	59	49	36	55	45	47	51	40	43
			Exposed	79	70	62	76	67	59	73	64	56	70	62	52	67	60	49	65	57	47	63	54	43	59	49	36	54	44	46	50	38	41	46	33	36	40	44	~~32~~	36	39	~~28~~
		7-20	Interior	85	76	70	81	72	67	78	69	64	75	67	62	72	64	60	70	62	57	68	60	54	64	54	48	60	49	42	56	45	36	52	38	47	49	34	42	46	45	38
			Exposed	72	64	59	69	61	56	67	59	52	64	55	49	62	52	46	60	49	41	58	46	38	53	39	47	48	33	42	44	44	36	38	38	~~32~~	34	34	~~28~~	45	~~30~~	~~25~~
		20-27	Interior	87	82	77	87	78	74	87	75	70	84	72	67	81	69	65	78	66	63	75	64	60	71	60	55	67	55	50	64	51	46	61	47	38	58	41	32	54	36	42
			Exposed	81	69	65	77	66	62	74	63	59	72	61	56	69	58	53	67	55	50	65	52	47	61	47	39	57	40	32	53	35	40	49	46	34	46	41	~~29~~	41	36	~~25~~
		27-45	Interior	87	87	81	87	84	77	87	81	74	83	77	71	80	75	68	77	72	66	74	69	64	69	65	60	65	61	55	61	58	50	58	53	46	53	49	40	49	46	35
			Exposed	79	74	68	76	71	65	73	68	63	70	66	60	67	63	58	65	61	55	62	59	52	58	54	47	53	49	40	48	44	33	43	38	43	38	34	37	33	45	32
10	B	0-7	Interior	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	71	72	72	66	72	68	62	72	67	59	72	64	55	68	61	51	65	58	47
			Exposed	72	72	72	72	72	72	72	72	70	72	72	67	72	72	64	72	70	62	72	68	60	72	64	55	68	60	50	64	56	46	61	52	40	58	48	35	54	45	46
		7-20	Interior	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	71	72	72	68	72	69	64	72	65	60	69	61	56	66	58	51	63	53	47	60	49	42
			Exposed	72	72	72	72	72	70	72	72	67	72	69	64	72	67	62	72	64	60	70	62	57	66	58	52	63	53	47	59	48	40	56	43	35	52	38	46	49	33	42
		20-27	Interior	83	83	83	83	83	83	83	83	83	83	83	83	83	83	81	83	82	78	83	79	75	83	74	70	82	69	66	77	66	62	73	62	59	70	59	54	67	55	50
			Exposed	83	83	81	83	81	77	83	78	73	83	75	70	83	72	68	81	69	65	79	67	63	74	62	59	70	59	53	66	54	49	63	50	44	60	46	37	57	40	32
		27-45	Interior	86	86	86	86	86	86	86	86	86	86	86	86	86	86	84	86	86	81	86	86	78	86	80	73	80	75	69	76	71	65	72	68	62	68	64	59	65	61	55
			Exposed	86	86	84	86	86	80	86	84	77	86	81	74	83	78	71	80	75	69	77	72	66	72	68	62	68	64	59	64	60	54	61	57	49	57	53	46	53	49	40
	C	0-7	Interior	72	72	72	72	72	72	72	72	71	72	72	69	72	72	66	72	72	64	72	70	62	72	65	57	70	62	52	66	59	48	63	54	43	60	50	38	56	47	34
			Exposed	72	72	66	72	72	63	72	69	61	72	66	58	72	64	55	69	61	52	67	59	49	63	54	44	59	50	37	55	46	47	51	40	43	47	35	38	42	46	33
		7-20	Interior	72	72	72	72	72	72	72	72	69	72	71	66	72	69	64	72	66	62	72	64	59	68	60	54	64	55	49	61	50	44	58	46	38	54	40	33	50	36	45
			Exposed	72	69	64	72	66	61	71	63	58	68	60	55	66	58	51	64	55	48	62	52	46	58	47	38	53	40	33	49	34	43	46	45	38	40	40	33	36	36	~~30~~
		20-27	Interior	83	83	83	83	83	79	83	80	76	83	77	73	83	74	70	83	71	67	81	69	65	76	64	61	71	60	56	68	56	51	65	52	47	62	48	41	59	44	35
			Exposed	83	74	70	83	70	66	79	67	64	76	65	61	74	62	59	71	60	56	69	58	52	65	52	47	61	47	40	58	41	33	54	36	42	50	47	36	47	43	~~31~~
		27-45	Interior	86	86	86	86	86	83	86	86	79	86	83	76	86	80	73	82	77	71	79	74	68	74	70	64	70	66	60	66	62	56	62	59	52	59	55	48	55	51	44
			Exposed	86	80	73	82	76	70	78	73	67	75	70	64	72	68	62	69	65	60	67	63	58	63	59	52	59	54	47	54	50	41	49	46	35	46	40	45	40	36	40
	D	0-7	Interior	72	72	72	72	72	70	72	72	67	72	72	64	72	70	62	72	68	60	72	65	57	69	61	52	65	57	47	62	53	41	59	49	36	55	45	47	51	40	43
			Exposed	72	70	62	72	67	59	72	64	56	70	62	52	67	60	49	65	57	47	63	54	43	59	49	36	54	44	46	50	38	41	46	33	36	40	44	~~32~~	36	39	~~28~~
		7-20	Interior	72	72	70	72	72	67	72	69	64	72	67	62	72	64	60	70	62	57	68	60	54	64	54	48	60	49	42	56	45	36	52	38	47	49	34	42	46	45	38
			Exposed	72	64	59	69	61	56	67	59	52	64	55	49	62	52	46	60	49	41	58	46	38	53	39	47	48	33	42	44	44	36	38	38	~~32~~	34	34	~~28~~	45	~~30~~	~~25~~
		20-27	Interior	84	82	77	84	78	74	84	75	70	84	72	67	81	69	65	78	66	63	75	64	60	71	60	55	67	55	50	64	51	46	61	47	38	58	41	32	54	36	42
			Exposed	81	69	65	77	66	62	74	63	59	72	61	56	69	58	53	67	55	50	65	52	47	61	47	39	57	40	32	53	35	40	49	46	34	46	41	~~29~~	41	36	~~25~~
		27-45	Interior	87	87	81	87	84	77	87	81	74	83	77	71	80	75	68	77	72	66	74	69	64	69	65	60	65	61	55	61	58	50	58	53	46	53	49	40	49	46	35
			Exposed	79	74	68	76	71	65	73	68	63	70	66	60	67	63	58	65	61	55	62	59	52	58	54	47	53	49	40	48	44	33	43	38	43	38	34	37	33	45	32
20	B	0-7	Interior	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	59	60	60	55	60	60	51	60	58	47
			Exposed	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	55	60	60	50	60	56	46	60	52	40	58	48	35	54	45	46
		7-20	Interior	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	60	61	61	56	61	58	51	61	53	47	60	49	42
			Exposed	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	60	61	61	57	61	58	52	61	53	47	59	48	40	56	43	35	52	38	46	49	33	42
		20-27	Interior	74	74	74	74	74	74	74	74	74	74	74	74	74	74	74	74	74	74	74	74	74	74	74	70	74	69	66	74	66	62	73	62	59	70	59	54	67	55	50
			Exposed	74	74	74	74	74	74	74	74	73	74	74	70	74	72	68	74	69	65	74	67	63	74	62	59	70	59	53	66	54	49	63	50	44	60	46	37	57	40	32
		27-45	Interior	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78	73	78	75	69	76	71	65	72	68	62	68	64	59	65	61	55
			Exposed	78	78	78	78	78	78	78	78	77	78	78	74	78	78	71	78	75	69	77	72	66	72	68	62	68	64	59	64	60	54	61	57	49	57	53	46	53	49	40
	C	0-7	Interior	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	57	60	60	52	60	59	48	60	54	43	60	50	38	56	47	34
			Exposed	60	60	60	60	60	60	60	60	60	60	60	58	60	60	55	60	60	52	60	59	49	60	54	44	59	50	37	55	46	47	51	40	43	47	35	38	42	46	33
		7-20	Interior	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	59	61	60	54	61	55	49	61	50	44	58	46	38	54	40	33	50	36	45
			Exposed	61	61	61	61	61	61	61	61	58	61	60	55	61	58	51	61	55	48	61	52	46	58	47	38	53	40	33	49	34	43	46	45	38	40	40	33	36	36	~~30~~
		20-27	Interior	74	74	74	74	74	74	74	74	74	74	74	73	74	74	70	74	71	67	74	69	65	74	64	61	71	60	56	68	56	51	65	52	47	62	48	41	59	44	35
			Exposed	74	74	70	74	70	66	74	67	64	74	65	61	74	62	59	71	60	56	69	58	52	65	52	47	61	47	40	58	41	33	54	36	42	50	47	36	47	43	~~31~~
		27-45	Interior	78	78	78	78	78	78	78	78	78	78	78	76	78	78	73	78	77	71	78	74	68	74	70	64	70	66	60	66	62	56	62	59	52	59	55	48	55	51	44
			Exposed	78	78	73	78	76	70	78	73	67	75	70	64	72	68	62	69	65	60	67	63	58	63	59	52	59	54	47	54	50	41	49	46	35	46	40	45	40	36	40
	D	0-7	Interior	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	57	60	60	52	60	57	47	60	53	41	59	49	36	55	45	47	51	40	43
			Exposed	60	60	60	60	60	59	60	60	56	60	60	52	60	60	49	60	57	47	60	54	43	59	49	36	54	44	46	50	38	41	46	33	36	40	44	~~32~~	36	39	~~28~~
		7-20	Interior	61	61	61	61	61	61	61	61	61	61	61	61	61	61	60	61	61	57	61	60	54	61	54	48	60	49	42	56	45	36	52	38	47	49	34	42	46	45	38
			Exposed	61	61	59	61	61	56	61	59	52	61	55	49	61	52	46	60	49	41	58	46	38	53	39	47	48	33	42	44	44	36	38	38	~~32~~	34	34	~~28~~	45	~~30~~	~~25~~
		20-27	Interior	75	75	75	75	75	74	75	75	70	75	72	67	75	69	65	75	66	63	75	64	60	71	60	55	67	55	50	64	51	46	61	47	38	58	41	32	54	36	42
			Exposed	75	69	65	75	66	62	74	63	59	72	61	56	69	58	53	67	55	50	65	52	47	61	47	39	57	40	32	53	35	40	49	46	34	46	41	~~29~~	41	36	~~25~~
		27-45	Interior	79	79	79	79	79	77	79	79	74	79	77	71	79	75	68	77	72	66	74	69	64	69	65	60	65	61	55	61	58	50	58	53	46	53	49	40	49	46	35
			Exposed	79	74	68	76	71	65	73	68	63	70	66	60	67	63	58	65	61	55	62	59	52	58	54	47	53	49	40	48	44	33	43	38	43	38	34	37	33	45	32

* Cells with an astrisks indicates that the L-foot must be oriented in the Y- direction as indicated in the image.

10 Highlighted cell indicate 3-rail system span. Contact Unirac Engineering Services for support.

~~10~~ Highlighted cell with strikethrough indicate 3-rail system span and module clamp allowable capacity exceeds with 3-rails. 4-Rail system required. Contact Unirac Engineering Services for support.

UNIRAC

ASCE 7-16	II	30 ft	Ss = 3.00	19 sq.ft	PORTRAIT	CROSS-SLOPE	NXT	NXT COMBO	Flashkit Pro
Design Standard	Risk Category	Roof Height	Seismic	Module Area	Orientation	Rail Direction	Rail Type	Clamp	Attachment

SPAN TABLES

Maximum Allowable Rail Spans for Rooftop Solar Panels Parallel to the Roof Surface (inches)

Ground Snow Load (psf)	Wind Exposure Category	Roof Tilt Angle (deg)	Panel Exposure	Basic Wind Speed (mph)																																								
				90			95			100			105			110			115			120			130			140			150			160			170			180		
				Roof Wind Zone																																								
				1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3
30	B	0-7	Interior	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	55	59	59	51	59	58	47
			Exposed	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	55	59	59	50	59	56	46	59	52	40	58	48	35	54	45	46
		7-20	Interior	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	60	61	61	56	61	58	51	61	53	47	60	49	42
			Exposed	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	60	61	61	57	61	58	52	61	53	47	59	48	40	56	43	35	52	38	46	49	33	42
		20-27	Interior	67	67	67	67	67	67	67	67	67	67	67	67	67	67	67	67	67	67	67	67	67	67	67	67	67	67	66	67	66	62	67	62	59	67	59	54	67	55	50
			Exposed	67	67	67	67	67	67	67	67	67	67	67	67	67	67	67	67	67	65	67	67	63	67	62	59	67	59	53	66	54	49	63	50	44	60	46	37	57	40	32
		27-45	Interior	71	71	71	71	71	71	71	71	71	71	71	71	71	71	71	71	71	71	71	71	71	71	71	71	71	71	69	70	70	65	68	68	62	66	64	59	64	61	55
			Exposed	71	71	71	71	71	71	71	71	71	71	71	71	71	71	71	71	71	69	71	71	66	71	68	62	68	64	59	64	60	54	61	57	49	57	53	46	53	49	40
	C	0-7	Interior	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	57	59	59	52	59	59	48	59	54	43	59	50	38	56	47	34
			Exposed	59	59	59	59	59	59	59	59	59	59	59	58	59	59	55	59	59	52	59	59	49	59	54	44	59	50	37	55	46	47	51	40	43	47	35	38	42	46	33
		7-20	Interior	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	59	61	60	54	61	55	49	61	50	44	58	46	38	54	40	33	50	36	45
			Exposed	61	61	61	61	61	61	61	61	58	61	60	55	61	58	51	61	55	48	61	52	46	58	47	38	53	40	33	49	34	43	46	45	38	40	40	33	36	36	~~30~~
		20-27	Interior	67	67	67	67	67	67	67	67	67	67	67	67	67	67	67	67	67	67	67	67	65	67	64	61	67	60	56	67	56	51	65	52	47	62	48	41	59	44	35
			Exposed	67	67	67	67	67	66	67	67	64	67	65	61	67	62	59	67	60	56	67	58	52	65	52	47	61	47	40	58	41	33	54	36	42	50	47	36	47	43	~~31~~
		27-45	Interior	71	71	71	71	71	71	71	71	71	71	71	71	71	71	71	71	71	71	71	71	68	69	69	64	67	66	60	64	62	56	62	59	52	59	55	48	55	51	44
			Exposed	71	71	71	71	71	70	71	71	67	71	70	64	71	68	62	69	65	60	67	63	58	63	59	52	59	54	47	54	50	41	49	46	35	46	40	45	40	36	40
	D	0-7	Interior	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	57	60	60	52	60	57	47	60	53	41	59	49	36	55	45	47	51	40	43
			Exposed	60	60	60	60	60	59	60	60	56	60	60	52	60	60	49	60	57	47	60	54	43	59	49	36	54	44	46	50	38	41	46	33	36	40	44	~~32~~	36	39	~~28~~
		7-20	Interior	61	61	61	61	61	61	61	61	61	61	61	61	61	61	60	61	61	57	61	60	54	61	54	48	60	49	42	56	45	36	52	38	47	49	34	42	46	45	38
			Exposed	61	61	59	61	61	56	61	59	52	61	55	49	61	52	46	60	49	41	58	46	38	53	39	47	48	33	42	44	44	36	38	38	~~32~~	34	34	~~28~~	45	~~30~~	~~25~~
		20-27	Interior	69	69	69	69	69	69	69	69	69	69	69	67	69	69	65	69	66	63	69	64	60	69	60	55	67	55	50	64	51	46	61	47	38	58	41	32	54	36	42
			Exposed	69	69	65	69	66	62	69	63	59	69	61	56	69	58	53	67	55	50	65	52	47	61	47	39	57	40	32	53	35	40	49	46	34	46	41	~~29~~	41	36	~~25~~
		27-45	Interior	73	73	73	73	73	73	73	73	73	73	73	71	73	73	68	73	72	66	71	69	64	68	65	60	65	61	55	61	58	50	58	53	46	53	49	40	49	46	35
			Exposed	73	73	68	73	71	65	73	68	63	70	66	60	67	63	58	65	61	55	62	59	52	58	54	47	53	49	40	48	44	33	43	38	43	38	34	37	33	45	32
40	B	0-7	Interior	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	51	54	54	47
			Exposed	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	50	54	54	46	54	52	40	54	48	35	54	45	46
		7-20	Interior	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	51	56	53	47	56	49	42
			Exposed	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	52	56	53	47	56	48	40	56	43	35	52	38	46	49	33	42
		20-27	Interior	62	62	62	62	62	62	62	62	62	62	62	62	62	62	62	62	62	62	62	62	62	62	62	62	62	62	62	62	62	62	62	62	59	62	59	54	62	55	50
			Exposed	62	62	62	62	62	62	62	62	62	62	62	62	62	62	62	62	62	62	62	62	62	62	62	59	62	59	53	62	54	49	62	50	44	60	46	37	57	40	32
		27-45	Interior	66	66	66	66	66	66	66	66	66	66	66	66	66	66	66	66	66	66	66	66	66	66	66	66	66	66	66	65	65	65	63	63	62	62	62	59	60	60	55
			Exposed	66	66	66	66	66	66	66	66	66	66	66	66	66	66	66	66	66	66	66	66	66	66	66	62	66	64	59	64	60	54	61	57	49	57	53	46	53	49	40
	C	0-7	Interior	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	52	54	54	48	54	54	43	54	50	38	54	47	34
			Exposed	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	52	54	54	49	54	54	44	54	50	37	54	46	47	51	40	43	47	35	38	42	46	33
		7-20	Interior	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	54	56	55	49	56	50	44	55	46	38	54	40	33	50	36	45
			Exposed	56	56	56	56	56	56	56	56	56	56	56	55	56	56	51	56	55	48	56	52	46	56	47	38	53	40	33	49	34	43	46	45	38	40	40	33	36	36	~~30~~
		20-27	Interior	62	62	62	62	62	62	62	62	62	62	62	62	62	62	62	62	62	62	62	62	62	62	62	61	62	60	56	62	56	51	61	52	47	60	48	41	58	44	35
			Exposed	62	62	62	62	62	62	62	62	62	62	62	61	62	62	59	62	60	56	62	58	52	62	52	47	61	47	40	58	41	33	54	36	42	50	47	36	47	43	~~31~~
		27-45	Interior	66	66	66	66	66	66	66	66	66	66	66	66	66	66	66	66	66	66	66	66	66	64	64	64	62	62	60	60	60	56	58	58	52	56	55	48	54	51	44
			Exposed	66	66	66	66	66	66	66	66	66	66	66	64	66	66	62	66	65	60	66	63	58	63	59	52	59	54	47	54	50	41	49	46	35	46	40	45	40	36	40
	D	0-7	Interior	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	52	56	56	47	56	53	41	56	49	36	55	45	47	51	40	43
			Exposed	56	56	56	56	56	56	56	56	56	56	56	52	56	56	49	56	56	47	56	54	43	56	49	36	54	44	46	50	38	41	46	33	36	40	44	~~32~~	36	39	~~28~~
		7-20	Interior	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	57	58	58	54	58	54	48	58	49	42	56	45	36	52	38	47	49	34	42	46	45	38
			Exposed	58	58	58	58	58	56	58	58	52	58	55	49	58	52	46	58	49	41	58	46	38	53	39	47	48	33	42	44	44	36	38	38	~~32~~	34	34	~~28~~	45	~~30~~	~~25~~
		20-27	Interior	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	63	64	64	60	64	60	55	64	55	50	62	51	46	61	47	38	58	41	32	54	36	42
			Exposed	64	64	64	64	64	62	64	63	59	64	61	56	64	58	53	64	55	50	64	52	47	61	47	39	57	40	32	53	35	40	49	46	34	46	41	~~29~~	41	36	~~25~~
		27-45	Interior	68	68	68	68	68	68	68	68	68	68	68	68	68	68	68	67	67	66	66	66	64	64	64	60	61	61	55	59	58	50	57	53	46	53	49	40	49	46	35
			Exposed	68	68	68	68	68	65	68	68	63	68	66	60	67	63	58	65	61	55	62	59	52	58	54	47	53	49	40	48	44	33	43	38	43	38	34	37	33	45	32
50	B	0-7	Interior	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	47
			Exposed	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	46	49	49	40	49	48	35	49	45	46
		7-20	Interior	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	47	51	49	42
			Exposed	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	47	51	48	40	51	43	35	51	38	46	49	33	42
		20-27	Interior	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	54	57	55	50
			Exposed	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	53	57	54	49	57	50	44	57	46	37	57	40	32
		27-45	Interior	67*	67*	67*	67*	67*	67*	67*	67*	67*	67*	67*	67*	67*	67*	67*	67*	67*	67*	67*	67*	67*	67*	67*	67*	67*	67*	67*	69*	69*	61	59	59	59	58	58	58	57	57	55
			Exposed	67*	67*	67*	67*	67*	67*	67*	67*	67*	67*	67*	67*	67*	67*	67*	67*	67*	67*	67*	67*	62	67*	67*	62	67*	62	59	61	60	54	59	57	49	57	53	46	53	49	40
	C	0-7	Interior	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	48	49	49	43	49	49	38	49	47	34
			Exposed	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	44	49	49	37	49	46	47	49	40	43	47	35	38	42	46	33
		7-20	Interior	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	49	51	50	44	51	46	38	50	40	33	49	36	45
			Exposed	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	48	51	51	46	51	47	38	51	40	33	49	34	43	46	45	38	40	40	33	36	36	~~30~~
		20-27	Interior	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	56	57	56	51	57	52	47	56	48	41	55	44	35
			Exposed	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	56	57	57	52	57	52	47	57	47	40	57	41	33	54	36	42	50	47	36	47	43	~~31~~
		27-45	Interior	67*	67*	67*	67*	67*	67*	67*	67*	67*	67*	67*	67*	67*	67*	67*	67*	67*	67*	67*	67*	67*	68*	68*	60	59	59	59	57	57	56	55	55	52	53	53	48	52	51	44
			Exposed	67*	67*	67*	67*	67*	67*	67*	67*	67*	67*	67*	62	67*	67*	62	67*	62	60	67*	62	58	60	59	52	59	54	47	54	50	41	49	46	35	46	40	45	40	36	40
	D	0-7	Interior	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	47	51	51	41	51	49	36	51	49	36	51	45	47	51	40	43
			Exposed	51	51	51	51	51	51	51	51	51	51	51	51	51	51	49	51	51	47	51	51	43	51	49	36	51	44	46	50	38	41	46	33	36	40	44	~~32~~	36	39	~~28~~
		7-20	Interior	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	48	53	49	42	52	45	36	51	38	47	49	34	42	46	45	38
			Exposed	53	53	53	53	53	53	53	53	52	53	53	49	53	52	46	53	49	41	53	46	38	53	39	47	48	33	42	44	44	36	38	38	~~32~~	34	34	~~28~~	45	~~30~~	~~25~~
		20-27	Interior	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	55	59	55	50	58	51	46	57	47	38	56	41	32	54	36	42
			Exposed	59	59	59	59	59	59	59	59	59	59	59	56	59	58	53	59	55	50	59	52	47	59	47	39	57	40	32	53	35	40	49	46	34	46	41	~~29~~	41	36	~~25~~
		27-45	Interior	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	63	63	63	62	62	62	60	60	60	58	58	55	56	56	50	54	53	46	52	49	40	49	46	35
			Exposed	64	64	64	64	64	64	64	64	63	64	64	60	64	63	58	63	61	55	62	59	52	58	54	47	53	49	40	48	44	33	43	38	43	38	34	37	33	45	32

* Cells with an astrisks indicates that the L-foot must be oriented in the Y- direction as indicated in the image.

10 Highlighted cell indicate 3-rail system span. Contact Unirac Engineering Services for support.

~~10~~ Highlighted cell with strikethrough indicate 3-rail system span and module clamp allowable capacity exceeds with 3-rails. 4-Rail system required. Contact Unirac Engineering Services for support.

UNIRAC

ASCE 7-16	II	30 ft	Ss = 3.00	19 sq.ft	PORTRAIT	CROSS-SLOPE	NXT	NXT COMBO	Flashkit Pro
Design Standard	Risk Category	Roof Height	Seismic	Module Area	Orientation	Rail Direction	Rail Type	Clamp	Attachment

SPAN TABLES

Maximum Allowable Rail Spans for Rooftop Solar Panels Parallel to the Roof Surface (inches)

Ground Snow Load (psf)	Wind Exposure Category	Roof Tilt Angle (deg)	Panel Exposure	Basic Wind Speed (mph)																																						
				90			95			100			105			110			115			120			130			140			150			160			170			180		
				Roof Wind Zone																																						
				1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3
60	B	0-7	Interior	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45
			Exposed	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	40	45	45	35	45	45	46
		7-20	Interior	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	42
			Exposed	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	40	47	43	35	47	38	46	47	33	42
		20-27	Interior	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	50
			Exposed	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	53	54	54	49	54	50	44	54	46	37	54	40	32
		27-45	Interior	59*	59*	59*	59*	59*	59*	59*	59*	59*	59*	59*	59*	59*	59*	59*	59*	59*	59*	59*	59*	59*	59*	59*	59*	59*	59*	59*	58*	58*	58*	59*	59*	59*	57*	57*	57*	58*	58*	54
			Exposed	59*	59*	59*	59*	59*	59*	59*	59*	59*	59*	59*	59*	59*	59*	59*	59*	59*	59*	59*	59*	59*	59*	59*	59*	59*	59*	59*	58*	58*	54	59*	57*	49	57*	53	46	53	49	40
	C	0-7	Interior	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	43	45	45	38	45	45	34
			Exposed	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	44	45	45	37	45	45	47	45	40	43	45	35	38	42	46	33
		7-20	Interior	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	44	47	46	38	47	40	33	46	36	45
			Exposed	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	46	47	47	38	47	40	33	47	34	43	46	45	38	40	40	33	36	36	~~30~~
		20-27	Interior	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	51	53	52	47	52	48	41	51	44	35
			Exposed	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	52	54	52	47	54	47	40	54	41	33	53	36	42	50	47	36	47	43	~~31~~
		27-45	Interior	59*	59*	59*	59*	59*	59*	59*	59*	59*	59*	59*	59*	59*	59*	59*	59*	59*	59*	59*	59*	59*	60*	60*	60*	58*	58*	58*	58*	58*	54	58*	58*	52	51	51	48	50	50	44
			Exposed	59*	59*	59*	59*	59*	59*	59*	59*	59*	59*	59*	59*	59*	59*	59*	59*	59*	59*	59*	59*	58*	60*	59*	52	58*	54	47	54	50	41	49	46	35	46	40	45	40	36	40
	D	0-7	Interior	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	41	47	47	36	47	45	47	47	40	43
			Exposed	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	43	47	47	36	47	44	46	47	38	41	46	33	36	40	44	~~32~~	36	39	~~28~~
		7-20	Interior	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	48	49	49	42	49	45	36	48	38	47	47	34	42	46	45	38
			Exposed	49	49	49	49	49	49	49	49	49	49	49	49	49	46	49	49	41	49	46	38	49	39	47	48	33	42	44	44	36	38	38	~~32~~	34	34	~~28~~	45	~~30~~	~~25~~
		20-27	Interior	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	55	56	55	50	55	51	46	54	47	38	53	41	32	52	36	42
			Exposed	56	56	56	56	56	56	56	56	56	56	56	56	56	53	56	55	50	56	52	47	56	47	39	56	40	32	53	35	40	49	46	34	46	41	~~29~~	41	36	~~25~~
		27-45	Interior	63*	63*	63*	63*	63*	63*	63*	63*	63*	63*	63*	63*	63*	63*	63*	62*	62*	62*	64*	64*	64*	64*	64*	57	55	55	55	54	54	50	52	52	46	50	49	40	48	46	35
			Exposed	63*	63*	63*	63*	63*	63*	63*	63*	63*	63*	63*	60	63*	63*	58	62*	60	55	59	59	52	57	54	47	53	49	40	48	44	33	43	38	43	38	34	37	33	45	32
70	B	0-7	Interior	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42
			Exposed	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	40	42	42	35	42	42	46
		7-20	Interior	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	42
			Exposed	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	40	43	43	35	43	38	46	43	33	42
		20-27	Interior	53*	53*	53*	53*	53*	53*	53*	53*	53*	53*	53*	53*	53*	53*	53*	53*	53*	53*	53*	53*	53*	53*	53*	53*	53*	53*	53*	53*	53*	53*	53*	53*	53*	53*	53*	53*	53*	53*	50
			Exposed	53*	53*	53*	53*	53*	53*	53*	53*	53*	53*	53*	53*	53*	53*	53*	53*	53*	53*	53*	53*	53*	53*	53*	53*	53*	53*	53*	53*	53*	49	53*	50	44	53*	46	37	53*	40	32
		27-45	Interior	56*	56*	56*	56*	56*	56*	56*	56*	56*	56*	56*	56*	56*	56*	56*	56*	56*	56*	56*	56*	56*	56*	56*	56*	56*	56*	56*	55*	55*	55*	54*	54*	54*	52*	52*	52*	51*	51*	51*
			Exposed	56*	56*	56*	56*	56*	56*	56*	56*	56*	56*	56*	56*	56*	56*	56*	56*	56*	56*	56*	56*	56*	56*	56*	56*	56*	56*	56*	55*	55*	54*	54*	54*	50*	52*	52*	46	51*	49	40
	C	0-7	Interior	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	38	42	42	34
			Exposed	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	37	42	42	47	42	40	43	42	35	38	42	46	33
		7-20	Interior	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	38	43	40	33	43	36	45
			Exposed	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	38	43	40	33	43	34	43	43	45	38	40	40	33	36	36	~~30~~
		20-27	Interior	53*	53*	53*	53*	53*	53*	53*	53*	53*	53*	53*	53*	53*	53*	53*	53*	53*	53*	53*	53*	53*	53*	53*	53*	53*	53*	53*	53*	53*	50	53*	52*	47	52*	48	41	49	44	35
			Exposed	53*	53*	53*	53*	53*	53*	53*	53*	53*	53*	53*	53*	53*	53*	53*	53*	53*	53*	53*	53*	52*	53*	52*	47	53*	47	40	53*	41	33	53*	36	42	50	47	36	47	43	~~31~~
		27-45	Interior	56*	56*	56*	56*	56*	56*	56*	56*	56*	56*	56*	56*	56*	56*	56*	56*	56*	56*	56*	56*	56*	54*	54*	54*	53*	53*	53*	52*	52*	52*	50*	50*	50*	51*	51*	48	51*	51*	44
			Exposed	56*	56*	56*	56*	56*	56*	56*	56*	56*	56*	56*	56*	56*	56*	56*	56*	56*	41	56*	56*	56*	54*	54*	52*	53*	53*	47	52*	50*	41	50*	46	35	46	40	45	40	36	40
	D	0-7	Interior	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	41	44	44	36	44	44	47	44	40	43
			Exposed	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	43	44	44	36	44	44	46	44	38	41	44	33	36	40	44	~~32~~	36	39	~~28~~
		7-20	Interior	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	42	46	45	36	46	38	47	45	34	42	44	45	38
			Exposed	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	41	46	46	38	46	39	47	46	33	42	44	44	36	38	38	~~32~~	34	34	~~28~~	45	~~30~~	~~25~~
		20-27	Interior	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	50	52	51	46	51	47	38	50	41	32	49	36	42
			Exposed	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	50	53	52	47	53	47	39	53	40	32	52	35	40	49	46	34	46	41	~~29~~	41	36	~~25~~
		27-45	Interior	58*	58*	58*	58*	58*	58*	58*	58*	58*	58*	58*	58*	58*	58*	58*	57*	57*	57*	56*	56*	56*	55*	55*	55*	55*	55*	55*	55*	55*	50	57*	50	46	48	48	40	47	46	35
			Exposed	58*	58*	58*	58*	58*	58*	58*	58*	58*	58*	58*	58*	58*	58*	58*	57*	57*	55*	56*	56*	52	55*	54*	47	53	49	40	48	44	33	43	38	43	38	34	37	33	45	32
80	B	0-7	Interior	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39
			Exposed	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	35	39	39	46
		7-20	Interior	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41
			Exposed	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	40	41	41	35	41	38	46	41	33	42
		20-27	Interior	50*	50*	50*	50*	50*	50*	50*	50*	50*	50*	50*	50*	50*	50*	50*	50*	50*	50*	50*	50*	50*	50*	50*	50*	50*	50*	50*	50*	50*	50*	50*	50*	50*	50*	50*	50*	50*	50*	50*
			Exposed	50*	50*	50*	50*	50*	50*	50*	50*	50*	50*	50*	50*	50*	50*	50*	50*	50*	50*	50*	50*	50*	50*	50*	50*	50*	50*	50*	50*	50*	49*	50*	50*	44	50*	46*	37	50*	40	32
		27-45	Interior	52*	52*	52*	52*	52*	52*	52*	52*	52*	52*	52*	52*	52*	52*	52*	52*	52*	52*	52*	52*	52*	52*	52*	52*	52*	52*	52*	52*	52*	52*	51*	51*	51*	50*	50*	50*	49*	49*	49*
			Exposed	52*	52*	52*	52*	52*	52*	52*	52*	52*	52*	52*	52*	52*	52*	52*	52*	52*	52*	52*	52*	52*	52*	52*	52*	52*	52*	52*	52*	52*	52*	51*	51*	49*	50*	50*	46*	49*	49*	40
	C	0-7	Interior	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	38	39	39	34
			Exposed	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	37	39	39	47	39	39	43	39	35	38	39	46	33
		7-20	Interior	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	38	41	40	33	41	36	45
			Exposed	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	38	41	40	33	41	34	43	41	45	38	40	40	33	36	36	~~30~~
		20-27	Interior	50*	50*	50*	50*	50*	50*	50*	50*	50*	50*	50*	50*	50*	50*	50*	50*	50*	50*	50*	50*	50*	50*	50*	50*	50*	50*	50*	50*	50*	50*	50*	50*	47*	49*	48*	41	49*	44	35
			Exposed	50*	50*	50*	50*	50*	50*	50*	50*	50*	50*	50*	50*	50*	50*	50*	50*	50*	50*	50*	50*	50*	50*	50*	47*	50*	47*	40	50*	41	33	50*	36	42	49*	47	36	47*	43	~~31~~
		27-45	Interior	52*	52*	52*	52*	52*	52*	52*	52*	52*	52*	52*	52*	52*	52*	52*	52*	52*	52*	52*	52*	52*	52*	52*	52*	51*	51*	51*	49*	49*	49*	48*	48*	48*	47*	47*	47*	46*	46*	44*
			Exposed	52*	52*	52*	52*	52*	52*	52*	52*	52*	52*	52*	52*	52*	52*	52*	52*	52*	52*	52*	52*	52*	52*	52*	52*	51*	51*	47*	49*	49*	41	48*	46*	35	46*	40	45	40	36	40
	D	0-7	Interior	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	36	41	41	47	41	40	43
			Exposed	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	36	41	41	46	41	38	41	41	33	36	40	44	~~32~~	36	39	~~28~~
		7-20	Interior	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	42	43	43	36	43	38	47	43	34	42	42	45	38
			Exposed	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	41	43	43	38	43	39	47	43	33	42	43	44	36	38	38	~~32~~	34	34	~~28~~	45	~~30~~	~~25~~
		20-27	Interior	53*	53*	53*	53*	53*	53*	53*	53*	53*	53*	53*	53*	53*	53*	53*	53*	53*	53*	53*	53*	53*	53*	53*	53*	53*	53*	50	52*	51*	46	51*	47	38	48	41	32	47	36	42
			Exposed	53*	53*	53*	53*	53*	53*	53*	53*	53*	53*	53*	53*	53*	53*	53*	53*	53*	50	53*	52*	47	53*	47	39	53*	40	32	52*	35	40	49	46	34	46	41	~~29~~	41	36	~~25~~
		27-45	Interior	55*	55*	55*	55*	55*	55*	55*	55*	55*	55*	55*	55*	55*	55*	55*	54*	54*	54*	54*	54*	54*	52*	52*	52*	51*	51*	51*	49*	49*	49*	50*	50*	46	48*	48*	40	50*	45	35
			Exposed	55*	55*	55*	55*	55*	55*	55*	55*	55*	55*	55*	55*	55*	55*	55*	54*	54*	54*	54*	54*	52*	52*	52*	47	51*	49*	40	48*	44	33	43	38	43	38	34	37	33	45	32

* Cells with an astrisks indicates that the L-foot must be oriented in the Y- direction as indicated in the image.

10 Highlighted cell indicate 3-rail system span. Contact Unirac Engineering Services for support.

~~10~~ Highlighted cell with strikethrough indicate 3-rail system span and module clamp allowable capacity exceeds with 3-rails. 4-Rail system required. Contact Unirac Engineering Services for support.

UNIRAC

ASCE 7-16	II	30 ft	Ss = 3.00	19 sq.ft	PORTRAIT	CROSS-SLOPE	NXT	NXT COMBO	Flashkit Pro
Design Standard	Risk Category	Roof Height	Seismic	Module Area	Orientation	Rail Direction	Rail Type	Clamp	Attachment

SPAN TABLES

Maximum Allowable Rail Spans for Rooftop Solar Panels Parallel to the Roof Surface (inches)

Ground Snow Load (psf)	Wind Exposure Category	Roof Tilt Angle (deg)	Panel Exposure	Basic Wind Speed (mph)																																						
				90			95			100			105			110			115			120			130			140			150			160			170			180		
				Roof Wind Zone																																						
				1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3
90	B	0-7	Interior	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37
			Exposed	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	35	37	37	45
		7-20	Interior	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38
			Exposed	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	35	38	38	46	38	33	42			
		20-27	Interior	45*	45*	45*	45*	45*	45*	45*	45*	45*	45*	45*	45*	45*	45*	45*	45*	45*	45*	45*	45*	45*	45*	45*	45*	45*	45*	45*	45*	45*	45*	45*	45*	45*	45*	45*	45*	45*	45*	45*
			Exposed	45*	45*	45*	45*	45*	45*	45*	45*	45*	45*	45*	45*	45*	45*	45*	45*	45*	45*	45*	45*	45*	45*	45*	45*	45*	45*	45*	45*	45*	44*	45*	45*	37	45*	40	32			
		27-45	Interior	47*	47*	47*	47*	47*	47*	47*	47*	47*	47*	47*	47*	47*	47*	47*	47*	47*	47*	47*	47*	47*	47*	47*	47*	47*	47*	47*	47*	47*	47*	47*	47*	47*	47*	47*	47*	47*	47*	47*
			Exposed	47*	47*	47*	47*	47*	47*	47*	47*	47*	47*	47*	47*	47*	47*	47*	47*	47*	47*	47*	47*	47*	47*	47*	47*	47*	47*	47*	47*	47*	47*	47*	47*	46*	47*	47*	40*			
	C	0-7	Interior	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	34
			Exposed	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	43	37	35	38	37	45	33
		7-20	Interior	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	33	38	36	45
			Exposed	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	33	38	34	43	38	45	38	38	40	33	36	36	30
		20-27	Interior	45*	45*	45*	45*	45*	45*	45*	45*	45*	45*	45*	45*	45*	45*	45*	45*	45*	45*	45*	45*	45*	45*	45*	45*	45*	45*	45*	45*	45*	45*	45*	45*	45*	45*	45*	41*	45*	44*	35
			Exposed	45*	45*	45*	45*	45*	45*	45*	45*	45*	45*	45*	45*	45*	45*	45*	45*	45*	45*	45*	45*	45*	45*	45*	45*	45*	45*	40	45*	41*	33	45*	36	42	45*	47	36	45*	43	31
		27-45	Interior	47*	47*	47*	47*	47*	47*	47*	47*	47*	47*	47*	47*	47*	47*	47*	47*	47*	47*	47*	47*	47*	47*	47*	47*	47*	47*	47*	47*	47*	47*	46*	46*	46*	45*	45*	45*	44*	44*	44*
			Exposed	47*	47*	47*	47*	47*	47*	47*	47*	47*	47*	47*	47*	47*	47*	47*	47*	47*	47*	47*	47*	47*	47*	47*	47*	47*	47*	47*	47*	47*	41*	46*	46*	35	45*	40*	45	40*	36	40
	D	0-7	Interior	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	36	39	39	47	39	39	43
			Exposed	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	36	39	39	46	39	38	41	39	33	36	39	44	32	36	39	28
		7-20	Interior	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	36	40	38	47	40	34	42	40	45	38
			Exposed	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	38	40	39	47	40	33	42	40	44	36	38	38	32	34	34	28	45	39	25
		20-27	Interior	50*	50*	50*	50*	50*	50*	50*	50*	50*	50*	50*	50*	50*	50*	50*	50*	50*	50*	50*	50*	50*	50*	50*	50*	50*	50*	50*	50*	50*	46*	49*	47*	38	48*	41	32	47*	36	42
			Exposed	50*	50*	50*	50*	50*	50*	50*	50*	50*	50*	50*	50*	50*	50*	50*	50*	50*	50*	50*	50*	47*	50*	47*	39	50*	40	32	50*	35	40	49*	46	34	46*	41	29	41	36	25
		27-45	Interior	51*	51*	51*	51*	51*	51*	51*	51*	51*	51*	51*	51*	51*	51*	51*	51*	51*	51*	51*	51*	51*	50*	50*	50*	49*	49*	49*	48*	48*	48*	46*	46*	46*	45*	45*	40	44*	44*	35
			Exposed	51*	51*	51*	51*	51*	51*	51*	51*	51*	51*	51*	51*	51*	51*	51*	51*	51*	51*	51*	51*	51*	50*	50*	47*	49*	49*	40	48*	44*	33	43*	38	43	38	34	37	33	45	32
100	B	0-7	Interior	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35
			Exposed	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	43
		7-20	Interior	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37
			Exposed	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	35	37	37	45	37	33	42
		20-27	Interior	43*	43*	43*	43*	43*	43*	43*	43*	43*	43*	43*	43*	43*	43*	43*	43*	43*	43*	43*	43*	43*	43*	43*	43*	43*	43*	43*	43*	43*	43*	43*	43*	43*	43*	43*	43*	43*	43*	43*
			Exposed	43*	43*	43*	43*	43*	43*	43*	43*	43*	43*	43*	43*	43*	43*	43*	43*	43*	43*	43*	43*	43*	43*	43*	43*	43*	43*	43*	43*	43*	43*	43*	43*	43*	43*	43*	37*	43*	40*	32
		27-45	Interior	42*	42*	42*	42*	42*	42*	42*	42*	42*	42*	42*	42*	42*	42*	42*	42*	42*	42*	42*	42*	42*	42*	42*	42*	42*	42*	42*	42*	42*	42*	42*	42*	42*	42*	42*	42*	42*	42*	42*
			Exposed	42*	42*	42*	42*	42*	42*	42*	42*	42*	42*	42*	42*	42*	42*	42*	42*	42*	42*	42*	42*	42*	42*	42*	42*	42*	42*	42*	42*	42*	42*	42*	42*	42*	42*	42*	42*	42*	42*	40*
	C	0-7	Interior	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	34
			Exposed	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	43	35	35	43	35	35	38	35	43	33
		7-20	Interior	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	33	37	36	45
			Exposed	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	33	37	34	43	37	45	38	37	40	33	36	36	30
		20-27	Interior	43*	43*	43*	43*	43*	43*	43*	43*	43*	43*	43*	43*	43*	43*	43*	43*	43*	43*	43*	43*	43*	43*	43*	43*	43*	43*	43*	43*	43*	43*	43*	43*	43*	43*	43*	41*	43*	43*	35
			Exposed	43*	43*	43*	43*	43*	43*	43*	43*	43*	43*	43*	43*	43*	43*	43*	43*	43*	43*	43*	43*	43*	43*	43*	43*	43*	43*	40*	43*	41*	33	43*	36	42	43*	47	36	43*	43	31
		27-45	Interior	42*	42*	42*	42*	42*	42*	42*	42*	42*	42*	42*	42*	42*	42*	42*	42*	42*	42*	42*	42*	42*	42*	42*	42*	42*	42*	42*	42*	42*	42*	42*	42*	42*	42*	42*	42*	42*	42*	42*
			Exposed	42*	42*	42*	42*	42*	42*	42*	42*	42*	42*	42*	42*	42*	42*	42*	42*	42*	42*	42*	42*	42*	42*	42*	42*	42*	42*	42*	42*	42*	41*	42*	42*	35	42*	40*	45	40*	36*	40
	D	0-7	Interior	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	36	37	37	45	37	37	43
			Exposed	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	36	37	37	45	37	37	41	37	33	36	37	44	32	36	39	28
		7-20	Interior	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	36	38	38	47	38	34	42	38	45	38
			Exposed	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	47	38	33	42	38	44	36	38	38	32	34	34	28	45	39	25
		20-27	Interior	45*	45*	45*	45*	45*	45*	45*	45*	45*	45*	45*	45*	45*	45*	45*	45*	45*	45*	45*	45*	45*	45*	45*	45*	45*	45*	45*	45*	45*	45*	45*	45*	38	44*	41*	32	44*	36	42
			Exposed	45*	45*	45*	45*	45*	45*	45*	45*	45*	45*	45*	45*	45*	45*	45*	45*	45*	45*	45*	45*	45*	45*	45*	39	45*	40	32	45*	35	40	45*	46	34	44*	41	29	41*	36	25
		27-45	Interior	47*	47*	47*	47*	47*	47*	47*	47*	47*	47*	47*	47*	47*	47*	47*	47*	47*	47*	47*	47*	47*	47*	47*	47*	47*	47*	47*	46*	46*	46*	45*	45*	45*	44*	44*	41*	43*	43*	35
			Exposed	47*	47*	47*	47*	47*	47*	47*	47*	47*	47*	47*	47*	47*	47*	47*	47*	47*	47*	47*	47*	47*	47*	47*	47*	47*	47*	40*	46*	44*	33	43*	38	43	38	34	37	33	45	32

*	Cells with an astrisks indicates that the L-foot must be oriented in the Y- direction as indicated in the image.
10	Highlighted cell indicate 3-rail system span. Contact Unirac Engineering Services for support.
~~10~~	Highlighted cell with strikethrough indicate 3-rail system span and module clamp allowable capacity exceeds with 3-rails. 4-Rail system required. Contact Unirac Engineering Services for support.

UNIRAC

ASCE 7-16	II	30 ft	Ss = 3.00	19 sq.ft	LANDSCAPE	CROSS-SLOPE	NXT	NXT COMBO	Flashkit Pro
Design Standard	Risk Category	Roof Height	Seismic	Module Area	Orientation	Rail Direction	Rail Type	Clamp	Attachment

SPAN TABLES

Maximum Allowable Rail Spans for Rooftop Solar Panels Parallel to the Roof Surface (inches)

Ground Snow Load (psf)	Wind Exposure Category	Roof Tilt Angle (deg)	Panel Exposure	Basic Wind Speed (mph)																																								
				90			95			100			105			110			115			120			130			140			150			160			170			180		
				Roof Wind Zone																																								
				1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3
0	B	0-7	Interior	102	102	102	102	102	102	102	102	101	102	102	96	102	102	92	102	101	88	102	97	84	102	90	78	97	84	73	91	79	68	85	74	65	81	71	62	77	67	60
			Exposed	102	102	91	102	100	87	102	95	82	102	91	79	101	87	75	96	84	72	93	80	70	86	75	65	80	70	62	75	66	59	71	63	55	68	60	52	64	58	59
		7-20	Interior	102	102	102	102	102	102	102	102	98	102	102	93	102	97	88	102	92	84	102	88	81	93	81	74	87	76	69	82	71	65	78	66	62	74	63	59	71	61	57
			Exposed	102	97	88	102	91	83	102	86	79	94	82	75	90	78	72	87	75	69	84	72	66	78	67	62	74	63	59	70	60	55	66	57	52	63	53	59	61	50	56
		20-27	Interior	103	103	103	103	103	103	103	103	103	103	103	103	103	103	100	103	101	95	103	97	90	103	89	83	99	82	77	93	77	71	88	72	67	83	68	63	79	65	60
			Exposed	103	103	100	103	100	93	103	94	88	103	90	84	103	86	80	99	82	76	94	78	73	88	73	67	83	68	63	78	64	60	74	61	56	71	59	52	68	55	49
		27-45	Interior	103	103	103	103	103	103	103	103	103	103	103	103	103	103	103	103	103	99	103	103	95	103	98	88	99	91	82	92	85	76	86	80	72	80	75	68	76	71	65
			Exposed	103	103	103	103	103	98	103	103	93	103	99	89	103	94	85	98	90	81	94	86	78	86	80	72	80	75	67	74	70	64	70	66	61	66	63	58	63	61	54
	C	0-7	Interior	102	102	94	102	102	90	102	98	85	102	94	81	102	90	78	100	86	75	96	83	72	89	77	67	83	72	63	78	68	60	73	64	57	70	62	54	66	59	51
			Exposed	102	90	78	99	85	74	94	81	70	90	78	67	86	75	65	82	72	63	79	69	61	74	65	57	69	61	53	65	59	60	62	55	57	60	52	53	57	59	50
		7-20	Interior	102	101	91	102	95	86	102	90	82	99	85	78	93	81	74	89	78	71	86	74	68	80	69	64	76	64	61	72	61	57	68	59	54	65	55	50	62	52	58
			Exposed	92	81	74	88	77	70	84	73	67	81	70	64	78	67	62	75	64	60	73	62	59	68	59	54	64	55	50	61	51	57	59	59	53	55	55	50	52	52	~~47~~
		20-27	Interior	103	103	103	103	103	97	103	98	92	103	93	87	103	89	83	102	85	79	98	81	75	91	75	70	85	70	65	80	65	61	76	63	58	73	60	54	69	57	51
			Exposed	103	88	82	101	84	78	96	79	74	91	76	70	88	72	67	85	69	64	82	67	62	77	63	58	72	60	53	68	56	49	65	52	57	62	60	53	60	57	49
		27-45	Interior	103	103	103	103	103	102	103	103	96	103	102	92	103	97	88	102	93	84	97	89	80	89	83	75	82	77	70	77	72	65	72	68	62	68	65	59	64	62	56
			Exposed	103	97	87	101	92	83	95	87	79	90	83	75	86	80	72	82	77	69	78	74	67	72	68	62	67	64	59	64	61	55	61	59	51	58	55	59	55	52	55
	D	0-7	Interior	102	100	87	102	95	82	102	91	79	100	87	75	96	83	72	92	80	69	88	77	67	82	72	63	77	67	60	72	64	56	68	61	52	65	58	60	62	55	57
			Exposed	96	83	72	91	79	68	87	75	65	83	72	63	79	69	61	76	67	59	73	65	57	68	61	53	64	58	59	61	54	56	59	50	52	55	58	49	52	55	~~46~~
		7-20	Interior	102	92	84	102	87	79	94	82	75	90	78	72	86	75	68	83	71	66	80	69	64	75	64	60	71	61	56	67	58	53	64	54	60	61	51	57	59	59	53
			Exposed	86	74	68	82	71	65	79	67	63	76	65	61	73	62	59	70	61	56	68	59	54	64	54	60	61	50	56	58	58	52	54	54	49	51	51	46	59	48	~~42~~
		20-27	Interior	103	100	94	103	95	88	103	90	84	103	85	79	98	81	76	94	78	72	90	75	69	84	69	64	79	65	60	75	62	57	71	59	53	68	56	49	65	53	57
			Exposed	98	81	75	93	77	71	89	73	68	85	70	65	82	67	62	79	64	60	76	63	58	72	59	53	67	55	48	64	51	56	61	59	51	59	56	47	55	52	~~42~~
		27-45	Interior	103	103	98	103	103	93	103	98	88	103	94	84	98	90	81	93	86	77	89	82	74	82	76	69	76	71	65	71	67	61	66	64	58	63	61	54	61	59	51
			Exposed	98	89	80	92	85	76	87	81	73	82	77	70	79	74	67	75	71	64	72	68	62	67	64	59	63	61	54	60	58	50	57	54	58	53	51	54	50	59	50
10	B	0-7	Interior	91	91	91	91	91	91	91	91	91	91	91	91	91	91	91	91	91	88	91	91	84	91	90	78	91	84	73	91	79	68	85	74	65	81	71	62	77	67	60
			Exposed	91	91	91	91	91	87	91	91	82	91	91	79	91	87	75	91	84	72	91	80	70	86	75	65	80	70	62	75	66	59	71	63	55	68	60	52	64	58	59
		7-20	Interior	91	91	91	91	91	91	91	91	91	91	91	91	91	91	88	91	91	84	91	88	81	91	81	74	87	76	69	82	71	65	78	66	62	74	63	59	71	61	57
			Exposed	91	91	88	91	91	83	91	86	79	91	82	75	90	78	72	87	75	69	84	72	66	78	67	62	74	63	59	70	60	55	66	57	52	63	53	59	61	50	56
		20-27	Interior	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	95	100	97	90	100	89	83	99	82	77	93	77	71	88	72	67	83	68	63	79	65	60
			Exposed	100	100	100	100	100	93	100	94	88	100	90	84	100	86	80	99	82	76	94	78	73	88	73	67	83	68	63	78	64	60	74	61	56	71	59	52	68	55	49
		27-45	Interior	102	102	102	102	102	102	102	102	102	102	102	102	102	102	102	102	102	99	102	102	95	102	98	88	99	91	82	92	85	76	86	80	72	80	75	68	76	71	65
			Exposed	102	102	102	102	102	98	102	102	93	102	99	89	102	94	85	98	90	81	94	86	78	86	80	72	80	75	67	74	70	64	70	66	61	66	63	58	63	61	54
	C	0-7	Interior	91	91	91	91	91	90	91	91	85	91	91	81	91	90	78	91	86	75	91	83	72	89	77	67	83	72	63	78	68	60	73	64	57	70	62	54	66	59	51
			Exposed	91	90	78	91	85	74	91	81	70	90	78	67	86	75	65	82	72	63	79	69	61	74	65	57	69	61	53	65	59	60	62	55	57	60	52	53	57	59	50
		7-20	Interior	91	91	91	91	91	86	91	90	82	91	85	78	91	81	74	89	78	71	86	74	68	80	69	64	76	64	61	72	61	57	68	59	54	65	55	50	62	52	58
			Exposed	91	81	74	88	77	70	84	73	67	81	70	64	78	67	62	75	64	60	73	62	59	68	59	54	64	55	50	61	51	57	59	59	53	55	55	50	52	52	~~47~~
		20-27	Interior	100	100	100	100	100	97	100	98	92	100	93	87	100	89	83	100	85	79	98	81	75	91	75	70	85	70	65	80	65	61	76	63	58	73	60	54	69	57	51
			Exposed	100	88	82	100	84	78	96	79	74	91	76	70	88	72	67	85	69	64	82	67	62	77	63	58	72	60	53	68	56	49	65	52	57	62	60	53	60	57	49
		27-45	Interior	102	102	102	102	102	102	102	102	96	102	102	92	102	97	88	102	93	84	97	89	80	89	83	75	82	77	70	77	72	65	72	68	62	68	65	59	64	62	56
			Exposed	102	97	87	101	92	83	95	87	79	90	83	75	86	80	72	82	77	69	78	74	67	72	68	62	67	64	59	64	61	55	61	59	51	58	55	59	55	52	55
	D	0-7	Interior	91	91	87	91	91	82	91	91	79	91	87	75	91	83	72	91	80	69	88	77	67	82	72	63	77	67	60	72	64	56	68	61	52	65	58	60	62	55	57
			Exposed	91	83	72	91	79	68	87	75	65	83	72	63	79	69	61	76	67	59	73	65	57	68	61	53	64	58	59	61	54	56	59	50	52	55	58	49	52	55	~~46~~
		7-20	Interior	91	91	84	91	87	79	91	82	75	90	78	72	86	75	68	83	71	66	80	69	64	75	64	60	71	61	56	67	58	53	64	54	60	61	51	57	59	59	53
			Exposed	86	74	68	82	71	65	79	67	63	76	65	61	73	62	59	70	61	56	68	59	54	64	54	60	61	50	56	58	58	52	54	54	49	51	51	46	59	48	~~42~~
		20-27	Interior	101	100	94	101	95	88	101	90	84	101	85	79	98	81	76	94	78	72	90	75	69	84	69	64	79	65	60	75	62	57	71	59	53	68	56	49	65	53	57
			Exposed	98	81	75	93	77	71	89	73	68	85	70	65	82	67	62	79	64	60	76	63	58	72	59	53	67	55	48	64	51	56	61	59	51	59	56	47	55	52	~~42~~
		27-45	Interior	103	103	98	103	103	93	103	98	88	103	94	84	98	90	81	93	86	77	89	82	74	82	76	69	76	71	65	71	67	61	66	64	58	63	61	54	61	59	51
			Exposed	98	89	80	92	85	76	87	81	73	82	77	70	79	74	67	75	71	64	72	68	62	67	64	59	63	61	54	60	58	50	57	54	58	53	51	54	50	59	50
20	B	0-7	Interior	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78	73	78	78	68	78	74	65	78	71	62	77	67	60
			Exposed	78	78	78	78	78	78	78	78	78	78	78	78	78	78	75	78	78	72	78	78	70	78	75	65	78	70	62	75	66	59	71	63	55	68	60	52	64	58	59
		7-20	Interior	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78	74	78	76	69	78	71	65	78	66	62	74	63	59	71	61	57
			Exposed	78	78	78	78	78	78	78	78	78	78	78	75	78	78	72	78	75	69	78	72	66	78	67	62	74	63	59	70	60	55	66	57	52	63	53	59	61	50	56
		20-27	Interior	92	92	92	92	92	92	92	92	92	92	92	92	92	92	92	92	92	92	92	92	90	92	89	83	92	82	77	92	77	71	88	72	67	83	68	63	79	65	60
			Exposed	92	92	92	92	92	92	92	92	88	92	90	84	92	86	80	92	82	76	92	78	73	88	73	67	83	68	63	78	64	60	74	61	56	71	59	52	68	55	49
		27-45	Interior	96	96	96	96	96	96	96	96	96	96	96	96	96	96	96	96	96	96	96	96	95	96	96	88	96	91	82	92	85	76	86	80	72	80	75	68	76	71	65
			Exposed	96	96	96	96	96	96	96	96	93	96	96	89	96	94	85	96	90	81	94	86	78	86	80	72	80	75	67	74	70	64	70	66	61	66	63	58	63	61	54
	C	0-7	Interior	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78	75	78	78	72	78	77	67	78	72	63	78	68	60	73	64	57	70	62	54	66	59	51
			Exposed	78	78	78	78	78	74	78	78	70	78	78	67	78	75	65	78	72	63	78	69	61	74	65	57	69	61	53	65	59	60	62	55	57	60	52	53	57	59	50
		7-20	Interior	78	78	78	78	78	78	78	78	78	78	78	78	78	78	74	78	78	71	78	74	68	78	69	64	76	64	61	72	61	57	68	59	54	65	55	50	62	52	58
			Exposed	78	78	74	78	77	70	78	73	67	78	70	64	78	67	62	75	64	60	73	62	59	68	59	54	64	55	50	61	51	57	59	59	53	55	55	50	52	52	~~47~~
		20-27	Interior	92	92	92	92	92	92	92	92	92	92	92	87	92	89	83	92	85	79	92	81	75	91	75	70	85	70	65	80	65	61	76	63	58	73	60	54	69	57	51
			Exposed	92	88	82	92	84	78	92	79	74	91	76	70	88	72	67	85	69	64	82	67	62	77	63	58	72	60	53	68	56	49	65	52	57	62	60	53	60	57	49
		27-45	Interior	96	96	96	96	96	96	96	96	96	96	96	92	96	96	88	96	93	84	96	89	80	89	83	75	82	77	70	77	72	65	72	68	62	68	65	59	64	62	56
			Exposed	96	96	87	96	92	83	95	87	79	90	83	75	86	80	72	82	77	69	78	74	67	72	68	62	67	64	59	64	61	55	61	59	51	58	55	59	55	52	55
	D	0-7	Interior	78	78	78	78	78	78	78	78	78	78	78	75	78	78	72	78	78	69	78	77	67	78	72	63	77	67	60	72	64	56	68	61	52	65	58	60	62	55	57
			Exposed	78	78	72	78	78	68	78	75	65	78	72	63	78	69	61	76	67	59	73	65	57	68	61	53	64	58	59	61	54	56	59	50	52	55	58	49	52	55	~~46~~
		7-20	Interior	78	78	78	78	78	78	78	78	75	78	78	72	78	75	68	78	71	66	78	69	64	75	64	60	71	61	56	67	58	53	64	54	60	61	51	57	59	59	53
			Exposed	78	74	68	78	71	65	78	67	63	76	65	61	73	62	59	70	61	56	68	59	54	64	54	60	61	50	56	58	58	52	54	54	49	51	51	46	59	48	~~42~~
		20-27	Interior	94	94	94	94	94	88	94	90	84	94	85	79	94	81	76	94	78	72	90	75	69	84	69	64	79	65	60	75	62	57	71	59	53	68	56	49	65	53	57
			Exposed	94	81	75	93	77	71	89	73	68	85	70	65	82	67	62	79	64	60	76	63	58	72	59	53	67	55	48	64	51	56	61	59	51	59	56	47	55	52	~~42~~
		27-45	Interior	97	97	97	97	97	93	97	97	88	97	94	84	97	90	81	93	86	77	89	82	74	82	76	69	76	71	65	71	67	61	66	64	58	63	61	54	61	59	51
			Exposed	97	89	80	92	85	76	87	81	73	82	77	70	79	74	67	75	71	64	72	68	62	67	64	59	63	61	54	60	58	50	57	54	58	53	51	54	50	59	50

* Cells with an astrisks indicates that the L-foot must be oriented in the Y- direction as indicated in the image.

10 Highlighted cell indicate 3-rail system span. Contact Unirac Engineering Services for support.

~~10~~ Highlighted cell with strikethrough indicate 3-rail system span and module clamp allowable capacity exceeds with 3-rails. 4-Rail system required. Contact Unirac Engineering Services for support.

UNIRAC

ASCE 7-16	II	30 ft	Ss = 3.00	19 sq.ft	LANDSCAPE	CROSS-SLOPE	NXT	NXT COMBO	Flashkit Pro
Design Standard	Risk Category	Roof Height	Seismic	Module Area	Orientation	Rail Direction	Rail Type	Clamp	Attachment

SPAN TABLES

Maximum Allowable Rail Spans for Rooftop Solar Panels Parallel to the Roof Surface (inches)

Ground Snow Load (psf)	Wind Exposure Category	Roof Tilt Angle (deg)	Panel Exposure	Basic Wind Speed (mph)																																						
				90			95			100			105			110			115			120			130			140			150			160			170			180		
				Roof Wind Zone																																						
				1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3
30	B	0-7	Interior	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	73	77	77	68	77	74	65	77	71	62	77	67	60
			Exposed	77	77	77	77	77	77	77	77	77	77	77	77	77	77	75	77	77	72	77	77	70	77	75	65	77	70	62	75	66	59	71	63	55	68	60	52	64	58	59
		7-20	Interior	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78	74	78	76	69	78	71	65	78	66	62	74	63	59	71	61	57
			Exposed	78	78	78	78	78	78	78	78	78	78	78	75	78	78	72	78	75	69	78	72	66	78	67	62	74	63	59	70	60	55	66	57	52	63	53	59	61	50	56
		20-27	Interior	86	86	86	86	86	86	86	86	86	86	86	86	86	86	86	86	86	86	86	86	86	86	86	83	86	82	77	86	77	71	86	72	67	83	68	63	79	65	60
			Exposed	86	86	86	86	86	86	86	86	86	86	86	84	86	86	80	86	82	76	86	78	73	86	73	67	83	68	63	78	64	60	74	61	56	71	59	52	68	55	49
		27-45	Interior	90	90	90	90	90	90	90	90	90	90	90	90	90	90	90	90	90	90	90	90	90	90	90	88	90	90	82	90	85	76	86	80	72	80	75	68	76	71	65
			Exposed	90	90	90	90	90	90	90	90	90	90	90	89	90	90	85	90	90	81	90	86	78	86	80	72	80	75	67	74	70	64	70	66	61	66	63	58	63	61	54
	C	0-7	Interior	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	75	77	77	72	77	77	67	77	72	63	77	68	60	73	64	57	70	62	54	66	59	51
			Exposed	77	77	77	77	77	74	77	77	70	77	77	67	77	77	75	65	77	72	63	77	69	61	74	65	57	69	61	53	65	59	60	62	55	57	60	52	53	57	59	50
		7-20	Interior	78	78	78	78	78	78	78	78	78	78	78	78	78	78	74	78	78	71	78	74	68	78	69	64	76	64	61	72	61	57	68	59	54	65	55	50	62	52	58
			Exposed	78	78	74	78	77	70	78	73	67	78	70	64	78	67	62	75	64	60	73	62	59	68	59	54	64	55	50	61	51	57	59	59	53	55	55	50	52	52	~~47~~
		20-27	Interior	86	86	86	86	86	86	86	86	86	86	86	86	86	86	83	86	85	79	86	81	75	86	75	70	85	70	65	80	65	61	76	63	58	73	60	54	69	57	51
			Exposed	86	86	82	86	84	78	86	79	74	86	76	70	86	72	67	85	69	64	82	67	62	77	63	58	72	60	53	68	56	49	65	52	57	62	60	53	60	57	49
		27-45	Interior	90	90	90	90	90	90	90	90	90	90	90	90	90	90	88	90	90	84	90	89	80	89	83	75	82	77	70	77	72	65	72	68	62	68	65	59	64	62	56
			Exposed	90	90	87	90	90	83	90	87	79	90	83	75	86	80	72	82	77	69	78	74	67	72	68	62	67	64	59	64	61	55	61	59	51	58	55	59	55	52	55
	D	0-7	Interior	78	78	78	78	78	78	78	78	78	78	78	75	78	78	72	78	78	69	78	77	67	78	72	63	77	67	60	72	64	56	68	61	52	65	58	60	62	55	57
			Exposed	78	78	72	78	78	68	78	75	65	78	72	63	78	69	61	76	67	59	73	65	57	68	61	53	64	58	59	61	54	56	59	50	52	55	58	49	52	55	~~46~~
		7-20	Interior	78	78	78	78	78	78	78	78	75	78	78	72	78	75	68	78	71	66	78	69	64	75	64	60	71	61	56	67	58	53	64	54	60	61	51	57	59	59	53
			Exposed	78	74	68	78	71	65	78	67	63	76	65	61	73	62	59	70	61	56	68	59	54	64	54	60	61	50	56	58	58	52	54	54	49	51	51	46	59	48	~~42~~
		20-27	Interior	88	88	88	88	88	88	88	88	84	88	85	79	88	81	76	88	78	72	88	75	69	84	69	64	79	65	60	75	62	57	71	59	53	68	56	49	65	53	57
			Exposed	88	81	75	88	77	71	88	73	68	85	70	65	82	67	62	79	64	60	76	63	58	72	59	53	67	55	48	64	51	56	61	59	51	59	56	47	55	52	~~42~~
		27-45	Interior	92	92	92	92	92	92	92	92	88	92	92	84	92	90	81	92	86	77	89	82	74	82	76	69	76	71	65	71	67	61	66	64	58	63	61	54	61	59	51
			Exposed	92	89	80	92	85	76	87	81	73	82	77	70	79	74	67	75	71	64	72	68	62	67	64	59	63	61	54	60	58	50	57	54	58	53	51	54	50	59	50
40	B	0-7	Interior	70	70	70	70	70	70	70	70	70	70	70	70	70	70	70	70	70	70	70	70	70	70	70	70	70	70	70	70	70	68	70	70	65	70	70	62	70	67	60
			Exposed	70	70	70	70	70	70	70	70	70	70	70	70	70	70	70	70	70	70	70	70	70	70	70	65	70	70	62	70	66	59	70	63	55	68	60	52	64	58	59
		7-20	Interior	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	69	72	71	65	72	66	62	72	63	59	71	61	57
			Exposed	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	69	72	72	66	72	67	62	72	63	59	70	60	55	66	57	52	63	53	59	61	50	56
		20-27	Interior	80	80	80	80	80	80	80	80	80	80	80	80	80	80	80	80	80	80	80	80	80	80	80	80	80	80	77	80	77	71	80	72	67	80	68	63	79	65	60
			Exposed	80	80	80	80	80	80	80	80	80	80	80	80	80	80	80	80	80	76	80	78	73	80	73	67	80	68	63	78	64	60	74	61	56	71	59	52	68	55	49
		27-45	Interior	86	86	86	86	86	86	86	86	86	86	86	86	86	86	86	86	86	86	86	86	86	86	86	86	86	86	82	85	85	76	82	80	72	80	75	68	76	71	65
			Exposed	86	86	86	86	86	86	86	86	86	86	86	86	86	86	85	86	86	81	86	86	78	86	80	72	80	75	67	74	70	64	70	66	61	66	63	58	63	61	54
	C	0-7	Interior	70	70	70	70	70	70	70	70	70	70	70	70	70	70	70	70	70	70	70	70	70	70	70	67	70	70	63	70	68	60	70	64	57	70	62	54	66	59	51
			Exposed	70	70	70	70	70	70	70	70	70	70	70	67	70	70	65	70	70	63	70	69	61	70	65	57	69	61	53	65	59	60	62	55	57	60	52	53	57	59	50
		7-20	Interior	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	71	72	72	68	72	69	64	72	64	61	72	61	57	68	59	54	65	55	50	62	52	58
			Exposed	72	72	72	72	72	70	72	72	67	72	70	64	72	67	62	72	64	60	72	62	59	68	59	54	64	55	50	61	51	57	59	59	53	55	55	50	52	52	~~47~~
		20-27	Interior	80	80	80	80	80	80	80	80	80	80	80	80	80	80	80	80	80	79	80	80	75	80	75	70	80	70	65	80	65	61	76	63	58	73	60	54	69	57	51
			Exposed	80	80	80	80	80	78	80	79	74	80	76	70	80	72	67	80	69	64	80	67	62	77	63	58	72	60	53	68	56	49	65	52	57	62	60	53	60	57	49
		27-45	Interior	86	86	86	86	86	86	86	86	86	86	86	86	86	86	86	86	86	84	86	86	80	84	83	75	81	77	70	77	72	65	72	68	62	68	65	59	64	62	56
			Exposed	86	86	86	86	86	83	86	86	79	86	83	75	86	80	72	82	77	69	78	74	67	72	68	62	67	64	59	64	61	55	61	59	51	58	55	59	55	52	55
	D	0-7	Interior	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	69	72	72	67	72	72	63	72	67	60	72	64	56	68	61	52	65	58	60	62	55	57
			Exposed	72	72	72	72	72	68	72	72	65	72	72	63	72	69	61	72	67	59	72	65	57	68	61	53	64	58	59	61	54	56	59	50	52	55	58	49	52	55	~~46~~
		7-20	Interior	75	75	75	75	75	75	75	75	75	75	75	72	75	75	68	75	71	66	75	69	64	75	64	60	71	61	56	67	58	53	64	54	60	61	51	57	59	59	53
			Exposed	75	74	68	75	71	65	75	67	63	75	65	61	73	62	59	70	61	56	68	59	54	64	54	60	61	50	56	58	58	52	54	54	49	51	51	46	59	48	~~42~~
		20-27	Interior	82	82	82	82	82	82	82	82	82	82	82	79	82	81	76	82	78	72	82	75	69	82	69	64	79	65	60	75	62	57	71	59	53	68	56	49	65	53	57
			Exposed	82	81	75	82	77	71	82	73	68	82	70	65	82	67	62	79	64	60	76	63	58	72	59	53	67	55	48	64	51	56	61	59	51	59	56	47	55	52	~~42~~
		27-45	Interior	88	88	88	88	88	88	88	88	88	88	88	84	88	88	81	88	86	77	86	82	74	82	76	69	76	71	65	71	67	61	66	64	58	63	61	54	61	59	51
			Exposed	88	88	80	88	85	76	87	81	73	82	77	70	79	74	67	75	71	64	72	68	62	67	64	59	63	61	54	60	58	50	57	54	58	53	51	54	50	59	50
50	B	0-7	Interior	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	62	63	63	60
			Exposed	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	62	63	63	59	63	63	55	63	60	52	63	58	59
		7-20	Interior	66	66	66	66	66	66	66	66	66	66	66	66	66	66	66	66	66	66	66	66	66	66	66	66	66	66	66	66	66	65	66	66	62	66	63	59	66	61	57
			Exposed	66	66	66	66	66	66	66	66	66	66	66	66	66	66	66	66	66	66	66	66	66	66	66	62	66	63	59	66	60	55	66	57	52	63	53	59	61	50	56
		20-27	Interior	74	74	74	74	74	74	74	74	74	74	74	74	74	74	74	74	74	74	74	74	74	74	74	74	74	74	74	74	74	71	74	72	67	74	68	63	74	65	60
			Exposed	74	74	74	74	74	74	74	74	74	74	74	74	74	74	74	74	74	74	74	74	73	74	73	67	74	68	63	74	64	60	74	61	56	71	59	52	68	55	49
		27-45	Interior	80	80	80	80	80	80	80	80	80	80	80	80	80	80	80	80	80	80	80	80	80	80	80	80	80	80	80	79	79	76	77	77	72	75	75	68	73	71	65
			Exposed	80	80	80	80	80	80	80	80	80	80	80	80	80	80	80	80	80	80	80	80	78	80	80	72	80	75	67	74	70	64	70	66	61	66	63	58	63	61	54
	C	0-7	Interior	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	60	63	63	57	63	62	54	63	59	51
			Exposed	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	61	63	63	57	63	61	53	63	59	60	62	55	57	60	52	53	57	59	50
		7-20	Interior	66	66	66	66	66	66	66	66	66	66	66	66	66	66	66	66	66	66	66	66	66	66	66	64	66	64	61	66	61	57	65	59	54	64	55	50	62	52	58
			Exposed	66	66	66	66	66	66	66	66	66	66	66	64	66	66	62	66	64	60	66	62	59	66	59	54	64	55	50	61	51	57	59	59	53	55	55	50	52	52	~~47~~
		20-27	Interior	74	74	74	74	74	74	74	74	74	74	74	74	74	74	74	74	74	74	74	74	74	74	74	70	74	70	65	74	65	61	73	63	58	72	60	54	69	57	51
			Exposed	74	74	74	74	74	74	74	74	74	74	74	70	74	72	67	74	69	64	74	67	62	74	63	58	72	60	53	68	56	49	65	52	57	62	60	53	60	57	49
		27-45	Interior	80	80	80	80	80	80	80	80	80	80	80	80	80	80	80	80	80	80	80	80	80	78	78	75	76	76	70	73	72	65	71	68	62	68	65	59	64	62	56
			Exposed	80	80	80	80	80	80	80	80	79	80	80	75	80	80	72	80	77	69	78	74	67	72	68	62	67	64	59	64	61	55	61	59	51	58	55	59	55	52	55
	D	0-7	Interior	66	66	66	66	66	66	66	66	66	66	66	66	66	66	66	66	66	66	66	66	66	66	66	63	66	66	60	66	64	56	66	61	52	65	58	60	62	55	57
			Exposed	66	66	66	66	66	66	66	66	65	66	66	63	66	66	61	66	66	59	66	65	57	66	61	53	64	58	59	61	54	56	59	50	52	55	58	49	52	55	~~46~~
		7-20	Interior	69	69	69	69	69	69	69	69	69	69	69	69	69	69	68	69	69	66	69	69	64	69	64	60	69	61	56	67	58	53	64	54	60	61	51	57	59	59	53
			Exposed	69	69	68	69	69	65	69	67	63	69	65	61	69	62	59	69	61	56	68	59	54	64	54	60	61	50	56	58	58	52	54	54	49	51	51	46	59	48	~~42~~
		20-27	Interior	77	77	77	77	77	77	77	77	77	77	77	77	77	77	76	77	77	72	77	75	69	77	69	64	77	65	60	75	62	57	71	59	53	68	56	49	65	53	57
			Exposed	77	77	75	77	77	71	77	73	68	77	70	65	77	67	62	77	64	60	76	63	58	72	59	53	67	55	48	64	51	56	61	59	51	59	56	47	55	52	~~42~~
		27-45	Interior	83	83	83	83	83	83	83	83	83	83	83	83	83	83	81	82	82	77	81	81	74	78	76	69	75	71	65	71	67	61	66	64	58	63	61	54	61	59	51
			Exposed	83	83	80	83	83	76	83	81	73	82	77	70	79	74	67	75	71	64	72	68	62	67	64	59	63	61	54	60	58	50	57	54	58	53	51	54	50	59	50

* Cells with an astrisks indicates that the L-foot must be oriented in the Y- direction as indicated in the image.

10 Highlighted cell indicate 3-rail system span. Contact Unirac Engineering Services for support.

~~10~~ Highlighted cell with strikethrough indicate 3-rail system span and module clamp allowable capacity exceeds with 3-rails. 4-Rail system required. Contact Unirac Engineering Services for support.

UNIRAC

ASCE 7-16	II	30 ft	Ss = 3.00	19 sq.ft	LANDSCAPE	CROSS-SLOPE	NXT	NXT COMBO	Flashkit Pro
Design Standard	Risk Category	Roof Height	Seismic	Module Area	Orientation	Rail Direction	Rail Type	Clamp	Attachment

SPAN TABLES

Maximum Allowable Rail Spans for Rooftop Solar Panels Parallel to the Roof Surface (inches)

Ground Snow Load (psf)	Wind Exposure Category	Roof Tilt Angle (deg)	Panel Exposure	Basic Wind Speed (mph)																																						
				90			95			100			105			110			115			120			130			140			150			160			170			180		
				Roof Wind Zone																																						
				1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3
60	B	0-7	Interior	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58
			Exposed	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	55	58	58	52	58	58	59
		7-20	Interior	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	59	60	60	57
			Exposed	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	59	60	60	55	60	57	52	60	53	59	60	50	56
		20-27	Interior	70	70	70	70	70	70	70	70	70	70	70	70	70	70	70	70	70	70	70	70	70	70	70	70	70	70	70	70	70	70	70	70	67	70	68	63	69	65	60
			Exposed	70	70	70	70	70	70	70	70	70	70	70	70	70	70	70	70	70	70	70	70	70	70	70	67	70	68	63	70	64	60	70	61	56	70	59	52	68	55	49
		27-45	Interior	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	74	74	74	72	72	72	71	71	68	69	69	65
			Exposed	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	72	76	75	67	74	70	64	70	66	61	66	63	58	63	61	54
	C	0-7	Interior	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	57	58	58	54	58	58	51
			Exposed	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	53	58	58	53	58	58	60	58	55	57	58	52	53	57	59	50
		7-20	Interior	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	57	60	59	54	60	55	50	59	52	58
			Exposed	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	59	60	59	54	60	55	50	60	51	57	59	59	53	55	55	50	52	52	47
		20-27	Interior	70	70	70	70	70	70	70	70	70	70	70	70	70	70	70	70	70	70	70	70	70	70	70	70	70	70	65	70	65	61	68	63	58	67	60	54	66	57	51
			Exposed	70	70	70	70	70	70	70	70	70	70	70	70	70	70	67	70	69	64	70	67	62	70	63	58	70	60	53	68	56	49	65	52	57	62	60	53	60	57	49
		27-45	Interior	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	74	74	74	71	71	70	69	69	65	67	67	62	65	65	59	63	62	56
			Exposed	76	76	76	76	76	76	76	76	76	76	75	76	76	72	76	76	69	76	74	67	72	68	62	67	64	59	64	61	55	61	59	51	58	55	59	55	52	55
	D	0-7	Interior	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	60	61	61	56	61	61	52	61	58	60	61	55	57
			Exposed	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	59	61	61	57	61	61	53	61	58	59	61	54	56	59	50	52	55	58	49	52	55	46
		7-20	Interior	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	60	64	61	56	63	58	53	62	54	60	61	51	57	59	59	53
			Exposed	64	64	64	64	64	64	64	64	63	64	64	61	64	62	59	64	61	56	64	59	54	64	54	60	61	50	56	58	58	52	54	54	49	51	51	46	59	48	42
		20-27	Interior	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	69	72	69	64	72	65	60	71	62	57	69	59	53	68	56	49	65	53	57
			Exposed	72	72	72	72	72	71	72	72	68	72	70	65	72	67	62	72	64	60	72	63	58	72	59	53	67	55	48	64	51	56	61	59	51	59	56	47	55	52	42
		27-45	Interior	79	79	79	79	79	79	79	79	79	79	79	79	78	78	78	77	77	77	76	76	74	74	74	69	71	71	65	68	67	61	66	64	58	63	61	54	61	59	51
			Exposed	79	79	79	79	79	76	79	79	73	79	77	70	78	74	67	75	71	64	72	68	62	67	64	59	63	61	54	60	58	50	57	54	58	53	51	54	50	59	50
70	B	0-7	Interior	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54
			Exposed	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	52	54	54	59
		7-20	Interior	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56
			Exposed	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	55	56	56	52	56	53	59	56	50	56
		20-27	Interior	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	63	65	65	60
			Exposed	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	63	65	64	60	65	61	56	65	59	52	65	55	49
		27-45	Interior	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	70	70	70	69	69	69	67	67	67	66	66	65
			Exposed	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	67	70	70	64	69	66	61	66	63	58	63	61	54
	C	0-7	Interior	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	51
			Exposed	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	53	54	54	53	54	54	60	54	54	57	54	52	53	54	59	50
		7-20	Interior	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	54	56	55	50	56	52	58
			Exposed	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	54	56	55	50	56	51	57	56	59	53	55	55	50	52	52	47
		20-27	Interior	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	61	65	63	58	64	60	54	63	57	51
			Exposed	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	64	65	65	62	65	63	58	65	60	53	65	56	49	65	52	57	62	60	53	60	57	49
		27-45	Interior	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	71	71	71	70	70	70	68	68	68	66	66	65	64	64	62	63	63	59	61	61	56
			Exposed	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	69	71	71	67	70	68	62	67	64	59	64	61	55	61	59	51	58	55	59	55	52	55
	D	0-7	Interior	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	56	57	57	52	57	57	60	57	55	57
			Exposed	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	53	57	57	59	57	54	56	57	50	52	55	58	49	52	55	46
		7-20	Interior	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	56	59	58	53	59	54	60	58	51	57	57	59	53
			Exposed	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	56	59	59	54	59	54	60	59	50	56	58	58	52	54	54	49	51	51	46	59	48	42
		20-27	Interior	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	64	68	65	60	67	62	57	65	59	53	64	56	49	63	53	57
			Exposed	69	69	69	69	69	69	69	69	68	69	69	65	69	67	62	69	64	60	69	63	58	69	59	53	67	55	48	64	51	56	61	59	51	59	56	47	55	52	42
		27-45	Interior	75	75	75	75	75	75	75	75	75	75	75	75	74	74	74	73	73	73	72	72	72	70	70	69	68	68	65	65	65	61	64	64	58	62	61	54	60	59	51
			Exposed	75	75	75	75	75	75	75	75	73	75	75	70	74	74	67	73	71	64	72	68	62	67	64	59	63	61	54	60	58	50	57	54	58	53	51	54	50	59	50
80	B	0-7	Interior	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51
			Exposed	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	59
		7-20	Interior	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53
			Exposed	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	52	53	53	59	53	50	56
		20-27	Interior	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	60
			Exposed	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	60	61	61	56	61	59	52	61	55	49
		27-45	Interior	76*	76*	76*	76*	76*	76*	76*	76*	76*	76*	76*	76*	76*	76*	76*	76*	76*	76*	76*	76*	76*	76*	76*	76*	75*	75*	75*	74*	74*	74*	75*	75*	66	77*	64	64	63	63	63
			Exposed	76*	76*	76*	76*	76*	76*	76*	76*	76*	76*	76*	76*	76*	76*	76*	76*	76*	76*	76*	76*	76*	76*	76*	69	75*	75*	67	74*	67	64	66	66	61	64	63	58	63	61	54
	C	0-7	Interior	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51
			Exposed	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	60	51	51	57	51	51	53	51	59	50
		7-20	Interior	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	50	53	52	58
			Exposed	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	50	53	51	57	53	59	53	53	55	50	52	52	47
		20-27	Interior	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	58	61	60	54	60	57	51
			Exposed	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	58	61	60	53	61	56	49	61	52	57	61	60	53	60	57	49
		27-45	Interior	76*	76*	76*	76*	76*	76*	76*	76*	76*	76*	76*	76*	76*	76*	76*	76*	76*	76*	75*	75*	75*	73*	73*	73*	78*	77*	65	63	63	63	62	62	62	60	60	59	59	59	56
			Exposed	76*	76*	76*	76*	76*	76*	76*	76*	76*	76*	75*	76*	76*	69	76*	76*	69	75*	74*	67	66	66	62	65	64	59	63	61	55	61	59	51	58	55	59	55	52	55
	D	0-7	Interior	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	52	53	53	60	53	53	57
			Exposed	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	59	53	53	56	53	53	50	52	53	58	49	52	55	46		
		7-20	Interior	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	53	55	54	60	55	51	57	54	59	53			
			Exposed	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	54	55	54	60	55	50	56	55	58	52	54	54	49	51	51	46	59	48	42
		20-27	Interior	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	60	64	62	57	63	59	53	61	56	49	60	53	57
			Exposed	64	64	64	64	64	64	64	64	64	64	64	64	64	62	64	64	60	64	63	58	64	59	53	64	55	48	64	51	56	61	59	51	59	56	47	55	52	42	
		27-45	Interior	82*	82*	82*	82*	82*	82*	82*	82*	82*	82*	82*	82*	82*	71	84*	84*	70	69	69	69	67	67	67	65	65	65	63	63	63	61	61	61	58	60	60	54	58	58	51
			Exposed	82*	82*	72	82*	82*	72	82*	72	72	82*	72	70	71	71	67	70	70	64	69	68	62	67	64	59	63	61	54	60	58	50	57	54	58	53	51	54	50	59	50

* Cells with an astrisks indicates that the L-foot must be oriented in the Y- direction as indicated in the image.

10 Highlighted cell indicate 3-rail system span. Contact Unirac Engineering Services for support.

~~10~~ Highlighted cell with strikethrough indicate 3-rail system span and module clamp allowable capacity exceeds with 3-rails. 4-Rail system required. Contact Unirac Engineering Services for support.

UNIRAC

ASCE 7-16	II	30 ft	Ss = 3.00	19 sq.ft	LANDSCAPE	CROSS-SLOPE	NXT	NXT COMBO	Flashkit Pro
Design Standard	Risk Category	Roof Height	Seismic	Module Area	Orientation	Rail Direction	Rail Type	Clamp	Attachment

SPAN TABLES

Maximum Allowable Rail Spans for Rooftop Solar Panels Parallel to the Roof Surface (inches)

Ground Snow Load (psf)	Wind Exposure Category	Roof Tilt Angle (deg)	Panel Exposure	Basic Wind Speed (mph)																																								
				90			95			100			105			110			115			120			130			140			150			160			170			180		
				Roof Wind Zone																																								
				1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3
90	B	0-7	Interior	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48
			Exposed	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	59
		7-20	Interior	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50
			Exposed	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	59	50	50	56		
		20-27	Interior	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58
			Exposed	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	56	58	58	52	58	55	49					
		27-45	Interior	69*	69*	69*	69*	69*	69*	69*	69*	69*	69*	69*	69*	69*	69*	69*	69*	69*	69*	69*	69*	69*	69*	69*	69*	69*	69*	69*	67*	67*	67*	66*	66*	66*	65*	65*	65*	66*	66*	61		
			Exposed	69*	69*	69*	69*	69*	69*	69*	69*	69*	69*	69*	69*	69*	69*	69*	69*	69*	69*	69*	69*	69*	69*	69*	69*	69*	69*	68*	67*	67*	64	66*	66*	61	65*	62	58	61	61	54		
	C	0-7	Interior	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48
			Exposed	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	59	48	48	57	48	48	53	48	59	50		
		7-20	Interior	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	58		
			Exposed	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	57	50	59	53	50	55	50	50	52	47		
		20-27	Interior	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	54	57	57	51		
			Exposed	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	53	58	56	49	58	52	57	58	60	53	57	57	49		
		27-45	Interior	69*	69*	69*	69*	69*	69*	69*	69*	69*	69*	69*	69*	69*	69*	69*	69*	69*	69*	68*	68*	68*	67*	67*	67*	65*	65*	65*	66*	66*	61	67*	67*	60	58	58	58	57	57	56		
			Exposed	69*	69*	69*	69*	69*	69*	69*	69*	69*	69*	69*	69*	69*	69*	69*	69*	69*	69*	68*	68*	67*	67*	67*	62	65*	62	59	61	61	55	60	59	51	58	55	59	55	52	55		
	D	0-7	Interior	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	60	50	50	57		
			Exposed	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	59	50	50	56	50	50	52	50	58	49	50	55	46					
		7-20	Interior	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	60	52	51	57	52	59	53		
			Exposed	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	60	52	50	56	52	58	52	52	54	49	51	51	46	59	48	42		
		20-27	Interior	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	60	61	61	57	60	59	53	59	56	49	58	53	57		
			Exposed	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	60	61	61	58	61	59	53	61	55	48	61	51	56	60	59	51	59	56	47	55	52	42		
		27-45	Interior	72*	72*	72*	72*	72*	72*	72*	72*	72*	72*	72*	72*	75*	75*	75*	74*	74*	74*	73*	73*	73*	74*	74*	64	63	63	63	61	61	61	60	60	58	58	58	54	57	57	51		
			Exposed	72*	72*	72*	72*	72*	72*	72*	72*	72*	72*	72*	68	75*	74*	67	74*	67	64	72*	66	62	64	64	59	63	61	54	60	58	50	57	54	58	53	51	54	50	59	50		
100	B	0-7	Interior	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45
			Exposed	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	56		
		7-20	Interior	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47		
			Exposed	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	58	47	47	56		
		20-27	Interior	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55		
			Exposed	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	52	55	55	49		
		27-45	Interior	62*	62*	62*	62*	62*	62*	62*	62*	62*	62*	62*	62*	62*	62*	62*	62*	62*	62*	62*	62*	62*	62*	62*	62*	62*	62*	62*	62*	62*	62*	61*	61*	61*	60*	60*	60*	61*	61*	61*		
			Exposed	62*	62*	62*	62*	62*	62*	62*	62*	62*	62*	62*	62*	62*	62*	62*	62*	62*	62*	62*	62*	62*	62*	62*	62*	62*	62*	62*	62*	62*	62*	61*	61*	61*	60*	60*	58	61*	61*	54		
	C	0-7	Interior	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45
			Exposed	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	56	45	45	56	45	45	53	45	56	50		
		7-20	Interior	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	58		
			Exposed	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	57	47	58	53	47	55	50	47	52	47		
		20-27	Interior	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	54	55	55	51		
			Exposed	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	53	55	55	49	55	52	57	55	60	53	55	57	49		
		27-45	Interior	62*	62*	62*	62*	62*	62*	62*	62*	62*	62*	62*	62*	62*	62*	62*	62*	62*	62*	62*	62*	62*	62*	62*	62*	60*	60*	60*	62*	62*	62*	60*	60*	60*	59*	59*	59*	60*	60*	56		
			Exposed	62*	62*	62*	62*	62*	62*	62*	62*	62*	62*	62*	62*	62*	62*	62*	62*	62*	62*	62*	62*	62*	62*	62*	62*	60*	60*	59*	62*	61*	55	60*	59*	51	57	55	59	55	52	55		
	D	0-7	Interior	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	59	48	48	57		
			Exposed	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	59	48	48	56	48	48	52	48	58	49	48	55	46					
		7-20	Interior	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	60	50	50	57	50	59	53		
			Exposed	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	56	50	58	52	50	54	49	50	51	46	59	48	42					
		20-27	Interior	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	57	58	58	53	57	56	49	56	53	57		
			Exposed	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	53	58	55	48	58	51	56	58	59	51	57	56	47	55	52	42		
		27-45	Interior	69*	69*	69*	69*	69*	69*	69*	69*	69*	69*	69*	69*	68*	68*	68*	68*	68*	68*	67*	67*	67*	65*	65*	65*	66*	66*	61	69*	59	59	58	58	58	57	57	54	55	55	51		
			Exposed	69*	69*	69*	69*	69*	69*	69*	69*	69*	69*	69*	69*	68*	68*	67*	68*	68*	64	67*	67*	62	65*	62	59	61	61	54	59	58	50	57	54	58	53	51	54	50	59	50		

* Cells with an astrisks indicates that the L-foot must be oriented in the Y- direction as indicated in the image.

10 Highlighted cell indicate 3-rail system span. Contact Unirac Engineering Services for support.

~~10~~ Highlighted cell with strikethrough indicate 3-rail system span and module clamp allowable capacity exceeds with 3-rails. 4-Rail system required. Contact Unirac Engineering Services for support.

UNIRAC

ASCE 7-16	II	30 ft	Ss = 3.00	23 sq.ft	PORTRAIT	CROSS-SLOPE	NXT	NXT COMBO	Flashkit Pro
Design Standard	Risk Category	Roof Height	Seismic	Module Area	Orientation	Rail Direction	Rail Type	Clamp	Attachment

SPAN TABLES

Maximum Allowable Rail Spans for Rooftop Solar Panels Parallel to the Roof Surface (inches)

Ground Snow Load (psf)	Wind Exposure Category	Roof Tilt Angle (deg)	Panel Exposure	Basic Wind Speed (mph)																																						
				90			95			100			105			110			115			120			130			140			150			160			170			180		
				Roof Wind Zone																																						
				1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3
0	B	0-7	Interior	79	79	79	79	79	79	79	79	79	79	79	76	79	79	73	79	79	70	79	77	68	79	72	63	77	68	60	72	64	55	69	61	51	65	57	47	62	54	42
			Exposed	79	79	73	79	79	70	79	75	67	79	72	64	79	70	62	76	67	59	74	65	57	69	61	51	65	57	47	61	52	40	58	48	33	54	44	44	50	37	39
		7-20	Interior	79	79	79	79	79	79	79	79	77	79	79	74	79	77	71	79	74	68	79	71	66	74	66	62	69	62	57	66	59	52	63	54	48	60	50	43	57	46	35
			Exposed	79	76	71	79	73	68	79	70	65	75	67	62	72	64	60	69	62	57	67	60	54	63	54	48	59	49	41	55	45	34	51	36	45	48	46	39	44	42	35
		20-27	Interior	79	79	79	79	79	79	79	79	79	79	79	79	79	79	78	79	79	75	79	76	72	79	71	67	78	67	63	74	63	60	70	60	55	67	56	51	64	52	47
			Exposed	79	79	78	79	78	74	79	75	71	79	72	68	79	69	65	78	66	63	75	64	61	70	60	56	66	55	50	63	50	46	60	46	37	56	40	31	53	34	40
		27-45	Interior	80	80	80	80	80	80	80	80	80	80	80	80	80	80	80	80	80	78	80	80	75	80	77	70	78	72	66	73	68	63	69	65	59	66	62	55	63	59	51
			Exposed	80	80	80	80	80	77	80	80	74	80	78	71	80	75	68	77	72	66	75	69	64	70	65	60	65	61	55	62	58	50	58	53	46	54	49	39	50	46	33
	C	0-7	Interior	79	79	75	79	79	72	79	78	69	79	74	66	79	72	63	78	69	61	76	67	59	71	63	54	67	59	49	63	54	44	60	50	36	56	47	46	52	41	42
			Exposed	79	72	63	78	68	61	74	66	58	71	63	54	69	61	51	66	59	48	64	56	46	60	51	37	56	46	46	51	39	41	47	33	36	42	44	31	35	39	28
		7-20	Interior	79	79	73	79	75	70	79	72	67	77	69	64	74	66	61	71	64	59	69	61	56	64	57	51	61	52	46	57	47	37	53	40	46	50	34	42	47	45	37
			Exposed	74	66	61	70	63	59	68	60	55	65	58	51	63	54	48	61	51	45	59	48	39	54	41	32	49	33	41	45	43	36	39	38	31	34	33	28	45	30	25
		20-27	Interior	79	79	79	79	79	77	79	77	73	79	74	70	79	71	67	79	68	65	77	66	62	72	62	58	68	58	53	64	53	48	61	48	42	59	44	34	55	37	44
			Exposed	79	71	67	79	68	64	76	65	61	73	62	59	70	60	55	68	57	52	65	54	49	62	49	43	58	43	33	54	35	41	50	45	35	46	40	30	41	36	26
		27-45	Interior	80	80	80	80	80	79	80	80	76	80	80	73	80	77	70	80	74	68	77	71	65	72	67	61	67	63	57	63	60	52	60	55	48	56	51	44	52	48	36
			Exposed	80	77	70	79	73	67	75	70	64	72	67	62	69	65	60	67	63	57	64	61	54	60	56	49	56	51	43	51	46	34	46	39	44	39	34	38	33	45	33
	D	0-7	Interior	79	79	70	79	75	67	79	72	64	79	69	61	76	67	59	73	65	56	71	62	53	66	59	48	62	53	42	59	49	34	55	45	45	51	38	40	47	33	36
			Exposed	76	67	59	72	64	55	69	61	52	67	59	49	64	56	46	62	53	41	60	50	36	55	46	45	50	37	39	46	47	34	39	42	30	34	37	26	45	33	23
		7-20	Interior	79	73	68	79	70	65	75	67	62	71	64	60	69	62	56	66	59	53	64	57	50	60	51	45	56	46	35	52	38	45	48	32	40	45	43	35	39	38	31
			Exposed	69	62	56	66	59	52	63	55	49	61	52	46	59	49	40	56	46	35	53	40	46	49	32	41	44	42	35	37	36	30	47	32	26	43	28	23	38	25	21
		20-27	Interior	79	79	75	79	75	71	79	72	68	79	69	65	77	66	63	74	64	60	72	62	58	67	57	52	64	52	47	60	47	39	57	41	32	53	34	41	50	45	35
			Exposed	77	66	62	74	63	60	71	60	56	68	58	53	66	54	49	63	51	47	61	49	42	57	42	32	53	34	40	49	44	33	45	38	28	39	34	24	34	30	21
		27-45	Interior	80	80	77	80	80	74	80	78	71	80	74	68	77	72	66	74	69	63	71	67	61	67	62	57	63	59	51	59	54	47	54	50	41	50	46	34	46	40	44
			Exposed	77	71	65	73	68	63	70	66	60	67	63	57	65	61	54	62	59	51	60	55	48	55	50	41	50	46	33	45	37	42	36	47	36	46	43	31	42	38	27
10	B	0-7	Interior	66	66	66	66	66	66	66	66	66	66	66	66	66	66	66	66	66	66	66	66	66	66	66	63	66	66	60	66	64	55	66	61	51	65	57	47	62	54	42
			Exposed	66	66	66	66	66	66	66	66	66	66	66	64	66	66	62	66	66	59	66	65	57	66	61	51	65	57	47	61	52	40	58	48	33	54	44	44	50	37	39
		7-20	Interior	66	66	66	66	66	66	66	66	66	66	66	66	66	66	66	66	66	66	66	66	66	66	66	62	66	62	57	66	59	52	63	54	48	60	50	43	57	46	35
			Exposed	66	66	66	66	66	66	66	66	65	66	66	62	66	64	60	66	62	57	66	60	54	63	54	48	59	49	41	55	45	34	51	36	45	48	46	39	44	42	35
		20-27	Interior	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	75	76	76	72	76	71	67	76	67	63	74	63	60	70	60	55	67	56	51	64	52	47
			Exposed	76	76	76	76	76	74	76	75	71	76	72	68	76	69	65	76	66	63	75	64	61	70	60	56	66	55	50	63	50	46	60	46	37	56	40	31	53	34	40
		27-45	Interior	79	79	79	79	79	79	79	79	79	79	79	79	79	79	79	79	79	78	79	79	75	79	77	70	78	72	66	73	68	63	69	65	59	66	62	55	63	59	51
			Exposed	79	79	79	79	79	77	79	79	74	79	78	71	79	75	68	77	72	66	75	69	64	70	65	60	65	61	55	62	58	50	58	53	46	54	49	39	50	46	33
	C	0-7	Interior	66	66	66	66	66	66	66	66	66	66	66	66	66	66	63	66	66	61	66	66	59	66	63	54	66	59	49	63	54	44	60	50	36	56	47	46	52	41	42
			Exposed	66	66	63	66	66	61	66	66	58	66	63	54	66	61	51	66	59	48	64	56	46	60	51	37	56	46	46	51	39	41	47	33	36	42	44	31	35	39	28
		7-20	Interior	66	66	66	66	66	66	66	66	66	66	66	64	66	66	61	66	64	59	66	61	56	64	57	51	61	52	46	57	47	37	53	40	46	50	34	42	47	45	37
			Exposed	66	66	61	66	63	59	66	60	55	65	58	51	63	54	48	61	51	45	59	48	39	54	41	32	49	33	41	45	43	36	39	38	31	34	33	28	45	30	25
		20-27	Interior	76	76	76	76	76	76	76	76	73	76	74	70	76	71	67	76	68	65	76	66	62	72	62	58	68	58	53	64	53	48	61	48	42	59	44	34	55	37	44
			Exposed	76	71	67	76	68	64	76	65	61	73	62	59	70	60	55	68	57	52	65	54	49	62	49	43	58	43	33	54	35	41	50	45	35	46	40	30	41	36	26
		27-45	Interior	79	79	79	79	79	79	79	79	76	79	79	73	79	77	70	79	74	68	77	71	65	72	67	61	67	63	57	63	60	52	60	55	48	56	51	44	52	48	36
			Exposed	79	77	70	79	73	67	75	70	64	72	67	62	69	65	60	67	63	57	64	61	54	60	56	49	56	51	43	51	46	34	46	39	44	39	34	38	33	45	33
	D	0-7	Interior	66	66	66	66	66	66	66	66	64	66	66	61	66	66	59	66	65	56	66	62	53	66	59	48	62	53	42	59	49	34	55	45	45	51	38	40	47	33	36
			Exposed	66	66	59	66	64	55	66	61	52	66	59	49	64	56	46	62	53	41	60	50	36	55	46	45	50	37	39	46	47	34	39	42	30	34	37	26	45	33	23
		7-20	Interior	66	66	66	66	66	65	66	66	62	66	64	60	66	62	56	66	59	53	64	57	50	60	51	45	56	46	35	52	38	45	48	32	40	45	43	35	39	38	31
			Exposed	66	62	56	66	59	52	63	55	49	61	52	46	59	49	40	56	46	35	53	40	46	49	32	41	44	42	35	37	36	30	47	32	26	43	28	23	38	25	21
		20-27	Interior	77	77	75	77	75	71	77	72	68	77	69	65	77	66	63	74	64	60	72	62	58	67	57	52	64	52	47	60	47	39	57	41	32	53	34	41	50	45	35
			Exposed	77	66	62	74	63	60	71	60	56	68	58	53	66	54	49	63	51	47	61	49	42	57	42	32	53	34	40	49	44	33	45	38	28	39	34	24	34	30	21
		27-45	Interior	80	80	77	80	80	74	80	78	71	80	74	68	77	72	66	74	69	63	71	67	61	67	62	57	63	59	51	59	54	47	54	50	41	50	46	34	46	40	44
			Exposed	77	71	65	73	68	63	70	66	60	67	63	57	65	61	54	62	59	51	60	55	48	55	50	41	50	46	33	45	37	42	36	47	36	46	43	31	42	38	27
20	B	0-7	Interior	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	51	55	55	47	55	54	42
			Exposed	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	51	55	55	47	55	52	40	55	48	33	54	44	44	50	37	39
		7-20	Interior	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	52	55	54	48	55	50	43	55	46	35
			Exposed	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	54	54	54	48	55	49	41	55	45	34	51	36	45	48	46	39	44	42	35
		20-27	Interior	67	67	67	67	67	67	67	67	67	67	67	67	67	67	67	67	67	67	67	67	67	67	67	67	67	67	63	67	63	60	67	60	55	67	56	51	64	52	47
			Exposed	67	67	67	67	67	67	67	67	67	67	67	67	67	67	65	67	66	63	67	64	61	67	60	56	66	55	50	63	50	46	60	46	37	56	40	31	53	34	40
		27-45	Interior	71	71	71	71	71	71	71	71	71	71	71	71	71	71	71	71	71	71	71	71	71	71	71	70	71	71	66	71	68	63	69	65	59	66	62	55	63	59	51
			Exposed	71	71	71	71	71	71	71	71	71	71	71	71	71	71	68	71	71	66	71	69	64	70	65	60	65	61	55	62	58	50	58	53	46	54	49	39	50	46	33
	C	0-7	Interior	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	54	55	55	49	55	54	44	55	50	36	55	47	46	52	41	42
			Exposed	55	55	55	55	55	55	55	55	55	55	55	54	55	55	51	55	55	48	55	55	46	55	51	37	55	46	46	51	39	41	47	33	36	42	44	31	35	39	28
		7-20	Interior	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	51	55	52	46	55	47	37	53	40	46	50	34	42	47	45	37
			Exposed	55	55	55	55	55	55	55	55	55	55	55	51	55	54	48	55	51	45	55	48	39	54	41	32	49	33	41	45	43	36	39	38	31	34	33	28	45	30	25
		20-27	Interior	67	67	67	67	67	67	67	67	67	67	67	67	67	67	67	67	67	67	67	66	62	67	62	58	67	58	53	64	53	48	61	48	42	59	44	34	55	37	44
			Exposed	67	67	67	67	67	64	67	65	61	67	62	59	67	60	55	67	57	52	65	54	49	62	49	43	58	43	33	54	35	41	50	45	35	46	40	30	41	36	26
		27-45	Interior	71	71	71	71	71	71	71	71	71	71	71	71	71	71	70	71	71	68	71	71	65	70	67	61	67	63	57	63	60	52	60	55	48	56	51	44	52	48	36
			Exposed	71	71	70	71	71	67	71	70	64	71	67	62	69	65	60	67	63	57	64	61	54	60	56	49	56	51	43	51	46	34	46	39	44	39	34	38	33	45	33
	D	0-7	Interior	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	53	55	55	48	55	53	42	55	49	34	55	45	45	51	38	40	47	33	36
			Exposed	55	55	55	55	55	55	55	55	52	55	55	49	55	55	46	55	53	41	55	50	36	55	46	45	50	37	39	46	47	34	39	42	30	34	37	26	45	33	23
		7-20	Interior	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	53	55	55	50	55	51	45	55	46	35	52	38	45	48	32	40	45	43	35	39	38	31
			Exposed	55	55	55	55	55	52	55	55	49	55	52	46	55	49	40	55	46	35	53	40	46	49	32	41	44	42	35	37	36	30	47	32	26	43	28	23	38	25	21
		20-27	Interior	69	69	69	69	69	69	69	69	68	69	69	65	69	66	63	69	64	60	69	62	58	67	57	52	64	52	47	60	47	39	57	41	32	53	34	41	50	45	35
			Exposed	69	66	62	69	63	60	69	60	56	68	58	53	66	54	49	63	51	47	61	49	42	57	42	32	53	34	40	49	44	33	45	38	28	39	34	24	34	30	21
		27-45	Interior	72	72	72	72	72	72	72	72	71	72	72	68	72	72	66	72	69	63	71	67	61	67	62	57	63	59	51	59	54	47	54	50	41	50	46	34	46	40	44
			Exposed	72	71	65	72	68	63	70	66	60	67	63	57	65	61	54	62	59	51	60	55	48	55	50	41	50	46	33	45	37	42	36	47	36	46	43	31	42	38	27

* Cells with an astrisks indicates that the L-foot must be oriented in the Y- direction as indicated in the image.

10 Highlighted cell indicate 3-rail system span. Contact Unirac Engineering Services for support.

~~10~~ Highlighted cell with strikethrough indicate 3-rail system span and module clamp allowable capacity exceeds with 3-rails. 4-Rail system required. Contact Unirac Engineering Services for support.

UNIRAC

ASCE 7-16	II	30 ft	Ss = 3.00	23 sq.ft	PORTRAIT	CROSS-SLOPE	NXT	NXT COMBO	Flashkit Pro
Design Standard	Risk Category	Roof Height	Seismic	Module Area	Orientation	Rail Direction	Rail Type	Clamp	Attachment

SPAN TABLES

Maximum Allowable Rail Spans for Rooftop Solar Panels Parallel to the Roof Surface (inches)

Ground Snow Load (psf)	Wind Exposure Category	Roof Tilt Angle (deg)	Panel Exposure	Basic Wind Speed (mph)																																						
				90			95			100			105			110			115			120			130			140			150			160			170			180		
				Roof Wind Zone																																						
				1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3
30	B	0-7	Interior	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	51	54	54	47	54	54	42
			Exposed	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	51	54	54	47	54	52	40	54	48	33	54	44	44	50	37	39
		7-20	Interior	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	52	55	54	48	55	50	43	55	46	35
			Exposed	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	54	55	54	48	55	49	41	55	45	34	51	36	45	48	46	39	44	42	35
		20-27	Interior	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	60	61	60	55	61	56	51	61	52	47
			Exposed	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	60	56	61	55	50	61	50	46	60	46	37	56	40	31	53	34	40
		27-45	Interior	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	63	63	63	59	61	61	55	59	59	51
			Exposed	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	64	65	65	60	65	61	55	62	58	50	58	53	46	54	49	39	50	46	33
	C	0-7	Interior	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	49	54	54	44	54	50	36	54	47	46	52	41	42
			Exposed	54	54	54	54	54	54	54	54	54	54	54	54	54	54	51	54	54	48	54	54	46	54	51	37	54	46	46	51	39	41	47	33	36	42	44	31	35	39	28
		7-20	Interior	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	51	55	52	46	55	47	37	53	40	46	50	34	42	47	45	37
			Exposed	55	55	55	55	55	55	55	55	55	55	55	51	55	54	48	55	51	45	55	48	39	54	41	32	49	33	41	45	43	36	39	38	31	34	33	28	45	30	25
		20-27	Interior	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	58	61	58	53	61	53	48	61	48	42	59	44	34	55	37	44
			Exposed	61	61	61	61	61	61	61	61	61	61	61	59	61	60	55	61	57	52	61	54	49	61	49	43	58	43	33	54	35	41	50	45	35	46	40	30	41	36	26
		27-45	Interior	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	64	64	61	62	62	57	60	60	52	57	55	48	55	51	44	52	48	36
			Exposed	65	65	65	65	65	65	65	65	64	65	65	62	65	65	60	65	63	57	64	61	54	60	56	49	56	51	43	51	46	34	46	39	44	39	34	38	33	45	33
	D	0-7	Interior	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	53	55	55	48	55	53	42	55	49	34	55	45	45	51	38	40	47	33	36
			Exposed	55	55	55	55	55	55	55	55	52	55	55	49	55	55	46	55	53	41	55	50	36	55	46	45	50	37	39	46	47	34	39	42	30	34	37	26	45	33	23
		7-20	Interior	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	53	55	55	50	55	51	45	55	46	35	52	38	45	48	32	40	45	43	35	39	38	31
			Exposed	55	55	55	55	55	52	55	55	49	55	52	46	55	49	40	55	46	35	53	40	46	49	32	41	44	42	35	37	36	30	47	32	26	43	28	23	38	25	21
		20-27	Interior	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	60	63	62	58	63	57	52	63	52	47	60	47	39	57	41	32	53	34	41	50	45	35
			Exposed	63	63	62	63	63	60	63	60	56	63	58	53	63	54	49	63	51	47	61	49	42	57	42	32	53	34	40	49	44	33	45	38	28	39	34	24	34	30	21
		27-45	Interior	67	67	67	67	67	67	67	67	67	67	67	67	67	67	66	67	67	63	66	66	61	63	62	57	60	59	51	58	54	47	54	50	41	50	46	34	46	40	44
			Exposed	67	67	65	67	67	63	67	66	60	67	63	57	65	61	54	62	59	51	60	55	48	55	50	41	50	46	33	45	37	42	36	47	36	46	43	31	42	38	27
40	B	0-7	Interior	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	47	49	49	42
			Exposed	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	47	49	49	40	49	48	33	49	44	44	49	37	39
		7-20	Interior	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	48	51	50	43	51	46	35
			Exposed	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	48	51	49	41	51	45	34	51	36	45	48	46	39	44	42	35
		20-27	Interior	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	55	56	56	51	56	52	47
			Exposed	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	55	50	56	50	46	56	46	37	56	40	31	53	34	40
		27-45	Interior	65*	65*	65*	65*	65*	65*	65*	65*	65*	65*	65*	65*	65*	65*	65*	65*	65*	65*	65*	65*	65*	65*	65*	65*	65*	65*	65*	65*	65*	60	67*	58	58	57	57	55	55	55	51
			Exposed	65*	65*	65*	65*	65*	65*	65*	65*	65*	65*	65*	65*	65*	65*	65*	65*	65*	65*	65*	65*	61	65*	65*	60	65*	61	55	60	58	50	58	53	46	54	49	39	50	46	33
	C	0-7	Interior	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	44	49	49	36	49	47	46	49	41	42
			Exposed	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	48	49	49	46	49	49	37	49	46	46	49	39	41	47	33	36	42	44	31	35	39	28
		7-20	Interior	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	46	51	47	37	50	40	46	50	34	42	47	45	37
			Exposed	51	51	51	51	51	51	51	51	51	51	51	51	51	51	48	51	51	45	51	48	39	51	41	32	49	33	41	45	43	36	39	38	31	34	33	28	45	30	25
		20-27	Interior	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	53	56	53	48	56	48	42	55	44	34	54	37	44	54	37	44
			Exposed	56	56	56	56	56	56	56	56	56	56	56	56	56	56	55	56	56	52	56	54	49	56	49	43	56	43	33	54	35	41	50	45	35	46	40	30	41	36	26
		27-45	Interior	65*	65*	65*	65*	65*	65*	65*	65*	65*	65*	65*	65*	65*	65*	65*	65*	65*	65*	65*	65*	65*	66*	66*	59	57	57	57	56	56	52	54	54	48	52	51	44	50	48	36
			Exposed	65*	65*	65*	65*	65*	65*	65*	65*	61	65*	65*	61	65*	65*	60	65*	61	57	65*	61	54	59	56	49	56	51	43	51	46	34	46	39	44	39	34	38	33	45	33
	D	0-7	Interior	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	48	51	51	42	51	49	34	51	45	45	51	38	40	47	33	36
			Exposed	51	51	51	51	51	51	51	51	51	51	51	49	51	51	46	51	51	41	51	50	36	51	46	45	50	37	39	46	47	34	39	42	30	34	37	26	45	33	23
		7-20	Interior	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	50	53	51	45	53	46	35	52	38	45	48	32	40	45	43	35	39	38	31
			Exposed	53	53	53	53	53	52	53	53	49	53	52	46	53	49	40	53	46	35	53	40	46	49	32	41	44	42	35	37	36	30	47	32	26	43	28	23	38	25	21
		20-27	Interior	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	57	52	58	52	47	58	47	39	56	41	32	53	34	41	50	45	35
			Exposed	58	58	58	58	58	58	58	58	56	58	58	53	58	54	49	58	51	47	58	49	42	57	42	32	53	34	40	49	44	33	45	38	28	39	34	24	34	30	21
		27-45	Interior	71*	71*	71*	71*	71*	71*	71*	71*	71*	71*	71*	62	71*	71*	62	71*	62	62	61	61	61	59	59	57	57	57	51	54	54	47	52	50	41	50	46	34	46	40	44
			Exposed	71*	71*	62	71*	62	62	62	62	60	62	62	57	62	61	54	62	59	51	60	55	48	55	50	41	50	46	33	45	37	42	36	47	36	46	43	31	42	38	27
50	B	0-7	Interior	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	42
			Exposed	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	40	45	45	33	45	44	44	45	37	39
		7-20	Interior	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	46	35
			Exposed	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	41	47	45	34	47	36	45	47	46	39	44	42	35
		20-27	Interior	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	51	53	52	47
			Exposed	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	50	53	50	46	53	46	37	53	40	31	53	34	40
		27-45	Interior	57*	57*	57*	57*	57*	57*	57*	57*	57*	57*	57*	57*	57*	57*	57*	57*	57*	57*	57*	57*	57*	57*	57*	57*	57*	57*	57*	58*	58*	58*	57*	57*	57*	56*	56*	56*	56*	56*	51
			Exposed	57*	57*	57*	57*	57*	57*	57*	57*	57*	57*	57*	57*	57*	57*	57*	57*	57*	57*	57*	57*	57*	57*	57*	57*	57*	57*	55	58*	58*	50	57*	53	46	53	49	39	50	46	33
	C	0-7	Interior	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	44	45	45	36	45	45	46	45	41	42
			Exposed	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	37	45	45	46	45	39	41	45	33	36	42	44	31	35	39	28
		7-20	Interior	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	46	47	47	37	47	40	46	46	34	42	45	45	37
			Exposed	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	45	47	47	39	47	41	32	47	33	41	45	43	36	39	38	31	34	33	28	45	30	25
		20-27	Interior	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	48	52	48	42	51	44	34	50	37	44
			Exposed	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	52	53	53	49	53	49	43	53	43	33	53	35	41	50	45	35	46	40	30	41	36	26
		27-45	Interior	57*	57*	57*	57*	57*	57*	57*	57*	57*	57*	57*	57*	57*	57*	57*	57*	57*	57*	57*	57*	57*	58*	58*	58*	56*	56*	56*	56*	56*	52	58*	51	48	49	49	44	48	48	36
			Exposed	57*	57*	57*	57*	57*	57*	57*	57*	57*	57*	57*	57*	57*	57*	57*	57*	57*	57*	57*	57*	54	58*	56*	49	56*	51	43	51	46	34	46	39	44	39	34	38	33	45	33
	D	0-7	Interior	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	42	47	47	34	47	45	45	47	38	40	47	33	36
			Exposed	47	47	47	47	47	47	47	47	47	47	47	47	47	47	46	47	47	41	47	47	36	47	46	45	47	37	39	46	47	34	39	42	30	34	37	26	45	33	23
		7-20	Interior	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	45	49	46	35	48	38	45	47	32	40	45	43	35	39	38	31
			Exposed	49	49	49	49	49	49	49	49	49	49	49	46	49	49	40	49	46	35	49	40	46	49	32	41	44	42	35	37	36	30	47	32	26	43	28	23	38	25	21
		20-27	Interior	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	52	54	52	47	54	47	39	52	41	32	51	34	41	50	45	35
			Exposed	54	54	54	54	54	54	54	54	54	54	54	54	54	54	49	54	51	47	54	49	42	54	42	32	53	34	40	49	44	33	45	38	28	39	34	24	34	30	21
		27-45	Interior	61*	61*	61*	61*	61*	61*	61*	61*	61*	61*	61*	61*	61*	61*	61*	61*	61*	61*	60*	60*	60*	60*	60*	55	54	54	51	52	52	47	50	50	41	48	46	34	46	40	44
			Exposed	61*	61*	61*	61*	61*	61*	61*	61*	60*	61*	61*	57	61*	61*	54	61*	58	51	60*	55	48	55	50	41	50	46	33	45	37	42	36	47	36	46	43	31	42	38	27

* Cells with an astrisks indicates that the L-foot must be oriented in the Y- direction as indicated in the image.

10 Highlighted cell indicate 3-rail system span. Contact Unirac Engineering Services for support.

~~10~~ Highlighted cell with strikethrough indicate 3-rail system span and module clamp allowable capacity exceeds with 3-rails. 4-Rail system required. Contact Unirac Engineering Services for support.

UNIRAC

ASCE 7-16	II	30 ft	Ss = 3.00	23 sq.ft	PORTRAIT	CROSS-SLOPE	NXT	NXT COMBO	Flashkit Pro
Design Standard	Risk Category	Roof Height	Seismic	Module Area	Orientation	Rail Direction	Rail Type	Clamp	Attachment

SPAN TABLES

Maximum Allowable Rail Spans for Rooftop Solar Panels Parallel to the Roof Surface (inches)

Ground Snow Load (psf)	Wind Exposure Category	Roof Tilt Angle (deg)	Panel Exposure	Basic Wind Speed (mph)																																								
				90			95			100			105			110			115			120			130			140			150			160			170			180		
				Roof Wind Zone																																								
				1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3
60	B	0-7	Interior	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41
			Exposed	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	40	41	41	33	41	41	44	41	37	39
		7-20	Interior	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	35
			Exposed	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	41	43	43	34	43	36	45	43	46	39	43	42	35
		20-27	Interior	52*	52*	52*	52*	52*	52*	52*	52*	52*	52*	52*	52*	52*	52*	52*	52*	52*	52*	52*	52*	52*	52*	52*	52*	52*	52*	52*	52*	52*	52*	52*	52*	52*	52*	52*	51*	52*	52*	47
			Exposed	52*	52*	52*	52*	52*	52*	52*	52*	52*	52*	52*	52*	52*	52*	52*	52*	52*	52*	52*	52*	52*	52*	52*	52*	52*	52*	50*	52*	50*	46	52*	46	37	52*	40	31	52*	34	40
		27-45	Interior	54*	54*	54*	54*	54*	54*	54*	54*	54*	54*	54*	54*	54*	54*	54*	54*	54*	54*	54*	54*	54*	54*	54*	54*	54*	54*	54*	53*	53*	53*	52*	52*	52*	51*	51*	51*	49*	49*	49*
			Exposed	54*	54*	54*	54*	54*	54*	54*	54*	54*	54*	54*	54*	54*	54*	54*	54*	54*	54*	54*	54*	54*	54*	54*	54*	54*	54*	54*	53*	53*	50*	52*	52*	46	51*	49*	39	49*	46	33
	C	0-7	Interior	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	36	41	41	46	41	41	42
			Exposed	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	37	41	41	46	41	39	41	41	33	36	41	44	31	35	39	28
		7-20	Interior	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	37	43	40	46	43	34	42	42	45	37
			Exposed	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	39	43	41	32	43	33	41	43	43	36	39	38	31	34	33	28	45	30	25
		20-27	Interior	52*	52*	52*	52*	52*	52*	52*	52*	52*	52*	52*	52*	52*	52*	52*	52*	52*	52*	52*	52*	52*	52*	52*	48	51*	48	42	50*	44	34	47	37	44	47	37	44	47	37	44
			Exposed	52*	52*	52*	52*	52*	52*	52*	52*	52*	52*	52*	52*	52*	52*	52*	52*	52*	52*	52*	52*	49	52*	49	43	52*	43	33	52*	35	41	50*	45	35	46	40	30	41	36	26
		27-45	Interior	54*	54*	54*	54*	54*	54*	54*	54*	54*	54*	54*	54*	54*	54*	54*	54*	54*	54*	54*	54*	54*	52*	52*	52*	51*	51*	51*	50*	50*	50*	48*	48*	48*	49*	49*	44	49*	48*	36
			Exposed	54*	54*	54*	54*	54*	54*	54*	54*	54*	54*	54*	54*	54*	54*	54*	54*	54*	54*	54*	54*	54*	52*	52*	49*	51*	51*	43	50*	46	34	46	39	44	39	34	38	33	45	33
	D	0-7	Interior	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	42	43	43	34	43	43	45	43	38	40	43	33	36
			Exposed	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	41	43	43	36	43	43	45	43	37	39	43	47	34	39	42	30	34	37	26	45	33	23
		7-20	Interior	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	35	45	38	45	44	32	40	44	43	35	39	38	31
			Exposed	45	45	45	45	45	45	45	45	45	45	45	45	45	45	40	45	45	35	45	40	46	45	32	41	44	42	35	37	36	30	47	32	26	43	28	23	38	25	21
		20-27	Interior	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	47	50	47	39	49	41	32	48	34	41	47	45	35
			Exposed	51	51	51	51	51	51	51	51	51	51	51	51	51	51	49	51	51	47	51	49	42	51	42	32	51	34	40	49	44	33	45	38	28	39	34	24	34	30	21
		27-45	Interior	56*	56*	56*	56*	56*	56*	56*	56*	56*	56*	56*	56*	56*	56*	56*	55*	55*	55*	54*	54*	54*	53*	53*	53*	53*	53*	52*	53*	53*	47	53*	48	41	46	46	34	45	40	44
			Exposed	56*	56*	56*	56*	56*	56*	56*	56*	56*	56*	56*	56*	56*	56*	54*	55*	55*	51	54*	54*	48	53*	50	41	50	46	33	45	37	42	36	47	36	46	43	31	42	38	27
70	B	0-7	Interior	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38
			Exposed	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	33	38	38	44	38	37	39
		7-20	Interior	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	35
			Exposed	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	34	40	36	45	40	46	39	40	42	35
		20-27	Interior	49*	49*	49*	49*	49*	49*	49*	49*	49*	49*	49*	49*	49*	49*	49*	49*	49*	49*	49*	49*	49*	49*	49*	49*	49*	49*	49*	49*	49*	49*	49*	49*	49*	49*	49*	49*	49*	49*	47*
			Exposed	49*	49*	49*	49*	49*	49*	49*	49*	49*	49*	49*	49*	49*	49*	49*	49*	49*	49*	49*	49*	49*	49*	49*	49*	49*	49*	49*	49*	49*	46*	49*	46*	37	49*	40	31	49*	34	40
		27-45	Interior	49*	49*	49*	49*	49*	49*	49*	49*	49*	49*	49*	49*	49*	49*	49*	49*	49*	49*	49*	49*	49*	49*	49*	49*	49*	49*	49*	49*	49*	49*	49*	49*	49*	48*	48*	48*	47*	47*	47*
			Exposed	49*	49*	49*	49*	49*	49*	49*	49*	49*	49*	49*	49*	49*	49*	49*	49*	49*	49*	49*	49*	49*	49*	49*	49*	49*	49*	49*	49*	49*	49*	49*	49*	46*	48*	48*	39	47*	46*	33
	C	0-7	Interior	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	36	38	38	46	38	38	42
			Exposed	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	41	38	33	36	38	44	31	35	39	28	38	44	31	35	39	28
		7-20	Interior	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	37	40	40	46	40	34	42	40	45	37	40	45	37	40	45	37
			Exposed	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	39	40	40	32	40	33	41	40	43	36	39	38	31	34	33	28	45	30	25
		20-27	Interior	49*	49*	49*	49*	49*	49*	49*	49*	49*	49*	49*	49*	49*	49*	49*	49*	49*	49*	49*	49*	49*	49*	49*	48*	48*	48*	42	48*	44*	34	47*	37	44	47*	37	44	47*	37	44
			Exposed	49*	49*	49*	49*	49*	49*	49*	49*	49*	49*	49*	49*	49*	49*	49*	49*	49*	49*	49*	49*	49*	49*	49*	43	49*	43	33	49*	35	41	48*	45	35	46*	40	30	41	36	26
		27-45	Interior	49*	49*	49*	49*	49*	49*	49*	49*	49*	49*	49*	49*	49*	49*	49*	49*	49*	49*	49*	49*	49*	49*	49*	49*	49*	49*	49*	47*	47*	47*	46*	46*	46*	45*	45*	44*	44*	44*	36
			Exposed	49*	49*	49*	49*	49*	49*	49*	49*	49*	49*	49*	49*	49*	49*	49*	49*	49*	49*	49*	49*	49*	49*	49*	49*	49*	49*	43*	47*	46*	34	46*	39	44	39	34	38	33	45	33
	D	0-7	Interior	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	34	40	40	45	40	38	40	40	33	36
			Exposed	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	36	40	40	45	40	37	39	40	47	34	39	42	30	34	37	26	45	33	23
		7-20	Interior	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	35	42	38	45	42	32	40	41	43	35	39	38	31
			Exposed	42	42	42	42	42	42	42	42	42	42	42	42	42	42	40	42	42	35	42	40	46	42	32	41	42	42	35	37	36	30	47	32	26	43	28	23	38	25	21
		20-27	Interior	51*	51*	51*	51*	51*	51*	51*	51*	51*	51*	51*	51*	51*	51*	51*	51*	51*	51*	51*	51*	51*	51*	51*	51*	51*	51*	47	50*	47	39	49*	41	32	48*	34	41	45	45	35
			Exposed	51*	51*	51*	51*	51*	51*	51*	51*	51*	51*	51*	51*	51*	51*	49*	51*	51*	47	51*	49*	42	51*	42	32	51*	34	40	49*	44	33	45	38	28	39	34	24	34	30	21
		27-45	Interior	53*	53*	53*	53*	53*	53*	53*	53*	53*	53*	53*	53*	53*	53*	53*	52*	52*	52*	52*	52*	52*	50*	50*	50*	49*	49*	49*	47*	47*	47*	46*	46*	41	46*	46*	34	46*	40	44
			Exposed	53*	53*	53*	53*	53*	53*	53*	53*	53*	53*	53*	53*	53*	53*	53*	52*	52*	51*	52*	52*	48*	50*	50*	41	49*	46*	33	45	37	42	36	47	36	46	43	31	42	38	27
80	B	0-7	Interior	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36
			Exposed	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	33	36	36	44	36	36	39
		7-20	Interior	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	35
			Exposed	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	34	37	36	45	37	46	39	37	42	35
		20-27	Interior	43*	43*	43*	43*	43*	43*	43*	43*	43*	43*	43*	43*	43*	43*	43*	43*	43*	43*	43*	43*	43*	43*	43*	43*	43*	43*	43*	43*	43*	43*	43*	43*	43*	43*	43*	43*	43*	43*	43*
			Exposed	43*	43*	43*	43*	43*	43*	43*	43*	43*	43*	43*	43*	43*	43*	43*	43*	43*	43*	43*	43*	43*	43*	43*	43*	43*	43*	43*	43*	43*	43*	43*	43*	37	43*	40*	31	43*	34	40
		27-45	Interior	43*	43*	43*	43*	43*	43*	43*	43*	43*	43*	43*	43*	43*	43*	43*	43*	43*	43*	43*	43*	43*	43*	43*	43*	43*	43*	43*	43*	43*	43*	43*	43*	43*	43*	43*	43*	43*	43*	43*
			Exposed	43*	43*	43*	43*	43*	43*	43*	43*	43*	43*	43*	43*	43*	43*	43*	43*	43*	43*	43*	43*	43*	43*	43*	43*	43*	43*	43*	43*	43*	43*	43*	43*	43*	43*	43*	39*	43*	43*	33
	C	0-7	Interior	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	44	36	36	42
			Exposed	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	44	36	36	41	36	33	36	36	44	31	35	39	28	35	39	28
		7-20	Interior	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	46	37	34	42	37	45	37
			Exposed	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	32	37	33	41	37	43	36	37	38	31	34	33	28	45	30	25
		20-27	Interior	43*	43*	43*	43*	43*	43*	43*	43*	43*	43*	43*	43*	43*	43*	43*	43*	43*	43*	43*	43*	43*	43*	43*	43*	43*	43*	43*	43*	43*	43*	43*	43*	42*	43*	43*	34	43*	37	44
			Exposed	43*	43*	43*	43*	43*	43*	43*	43*	43*	43*	43*	43*	43*	43*	43*	43*	43*	43*	43*	43*	43*	43*	43*	43*	43*	43*	33	43*	35	41	43*	45	35	43*	40	30	41*	36	26
		27-45	Interior	43*	43*	43*	43*	43*	43*	43*	43*	43*	43*	43*	43*	43*	43*	43*	43*	43*	43*	43*	43*	43*	43*	43*	43*	43*	43*	43*	43*	43*	43*	43*	43*	43*	43*	43*	43*	42*	42*	37*
			Exposed	43*	43*	43*	43*	43*	43*	43*	43*	43*	43*	43*	43*	43*	43*	43*	43*	43*	43*	43*	43*	43*	43*	43*	43*	43*	43*	43*	43*	43*	34	43*	39*	44	39*	34	38	33	45	33
	D	0-7	Interior	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	34	38	38	45	38	38	40	38	33	36
			Exposed	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	36	38	38	45	38	37	39	38	46	34	38	42	30	34	37	26	45	33	23
		7-20	Interior	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	35	39	38	45	39	32	40	39	43	35	39	38	31
			Exposed	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	35	39	39	46	39	32	41	39	42	35	37	36	30	47	32	26	43	28	23	38	25	21
		20-27	Interior	46*	46*	46*	46*	46*	46*	46*	46*	46*	46*	46*	46*	46*	46*	46*	46*	46*	46*	46*	46*	46*	46*	46*	46*	46*	46*	46*	46*	46*	39	47*	41	32	46*	34	41	45*	45	35
			Exposed	46*	46*	46*	46*	46*	46*	46*	46*	46*	46*	46*	46*	46*	46*	46*	46*	46*	46*	46*	46*	42	46*	42	32	46*	34	40	46*	44	33	45*	38	28	39	34	24	34	30	21
		27-45	Interior	48*	48*	48*	48*	48*	48*	48*	48*	48*	48*	48*	48*	48*	48*	48*	48*	48*	48*	48*	48*	48*	48*	48*	48*	47*	47*	47*	45*	45*	45*	44*	44*	41*	43*	43*	34	42*	40	44
			Exposed	48*	48*	48*	48*	48*	48*	48*	48*	48*	48*	48*	48*	48*	48*	48*	48*	48*	48*	48*	48*	48*	48*	48*	41*	47*	46*	33	45*	37	42	36	47	36	46	43	31	42	38	27

* Cells with an astrisks indicates that the L-foot must be oriented in the Y- direction as indicated in the image.

10 Highlighted cell indicate 3-rail system span. Contact Unirac Engineering Services for support.

~~10~~ Highlighted cell with strikethrough indicate 3-rail system span and module clamp allowable capacity exceeds with 3-rails. 4-Rail system required. Contact Unirac Engineering Services for support.

UNIRAC

ASCE 7-16	II	30 ft	Ss = 3.00	23 sq.ft	PORTRAIT	CROSS-SLOPE	NXT	NXT COMBO	Flashkit Pro
Design Standard	Risk Category	Roof Height	Seismic	Module Area	Orientation	Rail Direction	Rail Type	Clamp	Attachment

SPAN TABLES

Maximum Allowable Rail Spans for Rooftop Solar Panels Parallel to the Roof Surface (inches)

Ground Snow Load (psf)	Wind Exposure Category	Roof Tilt Angle (deg)	Panel Exposure	Basic Wind Speed (mph)																																						
				90			95			100			105			110			115			120			130			140			150			160			170			180		
				Roof Wind Zone																																						
				1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3
90	B	0-7	Interior	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34
			Exposed	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	33	34	34	41	34	34	39
		7-20	Interior	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35
			Exposed	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	34	35	35	43	35	43	39	35	42	35
		20-27	Interior	41*	41*	41*	41*	41*	41*	41*	41*	41*	41*	41*	41*	41*	41*	41*	41*	41*	41*	41*	41*	41*	41*	41*	41*	41*	41*	41*	41*	41*	41*	41*	41*	41*	41*	41*	41*	41*	41*	41*
			Exposed	41*	41*	41*	41*	41*	41*	41*	41*	41*	41*	41*	41*	41*	41*	41*	41*	41*	41*	41*	41*	41*	41*	41*	41*	41*	41*	41*	41*	41*	41*	41*	41*	37*	41*	40*	31	41*	34	40
		27-45	Interior	39*	39*	39*	39*	39*	39*	39*	39*	39*	39*	39*	39*	39*	39*	39*	39*	39*	39*	39*	39*	39*	39*	39*	39*	39*	39*	39*	39*	39*	39*	39*	39*	39*	39*	39*	39*	39*	39*	39*
			Exposed	39*	39*	39*	39*	39*	39*	39*	39*	39*	39*	39*	39*	39*	39*	39*	39*	39*	39*	39*	39*	39*	39*	39*	39*	39*	39*	39*	39*	39*	39*	39*	39*	39*	39*	39*	39*	39*	39*	33*
	C	0-7	Interior	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	41	34	34	41
			Exposed	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	41	34	34	41	34	33	36	34	41	~~31~~	34	39	~~28~~						
		7-20	Interior	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	43	35	34	42	35	43	37						
			Exposed	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	32	35	33	41	35	43	36	35	38	~~31~~	34	~~33~~	~~28~~	43	~~30~~	~~25~~
		20-27	Interior	41*	41*	41*	41*	41*	41*	41*	41*	41*	41*	41*	41*	41*	41*	41*	41*	41*	41*	41*	41*	41*	41*	41*	41*	41*	41*	41*	41*	41*	41*	41*	41*	41*	41*	41*	34	41*	37*	44
			Exposed	41*	41*	41*	41*	41*	41*	41*	41*	41*	41*	41*	41*	41*	41*	41*	41*	41*	41*	41*	41*	41*	41*	41*	41*	41*	41*	33	41*	35*	41	41*	45	35	41*	40	~~30~~	41*	36	~~26~~
		27-45	Interior	39*	39*	39*	39*	39*	39*	39*	39*	39*	39*	39*	39*	39*	39*	39*	39*	39*	39*	39*	39*	39*	39*	39*	39*	39*	39*	39*	39*	39*	39*	39*	39*	39*	39*	39*	39*	39*	39*	36*
			Exposed	39*	39*	39*	39*	39*	39*	39*	39*	39*	39*	39*	39*	39*	39*	39*	39*	39*	39*	39*	39*	39*	39*	39*	39*	39*	39*	39*	39*	39*	34*	39*	39*	44	39*	34*	38	33*	45	33
	D	0-7	Interior	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	34	36	36	44	36	36	40	36	33	36						
			Exposed	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	44	36	36	39	36	44	34	36	42	~~30~~	34	37	~~26~~	44	~~33~~	~~23~~
		7-20	Interior	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	35	37	37	45	37	32	40	37	43	35	37	38	~~31~~
			Exposed	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	35	37	37	45	37	32	41	37	42	35	37	36	~~30~~	45	~~32~~	~~26~~	43	~~28~~	~~23~~	38	~~25~~	~~21~~
		20-27	Interior	43*	43*	43*	43*	43*	43*	43*	43*	43*	43*	43*	43*	43*	43*	43*	43*	43*	43*	43*	43*	43*	43*	43*	43*	43*	43*	43*	43*	43*	39*	43*	41*	32	42*	34	41	42*	45	35
			Exposed	43*	43*	43*	43*	43*	43*	43*	43*	43*	43*	43*	43*	43*	43*	43*	43*	43*	43*	43*	43*	42*	43*	42*	32	43*	34	40	43*	44	33	43*	38	~~28~~	39*	34	~~24~~	34	~~30~~	~~21~~
		27-45	Interior	43*	43*	43*	43*	43*	43*	43*	43*	43*	43*	43*	43*	43*	43*	43*	43*	43*	43*	43*	43*	43*	43*	43*	43*	43*	43*	43*	43*	43*	43*	43*	43*	41*	42*	42*	34	40*	40*	44
			Exposed	43*	43*	43*	43*	43*	43*	43*	43*	43*	43*	43*	43*	43*	43*	43*	43*	43*	43*	43*	43*	43*	43*	43*	41*	43*	43*	33	43*	37*	42	36*	47	36	46	43	~~31~~	42	38	~~27~~
100	B	0-7	Interior	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32
			Exposed	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	39	32	32	39
		7-20	Interior	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33
			Exposed	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	41	33	41	39	33	41	35
		20-27	Interior	37*	37*	37*	37*	37*	37*	37*	37*	37*	37*	37*	37*	37*	37*	37*	37*	37*	37*	37*	37*	37*	37*	37*	37*	37*	37*	37*	37*	37*	37*	37*	37*	37*	37*	37*	37*	37*	37*	37*
			Exposed	37*	37*	37*	37*	37*	37*	37*	37*	37*	37*	37*	37*	37*	37*	37*	37*	37*	37*	37*	37*	37*	37*	37*	37*	37*	37*	37*	37*	37*	37*	37*	37*	37*	37*	37*	31*	37*	34*	40
		27-45	Interior	35*	35*	35*	35*	35*	35*	35*	35*	35*	35*	35*	35*	35*	35*	35*	35*	35*	35*	35*	35*	35*	35*	35*	35*	35*	35*	35*	35*	35*	35*	35*	35*	35*	35*	35*	35*	35*	35*	35*
			Exposed	35*	35*	35*	35*	35*	35*	35*	35*	35*	35*	35*	35*	35*	35*	35*	35*	35*	35*	35*	35*	35*	35*	35*	35*	35*	35*	35*	35*	35*	35*	35*	35*	35*	35*	35*	35*	35*	35*	33*
	C	0-7	Interior	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	39	32	32	39
			Exposed	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	39	32	32	39	32	32	36	32	39	~~31~~	32	39	~~28~~						
		7-20	Interior	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	41	33	33	41	33	41	37
			Exposed	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	32	33	33	41	33	41	36	33	38	~~31~~	33	~~33~~	~~28~~	41	~~30~~	~~25~~
		20-27	Interior	37*	37*	37*	37*	37*	37*	37*	37*	37*	37*	37*	37*	37*	37*	37*	37*	37*	37*	37*	37*	37*	37*	37*	37*	37*	37*	37*	37*	37*	37*	37*	37*	37*	37*	37*	34*	37*	37*	44
			Exposed	37*	37*	37*	37*	37*	37*	37*	37*	37*	37*	37*	37*	37*	37*	37*	37*	37*	37*	37*	37*	37*	37*	37*	37*	37*	37*	33*	37*	35*	41	37*	45	35	37*	40	~~30~~	37*	36	~~26~~
		27-45	Interior	35*	35*	35*	35*	35*	35*	35*	35*	35*	35*	35*	35*	35*	35*	35*	35*	35*	35*	35*	35*	35*	35*	35*	35*	35*	35*	35*	35*	35*	35*	35*	35*	35*	35*	35*	35*	35*	35*	35*
			Exposed	35*	35*	35*	35*	35*	35*	35*	35*	35*	35*	35*	35*	35*	35*	35*	35*	35*	35*	35*	35*	35*	35*	35*	35*	35*	35*	35*	35*	35*	34*	35*	35*	44	35*	34*	38	33*	45*	33
	D	0-7	Interior	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	41	34	34	40	34	33	36						
			Exposed	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	41	34	34	39	34	41	34	34	41	~~30~~	34	37	~~26~~	41	~~33~~	~~23~~
		7-20	Interior	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	43	35	32	40	35	43	35	35	38	~~31~~
			Exposed	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	43	35	32	41	35	42	35	35	36	~~30~~	43	~~32~~	~~26~~	43	~~28~~	~~23~~	38	~~25~~	~~21~~
		20-27	Interior	41*	41*	41*	41*	41*	41*	41*	41*	41*	41*	41*	41*	41*	41*	41*	41*	41*	41*	41*	41*	41*	41*	41*	41*	41*	41*	41*	41*	41*	39*	41*	41*	32	41*	34	41	40*	45	35
			Exposed	41*	41*	41*	41*	41*	41*	41*	41*	41*	41*	41*	41*	41*	41*	41*	41*	41*	41*	41*	41*	41*	41*	41*	32	41*	34	40	41*	44	33	41*	38	~~28~~	39*	34	~~24~~	34	~~30~~	~~21~~
		27-45	Interior	39*	39*	39*	39*	39*	39*	39*	39*	39*	39*	39*	39*	39*	39*	39*	39*	39*	39*	39*	39*	39*	39*	39*	39*	39*	39*	39*	39*	39*	39*	39*	39*	39*	39*	39*	34*	39*	39*	44
			Exposed	39*	39*	39*	39*	39*	39*	39*	39*	39*	39*	39*	39*	39*	39*	39*	39*	39*	39*	39*	39*	39*	39*	39*	39*	39*	39*	33*	39*	37*	42	36*	47	36	46	43	~~31~~	42	38	~~27~~

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UNIRAC

ASCE 7-16	II	30 ft	Ss = 3.00	23 sq.ft	LANDSCAPE	CROSS-SLOPE	NXT	NXT COMBO	Flashkit Pro
Design Standard	Risk Category	Roof Height	Seismic	Module Area	Orientation	Rail Direction	Rail Type	Clamp	Attachment

SPAN TABLES

Maximum Allowable Rail Spans for Rooftop Solar Panels Parallel to the Roof Surface (inches)

Ground Snow Load (psf)	Wind Exposure Category	Roof Tilt Angle (deg)	Panel Exposure	Basic Wind Speed (mph)																																						
				90			95			100			105			110			115			120			130			140			150			160			170			180		
				Roof Wind Zone																																						
				1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3
0	B	0-7	Interior	101	101	101	101	101	101	101	101	100	101	101	95	101	101	91	101	100	87	101	96	83	101	89	77	96	83	72	90	78	68	85	74	64	80	70	62	76	67	59
			Exposed	101	101	90	101	99	86	101	94	82	101	90	78	100	86	75	96	83	72	92	80	69	85	74	64	79	69	61	75	65	58	71	63	54	67	60	51	64	57	59
		7-20	Interior	102	102	102	102	102	102	102	102	97	102	101	92	102	96	87	102	91	83	102	87	80	92	80	74	86	75	68	81	70	64	77	66	62	74	63	59	70	60	56
			Exposed	102	96	87	102	90	82	100	86	78	93	81	74	89	78	71	86	74	68	83	71	65	78	66	62	73	63	59	69	60	55	66	56	51	63	53	59	60	60	56
		20-27	Interior	102	102	102	102	102	102	102	102	102	102	102	102	102	102	99	102	100	94	102	95	89	102	88	82	98	81	76	92	76	71	87	72	66	83	68	63	79	64	60
			Exposed	102	102	98	102	99	92	102	93	87	102	89	83	102	85	79	98	81	75	94	78	72	87	72	67	82	67	62	78	63	59	74	61	55	70	58	51	67	55	48
		27-45	Interior	103	103	103	103	103	103	103	103	103	103	103	103	103	103	103	103	103	98	103	103	94	103	97	87	98	90	81	91	84	76	85	79	71	79	75	67	75	71	64
			Exposed	103	103	103	103	103	97	103	103	92	103	98	88	102	93	84	97	89	80	93	86	77	85	79	72	79	74	67	73	69	63	69	65	60	65	63	57	63	60	53
	C	0-7	Interior	101	101	94	101	101	89	101	97	84	101	93	80	101	89	77	99	85	74	95	82	71	88	76	66	82	72	63	77	67	60	73	64	56	69	61	53	66	59	60
			Exposed	101	89	77	98	84	73	93	81	70	89	77	67	85	74	64	82	71	62	78	69	61	73	64	57	68	61	53	65	58	60	62	54	56	59	61	53	56	59	~~50~~
		7-20	Interior	102	100	90	102	94	85	102	89	81	98	84	77	92	80	73	88	77	70	85	74	67	80	68	63	75	64	60	71	61	57	67	58	53	64	55	60	62	52	58
			Exposed	92	80	73	87	76	70	84	72	66	80	69	64	77	66	62	75	64	60	72	62	58	68	59	53	64	54	60	61	51	56	58	58	53	55	55	~~50~~	62	51	~~47~~
		20-27	Interior	102	102	102	102	102	96	102	97	91	102	92	86	102	88	82	101	84	78	97	80	75	90	74	69	84	69	64	80	65	61	76	62	57	72	60	53	69	57	50
			Exposed	102	87	81	100	83	77	95	79	73	91	75	70	87	72	66	84	69	64	81	66	62	76	62	58	71	59	53	68	55	49	64	52	57	62	59	52	59	56	48
		27-45	Interior	103	103	103	103	103	100	103	103	95	103	101	91	103	96	87	101	92	83	96	88	80	88	82	74	82	76	69	76	72	65	71	67	62	67	64	59	64	62	55
			Exposed	103	96	86	100	91	82	94	87	78	89	83	75	85	79	71	81	76	69	78	73	66	72	68	62	67	64	59	63	61	54	60	58	50	58	55	59	54	51	55
	D	0-7	Interior	101	100	86	101	94	82	101	90	78	99	86	74	95	82	71	91	79	68	87	76	66	81	71	62	76	66	59	71	63	55	68	60	52	64	58	59	62	54	56
			Exposed	95	82	71	90	78	68	86	75	65	82	72	63	79	69	61	76	66	59	73	64	56	68	61	52	64	57	59	61	53	55	58	60	52	55	57	~~48~~	51	54	~~46~~
		7-20	Interior	102	91	83	100	86	78	93	81	74	89	77	71	85	74	68	82	71	65	79	68	63	74	64	60	70	60	56	66	57	52	63	53	59	61	61	56	58	58	53
			Exposed	85	74	68	82	70	64	78	67	62	75	64	60	72	62	58	70	60	55	67	58	53	64	54	59	60	60	56	57	57	52	53	53	~~49~~	61	~~50~~	~~46~~	58	~~47~~	~~44~~
		20-27	Interior	102	99	93	102	94	87	102	89	83	102	84	78	97	80	75	93	77	72	89	74	69	84	69	64	79	64	60	74	61	56	71	59	52	67	55	49	64	52	57
			Exposed	97	80	75	92	76	71	88	73	67	84	69	64	81	66	62	78	64	60	76	62	57	71	59	52	67	55	48	64	51	55	61	58	51	58	55	47	55	52	~~44~~
		27-45	Interior	103	103	97	103	103	92	103	97	88	102	93	84	97	89	80	92	85	77	88	81	74	81	76	68	75	71	64	70	66	61	66	63	58	63	61	54	60	58	50
			Exposed	96	88	80	91	84	76	86	80	72	82	76	69	78	73	66	74	70	64	71	68	62	66	63	58	62	60	53	60	57	49	56	53	57	53	60	53	60	58	49
10	B	0-7	Interior	90	90	90	90	90	90	90	90	90	90	90	90	90	90	90	90	90	87	90	90	83	90	89	77	90	83	72	90	78	68	85	74	64	80	70	62	76	67	59
			Exposed	90	90	90	90	90	86	90	90	82	90	90	78	90	86	75	90	83	72	90	80	69	85	74	64	79	69	61	75	65	58	71	63	54	67	60	51	64	57	59
		7-20	Interior	91	91	91	91	91	91	91	91	91	91	91	91	91	91	87	91	91	83	91	87	80	91	80	74	86	75	68	81	70	64	77	66	62	74	63	59	70	60	56
			Exposed	91	91	87	91	90	82	91	86	78	91	81	74	89	78	71	86	74	68	83	71	65	78	66	62	73	63	59	69	60	55	66	56	51	63	53	59	60	60	56
		20-27	Interior	99	99	99	99	99	99	99	99	99	99	99	99	99	99	99	99	99	94	99	95	89	99	88	82	98	81	76	92	76	71	87	72	66	83	68	63	79	64	60
			Exposed	99	99	98	99	99	92	99	93	87	99	89	83	99	85	79	98	81	75	94	78	72	87	72	67	82	67	62	78	63	59	74	61	55	70	58	51	67	55	48
		27-45	Interior	101	101	101	101	101	101	101	101	101	101	101	101	101	101	101	101	101	98	101	101	94	101	97	87	98	90	81	91	84	76	85	79	71	79	75	67	75	71	64
			Exposed	101	101	101	101	101	97	101	101	92	101	98	88	101	93	84	97	89	80	93	86	77	85	79	72	79	74	67	73	69	63	69	65	60	65	63	57	63	60	53
	C	0-7	Interior	90	90	90	90	90	89	90	90	84	90	90	80	90	89	77	90	85	74	90	82	71	88	76	66	82	72	63	77	67	60	73	64	56	69	61	53	66	59	60
			Exposed	90	89	77	90	84	73	90	81	70	89	77	67	85	74	64	82	71	62	78	69	61	73	64	57	68	61	53	65	58	60	62	54	56	59	61	53	56	59	~~50~~
		7-20	Interior	91	91	90	91	91	85	91	89	81	91	84	77	91	80	73	88	77	70	85	74	67	80	68	63	75	64	60	71	61	57	67	58	53	64	55	60	62	52	58
			Exposed	91	80	73	87	76	70	84	72	66	80	69	64	77	66	62	75	64	60	72	62	58	68	59	53	64	54	60	61	51	56	58	58	53	55	55	~~50~~	62	51	~~47~~
		20-27	Interior	99	99	99	99	99	96	99	97	91	99	92	86	99	88	82	99	84	78	97	80	75	90	74	69	84	69	64	80	65	61	76	62	57	72	60	53	69	57	50
			Exposed	99	87	81	99	83	77	95	79	73	91	75	70	87	72	66	84	69	64	81	66	62	76	62	58	71	59	53	68	55	49	64	52	57	62	59	52	59	56	48
		27-45	Interior	101	101	101	101	101	100	101	101	95	101	101	91	101	96	87	101	92	83	96	88	80	88	82	74	82	76	69	76	72	65	71	67	62	67	64	59	64	62	55
			Exposed	101	96	86	100	91	82	94	87	78	89	83	75	85	79	71	81	76	69	78	73	66	72	68	62	67	64	59	63	61	54	60	58	50	58	55	59	54	51	55
	D	0-7	Interior	90	90	86	90	90	82	90	90	78	90	86	74	90	82	71	90	79	68	87	76	66	81	71	62	76	66	59	71	63	55	68	60	52	64	58	59	62	54	56
			Exposed	90	82	71	90	78	68	86	75	65	82	72	63	79	69	61	76	66	59	73	64	56	68	61	52	64	57	59	61	53	55	58	60	52	55	57	~~48~~	51	54	~~46~~
		7-20	Interior	91	91	83	91	86	78	91	81	74	89	77	71	85	74	68	82	71	65	79	68	63	74	64	60	70	60	56	66	57	52	63	53	59	61	61	56	58	58	53
			Exposed	85	74	68	82	70	64	78	67	62	75	64	60	72	62	58	70	60	55	67	58	53	64	54	59	60	60	56	57	57	52	53	53	~~49~~	61	~~50~~	~~46~~	58	~~47~~	~~44~~
		20-27	Interior	100	99	93	100	94	87	100	89	83	100	84	78	97	80	75	93	77	72	89	74	69	84	69	64	79	64	60	74	61	56	71	59	52	67	55	49	64	52	57
			Exposed	97	80	75	92	76	71	88	73	67	84	69	64	81	66	62	78	64	60	76	62	57	71	59	52	67	55	48	64	51	55	61	58	51	58	55	47	55	52	~~44~~
		27-45	Interior	102	102	97	102	102	92	102	97	88	102	93	84	97	89	80	92	85	77	88	81	74	81	76	68	75	71	64	70	66	61	66	63	58	63	61	54	60	58	50
			Exposed	96	88	80	91	84	76	86	80	72	82	76	69	78	73	66	74	70	64	71	68	62	66	63	58	62	60	53	60	57	49	56	53	57	53	60	53	60	58	49
20	B	0-7	Interior	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	72	77	77	72	77	77	68	77	74	64	77	70	62	76	67	59
			Exposed	77	77	77	77	77	77	77	77	77	77	77	77	77	77	75	77	77	72	77	77	69	77	74	64	77	69	61	75	65	58	71	63	54	67	60	51	64	57	59
		7-20	Interior	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	74	77	75	68	77	70	64	77	66	62	74	63	59	70	60	56
			Exposed	77	77	77	77	77	77	77	77	77	77	77	74	77	77	71	77	74	68	77	71	65	77	66	62	73	63	59	69	60	55	66	56	51	63	53	59	60	60	56
		20-27	Interior	92	92	92	92	92	92	92	92	92	92	92	92	92	92	92	92	92	92	92	92	89	92	88	82	92	81	76	92	76	71	87	72	66	83	68	63	79	64	60
			Exposed	92	92	92	92	92	92	92	92	87	92	89	83	92	85	79	92	81	75	92	78	72	87	72	67	82	67	62	78	63	59	74	61	55	70	58	51	67	55	48
		27-45	Interior	95	95	95	95	95	95	95	95	95	95	95	95	95	95	95	95	95	95	95	95	94	95	95	87	95	90	81	91	84	76	85	79	71	79	75	67	75	71	64
			Exposed	95	95	95	95	95	95	95	95	92	95	95	88	95	93	84	95	89	80	93	86	77	85	79	72	79	74	67	73	69	63	69	65	60	65	63	57	63	60	53
	C	0-7	Interior	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	74	77	77	71	77	76	66	77	72	63	77	67	60	73	64	56	69	61	53	66	59	60
			Exposed	77	77	77	77	77	73	77	77	70	77	77	67	77	74	64	77	71	62	77	69	61	73	64	57	68	61	53	65	58	60	62	54	56	59	61	53	56	59	~~50~~
		7-20	Interior	77	77	77	77	77	77	77	77	77	77	77	77	77	77	73	77	77	70	77	74	67	77	68	63	75	64	60	71	61	57	67	58	53	64	55	60	62	52	58
			Exposed	77	77	73	77	76	70	77	72	66	77	69	64	77	66	62	75	64	60	72	62	58	68	59	53	64	54	60	61	51	56	58	58	53	55	55	~~50~~	62	51	~~47~~
		20-27	Interior	92	92	92	92	92	92	92	92	91	92	92	86	92	88	82	92	84	78	92	80	75	90	74	69	84	69	64	80	65	61	76	62	57	72	60	53	69	57	50
			Exposed	92	87	81	92	83	77	92	79	73	91	75	70	87	72	66	84	69	64	81	66	62	76	62	58	71	59	53	68	55	49	64	52	57	62	59	52	59	56	48
		27-45	Interior	95	95	95	95	95	95	95	95	95	95	95	91	95	95	87	95	92	83	95	88	80	88	82	74	82	76	69	76	72	65	71	67	62	67	64	59	64	62	55
			Exposed	95	95	86	95	91	82	94	87	78	89	83	75	85	79	71	81	76	69	78	73	66	72	68	62	67	64	59	63	61	54	60	58	50	58	55	59	54	51	55
	D	0-7	Interior	77	77	77	77	77	77	77	77	77	77	77	74	77	77	71	77	77	68	77	76	66	77	71	62	76	66	59	71	63	55	68	60	52	64	58	59	62	54	56
			Exposed	77	77	71	77	77	68	77	75	65	77	72	63	77	69	61	76	66	59	73	64	56	68	61	52	64	57	59	61	53	55	58	60	52	55	57	~~48~~	51	54	~~46~~
		7-20	Interior	77	77	77	77	77	77	77	77	74	77	77	71	77	74	68	77	71	65	77	68	63	74	64	60	70	60	56	66	57	52	63	53	59	61	61	56	58	58	53
			Exposed	77	74	68	77	70	64	77	67	62	75	64	60	72	62	58	70	60	55	67	58	53	64	54	59	60	60	56	57	57	52	53	53	~~49~~	61	~~50~~	~~46~~	58	~~47~~	~~44~~
		20-27	Interior	93	93	93	93	93	87	93	89	83	93	84	78	93	80	75	93	77	72	89	74	69	84	69	64	79	64	60	74	61	56	71	59	52	67	55	49	64	52	57
			Exposed	93	80	75	92	76	71	88	73	67	84	69	64	81	66	62	78	64	60	76	62	57	71	59	52	67	55	48	64	51	55	61	58	51	58	55	47	55	52	~~44~~
		27-45	Interior	96	96	96	96	96	92	96	96	88	96	93	84	96	89	80	92	85	77	88	81	74	81	76	68	75	71	64	70	66	61	66	63	58	63	61	54	60	58	50
			Exposed	96	88	80	91	84	76	86	80	72	82	76	69	78	73	66	74	70	64	71	68	62	66	63	58	62	60	53	60	57	49	56	53	57	53	60	53	60	58	49

* Cells with an astrisks indicates that the L-foot must be oriented in the Y- direction as indicated in the image.

10 Highlighted cell indicate 3-rail system span. Contact Unirac Engineering Services for support.

~~10~~ Highlighted cell with strikethrough indicate 3-rail system span and module clamp allowable capacity exceeds with 3-rails. 4-Rail system required. Contact Unirac Engineering Services for support.

UNIRAC

ASCE 7-16	II	30 ft	Ss = 3.00	23 sq.ft	LANDSCAPE	CROSS-SLOPE	NXT	NXT COMBO	Flashkit Pro
Design Standard	Risk Category	Roof Height	Seismic	Module Area	Orientation	Rail Direction	Rail Type	Clamp	Attachment

SPAN TABLES

Maximum Allowable Rail Spans for Rooftop Solar Panels Parallel to the Roof Surface (inches)

Ground Snow Load (psf)	Wind Exposure Category	Roof Tilt Angle (deg)	Panel Exposure	Basic Wind Speed (mph)																																						
				90			95			100			105			110			115			120			130			140			150			160			170			180		
				Roof Wind Zone																																						
				1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3
30	B	0-7	Interior	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	72	76	76	68	76	74	64	76	70	62	76	67	59
			Exposed	76	76	76	76	76	76	76	76	76	76	76	76	76	76	75	76	76	72	76	76	69	76	74	64	76	69	61	75	65	58	71	63	54	67	60	51	64	57	59
		7-20	Interior	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	74	77	75	68	77	70	64	77	66	62	74	63	59	70	60	56
			Exposed	77	77	77	77	77	77	77	77	77	77	77	74	77	77	71	77	74	68	77	71	65	77	66	62	73	63	59	69	60	55	66	56	51	63	53	59	60	60	56
		20-27	Interior	85	85	85	85	85	85	85	85	85	85	85	85	85	85	85	85	85	85	85	85	85	85	85	82	85	81	76	85	76	71	85	72	66	83	68	63	79	64	60
			Exposed	85	85	85	85	85	85	85	85	85	85	85	83	85	85	79	85	81	75	85	78	72	85	72	67	82	67	62	78	63	59	74	61	55	70	58	51	67	55	48
		27-45	Interior	90	90	90	90	90	90	90	90	90	90	90	90	90	90	90	90	90	90	90	90	90	90	90	87	90	90	81	90	84	76	85	79	71	79	75	67	75	71	64
			Exposed	90	90	90	90	90	90	90	90	90	90	90	88	90	90	84	90	89	80	90	86	77	85	79	72	79	74	67	73	69	63	69	65	60	65	63	57	63	60	53
	C	0-7	Interior	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	74	76	76	71	76	76	66	76	72	63	76	67	60	73	64	56	69	61	53	66	59	60
			Exposed	76	76	76	76	76	73	76	76	70	76	76	67	76	74	64	76	71	62	76	69	61	73	64	57	68	61	53	65	58	60	62	54	56	59	61	53	56	59	50
		7-20	Interior	77	77	77	77	77	77	77	77	77	77	77	77	77	77	73	77	77	70	77	74	67	77	68	63	75	64	60	71	61	57	67	58	53	64	55	60	62	52	58
			Exposed	77	77	73	77	76	70	77	72	66	77	69	64	77	66	62	75	64	60	72	62	58	68	59	53	64	54	60	61	51	56	58	58	53	55	55	50	62	51	47
		20-27	Interior	85	85	85	85	85	85	85	85	85	85	85	85	85	85	82	85	84	78	85	80	75	85	74	69	84	69	64	80	65	61	76	62	57	72	60	53	69	57	50
			Exposed	85	85	81	85	83	77	85	79	73	85	75	70	85	72	66	84	69	64	81	66	62	76	62	58	71	59	53	68	55	49	64	52	57	62	59	52	59	56	48
		27-45	Interior	90	90	90	90	90	90	90	90	90	90	90	90	90	90	87	90	90	83	90	88	80	88	82	74	82	76	69	76	72	65	71	67	62	67	64	59	64	62	55
			Exposed	90	90	86	90	90	82	90	87	78	89	83	75	85	79	71	81	76	69	78	73	66	72	68	62	67	64	59	63	61	54	60	58	50	58	55	59	54	51	55
	D	0-7	Interior	77	77	77	77	77	77	77	77	77	77	77	74	77	77	71	77	77	68	77	76	66	77	71	62	76	66	59	71	63	55	68	60	52	64	58	59	62	54	56
			Exposed	77	77	71	77	77	68	77	75	65	77	72	63	77	69	61	76	66	59	73	64	56	68	61	52	64	57	59	61	53	55	58	60	52	55	57	48	51	54	46
		7-20	Interior	77	77	77	77	77	77	77	77	74	77	77	71	77	74	68	77	71	65	77	68	63	74	64	60	70	60	56	66	57	52	63	53	59	61	61	56	58	58	53
			Exposed	77	74	68	77	70	64	77	67	62	75	64	60	72	62	58	70	60	55	67	58	53	64	54	59	60	60	56	57	57	52	53	53	49	61	50	46	58	47	41
		20-27	Interior	87	87	87	87	87	87	87	87	83	87	84	78	87	80	75	87	77	72	87	74	69	84	69	64	79	64	60	74	61	56	71	59	52	67	55	49	64	52	57
			Exposed	87	80	75	87	76	71	87	73	67	84	69	64	81	66	62	78	64	60	76	62	57	71	59	52	67	55	48	64	51	55	61	58	51	58	55	47	55	52	41
		27-45	Interior	91	91	91	91	91	91	91	91	88	91	91	84	91	89	80	91	85	77	88	81	74	81	76	68	75	71	64	70	66	61	66	63	58	63	61	54	60	58	50
			Exposed	91	88	80	91	84	76	86	80	72	82	76	69	78	73	66	74	70	64	71	68	62	66	63	58	62	60	53	60	57	49	56	53	57	53	60	53	60	58	49
40	B	0-7	Interior	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	68	69	69	64	69	69	62	69	67	59
			Exposed	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	64	69	69	61	69	65	58	69	63	54	67	60	51	64	57	59
		7-20	Interior	71	71	71	71	71	71	71	71	71	71	71	71	71	71	71	71	71	71	71	71	71	71	71	71	71	71	68	71	70	64	71	66	62	71	63	59	70	60	56
			Exposed	71	71	71	71	71	71	71	71	71	71	71	71	71	71	71	71	71	68	71	71	65	71	66	62	71	63	59	69	60	55	66	56	51	63	53	59	60	60	56
		20-27	Interior	79	79	79	79	79	79	79	79	79	79	79	79	79	79	79	79	79	79	79	79	79	79	79	79	79	79	76	79	76	71	79	72	66	79	68	63	79	64	60
			Exposed	79	79	79	79	79	79	79	79	79	79	79	79	79	79	79	79	79	75	79	78	72	79	72	67	79	67	62	78	63	59	74	61	55	70	58	51	67	55	48
		27-45	Interior	85	85	85	85	85	85	85	85	85	85	85	85	85	85	85	85	85	85	85	85	85	85	85	85	85	85	81	84	84	76	81	79	71	79	75	67	75	71	64
			Exposed	85	85	85	85	85	85	85	85	85	85	85	85	85	85	84	85	85	80	85	85	77	85	79	72	79	74	67	73	69	63	69	65	60	65	63	57	63	60	53
	C	0-7	Interior	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	66	69	69	63	69	67	60	69	64	56	69	61	53	66	59	60
			Exposed	69	69	69	69	69	69	69	69	69	69	69	67	69	69	64	69	69	62	69	69	61	69	64	57	68	61	53	65	58	60	62	54	56	59	61	53	56	59	50
		7-20	Interior	71	71	71	71	71	71	71	71	71	71	71	71	71	71	71	71	71	70	71	71	67	71	68	63	71	64	60	71	61	57	67	58	53	64	55	60	62	52	58
			Exposed	71	71	71	71	71	70	71	71	66	71	69	64	71	66	62	71	64	60	71	62	58	68	59	53	64	54	60	61	51	56	58	58	53	55	55	50	62	51	47
		20-27	Interior	79	79	79	79	79	79	79	79	79	79	79	79	79	79	79	79	79	78	79	79	75	79	74	69	79	69	64	79	65	61	76	62	57	72	60	53	69	57	50
			Exposed	79	79	79	79	79	77	79	79	73	79	75	70	79	72	66	79	69	64	79	66	62	76	62	58	71	59	53	68	55	49	64	52	57	62	59	52	59	56	48
		27-45	Interior	85	85	85	85	85	85	85	85	85	85	85	85	85	85	85	85	85	83	85	85	80	83	82	74	80	76	69	76	72	65	71	67	62	67	64	59	64	62	55
			Exposed	85	85	85	85	85	82	85	85	78	85	83	75	85	79	71	81	76	69	78	73	66	72	68	62	67	64	59	63	61	54	60	58	50	58	55	59	54	51	55
	D	0-7	Interior	72	72	72	72	72	72	72	72	72	72	72	72	72	72	71	72	72	68	72	72	66	72	71	62	72	66	59	71	63	55	68	60	52	64	58	59	62	54	56
			Exposed	72	72	71	72	72	68	72	72	65	72	72	63	72	69	61	72	66	59	72	64	56	68	61	52	64	57	59	61	53	55	58	60	52	55	57	48	51	54	46
		7-20	Interior	74	74	74	74	74	74	74	74	74	74	74	71	74	74	68	74	71	65	74	68	63	74	64	60	70	60	56	66	57	52	63	53	59	61	61	56	58	58	53
			Exposed	74	74	68	74	70	64	74	67	62	74	64	60	72	62	58	70	60	55	67	58	53	64	54	59	60	60	56	57	57	52	53	53	49	61	50	46	58	47	41
		20-27	Interior	81	81	81	81	81	81	81	81	81	81	81	78	81	80	75	81	77	72	81	74	69	81	69	64	79	64	60	74	61	56	71	59	52	67	55	49	64	52	57
			Exposed	81	80	75	81	76	71	81	73	67	81	69	64	81	66	62	78	64	60	76	62	57	71	59	52	67	55	48	64	51	55	61	58	51	58	55	47	55	52	41
		27-45	Interior	87	87	87	87	87	87	87	87	87	87	87	84	87	87	80	87	85	77	85	81	74	81	76	68	75	71	64	70	66	61	66	63	58	63	61	54	60	58	50
			Exposed	87	87	80	87	84	76	86	80	72	82	76	69	78	73	66	74	70	64	71	68	62	66	63	58	62	60	53	60	57	49	56	53	57	53	60	53	60	58	49
50	B	0-7	Interior	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	62	63	63	59
			Exposed	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	61	63	63	58	63	63	54	63	60	51	63	57	59
		7-20	Interior	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	64	65	65	62	65	63	59	65	60	56
			Exposed	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	62	65	63	59	65	60	55	65	56	51	63	53	59	60	60	56
		20-27	Interior	73	73	73	73	73	73	73	73	73	73	73	73	73	73	73	73	73	73	73	73	73	73	73	73	73	73	73	73	73	71	73	72	66	73	68	63	73	64	60
			Exposed	73	73	73	73	73	73	73	73	73	73	73	73	73	73	73	73	73	73	73	73	72	73	72	67	73	67	62	73	63	59	73	61	55	70	58	51	67	55	48
		27-45	Interior	79	79	79	79	79	79	79	79	79	79	79	79	79	79	79	79	79	79	79	79	79	79	79	79	79	79	79	78	78	76	76	76	71	74	74	67	72	71	64
			Exposed	79	79	79	79	79	79	79	79	79	79	79	79	79	79	79	79	79	79	79	79	77	79	79	72	79	74	67	73	69	63	69	65	60	65	63	57	63	60	53
	C	0-7	Interior	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	60	63	63	56	63	61	53	63	59	60
			Exposed	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	62	63	63	61	63	63	57	63	61	53	63	58	60	62	54	56	59	61	53	56	59	50
		7-20	Interior	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	63	65	64	60	65	61	57	64	58	53	63	55	60	62	52	58
			Exposed	65	65	65	65	65	65	65	65	65	65	65	64	65	65	62	65	64	60	65	62	58	65	59	53	64	54	60	61	51	56	58	58	53	55	55	50	62	51	47
		20-27	Interior	73	73	73	73	73	73	73	73	73	73	73	73	73	73	73	73	73	73	73	73	73	73	73	69	73	69	64	73	65	61	72	62	57	71	60	53	69	57	50
			Exposed	73	73	73	73	73	73	73	73	73	73	73	70	73	72	66	73	69	64	73	66	62	73	62	58	71	59	53	68	55	49	64	52	57	62	59	52	59	56	48
		27-45	Interior	79	79	79	79	79	79	79	79	79	79	79	79	79	79	79	79	79	79	79	79	79	77	77	74	75	75	69	72	72	65	70	67	62	67	64	59	64	62	55
			Exposed	79	79	79	79	79	79	79	79	78	79	79	75	79	79	71	79	76	69	78	73	66	72	68	62	67	64	59	63	61	54	60	58	50	58	55	59	54	51	55
	D	0-7	Interior	66	66	66	66	66	66	66	66	66	66	66	66	66	66	66	66	66	66	66	66	66	66	66	62	66	66	59	66	63	55	66	60	52	64	58	59	62	54	56
			Exposed	66	66	66	66	66	66	66	66	65	66	66	63	66	66	61	66	66	59	66	64	56	66	61	52	64	57	59	61	53	55	58	60	52	55	57	48	51	54	46
		7-20	Interior	68	68	68	68	68	68	68	68	68	68	68	68	68	68	68	68	68	65	68	68	63	68	64	60	68	60	56	66	57	52	63	53	59	61	61	56	58	58	53
			Exposed	68	68	68	68	68	64	68	67	62	68	64	60	68	62	58	68	60	55	67	58	53	64	54	59	60	60	56	57	57	52	53	53	49	61	50	46	58	47	41
		20-27	Interior	76	76	76	76	76	76	76	76	76	76	76	76	76	76	75	76	76	72	76	74	69	76	69	64	76	64	60	74	61	56	71	59	52	67	55	49	64	52	57
			Exposed	76	76	75	76	76	71	76	73	67	76	69	64	76	66	62	76	64	60	76	62	57	71	59	52	67	55	48	64	51	55	61	58	51	58	55	47	55	52	41
		27-45	Interior	82	82	82	82	82	82	82	82	82	82	82	82	82	82	80	81	81	77	80	80	74	77	76	68	74	71	64	70	66	61	66	63	58	63	61	54	60	58	50
			Exposed	82	82	80	82	82	76	82	80	72	82	76	69	78	73	66	74	70	64	71	68	62	66	63	58	62	60	53	60	57	49	56	53	57	53	60	53	60	58	49

* Cells with an astrisks indicates that the L-foot must be oriented in the Y- direction as indicated in the image.

10 Highlighted cell indicate 3-rail system span. Contact Unirac Engineering Services for support.

~~10~~ Highlighted cell with strikethrough indicate 3-rail system span and module clamp allowable capacity exceeds with 3-rails. 4-Rail system required. Contact Unirac Engineering Services for support.

UNIRAC

ASCE 7-16	II	30 ft	Ss = 3.00	23 sq.ft	LANDSCAPE	CROSS-SLOPE	NXT	NXT COMBO	Flashkit Pro
Design Standard	Risk Category	Roof Height	Seismic	Module Area	Orientation	Rail Direction	Rail Type	Clamp	Attachment

SPAN TABLES

Maximum Allowable Rail Spans for Rooftop Solar Panels Parallel to the Roof Surface (inches)

Ground Snow Load (psf)	Wind Exposure Category	Roof Tilt Angle (deg)	Panel Exposure	Basic Wind Speed (mph)																																						
				90			95			100			105			110			115			120			130			140			150			160			170			180		
				Roof Wind Zone																																						
				1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3
60	B	0-7	Interior	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57
			Exposed	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	54	57	57	51	57	57	59
		7-20	Interior	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	59	60	60	56
			Exposed	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	59	60	60	55	60	56	51	60	53	59	60	60	56
		20-27	Interior	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	66	69	68	63	69	64	60
			Exposed	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	67	69	67	62	69	63	59	69	61	55	69	58	51	67	55	48
		27-45	Interior	75	75	75	75	75	75	75	75	75	75	75	75	75	75	75	75	75	75	75	75	75	75	75	75	75	75	75	73	73	73	72	72	71	70	70	67	68	68	64
			Exposed	75	75	75	75	75	75	75	75	75	75	75	75	75	75	75	75	75	75	75	75	75	75	75	72	75	74	67	73	69	63	69	65	60	65	63	57	63	60	53
	C	0-7	Interior	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	56	57	57	53	57	57	60
			Exposed	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	53	57	57	60	57	54	56	57	61	53	56	59	~~50~~
		7-20	Interior	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	57	60	58	53	59	55	60	58	52	58
			Exposed	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	58	60	59	53	60	54	60	60	51	56	58	58	53	55	55	~~50~~	62	51	~~47~~
		20-27	Interior	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	64	69	65	61	68	62	57	66	60	53	65	57	50
			Exposed	69	69	69	69	69	69	69	69	69	69	69	69	69	69	66	69	69	64	69	66	62	69	62	58	69	59	53	68	55	49	64	52	57	62	59	52	59	56	48
		27-45	Interior	75	75	75	75	75	75	75	75	75	75	75	75	75	75	75	75	75	75	75	75	75	73	73	73	70	70	69	68	68	65	66	66	62	64	64	59	62	62	55
			Exposed	75	75	75	75	75	75	75	75	75	75	75	75	75	75	71	75	75	69	75	73	66	72	68	62	67	64	59	63	61	54	60	58	50	58	55	59	54	51	55
	D	0-7	Interior	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	59	60	60	55	60	60	52	60	58	59	60	54	56
			Exposed	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	59	60	60	56	60	60	52	60	57	59	60	53	55	58	60	52	55	57	~~48~~	51	54	~~46~~
		7-20	Interior	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	60	63	60	56	62	57	52	61	53	59	60	61	56	58	58	53
			Exposed	63	63	63	63	63	63	63	63	62	63	63	60	63	62	58	63	60	55	63	58	53	63	54	59	60	60	56	57	57	52	53	53	~~49~~	61	~~50~~	~~46~~	58	~~47~~	~~44~~
		20-27	Interior	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	69	72	69	64	71	64	60	70	61	56	68	59	52	67	55	49	64	52	57
			Exposed	72	72	72	72	72	71	72	72	67	72	69	64	72	66	62	72	64	60	72	62	57	71	59	52	67	55	48	64	51	55	61	58	51	58	55	47	55	52	~~44~~
		27-45	Interior	78	78	78	78	78	78	78	78	78	78	78	78	77	77	77	76	76	76	75	75	74	73	73	68	70	70	64	68	66	61	65	63	58	63	61	54	60	58	50
			Exposed	78	78	78	78	78	76	78	78	72	78	76	69	77	73	66	74	70	64	71	68	62	66	63	58	62	60	53	60	57	49	56	53	57	53	60	53	60	58	49
70	B	0-7	Interior	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53
			Exposed	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	51	53	53	59
		7-20	Interior	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56
			Exposed	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	55	56	56	51	56	53	59	56	60	56
		20-27	Interior	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	63	65	64	60
			Exposed	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	62	65	63	59	65	61	55	65	58	51	65	55	48
		27-45	Interior	85*	85*	85*	85*	85*	85*	85*	85*	85*	85*	85*	85*	85*	85*	85*	85*	85*	85*	85*	85*	85*	85*	85*	85*	85*	85*	71	69	69	69	68	68	68	66	66	66	65	65	64
			Exposed	85*	85*	85*	85*	85*	85*	85*	85*	85*	85*	85*	85*	85*	85*	71	85*	85*	71	85*	85*	71	85*	71	71	71	71	67	69	69	63	68	65	60	65	63	57	63	60	53
	C	0-7	Interior	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	60
			Exposed	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	60	53	53	56	53	61	53	53	59	~~50~~
		7-20	Interior	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	53	56	55	60	55	52	58
			Exposed	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	53	56	54	60	56	51	56	56	58	53	55	55	~~50~~	62	51	~~47~~
		20-27	Interior	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	64	65	65	61	64	62	57	63	60	53	62	57	50
			Exposed	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	64	65	65	62	65	62	58	65	59	53	65	55	49	64	52	57	62	59	52	59	56	48
		27-45	Interior	85*	85*	85*	85*	85*	85*	85*	85*	85*	85*	85*	85*	85*	85*	85*	85*	85*	71	85*	85*	71	69	69	69	67	67	67	65	65	65	63	63	62	62	62	59	60	60	55
			Exposed	85*	85*	85*	85*	85*	71	85*	85*	71	85*	71	71	85*	71	71	71	71	69	71	71	66	69	68	62	67	64	59	63	61	54	60	58	50	58	55	59	54	51	55
	D	0-7	Interior	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	55	56	56	52	56	56	59	56	54	56
			Exposed	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	52	56	56	59	56	53	55	56	60	52	55	57	~~48~~	51	54	~~46~~
		7-20	Interior	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	56	58	57	52	58	53	59	57	61	56	56	58	53
			Exposed	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	55	58	58	53	58	54	59	58	60	56	57	57	52	53	53	~~49~~	61	~~50~~	~~46~~	58	~~47~~	~~44~~
		20-27	Interior	68	68	68	68	68	68	68	68	68	68	68	68	68	68	68	68	68	68	68	68	68	68	68	64	67	64	60	66	61	56	65	59	52	63	55	49	62	52	57
			Exposed	68	68	68	68	68	68	68	68	67	68	68	64	68	66	62	68	64	60	68	62	57	68	59	52	67	55	48	64	51	55	61	58	51	58	55	47	55	52	~~44~~
		27-45	Interior	74	74	74	74	74	74	74	74	74	74	74	74	73	73	73	72	72	72	71	71	71	69	69	68	67	67	64	65	65	61	63	63	58	61	61	54	59	58	50
			Exposed	74	74	74	74	74	74	74	74	72	74	74	69	73	73	66	72	70	64	71	68	62	66	63	58	62	60	53	60	57	49	56	53	57	53	60	53	60	58	49
80	B	0-7	Interior	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50
			Exposed	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	59
		7-20	Interior	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52
			Exposed	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	51	52	52	59	52	60	56
		20-27	Interior	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	60
			Exposed	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	59	61	61	55	61	58	51	61	55	48
		27-45	Interior	71*	71*	71*	71*	71*	71*	71*	71*	71*	71*	71*	71*	71*	71*	71*	71*	71*	71*	71*	71*	71*	71*	71*	71*	71*	71*	71*	73*	73*	73*	74*	74*	65	76*	75*	64	62	62	62
			Exposed	71*	71*	71*	71*	71*	71*	71*	71*	71*	71*	71*	71*	71*	71*	71*	71*	71*	71*	71*	71*	71*	71*	71*	71*	71*	71*	67	73*	66	63	65	65	60	64	63	57	62	60	53
	C	0-7	Interior	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	60
			Exposed	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	60	50	50	56	50	61	53	50	59	~~50~~
		7-20	Interior	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	60	52	52	58
			Exposed	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	60	52	51	56	52	58	53	52	55	~~50~~	62	51	~~47~~
		20-27	Interior	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	57	60	60	53	59	57	50
			Exposed	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	58	61	59	53	61	55	49	61	52	57	60	59	52	59	56	48
		27-45	Interior	71*	71*	71*	71*	71*	71*	71*	71*	71*	71*	71*	71*	71*	71*	71*	71*	71*	71*	71*	71*	71*	72*	72*	72*	73*	73*	64	63	63	63	61	61	61	60	60	59	58	58	55
			Exposed	71*	71*	71*	71*	71*	71*	71*	71*	71*	71*	71*	71*	71*	71*	71*	71*	71*	68	71*	71*	66	72*	66	62	64	64	59	63	61	54	60	58	50	58	55	59	54	51	55
	D	0-7	Interior	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	52	53	53	59	53	53	56
			Exposed	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	52	53	53	59	53	53	55	53	60	52	53	57	~~48~~	51	54	~~46~~
		7-20	Interior	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	52	55	53	59	54	61	56	54	58	53
			Exposed	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	53	55	54	59	55	60	56	55	57	52	53	53	~~49~~	61	~~50~~	~~46~~	58	~~47~~	~~44~~
		20-27	Interior	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	60	63	61	56	62	59	52	61	55	49	60	52	57
			Exposed	64	64	64	64	64	64	64	64	64	64	64	64	64	64	62	64	64	60	64	62	57	64	59	52	64	55	48	63	51	55	61	58	51	58	55	47	55	52	~~44~~
		27-45	Interior	81*	81*	81*	81*	81*	81*	81*	81*	81*	81*	81*	81*	81*	81*	80*	80*	80*	69	86*	68	68	66	66	66	64	64	64	62	62	61	61	61	58	59	59	54	57	57	50
			Exposed	81*	81*	80*	81*	81*	71	81*	80*	71	81*	71	69	70	70	66	69	69	64	68	68	62	66	63	58	62	60	53	60	57	49	56	53	57	53	60	53	60	58	49

* Cells with an astrisks indicates that the L-foot must be oriented in the Y- direction as indicated in the image.

10 Highlighted cell indicate 3-rail system span. Contact Unirac Engineering Services for support.

~~10~~ Highlighted cell with strikethrough indicate 3-rail system span and module clamp allowable capacity exceeds with 3-rails. 4-Rail system required. Contact Unirac Engineering Services for support.

UNIRAC

ASCE 7-16	II	30 ft	Ss = 3.00	23 sq.ft	LANDSCAPE	CROSS-SLOPE	NXT	NXT COMBO	Flashkit Pro
Design Standard	Risk Category	Roof Height	Seismic	Module Area	Orientation	Rail Direction	Rail Type	Clamp	Attachment

SPAN TABLES

Maximum Allowable Rail Spans for Rooftop Solar Panels Parallel to the Roof Surface (inches)

Ground Snow Load (psf)	Wind Exposure Category	Roof Tilt Angle (deg)	Panel Exposure	Basic Wind Speed (mph)																																						
				90			95			100			105			110			115			120			130			140			150			160			170			180		
				Roof Wind Zone																																						
				1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3
90	B	0-7	Interior	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47
			Exposed	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	58
		7-20	Interior	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49
			Exposed	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	59	49	60	56
		20-27	Interior	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57
			Exposed	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	55	57	57	51	57	55	48			
		27-45	Interior	68*	68*	68*	68*	68*	68*	68*	68*	68*	68*	68*	68*	68*	68*	68*	68*	68*	68*	68*	68*	68*	68*	68*	68*	66*	66*	66*	65*	65*	65*	64*	64*	64*	65*	65*	64*			
			Exposed	68*	68*	68*	68*	68*	68*	68*	68*	68*	68*	68*	68*	68*	68*	68*	68*	68*	68*	68*	68*	68*	68*	68*	67*	66*	66*	63	65*	65*	60	64*	61	57	60	60	53			
	C	0-7	Interior	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	58
			Exposed	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	58	47	47	56	47	58	53	47	58	50			
		7-20	Interior	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	60	49	49	58			
			Exposed	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	60	49	49	56	49	58	53	49	55	60	60	51	47			
		20-27	Interior	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	53	57	57	50			
			Exposed	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	53	57	55	49	57	52	57	57	59	52	57	56	48			
		27-45	Interior	68*	68*	68*	68*	68*	68*	68*	68*	68*	68*	68*	68*	68*	68*	68*	68*	68*	68*	68*	68*	68*	66*	66*	66*	64*	64*	64*	65*	65*	65*	64*	64*	59	58	58	58	57	57	55
			Exposed	68*	68*	68*	68*	68*	68*	68*	68*	68*	68*	68*	68*	68*	68*	68*	68*	68*	68*	68*	68*	66*	66*	66*	62	64*	64*	59	60	60	54	59	58	50	58	55	59	54	51	55
	D	0-7	Interior	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	59	50	50	56			
			Exposed	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	59	50	50	55	50	60	52	50	57	48	50	54	46			
		7-20	Interior	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	59	52	61	56	51	58	53			
			Exposed	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	59	52	60	56	52	57	52	52	53	49	61	50	46	58	47	41
		20-27	Interior	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	56	59	59	52	58	55	49	57	52	57
			Exposed	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	57	60	59	52	60	55	48	60	51	55	59	58	51	58	55	47	55	52	41
		27-45	Interior	71*	71*	71*	71*	71*	71*	71*	71*	71*	71*	71*	71*	70*	70*	70*	73*	73*	73*	72*	72*	72*	73*	73*	64	62	62	62	61	61	61	59	59	58	57	57	54	56	56	50
			Exposed	71*	71*	71*	71*	71*	71*	71*	71*	71*	71*	71*	68	70*	70*	66	73*	66	64	71*	65	62	64	63	58	62	60	53	60	57	49	56	53	57	53	60	53	60	58	49
100	B	0-7	Interior	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45
			Exposed	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	55
		7-20	Interior	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47
			Exposed	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	57	47	57	56			
		20-27	Interior	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55
			Exposed	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	51	55	55	48			
		27-45	Interior	61*	61*	61*	61*	61*	61*	61*	61*	61*	61*	61*	61*	61*	61*	61*	61*	61*	61*	61*	61*	61*	61*	61*	61*	61*	61*	61*	61*	61*	61*	60*	60*	60*	59*	59*	59*	61*	61*	61*
			Exposed	61*	61*	61*	61*	61*	61*	61*	61*	61*	61*	61*	61*	61*	61*	61*	61*	61*	61*	61*	61*	61*	61*	61*	61*	61*	61*	61*	61*	61*	61*	60*	60*	60*	59*	59*	57	61*	60*	53
	C	0-7	Interior	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	55
			Exposed	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	55	45	45	55	45	45	55	45	55	53	45	55	50			
		7-20	Interior	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	57	47	47	57			
			Exposed	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	57	47	47	56	47	57	53	47	55	50	57	51	47			
		20-27	Interior	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	53	55	55	50			
			Exposed	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	53	55	55	49	55	52	57	55	59	52	55	56	48			
		27-45	Interior	61*	61*	61*	61*	61*	61*	61*	61*	61*	61*	61*	61*	61*	61*	61*	61*	61*	61*	61*	61*	61*	61*	61*	61*	60*	60*	60*	61*	61*	61*	60*	60*	60*	58*	58*	58*	59*	59*	55
			Exposed	61*	61*	61*	61*	61*	61*	61*	61*	61*	61*	61*	61*	61*	61*	61*	61*	61*	61*	61*	61*	61*	61*	61*	61*	60*	60*	59*	61*	61*	54	60*	58*	50	58*	55	59	54	51	55
	D	0-7	Interior	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	58	47	47	56
			Exposed	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	58	47	47	55	47	58	52	47	57	48	47	54	46			
		7-20	Interior	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	59	49	60	56	49	58	53
			Exposed	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	59	49	60	56	49	57	52	49	53	49	60	50	46	58	47	41
		20-27	Interior	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	56	57	57	52	56	55	49	55	52	57
			Exposed	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	52	57	55	48	57	51	55	57	58	51	56	55	47	55	52	41
		27-45	Interior	68*	68*	68*	68*	68*	68*	68*	68*	68*	68*	68*	68*	68*	68*	68*	67*	67*	67*	66*	66*	66*	64*	64*	64*	65*	65*	64*	66*	66*	59	57	57	57	56	56	54	55	55	50
			Exposed	68*	68*	68*	68*	68*	68*	68*	68*	68*	68*	68*	68*	68*	66*	67*	67*	64*	66*	66*	62	64*	62	58	60	60	53	59	57	49	56	53	57	53	60	53	60	58	49	

* Cells with an astrisks indicates that the L-foot must be oriented in the Y- direction as indicated in the image.

10 Highlighted cell indicate 3-rail system span. Contact Unirac Engineering Services for support.

~~10~~ Highlighted cell with strikethrough indicate 3-rail system span and module clamp allowable capacity exceeds with 3-rails. 4-Rail system required. Contact Unirac Engineering Services for support.