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

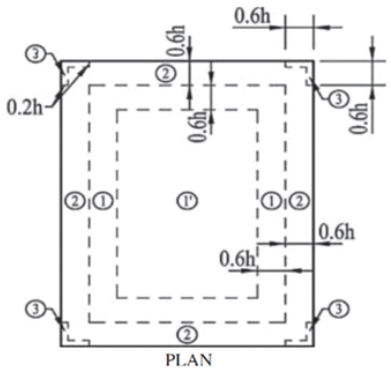
- 0.2-s Spectral Response Acceleration, SS ≤ 3
- S_S = 1.25 and 3 per criteria shown on individual span tables sheets.
- S_1 = 0.5
- Seismic site class D

Array Assumptions

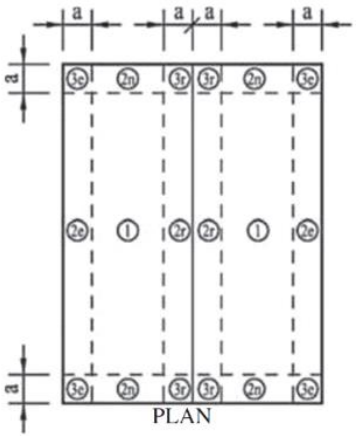
- Module orientation and Rail direction per criteria shown on individual span tables sheets.
- Maximum module dimensions of 40.1" x 67" (~19 sq.ft, 47.65 lbs) and 41" x 80" (~23 sq.ft, 58.6 lbs) per criteria shown on individual span tables sheets.
- Minimum distance between modules and roof edge is at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

#N/A

ASCE 7-16	II	30 ft	Ss = 1.25	19 sq.ft	PORTRAIT	CROSS-SLOPE	NXT HD	NXT COMBO	Flashloc DUO Rafter
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	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	124	124	124	124	124	124	124	124	124	124	124	124	124	124	94	124	124	80	124	124	69	124	88	52	124	69	42	91	55	36	73	45	31	60	39	28	50	35	24
			Exposed	124	124	93	124	124	77	124	121	64	124	91	54	124	78	46	124	67	41	97	59	37	74	46	32	58	38	27	47	33	23	40	29	20	35	25	18	31	23	16
		7-20	Interior	124	124	124	124	124	124	124	124	124	124	124	124	124	124	83	124	124	69	124	83	58	124	60	43	77	46	37	64	38	32	54	33	28	46	29	24	40	26	22
			Exposed	124	124	82	124	95	66	124	76	54	124	63	45	88	53	40	76	45	36	68	40	33	55	34	28	45	29	24	38	25	21	33	22	18	29	19	16	26	17	14
		20-27	Interior	126	126	126	126	126	126	126	126	126	126	126	126	126	126	126	126	126	126	126	126	92	126	84	64	126	63	47	98	49	38	79	40	32	67	36	27	57	32	23
			Exposed	126	126	126	126	126	126	126	126	83	126	88	67	126	73	55	126	62	46	126	53	40	80	41	32	65	35	26	54	30	22	46	26	18	40	23	16	35	21	14
		27-45	Interior	128	128	128	128	128	128	128	128	128	128	128	128	128	128	128	128	128	128	128	128	128	128	128	80	128	91	61	98	70	48	73	56	40	57	46	34	46	40	29
			Exposed	128	128	128	128	128	128	128	128	107	128	128	84	128	128	70	128	89	60	128	76	52	75	57	40	55	45	33	42	38	28	37	33	24	33	29	21	29	26	18
	C	0-7	Interior	124	124	124	124	124	87	124	124	72	124	105	61	124	87	52	124	75	45	124	65	40	83	51	34	65	41	29	52	36	25	43	31	22	38	27	19	33	24	17
			Exposed	124	86	52	124	72	43	105	61	39	86	53	35	74	46	32	64	41	29	56	37	26	44	31	22	37	27	19	32	23	16	28	20	14	25	18	13	22	16	11
		7-20	Interior	124	124	96	124	124	76	124	88	61	124	72	51	124	60	43	84	51	39	74	43	35	60	36	30	49	31	26	41	27	22	36	23	19	32	21	17	28	18	15
			Exposed	124	59	42	81	48	38	70	41	34	61	37	31	54	34	28	48	31	25	43	28	23	36	24	20	31	20	17	27	18	15	23	15	13	21	14	11	18	12	10
		20-27	Interior	126	126	126	126	126	126	126	126	98	126	126	78	126	84	63	126	70	53	126	60	45	89	45	35	72	38	29	60	32	24	50	28	20	43	25	17	38	22	15
			Exposed	126	83	63	126	67	50	126	55	42	93	47	36	80	41	32	71	37	28	63	34	25	51	29	20	42	25	17	36	21	14	32	19	13	28	16	11	25	14	10
		27-45	Interior	128	128	128	128	128	128	128	128	128	128	128	95	128	128	80	128	104	68	128	86	58	87	64	44	63	50	36	48	41	31	40	36	26	35	31	22	31	28	19
			Exposed	128	128	79	128	96	65	128	79	54	91	67	46	74	57	40	61	49	36	52	42	32	40	36	26	34	31	22	30	27	18	26	23	16	23	21	14	20	18	12
	D	0-7	Interior	124	124	78	124	122	64	124	90	54	124	77	46	124	66	40	95	57	37	82	50	34	63	40	28	50	34	24	41	30	21	36	26	18	31	23	16	28	20	14
			Exposed	124	66	40	91	55	36	76	47	32	65	41	29	56	37	26	49	34	24	43	31	22	36	26	19	31	23	16	27	19	14	23	17	12	21	15	11	18	13	14
		7-20	Interior	124	97	67	124	77	54	124	62	44	85	52	39	75	44	36	66	39	32	59	36	30	48	30	25	40	26	22	34	23	19	30	20	16	27	17	14	24	15	13
			Exposed	74	43	36	64	38	32	56	34	28	49	31	26	43	28	23	39	26	21	36	24	19	30	20	16	26	17	14	23	15	12	20	13	11	17	11	14	15	10	13
		20-27	Interior	126	126	126	126	126	84	126	88	66	126	72	54	126	60	45	123	51	39	88	44	35	70	37	28	57	31	23	48	27	19	41	24	16	36	21	14	32	19	13
			Exposed	126	60	45	99	49	38	82	42	33	72	38	29	63	34	25	56	31	23	50	28	20	41	24	16	35	21	14	30	18	12	27	16	11	23	14	9	21	12	8
		27-45	Interior	128	128	128	128	128	111	128	128	83	128	128	69	128	87	59	128	74	50	85	63	44	60	48	35	45	39	29	38	34	25	33	30	21	29	26	18	26	23	16
			Exposed	128	86	58	99	71	48	78	59	41	63	50	36	52	43	32	44	39	29	40	36	26	34	30	21	29	26	18	25	22	15	22	20	13	19	17	11	17	15	10
10	B	0-7	Interior	88	88	88	88	88	88	88	88	88	88	88	88	88	88	88	88	88	80	88	88	69	88	88	52	88	69	42	88	55	36	73	45	31	60	39	28	50	35	24
			Exposed	88	88	88	88	88	77	88	88	64	88	88	54	88	78	46	88	67	41	88	59	37	74	46	32	58	38	27	47	33	23	40	29	20	35	25	18	31	23	16
		7-20	Interior	89	89	89	89	89	89	89	89	89	89	89	89	89	89	83	89	89	69	89	83	58	89	60	43	77	46	37	64	38	32	54	33	28	46	29	24	40	26	22
			Exposed	89	89	82	89	89	66	89	76	54	89	63	45	88	53	40	76	45	36	68	40	33	55	34	28	45	29	24	38	25	21	33	22	18	29	19	16	26	17	14
		20-27	Interior	104	104	104	104	104	104	104	104	104	104	104	104	104	104	104	104	104	104	104	104	92	104	84	64	104	63	47	98	49	38	79	40	32	67	36	27	57	32	23
			Exposed	104	104	104	104	104	104	104	104	83	104	88	67	104	73	55	104	62	46	104	53	40	80	41	32	65	35	26	54	30	22	46	26	18	40	23	16	35	21	14
		27-45	Interior	128*	128*	128*	128*	128*	128*	128*	128*	128*	128*	128*	128*	128*	128*	128*	128*	128*	128*	128*	128*	128*	128*	128*	80	128*	91	61	98	70	48	73	56	40	57	46	34	46	40	29
			Exposed	128*	128*	128*	128*	128*	128*	128*	128*	128*	128*	128*	84	128*	128*	70	128*	89	60	128*	76	52	75	57	40	55	45	33	42	38	28	37	33	24	33	29	21	29	26	18
	C	0-7	Interior	88	88	88	88	88	87	88	88	72	88	88	61	88	87	52	88	75	45	88	65	40	83	51	34	65	41	29	52	36	25	43	31	22	38	27	19	33	24	17
			Exposed	88	86	52	88	72	43	88	61	39	86	53	35	74	46	32	64	41	29	56	37	26	44	31	22	37	27	19	32	23	16	28	20	14	25	18	13	22	16	11
		7-20	Interior	89	89	89	89	89	76	89	88	61	89	72	51	89	60	43	84	51	39	74	43	35	60	36	30	49	31	26	41	27	22	36	23	19	32	21	17	28	18	15
			Exposed	89	59	42	81	48	38	70	41	34	61	37	31	54	34	28	48	31	25	43	28	23	36	24	20	31	20	17	27	18	15	23	15	13	21	14	11	18	12	10
		20-27	Interior	104	104	104	104	104	104	104	104	98	104	104	78	104	84	63	104	70	53	104	60	45	89	45	35	72	38	29	60	32	24	50	28	20	43	25	17	38	22	15
			Exposed	104	83	63	104	67	50	104	55	42	93	47	36	80	41	32	71	37	28	63	34	25	51	29	20	42	25	17	36	21	14	32	19	13	28	16	11	25	14	10
		27-45	Interior	128*	128*	128*	128*	128*	128*	128*	128*	128*	128*	128*	95	128*	128*	80	128*	104	68	128*	86	58	87	64	44	63	50	36	48	41	31	40	36	26	35	31	22	31	28	19
			Exposed	128*	128*	79	128*	96	65	128*	79	54	91	67	46	74	57	40	61	49	36	52	42	32	40	36	26	34	31	22	30	27	18	26	23	16	23	21	14	20	18	12
	D	0-7	Interior	88	88	78	88	88	64	88	88	54	88	77	46	88	66	40	88	57	37	82	50	34	63	40	28	50	34	24	41	30	21	36	26	18	31	23	16	28	20	14
			Exposed	88	66	40	88	55	36	76	47	32	65	41	29	56	37	26	49	34	24	43	31	22	36	26	19	31	23	16	27	19	14	23	17	12	21	15	11	18	13	14
		7-20	Interior	89	89	67	89	77	54	89	62	44	85	52	39	75	44	36	66	39	32	59	36	30	48	30	25	40	26	22	34	23	19	30	20	16	27	17	14	24	15	13
			Exposed	74	43	36	64	38	32	56	34	28	49	31	26	43	28	23	39	26	21	36	24	19	30	20	16	26	17	14	23	15	12	20	13	11	17	11	14	15	10	13
		20-27	Interior	108	108	108	108	108	84	108	88	66	108	72	54	108	60	45	108	51	39	88	44	35	70	37	28	57	31	23	48	27	19	41	24	16	36	21	14	32	19	13
			Exposed	108	60	45	99	49	38	82	42	33	72	38	29	63	34	25	56	31	23	50	28	20	41	24	16	35	21	14	30	18	12	27	16	11	23	14	9	21	12	8
		27-45	Interior	130*	130*	130*	130*	130*	130*	130*	130*	83	130*	130*	69	130*	87	59	130*	74	50	85	63	44	60	48	35	45	39	29	38	34	25	33	30	21	29	26	18	26	23	16
			Exposed	130*	86	58	99	71	48	78	59	41	63	50	36	52	43	32	44	39	29	40	36	26	34	30	21	29	26	18	25	22	15	22	20	13	19	17	11	17	15	10
20	B	0-7	Interior	62	62	62	62	62	62	62	62	62	62	62	62	62	62	62	62	62	62	62	62	62	62	62	52	62	62	42	62	55	36	62	45	31	60	39	28	50	35	24
			Exposed	62	62	62	62	62	62	62	62	62	62	62	54	62	62	46	62	62	41	62	59	37	62	46	32	58	38	27	47	33	23	40	29	20	35	25	18	31	23	16
		7-20	Interior	62	62	62	62	62	62	62	62	62	62	62	62	62	62	62	62	62	62	62	62	58	62	60	43	62	46	37	62	38	32	54	33	28	46	29	24	40	26	22
			Exposed	62	62	62	62	62	62	62	62	54	62	62	45	62	53	40	62	45	36	62	40	33	55	34	28	45	29	24	38	25	21	33	22	18	29	19	16	26	17	14
		20-27	Interior	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78	64	78	63	47	78	49	38	78	40	32	67	36	27	57	32	23
			Exposed	78	78	78	78	78	78	78	78	78	78	78	67	78	73	55	78	62	46	78	53	40	78	41	32	65	35	26	54	30	22	46	26	18	40	23	16	35	21	14
		27-45	Interior	88*	88*	88*	88*	88*	88*	88*	88*	88*	88*	88*	88*	88*	88*	88*	88*	88*	88*	88*	88*	88*	88*	88*	80	88*	88*	61	88*	70	48	73	56	40	57	46	34	46	40	29
			Exposed	88*	88*	88*	88*	88*	88*	88*	88*	88*	88*	88*	85*	88*	88*	70	88*	88*	60	88*	76	52	75	57	40	55	45	33	42	38	28	37	33	24	33	29	21	29	26	18
	C	0-7	Interior	62	62	62	62	62	62	62	62	62	62	62	61	62	62	52	62	62	45	62	62	40	62	51	34	62	41	29	52	36	25	43	31	22	38	27	19	33	24	17
			Exposed	62	62	52	62	62	43	62	61	39	62	53	35	62	46	32	62	41	29	56	37	26	44	31	22	37	27	19	32	23	16	28	20	14	25	18	13	22	16	11
		7-20	Interior	62	62	62	62	62	62	62	62	61	62	62	51	62	60	43	62	51	39	62	43	35	60	36	30	49	31	26	41	27	22	36	23	19	32	21	17	28	18	15
			Exposed	62	59	42	62	48	38	62	41	34	61	37	31	54	34	28	48	31	25	43	28	23	36	24	20	31	20	17	27	18	15	23	15	13	21	14	11	18	12	10
		20-27	Interior	78	78	78	78	78	78	78	78	78	78	78	78	78	78	63	78	70	53	78	60	45	78	45	35	72	38	29	60	32	24	50	28	20	43	25	17	38	22	15
			Exposed	78	78	63	78	67	50	78	55	42	78	47	36	78	41	32	71	37	28	63	34	25	51	29	20	42	25	17	36	21	14	32	19	13	28	16	11	25	14	10
		27-45	Interior	88*	88*	88*	88*	88*	88*	88*	88*	88*	88*	88*	88*	88*	88*	80	88*	88*	68	88*	86*	58	87*	64	44	63	50	36	48	41	31	40	36	26	35	31	22	31	28	19
			Exposed	88*	88*	79	88*	88*	65	88*	79	54	88*	67	46	74	57	40	61	49	36	52	42	32	40	36	26	34	31	22	30	27	18	26	23	16	23	21	14	20	18	12
	D	0-7	Interior	62	62	62	62	62	62	62	62	54	62	62	46	62	62	40	62	57	37	62	50	34	62	40	28	50	34	24	41	30	21	36	26	18	31	23	16	28	20	14
			Exposed	62	62	40	62	55	36	62	47	32	62	41	29	56	37	26	49	34	24	43	31	22	36	26	19	31	23	16	27	19	14	23	17	12	21	15	11	18	13	14
		7-20	Interior	62	62	62	62	62	54	62	62	44	62	52	39	62	44	36	62	39	32	59	36	30	48	30	25	40	26	22	34	23	19	30	20	16	27	17	14	24	15	13
			Exposed	62	43	36	62	38	32	56	34	28	49	31	26	43	28	23	39	26	21	36	24	19	30	20	16	26	17	14	23	15	12	20	13	11	17	11	14	15	10	13
		20-27	Interior	82	82	82	82	82	82	82	82	66	82	72	54	82	60	45	82	51	39	82	44	35	70	37	28	57	31	23	48	27	19	41	24	16	36	21	14	32	19	13
			Exposed	82	60	45	82	49	38	82	42	33	72	38	29	63	34	25	56	31	23	50	28	20	41	24	16	35	21	14	30	18	12	27	16	11	23	14	9	21	12	8
		27-45	Interior	98*	98*	98*	98*	98*	98*	98*	98*	83	98*	98*	69	98*	87	59	98*	74	50	85	63	44	60	48	35	45	39	29	38	34	25	33	30	21	29	26	18	26	23	16
			Exposed	98*	86	58	98*	71	48	78	59	41	63	50	36	52	43	32	44	39	29	40	36	26	34	30	21	29	26	18	25	22	15	22	20	13	19	17	11	17	15	10

Header above wind speed columns: Basic Wind Speed (mph)

*	Cells with an astriks 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 HD	NXT COMBO	Flashloc DUO Rafter
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	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	52	53	53	42	53	53	36	53	45	31	53	39	28	50	35	24
			Exposed	53	53	53	53	53	53	53	53	53	53	53	53	53	53	46	53	53	41	53	53	37	53	46	32	53	38	27	47	33	23	40	29	20	35	25	18	31	23	16
		7-20	Interior	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	43	54	46	37	54	38	32	54	33	28	46	29	24	40	26	22			
			Exposed	54	54	54	54	54	54	54	54	54	54	54	45	54	53	40	54	45	36	54	40	33	54	34	28	45	29	24	38	25	21	33	22	18	29	19	16	26	17	14
		20-27	Interior	67*	67*	67*	67*	67*	67*	67*	67*	67*	67*	67*	67*	67*	67*	67*	67*	67*	67*	67*	67*	67*	67*	67*	62	67*	62	47	67*	49	38	67*	40	32	67*	36	27	57	32	23
			Exposed	67*	67*	67*	67*	67*	67*	67*	67*	67*	67*	67*	67*	67*	67*	55	67*	62	46	67*	53	40	67*	41	32	65*	35	26	54	30	22	46	26	18	40	23	16	35	21	14
		27-45	Interior	72*	72*	72*	72*	72*	72*	72*	72*	72*	72*	72*	72*	72*	72*	72*	72*	72*	72*	72*	72*	72*	72*	72*	72*	72*	72*	62*	70*	70*	48	66*	56	40	57	46	34	46	40	29
			Exposed	72*	72*	72*	72*	72*	72*	72*	72*	72*	72*	72*	72*	72*	72*	70*	72*	72*	61*	72*	72*	52	72*	57	40	55	45	33	42	38	28	37	33	24	33	29	21	29	26	18
	C	0-7	Interior	53	53	53	53	53	53	53	53	53	53	53	53	53	53	52	53	53	45	53	53	40	53	51	34	53	41	29	52	36	25	43	31	22	38	27	19	33	24	17
			Exposed	53	53	52	53	53	43	53	53	39	53	53	35	53	46	32	53	41	29	53	37	26	44	31	22	37	27	19	32	23	16	28	20	14	25	18	13	22	16	11
		7-20	Interior	54	54	54	54	54	54	54	54	54	54	54	51	54	54	43	54	51	39	54	43	35	54	36	30	49	31	26	41	27	22	36	23	19	32	21	17	28	18	15
			Exposed	54	54	42	54	48	38	54	41	34	54	37	31	54	34	28	48	31	25	43	28	23	36	24	20	31	20	17	27	18	15	23	15	13	21	14	11	18	12	10
		20-27	Interior	67*	67*	67*	67*	67*	67*	67*	67*	67*	67*	67*	67*	67*	67*	62	67*	67*	53	67*	60	45	67*	45	35	67*	38	29	60	32	24	50	28	20	43	25	17	38	22	15
			Exposed	67*	67*	62	67*	67*	50	67*	55	42	67*	47	36	67*	41	32	67*	37	28	62	34	25	51	29	20	42	25	17	36	21	14	32	19	13	28	16	11	25	14	10
		27-45	Interior	72*	72*	72*	72*	72*	72*	72*	72*	72*	72*	72*	72*	72*	72*	72*	72*	72*	68*	72*	72*	58	68*	64*	44	63*	50	36	48	41	31	40	36	26	35	31	22	31	28	19
			Exposed	72*	72*	72*	72*	72*	65*	72*	72*	54	72*	67*	46	72*	57	40	62*	49	36	52	42	32	40	36	26	34	31	22	30	27	18	26	23	16	23	21	14	20	18	12
	D	0-7	Interior	57	57	57	57	57	57	57	57	54	57	57	46	57	57	40	57	57	37	57	50	34	57	40	28	50	34	24	41	30	21	36	26	18	31	23	16	28	20	14
			Exposed	57	57	40	57	55	36	57	47	32	57	41	29	56	37	26	49	34	24	43	31	22	36	26	19	31	23	16	27	19	14	23	17	12	21	15	11	18	13	14
		7-20	Interior	58	58	58	58	58	54	58	58	44	58	52	39	58	44	36	58	39	32	58	36	30	48	30	25	40	26	22	34	23	19	30	20	16	27	17	14	24	15	13
			Exposed	58	43	36	58	38	32	56	34	28	49	31	26	43	28	23	39	26	21	36	24	19	30	20	16	26	17	14	23	15	12	20	13	11	17	11	14	15	10	13
		20-27	Interior	71*	71*	71*	71*	71*	71*	71*	71*	66	71*	71*	54	71*	60	45	71*	51	39	71*	44	35	66	37	28	57	31	23	48	27	19	41	24	16	36	21	14	32	19	13
			Exposed	71*	60	45	71*	49	38	71*	42	33	71*	38	29	63	34	25	56	31	23	50	28	20	41	24	16	35	21	14	30	18	12	27	16	11	23	14	9	21	12	8
		27-45	Interior	76*	76*	76*	76*	76*	76*	76*	76*	76*	76*	76*	70*	76*	76*	59	75*	74*	50	73*	63	44	60	48	35	45	39	29	38	34	25	33	30	21	29	26	18	26	23	16
			Exposed	76*	76*	58	76*	71*	48	76*	59	41	63	50	36	52	43	32	44	39	29	40	36	26	34	30	21	29	26	18	25	22	15	22	20	13	19	17	11	17	15	10
40	B	0-7	Interior	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	36	42	42	31	42	39	28	42	35	24
			Exposed	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	41	42	42	37	42	42	32	42	38	27	42	33	23	40	29	20	35	25	18	31	23	16
		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	37	43	38	32	43	33	28	43	29	24	40	26	22			
			Exposed	43	43	43	43	43	43	43	43	43	43	43	43	43	43	40	43	43	36	43	40	33	43	34	28	43	29	24	38	25	21	33	22	18	29	19	16	26	17	14
		20-27	Interior	56*	56*	56*	56*	56*	56*	56*	56*	56*	56*	56*	56*	56*	56*	56*	56*	56*	56*	56*	56*	56*	56*	56*	47	56*	49	38	56*	40	32	56*	36	27	56*	40	32	56*	32	23
			Exposed	56*	56*	56*	56*	56*	56*	56*	56*	56*	56*	56*	56*	56*	56*	55*	56*	56*	46	56*	53*	40	56*	41	32	56*	35	26	54*	30	22	46	26	18	40	23	16	35	21	14
		27-45	Interior	61*	61*	61*	61*	61*	61*	61*	61*	61*	61*	61*	61*	61*	61*	61*	61*	61*	61*	61*	61*	61*	61*	61*	61*	61*	61*	61*	58*	58*	49*	55*	55*	40	52*	46	34	46	40	29
			Exposed	61*	61*	61*	61*	61*	61*	61*	61*	61*	61*	61*	61*	61*	61*	61*	61*	61*	60*	61*	61*	52*	61*	57*	40	55*	45	33	42	38	28	37	33	24	33	29	21	29	26	18
	C	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	34	42	41	29	42	36	25	42	31	22	38	27	19	33	24	17
			Exposed	42	42	42	42	42	42	42	42	39	42	42	35	42	42	32	42	41	29	42	37	26	42	31	22	37	27	19	32	23	16	28	20	14	25	18	13	22	16	11
		7-20	Interior	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	39	43	43	35	43	36	30	43	31	26	41	27	22	36	23	19	32	21	17	28	18	15
			Exposed	43	43	42	43	43	38	43	41	34	43	37	31	43	34	28	43	31	25	43	28	23	36	24	20	31	20	17	27	18	15	23	15	13	21	14	11	18	12	10
		20-27	Interior	56*	56*	56*	56*	56*	56*	56*	56*	56*	56*	56*	56*	56*	56*	56*	56*	56*	53*	56*	56*	45	56*	45	35	56*	38	29	56*	32	24	50*	28	20	43	25	17	38	22	15
			Exposed	56*	56*	56*	56*	56*	50*	56*	55*	42	56*	47	36	56*	41	32	56*	37	28	56*	34	25	51*	29	20	42	25	17	36	21	14	32	19	13	28	16	11	25	14	10
		27-45	Interior	61*	61*	61*	61*	61*	61*	61*	61*	61*	61*	61*	61*	61*	61*	61*	61*	61*	61*	60*	60*	58*	57*	57*	44	54*	50*	36	48*	41	31	40	36	26	35	31	22	31	28	19
			Exposed	61*	61*	61*	61*	61*	61*	61*	61*	54*	61*	61*	46	61*	57*	40	61*	49*	36	52*	42	32	40	36	26	34	31	22	30	27	18	26	23	16	23	21	14	20	18	12
	D	0-7	Interior	47	47	47	47	47	47	47	47	47	47	47	46	47	47	40	47	47	37	47	47	34	47	40	28	47	34	24	41	30	21	36	26	18	31	23	16	28	20	14
			Exposed	47	47	40	47	47	36	47	47	32	47	41	29	47	37	26	47	34	24	43	31	22	36	26	19	31	23	16	27	19	14	23	17	12	21	15	11	18	13	14
		7-20	Interior	47	47	47	47	47	47	47	47	44	47	47	39	47	44	36	47	39	32	47	36	30	47	30	25	40	26	22	34	23	19	30	20	16	27	17	14	24	15	13
			Exposed	47	43	36	47	38	32	47	34	28	47	31	26	43	28	23	39	26	21	36	24	19	30	20	16	26	17	14	23	15	12	20	13	11	17	11	14	15	10	13
		20-27	Interior	60*	60*	60*	60*	60*	60*	60*	60*	60*	60*	60*	54	60*	60*	45	60*	51	39	60*	44	35	60*	37	28	57*	31	23	48	27	19	41	24	16	36	21	14	32	19	13
			Exposed	60*	60*	45	60*	49	38	60*	42	33	60*	38	29	60*	34	25	56*	31	23	50	28	20	41	24	16	35	21	14	30	18	12	27	16	11	23	14	9	21	12	8
		27-45	Interior	65*	65*	65*	65*	65*	65*	65*	65*	65*	65*	65*	65*	65*	65*	59*	63*	63*	50	61*	61*	44	57*	48	35	45	39	29	38	34	25	33	30	21	29	26	18	26	23	16
			Exposed	65*	65*	58*	65*	65*	48	65*	59*	41	63*	50	36	53*	43	32	44	39	29	40	36	26	34	30	21	29	26	18	25	22	15	22	20	13	19	17	11	17	15	10
50	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	31	34	34	28	34	34	24
			Exposed	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	32	34	34	27	34	33	23	34	29	20	34	25	18	31	23	16
		7-20	Interior	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	32	35	33	28	35	29	24	35	26	22
			Exposed	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	33	35	34	28	35	29	24	35	25	21	33	22	18	29	19	16	26	17	14
		20-27	Interior	48*	48*	48*	48*	48*	48*	48*	48*	48*	48*	48*	48*	48*	48*	48*	48*	48*	48*	48*	48*	48*	48*	48*	47*	48*	48*	47*	48*	48*	38	48*	40	32	48*	36	27	47*	32	23
			Exposed	48*	48*	48*	48*	48*	48*	48*	48*	48*	48*	48*	48*	48*	48*	48*	48*	48*	46*	48*	48*	40	48*	41*	32	48*	35	26	48*	30	22	46*	26	18	40	23	16	35	21	14
		27-45	Interior	53*	53*	53*	53*	53*	53*	53*	53*	53*	53*	53*	53*	53*	53*	53*	53*	53*	53*	53*	53*	53*	53*	53*	53*	52*	52*	52*	50*	50*	48*	47*	47*	40*	45*	45*	34	43*	40*	29
			Exposed	53*	53*	53*	53*	53*	53*	53*	53*	53*	53*	53*	53*	53*	53*	53*	53*	53*	53*	53*	53*	52*	53*	53*	40*	52*	45*	33	42*	38	28	37	33	24	33	29	21	29	26	18
	C	0-7	Interior	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	25	34	31	22	34	27	19	33	24	17
			Exposed	34	34	34	34	34	34	34	34	34	34	34	34	34	34	32	34	34	29	34	34	26	34	31	22	34	27	19	32	23	16	28	20	14	25	18	13	22	16	11
		7-20	Interior	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	30	35	31	26	35	27	22	35	23	19	32	21	17	28	18	15
			Exposed	35	35	35	35	35	35	35	35	34	35	35	31	35	34	28	35	31	25	35	28	23	35	24	20	31	20	17	27	18	15	23	15	13	21	14	11	18	12	10
		20-27	Interior	48*	48*	48*	48*	48*	48*	48*	48*	48*	48*	48*	48*	48*	48*	48*	48*	48*	48*	48*	48*	45*	48*	45*	35	48*	38	29	48*	32	24	46*	28	20	43*	25	17	38	22	15
			Exposed	48*	48*	48*	48*	48*	48*	48*	48*	42*	48*	47*	36	48*	41*	32	48*	37	28	48*	34	25	48*	29	20	42*	25	17	36	21	14	32	19	13	28	16	11	25	14	10
		27-45	Interior	53*	53*	53*	53*	53*	53*	53*	53*	53*	53*	53*	53*	53*	53*	53*	53*	53*	53*	53*	53*	51*	51*	51*	44*	46*	46*	36	44*	41*	31	40*	36	26	35	31	22	31	28	19
			Exposed	53*	53*	53*	53*	53*	53*	53*	53*	53*	53*	53*	46*	53*	53*	40*	53*	49*	36	51*	43*	32	40*	36	26	34	31	22	30	27	18	26	23	16	23	21	14	20	18	12
	D	0-7	Interior	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	37	38	38	34	38	38	28	38	34	24	38	30	21	36	26	18	31	23	16	28	20	14
			Exposed	38	38	38	38	38	36	38	38	32	38	38	29	38	37	26	38	34	24	38	31	22	36	26	19	31	23	16	27	19	14	23	17	12	21	15	11	18	13	14
		7-20	Interior	38	38	38	38	38	38	38	38	38	38	38	38	38	38	36	38	38	32	38	36	30	38	30	25	38	26	22	34	23	19	30	20	16	27	17	14	24	15	13
			Exposed	38	38	36	38	38	32	38	34	28	38	31	26	38	28	23	38	26	21	36	24	19	30	20	16	26	17	14	23	15	12	20	13	11	17	11	14	15	10	13
		20-27	Interior	52*	52*	52*	52*	52*	52*	52*	52*	52*	52*	52*	52*	52*	52*	45*	52*	51*	39	52*	44	35	52*	37	28	51*	31	23	48*	27	19	41	24	16	36	21	14	32	19	13
			Exposed	52*	52*	45*	52*	49*	38	52*	42	33	52*	38	29	52*	34	25	52*	31	23	50*	28	20	41	24	16	35	21	14	30	18	12	27	16	11	23	14	9	21	12	8
		27-45	Interior	56*	56*	56*	56*	56*	56*	56*	56*	56*	56*	56*	56*	56*	56*	56*	54*	54*	50*	52*	52*	44*	49*	48*	35	45*	39	29	38	34	25	33	30	21	29	26	18	26	23	16
			Exposed	56*	56*	56*	56*	56*	48*	56*	56*	41	56*	50*	36	52*	43*	32	45*	39	29	40	36	26	34	30	21	29	26	18	25	22	15	22	20	13	19	17	11	17	15	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 HD	NXT COMBO	Flashloc DUO Rafter
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	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	24			
			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	29	23	29	29	20	29	25	18	29	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	29	29	29	29	29	29	29	28	29	29	24	29	26	22		
			Exposed	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	25	21	29	22	18	29	19	16	26	17	14
		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*	38*	40*	40*	32	40*	36*	27	40*	32	23			
			Exposed	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*	35*	26	40*	30	22	40*	26	18	40*	23	16	35*	21	14
		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*	43*	43*	43*	42*	42*	40*	40*	40*	34*	39*	39*	29
			Exposed	45*	45*	45*	45*	45*	45*	45*	45*	45*	45*	45*	45*	45*	45*	45*	45*	45*	45*	45*	45*	45*	45*	45*	40*	45*	45*	33*	42*	38*	28	37*	33*	24	33*	29	21	29	26	18
	C	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	29	29	29	25	29	29	22	29	27	19	29	24	17
			Exposed	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	26	29	29	22	29	27	19	29	23	16	28	20	14	25	18	13	22	16	11
		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	26	29	27	22	29	23	19	29	21	17	28	18	15
			Exposed	29	29	29	29	29	29	29	29	29	29	29	29	29	29	24	29	29	25	29	28	23	29	24	20	29	20	17	27	18	15	23	15	13	21	14	11	18	12	10
		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*	35*	40*	38*	29	40*	32	24	40*	28	20	39*	25	17	38*	22	15
			Exposed	40*	40*	40*	40*	40*	40*	40*	40*	40*	40*	40*	36*	40*	40*	32	40*	37*	28	40*	34	25	40*	29	20	40*	25	17	36*	21	14	32	19	13	28	16	11	25	14	10
		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*	36*	39*	39*	31	37*	36*	26	35*	31	22	31	28	19
			Exposed	45*	45*	45*	45*	45*	45*	45*	45*	45*	45*	45*	45*	45*	45*	40*	45*	45*	36*	45*	42*	32	40*	36*	26	34*	31	22	30	27	18	26	23	16	23	21	14	20	18	12
	D	0-7	Interior	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	24	32	30	21	32	26	18	31	23	16	28	20	14			
			Exposed	32	32	32	32	32	32	32	32	32	32	32	29	32	32	26	32	32	24	32	31	22	32	26	19	31	23	16	27	19	14	23	17	12	21	15	11	18	13	14
		7-20	Interior	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	30	32	30	25	32	26	22	32	23	19	30	20	16	27	17	14	24	15	13
			Exposed	32	32	32	32	32	32	32	32	28	32	31	26	32	28	23	32	26	21	32	24	19	30	20	16	26	17	14	23	15	12	20	13	11	17	11	14	15	10	13
		20-27	Interior	45*	45*	45*	45*	45*	45*	45*	45*	45*	45*	45*	45*	45*	45*	45*	45*	45*	39*	45*	44*	35	45*	37	28	45*	31	23	43*	27	19	41*	24	16	36	21	14	32	19	13
			Exposed	45*	45*	45*	45*	45*	38*	45*	42*	33	45*	38*	29	45*	34	25	45*	31	23	45*	28	20	41*	24	16	35	21	14	30	18	12	27	16	11	23	14	9	21	12	8
		27-45	Interior	50*	50*	50*	50*	50*	50*	50*	50*	50*	50*	50*	50*	49*	49*	49*	47*	47*	47*	46*	46*	44*	44*	44*	36*	41*	39*	29	38*	34	25	33	30	21	29	26	18	26	23	16
			Exposed	50*	50*	50*	50*	50*	48*	50*	50*	41*	50*	50*	37*	49*	43*	32	44*	39*	29	40*	36*	26	34	30	21	29	26	18	25	22	15	22	20	13	19	17	11	17	15	10
70	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	24			
			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	23	25	25	20	25	25	18	25	23	16			
		7-20	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	24	25	25	22		
			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	21	25	22	18	25	19	16	25	17	14
		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*	27	35*	32*	23
			Exposed	35*	35*	35*	35*	35*	35*	35*	35*	35*	35*	35*	35*	35*	35*	35*	35*	35*	35*	35*	35*	35*	35*	35*	32*	35*	35*	26	35*	30*	22	35*	26	18	35*	23	16	35*	21	14
		27-45	Interior	39*	39*	39*	39*	39*	39*	39*	39*	39*	39*	39*	39*	39*	39*	39*	39*	39*	39*	39*	39*	39*	39*	39*	39*	39*	39*	39*	39*	39*	39*	38*	38*	38*	36*	36*	34*	35*	35*	30*
			Exposed	39*	39*	39*	39*	39*	39*	39*	39*	39*	39*	39*	39*	39*	39*	39*	39*	39*	39*	39*	39*	39*	39*	39*	39*	39*	39*	33*	39*	38*	28	37*	33*	24	33*	29*	21	29*	26	18
	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	22	25	25	19	25	24	17
			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	19	25	23	16	25	20	14	25	18	13	22	16	11
		7-20	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	22	25	23	19	25	21	17	25	18	15
			Exposed	25	25	25	25	25	25	25	25	25	25	25	25	25	25	23	25	24	20	25	20	17	25	18	15	23	15	13	21	14	11	18	12	10						
		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*	32*	24	35*	28	20	35*	25	17	34*	22	15			
			Exposed	35*	35*	35*	35*	35*	35*	35*	35*	35*	35*	35*	32*	35*	35*	28	35*	34*	25	35*	29	20	35*	25	17	35*	21	14	32*	19	13	28	16	11	25	14	10			
		27-45	Interior	39*	39*	39*	39*	39*	39*	39*	39*	39*	39*	39*	39*	39*	39*	39*	39*	39*	39*	39*	39*	39*	39*	39*	39*	37*	37*	36*	36*	36*	31*	34*	34*	26	33*	31*	22	31	28	19
			Exposed	39*	39*	39*	39*	39*	39*	39*	39*	39*	39*	39*	36*	39*	39*	32*	39*	39*	26	34*	31*	22	30*	27	18	26	23	16	23	21	14	20	18	12						
	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	24	27	27	21	27	26	18	27	23	16	27	20	14			
			Exposed	27	27	27	27	27	27	27	27	27	27	27	27	27	27	26	27	27	24	27	27	22	27	26	19	27	23	16	27	19	14	23	17	12	21	15	11	18	13	14
		7-20	Interior	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	26	22	28	23	19	28	20	16	27	17	14	24	15	13
			Exposed	28	28	28	28	28	28	28	28	28	28	28	26	28	28	23	28	26	21	28	24	19	28	20	16	26	17	14	23	15	12	20	13	11	17	11	14	15	10	13
		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*	37*	28	39*	31	23	38*	27	19	37*	24	16	36*	21	14	32	19	13
			Exposed	39*	39*	39*	39*	39*	38*	39*	39*	33*	39*	38*	29	39*	34*	25	39*	31	23	39*	28	20	35*	21	14	30	18	12	27	16	11	23	14	9	21	12	8			
		27-45	Interior	43*	43*	43*	43*	43*	43*	43*	43*	43*	43*	43*	43*	43*	43*	43*	42*	42*	42*	41*	41*	41*	39*	39*	35*	38*	38*	29	36*	34*	25	33*	30	21	29	26	18	26	23	16
			Exposed	43*	43*	43*	43*	43*	43*	43*	43*	41*	43*	43*	36*	43*	43*	32*	42*	39*	29	40*	36*	26	34*	30	21	29	26	18	25	22	15	22	20	13	19	17	11	17	15	10
80	B	0-7	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	22	22	22	22			
			Exposed	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	20	22	22	18	22	22	16
		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	22	22	22	22	22		
			Exposed	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	21	22	22	18	22	19	16	22	17	14
		20-27	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*	31*	31*	31*	31*	31*	31*	31*	31*	27*	31*	31*	23			
			Exposed	31*	31*	31*	31*	31*	31*	31*	31*	31*	31*	31*	31*	31*	31*	31*	31*	31*	31*	31*	31*	31*	31*	31*	31*	31*	31*	26	31*	30*	22	31*	26	18	31*	23	16	31*	21	14
		27-45	Interior	35*	35*	35*	35*	35*	35*	35*	35*	35*	35*	35*	35*	35*	35*	35*	35*	35*	35*	35*	35*	35*	35*	35*	35*	35*	35*	35*	35*	35*	35*	34*	34*	34*	33*	33*	33*	32*	32*	29*
			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*	28*	34*	33*	24	33*	29*	21	29*	26*	18			
	C	0-7	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	22	22	22	19	22	22	17
			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	22	16	22	20	14	22	18	13	22	16	11			
		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	21	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	20	22	20	17	22	18	15	22	15	13	21	14	11	18	12	10
		20-27	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*	31*	24	31*	28*	20	31*	25	17	31*	22	15			
			Exposed	31*	31*	31*	31*	31*	31*	31*	31*	31*	31*	31*	31*	31*	31*	31*	31*	31*	28*	31*	31*	25	31*	29*	20	31*	25	17	31*	21	14	31*	19	13	28*	16	11	25	14	10
		27-45	Interior	35*	35*	35*	35*	35*	35*	35*	35*	35*	35*	35*	35*	35*	35*	35*	35*	35*	35*	35*	35*	35*	35*	35*	34*	34*	34*	34*	33*	33*	31*	31*	31*	26*	30*	30*	22	29*	28*	19
			Exposed	35*	35*	35*	35*	35*	35*	35*	35*	35*	35*	35*	35*	35*	35*	35*	35*	35*	32*	35*	35*	26*	34*	31*	22	30*	27*	18	26*	23	16	23	21	14	20	18	12			
	D	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	21	24	24	18	24	23	16	24	20	14			
			Exposed	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	19	14	23	17	12	21	15	11	18	13	14
		7-20	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	22	24	23	19	24	20	16	24	17	14	24	15	13
			Exposed	24	24	24	24	24	24	24	24	24	24	24	24	24	24	23	24	24	21	24	24	19	24	24	20	16	24	17	14	23	15	12	20	13	11	17	11	14	15	10	13
		20-27	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*	31*	23	34*	27	19	34*	24	16	33*	21	14	31*	19	13
			Exposed	34*	34*	34*	34*	34*	34*	34*	34*	33*	34*	34*	29*	34*	34*	25	34*	31*	23	34*	28	20	34*	24	16	34*	21	14	30*	18	12	27	16	11	23	14	9	21	12	8
		27-45	Interior	38*	38*	38*	38*	38*	38*	38*	38*	38*	38*	38*	38*	38*	38*	38*	38*	38*	38*	38*	38*	38*	36*	36*	35*	35*	35*	29*	33*	33*	25	32*	30*	21	29*	26	18	26	23	16
			Exposed	38*	38*	38*	38*	38*	38*	38*	38*	38*	38*	38*	36*	38*	38*	32*	38*	38*	29*	38*	36*	26	34*	30*	21	29*	26	18	25	22	15	22	20	13	19	17	11	17	15	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 HD	NXT COMBO	Flashloc DUO Rafter
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	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	19	19	19	19	19	19	19	19	19	19
			Exposed	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	19	19	19	18	19	19	16	19	19	16
		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	20	20	20	20
			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	20	20	20	20	20	20	18	20	19	16	20	17	14
		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*	27*	27*	27*	27*	27*	27*	27*	27*	27*	23	27*	27*	23
			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*	26*	18	27*	23	16	27*	21	14
		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*	31*	31*	31*	31*	31*	31*	31*	31*	31*	30*	30*	29*	30*	30*	29*
			Exposed	31*	31*	31*	31*	31*	31*	31*	31*	31*	31*	31*	31*	31*	31*	31*	31*	31*	31*	31*	31*	31*	31*	31*	31*	31*	31*	31*	31*	31*	28*	31*	31*	24*	31*	29*	21	29*	26*	18
	C	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	19	19	19	19	19	19	19	19	19	19	19	19	17
			Exposed	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	16	19	19	14	19	18	13	19	16	11
		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	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	20	20	20	17	20	18	15	20	15	13	20	14	11	18	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*	27*	27*	27*	24*	27*	27*	20	27*	25*	17	27*	22	15			
			Exposed	27*	27*	27*	27*	27*	27*	27*	27*	27*	27*	27*	27*	27*	27*	27*	27*	27*	25*	27*	27*	20	27*	25*	17	27*	21	14	27*	19	13	27*	16	11	25*	14	10			
		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*	30*	30*	30*	29*	29*	26*	28*	28*	22	27*	27*	19			
			Exposed	31*	31*	31*	31*	31*	31*	31*	31*	31*	31*	31*	31*	31*	31*	31*	31*	31*	31*	31*	31*	26*	31*	31*	22	30*	27*	18	26*	23*	16	23*	21	14	20	18	12			
	D	0-7	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	21	22	22	18	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	19	22	22	16	22	19	14	22	17	12	21	15	11	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	22	22	22	19	22	20	16	22	17	14	22	15	13			
			Exposed	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	21	22	22	19	22	20	16	22	17	14	22	15	12	20	13	11	17	11	14			
		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*	28*	30*	30*	23	30*	27*	19	30*	24	16	30*	21	14			
			Exposed	30*	30*	30*	30*	30*	30*	30*	30*	30*	30*	30*	29*	30*	30*	25	30*	30*	23	30*	28*	20	30*	24	16	30*	21	14	30*	18	12	27*	16	11	23	14	9			
		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*	29*	31*	31*	25*	29*	29*	21	28*	26*	18			
			Exposed	34*	34*	34*	34*	34*	34*	34*	34*	34*	34*	34*	34*	34*	32*	34*	34*	29*	34*	34*	26*	33*	30*	21	29*	26*	18	25*	22	15	22	20	13	19	17	11						
100	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	17
			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	17	17	17	17	17	17	17	17	17	16	17	17	16
		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	18	18	18	18	18	18	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	18	18	18	16	18	17	14	18	17	14
		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*	25*	25*	25*	25*	25*	25*	25*	25*	25*	25*	25*	25*	23*	25*	25*	23*
			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*	18	25*	23*	16	25*	21	14			
		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*	28*	28*	28*	28*	28*	28*	28*	28*	28*	28*	28*	28*			
			Exposed	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*	24*	28*	28*	21*	28*	26*	18						
	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	17	17	17	17	17	17	17	17	17	17
			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	16	17	17	14	17	17	13	17	16	11			
		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	17	18	18	15	18	15	13	18	14	11			
		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*	25*	25*	25*	24*	25*	25*	20	25*	25*	17	25*	22*	15			
			Exposed	25*	25*	25*	25*	25*	25*	25*	25*	25*	25*	25*	25*	25*	25*	25*	25*	25*	25*	25*	25*	20	25*	25*	17	25*	21	14	25*	19	13	25*	16	11	25*	14	10			
		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*	28*	28*	28*	27*	27*	26*	26*	26*	22*	25*	25*	19			
			Exposed	28*	28*	28*	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*	27*	18	26*	23*	16	23*	21*	14	20	18	12
	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	19	19	19	18	19	19	16	19	19	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	19	14	19	17	12	19	15	11	18	13	14			
		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	19	20	20	16	20	17	14			
			Exposed	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	12	20	13	11	17	11	14			
		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*	19	27*	24*	16	27*	21	14			
			Exposed	27*	27*	27*	27*	27*	27*	27*	27*	27*	27*	27*	27*	27*	27*	27*	27*	27*	23	27*	27*	20	27*	24*	16	27*	21	14	27*	18	12	27*	16	11	23	14	9			
		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*	30*	30*	29*	29*	29*	25*	27*	27*	21	26*	26*	18			
			Exposed	31*	31*	31*	31*	31*	31*	31*	31*	31*	31*	31*	31*	31*	31*	31*	31*	31*	29*	31*	31*	26*	31*	30*	21	29*	26*	18	25*	22	15	22	20	13	19	17	11			

#N/A

* 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 HD	NXT COMBO	Flashloc DUO Rafter
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	1	2	3
0	B	0-7	Interior	92	92	92	92	92	92	92	92	92	92	92	92	92	92	92	92	92	80	92	92	69	92	88	52	92	69	42	91	55	36	73	45	31	60	39	28	50	35	24
			Exposed	92	92	92	92	92	77	92	92	64	92	91	54	92	78	46	92	67	41	92	59	37	74	46	32	58	38	27	47	33	23	40	29	20	35	25	18	31	23	16
		7-20	Interior	92	92	92	92	92	92	92	92	92	92	92	92	92	92	83	92	92	69	92	83	58	92	60	43	77	46	37	64	38	32	54	33	28	46	29	24	40	26	22
			Exposed	92	92	82	92	92	66	92	76	54	92	63	45	88	53	40	76	45	36	68	40	33	55	34	28	45	29	24	38	25	21	33	22	18	29	19	16	26	17	14
		20-27	Interior	92	92	92	92	92	92	92	92	92	92	92	92	92	92	92	92	92	92	92	92	92	92	84	64	92	63	47	92	49	38	79	40	32	67	36	27	57	32	23
			Exposed	92	92	92	92	92	92	92	92	83	92	88	67	92	73	55	92	62	46	92	53	40	80	41	32	65	35	26	54	30	22	46	26	18	40	23	16	35	21	14
		27-45	Interior	92	92	92	92	92	92	92	92	92	92	92	92	92	92	92	92	92	92	92	92	92	92	92	80	92	91	61	92	70	48	73	56	40	57	46	34	46	40	29
			Exposed	92	92	92	92	92	92	92	92	92	92	92	84	92	92	70	92	89	60	92	76	52	75	57	40	55	45	33	42	38	28	37	33	24	33	29	21	29	26	18
	C	0-7	Interior	92	92	92	92	92	87	92	92	72	92	92	61	92	87	52	92	75	45	92	65	40	83	51	34	65	41	29	52	36	25	43	31	22	38	27	19	33	24	17
			Exposed	92	86	52	92	72	43	92	61	39	86	53	35	74	46	32	64	41	29	56	37	26	44	31	22	37	27	19	32	23	16	28	20	14	25	18	13	22	16	11
		7-20	Interior	92	92	92	92	92	76	92	88	61	92	72	51	92	60	43	84	51	39	74	43	35	60	36	30	49	31	26	41	27	22	36	23	19	32	21	17	28	18	15
			Exposed	92	59	42	81	48	38	70	41	34	61	37	31	54	34	28	48	31	25	43	28	23	36	24	20	31	20	17	27	18	15	23	15	13	21	14	11	18	12	10
		20-27	Interior	92	92	92	92	92	92	92	92	92	92	92	78	92	84	63	92	70	53	92	60	45	89	45	35	72	38	29	60	32	24	50	28	20	43	25	17	38	22	15
			Exposed	92	83	63	92	67	50	92	55	42	92	47	36	80	41	32	71	37	28	63	34	25	51	29	20	42	25	17	36	21	14	32	19	13	28	16	11	25	14	10
		27-45	Interior	92	92	92	92	92	92	92	92	92	92	92	92	92	92	80	92	92	68	92	86	58	87	64	44	63	50	36	48	41	31	40	36	26	35	31	22	31	28	19
			Exposed	92	92	79	92	92	65	92	79	54	91	67	46	74	57	40	61	49	36	52	42	32	40	36	26	34	31	22	30	27	18	26	23	16	23	21	14	20	18	12
	D	0-7	Interior	92	92	78	92	92	64	92	90	54	92	77	46	92	66	40	92	57	37	82	50	34	63	40	28	50	34	24	41	30	21	36	26	18	31	23	16	28	20	14
			Exposed	92	66	40	91	55	36	76	47	32	65	41	29	56	37	26	49	34	24	43	31	22	36	26	19	31	23	16	27	19	14	23	17	12	21	15	11	18	13	14
		7-20	Interior	92	92	67	92	77	54	92	62	44	85	52	39	75	44	36	66	39	32	59	36	30	48	30	25	40	26	22	34	23	19	30	20	16	27	17	14	24	15	13
			Exposed	74	43	36	64	38	32	56	34	28	49	31	26	43	28	23	39	26	21	36	24	19	30	20	16	26	17	14	23	15	12	20	13	11	17	11	14	15	10	13
		20-27	Interior	92	92	92	92	92	84	92	88	66	92	72	54	92	60	45	92	51	39	88	44	35	70	37	28	57	31	23	48	27	19	41	24	16	36	21	14	32	19	13
			Exposed	92	60	45	92	49	38	82	42	33	72	38	29	63	34	25	56	31	23	50	28	20	41	24	16	35	21	14	30	18	12	27	16	11	23	14	9	21	12	8
		27-45	Interior	92	92	92	92	92	92	92	92	83	92	92	69	92	87	59	92	74	50	85	63	44	60	48	35	45	39	29	38	34	25	33	30	21	29	26	18	26	23	16
			Exposed	92	86	58	92	71	48	78	59	41	63	50	36	52	43	32	44	39	29	40	36	26	34	30	21	29	26	18	25	22	15	22	20	13	19	17	11	17	15	10
10	B	0-7	Interior	88	88	88	88	88	88	88	88	88	88	88	88	88	88	88	88	88	80	88	88	69	88	88	52	88	69	42	88	55	36	73	45	31	60	39	28	50	35	24
			Exposed	88	88	88	88	88	77	88	88	64	88	88	54	88	78	46	88	67	41	88	59	37	74	46	32	58	38	27	47	33	23	40	29	20	35	25	18	31	23	16
		7-20	Interior	89	89	89	89	89	89	89	89	89	89	89	89	89	89	83	89	89	69	89	83	58	89	60	43	77	46	37	64	38	32	54	33	28	46	29	24	40	26	22
			Exposed	89	89	82	89	89	66	89	76	54	89	63	45	88	53	40	76	45	36	68	40	33	55	34	28	45	29	24	38	25	21	33	22	18	29	19	16	26	17	14
		20-27	Interior	92	92	92	92	92	92	92	92	92	92	92	92	92	92	92	92	92	92	92	92	92	92	84	64	92	63	47	92	49	38	79	40	32	67	36	27	57	32	23
			Exposed	92	92	92	92	92	92	92	92	83	92	88	67	92	73	55	92	62	46	92	53	40	80	41	32	65	35	26	54	30	22	46	26	18	40	23	16	35	21	14
		27-45	Interior	92	92	92	92	92	92	92	92	92	92	92	92	92	92	92	92	92	92	92	92	92	92	92	80	92	91	61	92	70	48	73	56	40	57	46	34	46	40	29
			Exposed	92	92	92	92	92	92	92	92	92	92	92	84	92	92	70	92	89	60	92	76	52	75	57	40	55	45	33	42	38	28	37	33	24	33	29	21	29	26	18
	C	0-7	Interior	88	88	88	88	88	87	88	88	72	88	88	61	88	87	52	88	75	45	88	65	40	83	51	34	65	41	29	52	36	25	43	31	22	38	27	19	33	24	17
			Exposed	88	86	52	88	72	43	88	61	39	86	53	35	74	46	32	64	41	29	56	37	26	44	31	22	37	27	19	32	23	16	28	20	14	25	18	13	22	16	11
		7-20	Interior	89	89	89	89	89	76	89	88	61	89	72	51	89	60	43	84	51	39	74	43	35	60	36	30	49	31	26	41	27	22	36	23	19	32	21	17	28	18	15
			Exposed	89	59	42	81	48	38	70	41	34	61	37	31	54	34	28	48	31	25	43	28	23	36	24	20	31	20	17	27	18	15	23	15	13	21	14	11	18	12	10
		20-27	Interior	92	92	92	92	92	92	92	92	92	92	92	78	92	84	63	92	70	53	92	60	45	89	45	35	72	38	29	60	32	24	50	28	20	43	25	17	38	22	15
			Exposed	92	83	63	92	67	50	92	55	42	92	47	36	80	41	32	71	37	28	63	34	25	51	29	20	42	25	17	36	21	14	32	19	13	28	16	11	25	14	10
		27-45	Interior	92	92	92	92	92	92	92	92	92	92	92	92	92	92	80	92	92	68	92	86	58	87	64	44	63	50	36	48	41	31	40	36	26	35	31	22	31	28	19
			Exposed	92	92	79	92	92	65	92	79	54	91	67	46	74	57	40	61	49	36	52	42	32	40	36	26	34	31	22	30	27	18	26	23	16	23	21	14	20	18	12
	D	0-7	Interior	88	88	78	88	88	64	88	88	54	88	77	46	88	66	40	88	57	37	82	50	34	63	40	28	50	34	24	41	30	21	36	26	18	31	23	16	28	20	14
			Exposed	88	66	40	88	55	36	76	47	32	65	41	29	56	37	26	49	34	24	43	31	22	36	26	19	31	23	16	27	19	14	23	17	12	21	15	11	18	13	14
		7-20	Interior	89	89	67	89	77	54	89	62	44	85	52	39	75	44	36	66	39	32	59	36	30	48	30	25	40	26	22	34	23	19	30	20	16	27	17	14	24	15	13
			Exposed	74	43	36	64	38	32	56	34	28	49	31	26	43	28	23	39	26	21	36	24	19	30	20	16	26	17	14	23	15	12	20	13	11	17	11	14	15	10	13
		20-27	Interior	92	92	92	92	92	84	92	88	66	92	72	54	92	60	45	92	51	39	88	44	35	70	37	28	57	31	23	48	27	19	41	24	16	36	21	14	32	19	13
			Exposed	92	60	45	92	49	38	82	42	33	72	38	29	63	34	25	56	31	23	50	28	20	41	24	16	35	21	14	30	18	12	27	16	11	23	14	9	21	12	8
		27-45	Interior	92	92	92	92	92	92	92	92	83	92	92	69	92	87	59	92	74	50	85	63	44	60	48	35	45	39	29	38	34	25	33	30	21	29	26	18	26	23	16
			Exposed	92	86	58	92	71	48	78	59	41	63	50	36	52	43	32	44	39	29	40	36	26	34	30	21	29	26	18	25	22	15	22	20	13	19	17	11	17	15	10
20	B	0-7	Interior	62	62	62	62	62	62	62	62	62	62	62	62	62	62	62	62	62	62	62	62	52	62	62	42	62	55	36	62	45	31	60	39	28	50	35	24
			Exposed	62	62	62	62	62	62	62	62	62	62	62	54	62	62	46	62	62	41	62	59	37	62	46	32	58	38	27	47	33	23	40	29	20	35	25	18	31	23	16
		7-20	Interior	62	62	62	62	62	62	62	62	62	62	62	62	62	62	62	62	62	62	62	62	58	62	60	43	62	46	37	62	38	32	54	33	28	46	29	24	40	26	22
			Exposed	62	62	62	62	62	62	62	62	54	62	62	45	62	53	40	62	45	36	62	40	33	55	34	28	45	29	24	38	25	21	33	22	18	29	19	16	26	17	14
		20-27	Interior	83*	83*	83*	83*	83*	83*	83*	83*	83*	83*	83*	83*	83*	83*	83*	83*	83*	83*	83*	83*	83*	83*	83*	64	83*	63	47	83*	49	38	79*	40	32	67	36	27	57	32	23
			Exposed	83*	83*	83*	83*	83*	83*	83*	83*	83*	83*	83*	67	83*	73	55	83*	62	46	83*	53	40	80*	41	32	65	35	26	54	30	22	46	26	18	40	23	16	35	21	14
		27-45	Interior	88*	88*	88*	88*	88*	88*	88*	88*	88*	88*	88*	88*	88*	88*	88*	88*	88*	88*	88*	88*	88*	88*	88*	80*	88*	88*	61	88*	72*	48	74*	56	40	57	46	34	46	40	29
			Exposed	88*	88*	88*	88*	88*	88*	88*	88*	88*	88*	88*	84*	88*	88*	72*	88*	88*	60	88*	76*	52	75*	57	40	55	45	33	42	38	28	37	33	24	33	29	21	29	26	18
	C	0-7	Interior	62	62	62	62	62	62	62	62	62	62	62	61	62	62	52	62	62	45	62	62	40	62	51	34	62	41	29	52	36	25	43	31	22	38	27	19	33	24	17
			Exposed	62	62	52	62	62	43	62	61	39	62	53	35	62	46	32	62	41	29	56	37	26	44	31	22	37	27	19	32	23	16	28	20	14	25	18	13	22	16	11
		7-20	Interior	62	62	62	62	62	62	62	62	61	62	62	51	62	60	43	62	51	39	62	43	35	60	36	30	49	31	26	41	27	22	36	23	19	32	21	17	28	18	15
			Exposed	62	59	42	62	48	38	62	41	34	61	37	31	54	34	28	48	31	25	43	28	23	36	24	20	31	20	17	27	18	15	23	15	13	21	14	11	18	12	10
		20-27	Interior	83*	83*	83*	83*	83*	83*	83*	83*	83*	83*	83*	78*	83*	83*	63	83*	70	53	83*	60	45	83*	45	35	72	38	29	60	32	24	50	28	20	43	25	17	38	22	15
			Exposed	83*	83*	63	83*	67	50	83*	55	42	83*	47	36	80*	41	32	71	37	28	63	34	25	51	29	20	42	25	17	36	21	14	32	19	13	28	16	11	25	14	10
		27-45	Interior	88*	88*	88*	88*	88*	88*	88*	88*	88*	88*	88*	88*	88*	88*	80*	88*	88*	68	88*	86*	58	86*	64	44	63	50	36	48	41	31	40	36	26	35	31	22	31	28	19
			Exposed	88*	88*	79*	88*	88*	65	88*	79*	54	88*	67	46	74*	57	40	61	49	36	52	42	32	40	36	26	34	31	22	30	27	18	26	23	16	23	21	14	20	18	12
	D	0-7	Interior	62	62	62	62	62	62	62	62	54	62	62	46	62	62	40	62	57	37	62	50	34	62	40	28	50	34	24	41	30	21	36	26	18	31	23	16	28	20	14
			Exposed	62	62	40	62	55	36	62	47	32	62	41	29	56	37	26	49	34	24	43	31	22	36	26	19	31	23	16	27	19	14	23	17	12	21	15	11	18	13	14
		7-20	Interior	62	62	62	62	62	54	62	62	44	62	52	39	62	44	36	62	39	32	59	36	30	48	30	25	40	26	22	34	23	19	30	20	16	27	17	14	24	15	13
			Exposed	62	43	36	62	38	32	56	34	28	49	31	26	43	28	23	39	26	21	36	24	19	30	20	16	26	17	14	23	15	12	20	13	11	17	11	14	15	10	13
		20-27	Interior	87*	87*	87*	87*	87*	84*	87*	87*	66	87*	72	54	87*	60	45	87*	51	39	87*	44	35	70	37	28	57	31	23	48	27	19	41	24	16	36	21	14	32	19	13
			Exposed	87*	60	45	87*	49	38	82*	42	33	72	38	29	63	34	25	56	31	23	50	28	20	41	24	16	35	21	14	30	18	12	27	16	11	23	14	9	21	12	8
		27-45	Interior	92*	92*	92*	92*	92*	92*	92*	92*	83*	92*	92*	69	92*	87*	59	92*	74	50	85*	63	44	60	48	35	45	39	29	38	34	25	33	30	21	29	26	18	26	23	16
			Exposed	92*	86*	58	92*	71	48	78*	59	41	63	50	36	52	43	32	44	39	29	40	36	26	34	30	21	29	26	18	25	22	15	22	20	13	19	17	11	17	15	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 HD	NXT COMBO	Flashloc DUO Rafter
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	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	52	53	53	42	53	53	36	53	45	31	53	39	28	50	35	24
			Exposed	53	53	53	53	53	53	53	53	53	53	53	53	53	53	46	53	53	41	53	53	37	53	46	32	53	38	27	47	33	23	40	29	20	35	25	18	31	23	16
		7-20	Interior	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	43	54	46	37	54	38	32	54	33	28	46	29	24	40	26	22			
			Exposed	54	54	54	54	54	54	54	54	54	54	54	45	54	53	40	54	45	36	54	40	33	54	34	28	45	29	24	38	25	21	33	22	18	29	19	16	26	17	14
		20-27	Interior	67*	67*	67*	67*	67*	67*	67*	67*	67*	67*	67*	67*	67*	67*	67*	67*	67*	67*	67*	67*	67*	67*	67*	64*	67*	49	38	67*	40	32	67*	36	27	57	32	23			
			Exposed	67*	67*	67*	67*	67*	67*	67*	67*	67*	67*	67*	67*	67*	67*	55	67*	62*	46	67*	53	40	67*	41	32	65*	35	26	54	30	22	46	26	18	40	23	16	35	21	14
		27-45	Interior	72*	72*	72*	72*	72*	72*	72*	72*	72*	72*	72*	72*	72*	72*	72*	72*	72*	72*	72*	72*	72*	72*	72*	72*	72*	72*	61*	70*	70*	48	66*	56	40	58*	46	34	46	40	29
			Exposed	72*	72*	72*	72*	72*	72*	72*	72*	72*	72*	72*	72*	72*	72*	70*	72*	72*	60*	72*	72*	52	72*	58*	40	55	45	33	42	38	28	37	33	24	33	29	21	29	26	18
	C	0-7	Interior	53	53	53	53	53	53	53	53	53	53	53	53	53	53	52	53	53	45	53	53	40	53	51	34	53	41	29	52	36	25	43	31	22	38	27	19	33	24	17
			Exposed	53	53	52	53	53	43	53	53	39	53	53	35	53	46	32	53	41	29	53	37	26	44	31	22	37	27	19	32	23	16	28	20	14	25	18	13	22	16	11
		7-20	Interior	54	54	54	54	54	54	54	54	54	54	54	51	54	54	43	54	51	39	54	43	35	54	36	30	49	31	26	41	27	22	36	23	19	32	21	17	28	18	15
			Exposed	54	54	42	54	48	38	54	41	34	54	37	31	54	34	28	48	31	25	43	28	23	36	24	20	31	20	17	27	18	15	23	15	13	21	14	11	18	12	10
		20-27	Interior	67*	67*	67*	67*	67*	67*	67*	67*	67*	67*	67*	67*	67*	67*	63*	67*	67*	53	67*	60*	45	67*	45	35	67*	38	29	60*	32	24	50	28	20	43	25	17	38	22	15
			Exposed	67*	67*	63*	67*	67*	50	67*	55	42	67*	47	36	67*	41	32	67*	37	28	63*	34	25	51	29	20	42	25	17	36	21	14	32	19	13	28	16	11	25	14	10
		27-45	Interior	72*	72*	72*	72*	72*	72*	72*	72*	72*	72*	72*	72*	72*	72*	72*	72*	72*	68*	72*	72*	59*	68*	64*	44	63*	50	36	48	41	31	40	36	26	35	31	22	31	28	19
			Exposed	72*	72*	72*	72*	72*	65*	72*	72*	54	72*	67*	46	72*	58*	40	61*	49	36	52	42	32	40	36	26	34	31	22	30	27	18	26	23	16	23	21	14	20	18	12
	D	0-7	Interior	57	57	57	57	57	57	57	57	54	57	57	46	57	57	40	57	57	37	57	50	34	57	40	28	50	34	24	41	30	21	36	26	18	31	23	16	28	20	14
			Exposed	57	57	40	57	55	36	57	47	32	57	41	29	56	37	26	49	34	24	43	31	22	36	26	19	31	23	16	27	19	14	23	17	12	21	15	11	18	13	14
		7-20	Interior	58	58	58	58	58	54	58	58	44	58	52	39	58	44	36	58	39	32	58	36	30	48	30	25	40	26	22	34	23	19	30	20	16	27	17	14	24	15	13
			Exposed	58	43	36	58	38	32	56	34	28	49	31	26	43	28	23	39	26	21	36	24	19	30	20	16	26	17	14	23	15	12	20	13	11	17	11	14	15	10	13
		20-27	Interior	71*	71*	71*	71*	71*	71*	71*	71*	66*	71*	71*	54	71*	60	45	71*	51	39	71*	44	35	70*	37	28	57	31	23	48	27	19	41	24	16	36	21	14	32	19	13
			Exposed	71*	60	45	71*	49	38	71*	42	33	71*	38	29	63	34	25	56	31	23	50	28	20	41	24	16	35	21	14	30	18	12	27	16	11	23	14	9	21	12	8
		27-45	Interior	76*	76*	76*	76*	76*	76*	76*	76*	76*	76*	76*	69*	76*	76*	59	75*	74*	50	73*	64*	44	61*	48	35	45	39	29	38	34	25	33	30	21	29	26	18	26	23	16
			Exposed	76*	76*	58	76*	71*	48	76*	59	41	63*	50	36	52	43	32	44	39	29	40	36	26	34	30	21	29	26	18	25	22	15	22	20	13	19	17	11	17	15	10
40	B	0-7	Interior	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	36	42	42	31	42	39	28	42	35	24
			Exposed	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	41	42	42	37	42	42	32	42	38	27	42	33	23	40	29	20	35	25	18	31	23	16
		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	37	43	38	32	43	33	28	43	29	24	40	26	22			
			Exposed	43	43	43	43	43	43	43	43	43	43	43	43	43	43	40	43	43	36	43	40	33	43	34	28	43	29	24	38	25	21	33	22	18	29	19	16	26	17	14
		20-27	Interior	56*	56*	56*	56*	56*	56*	56*	56*	56*	56*	56*	56*	56*	56*	56*	56*	56*	56*	56*	56*	56*	56*	56*	56*	56*	56*	47	56*	49	38	56*	40	32	56*	36	27	56*	32	23
			Exposed	56*	56*	56*	56*	56*	56*	56*	56*	56*	56*	56*	56*	56*	56*	55*	56*	56*	46	56*	53*	40	56*	41	32	56*	35	26	54*	30	22	46	26	18	40	23	16	35	21	14
		27-45	Interior	61*	61*	61*	61*	61*	61*	61*	61*	61*	61*	61*	61*	61*	61*	61*	61*	61*	61*	61*	61*	61*	61*	61*	61*	61*	61*	61*	58*	58*	49*	55*	55*	40	52*	46	34	46	40	29
			Exposed	61*	61*	61*	61*	61*	61*	61*	61*	61*	61*	61*	61*	61*	61*	61*	61*	61*	60*	61*	61*	52*	61*	57*	40	55*	45	33	42	38	28	37	33	24	33	29	21	29	26	18
	C	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	34	42	41	29	42	36	25	42	31	22	38	27	19	33	24	17
			Exposed	42	42	42	42	42	42	42	42	39	42	42	35	42	42	32	42	41	29	42	37	26	42	31	22	37	27	19	32	23	16	28	20	14	25	18	13	22	16	11
		7-20	Interior	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	39	43	43	35	43	36	30	43	31	26	41	27	22	36	23	19	32	21	17	28	18	15
			Exposed	43	43	42	43	43	38	43	41	34	43	37	31	43	34	28	43	31	25	43	28	23	36	24	20	31	20	17	27	18	15	23	15	13	21	14	11	18	12	10
		20-27	Interior	56*	56*	56*	56*	56*	56*	56*	56*	56*	56*	56*	56*	56*	56*	56*	56*	56*	53*	56*	56*	45	56*	45	35	56*	38	29	56*	32	24	50*	28	20	43	25	17	38	22	15
			Exposed	56*	56*	56*	56*	56*	50*	56*	55*	42	56*	47	36	56*	41	32	56*	37	28	56*	34	25	51*	29	20	42	25	17	36	21	14	32	19	13	28	16	11	25	14	10
		27-45	Interior	61*	61*	61*	61*	61*	61*	61*	61*	61*	61*	61*	61*	61*	61*	61*	61*	61*	61*	60*	61*	52*	61*	57*	40	54*	50*	36	48*	41	31	40	36	26	35	31	22	31	28	19
			Exposed	61*	61*	61*	61*	61*	61*	61*	61*	54*	61*	61*	46	61*	57*	40	61*	49*	36	52*	42	32	40	36	26	34	31	22	30	27	18	26	23	16	23	21	14	20	18	12
	D	0-7	Interior	47	47	47	47	47	47	47	47	47	47	47	46	47	47	40	47	47	37	47	47	34	47	40	28	47	34	24	41	30	21	36	26	18	31	23	16	28	20	14
			Exposed	47	47	40	47	47	36	47	47	32	47	41	29	47	37	26	47	34	24	43	31	22	36	26	19	31	23	16	27	19	14	23	17	12	21	15	11	18	13	14
		7-20	Interior	47	47	47	47	47	47	47	47	44	47	47	39	47	44	36	47	39	32	47	36	30	47	30	25	40	26	22	34	23	19	30	20	16	27	17	14	24	15	13
			Exposed	47	43	36	47	38	32	47	34	28	47	31	26	43	28	23	39	26	21	36	24	19	30	20	16	26	17	14	23	15	12	20	13	11	17	11	14	15	10	13
		20-27	Interior	60*	60*	60*	60*	60*	60*	60*	60*	60*	60*	60*	54*	60*	60*	45	60*	51	39	60*	44	35	60*	37	28	57*	31	23	48	27	19	41	24	16	36	21	14	32	19	13
			Exposed	60*	60*	45	60*	49	38	60*	42	33	60*	38	29	60*	34	25	56*	31	23	50	28	20	41	24	16	35	21	14	30	18	12	27	16	11	23	14	9	21	12	8
		27-45	Interior	65*	65*	65*	65*	65*	65*	65*	65*	65*	65*	65*	65*	65*	65*	59*	63*	63*	50	61*	61*	44	57*	48	35	45	39	29	38	34	25	33	30	21	29	26	18	26	23	16
			Exposed	65*	65*	58*	65*	65*	48	65*	59*	41	63*	50	36	53*	43	32	44	39	29	40	36	26	34	30	21	29	26	18	25	22	15	22	20	13	19	17	11	17	15	10
50	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	31	34	34	28	34	34	24
			Exposed	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	32	34	34	27	34	33	23	34	29	20	34	25	18	31	23	16
		7-20	Interior	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	32	35	33	28	35	29	24	35	26	22
			Exposed	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	33	35	34	28	35	29	24	35	25	21	33	22	18	29	19	16	26	17	14
		20-27	Interior	48*	48*	48*	48*	48*	48*	48*	48*	48*	48*	48*	48*	48*	48*	48*	48*	48*	48*	48*	48*	48*	48*	48*	47*	48*	48*	38	48*	40	32	48*	36	27	47*	32	23			
			Exposed	48*	48*	48*	48*	48*	48*	48*	48*	48*	48*	48*	48*	48*	48*	46*	48*	48*	40	48*	41*	32	48*	35	26	48*	30	22	46*	26	18	40	23	16	35	21	14			
		27-45	Interior	53*	53*	53*	53*	53*	53*	53*	53*	53*	53*	53*	53*	53*	53*	53*	53*	53*	53*	53*	53*	53*	53*	53*	53*	52*	52*	52*	50*	50*	48*	47*	47*	40*	45*	45*	34	43*	40*	29
			Exposed	53*	53*	53*	53*	53*	53*	53*	53*	53*	53*	53*	53*	53*	53*	53*	53*	53*	53*	53*	53*	40*	52*	45*	33	42*	38	28	37	33	24	33	29	21	29	26	18			
	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	29	34	34	25	34	31	22	34	27	19	33	24	17
			Exposed	34	34	34	34	34	34	34	34	34	34	34	34	34	34	32	34	34	29	34	34	26	34	31	22	34	27	19	32	23	16	28	20	14	25	18	13	22	16	11
		7-20	Interior	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	30	35	31	26	35	27	22	35	23	19	32	21	17	28	18	15
			Exposed	35	35	35	35	35	35	35	35	34	35	35	31	35	34	28	35	31	25	35	28	23	35	24	20	31	20	17	27	18	15	23	15	13	21	14	11	18	12	10
		20-27	Interior	48*	48*	48*	48*	48*	48*	48*	48*	48*	48*	48*	48*	48*	48*	48*	48*	48*	48*	48*	48*	45*	48*	45*	35	48*	38	29	48*	32	24	46*	28	20	43*	25	17	38	22	15
			Exposed	48*	48*	48*	48*	48*	48*	48*	48*	42*	48*	47*	36	48*	41*	32	48*	37	28	48*	34	25	48*	29	20	42*	25	17	36	21	14	32	19	13	28	16	11	25	14	10
		27-45	Interior	53*	53*	53*	53*	53*	53*	53*	53*	53*	53*	53*	53*	53*	53*	53*	53*	53*	53*	53*	53*	53*	49*	49*	44*	46*	46*	36	44*	41*	31	40*	36	26	35	31	22	31	28	19
			Exposed	53*	53*	53*	53*	53*	53*	53*	53*	53*	53*	53*	46*	53*	53*	40*	53*	49*	36	51*	43*	32	40*	36	26	34	31	22	30	27	18	26	23	16	23	21	14	20	18	12
	D	0-7	Interior	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	37	38	38	34	38	38	28	38	34	24	38	30	21	36	26	18	31	23	16	28	20	14
			Exposed	38	38	38	38	38	36	38	38	32	38	38	29	38	37	26	38	34	24	38	31	22	36	26	19	31	23	16	27	19	14	23	17	12	21	15	11	18	13	14
		7-20	Interior	38	38	38	38	38	38	38	38	38	38	38	38	38	38	36	38	38	32	38	36	30	38	30	25	38	26	22	34	23	19	30	20	16	27	17	14	24	15	13
			Exposed	38	38	36	38	38	32	38	34	28	38	31	26	38	28	23	38	26	21	36	24	19	30	20	16	26	17	14	23	15	12	20	13	11	17	11	14	15	10	13
		20-27	Interior	52*	52*	52*	52*	52*	52*	52*	52*	52*	52*	52*	52*	52*	52*	45*	52*	51*	39	52*	44	35	52*	37	28	51*	31	23	48*	27	19	41	24	16	36	21	14	32	19	13
			Exposed	52*	52*	45*	52*	49*	38	52*	42	33	52*	38	29	52*	34	25	52*	31	23	50*	28	20	41	24	16	35	21	14	30	18	12	27	16	11	23	14	9	21	12	8
		27-45	Interior	56*	56*	56*	56*	56*	56*	56*	56*	56*	56*	56*	56*	56*	56*	56*	56*	56*	54*	54*	50*	52*	52*	44*	49*	48*	35	45*	39	29	38	34	25	33	30	21	29	26	18	26	23	16
			Exposed	56*	56*	56*	56*	56*	48*	56*	56*	41	56*	50*	36	52*	43*	32	45*	39	29	40	36	26	34	30	21	29	26	18	25	22	15	22	20	13	19	17	11	17	15	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 HD	NXT COMBO	Flashloc DUO Rafter
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	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	24			
			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	29	23	29	29	20	29	25	18	29	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	29	29	29	29	29	29	29	28	29	29	24	29	26	22		
			Exposed	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	25	21	29	22	18	29	19	16	26	17	14
		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*	38*	40*	40*	32	40*	36*	27	40*	32	23
			Exposed	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*	35*	26	40*	30	22	40*	26	18	40*	23	16	35*	21	14
		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*	43*	43*	43*	42*	42*	40*	40*	40*	34*	39*	39*	29
			Exposed	45*	45*	45*	45*	45*	45*	45*	45*	45*	45*	45*	45*	45*	45*	45*	45*	45*	45*	45*	45*	45*	45*	45*	45*	45*	45*	33*	42*	38*	28	37*	33*	24	33*	29	21	29	26	18
	C	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	29	29	29	25	29	29	22	29	27	19	29	24	17
			Exposed	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	26	29	29	22	29	27	19	29	23	16	28	20	14	25	18	13	22	16	11
		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	26	29	27	22	29	23	19	29	21	17	28	18	15
			Exposed	29	29	29	29	29	29	29	29	29	29	29	29	29	28	29	29	25	29	28	23	29	24	20	29	20	17	27	18	15	23	15	13	21	14	11	18	12	10		
		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*	35*	40*	38*	29	40*	32	24	40*	28	20	39*	25	17	38*	22	15
			Exposed	40*	40*	40*	40*	40*	40*	40*	40*	40*	40*	40*	36*	40*	40*	32	40*	37*	28	40*	34	25	40*	29	20	40*	25	17	36*	21	14	32	19	13	28	16	11	25	14	10
		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*	36*	39*	39*	31	37*	36*	26	35*	31	22	31	28	19
			Exposed	45*	45*	45*	45*	45*	45*	45*	45*	45*	45*	45*	45*	45*	45*	40*	45*	45*	36*	45*	42*	32	40*	36*	26	34*	31	22	30	27	18	26	23	16	23	21	14	20	18	12
	D	0-7	Interior	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	24	32	30	21	32	26	18	31	23	16	28	20	14			
			Exposed	32	32	32	32	32	32	32	32	32	32	32	29	32	32	26	32	32	24	32	31	22	32	26	19	31	23	16	27	19	14	23	17	12	21	15	11	18	13	14
		7-20	Interior	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	30	32	30	25	32	26	22	32	23	19	30	20	16	27	17	14	24	15	13
			Exposed	32	32	32	32	32	32	32	32	28	32	31	26	32	28	23	32	26	21	32	24	19	30	20	16	26	17	14	23	15	12	20	13	11	17	11	14	15	10	13
		20-27	Interior	45*	45*	45*	45*	45*	45*	45*	45*	45*	45*	45*	45*	45*	45*	45*	45*	45*	39*	45*	44*	35	45*	37	28	45*	31	23	43*	27	19	41*	24	16	36	21	14	32	19	13
			Exposed	45*	45*	45*	45*	45*	38*	45*	42*	33	45*	38*	29	45*	34	25	45*	31	23	45*	28	20	41*	24	16	35	21	14	30	18	12	27	16	11	23	14	9	21	12	8
		27-45	Interior	50*	50*	50*	50*	50*	50*	50*	50*	50*	50*	50*	50*	49*	49*	49*	47*	47*	47*	46*	46*	44*	44*	44*	36*	41*	39*	29	38*	34	25	33	30	21	29	26	18	26	23	16
			Exposed	50*	50*	50*	50*	50*	48*	50*	50*	41*	50*	50*	37*	49*	43*	32	44*	39*	29	40*	36*	26	34	30	21	29	26	18	25	22	15	22	20	13	19	17	11	17	15	10
70	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	24			
			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	23	25	25	20	25	25	18	25	23	16			
		7-20	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	24	25	25	22		
			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	21	25	22	18	25	19	16	25	17	14
		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*	27	35*	32*	23
			Exposed	35*	35*	35*	35*	35*	35*	35*	35*	35*	35*	35*	35*	35*	35*	35*	35*	35*	35*	35*	35*	35*	35*	35*	32*	35*	35*	26	35*	30*	22	35*	26	18	35*	23	16	35*	21	14
		27-45	Interior	39*	39*	39*	39*	39*	39*	39*	39*	39*	39*	39*	39*	39*	39*	39*	39*	39*	39*	39*	39*	39*	39*	39*	39*	39*	39*	39*	39*	39*	39*	38*	38*	38*	36*	36*	34*	35*	35*	30*
			Exposed	39*	39*	39*	39*	39*	39*	39*	39*	39*	39*	39*	39*	39*	39*	39*	39*	39*	39*	39*	39*	39*	39*	39*	39*	39*	39*	33*	39*	38*	28	37*	33*	24	33*	29*	21	29*	26	18
	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	22	25	25	19	25	24	17
			Exposed	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	19	25	23	16	25	23	16	25	20	14	25	18	13	22	16	11
		7-20	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	22	25	23	19	25	21	17	25	18	15
			Exposed	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	23	25	24	20	25	20	17	25	18	15	23	15	13	21	14	11	18	12	10
		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*	32*	24	35*	28	20	35*	25	17	34*	22	15			
			Exposed	35*	35*	35*	35*	35*	35*	35*	35*	35*	35*	35*	32*	35*	35*	28	35*	34*	25	35*	29	20	35*	25	17	35*	21	14	32*	19	13	28	16	11	25	14	10			
		27-45	Interior	39*	39*	39*	39*	39*	39*	39*	39*	39*	39*	39*	39*	39*	39*	39*	39*	39*	39*	39*	39*	39*	39*	39*	39*	37*	37*	36*	36*	36*	31*	34*	34*	26	33*	31*	22	31*	28	19
			Exposed	39*	39*	39*	39*	39*	39*	39*	39*	39*	39*	39*	36*	39*	39*	32*	39*	39*	26	34*	31*	22	30*	27	18	26	23	16	23	21	14	20	18	12						
	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	24	27	27	21	27	26	18	27	23	16	27	20	14			
			Exposed	27	27	27	27	27	27	27	27	27	27	27	27	27	27	26	27	27	24	27	27	22	27	26	19	27	23	16	27	19	14	23	17	12	21	15	11	18	13	14
		7-20	Interior	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	26	22	28	23	19	28	20	16	27	17	14	24	15	13
			Exposed	28	28	28	28	28	28	28	28	28	28	28	26	28	28	23	28	26	21	28	24	19	28	20	16	26	17	14	23	15	12	20	13	11	17	11	14	15	10	13
		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*	37*	28	39*	31	23	38*	27	19	37*	24	16	36*	21	14	32	19	13
			Exposed	39*	39*	39*	39*	39*	38*	39*	39*	33*	39*	38*	29	39*	34*	25	39*	31	23	39*	28	20	35*	24	16	30	18	12	27	16	11	23	14	9	21	12	8			
		27-45	Interior	43*	43*	43*	43*	43*	43*	43*	43*	43*	43*	43*	43*	43*	43*	43*	42*	42*	42*	41*	41*	41*	39*	39*	35*	38*	38*	29	36*	34*	25	33*	30	21	29	26	18	26	23	16
			Exposed	43*	43*	43*	43*	43*	43*	43*	43*	41*	43*	43*	36*	43*	43*	32*	42*	39*	29	40*	36*	26	34*	30	21	29	26	18	25	22	15	22	20	13	19	17	11	17	15	10
80	B	0-7	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	22	22	22	22			
			Exposed	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	20	22	22	18	22	22	16
		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	22	22	22	22	22		
			Exposed	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	21	22	22	18	22	19	16	22	17	14
		20-27	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*	31*	31*	31*	31*	31*	31*	31*	31*	31*	31*	31*	27*	31*	31*	23
			Exposed	31*	31*	31*	31*	31*	31*	31*	31*	31*	31*	31*	31*	31*	31*	31*	31*	31*	31*	31*	31*	31*	31*	31*	31*	31*	31*	26	31*	30*	22	31*	26	18	31*	23	16	31*	21	14
		27-45	Interior	35*	35*	35*	35*	35*	35*	35*	35*	35*	35*	35*	35*	35*	35*	35*	35*	35*	35*	35*	35*	35*	35*	35*	35*	35*	35*	35*	35*	35*	35*	34*	34*	34*	33*	33*	33*	32*	32*	29*
			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*	28*	34*	33*	24	33*	29*	21	29*	26*	18			
	C	0-7	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	22	22	22	19	22	22	17
			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	22	16	22	20	14	22	18	13	22	16	11			
		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	21	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	20	22	20	17	22	18	15	22	15	13	21	14	11	18	12	10
		20-27	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*	31*	24	31*	28*	20	31*	25	17	31*	22	15			
			Exposed	31*	31*	31*	31*	31*	31*	31*	31*	31*	31*	31*	31*	31*	31*	31*	31*	31*	28*	31*	31*	25	31*	29*	20	31*	25	17	31*	21	14	31*	19	13	28*	16	11	25	14	10
		27-45	Interior	35*	35*	35*	35*	35*	35*	35*	35*	35*	35*	35*	35*	35*	35*	35*	35*	35*	35*	35*	35*	35*	35*	35*	32*	35*	35*	26*	34*	34*	34*	33*	33*	31*	31*	31*	26*	30*	30*	22
			Exposed	35*	35*	35*	35*	35*	35*	35*	35*	35*	35*	35*	35*	35*	35*	35*	35*	35*	35*	35*	35*	32*	35*	35*	26*	34*	31*	22	30*	27*	18	26*	23	16	23	21	14	20	18	12
	D	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	21	24	24	18	24	23	16	24	20	14			
			Exposed	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	19	14	23	17	12	21	15	11	18	13	14
		7-20	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	22	24	23	19	24	20	16	24	17	14	24	15	13
			Exposed	24	24	24	24	24	24	24	24	24	24	24	24	24	24	23	24	24	21	24	24	19	24	24	20	16	24	17	14	23	15	12	20	13	11	17	11	14	15	10	13
		20-27	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*	31*	23	34*	27	19	34*	24	16	33*	21	14	31*	19	13
			Exposed	34*	34*	34*	34*	34*	34*	34*	34*	33*	34*	34*	29*	34*	34*	25	34*	31*	23	34*	28	20	34*	24	16	34*	21	14	30*	18	12	27	16	11	23	14	9	21	12	8
		27-45	Interior	38*	38*	38*	38*	38*	38*	38*	38*	38*	38*	38*	38*	38*	38*	38*	38*	38*	38*	38*	38*	38*	36*	36*	35*	35*	35*	29*	33*	33*	25	32*	30*	21	29*	26	18	26	23	16
			Exposed	38*	38*	38*	38*	38*	38*	38*	38*	38*	38*	38*	36*	38*	38*	32*	38*	38*	29*	38*	36*	26	34*	30*	21	29*	26	18	25	22	15	22	20	13	19	17	11	17	15	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 HD	NXT COMBO	Flashloc DUO Rafter
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	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	19	19	19	19	19	19	19	19	19	19
			Exposed	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	19	19	19	18	19	19	16	19	19	16
		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	20	20	20	20
			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	20	20	20	20	20	20	18	20	19	16	20	17	14
		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*	27*	27*	27*	27*	27*	27*	27*	27*	27*	23	27*	27*	23
			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*	26*	27*	27*	22	27*	26*	18	27*	23	16	27*	21	14	27*	21	14
		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*	31*	31*	31*	31*	31*	31*	31*	31*	31*	30*	30*	29*	30*	30*	29*
			Exposed	31*	31*	31*	31*	31*	31*	31*	31*	31*	31*	31*	31*	31*	31*	31*	31*	31*	31*	31*	31*	31*	31*	31*	31*	31*	31*	31*	28*	31*	31*	24*	31*	29*	21	29*	26*	18	29*	23*	18
	C	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	19	19	19	19	19	19	19	19	19	19	19	19	17
			Exposed	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	16	19	19	14	19	18	13	19	16	11	19	16	11
		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	19	20	20	17	20	18	15	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	20	20	20	17	20	18	15	20	15	13	20	14	11	18	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*	27*	27*	27*	24*	27*	27*	20	27*	25*	17	27*	22	15	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*	25*	17	27*	21	14	27*	19	13	27*	16	11	25*	14	10
		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*	31*	31*	31*	30*	30*	30*	29*	29*	26*	28*	28*	22	27*	27*	19
			Exposed	31*	31*	31*	31*	31*	31*	31*	31*	31*	31*	31*	31*	31*	31*	31*	31*	31*	26*	31*	31*	22	30*	27*	18	26*	23*	16	23*	21	14	20	18	12						
	D	0-7	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	21	22	22	18	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	22	22	22	19	22	22	16	22	19	14	22	17	12	21	15	11	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	22	22	22	22	22	22	19	22	20	16	22	17	14	22	15	13
			Exposed	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	21	22	22	19	22	20	16	22	17	14	22	15	12	20	13	11	17	11	14	15	10	13
		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*	28*	30*	30*	23	30*	27*	19	30*	24	16	30*	21	14	29*	19	13
			Exposed	30*	30*	30*	30*	30*	30*	30*	30*	30*	30*	30*	29*	30*	30*	25	30*	30*	23	30*	28*	20	30*	24	16	30*	21	14	30*	18	12	27*	16	11	23	14	9	21	12	8
		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*	29*	31*	31*	25*	29*	29*	21	28*	26*	18	26*	23	16
			Exposed	34*	34*	34*	34*	34*	34*	34*	34*	34*	34*	34*	34*	34*	32*	34*	34*	29*	34*	34*	26*	33*	30*	21	29*	26*	18	25*	22	15	22	20	13	19	17	11	17	15	10			
100	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	17
			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	17	17	17	17	17	17	17	17	17	17	17	17	16
		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	18	18	18	18	18	18	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	18	18	18	18	18	18	16	18	17	14
		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*	25*	25*	25*	25*	25*	25*	25*	25*	25*	25*	25*	25*	25*	25*	25*	23*
			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*	22*	25*	25*	18	25*	23*	16	25*	21	14
		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*	28*	28*	28*	28*	28*	28*	28*	28*	28*	28*	28*	28*	28*	28*	28*
			Exposed	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*	28*	24*	28*	28*	21*	28*	26*	18			
	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	17	17	17	17	17	17	17	17	17	17
			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	16	17	17	14	17	17	13	17	16	11			
		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	15	18	18	15	18	14	11	18	12	10						
		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*	25*	25*	25*	24*	25*	25*	20	25*	25*	17	25*	22*	15			
			Exposed	25*	25*	25*	25*	25*	25*	25*	25*	25*	25*	25*	25*	25*	25*	25*	25*	25*	25*	25*	25*	20	25*	25*	17	25*	21	14	25*	19	13	25*	16	11	25*	14	10			
		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*	28*	28*	28*	28*	28*	28*	27*	27*	26*	26*	26*	22*	25*	25*	19
			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*	27*	18	26*	23*	16	23*	21*	14	20	18	12			
	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	18	19	19	16	19	19	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	19	14	19	17	12	19	15	11	18	13	14			
		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	19	20	20	16	20	17	14	20	15	13			
			Exposed	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	12	20	13	11	17	11	14	15	10	13
		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*	19	27*	24*	16	27*	21	14	27*	19	13
			Exposed	27*	27*	27*	27*	27*	27*	27*	27*	27*	27*	27*	27*	27*	27*	27*	27*	27*	23	27*	27*	20	27*	24*	16	27*	21	14	27*	18	12	27*	16	11	23	14	9	21	12	8
		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*	30*	30*	29*	29*	29*	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*	29*	31*	31*	26*	31*	30*	21	29*	26*	18	25*	22	15	22	20	13	19	17	11	17	15	10			

#N/A

* 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.

SPAN TABLES

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

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	156	156	156	156	156	156	156	156	156	156	156	156	156	156	156	156	156	156	156	156	153	156	156	140	156	147	83	156	137	60	151	94	53	142	66	46	124	58	41
			Exposed	156	156	156	156	156	156	156	156	150	156	156	142	156	154	134	156	147	79	156	140	63	152	97	53	141	64	46	105	56	40	70	49	35	59	43	30	52	38	27
		7-20	Interior	156	156	156	156	156	156	156	156	156	156	156	156	156	156	156	156	156	156	156	156	156	156	156	143	156	144	62	156	64	53	156	56	47	84	50	41	69	44	36
			Exposed	156	156	156	156	156	156	156	156	155	156	156	145	156	151	77	156	143	61	156	80	56	156	57	47	81	49	40	64	42	35	56	37	31	50	33	27	44	29	24
		20-27	Interior	157	157	157	157	157	157	157	157	157	157	157	157	157	157	157	157	157	157	157	157	157	157	157	157	157	157	151	157	144	68	157	82	53	150	60	45	140	53	39
			Exposed	157	157	157	157	157	157	157	157	157	157	157	157	157	157	157	157	156	151	157	148	144	157	89	54	148	59	44	137	51	37	84	45	31	68	39	27	59	35	24
		27-45	Interior	157	157	157	157	157	157	157	157	157	157	157	157	157	157	157	157	157	157	157	157	157	157	157	157	157	157	151	157	157	140	157	146	76	157	136	57	151	70	50
			Exposed	157	157	157	157	157	157	157	157	157	157	157	157	157	157	157	157	157	150	157	157	143	157	147	79	157	135	56	146	64	47	62	56	40	55	49	35	49	44	30
	C	0-7	Interior	156	156	156	156	156	156	156	156	156	156	156	147	156	156	140	156	152	110	156	145	74	156	126	57	146	76	49	136	60	42	85	52	37	63	46	33	56	41	29
			Exposed	156	156	139	156	150	96	156	142	65	156	135	58	152	96	53	145	73	48	138	63	44	87	53	37	62	45	32	54	39	28	47	34	24	41	30	21	37	27	19
		7-20	Interior	156	156	156	156	156	156	156	156	156	156	156	152	156	156	143	156	149	65	156	141	60	156	61	50	92	52	43	72	45	37	60	40	33	53	35	29	47	31	26
			Exposed	156	156	142	156	147	64	156	138	57	156	62	52	156	57	47	90	52	43	77	47	39	61	40	33	52	34	28	45	30	25	40	26	22	35	23	19	31	20	17
		20-27	Interior	157	157	157	157	157	157	157	157	157	157	157	157	157	157	157	157	157	155	157	154	149	157	140	59	154	63	48	142	55	40	102	48	34	76	42	29	64	37	26
			Exposed	157	157	157	157	157	154	157	150	147	157	142	62	157	86	54	153	62	48	146	57	43	109	48	34	74	41	28	61	36	25	53	31	21	47	28	19	42	25	17
		27-45	Interior	157	157	157	157	157	157	157	157	157	157	157	157	157	157	157	157	157	156	157	157	149	157	152	136	157	140	61	153	79	51	140	60	44	59	53	38	52	47	33
			Exposed	157	157	157	157	157	154	157	157	145	157	154	138	157	146	78	157	139	60	157	98	54	141	60	44	58	52	37	50	45	31	44	39	27	39	35	23	34	31	20
	D	0-7	Interior	156	156	156	156	156	150	156	156	141	156	153	122	156	146	75	156	139	62	156	121	57	144	72	48	122	58	41	75	50	36	60	44	31	53	39	27	47	34	24
			Exposed	156	145	74	156	138	60	153	103	54	146	76	49	139	63	45	116	57	41	85	52	37	61	44	31	52	38	27	45	33	23	39	29	20	35	25	18	31	23	24
		7-20	Interior	156	156	156	156	156	155	156	156	145	156	150	72	156	142	60	156	71	55	156	61	50	89	51	42	68	44	36	58	38	31	51	33	28	45	29	24	40	26	22
			Exposed	156	141	60	156	65	53	156	58	48	156	52	43	78	48	39	67	43	36	61	40	33	51	34	28	44	29	24	38	25	21	33	22	18	29	19	24	26	17	21
		20-27	Interior	157	157	157	157	157	157	157	157	157	157	157	156	157	155	150	157	146	142	157	139	59	152	62	47	140	53	39	89	46	32	70	40	27	60	35	24	53	31	22
			Exposed	157	154	149	157	144	69	157	136	55	154	63	49	146	57	43	139	52	38	103	48	34	72	41	28	59	35	24	51	30	21	45	26	18	39	23	16	35	21	14
		27-45	Interior	157	157	157	157	157	157	157	157	157	157	157	157	157	157	149	157	157	142	157	152	136	157	139	60	150	69	49	64	57	42	56	50	36	49	44	31	44	39	27
			Exposed	157	157	149	157	157	140	157	148	88	157	140	62	157	103	54	149	66	49	141	60	44	57	51	36	49	44	30	42	38	25	37	33	22	33	29	19	29	26	16
10	B	0-7	Interior	137	137	137	137	137	137	137	137	137	137	137	137	137	137	137	137	137	137	137	137	137	137	137	137	137	137	83	137	137	60	137	94	53	137	66	46	124	58	41
			Exposed	137	137	137	137	137	137	137	137	137	137	137	137	137	137	134	137	137	79	137	137	63	137	97	53	137	64	46	105	56	40	70	49	35	59	43	30	52	38	27
		7-20	Interior	137	137	137	137	137	137	137	137	137	137	137	137	137	137	137	137	137	137	137	137	137	137	137	137	137	137	62	137	64	53	137	56	47	84	50	41	69	44	36
			Exposed	137	137	137	137	137	137	137	137	137	137	137	137	137	137	77	137	137	61	137	80	56	137	57	47	81	49	40	64	42	35	56	37	31	50	33	27	44	29	24
		20-27	Interior	147	147	147	147	147	147	147	147	147	147	147	147	147	147	147	147	147	147	147	147	147	147	147	147	147	147	147	147	144	68	147	82	53	147	60	45	140	53	39
			Exposed	147	147	147	147	147	147	147	147	147	147	147	147	147	147	147	147	147	147	147	147	144	147	89	54	147	59	44	137	51	37	84	45	31	68	39	27	59	35	24
		27-45	Interior	151	151	151	151	151	151	151	151	151	151	151	151	151	151	151	151	151	151	151	151	151	151	151	151	151	151	151	151	151	140	151	146	76	151	136	57	151	70	50
			Exposed	151	151	151	151	151	151	151	151	151	151	151	151	151	151	151	151	151	150	151	151	143	151	147	79	151	135	56	146	64	47	62	56	40	55	49	35	49	44	30
	C	0-7	Interior	137	137	137	137	137	137	137	137	137	137	137	137	137	137	137	137	137	110	137	137	74	137	126	57	137	76	49	136	60	42	85	52	37	63	46	33	56	41	29
			Exposed	137	137	137	137	137	96	137	137	65	137	135	58	137	96	53	137	73	48	137	63	44	87	53	37	62	45	32	54	39	28	47	34	24	41	30	21	37	27	19
		7-20	Interior	137	137	137	137	137	137	137	137	137	137	137	137	137	137	137	137	137	65	137	137	60	137	61	50	92	52	43	72	45	37	60	40	33	53	35	29	47	31	26
			Exposed	137	137	137	137	137	64	137	137	57	137	62	52	137	57	47	90	52	43	77	47	39	61	40	33	52	34	28	45	30	25	40	26	22	35	23	19	31	20	17
		20-27	Interior	147	147	147	147	147	147	147	147	147	147	147	147	147	147	147	147	147	147	147	147	147	147	140	59	147	63	48	142	55	40	102	48	34	76	42	29	64	37	26
			Exposed	147	147	147	147	147	147	147	147	147	147	142	62	147	86	54	147	62	48	146	57	43	109	48	34	74	41	28	61	36	25	53	31	21	47	28	19	42	25	17
		27-45	Interior	151	151	151	151	151	151	151	151	151	151	151	151	151	151	151	151	151	151	151	151	149	151	151	136	151	140	61	151	79	51	140	60	44	59	53	38	52	47	33
			Exposed	151	151	151	151	151	151	151	151	145	151	151	138	151	146	78	151	139	60	151	98	54	141	60	44	58	52	37	50	45	31	44	39	27	39	35	23	34	31	20
	D	0-7	Interior	137	137	137	137	137	137	137	137	137	137	137	122	137	137	75	137	137	62	137	121	57	137	72	48	122	58	41	75	50	36	60	44	31	53	39	27	47	34	24
			Exposed	137	137	74	137	137	60	137	103	54	137	76	49	137	63	45	116	57	41	85	52	37	61	44	31	52	38	27	45	33	23	39	29	20	35	25	18	31	23	24
		7-20	Interior	137	137	137	137	137	137	137	137	137	137	137	72	137	137	60	137	71	55	137	61	50	89	51	42	68	44	36	58	38	31	51	33	28	45	29	24	40	26	22
			Exposed	137	137	60	137	65	53	137	58	48	137	52	43	78	48	39	67	43	36	61	40	33	51	34	28	44	29	24	38	25	21	33	22	18	29	19	24	26	17	21
		20-27	Interior	149	149	149	149	149	149	149	149	149	149	149	149	149	149	149	149	146	142	149	139	59	149	62	47	140	53	39	89	46	32	70	40	27	60	35	24	53	31	22
			Exposed	149	149	149	149	144	69	149	136	55	149	63	49	146	57	43	139	52	38	103	48	34	72	41	28	59	35	24	51	30	21	45	26	18	39	23	16	35	21	14
		27-45	Interior	153	153	153	153	153	153	153	153	153	153	153	153	153	153	149	153	153	142	153	152	136	153	139	60	150	69	49	64	57	42	56	50	36	49	44	31	44	39	27
			Exposed	153	153	149	153	153	140	153	148	88	153	140	62	153	103	54	149	66	49	141	60	44	57	51	36	49	44	30	42	38	25	37	33	22	33	29	19	29	26	16
20	B	0-7	Interior	103	103	103	103	103	103	103	103	103	103	103	103	103	103	103	103	103	103	103	103	103	103	103	103	103	103	83	103	103	60	103	94	53	103	66	46	103	58	41
			Exposed	103	103	103	103	103	103	103	103	103	103	103	103	103	103	103	103	103	79	103	103	63	103	97	53	103	64	46	103	56	40	70	49	35	59	43	30	52	38	27
		7-20	Interior	104	104	104	104	104	104	104	104	104	104	104	104	104	104	104	104	104	104	104	104	104	104	104	104	104	104	62	104	64	53	104	56	47	84	50	41	69	44	36
			Exposed	104	104	104	104	104	104	104	104	104	104	104	104	104	104	77	104	104	61	104	80	56	104	57	47	81	49	40	64	42	35	56	37	31	50	33	27	44	29	24
		20-27	Interior	129	129	129	129	129	129	129	129	129	129	129	129	129	129	129	129	129	129	129	129	129	129	129	129	129	129	129	129	129	68	129	82	53	129	60	45	129	53	39
			Exposed	129	129	129	129	129	129	129	129	129	129	129	129	129	129	129	129	129	129	129	129	129	129	89	54	129	59	44	129	51	37	84	45	31	68	39	27	59	35	24
		27-45	Interior	141*	141*	141*	141*	141*	141*	141*	141*	141*	141*	141*	141*	141*	141*	141*	141*	141*	141*	141*	141*	141*	141*	141*	141*	141*	141*	141*	141*	141*	141*	141*	141*	76	141*	136	57	141*	70	50
			Exposed	141*	141*	141*	141*	141*	141*	141*	141*	141*	141*	141*	141*	141*	141*	141*	141*	141*	141*	141*	141*	141*	141*	141*	79	141*	135	56	141*	64	47	62	56	40	55	49	35	49	44	30
	C	0-7	Interior	103	103	103	103	103	103	103	103	103	103	103	103	103	103	103	103	103	103	103	103	74	103	103	57	103	76	49	103	60	42	85	52	37	63	46	33	56	41	29
			Exposed	103	103	103	103	103	96	103	103	65	103	103	58	103	96	53	103	73	48	103	63	44	87	53	37	62	45	32	54	39	28	47	34	24	41	30	21	37	27	19
		7-20	Interior	104	104	104	104	104	104	104	104	104	104	104	104	104	104	104	104	104	65	104	104	60	104	61	50	92	52	43	72	45	37	60	40	33	53	35	29	47	31	26
			Exposed	104	104	104	104	104	64	104	104	57	104	62	52	104	57	47	90	52	43	77	47	39	61	40	33	52	34	28	45	30	25	40	26	22	35	23	19	31	20	17
		20-27	Interior	129	129	129	129	129	129	129	129	129	129	129	129	129	129	129	129	129	129	129	129	129	129	129	59	129	63	48	129	55	40	102	48	34	76	42	29	64	37	26
			Exposed	129	129	129	129	129	129	129	129	129	129	129	62	129	86	54	129	62	48	129	57	43	109	48	34	74	41	28	61	36	25	53	31	21	47	28	19	42	25	17
		27-45	Interior	141*	141*	141*	141*	141*	141*	141*	141*	141*	141*	141*	141*	141*	141*	141*	141*	141*	141*	141*	141*	141*	141*	141*	136	141*	141*	61	141*	79	51	141*	60	44	59	53	38	52	47	33
			Exposed	141*	141*	141*	141*	141*	141*	141*	141*	141*	141*	141*	137	141*	141*	78	141*	140*	60	141*	98	54	141*	60	44	58	52	37	50	45	31	44	39	27	39	35	23	34	31	20
	D	0-7	Interior	103	103	103	103	103	103	103	103	103	103	103	103	103	103	75	103	103	62	103	103	57	103	72	48	103	58	41	75	50	36	60	44	31	53	39	27	47	34	24
			Exposed	103	103	74	103	103	60	103	103	54	103	76	49	103	63	45	103	57	41	85	52	37	61	44	31	52	38	27	45	33	23	39	29	20	35	25	18	31	23	24
		7-20	Interior	104	104	104	104	104	104	104	104	104	104	104	72	104	104	60	104	71	55	104	61	50	89	51	42	68	44	36	58	38	31	51	33	28	45	29	24	40	26	22
			Exposed	104	104	60	104	65	53	104	58	48	104	52	43	78	48	39	67	43	36	61	40	33	51	34	28	44	29	24	38	25	21	33	22	18	29	19	24	26	17	21
		20-27	Interior	132	132	132	132	132	132	132	132	132	132	132	132	132	132	132	132	132	132	132	132	59	132	62	47	132	53	39	89	46	32	70	40	27	60	35	24	53	31	22
			Exposed	132	132	132	132	132	69	132	132	55	132	63	49	132	57	43	132	52	38	103	48	34	72	41	28	59	35	24	51	30	21	45	26	18	39	23	16	35	21	14
		27-45	Interior	140	140	140	140	140	140	140	140	140	140	140	140	140	140	140	140	140	140	140	140	136	140	139	60	140	69	49	64	57	42	56	50	36	49	44	31	44	39	27
			Exposed	140	140	140	140	140	140	140	140	88	140	140	62	140	103	54	140	66	49	140	60	44	57	51	36	49	44	30	42	38	25	37	33	22	33	29	19	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	19 sq.ft	LANDSCAPE	CROSS-SLOPE	NXT HD	NXT COMBO	Flashloc DUO Rafter
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	89	89	89	89	89	89	89	89	89	89	89	89	89	89	89	89	89	89	89	89	89	89	89	89	89	89	83	89	89	60	89	89	53	89	66	46	89	58	41
			Exposed	89	89	89	89	89	89	89	89	89	89	89	89	89	89	89	89	89	79	89	89	63	89	89	53	89	64	46	89	56	40	70	49	35	59	43	30	52	38	27
		7-20	Interior	90	90	90	90	90	90	90	90	90	90	90	90	90	90	90	90	90	90	90	90	90	90	90	90	90	90	62	90	64	53	90	56	47	84	50	41	69	44	36
			Exposed	90	90	90	90	90	90	90	90	90	90	90	90	90	90	77	90	90	61	90	80	56	90	57	47	81	49	40	64	42	35	56	37	31	50	33	27	44	29	24
		20-27	Interior	112*	112*	112*	112*	112*	112*	112*	112*	112*	112*	112*	112*	112*	112*	112*	112*	112*	112*	112*	112*	112*	112*	112*	112*	112*	112*	112*	112*	112*	68	112*	82	53	112*	60	45	112*	53	39
			Exposed	112*	112*	112*	112*	112*	112*	112*	112*	112*	112*	112*	112*	112*	112*	112*	112*	112*	112*	112*	112*	112*	112*	89	54	112*	59	44	112*	51	37	84	45	31	68	39	27	59	35	24
		27-45	Interior	120*	120*	120*	120*	120*	120*	120*	120*	120*	120*	120*	120*	120*	120*	120*	120*	120*	120*	120*	120*	120*	120*	120*	120*	120*	120*	120*	120*	120*	120*	120*	120*	76	119*	119*	57	112*	70	50
			Exposed	120*	120*	120*	120*	120*	120*	120*	120*	120*	120*	120*	120*	120*	120*	120*	120*	120*	120*	120*	120*	120*	120*	120*	120*	120*	120*	120*	120*	64	47	62	56	40	55	49	35	49	44	30
	C	0-7	Interior	89	89	89	89	89	89	89	89	89	89	89	89	89	89	89	89	89	89	89	89	74	89	89	57	89	76	49	89	60	42	85	52	37	63	46	33	56	41	29
			Exposed	89	89	89	89	89	89	89	89	65	89	89	58	89	89	53	89	73	48	89	63	44	87	53	37	62	45	32	54	39	28	47	34	24	41	30	21	37	27	19
		7-20	Interior	90	90	90	90	90	90	90	90	90	90	90	90	90	90	90	90	90	65	90	90	60	90	61	50	90	52	43	72	45	37	60	40	33	53	35	29	47	31	26
			Exposed	90	90	90	90	90	64	90	90	57	90	62	52	90	57	47	90	52	43	77	47	39	61	40	33	52	34	28	45	30	25	40	26	22	35	23	19	31	20	17
		20-27	Interior	112*	112*	112*	112*	112*	112*	112*	112*	112*	112*	112*	112*	112*	112*	112*	112*	112*	112*	112*	112*	112*	112*	112*	59	112*	63	48	112*	55	40	102	48	34	76	42	29	64	37	26
			Exposed	112*	112*	112*	112*	112*	112*	112*	112*	112*	112*	112*	62	112*	86	54	112*	62	48	112*	57	43	109*	48	34	74	41	28	61	36	25	53	31	21	47	28	19	42	25	17
		27-45	Interior	120*	120*	120*	120*	120*	120*	120*	120*	120*	120*	120*	120*	120*	120*	120*	120*	120*	120*	120*	120*	120*	120*	120*	120*	120*	120*	120*	120*	120*	120*	120*	120*	120*	120*	120*	120*	120*	120*	120*
			Exposed	120*	120*	120*	120*	120*	120*	120*	120*	120*	120*	120*	120*	120*	120*	78	120*	120*	60	120*	103*	54	120*	60	44	58	52	37	50	45	31	44	39	27	39	35	23	34	31	20
	D	0-7	Interior	95	95	95	95	95	95	95	95	95	95	95	95	95	95	75	95	95	62	95	95	57	95	72	48	95	58	41	75	50	36	60	44	31	53	39	27	47	34	24
			Exposed	95	95	74	95	95	60	95	95	54	95	76	49	95	63	45	95	57	41	85	52	37	61	44	31	52	38	27	45	33	23	39	29	20	35	25	18	31	23	24
		7-20	Interior	96	96	96	96	96	96	96	96	96	96	96	72	96	96	60	96	71	55	96	61	50	89	51	42	68	44	36	58	38	31	51	33	28	45	29	24	40	26	22
			Exposed	96	96	60	96	65	53	96	58	48	96	52	43	78	48	39	67	43	36	61	40	33	51	34	28	44	29	24	38	25	21	33	22	18	29	19	24	26	17	21
		20-27	Interior	119*	119*	119*	119*	119*	119*	119*	119*	119*	119*	119*	119*	119*	119*	119*	119*	119*	119*	119*	119*	59	119*	62	47	119*	53	39	89	46	32	70	40	27	60	35	24	53	31	22
			Exposed	119*	119*	119*	119*	119*	69	119*	119*	55	119*	63	49	119*	57	43	119*	52	38	103	48	34	72	41	28	59	35	24	51	30	21	45	26	18	39	23	16	35	21	14
		27-45	Interior	127*	127*	127*	127*	127*	127*	127*	127*	127*	127*	127*	127*	127*	127*	127*	127*	127*	127*	127*	127*	127*	127*	127*	60	122*	69	49	64	57	42	56	50	36	49	44	31	44	39	27
			Exposed	127*	127*	127*	127*	127*	127*	127*	127*	88	127*	127*	62	127*	112*	54	127*	66	49	127*	60	44	57	51	36	49	44	30	42	38	25	37	33	22	33	29	19	29	26	16
40	B	0-7	Interior	71	71	71	71	71	71	71	71	71	71	71	71	71	71	71	71	71	71	71	71	71	71	71	71	71	71	71	71	71	60	71	71	53	71	66	46	71	58	41
			Exposed	71	71	71	71	71	71	71	71	71	71	71	71	71	71	71	71	71	71	71	71	63	71	71	53	71	64	46	71	56	40	70	49	35	59	43	30	52	38	27
		7-20	Interior	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	62	72	64	53	72	56	47	72	50	41	69	44	36			
			Exposed	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	61	72	72	56	72	57	47	72	49	40	64	42	35	56	37	31	50	33	27	44	29	24
		20-27	Interior	94*	94*	94*	94*	94*	94*	94*	94*	94*	94*	94*	94*	94*	94*	94*	94*	94*	94*	94*	94*	94*	94*	94*	94*	94*	94*	94*	94*	94*	68	94*	82	53	94*	60	45	94*	53	39
			Exposed	94*	94*	94*	94*	94*	94*	94*	94*	94*	94*	94*	94*	94*	94*	94*	94*	94*	94*	94*	94*	94*	94*	89*	54	94*	59	44	94*	51	37	84*	45	31	68	39	27	59	35	24
		27-45	Interior	102*	102*	102*	102*	102*	102*	102*	102*	102*	102*	102*	102*	102*	102*	102*	102*	102*	102*	102*	102*	102*	102*	102*	102*	102*	102*	102*	102*	102*	102*	100*	100*	76	95*	95*	57	89*	70	50
			Exposed	102*	102*	102*	102*	102*	102*	102*	102*	102*	102*	102*	102*	102*	102*	102*	102*	102*	102*	102*	102*	102*	102*	102*	81*	102*	102*	56	102*	64	47	62	56	40	55	49	35	49	44	30
	C	0-7	Interior	71	71	71	71	71	71	71	71	71	71	71	71	71	71	71	71	71	71	71	71	71	71	71	57	71	71	49	71	60	42	71	52	37	63	46	33	56	41	29
			Exposed	71	71	71	71	71	71	71	71	65	71	71	58	71	71	53	71	71	48	71	63	44	71	53	37	62	45	32	54	39	28	47	34	24	41	30	21	37	27	19
		7-20	Interior	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	65	72	72	60	72	61	50	72	52	43	72	45	37	60	40	33	53	35	29	47	31	26
			Exposed	72	72	72	72	72	64	72	72	57	72	62	52	72	57	47	72	52	43	72	47	39	61	40	33	52	34	28	45	30	25	40	26	22	35	23	19	31	20	17
		20-27	Interior	94*	94*	94*	94*	94*	94*	94*	94*	94*	94*	94*	94*	94*	94*	94*	94*	94*	94*	94*	94*	94*	94*	94*	59	94*	63	48	94*	55	40	94*	48	34	76	42	29	64	37	26
			Exposed	94*	94*	94*	94*	94*	94*	94*	94*	94*	94*	94*	62	94*	86*	54	94*	62	48	94*	57	43	94*	48	34	74	41	28	61	36	25	53	31	21	47	28	19	42	25	17
		27-45	Interior	102*	102*	102*	102*	102*	102*	102*	102*	102*	102*	102*	102*	102*	102*	102*	102*	102*	102*	102*	102*	102*	102*	102*	102*	102*	102*	102*	102*	102*	102*	97*	97*	61	91*	80*	51	84*	60	44
			Exposed	102*	102*	102*	102*	102*	102*	102*	102*	102*	102*	102*	102*	102*	102*	80*	102*	102*	60	102*	98*	54	102*	60	44	58	52	37	50	45	31	44	39	27	39	35	23	34	31	20
	D	0-7	Interior	78	78	78	78	78	78	78	78	78	78	78	78	78	78	75	78	78	62	78	78	57	78	72	48	78	58	41	75	50	36	60	44	31	53	39	27	47	34	24
			Exposed	78	78	74	78	78	60	78	78	54	78	76	49	78	63	45	78	57	41	78	52	37	61	44	31	52	38	27	45	33	23	39	29	20	35	25	18	31	23	24
		7-20	Interior	79	79	79	79	79	79	79	79	79	79	79	72	79	79	60	79	71	55	79	61	50	79	51	42	68	44	36	58	38	31	51	33	28	45	29	24	40	26	22
			Exposed	79	79	60	79	65	53	79	58	48	79	52	43	78	48	39	67	43	36	61	40	33	51	34	28	44	29	24	38	25	21	33	22	18	29	19	24	26	17	21
		20-27	Interior	100*	100*	100*	100*	100*	100*	100*	100*	100*	100*	100*	100*	100*	100*	100*	100*	100*	100*	100*	100*	59	100*	62	47	100*	53	39	89	46	32	70	40	27	60	35	24	53	31	22
			Exposed	100*	100*	100*	100*	100*	69	100*	100*	55	100*	63	49	100*	57	43	100*	52	38	100*	48	34	72	41	28	59	35	24	51	30	21	45	26	18	39	23	16	35	21	14
		27-45	Interior	108*	108*	108*	108*	108*	108*	108*	108*	108*	108*	108*	108*	108*	108*	108*	108*	108*	108*	108*	108*	108*	108*	108*	108*	105*	105*	60	97*	69	49	64	57	42	56	50	36	49	44	31
			Exposed	108*	108*	108*	108*	108*	108*	108*	108*	90*	108*	108*	62	108*	103*	54	108*	66	49	108*	60	44	57	51	36	49	44	30	42	38	25	37	33	22	33	29	19	29	26	16
50	B	0-7	Interior	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	53	57	57	46	57	57	41
			Exposed	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	53	57	57	46	57	56	40	57	49	35	57	43	30	52	38	27
		7-20	Interior	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	53	58	56	47	58	50	41	58	44	36
			Exposed	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	56	58	57	47	58	49	40	58	42	35	56	37	31	50	33	27	44	29	24
		20-27	Interior	80*	80*	80*	80*	80*	80*	80*	80*	80*	80*	80*	80*	80*	80*	80*	80*	80*	80*	80*	80*	80*	80*	80*	80*	80*	80*	80*	80*	80*	68*	80*	80*	53	80*	60	45	80*	53	39
			Exposed	80*	80*	80*	80*	80*	80*	80*	80*	80*	80*	80*	80*	80*	80*	80*	80*	80*	80*	80*	80*	80*	80*	80*	54	80*	59	44	80*	51	37	80*	45	31	68*	39	27	59	35	24
		27-45	Interior	88*	88*	88*	88*	88*	88*	88*	88*	88*	88*	88*	88*	88*	88*	88*	88*	88*	88*	88*	88*	88*	88*	88*	88*	88*	88*	88*	88*	88*	88*	87*	87*	87*	83*	83*	76*	79*	79*	57
			Exposed	88*	88*	88*	88*	88*	88*	88*	88*	88*	88*	88*	88*	88*	88*	88*	88*	88*	88*	88*	88*	88*	88*	88*	79*	88*	88*	56	87*	64	47	62	56	40	55	49	35	49	44	30
	C	0-7	Interior	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	49	57	57	42	57	52	37	57	46	33	56	41	29
			Exposed	57	57	57	57	57	57	57	57	57	57	57	57	57	57	53	57	57	48	57	57	44	57	53	37	57	45	32	54	39	28	47	34	24	41	30	21	37	27	19
		7-20	Interior	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	50	58	52	43	58	45	37	58	40	33	53	35	29	47	31	26
			Exposed	58	58	58	58	58	58	58	58	57	58	58	52	58	57	47	58	52	43	58	47	39	58	40	33	52	34	28	45	30	25	40	26	22	35	23	19	31	20	17
		20-27	Interior	80*	80*	80*	80*	80*	80*	80*	80*	80*	80*	80*	80*	80*	80*	80*	80*	80*	80*	80*	80*	80*	80*	80*	59	80*	63	48	80*	55	40	79*	48	34	76*	42	29	64	37	26
			Exposed	80*	80*	80*	80*	80*	80*	80*	80*	80*	80*	80*	62	80*	80*	54	80*	62	48	80*	57	43	80*	48	34	74*	41	28	61	36	25	53	31	21	47	28	19	42	25	17
		27-45	Interior	88*	88*	88*	88*	88*	88*	88*	88*	88*	88*	88*	88*	88*	88*	88*	88*	88*	88*	88*	88*	88*	88*	88*	88*	85*	85*	85*	81*	81*	61	76*	76*	51	71*	60	44	59	53	38
			Exposed	88*	88*	88*	88*	88*	88*	88*	88*	88*	88*	88*	88*	88*	88*	78*	88*	88*	60	88*	88*	54	85*	60	44	58	52	37	50	45	31	44	39	27	39	35	23	34	31	20
	D	0-7	Interior	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	62	63	63	57	63	63	48	63	58	41	63	50	36	60	44	31	53	39	27	47	34	24
			Exposed	63	63	63	63	63	60	63	63	54	63	63	49	63	63	45	63	57	41	63	52	37	61	44	31	52	38	27	45	33	23	39	29	20	35	25	18	31	23	24
		7-20	Interior	64	64	64	64	64	64	64	64	64	64	64	64	64	64	60	64	64	55	64	61	50	64	51	42	64	44	36	58	38	31	51	33	28	45	29	24	40	26	22
			Exposed	64	64	60	64	64	53	64	58	48	64	52	43	64	48	39	64	43	36	61	40	33	51	34	28	44	29	24	38	25	21	33	22	18	29	19	24	26	17	21
		20-27	Interior	87*	87*	87*	87*	87*	87*	87*	87*	87*	87*	87*	87*	87*	87*	87*	87*	87*	87*	87*	87*	59	87*	62	47	87*	53	39	86*	46	32	70	40	27	60	35	24	53	31	22
			Exposed	87*	87*	87*	87*	87*	69	87*	87*	55	87*	63	49	87*	57	43	87*	52	38	87*	48	34	72	41	28	59	35	24	51	30	21	45	26	18	39	23	16	35	21	14
		27-45	Interior	94*	94*	94*	94*	94*	94*	94*	94*	94*	94*	94*	94*	94*	94*	94*	94*	94*	94*	93*	93*	93*	87*	87*	60	81*	71*	49	64	57	42	56	50	36	49	44	31	44	39	27
			Exposed	94*	94*	94*	94*	94*	94*	94*	94*	88*	94*	94*	62	94*	94*	54	94*	66	49	93*	60	44	57	51	36	49	44	30	42	38	25	37	33	22	33	29	19	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	19 sq.ft	LANDSCAPE	CROSS-SLOPE	NXT HD	NXT COMBO	Flashloc DUO Rafter
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	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	46	48	48	41
			Exposed	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	46	48	48	40	48	48	35	48	43	30	48	38	27
		7-20	Interior	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	47	49	49	41	49	44	36	49	44	36
			Exposed	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	47	49	49	40	49	42	35	49	37	31	49	33	27	44	29	24
		20-27	Interior	68*	68*	68*	68*	68*	68*	68*	68*	68*	68*	68*	68*	68*	68*	68*	68*	68*	68*	68*	68*	68*	68*	68*	68*	68*	68*	68*	68*	68*	68*	68*	68*	53	68*	60*	45	68*	53	39
			Exposed	68*	68*	68*	68*	68*	68*	68*	68*	68*	68*	68*	68*	68*	68*	68*	68*	68*	68*	68*	68*	68*	68*	68*	54	68*	59*	44	68*	51	37	68*	45	31	68*	39	27	59*	35	24
		27-45	Interior	76*	76*	76*	76*	76*	76*	76*	76*	76*	76*	76*	76*	76*	76*	76*	76*	76*	76*	76*	76*	76*	76*	76*	76*	76*	76*	76*	75*	75*	75*	71*	71*	71*	68*	68*	57*	65*	65*	50
			Exposed	76*	76*	76*	76*	76*	76*	76*	76*	76*	76*	76*	76*	76*	76*	76*	76*	76*	76*	76*	76*	76*	76*	76*	76*	76*	76*	56*	75*	64*	47	62*	56*	40	55*	49	35	49	44	30
	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	37	48	46	33	48	41	29
			Exposed	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	44	48	48	37	48	45	32	48	39	28	47	34	24	41	30	21	37	27	19
		7-20	Interior	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	43	49	45	37	49	40	33	49	35	29	47	31	26
			Exposed	49	49	49	49	49	49	49	49	49	49	49	49	49	49	47	49	49	43	49	47	39	49	40	33	49	34	28	45	30	25	40	26	22	35	23	19	31	20	17
		20-27	Interior	68*	68*	68*	68*	68*	68*	68*	68*	68*	68*	68*	68*	68*	68*	68*	68*	68*	68*	68*	68*	68*	68*	68*	59*	68*	63*	48	68*	55	40	68*	48	34	66*	42	29	63*	37	26
			Exposed	68*	68*	68*	68*	68*	68*	68*	68*	68*	68*	68*	62*	68*	68*	54	68*	62*	48	68*	57	43	68*	48	34	68*	41	28	61*	36	25	53	31	21	47	28	19	42	25	17
		27-45	Interior	76*	76*	76*	76*	76*	76*	76*	76*	76*	76*	76*	76*	76*	76*	76*	76*	76*	76*	76*	76*	76*	73*	73*	73*	70*	70*	61*	66*	66*	51	63*	60*	44	59*	53	38	52	47	33
			Exposed	76*	76*	76*	76*	76*	76*	76*	76*	76*	76*	76*	76*	76*	76*	76*	76*	76*	60*	76*	76*	54	73*	60*	44	58*	52	37	50	45	31	44	39	27	39	35	23	34	31	20
	D	0-7	Interior	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	41	53	50	36	53	44	31	53	39	27	47	34	24
			Exposed	53	53	53	53	53	53	53	53	53	53	53	49	53	53	45	53	53	41	53	52	37	53	44	31	52	38	27	45	33	23	39	29	20	35	25	18	31	23	24
		7-20	Interior	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	50	54	51	42	54	44	36	54	38	31	51	33	28	45	29	24	40	26	22
			Exposed	54	54	54	54	54	53	54	54	48	54	52	43	54	48	39	54	43	36	54	40	33	51	34	28	44	29	24	38	25	21	33	22	18	29	19	24	26	17	21
		20-27	Interior	75*	75*	75*	75*	75*	75*	75*	75*	75*	75*	75*	75*	75*	75*	75*	75*	75*	75*	75*	75*	59	75*	62	47	75*	53	39	73*	46	32	70*	40	27	60	35	24	53	31	22
			Exposed	75*	75*	75*	75*	75*	69*	75*	75*	55	75*	63	49	75*	57	43	75*	52	38	75*	48	34	72*	41	28	59	35	24	51	30	21	45	26	18	39	23	16	35	21	14
		27-45	Interior	84*	84*	84*	84*	84*	84*	84*	84*	84*	84*	84*	84*	84*	84*	84*	82*	82*	82*	80*	80*	80*	75*	75*	60*	70*	69*	49	64*	57	42	56	50	36	49	44	31	44	39	27
			Exposed	84*	84*	84*	84*	84*	84*	84*	84*	84*	84*	84*	62*	84*	84*	54	82*	66*	49	80*	60*	44	57	51	36	49	44	30	42	38	25	37	33	22	33	29	19	29	26	16
70	B	0-7	Interior	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	41
			Exposed	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	40	42	42	35	42	42	30	42	38	27	42	42	27
		7-20	Interior	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	36
			Exposed	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	40	42	42	35	42	37	31	42	33	27	42	29	24
		20-27	Interior	59*	59*	59*	59*	59*	59*	59*	59*	59*	59*	59*	59*	59*	59*	59*	59*	59*	59*	59*	59*	59*	59*	59*	59*	59*	59*	59*	59*	59*	54*	59*	59*	53*	59*	59*	45	59*	53*	39
			Exposed	59*	59*	59*	59*	59*	59*	59*	59*	59*	59*	59*	59*	59*	59*	59*	59*	59*	59*	59*	59*	59*	59*	59*	44	59*	51*	37	59*	45	31	59*	39	27	59*	35	24			
		27-45	Interior	66*	66*	66*	66*	66*	66*	66*	66*	66*	66*	66*	66*	66*	66*	66*	66*	66*	66*	66*	66*	66*	66*	66*	66*	66*	66*	66*	65*	65*	65*	63*	63*	63*	61*	61*	57*	59*	59*	50*
			Exposed	66*	66*	66*	66*	66*	66*	66*	66*	66*	66*	66*	66*	66*	66*	66*	66*	66*	66*	66*	66*	66*	66*	66*	66*	66*	66*	56*	65*	64*	48*	62*	56*	40	55*	49*	35	49*	44	30
	C	0-7	Interior	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	37	42	42	33	42	41	29
			Exposed	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	32	42	39	28	42	34	24	41	30	21	37	27	19
		7-20	Interior	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	37	42	40	33	42	35	29	42	31	26
			Exposed	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	39	42	40	33	42	34	28	42	30	25	40	26	22	35	23	19	31	20	17
		20-27	Interior	59*	59*	59*	59*	59*	59*	59*	59*	59*	59*	59*	59*	59*	59*	59*	59*	59*	59*	59*	59*	59*	59*	59*	59*	59*	59*	48	59*	55*	40	59*	48	34	58*	42	29	57*	37	26
			Exposed	59*	59*	59*	59*	59*	59*	59*	59*	59*	59*	59*	59*	59*	59*	54*	59*	59*	48	59*	57*	43	59*	48	34	59*	41	28	59*	36	25	53*	31	21	47	28	19	42	25	17
		27-45	Interior	66*	66*	66*	66*	66*	66*	66*	66*	66*	66*	66*	66*	66*	66*	66*	66*	66*	66*	66*	66*	66*	65*	65*	65*	62*	62*	61*	60*	60*	51*	57*	57*	44	55*	53*	38	52*	47	33
			Exposed	66*	66*	66*	66*	66*	66*	66*	66*	66*	66*	66*	66*	66*	66*	66*	66*	66*	60*	66*	66*	54*	65*	60*	44	58*	52*	37	50*	45	31	44	39	27	39	35	23	34	31	20
	D	0-7	Interior	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	41	46	46	36	46	44	31	46	39	27	46	34	24
			Exposed	46	46	46	46	46	46	46	46	46	46	46	46	46	46	45	46	46	41	46	46	37	46	44	31	46	38	27	45	33	23	39	29	20	35	25	18	31	23	24
		7-20	Interior	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	42	47	44	36	47	38	31	47	33	28	45	29	24	40	26	22
			Exposed	47	47	47	47	47	47	47	47	47	47	47	43	47	47	39	47	43	36	47	40	33	47	34	28	44	29	24	38	25	21	33	22	18	29	19	24	26	17	21
		20-27	Interior	65*	65*	65*	65*	65*	65*	65*	65*	65*	65*	65*	65*	65*	65*	65*	65*	65*	65*	65*	65*	59*	65*	62*	47	65*	53	39	65*	46	32	62*	40	27	60*	35	24	53	31	22
			Exposed	65*	65*	65*	65*	65*	65*	65*	65*	55	65*	63*	49	65*	57*	43	65*	52	38	65*	48	34	65*	41	28	59*	35	24	51	30	21	45	26	18	39	23	16	35	21	14
		27-45	Interior	73*	73*	73*	73*	73*	73*	73*	73*	73*	73*	73*	73*	73*	73*	73*	72*	72*	72*	70*	70*	70*	66*	66*	60*	63*	63*	49	60*	58*	42	56*	50	36	49	44	31	44	39	27
			Exposed	73*	73*	73*	73*	73*	73*	73*	73*	73*	73*	73*	62*	73*	73*	55*	72*	66*	49	70*	60*	44	57*	51	36	49	44	30	42	38	25	37	33	22	33	29	19	29	26	16
80	B	0-7	Interior	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37
			Exposed	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	35	37	37	30	37	37	27			
		7-20	Interior	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	36
			Exposed	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	35	37	37	31	37	33	27	37	29	24
		20-27	Interior	52*	52*	52*	52*	52*	52*	52*	52*	52*	52*	52*	52*	52*	52*	52*	52*	52*	52*	52*	52*	52*	52*	52*	52*	52*	52*	52*	52*	52*	52*	52*	52*	52*	52*	52*	45*	52*	52*	39
			Exposed	52*	52*	52*	52*	52*	52*	52*	52*	52*	52*	52*	52*	52*	52*	52*	52*	52*	52*	52*	52*	52*	52*	52*	44*	52*	51*	37	52*	45*	31	52*	39	27	52*	35	24			
		27-45	Interior	58*	58*	58*	58*	58*	58*	58*	58*	58*	58*	58*	58*	58*	58*	58*	58*	58*	58*	58*	58*	58*	58*	58*	58*	58*	58*	58*	58*	58*	58*	58*	58*	58*	56*	56*	56*	54*	54*	50*
			Exposed	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*	47*	58*	56*	40	55*	49*	35	49*	44*	30			
	C	0-7	Interior	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	33	37	37	29
			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	37	28	37	34	24	37	30	21	37	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	37	37	37	33	37	35	29	37	31	26						
			Exposed	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	33	37	37	28	37	30	25	37	26	22	35	23	19	31	20	17
		20-27	Interior	52*	52*	52*	52*	52*	52*	52*	52*	52*	52*	52*	52*	52*	52*	52*	52*	52*	52*	52*	52*	52*	52*	52*	52*	52*	52*	48*	52*	52*	40	52*	48*	34	52*	42	29	51*	37	26
			Exposed	52*	52*	52*	52*	52*	52*	52*	52*	52*	52*	52*	52*	52*	52*	52*	52*	52*	48*	52*	52*	43	52*	48*	34	52*	41	28	52*	36	25	52*	31	21	47*	28	19	42	25	17
		27-45	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*	57*	57*	57*	55*	55*	51*	53*	53*	44*	51*	51*	38	49*	47*	33
			Exposed	58*	58*	58*	58*	58*	58*	58*	58*	58*	58*	58*	58*	58*	58*	58*	58*	58*	58*	58*	58*	54*	58*	58*	44*	57*	52*	37	50*	45*	31	44*	39	27	39	35	23	34	31	20
	D	0-7	Interior	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	36	41	41	31	41	39	27	41	34	24			
			Exposed	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	37	41	41	31	41	38	27	41	33	23	39	29	20	35	25	18	31	23	24
		7-20	Interior	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	36	41	38	31	41	33	28	41	29	24	40	26	22
			Exposed	41	41	41	41	41	41	41	41	41	41	41	41	41	41	39	41	41	36	41	40	33	41	34	28	41	29	24	38	25	21	33	22	18	29	19	24	26	17	21
		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*	47	57*	53*	39	57*	46	32	56*	40	27	55*	35	24	53*	31	22
			Exposed	57*	57*	57*	57*	57*	57*	57*	57*	55*	57*	57*	49*	57*	57*	43	57*	52*	38	57*	48	34	57*	41	28	57*	35	24	51*	30	21	45	26	18	39	23	16	35	21	14
		27-45	Interior	64*	64*	64*	64*	64*	64*	64*	64*	64*	64*	64*	64*	64*	64*	64*	64*	64*	64*	63*	63*	63*	61*	61*	60*	58*	58*	50*	55*	55*	42	53*	50*	36	49*	44	31	44	39	27
			Exposed	64*	64*	64*	64*	64*	64*	64*	64*	64*	64*	64*	62*	64*	64*	54*	64*	64*	49*	63*	60*	44	57*	51*	36	49*	44	30	42	38	25	37	33	22	33	29	19	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	19 sq.ft	LANDSCAPE	CROSS-SLOPE	NXT HD	NXT COMBO	Flashloc DUO Rafter
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	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33
			Exposed	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	30	33	33	27	33	33	27
		7-20	Interior	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33
			Exposed	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	31	33	33	27	33	29	24	33	29	24
		20-27	Interior	46*	46*	46*	46*	46*	46*	46*	46*	46*	46*	46*	46*	46*	46*	46*	46*	46*	46*	46*	46*	46*	46*	46*	46*	46*	46*	46*	46*	46*	46*	46*	46*	45*	46*	46*	39	46*	46*	39
			Exposed	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*	44*	46*	46*	37	46*	45*	31	46*	39	27	46*	35	24
		27-45	Interior	52*	52*	52*	52*	52*	52*	52*	52*	52*	52*	52*	52*	52*	52*	52*	52*	52*	52*	52*	52*	52*	52*	52*	52*	52*	52*	52*	52*	52*	52*	52*	52*	52*	52*	52*	52*	50*	50*	50*
			Exposed	52*	52*	52*	52*	52*	52*	52*	52*	52*	52*	52*	52*	52*	52*	52*	52*	52*	52*	52*	52*	52*	52*	52*	52*	52*	52*	52*	52*	52*	52*	52*	52*	47*	52*	52*	40*	52*	49*	35	49*	44*	30
	C	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	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	29
			Exposed	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	32	33	33	28	33	33	24	33	30	21
		7-20	Interior	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	29	33	31	26
			Exposed	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	28	33	30	25	33	26	22	33	23	19	31	20	17
		20-27	Interior	46*	46*	46*	46*	46*	46*	46*	46*	46*	46*	46*	46*	46*	46*	46*	46*	46*	46*	46*	46*	46*	46*	46*	46*	46*	46*	46*	46*	46*	40*	46*	46*	34	46*	42*	29	46*	37	26
			Exposed	46*	46*	46*	46*	46*	46*	46*	46*	46*	46*	46*	46*	46*	46*	46*	46*	46*	46*	46*	46*	43*	46*	46*	34	46*	41*	28	46*	36	25	46*	31	21	46*	28	19	42*	25	17
		27-45	Interior	52*	52*	52*	52*	52*	52*	52*	52*	52*	52*	52*	52*	52*	52*	52*	52*	52*	52*	52*	52*	52*	52*	52*	52*	52*	52*	52*	52*	52*	52*	49*	49*	44*	47*	47*	38*	45*	45*	33
			Exposed	52*	52*	52*	52*	52*	52*	52*	52*	52*	52*	52*	52*	52*	52*	52*	52*	52*	52*	52*	52*	52*	52*	52*	44*	52*	52*	37	50*	45*	31	44*	39*	27	39*	35	23	34	31	20
	D	0-7	Interior	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	31	36	36	27	36	34	24
			Exposed	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	31	36	36	27	36	33	23	36	29	20	35	25	18	31	23	24
		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	36	37	37	31	37	33	28	37	29	24	37	26	22
			Exposed	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	36	37	37	33	37	34	28	37	29	24	37	25	21	33	22	18	29	19	24	26	17	21
		20-27	Interior	51*	51*	51*	51*	51*	51*	51*	51*	51*	51*	51*	51*	51*	51*	51*	51*	51*	51*	51*	51*	51*	51*	51*	47*	51*	51*	39	51*	46*	32	51*	40	27	50*	35	24	49*	31	22
			Exposed	51*	51*	51*	51*	51*	51*	51*	51*	51*	51*	51*	49*	51*	51*	43	51*	51*	38	51*	48*	34	51*	41	28	51*	35	24	51*	30	21	45*	26	18	39	23	16	35	21	14
		27-45	Interior	57*	57*	57*	57*	57*	57*	57*	57*	57*	57*	57*	57*	57*	57*	57*	57*	57*	57*	57*	57*	57*	57*	56*	56*	56*	54*	54*	49*	51*	51*	42*	49*	49*	36	47*	44*	31	44*	39	27
			Exposed	57*	57*	57*	57*	57*	57*	57*	57*	57*	57*	57*	57*	57*	54*	57*	57*	49*	57*	57*	44*	56*	51*	36	49*	44*	30	42*	38	25	37	33	22	33	29	19	29	26	16			
100	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	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	30	30	30	30	30	30	30	30	30	27
		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	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	30	30	30	30	30	30	27	30	29	24
		20-27	Interior	42*	42*	42*	42*	42*	42*	42*	42*	42*	42*	42*	42*	42*	42*	42*	42*	42*	42*	42*	42*	42*	42*	42*	42*	42*	42*	42*	42*	42*	42*	42*	42*	42*	42*	42*	42*	42*	42*	39*
			Exposed	42*	42*	42*	42*	42*	42*	42*	42*	42*	42*	42*	42*	42*	42*	42*	42*	42*	42*	42*	42*	42*	42*	42*	42*	42*	42*	42*	42*	42*	37*	42*	42*	31	42*	39*	27	42*	35	24
		27-45	Interior	47*	47*	47*	47*	47*	47*	47*	47*	47*	47*	47*	47*	47*	47*	47*	47*	47*	47*	47*	47*	47*	47*	47*	47*	47*	47*	47*	47*	47*	47*	47*	47*	47*	47*	47*	47*	46*	46*	46*
			Exposed	47*	47*	47*	47*	47*	47*	47*	47*	47*	47*	47*	47*	47*	47*	47*	47*	47*	47*	47*	47*	47*	47*	47*	47*	47*	47*	47*	47*	47*	47*	47*	47*	40*	47*	47*	35*	46*	44*	30
	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	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	28	30	30	24	30	30	21
		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	30	30	30	29	30	30	26
			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	30	25	30	26	22	30	23	19	30	20	17
		20-27	Interior	42*	42*	42*	42*	42*	42*	42*	42*	42*	42*	42*	42*	42*	42*	42*	42*	42*	42*	42*	42*	42*	42*	42*	42*	42*	42*	42*	42*	42*	40*	42*	42*	34	42*	42*	29	42*	37*	26
			Exposed	42*	42*	42*	42*	42*	42*	42*	42*	42*	42*	42*	42*	42*	42*	42*	42*	42*	42*	42*	42*	42*	42*	42*	34	42*	41*	28	42*	36*	25	42*	31	21	42*	28	19	42*	25	17
		27-45	Interior	47*	47*	47*	47*	47*	47*	47*	47*	47*	47*	47*	47*	47*	47*	47*	47*	47*	47*	47*	47*	47*	47*	47*	47*	47*	47*	47*	47*	47*	47*	45*	45*	44*	44*	44*	38*	42*	42*	33
			Exposed	47*	47*	47*	47*	47*	47*	47*	47*	47*	47*	47*	47*	47*	47*	47*	47*	47*	47*	47*	47*	47*	47*	47*	44*	47*	47*	37*	47*	45*	31	44*	39*	27	39*	35*	23	34*	31	20
	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	33	33	33	33	33	33	33	33	33	31	33	33	27	33	33	24
			Exposed	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	31	33	33	27	33	33	23	33	29	20	33	25	18	31	23	24
		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	31	33	33	28	33	29	24	33	26	22
			Exposed	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	29	24	33	25	21	33	22	18	29	19	24	26	17	21
		20-27	Interior	46*	46*	46*	46*	46*	46*	46*	46*	46*	46*	46*	46*	46*	46*	46*	46*	46*	46*	46*	46*	46*	46*	46*	46*	46*	46*	39	46*	46*	32	46*	40*	27	46*	35	24	45*	32	22
			Exposed	46*	46*	46*	46*	46*	46*	46*	46*	46*	46*	46*	46*	46*	46*	46*	46*	46*	38	46*	46*	34	46*	41*	28	46*	35	24	46*	30	21	45*	26	18	39	23	16	35	21	14
		27-45	Interior	52*	52*	52*	52*	52*	52*	52*	52*	52*	52*	52*	52*	52*	52*	52*	52*	52*	52*	52*	52*	52*	52*	52*	52*	52*	50*	50*	49*	48*	48*	42*	46*	46*	36	44*	44*	31	43*	39*	27
			Exposed	52*	52*	52*	52*	52*	52*	52*	52*	52*	52*	52*	52*	52*	52*	52*	52*	52*	49*	52*	52*	44*	52*	51*	36	49*	44*	30	42*	38*	25	37	33	22	33	29	19	29	26	16

#N/A

* 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 HD	NXT COMBO	Flashloc DUO Rafter
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) | | |

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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	89	89	89	89	89	89	89	89	89	89	89	89	89	89	89	89	89	89	89	89	89	89	89	89	89	89	83	89	89	60	89	89	53	89	66	46	89	58	41
			Exposed	89	89	89	89	89	89	89	89	89	89	89	89	89	89	89	89	89	79	89	89	63	89	89	53	89	64	46	89	56	40	70	49	35	59	43	30	52	38	27
		7-20	Interior	90	90	90	90	90	90	90	90	90	90	90	90	90	90	90	90	90	90	90	90	90	90	90	90	90	90	62	90	64	53	90	56	47	84	50	41	69	44	36
			Exposed	90	90	90	90	90	90	90	90	90	90	90	90	90	90	77	90	90	61	90	80	56	90	57	47	81	49	40	64	42	35	56	37	31	50	33	27	44	29	24
		20-27	Interior	104*	104*	104*	104*	104*	104*	104*	104*	104*	104*	104*	104*	104*	104*	104*	104*	104*	104*	104*	104*	104*	104*	104*	104*	104*	104*	104*	104*	104*	68	104*	82	53	104*	60	45	104*	53	39
			Exposed	104*	104*	104*	104*	104*	104*	104*	104*	104*	104*	104*	104*	104*	104*	104*	104*	104*	104*	104*	104*	104*	104*	89	54	104*	59	44	104*	51	37	84	45	31	68	39	27	59	35	24
		27-45	Interior	120*	120*	120*	120*	120*	120*	120*	120*	120*	120*	120*	120*	120*	120*	120*	120*	120*	120*	120*	120*	120*	120*	120*	120*	120*	120*	120*	120*	120*	120*	120*	120*	76	119*	119*	57	112*	70	50
			Exposed	120*	120*	120*	120*	120*	120*	120*	120*	120*	120*	120*	120*	120*	120*	120*	120*	120*	120*	120*	120*	120*	120*	120*	79	120*	120*	56	120*	64	47	62	56	40	55	49	35	49	44	30
	C	0-7	Interior	89	89	89	89	89	89	89	89	89	89	89	89	89	89	89	89	89	89	89	89	74	89	89	57	89	76	49	89	60	42	85	52	37	63	46	33	56	41	29
			Exposed	89	89	89	89	89	89	89	89	65	89	89	58	89	89	53	89	73	48	89	63	44	87	53	37	62	45	32	54	39	28	47	34	24	41	30	21	37	27	19
		7-20	Interior	90	90	90	90	90	90	90	90	90	90	90	90	90	90	90	90	90	65	90	90	60	90	61	50	90	52	43	72	45	37	60	40	33	53	35	29	47	31	26
			Exposed	90	90	90	90	90	64	90	90	57	90	62	52	90	57	47	90	52	43	77	47	39	61	40	33	52	34	28	45	30	25	40	26	22	35	23	19	31	20	17
		20-27	Interior	104*	104*	104*	104*	104*	104*	104*	104*	104*	104*	104*	104*	104*	104*	104*	104*	104*	104*	104*	104*	104*	104*	104*	59	104*	63	48	104*	55	40	102*	48	34	76	42	29	64	37	26
			Exposed	104*	104*	104*	104*	104*	104*	104*	104*	104*	104*	104*	62	104*	86	54	104*	62	48	104*	57	43	104*	48	34	74	41	28	61	36	25	53	31	21	47	28	19	42	25	17
		27-45	Interior	120*	120*	120*	120*	120*	120*	120*	120*	120*	120*	120*	120*	120*	120*	120*	120*	120*	120*	120*	120*	120*	120*	120*	120*	120*	120*	120*	120*	120*	120*	120*	120*	120*	120*	120*	120*	120*	120*	120*
			Exposed	120*	120*	120*	120*	120*	120*	120*	120*	120*	120*	120*	120*	120*	120*	78	120*	120*	60	120*	100*	54	120*	60	44	58	52	37	50	45	31	44	39	27	39	35	23	34	31	20
	D	0-7	Interior	95	95	95	95	95	95	95	95	95	95	95	95	95	95	75	95	95	62	95	95	57	95	72	48	95	58	41	75	50	36	60	44	31	53	39	27	47	34	24
			Exposed	95	95	74	95	95	60	95	95	54	95	76	49	95	63	45	95	57	41	85	52	37	61	44	31	52	38	27	45	33	23	39	29	20	35	25	18	31	23	24
		7-20	Interior	96	96	96	96	96	96	96	96	96	96	96	72	96	96	60	96	71	55	96	61	50	89	51	42	68	44	36	58	38	31	51	33	28	45	29	24	40	26	22
			Exposed	96	96	60	96	65	53	96	58	48	96	52	43	78	48	39	67	43	36	61	40	33	51	34	28	44	29	24	38	25	21	33	22	18	29	19	24	26	17	21
		20-27	Interior	110*	110*	110*	110*	110*	110*	110*	110*	110*	110*	110*	110*	110*	110*	110*	110*	110*	110*	110*	110*	59	110*	62	47	110*	53	39	89	46	32	70	40	27	60	35	24	53	31	22
			Exposed	110*	110*	110*	110*	110*	69	110*	110*	55	110*	63	49	110*	57	43	110*	52	38	103	48	34	72	41	28	59	35	24	51	30	21	45	26	18	39	23	16	35	21	14
		27-45	Interior	127*	127*	127*	127*	127*	127*	127*	127*	127*	127*	127*	127*	127*	127*	127*	127*	127*	127*	127*	127*	127*	127*	127*	60	122*	69	49	64	57	42	56	50	36	49	44	31	44	39	27
			Exposed	127*	127*	127*	127*	127*	127*	127*	127*	88	127*	127*	62	127*	104*	54	127*	66	49	127*	60	44	57	51	36	49	44	30	42	38	25	37	33	22	33	29	19	29	26	16
40	B	0-7	Interior	71	71	71	71	71	71	71	71	71	71	71	71	71	71	71	71	71	71	71	71	71	71	71	71	71	71	71	71	71	60	71	71	53	71	66	46	71	58	41
			Exposed	71	71	71	71	71	71	71	71	71	71	71	71	71	71	71	71	71	71	71	71	63	71	71	53	71	64	46	71	56	40	70	49	35	59	43	30	52	38	27
		7-20	Interior	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	62	72	64	53	72	56	47	72	50	41	69	44	36			
			Exposed	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	61	72	72	56	72	57	47	72	49	40	64	42	35	56	37	31	50	33	27	44	29	24
		20-27	Interior	94*	94*	94*	94*	94*	94*	94*	94*	94*	94*	94*	94*	94*	94*	94*	94*	94*	94*	94*	94*	94*	94*	94*	94*	94*	94*	94*	94*	94*	68	94*	82*	53	94*	60	45	94*	53	39
			Exposed	94*	94*	94*	94*	94*	94*	94*	94*	94*	94*	94*	94*	94*	94*	94*	94*	94*	94*	94*	94*	94*	94*	89*	54	94*	59	44	94*	51	37	84*	45	31	68	39	27	59	35	24
		27-45	Interior	102*	102*	102*	102*	102*	102*	102*	102*	102*	102*	102*	102*	102*	102*	102*	102*	102*	102*	102*	102*	102*	102*	102*	102*	102*	102*	102*	102*	102*	102*	102*	102*	76	95*	95*	57	89*	70	50
			Exposed	102*	102*	102*	102*	102*	102*	102*	102*	102*	102*	102*	102*	102*	102*	102*	102*	102*	102*	102*	102*	102*	102*	102*	81*	102*	102*	56	102*	64	47	62	56	40	55	49	35	49	44	30
	C	0-7	Interior	71	71	71	71	71	71	71	71	71	71	71	71	71	71	71	71	71	71	71	71	71	71	71	57	71	71	49	71	60	42	71	52	37	63	46	33	56	41	29
			Exposed	71	71	71	71	71	71	71	71	65	71	71	58	71	71	53	71	71	48	71	63	44	71	53	37	62	45	32	54	39	28	47	34	24	41	30	21	37	27	19
		7-20	Interior	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	65	72	72	60	72	61	50	72	52	43	72	45	37	60	40	33	53	35	29	47	31	26
			Exposed	72	72	72	72	72	64	72	72	57	72	62	52	72	57	47	72	52	43	72	47	39	61	40	33	52	34	28	45	30	25	40	26	22	35	23	19	31	20	17
		20-27	Interior	94*	94*	94*	94*	94*	94*	94*	94*	94*	94*	94*	94*	94*	94*	94*	94*	94*	94*	94*	94*	94*	94*	94*	59	94*	63	48	94*	55	40	94*	48	34	76	42	29	64	37	26
			Exposed	94*	94*	94*	94*	94*	94*	94*	94*	94*	94*	94*	62	94*	86*	54	94*	62	48	94*	57	43	94*	48	34	74	41	28	61	36	25	53	31	21	47	28	19	42	25	17
		27-45	Interior	102*	102*	102*	102*	102*	102*	102*	102*	102*	102*	102*	102*	102*	102*	102*	102*	102*	102*	102*	102*	102*	102*	102*	102*	102*	102*	102*	102*	102*	102*	97*	97*	61	91*	80*	51	84*	60	44
			Exposed	102*	102*	102*	102*	102*	102*	102*	102*	102*	102*	102*	102*	102*	102*	80*	102*	102*	60	102*	98*	54	102*	60	44	58	52	37	50	45	31	44	39	27	39	35	23	34	31	20
	D	0-7	Interior	78	78	78	78	78	78	78	78	78	78	78	78	78	78	75	78	78	62	78	78	57	78	72	48	78	58	41	75	50	36	60	44	31	53	39	27	47	34	24
			Exposed	78	78	74	78	78	60	78	78	54	78	76	49	78	63	45	78	57	41	78	52	37	61	44	31	52	38	27	45	33	23	39	29	20	35	25	18	31	23	24
		7-20	Interior	79	79	79	79	79	79	79	79	79	79	79	72	79	79	60	79	71	55	79	61	50	79	51	42	68	44	36	58	38	31	51	33	28	45	29	24	40	26	22
			Exposed	79	79	60	79	65	53	79	58	48	79	52	43	78	48	39	67	43	36	61	40	33	51	34	28	44	29	24	38	25	21	33	22	18	29	19	24	26	17	21
		20-27	Interior	93*	93*	93*	93*	93*	93*	93*	93*	93*	93*	93*	93*	93*	93*	93*	93*	93*	93*	93*	93*	59	93*	62	47	93*	53	39	89*	46	32	70	40	27	60	35	24	53	31	22
			Exposed	93*	93*	93*	93*	93*	69	93*	93*	55	93*	63	49	93*	57	43	93*	52	38	93*	48	34	72	41	28	59	35	24	51	30	21	45	26	18	39	23	16	35	21	14
		27-45	Interior	108*	108*	108*	108*	108*	108*	108*	108*	108*	108*	108*	108*	108*	108*	108*	108*	108*	108*	108*	108*	108*	108*	108*	60	97*	69	49	64	57	42	56	50	36	49	44	31	44	39	27
			Exposed	108*	108*	108*	108*	108*	108*	108*	108*	89*	108*	108*	62	108*	103*	54	108*	66	49	108*	60	44	57	51	36	49	44	30	42	38	25	37	33	22	33	29	19	29	26	16
50	B	0-7	Interior	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	53	57	57	46	57	57	41
			Exposed	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	53	57	57	46	57	56	40	57	49	35	57	43	30	52	38	27
		7-20	Interior	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	53	58	56	47	58	50	41	58	44	36
			Exposed	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	56	58	57	47	58	49	40	58	42	35	56	37	31	50	33	27	44	29	24
		20-27	Interior	80*	80*	80*	80*	80*	80*	80*	80*	80*	80*	80*	80*	80*	80*	80*	80*	80*	80*	80*	80*	80*	80*	80*	80*	80*	80*	80*	80*	80*	68*	80*	80*	53	80*	60	45	80*	53	39
			Exposed	80*	80*	80*	80*	80*	80*	80*	80*	80*	80*	80*	80*	80*	80*	80*	80*	80*	80*	80*	80*	80*	80*	80*	54	80*	59	44	80*	51	37	80*	45	31	68*	39	27	59	35	24
		27-45	Interior	88*	88*	88*	88*	88*	88*	88*	88*	88*	88*	88*	88*	88*	88*	88*	88*	88*	88*	88*	88*	88*	88*	88*	88*	88*	88*	88*	88*	87*	87*	83*	83*	76*	79*	79*	57	75*	71*	50
			Exposed	88*	88*	88*	88*	88*	88*	88*	88*	88*	88*	88*	88*	88*	88*	88*	88*	88*	88*	88*	88*	88*	88*	88*	79*	88*	88*	56	87*	64	47	62	56	40	55	49	35	49	44	30
	C	0-7	Interior	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	49	57	57	42	57	52	37	57	46	33	56	41	29
			Exposed	57	57	57	57	57	57	57	57	57	57	57	57	57	57	53	57	57	48	57	57	44	57	53	37	57	45	32	54	39	28	47	34	24	41	30	21	37	27	19
		7-20	Interior	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	50	58	52	43	58	45	37	58	40	33	53	35	29	47	31	26
			Exposed	58	58	58	58	58	58	58	58	57	58	58	52	58	57	47	58	52	43	58	47	39	58	40	33	52	34	28	45	30	25	40	26	22	35	23	19	31	20	17
		20-27	Interior	80*	80*	80*	80*	80*	80*	80*	80*	80*	80*	80*	80*	80*	80*	80*	80*	80*	80*	80*	80*	80*	80*	80*	59	80*	63	48	80*	55	40	79*	48	34	76*	42	29	64	37	26
			Exposed	80*	80*	80*	80*	80*	80*	80*	80*	80*	80*	80*	62	80*	80*	54	80*	62	48	80*	57	43	80*	48	34	74*	41	28	61	36	25	53	31	21	47	28	19	42	25	17
		27-45	Interior	88*	88*	88*	88*	88*	88*	88*	88*	88*	88*	88*	88*	88*	88*	88*	88*	88*	88*	88*	88*	88*	88*	85*	85*	81*	81*	61	76*	76*	51	71*	60	44	59	53	38	52	47	33
			Exposed	88*	88*	88*	88*	88*	88*	88*	88*	88*	88*	88*	88*	88*	88*	78*	88*	88*	60	88*	88*	54	85*	60	44	58	52	37	50	45	31	44	39	27	39	35	23	34	31	20
	D	0-7	Interior	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	62	63	63	57	63	63	48	63	58	41	63	50	36	60	44	31	53	39	27	47	34	24
			Exposed	63	63	63	63	63	60	63	63	54	63	63	49	63	63	45	63	57	41	63	52	37	61	44	31	52	38	27	45	33	23	39	29	20	35	25	18	31	23	24
		7-20	Interior	64	64	64	64	64	64	64	64	64	64	64	64	64	64	60	64	64	55	64	61	50	64	51	42	64	44	36	58	38	31	51	33	28	45	29	24	40	26	22
			Exposed	64	64	60	64	64	53	64	58	48	64	52	43	64	48	39	64	43	36	61	40	33	51	34	28	44	29	24	38	25	21	33	22	18	29	19	24	26	17	21
		20-27	Interior	87*	87*	87*	87*	87*	87*	87*	87*	87*	87*	87*	87*	87*	87*	87*	87*	87*	87*	87*	87*	59	87*	62	47	87*	53	39	86*	46	32	70	40	27	60	35	24	53	31	22
			Exposed	87*	87*	87*	87*	87*	69	87*	87*	55	87*	63	49	87*	57	43	87*	52	38	87*	48	34	72	41	28	59	35	24	51	30	21	45	26	18	39	23	16	35	21	14
		27-45	Interior	94*	94*	94*	94*	94*	94*	94*	94*	94*	94*	94*	94*	94*	94*	94*	94*	94*	94*	93*	93*	93*	87*	87*	60	81*	71*	49	64	57	42	56	50	36	49	44	31	44	39	27
			Exposed	94*	94*	94*	94*	94*	94*	94*	94*	88*	94*	94*	62	94*	94*	54	94*	66	49	93*	60	44	57	51	36	49	44	30	42	38	25	37	33	22	33	29	19	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	LANDSCAPE	CROSS-SLOPE	NXT HD	NXT COMBO	Flashloc DUO Rafter
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	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	41
			Exposed	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	46	48	48	40	48	48	35	48	43	30	48	38	27
		7-20	Interior	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	47	49	49	41	49	44	36			
			Exposed	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	47	49	49	40	49	42	35	49	37	31	49	33	27	44	29	24
		20-27	Interior	68*	68*	68*	68*	68*	68*	68*	68*	68*	68*	68*	68*	68*	68*	68*	68*	68*	68*	68*	68*	68*	68*	68*	68*	68*	68*	68*	68*	68*	68*	68*	68*	53	68*	60*	45	68*	53	39
			Exposed	68*	68*	68*	68*	68*	68*	68*	68*	68*	68*	68*	68*	68*	68*	68*	68*	68*	68*	68*	68*	68*	68*	68*	54	68*	59*	44	68*	51	37	68*	45	31	68*	39	27	59*	35	24
		27-45	Interior	76*	76*	76*	76*	76*	76*	76*	76*	76*	76*	76*	76*	76*	76*	76*	76*	76*	76*	76*	76*	76*	76*	76*	76*	76*	76*	76*	75*	75*	75*	71*	71*	71*	68*	68*	57*	65*	65*	50
			Exposed	76*	76*	76*	76*	76*	76*	76*	76*	76*	76*	76*	76*	76*	76*	76*	76*	76*	76*	76*	76*	76*	76*	76*	76*	76*	76*	56*	75*	64*	47	62*	56*	40	55*	49	35	49	44	30
	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	37	48	46	33	48	41	29
			Exposed	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	44	48	48	37	48	45	32	48	39	28	47	34	24	41	30	21	37	27	19
		7-20	Interior	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	43	49	45	37	49	40	33	49	35	29	47	31	26
			Exposed	49	49	49	49	49	49	49	49	49	49	49	49	49	47	49	49	43	49	47	39	49	40	33	49	34	28	45	30	25	40	26	22	35	23	19	31	20	17			
		20-27	Interior	68*	68*	68*	68*	68*	68*	68*	68*	68*	68*	68*	68*	68*	68*	68*	68*	68*	68*	68*	68*	68*	68*	68*	59*	68*	63*	48	68*	55	40	68*	48	34	66*	42	29	63*	37	26
			Exposed	68*	68*	68*	68*	68*	68*	68*	68*	68*	68*	68*	62*	68*	68*	54	68*	62*	48	68*	57	43	68*	48	34	68*	41	28	61*	36	25	53	31	21	47	28	19	42	25	17
		27-45	Interior	76*	76*	76*	76*	76*	76*	76*	76*	76*	76*	76*	76*	76*	76*	76*	76*	76*	76*	76*	76*	76*	73*	73*	73*	70*	70*	61*	66*	66*	51	63*	60*	44	59*	53	38	52	47	33
			Exposed	76*	76*	76*	76*	76*	76*	76*	76*	76*	76*	76*	76*	76*	76*	76*	76*	76*	60*	76*	76*	54	73*	60*	44	58*	52	37	50	45	31	44	39	27	39	35	23	34	31	20
	D	0-7	Interior	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	41	53	50	36	53	44	31	53	39	27	47	34	24			
			Exposed	53	53	53	53	53	53	53	53	53	53	53	49	53	53	45	53	53	41	53	52	37	53	44	31	52	38	27	45	33	23	39	29	20	35	25	18	31	23	24
		7-20	Interior	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	50	54	51	42	54	44	36	54	38	31	51	33	28	45	29	24	40	26	22
			Exposed	54	54	54	54	54	53	54	54	48	54	52	43	54	48	39	54	43	36	54	40	33	51	34	28	44	29	24	38	25	21	33	22	18	29	19	24	26	17	21
		20-27	Interior	75*	75*	75*	75*	75*	75*	75*	75*	75*	75*	75*	75*	75*	75*	75*	75*	75*	75*	75*	75*	59	75*	62	47	75*	53	39	73*	46	32	70*	40	27	60	35	24	53	31	22
			Exposed	75*	75*	75*	75*	75*	69*	75*	75*	55	75*	63	49	75*	57	43	75*	52	38	75*	48	34	72*	41	28	59	35	24	51	30	21	45	26	18	39	23	16	35	21	14
		27-45	Interior	84*	84*	84*	84*	84*	84*	84*	84*	84*	84*	84*	84*	84*	84*	84*	82*	82*	82*	80*	80*	80*	75*	75*	60*	70*	69*	49	64*	57	42	56	50	36	49	44	31	44	39	27
			Exposed	84*	84*	84*	84*	84*	84*	84*	84*	84*	84*	84*	62*	84*	84*	54	82*	66*	49	80*	60*	44	57	51	36	49	44	30	42	38	25	37	33	22	33	29	19	29	26	16
70	B	0-7	Interior	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	41
			Exposed	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	40	42	42	35	42	42	30	42	38	27			
		7-20	Interior	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	41	42	36
			Exposed	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	40	42	42	35	42	37	31	42	33	27	42	29	24
		20-27	Interior	59*	59*	59*	59*	59*	59*	59*	59*	59*	59*	59*	59*	59*	59*	59*	59*	59*	59*	59*	59*	59*	59*	59*	59*	59*	59*	59*	59*	59*	59*	59*	59*	53*	59*	59*	45	59*	53*	39
			Exposed	59*	59*	59*	59*	59*	59*	59*	59*	59*	59*	59*	59*	59*	59*	59*	59*	59*	59*	59*	59*	59*	59*	59*	54*	59*	59*	44	59*	51*	37	59*	45	31	59*	39	27	59*	35	24
		27-45	Interior	66*	66*	66*	66*	66*	66*	66*	66*	66*	66*	66*	66*	66*	66*	66*	66*	66*	66*	66*	66*	66*	66*	66*	66*	66*	66*	66*	65*	65*	65*	63*	63*	63*	61*	61*	57*	59*	59*	50*
			Exposed	66*	66*	66*	66*	66*	66*	66*	66*	66*	66*	66*	66*	66*	66*	66*	66*	66*	66*	66*	66*	66*	66*	66*	66*	66*	66*	56*	65*	64*	48*	62*	56*	40	55*	49*	35	49*	44	30
	C	0-7	Interior	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	37	42	42	33	42	41	29
			Exposed	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	32	42	39	28	42	34	24	41	30	21	37	27	19
		7-20	Interior	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	37	42	40	33	42	35	29	42	31	26
			Exposed	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	39	42	40	33	42	34	28	42	30	25	40	26	22	35	23	19	31	20	17
		20-27	Interior	59*	59*	59*	59*	59*	59*	59*	59*	59*	59*	59*	59*	59*	59*	59*	59*	59*	59*	59*	59*	59*	59*	59*	59*	59*	59*	48	59*	55*	40	59*	48	34	58*	42	29	57*	37	26
			Exposed	59*	59*	59*	59*	59*	59*	59*	59*	59*	59*	59*	59*	59*	59*	54*	59*	59*	48	59*	57*	43	59*	48	34	59*	41	28	59*	36	25	53*	31	21	47	28	19	42	25	17
		27-45	Interior	66*	66*	66*	66*	66*	66*	66*	66*	66*	66*	66*	66*	66*	66*	66*	66*	66*	66*	66*	66*	66*	65*	65*	65*	62*	62*	61*	60*	60*	51*	57*	57*	44	55*	53*	38	52*	47	33
			Exposed	66*	66*	66*	66*	66*	66*	66*	66*	66*	66*	66*	66*	66*	66*	66*	66*	66*	60*	66*	66*	54*	65*	60*	44	58*	52*	37	50*	45	31	44	39	27	39	35	23	34	31	20
	D	0-7	Interior	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	41	46	46	36	46	44	31	46	39	27	46	34	24			
			Exposed	46	46	46	46	46	46	46	46	46	46	46	46	46	46	45	46	46	41	46	46	37	46	44	31	46	38	27	45	33	23	39	29	20	35	25	18	31	23	24
		7-20	Interior	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	42	47	44	36	47	38	31	47	33	28	45	29	24	40	26	22
			Exposed	47	47	47	47	47	47	47	47	47	47	47	43	47	47	39	47	43	36	47	40	33	47	34	28	44	29	24	38	25	21	33	22	18	29	19	24	26	17	21
		20-27	Interior	65*	65*	65*	65*	65*	65*	65*	65*	65*	65*	65*	65*	65*	65*	65*	65*	65*	65*	65*	65*	59*	65*	62*	47	65*	53	39	65*	46	32	62*	40	27	60*	35	24	53	31	22
			Exposed	65*	65*	65*	65*	65*	65*	65*	65*	55	65*	63*	49	65*	57*	43	65*	52	38	65*	48	34	65*	41	28	59*	35	24	51	30	21	45	26	18	39	23	16	35	21	14
		27-45	Interior	73*	73*	73*	73*	73*	73*	73*	73*	73*	73*	73*	73*	73*	73*	73*	72*	72*	72*	70*	70*	70*	66*	66*	60*	63*	63*	49	60*	58*	42	56*	50	36	49	44	31	44	39	27
			Exposed	73*	73*	73*	73*	73*	73*	73*	73*	73*	73*	73*	62*	73*	73*	55*	72*	66*	49	70*	60*	44	57*	51	36	49	44	30	42	38	25	37	33	22	33	29	19	29	26	16
80	B	0-7	Interior	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37
			Exposed	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	35	37	37	30	37	37	27			
		7-20	Interior	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	36
			Exposed	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	35	37	37	33	37	37	27	37	29	24
		20-27	Interior	52*	52*	52*	52*	52*	52*	52*	52*	52*	52*	52*	52*	52*	52*	52*	52*	52*	52*	52*	52*	52*	52*	52*	52*	52*	52*	52*	52*	52*	52*	52*	52*	45*	52*	52*	39			
			Exposed	52*	52*	52*	52*	52*	52*	52*	52*	52*	52*	52*	52*	52*	52*	52*	52*	52*	52*	52*	52*	52*	52*	52*	52*	52*	52*	44*	52*	51*	37	52*	45*	31	52*	39	27	52*	35	24
		27-45	Interior	58*	58*	58*	58*	58*	58*	58*	58*	58*	58*	58*	58*	58*	58*	58*	58*	58*	58*	58*	58*	58*	58*	58*	58*	58*	58*	58*	58*	58*	58*	58*	58*	58*	56*	56*	56*	54*	54*	50*
			Exposed	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*	47*	58*	56*	40	55*	49*	35	49*	44*	30			
	C	0-7	Interior	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	33	37	37	29
			Exposed	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	30	37	37	27
		7-20	Interior	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	36
			Exposed	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	27
		20-27	Interior	52*	52*	52*	52*	52*	52*	52*	52*	52*	52*	52*	52*	52*	52*	52*	52*	52*	52*	52*	52*	52*	52*	52*	52*	52*	52*	48*	52*	52*	40	52*	48*	34	52*	42	29	51*	37	26
			Exposed	52*	52*	52*	52*	52*	52*	52*	52*	52*	52*	52*	52*	52*	52*	52*	52*	52*	48*	52*	52*	43	52*	48*	34	52*	41	28	52*	36	25	52*	31	21	47*	28	19	42	25	17
		27-45	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*	57*	57*	57*	55*	55*	51*	53*	53*	44*	51*	51*	38	49*	47*	33
			Exposed	58*	58*	58*	58*	58*	58*	58*	58*	58*	58*	58*	58*	58*	58*	58*	58*	58*	58*	58*	58*	54*	58*	58*	44*	57*	52*	37	50*	45*	31	44*	39	27	39	35	23	34	31	20
	D	0-7	Interior	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	36	41	41	31	41	39	27	41	34	24			
			Exposed	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	37	41	41	31	41	38	27	41	33	23	39	29	20	35	25	18	31	23	24
		7-20	Interior	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	36	41	38	31	41	33	28	41	29	24	40	26	22
			Exposed	41	41	41	41	41	41	41	41	41	41	41	41	41	41	39	41	41	36	41	40	33	41	34	28	41	29	24	38	25	21	33	22	18	29	19	24	26	17	21
		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*	47	57*	53*	39	57*	46	32	56*	40	27	55*	35	24	53*	31	22
			Exposed	57*	57*	57*	57*	57*	57*	57*	57*	55*	57*	57*	49*	57*	57*	43	57*	52*	38	57*	48	34	57*	41	28	57*	35	24	51*	30	21	45	26	18	39	23	16	35	21	14
		27-45	Interior	64*	64*	64*	64*	64*	64*	64*	64*	64*	64*	64*	64*	64*	64*	64*	64*	64*	64*	63*	63*	63*	61*	61*	60*	58*	58*	50*	55*	55*	42	53*	50*	36	49*	44	31	44	39	27
			Exposed	64*	64*	64*	64*	64*	64*	64*	64*	64*	64*	64*	62*	64*	64*	54*	64*	64*	49*	63*	60*	44	57*	51*	36	49*	44	30	42	38	25	37	33	22	33	29	19	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	LANDSCAPE	CROSS-SLOPE	NXT HD	NXT COMBO	Flashloc DUO Rafter
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	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33
			Exposed	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	30	33	33	27	33	33	27
		7-20	Interior	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33
			Exposed	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	31	33	33	27	33	29	24	33	29
		20-27	Interior	46*	46*	46*	46*	46*	46*	46*	46*	46*	46*	46*	46*	46*	46*	46*	46*	46*	46*	46*	46*	46*	46*	46*	46*	46*	46*	46*	46*	46*	46*	46*	46*	45*	46*	46*	39	46*	46*	39
			Exposed	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*	44*	46*	46*	37	46*	45*	31	46*	39	27	46*	35	24
		27-45	Interior	52*	52*	52*	52*	52*	52*	52*	52*	52*	52*	52*	52*	52*	52*	52*	52*	52*	52*	52*	52*	52*	52*	52*	52*	52*	52*	52*	52*	52*	52*	52*	52*	52*	52*	52*	52*	50*	50*	50*
			Exposed	52*	52*	52*	52*	52*	52*	52*	52*	52*	52*	52*	52*	52*	52*	52*	52*	52*	52*	52*	52*	52*	52*	52*	52*	52*	52*	52*	52*	52*	52*	47*	52*	52*	40*	52*	49*	35	49*	44*	30
	C	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	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	29
			Exposed	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	32	33	33	28	33	33	24	33	30	21	33	27	19
		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	29	33	31	26
			Exposed	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	28	33	30	25	33	26	22	33	23	19	31	20	17
		20-27	Interior	46*	46*	46*	46*	46*	46*	46*	46*	46*	46*	46*	46*	46*	46*	46*	46*	46*	46*	46*	46*	46*	46*	46*	46*	46*	46*	46*	46*	46*	40*	46*	46*	34	46*	42*	29	46*	37	26
			Exposed	46*	46*	46*	46*	46*	46*	46*	46*	46*	46*	46*	46*	46*	46*	46*	46*	46*	46*	46*	46*	43*	46*	46*	34	46*	41*	28	46*	36	25	46*	31	21	46*	28	19	42*	25	17
		27-45	Interior	52*	52*	52*	52*	52*	52*	52*	52*	52*	52*	52*	52*	52*	52*	52*	52*	52*	52*	52*	52*	52*	52*	52*	52*	52*	52*	52*	52*	52*	52*	49*	49*	44*	47*	47*	38*	45*	45*	33
			Exposed	52*	52*	52*	52*	52*	52*	52*	52*	52*	52*	52*	52*	52*	52*	52*	52*	52*	52*	52*	52*	52*	52*	52*	44*	52*	52*	37	50*	45*	31	44*	39*	27	39*	35	23	34	31	20
	D	0-7	Interior	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	31	36	36	27	36	34	24
			Exposed	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	31	36	36	27	36	33	23	36	29	20	35	25	18	31	23	24
		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	36	37	37	31	37	33	28	37	29	24	37	26	22
			Exposed	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	36	37	37	33	37	34	28	37	29	24	37	25	21	33	22	18	29	19	24	26	17	21
		20-27	Interior	51*	51*	51*	51*	51*	51*	51*	51*	51*	51*	51*	51*	51*	51*	51*	51*	51*	51*	51*	51*	51*	51*	51*	47*	51*	51*	39	51*	46*	32	51*	40	27	50*	35	24	49*	31	22
			Exposed	51*	51*	51*	51*	51*	51*	51*	51*	51*	51*	51*	49*	51*	51*	43	51*	51*	38	51*	48*	34	51*	41	28	51*	35	24	51*	30	21	45*	26	18	39	23	16	35	21	14
		27-45	Interior	57*	57*	57*	57*	57*	57*	57*	57*	57*	57*	57*	57*	57*	57*	57*	57*	57*	57*	57*	57*	57*	57*	57*	57*	56*	56*	56*	54*	54*	49*	51*	51*	42*	49*	49*	36	47*	44*	31
			Exposed	57*	57*	57*	57*	57*	57*	57*	57*	57*	57*	57*	57*	57*	54*	57*	57*	49*	57*	57*	44*	56*	51*	36	49*	44*	30	42*	38	25	37	33	22	33	29	19	29	26	16	44*	39	27
100	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	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	30	30	30	30	30	30	27	30	30	27
		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	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	30	30	30	30	30	30	27	30	29	24
		20-27	Interior	42*	42*	42*	42*	42*	42*	42*	42*	42*	42*	42*	42*	42*	42*	42*	42*	42*	42*	42*	42*	42*	42*	42*	42*	42*	42*	42*	42*	42*	42*	42*	42*	42*	42*	42*	42*	42*	42*	39*
			Exposed	42*	42*	42*	42*	42*	42*	42*	42*	42*	42*	42*	42*	42*	42*	42*	42*	42*	42*	42*	42*	42*	42*	42*	42*	42*	42*	42*	42*	42*	37*	42*	42*	31	42*	39*	27	42*	35	24
		27-45	Interior	47*	47*	47*	47*	47*	47*	47*	47*	47*	47*	47*	47*	47*	47*	47*	47*	47*	47*	47*	47*	47*	47*	47*	47*	47*	47*	47*	47*	47*	47*	47*	47*	47*	47*	47*	47*	46*	46*	46*
			Exposed	47*	47*	47*	47*	47*	47*	47*	47*	47*	47*	47*	47*	47*	47*	47*	47*	47*	47*	47*	47*	47*	47*	47*	47*	47*	47*	47*	47*	47*	47*	47*	47*	40*	47*	47*	35*	46*	44*	30
	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	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	28	30	30	24	30	30	21	30	27	19
		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	30	30	29	30	30	26
			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	30	25	30	26	22	30	23	19	30	20	17
		20-27	Interior	42*	42*	42*	42*	42*	42*	42*	42*	42*	42*	42*	42*	42*	42*	42*	42*	42*	42*	42*	42*	42*	42*	42*	42*	42*	42*	42*	42*	42*	42*	42*	42*	34	42*	42*	29	42*	37*	26
			Exposed	42*	42*	42*	42*	42*	42*	42*	42*	42*	42*	42*	42*	42*	42*	42*	42*	42*	42*	42*	42*	42*	42*	42*	42*	42*	42*	42*	42*	42*	34	42*	41*	28	42*	36*	25	42*	31	21
		27-45	Interior	47*	47*	47*	47*	47*	47*	47*	47*	47*	47*	47*	47*	47*	47*	47*	47*	47*	47*	47*	47*	47*	47*	47*	47*	47*	47*	47*	47*	47*	47*	45*	45*	44*	44*	44*	38*	42*	42*	33
			Exposed	47*	47*	47*	47*	47*	47*	47*	47*	47*	47*	47*	47*	47*	47*	47*	47*	47*	47*	47*	47*	47*	47*	47*	44*	47*	47*	37*	47*	45*	31	44*	39*	27	39*	35*	23	34*	31	20
	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	33	33	33	33	33	33	31	33	33	27	33	33	24	33	33	24
			Exposed	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	31	33	33	27	33	33	23	33	29	20	33	25	18	31	23	24
		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	31	33	33	28	33	29	24	33	26	22
			Exposed	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	25	21	33	22	18	29	19	24	26	17	21
		20-27	Interior	46*	46*	46*	46*	46*	46*	46*	46*	46*	46*	46*	46*	46*	46*	46*	46*	46*	46*	46*	46*	46*	46*	46*	46*	46*	46*	39	46*	46*	32	46*	40*	27	46*	35	24	45*	26	18
			Exposed	46*	46*	46*	46*	46*	46*	46*	46*	46*	46*	46*	46*	46*	46*	46*	46*	46*	38	46*	46*	34	46*	41*	28	46*	35	24	46*	30	21	45*	26	18	39	23	16	35	21	14
		27-45	Interior	52*	52*	52*	52*	52*	52*	52*	52*	52*	52*	52*	52*	52*	52*	52*	52*	52*	52*	52*	52*	52*	52*	52*	52*	52*	52*	52*	50*	50*	49*	48*	48*	42*	46*	46*	36	44*	44*	31
			Exposed	52*	52*	52*	52*	52*	52*	52*	52*	52*	52*	52*	52*	52*	52*	52*	52*	52*	49*	52*	52*	44*	52*	51*	36	49*	44*	30	42*	38*	25	37	33	22	33	29	19	29	26	16

#N/A

* 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 HD	NXT COMBO	Flashloc DUO Rafter
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	104	104	104	104	104	104	104	104	104	104	104	94	104	104	78	104	104	67	104	97	57	104	73	44	97	57	35	76	46	30	61	38	26	50	33	23	42	29	20
			Exposed	104	104	78	104	104	64	104	90	53	104	76	45	104	65	39	94	56	34	81	49	31	62	38	26	49	32	23	39	28	20	33	24	17	29	21	15	26	19	13
		7-20	Interior	104	104	104	104	104	104	104	104	104	104	104	86	104	104	69	104	84	57	104	69	48	104	50	36	65	38	31	53	32	26	45	28	23	38	25	20	33	22	18
			Exposed	104	103	69	104	79	55	104	64	45	104	52	37	73	44	33	64	37	30	57	33	28	46	28	23	37	24	20	32	21	17	28	18	15	25	16	13	22	14	12
		20-27	Interior	106	106	106	106	106	106	106	106	106	106	106	106	106	106	106	106	106	95	106	99	76	106	70	53	106	53	39	82	41	32	66	34	26	56	30	22	48	26	19
			Exposed	106	106	106	106	106	90	106	91	69	106	73	56	106	61	46	106	51	39	89	44	33	67	34	27	55	29	22	45	25	18	38	22	15	33	19	13	29	17	12
		27-45	Interior	108	108	108	108	108	108	108	108	108	108	108	108	108	108	108	108	108	108	108	108	91	108	101	67	108	76	51	82	59	40	61	47	33	47	38	28	38	33	25
			Exposed	108	108	108	108	108	104	108	108	84	108	106	70	108	88	59	108	74	50	91	63	43	62	48	34	46	37	28	35	32	23	31	28	20	27	24	17	24	22	15
	C	0-7	Interior	104	104	89	104	104	72	104	101	60	104	85	51	104	73	43	104	63	37	92	55	34	69	42	28	54	34	24	44	30	21	36	26	18	31	23	16	28	20	14
			Exposed	104	72	43	103	60	36	85	51	32	72	44	29	61	38	26	53	34	24	46	31	22	36	26	18	31	22	16	27	19	14	23	17	12	20	15	10	18	13	14
		7-20	Interior	104	104	80	104	93	63	104	74	51	104	60	42	104	50	36	70	42	32	62	36	30	50	30	25	41	26	21	34	22	19	30	20	16	26	17	14	23	15	13
			Exposed	104	50	35	68	40	32	59	34	28	51	31	26	45	28	23	40	26	21	36	23	19	30	20	16	26	17	14	22	15	12	20	13	11	17	11	14	15	10	13
		20-27	Interior	106	106	106	106	106	106	106	106	82	106	85	65	106	70	53	106	59	44	102	50	37	74	37	29	60	31	24	50	27	20	42	24	17	36	21	14	32	18	13
			Exposed	106	69	52	106	56	42	94	46	35	78	39	30	67	34	27	59	31	24	53	28	21	42	24	17	35	20	14	30	18	12	26	15	11	23	14	9	21	12	8
		27-45	Interior	108	108	108	108	108	108	108	108	97	108	108	79	108	100	66	108	84	56	108	72	49	72	54	37	53	42	30	40	34	25	33	30	22	29	26	19	26	23	16
			Exposed	108	100	66	108	80	54	97	66	45	76	56	38	62	47	33	51	41	30	43	35	27	33	30	22	29	26	18	25	22	15	22	19	13	19	17	11	17	15	10
	D	0-7	Interior	104	104	65	104	90	54	104	75	45	104	64	38	92	55	34	79	48	31	68	42	28	53	34	24	42	29	20	34	25	18	30	22	15	26	19	13	23	17	12
			Exposed	92	55	34	76	46	30	64	39	27	54	34	24	47	31	22	41	28	20	36	26	18	30	22	15	26	19	13	22	16	11	19	14	10	17	12	13	15	11	12
		7-20	Interior	104	81	56	104	64	45	104	52	37	71	43	33	63	37	30	55	33	27	49	30	25	40	25	21	33	22	18	29	19	15	25	16	14	22	14	12	20	13	11
			Exposed	62	36	30	54	32	26	47	29	24	41	26	21	36	24	19	33	21	18	30	20	16	25	17	14	22	14	12	19	12	10	16	11	13	14	14	12	13	13	10
		20-27	Interior	106	106	91	106	91	70	106	73	55	106	60	45	103	50	38	86	43	33	73	37	29	58	31	23	48	26	19	40	23	16	34	20	14	30	17	12	26	15	11
			Exposed	102	50	37	82	41	32	69	35	27	60	31	24	53	28	21	47	26	19	42	24	17	34	20	14	29	17	12	25	15	10	22	13	9	19	11	8	17	10	10
		27-45	Interior	108	108	106	108	108	85	108	105	69	108	86	58	108	72	49	87	61	42	71	53	36	50	40	30	38	33	24	32	28	21	28	25	18	24	22	15	22	19	13
			Exposed	108	72	49	82	59	40	65	49	34	53	42	30	44	36	27	37	33	24	33	30	22	28	25	18	24	22	15	21	19	12	18	16	11	16	14	9	14	13	8
10	B	0-7	Interior	74	74	74	74	74	74	74	74	74	74	74	74	74	74	74	74	74	67	74	74	57	74	73	44	74	57	35	74	46	30	61	38	26	50	33	23	42	29	20
			Exposed	74	74	74	74	74	64	74	74	53	74	74	45	74	65	39	74	56	34	74	49	31	62	38	26	49	32	23	39	28	20	33	24	17	29	21	15	26	19	13
		7-20	Interior	74	74	74	74	74	74	74	74	74	74	74	74	74	74	69	74	74	57	74	69	48	74	50	36	65	38	31	53	32	26	45	28	23	38	25	20	33	22	18
			Exposed	74	74	69	74	74	55	74	64	45	74	52	37	73	44	33	64	37	30	57	33	28	46	28	23	37	24	20	32	21	17	28	18	15	25	16	13	22	14	12
		20-27	Interior	87	87	87	87	87	87	87	87	87	87	87	87	87	87	87	87	87	87	87	87	76	87	70	53	87	53	39	82	41	32	66	34	26	56	30	22	48	26	19
			Exposed	87	87	87	87	87	87	87	87	69	87	73	56	87	61	46	87	51	39	87	44	33	67	34	27	55	29	22	45	25	18	38	22	15	33	19	13	29	17	12
		27-45	Interior	108*	108*	108*	108*	108*	108*	108*	108*	108*	108*	108*	108*	108*	108*	108*	108*	108*	108*	108*	108*	91	108*	95	67	108*	76	51	82	59	40	61	47	33	47	38	28	38	33	25
			Exposed	108*	108*	108*	108*	108*	106*	108*	108*	84	108*	107*	70	108*	88	59	108*	74	50	91	63	43	62	48	34	46	37	28	35	32	23	31	28	20	27	24	17	24	22	15
	C	0-7	Interior	74	74	74	74	74	72	74	74	60	74	74	51	74	73	43	74	63	37	74	55	34	69	42	28	54	34	24	44	30	21	36	26	18	31	23	16	28	20	14
			Exposed	74	72	43	74	60	36	74	51	32	72	44	29	61	38	26	53	34	24	46	31	22	36	26	18	31	22	16	27	19	14	23	17	12	20	15	10	18	13	14
		7-20	Interior	74	74	74	74	74	63	74	74	51	74	60	42	74	50	36	70	42	32	62	36	30	50	30	25	41	26	21	34	22	19	30	20	16	26	17	14	23	15	13
			Exposed	74	50	35	68	40	32	59	34	28	51	31	26	45	28	23	40	26	21	36	23	19	30	20	16	26	17	14	22	15	12	20	13	11	17	11	14	15	10	13
		20-27	Interior	87	87	87	87	87	87	87	87	82	87	85	65	87	70	53	87	59	44	87	50	37	74	37	29	60	31	24	50	27	20	42	24	17	36	21	14	32	18	13
			Exposed	87	69	52	87	56	42	87	46	35	78	39	30	67	34	27	59	31	24	53	28	21	42	24	17	35	20	14	30	18	12	26	15	11	23	14	9	21	12	8
		27-45	Interior	108*	108*	108*	108*	108*	108*	108*	108*	95	108*	108*	79	108*	95	66	108*	84	56	108*	72	49	72	54	37	53	42	30	40	34	25	33	30	22	29	26	19	26	23	16
			Exposed	108*	95	66	108*	80	54	95	66	45	76	56	38	62	47	33	51	41	30	43	35	27	33	30	22	29	26	18	25	22	15	22	19	13	19	17	11	17	15	10
	D	0-7	Interior	74	74	65	74	74	54	74	74	45	74	64	38	74	55	34	74	48	31	68	42	28	53	34	24	42	29	20	34	25	18	30	22	15	26	19	13	23	17	12
			Exposed	74	55	34	74	46	30	64	39	27	54	34	24	47	31	22	41	28	20	36	26	18	30	22	15	26	19	13	22	16	11	19	14	10	17	12	13	15	11	12
		7-20	Interior	74	74	56	74	64	45	74	52	37	71	43	33	63	37	30	55	33	27	49	30	25	40	25	21	33	22	18	29	19	15	25	16	14	22	14	12	20	13	11
			Exposed	62	36	30	54	32	26	47	29	24	41	26	21	36	24	19	33	21	18	30	20	16	25	17	14	22	14	12	19	12	10	16	11	13	14	14	12	13	13	10
		20-27	Interior	90	90	90	90	90	70	90	73	55	90	60	45	90	50	38	86	43	33	73	37	29	58	31	23	48	26	19	40	23	16	34	20	14	30	17	12	26	15	11
			Exposed	90	50	37	82	41	32	69	35	27	60	31	24	53	28	21	47	26	19	42	24	17	34	20	14	29	17	12	25	15	10	22	13	9	19	11	8	17	10	10
		27-45	Interior	110*	110*	98	110*	110*	85	110*	98	69	110*	86	58	110*	72	49	87	61	42	71	53	36	50	40	30	38	33	24	32	28	21	28	25	18	24	22	15	22	19	13
			Exposed	110*	72	49	82	59	40	65	49	34	53	42	30	44	36	27	37	33	24	33	30	22	28	25	18	24	22	15	21	19	12	18	16	11	16	14	9	14	13	8
20	B	0-7	Interior	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	44	52	52	35	52	46	30	52	38	26	50	33	23	42	29	20			
			Exposed	52	52	52	52	52	52	52	52	52	52	52	45	52	52	39	52	52	34	52	49	31	52	38	26	49	32	23	39	28	20	33	24	17	29	21	15	26	19	13
		7-20	Interior	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	48	52	50	36	52	38	31	52	32	26	45	28	23	38	25	20	33	22	18
			Exposed	52	52	52	52	52	52	52	52	45	52	52	37	52	44	33	52	37	30	52	33	28	46	28	23	37	24	20	32	21	17	28	18	15	25	16	13	22	14	12
		20-27	Interior	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	53	65	53	39	65	41	32	65	34	26	56	30	22	48	26	19
			Exposed	65	65	65	65	65	65	65	65	65	65	65	56	65	61	46	65	51	39	65	44	33	65	34	27	55	29	22	45	25	18	38	22	15	33	19	13	29	17	12
		27-45	Interior	74*	74*	74*	74*	74*	74*	74*	74*	74*	74*	74*	74*	74*	74*	74*	74*	74*	74*	74*	74*	74*	74*	74*	67	74*	74*	51	74*	59	40	61	47	33	47	38	28	38	33	25
			Exposed	74*	74*	74*	74*	74*	74*	74*	74*	74*	74*	74*	71*	74*	74*	59	74*	74*	50	74*	63	43	62	48	34	46	37	28	35	32	23	31	28	20	27	24	17	24	22	15
	C	0-7	Interior	52	52	52	52	52	52	52	52	52	52	52	51	52	52	43	52	52	37	52	52	34	52	42	28	52	34	24	44	30	21	36	26	18	31	23	16	28	20	14
			Exposed	52	52	43	52	52	36	52	51	32	52	44	29	52	38	26	52	34	24	46	31	22	36	26	18	31	22	16	27	19	14	23	17	12	20	15	10	18	13	14
		7-20	Interior	52	52	52	52	52	52	52	52	51	52	52	42	52	50	36	52	42	32	52	36	30	50	30	25	41	26	21	34	22	19	30	20	16	26	17	14	23	15	13
			Exposed	52	50	35	52	40	32	52	34	28	51	31	26	45	28	23	40	26	21	36	23	19	30	20	16	26	17	14	22	15	12	20	13	11	17	11	14	15	10	13
		20-27	Interior	65	65	65	65	65	65	65	65	65	65	65	65	65	65	53	65	59	44	65	50	37	65	37	29	60	31	24	50	27	20	42	24	17	36	21	14	32	18	13
			Exposed	65	65	52	65	56	42	65	46	35	65	39	30	65	34	27	59	31	24	53	28	21	42	24	17	35	20	14	30	18	12	26	15	11	23	14	9	21	12	8
		27-45	Interior	74*	74*	74*	74*	74*	74*	74*	74*	74*	74*	74*	74*	74*	74*	74*	74*	74*	56	74*	72*	49	73*	54	37	53	42	30	40	34	25	33	30	22	29	26	19	26	23	16
			Exposed	74*	74*	66	74*	74*	54	74*	66	45	74*	56	38	62	47	33	51	41	30	43	35	27	33	30	22	29	26	18	25	22	15	22	19	13	19	17	11	17	15	10
	D	0-7	Interior	52	52	52	52	52	52	52	52	45	52	52	38	52	52	34	52	48	31	52	42	28	52	34	24	42	29	20	34	25	18	30	22	15	26	19	13	23	17	12
			Exposed	52	52	34	52	46	30	52	39	27	52	34	24	47	31	22	41	28	20	36	26	18	30	22	15	26	19	13	22	16	11	19	14	10	17	12	13	15	11	12
		7-20	Interior	52	52	52	52	52	45	52	52	37	52	43	33	52	37	30	52	33	27	49	30	25	40	25	21	33	22	18	29	19	15	25	16	14	22	14	12	20	13	11
			Exposed	52	36	30	52	32	26	47	29	24	41	26	21	36	24	19	33	21	18	30	20	16	25	17	14	22	14	12	19	12	10	16	11	13	14	14	12	13	13	10
		20-27	Interior	69	69	69	69	69	69	69	69	55	69	60	45	69	50	38	69	43	33	69	37	29	58	31	23	48	26	19	40	23	16	34	20	14	30	17	12	26	15	11
			Exposed	69	50	37	69	41	32	69	35	27	60	31	24	53	28	21	47	26	19	42	24	17	34	20	14	29	17	12	25	15	10	22	13	9	19	11	8	17	10	10
		27-45	Interior	82*	82*	82*	82*	82*	82*	82*	82*	69	82*	82*	58	82*	72	49	82*	61	42	71	53	36	50	40	30	38	33	24	32	28	21	28	25	18	24	22	15	22	19	13
			Exposed	82*	72	49	82*	59	40	65	49	34	53	42	30	44	36	27	37	33	24	33	30	22	28	25	18	24	22	15	21	19	12	18	16	11	16	14	9	14	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 HD	NXT COMBO	Flashloc DUO Rafter
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	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	44	45	45	35	45	45	30	45	38	26	45	33	23	42	29	20
			Exposed	45	45	45	45	45	45	45	45	45	45	45	45	45	45	39	45	45	34	45	45	31	45	38	26	45	32	23	39	28	20	33	24	17	29	21	15	26	19	13
		7-20	Interior	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	36	45	38	31	45	32	26	45	28	23	38	25	20	33	22	18
			Exposed	45	45	45	45	45	45	45	45	45	45	45	37	45	44	33	45	37	30	45	33	28	45	28	23	37	24	20	32	21	17	28	18	15	25	16	13	22	14	12
		20-27	Interior	56*	56*	56*	56*	56*	56*	56*	56*	56*	56*	56*	56*	56*	56*	56*	56*	56*	56*	56*	56*	56*	56*	56*	52	56*	56*	39	56*	41	32	56*	34	26	56*	30	22	48	26	19
			Exposed	56*	56*	56*	56*	56*	56*	56*	56*	56*	56*	56*	56*	56*	56*	46	56*	51	39	56*	44	33	56*	34	27	55*	29	22	45	25	18	38	22	15	33	19	13	29	17	12
		27-45	Interior	60*	60*	60*	60*	60*	60*	60*	60*	60*	60*	60*	60*	60*	60*	60*	60*	60*	60*	60*	60*	60*	60*	60*	60*	60*	60*	52*	59*	59*	40	55*	47	33	47	38	28	38	33	25
			Exposed	60*	60*	60*	60*	60*	60*	60*	60*	60*	60*	60*	60*	60*	60*	59*	60*	60*	51*	60*	60*	43	60*	48	34	46	37	28	35	32	23	31	28	20	27	24	17	24	22	15
	C	0-7	Interior	45	45	45	45	45	45	45	45	45	45	45	45	45	45	43	45	45	37	45	45	34	45	42	28	45	34	24	44	30	21	36	26	18	31	23	16	28	20	14
			Exposed	45	45	43	45	45	36	45	45	32	45	44	29	45	38	26	45	34	24	45	31	22	36	26	18	31	22	16	27	19	14	23	17	12	20	15	10	18	13	14
		7-20	Interior	45	45	45	45	45	45	45	45	45	45	45	42	45	45	36	45	42	32	45	36	30	45	30	25	41	26	21	34	22	19	30	20	16	26	17	14	23	15	13
			Exposed	45	45	35	45	40	32	45	34	28	45	31	26	45	28	23	40	26	21	36	23	19	30	20	16	26	17	14	22	15	12	20	13	11	17	11	14	15	10	13
		20-27	Interior	56*	56*	56*	56*	56*	56*	56*	56*	56*	56*	56*	56*	56*	56*	52	56*	56*	44	56*	50	37	56*	37	29	56*	31	24	50	27	20	42	24	17	36	21	14	32	18	13
			Exposed	56*	56*	52	56*	56*	42	56*	46	35	56*	39	30	56*	34	27	56*	31	24	52	28	21	42	24	17	35	20	14	30	18	12	26	15	11	23	14	9	21	12	8
		27-45	Interior	60*	60*	60*	60*	60*	60*	60*	60*	60*	60*	60*	60*	60*	60*	60*	60*	60*	56*	60*	60*	49	57*	54*	37	53*	42	30	40	34	25	33	30	22	29	26	19	26	23	16
			Exposed	60*	60*	60*	60*	60*	54*	60*	60*	45	60*	56*	38	60*	47	33	52*	41	30	43	35	27	33	30	22	29	26	18	25	22	15	22	19	13	19	17	11	17	15	10
	D	0-7	Interior	48	48	48	48	48	48	48	48	45	48	48	38	48	48	34	48	48	31	48	42	28	48	34	24	42	29	20	34	25	18	30	22	15	26	19	13	23	17	12
			Exposed	48	48	34	48	46	30	48	39	27	48	34	24	47	31	22	41	28	20	36	26	18	30	22	15	26	19	13	22	16	11	19	14	10	17	12	13	15	11	12
		7-20	Interior	48	48	48	48	48	45	48	48	37	48	43	33	48	37	30	48	33	27	48	30	25	40	25	21	33	22	18	29	19	15	25	16	14	22	14	12	20	13	11
			Exposed	48	36	30	48	32	26	47	29	24	41	26	21	36	24	19	33	21	18	30	20	16	25	17	14	22	14	12	19	12	10	16	11	13	14	14	12	13	13	10
		20-27	Interior	60*	60*	60*	60*	60*	60*	60*	60*	55	60*	60*	45	60*	50	38	60*	43	33	60*	37	29	55	31	23	48	26	19	40	23	16	34	20	14	30	17	12	26	15	11
			Exposed	60*	50	37	60*	41	32	60*	35	27	60*	31	24	53	28	21	47	26	19	42	24	17	34	20	14	29	17	12	25	15	10	22	13	9	19	11	8	17	10	10
		27-45	Interior	64*	64*	64*	64*	64*	64*	64*	64*	64*	64*	64*	58*	64*	64*	49	63*	61*	42	61*	53	36	50	40	30	38	33	24	32	28	21	28	25	18	24	22	15	22	19	13
			Exposed	64*	64*	49	64*	59*	40	64*	49	34	53	42	30	44	36	27	37	33	24	33	30	22	28	25	18	24	22	15	21	19	12	18	16	11	16	14	9	14	13	8
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	35	35	35	35	35	35	35	35	35	30	35	35	26	35	33	23	35	29	20
			Exposed	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	34	35	35	31	35	35	26	35	32	23	35	28	20	33	24	17	29	21	15	26	19	13
		7-20	Interior	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	31	36	32	26	36	28	23	36	25	20	33	22	18	29	19	15
			Exposed	36	36	36	36	36	36	36	36	36	36	36	36	36	36	33	36	36	30	36	33	28	36	28	23	36	24	20	32	21	17	28	18	15	25	16	13	22	14	12
		20-27	Interior	47*	47*	47*	47*	47*	47*	47*	47*	47*	47*	47*	47*	47*	47*	47*	47*	47*	47*	47*	47*	47*	47*	47*	39	47*	41	32	47*	34	26	47*	30	22	47*	26	19	29	17	12
			Exposed	47*	47*	47*	47*	47*	47*	47*	47*	47*	47*	47*	47*	47*	47*	46*	47*	47*	39	47*	44*	33	47*	34	27	47*	29	22	45*	25	18	38	22	15	33	19	13	29	17	12
		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*	49*	49*	41*	46*	46*	33	44*	38	28	38	33	25
			Exposed	51*	51*	51*	51*	51*	51*	51*	51*	51*	51*	51*	51*	51*	51*	51*	51*	51*	50*	51*	51*	43*	51*	48*	34	46*	37	28	35	32	23	31	28	20	27	24	17	24	22	15
	C	0-7	Interior	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	34	24	35	30	21	35	26	18	31	23	16	28	20	14
			Exposed	35	35	35	35	35	35	35	35	32	35	35	29	35	35	26	35	34	24	35	31	22	35	26	18	31	22	16	27	19	14	23	17	12	20	15	10	18	13	14
		7-20	Interior	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	32	36	36	30	36	30	25	36	26	21	34	22	19	30	20	16	26	17	14	23	15	13
			Exposed	36	36	35	36	36	32	36	34	28	36	31	26	36	28	23	36	26	21	36	23	19	30	20	16	26	17	14	22	15	12	20	13	11	17	11	14	15	10	13
		20-27	Interior	47*	47*	47*	47*	47*	47*	47*	47*	47*	47*	47*	47*	47*	47*	47*	47*	47*	44*	47*	47*	37	47*	37	29	47*	31	24	47*	27	20	42*	24	17	36	21	14	32	18	13
			Exposed	47*	47*	47*	47*	47*	42*	47*	46*	35	47*	39	30	47*	34	27	47*	31	24	47*	28	21	42*	24	17	35	20	14	30	18	12	26	15	11	23	14	9	21	12	8
		27-45	Interior	51*	51*	51*	51*	51*	51*	51*	51*	51*	51*	51*	51*	51*	51*	51*	51*	51*	51*	51*	51*	50*	51*	50*	49*	48*	48*	37	45*	42*	30	40*	34	25	33	30	22	29	26	16
			Exposed	51*	51*	51*	51*	51*	51*	51*	51*	45*	51*	51*	38	51*	47*	33	51*	41*	30	43*	35	27	33	30	22	29	26	18	25	22	15	22	19	13	19	17	11	17	15	10
	D	0-7	Interior	39	39	39	39	39	39	39	39	39	39	39	38	39	39	34	39	39	31	39	39	28	39	34	24	39	29	20	34	25	18	30	22	15	26	19	13	23	17	12
			Exposed	39	39	34	39	39	30	39	39	27	39	34	24	39	31	22	39	28	20	36	26	18	30	22	15	26	19	13	22	16	11	19	14	10	17	12	13	15	11	12
		7-20	Interior	40	40	40	40	40	40	40	40	37	40	40	33	40	37	30	40	33	27	40	30	25	40	25	21	33	22	18	29	19	15	25	16	14	22	14	12	20	13	11
			Exposed	40	36	30	40	32	26	40	29	24	40	26	21	36	24	19	33	21	18	30	20	16	25	17	14	22	14	12	19	12	10	16	11	13	14	14	12	13	13	10
		20-27	Interior	50*	50*	50*	50*	50*	50*	50*	50*	50*	50*	50*	45	50*	50*	38	50*	43	33	50*	37	29	50*	31	23	48*	26	19	40	23	16	34	20	14	30	17	12	26	15	11
			Exposed	50*	50*	37	50*	41	32	50*	35	27	50*	31	24	50*	28	21	47*	26	19	42	24	17	34	20	14	29	17	12	25	15	10	22	13	9	19	11	8	17	10	10
		27-45	Interior	54*	54*	54*	54*	54*	54*	54*	54*	54*	54*	54*	54*	54*	54*	49*	53*	53*	42	51*	51*	36	48*	40	30	38	33	24	32	28	21	28	25	18	24	22	15	22	19	13
			Exposed	54*	54*	49*	54*	54*	40	54*	49*	34	53*	42	30	44*	36	27	37	33	24	33	30	22	28	25	18	24	22	15	21	19	12	18	16	11	16	14	9	14	13	8
50	B	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	26	29	29	23	29	29	20	29	29	26	29	29	23	29	29	20
			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	29	29	28	20	29	24	17	29	21	15	26	19	13
		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	26	29	29	23	29	25	20	29	22	18
			Exposed	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	28	29	28	23	29	24	20	29	21	17	28	18	15	25	16	13	22	14	12
		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*	39*	40*	40*	32	40*	34	26	40*	30	22	40*	26	19	29	17	12
			Exposed	40*	40*	40*	40*	40*	40*	40*	40*	40*	40*	40*	40*	40*	40*	40*	40*	40*	39*	40*	40*	33	40*	34	27	40*	29	22	40*	25	18	38*	22	15	33	19	13	29	17	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*	44*	43*	43*	43*	42*	42*	40*	40*	40*	33*	38*	38*	28	36*	33*	25
			Exposed	44*	44*	44*	44*	44*	44*	44*	44*	44*	44*	44*	44*	44*	44*	44*	44*	44*	44*	44*	44*	43*	44*	44*	34*	43*	37*	28	35*	32	23	31	28	20	27	24	17	24	22	15
	C	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	28	29	29	24	29	29	21	29	26	18	29	23	16	28	20	14
			Exposed	29	29	29	29	29	29	29	29	29	29	29	29	29	29	26	29	29	24	29	29	22	29	26	18	29	22	16	27	19	14	23	17	12	20	15	10	18	13	14
		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	25	29	26	21	29	22	19	29	20	16	26	17	14	23	15	13
			Exposed	29	29	29	29	29	29	29	29	28	29	29	26	29	28	23	29	26	21	29	23	19	29	20	16	26	17	14	22	15	12	20	13	11	17	11	14	15	10	13
		20-27	Interior	40*	40*	40*	40*	40*	40*	40*	40*	40*	40*	40*	40*	40*	40*	40*	40*	40*	40*	40*	40*	37*	40*	37*	29	40*	31	24	40*	27	20	38*	24	17	36*	21	14	32	18	13
			Exposed	40*	40*	40*	40*	40*	40*	40*	40*	35*	40*	39*	30	40*	34	27	40*	31	24	40*	28	21	40*	24	17	35*	20	14	30	18	12	26	15	11	23	14	9	21	12	8
		27-45	Interior	44*	44*	44*	44*	44*	44*	44*	44*	44*	44*	44*	44*	44*	44*	44*	44*	44*	44*	44*	44*	43*	43*	43*	41*	41*	41*	37*	39*	39*	30	37*	34*	25	33*	30	22	29	26	16
			Exposed	44*	44*	44*	44*	44*	44*	44*	44*	38*	44*	44*	34*	44*	41*	30	43*	36*	27	34*	30	22	29	26	18	25	22	15	22	19	13	19	17	11	17	15	10	14	13	9
	D	0-7	Interior	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	31	32	32	28	32	32	24	32	29	20	32	25	18	30	22	15	26	19	13	23	17	12
			Exposed	32	32	32	32	32	30	32	32	27	32	32	24	32	31	22	32	28	20	32	26	18	30	22	15	26	19	13	22	16	11	19	14	10	17	12	13	15	11	12
		7-20	Interior	32	32	32	32	32	32	32	32	32	32	32	32	32	32	30	32	32	27	32	30	25	32	25	21	32	22	18	29	19	15	25	16	14	22	14	12	20	13	11
			Exposed	32	32	30	32	32	26	32	29	24	32	26	21	32	24	19	32	21	18	30	20	16	25	17	14	22	14	12	19	12	10	16	11	13	14	14	12	13	13	10
		20-27	Interior	43*	43*	43*	43*	43*	43*	43*	43*	43*	43*	43*	43*	43*	43*	38*	43*	43*	33	43*	37	29	43*	31	23	43*	26	19	40*	23	16	34	20	14	30	17	12	26	15	11
			Exposed	43*	43*	37	43*	41*	32	43*	35	27	43*	31	24	43*	28	21	43*	26	19	42*	24	17	34	20	14	29	17	12	25	15	10	22	13	9	19	11	8	17	10	10
		27-45	Interior	47*	47*	47*	47*	47*	47*	47*	47*	47*	47*	47*	47*	47*	47*	47*	45*	45*	42*	44*	44*	37*	41*	40*	30	38*	33	24	32	28	21	28	25	18	24	22	15	22	19	13
			Exposed	47*	47*	47*	47*	47*	40*	47*	47*	34	47*	42*	30	44*	36*	27	37*	33	24	33	30	22	28	25	18	24	22	15	21	19	12	18	16	11	16	14	9	14	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 HD	NXT COMBO	Flashloc DUO Rafter
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	20
			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	23	24	24	20	24	24	17	24	21	15	24	19	13
		7-20	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	23	24	24	20	24	22	18
			Exposed	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	21	17	24	18	15	24	16	13	22	14	12			
		20-27	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*	32*	34*	34*	26	34*	30*	22	34*	26	19			
			Exposed	34*	34*	34*	34*	34*	34*	34*	34*	34*	34*	34*	34*	34*	34*	34*	34*	34*	34*	34*	34*	33*	34*	34*	27	34*	29*	22	34*	25	18	34*	22	15	33*	19	13	29*	17	12
		27-45	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*	36*	36*	36*	35*	35*	33*	34*	34*	29*	32*	32*	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*	34*	38*	37*	28*	35*	32*	23	31*	28*	20	27	24	17	24	22	15
	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	21	24	24	18	24	23	16	24	20	14
			Exposed	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	16	24	19	14	23	17	12	20	15	10	18	13	14
		7-20	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	21	24	22	19	24	20	16	24	17	14	23	15	13
			Exposed	24	24	24	24	24	24	24	24	24	24	24	24	24	24	23	24	24	21	24	23	19	24	20	16	24	17	14	22	15	12	20	13	11	17	11	14	15	10	13
		20-27	Interior	34*	34*	34*	34*	34*	34*	34*	34*	34*	34*	34*	34*	34*	34*	34*	34*	34*	34*	34*	34*	34*	34*	34*	29*	34*	31*	24	34*	27	20	34*	24	17	33*	21	14	31*	18	13
			Exposed	34*	34*	34*	34*	34*	34*	34*	34*	34*	34*	34*	30*	34*	34*	27	34*	31*	24	34*	28	21	34*	24	17	34*	20	14	30*	18	12	26	15	11	23	14	9	21	12	8
		27-45	Interior	38*	38*	38*	38*	38*	38*	38*	38*	38*	38*	38*	38*	38*	38*	38*	38*	38*	38*	38*	38*	38*	36*	36*	36*	34*	34*	30*	33*	33*	25	31*	30*	22	29*	26	19	26	23	16
			Exposed	38*	38*	38*	38*	38*	38*	38*	38*	38*	38*	38*	33*	38*	38*	30*	38*	35*	27	33*	30*	22	29*	26	18	25	22	15	22	19	13	19	17	11	17	15	10			
	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	20	27	25	18	27	22	15	26	19	13	23	17	12			
			Exposed	27	27	27	27	27	27	27	27	27	24	27	27	22	27	27	20	27	26	18	27	22	15	26	19	13	22	16	11	19	14	10	17	12	13	15	11	12		
		7-20	Interior	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	25	27	25	21	27	22	18	27	19	15	25	16	14	22	14	12	20	13	11	
			Exposed	27	27	27	27	27	26	27	27	24	27	26	21	27	24	19	27	21	18	27	20	16	25	17	14	22	14	12	19	12	10	16	11	13	14	14	12	13	13	10
		20-27	Interior	37*	37*	37*	37*	37*	37*	37*	37*	37*	37*	37*	37*	37*	37*	37*	37*	37*	33*	37*	37*	29	37*	31	23	37*	26	19	36*	23	16	34*	20	14	30	17	12	26	15	11
			Exposed	37*	37*	37*	37*	37*	32*	37*	35*	27	37*	31	24	37*	28	21	37*	26	19	37*	24	17	34*	20	14	29	17	12	25	15	10	22	13	9	19	11	8	17	10	10
		27-45	Interior	42*	42*	42*	42*	42*	42*	42*	42*	42*	42*	42*	42*	41*	41*	41*	40*	40*	40*	39*	39*	36*	36*	36*	30	34*	33*	24	32*	28	21	28	25	18	24	22	15	22	19	13
			Exposed	42*	42*	42*	42*	42*	40*	42*	42*	34*	42*	42*	31*	41*	36*	27	37*	33*	24	33*	30	22	28	25	18	24	22	15	21	19	12	18	16	11	16	14	9	14	13	8
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	20
			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	20	21	21	17	21	21	15	21	19	13			
		7-20	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	20	21	21	18
			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	20	21	21	17	21	21	15	21	16	13	21	14	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*	29*	29*	29*	29*	29*	29*	29*	29*	29*	26*	29*	29*	22	29*	26*	19
			Exposed	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*	29*	22	29*	25*	18	29*	22	15	29*	19	13	29*	17	12
		27-45	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*	32*	32*	32*	31*	31*	28*	29*	29*	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*	28*	33*	32*	23	31*	28*	20	27*	24*	17	24*	22	15			
	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	21	21	21	21	21	21	18	21	21	16	21	20	14
			Exposed	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	16	21	19	14	21	17	12	20	15	10	18	13	14
		7-20	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	19	21	20	16	21	17	14	21	15	13
			Exposed	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	19	21	20	16	21	17	14	21	15	12	20	13	11	17	11	14	15	10	13
		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*	24	29*	27*	20	29*	24	17	29*	21	14	28*	18	13			
			Exposed	29*	29*	29*	29*	29*	29*	29*	29*	29*	29*	29*	29*	29*	29*	27*	29*	29*	24	29*	28*	21	29*	24	17	29*	20	14	29*	18	12	26*	15	11	23	14	9	21	12	8
		27-45	Interior	33*	33*	33*	33*	33*	33*	33*	33*	33*	33*	33*	33*	33*	33*	33*	33*	33*	33*	33*	33*	33*	32*	32*	32*	31*	31*	30*	30*	30*	26*	28*	28*	22	27*	26*	19	26*	23	16
			Exposed	33*	33*	33*	33*	33*	33*	33*	33*	33*	33*	33*	33*	33*	33*	33*	33*	33*	33*	33*	33*	27*	32*	30*	22	29*	26*	18	25*	22	15	22	19	13	19	17	11	17	15	10
	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	18	23	22	15	23	19	13	23	17	12			
			Exposed	23	23	23	23	23	23	23	23	23	23	23	23	23	23	22	23	23	20	23	23	18	23	22	15	23	19	13	22	16	11	19	14	10	17	12	13	15	11	12
		7-20	Interior	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	22	18	23	19	15	23	16	14	22	14	12	20	13	11
			Exposed	23	23	23	23	23	23	23	23	23	21	23	23	19	23	21	18	23	20	16	23	17	14	22	14	12	19	12	10	16	11	13	14	14	12	13	13	10		
		20-27	Interior	32*	32*	32*	32*	32*	32*	32*	32*	32*	32*	32*	32*	32*	32*	32*	32*	32*	32*	32*	32*	29*	32*	31*	23	32*	26	19	32*	23	16	31*	20	14	30*	17	12	26	15	11
			Exposed	32*	32*	32*	32*	32*	32*	32*	32*	27	32*	31*	24	32*	28*	21	32*	26	19	32*	24	17	32*	20	14	29*	17	12	25	15	10	22	13	9	19	11	8	17	10	10
		27-45	Interior	36*	36*	36*	36*	36*	36*	36*	36*	36*	36*	36*	36*	36*	36*	36*	35*	35*	35*	35*	35*	35*	33*	33*	30*	31*	31*	24	30*	29*	21	28*	25	18	24	22	15	22	19	13
			Exposed	36*	36*	36*	36*	36*	36*	36*	36*	34*	36*	36*	30*	36*	36*	27*	35*	33*	24	33*	30*	22	28*	25	18	24	22	15	21	19	12	18	16	11	16	14	9	14	13	8
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	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	18	18	18	17	18	18	15	18	18	13
		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	18	18	18	18	18	18	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	17	18	18	15	18	16	13	18	14	12
		20-27	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*	22*	26*	26*	19			
			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*	25*	18	26*	22*	15	26*	19	13	26*	17	12			
		27-45	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*	29*	28*	28*	28*	27*	27*	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*	28*	29*	29*	23*	29*	28*	20	27*	24*	17	24*	22*	15			
	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	16	18	18	14
			Exposed	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	12	18	15	10	18	13	14			
		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	18	18	17	14	18	15	13
			Exposed	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	12	18	13	11	17	11	14	15	10	13
		20-27	Interior	26*	26*	26*	26*	26*	26*	26*	26*	26*	26*	26*	26*	26*	26*	26*	26*	26*	26*	26*	26*	26*	26*	26*	24*	26*	26*	20	26*	24*	17	26*	21	14	26*	18	13			
			Exposed	26*	26*	26*	26*	26*	26*	26*	26*	26*	26*	26*	26*	26*	26*	24*	26*	26*	21	26*	24*	17	26*	20	14	26*	18	12	26*	15	11	23*	14	9	21	12	8			
		27-45	Interior	29*	29*	29*	29*	29*	29*	29*	29*	29*	29*	29*	29*	29*	29*	29*	29*	29*	29*	29*	29*	29*	28*	28*	28*	27*	27*	25*	26*	26*	22*	25*	25*	19	24*	23*	16			
			Exposed	29*	29*	29*	29*	29*	29*	29*	29*	29*	29*	29*	29*	29*	29*	27*	29*	29*	22*	28*	26*	18	25*	22*	15	22*	19	13	19	17	11	17	15	10						
	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	18	20	20	15	20	19	13	20	17	12			
			Exposed	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	10	17	12	13	15	11	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	18	20	19	15	20	16	14	20	14	12	20	13	11			
			Exposed	20	20	20	20	20	20	20	20	20	20	20	20	19	20	20	18	20	20	16	20	17	14	20	14	12	19	12	10	16	11	13	14	14	12	13	13	10		
		20-27	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*	26*	19	28*	23	16	28*	20	14	27*	17	12	26*	15	11
			Exposed	28*	28*	28*	28*	28*	28*	28*	28*	27*	28*	28*	24	28*	28*	21	28*	26*	19	28*	24	17	28*	20	14	28*	17	12	25*	15	10	22	13	9	19	11	8	17	10	10
		27-45	Interior	32*	32*	32*	32*	32*	32*	32*	32*	32*	32*	32*	32*	32*	32*	32*	32*	32*	32*	32*	32*	32*	30*	30*	30*	29*	29*	25*	28*	28*	21	26*	25*	18	25*	22	15	22	19	13
			Exposed	32*	32*	32*	32*	32*	32*	32*	32*	32*	32*	32*	30*	32*	32*	27*	32*	32*	24*	32*	30*	22	28*	25*	18	24*	22	15	21	19	12	18	16	11	16	14	9	14	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 HD	NXT COMBO	Flashloc DUO Rafter
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	16	15	16	16	13	16	16	13	16	16	13
		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	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	16	15	16	16	13	16	14	12	16	16	12
		20-27	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*	23*	23*	22*	23*	23*	19	23*	23*	19
			Exposed	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*	23*	23*	18	23*	22*	15	23*	19	13	23*	17	12
		27-45	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*	25*	25*	25*	25*	25*	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*	23*	26*	26*	20*	26*	24*	17	24*	22*	15	24*	22*	15
	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	16	16	16	16	16	16	14
			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	16	16	16	16	16	16	15	10	16	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	16	16	16	14	16	15	13
			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	15	12	16	11	14	16	15	10	16	13	13
		20-27	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*	20*	23*	23*	17	23*	21*	14	23*	18	13
			Exposed	23*	23*	23*	23*	23*	23*	23*	23*	23*	23*	23*	23*	23*	23*	23*	23*	23*	23*	23*	23*	21*	23*	23*	17	23*	20*	14	23*	18	12	23*	15	11	23*	14	9	21*	12	8
		27-45	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*	25*	25*	25*	24*	24*	22*	23*	23*	19*	22*	22*	16
			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*	26*	18	25*	22*	15	22*	19*	13	19*	17	11	17	15	10
	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	18	18	18	18	18	18	18	18	18	13	18	17	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	15	18	18	13	18	16	11	18	14	10	17	12	13	15	11	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	14	18	14	12	18	13	11
			Exposed	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	14	12	18	12	10	16	11	13	14	14	12	13	13	10
		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	25*	17	12	24*	15	11
			Exposed	25*	25*	25*	25*	25*	25*	25*	25*	25*	25*	25*	24*	25*	25*	21	25*	25*	19	25*	24*	17	25*	20	14	25*	17	12	25*	15	10	22*	13	9	19	11	8	17	10	10
		27-45	Interior	29*	29*	29*	29*	29*	29*	29*	29*	29*	29*	29*	29*	29*	29*	29*	29*	29*	29*	29*	29*	29*	28*	28*	28*	27*	27*	24*	26*	26*	21*	25*	25*	18	23*	22*	15	22*	19	13
			Exposed	29*	29*	29*	29*	29*	29*	29*	29*	29*	29*	29*	29*	29*	27*	29*	29*	24*	29*	29*	22*	28*	25*	18	24*	22*	15	21*	19	12	18	16	11	16	14	9	14	13	8			
100	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	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	15	15	15	15	15	15	15	15	15	15	15	15	13
		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	15	15	15	15	15	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	15	15	15	15	15	15	15	15	15	13	15	14	12
		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*	21*	21*	21*	21*	21*	21*	19*
			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*	21*	21*	21*	18*	21*	21*	15	21*	19*	13	21*	17	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*	23*	23*	23*	23*	23*	23*	23*	23*	23*
			Exposed	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*	20*	23*	23*	20*	23*	23*	17*	23*	22*	15			
	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	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	14	15	15	12	15	15	10	15	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	15	15	14	15	15	13
			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	15	12	15	13	11	15	11	14	15	10	13
		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*	20*	21*	21*	17	21*	21*	14	21*	18*	13
			Exposed	21*	21*	21*	21*	21*	21*	21*	21*	21*	21*	21*	21*	21*	21*	21*	21*	21*	21*	21*	21*	21*	21*	21*	17	21*	20*	14	21*	18*	12	21*	15	11	21*	14	9	21*	12	8
		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*	22*	22*	19*	21*	21*	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*	22*	23*	23*	18*	23*	22*	15	22*	19*	13	19*	17*	11	17*	15	10
	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	15	16	16	13	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	15	16	16	13	16	16	11	16	14	10	16	12	13	15	11	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	14	16	14	12	16	13	11
			Exposed	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	12	10	16	11	13	14	14	12	13	13	10
		20-27	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*	19	23*	23*	16	23*	20*	14	23*	17	12	22*	15	11
			Exposed	23*	23*	23*	23*	23*	23*	23*	23*	23*	23*	23*	23*	23*	23*	21*	23*	23*	19	23*	23*	17	23*	20*	14	23*	17	12	23*	15	10	22*	13	9	19	11	8	17	10	10
		27-45	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*	25*	25*	24*	24*	24*	21*	23*	23*	18	22*	22*	15	21*	20*	13
			Exposed	26*	26*	26*	26*	26*	26*	26*	26*	26*	26*	26*	26*	26*	26*	24*	26*	26*	22*	26*	25*	18	24*	22*	15	21*	19*	12	18	16	11	16	14	9	14	13	8			

#N/A

* 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 HD	NXT COMBO	Flashloc DUO Rafter
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) | | |

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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	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	44	45	45	35	45	45	30	45	38	26	45	33	23	42	29	20
			Exposed	45	45	45	45	45	45	45	45	45	45	45	45	45	45	39	45	45	34	45	45	31	45	38	26	45	32	23	39	28	20	33	24	17	29	21	15	26	19	13
		7-20	Interior	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	36	45	38	31	45	32	26	45	28	23	38	25	20	33	22	18
			Exposed	45	45	45	45	45	45	45	45	45	45	45	37	45	44	33	45	37	30	45	33	28	45	28	23	37	24	20	32	21	17	28	18	15	25	16	13	22	14	12
		20-27	Interior	56*	56*	56*	56*	56*	56*	56*	56*	56*	56*	56*	56*	56*	56*	56*	56*	56*	56*	56*	56*	56*	56*	56*	53*	56*	53*	39	56*	41	32	56*	34	26	56*	30	22	48	26	19
			Exposed	56*	56*	56*	56*	56*	56*	56*	56*	56*	56*	56*	56*	56*	56*	46	56*	51*	39	56*	44	33	56*	34	27	55*	29	22	45	25	18	38	22	15	33	19	13	29	17	12
		27-45	Interior	60*	60*	60*	60*	60*	60*	60*	60*	60*	60*	60*	60*	60*	60*	60*	60*	60*	60*	60*	60*	60*	60*	60*	60*	60*	60*	51*	59*	59*	40	55*	47	33	47	38	28	38	33	25
			Exposed	60*	60*	60*	60*	60*	60*	60*	60*	60*	60*	60*	60*	60*	60*	59*	60*	60*	50*	60*	60*	43	60*	49*	34	46	37	28	35	32	23	31	28	20	27	24	17	24	22	15
	C	0-7	Interior	45	45	45	45	45	45	45	45	45	45	45	45	45	45	43	45	45	37	45	45	34	45	42	28	45	34	24	44	30	21	36	26	18	31	23	16	28	20	14
			Exposed	45	45	43	45	45	36	45	45	32	45	44	29	45	38	26	45	34	24	45	31	22	36	26	18	31	22	16	27	19	14	23	17	12	20	15	10	18	13	14
		7-20	Interior	45	45	45	45	45	45	45	45	45	45	45	42	45	45	36	45	42	32	45	36	30	45	30	25	41	26	21	34	22	19	30	20	16	26	17	14	23	15	13
			Exposed	45	45	35	45	40	32	45	34	28	45	31	26	45	28	23	40	26	21	36	23	19	30	20	16	26	17	14	22	15	12	20	13	11	17	11	14	15	10	13
		20-27	Interior	56*	56*	56*	56*	56*	56*	56*	56*	56*	56*	56*	56*	56*	56*	53*	56*	56*	44	56*	50	37	56*	37	29	56*	31	24	50	27	20	42	24	17	36	21	14	32	18	13
			Exposed	56*	56*	52*	56*	56*	42	56*	46	35	56*	39	30	56*	34	27	56*	31	24	53*	28	21	42	24	17	35	20	14	30	18	12	26	15	11	23	14	9	21	12	8
		27-45	Interior	60*	60*	60*	60*	60*	60*	60*	60*	60*	60*	60*	60*	60*	60*	60*	60*	60*	56*	60*	60*	49*	57*	54*	37	53*	42	30	40	34	25	33	30	22	29	26	19	26	23	16
			Exposed	60*	60*	60*	60*	60*	54*	60*	60*	45	60*	56*	38	60*	47	33	51*	41	30	43	35	27	33	30	22	29	26	18	25	22	15	22	19	13	19	17	11	17	15	10
	D	0-7	Interior	48	48	48	48	48	48	48	48	45	48	48	38	48	48	34	48	48	31	48	42	28	48	34	24	42	29	20	34	25	18	30	22	15	26	19	13	23	17	12
			Exposed	48	48	34	48	46	30	48	39	27	48	34	24	47	31	22	41	28	20	36	26	18	30	22	15	26	19	13	22	16	11	19	14	10	17	12	13	15	11	12
		7-20	Interior	48	48	48	48	48	45	48	48	37	48	43	33	48	37	30	48	33	27	48	30	25	40	25	21	33	22	18	29	19	15	25	16	14	22	14	12	20	13	11
			Exposed	48	36	30	48	32	26	47	29	24	41	26	21	36	24	19	33	21	18	30	20	16	25	17	14	22	14	12	19	12	10	16	11	13	14	14	12	13	13	10
		20-27	Interior	60*	60*	60*	60*	60*	60*	60*	60*	55*	60*	60*	45	60*	50	38	60*	43	33	60*	37	29	58*	31	23	48	26	19	40	23	16	34	20	14	30	17	12	26	15	11
			Exposed	60*	50	37	60*	41	32	60*	35	27	60*	31	24	53	28	21	47	26	19	42	24	17	34	20	14	29	17	12	25	15	10	22	13	9	19	11	8	17	10	10
		27-45	Interior	64*	64*	64*	64*	64*	64*	64*	64*	64*	64*	64*	58*	64*	64*	49	63*	61*	42	61*	53*	36	52*	40	30	38	33	24	32	28	21	28	25	18	24	22	15	22	19	13
			Exposed	64*	64*	49	64*	59*	40	64*	49	34	53*	42	30	44	36	27	37	33	24	33	30	22	28	25	18	24	22	15	21	19	12	18	16	11	16	14	9	14	13	8
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	35	35	35	35	35	35	30	35	35	26	35	33	23	35	29	20	29	21	15
			Exposed	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	34	35	35	31	35	35	26	35	32	23	35	28	20	33	24	17	29	21	15	26	19	13
		7-20	Interior	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	31	36	32	26	36	28	23	36	25	20	33	22	18	29	19	15
			Exposed	36	36	36	36	36	36	36	36	36	36	36	36	36	36	33	36	36	30	36	33	28	36	28	23	36	24	20	32	21	17	28	18	15	25	16	13	22	14	12
		20-27	Interior	47*	47*	47*	47*	47*	47*	47*	47*	47*	47*	47*	47*	47*	47*	47*	47*	47*	47*	47*	47*	47*	47*	47*	39	47*	41	32	47*	34	26	47*	30	22	47*	26	19	29	17	12
			Exposed	47*	47*	47*	47*	47*	47*	47*	47*	47*	47*	47*	47*	47*	47*	46*	47*	47*	39	47*	44*	33	47*	34	27	47*	29	22	45*	25	18	38	22	15	33	19	13	29	17	12
		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*	49*	49*	41*	46*	46*	33	44*	38	28	38	33	25
			Exposed	51*	51*	51*	51*	51*	51*	51*	51*	51*	51*	51*	51*	51*	51*	51*	51*	51*	50*	51*	51*	43*	51*	48*	34	46*	37	28	35	32	23	31	28	20	27	24	17	24	22	15
	C	0-7	Interior	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	34	24	35	30	21	35	26	18	31	23	16	28	20	14
			Exposed	35	35	35	35	35	35	35	35	32	35	35	29	35	35	26	35	34	24	35	31	22	35	26	18	31	22	16	27	19	14	23	17	12	20	15	10	18	13	14
		7-20	Interior	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	32	36	36	30	36	30	25	36	26	21	34	22	19	30	20	16	26	17	14	23	15	13
			Exposed	36	36	35	36	36	32	36	34	28	36	31	26	36	28	23	36	26	21	36	23	19	30	20	16	26	17	14	22	15	12	20	13	11	17	11	14	15	10	13
		20-27	Interior	47*	47*	47*	47*	47*	47*	47*	47*	47*	47*	47*	47*	47*	47*	47*	47*	47*	44*	47*	47*	37	47*	37	29	47*	31	24	47*	27	20	42*	24	17	36	21	14	32	18	13
			Exposed	47*	47*	47*	47*	47*	42*	47*	46*	35	47*	39	30	47*	34	27	47*	31	24	47*	28	21	42*	24	17	35	20	14	30	18	12	26	15	11	23	14	9	21	12	8
		27-45	Interior	51*	51*	51*	51*	51*	51*	51*	51*	51*	51*	51*	51*	51*	51*	51*	51*	51*	51*	51*	51*	50*	50*	49*	48*	48*	48*	37	45*	42*	30	40*	34	25	33	30	22	29	26	16
			Exposed	51*	51*	51*	51*	51*	51*	51*	51*	45*	51*	51*	38	51*	47*	33	51*	41*	30	43*	35	27	33	30	22	29	26	18	25	22	15	22	19	13	19	17	11	17	15	10
	D	0-7	Interior	39	39	39	39	39	39	39	39	39	39	39	38	39	39	34	39	39	31	39	39	28	39	34	24	39	29	20	34	25	18	30	22	15	26	19	13	23	17	12
			Exposed	39	39	34	39	39	30	39	39	27	39	34	24	39	31	22	39	28	20	36	26	18	30	22	15	26	19	13	22	16	11	19	14	10	17	12	13	15	11	12
		7-20	Interior	40	40	40	40	40	40	40	40	37	40	40	33	40	37	30	40	33	27	40	30	25	40	25	21	33	22	18	29	19	15	25	16	14	22	14	12	20	13	11
			Exposed	40	36	30	40	32	26	40	29	24	40	26	21	36	24	19	33	21	18	30	20	16	25	17	14	22	14	12	19	12	10	16	11	13	14	14	12	13	13	10
		20-27	Interior	50*	50*	50*	50*	50*	50*	50*	50*	50*	50*	50*	45*	50*	50*	38	50*	43	33	50*	37	29	50*	31	23	48*	26	19	40	23	16	34	20	14	30	17	12	26	15	11
			Exposed	50*	50*	37	50*	41	32	50*	35	27	50*	31	24	50*	28	21	47*	26	19	42	24	17	34	20	14	29	17	12	25	15	10	22	13	9	19	11	8	17	10	10
		27-45	Interior	54*	54*	54*	54*	54*	54*	54*	54*	54*	54*	54*	54*	54*	54*	49*	53*	53*	42	51*	51*	36	48*	40	30	38	33	24	32	28	21	28	25	18	24	22	15	22	19	13
			Exposed	54*	54*	49*	54*	54*	40	54*	49*	34	53*	42	30	44*	36	27	37	33	24	33	30	22	28	25	18	24	22	15	21	19	12	18	16	11	16	14	9	14	13	8
50	B	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	26	29	29	23	29	29	20	29	24	17	29	21	15	26	19	13
			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	29	29	29	26	29	29	23	29	25	20	29	22	18
		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	26	29	28	23	29	25	20	29	22	18
			Exposed	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	28	29	28	23	29	24	20	29	21	17	28	18	15	25	16	13	22	14	12
		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*	39*	40*	40*	32	40*	34	26	40*	30	22	40*	26	19	29	17	12
			Exposed	40*	40*	40*	40*	40*	40*	40*	40*	40*	40*	40*	40*	40*	40*	40*	40*	40*	39*	40*	40*	33	40*	34	27	40*	29	22	40*	25	18	38*	22	15	33	19	13	29	17	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*	44*	43*	43*	43*	42*	42*	40*	40*	40*	33*	38*	38*	28	36*	33*	25
			Exposed	44*	44*	44*	44*	44*	44*	44*	44*	44*	44*	44*	44*	44*	44*	44*	44*	44*	44*	44*	44*	43*	44*	44*	34*	43*	37*	28	35*	32	23	31	28	20	27	24	17	24	22	15
	C	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	28	29	29	24	29	29	21	29	26	18	29	23	16	28	20	14
			Exposed	29	29	29	29	29	29	29	29	29	29	29	29	29	29	26	29	29	24	29	29	22	29	26	18	29	22	16	27	19	14	23	17	12	20	15	10	18	13	14
		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	25	29	26	21	29	22	19	29	20	16	26	17	14	23	15	13
			Exposed	29	29	29	29	29	29	29	29	28	29	29	26	29	28	23	29	26	21	29	23	19	29	20	16	26	17	14	22	15	12	20	13	11	17	11	14	15	10	13
		20-27	Interior	40*	40*	40*	40*	40*	40*	40*	40*	40*	40*	40*	40*	40*	40*	40*	40*	40*	40*	40*	40*	37*	40*	37*	29	40*	31	24	40*	27	20	38*	24	17	36*	21	14	32	18	13
			Exposed	40*	40*	40*	40*	40*	40*	40*	40*	35*	40*	39*	30	40*	34	27	40*	31	24	40*	28	21	40*	24	17	35*	20	14	30	18	12	26	15	11	23	14	9	21	12	8
		27-45	Interior	44*	44*	44*	44*	44*	44*	44*	44*	44*	44*	44*	44*	44*	44*	44*	44*	44*	44*	44*	44*	43*	43*	43*	41*	41*	41*	37*	39*	39*	30	37*	34*	25	33*	30	22	29	26	16
			Exposed	44*	44*	44*	44*	44*	44*	44*	44*	44*	44*	44*	38*	44*	44*	34*	44*	41*	30	43*	36*	27	34*	30	22	29	26	18	25	22	15	22	19	13	19	17	11	17	15	10
	D	0-7	Interior	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	31	32	32	28	32	32	24	32	29	20	32	25	18	30	22	15	26	19	13	23	17	12
			Exposed	32	32	32	32	32	30	32	32	27	32	32	24	32	31	22	32	28	20	32	26	18	30	22	15	26	19	13	22	16	11	19	14	10	17	12	13	15	11	12
		7-20	Interior	32	32	32	32	32	32	32	32	32	32	32	32	32	32	30	32	32	27	32	30	25	32	25	21	32	22	18	29	19	15	25	16	14	22	14	12	20	13	11
			Exposed	32	32	30	32	32	26	32	29	24	32	26	21	32	24	19	32	21	18	30	20	16	25	17	14	22	14	12	19	12	10	16	11	13	14	14	12	13	13	10
		20-27	Interior	43*	43*	43*	43*	43*	43*	43*	43*	43*	43*	43*	43*	43*	43*	38*	43*	43*	33	43*	37	29	43*	31	23	43*	26	19	40*	23	16	34	20	14	30	17	12	26	15	11
			Exposed	43*	43*	37	43*	41*	32	43*	35	27	43*	31	24	43*	28	21	43*	26	19	42*	24	17	34	20	14	29	17	12	25	15	10	22	13	9	19	11	8	17	10	10
		27-45	Interior	47*	47*	47*	47*	47*	47*	47*	47*	47*	47*	47*	47*	47*	47*	47*	45*	45*	42*	44*	44*	37*	41*	40*	30	38*	33	24	32	28	21	28	25	18	24	22	15	22	19	13
			Exposed	47*	47*	47*	47*	47*	40*	47*	47*	34	47*	42*	30	44*	36*	27	37*	33	24	33	30	22	28	25	18	24	22	15	21	19	12	18	16	11	16	14	9	14	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 HD	NXT COMBO	Flashloc DUO Rafter
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	20
			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	23	24	24	20	24	24	17	24	21	15	24	19	13
		7-20	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	23	24	24	20	24	22	18
			Exposed	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	21	17	24	18	15	24	16	13	22	14	12
		20-27	Interior	34*	34*	34*	34*	34*	34*	34*	34*	34*	34*	34*	34*	34*	34*	34*	34*	34*	34*	34*	34*	34*	34*	34*	32*	34*	34*	26	34*	30*	22	34*	26	19						
			Exposed	34*	34*	34*	34*	34*	34*	34*	34*	34*	34*	34*	34*	34*	34*	34*	34*	34*	34*	34*	34*	33*	34*	34*	27	34*	29*	22	34*	25	18	34*	22	15	33*	19	13	29*	17	12
		27-45	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*	36*	36*	36*	35*	35*	33*	34*	34*	29*	32*	32*	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*	34*	38*	37*	28*	35*	32*	23	31*	28*	20	27	24	17	24	22	15
	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	21	24	24	18	24	23	16	24	20	14
			Exposed	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	16	24	19	14	23	17	12	20	15	10	18	13	14
		7-20	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	21	24	22	19	24	20	16	24	17	14	23	15	13
			Exposed	24	24	24	24	24	24	24	24	24	24	24	24	24	24	23	24	24	21	24	23	19	24	20	16	24	17	14	22	15	12	20	13	11	17	11	14	15	10	13
		20-27	Interior	34*	34*	34*	34*	34*	34*	34*	34*	34*	34*	34*	34*	34*	34*	34*	34*	34*	34*	34*	34*	34*	34*	34*	29*	34*	31*	24	34*	27	20	34*	24	17	33*	21	14	31*	18	13
			Exposed	34*	34*	34*	34*	34*	34*	34*	34*	34*	34*	34*	30*	34*	34*	27	34*	31*	24	34*	28	21	34*	24	17	34*	20	14	30*	18	12	26	15	11	23	14	9	21	12	8
		27-45	Interior	38*	38*	38*	38*	38*	38*	38*	38*	38*	38*	38*	38*	38*	38*	38*	38*	38*	38*	38*	38*	38*	36*	36*	36*	34*	34*	30*	33*	33*	25	31*	30*	22	29*	26	19	26	23	16
			Exposed	38*	38*	38*	38*	38*	38*	38*	38*	38*	38*	38*	33*	38*	38*	30*	38*	35*	27	33*	30*	22	29*	26	18	25	22	15	22	19	13	19	17	11	17	15	10			
	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	24	27	27	20	27	25	18	27	22	15	26	19	13	23	17	12		
			Exposed	27	27	27	27	27	27	27	27	27	27	27	24	27	27	22	27	27	20	27	26	18	27	22	15	26	19	13	22	16	11	19	14	10	17	12	13	15	11	12
		7-20	Interior	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	25	27	25	21	27	22	18	27	19	15	25	16	14	22	14	12	20	13	11
			Exposed	27	27	27	27	27	26	27	27	24	27	26	21	27	24	19	27	21	18	27	20	16	25	17	14	22	14	12	19	12	10	16	11	13	14	14	12	13	13	10
		20-27	Interior	37*	37*	37*	37*	37*	37*	37*	37*	37*	37*	37*	37*	37*	37*	37*	37*	37*	33*	37*	37*	29	37*	31	23	37*	26	19	36*	23	16	34*	20	14	30	17	12	26	15	11
			Exposed	37*	37*	37*	37*	37*	32*	37*	35*	27	37*	31	24	37*	28	21	37*	26	19	37*	24	17	34*	20	14	29	17	12	25	15	10	22	13	9	19	11	8	17	10	10
		27-45	Interior	42*	42*	42*	42*	42*	42*	42*	42*	42*	42*	42*	42*	41*	41*	41*	40*	40*	40*	39*	39*	36*	36*	36*	30	34*	33*	24	32*	28	21	28	25	18	24	22	15	22	19	13
			Exposed	42*	42*	42*	42*	42*	40*	42*	42*	34*	42*	42*	31*	41*	36*	27	37*	33*	24	33*	30	22	28	25	18	24	22	15	21	19	12	18	16	11	16	14	9	14	13	8
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	20
			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	20	21	21	17	21	21	15	21	19	13			
		7-20	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	20	21	21	18
			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	20	21	21	17	21	18	15	21	16	13	21	14	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*	29*	29*	29*	29*	29*	29*	29*	29*	29*	26*	29*	29*	22	29*	26*	19
			Exposed	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*	29*	22	29*	25*	18	29*	22	15	29*	19	13	29*	17	12
		27-45	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*	32*	32*	32*	31*	31*	28*	29*	29*	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*	28*	33*	32*	23	31*	28*	20	27*	24*	17	24*	22	15			
	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	21	21	21	21	21	21	18	21	21	16	21	20	14
			Exposed	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	16	21	19	14	21	17	12	20	15	10	18	13	14
		7-20	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	19	21	20	16	21	17	14	21	15	13
			Exposed	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	19	21	20	16	21	17	14	21	15	12	20	13	11	17	11	14	15	10	13
		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*	24	29*	27*	20	29*	24	17	29*	21	14	28*	18	13			
			Exposed	29*	29*	29*	29*	29*	29*	29*	29*	29*	29*	29*	27*	29*	29*	24	29*	28*	21	29*	24	17	29*	20	14	29*	18	12	26*	15	11	23	14	9	21	12	8			
		27-45	Interior	33*	33*	33*	33*	33*	33*	33*	33*	33*	33*	33*	33*	33*	33*	33*	33*	33*	33*	33*	33*	33*	32*	32*	32*	32*	32*	32*	32*	32*	32*	28*	28*	28*	27*	27*	22*	26*	26*	19
			Exposed	33*	33*	33*	33*	33*	33*	33*	33*	33*	33*	33*	30*	33*	33*	27*	32*	30*	22	29*	26*	18	25*	22	15	22	19	13	19	17	11	17	15	10						
	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	18	23	22	15	23	19	13	23	17	12			
			Exposed	23	23	23	23	23	23	23	23	23	23	23	23	23	23	22	23	23	20	23	23	18	23	22	15	23	19	13	22	16	11	19	14	10	17	12	13	15	11	12
		7-20	Interior	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	22	18	23	19	15	23	16	14	22	14	12	20	13	11
			Exposed	23	23	23	23	23	23	23	23	23	23	21	23	23	19	23	21	18	23	20	16	23	17	14	22	14	12	19	12	10	16	11	13	14	14	12	13	13	10	
		20-27	Interior	32*	32*	32*	32*	32*	32*	32*	32*	32*	32*	32*	32*	32*	32*	32*	32*	32*	32*	32*	32*	29*	32*	31*	23	32*	26	19	32*	23	16	31*	20	14	30*	17	12	26	15	11
			Exposed	32*	32*	32*	32*	32*	32*	32*	32*	27	32*	31*	24	32*	28*	21	32*	26	19	32*	24	17	32*	20	14	29*	17	12	25	15	10	22	13	9	19	11	8	17	10	10
		27-45	Interior	36*	36*	36*	36*	36*	36*	36*	36*	36*	36*	36*	36*	36*	36*	36*	35*	35*	35*	35*	35*	35*	33*	33*	30*	31*	31*	24	30*	29*	21	28*	25	18	24	22	15	22	19	13
			Exposed	36*	36*	36*	36*	36*	36*	36*	36*	34*	36*	36*	30*	36*	36*	27*	35*	33*	24	33*	30*	22	28*	25	18	24	22	15	21	19	12	18	16	11	16	14	9	14	13	8
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	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	18	18	18	17	18	18	15	18	18	13
		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	18	18	18	18	18	18	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	17	18	18	15	18	16	13	18	14	12
		20-27	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*	19
			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*	25*	18	26*	22*	15	26*	19	13	26*	17	12			
		27-45	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*	29*	28*	28*	28*	27*	27*	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*	28*	29*	29*	23*	29*	28*	20	27*	24*	17	24*	22*	15			
	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	16	18	18	14
			Exposed	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	12	18	15	10	18	13	14			
		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	16	18	17	14	18	15	13
			Exposed	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	12	18	13	11	17	11	14	15	10	13			
		20-27	Interior	26*	26*	26*	26*	26*	26*	26*	26*	26*	26*	26*	26*	26*	26*	26*	26*	26*	26*	26*	26*	26*	26*	26*	24*	26*	26*	20	26*	24*	17	26*	21	14	26*	18	13			
			Exposed	26*	26*	26*	26*	26*	26*	26*	26*	26*	26*	26*	26*	26*	26*	24*	26*	26*	21	26*	24*	17	26*	20	14	26*	18	12	26*	15	11	23*	14	9	21	12	8			
		27-45	Interior	29*	29*	29*	29*	29*	29*	29*	29*	29*	29*	29*	29*	29*	29*	29*	29*	29*	29*	29*	29*	29*	28*	28*	28*	27*	27*	25*	26*	26*	22*	25*	25*	19	24*	23*	16			
			Exposed	29*	29*	29*	29*	29*	29*	29*	29*	29*	29*	29*	27*	29*	29*	22*	28*	26*	18	25*	22*	15	22*	19	13	19	17	11	17	15	10									
	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	18	20	20	15	20	19	13	20	17	12			
			Exposed	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	10	17	12	13	15	11	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	18	20	19	15	20	16	14	20	14	12	20	13	11			
			Exposed	20	20	20	20	20	20	20	20	20	20	20	19	20	20	18	20	20	16	20	17	14	20	14	12	19	12	10	16	11	13	14	12	13	13	10				
		20-27	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*	26*	19	28*	23	16	28*	20	14	27*	17	12	26*	15	11
			Exposed	28*	28*	28*	28*	28*	28*	28*	28*	27*	28*	28*	24	28*	28*	21	28*	26*	19	28*	24	17	28*	20	14	28*	17	12	25*	15	10	22	13	9	19	11	8	17	10	10
		27-45	Interior	32*	32*	32*	32*	32*	32*	32*	32*	32*	32*	32*	32*	32*	32*	32*	32*	32*	32*	32*	32*	32*	30*	30*	30*	29*	29*	25*	28*	28*	21	26*	25*	18	25*	22	15	22	19	13
			Exposed	32*	32*	32*	32*	32*	32*	32*	32*	32*	32*	32*	30*	32*	32*	27*	32*	32*	24*	32*	30*	22	28*	25*	18	24*	22	15	21	19	12	18	16	11	16	14	9	14	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 HD	NXT COMBO	Flashloc DUO Rafter
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	16	16	15	16	16	13	16	16	13
		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	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	15	16	16	13	16	14	12		
		20-27	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*	23*	23*	22*	23*	23*	19			
			Exposed	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*	23*	23*	18	23*	22*	15	23*	19	13	23*	17	12
		27-45	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*	25*	25*	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*	23*	26*	26*	20*	26*	24*	17	24*	22*	15		
	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	16	16	16	16	16	16	14
			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	16	16	16	16	15	10	16	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	16	14	16	15	13		
			Exposed	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	11	16	11	14	15	10	13			
		20-27	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*	20*	23*	23*	17	23*	21*	14	23*	18	13			
			Exposed	23*	23*	23*	23*	23*	23*	23*	23*	23*	23*	23*	23*	23*	23*	23*	23*	23*	23*	23*	23*	21*	23*	23*	17	23*	20*	14	23*	18	12	23*	15	11	23*	14	9	21*	12	8
		27-45	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*	25*	25*	25*	24*	24*	22*	23*	23*	19*	22*	22*	16
			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*	26*	18	25*	22*	15	22*	19*	13	19*	17	11	17	15	10
	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	18	18	18	18	18	18	18	13	18	17	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	15	18	18	13	18	16	11	18	14	10	17	12	13	15	11	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	14	18	14	12	18	13	11
			Exposed	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	14	12	18	12	10	16	11	13	14	14	12	13	13	10
		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	25*	17	12	24*	15	11
			Exposed	25*	25*	25*	25*	25*	25*	25*	25*	25*	25*	25*	24*	25*	25*	21	25*	25*	19	25*	24*	17	25*	20	14	25*	17	12	25*	15	10	22*	13	9	19	11	8	17	10	10
		27-45	Interior	29*	29*	29*	29*	29*	29*	29*	29*	29*	29*	29*	29*	29*	29*	29*	29*	29*	29*	29*	29*	29*	28*	28*	28*	27*	27*	24*	26*	26*	21*	25*	25*	18	23*	22*	15	22*	19	13
			Exposed	29*	29*	29*	29*	29*	29*	29*	29*	29*	29*	29*	29*	29*	27*	29*	29*	24*	29*	29*	22*	28*	25*	18	24*	22*	15	21*	19	12	18	16	11	16	14	9	14	13	8		
100	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	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	15	15	15	15	15	15	15	15	15	15	15	15	13
		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	15	15	15	15	15	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	15	15	15	15	15	15	13	15	14	12			
		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*	21*	21*	21*	19*			
			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*	21*	21*	21*	18*	21*	21*	15	21*	19*	13	21*	17	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*	23*	23*	23*	23*	23*	23*	23*	23*	23*
			Exposed	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*	20*	23*	23*	17*	23*	23*	17*	23*	22*	15		
	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	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	14	15	15	12	15	15	10	15	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	13		
			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	15	13	11	15	11	14	15	10	13			
		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*	17	21*	20*	14	21*	18*	12	21*	15	11	21*	14	9	21*	12	8
			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*	17	21*	21*	14	21*	18*	13	21*	21*	14	21*	18*	13
		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*	22*	22*	22*	21*	21*	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*	22*	23*	23*	18*	23*	22*	15	22*	19*	13	19*	17*	11	17*	15	10
	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	15	16	16	13	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	15	16	16	13	16	16	11	16	14	10	16	12	13	15	11	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	14	16	14	12	16	13	11
			Exposed	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	12	16	12	10	16	11	13	14	14	12	13	13	10
		20-27	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*	19	23*	23*	16	23*	20*	14	23*	17	12	22*	11	11
			Exposed	23*	23*	23*	23*	23*	23*	23*	23*	23*	23*	23*	23*	23*	23*	21*	23*	23*	19	23*	23*	17	23*	20*	14	23*	17	12	23*	15	10	22*	13	9	19	11	8	17	10	10
		27-45	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*	25*	25*	24*	24*	24*	21*	23*	23*	18	22*	22*	15	21*	20*	13
			Exposed	26*	26*	26*	26*	26*	26*	26*	26*	26*	26*	26*	26*	26*	26*	24*	26*	26*	22*	26*	25*	18	24*	22*	15	21*	19*	12	18	16	11	16	14	9	14	13	8			

#N/A

* 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 HD	NXT COMBO	Flashloc DUO Rafter
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	155	155	155	155	155	155	155	155	155	155	155	155	155	155	155	155	155	155	155	155	151	155	155	138	155	146	76	155	136	59	149	88	52	140	64	45	113	57	40
			Exposed	155	155	155	155	155	155	155	155	148	155	155	140	155	152	110	155	145	72	155	139	62	150	90	52	139	63	45	97	55	39	66	48	34	58	42	30	51	37	26
		7-20	Interior	155	155	155	155	155	155	155	155	155	155	155	155	155	155	155	155	155	155	155	155	141	155	142	60	155	63	52	155	55	45	81	48	40	66	43	36			
			Exposed	155	155	155	155	155	155	155	155	153	155	155	143	155	149	65	155	141	59	155	68	54	155	56	46	78	48	39	63	41	34	55	36	30	48	32	26	43	28	23
		20-27	Interior	156	156	156	156	156	156	156	156	156	156	156	156	156	156	156	156	156	156	156	156	156	156	156	150	156	142	63	156	71	52	148	59	44	139	52	38			
			Exposed	156	156	156	156	156	156	156	156	156	156	156	156	156	156	155	156	154	149	156	146	142	156	76	53	146	57	43	136	50	36	81	44	30	65	38	26	58	34	23
		27-45	Interior	156	156	156	156	156	156	156	156	156	156	156	156	156	156	156	156	156	156	156	156	156	156	156	156	156	156	150	156	155	138	156	144	69	156	135	56	148	65	49
			Exposed	156	156	156	156	156	156	156	156	156	156	156	156	156	156	156	156	156	149	156	156	142	156	145	72	156	105	55	144	62	46	61	55	39	54	48	34	48	43	29
	C	0-7	Interior	155	155	155	155	155	155	155	155	154	155	155	145	155	155	138	155	150	97	155	144	68	155	115	56	144	72	48	128	59	41	79	51	36	62	45	32	55	40	28
			Exposed	155	155	138	155	148	86	155	141	63	155	126	57	150	89	52	143	69	47	137	61	43	82	52	37	61	44	31	53	38	27	46	34	24	40	30	21	36	26	19
		7-20	Interior	155	155	155	155	155	155	155	155	155	155	155	150	155	155	141	155	147	64	155	139	58	155	60	49	89	51	42	69	44	37	59	39	32	52	34	28	46	30	25
			Exposed	155	155	140	155	145	62	155	84	56	155	61	50	155	55	46	87	50	42	74	46	38	60	39	32	51	34	28	44	29	24	39	25	21	34	22	19	30	20	25
		20-27	Interior	156	156	156	156	156	156	156	156	156	156	156	156	156	156	156	156	156	154	156	152	148	156	138	58	152	62	47	141	53	39	91	47	33	73	41	28	62	37	25
			Exposed	156	156	156	156	156	152	156	148	144	156	140	60	156	74	53	151	61	47	144	56	42	95	47	34	71	40	28	60	35	24	52	31	21	46	27	19	41	24	16
		27-45	Interior	156	156	156	156	156	156	156	156	156	156	156	156	156	156	156	156	156	155	156	156	147	156	150	112	156	139	60	151	72	50	65	58	43	58	52	37	51	46	32
			Exposed	156	156	156	156	156	152	156	156	144	156	152	136	156	145	70	156	138	59	156	86	53	72	59	43	56	51	36	49	44	30	43	38	26	38	34	22	34	30	20
	D	0-7	Interior	155	155	155	155	155	148	155	155	140	155	151	104	155	144	70	155	138	61	155	111	55	142	68	47	111	57	40	71	49	35	59	43	30	52	38	27	46	34	24
			Exposed	155	144	69	155	136	59	152	96	53	144	72	48	137	61	44	106	56	40	80	51	36	59	43	31	51	37	26	44	32	23	39	28	20	34	25	18	30	22	24
		7-20	Interior	155	155	155	155	155	153	155	155	143	155	148	65	155	140	59	155	65	53	155	59	49	85	50	41	66	43	35	57	37	31	50	32	27	44	29	24	39	25	21
			Exposed	155	140	58	155	63	52	155	57	47	89	51	42	75	46	38	65	42	35	59	39	32	50	33	27	43	28	23	37	24	20	32	21	18	29	19	24	25	25	21
		20-27	Interior	156	156	156	156	156	156	156	156	156	156	156	155	156	153	148	156	145	71	156	137	57	150	60	46	138	52	38	85	45	32	68	39	27	59	35	24	52	31	21
			Exposed	156	152	148	156	143	63	156	86	54	152	62	47	144	56	42	138	51	37	92	47	33	69	40	27	58	34	23	50	29	20	44	26	18	39	23	16	34	20	14
		27-45	Interior	156	156	156	156	156	156	156	156	156	156	156	156	156	156	148	156	156	140	156	150	102	156	137	58	148	65	48	63	56	41	55	49	35	48	43	30	43	38	26
			Exposed	156	156	147	156	155	139	156	146	78	156	139	60	156	89	53	147	64	48	66	59	43	55	50	35	47	43	29	41	37	25	36	32	21	32	29	18	28	25	16
10	B	0-7	Interior	135	135	135	135	135	135	135	135	135	135	135	135	135	135	135	135	135	135	135	135	135	135	135	135	135	135	76	135	135	59	135	88	52	135	64	45	113	57	40
			Exposed	135	135	135	135	135	135	135	135	135	135	135	135	135	135	110	135	135	72	135	135	62	135	90	52	135	63	45	97	55	39	66	48	34	58	42	30	51	37	26
		7-20	Interior	136	136	136	136	136	136	136	136	136	136	136	136	136	136	136	136	136	136	136	136	136	136	136	136	136	136	60	136	63	52	136	55	45	81	48	40	66	43	36
			Exposed	136	136	136	136	136	136	136	136	136	136	136	136	136	136	65	136	136	59	136	68	54	136	56	46	78	48	39	63	41	34	55	36	30	48	32	26	43	28	23
		20-27	Interior	146	146	146	146	146	146	146	146	146	146	146	146	146	146	146	146	146	146	146	146	146	146	146	146	146	146	142	146	142	63	146	71	52	146	59	44	139	52	38
			Exposed	146	146	146	146	146	146	146	146	146	146	146	146	146	146	146	146	146	146	146	146	142	146	76	53	146	57	43	136	50	36	81	44	30	65	38	26	58	34	23
		27-45	Interior	150	150	150	150	150	150	150	150	150	150	150	150	150	150	150	150	150	150	150	150	150	150	150	150	150	150	150	150	150	138	150	144	69	150	135	56	148	65	49
			Exposed	150	150	150	150	150	150	150	150	150	150	150	150	150	150	150	150	150	149	150	150	142	150	145	72	150	105	55	144	62	46	61	55	39	54	48	34	48	43	29
	C	0-7	Interior	135	135	135	135	135	135	135	135	135	135	135	135	135	135	135	135	135	97	135	135	68	135	115	56	135	72	48	128	59	41	79	51	36	62	45	32	55	40	28
			Exposed	135	135	135	135	135	86	135	135	63	135	126	57	135	89	52	135	69	47	135	61	43	82	52	37	61	44	31	53	38	27	46	34	24	40	30	21	36	26	19
		7-20	Interior	136	136	136	136	136	136	136	136	136	136	136	136	136	136	136	136	136	64	136	136	58	136	60	49	89	51	42	69	44	37	59	39	32	52	34	28	46	30	25
			Exposed	136	136	136	136	136	62	136	84	56	136	61	50	136	55	46	87	50	42	74	46	38	60	39	32	51	34	28	44	29	24	39	25	21	34	22	19	30	20	25
		20-27	Interior	146	146	146	146	146	146	146	146	146	146	146	146	146	146	146	146	146	146	146	146	146	146	146	138	58	146	62	47	141	53	39	91	47	33	73	41	28	62	37	25
			Exposed	146	146	146	146	146	146	146	146	144	146	140	60	146	74	53	146	61	47	144	56	42	95	47	34	71	40	28	60	35	24	52	31	21	46	27	19	41	24	16
		27-45	Interior	150	150	150	150	150	150	150	150	150	150	150	150	150	150	150	150	150	150	150	150	147	150	150	112	150	139	60	150	72	50	65	58	43	58	52	37	51	46	32
			Exposed	150	150	150	150	150	150	150	150	144	150	150	136	150	145	70	150	138	59	150	86	53	72	59	43	56	51	36	49	44	30	43	38	26	38	34	22	34	30	20
	D	0-7	Interior	135	135	135	135	135	135	135	135	135	135	135	104	135	135	70	135	135	61	135	111	55	135	68	47	111	57	40	71	49	35	59	43	30	52	38	27	46	34	24
			Exposed	135	135	69	135	135	59	135	96	53	135	72	48	135	61	44	106	56	40	80	51	36	59	43	31	51	37	26	44	32	23	39	28	20	34	25	18	30	22	24
		7-20	Interior	136	136	136	136	136	136	136	136	136	136	136	65	136	136	59	136	65	53	136	59	49	85	50	41	66	43	35	57	37	31	50	32	27	44	29	24	39	25	21
			Exposed	136	136	58	136	63	52	136	57	47	89	51	42	75	46	38	65	42	35	59	39	32	50	33	27	43	28	23	37	24	20	32	21	18	29	19	24	25	25	21
		20-27	Interior	148	148	148	148	148	148	148	148	148	148	148	148	148	148	148	148	145	71	148	137	57	148	60	46	138	52	38	85	45	32	68	39	27	59	35	24	52	31	21
			Exposed	148	148	148	148	143	63	148	86	54	148	62	47	144	56	42	138	51	37	92	47	33	69	40	27	58	34	23	50	29	20	44	26	18	39	23	16	34	20	14
		27-45	Interior	152	152	152	152	152	152	152	152	152	152	152	152	152	152	148	152	152	140	152	150	102	152	137	58	148	65	48	63	56	41	55	49	35	48	43	30	43	38	26
			Exposed	152	152	147	152	152	139	152	146	78	152	139	60	152	89	53	147	64	48	66	59	43	55	50	35	47	43	29	41	37	25	36	32	21	32	29	18	28	25	16
20	B	0-7	Interior	101	101	101	101	101	101	101	101	101	101	101	101	101	101	101	101	101	101	101	101	101	101	101	101	101	101	76	101	101	59	101	88	52	101	64	45	101	57	40
			Exposed	101	101	101	101	101	101	101	101	101	101	101	101	101	101	101	101	101	72	101	101	62	101	90	52	101	63	45	97	55	39	66	48	34	58	42	30	51	37	26
		7-20	Interior	102	102	102	102	102	102	102	102	102	102	102	102	102	102	102	102	102	102	102	102	102	102	102	102	102	102	60	102	63	52	102	55	45	81	48	40	66	43	36
			Exposed	102	102	102	102	102	102	102	102	102	102	102	102	102	102	65	102	102	59	102	68	54	102	56	46	78	48	39	63	41	34	55	36	30	48	32	26	43	28	23
		20-27	Interior	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	63	127	71	52	127	59	44	127	52	38
			Exposed	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	76	53	127	57	43	127	50	36	81	44	30	65	38	26	58	34	23
		27-45	Interior	140*	140*	140*	140*	140*	140*	140*	140*	140*	140*	140*	140*	140*	140*	140*	140*	140*	140*	140*	140*	140*	140*	140*	140*	140*	140*	140*	140*	140*	139*	140*	140*	69	140*	135	56	140*	65	49
			Exposed	140*	140*	140*	140*	140*	140*	140*	140*	140*	140*	140*	140*	140*	140*	140*	140*	140*	140*	140*	140*	140*	140*	140*	72	140*	105	55	140*	62	46	61	55	39	54	48	34	48	43	29
	C	0-7	Interior	101	101	101	101	101	101	101	101	101	101	101	101	101	101	101	101	101	97	101	101	68	101	101	56	101	72	48	101	59	41	79	51	36	62	45	32	55	40	28
			Exposed	101	101	101	101	101	86	101	101	63	101	101	57	101	89	52	101	69	47	101	61	43	82	52	37	61	44	31	53	38	27	46	34	24	40	30	21	36	26	19
		7-20	Interior	102	102	102	102	102	102	102	102	102	102	102	102	102	102	102	102	102	64	102	102	58	102	60	49	89	51	42	69	44	37	59	39	32	52	34	28	46	30	25
			Exposed	102	102	102	102	102	62	102	84	56	102	61	50	102	55	46	87	50	42	74	46	38	60	39	32	51	34	28	44	29	24	39	25	21	34	22	19	30	20	25
		20-27	Interior	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	58	127	62	47	127	53	39	91	47	33	73	41	28	62	37	25
			Exposed	127	127	127	127	127	127	127	127	127	127	127	60	127	74	53	127	61	47	127	56	42	95	47	34	71	40	28	60	35	24	52	31	21	46	27	19	41	24	16
		27-45	Interior	140*	140*	140*	140*	140*	140*	140*	140*	140*	140*	140*	140*	140*	140*	140*	140*	140*	140*	140*	140*	140*	140*	140*	112	140*	139*	60	140*	72	50	65	58	43	58	52	37	51	46	32
			Exposed	140*	140*	140*	140*	140*	140*	140*	140*	140*	140*	140*	137*	140*	140*	70	140*	138*	59	140*	86	53	72	59	43	56	51	36	49	44	30	43	38	26	38	34	22	34	30	20
	D	0-7	Interior	101	101	101	101	101	101	101	101	101	101	101	101	101	101	70	101	101	61	101	101	55	101	68	47	101	57	40	71	49	35	59	43	30	52	38	27	46	34	24
			Exposed	101	101	69	101	101	59	101	96	53	101	72	48	101	61	44	101	56	40	80	51	36	59	43	31	51	37	26	44	32	23	39	28	20	34	25	18	30	22	24
		7-20	Interior	102	102	102	102	102	102	102	102	102	102	102	65	102	102	59	102	65	53	102	59	49	85	50	41	66	43	35	57	37	31	50	32	27	44	29	24	39	25	21
			Exposed	102	102	58	102	63	52	102	57	47	89	51	42	75	46	38	65	42	35	59	39	32	50	33	27	43	28	23	37	24	20	32	21	18	29	19	24	25	25	21
		20-27	Interior	131	131	131	131	131	131	131	131	131	131	131	131	131	131	131	131	131	71	131	131	57	131	60	46	131	52	38	85	45	32	68	39	27	59	35	24	52	31	21
			Exposed	131	131	131	131	131	63	131	86	54	131	62	47	131	56	42	131	51	37	92	47	33	69	40	27	58	34	23	50	29	20	44	26	18	39	23	16	34	20	14
		27-45	Interior	148*	148*	148*	148*	148*	148*	148*	148*	148*	148*	148*	148*	148*	148*	148*	148*	148*	139	148*	148*	102	148*	137	58	148*	65	48	63	56	41	55	49	35	48	43	30	43	38	26
			Exposed	148*	148*	148*	148*	148*	139	148*	139	78	148*	139	60	148*	89	53	139	64	48	66	59	43	55	50	35	47	43	29	41	37	25	36	32	21	32	29	18	28	25	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 HD	NXT COMBO	Flashloc DUO Rafter
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	87	87	87	87	87	87	87	87	87	87	87	87	87	87	87	87	87	87	87	87	87	87	87	87	87	87	76	87	87	59	87	87	52	87	64	45	87	57	40
			Exposed	87	87	87	87	87	87	87	87	87	87	87	87	87	87	87	87	87	72	87	87	62	87	87	52	87	63	45	87	55	39	66	48	34	58	42	30	51	37	26
		7-20	Interior	88	88	88	88	88	88	88	88	88	88	88	88	88	88	88	88	88	88	88	88	88	88	88	88	88	88	60	88	63	52	88	55	45	81	48	40	66	43	36
			Exposed	88	88	88	88	88	88	88	88	88	88	88	88	88	88	65	88	88	59	88	68	54	88	56	46	78	48	39	63	41	34	55	36	30	48	32	26	43	28	23
		20-27	Interior	109*	109*	109*	109*	109*	109*	109*	109*	109*	109*	109*	109*	109*	109*	109*	109*	109*	109*	109*	109*	109*	109*	109*	109*	109*	109*	109*	109*	109*	63	109*	71	52	109*	59	44	109*	52	38
			Exposed	109*	109*	109*	109*	109*	109*	109*	109*	109*	109*	109*	109*	109*	109*	109*	109*	109*	109*	109*	109*	109*	109*	109*	109*	109*	76	53	109*	57	43	109*	50	36	81	44	30	65	38	26	58	34	23
		27-45	Interior	118*	118*	118*	118*	118*	118*	118*	118*	118*	118*	118*	118*	118*	118*	118*	118*	118*	118*	118*	118*	118*	118*	118*	118*	118*	118*	118*	118*	118*	118*	118*	118*	69	116*	116*	56	109*	65	49
			Exposed	118*	118*	118*	118*	118*	118*	118*	118*	118*	118*	118*	118*	118*	118*	118*	118*	118*	118*	118*	118*	118*	118*	118*	118*	72	118*	105*	55	118*	62	46	61	55	39	54	48	34	48	43	29
	C	0-7	Interior	87	87	87	87	87	87	87	87	87	87	87	87	87	87	87	87	87	87	87	87	68	87	87	56	87	72	48	87	59	41	79	51	36	62	45	32	55	40	28
			Exposed	87	87	87	87	87	86	87	87	63	87	87	57	87	87	52	87	69	47	87	61	43	82	52	37	61	44	31	53	38	27	46	34	24	40	30	21	36	26	19
		7-20	Interior	88	88	88	88	88	88	88	88	88	88	88	88	88	88	88	88	88	64	88	88	58	88	60	49	88	51	42	69	44	37	59	39	32	52	34	28	46	30	25
			Exposed	88	88	88	88	88	62	88	84	56	88	61	50	88	55	46	87	50	42	74	46	38	60	39	32	51	34	28	44	29	24	39	25	21	34	22	19	30	20	25
		20-27	Interior	109*	109*	109*	109*	109*	109*	109*	109*	109*	109*	109*	109*	109*	109*	109*	109*	109*	109*	109*	109*	109*	109*	109*	58	109*	62	47	109*	53	39	91	47	33	73	41	28	62	37	25
			Exposed	109*	109*	109*	109*	109*	109*	109*	109*	109*	109*	109*	60	109*	74	53	109*	61	47	109*	56	42	95	47	34	71	40	28	60	35	24	52	31	21	46	27	19	41	24	16
		27-45	Interior	118*	118*	118*	118*	118*	118*	118*	118*	118*	118*	118*	118*	118*	118*	118*	118*	118*	118*	118*	118*	118*	118*	118*	112*	118*	118*	60	110*	72	50	65	58	43	58	52	37	51	46	32
			Exposed	118*	118*	118*	118*	118*	118*	118*	118*	118*	118*	118*	118*	118*	118*	70	118*	118*	59	118*	86	53	118*	59	43	56	51	36	49	44	30	43	38	26	38	34	22	34	30	20
	D	0-7	Interior	93	93	93	93	93	93	93	93	93	93	93	93	93	93	70	93	93	61	93	93	55	93	68	47	93	57	40	71	49	35	59	43	30	52	38	27	46	34	24
			Exposed	93	93	69	93	93	59	93	93	53	93	72	48	93	61	44	93	56	40	80	51	36	59	43	31	51	37	26	44	32	23	39	28	20	34	25	18	30	22	24
		7-20	Interior	94	94	94	94	94	94	94	94	94	94	94	65	94	94	59	94	65	53	94	59	49	85	50	41	66	43	35	57	37	31	50	32	27	44	29	24	39	25	21
			Exposed	94	94	58	94	63	52	94	57	47	89	51	42	75	46	38	65	42	35	59	39	32	50	33	27	43	28	23	37	24	20	32	21	18	29	19	24	25	25	21
		20-27	Interior	116*	116*	116*	116*	116*	116*	116*	116*	116*	116*	116*	116*	116*	116*	116*	116*	116*	71	116*	116*	57	116*	60	46	116*	52	38	85	45	32	68	39	27	59	35	24	52	31	21
			Exposed	116*	116*	116*	116*	116*	63	116*	86	54	116*	62	47	116*	56	42	116*	51	37	92	47	33	69	40	27	58	34	23	50	29	20	44	26	18	39	23	16	34	20	14
		27-45	Interior	125*	125*	125*	125*	125*	125*	125*	125*	125*	125*	125*	125*	125*	125*	125*	125*	125*	125*	125*	125*	110*	125*	125*	58	118*	65	48	63	56	41	55	49	35	48	43	30	43	38	26
			Exposed	125*	125*	125*	125*	125*	125*	125*	125*	78	125*	125*	60	125*	89	53	125*	64	48	66	59	43	55	50	35	47	43	29	41	37	25	36	32	21	32	29	18	28	25	16
40	B	0-7	Interior	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	59	69	69	52	69	64	45	69	57	40						
			Exposed	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	62	69	69	52	69	63	45	69	55	39	66	48	34	58	42	30	51	37	26
		7-20	Interior	70	70	70	70	70	70	70	70	70	70	70	70	70	70	70	70	70	70	70	70	70	70	70	60	70	63	52	70	55	45	70	48	40	66	43	36			
			Exposed	70	70	70	70	70	70	70	70	70	70	70	70	70	70	65	70	70	59	70	68	54	70	56	46	70	48	39	63	41	34	55	36	30	48	32	26	43	28	23
		20-27	Interior	92*	92*	92*	92*	92*	92*	92*	92*	92*	92*	92*	92*	92*	92*	92*	92*	92*	92*	92*	92*	92*	92*	92*	92*	92*	92*	92*	92*	92*	63	92*	71	52	92*	59	44	92*	52	38
			Exposed	92*	92*	92*	92*	92*	92*	92*	92*	92*	92*	92*	92*	92*	92*	92*	92*	92*	92*	92*	92*	92*	92*	92*	76	53	92*	57	43	92*	50	36	81	44	30	65	38	26	58	34	23
		27-45	Interior	100*	100*	100*	100*	100*	100*	100*	100*	100*	100*	100*	100*	100*	100*	100*	100*	100*	100*	100*	100*	100*	100*	100*	100*	100*	100*	100*	100*	100*	100*	97*	97*	69	92*	92*	56	87*	65	49
			Exposed	100*	100*	100*	100*	100*	100*	100*	100*	100*	100*	100*	100*	100*	100*	100*	100*	100*	100*	100*	100*	100*	100*	100*	72	100*	100*	55	100*	62	46	61	55	39	54	48	34	48	43	29
	C	0-7	Interior	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	68	69	69	56	69	69	48	69	59	41	69	51	36	62	45	32	55	40	28
			Exposed	69	69	69	69	69	69	69	69	63	69	69	57	69	69	52	69	69	47	69	61	43	69	52	37	61	44	31	53	38	27	46	34	24	40	30	21	36	26	19
		7-20	Interior	70	70	70	70	70	70	70	70	70	70	70	70	70	70	70	70	70	64	70	70	58	70	60	49	70	51	42	69	44	37	59	39	32	52	34	28	46	30	25
			Exposed	70	70	70	70	70	62	70	70	56	70	61	50	70	55	46	70	70	50	42	70	46	38	60	39	32	51	34	28	44	29	24	39	25	21	34	22	19	30	20	25
		20-27	Interior	92*	92*	92*	92*	92*	92*	92*	92*	92*	92*	92*	92*	92*	92*	92*	92*	92*	92*	92*	92*	92*	92*	92*	58	92*	62	47	92*	53	39	91*	47	33	73	41	28	62	37	25
			Exposed	92*	92*	92*	92*	92*	92*	92*	92*	92*	92*	92*	60	92*	74	53	92*	61	47	92*	56	42	92*	47	34	71	40	28	60	35	24	52	31	21	46	27	19	41	24	16
		27-45	Interior	100*	100*	100*	100*	100*	100*	100*	100*	100*	100*	100*	100*	100*	100*	100*	100*	100*	100*	100*	100*	100*	100*	100*	100*	94*	94*	60	88*	72	50	65	58	43	58	52	37	51	46	32
			Exposed	100*	100*	100*	100*	100*	100*	100*	100*	100*	100*	100*	100*	100*	100*	70	100*	100*	59	100*	86*	53	77*	59	43	56	51	36	49	44	30	43	38	26	38	34	22	34	30	20
	D	0-7	Interior	76	76	76	76	76	76	76	76	76	76	76	76	76	76	70	76	76	61	76	76	55	76	68	47	76	57	40	71	49	35	59	43	30	52	38	27	46	34	24
			Exposed	76	76	69	76	76	59	76	76	53	76	72	48	76	61	44	76	56	40	76	51	36	59	43	31	51	37	26	44	32	23	39	28	20	34	25	18	30	22	24
		7-20	Interior	77	77	77	77	77	77	77	77	77	77	77	65	77	77	59	77	65	53	77	59	49	77	50	41	66	43	35	57	37	31	50	32	27	44	29	24	39	25	21
			Exposed	77	77	58	77	63	52	77	57	47	77	51	42	75	46	38	65	42	35	59	39	32	50	33	27	43	28	23	37	24	20	32	21	18	29	19	24	25	25	21
		20-27	Interior	98*	98*	98*	98*	98*	98*	98*	98*	98*	98*	98*	98*	98*	98*	98*	98*	98*	71	98*	98*	57	98*	60	46	98*	52	38	85	45	32	68	39	27	59	35	24	52	31	21
			Exposed	98*	98*	98*	98*	98*	63	98*	86	54	98*	62	47	98*	56	42	98*	51	37	92*	47	33	69	40	27	58	34	23	50	29	20	44	26	18	39	23	16	34	20	14
		27-45	Interior	106*	106*	106*	106*	106*	106*	106*	106*	106*	106*	106*	106*	106*	106*	106*	106*	106*	106*	106*	106*	102*	102*	102*	58	94*	65	48	63	56	41	55	49	35	48	43	30	43	38	26
			Exposed	106*	106*	106*	106*	106*	106*	106*	106*	78	106*	106*	60	106*	90*	53	106*	64	48	66	59	43	55	50	35	47	43	29	41	37	25	36	32	21	32	29	18	28	25	16
50	B	0-7	Interior	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	52	56	56	45	56	56	40
			Exposed	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	52	56	56	45	56	55	39	56	48	34	56	42	30	51	37	26
		7-20	Interior	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	52	57	55	45	57	48	40
			Exposed	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	54	57	56	46	57	48	39	57	41	34	55	36	30	48	32	26	43	28	23
		20-27	Interior	78*	78*	78*	78*	78*	78*	78*	78*	78*	78*	78*	78*	78*	78*	78*	78*	78*	78*	78*	78*	78*	78*	78*	78*	78*	78*	78*	78*	78*	63	78*	71*	52	78*	59	44	78*	52	38
			Exposed	78*	78*	78*	78*	78*	78*	78*	78*	78*	78*	78*	78*	78*	78*	78*	78*	78*	78*	78*	78*	78*	78*	78*	76*	53	78*	57	43	78*	50	36	78*	44	30	65	38	26	58	34	23
		27-45	Interior	86*	86*	86*	86*	86*	86*	86*	86*	86*	86*	86*	86*	86*	86*	86*	86*	86*	86*	86*	86*	86*	86*	86*	86*	86*	86*	86*	85*	85*	85*	81*	81*	69*	77*	77*	56	73*	65*	49
			Exposed	86*	86*	86*	86*	86*	86*	86*	86*	86*	86*	86*	86*	86*	86*	86*	86*	86*	86*	86*	86*	86*	86*	86*	72*	86*	86*	55	85*	63*	46	61	55	39	54	48	34	48	43	29
	C	0-7	Interior	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	48	56	56	41	56	51	36	56	45	32	55	40	28
			Exposed	56	56	56	56	56	56	56	56	56	56	56	56	56	56	52	56	56	47	56	56	43	56	52	37	56	44	31	53	38	27	46	34	24	40	30	21	36	26	19
		7-20	Interior	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	49	57	51	42	57	44	37	57	39	32	52	34	28	46	30	25
			Exposed	57	57	57	57	57	57	57	57	56	57	57	50	57	55	46	57	50	42	57	46	38	57	39	32	51	34	28	44	29	24	39	25	21	34	22	19	30	20	25
		20-27	Interior	78*	78*	78*	78*	78*	78*	78*	78*	78*	78*	78*	78*	78*	78*	78*	78*	78*	78*	78*	78*	78*	78*	78*	58	78*	62	47	78*	53	39	77*	47	33	73*	41	28	62	37	25
			Exposed	78*	78*	78*	78*	78*	78*	78*	78*	78*	78*	78*	60	78*	74*	53	78*	61	47	78*	56	42	78*	47	34	71*	40	28	60	35	24	52	31	21	46	27	19	41	24	16
		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*	83*	83*	83*	79*	79*	79*	60	74*	72*	50	67*	58	43	58	52	37
			Exposed	86*	86*	86*	86*	86*	86*	86*	86*	86*	86*	86*	70*	86*	86*	59	86*	86*	53	72*	59	43	56	51	36	49	44	30	43	38	26	38	34	22	34	30	20			
	D	0-7	Interior	62	62	62	62	62	62	62	62	62	62	62	62	62	62	62	62	62	61	62	62	55	62	62	47	62	57	40	62	49	35	59	43	30	52	38	27	46	34	24
			Exposed	62	62	62	62	62	59	62	62	53	62	62	48	62	61	44	62	56	40	62	51	36	59	43	31	51	37	26	44	32	23	39	28	20	34	25	18	30	22	24
		7-20	Interior	63	63	63	63	63	63	63	63	63	63	63	63	63	63	59	63	63	53	63	59	49	63	50	41	63	43	35	57	37	31	50	32	27	44	29	24	39	25	21
			Exposed	63	63	58	63	63	52	63	57	47	63	51	42	63	46	38	63	42	35	59	39	32	50	33	27	43	28	23	37	24	20	32	21	18	29	19	24	25	25	21
		20-27	Interior	85*	85*	85*	85*	85*	85*	85*	85*	85*	85*	85*	85*	85*	85*	85*	85*	85*	71	85*	85*	57	85*	60	46	85*	52	38	83*	45	32	68	39	27	59	35	24	52	31	21
			Exposed	85*	85*	85*	85*	85*	85*	85*	85*	54	85*	62	47	85*	56	42	85*	51	37	85*	47	33	69	40	27	58	34	23	50	29	20	44	26	18	39	23	16	34	20	14
		27-45	Interior	92*	92*	92*	92*	92*	92*	92*	92*	92*	92*	92*	92*	92*	92*	92*	92*	92*	92*	90*	90*	90*	85*	85*	58	79*	65	48	63	56	41	55	49	35	48	43	30	43	38	26
			Exposed	92*	92*	92*	92*	92*	92*	92*	92*	78*	92*	92*	60	92*	89*	53	92*	64	48	70*	59	43	55	50	35	47	43	29	41	37	25	36	32	21	32	29	18	28	25	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 HD	NXT COMBO	Flashloc DUO Rafter
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	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	40
			Exposed	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	45	47	47	39	47	47	34	47	42	30	47	37	26
		7-20	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	45	48	48	40	48	43	36			
			Exposed	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	46	48	48	39	48	41	34	48	36	30	48	32	26	43	28	23
		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*	66*	66*	66*	63*	66*	66*	52	66*	59*	44	66*	52	38			
			Exposed	66*	66*	66*	66*	66*	66*	66*	66*	66*	66*	66*	66*	66*	66*	66*	66*	66*	66*	66*	66*	66*	66*	66*	53	66*	57*	43	66*	50	36	66*	44	30	65*	38	26	58*	34	23
		27-45	Interior	75*	75*	75*	75*	75*	75*	75*	75*	75*	75*	75*	75*	75*	75*	75*	75*	75*	75*	75*	75*	75*	75*	75*	75*	75*	75*	75*	73*	73*	73*	69*	69*	69*	66*	66*	56*	64*	64*	49
			Exposed	75*	75*	75*	75*	75*	75*	75*	75*	75*	75*	75*	75*	75*	75*	75*	75*	75*	75*	75*	75*	72*	75*	75*	75*	75*	75*	55*	73*	62*	46	61*	55*	39	54*	48	34	48	43	29
	C	0-7	Interior	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	41	47	47	36	47	45	32	47	40	28
			Exposed	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	43	47	47	37	47	44	31	47	38	27	46	34	24	40	30	21	36	26	19
		7-20	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	42	48	44	37	48	39	32	48	34	28	46	30	25
			Exposed	48	48	48	48	48	48	48	48	48	48	48	48	48	48	46	48	48	42	48	46	38	48	39	32	48	34	28	44	29	24	39	25	21	34	22	19	30	20	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*	58*	66*	62*	47	66*	53	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*	53	66*	61*	47	66*	56	42	66*	47	34	66*	40	28	60*	35	24	52	31	21	46	27	19	41	24	16
		27-45	Interior	75*	75*	75*	75*	75*	75*	75*	75*	75*	75*	75*	75*	75*	75*	75*	75*	75*	75*	75*	75*	75*	71*	71*	71*	68*	68*	60*	64*	64*	50	61*	59*	43	58*	52	37	51	46	32
			Exposed	75*	75*	75*	75*	75*	75*	75*	75*	75*	75*	75*	75*	75*	75*	70*	75*	75*	59*	75*	75*	53	71*	59*	43	57*	51	36	49	44	30	43	38	26	38	34	22	34	30	20
	D	0-7	Interior	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	40	52	49	35	52	43	30	52	38	27	46	34	24			
			Exposed	52	52	52	52	52	52	52	52	52	52	52	48	52	52	44	52	52	40	52	51	36	52	43	31	51	37	26	44	32	23	39	28	20	34	25	18	30	22	24
		7-20	Interior	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	49	53	50	41	53	43	35	53	37	31	50	32	27	44	29	24	39	25	21
			Exposed	53	53	53	53	53	52	53	53	47	53	51	42	53	46	38	53	42	35	53	39	32	50	33	27	43	28	23	37	24	20	32	21	18	29	19	24	25	25	21
		20-27	Interior	73*	73*	73*	73*	73*	73*	73*	73*	73*	73*	73*	73*	73*	73*	73*	73*	73*	71*	73*	73*	57	73*	60	46	73*	52	38	72*	45	32	68*	39	27	59	35	24	52	31	21
			Exposed	73*	73*	73*	73*	73*	63*	73*	73*	54	73*	62*	47	73*	56	42	73*	51	37	73*	47	33	69*	40	27	58	34	23	50	29	20	44	26	18	39	23	16	34	20	14
		27-45	Interior	82*	82*	82*	82*	82*	82*	82*	82*	82*	82*	82*	82*	82*	82*	82*	80*	80*	80*	78*	78*	78*	73*	73*	59*	68*	65*	48	63*	56	41	55	49	35	48	43	30	43	38	26
			Exposed	82*	82*	82*	82*	82*	82*	82*	82*	78*	82*	82*	60*	82*	82*	53	80*	64*	48	66*	59*	43	55	50	35	47	43	29	41	37	25	36	32	21	32	29	18	28	25	16
70	B	0-7	Interior	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	40
			Exposed	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	39	41	41	34	41	41	30	41	37	26
		7-20	Interior	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	40	41	41	36
			Exposed	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	39	41	41	34	41	36	30	41	32	26	41	28	23
		20-27	Interior	57*	57*	57*	57*	57*	57*	57*	57*	57*	57*	57*	57*	57*	57*	57*	57*	57*	57*	57*	57*	57*	57*	57*	57*	57*	57*	57*	57*	57*	57*	57*	57*	52*	57*	57*	44	57*	52*	38
			Exposed	57*	57*	57*	57*	57*	57*	57*	57*	57*	57*	57*	57*	57*	57*	57*	57*	57*	57*	57*	57*	57*	57*	57*	53*	57*	57*	43	57*	50*	36	57*	44	30	57*	38	26	57*	34	23
		27-45	Interior	65*	65*	65*	65*	65*	65*	65*	65*	65*	65*	65*	65*	65*	65*	65*	65*	65*	65*	65*	65*	65*	65*	65*	65*	65*	65*	65*	64*	64*	64*	62*	62*	62*	60*	60*	56*	58*	58*	49*
			Exposed	65*	65*	65*	65*	65*	65*	65*	65*	65*	65*	65*	65*	65*	65*	65*	65*	65*	65*	65*	65*	65*	65*	65*	65*	65*	65*	55*	64*	62*	46	61*	55*	39	54*	48*	34	48*	43	29
	C	0-7	Interior	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	36	41	41	32	41	40	28
			Exposed	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	31	41	38	27	41	34	24	40	30	21	36	26	19			
		7-20	Interior	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	37	41	39	32	41	34	28	41	30	25
			Exposed	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	38	41	39	32	41	34	28	41	29	24	39	25	21	34	22	19	30	20	25
		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*	47	57*	53*	39	57*	47	33	57*	41	28	46	33	28	55*	37	25
			Exposed	57*	57*	57*	57*	57*	57*	57*	57*	57*	57*	57*	57*	57*	57*	53*	57*	57*	47	57*	56*	42	57*	47	34	57*	40	28	57*	35	24	52*	31	21	46	27	19	41	24	16
		27-45	Interior	65*	65*	65*	65*	65*	65*	65*	65*	65*	65*	65*	65*	65*	65*	65*	65*	65*	65*	65*	65*	65*	63*	63*	63*	61*	61*	60*	58*	58*	50*	56*	56*	43	54*	52*	37	51*	46	32
			Exposed	65*	65*	65*	65*	65*	65*	65*	65*	65*	65*	65*	65*	65*	65*	65*	65*	65*	59*	65*	65*	53*	63*	59*	43	56*	51*	36	49*	44	30	43	38	26	38	34	22	34	30	20
	D	0-7	Interior	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	40	45	45	35	45	43	30	45	38	27	45	34	24			
			Exposed	45	45	45	45	45	45	45	45	45	45	45	45	45	45	44	45	45	40	45	45	36	45	43	31	45	37	26	44	32	23	39	28	20	34	25	18	30	22	24
		7-20	Interior	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	41	46	43	35	46	37	31	46	32	27	44	29	24	39	25	21
			Exposed	46	46	46	46	46	46	46	46	46	46	46	42	46	46	38	46	42	35	46	39	32	46	33	27	43	28	23	37	24	20	32	21	18	29	19	24	25	25	21
		20-27	Interior	63*	63*	63*	63*	63*	63*	63*	63*	63*	63*	63*	63*	63*	63*	63*	63*	63*	63*	63*	63*	57*	63*	60*	46	63*	52	38	63*	45	32	61*	39	27	59*	35	24	52	31	21
			Exposed	63*	63*	63*	63*	63*	63*	63*	63*	54*	63*	62*	47	63*	56*	42	63*	51	37	63*	47	33	63*	40	27	58*	34	23	50	29	20	44	26	18	39	23	16	34	20	14
		27-45	Interior	71*	71*	71*	71*	71*	71*	71*	71*	71*	71*	71*	71*	71*	71*	71*	70*	70*	70*	68*	68*	68*	65*	65*	58*	62*	62*	48	59*	56*	41	55*	49	35	48	43	30	43	38	26
			Exposed	71*	71*	71*	71*	71*	71*	71*	71*	71*	71*	71*	60*	71*	71*	53*	70*	64*	48	66*	59*	43	55*	50	35	47	43	29	41	37	25	36	32	21	32	29	18	28	25	16
80	B	0-7	Interior	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36
			Exposed	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	34	36	36	30	36	36	26	36	36	26
		7-20	Interior	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36
			Exposed	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	34	36	36	30	36	32	26	36	28	23
		20-27	Interior	50*	50*	50*	50*	50*	50*	50*	50*	50*	50*	50*	50*	50*	50*	50*	50*	50*	50*	50*	50*	50*	50*	50*	50*	50*	50*	50*	50*	50*	50*	50*	50*	50*	50*	50*	44*	50*	50*	38
			Exposed	50*	50*	50*	50*	50*	50*	50*	50*	50*	50*	50*	50*	50*	50*	50*	50*	50*	50*	50*	50*	50*	50*	50*	50*	50*	50*	43*	50*	50*	36	50*	44*	30	50*	38	26	50*	34	23
		27-45	Interior	57*	57*	57*	57*	57*	57*	57*	57*	57*	57*	57*	57*	57*	57*	57*	57*	57*	57*	57*	57*	57*	57*	57*	57*	57*	57*	57*	57*	57*	57*	56*	56*	56*	55*	55*	55*	53*	53*	49*
			Exposed	57*	57*	57*	57*	57*	57*	57*	57*	57*	57*	57*	57*	57*	57*	57*	57*	57*	57*	57*	57*	57*	57*	57*	57*	57*	57*	55*	57*	57*	46*	56*	55*	39	54*	48*	34	48*	43*	29
	C	0-7	Interior	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	28
			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	31	36	36	27	36	34	24	36	30	21	36	26	19
		7-20	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	32	36	34	28	36	30	25
			Exposed	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	32	36	34	28	36	29	24	36	25	21	34	22	19	30	20	25			
		20-27	Interior	50*	50*	50*	50*	50*	50*	50*	50*	50*	50*	50*	50*	50*	50*	50*	50*	50*	50*	50*	50*	50*	50*	50*	47*	50*	50*	39	50*	47*	33	50*	41	28	50*	37	25			
			Exposed	50*	50*	50*	50*	50*	50*	50*	50*	50*	50*	50*	50*	50*	50*	50*	50*	50*	47*	50*	50*	42	50*	47*	34	50*	40	28	50*	35	24	50*	31	21	46*	27	19	41	24	16
		27-45	Interior	57*	57*	57*	57*	57*	57*	57*	57*	57*	57*	57*	57*	57*	57*	57*	57*	57*	57*	57*	57*	57*	57*	57*	57*	55*	55*	55*	53*	53*	50*	51*	51*	43*	49*	49*	37	47*	46*	32
			Exposed	57*	57*	57*	57*	57*	57*	57*	57*	57*	57*	57*	57*	57*	57*	57*	57*	57*	57*	57*	57*	53*	57*	57*	43*	55*	51*	36	49*	44*	30	43*	38	26	38	34	22	34	30	20
	D	0-7	Interior	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	35	40	40	30	40	38	27	40	34	24			
			Exposed	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	36	40	40	31	40	37	26	40	32	23	39	28	20	34	25	18	30	22	24
		7-20	Interior	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	35	40	37	31	40	32	27	40	29	24	39	25	21
			Exposed	40	40	40	40	40	40	40	40	40	40	40	40	40	40	38	40	40	35	40	39	32	40	33	27	40	28	23	37	24	20	32	21	18	29	19	24	25	25	21
		20-27	Interior	56*	56*	56*	56*	56*	56*	56*	56*	56*	56*	56*	56*	56*	56*	56*	56*	56*	56*	56*	56*	56*	56*	56*	46	56*	52*	38	56*	45	32	55*	39	27	53*	35	24	52*	31	21
			Exposed	56*	56*	56*	56*	56*	56*	56*	56*	54*	56*	56*	47	56*	56*	42	56*	51*	37	56*	47	33	56*	40	27	56*	34	23	50*	29	20	44	26	18	39	23	16	34	20	14
		27-45	Interior	63*	63*	63*	63*	63*	63*	63*	63*	63*	63*	63*	63*	63*	63*	63*	63*	63*	63*	62*	62*	62*	59*	59*	58*	57*	57*	48*	54*	54*	41	52*	49*	35	48*	43	30	43	38	26
			Exposed	63*	63*	63*	63*	63*	63*	63*	63*	63*	63*	63*	60*	63*	63*	53*	63*	63*	48*	62*	59*	43	55*	50*	35	48*	43	29	41	37	25	36	32	21	32	29	18	28	25	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 HD	NXT COMBO	Flashloc DUO Rafter
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	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32
			Exposed	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	30	32	32	26	32	32	26
		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	32	32
			Exposed	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	30	32	32	26	32	28	23		
		20-27	Interior	45*	45*	45*	45*	45*	45*	45*	45*	45*	45*	45*	45*	45*	45*	45*	45*	45*	45*	45*	45*	45*	45*	45*	45*	45*	45*	45*	45*	45*	45*	45*	45*	44*	45*	45*	38			
			Exposed	45*	45*	45*	45*	45*	45*	45*	45*	45*	45*	45*	45*	45*	45*	45*	45*	45*	45*	45*	45*	45*	45*	45*	45*	45*	45*	43*	45*	45*	36	45*	44*	30	45*	38	26	45*	34	23
		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*	51*	51*	51*	51*	51*	50*	50*	50*	49*	49*	49*	
			Exposed	51*	51*	51*	51*	51*	51*	51*	51*	51*	51*	51*	51*	51*	51*	51*	51*	51*	51*	51*	51*	51*	51*	51*	51*	51*	51*	51*	51*	51*	46*	51*	51*	39*	50*	48*	34	48*	43*	29
	C	0-7	Interior	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	28
			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	31	32	32	27	32	32	24	32	30	21	32	26	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	28	32	29	24	32	25	21	32	22	19	30	20	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*	42*	45*	45*	34	45*	40*	28	45*	35	24	45*	31	21	45*	27	19	41*	24	16
		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*	49*	49*	49*	48*	48*	43*	46*	46*	37*	44*	44*	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*	43*	51*	51*	36	49*	44*	30	43*	38*	26	38*	34	22	34	30	20
	D	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	30	35	35	27	35	34	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	31	35	35	26	35	32	23	35	28	20	34	25	18	30	22	24
		7-20	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	35	36	36	31	36	32	27	36	29	24	36	25	21
			Exposed	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	35	36	36	32	36	33	27	36	28	23	36	24	20	32	21	18	29	19	24	25	25	21
		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*	46*	50*	50*	38	50*	45*	32	50*	39	27	49*	35	24	48*	31	21
			Exposed	50*	50*	50*	50*	50*	50*	50*	50*	50*	50*	50*	47*	50*	50*	42	50*	50*	37	50*	47*	33	50*	40	27	50*	34	23	50*	29	20	44*	26	18	39	23	16	34	20	14
		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*	55*	55*	55*	53*	53*	48*	50*	50*	41*	48*	48*	35	46*	43*	30
			Exposed	56*	56*	56*	56*	56*	56*	56*	56*	56*	56*	56*	56*	56*	53*	56*	56*	48*	56*	56*	43*	55*	50*	35	47*	43*	29	41*	37	25	36	32	21	32	29	18	28	25	16		
100	B	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	29	29	29	29	29	29	29	29	29	29	29	29	29
			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	29	29	29	29	29	29	29	29	29	26	29	29	26
		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	29	29	29	29	29	29	29
			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	29	29	29	29	29	29	29	29	29	26	29	28	23
		20-27	Interior	41*	41*	41*	41*	41*	41*	41*	41*	41*	41*	41*	41*	41*	41*	41*	41*	41*	41*	41*	41*	41*	41*	41*	41*	41*	41*	41*	41*	41*	41*	41*	41*	41*	41*	41*	41*	41*	41*	38*
			Exposed	41*	41*	41*	41*	41*	41*	41*	41*	41*	41*	41*	41*	41*	41*	41*	41*	41*	41*	41*	41*	41*	41*	41*	41*	41*	41*	41*	41*	41*	36*	41*	41*	30	41*	38*	26	41*	34	23
		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*	46*	46*	46*	46*	46*	46*	45*	45*	45*
			Exposed	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*	46*	46*	39*	46*	46*	34*	45*	43*	29
	C	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	29	29	29	29	29	29	29	29	29	29	29	29	28
			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	29	29	29	27	29	29	24	29	29	21	29	26	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	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	28	29	29	24	29	25	21	29	22	19	29	20	25
		20-27	Interior	41*	41*	41*	41*	41*	41*	41*	41*	41*	41*	41*	41*	41*	41*	41*	41*	41*	41*	41*	41*	41*	41*	41*	41*	41*	41*	41*	41*	41*	39*	41*	41*	33	41*	41*	28	41*	37*	25
			Exposed	41*	41*	41*	41*	41*	41*	41*	41*	41*	41*	41*	41*	41*	41*	41*	41*	41*	41*	41*	41*	41*	41*	41*	34	41*	40*	28	41*	35*	24	41*	31	21	41*	27	19	41*	24	16
		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*	44*	44*	43*	43*	43*	37*	41*	41*	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*	46*	44*	30	43*	38*	26	38*	34*	22	34*	30	20
	D	0-7	Interior	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	30	32	32	27	32	32	24	32	32	24			
			Exposed	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	31	32	32	26	32	32	23	32	28	20	32	25	18	30	22	24			
		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	31	32	32	27	32	29	24	32	25	21			
			Exposed	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	24	20	32	21	18	29	19	24	25	25	21
		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*	38	45*	45*	32	45*	39*	27	45*	35	24	44*	31	21
			Exposed	45*	45*	45*	45*	45*	45*	45*	45*	45*	45*	45*	45*	45*	45*	45*	45*	45*	37	45*	45*	33	45*	40*	27	45*	34	23	45*	29	20	44*	26	18	39*	23	16	34	20	14
		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*	49*	49*	48*	47*	47*	41*	45*	45*	35	43*	43*	30	42*	39*	26
			Exposed	51*	51*	51*	51*	51*	51*	51*	51*	51*	51*	51*	51*	51*	51*	51*	51*	51*	48*	51*	51*	43*	51*	50*	35	47*	43*	29	41*	37*	25	36	32	21	32	29	18	28	25	16

#N/A

* 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 HD	NXT COMBO	Flashloc DUO Rafter
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) | | |

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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	87	87	87	87	87	87	87	87	87	87	87	87	87	87	87	87	87	87	87	87	87	87	87	76	87	87	59	87	87	52	87	64	45	87	57	40			
			Exposed	87	87	87	87	87	87	87	87	87	87	87	87	87	87	87	87	87	72	87	87	62	87	87	52	87	63	45	87	55	39	66	48	34	58	42	30	51	37	26
		7-20	Interior	88	88	88	88	88	88	88	88	88	88	88	88	88	88	88	88	88	88	88	88	88	88	88	60	88	63	52	88	55	45	81	48	40	66	43	36			
			Exposed	88	88	88	88	88	88	88	88	88	88	88	88	88	88	65	88	88	59	88	68	54	88	56	46	78	48	39	63	41	34	55	36	30	48	32	26	43	28	23
		20-27	Interior	102*	102*	102*	102*	102*	102*	102*	102*	102*	102*	102*	102*	102*	102*	102*	102*	102*	102*	102*	102*	102*	102*	102*	102*	102*	102*	102*	102*	102*	63	102*	71	52	102*	59	44	102*	52	38
			Exposed	102*	102*	102*	102*	102*	102*	102*	102*	102*	102*	102*	102*	102*	102*	102*	102*	102*	102*	102*	102*	102*	102*	102*	76	53	102*	57	43	102*	50	36	81	44	30	65	38	26	58	34	23
		27-45	Interior	118*	118*	118*	118*	118*	118*	118*	118*	118*	118*	118*	118*	118*	118*	118*	118*	118*	118*	118*	118*	118*	118*	118*	118*	118*	118*	118*	118*	118*	118*	118*	118*	69	116*	116*	56	109*	65	49
			Exposed	118*	118*	118*	118*	118*	118*	118*	118*	118*	118*	118*	118*	118*	118*	118*	118*	118*	118*	118*	118*	118*	118*	118*	105*	55	118*	62	46	61	55	39	54	48	34	48	43	29			
	C	0-7	Interior	87	87	87	87	87	87	87	87	87	87	87	87	87	87	87	87	87	87	87	87	68	87	87	56	87	72	48	87	59	41	79	51	36	62	45	32	55	40	28
			Exposed	87	87	87	87	87	86	87	87	63	87	87	57	87	87	52	87	69	47	87	61	43	82	52	37	61	44	31	53	38	27	46	34	24	40	30	21	36	26	19
		7-20	Interior	88	88	88	88	88	88	88	88	88	88	88	88	88	88	88	88	88	64	88	88	58	88	60	49	88	51	42	69	44	37	59	39	32	52	34	28	46	30	25
			Exposed	88	88	88	88	88	88	88	84	56	88	61	50	88	55	46	87	50	42	74	46	38	60	39	32	51	34	28	44	29	24	39	25	21	34	22	19	30	20	25
		20-27	Interior	102*	102*	102*	102*	102*	102*	102*	102*	102*	102*	102*	102*	102*	102*	102*	102*	102*	102*	102*	102*	102*	102*	102*	58	102*	62	47	102*	53	39	91	47	33	73	41	28	62	37	25
			Exposed	102*	102*	102*	102*	102*	102*	102*	102*	102*	102*	102*	60	102*	74	53	102*	61	47	102*	56	42	95	47	34	71	40	28	60	35	24	52	31	21	46	27	19	41	24	16
		27-45	Interior	118*	118*	118*	118*	118*	118*	118*	118*	118*	118*	118*	118*	118*	118*	118*	118*	118*	118*	118*	118*	118*	118*	118*	112*	118*	118*	60	110*	72	50	65	58	43	58	52	37	51	46	32
			Exposed	118*	118*	118*	118*	118*	118*	118*	118*	118*	118*	118*	118*	118*	118*	70	118*	118*	59	118*	86	53	118*	59	43	56	51	36	49	44	30	43	38	26	38	34	22	34	30	20
	D	0-7	Interior	93	93	93	93	93	93	93	93	93	93	93	93	93	93	70	93	93	61	93	93	55	93	68	47	93	57	40	71	49	35	59	43	30	52	38	27	46	34	24
			Exposed	93	93	69	93	93	59	93	93	53	93	72	48	93	61	44	93	56	40	80	51	36	59	43	31	51	37	26	44	32	23	39	28	20	34	25	18	30	22	24
		7-20	Interior	94	94	94	94	94	94	94	94	94	94	94	65	94	94	59	94	65	53	94	59	49	85	50	41	66	43	35	57	37	31	50	32	27	44	29	24	39	25	21
			Exposed	94	94	58	94	63	52	94	57	47	89	51	42	75	46	38	65	42	35	59	39	32	50	33	27	43	28	23	37	24	20	32	21	18	29	19	24	25	25	21
		20-27	Interior	116*	116*	116*	116*	116*	116*	116*	116*	116*	116*	116*	116*	116*	116*	116*	116*	116*	71	116*	116*	57	116*	60	46	116*	52	38	85	45	32	68	39	27	59	35	24	52	31	21
			Exposed	116*	116*	116*	116*	116*	63	116*	86	54	116*	62	47	116*	56	42	116*	51	37	92	47	33	69	40	27	58	34	23	50	29	20	44	26	18	39	23	16	34	20	14
		27-45	Interior	125*	125*	125*	125*	125*	125*	125*	125*	125*	125*	125*	125*	125*	125*	125*	125*	125*	125*	125*	125*	104*	125*	125*	58	118*	65	48	63	56	41	55	49	35	48	43	30	43	38	26
			Exposed	125*	125*	125*	125*	125*	125*	125*	125*	78	125*	125*	60	125*	89	53	125*	64	48	66	59	43	55	50	35	47	43	29	41	37	25	36	32	21	32	29	18	28	25	16
40	B	0-7	Interior	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	59	69	69	52	69	64	45	69	57	40						
			Exposed	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	62	69	69	52	69	63	45	69	55	39	66	48	34	58	42	30	51	37	26
		7-20	Interior	70	70	70	70	70	70	70	70	70	70	70	70	70	70	70	70	70	70	70	70	70	70	70	60	70	63	52	70	55	45	70	48	40	66	43	36			
			Exposed	70	70	70	70	70	70	70	70	70	70	70	70	70	70	65	70	70	59	70	68	54	70	56	46	70	48	39	63	41	34	55	36	30	48	32	26	43	28	23
		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*	85*	85*	85*	85*	85*	85*	63	85*	71	52	85*	59	44	85*	52	38
			Exposed	85*	85*	85*	85*	85*	85*	85*	85*	85*	85*	85*	85*	85*	85*	85*	85*	85*	85*	85*	85*	85*	85*	85*	76	53	85*	57	43	85*	50	36	81*	44	30	65	38	26	58	34	23
		27-45	Interior	100*	100*	100*	100*	100*	100*	100*	100*	100*	100*	100*	100*	100*	100*	100*	100*	100*	100*	100*	100*	100*	100*	100*	100*	100*	100*	100*	100*	100*	100*	97*	97*	69	92*	92*	56	87*	65	49
			Exposed	100*	100*	100*	100*	100*	100*	100*	100*	100*	100*	100*	100*	100*	100*	100*	100*	100*	100*	100*	100*	100*	100*	100*	72	100*	100*	55	100*	62	46	61	55	39	54	48	34	48	43	29
	C	0-7	Interior	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	68	69	69	56	69	69	48	69	59	41	69	51	36	62	45	32	55	40	28
			Exposed	69	69	69	69	69	69	69	69	63	69	69	57	69	69	52	69	69	47	69	61	43	69	52	37	61	44	31	53	38	27	46	34	24	40	30	21	36	26	19
		7-20	Interior	70	70	70	70	70	70	70	70	70	70	70	70	70	70	70	70	70	64	70	70	58	70	60	49	70	51	42	69	44	37	59	39	32	52	34	28	46	30	25
			Exposed	70	70	70	70	70	62	70	70	56	70	61	50	70	55	46	70	50	42	70	46	38	60	39	32	51	34	28	44	29	24	39	25	21	34	22	19	30	20	25
		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*	58	85*	62	47	85*	53	39	91*	47	33	73	41	28	62	37	25
			Exposed	85*	85*	85*	85*	85*	85*	85*	85*	85*	85*	85*	60	85*	74	53	85*	61	47	85*	56	42	85*	47	34	71	40	28	60	35	24	52	31	21	46	27	19	41	24	16
		27-45	Interior	100*	100*	100*	100*	100*	100*	100*	100*	100*	100*	100*	100*	100*	100*	100*	100*	100*	100*	100*	100*	100*	100*	100*	100*	100*	100*	100*	94*	94*	60	88*	72	50	65	58	43	58	52	37
			Exposed	100*	100*	100*	100*	100*	100*	100*	100*	100*	100*	100*	100*	100*	100*	70	100*	100*	59	100*	86*	53	77*	59	43	56	51	36	49	44	30	43	38	26	38	34	22	34	30	20
	D	0-7	Interior	76	76	76	76	76	76	76	76	76	76	76	76	76	76	70	76	76	61	76	76	55	76	68	47	76	57	40	71	49	35	59	43	30	52	38	27	46	34	24
			Exposed	76	76	69	76	76	59	76	76	53	76	72	48	76	61	44	76	56	40	76	51	36	59	43	31	51	37	26	44	32	23	39	28	20	34	25	18	30	22	24
		7-20	Interior	77	77	77	77	77	77	77	77	77	77	77	65	77	77	59	77	65	53	77	59	49	77	50	41	66	43	35	57	37	31	50	32	27	44	29	24	39	25	21
			Exposed	77	77	58	77	63	52	77	57	47	77	51	42	75	46	38	65	42	35	59	39	32	50	33	27	43	28	23	37	24	20	32	21	18	29	19	24	25	25	21
		20-27	Interior	91*	91*	91*	91*	91*	91*	91*	91*	91*	91*	91*	91*	91*	91*	91*	91*	91*	71	91*	91*	57	91*	60	46	91*	52	38	85	45	32	68	39	27	59	35	24	52	31	21
			Exposed	91*	91*	91*	91*	91*	63	91*	86	54	91*	62	47	91*	56	42	91*	51	37	91*	47	33	69	40	27	58	34	23	50	29	20	44	26	18	39	23	16	34	20	14
		27-45	Interior	106*	106*	106*	106*	106*	106*	106*	106*	106*	106*	106*	106*	106*	106*	106*	106*	106*	106*	106*	106*	102*	102*	102*	58	94*	65	48	63	56	41	55	49	35	48	43	30	43	38	26
			Exposed	106*	106*	106*	106*	106*	106*	106*	106*	78	106*	106*	60	106*	89*	53	106*	64	48	66	59	43	55	50	35	47	43	29	41	37	25	36	32	21	32	29	18	28	25	16
50	B	0-7	Interior	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	45	56	56	40
			Exposed	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	52	56	56	45	56	55	39	56	48	34	56	42	30	51	37	26
		7-20	Interior	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	48	57	57	36
			Exposed	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	54	57	56	46	57	48	39	57	41	34	55	36	30	48	32	26	43	28	23
		20-27	Interior	78*	78*	78*	78*	78*	78*	78*	78*	78*	78*	78*	78*	78*	78*	78*	78*	78*	78*	78*	78*	78*	78*	78*	78*	78*	78*	78*	78*	78*	63	78*	71*	52	78*	59	44	78*	52	38
			Exposed	78*	78*	78*	78*	78*	78*	78*	78*	78*	78*	78*	78*	78*	78*	78*	78*	78*	78*	78*	78*	78*	78*	78*	76*	53	78*	57	43	78*	50	36	78*	44	30	65	38	26	58	34	23
		27-45	Interior	86*	86*	86*	86*	86*	86*	86*	86*	86*	86*	86*	86*	86*	86*	86*	86*	86*	86*	86*	86*	86*	86*	86*	86*	86*	86*	86*	85*	85*	85*	81*	81*	69*	77*	77*	56	73*	65*	49
			Exposed	86*	86*	86*	86*	86*	86*	86*	86*	86*	86*	86*	86*	86*	86*	86*	86*	86*	86*	86*	86*	86*	86*	86*	86*	72*	86*	86*	55	85*	63*	46	61	55	39	54	48	34	48	43	29
	C	0-7	Interior	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	48	56	56	41	56	51	36	56	45	32	55	40	28
			Exposed	56	56	56	56	56	56	56	56	56	56	56	56	56	56	52	56	56	47	56	56	43	56	52	37	56	44	31	53	38	27	46	34	24	40	30	21	36	26	19
		7-20	Interior	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57	49	57	51	42	57	44	37	57	39	32	52	34	28	46	30	25
			Exposed	57	57	57	57	57	57	57	57	56	57	57	50	57	55	46	57	50	42	57	46	38	57	39	32	51	34	28	44	29	24	39	25	21	34	22	19	30	20	25
		20-27	Interior	78*	78*	78*	78*	78*	78*	78*	78*	78*	78*	78*	78*	78*	78*	78*	78*	78*	78*	78*	78*	78*	78*	78*	78*	78*	78*	78*	78*	78*	53	77*	47	33	73*	41	28	62	37	25
			Exposed	78*	78*	78*	78*	78*	78*	78*	78*	78*	78*	78*	60	78*	74*	53	78*	61	47	78*	56	42	78*	47	34	71*	40	28	60	35	24	52	31	21	46	27	19	41	24	16
		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*	83*	83*	79*	79*	60	74*	72*	50	67*	58	43	58	52	37	51	46	32
			Exposed	86*	86*	86*	86*	86*	86*	86*	86*	86*	86*	86*	70*	86*	86*	59	86*	86*	53	72*	59	43	56	51	36	49	44	30	43	38	26	38	34	22	34	30	20			
	D	0-7	Interior	62	62	62	62	62	62	62	62	62	62	62	62	62	62	62	62	62	61	62	62	55	62	62	47	62	57	40	62	49	35	59	43	30	52	38	27	46	34	24
			Exposed	62	62	62	62	62	59	62	62	53	62	62	48	62	61	44	62	56	40	62	51	36	59	43	31	51	37	26	44	32	23	39	28	20	34	25	18	30	22	24
		7-20	Interior	63	63	63	63	63	63	63	63	63	63	63	63	63	63	59	63	63	53	63	59	49	63	50	41	63	43	35	57	37	31	50	32	27	44	29	24	39	25	21
			Exposed	63	63	58	63	63	52	63	57	47	63	51	42	63	46	38	63	42	35	59	39	32	50	33	27	43	28	23	37	24	20	32	21	18	29	19	24	25	25	21
		20-27	Interior	85*	85*	85*	85*	85*	85*	85*	85*	85*	85*	85*	85*	85*	85*	85*	85*	85*	71	85*	85*	57	85*	60	46	85*	52	38	83*	45	32	68	39	27	59	35	24	52	31	21
			Exposed	85*	85*	85*	85*	85*	63	85*	85*	54	85*	62	47	85*	56	42	85*	51	37	85*	47	33	69	40	27	58	34	23	50	29	20	44	26	18	39	23	16	34	20	14
		27-45	Interior	92*	92*	92*	92*	92*	92*	92*	92*	92*	92*	92*	92*	92*	92*	92*	92*	92*	92*	90*	90*	90*	85*	85*	58	79*	65	48	63	56	41	55	49	35	48	43	30	43	38	26
			Exposed	92*	92*	92*	92*	92*	92*	92*	92*	78*	92*	92*	60	92*	89*	53	92*	64	48	70*	59	43	55	50	35	47	43	29	41	37	25	36	32	21	32	29	18	28	25	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 HD	NXT COMBO	Flashloc DUO Rafter
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	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	40
			Exposed	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	45	47	47	39	47	47	34	47	42	30	47	37	26
		7-20	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	45	48	48	40	48	43	36			
			Exposed	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	46	48	48	39	48	41	34	48	36	30	48	32	26	43	28	23
		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*	66*	66*	66*	63*	66*	66*	52	66*	59*	44	66*	52	38			
			Exposed	66*	66*	66*	66*	66*	66*	66*	66*	66*	66*	66*	66*	66*	66*	66*	66*	66*	66*	66*	66*	66*	66*	66*	53	66*	57*	43	66*	50	36	66*	44	30	65*	38	26	58*	34	23
		27-45	Interior	75*	75*	75*	75*	75*	75*	75*	75*	75*	75*	75*	75*	75*	75*	75*	75*	75*	75*	75*	75*	75*	75*	75*	75*	75*	75*	75*	73*	73*	73*	69*	69*	69*	66*	66*	56*	64*	64*	49
			Exposed	75*	75*	75*	75*	75*	75*	75*	75*	75*	75*	75*	75*	75*	75*	75*	75*	75*	75*	75*	75*	75*	75*	75*	72*	75*	75*	55*	73*	62*	46	61*	55*	39	54*	48	34	48	43	29
	C	0-7	Interior	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	41	47	47	36	47	45	32	47	40	28
			Exposed	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	43	47	47	37	47	44	31	47	38	27	46	34	24	40	30	21	36	26	19
		7-20	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	42	48	44	37	48	39	32	48	34	28	46	30	25
			Exposed	48	48	48	48	48	48	48	48	48	48	48	48	48	48	46	48	48	42	48	46	38	48	39	32	48	34	28	44	29	24	39	25	21	34	22	19	30	20	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*	58*	66*	62*	47	66*	53	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*	53	66*	61*	47	66*	56	42	66*	47	34	66*	40	28	60*	35	24	52	31	21	46	27	19	41	24	16
		27-45	Interior	75*	75*	75*	75*	75*	75*	75*	75*	75*	75*	75*	75*	75*	75*	75*	75*	75*	75*	75*	75*	75*	71*	71*	71*	68*	68*	60*	64*	64*	50	61*	59*	43	58*	52	37	51	46	32
			Exposed	75*	75*	75*	75*	75*	75*	75*	75*	75*	75*	75*	75*	75*	75*	70*	75*	75*	59*	75*	75*	53	71*	59*	43	57*	51	36	49	44	30	43	38	26	38	34	22	34	30	20
	D	0-7	Interior	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	40	52	49	35	52	43	30	52	38	27	46	34	24			
			Exposed	52	52	52	52	52	52	52	52	52	52	52	48	52	52	44	52	52	40	52	51	36	52	43	31	51	37	26	44	32	23	39	28	20	34	25	18	30	22	24
		7-20	Interior	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	49	53	50	41	53	43	35	53	37	31	50	32	27	44	29	24	39	25	21
			Exposed	53	53	53	53	53	52	53	53	47	53	51	42	53	46	38	53	42	35	53	39	32	50	33	27	43	28	23	37	24	20	32	21	18	29	19	24	25	25	21
		20-27	Interior	73*	73*	73*	73*	73*	73*	73*	73*	73*	73*	73*	73*	73*	73*	73*	73*	73*	71*	73*	73*	57	73*	60	46	73*	52	38	72*	45	32	68*	39	27	59	35	24	52	31	21
			Exposed	73*	73*	73*	73*	73*	63*	73*	73*	54	73*	62*	47	73*	56	42	73*	51	37	73*	47	33	69*	40	27	58	34	23	50	29	20	44	26	18	39	23	16	34	20	14
		27-45	Interior	82*	82*	82*	82*	82*	82*	82*	82*	82*	82*	82*	82*	82*	82*	82*	80*	80*	80*	78*	78*	78*	73*	73*	59*	68*	65*	48	63*	56	41	55	49	35	48	43	30	43	38	26
			Exposed	82*	82*	82*	82*	82*	82*	82*	82*	78*	82*	82*	60*	82*	82*	53	80*	64*	48	66*	59*	43	55	50	35	47	43	29	41	37	25	36	32	21	32	29	18	28	25	16
70	B	0-7	Interior	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	40
			Exposed	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	39	41	41	34	41	41	30	41	37	26
		7-20	Interior	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	40	41	41	36
			Exposed	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	39	41	41	34	41	36	30	41	32	26	41	28	23
		20-27	Interior	57*	57*	57*	57*	57*	57*	57*	57*	57*	57*	57*	57*	57*	57*	57*	57*	57*	57*	57*	57*	57*	57*	57*	57*	57*	57*	57*	57*	57*	57*	57*	57*	52*	57*	57*	44	57*	52*	38
			Exposed	57*	57*	57*	57*	57*	57*	57*	57*	57*	57*	57*	57*	57*	57*	57*	57*	57*	57*	57*	57*	57*	57*	57*	53*	57*	57*	43	57*	50*	36	57*	44	30	57*	38	26	57*	34	23
		27-45	Interior	65*	65*	65*	65*	65*	65*	65*	65*	65*	65*	65*	65*	65*	65*	65*	65*	65*	65*	65*	65*	65*	65*	65*	65*	65*	65*	65*	64*	64*	64*	62*	62*	62*	60*	60*	56*	58*	58*	49*
			Exposed	65*	65*	65*	65*	65*	65*	65*	65*	65*	65*	65*	65*	65*	65*	65*	65*	65*	65*	65*	65*	65*	65*	65*	65*	65*	65*	55*	64*	62*	46	61*	55*	39	54*	48*	34	48*	43	29
	C	0-7	Interior	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	36	41	41	32	41	40	28
			Exposed	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	31	41	38	27	41	34	24	40	30	21	36	26	19			
		7-20	Interior	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	37	41	39	32	41	34	28	41	30	25
			Exposed	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	38	41	39	32	41	34	28	41	29	24	39	25	21	34	22	19	30	20	25
		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*	47	57*	53*	39	57*	47	33	57*	41	28	55*	37	25			
			Exposed	57*	57*	57*	57*	57*	57*	57*	57*	57*	57*	57*	57*	57*	57*	53*	57*	57*	47	57*	56*	42	57*	47	34	57*	40	28	57*	35	24	52*	31	21	46	27	19	41	24	16
		27-45	Interior	65*	65*	65*	65*	65*	65*	65*	65*	65*	65*	65*	65*	65*	65*	65*	65*	65*	65*	65*	65*	65*	63*	63*	63*	61*	61*	60*	58*	58*	50*	56*	56*	43	54*	52*	37	51*	46	32
			Exposed	65*	65*	65*	65*	65*	65*	65*	65*	65*	65*	65*	65*	65*	65*	65*	65*	65*	59*	65*	65*	53*	63*	59*	43	56*	51*	36	49*	44	30	43	38	26	38	34	22	34	30	20
	D	0-7	Interior	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	40	45	45	35	45	43	30	45	38	27	45	34	24			
			Exposed	45	45	45	45	45	45	45	45	45	45	45	45	45	45	44	45	45	40	45	45	36	45	43	31	45	37	26	44	32	23	39	28	20	34	25	18	30	22	24
		7-20	Interior	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	41	46	43	35	46	37	31	46	32	27	44	29	24	39	25	21
			Exposed	46	46	46	46	46	46	46	46	46	46	46	42	46	46	38	46	42	35	46	39	32	46	33	27	43	28	23	37	24	20	32	21	18	29	19	24	25	25	21
		20-27	Interior	63*	63*	63*	63*	63*	63*	63*	63*	63*	63*	63*	63*	63*	63*	63*	63*	63*	63*	63*	63*	57*	63*	60*	46	63*	52	38	63*	45	32	61*	39	27	59*	35	24	52	31	21
			Exposed	63*	63*	63*	63*	63*	63*	63*	63*	54*	63*	62*	47	63*	56*	42	63*	51	37	63*	47	33	63*	40	27	58*	34	23	50	29	20	44	26	18	39	23	16	34	20	14
		27-45	Interior	71*	71*	71*	71*	71*	71*	71*	71*	71*	71*	71*	71*	71*	71*	71*	70*	70*	70*	68*	68*	68*	65*	65*	58*	62*	62*	48	59*	56*	41	55*	49	35	48	43	30	43	38	26
			Exposed	71*	71*	71*	71*	71*	71*	71*	71*	71*	71*	71*	60*	71*	71*	53*	70*	64*	48	66*	59*	43	55*	50	35	47	43	29	41	37	25	36	32	21	32	29	18	28	25	16
80	B	0-7	Interior	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36
			Exposed	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	34	36	36	30	36	36	26	36	28	23			
		7-20	Interior	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36
			Exposed	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	34	36	36	30	36	32	26	36	28	23
		20-27	Interior	50*	50*	50*	50*	50*	50*	50*	50*	50*	50*	50*	50*	50*	50*	50*	50*	50*	50*	50*	50*	50*	50*	50*	50*	50*	50*	50*	50*	50*	50*	50*	50*	50*	50*	50*	44*	50*	50*	38
			Exposed	50*	50*	50*	50*	50*	50*	50*	50*	50*	50*	50*	50*	50*	50*	50*	50*	50*	50*	50*	50*	50*	50*	50*	50*	50*	50*	43*	50*	50*	36	50*	44*	30	50*	38	26	50*	34	23
		27-45	Interior	57*	57*	57*	57*	57*	57*	57*	57*	57*	57*	57*	57*	57*	57*	57*	57*	57*	57*	57*	57*	57*	57*	57*	57*	57*	57*	57*	57*	57*	57*	56*	56*	56*	55*	55*	55*	53*	53*	49*
			Exposed	57*	57*	57*	57*	57*	57*	57*	57*	57*	57*	57*	57*	57*	57*	57*	57*	57*	57*	57*	57*	57*	57*	57*	57*	57*	57*	55*	57*	57*	46*	56*	55*	39	54*	48*	34	48*	43*	29
	C	0-7	Interior	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	32	36	36	28
			Exposed	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	31	36	36	27	36	36	24	36	36	30	36	30	21	36	26	19
		7-20	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	32	36	34	28	36	30	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	32	36	34	28	36	29	24	36	25	21	34	22	19	30	20	25
		20-27	Interior	50*	50*	50*	50*	50*	50*	50*	50*	50*	50*	50*	50*	50*	50*	50*	50*	50*	50*	50*	50*	50*	50*	50*	47*	50*	50*	39	50*	47*	33	50*	41	28	50*	37	25			
			Exposed	50*	50*	50*	50*	50*	50*	50*	50*	50*	50*	50*	50*	50*	50*	50*	50*	50*	47*	50*	50*	42	50*	47*	34	50*	40	28	50*	35	24	50*	31	21	46*	27	19	41	24	16
		27-45	Interior	57*	57*	57*	57*	57*	57*	57*	57*	57*	57*	57*	57*	57*	57*	57*	57*	57*	57*	57*	57*	57*	57*	57*	57*	55*	55*	55*	53*	53*	50*	51*	51*	43*	49*	49*	37	47*	46*	32
			Exposed	57*	57*	57*	57*	57*	57*	57*	57*	57*	57*	57*	57*	57*	57*	57*	57*	57*	57*	57*	57*	53*	57*	57*	43*	55*	51*	36	49*	44*	30	43*	38	26	38	34	22	34	30	20
	D	0-7	Interior	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	35	40	40	30	40	38	27	40	34	24
			Exposed	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	36	40	40	31	40	37	26	40	32	23	39	28	20	34	25	18	30	22	24
		7-20	Interior	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	35	40	37	31	40	32	27	40	29	24	39	25	21
			Exposed	40	40	40	40	40	40	40	40	40	40	40	40	40	40	38	40	40	35	40	39	32	40	33	27	40	28	23	37	24	20	32	21	18	29	19	24	25	25	21
		20-27	Interior	56*	56*	56*	56*	56*	56*	56*	56*	56*	56*	56*	56*	56*	56*	56*	56*	56*	56*	56*	56*	56*	56*	56*	46	56*	52*	38	56*	45	32	55*	39	27	53*	35	24	52*	31	21
			Exposed	56*	56*	56*	56*	56*	56*	56*	56*	54*	56*	56*	47	56*	56*	42	56*	51*	37	56*	47	33	56*	40	27	56*	34	23	50*	29	20	44	26	18	39	23	16	34	20	14
		27-45	Interior	63*	63*	63*	63*	63*	63*	63*	63*	63*	63*	63*	63*	63*	63*	63*	63*	63*	63*	62*	62*	62*	59*	59*	58*	57*	57*	48*	54*	54*	41	52*	49*	35	48*	43	30	43	38	26
			Exposed	63*	63*	63*	63*	63*	63*	63*	63*	63*	63*	63*	60*	63*	63*	53*	63*	63*	48*	62*	59*	43	55*	50*	35	48*	43	29	41	37	25	36	32	21	32	29	18	28	25	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 HD	NXT COMBO	Flashloc DUO Rafter
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	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32
			Exposed	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	30	32	32	26	32	32	26
		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	32	32
			Exposed	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	30	32	32	26	32	28	23
		20-27	Interior	45*	45*	45*	45*	45*	45*	45*	45*	45*	45*	45*	45*	45*	45*	45*	45*	45*	45*	45*	45*	45*	45*	45*	45*	45*	45*	45*	45*	45*	45*	45*	45*	45*	45*	45*	45*	45*	45*	38
			Exposed	45*	45*	45*	45*	45*	45*	45*	45*	45*	45*	45*	45*	45*	45*	45*	45*	45*	45*	45*	45*	45*	45*	45*	45*	45*	45*	43*	45*	45*	36	45*	44*	30	45*	38	26	45*	34	23
		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*	51*	51*	51*	51*	51*	51*	50*	50*	50*	49*	49*	49*
			Exposed	51*	51*	51*	51*	51*	51*	51*	51*	51*	51*	51*	51*	51*	51*	51*	51*	51*	51*	51*	51*	51*	51*	51*	51*	51*	51*	51*	51*	51*	46*	51*	51*	39*	50*	48*	34	48*	43*	29
	C	0-7	Interior	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	28
			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	31	32	32	27	32	32	24	32	30	21	32	26	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	28	32	29	24	32	25	21	32	22	19	30	20	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*	42*	45*	45*	34	45*	40*	28	45*	35	24	45*	31	21	45*	27	19	41*	24	16
		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*	49*	49*	49*	48*	48*	43*	46*	46*	37*	44*	44*	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*	43*	51*	51*	36	49*	44*	30	43*	38*	26	38*	34	22	34	30	20
	D	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	30	35	35	27	35	34	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	31	35	35	26	35	32	23	35	28	20	34	25	18	30	22	24
		7-20	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	35	36	36	31	36	32	27	36	29	24	36	25	21
			Exposed	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	35	36	36	32	36	33	27	36	28	23	36	24	20	32	21	18	29	19	24	25	25	21
		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*	46*	50*	50*	38	50*	45*	32	50*	39	27	49*	35	24	48*	31	21
			Exposed	50*	50*	50*	50*	50*	50*	50*	50*	50*	50*	50*	47*	50*	50*	42	50*	50*	37	50*	47*	33	50*	40	27	50*	34	23	50*	29	20	44*	26	18	39	23	16	34	20	14
		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*	55*	55*	55*	53*	53*	48*	50*	50*	41*	48*	48*	35	46*	43*	30
			Exposed	56*	56*	56*	56*	56*	56*	56*	56*	56*	56*	56*	56*	56*	56*	53*	56*	56*	48*	56*	56*	43*	55*	50*	35	47*	43*	29	41*	37	25	36	32	21	32	29	18	28	25	16
100	B	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	29	29	29	29	29	29	29	29	29	29	29	29	29
			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	29	29	29	29	29	29	29	29	29	29	29	29	26
		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	29	29	29	29	29	29	29
			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	29	29	29	29	29	29	29	29	29	26	29	28	23
		20-27	Interior	41*	41*	41*	41*	41*	41*	41*	41*	41*	41*	41*	41*	41*	41*	41*	41*	41*	41*	41*	41*	41*	41*	41*	41*	41*	41*	41*	41*	41*	41*	41*	41*	41*	41*	41*	41*	41*	41*	38*
			Exposed	41*	41*	41*	41*	41*	41*	41*	41*	41*	41*	41*	41*	41*	41*	41*	41*	41*	41*	41*	41*	41*	41*	41*	41*	41*	41*	41*	41*	41*	36*	41*	41*	30	41*	38*	26	41*	34	23
		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*	46*	46*	46*	46*	46*	46*	45*	45*	45*
			Exposed	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*	46*	46*	39*	46*	46*	34*	45*	43*	29
	C	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	29	29	29	29	29	29	29	29	29	29	29	29	28
			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	29	29	29	27	29	29	24	29	29	21	29	26	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	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	28	29	29	24	29	25	21	29	22	19	29	20	25
		20-27	Interior	41*	41*	41*	41*	41*	41*	41*	41*	41*	41*	41*	41*	41*	41*	41*	41*	41*	41*	41*	41*	41*	41*	41*	41*	41*	41*	41*	41*	41*	39*	41*	41*	33	41*	41*	28	41*	37*	25
			Exposed	41*	41*	41*	41*	41*	41*	41*	41*	41*	41*	41*	41*	41*	41*	41*	41*	41*	41*	41*	41*	41*	41*	41*	34	41*	40*	28	41*	35*	24	41*	31	21	41*	27	19	41*	24	16
		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*	44*	44*	43*	43*	43*	37*	41*	41*	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*	46*	44*	30	43*	38*	26	38*	34*	22	34*	30	20
	D	0-7	Interior	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	30	32	32	27	32	32	24	32	32	24	32	32	24
			Exposed	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	31	32	32	26	32	32	23	32	28	20	32	25	18	30	22	24	32	32	24
		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	31	32	32	27	32	29	24	32	25	21	32	32	24
			Exposed	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	24	20	32	21	18	29	19	24	25	25	21
		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*	38	45*	45*	32	45*	39*	27	45*	35	24	44*	31	21
			Exposed	45*	45*	45*	45*	45*	45*	45*	45*	45*	45*	45*	45*	45*	45*	42*	45*	45*	37	45*	45*	33	45*	40*	27	45*	34	23	45*	29	20	44*	26	18	39*	23	16	34	20	14
		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*	49*	49*	48*	47*	47*	41*	45*	45*	35	43*	43*	30
			Exposed	51*	51*	51*	51*	51*	51*	51*	51*	51*	51*	51*	51*	51*	51*	51*	51*	51*	48*	51*	51*	43*	51*	50*	35	47*	43*	29	41*	37*	25	36	32	21	32	29	18	28	25	16

#N/A

* 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.