

6.3. Peak Power Spectral Density

6.3.1. Measurement Limit

Standard	Limit (dBm)
FCC 47 CFR Part 15.407(a)(1)	5.15–5.25 GHz: the maximum power spectral density shall not exceed 17 dBm in any 1 megahertz band. 5.25–5.35 GHz and 5.47–5.725 GHz: the maximum power spectral density shall not exceed 11 dBm in any 1 megahertz band.

6.3.2. Test Procedure

The measurement method is made according to KDB 789033 F

1. Create an average power spectrum for the EUT operating mode being tested by following the instructions in II.E.2. for measuring maximum conducted output power using a spectrum analyzer or EMI receiver: select the appropriate test method (SA-1, SA-2, SA-3, or alternatives to each) and apply it up to, but not including, the step labeled, “Compute power...” (This procedure is required even if the maximum conducted output power measurement was performed using a power meter, method PM.)
2. Use the peak search function on the instrument to find the peak of the spectrum and record its value.
3. Make the following adjustments to the peak value of the spectrum, if applicable:
 - a) If Method SA-2 or SA-2 Alternative was used, add $10 \log(1/x)$, where x is the duty cycle, to the peak of the spectrum.
 - b) If Method SA-3 Alternative was used and the linear mode was used in step II.E.2.g)(viii), add 1 dB to the final result to compensate for the difference between linear averaging and power averaging.
4. The result is the Maximum PSD over 1 MHz reference bandwidth.
5. For devices operating in the bands 5.15-5.25 GHz, 5.25-5.35 GHz, and 5.47-5.725 GHz, the above procedures make use of 1 MHz RBW to satisfy directly the 1 MHz reference bandwidth specified in Section 15.407(a)(5). For devices operating in the band 5.725-5.85 GHz, the rules specify a measurement bandwidth of 500 kHz. Many spectrum analyzers do not have 500 kHz RBW, thus a narrower RBW may need to be used. The rules permit the use of a RBWs less than 1 MHz, or 500 kHz, “provided that the measured power is integrated over the full reference bandwidth” to show the total power over the specified measurement bandwidth (i.e., 1 MHz, or 500 kHz). If measurements are performed using a reduced resolution bandwidth (< 1 MHz, or < 500 kHz) and integrated over 1 MHz, or 500 kHz bandwidth, the following adjustments to the procedures apply:
 - a) Set $RBW \geq 1/T$, where T is defined in II.B.1.a).
 - b) Set $VBW \geq 3 RBW$.

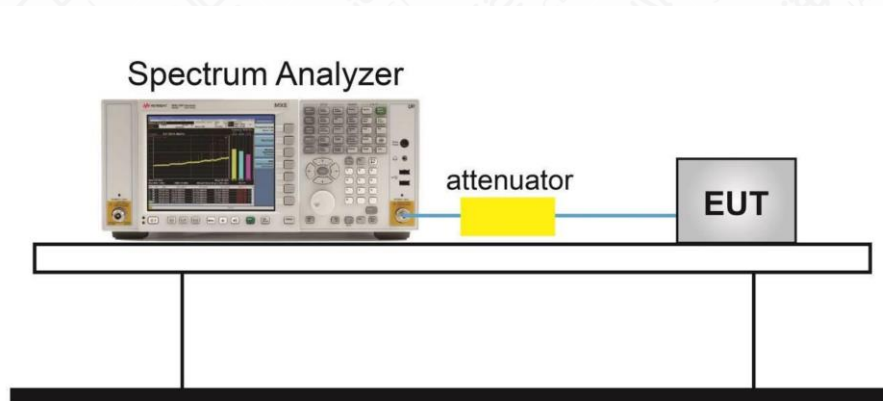
c) If measurement bandwidth of Maximum PSD is specified in 500 kHz, add $10 \log(500 \text{ kHz}/\text{RBW})$ to the measured result, whereas RBW (<500 kHz) is the reduced resolution bandwidth of the spectrum analyzer set during measurement.

d) If measurement bandwidth of Maximum PSD is specified in 1 MHz, add $10 \log(1\text{MHz}/\text{RBW})$ to the measured result, whereas RBW (< 1 MHz) is the reduced resolution bandwidth of spectrum analyzer set during measurement.

e) Care must be taken to ensure that the measurements are performed during a period of continuous transmission or are corrected upward for duty cycle.

Note: As a practical matter, it is recommended to use reduced RBW of 100 kHz for steps 5.c) and 5.d) above, since RBW=100 KHZ is available on nearly all spectrum analyzers.

6.3.3. Test setup



6.3.4. Measurement Results

TestMode	Antenna	Frequency[MHz]	Result [dBm/MHz]	Limit[dBm/MHz]	Verdict
11A	Ant1	5180	-2.52	17	PASS
11A	Ant2	5180	-1.89	17	PASS
11A	Ant1	5200	-2.54	17	PASS
11A	Ant2	5200	-1.57	17	PASS
11A	Ant1	5240	-2.5	17	PASS
11A	Ant2	5240	-1.64	17	PASS
11A	Ant1	5260	-2.94	11	PASS
11A	Ant2	5260	-2.47	11	PASS
11A	Ant1	5280	-3.08	11	PASS
11A	Ant2	5280	-1.17	11	PASS
11A	Ant1	5320	-2.33	11	PASS
11A	Ant2	5320	-1.66	11	PASS
11A	Ant1	5500	-5.03	11	PASS
11A	Ant2	5500	-2.2	11	PASS

11A	Ant1	5580	-4.27	11	PASS
11A	Ant2	5580	-2.33	11	PASS
11A	Ant1	5700	-3.12	11	PASS
11A	Ant2	5700	-2.79	11	PASS
11A-CDD	Ant1	5180	-1.54	17	PASS
11A-CDD	Ant2	5180	-1.3	17	PASS
11A-CDD	total	5180	1.59	17	PASS
11A-CDD	Ant1	5200	-2.14	17	PASS
11A-CDD	Ant2	5200	-1.26	17	PASS
11A-CDD	total	5200	1.33	17	PASS
11A-CDD	Ant1	5240	-2.58	17	PASS
11A-CDD	Ant2	5240	-1.11	17	PASS
11A-CDD	total	5240	1.23	17	PASS
11A-CDD	Ant1	5260	-2.84	11	PASS
11A-CDD	Ant2	5260	-2.4	11	PASS
11A-CDD	total	5260	0.4	11	PASS
11A-CDD	Ant2	5280	-1.24	11	PASS
11A-CDD	total	5280	0.96	11	PASS
11A-CDD	Ant1	5280	-3.04	11	PASS
11A-CDD	Ant1	5320	-2.52	11	PASS
11A-CDD	Ant2	5320	-1.6	11	PASS
11A-CDD	total	5320	0.97	11	PASS
11A-CDD	Ant1	5500	-4.86	11	PASS
11A-CDD	Ant2	5500	-2.22	11	PASS
11A-CDD	total	5500	-0.33	11	PASS
11A-CDD	Ant1	5580	-4.2	11	PASS
11A-CDD	Ant2	5580	-2.47	11	PASS
11A-CDD	total	5580	-0.24	11	PASS
11A-CDD	Ant1	5700	-3.61	11	PASS
11A-CDD	Ant2	5700	-3.03	11	PASS
11A-CDD	total	5700	-0.3	11	PASS
11N20SISO	Ant1	5180	-2.28	17	PASS
11N20SISO	Ant2	5180	-2.04	17	PASS
11N20SISO	Ant1	5200	-2.77	17	PASS
11N20SISO	Ant2	5200	-1.84	17	PASS
11N20SISO	Ant1	5240	-2.93	17	PASS
11N20SISO	Ant2	5240	-1.9	17	PASS
11N20SISO	Ant1	5260	-3.18	11	PASS
11N20SISO	Ant2	5260	-2.8	11	PASS
11N20SISO	Ant1	5280	-3.34	11	PASS
11N20SISO	Ant2	5280	-1.42	11	PASS
11N20SISO	Ant1	5320	-2.62	11	PASS

11N20SISO	Ant2	5320	-1.9	11	PASS
11N20SISO	Ant1	5500	-5.28	11	PASS
11N20SISO	Ant2	5500	-2.52	11	PASS
11N20SISO	Ant1	5580	-4.54	11	PASS
11N20SISO	Ant2	5580	-2.68	11	PASS
11N20SISO	Ant1	5700	-3.49	11	PASS
11N20SISO	Ant2	5700	-3.08	11	PASS
11N20MIMO	Ant1	5180	-2.91	17	PASS
11N20MIMO	Ant2	5180	-2.67	17	PASS
11N20MIMO	total	5180	0.22	17	PASS
11N20MIMO	Ant1	5200	-3.2	17	PASS
11N20MIMO	Ant2	5200	-2.35	17	PASS
11N20MIMO	total	5200	0.26	17	PASS
11N20MIMO	Ant1	5240	-3.19	17	PASS
11N20MIMO	Ant2	5240	-2.26	17	PASS
11N20MIMO	total	5240	0.31	17	PASS
11N20MIMO	Ant1	5260	-3.37	11	PASS
11N20MIMO	Ant2	5260	-2.7	11	PASS
11N20MIMO	total	5260	-0.01	11	PASS
11N20MIMO	Ant1	5280	-3.64	11	PASS
11N20MIMO	Ant2	5280	-1.62	11	PASS
11N20MIMO	total	5280	0.5	11	PASS
11N20MIMO	Ant1	5320	-2.96	11	PASS
11N20MIMO	Ant2	5320	-1.76	11	PASS
11N20MIMO	total	5320	0.69	11	PASS
11N20MIMO	Ant1	5500	-5.43	11	PASS
11N20MIMO	Ant2	5500	-2.87	11	PASS
11N20MIMO	total	5500	-0.95	11	PASS
11N20MIMO	Ant1	5580	-4.75	11	PASS
11N20MIMO	Ant2	5580	-2.84	11	PASS
11N20MIMO	total	5580	-0.68	11	PASS
11N20MIMO	Ant1	5700	-4.02	11	PASS
11N20MIMO	Ant2	5700	-3.44	11	PASS
11N20MIMO	total	5700	-0.71	11	PASS
11N40SISO	Ant1	5190	-6.06	17	PASS
11N40SISO	Ant2	5190	-5.69	17	PASS
11N40SISO	Ant1	5230	-6.58	17	PASS
11N40SISO	Ant2	5230	-5.2	17	PASS
11N40SISO	Ant1	5270	-6.84	11	PASS
11N40SISO	Ant2	5270	-5.45	11	PASS
11N40SISO	Ant1	5310	-5.99	11	PASS
11N40SISO	Ant2	5310	-4.94	11	PASS

11N40SISO	Ant1	5510	-8.23	11	PASS
11N40SISO	Ant2	5510	-6.68	11	PASS
11N40SISO	Ant1	5550	-7.92	11	PASS
11N40SISO	Ant2	5550	-7.22	11	PASS
11N40SISO	Ant1	5670	-6.35	11	PASS
11N40SISO	Ant2	5670	-5.82	11	PASS
11N40MIMO	Ant1	5190	-6.45	17	PASS
11N40MIMO	Ant2	5190	-6.56	17	PASS
11N40MIMO	total	5190	-3.49	17	PASS
11N40MIMO	Ant1	5230	-7.01	17	PASS
11N40MIMO	Ant2	5230	-5.78	17	PASS
11N40MIMO	total	5230	-3.34	17	PASS
11N40MIMO	Ant1	5270	-7.23	11	PASS
11N40MIMO	Ant2	5270	-5.44	11	PASS
11N40MIMO	total	5270	-3.23	11	PASS
11N40MIMO	Ant1	5310	-6.4	11	PASS
11N40MIMO	Ant2	5310	-5.37	11	PASS
11N40MIMO	total	5310	-2.84	11	PASS
11N40MIMO	Ant1	5510	-8.48	11	PASS
11N40MIMO	Ant2	5510	-6.73	11	PASS
11N40MIMO	total	5510	-4.51	11	PASS
11N40MIMO	Ant1	5550	-8.16	11	PASS
11N40MIMO	Ant2	5550	-7.44	11	PASS
11N40MIMO	total	5550	-4.77	11	PASS
11N40MIMO	Ant1	5670	-6.62	11	PASS
11N40MIMO	Ant2	5670	-6.11	11	PASS
11N40MIMO	total	5670	-3.35	11	PASS
11AC20SISO	Ant1	5180	-3.24	17	PASS
11AC20SISO	Ant2	5180	-2.88	17	PASS
11AC20SISO	Ant1	5200	-3.48	17	PASS
11AC20SISO	Ant2	5200	-2.73	17	PASS
11AC20SISO	Ant1	5240	-3.44	17	PASS
11AC20SISO	Ant2	5240	-2.72	17	PASS
11AC20SISO	Ant1	5260	-3.77	11	PASS
11AC20SISO	Ant2	5260	-3.6	11	PASS
11AC20SISO	Ant1	5280	-4.09	11	PASS
11AC20SISO	Ant2	5280	-2.29	11	PASS
11AC20SISO	Ant1	5320	-3.42	11	PASS
11AC20SISO	Ant2	5320	-2.77	11	PASS
11AC20SISO	Ant1	5500	-5.81	11	PASS
11AC20SISO	Ant2	5500	-3.43	11	PASS
11AC20SISO	Ant1	5580	-4.91	11	PASS

11AC20SISO	Ant2	5580	-3.69	11	PASS
11AC20SISO	Ant1	5700	-4.19	11	PASS
11AC20SISO	Ant2	5700	-4	11	PASS
11AC20MIMO	Ant1	5180	-3.39	17	PASS
11AC20MIMO	Ant2	5180	-3.3	17	PASS
11AC20MIMO	total	5180	-0.33	17	PASS
11AC20MIMO	Ant1	5200	-3.84	17	PASS
11AC20MIMO	Ant2	5200	-3.3	17	PASS
11AC20MIMO	total	5200	-0.55	17	PASS
11AC20MIMO	Ant1	5240	-3.67	17	PASS
11AC20MIMO	Ant2	5240	-3.3	17	PASS
11AC20MIMO	total	5240	-0.47	17	PASS
11AC20MIMO	Ant1	5260	-4.32	11	PASS
11AC20MIMO	Ant2	5260	-3.61	11	PASS
11AC20MIMO	total	5260	-0.94	11	PASS
11AC20MIMO	Ant1	5280	-4.63	11	PASS
11AC20MIMO	Ant2	5280	-2.08	11	PASS
11AC20MIMO	total	5280	-0.16	11	PASS
11AC20MIMO	Ant1	5320	-3.82	11	PASS
11AC20MIMO	Ant2	5320	-2.83	11	PASS
11AC20MIMO	total	5320	-0.29	11	PASS
11AC20MIMO	Ant1	5500	-5.81	11	PASS
11AC20MIMO	Ant2	5500	-3.88	11	PASS
11AC20MIMO	total	5500	-1.73	11	PASS
11AC20MIMO	Ant1	5580	-5.27	11	PASS
11AC20MIMO	Ant2	5580	-3.88	11	PASS
11AC20MIMO	total	5580	-1.51	11	PASS
11AC20MIMO	Ant1	5700	-4.54	11	PASS
11AC20MIMO	Ant2	5700	-4.42	11	PASS
11AC20MIMO	total	5700	-1.47	11	PASS
11AC40SISO	Ant1	5190	-8.32	17	PASS
11AC40SISO	Ant2	5190	-7.11	17	PASS
11AC40SISO	Ant1	5230	-8.77	17	PASS
11AC40SISO	Ant2	5230	-6.69	17	PASS
11AC40SISO	Ant1	5270	-9.01	11	PASS
11AC40SISO	Ant2	5270	-6.8	11	PASS
11AC40SISO	Ant1	5310	-7.95	11	PASS
11AC40SISO	Ant2	5310	-6.7	11	PASS
11AC40SISO	Ant1	5510	-10.28	11	PASS
11AC40SISO	Ant2	5510	-7.31	11	PASS
11AC40SISO	Ant1	5550	-9.93	11	PASS
11AC40SISO	Ant2	5550	-8.18	11	PASS

11AC40SISO	Ant1	5670	-8.78	11	PASS
11AC40SISO	Ant2	5670	-7.06	11	PASS
11AC40MIMO	Ant1	5190	-8.49	17	PASS
11AC40MIMO	Ant2	5190	-8.41	17	PASS
11AC40MIMO	total	5190	-5.44	17	PASS
11AC40MIMO	Ant1	5230	-8.4	17	PASS
11AC40MIMO	Ant2	5230	-7.16	17	PASS
11AC40MIMO	total	5230	-4.73	17	PASS
11AC40MIMO	Ant1	5270	-9.25	11	PASS
11AC40MIMO	Ant2	5270	-7.43	11	PASS
11AC40MIMO	total	5270	-5.24	11	PASS
11AC40MIMO	Ant1	5310	-8.41	11	PASS
11AC40MIMO	Ant2	5310	-7.34	11	PASS
11AC40MIMO	total	5310	-4.83	11	PASS
11AC40MIMO	Ant1	5510	-10.49	11	PASS
11AC40MIMO	Ant2	5510	-8.09	11	PASS
11AC40MIMO	total	5510	-6.12	11	PASS
11AC40MIMO	Ant1	5550	-10.17	11	PASS
11AC40MIMO	Ant2	5550	-8.68	11	PASS
11AC40MIMO	total	5550	-6.35	11	PASS
11AC40MIMO	Ant1	5670	-9.18	11	PASS
11AC40MIMO	Ant2	5670	-7.69	11	PASS
11AC40MIMO	total	5670	-5.36	11	PASS
11AC80SISO	Ant1	5210	-11.93	17	PASS
11AC80SISO	Ant2	5210	-10.76	17	PASS
11AC80SISO	Ant1	5290	-11.7	11	PASS
11AC80SISO	Ant2	5290	-10.07	11	PASS
11AC80SISO	Ant1	5530	-13.33	11	PASS
11AC80SISO	Ant2	5530	-11.35	11	PASS
11AC80SISO	Ant1	5610	-12.47	11	PASS
11AC80SISO	Ant2	5610	-11.1	11	PASS
11AC80MIMO	Ant1	5210	-12.17	17	PASS
11AC80MIMO	Ant2	5210	-10.97	17	PASS
11AC80MIMO	total	5210	-8.52	17	PASS
11AC80MIMO	Ant1	5290	-12.1	11	PASS
11AC80MIMO	Ant2	5290	-10.32	11	PASS
11AC80MIMO	total	5290	-8.11	11	PASS
11AC80MIMO	Ant1	5530	-13.55	11	PASS
11AC80MIMO	Ant2	5530	-11.73	11	PASS
11AC80MIMO	total	5530	-9.54	11	PASS
11AC80MIMO	Ant1	5610	-12.81	11	PASS
11AC80MIMO	Ant2	5610	-11.24	11	PASS

11AC80MIMO	total	5610	-8.94	11	PASS
11AX20SISO	Ant1	5180	-7.19	17	PASS
11AX20SISO	Ant2	5180	-6.83	17	PASS
11AX20SISO	Ant1	5200	-7.45	17	PASS
11AX20SISO	Ant2	5200	-6.7	17	PASS
11AX20SISO	Ant1	5240	-7.44	17	PASS
11AX20SISO	Ant2	5240	-6.73	17	PASS
11AX20SISO	Ant1	5260	-7.66	11	PASS
11AX20SISO	Ant2	5260	-6.98	11	PASS
11AX20SISO	Ant1	5280	-8.09	11	PASS
11AX20SISO	Ant2	5280	-5.78	11	PASS
11AX20SISO	Ant1	5320	-7.26	11	PASS
11AX20SISO	Ant2	5320	-6.44	11	PASS
11AX20SISO	Ant1	5500	-9.69	11	PASS
11AX20SISO	Ant2	5500	-6.72	11	PASS
11AX20SISO	Ant1	5580	-8.92	11	PASS
11AX20SISO	Ant2	5580	-6.77	11	PASS
11AX20SISO	Ant1	5700	-8.14	11	PASS
11AX20SISO	Ant2	5700	-7.44	11	PASS
11AX20MIMO	Ant1	5180	-7.44	17	PASS
11AX20MIMO	Ant2	5180	-7.36	17	PASS
11AX20MIMO	total	5180	-4.39	17	PASS
11AX20MIMO	Ant1	5200	-7.35	17	PASS
11AX20MIMO	Ant2	5200	-7.25	17	PASS
11AX20MIMO	total	5200	-4.29	17	PASS
11AX20MIMO	Ant1	5240	-7.64	17	PASS
11AX20MIMO	Ant2	5240	-7.09	17	PASS
11AX20MIMO	total	5240	-4.35	17	PASS
11AX20MIMO	Ant1	5260	-7.76	11	PASS
11AX20MIMO	Ant2	5260	-7.57	11	PASS
11AX20MIMO	total	5260	-4.65	11	PASS
11AX20MIMO	Ant1	5280	-8.51	11	PASS
11AX20MIMO	Ant2	5280	-6.43	11	PASS
11AX20MIMO	total	5280	-4.34	11	PASS
11AX20MIMO	Ant1	5320	-7.65	11	PASS
11AX20MIMO	Ant2	5320	-6.9	11	PASS
11AX20MIMO	total	5320	-4.25	11	PASS
11AX20MIMO	Ant1	5500	-10.02	11	PASS
11AX20MIMO	Ant2	5500	-7.21	11	PASS
11AX20MIMO	total	5500	-5.38	11	PASS
11AX20MIMO	Ant1	5580	-9.2	11	PASS
11AX20MIMO	Ant2	5580	-7.08	11	PASS

11AX20MIMO	total	5580	-5	11	PASS
11AX20MIMO	Ant1	5700	-8.54	11	PASS
11AX20MIMO	Ant2	5700	-7.94	11	PASS
11AX20MIMO	total	5700	-5.22	11	PASS
11AX40SISO	Ant1	5190	-10.12	17	PASS
11AX40SISO	Ant2	5190	-9.96	17	PASS
11AX40SISO	Ant1	5230	-10.65	17	PASS
11AX40SISO	Ant2	5230	-9.21	17	PASS
11AX40SISO	Ant1	5270	-10.76	11	PASS
11AX40SISO	Ant2	5270	-8.92	11	PASS
11AX40SISO	Ant1	5310	-9.84	11	PASS
11AX40SISO	Ant2	5310	-8.68	11	PASS
11AX40SISO	Ant1	5510	-12.04	11	PASS
11AX40SISO	Ant2	5510	-9.71	11	PASS
11AX40SISO	Ant1	5550	-11.89	11	PASS
11AX40SISO	Ant2	5550	-10.19	11	PASS
11AX40SISO	Ant1	5670	-10.58	11	PASS
11AX40SISO	Ant2	5670	-9.06	11	PASS
11AX40MIMO	Ant1	5190	-10.43	17	PASS
11AX40MIMO	Ant2	5190	-10.3	17	PASS
11AX40MIMO	total	5190	-7.35	17	PASS
11AX40MIMO	Ant1	5230	-10.69	17	PASS
11AX40MIMO	Ant2	5230	-9.6	17	PASS
11AX40MIMO	total	5230	-7.1	17	PASS
11AX40MIMO	Ant1	5270	-11.02	11	PASS
11AX40MIMO	Ant2	5270	-9.28	11	PASS
11AX40MIMO	total	5270	-7.05	11	PASS
11AX40MIMO	Ant1	5310	-10.3	11	PASS
11AX40MIMO	Ant2	5310	-9.15	11	PASS
11AX40MIMO	total	5310	-6.68	11	PASS
11AX40MIMO	Ant1	5510	-12.28	11	PASS
11AX40MIMO	Ant2	5510	-9.94	11	PASS
11AX40MIMO	total	5510	-7.94	11	PASS
11AX40MIMO	Ant1	5550	-12	11	PASS
11AX40MIMO	Ant2	5550	-10.39	11	PASS
11AX40MIMO	total	5550	-8.11	11	PASS
11AX40MIMO	Ant1	5670	-10.86	11	PASS
11AX40MIMO	Ant2	5670	-9.11	11	PASS
11AX40MIMO	total	5670	-6.89	11	PASS
11AX80SISO	Ant1	5210	-13.2	17	PASS
11AX80SISO	Ant2	5210	-11.94	17	PASS
11AX80SISO	Ant1	5290	-13.13	11	PASS

11AX80SISO	Ant2	5290	-11.37	11	PASS
11AX80SISO	Ant1	5530	-14.76	11	PASS
11AX80SISO	Ant2	5530	-11.99	11	PASS
11AX80SISO	Ant1	5610	-13.63	11	PASS
11AX80SISO	Ant2	5610	-12.7	11	PASS
11AX80MIMO	Ant1	5210	-13.61	17	PASS
11AX80MIMO	Ant2	5210	-12.17	17	PASS
11AX80MIMO	total	5210	-9.82	17	PASS
11AX80MIMO	Ant1	5290	-13.47	11	PASS
11AX80MIMO	Ant2	5290	-11.6	11	PASS
11AX80MIMO	total	5290	-9.42	11	PASS
11AX80MIMO	Ant1	5530	-14.9	11	PASS
11AX80MIMO	Ant2	5530	-12.85	11	PASS
11AX80MIMO	total	5530	-10.74	11	PASS
11AX80MIMO	Ant1	5610	-13.92	11	PASS
11AX80MIMO	Ant2	5610	-13.15	11	PASS
11AX80MIMO	total	5610	-10.51	11	PASS

Note:

1. EIRP= Power Spectral Density(dBm/MHz)+Antenna gain(dBi)
2. The Duty Cycle Factor is compensated in the graph.

Test Graphs

