Span Tables

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

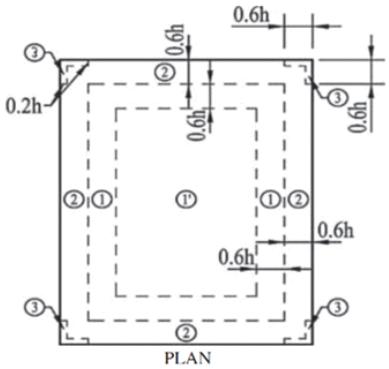
- 0.2-s Spectral Response Acceleration, SS ≤ 3
- S_S = 1.25 and 3 per criteria shown on individual span tables sheets.
- S_1 = 0.5
- Seismic site class D

Array Assumptions

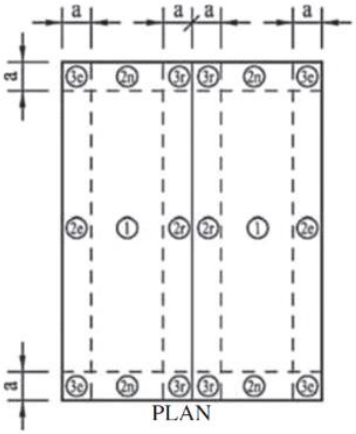
- Module orientation and Rail direction per criteria shown on individual span tables sheets.
- Maximum module dimensions of 40.1" x 67" (~19 sq.ft, 47.65 lbs) and 41" x 80" (~23 sq.ft, 58.6 lbs) per criteria shown on individual span tables sheets.
- Minimum distance between modules and roof edge is at 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.

Span Tables

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



Gable Roofs θ ≤ 7°

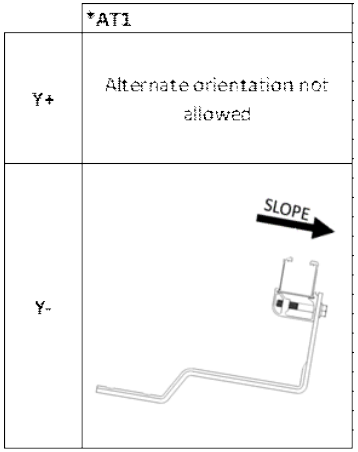


Gable Roofs 7°< θ ≤ 45°

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.



UNIRAC

ASCE 7-16	II	30 ft	Ss = 1.25	19 sq.ft	PORTRAIT	CROSS-SLOPE	NXT	NXT COMBO	Solarhooks ATI
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	84	86	86	72	86	86	60	86	84	51	86	75	44	86	65	40	83	50	33	65	40	28	51	35	25	42	30	21	37	27	19	33	24	17
			Exposed	86	84	51	86	72	42	86	61	38	84	52	34	74	45	31	63	40	28	55	36	26	42	31	22	36	26	19	31	23	16	27	20	14	24	17	19	21	15	17
		7-20	Interior	86	86	85	86	86	76	86	84	60	86	72	50	86	59	42	83	49	38	74	42	35	59	36	29	48	30	25	40	26	22	35	23	19	31	20	17	27	18	15
			Exposed	86	58	42	81	47	37	70	40	33	61	36	30	54	33	27	47	30	25	42	27	23	36	23	19	30	20	16	26	17	14	23	15	19	20	13	17	18	18	15
		20-27	Interior	87	87	87	87	87	87	87	87	85	87	86	78	87	83	62	87	70	52	87	59	43	84	44	34	72	37	28	59	32	23	49	28	20	42	24	17	37	22	15
			Exposed	87	83	62	87	67	49	87	54	41	85	45	35	80	40	31	70	36	28	62	33	25	50	28	20	41	24	16	36	21	14	31	18	12	27	16	11	24	14	15
		27-45	Interior	87	87	87	87	87	87	87	87	87	87	87	85	87	87	79	87	86	67	87	83	57	83	63	43	62	49	35	46	40	30	39	35	25	34	31	22	30	27	19
			Exposed	87	87	79	87	85	64	87	79	53	84	66	45	73	56	39	60	48	35	50	42	31	39	35	26	34	30	21	29	26	18	25	23	15	22	20	13	20	18	11
	C	0-7	Interior	86	86	57	86	81	47	86	68	41	86	58	37	83	50	33	71	43	30	61	39	28	47	33	23	39	28	20	34	24	17	29	21	15	26	19	13	23	17	18
			Exposed	82	49	33	68	42	29	57	38	26	49	34	24	42	31	22	38	28	20	35	25	18	30	22	15	25	18	13	22	16	17	19	14	15	17	19	13	15	16	~~12~~
		7-20	Interior	86	67	47	84	54	40	77	44	36	67	39	32	59	35	29	52	32	27	46	29	24	38	25	21	33	21	18	28	18	15	25	16	13	22	14	18	19	19	16
			Exposed	58	35	29	50	31	26	44	28	23	39	25	21	35	23	19	32	21	17	29	19	16	25	16	13	21	14	17	18	18	15	16	16	13	14	14	~~12~~	19	~~12~~	~~10~~
		20-27	Interior	87	85	72	87	77	57	87	62	46	87	51	39	84	43	34	78	39	30	69	36	27	55	30	22	45	26	18	38	22	15	33	19	13	29	17	12	26	15	16
			Exposed	84	43	34	75	38	29	65	34	25	56	31	22	50	28	20	44	25	18	40	23	16	34	20	13	29	17	11	25	15	15	22	13	13	19	17	12	17	15	~~10~~
		27-45	Interior	87	87	84	87	87	73	87	84	60	87	75	50	83	63	43	70	54	38	58	46	34	42	38	28	36	32	23	31	28	19	27	24	17	24	22	14	21	19	12
			Exposed	83	62	42	66	51	37	53	43	32	44	39	29	39	35	25	36	32	23	33	29	20	28	25	17	24	21	14	20	18	12	18	16	15	16	14	13	14	19	12
	D	0-7	Interior	86	73	43	86	61	38	83	52	34	73	44	31	62	39	28	54	36	25	47	33	23	38	28	20	33	24	17	28	20	14	25	18	13	22	16	17	19	14	15
			Exposed	62	39	28	52	35	25	44	31	22	39	28	20	35	26	18	32	23	16	29	21	15	25	18	13	21	15	17	18	13	14	16	18	~~13~~	14	16	~~11~~	19	14	~~10~~
		7-20	Interior	82	48	37	70	41	33	61	36	30	53	33	27	47	30	24	42	27	22	38	25	20	32	21	17	27	18	15	24	15	13	21	13	17	18	18	15	16	16	13
			Exposed	46	30	24	41	26	22	36	24	20	33	21	18	30	19	16	27	18	15	25	16	13	21	14	17	18	18	15	15	15	13	13	13	~~11~~	18	~~12~~	~~10~~	16	~~10~~	9
		20-27	Interior	87	68	50	87	55	41	85	45	35	79	40	31	69	36	27	61	33	24	54	30	21	44	25	17	37	22	15	32	19	13	28	16	11	25	14	15	22	13	13
			Exposed	69	36	27	59	32	23	51	29	20	45	26	18	40	23	16	37	21	15	33	19	13	28	16	11	24	14	15	21	19	13	18	16	~~11~~	16	14	~~10~~	14	13	9
		27-45	Interior	87	86	65	87	80	53	84	66	44	72	55	39	59	47	34	49	41	31	42	37	28	35	32	23	30	27	19	26	23	16	23	21	13	20	18	12	18	16	15
			Exposed	58	46	34	47	40	30	40	36	26	36	32	23	33	29	21	30	27	18	27	24	17	23	21	14	20	18	11	17	15	15	15	13	12	13	18	11	18	16	~~10~~
10	B	0-7	Interior	62	62	62	62	62	62	62	62	62	62	62	60	62	62	51	62	62	44	62	62	40	62	50	33	62	40	28	51	35	25	42	30	21	37	27	19	33	24	17
			Exposed	62	62	51	62	62	42	62	61	38	62	52	34	62	45	31	62	40	28	55	36	26	42	31	22	36	26	19	31	23	16	27	20	14	24	17	19	21	15	17
		7-20	Interior	63	63	63	63	63	63	63	63	60	63	63	50	63	59	42	63	49	38	63	42	35	59	36	29	48	30	25	40	26	22	35	23	19	31	20	17	27	18	15
			Exposed	63	58	42	63	47	37	63	40	33	61	36	30	54	33	27	47	30	25	42	27	23	36	23	19	30	20	16	26	17	14	23	15	19	20	13	17	18	18	15
		20-27	Interior	82	82	82	82	82	82	82	82	82	82	82	78	82	82	62	82	70	52	82	59	43	82	44	34	72	37	28	59	32	23	49	28	20	42	24	17	37	22	15
			Exposed	82	82	62	82	67	49	82	54	41	82	45	35	80	40	31	70	36	28	62	33	25	50	28	20	41	24	16	36	21	14	31	18	12	27	16	11	24	14	15
		27-45	Interior	86	86	86	86	86	86	86	86	86	86	86	85	86	86	79	86	86	67	86	83	57	83	63	43	62	49	35	46	40	30	39	35	25	34	31	22	30	27	19
			Exposed	86	86	79	86	85	64	86	79	53	84	66	45	73	56	39	60	48	35	50	42	31	39	35	26	34	30	21	29	26	18	25	23	15	22	20	13	20	18	11
	C	0-7	Interior	62	62	57	62	62	47	62	62	41	62	58	37	62	50	33	62	43	30	61	39	28	47	33	23	39	28	20	34	24	17	29	21	15	26	19	13	23	17	18
			Exposed	62	49	33	62	42	29	57	38	26	49	34	24	42	31	22	38	28	20	35	25	18	30	22	15	25	18	13	22	16	17	19	14	15	17	19	13	15	16	~~12~~
		7-20	Interior	63	63	47	63	54	40	63	44	36	63	39	32	59	35	29	52	32	27	46	29	24	38	25	21	33	21	18	28	18	15	25	16	13	22	14	18	19	19	16
			Exposed	58	35	29	50	31	26	44	28	23	39	25	21	35	23	19	32	21	17	29	19	16	25	16	13	21	14	17	18	18	15	16	16	13	14	14	~~12~~	19	~~12~~	~~10~~
		20-27	Interior	82	82	72	82	77	57	82	62	46	82	51	39	82	43	34	78	39	30	69	36	27	55	30	22	45	26	18	38	22	15	33	19	13	29	17	12	26	15	16
			Exposed	82	43	34	75	38	29	65	34	25	56	31	22	50	28	20	44	25	18	40	23	16	34	20	13	29	17	11	25	15	15	22	13	13	19	17	12	17	15	~~10~~
		27-45	Interior	86	86	84	86	86	73	86	84	60	86	75	50	83	63	43	70	54	38	58	46	34	42	38	28	36	32	23	31	28	19	27	24	17	24	22	14	21	19	12
			Exposed	83	62	42	66	51	37	53	43	32	44	39	29	39	35	25	36	32	23	33	29	20	28	25	17	24	21	14	20	18	12	18	16	15	16	14	13	14	19	12
	D	0-7	Interior	62	62	43	62	61	38	62	52	34	62	44	31	62	39	28	54	36	25	47	33	23	38	28	20	33	24	17	28	20	14	25	18	13	22	16	17	19	14	15
			Exposed	62	39	28	52	35	25	44	31	22	39	28	20	35	26	18	32	23	16	29	21	15	25	18	13	21	15	17	18	13	14	16	18	~~13~~	14	16	~~11~~	19	14	~~10~~
		7-20	Interior	63	48	37	63	41	33	61	36	30	53	33	27	47	30	24	42	27	22	38	25	20	32	21	17	27	18	15	24	15	13	21	13	17	18	18	15	16	16	13
			Exposed	46	30	24	41	26	22	36	24	20	33	21	18	30	19	16	27	18	15	25	16	13	21	14	17	18	18	15	15	15	13	13	13	~~11~~	18	~~12~~	~~10~~	16	~~10~~	9
		20-27	Interior	84	68	50	84	55	41	84	45	35	79	40	31	69	36	27	61	33	24	54	30	21	44	25	17	37	22	15	32	19	13	28	16	11	25	14	15	22	13	13
			Exposed	69	36	27	59	32	23	51	29	20	45	26	18	40	23	16	37	21	15	33	19	13	28	16	11	24	14	15	21	19	13	18	16	~~11~~	16	14	~~10~~	14	13	9
		27-45	Interior	87	86	65	87	80	53	84	66	44	72	55	39	59	47	34	49	41	31	42	37	28	35	32	23	30	27	19	26	23	16	23	21	13	20	18	12	18	16	15
			Exposed	58	46	34	47	40	30	40	36	26	36	32	23	33	29	21	30	27	18	27	24	17	23	21	14	20	18	11	17	15	15	15	13	12	13	18	11	18	16	~~10~~
20	B	0-7	Interior	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	40	43	43	33	43	40	28	43	35	25	42	30	21	37	27	19	33	24	17
			Exposed	43	43	43	43	43	42	43	43	38	43	43	34	43	43	31	43	40	28	43	36	26	42	31	22	36	26	19	31	23	16	27	20	14	24	17	19	21	15	17
		7-20	Interior	44	44	44	44	44	44	44	44	44	44	44	44	44	44	42	44	44	38	44	42	35	44	36	29	44	30	25	40	26	22	35	23	19	31	20	17	27	18	15
			Exposed	44	44	42	44	44	37	44	40	33	44	36	30	44	33	27	44	30	25	42	27	23	36	23	19	30	20	16	26	17	14	23	15	19	20	13	17	18	18	15
		20-27	Interior	65	65	65	65	65	65	65	65	65	65	65	65	65	65	62	65	65	52	65	59	43	65	44	34	65	37	28	59	32	23	49	28	20	42	24	17	37	22	15
			Exposed	65	65	62	65	65	49	65	54	41	65	45	35	65	40	31	65	36	28	62	33	25	50	28	20	41	24	16	36	21	14	31	18	12	27	16	11	24	14	15
		27-45	Interior	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	67	72	72	57	72	63	43	62	49	35	46	40	30	39	35	25	34	31	22	30	27	19
			Exposed	72	72	72	72	72	64	72	72	53	72	66	45	72	56	39	60	48	35	50	42	31	39	35	26	34	30	21	29	26	18	25	23	15	22	20	13	20	18	11
	C	0-7	Interior	43	43	43	43	43	43	43	43	41	43	43	37	43	43	33	43	43	30	43	39	28	43	33	23	39	28	20	34	24	17	29	21	15	26	19	13	23	17	18
			Exposed	43	43	33	43	42	29	43	38	26	43	34	24	42	31	22	38	28	20	35	25	18	30	22	15	25	18	13	22	16	17	19	14	15	17	19	13	15	16	~~12~~
		7-20	Interior	44	44	44	44	44	40	44	44	36	44	39	32	44	35	29	44	32	27	44	29	24	38	25	21	33	21	18	28	18	15	25	16	13	22	14	18	19	19	16
			Exposed	44	35	29	44	31	26	44	28	23	39	25	21	35	23	19	32	21	17	29	19	16	25	16	13	21	14	17	18	18	15	16	16	13	14	14	~~12~~	19	~~12~~	~~10~~
		20-27	Interior	65	65	65	65	65	57	65	62	46	65	51	39	65	43	34	65	39	30	65	36	27	55	30	22	45	26	18	38	22	15	33	19	13	29	17	12	26	15	16
			Exposed	65	43	34	65	38	29	65	34	25	56	31	22	50	28	20	44	25	18	40	23	16	34	20	13	29	17	11	25	15	15	22	13	13	19	17	12	17	15	~~10~~
		27-45	Interior	72	72	72	72	72	72	72	72	60	72	72	50	72	63	43	70	54	38	58	46	34	42	38	28	36	32	23	31	28	19	27	24	17	24	22	14	21	19	12
			Exposed	72	62	42	66	51	37	53	43	32	44	39	29	39	35	25	36	32	23	33	29	20	28	25	17	24	21	14	20	18	12	18	16	15	16	14	13	14	19	12
	D	0-7	Interior	43	43	43	43	43	38	43	43	34	43	43	31	43	39	28	43	36	25	43	33	23	38	28	20	33	24	17	28	20	14	25	18	13	22	16	17	19	14	15
			Exposed	43	39	28	43	35	25	43	31	22	39	28	20	35	26	18	32	23	16	29	21	15	25	18	13	21	15	17	18	13	14	16	18	~~13~~	14	16	~~11~~	19	14	~~10~~
		7-20	Interior	44	44	37	44	41	33	44	36	30	44	33	27	44	30	24	42	27	22	38	25	20	32	21	17	27	18	15	24	15	13	21	13	17	18	18	15	16	16	13
			Exposed	44	30	24	41	26	22	36	24	20	33	21	18	30	19	16	27	18	15	25	16	13	21	14	17	18	18	15	15	15	13	13	13	~~11~~	18	~~12~~	~~10~~	16	~~10~~	9
		20-27	Interior	67	67	50	67	55	41	67	45	35	67	40	31	67	36	27	61	33	24	54	30	21	44	25	17	37	22	15	32	19	13	28	16	11	25	14	15	22	13	13
			Exposed	67	36	27	59	32	23	51	29	20	45	26	18	40	23	16	37	21	15	33	19	13	28	16	11	24	14	15	21	19	13	18	16	~~11~~	16	14	~~10~~	14	13	9
		27-45	Interior	75	75	65	75	75	53	75	66	44	72	55	39	59	47	34	49	41	31	42	37	28	35	32	23	30	27	19	26	23	16	23	21	13	20	18	12	18	16	15
			Exposed	58	46	34	47	40	30	40	36	26	36	32	23	33	29	21	30	27	18	27	24	17	23	21	14	20	18	11	17	15	15	15	13	12	13	18	11	18	16	~~10~~

* 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	Solarhooks ATI
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	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	40	42	42	33	42	40	28	42	35	25	42	30	21	37	27	19	33	24	17
			Exposed	42	42	42	42	42	42	42	42	38	42	42	34	42	42	31	42	40	28	42	36	26	42	31	22	36	26	19	31	23	16	27	20	14	24	17	19	21	15	17
		7-20	Interior	44	44	44	44	44	44	44	44	44	44	44	44	44	44	42	44	44	38	44	42	35	44	36	29	44	30	25	40	26	22	35	23	19	31	20	17	27	18	15
			Exposed	44	44	42	44	44	37	44	40	33	44	36	30	44	33	27	44	30	25	42	27	23	36	23	19	30	20	16	26	17	14	23	15	19	20	13	17	18	18	15
		20-27	Interior	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	52	53	53	43	53	44	34	53	37	28	53	32	23	49	28	20	42	24	17	37	22	15
			Exposed	53	53	53	53	53	49	53	53	41	53	45	35	53	40	31	53	36	28	53	33	25	50	28	20	41	24	16	36	21	14	31	18	12	27	16	11	24	14	15
		27-45	Interior	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	57	61	61	43	59	49	35	46	40	30	39	35	25	34	31	22	30	27	19
			Exposed	61	61	61	61	61	61	61	61	53	61	61	45	61	56	39	60	48	35	50	42	31	39	35	26	34	30	21	29	26	18	25	23	15	22	20	13	20	18	11
	C	0-7	Interior	42	42	42	42	42	42	42	42	41	42	42	37	42	42	33	42	42	30	42	39	28	42	33	23	39	28	20	34	24	17	29	21	15	26	19	13	23	17	18
			Exposed	42	42	33	42	42	29	42	38	26	42	34	24	42	31	22	38	28	20	35	25	18	30	22	15	25	18	13	22	16	17	19	14	15	17	19	13	15	16	~~12~~
		7-20	Interior	44	44	44	44	44	40	44	44	36	44	39	32	44	35	29	44	32	27	44	29	24	38	25	21	33	21	18	28	18	15	25	16	13	22	14	18	19	19	16
			Exposed	44	35	29	44	31	26	44	28	23	39	25	21	35	23	19	32	21	17	29	19	16	25	16	13	21	14	17	18	18	15	16	16	13	14	14	~~12~~	19	~~12~~	~~10~~
		20-27	Interior	53	53	53	53	53	53	53	53	46	53	51	39	53	43	34	53	39	30	53	36	27	53	30	22	45	26	18	38	22	15	33	19	13	29	17	12	26	15	16
			Exposed	53	43	34	53	38	29	53	34	25	53	31	22	50	28	20	44	25	18	40	23	16	34	20	13	29	17	11	25	15	15	22	13	13	19	17	12	17	15	~~10~~
		27-45	Interior	61	61	61	61	61	61	61	61	60	61	61	50	61	61	43	60	54	38	58	46	34	42	38	28	36	32	23	31	28	19	27	24	17	24	22	14	21	19	12
			Exposed	61	61	42	61	51	37	53	43	32	44	39	29	39	35	25	36	32	23	33	29	20	28	25	17	24	21	14	20	18	12	18	16	15	16	14	13	14	19	12
	D	0-7	Interior	43	43	43	43	43	38	43	43	34	43	43	31	43	39	28	43	36	25	43	33	23	38	28	20	33	24	17	28	20	14	25	18	13	22	16	17	19	14	15
			Exposed	43	39	28	43	35	25	43	31	22	39	28	20	35	26	18	32	23	16	29	21	15	25	18	13	21	15	17	18	13	14	16	18	~~13~~	14	16	~~11~~	19	14	~~10~~
		7-20	Interior	44	44	37	44	41	33	44	36	30	44	33	27	44	30	24	42	27	22	38	25	20	32	21	17	27	18	15	24	15	13	21	13	17	18	18	15	16	16	13
			Exposed	44	30	24	41	26	22	36	24	20	33	21	18	30	19	16	27	18	15	25	16	13	21	14	17	18	18	15	15	15	13	13	13	~~11~~	18	~~12~~	~~10~~	16	~~10~~	9
		20-27	Interior	56	56	50	56	55	41	56	45	35	56	40	31	56	36	27	56	33	24	54	30	21	44	25	17	37	22	15	32	19	13	28	16	11	25	14	15	22	13	13
			Exposed	56	36	27	56	32	23	51	29	20	45	26	18	40	23	16	37	21	15	33	19	13	28	16	11	24	14	15	21	19	13	18	16	~~11~~	16	14	~~10~~	14	13	9
		27-45	Interior	64	64	64	64	64	53	64	64	44	64	55	39	59	47	34	49	41	31	42	37	28	35	32	23	30	27	19	26	23	16	23	21	13	20	18	12	18	16	15
			Exposed	58	46	34	47	40	30	40	36	26	36	32	23	33	29	21	30	27	18	27	24	17	23	21	14	20	18	11	17	15	15	15	13	12	13	18	11	18	16	~~10~~
40	B	0-7	Interior	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	33	35	35	28	35	35	25	35	30	21	35	27	19	33	24	17			
			Exposed	35	35	35	35	35	35	35	35	35	35	35	34	35	35	31	35	35	28	35	35	26	35	31	22	35	26	19	31	23	16	27	20	14	24	17	19	21	15	17
		7-20	Interior	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	35	37	36	29	37	30	25	37	26	22	35	23	19	31	20	17	27	18	15
			Exposed	37	37	37	37	37	37	37	37	33	37	36	30	37	33	27	37	30	25	37	27	23	36	23	19	30	20	16	26	17	14	23	15	19	20	13	17	18	18	15
		20-27	Interior	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	43	45	44	34	45	37	28	45	32	23	45	28	20	42	24	17	37	22	15
			Exposed	45	45	45	45	45	45	45	45	41	45	45	35	45	40	31	45	36	28	45	33	25	45	28	20	41	24	16	36	21	14	31	18	12	27	16	11	24	14	15
		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	43	50	49	35	46	40	30	39	35	25	34	31	22	30	27	19
			Exposed	52	52	52	52	52	52	52	52	52	52	52	45	52	52	39	52	48	35	50	42	31	39	35	26	34	30	21	29	26	18	25	23	15	22	20	13	20	18	11
	C	0-7	Interior	35	35	35	35	35	35	35	35	35	35	35	35	35	35	33	35	35	30	35	35	28	35	33	23	35	28	20	34	24	17	29	21	15	26	19	13	23	17	18
			Exposed	35	35	33	35	35	29	35	35	26	35	34	24	35	31	22	35	28	20	35	25	18	30	22	15	25	18	13	22	16	17	19	14	15	17	19	13	15	16	~~12~~
		7-20	Interior	37	37	37	37	37	37	37	37	36	37	37	32	37	35	29	37	32	27	37	29	24	37	25	21	33	21	18	28	18	15	25	16	13	22	14	18	19	19	16
			Exposed	37	35	29	37	31	26	37	28	23	37	25	21	35	23	19	32	21	17	29	19	16	25	16	13	21	14	17	18	18	15	16	16	13	14	14	~~12~~	19	~~12~~	~~10~~
		20-27	Interior	45	45	45	45	45	45	45	45	45	45	45	39	45	43	34	45	39	30	45	36	27	45	30	22	45	26	18	38	22	15	33	19	13	29	17	12	26	15	16
			Exposed	45	43	34	45	38	29	45	34	25	45	31	22	45	28	20	44	25	18	40	23	16	34	20	13	29	17	11	25	15	15	22	13	13	19	17	12	17	15	~~10~~
		27-45	Interior	52	52	52	52	52	52	52	52	52	52	52	50	52	52	43	51	51	38	49	46	34	42	38	28	36	32	23	31	28	19	27	24	17	24	22	14	21	19	12
			Exposed	52	52	42	52	51	37	52	43	32	44	39	29	39	35	25	36	32	23	33	29	20	28	25	17	24	21	14	20	18	12	18	16	15	16	14	13	14	19	12
	D	0-7	Interior	37	37	37	37	37	37	37	37	34	37	37	31	37	37	28	37	36	25	37	33	23	37	28	20	33	24	17	28	20	14	25	18	13	22	16	17	19	14	15
			Exposed	37	37	28	37	35	25	37	31	22	37	28	20	35	26	18	32	23	16	29	21	15	25	18	13	21	15	17	18	13	14	16	18	~~13~~	14	16	~~11~~	19	14	~~10~~
		7-20	Interior	40	40	37	40	40	33	40	36	30	40	33	27	40	30	24	40	27	22	38	25	20	32	21	17	27	18	15	24	15	13	21	13	17	18	18	15	16	16	13
			Exposed	40	30	24	40	26	22	36	24	20	33	21	18	30	19	16	27	18	15	25	16	13	21	14	17	18	18	15	15	15	13	13	13	~~11~~	18	~~12~~	~~10~~	16	~~10~~	9
		20-27	Interior	48	48	48	48	48	41	48	45	35	48	40	31	48	36	27	48	33	24	48	30	21	44	25	17	37	22	15	32	19	13	28	16	11	25	14	15	22	13	13
			Exposed	48	36	27	48	32	23	48	29	20	45	26	18	40	23	16	37	21	15	33	19	13	28	16	11	24	14	15	21	19	13	18	16	~~11~~	16	14	~~10~~	14	13	9
		27-45	Interior	55	55	55	55	55	53	55	55	44	54	54	39	52	47	34	49	41	31	42	37	28	35	32	23	30	27	19	26	23	16	23	21	13	20	18	12	18	16	15
			Exposed	55	46	34	47	40	30	40	36	26	36	32	23	33	29	21	30	27	18	27	24	17	23	21	14	20	18	11	17	15	15	15	13	12	13	18	11	18	16	~~10~~
50	B	0-7	Interior	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	25	28	28	21	28	27	19	28	24	17
			Exposed	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	26	28	28	22	28	26	19	28	23	16	27	20	14	24	17	19	21	15	17
		7-20	Interior	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	29	31	30	25	31	26	22	31	23	19	31	20	17	27	18	15
			Exposed	31	31	31	31	31	31	31	31	31	31	31	30	31	31	27	31	30	25	31	27	23	31	23	19	30	20	16	26	17	14	23	15	19	20	13	17	18	18	15
		20-27	Interior	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	37	28	39	32	23	39	28	20	38	24	17	37	22	15
			Exposed	39	39	39	39	39	39	39	39	39	39	39	35	39	39	31	39	36	28	39	33	25	39	28	20	39	24	16	36	21	14	31	18	12	27	16	11	24	14	15
		27-45	Interior	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	43	43	43	35	41	40	30	39	35	25	34	31	22	30	27	19
			Exposed	46	46	46	46	46	46	46	46	46	46	46	45	46	46	39	46	46	35	46	42	31	39	35	26	34	30	21	29	26	18	25	23	15	22	20	13	20	18	11
	C	0-7	Interior	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	23	28	28	20	28	24	17	28	21	15	26	19	13	23	17	18
			Exposed	28	28	28	28	28	28	28	28	26	28	28	24	28	28	22	28	28	20	28	25	18	28	22	15	25	18	13	22	16	17	19	14	15	17	19	13	15	16	~~12~~
		7-20	Interior	31	31	31	31	31	31	31	31	31	31	31	31	31	31	29	31	31	27	31	29	24	31	25	21	31	21	18	28	18	15	25	16	13	22	14	18	19	19	16
			Exposed	31	31	29	31	31	26	31	28	23	31	25	21	31	23	19	31	21	17	29	19	16	25	16	13	21	14	17	18	18	15	16	16	13	14	14	~~12~~	19	~~12~~	~~10~~
		20-27	Interior	39	39	39	39	39	39	39	39	39	39	39	39	39	39	34	39	39	30	39	36	27	39	30	22	39	26	18	37	22	15	33	19	13	29	17	12	26	15	16
			Exposed	39	39	34	39	38	29	39	34	25	39	31	22	39	28	20	39	25	18	39	23	16	34	20	13	29	17	11	25	15	15	22	13	13	19	17	12	17	15	~~10~~
		27-45	Interior	46	46	46	46	46	46	46	46	46	46	46	46	46	46	43	44	44	38	43	43	34	40	38	28	36	32	23	31	28	19	27	24	17	24	22	14	21	19	12
			Exposed	46	46	42	46	46	37	46	43	32	44	39	29	39	35	25	36	32	23	33	29	20	28	25	17	24	21	14	20	18	12	18	16	15	16	14	13	14	19	12
	D	0-7	Interior	31	31	31	31	31	31	31	31	31	31	31	31	31	31	28	31	31	25	31	31	23	31	28	20	31	24	17	28	20	14	25	18	13	22	16	17	19	14	15
			Exposed	31	31	28	31	31	25	31	31	22	31	28	20	31	26	18	31	23	16	29	21	15	25	18	13	21	15	17	18	13	14	16	18	~~13~~	14	16	~~11~~	19	14	~~10~~
		7-20	Interior	34	34	34	34	34	33	34	34	30	34	33	27	34	30	24	34	27	22	34	25	20	32	21	17	27	18	15	24	15	13	21	13	17	18	18	15	16	16	13
			Exposed	34	30	24	34	26	22	34	24	20	33	21	18	30	19	16	27	18	15	25	16	13	21	14	17	18	18	15	15	15	13	13	13	~~11~~	18	~~12~~	~~10~~	16	~~10~~	9
		20-27	Interior	42	42	42	42	42	41	42	42	35	42	40	31	42	36	27	42	33	24	42	30	21	41	25	17	37	22	15	32	19	13	28	16	11	25	14	15	22	13	13
			Exposed	42	36	27	42	32	23	42	29	20	42	26	18	40	23	16	37	21	15	33	19	13	28	16	11	24	14	15	21	19	13	18	16	~~11~~	16	14	~~10~~	14	13	9
		27-45	Interior	49	49	49	49	49	49	49	49	44	47	47	39	46	46	34	44	41	31	42	37	28	35	32	23	30	27	19	26	23	16	23	21	13	20	18	12	18	16	15
			Exposed	49	46	34	47	40	30	40	36	26	36	32	23	33	29	21	30	27	18	27	24	17	23	21	14	20	18	11	17	15	15	15	13	12	13	18	11	18	16	~~10~~

* 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	Solarhooks ATI
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	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	17
			Exposed	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	22	24	24	19	24	23	16	24	20	14	24	17	19	21	15	17
		7-20	Interior	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	25	26	26	22	26	23	19	26	20	17	26	18	15			
			Exposed	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	25	26	26	23	26	23	19	26	20	16	26	17	14	23	15	19	20	13	17	18	18	15
		20-27	Interior	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	28	35	32	23	35	28	20	34	24	17	33	22	15
			Exposed	35	35	35	35	35	35	35	35	35	35	35	35	35	35	31	35	35	28	35	33	25	35	28	20	35	24	16	35	21	14	31	18	12	27	16	11	24	14	15
		27-45	Interior	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	40	40	40	39	39	35	37	37	30	35	35	25	33	31	22	30	27	19
			Exposed	41	41	41	41	41	41	41	41	41	41	41	41	41	41	39	41	41	35	41	41	31	39	35	26	34	30	21	29	26	18	25	23	15	22	20	13	20	18	11
	C	0-7	Interior	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	23	24	24	20	24	24	17	24	21	15	24	19	13	23	17	18
			Exposed	24	24	24	24	24	24	24	24	24	24	24	24	24	24	22	24	24	20	24	24	18	24	22	15	24	18	13	22	16	17	19	14	15	17	19	13	15	16	12
		7-20	Interior	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	24	26	25	21	26	21	18	26	18	15	25	16	13	22	14	18	19	19	16
			Exposed	26	26	26	26	26	26	26	26	23	26	25	21	26	23	19	26	21	17	26	19	16	25	16	13	21	14	17	18	18	15	16	16	13	14	14	12	19	12	10
		20-27	Interior	35	35	35	35	35	35	35	35	35	35	35	35	35	34	35	35	35	30	35	35	27	35	30	22	34	26	18	33	22	15	32	19	13	29	17	12	26	15	16
			Exposed	35	35	34	35	35	29	35	34	25	35	31	22	35	28	20	35	25	18	35	23	16	34	20	13	29	17	11	25	15	15	22	13	13	19	17	12	17	15	10
		27-45	Interior	41	41	41	41	41	41	41	41	41	41	41	41	40	40	40	39	39	38	38	38	34	36	36	28	34	32	23	31	28	19	27	24	17	24	22	14	21	19	12
			Exposed	41	41	41	41	41	37	41	41	32	41	39	29	39	35	25	36	32	23	33	29	20	28	25	17	24	21	14	20	18	12	18	16	15	16	14	13	14	19	12
	D	0-7	Interior	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	25	26	26	23	26	26	20	26	24	17	26	20	14	25	18	13	22	16	17	19	14	15
			Exposed	26	26	26	26	26	25	26	26	22	26	26	20	26	26	18	26	23	16	26	21	15	25	18	13	21	15	17	18	13	14	16	18	13	14	16	11	19	14	10
		7-20	Interior	29	29	29	29	29	29	29	29	29	29	29	27	29	29	24	29	27	22	29	25	20	29	21	17	27	18	15	24	15	13	21	13	17	18	18	15	16	16	13
			Exposed	29	29	24	29	26	22	29	24	20	29	21	18	29	19	16	27	18	15	25	16	13	21	14	17	18	18	15	15	15	13	13	13	11	18	12	10	16	10	9
		20-27	Interior	37	37	37	37	37	37	37	37	35	37	37	31	37	36	27	37	33	24	37	30	21	37	25	17	35	22	15	32	19	13	28	16	11	25	14	15	22	13	13
			Exposed	37	36	27	37	32	23	37	29	20	37	26	18	37	23	16	37	21	15	33	19	13	28	16	11	24	14	15	21	19	13	18	16	11	16	14	10	14	13	9
		27-45	Interior	44	44	44	44	44	44	44	44	44	42	42	39	41	41	34	40	40	31	38	37	28	35	32	23	30	27	19	26	23	16	23	21	13	20	18	12	18	16	15
			Exposed	44	44	34	44	40	30	40	36	26	36	32	23	33	29	21	30	27	18	27	24	17	23	21	14	20	18	11	17	15	15	15	13	12	13	18	11	18	16	10
70	B	0-7	Interior	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	17
			Exposed	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	19	21	21	16	21	20	14	21	17	19	21	15	17
		7-20	Interior	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	19	22	20	17	22	18	15
			Exposed	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	19	22	20	16	22	17	14	22	15	19	20	13	17	18	18	15
		20-27	Interior	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	28	30	30	23	30	28	20	30	24	17	29	22	15
			Exposed	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	28	30	30	25	30	28	20	30	24	16	30	21	14	30	18	12	27	16	11	24	14	15
		27-45	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	35	35	35	34	34	30	32	32	25	31	31	22	29	27	19
			Exposed	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	35	37	37	31	37	35	26	34	30	21	29	26	18	25	23	15	22	20	13	20	18	11
	C	0-7	Interior	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	20	21	21	17	21	21	15	21	19	13	21	17	18
			Exposed	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	20	21	21	18	21	21	15	21	18	13	21	16	17	19	14	15	17	19	13	15	16	12
		7-20	Interior	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	21	22	21	18	22	18	15	22	16	13	22	14	18	19	19	16
			Exposed	22	22	22	22	22	22	22	22	22	22	22	21	22	22	19	22	21	17	22	19	16	22	16	13	21	14	17	18	18	15	16	16	13	14	14	12	19	12	10
		20-27	Interior	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	27	30	30	22	30	26	18	30	22	15	28	19	13	27	17	12
			Exposed	30	30	30	30	30	29	30	30	25	30	30	22	30	28	20	30	25	18	30	23	16	30	20	13	29	17	11	25	15	15	22	13	13	19	17	12	17	15	10
		27-45	Interior	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	36	36	36	35	35	34	33	33	28	31	31	23	30	28	19	27	24	17	24	22	14	21	19	12
			Exposed	37	37	37	37	37	37	37	37	32	37	37	29	37	35	25	36	32	23	33	29	20	28	25	17	24	21	14	20	18	12	18	16	15	16	14	13	14	19	12
	D	0-7	Interior	23	23	23	23	23	23	23	23	23	23	23	23	23	23	23	23	23	23	23	23	23	23	23	20	23	23	17	23	20	14	23	18	13	22	16	17	19	14	15
			Exposed	23	23	23	23	23	23	23	23	22	23	23	20	23	23	18	23	23	16	23	21	15	23	18	13	21	15	17	18	13	14	16	18	13	14	16	11	19	14	10
		7-20	Interior	25	25	25	25	25	25	25	25	25	25	25	25	25	25	24	25	25	22	25	25	20	25	21	17	25	18	15	24	15	13	21	13	17	18	18	15	16	16	13
			Exposed	25	25	24	25	25	22	25	24	20	25	21	18	25	19	16	25	18	15	25	16	13	21	14	17	18	18	15	15	15	13	13	13	11	18	12	10	16	10	9
		20-27	Interior	33	33	33	33	33	33	33	33	33	33	33	31	33	33	27	33	33	24	33	30	21	33	25	17	32	22	15	30	19	13	28	16	11	25	14	15	22	13	13
			Exposed	33	33	27	33	32	23	33	29	20	33	26	18	33	23	16	33	21	15	33	19	13	28	16	11	24	14	15	21	19	13	18	16	11	16	14	10	14	13	9
		27-45	Interior	40	40	40	40	40	40	39	39	39	38	38	38	37	37	34	36	36	31	35	35	28	33	32	23	30	27	19	26	23	16	23	21	13	20	18	12	18	16	15
			Exposed	40	40	34	40	40	30	39	36	26	36	32	23	33	29	21	30	27	18	27	24	17	23	21	14	20	18	11	17	15	15	15	13	12	13	18	11	18	16	10
80	B	0-7	Interior	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	17
			Exposed	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	16	18	18	14	18	17	19	18	15	17
		7-20	Interior	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	19	20	20	17	20	18	15
			Exposed	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	19	20	20	16	20	17	14	20	15	19	20	13	17	18	18	15
		20-27	Interior	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	23	27	27	20	27	24	17	27	22	15			
			Exposed	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	25	27	27	20	27	24	16	27	21	14	27	18	12	27	16	11	24	14	15
		27-45	Interior	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	33	33	33	32	32	32	31	31	30	30	30	25	28	28	22	27	27	19
			Exposed	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	31	33	33	26	32	30	21	29	26	18	25	23	15	22	20	13	20	18	11
	C	0-7	Interior	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	17	18	18	15	18	18	13	18	17	18
			Exposed	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	16	18	18	15	17	19	13	15	16	12
		7-20	Interior	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	18	20	18	15	20	16	13	20	14	18
			Exposed	20	20	20	20	20	20	20	20	20	20	20	20	20	20	19	20	20	17	20	19	16	20	16	13	20	14	17	18	18	15	16	16	13	14	14	12	19	12	10
		20-27	Interior	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	22	27	27	18	27	22	15	26	19	13	25	17	12	24	15	16
			Exposed	27	27	27	27	27	27	27	27	25	27	27	22	27	27	20	27	25	18	27	23	16	27	20	13	27	17	11	25	15	15	22	13	13	19	17	12	17	15	10
		27-45	Interior	34	34	34	34	34	34	34	34	34	34	34	34	33	33	33	33	33	33	32	32	32	30	30	28	29	29	23	28	28	19	26	24	17	24	22	14	21	19	12
			Exposed	34	34	34	34	34	34	34	34	32	34	34	29	33	33	25	33	32	23	32	29	20	28	25	17	24	21	14	20	18	12	18	16	15	16	14	13	14	19	12
	D	0-7	Interior	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	17	20	20	14	20	18	13	20	16	13	20	16	17	19	14	15
			Exposed	20	20	20	20	20	20	20	20	20	20	20	20	20	20	18	20	20	16	20	20	15	20	18	13	20	15	17	18	13	14	16	18	13	14	16	11	19	14	10
		7-20	Interior	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	20	22	21	17	22	18	15	22	15	13	21	13	17	18	18	15	16	16	13
			Exposed	22	22	22	22	22	22	22	22	20	22	21	18	22	19	16	22	18	15	22	16	13	21	14	17	18	18	15	15	15	13	13	13	11	18	12	10	16	10	9
		20-27	Interior	29	29	29	29	29	29	29	29	29	29	29	29	29	29	27	29	29	24	29	29	21	29	25	17	29	22	15	28	19	13	26	16	11	25	14	15	22	13	13
			Exposed	29	29	27	29	29	23	29	29	20	29	26	18	29	23	16	29	21	15	29	19	13	28	16	11	24	14	15	21	19	13	18	16	11	16	14	10	14	13	9
		27-45	Interior	36	36	36	36	36	36	36	36	36	35	35	35	34	34	34	33	33	31	32	32	28	31	31	23	29	27	19	26	23	16	23	21	13	20	18	12	18	16	15
			Exposed	36	36	34	36	36	30	36	36	26	35	32	23	33	29	21	30	27	18	27	24	17	23	21	14	20	18	11	17	15	15	15	13	12	13	18	11	18	16	10

* 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	Solarhooks ATI
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	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16
			Exposed	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	14	16	16	19	16	15	17		
		7-20	Interior	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	17	18	18	15				
			Exposed	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	16	18	17	14	18	15	19	18	13	17	18	18	15
		20-27	Interior	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	23	24	24	20	24	24	17	24	22	15			
			Exposed	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	20	24	24	16	24	21	14	24	18	12	24	16	11	24	14	15
		27-45	Interior	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	29	29	29	28	28	25	26	26	22	25	25	19
			Exposed	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	26	30	30	21	29	26	18	25	23	15	22	20	13	20	18	11
	C	0-7	Interior	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	15	16	16	13	16	16	18
			Exposed	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	15	16	16	13	16	16	17	16	14	15	16	19	13	15	16	12
		7-20	Interior	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	15	18	16	13	18	14	18	18	19	16
			Exposed	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	17	18	18	16	18	16	13	18	14	17	18	18	15	16	16	13	14	14	12	19	12	10
		20-27	Interior	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	22	24	24	18	24	22	15	24	19	13	23	17	12	22	15	16
			Exposed	24	24	24	24	24	24	24	24	24	24	24	22	24	24	20	24	24	18	24	23	16	24	20	13	24	17	11	24	15	15	22	13	13	19	17	12	17	15	10
		27-45	Interior	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	29	29	29	28	28	28	27	27	23	26	26	19	25	24	17	23	22	14	21	19	12
			Exposed	30	30	30	30	30	30	30	30	30	30	30	29	30	30	25	30	30	23	29	29	20	28	25	17	24	21	14	20	18	12	18	16	15	16	14	13	14	19	12
	D	0-7	Interior	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	17	18	18	14	18	18	13	18	16	17	18	14	15			
			Exposed	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	16	18	18	15	18	18	13	18	15	17	18	13	14	16	18	13	14	16	11	19	14	10
		7-20	Interior	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	17	19	18	15	19	15	13	19	13	17	18	18	15	16	16	13
			Exposed	19	19	19	19	19	19	19	19	19	19	18	19	19	16	19	18	15	19	16	13	19	14	17	18	18	15	15	15	13	13	13	11	18	12	10	16	10	9		
		20-27	Interior	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	24	26	26	21	26	25	17	26	22	15	25	19	13	24	16	11	23	14	15	22	13	13	
			Exposed	26	26	26	26	26	23	26	26	20	26	26	18	26	23	16	26	21	15	26	19	13	26	16	11	24	14	15	21	19	13	18	16	11	16	14	10	14	13	9
		27-45	Interior	33	33	33	33	33	33	33	33	33	32	32	32	32	32	32	31	31	31	30	30	28	29	29	23	27	27	19	26	23	16	23	21	13	20	18	12	18	16	15
			Exposed	33	33	33	33	33	30	33	33	26	32	32	23	32	29	21	30	27	18	27	24	17	23	21	14	20	18	11	17	15	15	15	13	12	13	18	11	18	16	10
100	B	0-7	Interior	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14
			Exposed	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	19	14	14	17
		7-20	Interior	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	15
			Exposed	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	14	16	15	19	16	13	17	16	18	15
		20-27	Interior	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	20	21	21	17	21	21	15
			Exposed	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	20	21	21	16	21	21	14	21	18	12	21	16	11	21	14	15
		27-45	Interior	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	26	26	25	25	25	22	24	24	19
			Exposed	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	26	27	27	21	27	26	18	25	23	15	22	20	13	20	18	11
	C	0-7	Interior	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	13	14	14	13	14	14	18
			Exposed	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	13	14	14	17	14	14	15	14	19	13	14	16	12			
		7-20	Interior	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	15	16	16	13	16	14	18	16	19	16
			Exposed	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	13	16	14	17	16	18	15	16	16	13	14	14	12	19	12	10
		20-27	Interior	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	18	21	21	15	21	21	15	21	19	13	21	17	12	21	15	16
			Exposed	21	21	21	21	21	21	21	21	21	21	21	21	21	21	20	21	21	18	21	21	16	21	20	13	21	17	11	21	15	15	21	13	13	19	17	12	17	15	10
		27-45	Interior	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	26	26	26	25	25	23	24	24	19	23	23	17	22	22	14	21	19	12
			Exposed	27	27	27	27	27	27	27	27	27	27	27	27	27	27	25	27	27	23	27	27	20	26	25	17	24	21	14	20	18	12	18	16	15	16	14	13	14	19	12
	D	0-7	Interior	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	14	16	16	13	16	16	17	16	14	15
			Exposed	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	15	16	16	13	16	15	17	16	13	14	16	18	13	14	16	11	19	14	10
		7-20	Interior	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	17	18	18	15	18	15	13	18	13	17	17	18	15	16	16	13
			Exposed	18	18	18	18	18	18	18	18	18	18	18	18	18	16	18	18	18	15	18	16	13	18	14	17	18	18	15	15	15	13	13	13	11	18	12	10	16	10	9
		20-27	Interior	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	21	24	24	17	24	22	15	23	19	13	23	16	11	22	14	15	21	13	13
			Exposed	24	24	24	24	24	23	24	24	20	24	24	18	24	23	16	24	21	15	24	19	13	24	16	11	24	14	15	21	19	13	18	16	11	16	14	10	14	13	9
		27-45	Interior	30	30	30	30	30	30	30	30	30	30	30	30	29	29	29	29	29	29	28	28	28	27	27	23	25	25	19	24	23	16	23	21	13	20	18	12	18	16	15
			Exposed	30	30	30	30	30	30	30	30	26	30	30	23	29	29	21	29	27	18	27	24	17	23	21	14	20	18	11	17	15	15	15	13	12	13	18	11	18	16	10

* 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	Solarhooks ATI
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	97	102	102	93	102	102	88	102	98	84	102	94	70	101	87	56	94	74	48	88	59	42	83	51	36	62	45	32	55	40	28
			Exposed	102	102	88	102	97	83	102	92	64	102	88	57	98	84	52	93	71	47	89	61	43	83	52	37	61	44	31	53	38	27	46	34	24	41	30	32	36	26	28
		7-20	Interior	102	102	102	102	102	100	102	102	94	102	99	89	102	93	85	102	89	64	100	85	59	90	60	49	84	51	42	70	44	37	59	39	32	52	34	28	46	30	25
			Exposed	102	93	85	102	88	63	96	83	56	91	61	51	87	56	46	84	51	42	76	46	38	60	39	32	51	34	28	44	29	24	39	25	21	34	22	28	30	30	25
		20-27	Interior	103	103	103	103	103	103	103	103	103	103	103	102	103	103	96	103	97	91	103	93	87	103	85	58	96	62	47	90	54	39	85	47	33	75	41	28	63	37	25
			Exposed	103	102	96	103	96	90	103	91	85	103	86	60	100	81	52	95	61	46	91	56	41	85	47	33	72	40	28	60	35	24	52	31	21	46	27	18	41	24	25
		27-45	Interior	103	103	103	103	103	103	103	103	103	103	103	103	103	103	100	103	103	96	103	103	92	103	94	85	95	87	60	88	74	50	68	59	43	58	52	37	51	46	32
			Exposed	103	103	100	103	103	95	103	100	90	103	95	85	100	91	73	95	87	59	90	83	53	83	59	43	57	51	36	49	44	30	43	38	26	38	34	22	34	30	19
	C	0-7	Interior	102	102	91	102	100	86	102	95	79	102	91	62	101	87	56	97	83	51	92	67	47	86	56	39	66	48	34	57	41	29	49	36	25	43	32	22	39	28	30
			Exposed	101	87	56	95	82	50	91	63	45	86	57	40	83	52	37	65	47	33	59	43	30	50	36	26	43	31	22	37	27	29	32	24	25	28	31	22	25	28	20
		7-20	Interior	102	97	88	102	91	83	102	86	60	94	70	54	90	60	49	86	54	45	83	50	41	64	42	35	55	36	30	48	31	26	42	27	23	37	24	30	33	21	27
			Exposed	90	59	49	86	53	44	80	48	39	66	43	36	60	39	32	54	36	29	50	33	27	42	28	23	36	24	30	31	31	26	27	27	22	24	24	20	21	21	18
		20-27	Interior	103	103	100	103	100	93	103	94	88	103	90	83	103	85	58	99	68	51	94	60	45	88	51	37	82	43	30	64	38	26	56	33	23	49	29	20	44	26	18
			Exposed	103	85	57	98	64	49	92	58	43	89	52	38	85	47	33	81	43	30	69	39	27	57	33	23	49	28	19	42	25	26	37	22	22	32	29	20	29	26	18
		27-45	Interior	103	103	103	103	103	98	103	103	93	103	99	88	103	94	84	99	90	65	94	86	57	86	64	47	61	54	39	53	47	33	46	41	28	41	36	24	36	32	21
			Exposed	103	94	84	97	89	63	92	84	54	87	65	48	82	59	43	60	54	38	55	49	35	46	42	28	40	36	24	35	31	20	30	27	17	27	24	22	24	21	20
	D	0-7	Interior	102	97	84	102	92	64	102	88	57	97	84	52	93	68	47	89	60	43	85	55	39	64	47	33	55	40	28	47	35	24	41	30	21	36	27	29	32	24	25
			Exposed	93	68	47	88	59	42	84	53	37	66	48	34	59	43	31	54	39	28	50	36	26	42	30	22	36	26	28	31	23	24	27	30	21	24	26	19	21	23	17
		7-20	Interior	102	88	63	97	83	56	91	61	50	87	55	46	83	50	41	74	46	38	64	42	34	54	35	29	46	30	25	40	26	22	35	23	29	31	30	25	27	27	22
			Exposed	83	50	41	70	44	37	61	40	33	55	36	30	50	33	27	46	30	25	42	27	23	35	23	29	30	30	25	26	26	21	23	23	19	30	20	17	27	18	15
		20-27	Interior	103	97	90	103	91	85	103	86	59	100	75	52	95	60	46	91	55	41	87	50	36	79	43	29	62	36	25	54	32	22	47	28	19	41	24	25	37	22	22
			Exposed	95	60	45	90	54	39	86	48	34	82	44	30	69	39	27	61	36	25	56	33	23	48	28	19	41	24	25	35	31	21	31	27	19	27	24	17	24	21	15
		27-45	Interior	103	103	95	103	100	90	103	95	85	99	90	70	94	86	58	89	83	52	85	63	46	59	53	38	51	46	32	44	40	27	39	35	23	34	31	20	30	27	17
			Exposed	94	86	57	88	75	50	83	60	44	61	55	39	55	49	35	50	45	31	46	41	28	39	35	23	33	30	19	29	26	25	25	23	21	22	30	19	30	27	17
10	B	0-7	Interior	91	91	91	91	91	91	91	91	91	91	91	91	91	91	88	91	91	84	91	91	70	91	87	56	91	74	48	88	59	42	83	51	36	62	45	32	55	40	28
			Exposed	91	91	88	91	91	83	91	91	64	91	88	57	91	84	52	91	71	47	89	61	43	83	52	37	61	44	31	53	38	27	46	34	24	41	30	32	36	26	28
		7-20	Interior	91	91	91	91	91	91	91	91	91	91	91	89	91	91	85	91	89	64	91	85	59	90	60	49	84	51	42	70	44	37	59	39	32	52	34	28	46	30	25
			Exposed	91	91	85	91	88	63	91	83	56	91	61	51	87	56	46	84	51	42	76	46	38	60	39	32	51	34	28	44	29	24	39	25	21	34	22	28	30	30	25
		20-27	Interior	100	100	100	100	100	100	100	100	100	100	100	100	100	100	96	100	97	91	100	93	87	100	85	58	96	62	47	90	54	39	85	47	33	75	41	28	63	37	25
			Exposed	100	100	96	100	96	90	100	91	85	100	86	60	100	81	52	95	61	46	91	56	41	85	47	33	72	40	28	60	35	24	52	31	21	46	27	18	41	24	25
		27-45	Interior	102	102	102	102	102	102	102	102	102	102	102	102	102	102	100	102	102	96	102	102	92	102	94	85	95	87	60	88	74	50	68	59	43	58	52	37	51	46	32
			Exposed	102	102	100	102	102	95	102	100	90	102	95	85	100	91	73	95	87	59	90	83	53	83	59	43	57	51	36	49	44	30	43	38	26	38	34	22	34	30	19
	C	0-7	Interior	91	91	91	91	91	86	91	91	79	91	91	62	91	87	56	91	83	51	91	67	47	86	56	39	66	48	34	57	41	29	49	36	25	43	32	22	39	28	30
			Exposed	91	87	56	91	82	50	91	63	45	86	57	40	83	52	37	65	47	33	59	43	30	50	36	26	43	31	22	37	27	29	32	24	25	28	31	22	25	28	20
		7-20	Interior	91	91	88	91	91	83	91	86	60	91	70	54	90	60	49	86	54	45	83	50	41	64	42	35	55	36	30	48	31	26	42	27	23	37	24	30	33	21	27
			Exposed	90	59	49	86	53	44	80	48	39	66	43	36	60	39	32	54	36	29	50	33	27	42	28	23	36	24	30	31	31	26	27	27	22	24	24	20	21	21	18
		20-27	Interior	100	100	100	100	100	93	100	94	88	100	90	83	100	85	58	99	68	51	94	60	45	88	51	37	82	43	30	64	38	26	56	33	23	49	29	20	44	26	18
			Exposed	100	85	57	98	64	49	92	58	43	89	52	38	85	47	33	81	43	30	69	39	27	57	33	23	49	28	19	42	25	26	37	22	22	32	29	20	29	26	18
		27-45	Interior	102	102	102	102	102	98	102	102	93	102	99	88	102	94	84	99	90	65	94	86	57	86	64	47	61	54	39	53	47	33	46	41	28	41	36	24	36	32	21
			Exposed	102	94	84	97	89	63	92	84	54	87	65	48	82	59	43	60	54	38	55	49	35	46	42	28	40	36	24	35	31	20	30	27	17	27	24	22	24	21	20
	D	0-7	Interior	91	91	84	91	91	64	91	91	57	91	84	52	91	68	47	89	60	43	85	55	39	64	47	33	55	40	28	47	35	24	41	30	21	36	27	29	32	24	25
			Exposed	93	68	47	88	59	42	84	53	37	66	48	34	59	43	31	54	39	28	50	36	26	42	30	22	36	26	28	31	23	24	27	30	21	24	26	19	21	23	17
		7-20	Interior	91	88	63	91	83	56	91	61	50	87	55	46	83	50	41	74	46	38	64	42	34	54	35	29	46	30	25	40	26	22	35	23	29	31	30	25	27	27	22
			Exposed	83	50	41	70	44	37	61	40	33	55	36	30	50	33	27	46	30	25	42	27	23	35	23	29	30	30	25	26	26	21	23	23	19	30	20	17	27	18	15
		20-27	Interior	101	97	90	101	91	85	101	86	59	100	75	52	95	60	46	91	55	41	87	50	36	79	43	29	62	36	25	54	32	22	47	28	19	41	24	25	37	22	22
			Exposed	95	60	45	90	54	39	86	48	34	82	44	30	69	39	27	61	36	25	56	33	23	48	28	19	41	24	25	35	31	21	31	27	19	27	24	17	24	21	15
		27-45	Interior	103	103	95	103	100	90	103	95	85	99	90	70	94	86	58	89	83	52	85	63	46	59	53	38	51	46	32	44	40	27	39	35	23	34	31	20	30	27	17
			Exposed	94	86	57	88	75	50	83	60	44	61	55	39	55	49	35	50	45	31	46	41	28	39	35	23	33	30	19	29	26	25	25	23	21	22	30	19	30	27	17
20	B	0-7	Interior	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	70	72	72	56	72	72	48	72	59	42	72	51	36	62	45	32	55	40	28
			Exposed	72	72	72	72	72	72	72	72	64	72	72	57	72	72	52	72	71	47	72	61	43	72	52	37	61	44	31	53	38	27	46	34	24	41	30	32	36	26	28
		7-20	Interior	73	73	73	73	73	73	73	73	73	73	73	73	73	73	73	73	73	64	73	73	59	73	60	49	73	51	42	70	44	37	59	39	32	52	34	28	46	30	25
			Exposed	73	73	73	73	73	63	73	73	56	73	61	51	73	56	46	73	51	42	73	46	38	60	39	32	51	34	28	44	29	24	39	25	21	34	22	28	30	30	25
		20-27	Interior	92	92	92	92	92	92	92	92	92	92	92	92	92	92	92	92	92	91	92	92	87	92	85	58	92	62	47	90	54	39	85	47	33	75	41	28	63	37	25
			Exposed	92	92	92	92	92	90	92	91	85	92	86	60	92	81	52	92	61	46	91	56	41	85	47	33	72	40	28	60	35	24	52	31	21	46	27	18	41	24	25
		27-45	Interior	96	96	96	96	96	96	96	96	96	96	96	96	96	96	96	96	96	96	96	96	92	96	94	85	95	87	60	88	74	50	68	59	43	58	52	37	51	46	32
			Exposed	96	96	96	96	96	95	96	96	90	96	95	85	96	91	73	95	87	59	90	83	53	83	59	43	57	51	36	49	44	30	43	38	26	38	34	22	34	30	19
	C	0-7	Interior	72	72	72	72	72	72	72	72	57	72	72	52	72	72	51	72	67	47	72	56	39	66	48	34	57	41	29	49	36	25	43	32	22	39	28	30	39	28	30
			Exposed	72	72	56	72	72	50	72	63	45	72	57	40	72	52	37	65	47	33	59	43	30	50	36	26	43	31	22	37	27	29	32	24	25	28	31	22	25	28	20
		7-20	Interior	73	73	73	73	73	73	73	73	60	73	70	54	73	60	49	73	54	45	73	50	41	64	42	35	55	36	30	48	31	26	42	27	23	37	24	30	33	21	27
			Exposed	73	59	49	73	53	44	73	48	39	66	43	36	60	39	32	54	36	29	50	33	27	42	28	23	36	24	30	31	31	26	27	27	22	24	24	20	21	21	18
		20-27	Interior	92	92	92	92	92	92	92	92	88	92	90	83	92	85	58	92	68	51	92	60	45	88	51	37	82	43	30	64	38	26	56	33	23	49	29	20	44	26	18
			Exposed	92	85	57	92	64	49	92	58	43	89	52	38	85	47	33	81	43	30	69	39	27	57	33	23	49	28	19	42	25	26	37	22	22	32	29	20	29	26	18
		27-45	Interior	96	96	96	96	96	96	96	96	93	96	96	88	96	94	84	96	90	65	94	86	57	86	64	47	61	54	39	53	47	33	46	41	28	41	36	24	36	32	21
			Exposed	96	94	84	96	89	63	92	84	54	87	65	48	82	59	43	60	54	38	55	49	35	46	42	28	40	36	24	35	31	20	30	27	17	27	24	22	24	21	20
	D	0-7	Interior	72	72	72	72	72	64	72	72	57	72	72	52	72	68	47	72	60	43	72	55	39	64	47	33	55	40	28	47	35	24	41	30	21	36	27	29	32	24	25
			Exposed	72	68	47	72	59	42	72	53	37	66	48	34	59	43	31	54	39	28	50	36	26	42	30	22	36	26	28	31	23	24	27	30	21	24	26	19	21	23	17
		7-20	Interior	73	73	63	73	73	56	73	61	50	73	55	46	73	50	41	73	46	38	64	42	34	54	35	29	46	30	25	40	26	22	35	23	29	31	30	25	27	27	22
			Exposed	73	50	41	70	44	37	61	40	33	55	36	30	50	33	27	46	30	25	42	27	23	35	23	29	30	30	25	26	26	21	23	23	19	30	20	17	27	18	15
		20-27	Interior	94	94	90	94	91	85	94	86	59	94	75	52	94	60	46	91	55	41	87	50	36	79	43	29	62	36	25	54	32	22	47	28	19	41	24	25	37	22	22
			Exposed	94	60	45	90	54	39	86	48	34	82	44	30	69	39	27	61	36	25	56	33	23	48	28	19	41	24	25	35	31	21	31	27	19	27	24	17	24	21	15
		27-45	Interior	97	97	95	97	97	90	97	95	85	97	90	70	94	86	58	89	83	52	85	63	46	59	53	38	51	46	32	44	40	27	39	35	23	34	31	20	30	27	17
			Exposed	94	86	57	88	75	50	83	60	44	61	55	39	55	49	35	50	45	31	46	41	28	39	35	23	33	30	19	29	26	25	25	23	21	22	30	19	30	27	17

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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.

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ASCE 7-16	II	30 ft	Ss = 1.25	19 sq.ft	LANDSCAPE	CROSS-SLOPE	NXT	NXT COMBO	Solarhooks ATI
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	70	70	70	70	70	70	70	70	70	70	70	70	70	70	70	70	70	70	70	70	70	70	70	56	70	70	48	70	59	42	70	51	36	62	45	32	55	40	28
			Exposed	70	70	70	70	70	70	70	70	64	70	70	57	70	70	52	70	70	47	70	61	43	70	52	37	61	44	31	53	38	27	46	34	24	41	30	32	36	26	28
		7-20	Interior	73	73	73	73	73	73	73	73	73	73	73	73	73	73	73	73	73	64	73	73	59	73	60	49	73	51	42	70	44	37	59	39	32	52	34	28	46	30	25
			Exposed	73	73	73	73	73	63	73	73	56	73	61	51	73	56	46	73	51	42	73	46	38	60	39	32	51	34	28	44	29	24	39	25	21	34	22	28	30	30	25
		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	85	58	86	62	47	86	54	39	85	47	33	75	41	28	63	37	25
			Exposed	86	86	86	86	86	86	86	86	85	86	86	60	86	81	52	86	61	46	86	56	41	85	47	33	72	40	28	60	35	24	52	31	21	46	27	18	41	24	25
		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	85	90	87	60	88	74	50	68	59	43	58	52	37	51	46	32
			Exposed	90	90	90	90	90	90	90	90	90	90	90	85	90	90	73	90	87	59	90	83	53	83	59	43	57	51	36	49	44	30	43	38	26	38	34	22	34	30	19
	C	0-7	Interior	70	70	70	70	70	70	70	70	70	70	70	62	70	70	56	70	70	51	70	67	47	70	56	39	66	48	34	57	41	29	49	36	25	43	32	22	39	28	30
			Exposed	70	70	56	70	70	50	70	63	45	70	57	40	70	52	37	65	47	33	59	43	30	50	36	26	43	31	22	37	27	29	32	24	25	28	31	22	25	28	20
		7-20	Interior	73	73	73	73	73	73	73	73	60	73	70	54	73	60	49	73	54	45	73	50	41	64	42	35	55	36	30	48	31	26	42	27	23	37	24	30	33	21	27
			Exposed	73	59	49	73	53	44	73	48	39	66	43	36	60	39	32	54	36	29	50	33	27	42	28	23	36	24	30	31	31	26	27	27	22	24	24	20	21	21	18
		20-27	Interior	86	86	86	86	86	86	86	86	86	86	86	83	86	85	58	86	68	51	86	60	45	86	51	37	82	43	30	64	38	26	56	33	23	49	29	20	44	26	18
			Exposed	86	85	57	86	64	49	86	58	43	86	52	38	85	47	33	81	43	30	69	39	27	57	33	23	49	28	19	42	25	26	37	22	22	32	29	20	29	26	18
		27-45	Interior	90	90	90	90	90	90	90	90	90	90	90	88	90	90	84	90	90	65	90	86	57	86	64	47	61	54	39	53	47	33	46	41	28	41	36	24	36	32	21
			Exposed	90	90	84	90	89	63	90	84	54	87	65	48	82	59	43	60	54	38	55	49	35	46	42	28	40	36	24	35	31	20	30	27	17	27	24	22	24	21	20
	D	0-7	Interior	72	72	72	72	72	64	72	72	57	72	72	52	72	68	47	72	60	43	72	55	39	64	47	33	55	40	28	47	35	24	41	30	21	36	27	29	32	24	25
			Exposed	72	68	47	72	59	42	72	53	37	66	48	34	59	43	31	54	39	28	50	36	26	42	30	22	36	26	28	31	23	24	27	30	21	24	26	19	21	23	17
		7-20	Interior	73	73	63	73	73	56	73	61	50	73	55	46	73	50	41	73	46	38	64	42	34	54	35	29	46	30	25	40	26	22	35	23	29	31	30	25	27	27	22
			Exposed	73	50	41	70	44	37	61	40	33	55	36	30	50	33	27	46	30	25	42	27	23	35	23	29	30	30	25	26	26	21	23	23	19	30	20	17	27	18	15
		20-27	Interior	88	88	88	88	88	85	88	86	59	88	75	52	88	60	46	88	55	41	87	50	36	79	43	29	62	36	25	54	32	22	47	28	19	41	24	25	37	22	22
			Exposed	88	60	45	88	54	39	86	48	34	82	44	30	69	39	27	61	36	25	56	33	23	48	28	19	41	24	25	35	31	21	31	27	19	27	24	17	24	21	15
		27-45	Interior	92	92	92	92	92	90	92	92	85	92	90	70	92	86	58	89	83	52	85	63	46	59	53	38	51	46	32	44	40	27	39	35	23	34	31	20	30	27	17
			Exposed	92	86	57	88	75	50	83	60	44	61	55	39	55	49	35	50	45	31	46	41	28	39	35	23	33	30	19	29	26	25	25	23	21	22	30	19	30	27	17
40	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	56	58	58	48	58	58	42	58	51	36	58	45	32	55	40	28
			Exposed	58	58	58	58	58	58	58	58	58	58	58	57	58	58	52	58	58	47	58	58	43	58	52	37	58	44	31	53	38	27	46	34	24	41	30	32	36	26	28
		7-20	Interior	62	62	62	62	62	62	62	62	62	62	62	62	62	62	62	62	62	62	62	62	59	62	60	49	62	51	42	62	44	37	59	39	32	52	34	28	46	30	25
			Exposed	62	62	62	62	62	62	62	62	56	62	61	51	62	56	46	62	51	42	62	46	38	60	39	32	51	34	28	44	29	24	39	25	21	34	22	28	30	30	25
		20-27	Interior	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	58	76	62	47	76	54	39	76	47	33	75	41	28	63	37	25
			Exposed	76	76	76	76	76	76	76	76	76	76	76	60	76	76	52	76	61	46	76	56	41	76	47	33	72	40	28	60	35	24	52	31	21	46	27	18	41	24	25
		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	85	86	86	60	83	74	50	68	59	43	58	52	37	51	46	32
			Exposed	86	86	86	86	86	86	86	86	86	86	86	85	86	86	73	86	86	59	86	83	53	83	59	43	57	51	36	49	44	30	43	38	26	38	34	22	34	30	19
	C	0-7	Interior	58	58	58	58	58	58	58	58	58	58	58	58	58	58	56	58	58	51	58	58	47	58	56	39	58	48	34	57	41	29	49	36	25	43	32	22	39	28	30
			Exposed	58	58	56	58	58	50	58	58	45	58	57	40	58	52	37	58	47	33	58	43	30	50	36	26	43	31	22	37	27	29	32	24	25	28	31	22	25	28	20
		7-20	Interior	62	62	62	62	62	62	62	62	60	62	62	54	62	60	49	62	54	45	62	50	41	62	42	35	55	36	30	48	31	26	42	27	23	37	24	30	33	21	27
			Exposed	62	59	49	62	53	44	62	48	39	62	43	36	60	39	32	54	36	29	50	33	27	42	28	23	36	24	30	31	31	26	27	27	22	24	24	20	21	21	18
		20-27	Interior	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	58	76	62	47	76	54	39	76	47	33	75	41	28	63	37	25
			Exposed	76	76	57	76	64	49	76	58	43	76	52	38	76	47	33	76	43	30	69	39	27	57	33	23	49	28	19	42	25	26	37	22	22	32	29	20	29	26	18
		27-45	Interior	86	86	86	86	86	86	86	86	86	86	86	86	86	86	84	86	86	65	85	85	57	80	64	47	61	54	39	53	47	33	46	41	28	41	36	24	36	32	21
			Exposed	86	86	84	86	86	63	86	84	54	86	65	48	82	59	43	60	54	38	55	49	35	46	42	28	40	36	24	35	31	20	30	27	17	27	24	22	24	21	20
	D	0-7	Interior	63	63	63	63	63	63	63	63	57	63	63	52	63	63	47	63	60	43	63	55	39	63	47	33	55	40	28	47	35	24	41	30	21	36	27	29	32	24	25
			Exposed	63	63	47	63	59	42	63	53	37	63	48	34	59	43	31	54	39	28	50	36	26	42	30	22	36	26	28	31	23	24	27	30	21	24	26	19	21	23	17
		7-20	Interior	66	66	63	66	66	56	66	61	50	66	55	46	66	50	41	66	46	38	64	42	34	54	35	29	46	30	25	40	26	22	35	23	29	31	30	25	27	27	22
			Exposed	66	50	41	66	44	37	61	40	33	55	36	30	50	33	27	46	30	25	42	27	23	35	23	29	30	30	25	26	26	21	23	23	19	30	20	17	27	18	15
		20-27	Interior	80	80	80	80	80	80	80	80	59	80	75	52	80	60	46	80	55	41	80	50	36	79	43	29	62	36	25	54	32	22	47	28	19	41	24	25	37	22	22
			Exposed	80	60	45	80	54	39	80	48	34	80	44	30	69	39	27	61	36	25	56	33	23	48	28	19	41	24	25	35	31	21	31	27	19	27	24	17	24	21	15
		27-45	Interior	88	88	88	88	88	88	88	88	85	88	88	70	88	86	58	87	83	52	85	63	46	59	53	38	51	46	32	44	40	27	39	35	23	34	31	20	30	27	17
			Exposed	88	86	57	88	75	50	83	60	44	61	55	39	55	49	35	50	45	31	46	41	28	39	35	23	33	30	19	29	26	25	25	23	21	22	30	19	30	27	17
50	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	42	48	48	36	48	45	32	48	40	28
			Exposed	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	47	48	48	43	48	48	37	48	44	31	48	38	27	46	34	24	41	30	32	36	26	28
		7-20	Interior	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	49	52	52	42	52	51	42	52	44	37	52	39	32	51	34	28	46	30	25
			Exposed	52	52	52	52	52	52	52	52	52	52	52	51	52	52	46	52	51	42	52	46	38	52	39	32	51	34	28	44	29	24	39	25	21	34	22	28	30	30	25
		20-27	Interior	66	66	66	66	66	66	66	66	66	66	66	66	66	66	66	66	66	66	66	66	66	66	66	56	66	62	47	66	54	39	66	47	33	64	41	28	62	37	25
			Exposed	66	66	66	66	66	66	66	66	66	66	66	60	66	66	52	66	61	46	66	56	41	66	47	33	66	40	28	60	35	24	52	31	21	46	27	18	41	24	25
		27-45	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	75	75	60	70	70	50	65	59	43	58	52	37	51	46	32
			Exposed	77	77	77	77	77	77	77	77	77	77	77	77	77	77	73	77	77	59	77	77	53	77	59	43	57	51	36	49	44	30	43	38	26	38	34	22	34	30	19
	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	42	48	48	36	48	45	32	48	40	28
			Exposed	48	48	48	48	48	48	48	48	45	48	48	40	48	48	37	48	47	33	48	43	30	48	36	26	43	31	22	37	27	29	32	24	25	28	31	22	25	28	20
		7-20	Interior	52	52	52	52	52	52	52	52	52	52	52	52	52	52	49	52	52	45	52	50	41	52	42	35	52	36	30	48	31	26	42	27	23	37	24	30	33	21	27
			Exposed	52	52	49	52	52	44	52	48	39	52	43	36	52	39	32	52	36	29	50	33	27	42	28	23	36	24	30	31	31	26	27	27	22	24	24	20	21	21	18
		20-27	Interior	66	66	66	66	66	66	66	66	66	66	66	66	66	66	58	66	66	51	66	60	45	66	51	37	65	43	30	63	38	26	56	33	23	49	29	20	44	26	18
			Exposed	66	66	57	66	64	49	66	58	43	66	52	38	66	47	33	66	43	30	66	39	27	57	33	23	49	28	19	42	25	26	37	22	22	32	29	20	29	26	18
		27-45	Interior	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	76	76	65	74	74	57	68	64	47	61	54	39	53	47	33	46	41	28	41	36	24	36	32	21
			Exposed	77	77	77	77	77	63	77	77	54	77	65	48	77	59	43	60	54	38	55	49	35	46	42	28	40	36	24	35	31	20	30	27	17	27	24	22	24	21	20
	D	0-7	Interior	53	53	53	53	53	53	53	53	53	53	53	52	53	53	47	53	53	43	53	53	39	53	47	33	53	40	28	47	35	24	41	30	21	36	27	29	32	24	25
			Exposed	53	53	47	53	53	42	53	53	37	53	48	34	53	43	31	53	39	28	50	36	26	42	30	22	36	26	28	31	23	24	27	30	21	24	26	19	21	23	17
		7-20	Interior	57	57	57	57	57	56	57	57	50	57	55	46	57	50	41	57	46	38	57	42	34	54	35	29	46	30	25	40	26	22	35	23	29	31	30	25	27	27	22
			Exposed	57	50	41	57	44	37	57	40	33	55	36	30	50	33	27	46	30	25	42	27	23	35	23	29	30	30	25	26	26	21	23	23	19	30	20	17	27	18	15
		20-27	Interior	70	70	70	70	70	70	70	70	59	70	70	52	70	60	46	70	55	41	70	50	36	70	43	29	62	36	25	54	32	22	47	28	19	41	24	25	37	22	22
			Exposed	70	60	45	70	54	39	70	48	34	70	44	30	69	39	27	61	36	25	56	33	23	48	28	19	41	24	25	35	31	21	31	27	19	27	24	17	24	21	15
		27-45	Interior	82	82	82	82	82	82	82	82	82	82	82	70	80	80	58	77	77	52	73	63	46	59	53	38	51	46	32	44	40	27	39	35	23	34	31	20	30	27	17
			Exposed	82	82	57	82	75	50	82	60	44	61	55	39	55	49	35	50	45	31	46	41	28	39	35	23	33	30	19	29	26	25	25	23	21	22	30	19	30	27	17

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UNIRAC

ASCE 7-16	II	30 ft	Ss = 1.25	19 sq.ft	LANDSCAPE	CROSS-SLOPE	NXT	NXT COMBO	Solarhooks ATI
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	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	32	40	40	28
			Exposed	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	31	40	38	27	40	34	24	40	30	32	36	26	28
		7-20	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	42	44	44	37	44	39	32	44	34	28	44	30	25
			Exposed	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	42	44	44	38	44	39	32	44	34	28	44	29	24	39	25	21	34	22	28	30	30	25
		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	47	58	54	39	58	47	33	57	41	28	55	37	25
			Exposed	58	58	58	58	58	58	58	58	58	58	58	58	58	58	52	58	58	46	58	56	41	58	47	33	58	40	28	58	35	24	52	31	21	46	27	18	41	24	25
		27-45	Interior	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	68	68	68	65	65	60	62	62	50	59	59	43	56	52	37	51	46	32
			Exposed	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	59	69	69	53	68	59	43	57	51	36	49	44	30	43	38	26	38	34	22	34	30	19
	C	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	39	40	40	34	40	40	29	40	36	25	40	32	22	39	28	30
			Exposed	40	40	40	40	40	40	40	40	40	40	40	40	40	40	37	40	40	33	40	40	30	40	36	26	40	31	22	37	27	29	32	24	25	28	31	22	25	28	20
		7-20	Interior	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	41	44	42	35	44	36	30	44	31	26	42	27	23	37	24	30	33	21	27
			Exposed	44	44	44	44	44	44	44	44	39	44	43	36	44	39	32	44	36	29	44	33	27	42	28	23	36	24	30	31	31	26	27	27	22	24	24	20	21	21	18
		20-27	Interior	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	51	58	58	45	58	51	37	57	43	30	55	38	26	53	33	23	49	29	20	44	26	18
			Exposed	58	58	57	58	58	49	58	58	43	58	52	38	58	47	33	58	43	30	58	39	27	57	33	23	49	28	19	42	25	26	37	22	22	32	29	20	29	26	18
		27-45	Interior	69	69	69	69	69	69	69	69	69	69	69	69	68	68	68	66	66	65	64	64	57	61	61	47	57	54	39	53	47	33	46	41	28	41	36	24	36	32	21
			Exposed	69	69	69	69	69	63	69	69	54	69	65	48	68	59	43	60	54	38	55	49	35	46	42	28	40	36	24	35	31	20	30	27	17	27	24	22	24	21	20
	D	0-7	Interior	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	43	44	44	39	44	44	33	44	40	28	44	35	24	41	30	21	36	27	29	32	24	25
			Exposed	44	44	44	44	44	42	44	44	37	44	44	34	44	43	31	44	39	28	44	36	26	42	30	22	36	26	28	31	23	24	27	30	21	24	26	19	21	23	17
		7-20	Interior	48	48	48	48	48	48	48	48	48	48	48	46	48	48	41	48	46	38	48	42	34	48	35	29	46	30	25	40	26	22	35	23	29	31	30	25	27	27	22
			Exposed	48	48	41	48	44	37	48	40	33	48	36	30	48	33	27	46	30	25	42	27	23	35	23	29	30	30	25	26	26	21	23	23	19	30	20	17	27	18	15
		20-27	Interior	63	63	63	63	63	63	63	63	59	63	63	52	63	60	46	63	55	41	63	50	36	61	43	29	59	36	25	54	32	22	47	28	19	41	24	25	37	22	22
			Exposed	63	60	45	63	54	39	63	48	34	63	44	30	63	39	27	61	36	25	56	33	23	48	28	19	41	24	25	35	31	21	31	27	19	27	24	17	24	21	15
		27-45	Interior	74	74	74	74	74	74	74	74	74	72	72	70	69	69	58	67	67	52	64	63	46	59	53	38	51	46	32	44	40	27	39	35	23	34	31	20	30	27	17
			Exposed	74	74	57	74	74	50	74	60	44	61	55	39	55	49	35	50	45	31	46	41	28	39	35	23	33	30	19	29	26	25	25	23	21	22	30	19	30	27	17
70	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	32	35	35	28
			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	31	35	35	27	35	34	24	35	30	32	35	26	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	37	38	38	32	38	34	28	38	30	25
			Exposed	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	32	38	34	28	38	29	24	38	25	21	34	22	28	30	30	25
		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	51	51	39	51	47	33	51	41	28	49	37	25
			Exposed	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	46	51	51	41	51	47	33	51	40	28	51	35	24	51	31	21	46	27	18	41	24	25
		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	61	61	61	59	59	59	56	56	50	54	54	43	52	52	37	49	46	32
			Exposed	62	62	62	62	62	62	62	62	62	62	62	62	62	62	62	62	62	59	62	62	53	61	59	43	57	51	36	49	44	30	43	38	26	38	34	22	34	30	19
	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	34	35	35	29	35	35	25	35	32	22	35	28	30
			Exposed	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	33	35	35	30	35	35	26	35	31	22	35	27	29	32	24	25	28	31	22	25	28	20
		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	35	38	36	30	38	31	26	38	27	23	37	24	30	33	21	27
			Exposed	38	38	38	38	38	38	38	38	38	38	38	36	38	38	32	38	36	29	38	33	27	38	28	23	36	24	30	31	31	26	27	27	22	24	24	20	21	21	18
		20-27	Interior	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	45	51	51	37	51	43	30	50	38	26	48	33	23	46	29	20	44	26	18
			Exposed	51	51	51	51	51	49	51	51	43	51	51	38	51	47	33	51	43	30	51	39	27	51	33	23	49	28	19	42	25	26	37	22	22	32	29	20	29	26	18
		27-45	Interior	62	62	62	62	62	62	62	62	62	62	62	62	61	61	61	60	60	60	58	58	57	55	55	47	53	53	39	50	47	33	46	41	28	41	36	24	36	32	21
			Exposed	62	62	62	62	62	62	62	62	54	62	62	48	61	59	43	60	54	38	55	49	35	46	42	28	40	36	24	35	31	20	30	27	17	27	24	22	24	21	20
	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	33	38	38	28	38	35	24	38	30	21	36	27	29	32	24	25
			Exposed	38	38	38	38	38	38	38	38	37	38	38	34	38	38	31	38	38	28	38	36	26	38	30	22	36	26	28	31	23	24	27	30	21	24	26	19	21	23	17
		7-20	Interior	42	42	42	42	42	42	42	42	42	42	42	42	42	42	41	42	42	38	42	42	34	42	35	29	42	30	25	40	26	22	35	23	29	31	30	25	27	27	22
			Exposed	42	42	41	42	42	37	42	40	33	42	36	30	42	33	27	42	30	25	42	27	23	35	23	29	30	30	25	26	26	21	23	23	19	30	20	17	27	18	15
		20-27	Interior	56	56	56	56	56	56	56	56	56	56	56	52	56	56	46	56	55	41	56	50	36	55	43	29	53	36	25	51	32	22	47	28	19	41	24	25	37	22	22
			Exposed	56	56	45	56	54	39	56	48	34	56	44	30	56	39	27	56	36	25	56	33	23	48	28	19	41	24	25	35	31	21	31	27	19	27	24	17	24	21	15
		27-45	Interior	67	67	67	67	67	67	66	66	66	64	64	64	62	62	58	61	61	52	59	59	46	55	53	38	51	46	32	44	40	27	39	35	23	34	31	20	30	27	17
			Exposed	67	67	57	67	67	50	66	60	44	61	55	39	55	49	35	50	45	31	46	41	28	39	35	23	33	30	19	29	26	25	25	23	21	22	30	19	30	27	17
80	B	0-7	Interior	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	28
			Exposed	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	27	30	30	24	30	30	32	30	26	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	32	33	33	28	33	30	25
			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	28	33	29	24	33	25	21	33	22	28	30	30	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	39	45	45	33	45	41	28	45	37	25
			Exposed	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	41	45	45	33	45	40	28	45	35	24	45	31	21	45	27	18	41	24	25
		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	54	54	54	52	52	50	50	50	43	48	48	37	46	46	32
			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	54	51	36	49	44	30	43	38	26	38	34	22	34	30	19
	C	0-7	Interior	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	29	30	30	25	30	30	22	30	28	30
			Exposed	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	27	30	30	24	30	30	28	31	22	25	28	20
		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	32	33	33	28	33	30	25
			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	28	33	29	24	33	25	21	33	22	28	30	30	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	39	45	45	33	45	41	28	45	37	25
			Exposed	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	41	45	45	33	45	40	28	45	35	24	45	31	21	45	27	18	41	24	25
		27-45	Interior	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	55	55	53	53	51	51	47	49	49	39	46	46	33	44	41	28	40	36	24	35	31	20	30	27	17
			Exposed	56	56	56	56	56	56	56	56	54	56	56	48	56	56	43	55	54	38	53	49	35	46	42	28	40	36	24	35	31	20	30	27	17	27	24	22	24	21	20
	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	33	34	34	28	34	34	24	34	30	21	34	27	29	32	24	25
			Exposed	34	34	34	34	34	34	34	34	34	34	34	34	34	34	31	34	34	28	34	34	26	34	30	22	34	26	28	31	23	24	27	30	21	24	26	19	21	23	17
		7-20	Interior	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	34	37	35	29	37	30	25	37	26	22	35	23	29	31	30	25	27	27	22
			Exposed	37	37	37	37	37	37	37	37	33	37	36	30	37	33	27	37	30	25	37	27	23	35	23	29	30	30	25	26	26	21	23	23	19	30	20	17	27	18	15
		20-27	Interior	49	49	49	49	49	49	49	49	49	49	49	49	49	49	46	49	49	41	49	49	36	49	43	29	48	36	25	46	32	22	44	28	19	41	24	25	37	22	22
			Exposed	49	49	45	49	49	39	49	48	34	49	44	30	49	39	27	49	36	25	49	33	23	48	28	19	41	24	25	35	31	21	31	27	19	27	24	17	24	21	15
		27-45	Interior	61	61	61	61	61	61	60	60	60	59	59	59	57	57	57	56	56	52	54	54	46	51	51	38	49	46	32	44	40	27	39	35	23	34	31	20	30	27	17
			Exposed	61	61	57	61	61	50	60	60	44	59	55	39	55	49	35	50	45	31	46	41	28	39	35	23	33	30	19	29	26	25	25	23	21	22	30	19	30	27	17

* 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	Solarhooks ATI
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	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27
			Exposed	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	24	27	27	32	27	26	28		
		7-20	Interior	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	28	30	30	25		
			Exposed	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	28	30	29	24	30	25	21	30	22	28	30	30	25
		20-27	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	39	40	40	33	40	40	28	40	37	25
			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	33	40	40	28	40	35	24	40	31	21	40	27	18
		27-45	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	50	50	50	48	48	48	46	46	43	45	45	37
			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	50	50	36	48	44	30	43	38	26	38	34	22
	C	0-7	Interior	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	25	27	27	22	27	27	30
			Exposed	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	26	27	27	22	27	27	29	27	24	25	27	31	22
		7-20	Interior	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	26	30	27	23	30	24	30
			Exposed	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	29	30	30	27	30	28	23	30	24	30	30	31	26	27	27	22	24	24	20	21	21	18
		20-27	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	30	40	38	26	40	33	23	39	29	20	37	26	18
			Exposed	40	40	40	40	40	40	40	40	40	38	40	40	33	40	40	30	40	39	27	40	33	23	40	28	19	40	25	26	37	22	22	32	29	20	29	26	18		
		27-45	Interior	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	50	50	50	49	49	49	47	47	47	45	45	39	43	43	33	41	41	28	39	36	24	36	32	21
			Exposed	51	51	51	51	51	51	51	51	51	48	51	51	43	50	50	38	49	49	35	46	42	28	40	36	24	35	31	20	30	27	17	27	24	22	24	21	20		
	D	0-7	Interior	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	24	30	30	21	30	27	25
			Exposed	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	28	30	30	26	30	30	22	30	26	28	30	23	24	27	30	21	24	26	19	21	23	17		
		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	29	33	30	25	33	26	22	33	23	29	31	30	25	27	27	22
			Exposed	33	33	33	33	33	33	33	33	33	30	33	33	27	33	30	25	33	27	23	33	23	29	30	30	25	26	26	21	23	23	19	30	20	17	27	18	15		
		20-27	Interior	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	41	44	44	36	44	43	29	44	36	25	43	32	22	41	28	19	39	24	25	37	22	22		
			Exposed	44	44	44	44	44	39	44	44	34	44	44	30	44	39	27	44	36	25	44	33	23	44	28	19	41	24	25	35	31	21	31	27	19	27	24	17	24	21	15
		27-45	Interior	56	56	56	56	56	56	56	56	56	54	54	54	53	53	53	52	52	52	51	51	46	48	48	38	45	45	32	43	40	27	39	35	23	34	31	20	30	27	17
			Exposed	56	56	56	56	56	50	56	56	44	54	54	39	53	49	35	50	45	31	46	41	28	39	35	23	33	30	19	29	26	25	25	23	21	22	30	19	30	27	17
100	B	0-7	Interior	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25
			Exposed	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	24	25	25	32	25	25	28						
		7-20	Interior	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	25
			Exposed	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	24	27	25	21	27	22	28	27	30	25			
		20-27	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	33	36	36	28	36	36	25
			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	33	36	36	28	36	35	24	36	31	21	36	27	18
		27-45	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	46	45	45	45	43	43	43	42	42	37
			Exposed	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	43	46	46	36	45	44	30	43	38	26	38	34	22	34	30	19
	C	0-7	Interior	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	22	25	25	30
			Exposed	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	22	25	25	29	25	24	25	25	31	22	25	28	20
		7-20	Interior	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	26	27	27	23	27	24	30	27	21	27
			Exposed	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	23	27	24	30	27	31	26	27	27	22	24	24	20	21	21	18
		20-27	Interior	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	30	36	36	26	36	33	23	36	29	20	35	26	18			
			Exposed	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	33	36	36	30	36	36	27	36	33	23	36	28	19	36	25	26	36	22	22	32	29	20	29	26	18
		27-45	Interior	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	44	44	44	42	42	39	40	40	33	39	39	28	37	36	24	35	32	21
			Exposed	46	46	46	46	46	46	46	46	46	46	46	46	46	46	43	46	46	38	46	46	35	44	42	28	40	36	24	35	31	20	30	27	17	27	24	22	24	21	20
	D	0-7	Interior	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	24	27	27	21	27	27	29	27	24	25
			Exposed	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	26	27	27	22	27	26	28	27	23	24	27	30	21	24	26	19	21	23	17
		7-20	Interior	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	29	30	30	25	30	26	22	30	23	29	29	30	25	27	27	22
			Exposed	30	30	30	30	30	30	30	30	30	30	30	30	30	30	27	30	30	25	30	27	23	30	30	23	29	30	30	25	26	26	21	23	23	19	30	20	17	27	18	15
		20-27	Interior	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	40	29	40	36	25	39	32	22	38	28	19	37	24	25
			Exposed	40	40	40	40	40	39	40	40	34	40	40	30	40	39	27	40	36	25	40	33	23	40	28	19	40	24	25	35	31	21	31	27	19	27	24	17	24	21	15
		27-45	Interior	51	51	51	51	51	51	51	51	51	51	51	51	49	49	49	48	48	48	47	47	46	45	45	38	43	43	32	41	40	27	39	35	23	34	31	20	30	27	17
			Exposed	51	51	51	51	51	50	51	51	44	51	51	39	49	49	35	48	45	31	46	41	28	39	35	23	33	30	19	29	26	25	25	23	21	22	30	19	30	27	17

* 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	Solarhooks ATI
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	74	74	74	74	74	73	74	74	60	74	74	50	74	74	43	74	63	37	74	54	33	70	42	28	54	34	24	43	29	21	35	25	18	31	22	16	27	20	14
			Exposed	74	73	42	74	60	35	74	51	32	73	43	28	62	37	26	53	33	23	46	30	21	35	26	18	30	22	15	26	19	13	23	17	18	20	15	16	18	13	14
		7-20	Interior	74	74	74	74	74	63	74	74	51	74	60	41	74	49	35	71	41	32	62	35	29	49	30	25	40	25	21	34	22	18	29	19	16	26	17	14	23	15	12
			Exposed	74	49	35	68	39	31	59	34	28	51	30	25	45	28	23	40	25	21	35	23	19	30	19	16	25	17	14	22	14	18	19	12	16	17	17	14	15	15	~~12~~
		20-27	Interior	75	75	75	75	75	75	75	75	75	75	75	65	75	71	52	75	58	43	75	49	36	75	36	29	60	31	23	49	27	19	41	23	16	35	20	14	31	18	12
			Exposed	75	70	52	75	56	41	75	45	34	75	38	30	67	33	26	59	30	23	52	28	20	42	23	17	34	20	14	30	17	12	26	15	10	23	13	14	20	18	12
		27-45	Interior	76	76	76	76	76	76	76	76	76	76	76	76	76	76	66	76	76	56	76	72	48	73	53	36	52	41	30	39	33	25	32	29	21	29	26	18	25	23	16
			Exposed	76	76	66	76	76	53	76	66	44	76	55	37	61	47	33	50	40	29	42	35	26	33	29	21	28	25	18	24	22	15	21	19	13	19	17	11	17	15	14
	C	0-7	Interior	74	74	48	74	68	39	74	57	34	74	48	31	70	42	28	59	36	25	51	33	23	40	28	19	33	24	17	28	20	14	24	18	13	22	16	17	19	14	15
			Exposed	69	41	28	57	35	25	48	31	22	41	28	20	35	26	18	32	23	16	29	21	15	25	18	13	21	15	16	18	13	~~12~~	14	15	~~11~~	12	14	~~10~~	16	16	13
		7-20	Interior	74	56	39	74	45	33	65	37	30	56	33	27	49	30	24	43	27	22	39	25	20	32	21	17	27	18	15	24	15	13	21	13	17	18	18	15	16	16	13
			Exposed	49	29	24	42	26	22	37	24	19	33	21	18	30	19	16	27	18	14	25	16	13	21	14	17	18	18	15	15	15	~~13~~	13	13	~~11~~	18	~~12~~	~~10~~	16	~~10~~	9
		20-27	Interior	75	75	61	75	64	47	75	52	38	75	43	33	75	36	29	65	33	25	57	30	22	46	25	18	37	22	15	32	19	13	28	16	11	24	14	15	22	13	13
			Exposed	74	36	28	63	32	24	54	29	21	47	26	19	42	23	16	37	21	15	33	19	13	28	16	11	24	14	15	21	18	13	18	16	~~11~~	16	14	~~10~~	14	~~13~~	9
		27-45	Interior	76	76	76	76	76	61	76	76	50	76	63	42	72	53	36	58	45	32	48	39	28	35	32	23	30	27	19	26	23	16	23	20	14	20	18	12	18	16	10
			Exposed	72	52	35	55	43	31	45	36	27	37	32	24	33	29	21	30	27	19	27	24	17	23	21	14	20	18	12	17	15	15	15	13	13	13	18	11	18	16	~~10~~
	D	0-7	Interior	74	61	36	74	51	32	73	43	28	61	37	26	52	33	23	45	30	21	39	27	19	32	23	16	27	20	14	23	17	18	20	15	16	18	13	14	16	18	~~12~~
			Exposed	52	33	23	43	29	21	37	26	18	33	24	17	30	21	15	27	19	14	25	18	13	21	15	16	18	13	14	15	17	~~12~~	13	15	~~10~~	18	13	9	16	~~11~~	~~8~~
		7-20	Interior	69	40	31	59	34	28	51	30	25	44	27	23	39	25	20	35	23	19	32	21	17	27	17	14	23	15	12	20	13	16	17	17	14	15	15	~~12~~	13	13	~~11~~
			Exposed	39	25	20	34	22	18	30	20	16	27	18	15	25	16	13	23	15	18	21	13	17	17	17	14	15	15	~~12~~	13	~~13~~	~~11~~	17	~~11~~	9	15	~~10~~	~~8~~	13	~~9~~	~~7~~
		20-27	Interior	75	56	42	75	46	34	75	38	29	66	33	26	58	30	23	51	27	20	45	25	18	36	21	14	31	18	12	27	16	11	23	14	14	20	~~18~~	12	18	16	~~11~~
			Exposed	58	30	22	49	27	19	43	24	17	37	22	15	34	20	13	31	18	12	28	16	11	24	14	14	20	18	12	17	15	~~11~~	15	13	9	13	~~12~~	8	18	~~11~~	~~7~~
		27-45	Interior	76	76	54	76	67	44	76	55	37	60	46	32	49	39	29	41	34	26	35	31	23	30	26	19	25	23	16	22	20	13	19	17	11	17	15	15	15	13	13
			Exposed	49	39	29	39	33	25	33	30	22	30	27	19	27	25	17	25	22	15	23	20	14	19	17	11	17	15	14	14	13	12	12	17	~~10~~	17	15	9	15	13	~~8~~
10	B	0-7	Interior	52	52	52	52	52	52	52	52	52	52	52	50	52	52	43	52	52	37	52	52	33	52	42	28	52	34	24	43	29	21	35	25	18	31	22	16	27	20	14
			Exposed	52	52	42	52	52	35	52	51	32	52	43	28	52	37	26	52	33	23	46	30	21	35	26	18	30	22	15	26	19	13	23	17	18	20	15	16	18	13	14
		7-20	Interior	52	52	52	52	52	52	52	52	51	52	52	41	52	49	35	52	41	32	52	35	29	49	30	25	40	25	21	34	22	18	29	19	16	26	17	14	23	15	12
			Exposed	52	49	35	52	39	31	52	34	28	51	30	25	45	28	23	40	25	21	35	23	19	30	19	16	25	17	14	22	14	18	19	12	16	17	17	14	15	15	~~12~~
		20-27	Interior	69	69	69	69	69	69	69	69	69	69	69	65	69	69	52	69	58	43	69	49	36	69	36	29	60	31	23	49	27	19	41	23	16	35	20	14	31	18	12
			Exposed	69	69	52	69	56	41	69	45	34	69	38	30	67	33	26	59	30	23	52	28	20	42	23	17	34	20	14	30	17	12	26	15	10	23	13	14	20	18	12
		27-45	Interior	74	74	74	74	74	74	74	74	74	74	74	74	74	74	66	74	74	56	74	72	48	73	53	36	52	41	30	39	33	25	32	29	21	29	26	18	25	23	16
			Exposed	74	74	66	74	74	53	74	66	44	74	55	37	61	47	33	50	40	29	42	35	26	33	29	21	28	25	18	24	22	15	21	19	13	19	17	11	17	15	14
	C	0-7	Interior	52	52	48	52	52	39	52	52	34	52	48	31	52	42	28	52	36	25	51	33	23	40	28	19	33	24	17	28	20	14	24	18	13	22	16	17	19	14	15
			Exposed	52	41	28	52	35	25	48	31	22	41	28	20	35	26	18	32	23	16	29	21	15	25	18	13	21	15	16	18	13	~~12~~	14	15	~~11~~	12	14	~~10~~	16	16	13
		7-20	Interior	52	52	39	52	45	33	52	37	30	52	33	27	49	30	24	43	27	22	39	25	20	32	21	17	27	18	15	24	15	13	21	13	17	18	18	15	16	16	13
			Exposed	49	29	24	42	26	22	37	24	19	33	21	18	30	19	16	27	18	14	25	16	13	21	14	17	18	18	15	15	15	~~13~~	13	13	~~11~~	18	~~12~~	~~10~~	16	~~10~~	9
		20-27	Interior	69	69	61	69	64	47	69	52	38	69	43	33	69	36	29	65	33	25	57	30	22	46	25	18	37	22	15	32	19	13	28	16	11	24	14	15	22	13	13
			Exposed	69	36	28	63	32	24	54	29	21	47	26	19	42	23	16	37	21	15	33	19	13	28	16	11	24	14	15	21	18	13	18	16	~~11~~	16	14	~~10~~	14	~~13~~	9
		27-45	Interior	74	74	74	74	74	61	74	74	50	74	63	42	72	53	36	58	45	32	48	39	28	35	32	23	30	27	19	26	23	16	23	20	14	20	18	12	18	16	10
			Exposed	72	52	35	55	43	31	45	36	27	37	32	24	33	29	21	30	27	19	27	24	17	23	21	14	20	18	12	17	15	15	15	13	13	13	18	11	18	16	~~10~~
	D	0-7	Interior	52	52	36	52	51	32	52	43	28	52	37	26	52	33	23	45	30	21	39	27	19	32	23	16	27	20	14	23	17	18	20	15	16	18	13	14	16	18	~~12~~
			Exposed	52	33	23	43	29	21	37	26	18	33	24	17	30	21	15	27	19	14	25	18	13	21	15	16	18	13	14	15	17	~~12~~	13	15	~~10~~	18	13	9	16	~~11~~	~~8~~
		7-20	Interior	52	40	31	52	34	28	51	30	25	44	27	23	39	25	20	35	23	19	32	21	17	27	17	14	23	15	12	20	13	16	17	17	14	15	15	~~12~~	13	13	~~11~~
			Exposed	39	25	20	34	22	18	30	20	16	27	18	15	25	16	13	23	15	18	21	13	17	17	17	14	15	15	~~12~~	13	~~13~~	~~11~~	17	~~11~~	9	15	~~10~~	~~8~~	13	~~9~~	~~7~~
		20-27	Interior	70	56	42	70	46	34	70	38	29	66	33	26	58	30	23	51	27	20	45	25	18	36	21	14	31	18	12	27	16	11	23	14	14	20	~~18~~	12	18	16	~~11~~
			Exposed	58	30	22	49	27	19	43	24	17	37	22	15	34	20	13	31	18	12	28	16	11	24	14	14	20	18	12	17	15	~~11~~	15	13	9	13	~~12~~	8	18	~~11~~	~~7~~
		27-45	Interior	75	75	54	75	67	44	75	55	37	60	46	32	49	39	29	41	34	26	35	31	23	30	26	19	25	23	16	22	20	13	19	17	11	17	15	15	15	13	13
			Exposed	49	39	29	39	33	25	33	30	22	30	27	19	27	25	17	25	22	15	23	20	14	19	17	11	17	15	14	14	13	12	12	17	~~10~~	17	15	9	15	13	~~8~~
20	B	0-7	Interior	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	33	36	36	28	36	34	24	36	29	21	35	25	18	31	22	16	27	20	14
			Exposed	36	36	36	36	36	35	36	36	32	36	36	28	36	36	26	36	33	23	36	30	21	35	26	18	30	22	15	26	19	13	23	17	18	20	15	16	18	13	14
		7-20	Interior	37	37	37	37	37	37	37	37	37	37	37	37	37	37	35	37	37	32	37	35	29	37	30	25	37	25	21	34	22	18	29	19	16	26	17	14	23	15	12
			Exposed	37	37	35	37	37	31	37	34	28	37	30	25	37	28	23	37	25	21	35	23	19	30	19	16	25	17	14	22	14	18	19	12	16	17	17	14	15	15	~~12~~
		20-27	Interior	54	54	54	54	54	54	54	54	54	54	54	54	54	54	52	54	54	43	54	49	36	54	36	29	54	31	23	49	27	19	41	23	16	35	20	14	31	18	12
			Exposed	54	54	52	54	54	41	54	45	34	54	38	30	54	33	26	54	30	23	52	28	20	42	23	17	34	20	14	30	17	12	26	15	10	23	13	14	20	18	12
		27-45	Interior	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	56	60	60	48	60	53	36	52	41	30	39	33	25	32	29	21	29	26	18	25	23	16
			Exposed	60	60	60	60	60	53	60	60	44	60	55	37	60	47	33	50	40	29	42	35	26	33	29	21	28	25	18	24	22	15	21	19	13	19	17	11	17	15	14
	C	0-7	Interior	36	36	36	36	36	36	36	36	34	36	36	31	36	36	28	36	36	25	36	33	23	36	28	19	33	24	17	28	20	14	24	18	13	22	16	17	19	14	15
			Exposed	36	36	28	36	35	25	36	31	22	36	28	20	35	26	18	32	23	16	29	21	15	25	18	13	21	15	16	18	13	~~12~~	14	15	~~11~~	12	14	~~10~~	16	16	13
		7-20	Interior	37	37	37	37	37	33	37	37	30	37	33	27	37	30	24	37	27	22	37	25	20	32	21	17	27	18	15	24	15	13	21	13	17	18	18	15	16	16	13
			Exposed	37	29	24	37	26	22	37	24	19	33	21	18	30	19	16	27	18	14	25	16	13	21	14	17	18	18	15	15	15	~~13~~	13	13	~~11~~	18	~~12~~	~~10~~	16	~~10~~	9
		20-27	Interior	54	54	54	54	54	47	54	52	38	54	43	33	54	36	29	54	33	25	54	30	22	46	25	18	37	22	15	32	19	13	28	16	11	24	14	15	22	13	13
			Exposed	54	36	28	54	32	24	54	29	21	47	26	19	42	23	16	37	21	15	33	19	13	28	16	11	24	14	15	21	18	13	18	16	~~11~~	16	14	~~10~~	14	~~13~~	9
		27-45	Interior	60	60	60	60	60	60	60	60	50	60	60	42	60	53	36	58	45	32	48	39	28	35	32	23	30	27	19	26	23	16	23	20	14	20	18	12	18	16	10
			Exposed	60	52	35	55	43	31	45	36	27	37	32	24	33	29	21	30	27	19	27	24	17	23	21	14	20	18	12	17	15	15	15	13	13	13	18	11	18	16	~~10~~
	D	0-7	Interior	36	36	36	36	36	32	36	36	28	36	36	26	36	33	23	36	30	21	36	27	19	32	23	16	27	20	14	23	17	18	20	15	16	18	13	14	16	18	~~12~~
			Exposed	36	33	23	36	29	21	36	26	18	33	24	17	30	21	15	27	19	14	25	18	13	21	15	16	18	13	14	15	17	~~12~~	13	15	~~10~~	18	13	9	16	~~11~~	~~8~~
		7-20	Interior	37	37	31	37	34	28	37	30	25	37	27	23	37	25	20	35	23	19	32	21	17	27	17	14	23	15	12	20	13	16	17	17	14	15	15	~~12~~	13	13	~~11~~
			Exposed	37	25	20	34	22	18	30	20	16	27	18	15	25	16	13	23	15	18	21	13	17	17	17	14	15	15	~~12~~	13	~~13~~	~~11~~	17	~~11~~	9	15	~~10~~	~~8~~	13	~~9~~	~~7~~
		20-27	Interior	56	56	42	56	46	34	56	38	29	56	33	26	56	30	23	51	27	20	45	25	18	36	21	14	31	18	12	27	16	11	23	14	14	20	~~18~~	12	18	16	~~11~~
			Exposed	56	30	22	49	27	19	43	24	17	37	22	15	34	20	13	31	18	12	28	16	11	24	14	14	20	18	12	17	15	~~11~~	15	13	9	13	~~12~~	8	18	~~11~~	~~7~~
		27-45	Interior	62	62	54	62	62	44	62	55	37	60	46	32	49	39	29	41	34	26	35	31	23	30	26	19	25	23	16	22	20	13	19	17	11	17	15	15	15	13	13
			Exposed	49	39	29	39	33	25	33	30	22	30	27	19	27	25	17	25	22	15	23	20	14	19	17	11	17	15	14	14	13	12	12	17	~~10~~	17	15	9	15	13	~~8~~

* 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	Solarhooks ATI
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	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	33	35	35	28	35	34	24	35	29	21	35	25	18	31	22	16	27	20	14
			Exposed	35	35	35	35	35	35	35	35	32	35	35	28	35	35	26	35	33	23	35	30	21	35	26	18	30	22	15	26	19	13	23	17	18	20	15	16	18	13	14
		7-20	Interior	37	37	37	37	37	37	37	37	37	37	37	37	37	37	35	37	37	32	37	35	29	37	30	25	37	25	21	34	22	18	29	19	16	26	17	14	23	15	12
			Exposed	37	37	35	37	37	31	37	34	28	37	30	25	37	28	23	37	25	21	35	23	19	30	19	16	25	17	14	22	14	18	19	12	16	17	17	14	15	15	12
		20-27	Interior	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	43	44	44	36	44	36	29	44	31	23	44	27	19	41	23	16	35	20	14	31	18	12
			Exposed	44	44	44	44	44	41	44	44	34	44	38	30	44	33	26	44	30	23	44	28	20	42	23	17	34	20	14	30	17	12	26	15	10	23	13	14	20	18	12
		27-45	Interior	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	48	51	51	36	49	41	30	39	33	25	32	29	21	29	26	18	25	23	16
			Exposed	51	51	51	51	51	51	51	51	44	51	51	37	51	47	33	50	40	29	42	35	26	33	29	21	28	25	18	24	22	15	21	19	13	19	17	11	17	15	14
	C	0-7	Interior	35	35	35	35	35	35	35	35	34	35	35	31	35	35	28	35	35	25	35	33	23	35	28	19	33	24	17	28	20	14	24	18	13	22	16	17	19	14	15
			Exposed	35	35	28	35	35	25	35	31	22	35	28	20	35	26	18	32	23	16	29	21	15	25	18	13	21	15	16	18	13	14	16	18	~~12~~	14	15	~~11~~	12	14	~~10~~
		7-20	Interior	37	37	37	37	37	33	37	37	30	37	33	27	37	30	24	37	27	22	37	25	20	32	21	17	27	18	15	24	15	13	21	13	17	18	18	15	16	16	13
			Exposed	37	29	24	37	26	22	37	24	19	33	21	18	30	19	16	27	18	14	25	16	13	21	14	17	18	18	15	15	15	~~13~~	13	13	~~11~~	18	~~12~~	~~10~~	16	~~10~~	9
		20-27	Interior	44	44	44	44	44	44	44	44	38	44	43	33	44	36	29	44	33	25	44	30	22	44	25	18	37	22	15	32	19	13	28	16	11	24	14	15	22	13	13
			Exposed	44	36	28	44	32	24	44	29	21	44	26	19	42	23	16	37	21	15	33	19	13	28	16	11	24	14	15	21	18	13	18	16	~~11~~	16	14	~~10~~	14	~~13~~	9
		27-45	Interior	51	51	51	51	51	51	51	51	50	51	51	42	51	51	36	50	45	32	48	39	28	35	32	23	30	27	19	26	23	16	23	20	14	20	18	12	18	16	10
			Exposed	51	51	35	51	43	31	45	36	27	37	32	24	33	29	21	30	27	19	27	24	17	23	21	14	20	18	12	17	15	15	15	13	13	13	18	11	18	16	~~10~~
	D	0-7	Interior	36	36	36	36	36	32	36	36	28	36	36	26	36	33	23	36	30	21	36	27	19	32	23	16	27	20	14	23	17	~~18~~	20	15	16	18	13	14	16	18	~~12~~
			Exposed	36	33	23	36	29	21	36	26	18	33	24	17	30	21	15	27	19	14	25	18	13	21	15	16	18	13	14	15	17	~~12~~	13	15	~~10~~	18	13	~~9~~	16	~~11~~	~~8~~
		7-20	Interior	37	37	31	37	34	28	37	30	25	37	27	23	37	25	20	35	23	19	32	21	17	27	17	14	23	15	12	20	13	16	17	17	14	15	15	~~12~~	13	13	~~11~~
			Exposed	37	25	20	34	22	18	30	20	16	27	18	15	25	16	13	23	15	18	21	13	17	17	17	14	15	15	~~12~~	13	~~13~~	~~11~~	17	~~11~~	9	15	~~10~~	~~8~~	13	~~9~~	~~7~~
		20-27	Interior	47	47	42	47	46	34	47	38	29	47	33	26	47	30	23	47	27	20	45	25	18	36	21	14	31	18	12	27	16	11	23	14	14	20	18	12	18	16	~~11~~
			Exposed	47	30	22	47	27	19	43	24	17	37	22	15	34	20	13	31	18	12	28	16	11	24	14	14	20	18	12	17	15	~~11~~	15	13	9	13	~~12~~	8	18	~~11~~	~~7~~
		27-45	Interior	53	53	53	53	53	44	53	53	37	53	46	32	49	39	29	41	34	26	35	31	23	30	26	19	25	23	16	22	20	13	19	17	11	17	15	15	15	13	13
			Exposed	49	39	29	39	33	25	33	30	22	30	27	19	27	25	17	25	22	15	23	20	14	19	17	11	17	15	14	14	13	12	12	17	~~10~~	17	15	9	15	13	~~8~~
40	B	0-7	Interior	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	28	29	29	24	29	29	21	29	25	18	29	22	16	27	20	14			
			Exposed	29	29	29	29	29	29	29	29	29	29	29	28	29	29	26	29	29	23	29	29	21	29	26	18	29	22	15	26	19	13	23	17	18	20	15	16	18	13	14
		7-20	Interior	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	29	31	30	25	31	25	21	31	22	18	29	19	16	26	17	14	23	15	12
			Exposed	31	31	31	31	31	31	31	31	28	31	30	25	31	28	23	31	25	21	31	23	19	30	19	16	25	17	14	22	14	18	19	12	16	17	17	14	15	15	~~12~~
		20-27	Interior	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	36	38	36	29	38	31	23	38	27	19	38	23	16	35	20	14	31	18	12
			Exposed	38	38	38	38	38	38	38	38	34	38	38	30	38	33	26	38	30	23	38	28	20	38	23	17	34	20	14	30	17	12	26	15	10	23	13	14	20	18	12
		27-45	Interior	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	36	41	41	30	39	33	25	32	29	21	29	26	18	25	23	16
			Exposed	44	44	44	44	44	44	44	44	44	44	44	37	44	44	33	44	40	29	42	35	26	33	29	21	28	25	18	24	22	15	21	19	13	19	17	11	17	15	14
	C	0-7	Interior	29	29	29	29	29	29	29	29	29	29	29	29	29	29	28	29	29	25	29	29	23	29	28	19	29	24	17	28	20	14	24	18	13	22	16	17	19	14	15
			Exposed	29	29	28	29	29	25	29	29	22	29	28	20	29	26	18	29	23	16	29	21	15	25	18	13	21	15	16	18	13	14	16	18	~~12~~	14	15	~~11~~	12	14	~~10~~
		7-20	Interior	31	31	31	31	31	31	31	31	30	31	31	27	31	30	24	31	27	22	31	25	20	31	21	17	27	18	15	24	15	13	21	13	17	18	18	15	16	16	13
			Exposed	31	29	24	31	26	22	31	24	19	31	21	18	30	19	16	27	18	14	25	16	13	21	14	17	18	18	15	15	15	~~13~~	13	13	~~11~~	18	~~12~~	~~10~~	16	~~10~~	9
		20-27	Interior	38	38	38	38	38	38	38	38	38	38	38	33	38	36	29	38	38	28	38	30	22	38	25	18	37	22	15	32	19	13	28	16	11	24	14	15	22	13	13
			Exposed	38	36	28	38	32	24	38	29	21	38	26	19	38	23	16	37	21	15	33	19	13	28	16	11	24	14	15	21	18	13	18	16	~~11~~	16	14	~~10~~	14	~~13~~	9
		27-45	Interior	44	44	44	44	44	44	44	44	44	44	42	32	44	44	36	42	42	32	41	39	28	35	32	23	30	27	19	26	23	16	23	20	14	20	18	12	18	16	10
			Exposed	44	44	35	44	43	31	44	36	27	37	32	24	33	29	21	30	27	19	27	24	17	23	21	14	20	18	12	17	15	15	15	13	13	13	18	11	18	16	~~10~~
	D	0-7	Interior	31	31	31	31	31	31	31	31	28	31	31	26	31	31	23	31	30	21	31	27	19	31	23	16	27	20	14	23	17	~~18~~	20	15	16	18	13	14	16	18	~~12~~
			Exposed	31	31	23	31	29	21	31	26	18	31	24	17	30	21	15	27	19	14	25	18	13	21	15	16	18	13	14	15	17	~~12~~	13	15	~~10~~	18	13	~~9~~	16	~~11~~	~~8~~
		7-20	Interior	33	33	31	33	33	28	33	30	25	33	27	23	33	25	20	33	23	19	32	21	17	27	17	14	23	15	12	20	13	16	17	17	14	15	15	~~12~~	13	13	~~11~~
			Exposed	33	25	20	33	22	18	30	20	16	27	18	15	25	16	13	23	15	18	21	13	17	17	17	14	15	15	~~12~~	13	~~13~~	~~11~~	17	~~11~~	9	15	~~10~~	~~8~~	13	~~9~~	~~7~~
		20-27	Interior	40	40	40	40	40	34	40	38	29	40	33	26	40	30	23	40	27	20	40	25	18	36	21	14	31	18	12	27	16	11	23	14	14	20	18	12	18	16	~~11~~
			Exposed	40	30	22	40	27	19	40	24	17	37	22	15	34	20	13	31	18	12	28	16	11	24	14	14	20	18	12	17	15	~~11~~	15	13	9	13	~~12~~	8	18	~~11~~	~~7~~
		27-45	Interior	46	46	46	46	46	44	46	46	37	46	46	32	44	39	29	41	34	26	35	31	23	30	26	19	25	23	16	22	20	13	19	17	11	17	15	15	15	13	13
			Exposed	46	39	29	39	33	25	33	30	22	30	27	19	27	25	17	25	22	15	23	20	14	19	17	11	17	15	14	14	13	12	12	17	~~10~~	17	15	9	15	13	~~8~~
50	B	0-7	Interior	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	21	24	24	18	24	22	16	24	20	14
			Exposed	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	23	24	24	21	24	24	18	24	22	15	24	19	13	23	17	18	20	15	16	18	13	14
		7-20	Interior	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	25	26	25	21	26	22	18	26	19	16	26	17	14	23	15	12
			Exposed	26	26	26	26	26	26	26	26	26	26	25	25	26	26	23	26	25	21	26	23	19	26	19	16	25	17	14	22	14	18	19	12	16	17	17	14	15	15	~~12~~
		20-27	Interior	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	29	33	31	23	33	27	19	33	23	16	32	20	14	31	18	12
			Exposed	33	33	33	33	33	33	33	33	33	33	33	30	33	33	26	33	30	23	33	28	20	33	23	17	33	20	14	30	17	12	26	15	10	23	13	14	20	18	12
		27-45	Interior	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	38	38	36	36	36	30	34	33	25	32	29	21	29	26	18	25	23	16
			Exposed	39	39	39	39	39	39	39	39	39	39	39	37	39	39	33	39	39	29	39	35	26	33	29	21	28	25	18	24	22	15	21	19	13	19	17	11	17	15	14
	C	0-7	Interior	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	23	24	24	19	24	24	17	24	20	14	24	18	13	22	16	17	19	14	15
			Exposed	24	24	24	24	24	24	24	24	22	24	24	20	24	24	18	24	23	16	24	21	15	24	18	13	21	15	16	18	13	14	16	18	~~12~~	14	15	~~11~~	12	14	~~10~~
		7-20	Interior	26	26	26	26	26	26	26	26	26	26	26	26	26	26	24	26	26	22	26	25	20	26	21	17	26	18	15	24	15	13	21	13	17	18	18	15	16	16	13
			Exposed	26	26	24	26	26	22	26	24	19	26	21	18	26	19	16	26	18	14	25	16	13	21	14	17	18	18	15	15	15	~~13~~	13	13	~~11~~	18	~~12~~	~~10~~	16	~~10~~	9
		20-27	Interior	33	33	33	33	33	33	33	33	33	33	33	33	33	33	29	33	33	25	33	30	22	33	25	18	32	22	15	31	19	13	28	16	11	24	14	15	22	13	13
			Exposed	33	33	28	33	32	24	33	29	21	33	26	19	33	23	16	33	21	15	33	19	13	28	16	11	24	14	15	21	18	13	18	16	~~11~~	16	14	~~10~~	14	~~13~~	9
		27-45	Interior	39	39	39	39	39	39	39	39	39	39	38	38	36	37	37	32	36	36	28	33	32	23	30	27	19	26	23	16	23	20	14	20	18	12	18	16	10		
			Exposed	39	39	35	39	39	31	39	36	27	37	32	24	33	29	21	30	27	19	27	24	17	23	21	14	20	18	12	17	15	15	15	13	13	13	18	11	18	16	~~10~~
	D	0-7	Interior	26	26	26	26	26	26	26	26	26	26	26	26	26	26	23	26	26	21	26	26	19	26	23	16	26	20	14	23	17	~~18~~	20	15	16	18	13	14	16	18	~~12~~
			Exposed	26	26	23	26	26	21	26	26	18	26	24	17	26	21	15	26	19	14	25	18	13	21	15	16	18	13	14	15	17	~~12~~	13	15	~~10~~	18	13	~~9~~	16	~~11~~	~~8~~
		7-20	Interior	28	28	28	28	28	28	28	28	25	28	27	23	28	25	20	28	23	19	28	21	17	27	17	14	23	15	12	20	13	16	17	17	14	15	15	~~12~~	13	13	~~11~~
			Exposed	28	25	20	28	22	18	28	20	16	27	18	15	25	16	13	23	15	18	21	13	17	17	17	14	15	15	~~12~~	13	~~13~~	~~11~~	17	~~11~~	9	15	~~10~~	~~8~~	13	~~9~~	~~7~~
		20-27	Interior	35	35	35	35	35	34	35	35	29	35	33	26	35	30	23	35	27	20	35	25	18	35	21	14	31	18	12	27	16	11	23	14	14	20	18	12	18	16	~~11~~
			Exposed	35	30	22	35	27	19	35	24	17	35	22	15	34	20	13	31	18	12	28	16	11	24	14	14	20	18	12	17	15	~~11~~	15	13	9	13	~~12~~	8	18	~~11~~	~~7~~
		27-45	Interior	41	41	41	41	41	41	41	41	37	40	40	32	38	38	29	37	34	26	35	31	23	30	26	19	25	23	16	22	20	13	19	17	11	17	15	15	15	13	13
			Exposed	41	39	29	39	33	25	33	30	22	30	27	19	27	25	17	25	22	15	23	20	14	19	17	11	17	15	14	14	13	12	12	17	~~10~~	17	15	9	15	13	~~8~~

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UNIRAC

ASCE 7-16	II	30 ft	Ss = 1.25	23 sq.ft	PORTRAIT	CROSS-SLOPE	NXT	NXT COMBO	Solarhooks ATI
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	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	18	20	20	16	20	20	14			
			Exposed	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	18	20	20	15	20	19	13	20	17	18	20	15	16	18	13	14
		7-20	Interior	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	21	22	22	18	22	19	16	22	17	14	22	15	12			
			Exposed	22	22	22	22	22	22	22	22	22	22	22	22	22	22	21	22	22	19	22	19	16	22	17	14	22	14	18	19	12	16	17	17	14	15	15	~~12~~			
		20-27	Interior	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	23	29	27	19	29	23	16	28	20	14	27	18	12			
			Exposed	29	29	29	29	29	29	29	29	29	29	29	29	29	26	29	29	23	29	28	20	29	23	17	29	20	14	29	17	12	26	15	10	23	13	14	20	18	12			
		27-45	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	32	32	30	31	31	25	29	29	21	28	26	18	25	23	16
			Exposed	34	34	34	34	34	34	34	34	34	34	34	34	34	33	34	34	29	34	34	26	33	29	21	28	25	18	24	22	15	21	19	13	19	17	11	17	15	14			
	C	0-7	Interior	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	19	20	20	17	20	20	14	20	18	13	20	16	17	19	14	15
			Exposed	20	20	20	20	20	20	20	20	20	20	20	20	20	18	20	20	16	20	20	15	20	18	13	20	15	16	18	13	14	16	18	~~12~~	14	15	~~11~~	12	14	~~10~~		
		7-20	Interior	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	20	22	21	17	22	18	15	22	15	13	21	13	17	18	18	15	16	16	13
			Exposed	22	22	22	22	22	22	22	22	19	22	21	18	22	19	16	22	18	14	22	16	13	21	14	17	18	18	15	15	15	~~13~~	13	13	~~11~~	18	~~12~~	~~10~~	16	~~10~~	9
		20-27	Interior	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	25	29	29	22	29	25	18	29	22	15	28	19	13	26	16	11	24	14	15	22	13	13
			Exposed	29	29	28	29	29	24	29	29	21	29	26	19	29	23	16	29	21	15	29	19	13	28	16	11	24	14	15	21	18	13	18	16	~~11~~	16	14	~~10~~	14	~~13~~	9		
		27-45	Interior	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	33	33	32	32	28	30	30	23	29	27	19	26	23	16	23	20	14	20	18	12	18	16	10			
			Exposed	34	34	34	34	34	31	34	34	27	34	32	24	33	29	21	30	27	19	27	24	17	23	21	14	20	18	12	17	15	15	15	13	13	13	18	11	18	16	~~10~~		
	D	0-7	Interior	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	21	22	22	19	22	22	16	22	20	14	22	17	18	20	15	16	18	13	14	16	18	~~12~~
			Exposed	22	22	22	22	22	21	22	22	18	22	22	17	22	21	15	22	19	14	22	18	13	21	15	16	18	13	14	15	17	~~12~~	13	15	~~10~~	18	13	9	16	~~11~~	8
		7-20	Interior	24	24	24	24	24	24	24	24	24	24	24	23	24	24	20	24	23	19	24	21	17	24	17	14	23	15	12	20	13	16	17	17	14	15	15	~~12~~	13	13	~~11~~
			Exposed	24	24	20	24	22	18	24	20	16	24	18	15	24	16	13	23	15	18	21	13	17	17	17	14	15	15	~~12~~	13	~~13~~	~~11~~	17	~~11~~	9	15	~~10~~	8	13	9	~~7~~	
		20-27	Interior	31	31	31	31	31	31	31	31	29	31	31	26	31	30	23	31	27	20	31	25	18	31	21	14	29	18	12	27	16	11	23	14	14	20	18	12	18	16	~~11~~
			Exposed	31	30	22	31	27	19	31	24	17	31	22	15	31	20	13	31	18	12	28	16	11	24	14	14	20	18	12	17	15	~~11~~	15	13	9	13	~~12~~	8	18	~~11~~	~~7~~	
		27-45	Interior	37	37	37	37	37	37	36	36	36	35	35	32	34	34	29	33	33	26	32	31	23	30	26	19	25	23	16	22	20	13	19	17	11	17	15	15	15	13	13
			Exposed	37	37	29	37	33	25	33	30	22	30	27	19	27	25	17	25	22	15	23	20	14	19	17	11	17	15	14	14	13	12	12	17	~~10~~	17	15	9	15	13	8
70	B	0-7	Interior	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	16	17	17	14			
			Exposed	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	15	17	17	13	17	17	18	17	15	16	17	13	14
		7-20	Interior	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	18	19	19	16	19	17	14			
			Exposed	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	16	19	17	14	19	14	18	19	12	16	17	17	14	15	15	~~12~~
		20-27	Interior	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	23	25	25	19	25	23	16	25	20	14	24	18	12			
			Exposed	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	23	25	25	20	25	23	17	25	20	14	25	17	12	25	15	10	23	13	14	20	18	12
		27-45	Interior	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	29	29	29	28	28	25	27	27	21	26	26	18	25	23	16
			Exposed	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	29	31	31	26	31	29	21	28	25	18	24	22	15	21	19	13	19	17	11	17	15	14
	C	0-7	Interior	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	14	17	17	13	17	16	17	17	14	15
			Exposed	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	16	17	17	15	17	17	13	17	15	16	17	13	14	16	18	~~12~~	14	15	~~11~~	12	14	~~10~~
		7-20	Interior	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	17	19	18	15	19	15	13	19	13	17	18	18	15	16	16	13
			Exposed	19	19	19	19	19	19	19	19	19	19	19	18	19	19	16	19	18	14	19	16	13	19	14	17	18	18	15	15	15	~~13~~	13	13	~~11~~	18	~~12~~	~~10~~	16	~~10~~	9
		20-27	Interior	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	22	25	25	18	25	22	15	25	19	13	24	16	11	23	14	15	22	13	13
			Exposed	25	25	25	25	25	24	25	25	21	25	25	19	25	23	16	25	21	15	25	19	13	25	16	11	24	14	15	21	18	13	18	16	~~11~~	16	14	~~10~~	14	~~13~~	9		
		27-45	Interior	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	30	30	30	29	28	28	28	23	26	26	19	25	23	16	23	20	14	20	18	12	18	16	10
			Exposed	31	31	31	31	31	31	31	31	27	31	31	24	31	29	21	30	27	19	27	24	17	23	21	14	20	18	12	17	15	15	15	13	13	13	18	11	18	16	~~10~~		
	D	0-7	Interior	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	14	19	17	18	19	15	16	18	13	14	16	18	~~12~~
			Exposed	19	19	19	19	19	19	19	19	18	19	19	17	19	19	15	19	19	14	19	18	13	19	15	16	18	13	14	15	17	~~12~~	13	15	~~10~~	18	13	9	16	~~11~~	8
		7-20	Interior	21	21	21	21	21	21	21	21	21	21	21	21	21	21	20	21	21	19	21	21	17	21	17	14	21	15	12	20	13	16	17	17	14	15	15	~~12~~	13	13	~~11~~
			Exposed	21	21	20	21	21	18	21	20	16	21	18	15	21	16	13	21	15	18	21	13	17	17	17	14	15	15	~~12~~	13	~~13~~	~~11~~	17	~~11~~	9	15	~~10~~	8	13	9	~~7~~	
		20-27	Interior	28	28	28	28	28	28	28	28	28	28	28	26	28	28	23	28	27	20	28	25	18	27	21	14	26	18	12	25	16	11	23	14	14	20	18	12	18	16	~~11~~
			Exposed	28	28	22	28	27	19	28	24	17	28	22	15	28	20	13	28	18	12	28	16	11	24	14	14	20	18	12	17	15	~~11~~	15	13	9	13	~~12~~	8	18	~~11~~	~~7~~	
		27-45	Interior	33	33	33	33	33	33	33	33	33	32	32	32	31	31	29	30	30	26	29	29	23	28	26	19	25	23	16	22	20	13	19	17	11	17	15	15	15	13	13
			Exposed	33	33	29	33	33	25	33	30	22	30	27	19	27	25	17	25	22	15	23	20	14	19	17	11	17	15	14	14	13	12	12	17	~~10~~	17	15	9	15	13	8
80	B	0-7	Interior	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	14			
			Exposed	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	13	15	15	18	15	15	16	15	13	14
		7-20	Interior	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	14	16	16	12			
			Exposed	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	14	16	14	18	16	12	16	16	17	14	15	15	~~12~~
		20-27	Interior	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	19	22	22	16	22	20	14			
			Exposed	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	20	22	22	17	22	20	14	22	17	12	22	15	10	22	13	14	20	18	12
		27-45	Interior	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	27	27	27	26	26	25	25	25	21	24	24	18	23	23	16
			Exposed	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	26	28	28	21	27	25	18	24	22	15	21	19	13	19	17	11	17	15	14
	C	0-7	Interior	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	14	15	15	13	15	15	17	15	14	15
			Exposed	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	16	15	13	14	15	15	18	~~12~~	14	15	~~11~~	12	14	~~10~~
		7-20	Interior	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	15	16	15	13	16	13	17	16	18	15	16	16	13
			Exposed	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	14	16	16	13	16	14	17	16	18	15	15	15	~~13~~	13	13	~~11~~	18	~~12~~	~~10~~	16	~~10~~	9
		20-27	Interior	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	15	22	19	13	22	16	11	21	14	15	20	13	13			
			Exposed	22	22	22	22	22	22	22	22	21	22	22	19	22	22	16	22	21	15	22	19	13	22	16	11	22	14	15	21	18	13	18	16	~~11~~	16	14	~~10~~	14	~~13~~	9		
		27-45	Interior	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	27	27	27	27	27	27	25	25	23	24	24	19	23	23	16	22	20	14	20	18	12	18	16	10
			Exposed	28	28	28	28	28	28	28	28	27	28	28	24	28	28	21	27	27	19	27	24	17	23	21	14	20	18	12	17	15	15	15	13	13	13	18	11	18	16	~~10~~		
	D	0-7	Interior	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	14	17	17	16	17	17	14	16	18	~~12~~						
			Exposed	17	17	17	17	17	17	17	17	17	17	17	17	17	15	17	17	14	17	17	13	17	15	16	17	13	14	15	17	~~12~~	13	15	~~10~~	18	13	9	16	~~11~~	8		
		7-20	Interior	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	17	18	17	14	18	15	12	18	13	16	17	17	14	15	15	~~12~~	13	13	~~11~~
			Exposed	18	18	18	18	18	18	18	18	16	18	18	15	18	16	13	18	15	18	18	13	17	17	17	14	15	15	~~12~~	13	~~13~~	~~11~~	17	~~11~~	9	15	~~10~~	8	13	9	~~7~~	
		20-27	Interior	25	25	25	25	25	25	25	25	25	25	25	25	25	25	23	25	25	20	25	25	18	25	21	14	24	18	12	23	16	11	22	14	14	20	18	12	18	16	~~11~~
			Exposed	25	25	22	25	25	19	25	24	17	25	22	15	25	20	13	25	18	12	25	16	11	24	14	14	20	18	12	17	15	~~11~~	15	13	9	13	~~12~~	8	18	~~11~~	~~7~~	
		27-45	Interior	30	30	30	30	30	30	30	30	30	29	29	29	29	29	29	28	28	26	27	27	23	26	26	19	24	23	16	22	20	13	19	17	11	17	15	15	15	13	13
			Exposed	30	30	29	30	30	25	30	30	22	29	27	19	27	25	17	25	22	15	23	20	14	19	17	11	17	15	14	14	13	12	12	17	~~10~~	17	15	9	15	13	8

* 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	Solarhooks ATI
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	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13
			Exposed	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	18	13	13	16	13	13	14
		7-20	Interior	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	14	15	15	12
			Exposed	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	14	15	14	18	15	12	16	15	17	14	15	15	~~12~~
		20-27	Interior	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	19	20	20	16	20	20	14	20	18	12
			Exposed	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	17	20	20	14	20	17	12	20	15	10	20	13	14
		27-45	Interior	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	24	24	24	23	23	21	22	22	18	21
			Exposed	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	21	25	25	18	24	22	15	21	19	13	19	17	11
	C	0-7	Interior	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13
			Exposed	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	14	13	13	16	13	13	14
		7-20	Interior	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	13	15	13	17	15	18	15	15	16	13
			Exposed	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	14	15	15	13	15	14	17	15	18	15	15	15	~~13~~	13	13	~~11~~	18	~~12~~	~~10~~	16	~~10~~	9
		20-27	Interior	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	18	20	20	15	20	19	13	20	16	11	19	14	15	19	13	13
			Exposed	20	20	20	20	20	20	20	20	20	19	20	20	16	20	20	15	20	19	13	20	16	11	20	14	15	20	18	13	18	16	~~11~~	16	14	~~10~~	14	~~13~~	9
		27-45	Interior	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	24	24	23	22	22	19	21	21	16	20	20	14	20	18	12	18	16	10
			Exposed	25	25	25	25	25	25	25	25	25	24	25	25	21	25	25	19	25	24	17	23	21	14	20	18	12	17	15	15	15	13	13	13	18	11	18	16	~~10~~
	D	0-7	Interior	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	14	15	15	18	15	15	16	15	13	14	15	18	~~12~~
			Exposed	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	14	15	15	13	15	15	16	15	13	14	15	17	~~12~~	13	15	~~10~~	18	13	9	16	~~11~~	8
		7-20	Interior	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	14	16	15	12	16	13	16	16	17	14	15	15	~~12~~	13	13	~~11~~
			Exposed	16	16	16	16	16	16	16	16	16	16	15	16	16	13	16	15	18	16	13	17	16	17	14	15	15	~~12~~	13	~~13~~	~~11~~	17	~~11~~	9	15	~~10~~	8	13	9	~~7~~
		20-27	Interior	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	20	22	22	18	22	21	14	22	18	12	21	16	11	20	14	14	20	18	12	18	16	~~11~~
			Exposed	22	22	22	22	22	19	22	22	17	22	22	15	22	20	13	22	18	12	22	16	11	22	14	14	20	18	12	17	15	~~11~~	15	13	9	13	~~12~~	8	18	~~11~~	~~7~~
		27-45	Interior	28	28	28	28	28	28	28	28	28	27	27	27	26	26	26	26	26	26	25	25	23	24	24	19	23	23	16	21	20	13	19	17	11	17	15	15	15	13	13
			Exposed	28	28	28	28	28	25	28	28	22	27	27	19	26	25	17	25	22	15	23	20	14	19	17	11	17	15	14	14	13	12	12	17	~~10~~	17	15	9	15	13	8
100	B	0-7	Interior	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12
			Exposed	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	18	12	12	16	12	12	14
		7-20	Interior	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	12
			Exposed	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	18	13	12	16	13	17	14	13	15	~~12~~
		20-27	Interior	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	16	18	18	14	18	18	12
			Exposed	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	17	18	18	14	18	17	12	18	15	10	18	13	14	18	18	12
		27-45	Interior	23	23	23	23	23	23	23	23	23	23	23	23	23	23	23	23	23	23	23	23	23	23	23	23	23	23	23	23	23	23	22	22	22	21	21	21	21	21	18
			Exposed	23	23	23	23	23	23	23	23	23	23	23	23	23	23	23	23	23	23	23	23	23	23	23	21	23	23	18	22	22	15	21	19	13	19	17	11	17	15	14
	C	0-7	Interior	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12
			Exposed	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12
		7-20	Interior	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13
			Exposed	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	18	13	13	17	13	13	15	~~13~~
		20-27	Interior	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	16	18	18	14	18	18	12
			Exposed	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	17	18	18	14	18	17	12	18	15	10	18	13	14	18	18	12
		27-45	Interior	23	23	23	23	23	23	23	23	23	23	23	23	23	23	23	23	23	23	23	23	23	23	23	23	23	23	23	23	23	23	22	22	22	21	21	21	21	21	18
			Exposed	23	23	23	23	23	23	23	23	23	23	23	23	23	23	23	23	23	23	23	23	23	23	23	21	23	23	18	22	22	15	21	19	13	19	17	11	17	15	14
	D	0-7	Interior	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13
			Exposed	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	16	13	13	14	13	13	14
		7-20	Interior	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	14	15	15	12	15	13	16	15	17	14	14	15	~~12~~	13	13	~~11~~
			Exposed	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	14	15	15	~~12~~	13	~~13~~	~~11~~	17	~~11~~	9	15	~~10~~	8	13	9	~~7~~
		20-27	Interior	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	18	20	20	14	20	18	12	20	16	11	19	14	14	18	18	12	18	16	~~11~~
			Exposed	20	20	20	20	20	19	20	20	17	20	20	15	20	20	13	20	18	12	20	16	11	20	14	14	20	~~18~~	~~12~~	17	~~15~~	~~11~~	15	13	9	13	~~12~~	8	18	~~11~~	~~7~~
		27-45	Interior	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	24	24	24	23	23	23	22	22	19	21	21	16	20	20	13	19	17	11	17	15	15	15	13	13
			Exposed	25	25	25	25	25	25	25	25	22	25	25	19	25	25	17	24	22	15	23	20	14	19	17	11	17	15	14	14	13	12	12	17	~~10~~	17	15	9	15	13	8

* 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	Solarhooks ATI
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	96	101	101	92	101	101	87	101	97	84	101	93	65	100	86	55	93	69	47	87	58	41	78	50	35	61	44	31	54	39	28
			Exposed	101	101	87	101	96	83	101	91	62	101	87	56	97	83	51	92	67	46	89	60	42	80	51	36	60	43	31	52	38	27	45	33	23	40	29	31	35	26	28
		7-20	Interior	102	102	102	102	102	99	102	102	93	102	98	88	102	92	84	102	88	63	98	84	57	89	59	48	84	50	41	68	43	36	58	38	31	51	33	28	45	30	25
			Exposed	102	92	84	102	87	61	95	79	55	90	60	49	86	54	45	83	50	41	73	45	37	59	38	32	50	33	27	43	28	23	38	25	31	33	22	27	30	29	24
		20-27	Interior	102	102	102	102	102	102	102	102	102	102	102	100	102	101	95	102	96	90	102	92	86	102	85	57	95	61	46	89	52	38	84	46	32	72	40	28	61	36	24
			Exposed	102	101	95	102	95	89	102	90	84	102	85	58	99	68	51	94	60	45	91	55	40	85	46	33	70	40	27	59	34	23	51	30	21	45	26	18	40	23	24
		27-45	Interior	103	103	103	103	103	103	103	103	103	103	103	103	103	103	99	103	103	95	103	101	91	103	93	84	94	86	58	87	67	49	64	57	42	56	50	36	50	45	31
			Exposed	103	103	99	103	103	94	103	99	89	103	94	85	99	90	65	94	86	57	89	82	52	65	58	42	55	50	35	48	43	30	42	38	25	37	33	22	33	29	19
	C	0-7	Interior	101	101	90	101	99	85	101	94	72	101	90	60	100	86	55	96	82	50	92	65	46	85	54	38	64	47	33	55	40	29	48	35	25	43	31	33	38	28	29
			Exposed	100	86	54	94	76	49	90	62	44	86	56	39	79	50	36	63	46	33	58	42	30	49	36	25	42	30	33	36	26	28	32	23	25	28	31	22	25	27	19
		7-20	Interior	102	96	87	102	90	69	100	85	59	93	64	53	89	58	48	86	53	44	83	49	40	63	41	34	54	35	29	47	30	25	41	27	22	36	23	29	32	32	26
			Exposed	89	58	48	85	52	43	77	47	38	64	42	35	58	38	32	53	35	29	49	32	26	41	27	22	35	23	29	30	30	25	27	26	22	35	23	19	32	21	17
		20-27	Interior	102	102	98	102	99	92	102	93	87	102	89	69	102	84	56	98	64	50	93	59	44	87	50	36	79	42	29	63	37	25	55	32	22	48	28	19	43	25	17
			Exposed	102	84	56	97	63	48	92	56	42	88	51	37	84	46	33	77	42	29	66	38	26	55	32	22	47	28	19	41	24	25	36	32	22	32	28	19	28	25	17
		27-45	Interior	103	103	103	103	103	97	103	103	92	103	98	87	103	93	84	97	89	63	93	85	56	85	62	46	59	53	38	51	46	32	45	40	27	40	36	24	35	32	21
			Exposed	102	93	83	96	88	61	91	84	53	86	64	47	64	58	42	59	53	38	54	48	34	45	41	28	39	35	23	34	30	20	30	26	25	26	23	22	23	31	19
	D	0-7	Interior	101	96	83	101	91	62	101	87	56	96	83	50	92	65	46	88	59	42	84	54	38	63	46	32	54	39	28	46	34	24	40	30	32	36	26	28	32	23	25
			Exposed	92	65	46	87	58	41	83	52	37	64	47	33	58	42	30	53	39	27	48	35	25	41	30	32	35	26	27	30	33	24	27	29	21	23	26	18	31	23	16
		7-20	Interior	102	87	62	95	81	55	90	60	49	86	54	45	83	49	40	71	45	37	62	41	34	53	34	28	45	30	24	39	26	32	34	22	28	30	30	25	27	26	22
			Exposed	83	49	40	68	43	36	60	39	32	54	35	29	49	32	26	45	29	24	41	27	22	34	23	28	30	29	24	26	25	21	34	22	18	30	20	16	26	17	14
		20-27	Interior	102	96	89	102	90	84	102	85	58	98	65	51	94	59	45	90	54	40	87	49	35	76	42	29	61	36	24	53	31	21	46	27	18	41	24	25	36	32	22
			Exposed	94	59	44	89	53	38	85	47	34	80	43	29	67	39	26	60	35	24	55	32	22	46	27	19	40	23	24	34	31	21	30	27	18	27	24	16	24	21	14
		27-45	Interior	103	103	94	103	99	89	103	94	84	98	90	64	93	85	57	88	76	51	84	62	45	58	52	37	50	45	31	43	39	26	38	34	22	33	30	19	30	27	25
			Exposed	93	85	56	87	67	49	83	59	43	60	53	38	54	48	34	49	44	31	45	40	27	38	34	23	33	29	19	28	25	24	25	22	21	22	30	18	29	26	16
10	B	0-7	Interior	90	90	90	90	90	90	90	90	90	90	90	90	90	90	87	90	90	84	90	90	65	90	86	55	90	69	47	87	58	41	78	50	35	61	44	31	54	39	28
			Exposed	90	90	87	90	90	83	90	90	62	90	87	56	90	83	51	90	67	46	89	60	42	80	51	36	60	43	31	52	38	27	45	33	23	40	29	31	35	26	28
		7-20	Interior	91	91	91	91	91	91	91	91	91	91	91	88	91	91	84	91	88	63	91	84	57	89	59	48	84	50	41	68	43	36	58	38	31	51	33	28	45	30	25
			Exposed	91	91	84	91	87	61	91	79	55	90	60	49	86	54	45	83	50	41	73	45	37	59	38	32	50	33	27	43	28	23	38	25	31	33	22	27	30	29	24
		20-27	Interior	99	99	99	99	99	99	99	99	99	99	99	99	99	99	95	99	96	90	99	92	86	99	85	57	95	61	46	89	52	38	84	46	32	72	40	28	61	36	24
			Exposed	99	99	95	99	95	89	99	90	84	99	85	58	99	68	51	94	60	45	91	55	40	85	46	33	70	40	27	59	34	23	51	30	21	45	26	18	40	23	24
		27-45	Interior	101	101	101	101	101	101	101	101	101	101	101	101	101	101	99	101	101	95	101	101	91	101	93	84	94	86	58	87	67	49	64	57	42	56	50	36	50	45	31
			Exposed	101	101	99	101	101	94	101	99	89	101	94	85	99	90	65	94	86	57	89	82	52	65	58	42	55	50	35	48	43	30	42	38	25	37	33	22	33	29	19
	C	0-7	Interior	90	90	90	90	90	85	90	90	72	90	90	60	90	86	55	90	82	50	90	65	46	85	54	38	64	47	33	55	40	29	48	35	25	43	31	33	38	28	29
			Exposed	90	86	54	90	76	49	90	62	44	86	56	39	79	50	36	63	46	33	58	42	30	49	36	25	42	30	33	36	26	28	32	23	25	28	31	22	25	27	19
		7-20	Interior	91	91	87	91	90	69	91	85	59	91	64	53	89	58	48	86	53	44	83	49	40	63	41	34	54	35	29	47	30	25	41	27	22	36	23	29	32	32	26
			Exposed	89	58	48	85	52	43	77	47	38	64	42	35	58	38	32	53	35	29	49	32	26	41	27	22	35	23	29	30	30	25	27	26	22	35	23	19	32	21	17
		20-27	Interior	99	99	98	99	99	92	99	93	87	99	89	69	99	84	56	98	64	50	93	59	44	87	50	36	79	42	29	63	37	25	55	32	22	48	28	19	43	25	17
			Exposed	99	84	56	97	63	48	92	56	42	88	51	37	84	46	33	77	42	29	66	38	26	55	32	22	47	28	19	41	24	25	36	32	22	32	28	19	28	25	17
		27-45	Interior	101	101	101	101	101	97	101	101	92	101	98	87	101	93	84	97	89	63	93	85	56	85	62	46	59	53	38	51	46	32	45	40	27	40	36	24	35	32	21
			Exposed	101	93	83	96	88	61	91	84	53	86	64	47	64	58	42	59	53	38	54	48	34	45	41	28	39	35	23	34	30	20	30	26	25	26	23	22	23	31	19
	D	0-7	Interior	90	90	83	90	90	62	90	87	56	90	83	50	90	65	46	88	59	42	84	54	38	63	46	32	54	39	28	46	34	24	40	30	32	36	26	28	32	23	25
			Exposed	90	65	46	87	58	41	83	52	37	64	47	33	58	42	30	53	39	27	48	35	25	41	30	32	35	26	27	30	33	24	27	29	21	23	26	18	31	23	16
		7-20	Interior	91	87	62	91	81	55	90	60	49	86	54	45	83	49	40	71	45	37	62	41	34	53	34	28	45	30	24	39	26	32	34	22	28	30	30	25	27	26	22
			Exposed	83	49	40	68	43	36	60	39	32	54	35	29	49	32	26	45	29	24	41	27	22	34	23	28	30	29	24	26	25	21	34	22	18	30	20	16	26	17	14
		20-27	Interior	100	96	89	100	90	84	100	85	58	98	65	51	94	59	45	90	54	40	87	49	35	76	42	29	61	36	24	53	31	21	46	27	18	41	24	25	36	32	22
			Exposed	94	59	44	89	53	38	85	47	34	80	43	29	67	39	26	60	35	24	55	32	22	46	27	19	40	23	24	34	31	21	30	27	18	27	24	16	24	21	14
		27-45	Interior	102	102	94	102	99	89	102	94	84	98	90	64	93	85	57	88	76	51	84	62	45	58	52	37	50	45	31	43	39	26	38	34	22	33	30	19	30	27	25
			Exposed	93	85	56	87	67	49	83	59	43	60	53	38	54	48	34	49	44	31	45	40	27	38	34	23	33	29	19	28	25	24	25	22	21	22	30	18	29	26	16
20	B	0-7	Interior	71	71	71	71	71	71	71	71	71	71	71	71	71	71	71	71	71	71	71	71	65	71	71	55	71	69	47	71	58	41	71	50	35	61	44	31	54	39	28
			Exposed	71	71	71	71	71	71	71	71	62	71	71	56	71	71	51	71	67	46	71	60	42	71	51	36	60	43	31	52	38	27	45	33	23	40	29	31	35	26	28
		7-20	Interior	71	71	71	71	71	71	71	71	71	71	71	71	71	71	71	71	71	63	71	71	57	71	59	48	71	50	41	68	43	36	58	38	31	51	33	28	45	30	25
			Exposed	71	71	71	71	71	61	71	71	55	71	60	49	71	54	45	71	50	41	71	45	37	59	38	32	50	33	27	43	28	23	38	25	31	33	22	27	30	29	24
		20-27	Interior	92	92	92	92	92	92	92	92	92	92	92	92	92	92	92	92	92	90	92	92	86	92	85	57	92	61	46	89	52	38	84	46	32	72	40	28	61	36	24
			Exposed	92	92	92	92	92	89	92	90	84	92	85	58	92	68	51	92	60	45	91	55	40	85	46	33	70	40	27	59	34	23	51	30	21	45	26	18	40	23	24
		27-45	Interior	95	95	95	95	95	95	95	95	95	95	95	95	95	95	95	95	95	95	95	95	91	95	93	84	94	86	58	87	67	49	64	57	42	56	50	36	50	45	31
			Exposed	95	95	95	95	95	94	95	95	89	95	94	85	95	90	65	94	86	57	89	82	52	65	58	42	55	50	35	48	43	30	42	38	25	37	33	22	33	29	19
	C	0-7	Interior	71	71	71	71	71	71	71	71	71	71	71	60	71	71	55	71	71	50	71	65	46	71	54	38	64	47	33	55	40	29	48	35	25	43	31	33	38	28	29
			Exposed	71	71	54	71	71	49	71	62	44	71	56	39	71	50	36	63	46	33	58	42	30	49	36	25	42	30	33	36	26	28	32	23	25	28	31	22	25	27	19
		7-20	Interior	71	71	71	71	71	69	71	71	59	71	64	53	71	58	48	71	53	44	71	49	40	63	41	34	54	35	29	47	30	25	41	27	22	36	23	29	32	32	26
			Exposed	71	58	48	71	52	43	71	47	38	64	42	35	58	38	32	53	35	29	49	32	26	41	27	22	35	23	29	30	30	25	27	26	22	35	23	19	32	21	17
		20-27	Interior	92	92	92	92	92	92	92	92	87	92	89	69	92	84	56	92	64	50	92	59	44	87	50	36	79	42	29	63	37	25	55	32	22	48	28	19	43	25	17
			Exposed	92	84	56	92	63	48	92	56	42	88	51	37	84	46	33	77	42	29	66	38	26	55	32	22	47	28	19	41	24	25	36	32	22	32	28	19	28	25	17
		27-45	Interior	95	95	95	95	95	95	95	95	92	95	95	87	95	93	84	95	89	63	93	85	56	85	62	46	59	53	38	51	46	32	45	40	27	40	36	24	35	32	21
			Exposed	95	93	83	95	88	61	91	84	53	86	64	47	64	58	42	59	53	38	54	48	34	45	41	28	39	35	23	34	30	20	30	26	25	26	23	22	23	31	19
	D	0-7	Interior	71	71	71	71	71	62	71	71	56	71	71	50	71	65	46	71	59	42	71	54	38	63	46	32	54	39	28	46	34	24	40	30	32	36	26	28	32	23	25
			Exposed	71	65	46	71	58	41	71	52	37	64	47	33	58	42	30	53	39	27	48	35	25	41	30	32	35	26	27	30	33	24	27	29	21	23	26	18	31	23	16
		7-20	Interior	71	71	62	71	71	55	71	60	49	71	54	45	71	49	40	71	45	37	62	41	34	53	34	28	45	30	24	39	26	32	34	22	28	30	30	25	27	26	22
			Exposed	71	49	40	68	43	36	60	39	32	54	35	29	49	32	26	45	29	24	41	27	22	34	23	28	30	29	24	26	25	21	34	22	18	30	20	16	26	17	14
		20-27	Interior	93	93	89	93	90	84	93	85	58	93	65	51	93	59	45	90	54	40	87	49	35	76	42	29	61	36	24	53	31	21	46	27	18	41	24	25	36	32	22
			Exposed	93	59	44	89	53	38	85	47	34	80	43	29	67	39	26	60	35	24	55	32	22	46	27	19	40	23	24	34	31	21	30	27	18	27	24	16	24	21	14
		27-45	Interior	96	96	94	96	96	89	96	94	84	96	90	64	93	85	57	88	76	51	84	62	45	58	52	37	50	45	31	43	39	26	38	34	22	33	30	19	30	27	25
			Exposed	93	85	56	87	67	49	83	59	43	60	53	38	54	48	34	49	44	31	45	40	27	38	34	23	33	29	19	28	25	24	25	22	21	22	30	18	29	26	16

* 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	Solarhooks ATI
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	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	65	69	69	55	69	69	47	69	58	41	69	50	35	61	44	31	54	39	28
			Exposed	69	69	69	69	69	69	69	69	62	69	69	56	69	69	51	69	67	46	69	60	42	69	51	36	60	43	31	52	38	27	45	33	23	40	29	31	35	26	28
		7-20	Interior	71	71	71	71	71	71	71	71	71	71	71	71	71	71	71	71	71	63	71	71	57	71	59	48	71	50	41	68	43	36	58	38	31	51	33	28	45	30	25
			Exposed	71	71	71	71	71	61	71	71	55	71	60	49	71	54	45	71	50	41	71	45	37	59	38	32	50	33	27	43	28	23	38	25	31	33	22	27	30	29	24
		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	57	85	61	46	85	52	38	84	46	32	72	40	28	61	36	24
			Exposed	85	85	85	85	85	85	85	85	84	85	85	58	85	68	51	85	60	45	85	55	40	85	46	33	70	40	27	59	34	23	51	30	21	45	26	18	40	23	24
		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	84	90	86	58	87	67	49	64	57	42	56	50	36	50	45	31
			Exposed	90	90	90	90	90	90	90	90	89	90	90	85	90	90	65	90	86	57	89	82	52	65	58	42	55	50	35	48	43	30	42	38	25	37	33	22	33	29	19
	C	0-7	Interior	69	69	69	69	69	69	69	69	69	69	69	60	69	69	55	69	69	50	69	65	46	69	54	38	64	47	33	55	40	29	48	35	25	43	31	33	38	28	29
			Exposed	69	69	54	69	69	49	69	62	44	69	56	39	69	50	36	63	46	33	58	42	30	49	36	25	42	30	33	36	26	28	32	23	25	28	31	22	25	27	19
		7-20	Interior	71	71	71	71	71	69	71	71	59	71	64	53	71	58	48	71	53	44	71	49	40	63	41	34	54	35	29	47	30	25	41	27	22	36	23	29	32	32	26
			Exposed	71	58	48	71	52	43	71	47	38	64	42	35	58	38	32	53	35	29	49	32	26	41	27	22	35	23	29	30	30	25	27	26	22	35	23	19	32	21	17
		20-27	Interior	85	85	85	85	85	85	85	85	85	85	85	69	85	84	56	85	64	50	85	59	44	85	50	36	79	42	29	63	37	25	55	32	22	48	28	19	43	25	17
			Exposed	85	84	56	85	63	48	85	56	42	85	51	37	84	46	33	77	42	29	66	38	26	55	32	22	47	28	19	41	24	25	36	32	22	32	28	19	28	25	17
		27-45	Interior	90	90	90	90	90	90	90	90	90	90	90	87	90	90	84	90	89	63	90	85	56	85	62	46	59	53	38	51	46	32	45	40	27	40	36	24	35	32	21
			Exposed	90	90	83	90	88	61	90	84	53	86	64	47	64	58	42	59	53	38	54	48	34	45	41	28	39	35	23	34	30	20	30	26	25	26	23	22	23	31	19
	D	0-7	Interior	71	71	71	71	71	62	71	71	56	71	71	50	71	65	46	71	59	42	71	54	38	63	46	32	54	39	28	46	34	24	40	30	32	36	26	28	32	23	25
			Exposed	71	65	46	71	58	41	71	52	37	64	47	33	58	42	30	53	39	27	48	35	25	41	30	32	35	26	27	30	33	24	27	29	21	23	26	18	31	23	16
		7-20	Interior	71	71	62	71	71	55	71	60	49	71	54	45	71	49	40	71	45	37	62	41	34	53	34	28	45	30	24	39	26	32	34	22	28	30	30	25	27	26	22
			Exposed	71	49	40	68	43	36	60	39	32	54	35	29	49	32	26	45	29	24	41	27	22	34	23	28	30	29	24	26	25	21	34	22	18	30	20	16	26	17	14
		20-27	Interior	87	87	87	87	87	84	87	85	58	87	65	51	87	59	45	87	54	40	87	49	35	76	42	29	61	36	24	53	31	21	46	27	18	41	24	25	36	32	22
			Exposed	87	59	44	87	53	38	85	47	34	80	43	29	67	39	26	60	35	24	55	32	22	46	27	19	40	23	24	34	31	21	30	27	18	27	24	16	24	21	14
		27-45	Interior	91	91	91	91	91	89	91	91	84	91	90	64	91	85	57	88	76	51	84	62	45	58	52	37	50	45	31	43	39	26	38	34	22	33	30	19	30	27	25
			Exposed	91	85	56	87	67	49	83	59	43	60	53	38	54	48	34	49	44	31	45	40	27	38	34	23	33	29	19	28	25	24	25	22	21	22	30	18	29	26	16
40	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	41	57	50	35	57	44	31	54	39	28
			Exposed	57	57	57	57	57	57	57	57	57	57	57	56	57	57	51	57	57	46	57	57	42	57	51	36	57	43	31	52	38	27	45	33	23	40	29	31	35	26	28
		7-20	Interior	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	57	60	59	48	60	50	41	60	43	36	58	38	31	51	33	28	45	30	25
			Exposed	60	60	60	60	60	60	60	60	55	60	60	49	60	54	45	60	50	41	60	45	37	59	38	32	50	33	27	43	28	23	38	25	31	33	22	27	30	29	24
		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	57	74	61	46	74	52	38	74	46	32	72	40	28	61	36	24
			Exposed	74	74	74	74	74	74	74	74	74	74	74	58	74	68	51	74	60	45	74	55	40	74	46	33	70	40	27	59	34	23	51	30	21	45	26	18	40	23	24
		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	84	85	85	58	80	67	49	64	57	42	56	50	36	50	45	31
			Exposed	85	85	85	85	85	85	85	85	85	85	85	65	85	85	65	85	85	57	85	82	52	65	58	42	55	50	35	48	43	30	42	38	25	37	33	22	33	29	19
	C	0-7	Interior	57	57	57	57	57	57	57	57	57	57	57	57	57	57	55	57	57	50	57	57	46	57	54	38	57	47	33	55	40	29	48	35	25	43	31	33	38	28	29
			Exposed	57	57	54	57	57	49	57	57	44	57	56	39	57	50	36	57	46	33	57	42	30	49	36	25	42	30	33	36	26	28	32	23	25	28	31	22	25	27	19
		7-20	Interior	60	60	60	60	60	60	60	60	59	60	60	53	60	58	48	60	53	44	60	49	40	60	41	34	54	35	29	47	30	25	41	27	22	36	23	29	32	32	26
			Exposed	60	58	48	60	52	43	60	47	38	60	42	35	58	38	32	53	35	29	49	32	26	41	27	22	35	23	29	30	30	25	27	26	22	35	23	19	32	21	17
		20-27	Interior	74	74	74	74	74	74	74	74	74	74	74	69	74	74	56	74	64	50	74	59	44	74	50	36	74	42	29	63	37	25	55	32	22	48	28	19	43	25	17
			Exposed	74	74	56	74	63	48	74	56	42	74	51	37	74	46	33	74	42	29	66	38	26	55	32	22	47	28	19	41	24	25	36	32	22	32	28	19	28	25	17
		27-45	Interior	85	85	85	85	85	85	85	85	85	85	85	85	85	85	84	85	85	63	84	84	56	77	62	46	59	53	38	51	46	32	45	40	27	40	36	24	35	32	21
			Exposed	85	85	83	85	85	61	85	84	53	85	64	47	64	58	42	59	53	38	54	48	34	45	41	28	39	35	23	34	30	20	30	26	25	26	23	22	23	31	19
	D	0-7	Interior	61	61	61	61	61	61	61	61	56	61	61	50	61	61	46	61	59	42	61	54	38	61	46	32	54	39	28	46	34	24	40	30	32	36	26	28	32	23	25
			Exposed	61	61	46	61	58	41	61	52	37	61	47	33	58	42	30	53	39	27	48	35	25	41	30	32	35	26	27	30	33	24	27	29	21	23	26	18	31	23	16
		7-20	Interior	65	65	62	65	65	55	65	60	49	65	54	45	65	49	40	65	45	37	62	41	34	53	34	28	45	30	24	39	26	32	34	22	28	30	30	25	27	26	22
			Exposed	65	49	40	65	43	36	60	39	32	54	35	29	49	32	26	45	29	24	41	27	22	34	23	28	30	29	24	26	25	21	34	22	18	30	20	16	26	17	14
		20-27	Interior	79	79	79	79	79	79	79	79	58	79	65	51	79	59	45	79	54	40	79	49	35	76	42	29	61	36	24	53	31	21	46	27	18	41	24	25	36	32	22
			Exposed	79	59	44	79	53	38	79	47	34	79	43	29	67	39	26	60	35	24	55	32	22	46	27	19	40	23	24	34	31	21	30	27	18	27	24	16	24	21	14
		27-45	Interior	87	87	87	87	87	87	87	87	84	87	87	64	87	85	57	85	76	51	83	62	45	58	52	37	50	45	31	43	39	26	38	34	22	33	30	19	30	27	25
			Exposed	87	85	56	87	67	49	83	59	43	60	53	38	54	48	34	49	44	31	45	40	27	38	34	23	33	29	19	28	25	24	25	22	21	22	30	18	29	26	16
50	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	41	47	47	35	47	44	31	47	39	28
			Exposed	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	46	47	47	42	47	47	36	47	43	31	47	38	27	45	33	23	40	29	31	35	26	28
		7-20	Interior	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	48	50	50	41	50	43	36	50	38	31	50	33	28	45	30	25			
			Exposed	50	50	50	50	50	50	50	50	50	50	50	49	50	50	45	50	50	41	50	45	37	50	38	32	50	33	27	43	28	23	38	25	31	33	22	27	30	29	24
		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	57	64	61	46	64	52	38	64	46	32	63	40	28	60	36	24
			Exposed	64	64	64	64	64	64	64	64	64	64	64	58	64	64	51	64	60	45	64	55	40	64	46	33	64	40	27	59	34	23	51	30	21	45	26	18	40	23	24
		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	72	72	58	67	67	49	63	57	42	56	50	36	50	45	31
			Exposed	75	75	75	75	75	75	75	75	75	75	75	75	75	75	65	75	75	57	75	75	52	65	58	42	55	50	35	48	43	30	42	38	25	37	33	22	33	29	19
	C	0-7	Interior	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	47	33	47	40	29	47	35	25	43	31	33	38	28	29
			Exposed	47	47	47	47	47	47	47	47	44	47	47	39	47	47	36	47	46	33	47	42	30	47	36	25	42	30	33	36	26	28	32	23	25	28	31	22	25	27	19
		7-20	Interior	50	50	50	50	50	50	50	50	50	50	50	50	50	50	48	50	50	44	50	49	40	50	41	34	50	35	29	47	30	25	41	27	22	36	23	29	32	32	26
			Exposed	50	50	48	50	50	43	50	47	38	50	42	35	50	38	32	50	35	29	49	32	26	41	27	22	35	23	29	30	30	25	27	26	22	35	23	19	32	21	17
		20-27	Interior	64	64	64	64	64	64	64	64	64	64	64	64	64	64	56	64	64	50	64	59	44	64	50	36	64	42	29	61	37	25	55	32	22	48	28	19	43	25	17
			Exposed	64	64	56	64	63	48	64	56	42	64	51	37	64	46	33	64	42	29	64	38	26	55	32	22	47	28	19	41	24	25	36	32	22	32	28	19	28	25	17
		27-45	Interior	75	75	75	75	75	75	75	75	75	75	75	75	75	75	74	74	63	71	71	56	65	62	46	59	53	38	51	46	32	45	40	27	40	36	24	35	32	21	
			Exposed	75	75	75	75	75	61	75	75	53	75	64	47	64	58	42	59	53	38	54	48	34	45	41	28	39	35	23	34	30	20	30	26	25	26	23	22	23	31	19
	D	0-7	Interior	51	51	51	51	51	51	51	51	51	51	51	50	51	51	46	51	51	42	51	51	38	51	46	32	51	39	28	46	34	24	40	30	32	36	26	28	32	23	25
			Exposed	51	51	46	51	51	41	51	51	37	51	47	33	51	42	30	51	39	27	48	35	25	41	30	32	35	26	27	30	33	24	27	29	21	23	26	18	31	23	16
		7-20	Interior	56	56	56	56	56	55	56	56	49	56	54	45	56	49	40	56	45	37	56	41	34	53	34	28	45	30	24	39	26	32	34	22	28	30	30	25	27	26	22
			Exposed	56	49	40	56	43	36	56	39	32	54	35	29	49	32	26	45	29	24	41	27	22	34	23	28	30	29	24	26	25	21	34	22	18	30	20	16	26	17	14
		20-27	Interior	69	69	69	69	69	69	69	69	58	69	65	51	69	59	45	69	54	40	69	49	35	69	42	29	61	36	24	53	31	21	46	27	18	41	24	25	36	32	22
			Exposed	69	59	44	69	53	38	69	47	34	69	43	29	67	39	26	60	35	24	55	32	22	46	27	19	40	23	24	34	31	21	30	27	18	27	24	16	24	21	14
		27-45	Interior	80	80	80	80	80	80	80	80	80	80	80	64	78	78	57	74	74	51	71	62	45	58	52	37	50	45	31	43	39	26	38	34	22	33	30	19	30	27	25
			Exposed	80	80	56	80	67	49	80	59	43	60	53	38	54	48	34	49	44	31	45	40	27	38	34	23	33	29	19	28	25	24	25	22	21	22	30	18	29	26	16

* 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	Solarhooks ATI
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	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	31	39	39	28			
			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	31	39	38	27	39	33	23	39	29	31	35	26	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	41	43	43	36	43	38	31	43	33	28	43	30	25			
			Exposed	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	41	43	43	37	43	38	32	43	33	27	43	28	23	38	25	31	33	22	27	30	29	24
		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	52	57	52	38	57	46	32	55	40	28	54	36	24
			Exposed	57	57	57	57	57	57	57	57	57	57	57	57	57	57	51	57	57	45	57	55	40	57	46	33	57	40	27	57	34	23	51	30	21	45	26	18	40	23	24
		27-45	Interior	67	67	67	67	67	67	67	67	67	67	67	67	67	67	67	67	67	67	67	67	67	66	66	66	63	63	58	60	60	49	58	57	42	55	50	36	50	45	31
			Exposed	67	67	67	67	67	67	67	67	67	67	67	67	67	65	67	67	57	67	67	52	65	58	42	55	50	35	48	43	30	42	38	25	37	33	22	33	29	19			
	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	38	39	39	33	39	39	29	39	35	25	39	31	33	38	28	29
			Exposed	39	39	39	39	39	39	39	39	39	39	39	39	39	36	39	39	33	39	39	30	39	36	25	39	30	33	36	26	28	32	23	25	28	31	22	25	27	19	
		7-20	Interior	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	40	43	41	34	43	35	29	43	30	25	41	27	22	36	23	29	32	32	26
			Exposed	43	43	43	43	43	43	43	43	38	43	42	35	43	38	32	43	35	29	43	32	26	41	27	22	35	23	29	30	30	25	27	26	22	35	23	19	32	21	17
		20-27	Interior	57	57	57	57	57	57	57	57	57	57	57	57	57	56	57	57	50	57	57	44	57	50	36	56	42	29	54	37	25	52	32	22	48	28	19	43	25	17	
			Exposed	57	57	56	57	57	48	57	56	42	57	51	37	57	46	33	57	42	29	57	38	26	55	32	22	47	28	19	41	24	25	36	32	22	32	28	19	28	25	17
		27-45	Interior	67	67	67	67	67	67	67	67	67	67	67	67	66	66	66	64	64	63	63	63	56	59	59	46	56	53	38	51	46	32	45	40	27	40	36	24	35	32	21
			Exposed	67	67	67	67	67	61	67	67	53	67	64	47	64	58	42	59	53	38	54	48	34	45	41	28	39	35	23	34	30	20	30	26	25	26	23	22	23	31	19
	D	0-7	Interior	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	42	43	43	38	43	43	32	43	39	28	43	34	24	40	30	32	36	26	28	32	23	25
			Exposed	43	43	43	43	43	41	43	43	37	43	43	33	43	42	30	43	39	27	43	35	25	41	30	32	35	26	27	30	33	24	27	29	21	23	26	18	31	23	16
		7-20	Interior	47	47	47	47	47	47	47	47	47	47	47	45	47	47	40	47	45	37	47	41	34	47	34	28	45	30	24	39	26	32	34	22	28	30	30	25	27	26	22
			Exposed	47	47	40	47	43	36	47	39	32	47	35	29	47	32	26	45	29	24	41	27	22	34	23	28	30	29	24	26	25	21	34	22	18	30	20	16	26	17	14
		20-27	Interior	61	61	61	61	61	61	61	61	58	61	61	51	61	59	45	61	54	40	61	49	35	60	42	29	57	36	24	53	31	21	46	27	18	41	24	25	36	32	22
			Exposed	61	59	44	61	53	38	61	47	34	61	43	29	61	39	26	60	35	24	55	32	22	46	27	19	40	23	24	34	31	21	30	27	18	27	24	16	24	21	14
		27-45	Interior	72	72	72	72	72	72	72	72	72	70	70	64	67	67	57	65	65	51	63	62	45	58	52	37	50	45	31	43	39	26	38	34	22	33	30	19	30	27	25
			Exposed	72	72	56	72	67	49	72	59	43	60	53	38	54	48	34	49	44	31	45	40	27	38	34	23	33	29	19	28	25	24	25	22	21	22	30	18	29	26	16
70	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	31	34	34	28
			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	31	34	34	27	34	33	23	34	29	31	34	26	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	36	37	37	31	37	33	28	37	30	25
			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	27	37	28	23	37	25	31	33	22	27	30	29	24
		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	46	50	50	38	50	46	32	50	40	28	48	36	24
			Exposed	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	45	50	50	40	50	46	33	50	40	27	50	34	23	50	30	21	45	26	18	40	23	24
		27-45	Interior	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	60	60	60	57	57	57	55	55	49	53	53	42	50	50	36	48	45	31
			Exposed	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	57	61	61	52	60	58	42	55	50	35	48	43	30	42	38	25	37	33	22	33	29	19
	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	33	34	34	29	34	34	25	34	31	33	34	28	29
			Exposed	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	33	34	34	30	34	34	25	34	30	33	34	26	28	32	23	25	28	31	22	25	27	19
		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	34	37	35	29	37	30	25	37	27	22	36	23	29	32	32	26
			Exposed	37	37	37	37	37	37	37	37	37	37	37	35	37	37	32	37	35	29	37	32	26	37	27	22	35	23	29	30	30	25	27	26	22	35	23	19	32	21	17
		20-27	Interior	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	44	50	50	36	50	42	29	48	37	25	47	32	22	45	28	19	43	25	17
			Exposed	50	50	50	50	50	48	50	50	42	50	50	37	50	46	33	50	42	29	50	38	26	50	32	22	47	28	19	41	24	25	36	32	22	32	28	19	28	25	17
		27-45	Interior	61	61	61	61	61	61	61	61	61	61	61	61	60	60	60	58	58	58	57	57	56	54	54	46	51	51	38	49	46	32	45	40	27	40	36	24	35	32	21
			Exposed	61	61	61	61	61	61	61	61	53	61	61	47	60	58	42	58	53	38	54	48	34	45	41	28	39	35	23	34	30	20	30	26	25	26	23	22	23	31	19
	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	32	37	37	28	37	34	24	37	30	32	36	26	28	32	23	25
			Exposed	37	37	37	37	37	37	37	37	37	37	37	33	37	37	30	37	37	27	37	35	25	37	30	32	35	26	27	30	33	24	27	29	21	23	26	18	31	23	16
		7-20	Interior	41	41	41	41	41	41	41	41	41	41	41	41	41	41	40	41	41	37	41	41	34	41	34	28	41	30	24	39	26	32	34	22	28	30	30	25	27	26	22
			Exposed	41	41	40	41	41	36	41	39	32	41	35	29	41	32	26	41	29	24	41	27	22	34	23	28	30	29	24	26	25	21	34	22	18	30	20	16	26	17	14
		20-27	Interior	55	55	55	55	55	55	55	55	55	55	55	51	55	55	45	55	54	40	55	49	35	54	42	29	52	36	24	50	31	21	46	27	18	41	24	25	36	32	22
			Exposed	55	55	44	55	53	38	55	47	34	55	43	29	55	39	26	55	35	24	55	32	22	46	27	19	40	23	24	34	31	21	30	27	18	27	24	16	24	21	14
		27-45	Interior	65	65	65	65	65	65	64	64	64	63	63	63	61	61	57	59	59	51	57	57	45	54	52	37	50	45	31	43	39	26	38	34	22	33	30	19	30	27	25
			Exposed	65	65	56	65	65	49	64	59	43	60	53	38	54	48	34	49	44	31	45	40	27	38	34	23	33	29	19	28	25	24	25	22	21	22	30	18	29	26	16
80	B	0-7	Interior	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	28			
			Exposed	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	27	30	30	23	30	29	31	30	26	28
		7-20	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	31	32	32	28	32	30	25
			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	27	32	28	23	32	25	31	32	22	27	30	29	24
		20-27	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	38	44	44	32	44	40	28	44	36	24
			Exposed	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	40	44	44	33	44	40	27	44	34	23	44	30	21	44	26	18	40	23	24			
		27-45	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	53	53	53	51	51	49	49	49	42	47	47	36	45	45	31
			Exposed	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	52	55	55	42	53	50	35	48	43	30	42	38	25	37	33	22	33	29	19			
	C	0-7	Interior	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	28	29
			Exposed	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	29	30	30	25	30	30	33	30	25	28
		7-20	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	28	32	30	25
			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	32	32	29	24
		20-27	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	44	44	44	44	44	44	36	44	36	24
			Exposed	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	44	44	44	44	44	44	44	44	36	24
		27-45	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	53	53	53	51	51	49	49	49	42	47	47	36	45	45	31
			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	53	50	35	48	43	30	42	38	25	37	33	22	33	29	19
	C	0-7	Interior	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	29	30	30	25	30	30	33	30	28	29
			Exposed	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	26	28
		7-20	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	30	25
			Exposed	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	29	32	32	26	32	27	22	32	23	29	30	30	25	27	26	22	35	23	19	32	21	17
		20-27	Interior	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	36	44	42	29	44	37	25	42	32	22	41	28	19	40	25	17
			Exposed	44	44	44	44	44	44	44	44	42	44	44	37	44	44	33	44	42	29	44	38	26	44	32	22	44	28	19	41	24	25	36	32	22	32	28	19	28	25	17
		27-45	Interior	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	53	53	53	52	52	52	50	50	46	48	48	38	45	45	32	43	40	27	40	36	24	35	32	21
			Exposed	55	55	55	55	55	55	55	55	53	55	55	47	55	55	42	53	53	38	52	48	34	45	41	28	39	35	23	34	30	20	30	26	25	26	23	22	23	31	19
	D	0-7	Interior	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	28	33	33	24	33	33	24	33	30	32	33	26	28	32	23	25
			Exposed	33	33	33	33	33	33	33	33	33	33	33	33	33	33	30	33	33	27	33	33	25	33	30	32	33	26	27	30	33	24	27	29	21	23	26	18	31	23	16
		7-20	Interior	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	34	36	34	28	36	30	24	36	26	32	34	22	28	30	30	25	27	26	22
			Exposed	36	36	36	36	36	36	36	36	32	36	35	29	36	32	26	36	29	24	36	27	22	34	23	28	30	29	24	26	25	21	34	22	18	30	20	16	26	17	14
		20-27	Interior	48	48	48	48	48	48	48	48	48	48	48	48	48	48	45	48	48	40	48	48	35	48	42	29	47	36	24	45	31	21	43	27	18	41	24	25	36	32	22
			Exposed	48	48	44	48	48	38	48	47	34	48	43	29	48	39	26	48	35	24	48	32	22	46	27	19	40	23	24	34	31	21	30	27	18	27	24	16	24	21	14
		27-45	Interior	60	60	60	60	60	60	59	59	59	58	58	58	56	56	56	55	55	51	53	53	45	50	50	37	47	45	31	43	39	26	38	34	22	33	30	19	30	27	25
			Exposed	60	60	56	60	60	49	59	59	43	58	53	38	54	48	34	49	44	31	45	40	27	38	34	23	33	29	19	28	25	24	25	22	21	22	30	18	29	26	16

* 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	Solarhooks ATI
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	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27
			Exposed	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	23	27	27	31	27	26	28		
		7-20	Interior	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	28	29	29	25			
			Exposed	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	27	29	28	23	29	25	31	29	22	27	29	29	24
		20-27	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	38	39	39	32	39	39	28	39	36	24			
			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	39	27	39	34	23	39	30	21	39	26	18	39	23	24
		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	47	47	47	45	45	42	44	44	36	42	42	31	
			Exposed	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	42	49	49	35	47	43	30	42	38	25	37	33	22	33	29	19
	C	0-7	Interior	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	25	27	27	33	27	27	29		
			Exposed	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	33	27	26	28	27	23	25	27	31	22	25	27	19			
		7-20	Interior	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	25	29	27	22	29	23	29	29	32	26			
			Exposed	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	26	29	27	22	29	23	29	29	30	25	27	26	22	35	23	19	32	21	17
		20-27	Interior	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	29	39	37	25	39	32	22	38	28	19	37	25	17
			Exposed	39	39	39	39	39	39	39	39	39	39	39	37	39	39	33	39	39	29	39	38	26	39	32	22	39	28	19	39	24	25	36	32	22	32	28	19	28	25	17
		27-45	Interior	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	48	48	48	46	46	46	44	44	38	42	42	32	40	40	27	38	36	24	35	32	21
			Exposed	49	49	49	49	49	49	49	49	49	49	49	47	49	49	42	49	49	38	48	48	34	45	41	28	39	35	23	34	30	20	30	26	25	26	23	22	23	31	19
	D	0-7	Interior	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	28	29	29	24	29	29	32	29	26	28	29	23	25
			Exposed	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	27	29	29	25	29	29	32	29	26	27	29	33	24	27	29	21	23	26	18	31	23	16
		7-20	Interior	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	28	32	30	24	32	26	32	32	22	28	30	30	25	27	26	22
			Exposed	32	32	32	32	32	32	32	32	32	32	32	29	32	32	26	32	29	24	32	27	22	32	23	28	30	29	24	26	25	21	34	22	18	30	20	16	26	17	14
		20-27	Interior	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	40	43	43	35	43	42	29	43	36	24	42	31	21	40	27	18	39	24	25	36	32	22
			Exposed	43	43	43	43	43	38	43	43	34	43	43	29	43	39	26	43	35	24	43	32	22	43	27	19	40	23	24	34	31	21	30	27	18	27	24	16	24	21	14
		27-45	Interior	55	55	55	55	55	55	54	54	54	53	53	53	52	52	52	51	51	51	49	49	45	47	47	37	44	44	31	42	39	26	38	34	22	33	30	19	30	27	25
			Exposed	55	55	55	55	55	49	54	54	43	53	53	38	52	48	34	49	44	31	45	40	27	38	34	23	33	29	19	28	25	24	25	22	21	22	30	18	29	26	16
100	B	0-7	Interior	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24
			Exposed	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	23	24	24	31	24	24	28
		7-20	Interior	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	25
			Exposed	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	23	26	25	31	26	22	27	26	29	24
		20-27	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	32	35	35	28	35	35	24
			Exposed	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	33	35	35	27	35	34	23	35	30	21	35	26	18	35	23	24
		27-45	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	44	44	44	42	42	42	41	41	36	39	39	31
			Exposed	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	42	45	45	35	44	43	30	42	38	25	37	33	22	33	29	19
	C	0-7	Interior	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	33	24	24	29
			Exposed	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	33	24	24	28	24	23	25	24	31	22	24	27	19			
		7-20	Interior	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	25	26	26	22	26	23	29	26	32	26			
			Exposed	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	22	26	23	29	26	30	25	26	26	22	35	23	19	32	21	17
		20-27	Interior	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	29	35	35	25	35	32	22	35	28	19	34	25	17			
			Exposed	35	35	35	35	35	35	35	35	35	35	35	35	35	35	33	35	35	29	35	35	26	35	32	22	35	28	19	35	24	25	35	32	22	32	28	19	28	25	17
		27-45	Interior	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	43	43	43	41	41	38	40	40	32	38	38	27	36	36	24	35	32	21
			Exposed	45	45	45	45	45	45	45	45	45	45	45	45	45	45	42	45	45	38	45	45	34	43	41	28	39	35	23	34	30	20	30	26	25	26	23	22	23	31	19
	D	0-7	Interior	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	24	27	27	32	27	26	28	27	23	25
			Exposed	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	25	27	27	32	27	26	27	27	33	24	27	29	21	23	26	18	31	23	16
		7-20	Interior	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	28	29	29	24	29	26	32	29	22	28	29	30	25	27	26	22
			Exposed	29	29	29	29	29	29	29	29	29	29	29	29	29	29	26	29	29	24	29	27	22	29	23	28	29	29	24	26	25	21	34	22	18	30	20	16	26	17	14
		20-27	Interior	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	35	39	39	29	39	36	24	39	31	21	37	27	18	36	24	25	35	32	22
			Exposed	39	39	39	39	39	38	39	39	34	39	39	29	39	39	26	39	35	24	39	32	22	39	27	19	39	23	24	34	31	21	30	27	18	27	24	16	24	21	14
		27-45	Interior	49	49	49	49	49	49	49	49	49	49	49	49	48	48	48	47	47	47	46	46	45	44	44	37	42	42	31	40	39	26	38	34	22	33	30	19	30	27	25
			Exposed	49	49	49	49	49	49	49	49	43	49	49	38	48	48	34	47	44	31	45	40	27	38	34	23	33	29	19	28	25	24	25	22	21	22	30	18	29	26	16

* 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	Solarhooks ATI
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	84	86	86	72	86	86	60	86	84	51	86	75	44	86	65	40	83	50	33	65	40	28	51	35	25	42	30	21	37	27	19	33	24	17
			Exposed	86	84	51	86	72	42	86	61	38	84	52	34	74	45	31	63	40	28	55	36	26	42	31	22	36	26	19	31	23	16	27	20	14	24	17	19	21	15	17
		7-20	Interior	86	86	85	86	86	76	86	84	60	86	72	50	86	59	42	83	49	38	74	42	35	59	36	29	48	30	25	40	26	22	35	23	19	31	20	17	27	18	15
			Exposed	86	58	42	81	47	37	70	40	33	61	36	30	54	33	27	47	30	25	42	27	23	36	23	19	30	20	16	26	17	14	23	15	19	20	13	17	18	18	15
		20-27	Interior	87	87	87	87	87	87	87	87	85	87	86	78	87	83	62	87	70	52	87	59	43	84	44	34	72	37	28	59	32	23	49	28	20	42	24	17	37	22	15
			Exposed	87	83	62	87	67	49	87	54	41	85	45	35	80	40	31	70	36	28	62	33	25	50	28	20	41	24	16	36	21	14	31	18	12	27	16	11	24	14	15
		27-45	Interior	87	87	87	87	87	87	87	87	87	87	87	85	87	87	79	87	86	67	87	83	57	83	63	43	62	49	35	46	40	30	39	35	25	34	31	22	30	27	19
			Exposed	87	87	79	87	85	64	87	79	53	84	66	45	73	56	39	60	48	35	50	42	31	39	35	26	34	30	21	29	26	18	25	23	15	22	20	13	20	18	11
	C	0-7	Interior	86	86	57	86	81	47	86	68	41	86	58	37	83	50	33	71	43	30	61	39	28	47	33	23	39	28	20	34	24	17	29	21	15	26	19	13	23	17	18
			Exposed	82	49	33	68	42	29	57	38	26	49	34	24	42	31	22	38	28	20	35	25	18	30	22	15	25	18	13	22	16	17	19	14	15	17	19	13	15	16	~~12~~
		7-20	Interior	86	67	47	84	54	40	77	44	36	67	39	32	59	35	29	52	32	27	46	29	24	38	25	21	33	21	18	28	18	15	25	16	13	22	14	18	19	19	16
			Exposed	58	35	29	50	31	26	44	28	23	39	25	21	35	23	19	32	21	17	29	19	16	25	16	13	21	14	17	18	18	15	16	16	13	14	14	~~12~~	19	~~12~~	~~10~~
		20-27	Interior	87	85	72	87	77	57	87	62	46	87	51	39	84	43	34	78	39	30	69	36	27	55	30	22	45	26	18	38	22	15	33	19	13	29	17	12	26	15	16
			Exposed	84	43	34	75	38	29	65	34	25	56	31	22	50	28	20	44	25	18	40	23	16	34	20	13	29	17	11	25	15	15	22	13	13	19	17	12	17	15	~~10~~
		27-45	Interior	87	87	84	87	87	73	87	84	60	87	75	50	83	63	43	70	54	38	58	46	34	42	38	28	36	32	23	31	28	19	27	24	17	24	22	14	21	19	12
			Exposed	83	62	42	66	51	37	53	43	32	44	39	29	39	35	25	36	32	23	33	29	20	28	25	17	24	21	14	20	18	12	18	16	15	16	14	13	14	19	12
	D	0-7	Interior	86	73	43	86	61	38	83	52	34	73	44	31	62	39	28	54	36	25	47	33	23	38	28	20	33	24	17	28	20	14	25	18	13	22	16	17	19	14	15
			Exposed	62	39	28	52	35	25	44	31	22	39	28	20	35	26	18	32	23	16	29	21	15	25	18	13	21	15	17	18	13	14	16	18	~~13~~	14	16	~~11~~	19	14	~~10~~
		7-20	Interior	82	48	37	70	41	33	61	36	30	53	33	27	47	30	24	42	27	22	38	25	20	32	21	17	27	18	15	24	15	13	21	13	17	18	18	15	16	16	13
			Exposed	46	30	24	41	26	22	36	24	20	33	21	18	30	19	16	27	18	15	25	16	13	21	14	17	18	18	15	15	15	13	13	13	~~11~~	18	~~12~~	~~10~~	16	~~10~~	9
		20-27	Interior	87	68	50	87	55	41	85	45	35	79	40	31	69	36	27	61	33	24	54	30	21	44	25	17	37	22	15	32	19	13	28	16	11	25	14	15	22	13	13
			Exposed	69	36	27	59	32	23	51	29	20	45	26	18	40	23	16	37	21	15	33	19	13	28	16	11	24	14	15	21	19	13	18	16	~~11~~	16	14	~~10~~	14	13	9
		27-45	Interior	87	86	65	87	80	53	84	66	44	72	55	39	59	47	34	49	41	31	42	37	28	35	32	23	30	27	19	26	23	16	23	21	13	20	18	12	18	16	15
			Exposed	58	46	34	47	40	30	40	36	26	36	32	23	33	29	21	30	27	18	27	24	17	23	21	14	20	18	11	17	15	15	15	13	12	13	18	11	18	16	~~10~~
10	B	0-7	Interior	62	62	62	62	62	62	62	62	62	62	62	60	62	62	51	62	62	44	62	62	40	62	50	33	62	40	28	51	35	25	42	30	21	37	27	19	33	24	17
			Exposed	62	62	51	62	62	42	62	61	38	62	52	34	62	45	31	62	40	28	55	36	26	42	31	22	36	26	19	31	23	16	27	20	14	24	17	19	21	15	17
		7-20	Interior	63	63	63	63	63	63	63	63	60	63	63	50	63	59	42	63	49	38	63	42	35	59	36	29	48	30	25	40	26	22	35	23	19	31	20	17	27	18	15
			Exposed	63	58	42	63	47	37	63	40	33	61	36	30	54	33	27	47	30	25	42	27	23	36	23	19	30	20	16	26	17	14	23	15	19	20	13	17	18	18	15
		20-27	Interior	82	82	82	82	82	82	82	82	82	82	82	78	82	82	62	82	70	52	82	59	43	82	44	34	72	37	28	59	32	23	49	28	20	42	24	17	37	22	15
			Exposed	82	82	62	82	67	49	82	54	41	82	45	35	80	40	31	70	36	28	62	33	25	50	28	20	41	24	16	36	21	14	31	18	12	27	16	11	24	14	15
		27-45	Interior	86	86	86	86	86	86	86	86	86	86	86	85	86	86	79	86	86	67	86	83	57	83	63	43	62	49	35	46	40	30	39	35	25	34	31	22	30	27	19
			Exposed	86	86	79	86	85	64	86	79	53	84	66	45	73	56	39	60	48	35	50	42	31	39	35	26	34	30	21	29	26	18	25	23	15	22	20	13	20	18	11
	C	0-7	Interior	62	62	57	62	62	47	62	62	41	62	58	37	62	50	33	62	43	30	61	39	28	47	33	23	39	28	20	34	24	17	29	21	15	26	19	13	23	17	18
			Exposed	62	49	33	62	42	29	57	38	26	49	34	24	42	31	22	38	28	20	35	25	18	30	22	15	25	18	13	22	16	17	19	14	15	17	19	13	15	16	~~12~~
		7-20	Interior	63	63	47	63	54	40	63	44	36	63	39	32	59	35	29	52	32	27	46	29	24	38	25	21	33	21	18	28	18	15	25	16	13	22	14	18	19	19	16
			Exposed	58	35	29	50	31	26	44	28	23	39	25	21	35	23	19	32	21	17	29	19	16	25	16	13	21	14	17	18	18	15	16	16	13	14	14	~~12~~	19	~~12~~	~~10~~
		20-27	Interior	82	82	72	82	77	57	82	62	46	82	51	39	82	43	34	78	39	30	69	36	27	55	30	22	45	26	18	38	22	15	33	19	13	29	17	12	26	15	16
			Exposed	82	43	34	75	38	29	65	34	25	56	31	22	50	28	20	44	25	18	40	23	16	34	20	13	29	17	11	25	15	15	22	13	13	19	17	12	17	15	~~10~~
		27-45	Interior	86	86	84	86	86	73	86	84	60	86	75	50	83	63	43	70	54	38	58	46	34	42	38	28	36	32	23	31	28	19	27	24	17	24	22	14	21	19	12
			Exposed	83	62	42	66	51	37	53	43	32	44	39	29	39	35	25	36	32	23	33	29	20	28	25	17	24	21	14	20	18	12	18	16	15	16	14	13	14	19	12
	D	0-7	Interior	62	62	43	62	61	38	62	52	34	62	44	31	62	39	28	54	36	25	47	33	23	38	28	20	33	24	17	28	20	14	25	18	13	22	16	17	19	14	15
			Exposed	62	39	28	52	35	25	44	31	22	39	28	20	35	26	18	32	23	16	29	21	15	25	18	13	21	15	17	18	13	14	16	18	~~13~~	14	16	~~11~~	19	14	~~10~~
		7-20	Interior	63	48	37	63	41	33	61	36	30	53	33	27	47	30	24	42	27	22	38	25	20	32	21	17	27	18	15	24	15	13	21	13	17	18	18	15	16	16	13
			Exposed	46	30	24	41	26	22	36	24	20	33	21	18	30	19	16	27	18	15	25	16	13	21	14	17	18	18	15	15	15	13	13	13	~~11~~	18	~~12~~	~~10~~	16	~~10~~	9
		20-27	Interior	84	68	50	84	55	41	84	45	35	79	40	31	69	36	27	61	33	24	54	30	21	44	25	17	37	22	15	32	19	13	28	16	11	25	14	15	22	13	13
			Exposed	69	36	27	59	32	23	51	29	20	45	26	18	40	23	16	37	21	15	33	19	13	28	16	11	24	14	15	21	19	13	18	16	~~11~~	16	14	~~10~~	14	13	9
		27-45	Interior	87	86	65	87	80	53	84	66	44	72	55	39	59	47	34	49	41	31	42	37	28	35	32	23	30	27	19	26	23	16	23	21	13	20	18	12	18	16	15
			Exposed	58	46	34	47	40	30	40	36	26	36	32	23	33	29	21	30	27	18	27	24	17	23	21	14	20	18	11	17	15	15	15	13	12	13	18	11	18	16	~~10~~
20	B	0-7	Interior	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	40	43	43	33	43	40	28	43	35	25	42	30	21	37	27	19	33	24	17			
			Exposed	43	43	43	43	43	42	43	43	38	43	43	34	43	43	31	43	40	28	43	36	26	42	31	22	36	26	19	31	23	16	27	20	14	24	17	19	21	15	17
		7-20	Interior	44	44	44	44	44	44	44	44	44	44	44	44	44	44	42	44	44	38	44	42	35	44	36	29	44	30	25	40	26	22	35	23	19	31	20	17	27	18	15
			Exposed	44	44	42	44	44	37	44	40	33	44	36	30	44	33	27	44	30	25	42	27	23	36	23	19	30	20	16	26	17	14	23	15	19	20	13	17	18	18	15
		20-27	Interior	65	65	65	65	65	65	65	65	65	65	65	65	65	65	62	65	65	52	65	59	43	65	44	34	65	37	28	59	32	23	49	28	20	42	24	17	37	22	15
			Exposed	65	65	62	65	65	49	65	54	41	65	45	35	65	40	31	65	36	28	62	33	25	50	28	20	41	24	16	36	21	14	31	18	12	27	16	11	24	14	15
		27-45	Interior	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	67	72	72	57	72	63	43	62	49	35	46	40	30	39	35	25	34	31	22	30	27	19
			Exposed	72	72	72	72	72	64	72	72	53	72	66	45	72	56	39	60	48	35	50	42	31	39	35	26	34	30	21	29	26	18	25	23	15	22	20	13	20	18	11
	C	0-7	Interior	43	43	43	43	43	43	43	43	41	43	43	37	43	43	33	43	43	30	43	39	28	43	33	23	39	28	20	34	24	17	29	21	15	26	19	13	23	17	18
			Exposed	43	43	33	43	42	29	43	38	26	43	34	24	42	31	22	38	28	20	35	25	18	30	22	15	25	18	13	22	16	17	19	14	15	17	19	13	15	16	~~12~~
		7-20	Interior	44	44	44	44	44	40	44	44	36	44	39	32	44	35	29	44	32	27	44	29	24	38	25	21	33	21	18	28	18	15	25	16	13	22	14	18	19	19	16
			Exposed	44	35	29	44	31	26	44	28	23	39	25	21	35	23	19	32	21	17	29	19	16	25	16	13	21	14	17	18	18	15	16	16	13	14	14	~~12~~	19	~~12~~	~~10~~
		20-27	Interior	65	65	65	65	65	57	65	62	46	65	51	39	65	43	34	65	39	30	65	36	27	55	30	22	45	26	18	38	22	15	33	19	13	29	17	12	26	15	16
			Exposed	65	43	34	65	38	29	65	34	25	56	31	22	50	28	20	44	25	18	40	23	16	34	20	13	29	17	11	25	15	15	22	13	13	19	17	12	17	15	~~10~~
		27-45	Interior	72	72	72	72	72	72	72	72	60	72	72	50	72	63	43	70	54	38	58	46	34	42	38	28	36	32	23	31	28	19	27	24	17	24	22	14	21	19	12
			Exposed	72	62	42	66	51	37	53	43	32	44	39	29	39	35	25	36	32	23	33	29	20	28	25	17	24	21	14	20	18	12	18	16	15	16	14	13	14	19	12
	D	0-7	Interior	43	43	43	43	43	38	43	43	34	43	43	31	43	39	28	43	36	25	43	33	23	38	28	20	33	24	17	28	20	14	25	18	13	22	16	17	19	14	15
			Exposed	43	39	28	43	35	25	43	31	22	39	28	20	35	26	18	32	23	16	29	21	15	25	18	13	21	15	17	18	13	14	16	18	~~13~~	14	16	~~11~~	19	14	~~10~~
		7-20	Interior	44	44	37	44	41	33	44	36	30	44	33	27	44	30	24	42	27	22	38	25	20	32	21	17	27	18	15	24	15	13	21	13	17	18	18	15	16	16	13
			Exposed	44	30	24	41	26	22	36	24	20	33	21	18	30	19	16	27	18	15	25	16	13	21	14	17	18	18	15	15	15	13	13	13	~~11~~	18	~~12~~	~~10~~	16	~~10~~	9
		20-27	Interior	67	67	50	67	55	41	67	45	35	67	40	31	67	36	27	61	33	24	54	30	21	44	25	17	37	22	15	32	19	13	28	16	11	25	14	15	22	13	13
			Exposed	67	36	27	59	32	23	51	29	20	45	26	18	40	23	16	37	21	15	33	19	13	28	16	11	24	14	15	21	19	13	18	16	~~11~~	16	14	~~10~~	14	13	9
		27-45	Interior	75	75	65	75	75	53	75	66	44	72	55	39	59	47	34	49	41	31	42	37	28	35	32	23	30	27	19	26	23	16	23	21	13	20	18	12	18	16	15
			Exposed	58	46	34	47	40	30	40	36	26	36	32	23	33	29	21	30	27	18	27	24	17	23	21	14	20	18	11	17	15	15	15	13	12	13	18	11	18	16	~~10~~

* 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	Solarhooks ATI
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	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	40	42	42	33	42	40	28	42	35	25	42	30	21	37	27	19	33	24	17
			Exposed	42	42	42	42	42	42	42	42	38	42	42	34	42	42	31	42	40	28	42	36	26	42	31	22	36	26	19	31	23	16	27	20	14	24	17	19	21	15	17
		7-20	Interior	44	44	44	44	44	44	44	44	44	44	44	44	44	44	42	44	44	38	44	42	35	44	36	29	44	30	25	40	26	22	35	23	19	31	20	17	27	18	15
			Exposed	44	44	42	44	44	37	44	40	33	44	36	30	44	33	27	44	30	25	42	27	23	36	23	19	30	20	16	26	17	14	23	15	19	20	13	17	18	18	15
		20-27	Interior	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	52	53	53	43	53	44	34	53	37	28	53	32	23	49	28	20	42	24	17	37	22	15
			Exposed	53	53	53	53	53	49	53	53	41	53	45	35	53	40	31	53	36	28	53	33	25	50	28	20	41	24	16	36	21	14	31	18	12	27	16	11	24	14	15
		27-45	Interior	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	57	61	61	43	59	49	35	46	40	30	39	35	25	34	31	22	30	27	19
			Exposed	61	61	61	61	61	61	61	61	53	61	61	45	61	56	39	60	48	35	50	42	31	39	35	26	34	30	21	29	26	18	25	23	15	22	20	13	20	18	11
	C	0-7	Interior	42	42	42	42	42	42	42	42	41	42	42	37	42	42	33	42	42	30	42	39	28	42	33	23	39	28	20	34	24	17	29	21	15	26	19	13	23	17	18
			Exposed	42	42	33	42	42	29	42	38	26	42	34	24	42	31	22	38	28	20	35	25	18	30	22	15	25	18	13	22	16	17	19	14	15	17	19	13	15	16	~~12~~
		7-20	Interior	44	44	44	44	44	40	44	44	36	44	39	32	44	35	29	44	32	27	44	29	24	38	25	21	33	21	18	28	18	15	25	16	13	22	14	18	19	19	16
			Exposed	44	35	29	44	31	26	44	28	23	39	25	21	35	23	19	32	21	17	29	19	16	25	16	13	21	14	17	18	18	15	16	16	13	14	14	~~12~~	19	~~12~~	~~10~~
		20-27	Interior	53	53	53	53	53	53	53	53	46	53	51	39	53	43	34	53	39	30	53	36	27	53	30	22	45	26	18	38	22	15	33	19	13	29	17	12	26	15	16
			Exposed	53	43	34	53	38	29	53	34	25	53	31	22	50	28	20	44	25	18	40	23	16	34	20	13	29	17	11	25	15	15	22	13	13	19	17	12	17	15	~~10~~
		27-45	Interior	61	61	61	61	61	61	61	61	60	61	61	50	61	61	43	60	54	38	58	46	34	42	38	28	36	32	23	31	28	19	27	24	17	24	22	14	21	19	12
			Exposed	61	61	42	61	51	37	53	43	32	44	39	29	39	35	25	36	32	23	33	29	20	28	25	17	24	21	14	20	18	12	18	16	15	16	14	13	14	19	12
	D	0-7	Interior	43	43	43	43	43	38	43	43	34	43	43	31	43	39	28	43	36	25	43	33	23	38	28	20	33	24	17	28	20	14	25	18	13	22	16	17	19	14	15
			Exposed	43	39	28	43	35	25	43	31	22	39	28	20	35	26	18	32	23	16	29	21	15	25	18	13	21	15	17	18	13	14	16	18	~~13~~	14	16	~~11~~	19	14	~~10~~
		7-20	Interior	44	44	37	44	41	33	44	36	30	44	33	27	44	30	24	42	27	22	38	25	20	32	21	17	27	18	15	24	15	13	21	13	17	18	18	15	16	16	13
			Exposed	44	30	24	41	26	22	36	24	20	33	21	18	30	19	16	27	18	15	25	16	13	21	14	17	18	18	15	15	15	13	13	13	~~11~~	18	~~12~~	~~10~~	16	~~10~~	9
		20-27	Interior	56	56	50	56	55	41	56	45	35	56	40	31	56	36	27	56	33	24	54	30	21	44	25	17	37	22	15	32	19	13	28	16	11	25	14	15	22	13	13
			Exposed	56	36	27	56	32	23	51	29	20	45	26	18	40	23	16	37	21	15	33	19	13	28	16	11	24	14	15	21	19	13	18	16	~~11~~	16	14	~~10~~	14	13	9
		27-45	Interior	64	64	64	64	64	53	64	64	44	64	55	39	59	47	34	49	41	31	42	37	28	35	32	23	30	27	19	26	23	16	23	21	13	20	18	12	18	16	15
			Exposed	58	46	34	47	40	30	40	36	26	36	32	23	33	29	21	30	27	18	27	24	17	23	21	14	20	18	11	17	15	15	15	13	12	13	18	11	18	16	~~10~~
40	B	0-7	Interior	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	33	35	35	28	35	35	25	35	30	21	35	27	19	33	24	17			
			Exposed	35	35	35	35	35	35	35	35	35	35	35	34	35	35	31	35	35	28	35	35	26	35	31	22	35	26	19	31	23	16	27	20	14	24	17	19	21	15	17
		7-20	Interior	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	35	37	36	29	37	30	25	37	26	22	35	23	19	31	20	17	27	18	15
			Exposed	37	37	37	37	37	37	37	37	33	37	36	30	37	33	27	37	30	25	37	27	23	36	23	19	30	20	16	26	17	14	23	15	19	20	13	17	18	18	15
		20-27	Interior	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	43	45	44	34	45	37	28	45	32	23	45	28	20	42	24	17	37	22	15
			Exposed	45	45	45	45	45	45	45	45	41	45	45	35	45	40	31	45	36	28	45	33	25	45	28	20	41	24	16	36	21	14	31	18	12	27	16	11	24	14	15
		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	43	50	49	35	46	40	30	39	35	25	34	31	22	30	27	19
			Exposed	52	52	52	52	52	52	52	52	52	52	52	45	52	52	39	52	48	35	50	42	31	39	35	26	34	30	21	29	26	18	25	23	15	22	20	13	20	18	11
	C	0-7	Interior	35	35	35	35	35	35	35	35	35	35	35	35	35	35	33	35	35	30	35	35	28	35	33	23	35	28	20	34	24	17	29	21	15	26	19	13	23	17	18
			Exposed	35	35	33	35	35	29	35	35	26	35	34	24	35	31	22	35	28	20	35	25	18	30	22	15	25	18	13	22	16	17	19	14	15	17	19	13	15	16	~~12~~
		7-20	Interior	37	37	37	37	37	37	37	37	36	37	37	32	37	35	29	37	32	27	37	29	24	37	25	21	33	21	18	28	18	15	25	16	13	22	14	18	19	19	16
			Exposed	37	35	29	37	31	26	37	28	23	37	25	21	35	23	19	32	21	17	29	19	16	25	16	13	21	14	17	18	18	15	16	16	13	14	14	~~12~~	19	~~12~~	~~10~~
		20-27	Interior	45	45	45	45	45	45	45	45	45	45	45	39	45	43	34	45	39	30	45	36	27	45	30	22	45	26	18	38	22	15	33	19	13	29	17	12	26	15	16
			Exposed	45	43	34	45	38	29	45	34	25	45	31	22	45	28	20	44	25	18	40	23	16	34	20	13	29	17	11	25	15	15	22	13	13	19	17	12	17	15	~~10~~
		27-45	Interior	52	52	52	52	52	52	52	52	52	52	52	50	52	52	43	51	51	38	49	46	34	42	38	28	36	32	23	31	28	19	27	24	17	24	22	14	21	19	12
			Exposed	52	52	42	52	51	37	52	43	32	44	39	29	39	35	25	36	32	23	33	29	20	28	25	17	24	21	14	20	18	12	18	16	15	16	14	13	14	19	12
	D	0-7	Interior	37	37	37	37	37	37	37	37	34	37	37	31	37	37	28	37	36	25	37	33	23	37	28	20	33	24	17	28	20	14	25	18	13	22	16	17	19	14	15
			Exposed	37	37	28	37	35	25	37	31	22	37	28	20	35	26	18	32	23	16	29	21	15	25	18	13	21	15	17	18	13	14	16	18	~~13~~	14	16	~~11~~	19	14	~~10~~
		7-20	Interior	40	40	37	40	40	33	40	36	30	40	33	27	40	30	24	40	27	22	38	25	20	32	21	17	27	18	15	24	15	13	21	13	17	18	18	15	16	16	13
			Exposed	40	30	24	40	26	22	36	24	20	33	21	18	30	19	16	27	18	15	25	16	13	21	14	17	18	18	15	15	15	13	13	13	~~11~~	18	~~12~~	~~10~~	16	~~10~~	9
		20-27	Interior	48	48	48	48	48	41	48	45	35	48	40	31	48	36	27	48	33	24	48	30	21	44	25	17	37	22	15	32	19	13	28	16	11	25	14	15	22	13	13
			Exposed	48	36	27	48	32	23	48	29	20	45	26	18	40	23	16	37	21	15	33	19	13	28	16	11	24	14	15	21	19	13	18	16	~~11~~	16	14	~~10~~	14	13	9
		27-45	Interior	55	55	55	55	55	53	55	55	44	54	54	39	52	47	34	49	41	31	42	37	28	35	32	23	30	27	19	26	23	16	23	21	13	20	18	12	18	16	15
			Exposed	55	46	34	47	40	30	40	36	26	36	32	23	33	29	21	30	27	18	27	24	17	23	21	14	20	18	11	17	15	15	15	13	12	13	18	11	18	16	~~10~~
50	B	0-7	Interior	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	25	28	28	21	28	27	19	28	24	17
			Exposed	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	26	28	28	22	28	26	19	28	23	16	27	20	14	24	17	19	21	15	17
		7-20	Interior	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	29	31	30	25	31	26	22	31	23	19	31	20	17	27	18	15
			Exposed	31	31	31	31	31	31	31	31	31	31	31	30	31	31	27	31	30	25	31	27	23	31	23	19	30	20	16	26	17	14	23	15	19	20	13	17	18	18	15
		20-27	Interior	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	37	28	39	32	23	39	28	20	38	24	17	37	22	15
			Exposed	39	39	39	39	39	39	39	39	39	39	39	35	39	39	31	39	36	28	39	33	25	39	28	20	39	24	16	36	21	14	31	18	12	27	16	11	24	14	15
		27-45	Interior	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	43	43	43	35	41	40	30	39	35	25	34	31	22	30	27	19
			Exposed	46	46	46	46	46	46	46	46	46	46	46	45	46	46	39	46	46	35	46	42	31	39	35	26	34	30	21	29	26	18	25	23	15	22	20	13	20	18	11
	C	0-7	Interior	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	23	28	28	20	28	24	17	28	21	15	26	19	13	23	17	18
			Exposed	28	28	28	28	28	28	28	28	26	28	28	24	28	28	22	28	28	20	28	25	18	28	22	15	25	18	13	22	16	17	19	14	15	17	19	13	15	16	~~12~~
		7-20	Interior	31	31	31	31	31	31	31	31	31	31	31	31	31	31	29	31	31	27	31	29	24	31	25	21	31	21	18	28	18	15	25	16	13	22	14	18	19	19	16
			Exposed	31	31	29	31	31	26	31	28	23	31	25	21	31	23	19	31	21	17	29	19	16	25	16	13	21	14	17	18	18	15	16	16	13	14	14	~~12~~	19	~~12~~	~~10~~
		20-27	Interior	39	39	39	39	39	39	39	39	39	39	39	39	39	39	34	39	39	30	39	36	27	39	30	22	39	26	18	37	22	15	33	19	13	29	17	12	26	15	16
			Exposed	39	39	34	39	38	29	39	34	25	39	31	22	39	28	20	39	25	18	39	23	16	34	20	13	29	17	11	25	15	15	22	13	13	19	17	12	17	15	~~10~~
		27-45	Interior	46	46	46	46	46	46	46	46	46	46	46	46	46	46	43	44	44	38	43	43	34	40	38	28	36	32	23	31	28	19	27	24	17	24	22	14	21	19	12
			Exposed	46	46	42	46	46	37	46	43	32	44	39	29	39	35	25	36	32	23	33	29	20	28	25	17	24	21	14	20	18	12	18	16	15	16	14	13	14	19	12
	D	0-7	Interior	31	31	31	31	31	31	31	31	31	31	31	31	31	31	28	31	31	25	31	31	23	31	28	20	31	24	17	28	20	14	25	18	13	22	16	17	19	14	15
			Exposed	31	31	28	31	31	25	31	31	22	31	28	20	31	26	18	31	23	16	29	21	15	25	18	13	21	15	17	18	13	14	16	18	~~13~~	14	16	~~11~~	19	14	~~10~~
		7-20	Interior	34	34	34	34	34	33	34	34	30	34	33	27	34	30	24	34	27	22	34	25	20	32	21	17	27	18	15	24	15	13	21	13	17	18	18	15	16	16	13
			Exposed	34	30	24	34	26	22	34	24	20	33	21	18	30	19	16	27	18	15	25	16	13	21	14	17	18	18	15	15	15	13	13	13	~~11~~	18	~~12~~	~~10~~	16	~~10~~	9
		20-27	Interior	42	42	42	42	42	41	42	42	35	42	40	31	42	36	27	42	33	24	42	30	21	41	25	17	37	22	15	32	19	13	28	16	11	25	14	15	22	13	13
			Exposed	42	36	27	42	32	23	42	29	20	42	26	18	40	23	16	37	21	15	33	19	13	28	16	11	24	14	15	21	19	13	18	16	~~11~~	16	14	~~10~~	14	13	9
		27-45	Interior	49	49	49	49	49	49	49	49	44	47	47	39	46	46	34	44	41	31	42	37	28	35	32	23	30	27	19	26	23	16	23	21	13	20	18	12	18	16	15
			Exposed	49	46	34	47	40	30	40	36	26	36	32	23	33	29	21	30	27	18	27	24	17	23	21	14	20	18	11	17	15	15	15	13	12	13	18	11	18	16	~~10~~

* 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	Solarhooks ATI
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	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	17
			Exposed	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	22	24	24	19	24	23	16	24	20	14	24	17	19	21	15	17
		7-20	Interior	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	25	26	26	22	26	23	19	26	20	17	26	18	15			
			Exposed	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	25	26	26	23	26	23	19	26	20	16	26	17	14	23	15	19	20	13	17	18	18	15			
		20-27	Interior	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	28	35	32	23	35	28	20	34	24	17	33	22	15			
			Exposed	35	35	35	35	35	35	35	35	35	35	35	35	35	35	31	35	35	28	35	33	25	35	28	20	35	24	16	35	21	14	31	18	12	27	16	11	24	14	15			
		27-45	Interior	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	40	40	40	39	39	35	37	37	30	35	35	25	33	31	22	30	27	19			
			Exposed	41	41	41	41	41	41	41	41	41	41	41	41	41	39	41	41	35	41	41	31	39	35	26	34	30	21	29	26	18	25	23	15	22	20	13	20	18	11			
	C	0-7	Interior	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	23	24	24	20	24	24	17	24	21	15	24	19	13	23	17	18			
			Exposed	24	24	24	24	24	24	24	24	24	24	24	24	24	22	24	24	20	24	24	18	24	22	15	24	18	13	22	16	17	19	14	15	17	19	13	15	16	~~12~~			
		7-20	Interior	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	24	26	25	21	26	21	18	26	18	15	25	16	13	22	14	18	19	19	16			
			Exposed	26	26	26	26	26	26	26	26	23	26	25	21	26	23	19	26	21	17	26	19	16	25	16	13	21	14	17	18	18	15	16	16	13	14	14	~~12~~	19	~~12~~	~~10~~			
		20-27	Interior	35	35	35	35	35	35	35	35	35	35	35	35	35	34	35	35	35	30	35	35	27	35	30	22	34	26	18	33	22	15	32	19	13	29	17	12	26	15	16			
			Exposed	35	35	34	35	35	29	35	34	25	35	31	22	35	28	20	35	25	18	35	23	16	34	20	13	29	17	11	25	15	15	22	13	13	19	17	12	17	15	~~10~~			
		27-45	Interior	41	41	41	41	41	41	41	41	41	41	41	41	40	40	40	39	39	38	38	38	34	36	36	28	34	32	23	31	28	19	27	24	17	24	22	14	21	19	12			
			Exposed	41	41	41	41	41	37	41	41	32	41	39	29	39	35	25	36	32	23	33	29	20	28	25	17	24	21	14	20	18	12	18	16	15	16	14	13	14	19	12			
	D	0-7	Interior	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	25	26	26	23	26	26	20	26	24	17	26	20	14	25	18	13	22	16	17	19	14	15			
			Exposed	26	26	26	26	26	25	26	26	22	26	26	20	26	26	18	26	23	16	26	21	15	25	18	13	21	15	17	18	13	14	16	18	~~13~~	14	16	~~11~~	19	14	~~10~~			
		7-20	Interior	29	29	29	29	29	29	29	29	29	29	29	27	29	29	24	29	27	22	29	25	20	29	21	17	27	18	15	24	15	13	21	13	17	18	18	15	16	16	13			
			Exposed	29	29	24	29	26	22	29	24	20	29	21	18	29	19	16	27	18	15	25	16	13	21	14	17	18	18	15	15	15	13	13	13	~~11~~	18	~~12~~	~~10~~	16	~~10~~	9			
		20-27	Interior	37	37	37	37	37	37	37	37	35	37	37	31	37	36	27	37	33	24	37	30	21	37	25	17	35	22	15	32	19	13	28	16	11	25	14	15	22	13	13			
			Exposed	37	36	27	37	32	23	37	29	20	37	26	18	37	23	16	37	21	15	33	19	13	28	16	11	24	14	15	21	19	13	18	16	~~11~~	16	14	~~10~~	14	13	9			
		27-45	Interior	44	44	44	44	44	44	44	44	44	42	42	39	41	41	34	40	40	31	38	37	28	35	32	23	30	27	19	26	23	16	23	21	13	20	18	12	18	16	15			
			Exposed	44	44	34	44	40	30	40	36	26	36	32	23	33	29	21	30	27	18	27	24	17	23	21	14	20	18	11	17	15	15	15	13	12	13	18	11	18	16	~~10~~			
70	B	0-7	Interior	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	17			
			Exposed	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	19	21	21	16	21	20	14	21	17	19	21	15	17			
		7-20	Interior	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	19	22	20	17	22	18	15			
			Exposed	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	19	22	20	16	22	17	14	22	15	19	20	13	17	18	18	15			
		20-27	Interior	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	28	30	30	23	30	28	20	30	24	17	29	22	15			
			Exposed	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	28	30	30	25	30	28	20	30	24	16	30	21	14	30	18	12	27	16	11	24	14	15			
		27-45	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	35	35	35	34	34	30	32	32	25	31	31	22	29	27	19			
			Exposed	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	35	37	37	31	37	35	26	34	30	21	29	26	18	25	23	15	22	20	13	20	18	11			
	C	0-7	Interior	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	20	21	21	17	21	21	15	21	19	13	21	17	18			
			Exposed	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	20	21	21	18	21	21	15	21	18	13	21	16	17	19	14	15	17	19	13	15	16	~~12~~			
		7-20	Interior	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	21	22	21	18	22	18	15	22	16	13	22	14	18	19	19	16			
			Exposed	22	22	22	22	22	22	22	22	22	22	22	21	22	22	19	22	21	17	22	19	16	22	16	13	21	14	17	18	18	15	16	16	13	14	14	~~12~~	19	~~12~~	~~10~~			
		20-27	Interior	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	27	30	30	22	30	26	18	30	22	15	28	19	13	27	17	12	26	15	16			
			Exposed	30	30	30	30	30	29	30	30	25	30	30	22	30	28	20	30	25	18	30	23	16	30	20	13	29	17	11	25	15	15	22	13	13	19	17	12	17	15	~~10~~			
		27-45	Interior	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	36	36	36	35	35	34	33	33	28	31	31	23	30	28	19	27	24	17	24	22	14	21	19	12			
			Exposed	37	37	37	37	37	37	37	37	32	37	37	29	37	35	25	36	32	23	33	29	20	28	25	17	24	21	14	20	18	12	18	16	15	16	14	13	14	19	12			
	D	0-7	Interior	23	23	23	23	23	23	23	23	23	23	23	23	23	23	23	23	23	23	23	23	23	23	23	20	23	23	17	23	20	14	23	18	13	22	16	17	19	14	15			
			Exposed	23	23	23	23	23	23	23	23	22	23	23	20	23	23	18	23	23	16	23	21	15	23	18	13	21	15	17	18	13	14	16	18	~~13~~	14	16	~~11~~	19	14	~~10~~			
		7-20	Interior	25	25	25	25	25	25	25	25	25	25	25	25	25	25	24	25	25	22	25	25	20	25	21	17	25	18	15	24	15	13	21	13	17	18	18	15	16	16	13			
			Exposed	25	25	24	25	25	22	25	24	20	25	21	18	25	19	16	25	18	15	25	16	13	21	14	17	18	18	15	15	15	13	13	13	~~11~~	18	~~12~~	~~10~~	16	~~10~~	9			
		20-27	Interior	33	33	33	33	33	33	33	33	33	33	33	31	33	33	27	33	33	24	33	30	21	33	25	17	32	22	15	30	19	13	28	16	11	25	14	15	22	13	13			
			Exposed	33	33	27	33	32	23	33	29	20	33	26	18	33	23	16	33	21	15	33	19	13	28	16	11	24	14	15	21	19	13	18	16	~~11~~	16	14	~~10~~	14	13	9			
		27-45	Interior	40	40	40	40	40	40	39	39	39	38	38	38	37	37	34	36	36	31	35	35	28	33	32	23	30	27	19	26	23	16	23	21	13	20	18	12	18	16	15			
			Exposed	40	40	34	40	40	30	39	36	26	36	32	23	33	29	21	30	27	18	27	24	17	23	21	14	20	18	11	17	15	15	15	13	12	13	18	11	18	16	~~10~~			
80	B	0-7	Interior	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	17			
			Exposed	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	16	18	18	14	18	17	19	18	15	17			
		7-20	Interior	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	19	20	20	17	20	18	15			
			Exposed	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	19	20	20	16	20	17	14	20	15	19	20	13	17	18	18	15			
		20-27	Interior	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	23	27	27	20	27	24	17	27	22	15	26	18	12	27	16	11	24	14	15
			Exposed	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	25	27	27	20	27	24	16	27	21	14	27	18	12	27	16	11	24	14	15						
		27-45	Interior	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	33	33	33	32	32	32	31	31	30	30	30	25	28	28	22	27	27	19			
			Exposed	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	31	33	33	26	32	30	21	29	26	18	25	23	15	22	20	13	20	18	11			
	C	0-7	Interior	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	17			
			Exposed	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	17	18	18	15	18	18	13	18	17	18			
		7-20	Interior	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	18	20	18	15			
			Exposed	20	20	20	20	20	20	20	20	20	20	20	20	20	20	19	20	20	17	20	19	16	20	16	13	20	14	17	18	18	15	16	16	13	14	14	~~12~~	19	~~12~~	~~10~~			
		20-27	Interior	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	22	27	27	18	27	22	15	26	19	13	25	17	12	24	15	16			
			Exposed	27	27	27	27	27	27	27	27	25	27	27	22	27	27	20	27	25	18	27	23	16	27	20	13	27	17	11	25	15	15	22	13	13	19	17	12	17	15	~~10~~			
		27-45	Interior	34	34	34	34	34	34	34	34	34	34	34	34	33	33	33	33	33	33	32	32	32	30	30	28	29	29	23	28	28	19	26	24	17	24	22	14	21	19	12			
			Exposed	34	34	34	34	34	34	34	34	32	34	34	29	33	33	25	33	32	23	32	29	20	28	25	17	24	21	14	20	18	12	18	16	15	16	14	13	14	19	12			
	D	0-7	Interior	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	17	20	20	14	20	18	13	20	16	17	19	14	15			
			Exposed	20	20	20	20	20	20	20	20	20	20	20	20	20	20	18	20	20	16	20	20	15	20	18	13	20	15	17	18	13	14	16	18	~~13~~	14	16	~~11~~	19	14	~~10~~			
		7-20	Interior	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	20	22	21	17	22	18	15	22	15	13	21	13	17	18	18	15	16	16	13			
			Exposed	22	22	22	22	22	22	22	22	20	22	21	18	22	19	16	22	18	15	22	18	13	21	14	17	18	18	15	15	15	13	13	13	~~11~~	18	~~12~~	~~10~~	16	~~10~~	9			
		20-27	Interior	29	29	29	29	29	29	29	29	29	29	29	29	29	29	27	29	29	24	29	29	21	29	25	17	29	22	15	28	19	13	26	16	11	25	14	15	22	13	13			
			Exposed	29	29	27	29	29	23	29	29	20	29	26	18	29	23	16	29	21	15	29	19	13	28	16	11	24	14	15	21	19	13	18	16	~~11~~	16	14	~~10~~	14	13	9			
		27-45	Interior	36	36	36	36	36	36	36	36	36	35	35	35	34	34	34	33	33	31	32	32	28	31	31	23	29	27	19	26	23	16	23	21	13	20	18	12	18	16	15			
			Exposed	36	36	34	36	36	30	36	36	26	35	32	23	33	29	21	30	27	18	27	24	17	23	21	14	20	18	11	17	15	15	15	13	12	13	18	11	18	16	~~10~~			

* 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	Solarhooks ATI
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	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16
			Exposed	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	14	16	16	19	16	15	17		
		7-20	Interior	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	17	18	18	15			
			Exposed	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	16	18	17	14	18	15	19	18	13	17	18	18	15
		20-27	Interior	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	23	24	24	20	24	24	17	24	22	15
			Exposed	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	20	24	24	16	24	21	14	24	18	12	24	16	11	24	14	15
		27-45	Interior	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	29	29	29	28	28	25	26	26	22	25	25	19
			Exposed	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	26	30	30	21	29	26	18	25	23	15	22	20	13	20	18	11
	C	0-7	Interior	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	15	16	16	13	16	16	18
			Exposed	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	15	16	16	13	16	16	17	16	14	15	16	19	13	15	16	~~12~~
		7-20	Interior	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	15	18	16	13	18	14	18	18	19	16
			Exposed	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	17	18	18	16	18	16	13	18	14	17	18	18	15	16	16	13	14	14	~~12~~	19	~~12~~	~~10~~
		20-27	Interior	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	22	24	24	18	24	22	15	24	19	13	23	17	12	22	15	16
			Exposed	24	24	24	24	24	24	24	24	24	22	24	24	20	24	24	18	24	23	16	24	20	13	24	17	11	24	15	15	22	13	13	19	17	12	17	15	~~10~~		
		27-45	Interior	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	29	29	29	28	28	28	27	27	23	26	26	19	25	24	17	23	22	14	21	19	12
			Exposed	30	30	30	30	30	30	30	30	30	29	30	30	25	30	30	23	29	29	20	28	25	17	24	21	14	20	18	12	18	16	15	16	14	13	14	19	12		
	D	0-7	Interior	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	17	18	18	14	18	18	13	18	16	17	18	14	15
			Exposed	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	16	18	18	15	18	18	13	18	15	17	18	13	14	16	18	~~13~~	14	16	~~11~~	19	14	~~10~~		
		7-20	Interior	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	17	19	18	15	19	15	13	19	13	17	18	18	15	16	16	13
			Exposed	19	19	19	19	19	19	19	19	19	19	18	19	19	16	19	18	15	19	16	13	19	14	17	18	18	15	15	15	13	13	13	~~11~~	18	~~12~~	~~10~~	16	~~10~~	9	
		20-27	Interior	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	24	26	26	21	26	25	17	26	22	15	25	19	13	24	16	11	23	14	15	22	13	13	
			Exposed	26	26	26	26	26	23	26	26	20	26	26	18	26	23	16	26	21	15	26	19	13	26	16	11	24	14	15	21	19	13	18	16	~~11~~	16	14	~~10~~	14	13	9
		27-45	Interior	33	33	33	33	33	33	33	33	33	32	32	32	32	32	32	31	31	31	30	30	28	29	29	23	27	27	19	26	23	16	23	21	13	20	18	12	18	16	15
			Exposed	33	33	33	33	33	30	33	33	26	32	32	23	32	29	21	30	27	18	27	24	17	23	21	14	20	18	11	17	15	15	15	13	12	13	18	11	18	16	~~10~~
100	B	0-7	Interior	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14
			Exposed	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	19	14	14	17
		7-20	Interior	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	15
			Exposed	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	14	16	15	19	16	13	17	16	18	15
		20-27	Interior	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	20	21	21	17	21	21	15
			Exposed	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	20	21	21	16	21	21	14	21	18	12	21	16	11	21	14	15
		27-45	Interior	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	26	26	25	25	25	22	24	24	19
			Exposed	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	26	27	27	21	27	26	18	25	23	15	22	20	13	20	18	11
	C	0-7	Interior	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	13	14	14	18
			Exposed	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	13	14	14	17	14	14	15	14	19	13	14	16	~~12~~			
		7-20	Interior	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	15	16	16	13	16	14	18	16	19	16
			Exposed	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	13	16	14	17	16	18	15	16	16	13	14	14	~~12~~	19	~~12~~	~~10~~
		20-27	Interior	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	18	21	21	15	21	21	15	21	19	13	21	17	12	21	15	16
			Exposed	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	20	21	21	18	21	21	16	21	20	13	21	17	11	21	15	15	21	13	13	19	17	12	17	15	~~10~~
		27-45	Interior	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	26	26	26	25	25	23	24	24	19	23	23	17	22	22	14	21	19	12
			Exposed	27	27	27	27	27	27	27	27	27	27	27	27	27	27	25	27	27	23	27	27	20	26	25	17	24	21	14	20	18	12	18	16	15	16	14	13	14	19	12
	D	0-7	Interior	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	14	16	16	13	16	16	17	16	14	15
			Exposed	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	15	16	16	13	16	15	17	16	13	14	16	18	~~13~~	14	16	~~11~~	19	14	~~10~~
		7-20	Interior	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	17	18	18	15	18	15	13	18	13	17	17	18	15	16	16	13
			Exposed	18	18	18	18	18	18	18	18	18	18	18	18	18	16	18	18	18	15	18	16	13	18	14	17	18	18	15	15	15	13	13	~~11~~	18	~~12~~	~~10~~	16	~~10~~	9	
		20-27	Interior	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	21	24	24	17	24	22	15	23	19	13	23	16	11	22	14	15	21	13	13
			Exposed	24	24	24	24	24	23	24	24	20	24	24	18	24	23	16	24	21	15	24	19	13	24	16	11	24	14	15	21	19	13	18	16	~~11~~	16	14	~~10~~	14	13	9
		27-45	Interior	30	30	30	30	30	30	30	30	30	30	30	30	29	29	29	29	29	29	28	28	28	27	27	23	25	25	19	24	23	16	23	21	13	20	18	12	18	16	15
			Exposed	30	30	30	30	30	30	30	30	26	30	30	23	29	29	21	29	27	18	27	24	17	23	21	14	20	18	11	17	15	15	15	13	12	13	18	11	18	16	~~10~~

* 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	Solarhooks ATI
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	97	102	102	93	102	102	88	102	98	84	102	94	70	101	87	56	94	74	48	88	59	42	83	51	36	62	45	32	55	40	28
			Exposed	102	102	88	102	97	83	102	92	64	102	88	57	98	84	52	93	71	47	89	61	43	83	52	37	61	44	31	53	38	27	46	34	24	41	30	32	36	26	28
		7-20	Interior	102	102	102	102	102	100	102	102	94	102	99	89	102	93	85	102	89	64	100	85	59	90	60	49	84	51	42	70	44	37	59	39	32	52	34	28	46	30	25
			Exposed	102	93	85	102	88	63	96	83	56	91	61	51	87	56	46	84	51	42	76	46	38	60	39	32	51	34	28	44	29	24	39	25	21	34	22	28	30	30	25
		20-27	Interior	103	103	103	103	103	103	103	103	103	103	103	102	103	103	96	103	97	91	103	93	87	103	85	58	96	62	47	90	54	39	85	47	33	75	41	28	63	37	25
			Exposed	103	102	96	103	96	90	103	91	85	103	86	60	100	81	52	95	61	46	91	56	41	85	47	33	72	40	28	60	35	24	52	31	21	46	27	18	41	24	25
		27-45	Interior	103	103	103	103	103	103	103	103	103	103	103	103	103	103	100	103	103	96	103	103	92	103	94	85	95	87	60	88	74	50	68	59	43	58	52	37	51	46	32
			Exposed	103	103	100	103	103	95	103	100	90	103	95	85	100	91	73	95	87	59	90	83	53	83	59	43	57	51	36	49	44	30	43	38	26	38	34	22	34	30	19
	C	0-7	Interior	102	102	91	102	100	86	102	95	79	102	91	62	101	87	56	97	83	51	92	67	47	86	56	39	66	48	34	57	41	29	49	36	25	43	32	22	39	28	30
			Exposed	101	87	56	95	82	50	91	63	45	86	57	40	83	52	37	65	47	33	59	43	30	50	36	26	43	31	22	37	27	29	32	24	25	28	31	22	25	28	20
		7-20	Interior	102	97	88	102	91	83	102	86	60	94	70	54	90	60	49	86	54	45	83	50	41	64	42	35	55	36	30	48	31	26	42	27	23	37	24	30	33	21	27
			Exposed	90	59	49	86	53	44	80	48	39	66	43	36	60	39	32	54	36	29	50	33	27	42	28	23	36	24	30	31	31	26	27	27	22	24	24	20	21	21	18
		20-27	Interior	103	103	103	103	103	100	103	94	88	103	90	83	103	85	58	99	68	51	94	60	45	88	51	37	82	43	30	64	38	26	56	33	23	49	29	20	44	26	18
			Exposed	103	85	57	98	64	49	92	58	43	89	52	38	85	47	33	81	43	30	69	39	27	57	33	23	49	28	19	42	25	26	37	22	22	32	29	20	29	26	18
		27-45	Interior	103	103	103	103	103	98	103	103	93	103	99	88	103	94	84	99	90	65	94	86	57	86	64	47	61	54	39	53	47	33	46	41	28	41	36	24	36	32	21
			Exposed	103	94	84	97	89	63	92	84	54	87	65	48	82	59	43	60	54	38	55	49	35	46	42	28	40	36	24	35	31	20	30	27	17	27	24	22	24	21	20
	D	0-7	Interior	102	97	84	102	92	64	102	88	57	97	84	52	93	68	47	89	60	43	85	55	39	64	47	33	55	40	28	47	35	24	41	30	21	36	27	29	32	24	25
			Exposed	93	68	47	88	59	42	84	53	37	66	48	34	59	43	31	54	39	28	50	36	26	42	30	22	36	26	28	31	23	24	27	30	21	24	26	19	21	23	17
		7-20	Interior	102	88	63	97	83	56	91	61	50	87	55	46	83	50	41	74	46	38	64	42	34	54	35	29	46	30	25	40	26	22	35	23	29	31	30	25	27	27	22
			Exposed	83	50	41	70	44	37	61	40	33	55	36	30	50	33	27	46	30	25	42	27	23	35	23	29	30	30	25	26	26	21	23	23	19	30	20	17	27	18	15
		20-27	Interior	103	97	90	103	91	85	103	86	59	100	75	52	95	60	46	91	55	41	87	50	36	79	43	29	62	36	25	54	32	22	47	28	19	41	24	25	37	22	22
			Exposed	95	60	45	90	54	39	86	48	34	82	44	30	69	39	27	61	36	25	56	33	23	48	28	19	41	24	25	35	31	21	31	27	19	27	24	17	24	21	15
		27-45	Interior	103	103	95	103	100	90	103	95	85	99	90	70	94	86	58	89	83	52	85	63	46	59	53	38	51	46	32	44	40	27	39	35	23	34	31	20	30	27	17
			Exposed	94	86	57	88	75	50	83	60	44	61	55	39	55	49	35	50	45	31	46	41	28	39	35	23	33	30	19	29	26	25	25	23	21	22	30	19	30	27	17
10	B	0-7	Interior	91	91	91	91	91	91	91	91	91	91	91	91	91	91	88	91	91	84	91	91	70	91	87	56	91	74	48	88	59	42	83	51	36	62	45	32	55	40	28
			Exposed	91	91	88	91	91	83	91	91	64	91	88	57	91	84	52	91	71	47	89	61	43	83	52	37	61	44	31	53	38	27	46	34	24	41	30	32	36	26	28
		7-20	Interior	91	91	91	91	91	91	91	91	91	91	91	89	91	91	85	91	89	64	91	85	59	90	60	49	84	51	42	70	44	37	59	39	32	52	34	28	46	30	25
			Exposed	91	91	85	91	88	63	91	83	56	91	61	51	87	56	46	84	51	42	76	46	38	60	39	32	51	34	28	44	29	24	39	25	21	34	22	28	30	30	25
		20-27	Interior	100	100	100	100	100	100	100	100	100	100	100	100	100	100	96	100	97	91	100	93	87	100	85	58	96	62	47	90	54	39	85	47	33	75	41	28	63	37	25
			Exposed	100	100	96	100	96	90	100	91	85	100	86	60	100	81	52	95	61	46	91	56	41	85	47	33	72	40	28	60	35	24	52	31	21	46	27	18	41	24	25
		27-45	Interior	102	102	102	102	102	102	102	102	102	102	102	102	102	102	100	102	102	96	102	102	92	102	94	85	95	87	60	88	74	50	68	59	43	58	52	37	51	46	32
			Exposed	102	102	100	102	102	95	102	100	90	102	95	85	100	91	73	95	87	59	90	83	53	83	59	43	57	51	36	49	44	30	43	38	26	38	34	22	34	30	19
	C	0-7	Interior	91	91	91	91	91	86	91	91	79	91	91	62	91	87	56	91	83	51	91	67	47	86	56	39	66	48	34	57	41	29	49	36	25	43	32	22	39	28	30
			Exposed	91	87	56	91	82	50	91	63	45	86	57	40	83	52	37	65	47	33	59	43	30	50	36	26	43	31	22	37	27	29	32	24	25	28	31	22	25	28	20
		7-20	Interior	91	91	88	91	91	83	91	86	60	91	70	54	90	60	49	86	54	45	83	50	41	64	42	35	55	36	30	48	31	26	42	27	23	37	24	30	33	21	27
			Exposed	90	59	49	86	53	44	80	48	39	66	43	36	60	39	32	54	36	29	50	33	27	42	28	23	36	24	30	31	31	26	27	27	22	24	24	20	21	21	18
		20-27	Interior	100	100	100	100	100	93	100	94	88	100	90	83	100	85	58	99	68	51	94	60	45	88	51	37	82	43	30	64	38	26	56	33	23	49	29	20	44	26	18
			Exposed	100	85	57	98	64	49	92	58	43	89	52	38	85	47	33	81	43	30	69	39	27	57	33	23	49	28	19	42	25	26	37	22	22	32	29	20	29	26	18
		27-45	Interior	102	102	102	102	102	98	102	102	93	102	99	88	102	94	84	99	90	65	94	86	57	86	64	47	61	54	39	53	47	33	46	41	28	41	36	24	36	32	21
			Exposed	102	94	84	97	89	63	92	84	54	87	65	48	82	59	43	60	54	38	55	49	35	46	42	28	40	36	24	35	31	20	30	27	17	27	24	22	24	21	20
	D	0-7	Interior	91	91	84	91	91	64	91	91	57	91	84	52	91	68	47	89	60	43	85	55	39	64	47	33	55	40	28	47	35	24	41	30	21	36	27	29	32	24	25
			Exposed	91	68	47	88	59	42	84	53	37	66	48	34	59	43	31	54	39	28	50	36	26	42	30	22	36	26	28	31	23	24	27	30	21	24	26	19	21	23	17
		7-20	Interior	91	88	63	91	83	56	91	61	50	87	55	46	83	50	41	74	46	38	64	42	34	54	35	29	46	30	25	40	26	22	35	23	29	31	30	25	27	27	22
			Exposed	83	50	41	70	44	37	61	40	33	55	36	30	50	33	27	46	30	25	42	27	23	35	23	29	30	30	25	26	26	21	23	23	19	30	20	17	27	18	15
		20-27	Interior	101	97	90	101	91	85	101	86	59	100	75	52	95	60	46	91	55	41	87	50	36	79	43	29	62	36	25	54	32	22	47	28	19	41	24	25	37	22	22
			Exposed	95	60	45	90	54	39	86	48	34	82	44	30	69	39	27	61	36	25	56	33	23	48	28	19	41	24	25	35	31	21	31	27	19	27	24	17	24	21	15
		27-45	Interior	103	103	95	103	100	90	103	95	85	99	90	70	94	86	58	89	83	52	85	63	46	59	53	38	51	46	32	44	40	27	39	35	23	34	31	20	30	27	17
			Exposed	94	86	57	88	75	50	83	60	44	61	55	39	55	49	35	50	45	31	46	41	28	39	35	23	33	30	19	29	26	25	25	23	21	22	30	19	30	27	17
20	B	0-7	Interior	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	70	72	72	56	72	72	48	72	59	42	72	51	36	62	45	32	55	40	28
			Exposed	72	72	72	72	72	72	72	72	64	72	72	57	72	72	52	72	71	47	72	61	43	72	52	37	61	44	31	53	38	27	46	34	24	41	30	32	36	26	28
		7-20	Interior	73	73	73	73	73	73	73	73	73	73	73	73	73	73	73	73	73	64	73	73	59	73	60	49	73	51	42	70	44	37	59	39	32	52	34	28	46	30	25
			Exposed	73	73	73	73	73	63	73	73	56	73	61	51	73	56	46	73	51	42	73	46	38	60	39	32	51	34	28	44	29	24	39	25	21	34	22	28	30	30	25
		20-27	Interior	92	92	92	92	92	92	92	92	92	92	92	92	92	92	92	92	92	91	92	92	87	92	85	58	92	62	47	90	54	39	85	47	33	75	41	28	63	37	25
			Exposed	92	92	92	92	92	90	92	91	85	92	86	60	92	81	52	92	61	46	91	56	41	85	47	33	72	40	28	60	35	24	52	31	21	46	27	18	41	24	25
		27-45	Interior	96	96	96	96	96	96	96	96	96	96	96	96	96	96	96	96	96	96	96	96	92	96	94	85	95	87	60	88	74	50	68	59	43	58	52	37	51	46	32
			Exposed	96	96	96	96	96	95	96	96	90	96	95	85	96	91	73	95	87	59	90	83	53	83	59	43	57	51	36	49	44	30	43	38	26	38	34	22	34	30	19
	C	0-7	Interior	72	72	72	72	72	72	72	72	72	72	72	62	72	72	56	72	72	51	72	67	47	72	56	39	66	48	34	57	41	29	49	36	25	43	32	22	39	28	30
			Exposed	72	72	56	72	72	50	72	63	45	72	57	40	72	52	37	65	47	33	59	43	30	50	36	26	43	31	22	37	27	29	32	24	25	28	31	22	25	28	20
		7-20	Interior	73	73	73	73	73	73	73	73	60	73	70	54	73	60	49	73	54	45	73	50	41	64	42	35	55	36	30	48	31	26	42	27	23	37	24	30	33	21	27
			Exposed	73	59	49	73	53	44	73	48	39	66	43	36	60	39	32	54	36	29	50	33	27	42	28	23	36	24	30	31	31	26	27	27	22	24	24	20	21	21	18
		20-27	Interior	92	92	92	92	92	92	92	92	88	92	90	83	92	85	58	92	68	51	92	60	45	88	51	37	82	43	30	64	38	26	56	33	23	49	29	20	44	26	18
			Exposed	92	85	57	92	64	49	92	58	43	89	52	38	85	47	33	81	43	30	69	39	27	57	33	23	49	28	19	42	25	26	37	22	22	32	29	20	29	26	18
		27-45	Interior	96	96	96	96	96	96	96	96	93	96	96	88	96	94	84	96	90	65	94	86	57	86	64	47	61	54	39	53	47	33	46	41	28	41	36	24	36	32	21
			Exposed	96	94	84	96	89	63	92	84	54	87	65	48	82	59	43	60	54	38	55	49	35	46	42	28	40	36	24	35	31	20	30	27	17	27	24	22	24	21	20
	D	0-7	Interior	72	72	72	72	72	64	72	72	57	72	72	52	72	68	47	72	60	43	72	55	39	64	47	33	55	40	28	47	35	24	41	30	21	36	27	29	32	24	25
			Exposed	72	68	47	72	59	42	72	53	37	66	48	34	59	43	31	54	39	28	50	36	26	42	30	22	36	26	28	31	23	24	27	30	21	24	26	19	21	23	17
		7-20	Interior	73	73	63	73	73	56	73	61	50	73	55	46	73	50	41	73	46	38	64	42	34	54	35	29	46	30	25	40	26	22	35	23	29	31	30	25	27	27	22
			Exposed	73	50	41	70	44	37	61	40	33	55	36	30	50	33	27	46	30	25	42	27	23	35	23	29	30	30	25	26	26	21	23	23	19	30	20	17	27	18	15
		20-27	Interior	94	94	90	94	91	85	94	86	59	94	75	52	94	60	46	91	55	41	87	50	36	79	43	29	62	36	25	54	32	22	47	28	19	41	24	25	37	22	22
			Exposed	94	60	45	90	54	39	86	48	34	82	44	30	69	39	27	61	36	25	56	33	23	48	28	19	41	24	25	35	31	21	31	27	19	27	24	17	24	21	15
		27-45	Interior	97	97	95	97	97	90	97	95	85	97	90	70	94	86	58	89	83	52	85	63	46	59	53	38	51	46	32	44	40	27	39	35	23	34	31	20	30	27	17
			Exposed	94	86	57	88	75	50	83	60	44	61	55	39	55	49	35	50	45	31	46	41	28	39	35	23	33	30	19	29	26	25	25	23	21	22	30	19	30	27	17

* 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	Solarhooks ATI
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	70	70	70	70	70	70	70	70	70	70	70	70	70	70	70	70	70	70	70	70	70	70	70	56	70	70	48	70	59	42	70	51	36	62	45	32	55	40	28
			Exposed	70	70	70	70	70	70	70	70	64	70	70	57	70	70	52	70	70	47	70	61	43	70	52	37	61	44	31	53	38	27	46	34	24	41	30	32	36	26	28
		7-20	Interior	73	73	73	73	73	73	73	73	73	73	73	73	73	73	73	73	73	64	73	73	59	73	60	49	73	51	42	70	44	37	59	39	32	52	34	28	46	30	25
			Exposed	73	73	73	73	73	63	73	73	56	73	61	51	73	56	46	73	51	42	73	46	38	60	39	32	51	34	28	44	29	24	39	25	21	34	22	28	30	30	25
		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	85	58	86	62	47	86	54	39	85	47	33	75	41	28	63	37	25
			Exposed	86	86	86	86	86	86	86	86	85	86	86	60	86	81	52	86	61	46	86	56	41	85	47	33	72	40	28	60	35	24	52	31	21	46	27	18	41	24	25
		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	85	90	87	60	88	74	50	68	59	43	58	52	37	51	46	32
			Exposed	90	90	90	90	90	90	90	90	90	90	90	85	90	90	73	90	87	59	90	83	53	83	59	43	57	51	36	49	44	30	43	38	26	38	34	22	34	30	19
	C	0-7	Interior	70	70	70	70	70	70	70	70	70	70	70	62	70	70	56	70	70	51	70	67	47	70	56	39	66	48	34	57	41	29	49	36	25	43	32	22	39	28	30
			Exposed	70	70	56	70	70	50	70	63	45	70	57	40	70	52	37	65	47	33	59	43	30	50	36	26	43	31	22	37	27	29	32	24	25	28	31	22	25	28	20
		7-20	Interior	73	73	73	73	73	73	73	73	60	73	70	54	73	60	49	73	54	45	73	50	41	64	42	35	55	36	30	48	31	26	42	27	23	37	24	30	33	21	27
			Exposed	73	59	49	73	53	44	73	48	39	66	43	36	60	39	32	54	36	29	50	33	27	42	28	23	36	24	30	31	31	26	27	27	22	24	24	20	21	21	18
		20-27	Interior	86	86	86	86	86	86	86	86	86	86	86	83	86	85	58	86	68	51	86	60	45	86	51	37	82	43	30	64	38	26	56	33	23	49	29	20	44	26	18
			Exposed	86	85	57	86	64	49	86	58	43	86	52	38	85	47	33	81	43	30	69	39	27	57	33	23	49	28	19	42	25	26	37	22	22	32	29	20	29	26	18
		27-45	Interior	90	90	90	90	90	90	90	90	90	90	90	88	90	90	84	90	90	65	90	86	57	86	64	47	61	54	39	53	47	33	46	41	28	41	36	24	36	32	21
			Exposed	90	90	84	90	89	63	90	84	54	87	65	48	82	59	43	60	54	38	55	49	35	46	42	28	40	36	24	35	31	20	30	27	17	27	24	22	24	21	20
	D	0-7	Interior	72	72	72	72	72	64	72	72	57	72	72	52	72	68	47	72	60	43	72	55	39	64	47	33	55	40	28	47	35	24	41	30	21	36	27	29	32	24	25
			Exposed	72	68	47	72	59	42	72	53	37	66	48	34	59	43	31	54	39	28	50	36	26	42	30	22	36	26	28	31	23	24	27	30	21	24	26	19	21	23	17
		7-20	Interior	73	73	63	73	73	56	73	61	50	73	55	46	73	50	41	73	46	38	64	42	34	54	35	29	46	30	25	40	26	22	35	23	29	31	30	25	27	27	22
			Exposed	73	50	41	70	44	37	61	40	33	55	36	30	50	33	27	46	30	25	42	27	23	35	23	29	30	30	25	26	26	21	23	23	19	30	20	17	27	18	15
		20-27	Interior	88	88	88	88	88	85	88	86	59	88	75	52	88	60	46	88	55	41	87	50	36	79	43	29	62	36	25	54	32	22	47	28	19	41	24	25	37	22	22
			Exposed	88	60	45	88	54	39	86	48	34	82	44	30	69	39	27	61	36	25	56	33	23	48	28	19	41	24	25	35	31	21	31	27	19	27	24	17	24	21	15
		27-45	Interior	92	92	92	92	92	90	92	92	85	92	90	70	92	86	58	89	83	52	85	63	46	59	53	38	51	46	32	44	40	27	39	35	23	34	31	20	30	27	17
			Exposed	92	86	57	88	75	50	83	60	44	61	55	39	55	49	35	50	45	31	46	41	28	39	35	23	33	30	19	29	26	25	25	23	21	22	30	19	30	27	17
40	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	56	58	58	48	58	58	42	58	51	36	58	45	32	55	40	28
			Exposed	58	58	58	58	58	58	58	58	58	58	58	57	58	58	52	58	58	47	58	58	43	58	52	37	58	44	31	53	38	27	46	34	24	41	30	32	36	26	28
		7-20	Interior	62	62	62	62	62	62	62	62	62	62	62	62	62	62	62	62	62	62	62	62	59	62	60	49	62	51	42	62	44	37	59	39	32	52	34	28	46	30	25
			Exposed	62	62	62	62	62	62	62	62	56	62	61	51	62	56	46	62	51	42	62	46	38	60	39	32	51	34	28	44	29	24	39	25	21	34	22	28	30	30	25
		20-27	Interior	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	58	76	62	47	76	54	39	76	47	33	75	41	28	63	37	25
			Exposed	76	76	76	76	76	76	76	76	76	76	76	60	76	76	52	76	61	46	76	56	41	76	47	33	72	40	28	60	35	24	52	31	21	46	27	18	41	24	25
		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	85	86	86	60	83	74	50	68	59	43	58	52	37	51	46	32
			Exposed	86	86	86	86	86	86	86	86	86	86	86	85	86	86	73	86	86	59	86	83	53	83	59	43	57	51	36	49	44	30	43	38	26	38	34	22	34	30	19
	C	0-7	Interior	58	58	58	58	58	58	58	58	58	58	58	58	58	58	56	58	58	51	58	58	47	58	56	39	58	48	34	57	41	29	49	36	25	43	32	22	39	28	30
			Exposed	58	58	56	58	58	50	58	58	45	58	57	40	58	52	37	58	47	33	58	43	30	50	36	26	43	31	22	37	27	29	32	24	25	28	31	22	25	28	20
		7-20	Interior	62	62	62	62	62	62	62	62	60	62	62	54	62	60	49	62	54	45	62	50	41	62	42	35	55	36	30	48	31	26	42	27	23	37	24	30	33	21	27
			Exposed	62	59	49	62	53	44	62	48	39	62	43	36	60	39	32	54	36	29	50	33	27	42	28	23	36	24	30	31	31	26	27	27	22	24	24	20	21	21	18
		20-27	Interior	76	76	76	76	76	76	76	76	76	76	76	76	76	76	58	76	68	51	76	60	45	76	51	37	76	43	30	64	38	26	56	33	23	49	29	20	44	26	18
			Exposed	76	76	57	76	64	49	76	58	43	76	52	38	76	47	33	76	43	30	69	39	27	57	33	23	49	28	19	42	25	26	37	22	22	32	29	20	29	26	18
		27-45	Interior	86	86	86	86	86	86	86	86	86	86	86	86	86	86	84	86	86	65	85	85	57	80	64	47	61	54	39	53	47	33	46	41	28	41	36	24	36	32	21
			Exposed	86	86	84	86	86	63	86	84	54	86	65	48	82	59	43	60	54	38	55	49	35	46	42	28	40	36	24	35	31	20	30	27	17	27	24	22	24	21	20
	D	0-7	Interior	63	63	63	63	63	63	63	63	57	63	63	52	63	63	47	63	60	43	63	55	39	63	47	33	55	40	28	47	35	24	41	30	21	36	27	29	32	24	25
			Exposed	63	63	47	63	59	42	63	53	37	63	48	34	59	43	31	54	39	28	50	36	26	42	30	22	36	26	28	31	23	24	27	30	21	24	26	19	21	23	17
		7-20	Interior	66	66	63	66	66	56	66	61	50	66	55	46	66	50	41	66	46	38	64	42	34	54	35	29	46	30	25	40	26	22	35	23	29	31	30	25	27	27	22
			Exposed	66	50	41	66	44	37	61	40	33	55	36	30	50	33	27	46	30	25	42	27	23	35	23	29	30	30	25	26	26	21	23	23	19	30	20	17	27	18	15
		20-27	Interior	80	80	80	80	80	80	80	80	59	80	75	52	80	60	46	80	55	41	80	50	36	79	43	29	62	36	25	54	32	22	47	28	19	41	24	25	37	22	22
			Exposed	80	60	45	80	54	39	80	48	34	80	44	30	69	39	27	61	36	25	56	33	23	48	28	19	41	24	25	35	31	21	31	27	19	27	24	17	24	21	15
		27-45	Interior	88	88	88	88	88	88	88	88	85	88	88	70	88	86	58	87	83	52	85	63	46	59	53	38	51	46	32	44	40	27	39	35	23	34	31	20	30	27	17
			Exposed	88	86	57	88	75	50	83	60	44	61	55	39	55	49	35	50	45	31	46	41	28	39	35	23	33	30	19	29	26	25	25	23	21	22	30	19	30	27	17
50	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	42	48	48	36	48	45	32	48	40	28	48	40	28	48	40	28
			Exposed	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	47	48	48	43	48	48	37	48	44	31	48	38	27	46	34	24	41	30	32	36	26	28
		7-20	Interior	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	49	52	52	42	52	52	42	52	44	37	52	39	32	51	34	28	46	30	25
			Exposed	52	52	52	52	52	52	52	52	52	52	52	51	52	52	46	52	51	42	52	46	38	52	39	32	51	34	28	44	29	24	39	25	21	34	22	28	30	30	25
		20-27	Interior	66	66	66	66	66	66	66	66	66	66	66	66	66	66	66	66	66	66	66	66	66	66	66	56	66	66	47	66	54	39	66	47	33	64	41	28	62	37	25
			Exposed	66	66	66	66	66	66	66	66	66	66	66	60	66	66	52	66	61	46	66	56	41	66	47	33	66	40	28	60	35	24	52	31	21	46	27	18	41	24	25
		27-45	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	75	75	60	70	70	50	65	59	43	58	52	37	51	46	32
			Exposed	77	77	77	77	77	77	77	77	77	77	77	77	77	77	73	77	77	59	77	77	53	77	59	43	57	51	36	49	44	30	43	38	26	38	34	22	34	30	19
	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	39	48	48	34	48	41	29	48	36	25	43	32	22	39	28	30
			Exposed	48	48	48	48	48	48	48	48	45	48	48	40	48	48	37	48	47	33	48	43	30	48	36	26	43	31	22	37	27	29	32	24	25	28	31	22	25	28	20
		7-20	Interior	52	52	52	52	52	52	52	52	52	52	52	52	52	52	49	52	52	45	52	50	41	52	42	35	52	36	30	48	31	26	42	27	23	37	24	30	33	21	27
			Exposed	52	52	49	52	52	44	52	48	39	52	43	36	52	39	32	52	36	29	50	33	27	42	28	23	36	24	30	31	31	26	27	27	22	24	24	20	21	21	18
		20-27	Interior	66	66	66	66	66	66	66	66	66	66	66	66	66	66	58	66	66	51	66	60	45	66	51	37	65	43	30	63	38	26	56	33	23	49	29	20	44	26	18
			Exposed	66	66	57	66	64	49	66	58	43	66	52	38	66	47	33	66	43	30	66	39	27	57	33	23	49	28	19	42	25	26	37	22	22	32	29	20	29	26	18
		27-45	Interior	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	76	76	65	74	74	57	68	64	47	61	54	39	53	47	33	46	41	28	41	36	24	36	32	21
			Exposed	77	77	77	77	77	63	77	77	54	77	65	48	77	59	43	60	54	38	55	49	35	46	42	28	40	36	24	35	31	20	30	27	17	27	24	22	24	21	20
	D	0-7	Interior	53	53	53	53	53	53	53	53	53	53	53	47	53	53	43	53	53	39	53	47	33	53	40	28	47	35	24	41	30	21	36	27	29	32	24	25	32	24	25
			Exposed	53	53	47	53	53	42	53	53	37	53	48	34	53	43	31	53	39	28	50	36	26	42	30	22	36	26	28	31	23	24	27	30	21	24	26	19	21	23	17
		7-20	Interior	57	57	57	57	57	56	57	57	50	57	55	46	57	50	41	57	46	38	57	42	34	54	35	29	46	30	25	40	26	22	35	23	29	31	30	25	27	27	22
			Exposed	57	50	41	57	44	37	57	40	33	55	36	30	50	33	27	46	30	25	42	27	23	35	23	29	30	30	25	26	26	21	23	23	19	30	20	17	27	18	15
		20-27	Interior	70	70	70	70	70	70	70	70	59	70	70	52	70	60	46	70	55	41	70	50	36	70	43	29	62	36	25	54	32	22	47	28	19	41	24	25	37	22	22
			Exposed	70	60	45	70	54	39	70	48	34	70	44	30	69	39	27	61	36	25	56	33	23	48	28	19	41	24	25	35	31	21	31	27	19	27	24	17	24	21	15
		27-45	Interior	82	82	82	82	82	82	82	82	82	82	82	70	80	80	58	77	77	52	73	63	46	59	53	38	51	46	32	44	40	27	39	35	23	34	31	20	30	27	17
			Exposed	82	82	57	82	75	50	82	60	44	61	55	39	55	49	35	50	45	31	46	41	28	39	35	23	33	30	19	29	26	25	25	23	21	22	30	19	30	27	17

* 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	Solarhooks ATI
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	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	32	40	40	28		
			Exposed	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	31	40	38	27	40	34	24	40	30	32	36	26	28
		7-20	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	42	44	44	37	44	39	32	44	34	28	44	30	25
			Exposed	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	42	44	44	38	44	39	32	44	34	28	44	29	24	39	25	21	34	22	28	30	30	25
		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	47	58	54	39	58	47	33	57	41	28	55	37	25
			Exposed	58	58	58	58	58	58	58	58	58	58	58	58	58	58	52	58	58	46	58	56	41	58	47	33	58	40	28	58	35	24	52	31	21	46	27	18	41	24	25
		27-45	Interior	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	68	68	68	65	65	60	62	62	50	59	59	43	56	52	37	51	46	32
			Exposed	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	59	69	69	53	68	59	43	57	51	36	49	44	30	43	38	26	38	34	22	34	30	19
	C	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	39	40	40	34	40	40	29	40	36	25	40	32	22	39	28	30
			Exposed	40	40	40	40	40	40	40	40	40	40	40	40	40	40	37	40	40	33	40	40	30	40	36	26	40	31	22	37	27	29	32	24	25	28	31	22	25	28	20
		7-20	Interior	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	41	44	42	35	44	36	30	44	31	26	42	27	23	37	24	30	33	21	27
			Exposed	44	44	44	44	44	44	44	44	39	44	43	36	44	39	32	44	36	29	44	33	27	42	28	23	36	24	30	31	31	26	27	27	22	24	24	20	21	21	18
		20-27	Interior	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	51	58	58	45	58	51	37	57	43	30	55	38	26	53	33	23	49	29	20	44	26	18
			Exposed	58	58	57	58	58	49	58	58	43	58	52	38	58	47	33	58	43	30	58	39	27	57	33	23	49	28	19	42	25	26	37	22	22	32	29	20	29	26	18
		27-45	Interior	69	69	69	69	69	69	69	69	69	69	69	69	68	68	68	66	66	65	64	64	57	61	61	47	57	54	39	53	47	33	46	41	28	41	36	24	36	32	21
			Exposed	69	69	69	69	69	63	69	69	54	69	65	48	68	59	43	60	54	38	55	49	35	46	42	28	40	36	24	35	31	20	30	27	17	27	24	22	24	21	20
	D	0-7	Interior	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	43	44	44	39	44	44	33	44	40	28	44	35	24	41	30	21	36	27	29	32	24	25
			Exposed	44	44	44	44	44	42	44	44	37	44	44	34	44	43	31	44	39	28	44	36	26	42	30	22	36	26	28	31	23	24	27	30	21	24	26	19	21	23	17
		7-20	Interior	48	48	48	48	48	48	48	48	48	48	48	46	48	48	41	48	46	38	48	42	34	48	35	29	46	30	25	40	26	22	35	23	29	31	30	25	27	27	22
			Exposed	48	48	41	48	44	37	48	40	33	48	36	30	48	33	27	46	30	25	42	27	23	35	23	29	30	30	25	26	26	21	23	23	19	30	20	17	27	18	15
		20-27	Interior	63	63	63	63	63	63	63	63	59	63	63	52	63	60	46	63	55	41	63	50	36	61	43	29	59	36	25	54	32	22	47	28	19	41	24	25	37	22	22
			Exposed	63	60	45	63	54	39	63	48	34	63	44	30	63	39	27	61	36	25	56	33	23	48	28	19	41	24	25	35	31	21	31	27	19	27	24	17	24	21	15
		27-45	Interior	74	74	74	74	74	74	74	74	74	72	72	70	69	69	58	67	67	52	64	63	46	59	53	38	51	46	32	44	40	27	39	35	23	34	31	20	30	27	17
			Exposed	74	74	57	74	74	50	74	60	44	61	55	39	55	49	35	50	45	31	46	41	28	39	35	23	33	30	19	29	26	25	25	23	21	22	30	19	30	27	17
70	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	32	35	35	28
			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	31	35	35	27	35	34	24	35	30	32	35	26	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	37	38	38	32	38	34	28	38	30	25
			Exposed	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	32	38	34	28	38	29	24	38	25	21	34	22	28	30	30	25
		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	51	51	39	51	47	33	51	41	28	49	37	25
			Exposed	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	46	51	51	41	51	47	33	51	40	28	51	35	24	51	31	21	46	27	18	41	24	25
		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	61	61	61	59	59	59	56	56	50	54	54	43	52	52	37	49	46	32
			Exposed	62	62	62	62	62	62	62	62	62	62	62	62	62	62	62	62	62	59	62	62	53	61	59	43	57	51	36	49	44	30	43	38	26	38	34	22	34	30	19
	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	34	35	35	29	35	35	25	35	32	22	35	28	30
			Exposed	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	33	35	35	30	35	35	26	35	31	22	35	27	29	32	24	25	28	31	22	25	28	20
		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	35	38	36	30	38	31	26	38	27	23	37	24	30	33	21	27
			Exposed	38	38	38	38	38	38	38	38	38	38	38	36	38	38	32	38	36	29	38	33	27	38	28	23	36	24	30	31	31	26	27	27	22	24	24	20	21	21	18
		20-27	Interior	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	45	51	51	37	51	43	30	50	38	26	48	33	23	46	29	20	44	26	18
			Exposed	51	51	51	51	51	49	51	51	43	51	51	38	51	47	33	51	43	30	51	39	27	51	33	23	49	28	19	42	25	26	37	22	22	32	29	20	29	26	18
		27-45	Interior	62	62	62	62	62	62	62	62	62	62	62	62	61	61	61	60	60	60	58	58	57	55	55	47	53	53	39	50	47	33	46	41	28	41	36	24	36	32	21
			Exposed	62	62	62	62	62	62	62	62	54	62	62	48	61	59	43	60	54	38	55	49	35	46	42	28	40	36	24	35	31	20	30	27	17	27	24	22	24	21	20
	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	33	38	38	28	38	35	24	38	30	21	36	27	29	32	24	25
			Exposed	38	38	38	38	38	38	38	38	37	38	38	34	38	38	31	38	38	28	38	36	26	38	30	22	36	26	28	31	23	24	27	30	21	24	26	19	21	23	17
		7-20	Interior	42	42	42	42	42	42	42	42	42	42	42	42	42	42	41	42	42	38	42	42	34	42	35	29	42	30	25	40	26	22	35	23	29	31	30	25	27	27	22
			Exposed	42	42	41	42	42	37	42	40	33	42	36	30	42	33	27	42	30	25	42	27	23	35	23	29	30	30	25	26	26	21	23	23	19	30	20	17	27	18	15
		20-27	Interior	56	56	56	56	56	56	56	56	56	56	56	52	56	56	46	56	55	41	56	50	36	55	43	29	53	36	25	51	32	22	47	28	19	41	24	25	37	22	22
			Exposed	56	56	45	56	54	39	56	48	34	56	44	30	56	39	27	56	36	25	56	33	23	48	28	19	41	24	25	35	31	21	31	27	19	27	24	17	24	21	15
		27-45	Interior	67	67	67	67	67	67	66	66	66	64	64	64	62	62	58	61	61	52	59	59	46	55	53	38	51	46	32	44	40	27	39	35	23	34	31	20	30	27	17
			Exposed	67	67	57	67	67	50	66	60	44	61	55	39	55	49	35	50	45	31	46	41	28	39	35	23	33	30	19	29	26	25	25	23	21	22	30	19	30	27	17
80	B	0-7	Interior	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	28
			Exposed	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	27	30	30	24	30	30	32	30	26	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	32	33	33	28	33	30	25
			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	28	33	29	24	33	25	21	33	22	28	30	30	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	39	45	45	33	45	41	28	45	37	25
			Exposed	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	41	45	45	33	45	40	28	45	35	24	45	31	21	45	27	18	41	24	25
		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	54	54	54	52	52	50	50	50	43	48	48	37	46	46	32
			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	54	51	36	49	44	30	43	38	26	38	34	22	34	30	19
	C	0-7	Interior	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30
			Exposed	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	29	30	30	25	30	30	28	30	30	20
		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	31	26	33	27
			Exposed	33	33	33	33	33	33	33	33	33	33	33	33	33	33	32	33	33	29	33	33	27	33	28	23	33	24	30	31	31	26	27	27	22	24	24	20	21	21	18
		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	37	45	43	30	45	38	26	43	33	23	42	29	20	41	26	18
			Exposed	45	45	45	45	45	45	45	45	43	45	45	38	45	45	33	45	43	30	45	39	27	45	33	23	45	28	19	42	25	26	37	22	22	32	29	20	29	26	18
		27-45	Interior	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	55	55	55	53	53	53	51	51	47	49	49	39	46	46	33	44	41	28	41	36	24	36	32	21
			Exposed	56	56	56	56	56	56	56	56	54	56	56	48	56	56	43	55	54	38	53	49	35	46	42	28	40	36	24	35	31	20	30	27	17	27	24	22	24	21	20
	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	28	34	34	28	34	34	24	34	30	21	34	27	29	32	24	25
			Exposed	34	34	34	34	34	34	34	34	34	34	34	34	34	34	31	34	34	28	34	34	26	34	30	22	34	26	28	31	23	24	27	30	21	24	26	19	21	23	17
		7-20	Interior	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	34	37	35	29	37	30	25	37	26	22	35	23	29	31	30	25	27	27	22
			Exposed	37	37	37	37	37	37	37	37	33	37	36	30	37	33	27	37	30	25	37	27	23	35	23	29	30	30	25	26	26	21	23	23	19	30	20	17	27	18	15
		20-27	Interior	49	49	49	49	49	49	49	49	49	49	49	49	49	49	46	49	49	41	49	49	36	49	43	29	48	36	25	46	32	22	44	28	19	41	24	25	37	22	22
			Exposed	49	49	45	49	49	39	49	48	34	49	44	30	49	39	27	49	36	25	49	33	23	48	28	19	41	24	25	35	31	21	31	27	19	27	24	17	24	21	15
		27-45	Interior	61	61	61	61	61	61	60	60	60	59	59	59	57	57	57	56	56	52	54	54	46	51	51	38	49	46	32	44	40	27	39	35	23	34	31	20	30	27	17
			Exposed	61	61	57	61	61	50	60	60	44	59	55	39	55	49	35	50	45	31	46	41	28	39	35	23	33	30	19	29	26	25	25	23	21	22	30	19	30	27	17

* 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	Solarhooks ATI
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	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27
			Exposed	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	24	27	27	32	27	26	28		
		7-20	Interior	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	28	30	30	25		
			Exposed	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	28	30	29	24	30	25	21	30	22	28	30	30	25
		20-27	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	39	40	40	33	40	40	28	40	37	25
			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	33	40	40	28	40	35	24	40	31	21	40	27	18
		27-45	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	50	50	50	48	48	48	46	46	43	45	45	37	43	43	32
			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	50	50	50	48	44	30	43	38	26	38	34	22	34	30	19
	C	0-7	Interior	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	25	27	27	22	27	27	30
			Exposed	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	29	27	24	25	27	31	22	25	28	20
		7-20	Interior	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	26	30	27	23	30	24	30	30	21	27
			Exposed	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	29	30	30	27	30	28	23	30	24	30	30	31	26	27	27	22	24	24	20	21	21	18
		20-27	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	30	40	38	26	40	33	23	39	29	20	37	26	18
			Exposed	40	40	40	40	40	40	40	40	40	38	40	40	33	40	40	30	40	39	27	40	33	23	40	28	19	40	25	26	37	22	22	32	29	20	29	26	18		
		27-45	Interior	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	50	50	50	49	49	49	47	47	47	45	45	39	43	43	33	41	41	28	39	36	24	36	32	21
			Exposed	51	51	51	51	51	51	51	51	51	48	51	51	43	50	50	38	49	49	35	46	42	28	40	36	24	35	31	20	30	27	17	27	24	22	24	21	20		
	D	0-7	Interior	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	24	30	30	21	30	27	29	30	24	25
			Exposed	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	28	30	30	26	30	30	22	30	26	28	30	23	24	27	30	21	24	26	19	21	23	17		
		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	29	33	30	25	33	26	22	33	23	29	31	30	25	27	27	22
			Exposed	33	33	33	33	33	33	33	33	33	30	33	33	27	33	30	25	33	27	23	33	23	29	30	30	25	26	26	21	23	23	19	30	20	17	27	18	15		
		20-27	Interior	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	41	44	44	36	44	43	29	44	36	25	43	32	22	41	28	19	39	24	25	37	22	22		
			Exposed	44	44	44	44	44	39	44	44	34	44	44	30	44	39	27	44	36	25	44	33	23	44	28	19	41	24	25	35	31	21	31	27	19	27	24	17	24	21	15
		27-45	Interior	56	56	56	56	56	56	56	56	56	54	54	54	53	53	53	52	52	52	51	51	46	48	48	38	45	45	32	43	40	27	39	35	23	34	31	20	30	27	17
			Exposed	56	56	56	56	56	50	56	56	44	54	54	39	53	49	35	50	45	31	46	41	28	39	35	23	33	30	19	29	26	25	25	23	21	22	30	19	30	27	17
100	B	0-7	Interior	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25
			Exposed	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	24	25	25	32	25	25	28		
		7-20	Interior	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	25
			Exposed	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	24	27	25	21	27	22	28	27	30	25
		20-27	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	33	36	36	28	36	36	25
			Exposed	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	28	36	35	24	36	31	21	36	27	18	36	24	25
		27-45	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	45	45	45	43	43	43	42	42	37	40	40	32
			Exposed	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	43	46	46	36	45	44	30	43	38	26	38	34	22	34	30	19
	C	0-7	Interior	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	22	25	25	30
			Exposed	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	22	25	25	29	25	24	25	25	31	22	25	28	20
		7-20	Interior	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	26	27	27	23	27	24	30	27	21	27
			Exposed	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	23	27	24	30	27	31	26	27	27	22	24	24	20	21	21	18
		20-27	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	30	36	36	26	36	33	23	36	29	20	35	26	18
			Exposed	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	28	19	36	25	26	36	22	22	32	29	20	29	26	18
		27-45	Interior	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	44	44	44	42	42	39	40	40	33	39	39	28	37	36	24	35	32	21
			Exposed	46	46	46	46	46	46	46	46	46	46	46	46	46	46	43	46	46	38	46	46	35	44	42	28	40	36	24	35	31	20	30	27	17	27	24	22	24	21	20
	D	0-7	Interior	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	24	27	27	21	27	27	29	27	24	25
			Exposed	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	26	27	27	22	27	26	28	27	23	24	27	30	21	24	26	19	21	23	17
		7-20	Interior	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	29	30	30	25	30	26	22	30	23	29	29	30	25	27	27	22
			Exposed	30	30	30	30	30	30	30	30	30	30	30	30	30	30	27	30	30	25	30	27	23	30	30	23	29	30	30	25	26	26	21	23	23	19	30	20	17	27	18	15
		20-27	Interior	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	29	40	36	25	39	32	22	38	28	19	37	24	25	35	22	22
			Exposed	40	40	40	40	40	39	40	40	34	40	40	30	40	39	27	40	36	25	40	33	23	40	28	19	40	24	25	35	31	21	31	27	19	27	24	17	24	21	15
		27-45	Interior	51	51	51	51	51	51	51	51	51	51	51	51	49	49	49	48	48	48	47	47	46	45	45	38	43	43	32	41	40	27	39	35	23	34	31	20	30	27	17
			Exposed	51	51	51	51	51	50	51	51	44	51	51	39	49	49	35	48	45	31	46	41	28	39	35	23	33	30	19	29	26	25	25	23	21	22	30	19	30	27	17

* 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	Solarhooks ATI
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	74	74	74	74	74	73	74	74	60	74	74	50	74	74	43	74	63	37	74	54	33	70	42	28	54	34	24	43	29	21	35	25	18	31	22	16	27	20	14
			Exposed	74	73	42	74	60	35	74	51	32	73	43	28	62	37	26	53	33	23	46	30	21	35	26	18	30	22	15	26	19	13	23	17	18	20	15	16	18	13	14
		7-20	Interior	74	74	74	74	74	63	74	74	51	74	60	41	74	49	35	71	41	32	62	35	29	49	30	25	40	25	21	34	22	18	29	19	16	26	17	14	23	15	12
			Exposed	74	49	35	68	39	31	59	34	28	51	30	25	45	28	23	40	25	21	35	23	19	30	19	16	25	17	14	22	14	18	19	12	16	17	17	14	15	15	~~12~~
		20-27	Interior	75	75	75	75	75	75	75	75	75	75	75	65	75	71	52	75	58	43	75	49	36	75	36	29	60	31	23	49	27	19	41	23	16	35	20	14	31	18	12
			Exposed	75	70	52	75	56	41	75	45	34	75	38	30	67	33	26	59	30	23	52	28	20	42	23	17	34	20	14	30	17	12	26	15	10	23	13	14	20	18	12
		27-45	Interior	76	76	76	76	76	76	76	76	76	76	76	76	76	76	66	76	76	56	76	72	48	73	53	36	52	41	30	39	33	25	32	29	21	29	26	18	25	23	16
			Exposed	76	76	66	76	76	53	76	66	44	76	55	37	61	47	33	50	40	29	42	35	26	33	29	21	28	25	18	24	22	15	21	19	13	19	17	11	17	15	14
	C	0-7	Interior	74	74	48	74	68	39	74	57	34	74	48	31	70	42	28	59	36	25	51	33	23	40	28	19	33	24	17	28	20	14	24	18	13	22	16	17	19	14	15
			Exposed	69	41	28	57	35	25	48	31	22	41	28	20	35	26	18	32	23	16	29	21	15	25	18	13	21	15	16	18	13	14	16	18	~~12~~	14	15	~~11~~	12	14	~~10~~
		7-20	Interior	74	56	39	74	45	33	65	37	30	56	33	27	49	30	24	43	27	22	39	25	20	32	21	17	27	18	15	24	15	13	21	13	17	18	18	15	16	16	13
			Exposed	49	29	24	42	26	22	37	24	19	33	21	18	30	19	16	27	18	14	25	16	13	21	14	17	18	18	15	15	15	~~13~~	13	13	~~11~~	18	~~12~~	~~10~~	16	~~10~~	9
		20-27	Interior	75	75	61	75	64	47	75	52	38	75	43	33	75	36	29	65	33	25	57	30	22	46	25	18	37	22	15	32	19	13	28	16	11	24	14	15	22	13	13
			Exposed	74	36	28	63	32	24	54	29	21	47	26	19	42	23	16	37	21	15	33	19	13	28	16	11	24	14	15	21	18	13	18	16	~~11~~	16	14	~~10~~	14	~~13~~	9
		27-45	Interior	76	76	76	76	76	61	76	76	50	76	63	42	72	53	36	58	45	32	48	39	28	35	32	23	30	27	19	26	23	16	23	20	14	20	18	12	18	16	10
			Exposed	72	52	35	55	43	31	45	36	27	37	32	24	33	29	21	30	27	19	27	24	17	23	21	14	20	18	12	17	15	15	15	13	13	13	18	11	18	16	~~10~~
	D	0-7	Interior	74	61	36	74	51	32	73	43	28	61	37	26	52	33	23	45	30	21	39	27	19	32	23	16	27	20	14	23	17	18	20	15	16	18	13	14	16	18	~~12~~
			Exposed	52	33	23	43	29	21	37	26	18	33	24	17	30	21	15	27	19	14	25	18	13	21	15	16	18	13	14	15	17	~~12~~	13	15	~~10~~	18	13	9	16	~~11~~	~~8~~
		7-20	Interior	69	40	31	59	34	28	51	30	25	44	27	23	39	25	20	35	23	19	32	21	17	27	17	14	23	15	12	20	13	16	17	17	14	15	15	~~12~~	13	13	~~11~~
			Exposed	39	25	20	34	22	18	30	20	16	27	18	15	25	16	13	23	15	18	21	13	17	17	17	14	15	15	~~12~~	13	~~13~~	~~11~~	17	~~11~~	9	15	~~10~~	~~8~~	13	9	~~7~~
		20-27	Interior	75	56	42	75	46	34	75	38	29	66	33	26	58	30	23	51	27	20	45	25	18	36	21	14	31	18	12	27	16	11	23	14	14	20	18	12	18	16	~~11~~
			Exposed	58	30	22	49	27	19	43	24	17	37	22	15	34	20	13	31	18	12	28	16	11	24	14	14	20	18	12	17	15	~~11~~	15	13	9	13	~~12~~	8	18	~~11~~	~~7~~
		27-45	Interior	76	76	54	76	67	44	76	55	37	60	46	32	49	39	29	41	34	26	35	31	23	30	26	19	25	23	16	22	20	13	19	17	11	17	15	15	15	13	13
			Exposed	49	39	29	39	33	25	33	30	22	30	27	19	27	25	17	25	22	15	23	20	14	19	17	11	17	15	14	14	13	12	12	17	~~10~~	17	15	9	15	13	~~8~~
10	B	0-7	Interior	52	52	52	52	52	52	52	52	52	52	52	50	52	52	43	52	52	37	52	52	33	52	42	28	52	34	24	43	29	21	35	25	18	31	22	16	27	20	14
			Exposed	52	52	42	52	52	35	52	51	32	52	43	28	52	37	26	52	33	23	46	30	21	35	26	18	30	22	15	26	19	13	23	17	18	20	15	16	18	13	14
		7-20	Interior	52	52	52	52	52	52	52	52	51	52	52	41	52	49	35	52	41	32	52	35	29	49	30	25	40	25	21	34	22	18	29	19	16	26	17	14	23	15	12
			Exposed	52	49	35	52	39	31	52	34	28	51	30	25	45	28	23	40	25	21	35	23	19	30	19	16	25	17	14	22	14	18	19	12	16	17	17	14	15	15	~~12~~
		20-27	Interior	69	69	69	69	69	69	69	69	69	69	69	65	69	69	52	69	58	43	69	49	36	69	36	29	60	31	23	49	27	19	41	23	16	35	20	14	31	18	12
			Exposed	69	69	52	69	56	41	69	45	34	69	38	30	67	33	26	59	30	23	52	28	20	42	23	17	34	20	14	30	17	12	26	15	10	23	13	14	20	18	12
		27-45	Interior	74	74	74	74	74	74	74	74	74	74	74	74	74	74	66	74	74	56	74	72	48	73	53	36	52	41	30	39	33	25	32	29	21	29	26	18	25	23	16
			Exposed	74	74	66	74	74	53	74	66	44	74	55	37	61	47	33	50	40	29	42	35	26	33	29	21	28	25	18	24	22	15	21	19	13	19	17	11	17	15	14
	C	0-7	Interior	52	52	48	52	52	39	52	52	34	52	48	31	52	42	28	52	36	25	51	33	23	40	28	19	33	24	17	28	20	14	24	18	13	22	16	17	19	14	15
			Exposed	52	41	28	52	35	25	48	31	22	41	28	20	35	26	18	32	23	16	29	21	15	25	18	13	21	15	16	18	13	14	16	18	~~12~~	14	15	~~11~~	12	14	~~10~~
		7-20	Interior	52	52	39	52	45	33	52	37	30	52	33	27	49	30	24	43	27	22	39	25	20	32	21	17	27	18	15	24	15	13	21	13	17	18	18	15	16	16	13
			Exposed	49	29	24	42	26	22	37	24	19	33	21	18	30	19	16	27	18	14	25	16	13	21	14	17	18	18	15	15	15	~~13~~	13	13	~~11~~	18	~~12~~	~~10~~	16	~~10~~	9
		20-27	Interior	69	69	61	69	64	47	69	52	38	69	43	33	69	36	29	65	33	25	57	30	22	46	25	18	37	22	15	32	19	13	28	16	11	24	14	15	22	13	13
			Exposed	69	36	28	63	32	24	54	29	21	47	26	19	42	23	16	37	21	15	33	19	13	28	16	11	24	14	15	21	18	13	18	16	~~11~~	16	14	~~10~~	14	~~13~~	9
		27-45	Interior	74	74	74	74	74	61	74	74	50	74	63	42	72	53	36	58	45	32	48	39	28	35	32	23	30	27	19	26	23	16	23	20	14	20	18	12	18	16	10
			Exposed	72	52	35	55	43	31	45	36	27	37	32	24	33	29	21	30	27	19	27	24	17	23	21	14	20	18	12	17	15	15	15	13	13	13	18	11	18	16	~~10~~
	D	0-7	Interior	52	52	36	52	51	32	52	43	28	52	37	26	52	33	23	45	30	21	39	27	19	32	23	16	27	20	14	23	17	18	20	15	16	18	13	14	16	18	~~12~~
			Exposed	52	33	23	43	29	21	37	26	18	33	24	17	30	21	15	27	19	14	25	18	13	21	15	16	18	13	14	15	17	~~12~~	13	15	~~10~~	18	13	9	16	~~11~~	~~8~~
		7-20	Interior	52	40	31	52	34	28	51	30	25	44	27	23	39	25	20	35	23	19	32	21	17	27	17	14	23	15	12	20	13	16	17	17	14	15	15	~~12~~	13	13	~~11~~
			Exposed	39	25	20	34	22	18	30	20	16	27	18	15	25	16	13	23	15	18	21	13	17	17	17	14	15	15	~~12~~	13	~~13~~	~~11~~	17	~~11~~	9	15	~~10~~	~~8~~	13	9	~~7~~
		20-27	Interior	70	56	42	70	46	34	70	38	29	66	33	26	58	30	23	51	27	20	45	25	18	36	21	14	31	18	12	27	16	11	23	14	14	20	18	12	18	16	~~11~~
			Exposed	58	30	22	49	27	19	43	24	17	37	22	15	34	20	13	31	18	12	28	16	11	24	14	14	20	18	12	17	15	~~11~~	15	13	9	13	~~12~~	8	18	~~11~~	~~7~~
		27-45	Interior	75	75	54	75	67	44	75	55	37	60	46	32	49	39	29	41	34	26	35	31	23	30	26	19	25	23	16	22	20	13	19	17	11	17	15	15	15	13	13
			Exposed	49	39	29	39	33	25	33	30	22	30	27	19	27	25	17	25	22	15	23	20	14	19	17	11	17	15	14	14	13	12	12	17	~~10~~	17	15	9	15	13	~~8~~
20	B	0-7	Interior	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	33	36	36	28	36	34	24	36	29	21	35	25	18	31	22	16	27	20	14
			Exposed	36	36	36	36	36	35	36	36	32	36	36	28	36	36	26	36	33	23	36	30	21	35	26	18	30	22	15	26	19	13	23	17	18	20	15	16	18	13	14
		7-20	Interior	37	37	37	37	37	37	37	37	37	37	37	37	37	37	35	37	37	32	37	35	29	37	30	25	37	25	21	34	22	18	29	19	16	26	17	14	23	15	12
			Exposed	37	37	35	37	37	31	37	34	28	37	30	25	37	28	23	37	25	21	35	23	19	30	19	16	25	17	14	22	14	18	19	12	16	17	17	14	15	15	~~12~~
		20-27	Interior	54	54	54	54	54	54	54	54	54	54	54	54	54	54	52	54	54	43	54	49	36	54	36	29	54	31	23	49	27	19	41	23	16	35	20	14	31	18	12
			Exposed	54	54	52	54	54	41	54	45	34	54	38	30	54	33	26	54	30	23	52	28	20	42	23	17	34	20	14	30	17	12	26	15	10	23	13	14	20	18	12
		27-45	Interior	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	56	60	60	48	60	53	36	52	41	30	39	33	25	32	29	21	29	26	18	25	23	16
			Exposed	60	60	60	60	60	53	60	60	44	60	55	37	60	47	33	50	40	29	42	35	26	33	29	21	28	25	18	24	22	15	21	19	13	19	17	11	17	15	14
	C	0-7	Interior	36	36	36	36	36	36	36	36	34	36	36	31	36	36	28	36	36	25	36	33	23	36	28	19	33	24	17	28	20	14	24	18	13	22	16	17	19	14	15
			Exposed	36	36	28	36	35	25	36	31	22	36	28	20	35	26	18	32	23	16	29	21	15	25	18	13	21	15	16	18	13	14	16	18	~~12~~	14	15	~~11~~	12	14	~~10~~
		7-20	Interior	37	37	37	37	37	33	37	37	30	37	33	27	37	30	24	37	27	22	37	25	20	32	21	17	27	18	15	24	15	13	21	13	17	18	18	15	16	16	13
			Exposed	37	29	24	37	26	22	37	24	19	33	21	18	30	19	16	27	18	14	25	16	13	21	14	17	18	18	15	15	15	~~13~~	13	13	~~11~~	18	~~12~~	~~10~~	16	~~10~~	9
		20-27	Interior	54	54	54	54	54	47	54	52	38	54	43	33	54	36	29	54	33	25	54	30	22	46	25	18	37	22	15	32	19	13	28	16	11	24	14	15	22	13	13
			Exposed	54	36	28	54	32	24	54	29	21	47	26	19	42	23	16	37	21	15	33	19	13	28	16	11	24	14	15	21	18	13	18	16	~~11~~	16	14	~~10~~	14	~~13~~	9
		27-45	Interior	60	60	60	60	60	60	60	60	50	60	60	42	60	53	36	58	45	32	48	39	28	35	32	23	30	27	19	26	23	16	23	20	14	20	18	12	18	16	10
			Exposed	60	52	35	55	43	31	45	36	27	37	32	24	33	29	21	30	27	19	27	24	17	23	21	14	20	18	12	17	15	15	15	13	13	13	18	11	18	16	~~10~~
	D	0-7	Interior	36	36	36	36	36	32	36	36	28	36	36	26	36	33	23	36	30	21	36	27	19	32	23	16	27	20	14	23	17	18	20	15	16	18	13	14	16	18	~~12~~
			Exposed	36	33	23	36	29	21	36	26	18	33	24	17	30	21	15	27	19	14	25	18	13	21	15	16	18	13	14	15	17	~~12~~	13	15	~~10~~	18	13	9	16	~~11~~	~~8~~
		7-20	Interior	37	37	31	37	34	28	37	30	25	37	27	23	37	25	20	35	23	19	32	21	17	27	17	14	23	15	12	20	13	16	17	17	14	15	15	~~12~~	13	13	~~11~~
			Exposed	37	25	20	34	22	18	30	20	16	27	18	15	25	16	13	23	15	18	21	13	17	17	17	14	15	15	~~12~~	13	~~13~~	~~11~~	17	~~11~~	9	15	~~10~~	~~8~~	13	9	~~7~~
		20-27	Interior	56	56	42	56	46	34	56	38	29	56	33	26	56	30	23	51	27	20	45	25	18	36	21	14	31	18	12	27	16	11	23	14	14	20	18	12	18	16	~~11~~
			Exposed	56	30	22	49	27	19	43	24	17	37	22	15	34	20	13	31	18	12	28	16	11	24	14	14	20	18	12	17	15	~~11~~	15	13	9	13	~~12~~	8	18	~~11~~	~~7~~
		27-45	Interior	62	62	54	62	62	44	62	55	37	60	46	32	49	39	29	41	34	26	35	31	23	30	26	19	25	23	16	22	20	13	19	17	11	17	15	15	15	13	13
			Exposed	49	39	29	39	33	25	33	30	22	30	27	19	27	25	17	25	22	15	23	20	14	19	17	11	17	15	14	14	13	12	12	17	~~10~~	17	15	9	15	13	~~8~~

* 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	Solarhooks ATI
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	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	33	35	35	28	35	34	24	35	29	21	35	25	18	31	22	16	27	20	14
			Exposed	35	35	35	35	35	35	35	35	32	35	35	28	35	35	26	35	33	23	35	30	21	35	26	18	30	22	15	26	19	13	23	17	18	20	15	16	18	13	14
		7-20	Interior	37	37	37	37	37	37	37	37	37	37	37	37	37	37	35	37	37	32	37	35	29	37	30	25	37	25	21	34	22	18	29	19	16	26	17	14	23	15	12
			Exposed	37	37	35	37	37	31	37	34	28	37	30	25	37	28	23	37	25	21	35	23	19	30	19	16	25	17	14	22	14	18	19	12	16	17	17	14	15	15	12
		20-27	Interior	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	43	44	44	36	44	36	29	44	31	23	44	27	19	41	23	16	35	20	14	31	18	12
			Exposed	44	44	44	44	44	41	44	44	34	44	38	30	44	33	26	44	30	23	44	28	20	42	23	17	34	20	14	30	17	12	26	15	10	23	13	14	20	18	12
		27-45	Interior	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	48	51	51	36	49	41	30	39	33	25	32	29	21	29	26	18	25	23	16
			Exposed	51	51	51	51	51	51	51	51	44	51	51	37	51	47	33	50	40	29	42	35	26	33	29	21	28	25	18	24	22	15	21	19	13	19	17	11	17	15	14
	C	0-7	Interior	35	35	35	35	35	35	35	35	34	35	35	31	35	35	28	35	35	25	35	33	23	35	28	19	33	24	17	28	20	14	24	18	13	22	16	17	19	14	15
			Exposed	35	35	28	35	35	25	35	31	22	35	28	20	35	26	18	32	23	16	29	21	15	25	18	13	21	15	16	18	13	14	16	18	~~12~~	14	15	~~11~~	12	14	~~10~~
		7-20	Interior	37	37	37	37	37	33	37	37	30	37	33	27	37	30	24	37	27	22	37	25	20	32	21	17	27	18	15	24	15	13	21	13	17	18	18	15	16	16	13
			Exposed	37	29	24	37	26	22	37	24	19	33	21	18	30	19	16	27	18	14	25	16	13	21	14	17	18	18	15	15	15	~~13~~	13	13	~~11~~	18	~~12~~	~~10~~	16	~~10~~	9
		20-27	Interior	44	44	44	44	44	44	44	44	38	44	43	33	44	36	29	44	33	25	44	30	22	44	25	18	37	22	15	32	19	13	28	16	11	24	14	15	22	13	13
			Exposed	44	36	28	44	32	24	44	29	21	44	26	19	42	23	16	37	21	15	33	19	13	28	16	11	24	14	15	21	18	13	18	16	~~11~~	16	14	~~10~~	14	~~13~~	9
		27-45	Interior	51	51	51	51	51	51	51	51	50	51	51	42	51	51	36	50	45	32	48	39	28	35	32	23	30	27	19	26	23	16	23	20	14	20	18	12	18	16	10
			Exposed	51	51	35	51	43	31	45	36	27	37	32	24	33	29	21	30	27	19	27	24	17	23	21	14	20	18	12	17	15	15	15	13	13	13	18	11	18	16	~~10~~
	D	0-7	Interior	36	36	36	36	36	32	36	36	28	36	36	26	36	33	23	36	30	21	36	27	19	32	23	16	27	20	14	23	17	~~18~~	20	15	16	18	13	14	16	18	~~12~~
			Exposed	36	33	23	36	29	21	36	26	18	33	24	17	30	21	15	27	19	14	25	18	13	21	15	16	18	13	14	15	17	~~12~~	13	15	~~10~~	18	13	~~9~~	16	~~11~~	~~8~~
		7-20	Interior	37	37	31	37	34	28	37	30	25	37	27	23	37	25	20	35	23	19	32	21	17	27	17	14	23	15	12	20	13	16	17	17	14	15	15	~~12~~	13	13	~~11~~
			Exposed	37	25	20	34	22	18	30	20	16	27	18	15	25	16	13	23	15	18	21	13	17	17	17	14	15	15	~~12~~	13	~~13~~	~~11~~	17	~~11~~	9	15	~~10~~	~~8~~	13	~~9~~	~~7~~
		20-27	Interior	47	47	42	47	46	34	47	38	29	47	33	26	47	30	23	47	27	20	45	25	18	36	21	14	31	18	12	27	16	11	23	14	14	20	18	12	18	16	~~11~~
			Exposed	47	30	22	47	27	19	43	24	17	37	22	15	34	20	13	31	18	12	28	16	11	24	14	14	20	18	12	17	15	~~11~~	15	13	9	13	~~12~~	~~8~~	18	~~11~~	~~7~~
		27-45	Interior	53	53	53	53	53	44	53	53	37	53	46	32	49	39	29	41	34	26	35	31	23	30	26	19	25	23	16	22	20	13	19	17	11	17	15	15	15	13	13
			Exposed	49	39	29	39	33	25	33	30	22	30	27	19	27	25	17	25	22	15	23	20	14	19	17	11	17	15	14	14	13	12	12	17	~~10~~	17	15	9	15	13	~~8~~
40	B	0-7	Interior	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	28	29	29	24	29	29	21	29	25	18	29	22	16	27	20	14			
			Exposed	29	29	29	29	29	29	29	29	29	29	29	28	29	29	26	29	29	23	29	29	21	29	26	18	29	22	15	26	19	13	23	17	18	20	15	16	18	13	14
		7-20	Interior	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	29	31	30	25	31	25	21	31	22	18	29	19	16	26	17	14	23	15	12
			Exposed	31	31	31	31	31	31	31	31	28	31	30	25	31	28	23	31	25	21	31	23	19	30	19	16	25	17	14	22	14	18	19	12	16	17	17	14	15	15	~~12~~
		20-27	Interior	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	36	38	36	29	38	31	23	38	27	19	38	23	16	35	20	14	31	18	12
			Exposed	38	38	38	38	38	38	38	38	34	38	38	30	38	33	26	38	30	23	38	28	20	38	23	17	34	20	14	30	17	12	26	15	10	23	13	14	20	18	12
		27-45	Interior	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	36	41	41	30	39	33	25	32	29	21	29	26	18	25	23	16
			Exposed	44	44	44	44	44	44	44	44	44	44	44	37	44	44	33	44	40	29	42	35	26	33	29	21	28	25	18	24	22	15	21	19	13	19	17	11	17	15	14
	C	0-7	Interior	29	29	29	29	29	29	29	29	29	29	29	29	29	29	28	29	29	25	29	29	23	29	28	19	29	24	17	28	20	14	24	18	13	22	16	17	19	14	15
			Exposed	29	29	28	29	29	25	29	29	22	29	28	20	29	26	18	29	23	16	29	21	15	25	18	13	21	15	16	18	13	14	16	18	~~12~~	14	15	~~11~~	12	14	~~10~~
		7-20	Interior	31	31	31	31	31	31	31	31	30	31	31	27	31	30	24	31	27	22	31	25	20	31	21	17	27	18	15	24	15	13	21	13	17	18	18	15	16	16	13
			Exposed	31	29	24	31	26	22	31	24	19	31	21	18	30	19	16	27	18	14	25	16	13	21	14	17	18	18	15	15	15	~~13~~	13	13	~~11~~	18	~~12~~	~~10~~	16	~~10~~	9
		20-27	Interior	38	38	38	38	38	38	38	38	38	38	38	33	38	36	29	38	38	30	38	38	32	38	38	25	38	30	22	38	25	18	37	22	15	32	19	13	28	16	11
			Exposed	38	36	28	38	32	24	38	29	21	38	26	19	38	23	16	37	21	15	33	19	13	28	16	11	24	14	15	21	18	13	18	16	~~11~~	16	14	~~10~~	14	~~13~~	9
		27-45	Interior	44	44	44	44	44	44	44	44	44	44	42	32	44	44	36	42	42	32	41	39	28	35	32	23	30	27	19	26	23	16	23	20	14	20	18	12	18	16	10
			Exposed	44	44	35	44	43	31	44	36	27	37	32	24	33	29	21	30	27	19	27	24	17	23	21	14	20	18	12	17	15	15	15	13	13	13	18	11	18	16	~~10~~
	D	0-7	Interior	31	31	31	31	31	31	31	31	28	31	31	26	31	31	23	31	30	21	31	27	19	31	23	16	27	20	14	23	17	~~18~~	20	15	16	18	13	14	16	18	~~12~~
			Exposed	31	31	23	31	29	21	31	26	18	31	24	17	30	21	15	27	19	14	25	18	13	21	15	16	18	13	14	15	17	~~12~~	13	15	~~10~~	18	13	~~9~~	16	~~11~~	~~8~~
		7-20	Interior	33	33	31	33	33	28	33	30	25	33	27	23	33	25	20	33	23	19	32	21	17	27	17	14	23	15	12	20	13	16	17	17	14	15	15	~~12~~	13	13	~~11~~
			Exposed	33	25	20	33	22	18	30	20	16	27	18	15	25	16	13	23	15	18	21	13	17	17	17	14	15	15	~~12~~	13	~~13~~	~~11~~	17	~~11~~	9	15	~~10~~	~~8~~	13	~~9~~	~~7~~
		20-27	Interior	40	40	40	40	40	34	40	38	29	40	33	26	40	30	23	40	27	20	40	25	18	36	21	14	31	18	12	27	16	11	23	14	14	20	18	12	18	16	~~11~~
			Exposed	40	30	22	40	27	19	40	24	17	37	22	15	34	20	13	31	18	12	28	16	11	24	14	14	20	18	12	17	15	~~11~~	15	13	9	13	~~12~~	~~8~~	18	~~11~~	~~7~~
		27-45	Interior	46	46	46	46	46	44	46	46	37	46	46	32	44	39	29	41	34	26	35	31	23	30	26	19	25	23	16	22	20	13	19	17	11	17	15	15	15	13	13
			Exposed	46	39	29	39	33	25	33	30	22	30	27	19	27	25	17	25	22	15	23	20	14	19	17	11	17	15	14	14	13	12	12	17	~~10~~	17	15	9	15	13	~~8~~
50	B	0-7	Interior	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	21	24	24	18	24	22	16	24	20	14
			Exposed	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	23	24	24	21	24	24	18	24	22	15	24	19	13	23	17	18	20	15	16	18	13	14
		7-20	Interior	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	25	26	25	21	26	22	18	26	19	16	26	17	14	23	15	12
			Exposed	26	26	26	26	26	26	26	26	26	26	25	25	26	26	23	26	25	21	26	23	19	26	19	16	25	17	14	22	14	18	19	12	16	17	17	14	15	15	~~12~~
		20-27	Interior	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	29	33	31	23	33	27	19	33	23	16	32	20	14	31	18	12
			Exposed	33	33	33	33	33	33	33	33	33	33	33	30	33	33	26	33	30	23	33	28	20	33	23	17	33	20	14	30	17	12	26	15	10	23	13	14	20	18	12
		27-45	Interior	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	38	38	36	36	36	30	34	33	25	32	29	21	29	26	18	25	23	16
			Exposed	39	39	39	39	39	39	39	39	39	39	39	37	39	39	33	39	39	29	39	35	26	33	29	21	28	25	18	24	22	15	21	19	13	19	17	11	17	15	14
	C	0-7	Interior	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	23	24	24	19	24	24	17	24	20	14	24	18	13	22	16	17	19	14	15
			Exposed	24	24	24	24	24	24	24	24	22	24	24	20	24	24	18	24	23	16	24	21	15	24	18	13	21	15	16	18	13	14	16	18	~~12~~	14	15	~~11~~	12	14	~~10~~
		7-20	Interior	26	26	26	26	26	26	26	26	26	26	26	26	26	26	24	26	26	22	26	25	20	26	21	17	26	18	15	24	15	13	21	13	17	18	18	15	16	16	13
			Exposed	26	26	24	26	26	22	26	24	19	26	21	18	26	19	16	26	18	14	25	16	13	21	14	17	18	18	15	15	15	~~13~~	13	13	~~11~~	18	~~12~~	~~10~~	16	~~10~~	9
		20-27	Interior	33	33	33	33	33	33	33	33	33	33	33	33	33	33	29	33	33	25	33	30	22	33	25	18	32	22	15	31	19	13	28	16	11	24	14	15	22	13	13
			Exposed	33	33	28	33	32	24	33	29	21	33	26	19	33	23	16	33	21	15	33	19	13	28	16	11	24	14	15	21	18	13	18	16	~~11~~	16	14	~~10~~	14	~~13~~	9
		27-45	Interior	39	39	39	39	39	39	39	39	39	39	38	38	36	37	37	32	36	36	28	33	32	23	30	27	19	26	23	16	23	20	14	20	18	12	18	16	10		
			Exposed	39	39	35	39	39	31	39	36	27	37	32	24	33	29	21	30	27	19	27	24	17	23	21	14	20	18	12	17	15	15	15	13	13	13	18	11	18	16	~~10~~
	D	0-7	Interior	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	21	26	26	19	26	23	16	26	20	14	23	17	~~18~~	20	15	16	18	13	14	16	18	~~12~~	
			Exposed	26	26	23	26	26	21	26	26	18	26	24	17	26	21	15	26	19	14	25	18	13	21	15	16	18	13	14	15	17	~~12~~	13	15	~~10~~	18	13	~~9~~	16	~~11~~	~~8~~
		7-20	Interior	28	28	28	28	28	28	28	28	25	28	27	23	28	25	20	28	23	19	28	21	17	27	17	14	23	15	12	20	13	16	17	17	14	15	15	~~12~~	13	13	~~11~~
			Exposed	28	25	20	28	22	18	28	20	16	27	18	15	25	16	13	23	15	18	21	13	17	17	17	14	15	15	~~12~~	13	~~13~~	~~11~~	17	~~11~~	9	15	~~10~~	~~8~~	13	~~9~~	~~7~~
		20-27	Interior	35	35	35	35	35	34	35	35	29	35	33	26	35	30	23	35	27	20	35	25	18	35	21	14	31	18	12	27	16	11	23	14	14	20	18	12	18	16	~~11~~
			Exposed	35	30	22	35	27	19	35	24	17	35	22	15	34	20	13	31	18	12	28	16	11	24	14	14	20	18	12	17	15	~~11~~	15	13	9	13	~~12~~	~~8~~	18	~~11~~	~~7~~
		27-45	Interior	41	41	41	41	41	41	41	41	37	40	40	32	38	38	29	37	34	26	35	31	23	30	26	19	25	23	16	22	20	13	19	17	11	17	15	15	15	13	13
			Exposed	41	39	29	39	33	25	33	30	22	30	27	19	27	25	17	25	22	15	23	20	14	19	17	11	17	15	14	14	13	12	12	17	~~10~~	17	15	9	15	13	~~8~~

* 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	Solarhooks ATI
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	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	18	20	20	16	20	20	14		
			Exposed	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	18	20	20	15	20	19	13	20	17	18	20	15	16	18	13	14
		7-20	Interior	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	21	22	22	18	22	19	16	22	17	14	22	15	12			
			Exposed	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	21	22	22	19	22	19	16	22	17	14	22	14	18	19	12	16	17	17	14	15	15	12
		20-27	Interior	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	23	29	27	19	29	23	16	28	20	14	27	18	12			
			Exposed	29	29	29	29	29	29	29	29	29	29	29	29	26	29	29	23	29	28	20	29	23	17	29	20	14	29	17	12	26	15	10	23	13	14	20	18	12			
		27-45	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	32	32	30	31	31	25	29	29	21	28	26	18	25	23	16
			Exposed	34	34	34	34	34	34	34	34	34	34	34	34	34	33	34	34	29	34	34	26	33	29	21	28	25	18	24	22	15	21	19	13	19	17	11	17	15	14			
	C	0-7	Interior	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	19	20	20	17	20	20	14	20	18	13	20	16	17	19	14	15
			Exposed	20	20	20	20	20	20	20	20	20	20	20	20	18	20	20	16	20	20	15	20	18	13	20	15	16	18	13	16	18	12	14	15	11	12	14	10			
		7-20	Interior	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	20	22	21	17	22	18	15	22	15	13	21	13	17	18	18	15	16	16	13
			Exposed	22	22	22	22	22	22	22	22	19	22	21	18	22	19	16	22	18	14	22	16	13	21	14	17	18	18	15	15	15	13	13	13	11	18	12	10	16	10	9
		20-27	Interior	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	25	29	29	22	29	25	18	29	22	15	28	19	13	26	16	11	24	14	15	22	13	13		
			Exposed	29	29	28	29	29	24	29	29	21	29	26	19	29	23	16	29	21	15	29	19	13	28	16	11	24	14	15	21	18	13	18	16	11	16	14	10	14	13	9
		27-45	Interior	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	33	33	32	32	28	30	30	23	29	27	19	26	23	16	23	20	14	20	18	12	18	16	10	
			Exposed	34	34	34	34	34	31	34	34	27	34	32	24	33	29	21	30	27	19	27	24	17	23	21	14	20	18	12	17	15	15	15	13	13	13	18	11	18	16	10
	D	0-7	Interior	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	21	22	22	19	22	22	16	22	20	14	22	17	18	20	15	16	18	13	14	16	18	12
			Exposed	22	22	22	22	22	21	22	22	18	22	22	17	22	21	15	22	19	14	22	18	13	21	15	16	18	13	14	15	17	12	13	15	10	18	13	9	16	11	8
		7-20	Interior	24	24	24	24	24	24	24	24	24	24	24	23	24	24	20	24	23	19	24	21	17	24	17	14	23	15	12	20	13	16	17	17	14	15	15	12	13	13	11
			Exposed	24	24	20	24	22	18	24	20	16	24	18	15	24	16	13	23	15	18	21	13	17	17	17	14	15	15	12	13	13	11	17	11	9	15	10	8	13	9	7
		20-27	Interior	31	31	31	31	31	31	31	31	29	31	31	26	31	30	23	31	27	20	31	25	18	31	21	14	29	18	12	27	16	11	23	14	14	20	18	12	18	16	11
			Exposed	31	30	22	31	27	19	31	24	17	31	22	15	31	20	13	31	18	12	28	16	11	24	14	14	20	18	12	17	15	11	15	13	9	13	12	8	18	11	7
		27-45	Interior	37	37	37	37	37	37	36	36	36	35	35	32	34	34	29	33	33	26	32	31	23	30	26	19	25	23	16	22	20	13	19	17	11	17	15	15	15	13	13
			Exposed	37	37	29	37	33	25	33	30	22	30	27	19	27	25	17	25	22	15	23	20	14	19	17	11	17	15	14	14	13	12	12	17	10	17	15	9	15	13	8
70	B	0-7	Interior	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	14
			Exposed	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	15	17	17	13	17	17	18	17	15	16	17	13	14
		7-20	Interior	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	18	19	19	16	19	17	14	19	15	12
			Exposed	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	16	19	17	14	19	14	18	19	12	16	17	17	14	15	15	12
		20-27	Interior	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	23	25	25	19	25	23	16	25	20	14	24	18	12			
			Exposed	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	23	25	25	20	25	23	17	25	20	14	25	17	12	25	15	10	23	13	14	20	18	12
		27-45	Interior	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	29	29	29	28	28	25	27	27	21	26	26	18	25	23	16
			Exposed	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	29	31	31	26	31	29	21	28	25	18	24	22	15	21	19	13	19	17	11	17	15	14
	C	0-7	Interior	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	14	17	17	13	17	16	17	17	14	15
			Exposed	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	16	17	17	15	17	17	13	17	15	16	17	13	14	16	18	12	14	15	11	12	14	10
		7-20	Interior	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	17	19	18	15	19	15	13	19	13	17	18	18	15	16	16	13
			Exposed	19	19	19	19	19	19	19	19	19	19	19	18	19	19	16	19	18	14	19	16	13	19	14	17	18	18	15	15	15	13	13	13	11	18	12	10	16	10	9
		20-27	Interior	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	22	25	25	18	25	22	15	25	19	13	24	16	11	23	14	15	22	13	13
			Exposed	25	25	25	25	25	24	25	25	21	25	25	19	25	23	16	25	21	15	25	19	13	25	16	11	24	14	15	21	18	13	18	16	11	16	14	10	14	13	9
		27-45	Interior	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	30	30	30	29	29	28	28	28	23	26	26	19	25	23	16	23	20	14	20	18	12	18	16	10
			Exposed	31	31	31	31	31	31	31	31	27	31	31	24	31	29	21	30	27	19	27	24	17	23	21	14	20	18	12	17	15	15	15	13	13	13	18	11	18	16	10
	D	0-7	Interior	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	16	19	19	14	19	17	18	19	15	16	18	13	14	16	18	12
			Exposed	19	19	19	19	19	19	19	19	18	19	19	17	19	19	15	19	19	14	19	18	13	19	15	16	18	13	14	15	17	12	13	15	10	18	13	9	16	11	8
		7-20	Interior	21	21	21	21	21	21	21	21	21	21	21	21	21	21	20	21	21	19	21	21	17	21	17	14	21	15	12	20	13	16	17	17	14	15	15	12	13	13	11
			Exposed	21	21	20	21	21	18	21	20	16	21	18	15	21	16	13	21	15	18	21	13	17	17	17	14	15	15	12	13	13	11	17	11	9	15	10	8	13	9	7
		20-27	Interior	28	28	28	28	28	28	28	28	28	28	28	26	28	28	23	28	27	20	28	25	18	27	21	14	26	18	12	25	16	11	23	14	14	20	18	12	18	16	11
			Exposed	28	28	22	28	27	19	28	24	17	28	22	15	28	20	13	28	18	12	28	16	11	24	14	14	20	18	12	17	15	11	15	13	9	13	12	8	18	11	7
		27-45	Interior	33	33	33	33	33	33	33	33	33	32	32	32	31	31	29	30	30	26	29	29	23	28	26	19	25	23	16	22	20	13	19	17	11	17	15	15	15	13	13
			Exposed	33	33	29	33	33	25	33	30	22	30	27	19	27	25	17	25	22	15	23	20	14	19	17	11	17	15	14	14	13	12	12	17	10	17	15	9	15	13	8
80	B	0-7	Interior	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	14
			Exposed	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	13	15	15	18	15	15	16	15	13	14
		7-20	Interior	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	14	16	16	12	16	14	12
			Exposed	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	14	16	14	18	16	12	16	16	17	14	15	15	12
		20-27	Interior	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	19	22	22	16	22	20	14	22	18	12
			Exposed	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	20	22	22	17	22	20	14	22	17	12	22	15	10	22	13	14	20	18	12
		27-45	Interior	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	27	27	27	26	26	25	25	25	21	24	24	18	23	23	16
			Exposed	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	26	28	28	21	27	25	18	24	22	15	21	19	13	19	17	11	17	15	14
	C	0-7	Interior	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	14	15	15	13	15	15	17	15	14	15
			Exposed	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	16	15	13	14	15	15	18	15	15	11	12	14	10
		7-20	Interior	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	15	16	15	13	16	13	17	16	18	15	16	16	13
			Exposed	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	14	16	16	13	16	14	17	16	18	15	15	15	13	13	13	11	18	12	10	16	10	9
		20-27	Interior	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	18	22	22	15	22	19	13	22	16	11	21	14	15	20	13	13
			Exposed	22	22	22	22	22	22	22	22	21	22	22	19	22	22	16	22	21	15	22	19	13	22	16	11	22	14	15	21	18	13	18	16	11	16	14	10	14	13	9
		27-45	Interior	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	27	27	27	27	27	27	25	25	23	24	24	19	23	23	16	22	20	14	20	18	12	18	16	10
			Exposed	28	28	28	28	28	28	28	28	27	28	28	24	28	28	21	27	27	19	27	24	17	23	21	14	20	18	12	17	15	15	15	13	13	13	18	11	18	16	10
	D	0-7	Interior	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	14	17	17	14	17	17	18	17	15	16	17	13	14	16	18	12
			Exposed	17	17	17	17	17	17	17	17	17	17	17	17	15	17	17	14	17	17	13	17	15	16	17	13	14	15	17	12	13	15	10	18	13	9	16	11	8		
		7-20	Interior	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	17	18	17	14	18	15	12	18	13	16	17	17	14	15	15	12	13	13	11
			Exposed	18	18	18	18	18	18	18	18	16	18	18	15	18	16	13	18	15	18	18	13	17	17	17	14	15	15	12	13	13	11	17	11	9	15	10	8	13	9	7
		20-27	Interior	25	25	25	25	25	25	25	25	25	25	25	25	25	25	23	25	25	20	25	25	18	25	21	14	24	18	12	23	16	11	22	14	14	20	18	12	18	16	11
			Exposed	25	25	22	25	25	19	25	24	17	25	22	15	25	20	13	25	18	12	25	16	11	24	14	14	20	18	12	17	15	11	15	13	9	13	12	8	18	11	7
		27-45	Interior	30	30	30	30	30	30	30	30	30	29	29	29	29	29	29	28	28	26	27	27	23	26	26	19	24	23	16	22	20	13	19	17	11	17	15	15	15	13	13
			Exposed	30	30	29	30	30	25	30	30	22	29	27	19	27	25	17	25	22	15	23	20	14	19	17	11	17	15	14	14	13	12	12	17	10	17	15	9	15	13	8

* 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	Solarhooks ATI
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	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13
			Exposed	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	18	13	13	16	13	13	14
		7-20	Interior	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	14	15	15	12		
			Exposed	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	14	15	14	18	15	12	16	15	17	14	15	15	~~12~~
		20-27	Interior	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	19	20	20	16	20	20	14	20	18	12			
			Exposed	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	17	20	20	14	20	17	12	20	15	10	20	13	14	20	18	12
		27-45	Interior	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	24	24	24	23	23	21	22	22	18	21	21	16
			Exposed	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	21	25	25	18	24	22	15	21	19	13	19	17	11	17	15	14
	C	0-7	Interior	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	17	13	13	15
			Exposed	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	16	13	13	14	13	18	~~12~~	13	15	~~11~~	12	14	~~10~~
		7-20	Interior	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	13	15	13	17	15	18	15	15	16	13
			Exposed	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	14	15	15	13	15	14	17	15	18	15	15	15	~~13~~	13	13	~~11~~	18	~~12~~	~~10~~	16	~~10~~	9
		20-27	Interior	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	18	20	20	15	20	19	13	20	16	11	19	14	15	19	13	13
			Exposed	20	20	20	20	20	20	20	20	20	19	20	20	16	20	20	15	20	19	13	20	16	11	20	14	15	20	18	13	18	16	~~11~~	16	14	~~10~~	14	~~13~~	9		
		27-45	Interior	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	24	24	23	22	22	19	21	21	16	20	20	14	20	18	12	18	16	10
			Exposed	25	25	25	25	25	25	25	25	25	24	25	25	21	25	25	19	25	24	17	23	21	14	20	18	12	17	15	15	15	13	13	13	18	11	18	16	~~10~~		
	D	0-7	Interior	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	14	15	15	18	15	15	16	15	13	14	15	18	~~12~~
			Exposed	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	14	15	15	13	15	15	16	15	13	14	15	17	~~12~~	13	15	~~10~~	18	13	9	16	~~11~~	~~8~~
		7-20	Interior	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	14	16	15	12	16	13	16	16	17	14	15	15	~~12~~	13	13	~~11~~
			Exposed	16	16	16	16	16	16	16	16	16	16	15	16	16	13	16	15	18	16	13	17	16	17	14	15	15	~~12~~	13	~~13~~	~~11~~	17	~~11~~	9	15	~~10~~	~~8~~	13	9	~~7~~		
		20-27	Interior	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	20	22	22	18	22	21	14	22	18	12	21	16	11	20	14	14	20	18	12	18	16	~~11~~
			Exposed	22	22	22	22	22	19	22	22	17	22	22	15	22	20	13	22	18	12	22	16	11	22	14	14	20	18	12	17	15	~~11~~	15	13	9	13	~~12~~	8	18	~~11~~	~~7~~
		27-45	Interior	28	28	28	28	28	28	28	28	28	27	27	27	26	26	26	26	26	26	25	25	23	24	24	19	23	23	16	21	20	13	19	17	11	17	15	15	15	13	13
			Exposed	28	28	28	28	28	25	28	28	22	27	27	19	26	25	17	25	22	15	23	20	14	19	17	11	17	15	14	14	13	12	12	17	~~10~~	17	15	9	15	13	~~8~~
100	B	0-7	Interior	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12
			Exposed	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	18	12	12	16	12	12	14
		7-20	Interior	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	12
			Exposed	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	18	13	12	16	13	17	14	13	15	~~12~~
		20-27	Interior	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	16	18	18	14	18	18	12
			Exposed	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	17	18	18	14	18	17	12	18	15	10	18	13	14	18	18	12
		27-45	Interior	23	23	23	23	23	23	23	23	23	23	23	23	23	23	23	23	23	23	23	23	23	23	23	23	23	23	23	22	22	22	21	21	21	21	21	18	20	20	16
			Exposed	23	23	23	23	23	23	23	23	23	23	23	23	23	23	23	23	23	23	23	23	23	23	23	21	23	23	18	22	22	15	21	19	13	19	17	11	17	15	14
	C	0-7	Interior	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	17	12	12	15
			Exposed	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	16	12	12	14	12	18	~~12~~	12	15	~~11~~	12	14	~~10~~
		7-20	Interior	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	17	13	18	15	13	16	13
			Exposed	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	17	13	18	15	13	15	~~13~~	13	13	~~11~~	18	~~12~~	~~10~~	16	~~10~~	9
		20-27	Interior	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	15	18	18	13	18	16	11	18	16	14	16	14	15	17	13	13
			Exposed	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	16	18	18	15	18	18	13	18	16	~~11~~	16	14	~~10~~	14	~~13~~	9						
		27-45	Interior	23	23	23	23	23	23	23	23	23	23	23	23	23	23	23	23	23	23	23	23	23	22	22	22	21	21	19	20	20	16	19	19	14	18	18	12	18	16	10
			Exposed	23	23	23	23	23	23	23	23	23	23	23	23	21	23	23	19	23	23	17	22	21	14	20	18	12	17	15	15	15	13	13	18	11	18	16	~~10~~			
	D	0-7	Interior	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	18	13	13	16	13	13	14	13	18	~~12~~
			Exposed	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	16	13	13	14	13	17	~~12~~	13	15	~~10~~	18	13	9	16	~~11~~	~~8~~
		7-20	Interior	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	14	15	15	12	15	13	16	15	17	14	14	15	~~12~~	13	13	~~11~~
			Exposed	15	15	15	15	15	15	15	15	15	15	15	15	15	13	18	15	13	~~17~~	15	17	14	15	15	~~12~~	13	~~13~~	~~11~~	17	~~11~~	9	15	~~10~~	~~8~~	13	9	~~7~~		
		20-27	Interior	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	18	20	20	14	20	18	12	20	16	11	19	14	14	18	18	12	18	16	~~11~~
			Exposed	20	20	20	20	20	19	20	20	17	20	20	15	20	20	13	20	18	12	20	16	11	20	14	14	20	~~18~~	~~12~~	17	15	~~11~~	15	13	9	13	~~12~~	~~8~~	18	~~11~~	~~7~~
		27-45	Interior	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	24	24	24	23	23	23	22	22	19	21	21	16	20	20	13	19	17	11	17	15	15	15	13	13
			Exposed	25	25	25	25	25	25	25	25	22	25	25	19	25	25	17	24	22	15	23	20	14	19	17	11	17	15	14	14	13	12	12	17	~~10~~	17	15	9	15	13	~~8~~

* 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	Solarhooks ATI
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	96	101	101	92	101	101	87	101	97	84	101	93	65	100	86	55	93	69	47	87	58	41	78	50	35	61	44	31	54	39	28
			Exposed	101	101	87	101	96	83	101	91	62	101	87	56	97	83	51	92	67	46	89	60	42	80	51	36	60	43	31	52	38	27	45	33	23	40	29	31	35	26	28
		7-20	Interior	102	102	102	102	102	99	102	102	93	102	98	88	102	92	84	102	88	63	98	84	57	89	59	48	84	50	41	68	43	36	58	38	31	51	33	28	45	30	25
			Exposed	102	92	84	102	87	61	95	79	55	90	60	49	86	54	45	83	50	41	73	45	37	59	38	32	50	33	27	43	28	23	38	25	31	33	22	27	30	29	24
		20-27	Interior	102	102	102	102	102	102	102	102	102	102	102	100	102	101	95	102	96	90	102	92	86	102	85	57	95	61	46	89	52	38	84	46	32	72	40	28	61	36	24
			Exposed	102	101	95	102	95	89	102	90	84	102	85	58	99	68	51	94	60	45	91	55	40	85	46	33	70	40	27	59	34	23	51	30	21	45	26	18	40	23	24
		27-45	Interior	103	103	103	103	103	103	103	103	103	103	103	103	103	103	99	103	103	95	103	101	91	103	93	84	94	86	58	87	67	49	64	57	42	56	50	36	50	45	31
			Exposed	103	103	99	103	103	94	103	99	89	103	94	85	99	90	65	94	86	57	89	82	52	65	58	42	55	50	35	48	43	30	42	38	25	37	33	22	33	29	19
	C	0-7	Interior	101	101	90	101	99	85	101	94	72	101	90	60	100	86	55	96	82	50	92	65	46	85	54	38	64	47	33	55	40	29	48	35	25	43	31	33	38	28	29
			Exposed	100	86	54	94	76	49	90	62	44	86	56	39	79	50	36	63	46	33	58	42	30	49	36	25	42	30	33	36	26	28	32	23	25	28	31	22	25	27	19
		7-20	Interior	102	96	87	102	90	69	100	85	59	93	64	53	89	58	48	86	53	44	83	49	40	63	41	34	54	35	29	47	30	25	41	27	22	36	23	29	32	32	26
			Exposed	89	58	48	85	52	43	77	47	38	64	42	35	58	38	32	53	35	29	49	32	26	41	27	22	35	23	29	30	30	25	27	26	22	35	23	19	32	21	17
		20-27	Interior	102	102	98	102	99	92	102	93	87	102	89	69	102	84	56	98	64	50	93	59	44	87	50	36	79	42	29	63	37	25	55	32	22	48	28	19	43	25	17
			Exposed	102	84	56	97	63	48	92	56	42	88	51	37	84	46	33	77	42	29	66	38	26	55	32	22	47	28	19	41	24	25	36	32	22	32	28	19	28	25	17
		27-45	Interior	103	103	103	103	103	97	103	103	92	103	98	87	103	93	84	97	89	63	93	85	56	85	62	46	59	53	38	51	46	32	45	40	27	40	36	24	35	32	21
			Exposed	102	93	83	96	88	61	91	84	53	86	64	47	64	58	42	59	53	38	54	48	34	45	41	28	39	35	23	34	30	20	30	26	25	26	23	22	23	31	19
	D	0-7	Interior	101	96	83	101	91	62	101	87	56	96	83	50	92	65	46	88	59	42	84	54	38	63	46	32	54	39	28	46	34	24	40	30	32	36	26	28	32	23	25
			Exposed	92	65	46	87	58	41	83	52	37	64	47	33	58	42	30	53	39	27	48	35	25	41	30	32	35	26	27	30	33	24	27	29	21	23	26	18	31	23	16
		7-20	Interior	102	87	62	95	81	55	90	60	49	86	54	45	83	49	40	71	45	37	62	41	34	53	34	28	45	30	24	39	26	32	34	22	28	30	30	25	27	26	22
			Exposed	83	49	40	68	43	36	60	39	32	54	35	29	49	32	26	45	29	24	41	27	22	34	23	28	30	29	24	26	25	21	34	22	18	30	20	16	26	17	14
		20-27	Interior	102	96	89	102	90	84	102	85	58	98	65	51	94	59	45	90	54	40	87	49	35	76	42	29	61	36	24	53	31	21	46	27	18	41	24	25	36	32	22
			Exposed	94	59	44	89	53	38	85	47	34	80	43	29	67	39	26	60	35	24	55	32	22	46	27	19	40	23	24	34	31	21	30	27	18	27	24	16	24	21	14
		27-45	Interior	103	103	94	103	99	89	103	94	84	98	90	64	93	85	57	88	76	51	84	62	45	58	52	37	50	45	31	43	39	26	38	34	22	33	30	19	30	27	25
			Exposed	93	85	56	87	67	49	83	59	43	60	53	38	54	48	34	49	44	31	45	40	27	38	34	23	33	29	19	28	25	24	25	22	21	22	30	18	29	26	16
10	B	0-7	Interior	90	90	90	90	90	90	90	90	90	90	90	90	90	90	87	90	90	84	90	90	65	90	86	55	90	69	47	87	58	41	78	50	35	61	44	31	54	39	28
			Exposed	90	90	87	90	90	83	90	90	62	90	87	56	90	83	51	90	67	46	89	60	42	80	51	36	60	43	31	52	38	27	45	33	23	40	29	31	35	26	28
		7-20	Interior	91	91	91	91	91	91	91	91	91	91	91	88	91	91	84	91	88	63	91	84	57	89	59	48	84	50	41	68	43	36	58	38	31	51	33	28	45	30	25
			Exposed	91	91	84	91	87	61	91	79	55	90	60	49	86	54	45	83	50	41	73	45	37	59	38	32	50	33	27	43	28	23	38	25	31	33	22	27	30	29	24
		20-27	Interior	99	99	99	99	99	99	99	99	99	99	99	99	99	99	95	99	96	90	99	92	86	99	85	57	95	61	46	89	52	38	84	46	32	72	40	28	61	36	24
			Exposed	99	99	95	99	95	89	99	90	84	99	85	58	99	68	51	94	60	45	91	55	40	85	46	33	70	40	27	59	34	23	51	30	21	45	26	18	40	23	24
		27-45	Interior	101	101	101	101	101	101	101	101	101	101	101	101	101	101	99	101	101	95	101	101	91	101	93	84	94	86	58	87	67	49	64	57	42	56	50	36	50	45	31
			Exposed	101	101	99	101	101	94	101	99	89	101	94	85	99	90	65	94	86	57	89	82	52	65	58	42	55	50	35	48	43	30	42	38	25	37	33	22	33	29	19
	C	0-7	Interior	90	90	90	90	90	85	90	90	72	90	90	60	90	86	55	90	82	50	90	65	46	85	54	38	64	47	33	55	40	29	48	35	25	43	31	33	38	28	29
			Exposed	90	86	54	90	76	49	90	62	44	86	56	39	79	50	36	63	46	33	58	42	30	49	36	25	42	30	33	36	26	28	32	23	25	28	31	22	25	27	19
		7-20	Interior	91	91	87	91	90	69	91	85	59	91	64	53	89	58	48	86	53	44	83	49	40	63	41	34	54	35	29	47	30	25	41	27	22	36	23	29	32	32	26
			Exposed	89	58	48	85	52	43	77	47	38	64	42	35	58	38	32	53	35	29	49	32	26	41	27	22	35	23	29	30	30	25	27	26	22	35	23	19	32	21	17
		20-27	Interior	99	99	98	99	99	92	99	93	87	99	89	69	99	84	56	98	64	50	93	59	44	87	50	36	79	42	29	63	37	25	55	32	22	48	28	19	43	25	17
			Exposed	99	84	56	97	63	48	92	56	42	88	51	37	84	46	33	77	42	29	66	38	26	55	32	22	47	28	19	41	24	25	36	32	22	32	28	19	28	25	17
		27-45	Interior	101	101	101	101	101	97	101	101	92	101	98	87	101	93	84	97	89	63	93	85	56	85	62	46	59	53	38	51	46	32	45	40	27	40	36	24	35	32	21
			Exposed	101	93	83	96	88	61	91	84	53	86	64	47	64	58	42	59	53	38	54	48	34	45	41	28	39	35	23	34	30	20	30	26	25	26	23	22	23	31	19
	D	0-7	Interior	90	90	83	90	90	62	90	87	56	90	83	50	90	65	46	88	59	42	84	54	38	63	46	32	54	39	28	46	34	24	40	30	32	36	26	28	32	23	25
			Exposed	90	65	46	87	58	41	83	52	37	64	47	33	58	42	30	53	39	27	48	35	25	41	30	32	35	26	27	30	33	24	27	29	21	23	26	18	31	23	16
		7-20	Interior	91	87	62	91	81	55	90	60	49	86	54	45	83	49	40	71	45	37	62	41	34	53	34	28	45	30	24	39	26	32	34	22	28	30	30	25	27	26	22
			Exposed	83	49	40	68	43	36	60	39	32	54	35	29	49	32	26	45	29	24	41	27	22	34	23	28	30	29	24	26	25	21	34	22	18	30	20	16	26	17	14
		20-27	Interior	100	96	89	100	90	84	100	85	58	98	65	51	94	59	45	90	54	40	87	49	35	76	42	29	61	36	24	53	31	21	46	27	18	41	24	25	36	32	22
			Exposed	94	59	44	89	53	38	85	47	34	80	43	29	67	39	26	60	35	24	55	32	22	46	27	19	40	23	24	34	31	21	30	27	18	27	24	16	24	21	14
		27-45	Interior	102	102	94	102	99	89	102	94	84	98	90	64	93	85	57	88	76	51	84	62	45	58	52	37	50	45	31	43	39	26	38	34	22	33	30	19	30	27	25
			Exposed	93	85	56	87	67	49	83	59	43	60	53	38	54	48	34	49	44	31	45	40	27	38	34	23	33	29	19	28	25	24	25	22	21	22	30	18	29	26	16
20	B	0-7	Interior	71	71	71	71	71	71	71	71	71	71	71	71	71	71	71	71	71	71	71	71	65	71	71	55	71	69	47	71	58	41	71	50	35	61	44	31	54	39	28
			Exposed	71	71	71	71	71	71	71	71	62	71	71	56	71	71	51	71	67	46	71	60	42	71	51	36	60	43	31	52	38	27	45	33	23	40	29	31	35	26	28
		7-20	Interior	71	71	71	71	71	71	71	71	71	71	71	71	71	71	71	71	71	63	71	71	57	71	59	48	71	50	41	68	43	36	58	38	31	51	33	28	45	30	25
			Exposed	71	71	71	71	71	61	71	71	55	71	60	49	71	54	45	71	50	41	71	45	37	59	38	32	50	33	27	43	28	23	38	25	31	33	22	27	30	29	24
		20-27	Interior	92	92	92	92	92	92	92	92	92	92	92	92	92	92	92	92	92	90	92	92	86	92	85	57	92	61	46	89	52	38	84	46	32	72	40	28	61	36	24
			Exposed	92	92	92	92	92	89	92	90	84	92	85	58	92	68	51	92	60	45	91	55	40	85	46	33	70	40	27	59	34	23	51	30	21	45	26	18	40	23	24
		27-45	Interior	95	95	95	95	95	95	95	95	95	95	95	95	95	95	95	95	95	95	95	95	91	95	93	84	94	86	58	87	67	49	64	57	42	56	50	36	50	45	31
			Exposed	95	95	95	95	95	94	95	95	89	95	94	85	95	90	65	94	86	57	89	82	52	65	58	42	55	50	35	48	43	30	42	38	25	37	33	22	33	29	19
	C	0-7	Interior	71	71	71	71	71	71	71	71	71	71	71	60	71	71	55	71	71	50	71	65	46	71	54	38	64	47	33	55	40	29	48	35	25	43	31	33	38	28	29
			Exposed	71	71	54	71	71	49	71	62	44	71	56	39	71	50	36	63	46	33	58	42	30	49	36	25	42	30	33	36	26	28	32	23	25	28	31	22	25	27	19
		7-20	Interior	71	71	71	71	71	69	71	71	59	71	64	53	71	58	48	71	53	44	71	49	40	63	41	34	54	35	29	47	30	25	41	27	22	36	23	29	32	32	26
			Exposed	71	58	48	71	52	43	71	47	38	64	42	35	58	38	32	53	35	29	49	32	26	41	27	22	35	23	29	30	30	25	27	26	22	35	23	19	32	21	17
		20-27	Interior	92	92	92	92	92	92	92	92	87	92	89	69	92	84	56	92	64	50	92	59	44	87	50	36	79	42	29	63	37	25	55	32	22	48	28	19	43	25	17
			Exposed	92	84	56	92	63	48	92	56	42	88	51	37	84	46	33	77	42	29	66	38	26	55	32	22	47	28	19	41	24	25	36	32	22	32	28	19	28	25	17
		27-45	Interior	95	95	95	95	95	95	95	95	92	95	95	87	95	93	84	95	89	63	93	85	56	85	62	46	59	53	38	51	46	32	45	40	27	40	36	24	35	32	21
			Exposed	95	93	83	95	88	61	91	84	53	86	64	47	64	58	42	59	53	38	54	48	34	45	41	28	39	35	23	34	30	20	30	26	25	26	23	22	23	31	19
	D	0-7	Interior	71	71	71	71	71	62	71	71	56	71	71	50	71	65	46	71	59	42	71	54	38	63	46	32	54	39	28	46	34	24	40	30	32	36	26	28	32	23	25
			Exposed	71	65	46	71	58	41	71	52	37	64	47	33	58	42	30	53	39	27	48	35	25	41	30	32	35	26	27	30	33	24	27	29	21	23	26	18	31	23	16
		7-20	Interior	71	71	62	71	71	55	71	60	49	71	54	45	71	49	40	71	45	37	62	41	34	53	34	28	45	30	24	39	26	32	34	22	28	30	30	25	27	26	22
			Exposed	71	49	40	68	43	36	60	39	32	54	35	29	49	32	26	45	29	24	41	27	22	34	23	28	30	29	24	26	25	21	34	22	18	30	20	16	26	17	14
		20-27	Interior	93	93	89	93	90	84	93	85	58	93	65	51	93	59	45	90	54	40	87	49	35	76	42	29	61	36	24	53	31	21	46	27	18	41	24	25	36	32	22
			Exposed	93	59	44	89	53	38	85	47	34	80	43	29	67	39	26	60	35	24	55	32	22	46	27	19	40	23	24	34	31	21	30	27	18	27	24	16	24	21	14
		27-45	Interior	96	96	94	96	96	89	96	94	84	96	90	64	93	85	57	88	76	51	84	62	45	58	52	37	50	45	31	43	39	26	38	34	22	33	30	19	30	27	25
			Exposed	93	85	56	87	67	49	83	59	43	60	53	38	54	48	34	49	44	31	45	40	27	38	34	23	33	29	19	28	25	24	25	22	21	22	30	18	29	26	16

* 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	Solarhooks ATI
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	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	65	69	69	55	69	69	47	69	58	41	69	50	35	61	44	31	54	39	28
			Exposed	69	69	69	69	69	69	69	69	62	69	69	56	69	69	51	69	67	46	69	60	42	69	51	36	60	43	31	52	38	27	45	33	23	40	29	31	35	26	28
		7-20	Interior	71	71	71	71	71	71	71	71	71	71	71	71	71	71	71	71	71	63	71	71	57	71	59	48	71	50	41	68	43	36	58	38	31	51	33	28	45	30	25
			Exposed	71	71	71	71	71	61	71	71	55	71	60	49	71	54	45	71	50	41	71	45	37	59	38	32	50	33	27	43	28	23	38	25	31	33	22	27	30	29	24
		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	57	85	61	46	85	52	38	84	46	32	72	40	28	61	36	24
			Exposed	85	85	85	85	85	85	85	85	84	85	85	58	85	68	51	85	60	45	85	55	40	85	46	33	70	40	27	59	34	23	51	30	21	45	26	18	40	23	24
		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	84	90	86	58	87	67	49	64	57	42	56	50	36	50	45	31
			Exposed	90	90	90	90	90	90	90	90	89	90	90	85	90	90	65	90	86	57	89	82	52	65	58	42	55	50	35	48	43	30	42	38	25	37	33	22	33	29	19
	C	0-7	Interior	69	69	69	69	69	69	69	69	69	69	69	60	69	69	55	69	69	50	69	65	46	69	54	38	64	47	33	55	40	29	48	35	25	43	31	33	38	28	29
			Exposed	69	69	54	69	69	49	69	62	44	69	56	39	69	50	36	63	46	33	58	42	30	49	36	25	42	30	33	36	26	28	32	23	25	28	31	22	25	27	19
		7-20	Interior	71	71	71	71	71	69	71	71	59	71	64	53	71	58	48	71	53	44	71	49	40	63	41	34	54	35	29	47	30	25	41	27	22	36	23	29	32	32	26
			Exposed	71	58	48	71	52	43	71	47	38	64	42	35	58	38	32	53	35	29	49	32	26	41	27	22	35	23	29	30	30	25	27	26	22	35	23	19	32	21	17
		20-27	Interior	85	85	85	85	85	85	85	85	85	85	85	69	85	84	56	85	64	50	85	59	44	85	50	36	79	42	29	63	37	25	55	32	22	48	28	19	43	25	17
			Exposed	85	84	56	85	63	48	85	56	42	85	51	37	84	46	33	77	42	29	66	38	26	55	32	22	47	28	19	41	24	25	36	32	22	32	28	19	28	25	17
		27-45	Interior	90	90	90	90	90	90	90	90	90	90	90	87	90	90	84	90	89	63	90	85	56	85	62	46	59	53	38	51	46	32	45	40	27	40	36	24	35	32	21
			Exposed	90	90	83	90	88	61	90	84	53	86	64	47	64	58	42	59	53	38	54	48	34	45	41	28	39	35	23	34	30	20	30	26	25	26	23	22	23	31	19
	D	0-7	Interior	71	71	71	71	71	62	71	71	56	71	71	50	71	65	46	71	59	42	71	54	38	63	46	32	54	39	28	46	34	24	40	30	32	36	26	28	32	23	25
			Exposed	71	65	46	71	58	41	71	52	37	64	47	33	58	42	30	53	39	27	48	35	25	41	30	32	35	26	27	30	33	24	27	29	21	23	26	18	31	23	16
		7-20	Interior	71	71	62	71	71	55	71	60	49	71	54	45	71	49	40	71	45	37	62	41	34	53	34	28	45	30	24	39	26	32	34	22	28	30	30	25	27	26	22
			Exposed	71	49	40	68	43	36	60	39	32	54	35	29	49	32	26	45	29	24	41	27	22	34	23	28	30	29	24	26	25	21	34	22	18	30	20	16	26	17	14
		20-27	Interior	87	87	87	87	87	84	87	85	58	87	65	51	87	59	45	87	54	40	87	49	35	76	42	29	61	36	24	53	31	21	46	27	18	41	24	25	36	32	22
			Exposed	87	59	44	87	53	38	85	47	34	80	43	29	67	39	26	60	35	24	55	32	22	46	27	19	40	23	24	34	31	21	30	27	18	27	24	16	24	21	14
		27-45	Interior	91	91	91	91	91	89	91	91	84	91	90	64	91	85	57	88	76	51	84	62	45	58	52	37	50	45	31	43	39	26	38	34	22	33	30	19	30	27	25
			Exposed	91	85	56	87	67	49	83	59	43	60	53	38	54	48	34	49	44	31	45	40	27	38	34	23	33	29	19	28	25	24	25	22	21	22	30	18	29	26	16
40	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	41	57	50	35	57	44	31	54	39	28
			Exposed	57	57	57	57	57	57	57	57	57	57	57	56	57	57	51	57	57	46	57	57	42	57	51	36	57	43	31	52	38	27	45	33	23	40	29	31	35	26	28
		7-20	Interior	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	57	60	59	48	60	50	41	60	43	36	58	38	31	51	33	28	45	30	25
			Exposed	60	60	60	60	60	60	60	60	55	60	60	49	60	54	45	60	50	41	60	45	37	59	38	32	50	33	27	43	28	23	38	25	31	33	22	27	30	29	24
		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	57	74	61	46	74	52	38	74	46	32	72	40	28	61	36	24
			Exposed	74	74	74	74	74	74	74	74	74	74	74	58	74	68	51	74	60	45	74	55	40	74	46	33	70	40	27	59	34	23	51	30	21	45	26	18	40	23	24
		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	84	85	85	58	80	67	49	64	57	42	56	50	36	50	45	31
			Exposed	85	85	85	85	85	85	85	85	85	85	85	65	85	85	57	85	82	52	65	58	42	55	50	35	48	43	30	42	38	25	37	33	22	33	29	19			
	C	0-7	Interior	57	57	57	57	57	57	57	57	57	57	57	46	57	57	55	57	57	50	57	57	46	57	54	38	57	47	33	55	40	29	48	35	25	43	31	33	38	28	29
			Exposed	57	57	54	57	57	49	57	57	44	57	56	39	57	50	36	57	46	33	57	42	30	49	36	25	42	30	33	36	26	28	32	23	25	28	31	22	25	27	19
		7-20	Interior	60	60	60	60	60	60	60	60	59	60	60	53	60	58	48	60	53	44	60	49	40	60	41	34	54	35	29	47	30	25	41	27	22	36	23	29	32	32	26
			Exposed	60	58	48	60	52	43	60	47	38	60	42	35	58	38	32	53	35	29	49	32	26	41	27	22	35	23	29	30	30	25	27	26	22	35	23	19	32	21	17
		20-27	Interior	74	74	74	74	74	74	74	74	74	74	74	69	74	74	56	74	64	50	74	59	44	74	50	36	74	42	29	63	37	25	55	32	22	48	28	19	43	25	17
			Exposed	74	74	56	74	63	48	74	56	42	74	51	37	74	46	33	74	42	29	66	38	26	55	32	22	47	28	19	41	24	25	36	32	22	32	28	19	28	25	17
		27-45	Interior	85	85	85	85	85	85	85	85	85	85	85	85	85	85	84	85	85	63	84	84	56	77	62	46	59	53	38	51	46	32	45	40	27	40	36	24	35	32	21
			Exposed	85	85	83	85	85	61	85	84	53	85	64	47	64	58	42	59	53	38	54	48	34	45	41	28	39	35	23	34	30	20	30	26	25	26	23	22	23	31	19
	D	0-7	Interior	61	61	61	61	61	61	61	61	56	61	61	50	61	61	46	61	59	42	61	54	38	61	46	32	54	39	28	46	34	24	40	30	32	36	26	28	32	23	25
			Exposed	61	61	46	61	58	41	61	52	37	61	47	33	58	42	30	53	39	27	48	35	25	41	30	32	35	26	27	30	33	24	27	29	21	23	26	18	31	23	16
		7-20	Interior	65	65	62	65	65	55	65	60	49	65	54	45	65	49	40	65	45	37	62	41	34	53	34	28	45	30	24	39	26	32	34	22	28	30	30	25	27	26	22
			Exposed	65	49	40	65	43	36	60	39	32	54	35	29	49	32	26	45	29	24	41	27	22	34	23	28	30	29	24	26	25	21	34	22	18	30	20	16	26	17	14
		20-27	Interior	79	79	79	79	79	79	79	79	58	79	65	51	79	59	45	79	54	40	79	49	35	76	42	29	61	36	24	53	31	21	46	27	18	41	24	25	36	32	22
			Exposed	79	59	44	79	53	38	79	47	34	79	43	29	67	39	26	60	35	24	55	32	22	46	27	19	40	23	24	34	31	21	30	27	18	27	24	16	24	21	14
		27-45	Interior	87	87	87	87	87	87	87	87	84	87	87	64	87	85	57	85	76	51	83	62	45	58	52	37	50	45	31	43	39	26	38	34	22	33	30	19	30	27	25
			Exposed	87	85	56	87	67	49	83	59	43	60	53	38	54	48	34	49	44	31	45	40	27	38	34	23	33	29	19	28	25	24	25	22	21	22	30	18	29	26	16
50	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	41	47	47	35	47	44	31	47	39	28
			Exposed	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	46	47	47	42	47	47	36	47	43	31	47	38	27	45	33	23	40	29	31	35	26	28
		7-20	Interior	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	48	50	50	41	50	43	36	50	38	31	50	33	28	45	30	25			
			Exposed	50	50	50	50	50	50	50	50	50	50	50	49	50	50	45	50	50	41	50	45	37	50	38	32	50	33	27	43	28	23	38	25	31	33	22	27	30	29	24
		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	57	64	61	46	64	52	38	64	46	32	63	40	28	60	36	24
			Exposed	64	64	64	64	64	64	64	64	64	64	64	58	64	64	51	64	60	45	64	55	40	64	46	33	64	40	27	59	34	23	51	30	21	45	26	18	40	23	24
		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	72	72	58	67	67	49	63	57	42	56	50	36	50	45	31
			Exposed	75	75	75	75	75	75	75	75	75	75	75	75	75	75	65	75	75	57	75	75	52	65	58	42	55	50	35	48	43	30	42	38	25	37	33	22	33	29	19
	C	0-7	Interior	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	47	33	47	40	29	47	35	25	43	31	33	38	28	29
			Exposed	47	47	47	47	47	47	47	47	44	47	47	39	47	47	36	47	46	33	47	42	30	47	36	25	42	30	33	36	26	28	32	23	25	28	31	22	25	27	19
		7-20	Interior	50	50	50	50	50	50	50	50	50	50	50	50	50	50	48	50	50	44	50	49	40	50	41	34	50	35	29	47	30	25	41	27	22	36	23	29	32	32	26
			Exposed	50	50	48	50	50	43	50	47	38	50	42	35	50	38	32	50	35	29	49	32	26	41	27	22	35	23	29	30	30	25	27	26	22	35	23	19	32	21	17
		20-27	Interior	64	64	64	64	64	64	64	64	64	64	64	64	64	64	56	64	64	50	64	59	44	64	50	36	64	42	29	61	37	25	55	32	22	48	28	19	43	25	17
			Exposed	64	64	56	64	63	48	64	56	42	64	51	37	64	46	33	64	42	29	64	38	26	55	32	22	47	28	19	41	24	25	36	32	22	32	28	19	28	25	17
		27-45	Interior	75	75	75	75	75	75	75	75	75	75	75	75	75	75	74	74	63	71	71	56	65	62	46	59	53	38	51	46	32	45	40	27	40	36	24	35	32	21	
			Exposed	75	75	75	75	75	61	75	75	53	75	64	47	64	58	42	59	53	38	54	48	34	45	41	28	39	35	23	34	30	20	30	26	25	26	23	22	23	31	19
	D	0-7	Interior	51	51	51	51	51	51	51	51	51	51	51	50	51	51	46	51	51	42	51	51	38	51	46	32	51	39	28	46	34	24	40	30	32	36	26	28	32	23	25
			Exposed	51	51	46	51	51	41	51	51	37	51	47	33	51	42	30	51	39	27	48	35	25	41	30	32	35	26	27	30	33	24	27	29	21	23	26	18	31	23	16
		7-20	Interior	56	56	56	56	56	55	56	56	49	56	54	45	56	49	40	56	45	37	56	41	34	53	34	28	45	30	24	39	26	32	34	22	28	30	30	25	27	26	22
			Exposed	56	49	40	56	43	36	56	39	32	54	35	29	49	32	26	45	29	24	41	27	22	34	23	28	30	29	24	26	25	21	34	22	18	30	20	16	26	17	14
		20-27	Interior	69	69	69	69	69	69	69	69	58	69	65	51	69	59	45	69	54	40	69	49	35	69	42	29	61	36	24	53	31	21	46	27	18	41	24	25	36	32	22
			Exposed	69	59	44	69	53	38	69	47	34	69	43	29	67	39	26	60	35	24	55	32	22	46	27	19	40	23	24	34	31	21	30	27	18	27	24	16	24	21	14
		27-45	Interior	80	80	80	80	80	80	80	80	80	80	80	64	78	78	57	74	74	51	71	62	45	58	52	37	50	45	31	43	39	26	38	34	22	33	30	19	30	27	25
			Exposed	80	80	56	80	67	49	80	59	43	60	53	38	54	48	34	49	44	31	45	40	27	38	34	23	33	29	19	28	25	24	25	22	21	22	30	18	29	26	16

* 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	Solarhooks ATI
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	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	31	39	39	28			
			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	31	39	38	27	39	33	23	39	29	31	35	26	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	41	43	43	36	43	38	31	43	33	28	43	30	25			
			Exposed	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	41	43	43	37	43	38	32	43	33	27	43	28	23	38	25	31	33	22	27	30	29	24
		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	52	57	52	38	57	46	32	55	40	28	54	36	24
			Exposed	57	57	57	57	57	57	57	57	57	57	57	57	57	57	51	57	57	45	57	55	40	57	46	33	57	40	27	57	34	23	51	30	21	45	26	18	40	23	24
		27-45	Interior	67	67	67	67	67	67	67	67	67	67	67	67	67	67	67	67	67	67	67	67	67	66	66	66	63	63	58	60	60	49	58	57	42	55	50	36	50	45	31
			Exposed	67	67	67	67	67	67	67	67	67	67	67	67	67	65	67	67	57	67	67	52	65	58	42	55	50	35	48	43	30	42	38	25	37	33	22	33	29	19			
	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	38	39	39	33	39	39	29	39	35	25	39	31	33	38	28	29
			Exposed	39	39	39	39	39	39	39	39	39	39	39	39	39	36	39	39	33	39	39	30	39	36	25	39	30	33	36	26	28	32	23	25	28	31	22	25	27	19
		7-20	Interior	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	40	43	41	34	43	35	29	43	30	25	41	27	22	36	23	29	32	32	26
			Exposed	43	43	43	43	43	43	43	43	38	43	42	35	43	38	32	43	35	29	43	32	26	41	27	22	35	23	29	30	30	25	27	26	22	35	23	19	32	21	17
		20-27	Interior	57	57	57	57	57	57	57	57	57	57	57	57	57	56	57	57	50	57	57	44	57	50	36	56	42	29	54	37	25	52	32	22	48	28	19	43	25	17			
			Exposed	57	57	56	57	57	48	57	56	42	57	51	37	57	46	33	57	42	29	57	38	26	55	32	22	47	28	19	41	24	25	36	32	22	32	28	19	28	25	17
		27-45	Interior	67	67	67	67	67	67	67	67	67	67	67	67	66	66	66	64	64	63	63	63	56	59	59	46	56	53	38	51	46	32	45	40	27	40	36	24	35	32	21
			Exposed	67	67	67	67	67	61	67	67	53	67	64	47	64	58	42	59	53	38	54	48	34	45	41	28	39	35	23	34	30	20	30	26	25	26	23	22	23	31	19
	D	0-7	Interior	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	42	43	43	38	43	43	32	43	39	28	43	34	24	40	30	32	36	26	28	32	23	25
			Exposed	43	43	43	43	43	41	43	43	37	43	43	33	43	42	30	43	39	27	43	35	25	41	30	32	35	26	27	30	33	24	27	29	21	23	26	18	31	23	16
		7-20	Interior	47	47	47	47	47	47	47	47	47	47	47	45	47	47	40	47	45	37	47	41	34	47	34	28	45	30	24	39	26	32	34	22	28	30	30	25	27	26	22
			Exposed	47	47	40	47	43	36	47	39	32	47	35	29	47	32	26	45	29	24	41	27	22	34	23	28	30	29	24	26	25	21	34	22	18	30	20	16	26	17	14
		20-27	Interior	61	61	61	61	61	61	61	61	58	61	61	51	61	59	45	61	54	40	61	49	35	60	42	29	57	36	24	53	31	21	46	27	18	41	24	25	36	32	22
			Exposed	61	59	44	61	53	38	61	47	34	61	43	29	61	39	26	60	35	24	55	32	22	46	27	19	40	23	24	34	31	21	30	27	18	27	24	16	24	21	14
		27-45	Interior	72	72	72	72	72	72	72	72	72	70	70	64	67	67	57	65	65	51	63	62	45	58	52	37	50	45	31	43	39	26	38	34	22	33	30	19	30	27	25
			Exposed	72	72	56	72	67	49	72	59	43	60	53	38	54	48	34	49	44	31	45	40	27	38	34	23	33	29	19	28	25	24	25	22	21	22	30	18	29	26	16
70	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	31	34	34	28
			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	31	34	34	27	34	33	23	34	29	31	34	26	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	36	37	37	31	37	33	28	37	30	25
			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	27	37	28	23	37	25	31	33	22	27	30	29	24
		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	46	50	50	38	50	46	32	50	40	28	48	36	24
			Exposed	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	45	50	50	40	50	46	33	50	40	27	50	34	23	50	30	21	45	26	18	40	23	24
		27-45	Interior	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	60	60	60	57	57	57	55	55	49	53	53	42	50	50	36	48	45	31
			Exposed	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	57	61	61	52	60	58	42	55	50	35	48	43	30	42	38	25	37	33	22	33	29	19
	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	33	34	34	29	34	34	25	34	31	33	34	28	29
			Exposed	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	33	34	34	30	34	34	25	34	30	33	34	26	28	32	23	25	28	31	22	25	27	19
		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	34	37	35	29	37	30	25	37	27	22	36	23	29	32	32	26
			Exposed	37	37	37	37	37	37	37	37	37	37	37	35	37	37	32	37	35	29	37	32	26	37	27	22	35	23	29	30	30	25	27	26	22	35	23	19	32	21	17
		20-27	Interior	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	44	50	50	36	50	42	29	48	37	25	47	32	22	45	28	19	43	25	17
			Exposed	50	50	50	50	50	48	50	50	42	50	50	37	50	46	33	50	42	29	50	38	26	50	32	22	47	28	19	41	24	25	36	32	22	32	28	19	28	25	17
		27-45	Interior	61	61	61	61	61	61	61	61	61	61	61	61	60	60	60	58	58	58	57	57	56	54	54	46	51	51	38	49	46	32	45	40	27	40	36	24	35	32	21
			Exposed	61	61	61	61	61	61	61	61	53	61	61	47	60	58	42	58	53	38	54	48	34	45	41	28	39	35	23	34	30	20	30	26	25	26	23	22	23	31	19
	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	32	37	37	28	37	34	24	37	30	32	36	26	28	32	23	25
			Exposed	37	37	37	37	37	37	37	37	37	37	37	33	37	37	30	37	37	27	37	35	25	37	30	32	35	26	27	30	33	24	27	29	21	23	26	18	31	23	16
		7-20	Interior	41	41	41	41	41	41	41	41	41	41	41	41	41	41	40	41	41	37	41	41	34	41	34	28	41	30	24	39	26	32	34	22	28	30	30	25	27	26	22
			Exposed	41	41	40	41	41	36	41	39	32	41	35	29	41	32	26	41	29	24	41	27	22	34	23	28	30	29	24	26	25	21	34	22	18	30	20	16	26	17	14
		20-27	Interior	55	55	55	55	55	55	55	55	55	55	55	51	55	55	45	55	54	40	55	49	35	54	42	29	52	36	24	50	31	21	46	27	18	41	24	25	36	32	22
			Exposed	55	55	44	55	53	38	55	47	34	55	43	29	55	39	26	55	35	24	55	32	22	46	27	19	40	23	24	34	31	21	30	27	18	27	24	16	24	21	14
		27-45	Interior	65	65	65	65	65	65	64	64	64	63	63	63	61	61	57	59	59	51	57	57	45	54	52	37	50	45	31	43	39	26	38	34	22	33	30	19	30	27	25
			Exposed	65	65	56	65	65	49	64	59	43	60	53	38	54	48	34	49	44	31	45	40	27	38	34	23	33	29	19	28	25	24	25	22	21	22	30	18	29	26	16
80	B	0-7	Interior	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	28			
			Exposed	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	27	30	30	23	30	29	31	30	26	28
		7-20	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	31	32	32	28	32	30	25
			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	27	32	28	23	32	25	31	32	22	27	30	29	24
		20-27	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	38	44	44	32	44	40	28	44	36	24
			Exposed	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	40	44	44	33	44	40	27	44	34	23	44	30	21	44	26	18	40	23	24
		27-45	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	53	53	53	51	51	49	49	49	42	47	47	36	45	45	31
			Exposed	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	52	55	55	42	53	50	35	48	43	30	42	38	25	37	33	22	33	29	19
	C	0-7	Interior	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	28			
			Exposed	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	29	30	30	25	30	30	33	30	29	19
		7-20	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	28	32	30	25
			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	32	32	32	24
		20-27	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	44	44	44	44	44	44	36	44	44	32
			Exposed	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	44	44	44	44	44	44	44	44	44	32
		27-45	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	53	53	53	51	51	49	49	49	42	47	47	36
			Exposed	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	52	55	55	42	53	50	35	48	43	30	42	38	25	37	33	22	33	29	19
	D	0-7	Interior	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	29	30	30	25	30	30	33	30	28	29
			Exposed	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	26	30	30	23	30	30	31	30	27	19
		7-20	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	29	32	32	27	32	32	32	32	32	26
			Exposed	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	29	32	32	26	32	27	22	32	23	29	30	30	25	27	26	22	35	23	19	32	21	17
		20-27	Interior	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	36	44	42	29	44	37	25	42	32	22	41	28	19	40	25	17
			Exposed	44	44	44	44	44	44	44	44	42	44	44	37	44	44	33	44	42	29	44	38	26	44	32	22	44	28	19	41	24	25	36	32	22	32	28	19	28	25	17
		27-45	Interior	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	53	53	53	52	52	52	50	50	46	48	48	38	45	45	32	43	40	27	40	36	24	35	32	21
			Exposed	55	55	55	55	55	55	55	55	53	55	55	47	55	55	42	53	53	38	52	48	34	45	41	28	39	35	23	34	30	20	30	26	25	26	23	22	23	31	19
	D	0-7	Interior	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	28	33	33	24	33	30	32	33	26	28	32	23	25
			Exposed	33	33	33	33	33	33	33	33	33	33	33	33	33	33	30	33	33	27	33	33	25	33	30	32	33	26	27	30	33	24	27	29	21	23	26	18	31	23	16
		7-20	Interior	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	34	36	34	28	36	30	24	36	26	32	34	22	28	30	30	25	27	26	22
			Exposed	36	36	36	36	36	36	36	36	32	36	35	29	36	32	26	36	29	24	36	27	22	34	23	28	30	29	24	26	25	21	34	22	18	30	20	16	26	17	14
		20-27	Interior	48	48	48	48	48	48	48	48	48	48	48	48	48	48	45	48	48	40	48	48	35	48	42	29	47	36	24	45	31	21	43	27	18	41	24	25	36	32	22
			Exposed	48	48	44	48	48	38	48	47	34	48	43	29	48	39	26	48	35	24	48	32	22	46	27	19	40	23	24	34	31	21	30	27	18	27	24	16	24	21	14
		27-45	Interior	60	60	60	60	60	60	59	59	59	58	58	58	56	56	56	55	55	51	53	53	45	50	50	37	47	45	31	43	39	26	38	34	22	33	30	19	30	27	25
			Exposed	60	60	56	60	60	49	59	59	43	58	53	38	54	48	34	49	44	31	45	40	27	38	34	23	33	29	19	28	25	24	25	22	21	22	30	18	29	26	16

* 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	Solarhooks ATI
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	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27
			Exposed	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	23	27	27	31	27	26	28		
		7-20	Interior	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	28	29	29	25			
			Exposed	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	27	29	28	23	29	25	31	29	22	27	29	29	24
		20-27	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	38	39	39	32	39	39	28	39	36	24			
			Exposed	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	33	39	39	27	39	34	23	39	30	21	39	26	18	39	23	24			
		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	47	47	47	45	45	42	44	44	36	42	42	31		
			Exposed	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	42	49	49	35	47	43	30	42	38	25	37	33	22	33	29	19
	C	0-7	Interior	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	25	27	27	33	27	27	29		
			Exposed	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	25	27	27	33	27	26	28	27	23	25	27	31	22	25	27	19
		7-20	Interior	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	25	29	27	22	29	23	29	29	32	26
			Exposed	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	26	29	27	22	29	23	29	29	30	25	27	26	22	35	23	19	32	21	17
		20-27	Interior	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	29	39	37	25	39	32	22	38	28	19	37	25	17
			Exposed	39	39	39	39	39	39	39	39	39	39	39	37	39	39	33	39	39	29	39	38	26	39	32	22	39	28	19	39	24	25	36	32	22	32	28	19	28	25	17
		27-45	Interior	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	48	48	48	46	46	46	44	44	38	42	42	32	40	40	27	38	36	24	35	32	21
			Exposed	49	49	49	49	49	49	49	49	49	49	49	47	49	49	42	49	49	38	48	48	34	45	41	28	39	35	23	34	30	20	30	26	25	26	23	22	23	31	19
	D	0-7	Interior	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	28	29	29	24	29	29	32	29	26	28	29	23	25
			Exposed	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	27	29	29	25	29	29	32	29	26	27	29	33	24	27	29	21	23	26	18	31	23	16
		7-20	Interior	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	28	32	30	24	32	26	32	32	22	28	30	30	25	27	26	22
			Exposed	32	32	32	32	32	32	32	32	32	32	32	29	32	32	26	32	29	24	32	27	22	32	23	28	30	29	24	26	25	21	34	22	18	30	20	16	26	17	14
		20-27	Interior	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	40	43	43	35	43	42	29	43	36	24	42	31	21	40	27	18	39	24	25	36	32	22
			Exposed	43	43	43	43	43	38	43	43	34	43	43	29	43	39	26	43	35	24	43	32	22	43	27	19	40	23	24	34	31	21	30	27	18	27	24	16	24	21	14
		27-45	Interior	55	55	55	55	55	55	54	54	54	53	53	53	52	52	52	51	51	51	49	49	45	47	47	37	44	44	31	42	39	26	38	34	22	33	30	19	30	27	25
			Exposed	55	55	55	55	55	49	54	54	43	53	53	38	52	48	34	49	44	31	45	40	27	38	34	23	33	29	19	28	25	24	25	22	21	22	30	18	29	26	16
100	B	0-7	Interior	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24
			Exposed	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	23	24	24	31	24	24	28
		7-20	Interior	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	25
			Exposed	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	23	26	25	31	26	22	27	26	29	24
		20-27	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	32	35	35	28	35	35	24
			Exposed	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	33	35	35	27	35	34	23	35	30	21	35	26	18	35	23	24
		27-45	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	44	44	44	42	42	42	41	41	36	39	39	31
			Exposed	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	42	45	45	35	44	43	30	42	38	25	37	33	22	33	29	19			
	C	0-7	Interior	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24
			Exposed	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	33	24	24	29
		7-20	Interior	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	25
			Exposed	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	24
		20-27	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	32	35	35	28	35	35	24
			Exposed	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	33	35	35	27	35	34	23	35	30	21	35	26	18	35	23	24
		27-45	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	44	44	44	42	42	42	41	41	36	39	39	31
			Exposed	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	42	45	45	35	44	43	30	42	38	25	37	33	22	33	29	19			
	D	0-7	Interior	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	24	27	27	32	27	26	28	27	23	25
			Exposed	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	25	27	27	32	27	26	27	27	33	24	27	29	21	23	26	18	31	23	16
		7-20	Interior	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	28	29	29	24	29	26	32	29	22	28	29	30	25	27	26	22
			Exposed	29	29	29	29	29	29	29	29	29	29	29	29	29	29	26	29	29	24	29	27	22	29	23	28	29	29	24	26	25	21	34	22	18	30	20	16	26	17	14
		20-27	Interior	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	35	39	39	29	39	36	24	39	31	21	37	27	18	36	24	25	35	32	22
			Exposed	39	39	39	39	39	38	39	39	34	39	39	29	39	39	26	39	35	24	39	32	22	39	27	19	39	23	24	34	31	21	30	27	18	27	24	16	24	21	14
		27-45	Interior	49	49	49	49	49	49	49	49	49	49	49	49	48	48	48	47	47	47	46	46	45	44	44	37	42	42	31	40	39	26	38	34	22	33	30	19	30	27	25
			Exposed	49	49	49	49	49	49	49	49	43	49	49	38	48	48	34	47	44	31	45	40	27	38	34	23	33	29	19	28	25	24	25	22	21	22	30	18	29	26	16

* 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.