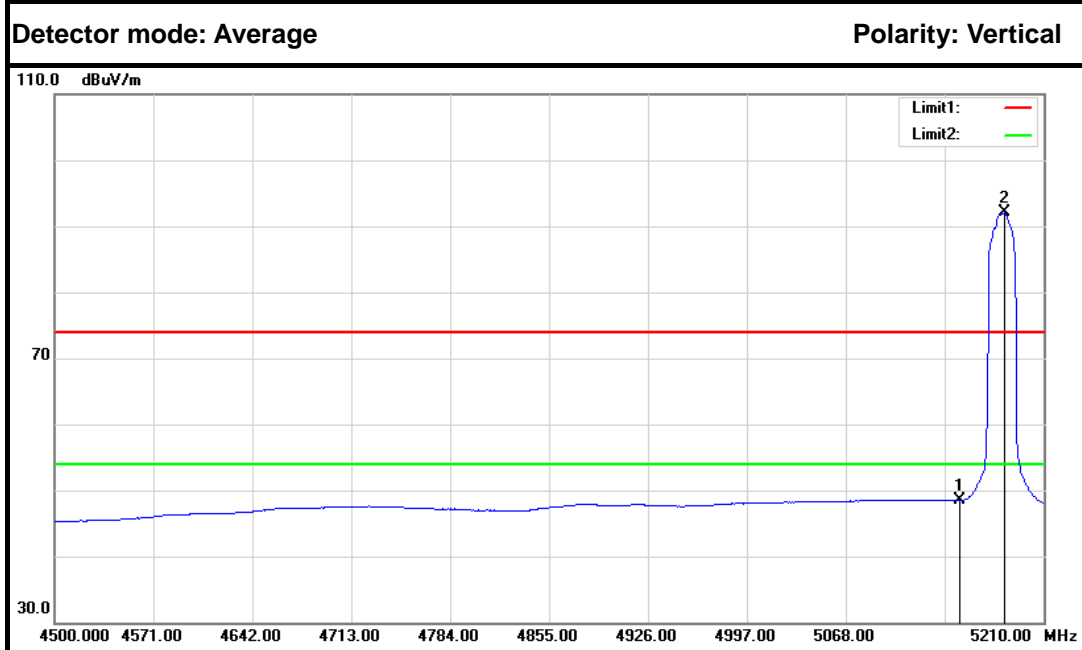
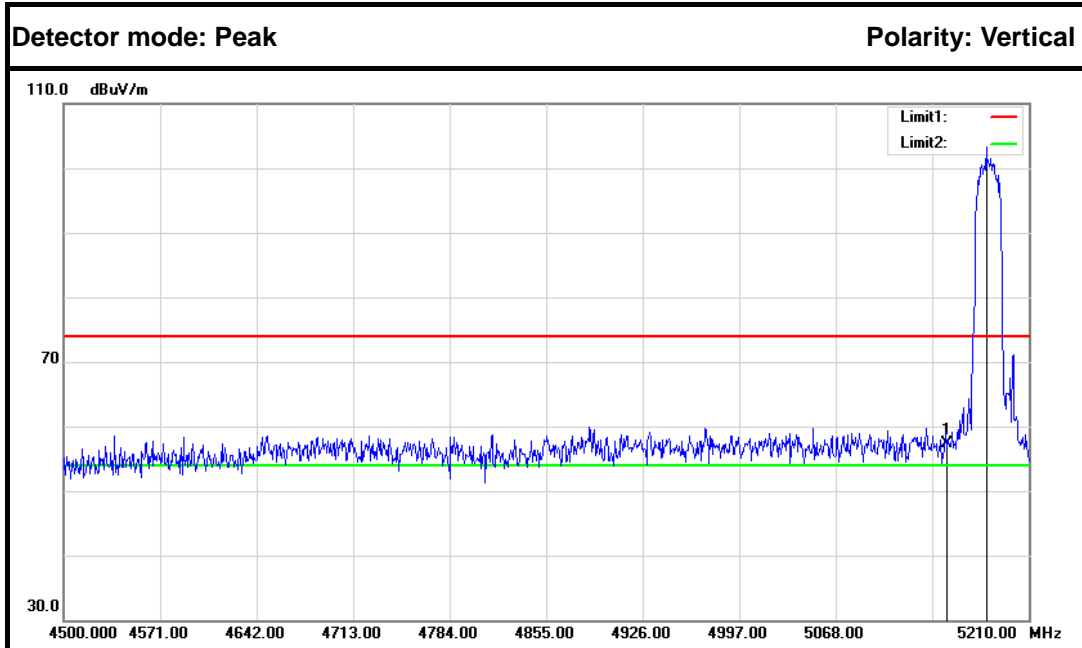
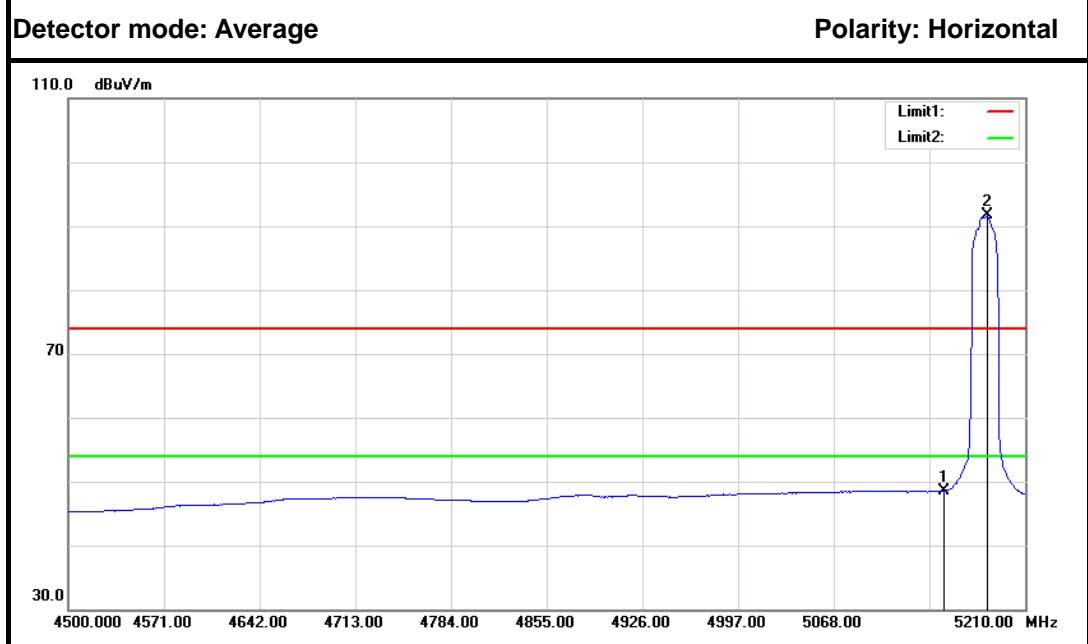
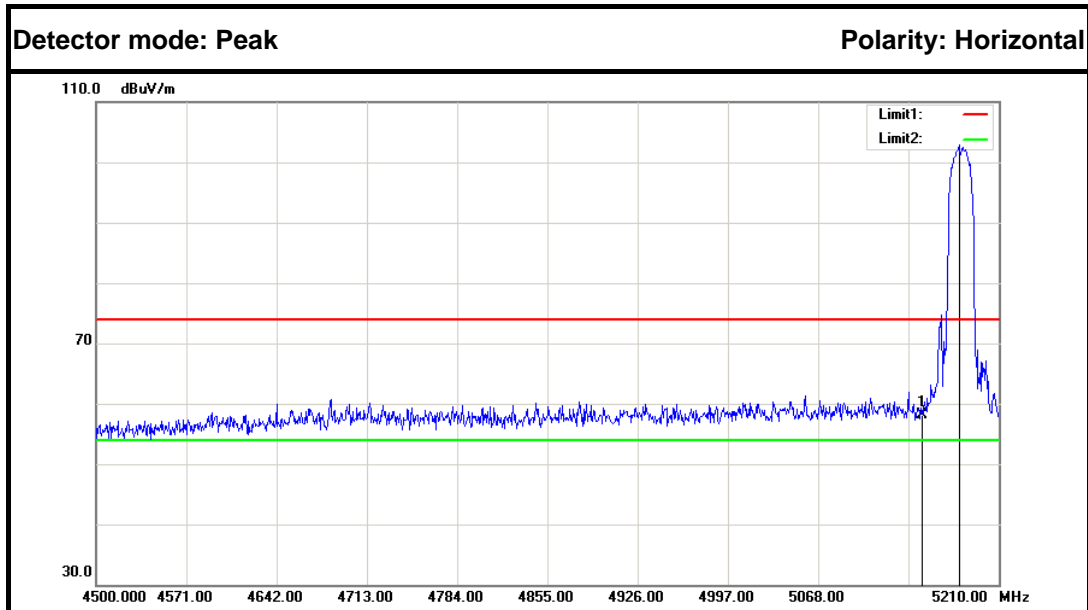




IEEE 802.11n HT 20 MHz mode / 5180 MHz



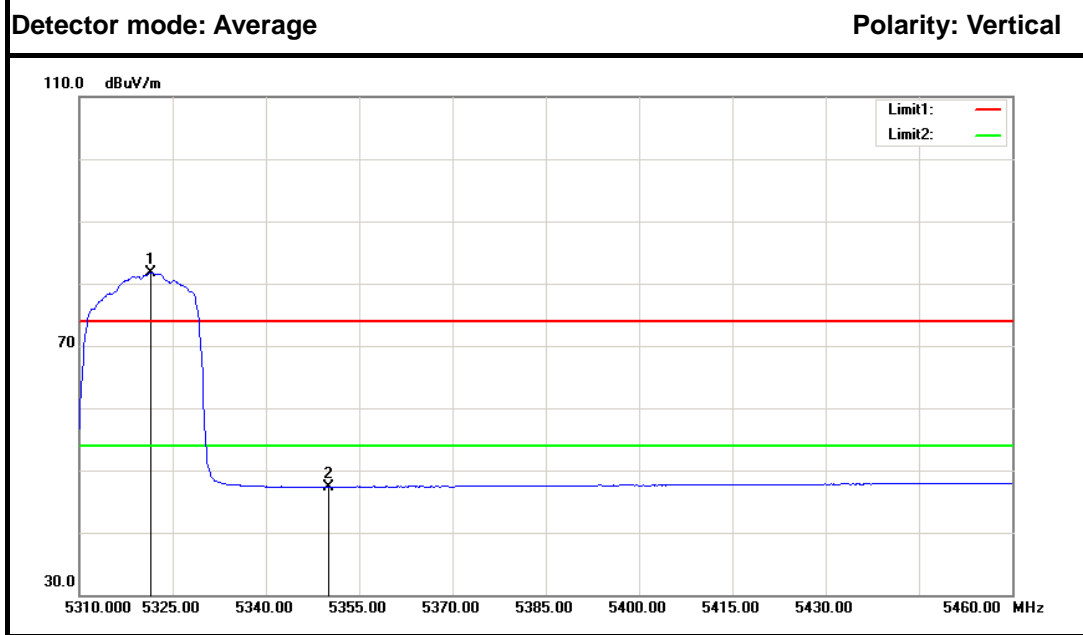
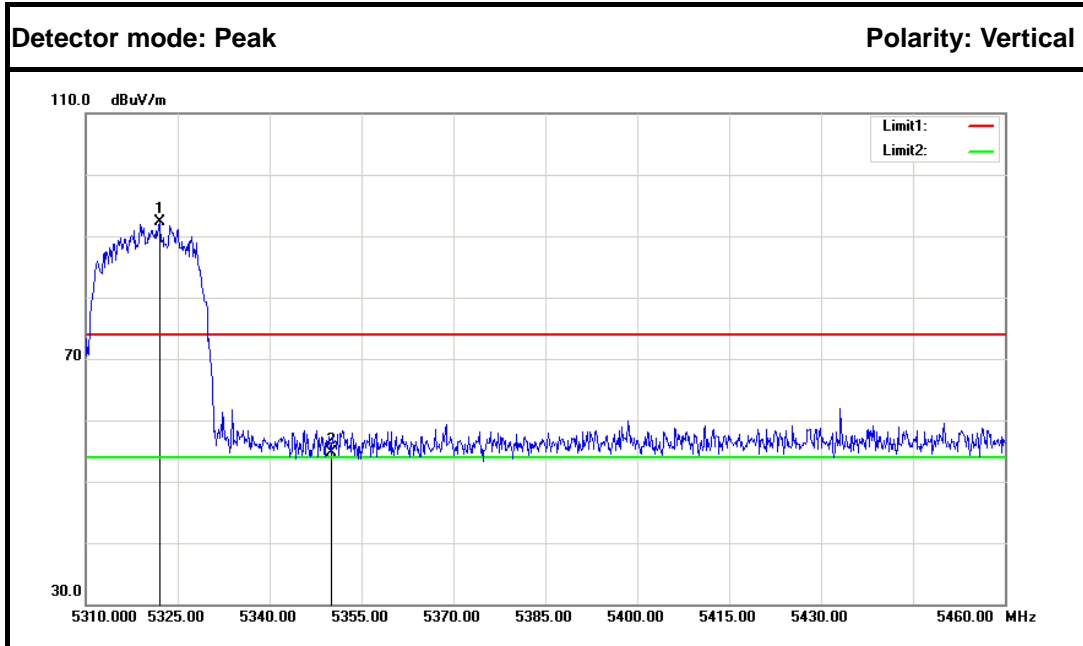
No.	Frequency (MHz)	Reading (dB)	Factor (dB/m)	Result (dB/m)	Limit (dB/m)	Margin (dB)	Remark	Antenna Polar
1	5150.000	52.10	5.25	57.35	74.00	-16.65	Peak	Vertical
2	5178.760	97.92	5.30	103.22	---	---	Peak	Vertical
1	5150.000	43.23	5.25	48.48	54.00	-5.52	Average	Vertical
2	5181.600	86.87	5.30	92.17	---	---	Average	Vertical



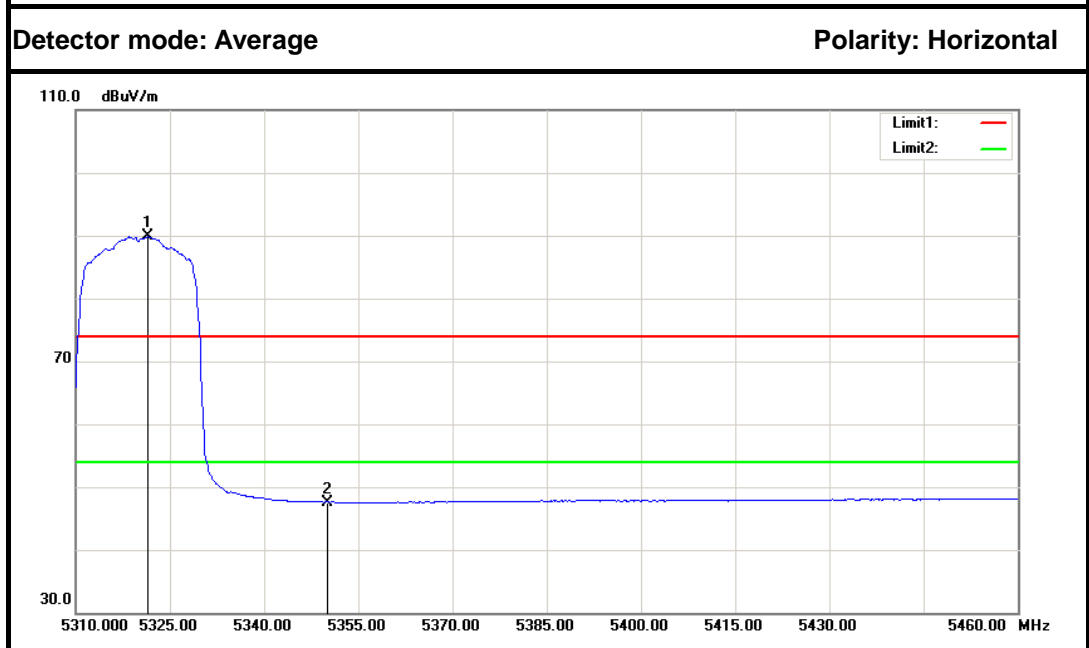
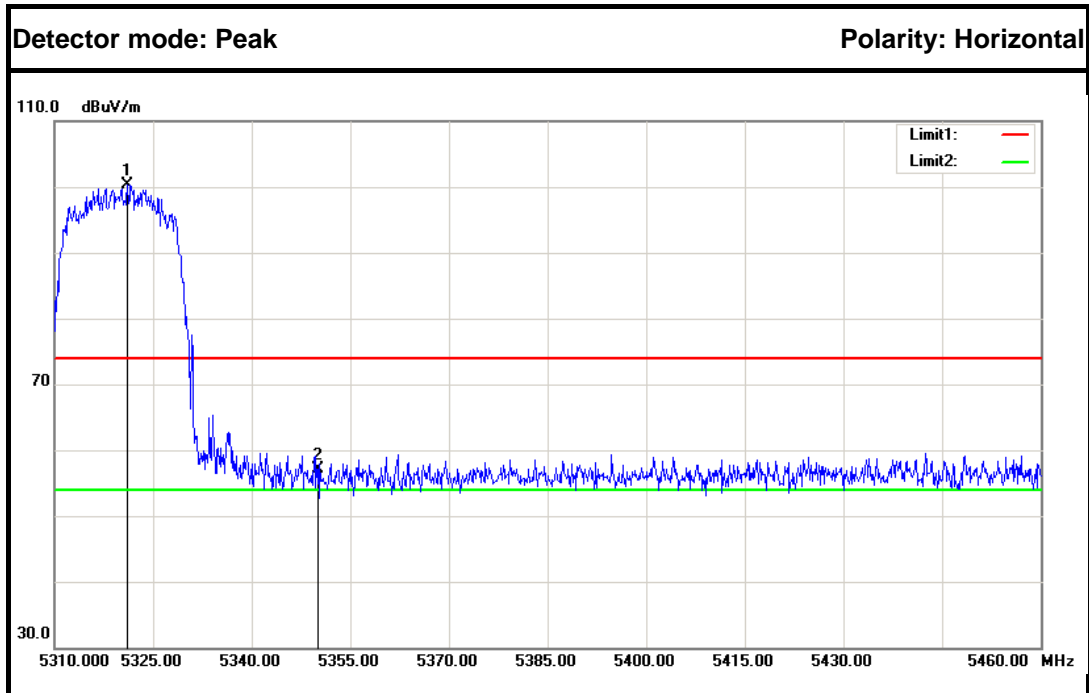
No.	Frequency (MHz)	Reading (dB)	Factor (dB/m)	Result (dB/m)	Limit (dB/m)	Margin (dB)	Remark	Antenna Polar
1	5150.000	52.92	5.25	58.17	74.00	-15.83	Peak	Horizontal
2	5178.760	97.66	5.30	102.96	---	---	Peak	Horizontal
1	5150.000	43.27	5.25	48.52	54.00	-5.48	Average	Horizontal
2	5181.600	86.31	5.30	91.61	---	---	Average	Horizontal



IEEE 802.11n HT 20 MHz mode / 5320 MHz



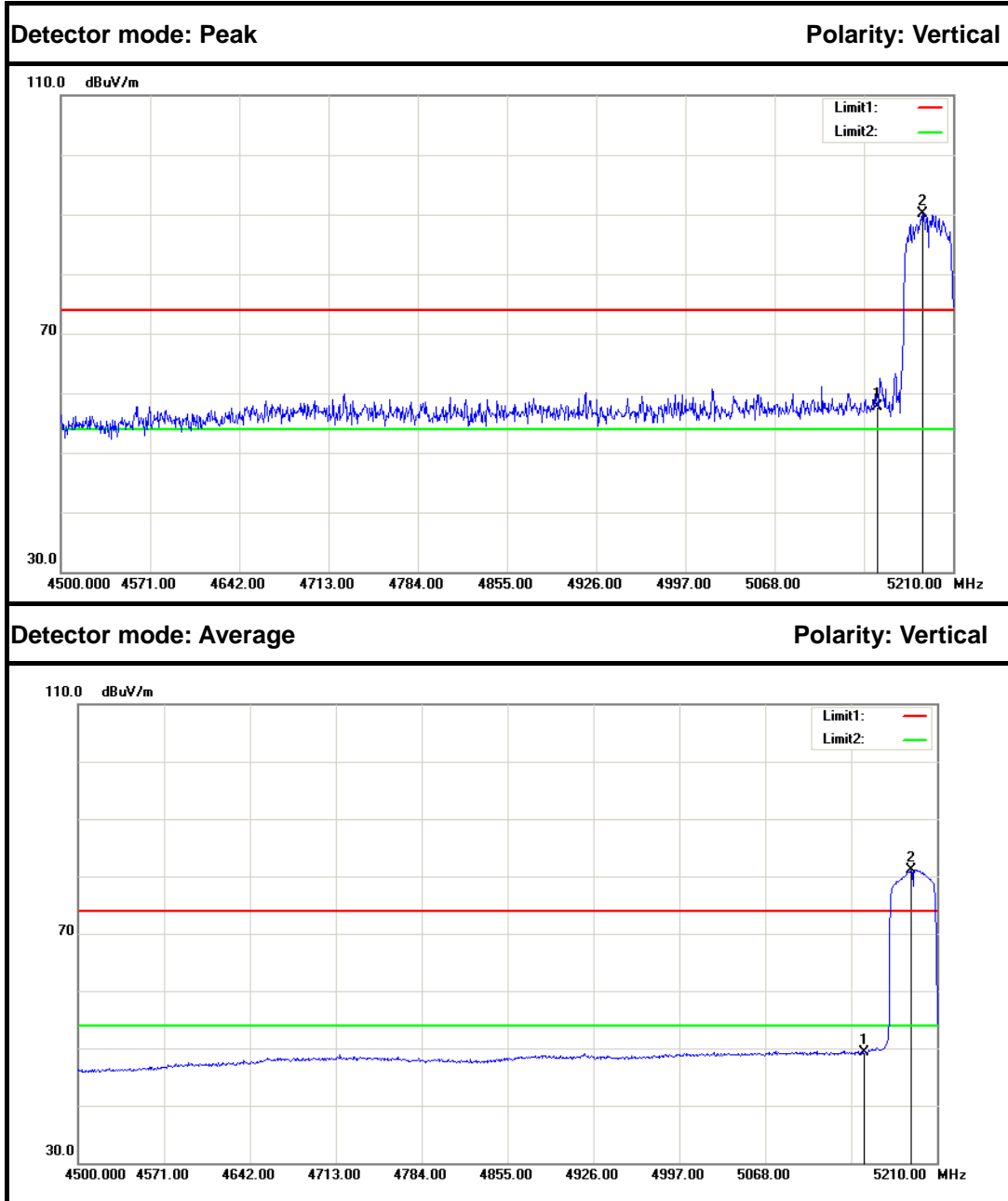
No.	Frequency (MHz)	Reading (dB)	Factor (dB/m)	Result (dB/m)	Limit (dB/m)	Margin (dB)	Remark	Antenna Polar
1	5322.000	86.68	5.55	92.23	---	---	Peak	Vertical
2	5350.000	49.03	5.60	54.63	74.00	-19.37	Peak	Vertical
1	5321.550	76.15	5.55	81.70	---	---	Average	Vertical
2	5350.000	41.74	5.60	47.34	54.00	-6.66	Average	Vertical



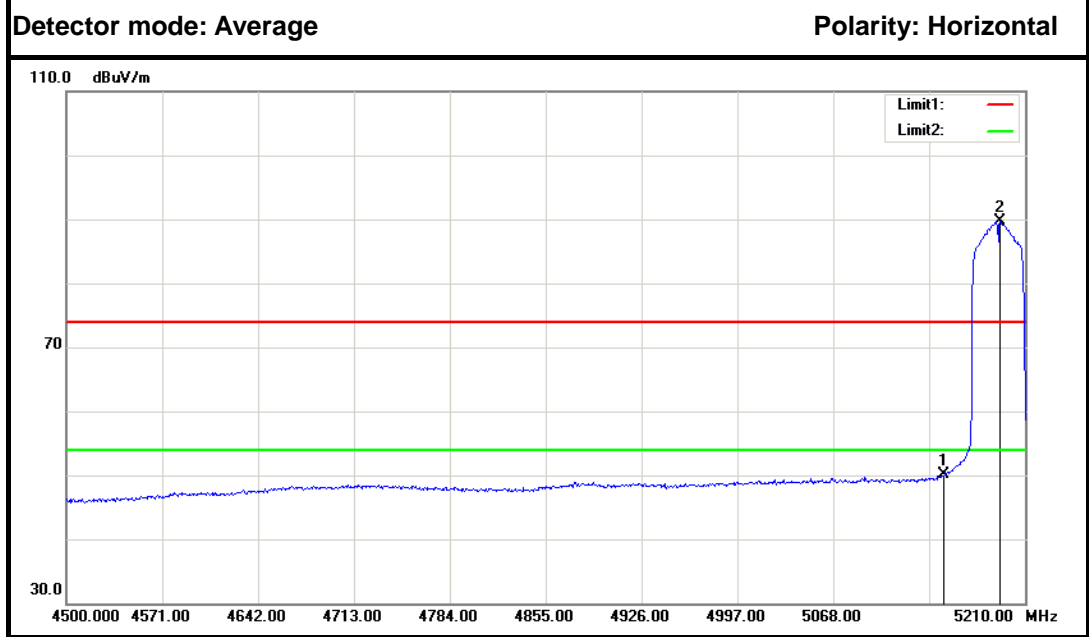
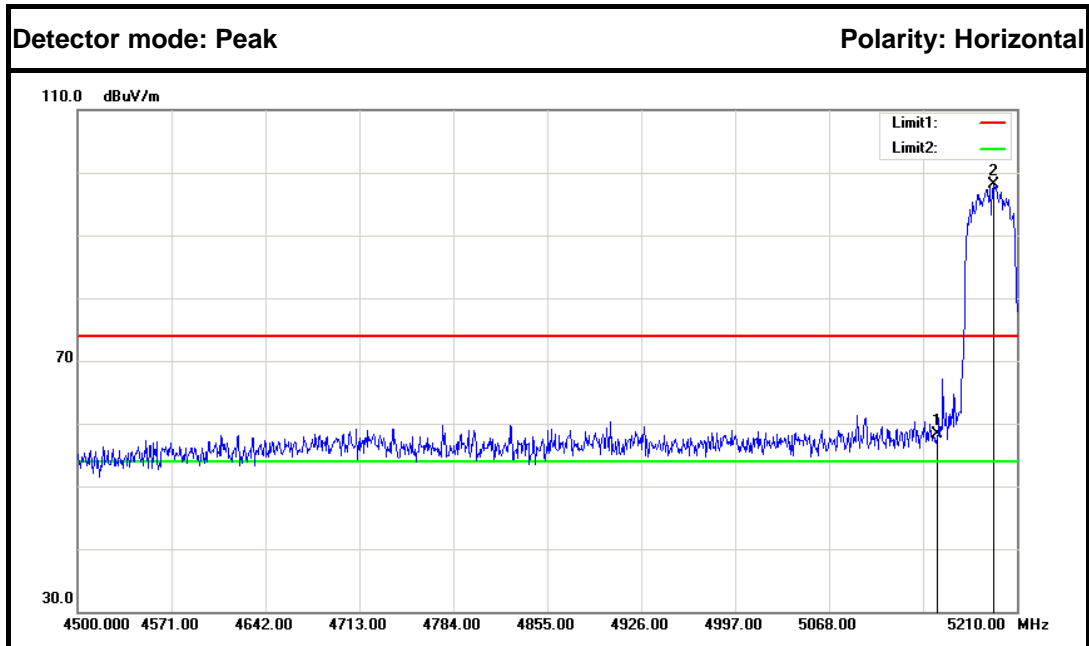
No.	Frequency (MHz)	Reading (dB)	Factor (dB/m)	Result (dB/m)	Limit (dB/m)	Margin (dB)	Remark	Antenna Polar
1	5321.100	94.85	5.55	100.40	---	---	Peak	Horizontal
2	5350.000	51.49	5.60	57.09	74.00	-16.91	Peak	Horizontal
1	5321.400	84.28	5.55	89.83	---	---	Average	Horizontal
2	5350.000	42.00	5.60	47.60	54.00	-6.40	Average	Horizontal



IEEE 802.11n HT 40 MHz mode / 5190 MHz



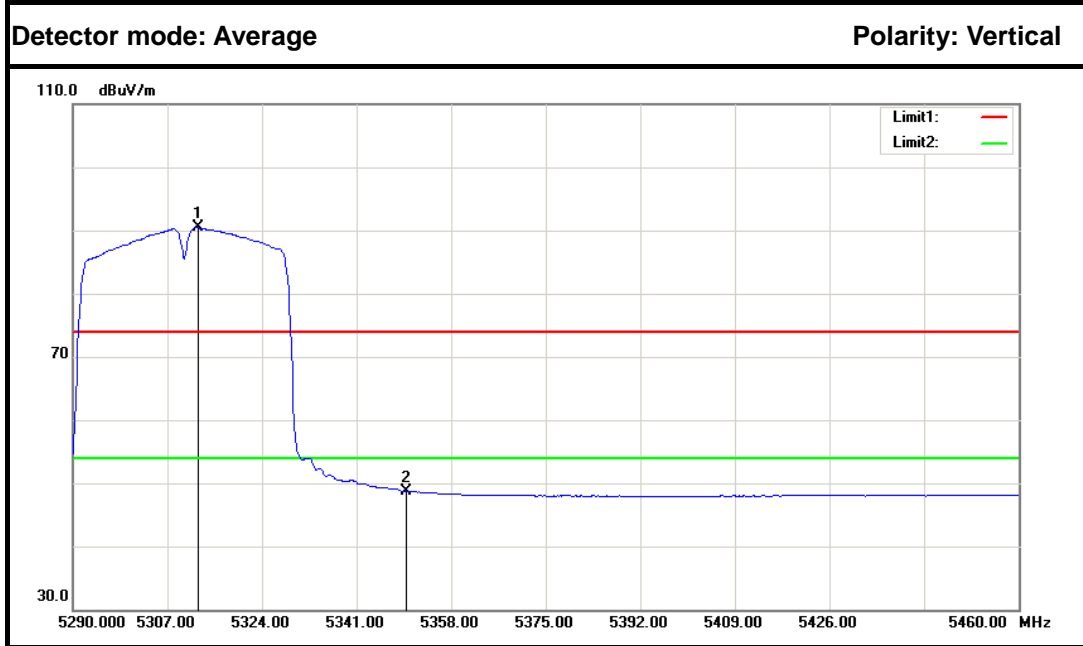
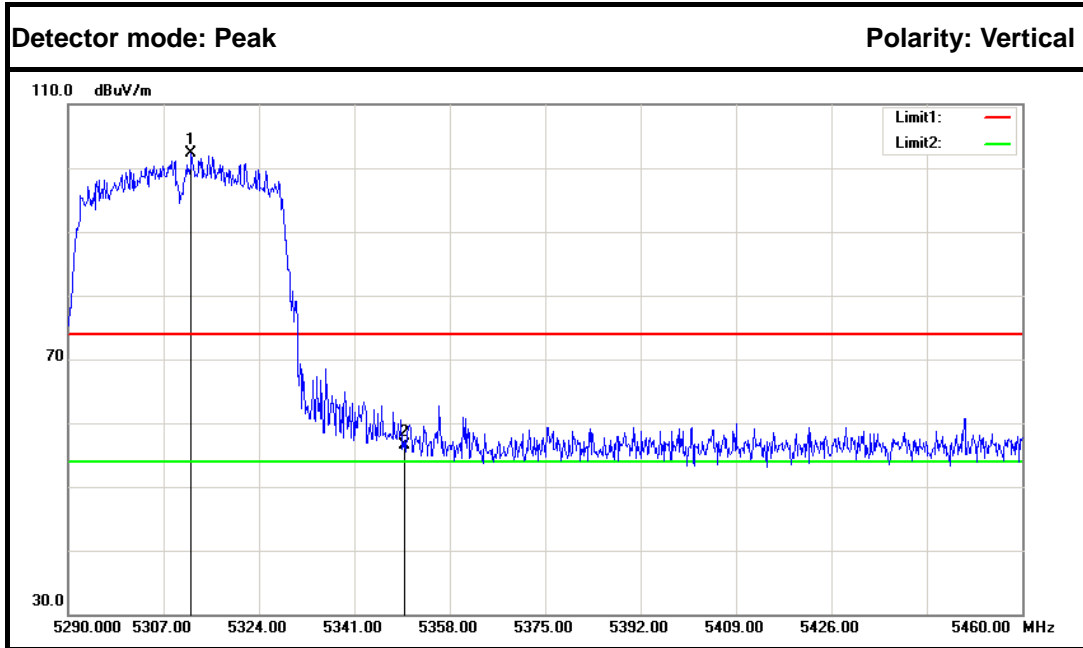
No.	Frequency (MHz)	Reading (dB)	Factor (dB/m)	Result (dB/m)	Limit (dB/m)	Margin (dB)	Remark	Antenna Polar
1	5150.000	52.55	5.25	57.80	74.00	-16.20	Peak	Vertical
2	5185.860	84.84	5.31	90.15	---	---	Peak	Vertical
1	5150.000	44.09	5.25	49.34	54.00	-4.66	Average	Vertical
2	5188.700	75.81	5.32	81.13	---	---	Average	Vertical



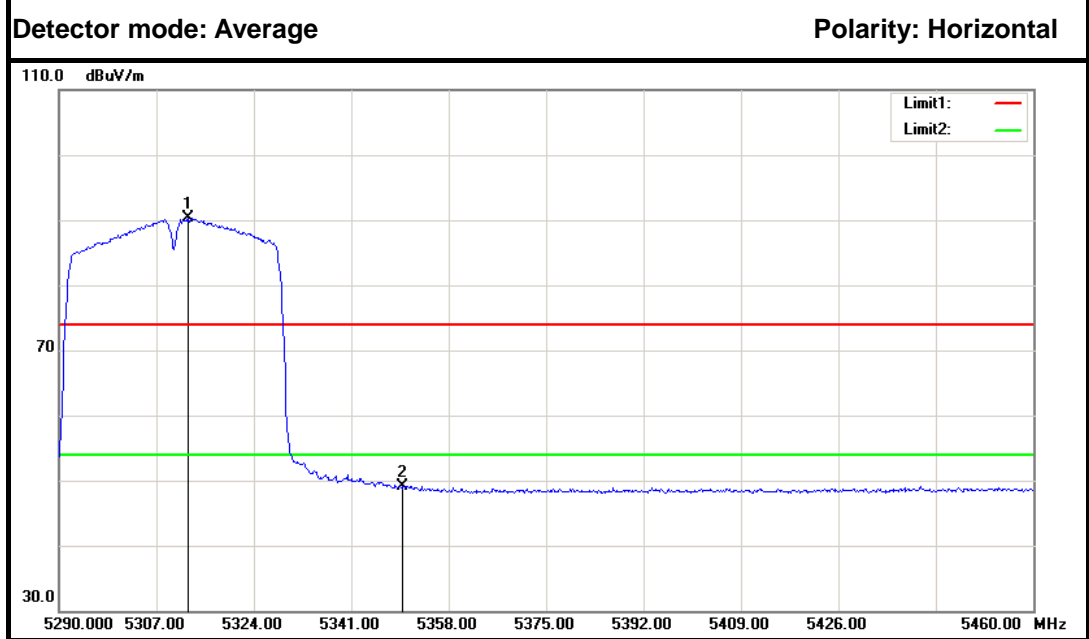
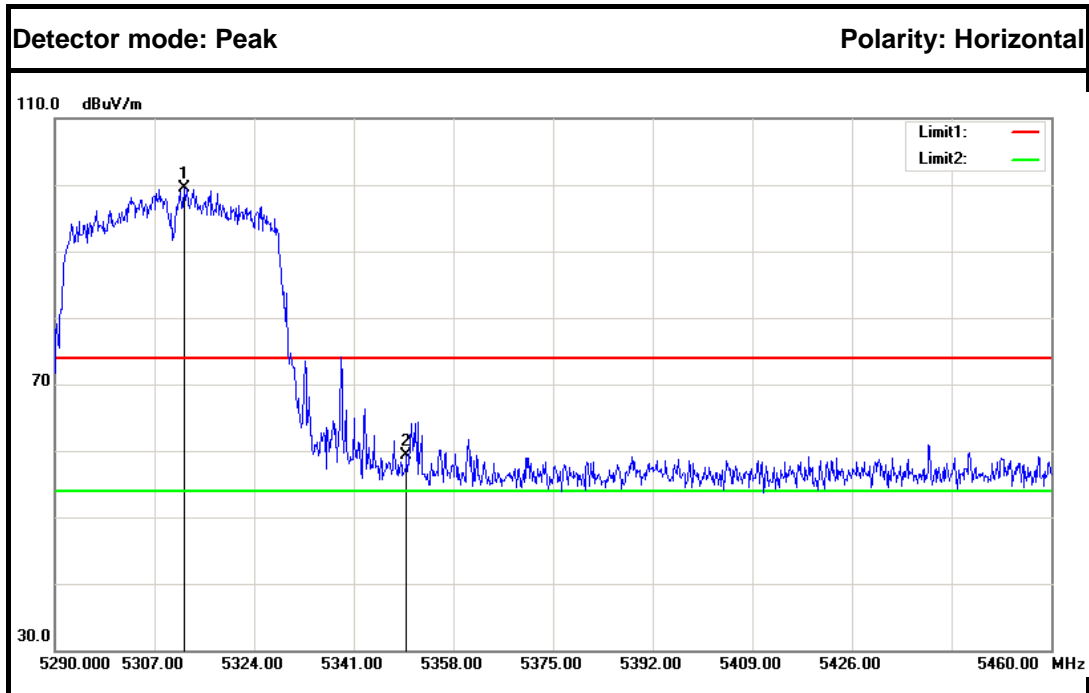
No.	Frequency (MHz)	Reading (dB)	Factor (dB/m)	Result (dB/m)	Limit (dB/m)	Margin (dB)	Remark	Antenna Polar
1	5150.000	53.03	5.25	58.28	74.00	-15.72	Peak	Horizontal
2	5192.250	92.77	5.32	98.09	---	---	Peak	Horizontal
1	5150.000	44.93	5.25	50.18	54.00	-3.82	Average	Horizontal
2	5191.540	84.38	5.32	89.70	---	---	Average	Horizontal



IEEE 802.11n HT 40 MHz mode / 5310 MHz



No.	Frequency (MHz)	Reading (dB)	Factor (dB/m)	Result (dB/m)	Limit (dB/m)	Margin (dB)	Remark	Antenna Polar
1	5311.930	96.69	5.54	102.23	---	---	Peak	Vertical
2	5350.000	50.82	5.60	56.42	74.00	-17.58	Peak	Vertical
1	5312.440	84.93	5.54	90.47	---	---	Average	Vertical
2	5350.000	43.14	5.60	48.74	54.00	-5.26	Average	Vertical

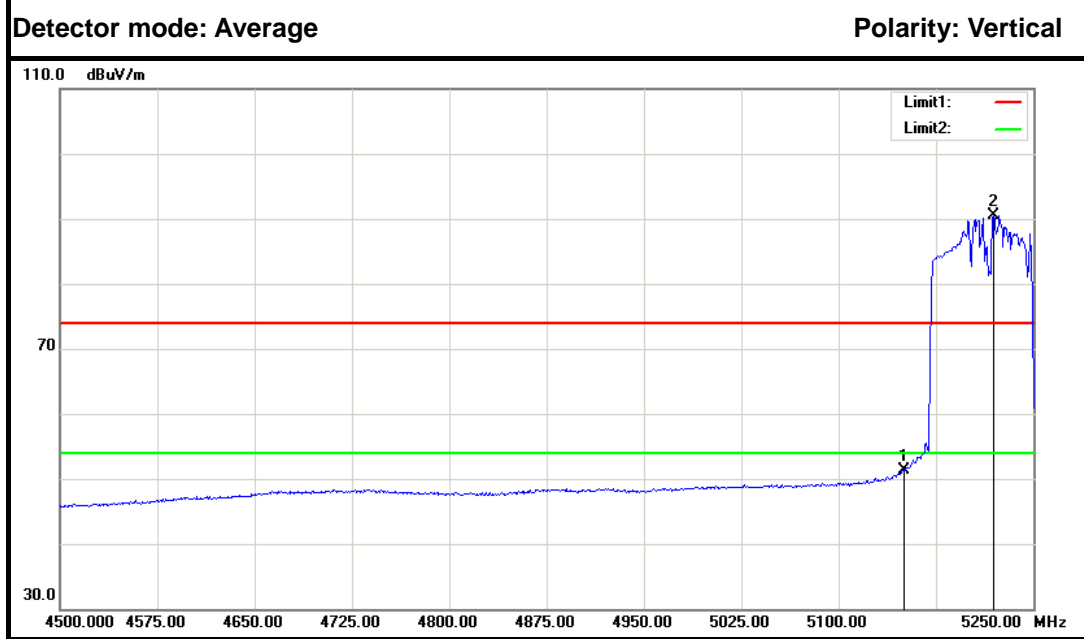
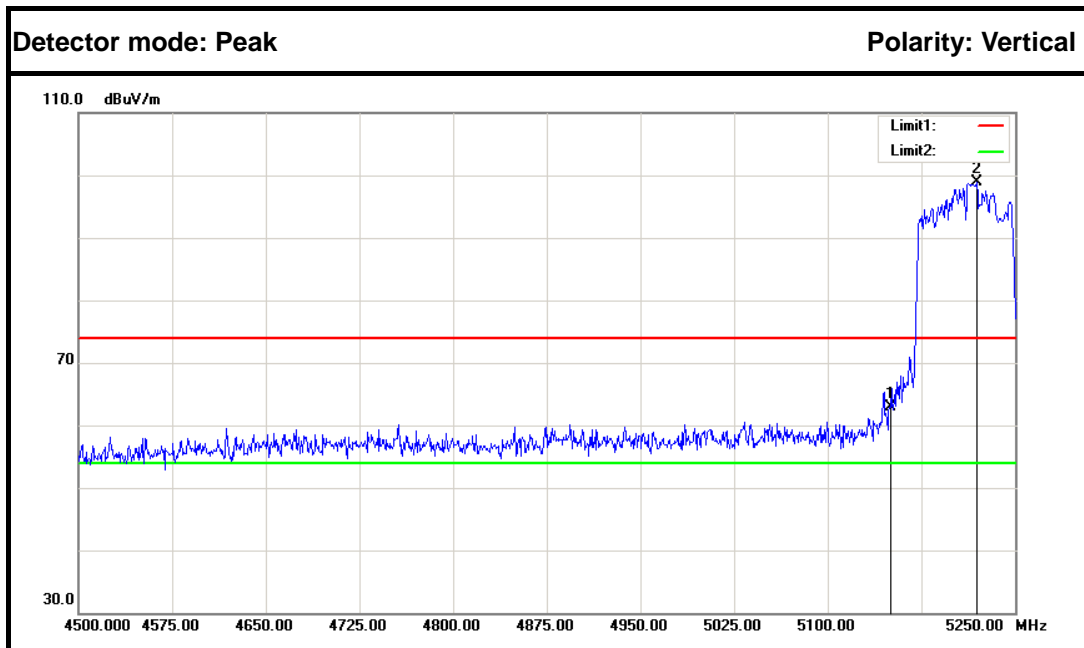


No.	Frequency (MHz)	Reading (dB)	Factor (dB/m)	Result (dB/m)	Limit (dB/m)	Margin (dB)	Remark	Antenna Polar
1	5312.100	93.90	5.54	99.44	---	---	Peak	Horizontal
2	5350.000	53.71	5.60	59.31	74.00	-14.69	Peak	Horizontal
1	5312.440	84.68	5.54	90.22	---	---	Average	Horizontal
2	5350.000	43.50	5.60	49.10	54.00	-4.90	Average	Horizontal

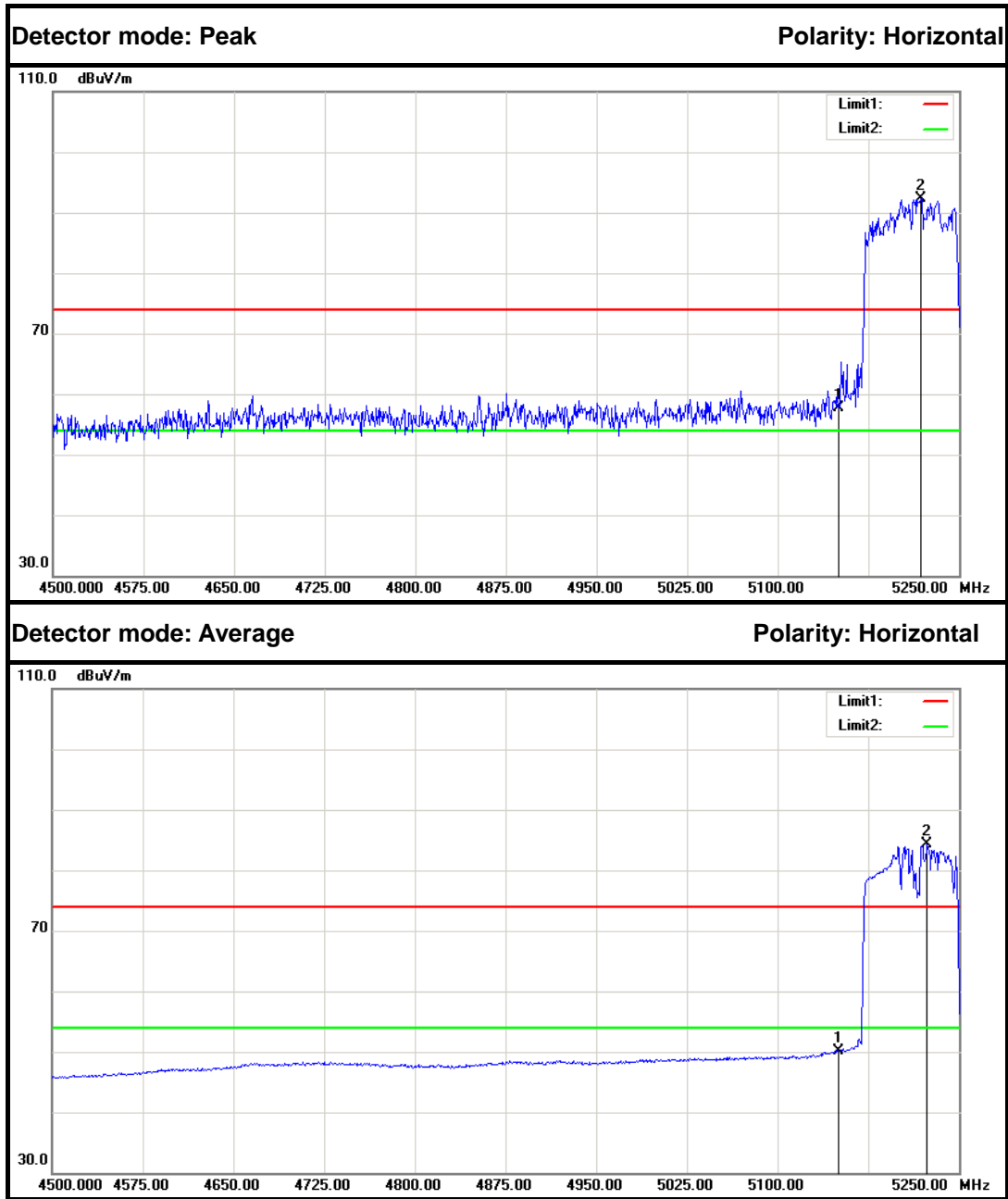




IEEE 802.11ac 80 mode / 5210 MHz



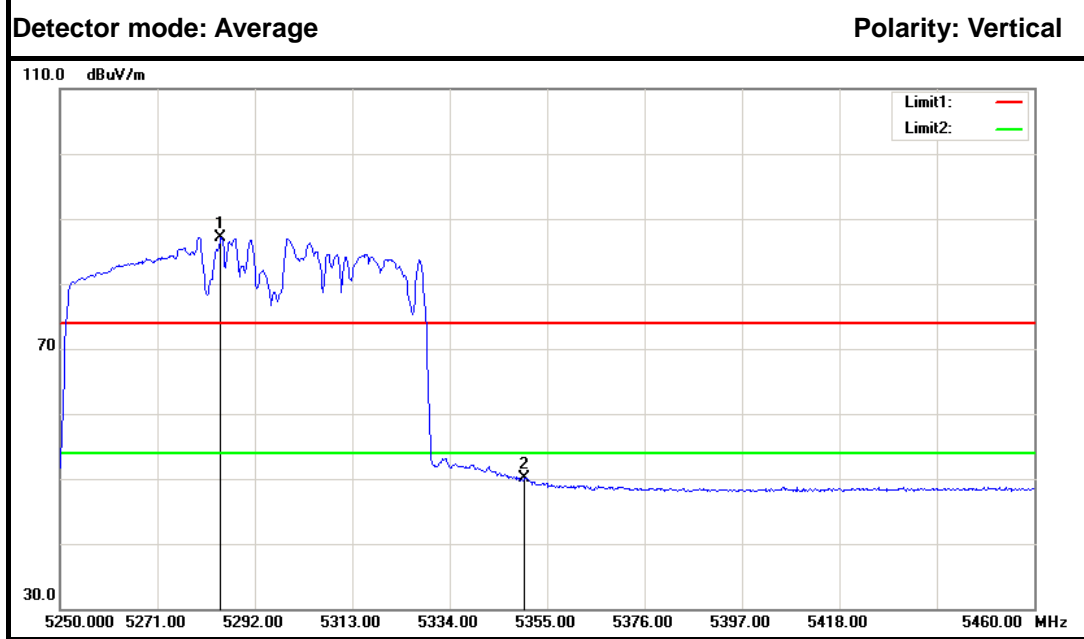
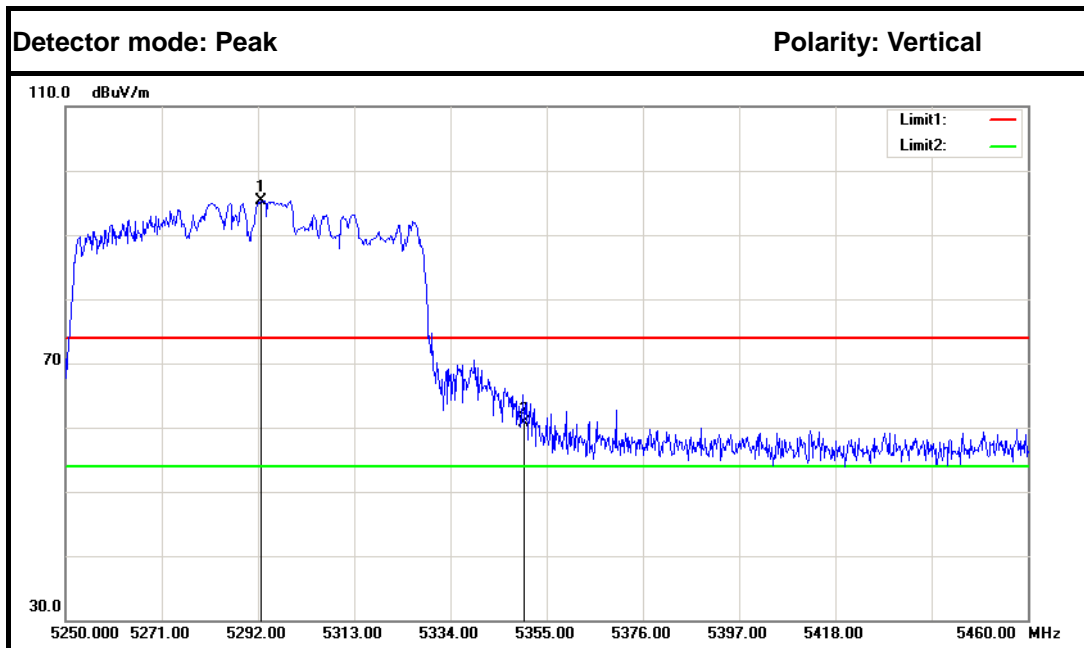
No.	Frequency (MHz)	Reading (dB)	Factor (dB/m)	Result (dB/m)	Limit (dB/m)	Margin (dB)	Remark	Antenna Polar
1	5150.000	57.69	5.25	62.94	74.00	-11.06	Peak	Vertical
2	5219.250	93.61	5.37	98.98	---	---	Peak	Vertical
1	5150.000	46.02	5.25	51.27	54.00	-2.73	Average	Vertical
2	5219.250	85.13	5.37	90.50	---	---	Average	Vertical



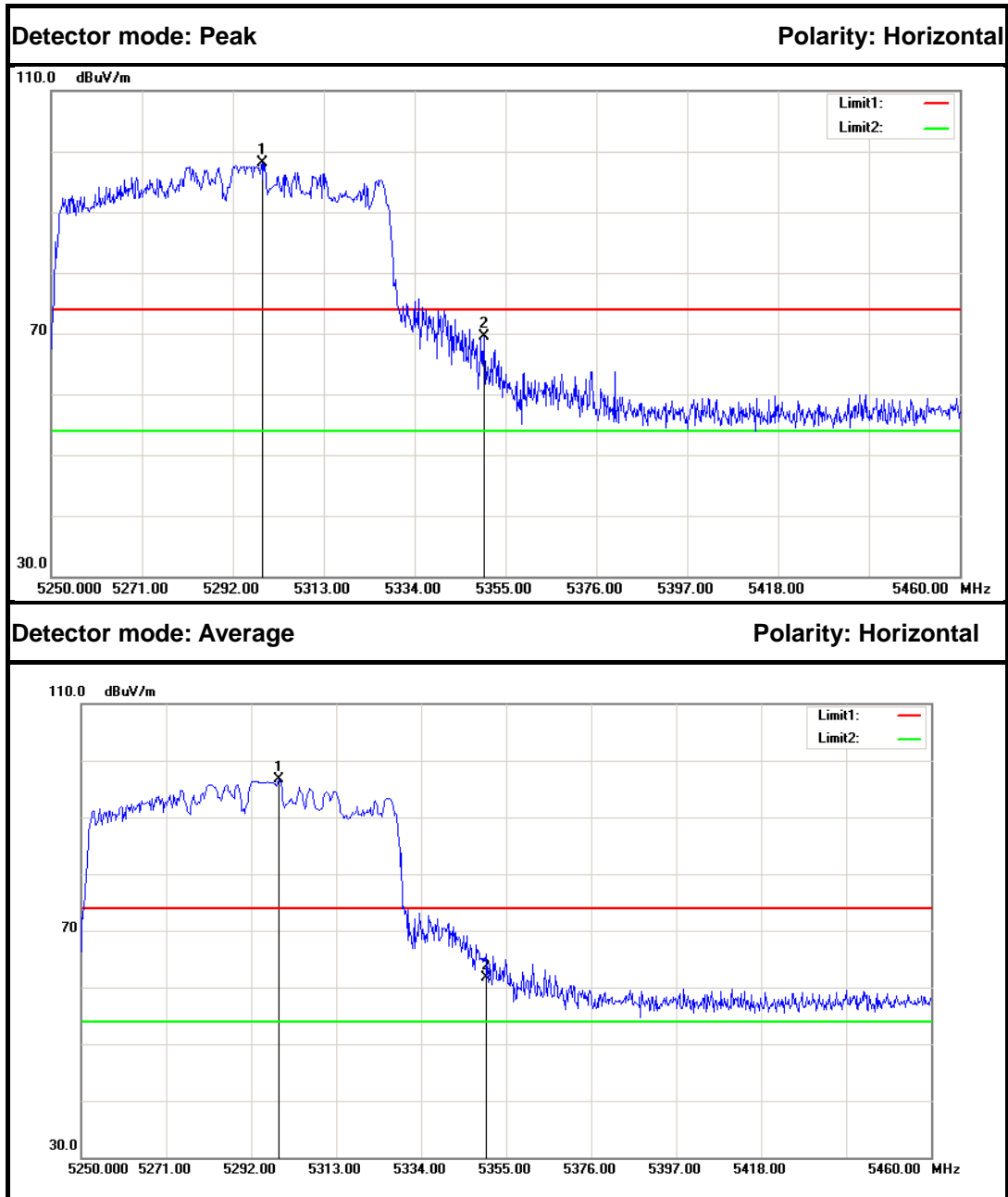
No.	Frequency (MHz)	Reading (dB)	Factor (dB/m)	Result (dB/m)	Limit (dB/m)	Margin (dB)	Remark	Antenna Polar
1	5150.000	52.39	5.25	57.64	74.00	-16.36	Peak	Horizontal
2	5218.500	86.96	5.37	92.33	---	---	Peak	Horizontal
1	5150.000	44.77	5.25	50.02	54.00	-3.98	Average	Horizontal
2	5223.750	78.85	5.38	84.23	---	---	Average	Horizontal



IEEE 802.11ac 80 mode / 5290 MHz



No.	Frequency (MHz)	Reading (dB)	Factor (dB/m)	Result (dB/m)	Limit (dB/m)	Margin (dB)	Remark	Antenna Polar
1	5292.630	89.87	5.50	95.37	---	---	Peak	Vertical
2	5350.000	55.14	5.60	60.74	74.00	-13.26	Peak	Vertical
1	5284.650	81.67	5.49	87.16	---	---	Average	Vertical
2	5350.000	44.54	5.60	50.14	54.00	-3.86	Average	Vertical



No.	Frequency (MHz)	Reading (dB)	Factor (dB/m)	Result (dB/m)	Limit (dB/m)	Margin (dB)	Remark	Antenna Polar
1	5298.720	92.54	5.51	98.05	---	---	Peak	Horizontal
2	5350.000	63.98	5.60	69.58	74.00	-4.42	Peak	Horizontal
1	5298.930	91.25	5.51	96.76	---	---	Average	Horizontal
2	5350.000	56.07	5.60	61.67	74.00	-12.33	Average	Horizontal



## 6.7. PEAK POWER SPECTRAL DENSITY

### LIMIT

According to RSS-247 §6.2,

- (1) For the band 5150-5250 MHz, the e.i.r.p. spectral density shall not exceed 10 dBm in any 1.0 MHz band.
- (2) For the band 5250-5350 MHz and 5470-5725 MHz, the power spectral density shall not exceed 11 dBm in any 1.0 MHz band.
- (3) For the band 5725-5850 MHz, the power spectral density shall not exceed 30 dBm in any 500 kHz band.

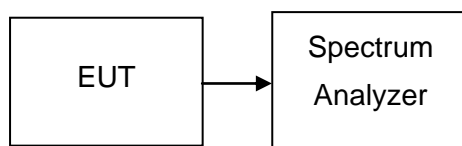
*If transmitting antennas of directional gain greater than 6dBi are used, both the peak transmits power and the peak power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6dBi.*

### MEASUREMENT EQUIPMENT USED

Name of Equipment	Manufacturer	Model	Serial Number	Last Calibration	Due Calibration
Spectrum Analyzer	Agilent	N9010A	MY52221469	02/21/2017	02/20/2018
Cable	HuberSuhner	SUCOFLEX104PEA	N/A	N/A	N/A

**Remark:** Each piece of equipment is scheduled for calibration once a year.

### TEST CONFIGURATION



### TEST PROCEDURE

1. Place the EUT on the table and set it in transmitting mode.  
Remove the antenna from the EUT and then connect a low loss RF cable from the antenna port to the spectrum analyzer.
2. For devices operating in the bands 5.15-5.25 GHz, Set the spectrum analyzer as RBW = 1MHz, VBW = 3MHz, Span >26dB bandwidth, Sweep=1ms
3. For devices operating in the bands 5.725-5.85 GHz, Set the spectrum analyzer as RBW = 1MHz, VBW = 3MHz, Span >26dB bandwidth, Sweep=1ms
4. Record the max. reading.
5. Repeat the above procedure until the measurements for all frequencies are completed



## TEST RESULTS

*No non-compliance noted*

### Test Data

**Test mode: IEEE 802.11a mode / 5180 ~ 5240MHz**

Channel	Frequency (MHz)	PPSD (dBm)	Antenna Gain (dBi)	PPSD (dBm)	Limit (dBm)	Margin	Result
Low	5180	0.636	1.98	2.616	10	-7.384	PASS
Mid	5200	1.025		3.005		-6.995	PASS
High	5240	1.093		3.073		-6.927	PASS

**Test mode: IEEE 802.11a mode / 5260~ 5320MHz**

Channel	Frequency (MHz)	PPSD (dBm)	Limit (dBm)	Margin	Result
Low	5260	0.343	11	-10.657	PASS
Mid	5300	0.427		-10.573	PASS
High	5320	0.231		-10.769	PASS

**Test mode: IEEE 802.11a mode / 5500 ~ 5580MHz; 5660 ~ 5700MHz**

Channel	Frequency (MHz)	PPSD (dBm)	Limit (dBm)	Margin	Result
Low	5500	1.012	11	-9.988	PASS
Mid	5580	0.304		-10.696	PASS
High	5700	-0.380		-11.380	PASS

**Test mode: IEEE 802.11a mode / 5745 ~ 5825MHz**

Channel	Frequency (MHz)	PPSD (dBm)	factor	Limit (dBm)	Margin	Result
Low	5745	-3.275	0.27	30	-33.005	PASS
Mid	5785	-3.130	0.27		-32.860	PASS
High	5825	-3.198	0.27		-32.928	PASS

**Remark: factor =10\*log10 (500/RBW)**



**Test mode: IEEE 802.11n HT 20 MHz mode / 5180 ~ 5240MHz**

Channel	Frequency (MHz)	PPSD (dBm)	Antenna Gain (dBi)	PPSD (dBm)	Limit (dBm)	Margin	Result
Low	5180	0.341	1.98	2.321	10	-7.679	PASS
Mid	5200	0.518		2.498		-7.502	PASS
High	5240	0.156		2.136		-7.864	PASS

**Test mode: IEEE 802.11n HT 20 MHz mode / 5260~ 5320MHz**

Channel	Frequency (MHz)	PPSD (dBm)	Limit (dBm)	Margin	Result
Low	5260	0.011	11	-10.989	PASS
Mid	5300	0.140		-10.860	PASS
High	5320	-0.049		-11.049	PASS

**Test mode: IEEE 802.11n HT 20 MHz mode / 5500 ~ 5580MHz; 5660 ~ 5700MHz**

Channel	Frequency (MHz)	PPSD (dBm)	Limit (dBm)	Margin	Result
Low	5500	0.830	11	-10.170	PASS
Mid	5580	0.464		-10.536	PASS
High	5700	-0.542		-11.542	PASS

**Test mode: IEEE 802.11n HT 20 MHz mode / 5745 ~ 5825MHz**

Channel	Frequency (MHz)	PPSD (dBm)	factor	Limit (dBm)	Margin	Result
Low	5745	-3.225	0.27	30	-32.955	PASS
Mid	5785	-3.628	0.27		-33.358	PASS
High	5825	-3.550	0.27		-33.280	PASS

**Remark: factor =10\*log10 (500/RBW)**



**Test mode: IEEE 802.11n HT 40 MHz mode / 5190 ~ 5230MHz**

Channel	Frequency (MHz)	PPSD (dBm)	Antenna Gain (dBi)	PPSD (dBm)	Limit (dBm)	Margin	Result
Low	5190	-2.470	1.98	-0.490	10	-10.490	PASS
High	5230	-2.125		-0.145		-10.145	PASS

**Test mode: IEEE 802.11n HT 40 MHz mode / 5270 ~ 5310MHz**

Channel	Frequency (MHz)	PPSD (dBm)	Limit (dBm)	Margin	Result
Low	5270	-2.807	11	-13.807	PASS
High	5310	-2.579		-13.579	PASS

**Test mode: IEEE 802.11n HT 40 MHz mode / 5510~5550MHz; 5670MHz**

Channel	Frequency (MHz)	PPSD (dBm)	Limit (dBm)	Margin	Result
Low	5510	-2.049	11	-13.049	PASS
Mid	5550	-2.125		-13.125	PASS
High	5670	-3.140		-14.140	PASS

**Test mode: IEEE 802.11n HT 40 MHz mode / 5755 ~ 5795MHz**

Channel	Frequency (MHz)	PPSD (dBm)	factor	Limit (dBm)	Margin	Result
Low	5755	-6.554	0.27	30	-36.284	PASS
High	5795	-6.316	0.27		-36.046	PASS

**Remark: factor =10\*log10 (500/RBW)**





Test mode: IEEE 802.11ac 80 mode / 5210MHz

Channel	Frequency (MHz)	PPSD (dBm)	Antenna Gain (dBi)	PPSD (dBm)	Limit (dBm)	Margin	Result
	5210	-4.870	1.98	-2.890	10	-12.890	PASS

Test mode: IEEE 802.11ac 80 mode / 5290MHz

Channel	Frequency (MHz)	PPSD (dBm)	Limit (dBm)	Margin	Result
	5290	-5.276	11	-16.276	PASS

Test mode: IEEE 802.11ac 80 mode / 5530MHz

Channel	Frequency (MHz)	PPSD (dBm)	Limit (dBm)	Margin	Result
	5530	-4.473	11	-15.473	PASS

Test mode: IEEE 802.11ac 80 mode / 5775MHz

Channel	Frequency (MHz)	PPSD (dBm)	factor	Limit (dBm)	Margin	Result
	5775	-7.661	0.27	30	-37.391	PASS

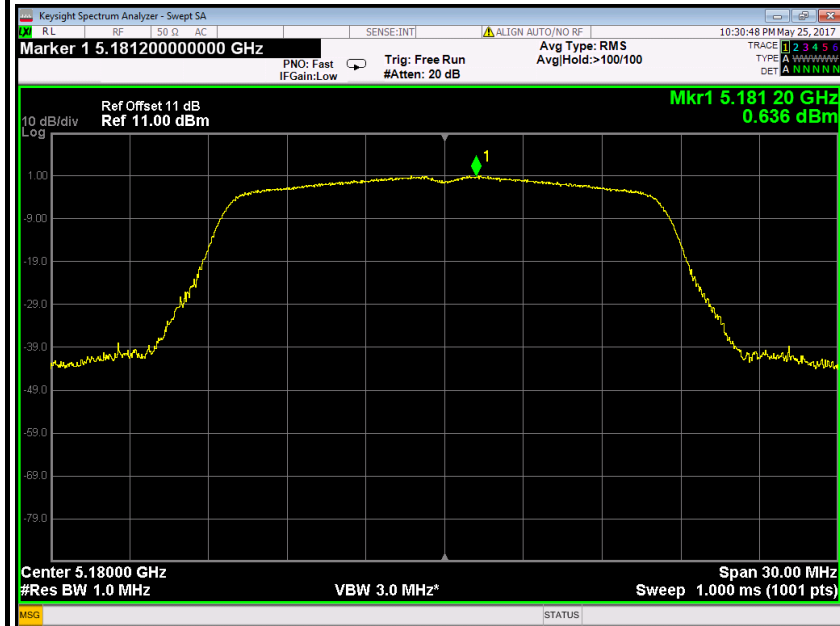
Remark: factor =  $10 \cdot \log_{10}(500/RBW)$



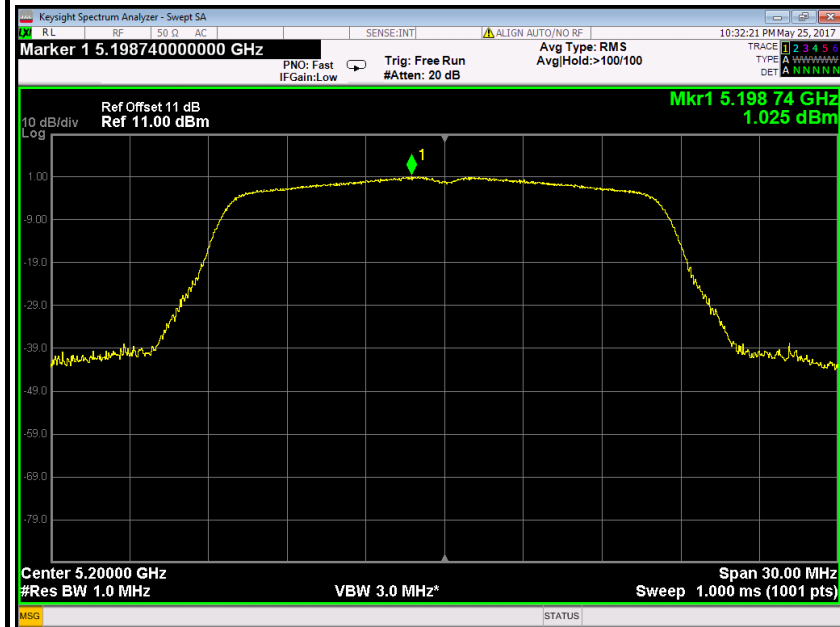
### Test Plot

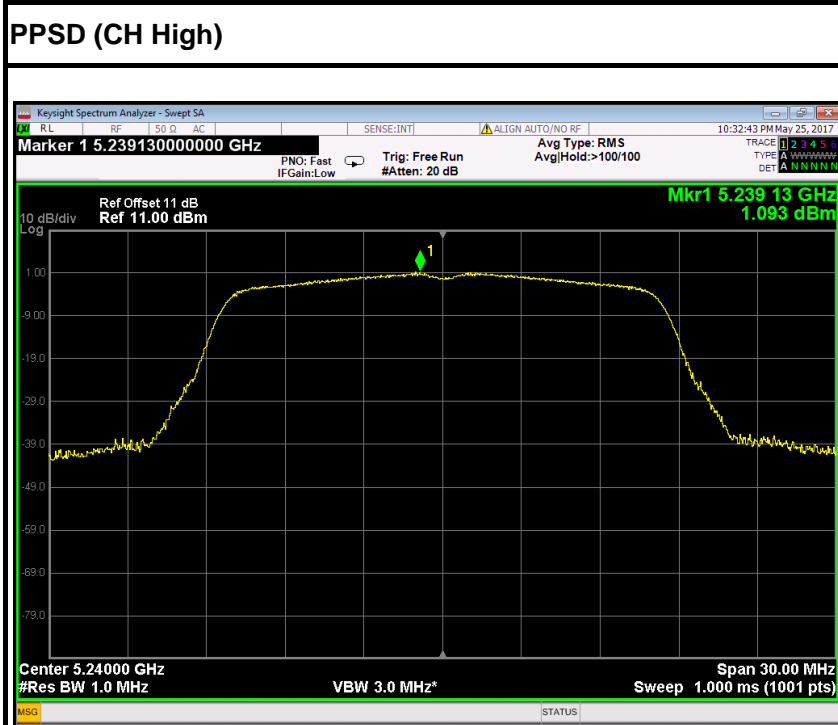
IEEE 802.11a mode / 5180 ~ 5240MHz

PPSD (CH Low)

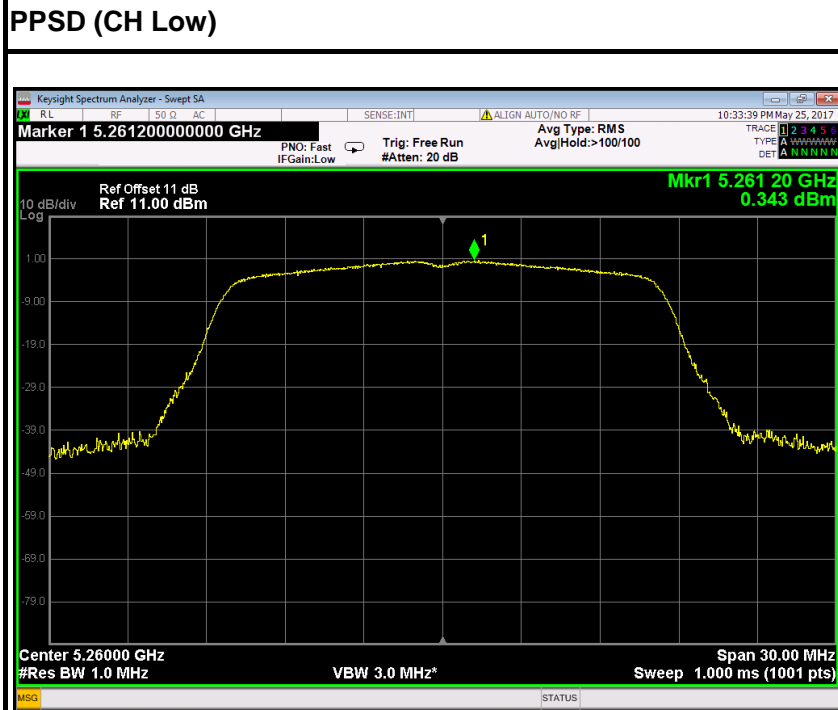


PPSD (CH Mid)



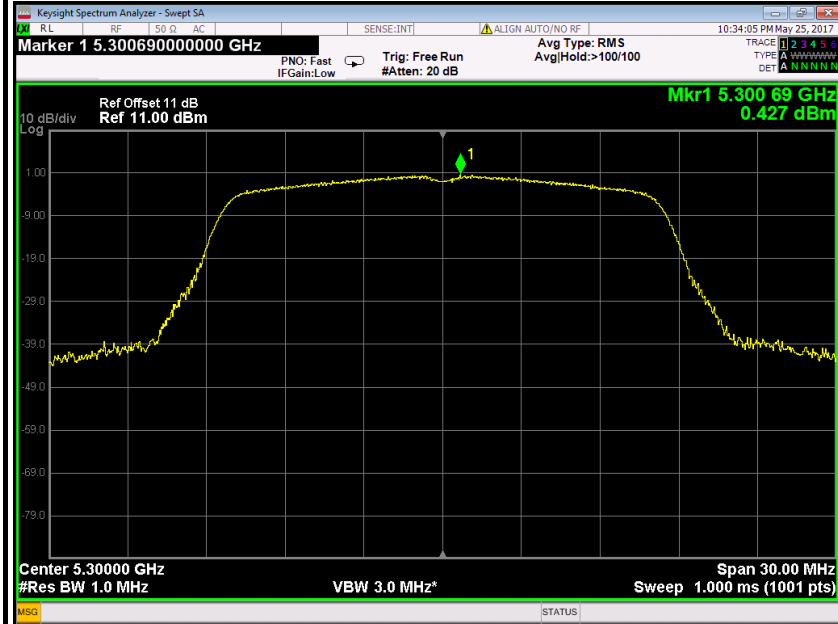


### IEEE 802.11a mode / 5260~ 5320MHz

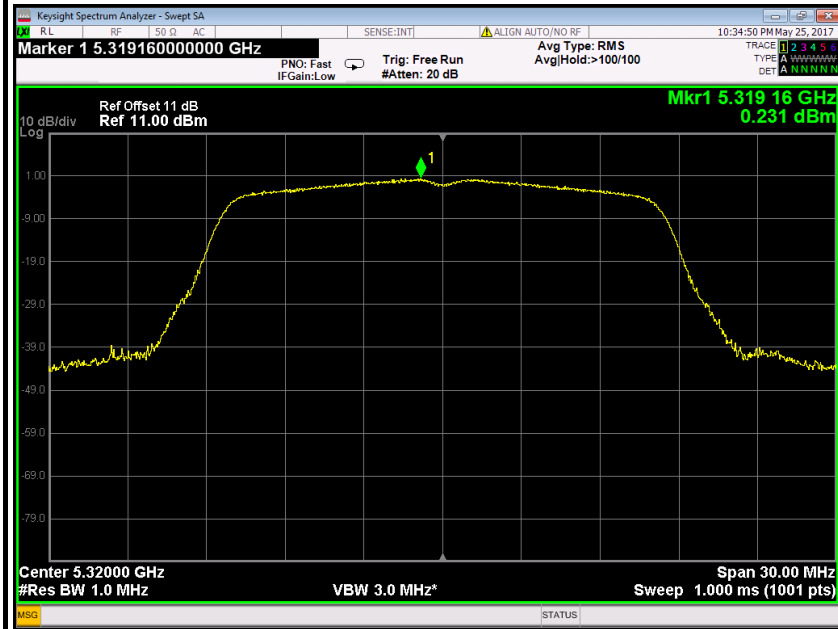




### PPSD (CH Mid)



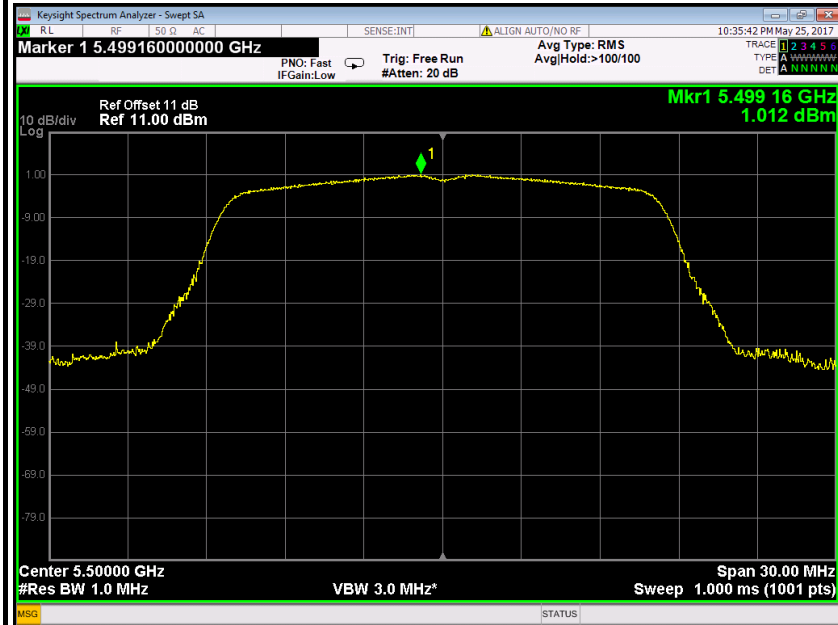
### PPSD (CH High)



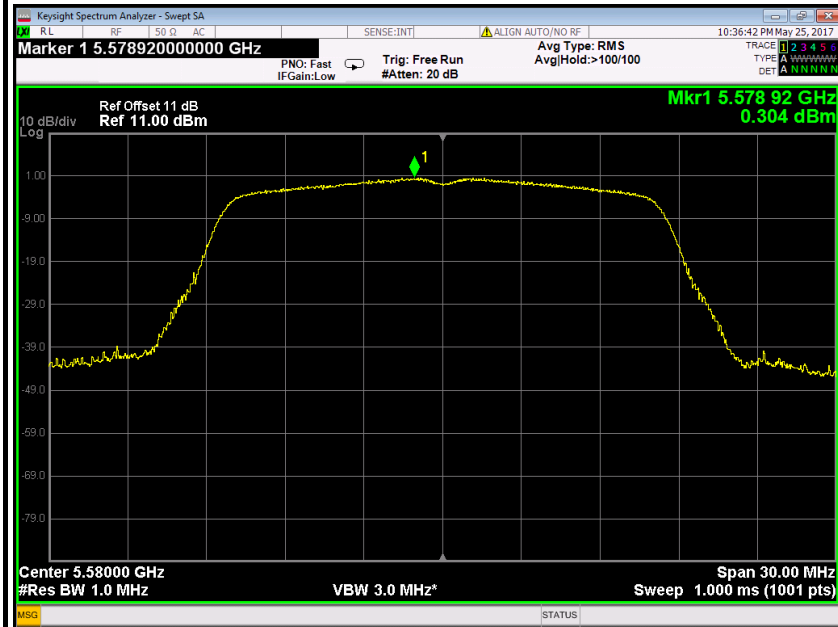


IEEE 802.11a mode / 5500 ~ 5580MHz; 5660 ~ 5700MHz

PPSD (CH Low)

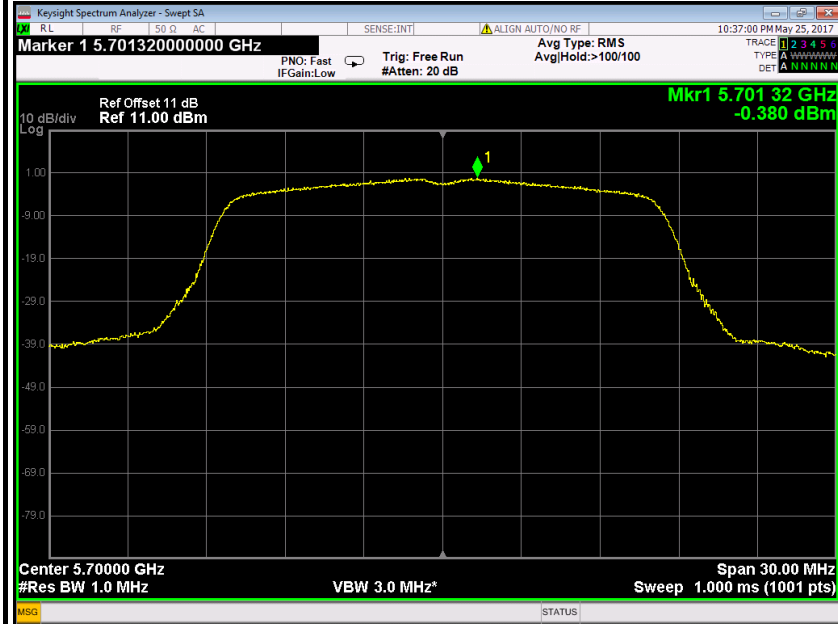


PPSD (CH Mid)



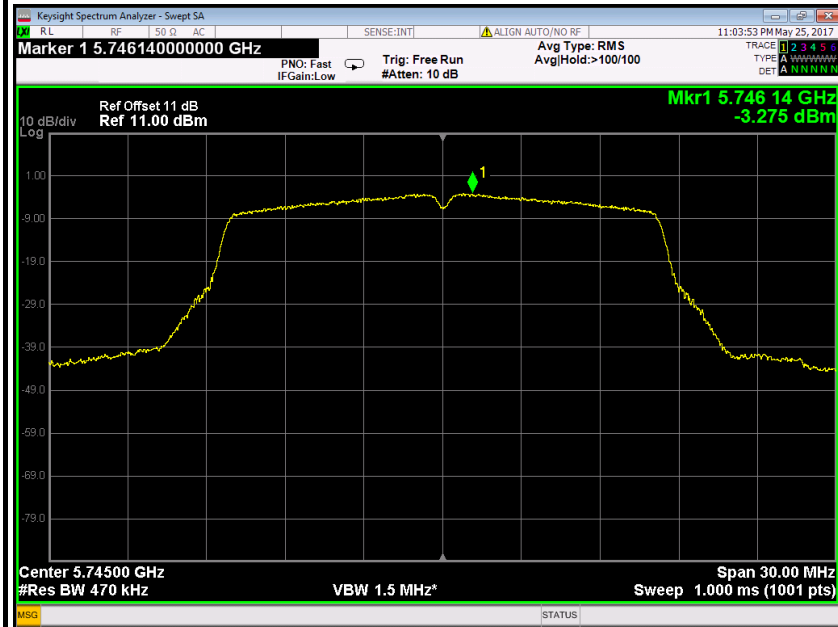


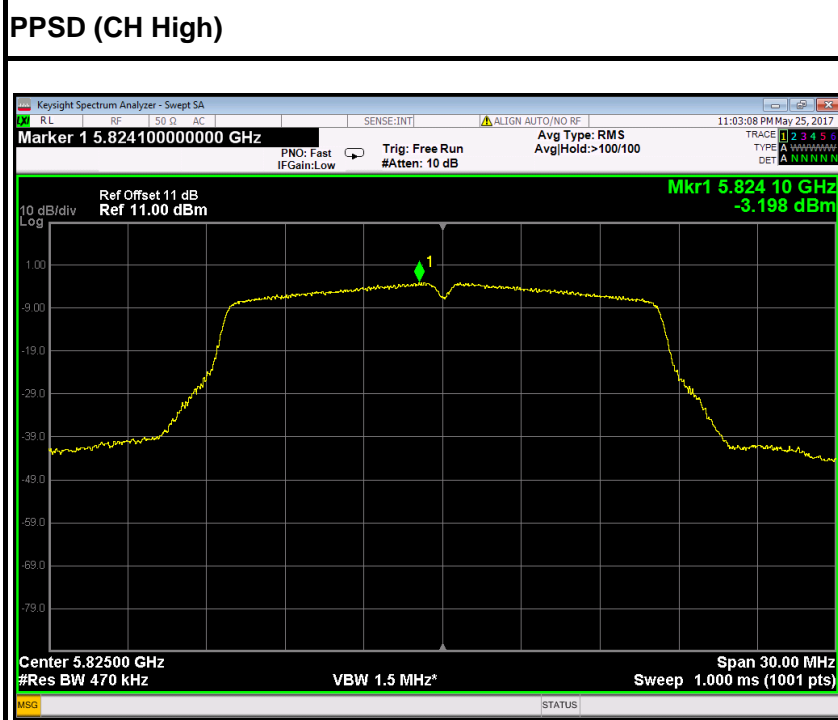
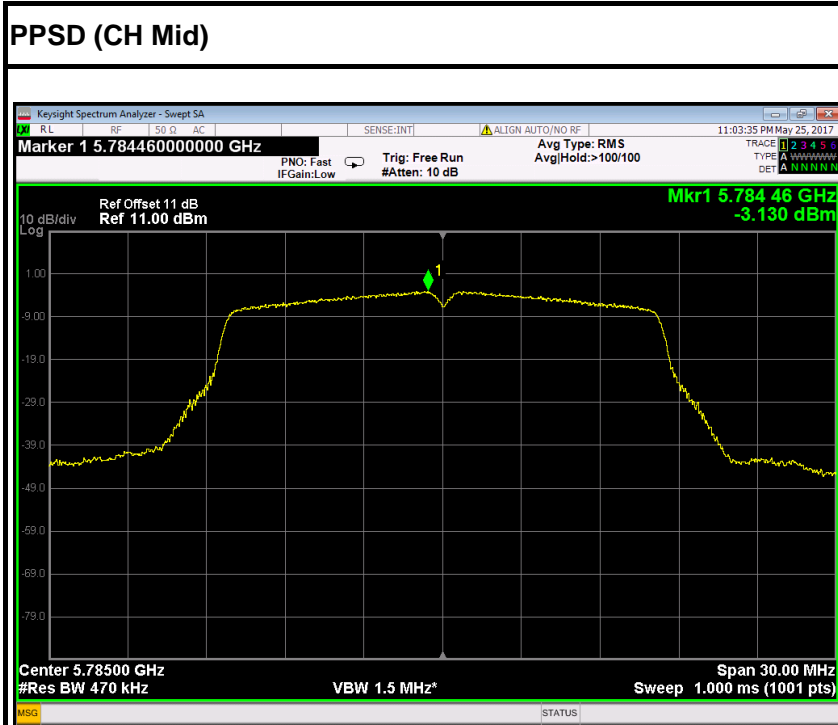
### PPSD (CH High)



### IEEE 802.11a mode / 5745 ~ 5825MHz

### PPSD (CH Low)

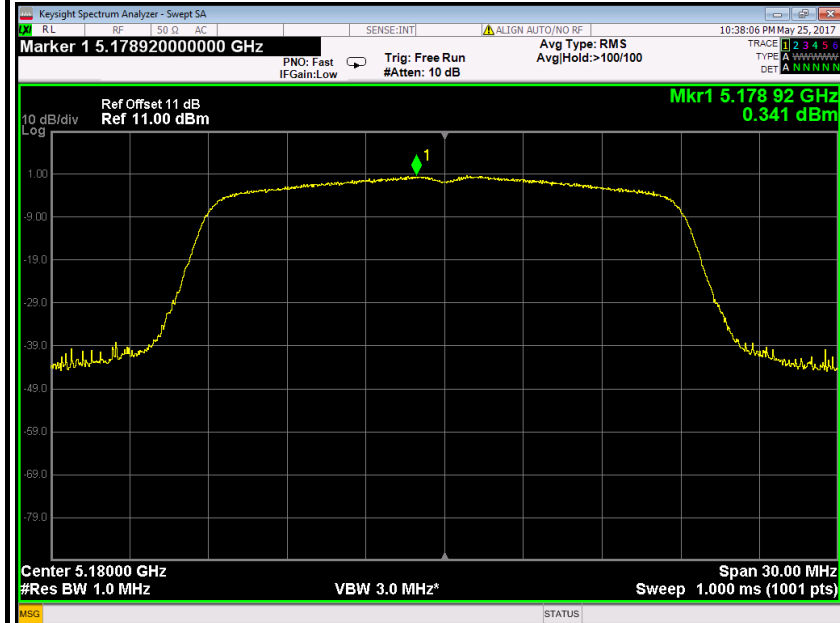




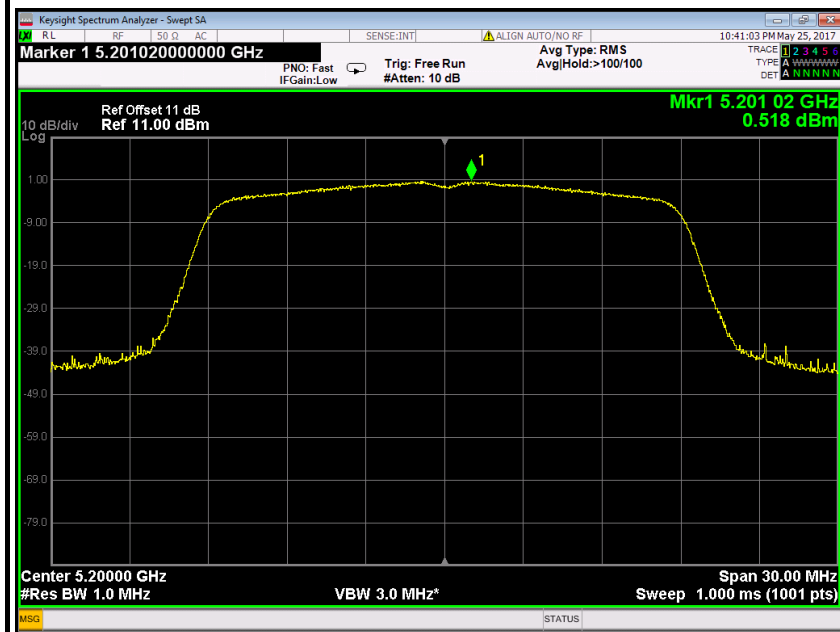


IEEE 802.11n HT 20 MHz mode / 5180 ~ 5240MHz

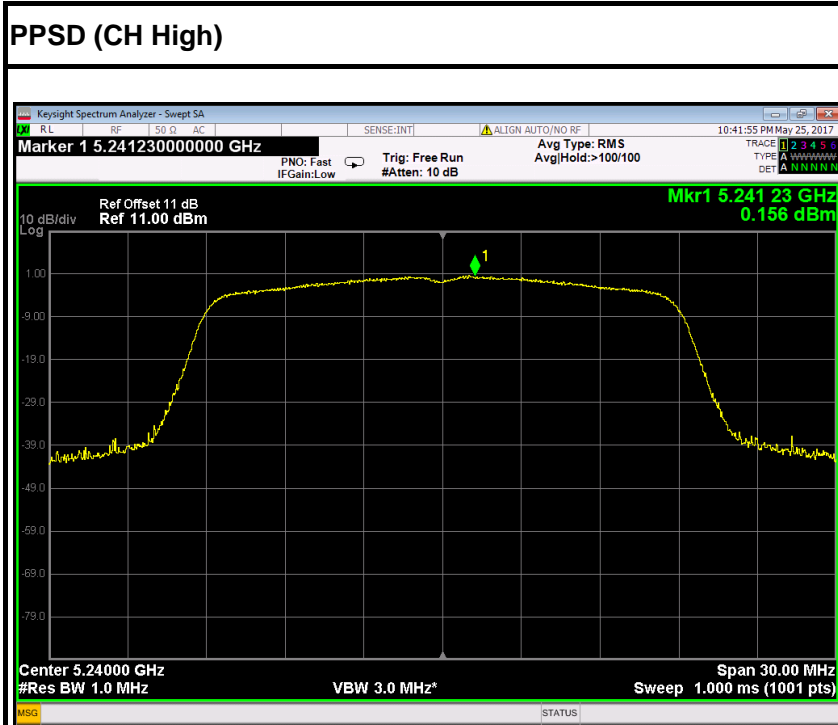
PPSD (CH Low)



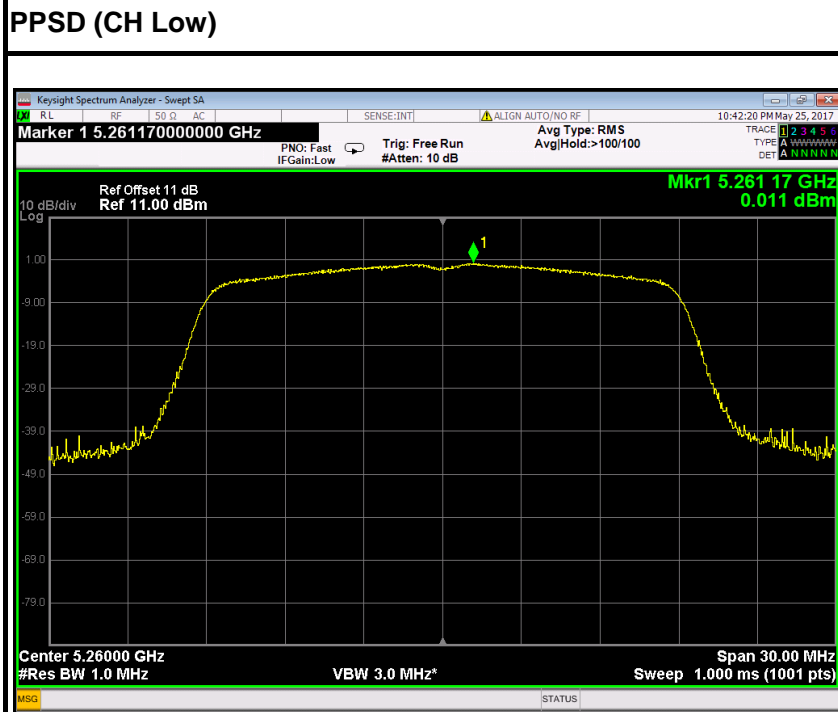
PPSD (CH Mid)





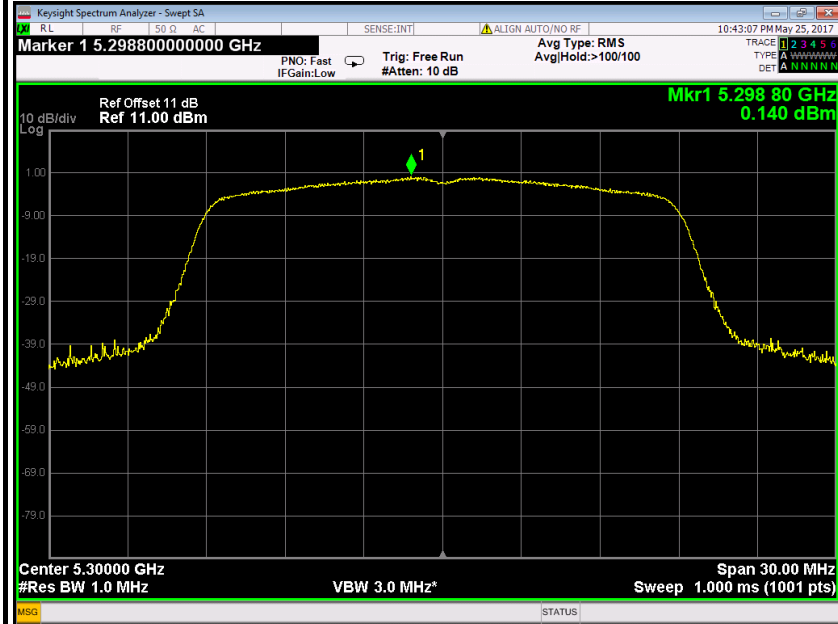


IEEE 802.11n HT 20 MHz mode / 5260~ 5320MHz

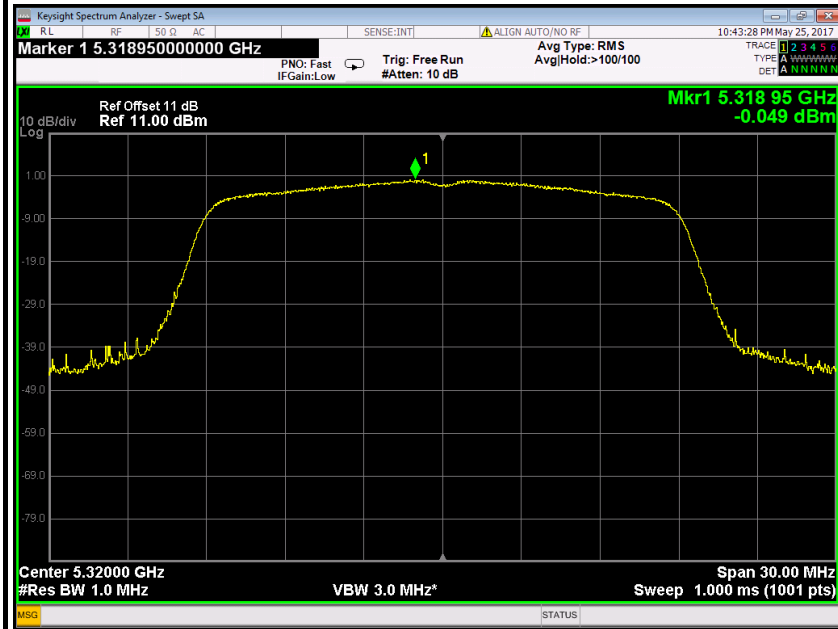




### PPSD (CH Mid)



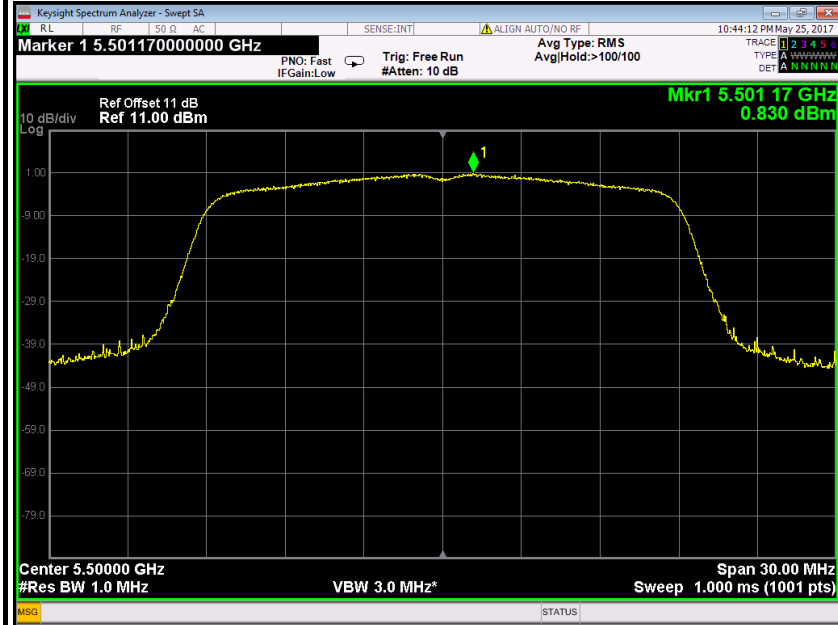
### PPSD (CH High)



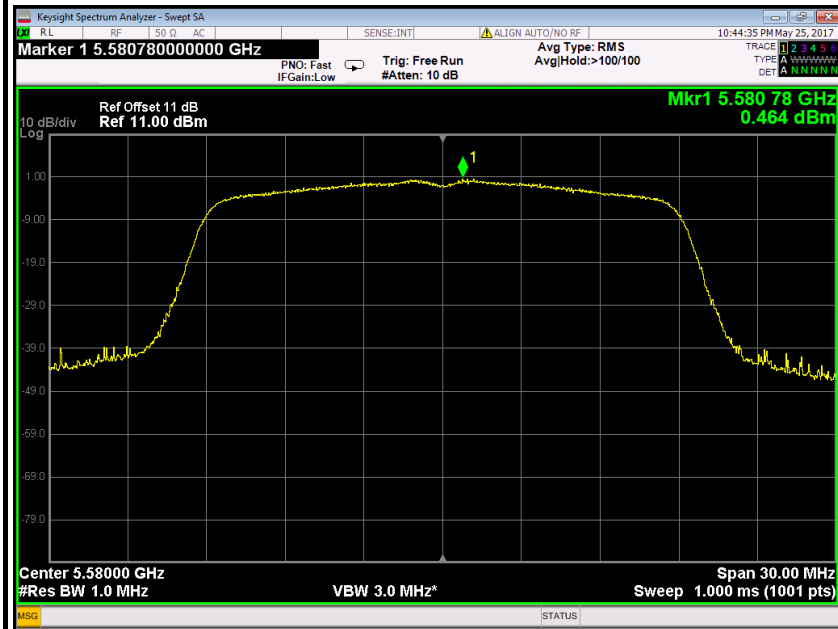


IEEE 802.11n HT 20 MHz mode / 5500 ~ 5580MHz; 5660 ~ 5700MHz

PPSD (CH Low)

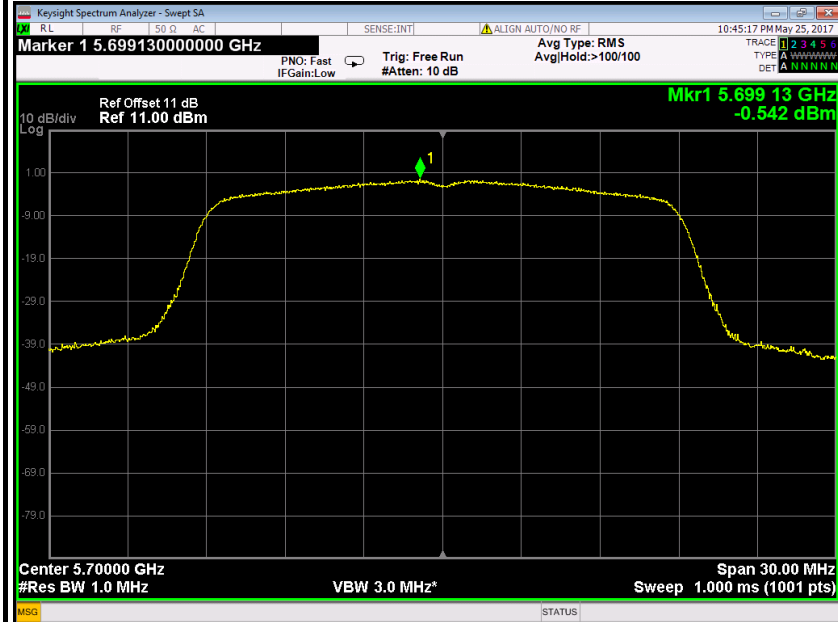


PPSD (CH Mid)



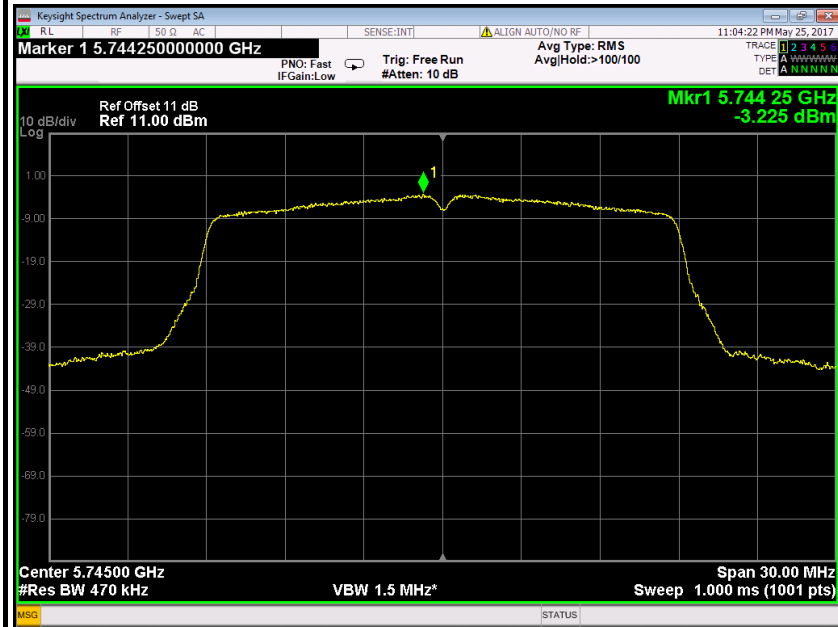


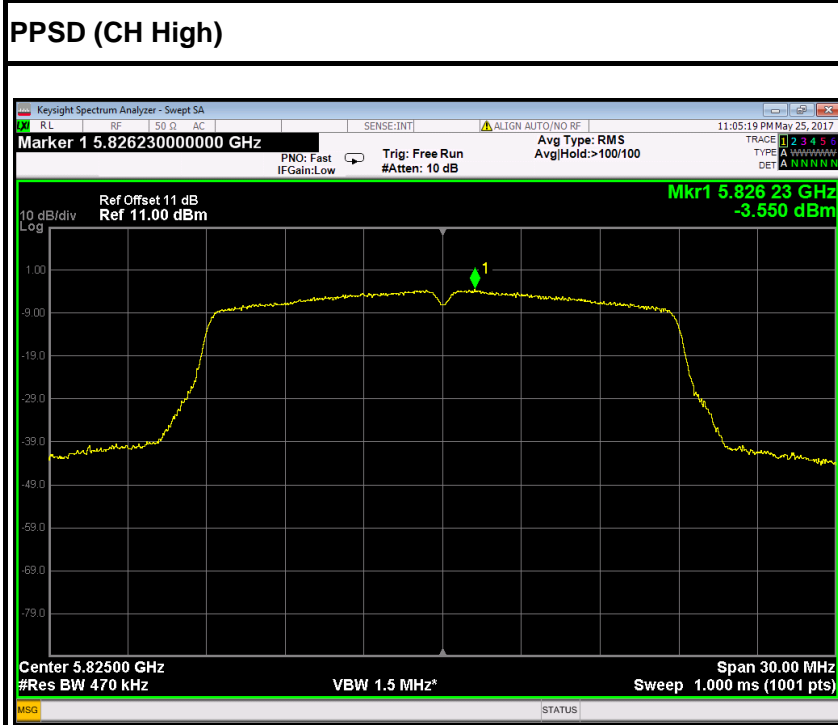
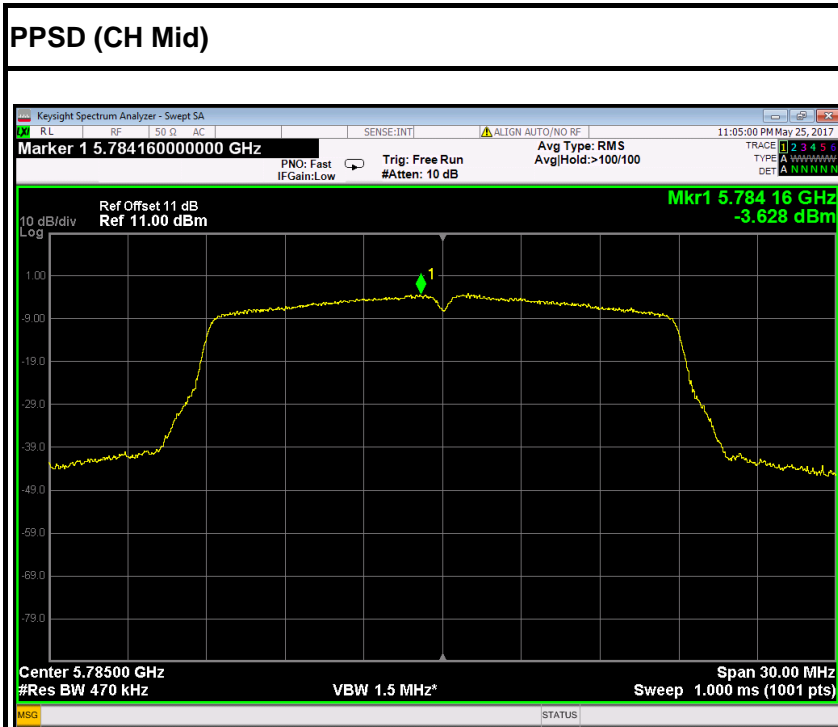
### PPSD (CH High)



### IEEE 802.11n HT 20 MHz mode / 5745 ~ 5825MHz

### PPSD (CH Low)

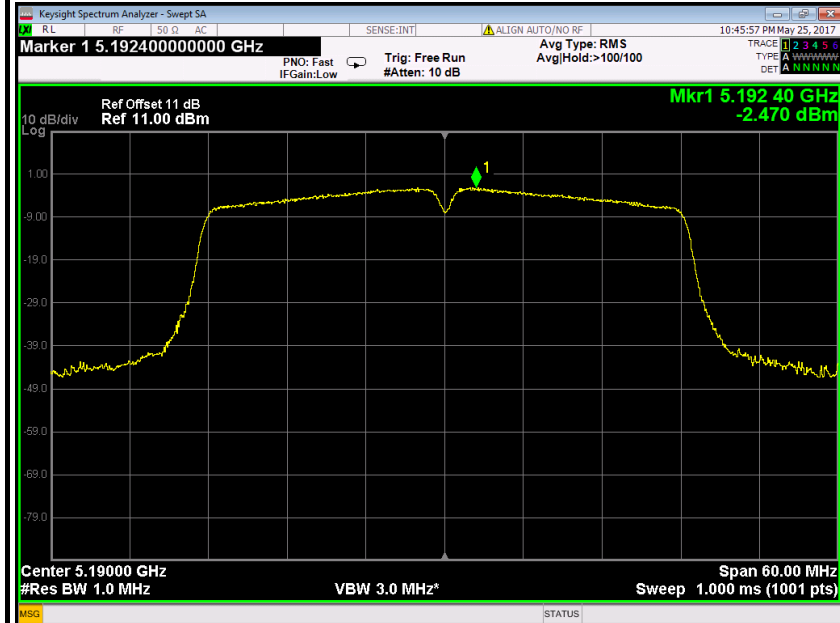




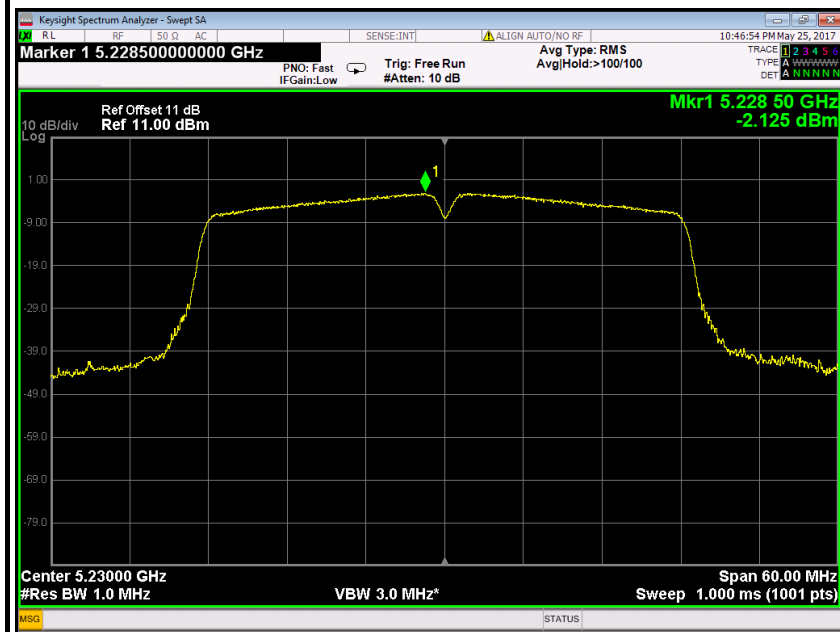


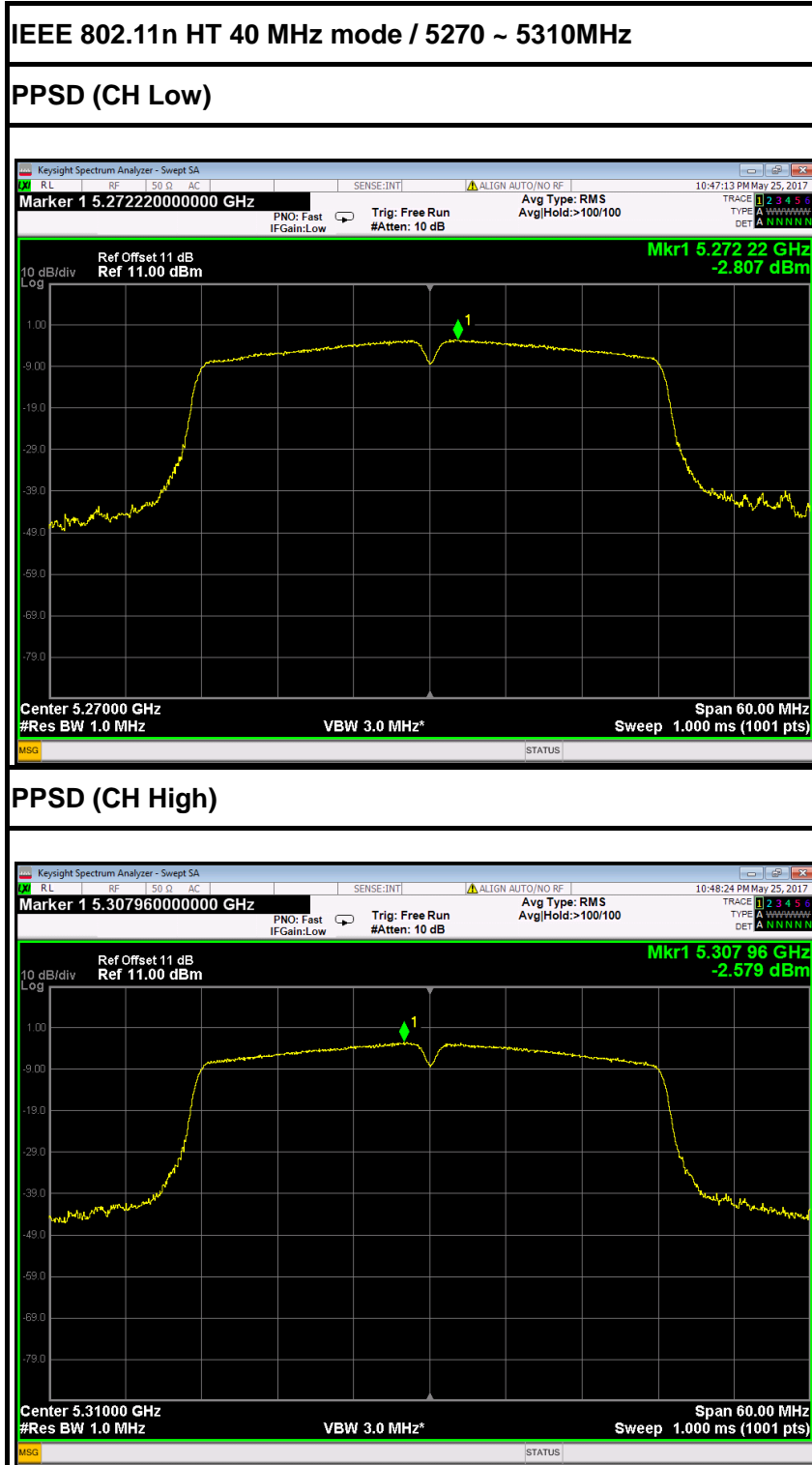
IEEE 802.11n HT 40 MHz mode / 5190 ~ 5230MHz

PPSD (CH Low)



PPSD (CH High)

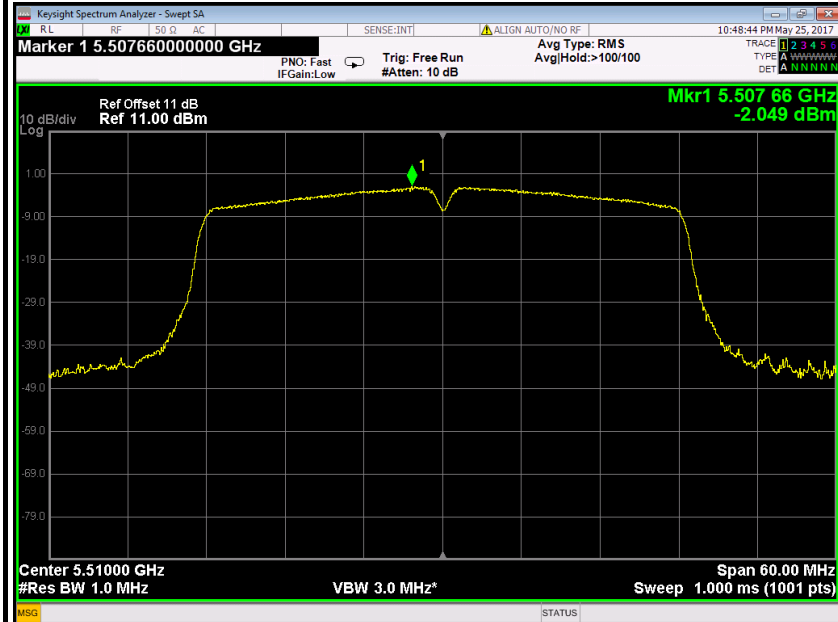




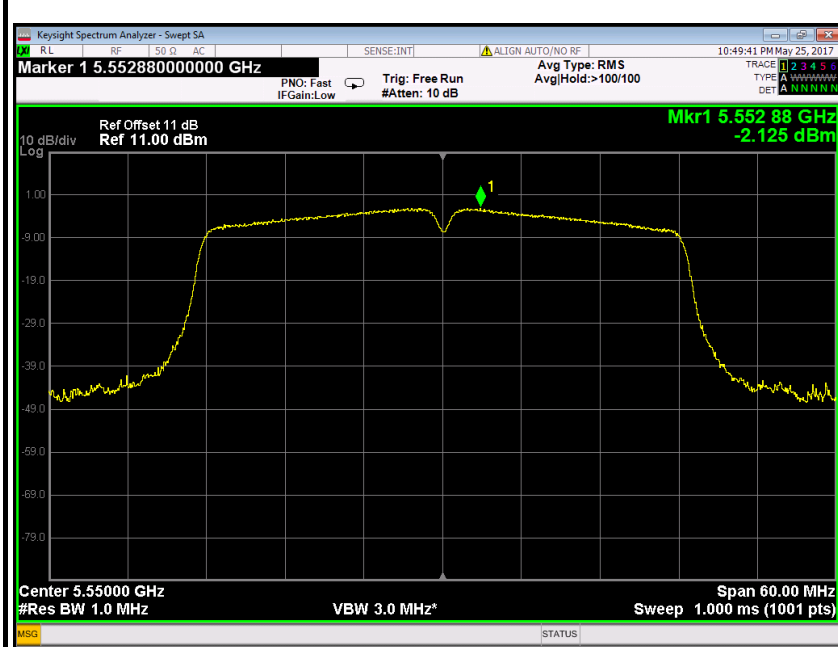


IEEE 802.11n HT 40 MHz mode / 5510~5550MHz; 5670MHz

PPSD (CH Low)



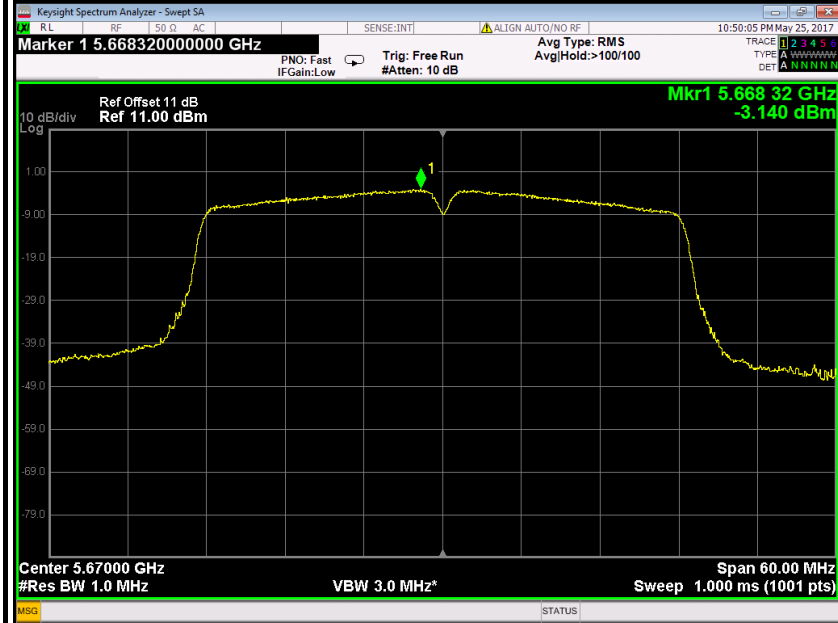
PPSD (CH Mid)





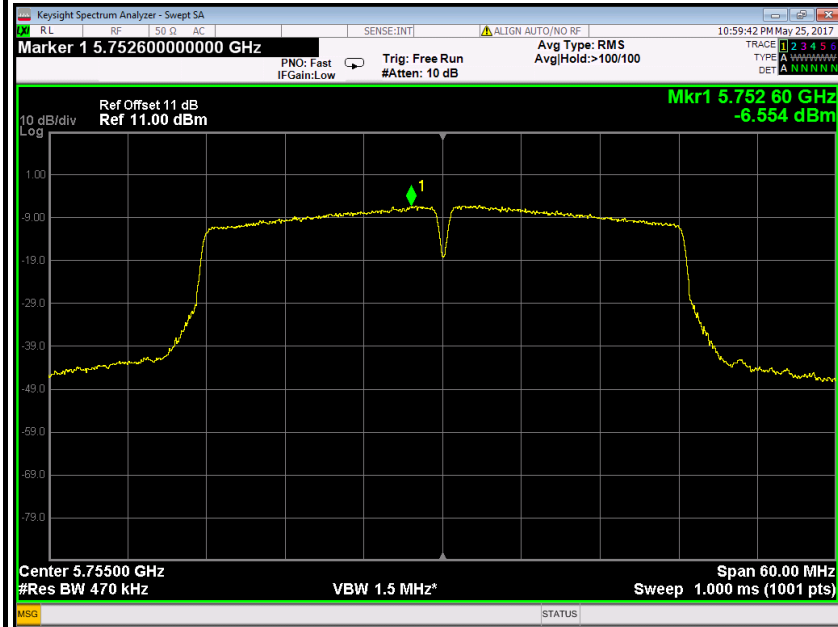


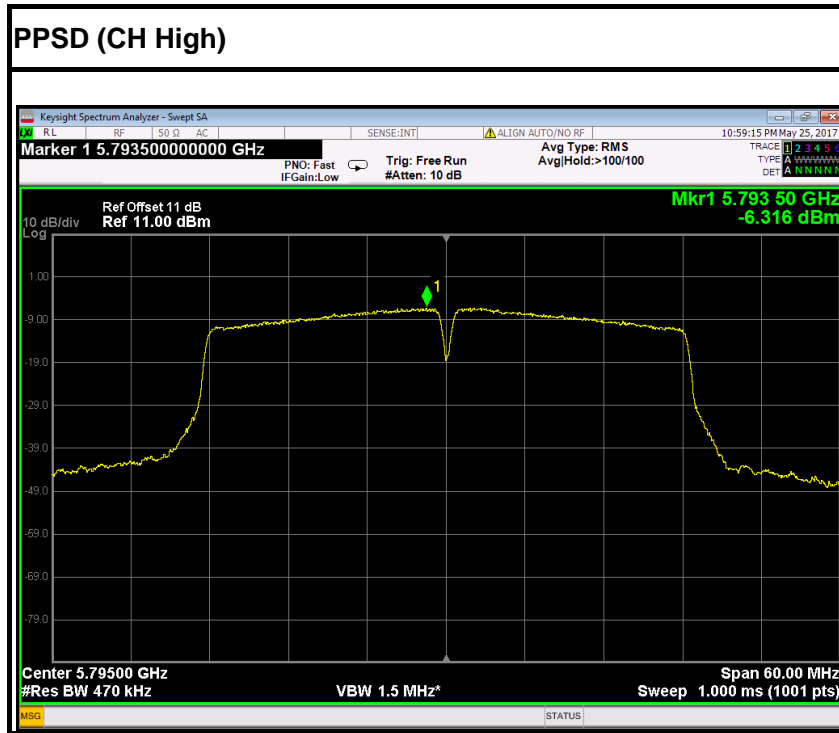
### PPSD (CH High)

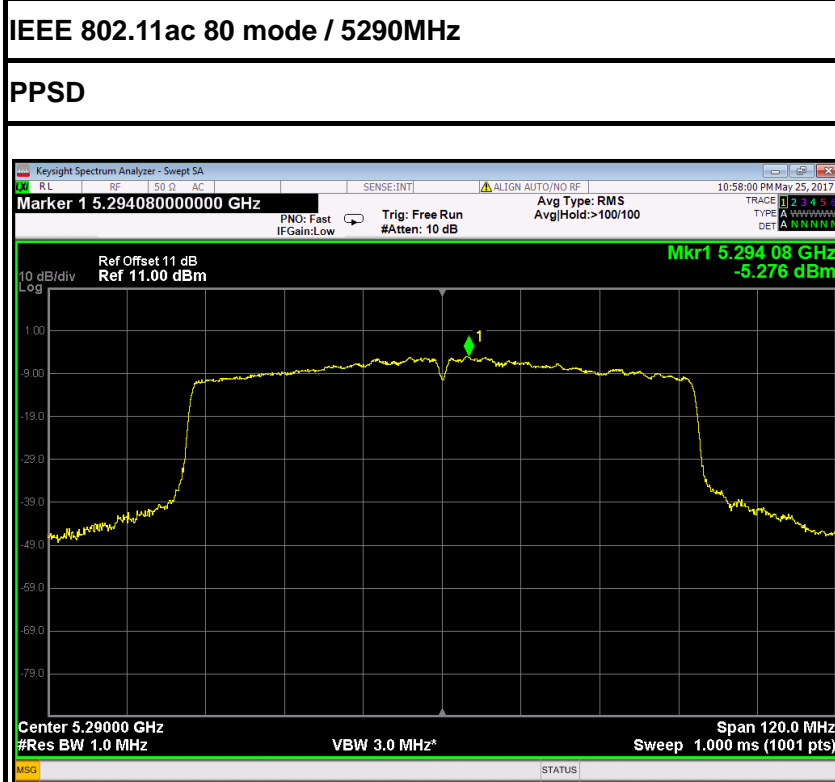
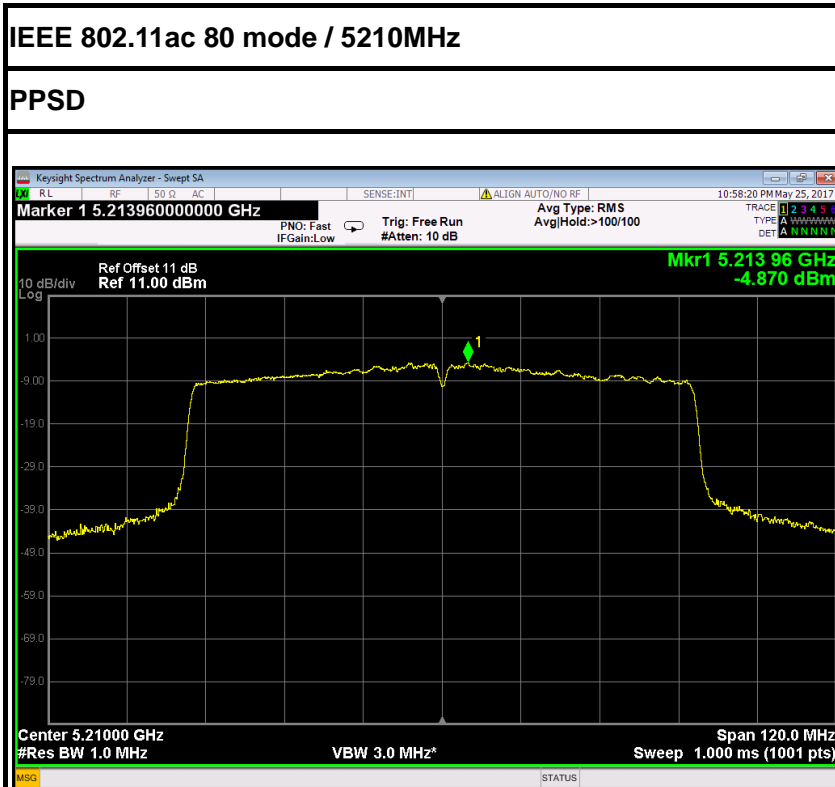


### IEEE 802.11n HT 40 MHz mode / 5755 ~ 5795MHz

### PPSD (CH Low)



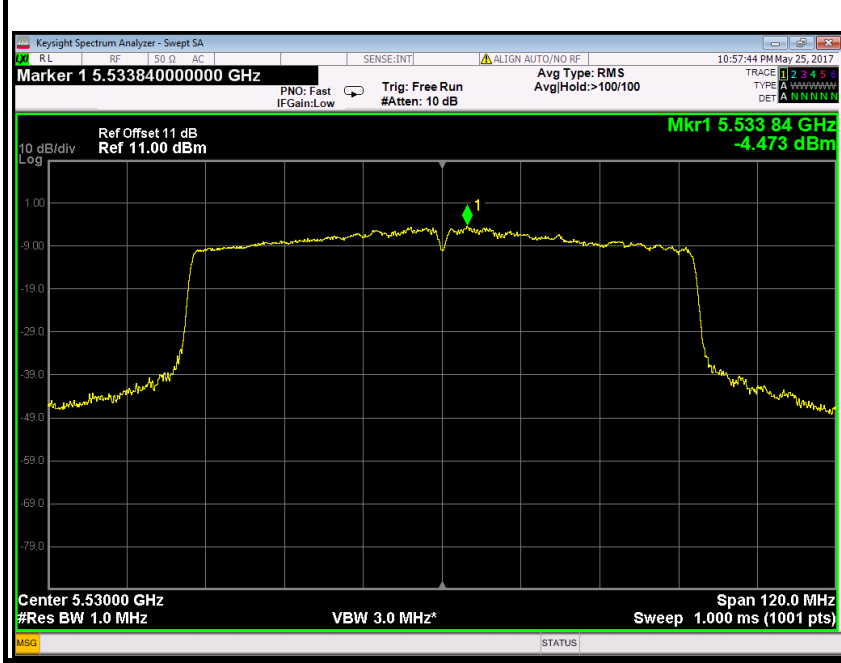






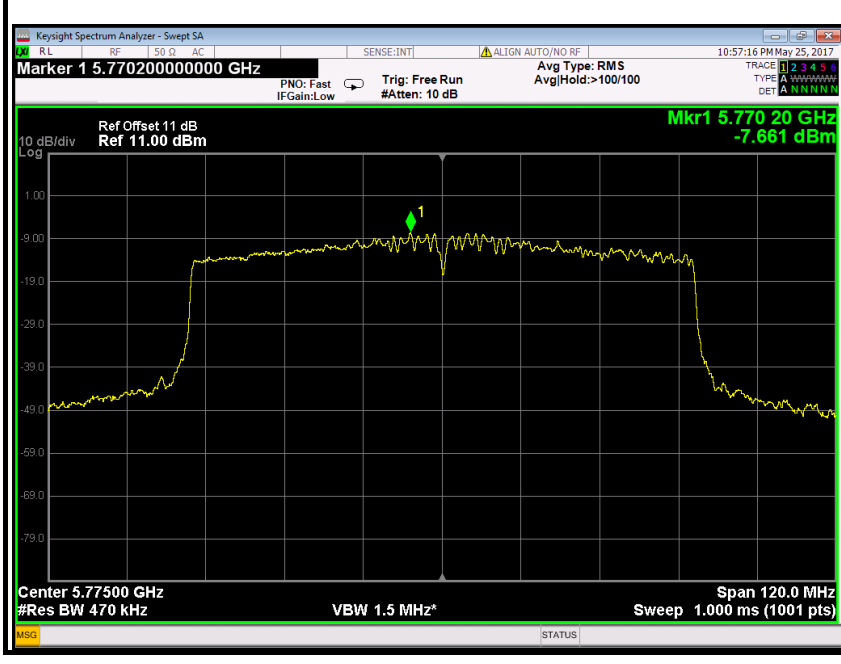
IEEE 802.11ac 80 mode / 5530MHz

PPSD



IEEE 802.11ac 80 mode / 5775MHz

PPSD





## 6.8. SPURIOUS EMISSIONS MEASUREMENT

### 6.8.1. LIMITS OF CONDUCTED EMISSIONS MEASUREMENT

According to RSS-247 §5.5, in any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated device is operating, the radio frequency power that is produced shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement, provided the transmitter demonstrates compliance with the peak conducted power limits. If the transmitter complies with the conducted power limits based on the use of RMS averaging over a time interval, as permitted under section 5.4(4), the attenuation required shall be 30 dB instead of 20 dB. Attenuation below the general limits specified in Tables 2 and 3 is not required. In addition, radiated emissions which fall in the restricted bands of Table 1 must also comply with the radiated emission limits specified in Tables 2 and 3.

### 6.8.2. TEST INSTRUMENTS

Name of Equipment	Manufacturer	Model	Serial Number	Last Calibration	Due Calibration
Spectrum Analyzer	Agilent	N9010A	MY52221469	02/21/2017	02/20/2018
Cable	HuberSuhner	SUCOFLEX104PEA	N/A	N/A	N/A

### 6.8.3. TEST PROCEDURE (please refer to measurement standard)

Conducted RF measurements of the transmitter output were made to confirm that the EUT antenna port conducted emissions meet the specified limit and to identify any spurious signals that require further investigation or measurements on the radiated emissions site.

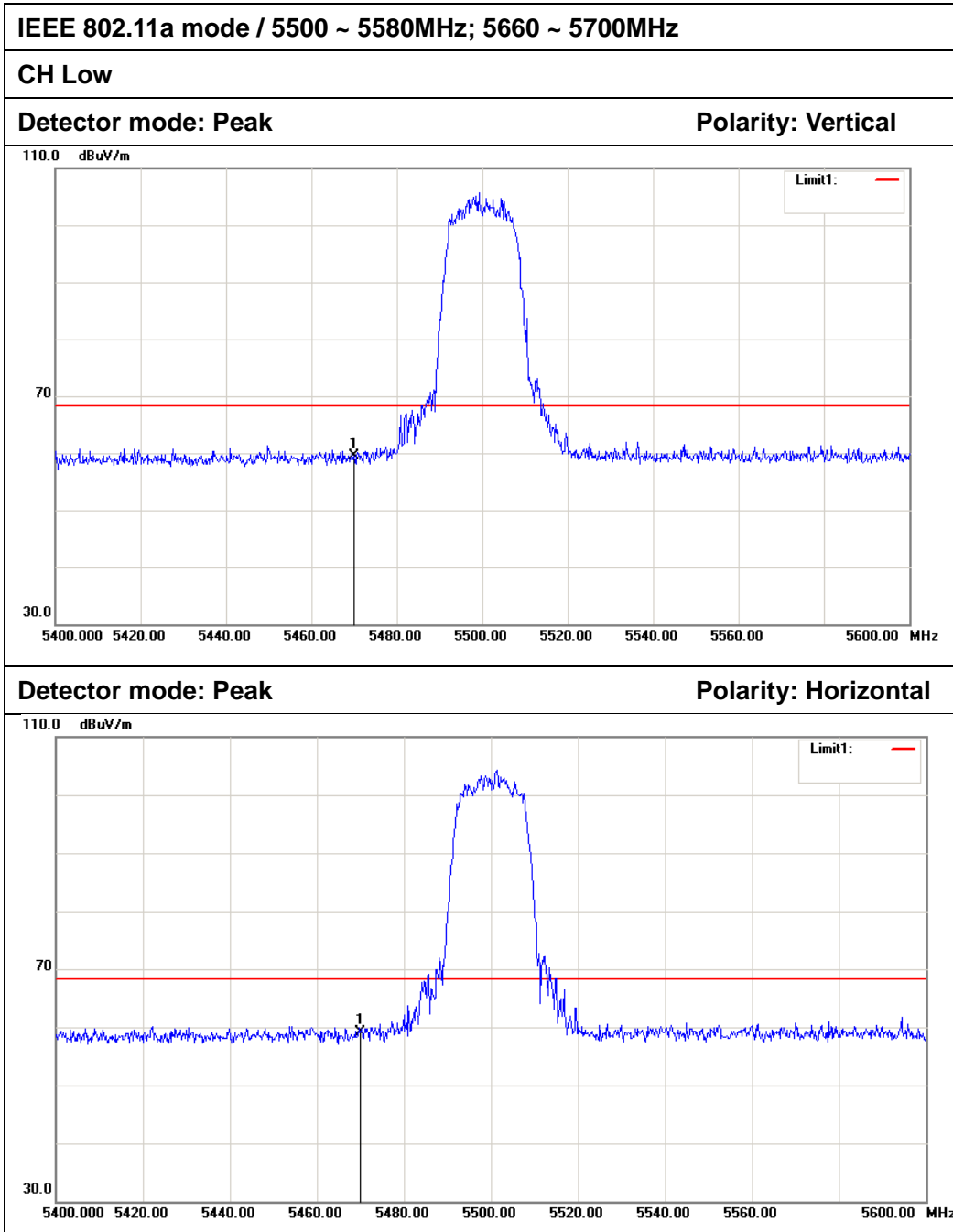
The transmitter output is connected to the spectrum analyzer. The resolution bandwidth is set to 1MHz. The video bandwidth is set to 3MHz.

Measurements are made over the 30MHz to 40GHz range with the transmitter set to the lowest, middle, and highest channels.

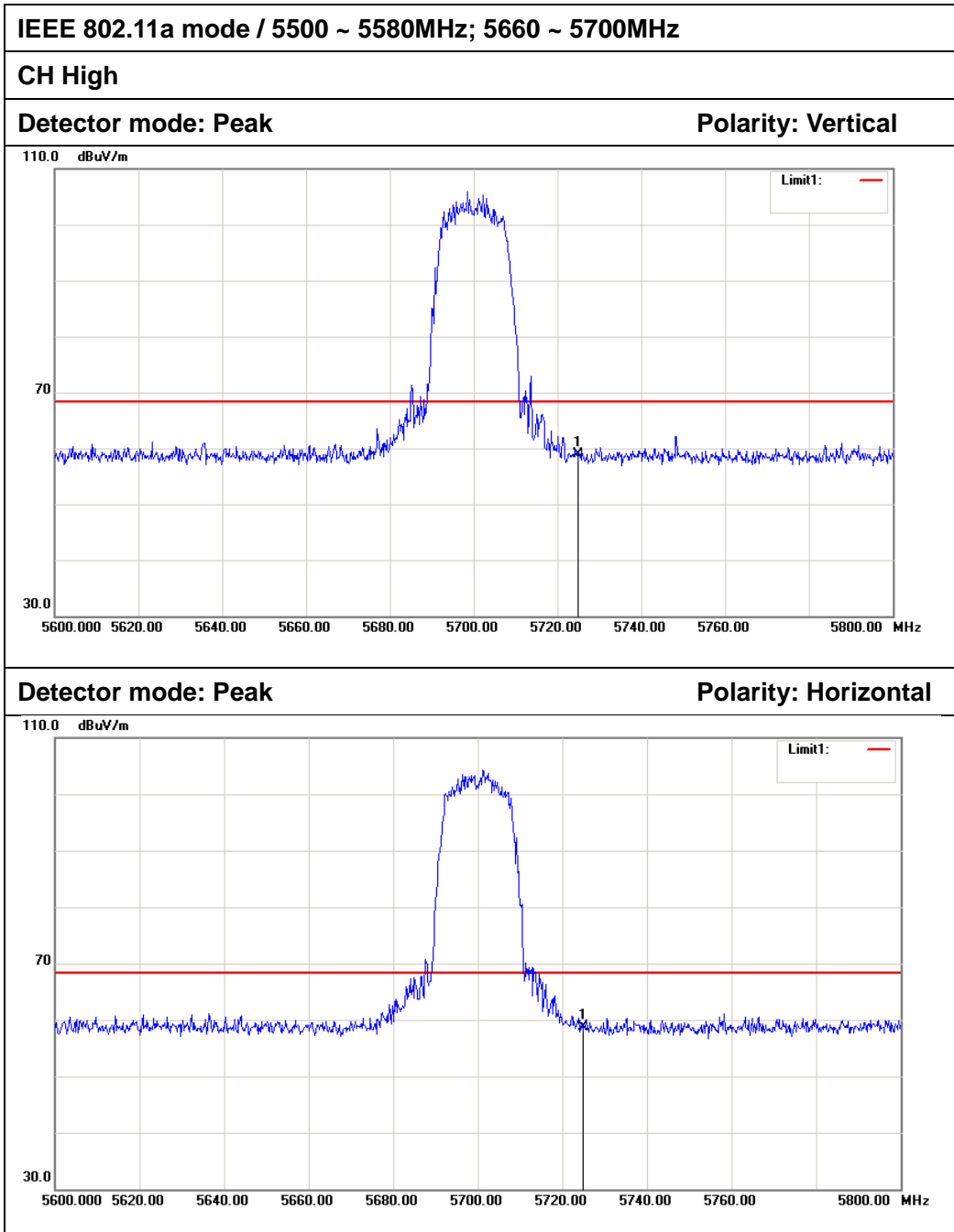


6.8.4. TEST RESULTS

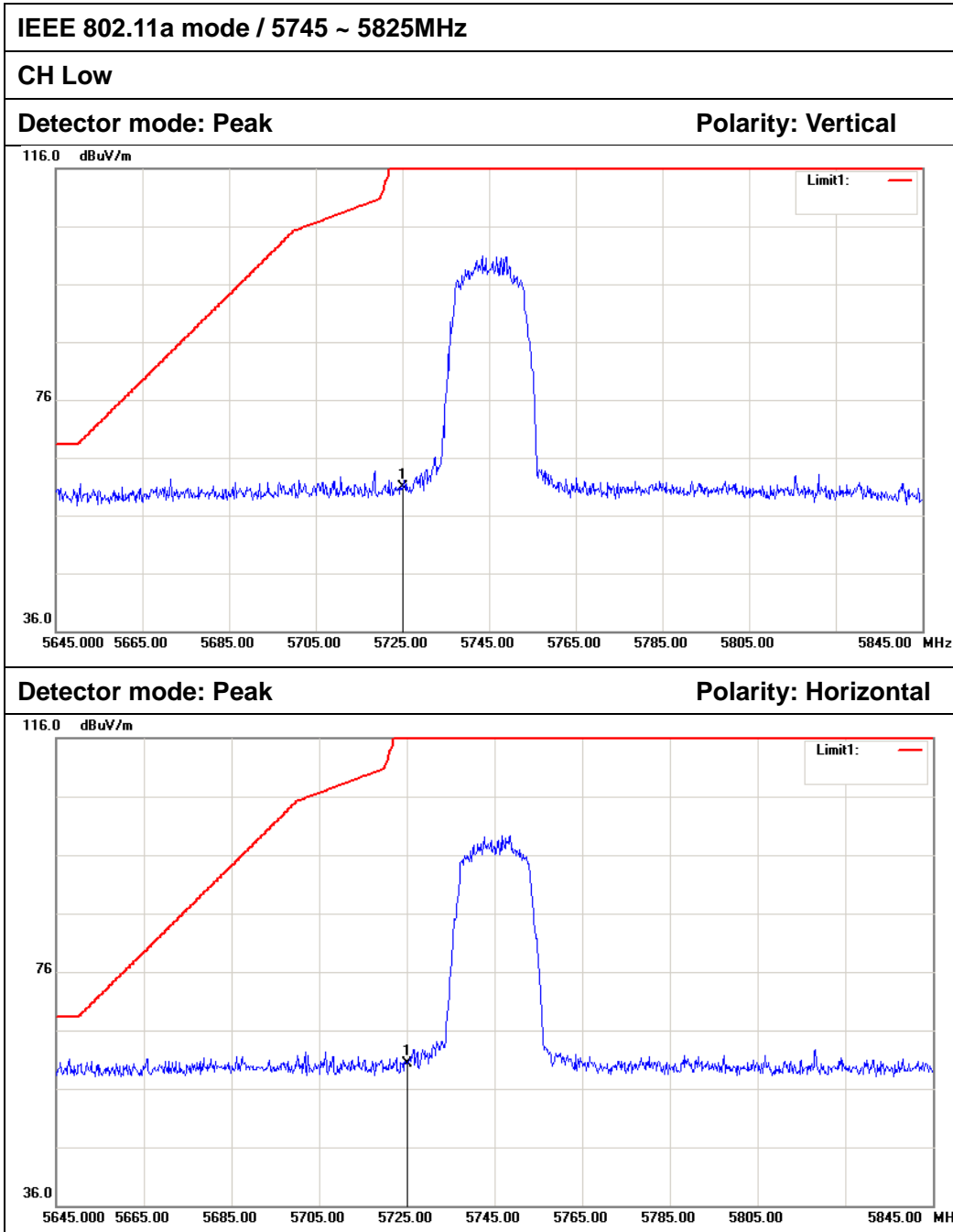
**Test Plot**



No.	Frequency (MHz)	Reading (dB)	Factor (dB/m)	Result (dB/m)	Limit (dB/m)	Margin (dB)	Remark	Antenna Polar
1	5470.000	53.73	5.82	59.55	68.20	-8.65	Peak	Vertical
2	5470.000	53.31	5.82	59.13	68.20	-9.07	Peak	Horizontal

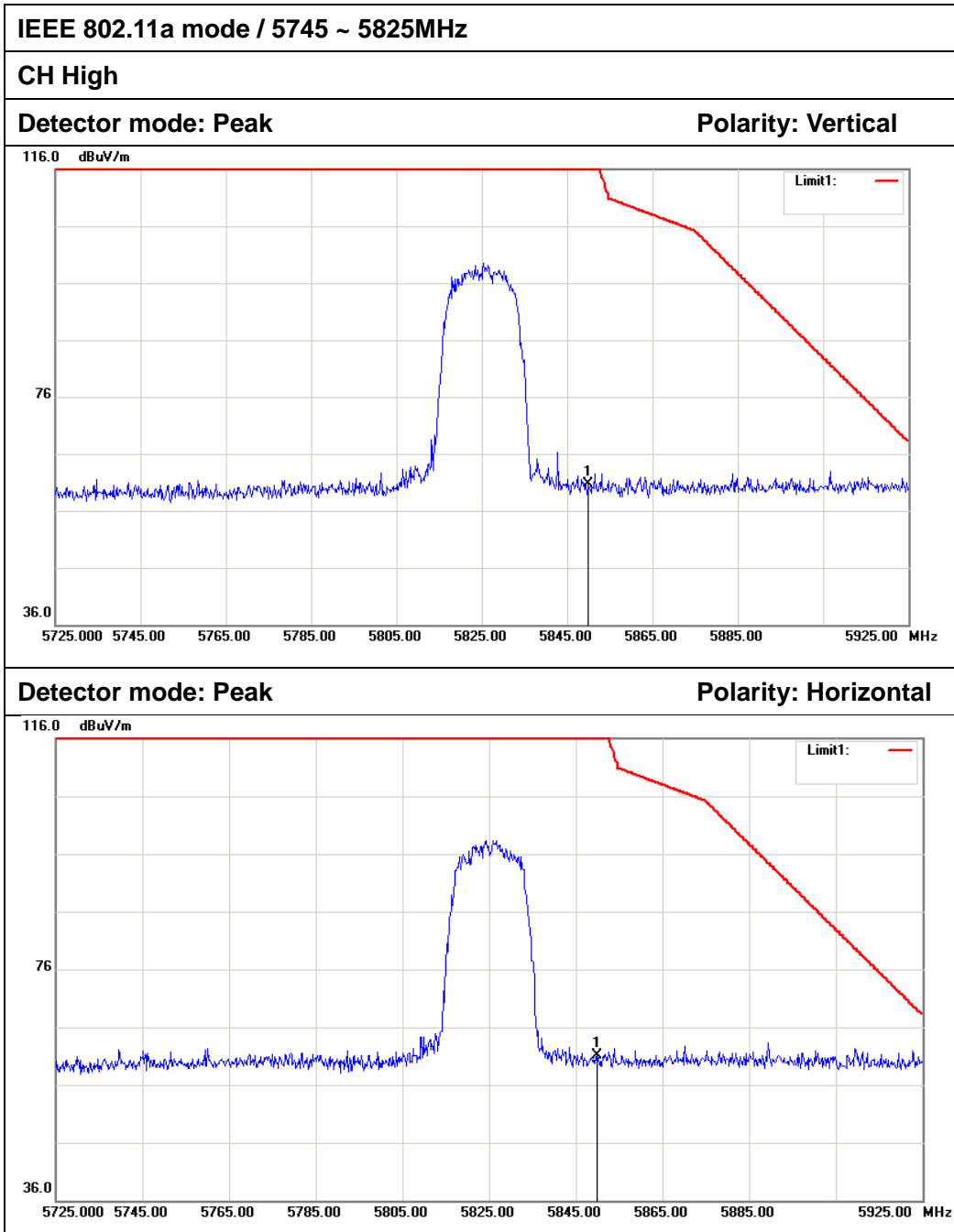


No.	Frequency (MHz)	Reading (dB)	Factor (dB/m)	Result (dB/m)	Limit (dB/m)	Margin (dB)	Remark	Antenna Polar
1	5725.000	52.86	5.96	58.82	68.20	-9.38	Peak	Vertical
2	5725.000	52.78	5.96	58.74	68.20	-9.46	Peak	Horizontal

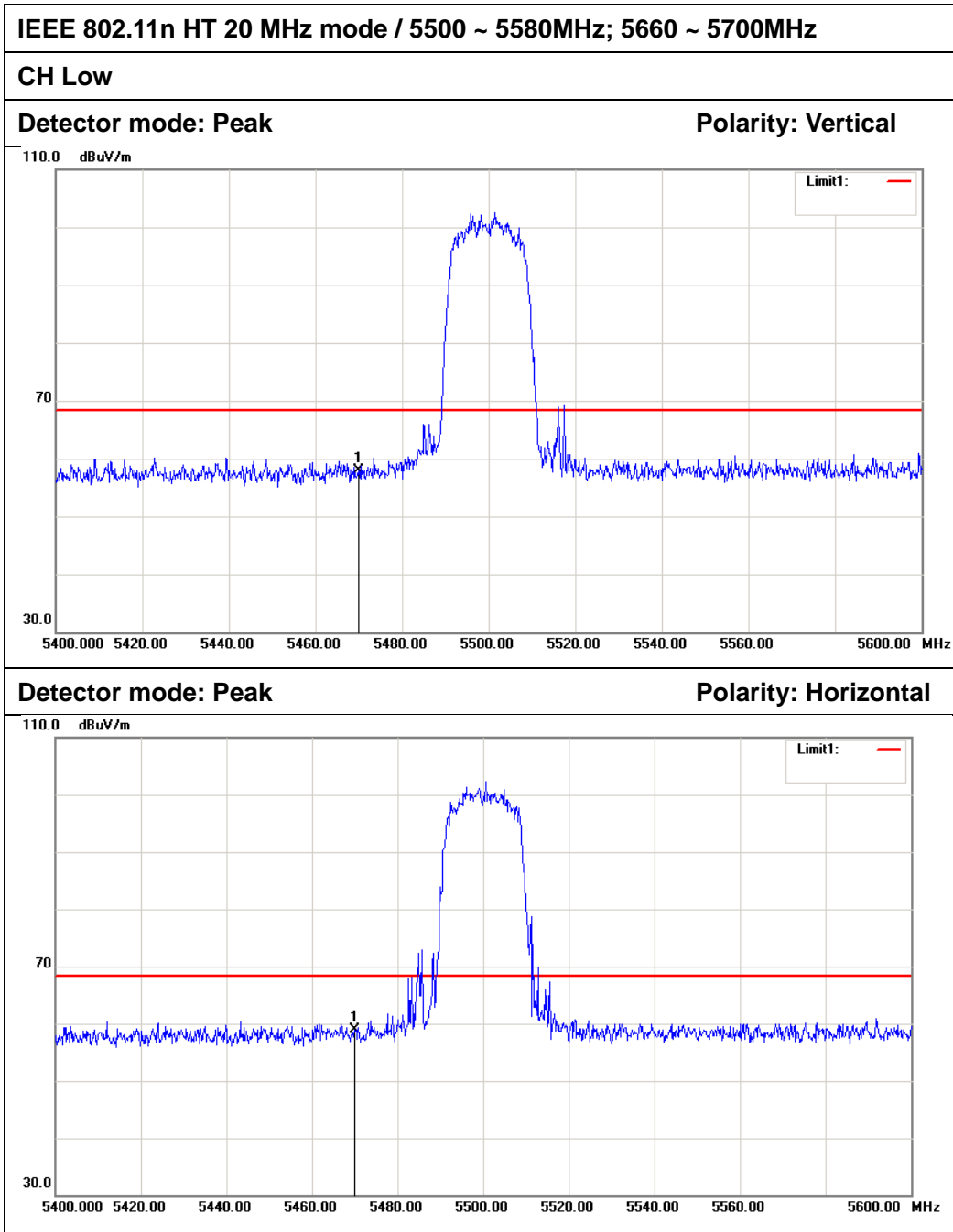


No.	Frequency (MHz)	Reading (dB)	Factor (dB/m)	Result (dB/m)	Limit (dB/m)	Margin (dB)	Remark	Antenna Polar
1	5725.000	54.88	5.96	60.84	122.20	-61.36	Peak	Vertical
2	5725.000	54.25	5.96	60.21	122.20	-61.99	Peak	Horizontal

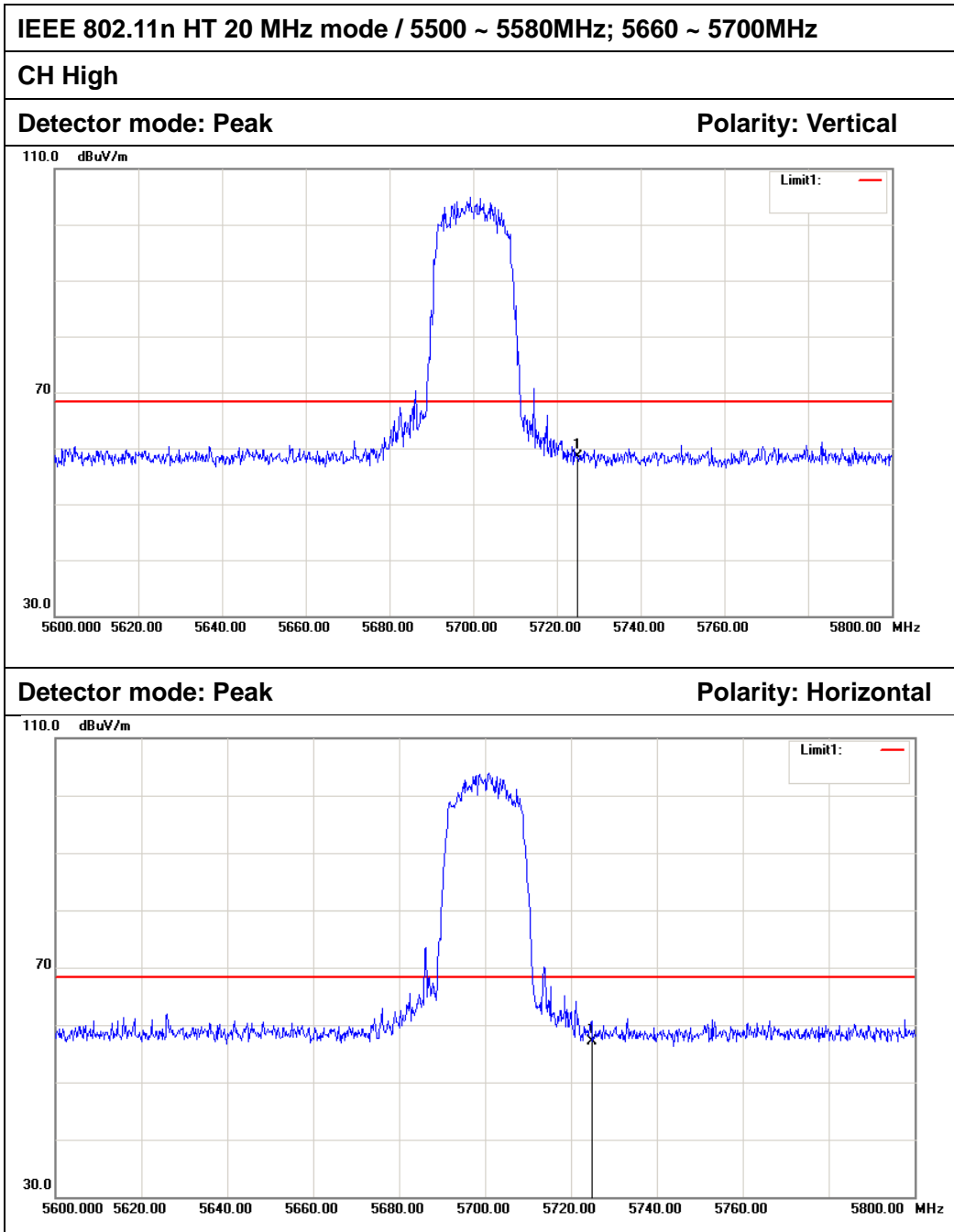




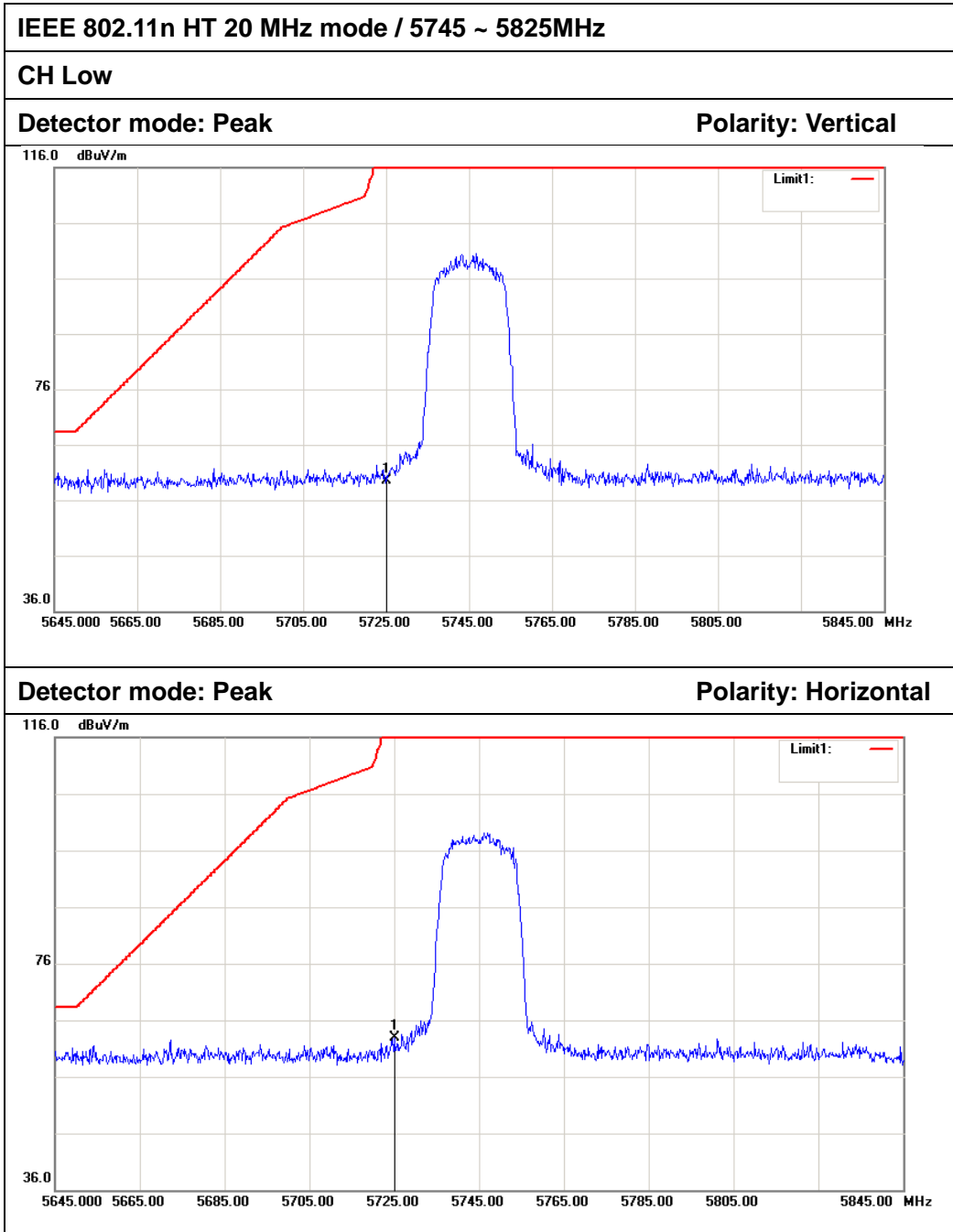
No.	Frequency (MHz)	Reading (dB)	Factor (dB/m)	Result (dB/m)	Limit (dB/m)	Margin (dB)	Remark	Antenna Polar
1	5850.000	54.63	6.02	60.65	122.20	-61.55	Peak	Vertical
2	5850.000	55.02	6.02	61.04	122.20	-61.16	Peak	Horizontal



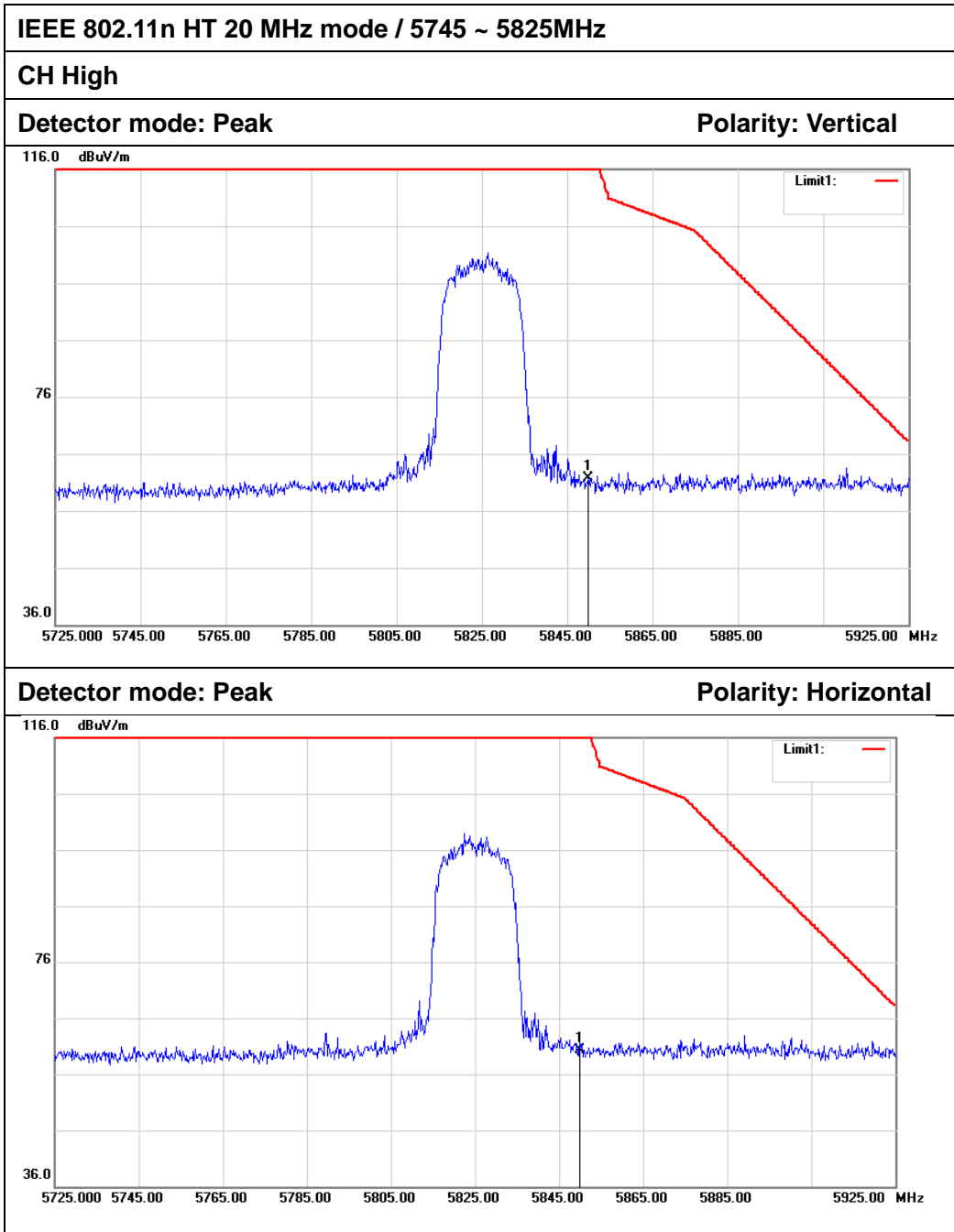
No.	Frequency (MHz)	Reading (dB)	Factor (dB/m)	Result (dB/m)	Limit (dB/m)	Margin (dB)	Remark	Antenna Polar
1	5470.000	52.10	5.82	57.92	68.20	-10.28	Peak	Vertical
2	5470.000	52.99	5.82	58.81	68.20	-9.39	Peak	Horizontal



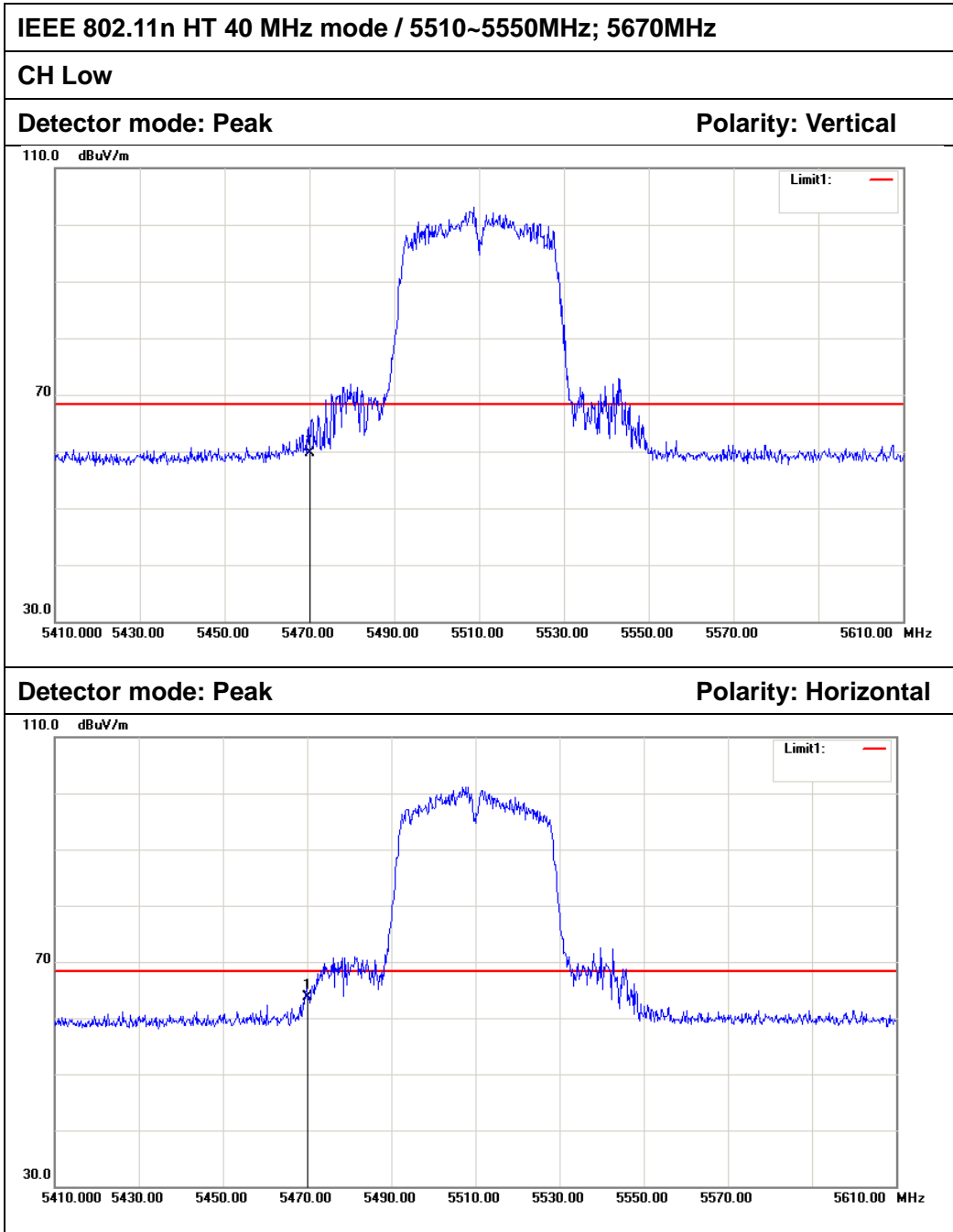
No.	Frequency (MHz)	Reading (dB)	Factor (dB/m)	Result (dB/m)	Limit (dB/m)	Margin (dB)	Remark	Antenna Polar
1	5725.000	52.62	5.96	58.58	68.20	-9.62	Peak	Vertical
2	5725.000	51.15	5.96	57.11	68.20	-11.09	Peak	Horizontal



No.	Frequency (MHz)	Reading (dB)	Factor (dB/m)	Result (dB/m)	Limit (dB/m)	Margin (dB)	Remark	Antenna Polar
1	5725.000	53.56	5.96	59.52	122.20	-62.68	Peak	Vertical
2	5725.000	57.03	5.96	62.99	122.20	-59.21	Peak	Horizontal



No.	Frequency (MHz)	Reading (dB)	Factor (dB/m)	Result (dB/m)	Limit (dB/m)	Margin (dB)	Remark	Antenna Polar
1	5850.000	55.59	6.02	61.61	122.20	-60.59	Peak	Vertical
2	5850.000	54.21	6.02	60.23	122.20	-61.97	Peak	Horizontal



No.	Frequency (MHz)	Reading (dB)	Factor (dB/m)	Result (dB/m)	Limit (dB/m)	Margin (dB)	Remark	Antenna Polar
1	5470.000	53.83	5.82	59.65	68.20	-8.55	Peak	Vertical
2	5470.000	57.91	5.82	63.73	68.20	-4.47	Peak	Horizontal

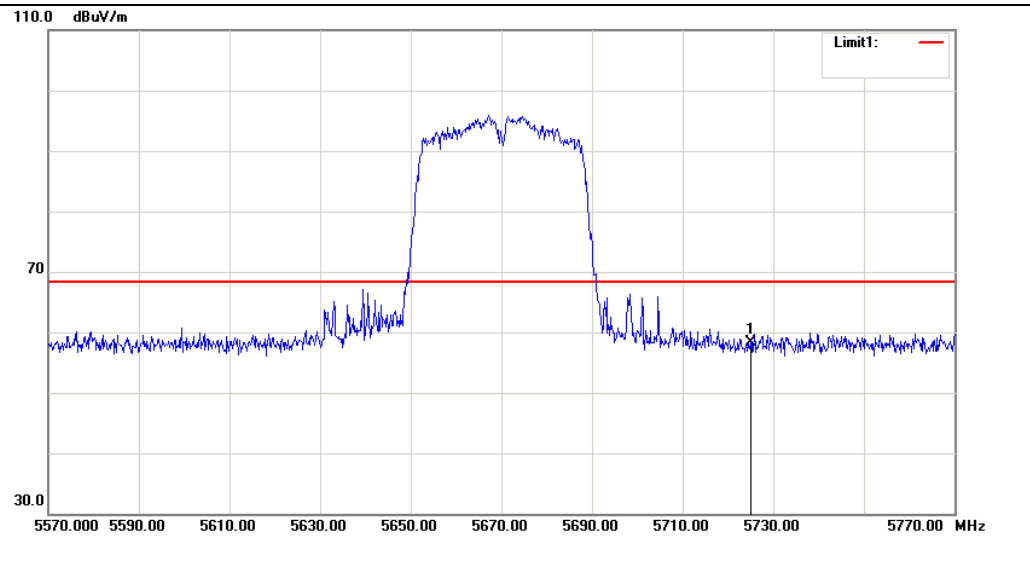


IEEE 802.11n HT 40 MHz mode / 5510~5550MHz; 5670MHz

CH High

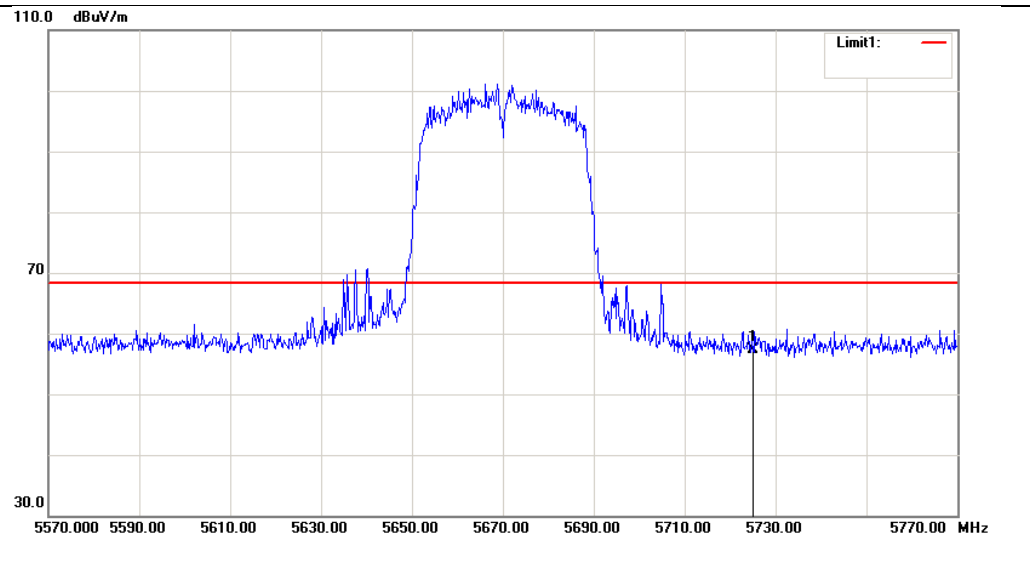
Detector mode: Peak

Polarity: Vertical

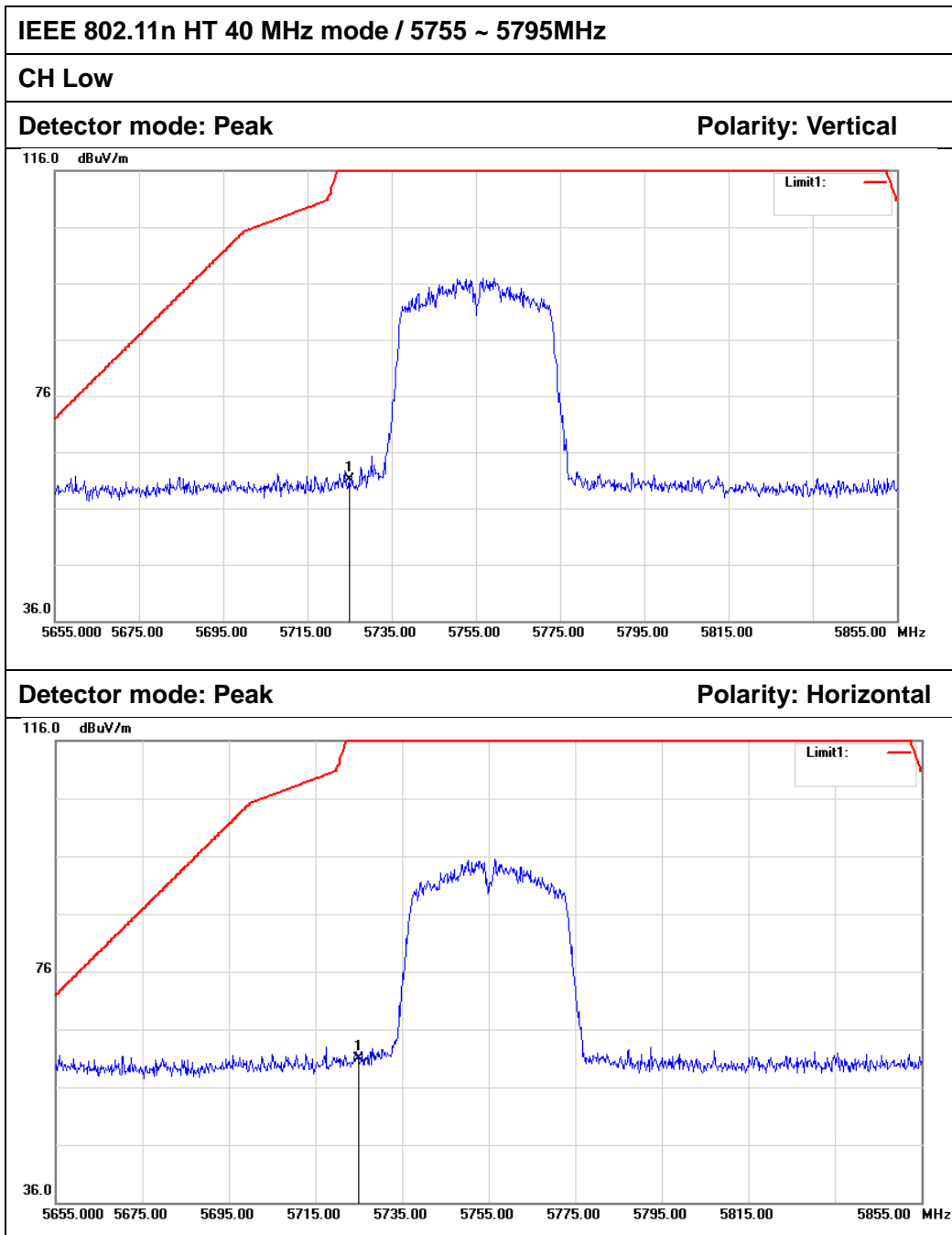


Detector mode: Peak

Polarity: Horizontal

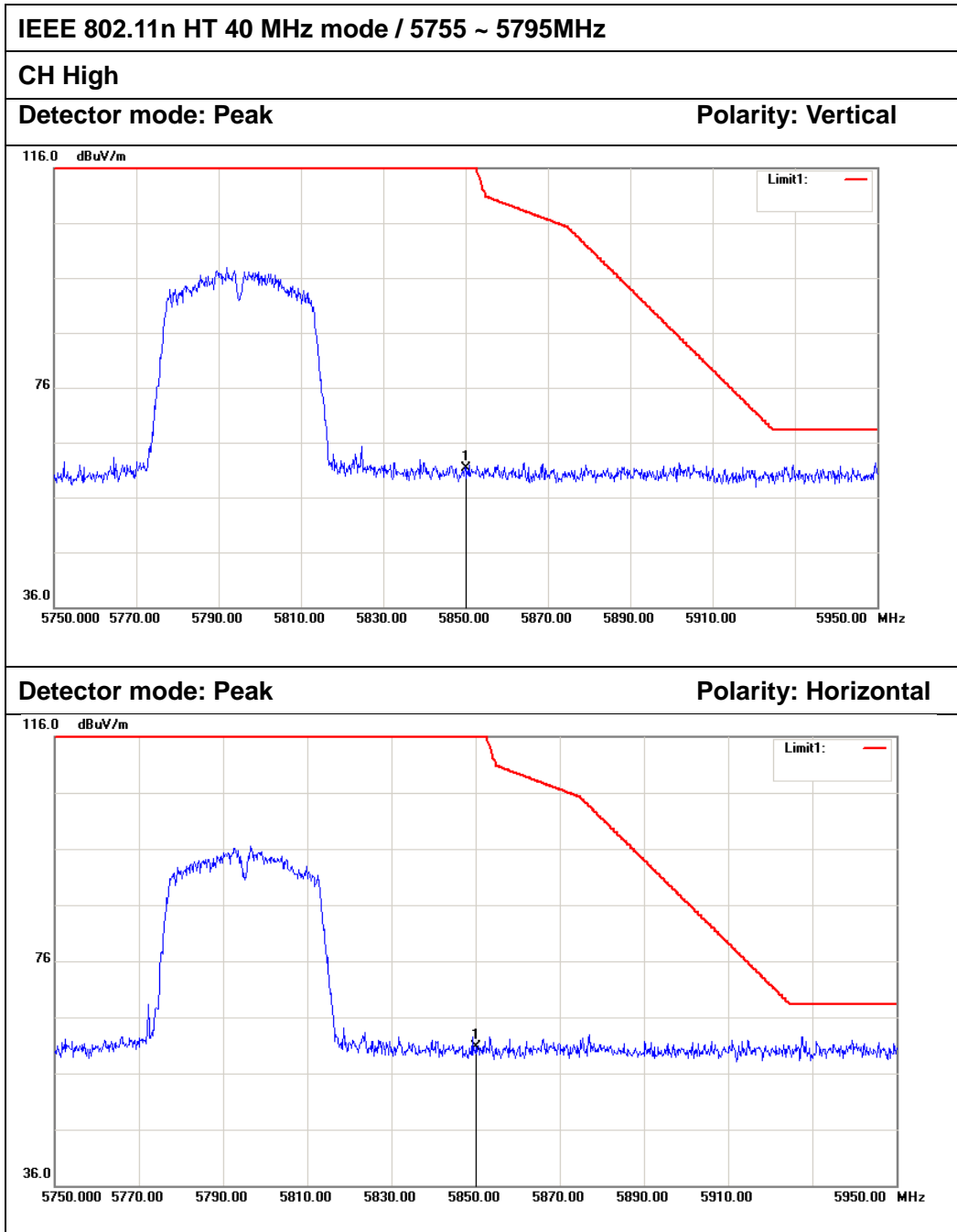


No.	Frequency (MHz)	Reading (dB)	Factor (dB/m)	Result (dB/m)	Limit (dB/m)	Margin (dB)	Remark	Antenna Polar
1	5725.000	52.41	5.96	58.37	68.20	-9.83	Peak	Vertical
2	5725.000	51.38	5.96	57.34	68.20	-10.86	Peak	Horizontal

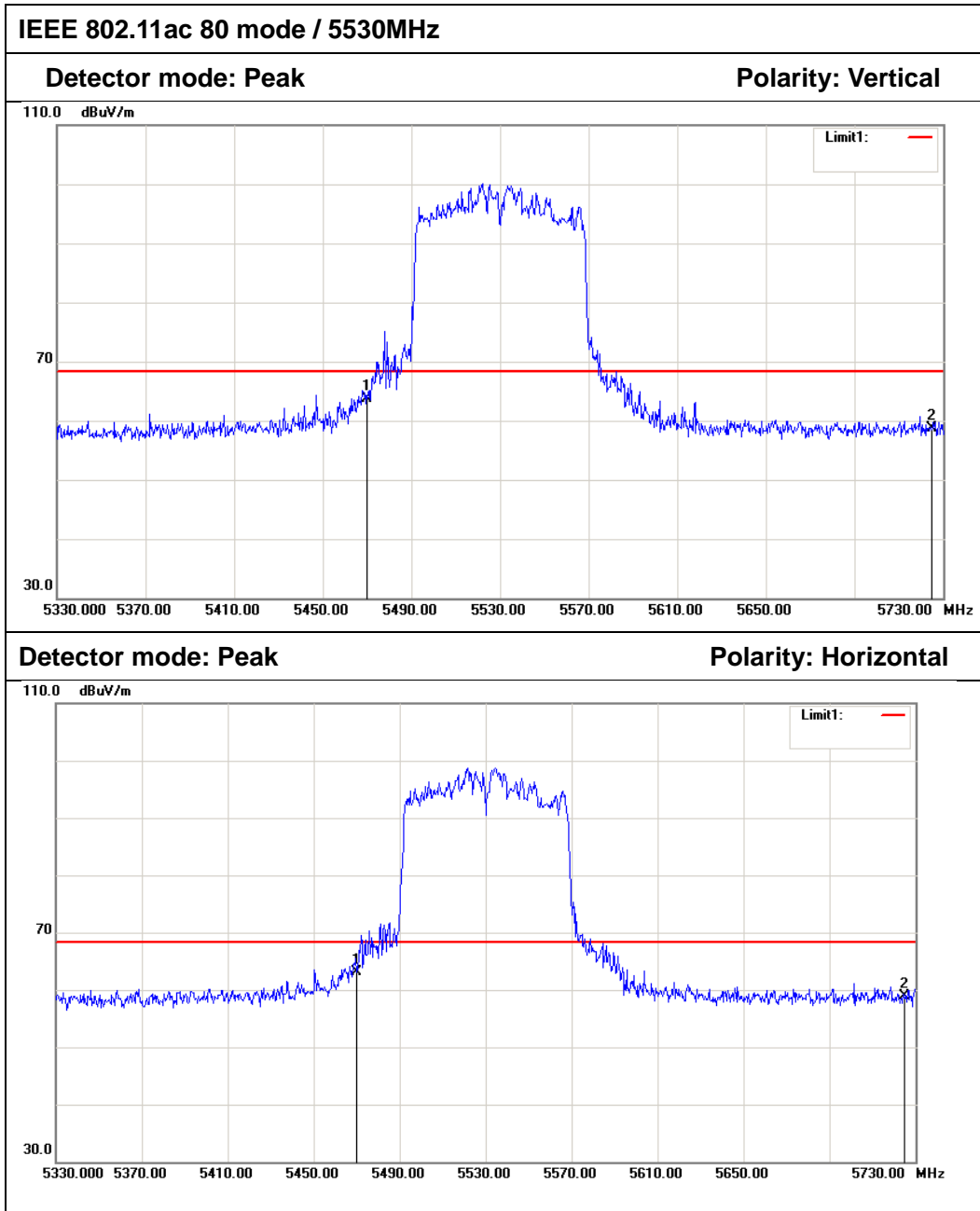


No.	Frequency (MHz)	Reading (dB)	Factor (dB/m)	Result (dB/m)	Limit (dB/m)	Margin (dB)	Remark	Antenna Polar
1	5725.000	55.11	5.96	61.07	122.20	-61.13	Peak	Vertical
2	5725.000	55.01	5.96	60.97	122.20	-61.23	Peak	Horizontal

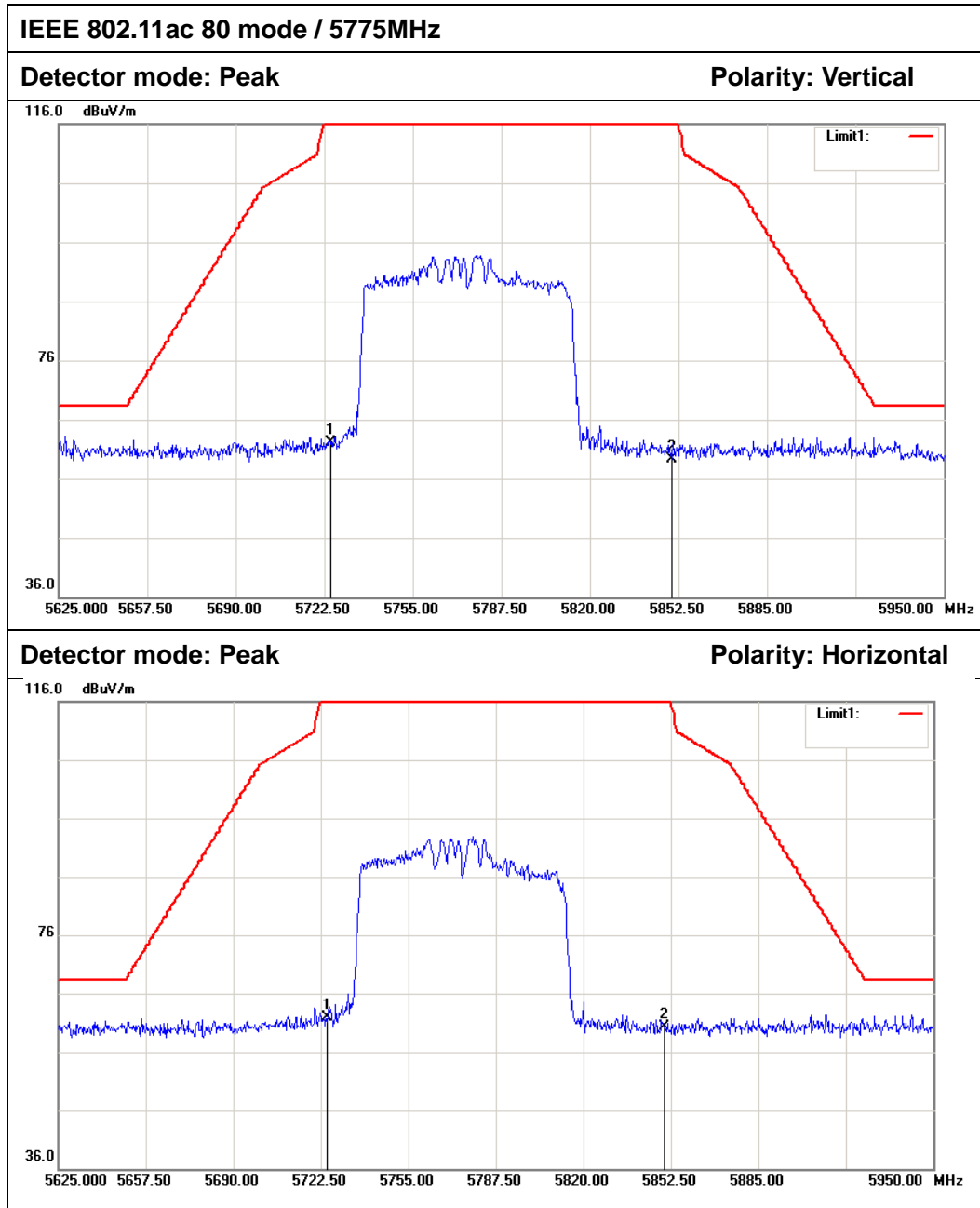




No.	Frequency (MHz)	Reading (dB)	Factor (dB/m)	Result (dB/m)	Limit (dB/m)	Margin (dB)	Remark	Antenna Polar
1	5850.000	55.29	6.02	61.31	122.20	-60.89	Peak	Vertical
2	5850.000	54.68	6.02	60.70	122.20	-61.50	Peak	Horizontal



No.	Frequency (MHz)	Reading (dB)	Factor (dB/m)	Result (dB/m)	Limit (dB/m)	Margin (dB)	Remark	Antenna Polar
1	5470.000	57.86	5.82	63.68	68.20	-4.52	Peak	Vertical
2	5725.000	52.77	5.96	58.73	68.20	-9.47	Peak	Vertical
1	5470.000	57.37	5.82	63.19	68.20	-5.01	Peak	Horizontal
2	5725.000	53.03	5.96	58.99	68.20	-9.21	Peak	Horizontal



No.	Frequency (MHz)	Reading (dB)	Factor (dB/m)	Result (dB/m)	Limit (dB/m)	Margin (dB)	Remark	Antenna Polar
1	5725.000	56.08	5.96	62.04	122.20	-60.16	Peak	Vertical
2	5850.000	53.30	6.02	59.32	122.20	-62.88	Peak	Vertical
1	5725.000	56.00	5.96	61.96	122.20	-60.24	Peak	Horizontal
2	5850.000	54.22	6.02	60.24	122.20	-61.96	Peak	Horizontal



### 6.8.4.1. LIMITS OF RADIATED EMISSIONS MEASUREMENT

All spurious emissions shall comply with the limits of RSS-Gen Table 2&5&6.

Table 2: Radiated Limits of Receiver Spurious Emissions

Frequency (MHz)	Field Strength (microvolts/m at 3 meters)*
30-88	100
88-216	150
216-960	200
Above 960	500

**Note:** \*Measurements for compliance with limits in the above table may be performed at distances other than 3 metres, in accordance with Section 7.2.7

Table 5: General Field Strength Limits for Transmitters at Frequencies Above 30 MHz

Frequency (MHz)	Field Strength (microvolts/m at 3 meters)*
30-88	100
88-216	150
216-960	200
Above 960	500

**Note:** Transmitting devices are not permitted in restricted frequency bands or, unless stated otherwise, in TV bands (54-72 MHz, 76-88 MHz, 174-216 MHz, 470-608 MHz and 614-806 MHz)

Table 6: General Field Strength Limits for Transmitters at Frequencies Below 30 MHz (Transmit)

Frequency (MHz)	Field Strength (microvolts/m)	Magnetic H-Field (microamperes/m)	Measurement Distance (metres)
0.009-0.490	2,400/F (F in kHz)	2,400/377F (F in kHz)	300
0.490-1.705	24,000/F (F in kHz)	24,000/377F (F in kHz)	30
1.705-30.0	30	N/A	30

**Note:** The emission limits for the bands 9-90 kHz and 110-490 kHz are based on measurements employing an average detector.

In the emission table above, the tighter limit applies at the band edges.

Frequency (MHz)	Field Strength (µV/m at 3-meter)	Field Strength (dBµV/m at 3-meter)
30-88	100	40
88-216	150	43.5
216-960	200	46
Above 960	500	54

**NOTE:** (1) The lower limit shall apply at the transition frequencies.  
 (2) Emission level (dBuV/m) = 20 log Emission level (uV/m).



6.8.4.2. TEST INSTRUMENTS

Radiated Emission Test Site 966 (2)					
Name of Equipment	Manufacturer	Model Number	Serial Number	Last Calibration	Due Calibration
PSA Series Spectrum Analyzer	Agilent	N9010A	MY52221469	02/21/2017	02/20/2018
EMI TEST RECEIVER	ROHDE&SCHWARZ	ESCI	100783	02/21/2017	02/20/2018
Amplifier	EMEC	EM330	060661	03/18/2017	03/17/2018
High Noise Amplifier	Agilent	8449B	3008A01838	02/21/2017	02/20/2018
Loop Antenna	COM-POWER	AL-130	121044	09/25/2016	09/24/2017
Bilog Antenna	SCHAFFNER	CBL6143	5082	02/21/2017	02/20/2018
Horn Antenna	SCHWARZBECK	BBHA9120	D286	02/27/2018	02/27/2018
Board-Band Horn Antenna	Schwarzbeck	BBHA 9170	9170-497	02/27/2018	02/27/2018
Turn Table	N/A	N/A	N/A	N.C.R	N.C.R
Antenna Tower	SUNOL	TLT2	N/A	N.C.R	N.C.R
Controller	Sunol Sciences	SC104V	022310-1	N.C.R	N.C.R
Controller	CT	N/A	N/A	N.C.R	N.C.R
Temp. / Humidity Meter	Anymetre	JR913	N/A	02/21/2017	02/20/2018
Test S/W	FARAD	LZ-RF / CCS-SZ-3A2			

- NOTE:** 1. The calibration interval of the above test instruments is 12 months and the calibrations are traceable to NML/ROC and NIST/USA.  
2. The FCC Site Registration number is 101879.  
3. N.C.R = No Calibration Required.



### 6.8.4.3. MEASURING SETTING

The following table is the setting of spectrum analyzer and receiver.

Spectrum Parameter	Setting
Attenuation	Auto
Start Frequency	1000 MHz
Stop Frequency	10th carrier harmonic
RB / VB (Emission in restricted band)	1MHz / 1MHz for Peak, 1 MHz / 10Hz for Average
RB / VB (Emission in non-restricted band)	1MHz / 1MHz for Peak, 1 MHz / 10Hz for Average

Receiver Parameter	Setting
Attenuation	Auto
Start ~ Stop Frequency	9kHz~150kHz / RB 200Hz for QP/AVG
Start ~ Stop Frequency	150kHz~30MHz / RB 9kHz for QP/AVG
Start ~ Stop Frequency	30MHz~1000MHz / RB 100kHz for QP

### 6.8.4.4. TEST PROCEDURE (please refer to measurement standard)

#### 1) Sequence of testing 9 kHz to 30 MHz

##### Setup:

--- The equipment was set up to simulate a typical usage like described in the user manual or described by manufacturer.

--- If the EUT is a tabletop system, a rotatable table with 0.8 m height is used.

--- If the EUT is a floor standing device, it is placed on the ground.

--- Auxiliary equipment and cables were positioned to simulate normal operation conditions.

--- The AC power port of the EUT (if available) is connected to a power outlet below the turntable.

--- The measurement distance is 3 meter.

--- The EUT was set into operation.

##### Pre measurement:

--- The turntable rotates from 0° to 315° using 45° steps.

--- The antenna height is 0.8 meter.

--- At each turntable position the analyzer sweeps with peak detection to find the



maximum of all emissions

**Final measurement:**

--- Identified emissions during the pre measurement the software maximizes by rotating the turntable position (0° to 360°) and by rotating the elevation axes (0° to 360°).

--- The final measurement will be done in the position (turntable and elevation) causing the highest emissions with QPK detector.

--- The final levels, frequency, measuring time, bandwidth, turntable position, correction factor, margin to the limit and limit will be recorded. Also a plot with the graph of the pre measurement and the limit will be stored.

**2) Sequence of testing 30 MHz to 1 GHz**

**Setup:**

--- The equipment was set up to simulate a typical usage like described in the user manual or described by manufacturer.

--- If the EUT is a tabletop system, a table with 0.8 m height is used, which is placed on the ground plane.

--- If the EUT is a floor standing device, it is placed on the ground plane with insulation between both.

--- Auxiliary equipment and cables were positioned to simulate normal operation conditions

--- The AC power port of the EUT (if available) is connected to a power outlet below the turntable.

--- The measurement distance is 3 meter.

--- The EUT was set into operation.

**Pre measurement:**

--- The turntable rotates from 0° to 315° using 45° steps.

--- The antenna is polarized vertical and horizontal.

--- The antenna height changes from 1 to 3 meter.

--- At each turntable position, antenna polarization and height the analyzer sweeps three times in peak to find the maximum of all emissions.



**Final measurement:**

- The final measurement will be performed with minimum the six highest peaks.
- According to the maximum antenna and turntable positions of premeasurement the software maximize the peaks by changing turntable position ( $\pm 45^\circ$ ) and antenna movement between 1 and 4 meter.
- The final measurement will be done with QP detector with an EMI receiver.
- The final levels, frequency, measuring time, bandwidth, antenna height, antenna polarization, turntable angle, correction factor, margin to the limit and limit will be recorded. Also a plot with the graph of the premeasurement with marked maximum final measurements and the limit will be stored.

**3) Sequence of testing 1 GHz to 18 GHz**

**Setup:**

- The equipment was set up to simulate a typical usage like described in the user manual or described by manufacturer.
- If the EUT is a tabletop system, a rotatable table with 1.5 m height is used.
- If the EUT is a floor standing device, it is placed on the ground plane with insulation between both.
- Auxiliary equipment and cables were positioned to simulate normal operation conditions
- The AC power port of the EUT (if available) is connected to a power outlet below the turntable.
- The measurement distance is 3 meter.
- The EUT was set into operation.

**Pre measurement:**

- The turntable rotates from  $0^\circ$  to  $315^\circ$  using  $45^\circ$  steps.
- The antenna is polarized vertical and horizontal.
- The antenna height scan range is 1 meter to 2.5 meter.
- At each turntable position and antenna polarization the analyzer sweeps with peak detection to find the maximum of all emissions.





**Final measurement:**

--- The final measurement will be performed with minimum the six highest peaks.

--- According to the maximum antenna and turntable positions of premeasurement the software maximize the peaks by changing turntable position ( $\pm 45^\circ$ ) and antenna movement between 1 and 4 meter. This procedure is repeated for both antenna polarizations.

--- The final measurement will be done in the position (turntable, EUT-table and antenna polarization) causing the highest emissions with Peak and Average detector.

--- The final levels, frequency, measuring time, bandwidth, turntable position, EUT-table position, antenna polarization, correction factor, margin to the limit and limit will be recorded. Also a plot with the graph of the pre measurement with marked maximum final measurements and the limit will be stored.

**4) Sequence of testing above 18 GHz**

**Setup:**

--- The equipment was set up to simulate a typical usage like described in the user manual or described by manufacturer.

--- If the EUT is a tabletop system, a rotatable table with 1.5 m height is used.

--- If the EUT is a floor standing device, it is placed on the ground plane with insulation between both.

--- Auxiliary equipment and cables were positioned to simulate normal operation conditions

--- The AC power port of the EUT (if available) is connected to a power outlet below the turntable.

--- The measurement distance is 1 meter.

--- The EUT was set into operation.

**Pre measurement:**

--- The antenna is moved spherical over the EUT in different polarisations of the antenna.

**Final measurement:**

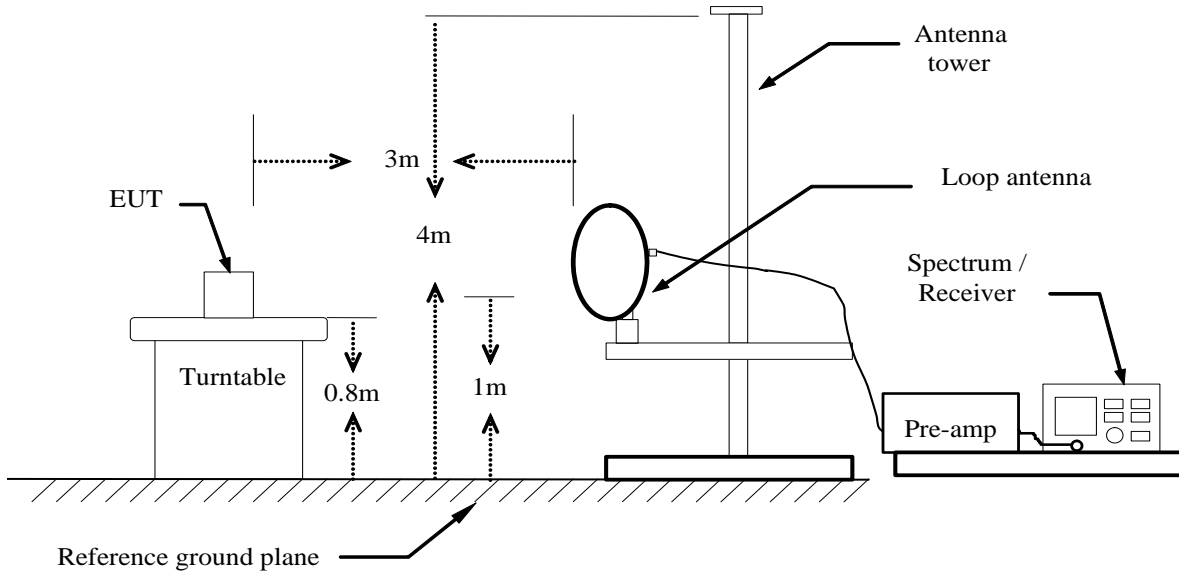
--- The final measurement will be performed at the position and antenna orientation for all detected emissions that were found during the premeasurements with Peak and Average detector.

--- The final levels, frequency, measuring time, bandwidth, correction factor, margin to the limit and limit will be recorded. Also a plot with the graph of the premeasurement and the limit will be stored.

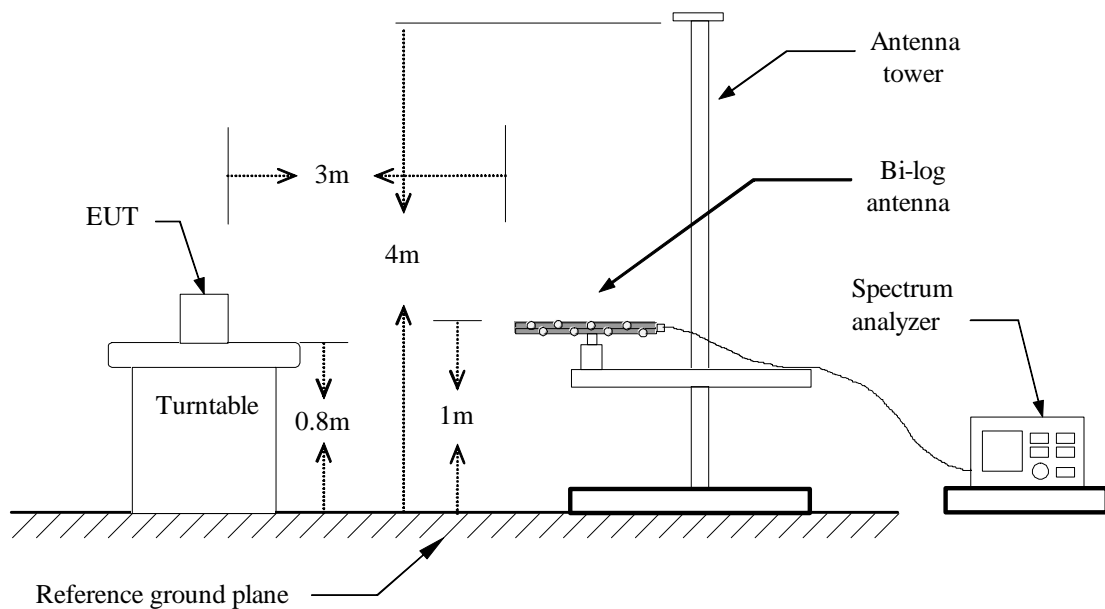


### 6.8.4.5. TEST SETUP

#### Below 30MHz

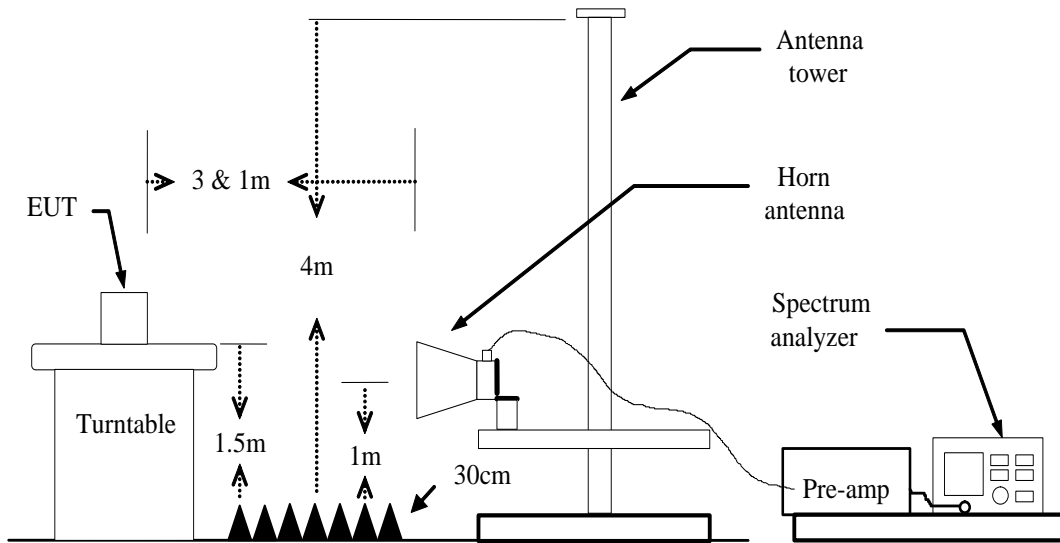


#### Below 1 GHz





Above 1 GHz



For the actual test configuration, please refer to the related item – Photographs of the Test Configuration.



6.8.4.6. DATA SAPLE

Below 1GHz

Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Pole (V/H)	Remark
XXX.XXXX	36.37	-12.20	24.17	40.00	-15.83	V	QP

Frequency (MHz) = Emission frequency in MHz  
 Reading (dBuV) = Uncorrected Analyzer / Receiver reading  
 Correct Factor (dB/m) = Antenna factor + Cable loss – Amplifier gain  
 Result (dBuV/m) = Reading (dBuV) + Corr. Factor (dB/m)  
 Limit (dBuV/m) = Limit stated in standard  
 Margin (dB) = Result (dBuV/m) – Limit (dBuV/m)  
 Q.P. = Quasi-peak Reading

Above 1GHz

Frequency (MHz)	Reading (dBuV)	Correction Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Pole (V/H)	Remark
XXXX.XXXX	62.09	-11.42	50.67	74.00	-23.33	V	Peak
XXXX.XXXX	49.78	-11.42	38.36	54.00	-15.64	V	AVG

Frequency (MHz) = Emission frequency in MHz  
 Reading (dBuV) = Uncorrected Analyzer / Receiver reading  
 Correction Factor (dB/m) = Antenna factor + Cable loss – Amplifier gain  
 Result (dBuV/m) = Reading (dBuV) + Corr. Factor (dB/m)  
 Limit (dBuV/m) = Limit stated in standard  
 Margin (dB) = Result (dBuV/m) – Limit (dBuV/m)  
 Peak = Peak Reading  
 AVG = Average Reading

**Calculation Formula**

Margin (dB) = Result (dBuV/m) – Limits (dBuV/m)  
 Result (dBuV/m) = Reading (dBuV) + Correction Factor

**6.8.4.7. TEST RESULTS****Below 1 GHz****Test Mode:** TX / IEEE 802.11a / 5180MHz /(CH Low)**Tested by:** Eve Wang**Ambient temperature:** 24°C **Relative humidity:** 52% RH**Date:** May 25, 2017

Frequency (MHz)	Reading (dBuV)	Correction Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Pole (V/H)	Remark
51.3400	55.28	-21.56	33.72	40.00	-6.28	V	QP
93.0500	57.56	-24.42	33.14	43.50	-10.36	V	QP
311.3000	41.67	-19.15	22.52	46.00	-23.48	V	QP
456.8000	37.09	-15.27	21.82	46.00	-24.18	V	QP
560.5900	36.31	-13.25	23.06	46.00	-22.94	V	QP
832.1900	33.87	-10.61	23.26	46.00	-22.74	V	QP
54.2500	53.77	-22.47	31.30	40.00	-8.70	H	QP
91.1100	54.90	-24.62	30.28	43.50	-13.22	H	QP
154.1600	51.88	-22.08	29.80	43.50	-13.70	H	QP
221.0900	45.06	-20.51	24.55	46.00	-21.45	H	QP
312.2700	46.45	-19.12	27.33	46.00	-18.67	H	QP
445.1600	39.85	-15.57	24.28	46.00	-21.72	H	QP

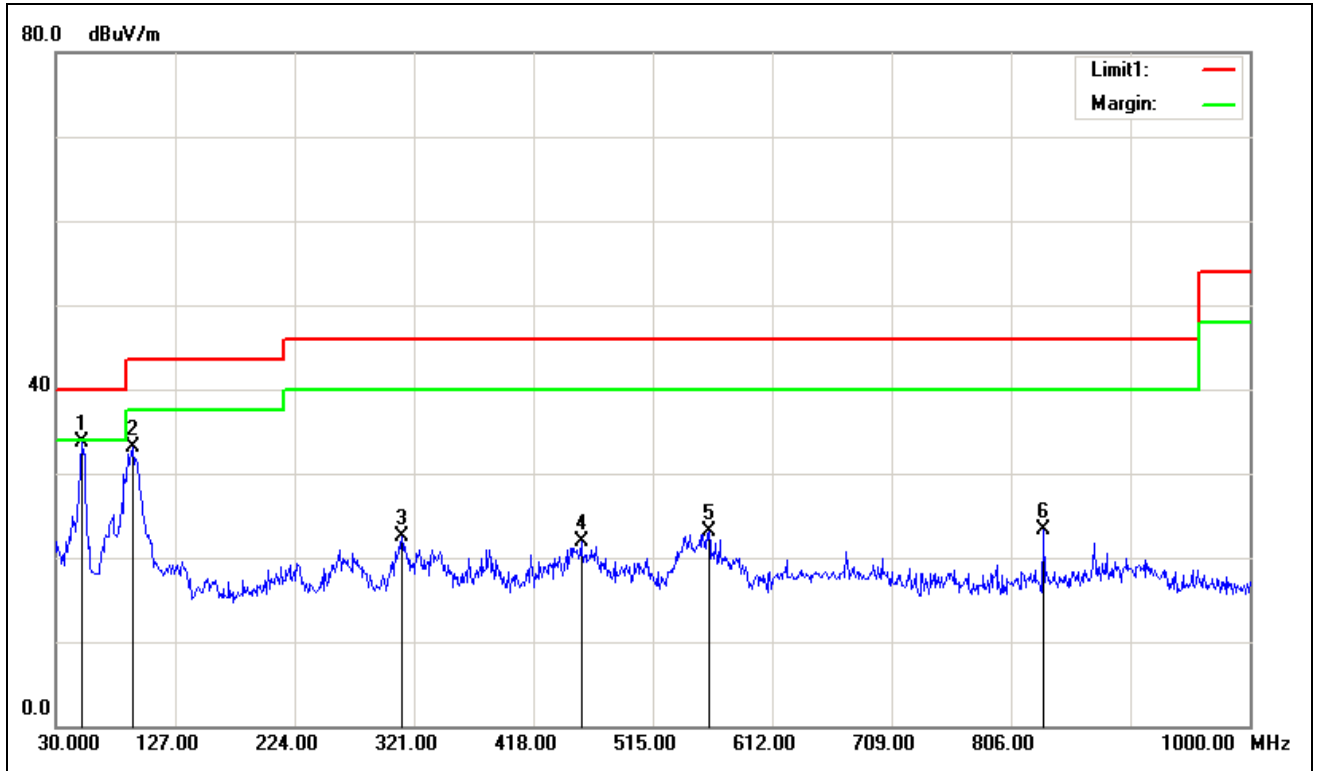
Pre-scan all mode and recorded the worst case results in this report (802.11a (Low Mid)).

**Remark:**

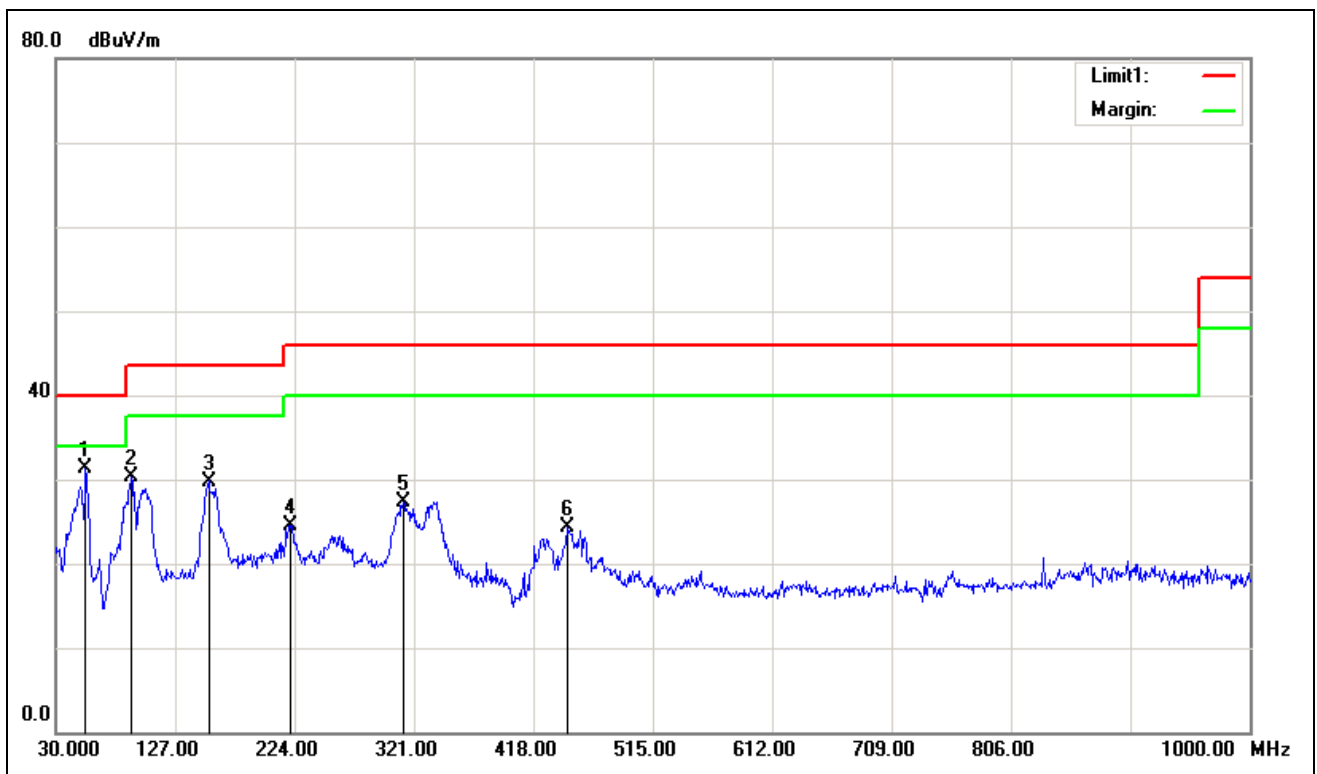
1. No emission found between lowest internal used/generated frequency to 30MHz (9kHz~30MHz)
2. Radiated emissions measured in frequency range from 30 MHz to 1000MHz were made with an instrument using peak/quasi-peak detector mode.
3. Quasi-peak test would be performed if the peak result were greater than the quasi-peak limit.
4. Data of measurement within this frequency range shown " --- " in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.
5. Measurements above show only up to 6 maximum emissions noted, or would be lesser, with " N/A " remark, if no specific emissions from the EUT are recorded (ie: margin>20dB from the applicable limit) and considered that's already beyond the background noise floor.
6. Margin (dB) = Remark result (dBuV/m) – Quasi-peak limit (dBuV/m).



### Vertical



### Horizontal



**Above 1 GHz****1GHz~6GHz**

Test Mode: TX / IEEE 802.11a / 5180MHz / (CH Low)

Tested by: Eve WangAmbient temperature: 24°C Relative humidity: 52% RHDate: May 29, 2017

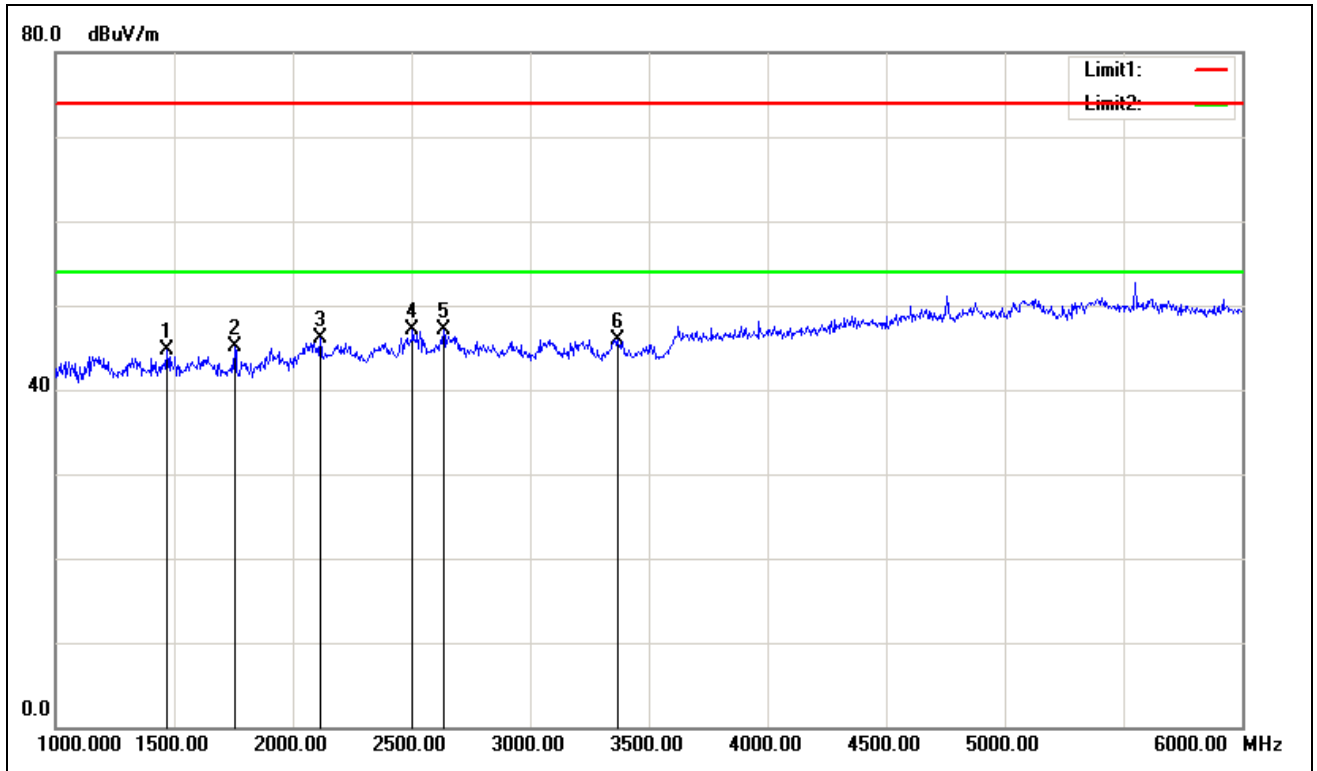
Frequency (MHz)	Reading (dBuV)	Correction Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Pole (V/H)	Remark
1470.000	51.56	-6.93	44.63	74.00	-29.37	V	peak
1755.000	51.49	-6.37	45.12	74.00	-28.88	V	peak
2115.000	50.53	-4.37	46.16	74.00	-27.84	V	peak
2505.000	49.41	-2.25	47.16	74.00	-26.84	V	peak
2635.000	49.04	-2.02	47.02	74.00	-26.98	V	peak
3370.000	46.69	-0.74	45.95	74.00	-28.05	V	peak
1320.000	51.07	-7.35	43.72	74.00	-30.28	H	Peak
1760.000	52.01	-6.36	45.65	74.00	-28.35	H	Peak
2245.000	47.97	-3.66	44.31	74.00	-29.69	H	Peak
2510.000	47.59	-2.24	45.35	74.00	-28.65	H	peak
3090.000	46.70	-1.21	45.49	74.00	-28.51	H	peak
3210.000	46.56	-1.01	45.55	74.00	-28.45	H	peak

**Remark:**

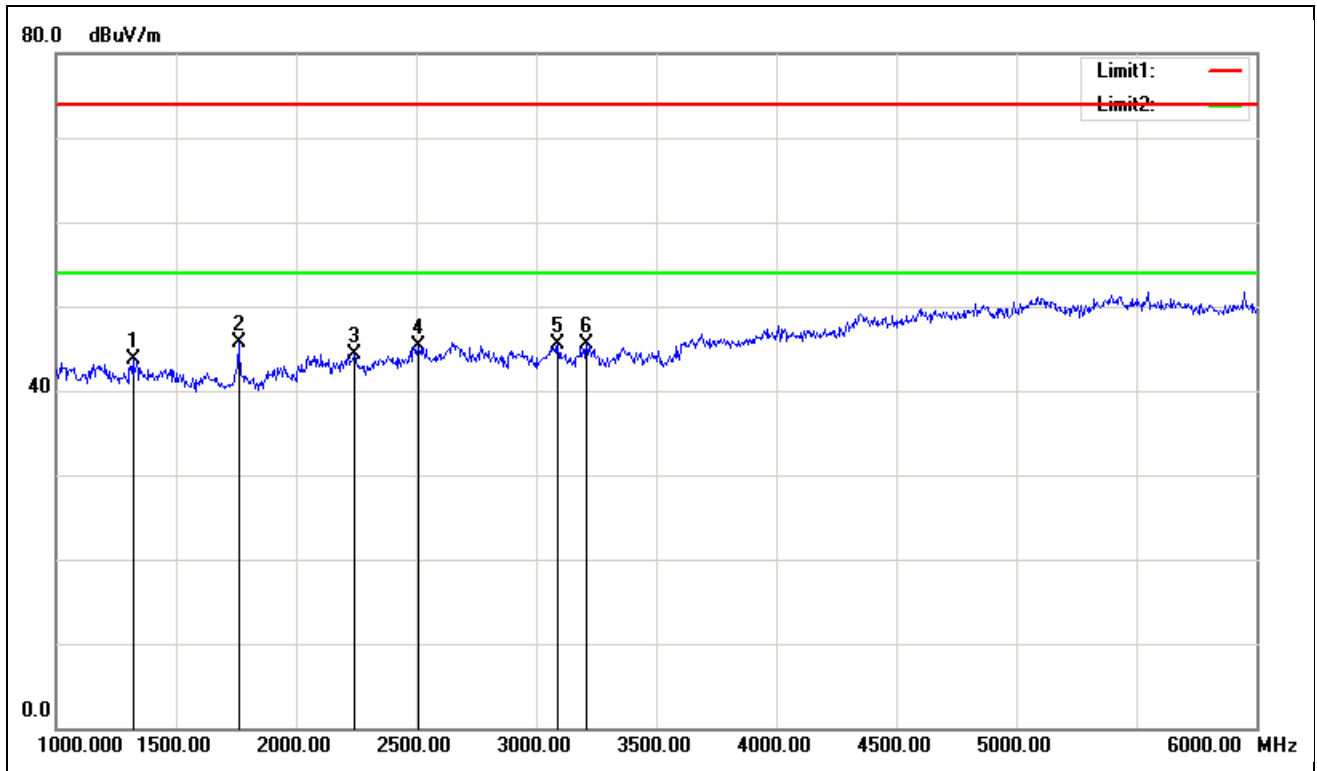
1. Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.
2. Radiated emissions measured in frequency above 1000MHz were made with an instrument using peak/average detector mode.
3. Average test would be performed if the peak result were greater than the average limit.
4. Data of measurement within this frequency range shown " --- " in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.
5. Measurements above show only up to 6 maximum emissions noted, or would be lesser, with " N/A " remark, if no specific emissions from the EUT are recorded (ie: margin>20dB from the applicable limit) and considered that's already beyond the background noise floor.
6. Margin (dB) = Remark result (dBuV/m) – Average limit (dBuV/m).



### Vertical



### Horizontal





**Above 6GHz****Test Mode:** TX / IEEE 802.11a / 5180MHz /(CH Low)**Tested by:** Eve Wang**Ambient temperature:** 24°C **Relative humidity:** 52% RH**Date:** May 29, 2017

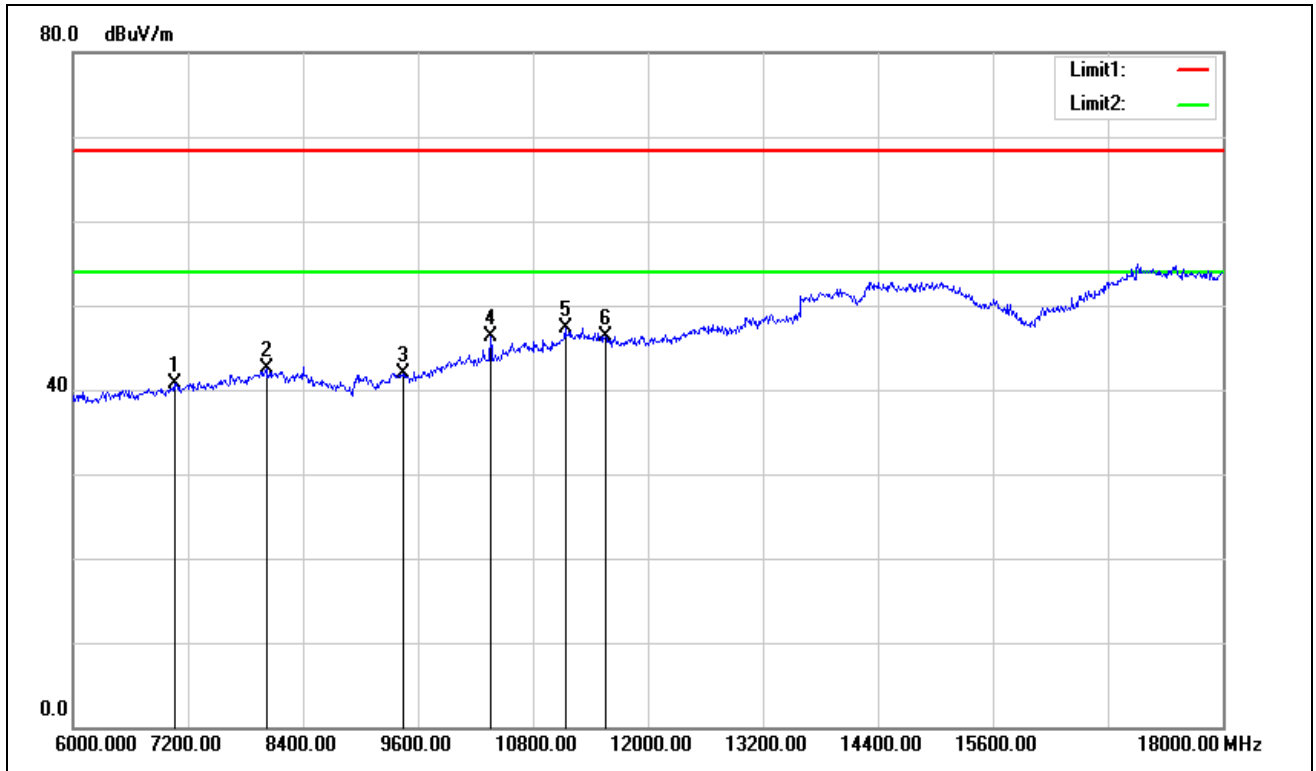
Frequency (MHz)	Reading (dBuV)	Correction Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Pole (V/H)	Remark
7056.000	32.92	7.81	40.73	68.23	-27.50	V	peak
8016.000	32.96	9.64	42.60	68.23	-25.63	V	peak
9444.000	31.57	10.38	41.95	68.23	-26.28	V	peak
10356.000	33.13	13.08	46.21	68.23	-22.02	V	peak
11136.000	32.28	15.02	47.30	68.23	-20.93	V	peak
11556.000	31.47	14.84	46.31	68.23	-21.92	V	peak
7308.000	33.02	8.30	41.32	68.23	-26.91	H	Peak
7764.000	33.02	9.19	42.21	68.23	-26.02	H	Peak
8412.000	33.17	9.42	42.59	68.23	-25.64	H	Peak
9840.000	31.75	11.52	43.27	68.23	-24.96	H	peak
11160.000	32.51	15.01	47.52	68.23	-20.71	H	peak
12156.000	31.87	15.16	47.03	68.23	-21.20	H	peak

**Remark:**

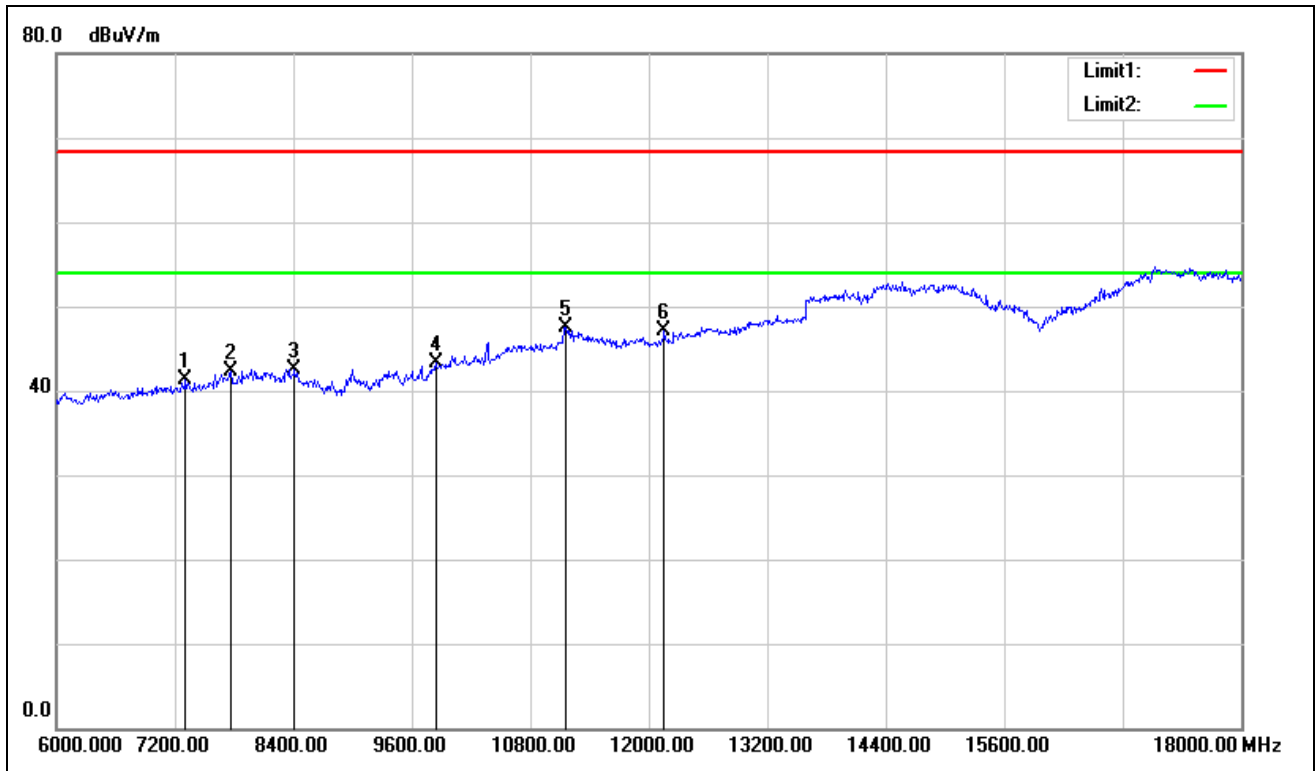
1. Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.
2. Radiated emissions measured in frequency above 1000MHz were made with an instrument using peak/average detector mode.
3. Average test would be performed if the peak result were greater than the average limit.
4. Data of measurement within this frequency range shown " --- " in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.
5. Measurements above show only up to 6 maximum emissions noted, or would be lesser, with " N/A " remark, if no specific emissions from the EUT are recorded (ie: margin>20dB from the applicable limit) and considered that's already beyond the background noise floor.
6. Margin (dB) = Remark result (dBuV/m) – Average limit (dBuV/m).



### Vertical



### Horizontal





Test Mode: TX / IEEE 802.11a / 5200MHz /(CH Mid)

Tested by: Eve WangAmbient temperature: 24°C Relative humidity: 52% RHDate: May 29, 2017

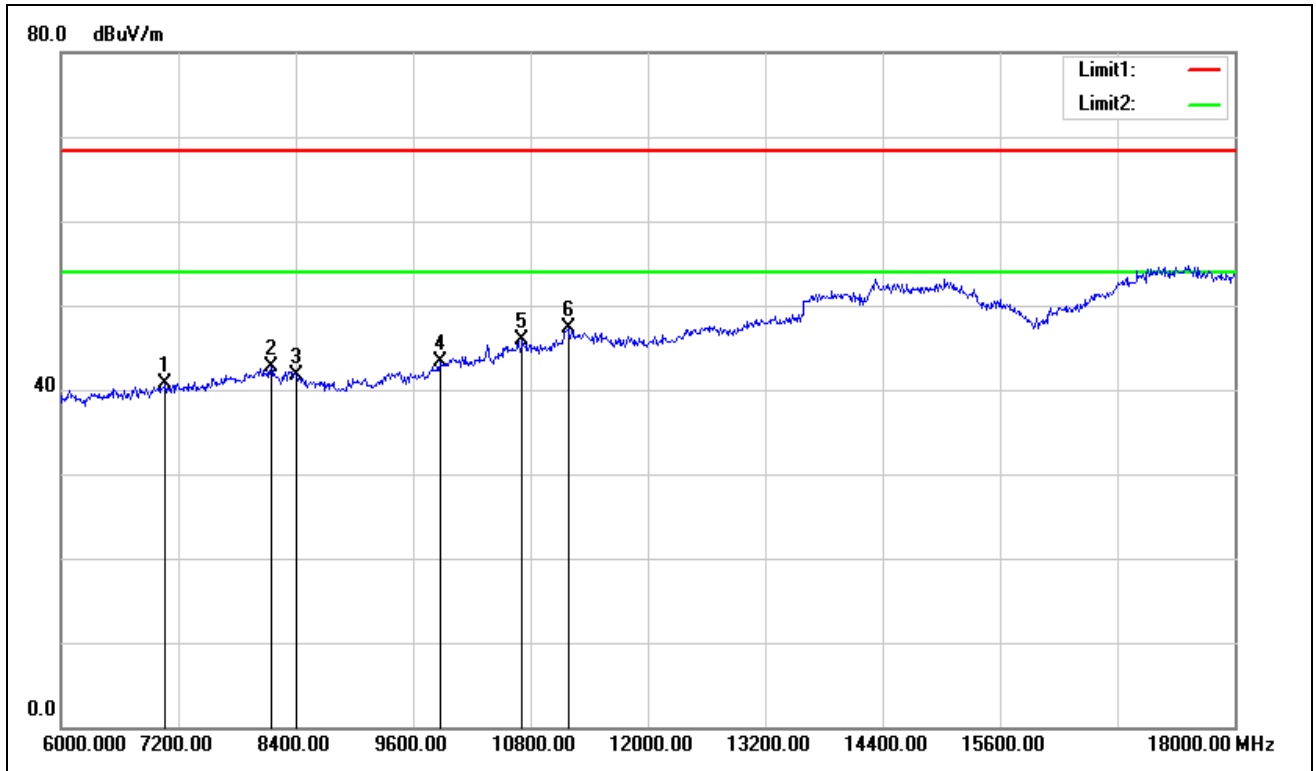
Frequency (MHz)	Reading (dBuV)	Correction Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Pole (V/H)	Remark
7068.000	32.94	7.83	40.77	68.23	-27.46	V	peak
8148.000	33.20	9.57	42.77	68.23	-25.46	V	peak
8412.000	32.22	9.42	41.64	68.23	-26.59	V	peak
9876.000	31.59	11.62	43.21	68.23	-25.02	V	peak
10716.000	31.72	14.20	45.92	68.23	-22.31	V	peak
11184.000	32.38	15.00	47.38	68.23	-20.85	V	peak
6792.000	33.19	7.36	40.55	68.23	-27.68	H	Peak
7212.000	32.63	8.11	40.74	68.23	-27.49	H	Peak
8136.000	32.79	9.58	42.37	68.23	-25.86	H	Peak
9396.000	31.99	10.24	42.23	68.23	-26.00	H	peak
10452.000	31.05	13.38	44.43	68.23	-23.80	H	peak
11184.000	32.17	15.00	47.17	68.23	-21.06	H	peak

**Remark:**

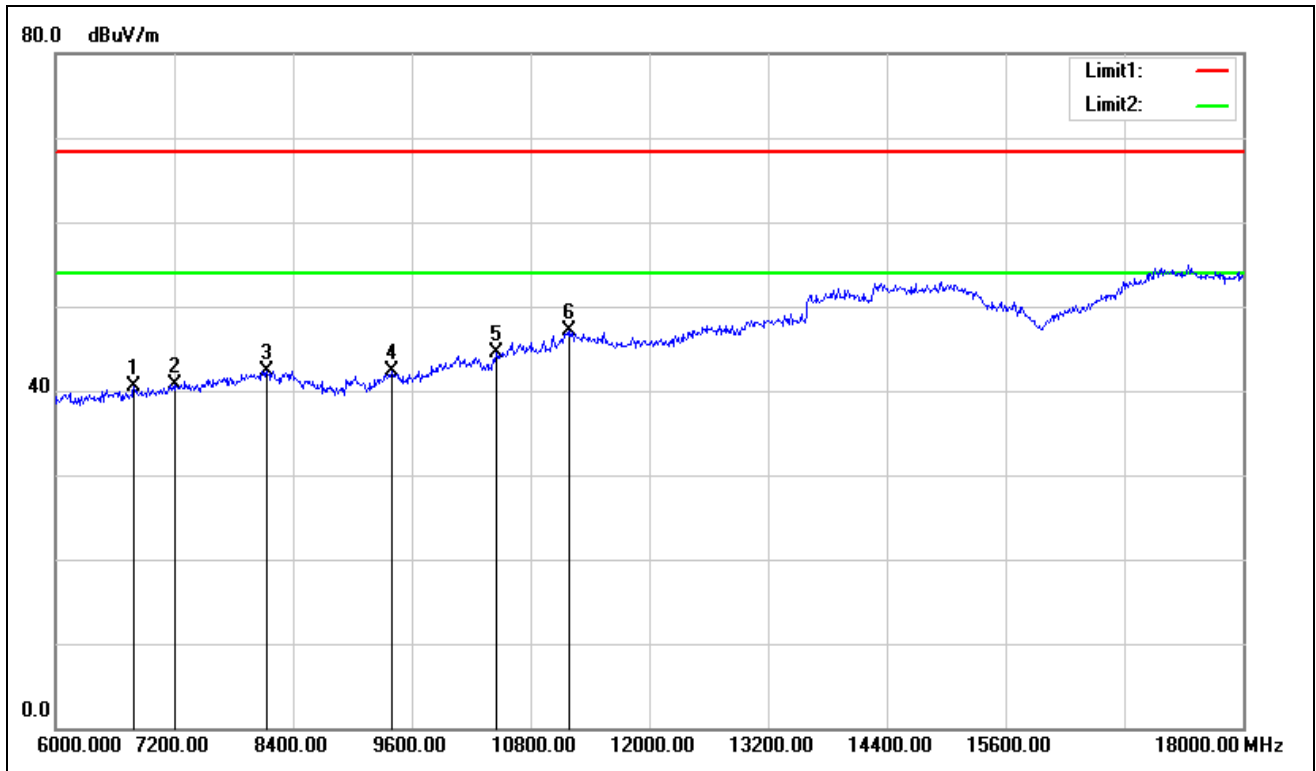
1. Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.
2. Radiated emissions measured in frequency above 1000MHz were made with an instrument using peak/average detector mode.
3. Average test would be performed if the peak result were greater than the average limit.
4. Data of measurement within this frequency range shown " --- " in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.
5. Measurements above show only up to 6 maximum emissions noted, or would be lesser, with " N/A " remark, if no specific emissions from the EUT are recorded (ie: margin>20dB from the applicable limit) and considered that's already beyond the background noise floor.
6.  $Margin (dB) = Remark\ result (dBuV/m) - Average\ limit (dBuV/m)$ .



### Vertical



### Horizontal





Test Mode: TX / IEEE 802.11a / 5240MHz /(CH High)

Tested by: Eve Wang

Ambient temperature: 24°C Relative humidity: 52% RH

Date: May 29, 2017

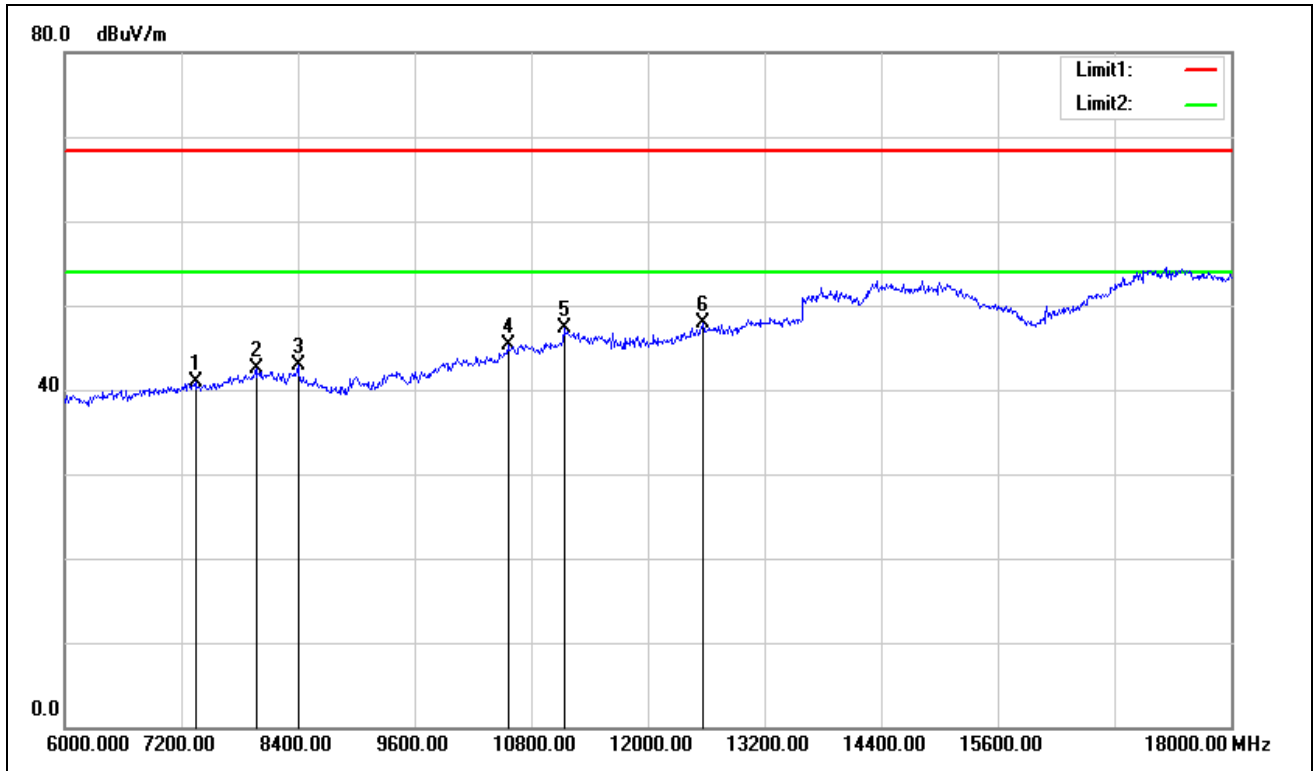
Frequency (MHz)	Reading (dBuV)	Correction Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Pole (V/H)	Remark
7344.000	32.61	8.37	40.98	68.23	-27.25	V	peak
7968.000	32.91	9.59	42.50	68.23	-25.73	V	peak
8400.000	33.42	9.43	42.85	68.23	-25.38	V	peak
10560.000	31.57	13.72	45.29	68.23	-22.94	V	peak
11136.000	32.22	15.02	47.24	68.23	-20.99	V	peak
12564.000	31.30	16.51	47.81	68.23	-20.42	V	peak
6504.000	32.99	6.90	39.89	68.23	-28.34	H	Peak
7536.000	32.79	8.75	41.54	68.23	-26.69	H	Peak
8364.000	32.99	9.45	42.44	68.23	-25.79	H	Peak
10248.000	31.16	12.75	43.91	68.23	-24.32	H	peak
10476.000	32.85	13.46	46.31	68.23	-21.92	H	peak
11376.000	32.27	14.91	47.18	68.23	-21.05	H	peak

**Remark:**

1. Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.
2. Radiated emissions measured in frequency above 1000MHz were made with an instrument using peak/average detector mode.
3. Average test would be performed if the peak result were greater than the average limit.
4. Data of measurement within this frequency range shown " --- " in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.
5. Measurements above show only up to 6 maximum emissions noted, or would be lesser, with " N/A " remark, if no specific emissions from the EUT are recorded (ie: margin>20dB from the applicable limit) and considered that's already beyond the background noise floor.
6. Margin (dB) = Remark result (dBuV/m) – Average limit (dBuV/m).



### Vertical



### Horizontal

