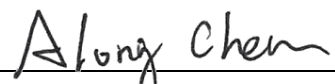


FCC C2PC Test Report

FCC ID : MXF-WRTM-331
Equipment : THINGS
Model No. : TH-GW10, VC-FLX1
(Marketing difference)
Brand Name : Toshiba, Onkyo
(Marketing difference)
Applicant : Gemtek Technology Co., Ltd.
Address : No. 15-1 Zhonghua Road, Hsinchu Industrial
Park, Hukou, Hsinchu, Taiwan, 30352.
Standard : 47 CFR FCC Part 15.407
Received Date : Mar. 09, 2018
Tested Date : Mar. 16 ~ Mar. 21, 2018

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

Reviewed by:


Along Chen / Assistant Manager

Approved by:

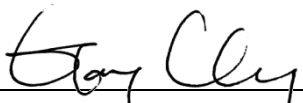

Gary Chang / Manager



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Release Record

Report No.	Version	Description	Issued Date
FR741201-04	Rev. 01	Initial issue	Apr. 03, 2018

Summary of Test Results

FCC Rules	Test Items	Measured	Result
15.207	Conducted Emissions	[dBuV]: 0.354MHz 36.39 (Margin -12.48dB) - AV	Pass
15.407(b) 15.209	Radiated Emissions	[dBuV/m at 3m]: 15780.00MHz 53.00 (Margin -1.00dB) – AV [dBuV/m at 3m]: 5725.00MHz 53.00(Margin -1.00dB) - AV	Pass
15.407(a)	Emission Bandwidth	Meet the requirement of limit	Pass
15.407(a)	RF Output Power	Max Power [dBm]: 5250~5350MHz: 22.16 5470~5725MHz: 22.21	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 Class II Permissive Change. The modification is only concerned with adding 5250~5350MHz and 5470~5725 MHz band by software setting.

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
5250-5350 5470-5725	a	5260-5320 5500-5720	52-64 [4] 100-144 [12]	2	6-54 Mbps
5250-5350 5470-5725	n (HT20)	5260-5320 5500-5720	52-64 [4] 100-144 [12]	2	MCS 0-15
5250-5350 5470-5725	n (HT40)	5270-5310 5510-5710	54-62 [2] 102-142 [6]	2	MCS 0-15
5250-5350 5470-5725	ac (VHT20)	5260-5320 5500-5720	52-64 [4] 100-144 [12]	2	MCS 0-9
5250-5350 5470-5725	ac (VHT40)	5270-5310 5510-5710	54-62 [2] 102-142 [6]	2	MCS 0-9
5250-5350 5470-5725	ac (VHT80)	5290 5530-5690	58 [1] 106-138 [3]	2	MCS 0-9

Note 1: RF output power specifies that Maximum Conducted Output Power.
Note 2: 802.11a/n/ac uses a combination of OFDM-BPSK, QPSK, 16QAM, 64QAM, 256QAM modulation.

1.1.2 Antenna Details

Ant. No.	Model	Type	Connector	Operating Frequencies (MHz) / Antenna Gain (dBi)	
				5250~5350MHz	5470~5725MHz
1	A8-A006-00391	Dipole	IPEX	4.34	4.34
2	A8-A006-00392	Dipole	IPEX	4.34	4.34

1.1.3 Power Supply Type of Equipment under Test (EUT)

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

1.1.4 Accessories

Accessories		
No.	Equipment	Description
1	AC adapter	Brand: APD Model: WA-36A12FU Power Rating: I/P: 100-240Vac, 50-60Hz, 0.9A Max. O/P: 12Vdc, 3A Power Line: 1.8m non-shielded without core

1.1.5 Channel List

802.11 a / HT20 / VHT20		HT40 / VHT40	
Channel	Frequency(MHz)	Channel	Frequency(MHz)
52	5260	54	5270
56	5280	62	5310
60	5300	102	5510
64	5320	110	5550
100	5500	118	5590
104	5520	126	5630
108	5540	134	5670
112	5560	142	5710
116	5580	VHT80	
120	5600	58	5290
124	5620	106	5530
128	5640	122	5610
132	5660	138	5690
136	5680	---	---
140	5700	---	---
144	5720	---	---

1.1.6 Test Tool and Duty Cycle

Test Tool	MT7615QA, Version: 0.0.1.63		
Duty Cycle and Duty Factor	Mode	Duty cycle (%)	Duty factor (dB)
	11a	82.63%	0.83
	VHT20	82.22%	0.85
	VHT40	68.56%	1.64
	VHT80	53.42%	2.72

1.1.7 Power Setting

For Frequency band 5250~5350 MHz		
Modulation Mode	Test Frequency (MHz)	Power Set
11a	5260	22
11a	5300	22
11a	5320	22
HT20	5260	22
HT20	5300	22
HT20	5320	22
HT40	5270	25
HT40	5310	1C
VHT20	5260	22
VHT20	5300	22
VHT20	5320	22
VHT40	5270	25
VHT40	5310	1C
VHT80	5290	1B

For Frequency band 5470~5725 MHz		
Modulation Mode	Test Frequency (MHz)	Power Set
11a	5500	21
11a	5580	21
11a	5700	1E
HT20	5500	21
HT20	5580	23
HT20	5700	1F
HT40	5510	1D
HT40	5590	26
HT40	5670	20
VHT20	5500	21
VHT20	5580	23
VHT20	5700	1F
VHT40	5510	1D
VHT40	5590	26
VHT40	5670	20
VHT80	5530	1D
VHT80	5610	2A

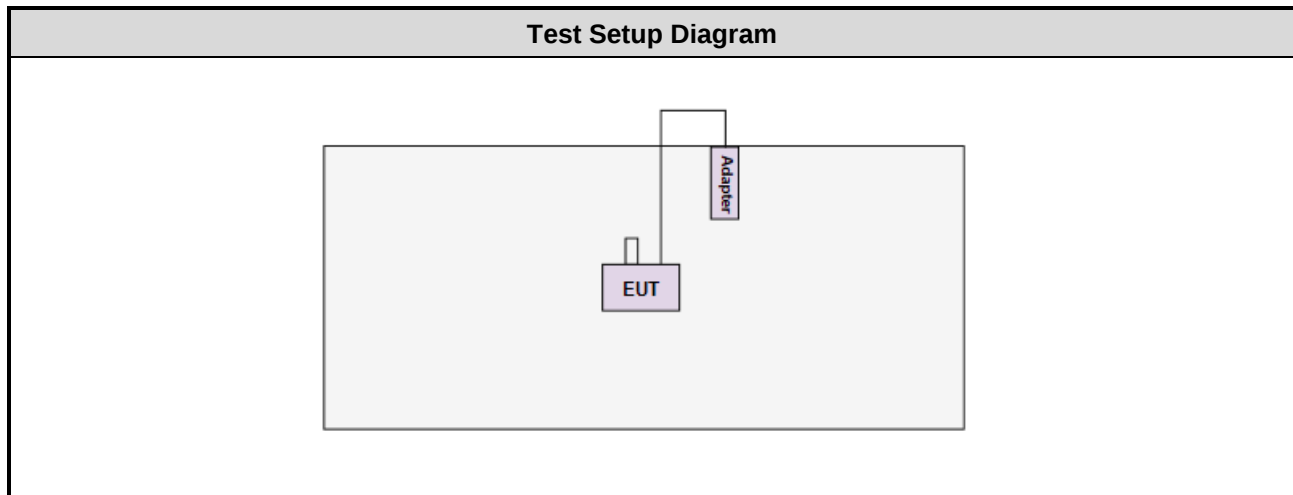
Channel that extends across the 5.725 GHz boundary

For Frequency band 5470~5725 MHz		
Modulation Mode	Test Frequency (MHz)	Power Set
11a	5720	23
HT20	5720	23
HT40	5710	26
VHT20	5720	23
VHT40	5710	26
VHT80	5690	2D

1.2 Local Support Equipment List

Support Equipment List					
No.	Equipment	Brand	Model	FCC ID	Signal cable / Length (m)
1	USB Flash	Kingston	DTSE9G2	TXVV6	---

1.3 Test Setup Chart



1.4 The Equipment List

Test Item	Conducted Emission				
Test Site	Conduction room 1 / (CO01-WS)				
Tested Date	Mar. 21, 2018				
Instrument	Manufacturer	Model No.	Serial No.	Calibration Date	Calibration Until
Receiver	R&S	ESR3	101657	Jan. 05, 2018	Jan. 04, 2019
LISN	SCHWARZBECK	Schwarzbeck 8127	8127-667	Nov. 13, 2017	Nov. 12, 2018
RF Cable-CON	EMC	EMCCFD300-BM-BM-6000	50821	Dec. 18, 2017	Dec. 17, 2018
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	Mar. 16 ~ Mar. 20, 2018				
Instrument	Manufacturer	Model No.	Serial No.	Calibration Date	Calibration Until
Spectrum Analyzer	R&S	FSV40	101498	Dec. 04, 2017	Dec. 03, 2018
Receiver	R&S	ESR3	101658	Nov. 20, 2017	Nov. 19, 2018
Bilog Antenna	SCHWARZBECK	VULB9168	VULB9168-522	Jul. 25, 2017	Jul. 24, 2018
Horn Antenna 1G-18G	SCHWARZBECK	BBHA 9120 D	BBHA 9120 D 1096	Dec. 20, 2017	Dec. 19, 2018
Horn Antenna 18G-40G	SCHWARZBECK	BBHA 9170	BBHA 9170517	Nov. 23, 2017	Nov. 22, 2018
Loop Antenna	R&S	HFH2-Z2	100330	Nov. 13, 2017	Nov. 12, 2018
Loop Antenna Cable	KOAX KABEL	101354-BW	101354-BW	Dec. 07, 2017	Dec. 06, 2018
Preamplifier	EMC	EMC02325	980225	Jul. 28, 2017	Jul. 27, 2018
Preamplifier	Agilent	83017A	MY39501308	Oct. 06, 2017	Oct. 05, 2018
Preamplifier	EMC	EMC184045B	980192	Aug. 22, 2017	Aug. 21, 2018
RF Cable	HUBER+SUHNER	SUCOFLEX104	MY16014/4	Dec. 07, 2017	Dec. 06, 2018
RF Cable	HUBER+SUHNER	SUCOFLEX104	MY16019/4	Dec. 07, 2017	Dec. 06, 2018
RF Cable	HUBER+SUHNER	SUCOFLEX104	MY16139/4	Dec. 07, 2017	Dec. 06, 2018
LF cable 1M	EMC	EMCCFD400-NM-N M-1000	16052	Dec. 07, 2017	Dec. 06, 2018
LF cable 3M	Woken	CFD400NL-LW	CFD400NL-001	Dec. 07, 2017	Dec. 06, 2018
LF cable 10M	Woken	CFD400NL-LW	CFD400NL-002	Dec. 07, 2017	Dec. 06, 2018
Measurement Software	AUDIX	e3	6.120210g	NA	NA
Note: Calibration Interval of instruments listed above is one year.					

Test Item	RF Conducted				
Test Site	(TH01-WS)				
Tested Date	Mar. 21, 2018				
Instrument	Manufacturer	Model No.	Serial No.	Calibration Date	Calibration Until
Spectrum Analyzer	R&S	FSV40	101486	Nov. 21, 2017	Nov. 20, 2018
TEMP&HUMIDITY CHAMBER	GIANT FORCE	GCT-225-40-SP-SD	MAF1212-002	Nov. 27, 2017	Nov. 26, 2018
Power Meter	Anritsu	ML2495A	1241002	Oct. 16, 2017	Oct. 15, 2018
Power Sensor	Anritsu	MA2411B	1207366	Oct. 16, 2017	Oct. 15, 2018
AC POWER SOURCE	APC	AFC-500W	F312060012	Dec. 01, 2017	Nov. 30, 2018
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 v02r01

FCC KDB 662911 D01 Multiple Transmitter Output v02r01

FCC KDB 412172 D01 Determining ERP and EIRP v01r01

1.6 Measurement Uncertainty

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

Measurement Uncertainty	
Parameters	Uncertainty
Bandwidth	±34.134 Hz
Conducted power	±0.808 dB
Frequency error	±34.134 Hz
Power density	±0.463 dB
Conducted emission	±2.670 dB
AC conducted emission	±2.90 dB
Radiated emission ≤ 1GHz	±3.66 dB
Radiated emission > 1GHz	±5.63 dB
Time	±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	23°C / 58%	Alex Tsai
Radiated Emissions	03CH01-WS	21-25°C / 63-65%	Aska Huang Vincent Yeh
RF Conducted	TH01-WS	22°C / 65%	Brad Wu

- FCC Designation No.: TW2732
- FCC site registration No.: 181692
- IC site registration No.: 10807A-1

2.2 The Worst Test Modes and Channel Details

For Frequency band 5250-5350 MHz, 5470-5725 MHz				
Test item	Modulation Mode	Test Frequency (MHz)	Data Rate	Test Configuration
Conducted Emissions	VHT40	5590	MCS 0	---
Radiated Emissions ≤1GHz	VHT40	5590	MCS 0	---
RF Output Power	11a	5260 / 5300 / 5320 5500 / 5580 / 5700 / 5720	6 Mbps	---
	HT20	5260 / 5300 / 5320 5500 / 5580 / 5700 / 5720	MCS 0	
	HT40	5270 / 5310 5510 / 5590 / 5670 / 5710	MCS 0	
	VHT20	5260 / 5300 / 5320 5500 / 5580 / 5700 / 5720	MCS 0	
	VHT40	5270 / 5310 5510 / 5590 / 5670 / 5710	MCS 0	
	VHT80	5290 / 5530 / 5610 / 5690	MCS 0	
Radiated Emissions >1GHz Emission Bandwidth Peak Power Spectral Density	11a	5260 / 5300 / 5320 5500 / 5580 / 5700 / 5720	6 Mbps	---
	VHT20	5260 / 5300 / 5320 5500 / 5580 / 5700 / 5720	MCS 0	
	VHT40	5270 / 5310 5510 / 5590 / 5670 / 5710	MCS 0	
	VHT80	5290 / 5530 / 5610 / 5690	MCS 0	
Frequency Stability	Un-modulation	5320	---	---

3 Transmitter Test Results

3.1 Conducted Emissions

3.1.1 Limit of Conducted Emissions

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

Note 1: * Decreases with the logarithm of the frequency.

3.1.2 Test Procedures

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

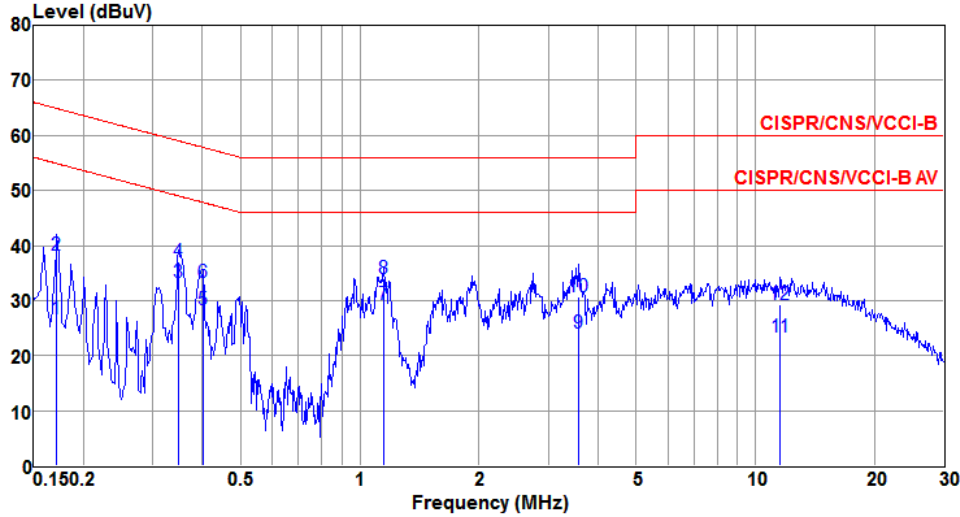
3.1.3 Test Setup



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

3.1.4 Test Result of Conducted Emissions

Modulation	VHT40	Test Freq. (MHz)	5590
Power Phase	Line		

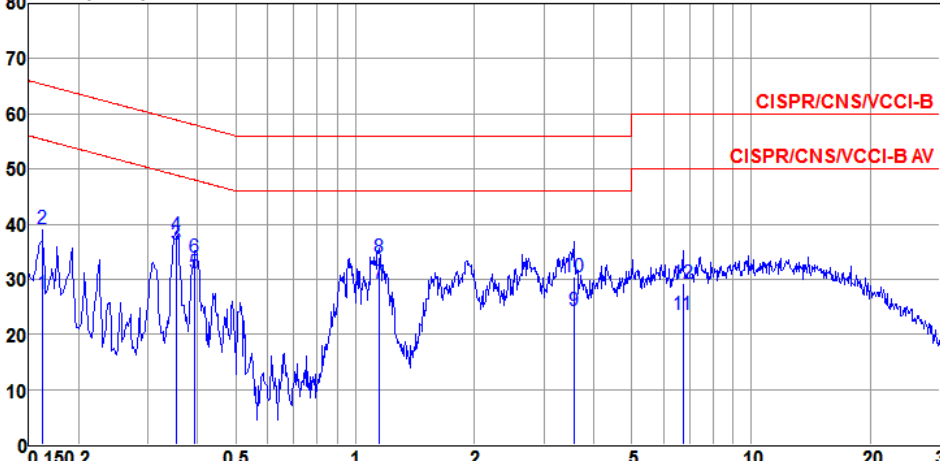


	Freq MHz	Level dBuV	Limit Line dBuV	Over Limit dB	Read Level dBuV	LISN factor dB	cable loss dB	Remark
1	0.171	26.73	54.90	-28.17	26.43	0.28	0.02	Average
2	0.171	38.34	64.90	-26.56	38.04	0.28	0.02	QP
3	0.348	33.19	49.00	-15.81	32.84	0.33	0.02	Average
4	0.348	37.05	59.00	-21.95	36.70	0.33	0.02	QP
5	0.402	28.27	47.81	-19.54	27.91	0.34	0.02	Average
6	0.402	33.18	57.81	-24.63	32.82	0.34	0.02	QP
7	1.147	29.29	46.00	-16.71	28.85	0.40	0.04	Average
8	1.147	33.98	56.00	-22.02	33.54	0.40	0.04	QP
9	3.565	24.07	46.00	-21.93	23.41	0.46	0.20	Average
10	3.565	30.80	56.00	-25.20	30.14	0.46	0.20	QP
11	11.559	23.48	50.00	-26.52	22.55	0.61	0.32	Average
12	11.559	29.16	60.00	-30.84	28.23	0.61	0.32	QP

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

Modulation	VHT40	Test Freq. (MHz)	5590
Power Phase	Neutral		

Level (dBuV)



Frequency (MHz)

	Freq	Level	Limit	Over	Read	LISN	cable	
	MHz	dBuV	Line	Limit	Level	factor	loss	Remark
			dBuV	dB	dBuV	dB	dB	
1	0.162	27.28	55.34	-28.06	27.12	0.14	0.02	Average
2	0.162	39.19	65.34	-26.15	39.03	0.14	0.02	QP
3	0.354	36.39	48.87	-12.48	36.19	0.18	0.02	Average
4	0.354	38.01	58.87	-20.86	37.81	0.18	0.02	QP
5	0.393	31.09	47.99	-16.90	30.88	0.19	0.02	Average
6	0.393	34.10	57.99	-23.89	33.89	0.19	0.02	QP
7	1.147	29.25	46.00	-16.75	28.94	0.27	0.04	Average
8	1.147	33.98	56.00	-22.02	33.67	0.27	0.04	QP
9	3.565	24.27	46.00	-21.73	23.73	0.34	0.20	Average
10	3.565	30.48	56.00	-25.52	29.94	0.34	0.20	QP
11	6.733	23.64	50.00	-26.36	22.95	0.41	0.28	Average
12	6.733	29.34	60.00	-30.66	28.65	0.41	0.28	QP

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

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

3.2 Emission Bandwidth

3.2.1 Test Procedures

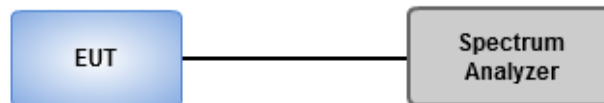
26dB Bandwidth

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

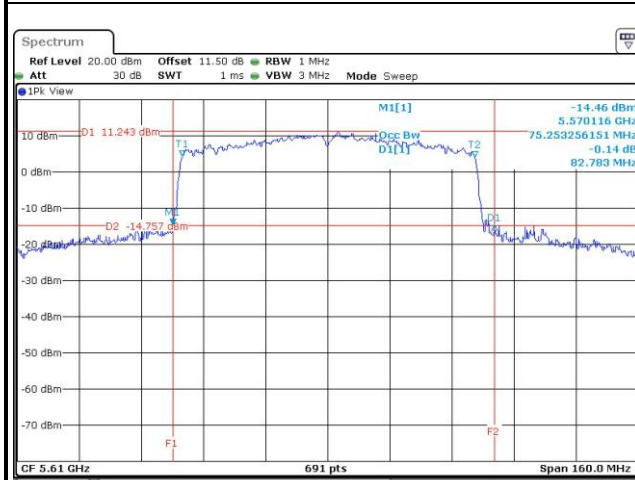
3.2.2 Test Setup



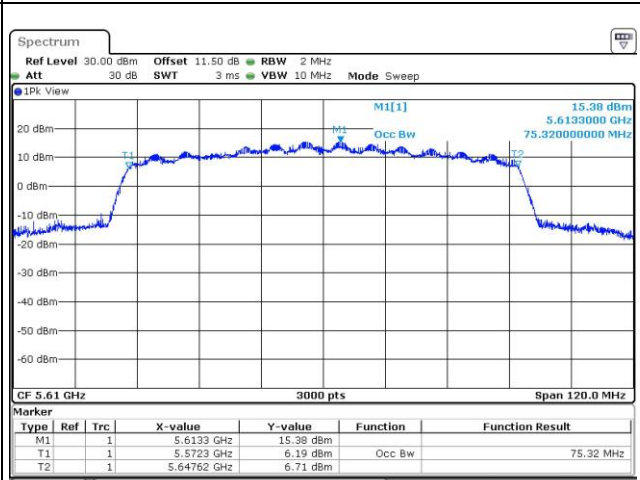
3.2.3 Test Result of Emission Bandwidth

Emission Bandwidth											
Mode	N _{TX}	Freq. (MHz)	26dB Bandwidth (MHz)				99% Bandwidth (MHz)				Power Limit (dBm)
			Chain 0	Chain 1	Chain 2	Chain 3	Chain 0	Chain 1	Chain 2	Chain 3	
11a	2	5260	24.52	24.64	---	---	16.82	16.52	---	---	24.00
11a	2	5300	22.38	24.64	---	---	16.80	16.52	---	---	24.00
11a	2	5320	20.29	24.58	---	---	16.83	16.53	---	---	24.00
VHT20	2	5260	20.52	20.29	---	---	17.68	17.60	---	---	24.00
VHT20	2	5300	20.64	20.23	---	---	17.68	17.59	---	---	24.00
VHT20	2	5320	20.46	20.35	---	---	17.68	17.62	---	---	24.00
VHT40	2	5270	53.57	50.20	---	---	36.32	36.30	---	---	24.00
VHT40	2	5310	41.28	40.93	---	---	36.14	36.12	---	---	24.00
VHT80	2	5290	81.16	79.54	---	---	75.12	74.84	---	---	24.00
11a	2	5500	22.26	23.59	---	---	16.83	16.49	---	---	24.00
11a	2	5580	20.23	22.20	---	---	16.81	16.50	---	---	24.00
11a	2	5700	20.00	19.88	---	---	16.76	16.46	---	---	23.99
VHT20	2	5500	20.41	20.35	---	---	17.68	17.59	---	---	24.00
VHT20	2	5580	21.04	20.46	---	---	17.75	17.62	---	---	24.00
VHT20	2	5700	20.41	20.41	---	---	17.65	17.58	---	---	24.00
VHT40	2	5510	41.16	56.58	---	---	36.14	36.08	---	---	24.00
VHT40	2	5590	65.04	55.19	---	---	36.38	36.32	---	---	24.00
VHT40	2	5670	41.51	41.28	---	---	36.14	36.14	---	---	24.00
VHT80	2	5530	81.39	79.77	---	---	75.12	74.84	---	---	24.00
VHT80	2	5610	81.39	82.78	---	---	75.32	75.24	---	---	24.00

Worst Plot of 26dB Bandwidth



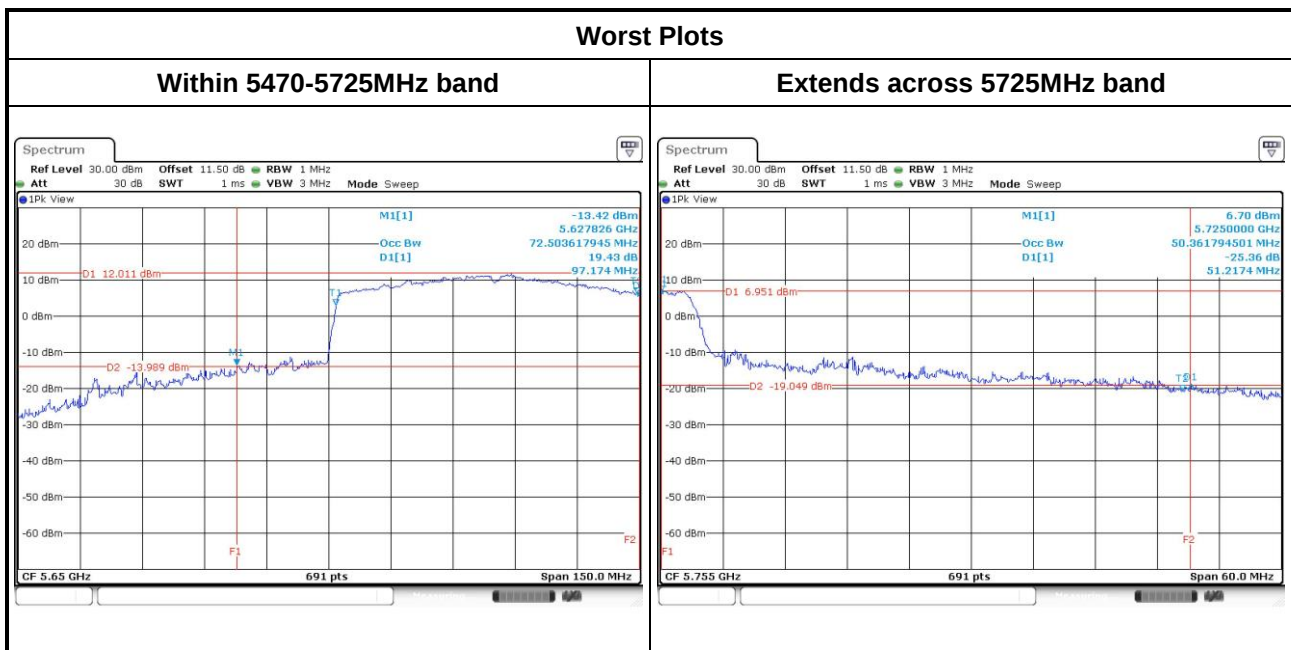
Worst Plot of 99% Bandwidth



Channel that extends across the 5.725 GHz boundary

UNII Emission Bandwidth Result (Within 5470-5725MHz band)											
Mode	N _{TX}	Freq. (MHz)	26dB Bandwidth (MHz)				99% Bandwidth (MHz)				Power Limit (dBm)
			Chain 0	Chain 1	Chain 2	Chain 3	Chain 0	Chain 1	Chain 2	Chain 3	
11a	2	5720	17.31	17.18	---	---	13.52	13.30	---	---	23.35
HT20	2	5720	15.77	15.09	---	---	13.91	13.83	---	---	22.79
HT40	2	5710	50.12	35.81	---	---	33.25	33.13	---	---	24.00
VHT20	2	5720	15.77	15.09	---	---	13.91	13.83	---	---	22.79
VHT40	2	5710	50.12	35.81	---	---	33.25	33.13	---	---	24.00
VHT80	2	5690	97.17	84.35	---	---	73.06	72.70	---	---	24.00

UNII Emission Bandwidth Result (Extends across 5725MHz band)											
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	5720	9.48	9.61	---	---	3.39	3.25	---	---	
HT20	2	5720	7.63	7.20	---	---	3.83	3.79	---	---	
HT40	2	5710	21.68	25.68	---	---	3.13	3.19	---	---	
VHT20	2	5720	7.63	7.20	---	---	3.83	3.79	---	---	
VHT40	2	5710	21.68	25.68	---	---	3.13	3.19	---	---	
VHT80	2	5690	42.43	51.22	---	---	2.66	2.82	---	---	



3.3 RF Output Power

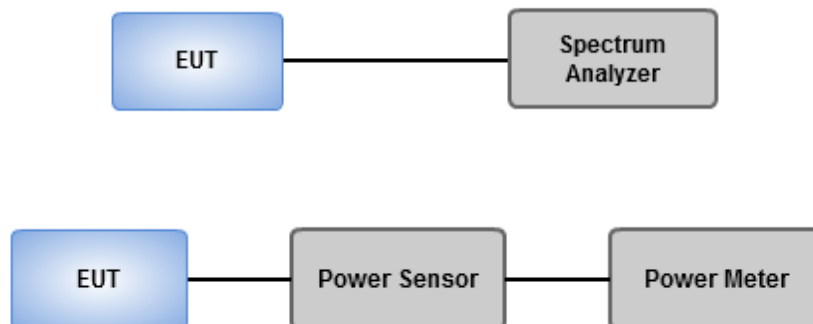
3.3.1 Limit of RF Output Power

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

3.3.2 Test Procedures

- ☒ Power meter (For channel that does not extends across the 5.725 GHz boundary)
 - ☒ Measurements 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
- ☒ Spectrum analyzer (For channel that extends across the 5.725 GHz boundary)
 1. Set RBW=1MHz, VBW=3MHz , Sweep time= Auto, Detector = RMS
 2. Trace average at least 100 traces in power averaging mode
 3. Compute power by integrating the spectrum across the 26 dB EBW
 4. Add 10 log(1/X, X:duty cycle) if duty cycle is <98%)

3.3.3 Test Setup



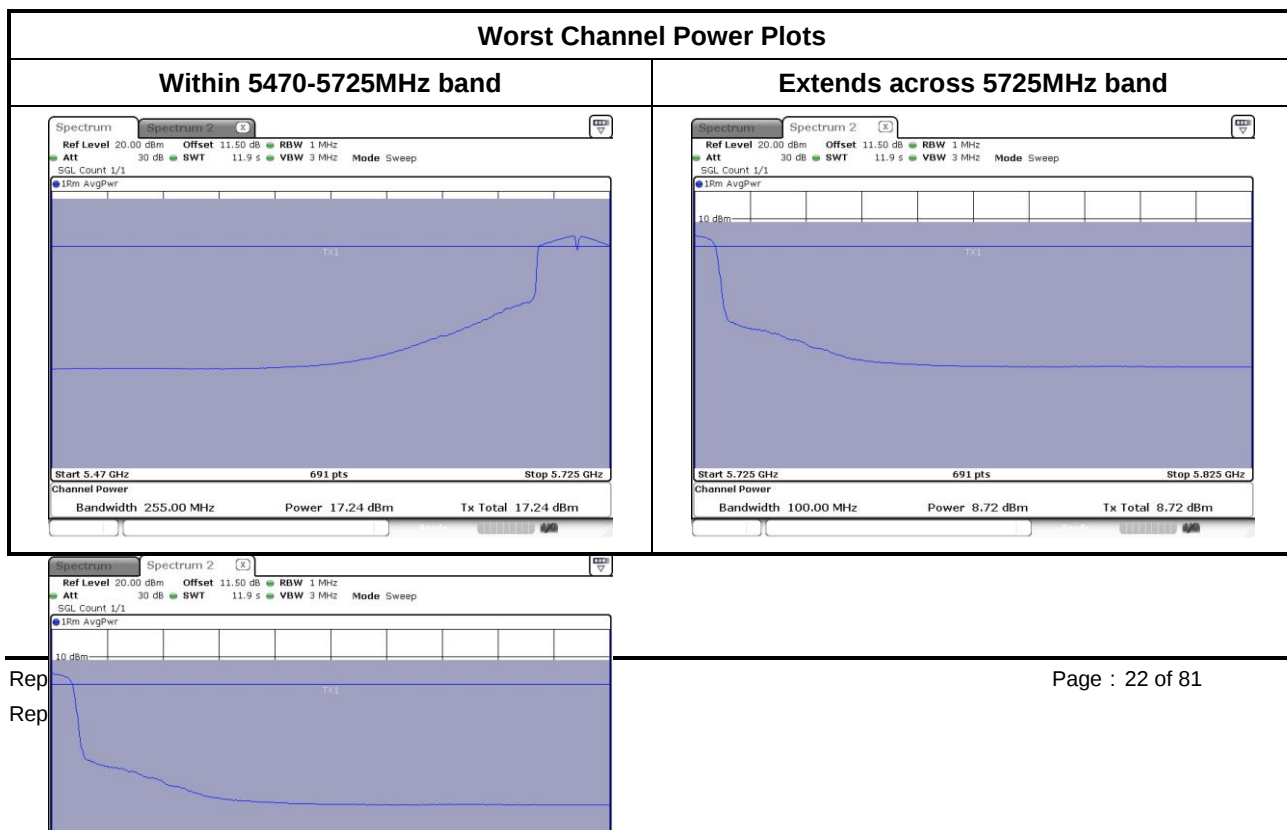
3.3.4 Test Result of Maximum Conducted Output Power

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	5260	17.75	17.93	---	---	121.653	20.85	24.00
11a	2	5300	17.89	17.61	---	---	119.194	20.76	24.00
11a	2	5320	17.77	17.66	---	---	118.186	20.73	24.00
HT20	2	5260	17.82	17.75	---	---	120.100	20.80	24.00
HT20	2	5300	17.69	17.92	---	---	120.693	20.82	24.00
HT20	2	5320	17.55	17.63	---	---	114.828	20.60	24.00
HT40	2	5270	18.71	19.32	---	---	159.809	22.04	24.00
HT40	2	5310	14.48	15.14	---	---	60.713	17.83	24.00
VHT20	2	5260	17.99	17.88	---	---	124.327	20.95	24.00
VHT20	2	5300	17.81	18.01	---	---	123.636	20.92	24.00
VHT20	2	5320	17.69	17.78	---	---	118.728	20.75	24.00
VHT40	2	5270	18.82	19.45	---	---	164.313	22.16	24.00
VHT40	2	5310	14.61	15.23	---	---	62.249	17.94	24.00
VHT80	2	5290	10.60	11.84	---	---	26.757	14.27	24.00
11a	2	5500	16.84	17.12	---	---	99.829	19.99	24.00
11a	2	5580	17.05	16.98	---	---	100.588	20.03	24.00
11a	2	5700	15.41	15.24	---	---	68.173	18.34	23.99
HT20	2	5500	16.91	16.88	---	---	97.844	19.91	24.00
HT20	2	5580	17.65	18.02	---	---	121.597	20.85	24.00
HT20	2	5700	15.12	15.66	---	---	69.322	18.41	24.00
HT40	2	5510	15.15	15.21	---	---	65.924	18.19	24.00
HT40	2	5590	19.06	19.08	---	---	161.447	22.08	24.00
HT40	2	5670	16.35	16.41	---	---	86.904	19.39	24.00
VHT20	2	5500	17.03	17.01	---	---	100.700	20.03	24.00
VHT20	2	5580	17.78	18.16	---	---	125.443	20.98	24.00
VHT20	2	5700	15.26	15.82	---	---	71.768	18.56	24.00
VHT40	2	5510	15.29	15.34	---	---	68.004	18.33	24.00
VHT40	2	5590	19.21	19.18	---	---	166.162	22.21	24.00
VHT40	2	5670	16.51	16.54	---	---	89.853	19.54	24.00
VHT80	2	5530	11.74	12.07	---	---	31.034	14.92	24.00
VHT80	2	5610	17.64	18.01	---	---	121.318	20.84	24.00

Channel that extends across the 5.725 GHz boundary

Maximum Conducted Output Power (Within 5470-5725MHz band)											
Mode	N _{Tx}	Freq. (MHz)	Conducted Power without duty factor					Duty factor (dB)	Total Power (mW)	Total Power (dBm)	Limit (dBm)
			Chain 0	Chain 1	Chain 2	Chain 3	Total Power (dBm)				
11a	2	5720	16.15	15.95	---	---	19.06	0.83	97.532	19.89	23.35
HT20	2	5720	16.04	15.97	---	---	19.02	0.85	96.949	19.87	22.79
HT40	2	5710	17.21	17.02	---	---	20.13	1.64	150.188	21.77	24.00
VHT20	2	5720	16.12	16.05	---	---	19.10	0.85	98.752	19.95	22.79
VHT40	2	5710	17.24	17.09	---	---	20.18	1.64	151.913	21.82	24.00
VHT80	2	5690	15.93	16.16	---	---	19.06	2.72	150.551	21.78	24.00

Maximum Conducted Output Power (Extends across 5725MHz band)											
Mode	N _{Tx}	Freq. (MHz)	Conducted Power without duty factor					Duty factor (dB)	Total Power (mW)	Total Power (dBm)	Limit (dBm)
			Chain 0	Chain 1	Chain 2	Chain 3	Total Power (dBm)				
11a	2	5720	8.26	8.29	---	---	11.29	0.83	16.275	12.12	30.00
HT20	2	5720	8.55	8.67	---	---	11.62	0.85	17.663	12.47	30.00
HT40	2	5710	4.65	4.73	---	---	7.70	1.64	8.591	9.34	30.00
VHT20	2	5720	8.64	8.72	---	---	11.69	0.85	17.949	12.54	30.00
VHT40	2	5710	4.68	4.76	---	---	7.73	1.64	8.651	9.37	30.00
VHT80	2	5690	-0.63	0.25	---	---	2.84	2.72	3.600	5.56	30.00



3.4 Peak Power Spectral Density

3.4.1 Limit of Peak Power Spectral Density

Frequency Band (MHz)		Limit
☒	5250 ~ 5350	11 dBm / MHz
☒	5470 ~ 5725	11 dBm / MHz

3.4.2 Test Procedures

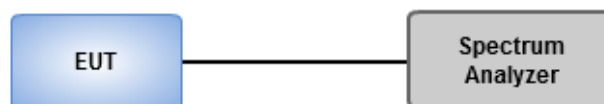
☐ Method SA-1

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 $\geq 10 \times (\text{number of points in sweep}) \times (\text{total on/off period of the transmitted signal})$.
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 if duty cycle < 98%

3.4.3 Test Setup



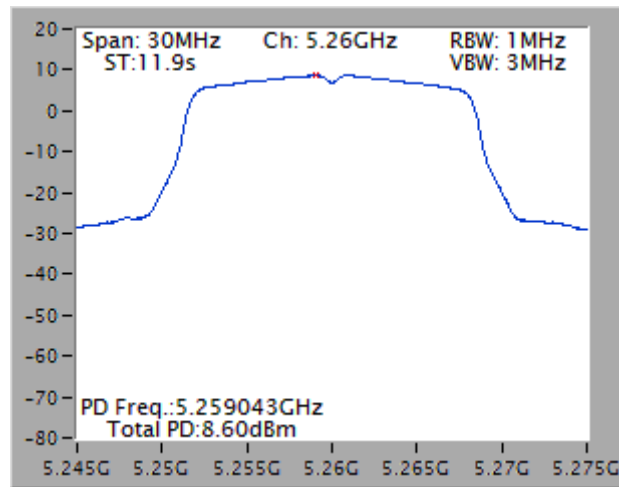
3.4.4 Test Result of Peak Power Spectral Density

Condition			Peak Power Spectral Density (dBm/MHz)			
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	5260	8.60	0.83	9.43	9.65
11a	2	5300	8.43	0.83	9.26	9.65
11a	2	5320	8.43	0.83	9.26	9.65
VHT20	2	5260	8.35	0.85	9.20	9.65
VHT20	2	5300	8.40	0.85	9.25	9.65
VHT20	2	5320	8.29	0.85	9.14	9.65
VHT40	2	5270	5.94	1.64	7.58	9.65
VHT40	2	5310	1.21	1.64	2.85	9.65
VHT80	2	5290	-5.72	2.72	-3.00	9.65
11a	2	5500	7.34	0.83	8.17	9.65
11a	2	5580	7.25	0.83	8.08	9.65
11a	2	5700	5.74	0.83	6.57	9.65
11a	2	5720	8.43	0.83	9.26	9.65
VHT20	2	5500	7.26	0.85	8.11	9.65
VHT20	2	5580	8.46	0.85	9.31	9.65
VHT20	2	5700	6.19	0.85	7.04	9.65
VHT20	2	5720	8.16	0.85	9.01	9.65
VHT40	2	5510	1.65	1.64	3.29	9.65
VHT40	2	5590	5.72	1.64	7.36	9.65
VHT40	2	5670	2.89	1.64	4.53	9.65
VHT40	2	5710	5.62	1.64	7.26	9.65
VHT80	2	5530	-5.44	2.72	-2.72	9.65
VHT80	2	5610	0.54	2.72	3.26	9.65
VHT80	2	5690	1.97	2.72	4.69	9.65

Note:

1. Test result is bin-by-bin summing measured value of each TX port.
2. Directional gain = $4.34 + 10 \cdot \log(2/1) = 7.35 \text{ dBi} > 6 \text{ dBi}$.
Limit shall be reduced to $11 \text{ dBm} - (7.35 \text{ dBi} - 6 \text{ dBi}) = 9.65 \text{ dBm}$.

Worst Plot



Note: The plot without duty factor.

3.5 Transmitter Radiated and Band Edge Emissions

3.5.1 Limit of Transmitter Radiated and Band Edge Emissions

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

Note 1:
Qusai-Peak value is measured for frequency below 1GHz except for 9–90 kHz, 110–490 kHz frequency band. Peak and average value are measured for frequency above 1GHz. The limit on average radio frequency emission is as above table. The limit on peak radio frequency emissions is 20 dB above the maximum permitted average emission limit

Note 2:
Measurements may be performed at a distance other than what is specified provided. When performing measurements at a distance other than that specified, the results shall be extrapolated to the specified distance using an extrapolation factor as below, Frequency at or above 30 MHz: 20 dB/decade Frequency below 30 MHz: 40 dB/decade.

Un-restricted band emissions above 1GHz Limit	
Operating Band	Limit
5.25 - 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]

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

3.5.2 Test Procedures

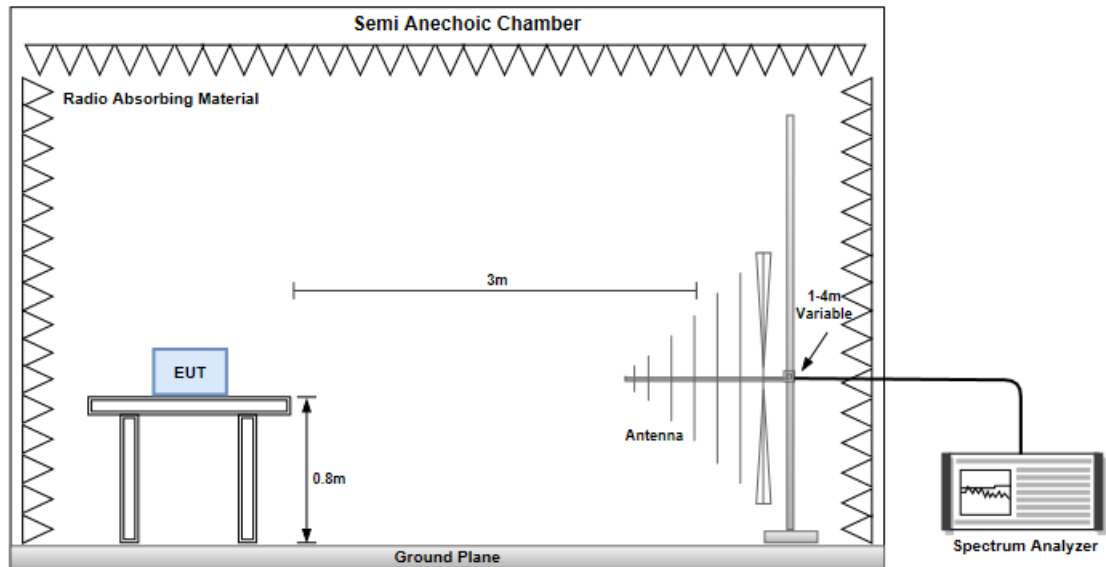
1. Measurement is made at a semi-anechoic chamber that incorporates a turntable allowing a EUT rotation of 360°. A continuously-rotating, remotely-controlled turntable is installed at the test site to support the EUT and facilitate determination of the direction of maximum radiation for each EUT emission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

Note:

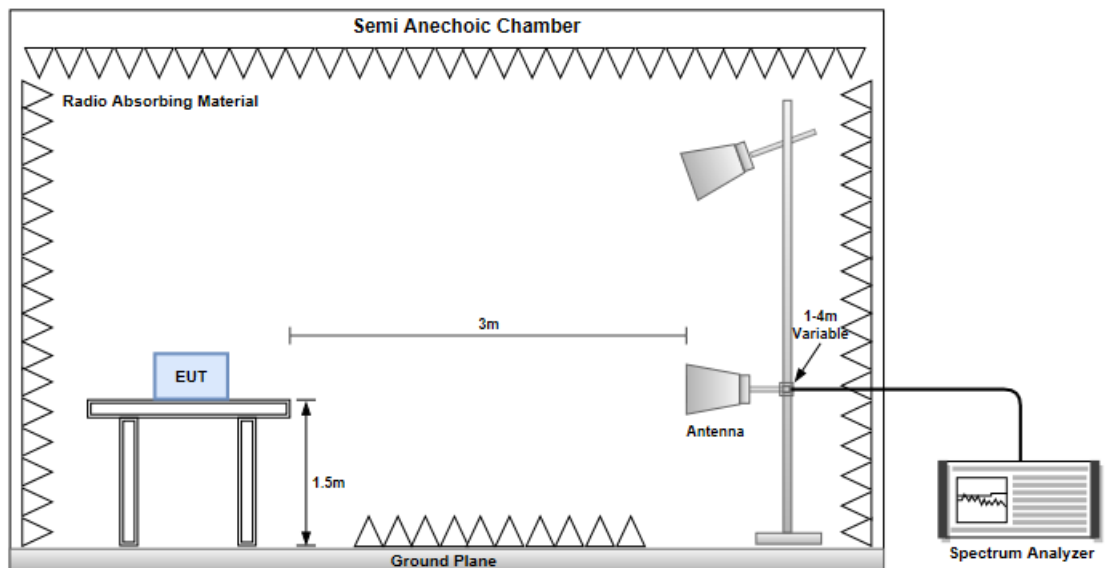
1. 120kHz measurement bandwidth of test receiver and Quasi-peak detector is for radiated emission below 1GHz.
2. RBW=1MHz, VBW=3MHz and Peak detector is for peak measured value of radiated emission above 1GHz.
3. RBW=1MHz, VBW=1/T and Peak detector is for average measured value of radiated emission above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

3.5.3 Test Setup

Radiated Emissions below 1 GHz



Radiated Emissions above 1 GHz



3.5.4 Transmitter Radiated Unwanted Emissions (Below 1GHz)

Modulation	VHT40	Test Freq. (MHz)	5590
Polarization	Horizontal		
Level (dBUV/m)			

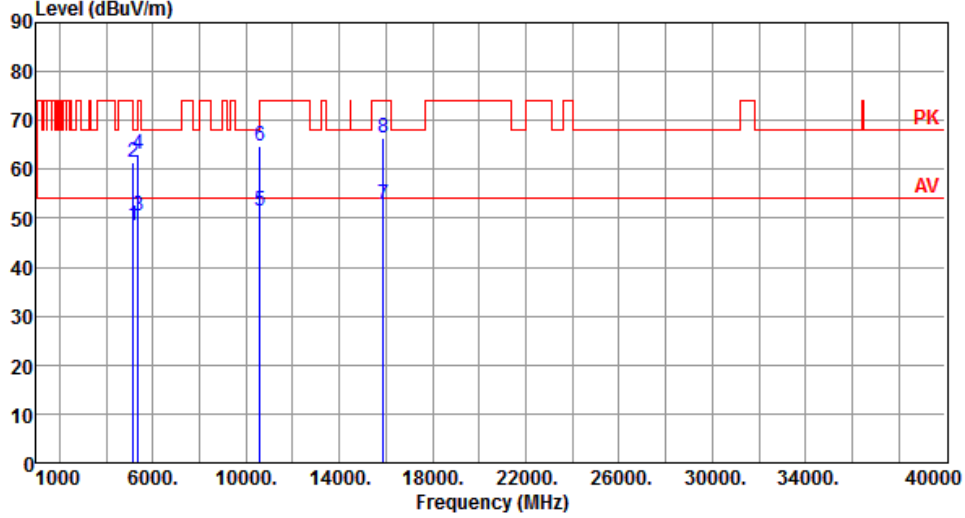
Modulation	VHT40	Test Freq. (MHz)	5590
Polarization	Vertical		
Level (dBuV/m)			

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

Modulation	11a	Test Freq. (MHz)	5260
Polarization	Horizontal		
Level (dBuV/m)			

Modulation	11a	Test Freq. (MHz)	5260
Polarization	Vertical		
Level (dBuV/m) </			

Modulation	11a	Test Freq. (MHz)	5300
Polarization	Horizontal		



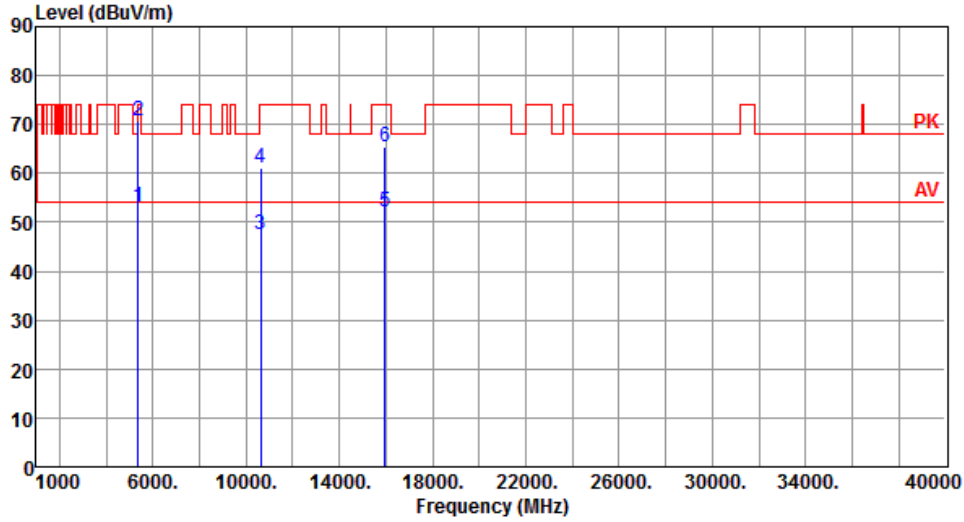
	Freq. MHz	Emission level dBuV/m	Limit dBuV/m	Margin dB	SA reading dBuV	Factor dB	Remark	ANT High cm	Turn Table deg
1	5150.00	48.49	54.00	-5.51	44.21	4.28	Average	152	230
2	5150.00	61.45	74.00	-12.55	57.17	4.28	Peak	152	230
3	5350.00	50.52	54.00	-3.48	46.08	4.44	Average	152	230
4	5350.00	62.95	74.00	-11.05	58.51	4.44	Peak	152	230
5	10600.00	51.50	54.00	-2.50	37.70	13.80	Average	184	216
6	10600.00	64.85	74.00	-9.15	51.05	13.80	Peak	184	216
7	15900.00	52.80	54.00	-1.20	38.62	14.18	Average	213	241
8	15900.00	66.58	74.00	-7.42	52.40	14.18	Peak	213	241

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)	5300
Polarization	Vertical		
Level (dBUV/m) </			

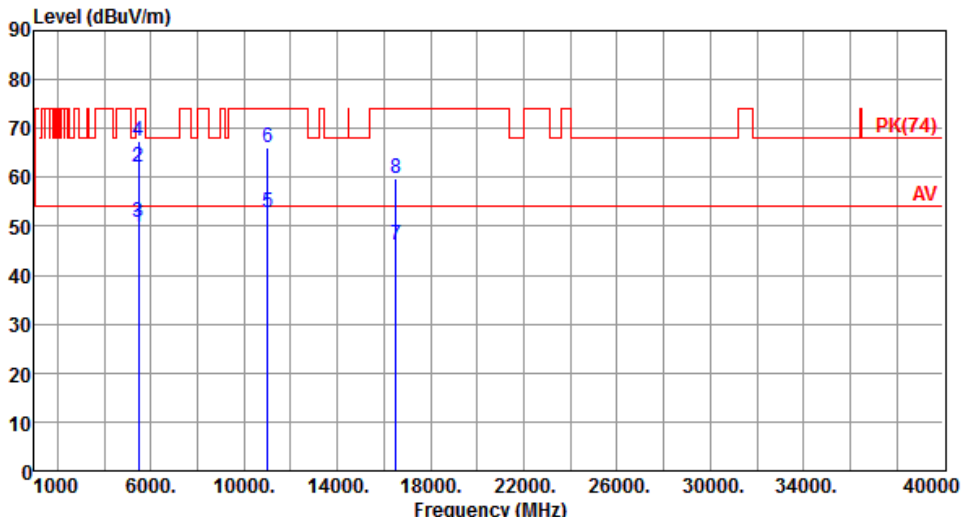
Modulation	11a	Test Freq. (MHz)	5320
Polarization	Horizontal		
Level (dBUV/m)			

Modulation	11a	Test Freq. (MHz)	5320
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	52.98	54.00	-1.02	48.54	4.44	Average	155	216
2	5350.00	70.73	74.00	-3.27	66.29	4.44	Peak	155	216
3	10640.00	47.65	54.00	-6.35	33.81	13.84	Average	118	194
4	10640.00	61.21	74.00	-12.79	47.37	13.84	Peak	118	194
5	15960.00	52.04	54.00	-1.96	37.95	14.09	Average	282	200
6	15960.00	65.35	74.00	-8.65	51.26	14.09	Peak	282	200

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).

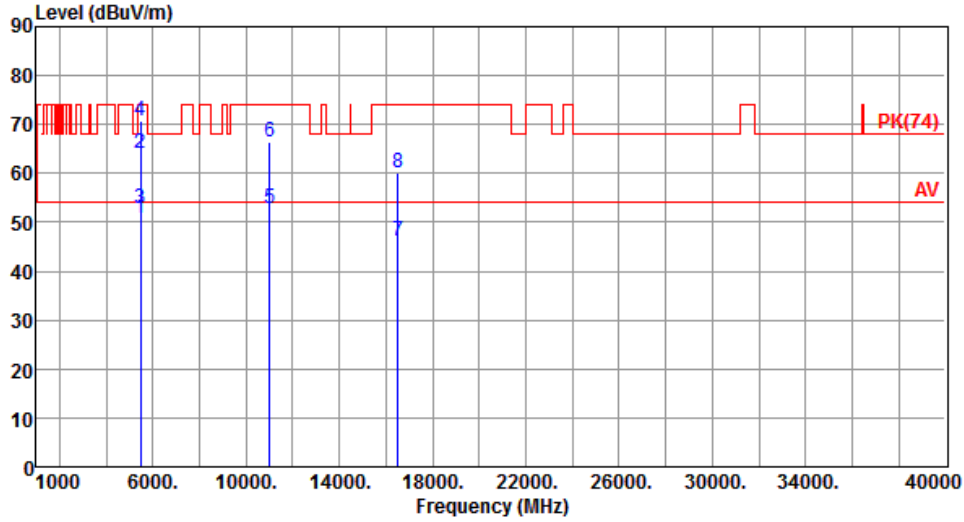
Modulation	11a	Test Freq. (MHz)	5500						
Polarization	Horizontal								
									
	Freq. MHz	Emission level dBuV/m	Limit dBuV/m	Margin dB	SA reading dBuV	Factor dB	Remark	ANT High cm	Turn Table deg
1	5460.00	49.87	54.00	-4.13	45.36	4.51	Average	177	222
2	5460.00	62.17	74.00	-11.83	57.66	4.51	Peak	177	222
3	5470.00	50.70	54.00	-3.30	46.18	4.52	Average	177	222
4	5470.00	67.42	74.00	-6.58	62.90	4.52	Peak	177	222
5	11000.00	52.75	54.00	-1.25	38.60	14.15	Average	128	226
6	11000.00	66.10	74.00	-7.90	51.95	14.15	Peak	128	226
7	16500.00	46.29	54.00	-7.71	30.11	16.18	Average	100	257
8	16500.00	59.78	74.00	-14.22	43.60	16.18	Peak	100	257

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).

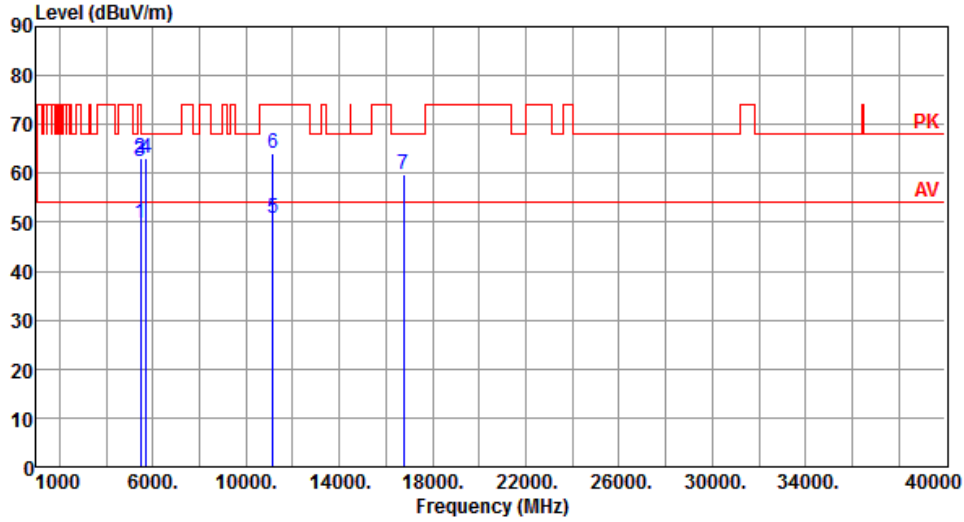
Modulation	11a	Test Freq. (MHz)	5500
Polarization	Vertical		



	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	50.81	54.00	-3.19	46.30	4.51	Average	285	220
2	5460.00	63.95	74.00	-10.05	59.44	4.51	Peak	285	220
3	5470.00	52.80	54.00	-1.20	48.28	4.52	Average	285	220
4	5470.00	70.82	74.00	-3.18	66.30	4.52	Peak	285	220
5	11000.00	52.95	54.00	-1.05	38.80	14.15	Average	110	208
6	11000.00	66.27	74.00	-7.73	52.12	14.15	Peak	110	208
7	16500.00	46.25	54.00	-7.75	30.07	16.18	Average	100	146
8	16500.00	60.00	74.00	-14.00	43.82	16.18	Peak	100	146

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).

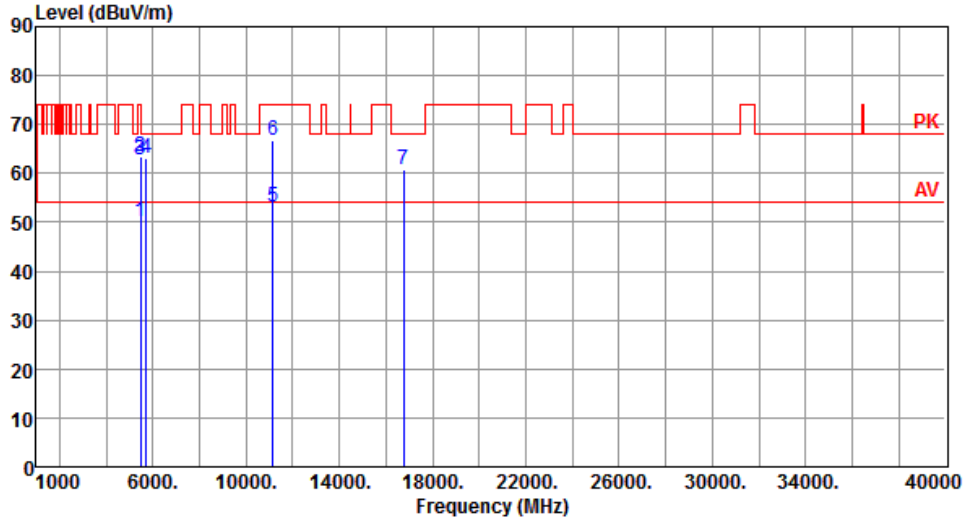
Modulation	11a	Test Freq. (MHz)	5580
Polarization	Horizontal		



	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	49.74	54.00	-4.26	45.23	4.51	Average	192	229
2	5460.00	62.95	74.00	-11.05	58.44	4.51	Peak	192	229
3	5470.00	62.32	68.20	-5.88	57.80	4.52	Peak	192	229
4	5725.00	63.26	68.20	-4.94	58.42	4.84	Peak	192	229
5	11160.00	50.90	54.00	-3.10	36.76	14.14	Average	100	230
6	11160.00	64.09	74.00	-9.91	49.95	14.14	Peak	100	230
7	16740.00	59.88	68.20	-8.32	43.14	16.74	Peak	100	245

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).

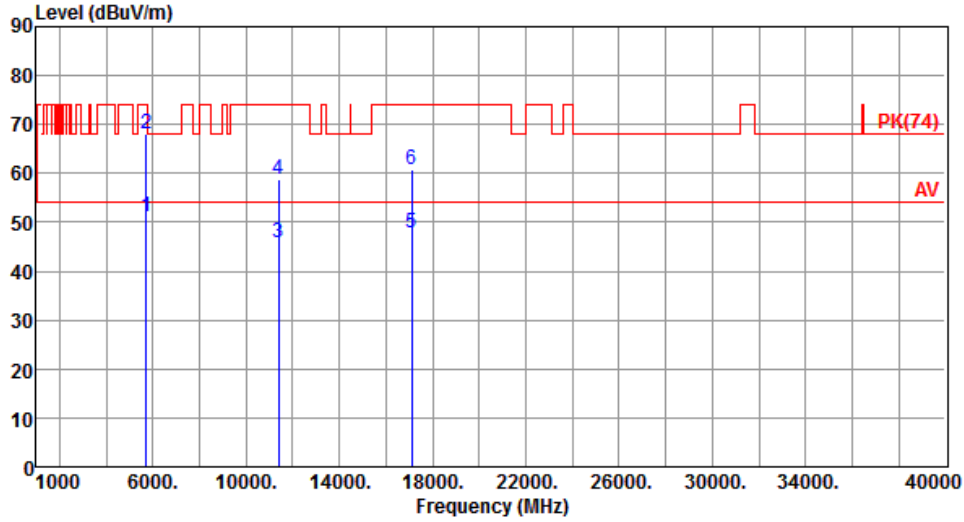
Modulation	11a	Test Freq. (MHz)	5580
Polarization	Vertical		



	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	50.23	54.00	-3.77	45.72	4.51	Average	260	218
2	5460.00	63.57	74.00	-10.43	59.06	4.51	Peak	260	218
3	5470.00	62.82	68.20	-5.38	58.30	4.52	Peak	260	218
4	5725.00	63.07	68.20	-5.13	58.23	4.84	Peak	260	218
5	11160.00	52.99	54.00	-1.01	38.85	14.14	Average	100	210
6	11160.00	66.74	74.00	-7.26	52.60	14.14	Peak	100	210
7	16740.00	60.71	68.20	-7.49	43.97	16.74	Peak	100	142

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)	5700
Polarization	Horizontal		



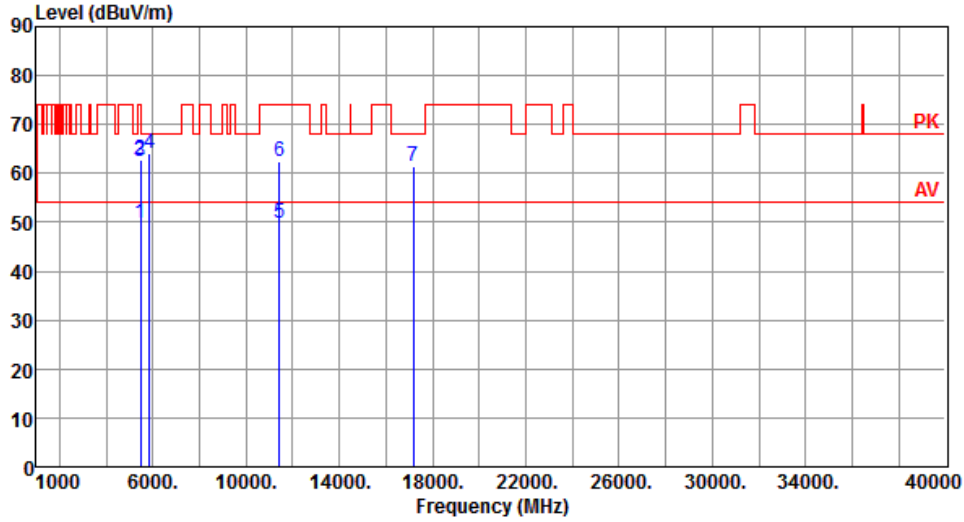
	Freq. MHz	Emission level dBUV/m	Limit dBUV/m	Margin dB	SA reading dBUV	Factor dB	Remark	ANT High cm	Turn Table deg
1	5725.00	51.15	54.00	-2.85	46.31	4.84	Average	163	225
2	5725.00	68.07	74.00	-5.93	63.23	4.84	Peak	163	225
3	11400.00	45.92	54.00	-8.08	31.80	14.12	Average	125	232
4	11400.00	58.82	74.00	-15.18	44.70	14.12	Peak	125	232
5	17100.00	47.77	54.00	-6.23	30.17	17.60	Average	100	263
6	17100.00	60.82	74.00	-13.18	43.22	17.60	Peak	100	263

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)	5700
Polarization	Vertical		
Level (dBuV/m) </			

Modulation	11a	Test Freq. (MHz)	5720
Polarization	Horizontal		
Level (dBuV/m) </			

Modulation	11a	Test Freq. (MHz)	5720
Polarization	Vertical		

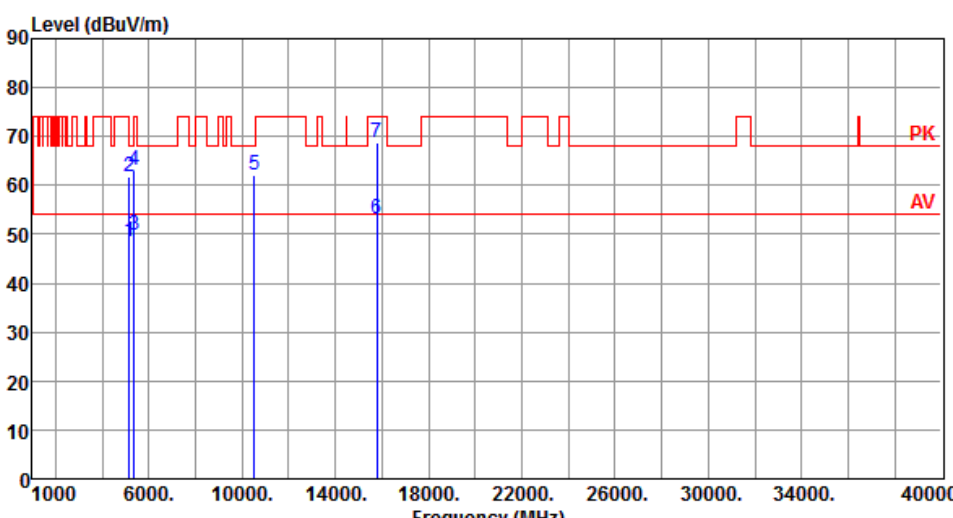


	Freq. MHz	Emission level dBUV/m	Limit dBUV/m	Margin dB	SA reading dBUV	Factor dB	Remark	ANT High cm	Turn Table deg
1	5460.00	49.74	54.00	-4.26	45.23	4.51	Average	232	222
2	5460.00	62.81	74.00	-11.19	58.30	4.51	Peak	232	222
3	5470.00	62.30	68.20	-5.90	57.78	4.52	Peak	232	222
4	5850.00	64.06	68.20	-4.14	59.02	5.04	Peak	232	222
5	11440.00	49.91	54.00	-4.09	35.80	14.11	Average	121	185
6	11440.00	62.47	74.00	-11.53	48.36	14.11	Peak	121	185
7	17160.00	61.32	68.20	-6.88	43.57	17.75	Peak	100	164

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)	5260
Polarization	Horizontal		

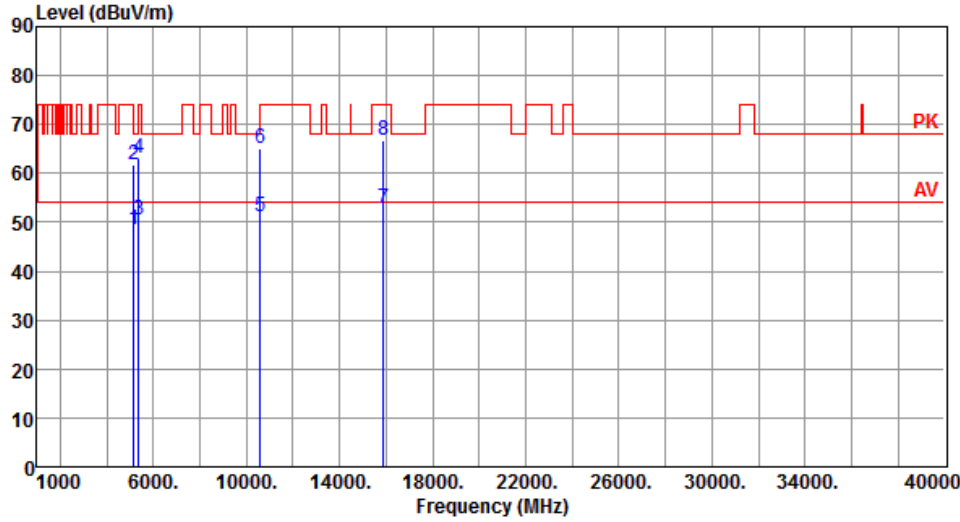


	Freq. MHz	Emission level dBUV/m	Limit dBUV/m	Margin dB	SA reading dBUV	Factor dB	Remark	ANT High cm	Turn Table deg
1	5150.00	48.56	54.00	-5.44	44.28	4.28	Average	177	224
2	5150.00	61.87	74.00	-12.13	57.59	4.28	Peak	177	224
3	5350.00	49.87	54.00	-4.13	45.43	4.44	Average	177	224
4	5350.00	62.97	74.00	-11.03	58.53	4.44	Peak	177	224
5	10520.00	62.18	68.20	-6.02	48.46	13.72	Peak	139	210
6	15780.00	52.98	54.00	-1.02	38.64	14.34	Average	165	227
7	15780.00	68.65	74.00	-5.35	54.31	14.34	Peak	165	227

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)	5260
Polarization	Vertical		
Level (dBuV/m) <			

Modulation	VHT20	Test Freq. (MHz)	5300
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	48.41	54.00	-5.59	44.13	4.28	Average	159	236
2	5150.00	61.74	74.00	-12.26	57.46	4.28	Peak	159	236
3	5350.00	50.38	54.00	-3.62	45.94	4.44	Average	159	236
4	5350.00	63.17	74.00	-10.83	58.73	4.44	Peak	159	236
5	10600.00	51.11	54.00	-2.89	37.31	13.80	Average	179	215
6	10600.00	65.12	74.00	-8.88	51.32	13.80	Peak	179	215
7	15900.00	52.70	54.00	-1.30	38.52	14.18	Average	231	238
8	15900.00	66.92	74.00	-7.08	52.74	14.18	Peak	231	238

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)	5300
Polarization	Vertical		
Level (dBUV/m)			

Modulation	VHT20	Test Freq. (MHz)	5320
Polarization	Horizontal		
Level (dBuV/m) </			

Modulation	VHT20	Test Freq. (MHz)	5320
Polarization	Vertical		
Level (dBuV/m) </			

Modulation	VHT20	Test Freq. (MHz)	5500
Polarization	Horizontal		
Level (dBuV/m)			

Modulation	VHT20	Test Freq. (MHz)	5500
Polarization	Vertical		
Level (dBuV/m)			

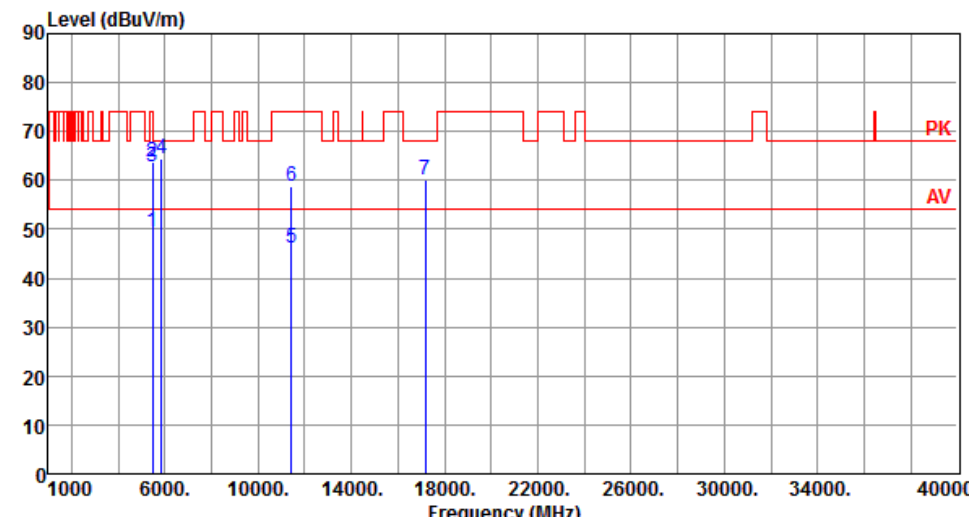
Modulation	VHT20	Test Freq. (MHz)	5580
Polarization	Horizontal		
Level (dBuV/m)			

Modulation	VHT20	Test Freq. (MHz)	5580
Polarization	Vertical		
Level (dBuV/m)			

Modulation	VHT20	Test Freq. (MHz)	5700
Polarization	Horizontal		
Level (dBuV/m) </			

Modulation	VHT20	Test Freq. (MHz)	5700
Polarization	Vertical		
Level (dBuV/m)			

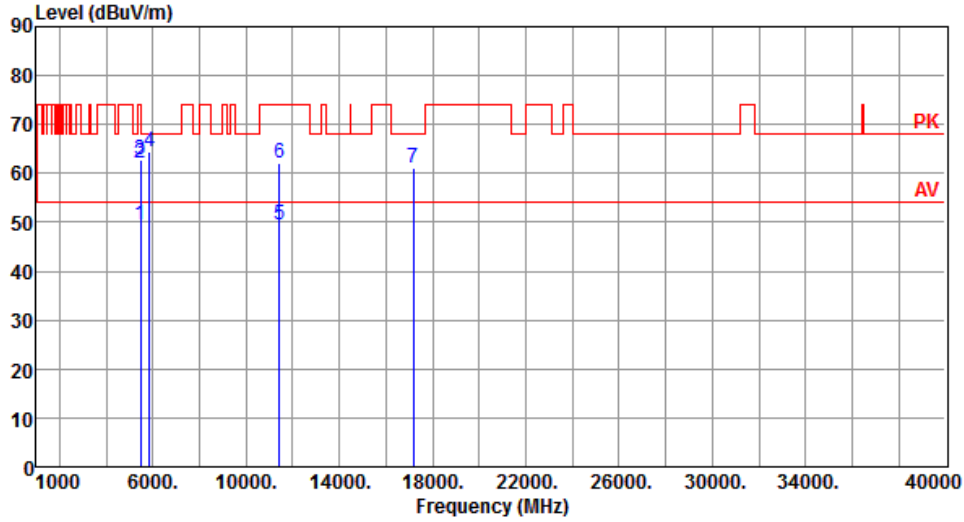
Modulation	VHT20	Test Freq. (MHz)	5720
Polarization	Horizontal		



	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	49.39	54.00	-4.61	44.88	4.51	Average	166	230
2	5460.00	63.67	74.00	-10.33	59.16	4.51	Peak	166	230
3	5470.00	62.74	68.20	-5.46	58.22	4.52	Peak	166	230
4	5850.00	64.36	68.20	-3.84	59.32	5.04	Peak	166	230
5	11440.00	46.27	54.00	-7.73	32.16	14.11	Average	119	171
6	11440.00	58.69	74.00	-15.31	44.58	14.11	Peak	119	171
7	17160.00	60.07	68.20	-8.13	42.32	17.75	Peak	100	262

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)	5720
Polarization	Vertical		



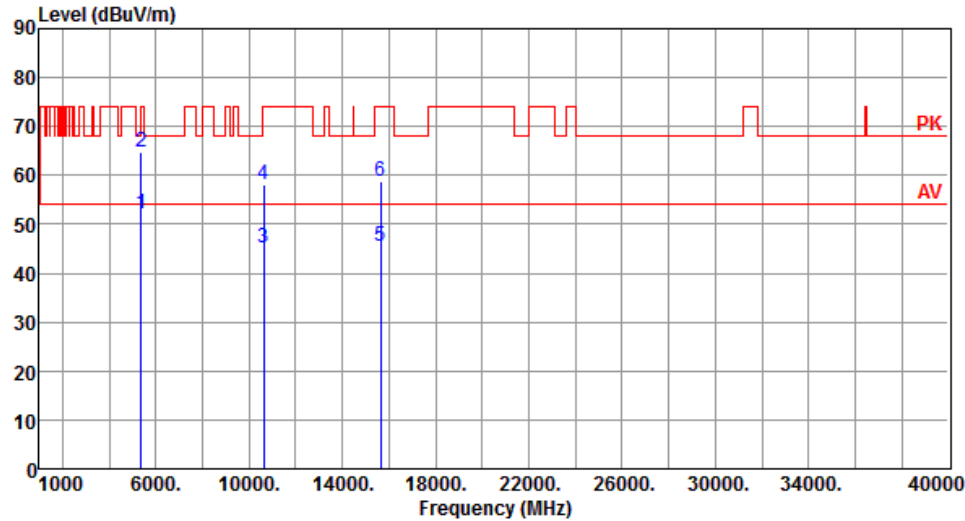
	Freq. MHz	Emission level dBUV/m	Limit dBUV/m	Margin dB	SA reading dBUV	Factor dB	Remark	ANT High cm	Turn Table deg
1	5460.00	49.57	54.00	-4.43	45.06	4.51	Average	220	214
2	5460.00	62.24	74.00	-11.76	57.73	4.51	Peak	220	214
3	5470.00	62.82	68.20	-5.38	58.30	4.52	Peak	220	214
4	5850.00	64.38	68.20	-3.82	59.34	5.04	Peak	220	214
5	11440.00	49.37	54.00	-4.63	35.26	14.11	Average	118	182
6	11440.00	62.17	74.00	-11.83	48.06	14.11	Peak	118	182
7	17160.00	61.03	68.20	-7.17	43.28	17.75	Peak	100	155

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).

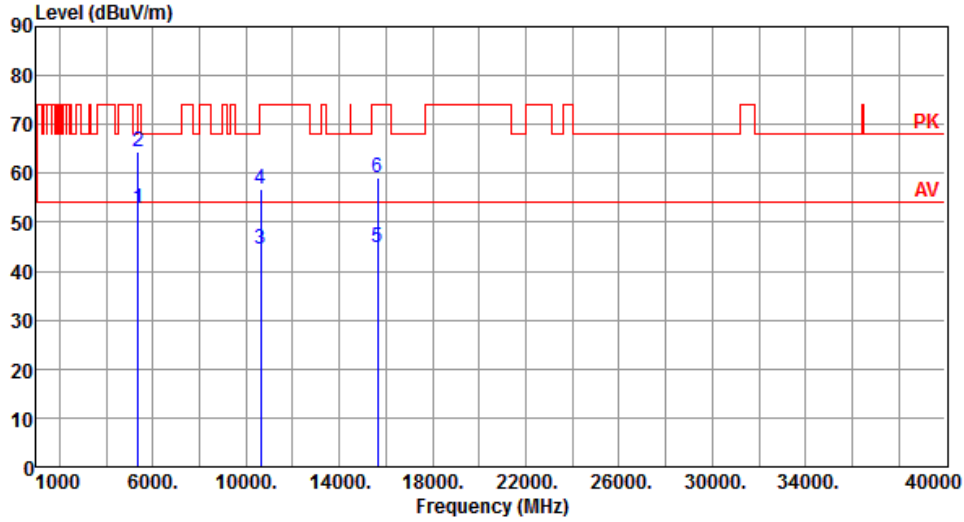
3.5.7 Transmitter Radiated Unwanted Emissions (Above 1GHz) for VHT40

Modulation	VHT40	Test Freq. (MHz)	5270
Polarization	Horizontal		
Level (dBuV/m) </			

Modulation	VHT40	Test Freq. (MHz)	5270
Polarization	Vertical		
Level (dBuV/m)			

Modulation	VHT40	Test Freq. (MHz)	5310																																																																						
Polarization	Horizontal																																																																								
 <table><tr><th></th><th>Freq. MHz</th><th>Emission level dBuV/m</th><th>Limit dBuV/m</th><th>Margin dB</th><th>SA reading dBuV</th><th>Factor dB</th><th>Remark</th><th>ANT High cm</th><th>Turn Table deg</th></tr><tr><td>1</td><td>5350.00</td><td>52.11</td><td>54.00</td><td>-1.89</td><td>47.67</td><td>4.44</td><td>Average</td><td>156</td><td>48</td></tr><tr><td>2</td><td>5350.00</td><td>64.92</td><td>74.00</td><td>-9.08</td><td>60.48</td><td>4.44</td><td>Peak</td><td>156</td><td>48</td></tr><tr><td>3</td><td>10620.00</td><td>45.03</td><td>54.00</td><td>-8.97</td><td>31.22</td><td>13.81</td><td>Average</td><td>100</td><td>30</td></tr><tr><td>4</td><td>10620.00</td><td>58.09</td><td>74.00</td><td>-15.91</td><td>44.28</td><td>13.81</td><td>Peak</td><td>100</td><td>30</td></tr><tr><td>5</td><td>15630.00</td><td>45.52</td><td>54.00</td><td>-8.48</td><td>30.98</td><td>14.54</td><td>Average</td><td>100</td><td>200</td></tr><tr><td>6</td><td>15630.00</td><td>58.71</td><td>74.00</td><td>-15.29</td><td>44.17</td><td>14.54</td><td>Peak</td><td>100</td><td>200</td></tr></table>					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	52.11	54.00	-1.89	47.67	4.44	Average	156	48	2	5350.00	64.92	74.00	-9.08	60.48	4.44	Peak	156	48	3	10620.00	45.03	54.00	-8.97	31.22	13.81	Average	100	30	4	10620.00	58.09	74.00	-15.91	44.28	13.81	Peak	100	30	5	15630.00	45.52	54.00	-8.48	30.98	14.54	Average	100	200	6	15630.00	58.71	74.00	-15.29	44.17	14.54	Peak	100	200
	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	52.11	54.00	-1.89	47.67	4.44	Average	156	48																																																																
2	5350.00	64.92	74.00	-9.08	60.48	4.44	Peak	156	48																																																																
3	10620.00	45.03	54.00	-8.97	31.22	13.81	Average	100	30																																																																
4	10620.00	58.09	74.00	-15.91	44.28	13.81	Peak	100	30																																																																
5	15630.00	45.52	54.00	-8.48	30.98	14.54	Average	100	200																																																																
6	15630.00	58.71	74.00	-15.29	44.17	14.54	Peak	100	200																																																																
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).																																																																									

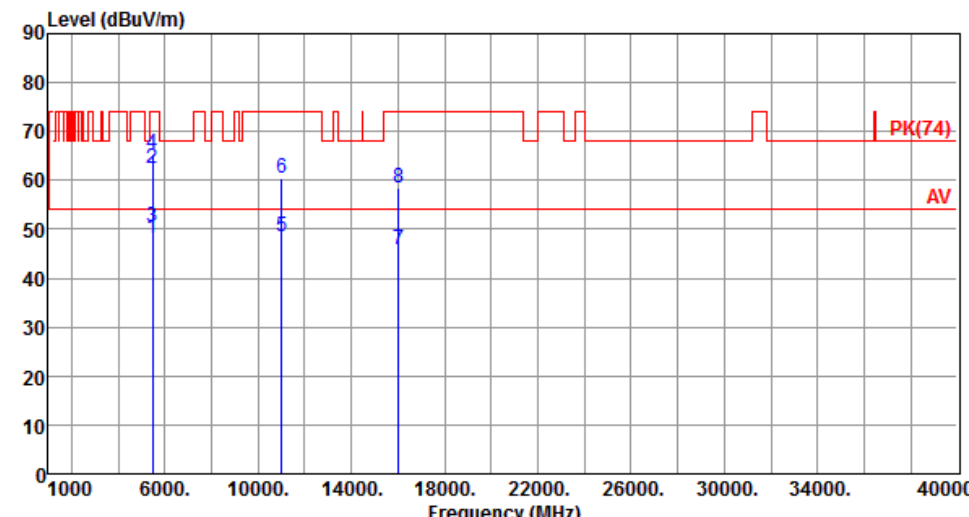
Modulation	VHT40	Test Freq. (MHz)	5310
Polarization	Vertical		



	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	52.90	54.00	-1.10	48.46	4.44	Average	186	303
2	5350.00	64.35	74.00	-9.65	59.91	4.44	Peak	186	303
3	10620.00	44.39	54.00	-9.61	30.58	13.81	Average	100	27
4	10620.00	56.82	74.00	-17.18	43.01	13.81	Peak	100	27
5	15630.00	44.88	54.00	-9.12	30.34	14.54	Average	100	327
6	15630.00	59.15	74.00	-14.85	44.61	14.54	Peak	100	327

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).

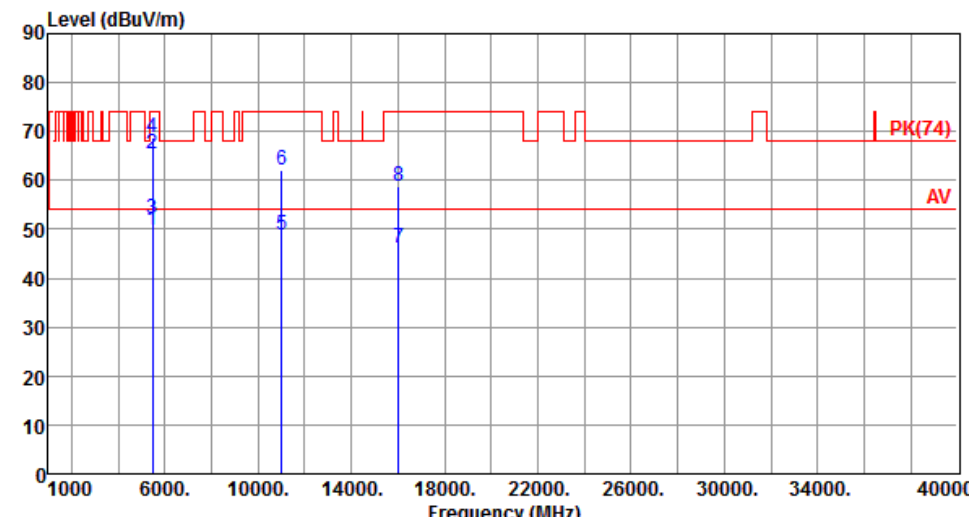
Modulation	VHT40	Test Freq. (MHz)	5510
Polarization	Horizontal		



	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	48.15	54.00	-5.85	43.64	4.51	Average	203	44
2	5460.00	62.47	74.00	-11.53	57.96	4.51	Peak	203	44
3	5470.00	50.62	54.00	-3.38	46.10	4.52	Average	203	44
4	5470.00	65.41	74.00	-8.59	60.89	4.52	Peak	203	44
5	11020.00	48.35	54.00	-5.65	34.21	14.14	Average	105	242
6	11020.00	60.41	74.00	-13.59	46.27	14.14	Peak	105	242
7	16030.00	45.87	54.00	-8.13	31.70	14.17	Average	100	325
8	16030.00	58.49	74.00	-15.51	44.32	14.17	Peak	100	325

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)	5510
Polarization	Vertical		

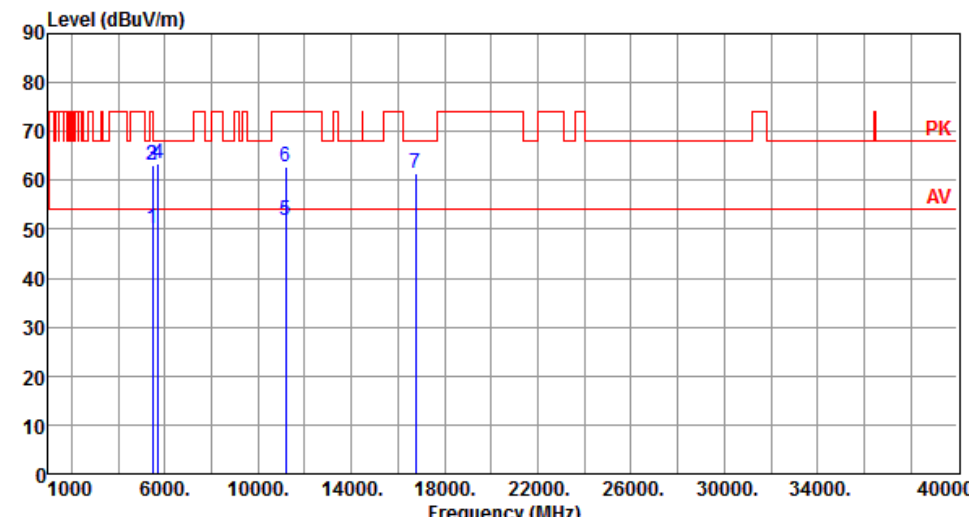


	Freq. MHz	Emission level dBuV/m	Limit dBuV/m	Margin dB	SA reading dBuV	Factor dB	Remark	ANT High cm	Turn Table deg
1	5460.00	49.80	54.00	-4.20	45.29	4.51	Average	266	58
2	5460.00	65.47	74.00	-8.53	60.96	4.51	Peak	266	58
3	5470.00	52.16	54.00	-1.84	47.64	4.52	Average	266	58
4	5470.00	68.77	74.00	-5.23	64.25	4.52	Peak	266	58
5	11020.00	48.82	54.00	-5.18	34.68	14.14	Average	114	28
6	11020.00	62.11	74.00	-11.89	47.97	14.14	Peak	114	28
7	16030.00	46.24	54.00	-7.76	32.07	14.17	Average	100	329
8	16030.00	58.63	74.00	-15.37	44.46	14.17	Peak	100	329

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)	5590
Polarization	Horizontal		
Level (dBuV/m) </			

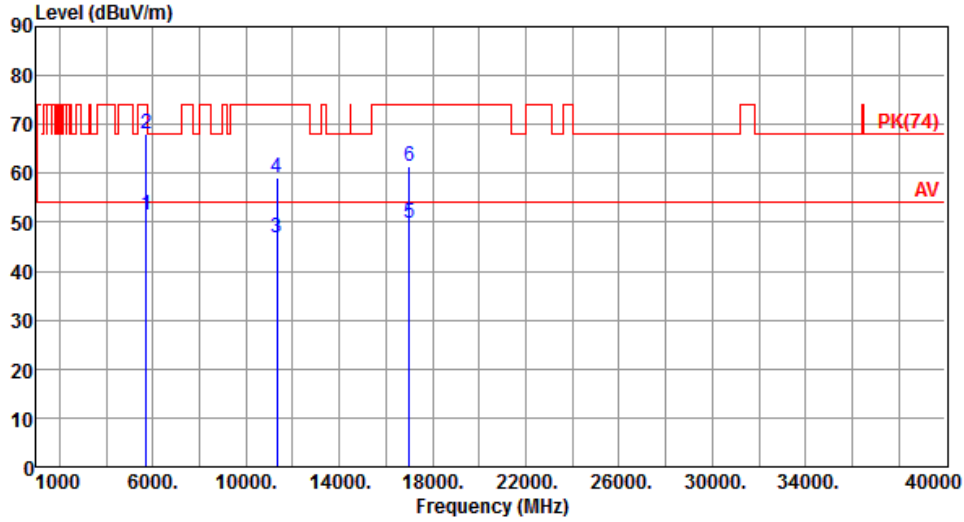
Modulation	VHT40	Test Freq. (MHz)	5590
Polarization	Vertical		



	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	50.14	54.00	-3.86	45.63	4.51	Average	181	355
2	5460.00	63.10	74.00	-10.90	58.59	4.51	Peak	181	355
3	5470.00	63.15	68.20	-5.05	58.63	4.52	Peak	181	355
4	5725.00	63.36	68.20	-4.84	58.52	4.84	Peak	181	355
5	11180.00	51.92	54.00	-2.08	37.78	14.14	Average	134	28
6	11180.00	62.78	74.00	-11.22	48.64	14.14	Peak	134	28
7	16770.00	61.46	68.20	-6.74	44.65	16.81	Peak	100	337

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).

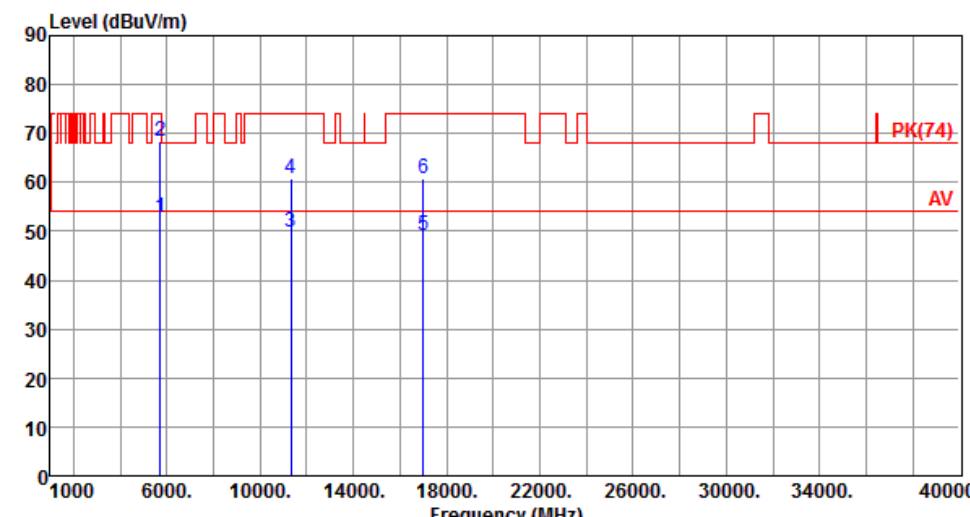
Modulation	VHT40	Test Freq. (MHz)	5670
Polarization	Horizontal		



	Freq. MHz	Emission level dBuV/m	Limit dBuV/m	Margin dB	SA reading dBuV	Factor dB	Remark	ANT High cm	Turn Table deg
1	5725.00	51.49	54.00	-2.51	46.65	4.84	Average	100	47
2	5725.00	68.22	74.00	-5.78	63.38	4.84	Peak	100	47
3	11340.00	46.74	54.00	-7.26	32.62	14.12	Average	163	44
4	11340.00	59.09	74.00	-14.91	44.97	14.12	Peak	163	44
5	17010.00	49.97	54.00	-4.03	32.61	17.36	Average	100	49
6	17010.00	61.34	74.00	-12.66	43.98	17.36	Peak	100	49

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

Modulation	VHT40	Test Freq. (MHz)	5670
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	5725.00	52.76	54.00	-1.24	47.92	4.84	Average	223	21
2	5725.00	68.45	74.00	-5.55	63.61	4.84	Peak	223	21
3	11340.00	49.86	54.00	-4.14	35.74	14.12	Average	147	31
4	11340.00	60.85	74.00	-13.15	46.73	14.12	Peak	147	31
5	17010.00	49.20	54.00	-4.80	31.84	17.36	Average	100	318
6	17010.00	60.82	74.00	-13.18	43.46	17.36	Peak	100	318

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)	5710
Polarization	Horizontal		
Level (dBUV/m) <			

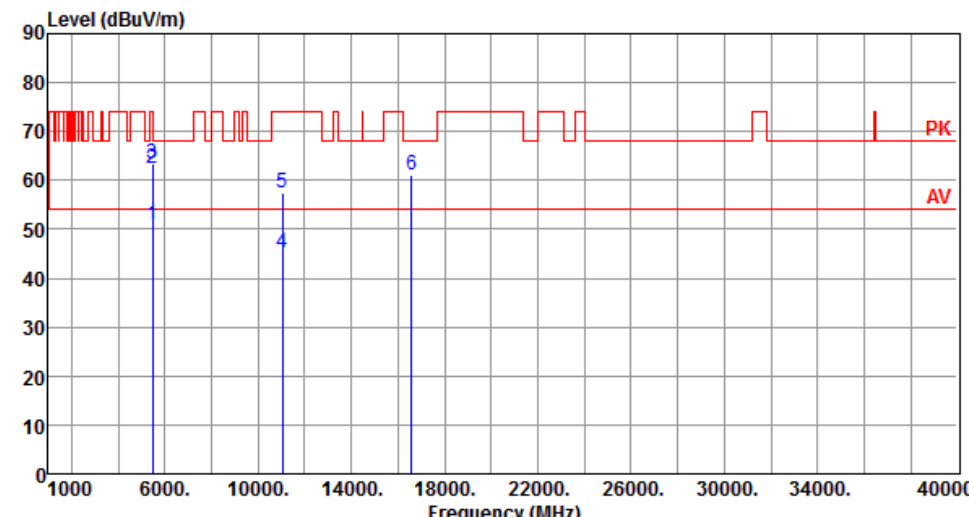
Modulation	VHT40	Test Freq. (MHz)	5710
Polarization	Vertical		
Level (dBuV/m)			

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

Modulation	VHT80	Test Freq. (MHz)	5290
Polarization	Horizontal		
Level (dBuV/m) <			

Modulation	VHT80	Test Freq. (MHz)	5290
Polarization	Vertical		
Level (dBuV/m) <			

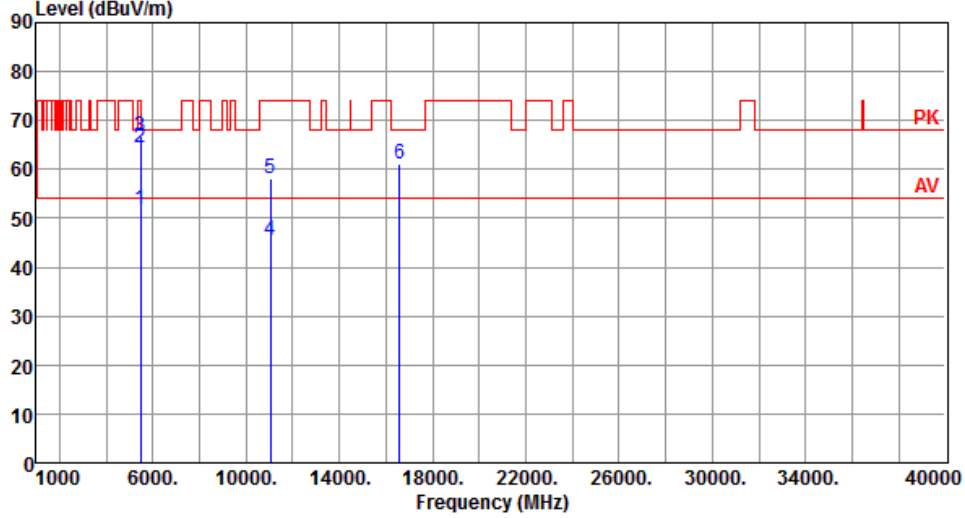
Modulation	VHT80	Test Freq. (MHz)	5530
Polarization	Horizontal		



	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	50.83	54.00	-3.17	46.32	4.51	Average	146	228
2	5460.00	62.36	74.00	-11.64	57.85	4.51	Peak	146	228
3	5470.00	63.32	68.20	-4.88	58.80	4.52	Peak	146	228
4	11060.00	45.03	54.00	-8.97	30.88	14.15	Average	100	210
5	11060.00	57.31	74.00	-16.69	43.16	14.15	Peak	100	210
6	16590.00	61.07	68.20	-7.13	44.69	16.38	Peak	100	231

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).

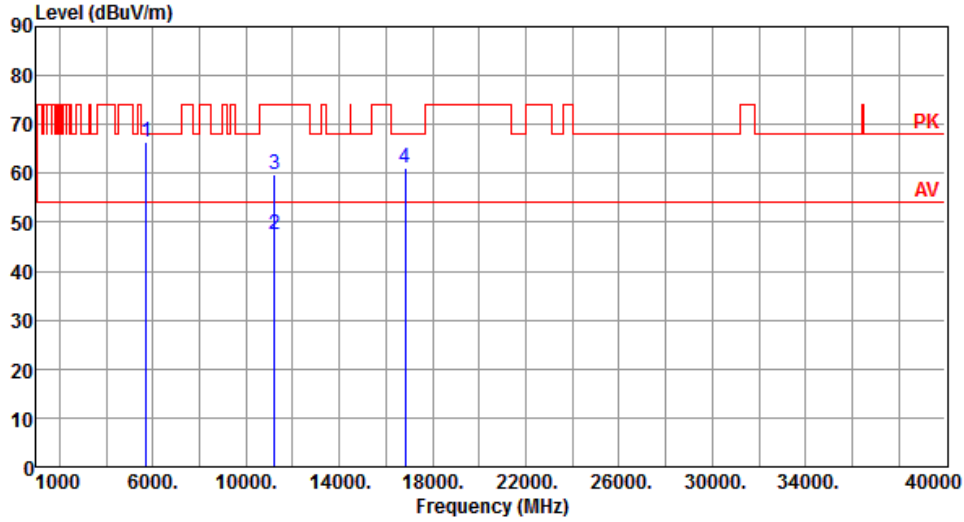
Modulation	VHT80	Test Freq. (MHz)	5530
Polarization	Vertical		



	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	51.96	54.00	-2.04	47.45	4.51	Average	282	221
2	5460.00	64.49	74.00	-9.51	59.98	4.51	Peak	282	221
3	5470.00	66.75	68.20	-1.45	62.23	4.52	Peak	282	221
4	11060.00	45.37	54.00	-8.63	31.22	14.15	Average	100	240
5	11060.00	58.28	74.00	-15.72	44.13	14.15	Peak	100	240
6	16590.00	61.21	68.20	-6.99	44.83	16.38	Peak	100	262

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).

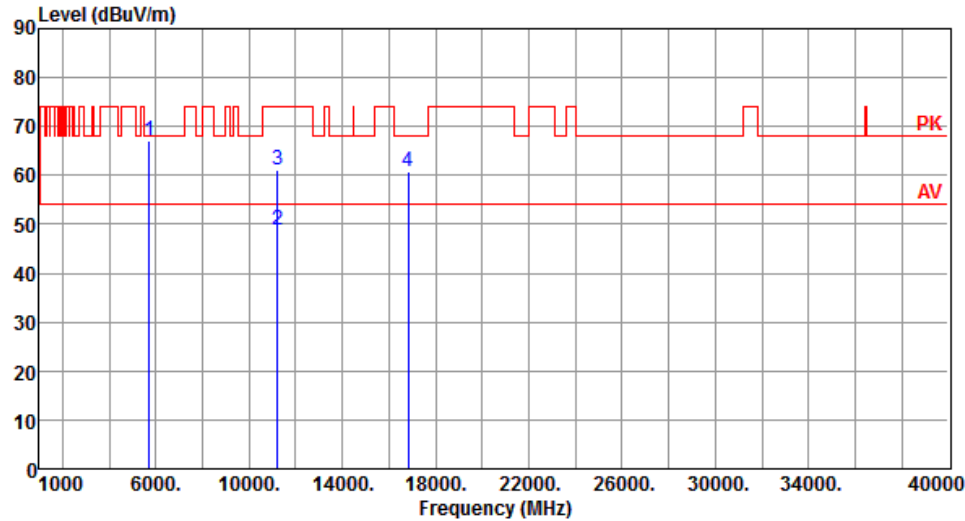
Modulation	VHT80	Test Freq. (MHz)	5610
Polarization	Horizontal		



	Freq. MHz	Emission level dBUV/m	Limit dBUV/m	Margin dB	SA reading dBUV	Factor dB	Remark	ANT High cm	Turn Table deg
1	5725.00	66.43	68.20	-1.77	61.59	4.84	Peak	163	229
2	11220.00	47.49	54.00	-6.51	33.36	14.13	Average	100	232
3	11220.00	59.71	74.00	-14.29	45.58	14.13	Peak	100	232
4	16830.00	60.97	68.20	-7.23	44.03	16.94	Peak	100	228

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).

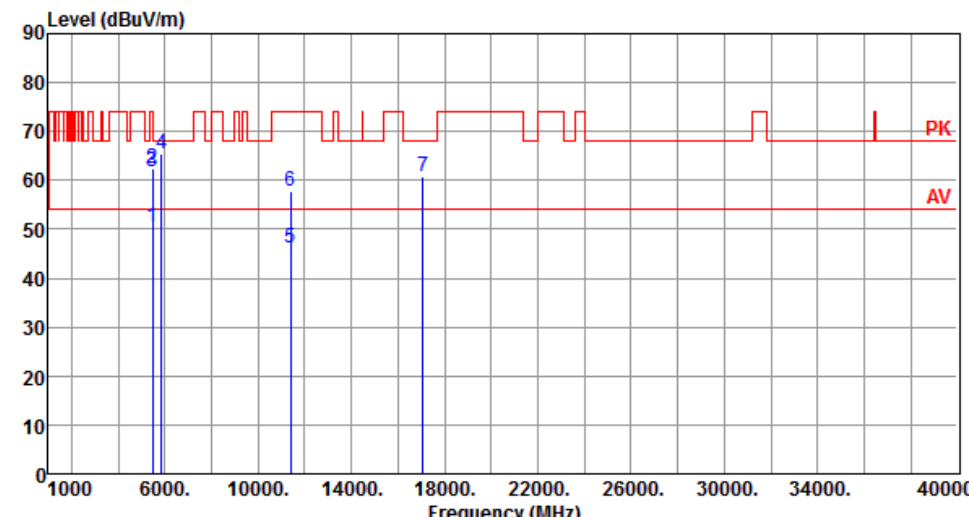
Modulation	VHT80	Test Freq. (MHz)	5610
Polarization	Vertical		



	Freq. MHz	Emission level dBuV/m	Limit dBuV/m	Margin dB	SA reading dBuV	Factor dB	Remark	ANT High cm	Turn Table deg
1	5725.00	67.19	68.20	-1.01	62.35	4.84	Peak	290	225
2	11220.00	48.83	54.00	-5.17	34.70	14.13	Average	115	212
3	11220.00	61.06	74.00	-12.94	46.93	14.13	Peak	115	212
4	16830.00	60.90	68.20	-7.30	43.96	16.94	Peak	100	156

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)	5690
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	50.34	54.00	-3.66	45.83	4.51	Average	174	223
2	5460.00	62.34	74.00	-11.66	57.83	4.51	Peak	174	223
3	5470.00	61.76	68.20	-6.44	57.24	4.52	Peak	174	223
4	5850.00	65.31	68.20	-2.89	60.27	5.04	Peak	174	223
5	11380.00	46.07	54.00	-7.93	31.94	14.13	Average	135	170
6	11380.00	57.77	74.00	-16.23	43.64	14.13	Peak	135	170
7	17070.00	60.78	68.20	-7.42	43.26	17.52	Peak	100	253

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)	5690
Polarization	Vertical		
Level (dBuV/m)			

3.6 Frequency Stability

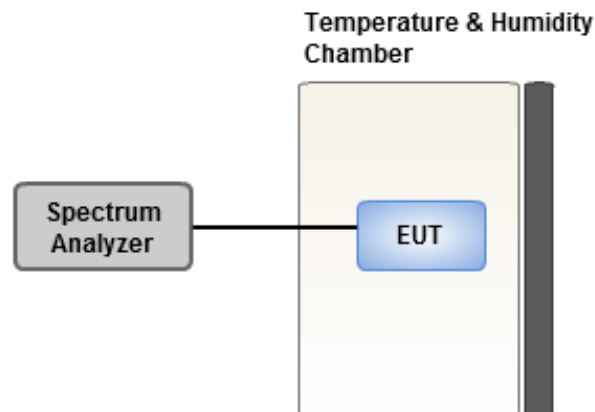
3.6.1 Limit of Frequency Stability

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: 5320 MHz	Frequency Drift (ppm)			
Temperature (°C)	0 minute	2 minutes	5 minutes	10 minutes
T20°C Vmax	5.75	5.55	5.52	6.42
T20°C Vmin	5.77	5.89	5.43	5.68
T50°C Vnom	3.99	4.36	4.58	3.91
T40°C Vnom	3.26	3.60	3.50	3.67
T30°C Vnom	3.24	3.72	3.47	3.83
T20°C Vnom	3.37	3.56	3.89	3.66
T10°C Vnom	2.77	3.43	3.22	3.24
T0°C Vnom	3.67	4.17	4.03	4.07
T-10°C Vnom	2.36	2.90	2.82	2.88
T-20°C Vnom	0.70	0.48	0.71	0.69
T-30°C Vnom	0.56	1.37	0.59	1.06
Vnom [Vac]: 120	Vmax [Vac]: 138		Vmin [Vac]: 102	
Tnom [°C]: 20	Tmax [°C]: 50		Tmin [°C]: -30	

4 Test laboratory information

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

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

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

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Kwei Shan Site II

Tel: 886-3-271-8640

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St., Kwei Shan District, Tao Yuan
City 333, Taiwan, R.O.C.

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

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