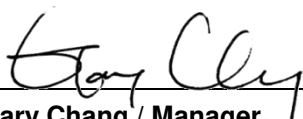


FCC C2PC Test Report

FCC ID : KA2AP1665A1
Equipment : Wireless AC1200 Dual Band Access Point
Model No. : DAP-1665
Brand Name : D-Link
Applicant : D-Link Corporation
Address : 17595 Mt. Herrmann, Fountain Valley, CA
92708 U.S.A
Standard : 47 CFR FCC Part 15.407
Received Date : Mar. 16, 2016
Tested Date : Mar. 21 ~ Apr. 06, 2016

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



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Release Record

Report No.	Version	Description	Issued Date
FR380702-05AN	Rev. 01	Initial issue	Apr. 18, 2016

Summary of Test Results

FCC Rules	Test Items	Measured	Result
15.207	Conducted Emissions	[dBuV]: 4.478MHz 43.71 (Margin -12.29dB) - QP	Pass
15.407(b) 15.209	Radiated Emissions	[dBuV/m at 3m]: 5715.00MHz 53.00 (Margin -1.00dB) - 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: 23.02 5725-5850MHz: 20.99	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

This report is issued as a FCC Class II Permissive Change for complying with New U-NII rule requirement. In this test report, all test items has been re-tested and its data was recorded in the following sections.

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	Gain (dBi)
1	C056-510908-A	dipole	R-SMA	2
2	C056-510946-A	dipole	R-SMA	5

1.1.3 Power Supply Type of Equipment under Test (EUT)

Power Supply Type	12Vdc from adapter
--------------------------	--------------------

1.1.4 Accessories

Accessories		
No.	Equipment	Description
1	AC Adapter	Brand: D-Link Model: AMS135-1201000FU I/P: 100-240Vac, 50/60Hz, 0.5A/27VA O/P: 12Vdc, 1.0A Power line: 1.2m non-shielded w/o core
2	AC Adapter	Brand: D-Link Model: MU12AR120100-A1 I/P: 100-240Vac, 50/60Hz, 0.3A O/P: 12Vdc, 1A Power line: 1.2m non-shielded w/o 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	RTL819x, version 2.3		
Duty Cycle and Duty Factor	Mode	Duty cycle (%)	Duty factor (dB)
	11a	91.55%	0.38
	VHT20	92.76%	0.33
	VHT40	88.44%	0.53
	VHT80	66.96%	1.74

1.1.7 Power Setting

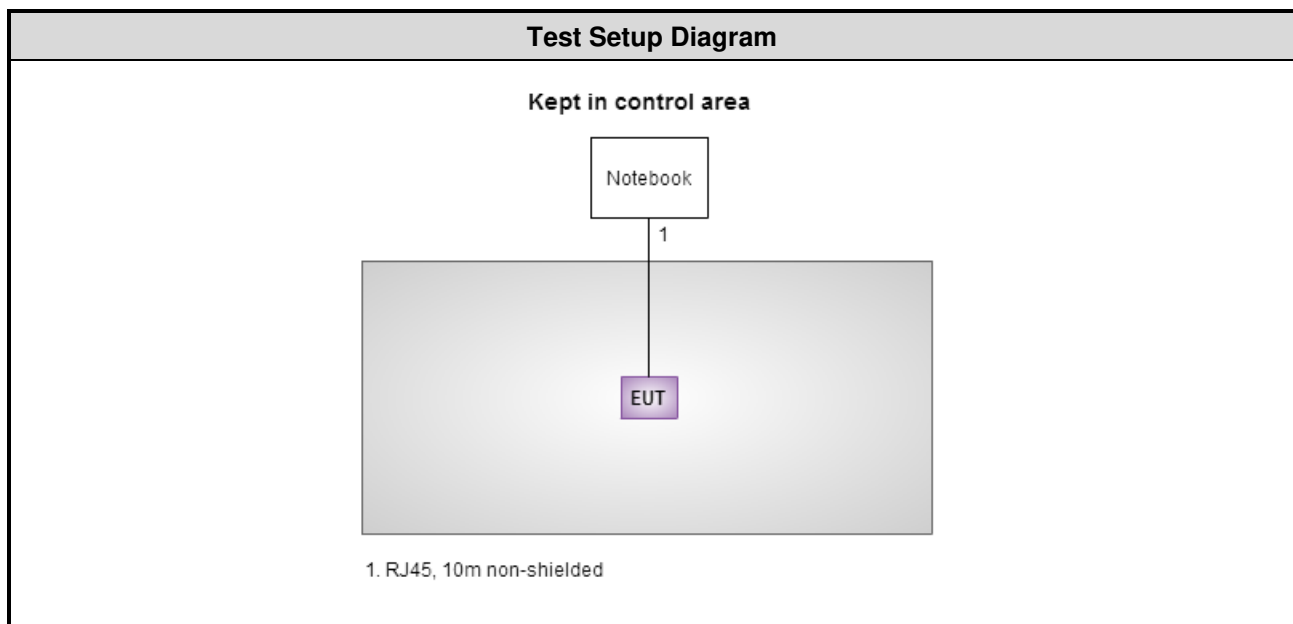
For Frequency band 5150-5250 MHz		
Modulation Mode	Test Frequency (MHz)	Power Set
11a	5180	63/57
11a	5200	63/57
11a	5240	63/56
HT20	5180	63/57
HT20	5200	63/56
HT20	5240	63/56
HT40	5190	58/52
HT40	5230	63/57
VHT20	5180	63/57
VHT20	5200	63/56
VHT20	5240	63/56
VHT40	5190	58/52
VHT40	5230	63/57
VHT80	5210	49/43

For Frequency band 5725~5850 MHz		
Modulation Mode	Test Frequency (MHz)	Power Set
11a	5745	59/56
11a	5785	59/56
11a	5825	59/56
HT20	5745	55/52
HT20	5785	59/56
HT20	5825	59/56
HT40	5755	50/48
HT40	5795	59/57
VHT20	5745	55/52
VHT20	5785	59/56
VHT20	5825	59/56
VHT40	5755	50/48
VHT40	5795	59/57
VHT80	5775	45/43

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.

1.3 Test Setup Chart



1.4 The Equipment List

Test Item	Conducted Emission				
Test Site	Conduction room 1 / (CO01-WS)				
Instrument	Manufacturer	Model No.	Serial No.	Calibration Date	Calibration Until
EMC Receiver	R&S	ESCS 30	100169	Oct. 21, 2015	Oct. 20, 2016
LISN	SCHWARZBECK	Schwarzbeck 8127	8127-667	Nov. 13, 2015	Nov. 12, 2016
RF Cable-CON	EMC	EMCCFD300-BM-B M-6000	50821	Dec. 21, 2015	Dec. 20, 2016
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 2 / (03CH02-WS)				
Instrument	Manufacturer	Model No.	Serial No.	Calibration Date	Calibration Until
Spectrum Analyzer	R&S	FSV40	101499	Dec. 17, 2015	Dec. 16, 2016
Receiver	R&S	ESR3	101657	Jan. 12, 2016	Jan. 11, 2017
Bilog Antenna	SCHWARZBECK	VULB9168	VULB9168-523	Nov. 09, 2015	Nov. 08, 2016
Horn Antenna 1G-18G	SCHWARZBECK	BBHA 9120 D	BBHA 9120 D 1095	Oct. 07, 2015	Oct. 06, 2016
Horn Antenna 18G-40G	SCHWARZBECK	BBHA 9170	BBHA 9170517	Nov. 04, 2015	Nov. 03, 2016
Loop Antenna	R&S	HFH2-Z2	11900	Nov. 16, 2015	Nov. 15, 2016
Loop Antenna Cable	KOAX KABEL	101354-BW	101354-BW	Dec. 10, 2015	Dec. 09, 2016
Preamplifier	Burgeon	BPA-530	100218	Nov. 03, 2015	Nov. 02, 2016
Preamplifier	Agilent	83017A	MY39501309	Sep. 22, 2015	Sep. 21, 2016
Preamplifier	EMC	EMC184045B	980192	Sep. 01, 2015	Aug. 31, 2016
RF Cable	HUBER+SUHNER	SUCOFLEX104	MY16140/4	Dec. 10, 2015	Dec. 09, 2016
RF Cable	HUBER+SUHNER	SUCOFLEX104	MY16018/4	Dec. 10, 2015	Dec. 09, 2016
RF Cable	HUBER+SUHNER	SUCOFLEX104	MY16015/4	Dec. 10, 2015	Dec. 09, 2016
LF cable 3M	Woken	CFD400NL-LW	CFD400NL-003	Dec. 10, 2015	Dec. 09, 2016
LF cable 10M	EMCC	CFD400-E	CFD400-001	Dec. 10, 2015	Dec. 09, 2016
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)				
Instrument	Manufacturer	Model No.	Serial No.	Calibration Date	Calibration Until
Spectrum Analyzer	R&S	FSV40	101063	Feb. 17, 2016	Feb. 16, 2017
TEMP&HUMIDITY CHAMBER	GIANT FORCE	GCT-225-40-SP-SD	MAF1212-002	Nov. 27, 2015	Nov. 26, 2016
Power Meter	Anritsu	ML2495A	1241002	Sep. 21, 2015	Sep. 20, 2016
Power Sensor	Anritsu	MA2411B	1207366	Sep. 21, 2015	Sep. 20, 2016
AC POWER SOURCE	APC	AFC-500W	F312060012	Oct. 26, 2015	Oct. 25, 2016
Measurement Software	Sporton	Sporton_1	1.3.30	NA	NA
Note: Calibration Interval of instruments listed above is one year.					

1.5 Testing Applied Standards

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

47 CFR FCC Part 15.407

ANSI C63.10-2013

FCC KDB 789033 D02 General UNII Test Procedures New Rules v01r02

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 ≤ 1 GHz	± 3.87 dB
Radiated emission > 1 GHz	± 5.60 dB
Time	$\pm 0.1\%$
Temperature	± 0.6 °C

2 Test Configuration

2.1 Testing Condition

Test Item	Test Site	Ambient Condition	Tested By
AC Conduction	CO01-WS	20°C / 62%	Alex Tsai
Radiated Emissions	03CH02-WS	21-22°C / 63-64%	Aska Huang Felix Sung
RF Conducted	TH01-WS	24°C / 61%	Anderson Hung

➤ FCC site registration No.: 181692

➤ IC site registration No.: 10807A-2

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	VHT20	5240	MCS 0	---
Radiated Emissions ≤ 1 GHz	VHT20	5240	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 > 1 GHz 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: Two adapters had been covered during the pretest and found that **Adapter 2** was the worst case and was selected for final test. (Adapter 1: AMS135-1201000FU ; Adapter 2: MU12AR120100-A1.)

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	---
Radiated Emissions ≤ 1 GHz	11a	5785	6 Mbps	---
RF Output Power	11a	5745 / 5785 / 5825	6 Mbps	---
	HT20	5745 / 5785 / 5825	MCS 0	
	HT40	5755 / 5795	MCS 0	
	VHT20	5745 / 5785 / 5825	MCS 0	
	VHT40	5755 / 5795	MCS 0	
	VHT80	5775	MCS 0	
Radiated Emissions > 1 GHz 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: Two adapters had been covered during the pretest and found that **Adapter 2** was the worst case and was selected for final test. (Adapter 1: AMS135-1201000FU ; Adapter 2: MU12AR120100-A1.)

3 Transmitter Test Results

3.1 Conducted Emissions

3.1.1 Limit of Conducted Emissions

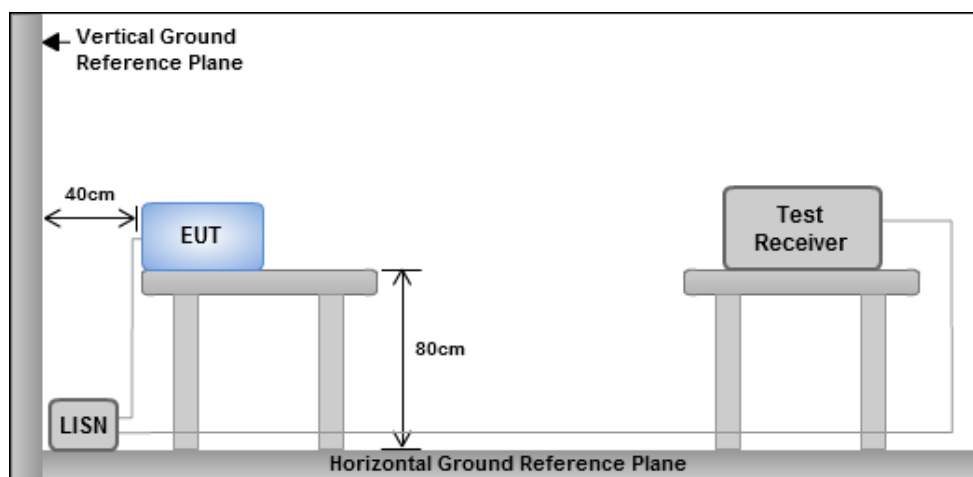
Conducted Emissions Limit		
Frequency Emission (MHz)	Quasi-Peak	Average
0.15-0.5	66 - 56 *	56 - 46 *
0.5-5	56	46
5-30	60	50

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

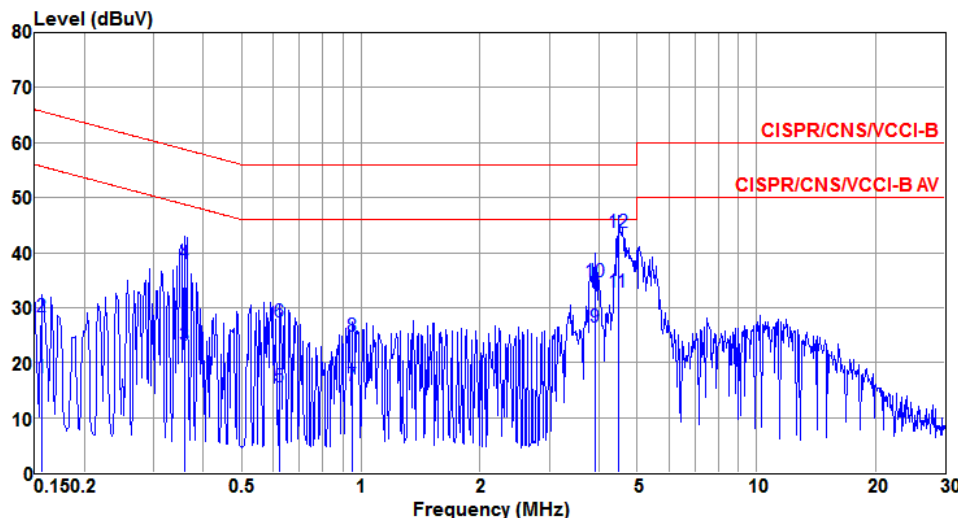


- Note: 1. Support units were connected to second LISN.
2. Both of LISNs (AMN) are 80 cm from EUT and at least 80 cm from other units and other metal planes

3.1.4 Test Result of Conducted Emissions

Modulation	VHT20	Test Freq. (MHz)	5240
Power Phase	Line		

Level (dBuV)



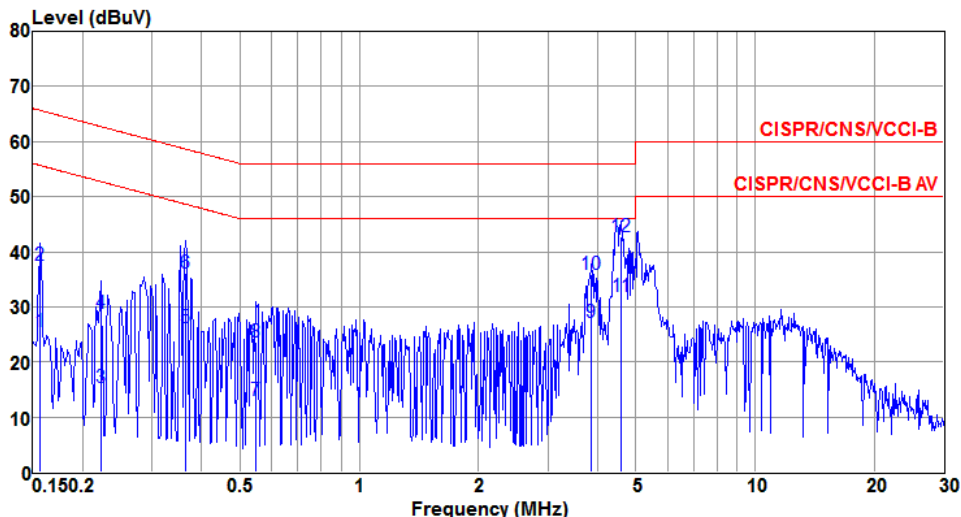
Frequency (MHz)

	Freq MHz	Level dBuV	Limit Line dBuV	Over Limit dB	Read Level dBuV	LISN factor dB	cable loss dB	Remark
1	0.156	17.31	55.65	-38.34	17.18	0.11	0.02	Average
2	0.156	28.35	65.65	-37.30	28.22	0.11	0.02	QP
3	0.358	23.14	48.78	-25.64	22.98	0.13	0.03	Average
4	0.358	38.06	58.78	-20.72	37.90	0.13	0.03	QP
5	0.624	15.59	46.00	-30.41	15.42	0.13	0.04	Average
6	0.624	27.43	56.00	-28.57	27.26	0.13	0.04	QP
7	0.953	15.85	46.00	-30.15	15.66	0.13	0.06	Average
8	0.953	24.72	56.00	-31.28	24.53	0.13	0.06	QP
9	3.922	26.36	46.00	-19.64	26.05	0.19	0.12	Average
10	3.922	34.75	56.00	-21.25	34.44	0.19	0.12	QP
11	4.478	32.88	46.00	-13.12	32.56	0.20	0.12	Average
12@	4.478	43.71	56.00	-12.29	43.39	0.20	0.12	QP

Note 1: Level (dBuV) = Read Level (dBuV) + LISN Factor (dB) + Cable Loss (dB).

2: Over Limit (dB) = Level (dBuV) – Limit Line (dBuV).

Modulation	VHT20	Test Freq. (MHz)	5240
Power Phase	Neutral		

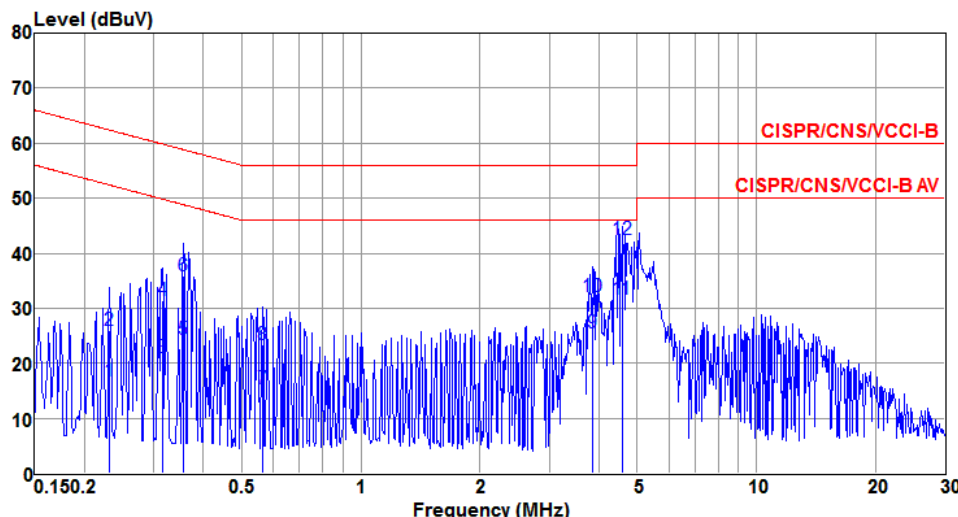


The graph displays the radio frequency interference (RFI) level in dBuV across a frequency range from 0.15 to 30 MHz. Two red lines represent the CISPR/CNS/VCCI-B and CISPR/CNS/VCCI-B AV limits. The blue line shows the measured RFI level, which is generally below the limits, with some peaks around 0.156 MHz, 0.222 MHz, 0.363 MHz, 0.549 MHz, 3.860 MHz, and 4.598 MHz.

	Freq	Level	Limit	Over	Read	LISN	cable	
	MHz	dBuV	Line	Limit	Level	factor	loss	Remark
			dBuV	dB	dBuV	dB	dB	
1	0.156	25.53	55.65	-30.12	25.38	0.13	0.02	Average
2	0.156	37.48	65.65	-28.17	37.33	0.13	0.02	QP
3	0.222	15.34	52.74	-37.40	15.21	0.11	0.02	Average
4	0.222	28.71	62.74	-34.03	28.58	0.11	0.02	QP
5	0.363	26.30	48.65	-22.35	26.14	0.13	0.03	Average
6	0.363	36.00	58.65	-22.65	35.84	0.13	0.03	QP
7	0.549	13.03	46.00	-32.97	12.85	0.14	0.04	Average
8	0.549	23.51	56.00	-32.49	23.33	0.14	0.04	QP
9	3.860	27.09	46.00	-18.91	26.80	0.17	0.12	Average
10	3.860	35.84	56.00	-20.16	35.55	0.17	0.12	QP
11	4.598	31.82	46.00	-14.18	31.50	0.19	0.13	Average
12@	4.598	42.84	56.00	-13.16	42.52	0.19	0.13	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		

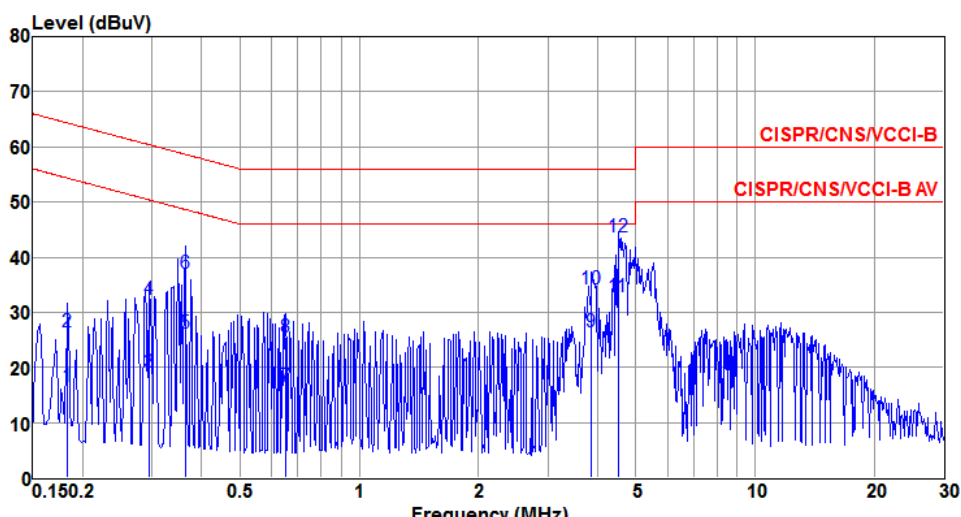


	Freq	Level	Limit	Over	Read	LISN	cable	
	MHz	dBuV	Line	Limit	Level	factor	loss	Remark
			dBuV	dB	dBuV	dB	dB	
1	0.232	16.80	52.39	-35.59	16.67	0.11	0.02	Average
2	0.232	26.06	62.39	-36.33	25.93	0.11	0.02	QP
3	0.315	20.97	49.84	-28.87	20.82	0.12	0.03	Average
4	0.315	31.44	59.84	-28.40	31.29	0.12	0.03	QP
5	0.356	24.34	48.83	-24.49	24.18	0.13	0.03	Average
6	0.356	35.86	58.83	-22.97	35.70	0.13	0.03	QP
7	0.564	15.42	46.00	-30.58	15.25	0.13	0.04	Average
8	0.564	23.32	56.00	-32.68	23.15	0.13	0.04	QP
9	3.860	25.44	46.00	-20.56	25.13	0.19	0.12	Average
10	3.860	32.18	56.00	-23.82	31.87	0.19	0.12	QP
11	4.574	31.66	46.00	-14.34	31.33	0.20	0.13	Average
12@	4.574	42.50	56.00	-13.50	42.17	0.20	0.13	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		



	Freq	Level	Limit	Over	Read	LISN	cable	Remark
	MHz	dBuV	Line dBuV	Limit dB	Level dBuV	factor dB	loss dB	
1	0.183	16.63	54.33	-37.70	16.50	0.11	0.02	Average
2	0.183	26.53	64.33	-37.80	26.40	0.11	0.02	QP
3	0.294	19.23	50.41	-31.18	19.08	0.12	0.03	Average
4	0.294	32.26	60.41	-28.15	32.11	0.12	0.03	QP
5	0.363	26.30	48.65	-22.35	26.14	0.13	0.03	Average
6	0.363	37.02	58.65	-21.63	36.86	0.13	0.03	QP
7	0.651	16.51	46.00	-29.49	16.33	0.13	0.05	Average
8	0.651	25.59	56.00	-30.41	25.41	0.13	0.05	QP
9	3.860	26.42	46.00	-19.58	26.13	0.17	0.12	Average
10	3.860	34.14	56.00	-21.86	33.85	0.17	0.12	QP
11	4.501	32.92	46.00	-13.08	32.62	0.18	0.12	Average
12	4.501	43.62	56.00	-12.38	43.32	0.18	0.12	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.

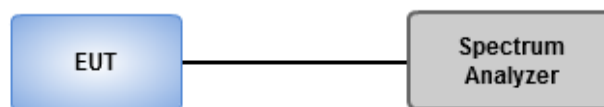
Occupied Bandwidth

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

6dB Bandwidth

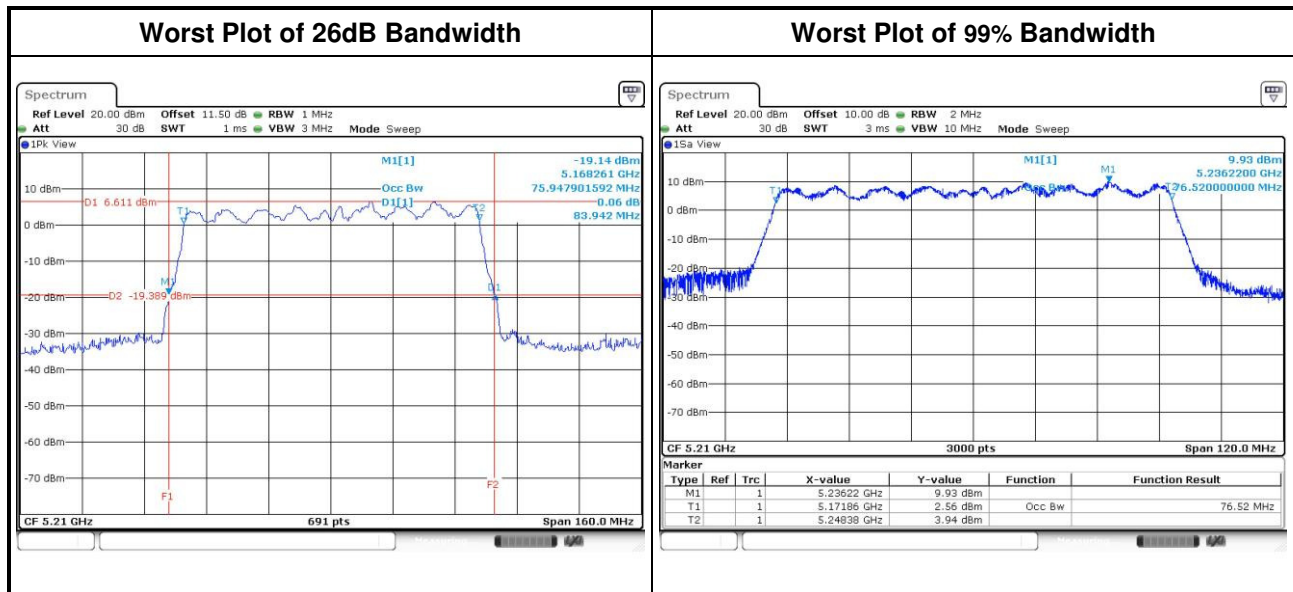
1. Set RBW = 100kHz, VBW = 300kHz
2. Detector = Peak, Trace mode = max hold.
3. Allow the trace to stabilize.
4. Measure the maximum width of the emission that is constrained by the frequencies associated with the two outermost amplitude points (upper and lower frequencies) that are attenuated by 6 dB 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	37.54	38.70	---	---	17.30	17.51	---	---
11a	2	5200	32.75	39.35	---	---	17.29	17.89	---	---
11a	2	5240	38.48	39.57	---	---	17.42	17.61	---	---
VHT20	2	5180	33.48	39.86	---	---	18.08	18.16	---	---
VHT20	2	5200	39.71	40.14	---	---	18.05	18.53	---	---
VHT20	2	5240	32.75	42.03	---	---	18.23	18.38	---	---
VHT40	2	5190	44.52	49.62	---	---	36.90	37.10	---	---
VHT40	2	5230	60.58	66.38	---	---	37.42	37.54	---	---
VHT80	2	5210	83.94	83.71	---	---	76.44	76.52	---	---

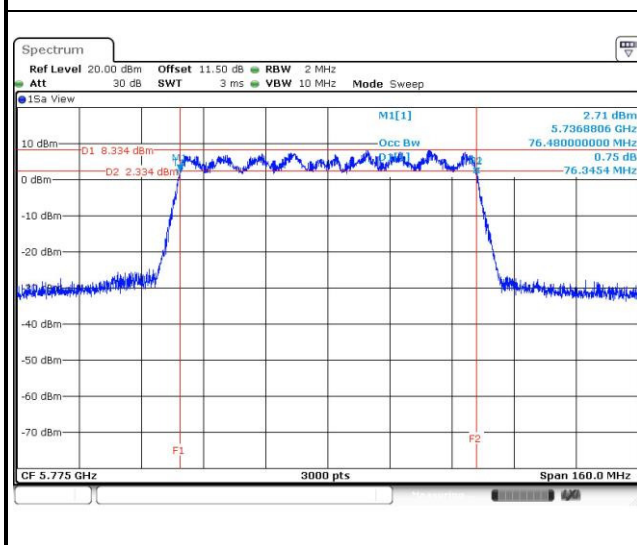


For Frequency band 5725-5850 MHz

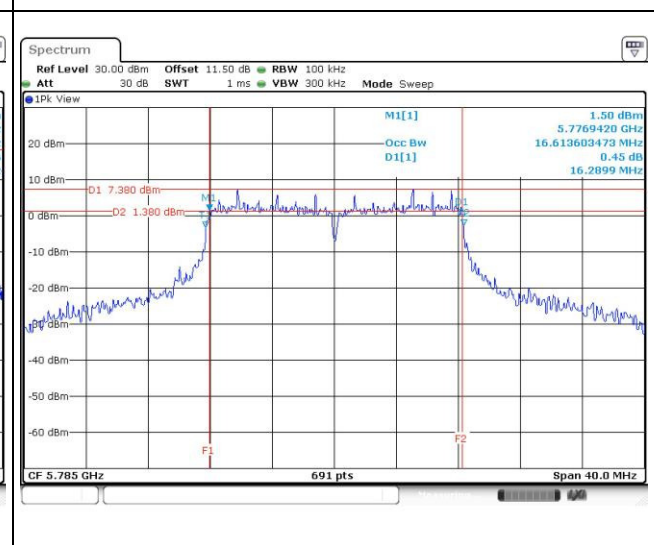
Emission Bandwidth

Mode	N _{TX}	Freq. (MHz)	OBW Bandwidth (MHz)				6dB Bandwidth (MHz)				6dB BW Limit (MHz)
			Chain 0	Chain 1	Chain 2	Chain 3	Chain 0	Chain 1	Chain 2	Chain 3	
11a	2	5745	17.17	17.37	---	---	16.35	16.35	---	---	0.5
11a	2	5785	17.25	17.52	---	---	16.29	16.35	---	---	0.5
11a	2	5825	17.41	17.80	---	---	16.35	16.29	---	---	0.5
VHT20	2	5745	17.95	18.01	---	---	17.10	17.04	---	---	0.5
VHT20	2	5785	18.15	18.32	---	---	16.29	17.33	---	---	0.5
VHT20	2	5825	18.12	18.79	---	---	16.64	17.04	---	---	0.5
VHT40	2	5755	36.93	36.93	---	---	35.83	36.06	---	---	0.5
VHT40	2	5795	37.33	37.89	---	---	35.36	35.83	---	---	0.5
VHT80	2	5775	76.48	76.48	---	---	75.13	75.36	---	---	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
☐	Mobile and portable client devices	Conducted Power: 250 mW

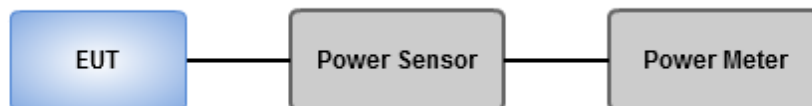
Frequency Band (MHz)	Limit
☐ 5250 ~ 5350	250mW or 11dBm+10 log B
☐ 5470 ~ 5725	250mW or 11dBm+10 log B
☒ 5725 ~ 5850	1 W

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	20.02	19.98	---	---	200.002	23.01	30.00
11a	2	5200	19.92	19.89	---	---	195.674	22.92	30.00
11a	2	5240	19.89	20.03	---	---	198.192	22.97	30.00
HT20	2	5180	19.68	19.71	---	---	186.437	22.71	30.00
HT20	2	5200	19.55	19.53	---	---	179.900	22.55	30.00
HT20	2	5240	19.78	20.04	---	---	195.986	22.92	30.00
HT40	2	5190	17.22	17.54	---	---	109.477	20.39	30.00
HT40	2	5230	19.53	19.63	---	---	181.576	22.59	30.00
VHT20	2	5180	19.81	19.89	---	---	193.218	22.86	30.00
VHT20	2	5200	19.62	19.65	---	---	183.879	22.65	30.00
VHT20	2	5240	19.82	20.19	---	---	200.412	23.02	30.00
VHT40	2	5190	17.42	17.61	---	---	112.884	20.53	30.00
VHT40	2	5230	19.65	19.81	---	---	187.977	22.74	30.00
VHT80	2	5210	15.09	15.19	---	---	65.322	18.15	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	17.88	18.02	---	---	124.763	20.96	30.00
11a	2	5785	17.92	18.04	---	---	125.624	20.99	30.00
11a	2	5825	17.88	18.01	---	---	124.617	20.96	30.00
HT20	2	5745	16.42	16.08	---	---	84.404	19.26	30.00
HT20	2	5785	17.73	17.66	---	---	117.637	20.71	30.00
HT20	2	5825	17.82	17.83	---	---	121.208	20.84	30.00
HT40	2	5755	14.56	15.02	---	---	60.345	17.81	30.00
HT40	2	5795	17.68	17.84	---	---	119.427	20.77	30.00
VHT20	2	5745	16.58	16.21	---	---	87.282	19.41	30.00
VHT20	2	5785	17.88	17.80	---	---	121.632	20.85	30.00
VHT20	2	5825	17.95	17.93	---	---	124.460	20.95	30.00
VHT40	2	5755	14.70	15.11	---	---	61.946	17.92	30.00
VHT40	2	5795	17.82	17.93	---	---	122.621	20.89	30.00
VHT80	2	5775	13.41	13.51	---	---	44.367	16.47	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

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 $\geq 10 * (\text{number of points in sweep}) * (\text{total on/off period of the transmitted signal})$.
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

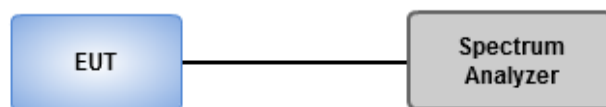
☐ Method SA-1

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 $\geq 10 * (\text{number of points in sweep}) * (\text{total on/off period of the transmitted signal})$.
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

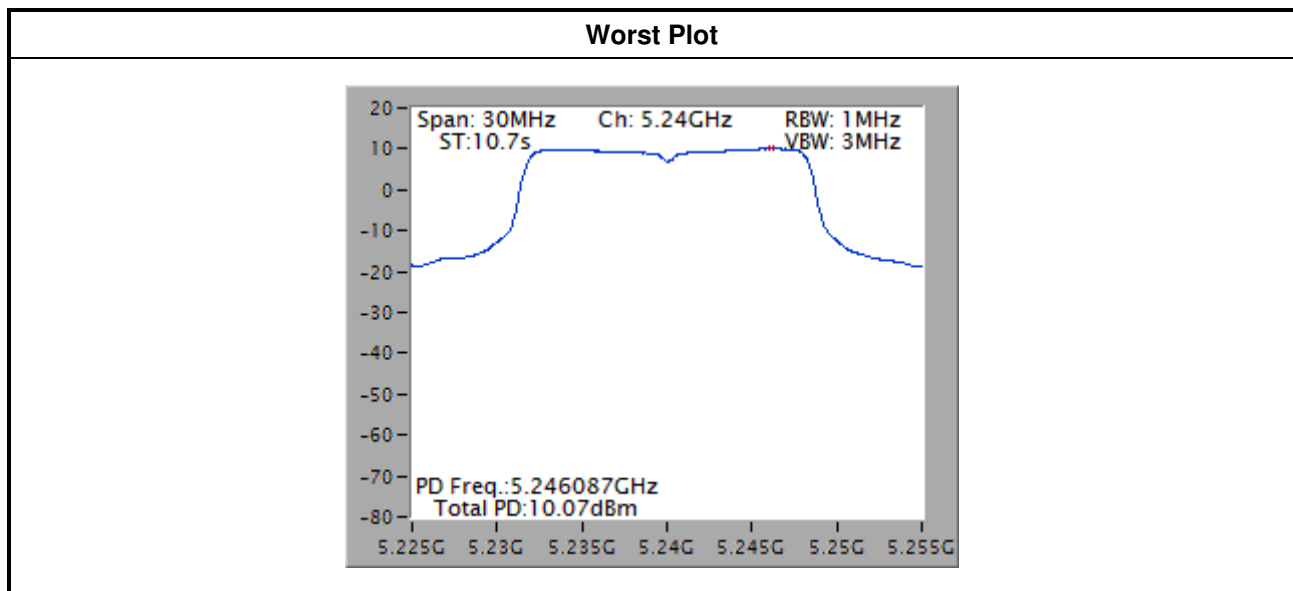


3.4.4 Test Result of Peak Power Spectral Density

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	9.43	0.38	9.81	14.99
11a	2	5200	9.62	0.38	10.00	14.99
11a	2	5240	10.07	0.38	10.45	14.99
VHT20	2	5180	9.37	0.33	9.70	14.99
VHT20	2	5200	9.28	0.33	9.61	14.99
VHT20	2	5240	9.92	0.33	10.25	14.99
VHT40	2	5190	3.91	0.53	4.44	14.99
VHT40	2	5230	6.63	0.53	7.16	14.99
VHT80	2	5210	-1.36	1.74	0.38	14.99

Note:

1. D.F is duty factor.
2. Test results are bin-by-bin summing measured value of each TX port.
3. Directional gain = $5 + 10 \cdot \log(2/1) = 8.01 \text{ dBi} > 6 \text{ dBi}$.
Limit shall be reduced to $17 \text{ dBm} - (8.01 \text{ dBi} - 6 \text{ dBi}) = 14.99 \text{ dBm}$.

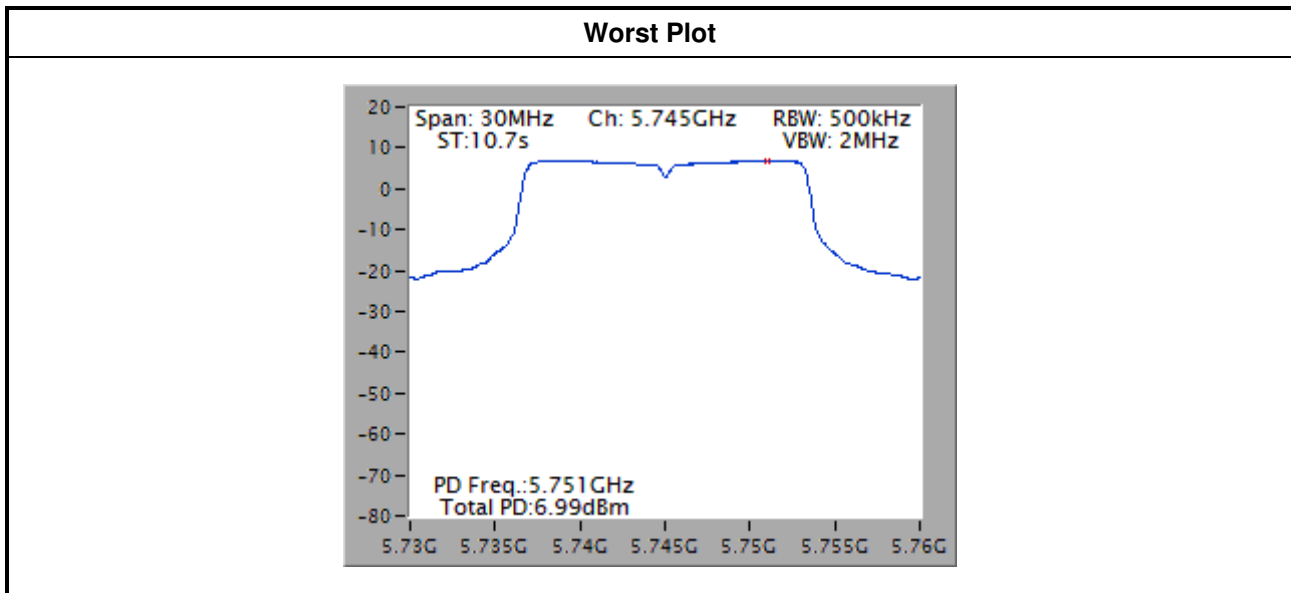


Note: The plot without duty factor

For Frequency band 5725-5850 MHz						
Condition			Peak Power Spectral Density (dBm/500kHz)			
Modulation Mode	N _{TX}	Freq. (MHz)	PPSD w/o D.F (dBm/500kHz)	Duty Factor (dB)	PPSD with D.F (dBm/500kHz)	PPSD Limit (dBm/500kHz)
11a	2	5745	6.99	0.38	7.37	27.99
11a	2	5785	6.77	0.38	7.15	27.99
11a	2	5825	6.52	0.38	6.90	27.99
VHT20	2	5745	4.83	0.33	5.16	27.99
VHT20	2	5785	6.32	0.33	6.65	27.99
VHT20	2	5825	6.15	0.33	6.48	27.99
VHT40	2	5755	-0.43	0.53	0.10	27.99
VHT40	2	5795	3.00	0.53	3.53	27.99
VHT80	2	5775	-4.41	1.74	-2.67	27.99

Note:

1. D.F is duty factor.
2. Test results are bin-by-bin summing measured value of each TX port.
3. Directional gain = $5 + 10 \cdot \log(2/1) = 8.01 \text{ dBi} > 6 \text{ dBi}$.
Limit shall be reduced to $30 \text{ dBm} - (8.01 \text{ dBi} - 6 \text{ dBi}) = 27.99 \text{ dBm}$.



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	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

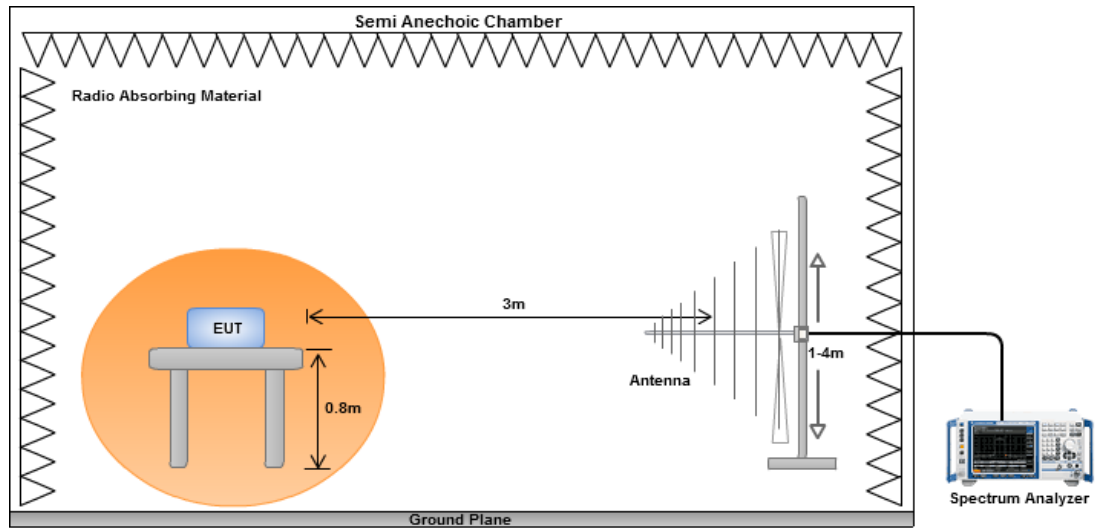
1. Measurement is made at a semi-anechoic chamber that incorporates a turntable allowing a EUT rotation of 360°. A continuously-rotating, remotely-controlled turntable is installed at the test site to support the EUT and facilitate determination of the direction of maximum radiation for each EUT emission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

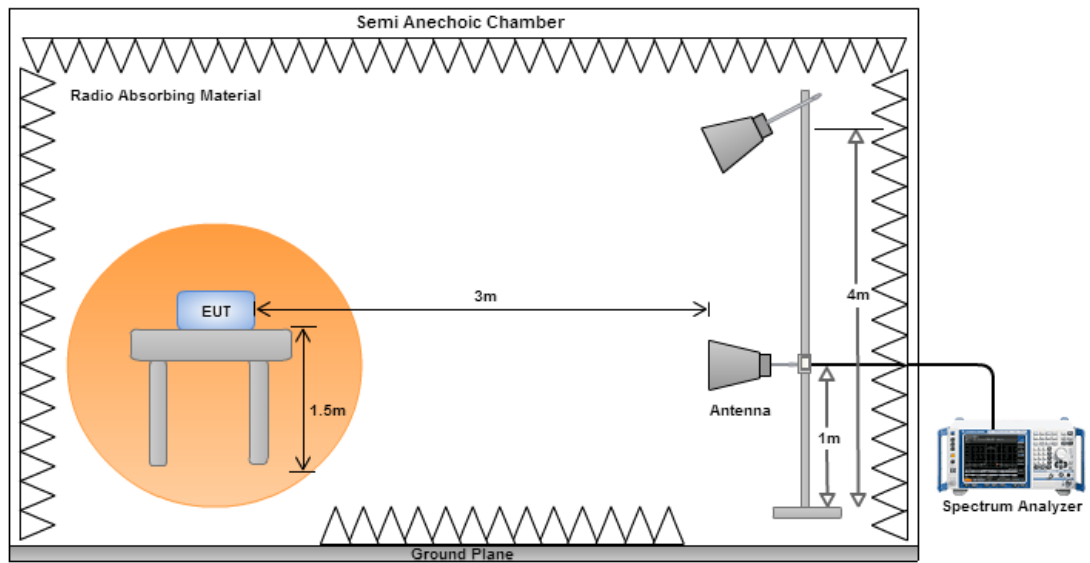
1. 120kHz measurement bandwidth of test receiver and Quasi-peak detector is for radiated emission below 1GHz.
2. RBW=1MHz, VBW=3MHz and Peak detector is for peak measured value of radiated emission above 1GHz.
3. RBW=1MHz, VBW=1/T and Peak detector is for average measured value of radiated emission above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

3.5.3 Test Setup

Radiated Emissions below 1 GHz



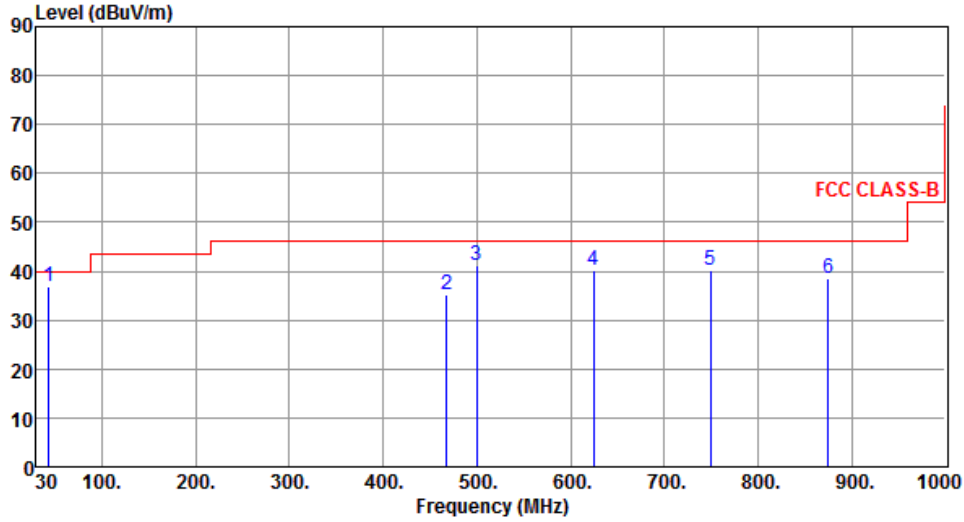
Radiated Emissions above 1 GHz



3.5.4 Transmitter Radiated Unwanted Emissions (Below 1GHz)

Modulation	VHT20	Test Freq. (MHz)	5240
Polarization	Horizontal		
Level (dBuV/m)			

Modulation	VHT20	Test Freq. (MHz)	5240
Polarization	Vertical		

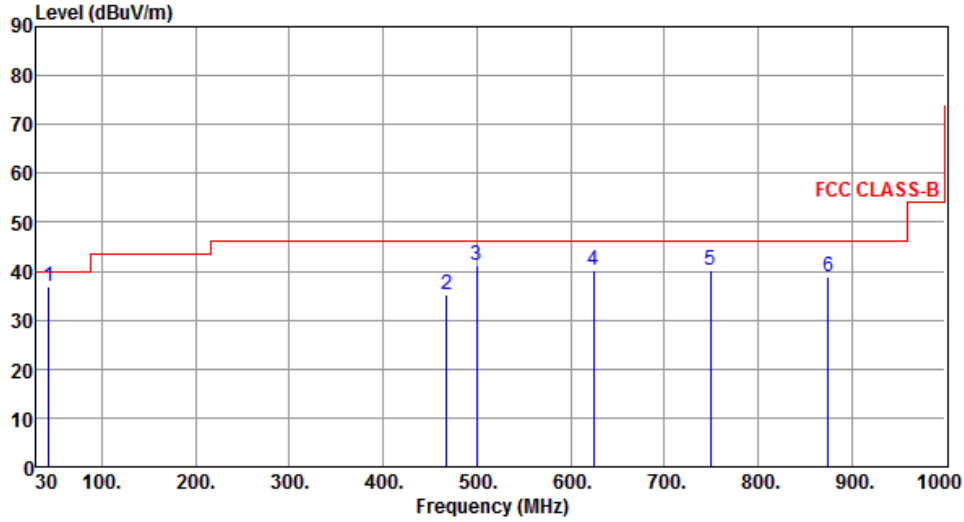


	Freq. MHz	Emission level dBuV/m	Limit dBuV/m	Margin dB	SA reading dBuV	Factor dB	Remark	ANT High cm	Turn Table deg
1	43.56	36.73	40.00	-3.27	48.41	-11.68	QP	100	25
2	467.52	35.24	46.00	-10.76	42.42	-7.18	Peak	---	---
3	499.63	41.16	46.00	-4.84	47.68	-6.52	Peak	---	---
4	624.58	40.07	46.00	-5.93	44.36	-4.29	Peak	---	---
5	749.56	40.03	46.00	-5.97	42.41	-2.38	Peak	---	---
6	874.83	38.52	46.00	-7.48	39.44	-0.92	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		
Level (dBuV/m)			

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

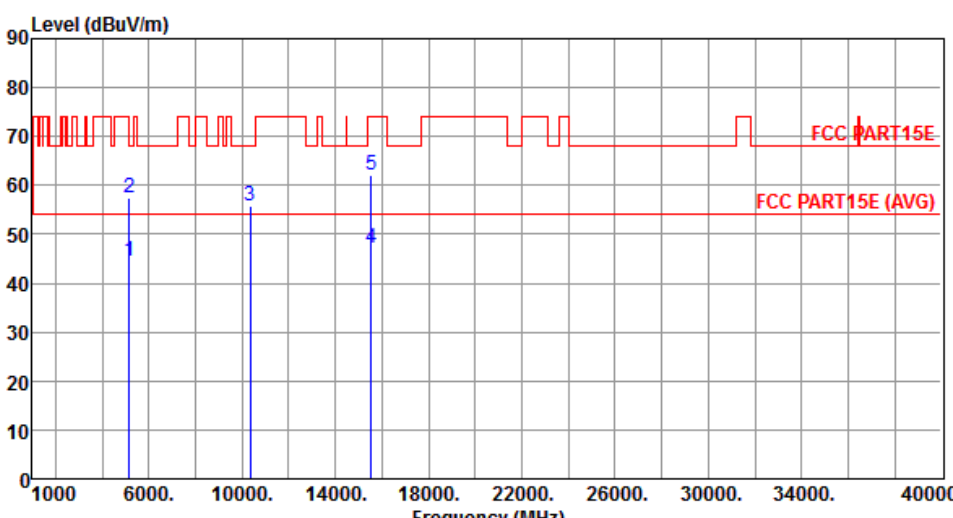


	Freq. MHz	Emission level dBUV/m	Limit dBUV/m	Margin dB	SA reading dBUV	Factor dB	Remark	ANT High cm	Turn Table deg
1	43.66	36.74	40.00	-3.26	48.41	-11.67	QP	100	32
2	467.52	35.26	46.00	-10.74	42.44	-7.18	Peak	---	---
3	499.63	41.11	46.00	-4.89	47.63	-6.52	Peak	---	---
4	624.58	40.25	46.00	-5.75	44.54	-4.29	Peak	---	---
5	749.44	40.10	46.00	-5.90	42.48	-2.38	Peak	---	---
6	874.62	38.69	46.00	-7.31	39.61	-0.92	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

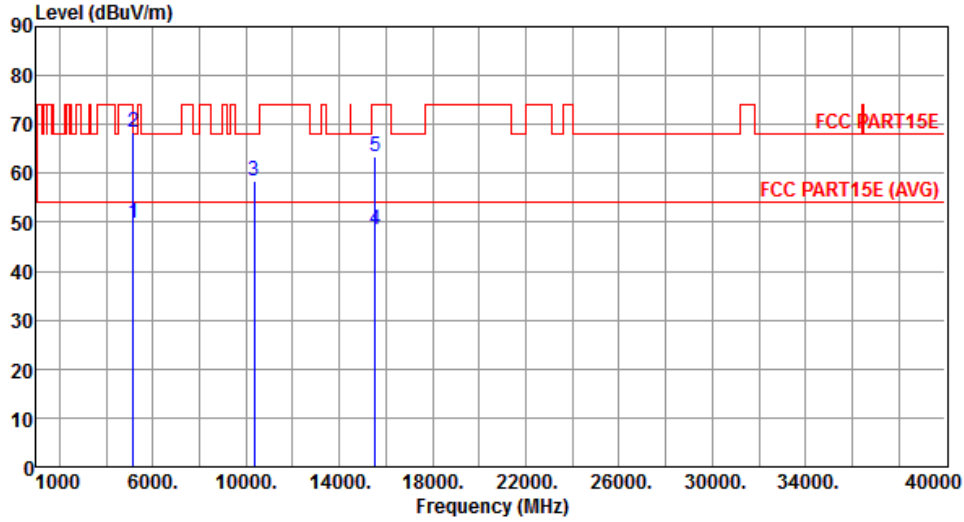
Modulation	11a	Test Freq. (MHz)	5180
Polarization	Horizontal		



	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	44.51	54.00	-9.49	39.61	4.90	Average	274	272
2	5150.00	57.51	74.00	-16.49	52.61	4.90	Peak	274	272
3	10360.00	55.68	68.20	-12.52	42.01	13.67	Peak	100	35
4	15540.00	47.32	54.00	-6.68	31.60	15.72	Average	100	192
5	15540.00	61.96	74.00	-12.04	46.24	15.72	Peak	100	192

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).

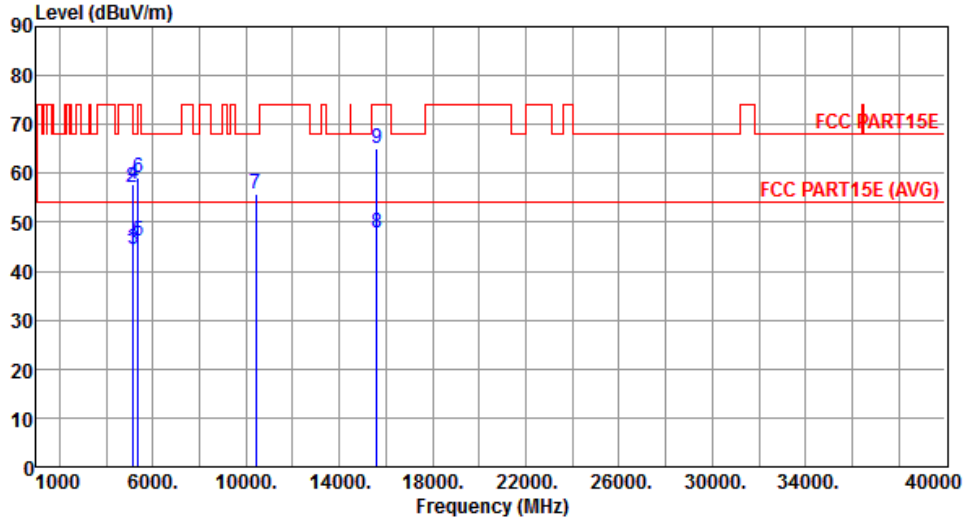
Modulation	11a	Test Freq. (MHz)	5180
Polarization	Vertical		



	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	49.78	54.00	-4.22	44.88	4.90	Average	190	148
2	5150.00	68.47	74.00	-5.53	63.57	4.90	Peak	190	148
3	10360.00	58.51	68.20	-9.69	44.84	13.67	Peak	100	288
4	15540.00	48.49	54.00	-5.51	32.77	15.72	Average	100	275
5	15540.00	63.47	74.00	-10.53	47.75	15.72	Peak	100	275

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).

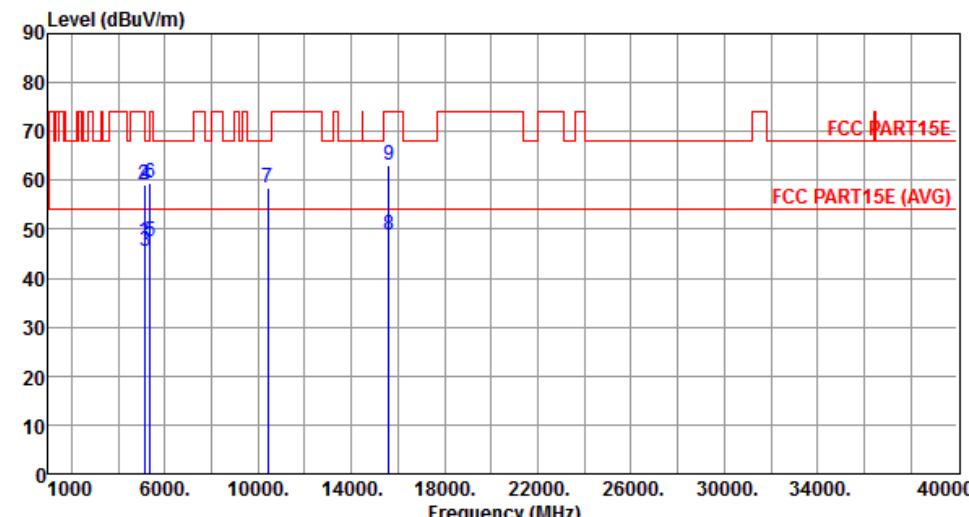
Modulation	11a	Test Freq. (MHz)	5200
Polarization	Horizontal		



	Freq. MHz	Emission level dBuV/m	Limit dBuV/m	Margin dB	SA reading dBuV	Factor dB	Remark	ANT High cm	Turn Table deg
1	5120.00	44.33	54.00	-9.67	39.47	4.86	Average	275	251
2	5120.00	57.28	74.00	-16.72	52.42	4.86	Peak	275	251
3	5150.00	44.40	54.00	-9.60	39.50	4.90	Average	275	251
4	5150.00	57.63	74.00	-16.37	52.73	4.90	Peak	275	251
5	5350.00	46.13	54.00	-7.87	41.00	5.13	Average	275	251
6	5350.00	59.06	74.00	-14.94	53.93	5.13	Peak	275	251
7	10400.00	55.90	68.20	-12.30	42.15	13.75	Peak	100	35
8	15600.00	47.93	54.00	-6.07	32.32	15.61	Average	100	190
9	15600.00	65.24	74.00	-8.76	49.63	15.61	Peak	100	190

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	5120.00	47.61	54.00	-6.39	42.75	4.86	Average	208	223
2	5120.00	58.98	74.00	-15.02	54.12	4.86	Peak	208	223
3	5150.00	45.53	54.00	-8.47	40.63	4.90	Average	208	223
4	5150.00	59.01	74.00	-14.99	54.11	4.90	Peak	208	223
5	5350.00	47.60	54.00	-6.40	42.47	5.13	Average	208	223
6	5350.00	59.49	74.00	-14.51	54.36	5.13	Peak	208	223
7	10400.00	58.61	68.20	-9.59	44.86	13.75	Peak	100	296
8	15600.00	48.77	54.00	-5.23	33.16	15.61	Average	100	275
9	15600.00	63.24	74.00	-10.76	47.63	15.61	Peak	100	275

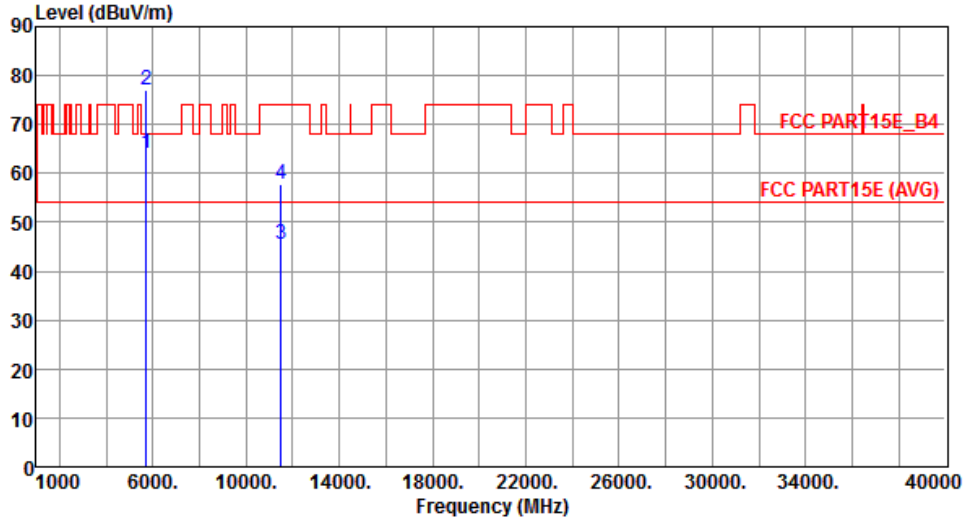
Note 1: Emission Level (dBuV/m) = SA Reading (dBuV/m) + Factor* (dB)
*Factor includes antenna factor , cable loss and amplifier gain
Note 2: Margin (dB) = Emission level (dBuV/m) – Limit (dBuV/m).

Modulation	11a	Test Freq. (MHz)	5240
Polarization	Horizontal		
Level (dBuV/m)			

Modulation	11a	Test Freq. (MHz)	5240
Polarization	Vertical		
Level (dBuV/m) </			

Modulation	11a	Test Freq. (MHz)	5745
Polarization	Horizontal		
Level (dBuV/m)			

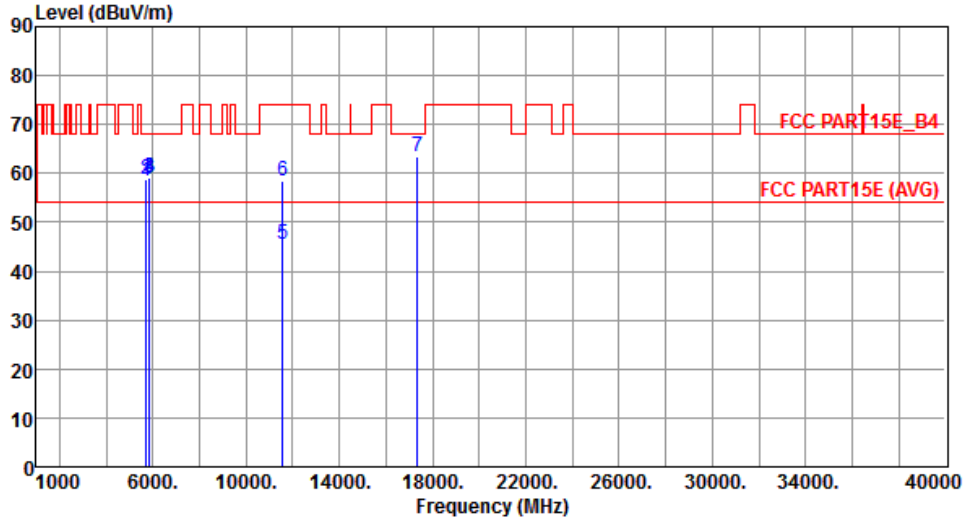
Modulation	11a	Test Freq. (MHz)	5745
Polarization	Vertical		



	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	64.04	68.20	-4.16	58.34	5.70	Peak	245	77
2	5725.00	77.09	78.20	-1.11	71.38	5.71	Peak	245	77
3	11490.00	45.56	54.00	-8.44	30.94	14.62	Average	100	291
4	11490.00	57.63	74.00	-16.37	43.01	14.62	Peak	100	291

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		

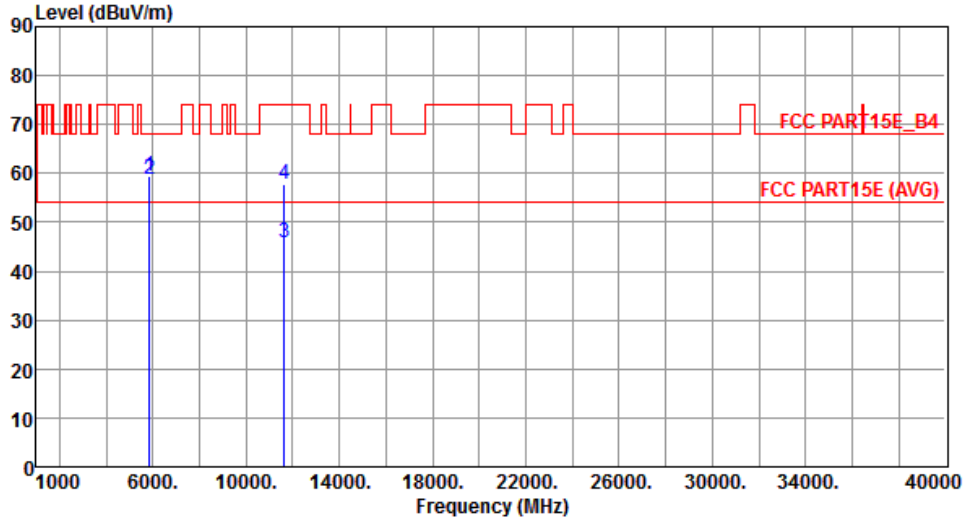


	Freq. MHz	Emission level dBuV/m	Limit dBuV/m	Margin dB	SA reading dBuV	Factor dB	Remark	ANT High cm	Turn Table deg
1	5715.00	58.56	68.20	-9.64	52.86	5.70	Peak	100	225
2	5725.00	58.94	78.20	-19.26	53.23	5.71	Peak	100	225
3	5850.00	59.09	78.20	-19.11	53.12	5.97	Peak	100	225
4	5860.00	59.03	68.20	-9.17	53.05	5.98	Peak	100	225
5	11570.00	45.51	54.00	-8.49	30.99	14.52	Average	100	311
6	11570.00	58.42	74.00	-15.58	43.90	14.52	Peak	100	311
7	17355.00	63.28	68.20	-4.92	41.99	21.29	Peak	100	123

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

Modulation	11a	Test Freq. (MHz)	5785
Polarization	Vertical		
Level (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	59.46	78.20	-18.74	53.49	5.97	Peak	138	228
2	5860.00	58.81	68.20	-9.39	52.83	5.98	Peak	138	228
3	11650.00	45.67	54.00	-8.33	31.27	14.40	Average	100	311
4	11650.00	57.85	74.00	-16.15	43.45	14.40	Peak	100	311

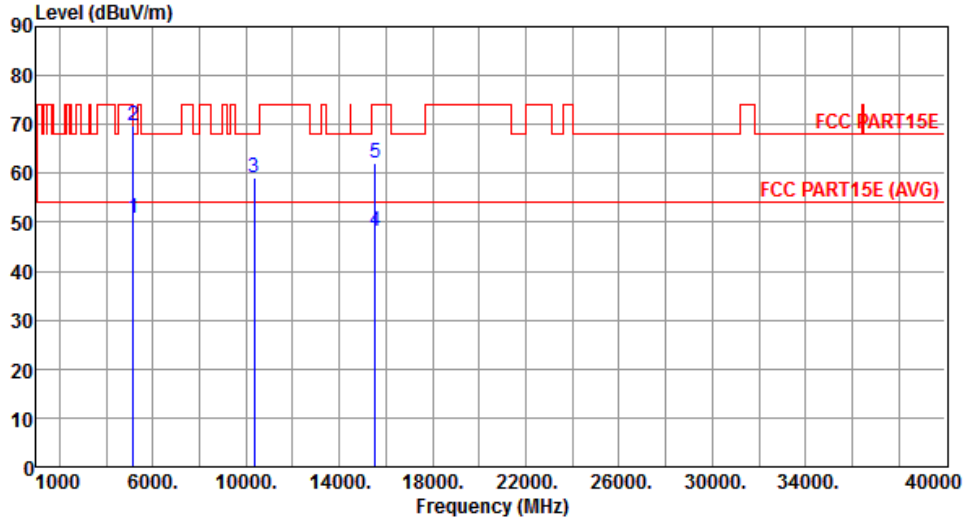
Note 1: Emission Level (dBuV/m) = SA Reading (dBuV/m) + Factor* (dB)
*Factor includes antenna factor , cable loss and amplifier gain
Note 2: Margin (dB) = Emission level (dBuV/m) – Limit (dBuV/m).

Modulation	11a	Test Freq. (MHz)	5825
Polarization	Vertical		
Level (dBuV/m)			

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

Modulation	VHT20	Test Freq. (MHz)	5180
Polarization	Horizontal		
Level (dBuV/m) <			

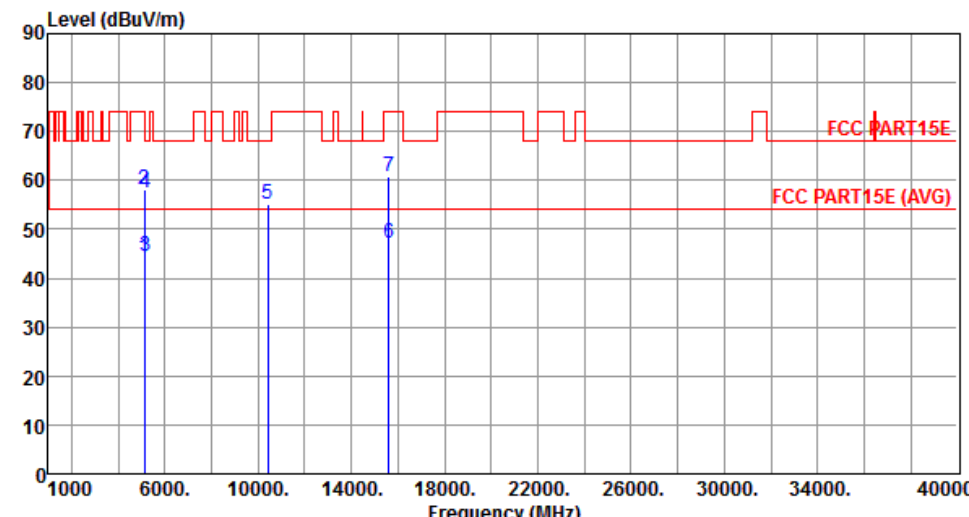
Modulation	VHT20	Test Freq. (MHz)	5180
Polarization	Vertical		



	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	50.86	54.00	-3.14	45.96	4.90	Average	190	148
2	5150.00	69.73	74.00	-4.27	64.83	4.90	Peak	190	148
3	10360.00	59.03	68.20	-9.17	45.36	13.67	Peak	100	295
4	15540.00	48.32	54.00	-5.68	32.60	15.72	Average	100	275
5	15540.00	62.21	74.00	-11.79	46.49	15.72	Peak	100	275

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).

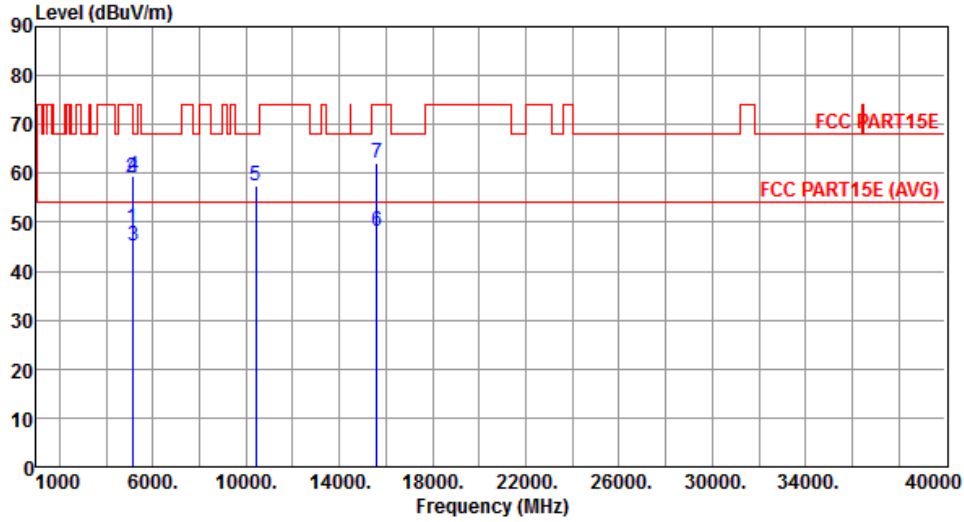
Modulation	VHT20	Test Freq. (MHz)	5200
Polarization	Horizontal		



	Freq. MHz	Emission level dBuV/m	Limit dBuV/m	Margin dB	SA reading dBuV	Factor dB	Remark	ANT High cm	Turn Table deg
1	5120.00	44.10	54.00	-9.90	39.24	4.86	Average	275	266
2	5120.00	57.99	74.00	-16.01	53.13	4.86	Peak	275	266
3	5150.00	44.48	54.00	-9.52	39.58	4.90	Average	275	266
4	5150.00	57.47	74.00	-16.53	52.57	4.90	Peak	275	266
5	10400.00	55.27	68.20	-12.93	41.52	13.75	Peak	100	37
6	15600.00	47.32	54.00	-6.68	31.71	15.61	Average	100	192
7	15600.00	60.63	74.00	-13.37	45.02	15.61	Peak	100	192

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).

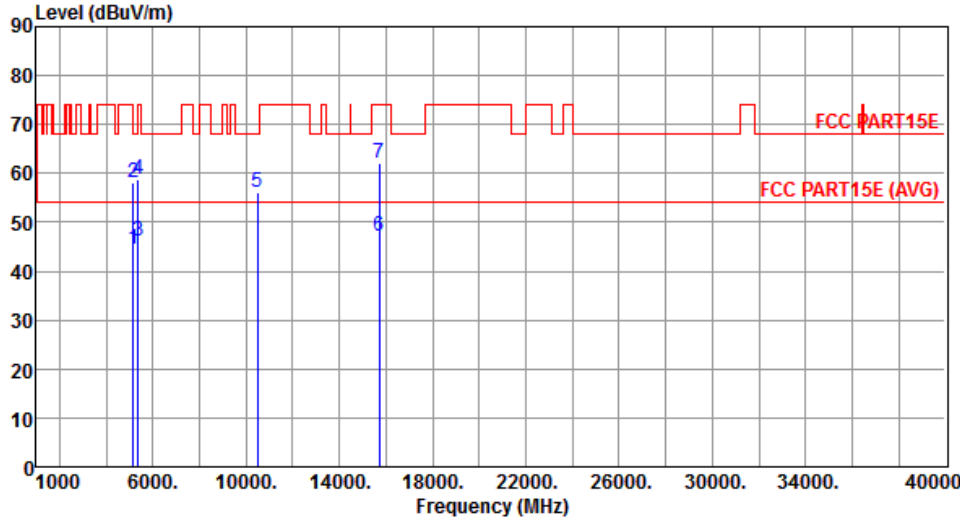
Modulation	VHT20	Test Freq. (MHz)	5200
Polarization	Vertical		



	Freq. MHz	Emission level dBuV/m	Limit dBuV/m	Margin dB	SA reading dBuV	Factor dB	Remark	ANT High cm	Turn Table deg
1	5120.00	48.86	54.00	-5.14	44.00	4.86	Average	208	213
2	5120.00	59.24	74.00	-14.76	54.38	4.86	Peak	208	213
3	5150.00	45.20	54.00	-8.80	40.30	4.90	Average	208	213
4	5150.00	59.52	74.00	-14.48	54.62	4.90	Peak	208	213
5	10400.00	57.41	68.20	-10.79	43.66	13.75	Peak	100	296
6	15600.00	48.12	54.00	-5.88	32.51	15.61	Average	100	275
7	15600.00	62.02	74.00	-11.98	46.41	15.61	Peak	100	275

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).

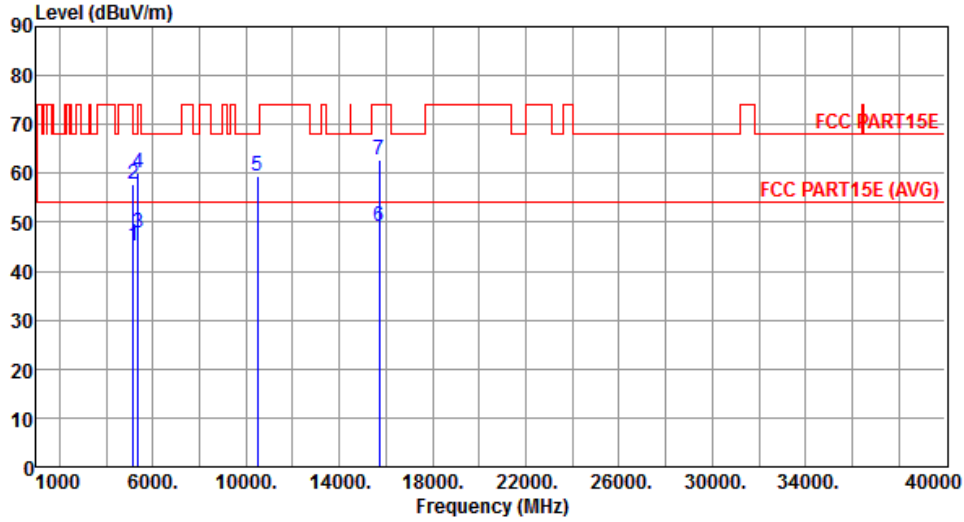
Modulation	VHT20	Test Freq. (MHz)	5240
Polarization	Horizontal		



	Freq. MHz	Emission level dBUV/m	Limit dBUV/m	Margin dB	SA reading dBUV	Factor dB	Remark	ANT High cm	Turn Table deg
1	5150.00	44.53	54.00	-9.47	39.63	4.90	Average	214	212
2	5150.00	58.07	74.00	-15.93	53.17	4.90	Peak	214	212
3	5350.00	46.06	54.00	-7.94	40.93	5.13	Average	214	212
4	5350.00	58.69	74.00	-15.31	53.56	5.13	Peak	214	212
5	10480.00	55.99	68.20	-12.21	42.09	13.90	Peak	100	8
6	15720.00	47.19	54.00	-6.81	31.80	15.39	Average	100	192
7	15720.00	62.02	74.00	-11.98	46.63	15.39	Peak	100	192

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).

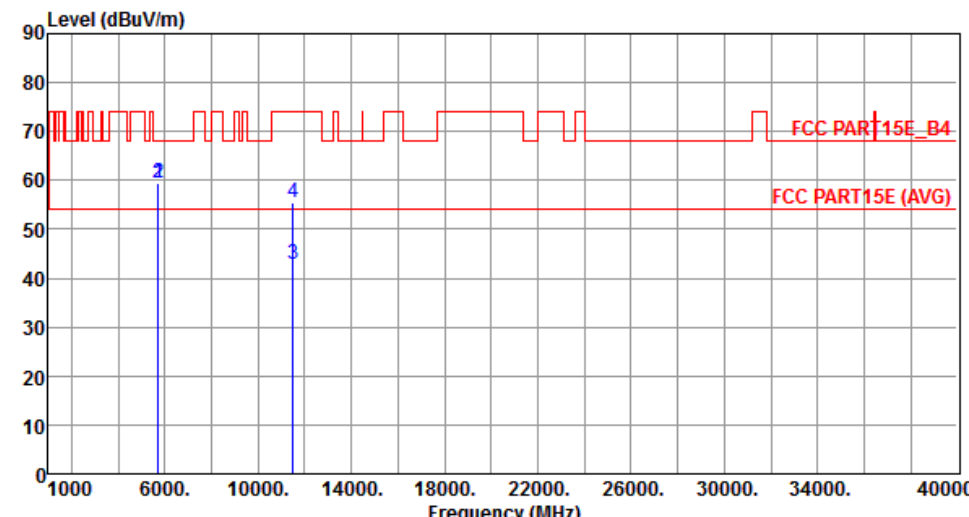
Modulation	VHT20	Test Freq. (MHz)	5240
Polarization	Vertical		



	Freq. MHz	Emission level dBUV/m	Limit dBUV/m	Margin dB	SA reading dBUV	Factor dB	Remark	ANT High cm	Turn Table deg
1	5150.00	45.09	54.00	-8.91	40.19	4.90	Average	219	219
2	5150.00	57.85	74.00	-16.15	52.95	4.90	Peak	219	219
3	5350.00	47.83	54.00	-6.17	42.70	5.13	Average	219	219
4	5350.00	60.26	74.00	-13.74	55.13	5.13	Peak	219	219
5	10480.00	59.37	68.20	-8.83	45.47	13.90	Peak	100	297
6	15720.00	49.19	54.00	-4.81	33.80	15.39	Average	100	277
7	15720.00	62.64	74.00	-11.36	47.25	15.39	Peak	100	277

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).

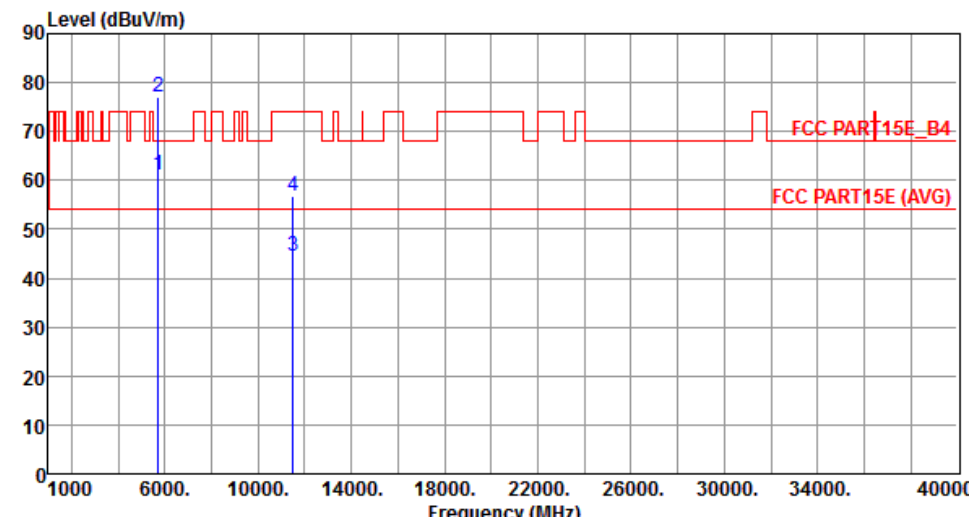
Modulation	VHT20	Test Freq. (MHz)	5745
Polarization	Horizontal		



	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	59.32	68.20	-8.88	53.62	5.70	Peak	100	227
2	5725.00	59.44	78.20	-18.76	53.73	5.71	Peak	100	227
3	11490.00	42.75	54.00	-11.25	28.13	14.62	Average	100	310
4	11490.00	55.61	74.00	-18.39	40.99	14.62	Peak	100	310

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).

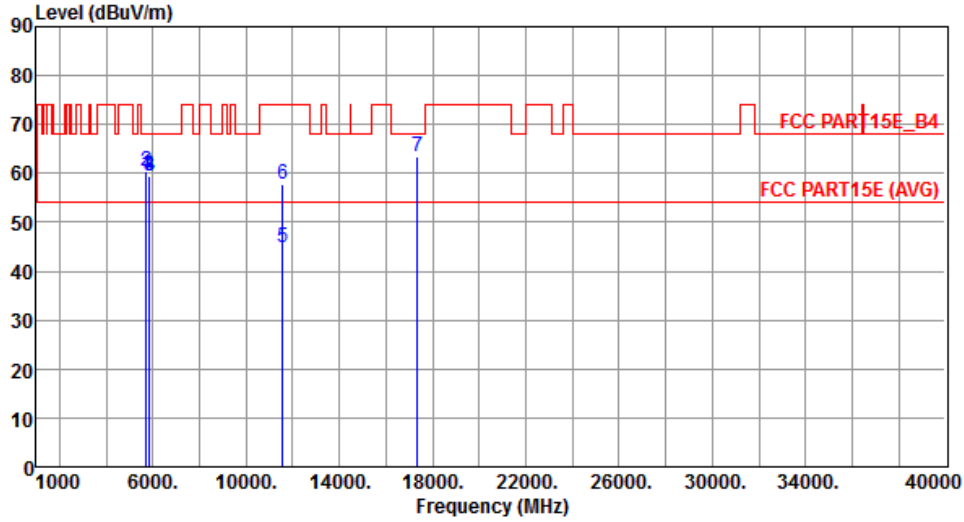
Modulation	VHT20	Test Freq. (MHz)	5745
Polarization	Vertical		



	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	61.18	68.20	-7.02	55.48	5.70	Peak	251	76
2	5725.00	76.92	78.20	-1.28	71.21	5.71	Peak	251	76
3	11490.00	44.65	54.00	-9.35	30.03	14.62	Average	100	290
4	11490.00	56.88	74.00	-17.12	42.26	14.62	Peak	100	290

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		

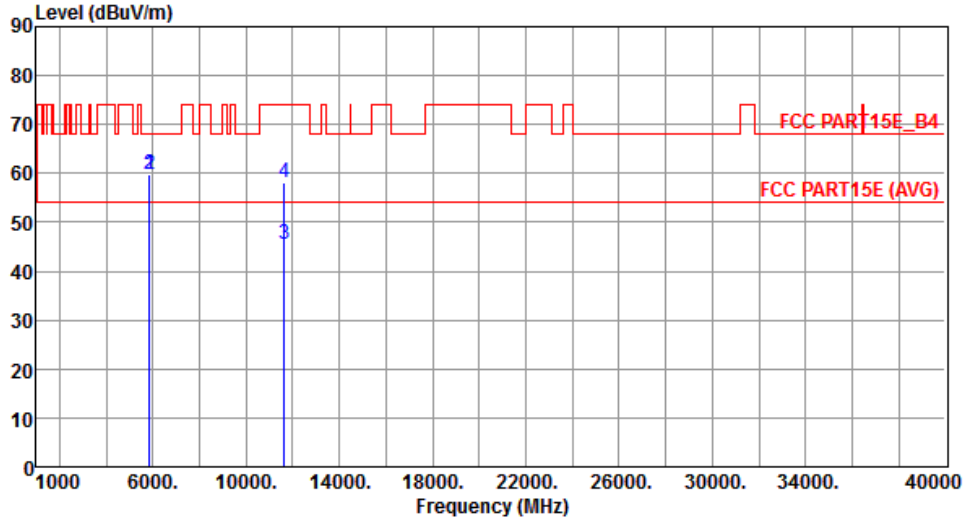


	Freq. MHz	Emission level dBuV/m	Limit dBuV/m	Margin dB	SA reading dBuV	Factor dB	Remark	ANT High cm	Turn Table deg
1	5715.00	59.80	68.20	-8.40	54.10	5.70	Peak	100	227
2	5725.00	60.37	78.20	-17.83	54.66	5.71	Peak	100	227
3	5850.00	59.45	78.20	-18.75	53.48	5.97	Peak	100	227
4	5860.00	59.43	68.20	-8.77	53.45	5.98	Peak	100	227
5	11570.00	44.76	54.00	-9.24	30.24	14.52	Average	100	309
6	11570.00	57.94	74.00	-16.06	43.42	14.52	Peak	100	309
7	17355.00	63.54	68.20	-4.66	42.25	21.29	Peak	100	309

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		
Level (dBuV/m) </			

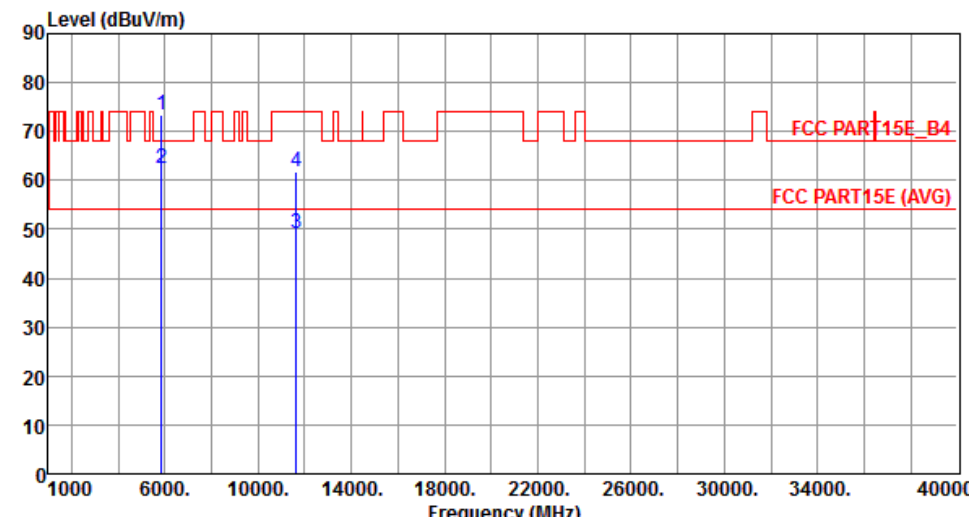
Modulation	VHT20	Test Freq. (MHz)	5825
Polarization	Horizontal		



	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	59.88	78.20	-18.32	53.91	5.97	Peak	100	227
2	5860.00	59.78	68.20	-8.42	53.80	5.98	Peak	100	227
3	11650.00	45.42	54.00	-8.58	31.02	14.40	Average	100	312
4	11650.00	57.97	74.00	-16.03	43.57	14.40	Peak	100	312

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		



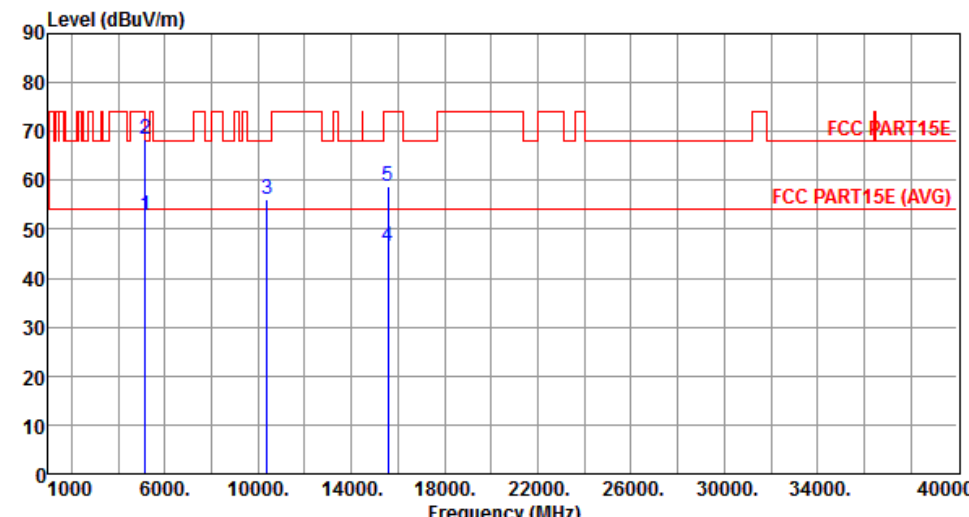
	Freq. MHz	Emission level dBuV/m	Limit dBuV/m	Margin dB	SA reading dBuV	Factor dB	Remark	ANT High cm	Turn Table deg
1	5850.00	73.37	78.20	-4.83	67.40	5.97	Peak	262	83
2	5860.00	62.45	68.20	-5.75	56.47	5.98	Peak	262	83
3	11650.00	49.13	54.00	-4.87	34.73	14.40	Average	100	291
4	11650.00	61.85	74.00	-12.15	47.45	14.40	Peak	100	291

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		
Level (dBuV/m) </			

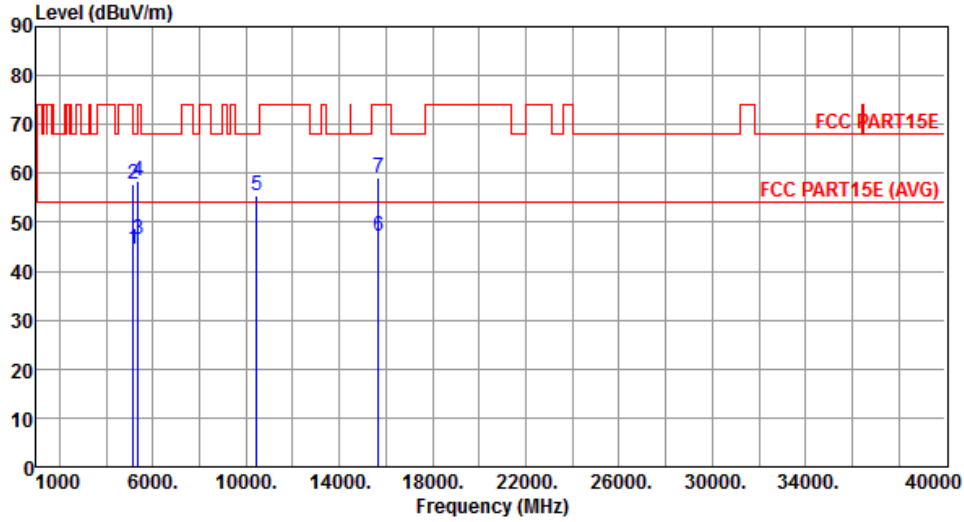
Modulation	VHT40	Test Freq. (MHz)	5190
Polarization	Vertical		



	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	52.86	54.00	-1.14	47.96	4.90	Average	190	144
2	5150.00	68.29	74.00	-5.71	63.39	4.90	Peak	190	144
3	10380.00	56.21	68.20	-11.99	42.50	13.71	Peak	100	289
4	15570.00	46.42	54.00	-7.58	30.75	15.67	Average	100	275
5	15570.00	58.79	74.00	-15.21	43.12	15.67	Peak	100	275

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).

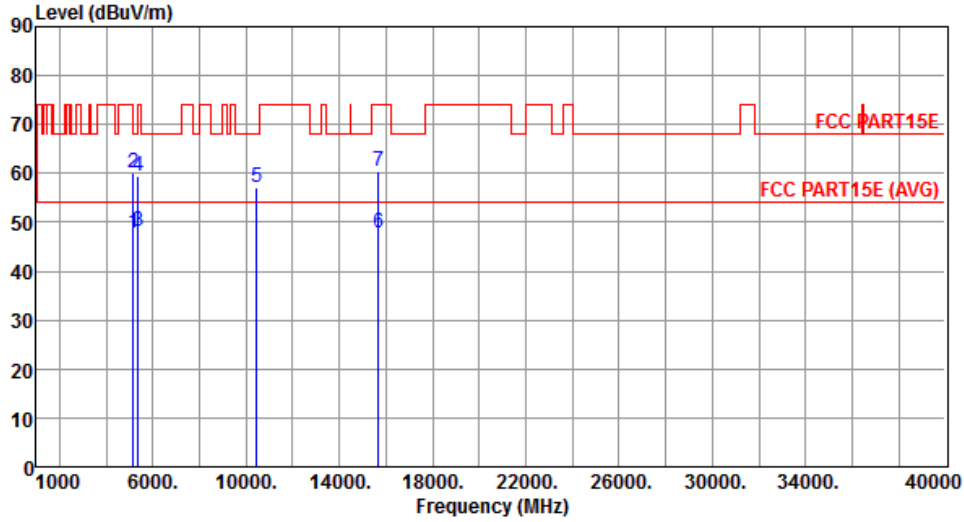
Modulation	VHT40	Test Freq. (MHz)	5230
Polarization	Horizontal		



	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	44.56	54.00	-9.44	39.66	4.90	Average	275	267
2	5150.00	57.87	74.00	-16.13	52.97	4.90	Peak	275	267
3	5350.00	46.63	54.00	-7.37	41.50	5.13	Average	275	267
4	5350.00	58.29	74.00	-15.71	53.16	5.13	Peak	275	267
5	10460.00	55.51	68.20	-12.69	41.65	13.86	Peak	100	38
6	15690.00	47.13	54.00	-6.87	31.70	15.43	Average	100	193
7	15690.00	59.18	74.00	-14.82	43.75	15.43	Peak	100	193

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).

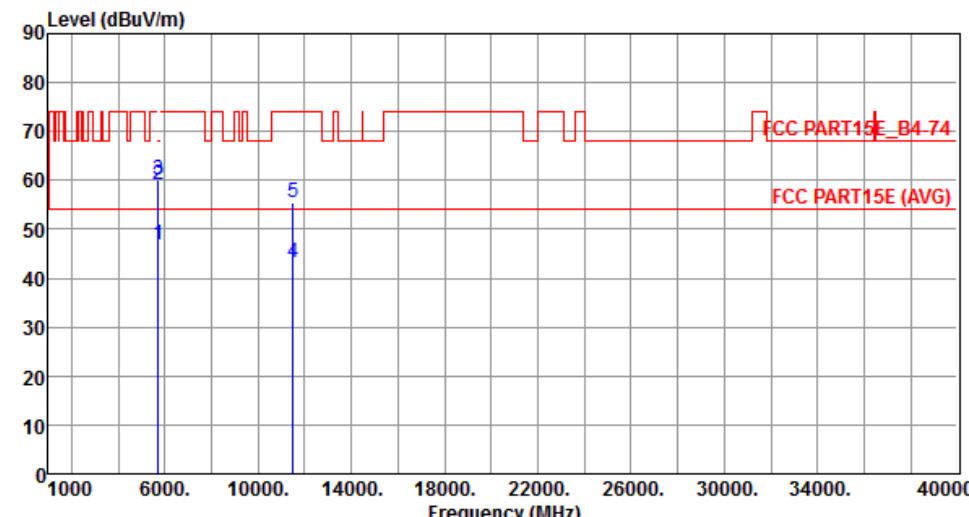
Modulation	VHT40	Test Freq. (MHz)	5230
Polarization	Vertical		



	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	47.70	54.00	-6.30	42.80	4.90	Average	209	141
2	5150.00	60.22	74.00	-13.78	55.32	4.90	Peak	209	141
3	5350.00	48.16	54.00	-5.84	43.03	5.13	Average	209	141
4	5350.00	59.46	74.00	-14.54	54.33	5.13	Peak	209	141
5	10460.00	57.29	68.20	-10.91	43.43	13.86	Peak	100	283
6	15690.00	47.76	54.00	-6.24	32.33	15.43	Average	100	274
7	15690.00	60.48	74.00	-13.52	45.05	15.43	Peak	100	274

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).

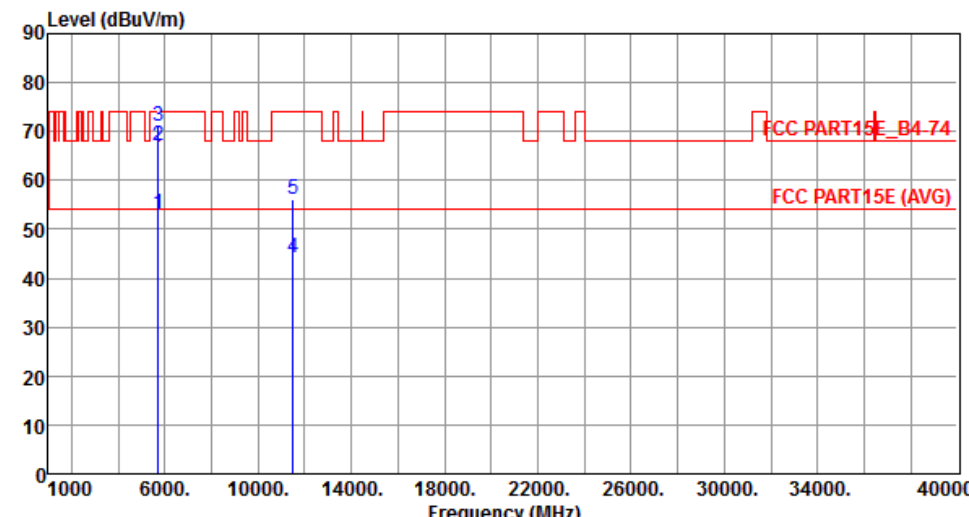
Modulation	VHT40	Test Freq. (MHz)	5755
Polarization	Horizontal		



	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	46.99	54.00	-7.01	41.29	5.70	Average	100	225
2	5715.00	59.02	74.00	-14.98	53.32	5.70	Peak	100	225
3	5725.00	60.25	78.20	-17.95	54.54	5.71	Peak	100	225
4	11510.00	43.17	54.00	-10.83	28.55	14.62	Average	100	310
5	11510.00	55.35	74.00	-18.65	40.73	14.62	Peak	100	310

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).

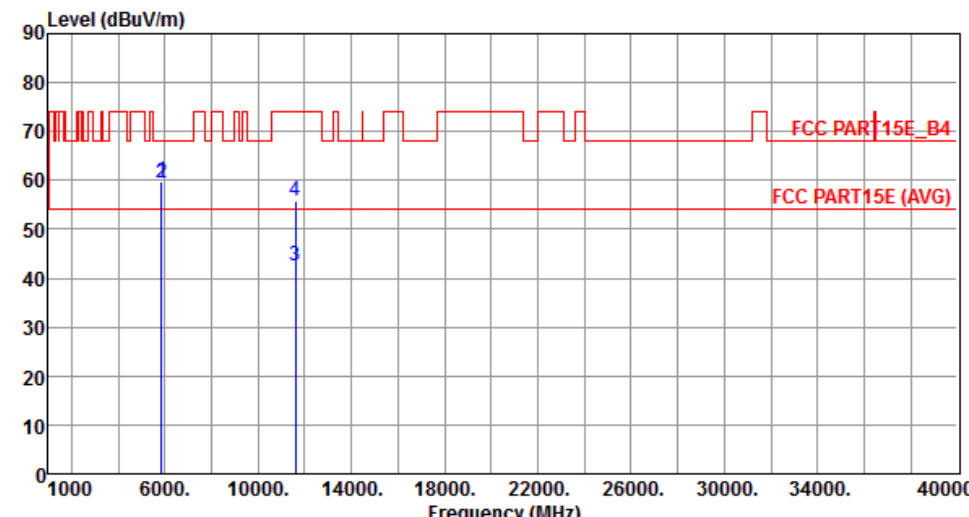
Modulation	VHT40	Test Freq. (MHz)	5755
Polarization	Vertical		



	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	53.00	54.00	-1.00	47.30	5.70	Average	254	81
2	5715.00	66.93	74.00	-7.07	61.23	5.70	Peak	254	81
3	5725.00	71.03	78.20	-7.17	65.32	5.71	Peak	254	81
4	11510.00	44.26	54.00	-9.74	29.64	14.62	Average	100	289
5	11510.00	56.15	74.00	-17.85	41.53	14.62	Peak	100	289

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).

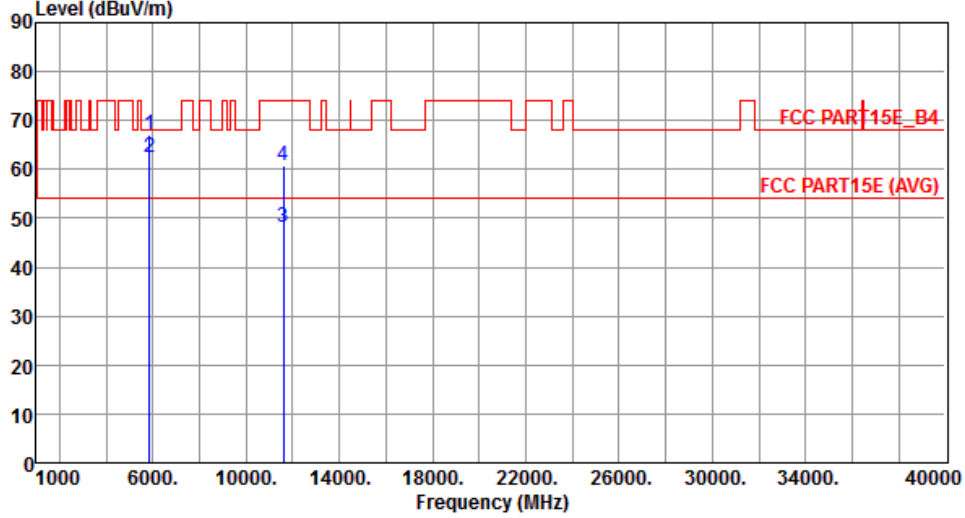
Modulation	VHT40	Test Freq. (MHz)	5795
Polarization	Horizontal		



	Freq. MHz	Emission level dBuV/m	Limit dBuV/m	Margin dB	SA reading dBuV	Factor dB	Remark	ANT High cm	Turn Table deg
1	5850.00	59.79	78.20	-18.41	53.82	5.97	Peak	100	227
2	5860.00	59.43	68.20	-8.77	53.45	5.98	Peak	100	227
3	11590.00	42.49	54.00	-11.51	27.99	14.50	Average	100	311
4	11590.00	55.81	74.00	-18.19	41.31	14.50	Peak	100	311

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		

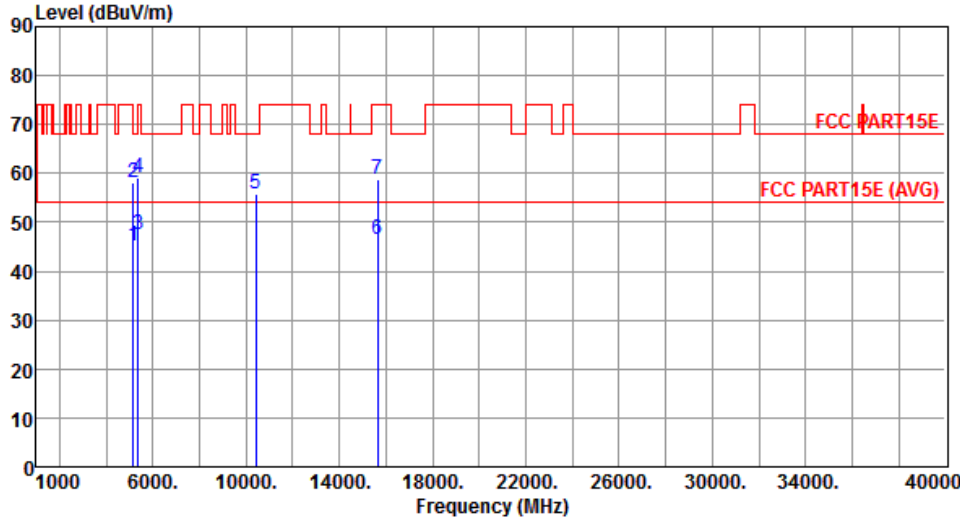


	Freq. MHz	Emission level dBUV/m	Limit dBUV/m	Margin dB	SA reading dBUV	Factor dB	Remark	ANT High cm	Turn Table deg
1	5850.00	67.04	78.20	-11.16	61.07	5.97	Peak	251	80
2	5860.00	62.52	68.20	-5.68	56.54	5.98	Peak	251	80
3	11590.00	48.22	54.00	-5.78	33.72	14.50	Average	100	294
4	11590.00	60.88	74.00	-13.12	46.38	14.50	Peak	100	294

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		

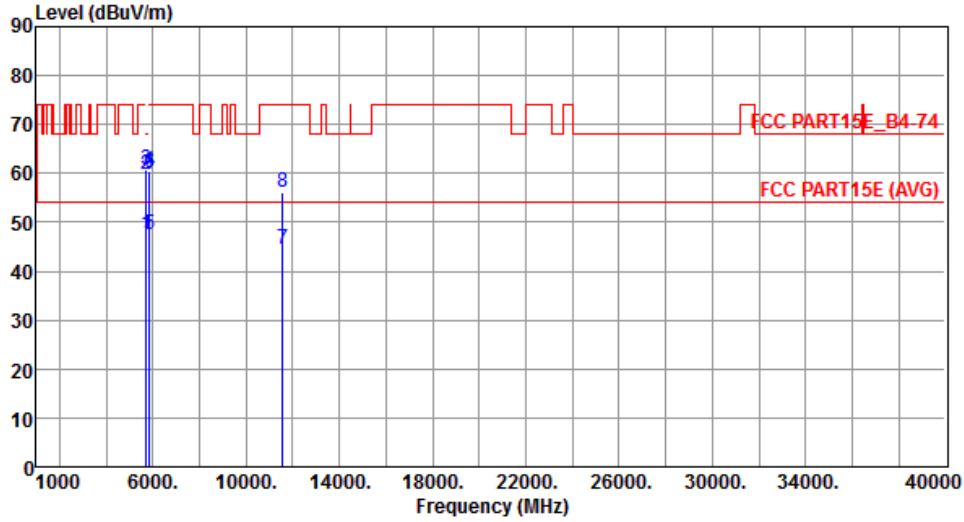


	Freq. MHz	Emission level dBuV/m	Limit dBuV/m	Margin dB	SA reading dBuV	Factor dB	Remark	ANT High cm	Turn Table deg
1	5150.00	45.30	54.00	-8.70	40.40	4.90	Average	274	251
2	5150.00	58.06	74.00	-15.94	53.16	4.90	Peak	274	251
3	5350.00	47.33	54.00	-6.67	42.20	5.13	Average	274	251
4	5350.00	59.17	74.00	-14.83	54.04	5.13	Peak	274	251
5	10420.00	55.66	68.20	-12.54	41.88	13.78	Peak	100	38
6	15630.00	46.50	54.00	-7.50	30.95	15.55	Average	100	190
7	15630.00	58.91	74.00	-15.09	43.36	15.55	Peak	100	190

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		
Level (dBuV/m)			

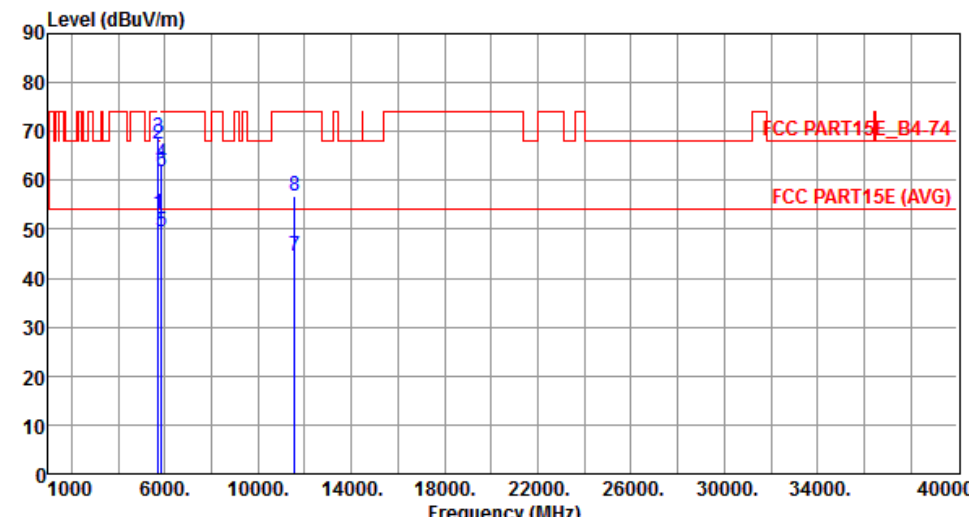
Modulation	VHT80	Test Freq. (MHz)	5775
Polarization	Horizontal		



	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	47.57	54.00	-6.43	41.87	5.70	Average	100	202
2	5715.00	59.82	74.00	-14.18	54.12	5.70	Peak	100	202
3	5725.00	60.72	78.20	-17.48	55.01	5.71	Peak	100	202
4	5850.00	60.52	78.20	-17.68	54.55	5.97	Peak	100	202
5	5860.00	47.43	54.00	-6.57	41.45	5.98	Average	100	202
6	5860.00	60.09	74.00	-13.91	54.11	5.98	Peak	100	202
7	11550.00	44.62	54.00	-9.38	30.07	14.55	Average	100	80
8	11550.00	56.06	74.00	-17.94	41.51	14.55	Peak	100	80

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	53.00	54.00	-1.00	47.30	5.70	Average	250	82
2	5715.00	67.56	74.00	-6.44	61.86	5.70	Peak	250	82
3	5725.00	68.82	78.20	-9.38	63.11	5.71	Peak	250	82
4	5850.00	63.31	78.20	-14.89	57.34	5.97	Peak	250	82
5	5860.00	49.43	54.00	-4.57	43.45	5.98	Average	250	82
6	5860.00	61.90	74.00	-12.10	55.92	5.98	Peak	250	82
7	11550.00	44.60	54.00	-9.40	30.05	14.55	Average	100	120
8	11550.00	56.76	74.00	-17.24	42.21	14.55	Peak	100	120

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

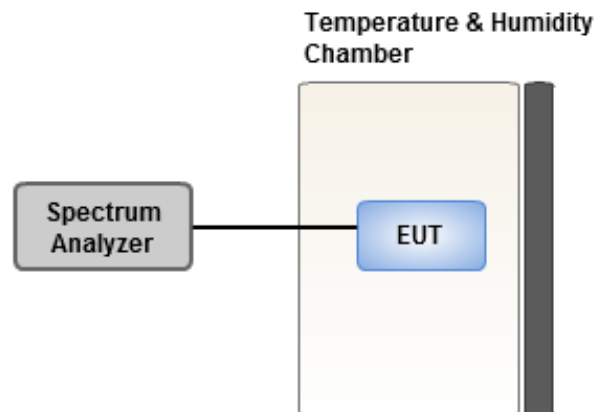
3.6.1 Limit of Frequency Stability

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 55 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	0.63	0.61	1.11	0.76
T20°CVmin	-0.58	0.17	-0.86	-0.92
T55°CVnom	1.33	1.32	1.85	1.55
T50°CVnom	0.48	0.30	0.10	0.85
T40°CVnom	0.78	0.97	1.43	0.78
T30°CVnom	-0.36	0.23	-0.09	0.09
T20°CVnom	0.49	1.19	0.19	0.28
T10°CVnom	0.25	0.15	0.43	0.63
T0°CVnom	-0.16	0.03	-0.09	-0.43
T-10°CVnom	0.92	1.73	1.22	1.49
T-20°CVnom	0.03	0.05	0.87	0.78
T-30°CVnom	0.48	1.03	0.54	0.50
Vnom [Vac]: 120		Vmax [Vac]: 138		Vmin [Vac]: 102
Tnom [°C]: 20		Tmax [°C]: 55		Tmin [°C]: -30

Frequency: 5785 MHz	Frequency Drift (ppm)			
Temperature (°C)	0 minute	2 minutes	5 minutes	10 minutes
T20°CVmax	0.46	0.96	0.56	1.00
T20°CVmin	0.72	0.78	0.25	-0.04
T55°CVnom	2.08	2.27	1.90	2.29
T50°CVnom	1.84	1.84	1.79	1.50
T40°CVnom	0.59	0.91	0.19	0.17
T30°CVnom	1.24	1.11	0.43	0.91
T20°CVnom	1.22	0.65	-0.24	0.17
T10°CVnom	1.37	1.40	1.55	1.23
T0°CVnom	0.54	0.08	0.43	0.60
T-10°CVnom	-0.13	-0.11	0.69	-0.34
T-20°CVnom	0.53	0.83	1.16	0.98
T-30°CVnom	0.88	1.17	0.49	0.56
Vnom [Vac]: 120		Vmax [Vac]: 138		Vmin [Vac]: 102
Tnom [°C]: 20		Tmax [°C]: 55		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>.

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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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Email: ICC_Service@icertifi.com.tw

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