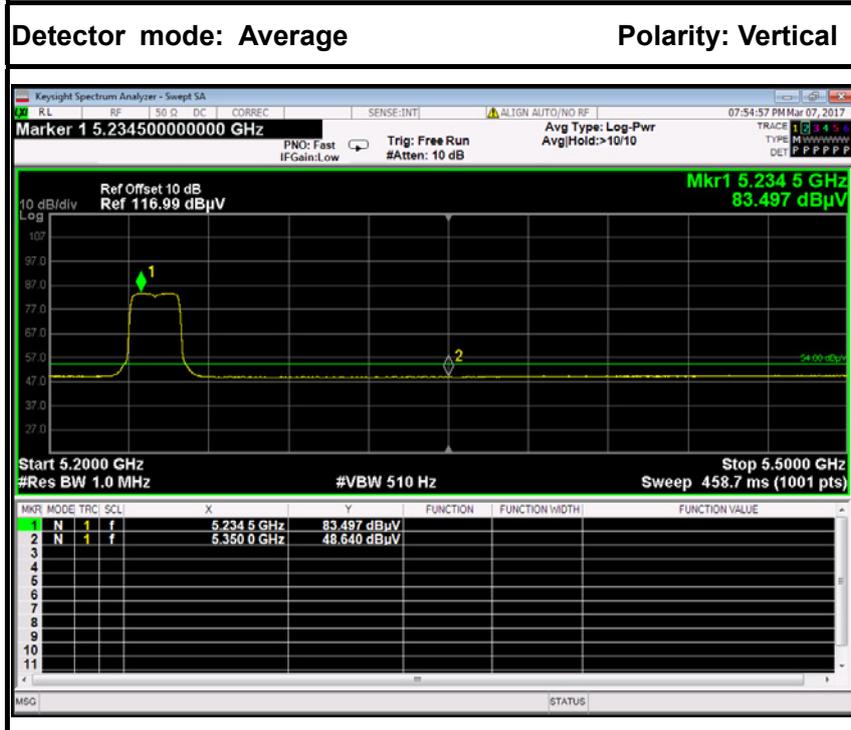
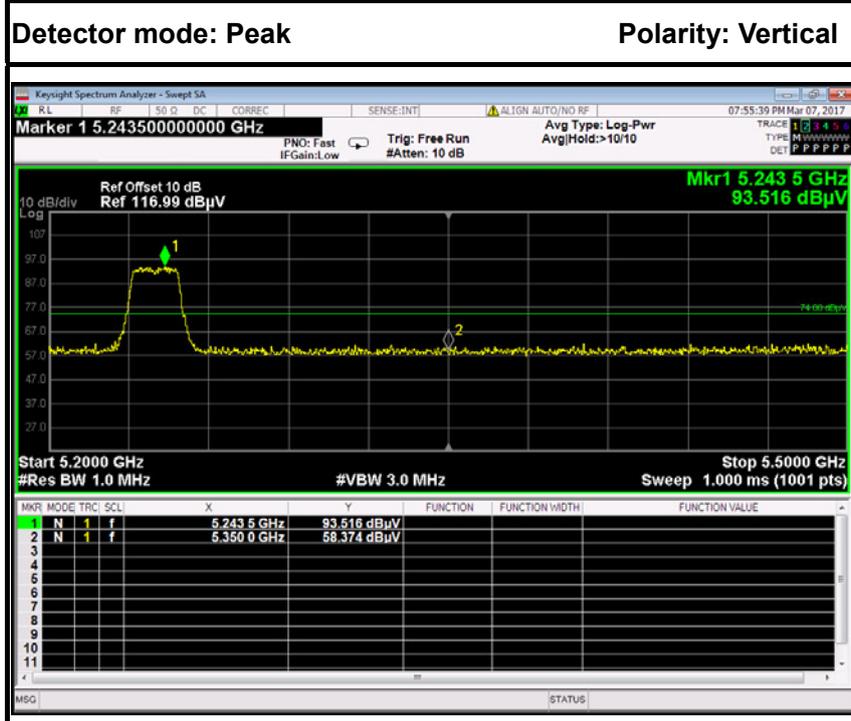
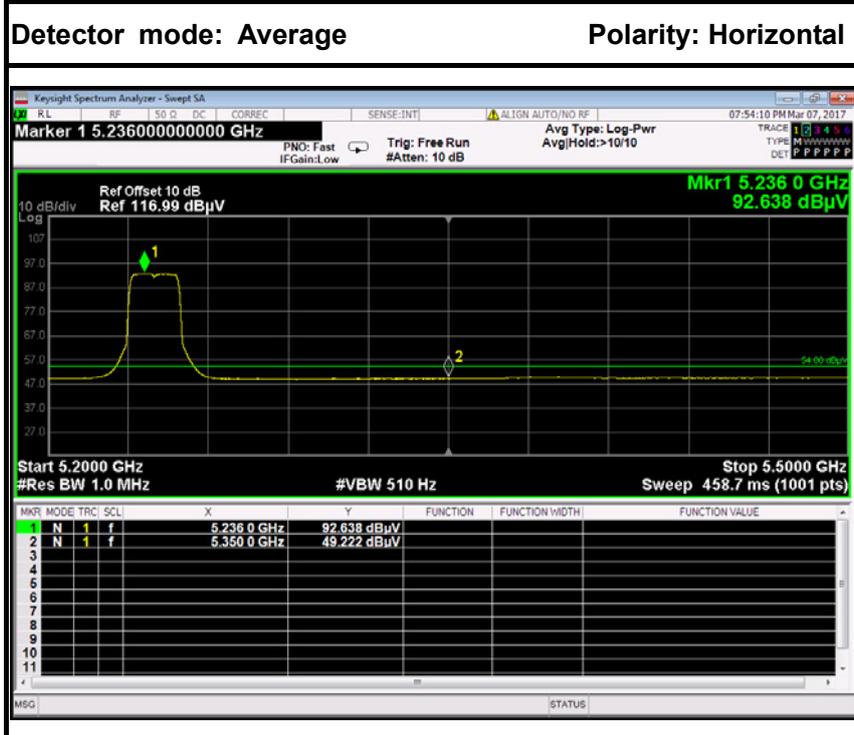
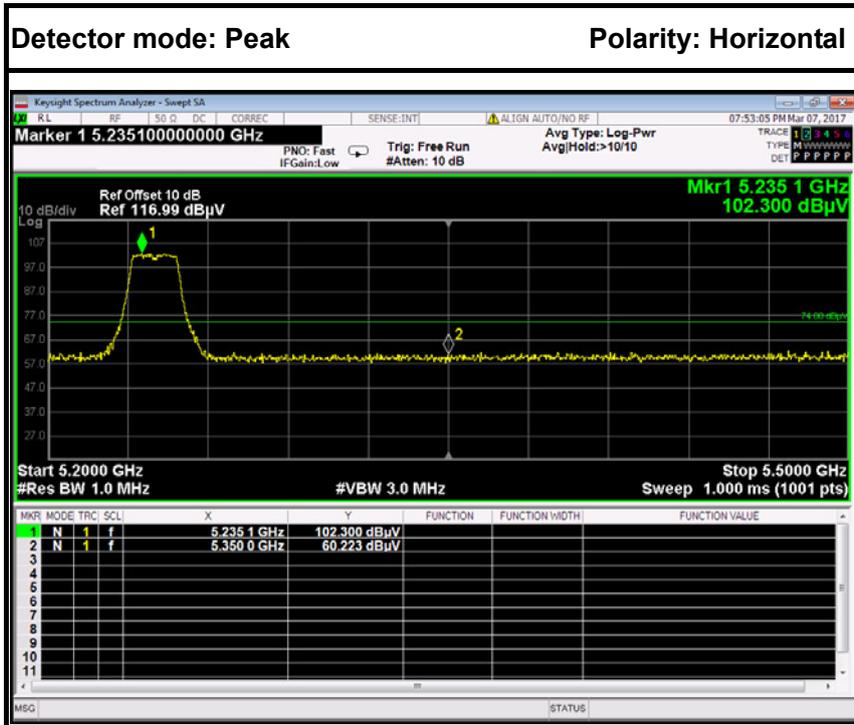




IEEE 802.11n HT 20 MHz mode / 5240 MHz



No.	Frequency (MHz)	Reading (dBμV)	Corrected (dB/m)	Result (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Detector	Antenna Pole
1	5350.0000	52.77	5.60	58.37	74.00	-15.63	Peak	Vertical
2	5350.0000	43.04	5.60	48.64	54.00	-5.36	Average	Vertical

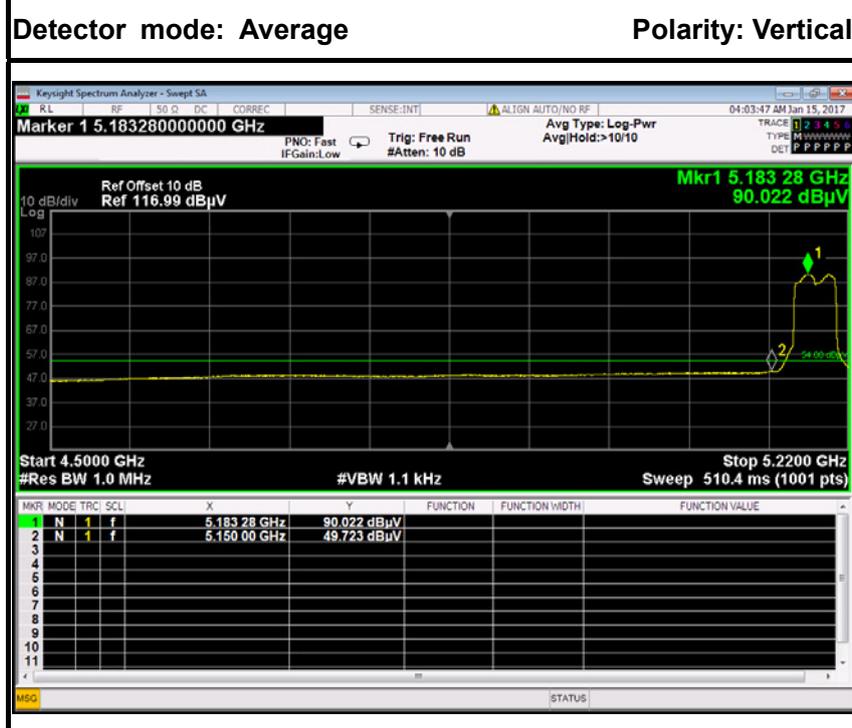
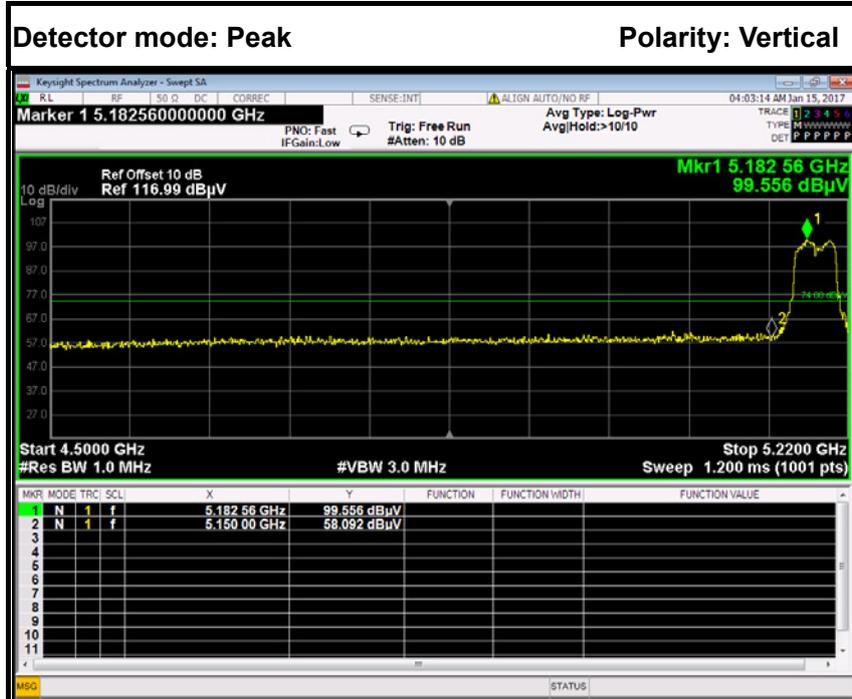


No.	Frequency (MHz)	Reading (dBµV)	Corrected (dB/m)	Result (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Detector	Antenna Pole
1	5350.0000	54.62	5.60	60.22	74.00	-13.78	Peak	Horizontal
2	5350.0000	43.62	5.60	49.22	54.00	-4.78	Average	Horizontal

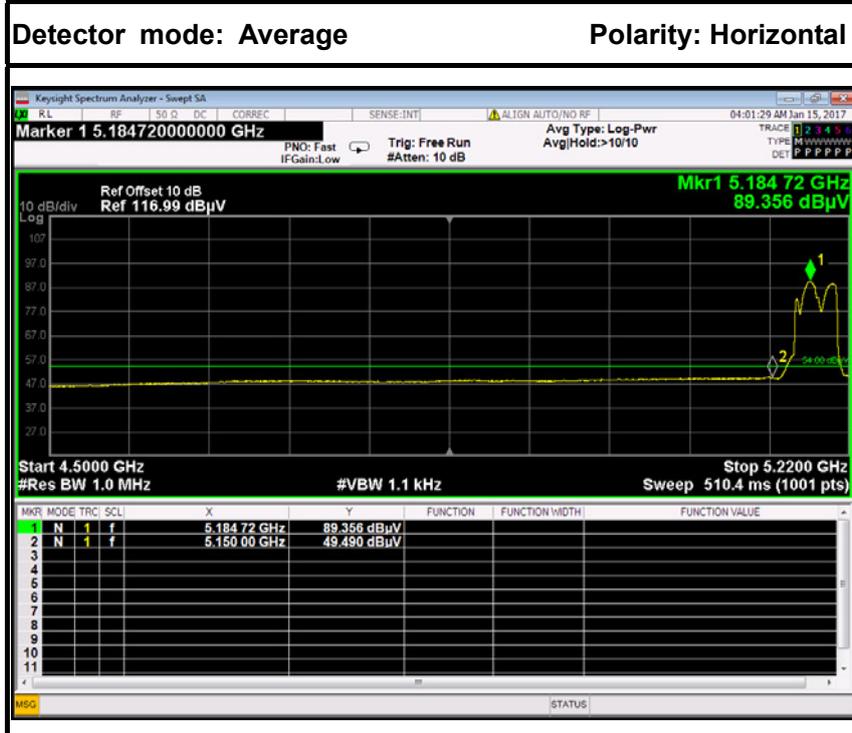
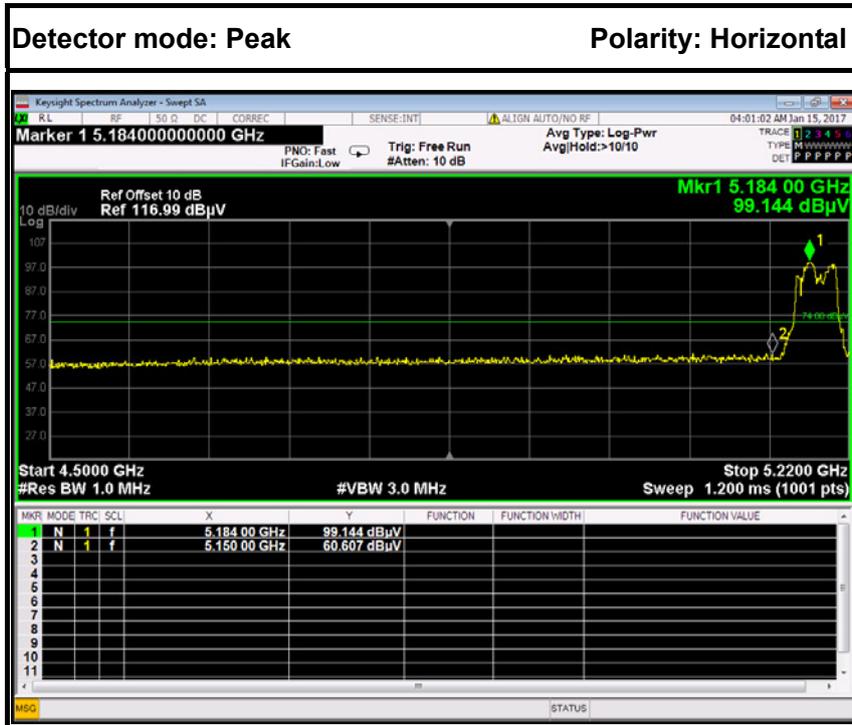


Combine with Antenna 1 and Antenna 2

IEEE 802.11n HT 40 MHz mode / 5190 MHz



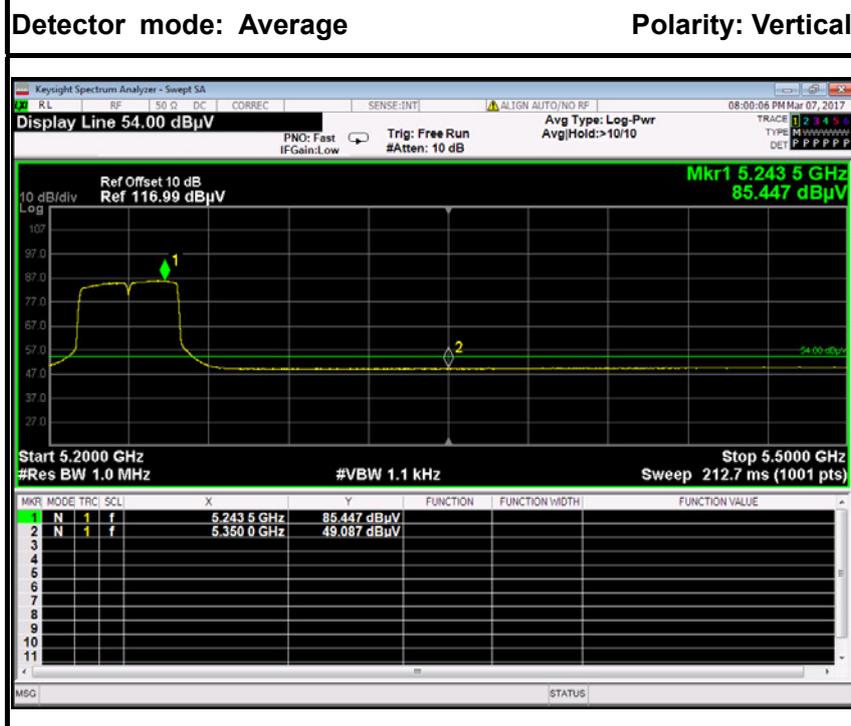
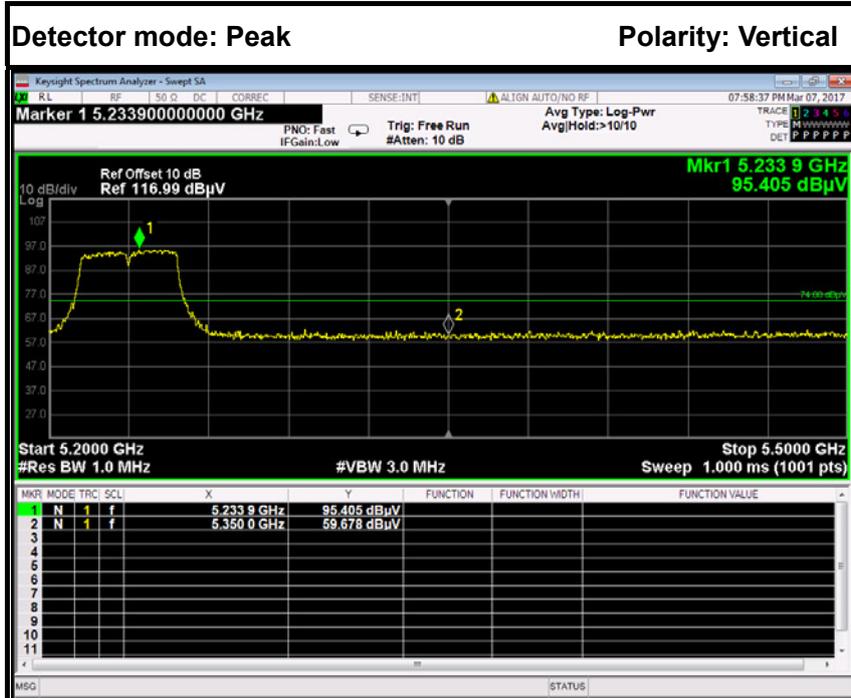
No.	Frequency (MHz)	Reading (dBuV)	Corrected (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Antenna Pole
1	5150.0000	52.49	5.60	58.09	74.00	-15.91	Peak	Vertical
2	5150.0000	44.12	5.60	49.72	54.00	-4.28	Average	Vertical



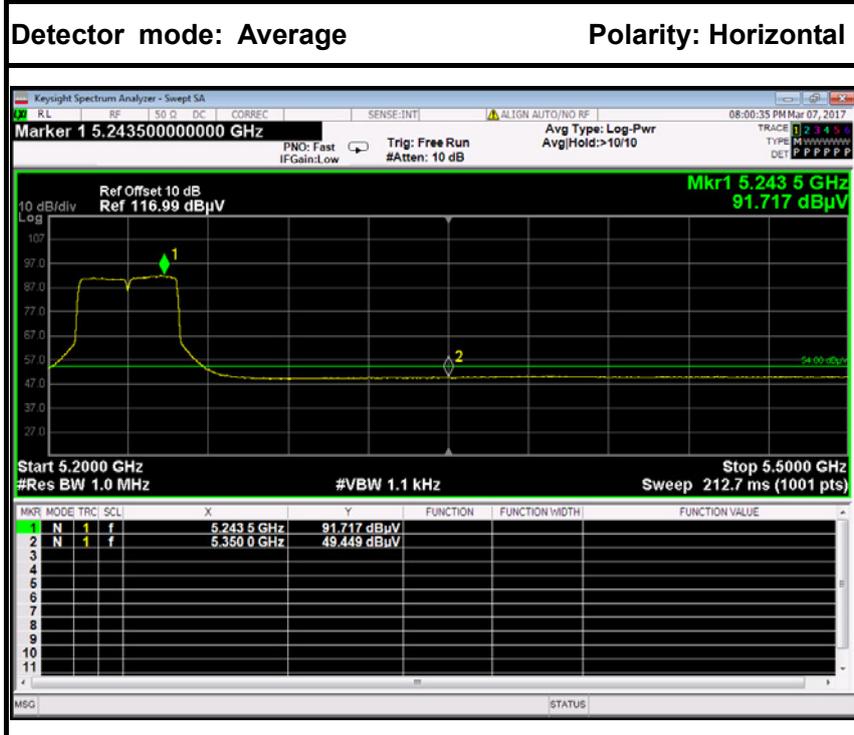
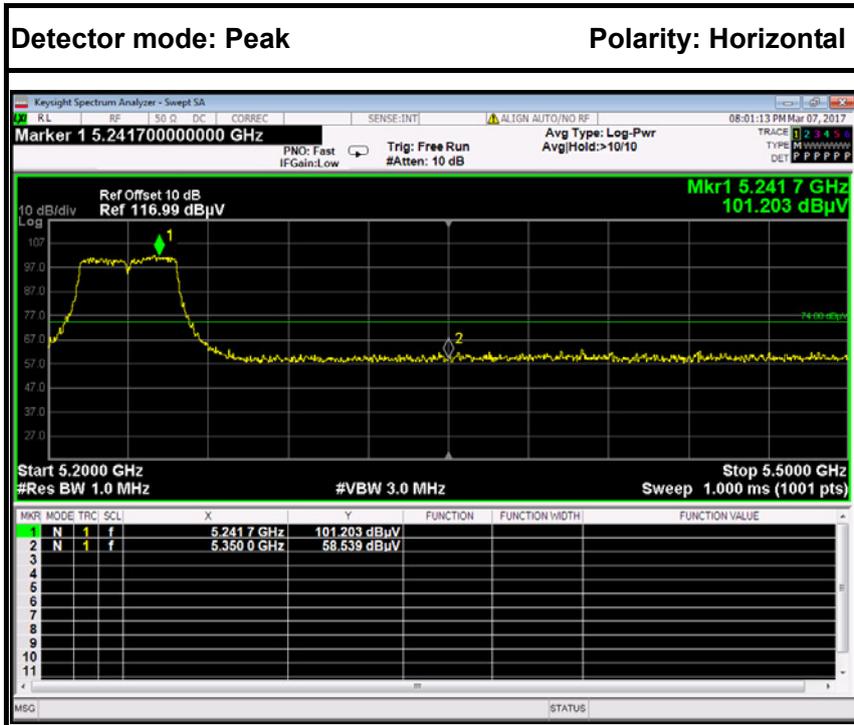
No.	Frequency (MHz)	Reading (dB μ V)	Corrected (dB/m)	Result (dB μ V/m)	Limit (dB μ V/m)	Margin (dB)	Detector	Antenna Pole
1	5150.0000	55.01	5.60	60.61	74.00	-13.39	Peak	Horizontal
2	5150.0000	43.89	5.60	49.49	54.00	-4.51	Average	Horizontal



IEEE 802.11n HT 40 MHz mode / 5230 MHz



No.	Frequency (MHz)	Reading (dBuV)	Corrected (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Antenna Pole
1	5350.0000	54.08	5.60	59.68	74.00	-14.32	Peak	Vertical
2	5350.0000	43.49	5.60	49.09	54.00	-4.91	Average	Vertical

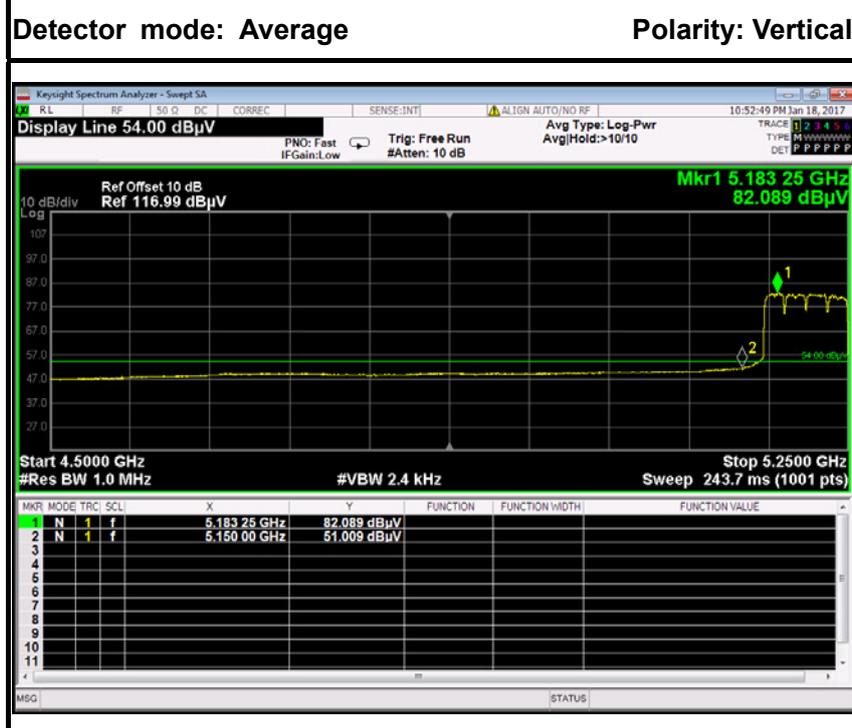
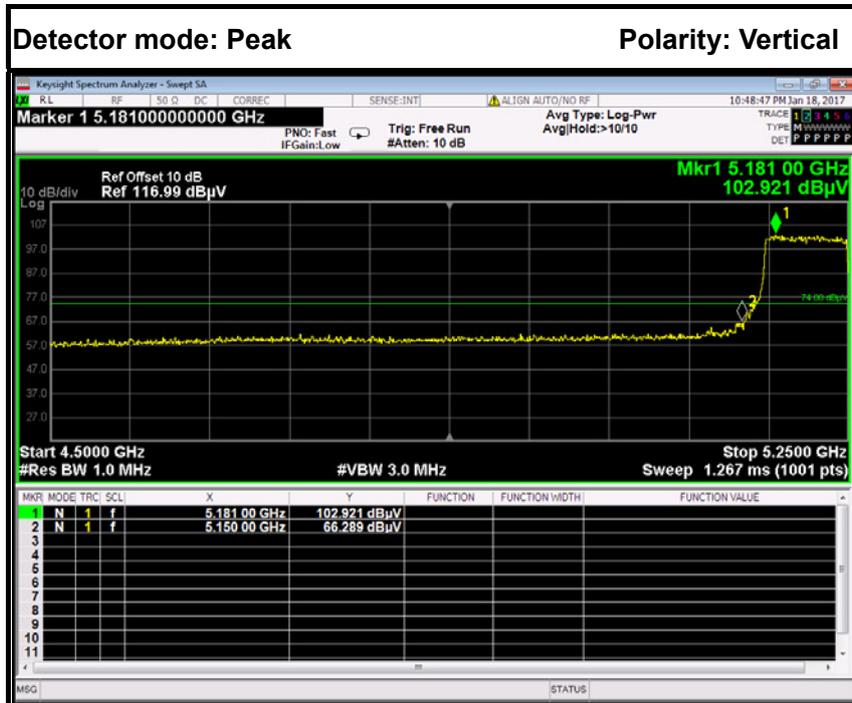


No.	Frequency (MHz)	Reading (dBuV)	Corrected (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Antenna Pole
1	5350.0000	52.94	5.60	58.54	74.00	-15.46	Peak	Horizontal
2	5350.0000	43.85	5.60	49.45	54.00	-4.55	Average	Horizontal

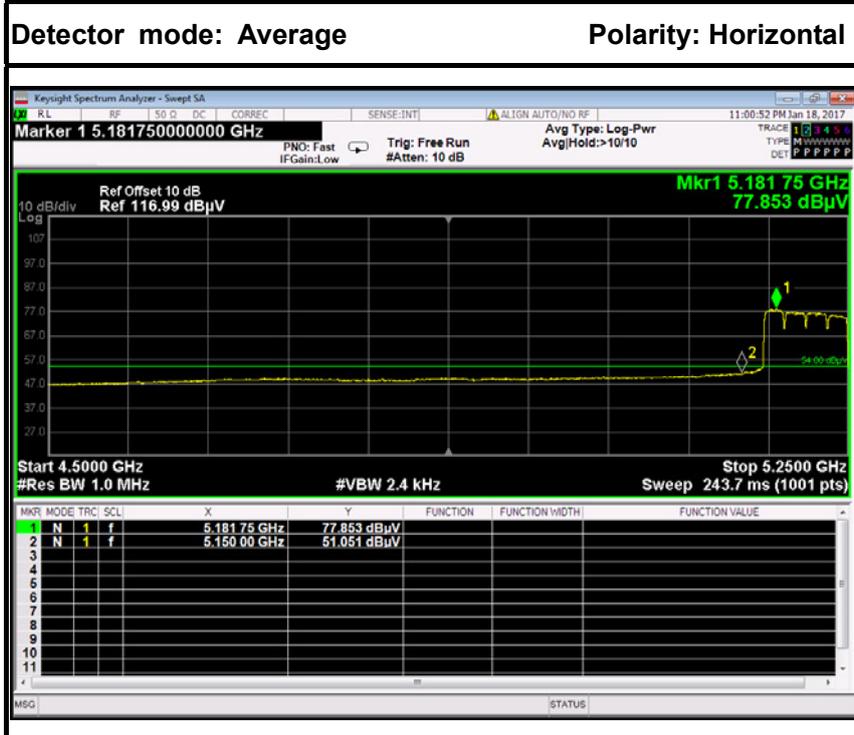
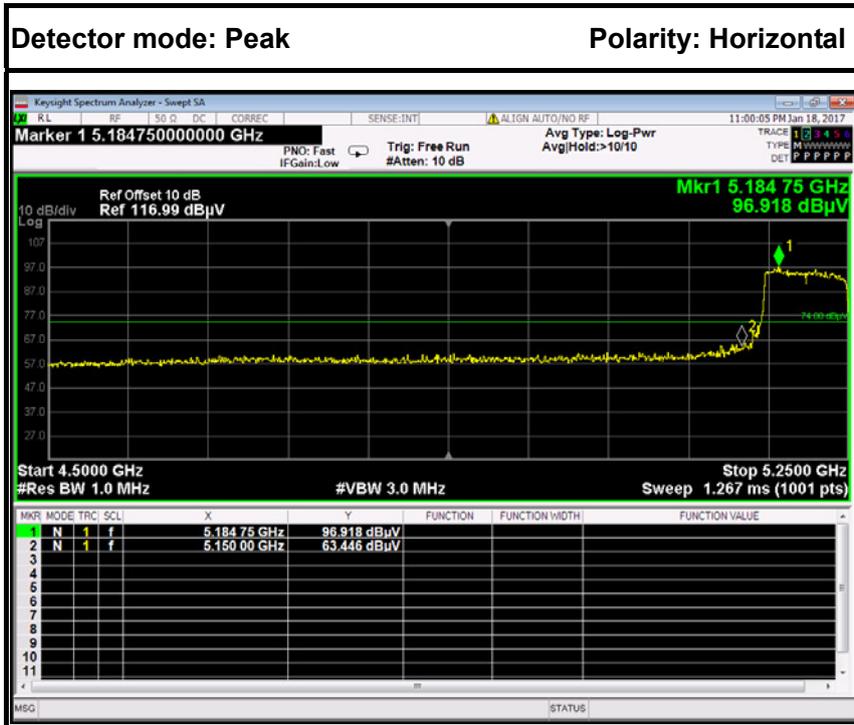


Combine with Antenna 1 and Antenna 2

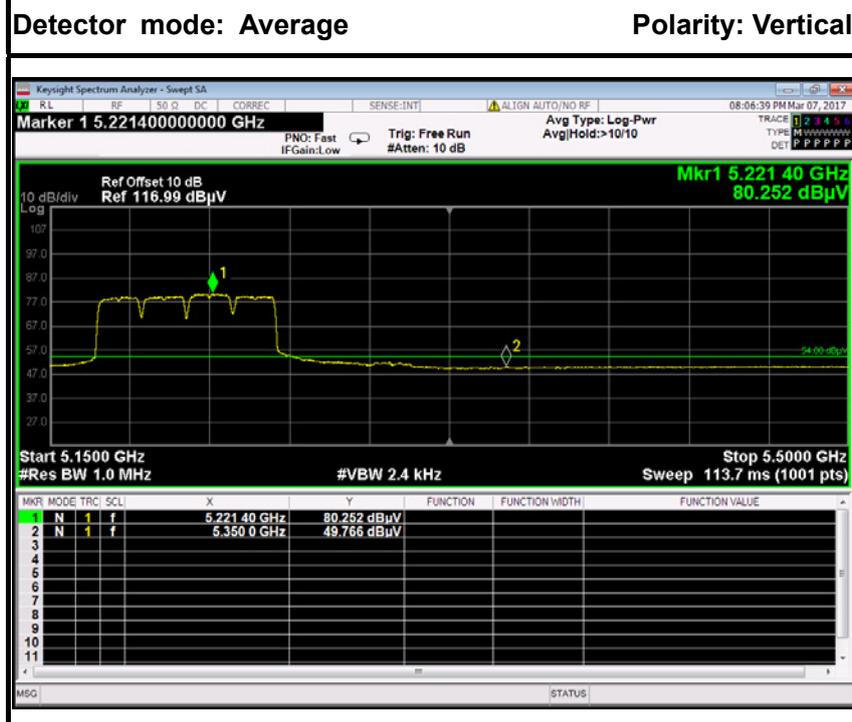
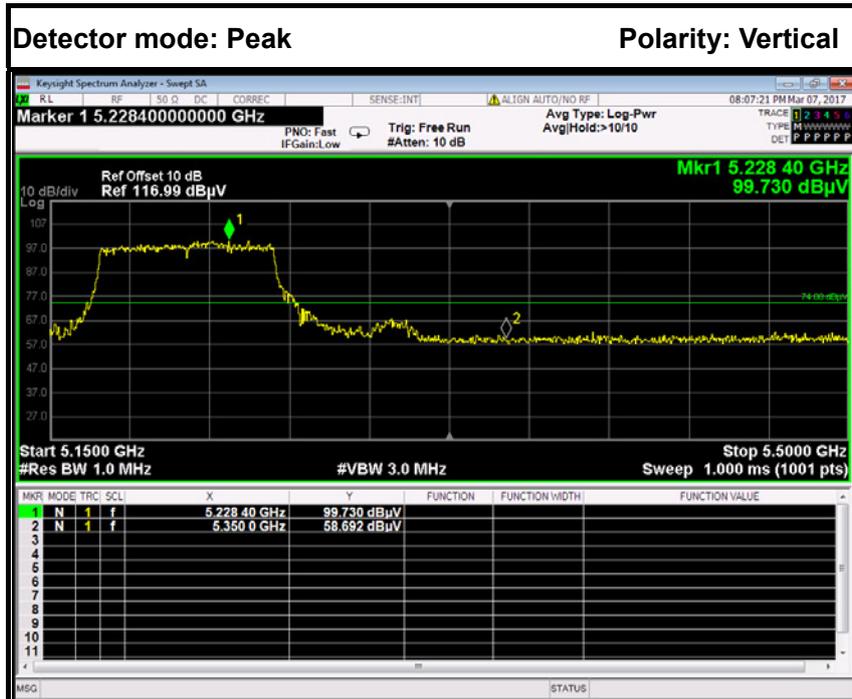
IEEE 802.11ac 80 mode / 5210 MHz



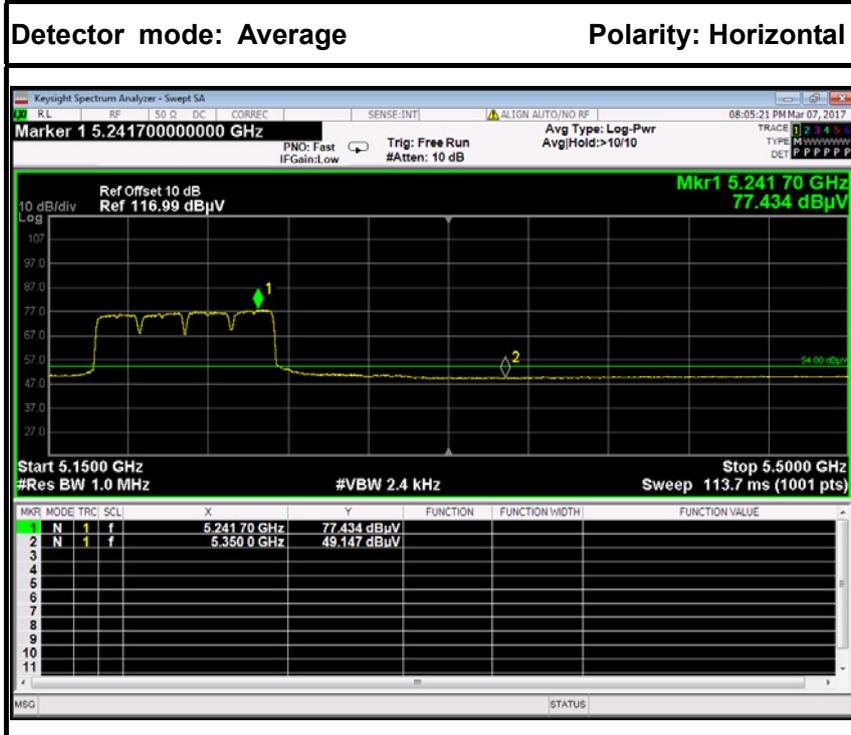
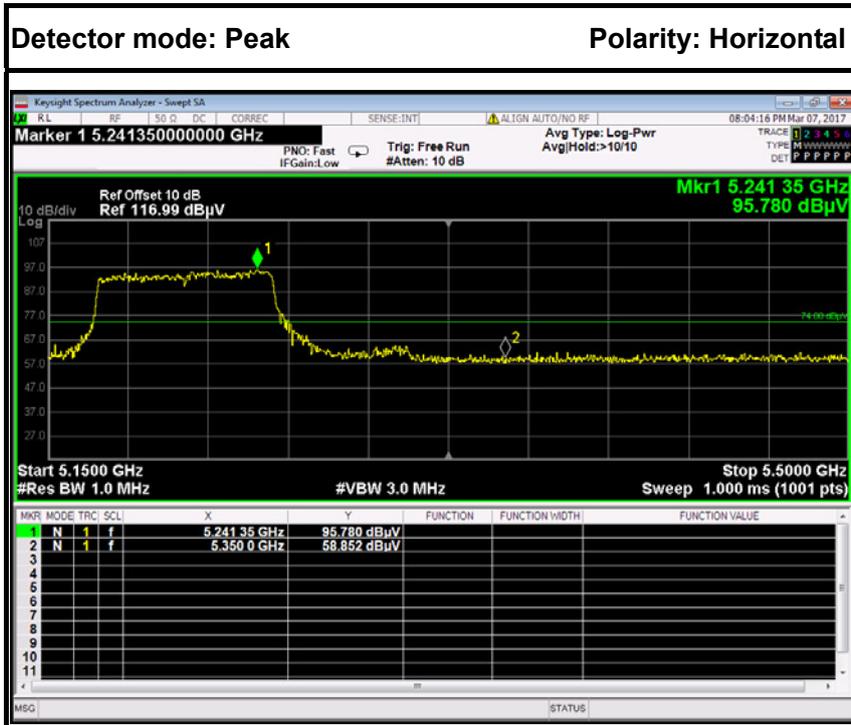
No.	Frequency (MHz)	Reading (dBµV)	Corrected (dB/m)	Result (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Detector	Antenna Pole
1	5150.0000	60.69	5.60	66.29	74.00	-7.71	Peak	Vertical
2	5150.0000	45.41	5.60	51.01	54.00	-2.99	Average	Vertical



No.	Frequency (MHz)	Reading (dBuV)	Corrected (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Antenna Pole
1	5150.0000	57.85	5.60	63.45	74.00	-10.55	Peak	Horizontal
2	5150.0000	45.45	5.60	51.05	54.00	-2.95	Average	Horizontal



No.	Frequency (MHz)	Reading (dBuV)	Corrected (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Antenna Pole
1	5350.0000	53.09	5.60	58.69	74.00	-15.31	Peak	Vertical
2	5350.0000	44.17	5.60	49.77	54.00	-4.23	Average	Vertical



No.	Frequency (MHz)	Reading (dBµV)	Corrected (dB/m)	Result (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Detector	Antenna Pole
1	5350.0000	53.25	5.60	58.85	74.00	-15.15	Peak	Horizontal
2	5350.0000	43.55	5.60	49.15	54.00	-4.85	Average	Horizontal



6.6 PEAK POWER SPECTAL DENSITY

6.6.1 LIMIT

According to §15.407(a) & FCC R&O FCC 14-30

(1) For the band 5.15-5.25 GHz.

(i) For an outdoor access point operating in the band 5.15-5.25 GHz, the maximum conducted output power over the frequency band of operation shall not exceed 1 W provided the maximum antenna gain does not exceed 6 dBi. In addition, the maximum power spectral density shall not exceed 17 dBm in any 1 megahertz band. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi. The maximum e.i.r.p. at any elevation angle above 30 degrees as measured from the horizon must not exceed 125 mW (21 dBm).

(ii) For an indoor access point operating in the band 5.15-5.25 GHz, the maximum conducted output power over the frequency band of operation shall not exceed 1 W provided the maximum antenna gain does not exceed 6 dBi. In addition, the maximum power spectral density shall not exceed 17 dBm in any 1 megahertz band. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

(iii) For fixed point-to-point access points operating in the band 5.15-5.25 GHz, the maximum conducted output power over the frequency band of operation shall not exceed 1 W. In addition, the maximum power spectral density shall not exceed 17 dBm in any 1 megahertz band. Fixed point-to-point U-NII devices may employ antennas with directional gain up to 23 dBi without any corresponding reduction in the maximum conducted output power or maximum power spectral density. For fixed point-to-point transmitters that employ a directional antenna gain greater than 23 dBi, a 1 dB reduction in maximum conducted output power and maximum power spectral density is required for each 1 dB of antenna gain in excess of 23 dBi. Fixed, point-to-point operations exclude the use of point-to-multipoint systems, omnidirectional applications, and multiple collocated transmitters transmitting the same information. The operator of the U-NII device, or if the equipment is professionally installed, the installer, is responsible for ensuring that systems employing high gain directional antennas are used exclusively for fixed, point-to-point operations.

(iv) For mobile and portable client devices in the 5.15-5.25 GHz band, the maximum conducted output power over the frequency band of operation shall not exceed 250 mW provided the maximum antenna gain does not exceed 6 dBi. In addition, the maximum power spectral density shall not exceed 11 dBm in any 1 megahertz band. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

(2) For the 5.25-5.35 GHz and 5.47-5.725 GHz bands, the maximum conducted output power over the frequency bands of operation shall not exceed the lesser of 250 mW or $11 \text{ dBm} + 10 \log B$, where B is the 26 dB emission bandwidth in megahertz. In addition, the maximum power spectral density shall not exceed 11 dBm in any 1 megahertz band. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.



(3) For the band 5.725-5.85 GHz, the maximum conducted output power over the frequency band of operation shall not exceed 1 W. In addition, the maximum power spectral density shall not exceed 30 dBm in any 500-kHz band. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi. However, fixed point-to-point U-NII devices operating in this band may employ transmitting antennas with directional gain greater than 6 dBi without any corresponding reduction in transmitter conducted power. Fixed, point-to-point operations exclude the use of point-to-multipoint systems, omnidirectional applications, and multiple collocated transmitters transmitting the same information. The operator of the U-NII device, or if the equipment is professionally installed, the installer, is responsible for ensuring that systems employing high gain directional antennas are used exclusively for fixed, point-to-point operations.

Note to paragraph (a)(3): The Commission strongly recommends that parties employing U-NII devices to provide critical communications services should determine if there are any nearby Government radar systems that could affect their operation.

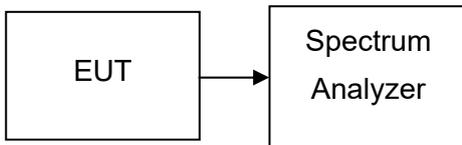
6.6.2 MEASUREMENT EQUIPMENT USED

Name of Equipment	Manufacturer	Model	Serial Number	Last Calibration	Due Calibration
Spectrum Analyzer	Agilent	N9010A	MY52221469	02/21/2016	02/20/2017

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



6.6.3 TEST CONFIGURATION



6.6.4 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



6.6.5 TEST RESULTS

Test Data

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

Channel	Frequency (MHz)	PPSD (dBm)		Limit (dBm)	Margain		Result
		Antenna 1	Antenna 2		Antenna 1	Antenna 2	
Low	5180	-0.688	-2.212	7	-7.688	-9.212	PASS
Mid	5200	-1.132	-2.102		-8.132	-9.102	PASS
High	5240	-3.122	-1.658		-10.122	-8.658	PASS

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

Channel	Frequency (MHz)	PPSD (dBm)		Total (dBm)	Limit (dBm)	Margain	Result
		Antenna 1	Antenna 2				
Low	5180	-0.982	-2.606	1.292	3.99	-2.698	PASS
Mid	5200	-1.753	-2.487	0.906		-3.084	PASS
High	5240	-3.325	-2.132	0.323		-3.667	PASS

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

Channel	Frequency (MHz)	PPSD (dBm)		Total (dBm)	Limit (dBm)	Margain	Result
		Antenna 1	Antenna 2				
Low	5190	-5.050	-5.711	-2.358	3.99	-6.348	PASS
High	5230	-6.098	-5.937	-3.006		-6.996	PASS

Test mode: IEEE 802.11ac 80 mode / 5210MHz

Channel	Frequency (MHz)	PPSD (dBm)		Total (dBm)	Limit (dBm)	Margain	Result
		Antenna 1	Antenna 2				
	5210	-5.788	-6.994	-3.339	3.99	-7.329	PASS

Remark:

1. Measured power spectrum density at difference data rate for each mode and recorded worst case for each mode.
2. Test results including cable loss;
3. Worst case data at 6Mbps at IEEE 802.11a; MCS0 at IEEE 802.11n HT20, IEEE 802.11n HT40 and IEEE 802.11ac VHT80;
4. For MIMO with CCD technology device, The Directional Gain= Gain of individual transmit antennas (dBi) + Array gain;
 $Array\ gain = 10 \log (N_{ant})$, where N_{ant} is the number of transmit antennas.
5. $Directional\ Gain = 16.00 + 10 \log (2) = 19.01 dBi$,



7. $Limit = 17 - (Direction\ Gain - 6)$, where $Direction\ Gain = 16\text{dBi}$ for SISO, and $Direction\ Gain = 19.01\text{dBi}$ for MIMO ;
6. Duty cycle crest factor = 0, as duty cycle > 98%.
7. Please refer to following test plots;

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

Channel	Frequency (MHz)	PPSD (dBm)		factor	Limit (dBm)	Margain		Result
		Antenna 1	Antenna 2			Antenna 1	Antenna 2	
Low	5745	-6.931	-6.428	0.27	20	-26.661	-26.158	PASS
Mid	5785	-5.082	-4.043	0.27		-24.812	-23.773	PASS
High	5825	-6.899	-6.115	0.27		-26.629	-25.845	PASS

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

Channel	Frequency (MHz)	PPSD (dBm)		factor	Total (dBm)	Limit (dBm)	Margain	Result
		Antenna 1	Antenna 2					
Low	5745	-5.716	-5.809	0.27	-2.482	16.99	-19.472	PASS
Mid	5785	-5.292	-3.930	0.27	-1.278		-18.268	PASS
High	5825	-7.255	-6.726	0.27	-3.702		-20.692	PASS

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

Channel	Frequency (MHz)	PPSD (dBm)		factor	Total (dBm)	Limit (dBm)	Margain	Result
		Antenna 1	Antenna 2					
Low	5755	-8.818	-8.250	0.27	-5.244	16.99	-22.234	PASS
High	5795	-9.098	-7.870	0.27	-5.160		-22.150	PASS

Test mode: IEEE 802.11ac 80 mode / 5775MHz

Channel	Frequency (MHz)	PPSD (dBm)		factor	Total (dBm)	Limit (dBm)	Margain	Result
		Antenna 1	Antenna 2					
	5775	-7.760	-7.156	0.27	-4.167	16.99	-21.157	PASS

Remark:

1. Measured power spectrum density at difference data rate for each mode and recorded worst case for each mode.
2. Test results including cable loss;
3. Worst case data at 6Mbps at IEEE 802.11a; MCS0 at IEEE 802.11n HT20, IEEE 802.11n HT40 and IEEE 802.11ac VHT80;
4. For MIMO with CCD technology device, The Directional Gain = Gain of individual transmit antennas (dBi) + Array gain;
 $Array\ gain = 10\log(N_{ant})$, where N_{ant} is the number of transmit antennas.
5. $Directional\ Gain = 16.00 + 10\log(2) = 19.01\text{dBi}$,



6. *Limit=30-(Direction Gain-6), where Direction Gain=16dBi for SISO, and Direction Gain=19.01dBi for MIMO ;*
7. *Duty cycle crest factor=0, as duty cycle>98%.*
8. *RBW factor = $10 \log (500 \text{ KHz} / 470\text{kHz}) = 0.27 \text{ dB}$*
9. *Please refer to following test plots;*

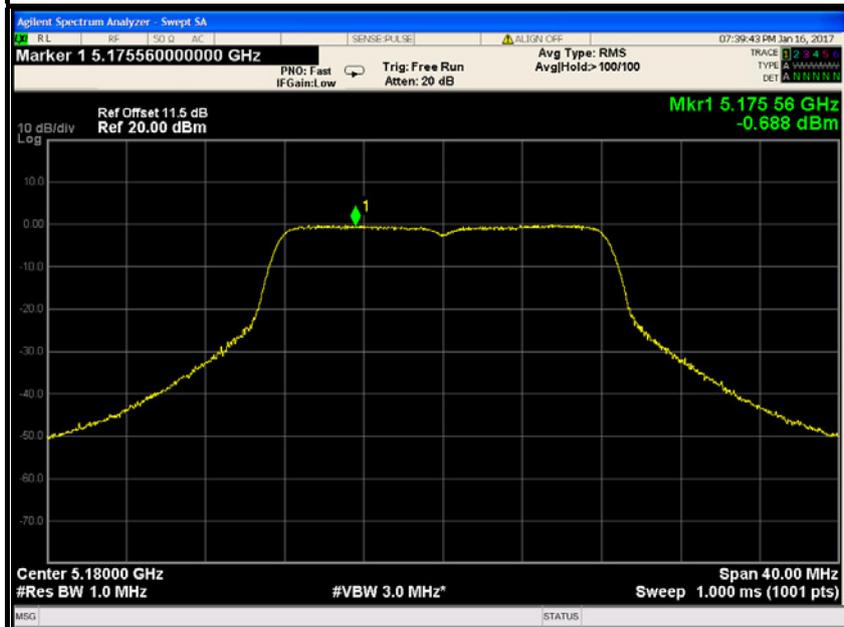


Test Plot

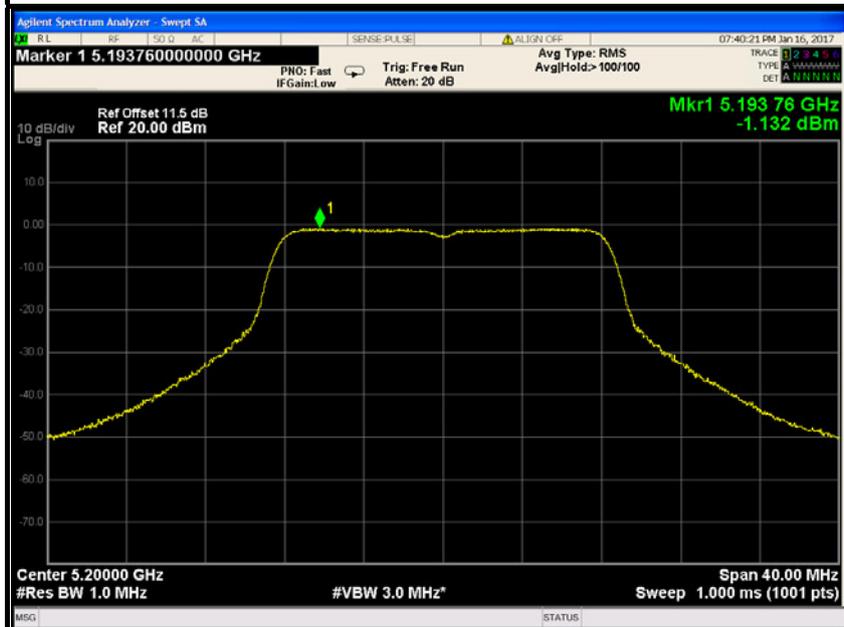
Antenna 1

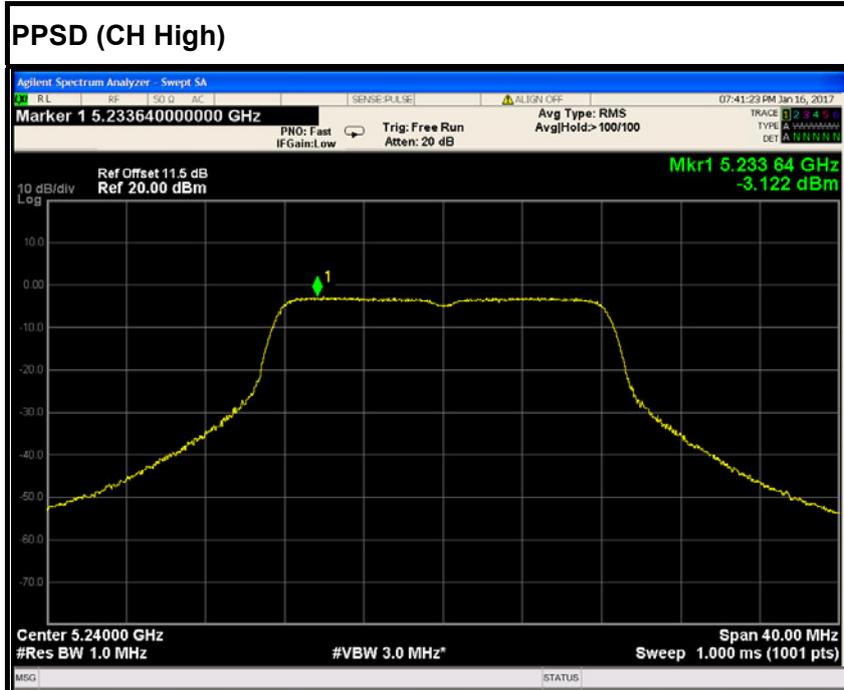
IEEE 802.11a mode / 5180 ~ 5240MHz

PPSD (CH Low)

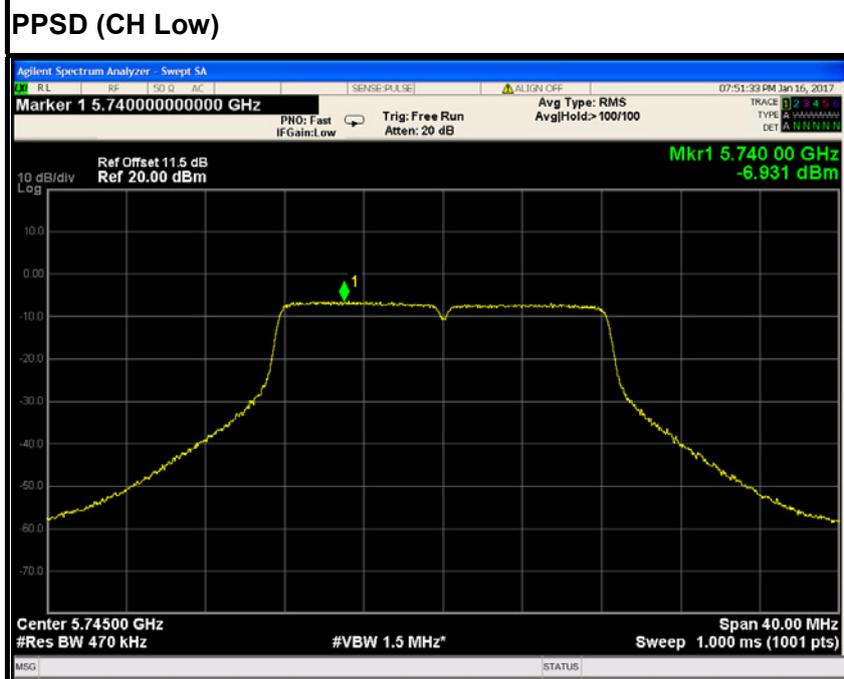


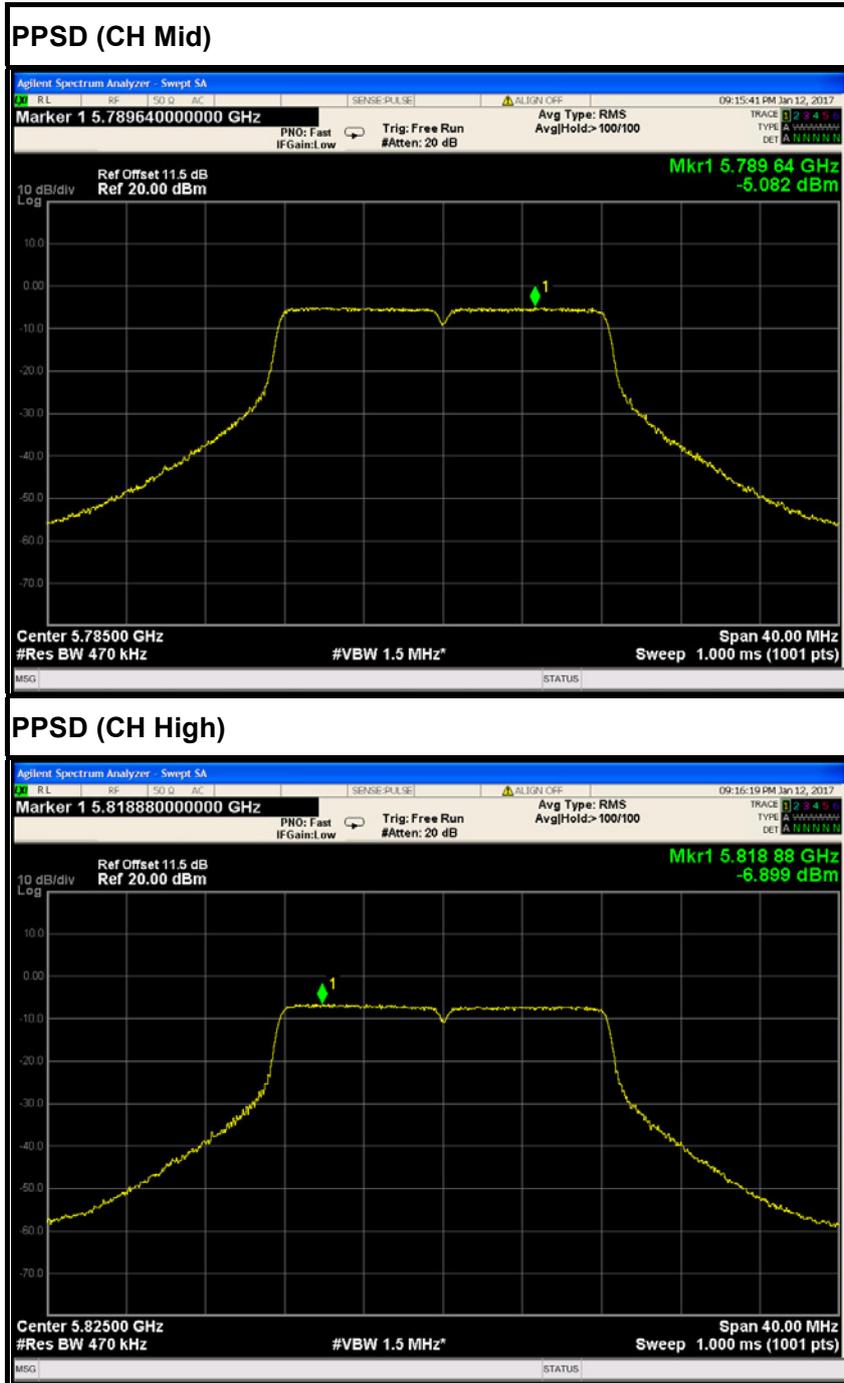
PPSD (CH Mid)





IEEE 802.11a mode / 5745 ~ 5825MHz



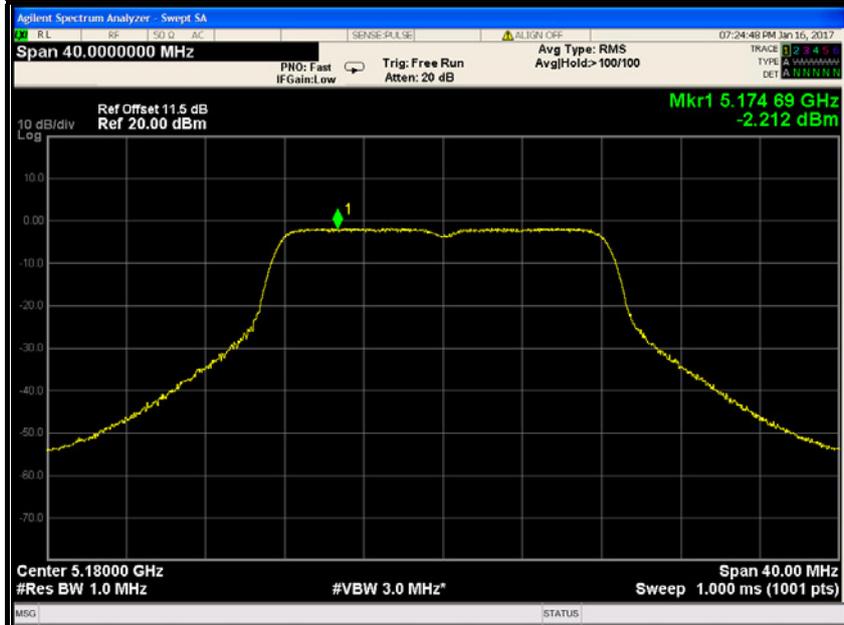




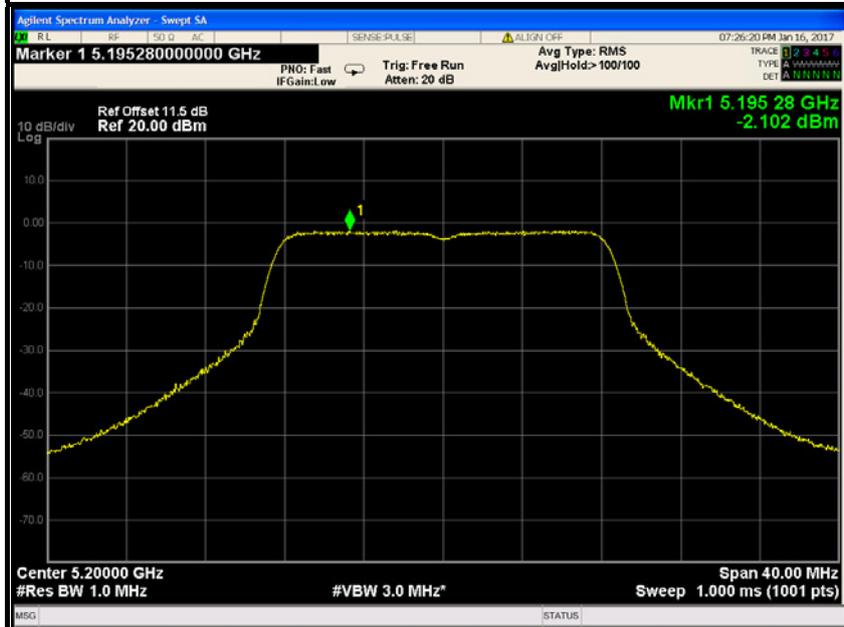
Antenna 2

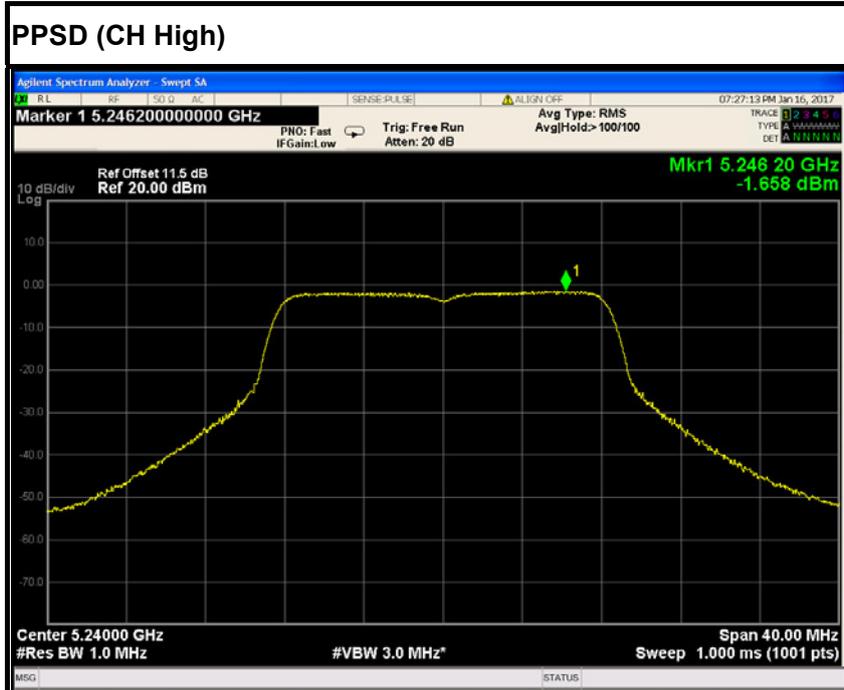
IEEE 802.11a mode / 5180 ~ 5240MHz

PPSD (CH Low)

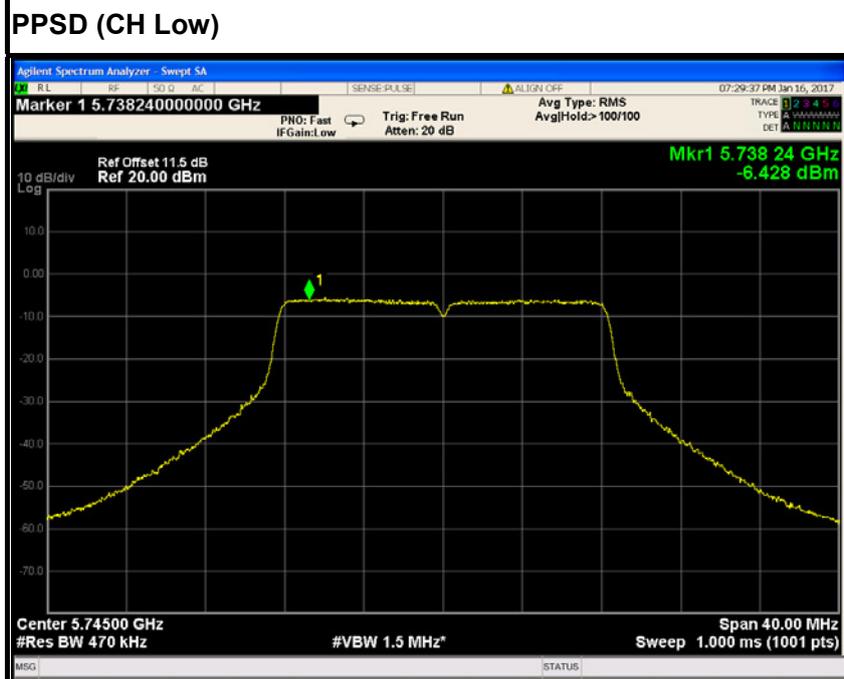


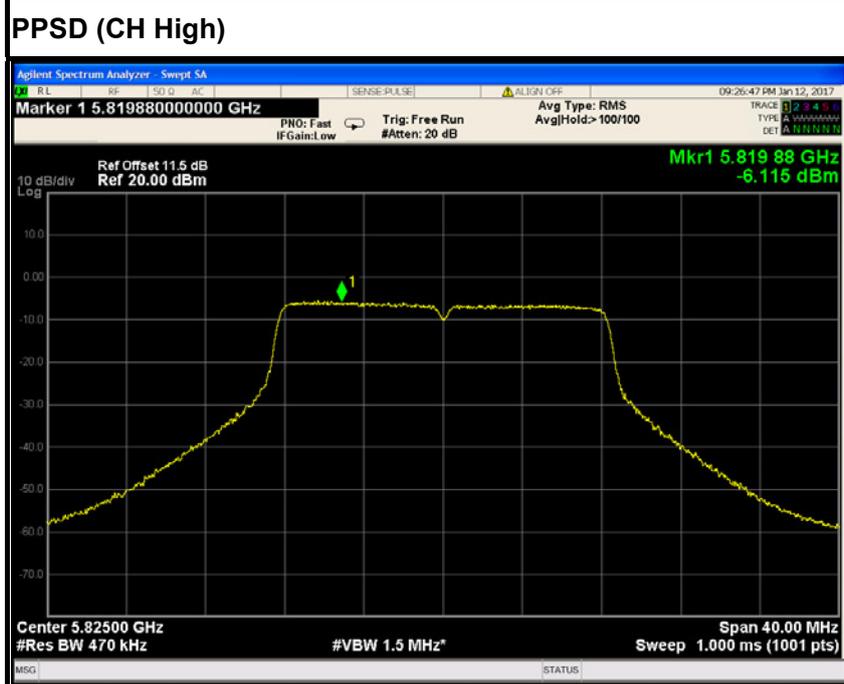
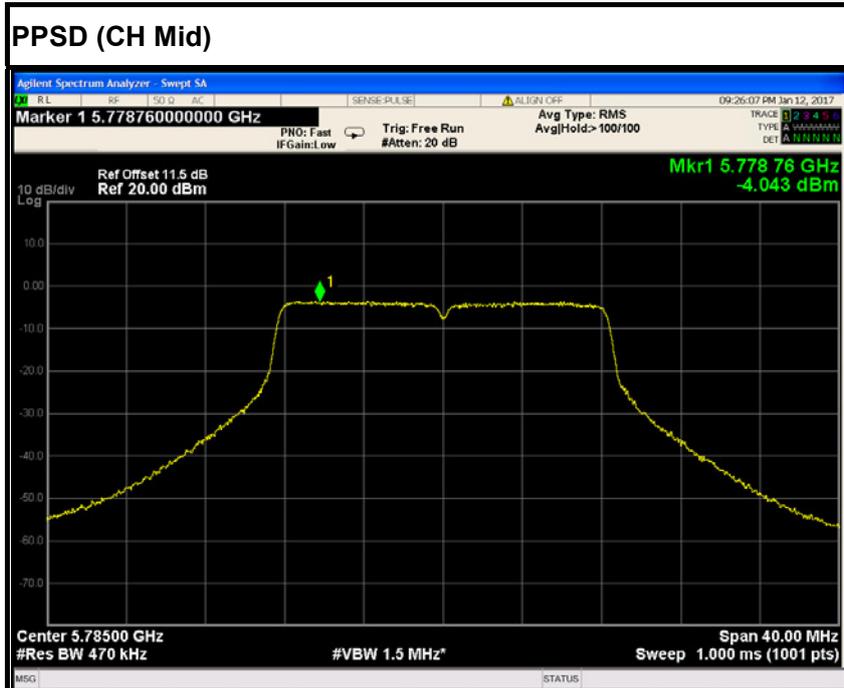
PPSD (CH Mid)





IEEE 802.11a mode / 5745 ~ 5825MHz



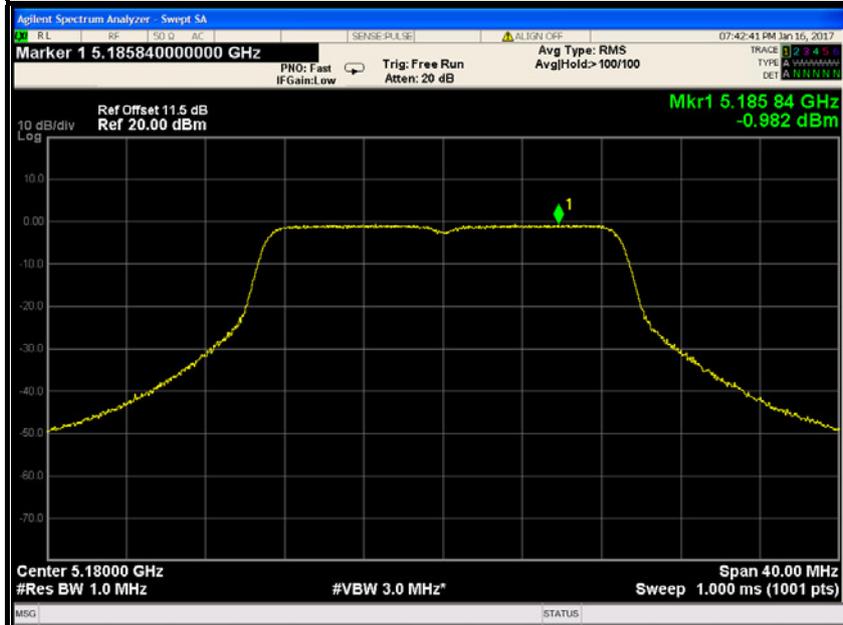




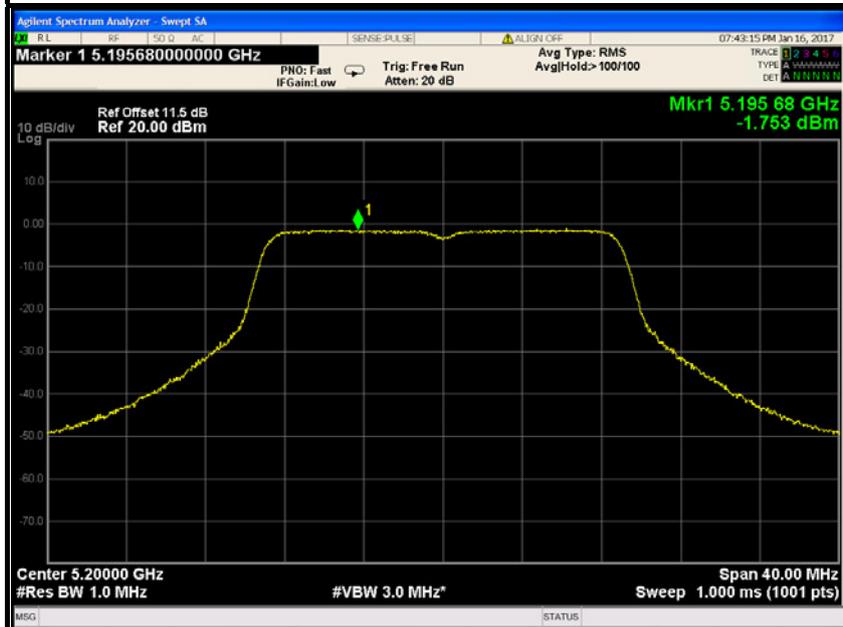
Antenna 1

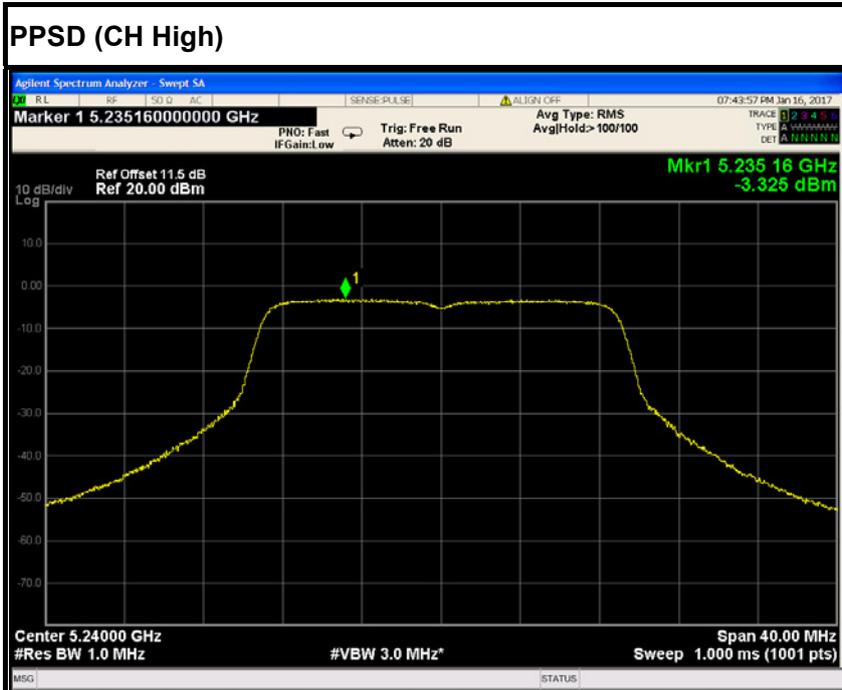
IEEE 802.11n HT 20 MHz mode / 5180 ~ 5240MHz

PPSD (CH Low)

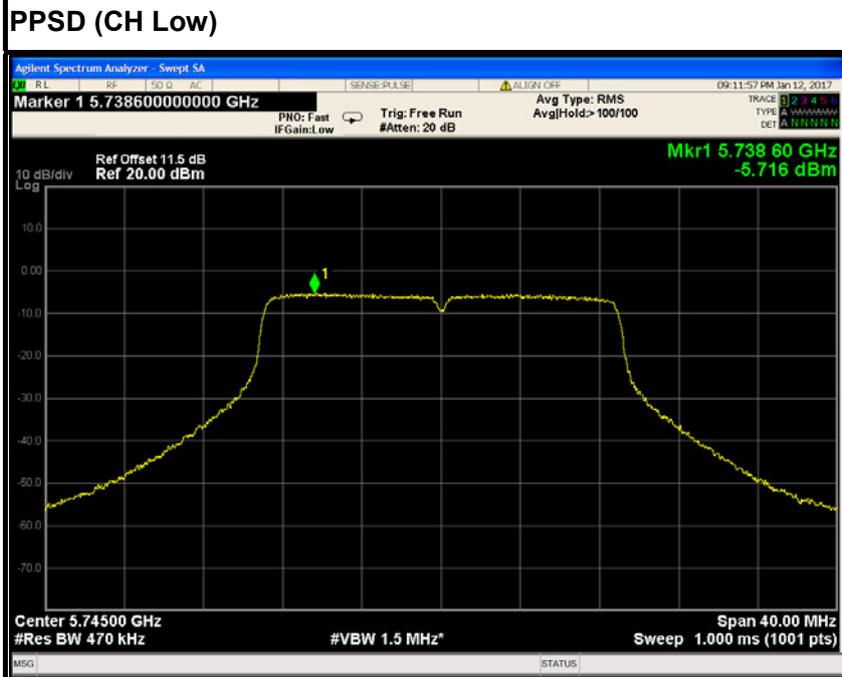


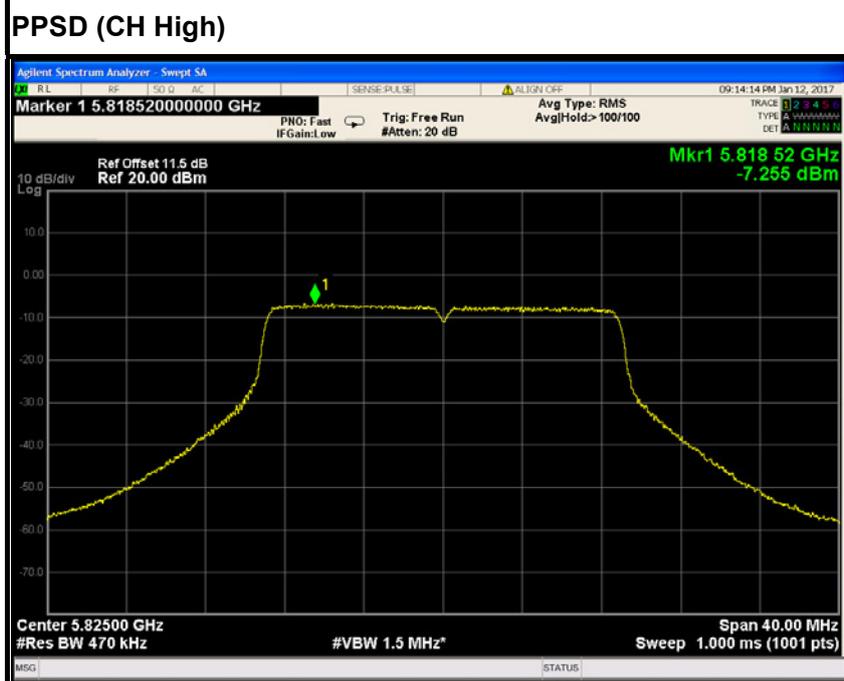
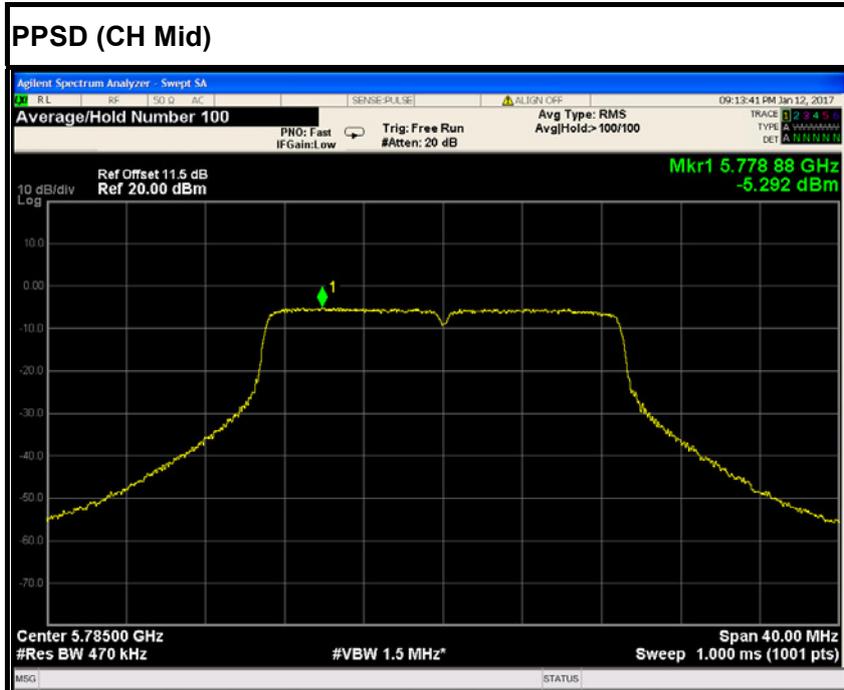
PPSD (CH Mid)





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



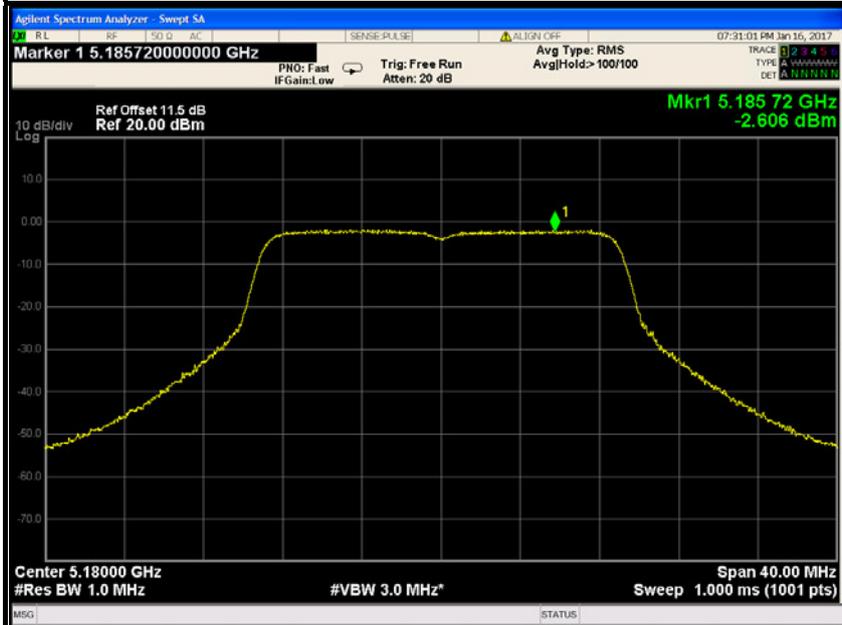




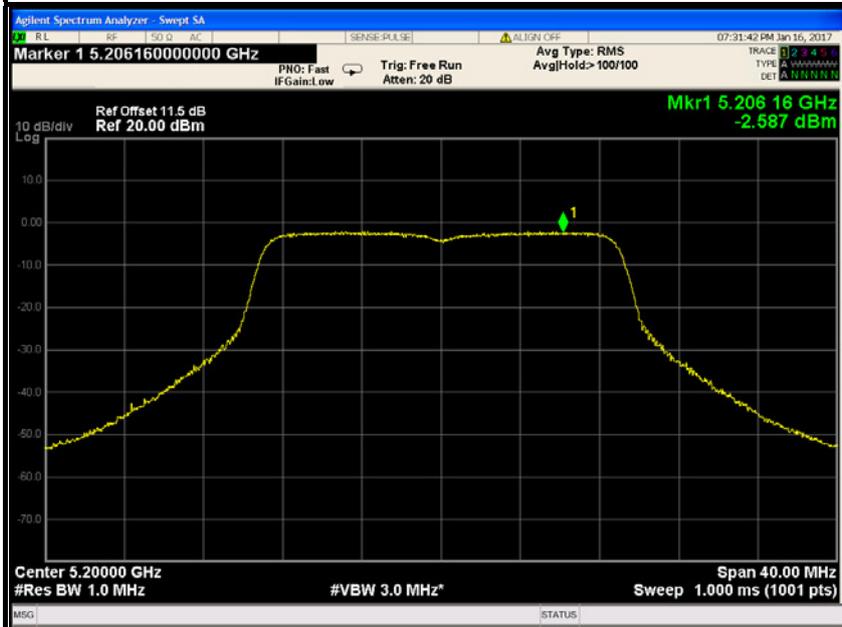
Antenna 2

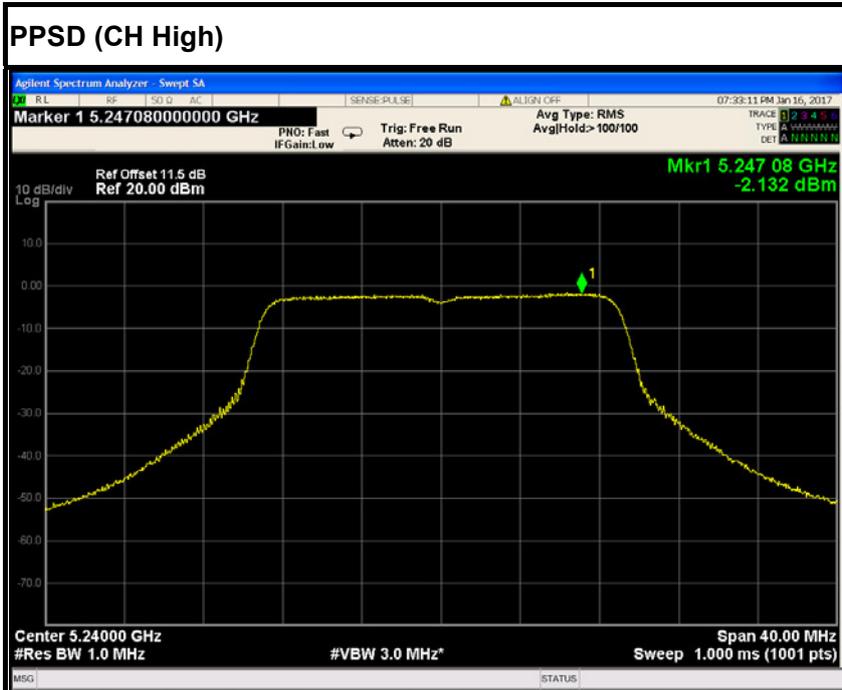
IEEE 802.11n HT 20 MHz mode / 5180 ~ 5240MHz

PPSD (CH Low)

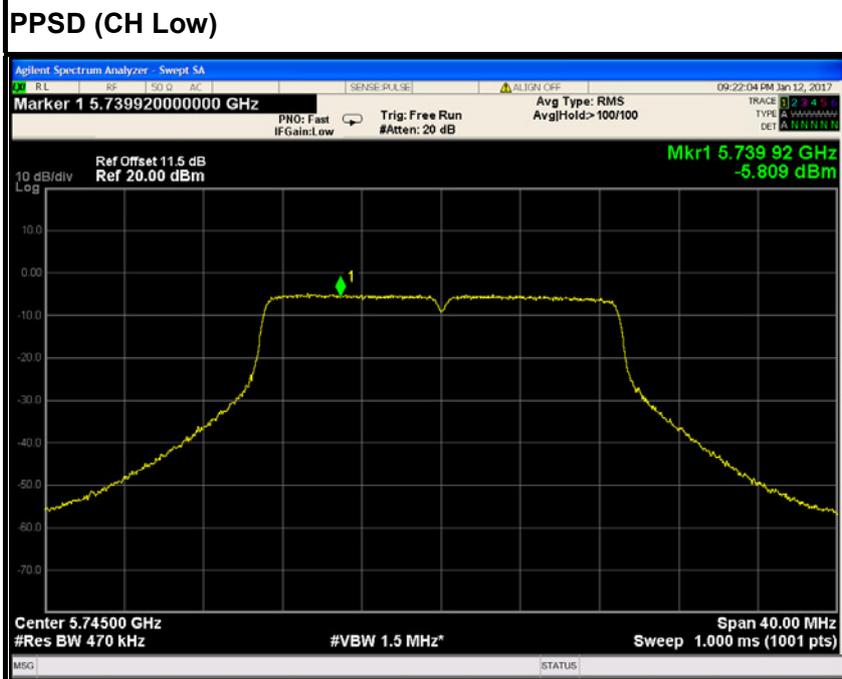


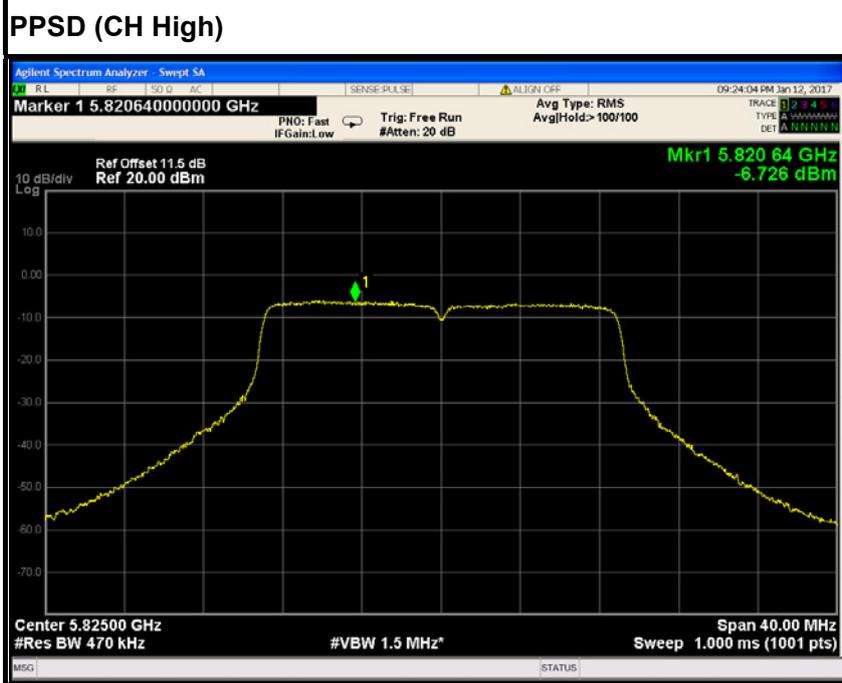
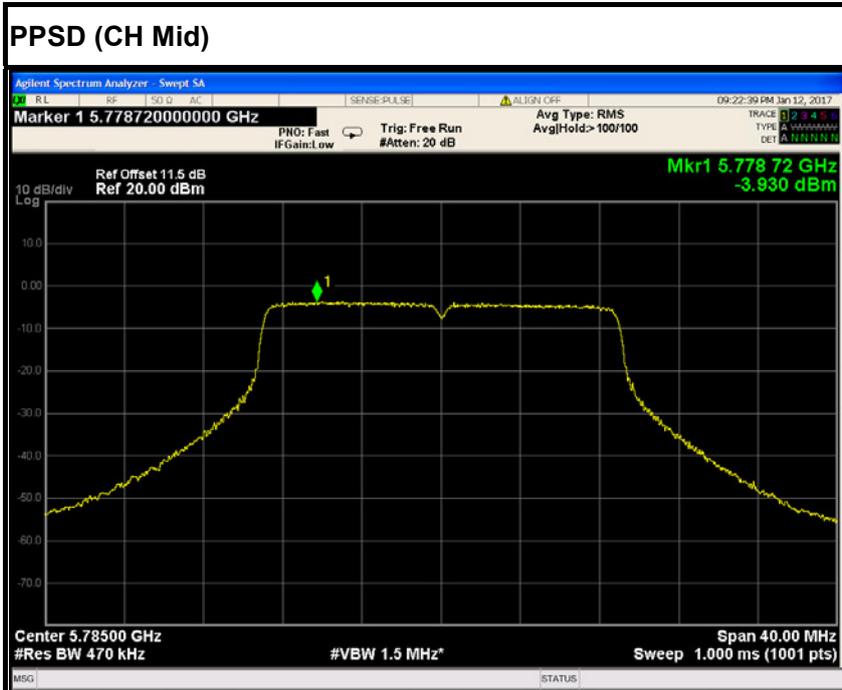
PPSD (CH Mid)





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



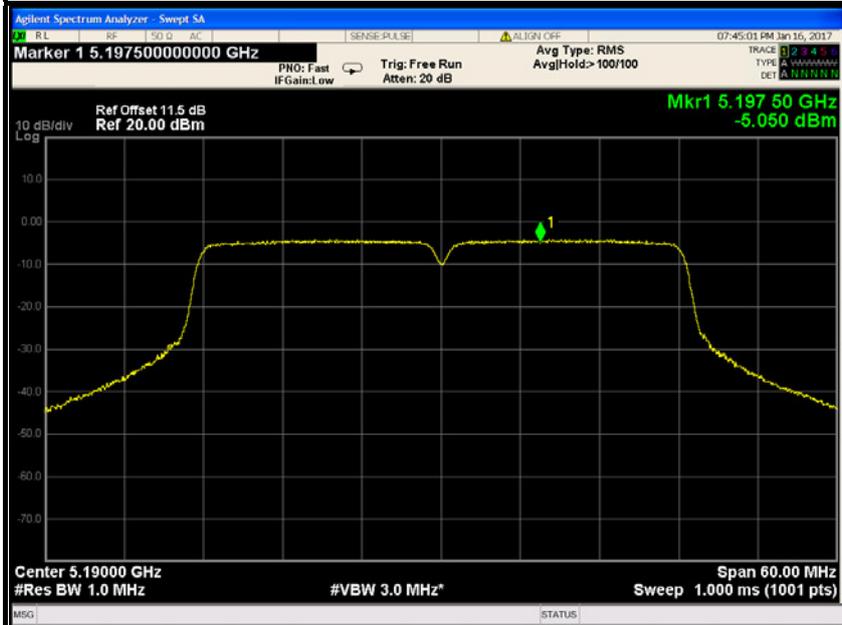




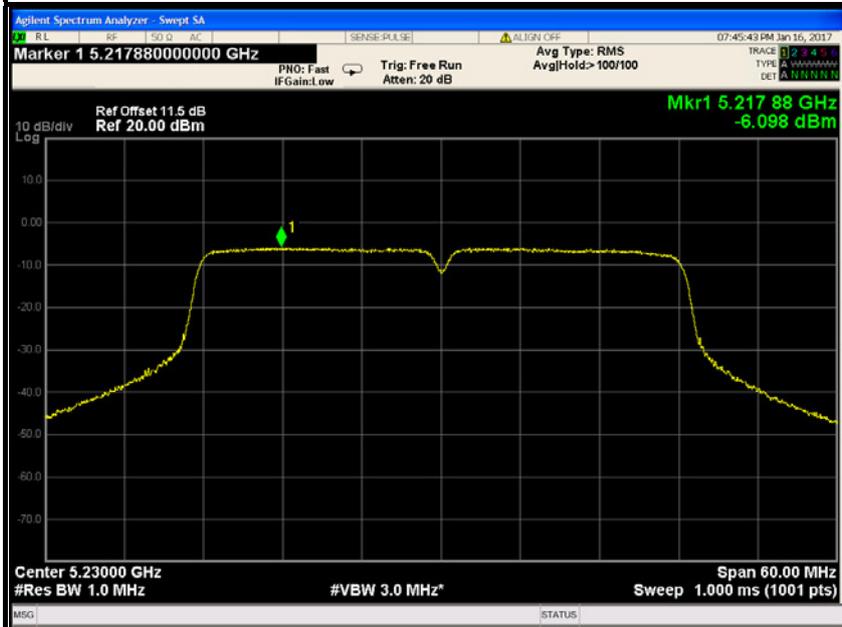
Antenna 1

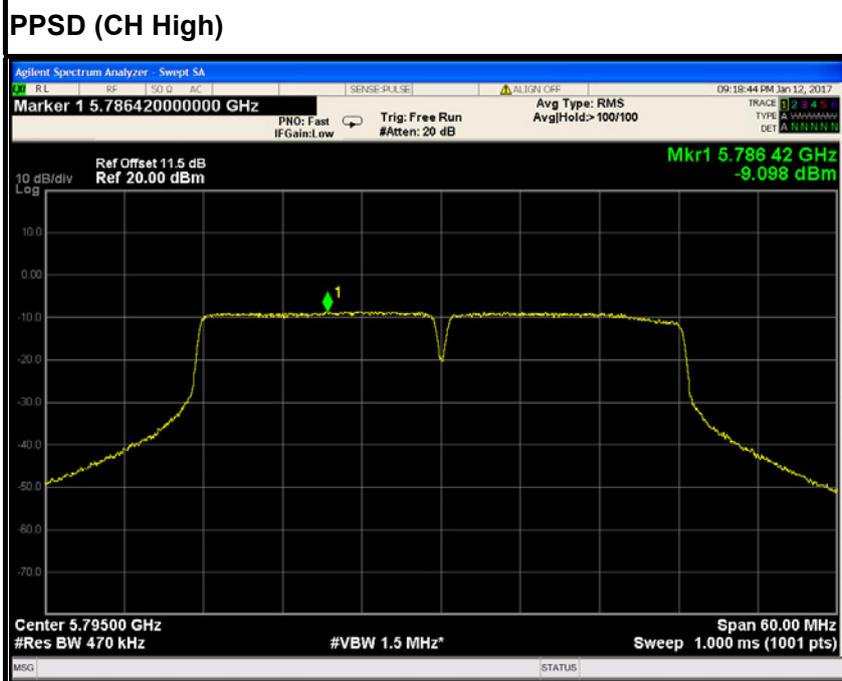
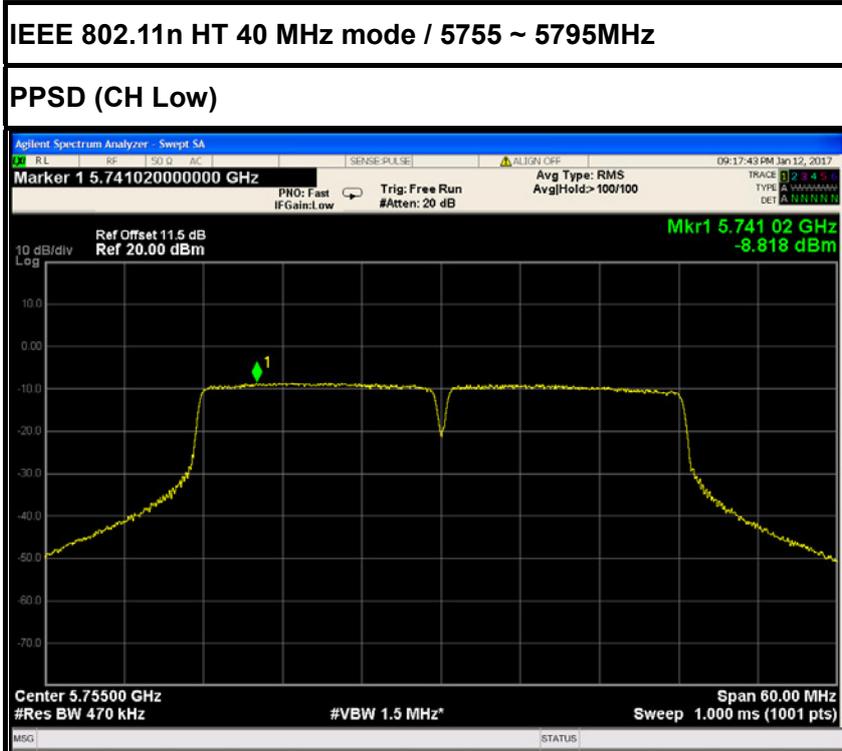
IEEE 802.11n HT 40 MHz mode / 5190 ~ 5230MHz

PPSD (CH Low)



PPSD (CH High)



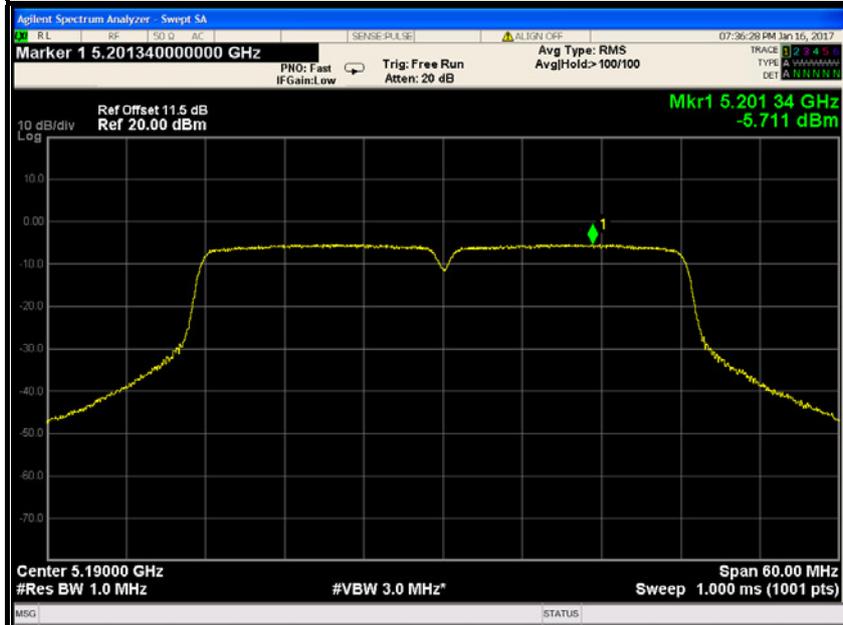




Antenna 2

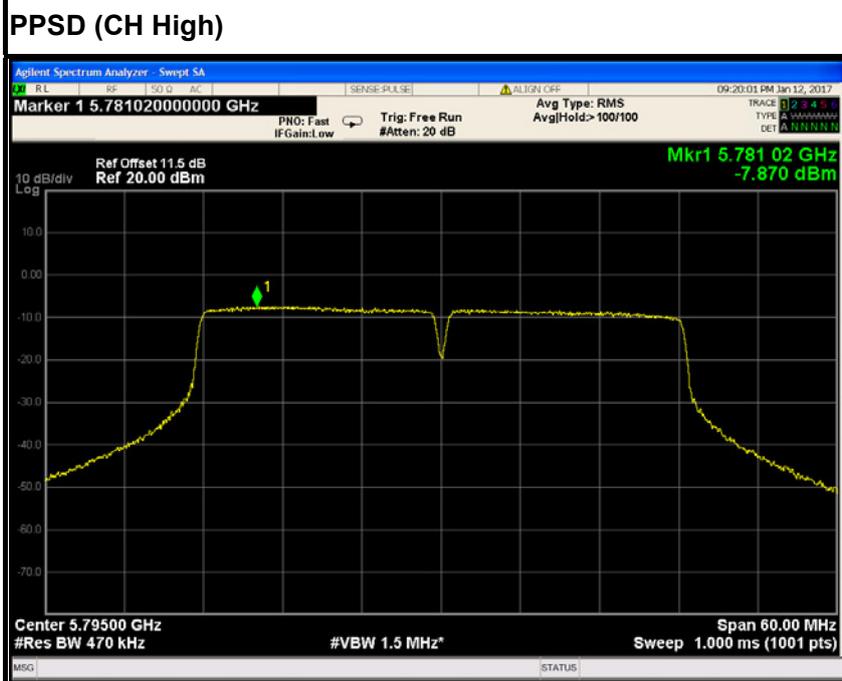
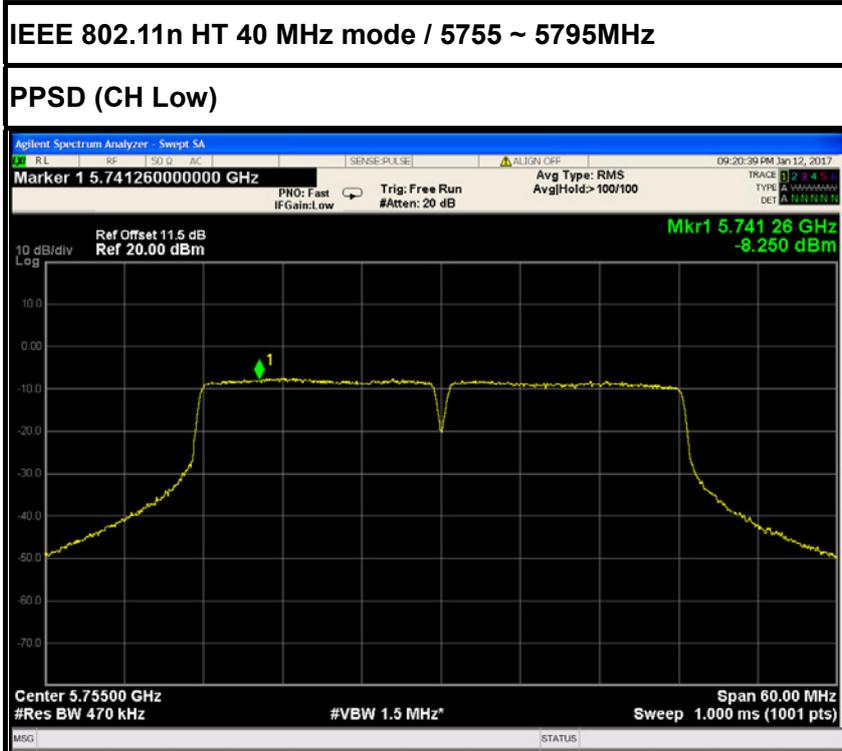
IEEE 802.11n HT 40 MHz mode / 5190 ~ 5230MHz

PPSD (CH Low)



PPSD (CH High)



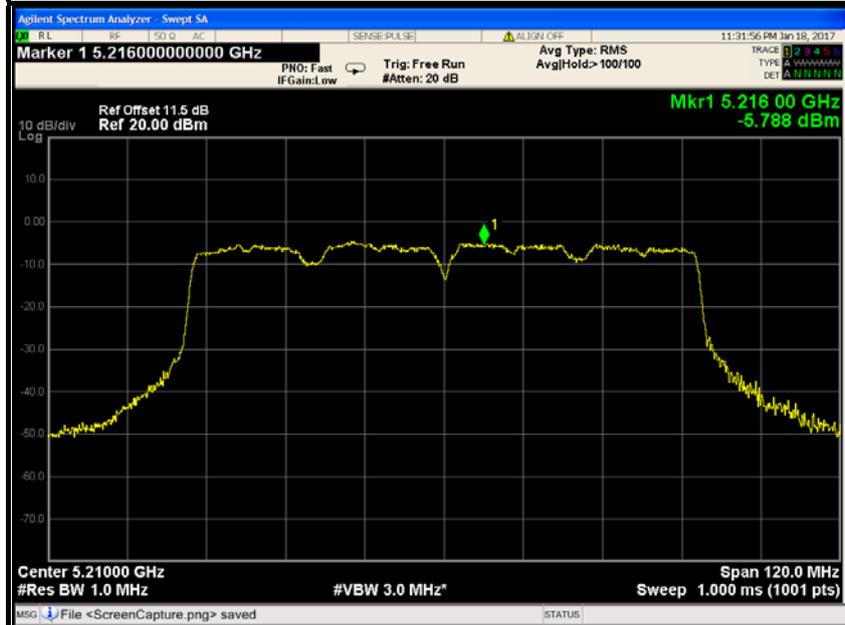




Antenna 1

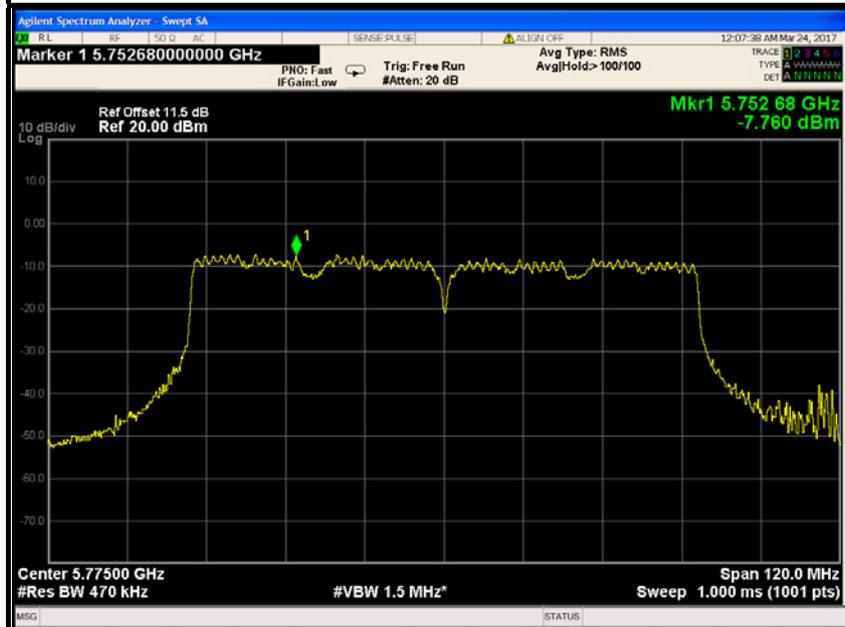
IEEE 802.11ac 80 mode / 5210MHz

PPSD



IEEE 802.11ac 80 mode / 5775MHz

PPSD

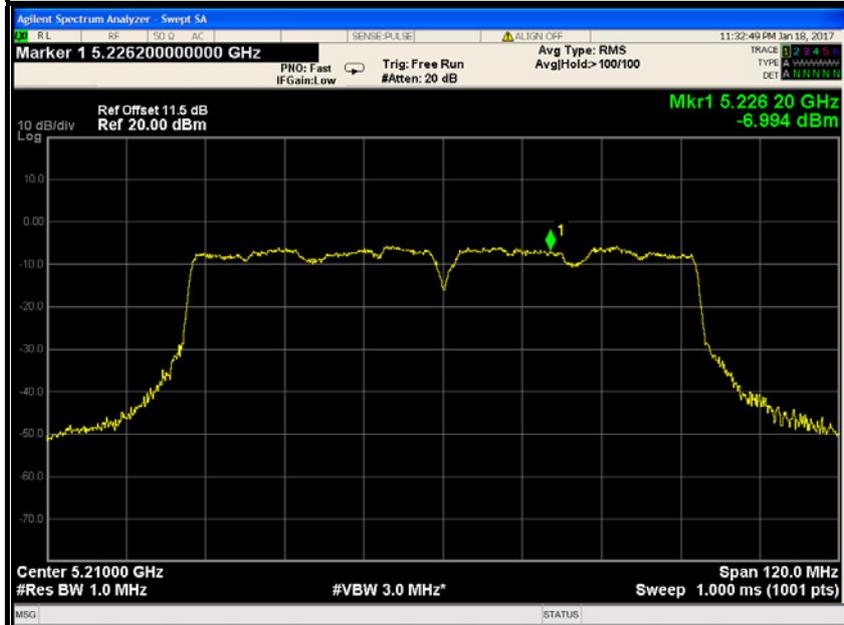




Antenna 2

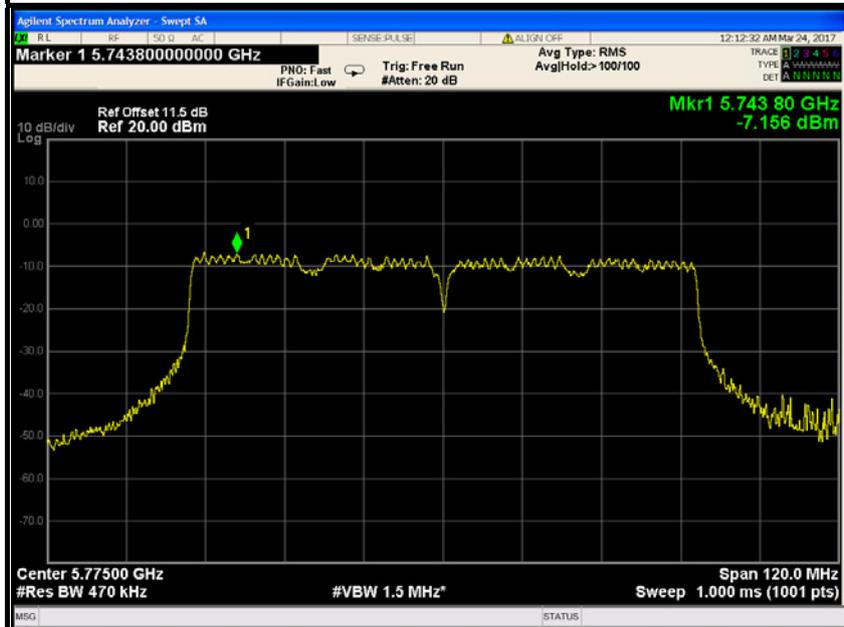
IEEE 802.11ac 80 mode / 5210MHz

PPSD



IEEE 802.11ac 80 mode / 5775MHz

PPSD





6.7 RADIATED UNDESIRABLE EMISSION

6.7.1 LIMIT

1. According to §15.209(a), except as provided elsewhere in this Subpart, the emissions from an intentional radiator shall not exceed the field strength levels specified in the following table:

Frequency (MHz)	Field Strength ($\mu\text{V/m}$)	Measurement Distance (m)
30-88	100*	3
88-216	150*	3
216-960	200*	3
Above 960	500	3

Remark: Except as provided in paragraph (g), fundamental emissions from intentional radiators operating under this Section shall not be located in the frequency bands 54-72 MHz, 76-88 MHz, 174-216 MHz or 470-806 MHz. However, operation within these frequency bands is permitted under other sections of this Part, e.g., Sections 15.231 and 15.241.

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

Frequency (MHz)	Field Strength ($\mu\text{V/m}$ at 3-meter)	Field Strength ($\text{dB}\mu\text{V/m}$ at 3-meter)
30-88	100	40
88-216	150	43.5
216-960	200	46
Above 960	500	54

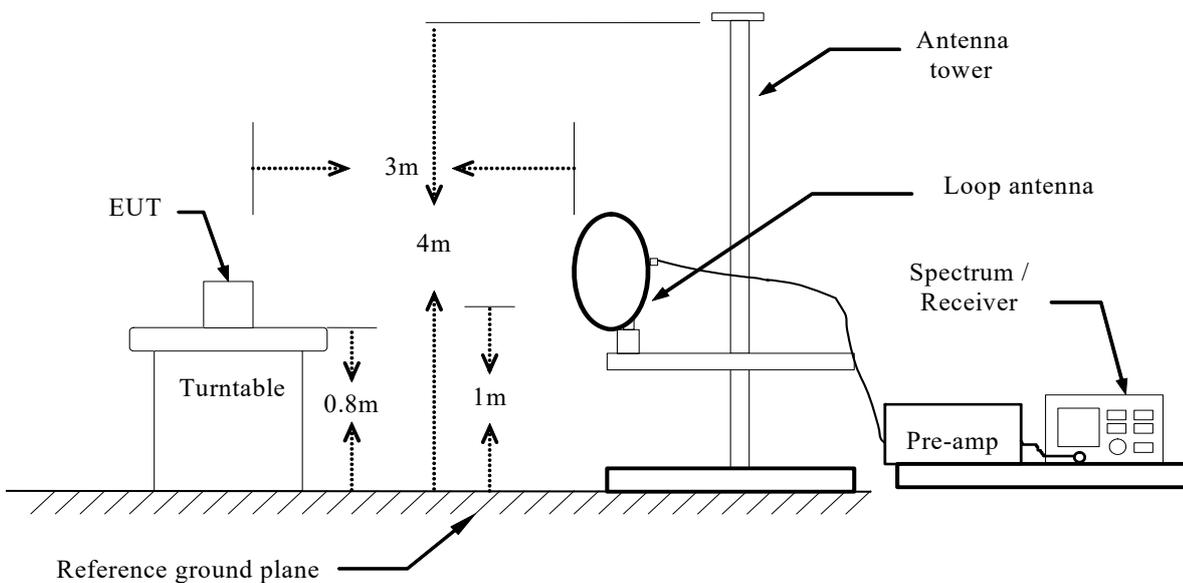


6.7.2 TEST INSTRUMENTS

Radiated Emission Test Site 966(2)					
Name of Equipment	Manufacturer	Model Number	Serial Number	Last Calibration	Due Calibration
PSA Series Spectrum Analyzer	Agilent	E4446A	US44300399	02/21/2016	02/20/2017
EMI TEST RECEIVER	ROHDE&SCHWARZ	ESCI	100783	02/21/2016	02/20/2017
Amplifier	EMEC	EM330	060661	03/18/2016	03/17/2017
High Noise Amplifier	Agilent	8449B	3008A01838	02/21/2016	02/20/2017
Board-Band Horn Antenna	Schwarzbeck	BBHA 9170	9170-497	02/28/2016	02/27/2017
Bilog Antenna	SCHAFFNER	CBL6143	5082	02/21/2016	02/20/2017
Horn Antenna	SCHWARZBECK	BBHA9120	D286	02/28/2016	02/27/2017
Loop Antenna	COM-POWER	AL-130	121044	09/25/2016	09/24/2017
Turn Table	N/A	N/A	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	02/21/2016	02/20/2017
Antenna Tower	SUNOL	TLT2	N/A	N.C.R	N.C.R
Test S/W	FARAD	LZ-RF / CCS-SZ-3A2			

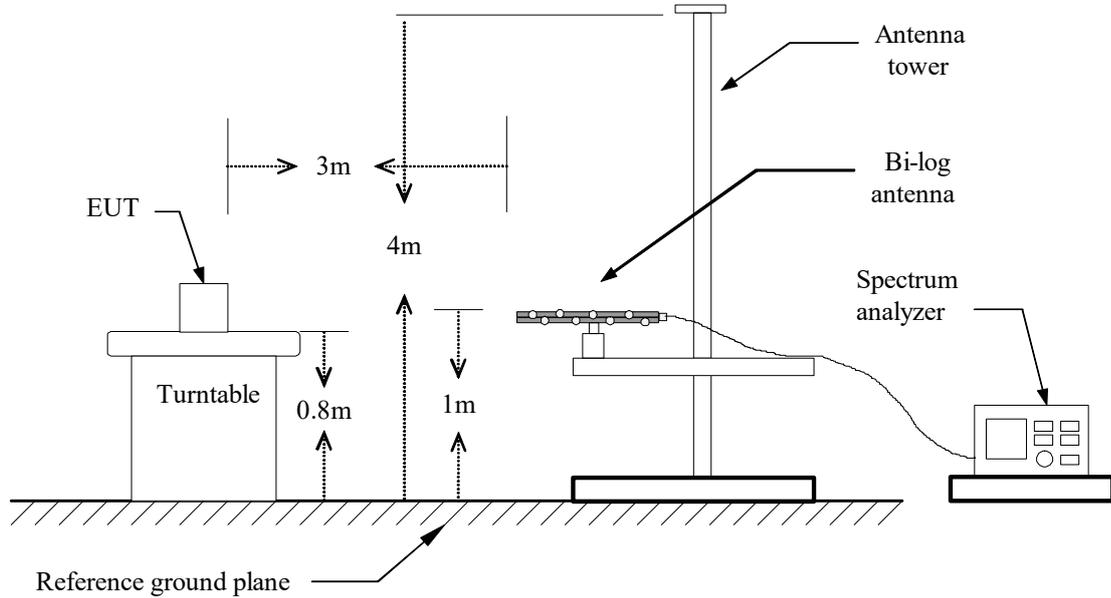
6.7.3 TEST CONFIGURATION

Below 30MHz

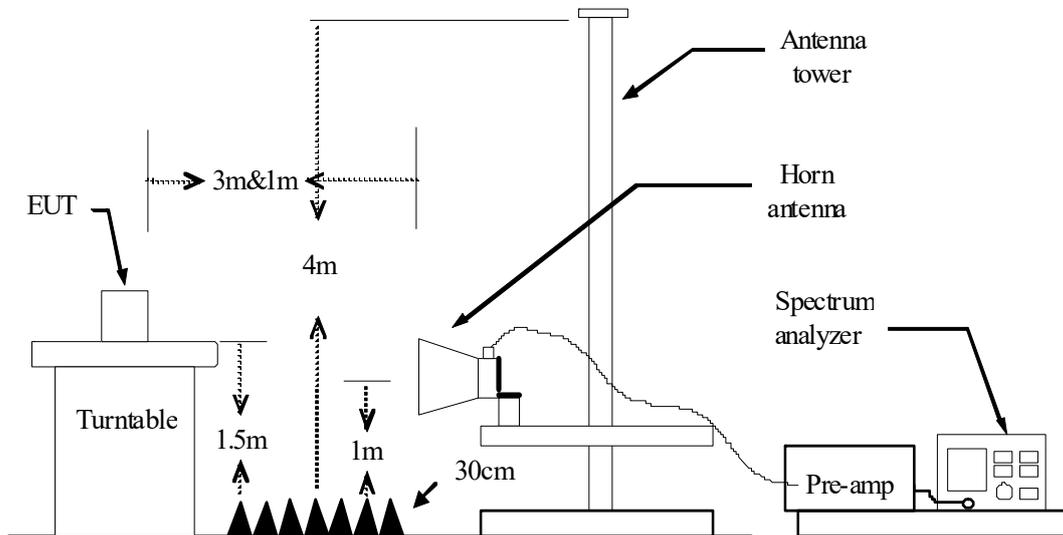




Below 1 GHz



Above 1 GHz



For the actual test configuration, please refer to the related item – Photographs of the TEST CONFIGURATION.



6.7.4 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

6.7.5 TEST PROCEDURE

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 above 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 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° to 315° using 45° 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 & 3 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.



6.7.6 DATA SAMPLE

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

**6.7.7 TEST RESULTS****Below 1 GHz****Antenna 1****Test Mode:** TX / IEEE 802.11a / 5180MHz / (CH Low) **Tested by:** Saber Huang**Ambient temperature:** 24°C **Relative humidity:** 52% RH **Date:** December 29, 2016

Frequency (MHz)	Reading (dBuV)	Correction Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Pole (V/H)	Remark
32.9100	44.42	-13.43	30.99	40.00	-9.01	V	QP
92.0800	49.81	-24.52	25.29	43.50	-18.21	V	QP
324.8800	37.84	-18.67	19.17	46.00	-26.83	V	QP
529.5500	42.84	-13.90	28.94	46.00	-17.06	V	QP
600.3600	34.27	-12.86	21.41	46.00	-24.59	V	QP
624.6100	34.45	-12.73	21.72	46.00	-24.28	V	QP
98.8700	49.39	-23.80	25.59	43.50	-17.91	H	QP
143.4900	47.14	-21.43	25.71	43.50	-17.79	H	QP
197.8100	46.47	-22.76	23.71	43.50	-19.79	H	QP
324.8800	37.78	-18.67	19.11	46.00	-26.89	H	QP
406.3600	33.84	-15.78	18.06	46.00	-27.94	H	QP
525.6700	33.76	-14.00	19.76	46.00	-26.24	H	QP

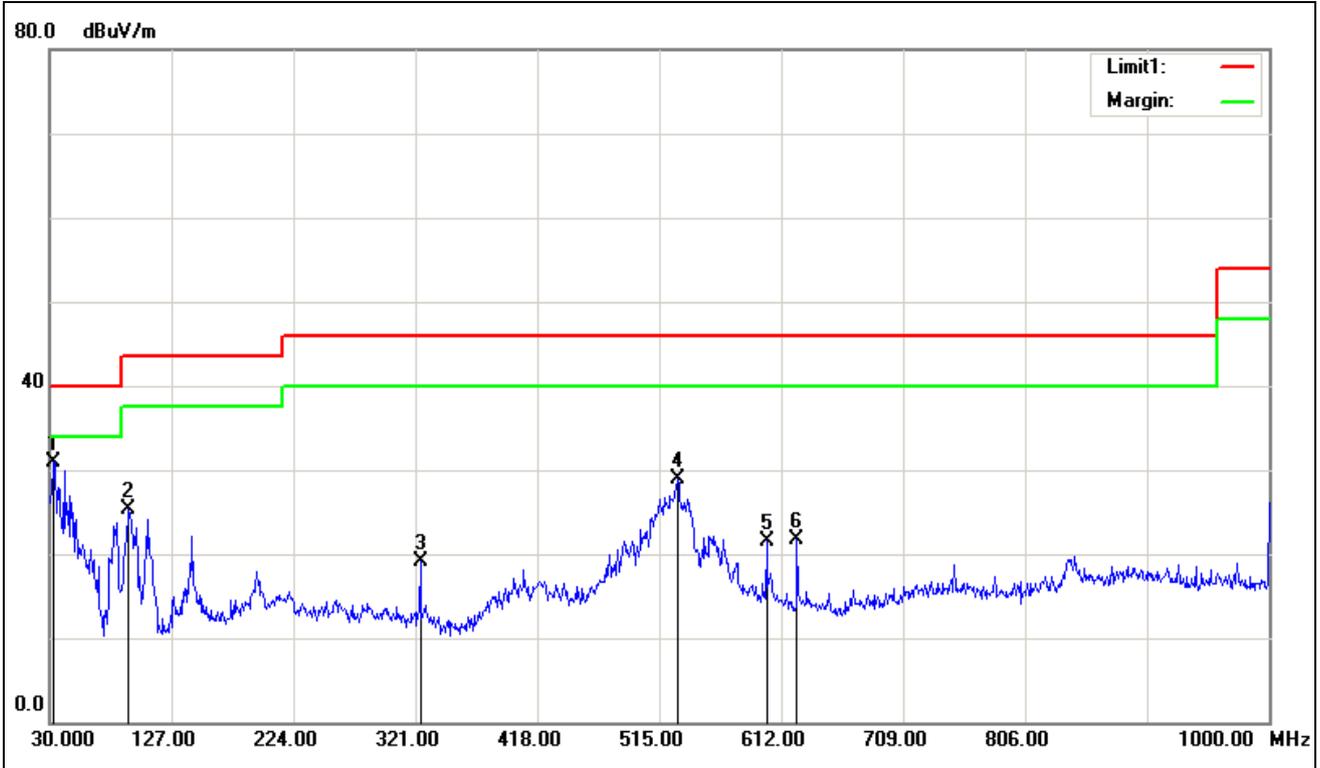
Pre-scan all mode and recorded the worst case results in this report (802.11a Antenna 1(Low Mid)).

Remark:

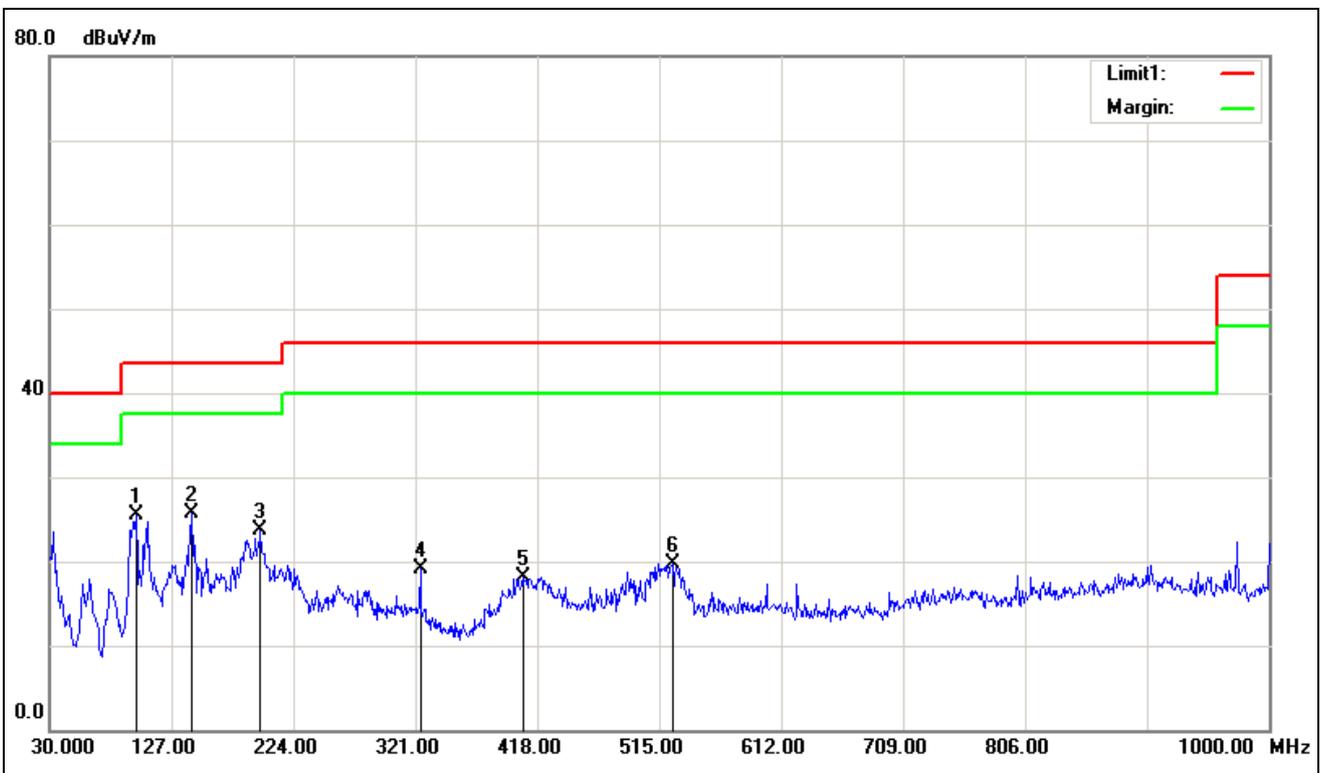
- 1. No emission found between lowest internal used/generated frequency to 30MHz (9kHz~30MHz)*
- 2. Radiated emissions measured in frequency range from 30 MHz to 1000MHz were made with an instrument using peak/quasi-peak detector mode.*
- 3. Quasi-peak test would be performed if the peak result were 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 (Antenna 1)

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

Tested by: Saber Huang

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

Date: December 29, 2016

Frequency (MHz)	Reading (dBuV)	Correction Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Pole (V/H)	Remark
1325.000	46.62	-7.33	39.29	68.23	-28.94	V	peak
1630.000	54.62	-6.64	47.98	68.23	-20.25	V	peak
2450.000	46.80	-2.53	44.27	68.23	-23.96	V	peak
3395.000	41.73	-0.70	41.03	68.23	-27.20	V	peak
3745.000	42.82	0.51	43.33	68.23	-24.90	V	peak
5640.000	49.85	5.93	55.78	68.23	-12.45	V	peak
5640.000	34.42	5.93	40.35	54.00	-13.65	V	AVG
1630.000	48.81	-6.64	42.17	68.23	-26.06	H	Peak
1950.000	53.59	-5.32	48.27	68.23	-19.96	H	Peak
2600.000	48.31	-2.08	46.23	68.23	-22.00	H	Peak
2940.000	43.76	-1.47	42.29	68.23	-25.94	H	peak
3720.000	42.89	0.41	43.30	68.23	-24.93	H	peak
5640.000	44.87	5.93	50.80	68.23	-17.43	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).



Above 6GHz

Antenna 1

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

Tested by: Saber Huang

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

Date: December 29, 2016

Frequency (MHz)	Reading (dBuV)	Correction Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Pole (V/H)	Remark
6336.000	32.22	6.62	38.84	68.23	-29.39	V	peak
6792.000	32.53	7.36	39.89	68.23	-28.34	V	peak
7872.000	31.90	9.40	41.30	68.23	-26.93	V	peak
8400.000	31.75	9.43	41.18	68.23	-27.05	V	peak
9348.000	31.08	10.10	41.18	68.23	-27.05	V	peak
10512.000	30.51	13.57	44.08	68.23	-24.15	V	peak
6804.000	31.74	7.38	39.12	68.23	-29.11	H	Peak
7752.000	31.88	9.17	41.05	68.23	-27.18	H	Peak
8148.000	32.31	9.57	41.88	68.23	-26.35	H	Peak
9420.000	31.45	10.31	41.76	68.23	-26.47	H	peak
10272.000	30.52	12.82	43.34	68.23	-24.89	H	peak
10596.000	30.86	13.83	44.69	68.23	-23.54	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).



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

Tested by: Saber Huang

Ambient temperature: 24°C

Relative humidity: 52% RH

Date: December 29, 2016

Frequency (MHz)	Reading (dBuV)	Correction Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Pole (V/H)	Remark
6924.000	31.48	7.58	39.06	68.23	-29.17	V	peak
7296.000	31.42	8.28	39.70	68.23	-28.53	V	peak
8160.000	32.13	9.56	41.69	68.23	-26.54	V	peak
9348.000	31.28	10.10	41.38	68.23	-26.85	V	peak
10500.000	30.33	13.53	43.86	68.23	-24.37	V	peak
10968.000	30.04	14.98	45.02	68.23	-23.21	V	peak
6804.000	31.73	7.38	39.11	68.23	-29.12	H	Peak
7452.000	31.70	8.58	40.28	68.23	-27.95	H	Peak
8016.000	32.02	9.64	41.66	68.23	-26.57	H	Peak
8964.000	31.52	9.12	40.64	68.23	-27.59	H	peak
9456.000	31.84	10.41	42.25	68.23	-25.98	H	peak
10020.000	31.20	12.04	43.24	68.23	-24.99	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. $Margin (dB) = Remark\ result (dBuV/m) - Average\ limit (dBuV/m)$.



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

Tested by: Saber Huang

Ambient temperature: 24°C

Relative humidity: 52% RH

Date: December 29, 2016

Frequency (MHz)	Reading (dBuV)	Correction Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Pole (V/H)	Remark
6528.000	31.83	6.94	38.77	68.23	-29.46	V	peak
7092.000	32.05	7.88	39.93	68.23	-28.30	V	peak
7716.000	31.44	9.10	40.54	68.23	-27.69	V	peak
8016.000	32.13	9.64	41.77	68.23	-26.46	V	peak
8364.000	32.06	9.45	41.51	68.23	-26.72	V	peak
9024.000	31.50	9.17	40.67	68.23	-27.56	V	peak
6444.000	32.17	6.80	38.97	68.23	-29.26	H	Peak
7200.000	31.70	8.09	39.79	68.23	-28.44	H	Peak
7956.000	31.86	9.56	41.42	68.23	-26.81	H	Peak
8364.000	31.82	9.45	41.27	68.23	-26.96	H	peak
8952.000	31.51	9.13	40.64	68.23	-27.59	H	peak
9360.000	31.25	10.14	41.39	68.23	-26.84	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).

Test Mode: TX / IEEE 802.11a / 5745MHz / (CH Low)Tested by: Saber HuangAmbient temperature: 24°CRelative humidity: 52% RHDate: December 29, 2016

Frequency (MHz)	Reading (dBuV)	Correction Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Pole (V/H)	Remark
6600.000	31.74	7.05	38.79	68.23	-29.44	V	peak
7176.000	31.91	8.04	39.95	68.23	-28.28	V	peak
7632.000	32.02	8.93	40.95	68.23	-27.28	V	peak
8148.000	31.99	9.57	41.56	68.23	-26.67	V	peak
8628.000	30.60	9.30	39.90	68.23	-28.33	V	peak
9444.000	31.17	10.38	41.55	68.23	-26.68	V	peak
6384.000	32.68	6.70	39.38	68.23	-28.85	H	Peak
7368.000	31.25	8.42	39.67	68.23	-28.56	H	Peak
8328.000	32.20	9.47	41.67	68.23	-26.56	H	Peak
9348.000	31.73	10.10	41.83	68.23	-26.40	H	peak
9996.000	30.69	11.97	42.66	68.23	-25.57	H	peak
10272.000	31.23	12.82	44.05	68.23	-24.18	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).



Test Mode: TX / IEEE 802.11a / 5785MHz /(CH Mid)

Tested by: Saber Huang

Ambient temperature: 24°C

Relative humidity: 52% RH

Date: December 29, 2016

Frequency (MHz)	Reading (dBuV)	Correction Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Pole (V/H)	Remark
6768.000	31.76	7.32	39.08	68.23	-29.15	V	peak
7284.000	31.32	8.25	39.57	68.23	-28.66	V	peak
7992.000	31.65	9.63	41.28	68.23	-26.95	V	peak
8388.000	31.46	9.44	40.90	68.23	-27.33	V	peak
9348.000	31.71	10.10	41.81	68.23	-26.42	V	peak
10104.000	30.57	12.30	42.87	68.23	-25.36	V	peak
6372.000	32.23	6.68	38.91	68.23	-29.32	H	Peak
7068.000	31.54	7.83	39.37	68.23	-28.86	H	Peak
7776.000	31.38	9.21	40.59	68.23	-27.64	H	Peak
8316.000	31.93	9.48	41.41	68.23	-26.82	H	peak
8940.000	31.40	9.13	40.53	68.23	-27.70	H	peak
9348.000	31.14	10.10	41.24	68.23	-26.99	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).



Test Mode: TX / IEEE 802.11a / 5825MHz /(CH High)

Tested by: Saber Huang

Ambient temperature: 24°C

Relative humidity: 52% RH

Date: December 29, 2016

Frequency (MHz)	Reading (dBuV)	Correction Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Pole (V/H)	Remark
6504.000	31.74	6.90	38.64	68.23	-29.59	V	peak
7140.000	31.70	7.97	39.67	68.23	-28.56	V	peak
7980.000	31.92	9.61	41.53	68.23	-26.70	V	peak
8352.000	31.77	9.46	41.23	68.23	-27.00	V	peak
9012.000	31.63	9.13	40.76	68.23	-27.47	V	peak
9348.000	31.11	10.10	41.21	68.23	-27.02	V	peak
6552.000	31.87	6.97	38.84	68.23	-29.39	H	Peak
6984.000	32.38	7.67	40.05	68.23	-28.18	H	Peak
7656.000	31.39	8.98	40.37	68.23	-27.86	H	Peak
8112.000	31.98	9.59	41.57	68.23	-26.66	H	peak
8412.000	31.33	9.42	40.75	68.23	-27.48	H	peak
9048.000	31.41	9.24	40.65	68.23	-27.58	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).



Antenna 2

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

Tested by: Saber Huang

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

Date: December 29, 2016

Frequency (MHz)	Reading (dBuV)	Correction Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Pole (V/H)	Remark
6528.000	32.51	6.94	39.45	68.23	-28.78	V	peak
7116.000	31.66	7.93	39.59	68.23	-28.64	V	peak
8088.000	31.97	9.60	41.57	68.23	-26.66	V	peak
9012.000	31.63	9.13	40.76	68.23	-27.47	V	peak
9924.000	31.66	11.76	43.42	68.23	-24.81	V	peak
11136.000	31.87	15.02	46.89	68.23	-21.34	V	peak
6540.000	31.95	6.95	38.90	68.23	-29.33	H	Peak
7056.000	31.83	7.81	39.64	68.23	-28.59	H	Peak
8028.000	31.30	9.63	40.93	68.23	-27.30	H	Peak
8556.000	30.93	9.34	40.27	68.23	-27.96	H	peak
9384.000	30.98	10.21	41.19	68.23	-27.04	H	peak
10020.000	31.60	12.04	43.64	68.23	-24.59	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).



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

Tested by: Saber Huang

Ambient temperature: 24°C

Relative humidity: 52% RH

Date: December 29, 2016

Frequency (MHz)	Reading (dBuV)	Correction Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Pole (V/H)	Remark
6576.000	31.64	7.01	38.65	68.23	-29.58	V	peak
7272.000	31.58	8.23	39.81	68.23	-28.42	V	peak
7896.000	31.54	9.45	40.99	68.23	-27.24	V	peak
8400.000	31.82	9.43	41.25	68.23	-26.98	V	peak
9228.000	31.19	9.76	40.95	68.23	-27.28	V	peak
10008.000	31.00	12.00	43.00	68.23	-25.23	V	peak
6504.000	31.79	6.90	38.69	68.23	-29.54	H	Peak
7548.000	31.29	8.77	40.06	68.23	-28.17	H	Peak
8328.000	31.97	9.47	41.44	68.23	-26.79	H	Peak
9036.000	31.53	9.20	40.73	68.23	-27.50	H	peak
10020.000	30.49	12.04	42.53	68.23	-25.70	H	peak
10728.000	30.77	14.24	45.01	68.23	-23.22	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).



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

Tested by: Saber Huang

Ambient temperature: 24°C

Relative humidity: 52% RH

Date: December 29, 2016

Frequency (MHz)	Reading (dBuV)	Correction Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Pole (V/H)	Remark
6552.000	31.62	6.97	38.59	68.23	-29.64	V	peak
7068.000	31.46	7.83	39.29	68.23	-28.94	V	peak
7716.000	31.16	9.10	40.26	68.23	-27.97	V	peak
8400.000	31.76	9.43	41.19	68.23	-27.04	V	peak
9324.000	30.90	10.03	40.93	68.23	-27.30	V	peak
10284.000	30.26	12.86	43.12	68.23	-25.11	V	peak
6696.000	31.92	7.21	39.13	68.23	-29.10	H	Peak
7200.000	31.61	8.09	39.70	68.23	-28.53	H	Peak
7596.000	31.61	8.86	40.47	68.23	-27.76	H	Peak
8376.000	31.70	9.44	41.14	68.23	-27.09	H	peak
9024.000	31.87	9.17	41.04	68.23	-27.19	H	peak
9792.000	30.62	11.38	42.00	68.23	-26.23	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).



Test Mode: TX / IEEE 802.11a / 5745MHz /(CH Low) **Tested by:** Saber Huang
Ambient temperature: 24°C **Relative humidity:** 52% RH **Date:** December 29, 2016

Frequency (MHz)	Reading (dBuV)	Correction Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Pole (V/H)	Remark
6504.000	31.63	6.90	38.53	68.23	-29.70	V	peak
7020.000	31.89	7.74	39.63	68.23	-28.60	V	peak
7740.000	31.87	9.14	41.01	68.23	-27.22	V	peak
8004.000	31.87	9.65	41.52	68.23	-26.71	V	peak
8976.000	31.78	9.11	40.89	68.23	-27.34	V	peak
9816.000	30.35	11.45	41.80	68.23	-26.43	V	peak
6780.000	31.54	7.34	38.88	68.23	-29.35	H	Peak
7404.000	31.20	8.49	39.69	68.23	-28.54	H	Peak
8124.000	31.66	9.58	41.24	68.23	-26.99	H	Peak
9000.000	31.64	9.10	40.74	68.23	-27.49	H	peak
10020.000	30.81	12.04	42.85	68.23	-25.38	H	peak
10716.000	30.41	14.20	44.61	68.23	-23.62	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).



Test Mode: TX / IEEE 802.11a / 5785MHz / (CH Mid)

Tested by: Saber Huang

Ambient temperature: 24°C

Relative humidity: 52% RH

Date: December 29, 2016

Frequency (MHz)	Reading (dBuV)	Correction Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Pole (V/H)	Remark
6828.000	31.59	7.42	39.01	68.23	-29.22	V	peak
8004.000	31.80	9.65	41.45	68.23	-26.78	V	peak
8376.000	31.61	9.44	41.05	68.23	-27.18	V	peak
9012.000	31.52	9.13	40.65	68.23	-27.58	V	peak
9372.000	31.27	10.17	41.44	68.23	-26.79	V	peak
10080.000	30.94	12.23	43.17	68.23	-25.06	V	peak
6348.000	32.15	6.64	38.79	68.23	-29.44	H	Peak
7548.000	31.19	8.77	39.96	68.23	-28.27	H	Peak
8112.000	31.79	9.59	41.38	68.23	-26.85	H	Peak
8568.000	31.03	9.34	40.37	68.23	-27.86	H	peak
9432.000	30.95	10.34	41.29	68.23	-26.94	H	peak
10140.000	30.56	12.41	42.97	68.23	-25.26	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).



Test Mode: TX / IEEE 802.11a / 5825MHz /(CH High)

Tested by: Saber Huang

Ambient temperature: 24°C

Relative humidity: 52% RH

Date: December 29, 2016

Frequency (MHz)	Reading (dBuV)	Correction Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Pole (V/H)	Remark
6912.000	31.14	7.56	38.70	68.23	-29.53	V	peak
7620.000	30.95	8.91	39.86	68.23	-28.37	V	peak
9036.000	31.69	9.20	40.89	68.23	-27.34	V	peak
10032.000	30.56	12.08	42.64	68.23	-25.59	V	peak
11160.000	31.40	15.01	46.41	68.23	-21.82	V	peak
12540.000	29.89	16.43	46.32	68.23	-21.91	V	peak
6720.000	31.36	7.25	38.61	68.23	-29.62	H	Peak
7272.000	31.37	8.23	39.60	68.23	-28.63	H	Peak
8100.000	31.94	9.60	41.54	68.23	-26.69	H	Peak
8940.000	31.16	9.13	40.29	68.23	-27.94	H	peak
9576.000	30.80	10.76	41.56	68.23	-26.67	H	peak
10044.000	31.38	12.12	43.50	68.23	-24.73	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).



Combine with Antenna 1 and Antenna 2

Test Mode: TX / IEEE 802.11n HT 20 MHz / 5180MHz / (CH Low)

Tested by: Saber Huang

Ambient temperature: 24°C **Relative humidity:** 52% RH **Date:** December 29, 2016

Frequency (MHz)	Reading (dBuV)	Correction Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Pole (V/H)	Remark
6744.000	31.53	7.29	38.82	68.23	-29.41	V	peak
7644.000	32.07	8.96	41.03	68.23	-27.20	V	peak
8220.000	31.93	9.53	41.46	68.23	-26.77	V	peak
8520.000	30.94	9.36	40.30	68.23	-27.93	V	peak
8988.000	31.84	9.11	40.95	68.23	-27.28	V	peak
9588.000	30.76	10.79	41.55	68.23	-26.68	V	peak
6288.000	32.03	6.55	38.58	68.23	-29.65	H	Peak
6876.000	31.75	7.50	39.25	68.23	-28.98	H	Peak
7188.000	31.89	8.07	39.96	68.23	-28.27	H	Peak
7680.000	31.32	9.03	40.35	68.23	-27.88	H	peak
8112.000	31.99	9.59	41.58	68.23	-26.65	H	peak
8484.000	31.21	9.38	40.59	68.23	-27.64	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).



Test Mode: TX / IEEE 802.11n HT 20 MHz / 5200MHz /(CH Mid) Tested by: Saber Huang

Ambient temperature: 24°C Relative humidity: 52% RH Date: December 29, 2016

Frequency (MHz)	Reading (dBuV)	Correction Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Pole (V/H)	Remark
6264.000	32.03	6.51	38.54	68.23	-29.69	V	peak
6792.000	31.51	7.36	38.87	68.23	-29.36	V	peak
7164.000	31.60	8.02	39.62	68.23	-28.61	V	peak
7572.000	31.58	8.82	40.40	68.23	-27.83	V	peak
8028.000	31.57	9.63	41.20	68.23	-27.03	V	peak
8328.000	31.64	9.47	41.11	68.23	-27.12	V	peak
6684.000	31.73	7.19	38.92	68.23	-29.31	H	Peak
7152.000	31.93	8.00	39.93	68.23	-28.30	H	Peak
7884.000	32.11	9.42	41.53	68.23	-26.70	H	Peak
8364.000	31.74	9.45	41.19	68.23	-27.04	H	peak
8976.000	31.09	9.11	40.20	68.23	-28.03	H	peak
9264.000	30.51	9.86	40.37	68.23	-27.86	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).



Test Mode: TX / IEEE 802.11n HT 20 MHz / 5240MHz /(CH High)

Tested by: Saber Huang

Ambient temperature: 24°C Relative humidity: 52% RH Date: December 29, 2016

Frequency (MHz)	Reading (dBuV)	Correction Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Pole (V/H)	Remark
6564.000	31.74	6.99	38.73	68.23	-29.50	V	peak
6924.000	31.90	7.58	39.48	68.23	-28.75	V	peak
7368.000	31.10	8.42	39.52	68.23	-28.71	V	peak
7992.000	31.78	9.63	41.41	68.23	-26.82	V	peak
8352.000	32.51	9.46	41.97	68.23	-26.26	V	peak
8964.000	31.46	9.12	40.58	68.23	-27.65	V	peak
6528.000	31.68	6.94	38.62	68.23	-29.61	H	Peak
7020.000	32.11	7.74	39.85	68.23	-28.38	H	Peak
7716.000	31.86	9.10	40.96	68.23	-27.27	H	Peak
8400.000	31.77	9.43	41.20	68.23	-27.03	H	peak
9420.000	31.83	10.31	42.14	68.23	-26.09	H	peak
10248.000	30.28	12.75	43.03	68.23	-25.20	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).



Test Mode: TX / IEEE 802.11n HT 20 MHz / 5745MHz / (CH Low)

Tested by: Saber Huang

Ambient temperature: 24°C Relative humidity: 52% RH Date: December 29, 2016

Frequency (MHz)	Reading (dBuV)	Correction Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Pole (V/H)	Remark
6360.000	31.80	6.66	38.46	68.23	-29.77	V	peak
7020.000	31.96	7.74	39.70	68.23	-28.53	V	peak
7500.000	31.43	8.68	40.11	68.23	-28.12	V	peak
8112.000	31.46	9.59	41.05	68.23	-27.18	V	peak
8928.000	31.57	9.14	40.71	68.23	-27.52	V	peak
9408.000	31.26	10.28	41.54	68.23	-26.69	V	peak
6528.000	31.56	6.94	38.50	68.23	-29.73	H	Peak
7176.000	31.35	8.04	39.39	68.23	-28.84	H	Peak
7908.000	31.76	9.47	41.23	68.23	-27.00	H	Peak
8400.000	32.55	9.43	41.98	68.23	-26.25	H	peak
9336.000	31.45	10.07	41.52	68.23	-26.71	H	peak
10008.000	30.68	12.00	42.68	68.23	-25.55	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).



Test Mode: TX / IEEE 802.11n HT 20 MHz / 5785MHz /(CH Mid)

Tested by: Saber Huang

Ambient temperature: 24°C Relative humidity: 52% RH Date: December 29, 2016

Frequency (MHz)	Reading (dBuV)	Correction Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Pole (V/H)	Remark
6504.000	31.79	6.90	38.69	68.23	-29.54	V	peak
7068.000	31.68	7.83	39.51	68.23	-28.72	V	peak
7728.000	31.57	9.12	40.69	68.23	-27.54	V	peak
8040.000	31.53	9.63	41.16	68.23	-27.07	V	peak
8592.000	30.75	9.32	40.07	68.23	-28.16	V	peak
9432.000	31.26	10.34	41.60	68.23	-26.63	V	peak
6456.000	31.66	6.82	38.48	68.23	-29.75	H	Peak
7092.000	31.54	7.88	39.42	68.23	-28.81	H	Peak
7584.000	31.68	8.84	40.52	68.23	-27.71	H	Peak
8064.000	31.68	9.61	41.29	68.23	-26.94	H	peak
8424.000	32.34	9.42	41.76	68.23	-26.47	H	peak
9336.000	31.02	10.07	41.09	68.23	-27.14	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).



Test Mode: TX / IEEE 802.11n HT 20 MHz / 5825MHz /(CH High)

Tested by: Saber Huang

Ambient temperature: 24°C Relative humidity: 52% RH Date: December 29, 2016

Frequency (MHz)	Reading (dBuV)	Correction Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Pole (V/H)	Remark
6564.000	31.70	6.99	38.69	68.23	-29.54	V	peak
7092.000	31.45	7.88	39.33	68.23	-28.90	V	peak
7704.000	31.90	9.07	40.97	68.23	-27.26	V	peak
8388.000	32.03	9.44	41.47	68.23	-26.76	V	peak
9336.000	31.26	10.07	41.33	68.23	-26.90	V	peak
10068.000	30.82	12.19	43.01	68.23	-25.22	V	peak
6804.000	31.52	7.38	38.90	68.23	-29.33	H	Peak
7464.000	31.38	8.60	39.98	68.23	-28.25	H	Peak
8316.000	31.96	9.48	41.44	68.23	-26.79	H	Peak
8952.000	31.57	9.13	40.70	68.23	-27.53	H	peak
9444.000	30.66	10.38	41.04	68.23	-27.19	H	peak
10056.000	31.04	12.15	43.19	68.23	-25.04	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).



Combine with Antenna 1 and Antenna 2

Test Mode: TX / IEEE 802.11n HT 40 MHz / 5190MHz / (CH Low)

Tested by: Saber Huang

Ambient temperature: 24°C **Relative humidity:** 52% RH **Date:** December 29, 2016

Frequency (MHz)	Reading (dBuV)	Correction Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Pole (V/H)	Remark
6396.000	31.80	6.72	38.52	68.23	-29.71	V	peak
6768.000	31.84	7.32	39.16	68.23	-29.07	V	peak
7092.000	31.93	7.88	39.81	68.23	-28.42	V	peak
7728.000	31.80	9.12	40.92	68.23	-27.31	V	peak
7944.000	31.91	9.54	41.45	68.23	-26.78	V	peak
8304.000	31.57	9.48	41.05	68.23	-27.18	V	peak
6420.000	31.62	6.76	38.38	68.23	-29.85	H	Peak
7008.000	31.83	7.72	39.55	68.23	-28.68	H	Peak
7692.000	31.50	9.05	40.55	68.23	-27.68	H	Peak
8124.000	31.65	9.58	41.23	68.23	-27.00	H	peak
8544.000	31.07	9.35	40.42	68.23	-27.81	H	peak
9000.000	31.60	9.10	40.70	68.23	-27.53	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).



Test Mode: TX / IEEE 802.11n HT 40 MHz / 5230MHz / (CH High)

Tested by: Saber Huang

Ambient temperature: 24°C Relative humidity: 52% RH Date: December 29, 2016

Frequency (MHz)	Reading (dBuV)	Correction Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Pole (V/H)	Remark
6156.000	33.79	6.33	40.12	68.23	-28.11	V	peak
6804.000	31.58	7.38	38.96	68.23	-29.27	V	peak
7404.000	31.34	8.49	39.83	68.23	-28.40	V	peak
8004.000	31.51	9.65	41.16	68.23	-27.07	V	peak
8364.000	31.92	9.45	41.37	68.23	-26.86	V	peak
9060.000	31.22	9.27	40.49	68.23	-27.74	V	peak
6792.000	31.58	7.36	38.94	68.23	-29.29	H	Peak
7680.000	31.30	9.03	40.33	68.23	-27.90	H	Peak
8100.000	31.94	9.60	41.54	68.23	-26.69	H	Peak
9132.000	31.09	9.48	40.57	68.23	-27.66	H	peak
10164.000	30.36	12.49	42.85	68.23	-25.38	H	peak
11184.000	31.43	15.00	46.43	68.23	-21.80	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).



Test Mode: TX / IEEE 802.11n HT 40 MHz / 5755MHz / (CH Low)

Tested by: Saber Huang

Ambient temperature: 24°C Relative humidity: 52% RH Date: December 29, 2016

Frequency (MHz)	Reading (dBuV)	Correction Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Pole (V/H)	Remark
6816.000	32.38	7.40	39.78	68.23	-28.45	V	peak
7764.000	31.89	9.19	41.08	68.23	-27.15	V	peak
8364.000	31.79	9.45	41.24	68.23	-26.99	V	peak
9372.000	31.18	10.17	41.35	68.23	-26.88	V	peak
10452.000	30.41	13.38	43.79	68.23	-24.44	V	peak
11376.000	31.47	14.91	46.38	68.23	-21.85	V	peak
6816.000	31.67	7.40	39.07	68.23	-29.16	H	Peak
7692.000	31.46	9.05	40.51	68.23	-27.72	H	Peak
8232.000	31.73	9.52	41.25	68.23	-26.98	H	Peak
9024.000	31.71	9.17	40.88	68.23	-27.35	H	peak
9852.000	30.48	11.55	42.03	68.23	-26.20	H	peak
10776.000	30.23	14.39	44.62	68.23	-23.61	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).



Test Mode: TX / IEEE 802.11n HT 40 MHz / 5795MHz / (CH High)

Tested by: Saber Huang

Ambient temperature: 24°C Relative humidity: 52% RH Date: December 29, 2016

Frequency (MHz)	Reading (dBuV)	Correction Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Pole (V/H)	Remark
6144.000	33.30	6.31	39.61	68.23	-28.62	V	peak
6756.000	31.70	7.30	39.00	68.23	-29.23	V	peak
7284.000	31.44	8.25	39.69	68.23	-28.54	V	peak
8148.000	32.13	9.57	41.70	68.23	-26.53	V	peak
9000.000	31.59	9.10	40.69	68.23	-27.54	V	peak
9396.000	30.98	10.24	41.22	68.23	-27.01	V	peak
6516.000	31.64	6.92	38.56	68.23	-29.67	H	Peak
7164.000	31.69	8.02	39.71	68.23	-28.52	H	Peak
8004.000	31.63	9.65	41.28	68.23	-26.95	H	Peak
8940.000	31.45	9.13	40.58	68.23	-27.65	H	peak
9384.000	30.84	10.21	41.05	68.23	-27.18	H	peak
10020.000	30.86	12.04	42.90	68.23	-25.33	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).*



Combine with Antenna 1 and Antenna 2

Test Mode: TX / IEEE 802.11ac 80 / 5210MHz

Tested by: Saber Huang

Ambient temperature: 24°C **Relative humidity:** 52% RH **Date:** December 29, 2016

Frequency (MHz)	Reading (dBuV)	Correction Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Pole (V/H)	Remark
6828.000	31.59	7.42	39.01	68.23	-29.22	V	peak
8004.000	31.80	9.65	41.45	68.23	-26.78	V	peak
8376.000	31.61	9.44	41.05	68.23	-27.18	V	peak
9012.000	31.52	9.13	40.65	68.23	-27.58	V	peak
9372.000	31.27	10.17	41.44	68.23	-26.79	V	peak
10080.000	30.94	12.23	43.17	68.23	-25.06	V	peak
6348.000	32.15	6.64	38.79	68.23	-29.44	H	Peak
7548.000	31.19	8.77	39.96	68.23	-28.27	H	Peak
8112.000	31.79	9.59	41.38	68.23	-26.85	H	Peak
8568.000	31.03	9.34	40.37	68.23	-27.86	H	peak
9432.000	30.95	10.34	41.29	68.23	-26.94	H	peak
10140.000	30.56	12.41	42.97	68.23	-25.26	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).*



Test Mode: TX / IEEE 802.11ac 80 / 5775MHz

Tested by: Saber HuangAmbient temperature: 24°CRelative humidity: 52% RHDate: December 29, 2016

Frequency (MHz)	Reading (dBuV)	Correction Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Pole (V/H)	Remark
6912.000	31.14	7.56	38.70	68.23	-29.53	V	peak
7620.000	30.95	8.91	39.86	68.23	-28.37	V	peak
9036.000	31.69	9.20	40.89	68.23	-27.34	V	peak
10032.000	30.56	12.08	42.64	68.23	-25.59	V	peak
11160.000	31.40	15.01	46.41	68.23	-21.82	V	peak
12540.000	29.89	16.43	46.32	68.23	-21.91	V	peak
6720.000	31.36	7.25	38.61	68.23	-29.62	H	Peak
7272.000	31.37	8.23	39.60	68.23	-28.63	H	Peak
8100.000	31.94	9.60	41.54	68.23	-26.69	H	Peak
8940.000	31.16	9.13	40.29	68.23	-27.94	H	peak
9576.000	30.80	10.76	41.56	68.23	-26.67	H	peak
10044.000	31.38	12.12	43.50	68.23	-24.73	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).



6.8 CONDUCTED UNDESIRABLE EMISSION

6.8.1 LIMIT

FCC 15.407			
Frequency Band (MHz)	Frequency (MHz)	EIRP Limit (dBm)	Equivalent Field Strength (3m) (dBuV/m)
5725~5850	< 5650	-27	68.2
	5650~5700	-27~10	68.2~105.2
	5700~5720	10~15.6	105.2~110.8
	5720~5725	15.6~27	110.8~122.2
	5850~5855	27~15.6	122.2~110.8
	5855~5875	15.6~10	110.8~105.2
	5875~5925	10~-27	105.2~68.2
	>5925	-27	68.2

Note:

- (i) Section 15.407(b)(1-3) specifies the unwanted emissions limit for the U-NII-1 and 2 bands. As specified, emissions above 1000 MHz that are outside of the restricted bands are subject to a peak emission limit of -27dBm/MHz. However, an out-of-band emission that complies with both the average and peak limits of Section 15.209 is not required to satisfy the -27 dBm/MHz dBm/MHz peak emission limit.

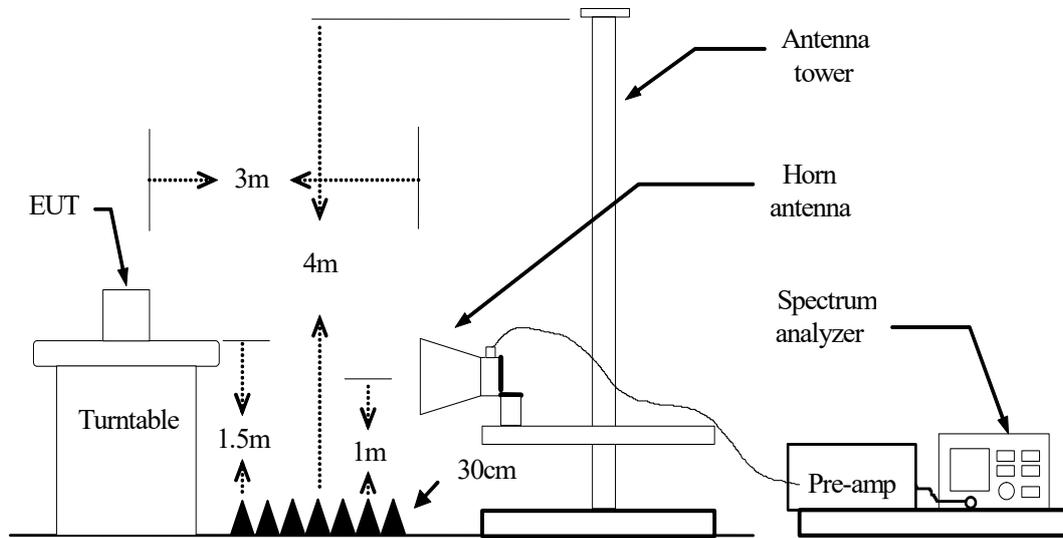
**6.8.2 MEASUREMENT EQUIPMENT USED**

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	02/21/2016	02/20/2017
EMI TEST RECEIVER	ROHDE&SCHWARZ	ESCI	100783	02/21/2016	02/20/2017
Amplifier	EMEC	EM330	060661	03/18/2016	03/17/2017
High Noise Amplifier	Agilent	8449B	3008A01838	02/21/2016	02/20/2017
Loop Antenna	COM-POWER	AL-130	121044	09/25/2016	09/24/2017
Bilog Antenna	SCHAFFNER	CBL6143	5082	02/21/2016	02/20/2017
Horn Antenna	SCHWARZBECK	BBHA9120	D286	02/28/2016	02/27/2017
Board-Band Horn Antenna	Schwarzbeck	BBHA 9170	9170-497	02/28/2016	02/27/2017
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	02/21/2016	02/20/2017
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.



6.8.3 TEST CONFIGURATION



6.8.4 TEST PROCEDURE

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. Peak detection measurements are compared to the average EIRP limit, adjusted for the maximum antenna gain. If necessary, additional average detection measurements are made.

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



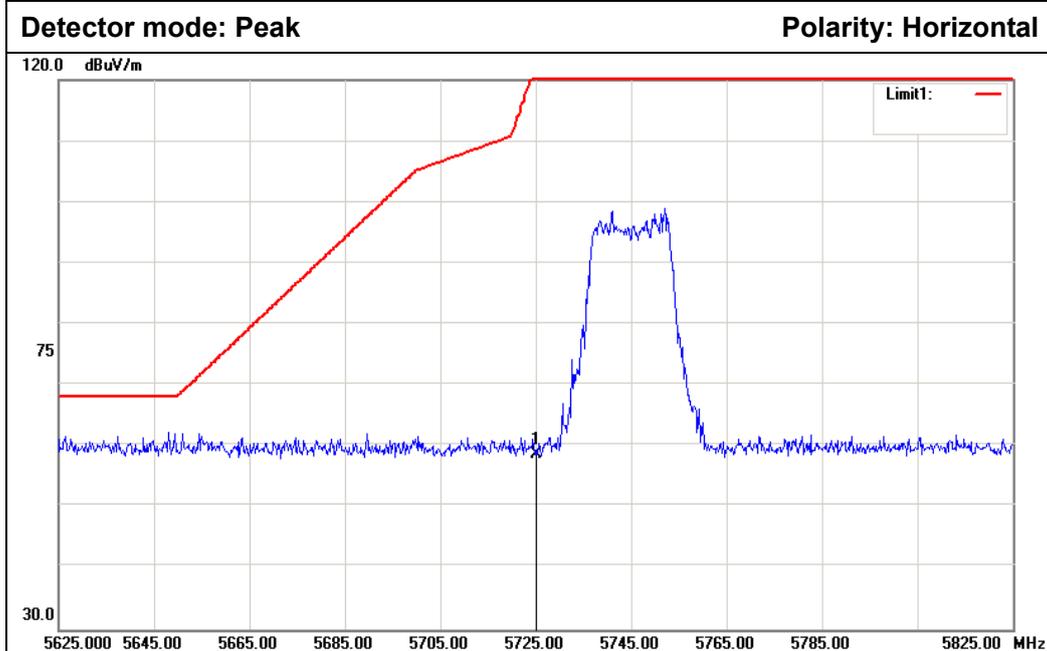
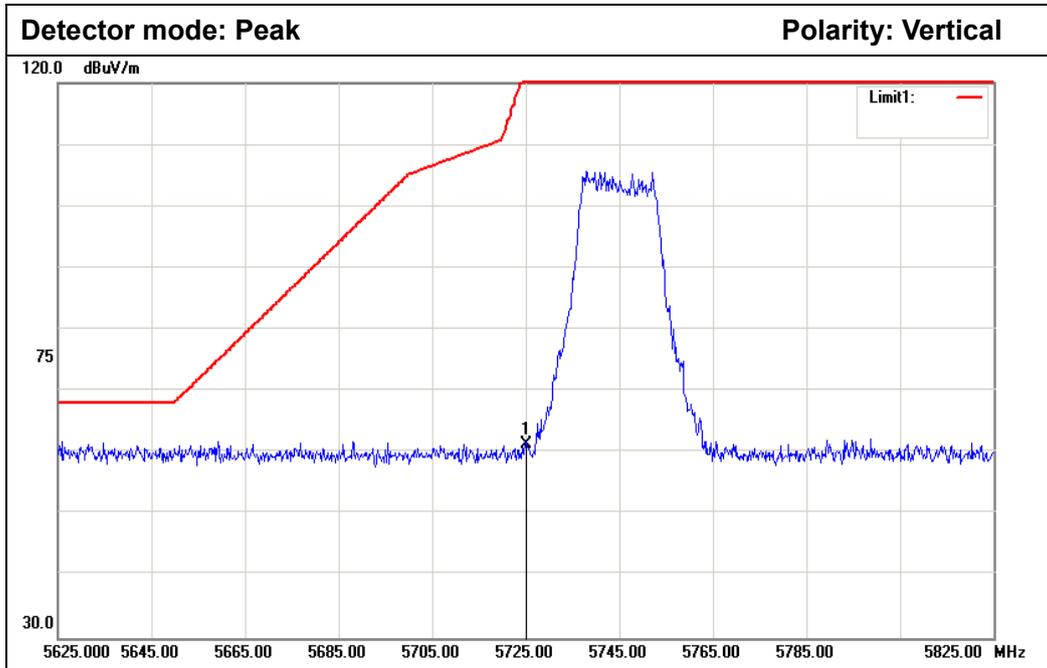
6.8.5 TEST RESULTS

No non-compliance noted

Test Plot

Antenna 1

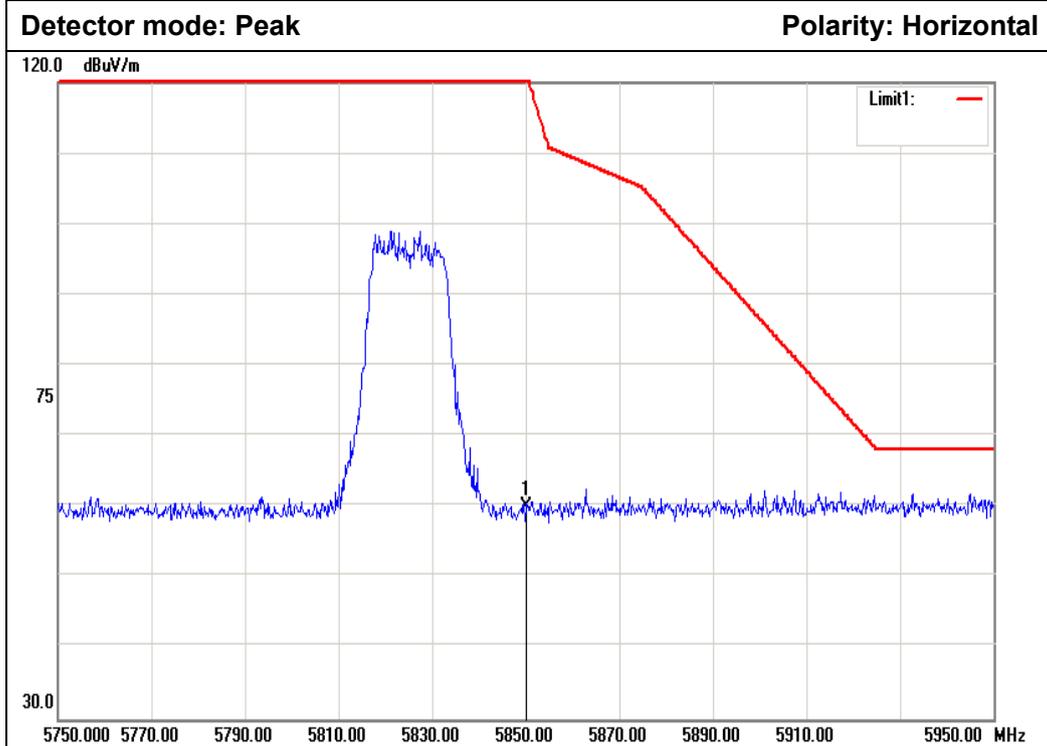
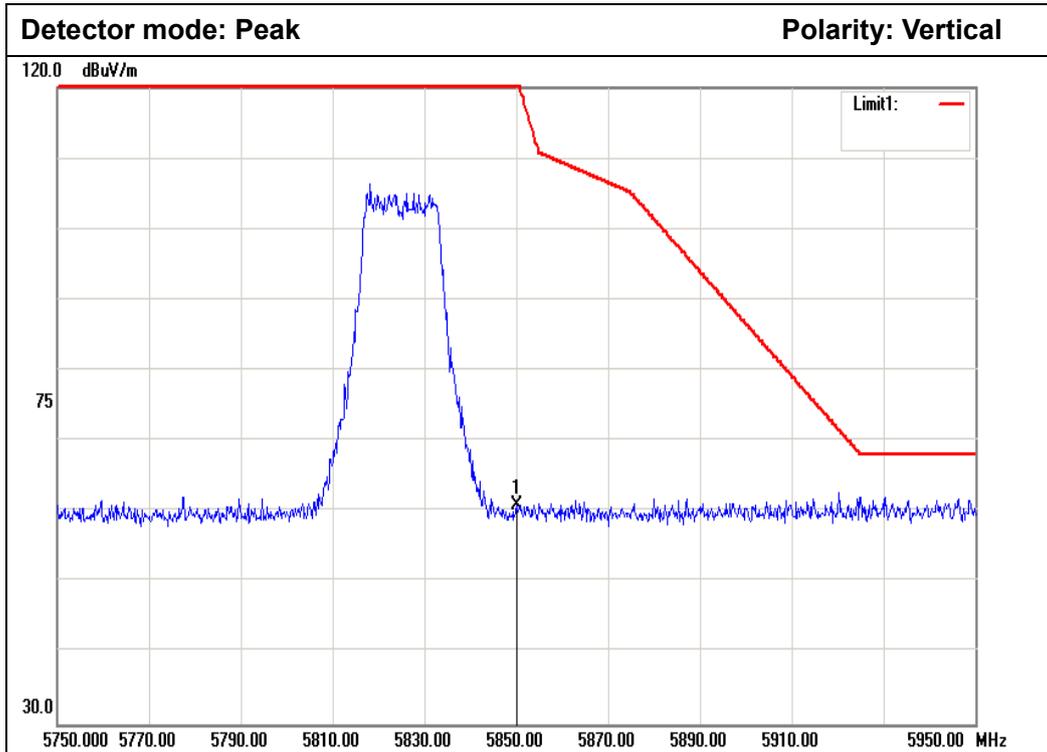
IEEE 802.11a mode / 5745 ~ 5825MHz



No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark	Antenna Polar
1	5725.000	55.35	5.96	61.31	122.20	-60.89	Peak	Vertical
2	5725.000	52.74	5.96	58.70	122.20	-63.50	Peak	Horizontal



IEEE 802.11a mode / mode/5750~ 5950MHz

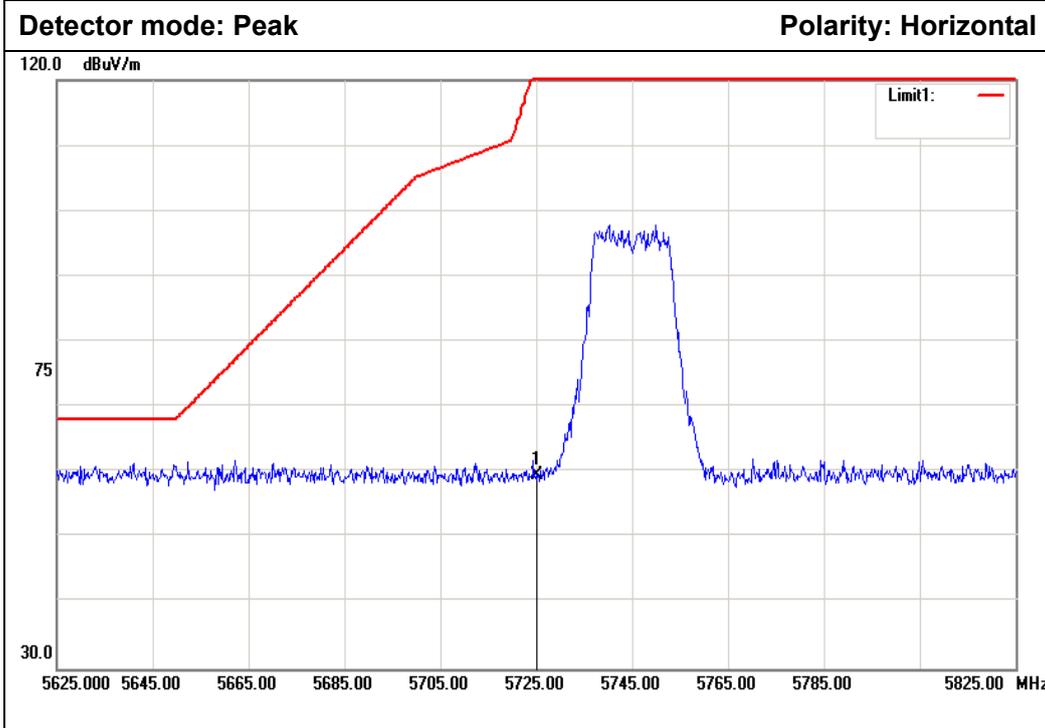
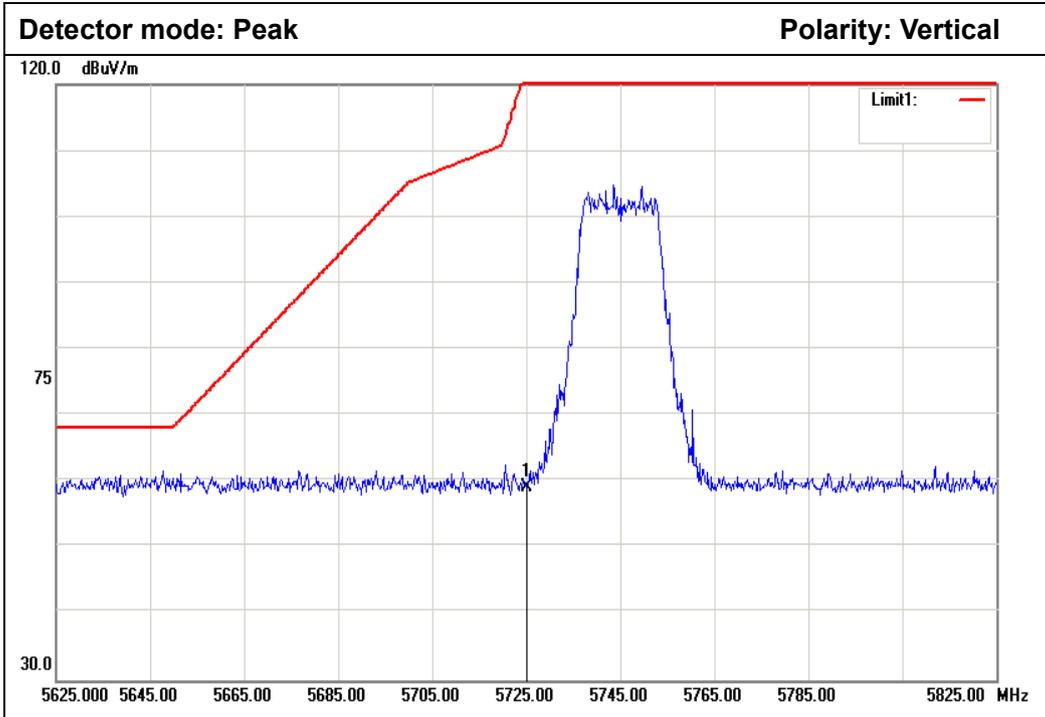


No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark	Antenna Polar
1	5850.000	54.82	6.02	60.84	122.20	-61.36	Peak	Vertical
2	5850.000	54.04	6.02	60.06	122.20	-62.14	Peak	Horizontal



Antenna 2

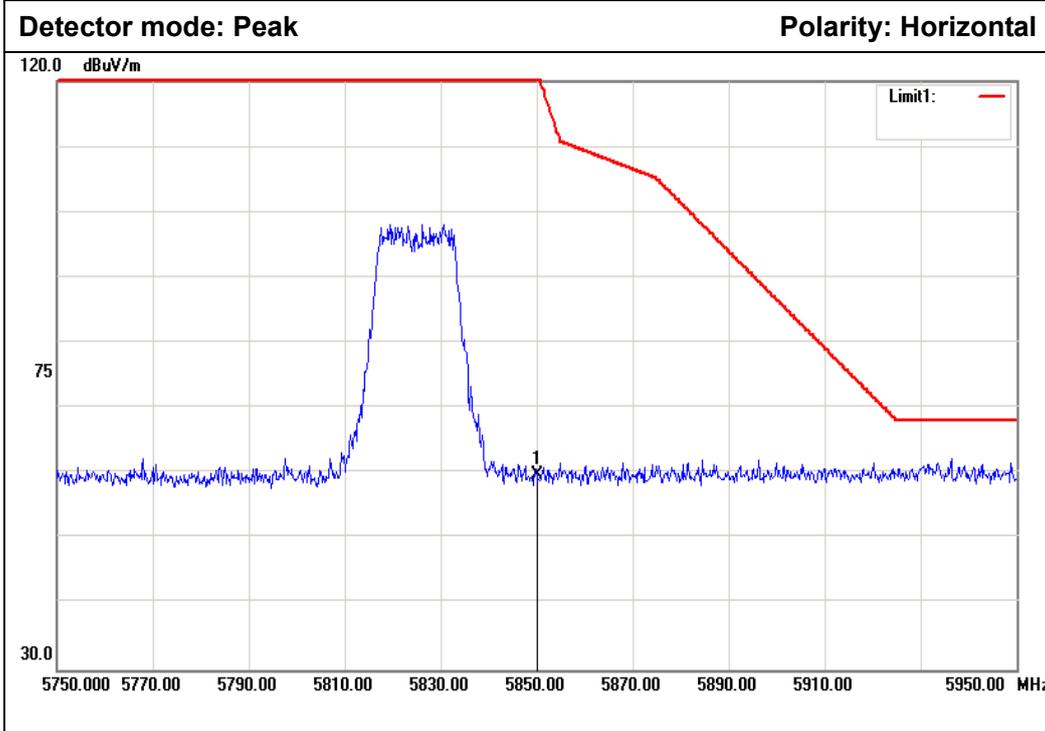
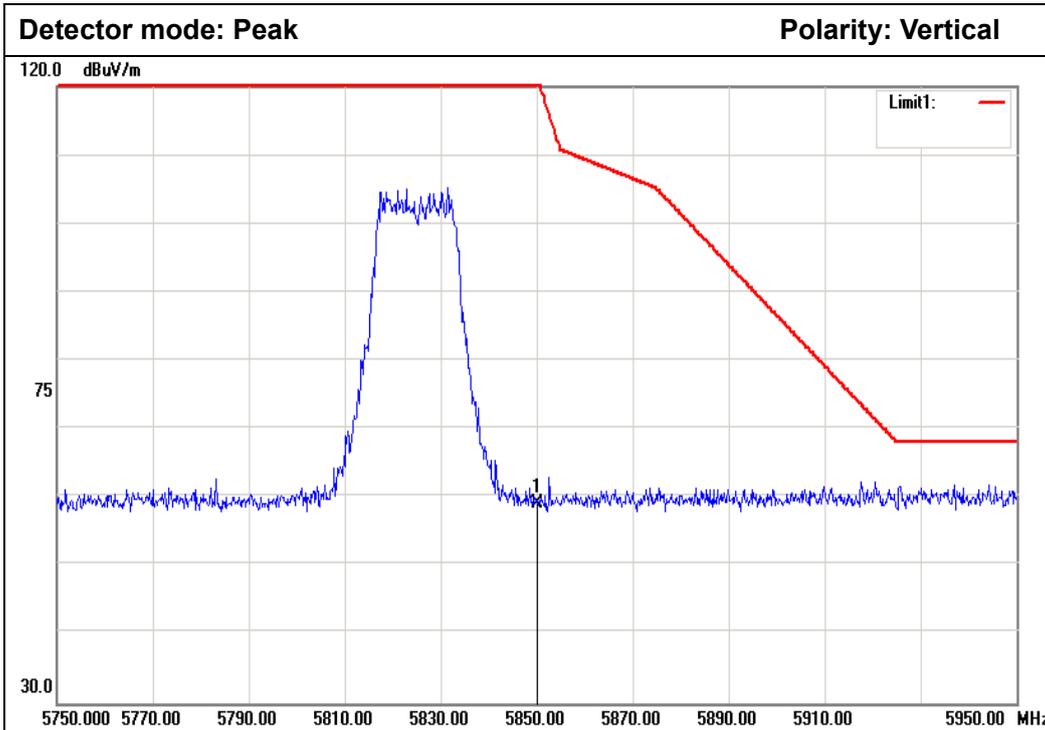
IEEE 802.11a mode / 5745 ~ 5825MHz



No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark	Antenna Polar
1	5725.000	53.27	5.96	59.23	122.20	-62.97	Peak	Vertical
2	5725.000	53.64	5.96	59.60	122.20	-62.60	Peak	Horizontal



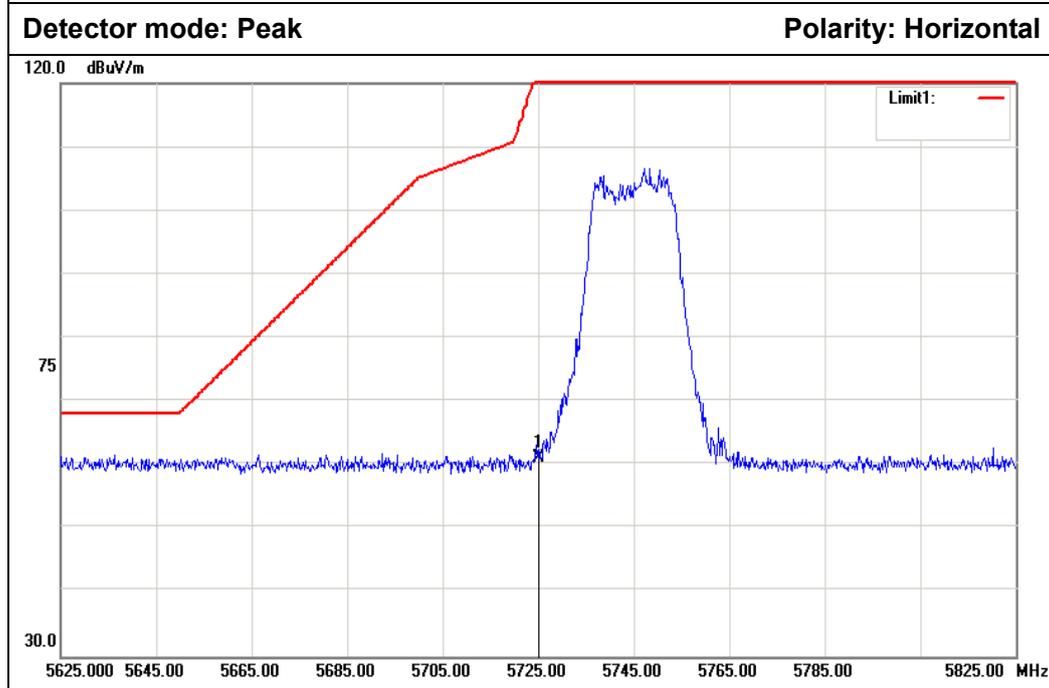
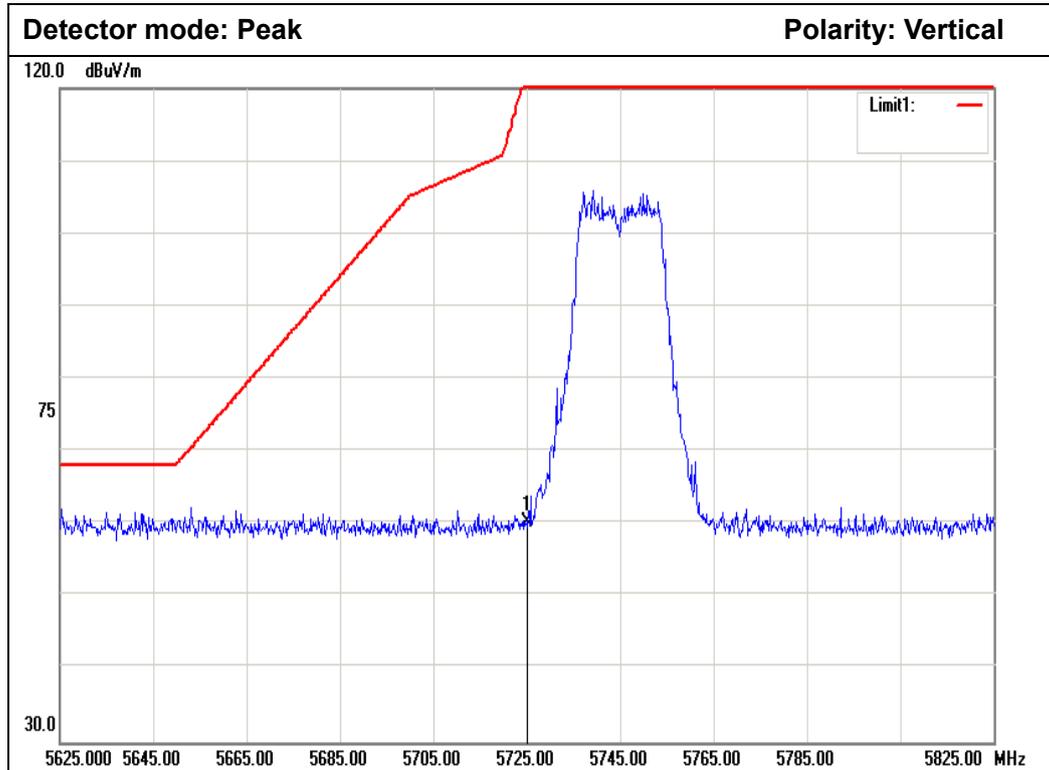
IEEE 802.11a mode / mode/5750~ 5950MHz



No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark	Antenna Polar
1	5850.000	53.22	6.02	59.24	122.20	-62.96	Peak	Vertical
2	5850.000	53.73	6.02	59.75	122.20	-62.45	Peak	Horizontal



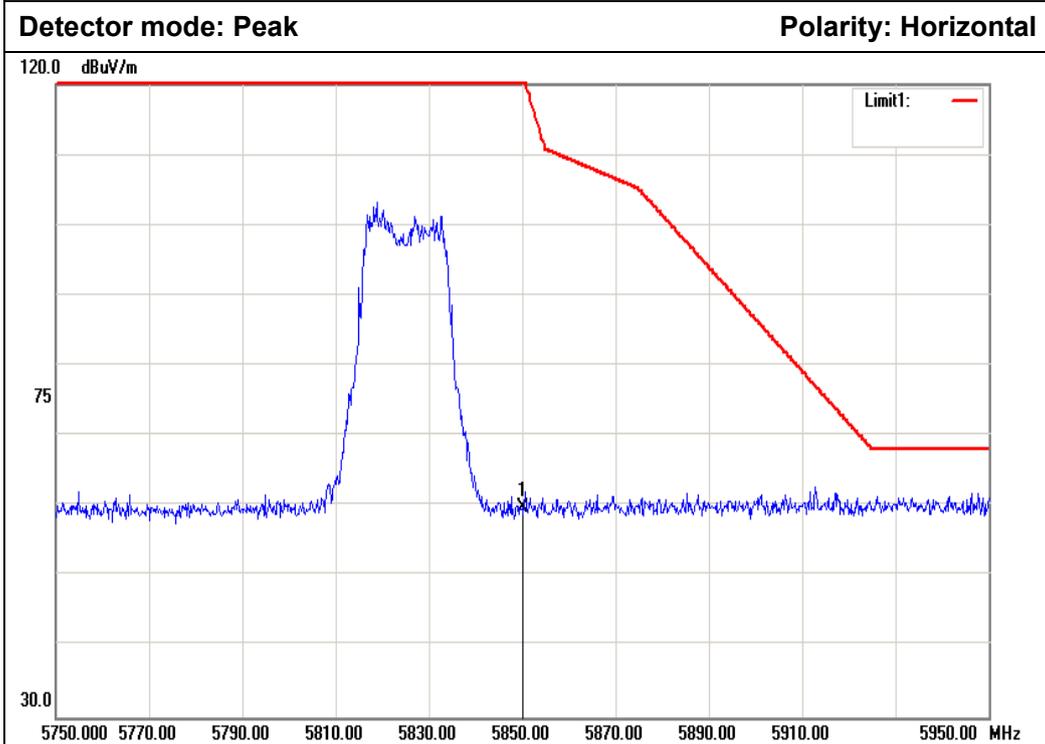
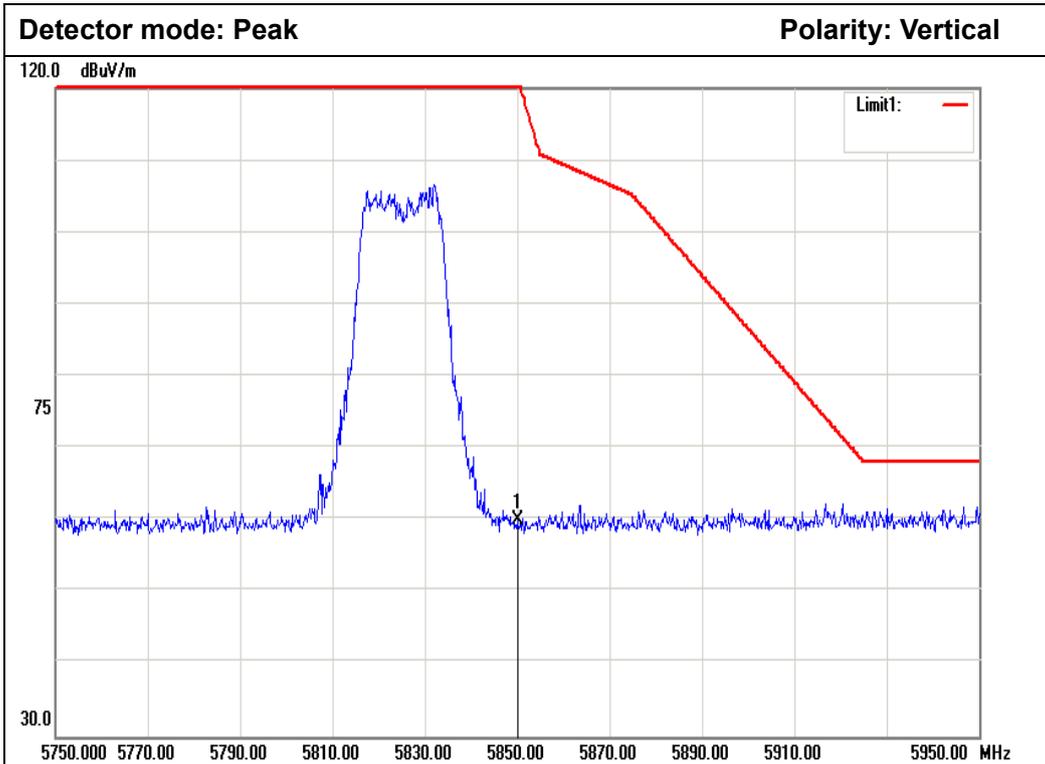
Combine with Antenna 1 and Antenna 2
 IEEE 802.11n HT 20 MHz mode / 5625 ~ 5825MHz



No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark	Antenna Polar
1	5725.000	54.20	5.96	60.16	122.20	-62.04	Peak	Vertical
2	5725.000	55.29	5.96	61.25	122.20	-60.95	Peak	Horizontal



IEEE 802.11n HT 20 MHz mode / 5750~ 5950MHz

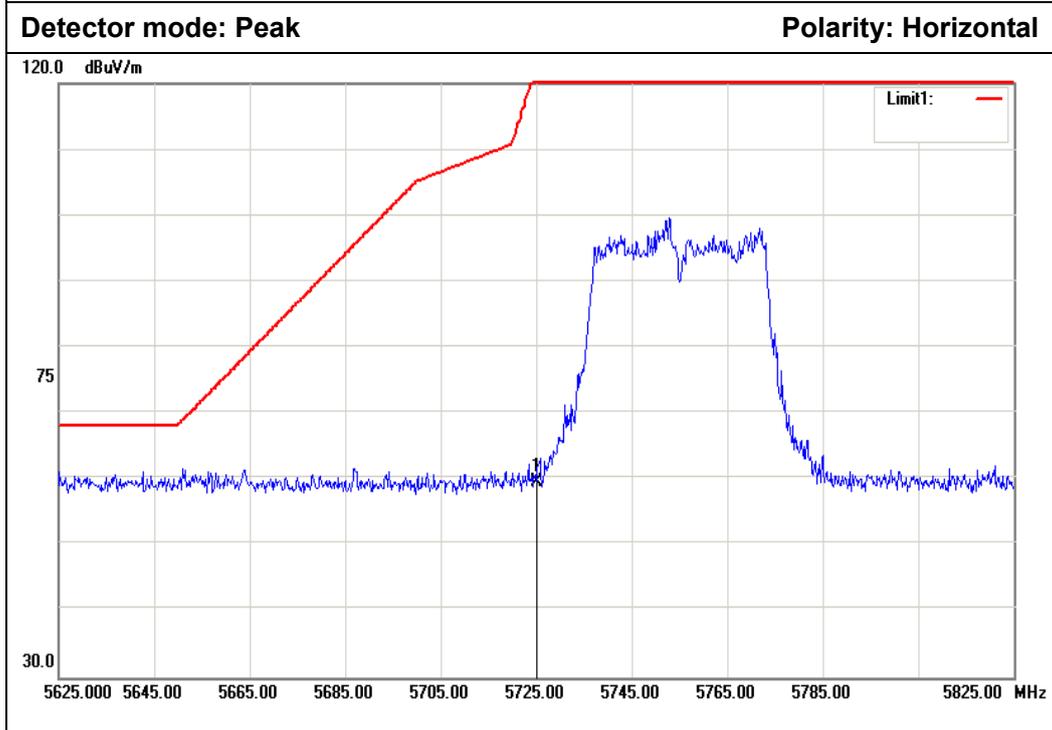
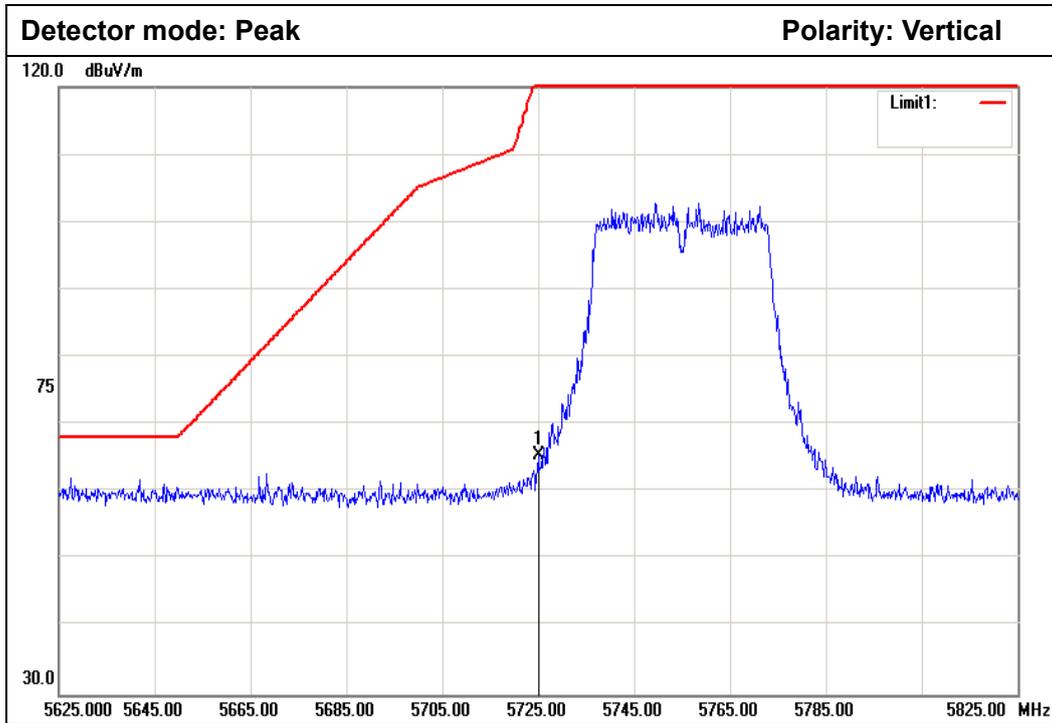


No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark	Antenna Polar
1	5850.000	53.98	6.02	60.00	122.20	-62.20	Peak	Vertical
2	5850.000	53.79	6.02	59.81	122.20	-62.39	Peak	Horizontal



Combine with Antenna 1 and Antenna 2

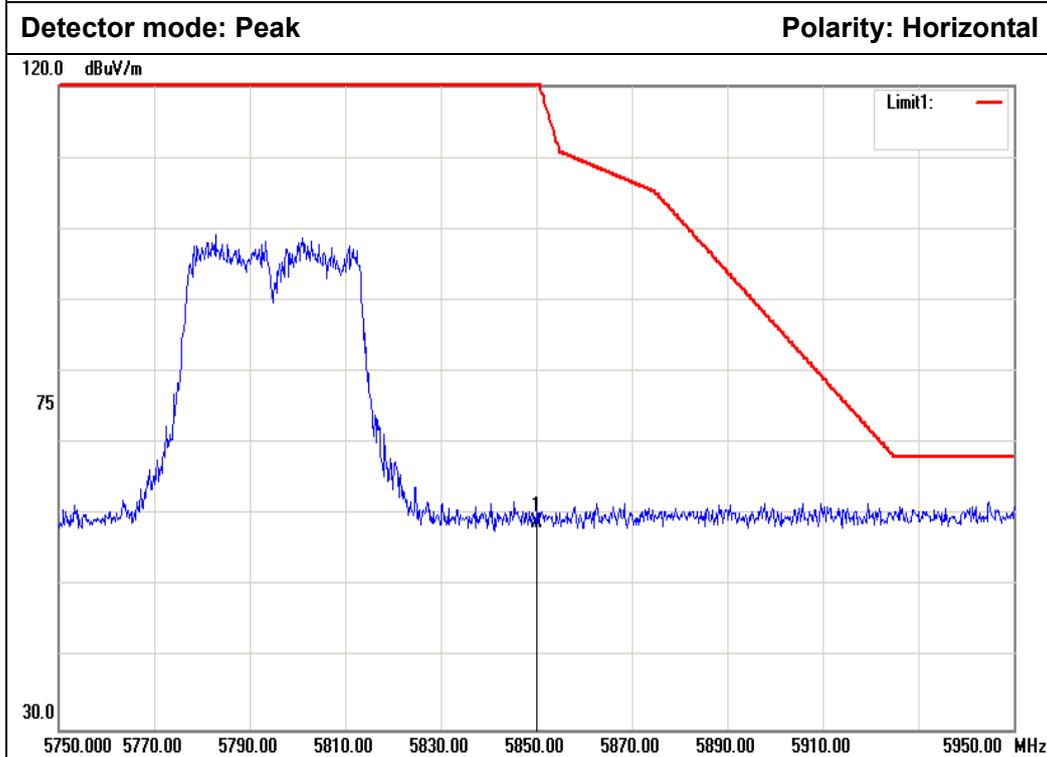
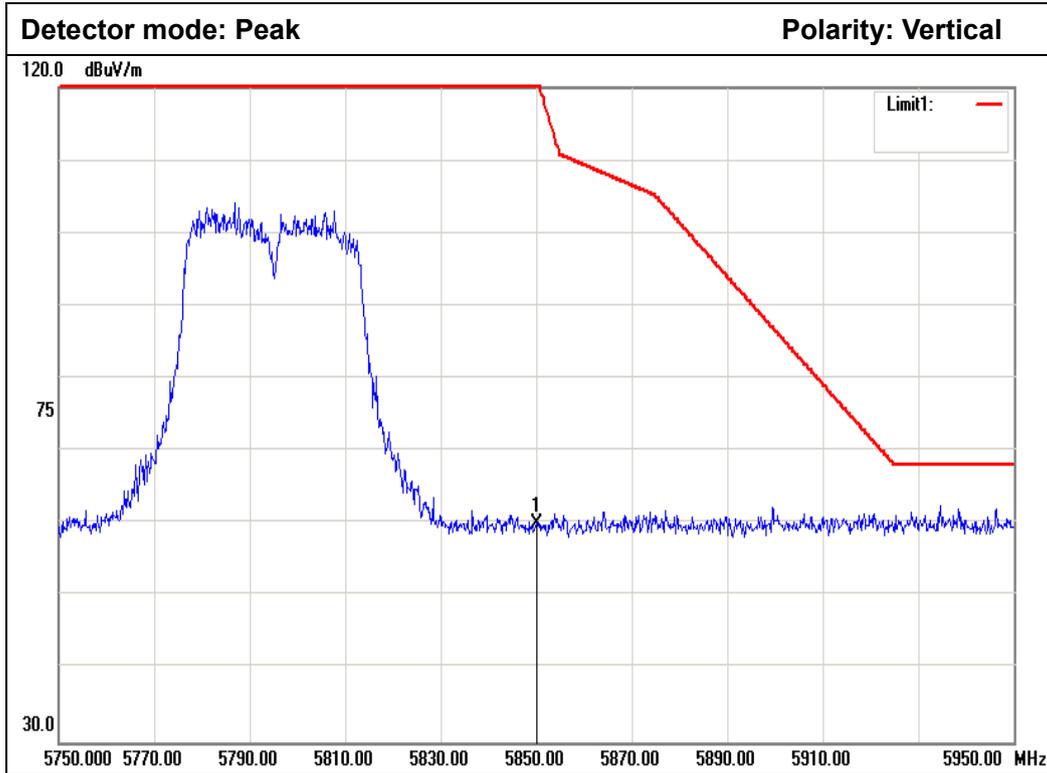
IEEE 802.11n HT 40 MHz mode / 5625 ~ 5825MHz



No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark	Antenna Polar
1	5725.000	59.44	5.96	65.40	122.20	-56.80	Peak	Vertical
2	5725.000	53.71	5.96	59.67	122.20	-62.53	Peak	Horizontal



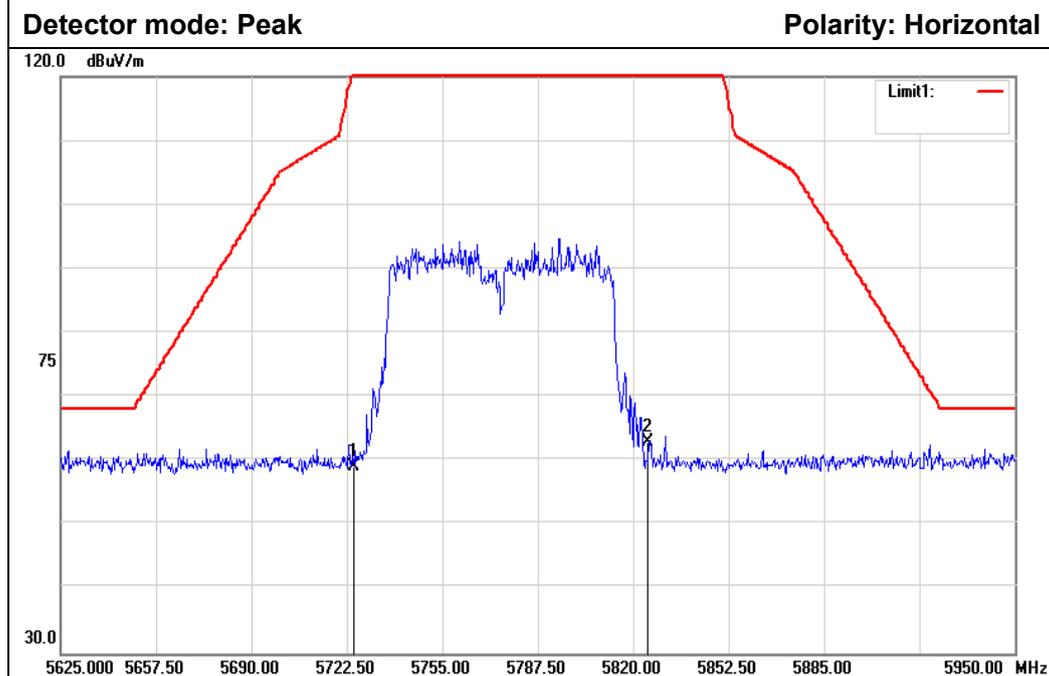
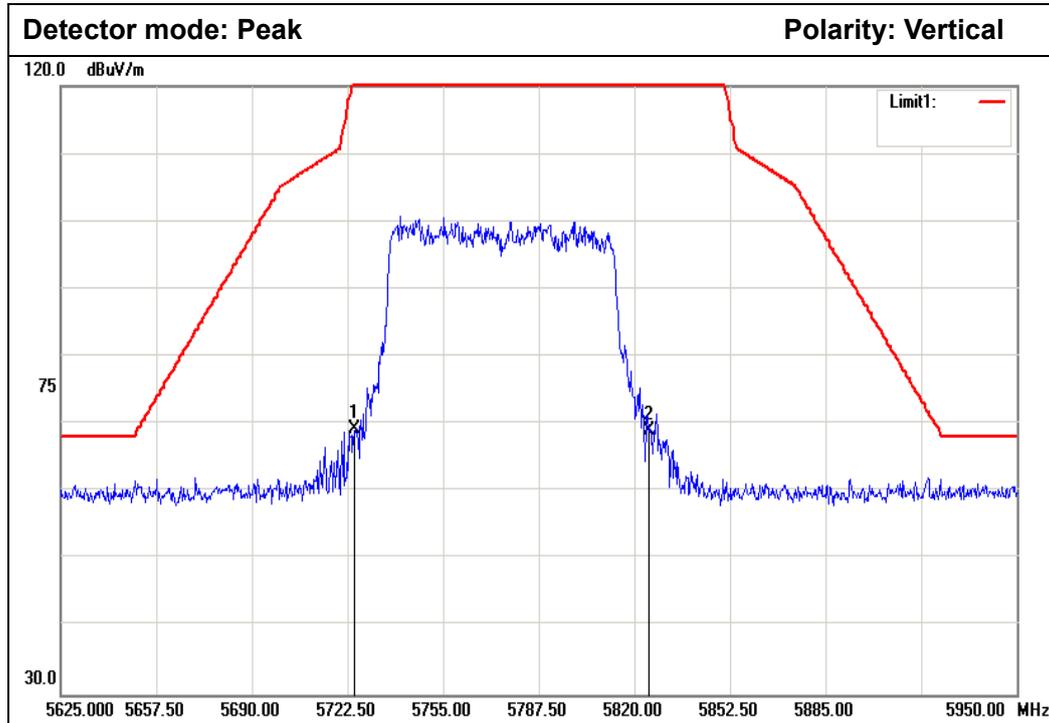
IEEE 802.11n HT 40 MHz mode / 5750~ 5950MHz



No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark	Antenna Polar
1	5850.000	54.13	6.02	60.15	122.20	-62.05	Peak	Vertical
2	5850.000	52.96	6.02	58.98	122.20	-63.22	Peak	Horizontal



Combine with Antenna 1 and Antenna 2
IEEE 802.11ac 80 mode / 5625 ~ 5950MHz



No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark	Antenna Polar
1	5725.000	63.21	5.96	69.17	122.20	-53.03	Peak	Vertical
2	5825.000	62.97	6.01	68.98	122.20	-53.22	Peak	Vertical
3	5725.000	53.08	5.96	59.04	122.20	-63.16	Peak	Horizontal
4	5825.000	57.01	6.01	63.02	122.20	-59.18	Peak	Horizontal



6.9 POWERLINE CONDUCTED EMISSIONS

6.9.1 LIMIT

According to §15.207(a), except as shown in paragraphs (b) and (c) of this section, for an intentional radiator that is designed to be connected to the public utility (AC) power line, the radio frequency voltage that is conducted back onto the AC power line on any frequency or frequencies within the band 150 kHz to 30 MHz shall not exceed the limits in the following table, as measured using a 50 μ H/50 ohms line impedance stabilization network (LISN). Compliance with the provisions of this paragraph shall be based on the measurement of the radio frequency voltage between each power line and ground at the power terminal. The lower limit applies at the boundary between the frequency ranges.

Frequency Range (MHz)	Limits (dB μ V)	
	Quasi-peak	Average
0.15 to 0.50	66 to 56*	56 to 46*
0.50 to 5	56	46
5 to 30	60	50

* Decreases with the logarithm of the frequency.

6.9.2 TEST INSTRUMENTS

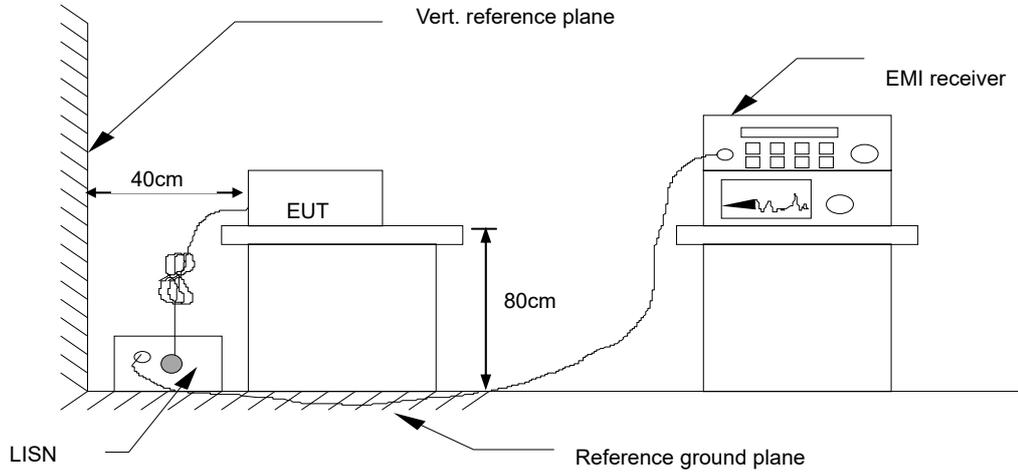
Conducted Emission Test Site					
Name of Equipment	Manufacturer	Model Number	Serial Number	Last Calibration	Due Calibration
EMI TEST RECEIVER	ROHDE&SCHWARZ	ESCI	100783	02/21/2016	02/20/2017
LISN(EUT)	ROHDE&SCHWARZ	ENV216	101543-WX	02/21/2016	02/20/2017
LISN	EMCO	3825/2	8901-1459	02/21/2016	02/20/2017
Temp. / Humidity Meter	VICTOR	HTC-1	N/A	02/21/2016	02/20/2017
Test S/W	FARAD	EZ-EMC/ CCS-3A1-CE			

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. N.C.R = No Calibration Request.



6.9.3 TEST CONFIGURATION



6.9.4 TEST PROCEDURE

1. The EUT was placed on a table, which is 0.8m above ground plane.
2. Maximum procedure was performed on the six highest emissions to ensure EUT compliance.
3. Repeat above procedures until all frequency measured were complete.

6.9.5 DATA SAMPLE

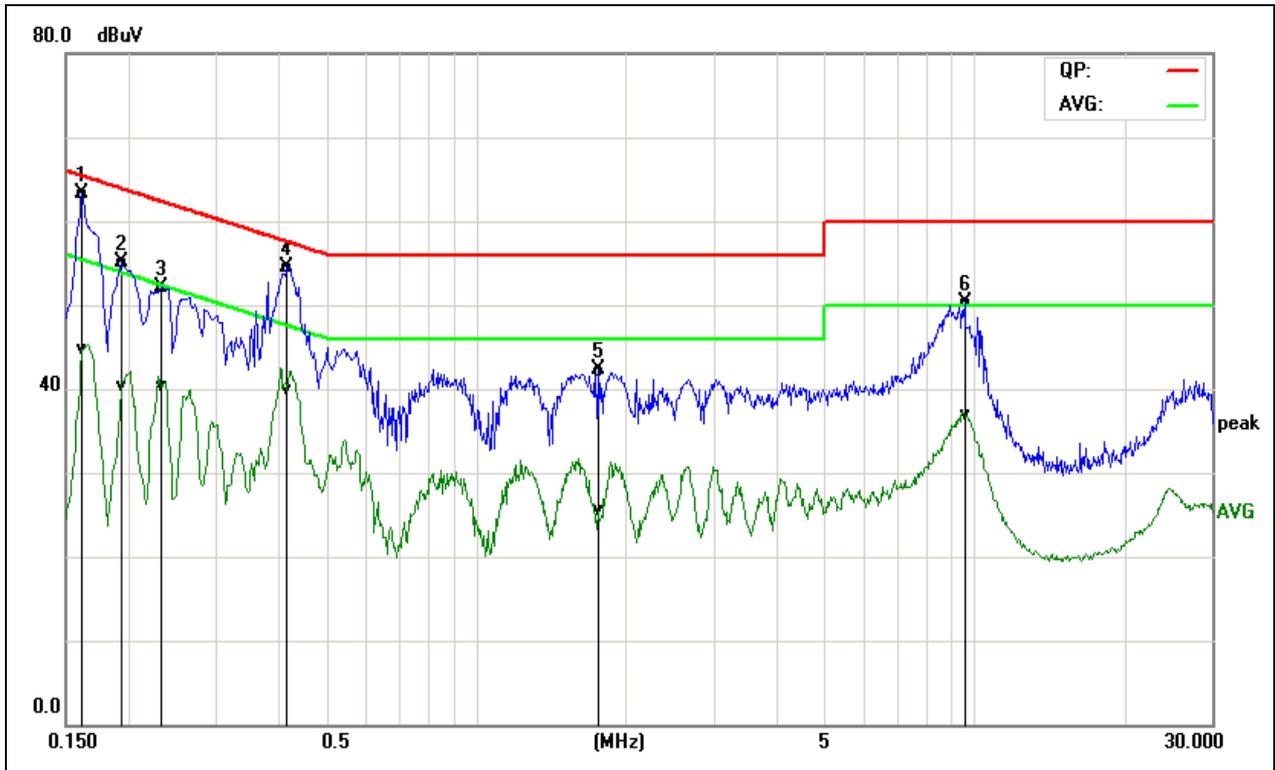
Frequency (MHz)	QuasiPeak Reading (dBuV)	Average Reading (dBuV)	Correction Factor (dB)	QuasiPeak Result (dBuV)	Average Result (dBuV)	QuasiPeak Limit (dBuV)	Average Limit (dBuV)	QuasiPeak Margin (dB)	Average Margin (dB)	Remark (Pass/Fail)
X.XXXX	32.69	25.65	11.52	44.21	37.17	65.78	55.79	-21.57	-18.62	Pass

Factor = Insertion loss of LISN + Cable Loss
Result = Quasi-peak Reading/ Average Reading + Factor
Limit = Limit stated in standard
Margin = Result (dBuV) – Limit (dBuV)



6.9.6 TEST RESULTS

Model No.	AIP5	RBW,VBW	9 kHz
Environmental Conditions	22°C, 45% RH	Test Mode	Mode 1
Tested by	Luja Huang	Line	L1
Test Date	December 28, 2016	Test Voltage	120Vac/60Hz

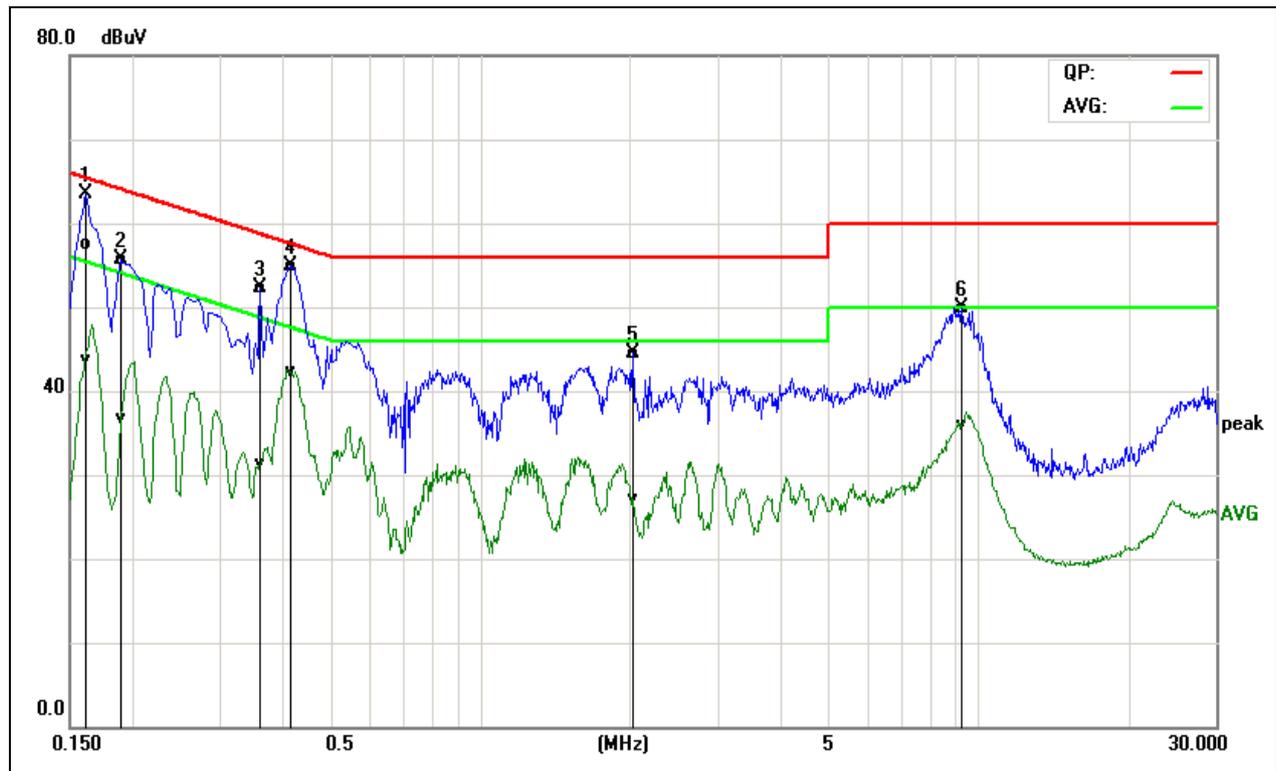


Frequency (MHz)	QuasiPeak Reading (dBuV)	Average Reading (dBuV)	Correction Factor (dB)	QuasiPeak Result (dBuV)	Average Result (dBuV)	QuasiPeak Limit (dBuV)	Average Limit (dBuV)	QuasiPeak Margin (dB)	Average Margin (dB)	Remark (Pass/Fail)
0.1620	43.77	25.18	19.54	63.31	44.72	65.36	55.36	-2.05	-10.64	Pass
0.1940	35.42	20.71	19.63	55.05	40.34	63.86	53.86	-8.81	-13.52	Pass
0.2340	32.52	20.66	19.64	52.16	40.30	62.30	52.31	-10.14	-12.01	Pass
0.4180	34.82	20.30	19.63	54.45	39.93	57.49	47.49	-3.04	-7.56	Pass
1.7580	22.50	5.76	19.70	42.20	25.46	56.00	46.00	-13.80	-20.54	Pass
9.5700	30.23	16.88	20.09	50.32	36.97	60.00	50.00	-9.68	-13.03	Pass

REMARKS: L1 = Line One (Live Line)



Model No.	AIP5	RBW,VBW	9 kHz
Environmental Conditions	22°C, 45% RH	Test Mode	Mode 1
Tested by	Luja Huang	Line	L2
Test Date	December 28, 2016	Test Voltage	120Vac/60Hz

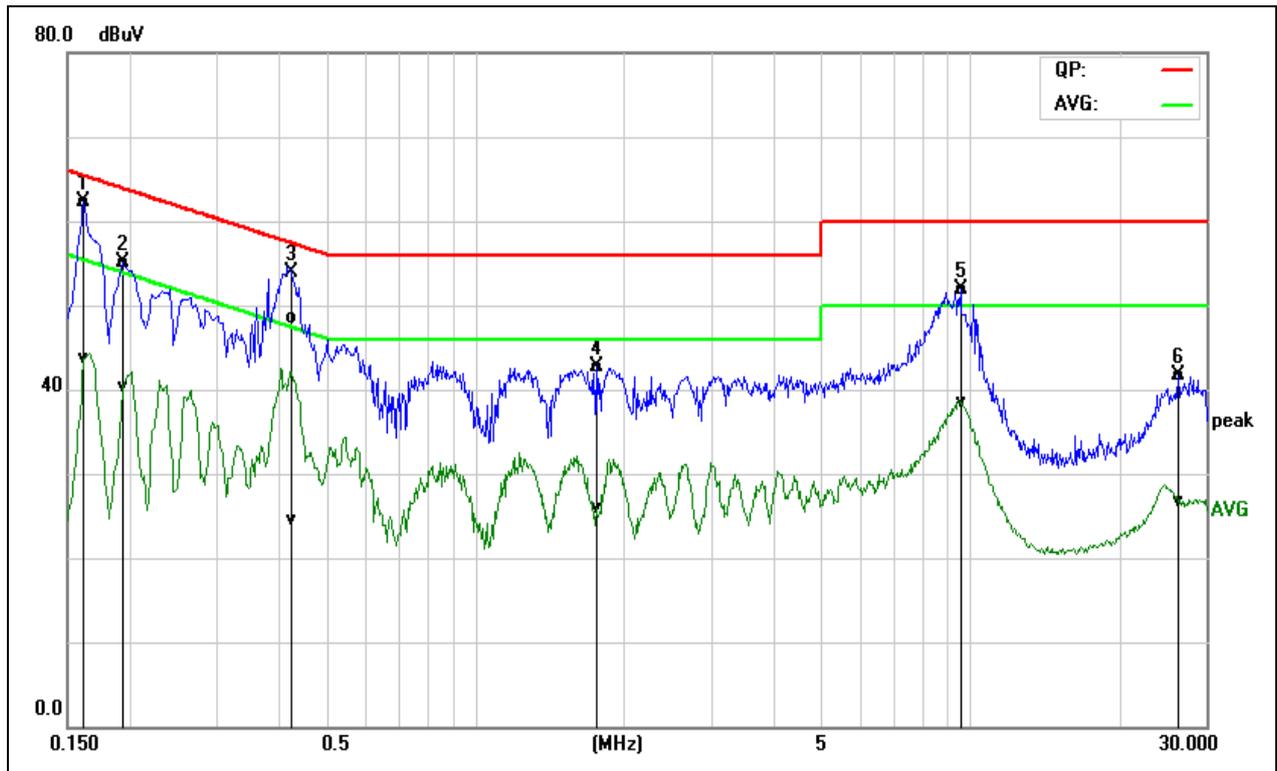


Frequency (MHz)	QuasiPeak Reading (dBuV)	Average Reading (dBuV)	Correction Factor (dB)	QuasiPeak Result (dBuV)	Average Result (dBuV)	QuasiPeak Limit (dBuV)	Average Limit (dBuV)	QuasiPeak Margin (dB)	Average Margin (dB)	Remark (Pass/Fail)
0.1607	37.88	23.98	19.72	57.60	43.70	65.42	55.43	-7.82	-11.73	Pass
0.1900	35.94	16.93	19.74	55.68	36.67	64.03	54.04	-8.35	-17.37	Pass
0.3620	32.59	11.55	19.68	52.27	31.23	58.68	48.68	-6.41	-17.45	Pass
0.4180	35.16	22.60	19.66	54.82	42.26	57.49	47.49	-2.67	-5.23	Pass
2.0260	24.83	7.35	19.72	44.55	27.07	56.00	46.00	-11.45	-18.93	Pass
9.2700	29.88	15.91	20.05	49.93	35.96	60.00	50.00	-10.07	-14.04	Pass

REMARKS: L2 = Line Two (Neutral Line)



Model No.	AIP5	RBW,VBW	9 kHz
Environmental Conditions	22°C, 45% RH	Test Mode	Mode 1
Tested by	Luja Huang	Line	L1
Test Date	December 28, 2016	Test Voltage	240Vac/50Hz

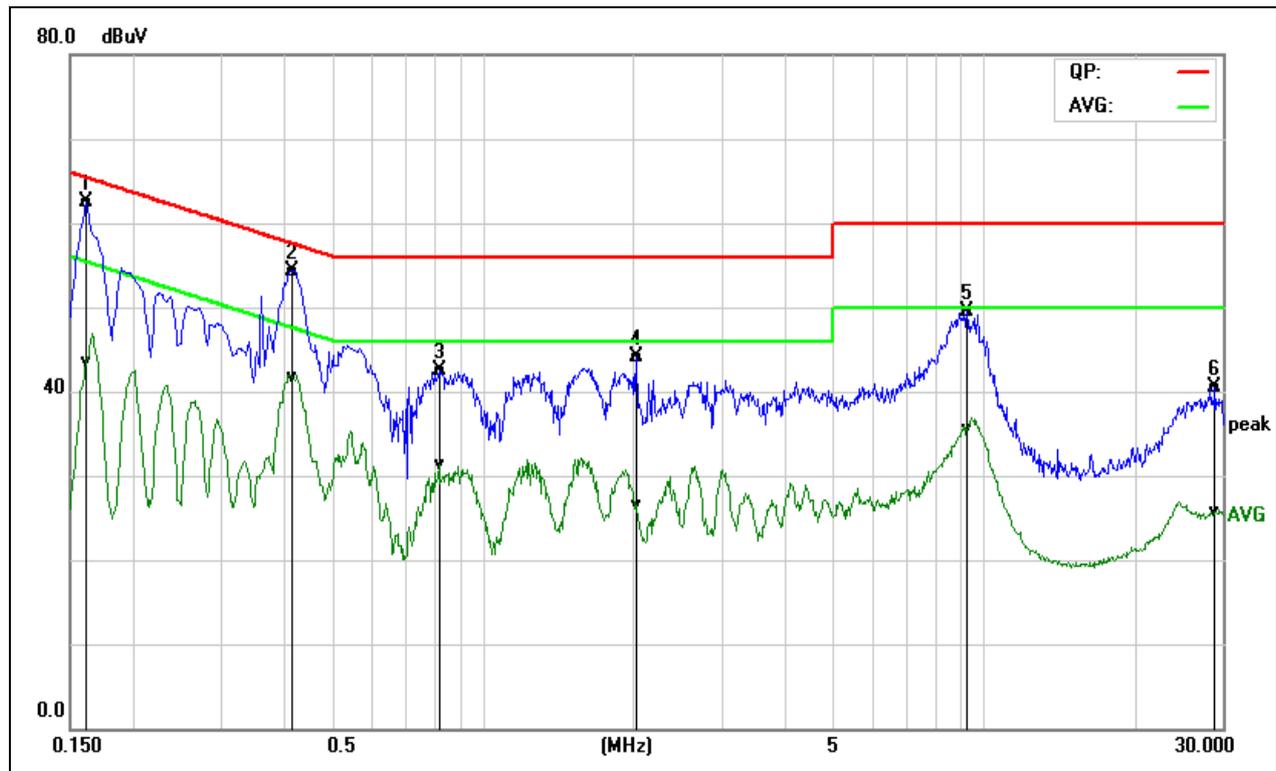


Frequency (MHz)	QuasiPeak Reading (dBuV)	Average Reading (dBuV)	Correction Factor (dB)	QuasiPeak Result (dBuV)	Average Result (dBuV)	QuasiPeak Limit (dBuV)	Average Limit (dBuV)	QuasiPeak Margin (dB)	Average Margin (dB)	Remark (Pass/Fail)
0.1620	42.77	24.18	19.54	62.31	43.72	65.36	55.36	-3.05	-11.64	Pass
0.1940	35.42	20.71	19.63	55.05	40.34	63.86	53.86	-8.81	-13.52	Pass
0.4300	28.91	4.88	19.63	48.54	24.51	57.25	47.25	-8.71	-22.74	Pass
1.7580	23.00	6.26	19.70	42.70	25.96	56.00	46.00	-13.30	-20.04	Pass
9.5700	31.73	18.38	20.09	51.82	38.47	60.00	50.00	-8.18	-11.53	Pass
26.3460	21.65	6.75	19.99	41.64	26.74	60.00	50.00	-18.36	-23.26	Pass

REMARKS: L1 = Line One (Live Line)



Model No.	AIP5	RBW,VBW	9 kHz
Environmental Conditions	22°C, 45% RH	Test Mode	Mode 1
Tested by	Luja Huang	Line	L2
Test Date	December 28, 2016	Test Voltage	240Vac/50Hz



Frequency (MHz)	QuasiPeak Reading (dBuV)	Average Reading (dBuV)	Correction Factor (dB)	QuasiPeak Result (dBuV)	Average Result (dBuV)	QuasiPeak Limit (dBuV)	Average Limit (dBuV)	QuasiPeak Margin (dB)	Average Margin (dB)	Remark (Pass/Fail)
0.1620	42.80	23.78	19.72	62.52	43.50	65.36	55.36	-2.84	-11.86	Pass
0.4180	34.66	22.10	19.66	54.32	41.76	57.49	47.49	-3.17	-5.73	Pass
0.8180	22.77	11.55	19.73	42.50	31.28	56.00	46.00	-13.50	-14.72	Pass
2.0260	24.33	6.85	19.72	44.05	26.57	56.00	46.00	-11.95	-19.43	Pass
9.2700	29.38	15.41	20.05	49.43	35.46	60.00	50.00	-10.57	-14.54	Pass
29.0300	20.47	5.71	19.97	40.44	25.68	60.00	50.00	-19.56	-24.32	Pass

REMARKS: L2 = Line Two (Neutral Line)



6.10 FREQUENCY STABILITY

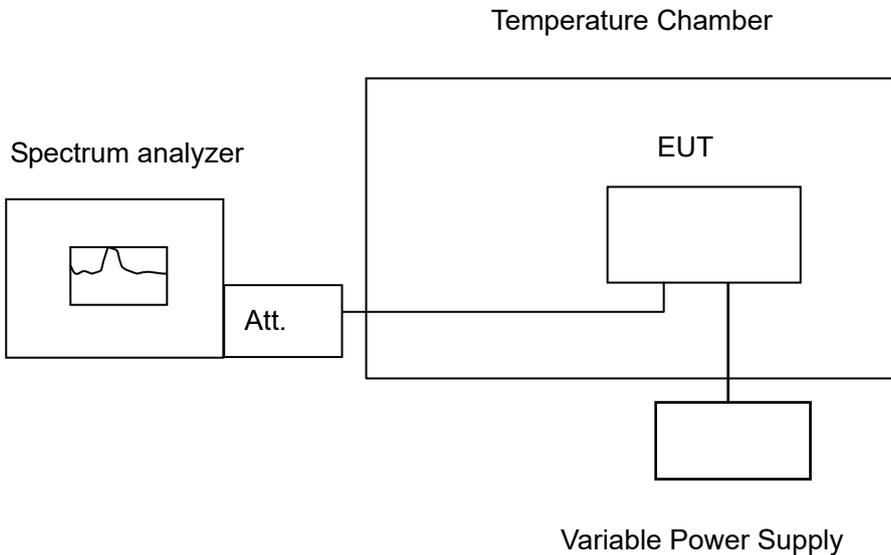
6.10.1 LIMIT

According to §15.407(g), manufacturers of U-NII devices are responsible for ensuring frequency stability such that an emission is maintained within the band of operation under all conditions of normal operation as specified in the operational description.

6.10.2 TEST INSTRUMENTS

Name of Equipment	Manufacturer	Model Number	Serial Number	Last Calibration	Due Calibration
Spectrum Analyzer	Agilent	N9010A	MY52221469	02/21/2016	02/20/2017
DC Power Supply	DAZHENG	PS-605D	20018978	N.C.R	N.C.R
AC POWER SOURCE	UMART	HPA1010	N/A	N.C.R	N.C.R
Power Meter	Anritsu	ML2495A	1204003	02/21/2016	02/20/2017
Power Sensor	Anritsu	MA2411B	1126150	02/21/2016	02/20/2017
Temperature Chamber	TERCHY	MHG-800N	E21104	11/18/2016	11/17/2017
Temp. / Humidity Meter	Anymetre	JR913	N/A	02/21/2016	02/20/2017

6.10.3 TEST CONFIGURATION



Remark: Measurement setup for testing on Antenna connector



6.10.4 TEST PROCEDURE

The equipment under test was connected to an external AC or DC power supply and input rated voltage. RF output was connected to a frequency counter or spectrum analyzer via feed through attenuators. The EUT was placed inside the temperature chamber. Set the spectrum analyzer RBW low enough to obtain the desired frequency resolution and measure EUT 20°C operating frequency as reference frequency. Turn EUT off and set the chamber temperature to -20°C. After the temperature stabilized for approximately 30 minutes recorded the frequency. Repeat step measure with 10°C increased per stage until the highest temperature of +50°C reached.

6.10.5 TEST RESULTS

No non-compliance noted.



Test Data
Antenna 1

IEEE 802.11a MHz mode / 5180 ~ 5240MHz (Low)

Environment Temperature (°C)	Volage (V)	Measured Frequency (MHz)	limit Range	Test Result
50	120	5179.992340	5150-5250	PASS
40	120	5179.956373	5150-5250	PASS
30	120	5179.962080	5150-5250	PASS
20	120	5179.987264	5150-5250	PASS
10	120	5179.954144	5150-5250	PASS
0	120	5179.981258	5150-5250	PASS
-10	120	5179.986014	5150-5250	PASS
-20	120	5179.952433	5150-5250	PASS

Environment Temperature (°C)	Volage (V)	Measured Frequency (MHz)	limit Range	Test Result
20	108	5179.996904	5150-5250	PASS
	120	5179.987264	5150-5250	PASS
	132	5179.998501	5150-5250	PASS

IEEE 802.11a MHz mode / 5180 ~ 5240MHz (High)

Environment Temperature (°C)	Volage (V)	Measured Frequency (MHz)	limit Range	Test Result
50	120	5239.952566	5150-5250	PASS
40	120	5239.959289	5150-5250	PASS
30	120	5239.968086	5150-5250	PASS
20	120	5239.996883	5150-5250	PASS
10	120	5239.964003	5150-5250	PASS
0	120	5239.949040	5150-5250	PASS
-10	120	5239.950051	5150-5250	PASS
-20	120	5239.974918	5150-5250	PASS

Environment Temperature (°C)	Volage (V)	Measured Frequency (MHz)	limit Range	Test Result
20	108	5239.990345	5150-5250	PASS
	120	5239.996883	5150-5250	PASS
	132	5239.997135	5150-5250	PASS



IEEE 802.11a mode / 5745 ~ 5825MHz (Low)

Environment Temperature (°C)	Volage (V)	Measured Frequency (MHz)	limit Range	Test Result
50	120	5744.980121	5725-5850	PASS
40	120	5744.987253	5725-5850	PASS
30	120	5744.962698	5725-5850	PASS
20	120	5744.986387	5725-5850	PASS
10	120	5744.964962	5725-5850	PASS
0	120	5744.984238	5725-5850	PASS
-10	120	5744.960086	5725-5850	PASS
-20	120	5744.958481	5725-5850	PASS

Environment Temperature (°C)	Volage (V)	Measured Frequency (MHz)	limit Range	Test Result
20	108	5744.994200	5725-5850	PASS
	120	5744.986387	5725-5850	PASS
	132	5744.951251	5725-5850	PASS

IEEE 802.11a mode / 5745 ~ 5825MHz (High)

Environment Temperature (°C)	Volage (V)	Measured Frequency (MHz)	limit Range	Test Result
50	120	5824.964431	5725-5850	PASS
40	120	5824.950886	5725-5850	PASS
30	120	5824.978592	5725-5850	PASS
20	120	5824.976821	5725-5850	PASS
10	120	5824.955675	5725-5850	PASS
0	120	5824.974891	5725-5850	PASS
-10	120	5824.959202	5725-5850	PASS
-20	120	5824.999002	5725-5850	PASS

Environment Temperature (°C)	Volage (V)	Measured Frequency (MHz)	limit Range	Test Result
20	108	5824.967504	5725-5850	PASS
	120	5824.976821	5725-5850	PASS
	132	5824.967878	5725-5850	PASS



Antenna 2

IEEE 802.11a MHz mode / 5180 ~ 5240MHz (Low)

Environment Temperature (°C)	Volage (V)	Measured Frequency (MHz)	limit Range	Test Result
50	120	5179.977993	5150-5250	PASS
40	120	5179.956778	5150-5250	PASS
30	120	5179.982833	5150-5250	PASS
20	120	5179.987266	5150-5250	PASS
10	120	5179.953266	5150-5250	PASS
0	120	5179.952454	5150-5250	PASS
-10	120	5179.982229	5150-5250	PASS
-20	120	5179.963277	5150-5250	PASS

Environment Temperature (°C)	Volage (V)	Measured Frequency (MHz)	limit Range	Test Result
20	108	5179.994139	5150-5250	PASS
	120	5179.987266	5150-5250	PASS
	132	5179.989988	5150-5250	PASS

IEEE 802.11a MHz mode / 5180 ~ 5240MHz (High)

Environment Temperature (°C)	Volage (V)	Measured Frequency (MHz)	limit Range	Test Result
50	120	5239.967790	5150-5250	PASS
40	120	5239.999822	5150-5250	PASS
30	120	5239.991104	5150-5250	PASS
20	120	5239.996880	5150-5250	PASS
10	120	5239.974128	5150-5250	PASS
0	120	5239.978748	5150-5250	PASS
-10	120	5239.960770	5150-5250	PASS
-20	120	5239.993830	5150-5250	PASS

Environment Temperature (°C)	Volage (V)	Measured Frequency (MHz)	limit Range	Test Result
20	108	5239.995095	5150-5250	PASS
	120	5239.996880	5150-5250	PASS
	132	5239.977818	5150-5250	PASS



IEEE 802.11a MHz mode / 5745 ~ 5825MHz (Low)

Environment Temperature (°C)	Volage (V)	Measured Frequency (MHz)	limit Range	Test Result
50	120	5744.986167	5725-5850	PASS
40	120	5744.991653	5725-5850	PASS
30	120	5744.949042	5725-5850	PASS
20	120	5744.986388	5725-5850	PASS
10	120	5744.966713	5725-5850	PASS
0	120	5744.960949	5725-5850	PASS
-10	120	5744.989840	5725-5850	PASS
-20	120	5744.957767	5725-5850	PASS

Environment Temperature (°C)	Volage (V)	Measured Frequency (MHz)	limit Range	Test Result
20	108	5744.988268	5725-5850	PASS
	120	5744.986388	5725-5850	PASS
	132	5744.969206	5725-5850	PASS

IEEE 802.11a MHz mode / 5745 ~ 5825MHz (High)

Environment Temperature (°C)	Volage (V)	Measured Frequency (MHz)	limit Range	Test Result
50	120	5824.988168	5725-5850	PASS
40	120	5824.963597	5725-5850	PASS
30	120	5824.971586	5725-5850	PASS
20	120	5824.976826	5725-5850	PASS
10	120	5824.988217	5725-5850	PASS
0	120	5824.957416	5725-5850	PASS
-10	120	5824.989771	5725-5850	PASS
-20	120	5824.998563	5725-5850	PASS

Environment Temperature (°C)	Volage (V)	Measured Frequency (MHz)	limit Range	Test Result
20	108	5824.962462	5725-5850	PASS
	120	5824.976826	5725-5850	PASS
	132	5824.951706	5725-5850	PASS



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IEEE 802.11n HT 20 MHz mode / 5180 ~ 5240MHz (Low)

Environment Temperature (°C)	Volage (V)	Measured Frequency (MHz)	limit Range	Test Result
50	120	5179.950259	5150-5250	PASS
40	120	5179.963011	5150-5250	PASS
30	120	5179.980015	5150-5250	PASS
20	120	5179.994545	5150-5250	PASS
10	120	5179.996327	5150-5250	PASS
0	120	5179.999023	5150-5250	PASS
-10	120	5179.959513	5150-5250	PASS
-20	120	5179.979094	5150-5250	PASS

Environment Temperature (°C)	Volage (V)	Measured Frequency (MHz)	limit Range	Test Result
20	108	5179.970230	5150-5250	PASS
	120	5179.994545	5150-5250	PASS
	132	5179.953119	5150-5250	PASS

IEEE 802.11n HT 20 MHz mode / 5180 ~ 5240MHz (High)

Environment Temperature (°C)	Volage (V)	Measured Frequency (MHz)	limit Range	Test Result
50	120	5239.964025	5150-5250	PASS
40	120	5239.966577	5150-5250	PASS
30	120	5239.978484	5150-5250	PASS
20	120	5239.996454	5150-5250	PASS
10	120	5239.977704	5150-5250	PASS
0	120	5239.951087	5150-5250	PASS
-10	120	5239.969477	5150-5250	PASS
-20	120	5239.950917	5150-5250	PASS

Environment Temperature (°C)	Volage (V)	Measured Frequency (MHz)	limit Range	Test Result
20	108	5239.961457	5150-5250	PASS
	120	5239.996454	5150-5250	PASS
	132	5239.976741	5150-5250	PASS



IEEE 802.11n HT 20 MHz mode / 5745 ~ 5825MHz (Low)

Environment Temperature (°C)	Volage (V)	Measured Frequency (MHz)	limit Range	Test Result
50	120	5744.994410	5725-5850	PASS
40	120	5744.985258	5725-5850	PASS
30	120	5744.978871	5725-5850	PASS
20	120	5744.965489	5725-5850	PASS
10	120	5744.977288	5725-5850	PASS
0	120	5744.974809	5725-5850	PASS
-10	120	5744.950119	5725-5850	PASS
-20	120	5744.972844	5725-5850	PASS

Environment Temperature (°C)	Volage (V)	Measured Frequency (MHz)	limit Range	Test Result
20	108	5744.967306	5725-5850	PASS
	120	5744.965489	5725-5850	PASS
	132	5744.999693	5725-5850	PASS

IEEE 802.11n HT 20 MHz mode / 5745 ~ 5825MHz (High)

Environment Temperature (°C)	Volage (V)	Measured Frequency (MHz)	limit Range	Test Result
50	120	5824.973619	5725-5850	PASS
40	120	5824.997478	5725-5850	PASS
30	120	5824.992057	5725-5850	PASS
20	120	5824.973587	5725-5850	PASS
10	120	5824.981230	5725-5850	PASS
0	120	5824.952357	5725-5850	PASS
-10	120	5824.986267	5725-5850	PASS
-20	120	5824.980106	5725-5850	PASS

Environment Temperature (°C)	Volage (V)	Measured Frequency (MHz)	limit Range	Test Result
20	108	5824.965796	5725-5850	PASS
	120	5824.973587	5725-5850	PASS
	132	5824.993939	5725-5850	PASS



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IEEE 802.11n HT 20 MHz mode / 5180 ~ 5240MHz (Low)

Environment Temperature (°C)	Volage (V)	Measured Frequency (MHz)	limit Range	Test Result
50	120	5179.979774	5150-5250	PASS
40	120	5179.983971	5150-5250	PASS
30	120	5179.967995	5150-5250	PASS
20	120	5179.994785	5150-5250	PASS
10	120	5179.954026	5150-5250	PASS
0	120	5179.959100	5150-5250	PASS
-10	120	5179.988795	5150-5250	PASS
-20	120	5179.977557	5150-5250	PASS

Environment Temperature (°C)	Volage (V)	Measured Frequency (MHz)	limit Range	Test Result
20	108	5179.976938	5150-5250	PASS
	120	5179.994785	5150-5250	PASS
	132	5179.986253	5150-5250	PASS

IEEE 802.11n HT 20 MHz mode / 5180 ~ 5240MHz (High)

Environment Temperature (°C)	Volage (V)	Measured Frequency (MHz)	limit Range	Test Result
50	120	5239.953350	5150-5250	PASS
40	120	5239.995779	5150-5250	PASS
30	120	5239.988151	5150-5250	PASS
20	120	5239.997788	5150-5250	PASS
10	120	5239.956490	5150-5250	PASS
0	120	5239.973913	5150-5250	PASS
-10	120	5239.966054	5150-5250	PASS
-20	120	5239.988614	5150-5250	PASS

Environment Temperature (°C)	Volage (V)	Measured Frequency (MHz)	limit Range	Test Result
20	108	5239.961528	5150-5250	PASS
	120	5239.997788	5150-5250	PASS
	132	5239.949830	5150-5250	PASS



IEEE 802.11n HT 20 MHz mode / 5745 ~ 5825MHz (Low)

Environment Temperature (°C)	Volage (V)	Measured Frequency (MHz)	limit Range	Test Result
50	120	5744.979909	5725-5850	PASS
40	120	5744.962643	5725-5850	PASS
30	120	5744.959343	5725-5850	PASS
20	120	5744.965556	5725-5850	PASS
10	120	5744.983917	5725-5850	PASS
0	120	5744.972334	5725-5850	PASS
-10	120	5744.953250	5725-5850	PASS
-20	120	5744.987104	5725-5850	PASS

Environment Temperature (°C)	Volage (V)	Measured Frequency (MHz)	limit Range	Test Result
20	108	5744.964964	5725-5850	PASS
	120	5744.965556	5725-5850	PASS
	132	5744.953109	5725-5850	PASS

IEEE 802.11n HT 20 MHz mode / 5745 ~ 5825MHz (High)

Environment Temperature (°C)	Volage (V)	Measured Frequency (MHz)	limit Range	Test Result
50	120	5824.977031	5725-5850	PASS
40	120	5824.987128	5725-5850	PASS
30	120	5824.996878	5725-5850	PASS
20	120	5824.973889	5725-5850	PASS
10	120	5824.957140	5725-5850	PASS
0	120	5824.982245	5725-5850	PASS
-10	120	5824.951405	5725-5850	PASS
-20	120	5824.963191	5725-5850	PASS

Environment Temperature (°C)	Volage (V)	Measured Frequency (MHz)	limit Range	Test Result
20	108	5824.996608	5725-5850	PASS
	120	5824.973889	5725-5850	PASS
	132	5824.951215	5725-5850	PASS



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IEEE 802.11n HT 40 MHz mode / 5190 ~ 5230MHz (Low)

Environment Temperature (°C)	Volage (V)	Measured Frequency (MHz)	limit Range	Test Result
50	120	5189.956766	5150-5250	PASS
40	120	5189.973465	5150-5250	PASS
30	120	5189.954278	5150-5250	PASS
20	120	5189.935478	5150-5250	PASS
10	120	5189.977444	5150-5250	PASS
0	120	5189.994288	5150-5250	PASS
-10	120	5189.983463	5150-5250	PASS
-20	120	5189.956204	5150-5250	PASS

Environment Temperature (°C)	Volage (V)	Measured Frequency (MHz)	limit Range	Test Result
20	108	5189.970040	5150-5250	PASS
	120	5189.935478	5150-5250	PASS
	132	5189.965469	5150-5250	PASS

IEEE 802.11n HT 40 MHz mode / 5190 ~ 5230MHz (High)

Environment Temperature (°C)	Volage (V)	Measured Frequency (MHz)	limit Range	Test Result
50	120	5229.995633	5150-5250	PASS
40	120	5229.982144	5150-5250	PASS
30	120	5229.965908	5150-5250	PASS
20	120	5230.006879	5150-5250	PASS
10	120	5229.949268	5150-5250	PASS
0	120	5229.989898	5150-5250	PASS
-10	120	5229.994249	5150-5250	PASS
-20	120	5229.975641	5150-5250	PASS

Environment Temperature (°C)	Volage (V)	Measured Frequency (MHz)	limit Range	Test Result
20	108	5229.989463	5150-5250	PASS
	120	5230.006879	5150-5250	PASS
	132	5229.988705	5150-5250	PASS



IEEE 802.11n HT 40 MHz mode / 5755 ~ 5795MHz (Low)

Environment Temperature (°C)	Volage (V)	Measured Frequency (MHz)	limit Range	Test Result
50	120	5754.981949	5725-5850	PASS
40	120	5754.974456	5725-5850	PASS
30	120	5754.981623	5725-5850	PASS
20	120	5754.994124	5725-5850	PASS
10	120	5754.969579	5725-5850	PASS
0	120	5754.970594	5725-5850	PASS
-10	120	5754.956046	5725-5850	PASS
-20	120	5754.976388	5725-5850	PASS

Environment Temperature (°C)	Volage (V)	Measured Frequency (MHz)	limit Range	Test Result
20	108	5754.949882	5725-5850	PASS
	120	5754.994124	5725-5850	PASS
	132	5754.963207	5725-5850	PASS

IEEE 802.11n HT 40 MHz mode / 5755 ~ 5795MHz (High)

Environment Temperature (°C)	Volage (V)	Measured Frequency (MHz)	limit Range	Test Result
50	120	5794.979346	5725-5850	PASS
40	120	5794.985683	5725-5850	PASS
30	120	5794.970566	5725-5850	PASS
20	120	5794.983278	5725-5850	PASS
10	120	5794.996342	5725-5850	PASS
0	120	5794.952049	5725-5850	PASS
-10	120	5794.962145	5725-5850	PASS
-20	120	5794.959185	5725-5850	PASS

Environment Temperature (°C)	Volage (V)	Measured Frequency (MHz)	limit Range	Test Result
20	108	5794.976774	5725-5850	PASS
	120	5794.983278	5725-5850	PASS
	132	5794.972415	5725-5850	PASS



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IEEE 802.11n HT 40 MHz mode / 5190 ~ 5230MHz (Low)

Environment Temperature (°C)	Volage (V)	Measured Frequency (MHz)	limit Range	Test Result
50	120	5189.984596	5150-5250	PASS
40	120	5189.963033	5150-5250	PASS
30	120	5189.949970	5150-5250	PASS
20	120	5189.935446	5150-5250	PASS
10	120	5189.987766	5150-5250	PASS
0	120	5189.980288	5150-5250	PASS
-10	120	5189.957544	5150-5250	PASS
-20	120	5189.963575	5150-5250	PASS

Environment Temperature (°C)	Volage (V)	Measured Frequency (MHz)	limit Range	Test Result
20	108	5189.969089	5150-5250	PASS
	120	5189.935446	5150-5250	PASS
	132	5189.999750	5150-5250	PASS

IEEE 802.11n HT 40 MHz mode / 5190 ~ 5230MHz (High)

Environment Temperature (°C)	Volage (V)	Measured Frequency (MHz)	limit Range	Test Result
50	120	5229.983584	5150-5250	PASS
40	120	5229.967897	5150-5250	PASS
30	120	5229.997797	5150-5250	PASS
20	120	5230.001122	5150-5250	PASS
10	120	5229.998088	5150-5250	PASS
0	120	5229.955366	5150-5250	PASS
-10	120	5229.990230	5150-5250	PASS
-20	120	5229.986828	5150-5250	PASS

Environment Temperature (°C)	Volage (V)	Measured Frequency (MHz)	limit Range	Test Result
20	108	5229.983371	5150-5250	PASS
	120	5230.001122	5150-5250	PASS
	132	5229.977330	5150-5250	PASS



IEEE 802.11n HT 40 MHz mode / 5755 ~ 5795MHz (Low)

Environment Temperature (°C)	Volage (V)	Measured Frequency (MHz)	limit Range	Test Result
50	120	5754.967088	5725-5850	PASS
40	120	5754.949824	5725-5850	PASS
30	120	5754.963116	5725-5850	PASS
20	120	5754.994111	5725-5850	PASS
10	120	5754.975079	5725-5850	PASS
0	120	5754.995865	5725-5850	PASS
-10	120	5754.984694	5725-5850	PASS
-20	120	5754.969072	5725-5850	PASS

Environment Temperature (°C)	Volage (V)	Measured Frequency (MHz)	limit Range	Test Result
20	108	5754.989602	5725-5850	PASS
	120	5754.994111	5725-5850	PASS
	132	5754.954246	5725-5850	PASS

IEEE 802.11n HT 40 MHz mode / 5755 ~ 5795MHz (High)

Environment Temperature (°C)	Volage (V)	Measured Frequency (MHz)	limit Range	Test Result
50	120	5794.998003	5725-5850	PASS
40	120	5794.974114	5725-5850	PASS
30	120	5794.952737	5725-5850	PASS
20	120	5794.983335	5725-5850	PASS
10	120	5794.962130	5725-5850	PASS
0	120	5794.969048	5725-5850	PASS
-10	120	5794.979110	5725-5850	PASS
-20	120	5794.976728	5725-5850	PASS

Environment Temperature (°C)	Volage (V)	Measured Frequency (MHz)	limit Range	Test Result
20	108	5794.981793	5725-5850	PASS
	120	5794.983335	5725-5850	PASS
	132	5794.953132	5725-5850	PASS



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IEEE 802.11ac 80 mode / 5210MHz

Environment Temperature (°C)	Volage (V)	Measured Frequency (MHz)	limit Range	Test Result
50	120	5209.995582	5150-5250	PASS
40	120	5209.991081	5150-5250	PASS
30	120	5209.989534	5150-5250	PASS
20	120	5209.975565	5150-5250	PASS
10	120	5209.990768	5150-5250	PASS
0	120	5209.995959	5150-5250	PASS
-10	120	5209.990324	5150-5250	PASS
-20	120	5209.986499	5150-5250	PASS

Environment Temperature (°C)	Volage (V)	Measured Frequency (MHz)	limit Range	Test Result
20	108	5209.964142	5150-5250	PASS
	120	5209.975565	5150-5250	PASS
	132	5209.995465	5150-5250	PASS

IEEE 802.11ac 80 mode / 5775MHz

Environment Temperature (°C)	Volage (V)	Measured Frequency (MHz)	limit Range	Test Result
50	120	5774.973557	5725-5850	PASS
40	120	5774.960278	5725-5850	PASS
30	120	5774.977351	5725-5850	PASS
20	120	5774.944748	5725-5850	PASS
10	120	5774.957094	5725-5850	PASS
0	120	5774.978274	5725-5850	PASS
-10	120	5774.991361	5725-5850	PASS
-20	120	5774.954060	5725-5850	PASS

Environment Temperature (°C)	Volage (V)	Measured Frequency (MHz)	limit Range	Test Result
20	108	5774.980689	5725-5850	PASS
	120	5774.944748	5725-5850	PASS
	132	5774.964138	5725-5850	PASS



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IEEE 802.11ac 80 mode / 5210MHz

Environment Temperature (°C)	Volage (V)	Measured Frequency (MHz)	limit Range	Test Result
50	120	5209.956015	5150-5250	PASS
40	120	5209.973435	5150-5250	PASS
30	120	5209.997894	5150-5250	PASS
20	120	5209.975450	5150-5250	PASS
10	120	5209.958266	5150-5250	PASS
0	120	5209.980477	5150-5250	PASS
-10	120	5209.953964	5150-5250	PASS
-20	120	5209.962325	5150-5250	PASS

Environment Temperature (°C)	Volage (V)	Measured Frequency (MHz)	limit Range	Test Result
20	108	5209.980005	5150-5250	PASS
	120	5209.975450	5150-5250	PASS
	132	5209.973043	5150-5250	PASS

IEEE 802.11ac 80 mode / 5775MHz

Environment Temperature (°C)	Volage (V)	Measured Frequency (MHz)	limit Range	Test Result
50	120	5774.979418	5725-5850	PASS
40	120	5774.976738	5725-5850	PASS
30	120	5774.987093	5725-5850	PASS
20	120	5774.944670	5725-5850	PASS
10	120	5774.958029	5725-5850	PASS
0	120	5774.965874	5725-5850	PASS
-10	120	5774.981880	5725-5850	PASS
-20	120	5774.967057	5725-5850	PASS

Environment Temperature (°C)	Volage (V)	Measured Frequency (MHz)	limit Range	Test Result
20	108	5774.971748	5725-5850	PASS
	120	5774.944670	5725-5850	PASS
	132	5774.978957	5725-5850	PASS