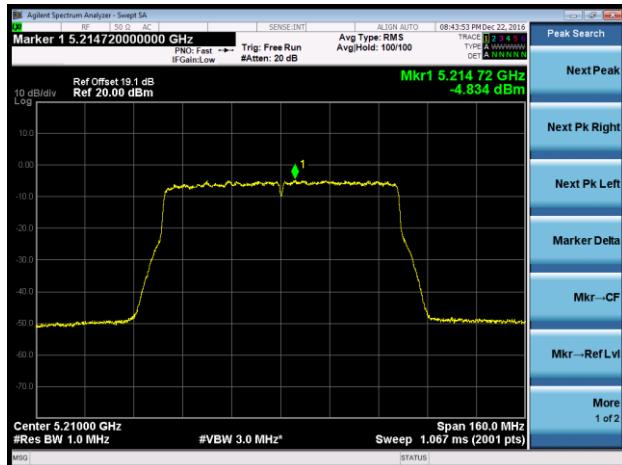


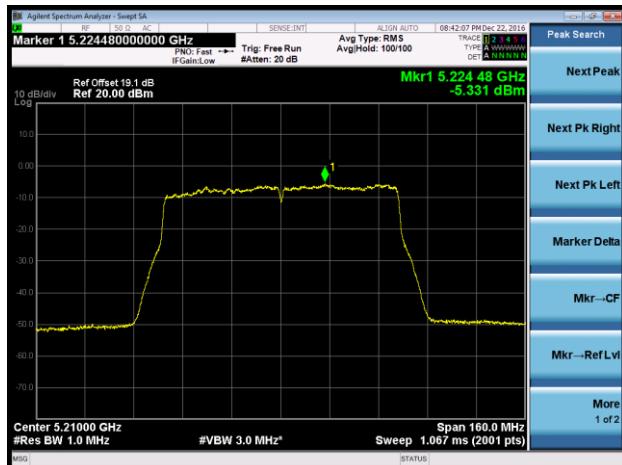
### 802.11ac-VHT 80 + 80 Power Spectral Density - Ant 0 / Ant 0 + 1 + 2 + 3

#### Channel 42 (5210MHz)



### 802.11ac-VHT 80 + 80 Power Spectral Density - Ant 1 / Ant 0 + 1 + 2 + 3

#### Channel 42 (5210MHz)



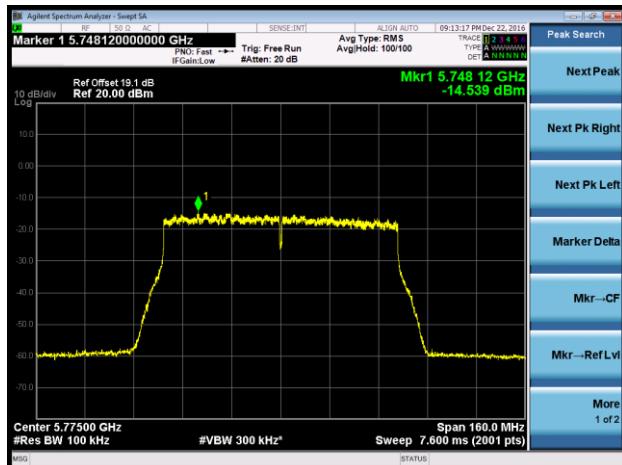
### 802.11ac-VHT 80 + 80 Power Spectral Density - Ant 2 / Ant 0 + 1 + 2 + 3

#### Channel 155 (5775MHz)



### 802.11ac-VHT 80 + 80 Power Spectral Density - Ant 3 / Ant 0 + 1 + 2 + 3

#### Channel 155 (5775MHz)



**Power Spectral Density Measurement Limit of Galtronics Omni Antenna**

Frequency Band (MHz)	Per Chain Max Antenna Gain (dBi)				CDD & Beam Forming Directional Gain (dBi)	Limit of SISO (dBm/MHz)				Limit of MIMO (dBm/MHz)  Ant 0+1+2+3
	Ant 0	Ant 1	Ant 2	Ant 3		Ant 0	Ant 1	Ant 2	Ant 3	
5150 ~ 5250	6.68	6.53	6.68	6.53	12.63	16.32	16.47	16.32	16.47	10.37
Frequency Band (MHz)	Per Chain Max Antenna Gain (dBi)				CDD & Beam Forming Directional Gain (dBi)	Limit of SISO (dBm/500kHz)				Limit of MIMO (dBm/500kHz)  Ant 0+1+2+3
	Ant 0	Ant 1	Ant 2	Ant 3		Ant 0	Ant 1	Ant 2	Ant 3	
5725 ~ 5850	6.78	6.55	6.78	6.55	12.69	29.22	29.45	29.22	29.45	23.31

Product	US WI-FI AP 4X4 OD ext. antenna	Temperature	25°C
Test Engineer	Johnson Liao	Relative Humidity	50 ~ 58%
Test Site	SR2	Test Date	2016/12/20
Test Item	Power Spectral Density	Antenna Model No.	Galtronics Omni

Test Mode	Data Rate (Mbps)	Channel No.	Freq. (MHz)	PSD (dBm/ MHz)	Duty Cycle (%)	Total PSD (dBm/ MHz)	PSD Limit (dBm/ MHz)	Result
Ant 0								
11a	6	36	5180	8.74	97.18	8.86	≤ 16.32	Pass
11a	6	44	5220	9.35	97.18	9.47	≤ 16.32	Pass
11a	6	48	5240	8.85	97.18	8.97	≤ 16.32	Pass
11n-HT20	6.5	36	5180	8.70	98.81	8.75	≤ 16.32	Pass
11n-HT20	6.5	44	5220	9.46	98.81	9.51	≤ 16.32	Pass
11n-HT20	6.5	48	5240	8.95	98.81	9.00	≤ 16.32	Pass
11n-HT40	13.5	38	5190	6.29	97.55	6.40	≤ 16.32	Pass
11n-HT40	13.5	46	5230	6.43	97.55	6.54	≤ 16.32	Pass
11ac-VHT20	6.5	36	5180	8.73	98.82	8.78	≤ 16.32	Pass
11ac-VHT20	6.5	44	5220	9.56	98.82	9.61	≤ 16.32	Pass
11ac-VHT20	6.5	48	5240	8.95	98.82	9.00	≤ 16.32	Pass
11ac-VHT40	13.5	38	5190	5.59	97.40	5.70	≤ 16.32	Pass
11ac-VHT40	13.5	46	5230	6.22	97.40	6.33	≤ 16.32	Pass
11ac-VHT80	29.3	42	5210	3.07	94.30	3.32	≤ 16.32	Pass

Note: Total PSD (dBm/MHz) = Ant PSD (dBm/MHz) + 10\*log(1/duty cycle)

Test Mode	Data Rate (Mbps)	Channel No.	Freq. (MHz)	PSD (dBm/ MHz)	Duty Cycle (%)	Total PSD (dBm/ MHz)	PSD Limit (dBm/ MHz)	Result
Ant 1								
11a	6	36	5180	9.23	97.18	9.35	≤ 16.47	Pass
11a	6	44	5220	9.75	97.18	9.87	≤ 16.47	Pass
11a	6	48	5240	9.54	97.18	9.66	≤ 16.47	Pass
11n-HT20	6.5	36	5180	9.43	98.81	9.48	≤ 16.47	Pass
11n-HT20	6.5	44	5220	9.18	98.81	9.23	≤ 16.47	Pass
11n-HT20	6.5	48	5240	9.43	98.81	9.48	≤ 16.47	Pass
11n-HT40	13.5	38	5190	6.12	97.55	6.23	≤ 16.47	Pass
11n-HT40	13.5	46	5230	6.70	97.55	6.81	≤ 16.47	Pass
11ac-VHT20	6.5	36	5180	9.54	98.82	9.59	≤ 16.47	Pass
11ac-VHT20	6.5	44	5220	9.41	98.82	9.46	≤ 16.47	Pass
11ac-VHT20	6.5	48	5240	9.63	98.82	9.68	≤ 16.47	Pass
11ac-VHT40	13.5	38	5190	6.33	97.40	6.44	≤ 16.47	Pass
11ac-VHT40	13.5	46	5230	6.75	97.40	6.86	≤ 16.47	Pass
11ac-VHT80	29.3	42	5210	3.20	94.30	3.45	≤ 16.47	Pass

Note: Total PSD (dBm/MHz) = Ant PSD (dBm/MHz) + 10\*log(1/duty cycle)

Test Mode	Data Rate (Mbps)	Channel No.	Freq. (MHz)	PSD (dBm/ MHz)	Duty Cycle (%)	Total PSD (dBm/ MHz)	PSD Limit (dBm/ MHz)	Result
Ant 2								
11a	6	36	5180	9.52	97.18	9.64	≤ 16.32	Pass
11a	6	44	5220	9.21	97.18	9.33	≤ 16.32	Pass
11a	6	48	5240	9.42	97.18	9.54	≤ 16.32	Pass
11n-HT20	6.5	36	5180	8.95	98.81	9.00	≤ 16.32	Pass
11n-HT20	6.5	44	5220	9.29	98.81	9.34	≤ 16.32	Pass
11n-HT20	6.5	48	5240	9.05	98.81	9.10	≤ 16.32	Pass
11n-HT40	13.5	38	5190	6.29	97.55	6.40	≤ 16.32	Pass
11n-HT40	13.5	46	5230	6.22	97.55	6.33	≤ 16.32	Pass
11ac-VHT20	6.5	36	5180	9.12	98.82	9.17	≤ 16.32	Pass
11ac-VHT20	6.5	44	5220	9.30	98.82	9.35	≤ 16.32	Pass
11ac-VHT20	6.5	48	5240	9.10	98.82	9.15	≤ 16.32	Pass
11ac-VHT40	13.5	38	5190	6.32	97.40	6.43	≤ 16.32	Pass
11ac-VHT40	13.5	46	5230	6.12	97.40	6.23	≤ 16.32	Pass
11ac-VHT80	29.3	42	5210	2.53	94.30	2.78	≤ 16.32	Pass
Ant 3								
11a	6	36	5180	9.72	97.18	9.84	≤ 16.47	Pass
11a	6	44	5220	9.64	97.18	9.76	≤ 16.47	Pass
11a	6	48	5240	9.81	97.18	9.93	≤ 16.47	Pass
11n-HT20	6.5	36	5180	9.48	98.81	9.53	≤ 16.47	Pass
11n-HT20	6.5	44	5220	9.71	98.81	9.76	≤ 16.47	Pass
11n-HT20	6.5	48	5240	10.04	98.81	10.09	≤ 16.47	Pass
11n-HT40	13.5	38	5190	6.64	97.55	6.75	≤ 16.47	Pass
11n-HT40	13.5	46	5230	6.45	97.55	6.56	≤ 16.47	Pass
11ac-VHT20	6.5	36	5180	9.22	98.82	9.27	≤ 16.47	Pass
11ac-VHT20	6.5	44	5220	9.74	98.82	9.79	≤ 16.47	Pass
11ac-VHT20	6.5	48	5240	10.08	98.82	10.13	≤ 16.47	Pass
11ac-VHT40	13.5	38	5190	6.81	97.40	6.92	≤ 16.47	Pass
11ac-VHT40	13.5	46	5230	6.49	97.40	6.60	≤ 16.47	Pass
11ac-VHT80	29.3	42	5210	3.22	94.30	3.47	≤ 16.47	Pass

Note: Total PSD (dBm/MHz) = Ant PSD (dBm/MHz) +  $10 \log(1/\text{duty cycle})$

Test Mode	Data Rate (Mbps)	Channel No.	Freq. (MHz)	Ant 0 PSD (dBm/ MHz)	Ant 1 PSD (dBm/ MHz)	Ant 2 PSD (dBm/ MHz)	Ant 3 PSD (dBm/ MHz)	Duty Cycle (%)	Total PSD (dBm/ MHz)	PSD Limit (dBm/ MHz)	Result
<b>Ant 0 + 1 + 2 + 3</b>											
11a	6	36	5180	3.58	3.36	3.07	3.02	97.18	9.41	≤ 10.37	Pass
11a	6	44	5220	4.46	3.69	3.68	3.38	97.18	9.96	≤ 10.37	Pass
11a	6	48	5240	4.27	3.98	3.36	3.10	97.18	9.85	≤ 10.37	Pass
11n-HT20	13	36	5180	3.57	3.28	3.12	3.20	98.81	9.37	≤ 10.37	Pass
11n-HT20	13	44	5220	3.93	3.64	3.63	3.50	98.81	9.75	≤ 10.37	Pass
11n-HT20	13	48	5240	3.54	3.64	3.63	3.11	98.81	9.56	≤ 10.37	Pass
11n-HT40	27	38	5190	0.63	0.36	0.15	0.15	97.55	6.45	≤ 10.37	Pass
11n-HT40	27	46	5230	1.10	0.86	0.55	0.19	97.55	6.82	≤ 10.37	Pass
11ac-VHT20	13	36	5180	3.36	3.61	3.00	3.10	98.82	9.34	≤ 10.37	Pass
11ac-VHT20	13	44	5220	3.97	3.39	3.51	3.78	98.82	9.74	≤ 10.37	Pass
11ac-VHT20	13	48	5240	3.73	3.60	3.20	3.17	98.82	9.50	≤ 10.37	Pass
11ac-VHT40	27	38	5190	0.59	0.57	0.02	-0.89	97.40	6.25	≤ 10.37	Pass
11ac-VHT40	27	46	5230	1.23	1.01	0.51	-0.34	97.40	6.78	≤ 10.37	Pass
11ac-VHT80	58.6	42	5210	-2.51	-2.54	-2.86	-4.35	94.30	3.27	≤ 10.37	Pass

Note: Total PSD (dBm/MHz) =  $10^{\log\{10^{(Ant 0 PSD/10)} + 10^{(Ant 1 PSD/10)} + 10^{(Ant 2 PSD/10)} + 10^{(Ant 3 PSD/10)}\}} + 10^{\log(1/duty cycle)}$

Test Mode	Data Rate (Mbps)	Channel No.	Freq. (MHz)	Ant 0 PSD (dBm/ MHz)	Ant 1 PSD (dBm/ MHz)	Ant 2 PSD (dBm/ MHz)	Ant 3 PSD (dBm/ MHz)	Duty Cycle (%)	Total PSD (dBm/ MHz)	PSD Limit (dBm/ MHz)	Result
<b>Ant 0 + 1 + 2 + 3</b>											
11ac-VHT80+80	58.6	42	5210	0.36	-0.58	--	--	94.30	3.18	≤ 13.38	Pass

Note: Total PSD (dBm/MHz) =  $10^{\log\{10^{(Ant 0 PSD/10)} + 10^{(Ant 1 PSD/10)}\}} + 10^{\log(1/duty cycle)}$

Test Mode	Data Rate (Mbps)	Channel No.	Freq. (MHz)	PSD (dBm/100kHz)	Duty Cycle (%)	Constant Factor	Total PSD (dBm/500kHz)	Limit (dBm/500kHz)	Result
Ant 0									
11a	6	149	5745	2.84	97.18	6.99	9.96	≤ 29.22	Pass
11a	6	157	5785	2.41	97.18	6.99	9.52	≤ 29.22	Pass
11a	6	165	5825	2.09	97.18	6.99	9.21	≤ 29.22	Pass
11n-HT20	6.5	149	5745	2.64	98.81	6.99	9.68	≤ 29.22	Pass
11n-HT20	6.5	157	5785	2.41	98.81	6.99	9.45	≤ 29.22	Pass
11n-HT20	6.5	165	5825	1.61	98.81	6.99	8.65	≤ 29.22	Pass
11n-HT40	13.5	151	5755	-0.21	97.55	6.99	6.89	≤ 29.22	Pass
11n-HT40	13.5	159	5795	-0.74	97.55	6.99	6.36	≤ 29.22	Pass
11ac-VHT20	6.5	149	5745	2.43	98.82	6.99	9.47	≤ 29.22	Pass
11ac-VHT20	6.5	157	5785	2.16	98.82	6.99	9.20	≤ 29.22	Pass
11ac-VHT20	6.5	165	5825	2.02	98.82	6.99	9.07	≤ 29.22	Pass
11ac-VHT40	13.5	151	5755	-0.58	97.40	6.99	6.52	≤ 29.22	Pass
11ac-VHT40	13.5	159	5795	-0.84	97.40	6.99	6.26	≤ 29.22	Pass
11ac-VHT80	29.3	155	5775	-3.64	94.30	6.99	3.61	≤ 29.22	Pass
Ant 1									
11a	6	149	5745	2.47	97.18	6.99	9.58	≤ 29.45	Pass
11a	6	157	5785	2.05	97.18	6.99	9.16	≤ 29.45	Pass
11a	6	165	5825	1.28	97.18	6.99	8.39	≤ 29.45	Pass
11n-HT20	6.5	149	5745	2.05	98.81	6.99	9.09	≤ 29.45	Pass
11n-HT20	6.5	157	5785	1.51	98.81	6.99	8.55	≤ 29.45	Pass
11n-HT20	6.5	165	5825	0.95	98.81	6.99	7.99	≤ 29.45	Pass
11n-HT40	13.5	151	5755	-0.72	97.55	6.99	6.38	≤ 29.45	Pass
11n-HT40	13.5	159	5795	-1.36	97.55	6.99	5.73	≤ 29.45	Pass
11ac-VHT20	6.5	149	5745	1.69	98.82	6.99	8.73	≤ 29.45	Pass
11ac-VHT20	6.5	157	5785	1.84	98.82	6.99	8.88	≤ 29.45	Pass
11ac-VHT20	6.5	165	5825	0.94	98.82	6.99	7.98	≤ 29.45	Pass
11ac-VHT40	13.5	151	5755	-1.02	97.40	6.99	6.08	≤ 29.45	Pass
11ac-VHT40	13.5	159	5795	-1.43	97.40	6.99	5.68	≤ 29.45	Pass
11ac-VHT80	29.3	155	5775	-4.20	94.30	6.99	3.04	≤ 29.45	Pass

Note: Total PSD (dBm/500kHz) = Ant PSD (dBm/100kHz) +  $10 \log(1/\text{duty cycle})$  + Constant Factor.

Test Mode	Data Rate (Mbps)	Channel No.	Freq. (MHz)	PSD (dBm/100kHz)	Duty Cycle (%)	Constant Factor	Total PSD (dBm/500kHz)	Limit (dBm/500kHz)	Result
Ant 2									
11a	6	149	5745	2.52	97.18	6.99	9.63	≤ 29.22	Pass
11a	6	157	5785	2.17	97.18	6.99	9.29	≤ 29.22	Pass
11a	6	165	5825	1.16	97.18	6.99	8.28	≤ 29.22	Pass
11n-HT20	6.5	149	5745	2.08	98.81	6.99	9.12	≤ 29.22	Pass
11n-HT20	6.5	157	5785	1.35	98.81	6.99	8.39	≤ 29.22	Pass
11n-HT20	6.5	165	5825	0.71	98.81	6.99	7.75	≤ 29.22	Pass
11n-HT40	13.5	151	5755	-0.38	97.55	6.99	6.72	≤ 29.22	Pass
11n-HT40	13.5	159	5795	-1.40	97.55	6.99	5.70	≤ 29.22	Pass
11ac-VHT20	6.5	149	5745	2.03	98.82	6.99	9.07	≤ 29.22	Pass
11ac-VHT20	6.5	157	5785	1.42	98.82	6.99	8.47	≤ 29.22	Pass
11ac-VHT20	6.5	165	5825	1.09	98.82	6.99	8.13	≤ 29.22	Pass
11ac-VHT40	13.5	151	5755	-0.61	97.40	6.99	6.49	≤ 29.22	Pass
11ac-VHT40	13.5	159	5795	-0.92	97.40	6.99	6.19	≤ 29.22	Pass
11ac-VHT80	29.3	155	5775	-4.10	94.30	6.99	3.14	≤ 29.22	Pass
Ant 3									
11a	6	149	5745	2.19	97.18	6.99	9.30	≤ 29.45	Pass
11a	6	157	5785	1.52	97.18	6.99	8.63	≤ 29.45	Pass
11a	6	165	5825	0.92	97.18	6.99	8.04	≤ 29.45	Pass
11n-HT20	6.5	149	5745	1.84	98.81	6.99	8.88	≤ 29.45	Pass
11n-HT20	6.5	157	5785	1.58	98.81	6.99	8.62	≤ 29.45	Pass
11n-HT20	6.5	165	5825	0.51	98.81	6.99	7.55	≤ 29.45	Pass
11n-HT40	13.5	151	5755	-1.13	97.55	6.99	5.97	≤ 29.45	Pass
11n-HT40	13.5	159	5795	-1.60	97.55	6.99	5.50	≤ 29.45	Pass
11ac-VHT20	6.5	149	5745	1.50	98.82	6.99	8.54	≤ 29.45	Pass
11ac-VHT20	6.5	157	5785	1.34	98.82	6.99	8.38	≤ 29.45	Pass
11ac-VHT20	6.5	165	5825	0.79	98.82	6.99	7.83	≤ 29.45	Pass
11ac-VHT40	13.5	151	5755	-1.01	97.40	6.99	6.09	≤ 29.45	Pass
11ac-VHT40	13.5	159	5795	-1.38	97.40	6.99	5.72	≤ 29.45	Pass
11ac-VHT80	29.3	155	5775	-4.52	94.30	6.99	2.72	≤ 29.45	Pass

Note: Total PSD (dBm/500kHz) = Ant PSD (dBm/100kHz) +  $10 \log(1/\text{duty cycle})$  + Constant Factor.

Test Mode	Data Rate (Mbps)	Channel No.	Freq. (MHz)	Ant 0 PSD (dBm/100kHz)	Ant 1 PSD (dBm/100kHz)	Ant 2 PSD (dBm/100kHz)	Ant 3 PSD (dBm/100kHz)	Duty Cycle (%)	Constant Factor	Total PSD (dBm/500kHz)	Limit (dBm/500kHz)	Result
Ant 0 + 1 + 2 + 3												
11a	6	149	5745	-3.39	-3.64	-3.21	-4.13	97.18	6.99	9.55	≤ 23.31	Pass
11a	6	157	5785	-3.48	-3.67	-3.51	-4.21	97.18	6.99	9.43	≤ 23.31	Pass
11a	6	165	5825	-3.04	-3.70	-4.12	-4.13	97.18	6.99	9.41	≤ 23.31	Pass
11n-HT20	13	149	5745	-3.52	-3.17	-3.16	-3.73	98.81	6.99	9.67	≤ 23.31	Pass
11n-HT20	13	157	5785	-3.97	-3.26	-3.67	-3.62	98.81	6.99	9.44	≤ 23.31	Pass
11n-HT20	13	165	5825	-3.25	-3.41	-3.79	-3.65	98.81	6.99	9.54	≤ 23.31	Pass
11n-HT40	27	151	5755	-6.65	-6.57	-6.68	-7.54	97.55	6.99	6.28	≤ 23.31	Pass
11n-HT40	27	159	5795	-6.56	-6.44	-6.91	-7.28	97.55	6.99	6.33	≤ 23.31	Pass
11ac-VHT20	13	149	5745	-3.24	-3.45	-3.07	-3.49	98.82	6.99	9.75	≤ 23.31	Pass
11ac-VHT20	13	157	5785	-4.03	-3.87	-3.82	-4.03	98.82	6.99	9.12	≤ 23.31	Pass
11ac-VHT20	13	165	5825	-2.97	-3.42	-3.72	-3.58	98.82	6.99	9.65	≤ 23.31	Pass
11ac-VHT40	27	151	5755	-6.76	-6.66	-6.69	-7.60	97.40	6.99	6.22	≤ 23.31	Pass
11ac-VHT40	27	159	5795	-6.73	-6.37	-6.85	-7.27	97.40	6.99	6.33	≤ 23.31	Pass
11ac-VHT80	58.6	155	5775	-10.26	-9.73	-9.74	-10.84	94.30	6.99	3.14	≤ 23.31	Pass

Note: Total PSD (dBm/500kHz) =  $10^{\log\{10^{(\text{Ant 0 PSD/10})} + 10^{(\text{Ant 1 PSD/10})} + 10^{(\text{Ant 2 PSD/10})} + 10^{(\text{Ant 3 PSD/10})}\}} + 10^{\log(1/\text{duty cycle})} + \text{Constant Factor}$ .

Test Mode	Data Rate (Mbps)	Channel No.	Freq. (MHz)	Ant 0 PSD (dBm/100kHz)	Ant 1 PSD (dBm/100kHz)	Ant 2 PSD (dBm/100kHz)	Ant 3 PSD (dBm/100kHz)	Duty Cycle (%)	Constant Factor	Total PSD (dBm/500kHz)	Limit (dBm/500kHz)	Result
Ant 0 + 1 + 2 + 3												
11ac-VHT80+80	58.6	155	5775	--	--	-9.39	-9.89	94.30	6.99	0.62	≤ 26.32	Pass

Note: Total PSD (dBm/MHz) =  $10^{\log\{10^{(\text{Ant 2 PSD/10})} + 10^{(\text{Ant 3 PSD/10})}\}} + 10^{\log(1/\text{duty cycle})} + \text{Constant Factor}$

