FCC Test Report

FCC ID	:	**XU8TEW821DAP**
Equipment	:	**AC1200 Dual Band PoE Access Point**
Model No.	:	**TEW-821DAP**
Brand Name	:	**TRENDnet**
Applicant	:	**TRENDnet, Inc.**
Address	:	**20675 Manhattan Place, Torrance, CA 90501, USA**
Standard	:	**47 CFR FCC Part 15.407**
Received Date	:	**Jan. 26, 2015**
Tested Date	:	**Jan. 27 ~ May 06, 2015**

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.

Approved & Reviewed by:

Gary Chang / Manager

Testing Laboratory
2732

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Release Record

Report No.	Version	Description	Issued Date
FR512802AN	Rev. 01	Initial issue	Jul. 30, 2015

Summary of Test Results

FCC Rules	Test Items	Measured	Result
15.207	Conducted Emissions	[dBuV]: 0.266MHz 46.10 (Margin -5.15dB) - AV	Pass
15.407(b) 15.209	Radiated Emissions	[dBuV/m at 3m]: 5150.00MHz 52.99 (Margin -1.01dB) - 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: 27.48 5725-5850MHz: 26.81	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.	**Type**	**Connector**	**Operating Frequencies (MHz) / Antenna Gain (dBi)**		
			2400~2483.5	**5150~5250**	**5725~5850**
1	PIFA	N/A	4	4	4

1.1.3 Power Supply Type of Equipment under Test (EUT)

Power Supply Type	12Vdc from adapter 48-57Vdc from POE (for support unit only)

1.1.4 Accessories

Accessories		
No.	**Equipment**	**Description**
1	AC adapter 1	Brand Name: CWT Model Name: 2AAJ012F US Power Rating: I/P: 100-240Vac, 50-60Hz, 0.35A O/P: 12.0Vdc, 1.0A DC 1.23m non-shielded cable without core
2	AC adapter 2	Brand Name: AMIGO Model Name: AMS9-1201000FU2 Power Rating: I/P: 100-240Vac, 50-60Hz, 0.5A O/P: 12.0Vdc, 1.0A DC 1.25m non-shielded cable without core
3	AC adapter 3	Brand Name: AMIGO Model Name: AMS135-1201000FU Power Rating: I/P: 100-240Vac, 50-60Hz, 0.5A O/P: 12.0Vdc, 1.0A DC 1.22m non-shielded cable 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	ART2-GUI. Version: 2.3		
Duty Cycle and Duty Factor	**Mode**	**Duty cycle (%)**	**Duty factor (dB)**
	11a	98.24%	0.08
	VHT20	98.12%	0.08
	VHT40	93.63%	0.29
	VHT80	87.22%	0.59

1.1.7 Power Setting

For Frequency band 5150-5250 MHz		
Modulation Mode	**Test Frequency (MHz)**	**Power Set**
11a	5180	24
11a	5200	26
11a	5240	26
HT20	5180	23
HT20	5200	26
HT20	5240	26
HT40	5190	17
HT40	5230	26
VHT20	5180	23
VHT20	5200	26
VHT20	5240	26
VHT40	5190	17
VHT40	5230	26
VHT80	5210	15

For Frequency band 5725~5850 MHz		
Modulation Mode	**Test Frequency (MHz)**	**Power Set**
11a	5745	23.5
11a	5785	26
11a	5825	26
HT20	5745	23.5
HT20	5785	26
HT20	5825	26
HT40	5755	19.0
HT40	5795	26.0
VHT20	5745	23.5
VHT20	5785	26
VHT20	5825	26
VHT40	5755	19.0
VHT40	5795	26.0
VHT80	5775	16.5

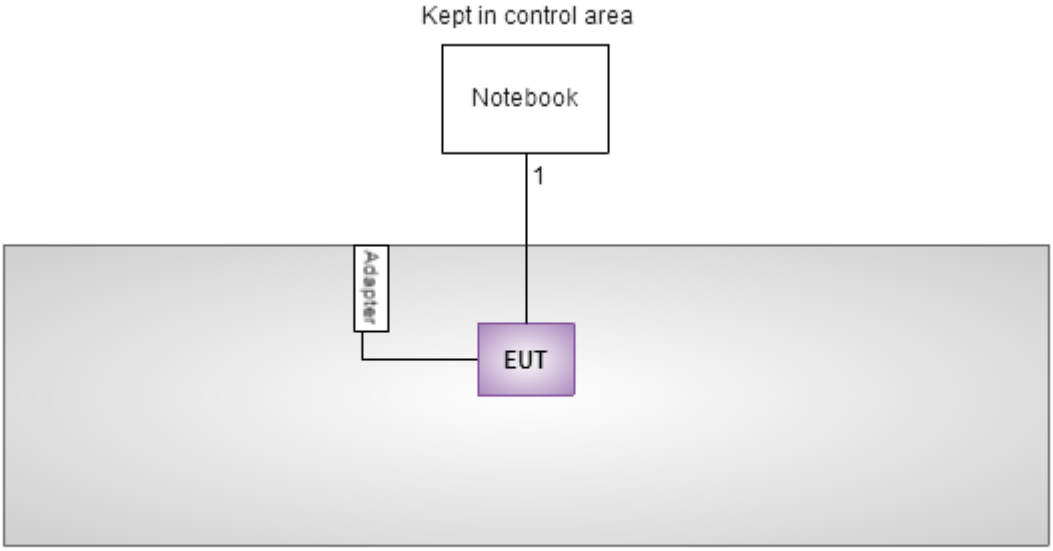
1.2 Local Support Equipment List

Support Equipment List					
No.	**Equipment**	**Brand**	**Model**	**FCC ID**	**Signal cable / Length (m)**
1	Notebook	DELL	Latitude E6430	DoC	RJ45, 10m non-shielded cable w/o core.
2	POE	Allied Telesis	AT-GS950/10PS	---	RJ45, 1m non-shielded cable w/o core.

Note: No.2 was provided by applicant.

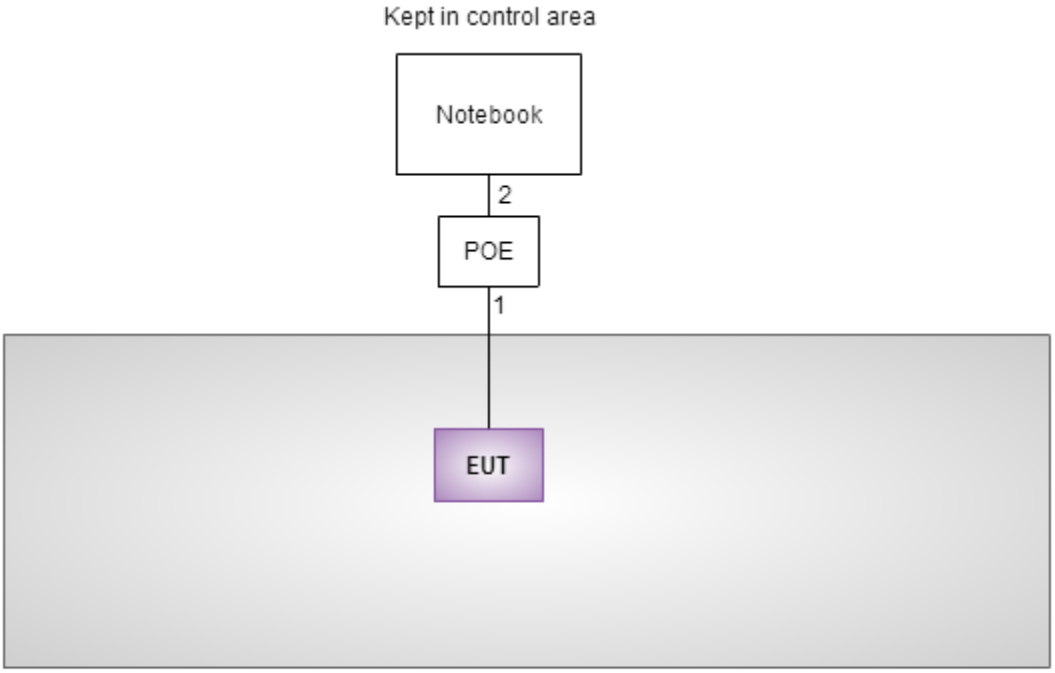
1.3 Test Setup Chart

Test Setup Diagram (Adapter mode)



1. RJ45, 10m non-shielded w/o core.

Test Setup Diagram (POE mode)



1. RJ45, 10m non-shielded w/o core.
2. RJ45, 1m non-shielded w/o core.

1.4 The Equipment List

Test Item	Conducted Emission				
Test Site	Conduction room 1 / (CO01-WS)				
Test Date	Feb. 09 ~ May 06, 2015				
Instrument	**Manufacturer**	**Model No.**	**Serial No.**	**Calibration Date**	**Calibration Until**
EMC Receiver	R&S	ESCS 30	100169	Oct. 17, 2014	Oct. 16, 2015
LISN	SCHWARZBECK	Schwarzbeck 8127	8127-667	Nov. 17, 2014	Nov. 16, 2015
RF Cable-CON	Woken	CFD200-NL	CFD200-NL-001	Dec. 31, 2014	Dec. 30, 2015
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	Jan. 27 ~ Jan. 28, 2015				
Instrument	**Manufacturer**	**Model No.**	**Serial No.**	**Calibration Date**	**Calibration Until**
Spectrum Analyzer	Agilent	N9010A	MY53400091	Sep. 16, 2014	Sep. 15, 2015
Receiver	Agilent	N9038A	MY53290044	Oct. 21, 2014	Oct. 20, 2015
Bilog Antenna	SCHWARZBECK	VULB9168	VULB9168-562	Jan. 19, 2015	Jan. 18, 2016
Horn Antenna 1G-18G	SCHWARZBECK	BBHA 9120 D	BBHA 9120 D 1206	Feb. 20, 2014	Feb. 19, 2015
Horn Antenna 18G-40G	SCHWARZBECK	BBHA 9170	BBHA 9170517	Nov. 10, 2014	Nov. 09, 2015
Loop Antenna	R&S	HFH2-Z2	11900	Nov. 10, 2014	Nov. 09, 2015
Preamplifier	EMC	EMC02325	980187	Sep. 26, 2014	Sep. 25, 2015
Preamplifier	Agilent	83017A	MY53270014	Sep. 17, 2014	Sep. 16, 2015
Preamplifier	EMC	EMC184045B	980192	Aug. 26, 2014	Aug. 25, 2015
RF cable-3M	HUBER+SUHNER	SUCOFLEX104	MY22620/4	Feb. 19, 2014	Feb. 18, 2015
RF cable-8M	HUBER+SUHNER	SUCOFLEX104	MY22601/4	Feb. 19, 2014	Feb. 18, 2015
RF cable-1M	HUBER+SUHNER	SUCOFLEX104	MY22624/4	Feb. 19, 2014	Feb. 18, 2015
LF cable-0.8M	EMC	EMC8D-NM-NM-800	EMC8D-NM-NM-800-001	Feb. 17, 2014	Feb. 16, 2015
LF cable-3M	EMC	EMC8D-NM-NM-3000	131103	Feb. 17, 2014	Feb. 16, 2015
LF cable-13M	EMC	EMC8D-NM-NM-13000	131104	Feb. 17, 2014	Feb. 16, 2015
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	Feb. 06, 2015				
Instrument	**Manufacturer**	**Model No.**	**Serial No.**	**Calibration Date**	**Calibration Until**
Spectrum Analyzer	R&S	FSV40	101063	Feb. 03, 2015	Feb. 02, 2016
TEMP&HUMIDITY CHAMBER	GIANT FORCE	GCT-225-40-SP-SD	MAF1212-002	Dec. 03, 2014	Dec. 02, 2015
Power Meter	Anritsu	ML2495A	1241002	Sep. 29, 2014	Sep. 28, 2015
Power Sensor	Anritsu	MA2411B	1207366	Sep. 29, 2014	Sep. 28, 2015
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 C63.10-2009
FCC 789033 D02 General UNII Test Procedures New Rules v01
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 v01

Note: FCC's permission to use 1.5m as an alternative per TCBC Conf call of Dec. 02, 2014.

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	±2.92 dB
Radiated emission ≤ 1GHz	±3.99 dB
Radiated emission > 1GHz	±5.52 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	15-20°C / 62-68%	Peter Lin
Radiated Emissions	03CH03-WS	20-22°C / 63-64%	Anderson Hung
RF Conducted	TH01-WS	20°C / 65%	Brad Wu

- FCC site registration No.: 390588
- 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	1, 2
Radiated Emissions ≤1GHz	11a	5200	6 Mbps	1, 2
RF Output Power	11a	5180 / 5200 / 5240	6 Mbps	1
	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	1
	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 **X-plane** results were found as the worst case and were shown in this report.
2. Adapter 1, Adapter 2 and Adapter 3 had been pretested and found that **Adapter 3** was the worst case and was selected for final testing. (Adapter 1: 2AAJ012F US; Adapter 2: AMS9-1201000FU2; Adapter 3: AMS135-1201000FU).
3. Test configurations are listed as below:
   1) Configuration 1: Adapter mode.
   2) Configuration 2: POE mode.

For Frequency band 5725-5850 MHz				
Test item	**Modulation Mode**	**Test Frequency (MHz)**	**Data Rate (Mbps) / MCS**	**Test Configuration**
Conducted Emissions	11a	5785	6 Mbps	1, 2
Radiated Emissions ≤1GHz	11a	5785	6 Mbps	1, 2
RF Output Power	11a	5745 / 5785 / 5825	6 Mbps	1
	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	1
	VHT20	5745 / 5785 / 5825	MCS 0	
	VHT40	5755 / 5795	MCS 0	
	VHT80	5785	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 **X-plane** results were found as the worst case and were shown in this report.
2. Adapter 1, Adapter 2 and Adapter 3 had been pretested and found that **Adapter 3** was the worst case and was selected for final testing. (Adapter 1: 2AAJ012F US; Adapter 2: AMS9-1201000FU2; Adapter 3: AMS135-1201000FU).
3. Test configurations are listed as below:
   1) Configuration 1: Adapter mode.
   2) Configuration 2: POE mode.

3 Transmitter Test Results

3.1 Conducted Emissions

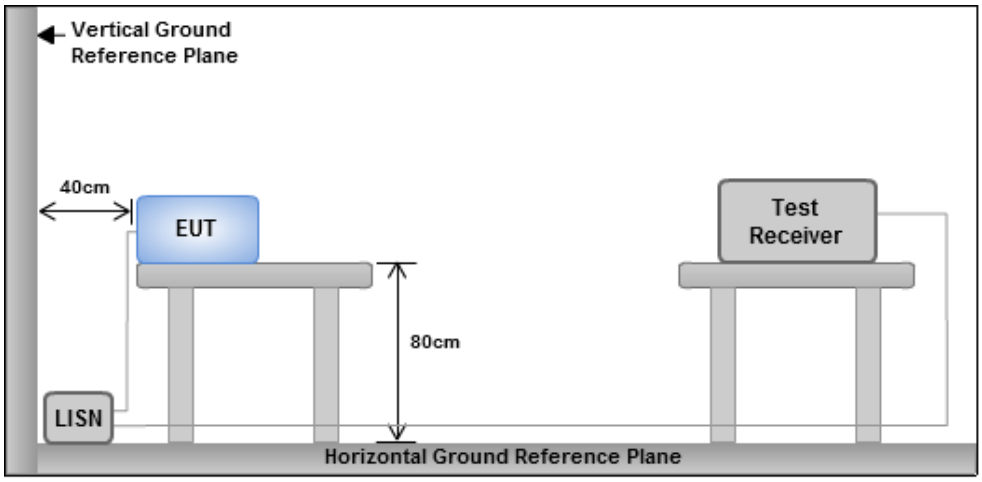
3.1.1 Limit of Conducted Emissions

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.

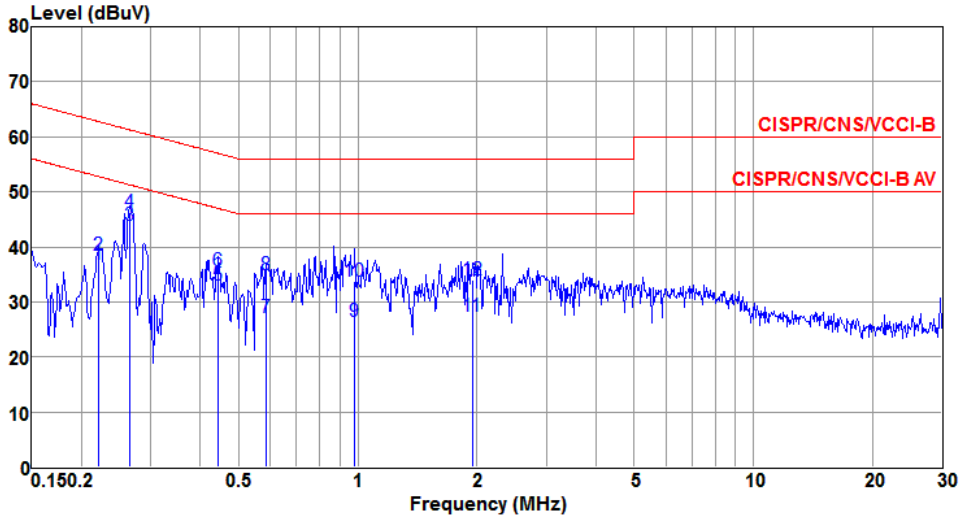
3.1.3 Test Setup



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

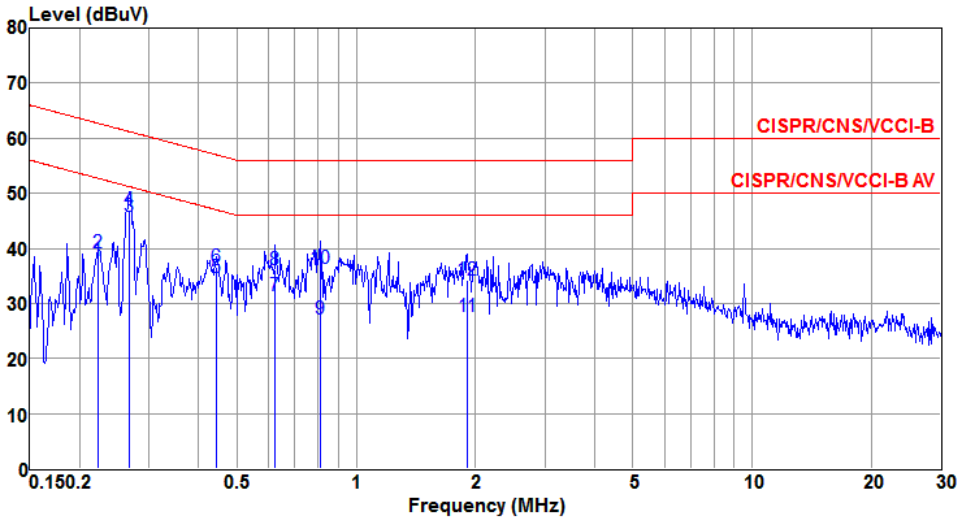
Modulation	11a	Test Freq. (MHz)	5200
Power Phase	Line	Test Configuration	1



	Freq MHz	Level dBuV	Limit Line dBuV	Over Limit dB	Read Level dBuV	LISN factor dB	cable loss dB	Remark
1	0.222	36.78	52.75	-15.97	36.45	0.24	0.09	Average
2	0.222	38.50	62.75	-24.25	38.17	0.24	0.09	QP
3*	0.266	44.01	51.26	-7.25	43.69	0.22	0.10	Average
4	0.266	46.16	61.26	-15.10	45.84	0.22	0.10	QP
5	0.444	32.98	46.98	-14.00	32.69	0.17	0.12	Average
6	0.444	35.61	56.98	-21.37	35.32	0.17	0.12	QP
7	0.589	27.09	46.00	-18.91	26.82	0.14	0.13	Average
8	0.589	34.93	56.00	-21.07	34.66	0.14	0.13	QP
9	0.984	26.42	46.00	-19.58	26.17	0.09	0.16	Average
10	0.984	33.74	56.00	-22.26	33.49	0.09	0.16	QP
11	1.949	27.36	46.00	-18.64	26.51	0.61	0.24	Average
12	1.949	34.05	56.00	-21.95	33.20	0.61	0.24	QP

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

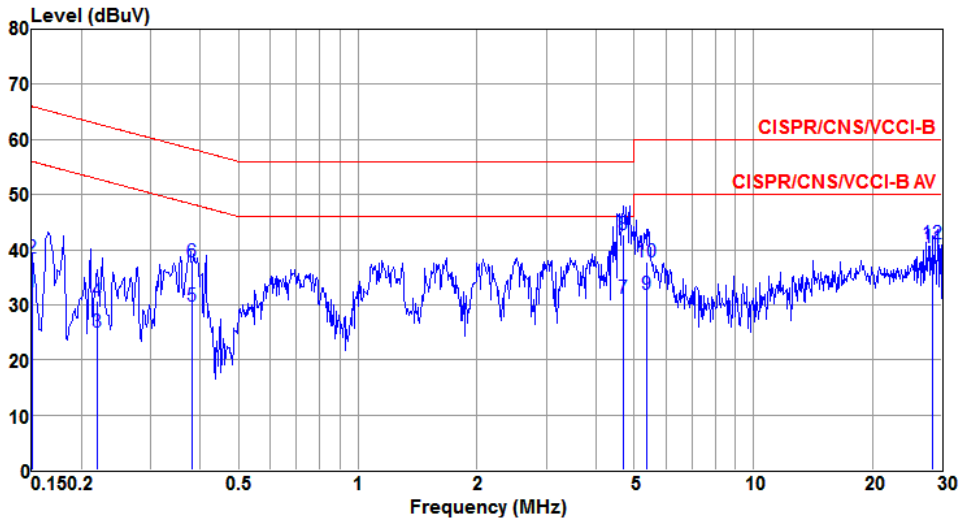
Modulation	11a	Test Freq. (MHz)	5200
Power Phase	Neutral	Test Configuration	1



	Freq MHz	Level dBuV	Limit Line dBuV	Over Limit dB	Read Level dBuV	LISN factor dB	cable loss dB	Remark
1	0.222	37.83	52.74	-14.91	37.52	0.22	0.09	Average
2	0.222	39.10	62.74	-23.64	38.79	0.22	0.09	QP
3*	0.267	45.68	51.21	-5.53	45.39	0.19	0.10	Average
4	0.267	46.92	61.21	-14.29	46.63	0.19	0.10	QP
5	0.444	34.76	46.98	-12.22	34.49	0.15	0.12	Average
6	0.444	36.59	56.98	-20.39	36.32	0.15	0.12	QP
7	0.624	31.46	46.00	-14.54	31.13	0.20	0.13	Average
8	0.624	36.20	56.00	-19.80	35.87	0.20	0.13	QP
9	0.809	27.20	46.00	-18.80	26.81	0.24	0.15	Average
10	0.809	36.24	56.00	-19.76	35.85	0.24	0.15	QP
11	1.908	27.54	46.00	-18.46	27.09	0.22	0.23	Average
12	1.908	34.32	56.00	-21.68	33.87	0.22	0.23	QP

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

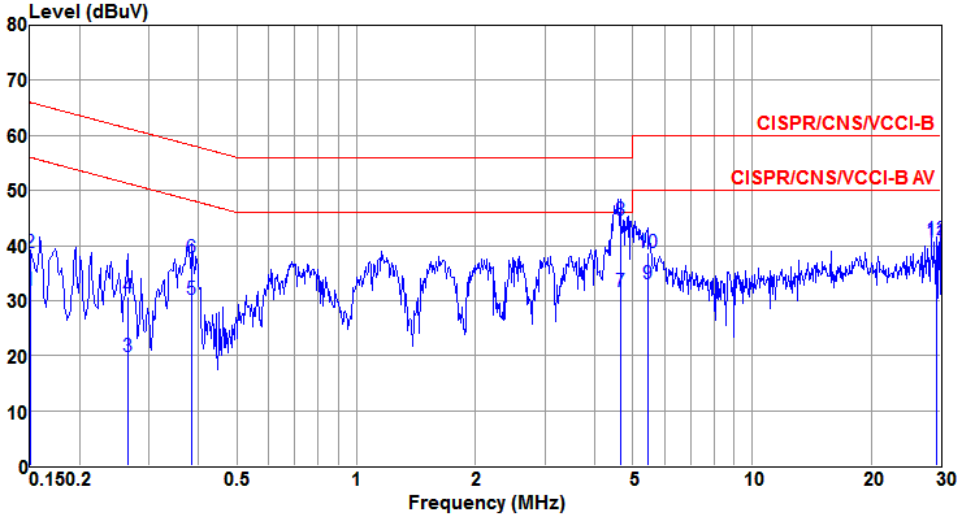
Modulation	11a	Test Freq. (MHz)	5200
Power Phase	Line	Test Configuration	2



	Freq MHz	Level dBuV	Limit Line dBuV	Over Limit dB	Read Level dBuV	LISN factor dB	cable loss dB	Remark
1	0.150	32.38	56.00	-23.62	31.38	0.92	0.08	Average
2	0.150	38.48	66.00	-27.52	37.48	0.92	0.08	QP
3	0.220	24.97	52.81	-27.84	24.64	0.24	0.09	Average
4	0.220	30.60	62.81	-32.21	30.27	0.24	0.09	QP
5	0.380	29.64	48.27	-18.63	29.35	0.18	0.11	Average
6	0.380	37.78	58.27	-20.49	37.49	0.18	0.11	QP
7	4.696	31.25	46.00	-14.75	30.61	0.33	0.31	Average
8	4.696	42.72	56.00	-13.28	42.08	0.33	0.31	QP
9	5.362	31.92	50.00	-18.08	31.22	0.39	0.31	Average
10	5.362	37.69	60.00	-22.31	36.99	0.39	0.31	QP
11*	28.445	40.43	50.00	-9.57	39.26	1.07	0.10	Average
12	28.445	41.07	60.00	-18.93	39.90	1.07	0.10	QP

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

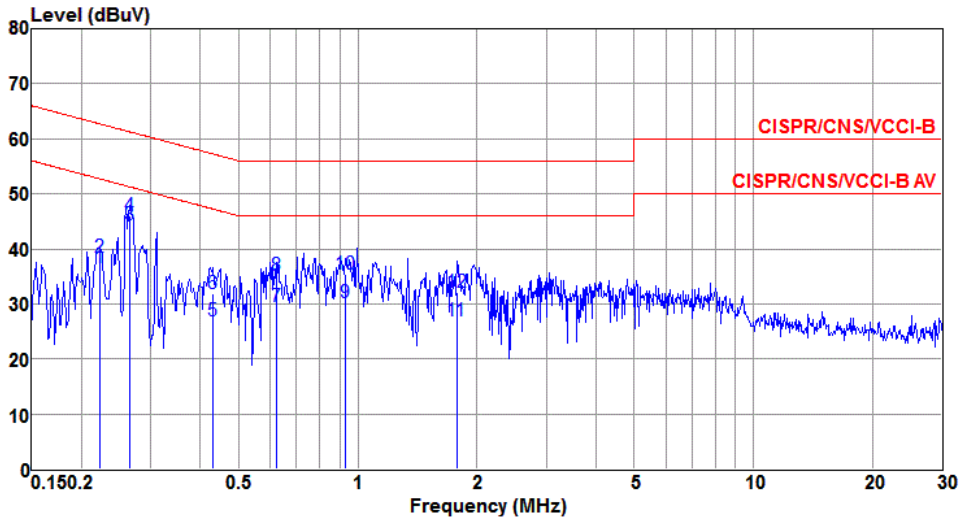
Modulation	11a	Test Freq. (MHz)	5200
Power Phase	Neutral	Test Configuration	2



	Freq MHz	Level dBuV	Limit Line dBuV	Over Limit dB	Read Level dBuV	LISN factor dB	cable loss dB	Remark
1	0.150	31.87	56.00	-24.13	30.94	0.85	0.08	Average
2	0.150	38.72	66.00	-27.28	37.79	0.85	0.08	QP
3	0.264	19.72	51.29	-31.57	19.42	0.20	0.10	Average
4	0.264	30.71	61.29	-30.58	30.41	0.20	0.10	QP
5	0.385	30.33	48.17	-17.84	30.08	0.14	0.11	Average
6	0.385	37.84	58.17	-20.33	37.59	0.14	0.11	QP
7	4.647	31.52	46.00	-14.48	30.51	0.70	0.31	Average
8	4.647	44.67	56.00	-11.33	43.66	0.70	0.31	QP
9	5.447	33.14	50.00	-16.86	32.16	0.67	0.31	Average
10	5.447	38.62	60.00	-21.38	37.64	0.67	0.31	QP
11*	29.191	40.66	50.00	-9.34	39.30	1.25	0.11	Average
12	29.191	40.98	60.00	-19.02	39.62	1.25	0.11	QP

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

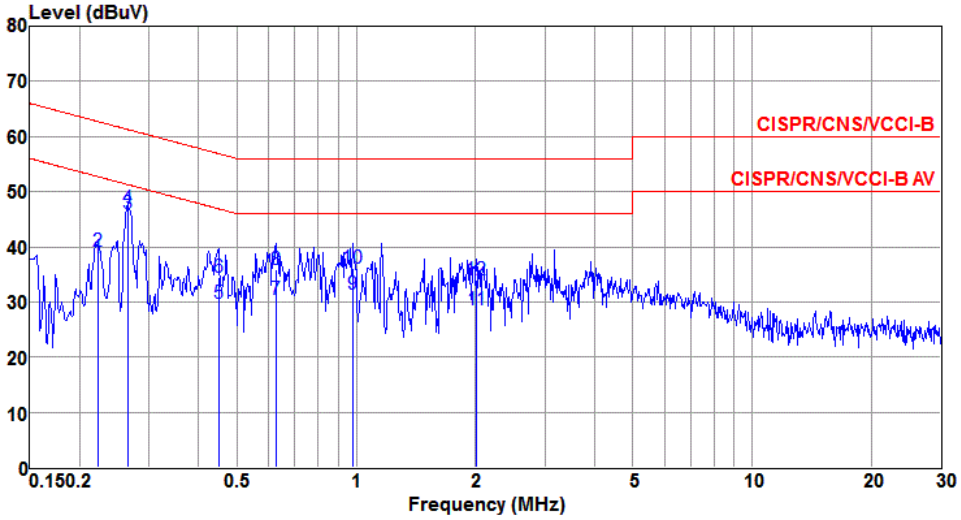
Modulation	11a	Test Freq. (MHz)	5785
Power Phase	Line	Test Configuration	1



	Freq MHz	Level dBuV	Limit Line dBuV	Over Limit dB	Read Level dBuV	LISN factor dB	cable loss dB	Remark
1	0.222	36.69	52.74	-16.05	36.36	0.24	0.09	Average
2	0.222	38.40	62.74	-24.34	38.07	0.24	0.09	QP
3*	0.266	44.31	51.25	-6.94	43.99	0.22	0.10	Average
4	0.266	46.12	61.25	-15.13	45.80	0.22	0.10	QP
5	0.431	26.94	47.24	-20.30	26.66	0.17	0.11	Average
6	0.431	31.86	57.24	-25.38	31.58	0.17	0.11	QP
7	0.621	29.62	46.00	-16.38	29.35	0.14	0.13	Average
8	0.621	35.14	56.00	-20.86	34.87	0.14	0.13	QP
9	0.928	30.19	46.00	-15.81	29.93	0.10	0.16	Average
10	0.928	35.51	56.00	-20.49	35.25	0.10	0.16	QP
11	1.781	26.80	46.00	-19.20	26.03	0.54	0.23	Average
12	1.781	32.21	56.00	-23.79	31.44	0.54	0.23	QP

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

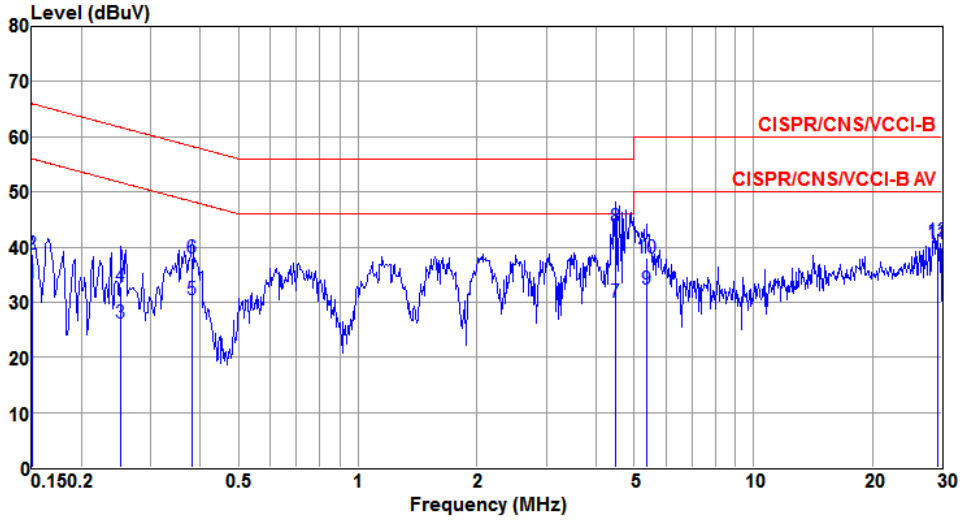
Modulation	11a	Test Freq. (MHz)	5785
Power Phase	Neutral	Test Configuration	1



	Freq MHz	Level dBuV	Limit Line dBuV	Over Limit dB	Read Level dBuV	LISN factor dB	cable loss dB	Remark
1	0.222	38.05	52.74	-14.69	37.74	0.22	0.09	Average
2	0.222	39.15	62.74	-23.59	38.84	0.22	0.09	QP
3*	0.266	46.10	51.25	-5.15	45.80	0.20	0.10	Average
4	0.266	46.96	61.25	-14.29	46.66	0.20	0.10	QP
5	0.449	29.77	46.89	-17.12	29.50	0.15	0.12	Average
6	0.449	34.55	56.89	-22.34	34.28	0.15	0.12	QP
7	0.627	30.36	46.00	-15.64	30.03	0.20	0.13	Average
8	0.627	35.77	56.00	-20.23	35.44	0.20	0.13	QP
9	0.979	31.32	46.00	-14.68	30.89	0.27	0.16	Average
10	0.979	36.14	56.00	-19.86	35.71	0.27	0.16	QP
11	2.012	28.59	46.00	-17.41	28.12	0.23	0.24	Average
12	2.012	34.06	56.00	-21.94	33.59	0.23	0.24	QP

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

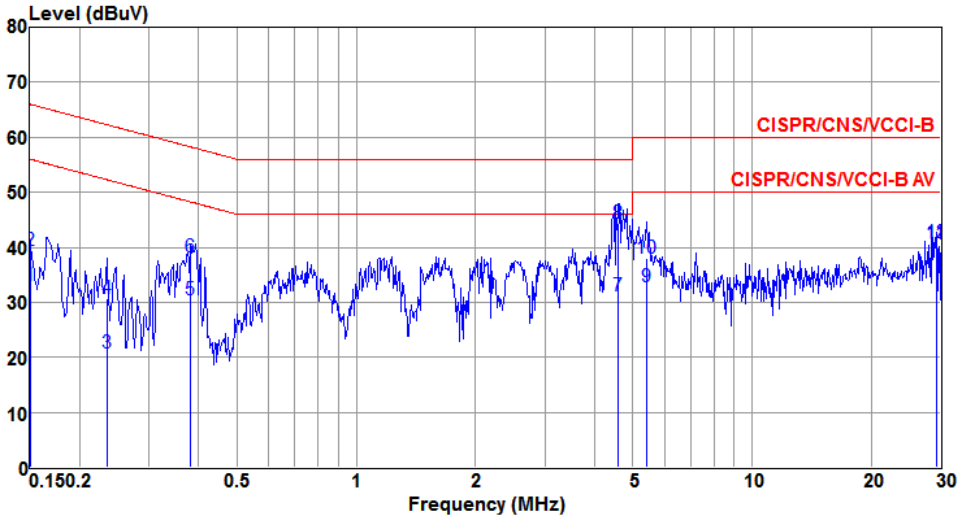
Modulation	11a	Test Freq. (MHz)	5785
Power Phase	Line	Test Configuration	2



	Freq MHz	Level dBuV	Limit Line dBuV	Over Limit dB	Read Level dBuV	LISN factor dB	cable loss dB	Remark
1	0.150	33.41	56.00	-22.59	32.41	0.92	0.08	Average
2	0.150	38.81	66.00	-27.19	37.81	0.92	0.08	QP
3	0.252	26.17	51.69	-25.52	25.84	0.23	0.10	Average
4	0.252	32.74	61.69	-28.95	32.41	0.23	0.10	QP
5	0.381	30.44	48.25	-17.81	30.15	0.18	0.11	Average
6	0.381	38.03	58.25	-20.22	37.74	0.18	0.11	QP
7	4.478	30.08	46.00	-15.92	29.46	0.31	0.31	Average
8	4.478	43.59	56.00	-12.41	42.97	0.31	0.31	QP
9	5.362	32.31	50.00	-17.69	31.61	0.39	0.31	Average
10	5.362	37.96	60.00	-22.04	37.26	0.39	0.31	QP
11*	29.200	40.61	50.00	-9.39	39.40	1.10	0.11	Average
12	29.200	41.19	60.00	-18.81	39.98	1.10	0.11	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)	5785
Power Phase	Neutral	Test Configuration	2



	Freq MHz	Level dBuV	Limit Line dBuV	Over Limit dB	Read Level dBuV	LISN factor dB	cable loss dB	Remark
1	0.150	33.06	56.00	-22.94	32.13	0.85	0.08	Average
2	0.150	39.39	66.00	-26.61	38.46	0.85	0.08	QP
3	0.234	20.84	52.30	-31.46	20.54	0.21	0.09	Average
4	0.234	30.70	62.30	-31.60	30.40	0.21	0.09	QP
5	0.381	30.53	48.25	-17.72	30.28	0.14	0.11	Average
6	0.381	38.27	58.25	-19.98	38.02	0.14	0.11	QP
7	4.598	31.18	46.00	-14.82	30.16	0.71	0.31	Average
8	4.598	44.30	56.00	-11.70	43.28	0.71	0.31	QP
9	5.419	32.77	50.00	-17.23	31.79	0.67	0.31	Average
10	5.419	38.01	60.00	-21.99	37.03	0.67	0.31	QP
11*	29.201	40.63	50.00	-9.37	39.27	1.25	0.11	Average
12	29.201	40.88	60.00	-19.12	39.52	1.25	0.11	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.

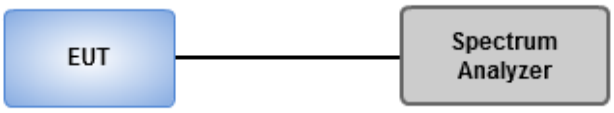
Occupied Bandwidth

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

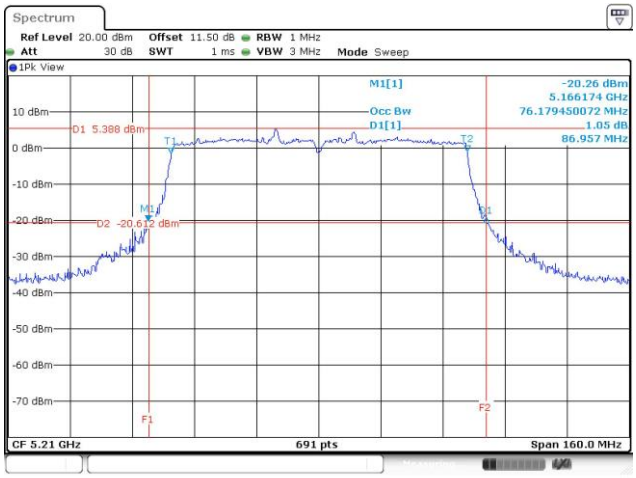
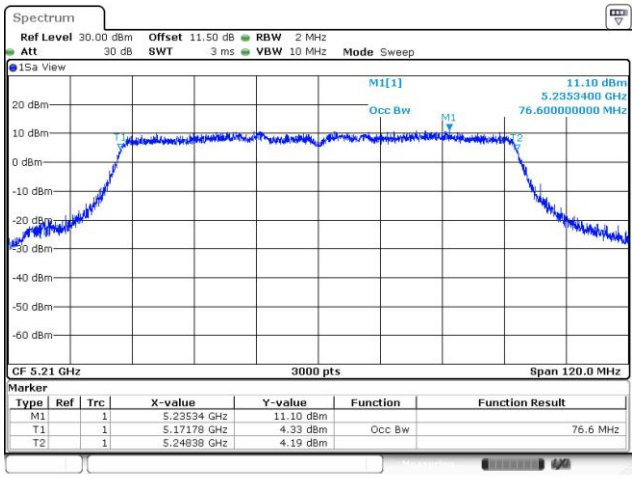
1. Set RBW = 100kHz, VBW = 300kHz
2. Detector = Peak,Trace mode = max hold.
3. Allow the trace to stabilize.
4. Measure the maximum width of the emission that is constrained by the frequencies associated with the two outermost amplitude points (upper and lower frequencies) that are attenuated by 6 dB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

3.2.3 Test Setup

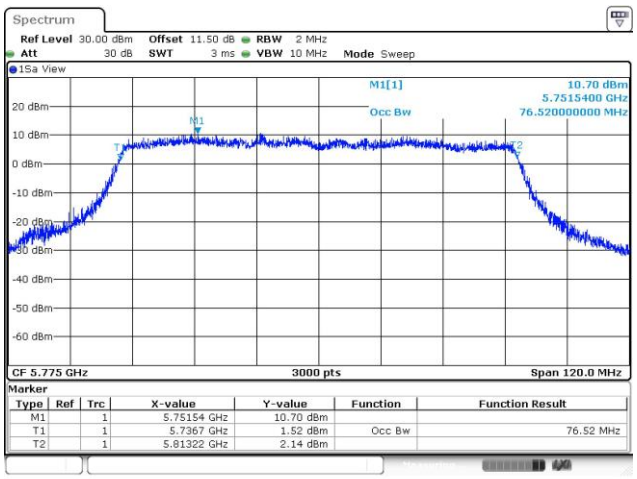
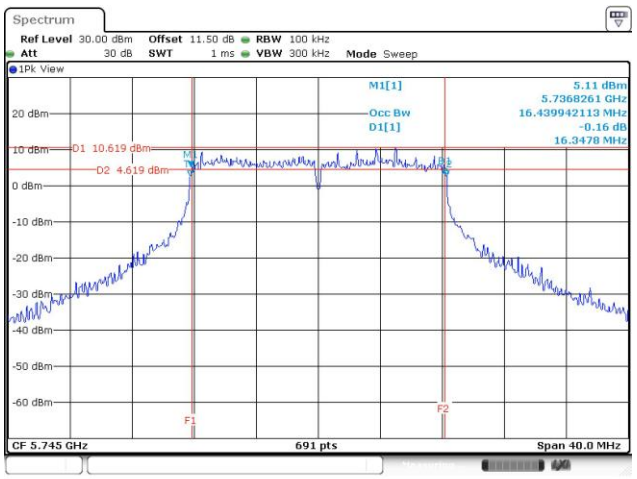


3.2.4 Test Result of Emission Bandwidth

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	23.36	22.55	---	---	16.79	16.65	---	---
11a	2	5200	24.12	26.14	---	---	16.89	16.76	---	---
11a	2	5240	24.00	26.03	---	---	16.87	16.80	---	---
VHT20	2	5180	23.13	23.59	---	---	17.83	17.88	---	---
VHT20	2	5200	26.72	26.49	---	---	17.98	17.88	---	---
VHT20	2	5240	24.29	25.68	---	---	18.03	17.94	---	---
VHT40	2	5190	45.80	46.38	---	---	36.86	36.76	---	---
VHT40	2	5230	47.65	47.30	---	---	37.02	36.78	---	---
VHT80	2	5210	86.96	86.49	---	---	76.56	76.60	---	---

Worst Plots of 26dB Bandwidth	Worst Plots 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	16.80	16.68	---	---	16.35	16.35	---	---	0.5
11a	2	5785	16.94	16.76	---	---	16.41	16.35	---	---	0.5
11a	2	5825	16.81	16.74	---	---	16.35	16.35	---	---	0.5
VHT20	2	5745	17.89	17.85	---	---	17.57	17.57	---	---	0.5
VHT20	2	5785	17.94	17.93	---	---	17.16	17.62	---	---	0.5
VHT20	2	5825	18.12	17.91	---	---	16.99	17.57	---	---	0.5
VHT40	2	5755	36.70	36.64	---	---	36.41	36.41	---	---	0.5
VHT40	2	5795	36.76	36.72	---	---	35.83	36.17	---	---	0.5
VHT80	2	5775	76.52	76.28	---	---	75.36	75.83	---	---	0.5

Worst Plots of 99% Bandwidth	Worst Plots 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
☐	Mobile and portable 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	22.74	22.78	---	---	377.602	25.77	30.00
11a	2	5200	24.28	24.66	---	---	560.332	**27.48**	30.00
11a	2	5240	24.2	24.67	---	---	556.116	27.45	30.00
HT20	2	5180	21.42	21.76	---	---	288.644	24.60	30.00
HT20	2	5200	24.05	24.51	---	---	536.585	27.30	30.00
HT20	2	5240	24.02	24.54	---	---	536.794	27.30	30.00
HT40	2	5190	14.62	15.25	---	---	62.470	17.96	30.00
HT40	2	5230	23.45	24.21	---	---	484.943	26.86	30.00
VHT20	2	5180	21.58	21.92	---	---	299.476	24.76	30.00
VHT20	2	5200	24.2	24.62	---	---	552.761	27.43	30.00
VHT20	2	5240	24.18	24.61	---	---	550.886	27.41	30.00
VHT40	2	5190	14.79	15.38	---	---	64.644	18.11	30.00
VHT40	2	5230	23.59	24.36	---	---	501.458	27.00	30.00
VHT80	2	5210	12.82	13.05	---	---	39.326	15.95	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	22.28	22.45	---	---	344.836	25.38	30.00
11a	2	5785	24.01	23.58	---	---	479.802	**26.81**	30.00
11a	2	5825	23.5	23.62	---	---	454.016	26.57	30.00
HT20	2	5745	22.14	22.26	---	---	331.949	25.21	30.00
HT20	2	5785	23.81	23.42	---	---	460.222	26.63	30.00
HT20	2	5825	23.31	23.45	---	---	435.599	26.39	30.00
HT40	2	5755	17.26	17.75	---	---	112.777	20.52	30.00
HT40	2	5795	23.45	23.12	---	---	426.426	26.30	30.00
VHT20	2	5745	22.25	22.38	---	---	340.862	25.33	30.00
VHT20	2	5785	23.94	23.54	---	---	473.686	26.75	30.00
VHT20	2	5825	23.45	23.58	---	---	449.344	26.53	30.00
VHT40	2	5755	17.35	17.86	---	---	115.419	20.62	30.00
VHT40	2	5795	23.65	23.28	---	---	444.553	26.48	30.00
VHT80	2	5775	14.92	14.96	---	---	62.378	17.95	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
☐	Mobile and portable 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 (for 11a, VHT20)

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 (for VHT40, VHT80)

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

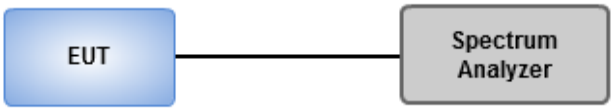
☒ Method SA-1 (for 11a, VHT20)

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 (for VHT40, VHT80)

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



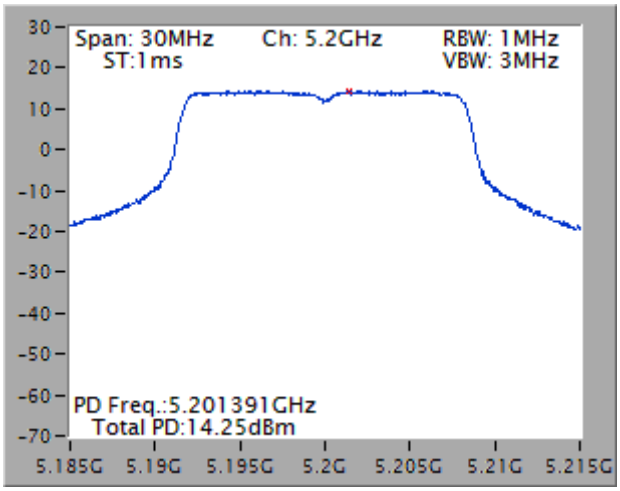
3.4.4 Test Result of Peak Power Spectral Density

For Frequency band 5150-5250 MHz						
Condition			Peak Power Spectral Density (dBm)			
Modulation Mode	N_{TX}	Freq. (MHz)	PPSD w/o D.F (dBm)	Duty Factor (dB)	PPSD with D.F (dBm)	PPSD Limit (dBm)
11a	2	5180	12.13	0.00	12.13	15.99
11a	2	5200	14.25	0.00	14.25	15.99
11a	2	5240	14.06	0.00	14.06	15.99
VHT20	2	5180	10.83	0.00	10.83	15.99
VHT20	2	5200	14.07	0.00	14.07	15.99
VHT20	2	5240	14.03	0.00	14.03	15.99
VHT40	2	5190	0.59	0.29	0.88	15.99
VHT40	2	5230	9.51	0.29	9.80	15.99
VHT80	2	5210	-4.78	0.59	-4.19	15.99

Note:

1. D.F is duty factor.
2. Test result is bin-by-bin summing measured value of each TX port.
3. Directional gain = 4+10* log(2/1) = 7.01 dBi > 6 dBi.
   Limit shall be reduced to 17 dBm – (7.01 dBi – 6 dBi) = 15.99 dBm.

Worst Plots

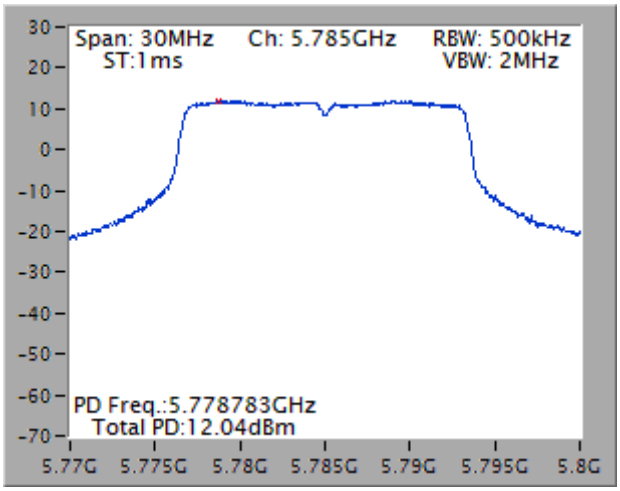


For Frequency band 5725-5850 MHz						
Condition			Peak Power Spectral Density (dBm)			
Modulation Mode	N_{TX}	Freq. (MHz)	PPSD w/o D.F (dBm)	Duty Factor (dB)	PPSD with D.F (dBm)	PPSD Limit (dBm)
11a	2	5745	10.90	0.00	10.90	28.99
11a	2	5785	12.04	0.00	12.04	28.99
11a	2	5825	11.79	0.00	11.79	28.99
VHT20	2	5745	9.97	0.00	9.97	28.99
VHT20	2	5785	11.19	0.00	11.19	28.99
VHT20	2	5825	11.07	0.00	11.07	28.99
VHT40	2	5755	1.99	0.29	2.28	28.99
VHT40	2	5795	7.79	0.29	8.08	28.99
VHT80	2	5775	-4.16	0.59	-3.57	28.99

Note:

1. D.F is duty factor.
2. Test result is bin-by-bin summing measured value of each TX port.
3. Directional gain = 4+10* log(2/1) = 7.01 dBi > 6 dBi.
   Limit shall be reduced to 30 dBm – (7.01 dBi – 6 dBi) = 28.99 dBm.

Worst Plots



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]
5.25 - 5.35 GHz	e.i.r.p. -27 dBm [68.2 dBuV/m@3m]
5.47 - 5.725 GHz	e.i.r.p. -27 dBm [68.2 dBuV/m@3m]
5.725 - 5.825 GHz	5.715 5.725 GHz: e.i.r.p. -17 dBm [78.2 dBuV/m@3m] 5.85 5.86 GHz: e.i.r.p. -17 dBm [78.2 dBuV/m@3m] Other un-restricted band: e.i.r.p. -27 dBm [68.2 dBuV/m@3m]

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

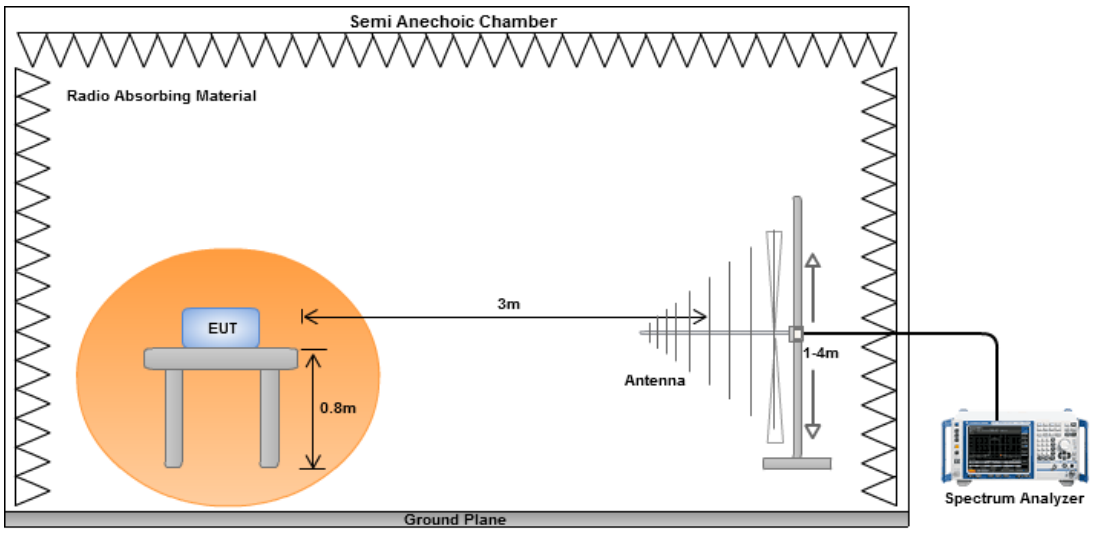
1. Measurement is made at a semi-anechoic chamber that incorporates a turntable allowing a EUT rotation of 360°. A continuously-rotating, remotely-controlled turntable is installed at the test site to support the EUT and facilitate determination of the direction of maximum radiation for each EUT emission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

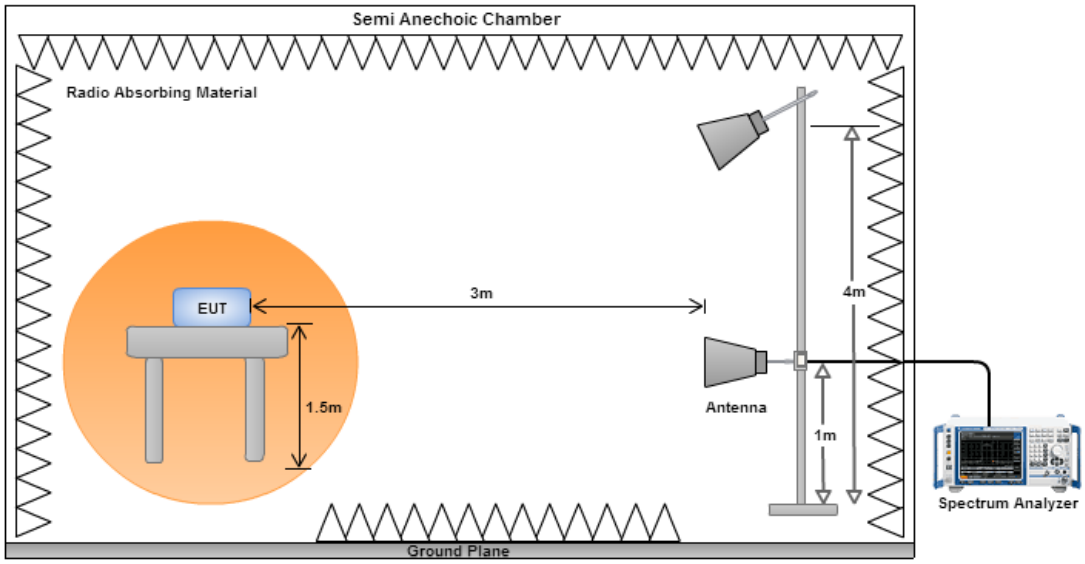
1. 120kHz measurement bandwidth of test receiver and Quasi-peak detector is for radiated emission below 1GHz.
2. RBW=1MHz, VBW=3MHz and Peak detector is for peak measured value of radiated emission above 1GHz.
3. RBW=1MHz, VBW=1/T and Peak detector is for average measured value of radiated emission above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

3.5.3 Test Setup

Radiated Emissions below 1 GHz

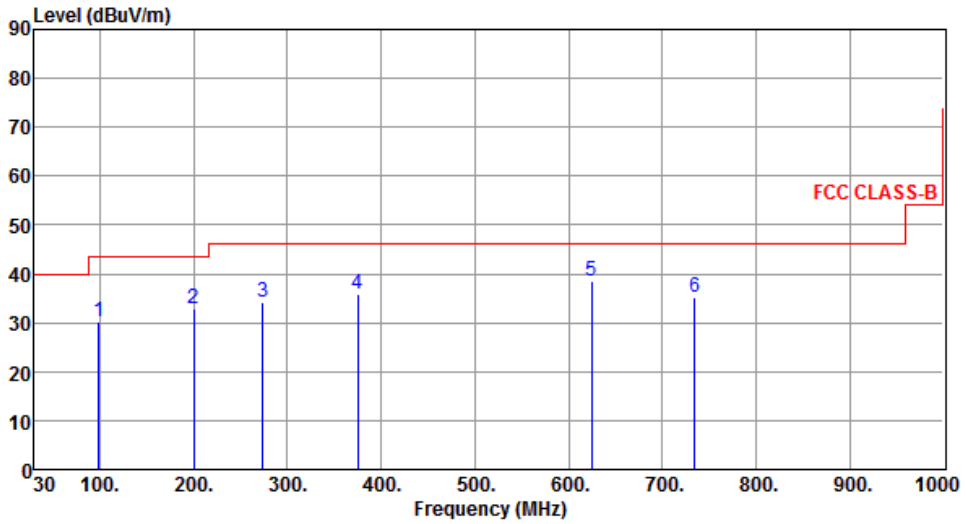


Radiated Emissions above 1 GHz



3.5.4 Transmitter Radiated Unwanted Emissions (Below 1GHz)

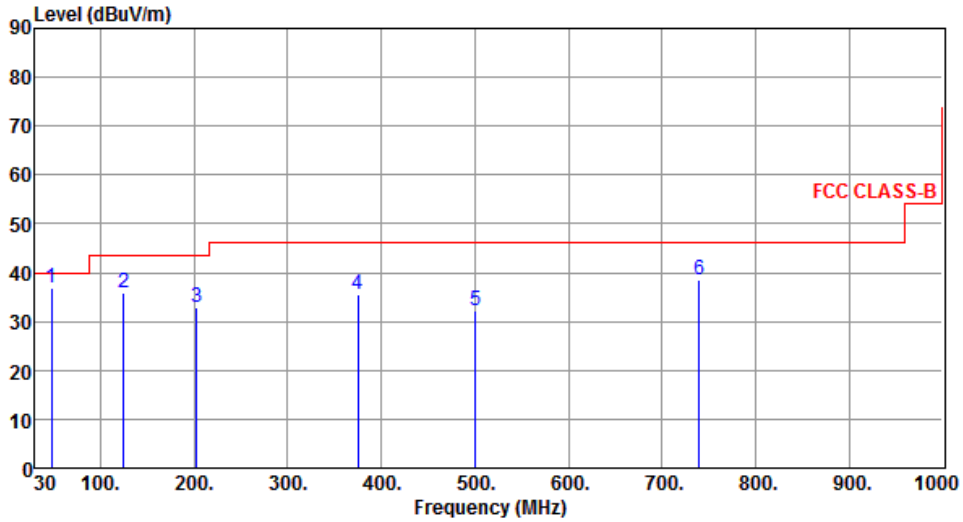
Modulation	11a	**Test Freq. (MHz)**	5200
Polarization	Horizontal	**Test Configuration**	1



	Freq. MHz	Emission level dBuV/m	Limit dBuV/m	Margin dB	SA reading dBuV	Factor dB	Remark	ANT High cm	Turn Table deg
1	98.87	30.35	43.50	-13.15	48.77	-18.42	Peak	---	---
2	199.75	32.88	43.50	-10.62	49.28	-16.40	Peak	---	---
3	273.47	34.31	46.00	-11.69	47.87	-13.56	Peak	---	---
4	375.32	36.00	46.00	-10.00	46.75	-10.75	Peak	---	---
5	624.61	38.64	46.00	-7.36	43.86	-5.22	Peak	---	---
6	734.22	35.37	46.00	-10.63	38.86	-3.49	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.

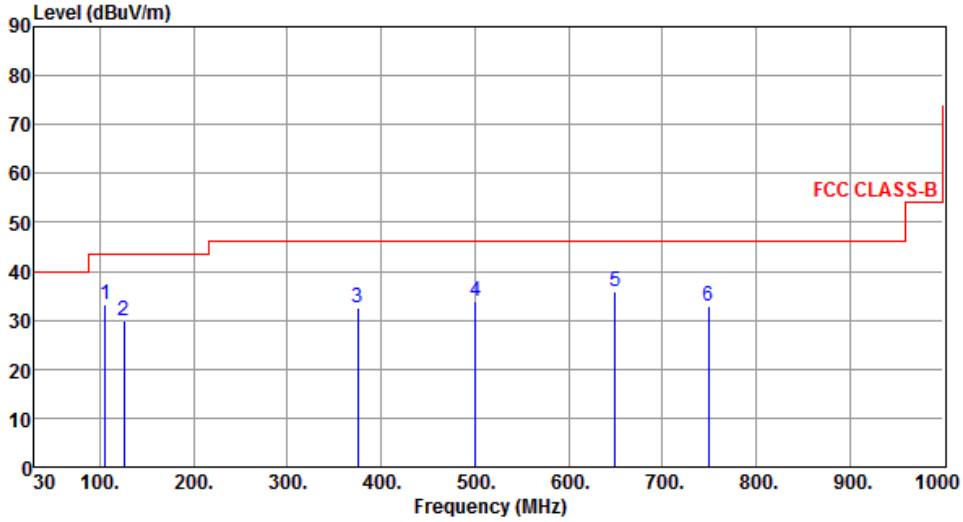
Modulation	11a	Test Freq. (MHz)	5200
Polarization	Vertical	Test Configuration	1



	Freq. MHz	Emission level dBuV/m	Limit dBuV/m	Margin dB	SA reading dBuV	Factor dB	Remark	ANT High cm	Turn Table deg
1	47.46	36.87	40.00	-3.13	49.70	-12.83	Peak	---	---
2	125.06	35.81	43.50	-7.69	50.76	-14.95	Peak	---	---
3	202.66	32.88	43.50	-10.62	49.28	-16.40	Peak	---	---
4	375.32	35.57	46.00	-10.43	46.32	-10.75	Peak	---	---
5	500.45	32.15	46.00	-13.85	39.86	-7.71	Peak	---	---
6	740.04	38.52	46.00	-7.48	41.89	-3.37	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.

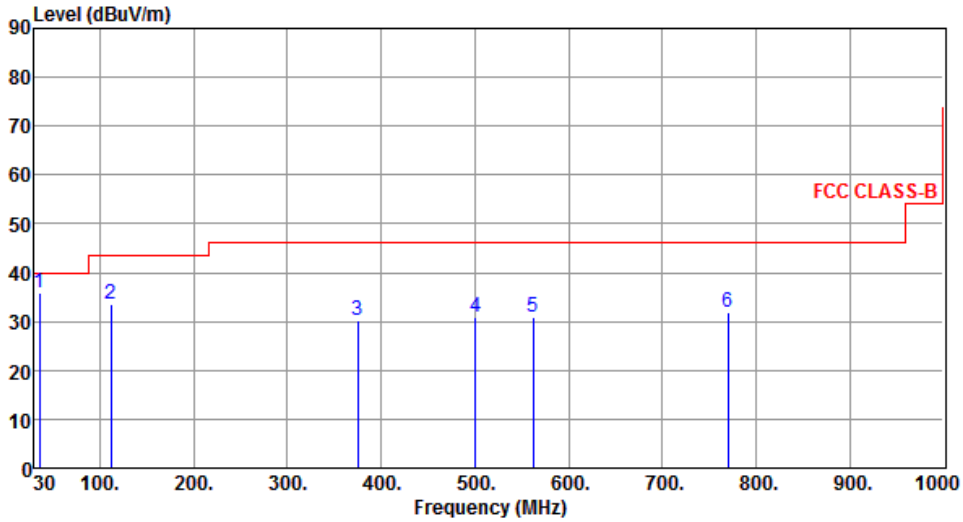
Modulation	11a	Test Freq. (MHz)	5200
Polarization	Horizontal	Test Configuration	2



	Freq. MHz	Emission level dBuV/m	Limit dBuV/m	Margin dB	SA reading dBuV	Factor dB	Remark	ANT High cm	Turn Table deg
1	105.66	33.11	43.50	-10.39	50.39	-17.28	Peak	---	---
2	126.03	29.93	43.50	-13.57	44.79	-14.86	Peak	---	---
3	375.32	32.71	46.00	-13.29	43.46	-10.75	Peak	---	---
4	500.45	33.81	46.00	-12.19	41.52	-7.71	Peak	---	---
5	649.83	35.93	46.00	-10.07	40.70	-4.77	Peak	---	---
6	749.74	32.94	46.00	-13.06	36.10	-3.16	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.

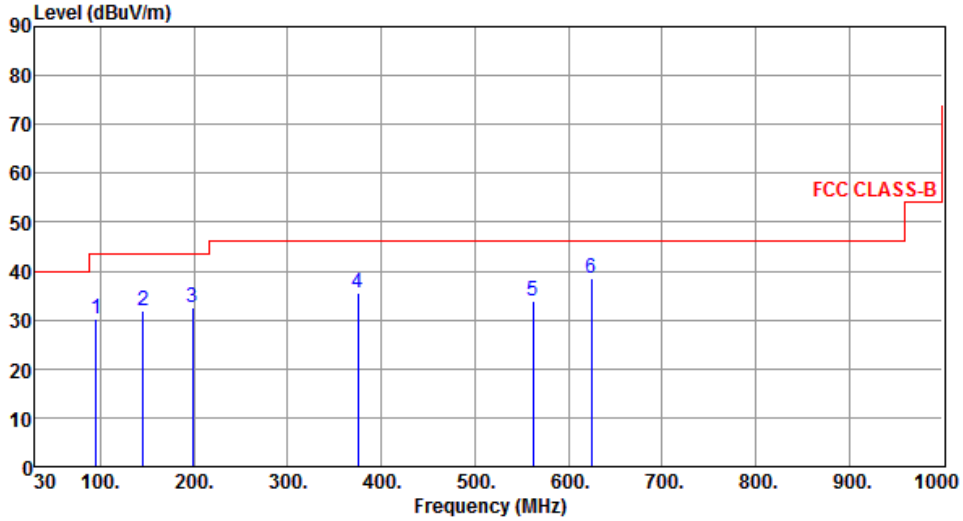
Modulation	11a	Test Freq. (MHz)	5200
Polarization	Vertical	Test Configuration	2



	Freq. MHz	Emission level dBuV/m	Limit dBuV/m	Margin dB	SA reading dBuV	Factor dB	Remark	ANT High cm	Turn Table deg
1	35.82	35.89	40.00	-4.11	49.36	-13.47	Peak	---	---
2	111.48	33.51	43.50	-9.99	49.86	-16.35	Peak	---	---
3	375.32	30.17	46.00	-15.83	40.92	-10.75	Peak	---	---
4	500.45	30.80	46.00	-15.20	38.51	-7.71	Peak	---	---
5	562.53	30.87	46.00	-15.13	37.59	-6.72	Peak	---	---
6	770.11	31.72	46.00	-14.28	34.61	-2.89	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.

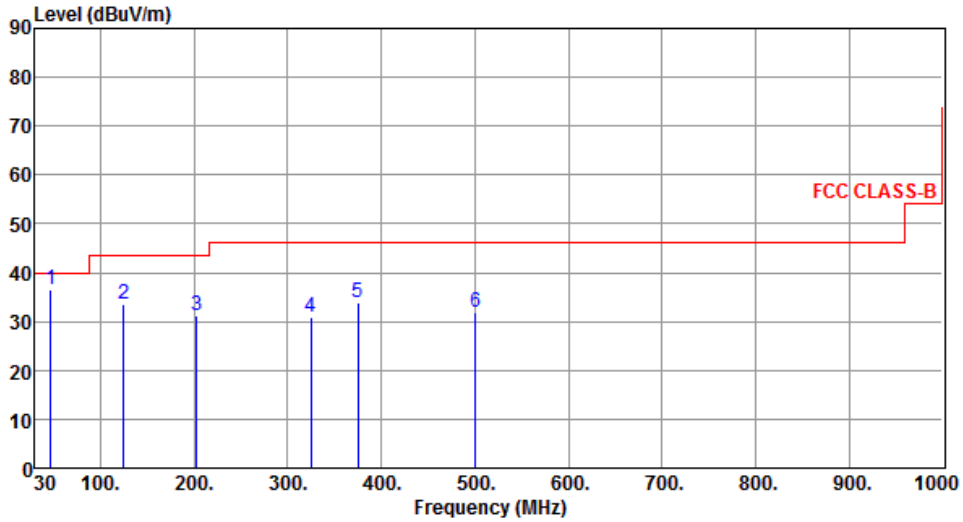
Modulation	11a	Test Freq. (MHz)	5785
Polarization	Horizontal	Test Configuration	1



	Freq. MHz	Emission level dBuV/m	Limit dBuV/m	Margin dB	SA reading dBuV	Factor dB	Remark	ANT High cm	Turn Table deg
1	94.99	30.17	43.50	-13.33	48.96	-18.79	Peak	---	---
2	145.43	31.96	43.50	-11.54	45.41	-13.45	Peak	---	---
3	198.78	32.49	43.50	-11.01	48.89	-16.40	Peak	---	---
4	375.32	35.69	46.00	-10.31	46.44	-10.75	Peak	---	---
5	562.53	34.02	46.00	-11.98	40.74	-6.72	Peak	---	---
6	624.61	38.62	46.00	-7.38	43.84	-5.22	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.

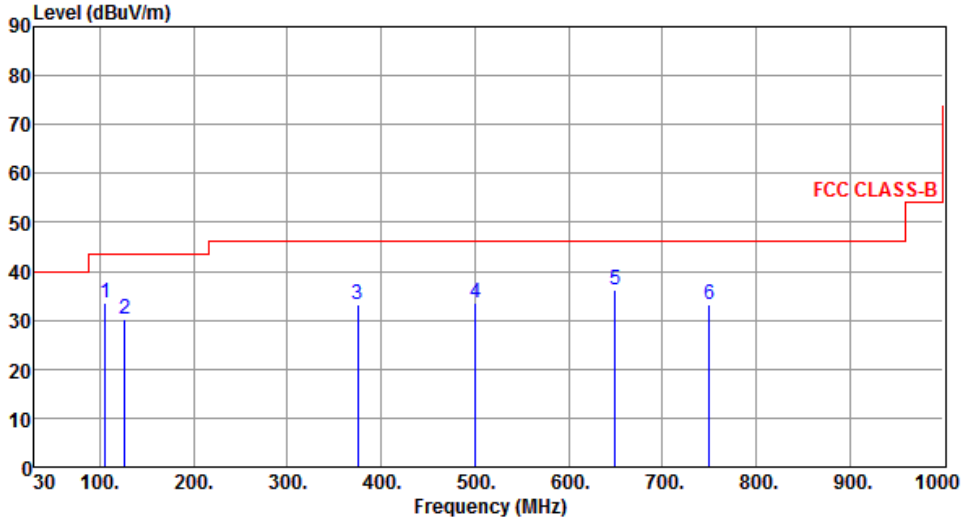
Modulation	11a	Test Freq. (MHz)	5785
Polarization	Vertical	Test Configuration	1



	Freq. MHz	Emission level dBuV/m	Limit dBuV/m	Margin dB	SA reading dBuV	Factor dB	Remark	ANT High cm	Turn Table deg
1	46.49	36.50	40.00	-3.50	49.31	-12.81	Peak	---	---
2	125.06	33.59	43.50	-9.91	48.54	-14.95	Peak	---	---
3	202.66	31.29	43.50	-12.21	47.69	-16.40	Peak	---	---
4	324.88	30.76	46.00	-15.24	42.74	-11.98	Peak	---	---
5	375.32	33.72	46.00	-12.28	44.47	-10.75	Peak	---	---
6	500.45	31.76	46.00	-14.24	39.47	-7.71	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.

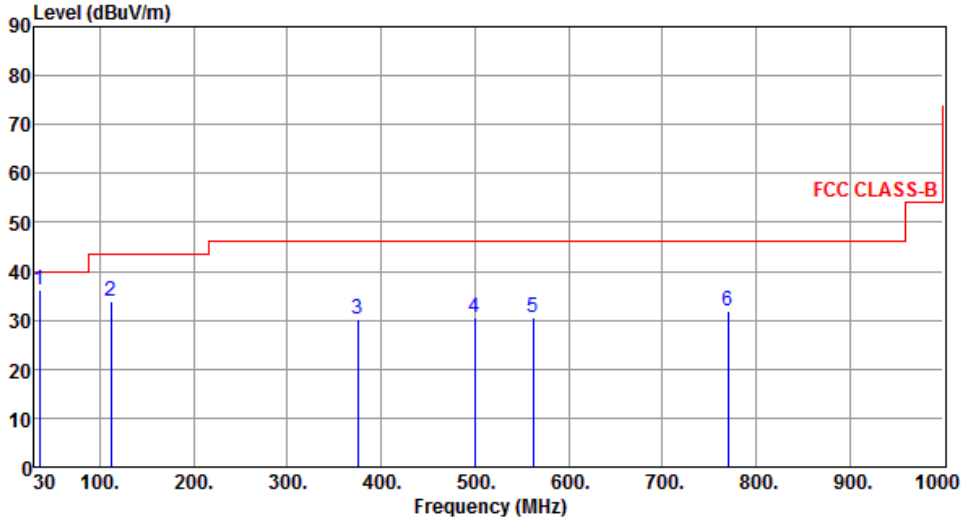
Modulation	11a	Test Freq. (MHz)	5785
Polarization	Horizontal	Test Configuration	2



	Freq. MHz	Emission level dBuV/m	Limit dBuV/m	Margin dB	SA reading dBuV	Factor dB	Remark	ANT High cm	Turn Table deg
1	105.56	33.40	43.50	-10.10	50.70	-17.30	Peak	---	---
2	126.14	30.11	43.50	-13.39	44.96	-14.85	Peak	---	---
3	375.35	33.09	46.00	-12.91	43.84	-10.75	Peak	---	---
4	500.45	33.56	46.00	-12.44	41.27	-7.71	Peak	---	---
5	649.86	36.14	46.00	-9.86	40.91	-4.77	Peak	---	---
6	749.77	33.15	46.00	-12.85	36.31	-3.16	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)	5785
Polarization	Vertical	Test Configuration	2

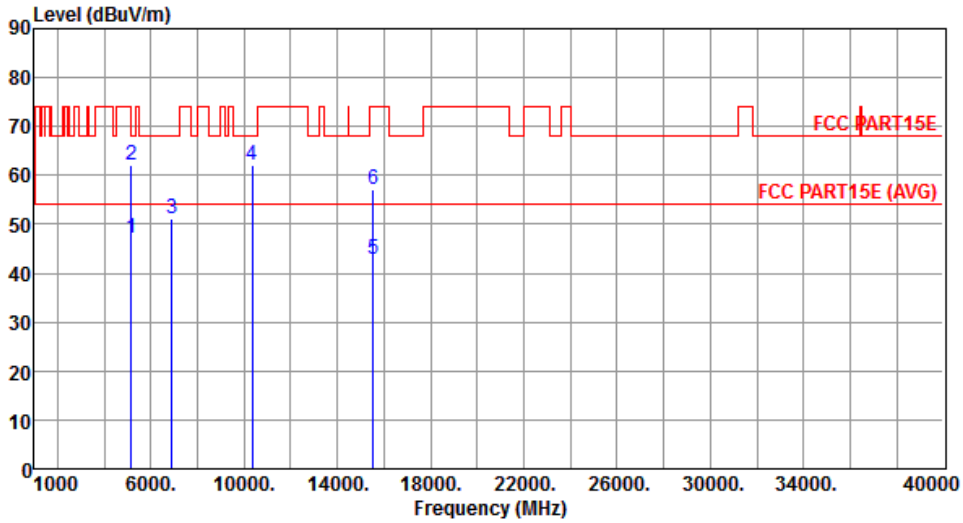


	Freq. MHz	Emission level dBuV/m	Limit dBuV/m	Margin dB	SA reading dBuV	Factor dB	Remark	ANT High cm	Turn Table deg
1	35.93	36.14	40.00	-3.86	49.59	-13.45	Peak	---	---
2	111.52	33.84	43.50	-9.66	50.19	-16.35	Peak	---	---
3	375.26	30.34	46.00	-15.66	41.09	-10.75	Peak	---	---
4	500.22	30.71	46.00	-15.29	38.42	-7.71	Peak	---	---
5	562.53	30.54	46.00	-15.46	37.26	-6.72	Peak	---	---
6	770.20	31.95	46.00	-14.05	34.84	-2.89	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

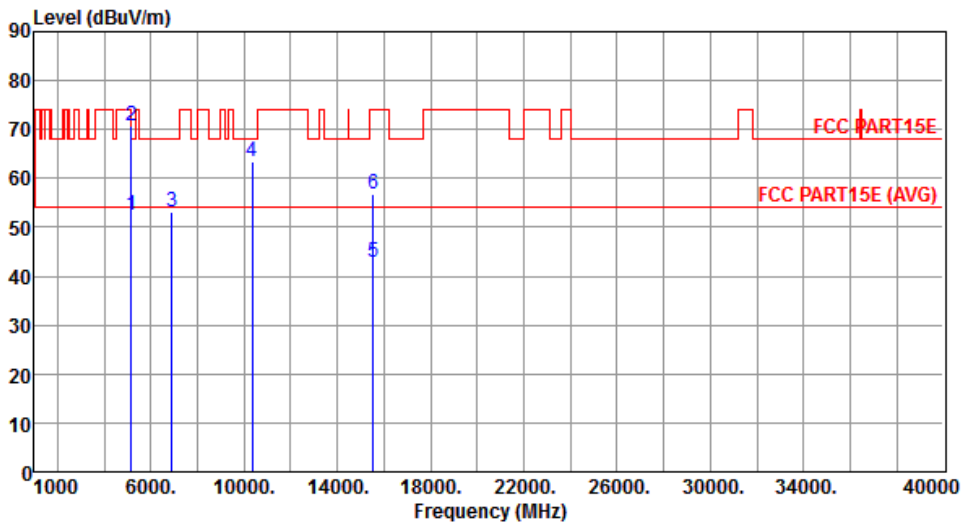
Modulation	11a	**Test Freq. (MHz)**	5180
Polarization	Horizontal		



	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	47.07	54.00	-6.93	40.89	6.18	Average	---	---
2	5150.00	62.13	74.00	-11.87	55.95	6.18	Peak	---	---
3	6906.60	51.24	68.20	-16.96	40.85	10.39	Peak	---	---
4	10360.00	62.14	68.20	-6.06	45.18	16.96	Peak	---	---
5	15540.00	42.89	54.00	-11.11	25.01	17.88	Average	---	---
6	15540.00	57.06	74.00	-16.94	39.18	17.88	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).

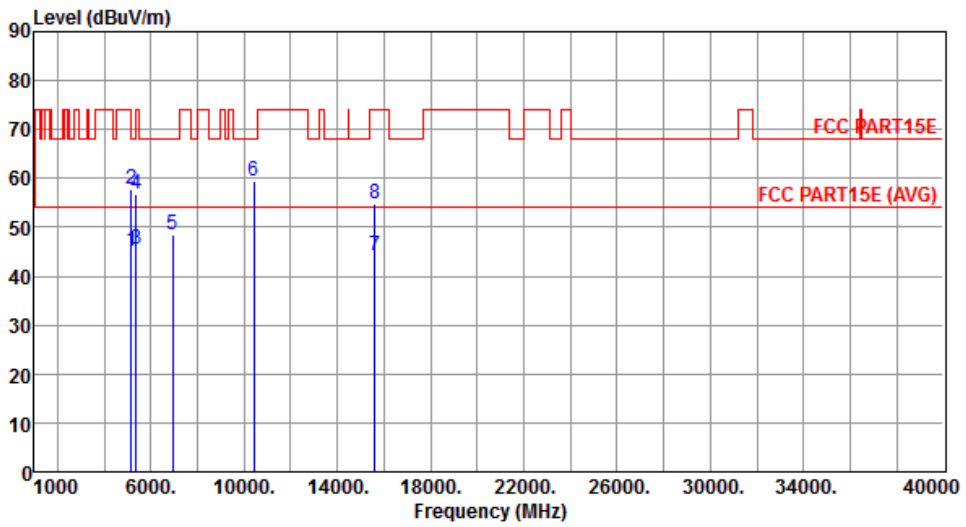
Modulation	11a	Test Freq. (MHz)	5180
Polarization	Vertical		



	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	52.55	54.00	-1.45	46.37	6.18	Average	---	---
2	5150.00	70.83	74.00	-3.17	64.65	6.18	Peak	---	---
3	6906.60	53.25	68.20	-14.95	42.86	10.39	Peak	---	---
4	10360.00	63.32	68.20	-4.88	46.36	16.96	Peak	---	---
5	15540.00	42.97	54.00	-11.03	25.09	17.88	Average	---	---
6	15540.00	56.68	74.00	-17.32	38.80	17.88	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).

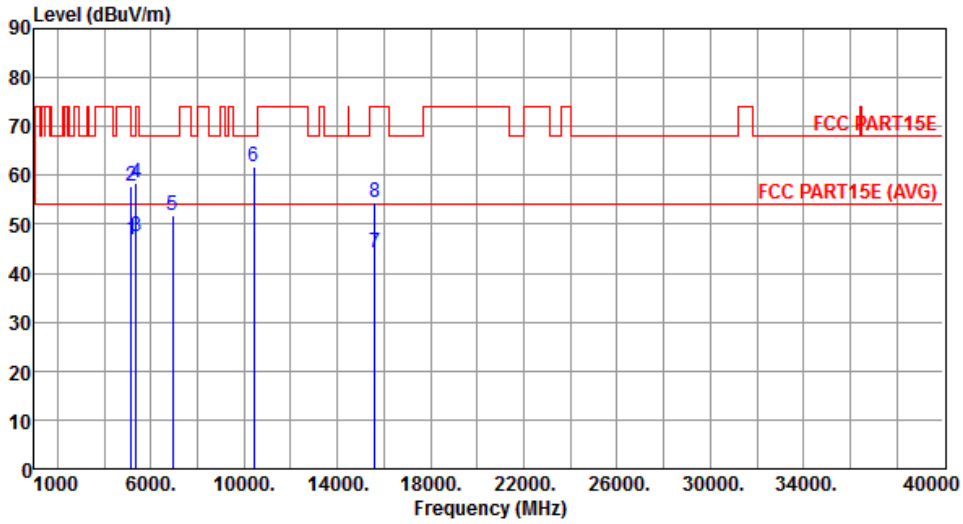
Modulation	11a	Test Freq. (MHz)	5200
Polarization	Horizontal		



	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	45.19	54.00	-8.81	39.01	6.18	Average	---	---
2	5150.00	57.89	74.00	-16.11	51.71	6.18	Peak	---	---
3	5354.00	45.65	54.00	-8.35	39.14	6.51	Average	---	---
4	5354.00	56.80	74.00	-17.20	50.29	6.51	Peak	---	---
5	6933.30	48.64	68.20	-19.56	38.10	10.54	Peak	---	---
6	10400.00	59.50	68.20	-8.70	42.42	17.08	Peak	---	---
7	15600.00	44.09	54.00	-9.91	26.36	17.73	Average	---	---
8	15600.00	54.66	74.00	-19.34	36.93	17.73	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).

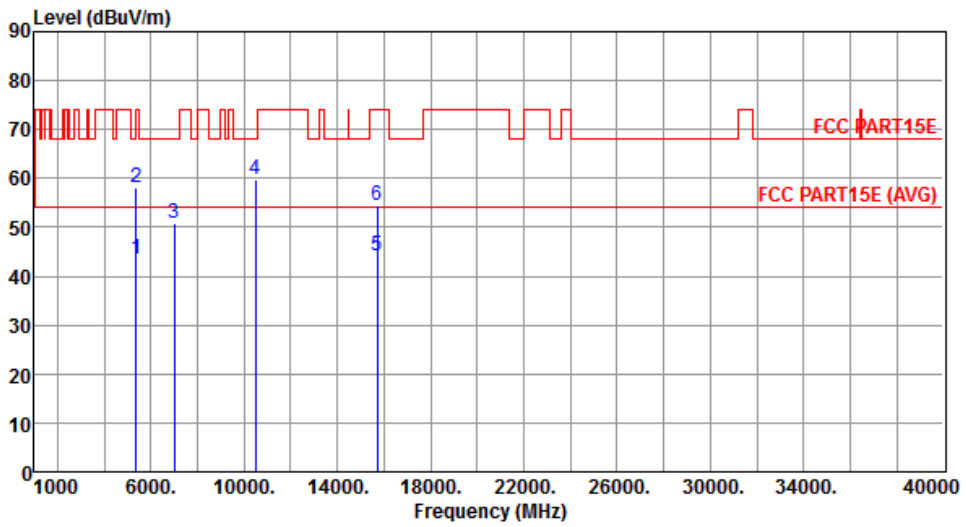
Modulation	11a	Test Freq. (MHz)	5200
Polarization	Vertical		



	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	46.99	54.00	-7.01	40.81	6.18	Average	---	---
2	5150.00	57.78	74.00	-16.22	51.60	6.18	Peak	---	---
3	5354.00	47.50	54.00	-6.50	40.99	6.51	Average	---	---
4	5354.00	58.46	74.00	-15.54	51.95	6.51	Peak	---	---
5	6933.30	51.72	68.20	-16.48	41.18	10.54	Peak	---	---
6	10400.00	61.63	68.20	-6.57	44.55	17.08	Peak	---	---
7	15600.00	44.19	54.00	-9.81	26.46	17.73	Average	---	---
8	15600.00	54.41	74.00	-19.59	36.68	17.73	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).

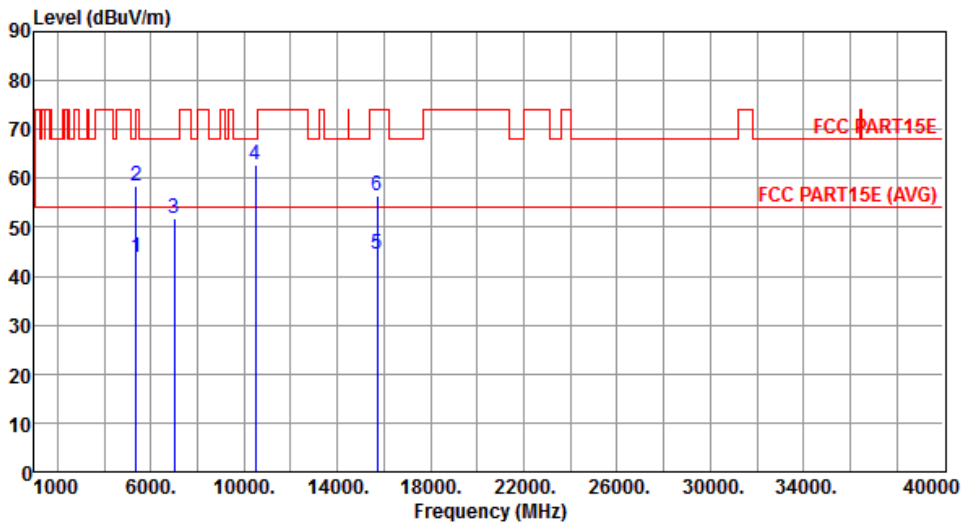
Modulation	11a	Test Freq. (MHz)	5240
Polarization	Horizontal		



	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	43.65	54.00	-10.35	37.14	6.51	Average	---	---
2	5350.00	58.14	74.00	-15.86	51.63	6.51	Peak	---	---
3	6986.66	50.74	68.20	-17.46	39.88	10.86	Peak	---	---
4	10480.00	59.62	68.20	-8.58	42.30	17.32	Peak	---	---
5	15720.00	44.15	54.00	-9.85	26.72	17.43	Average	---	---
6	15720.00	54.62	74.00	-19.38	37.19	17.43	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).

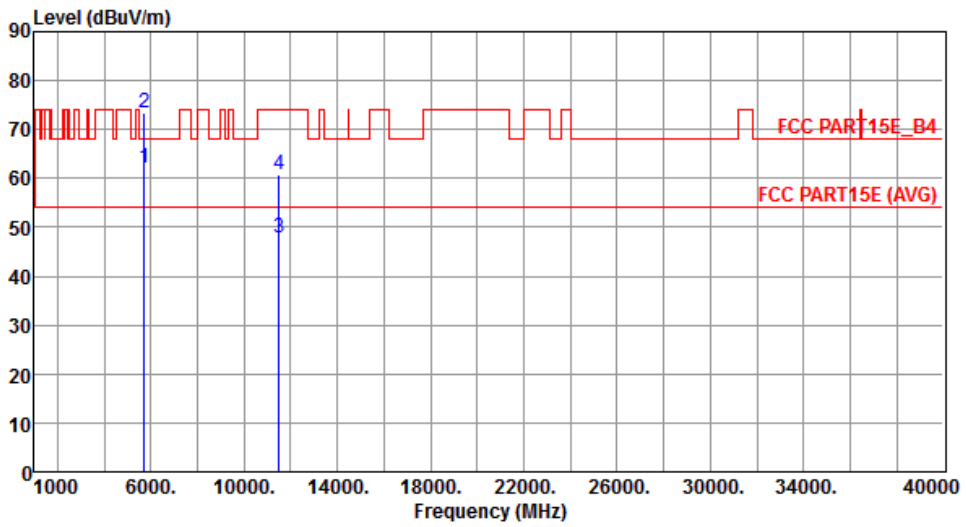
Modulation	11a	Test Freq. (MHz)	5240
Polarization	Vertical		



	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	43.91	54.00	-10.09	37.40	6.51	Average	---	---
2	5350.00	58.29	74.00	-15.71	51.78	6.51	Peak	---	---
3	6986.66	51.86	68.20	-16.34	41.00	10.86	Peak	---	---
4	10480.00	62.77	68.20	-5.43	45.45	17.32	Peak	---	---
5	15720.00	44.57	54.00	-9.43	27.14	17.43	Average	---	---
6	15720.00	56.41	74.00	-17.59	38.98	17.43	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).

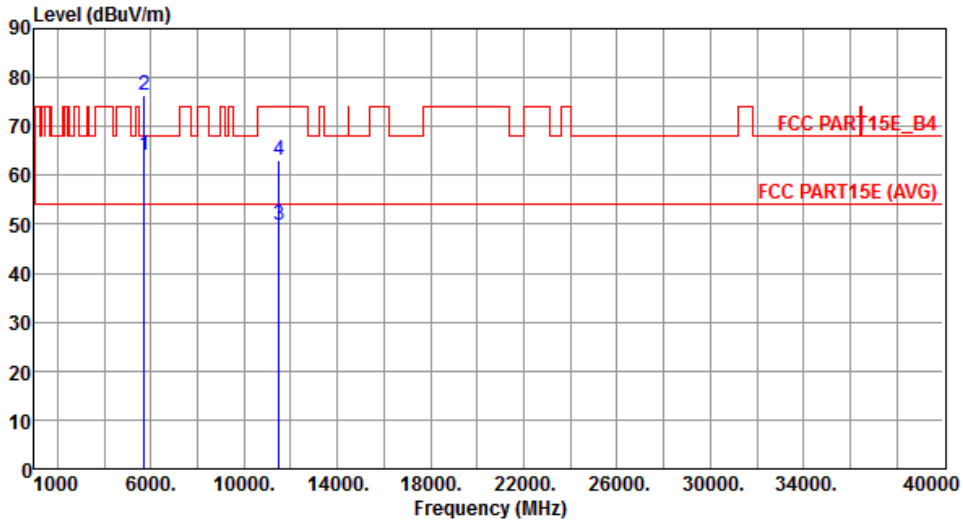
Modulation	11a	Test Freq. (MHz)	5745
Polarization	Horizontal		



	Freq. MHz	Emission level dBuV/m	Limit dBuV/m	Margin dB	SA reading dBuV	Factor dB	Remark	ANT High cm	Turn Table deg
1	5715.00	62.12	68.20	-6.08	55.04	7.08	Peak	---	---
2	5725.00	73.27	78.20	-4.93	66.18	7.09	Peak	---	---
3	11490.00	47.87	54.00	-6.13	30.64	17.23	Average	---	---
4	11490.00	60.84	74.00	-13.16	43.61	17.23	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).

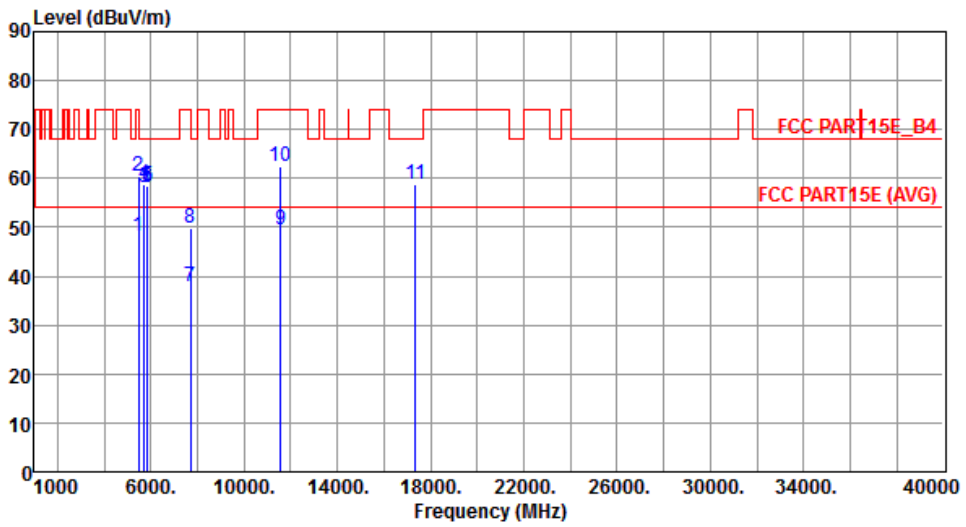
Modulation	11a	Test Freq. (MHz)	5745
Polarization	Vertical		



	Freq. MHz	Emission level dBuV/m	Limit dBuV/m	Margin dB	SA reading dBuV	Factor dB	Remark	ANT High cm	Turn Table deg
1	5715.00	64.17	68.20	-4.03	57.09	7.08	Peak	---	---
2	5725.00	76.54	78.20	-1.66	69.45	7.09	Peak	---	---
3	11490.00	49.98	54.00	-4.02	32.75	17.23	Average	---	---
4	11490.00	63.11	74.00	-10.89	45.88	17.23	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).

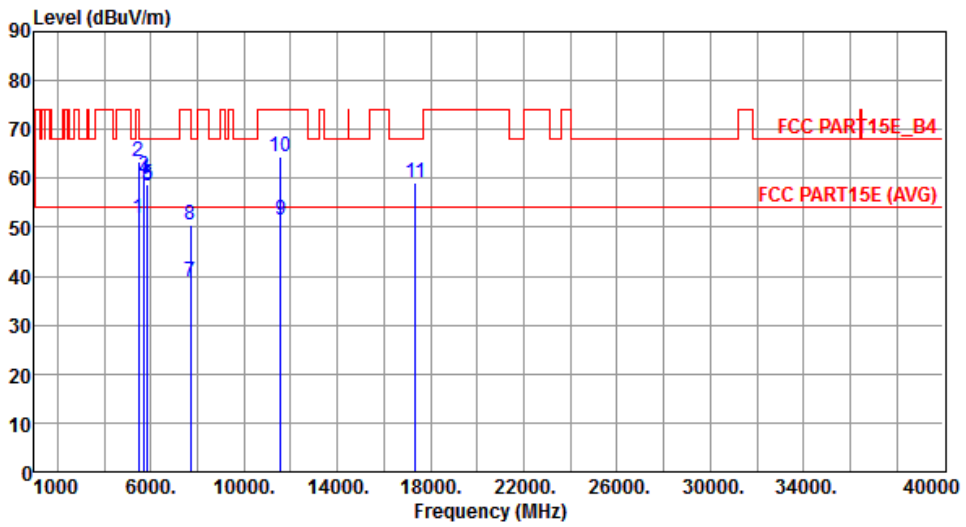
Modulation	11a	Test Freq. (MHz)	5785
Polarization	Horizontal		



	Freq. MHz	Emission level dBuV/m	Limit dBuV/m	Margin dB	SA reading dBuV	Factor dB	Remark	ANT High cm	Turn Table deg
1	5460.00	48.09	54.00	-5.91	41.41	6.68	Average	---	---
2	5460.00	60.32	74.00	-13.68	53.64	6.68	Peak	---	---
3	5715.00	58.16	68.20	-10.04	51.08	7.08	Peak	---	---
4	5725.00	58.74	78.20	-19.46	51.65	7.09	Peak	---	---
5	5850.00	58.43	78.20	-19.77	51.19	7.24	Peak	---	---
6	5860.00	58.12	68.20	-10.08	50.88	7.24	Peak	---	---
7	7713.30	37.87	54.00	-16.13	26.42	11.45	Average	---	---
8	7713.30	49.66	74.00	-24.34	38.21	11.45	Peak	---	---
9	11570.00	49.58	54.00	-4.42	32.49	17.09	Average	---	---
10	11570.00	62.41	74.00	-11.59	45.32	17.09	Peak	---	---
11	17355.00	58.63	68.20	-9.57	39.05	19.58	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).

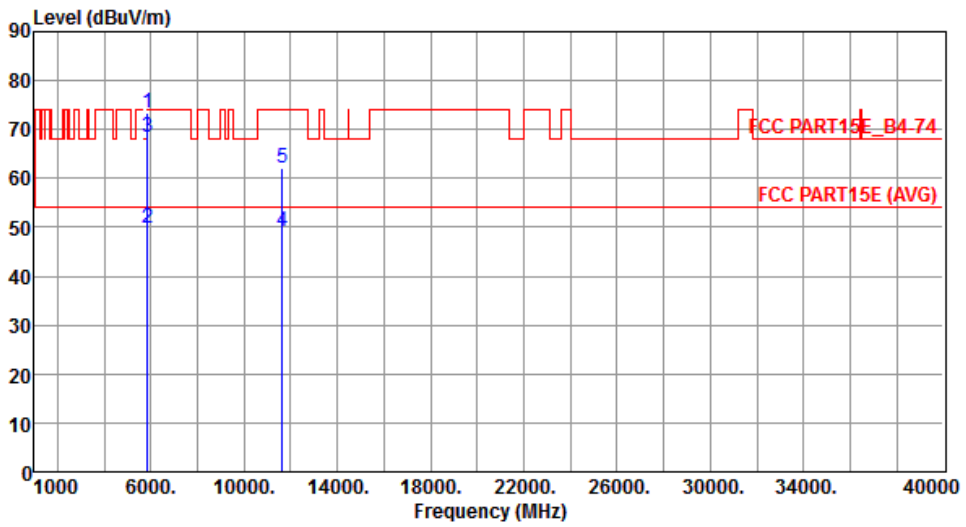
Modulation	11a	Test Freq. (MHz)	5785
Polarization	Vertical		



	Freq. MHz	Emission level dBuV/m	Limit dBuV/m	Margin dB	SA reading dBuV	Factor dB	Remark	ANT High cm	Turn Table deg
1	5460.00	51.88	54.00	-2.12	45.20	6.68	Average	---	---
2	5460.00	63.58	74.00	-10.42	56.90	6.68	Peak	---	---
3	5715.00	60.46	68.20	-7.74	53.38	7.08	Peak	---	---
4	5725.00	59.68	78.20	-18.52	52.59	7.09	Peak	---	---
5	5850.00	58.94	78.20	-19.26	51.70	7.24	Peak	---	---
6	5860.00	58.38	68.20	-9.82	51.14	7.24	Peak	---	---
7	7713.30	38.94	54.00	-15.06	27.49	11.45	Average	---	---
8	7713.30	50.53	74.00	-23.47	39.08	11.45	Peak	---	---
9	11570.00	51.63	54.00	-2.37	34.54	17.09	Average	---	---
10	11570.00	64.54	74.00	-9.46	47.45	17.09	Peak	---	---
11	17355.00	59.01	68.20	-9.19	39.43	19.58	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).

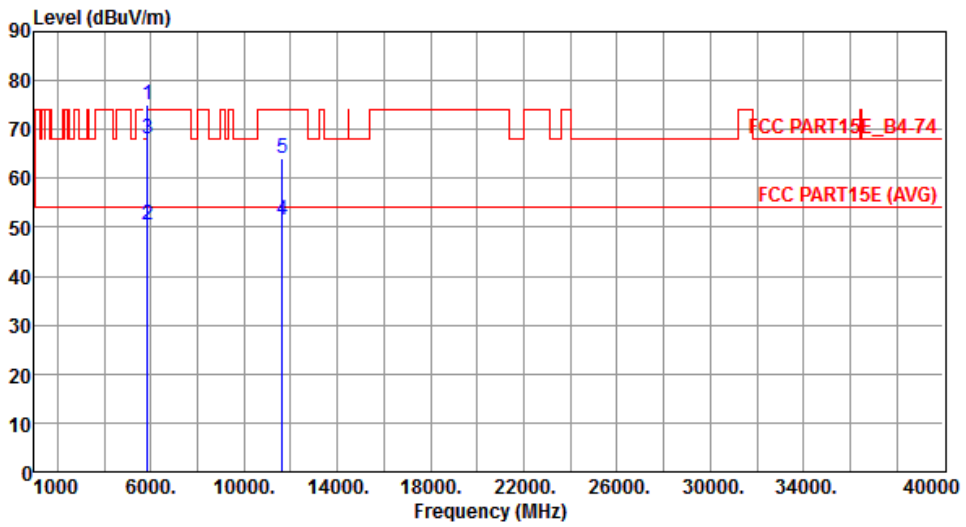
Modulation	11a	Test Freq. (MHz)	5825
Polarization	Horizontal		



	Freq. MHz	Emission level dBuV/m	Limit dBuV/m	Margin dB	SA reading dBuV	Factor dB	Remark	ANT High cm	Turn Table deg
1	5850.00	73.24	78.20	-4.96	66.00	7.24	Peak	---	---
2	5860.00	49.76	54.00	-4.24	42.52	7.24	Average	---	---
3	5860.00	68.28	74.00	-5.72	61.04	7.24	Peak	---	---
4	11650.00	49.22	54.00	-4.78	32.28	16.94	Average	---	---
5	11650.00	62.07	74.00	-11.93	45.13	16.94	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).

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

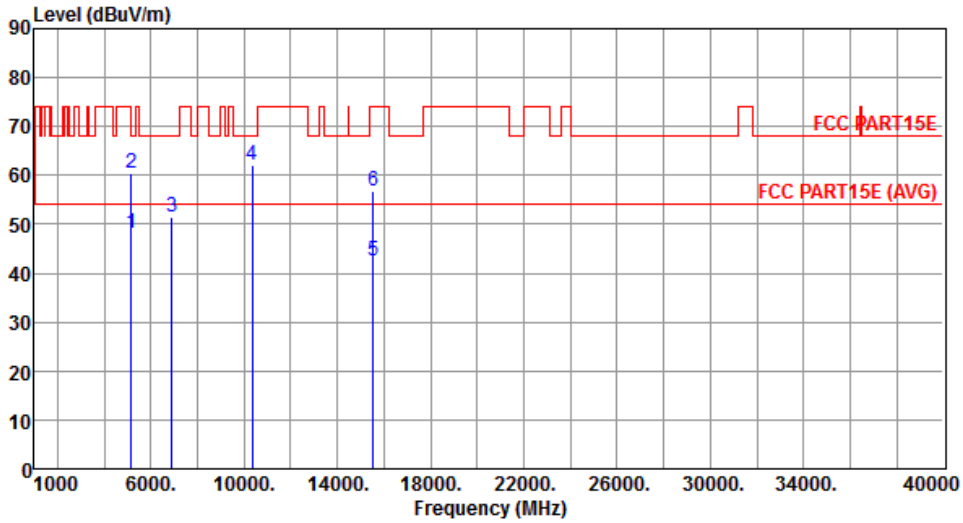


	Freq. MHz	Emission level dBuV/m	Limit dBuV/m	Margin dB	SA reading dBuV	Factor dB	Remark	ANT High cm	Turn Table deg
1	5850.00	74.89	78.20	-3.31	67.65	7.24	Peak	---	---
2	5860.00	50.35	54.00	-3.65	43.11	7.24	Average	---	---
3	5860.00	68.11	74.00	-5.89	60.87	7.24	Peak	---	---
4	11650.00	51.34	54.00	-2.66	34.40	16.94	Average	---	---
5	11650.00	64.16	74.00	-9.84	47.22	16.94	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).

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

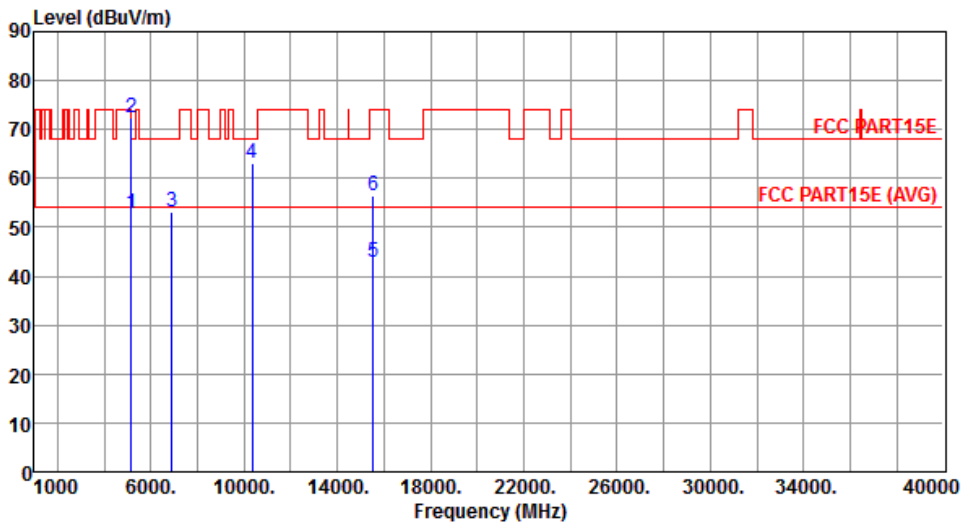
Modulation	VHT20	**Test Freq. (MHz)**	5180
Polarization	Horizontal		



	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	48.16	54.00	-5.84	41.98	6.18	Average	---	---
2	5150.00	60.41	74.00	-13.59	54.23	6.18	Peak	---	---
3	6906.60	51.63	68.20	-16.57	41.24	10.39	Peak	---	---
4	10360.00	61.94	68.20	-6.26	44.98	16.96	Peak	---	---
5	15540.00	42.55	54.00	-11.45	24.67	17.88	Average	---	---
6	15540.00	56.73	74.00	-17.27	38.85	17.88	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).

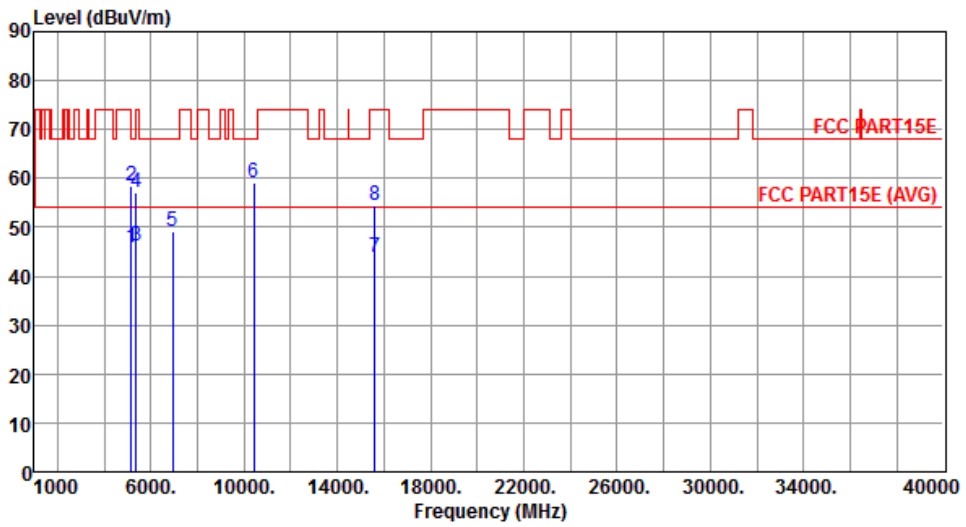
Modulation	VHT20	Test Freq. (MHz)	5180
Polarization	Vertical		



	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	52.91	54.00	-1.09	46.73	6.18	Average	---	---
2	5150.00	72.28	74.00	-1.72	66.10	6.18	Peak	---	---
3	6906.60	53.14	68.20	-15.06	42.75	10.39	Peak	---	---
4	10360.00	63.21	68.20	-4.99	46.25	16.96	Peak	---	---
5	15540.00	42.81	54.00	-11.19	24.93	17.88	Average	---	---
6	15540.00	56.52	74.00	-17.48	38.64	17.88	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).

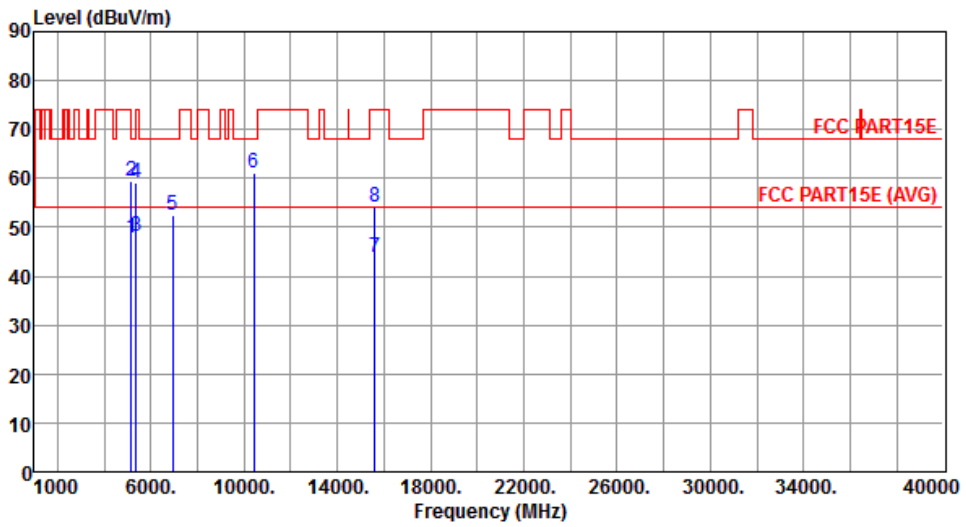
Modulation	VHT20	Test Freq. (MHz)	5200
Polarization	Horizontal		



	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	45.87	54.00	-8.13	39.69	6.18	Average	---	---
2	5150.00	58.36	74.00	-15.64	52.18	6.18	Peak	---	---
3	5354.00	46.12	54.00	-7.88	39.61	6.51	Average	---	---
4	5354.00	57.24	74.00	-16.76	50.73	6.51	Peak	---	---
5	6933.30	49.13	68.20	-19.07	38.59	10.54	Peak	---	---
6	10400.00	59.06	68.20	-9.14	41.98	17.08	Peak	---	---
7	15600.00	43.88	54.00	-10.12	26.15	17.73	Average	---	---
8	15600.00	54.45	74.00	-19.55	36.72	17.73	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).

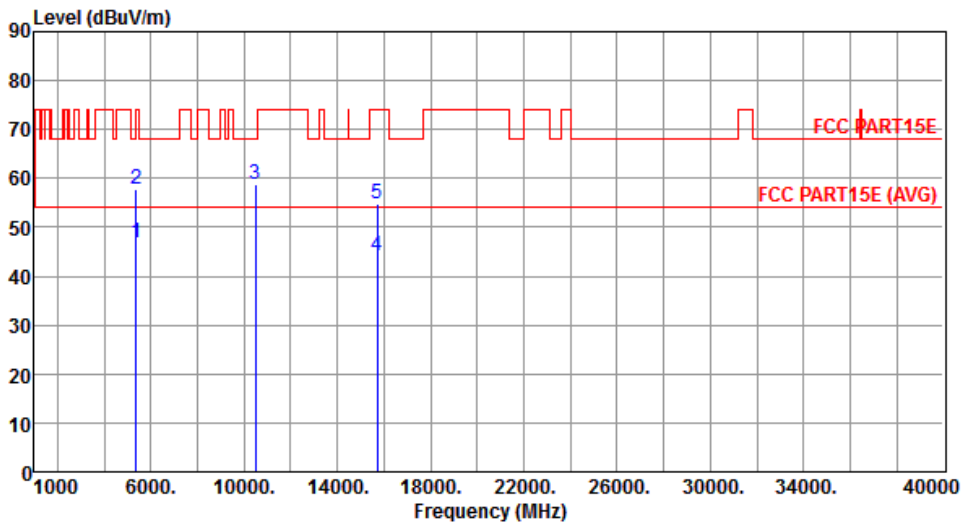
Modulation	VHT20	Test Freq. (MHz)	5200
Polarization	Vertical		



	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	47.66	54.00	-6.34	41.48	6.18	Average	---	---
2	5150.00	59.55	74.00	-14.45	53.37	6.18	Peak	---	---
3	5354.00	48.12	54.00	-5.88	41.61	6.51	Average	---	---
4	5354.00	58.97	74.00	-15.03	52.46	6.51	Peak	---	---
5	6933.30	52.33	68.20	-15.87	41.79	10.54	Peak	---	---
6	10400.00	61.24	68.20	-6.96	44.16	17.08	Peak	---	---
7	15600.00	43.96	54.00	-10.04	26.23	17.73	Average	---	---
8	15600.00	54.22	74.00	-19.78	36.49	17.73	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).

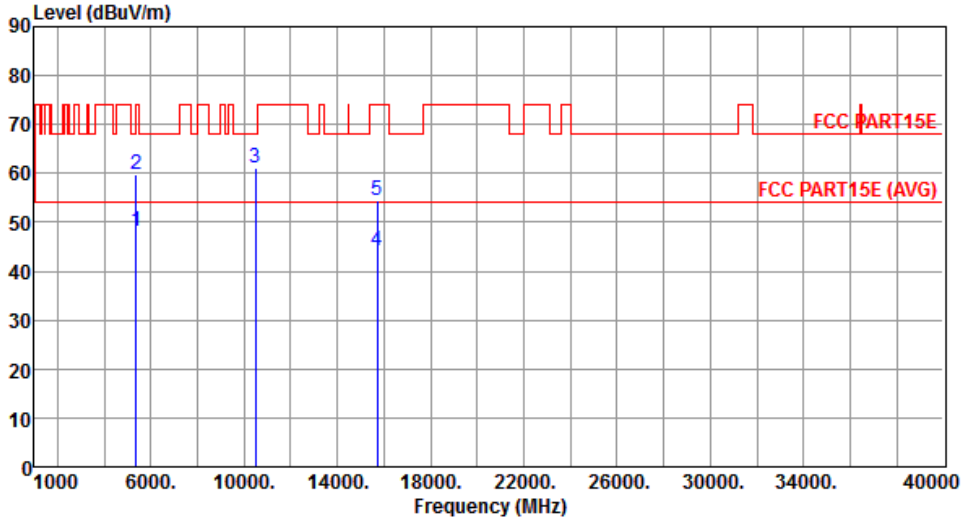
Modulation	VHT20	Test Freq. (MHz)	5240
Polarization	Horizontal		



	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	46.82	54.00	-7.18	40.31	6.51	Average	---	---
2	5350.00	57.93	74.00	-16.07	51.42	6.51	Peak	---	---
3	10480.00	58.86	68.20	-9.34	41.54	17.32	Peak	---	---
4	15720.00	44.17	54.00	-9.83	26.74	17.43	Average	---	---
5	15720.00	54.83	74.00	-19.17	37.40	17.43	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).

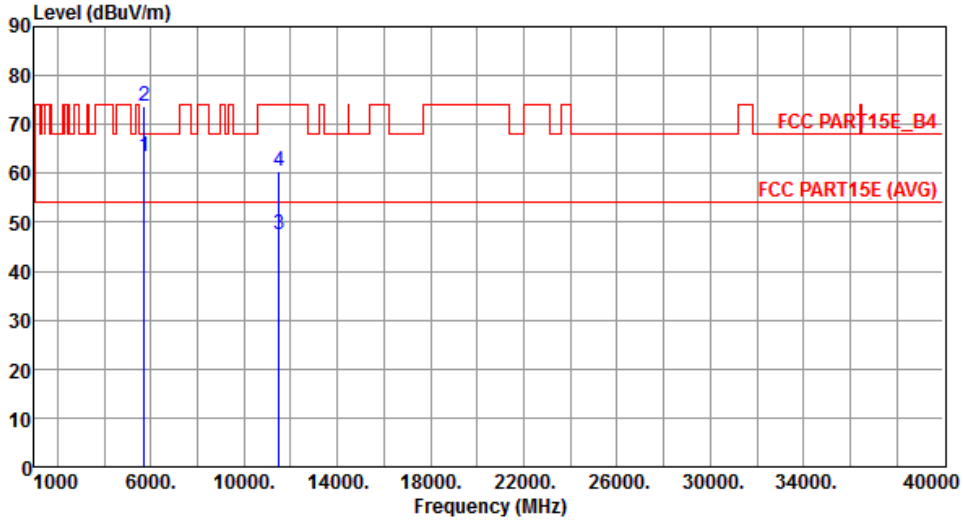
Modulation	VHT20	Test Freq. (MHz)	5240
Polarization	Vertical		



	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	48.22	54.00	-5.78	41.71	6.51	Average	---	---
2	5350.00	59.85	74.00	-14.15	53.34	6.51	Peak	---	---
3	10480.00	61.08	68.20	-7.12	43.76	17.32	Peak	---	---
4	15720.00	44.26	54.00	-9.74	26.83	17.43	Average	---	---
5	15720.00	54.63	74.00	-19.37	37.20	17.43	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).

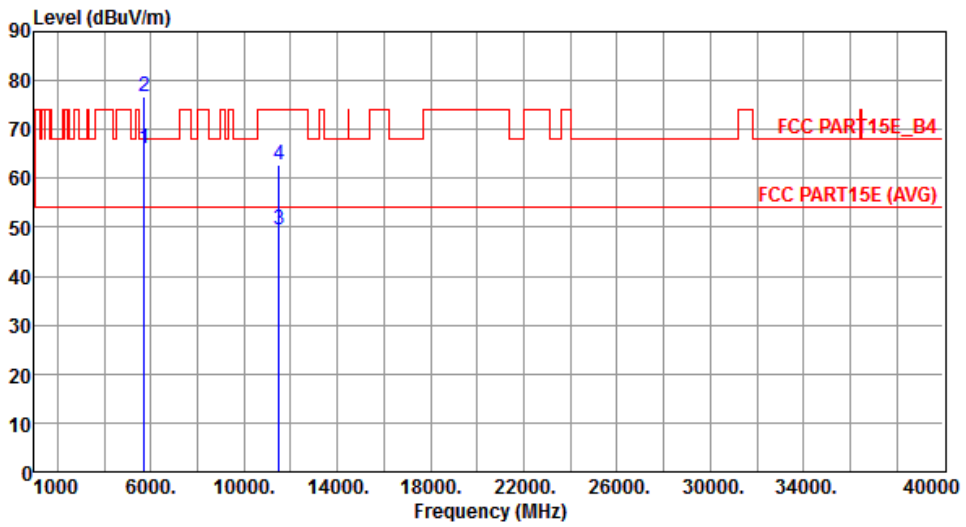
Modulation	VHT20	Test Freq. (MHz)	5745
Polarization	Horizontal		



	Freq. MHz	Emission level dBuV/m	Limit dBuV/m	Margin dB	SA reading dBuV	Factor dB	Remark	ANT High cm	Turn Table deg
1	5715.00	63.52	68.20	-4.68	56.44	7.08	Peak	---	---
2	5725.00	73.73	78.20	-4.47	66.64	7.09	Peak	---	---
3	11490.00	47.42	54.00	-6.58	30.19	17.23	Average	---	---
4	11490.00	60.39	74.00	-13.61	43.16	17.23	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).

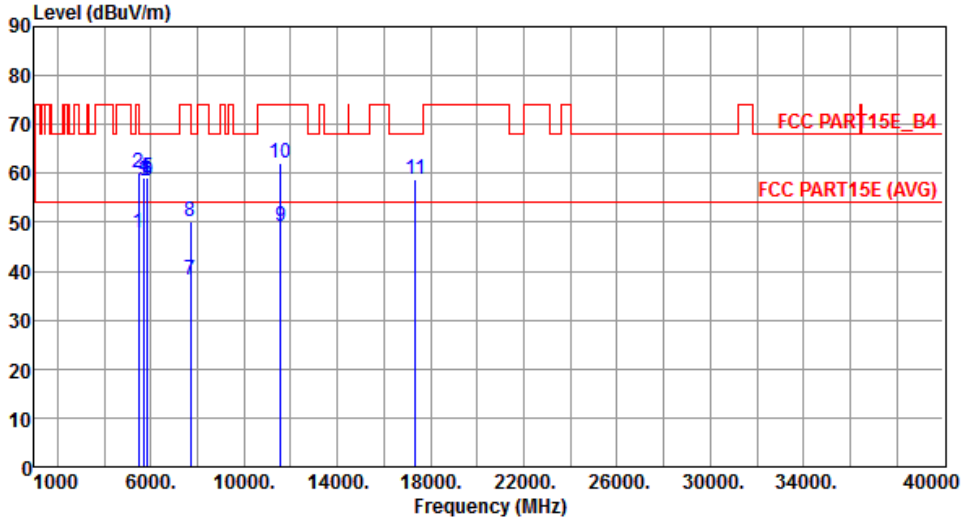
Modulation	VHT20	Test Freq. (MHz)	5745
Polarization	Vertical		



	Freq. MHz	Emission level dBuV/m	Limit dBuV/m	Margin dB	SA reading dBuV	Factor dB	Remark	ANT High cm	Turn Table deg
1	5715.00	66.12	68.20	-2.08	59.04	7.08	Peak	---	---
2	5725.00	76.79	78.20	-1.41	69.70	7.09	Peak	---	---
3	11490.00	49.55	54.00	-4.45	32.32	17.23	Average	---	---
4	11490.00	62.89	74.00	-11.11	45.66	17.23	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).

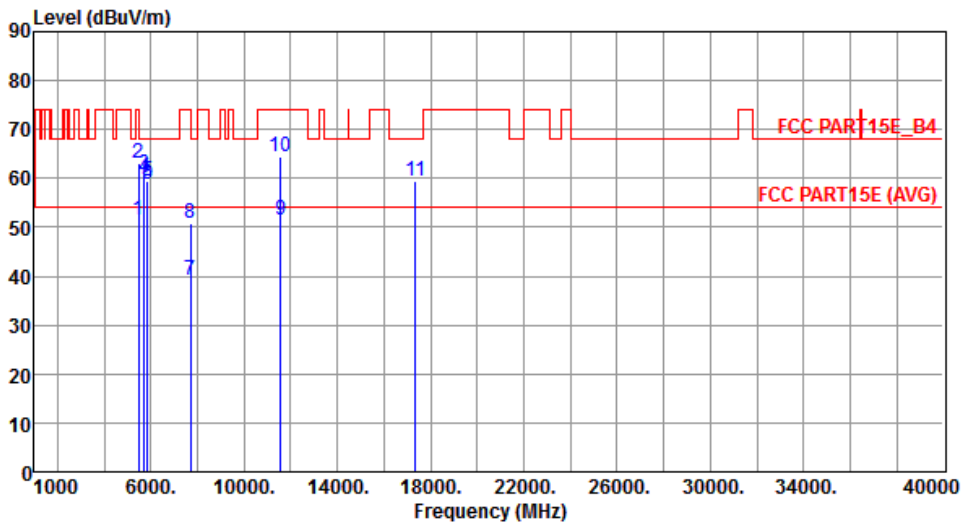
Modulation	VHT20	Test Freq. (MHz)	5785
Polarization	Horizontal		



	Freq. MHz	Emission level dBuV/m	Limit dBuV/m	Margin dB	SA reading dBuV	Factor dB	Remark	ANT High cm	Turn Table deg
1	5460.00	47.68	54.00	-6.32	41.00	6.68	Average	---	---
2	5460.00	60.02	74.00	-13.98	53.34	6.68	Peak	---	---
3	5715.00	58.47	68.20	-9.73	51.39	7.08	Peak	---	---
4	5725.00	59.20	78.20	-19.00	52.11	7.09	Peak	---	---
5	5850.00	58.98	78.20	-19.22	51.74	7.24	Peak	---	---
6	5860.00	58.52	68.20	-9.68	51.28	7.24	Peak	---	---
7	7713.30	38.31	54.00	-15.69	26.86	11.45	Average	---	---
8	7713.30	50.05	74.00	-23.95	38.60	11.45	Peak	---	---
9	11570.00	49.24	54.00	-4.76	32.15	17.09	Average	---	---
10	11570.00	62.15	74.00	-11.85	45.06	17.09	Peak	---	---
11	17355.00	58.92	68.20	-9.28	39.34	19.58	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).

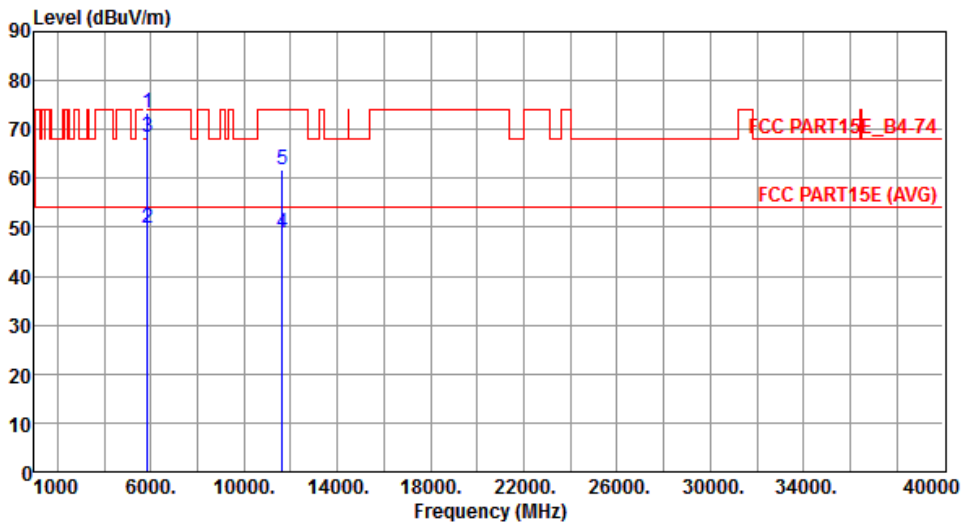
Modulation	VHT20	Test Freq. (MHz)	5785
Polarization	Vertical		



	Freq. MHz	Emission level dBuV/m	Limit dBuV/m	Margin dB	SA reading dBuV	Factor dB	Remark	ANT High cm	Turn Table deg
1	5460.00	51.42	54.00	-2.58	44.74	6.68	Average	---	---
2	5460.00	63.05	74.00	-10.95	56.37	6.68	Peak	---	---
3	5715.00	60.78	68.20	-7.42	53.70	7.08	Peak	---	---
4	5725.00	60.24	78.20	-17.96	53.15	7.09	Peak	---	---
5	5850.00	59.36	78.20	-18.84	52.12	7.24	Peak	---	---
6	5860.00	58.82	68.20	-9.38	51.58	7.24	Peak	---	---
7	7713.30	39.24	54.00	-14.76	27.79	11.45	Average	---	---
8	7713.30	50.75	74.00	-23.25	39.30	11.45	Peak	---	---
9	11570.00	51.34	54.00	-2.66	34.25	17.09	Average	---	---
10	11570.00	64.27	74.00	-9.73	47.18	17.09	Peak	---	---
11	17355.00	59.36	68.20	-8.84	39.78	19.58	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).

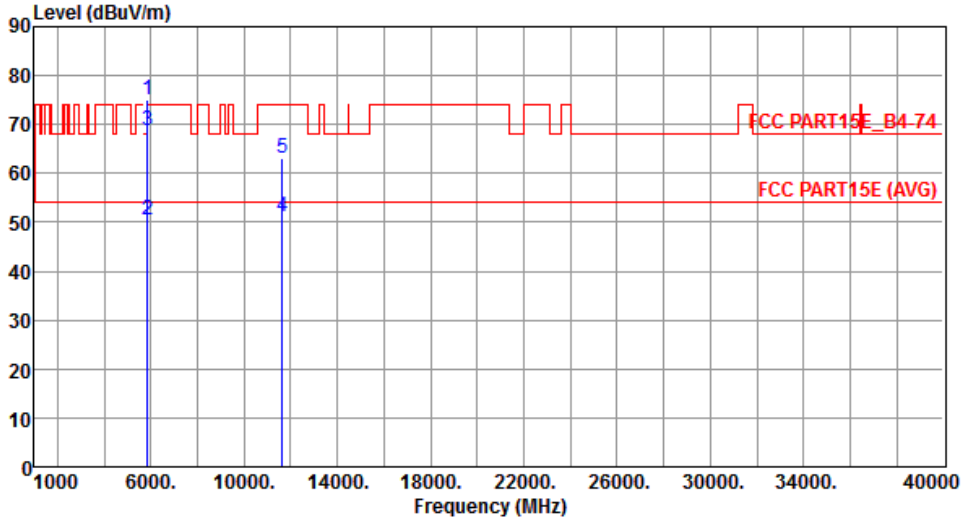
Modulation	VHT20	Test Freq. (MHz)	5825
Polarization	Horizontal		



	Freq. MHz	Emission level dBuV/m	Limit dBuV/m	Margin dB	SA reading dBuV	Factor dB	Remark	ANT High cm	Turn Table deg
1	5850.00	73.24	78.20	-4.96	66.00	7.24	Peak	---	---
2	5860.00	49.76	54.00	-4.24	42.52	7.24	Average	---	---
3	5860.00	68.28	74.00	-5.72	61.04	7.24	Peak	---	---
4	11650.00	48.87	54.00	-5.13	31.93	16.94	Average	---	---
5	11650.00	61.93	74.00	-12.07	44.99	16.94	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).

Modulation	VHT20	Test Freq. (MHz)	5825
Polarization	Vertical		

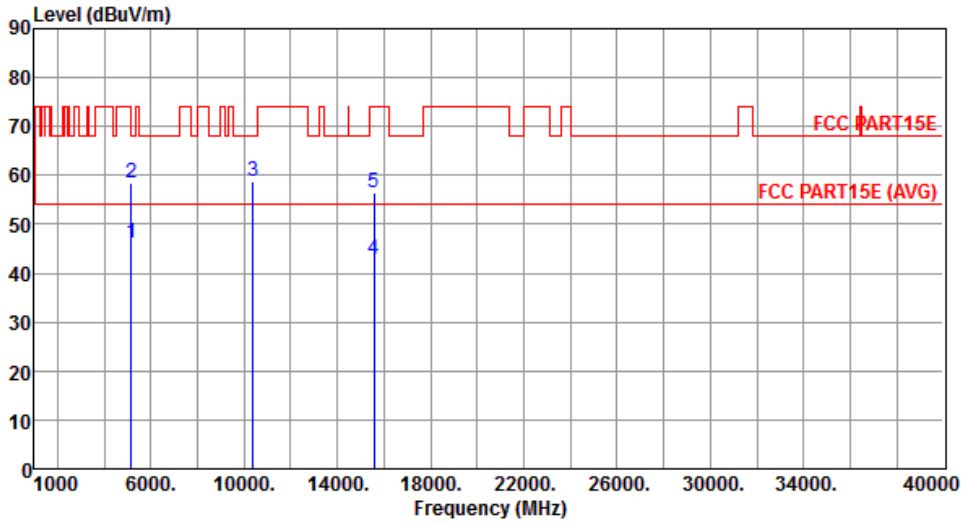


	Freq. MHz	Emission level dBuV/m	Limit dBuV/m	Margin dB	SA reading dBuV	Factor dB	Remark	ANT High cm	Turn Table deg
1	5850.00	75.11	78.20	-3.09	67.87	7.24	Peak	---	---
2	5860.00	50.56	54.00	-3.44	43.32	7.24	Average	---	---
3	5860.00	68.62	74.00	-5.38	61.38	7.24	Peak	---	---
4	11650.00	51.06	54.00	-2.94	34.12	16.94	Average	---	---
5	11650.00	62.98	74.00	-11.02	46.04	16.94	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).

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

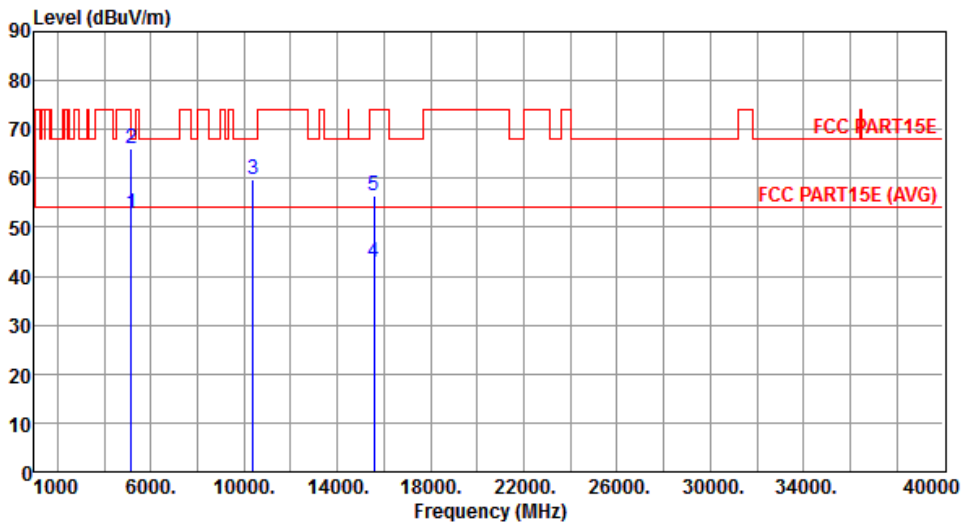
Modulation	VHT40	**Test Freq. (MHz)**	5190
Polarization	Horizontal		



	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	46.30	54.00	-7.70	40.12	6.18	Average	---	---
2	5150.00	58.43	74.00	-15.57	52.25	6.18	Peak	---	---
3	10380.00	58.75	68.20	-9.45	41.73	17.02	Peak	---	---
4	15570.00	42.87	54.00	-11.13	25.07	17.80	Average	---	---
5	15570.00	56.48	74.00	-17.52	38.68	17.80	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).

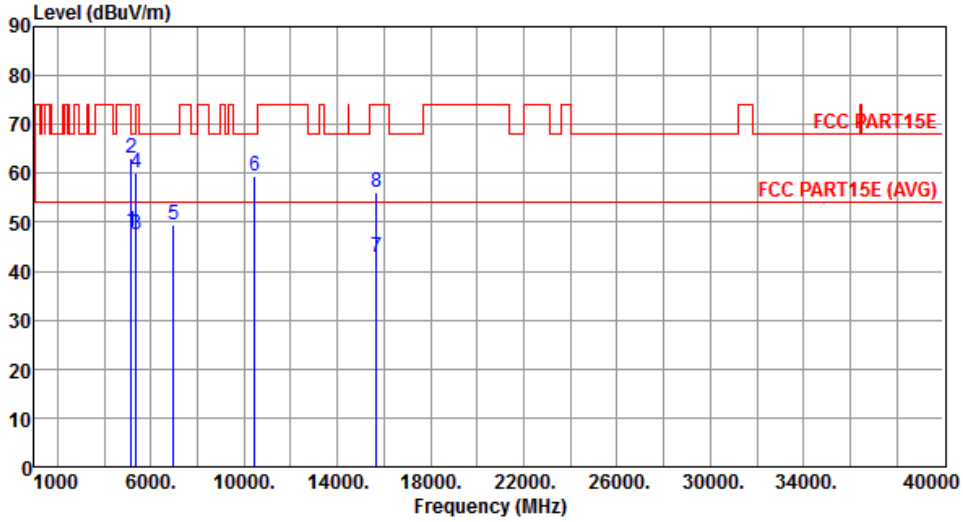
Modulation	VHT40	Test Freq. (MHz)	5190
Polarization	Vertical		



	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	52.66	54.00	-1.34	46.48	6.18	Average	---	---
2	5150.00	66.00	74.00	-8.00	59.82	6.18	Peak	---	---
3	10380.00	59.89	68.20	-8.31	42.87	17.02	Peak	---	---
4	15570.00	42.96	54.00	-11.04	25.16	17.80	Average	---	---
5	15570.00	56.33	74.00	-17.67	38.53	17.80	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).

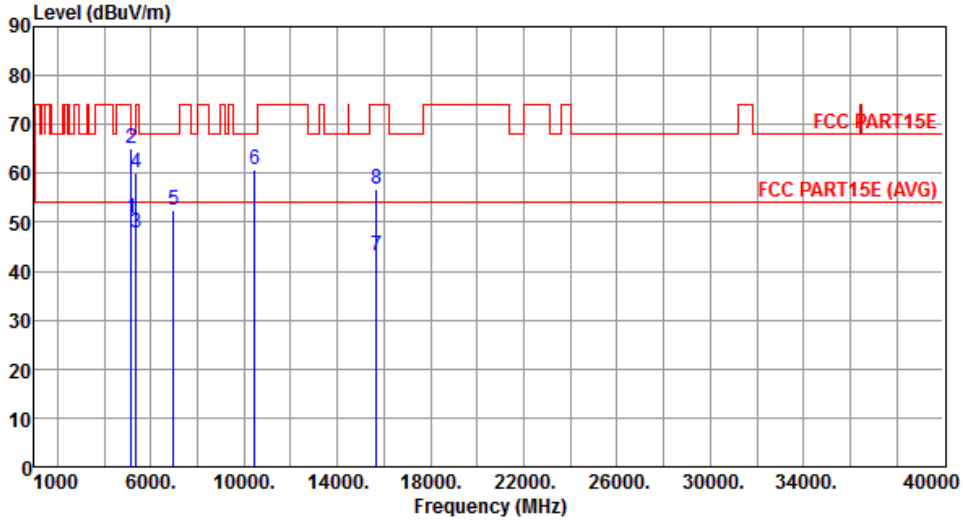
Modulation	VHT40	Test Freq. (MHz)	5230
Polarization	Horizontal		



	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	48.25	54.00	-5.75	42.07	6.18	Average	---	---
2	5150.00	63.15	74.00	-10.85	56.97	6.18	Peak	---	---
3	5350.00	47.43	54.00	-6.57	40.92	6.51	Average	---	---
4	5350.00	60.00	74.00	-14.00	53.49	6.51	Peak	---	---
5	6973.30	49.53	68.20	-18.67	38.75	10.78	Peak	---	---
6	10460.00	59.53	68.20	-8.67	42.27	17.26	Peak	---	---
7	15690.00	42.76	54.00	-11.24	25.25	17.51	Average	---	---
8	15690.00	56.07	74.00	-17.93	38.56	17.51	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).

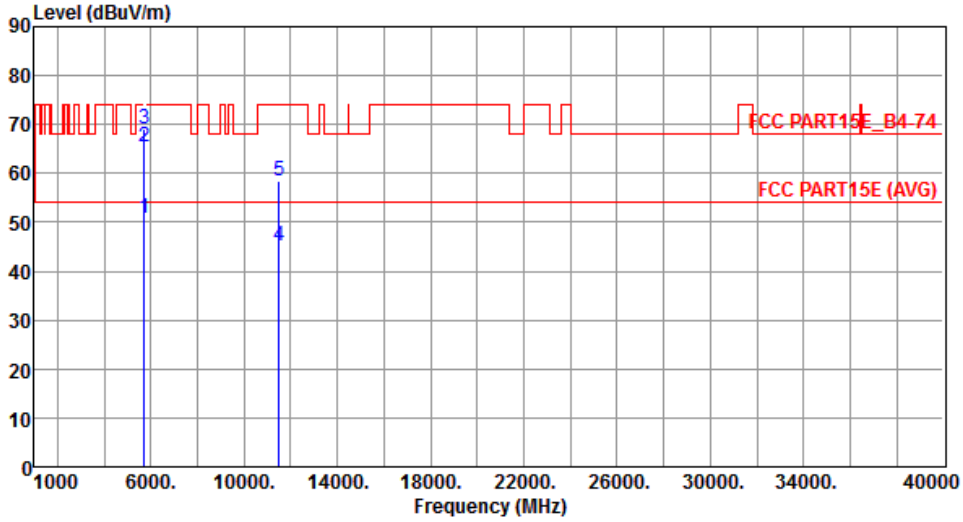
Modulation	VHT40	Test Freq. (MHz)	5230
Polarization	Vertical		



	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	50.65	54.00	-3.35	44.47	6.18	Average	---	---
2	5150.00	65.06	74.00	-8.94	58.88	6.18	Peak	---	---
3	5350.00	47.87	54.00	-6.13	41.36	6.51	Average	---	---
4	5350.00	60.25	74.00	-13.75	53.74	6.51	Peak	---	---
5	6973.30	52.54	68.20	-15.66	41.76	10.78	Peak	---	---
6	10460.00	60.65	68.20	-7.55	43.39	17.26	Peak	---	---
7	15690.00	43.21	54.00	-10.79	25.70	17.51	Average	---	---
8	15690.00	56.70	74.00	-17.30	39.19	17.51	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).

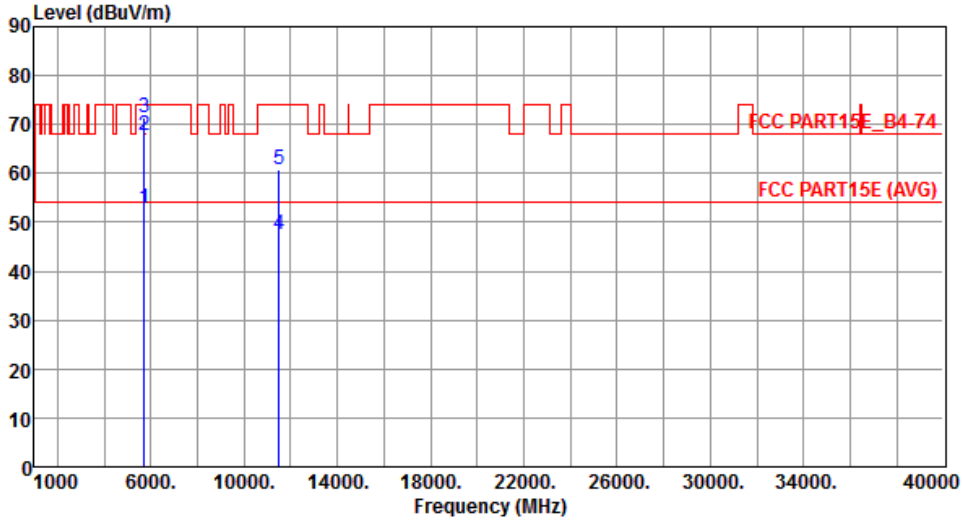
Modulation	VHT40	Test Freq. (MHz)	5755
Polarization	Horizontal		



	Freq. MHz	Emission level dBuV/m	Limit dBuV/m	Margin dB	SA reading dBuV	Factor dB	Remark	ANT High cm	Turn Table deg
1	5715.00	50.75	54.00	-3.25	43.67	7.08	Average	---	---
2	5715.00	65.36	74.00	-8.64	58.28	7.08	Peak	---	---
3	5725.00	69.21	78.20	-8.99	62.12	7.09	Peak	---	---
4	11510.00	45.33	54.00	-8.67	28.13	17.20	Average	---	---
5	11510.00	58.29	74.00	-15.71	41.09	17.20	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).

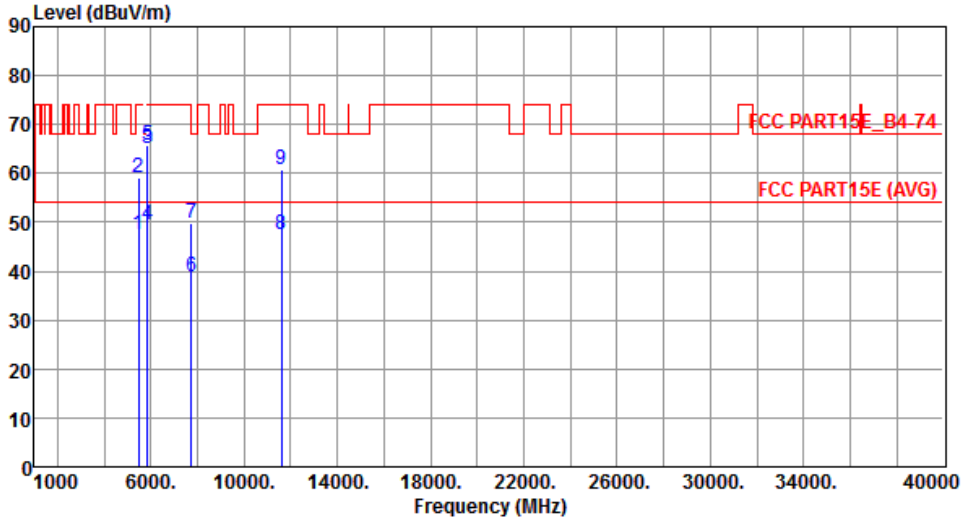
Modulation	VHT40	Test Freq. (MHz)	5755
Polarization	Vertical		



	Freq. MHz	Emission level dBuV/m	Limit dBuV/m	Margin dB	SA reading dBuV	Factor dB	Remark	ANT High cm	Turn Table deg
1	5715.00	52.82	54.00	-1.18	45.74	7.08	Average	---	---
2	5715.00	67.62	74.00	-6.38	60.54	7.08	Peak	---	---
3	5725.00	71.25	78.20	-6.95	64.16	7.09	Peak	---	---
4	11510.00	47.34	54.00	-6.66	30.14	17.20	Average	---	---
5	11510.00	60.76	74.00	-13.24	43.56	17.20	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).

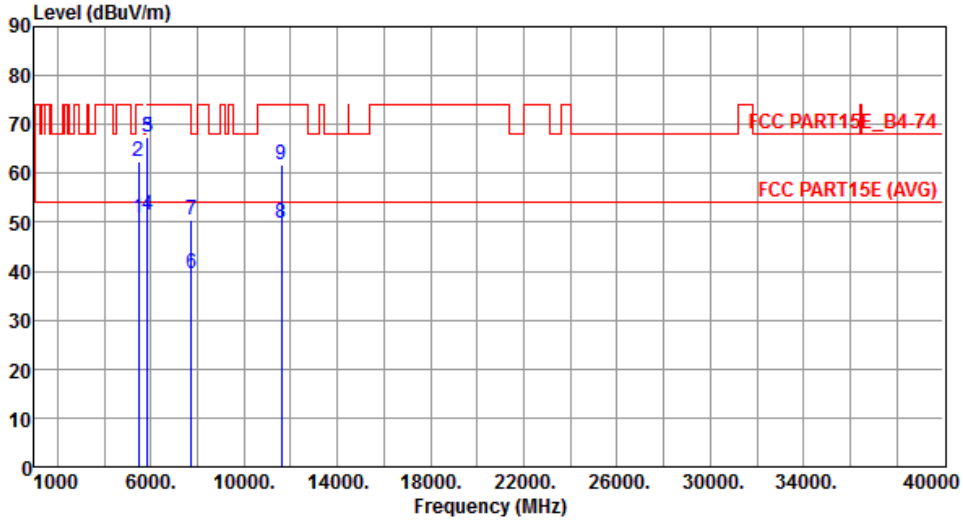
Modulation	VHT40	Test Freq. (MHz)	5795
Polarization	Horizontal		



	Freq. MHz	Emission level dBuV/m	Limit dBuV/m	Margin dB	SA reading dBuV	Factor dB	Remark	ANT High cm	Turn Table deg
1	5460.00	47.62	54.00	-6.38	40.94	6.68	Average	---	---
2	5460.00	59.18	74.00	-14.82	52.50	6.68	Peak	---	---
3	5850.00	65.24	78.20	-12.96	58.00	7.24	Peak	---	---
4	5860.00	49.37	54.00	-4.63	42.13	7.24	Average	---	---
5	5860.00	65.65	74.00	-8.35	58.41	7.24	Peak	---	---
6	7726.70	38.74	54.00	-15.26	27.22	11.52	Average	---	---
7	7726.70	49.95	74.00	-24.05	38.43	11.52	Peak	---	---
8	11590.00	47.55	54.00	-6.45	30.50	17.05	Average	---	---
9	11590.00	60.68	74.00	-13.32	43.63	17.05	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).

Modulation	VHT40	Test Freq. (MHz)	5795
Polarization	Vertical		

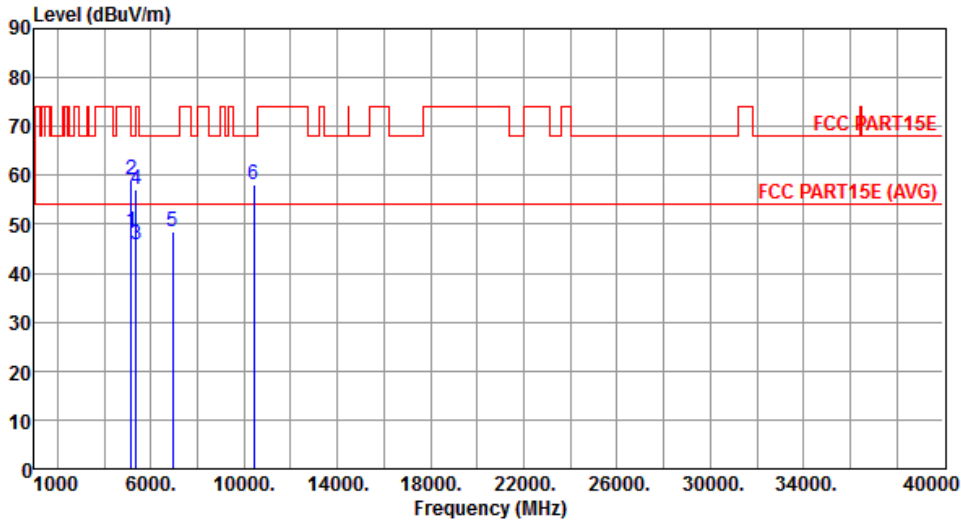


	Freq. MHz	Emission level dBuV/m	Limit dBuV/m	Margin dB	SA reading dBuV	Factor dB	Remark	ANT High cm	Turn Table deg
1	5460.00	50.78	54.00	-3.22	44.10	6.68	Average	---	---
2	5460.00	62.35	74.00	-11.65	55.67	6.68	Peak	---	---
3	5850.00	67.32	78.20	-10.88	60.08	7.24	Peak	---	---
4	5860.00	51.64	54.00	-2.36	44.40	7.24	Average	---	---
5	5860.00	67.52	74.00	-6.48	60.28	7.24	Peak	---	---
6	7726.70	39.42	54.00	-14.58	27.90	11.52	Average	---	---
7	7726.70	50.59	74.00	-23.41	39.07	11.52	Peak	---	---
8	11590.00	49.89	54.00	-4.11	32.84	17.05	Average	---	---
9	11590.00	61.63	74.00	-12.37	44.58	17.05	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).

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

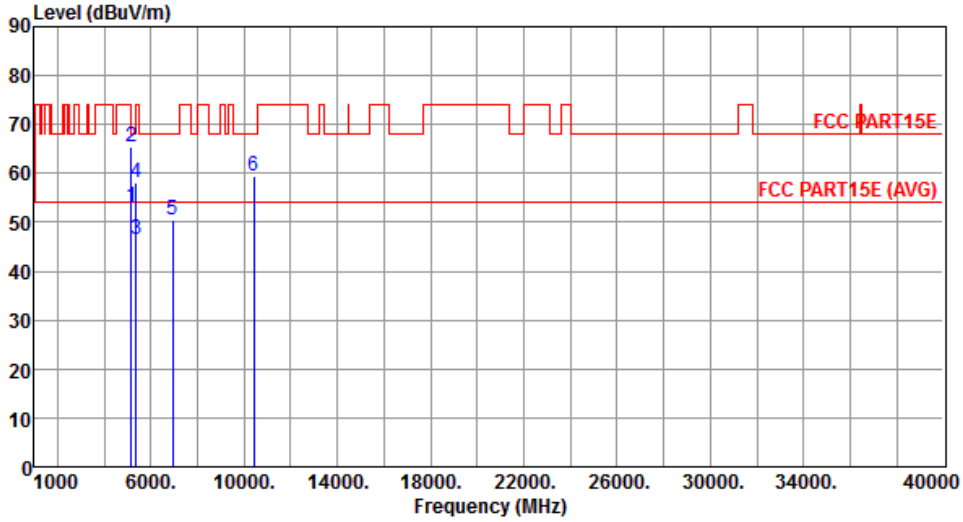
Modulation	VHT80	**Test Freq. (MHz)**	5210
Polarization	Horizontal		



	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	48.57	54.00	-5.43	42.39	6.18	Average	---	---
2	5150.00	59.19	74.00	-14.81	53.01	6.18	Peak	---	---
3	5350.00	45.82	54.00	-8.18	39.31	6.51	Average	---	---
4	5350.00	57.11	74.00	-16.89	50.60	6.51	Peak	---	---
5	6946.70	48.35	68.20	-19.85	37.73	10.62	Peak	---	---
6	10420.00	58.11	68.20	-10.09	40.98	17.13	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).

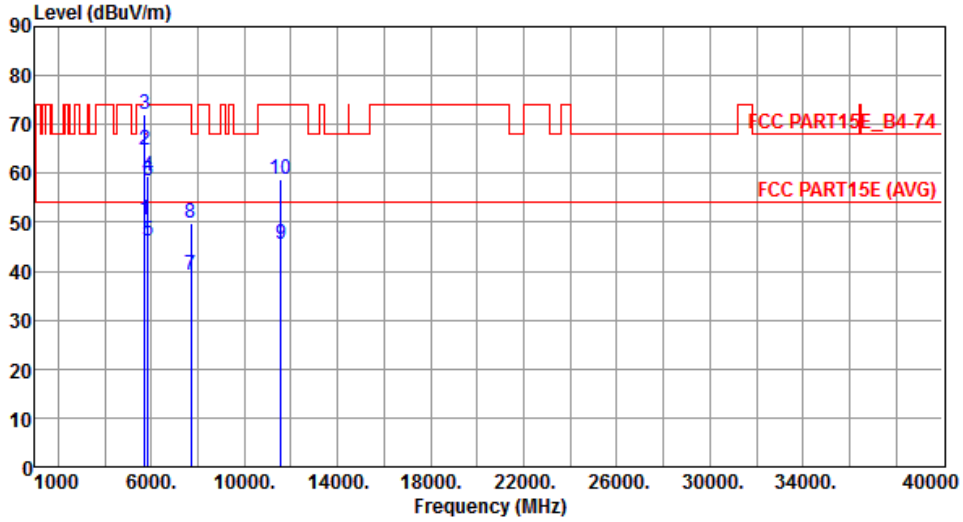
Modulation	VHT80	Test Freq. (MHz)	5210
Polarization	Vertical		



	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	52.99	54.00	-1.01	46.81	6.18	Average	---	---
2	5150.00	65.36	74.00	-8.64	59.18	6.18	Peak	---	---
3	5350.00	46.54	54.00	-7.46	40.03	6.51	Average	---	---
4	5350.00	58.11	74.00	-15.89	51.60	6.51	Peak	---	---
5	6946.70	50.33	68.20	-17.87	39.71	10.62	Peak	---	---
6	10420.00	59.31	68.20	-8.89	42.18	17.13	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).

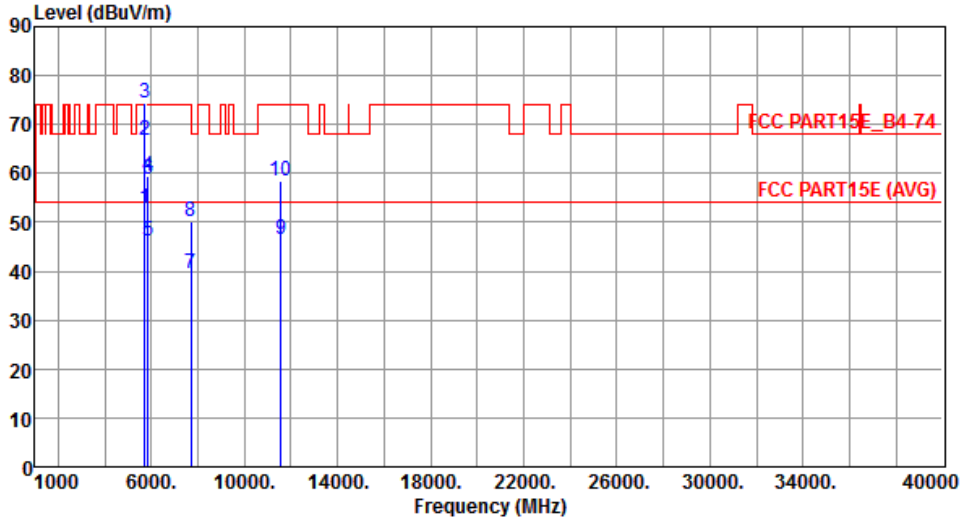
Modulation	VHT80	Test Freq. (MHz)	5775
Polarization	Horizontal		



	Freq. MHz	Emission level dBuV/m	Limit dBuV/m	Margin dB	SA reading dBuV	Factor dB	Remark	ANT High cm	Turn Table deg
1	5715.00	50.45	54.00	-3.55	43.37	7.08	Average	---	---
2	5715.00	64.62	74.00	-9.38	57.54	7.08	Peak	---	---
3	5725.00	72.13	78.20	-6.07	65.04	7.09	Peak	---	---
4	5850.00	59.33	78.20	-18.87	52.09	7.24	Peak	---	---
5	5860.00	46.12	54.00	-7.88	38.88	7.24	Average	---	---
6	5860.00	58.47	74.00	-15.53	51.23	7.24	Peak	---	---
7	7700.00	39.11	54.00	-14.89	27.73	11.38	Average	---	---
8	7700.00	49.84	74.00	-24.16	38.46	11.38	Peak	---	---
9	11550.00	45.55	54.00	-8.45	28.42	17.13	Average	---	---
10	11550.00	58.68	74.00	-15.32	41.55	17.13	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).

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	5715.00	52.91	54.00	-1.09	45.83	7.08	Average	---	---
2	5715.00	66.78	74.00	-7.22	59.70	7.08	Peak	---	---
3	5725.00	74.41	78.20	-3.79	67.32	7.09	Peak	---	---
4	5850.00	59.61	78.20	-18.59	52.37	7.24	Peak	---	---
5	5860.00	46.23	54.00	-7.77	38.99	7.24	Average	---	---
6	5860.00	58.88	74.00	-15.12	51.64	7.24	Peak	---	---
7	7700.00	39.59	54.00	-14.41	28.21	11.38	Average	---	---
8	7700.00	50.27	74.00	-23.73	38.89	11.38	Peak	---	---
9	11550.00	46.46	54.00	-7.54	29.33	17.13	Average	---	---
10	11550.00	58.36	74.00	-15.64	41.23	17.13	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).

3.6 Frequency Stability

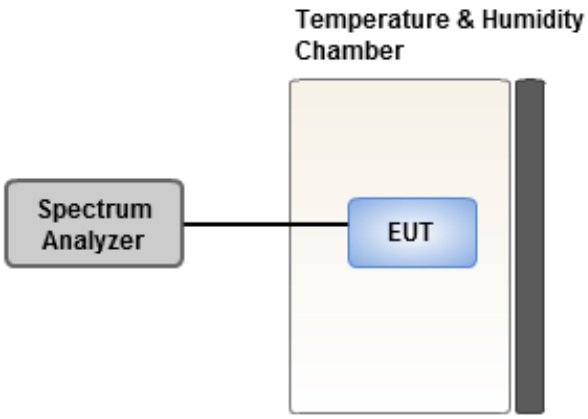
3.6.1 Limit of Frequency Stability

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	0.66	-0.10	0.07
T20°CVmin	4.31	4.16	5.03	4.39
T50°CVnom	4.04	4.31	3.84	3.99
T40°CVnom	4.42	4.29	3.59	4.14
T30°CVnom	3.33	3.43	4.21	3.60
T20°CVnom	1.83	2.18	2.84	2.44
T10°CVnom	2.88	1.91	2.64	2.62
T0°CVnom	-0.03	-0.17	-0.24	0.13
T-10°CVnom	-0.25	-0.53	0.55	-0.39
T-20°CVnom	-0.81	-0.10	0.00	-0.57
T-30°CVnom	-0.44	-0.73	-0.84	-0.64
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	0.11	0.42	0.24	0.69
T20°CVmin	4.22	4.26	4.67	4.60
T50°CVnom	4.03	4.10	3.90	4.33
T40°CVnom	4.05	4.01	4.26	3.89
T30°CVnom	3.26	3.13	3.58	3.00
T20°CVnom	1.60	1.94	1.95	2.40
T10°CVnom	2.91	3.39	3.35	3.60
T0°CVnom	-0.10	0.38	0.13	0.36
T-10°CVnom	0.62	0.71	0.56	0.86
T-20°CVnom	0.16	-0.78	0.29	-0.01
T-30°CVnom	-0.18	-0.14	-0.12	0.37
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, 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 Hsiang. 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 Hsiang, Tao Yuan Hsien 333, Taiwan, R.O.C.	No. 14-1, Lane 19, Wen San 3rd St., Kwei Shan Hsiang, Tao Yuan Hsien 333, Taiwan, R.O.C.

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

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