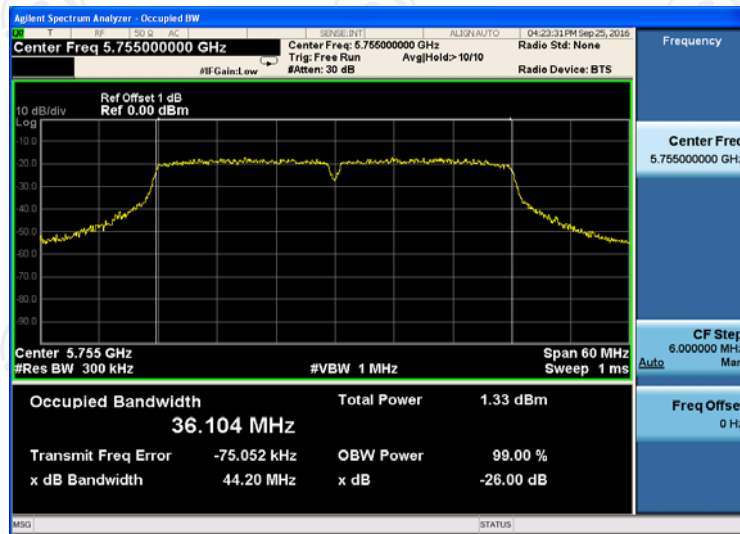
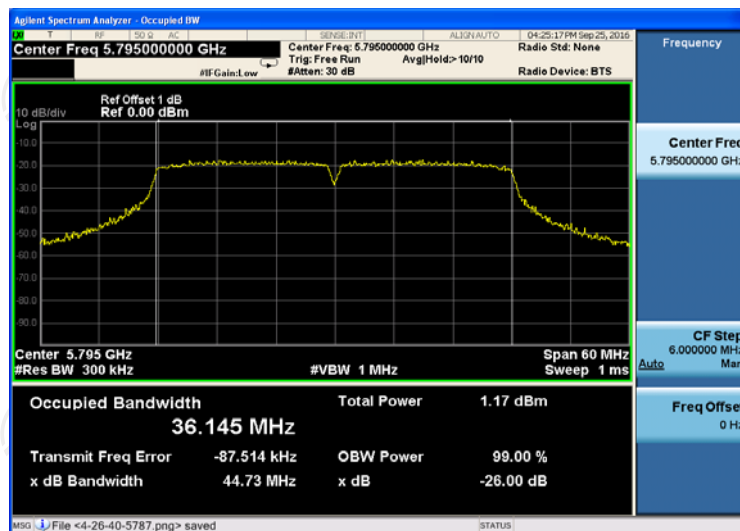


11n(HT40)

CH151



CH159



6.6. Power Spectral Density

6.6.1. Test Specification

Test Requirement:	FCC Part15 E Section 15.407 (a)
Test Method:	KDB662911 D01 Multiple Transmitter Output v02r01 KDB789033 D02 General UNII Test Procedures New Rules v01r03 Section F
Limit:	$\leq 17.00\text{dBm/MHz}$ for Band I 5150MHz-5250MHz $\leq 11.00\text{dBm/MHz}$ for Band II 5250MHz-5350MHz $\leq 11.00\text{dBm/MHz}$ for Band III 5450MHz-5725MHz $\leq 30.00\text{dBm/500KHz}$ for Band IV 5725MHz-5850MHz The e.i.r.p spectral density for Band I 5150MHz – 5250 MHz should not exceed 10dBm/MHz
Test Setup:	 Spectrum Analyzer EUT
Test Mode:	Transmitting mode with modulation
Test Procedure:	1. Set the spectrum analyzer or EMI receiver span to view the entire emission bandwidth. 1. Set RBW = 510 kHz/1 MHz, VBW $\geq 3 \times \text{RBW}$, Sweep time = Auto, Detector = RMS. 2. Allow the sweeps to continue until the trace stabilizes. 3. Use the peak marker function to determine the maximum amplitude level. 4. The E.I.R.P spectral density used radiated test method. At a test site that has been validated using the procedures of ANSI C63.4 or the latest CISPR 16-1-4 for measurements above 1 GHz, so as to simulate a near free-space environment.
Test Result:	PASS

6.6.2. Test Instruments

RF Test Room				
Equipment	Manufacturer	Model	Serial Number	Calibration Due
Spectrum Analyzer	Agilent	N9020A	MY49100060	Aug 12, 2017
RF cable	TCT	RE-06	N/A	Aug 12, 2017
Antenna Connector	TCT	RFC-01	N/A	Aug 12, 2017

Note: The calibration interval of the above test instruments is 12 months and the calibrations are traceable to international system unit (SI).

6.6.3. Test data

6.6.4.

Configuration Band I (5150 - 5250 MHz) / Antenna 0+Antenna 1						
Mode	Test channel	Power Spectral Density			Limit (dBm/MHz)	Result
		Ant0	Ant1	Total		
11n(HT20)	CH36	-5.762	-5.433	-2.58	17	PASS
11n(HT20)	CH44	-5.571	-5.591	-2.57	17	PASS
11n(HT20)	CH48	-4.430	-5.555	-1.95	17	PASS
11n(HT40)	CH38	-9.990	-10.262	-7.11	17	PASS
11n(HT40)	CH46	-8.103	-8.718	-5.39	17	PASS

Note: 1. All antennas have the same gain. $G_{ANT}=2\text{dBi}$, Array Gain= $10\log(N_{ANT}/N_{SS})=3.01\text{dBi}$

Directional Gain= G_{ANT} + Array Gain= 5.01dBi , $5.01\text{dBi} < 6\text{dBi}$ so limit= 17dBm/MHz

2. The total PSD method used the sum spectra maxima across the outputs.

Configuration Band IV (5725 - 5850 MHz) / Antenna 0+Antenna 1						
Mode	Test channel	Power Spectral Density			Limit (dBm/500kHz)	Result
		Ant0	Ant1	Total		
11n(HT20)	CH149	-9.223	-9.629	-6.41	30	PASS
11n(HT20)	CH157	-8.447	-8.139	-5.28	30	PASS
11n(HT20)	CH161	-7.880	-7.443	-4.65	30	PASS
11n(HT40)	CH151	-13.488	-12.353	-9.87	30	PASS
11n(HT40)	CH159	-12.326	-12.227	-9.27	30	PASS

Note: 1. All antennas have the same gain. $G_{ANT}=2\text{dBi}$, Array Gain= $10\log(N_{ANT}/N_{SS})=3.01\text{dBi}$

Directional Gain= G_{ANT} + Array Gain= 5.01dBi , $5.01\text{dBi} < 6\text{dBi}$ so limit= 30dBm/MHz

2. The total PSD method used the sum spectra maxima across the outputs.

Test plots as follows:

ANT 0

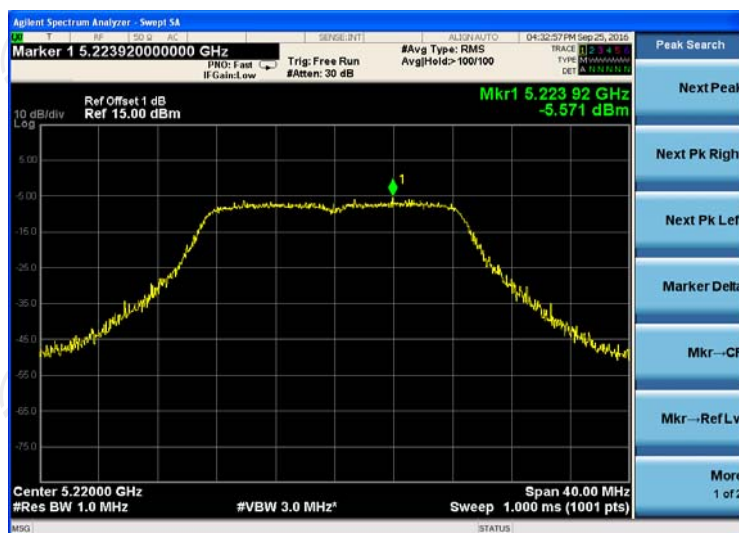
Band I (5150 – 5250 MHz)

11n(HT20)

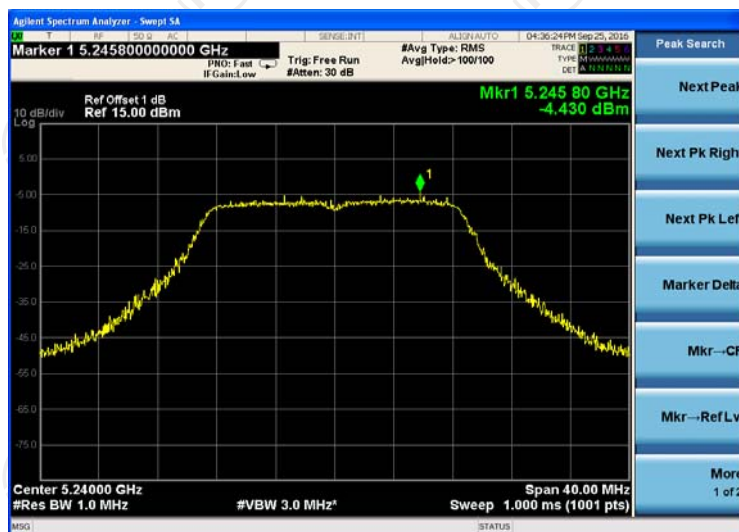
CH36



CH44

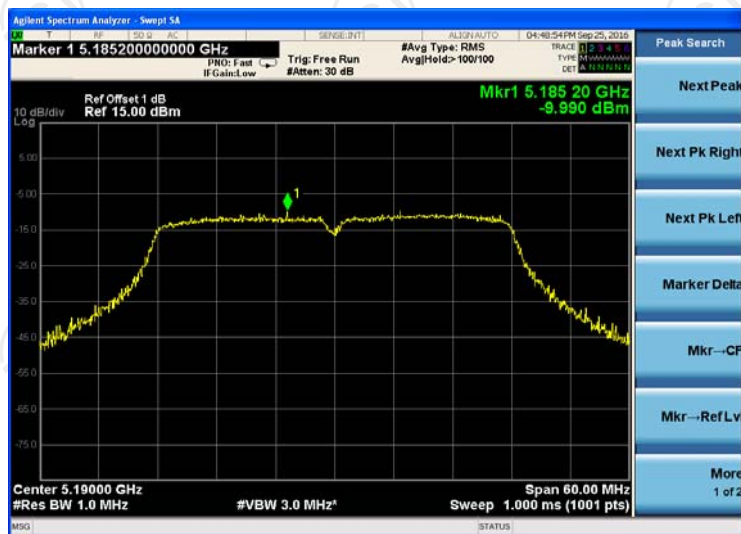


CH48



11n(HT40)

CH38



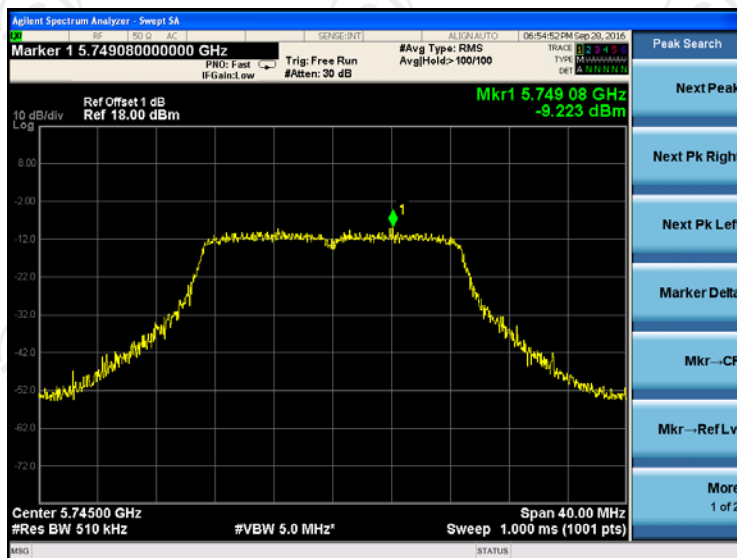
CH46



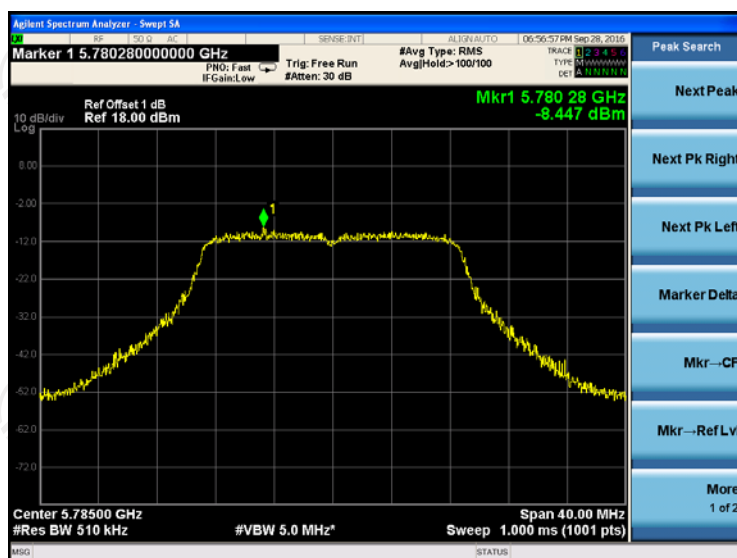
Band IV (5725 – 5850 MHz)

11n(HT20)

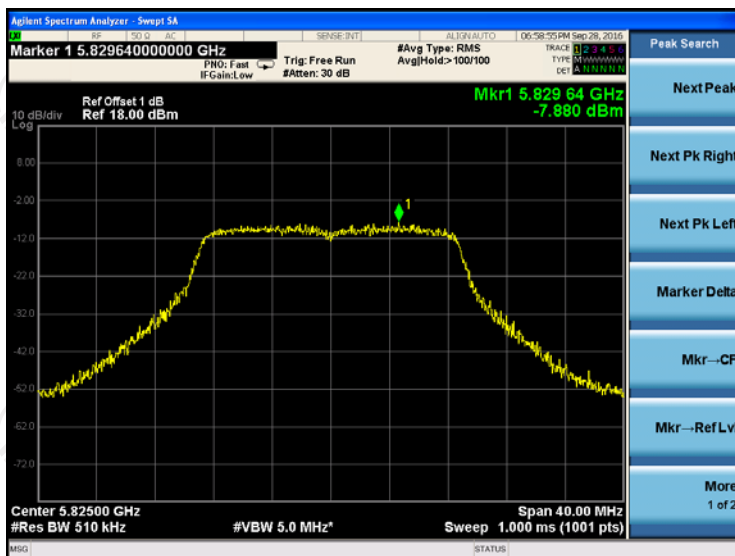
CH149



CH157

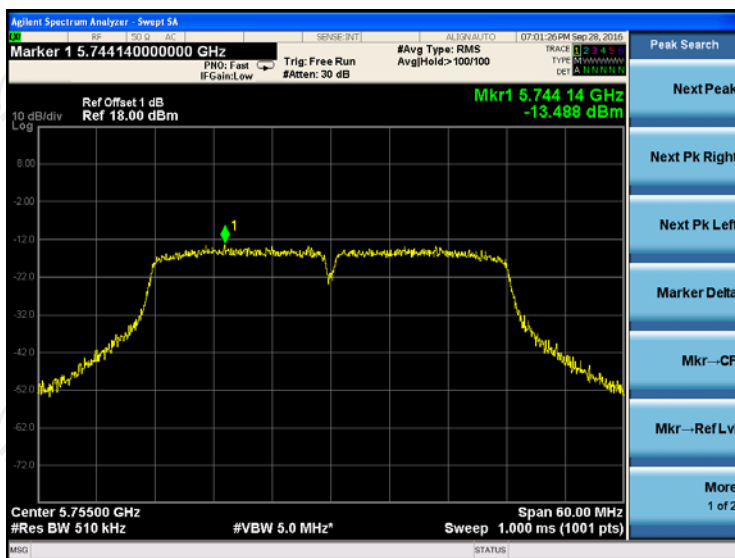


CH161

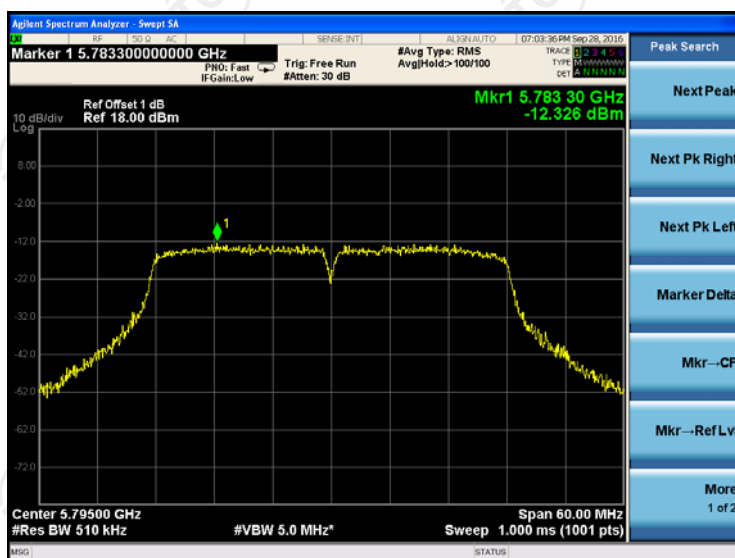


11n(HT40)

CH151



CH159



ANT 1

Band I (5150 – 5250 MHz)

11n(HT20)

CH36



CH44

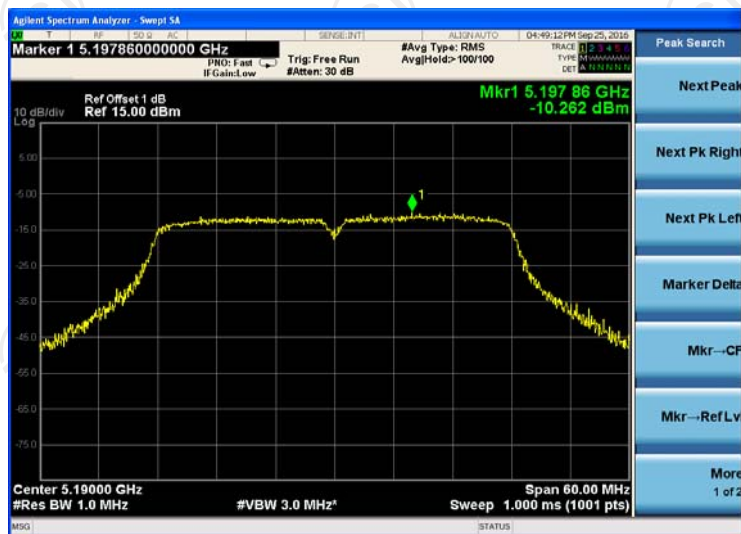


CH48

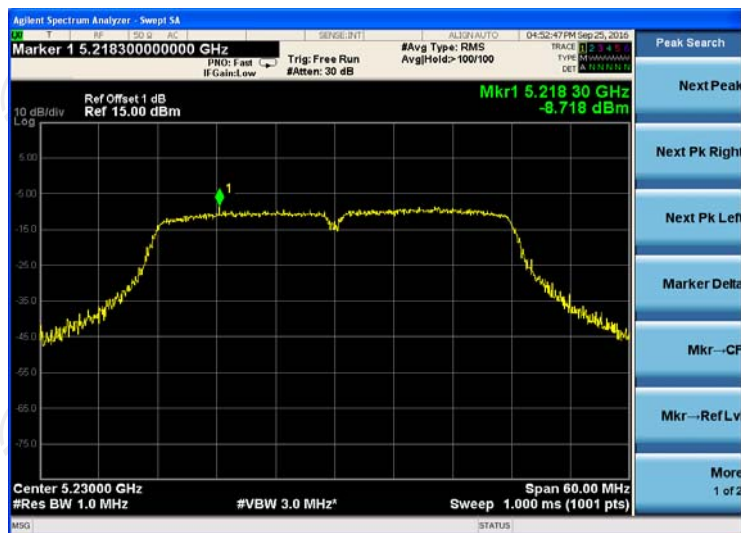


11n(HT40)

CH38



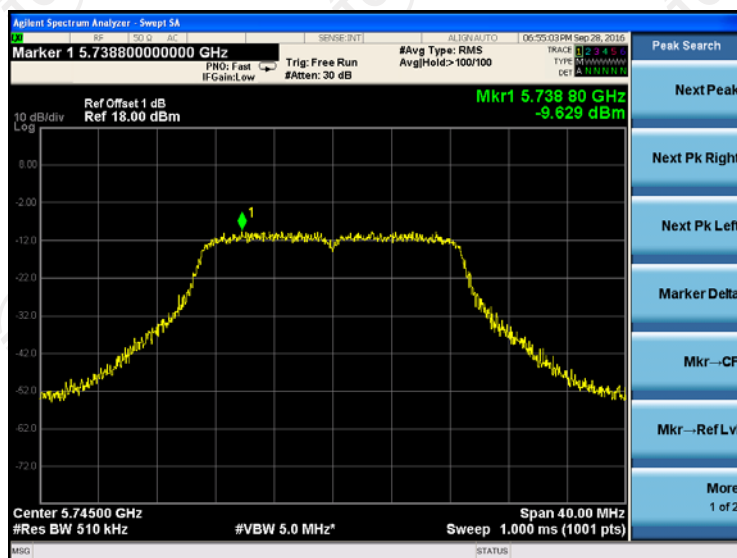
CH46



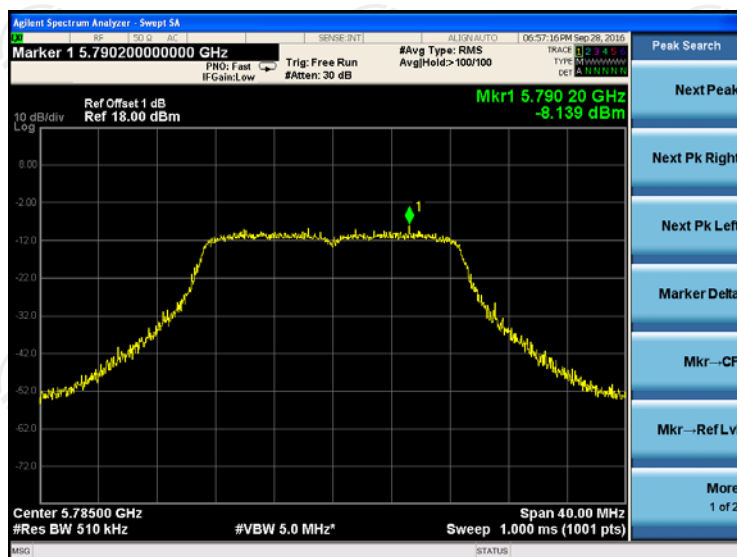
Band IV (5725 – 5850 MHz)

11n(HT20)

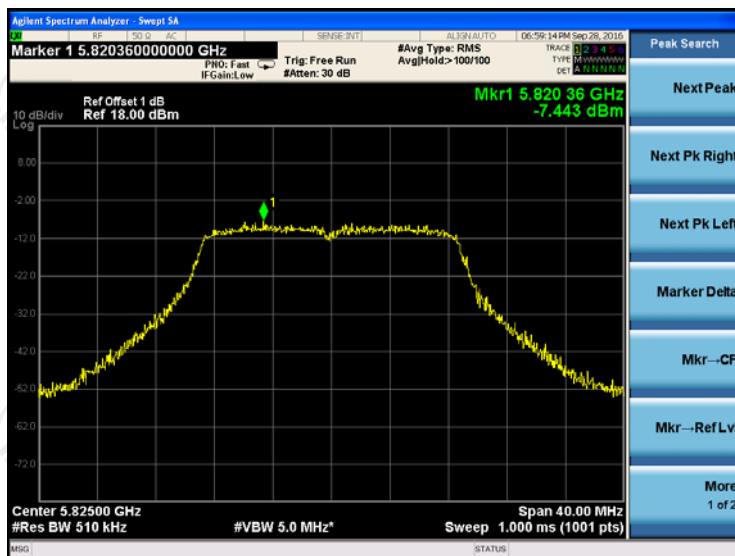
CH149



CH157

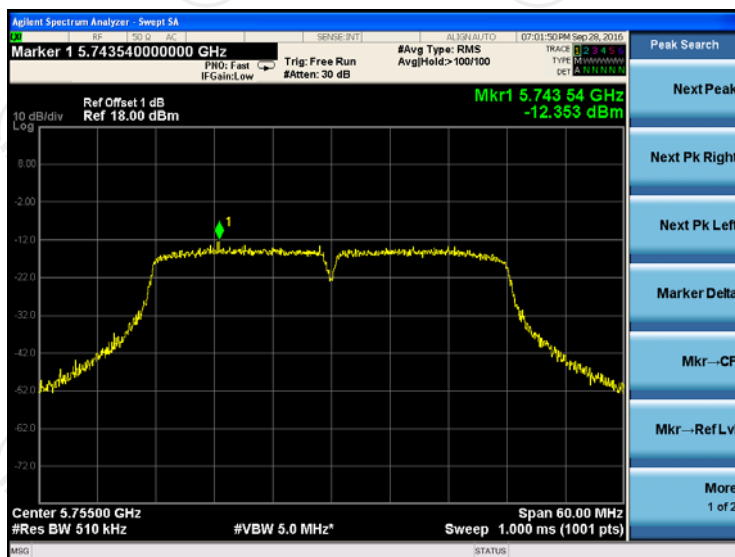


CH161

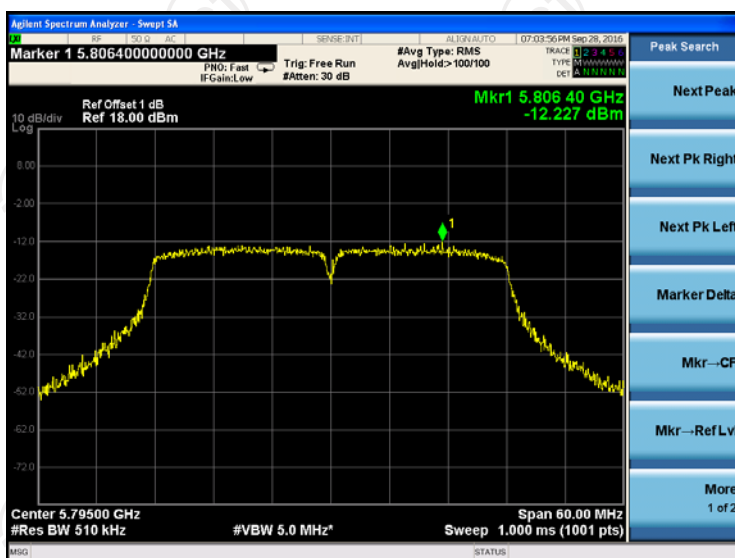


11n(HT40)

CH151

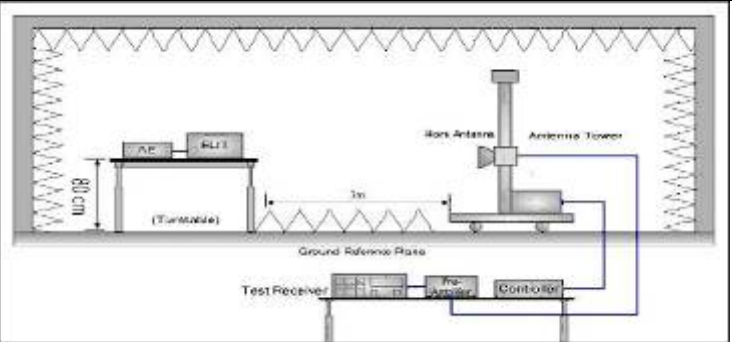


CH159



6.7. Band edge

6.7.1. Test Specification

Test Requirement:	FCC CFR47 Part 15E Section 15.407
Test Method:	ANSI C63.10 2013
Limit:	For band I&II&III: $E[dB\mu V/m] = EIRP[dBm] + 95.2 = 68.2$ dB $\mu V/m$, for EIRP(dBm)= -27dBm For band IV(5715-5725MHz&5850-5860MHz): $E[dB\mu V/m] = EIRP[dBm] + 95.2 = 78.2$ dB $\mu V/m$, for EIRP(dBm)= -17dBm ; For band IV(other un-restricted band): $E[dB\mu V/m] = EIRP[dBm] + 95.2 = 68.2$ dB $\mu V/m$, for EIRP(dBm)= -27dBm
Test Setup:	
Test Mode:	Transmitting mode with modulation
Test Procedure:	1. The EUT was placed on the top of a rotating table 0.8 meters above the ground at a 3 meter camber. The table was rotated 360 degrees to determine the position of the highest radiation. 2. The EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower. 3. The antenna height is varied from one meter to four meters above the ground to determine the maximum value of the field strength. Both horizontal and vertical polarizations of the antenna are set to make the measurement. 4. For each suspected emission, the EUT was arranged to its worst case and then the antenna was tuned to heights from 1 meter to 4 meters and the rota table was turned from 0 degrees to 360 degrees to find the maximum reading. 5. The test-receiver system was set to Peak Detect Function and Specified Bandwidth with Maximum Hold Mode. 6. If the emission level of the EUT in peak mode was 10dB lower than the limit specified, then testing could be stopped and the peak values of the EUT would be reported. Otherwise the emissions that did not have 10dB margin would be re-tested one by one using peak,

	quasipeak or average method as specified and then reported in a data sheet.
Test Result:	PASS

6.7.2. Test Instruments

Radiated Emission Test Site (966)				
Name of Equipment	Manufacturer	Model	Serial Number	Calibration Due
ESPI Test Receiver	ROHDE&SCHW ARZ	ESVD	100008	Aug. 11, 2017
Spectrum Analyzer	ROHDE&SCHW ARZ	FSEM	848597/001	Aug. 11, 2017
Spectrum Analyzer	ROHDE&SCHW ARZ	FSP40	100056	Aug. 11, 2017
Spectrum Analyzer	Agilent	N9020A	MY49100060	Aug. 12, 2017
Pre-amplifier	EM Electronics Corporation CO.,LTD	EM30265	07032613	Aug. 11, 2017
Pre-amplifier	HP	8447D	2727A05017	Aug. 11, 2017
Loop antenna	ZHINAN	ZN30900A	12024	Aug. 13, 2017
Broadband Antenna	Schwarzbeck	VULB9163	340	Aug. 13, 2017
Horn Antenna	Schwarzbeck	BBHA 9120D	631	Aug. 13, 2017
Horn Antenna	Schwarzbeck	BBHA 9170	373	Aug. 13, 2017
Coax cable	TCT	RE-low-01	N/A	Aug. 11, 2017
Coax cable	TCT	RE-high-02	N/A	Aug. 11, 2017
Coax cable	TCT	RE-low-03	N/A	Aug. 11, 2017
Coax cable	TCT	RE-High-04	N/A	Aug. 11, 2017
Antenna Mast	CCS	CC-A-4M	N/A	Aug. 11, 2017
EMI Test Software	Shurple Technology	EZ-EMC	N/A	N/A

Note: The calibration interval of the above test instruments is 12 months and the calibrations are traceable to international system unit (SI).

6.7.3. Test Data

802.11n HT20	CH	Freq. (MHz)	Read_level (dBuV/m)	Factor (dB)	Peak (dBuV/m)	Limit (dBuV/m) (Peak)	Limit (dBuV/m)t (Avg)	Over	Ant. Pol. H/V
Band I	Lowest	5150	43.14	5.82	48.96	68.2	54	-5.04	H
		5150	40.22	5.82	46.04	68.2	54	-7.96	V
	Highest	5350	42.83	6.52	49.35	68.2	54	-4.65	H
		5350	40.19	6.52	46.71	68.2	54	-7.29	V
Band IV	Lowest	5725	42.81	8.21	51.02	78.2	54	-2.98	H
		5725	43.81	8.21	52.02	78.2	54	-1.98	V
	Highest	5850	42.83	8.87	51.7	78.2	54	-2.30	H
		5850	40.85	8.87	49.72	78.2	54	-4.28	V
Remark: Factor(dB)=Ant. Factor+Cable Loss-Amp. Factor									

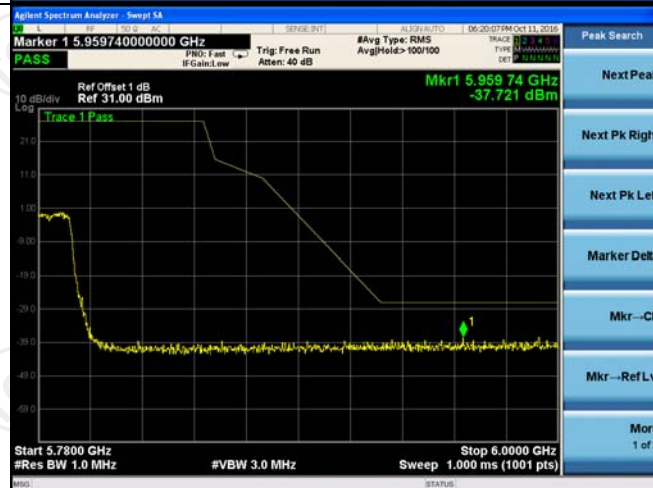
802.11n HT40	CH	Freq. (MHz)	Read_level (dBuV/m)	Factor (dB)	Peak (dBuV/m)	Limit (dBuV/m) (Peak)	Limit (dBuV/m)t (Avg)	Over	Ant. Pol. H/V
Band I	Lowest	5150	44.32	5.82	50.14	68.2	54	-3.86	H
		5150	39.40	5.82	45.22	68.2	54	-8.78	V
	Highest	5350	43.01	6.52	49.53	68.2	54	-4.47	H
		5350	40.37	6.52	46.89	68.2	54	-7.11	V
Band IV	Lowest	5725	43.99	8.21	52.20	78.2	54	-1.80	H
		5725	40.99	8.21	49.20	78.2	54	-4.80	V
	Highest	5850	43.01	8.87	51.88	78.2	54	-2.12	H
		5850	41.03	8.87	49.9	78.2	54	-4.10	V
Remark: Factor(dB)=Ant. Factor+Cable Loss-Amp. Factor									

Band IV Band-edge for RF Conducted Emissions

802.11n
HT20 / LCH



802.11n
HT20 / HCH

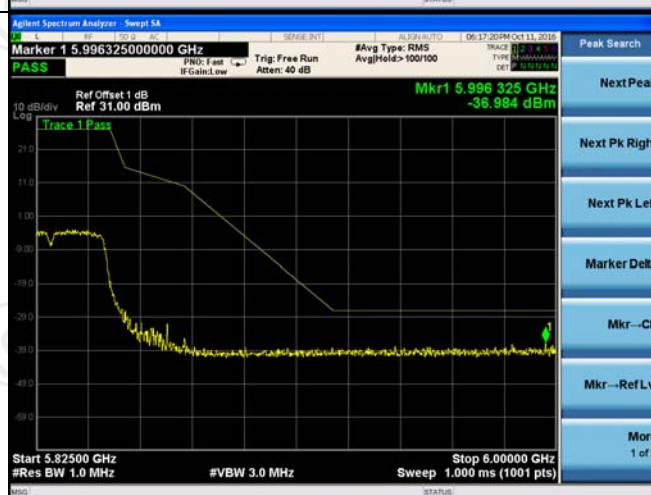


Band IV Band-edge for RF Conducted Emissions

802.11n
HT40 / LCH



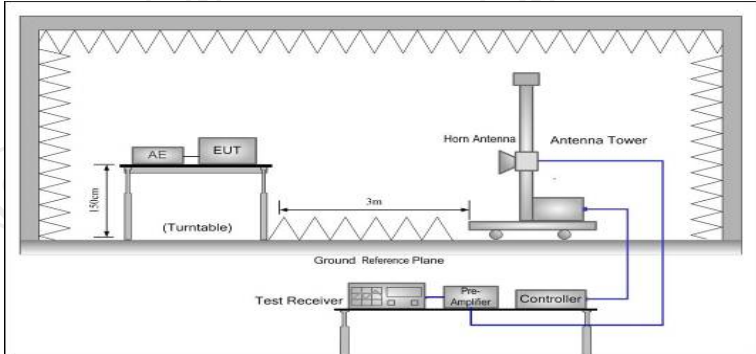
802.11n
HT40 / HCH



6.8. Spurious Emission

6.8.1. Restrict Bands Measurement

6.8.1.1. Test Specification

Test Requirement:	FCC CFR47 Part 15 Section 15.407 & 15.209 & 15.205																		
Test Method:	KDB 789033 D02 v01r03																		
Frequency Range:	Band I & II: 4.5 GHz to 5.15 GHz and 5.35GHz to 5.46GHz Band III &IV: 5.35 GHz to 5.46 GHz																		
Measurement Distance:	3 m																		
Antenna Polarization:	Horizontal & Vertical																		
Operation mode:	Transmitting mode with modulation																		
Receiver Setup:	<table><tr><td>Frequency</td><td>Detector</td><td>RBW</td><td>VBW</td><td>Remark</td></tr><tr><td rowspan="2">Above 1GHz</td><td>Peak</td><td>1MHz</td><td>3MHz</td><td>Peak Value</td></tr><tr><td>RMS</td><td>1MHz</td><td>3MHz</td><td>Average Value</td></tr></table>					Frequency	Detector	RBW	VBW	Remark	Above 1GHz	Peak	1MHz	3MHz	Peak Value	RMS	1MHz	3MHz	Average Value
Frequency	Detector	RBW	VBW	Remark															
Above 1GHz	Peak	1MHz	3MHz	Peak Value															
	RMS	1MHz	3MHz	Average Value															
Limit:	<table><tr><td>Frequency</td><td>Limit (dBuV/m @3m)</td><td>Remark</td></tr><tr><td rowspan="2">Above 1GHz</td><td>74</td><td>Peak Value</td></tr><tr><td>54</td><td>Average Value</td></tr></table>					Frequency	Limit (dBuV/m @3m)	Remark	Above 1GHz	74	Peak Value	54	Average Value						
Frequency	Limit (dBuV/m @3m)	Remark																	
Above 1GHz	74	Peak Value																	
	54	Average Value																	
Test setup:	Above 1GHz 																		
Test Procedure:	1. The testing follows FCC KDB Publication No. 789033 D02 General UNII Test Procedures New Rules v01r03. Section G) Unwanted emissions measurement. 2. For the radiated emission test below 1GHz: The EUT was placed on a turntable with 0.8 meter above ground. The EUT was set 3 meters from the interference receiving antenna, which was mounted on the top of a variable height antenna tower. The EUT was arranged to its worst case and then tune																		

	the antenna tower (from 1 m to 4 m) and turntable (from 0 degree to 360 degrees) to find the maximum reading. A pre-amp and a high PASS filter are used for the test in order to get better signal level. For the radiated emission test above 1GHz: Place the measurement antenna on a turntable with 1.5 meter above ground, which is away from each area of the EUT determined to be a source of emissions at the specified measurement distance, while keeping the measurement antenna aimed at the source of emissions at each frequency of significant emissions, with polarization oriented for maximum response. The measurement antenna may have to be higher or lower than the EUT, depending on the radiation pattern of the emission and staying aimed at the emission source for receiving the maximum signal. The final measurement antenna elevation shall be that which maximizes the emissions. The measurement antenna elevation for maximum emissions shall be restricted to a range of heights of from 1 m to 4 m above the ground or reference ground plane. 3. Corrected Reading: Antenna Factor + Cable Loss + Read Level - Preamp Factor = Level 4. For measurement below 1GHz, If the emission level of the EUT measured by the peak detector is 3 dB lower than the applicable limit, the peak emission level will be reported. Otherwise, the emission measurement will be repeated using the quasi-peak detector and reported. 5. Use the following spectrum analyzer settings: (1) Span shall wide enough to fully capture the emission being measured; (2) Set RBW=100 kHz for $f < 1 \text{ GHz}$; $\text{VBW} \geq \text{RBW}$; Sweep = auto; Detector function = peak; Trace = max hold; (3) Set RBW = 1 MHz, VBW= 3MHz for $f > 1 \text{ GHz}$ for peak measurement. For average measurement: VBW = 10 Hz, when duty cycle is no less than 98 percent. $\text{VBW} \geq 1/T$, when duty cycle is less than 98 percent where T is the minimum transmission duration over which the transmitter is on and is transmitting at its maximum power control level for the tested mode of operation. (4) A 5.8GHz high -PASS filter is used during radiated emissions above 1GHz measurement.
Test results:	PASS

6.8.1.1 Test Instruments

Radiated Emission Test Site (966)				
Name of Equipment	Manufacturer	Model	Serial Number	Calibration Due
ESPI Test Receiver	ROHDE&SCHW ARZ	ESVD	100008	Aug. 11, 2017
Spectrum Analyzer	ROHDE&SCHW ARZ	FSEM	848597/001	Aug. 11, 2017
Spectrum Analyzer	ROHDE&SCHW ARZ	FSP40	100056	Aug. 11, 2017
Spectrum Analyzer	Agilent	N9020A	MY49100060	Aug. 12, 2017
Pre-amplifier	EM Electronics Corporation CO.,LTD	EM30265	07032613	Aug. 11, 2017
Pre-amplifier	HP	8447D	2727A05017	Aug. 11, 2017
Loop antenna	ZHINAN	ZN30900A	12024	Aug. 13, 2017
Broadband Antenna	Schwarzbeck	VULB9163	340	Aug. 13, 2017
Horn Antenna	Schwarzbeck	BBHA 9120D	631	Aug. 13, 2017
Horn Antenna	Schwarzbeck	BBHA 9170	373	Aug. 13, 2017
Coax cable	TCT	RE-low-01	N/A	Aug. 11, 2017
Coax cable	TCT	RE-high-02	N/A	Aug. 11, 2017
Coax cable	TCT	RE-low-03	N/A	Aug. 11, 2017
Coax cable	TCT	RE-High-04	N/A	Aug. 11, 2017
Antenna Mast	CCS	CC-A-4M	N/A	Aug. 12, 2017
EMI Test Software	Shurple Technology	EZ-EMC	N/A	N/A

Note: The calibration interval of the above test instruments is 12 months and the calibrations are traceable to international system unit (SI).

6.8.1.2 Test Data

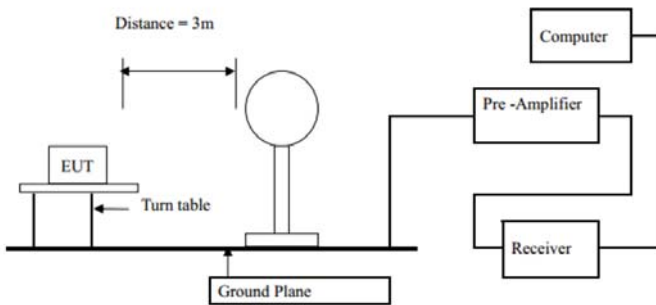
Restrict band around fundamental

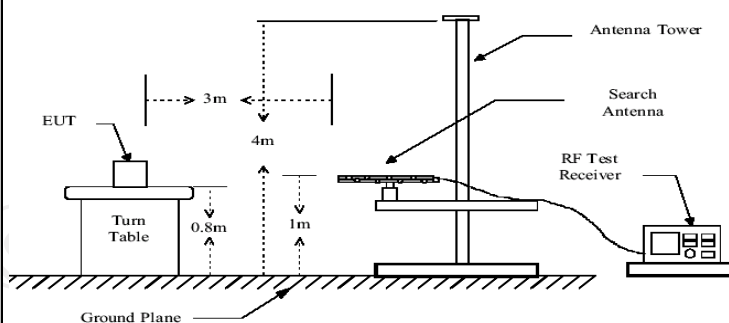
11n (HT20) CH36: 5180MHz									
Frequency (MHz)	Ant. Pol. H/V	Peak reading (dBμV)	AV reading (dBμV)	Correction Factor (Db/m)	Emission Level		Peak limit (DbμV/m)	AV limit (DbμV/m)	Margin (Db)
					Peak (DbμV/m)	AV (DbμV/m)			
5142.20	H	49.85	---	0.55	50.40	---	74	54	-3.60
5150.00	H	50.41	---	0.66	51.07	---	74	54	-2.93
5183.20	H	49.79	---	0.58	50.37	---	74	54	-3.63
5150.00	H	48.57	---	0.66	49.23	---	74	54	-4.77
5187.19	H	48.45	---	0.85	49.30	---	74	54	-4.70
5142.65	V	50.21	---	0.55	50.76	---	74	54	-3.24
5150.03	V	52.32	---	0.66	52.98	---	74	54	-1.02
5183.29	V	49.10	---	0.86	49.96	---	74	54	-4.04
5150.00	V	49.16	---	0.66	49.82	---	74	54	-4.18
5187.28	V	49.63	---	0.57	50.20	---	74	54	-3.80
11n (HT20) CH64: 5320MHz									
Frequency (MHz)	Ant. Pol. H/V	Peak reading (DbμV)	AV reading (DbμV)	Correction Factor (Db/m)	Emission Level		Peak limit (DbμV/m)	AV limit (DbμV/m)	Margin (Db)
					Peak (DbμV/m)	AV (DbμV/m)			
5314.55	H	50.30	---	0.99	51.29	---	74	54	-2.71
5360.00	H	48.71	---	0.85	49.56	---	74	54	-4.44
5323.00	V	50.85	---	0.99	51.84	---	74	54	-2.16
5360.00	V	49.51	---	0.85	51.35	---	74	54	-2.65
11n(HT20) CH100: 5500MHz									
Frequency (MHz)	Ant. Pol. H/V	Peak reading (dBμV)	AV reading (dBμV)	Correction Factor (dB/m)	Emission Level		Peak limit (dBμV/m)	AV limit (dBμV/m)	Margin (dB)
					Peak (dBμV/m)	AV (dBμV/m)			
5416.24	H	49.35	---	0.99	50.34	---	74	54	-3.66
5460	H	51.70	---	0.89	52.59	---	74	54	-1.41
5503.76	H	49.69	---	0.99	50.86	---	74	54	-3.14
5416.24	V	49.80	---	0.99	50.79	---	74	54	-3.21
5460	V	50.95	---	0.89	51.84	---	74	54	-2.16
5503.20	V	48.10	---	0.85	48.95	---	74	54	-5.05
11n(HT40) CH38: 5190MHz									
Frequency (MHz)	Ant. Pol. H/V	Peak reading (dBμV)	AV reading (dBμV)	Correction Factor (dB/m)	Emission Level		Peak limit (dBμV/m)	AV limit (dBμV/m)	Margin (dB)
					Peak (dBμV/m)	AV (dBμV/m)			
5135.98	H	50.01	---	0.57	50.58	---	74	54	-3.42
5207.33	H	49.63	---	0.86	50.49	---	74	54	-3.51
5135.98	V	50.21	---	0.57	50.78	---	74	54	-3.22
5207.33	V	49.75	---	0.85	50.60	---	74	54	-3.40
11n(HT40) CH62: 5310MHz									
Frequency (MHz)	Ant. Pol. H/V	Peak reading (dBμV)	AV reading (dBμV)	Correction Factor (dB/m)	Emission Level		Peak limit (dBμV/m)	AV limit (dBμV/m)	Margin (dB)
					Peak (dBμV/m)	AV (dBμV/m)			
5303.66	H	49.78	---	0.99	50.77	---	74	54	-3.23
5360.00	H	48.36	---	0.85	49.21	---	74	54	-4.79
5306.66	V	50.44	---	0.99	51.43	---	74	54	-2.57
5360.00	V	47.65	---	0.85	48.50	---	74	54	-5.50
11n(HT40) CH102: 5510MHz									
Frequency (MHz)	Ant. Pol. H/V	Peak reading (dBμV)	AV reading (dBμV)	Correction Factor (dB/m)	Emission Level		Peak limit (dBμV/m)	AV limit (dBμV/m)	Margin (dB)
					Peak (dBμV/m)	AV (dBμV/m)			
5417.98	H	50.72	---	0.81	51.53	---	74	54	-2.47
5460	H	50.26	---	0.93	51.19	---	74	54	-2.81

5503.60	H	49.77	---	0.82	50.59	---	74	54	-3.41
5417.98	V	50.47	---	0.81	51.28	---	74	54	-2.72
5460	V	51.33	---	0.93	52.26	---	74	54	-1.74
5503.60	V	48.63	---	0.82	49.45	---	74	54	-4.55

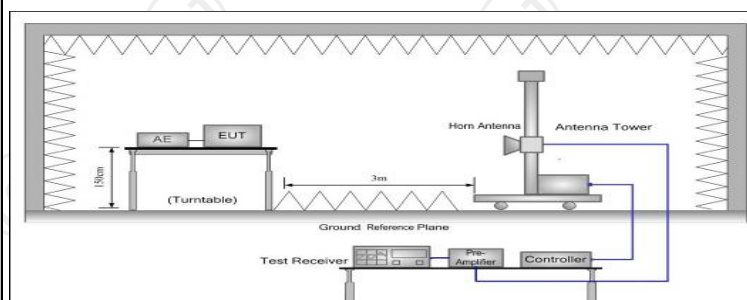
6.8.2. Unwanted Emissions out of the Restricted Bands

6.8.2.1. Test Specification

Test Requirement:	FCC CFR47 Part 15 Section 15.407 & 15.209 & 15.205				
Test Method:	KDB 789033 D02 v01r03				
Frequency Range:	9kHz to 40GHz				
Measurement Distance:	3 m				
Antenna Polarization:	Horizontal & Vertical				
Operation mode:	Transmitting mode with modulation				
Receiver Setup:	Frequency	Detector	RBW	VBW	Remark
	9kHz- 150kHz	Quasi-peak	200Hz	1kHz	Quasi-peak Value
	150kHz- 30MHz	Quasi-peak	9kHz	30kHz	Quasi-peak Value
	30MHz-1GHz	Quasi-peak	100KHz	300KHz	Quasi-peak Value
	Above 1GHz	Peak	1MHz	3MHz	Peak Value
		Peak	1MHz	10Hz	Average Value
Limit:	Unwanted spurious emissions fallen in restricted bands per FCC Part15.205 shall comply with the general field strength limits set forth in § 15.209 as below table,				
	Frequency		Field Strength (microvolts/meter)	Measurement Distance (meters)	
	0.009-0.490		2400/F(KHz)	300	
	0.490-1.705		24000/F(KHz)	30	
	1.705-30		30	30	
	30-88		100	3	
	88-216		150	3	
	216-960		200	3	
	Above 960		500	3	
	Frequency		Limit (dBuV/m @3m)	Detector	
Above 1G		74.0	Peak		
		54.0	Average		
Test setup:	For radiated emissions below 30MHz				
					
	30MHz to 1GHz				



Above 1GHz



Test Procedure:

1. The EUT was placed on the top of a rotating table 0.8 meters above the ground at a 3 meter camber. The table was rotated 360 degrees to determine the position of the highest radiation.
2. The EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower.
3. The antenna height is varied from one meter to four meters above the ground to determine the maximum value of the field strength. Both horizontal and vertical polarizations of the antenna are set to make the measurement.
4. For each suspected emission, the EUT was arranged to its worst case and then the antenna was tuned to heights from 1 meter to 4 meters and the rotating table was turned from 0 degrees to 360 degrees to find the maximum reading.
5. The test-receiver system was set to Peak Detect Function and Specified Bandwidth with Maximum Hold Mode.
6. If the emission level of the EUT in peak mode was 10dB lower than the limit specified, then testing could be stopped and the peak values of the EUT would be reported. Otherwise the emissions that did not have 10dB margin would be re-tested one by one using peak, quasi-peak or average method as specified and then reported in a data sheet.

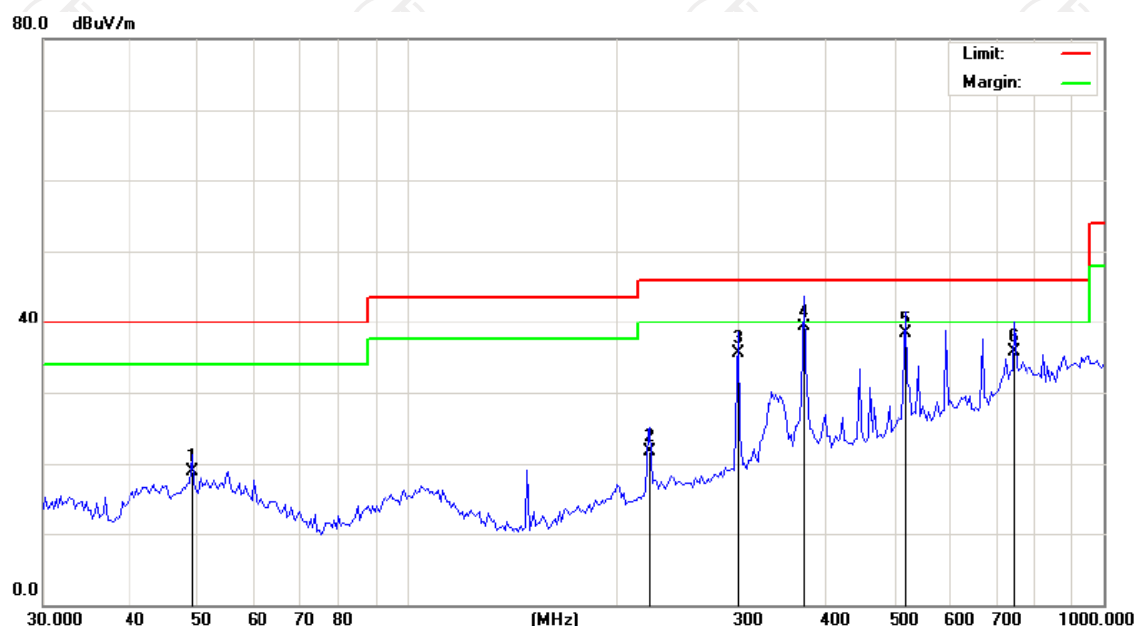
Test results:

PASS

6.8.3. Test Data

Please refer to following diagram for individual
Below 1GHz

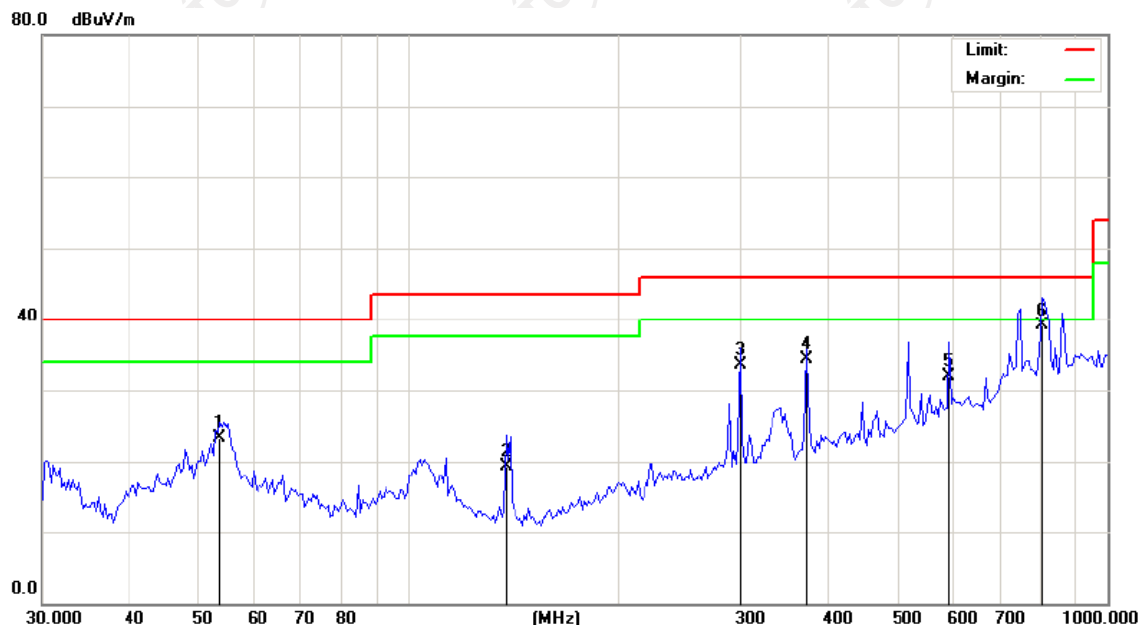
Horizontal:



Site: Polarization: **Horizontal** Temperature: 23
Limit: FCC Part 15B Class B RE_3 m Power: Humidity: 54 %

No.	Mk.	Freq.	Reading Level	Correct Factor	Measurement	Limit	Over	Antenna Height	Table Degree	
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	cm	degree	Comment
1		49.0626	28.70	-9.71	18.99	40.00	-21.01	QP	0	
2		223.8480	31.40	-9.72	21.68	46.00	-24.32	QP	0	
3		298.5932	42.30	-6.74	35.56	46.00	-10.44	QP	0	
4	*	371.2680	44.50	-5.18	39.32	46.00	-6.68	QP	0	
5		520.2078	40.40	-2.13	38.27	46.00	-7.73	QP	0	
6		744.4265	29.70	6.04	35.74	46.00	-10.26	QP	0	

Vertical:



Site: Polarization: **Vertical** Temperature: 23
Limit: FCC Part 15B Class B RE_3 m Power: Humidity: 54 %

No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV/m	Limit dBuV/m	Over dB	Antenna Height cm	Table Degree degree	Comment
1		53.7558	32.40	-9.05	23.35	40.00	-16.65	QP	0	
2		137.8400	34.50	-15.18	19.32	43.50	-24.18	QP	0	
3		298.5932	40.30	-6.74	33.56	46.00	-12.44	QP	0	
4		371.2680	39.50	-5.18	34.32	46.00	-11.68	QP	0	
5		594.5143	31.40	0.43	31.83	46.00	-14.17	QP	0	
6	*	809.9238	34.10	4.95	39.05	46.00	-6.95	QP	0	

Note: 1. The low frequency, which started from 9KHz~30MHz, was pre-scanned and the result which was 20dB lower than the limit line per 15.31(o) was not reported

2. Measurements were conducted in all three channels (high, middle, low) and all modulation (802.11n), and the worst case Mode (Highest channel and 11n(HT40)) was submitted only.

Modulation Type: Band I									
11n(HT20) CH36: 5180MHz									
Frequency (MHz)	Ant. Pol. H/V	Peak reading (dBμV)	AV reading (dBμV)	Correction Factor (dB/m)	Emission Level		Peak limit (dBμV/m)	AV limit (dBμV/m)	Margin (dB)
					Peak (dBμV/m)	AV (dBμV/m)			
10360	H	50.74	---	0.75	51.49	---	74	54	-2.51
15540	H	41.46	---	9.87	51.33	---	74	54	-2.67
---	H	---	---	---	---	---	---	---	---
10360	V	49.78	---	0.75	50.53	---	74	54	-3.47
15540	V	41.58	---	9.87	51.45	---	74	54	-2.55
---	V	---	---	---	---	---	---	---	---
11n(HT20) CH44: 5220MHz									
Frequency (MHz)	Ant. Pol. H/V	Peak reading (dBμV)	AV reading (dBμV)	Correction Factor (dB/m)	Emission Level		Peak limit (dBμV/m)	AV limit (dBμV/m)	Margin (dB)
					Peak (dBμV/m)	AV (dBμV/m)			
10440	H	49.59	---	0.97	50.56	---	74	54	-3.44
15660	H	41.12	---	9.83	50.95	---	74	54	-3.05
---	H	---	---	---	---	---	---	---	---
10440	V	49.45	---	0.97	50.42	---	74	54	-3.58
15660	V	40.96	---	9.83	50.79	---	74	54	-3.21
---	V	---	---	---	---	---	---	---	---
11n(HT20) CH48: 5240MHz									
Frequency (MHz)	Ant. Pol. H/V	Peak reading (dBμV)	AV reading (dBμV)	Correction Factor (dB/m)	Emission Level		Peak limit (dBμV/m)	AV limit (dBμV/m)	Margin (dB)
					Peak (dBμV/m)	AV (dBμV/m)			
10480	H	49.57	---	1.18	50.75	---	74	54	-3.25
15720	H	39.65	---	10.07	49.72	---	74	54	-4.28
---	H	---	---	---	---	---	---	---	---
10480	V	49.99	---	1.18	51.17	---	74	54	-2.83
15720	V	40.53	---	10.07	50.60	---	74	54	-3.40
---	V	---	---	---	---	---	---	---	---
11n(HT40) CH38: 5190MHz									
Frequency (MHz)	Ant. Pol. H/V	Peak reading (dBμV)	AV reading (dBμV)	Correction Factor (dB/m)	Emission Level		Peak limit (dBμV/m)	AV limit (dBμV/m)	Margin (dB)
					Peak (dBμV/m)	AV (dBμV/m)			
10380	H	49.36	---	0.75	50.11	---	74	54	-3.89
15570	H	40.61	---	9.87	50.48	---	74	54	-3.52
---	H	---	---	---	---	---	---	---	---
10380	V	47.57	---	0.75	48.32	---	74	54	-5.68
15570	V	40.68	---	9.87	50.55	---	74	54	-3.45
---	V	---	---	---	---	---	---	---	---
11n(HT40) CH46: 5230MHz									
Frequency (MHz)	Ant. Pol. H/V	Peak reading (dBμV)	AV reading (dBμV)	Correction Factor (dB/m)	Emission Level		Peak limit (dBμV/m)	AV limit (dBμV/m)	Margin (dB)
					Peak (dBμV/m)	AV (dBμV/m)			
10460	H	48.15	---	0.97	49.12	---	74	54	-4.88
15690	H	40.17	---	9.83	50.00	---	74	54	-4.00
---	H	---	---	---	---	---	---	---	---
10460	V	47.32	---	0.97	48.29	---	74	54	-5.71
15690	V	40.58	---	9.83	50.41	---	74	54	-3.59
---	V	---	---	---	---	---	---	---	---

Note:

1. Emission Level=Peak Reading + Correction Factor; Correction Factor= Antenna Factor + Cable loss – Pre-amplifier
2. Margin (dB) = Emission Level (Peak) (dB μ V/m)-Average limit (dB μ V/m)
3. The emission levels of other frequencies are very lower than the limit and not show in test report.
4. Measurements were conducted from 1 GHz to the 10th harmonic of highest fundamental frequency. The highest test frequency is 40GHz.
5. Data of measurement shown “---“in the above table mean that the reading of emissions is attenuated more than 20 dB below the limits or the field strength is too small to be measured.

Modulation Type: Band IV									
11n(HT20) CH149: 5745MHz									
Frequency (MHz)	Ant. Pol. H/V	Peak reading (dBμV)	AV reading (dBμV)	Correction Factor (dB/m)	Emission Level		Peak limit (dBμV/m)	AV limit (dBμV/m)	Margin (dB)
					Peak (dBμV/m)	AV (dBμV/m)			
11490	H	49.07	---	0.75	49.82	---	74	54	-4.18
17235	H	40.60	---	9.87	50.47	---	74	54	-3.53
---	H	---	---	---	---	---	---	---	---
11490	V	47.59	---	0.75	48.34	---	74	54	-5.66
17235	V	40.24	---	9.87	50.11	---	74	54	-3.89
---	V	---	---	---	---	---	---	---	---

11n(HT20) CH157: 5785MHz									
Frequency (MHz)	Ant. Pol. H/V	Peak reading (dBμV)	AV reading (dBμV)	Correction Factor (dB/m)	Emission Level		Peak limit (dBμV/m)	AV limit (dBμV/m)	Margin (dB)
					Peak (dBμV/m)	AV (dBμV/m)			
11570	H	47.29	---	0.97	48.26	---	74	54	-5.74
17355	H	40.47	---	9.83	50.3	---	74	54	-3.70
---	H	---	---	---	---	---	---	---	---
11570	V	47.42	---	0.97	48.39	---	74	54	-5.61
17355	V	40.03	---	9.83	49.86	---	74	54	-4.14
---	V	---	---	---	---	---	---	---	---

11n(HT20) CH161: 5825MHz									
Frequency (MHz)	Ant. Pol. H/V	Peak reading (dBμV)	AV reading (dBμV)	Correction Factor (dB/m)	Emission Level		Peak limit (dBμV/m)	AV limit (dBμV/m)	Margin (dB)
					Peak (dBμV/m)	AV (dBμV/m)			
11650	H	42.80	---	0.99	43.79	---	74	54	-10.21
17475	H	32.71	---	9.85	42.56	---	74	54	-11.44
---	H	---	---	---	---	---	---	---	---
11650	V	45.57	---	0.99	46.56	---	74	54	-7.44
17475	V	35.35	---	9.85	45.2	---	74	54	-8.8
---	V	---	---	---	---	---	---	---	---

11n(HT40) CH151: 5755MHz									
Frequency (MHz)	Ant. Pol. H/V	Peak reading (dBμV)	AV reading (dBμV)	Correction Factor (dB/m)	Emission Level		Peak limit (dBμV/m)	AV limit (dBμV/m)	Margin (dB)
					Peak (dBμV/m)	AV (dBμV/m)			
11510	H	42.76	---	1.33	44.09	---	74	54	-9.91
17265	H	35.84	---	10.22	46.06	---	74	54	-7.94
---	H	---	---	---	---	---	---	---	---
11510	V	41.69	---	1.33	43.02	---	74	54	-10.98
17265	V	34.43	---	10.22	44.65	---	74	54	-9.35
---	V	---	---	---	---	---	---	---	---

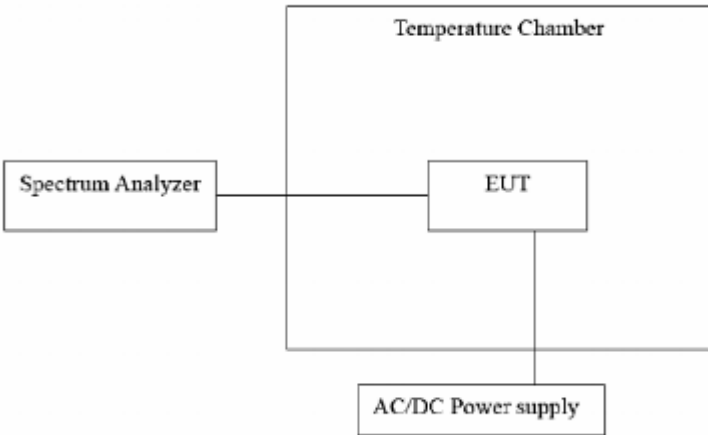
11n(HT40) CH159: 5795MHz									
Frequency (MHz)	Ant. Pol. H/V	Peak reading (dBμV)	AV reading (dBμV)	Correction Factor (dB/m)	Emission Level		Peak limit (dBμV/m)	AV limit (dBμV/m)	Margin (dB)
					Peak (dBμV/m)	AV (dBμV/m)			
11590	H	44.69	---	0.66	45.35	---	74	54	-8.65
17385	H	37.71	---	9.5	47.21	---	74	54	-6.79
---	H	---	---	---	---	---	---	---	---
11590	V	45.23	---	0.66	45.89	---	74	54	-8.11
17385	V	38.52	---	9.5	48.02	---	74	54	-5.98
---	V	---	---	---	---	---	---	---	---

Note:

1. Emission Level=Peak Reading + Correction Factor; Correction Factor= Antenna Factor + Cable loss – Pre-amplifier
2. Margin (dB) = Emission Level (Peak) (dBμV/m)-Average limit (dBμV/m)
3. The emission levels of other frequencies are very lower than the limit and not show in test report.
4. Measurements were conducted from 1 GHz to the 10th harmonic of highest fundamental frequency. The highest test frequency is 40GHz.
5. Data of measurement shown “---“in the above table mean that the reading of emissions is attenuated more than 20 dB below the limits or the field strength is too small to be measured.

6.9. Frequency Stability Measurement

6.9.1. Test Specification

Test Requirement:	FCC Part15 Section 15.407(g) &Part2 J Section 2.1055
Test Method:	ANSI C63.10: 2013
Limit:	The frequency tolerance shall be maintained within the band of operation frequency over a temperature variation of 0 degrees to 35 degrees C at normal supply voltage, and for a variation in the primary supply voltage from 85% to 115% of the rated supply voltage at a temperature of 20 degrees C.
Test Setup:	 <pre> graph LR SA[Spectrum Analyzer] --- EUT[EUT] subgraph TC [Temperature Chamber] EUT end EUT --- P[AC/DC Power supply] </pre>
Test Procedure:	The EUT was placed inside the environmental test chamber and powered by nominal AC/DC voltage. b. Turn the EUT on and couple its output to a spectrum analyzer. c. Turn the EUT off and set the chamber to the highest temperature specified. d. Allow sufficient time (approximately 30 min) for the temperature of the chamber to stabilize. e. Repeat step 2 and 3 with the temperature chamber set to the lowest temperature. f. The test chamber was allowed to stabilize at +20 degree C for a minimum of 30 minutes. The supply voltage was then adjusted on the EUT from 85% to 115% and the frequency record.
Test Result:	PASS
Remark:	Pre-scan was performed at Antenna 0 and Antenna 1, the worst case was found. Only the test data of Antenna 0 was shown in this report.

Test plots as follows:

Test mode:		802.11n(HT20)	Frequency(MHz):	5180
Temperature (°C)	Voltage(VAC)	Measurement Frequency(MHz)	Delta Frequency(Hz)	Result
45	3.3	5180.0079	7900	PASS
35		5180.0021	2100	PASS
25		5179.9832	-16800	PASS
15		5179.9989	-1100	PASS
5		5180.0027	2700	PASS
0		5180.0087	8700	PASS
20	3.795	5180.0061	6100	PASS
	3.3	5179.9879	-12100	PASS
	2.805	5179.9985	-1500	PASS

Test mode:		802.11n(HT20)	Frequency(MHz):	5220
Temperature (°C)	Voltage(VAC)	Measurement Frequency(MHz)	Delta Frequency(Hz)	Result
45	3.3	5219.9879	-12100	PASS
35		5219.9957	-4300	PASS
25		5220.0028	2800	PASS
15		5220.0045	4500	PASS
5		5220.0089	8900	PASS
0		5220.0012	1200	PASS
20	3.795	5220.0078	7800	PASS
	3.3	5220.0043	4300	PASS
	2.805	5219.9970	-3000	PASS

Test mode:		802.11n(HT20)	Frequency(MHz):	5240
Temperature (°C)	Voltage(VAC)	Measurement Frequency(MHz)	Delta Frequency(Hz)	Result
45	3.3	5240.0005	500	PASS
35		5239.9991	-900	PASS
25		5239.9982	-1800	PASS
15		5239.9979	-2100	PASS
5		5240.0031	3100	PASS
0		5240.0044	4400	PASS
20	3.795	5240.0036	3600	PASS
	3.3	5240.0011	1100	PASS
	2.805	5239.9980	-2000	PASS

Test mode:		802.11n(HT40)	Frequency(MHz):	5190
Temperature (°C)	Voltage(VAC)	Measurement Frequency(MHz)	Delta Frequency(Hz)	Result
45	3.3	5190.0017	1700	PASS
35		5190.0111	11100	PASS
25		5190.0078	7800	PASS
15		5190.0034	3400	PASS
5		5190.0045	4500	PASS
0		5190.0010	1000	PASS
20	3.795	5189.9905	-9500	PASS
	3.3	5189.9988	-1200	PASS
	2.805	5190.0041	4100	PASS

Test mode:		802.11n(HT40)	Frequency(MHz):	5230
Temperature (°C)	Voltage(VAC)	Measurement Frequency(MHz)	Delta Frequency(Hz)	Result
45	3.3	5230.0128	12800	PASS
35		5230.0009	900	PASS
25		5230.0069	6900	PASS
15		5229.9978	-2200	PASS
5		5229.9981	-1900	PASS
0		5230.0007	700	PASS
20	3.795	5230.0026	2600	PASS
	3.3	5230.0028	2800	PASS
	2.805	5229.9989	-1100	PASS

*****END OF REPORT*****