

## **Appendix C: Test results for the U-NII-3 Band 5.725 – 5.85 GHz**

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## TEST CONDITIONS

### POWER SUPPLY (V):

V nominal: 12 Vdc.  
 Type of Power Supply: External power supply (Car Battery).

### ANTENNA:

Type of Antenna: Indoor the vehicle.  
 Outdoor the vehicle.

Max. Declared Gain: Indoor: +5.2 dBi. (Antenna gain plus antenna cable loss).  
 Outdoor: +1.7 dBi. (Antenna gain plus antenna cable loss).

Technology Tested:	WLAN (IEEE 802.11 a/n/ac): U-NII-3 band	
Modes:	802.11a: 6, 9, 12, 18, 24, 36, 48 & 54 Mbps	
	802.11n HT20: MCS0 to MCS7	
	802.11n HT40: MCS0 to MCS7	
	802.11ac VHT20: MCS0 to MCS8	
	802.11ac VHT40: MCS0 to MCS9	
	802.11ac VHT80: MCS0 to MCS9	
Setting of cores / ports:	One port.	
Beamforming:	No	
Frequency Range:	5725 MHz to 5850 MHz	
Channel Spacing:	20 MHz	
Transmit Channels	Channel	Channel Frequency (MHz)
	Lowest: 149	5745
	Middle: 157	5785
	Highest: 165	5825
Channel Spacing:	40 MHz	
Transmit Channels	Channel	Channel Frequency (MHz)
	Lowest: 151	5755
	Highest: 159	5795
Channel Spacing:	80 MHz	
Transmit Channels	Middle: 155	5775

802.11 a: Adjustment of Maximum RF Output Power: +12 dBm  
 802.11 n20/ac20: Adjustment of Maximum RF Output Power: +12 dBm  
 802.11 n40/ac40: Adjustment of Maximum RF Output Power: +11 dBm  
 802.11 ac80: Adjustment of Maximum RF Output Power: +9 dBm

The test set-up was made in accordance to the general provisions of ANSI C63.10: 2013 and FCC KDB 789033 D02 General UNII Test Procedures New Rules v02r01 dated 12/14/2017.

The EUT was tested in the following operating mode:

- Continuously transmitting with a modulated carrier at maximum power in all required channels using the supported data rates/modulations types.

The field strength at the band edges was evaluated for each mode individually on the lowest and highest channels at the rated power for the channel under test.

For all modes, the EUT was configured in test mode using a software application. The application was used to enable a continuous transmission and to select the test channels as required. The client supplied scripts to configure the EUT. The customer supplied a document containing the setup instructions.

The worst cases for testing were identified for output power and spurious levels at the band edges which were selected based on preliminary testing that correspond to next data rates:

- 802.11a20: 6 Mbits
- 802.11n HT20: MCS0
- 802.11n HT40: MCS0
- 802.11ac VHT20: MCS0
- 802.11ac VHT40: MCS0
- 802.11ac VHT80: MCS0

The conducted test sample has only one connector. The client provided the antenna gains for both antennas (including the losses of lines and switches). The client considered the transmission lines and rf switches as part of the indoor and outdoor antenna.

The client supplied U.FL RF cables with the EUT in order to perform conducted measurements. The measured additional path loss was included in any path loss calculations.

### CONDUCTED MEASUREMENTS

The equipment under test was set up in a shielded room and it is connected to the spectrum analyser using a low loss RF cable. The reading of the spectrum analyser is corrected taking into account the cable loss.



The DC supply voltage is applied using an external calibrated power supply with a multimeter.

### RADIATED MEASUREMENTS

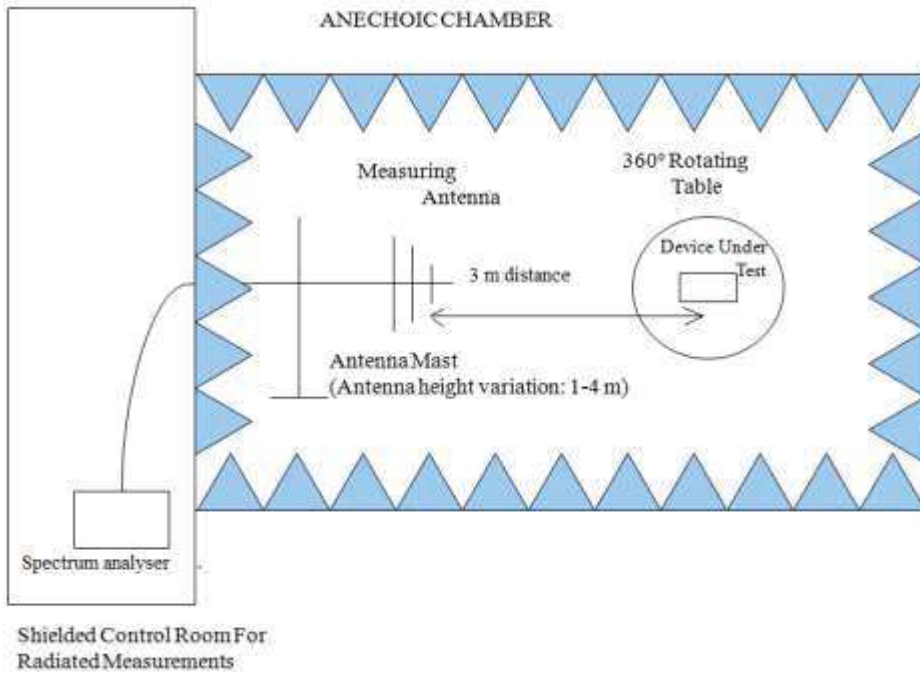
All radiated tests were performed in a semi-anechoic chamber. The measurement antenna is situated at a distance of 1 m for the frequency range 1 GHz-40 GHz (1 GHz-18 GHz Double ridge horn antenna and 18 GHz-40 GHz horn antenna).

For radiated emissions in the range 1 GHz-40 GHz that is performed at a distance closer than the specified distance, an inverse proportionality factor of 20 dB per decade is used to normalize the measured data for determining compliance.

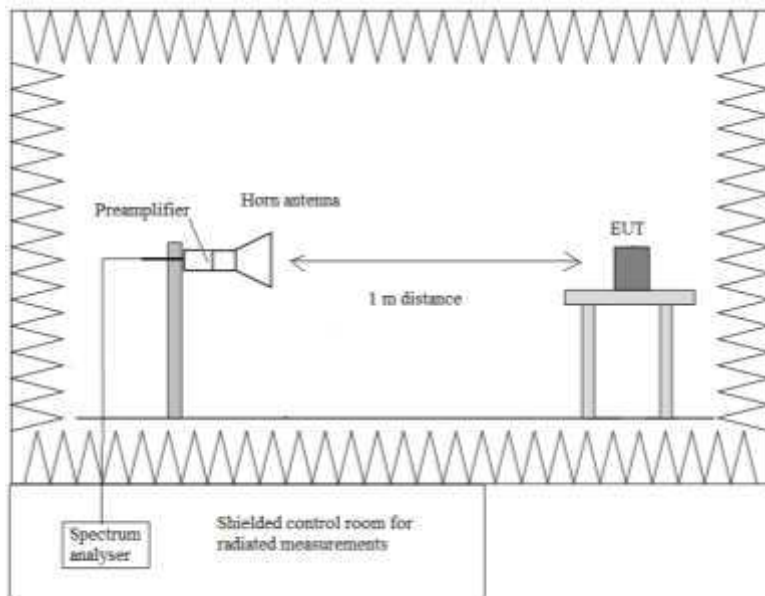
The EUT was placed at a height of 80 cm above the reference ground plane in the center of the chamber turntable to perform the measurements below 1GHz and the EUT was placed at a height of 1.5 meters above the test chamber floor in the center of the chamber turntable to perform the measurements above 1GHz. It was also rotated 360° and the antenna height was varied from 1 to 4 meters to find the maximum radiated emission.

Measurements were made in both horizontal and vertical planes of polarization.

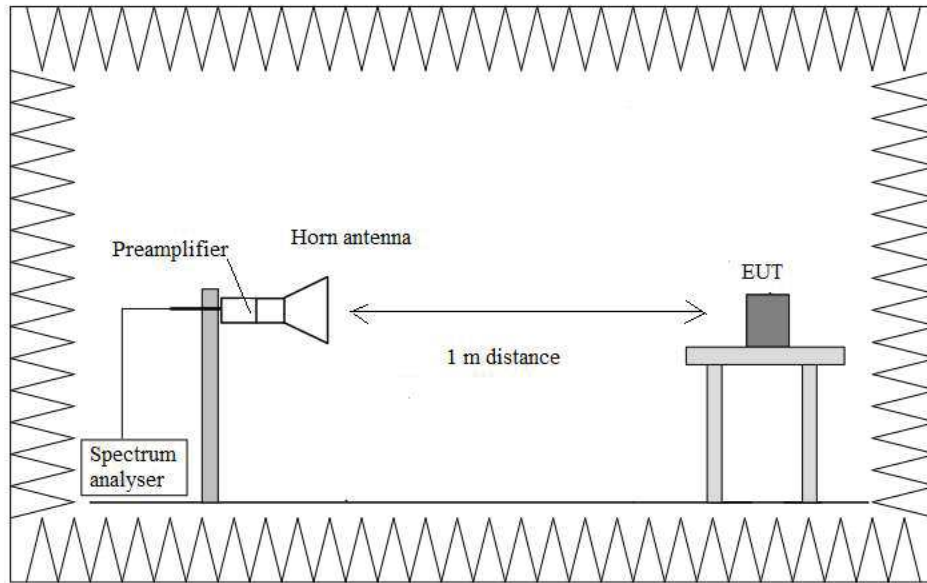
The final measured value, for the given emission, in the tables below incorporates the calibrated antenna factor and cable loss.



Radiated measurements setup  $f > 1$  GHz up to 18 GHz.



Radiated measurements setup  $f > 18$  GHz up to 40 GHz.



## FCC 15.247 (e) / RSS-247 6.2.4.1 6 dB Bandwidth

### SPECIFICATION:

The minimum 6 dB bandwidth shall be at least 500 kHz.

### RESULTS:

The following modes and data rates were selected based on preliminary testing that identified those corresponding to the worst cases:

- 802.11a20: 6 Mbits
- 802.11n HT20: MCS0
- 802.11n HT40: MCS0
- 802.11ac VHT80: MCS0

#### Mode 802.11 a20

	Low Channel 149 (5745 MHz)	Middle Channel 157 (5785 MHz)	High Channel 165 (5825 MHz)
6 dB Bandwidth (MHz)	15.1317	15.3298	15.333
Measurement uncertainty (kHz)	<±3.00		

#### Mode 802.11n/ac HT20/VTH20 (HT20)

	Low Channel 149 (5745 MHz)	Middle Channel 157 (5785 MHz)	High Channel 165 (5825 MHz)
6 dB Bandwidth (MHz)	15.1345	15.1405	15.1525
Measurement uncertainty (kHz)	<±3.00		

#### Mode 802.11n/ac HT40/VHT40 (HT40)

	Low Channel 151 (5755 MHz)	High Channel 159 (5795 MHz)
6 dB Bandwidth (MHz)	35.1005	35.1148
Measurement uncertainty (kHz)	<±5.00	

#### Mode 802.11 ac80 (VHT80)

	Single Channel 155 (5775 MHz)
6 dB bandwidth (MHz)	75.123
Measurement uncertainty (kHz)	<±9.01

Verdict: PASS

 << SEE GRAPHICS IN THE ATTACHED FILE 59830RRF006\_Graphics\_part1.7z >>

## FCC 15.407 (a)(3) / RSS-247 6.2.4.1 Transmitter Maximum Conducted Output Power

### SPECIFICATION:

For the band 5.725-5.85 GHz, the maximum conducted output power over the frequency band of operation shall not exceed 1W (30 dBm). If transmitting antennas of directional gain greater than 6 dBi are used, the maximum conducted output power shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

### RESULTS:

The maximum conducted output power was measured using the channel power integration method according to point E) 2) b) (Method SA-1) of 789033 D02 General UNII Test Procedures New Rules v02r01 when the duty cycle is >98% and the channel power integration method according to point E) 2) d) (Method SA-2) of 789033 D02 General UNII Test Procedures New Rules v02r01 when the duty cycle is <98%.

For data rates where the EUT was transmitting at <98% duty cycle, the duty calculated in Appendix A was added to the measured power in order to calculate the total average power during the actual transmission time.

The e.i.r.p. levels are calculated by adding the declared maximum antenna gain (dBi).

For all modes of operation, the antenna gain is less than 6 dBi.

**INDOOR ANTENNA:** Maximum Declared Assembly Antenna Gain: +5.2 dBi (Antenna gain plus antenna cable loss).

#### Mode 802.11 a20

	Low Channel 149 (5745 MHz)	Middle Channel 157 (5785 MHz)	High Channel 165 (5825 MHz)
Max. Conducted Power (dBm)	11.100	10.460	11.030
Duty Cycle Correction Factor (dB)	0.222		
Max. Conducted Power Corrected (dBm)	11.322	10.682	11.252
Maximum EIRP power Corrected (dBm)	16.522	15.882	16.452
Measurement uncertainty (dB)	<±1.20		

#### Mode 802.11 n20 (HT20)

	Low Channel 149 (5745 MHz)	Middle Channel 157 (5785 MHz)	High Channel 165 (5825 MHz)
Max. Conducted Power (dBm)	11.050	10.430	10.970
Duty Cycle Correction Factor (dB)	0.218		
Max. Conducted Power Corrected (dBm)	11.268	10.648	11.188
Maximum EIRP power Corrected (dBm)	16.468	15.848	16.388
Measurement uncertainty (dB)	<±1.20		



**Mode 802.11 n40 (HT40)**

	Low Channel 151 (5755 MHz)	High Channel 159 (5795 MHz)
Max. Conducted Power (dBm)	10.290	9.700
Duty Cycle Correction Factor (dB)	0.680	
Max. Conducted Power Corrected (dBm)	10.970	10.380
Maximum EIRP power Corrected (dBm)	16.170	15.580
Measurement uncertainty (dB)	<±1.20	

**Mode 802.11 ac80 (VHT80)**

	Low Channel 155 (5775 MHz)
Max. Conducted Power (dBm)	7.430
Duty Cycle Correction Factor (dB)	1.378
Max. Conducted Power Corrected (dBm)	8.808
Maximum EIRP power Corrected (dBm)	14.008
Measurement uncertainty (dB)	<±1.20

Verdict: PASS

<< SEE GRAPHICS IN THE ATTACHED FILE 59830RRF006\_Graphics\_part1.7z >>

**OUTDOOR ANTENNA:** Maximum Declared Assembly Antenna Gain: +1.7 dBi (Antenna gain plus antenna cable loss).

**Mode 802.11 a20**

	Low Channel 149 (5745 MHz)	Middle Channel 157 (5785 MHz)	High Channel 165 (5825 MHz)
Max. Conducted Power (dBm)	11.100	10.460	11.030
Duty Cycle Correction Factor (dB)	0.222		
Max. Conducted Power Corrected (dBm)	11.322	10.682	11.252
Maximum EIRP power Corrected (dBm)	13.022	12.382	12.952
Measurement uncertainty (dB)	<±1.20		

**Mode 802.11 n20 (HT20)**

	Low Channel 149 (5745 MHz)	Middle Channel 157 (5785 MHz)	High Channel 165 (5825 MHz)
Max. Conducted Power (dBm)	11.050	10.430	10.970
Duty Cycle Correction Factor (dB)	0.218		
Max. Conducted Power Corrected (dBm)	11.268	10.648	11.188
Maximum EIRP power Corrected (dBm)	12.968	12.348	12.888
Measurement uncertainty (dB)	<±1.20		

**Mode 802.11 n40 (HT40)**

	Low Channel 151 (5755 MHz)	High Channel 159 (5795 MHz)
Max. Conducted Power (dBm)	10.290	9.700
Duty Cycle Correction Factor (dB)	0.680	
Max. Conducted Power Corrected (dBm)	10.970	10.380
Maximum EIRP power Corrected (dBm)	12.670	12.080
Measurement uncertainty (dB)	<±1.20	

**Mode 802.11 ac80 (VHT80)**

	Low Channel 155 (5775 MHz)
Max. Conducted Power (dBm)	7.430
Duty Cycle Correction Factor (dB)	1.378
Max. Conducted Power Corrected (dBm)	8.808
Maximum EIRP power Corrected (dBm)	10.508
Measurement uncertainty (dB)	<±1.20

Verdict: PASS

<< SEE GRAPHICS IN THE ATTACHED FILE 59830RRF006\_Graphics\_part1.7z >>

## FCC 15.407 (a)(3) / RSS-247 6.2.4.1 Transmitter Maximum Power Spectral Density

### SPECIFICATION:

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.

### RESULTS:

The maximum power spectral density (PSD) was measured using the method according to point F) referencing E.2.b) (Method SA-1) and E.2.b) (Method SA-2) of Guidance 789033 D02 General UNII Test Procedures New Rules v02r01.

In accordance with ANSI C63.10 Section 4.1.4.1, use of bandwidths greater than those specified can produce higher readings. Compliance against the applicable limits is shown using a 1 MHz resolution bandwidth. This was deemed worst case.

The PSD test uses the same setup than the transmitter maximum conducted output power test. The result of the Peak PSD was measured by collocation a marker on the peak of the signal and the results are in the tables below.

For all modes of operation, the antenna gain is less than 6 dBi.

**INDOOR ANTENNA:** Maximum Declared Assembly Antenna Gain: +5.2 dBi (Antenna gain plus antenna cable loss).

#### Mode 802.11 a20

	Low Channel 149 (5745 MHz)	Middle Channel 157 (5785 MHz)	High Channel 165 (5825 MHz)
Maximum Average PSD (dBm/MHz)	0.74	0.16	0.75
Duty Cycle Correction Factor (dB)	0.222		
Maximum Average PSD Corrected (dBm/MHz)	0.962	0.382	0.972
Maximum EIRP PSD Corrected (dBm/MHz)	6.162	5.582	6.172
Measurement uncertainty (dB)	<±1.20		

#### Mode 802.11 n20 (HT20)

	Low Channel 149 (5745 MHz)	Middle Channel 157 (5785 MHz)	High Channel 165 (5825 MHz)
Maximum Average PSD (dBm/MHz)	0.72	0.17	0.58
Duty Cycle Correction Factor (dB)	0.218		
Maximum Average PSD Corrected (dBm/MHz)	0.938	0.388	0.798
Maximum EIRP PSD Corrected (dBm/MHz)	6.138	5.588	5.998
Measurement uncertainty (dB)	<±1.20		

**Mode 802.11 n40 (HT40)**

	Low Channel 151 (5755 MHz)	High Channel 159 (5795 MHz)
Maximum Average PSD (dBm/MHz)	-3.19	-3.81
Duty Cycle Correction Factor (dB)	0.680	
Maximum Average PSD Corrected (dBm/MHz)	-2.510	-3.130
Maximum EIRP PSD Corrected (dBm/MHz)	2.690	2.070
Measurement uncertainty (dB)	<±1.20	

**Mode 802.11 ac80 (VHT80)**

	Low Channel 155 (5775 MHz)
Maximum Average PSD (dBm/MHz)	-9.11
Duty Cycle Correction Factor (dB)	1.378
Maximum Average PSD Corrected (dBm/MHz)	-7.732
Maximum EIRP PSD Corrected (dBm/MHz)	-2.532
Measurement uncertainty (dB)	<±1.20

Verdict: PASS

<< SEE GRAPHICS IN THE ATTACHED FILE 59830RRF006\_Graphics\_part1.7z >>

**OUTDOOR ANTENNA:** Maximum Declared Assembly Antenna Gain: +1.7 dBi (Antenna gain plus antenna cable loss).

**Mode 802.11 a20**

	Low Channel 149 (5745 MHz)	Middle Channel 157 (5785 MHz)	High Channel 165 (5825 MHz)
Maximum Average PSD (dBm/MHz)	0.74	0.16	0.75
Duty Cycle Correction Factor (dB)	0.222		
Maximum Average PSD Corrected (dBm/MHz)	0.962	0.382	0.972
Maximum EIRP PSD Corrected (dBm/MHz)	2.662	2.082	2.672
Measurement uncertainty (dB)	<±1.20		

**Mode 802.11 n20 (HT20)**

	Low Channel 149 (5745 MHz)	Middle Channel 157 (5785 MHz)	High Channel 165 (5825 MHz)
Maximum Average PSD (dBm/MHz)	0.72	0.17	0.58
Duty Cycle Correction Factor (dB)	0.218		
Maximum Average PSD Corrected (dBm/MHz)	0.938	0.388	0.798
Maximum EIRP PSD Corrected (dBm/MHz)	2.638	2.088	2.498
Measurement uncertainty (dB)	<±1.20		

**Mode 802.11 n40 (HT40)**

	Low Channel 151 (5755 MHz)	High Channel 159 (5795 MHz)
Maximum Average PSD (dBm/MHz)	-3.19	-3.81
Duty Cycle Correction Factor (dB)	0.680	
Maximum Average PSD Corrected (dBm/MHz)	-2.510	-3.130
Maximum EIRP PSD Corrected (dBm/MHz)	-0.81	-1.43
Measurement uncertainty (dB)	<±1.20	

**Mode 802.11 ac80 (VHT80)**

	Low Channel 155 (5775 MHz)
Maximum Average PSD (dBm/MHz)	-9.11
Duty Cycle Correction Factor (dB)	1.378
Maximum Average PSD Corrected (dBm/MHz)	-7.732
Maximum EIRP PSD Corrected (dBm/MHz)	-6.032
Measurement uncertainty (dB)	<±1.20

Verdict: PASS

<< SEE GRAPHICS IN THE ATTACHED FILE 59830RRF006\_Graphics\_part1.7z >>

## FCC 15.407 (b)(4)(6) / RSS-247 6.2.4.2 Transmitter Out of Band Radiated Emissions

### SPECIFICATION:

For transmitters operating in the 5.725–5.85 GHz band:

All emissions shall be limited to a level of -27 dBm/MHz (68.23 dBµV/m at 3 m distance) at 75 MHz or more above or below the band edge increasing linearly to 10 dBm/MHz at 25 MHz above or below the band edge, and from 25 MHz above or below the band edge increasing linearly to a level of 15.6 dBm/MHz at 5 MHz above or below the band edge, and from 5 MHz above or below the band edge increasing linearly to a level of 27 dBm/MHz at the band edge.

Radiated emissions which fall in the restricted bands, as defined in §15.205(a), must also comply with the radiated emission limits specified in §15.209(a) (see §15.205(c)):

Frequency Range (MHz)	Field strength (µV/m)	Field strength (dBµV/m)	Measurement distance (m)
0.009-0.490	2400/F(kHz)	-	300
0.490-1.705	24000/F(kHz)	-	300
1.705 - 30.0	30	-	30
30 - 88	100	40	3
88 - 216	150	43.5	3
216 - 960	200	46	3
960 - 40000	500	54	3

The emission limits shown in the above table are based on measurements employing CISPR quasi-peak detector except for the frequency bands 9-90 kHz, 110-490 kHz and above 1000 MHz. Radiated emission limits in these three bands are based on measurements employing an average detector.

For average radiated emission measurements above 1000 MHz, there is also a limit corresponding to 20 dB above the indicated values in the table is specified when measuring with peak detector function.

### RESULTS:

The situation and orientation was varied to find the maximum radiated emission. It was also rotated 360° and the antenna height was varied from 1 to 4 meters to find the maximum radiated emission.

Measurements were made in both horizontal and vertical planes of polarization.

All tests were performed in a semi-anechoic chamber at a distance of 1m for the frequency range 1 GHz-40 GHz and a distance of 3m for frequency range 30MHz-1GHz.

The field strength is calculated by adding correction factor to the measured level from the spectrum analyzer. This correction factor includes antenna factor, cable loss and pre-amplifiers gain.

Test performed on the following worst case: 802.11a20: 6 Mbits. The worst case was determined by measuring the eirp density (radiated).

**INDOOR ANTENNA:** Maximum Declared Assembly Antenna Gain: +5.2 dBi (Antenna gain plus antenna cable loss).

**Frequency range 30 MHz - 1 GHz**

The spurious emissions below 1 GHz do not depend on either the operating channel or the modulation mode selected in the EUT.

Spurious frequencies operating (radiated) at less than 20 dB below the limit:

Spurious frequency (MHz)	Emission Level (dBµV/m)	Polarization	Detector	Measurement Uncertainty (dB)
55.786	23.6	V	Quasi-Peak	± 3.81
812.321	26.8	H	Quasi-Peak	± 3.81

**Frequency range 1 - 40 GHz**

The results in the next tables show the maximum measured levels in the 1-40 GHz range except the 5.65-5.725 GHz and 5.85-5.925GHz adjacent bands. The results in the adjacent bands was evaluated on the next section.

Spurious frequencies with peak levels above the average limit (54 dBµV/m at 3 m) are measured with an average detector for checking compliance with the average limit.

- **Mode 802.11 a20 (worst case)**

- LOW CHANNEL. Spurious frequencies detected at less than 20 dB below the limit:

Spurious frequency (GHz)	Emission Level (dBµV/m)	Polarization	Detector	Measurement Uncertainty (dB)
7.66008	47.66	V	Peak	<±4.72
11.49118	47.79	H	Peak	<±4.72

- MIDDLE CHANNEL. Spurious frequencies detected at less than 20 dB below the limit:

Spurious frequency (GHz)	Emission Level (dBµV/m)	Polarization	Detector	Measurement Uncertainty (dB)
7.71328	47.92	V	Peak	<±4.72
11.57273	47.85	V	Peak	<±4.72

- HIGH CHANNEL. Spurious frequencies detected at less than 20 dB below the limit:

Spurious frequency (GHz)	Emission Level (dBµV/m)	Polarization	Detector	Measurement Uncertainty (dB)
7.76648	46.78	V	Peak	<±4.72
11.65218	50.14	V	Peak	<±4.72

Verdict: PASS

<< SEE GRAPHICS IN THE ATTACHED FILE 59830RRF006\_Graphics\_part0.7z >>



**OUTDOOR ANTENNA:** Maximum Declared Assembly Antenna Gain: +1.7 dBi (Antenna gain plus antenna cable loss).

**Frequency range 30 MHz - 1 GHz**

The spurious emissions below 1 GHz do not depend on either the operating channel or the modulation mode selected in the EUT.

Spurious frequencies detected at less than 20 dB below the limit:

Spurious frequency (MHz)	Emission Level (dBµV/m)	Polarization	Detector	Measurement Uncertainty (dB)
50.774	27.2	V	Quasi-Peak	<±3.81

**Frequency range 1 - 40 GHz**

The results in the next tables show the maximum measured levels in the 1-40 GHz frequency range.

The Low, Middle and High Channels were measured for out-of-band emissions for the worst mode.

Spurious frequencies in the restricted bands with peak levels above the average limit (54 dBµV/m at 3 m) are measured with an average detector for checking compliance with the average limit.

- **Mode 802.11 a20** (worst case)

- LOW CHANNEL. Spurious frequencies detected at less than 20 dB below the limit:

Spurious frequency (GHz)	Emission Level (dBµV/m)	Polarization	Detector	Measurement Uncertainty (dB)
7.66008	47.14	V	Peak	<±4.72
11.48978	45.88	V	Peak	<±4.72

- MIDDLE CHANNEL. Spurious frequencies detected at less than 20 dB below the limit:

Spurious frequency (GHz)	Emission Level (dBµV/m)	Polarization	Detector	Measurement Uncertainty (dB)
7.71363	47.55	V	Peak	<±4.72
11.57071	45.97	H	Peak	<±4.72

- HIGH CHANNEL. Spurious frequencies detected at less than 20 dB below the limit:

Spurious frequency (GHz)	Emission Level (dBµV/m)	Polarization	Detector	Measurement Uncertainty (dB)
7.76648	47.34	V	Peak	<±4.72
11.64973	47.4	V	Peak	<±4.72

Verdict: PASS

<< SEE GRAPHICS IN THE ATTACHED FILE 59830RRF006\_Graphics\_part1.7z >>

## FCC 15.407 (b)(4) / RSS-247 6.2.4.2 Transmitter Band Edge Radiated Emissions

### SPECIFICATION:

For transmitters operating in the 5.725-5.85 GHz band: All emissions shall be limited to a level of -27 dBm/MHz (68.23 dBµV/m at 3 m distance) at 75 MHz or more above or below the band edge increasing linearly to 10 dBm/MHz at 25 MHz above or below the band edge, and from 25 MHz above or below the band edge increasing linearly to a level of 15.6 dBm/MHz at 5 MHz above or below the band edge, and from 5 MHz above or below the band edge increasing linearly to a level of 27 dBm/MHz at the band edge.

Radiated emissions which fall in the restricted bands, as defined in §15.205(a), must also comply with the radiated emission limits specified in §15.209(a) (see §15.205(c)):

Frequency Range (MHz)	Field strength (µV/m)	Field strength (dBµV/m)	Measurement distance (m)
0.009-0.490	2400/F(kHz)	-	300
0.490-1.705	24000/F(kHz)	-	300
1.705 - 30.0	30	-	30
30 - 88	100	40	3
88 - 216	150	43.5	3
216 - 960	200	46	3
960 - 40000	500	54	3

The emission limits shown in the above table are based on measurements employing CISPR quasi-peak detector except for the frequency bands 9-90 kHz, 110-490 kHz and above 1000 MHz. Radiated emission limits in these three bands are based on measurements employing an average detector.

For average radiated emission measurements above 1000 MHz, there is also a limit corresponding to 20 dB above the indicated values in the table is specified when measuring with peak detector function.

### RESULTS:

The field strength is calculated by adding correction factor to the measured level from the spectrum analyzer. This correction factor includes antenna factor, cable loss and pre-amplifiers gain.

Test performed on the following worst cases modes in all relevant tests channels:

- 802.11a20: 6 Mbits
- 802.11n HT20: MCS0
- 802.11n HT40: MCS0
- 802.11ac VHT20: MCS0
- 802.11ac VHT40: MCS0
- 802.11ac VHT80: MCS0

**INDOOR ANTENNA:** Maximum Declared Assembly Antenna Gain: +5.2 dBi (Antenna gain plus antenna cable loss).

**Mode 802.11 a20**

Inside band radiated spurious emissions in 5.65-5.925 GHz adjacent band.

- Low Channel 149 (5745 MHz): No spurious frequencies detected.
- Middle Channel 157 (5785 MHz): No spurious frequencies detected.
- High Channel 165 (5825 MHz): No spurious frequencies detected.

**Mode 802.11 n20 (HT20)**

Inside band radiated spurious emissions in 5.65-5.925 GHz adjacent band.

- Low Channel 149 (5745 MHz): No spurious frequencies detected.
- Middle Channel 157 (5785 MHz): No spurious frequencies detected.
- High Channel 165 (5825 MHz): No spurious frequencies detected.

**Mode 802.11 n40 (HT40)**

Inside band radiated spurious emissions in 5.65-5.925 GHz adjacent band.

- Low Channel 151 (5755 MHz): No spurious frequencies detected.
- High Channel 159 (5795 MHz): No spurious frequencies detected.

**Mode 802.11 ac40**

Inside band radiated spurious emissions in 5.65-5.925 GHz adjacent band.

- Low Channel 151 (5755 MHz): No spurious frequencies detected.
- High Channel 159 (5795 MHz): No spurious frequencies detected.

**Mode 802.11 ac80 (VHT80)**

Inside band radiated spurious emissions in 5.65-5.925 GHz adjacent band.

- Middle Channel 155 (5775 MHz): No spurious frequencies detected.

Verdict: PASS

<< SEE GRAPHICS IN THE ATTACHED FILE 59830RRF006\_Graphics\_part1.7z >>

**OUTDOOR ANTENNA:** Maximum Declared Assembly Antenna Gain: +1.7 dBi (Antenna gain plus antenna cable loss).

**Mode 802.11 a20**

Inside band radiated spurious emissions in 5.65-5.925 GHz adjacent band.

- Low Channel 149 (5745 MHz): No spurious frequencies detected.
- Middle Channel 157 (5785 MHz): No spurious frequencies detected.
- High Channel 165 (5825 MHz): No spurious frequencies detected.

**Mode 802.11 n20 (HT20)**

Inside band radiated spurious emissions in 5.65-5.925 GHz adjacent band.

- Low Channel 149 (5745 MHz): No spurious frequencies detected.
- Middle Channel 157 (5785 MHz): No spurious frequencies detected.
- High Channel 165 (5825 MHz): No spurious frequencies detected.

**Mode 802.11 n40 (HT40)**

Inside band radiated spurious emissions in 5.65-5.925 GHz adjacent band.

- Low Channel 151 (5755 MHz): No spurious frequencies detected
- High Channel 159 (5795 MHz): No spurious frequencies detected

**Mode 802.11 ac40**

Inside band radiated spurious emissions in 5.65-5.925 GHz adjacent band.

- Low Channel 151 (5755 MHz): No spurious frequencies detected
- High Channel 159 (5795 MHz): No spurious frequencies detected

**Mode 802.11 ac80 (VHT80)**

Inside band radiated spurious emissions in 5.65-5.925 GHz adjacent band.

- Middle Channel 155 (5775 MHz): No spurious frequencies detected

Verdict: PASS

<< SEE GRAPHICS IN THE ATTACHED FILE 59830RRF006\_Graphics\_part1.7z >>