FCC Test Report

FCC ID	:	**MXF-WVRTM127ACN**
Equipment	:	**Indoor Wi-Fi Router**
Model No.	:	**WVRTM-127ACN**
Brand Name	:	**Gemtek**
Applicant	:	**Gemtek Technology Co., Ltd.**
Address	:	**No. 15-1 Zhonghua Road, Hsinchu Industrial Park, Hukou, Hsinchu, Taiwan, 30352.**
Standard	:	**47 CFR FCC Part 15.407**
Received Date	:	**Fed. 23, 2017**
Tested Date	:	**Mar. 01 ~ Oct. 24, 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

Table of Contents

1 GENERAL DESCRIPTION 5

1.1 Information 5
1.2 Local Support Equipment List 9
1.3 Test Setup Chart 9
1.4 The Equipment List 10
1.5 Testing Applied Standards 11
1.6 Measurement Uncertainty 12

2 TEST CONFIGURATION 13

2.1 Testing Condition 13
2.2 The Worst Test Modes and Channel Details 13

3 TRANSMITTER TEST RESULTS 15

3.1 Conducted Emissions 15
3.2 Emission Bandwidth 20
3.3 RF Output Power 23
3.4 Peak Power Spectral Density 25
3.5 Transmitter Radiated and Band Edge Emissions 29
3.6 Frequency Stability 72

4 TEST LABORATORY INFORMATION 75

Release Record

Report No.	Version	Description	Issued Date
FR7O1102AN	Rev. 01	Initial issue	Nov. 13, 2017

Summary of Test Results

FCC Rules	Test Items	Measured	Result
15.207	Conducted Emissions	[dBuV]: 0.471MHz 38.32 (Margin -8.17dB) - AV	Pass
15.407(b) 15.209	Radiated Emissions	[dBuV/m at 3m]: 5150.00MHz 53.68 (Margin -0.32dB) - AV	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: 20.45 5725-5850MHz: 22.71	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 Frequency (MHz) / Gain (dBi)		
				2400~2483.5	**5150~5250**	**5725~5850**
1	BLACK	PIFA	IPEX	2.34	2.48	5.06
2	GRAY	PIFA	IPEX	2.4	2	4.14

1.1.3 Power Supply Type of Equipment under Test (EUT)

Power Supply Type	56Vdc from adapter

1.1.4 Accessories

No.	Equipment	Description
1	Adapter	Brand: PHIHONG Model: PSAA30R-560 Power Rating: I/P: 100-240Vac, 50-60Hz, 0.8A O/P: 56Vdc, 0.536A Power Line: 1.5m non-shielded without core
2	Adapter	Brand: Gospell Model: G0753-560-054 Power Rating: I/P: 100-240Vac, 50-60Hz, 0.75A O/P: 56Vdc, 0.54A Power Line: 1.2m non-shielded without core
3	RJ45 (EEKSONG)	1.4m non-shielded without core
4	RJ45 (Tong-Li)	1.4m 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	VHT 80	
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	MT7662, V0.0.2.3		
Duty Cycle and Duty Factor	**Mode**	**Duty cycle (%)**	**Duty factor (dB)**
	11a	94.01%	0.27
	VHT20	94.72%	0.24
	VHT40	89.58%	0.48
	VHT80	82.39%	0.84

1.1.7 Power Setting

For Frequency band 5150-5250 MHz		
Modulation Mode	**Test Frequency (MHz)**	**Power Set**
11a	5180	13/11
11a	5200	13/11
11a	5240	13/11
HT20	5180	13/11
HT20	5200	13/11
HT20	5240	13/11
HT40	5190	13/11
HT40	5230	1A/18
VHT20	5180	13/11
VHT20	5200	13/11
VHT20	5240	13/11
VHT40	5190	13/11
VHT40	5230	1A/18
VHT80	5210	0E/0E

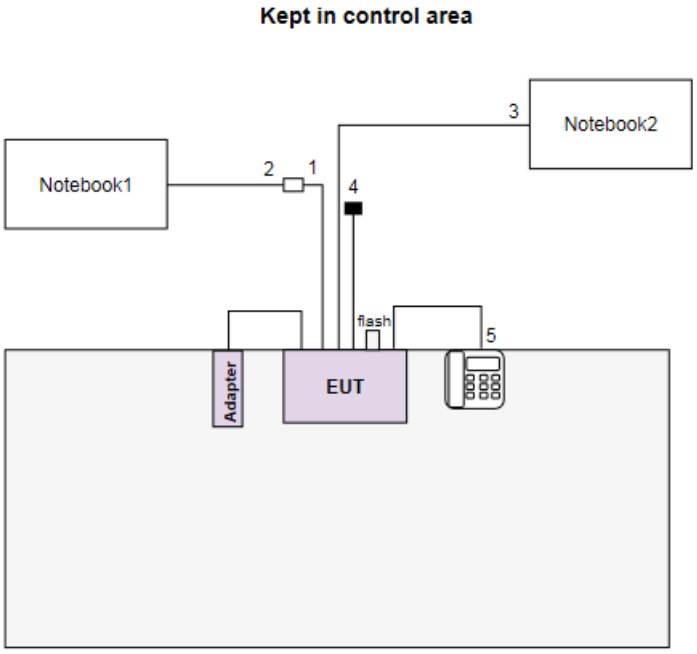
For Frequency band 5725~5850 MHz		
Modulation Mode	**Test Frequency (MHz)**	**Power Set**
11a	5745	20/1F
11a	5785	20/1F
11a	5825	20/20
HT20	5745	20/1F
HT20	5785	20/1F
HT20	5825	20/20
HT40	5755	1F/1F
HT40	5795	1F/1F
VHT20	5745	20/1F
VHT20	5785	20/1F
VHT20	5825	20/20
VHT40	5755	1F/1F
VHT40	5795	1F/1F
VHT80	5775	1B/1A

1.2 Local Support Equipment List

Support Equipment List					
No.	**Equipment**	**Brand**	**Model**	**FCC ID**	**Signal cable / Length (m)**
1	Notebook	DELL	Latitude E6430	DoC	RJ45, 10m non-shielded.
	Notebook	DELL	Latitude E6430	DoC	RJ45, 10m non-shielded.
2	Phone	HTT	HTT-806	---	RJ11, 1.5m non-shielded.
3	USB Flash	Kingston	DTSE9	---	---

1.3 Test Setup Chart

Test Setup Diagram



1. RJ45, 1.4m non-shielded
2-3. RJ45, 10m non-shielded
4. RJ45, 1m non-shielded with load
5. RJ11, 1.5m non-shielded

1.4 The Equipment List

Test Item	Conducted Emission				
Test Site	Conduction room 1 / (CO01-WS)				
Tested Date	Oct. 24, 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 below 1GHz				
Test Site	966 chamber 3 / (03CH03-WS)				
Tested Date	Oct. 23, 2017				
Instrument	**Manufacturer**	**Model No.**	**Serial No.**	**Calibration Date**	**Calibration Until**
Receiver	Agilent	N9038A	MY53290044	Sep. 26, 2017	Sep. 25, 2018
Bilog Antenna	SCHWARZBECK	VULB9168	VULB9168-685	Apr. 28, 2017	Apr. 27, 2018
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
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	Mar. 08, 2017				
Instrument	**Manufacturer**	**Model No.**	**Serial No.**	**Calibration Date**	**Calibration Until**
Spectrum Analyzer	ROHDE&SCHWARZ	FSV40	101486	Nov. 15, 2016	Nov. 14, 2017
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.					

Test Item	Radiated Emission above 1GHz				
Test Site	966 chamber 3 / (03CH03-WS)				
Tested Date	Mar. 01, 2017				
Instrument	**Manufacturer**	**Model No.**	**Serial No.**	**Calibration Date**	**Calibration Until**
Spectrum Analyzer	Agilent	N9010A	MY53400091	Sep. 09, 2016	Sep. 08, 2017
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
Preamplifier	Agilent	83017A	MY53270014	Aug. 22, 2016	Aug. 21, 2017
Preamplifier	EMC	EMC184045B	980192	Aug. 24, 2016	Aug. 23, 2017
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
Measurement Software	AUDIX	e3	6.120210g	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 / 56%	Alex Tsai
Radiated Emissions	03CH03-WS	22-25°C / 64-65%	Brad Wu Vincent Yeh
RF Conducted	TH01-WS	20°C / 65%	Brad Wu

- 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	VHT40	5230	MCS 0	---
Radiated Emissions ≤1GHz	VHT40	5230	MCS 0	---
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.
2. Two RJ45 cables (EEKSONG & Tong-Li) had been covered during the pretest and found that **EEKSONG RJ45 cable** was the worst case and was selected for final testing.
3. Two adapters (PHIHONG & Gospell) had been covered during the pretest and found that **PHIHONG adapter was the worst case for radiated emission test**, and **Gospell adapter was the worst case for conducted emission test**.

For Frequency band 5725-5850 MHz				
Test item	**Modulation Mode**	**Test Frequency (MHz)**	**Data Rate (Mbps) / MCS**	**Test Configuration**
Conducted Emissions	VHT40	5755	MCS 0	---
Radiated Emissions ≤1GHz	VHT40	5755	MCS 0	---
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.
2. Two RJ45 cables (EEKSONG & Tong-Li) had been covered during the pretest and found that **EEKSONG RJ45 cable** was the worst case and was selected for final testing.
3. Two adapters (PHIHONG & Gospell) had been covered during the pretest and found that **PHIHONG adapter was the worst case for radiated emission test**, and **Gospell adapter was the worst case for conducted emission test**.

3 Transmitter Test Results

3.1 Conducted Emissions

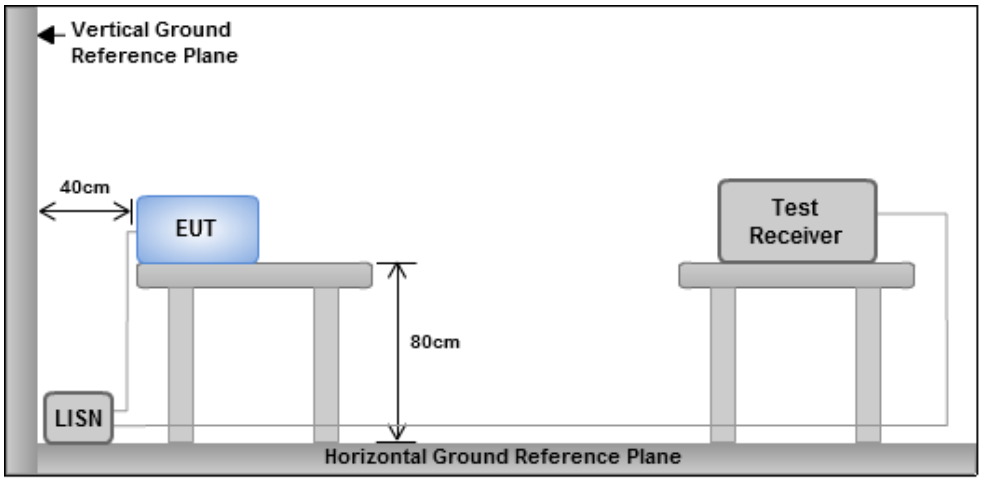
3.1.1 Limit of Conducted Emissions

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.

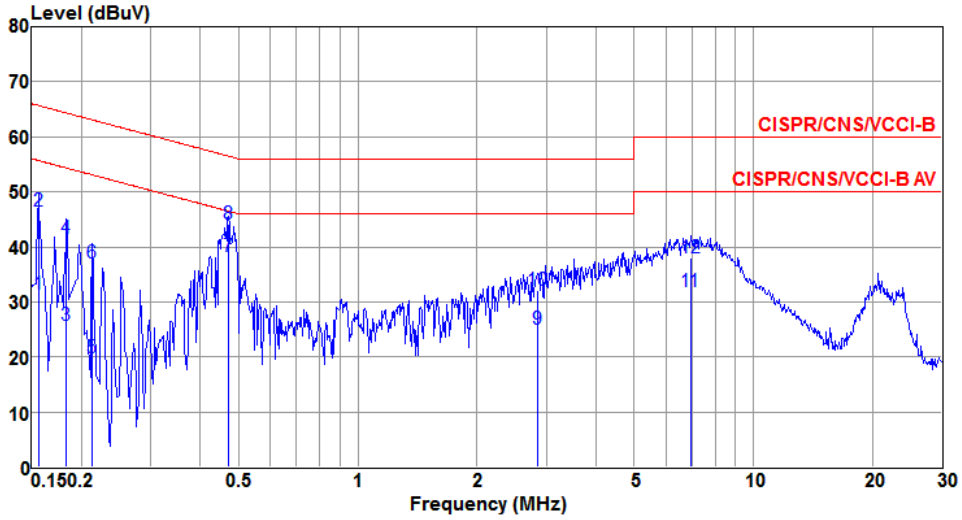
3.1.3 Test Setup



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

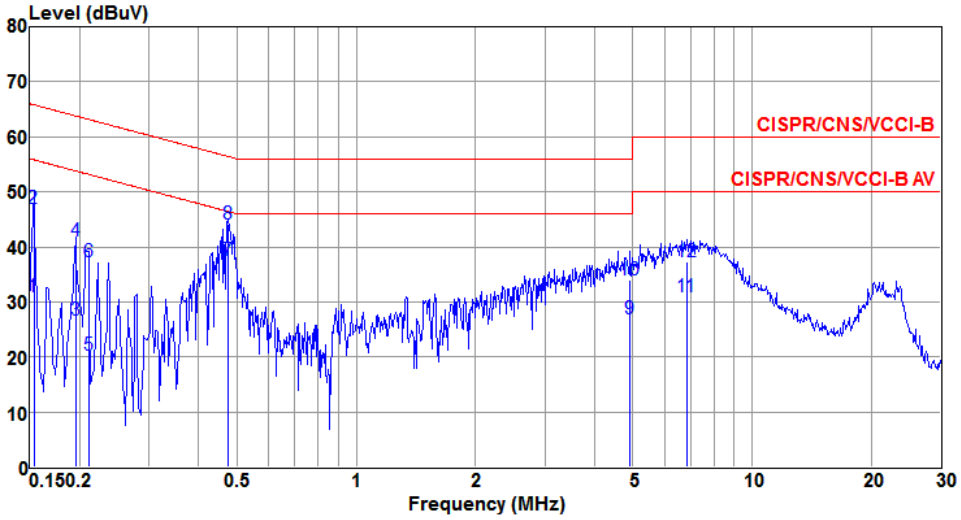
Modulation	VHT40	Test Freq. (MHz)	5230
Power Phase	Line		



	Freq MHz	Level dBuV	Limit Line dBuV	Over Limit dB	Read Level dBuV	LISN factor dB	cable loss dB	Remark
1	0.156	31.42	55.69	-24.27	31.00	0.38	0.04	Average
2	0.156	46.51	65.69	-19.18	46.09	0.38	0.04	QP
3	0.183	25.81	54.33	-28.52	25.38	0.39	0.04	Average
4	0.183	41.57	64.33	-22.76	41.14	0.39	0.04	QP
5	0.213	19.93	53.10	-33.17	19.50	0.39	0.04	Average
6	0.213	37.09	63.10	-26.01	36.66	0.39	0.04	QP
7@	0.471	38.32	46.49	-8.17	37.94	0.34	0.04	Average
8	0.471	44.17	56.49	-12.32	43.79	0.34	0.04	QP
9	2.839	25.14	46.00	-20.86	24.52	0.52	0.10	Average
10	2.839	32.05	56.00	-23.95	31.43	0.52	0.10	QP
11	6.951	31.98	50.00	-18.02	30.90	0.88	0.20	Average
12	6.951	38.11	60.00	-21.89	37.03	0.88	0.20	QP

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

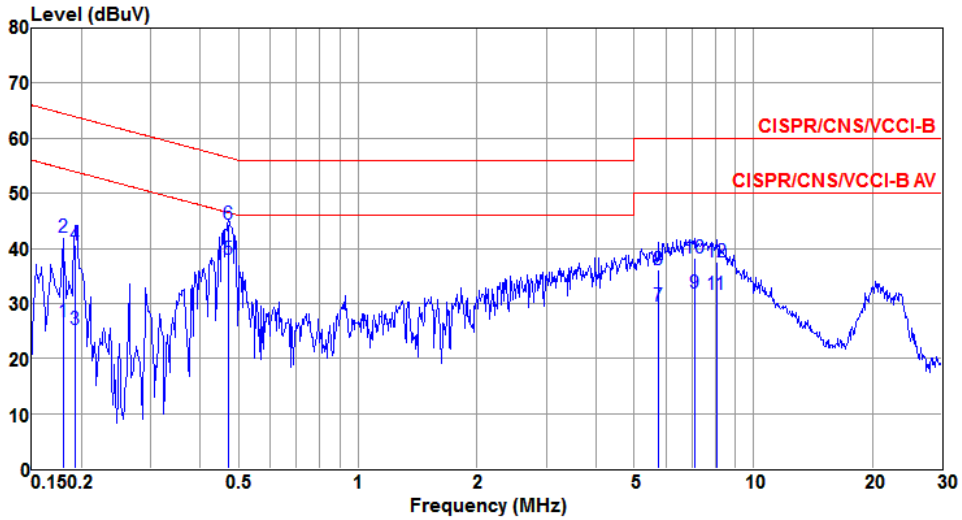
Modulation	VHT40	Test Freq. (MHz)	5230
Power Phase	Neutral		



	Freq MHz	Level dBuV	Limit Line dBuV	Over Limit dB	Read Level dBuV	LISN factor dB	cable loss dB	Remark
1	0.153	30.99	55.82	-24.83	30.61	0.34	0.04	Average
2	0.153	47.02	65.82	-18.80	46.64	0.34	0.04	QP
3	0.195	26.58	53.80	-27.22	26.20	0.34	0.04	Average
4	0.195	40.96	63.80	-22.84	40.58	0.34	0.04	QP
5	0.211	20.19	53.18	-32.99	19.81	0.34	0.04	Average
6	0.211	37.22	63.18	-25.96	36.84	0.34	0.04	QP
7@	0.476	37.44	46.41	-8.97	37.02	0.38	0.04	Average
8	0.476	44.18	56.41	-12.23	43.76	0.38	0.04	QP
9	4.926	27.03	46.00	-18.97	26.28	0.58	0.17	Average
10	4.926	34.08	56.00	-21.92	33.33	0.58	0.17	QP
11	6.841	30.98	50.00	-19.02	30.16	0.62	0.20	Average
12	6.841	37.24	60.00	-22.76	36.42	0.62	0.20	QP

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

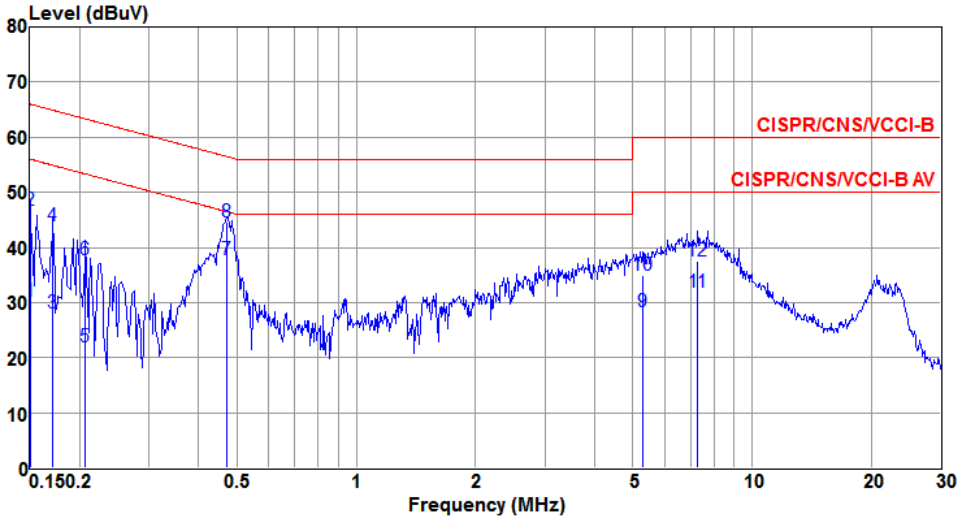
Modulation	VHT40	Test Freq. (MHz)	5755
Power Phase	Line		



	Freq MHz	Level dBuV	Limit Line dBuV	Over Limit dB	Read Level dBuV	LISN factor dB	cable loss dB	Remark
1	0.180	26.63	54.50	-27.87	26.20	0.39	0.04	Average
2	0.180	42.10	64.50	-22.40	41.67	0.39	0.04	QP
3	0.192	25.25	53.93	-28.68	24.82	0.39	0.04	Average
4	0.192	40.50	63.93	-23.43	40.07	0.39	0.04	QP
5@	0.471	37.98	46.49	-8.51	37.60	0.34	0.04	Average
6	0.471	44.40	56.49	-12.09	44.02	0.34	0.04	QP
7	5.774	29.49	50.00	-20.51	28.53	0.78	0.18	Average
8	5.774	36.04	60.00	-23.96	35.08	0.78	0.18	QP
9	7.100	31.77	50.00	-18.23	30.69	0.88	0.20	Average
10	7.100	38.14	60.00	-21.86	37.06	0.88	0.20	QP
11	8.062	31.66	50.00	-18.34	30.50	0.95	0.21	Average
12	8.062	37.43	60.00	-22.57	36.27	0.95	0.21	QP

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

Modulation	VHT40	Test Freq. (MHz)	5755
Power Phase	Neutral		



	Freq MHz	Level dBuV	Limit Line dBuV	Over Limit dB	Read Level dBuV	LISN factor dB	cable loss dB	Remark
1	0.150	30.21	56.00	-25.79	29.83	0.34	0.04	Average
2	0.150	46.74	66.00	-19.26	46.36	0.34	0.04	QP
3	0.171	28.12	54.90	-26.78	27.74	0.34	0.04	Average
4	0.171	44.01	64.90	-20.89	43.63	0.34	0.04	QP
5	0.207	22.06	53.32	-31.26	21.68	0.34	0.04	Average
6	0.207	37.79	63.32	-25.53	37.41	0.34	0.04	QP
7@	0.471	37.67	46.49	-8.82	37.25	0.38	0.04	Average
8	0.471	44.49	56.49	-12.00	44.07	0.38	0.04	QP
9	5.277	28.24	50.00	-21.76	27.47	0.59	0.18	Average
10	5.277	34.94	60.00	-25.06	34.17	0.59	0.18	QP
11	7.290	31.91	50.00	-18.09	31.08	0.63	0.20	Average
12	7.290	37.63	60.00	-22.37	36.80	0.63	0.20	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.

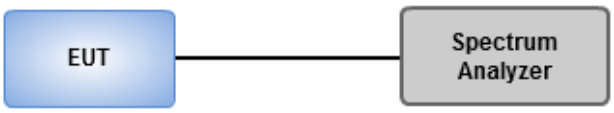
Occupied Bandwidth

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

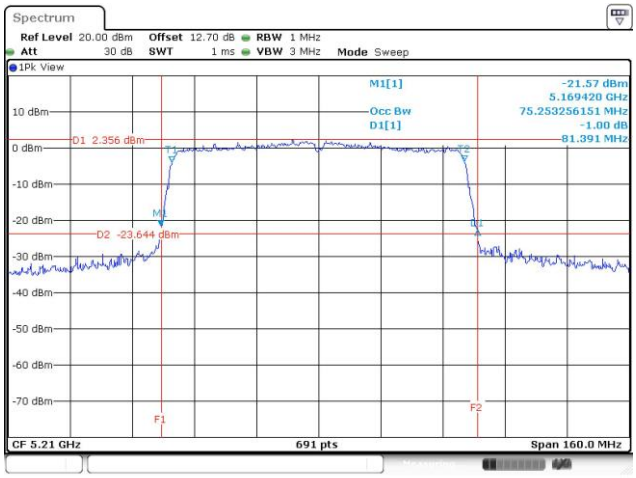
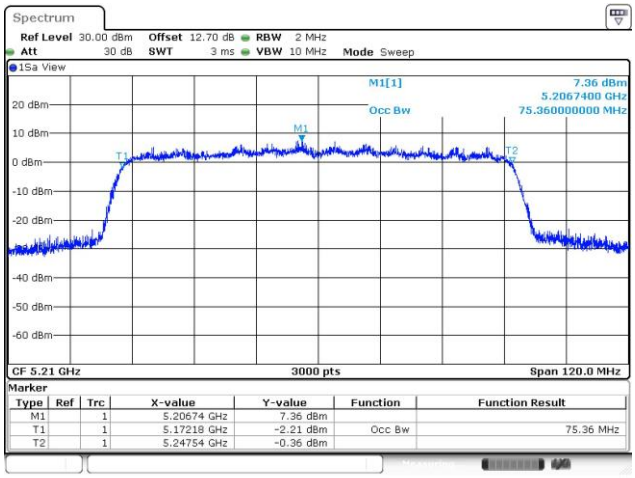
1. Set RBW = 100kHz, VBW = 300kHz
2. Detector = Peak,Trace mode = max hold.
3. Allow the trace to stabilize.
4. Measure the maximum width of the emission that is constrained by the frequencies associated with the two outermost amplitude points (upper and lower frequencies) that are attenuated by 6 dB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

3.2.3 Test Setup



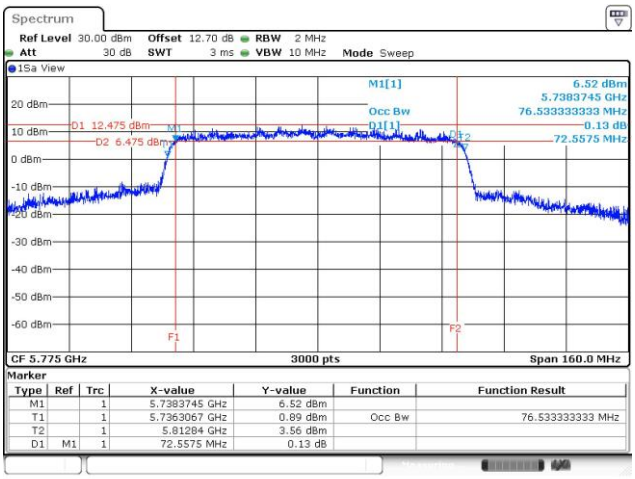
3.2.4 Test Result of Emission Bandwidth

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	21.28	20.12	---	---	16.85	16.85	---	---
11a	2	5200	20.23	20.17	---	---	16.87	16.83	---	---
11a	2	5240	22.61	20.12	---	---	16.88	16.85	---	---
VHT20	2	5180	20.93	20.41	---	---	17.71	17.69	---	---
VHT20	2	5200	21.68	20.35	---	---	17.71	17.69	---	---
VHT20	2	5240	24.93	20.41	---	---	17.73	17.70	---	---
VHT40	2	5190	41.51	41.39	---	---	36.22	36.18	---	---
VHT40	2	5230	72.46	68.17	---	---	36.60	36.50	---	---
VHT80	2	5210	81.39	81.39	---	---	75.36	75.28	---	---

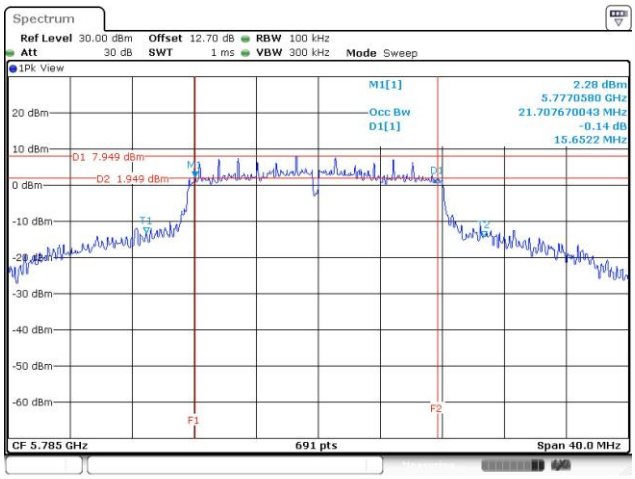
Worst Plot of 26dB Bandwidth	Worst Plot of 99% Bandwidth
	

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	21.95	23.33	---	---	16.06	15.94	---	---	0.5
11a	2	5785	22.43	23.67	---	---	15.71	15.65	---	---	0.5
11a	2	5825	22.80	25.24	---	---	16.29	15.94	---	---	0.5
VHT20	2	5745	23.53	24.64	---	---	16.00	16.64	---	---	0.5
VHT20	2	5785	23.84	23.76	---	---	16.06	16.93	---	---	0.5
VHT20	2	5825	23.17	26.29	---	---	16.52	16.93	---	---	0.5
VHT40	2	5755	43.60	48.53	---	---	35.13	35.13	---	---	0.5
VHT40	2	5795	44.88	50.59	---	---	35.13	35.13	---	---	0.5
VHT80	2	5775	76.43	76.53	---	---	16.00	16.64	---	---	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	14.06	14.15	---	---	51.470	17.12	30.00
11a	2	5200	14.14	14.18	---	---	52.124	17.17	30.00
11a	2	5240	14.12	14.23	---	---	52.308	17.19	30.00
HT20	2	5180	14.12	14.23	---	---	52.308	17.19	30.00
HT20	2	5200	13.94	14.04	---	---	50.126	17.00	30.00
HT20	2	5240	13.93	14.06	---	---	50.186	17.01	30.00
HT40	2	5190	14.25	14.11	---	---	52.370	17.19	30.00
HT40	2	5230	17.26	17.28	---	---	106.667	20.28	30.00
VHT20	2	5180	14.21	14.35	---	---	53.590	17.29	30.00
VHT20	2	5200	14.06	14.15	---	---	51.470	17.12	30.00
VHT20	2	5240	14.08	14.21	---	---	51.949	17.16	30.00
VHT40	2	5190	14.42	14.23	---	---	54.154	17.34	30.00
VHT40	2	5230	17.45	17.42	---	---	110.798	20.45	30.00
VHT80	2	5210	11.86	12.72	---	---	34.053	15.32	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	19.12	19.35	---	---	167.758	22.25	30.00
11a	2	5785	19.04	19.38	---	---	166.864	22.22	30.00
11a	2	5825	19.45	19.34	---	---	174.006	22.41	30.00
HT20	2	5745	18.91	18.94	---	---	156.147	21.94	30.00
HT20	2	5785	19.22	19.03	---	---	163.544	22.14	30.00
HT20	2	5825	19.08	19.53	---	---	170.652	22.32	30.00
HT40	2	5755	19.72	19.41	---	---	181.053	22.58	30.00
HT40	2	5795	19.39	19.54	---	---	176.846	22.48	30.00
VHT20	2	5745	19.06	19.05	---	---	160.890	22.07	30.00
VHT20	2	5785	19.34	19.11	---	---	167.372	22.24	30.00
VHT20	2	5825	19.22	19.68	---	---	176.457	22.47	30.00
VHT40	2	5755	19.86	19.54	---	---	186.778	22.71	30.00
VHT40	2	5795	19.51	19.66	---	---	181.800	22.60	30.00
VHT80	2	5775	17.16	17.24	---	---	104.966	20.21	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

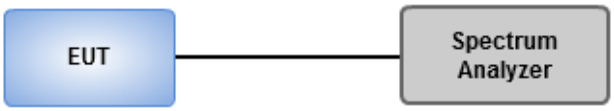
☐ Method SA-1

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

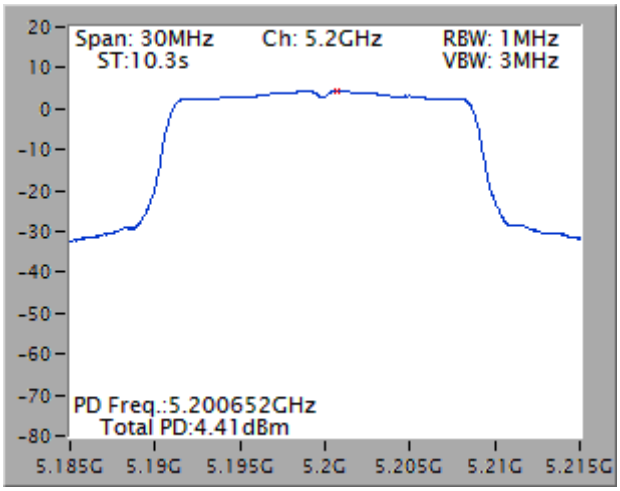


3.4.4 Test Result of Peak Power Spectral Density

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	4.22	0.27	4.49	17
11a	2	5200	4.15	0.27	4.42	17
11a	2	5240	4.20	0.27	4.47	17
VHT20	2	5180	4.03	0.24	4.27	17
VHT20	2	5200	4.41	0.24	4.65	17
VHT20	2	5240	4.20	0.24	4.44	17
VHT40	2	5190	-0.31	0.48	0.17	17
VHT40	2	5230	3.87	0.48	4.35	17
VHT80	2	5210	-6.06	0.84	-5.22	17

Note:
1. D.F is duty factor.
2. Test results are bin-by-bin summing measured value of each TX port.

Worst Plot



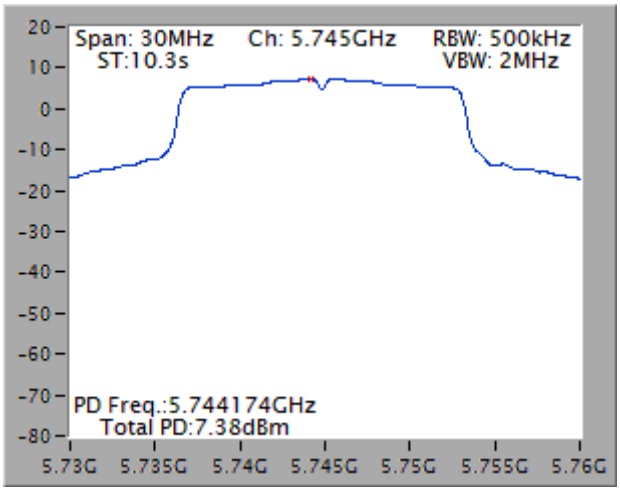
Note: Worst plot is w/o duty factor.

For Frequency band 5725-5850 MHz						
Condition			Peak Power Spectral Density (dBm/500kHz)			
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	7.38	0.27	7.65	28.38
11a	2	5785	7.35	0.27	7.62	28.38
11a	2	5825	7.35	0.27	7.62	28.38
VHT20	2	5745	6.96	0.24	7.20	28.38
VHT20	2	5785	6.83	0.24	7.07	28.38
VHT20	2	5825	6.94	0.24	7.18	28.38
VHT40	2	5755	3.47	0.48	3.95	28.38
VHT40	2	5795	3.49	0.48	3.97	28.38
VHT80	2	5775	-2.02	0.84	-1.18	28.38

Note:

1. D.F is duty factor.
2. Test results are bin-by-bin summing measured value of each TX port.
3. Directional gain = $10 * \log((10^{5.06/20}+10^{4.14/20})^2/2)$ = 7.62 dBi > 6dBi
   Limit shall be reduced to 30 dBm – (7.62 dBi – 6 dBi) = 28.38 dBm.

Worst Plot



Note: The plot without 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

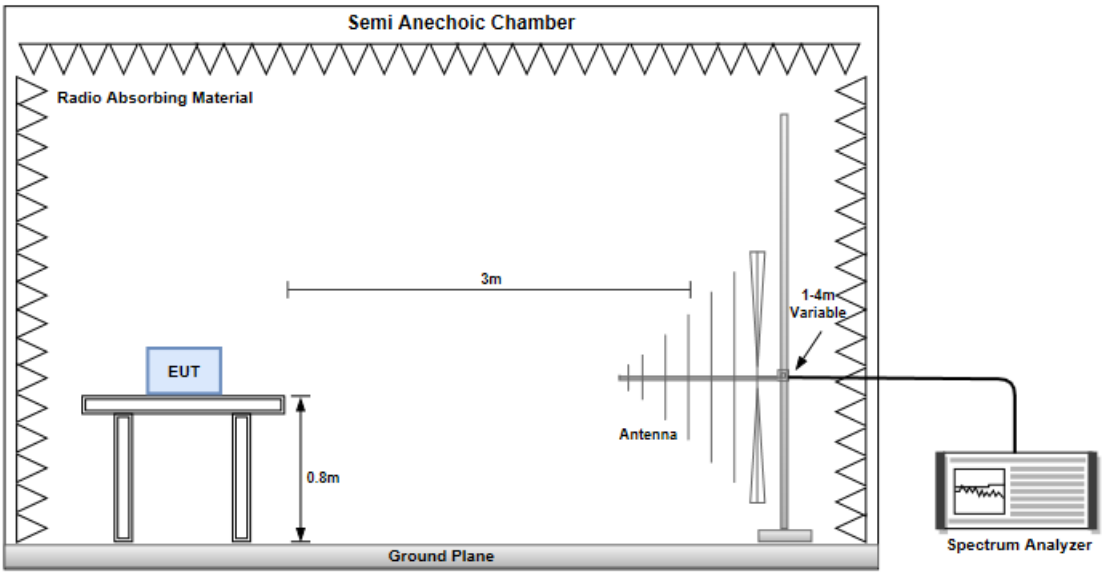
1. Measurement is made at a semi-anechoic chamber that incorporates a turntable allowing a EUT rotation of 360°. A continuously-rotating, remotely-controlled turntable is installed at the test site to support the EUT and facilitate determination of the direction of maximum radiation for each EUT emission 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:

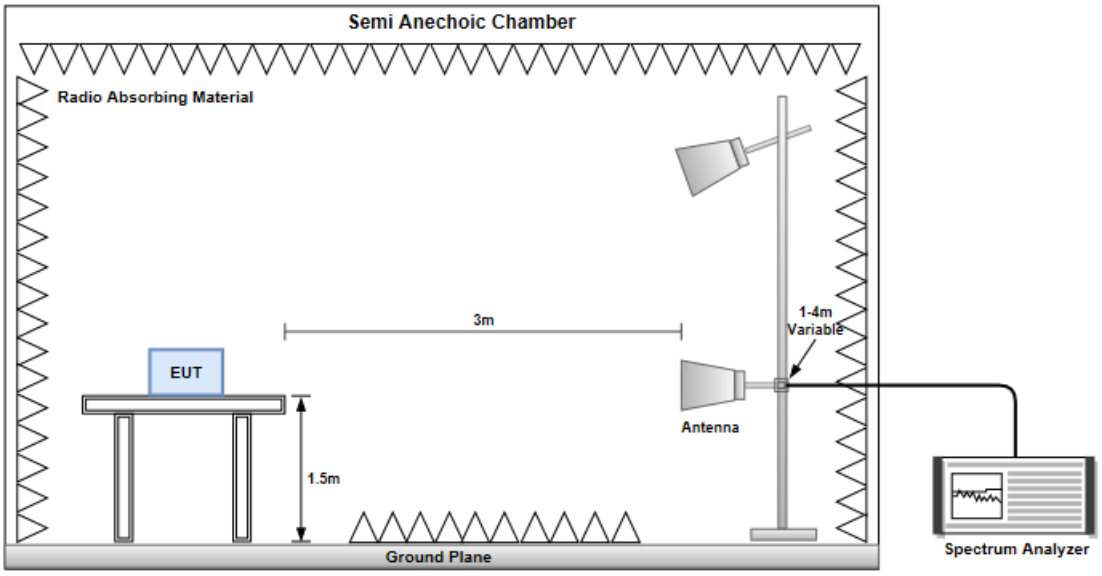
1. 120kHz measurement bandwidth of test receiver and Quasi-peak detector is for radiated emission below 1GHz.
2. RBW=1MHz, VBW=3MHz and Peak detector is for peak measured value of radiated emission above 1GHz.
3. RBW=1MHz, VBW=1/T and Peak detector is for average measured value of radiated emission above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

3.5.3 Test Setup

Radiated Emissions below 1 GHz

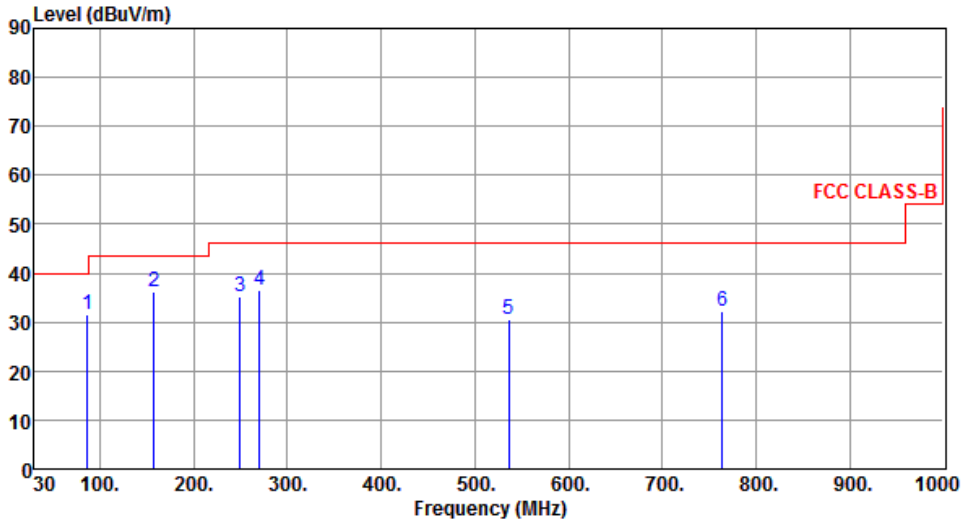


Radiated Emissions above 1 GHz



3.5.4 Transmitter Radiated Unwanted Emissions (Below 1GHz)

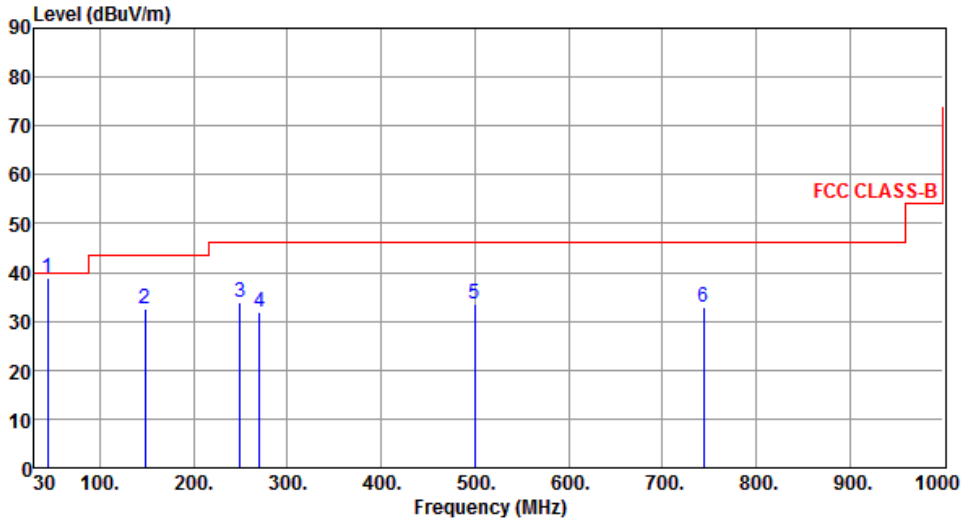
Modulation	VHT40	**Test Freq. (MHz)**	5230
Polarization	Horizontal		



	Freq. MHz	Emission level dBuV/m	Limit dBuV/m	Margin dB	SA reading dBuV	Factor dB	Remark	ANT High cm	Turn Table deg
1	86.26	31.59	40.00	-8.41	45.58	-13.99	Peak	---	---
2	158.04	36.05	43.50	-7.45	44.36	-8.31	Peak	---	---
3	249.22	35.30	46.00	-10.70	44.69	-9.39	Peak	---	---
4	270.56	36.61	46.00	-9.39	45.32	-8.71	Peak	---	---
5	536.34	30.54	46.00	-15.46	33.15	-2.61	Peak	---	---
6	764.29	32.29	46.00	-13.71	30.53	1.76	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.

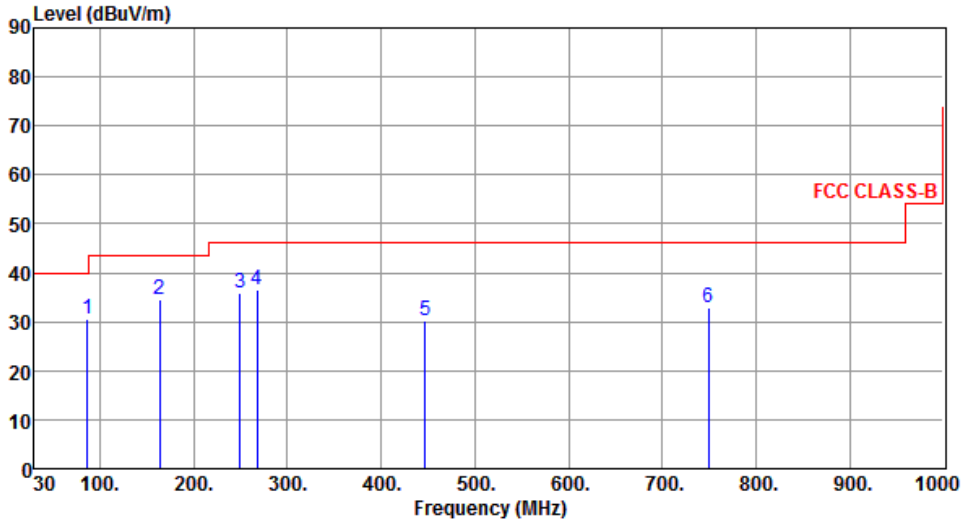
Modulation	VHT40	Test Freq. (MHz)	5230
Polarization	Vertical		



	Freq. MHz	Emission level dBuV/m	Limit dBuV/m	Margin dB	SA reading dBuV	Factor dB	Remark	ANT High cm	Turn Table deg
1	43.77	38.91	40.00	-1.09	47.38	-8.47	QP	100	119
2	148.34	32.50	43.50	-11.00	40.97	-8.47	Peak	---	---
3	249.22	33.89	46.00	-12.11	43.28	-9.39	Peak	---	---
4	270.56	31.90	46.00	-14.10	40.61	-8.71	Peak	---	---
5	499.48	33.41	46.00	-12.59	36.77	-3.36	Peak	---	---
6	743.92	32.72	46.00	-13.28	31.28	1.44	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.

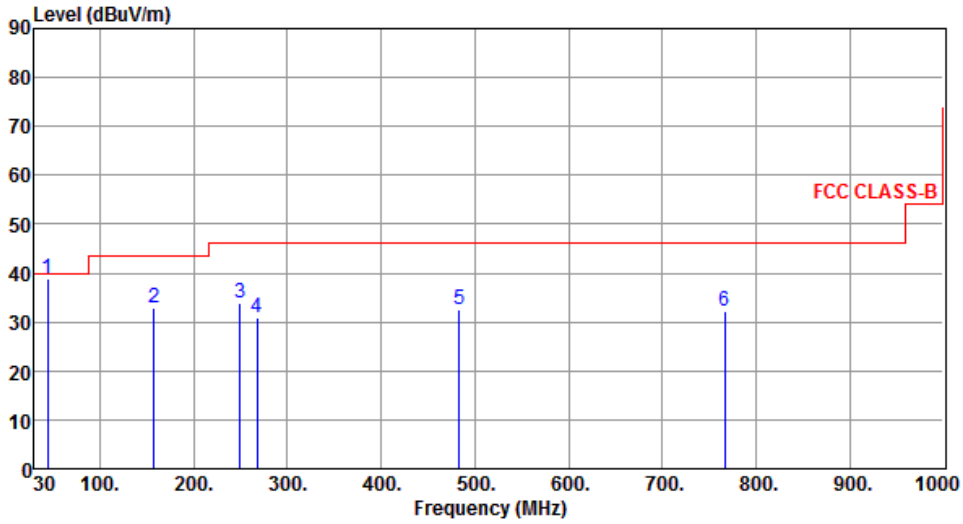
Modulation	VHT40	Test Freq. (MHz)	5755
Polarization	Horizontal		



	Freq. MHz	Emission level dBuV/m	Limit dBuV/m	Margin dB	SA reading dBuV	Factor dB	Remark	ANT High cm	Turn Table deg
1	86.26	30.51	40.00	-9.49	44.50	-13.99	Peak	---	---
2	163.86	34.61	43.50	-8.89	43.00	-8.39	Peak	---	---
3	249.22	35.72	46.00	-10.28	45.11	-9.39	Peak	---	---
4	267.65	36.59	46.00	-9.41	45.41	-8.82	Peak	---	---
5	447.10	30.16	46.00	-15.84	34.29	-4.13	Peak	---	---
6	749.74	32.97	46.00	-13.03	31.39	1.58	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	VHT40	Test Freq. (MHz)	5755
Polarization	Vertical		

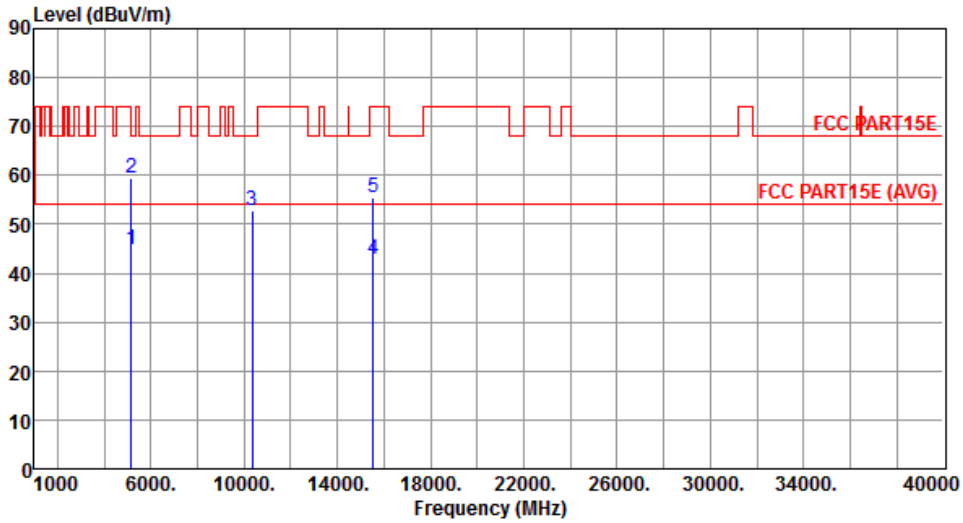


	Freq. MHz	Emission level dBuV/m	Limit dBuV/m	Margin dB	SA reading dBuV	Factor dB	Remark	ANT High cm	Turn Table deg
1	43.79	38.89	40.00	-1.11	47.36	-8.47	QP	100	114
2	158.04	32.78	43.50	-10.72	41.09	-8.31	Peak	---	---
3	249.22	33.89	46.00	-12.11	43.28	-9.39	Peak	---	---
4	267.65	30.80	46.00	-15.20	39.62	-8.82	Peak	---	---
5	482.99	32.58	46.00	-13.42	36.17	-3.59	Peak	---	---
6	766.23	32.32	46.00	-13.68	30.54	1.78	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

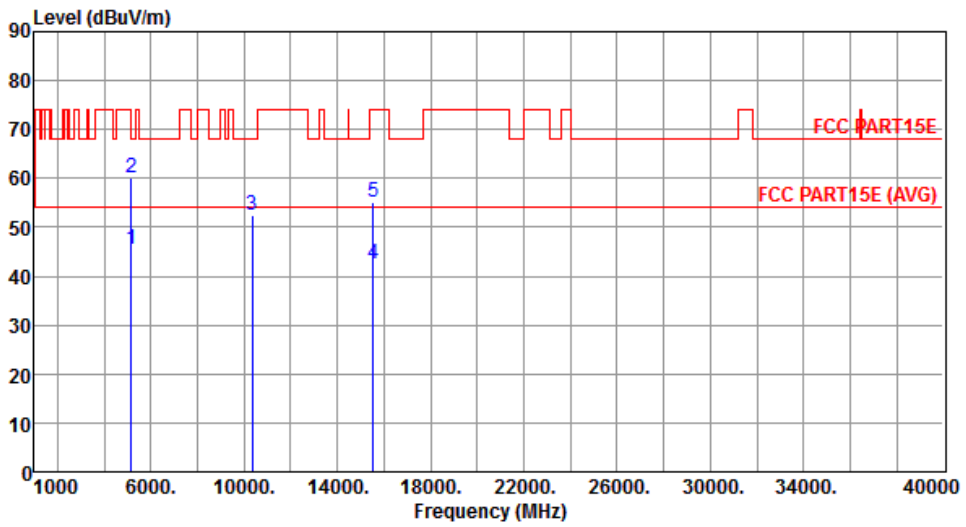
Modulation	11a	**Test Freq. (MHz)**	5180
Polarization	Horizontal		



	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	44.83	54.00	-9.17	39.81	5.02	Average	218	271
2	5150.00	59.61	74.00	-14.39	54.59	5.02	Peak	218	271
3	10360.00	52.70	68.20	-15.50	38.96	13.74	Peak	179	21
4	15540.00	42.89	54.00	-11.11	27.92	14.97	Average	175	6
5	15540.00	55.35	74.00	-18.65	40.38	14.97	Peak	175	6

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).

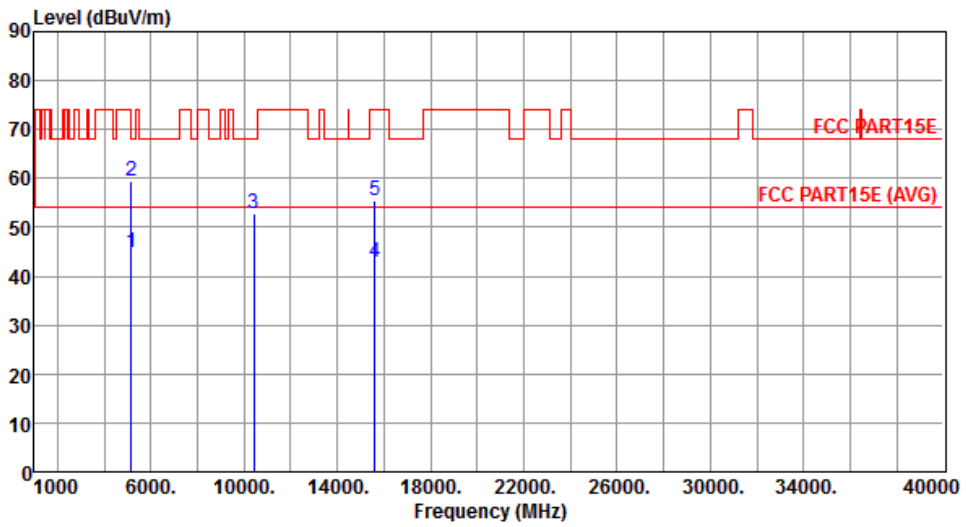
Modulation	11a	Test Freq. (MHz)	5180
Polarization	Vertical		



	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	45.46	54.00	-8.54	40.44	5.02	Average	233	8
2	5150.00	59.98	74.00	-14.02	54.96	5.02	Peak	233	8
3	10360.00	52.47	68.20	-15.73	38.73	13.74	Peak	181	9
4	15540.00	42.54	54.00	-11.46	27.57	14.97	Average	192	5
5	15540.00	55.08	74.00	-18.92	40.11	14.97	Peak	192	5

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).

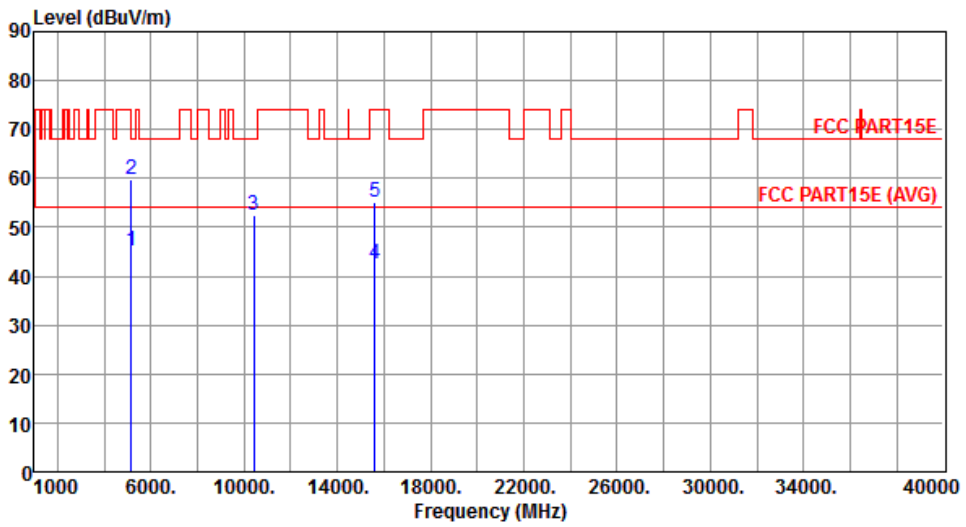
Modulation	11a	Test Freq. (MHz)	5200
Polarization	Horizontal		



	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	44.71	54.00	-9.29	39.69	5.02	Average	218	272
2	5150.00	59.52	74.00	-14.48	54.50	5.02	Peak	218	272
3	10400.00	52.74	68.20	-15.46	38.97	13.77	Peak	183	21
4	15600.00	42.95	54.00	-11.05	28.01	14.94	Average	178	11
5	15600.00	55.46	74.00	-18.54	40.52	14.94	Peak	178	11

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).

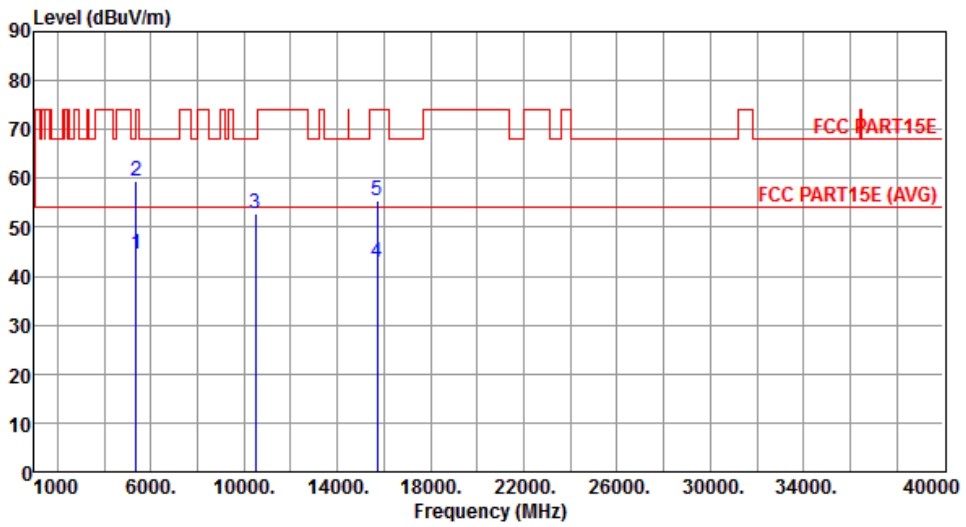
Modulation	11a	Test Freq. (MHz)	5200
Polarization	Vertical		



	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	45.32	54.00	-8.68	40.30	5.02	Average	235	6
2	5150.00	59.88	74.00	-14.12	54.86	5.02	Peak	235	6
3	10400.00	52.35	68.20	-15.85	38.58	13.77	Peak	186	15
4	15600.00	42.48	54.00	-11.52	27.54	14.94	Average	187	13
5	15600.00	55.12	74.00	-18.88	40.18	14.94	Peak	187	13

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).

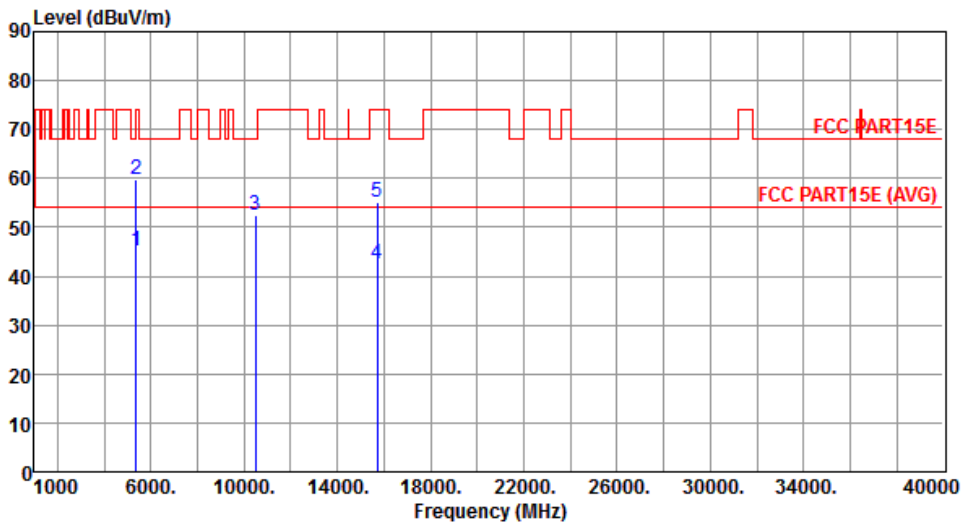
Modulation	11a	Test Freq. (MHz)	5240
Polarization	Horizontal		



	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	44.65	54.00	-9.35	39.34	5.31	Average	212	284
2	5350.00	59.43	74.00	-14.57	54.12	5.31	Peak	212	284
3	10480.00	52.81	68.20	-15.39	39.00	13.81	Peak	191	25
4	15720.00	42.86	54.00	-11.14	27.95	14.91	Average	185	19
5	15720.00	55.31	74.00	-18.69	40.40	14.91	Peak	185	19

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).

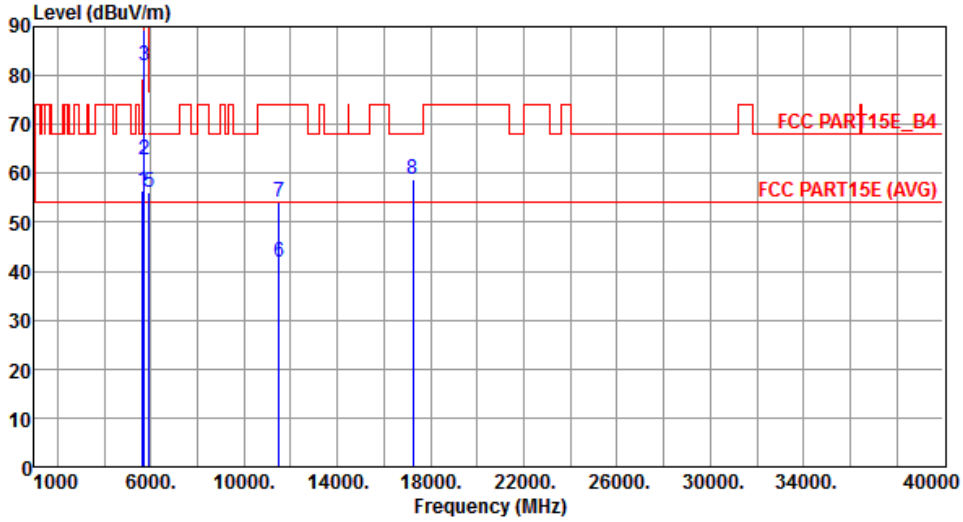
Modulation	11a	Test Freq. (MHz)	5240
Polarization	Vertical		



	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	45.16	54.00	-8.84	39.85	5.31	Average	235	9
2	5350.00	59.72	74.00	-14.28	54.41	5.31	Peak	235	9
3	10480.00	52.46	68.20	-15.74	38.65	13.81	Peak	191	22
4	15720.00	42.35	54.00	-11.65	27.44	14.91	Average	169	25
5	15720.00	55.08	74.00	-18.92	40.17	14.91	Peak	169	25

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).

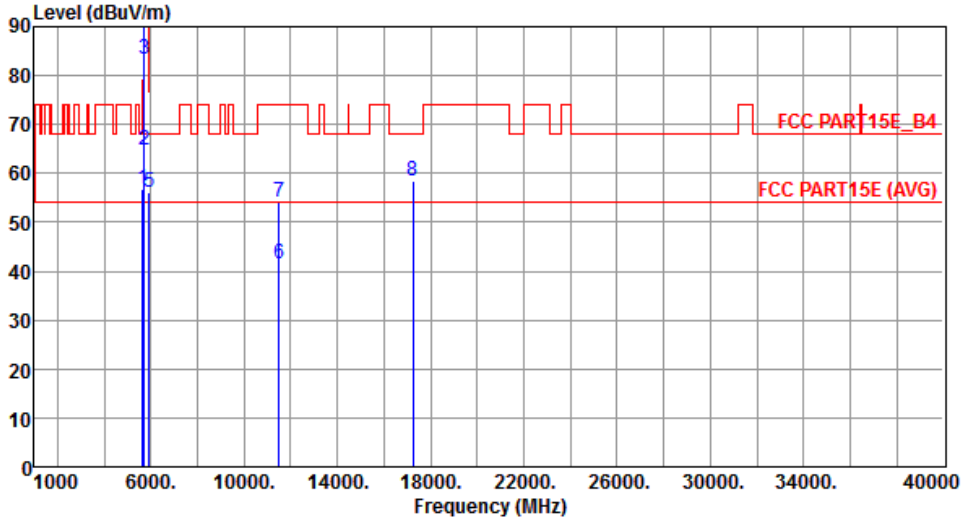
Modulation	11a	Test Freq. (MHz)	5745
Polarization	Horizontal		



	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	56.51	68.20	-11.69	50.82	5.69	Peak	205	283
2	5700.00	62.75	105.20	-42.45	56.98	5.77	Peak	205	283
3	5720.00	82.16	110.80	-28.64	76.37	5.79	Peak	205	283
4	5725.00	89.40	122.20	-32.80	83.59	5.81	Peak	205	283
5	5925.00	56.02	68.20	-12.18	49.93	6.09	Peak	205	283
6	11490.00	41.85	54.00	-12.15	27.12	14.73	Average	208	14
7	11490.00	54.22	74.00	-19.78	39.49	14.73	Peak	208	14
8	17235.00	58.65	68.20	-9.55	41.58	17.07	Peak	202	8

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).

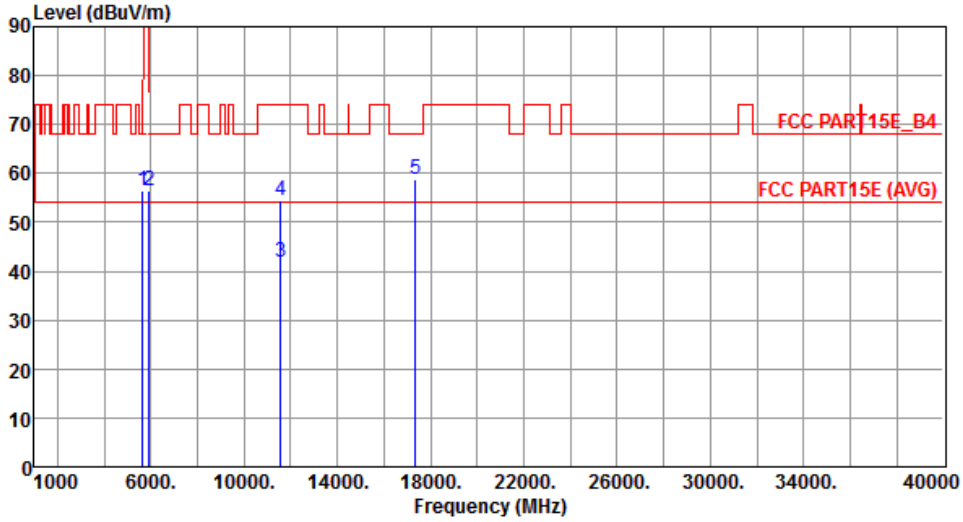
Modulation	11a	Test Freq. (MHz)	5745
Polarization	Vertical		



	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	56.68	68.20	-11.52	50.99	5.69	Peak	232	1
2	5700.00	64.79	105.20	-40.41	59.02	5.77	Peak	232	1
3	5720.00	83.25	110.80	-27.55	77.46	5.79	Peak	232	1
4	5725.00	91.66	122.20	-30.54	85.85	5.81	Peak	232	1
5	5925.00	56.18	68.20	-12.02	50.09	6.09	Peak	232	1
6	11490.00	41.65	54.00	-12.35	26.92	14.73	Average	210	15
7	11490.00	54.08	74.00	-19.92	39.35	14.73	Peak	210	15
8	17235.00	58.46	68.20	-9.74	41.39	17.07	Peak	232	1

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).

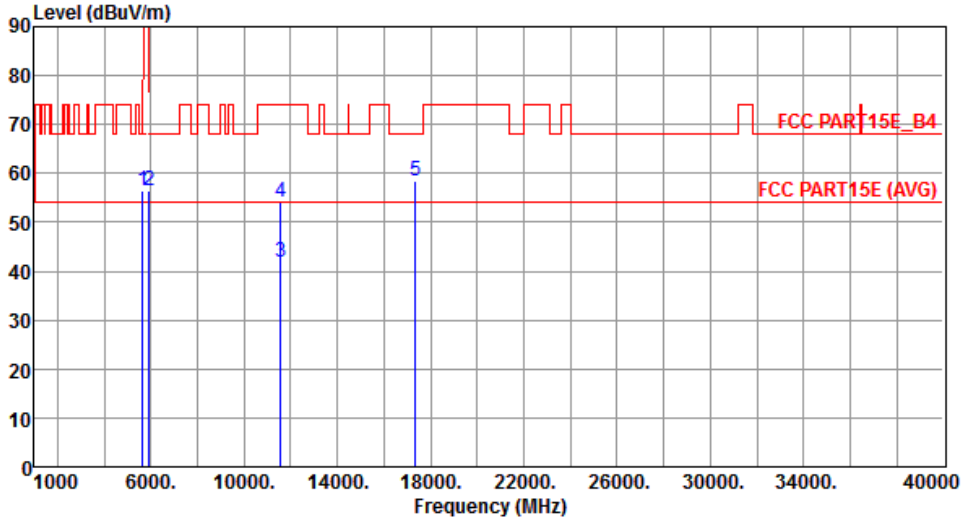
Modulation	11a	Test Freq. (MHz)	5785
Polarization	Horizontal		



	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	56.45	68.20	-11.75	50.76	5.69	Peak	208	291
2	5925.00	56.31	68.20	-11.89	50.22	6.09	Peak	208	291
3	11570.00	41.96	54.00	-12.04	27.36	14.60	Average	210	17
4	11570.00	54.35	74.00	-19.65	39.75	14.60	Peak	210	17
5	17355.00	58.74	68.20	-9.46	41.19	17.55	Peak	205	13

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).

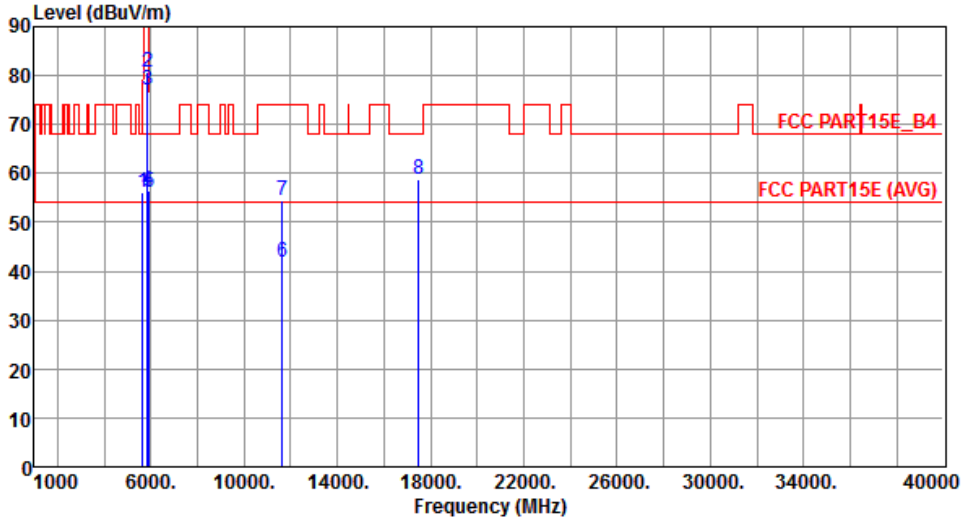
Modulation	11a	Test Freq. (MHz)	5785
Polarization	Vertical		



	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	56.60	68.20	-11.60	50.91	5.69	Peak	228	2
2	5925.00	56.44	68.20	-11.76	50.35	6.09	Peak	228	2
3	11570.00	41.75	54.00	-12.25	27.15	14.60	Average	206	18
4	11570.00	54.16	74.00	-19.84	39.56	14.60	Peak	206	18
5	17355.00	58.56	68.20	-9.64	41.01	17.55	Peak	235	16

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).

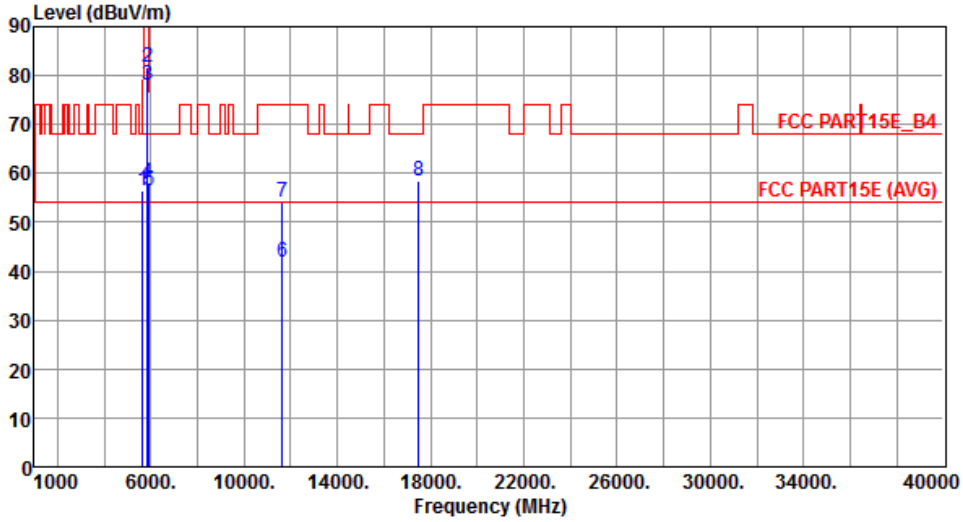
Modulation	11a	Test Freq. (MHz)	5825
Polarization	Horizontal		



	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	56.21	68.20	-11.99	50.52	5.69	Peak	209	288
2	5850.00	80.65	122.20	-41.55	74.66	5.99	Peak	209	288
3	5855.00	76.94	110.80	-33.86	70.94	6.00	Peak	209	288
4	5875.00	56.62	105.20	-48.58	50.60	6.02	Peak	209	288
5	5925.00	56.12	68.20	-12.08	50.03	6.09	Peak	209	288
6	11650.00	41.96	54.00	-12.04	27.52	14.44	Average	201	5
7	11650.00	54.38	74.00	-19.62	39.94	14.44	Peak	201	5
8	17475.00	58.75	68.20	-9.45	40.71	18.04	Peak	202	17

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		

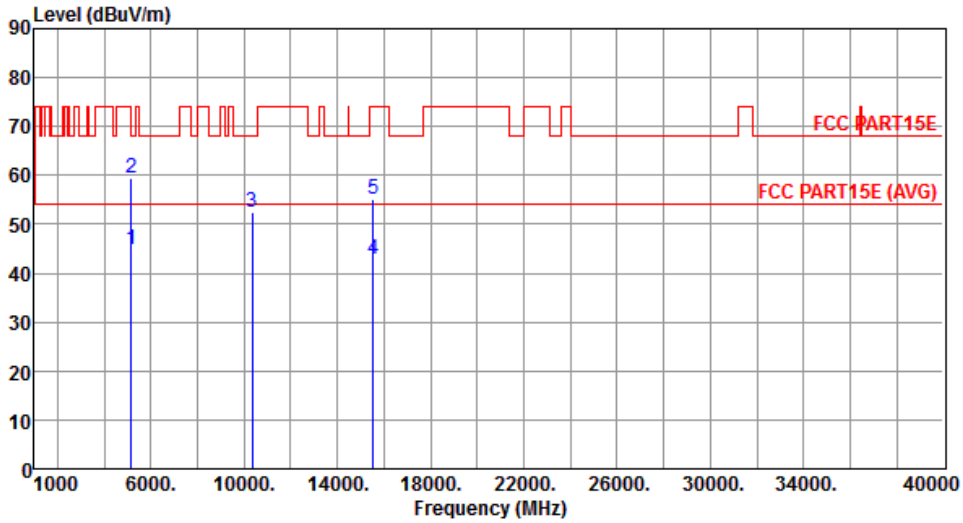


	Freq. MHz	Emission level dBuV/m	Limit dBuV/m	Margin dB	SA reading dBuV	Factor dB	Remark	ANT High cm	Turn Table deg
1	5650.00	56.45	68.20	-11.75	50.76	5.69	Peak	228	353
2	5850.00	81.78	122.20	-40.42	75.79	5.99	Peak	228	353
3	5855.00	78.02	110.80	-32.78	72.02	6.00	Peak	228	353
4	5875.00	58.08	105.20	-47.12	52.06	6.02	Peak	228	353
5	5925.00	56.33	68.20	-11.87	50.24	6.09	Peak	228	353
6	11650.00	41.69	54.00	-12.31	27.25	14.44	Average	212	6
7	11650.00	54.15	74.00	-19.85	39.71	14.44	Peak	212	6
8	17475.00	58.52	68.20	-9.68	40.48	18.04	Peak	229	6

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

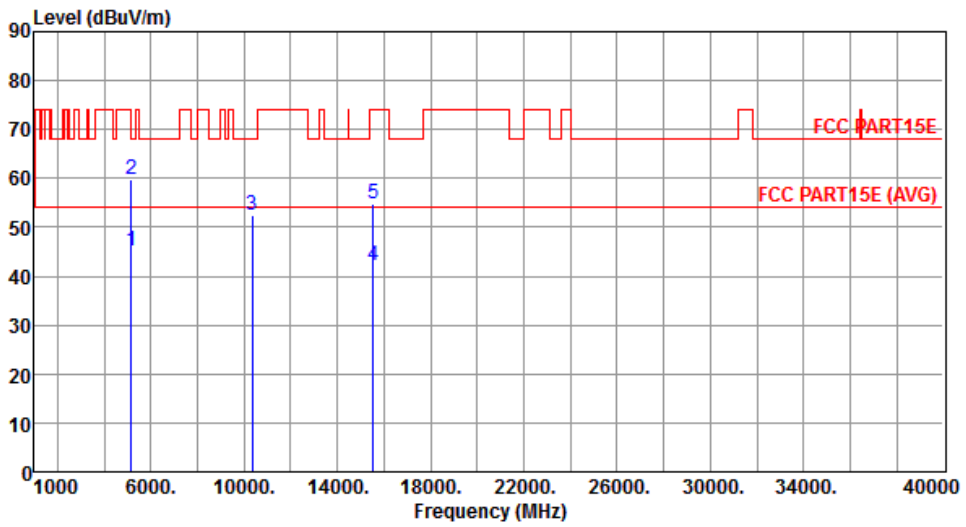
Modulation	VHT20	**Test Freq. (MHz)**	5180
Polarization	Horizontal		



	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	44.71	54.00	-9.29	39.69	5.02	Average	219	268
2	5150.00	59.52	74.00	-14.48	54.50	5.02	Peak	219	268
3	10360.00	52.53	68.20	-15.67	38.79	13.74	Peak	174	26
4	15540.00	42.75	54.00	-11.25	27.78	14.97	Average	174	9
5	15540.00	55.21	74.00	-18.79	40.24	14.97	Peak	174	9

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).

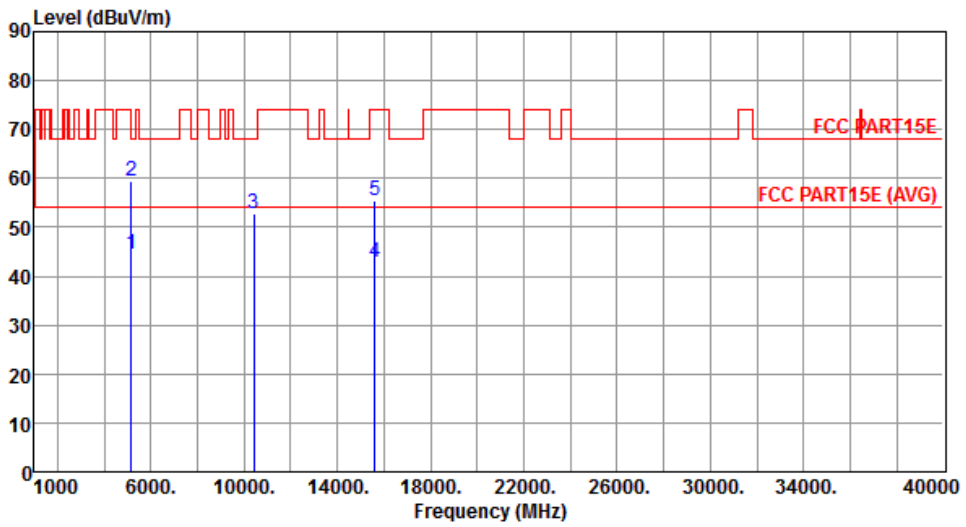
Modulation	VHT20	Test Freq. (MHz)	5180
Polarization	Vertical		



	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	45.31	54.00	-8.69	40.29	5.02	Average	233	11
2	5150.00	59.82	74.00	-14.18	54.80	5.02	Peak	233	11
3	10360.00	52.35	68.20	-15.85	38.61	13.74	Peak	188	12
4	15540.00	42.33	54.00	-11.67	27.36	14.97	Average	192	9
5	15540.00	54.96	74.00	-19.04	39.99	14.97	Peak	192	9

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).

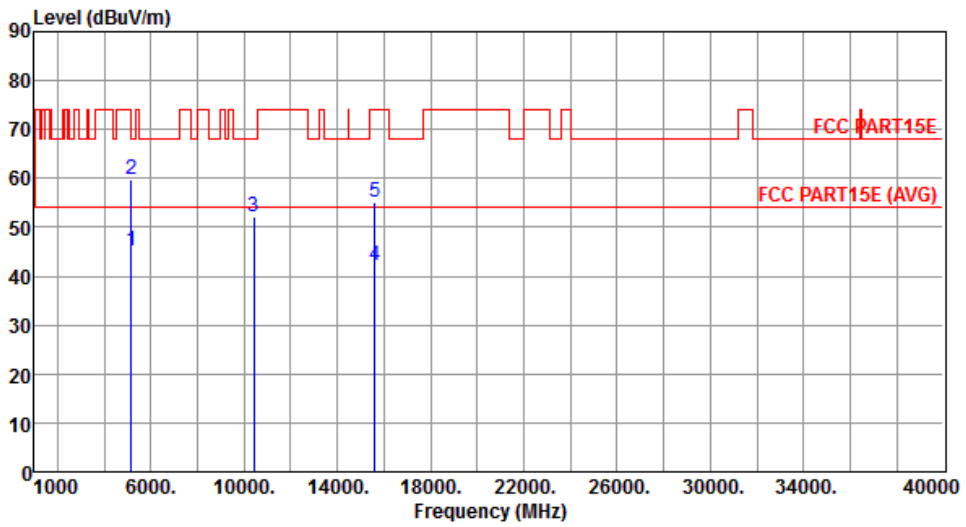
Modulation	VHT20	Test Freq. (MHz)	5200
Polarization	Horizontal		



	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	44.63	54.00	-9.37	39.61	5.02	Average	218	265
2	5150.00	59.44	74.00	-14.56	54.42	5.02	Peak	218	265
3	10400.00	52.81	68.20	-15.39	39.04	13.77	Peak	186	12
4	15600.00	42.83	54.00	-11.17	27.89	14.94	Average	178	25
5	15600.00	55.31	74.00	-18.69	40.37	14.94	Peak	178	25

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).

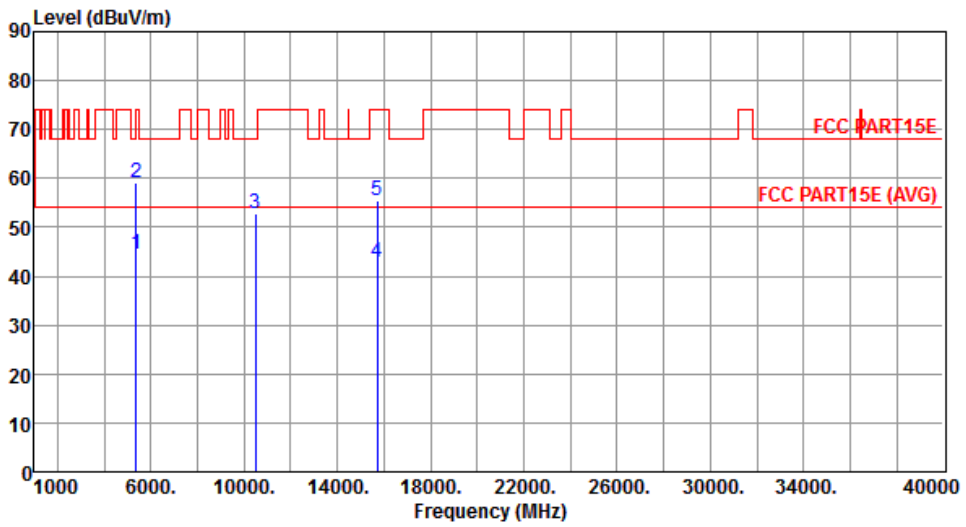
Modulation	VHT20	Test Freq. (MHz)	5200
Polarization	Vertical		



	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	45.17	54.00	-8.83	40.15	5.02	Average	233	14
2	5150.00	59.68	74.00	-14.32	54.66	5.02	Peak	233	14
3	10400.00	52.19	68.20	-16.01	38.42	13.77	Peak	186	24
4	15600.00	42.33	54.00	-11.67	27.39	14.94	Average	191	25
5	15600.00	55.04	74.00	-18.96	40.10	14.94	Peak	191	25

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).

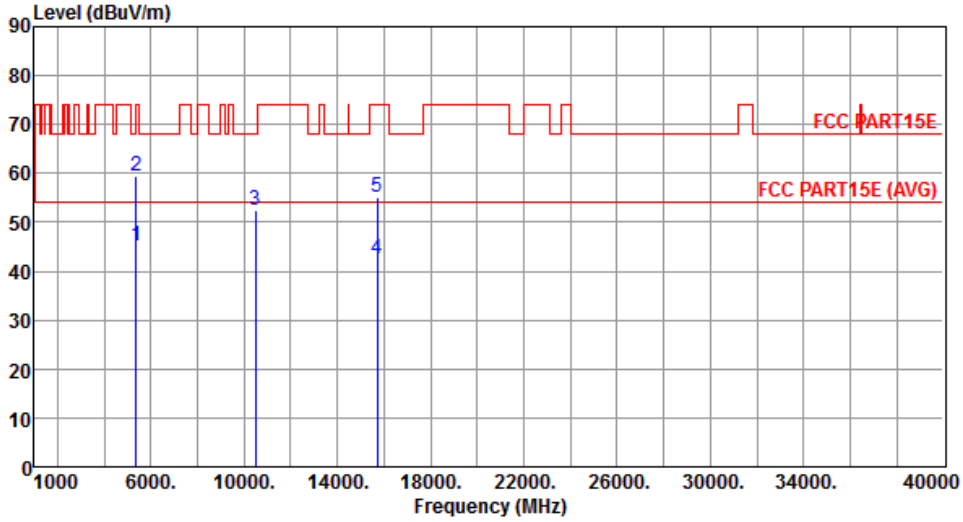
Modulation	VHT20	Test Freq. (MHz)	5240
Polarization	Horizontal		



	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	44.38	54.00	-9.62	39.07	5.31	Average	210	281
2	5350.00	59.22	74.00	-14.78	53.91	5.31	Peak	210	281
3	10480.00	52.96	68.20	-15.24	39.15	13.81	Peak	191	13
4	15720.00	42.94	54.00	-11.06	28.03	14.91	Average	185	24
5	15720.00	55.46	74.00	-18.54	40.55	14.91	Peak	185	24

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).

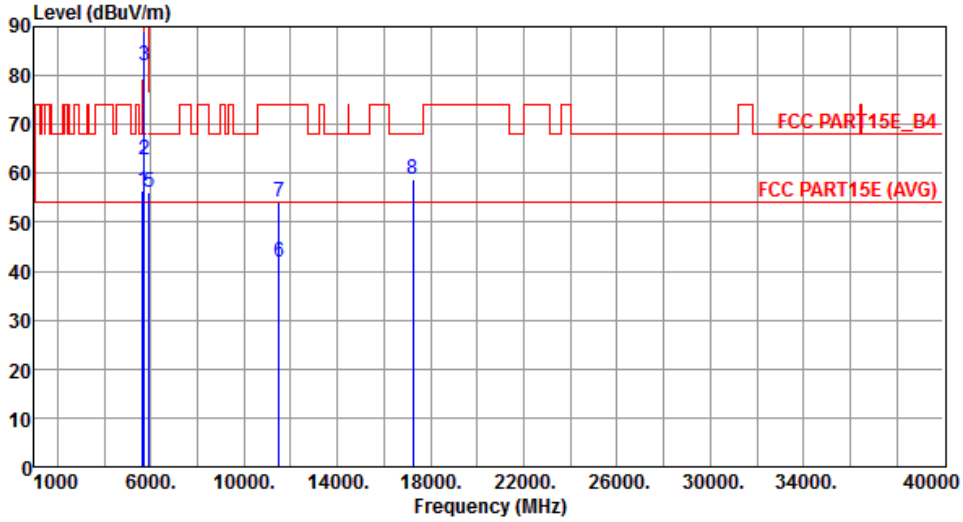
Modulation	VHT20	Test Freq. (MHz)	5240
Polarization	Vertical		



	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	45.02	54.00	-8.98	39.71	5.31	Average	236	17
2	5350.00	59.49	74.00	-14.51	54.18	5.31	Peak	236	17
3	10480.00	52.59	68.20	-15.61	38.78	13.81	Peak	191	41
4	15720.00	42.48	54.00	-11.52	27.57	14.91	Average	155	32
5	15720.00	55.21	74.00	-18.79	40.30	14.91	Peak	155	32

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).

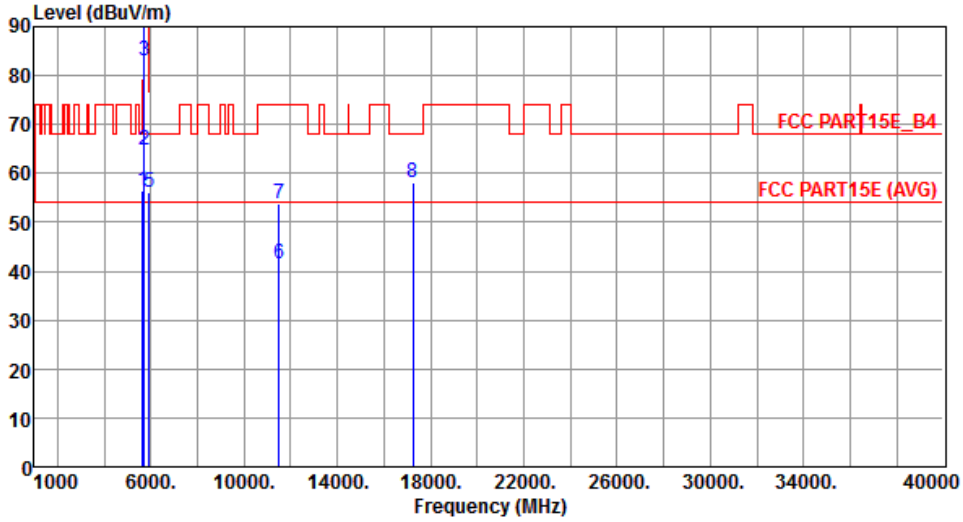
Modulation	VHT20	Test Freq. (MHz)	5745
Polarization	Horizontal		



	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	56.45	68.20	-11.75	50.76	5.69	Peak	206	285
2	5700.00	62.61	105.20	-42.59	56.84	5.77	Peak	206	285
3	5720.00	81.95	110.80	-28.85	76.16	5.79	Peak	206	285
4	5725.00	89.06	122.20	-33.14	83.25	5.81	Peak	206	285
5	5925.00	56.12	68.20	-12.08	50.03	6.09	Peak	206	285
6	11490.00	41.92	54.00	-12.08	27.19	14.73	Average	206	15
7	11490.00	54.28	74.00	-19.72	39.55	14.73	Peak	206	15
8	17235.00	58.74	68.20	-9.46	41.67	17.07	Peak	202	12

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).

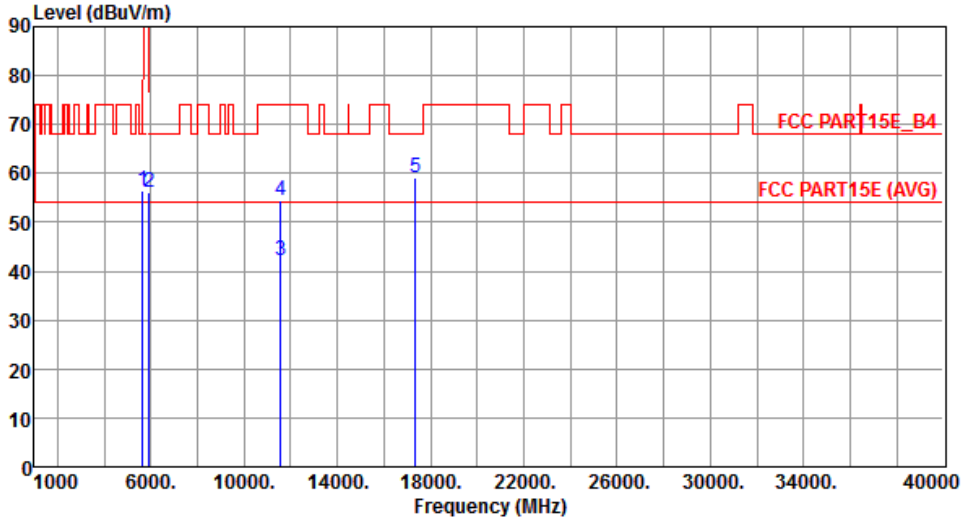
Modulation	VHT20	Test Freq. (MHz)	5745
Polarization	Vertical		



	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	56.52	68.20	-11.68	50.83	5.69	Peak	233	4
2	5700.00	64.61	105.20	-40.59	58.84	5.77	Peak	233	4
3	5720.00	82.95	110.80	-27.85	77.16	5.79	Peak	233	4
4	5725.00	91.54	122.20	-30.66	85.73	5.81	Peak	233	4
5	5925.00	56.03	68.20	-12.17	49.94	6.09	Peak	233	4
6	11490.00	41.52	54.00	-12.48	26.79	14.73	Average	206	15
7	11490.00	53.93	74.00	-20.07	39.20	14.73	Peak	206	15
8	17235.00	58.24	68.20	-9.96	41.17	17.07	Peak	216	1

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).

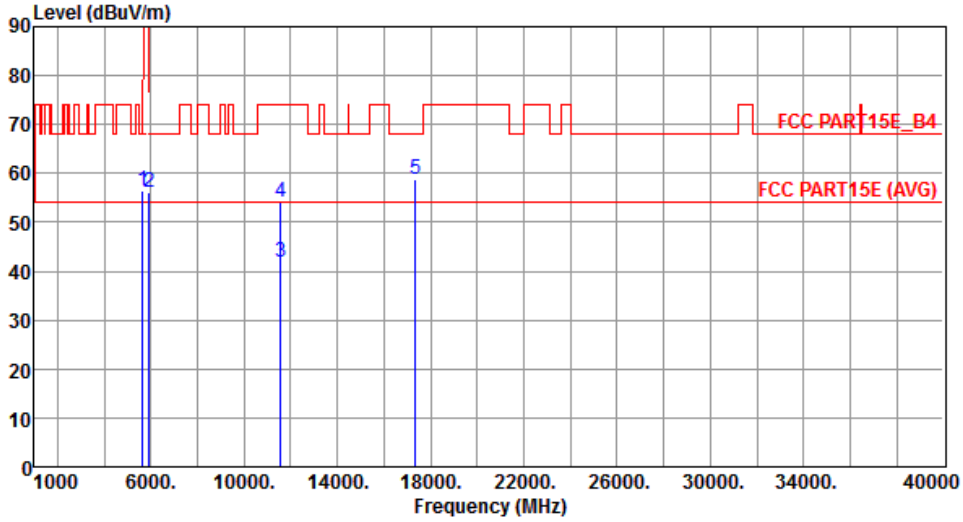
Modulation	VHT20	Test Freq. (MHz)	5785
Polarization	Horizontal		



	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	56.35	68.20	-11.85	50.66	5.69	Peak	210	288
2	5925.00	56.24	68.20	-11.96	50.15	6.09	Peak	210	288
3	11570.00	42.13	54.00	-11.87	27.53	14.60	Average	205	21
4	11570.00	54.45	74.00	-19.55	39.85	14.60	Peak	205	21
5	17355.00	58.96	68.20	-9.24	41.41	17.55	Peak	208	15

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).

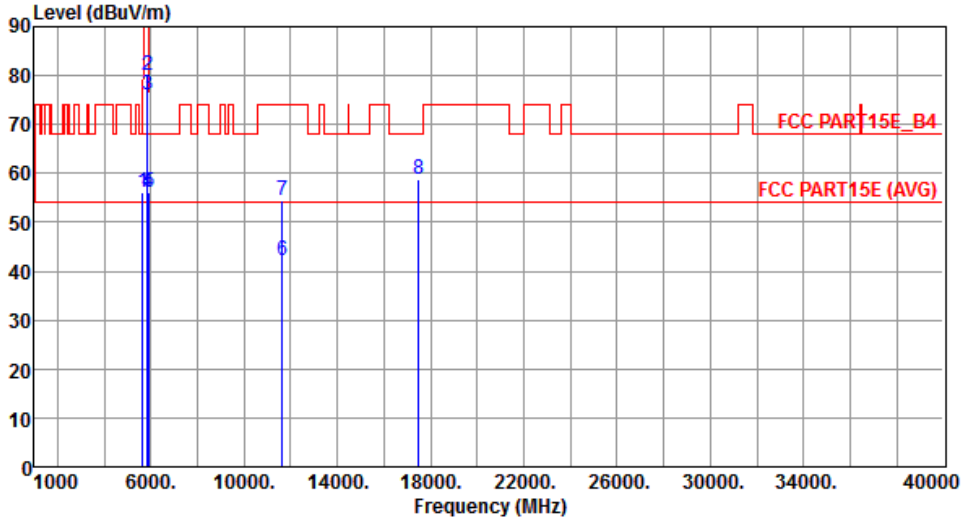
Modulation	VHT20	Test Freq. (MHz)	5785
Polarization	Vertical		



	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	56.42	68.20	-11.78	50.73	5.69	Peak	225	14
2	5925.00	56.18	68.20	-12.02	50.09	6.09	Peak	225	14
3	11570.00	41.68	54.00	-12.32	27.08	14.60	Average	201	9
4	11570.00	54.21	74.00	-19.79	39.61	14.60	Peak	201	9
5	17355.00	58.62	68.20	-9.58	41.07	17.55	Peak	234	19

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).

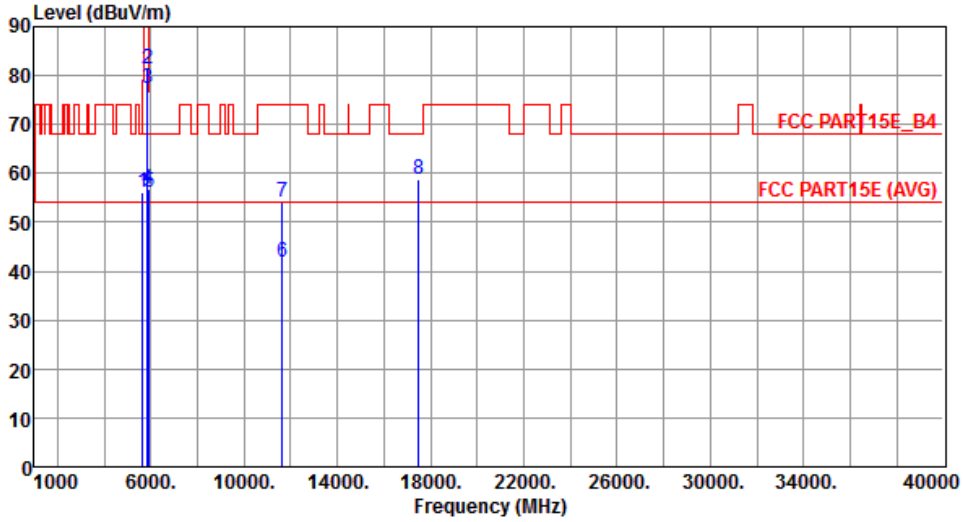
Modulation	VHT20	Test Freq. (MHz)	5825
Polarization	Horizontal		



	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	56.12	68.20	-12.08	50.43	5.69	Peak	211	293
2	5850.00	80.13	122.20	-42.07	74.14	5.99	Peak	211	293
3	5855.00	76.21	110.80	-34.59	70.21	6.00	Peak	211	293
4	5875.00	56.11	105.20	-49.09	50.09	6.02	Peak	211	293
5	5925.00	56.23	68.20	-11.97	50.14	6.09	Peak	211	293
6	11650.00	42.14	54.00	-11.86	27.70	14.44	Average	205	8
7	11650.00	54.49	74.00	-19.51	40.05	14.44	Peak	205	8
8	17475.00	58.92	68.20	-9.28	40.88	18.04	Peak	209	34

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		

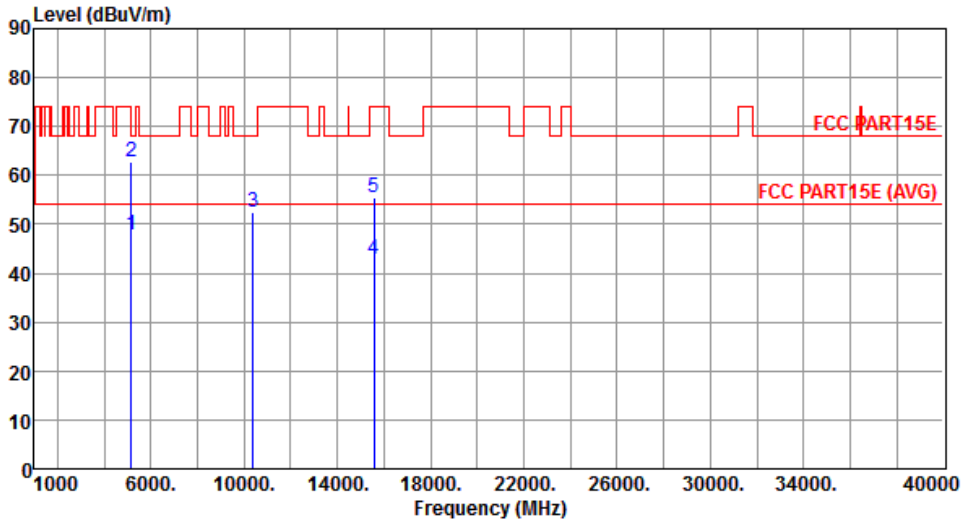


	Freq. MHz	Emission level dBuV/m	Limit dBuV/m	Margin dB	SA reading dBuV	Factor dB	Remark	ANT High cm	Turn Table deg
1	5650.00	56.29	68.20	-11.91	50.60	5.69	Peak	223	356
2	5850.00	81.24	122.20	-40.96	75.25	5.99	Peak	223	356
3	5855.00	77.51	110.80	-33.29	71.51	6.00	Peak	223	356
4	5875.00	56.92	105.20	-48.28	50.90	6.02	Peak	223	356
5	5925.00	56.12	68.20	-12.08	50.03	6.09	Peak	223	356
6	11650.00	41.82	54.00	-12.18	27.38	14.44	Average	203	19
7	11650.00	54.29	74.00	-19.71	39.85	14.44	Peak	203	19
8	17475.00	58.69	68.20	-9.51	40.65	18.04	Peak	229	13

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

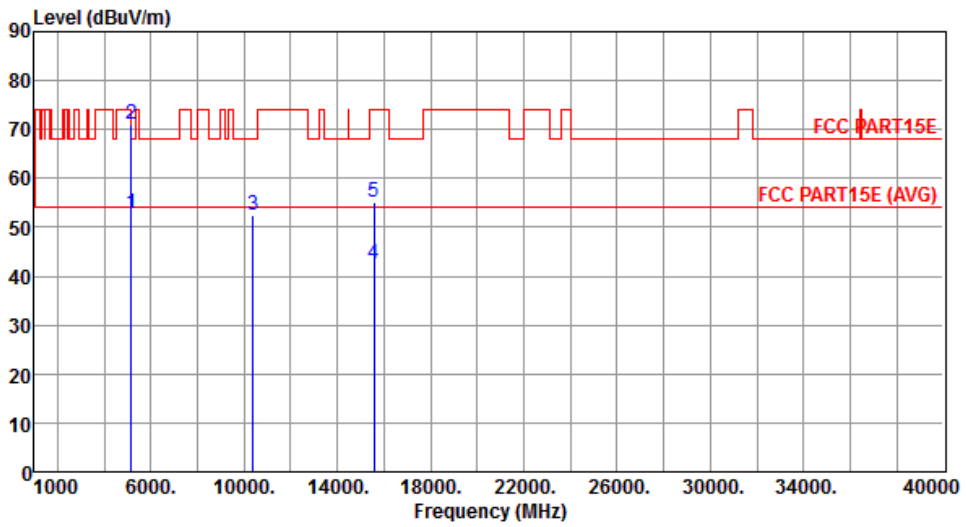
Modulation	VHT40	**Test Freq. (MHz)**	5190
Polarization	Horizontal		



	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	47.86	54.00	-6.14	42.84	5.02	Average	216	274
2	5150.00	62.85	74.00	-11.15	57.83	5.02	Peak	216	274
3	10380.00	52.61	68.20	-15.59	38.86	13.75	Peak	175	29
4	15570.00	42.86	54.00	-11.14	27.90	14.96	Average	177	12
5	15570.00	55.34	74.00	-18.66	40.38	14.96	Peak	177	12

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).

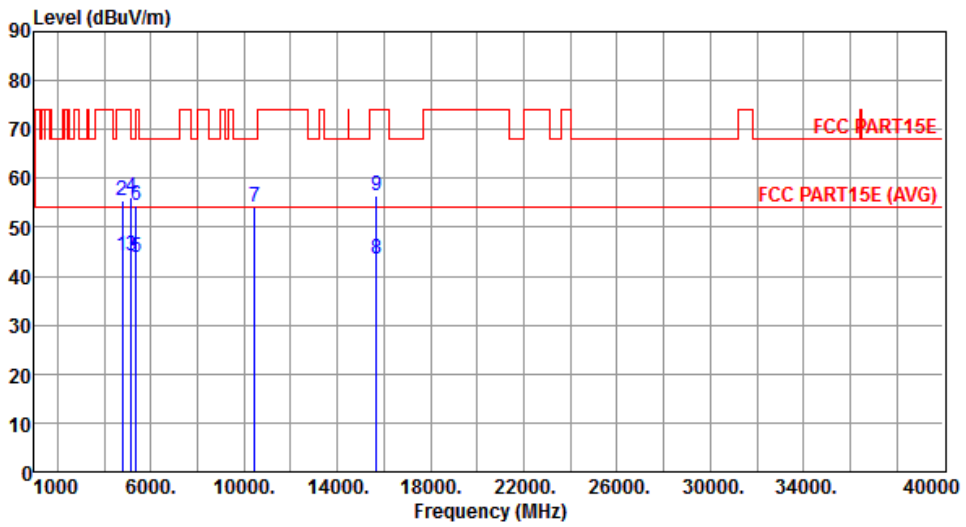
Modulation	VHT40	Test Freq. (MHz)	5190
Polarization	Vertical		



	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	52.84	54.00	-1.16	47.82	5.02	Average	234	14
2	5150.00	71.21	74.00	-2.79	66.19	5.02	Peak	234	14
3	10380.00	52.42	68.20	-15.78	38.67	13.75	Peak	189	15
4	15570.00	42.45	54.00	-11.55	27.49	14.96	Average	193	16
5	15570.00	55.06	74.00	-18.94	40.10	14.96	Peak	193	16

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).

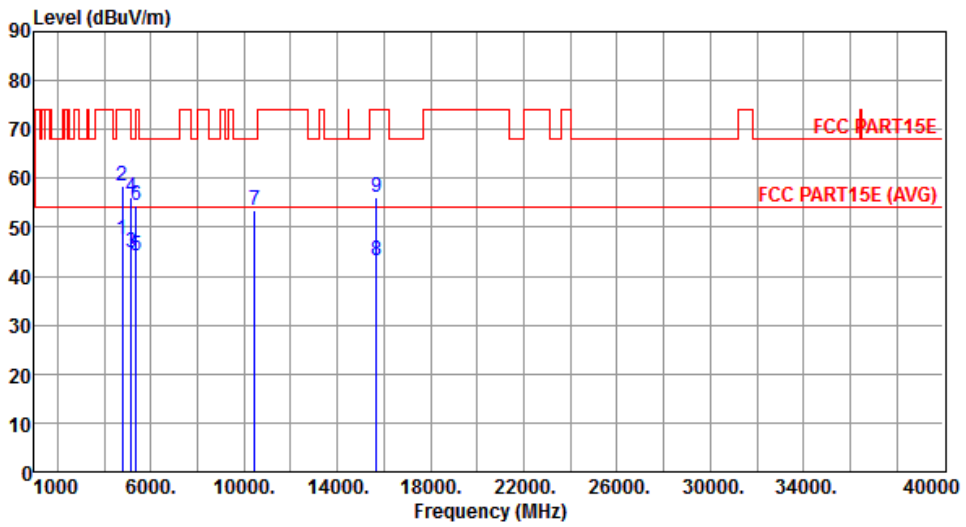
Modulation	VHT40	Test Freq. (MHz)	5230
Polarization	Horizontal		



	Freq. MHz	Emission level dBuV/m	Limit dBuV/m	Margin dB	SA reading dBuV	Factor dB	Remark	ANT High cm	Turn Table deg
1	4766.00	44.25	54.00	-9.75	39.90	4.35	Average	213	268
2	4766.00	55.36	74.00	-18.64	51.01	4.35	Peak	213	268
3	5150.00	44.21	54.00	-9.79	39.19	5.02	Average	213	268
4	5150.00	55.96	74.00	-18.04	50.94	5.02	Peak	213	268
5	5350.00	43.95	54.00	-10.05	38.64	5.31	Average	213	268
6	5350.00	54.38	74.00	-19.62	49.07	5.31	Peak	213	268
7	10460.00	54.15	68.20	-14.05	40.36	13.79	Peak	182	31
8	15690.00	43.47	54.00	-10.53	28.55	14.92	Average	185	66
9	15690.00	56.56	74.00	-17.44	41.64	14.92	Peak	185	66

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).

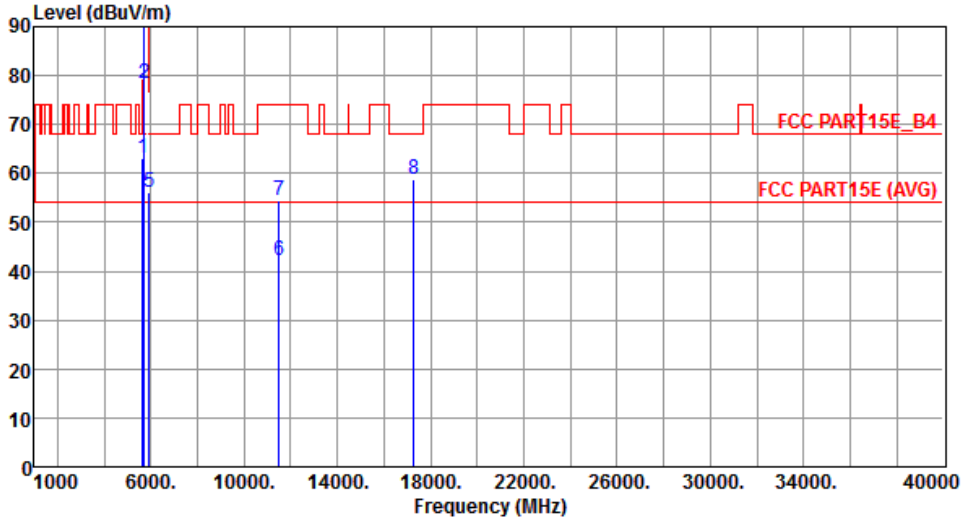
Modulation	VHT40	Test Freq. (MHz)	5230
Polarization	Vertical		



	Freq. MHz	Emission level dBuV/m	Limit dBuV/m	Margin dB	SA reading dBuV	Factor dB	Remark	ANT High cm	Turn Table deg
1	4766.00	47.41	54.00	-6.59	43.06	4.35	Average	218	11
2	4766.00	58.40	74.00	-15.60	54.05	4.35	Peak	218	11
3	5150.00	44.84	54.00	-9.16	39.82	5.02	Average	218	16
4	5150.00	56.08	74.00	-17.92	51.06	5.02	Peak	218	16
5	5350.00	44.17	54.00	-9.83	38.86	5.31	Average	218	16
6	5350.00	54.60	74.00	-19.40	49.29	5.31	Peak	218	16
7	10460.00	53.36	68.20	-14.84	39.57	13.79	Peak	189	21
8	15690.00	43.28	54.00	-10.72	28.36	14.92	Average	196	18
9	15690.00	56.21	74.00	-17.79	41.29	14.92	Peak	196	18

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).

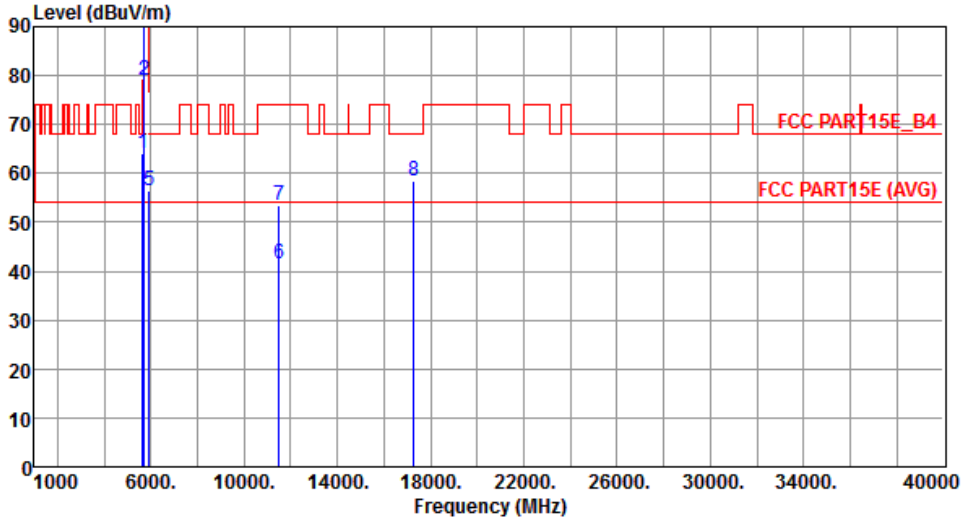
Modulation	VHT40	Test Freq. (MHz)	5755
Polarization	Horizontal		



	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	63.19	68.20	-5.01	57.50	5.69	Peak	202	281
2	5700.00	78.25	105.20	-26.95	72.48	5.77	Peak	202	281
3	5720.00	91.86	110.80	-18.94	86.07	5.79	Peak	202	281
4	5725.00	92.44	122.20	-29.76	86.63	5.81	Peak	202	281
5	5925.00	56.21	68.20	-11.99	50.12	6.09	Peak	202	281
6	11510.00	42.13	54.00	-11.87	27.41	14.72	Average	209	53
7	11510.00	54.49	74.00	-19.51	39.77	14.72	Peak	209	53
8	17265.00	58.91	68.20	-9.29	41.74	17.17	Peak	221	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).

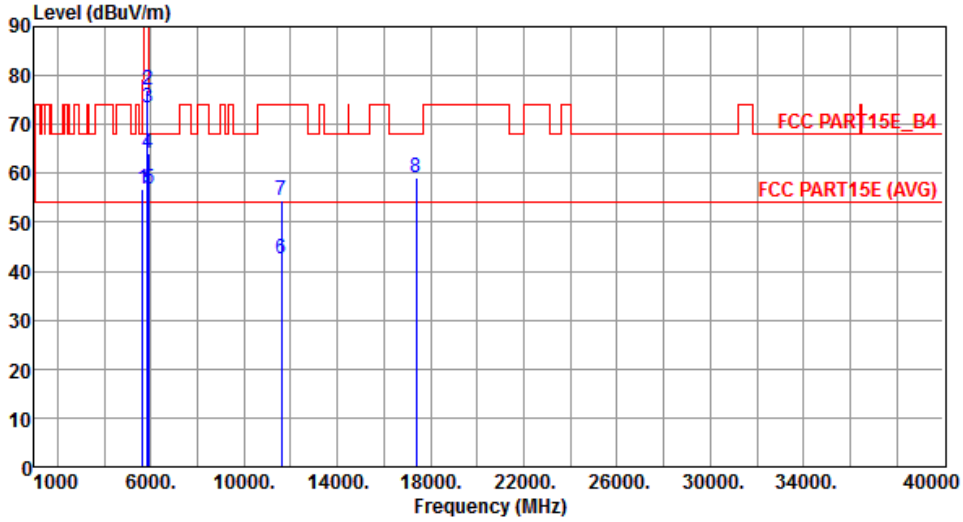
Modulation	VHT40	Test Freq. (MHz)	5755
Polarization	Vertical		



	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	64.24	68.20	-3.96	58.55	5.69	Peak	246	11
2	5700.00	78.88	105.20	-26.32	73.11	5.77	Peak	246	11
3	5720.00	92.30	110.80	-18.50	86.51	5.79	Peak	246	11
4	5725.00	93.79	122.20	-28.41	87.98	5.81	Peak	246	11
5	5925.00	56.56	68.20	-11.64	50.47	6.09	Peak	246	11
6	11510.00	41.46	54.00	-12.54	26.74	14.72	Average	209	19
7	11510.00	53.62	74.00	-20.38	38.90	14.72	Peak	209	19
8	17265.00	58.39	68.20	-9.81	41.22	17.17	Peak	219	17

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).

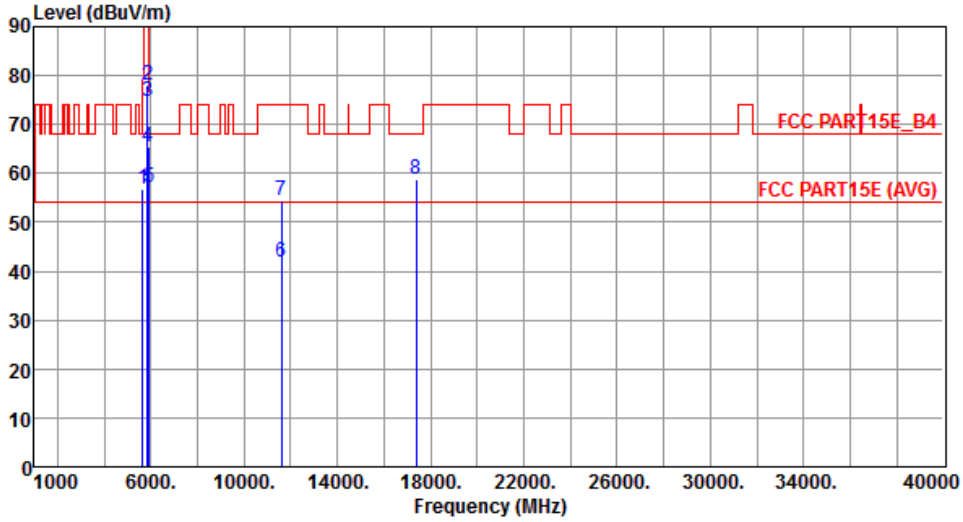
Modulation	VHT40	Test Freq. (MHz)	5795
Polarization	Horizontal		



	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	56.84	68.20	-11.36	51.15	5.69	Peak	205	298
2	5850.00	76.95	122.20	-45.25	70.96	5.99	Peak	205	298
3	5855.00	73.24	110.80	-37.56	67.24	6.00	Peak	205	298
4	5875.00	64.23	105.20	-40.97	58.21	6.02	Peak	205	298
5	5925.00	56.81	68.20	-11.39	50.72	6.09	Peak	205	298
6	11590.00	42.35	54.00	-11.65	27.79	14.56	Average	196	22
7	11590.00	54.61	74.00	-19.39	40.05	14.56	Peak	196	22
8	17385.00	59.13	68.20	-9.07	41.46	17.67	Peak	220	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)	5795
Polarization	Vertical		

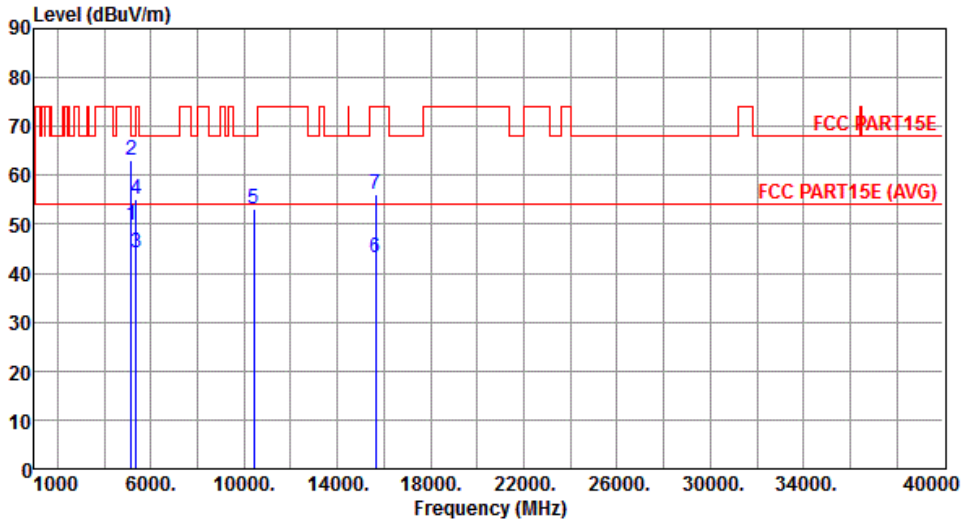


	Freq. MHz	Emission level dBuV/m	Limit dBuV/m	Margin dB	SA reading dBuV	Factor dB	Remark	ANT High cm	Turn Table deg
1	5650.00	56.95	68.20	-11.25	51.26	5.69	Peak	235	12
2	5850.00	78.03	122.20	-44.17	72.04	5.99	Peak	235	12
3	5855.00	74.59	110.80	-36.21	68.59	6.00	Peak	235	12
4	5875.00	65.48	105.20	-39.72	59.46	6.02	Peak	235	12
5	5925.00	57.14	68.20	-11.06	51.05	6.09	Peak	235	12
6	11590.00	41.96	54.00	-12.04	27.40	14.56	Average	205	22
7	11590.00	54.38	74.00	-19.62	39.82	14.56	Peak	205	22
8	17385.00	58.74	68.20	-9.46	41.07	17.67	Peak	220	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).

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

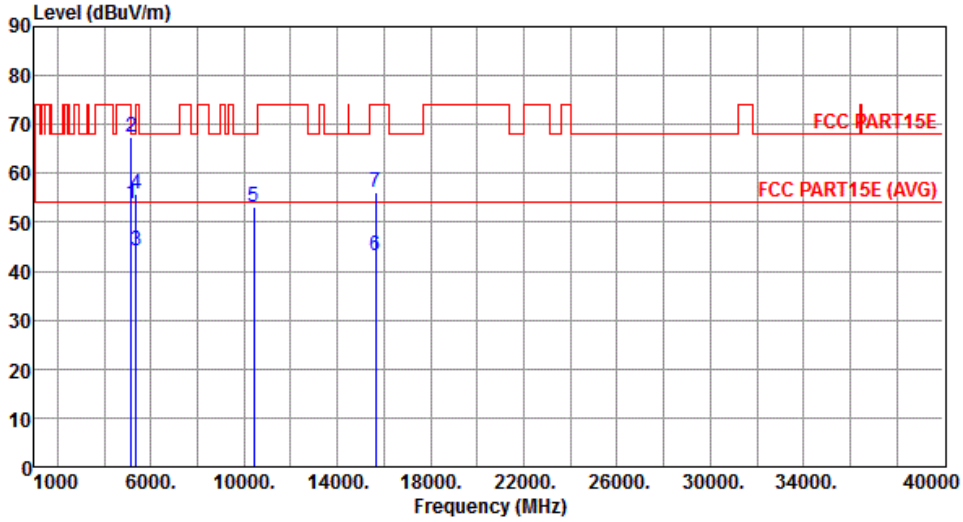
Modulation	VHT80	**Test Freq. (MHz)**	5210
Polarization	Horizontal		



	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	49.68	54.00	-4.32	44.66	5.02	Average	212	265
2	5150.00	63.02	74.00	-10.98	58.00	5.02	Peak	212	265
3	5350.00	44.06	54.00	-9.94	38.75	5.31	Average	212	265
4	5350.00	55.21	74.00	-18.79	49.90	5.31	Peak	212	265
5	10420.00	53.26	68.20	-14.94	39.48	13.78	Peak	159	34
6	15630.00	43.21	54.00	-10.79	28.28	14.93	Average	165	43
7	15630.00	56.28	74.00	-17.72	41.35	14.93	Peak	165	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).

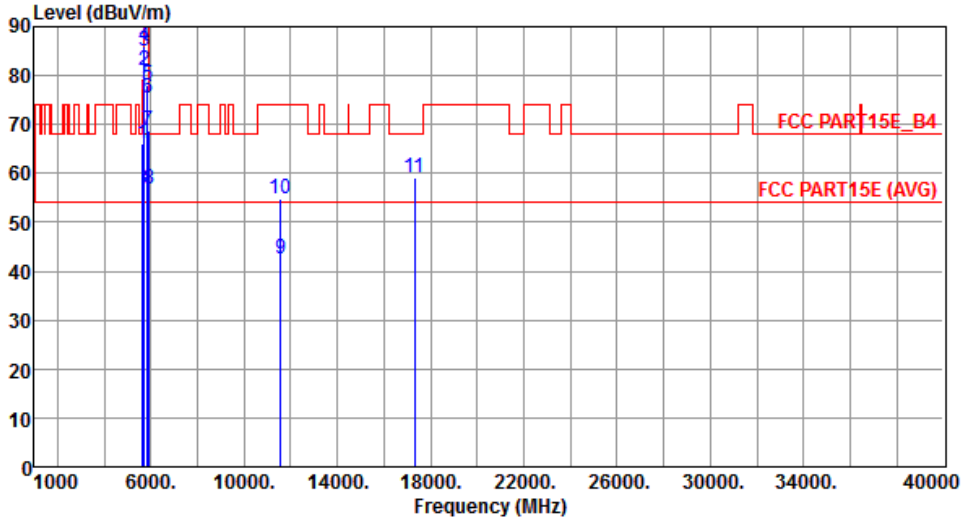
Modulation	VHT80	Test Freq. (MHz)	5210
Polarization	Vertical		



	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	53.68	54.00	-0.32	48.66	5.02	Average	235	4
2	5150.00	67.55	74.00	-6.45	62.53	5.02	Peak	235	4
3	5350.00	44.13	54.00	-9.87	38.82	5.31	Average	235	4
4	5350.00	55.63	74.00	-18.37	50.32	5.31	Peak	235	4
5	10420.00	53.15	68.20	-15.05	39.37	13.78	Peak	191	26
6	15630.00	43.02	54.00	-10.98	28.09	14.93	Average	201	19
7	15630.00	56.14	74.00	-17.86	41.21	14.93	Peak	201	19

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).

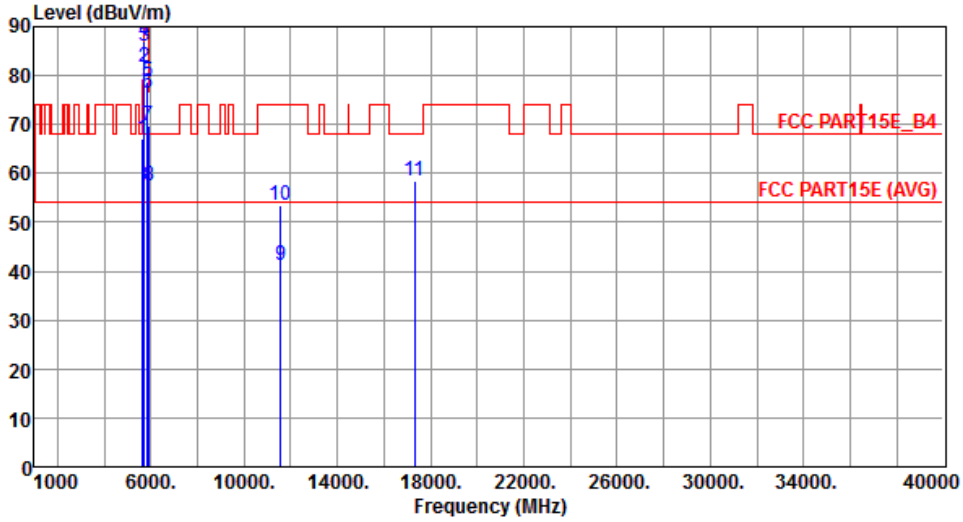
Modulation	VHT80	Test Freq. (MHz)	5775
Polarization	Horizontal		



	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	66.19	68.20	-2.01	60.50	5.69	Peak	206	278
2	5700.00	80.92	105.20	-24.28	75.15	5.77	Peak	206	278
3	5720.00	85.14	110.80	-25.66	79.35	5.79	Peak	206	278
4	5725.00	86.11	122.20	-36.09	80.30	5.81	Peak	206	278
5	5850.00	78.15	122.20	-44.05	72.16	5.99	Peak	206	278
6	5855.00	75.32	110.80	-35.48	69.32	6.00	Peak	206	278
7	5875.00	68.82	105.20	-36.38	62.80	6.02	Peak	206	278
8	5925.00	56.84	68.20	-11.36	50.75	6.09	Peak	206	278
9	11550.00	42.36	54.00	-11.64	27.72	14.64	Average	223	41
10	11550.00	54.69	74.00	-19.31	40.05	14.64	Peak	223	41
11	17325.00	59.24	68.20	-8.96	41.81	17.43	Peak	221	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)	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	67.04	68.20	-1.16	61.35	5.69	Peak	226	13
2	5700.00	81.63	105.20	-23.57	75.86	5.77	Peak	226	13
3	5720.00	85.95	110.80	-24.85	80.16	5.79	Peak	226	13
4	5725.00	87.06	122.20	-35.14	81.25	5.81	Peak	226	13
5	5850.00	78.58	122.20	-43.62	72.59	5.99	Peak	226	13
6	5855.00	76.44	110.80	-34.36	70.44	6.00	Peak	226	13
7	5875.00	69.61	105.20	-35.59	63.59	6.02	Peak	226	13
8	5925.00	57.32	68.20	-10.88	51.23	6.09	Peak	226	13
9	11550.00	41.31	54.00	-12.69	26.67	14.64	Average	210	19
10	11550.00	53.39	74.00	-20.61	38.75	14.64	Peak	210	19
11	17325.00	58.44	68.20	-9.76	41.01	17.43	Peak	207	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).

3.6 Frequency Stability

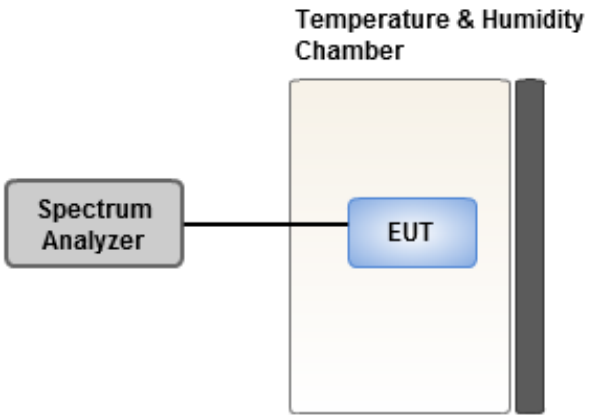
3.6.1 Limit of Frequency Stability

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 75 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	5.46	5.29	6.85	5.62
T20°CVmin	5.63	4.77	6.47	6.10
T75°CVnom	4.40	5.87	5.77	4.28
T70°CVnom	3.83	4.05	3.46	3.61
T60°CVnom	4.49	4.73	4.46	3.79
T50°CVnom	3.41	3.66	3.99	3.30
T40°CVnom	3.60	3.75	3.69	3.84
T30°CVnom	3.18	4.09	3.96	3.19
T20°CVnom	3.28	4.99	3.21	2.32
T10°CVnom	1.26	1.79	1.32	2.49
T0°CVnom	0.61	1.78	0.50	2.06
T-10°CVnom	1.12	1.16	0.62	0.69
T-20°CVnom	1.53	2.46	2.52	1.71
T-30°CVnom	1.64	1.66	3.10	1.97
Vnom [Vac]: 120		Vmax [Vac]: 138		Vmin [Vac]: 102
Tnom [°C]: 20		Tmax [°C]: 75		Tmin [°C]: -30

Frequency: 5785 MHz	Frequency Drift (ppm)			
Temperature (°C)	**0 minute**	**2 minutes**	**5 minutes**	**10 minutes**
T20°CVmax	5.21	6.32	6.16	6.20
T20°CVmin	3.57	3.50	3.90	3.76
T75°CVnom	4.53	4.49	4.13	4.98
T70°CVnom	3.02	3.37	2.95	3.55
T60°CVnom	3.54	3.86	3.18	3.50
T50°CVnom	2.50	2.96	2.55	2.77
T40°CVnom	2.40	2.61	2.13	2.52
T30°CVnom	3.44	3.22	3.41	3.34
T20°CVnom	1.91	2.12	2.18	1.74
T10°CVnom	0.61	1.16	0.77	1.60
T0°CVnom	0.80	0.34	0.60	-0.08
T-10°CVnom	0.87	1.04	0.58	0.21
T-20°CVnom	1.03	1.67	1.68	1.33
T-30°CVnom	-0.21	0.23	0.28	0.08
Vnom [Vac]: 120		Vmax [Vac]: 138		Vmin [Vac]: 102
Tnom [°C]: 20		Tmax [°C]: 75		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.

Tel: 886-3-271-8666
Fax: 886-3-318-0155
Email: ICC_Service@icertifi.com.tw

═END═