FCC Test Report

FCC ID	:	**UIDGPW2200**
Equipment	:	**G.hn Powerline to Wi-Fi extender**
Model No.	:	**GPW2200**
Brand Name	:	**ARRIS**
Applicant	:	**ARRIS Group, Inc.**
Address	:	**3871 Lakefield Drive, Suite 300, Suwanee, Georgia 30024, United States**
Standard	:	**47 CFR FCC Part 15.407**
Received Date	:	**Aug. 28, 2017**
Tested Date	:	**Sep. 04 ~ Sep. 28, 2017**

We, International Certification Corp., would like to declare that the tested sample has been evaluated and in compliance with the requirement of the above standards. The test results contained in this report refer exclusively to the product. It may be duplicated completely for legal use with the approval of the applicant. It shall not be reproduced except in full without the written approval of our laboratory.

Reviewed by: **Approved by:**

Along Chen / Assistant Manager **Gary Chang / Manager**

Testing Laboratory 2732

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Release Record

Report No.	Version	Description	Issued Date
FR782803AN	Rev. 01	Initial issue	Nov. 09, 2017

Summary of Test Results

FCC Rules	Test Items	Measured	Result
15.207	Conducted Emissions	[dBuV]: 0.198MHz 32.42 (Margin -21.29dB) - AV	Pass
15.407(b) 15.209	Radiated Emissions	[dBuV/m at 3m]: 5650.00MHz 67.77 (Margin -0.43dB) - PK	Pass
15.407(a)	Emission Bandwidth	Meet the requirement of limit	Pass
15.407(e)	6dB bandwidth	Meet the requirement of limit	Pass
15.407(a)	RF Output Power	Max Power [dBm]: 5150-5250MHz: 25.37 5725-5850MHz: 25.83	Pass
15.407(a)	Peak Power Spectral Density	Meet the requirement of limit	Pass
15.407(g)	Frequency Stability	Meet the requirement of limit	Pass
15.203	Antenna Requirement	Meet the requirement of limit	Pass

1 General Description

1.1 Information

1.1.1 Specification of the Equipment under Test (EUT)

RF General Information					
Frequency Range (MHz)	**IEEE Std. 802.11**	**Ch. Freq. (MHz)**	**Channel Number**	**Transmit Chains (N_{TX})**	**Data Rate / MCS**
5150-5250	a	5180-5240	36-48 [4]	2	6-54 Mbps
5150-5250	n (HT20)	5180-5240	36-48 [4]	2	MCS 0-15
5150-5250	n (HT40)	5190-5230	38-46 [2]	2	MCS 0-15
5150-5250	ac (VHT20)	5180-5240	36-48 [4]	2	MCS 0-9
5150-5250	ac (VHT40)	5190-5230	38-46 [2]	2	MCS 0-9
5150-5250	ac (VHT80)	5210	42 [1]	2	MCS 0-9
Note 1: RF output power specifies that Maximum Conducted Output Power. Note 2: 802.11a/n/ac uses a combination of OFDM-BPSK, QPSK, 16QAM, 64QAM, 256QAM modulation.					

RF General Information					
Frequency Range (MHz)	**IEEE Std. 802.11**	**Ch. Freq. (MHz)**	**Channel Number**	**Transmit Chains (N_{TX})**	**Data Rate / MCS**
5725-5850	a	5745-5825	149-165 [5]	2	6-54 Mbps
5725-5850	n (HT20)	5745-5825	149-165 [5]	2	MCS 0-15
5725-5850	n (HT40)	5755-5795	151-159 [2]	2	MCS 0-15
5725-5850	ac (VHT20)	5745-5825	149-165 [5]	2	MCS 0-9
5725-5850	ac (VHT40)	5755-5795	151-159 [2]	2	MCS 0-9
5725-5850	ac (VHT80)	5775	155 [1]	2	MCS 0-9
Note 1: RF output power specifies that Maximum Conducted Output Power. Note 2: 802.11a/n/ac uses a combination of OFDM-BPSK, QPSK, 16QAM, 64QAM, 256QAM modulation.					

1.1.2 Antenna Details

Ant. No.	**Model**	**Type**	**Connector**	**Operating Frequencies (MHz) / Antenna Gain (dBi)**		
				2400~2483.5	**5150~5250**	**5725~5850**
1	Ant 1	Dipole	UFL	3.46	3.14	3.41
2	Ant 2	Dipole	UFL	2.43	3.25	2.6

1.1.3 Power Supply Type of Equipment under Test (EUT)

Power Supply Type	100-240Vac

1.1.4 Accessories

Accessories		
No.	**Equipment**	**Description**
1	RJ45 cable	2.0m non-shielded without core

1.1.5 Channel List

For Frequency band 5150-5250 MHz			
802.11 a / HT20 / VHT20		**HT40 / VHT40**	
Channel	**Frequency(MHz)**	**Channel**	**Frequency(MHz)**
36	5180	38	5190
40	5200	46	5230
44	5220	**VHT80**	
48	5240	42	5210

For Frequency band 5725~5850 MHz			
802.11 a / HT20 / VHT20		**HT40 / VHT40**	
Channel	**Frequency(MHz)**	**Channel**	**Frequency(MHz)**
149	5745	151	5755
153	5765	159	5795
157	5785	**VHT80**	
161	5805	155	5775
165	5825	---	---

1.1.6 Test Tool and Duty Cycle

Test Tool	Putty, version: 0.6		
Duty Cycle and Duty Factor	**Mode**	**Duty cycle (%)**	**Duty factor (dB)**
	11a	87.84%	0.56
	VHT20	88.94%	0.51
	VHT40	80.55%	0.94
	VHT80	64.52%	1.90

1.1.7 Power Setting

For Frequency band 5150-5250 MHz		
Modulation Mode	**Test Frequency (MHz)**	**Power Set**
11a	5180	23/27
11a	5200	32/36
11a	5240	32/36
HT20	5180	22/26
HT20	5200	32/36
HT20	5240	32/36
HT40	5190	17/21
HT40	5230	30/34
VHT20	5180	22/26
VHT20	5200	32/36
VHT20	5240	32/36
VHT40	5190	17/21
VHT40	5230	30/34
VHT80	5210	13/17

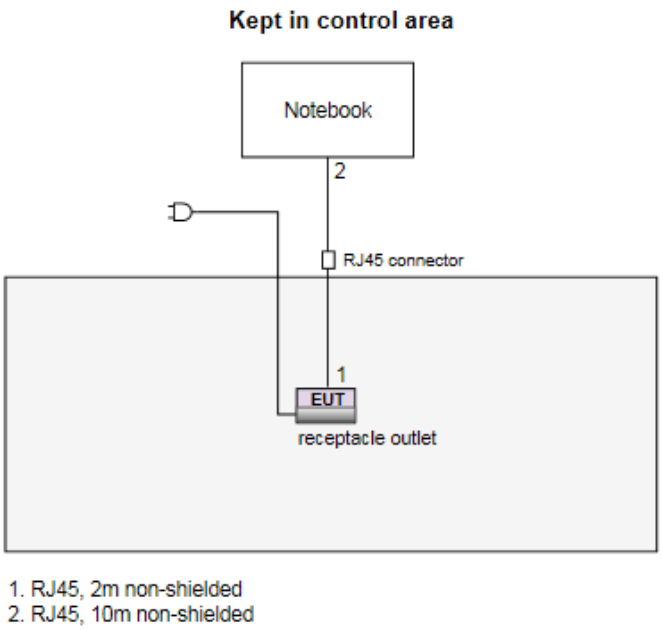
For Frequency band 5725~5850 MHz		
Modulation Mode	**Test Frequency (MHz)**	**Power Set**
11a	5745	32/32
11a	5785	32/32
11a	5825	32/32
HT20	5745	32/32
HT20	5785	32/32
HT20	5825	32/32
HT40	5755	32/32
HT40	5795	32/32
VHT20	5745	32/32
VHT20	5785	32/32
VHT20	5825	32/32
VHT40	5755	32/32
VHT40	5795	32/32
VHT80	5775	24/24

1.2 Local Support Equipment List

Support Equipment List					
No.	**Equipment**	**Brand**	**Model**	**FCC ID**	**Signal cable / Length (m)**
1	Notebook	DELL	Latitude E6440	DoC	RJ45, 10m non-shielded.

1.3 Test Setup Chart

Test Setup Diagram



1.4 The Equipment List

Test Item	Conducted Emission				
Test Site	Conduction room 1 / (CO01-WS)				
Tested Date	Sep. 28, 2017				
Instrument	**Manufacturer**	**Model No.**	**Serial No.**	**Calibration Date**	**Calibration Until**
Receiver	R&S	ESR3	101657	Dec. 21, 2016	Dec. 20, 2017
LISN	SCHWARZBECK	Schwarzbeck 8127	8127-667	Nov. 08, 2016	Nov. 07, 2017
RF Cable-CON	EMC	EMCCFD300-BM-BM-6000	50821	Dec. 20, 2016	Dec. 19, 2017
Measurement Software	AUDIX	e3	6.120210k	NA	NA
Note: Calibration Interval of instruments listed above is one year.					

Test Item	Radiated Emission				
Test Site	966 chamber 3 / (03CH03-WS)				
Tested Date	Sep. 04, 2017				
Instrument	**Manufacturer**	**Model No.**	**Serial No.**	**Calibration Date**	**Calibration Until**
Spectrum Analyzer	ROHDE&SCHWARZ	FSV40	101486	Nov. 15, 2016	Nov. 14, 2017
Receiver	Agilent	N9038A	MY53290044	Oct. 06, 2016	Oct. 05, 2017
Bilog Antenna	SCHWARZBECK	VULB9168	VULB9168-685	Apr. 28, 2017	Apr. 27, 2018
Horn Antenna 1G-18G	SCHWARZBECK	BBHA 9120 D	BBHA 9120 D 1206	Feb. 09, 2017	Feb. 08, 2018
Horn Antenna 18G-40G	SCHWARZBECK	BBHA 9170	BBHA 9170517	Oct. 25, 2016	Oct. 24, 2017
Loop Antenna	R&S	HFH2-Z2	100330	Nov. 10, 2016	Nov. 09, 2017
Loop Antenna Cable	KOAX KABEL	101354-BW	101354-BW	Dec. 09, 2016	Dec. 08, 2017
Preamplifier	EMC	EMC02325	980187	Sep. 08, 2016	Sep. 07, 2017
Preamplifier	Agilent	83017A	MY53270014	Aug. 21, 2017	Aug. 20, 2018
Preamplifier	EMC	EMC184045B	980192	Aug. 22, 2017	Aug. 21, 2018
RF cable-3M	HUBER+SUHNER	SUCOFLEX104	MY22620/4	Feb. 04, 2017	Feb. 03, 2018
RF cable-8M	HUBER+SUHNER	SUCOFLEX104	MY22600/4	Feb. 04, 2017	Feb. 03, 2018
RF cable-1M	HUBER+SUHNER	SUCOFLEX104	MY22624/4	Feb. 04, 2017	Feb. 03, 2018
LF cable-0.8M	EMC	EMC8D-NM-NM-800	EMC8D-NM-NM-800-001	Feb. 04, 2017	Feb. 03, 2018
LF cable-3M	EMC	EMC8D-NM-NM-3000	131103	Feb. 04, 2017	Feb. 03, 2018
LF cable-13M	EMC	EMC8D-NM-NM-13000	131104	Feb. 04, 2017	Feb. 03, 2018
Measurement Software	AUDIX	e3	6.120210g	NA	NA
Note: Calibration Interval of instruments listed above is one year.					

Test Item	Radiated Emission				
Test Site	966 chamber 3 / (03CH03-WS)				
Tested Date	Sep. 26, 2017				
Instrument	**Manufacturer**	**Model No.**	**Serial No.**	**Calibration Date**	**Calibration Until**
Spectrum Analyzer	ROHDE&SCHWARZ	FSV40	101486	Nov. 15, 2016	Nov. 14, 2017
Receiver	Agilent	N9038A	MY53290044	Oct. 06, 2016	Oct. 05, 2017
Bilog Antenna	SCHWARZBECK	VULB9168	VULB9168-685	Apr. 28, 2017	Apr. 27, 2018
Horn Antenna 1G-18G	SCHWARZBECK	BBHA 9120 D	BBHA 9120 D 1206	Feb. 09, 2017	Feb. 08, 2018
Horn Antenna 18G-40G	SCHWARZBECK	BBHA 9170	BBHA 9170517	Oct. 25, 2016	Oct. 24, 2017
Loop Antenna	R&S	HFH2-Z2	100330	Nov. 10, 2016	Nov. 09, 2017
Loop Antenna Cable	KOAX KABEL	101354-BW	101354-BW	Dec. 09, 2016	Dec. 08, 2017
Preamplifier	EMC	EMC02325	980187	Sep. 04, 2017	Sep. 03, 2018
Preamplifier	Agilent	83017A	MY53270014	Aug. 21, 2017	Aug. 20, 2018
Preamplifier	EMC	EMC184045B	980192	Aug. 22, 2017	Aug. 21, 2018
RF cable-3M	HUBER+SUHNER	SUCOFLEX104	MY22620/4	Feb. 04, 2017	Feb. 03, 2018
RF cable-8M	HUBER+SUHNER	SUCOFLEX104	MY22600/4	Feb. 04, 2017	Feb. 03, 2018
RF cable-1M	HUBER+SUHNER	SUCOFLEX104	MY22624/4	Feb. 04, 2017	Feb. 03, 2018
LF cable-0.8M	EMC	EMC8D-NM-NM-800	EMC8D-NM-NM-800-001	Feb. 04, 2017	Feb. 03, 2018
LF cable-3M	EMC	EMC8D-NM-NM-3000	131103	Feb. 04, 2017	Feb. 03, 2018
LF cable-13M	EMC	EMC8D-NM-NM-13000	131104	Feb. 04, 2017	Feb. 03, 2018
Measurement Software	AUDIX	e3	6.120210g	NA	NA
Note: Calibration Interval of instruments listed above is one year.					

Test Item	RF Conducted				
Test Site	(TH01-WS)				
Tested Date	Sep. 20 ~ Sep. 28, 2017				
Instrument	**Manufacturer**	**Model No.**	**Serial No.**	**Calibration Date**	**Calibration Until**
Spectrum Analyzer	R&S	FSV40	101063	Mar. 15, 2017	Mar. 14, 2018
TEMP&HUMIDITY CHAMBER	GIANT FORCE	GCT-225-40-SP-SD	MAF1212-002	Nov. 21, 2016	Nov. 20, 2017
Power Meter	Anritsu	ML2495A	1241002	Oct. 06, 2016	Oct. 05, 2017
Power Sensor	Anritsu	MA2411B	1207366	Oct. 06, 2016	Oct. 05, 2017
AC POWER SOURCE	APC	AFC-500W	F312060012	Oct. 28, 2016	Oct. 27, 2017
Measurement Software	Sporton	Sporton_1	1.3.30	NA	NA
Note: Calibration Interval of instruments listed above is one year.					

1.5 Testing Applied Standards

According to the specification of EUT, the EUT must comply with following standards and KDB documents.

47 CFR FCC Part 15.407
ANSI C63.10-2013
FCC KDB 789033 D02 General UNII Test Procedures New Rules v01r04
FCC KDB 644545 D03 Guidance for IEEE 802 11ac New Rules v01
FCC KDB 662911 D01 Multiple Transmitter Output v02r01
FCC KDB 412172 D01 Determining ERP and EIRP v01r01

1.6 Measurement Uncertainty

ISO/IEC 17025 requires that an estimate of the measurement uncertainties associated with the emissions test results be included in the report. The measurement uncertainties given below are based on a 95% confidence level (based on a coverage factor (k=2)

Measurement Uncertainty	
Parameters	**Uncertainty**
Bandwidth	±34.134 Hz
Conducted power	±0.808 dB
Frequency error	±34.134 Hz
Power density	±0.463 dB
Conducted emission	±2.670 dB
AC conducted emission	±2.90 dB
Radiated emission ≤ 1GHz	±3.66 dB
Radiated emission > 1GHz	±5.37 dB
Time	±0.1%
Temperature	±0.6 ^{o}C

2 Test Configuration

2.1 Testing Condition

Test Item	Test Site	Ambient Condition	Tested By
AC Conduction	CO01-WS	22°C / 60%	Howard Huang
Radiated Emissions	03CH03-WS	24-25°C / 65-66%	Aska Huang Brad Wu
RF Conducted	TH01-WS	23°C / 62%	Felix Sung

- FCC Designation No.: TW0009
- FCC site registration No.: 207696
- IC site registration No.: 10807C-1

2.2 The Worst Test Modes and Channel Details

For Frequency band 5150-5250 MHz				
Test item	**Modulation Mode**	**Test Frequency (MHz)**	**Data Rate (Mbps) / MCS**	**Test Configuration**
Conducted Emissions	11a	5200	6 Mbps	---
Radiated Emissions ≤1GHz	11a	5200	6 Mbps	---
RF Output Power	11a	5180 / 5200 / 5240	6 Mbps	---
	HT20	5180 / 5200 / 5240	MCS 0	
	HT40	5190 / 5230	MCS 0	
	VHT20	5180 / 5200 / 5240	MCS 0	
	VHT40	5190 / 5230	MCS 0	
	VHT80	5210	MCS 0	
Radiated Emissions >1GHz Emission Bandwidth Peak Power Spectral Density	11a	5180 / 5200 / 5240	6 Mbps	---
	VHT20	5180 / 5200 / 5240	MCS 0	
	VHT40	5190 / 5230	MCS 0	
	VHT80	5210	MCS 0	
Frequency Stability	Un-modulation	5200	---	---

NOTE:

1. The EUT was pretested with 3 orientations placed on the table for the radiated emission measurement – X, Y, and Z-plane. The **Y-plane** results were found as the worst case and were shown in this report.

For Frequency band 5725-5850 MHz				
Test item	**Modulation Mode**	**Test Frequency (MHz)**	**Data Rate (Mbps) / MCS**	**Test Configuration**
Conducted Emissions	11a	5745	6 Mbps	---
Radiated Emissions ≤1GHz	11a	5745	6 Mbps	---
RF Output Power	11a	5745 / 5785 / 5825	6 Mbps	---
	HT20	5745 / 5785 / 5825	MCS 0	
	HT40	5755 / 5795	MCS 0	
	VHT20	5745 / 5785 / 5825	MCS 0	
	VHT40	5755 / 5795	MCS 0	
	VHT80	5775	MCS 0	
Radiated Emissions >1GHz Emission Bandwidth 6dB bandwidth Peak Power Spectral Density	11a	5745 / 5785 / 5825	6 Mbps	---
	VHT20	5745 / 5785 / 5825	MCS 0	
	VHT40	5755 / 5795	MCS 0	
	VHT80	5775	MCS 0	
Frequency Stability	Un-modulation	5785	---	---

NOTE:

1. The EUT was pretested with 3 orientations placed on the table for the radiated emission measurement – X, Y, and Z-plane. The **Y-plane** results were found as the worst case and were shown in this report.

3 Transmitter Test Results

3.1 Conducted Emissions

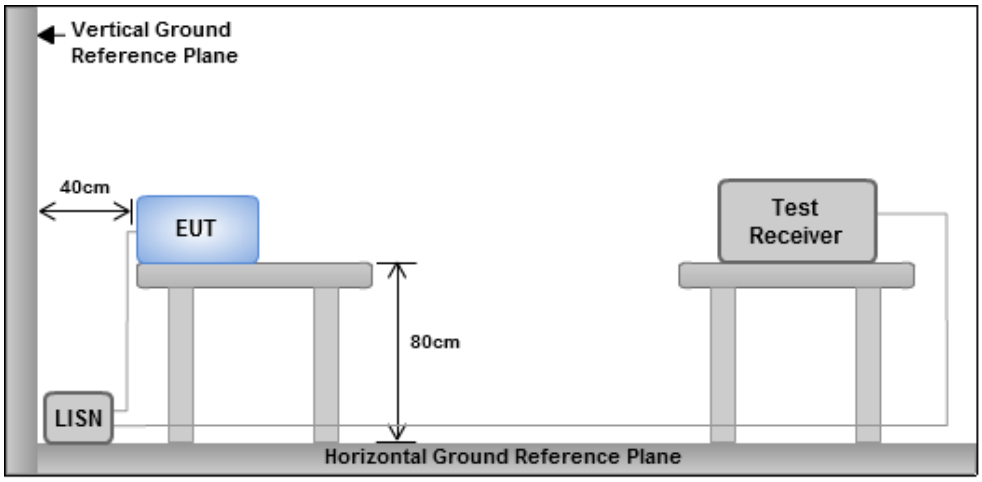
3.1.1 Limit of Conducted Emissions

Conducted Emissions Limit		
Frequency Emission (MHz)	**Quasi-Peak**	**Average**
0.15-0.5	66 - 56 *	56 - 46 *
0.5-5	56	46
5-30	60	50
Note 1: * Decreases with the logarithm of the frequency.		

3.1.2 Test Procedures

1. The device is placed on a test table, raised 80 cm above the reference ground plane. The vertical conducting plane is located 40 cm to the rear of the device.
2. The device is connected to line impedance stabilization network (LISN) and other accessories are connected to other LISN. Measured levels of AC power line conducted emission are across the 50 Ω LISN port.
3. AC conducted emission measurements is made over frequency range from 150 kHz to 30 MHz.
4. This measurement was performed with AC 120V / 60Hz.

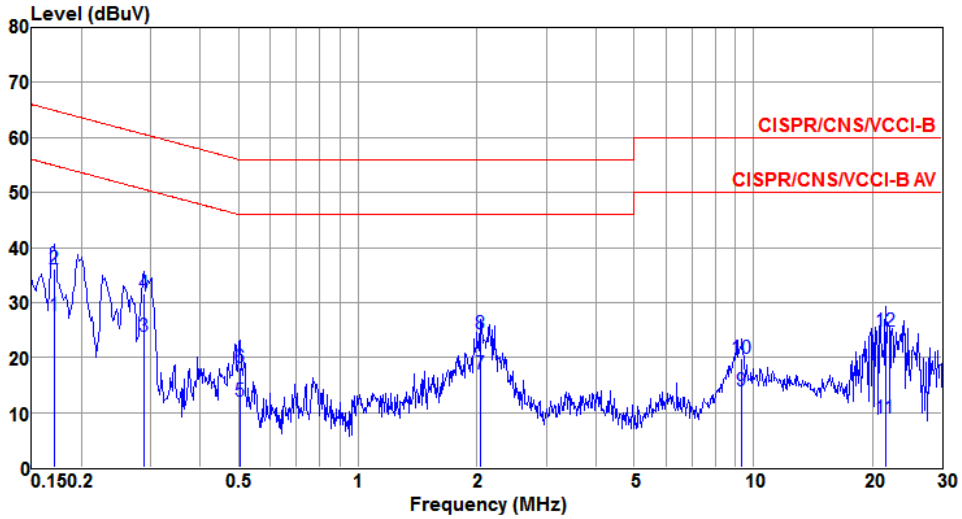
3.1.3 Test Setup



Note: 1. Support units were connected to second LISN.
2. Both of LISNs (AMN) are 80 cm from EUT and at least 80 cm from other units and other metal planes

3.1.4 Test Result of Conducted Emissions

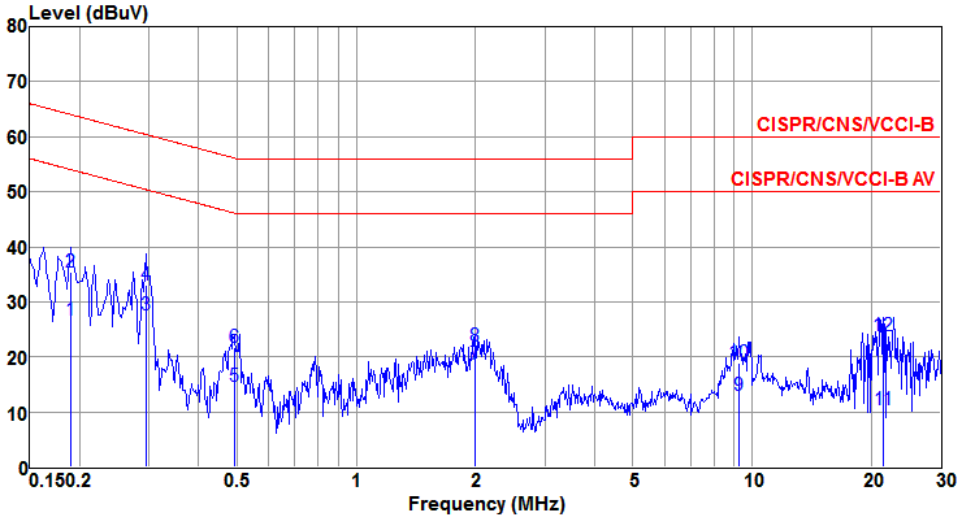
Modulation	11a	Test Freq. (MHz)	5200
Power Phase	Line		



	Freq MHz	Level dBuV	Limit Line dBuV	Over Limit dB	Read Level dBuV	LISN factor dB	cable loss dB	Remark
1	0.171	27.61	54.90	-27.29	27.19	0.38	0.04	Average
2	0.171	36.10	64.90	-28.80	35.68	0.38	0.04	QP
3@	0.288	23.74	50.59	-26.85	23.34	0.36	0.04	Average
4	0.288	31.69	60.59	-28.90	31.29	0.36	0.04	QP
5	0.505	12.03	46.00	-33.97	11.65	0.34	0.04	Average
6	0.505	18.13	56.00	-37.87	17.75	0.34	0.04	QP
7	2.044	17.05	46.00	-28.95	16.55	0.46	0.04	Average
8	2.044	24.21	56.00	-31.79	23.71	0.46	0.04	QP
9	9.352	13.90	50.00	-36.10	12.66	1.02	0.22	Average
10	9.352	19.95	60.00	-40.05	18.71	1.02	0.22	QP
11	21.600	9.08	50.00	-40.92	8.39	0.42	0.27	Average
12	21.600	24.77	60.00	-35.23	24.08	0.42	0.27	QP

Note 1: Level (dBuV) = Read Level (dBuV) + LISN Factor (dB) + Cable Loss (dB).
2: Over Limit (dB) = Level (dBuV) – Limit Line (dBuV).

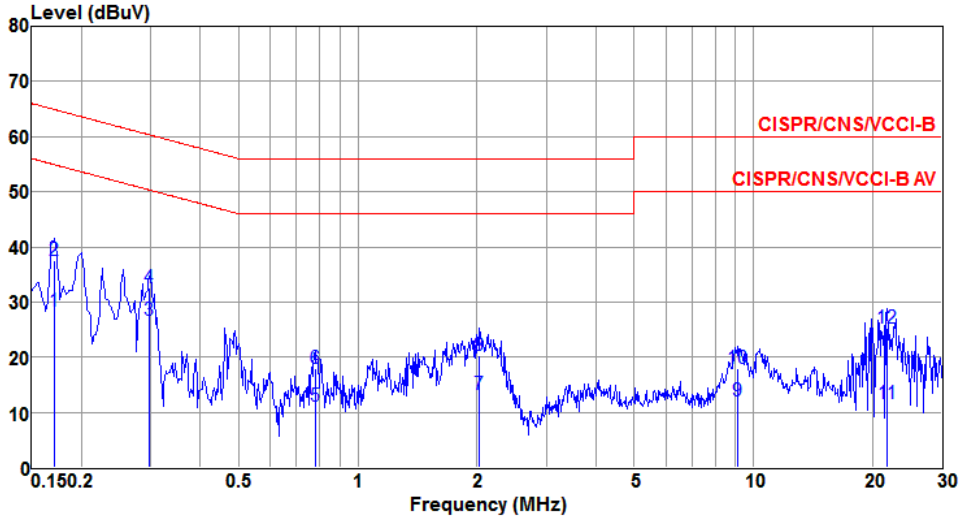
Modulation	11a	Test Freq. (MHz)	5200
Power Phase	Neutral		



	Freq MHz	Level dBuV	Limit Line dBuV	Over Limit dB	Read Level dBuV	LISN factor dB	cable loss dB	Remark
1	0.189	26.73	54.06	-27.33	26.35	0.34	0.04	Average
2	0.189	35.41	64.06	-28.65	35.03	0.34	0.04	QP
3@	0.294	27.55	50.41	-22.86	27.15	0.36	0.04	Average
4	0.294	33.01	60.41	-27.40	32.61	0.36	0.04	QP
5	0.491	14.64	46.14	-31.50	14.22	0.38	0.04	Average
6	0.491	21.64	56.14	-34.50	21.22	0.38	0.04	QP
7	2.001	18.54	46.00	-27.46	18.03	0.47	0.04	Average
8	2.001	22.04	56.00	-33.96	21.53	0.47	0.04	QP
9	9.253	12.95	50.00	-37.05	12.08	0.66	0.21	Average
10	9.253	18.88	60.00	-41.12	18.01	0.66	0.21	QP
11	21.486	10.37	50.00	-39.63	9.67	0.43	0.27	Average
12	21.486	23.81	60.00	-36.19	23.11	0.43	0.27	QP

Note 1: Level (dBuV) = Read Level (dBuV) + LISN Factor (dB) + Cable Loss (dB).
2: Over Limit (dB) = Level (dBuV) – Limit Line (dBuV).

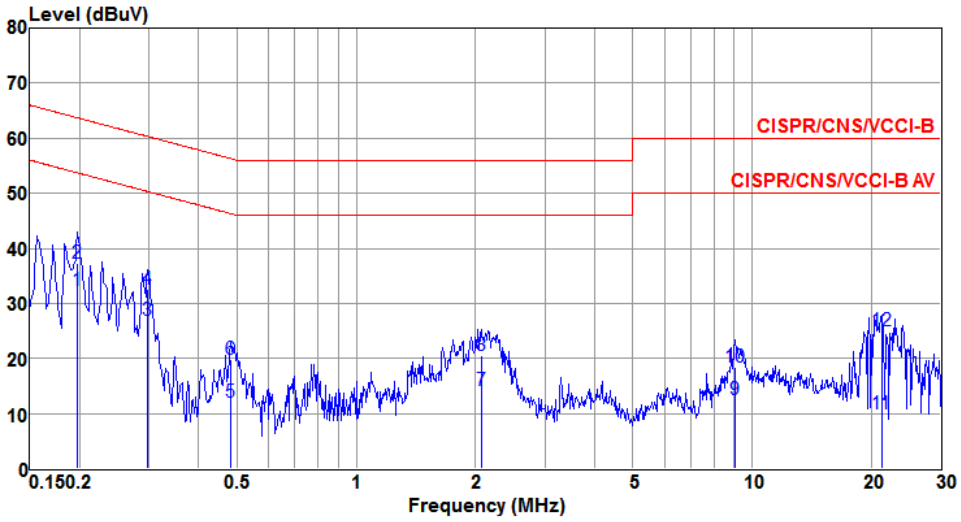
Modulation	11a	Test Freq. (MHz)	5745
Power Phase	Line		



	Freq MHz	Level dBuV	Limit Line dBuV	Over Limit dB	Read Level dBuV	LISN factor dB	cable loss dB	Remark
1	0.171	28.22	54.90	-26.68	27.84	0.34	0.04	Average
2	0.171	37.64	64.90	-27.26	37.26	0.34	0.04	QP
3@	0.297	26.72	50.32	-23.60	26.32	0.36	0.04	Average
4	0.297	32.46	60.32	-27.86	32.06	0.36	0.04	QP
5	0.779	11.17	46.00	-34.83	10.76	0.37	0.04	Average
6	0.779	17.97	56.00	-38.03	17.56	0.37	0.04	QP
7	2.033	13.16	46.00	-32.84	12.65	0.47	0.04	Average
8	2.033	20.32	56.00	-35.68	19.81	0.47	0.04	QP
9	9.107	11.97	50.00	-38.03	11.10	0.66	0.21	Average
10	9.107	17.94	60.00	-42.06	17.07	0.66	0.21	QP
11	21.830	11.61	50.00	-38.39	10.93	0.41	0.27	Average
12	21.830	25.22	60.00	-34.78	24.54	0.41	0.27	QP

Note 1: Level (dBuV) = Read Level (dBuV) + LISN Factor (dB) + Cable Loss (dB).
2: Over Limit (dB) = Level (dBuV) – Limit Line (dBuV).

Modulation	11a	Test Freq. (MHz)	5745
Power Phase	Neutral		



	Freq MHz	Level dBuV	Limit Line dBuV	Over Limit dB	Read Level dBuV	LISN factor dB	cable loss dB	Remark
1@	0.198	32.42	53.71	-21.29	31.99	0.39	0.04	Average
2	0.198	37.32	63.71	-26.39	36.89	0.39	0.04	QP
3	0.297	26.92	50.32	-23.40	26.52	0.36	0.04	Average
4	0.297	32.64	60.32	-27.68	32.24	0.36	0.04	QP
5	0.481	12.13	46.32	-34.19	11.75	0.34	0.04	Average
6	0.481	19.93	56.32	-36.39	19.55	0.34	0.04	QP
7	2.066	14.11	46.00	-31.89	13.60	0.46	0.05	Average
8	2.066	20.57	56.00	-35.43	20.06	0.46	0.05	QP
9	9.059	12.58	50.00	-37.42	11.36	1.01	0.21	Average
10	9.059	18.50	60.00	-41.50	17.28	1.01	0.21	QP
11	21.260	9.90	50.00	-40.10	9.19	0.44	0.27	Average
12	21.260	24.98	60.00	-35.02	24.27	0.44	0.27	QP

Note 1: Level (dBuV) = Read Level (dBuV) + LISN Factor (dB) + Cable Loss (dB).
2: Over Limit (dB) = Level (dBuV) – Limit Line (dBuV).

3.2 Emission Bandwidth

3.2.1 Limit of Emission bandwidth

Within the 5.725-5.85 GHz band, the minimum 6 dB bandwidth of U-NII devices shall be at least 500 kHz.

3.2.2 Test Procedures

26dB Bandwidth

1. Set RBW = approximately 1% of the emission bandwidth.
2. Set the VBW > RBW, Detector = Peak.
3. Trace mode = max hold.
4. Measure the maximum width of the emission that is 26 dB down from the peak of the emission.

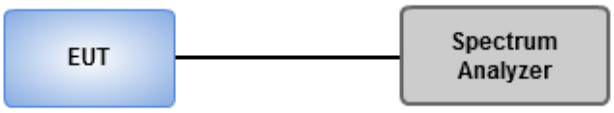
Occupied Bandwidth

1. Set RBW = 1 % to 5 % of the OBW
2. Set VBW ≥ 3 RBW
3. Sample detection and single sweep mode shall be used
4. Use the 99 % power bandwidth function of the instrument

6dB Bandwidth

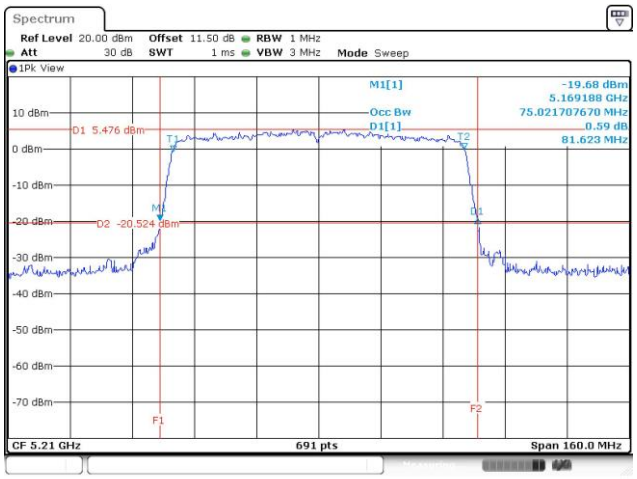
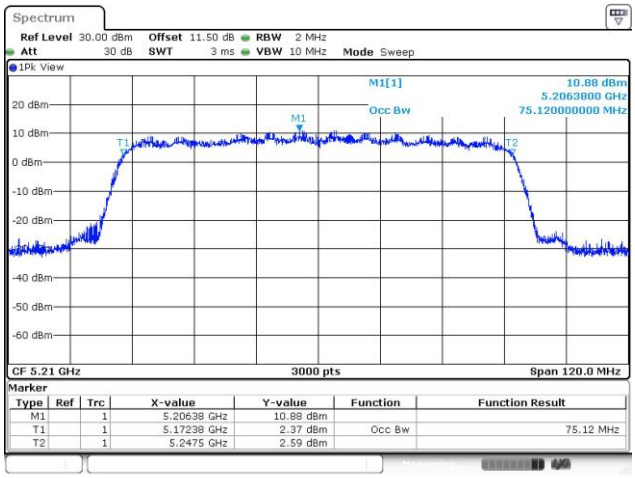
1. Set RBW = 100kHz, VBW = 300kHz
2. Detector = Peak,Trace mode = max hold.
3. Allow the trace to stabilize.
4. Measure the maximum width of the emission that is constrained by the frequencies associated with the two outermost amplitude points (upper and lower frequencies) that are attenuated by 6 dB relative to the maximum level measured in the fundamental emission

3.2.3 Test Setup



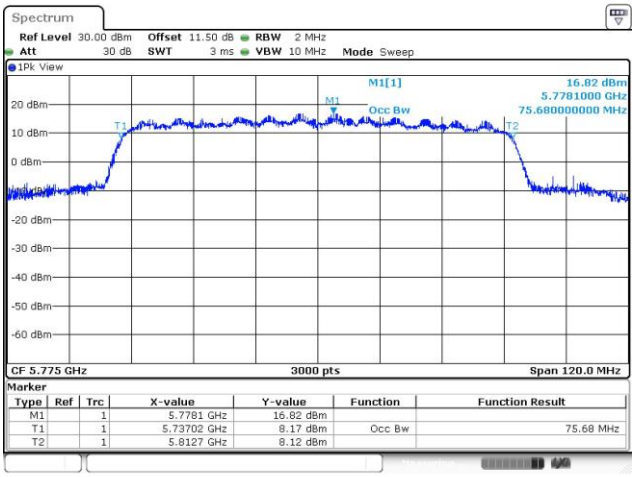
3.2.4 Test Result of Emission Bandwidth

For Frequency band 5150-5250 MHz										
Emission Bandwidth										
Mode	N_{TX}	Freq. (MHz)	26dB Bandwidth (MHz)				99% Bandwidth (MHz)			
			Chain 0	Chain 1	Chain 2	Chain 3	Chain 0	Chain 1	Chain 2	Chain 3
11a	2	5180	21.39	23.48	---	---	16.83	16.84	---	---
11a	2	5200	37.86	37.68	---	---	17.42	17.41	---	---
11a	2	5240	36.23	36.41	---	---	17.21	17.31	---	---
VHT20	2	5180	23.54	24.29	---	---	17.69	17.72	---	---
VHT20	2	5200	44.35	43.84	---	---	18.77	18.66	---	---
VHT20	2	5240	44.78	42.46	---	---	18.42	18.38	---	---
VHT40	2	5190	41.62	41.51	---	---	36.12	36.12	---	---
VHT40	2	5230	78.84	78.70	---	---	37.00	36.98	---	---
VHT80	2	5210	81.62	81.39	---	---	75.12	75.12	---	---

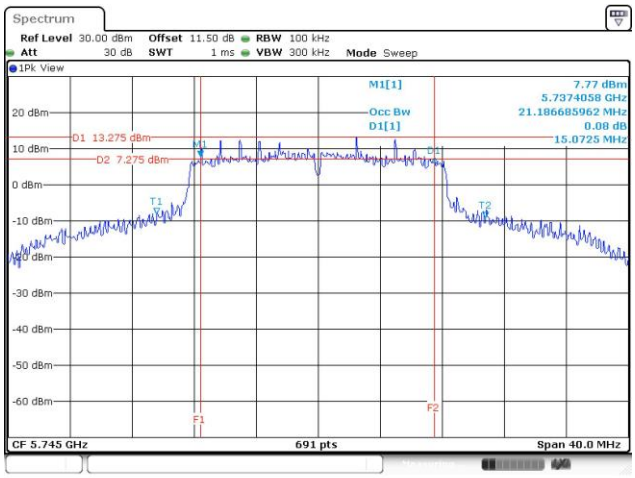
Worst Plot of 26dB Bandwidth	Worst Plot of 99% Bandwidth
	

For Frequency band 5725-5850 MHz											
Emission Bandwidth											
Mode	N_{TX}	Freq. (MHz)	OBW Bandwidth (MHz)				6dB Bandwidth (MHz)				
			Chain 0	Chain 1	Chain 2	Chain 3	Chain 0	Chain 1	Chain 2	Chain 3	6dB BW Limit (MHz)
11a	2	5745	18.45	18.26	---	---	15.13	15.07	---	---	0.5
11a	2	5785	17.59	17.91	---	---	15.36	15.13	---	---	0.5
11a	2	5825	17.30	17.67	---	---	15.48	15.36	---	---	0.5
VHT20	2	5745	19.33	19.43	---	---	15.19	15.77	---	---	0.5
VHT20	2	5785	18.47	19.02	---	---	15.48	15.65	---	---	0.5
VHT20	2	5825	18.19	18.50	---	---	15.71	15.48	---	---	0.5
VHT40	2	5755	39.62	39.02	---	---	35.13	35.13	---	---	0.5
VHT40	2	5795	37.84	38.92	---	---	35.13	35.13	---	---	0.5
VHT80	2	5775	75.60	75.68	---	---	75.13	75.13	---	---	0.5

Worst Plot of 99% Bandwidth



Worst Plot of 6dB Bandwidth



3.3 RF Output Power

3.3.1 Limit of RF Output Power

Frequency band 5150-5250 MHz		
Operating Mode		**Limit**
☐	Outdoor access point	Conducted Power: 1 W 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)
☒	Indoor access point	Conducted Power: 1 W
☐	Fixed point-to-point access points	Conducted Power: 1 W
☐	Client devices	Conducted Power: 250 mW

Frequency Band (MHz)		Limit
☐	5250 ~ 5350	250mW or 11dBm+10 log B
☐	5470 ~ 5725	250mW or 11dBm+10 log B
☒	5725 ~ 5850	1 W
Note: “B” is the 26dB emission bandwidth in MHz.		

3.3.2 Test Procedures

☒ **Method PM-G (Measurement using a gated RF average power meter)**

☒ Measurements may is performed using a wideband gated RF power meter provided that the gate parameters are adjusted such that the power is measured only when the EUT is transmitting at its maximum power control level. Since the measurement is made only during the ON time of the transmitter, no duty cycle correction factor is required.

3.3.3 Test Setup

3.3.4 Test Result of Maximum Conducted Output Power

For Frequency band 5150-5250 MHz									
Mode	N_{TX}	Freq. (MHz)	Conducted Power (dBm)				Total Power (mW)	Total Power (dBm)	Limit (dBm)
			Chain 0	Chain 1	Chain 2	Chain 3			
11a	2	5180	17.89	18.22	---	---	127.892	21.07	30.00
11a	2	5200	22.33	22.38	---	---	343.983	25.37	30.00
11a	2	5240	22.16	22.02	---	---	323.658	25.10	30.00
HT20	2	5180	17.46	17.62	---	---	113.528	20.55	30.00
HT20	2	5200	22.03	21.86	---	---	313.050	24.96	30.00
HT20	2	5240	21.78	21.55	---	---	293.550	24.68	30.00
HT40	2	5190	14.82	15.03	---	---	62.181	17.94	30.00
HT40	2	5230	21.11	21.09	---	---	257.651	24.11	30.00
VHT20	2	5180	17.59	17.77	---	---	117.253	20.69	30.00
VHT20	2	5200	22.04	22.01	---	---	318.810	25.04	30.00
VHT20	2	5240	21.83	21.62	---	---	297.616	24.74	30.00
VHT40	2	5190	14.89	15.16	---	---	63.641	18.04	30.00
VHT40	2	5230	21.20	21.12	---	---	261.245	24.17	30.00
VHT80	2	5210	13.25	13.43	---	---	43.164	16.35	30.00

For Frequency band 5725-5850 MHz									
Mode	N_{TX}	Freq. (MHz)	Conducted Power (dBm)				Total Power (mW)	Total Power (dBm)	Limit (dBm)
			Chain 0	Chain 1	Chain 2	Chain 3			
11a	2	5745	22.65	22.98	---	---	382.687	25.83	30.00
11a	2	5785	22.26	22.75	---	---	356.632	25.52	30.00
11a	2	5825	21.65	22.15	---	---	310.277	24.92	30.00
HT20	2	5745	22.46	22.65	---	---	360.275	25.57	30.00
HT20	2	5785	21.87	22.29	---	---	323.249	25.10	30.00
HT20	2	5825	21.07	21.43	---	---	266.933	24.26	30.00
HT40	2	5755	22.49	22.38	---	---	350.401	25.45	30.00
HT40	2	5795	21.65	22.17	---	---	311.034	24.93	30.00
VHT20	2	5745	22.58	22.72	---	---	368.202	25.66	30.00
VHT20	2	5785	21.95	22.36	---	---	328.862	25.17	30.00
VHT20	2	5825	21.13	21.56	---	---	272.937	24.36	30.00
VHT40	2	5755	22.55	22.48	---	---	356.898	25.53	30.00
VHT40	2	5795	21.76	22.21	---	---	316.310	25.00	30.00
VHT80	2	5775	19.15	19.32	---	---	167.731	22.25	30.00

3.4 Peak Power Spectral Density

3.4.1 Limit of Peak Power Spectral Density

Frequency band 5150-5250 MHz		
Operating Mode		**Limit**
☐	Outdoor access point	17 dBm / MHz
☒	Indoor access point	17 dBm / MHz
☐	Fixed point-to-point access points	17 dBm / MHz
☐	Client devices	11 dBm / MHz

Frequency Band (MHz)		**Limit**
☐	5250 ~ 5350	11 dBm / MHz
☐	5470 ~ 5725	11 dBm / MHz
☒	5725 ~ 5850	30 dBm / 500 kHz

3.4.2 Test Procedures

For 5150 ~ 5250 MHz

☐ Method SA-1

1. Set RBW = 1 MHz, VBW = 3 MHz, Sweep time = auto, Detector = RMS.
2. Trace average 100 traces.
3. Use the peak marker function to determine the maximum amplitude level.

☒ Method SA-2 Alternative

1. Set RBW = 1 MHz, VBW = 3 MHz, Detector = RMS.
2. Set sweep time ≥ 10 * (number of points in sweep) * (total on/off period of the transmitted signal).
3. Perform a single sweep.
4. Use the peak marker function to determine the maximum amplitude level.
5. Add 10 log(1/x), where x is the duty cycle.

For 5725 ~ 5850 MHz

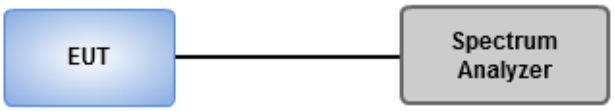
☐ Method SA-1

1. Set RBW = 500 kHz, VBW = 2 MHz, Sweep time = auto, Detector = RMS.
2. Trace average 100 traces.
3. Use the peak marker function to determine the maximum amplitude level.

☒ Method SA-2 Alternative

1. Set RBW = 500 kHz, VBW = 2 MHz, Detector = RMS.
2. Set sweep time ≥ 10 * (number of points in sweep) * (total on/off period of the transmitted signal).
3. Perform a single sweep.
4. Use the peak marker function to determine the maximum amplitude level.
5. Add 10 log(1/x), where x is the duty cycle.

3.4.3 Test Setup

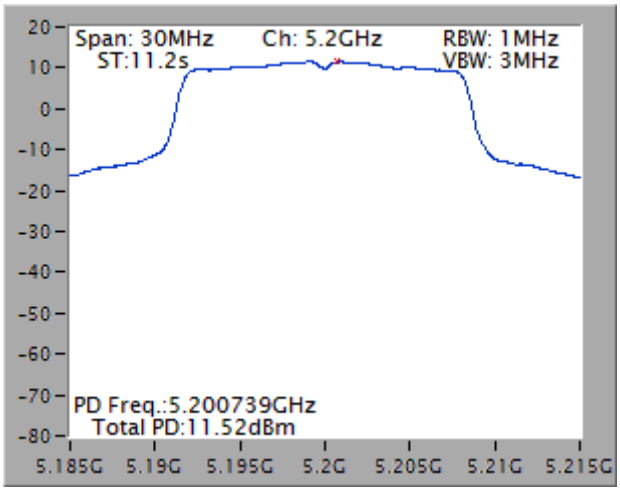


3.4.4 Test Result of Peak Power Spectral Density

For Frequency band 5150-5250 MHz						
Condition			Peak Power Spectral Density (dBm/MHz)			
Modulation Mode	N_{TX}	Freq. (MHz)	PPSD w/o D.F (dBm/MHz)	Duty Factor (dB)	PPSD with D.F (dBm/MHz)	PPSD Limit (dBm/MHz)
11a	2	5180	7.51	0.56	8.07	16.79
11a	2	5200	11.52	0.56	12.08	16.79
11a	2	5240	11.43	0.56	11.99	16.79
VHT20	2	5180	7.06	0.51	7.57	16.79
VHT20	2	5200	11.40	0.51	11.91	16.79
VHT20	2	5240	11.33	0.51	11.84	16.79
VHT40	2	5190	1.61	0.94	2.55	16.79
VHT40	2	5230	7.50	0.94	8.44	16.79
VHT80	2	5210	-3.88	1.90	-1.98	16.79

Note:
1. D.F is duty factor.
2. Test results are bin-by-bin summing measured value of each TX port.
3. Directional gain = $10 * \log((10^{3.14/20}+10^{3.25/20})^2/2)$ = 6.21 dBi > 6 dBi
   Limit shall be reduced to 17 dBm – (6.21 dBi – 6 dBi) = 16.79 dBm

Worst Plot

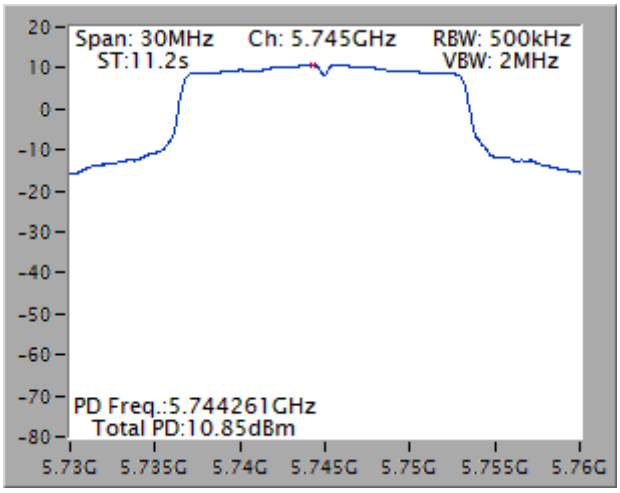


Note: Worst plot is w/o duty factor.

For Frequency band 5725-5850 MHz						
Condition			Peak Power Spectral Density (dBm/500kHz)			
Modulation Mode	N_{TX}	Freq. (MHz)	PPSD w/o D.F (dBm/500kHz)	Duty Factor (dB)	PPSD with D.F (dBm/500kHz)	PPSD Limit (dBm/500kHz)
11a	2	5745	10.85	0.56	11.41	29.98
11a	2	5785	10.33	0.56	10.89	29.98
11a	2	5825	9.44	0.56	10.00	29.98
VHT20	2	5745	10.46	0.51	10.97	29.98
VHT20	2	5785	9.93	0.51	10.44	29.98
VHT20	2	5825	9.06	0.51	9.57	29.98
VHT40	2	5755	6.87	0.94	7.81	29.98
VHT40	2	5795	6.28	0.94	7.22	29.98
VHT80	2	5775	0.31	1.90	2.21	29.98

Note:
1. D.F is duty factor.
2. Test results are bin-by-bin summing measured value of each TX port.
3. Directional gain = $10 * \log((10^{3.41/20}+10^{2.6/20})^2/2)$ = 6.02 dBi > 6 dBi
   Limit shall be reduced to 30 dBm – (6.02 dBi – 6 dBi) = 29.98 dBm

Worst Plot



Note: Worst plot is w/o duty factor.

3.5 Transmitter Radiated and Band Edge Emissions

3.5.1 Limit of Transmitter Radiated and Band Edge Emissions

Restricted Band Emissions Limit			
Frequency Range (MHz)	**Field Strength (uV/m)**	**Field Strength (dBuV/m)**	**Measure Distance (m)**
0.009~0.490	2400/F(kHz)	48.5 - 13.8	300
0.490~1.705	24000/F(kHz)	33.8 - 23	30
1.705~30.0	30	29	30
30~88	100	40	3
88~216	150	43.5	3
216~960	200	46	3
Above 960	500	54	3

Note 1:
Qusai-Peak value is measured for frequency below 1GHz except for 9–90 kHz, 110–490 kHz frequency band. Peak and average value are measured for frequency above 1GHz. The limit on average radio frequency emission is as above table. The limit on peak radio frequency emissions is 20 dB above the maximum permitted average emission limit
Note 2:
Measurements may be performed at a distance other than what is specified provided. When performing measurements at a distance other than that specified, the results shall be extrapolated to the specified distance using an extrapolation factor as below, Frequency at or above 30 MHz: 20 dB/decade Frequency below 30 MHz: 40 dB/decade.

Un-restricted band emissions above 1GHz Limit		
Operating Band	**Limit**	
5.15 - 5.25 GHz	e.i.r.p. -27 dBm [68.2 dBuV/m@3m]	
5.725 - 5.850 GHz	☒	15.407(b)(4)(i) All emissions shall be limited to a level of −27 dBm/MHz 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.
	☐	15.407(b)(4)(ii) ,compliance with the emission limits in § 15.247(d) Shall be at least 30dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power,. Attenuation below the general limits specified in §15.209(a) is not required. In addition,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))

Note 1: Measurements may be performed at a distance other than the limit distance provided they are not performed in the near field and the emissions to be measured can be detected by the measurement equipment. When performing measurements at a distance other than that specified, the results shall be extrapolated to the specified distance using an extrapolation factor of 20 dB/decade (inverse of linear distance for field-strength measurements, inverse of linear distance-squared for power-density measurements).

3.5.2 Test Procedures

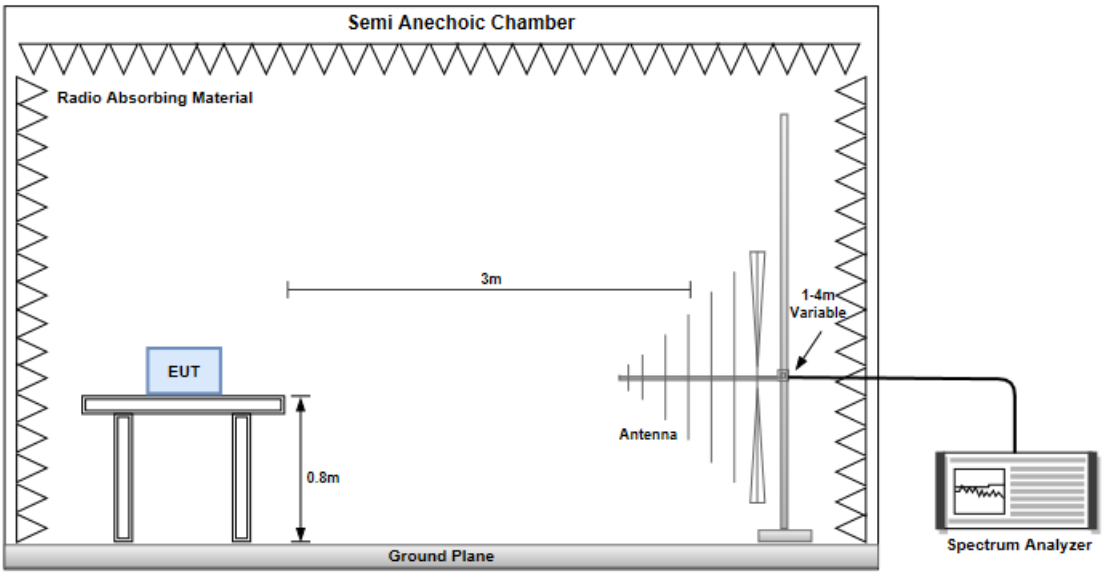
1. Measurement is made at a semi-anechoic chamber that incorporates a turntable allowing a EUT rotation of 360°. A continuously-rotating, remotely-controlled turntable is installed at the test site to support the EUT and facilitate determination of the direction of maximum radiation for each EUT emission frequency. The EUT is placed at test table. For emissions testing at or below 1 GHz, the table height is 80 cm above the reference ground plane. For emission measurements above 1 GHz, the table height is 1.5 m
2. Measurement is made with the antenna positioned in both the horizontal and vertical planes of polarization. The measurement antenna is varied in height (1m ~ 4m) above the reference ground plane to obtain the maximum signal strength. Distance between EUT and antenna is 3 m.
3. This investigation is performed with the EUT rotated 360°, the antenna height scanned between 1 m and 4 m, and the antenna rotated to repeat the measurements for both the horizontal and vertical antenna polarizations.

Note:

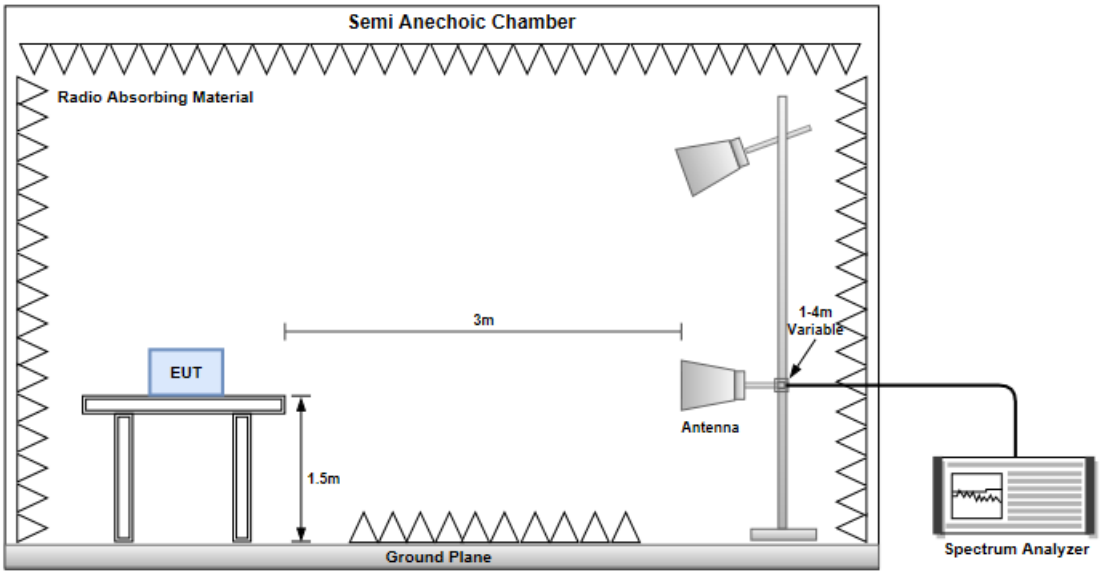
1. 120kHz measurement bandwidth of test receiver and Quasi-peak detector is for radiated emission below 1GHz.
2. RBW=1MHz, VBW=3MHz and Peak detector is for peak measured value of radiated emission above 1GHz.
3. RBW=1MHz, VBW=1/T and Peak detector is for average measured value of radiated emission above 1GHz.

3.5.3 Test Setup

Radiated Emissions below 1 GHz

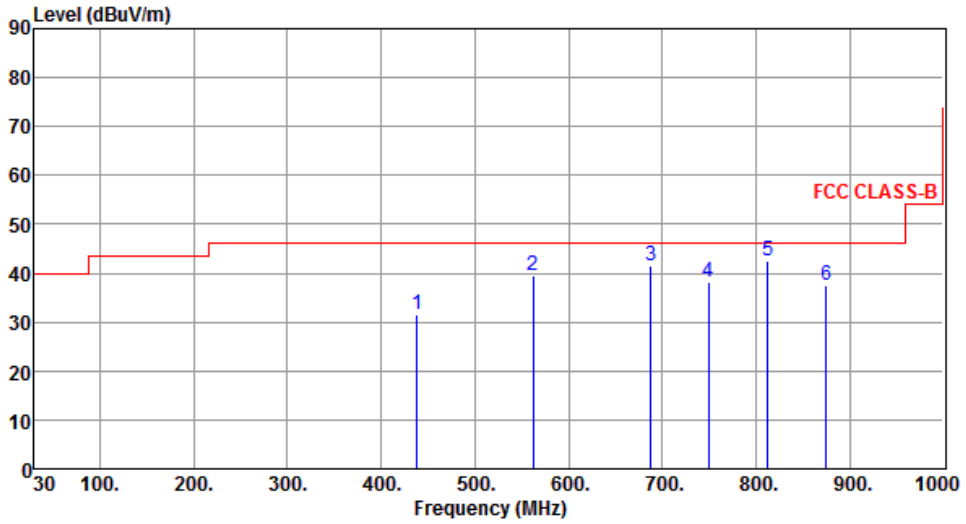


Radiated Emissions above 1 GHz



3.5.4 Transmitter Radiated Unwanted Emissions (Below 1GHz)

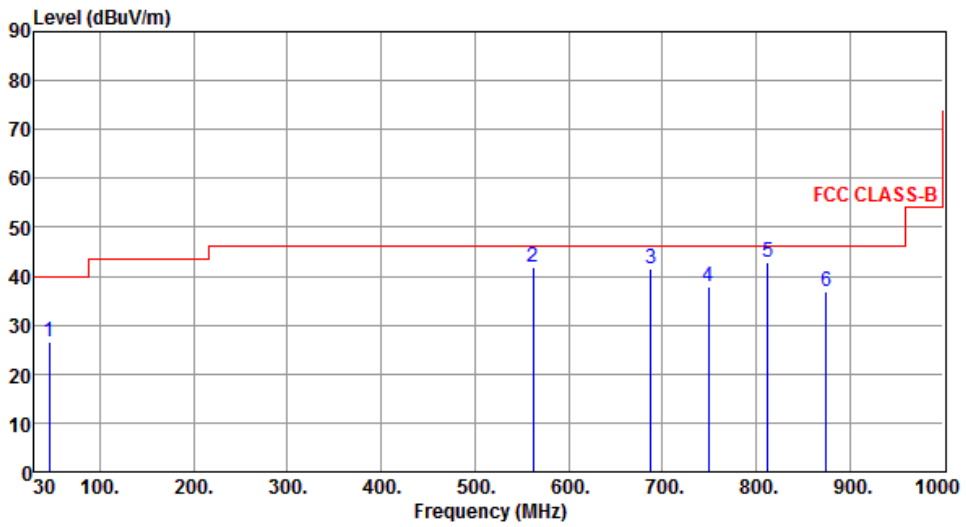
Modulation	11a	**Test Freq. (MHz)**	5200
Polarization	Horizontal		



	Freq. MHz	Emission level dBuV/m	Limit dBuV/m	Margin dB	SA reading dBuV	Factor dB	Remark	ANT High cm	Turn Table deg
1	438.46	31.45	46.00	-14.55	35.79	-4.34	Peak	---	---
2	562.53	39.68	46.00	-6.32	41.66	-1.98	Peak	---	---
3	687.66	41.40	46.00	-4.60	41.27	0.13	Peak	---	---
4	749.55	38.33	46.00	-7.67	36.75	1.58	Peak	---	---
5	812.69	42.45	46.00	-3.55	40.12	2.33	Peak	---	---
6	874.65	37.57	46.00	-8.43	34.33	3.24	Peak	---	---

Note 1: Emission Level (dBuV/m) = SA Reading (dBuV/m) + Factor* (dB)
*Factor includes antenna factor , cable loss and amplifier gain
Note 2: Margin (dB) = Emission level (dBuV/m) – Limit (dBuV/m).
Note 3: All spurious emissions below 30MHz are more than 20 dB below the limit.

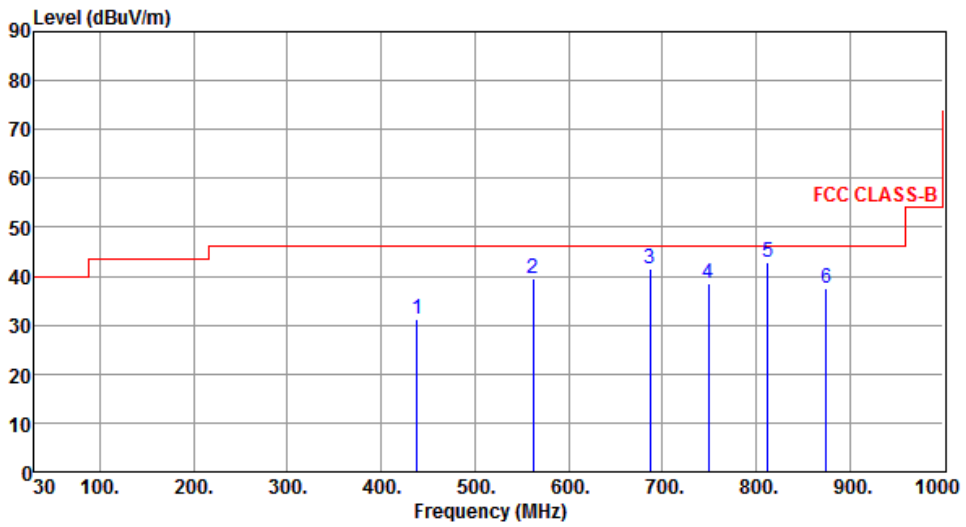
Modulation	11a	Test Freq. (MHz)	5200
Polarization	Vertical		



	Freq. MHz	Emission level dBuV/m	Limit dBuV/m	Margin dB	SA reading dBuV	Factor dB	Remark	ANT High cm	Turn Table deg
1	46.35	26.65	40.00	-13.35	34.97	-8.32	QP	100	8
2	562.59	41.74	46.00	-4.26	43.72	-1.98	Peak	---	---
3	687.55	41.66	46.00	-4.34	41.53	0.13	Peak	---	---
4	749.75	37.87	46.00	-8.13	36.28	1.59	Peak	---	---
5	812.83	42.85	46.00	-3.15	40.52	2.33	QP	100	135
6	874.96	36.72	46.00	-9.28	33.48	3.24	Peak	---	---

Note 1: Emission Level (dBuV/m) = SA Reading (dBuV/m) + Factor* (dB)
*Factor includes antenna factor , cable loss and amplifier gain
Note 2: Margin (dB) = Emission level (dBuV/m) – Limit (dBuV/m).
Note 3: All spurious emissions below 30MHz are more than 20 dB below the limit.

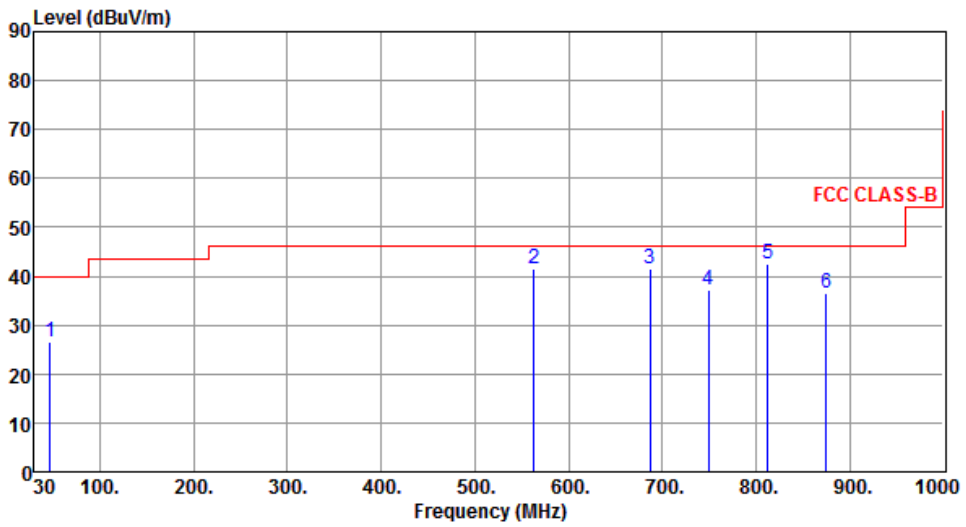
Modulation	11a	Test Freq. (MHz)	5745
Polarization	Horizontal		



	Freq. MHz	Emission level dBuV/m	Limit dBuV/m	Margin dB	SA reading dBuV	Factor dB	Remark	ANT High cm	Turn Table deg
1	438.21	31.26	46.00	-14.74	35.61	-4.35	Peak	---	---
2	562.44	39.52	46.00	-6.48	41.51	-1.99	Peak	---	---
3	687.23	41.57	46.00	-4.43	41.44	0.13	Peak	---	---
4	749.24	38.59	46.00	-7.41	37.02	1.57	Peak	---	---
5	812.72	42.83	46.00	-3.17	40.50	2.33	Peak	---	---
6	874.77	37.62	46.00	-8.38	34.38	3.24	Peak	---	---

Note 1: Emission Level (dBuV/m) = SA Reading (dBuV/m) + Factor* (dB)
*Factor includes antenna factor , cable loss and amplifier gain
Note 2: Margin (dB) = Emission level (dBuV/m) – Limit (dBuV/m).
Note 3: All spurious emissions below 30MHz are more than 20 dB below the limit.

Modulation	11a	Test Freq. (MHz)	5745
Polarization	Vertical		

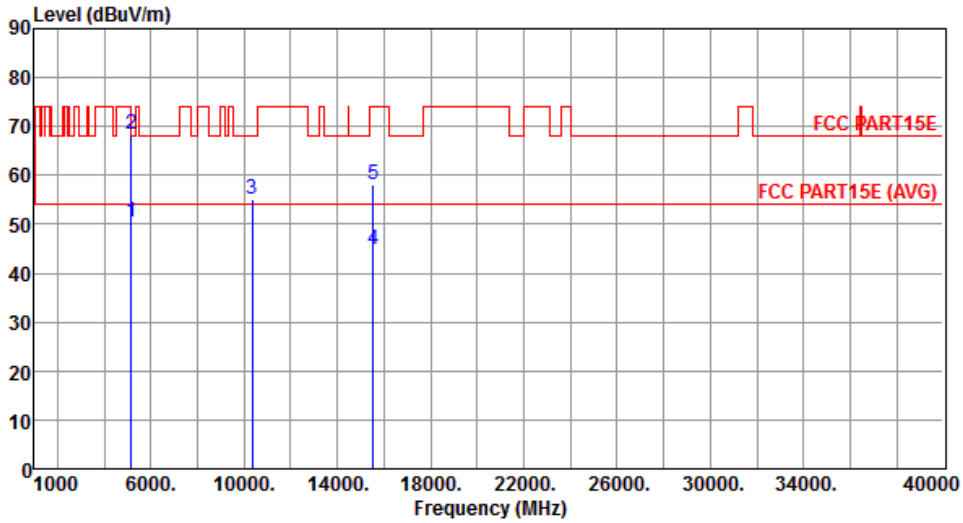


	Freq. MHz	Emission level dBuV/m	Limit dBuV/m	Margin dB	SA reading dBuV	Factor dB	Remark	ANT High cm	Turn Table deg
1	46.56	26.45	40.00	-13.55	26.45	0.00	QP	100	18
2	562.83	41.56	46.00	-4.44	43.54	-1.98	Peak	---	---
3	687.29	41.35	46.00	-4.65	41.22	0.13	Peak	---	---
4	749.47	37.26	46.00	-8.74	35.68	1.58	Peak	---	---
5	812.96	42.44	46.00	-3.56	40.11	2.33	QP	100	152
6	874.91	36.46	46.00	-9.54	33.22	3.24	Peak	---	---

Note 1: Emission Level (dBuV/m) = SA Reading (dBuV/m) + Factor* (dB)
*Factor includes antenna factor , cable loss and amplifier gain
Note 2: Margin (dB) = Emission level (dBuV/m) – Limit (dBuV/m).
Note 3: All spurious emissions below 30MHz are more than 20 dB below the limit.

3.5.5 Transmitter Radiated Unwanted Emissions (Above 1GHz) for 11a

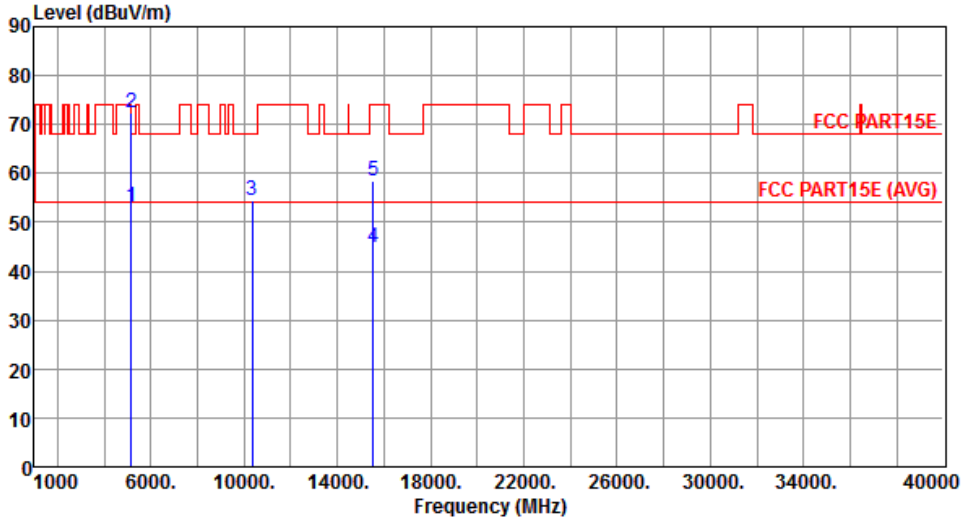
Modulation	11a	**Test Freq. (MHz)**	5180
Polarization	Horizontal		



	Freq. MHz	Emission level dBuV/m	Limit dBuV/m	Margin dB	SA reading dBuV	Factor dB	Remark	ANT High cm	Turn Table deg
1	5150.00	50.54	54.00	-3.46	45.33	5.21	Average	100	359
2	5150.00	68.52	74.00	-5.48	63.31	5.21	Peak	100	359
3	10360.00	55.21	68.20	-12.99	41.31	13.90	Peak	100	55
4	15540.00	44.69	54.00	-9.31	29.52	15.17	Average	105	59
5	15540.00	58.11	74.00	-15.89	42.94	15.17	Peak	105	59

Note 1: Emission Level (dBuV/m) = SA Reading (dBuV/m) + Factor* (dB)
*Factor includes antenna factor , cable loss and amplifier gain
Note 2: Margin (dB) = Emission level (dBuV/m) – Limit (dBuV/m).

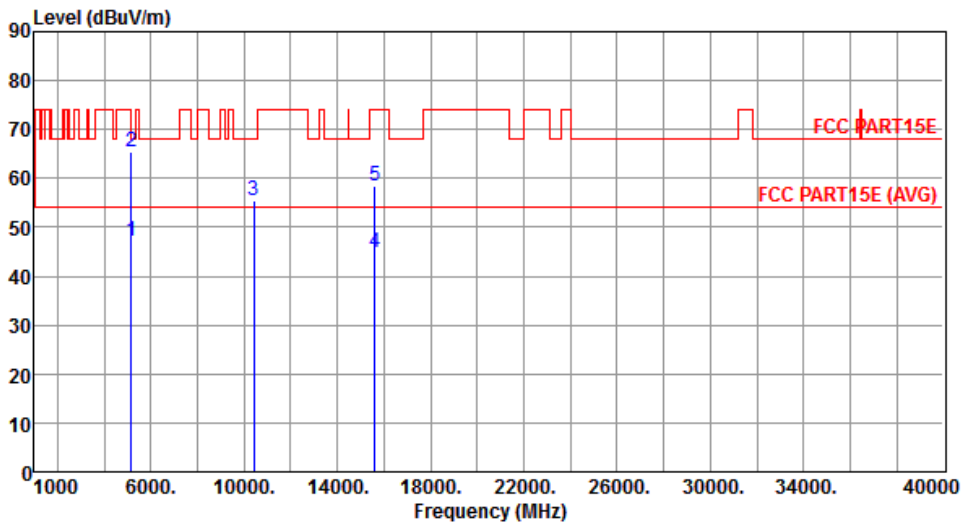
Modulation	11a	Test Freq. (MHz)	5180
Polarization	Vertical		



	Freq. MHz	Emission level dBuV/m	Limit dBuV/m	Margin dB	SA reading dBuV	Factor dB	Remark	ANT High cm	Turn Table deg
1	5150.00	53.11	54.00	-0.89	47.90	5.21	Average	200	13
2	5150.00	72.43	74.00	-1.57	67.22	5.21	Peak	200	13
3	10360.00	54.63	68.20	-13.57	40.73	13.90	Peak	100	128
4	15540.00	44.86	54.00	-9.14	29.69	15.17	Average	106	119
5	15540.00	58.51	74.00	-15.49	43.34	15.17	Peak	106	119

Note 1: Emission Level (dBuV/m) = SA Reading (dBuV/m) + Factor* (dB)
*Factor includes antenna factor , cable loss and amplifier gain
Note 2: Margin (dB) = Emission level (dBuV/m) – Limit (dBuV/m).

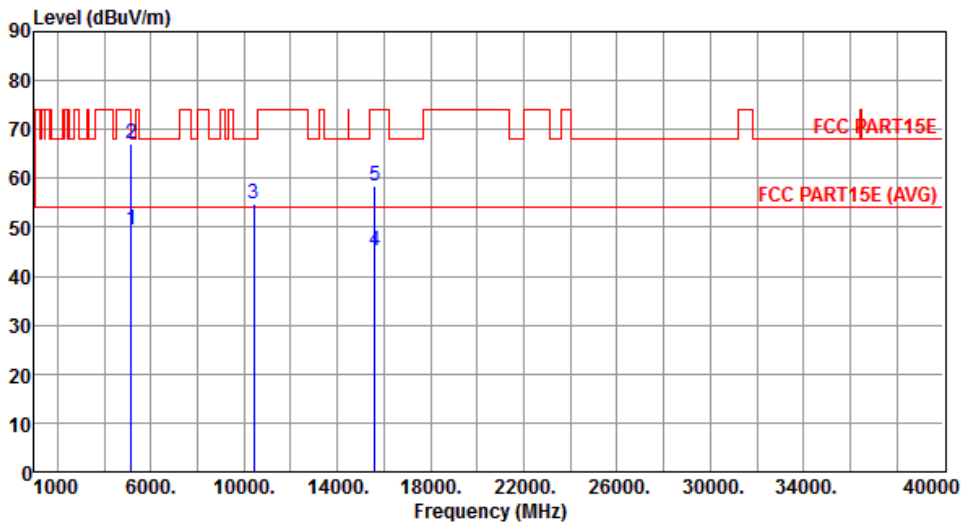
Modulation	11a	Test Freq. (MHz)	5200
Polarization	Horizontal		



	Freq. MHz	Emission level dBuV/m	Limit dBuV/m	Margin dB	SA reading dBuV	Factor dB	Remark	ANT High cm	Turn Table deg
1	5150.00	47.21	54.00	-6.79	42.00	5.21	Average	102	358
2	5150.00	65.45	74.00	-8.55	60.24	5.21	Peak	102	358
3	10400.00	55.38	68.20	-12.82	41.46	13.92	Peak	100	52
4	15600.00	44.85	54.00	-9.15	29.71	15.14	Average	100	56
5	15600.00	58.36	74.00	-15.64	43.22	15.14	Peak	100	56

Note 1: Emission Level (dBuV/m) = SA Reading (dBuV/m) + Factor* (dB)
*Factor includes antenna factor , cable loss and amplifier gain
Note 2: Margin (dB) = Emission level (dBuV/m) – Limit (dBuV/m).

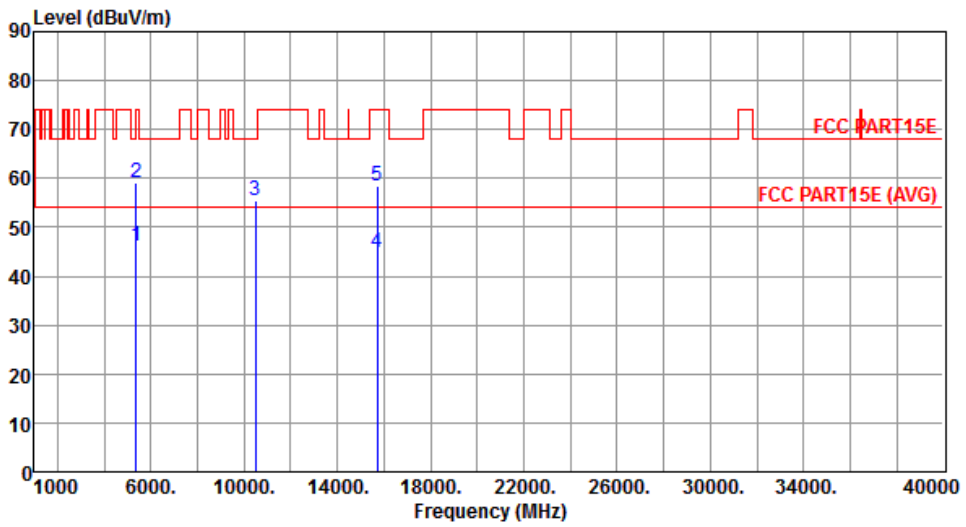
Modulation	11a	Test Freq. (MHz)	5200
Polarization	Vertical		



	Freq. MHz	Emission level dBuV/m	Limit dBuV/m	Margin dB	SA reading dBuV	Factor dB	Remark	ANT High cm	Turn Table deg
1	5150.00	49.38	54.00	-4.62	44.17	5.21	Average	203	11
2	5150.00	67.15	74.00	-6.85	61.94	5.21	Peak	203	11
3	10400.00	54.82	68.20	-13.38	40.90	13.92	Peak	105	151
4	15600.00	45.05	54.00	-8.95	29.91	15.14	Average	110	124
5	15600.00	58.59	74.00	-15.41	43.45	15.14	Peak	110	124

Note 1: Emission Level (dBuV/m) = SA Reading (dBuV/m) + Factor* (dB)
*Factor includes antenna factor , cable loss and amplifier gain
Note 2: Margin (dB) = Emission level (dBuV/m) – Limit (dBuV/m).

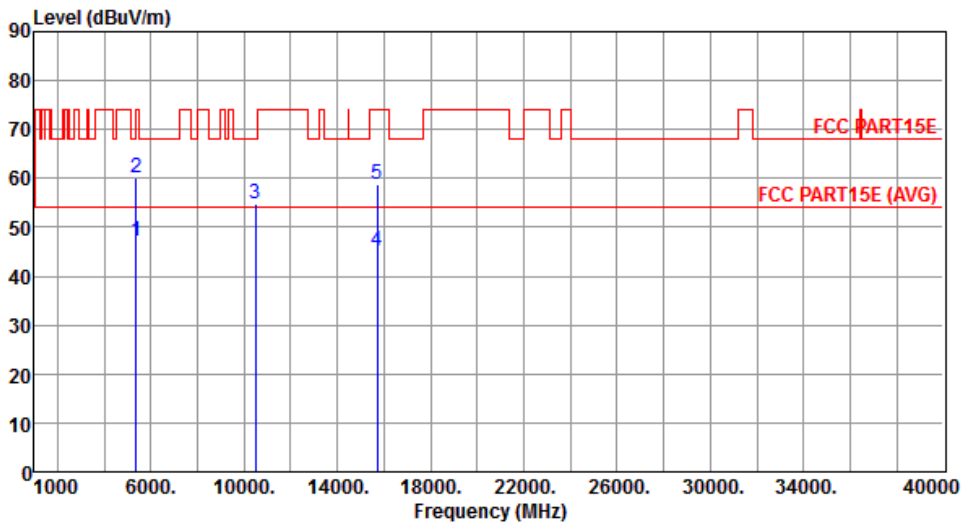
Modulation	11a	Test Freq. (MHz)	5240
Polarization	Horizontal		



	Freq. MHz	Emission level dBuV/m	Limit dBuV/m	Margin dB	SA reading dBuV	Factor dB	Remark	ANT High cm	Turn Table deg
1	5350.00	46.15	54.00	-7.85	40.65	5.50	Average	103	356
2	5350.00	59.03	74.00	-14.97	53.53	5.50	Peak	103	356
3	10480.00	55.46	68.20	-12.74	41.51	13.95	Peak	100	49
4	15720.00	44.92	54.00	-9.08	29.81	15.11	Average	103	51
5	15720.00	58.45	74.00	-15.55	43.34	15.11	Peak	103	51

Note 1: Emission Level (dBuV/m) = SA Reading (dBuV/m) + Factor* (dB)
*Factor includes antenna factor , cable loss and amplifier gain
Note 2: Margin (dB) = Emission level (dBuV/m) – Limit (dBuV/m).

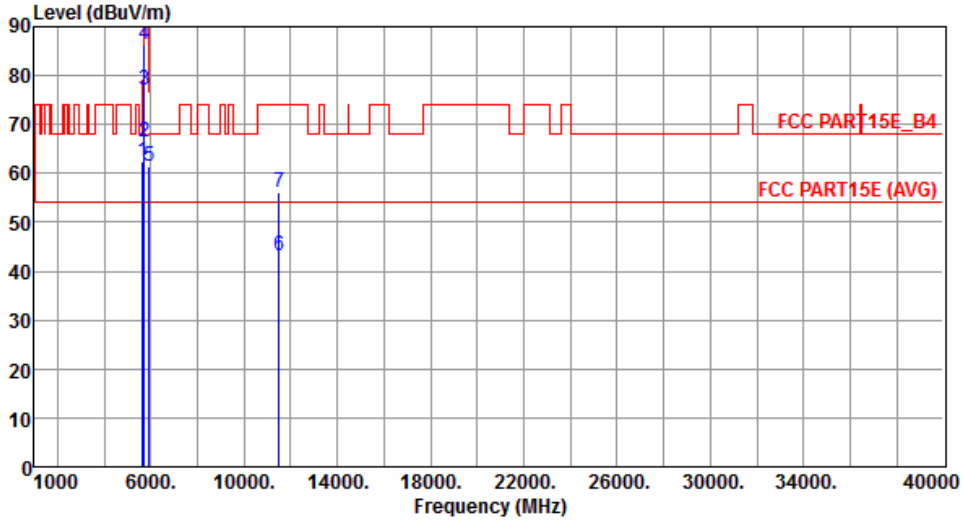
Modulation	11a	Test Freq. (MHz)	5240
Polarization	Vertical		



	Freq. MHz	Emission level dBuV/m	Limit dBuV/m	Margin dB	SA reading dBuV	Factor dB	Remark	ANT High cm	Turn Table deg
1	5350.00	47.31	54.00	-6.69	41.81	5.50	Average	202	9
2	5350.00	60.12	74.00	-13.88	54.62	5.50	Peak	202	9
3	10480.00	54.96	68.20	-13.24	41.01	13.95	Peak	101	142
4	15720.00	45.13	54.00	-8.87	30.02	15.11	Average	106	119
5	15720.00	58.63	74.00	-15.37	43.52	15.11	Peak	106	119

Note 1: Emission Level (dBuV/m) = SA Reading (dBuV/m) + Factor* (dB)
*Factor includes antenna factor , cable loss and amplifier gain
Note 2: Margin (dB) = Emission level (dBuV/m) – Limit (dBuV/m).

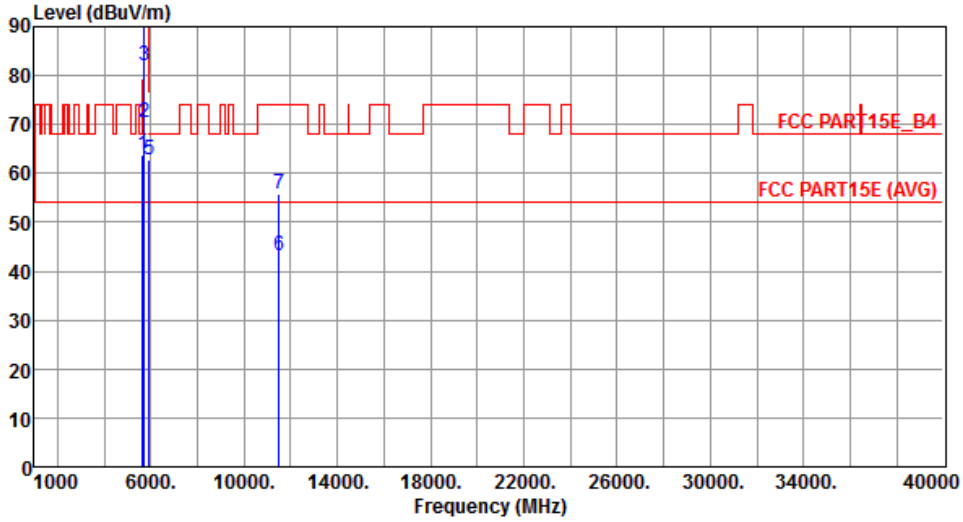
Modulation	11a	Test Freq. (MHz)	5745
Polarization	Horizontal		



	Freq. MHz	Emission level dBuV/m	Limit dBuV/m	Margin dB	SA reading dBuV	Factor dB	Remark	ANT High cm	Turn Table deg
1	5650.00	62.52	68.20	-5.68	56.65	5.87	Peak	105	359
2	5700.00	66.28	105.20	-38.92	60.32	5.96	Peak	105	359
3	5720.00	76.95	110.80	-33.85	70.97	5.98	Peak	105	359
4	5725.00	86.24	122.20	-35.96	80.25	5.99	Peak	105	359
5	5925.00	61.54	68.20	-6.66	55.28	6.26	Peak	105	359
6	11490.00	43.24	54.00	-10.76	28.34	14.90	Average	100	53
7	11490.00	55.96	74.00	-18.04	41.06	14.90	Peak	100	53

Note 1: Emission Level (dBuV/m) = SA Reading (dBuV/m) + Factor* (dB)
*Factor includes antenna factor , cable loss and amplifier gain
Note 2: Margin (dB) = Emission level (dBuV/m) – Limit (dBuV/m).

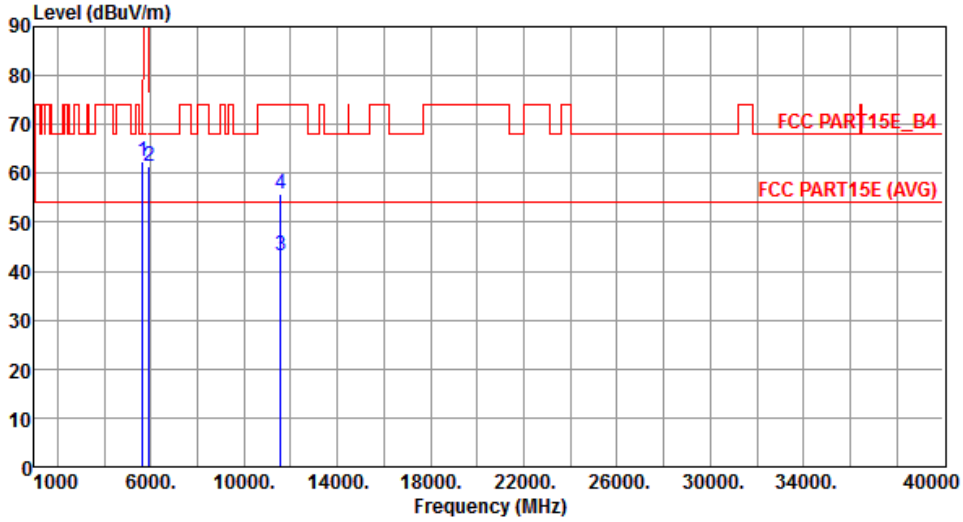
Modulation	11a	Test Freq. (MHz)	5745
Polarization	Vertical		



	Freq. MHz	Emission level dBuV/m	Limit dBuV/m	Margin dB	SA reading dBuV	Factor dB	Remark	ANT High cm	Turn Table deg
1	5650.00	63.76	68.20	-4.44	57.89	5.87	Peak	233	344
2	5700.00	70.53	105.20	-34.67	64.57	5.96	Peak	233	344
3	5720.00	82.11	110.80	-28.69	76.13	5.98	Peak	233	344
4	5725.00	91.15	122.20	-31.05	85.16	5.99	Peak	233	344
5	5925.00	62.62	68.20	-5.58	56.36	6.26	Peak	233	344
6	11490.00	43.15	54.00	-10.85	28.25	14.90	Average	104	135
7	11490.00	55.81	74.00	-18.19	40.91	14.90	Peak	104	135

Note 1: Emission Level (dBuV/m) = SA Reading (dBuV/m) + Factor* (dB)
*Factor includes antenna factor , cable loss and amplifier gain
Note 2: Margin (dB) = Emission level (dBuV/m) – Limit (dBuV/m).

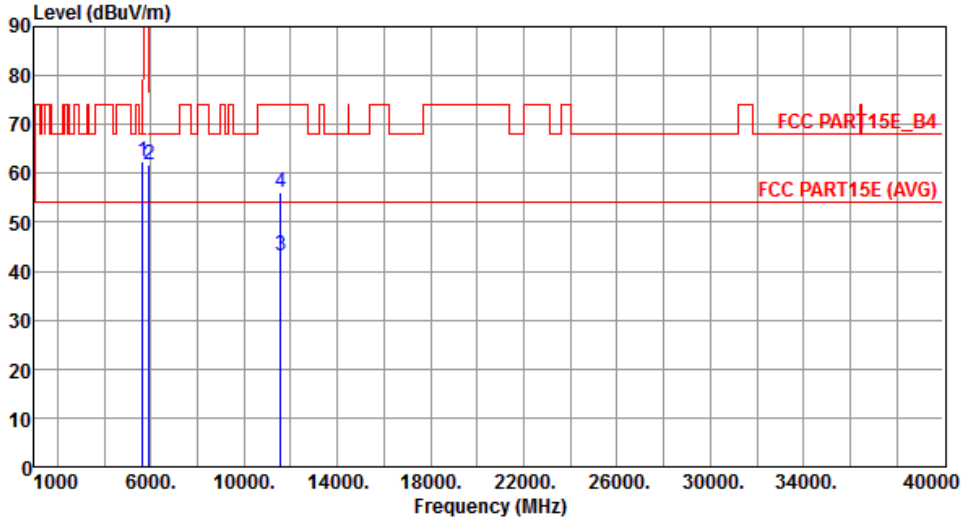
Modulation	11a	Test Freq. (MHz)	5785
Polarization	Horizontal		



	Freq. MHz	Emission level dBuV/m	Limit dBuV/m	Margin dB	SA reading dBuV	Factor dB	Remark	ANT High cm	Turn Table deg
1	5650.00	62.31	68.20	-5.89	56.44	5.87	Peak	105	353
2	5925.00	61.45	68.20	-6.75	55.19	6.26	Peak	105	353
3	11570.00	43.18	54.00	-10.82	28.41	14.77	Average	102	46
4	11570.00	55.81	74.00	-18.19	41.04	14.77	Peak	102	46

Note 1: Emission Level (dBuV/m) = SA Reading (dBuV/m) + Factor* (dB)
*Factor includes antenna factor , cable loss and amplifier gain
Note 2: Margin (dB) = Emission level (dBuV/m) – Limit (dBuV/m).

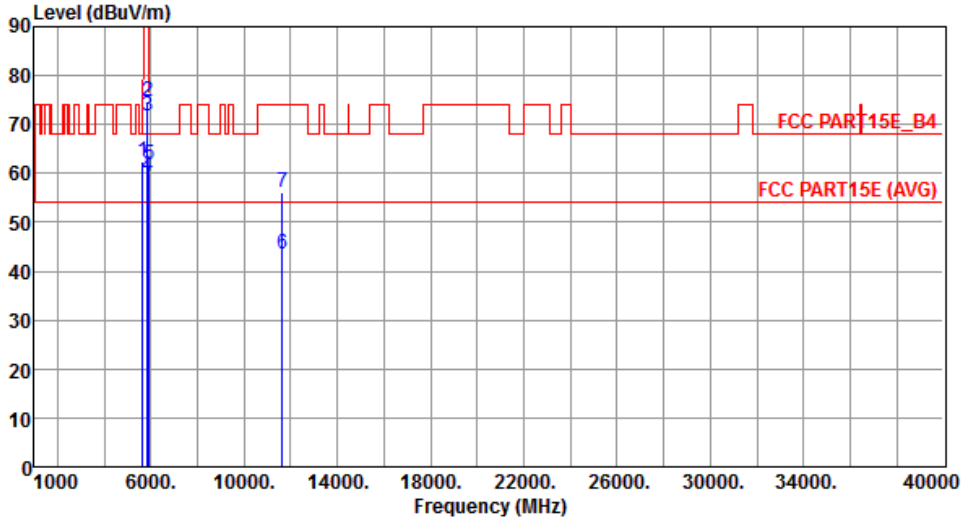
Modulation	11a	Test Freq. (MHz)	5785
Polarization	Vertical		



	Freq. MHz	Emission level dBuV/m	Limit dBuV/m	Margin dB	SA reading dBuV	Factor dB	Remark	ANT High cm	Turn Table deg
1	5650.00	62.47	68.20	-5.73	56.60	5.87	Peak	233	345
2	5925.00	61.65	68.20	-6.55	55.39	6.26	Peak	233	345
3	11570.00	43.24	54.00	-10.76	28.47	14.77	Average	105	113
4	11570.00	55.96	74.00	-18.04	41.19	14.77	Peak	105	113

Note 1: Emission Level (dBuV/m) = SA Reading (dBuV/m) + Factor* (dB)
*Factor includes antenna factor , cable loss and amplifier gain
Note 2: Margin (dB) = Emission level (dBuV/m) – Limit (dBuV/m).

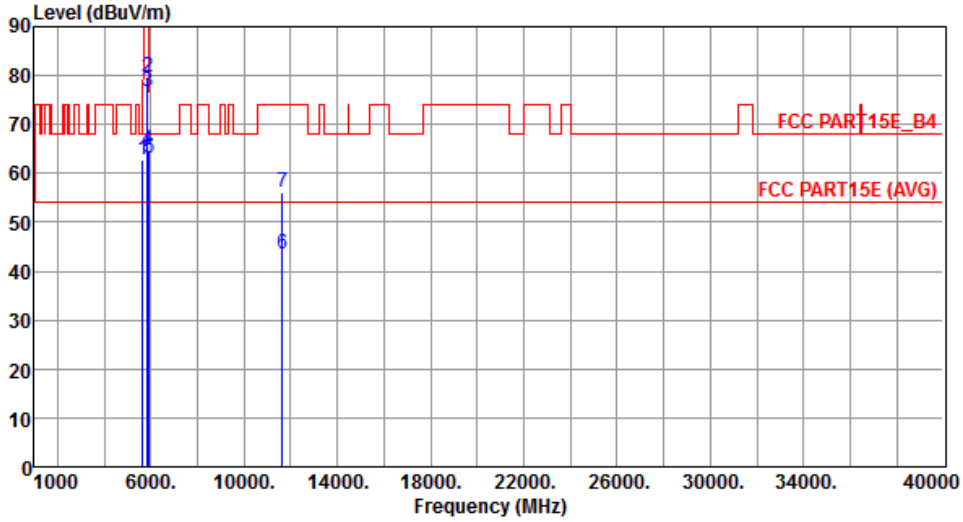
Modulation	11a	Test Freq. (MHz)	5825
Polarization	Horizontal		



	Freq. MHz	Emission level dBuV/m	Limit dBuV/m	Margin dB	SA reading dBuV	Factor dB	Remark	ANT High cm	Turn Table deg
1	5650.00	62.45	68.20	-5.75	56.58	5.87	Peak	106	258
2	5850.00	74.81	122.20	-47.39	68.64	6.17	Peak	106	258
3	5855.00	71.62	110.80	-39.18	65.44	6.18	Peak	106	258
4	5875.00	59.43	105.20	-45.77	53.23	6.20	Peak	106	258
5	5925.00	61.88	68.20	-6.32	55.62	6.26	Peak	106	258
6	11650.00	43.42	54.00	-10.58	28.81	14.61	Average	101	55
7	11650.00	55.98	74.00	-18.02	41.37	14.61	Peak	101	55

Note 1: Emission Level (dBuV/m) = SA Reading (dBuV/m) + Factor* (dB)
*Factor includes antenna factor , cable loss and amplifier gain
Note 2: Margin (dB) = Emission level (dBuV/m) – Limit (dBuV/m).

Modulation	11a	Test Freq. (MHz)	5825
Polarization	Vertical		

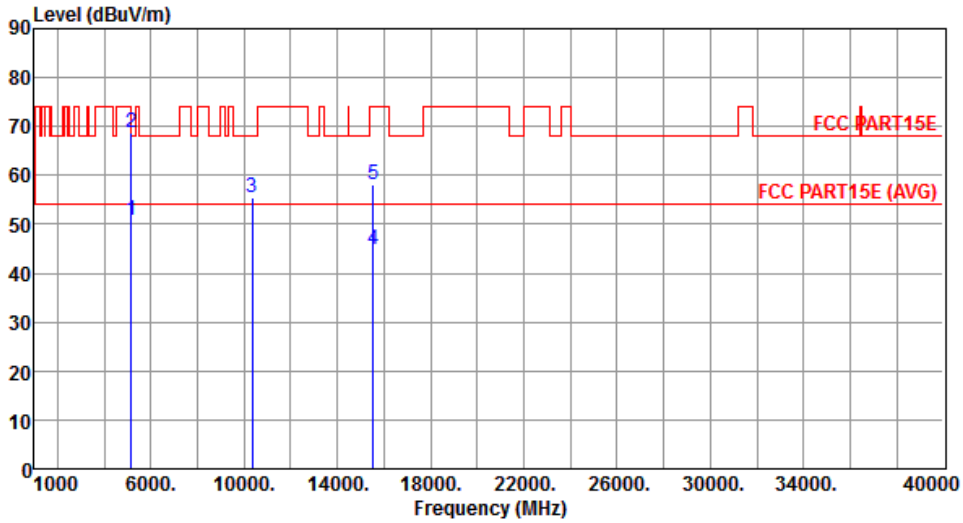


	Freq. MHz	Emission level dBuV/m	Limit dBuV/m	Margin dB	SA reading dBuV	Factor dB	Remark	ANT High cm	Turn Table deg
1	5650.00	62.80	68.20	-5.40	56.93	5.87	Peak	213	344
2	5850.00	79.65	122.20	-42.55	73.48	6.17	Peak	213	344
3	5855.00	76.79	110.80	-34.01	70.61	6.18	Peak	213	344
4	5875.00	64.83	105.20	-40.37	58.63	6.20	Peak	213	344
5	5925.00	62.95	68.20	-5.25	56.69	6.26	Peak	213	344
6	11650.00	43.54	54.00	-10.46	28.93	14.61	Average	109	108
7	11650.00	56.13	74.00	-17.87	41.52	14.61	Peak	109	108

Note 1: Emission Level (dBuV/m) = SA Reading (dBuV/m) + Factor* (dB)
*Factor includes antenna factor , cable loss and amplifier gain
Note 2: Margin (dB) = Emission level (dBuV/m) – Limit (dBuV/m).

3.5.6 Transmitter Radiated Unwanted Emissions (Above 1GHz) for VHT20

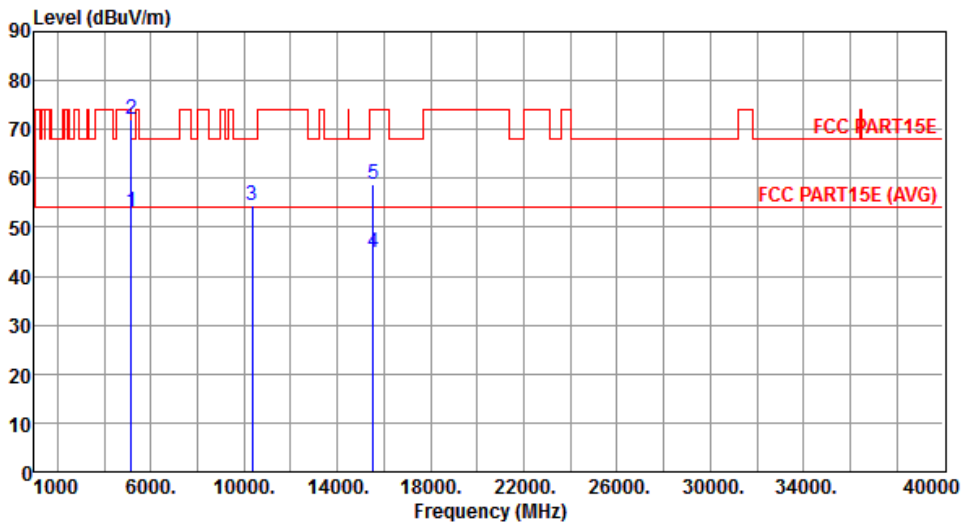
Modulation	VHT20	**Test Freq. (MHz)**	5180
Polarization	Horizontal		



	Freq. MHz	Emission level dBuV/m	Limit dBuV/m	Margin dB	SA reading dBuV	Factor dB	Remark	ANT High cm	Turn Table deg
1	5150.00	50.69	54.00	-3.31	45.48	5.21	Average	106	358
2	5150.00	68.66	74.00	-5.34	63.45	5.21	Peak	106	358
3	10360.00	55.38	68.20	-12.82	41.48	13.90	Peak	110	62
4	15540.00	44.78	54.00	-9.22	29.61	15.17	Average	105	55
5	15540.00	58.26	74.00	-15.74	43.09	15.17	Peak	105	55

Note 1: Emission Level (dBuV/m) = SA Reading (dBuV/m) + Factor* (dB)
*Factor includes antenna factor , cable loss and amplifier gain
Note 2: Margin (dB) = Emission level (dBuV/m) – Limit (dBuV/m).

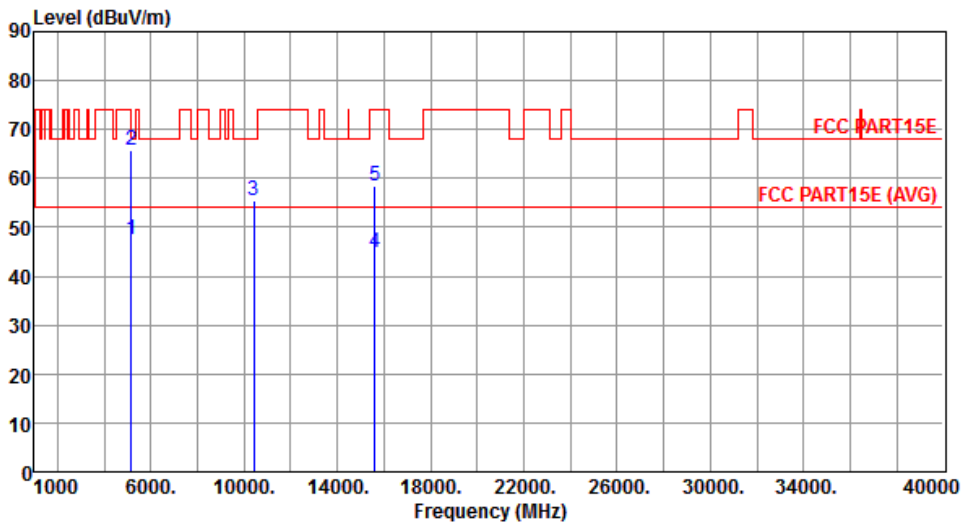
Modulation	VHT20	Test Freq. (MHz)	5180
Polarization	Vertical		



	Freq. MHz	Emission level dBuV/m	Limit dBuV/m	Margin dB	SA reading dBuV	Factor dB	Remark	ANT High cm	Turn Table deg
1	5150.00	53.15	54.00	-0.85	47.94	5.21	Average	188	19
2	5150.00	72.03	74.00	-1.97	66.82	5.21	Peak	188	19
3	10360.00	54.53	68.20	-13.67	40.63	13.90	Peak	105	128
4	15540.00	44.92	54.00	-9.08	29.75	15.17	Average	105	121
5	15540.00	58.63	74.00	-15.37	43.46	15.17	Peak	105	121

Note 1: Emission Level (dBuV/m) = SA Reading (dBuV/m) + Factor* (dB)
*Factor includes antenna factor , cable loss and amplifier gain
Note 2: Margin (dB) = Emission level (dBuV/m) – Limit (dBuV/m).

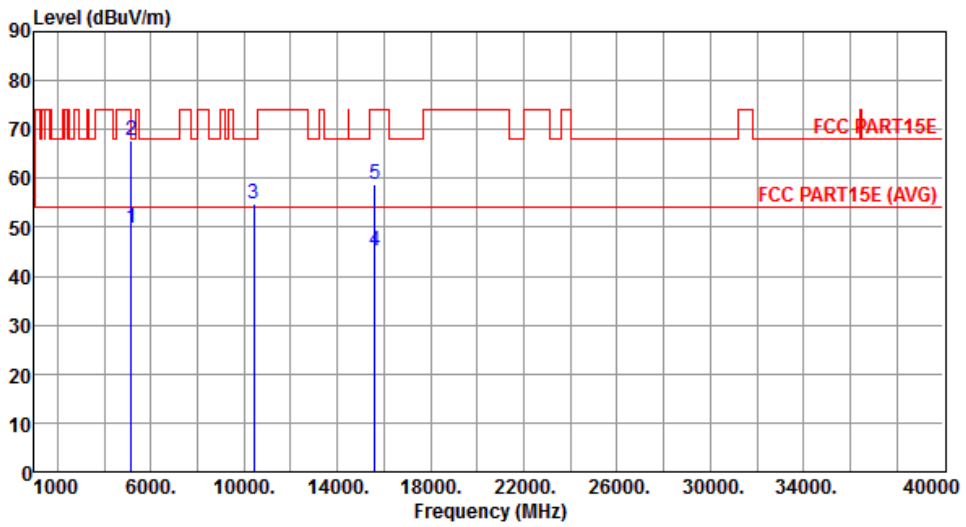
Modulation	VHT20	Test Freq. (MHz)	5200
Polarization	Horizontal		



	Freq. MHz	Emission level dBuV/m	Limit dBuV/m	Margin dB	SA reading dBuV	Factor dB	Remark	ANT High cm	Turn Table deg
1	5150.00	47.62	54.00	-6.38	42.41	5.21	Average	105	356
2	5150.00	65.88	74.00	-8.12	60.67	5.21	Peak	105	356
3	10400.00	55.49	68.20	-12.71	41.57	13.92	Peak	101	48
4	15600.00	44.93	54.00	-9.07	29.79	15.14	Average	100	59
5	15600.00	58.42	74.00	-15.58	43.28	15.14	Peak	100	59

Note 1: Emission Level (dBuV/m) = SA Reading (dBuV/m) + Factor* (dB)
*Factor includes antenna factor , cable loss and amplifier gain
Note 2: Margin (dB) = Emission level (dBuV/m) – Limit (dBuV/m).

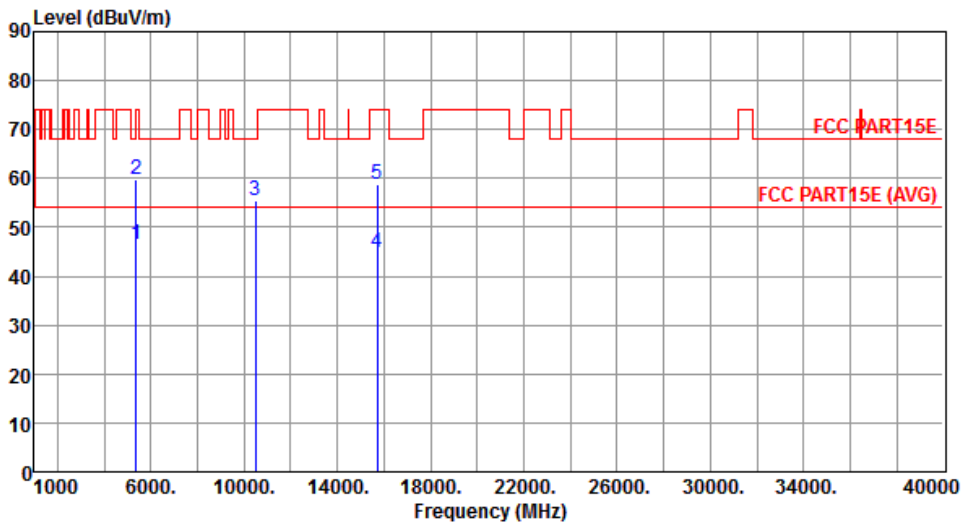
Modulation	VHT20	Test Freq. (MHz)	5200
Polarization	Vertical		



	Freq. MHz	Emission level dBuV/m	Limit dBuV/m	Margin dB	SA reading dBuV	Factor dB	Remark	ANT High cm	Turn Table deg
1	5150.00	49.85	54.00	-4.15	44.64	5.21	Average	189	18
2	5150.00	67.74	74.00	-6.26	62.53	5.21	Peak	189	18
3	10400.00	54.76	68.20	-13.44	40.84	13.92	Peak	106	114
4	15600.00	45.29	54.00	-8.71	30.15	15.14	Average	111	136
5	15600.00	58.71	74.00	-15.29	43.57	15.14	Peak	111	136

Note 1: Emission Level (dBuV/m) = SA Reading (dBuV/m) + Factor* (dB)
*Factor includes antenna factor , cable loss and amplifier gain
Note 2: Margin (dB) = Emission level (dBuV/m) – Limit (dBuV/m).

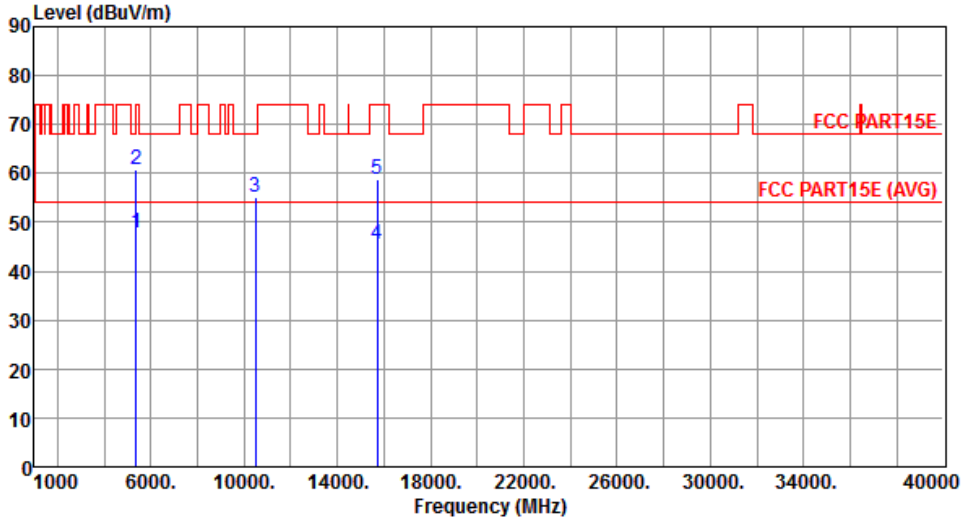
Modulation	VHT20	Test Freq. (MHz)	5240
Polarization	Horizontal		



	Freq. MHz	Emission level dBuV/m	Limit dBuV/m	Margin dB	SA reading dBuV	Factor dB	Remark	ANT High cm	Turn Table deg
1	5350.00	46.48	54.00	-7.52	40.98	5.50	Average	105	358
2	5350.00	59.65	74.00	-14.35	54.15	5.50	Peak	105	358
3	10480.00	55.62	68.20	-12.58	41.67	13.95	Peak	106	55
4	15720.00	44.98	54.00	-9.02	29.87	15.11	Average	103	58
5	15720.00	58.62	74.00	-15.38	43.51	15.11	Peak	103	58

Note 1: Emission Level (dBuV/m) = SA Reading (dBuV/m) + Factor* (dB)
*Factor includes antenna factor , cable loss and amplifier gain
Note 2: Margin (dB) = Emission level (dBuV/m) – Limit (dBuV/m).

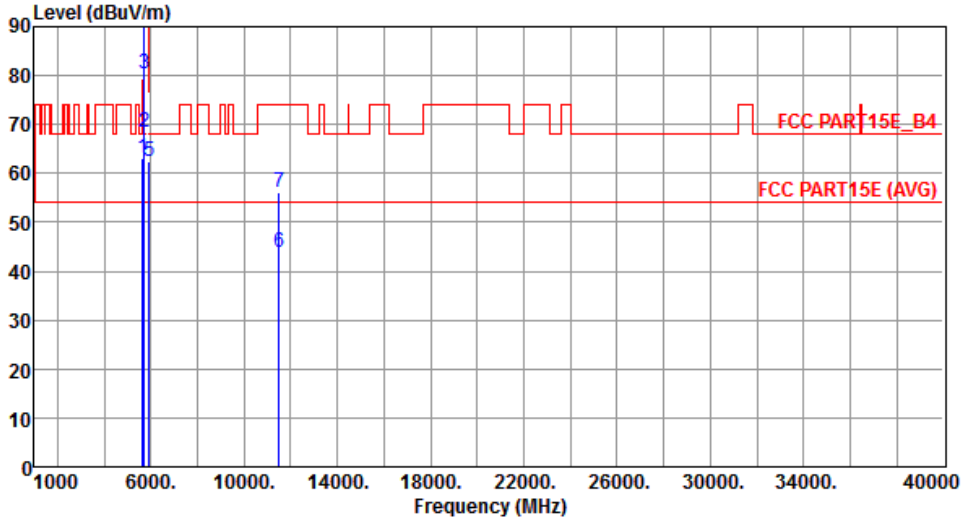
Modulation	VHT20	Test Freq. (MHz)	5240
Polarization	Vertical		



	Freq. MHz	Emission level dBuV/m	Limit dBuV/m	Margin dB	SA reading dBuV	Factor dB	Remark	ANT High cm	Turn Table deg
1	5350.00	47.82	54.00	-6.18	42.32	5.50	Average	191	16
2	5350.00	60.69	74.00	-13.31	55.19	5.50	Peak	191	16
3	10480.00	55.23	68.20	-12.97	41.28	13.95	Peak	108	149
4	15720.00	45.36	54.00	-8.64	30.25	15.11	Average	106	123
5	15720.00	58.92	74.00	-15.08	43.81	15.11	Peak	106	123

Note 1: Emission Level (dBuV/m) = SA Reading (dBuV/m) + Factor* (dB)
*Factor includes antenna factor , cable loss and amplifier gain
Note 2: Margin (dB) = Emission level (dBuV/m) – Limit (dBuV/m).

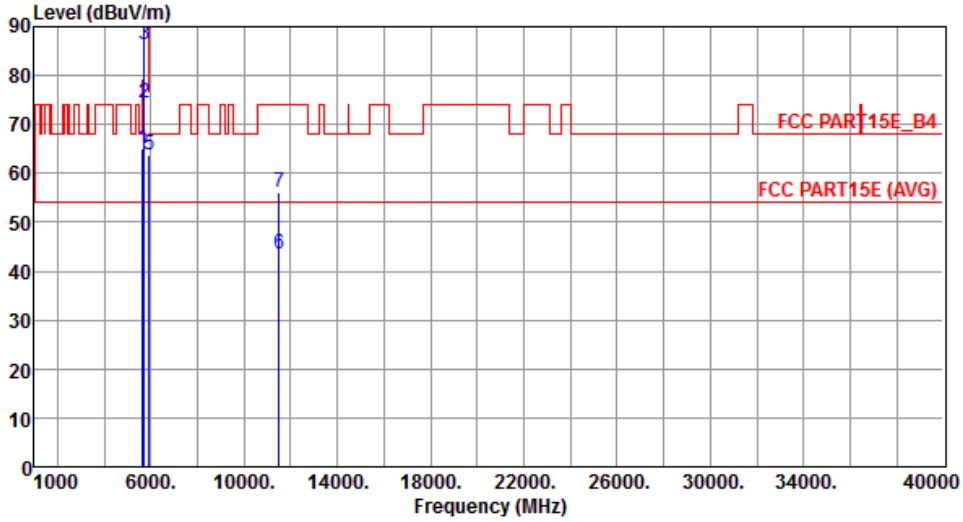
Modulation	VHT20	Test Freq. (MHz)	5745
Polarization	Horizontal		



	Freq. MHz	Emission level dBuV/m	Limit dBuV/m	Margin dB	SA reading dBuV	Factor dB	Remark	ANT High cm	Turn Table deg
1	5650.00	63.14	68.20	-5.06	57.27	5.87	Peak	108	355
2	5700.00	68.45	105.20	-36.75	62.49	5.96	Peak	108	355
3	5720.00	80.42	110.80	-30.38	74.44	5.98	Peak	108	355
4	5725.00	90.16	122.20	-32.04	84.17	5.99	Peak	108	355
5	5925.00	62.49	68.20	-5.71	56.23	6.26	Peak	108	355
6	11490.00	43.68	54.00	-10.32	28.78	14.90	Average	100	59
7	11490.00	56.21	74.00	-17.79	41.31	14.90	Peak	100	59

Note 1: Emission Level (dBuV/m) = SA Reading (dBuV/m) + Factor* (dB)
*Factor includes antenna factor , cable loss and amplifier gain
Note 2: Margin (dB) = Emission level (dBuV/m) – Limit (dBuV/m).

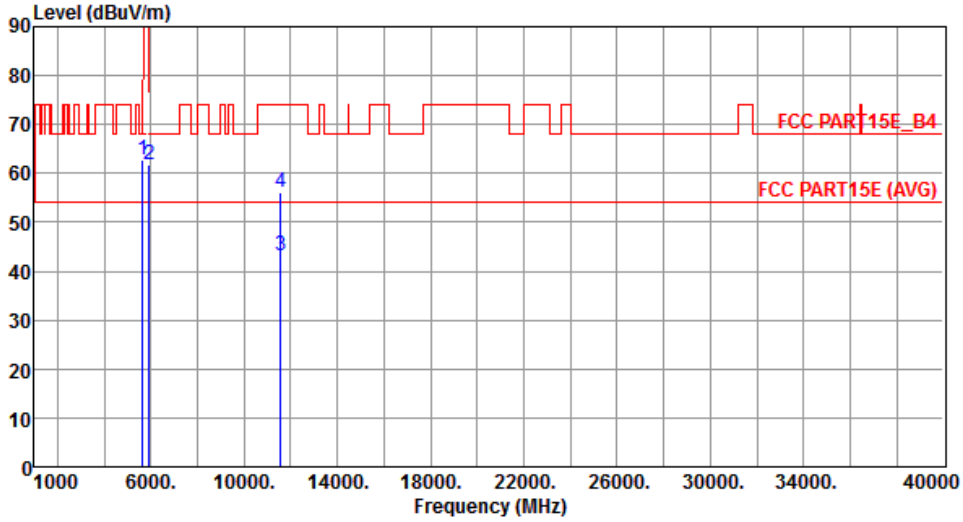
Modulation	VHT20	Test Freq. (MHz)	5745
Polarization	Vertical		



	Freq. MHz	Emission level dBuV/m	Limit dBuV/m	Margin dB	SA reading dBuV	Factor dB	Remark	ANT High cm	Turn Table deg
1	5650.00	65.00	68.20	-3.20	59.13	5.87	Peak	189	19
2	5700.00	74.31	105.20	-30.89	68.35	5.96	Peak	189	19
3	5720.00	86.49	110.80	-24.31	80.51	5.98	Peak	189	19
4	5725.00	96.24	122.20	-25.96	90.25	5.99	Peak	189	19
5	5925.00	63.68	68.20	-4.52	57.42	6.26	Peak	189	19
6	11490.00	43.48	54.00	-10.52	28.58	14.90	Average	109	127
7	11490.00	56.15	74.00	-17.85	41.25	14.90	Peak	109	127

Note 1: Emission Level (dBuV/m) = SA Reading (dBuV/m) + Factor* (dB)
*Factor includes antenna factor , cable loss and amplifier gain
Note 2: Margin (dB) = Emission level (dBuV/m) – Limit (dBuV/m).

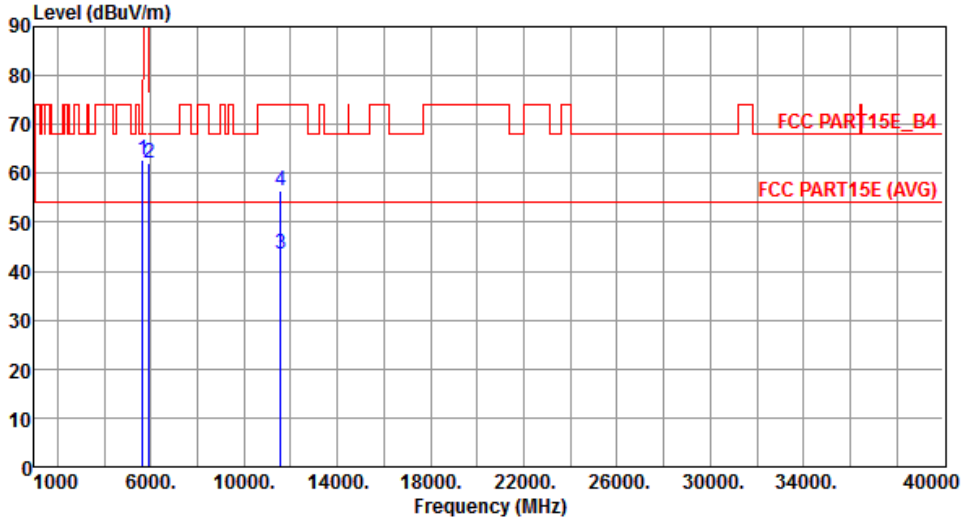
Modulation	VHT20	Test Freq. (MHz)	5785
Polarization	Horizontal		



	Freq. MHz	Emission level dBuV/m	Limit dBuV/m	Margin dB	SA reading dBuV	Factor dB	Remark	ANT High cm	Turn Table deg
1	5650.00	62.65	68.20	-5.55	56.78	5.87	Peak	108	356
2	5925.00	61.74	68.20	-6.46	55.48	6.26	Peak	108	356
3	11570.00	43.24	54.00	-10.76	28.47	14.77	Average	102	49
4	11570.00	55.96	74.00	-18.04	41.19	14.77	Peak	102	49

Note 1: Emission Level (dBuV/m) = SA Reading (dBuV/m) + Factor* (dB)
*Factor includes antenna factor , cable loss and amplifier gain
Note 2: Margin (dB) = Emission level (dBuV/m) – Limit (dBuV/m).

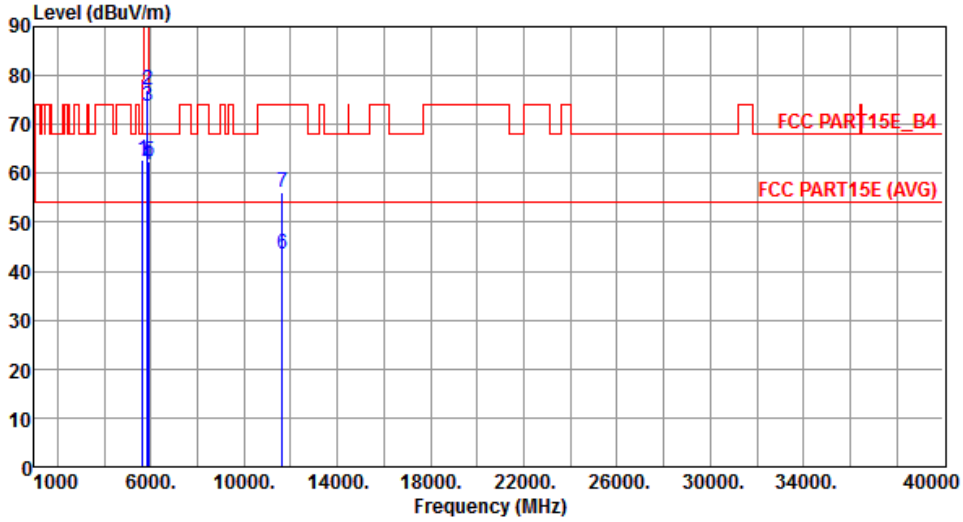
Modulation	VHT20	Test Freq. (MHz)	5785
Polarization	Vertical		



	Freq. MHz	Emission level dBuV/m	Limit dBuV/m	Margin dB	SA reading dBuV	Factor dB	Remark	ANT High cm	Turn Table deg
1	5650.00	62.69	68.20	-5.51	56.82	5.87	Peak	186	18
2	5925.00	61.96	68.20	-6.24	55.70	6.26	Peak	186	18
3	11570.00	43.55	54.00	-10.45	28.78	14.77	Average	109	108
4	11570.00	56.31	74.00	-17.69	41.54	14.77	Peak	109	108

Note 1: Emission Level (dBuV/m) = SA Reading (dBuV/m) + Factor* (dB)
*Factor includes antenna factor , cable loss and amplifier gain
Note 2: Margin (dB) = Emission level (dBuV/m) – Limit (dBuV/m).

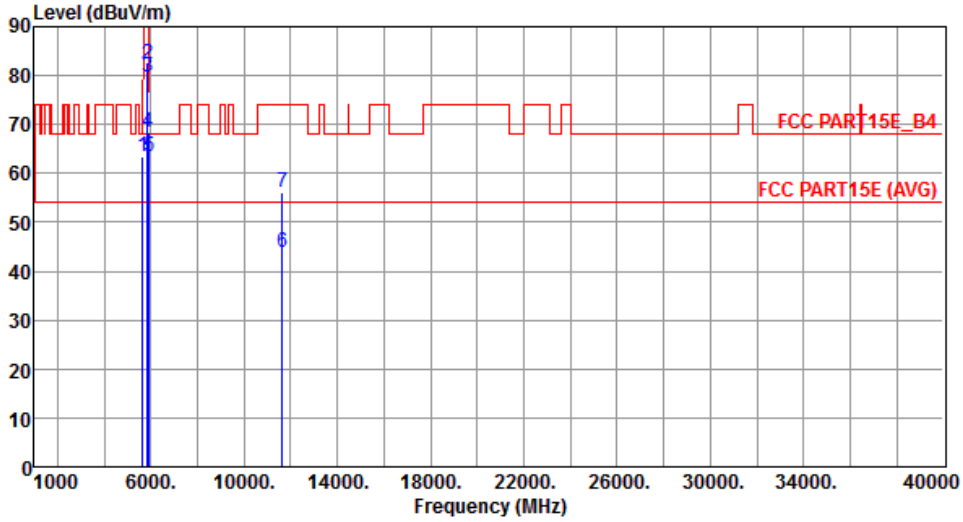
Modulation	VHT20	Test Freq. (MHz)	5825
Polarization	Horizontal		



	Freq. MHz	Emission level dBuV/m	Limit dBuV/m	Margin dB	SA reading dBuV	Factor dB	Remark	ANT High cm	Turn Table deg
1	5650.00	62.93	68.20	-5.27	57.06	5.87	Peak	103	255
2	5850.00	76.92	122.20	-45.28	70.75	6.17	Peak	103	255
3	5855.00	73.64	110.80	-37.16	67.46	6.18	Peak	103	255
4	5875.00	61.92	105.20	-43.28	55.72	6.20	Peak	103	255
5	5925.00	62.41	68.20	-5.79	56.15	6.26	Peak	103	255
6	11650.00	43.54	54.00	-10.46	28.93	14.61	Average	103	59
7	11650.00	56.18	74.00	-17.82	41.57	14.61	Peak	103	59

Note 1: Emission Level (dBuV/m) = SA Reading (dBuV/m) + Factor* (dB)
*Factor includes antenna factor , cable loss and amplifier gain
Note 2: Margin (dB) = Emission level (dBuV/m) – Limit (dBuV/m).

Modulation	VHT20	Test Freq. (MHz)	5825
Polarization	Vertical		

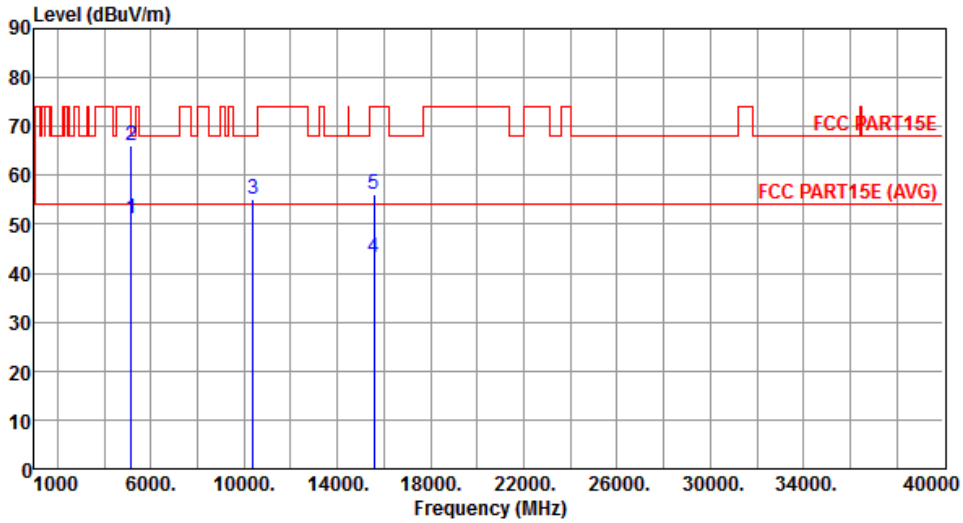


	Freq. MHz	Emission level dBuV/m	Limit dBuV/m	Margin dB	SA reading dBuV	Factor dB	Remark	ANT High cm	Turn Table deg
1	5650.00	63.52	68.20	-4.68	57.65	5.87	Peak	188	18
2	5850.00	82.45	122.20	-39.75	76.28	6.17	Peak	188	18
3	5855.00	79.81	110.80	-30.99	73.63	6.18	Peak	188	18
4	5875.00	68.39	105.20	-36.81	62.19	6.20	Peak	188	18
5	5925.00	63.44	68.20	-4.76	57.18	6.26	Peak	188	18
6	11650.00	43.68	54.00	-10.32	29.07	14.61	Average	110	103
7	11650.00	56.25	74.00	-17.75	41.64	14.61	Peak	110	103

Note 1: Emission Level (dBuV/m) = SA Reading (dBuV/m) + Factor* (dB)
*Factor includes antenna factor , cable loss and amplifier gain
Note 2: Margin (dB) = Emission level (dBuV/m) – Limit (dBuV/m).

3.5.7 Transmitter Radiated Unwanted Emissions (Above 1GHz) for VHT40

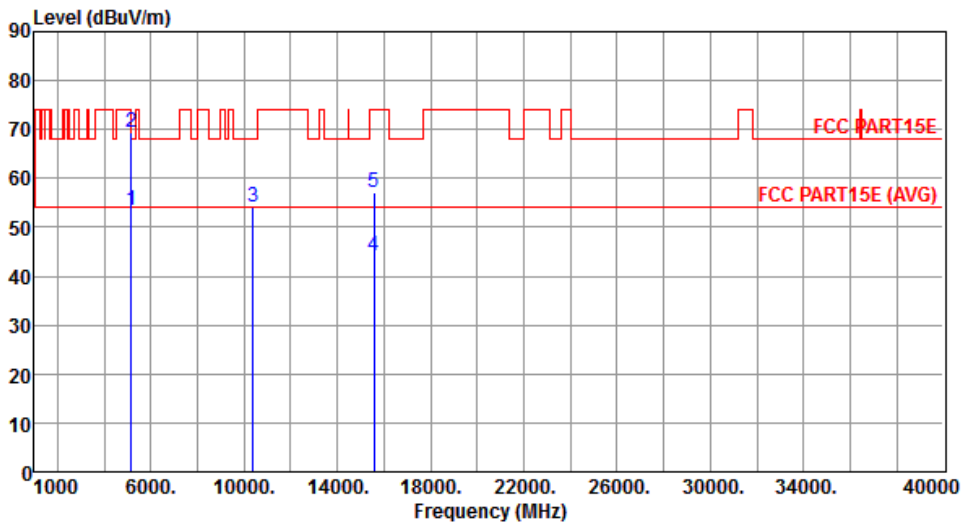
Modulation	VHT40	**Test Freq. (MHz)**	5190
Polarization	Horizontal		



	Freq. MHz	Emission level dBuV/m	Limit dBuV/m	Margin dB	SA reading dBuV	Factor dB	Remark	ANT High cm	Turn Table deg
1	5150.00	51.26	54.00	-2.74	46.05	5.21	Average	100	1
2	5150.00	65.95	74.00	-8.05	60.74	5.21	Peak	100	1
3	10380.00	55.20	68.20	-13.00	41.30	13.90	Peak	100	56
4	15570.00	43.24	54.00	-10.76	28.08	15.16	Average	100	45
5	15570.00	55.97	74.00	-18.03	40.81	15.16	Peak	100	45

Note 1: Emission Level (dBuV/m) = SA Reading (dBuV/m) + Factor* (dB)
*Factor includes antenna factor , cable loss and amplifier gain
Note 2: Margin (dB) = Emission level (dBuV/m) – Limit (dBuV/m).

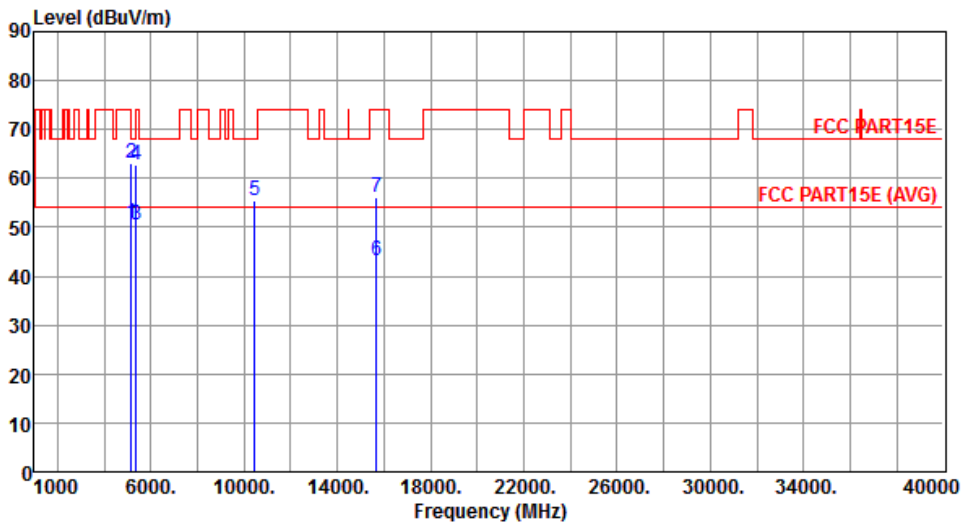
Modulation	VHT40	Test Freq. (MHz)	5190
Polarization	Vertical		



	Freq. MHz	Emission level dBuV/m	Limit dBuV/m	Margin dB	SA reading dBuV	Factor dB	Remark	ANT High cm	Turn Table deg
1	5150.00	53.50	54.00	-0.50	48.29	5.21	Average	185	12
2	5150.00	69.35	74.00	-4.65	64.14	5.21	Peak	185	12
3	10380.00	54.20	68.20	-14.00	40.30	13.90	Peak	100	134
4	15570.00	44.25	54.00	-9.75	29.09	15.16	Average	100	118
5	15570.00	57.07	74.00	-16.93	41.91	15.16	Peak	100	118

Note 1: Emission Level (dBuV/m) = SA Reading (dBuV/m) + Factor* (dB)
*Factor includes antenna factor , cable loss and amplifier gain
Note 2: Margin (dB) = Emission level (dBuV/m) – Limit (dBuV/m).

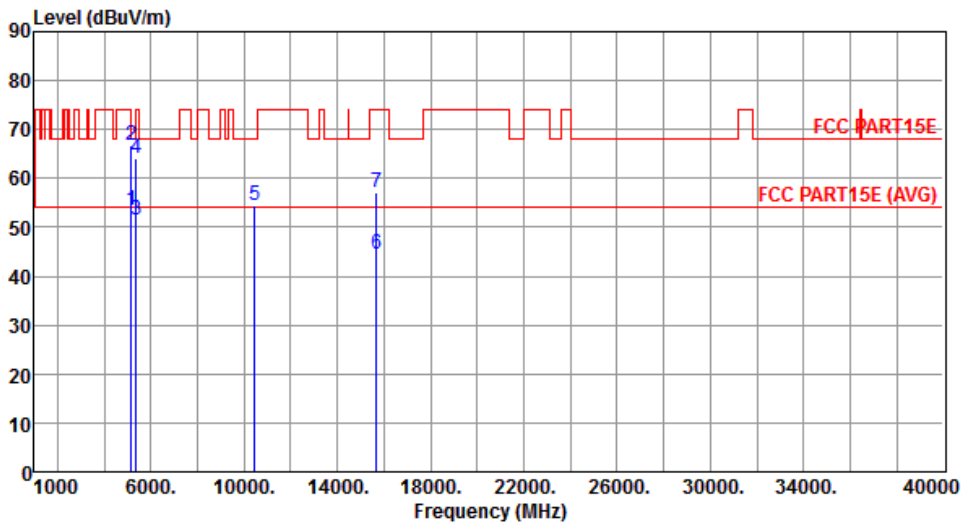
Modulation	VHT40	Test Freq. (MHz)	5230
Polarization	Horizontal		



	Freq. MHz	Emission level dBuV/m	Limit dBuV/m	Margin dB	SA reading dBuV	Factor dB	Remark	ANT High cm	Turn Table deg
1	5150.00	50.82	54.00	-3.18	45.61	5.21	Average	100	18
2	5150.00	63.25	74.00	-10.75	58.04	5.21	Peak	100	18
3	5350.00	50.57	54.00	-3.43	45.07	5.50	Average	100	18
4	5350.00	62.66	74.00	-11.34	57.16	5.50	Peak	100	18
5	10460.00	55.36	68.20	-12.84	41.42	13.94	Peak	100	53
6	15690.00	43.33	54.00	-10.67	28.21	15.12	Average	100	48
7	15690.00	55.97	74.00	-18.03	40.85	15.12	Peak	100	48

Note 1: Emission Level (dBuV/m) = SA Reading (dBuV/m) + Factor* (dB)
*Factor includes antenna factor , cable loss and amplifier gain
Note 2: Margin (dB) = Emission level (dBuV/m) – Limit (dBuV/m).

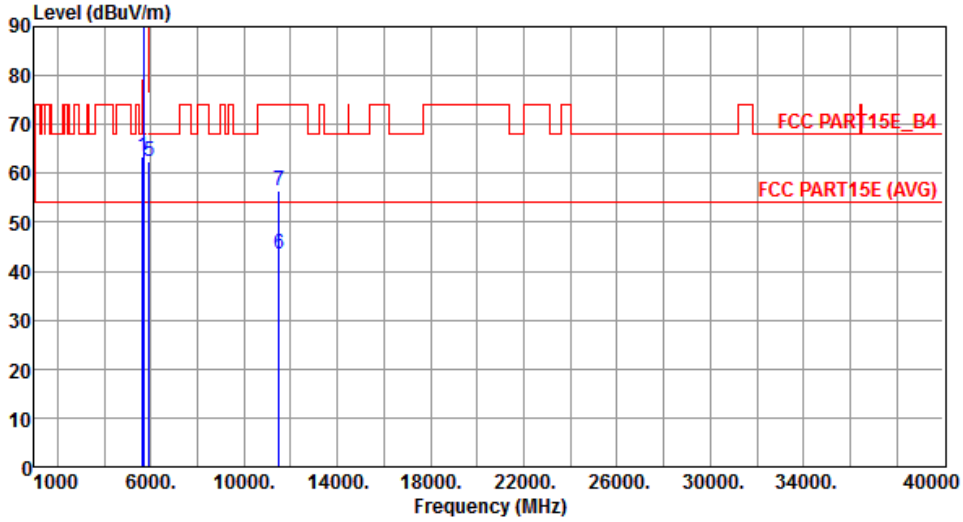
Modulation	VHT40	Test Freq. (MHz)	5230
Polarization	Vertical		



	Freq. MHz	Emission level dBuV/m	Limit dBuV/m	Margin dB	SA reading dBuV	Factor dB	Remark	ANT High cm	Turn Table deg
1	5150.00	53.37	54.00	-0.63	48.16	5.21	Average	198	343
2	5150.00	66.81	74.00	-7.19	61.60	5.21	Peak	198	343
3	5350.00	51.38	54.00	-2.62	45.88	5.50	Average	198	343
4	5350.00	63.95	74.00	-10.05	58.45	5.50	Peak	198	343
5	10460.00	54.35	68.20	-13.85	40.41	13.94	Peak	100	130
6	15690.00	44.34	54.00	-9.66	29.22	15.12	Average	100	124
7	15690.00	57.19	74.00	-16.81	42.07	15.12	Peak	100	124

Note 1: Emission Level (dBuV/m) = SA Reading (dBuV/m) + Factor* (dB)
*Factor includes antenna factor , cable loss and amplifier gain
Note 2: Margin (dB) = Emission level (dBuV/m) – Limit (dBuV/m).

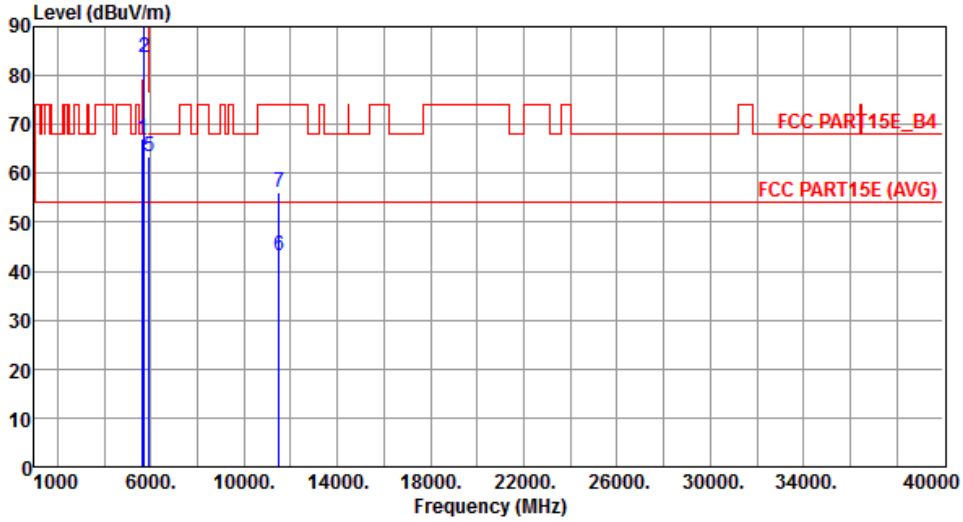
Modulation	VHT40	Test Freq. (MHz)	5755
Polarization	Horizontal		



	Freq. MHz	Emission level dBuV/m	Limit dBuV/m	Margin dB	SA reading dBuV	Factor dB	Remark	ANT High cm	Turn Table deg
1	5650.00	63.53	68.20	-4.67	57.66	5.87	Peak	104	0
2	5700.00	89.75	105.20	-15.45	83.79	5.96	Peak	104	0
3	5720.00	89.78	110.80	-21.02	83.80	5.98	Peak	104	0
4	5725.00	92.22	122.20	-29.98	86.23	5.99	Peak	104	0
5	5925.00	62.58	68.20	-5.62	56.32	6.26	Peak	104	0
6	11510.00	43.38	54.00	-10.62	28.49	14.89	Average	100	48
7	11510.00	56.55	74.00	-17.45	41.66	14.89	Peak	100	48

Note 1: Emission Level (dBuV/m) = SA Reading (dBuV/m) + Factor* (dB)
*Factor includes antenna factor , cable loss and amplifier gain
Note 2: Margin (dB) = Emission level (dBuV/m) – Limit (dBuV/m).

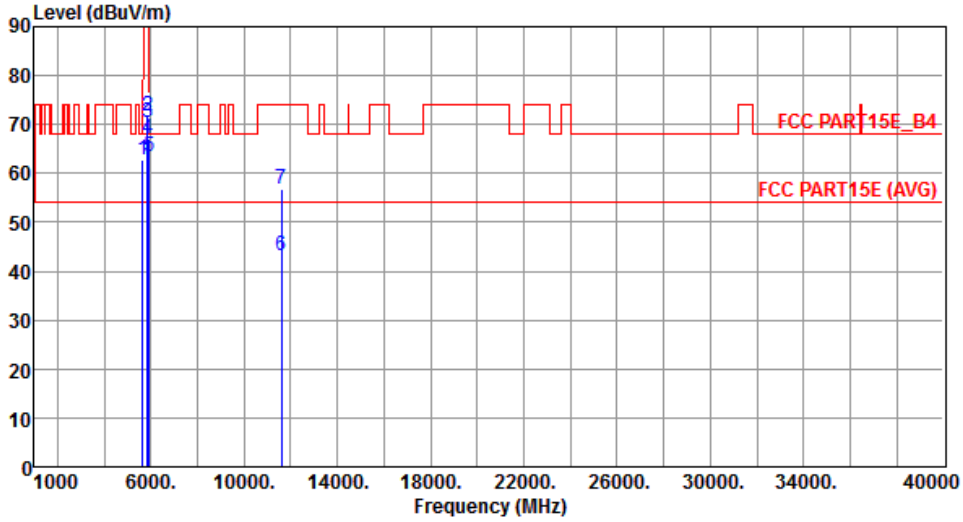
Modulation	VHT40	Test Freq. (MHz)	5755
Polarization	Vertical		



	Freq. MHz	Emission level dBuV/m	Limit dBuV/m	Margin dB	SA reading dBuV	Factor dB	Remark	ANT High cm	Turn Table deg
1	5650.00	67.16	68.20	-1.04	61.29	5.87	Peak	191	18
2	5700.00	83.74	105.20	-21.46	77.78	5.96	Peak	191	18
3	5720.00	95.73	110.80	-15.07	89.75	5.98	Peak	191	18
4	5725.00	97.93	122.20	-24.27	91.94	5.99	Peak	191	18
5	5925.00	63.47	68.20	-4.73	57.21	6.26	Peak	191	18
6	11510.00	43.33	54.00	-10.67	28.44	14.89	Average	100	126
7	11510.00	56.24	74.00	-17.76	41.35	14.89	Peak	100	126

Note 1: Emission Level (dBuV/m) = SA Reading (dBuV/m) + Factor* (dB)
*Factor includes antenna factor , cable loss and amplifier gain
Note 2: Margin (dB) = Emission level (dBuV/m) – Limit (dBuV/m).

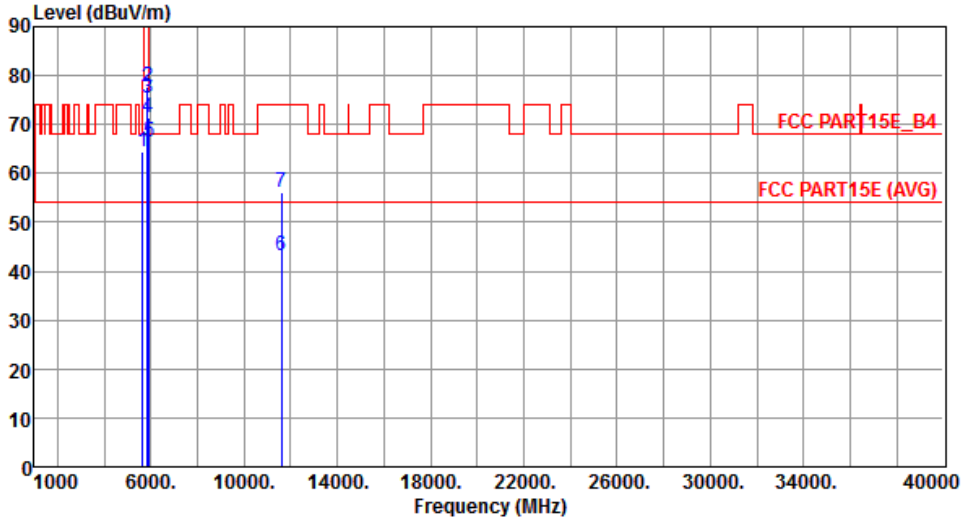
Modulation	VHT40	Test Freq. (MHz)	5795
Polarization	Horizontal		



	Freq. MHz	Emission level dBuV/m	Limit dBuV/m	Margin dB	SA reading dBuV	Factor dB	Remark	ANT High cm	Turn Table deg
1	5650.00	62.77	68.20	-5.43	56.90	5.87	Peak	100	358
2	5850.00	71.72	122.20	-50.48	65.55	6.17	Peak	100	358
3	5855.00	70.38	110.80	-40.42	64.20	6.18	Peak	100	358
4	5875.00	67.17	105.20	-38.03	60.97	6.20	Peak	100	358
5	5925.00	63.36	68.20	-4.84	57.10	6.26	Peak	100	358
6	11590.00	43.20	54.00	-10.80	28.47	14.73	Average	100	42
7	11590.00	56.72	74.00	-17.28	41.99	14.73	Peak	100	42

Note 1: Emission Level (dBuV/m) = SA Reading (dBuV/m) + Factor* (dB)
*Factor includes antenna factor , cable loss and amplifier gain
Note 2: Margin (dB) = Emission level (dBuV/m) – Limit (dBuV/m).

Modulation	VHT40	Test Freq. (MHz)	5795
Polarization	Vertical		

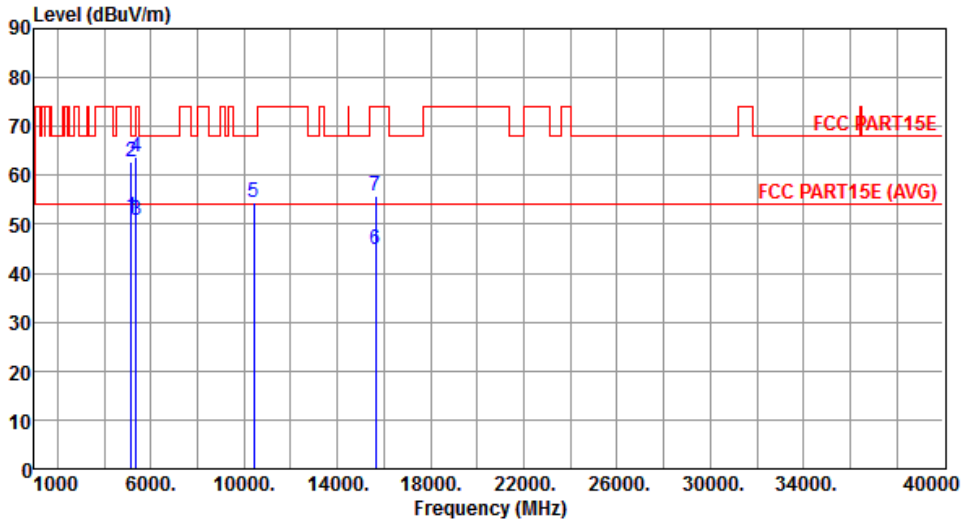


	Freq. MHz	Emission level dBuV/m	Limit dBuV/m	Margin dB	SA reading dBuV	Factor dB	Remark	ANT High cm	Turn Table deg
1	5650.00	64.57	68.20	-3.63	58.70	5.87	Peak	202	19
2	5850.00	77.57	122.20	-44.63	71.40	6.17	Peak	202	19
3	5855.00	75.33	110.80	-35.47	69.15	6.18	Peak	202	19
4	5875.00	71.31	105.20	-33.89	65.11	6.20	Peak	202	19
5	5925.00	66.33	68.20	-1.87	60.07	6.26	Peak	202	19
6	11590.00	43.24	54.00	-10.76	28.51	14.73	Average	100	124
7	11590.00	56.02	74.00	-17.98	41.29	14.73	Peak	100	124

Note 1: Emission Level (dBuV/m) = SA Reading (dBuV/m) + Factor* (dB)
*Factor includes antenna factor , cable loss and amplifier gain
Note 2: Margin (dB) = Emission level (dBuV/m) – Limit (dBuV/m).

3.5.8 Transmitter Radiated Unwanted Emissions (Above 1GHz) for VHT80

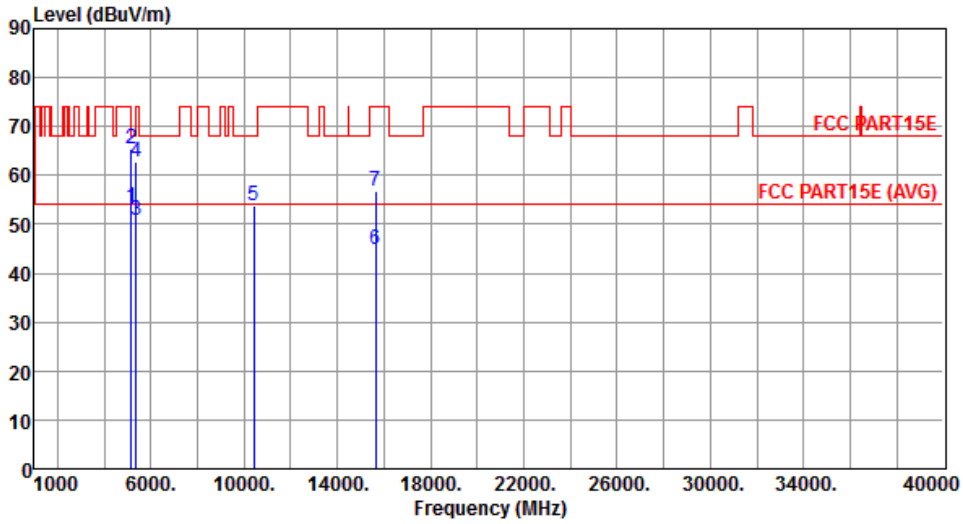
Modulation	VHT80	**Test Freq. (MHz)**	5210
Polarization	Horizontal		



	Freq. MHz	Emission level dBuV/m	Limit dBuV/m	Margin dB	SA reading dBuV	Factor dB	Remark	ANT High cm	Turn Table deg
1	5150.00	51.50	54.00	-2.50	46.29	5.21	Average	100	358
2	5150.00	62.91	74.00	-11.09	57.70	5.21	Peak	100	358
3	5350.00	50.80	54.00	-3.20	45.30	5.50	Average	100	358
4	5350.00	63.90	74.00	-10.10	58.40	5.50	Peak	100	358
5	10420.00	54.51	68.20	-13.69	40.59	13.92	Peak	100	51
6	15630.00	44.85	54.00	-9.15	29.72	15.13	Average	100	43
7	15630.00	55.67	74.00	-18.33	40.54	15.13	Peak	100	43

Note 1: Emission Level (dBuV/m) = SA Reading (dBuV/m) + Factor* (dB)
*Factor includes antenna factor , cable loss and amplifier gain
Note 2: Margin (dB) = Emission level (dBuV/m) – Limit (dBuV/m).

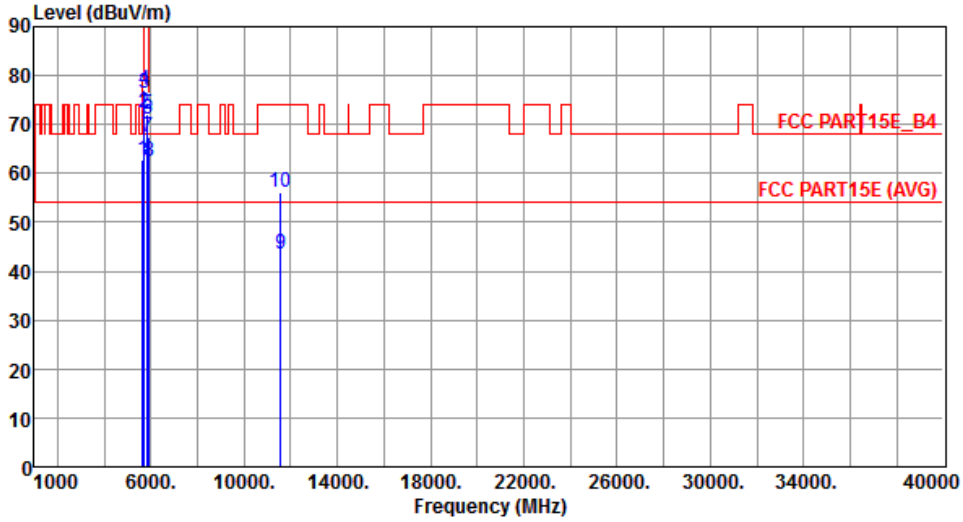
Modulation	VHT80	Test Freq. (MHz)	5210
Polarization	Vertical		



	Freq. MHz	Emission level dBuV/m	Limit dBuV/m	Margin dB	SA reading dBuV	Factor dB	Remark	ANT High cm	Turn Table deg
1	5150.00	53.50	54.00	-0.50	48.29	5.21	Average	185	9
2	5150.00	65.49	74.00	-8.51	60.28	5.21	Peak	185	9
3	5350.00	50.97	54.00	-3.03	45.47	5.50	Average	185	9
4	5350.00	62.60	74.00	-11.40	57.10	5.50	Peak	185	9
5	10420.00	53.80	68.20	-14.40	39.88	13.92	Peak	100	128
6	15630.00	44.92	54.00	-9.08	29.79	15.13	Average	100	126
7	15630.00	56.89	74.00	-17.11	41.76	15.13	Peak	100	126

Note 1: Emission Level (dBuV/m) = SA Reading (dBuV/m) + Factor* (dB)
*Factor includes antenna factor , cable loss and amplifier gain
Note 2: Margin (dB) = Emission level (dBuV/m) – Limit (dBuV/m).

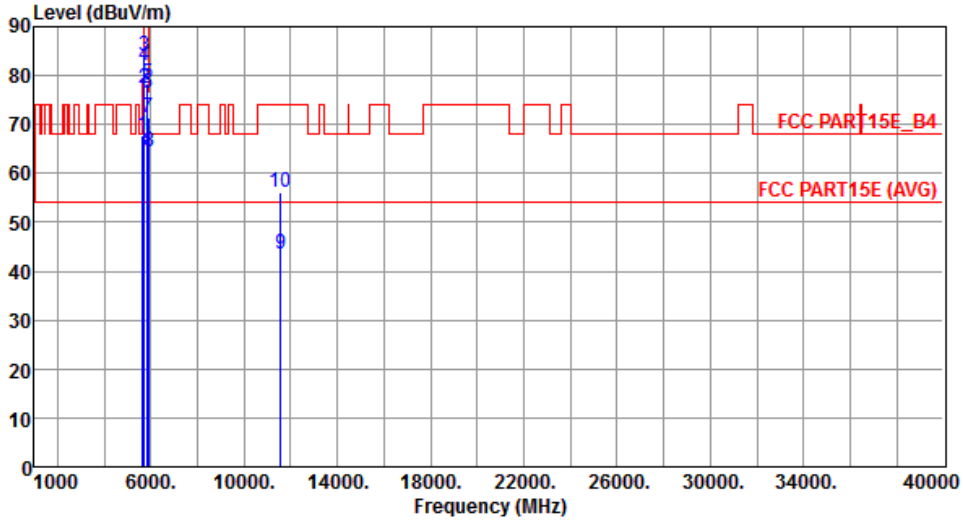
Modulation	VHT80	Test Freq. (MHz)	5775
Polarization	Horizontal		



	Freq. MHz	Emission level dBuV/m	Limit dBuV/m	Margin dB	SA reading dBuV	Factor dB	Remark	ANT High cm	Turn Table deg
1	5650.00	62.73	68.20	-5.47	56.86	5.87	Peak	100	359
2	5700.00	72.53	105.20	-32.67	66.57	5.96	Peak	100	359
3	5720.00	76.39	110.80	-34.41	70.41	5.98	Peak	100	359
4	5725.00	77.19	122.20	-45.01	71.20	5.99	Peak	100	359
5	5850.00	72.17	122.20	-50.03	66.00	6.17	Peak	100	359
6	5855.00	71.20	110.80	-39.60	65.02	6.18	Peak	100	359
7	5875.00	67.50	105.20	-37.70	61.30	6.20	Peak	100	359
8	5925.00	62.60	68.20	-5.60	56.34	6.26	Peak	100	359
9	11550.00	43.64	54.00	-10.36	28.83	14.81	Average	100	52
10	11550.00	56.27	74.00	-17.73	41.46	14.81	Peak	100	52

Note 1: Emission Level (dBuV/m) = SA Reading (dBuV/m) + Factor* (dB)
*Factor includes antenna factor , cable loss and amplifier gain
Note 2: Margin (dB) = Emission level (dBuV/m) – Limit (dBuV/m).

Modulation	VHT80	Test Freq. (MHz)	5775
Polarization	Vertical		



	Freq. MHz	Emission level dBuV/m	Limit dBuV/m	Margin dB	SA reading dBuV	Factor dB	Remark	ANT High cm	Turn Table deg
1	5650.00	67.77	68.20	-0.43	61.90	5.87	Peak	188	17
2	5700.00	77.41	105.20	-27.79	71.45	5.96	Peak	188	17
3	5720.00	84.09	110.80	-26.71	78.11	5.98	Peak	188	17
4	5725.00	82.16	122.20	-40.04	76.17	5.99	Peak	188	17
5	5850.00	78.32	122.20	-43.88	72.15	6.17	Peak	188	17
6	5855.00	76.23	110.80	-34.57	70.05	6.18	Peak	188	17
7	5875.00	71.26	105.20	-33.94	65.06	6.20	Peak	188	17
8	5925.00	64.51	68.20	-3.69	58.25	6.26	Peak	188	17
9	11550.00	43.36	54.00	-10.64	28.55	14.81	Average	100	121
10	11550.00	56.02	74.00	-17.98	41.21	14.81	Peak	100	121

Note 1: Emission Level (dBuV/m) = SA Reading (dBuV/m) + Factor* (dB)
*Factor includes antenna factor , cable loss and amplifier gain
Note 2: Margin (dB) = Emission level (dBuV/m) – Limit (dBuV/m).

3.6 Frequency Stability

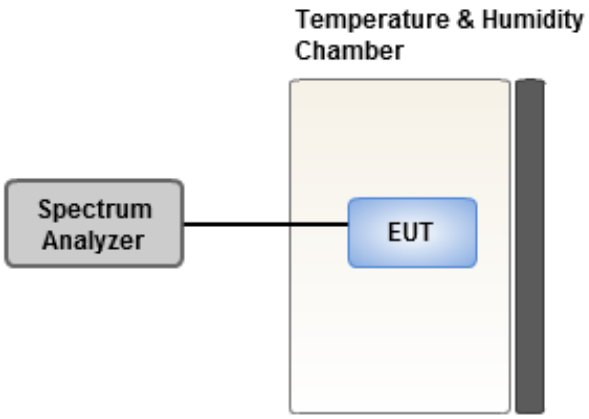
3.6.1 Limit of Frequency Stability

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 user's manual.

3.6.2 Test Procedures

1. The EUT is installed in an environment test chamber with external power source.
2. Set the chamber to operate at 50 centigrade and external power source to output at nominal voltage of EUT.
3. A sufficient stabilization period at each temperature is used prior to each frequency measurement.
4. When temperature is stabled, measure the frequency stability.
5. The test shall be performed under -30 to 50 centigrade and 85 to 115 percent of the nominal voltage. Change setting of chamber and external power source to complete all conditions.

3.6.3 Test Setup



3.6.4 Test Result of Frequency Stability

Frequency: 5200 MHz	Frequency Drift (ppm)			
Temperature (°C)	0 minute	2 minutes	5 minutes	10 minutes
T20°CVmax	0.34	0.12	0.93	0.71
T20°CVmin	-0.26	0.22	0.12	0.03
T50°CVnom	0.82	1.34	0.24	0.49
T40°CVnom	-0.04	0.10	-0.76	-0.46
T30°CVnom	0.74	1.45	1.01	0.55
T20°CVnom	1.52	0.95	1.26	0.91
T10°CVnom	0.86	0.07	0.17	0.89
T0°CVnom	0.40	1.07	1.19	1.46
T-10°CVnom	-0.08	0.38	-0.06	0.09
T-20°CVnom	0.61	0.28	0.77	0.74
T-30°CVnom	-0.78	0.28	-0.57	-0.28
Vnom [Vac]: 120		Vmax [Vac]: 138		Vmin [Vac]: 102
Tnom [°C]: 20		Tmax [°C]: 50		Tmin [°C]: -30

Frequency: 5785 MHz	Frequency Drift (ppm)			
Temperature (°C)	0 minute	2 minutes	5 minutes	10 minutes
T20°CVmax	2.13	1.70	1.42	1.23
T20°CVmin	0.45	0.40	-0.05	-0.38
T50°CVnom	1.21	1.09	0.93	0.97
T40°CVnom	0.97	0.95	1.24	1.22
T30°CVnom	2.83	3.25	2.31	3.33
T20°CVnom	1.77	1.52	1.74	1.42
T10°CVnom	2.75	1.91	2.44	2.17
T0°CVnom	2.24	1.33	1.77	1.80
T-10°CVnom	0.69	1.58	1.64	0.83
T-20°CVnom	1.99	2.14	2.47	2.74
T-30°CVnom	-0.08	0.03	0.13	0.13
Vnom [Vac]: 120		Vmax [Vac]: 138		Vmin [Vac]: 102
Tnom [°C]: 20		Tmax [°C]: 50		Tmin [°C]: -30

4 Test laboratory information

Established in 2012, ICC provides foremost EMC & RF Testing and advisory consultation services by our skilled engineers and technicians. Our services employ a wide variety of advanced edge test equipment and one of the widest certification extents in the business.

International Certification Corp (EMC and Wireless Communication Laboratory), it is our definitive objective is to institute long term, trust-based associations with our clients. The expectation we set up with our clients is based on outstanding service, practical expertise and devotion to a certified value structure. Our passion is to grant our clients with best EMC / RF services by oriented knowledgeable and accommodating staff.

Our Test sites are located at Linkou District and Kwei Shan District. Location map can be found on our website http://www.icertifi.com.tw.

Linkou	**Kwei Shan**	**Kwei Shan Site II**
Tel: 886-2-2601-1640	Tel: 886-3-271-8666	Tel: 886-3-271-8640
No. 30-2, Ding Fwu Tsuen, Lin Kou District, New Taipei City, Taiwan, R.O.C.	No. 3-1, Lane 6, Wen San 3rd St., Kwei Shan District, Tao Yuan City 333, Taiwan, R.O.C.	No. 14-1, Lane 19, Wen San 3rd St., Kwei Shan District, Tao Yuan City 333, Taiwan, R.O.C.

If you have any suggestion, please feel free to contact us as below information.

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Email: ICC_Service@icertifi.com.tw

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