NCC Test Report

Equipment	:	**Multy X** 三頻全覆蓋無線延伸系統
Model No.	:	**WSQ50**
Brand Name	:	**ZYXEL**
Applicant	:	合勤科技股份有限公司
Address	:	新北市新店區北新路 **3** 段 **223** 號 **11** 樓
Standard	:	**LP0002 Section 4.7 (2018-01-10)**
Received Date	:	**Aug. 11, 2017**
Tested Date	:	**Aug. 11 ~ Aug. 22, 2017** **Mar. 07 ~ May 02, 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

Testing Laboratory 2732

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Release Record

Report No.	Version	Description	Issued Date
TR760801-02AN	Rev. 01	Initial issue	Jun. 01, 2018

Summary of Test Results

NCC Rules	Test Items	Measured	Result
2.3	Conducted Emissions	[dBuV]: 0.481MHz 31.13 (Margin -15.19dB) - AV	Pass
4.7.4 2.8	Radiated Emissions	[dBuV/m at 3m]: 15600.00MHz 53.89 (Margin -0.11dB) - AV	Pass
-	Emission Bandwidth	Meet the requirement of limit	Pass
4.7.5	6dB bandwidth	Meet the requirement of limit	Pass
4.7.3	RF Output Power	Max Power [dBm]: ***Non-beamforming mode*** 5150-5250MHz: 26.92 5725-5850MHz: 29.81 ***Beamforming mode*** 5725-5850MHz: 28.92	Pass
4.7.3	Peak Power Spectral Density	Meet the requirement of limit	Pass
-	Frequency Stability	Meet the requirement of limit	Pass
4.7.8	Antenna Requirement	Meet the requirement of limit	Pass

1 General Description

1.1 Information

1.1.1 Specification of the Equipment under Test (EUT)

RF General Information					
Frequency Range (MHz)	**IEEE Std. 802.11**	**Ch. Freq. (MHz)**	**Channel Number**	**Transmit Chains (N_{TX})**	**Data Rate / MCS**
5150-5250	a	5180-5240	36-48 [4]	2	6-54 Mbps
5150-5250	n (HT20)	5180-5240	36-48 [4]	2	MCS 0-15
5150-5250	n (HT40)	5190-5230	38-46 [2]	2	MCS 0-15
5150-5250	ac (VHT20)	5180-5240	36-48 [4]	2	MCS 0-9
5150-5250	ac (VHT40)	5190-5230	38-46 [2]	2	MCS 0-9
5150-5250	ac (VHT80)	5210	42 [1]	2	MCS 0-9
Note 1: RF output power specifies that Maximum Conducted Output Power. Note 2: 802.11a/n/ac uses a combination of OFDM-BPSK, QPSK, 16QAM, 64QAM, 256QAM modulation. Note 3: 802.11ac does not supports beamforming function.					

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]	4	6-54 Mbps
5725-5850	n (HT20)	5745-5825	149-165 [5]	4	MCS 0-31
5725-5850	n (HT40)	5755-5795	151-159 [2]	4	MCS 0-31
5725-5850	ac (VHT20)	5745-5825	149-165 [5]	4	MCS 0-9
5725-5850	ac (VHT40)	5755-5795	151-159 [2]	4	MCS 0-9
5725-5850	ac (VHT80)	5775	155 [1]	4	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. Note 3: 802.11ac supports beamforming function.					

1.1.2 Main Chipset / RF Chipset

Function	Model No.
Main Chipset	IPQ4019
2.4G	IPQ4019
5G 2T2R	IPQ4019
5G 4T4R	QCA9984
Bluetooth LE	CSR8811

1.1.3 Antenna Details

Ant. No.	Model	Type	Connector	Operating Frequency (MHz) / Gain (dBi)		
				2400~2483.5	5150~5250	5725~5850
1	ALX17P-051XXB-00	PCB dipole	UFL	0	0	0
2	ALX17P-051XXC-00	PCB dipole	UFL	0	0	0
3	ALX17P-091XX5-00	PCB dipole	UFL	0	0	0
4	ALX17P-091XX6-00	PCB dipole	UFL	0	0	0
5	ALX17P-091XX7-00	PCB dipole	UFL	0	0	0
6	ALX17P-091XX8-00	PCB dipole	UFL	0	0	0
7	ALX17P-091XX9-00	PCB dipole	UFL	0	0	0
8	ALX17P-091XXA-00	PCB dipole	UFL	0	0	0

1.1.4 Power Supply Type of Equipment under Test (EUT)

Power Supply Type	12Vdc from adapter

1.1.5 Accessories

Accessories		
No.	**Equipment**	**Description**
1	AC adapter	Brand Name: APD Model Name: WA-36A12FU I/P: 100-240Vac, 50-60Hz 0.9 Max O/P: 12Vdc, 3A Power line: 1.75m non-shielded without core
2	AC adapter	Brand Name: APD Model Name: WA-36A12R I/P: 100-240Vac, 50-60Hz 0.9 Max O/P: 12Vdc, 3A Power line: 1.75m non-shielded without core
3	RJ45 cable	1.9m non-shielded without core

1.1.6 Channel List

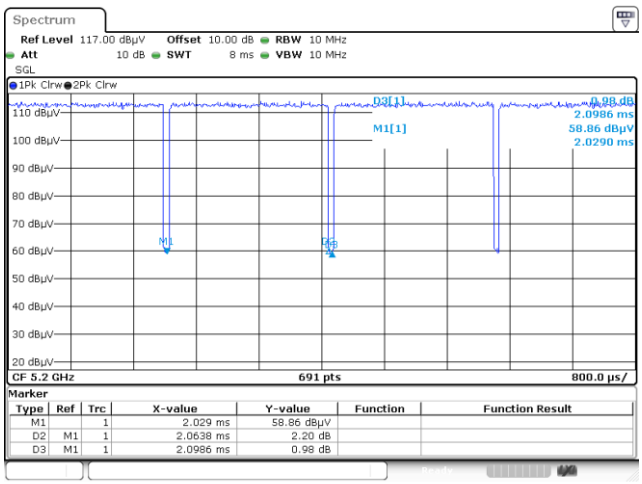
For Frequency band 5150-5250 MHz			
802.11 a / HT20 / VHT20		HT40 / VHT40	
Channel	Frequency(MHz)	Channel	Frequency(MHz)
36	5180	38	5190
40	5200	46	5230
44	5220	VHT80	
48	5240	42	5210

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

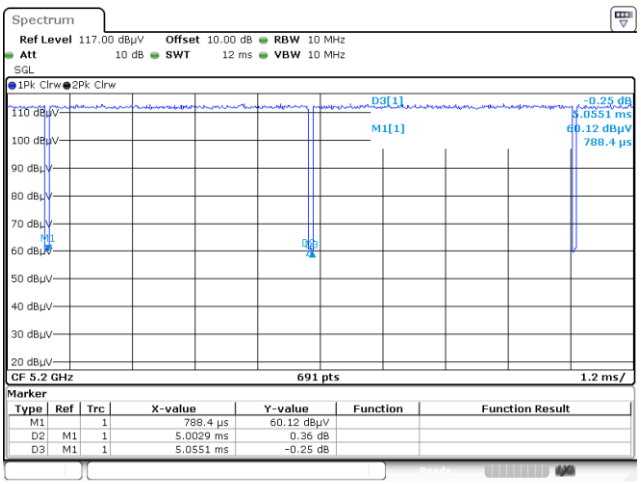
1.1.7 Test Tool and Duty Cycle

For Frequency band 5150-5250 MHz			
Test Tool	QRCT, Version: 3.0.144.0		
Duty Cycle and Duty Factor	**Mode**	**Duty cycle (%)**	**Duty factor (dB)**
	11a	98.34%	0.07
	VHT20	98.97%	0.05
	VHT40	98.14%	0.08
	VHT80	92.99%	0.32

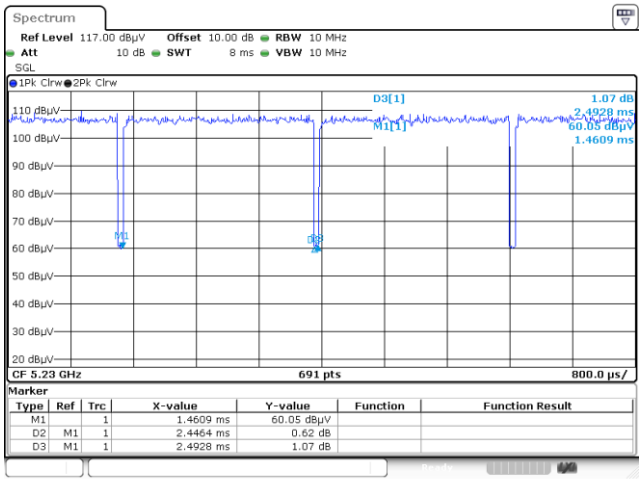
11a



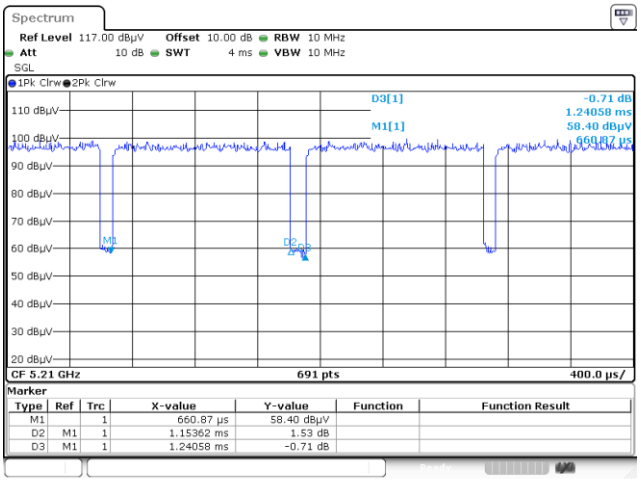
VHT20



VHT40



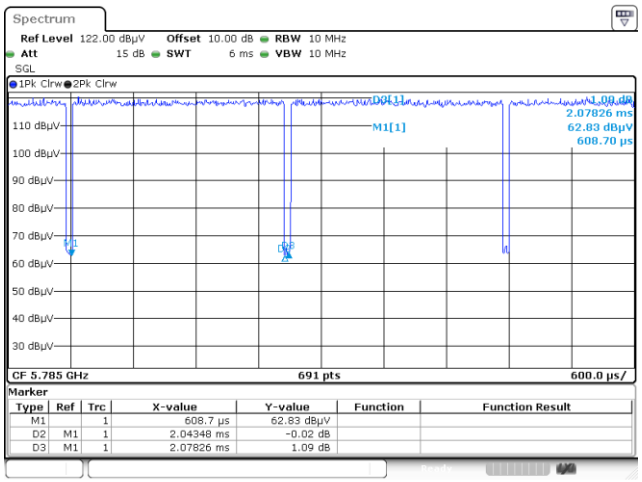
VHT80



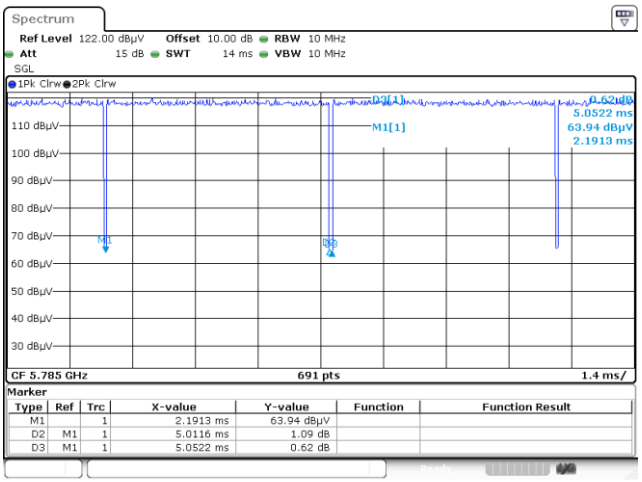
For Frequency band 5725~5850 MHz					
Test Tool	Non-Beamforming: QRCT, Version: 3.0.144.0 Beamforming: Telnet				
Duty Cycle and Duty Factor	**Mode**	**Non-beamforming**		**Beamforming**	
		Duty cycle (%)	**Duty factor (dB)**	**Duty cycle (%)**	**Duty factor (dB)**
	11a	98.33%	0.07	---	---
	VHT20	99.20%	0.04	92.10%	0.36
	VHT40	98.14%	0.08	91.83%	0.37
	VHT80	95.71%	0.19	92.81%	0.32

Non-beamforming mode

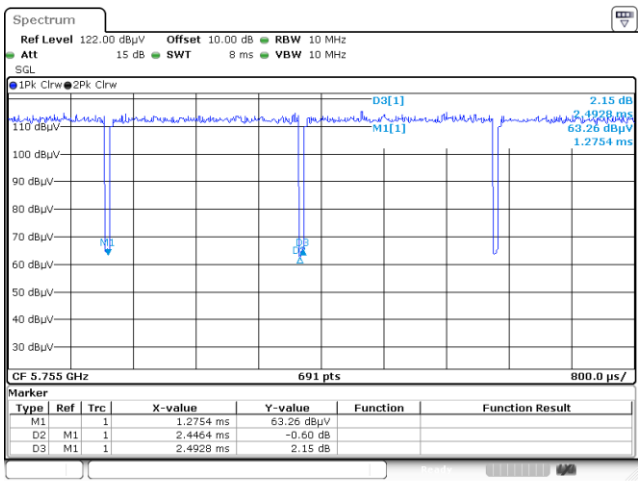
11a



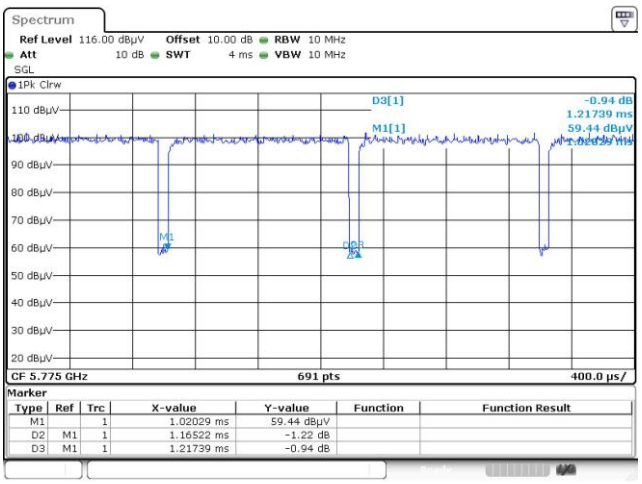
VHT20



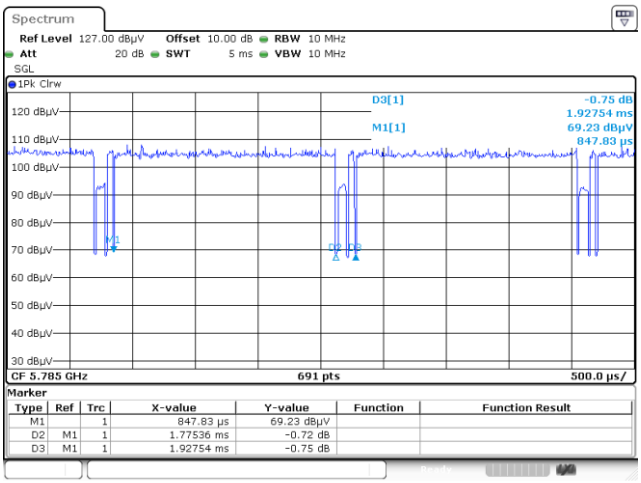
VHT40

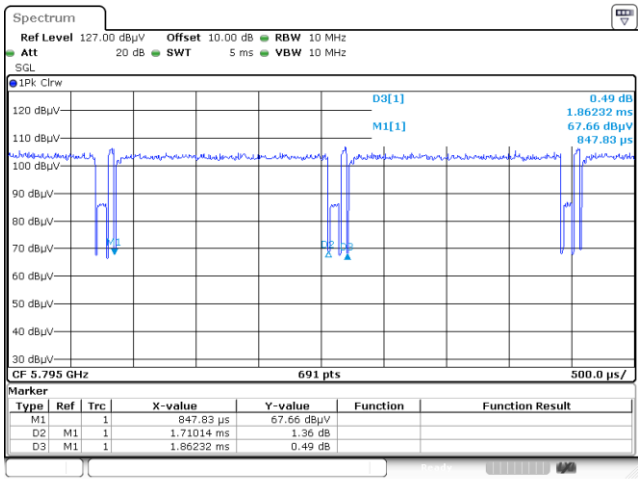
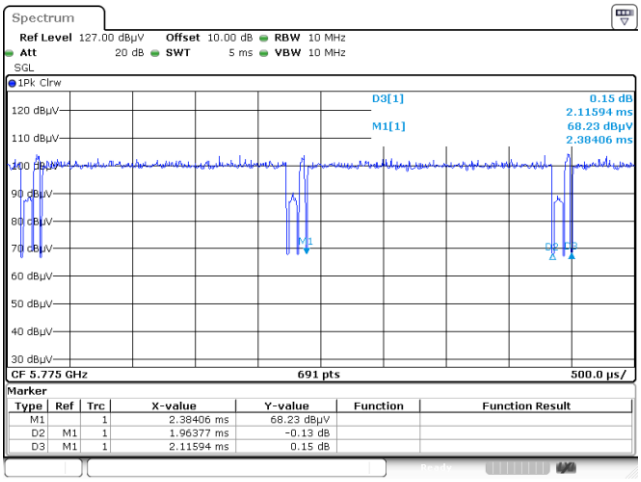


VHT80



Beamforming mode

11a	VHT20
---	

VHT40	VHT80
	

1.1.8 Power Setting

For Frequency band 5150-5250 MHz		
Modulation Mode	Test Frequency (MHz)	Power Set
		Non-Beamforming
11a	5180	19.5
11a	5200	23.5
11a	5240	23.5
HT20	5180	19.5
HT20	5200	23.5
HT20	5240	24
HT40	5190	19
HT40	5230	22
VHT20	5180	19.5
VHT20	5200	23.5
VHT20	5240	24
VHT40	5190	19
VHT40	5230	22
VHT80	5210	18.5

For Frequency band 5725~5850 MHz			
Modulation Mode	Test Frequency (MHz)	Power Set	
		Non-Beamforming	Beamforming
11a	5745	23.50	---
11a	5785	23.50	---
11a	5825	23.50	---
HT20	5745	23.50	29.00
HT20	5785	23.50	29.00
HT20	5825	23.50	29.00
HT40	5755	23.50	29.00
HT40	5795	23.50	29.00
VHT20	5745	23.50	29.00
VHT20	5785	23.50	29.00
VHT20	5825	23.50	29.00
VHT40	5755	23.50	29.00
VHT40	5795	23.50	29.00
VHT80	5775	21.00	27.00

1.2 Local Support Equipment List

Non-beamforming mode

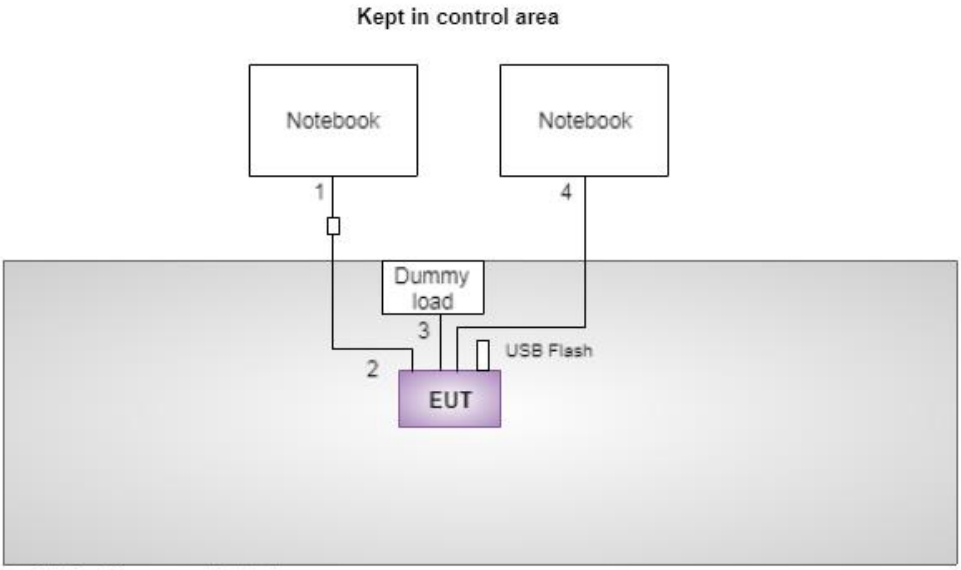
Support Equipment List					
No.	**Equipment**	**Brand**	**Model**	**FCC ID**	**Signal cable / Length (m)**
1	Notebook	DELL	Latitude E6430	DoC	RJ45, 10m non-shielded.
2	Notebook	DELL	Latitude E5420	DoC	RJ45, 1.9m non-shielded.
3	USB Flash	Kingston	DTSE9	---	---
4	Dummy Load	---	---	---	RJ45, 1m(x2) non-shielded.

Beamforming mode

Support Equipment List					
No.	**Equipment**	**Brand**	**Model**	**FCC ID**	**Signal cable / Length (m)**
1	Notebook	DELL	Latitude E6430	DoC	RJ45, 10m non-shielded.
2	Notebook	DELL	Latitude E5420	DoC	RJ45, 1.9m non-shielded.
3	Notebook	DELL	Latitude E5420	DoC	RJ45, 1m non-shielded.
3	USB Flash	Kingston	DTSE9	---	---
4	Dummy Load	---	---	---	RJ45, 1m(x2) non-shielded.
5	Multy X 三頻全覆蓋無線延伸系統	ZYXEL	WSQ50	---	---

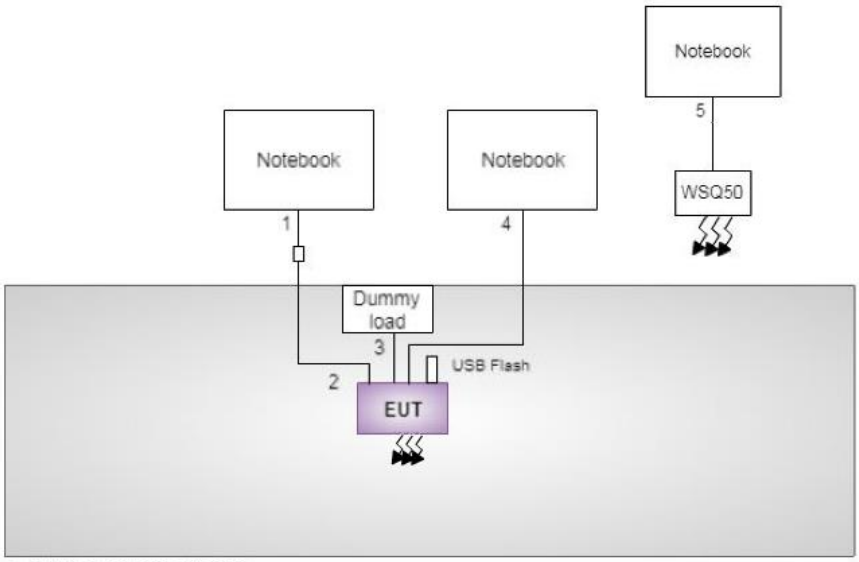
1.3 Test Setup Chart

Test Setup Diagram (*Non-beamforming mode*)



1. RJ45, 1.9m non-shielded.
2. RJ45, 10m non-shielded.
3. RJ45, 1.5m(x2) non-shielded.
4 . RJ45, 10m non-shielded.

Test Setup Diagram (*Beamforming mode*)



1. RJ45, 1.9m non-shielded.
2. RJ45, 10m non-shielded.
3. RJ45, 1.5m(x2) non-shielded.
4 . RJ45, 10m non-shielded.
5. RJ45, 1m non-shielded.

1.4 The Equipment List

Test Item	Conducted Emission				
Test Site	Conduction room 1 / (CO01-WS)				
Tested Date	Mar. 31, 2018				
Instrument	**Manufacturer**	**Model No.**	**Serial No.**	**Calibration Date**	**Calibration Until**
Receiver	Agilent	N9038A	MY53290044	Sep. 26, 2017	Sep. 25, 2018
LISN	R&S	ENV216	101579	Feb. 13, 2018	Feb. 12, 2019
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 chamber1 / (03CH01-WS)				
Tested Date	Mar. 07 ~ Mar. 17, 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-NM-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	Aug. 11 ~ Aug. 22, 2017				
Instrument	**Manufacturer**	**Model No.**	**Serial No.**	**Calibration Date**	**Calibration Until**
Spectrum Analyzer	R&S	FSV40	101063	Mar. 15, 2017	Mar. 14, 2018
TEMP&HUMIDITY CHAMBER	GIANT FORCE	GCT-225-40-SP-SD	MAF1212-002	Nov. 21, 2016	Nov. 20, 2017
Power Meter	Anritsu	ML2495A	1241002	Oct. 06, 2016	Oct. 05, 2017
Power Sensor	Anritsu	MA2411B	1207366	Oct. 06, 2016	Oct. 05, 2017
AC POWER SOURCE	APC	AFC-500W	F312060012	Oct. 28, 2016	Oct. 27, 2017
Measurement Software	Sporton	Sporton_1	1.3.30	NA	NA
Note: Calibration Interval of instruments listed above is one year.					

Test Item	RF Conducted				
Test Site	(TH01-WS)				
Tested Date	Apr. 30 ~ May 02, 2018				
Instrument	**Manufacturer**	**Model No.**	**Serial No.**	**Calibration Date**	**Calibration Until**
Spectrum Analyzer	R&S	FSV40	101063	Apr. 16, 2018	Apr. 15, 2019
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.

LP0002 Section 4.7 (2018-01-10)
ANSI C63.10-2013
ANSI C63.4-2014
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 ^{o}C

2 Test Configuration

2.1 Testing Condition

Test Item	Test Site	Ambient Condition	Tested By
AC Conduction	CO01-WS	24°C / 57%	Alex Tsai
Radiated Emissions	03CH01-WS	24-26°C / 62%	Vincent Yeh Roger Lu
RF Conducted	TH01-WS	22°C / 62% 23°C / 65%	Felix Sung 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

Non-beamforming mode

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

Note:
1. Two adapters (WA-36A12FU and WA-36A12R) had been covered during the pretest, and found that **WA-36A12FU adapter** was the worst case and was selected for final test.
2. The EUT was pretested with 3 orientations placed on the table for the radiated emission measurement – X, Y, and Z-plane. The **X-plane** results were found as the worst case and were shown in this report.

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

Note:
1. Two adapters (WA-36A12FU and WA-36A12R) had been covered during the pretest, and found that **WA-36A12FU adapter** was the worst case and was selected for final test.
2. The EUT was pretested with 3 orientations placed on the table for the radiated emission measurement – X, Y, and Z-plane. The **X-plane** results were found as the worst case and were shown in this report.

For Frequency band 5150-5250 / 5725-5850 MHz			
Test item	**Modulation Mode**	**Test Frequency (MHz)**	**Mode**
Conducted Emissions	VHT20 11a	5240 5785	RX
Radiated Emissions	VHT20 11a	5240 5785	RX

Note:
1. Two adapters (WA-36A12FU and WA-36A12R) had been covered during the pretest, and found that **WA-36A12FU adapter** was the worst case and was selected for final test.
2. The EUT was pretested with 3 orientations placed on the table for the radiated emission measurement – X, Y, and Z-plane. The **X-plane** results were found as the worst case and were shown in this report.

Beamforming mode

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

Note:
1. Two adapters (WA-36A12FU and WA-36A12R) had been covered during the pretest, and found that **WA-36A12FU adapter** was the worst case and was selected for final test.
2. The EUT was pretested with 3 orientations placed on the table for the radiated emission measurement – X, Y, and Z-plane. The **X-plane** results were found as the worst case and were shown in this report.

3 Transmitter Test Results

3.1 Conducted Emissions

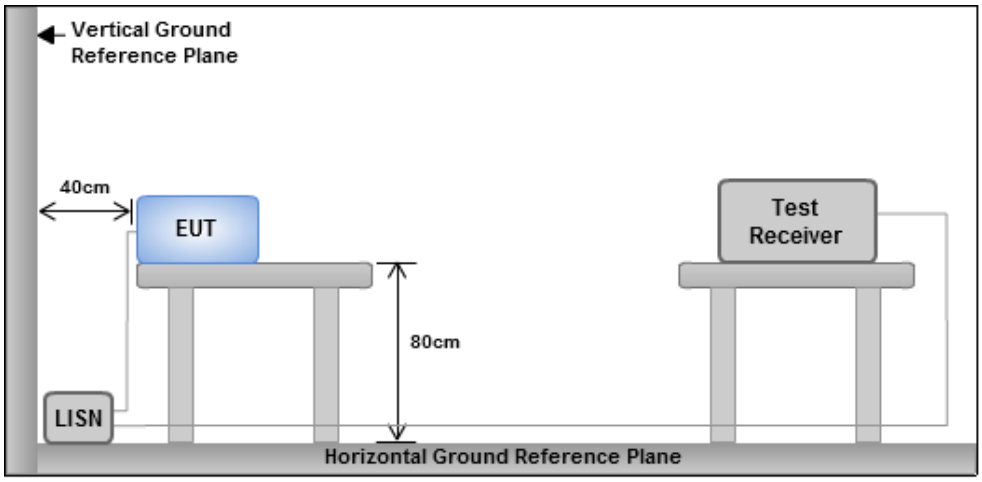
3.1.1 Limit of Conducted Emissions

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

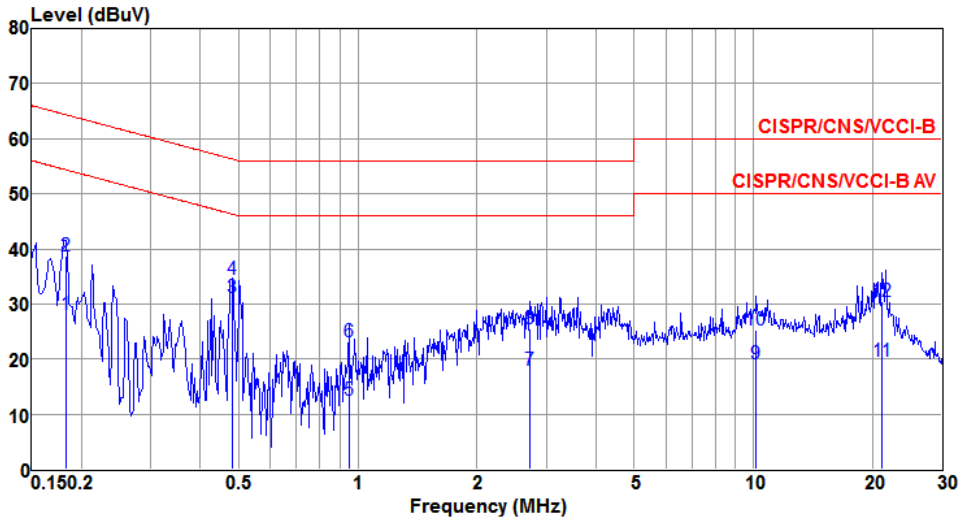


Note: 1. Support units were connected to second LISN.
2. Both of LISNs (AMN) are 80 cm from EUT and at least 80 cm from other units and other metal planes

3.1.4 Test Result of Conducted Emissions

Non-beamforming mode

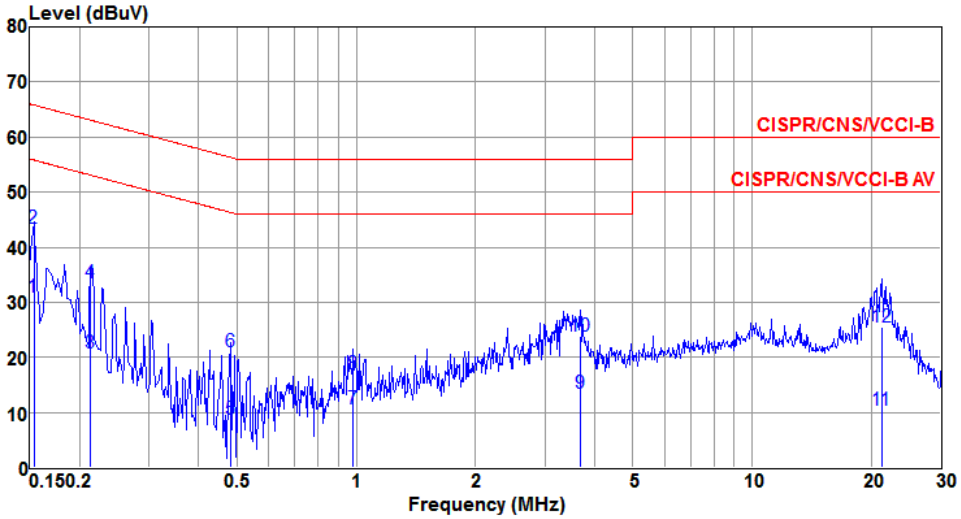
Modulation	VHT20	**Test Freq. (MHz)**	5240
Power Phase	Line		



	Freq MHz	Level dBuV	Limit Line dBuV	Over Limit dB	Read Level dBuV	LISN factor dB	cable loss dB	Remark
1	0.183	28.03	54.33	-26.30	18.28	9.73	0.02	Average
2	0.183	38.67	64.33	-25.66	28.92	9.73	0.02	QP
3@	0.481	31.13	46.32	-15.19	21.38	9.73	0.02	Average
4	0.481	34.38	56.32	-21.94	24.63	9.73	0.02	QP
5	0.948	12.41	46.00	-33.59	2.65	9.73	0.03	Average
6	0.948	23.10	56.00	-32.90	13.34	9.73	0.03	QP
7	2.721	18.02	46.00	-27.98	8.12	9.75	0.15	Average
8	2.721	25.38	56.00	-30.62	15.48	9.75	0.15	QP
9	10.179	19.06	50.00	-30.94	8.96	9.78	0.32	Average
10	10.179	25.21	60.00	-34.79	15.11	9.78	0.32	QP
11	21.147	19.67	50.00	-30.33	9.62	9.70	0.35	Average
12	21.147	30.54	60.00	-29.46	20.49	9.70	0.35	QP

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

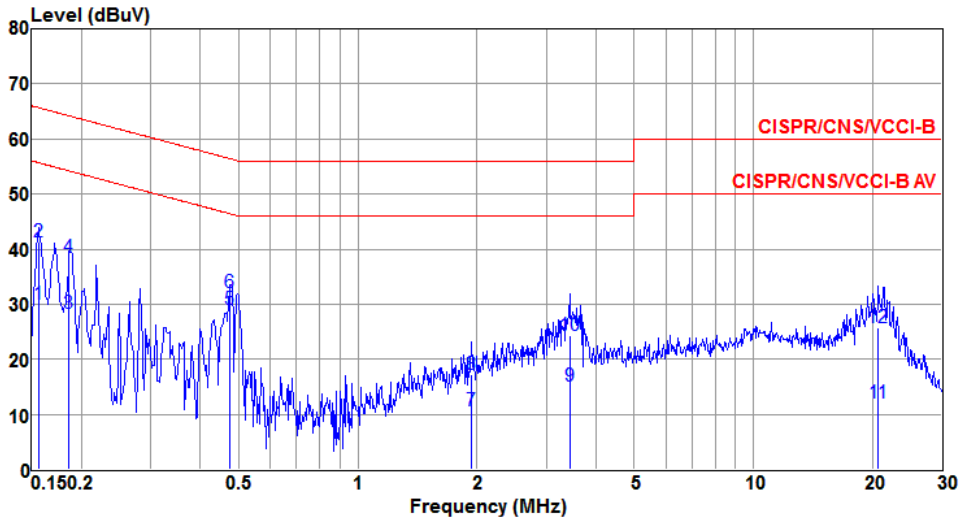
Modulation	VHT20	Test Freq. (MHz)	5240
Power Phase	Neutral		



	Freq MHz	Level dBuV	Limit Line dBuV	Over Limit dB	Read Level dBuV	LISN factor dB	cable loss dB	Remark
1	0.153	30.87	55.82	-24.95	21.18	9.68	0.01	Average
2@	0.153	43.49	65.82	-22.33	33.80	9.68	0.01	QP
3	0.213	20.82	53.10	-32.28	11.12	9.67	0.03	Average
4	0.213	33.63	63.10	-29.47	23.93	9.67	0.03	QP
5	0.481	8.75	46.32	-37.57	-0.94	9.67	0.02	Average
6	0.481	20.93	56.32	-35.39	11.24	9.67	0.02	QP
7	0.984	10.73	46.00	-35.27	1.03	9.67	0.03	Average
8	0.984	16.89	56.00	-39.11	7.19	9.67	0.03	QP
9	3.681	13.51	46.00	-32.49	3.62	9.69	0.20	Average
10	3.681	23.83	56.00	-32.17	13.94	9.69	0.20	QP
11	21.260	10.51	50.00	-39.49	0.33	9.83	0.35	Average
12	21.260	25.40	60.00	-34.60	15.22	9.83	0.35	QP

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

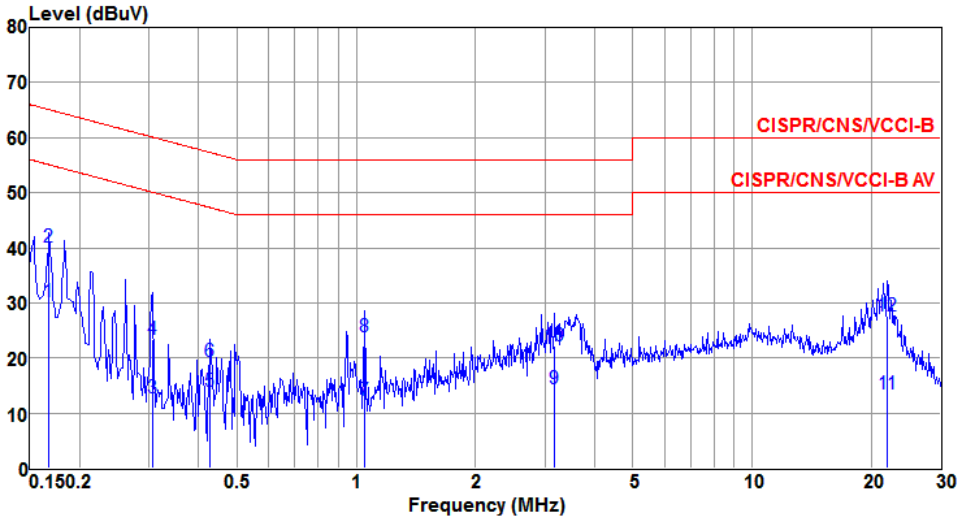
Modulation	11a	Test Freq. (MHz)	5785
Power Phase	Line		



	Freq MHz	Level dBuV	Limit Line dBuV	Over Limit dB	Read Level dBuV	LISN factor dB	cable loss dB	Remark
1	0.156	29.90	55.69	-25.79	20.16	9.73	0.01	Average
2	0.156	41.39	65.69	-24.30	31.65	9.73	0.01	QP
3	0.186	28.29	54.20	-25.91	18.53	9.73	0.03	Average
4	0.186	38.39	64.20	-25.81	28.63	9.73	0.03	QP
5@	0.476	29.04	46.41	-17.37	19.29	9.73	0.02	Average
6	0.476	32.13	56.41	-24.28	22.38	9.73	0.02	QP
7	1.939	10.66	46.00	-35.34	0.81	9.75	0.10	Average
8	1.939	17.32	56.00	-38.68	7.47	9.75	0.10	QP
9	3.436	15.20	46.00	-30.80	5.26	9.75	0.19	Average
10	3.436	24.43	56.00	-31.57	14.49	9.75	0.19	QP
11	20.704	12.10	50.00	-37.90	2.04	9.71	0.35	Average
12	20.704	25.81	60.00	-34.19	15.75	9.71	0.35	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		

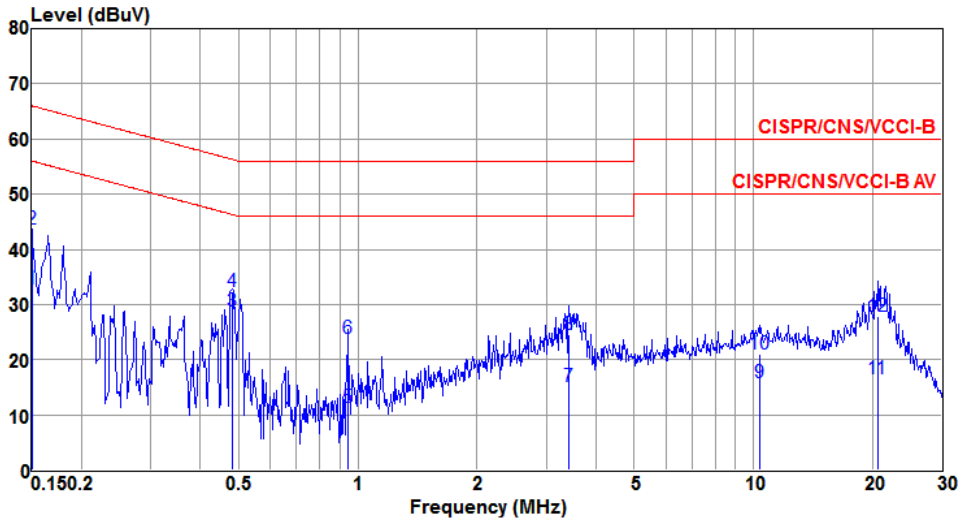


	Freq MHz	Level dBuV	Limit Line dBuV	Over Limit dB	Read Level dBuV	LISN factor dB	cable loss dB	Remark
1@	0.168	30.10	55.08	-24.98	20.40	9.68	0.02	Average
2	0.168	40.08	65.08	-25.00	30.38	9.68	0.02	QP
3	0.307	12.86	50.06	-37.20	3.17	9.67	0.02	Average
4	0.307	23.45	60.06	-36.61	13.76	9.67	0.02	QP
5	0.428	13.82	47.29	-33.47	4.13	9.67	0.02	Average
6	0.428	19.35	57.29	-37.94	9.66	9.67	0.02	QP
7	1.049	12.18	46.00	-33.82	2.48	9.67	0.03	Average
8	1.049	23.85	56.00	-32.15	14.15	9.67	0.03	QP
9	3.173	14.34	46.00	-31.66	4.47	9.69	0.18	Average
10	3.173	22.23	56.00	-33.77	12.36	9.69	0.18	QP
11	21.946	13.49	50.00	-36.51	3.30	9.83	0.36	Average
12	21.946	27.67	60.00	-32.33	17.48	9.83	0.36	QP

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

Beamforming mode

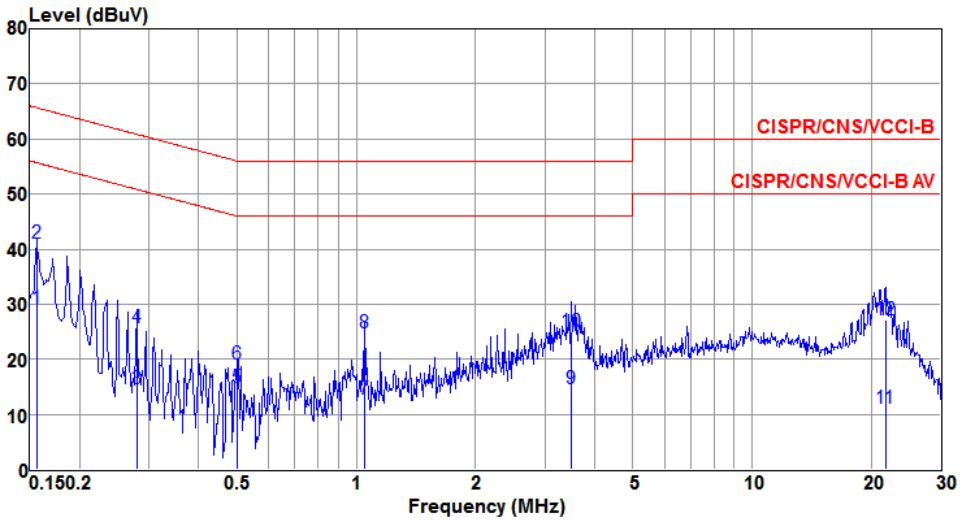
Modulation	VHT20	**Test Freq. (MHz)**	5785
Power Phase	Line		



	Freq MHz	Level dBuV	Limit Line dBuV	Over Limit dB	Read Level dBuV	LISN factor dB	cable loss dB	Remark
1	0.150	32.86	56.00	-23.14	23.12	9.73	0.01	Average
2	0.150	43.76	66.00	-22.24	34.02	9.73	0.01	QP
3@	0.481	28.78	46.32	-17.54	19.03	9.73	0.02	Average
4	0.481	32.37	56.32	-23.95	22.62	9.73	0.02	QP
5	0.943	11.22	46.00	-34.78	1.46	9.73	0.03	Average
6	0.943	23.74	56.00	-32.26	13.98	9.73	0.03	QP
7	3.417	15.18	46.00	-30.82	5.24	9.75	0.19	Average
8	3.417	24.49	56.00	-31.51	14.55	9.75	0.19	QP
9	10.342	15.71	50.00	-34.29	5.61	9.78	0.32	Average
10	10.342	21.03	60.00	-38.97	10.93	9.78	0.32	QP
11	20.594	16.54	50.00	-33.46	6.48	9.71	0.35	Average
12	20.594	27.91	60.00	-32.09	17.85	9.71	0.35	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)	5785
Power Phase	Neutral		



	Freq MHz	Level dBuV	Limit Line dBuV	Over Limit dB	Read Level dBuV	LISN factor dB	cable loss dB	Remark
1	0.156	29.36	55.69	-26.33	19.67	9.68	0.01	Average
2@	0.156	41.19	65.69	-24.50	31.50	9.68	0.01	QP
3	0.279	14.72	50.85	-36.13	5.02	9.67	0.03	Average
4	0.279	25.75	60.85	-35.10	16.05	9.67	0.03	QP
5	0.502	14.87	46.00	-31.13	5.18	9.67	0.02	Average
6	0.502	19.07	56.00	-36.93	9.38	9.67	0.02	QP
7	1.049	12.87	46.00	-33.13	3.17	9.67	0.03	Average
8	1.049	24.72	56.00	-31.28	15.02	9.67	0.03	QP
9	3.491	14.75	46.00	-31.25	4.86	9.69	0.20	Average
10	3.491	24.91	56.00	-31.09	15.02	9.69	0.20	QP
11	21.715	11.13	50.00	-38.87	0.94	9.83	0.36	Average
12	21.715	27.04	60.00	-32.96	16.85	9.83	0.36	QP

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

3.2 Emission Bandwidth

3.2.1 Limit of Emission bandwidth

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

3.2.2 Test Procedures

26dB Bandwidth

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

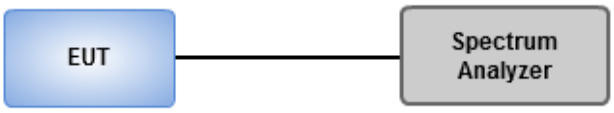
Occupied Bandwidth

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

6dB Bandwidth

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

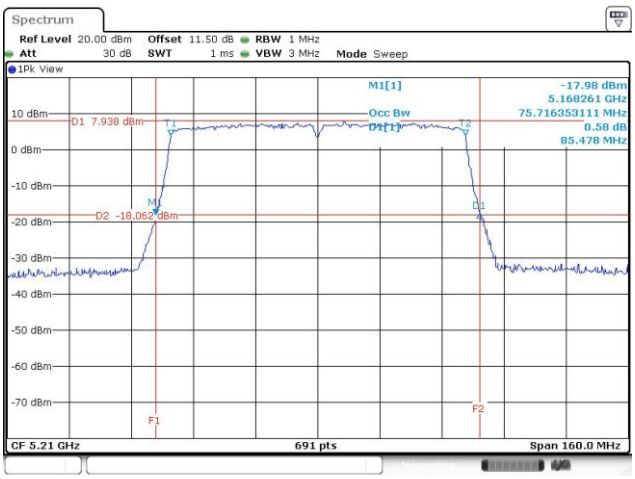
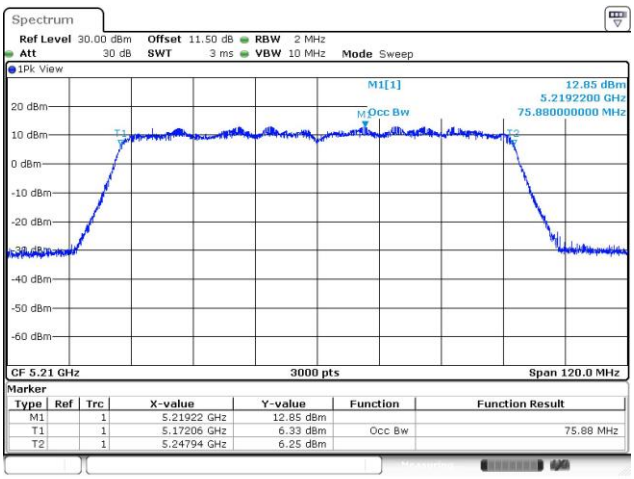
3.2.3 Test Setup



3.2.4 Test Result of Emission Bandwidth

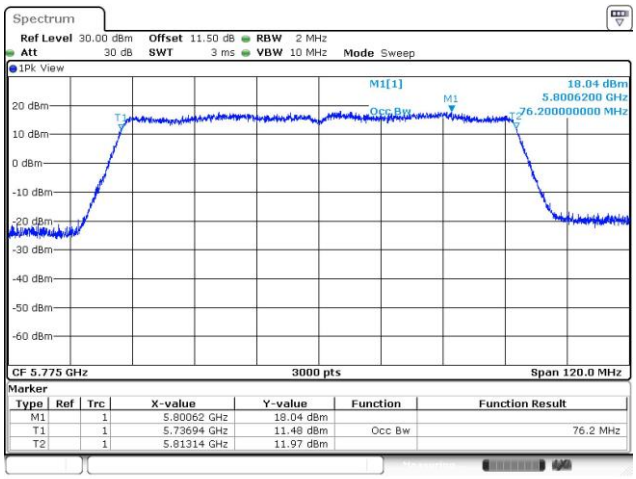
Non-beamforming mode

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	19.48	19.19	---	---	16.45	16.43	---	---
11a	2	5200	39.35	38.19	---	---	16.90	16.88	---	---
11a	2	5240	37.03	34.20	---	---	16.80	16.62	---	---
VHT20	2	5180	20.23	20.64	---	---	17.60	17.63	---	---
VHT20	2	5200	39.57	43.48	---	---	17.91	18.24	---	---
VHT20	2	5240	36.59	35.36	---	---	17.82	17.78	---	---
VHT40	2	5190	40.46	40.46	---	---	35.98	35.98	---	---
VHT40	2	5230	58.12	55.94	---	---	36.18	36.18	---	---
VHT80	2	5210	85.48	83.25	---	---	75.88	75.72	---	---

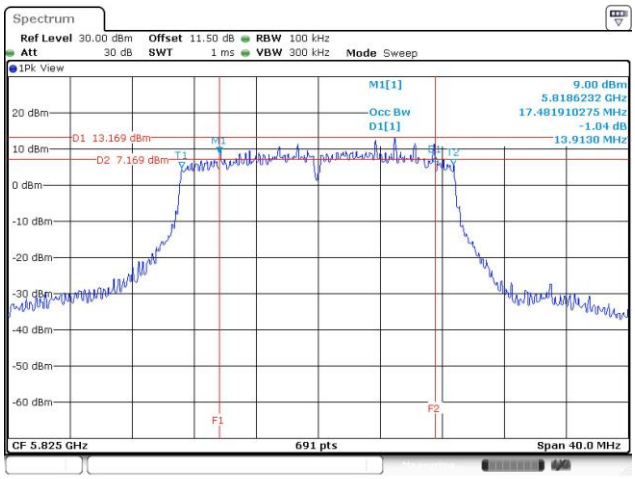
Worst Plots of 26dB Bandwidth	Worst Plots of 99% Bandwidth
	

For Frequency band 5725-5850 MHz											
Emission Bandwidth											
Mode	N_{TX}	Freq. (MHz)	OBW Bandwidth (MHz)				6dB Bandwidth (MHz)				
			Chain 0	Chain 1	Chain 2	Chain 3	Chain 0	Chain 1	Chain 2	Chain 3	6dB BW Limit (MHz)
11a	4	5745	16.57	16.53	16.43	16.50	15.94	16.35	14.43	16.35	0.5
11a	4	5785	16.58	16.55	16.40	16.51	15.94	16.35	15.01	16.29	0.5
11a	4	5825	16.56	16.48	16.37	16.52	16.35	15.94	15.07	15.94	0.5
VHT20	4	5745	17.65	17.67	17.59	17.68	17.16	17.57	15.30	16.93	0.5
VHT20	4	5785	17.69	17.67	17.57	17.69	17.16	16.81	15.71	16.93	0.5
VHT20	4	5825	17.70	17.66	17.53	17.66	17.57	17.57	13.91	16.29	0.5
VHT40	4	5755	36.02	35.92	36.08	36.12	35.13	35.13	35.13	33.86	0.5
VHT40	4	5795	36.00	35.90	36.14	35.94	35.13	35.13	35.13	33.86	0.5
VHT80	4	5775	76.16	76.08	76.20	75.96	75.83	75.83	76.29	76.06	0.5

Worst Plot of 99% Bandwidth

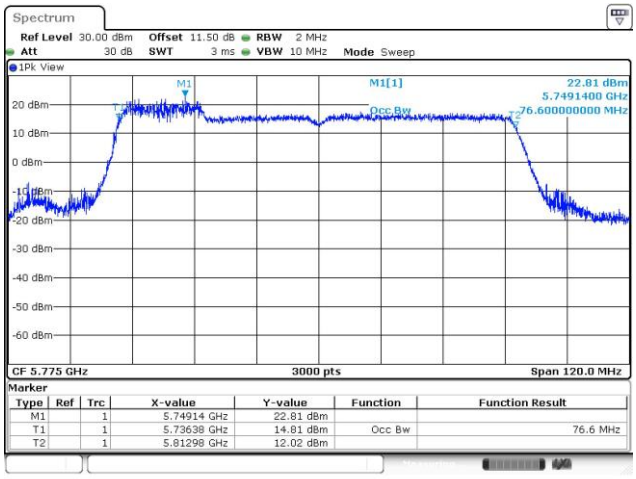
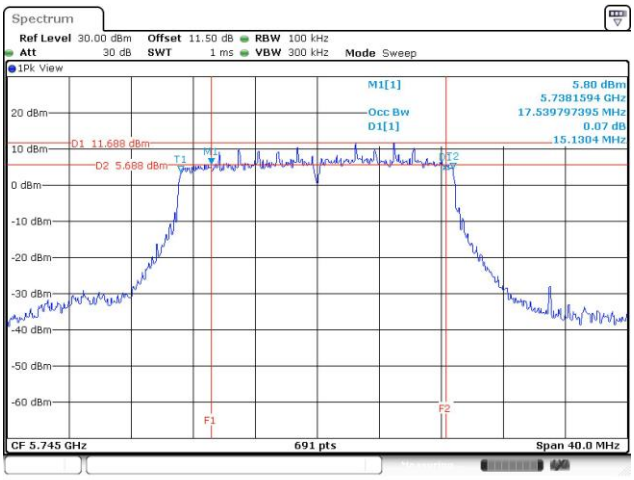


Worst Plot of 6dB Bandwidth



Beamforming mode

For Frequency band 5725-5850 MHz											
Emission Bandwidth											
Mode	N_{TX}	Freq. (MHz)	OBW Bandwidth (MHz)				6dB Bandwidth (MHz)				
			Chain 0	Chain 1	Chain 2	Chain 3	Chain 0	Chain 1	Chain 2	Chain 3	6dB BW Limit (MHz)
VHT20	4	5745	17.65	17.72	17.63	17.71	17.33	17.28	15.13	16.99	0.5
VHT20	4	5785	17.68	17.74	17.61	17.71	17.39	17.39	15.65	16.70	0.5
VHT20	4	5825	17.69	17.68	17.62	17.71	16.58	17.28	16.99	17.39	0.5
VHT40	4	5755	36.18	36.24	36.02	36.06	34.55	35.13	33.28	35.71	0.5
VHT40	4	5795	36.30	36.16	36.08	36.34	35.71	35.36	35.13	35.71	0.5
VHT80	4	5775	76.60	76.48	76.44	76.52	75.83	75.83	75.83	75.59	0.5

Worst Plot of 99% Bandwidth	Worst Plot of 6dB Bandwidth
	

3.3 RF Output Power

3.3.1 Limit of RF Output Power

Frequency band 5150-5250 MHz		
Operating Mode		**Limit**
☐	Outdoor access point	Conducted Power: 1 W The maximum e.i.r.p. at any elevation angle above 30 degrees as measured from the horizon must not exceed 125 mW (21 dBm)
☒	Indoor access point	Conducted Power: 1 W
☐	Fixed point-to-point access points	Conducted Power: 1 W
☐	Client devices	Conducted Power: 250 mW

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

3.3.2 Test Procedures

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

☒ Measurements 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

Non-beamforming mode

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	20.27	21.08	---	---	234.647	23.70	30.00
11a	2	5200	23.61	23.74	---	---	466.207	26.69	30.00
11a	2	5240	23.7	23.08	---	---	437.659	26.41	30.00
HT20	2	5180	20.26	21.04	---	---	233.227	23.68	30.00
HT20	2	5200	23.52	23.64	---	---	456.112	26.59	30.00
HT20	2	5240	24.12	23.41	---	---	477.507	**26.79**	30.00
HT40	2	5190	18.39	17.87	---	---	130.259	21.15	30.00
HT40	2	5230	22.52	22.18	---	---	343.845	25.36	30.00
VHT20	2	5180	20.19	21.17	---	---	235.390	23.72	30.00
VHT20	2	5200	23.66	23.77	---	---	470.506	26.73	30.00
VHT20	2	5240	24.23	23.56	---	---	491.836	26.92	30.00
VHT40	2	5190	18.48	17.92	---	---	132.413	21.22	30.00
VHT40	2	5230	22.64	22.30	---	---	353.478	25.48	30.00
VHT80	2	5210	17.47	16.47	---	---	100.208	20.01	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	4	5745	24.28	23.48	23.09	23.86	937.685	29.72	30.00
11a	4	5785	24.32	23.46	23.36	23.94	956.728	**29.81**	30.00
11a	4	5825	24.12	23.23	23.26	23.62	910.584	29.59	30.00
HT20	4	5745	23.88	23.02	22.95	23.31	856.322	29.33	30.00
HT20	4	5785	24.16	23.18	23.09	23.71	907.253	29.58	30.00
HT20	4	5825	23.77	22.85	22.94	23.37	845.043	29.27	30.00
HT40	4	5755	24.03	23.15	22.94	23.84	898.359	29.53	30.00
HT40	4	5795	24.11	23.19	23.06	23.87	912.164	29.60	30.00
VHT20	4	5745	23.91	23.06	22.98	23.41	866.229	29.38	30.00
VHT20	4	5785	24.21	23.34	23.14	23.83	927.017	29.67	30.00
VHT20	4	5825	23.88	22.91	23.07	23.42	862.331	29.36	30.00
VHT40	4	5755	24.09	23.28	23.02	23.91	915.746	29.62	30.00
VHT40	4	5795	24.16	23.23	23.18	23.96	927.849	29.67	30.00
VHT80	4	5775	21.66	20.72	20.84	21.62	531.137	27.25	30.00

Beamforming mode

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			
HT20	4	5745	22.06	22.19	22.39	23.72	735.156	28.66	29.98
HT20	4	5785	22.35	22.41	22.59	23.77	765.755	28.84	29.98
HT20	4	5825	22.06	22.35	22.07	23.71	728.513	28.62	29.98
HT40	4	5755	22.35	22.32	22.24	23.84	751.996	28.76	29.98
HT40	4	5795	22.43	22.16	22.75	23.74	764.379	28.83	29.98
VHT20	4	5745	22.19	22.28	22.56	23.85	757.584	28.79	29.98
VHT20	4	5785	22.43	22.53	22.68	23.82	780.389	**28.92**	29.98
VHT20	4	5825	22.18	22.42	22.18	23.88	749.318	28.75	29.98
VHT40	4	5755	22.43	22.38	22.31	23.89	763.088	28.83	29.98
VHT40	4	5795	22.45	22.25	22.81	23.81	775.094	28.89	29.98
VHT80	4	5775	20.96	21.06	21.01	21.15	508.882	27.07	29.98

Note:

1. Directional gain = 0+10* log(4/1) = 6.02 dBi > 6 dBi.
   Limit shall be reduced to 30 dBm – (6.02 dBi – 6 dBi) = 29.98 dBm.

3.4 Peak Power Spectral Density

3.4.1 Limit of Peak Power Spectral Density

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

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

3.4.2 Test Procedures

For 5150 ~ 5250 MHz

☒ Method SA-1 (Non- Beamforming: 802.11a/VHT20/VHT40)

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 (Non- Beamforming: VHT80)

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

For 5725 ~ 5850 MHz

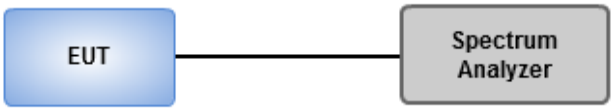
☒ Method SA-1 (Non- Beamforming: 802.11a/VHT20/VHT40)

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 (Non- Beamforming: VHT80 / Beamforming: all modes)

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

3.4.3 Test Setup



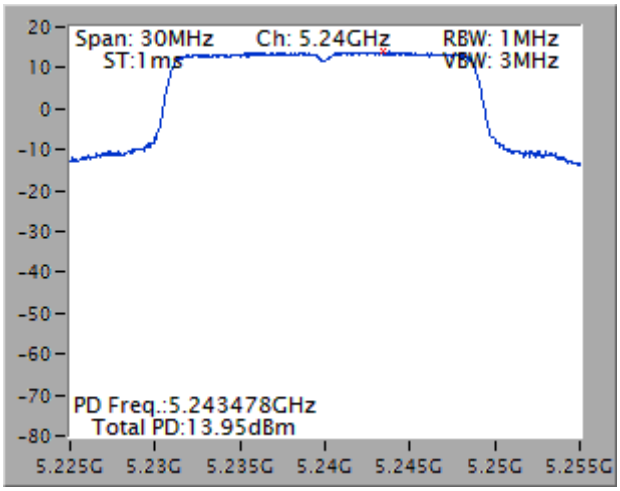
3.4.4 Test Result of Peak Power Spectral Density

Non-beamforming mode

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	10.78	0.00	10.78	17
11a	2	5200	13.94	0.00	13.94	17
11a	2	5240	13.71	0.00	13.71	17
VHT20	2	5180	10.60	0.00	10.60	17
VHT20	2	5200	13.92	0.00	13.92	17
VHT20	2	5240	13.95	0.00	13.95	17
VHT40	2	5190	4.77	0.00	4.77	17
VHT40	2	5230	9.28	0.00	9.28	17
VHT80	2	5210	0.23	0.32	0.55	17

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

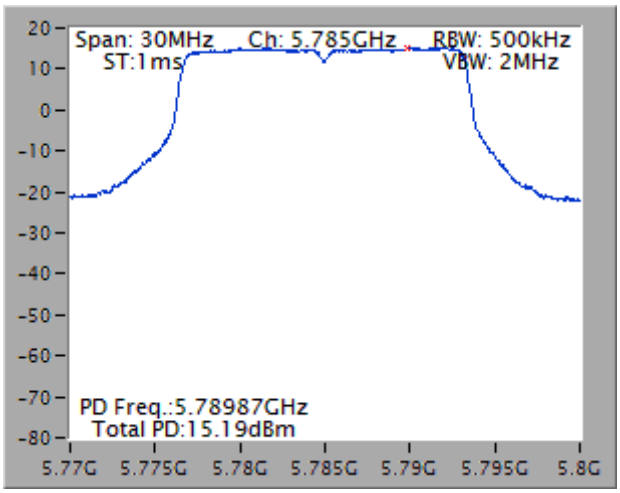
Worst Plot



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	4	5745	14.79	0.00	14.79	29.98
11a	4	5785	15.19	0.00	15.19	29.98
11a	4	5825	14.78	0.00	14.78	29.98
VHT20	4	5745	14.39	0.00	14.39	29.98
VHT20	4	5785	14.83	0.00	14.83	29.98
VHT20	4	5825	14.49	0.00	14.49	29.98
VHT40	4	5755	12.18	0.00	12.18	29.98
VHT40	4	5795	12.42	0.00	12.42	29.98
VHT80	4	5775	6.17	0.19	6.36	29.98

Note:
1. D.F is duty factor.
2. Test result is bin-by-bin summing measured value of each TX port.
3. Directional gain = 0+10* log(4/1) = 6.02 dBi
   Limit shall be reduced to 30 dBm – (6.02 dBi – 6 dBi) = 29.98 dBm.

Worst Plot

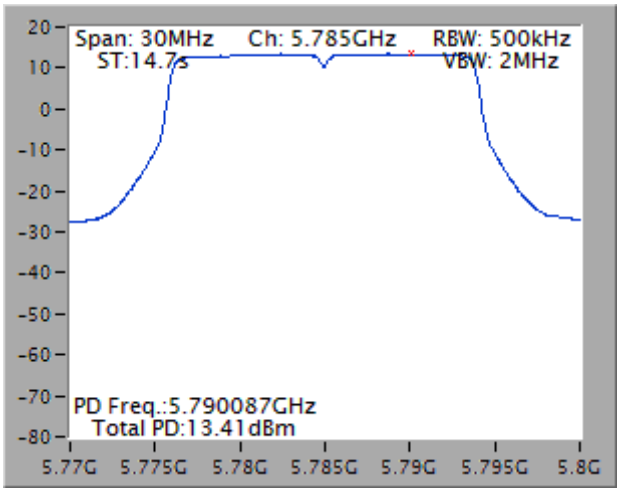


Beamforming mode

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)
VHT20	4	5745	13.28	0.36	13.64	29.98
VHT20	4	5785	13.41	0.36	13.77	29.98
VHT20	4	5825	13.03	0.36	13.39	29.98
VHT40	4	5755	10.27	0.37	10.64	29.98
VHT40	4	5795	10.39	0.37	10.76	29.98
VHT80	4	5775	6.08	0.32	6.40	29.98

Note:
1. D.F is duty factor.
2. Test result is bin-by-bin summing measured value of each TX port.
3. Directional gain = 0+10* log(4/1) = 6.02 dBi
   Limit shall be reduced to 30 dBm – (6.02 dBi – 6 dBi) = 29.98 dBm.

Worst Plot



3.5 Transmitter Radiated and Band Edge Emissions

3.5.1 Limit of Transmitter Radiated and Band Edge Emissions

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

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

Un-restricted band emissions above 1GHz Limit		
Operating Band	**Limit**	
5.15 - 5.25 GHz	e.i.r.p. -27 dBm [68.2 dBuV/m@3m]	
5.725 - 5.850 GHz	☒	15.407(b)(4)(i) All emissions shall be limited to a level of −27 dBm/MHz at 75 MHz or more above or below the band edge increasing linearly to 10 dBm/MHz at 25 MHz above or below the band edge, and from 25 MHz above or below the band edge increasing linearly to a level of 15.6 dBm/MHz at 5 MHz above or below the band edge, and from 5 MHz above or below the band edge increasing linearly to a level of 27 dBm/MHz at the band edge.
	☐	15.407(b)(4)(ii) ,compliance with the emission limits in § 15.247(d) Shall be at least 30dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power,. Attenuation below the general limits specified in §15.209(a) is not required. In addition,radiated emissions which fall in the restricted bands, as defined in §15.205(a), must also comply with the radiated emission limits specified in §15.209(a) (see § 15.205(c))

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

3.5.2 Test Procedures

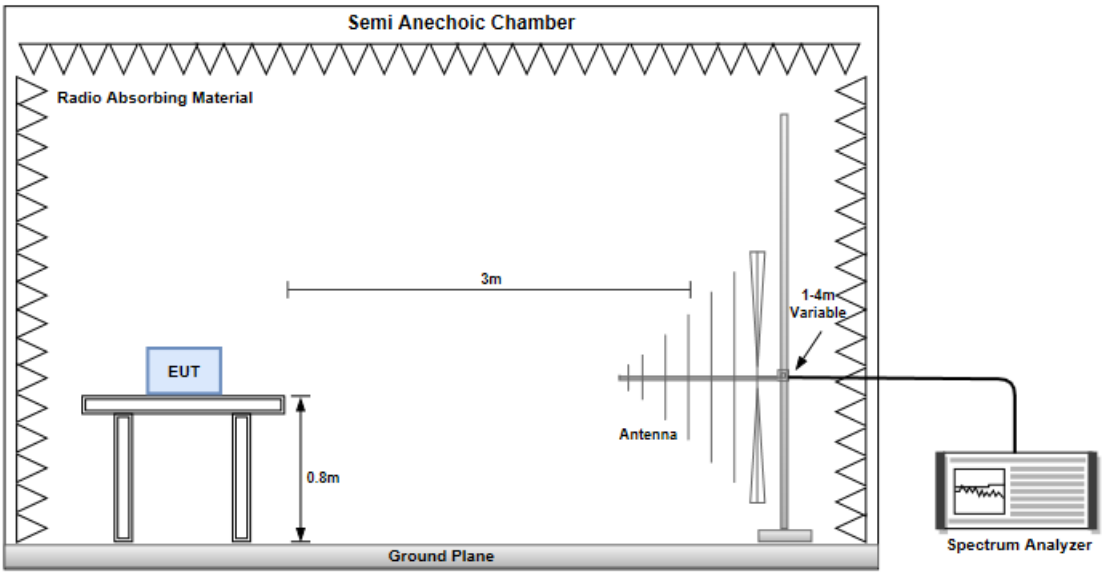
1. Measurement is made at a semi-anechoic chamber that incorporates a turntable allowing a EUT rotation of 360°. A continuously-rotating, remotely-controlled turntable is installed at the test site to support the EUT and facilitate determination of the direction of maximum radiation for each EUT emission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

Note:

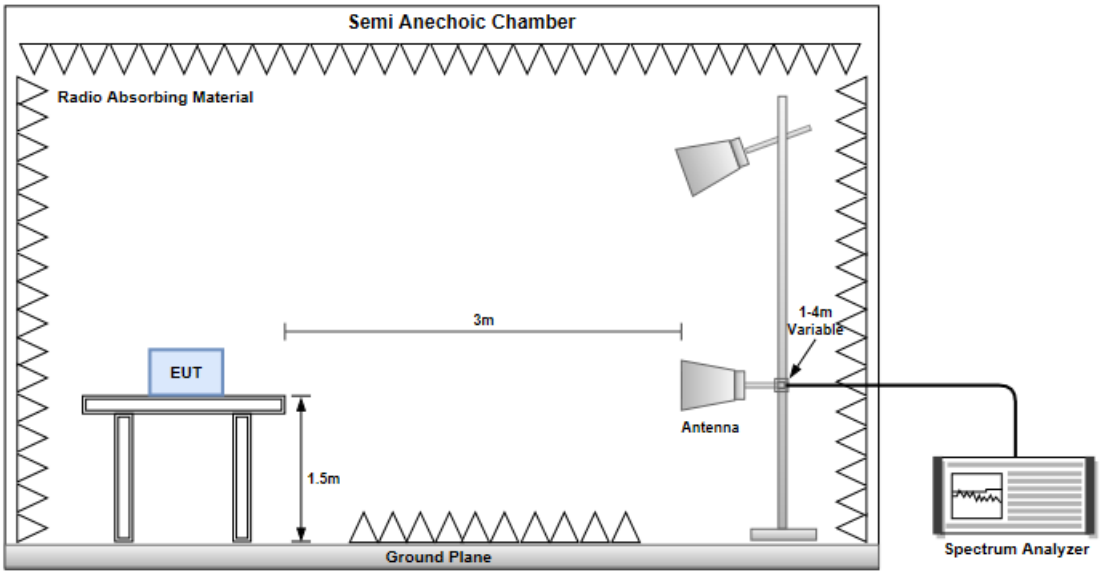
1. 120kHz measurement bandwidth of test receiver and Quasi-peak detector is for radiated emission below 1GHz.
2. RBW=1MHz, VBW=3MHz and Peak detector is for peak measured value of radiated emission above 1GHz.
3. RBW=1MHz, VBW=1/T and Peak detector is for average measured value of radiated emission above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

3.5.3 Test Setup

Radiated Emissions below 1 GHz



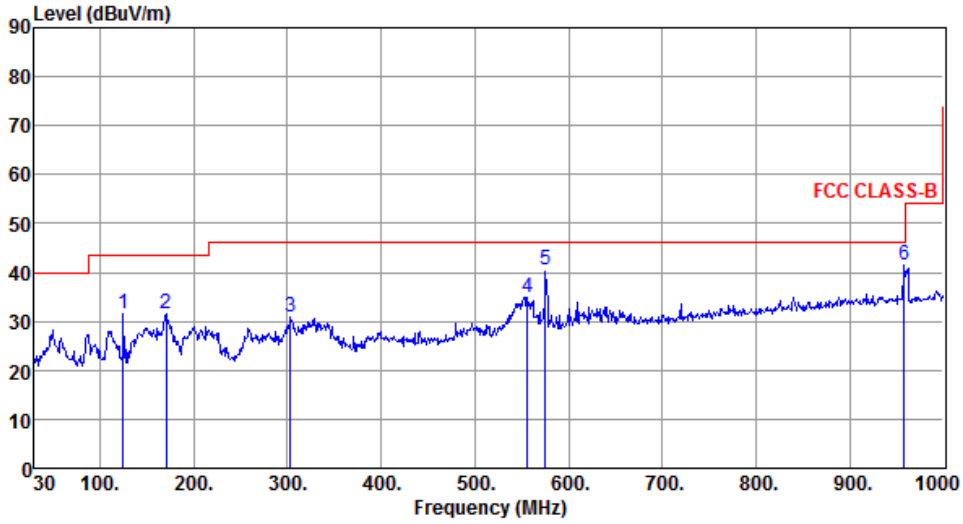
Radiated Emissions above 1 GHz



Non- beamforming mode

3.5.4 Transmitter Radiated Unwanted Emissions (Below 1GHz)

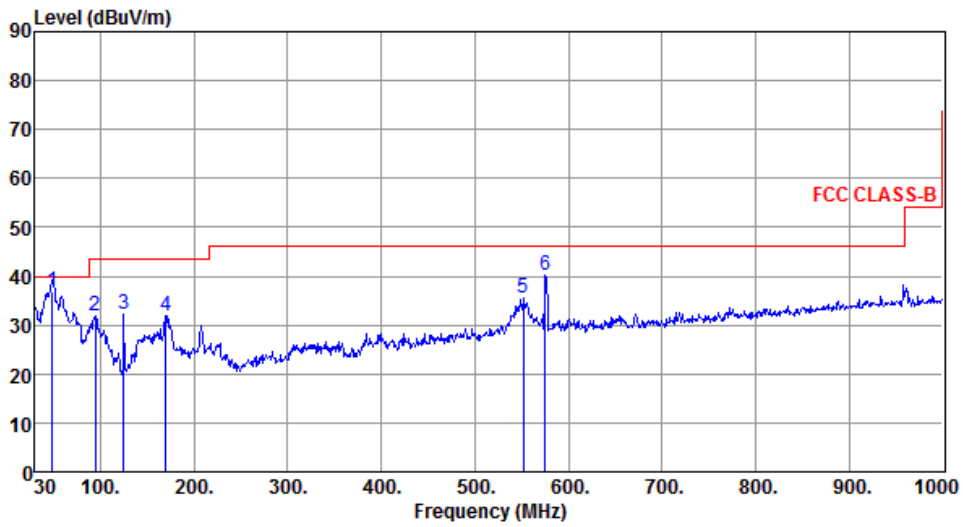
Modulation	VHT20	**Test Freq. (MHz)**	5240
Polarization	Horizontal		



	Freq. MHz	Emission level dBuV/m	Limit dBuV/m	Margin dB	SA reading dBuV	Factor dB	Remark	ANT High cm	Turn Table deg
1	125.06	31.47	43.50	-12.03	41.54	-10.07	Peak	---	---
2	170.65	31.40	43.50	-12.10	40.04	-8.64	Peak	---	---
3	303.54	30.93	46.00	-15.07	38.48	-7.55	Peak	---	---
4	555.74	34.96	46.00	-11.04	36.58	-1.62	Peak	---	---
5	575.14	40.51	46.00	-5.49	41.71	-1.20	Peak	---	---
6	958.29	41.35	46.00	-4.65	36.36	4.99	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.

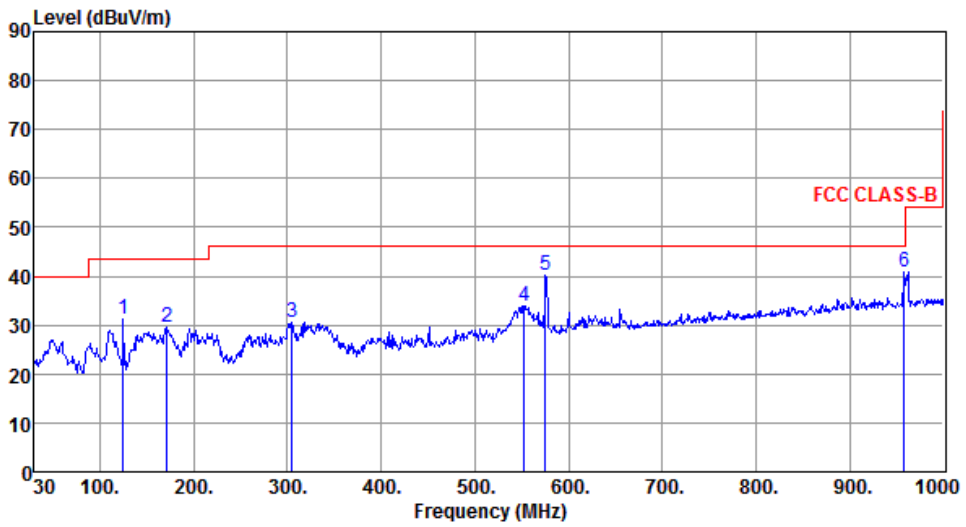
Modulation	VHT20	Test Freq. (MHz)	5240
Polarization	Vertical		



	Freq. MHz	Emission level dBuV/m	Limit dBuV/m	Margin dB	SA reading dBuV	Factor dB	Remark	ANT High cm	Turn Table deg
1	48.43	36.89	40.00	-3.11	44.59	-7.70	QP	100	204
2	94.02	31.79	43.50	-11.71	45.66	-13.87	Peak	---	---
3	125.06	32.09	43.50	-11.41	42.16	-10.07	Peak	---	---
4	169.68	31.80	43.50	-11.70	40.35	-8.55	Peak	---	---
5	551.86	35.40	46.00	-10.60	37.10	-1.70	Peak	---	---
6	575.14	40.10	46.00	-5.90	41.30	-1.20	Peak	---	---

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

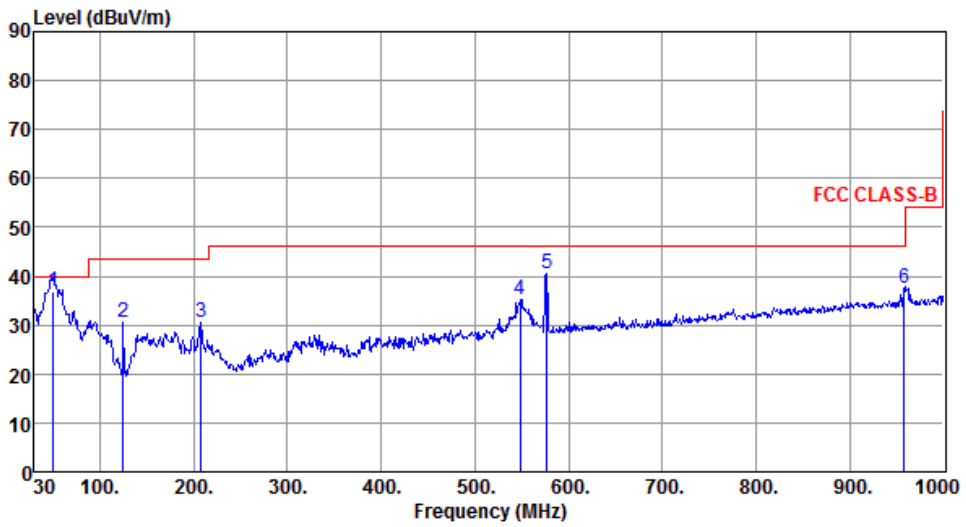
Modulation	11a	Test Freq. (MHz)	5785
Polarization	Horizontal		



	Freq. MHz	Emission level dBuV/m	Limit dBuV/m	Margin dB	SA reading dBuV	Factor dB	Remark	ANT High cm	Turn Table deg
1	125.06	31.12	43.50	-12.38	41.19	-10.07	Peak	---	---
2	171.62	29.46	43.50	-14.04	38.20	-8.74	Peak	---	---
3	304.51	30.70	46.00	-15.30	38.23	-7.53	Peak	---	---
4	552.83	33.85	46.00	-12.15	35.52	-1.67	Peak	---	---
5	575.14	40.25	46.00	-5.75	41.45	-1.20	Peak	---	---
6	958.29	40.85	46.00	-5.15	35.86	4.99	Peak	---	---

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

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

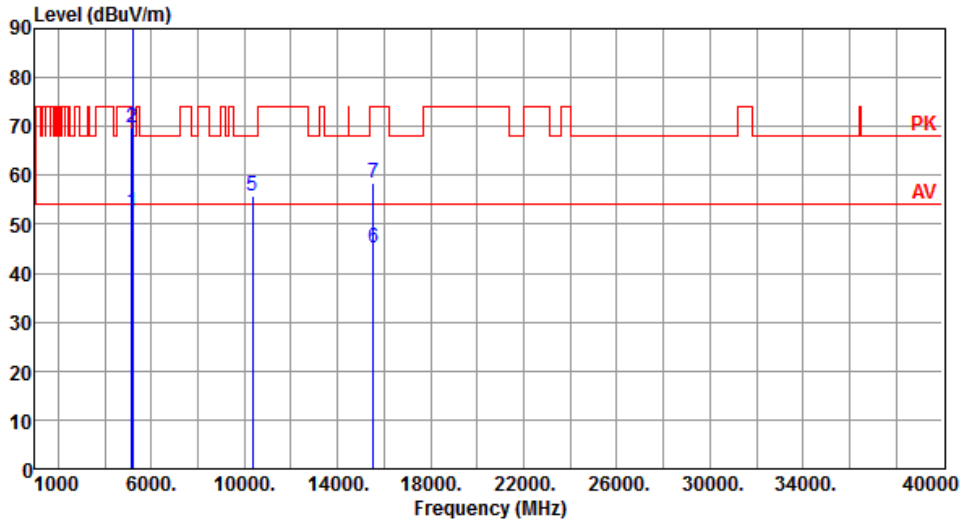


	Freq. MHz	Emission level dBuV/m	Limit dBuV/m	Margin dB	SA reading dBuV	Factor dB	Remark	ANT High cm	Turn Table deg
1	50.37	36.95	40.00	-3.05	44.64	-7.69	QP	100	206
2	125.06	30.60	43.50	-12.90	40.67	-10.07	Peak	---	---
3	207.51	30.67	43.50	-12.83	41.46	-10.79	Peak	---	---
4	547.98	35.28	46.00	-10.72	37.05	-1.77	Peak	---	---
5	577.08	40.44	46.00	-5.56	41.60	-1.16	Peak	---	---
6	958.29	37.52	46.00	-8.48	32.53	4.99	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

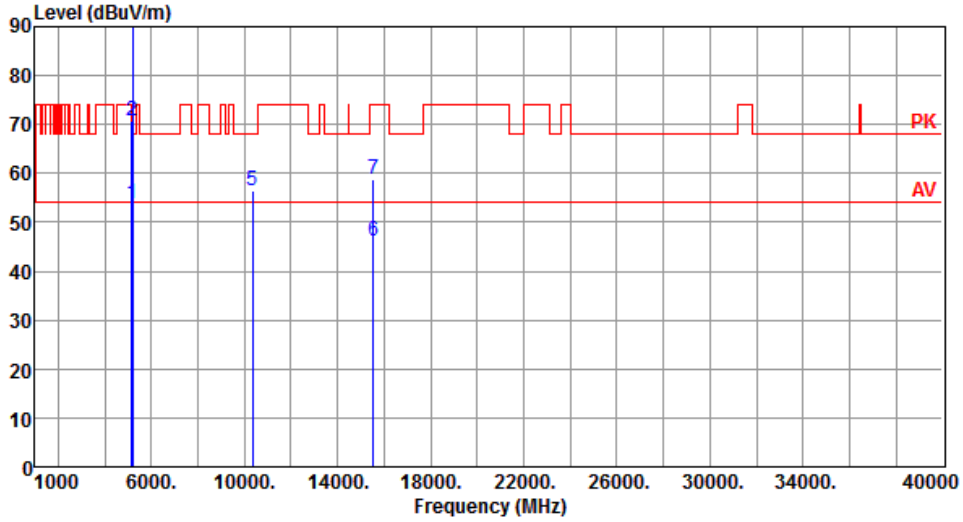
Modulation	11a	Test Freq. (MHz)	5180
Polarization	Horizontal		



		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	52.43	54.00	-1.57	48.15	4.28	Average	296	295
2		5150.00	69.84	74.00	-4.16	65.56	4.28	Peak	296	295
3	*	5180.00	103.50			99.20	4.30	Average	330	295
4	*	5180.00	114.21			109.91	4.30	Peak	330	295
5		10360.00	55.82	68.20	-12.38	42.22	13.60	Peak	100	50
6		15540.00	45.22	54.00	-8.78	30.55	14.67	Average	100	30
7		15540.00	58.45	74.00	-15.55	43.78	14.67	Peak	100	30

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:"*" is Peak / Average value of fundamental frequency

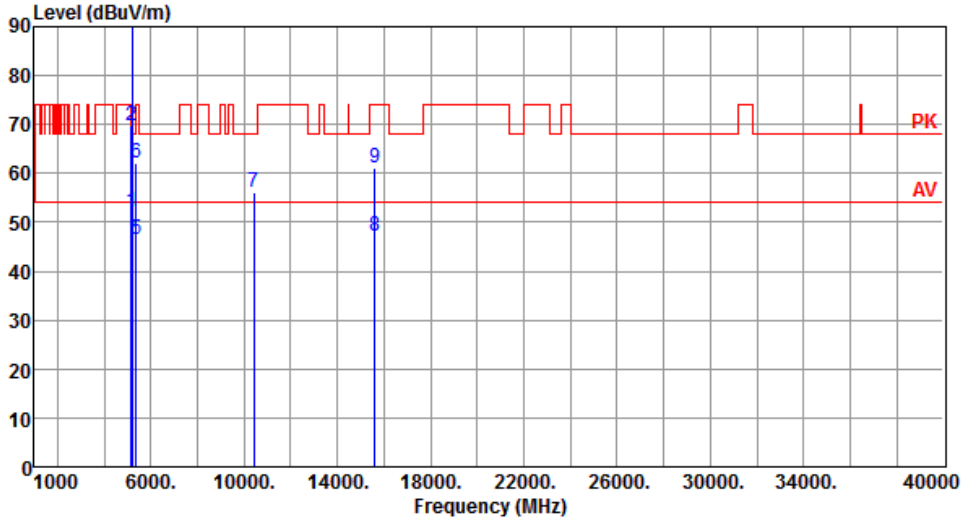
Modulation	11a	Test Freq. (MHz)	5180
Polarization	Vertical		



		Freq. MHz	Emission level dBuV/m	Limit dBuV/m	Margin dB	SA reading dBuV	Factor dB	Remark	ANT High cm	Turn Table deg
1		5150.00	53.86	54.00	-0.14	49.58	4.28	Average	247	100
2		5150.00	70.61	74.00	-3.39	66.33	4.28	Peak	247	100
3	*	5180.00	106.05			101.75	4.30	Average	247	100
4	*	5180.00	116.54			112.24	4.30	Peak	247	100
5		10360.00	56.54	68.20	-11.66	42.94	13.60	Peak	100	42
6		15540.00	46.26	54.00	-7.74	31.59	14.67	Average	100	247
7		15540.00	58.93	74.00	-15.07	44.26	14.67	Peak	100	247

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:"*" is Peak / Average value of fundamental frequency

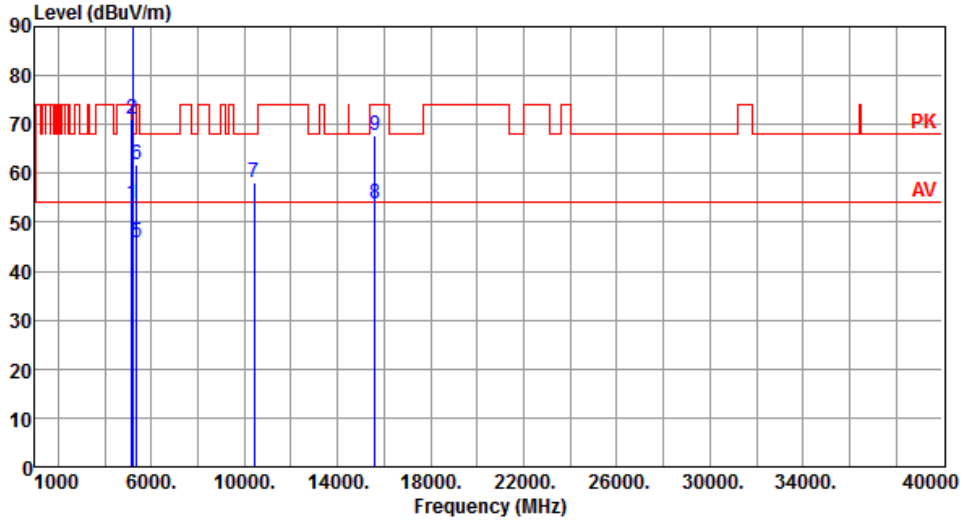
Modulation	11a	Test Freq. (MHz)	5200
Polarization	Horizontal		



		Freq. MHz	Emission level dBuV/m	Limit dBuV/m	Margin dB	SA reading dBuV	Factor dB	Remark	ANT High cm	Turn Table deg
1		5150.00	52.30	54.00	-1.70	48.02	4.28	Average	311	293
2		5150.00	69.62	74.00	-4.38	65.34	4.28	Peak	311	293
3	*	5200.00	107.70			103.38	4.32	Average	311	293
4	*	5200.00	118.87			114.55	4.32	Peak	311	293
5		5350.00	46.48	54.00	-7.52	42.04	4.44	Average	311	293
6		5350.00	62.00	74.00	-12.00	57.56	4.44	Peak	311	293
7		10400.00	56.13	68.20	-12.07	42.49	13.64	Peak	100	58
8		15600.00	47.18	54.00	-6.82	32.60	14.58	Average	100	37
9		15600.00	61.13	74.00	-12.87	46.55	14.58	Peak	100	37

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:"*" is Peak / Average value of fundamental frequency

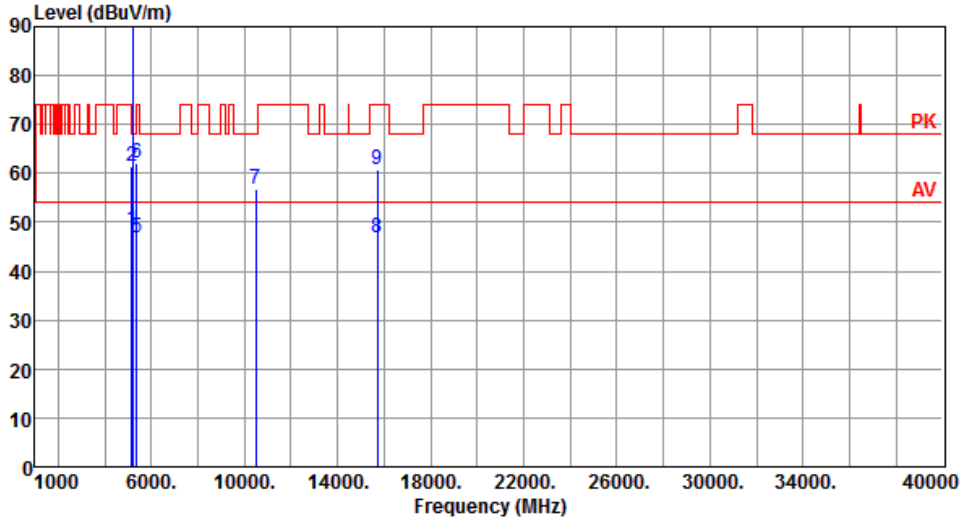
Modulation	11a	Test Freq. (MHz)	5200
Polarization	Vertical		



		Freq. MHz	Emission level dBuV/m	Limit dBuV/m	Margin dB	SA reading dBuV	Factor dB	Remark	ANT High cm	Turn Table deg
1		5150.00	53.76	54.00	-0.24	49.48	4.28	Average	249	99
2		5150.00	71.11	74.00	-2.89	66.83	4.28	Peak	249	99
3	*	5200.00	109.95			105.63	4.32	Average	249	99
4	*	5200.00	121.15			116.83	4.32	Peak	249	99
5		5350.00	45.68	54.00	-8.32	41.24	4.44	Average	249	99
6		5350.00	61.84	74.00	-12.16	57.40	4.44	Peak	249	99
7		10400.00	58.23	68.20	-9.97	44.59	13.64	Peak	248	35
8		15600.00	53.89	54.00	-0.11	39.31	14.58	Average	100	237
9		15600.00	67.85	74.00	-6.15	53.27	14.58	Peak	100	237

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:"*" is Peak / Average value of fundamental frequency

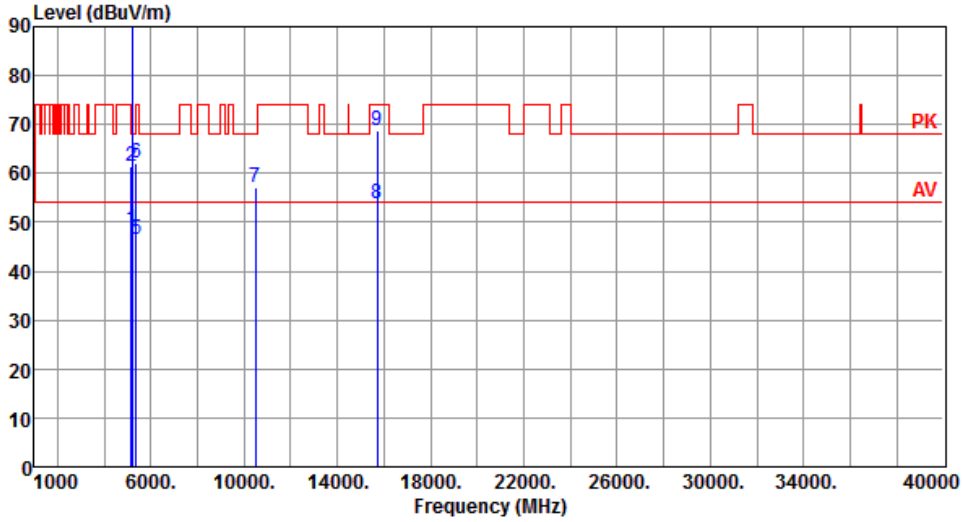
Modulation	11a	Test Freq. (MHz)	5240
Polarization	Horizontal		



		Freq. MHz	Emission level dBuV/m	Limit dBuV/m	Margin dB	SA reading dBuV	Factor dB	Remark	ANT High cm	Turn Table deg
1		5150.00	48.40	54.00	-5.60	44.12	4.28	Average	288	290
2		5150.00	61.53	74.00	-12.47	57.25	4.28	Peak	288	290
3	*	5240.00	108.83			104.48	4.35	Average	288	290
4	*	5240.00	119.21			114.86	4.35	Peak	288	290
5		5350.00	46.95	54.00	-7.05	42.51	4.44	Average	288	290
6		5350.00	61.99	74.00	-12.01	57.55	4.44	Peak	288	290
7		10480.00	56.70	68.20	-11.50	43.00	13.70	Peak	100	59
8		15720.00	46.95	54.00	-7.05	32.53	14.42	Average	100	35
9		15720.00	60.73	74.00	-13.27	46.31	14.42	Peak	100	35

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:"*" is Peak / Average value of fundamental frequency

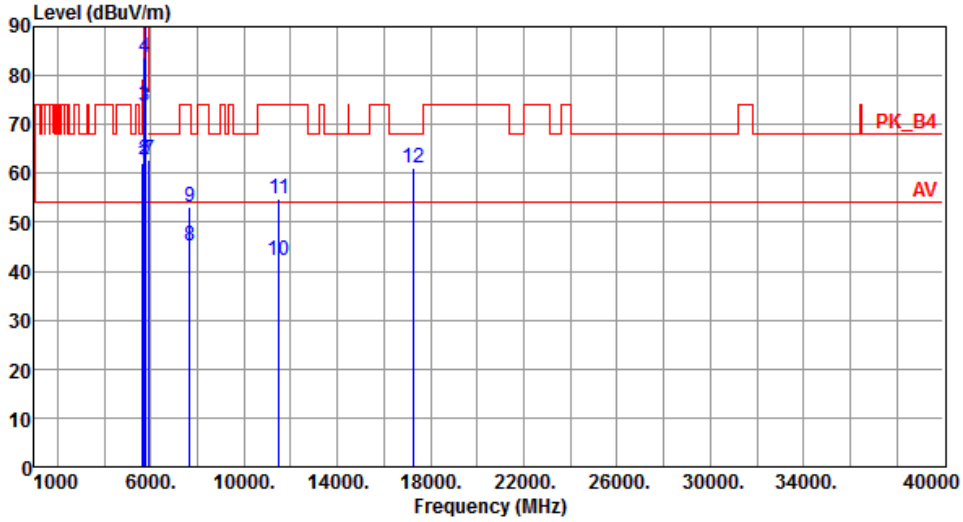
Modulation	11a	Test Freq. (MHz)	5240
Polarization	Vertical		



		Freq. MHz	Emission level dBuV/m	Limit dBuV/m	Margin dB	SA reading dBuV	Factor dB	Remark	ANT High cm	Turn Table deg
1		5150.00	48.33	54.00	-5.67	44.05	4.28	Average	246	90
2		5150.00	61.58	74.00	-12.42	57.30	4.28	Peak	246	90
3	*	5240.00	110.41			106.06	4.35	Average	246	90
4	*	5240.00	121.64			117.29	4.35	Peak	246	90
5		5350.00	46.50	54.00	-7.50	42.06	4.44	Average	246	90
6		5350.00	62.13	74.00	-11.87	57.69	4.44	Peak	246	90
7		10480.00	57.25	68.20	-10.95	43.55	13.70	Peak	100	37
8		15720.00	53.85	54.00	-0.15	39.43	14.42	Average	100	245
9		15720.00	68.74	74.00	-5.26	54.32	14.42	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).
Note 3:"*" is Peak / Average value of fundamental frequency

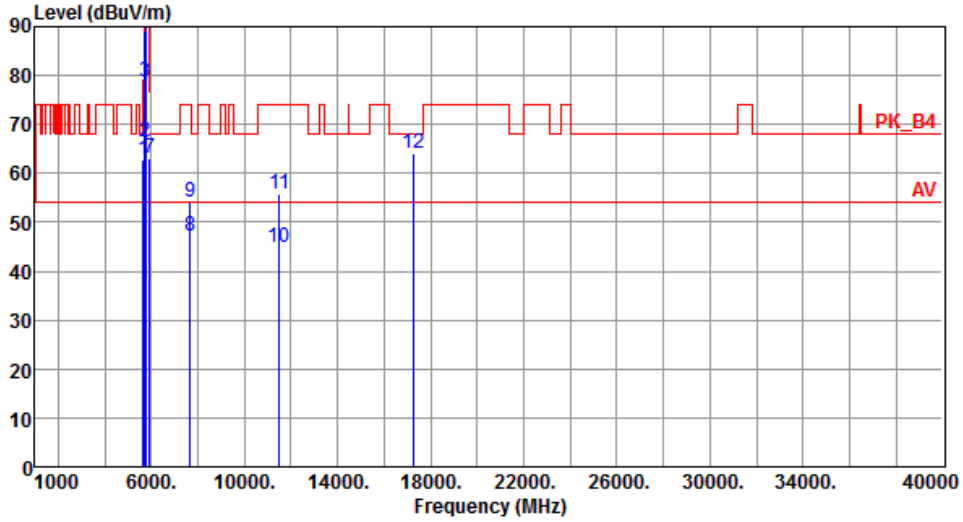
Modulation	11a	Test Freq. (MHz)	5745
Polarization	Horizontal		



		Freq. MHz	Emission level dBuV/m	Limit dBuV/m	Margin dB	SA reading dBuV	Factor dB	Remark	ANT High cm	Turn Table deg
1		5650.00	62.24	68.20	-5.96	57.51	4.73	Peak	100	33
2		5700.00	62.65	105.20	-42.55	57.84	4.81	Peak	100	33
3		5720.00	73.74	110.80	-37.06	68.90	4.84	Peak	100	33
4		5725.00	83.61	122.20	-38.59	78.77	4.84	Peak	100	33
5	*	5745.00	109.00			104.13	4.87	Average	100	33
6	*	5745.00	119.97			115.10	4.87	Peak	100	33
7		5925.00	62.83	68.20	-5.37	57.70	5.13	Peak	100	33
8		7660.00	45.10	54.00	-8.90	36.48	8.62	Average	100	310
9		7660.00	53.28	74.00	-20.72	44.66	8.62	Peak	100	310
10		11490.00	42.25	54.00	-11.75	28.14	14.11	Average	100	268
11		11490.00	54.74	74.00	-19.26	40.63	14.11	Peak	100	268
12		17235.00	61.26	68.20	-6.94	43.32	17.94	Peak	100	251

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:"*" is Peak / Average value of fundamental frequency

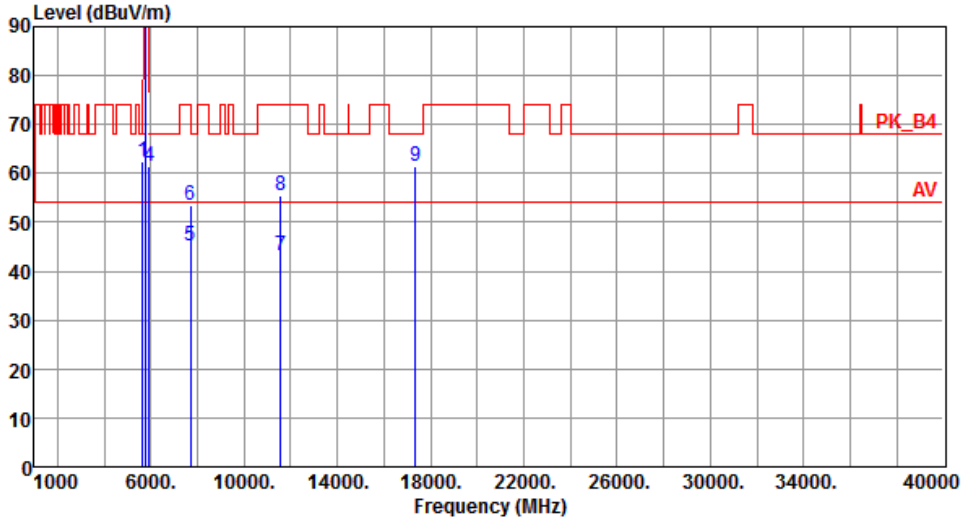
Modulation	11a	Test Freq. (MHz)	5745
Polarization	Vertical		



		Freq. MHz	Emission level dBuV/m	Limit dBuV/m	Margin dB	SA reading dBuV	Factor dB	Remark	ANT High cm	Turn Table deg
1		5650.00	62.86	68.20	-5.34	58.13	4.73	Peak	100	38
2		5700.00	66.53	105.20	-38.67	61.72	4.81	Peak	100	38
3		5720.00	78.55	110.80	-32.25	73.71	4.84	Peak	100	38
4		5725.00	88.97	122.20	-33.23	84.13	4.84	Peak	100	38
5	*	5745.00	114.11			109.24	4.87	Average	100	38
6	*	5745.00	125.41			120.54	4.87	Peak	100	38
7		5925.00	63.22	68.20	-4.98	58.09	5.13	Peak	100	38
8		7660.00	47.22	54.00	-6.78	38.60	8.62	Average	100	95
9		7660.00	54.02	74.00	-19.98	45.40	8.62	Peak	100	95
10		11490.00	44.87	54.00	-9.13	30.76	14.11	Average	100	40
11		11490.00	55.67	74.00	-18.33	41.56	14.11	Peak	100	40
12		17235.00	63.98	68.20	-4.22	46.04	17.94	Peak	206	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).
Note 3:"*" is Peak / Average value of fundamental frequency

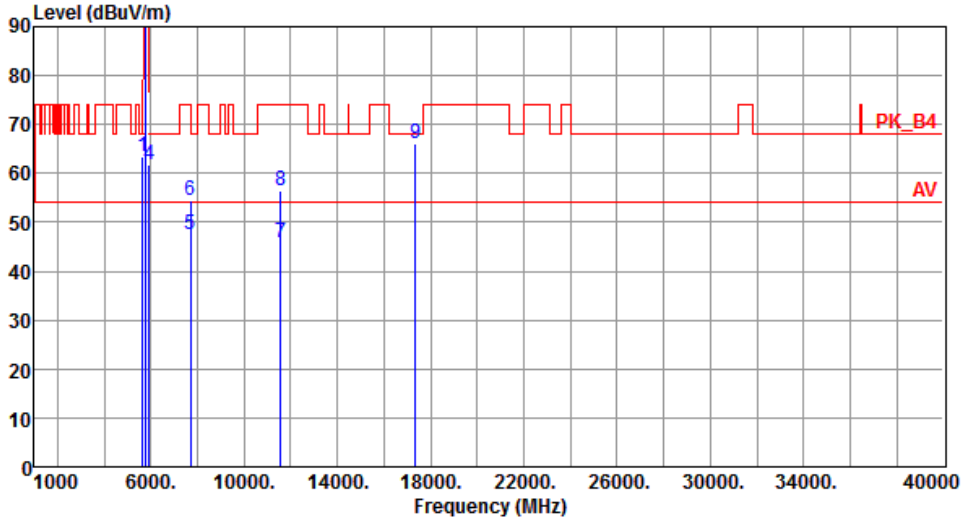
Modulation	11a	Test Freq. (MHz)	5785
Polarization	Horizontal		



		Freq. MHz	Emission level dBuV/m	Limit dBuV/m	Margin dB	SA reading dBuV	Factor dB	Remark	ANT High cm	Turn Table deg
1		5650.00	62.55	68.20	-5.65	57.82	4.73	Peak	100	35
2	*	5785.00	109.71			104.77	4.94	Average	100	35
3	*	5785.00	119.94			115.00	4.94	Peak	100	35
4		5925.00	61.48	68.20	-6.72	56.35	5.13	Peak	100	35
5		7713.00	45.16	54.00	-8.84	36.46	8.70	Average	100	302
6		7713.00	53.35	74.00	-20.65	44.65	8.70	Peak	100	302
7		11570.00	43.15	54.00	-10.85	29.17	13.98	Average	100	312
8		11570.00	55.47	74.00	-18.53	41.49	13.98	Peak	100	312
9		17355.00	61.57	68.20	-6.63	43.32	18.25	Peak	100	10

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:"*" is Peak / Average value of fundamental frequency

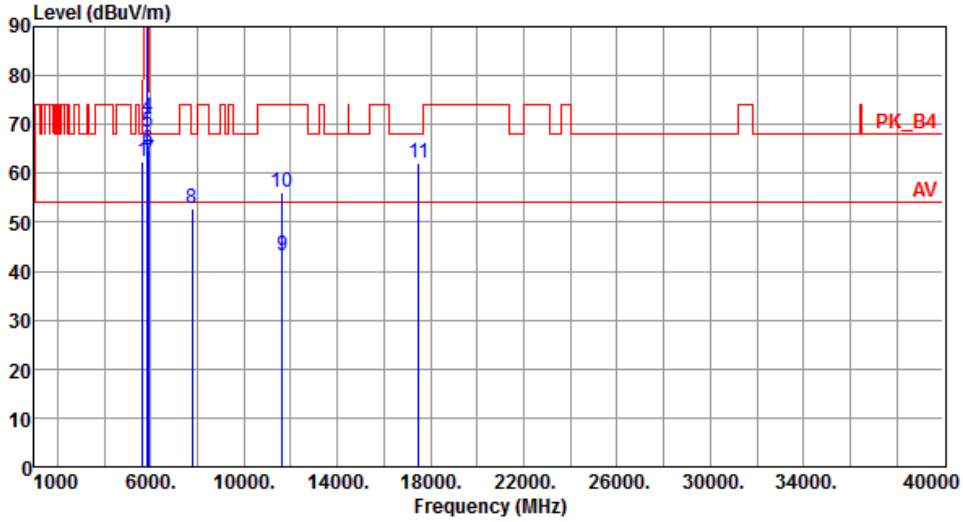
Modulation	11a	Test Freq. (MHz)	5785
Polarization	Vertical		



		Freq. MHz	Emission level dBuV/m	Limit dBuV/m	Margin dB	SA reading dBuV	Factor dB	Remark	ANT High cm	Turn Table deg
1		5650.00	63.28	68.20	-4.92	58.55	4.73	Peak	100	39
2	*	5785.00	114.80			109.86	4.94	Average	100	39
3	*	5785.00	126.93			121.99	4.94	Peak	100	39
4		5925.00	61.83	68.20	-6.37	56.70	5.13	Peak	100	39
5		7713.00	47.46	54.00	-6.54	38.76	8.70	Average	100	50
6		7713.00	54.38	74.00	-19.62	45.68	8.70	Peak	100	50
7		11570.00	45.83	54.00	-8.17	31.85	13.98	Average	100	88
8		11570.00	56.60	74.00	-17.40	42.62	13.98	Peak	100	88
9		17355.00	66.05	68.20	-2.15	47.80	18.25	Peak	203	6

Note 1: Emission Level (dBuV/m) = SA Reading (dBuV/m) + Factor* (dB)
*Factor includes antenna factor , cable loss and amplifier gain
Note 2: Margin (dB) = Emission level (dBuV/m) – Limit (dBuV/m).
Note 3:"*" is Peak / Average value of fundamental frequency

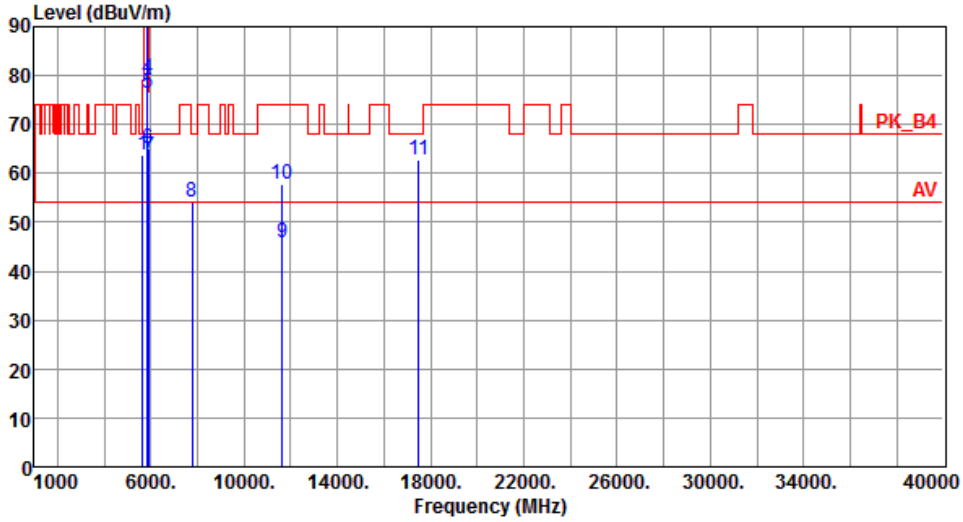
Modulation	11a	Test Freq. (MHz)	5825
Polarization	Horizontal		



		Freq. MHz	Emission level dBuV/m	Limit dBuV/m	Margin dB	SA reading dBuV	Factor dB	Remark	ANT High cm	Turn Table deg
1		5650.00	62.53	68.20	-5.67	57.80	4.73	Peak	100	104
2	*	5825.00	109.68			104.69	4.99	Average	100	104
3	*	5825.00	121.40			116.41	4.99	Peak	100	104
4		5850.00	71.34	122.20	-50.86	66.30	5.04	Peak	100	104
5		5855.00	68.45	110.80	-42.35	63.41	5.04	Peak	100	104
6		5875.00	64.67	105.20	-40.53	59.60	5.07	Peak	100	104
7		5925.00	62.92	68.20	-5.28	57.79	5.13	Peak	100	104
8		7766.60	52.89	68.20	-15.31	44.11	8.78	Peak	100	8
9		11650.00	43.12	54.00	-10.88	29.29	13.83	Average	100	112
10		11650.00	56.14	74.00	-17.86	42.31	13.83	Peak	100	112
11		17475.00	62.19	68.20	-6.01	43.64	18.55	Peak	222	135

Note 1: Emission Level (dBuV/m) = SA Reading (dBuV/m) + Factor* (dB)
*Factor includes antenna factor , cable loss and amplifier gain
Note 2: Margin (dB) = Emission level (dBuV/m) – Limit (dBuV/m).
Note 3:"*" is Peak / Average value of fundamental frequency

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

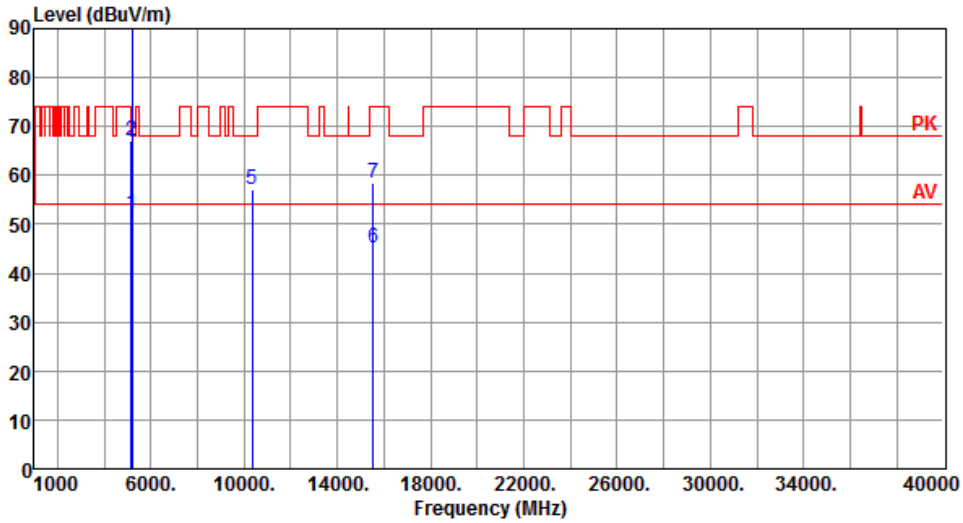


		Freq. MHz	Emission level dBuV/m	Limit dBuV/m	Margin dB	SA reading dBuV	Factor dB	Remark	ANT High cm	Turn Table deg
1		5650.00	63.77	68.20	-4.43	59.04	4.73	Peak	100	288
2	*	5825.00	114.35			109.36	4.99	Average	100	288
3	*	5825.00	125.79			120.80	4.99	Peak	100	288
4		5850.00	79.44	122.20	-42.76	74.40	5.04	Peak	100	288
5		5855.00	76.32	110.80	-34.48	71.28	5.04	Peak	100	288
6		5875.00	65.17	105.20	-40.03	60.10	5.07	Peak	100	288
7		5925.00	63.44	68.20	-4.76	58.31	5.13	Peak	100	288
8		7766.60	54.05	68.20	-14.15	45.27	8.78	Peak	100	222
9		11650.00	45.80	54.00	-8.20	31.97	13.83	Average	100	246
10		11650.00	57.77	74.00	-16.23	43.94	13.83	Peak	100	246
11		17475.00	62.75	68.20	-5.45	44.20	18.55	Peak	235	350

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:"*" is Peak / Average value of fundamental frequency

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

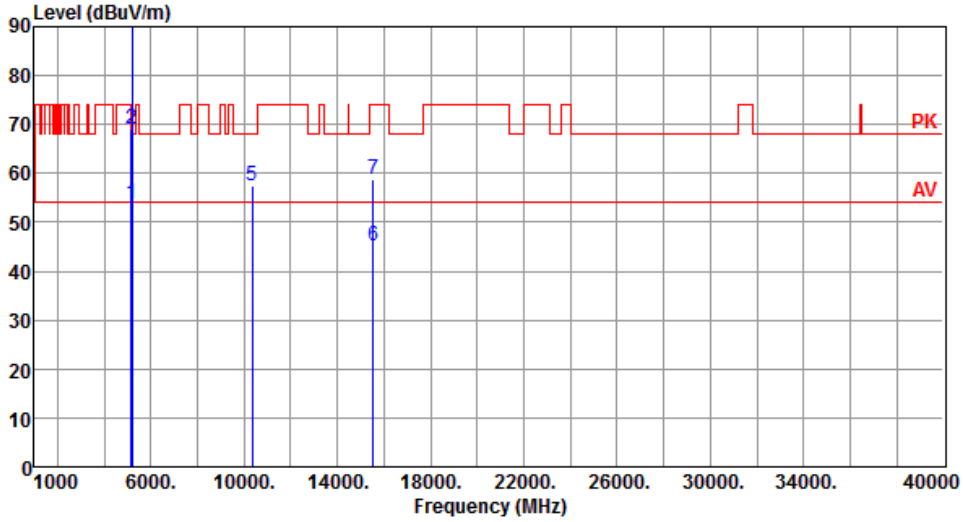
Modulation	VHT20	**Test Freq. (MHz)**	5180
Polarization	Horizontal		



		Freq. MHz	Emission level dBuV/m	Limit dBuV/m	Margin dB	SA reading dBuV	Factor dB	Remark	ANT High cm	Turn Table deg
1		5150.00	51.99	54.00	-2.01	47.71	4.28	Average	100	267
2		5150.00	67.18	74.00	-6.82	62.90	4.28	Peak	100	267
3	*	5180.00	101.41			97.11	4.30	Average	100	296
4	*	5180.00	113.85			109.55	4.30	Peak	100	296
5		10360.00	56.96	68.20	-11.24	43.36	13.60	Peak	100	56
6		15540.00	45.30	54.00	-8.70	30.63	14.67	Average	100	30
7		15540.00	58.29	74.00	-15.71	43.62	14.67	Peak	100	30

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:"*" is Peak / Average value of fundamental frequency

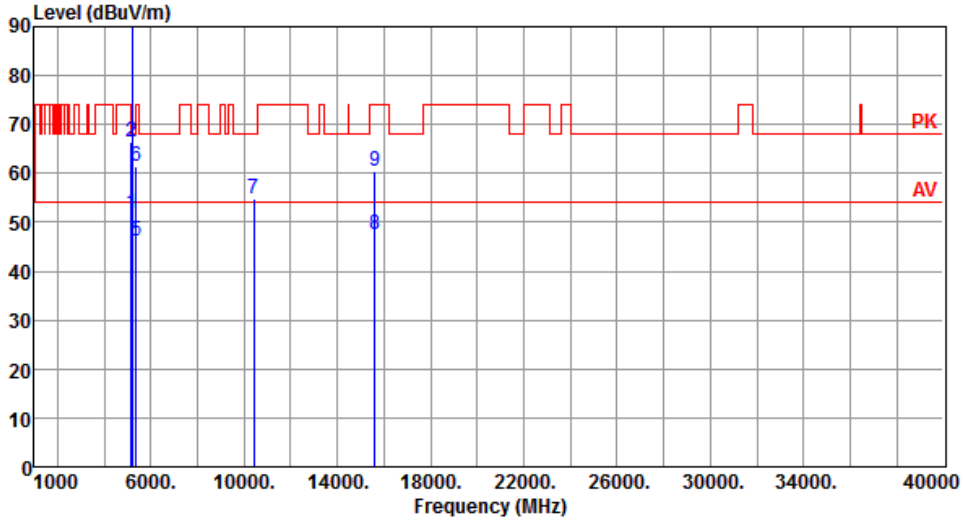
Modulation	VHT20	Test Freq. (MHz)	5180
Polarization	Vertical		



		Freq. MHz	Emission level dBuV/m	Limit dBuV/m	Margin dB	SA reading dBuV	Factor dB	Remark	ANT High cm	Turn Table deg
1		5150.00	53.83	54.00	-0.17	49.55	4.28	Average	100	52
2		5150.00	69.00	74.00	-5.00	64.72	4.28	Peak	100	52
3	*	5180.00	104.82			100.52	4.30	Average	100	102
4	*	5180.00	116.73			112.43	4.30	Peak	100	102
5		10360.00	57.61	68.20	-10.59	44.01	13.60	Peak	100	30
6		15540.00	45.29	54.00	-8.71	30.62	14.67	Average	100	241
7		15540.00	58.71	74.00	-15.29	44.04	14.67	Peak	100	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).
Note 3:"*" is Peak / Average value of fundamental frequency

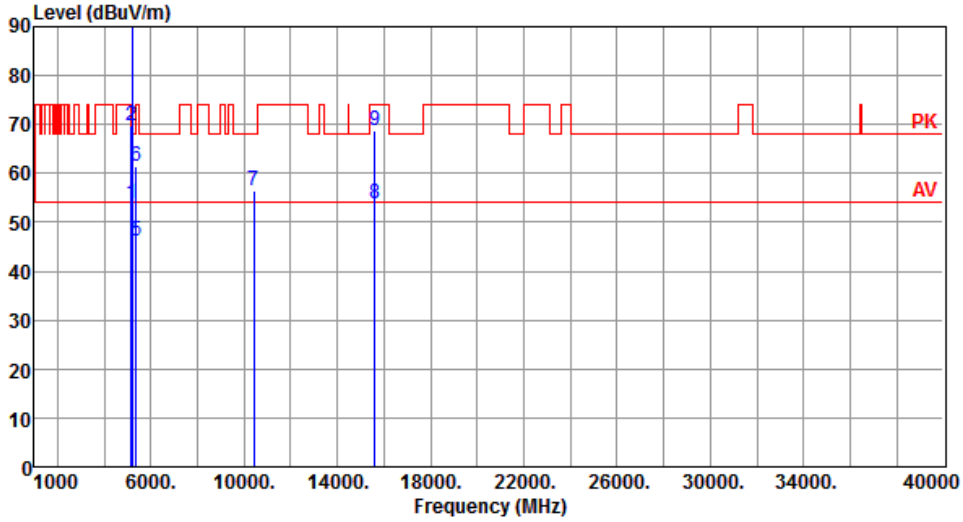
Modulation	VHT20	Test Freq. (MHz)	5200
Polarization	Horizontal		



		Freq. MHz	Emission level dBuV/m	Limit dBuV/m	Margin dB	SA reading dBuV	Factor dB	Remark	ANT High cm	Turn Table deg
1		5150.00	51.84	54.00	-2.16	47.56	4.28	Average	111	260
2		5150.00	66.51	74.00	-7.49	62.23	4.28	Peak	111	260
3	*	5200.00	107.12			102.80	4.32	Average	111	289
4	*	5200.00	117.31			112.99	4.32	Peak	111	289
5		5350.00	46.11	54.00	-7.89	41.67	4.44	Average	111	289
6		5350.00	61.32	74.00	-12.68	56.88	4.44	Peak	111	289
7		10400.00	54.91	68.20	-13.29	41.27	13.64	Peak	100	55
8		15600.00	47.54	54.00	-6.46	32.96	14.58	Average	100	37
9		15600.00	60.58	74.00	-13.42	46.00	14.58	Peak	100	37

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:"*" is Peak / Average value of fundamental frequency

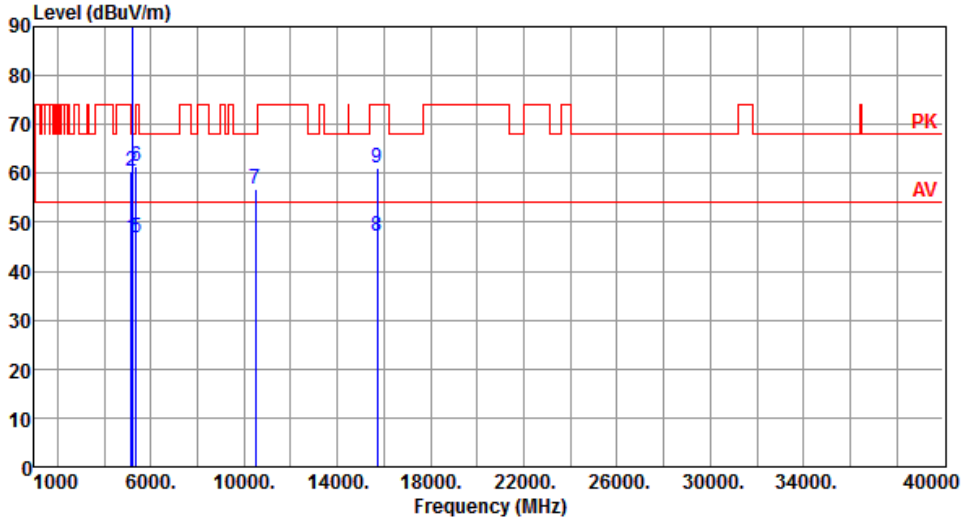
Modulation	VHT20	Test Freq. (MHz)	5200
Polarization	Vertical		



		Freq. MHz	Emission level dBuV/m	Limit dBuV/m	Margin dB	SA reading dBuV	Factor dB	Remark	ANT High cm	Turn Table deg
1		5150.00	53.88	54.00	-0.12	49.60	4.28	Average	100	49
2		5150.00	69.75	74.00	-4.25	65.47	4.28	Peak	100	49
3	*	5200.00	108.92			104.60	4.32	Average	100	103
4	*	5200.00	120.89			116.57	4.32	Peak	100	103
5		5350.00	46.02	54.00	-7.98	41.58	4.44	Average	100	103
6		5350.00	61.43	74.00	-12.57	56.99	4.44	Peak	100	103
7		10400.00	56.60	68.20	-11.60	42.96	13.64	Peak	100	37
8		15600.00	53.89	54.00	-0.11	39.31	14.58	Average	100	245
9		15600.00	68.66	74.00	-5.34	54.08	14.58	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).
Note 3:"*" is Peak / Average value of fundamental frequency

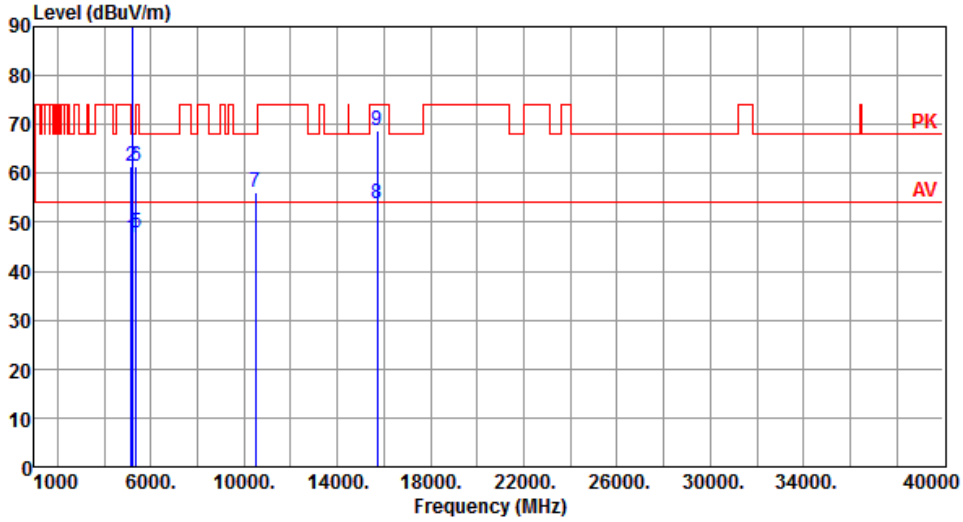
Modulation	VHT20	Test Freq. (MHz)	5240
Polarization	Horizontal		



		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	46.83	54.00	-7.17	42.55	4.28	Average	100	292
2		5150.00	60.42	74.00	-13.58	56.14	4.28	Peak	100	292
3	*	5240.00	104.88			100.53	4.35	Average	100	292
4	*	5240.00	117.74			113.39	4.35	Peak	100	292
5		5350.00	46.91	54.00	-7.09	42.47	4.44	Average	100	292
6		5350.00	61.54	74.00	-12.46	57.10	4.44	Peak	100	292
7		10480.00	56.95	68.20	-11.25	43.25	13.70	Peak	100	49
8		15720.00	47.22	54.00	-6.78	32.80	14.42	Average	100	29
9		15720.00	61.10	74.00	-12.90	46.68	14.42	Peak	100	29

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:"*" is Peak / Average value of fundamental frequency

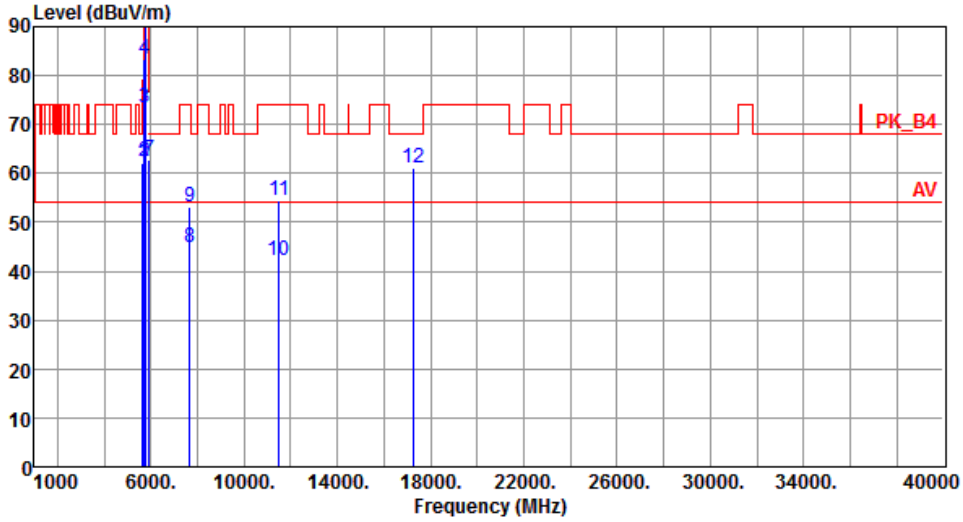
Modulation	VHT20	Test Freq. (MHz)	5240
Polarization	Vertical		



		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	46.69	54.00	-7.31	42.41	4.28	Average	100	97
2		5150.00	61.32	74.00	-12.68	57.04	4.28	Peak	100	97
3	*	5240.00	107.41			103.06	4.35	Average	100	97
4	*	5240.00	120.15			115.80	4.35	Peak	100	97
5		5350.00	47.86	54.00	-6.14	43.42	4.44	Average	100	97
6		5350.00	61.45	74.00	-12.55	57.01	4.44	Peak	100	97
7		10480.00	56.04	68.20	-12.16	42.34	13.70	Peak	100	35
8		15720.00	53.88	54.00	-0.12	39.46	14.42	Average	100	233
9		15720.00	68.66	74.00	-5.34	54.24	14.42	Peak	100	233

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:"*" is Peak / Average value of fundamental frequency

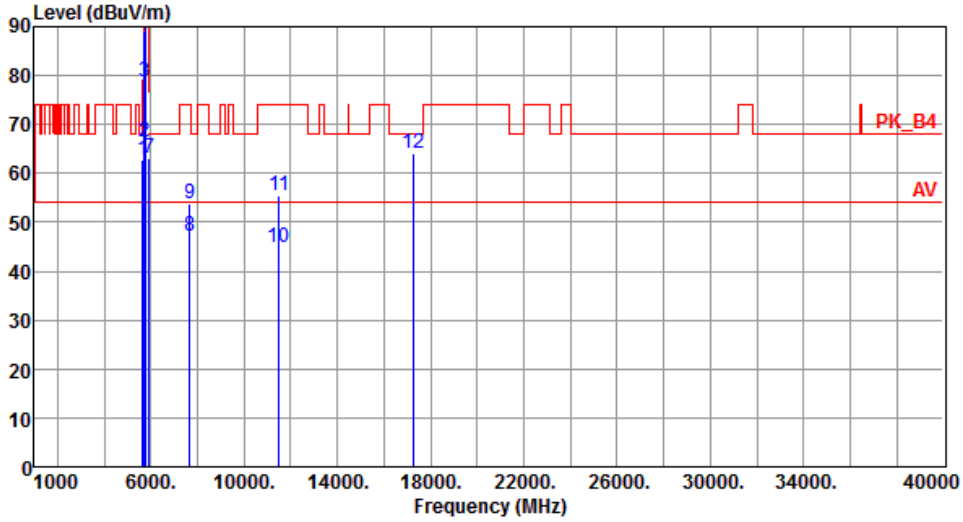
Modulation	VHT20	Test Freq. (MHz)	5745
Polarization	Horizontal		



		Freq. MHz	Emission level dBuV/m	Limit dBuV/m	Margin dB	SA reading dBuV	Factor dB	Remark	ANT High cm	Turn Table deg
1		5650.00	62.15	68.20	-6.05	57.42	4.73	Peak	100	35
2		5700.00	62.46	105.20	-42.74	57.65	4.81	Peak	100	35
3		5720.00	73.51	110.80	-37.29	68.67	4.84	Peak	100	35
4		5725.00	83.47	122.20	-38.73	78.63	4.84	Peak	100	35
5	*	5745.00	108.26			103.39	4.87	Average	100	35
6	*	5745.00	119.55			114.68	4.87	Peak	100	35
7		5925.00	62.92	68.20	-5.28	57.79	5.13	Peak	100	35
8		7660.00	44.78	54.00	-9.22	36.16	8.62	Average	100	306
9		7660.00	53.19	74.00	-20.81	44.57	8.62	Peak	100	306
10		11490.00	42.16	54.00	-11.84	28.05	14.11	Average	100	265
11		11490.00	54.60	74.00	-19.40	40.49	14.11	Peak	100	265
12		17235.00	61.05	68.20	-7.15	43.11	17.94	Peak	100	246

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:"*" is Peak / Average value of fundamental frequency

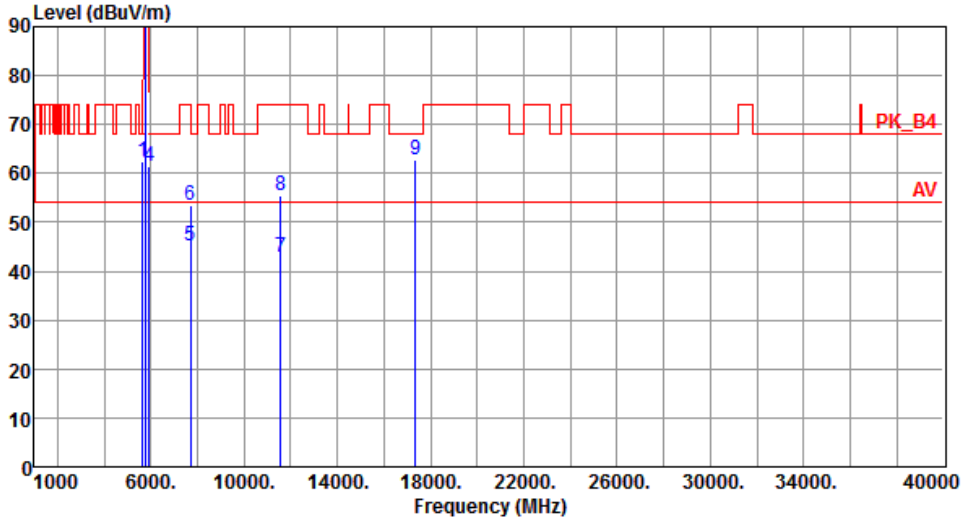
Modulation	VHT20	Test Freq. (MHz)	5745
Polarization	Vertical		



		Freq. MHz	Emission level dBuV/m	Limit dBuV/m	Margin dB	SA reading dBuV	Factor dB	Remark	ANT High cm	Turn Table deg
1		5650.00	62.79	68.20	-5.41	58.06	4.73	Peak	100	36
2		5700.00	66.40	105.20	-38.80	61.59	4.81	Peak	100	36
3		5720.00	78.62	110.80	-32.18	73.78	4.84	Peak	100	36
4		5725.00	88.86	122.20	-33.34	84.02	4.84	Peak	100	36
5	*	5745.00	113.59			108.72	4.87	Average	100	36
6	*	5745.00	124.86			119.99	4.87	Peak	100	36
7		5925.00	63.01	68.20	-5.19	57.88	5.13	Peak	100	36
8		7660.00	47.14	54.00	-6.86	38.52	8.62	Average	100	92
9		7660.00	53.91	74.00	-20.09	45.29	8.62	Peak	100	92
10		11490.00	44.73	54.00	-9.27	30.62	14.11	Average	100	44
11		11490.00	55.50	74.00	-18.50	41.39	14.11	Peak	100	44
12		17235.00	64.22	68.20	-3.98	46.28	17.94	Peak	100	77

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:"*" is Peak / Average value of fundamental frequency

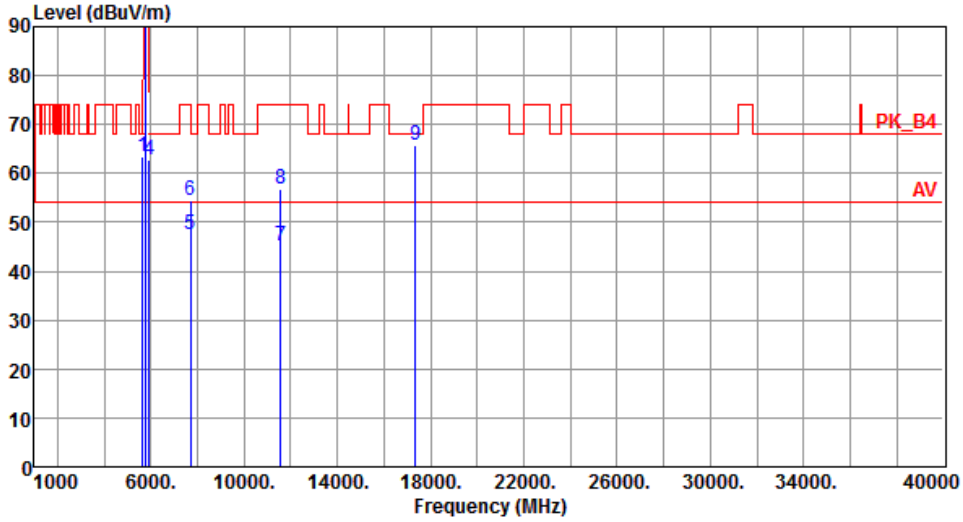
Modulation	VHT20	Test Freq. (MHz)	5785
Polarization	Horizontal		



		Freq. MHz	Emission level dBuV/m	Limit dBuV/m	Margin dB	SA reading dBuV	Factor dB	Remark	ANT High cm	Turn Table deg
1		5650.00	62.46	68.20	-5.74	57.73	4.73	Peak	100	262
2	*	5785.00	108.89			103.95	4.94	Average	100	262
3	*	5785.00	119.48			114.54	4.94	Peak	100	262
4		5925.00	61.35	68.20	-6.85	56.22	5.13	Peak	100	262
5		7713.00	45.32	54.00	-8.68	36.62	8.70	Average	100	296
6		7713.00	53.48	74.00	-20.52	44.78	8.70	Peak	100	296
7		11570.00	43.00	54.00	-11.00	29.02	13.98	Average	100	270
8		11570.00	55.47	74.00	-18.53	41.49	13.98	Peak	100	270
9		17355.00	62.93	68.20	-5.27	44.68	18.25	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).
Note 3:"*" is Peak / Average value of fundamental frequency

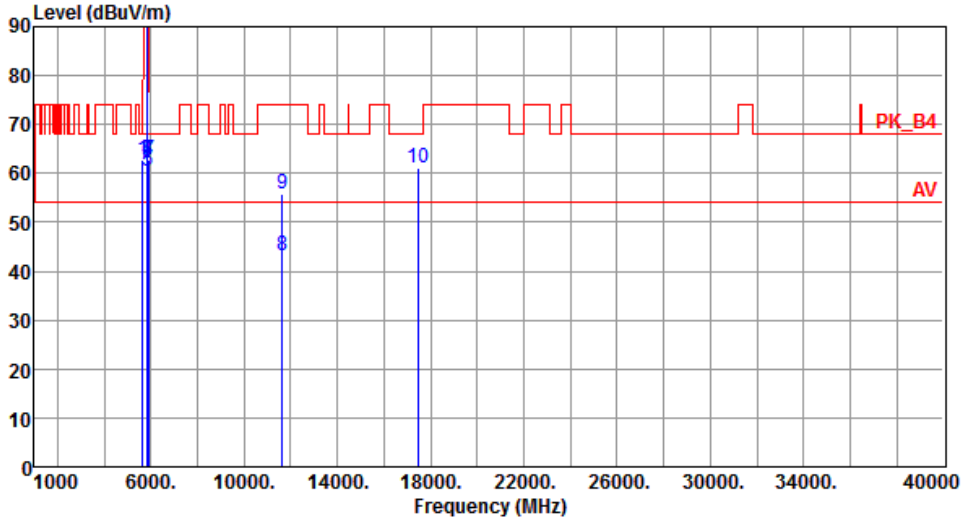
Modulation	VHT20	Test Freq. (MHz)	5785
Polarization	Vertical		



		Freq. MHz	Emission level dBuV/m	Limit dBuV/m	Margin dB	SA reading dBuV	Factor dB	Remark	ANT High cm	Turn Table deg
1		5650.00	63.31	68.20	-4.89	58.58	4.73	Peak	100	40
2	*	5785.00	113.86			108.92	4.94	Average	100	40
3	*	5785.00	126.56			121.62	4.94	Peak	100	40
4		5925.00	62.83	68.20	-5.37	57.70	5.13	Peak	100	40
5		7713.00	47.61	54.00	-6.39	38.91	8.70	Average	100	46
6		7713.00	54.54	74.00	-19.46	45.84	8.70	Peak	100	46
7		11570.00	45.18	54.00	-8.82	31.20	13.98	Average	100	88
8		11570.00	56.64	74.00	-17.36	42.66	13.98	Peak	100	88
9		17355.00	65.60	68.20	-2.60	47.35	18.25	Peak	211	4

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:"*" is Peak / Average value of fundamental frequency

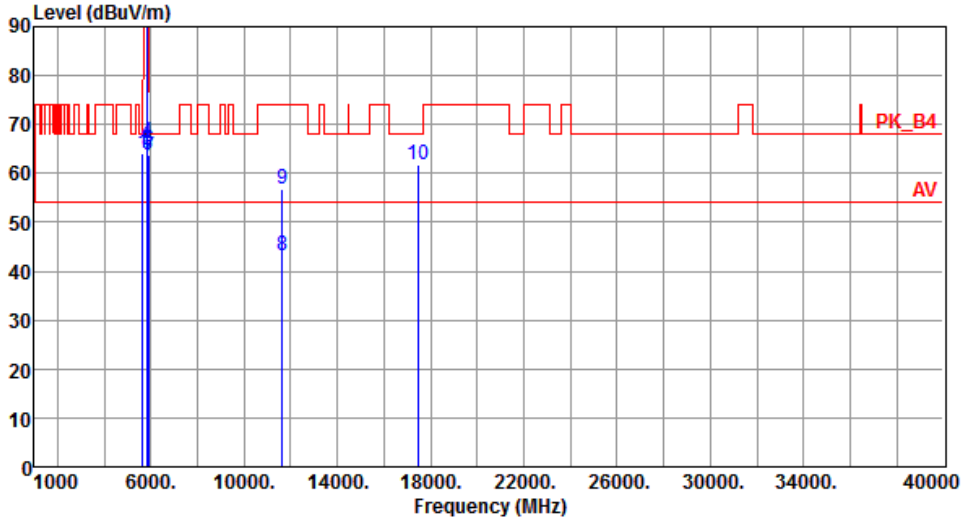
Modulation	VHT20	Test Freq. (MHz)	5825
Polarization	Horizontal		



		Freq. MHz	Emission level dBuV/m	Limit dBuV/m	Margin dB	SA reading dBuV	Factor dB	Remark	ANT High cm	Turn Table deg
1		5650.00	62.64	68.20	-5.56	57.91	4.73	Peak	100	253
2	*	5825.00	108.25			103.26	4.99	Average	100	253
3	*	5825.00	119.85			114.86	4.99	Peak	100	253
4		5850.00	62.75	122.20	-59.45	57.71	5.04	Peak	100	253
5		5855.00	60.51	110.80	-50.29	55.47	5.04	Peak	100	253
6		5875.00	62.35	105.20	-42.85	57.28	5.07	Peak	100	253
7		5925.00	62.83	68.20	-5.37	57.70	5.13	Peak	100	253
8		11650.00	43.24	54.00	-10.76	29.41	13.83	Average	100	269
9		11650.00	55.69	74.00	-18.31	41.86	13.83	Peak	100	269
10		17475.00	61.17	68.20	-7.03	42.62	18.55	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).
Note 3:"*" is Peak / Average value of fundamental frequency

Modulation	VHT20	Test Freq. (MHz)	5825
Polarization	Vertical		

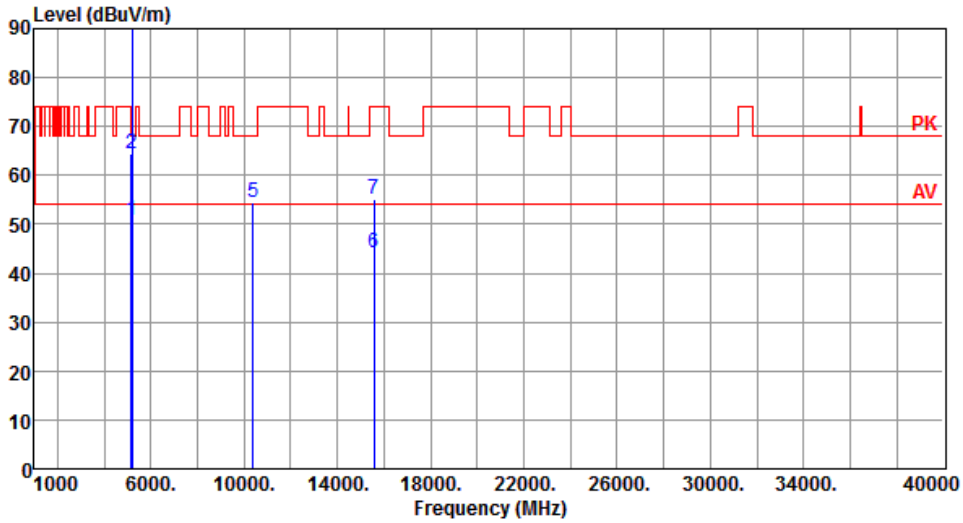


		Freq. MHz	Emission level dBuV/m	Limit dBuV/m	Margin dB	SA reading dBuV	Factor dB	Remark	ANT High cm	Turn Table deg
1		5650.00	64.15	68.20	-4.05	59.42	4.73	Peak	100	37
2	*	5825.00	113.76			108.77	4.99	Average	100	37
3	*	5825.00	125.60			120.61	4.99	Peak	100	37
4		5850.00	66.26	122.20	-55.94	61.22	5.04	Peak	100	37
5		5855.00	64.88	110.80	-45.92	59.84	5.04	Peak	100	37
6		5875.00	63.72	105.20	-41.48	58.65	5.07	Peak	100	37
7		5925.00	63.30	68.20	-4.90	58.17	5.13	Peak	100	37
8		11650.00	43.34	54.00	-10.66	29.51	13.83	Average	100	97
9		11650.00	56.63	74.00	-17.37	42.80	13.83	Peak	100	97
10		17475.00	61.77	68.20	-6.43	43.22	18.55	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).
Note 3:"*" is Peak / Average value of fundamental frequency

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

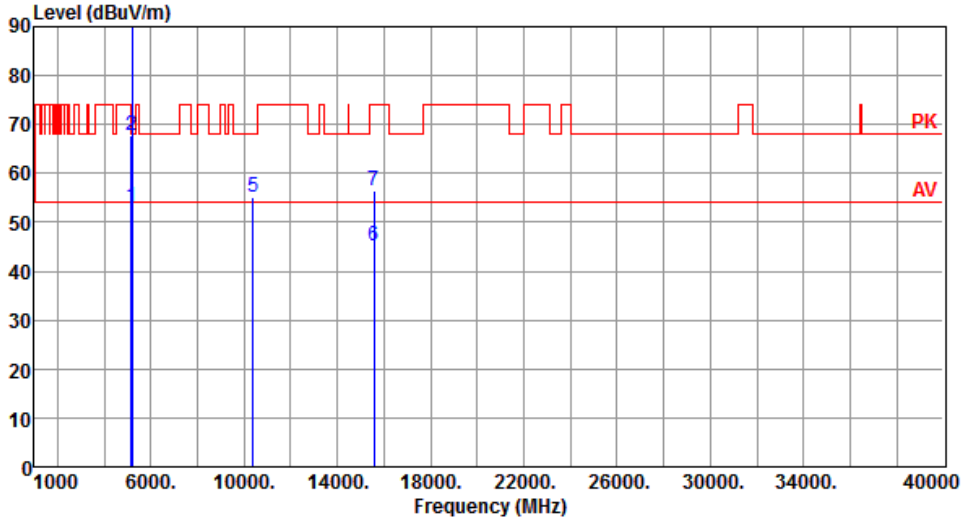
Modulation	VHT40	**Test Freq. (MHz)**	5190
Polarization	Horizontal		



		Freq. MHz	Emission level dBuV/m	Limit dBuV/m	Margin dB	SA reading dBuV	Factor dB	Remark	ANT High cm	Turn Table deg
1		5150.00	50.91	54.00	-3.09	46.63	4.28	Average	100	291
2		5150.00	64.44	74.00	-9.56	60.16	4.28	Peak	100	291
3	*	5190.00	96.91			92.59	4.32	Average	100	291
4	*	5190.00	108.62			104.30	4.32	Peak	100	291
5		10380.00	54.37	68.20	-13.83	40.75	13.62	Peak	100	31
6		15570.00	44.26	54.00	-9.74	29.64	14.62	Average	100	41
7		15570.00	55.21	74.00	-18.79	40.59	14.62	Peak	100	41

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:"*" is Peak / Average value of fundamental frequency

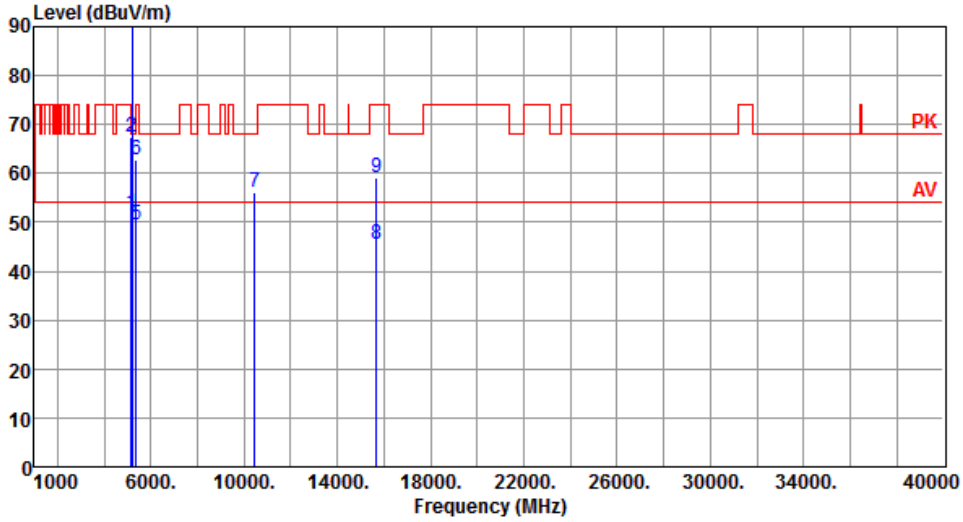
Modulation	VHT40	Test Freq. (MHz)	5190
Polarization	Vertical		



		Freq. MHz	Emission level dBuV/m	Limit dBuV/m	Margin dB	SA reading dBuV	Factor dB	Remark	ANT High cm	Turn Table deg
1		5150.00	53.13	54.00	-0.87	48.85	4.28	Average	262	97
2		5150.00	67.61	74.00	-6.39	63.33	4.28	Peak	262	97
3	*	5190.00	99.92			95.60	4.32	Average	262	91
4	*	5190.00	111.02			106.70	4.32	Peak	262	91
5		10380.00	55.28	68.20	-12.92	41.66	13.62	Peak	100	217
6		15570.00	45.10	54.00	-8.90	30.48	14.62	Average	100	336
7		15570.00	56.44	74.00	-17.56	41.82	14.62	Peak	100	336

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:"*" is Peak / Average value of fundamental frequency

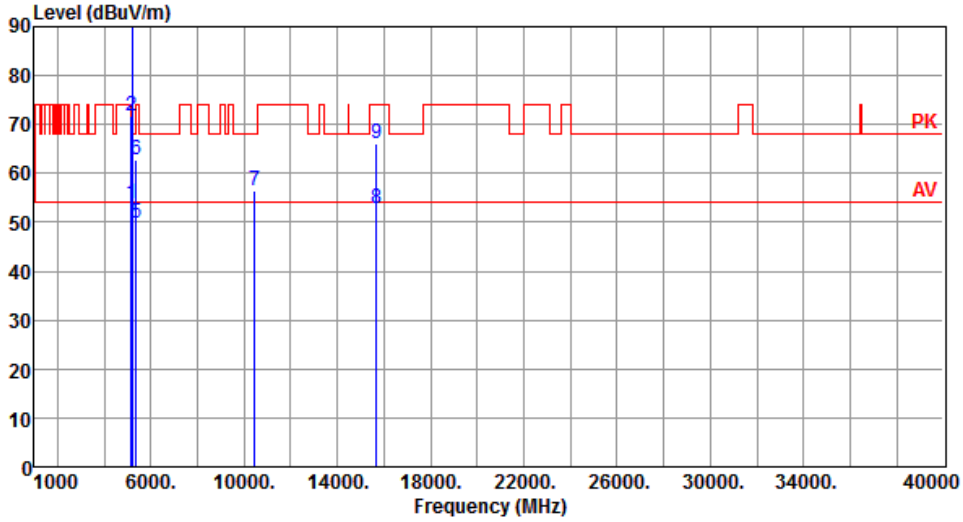
Modulation	VHT40	Test Freq. (MHz)	5230
Polarization	Horizontal		



		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	51.88	54.00	-2.12	47.60	4.28	Average	100	293
2		5150.00	67.35	74.00	-6.65	63.07	4.28	Peak	100	293
3	*	5230.00	103.28			98.94	4.34	Average	100	293
4	*	5230.00	114.73			110.39	4.34	Peak	100	293
5		5350.00	49.41	54.00	-4.59	44.97	4.44	Average	100	293
6		5350.00	62.72	74.00	-11.28	58.28	4.44	Peak	100	293
7		10460.00	56.19	68.20	-12.01	42.52	13.67	Peak	100	36
8		15690.00	45.66	54.00	-8.34	31.20	14.46	Average	100	36
9		15690.00	59.00	74.00	-15.00	44.54	14.46	Peak	100	36

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:"*" is Peak / Average value of fundamental frequency

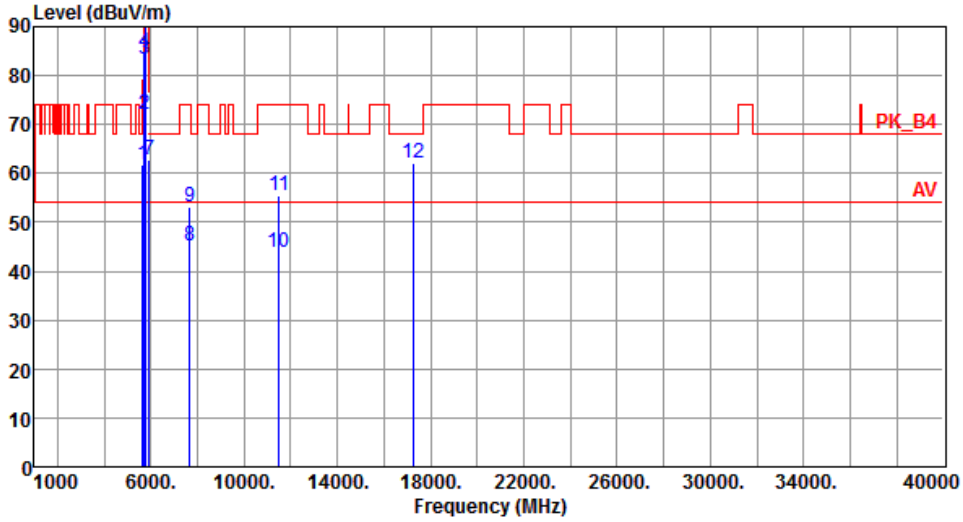
Modulation	VHT40	Test Freq. (MHz)	5230
Polarization	Vertical		



		Freq. MHz	Emission level dBuV/m	Limit dBuV/m	Margin dB	SA reading dBuV	Factor dB	Remark	ANT High cm	Turn Table deg
1		5150.00	53.88	54.00	-0.12	49.60	4.28	Average	260	98
2		5150.00	71.60	74.00	-2.40	67.32	4.28	Peak	260	98
3	*	5230.00	106.51			102.17	4.34	Average	260	98
4	*	5230.00	118.33			113.99	4.34	Peak	260	98
5		5350.00	49.73	54.00	-4.27	45.29	4.44	Average	260	98
6		5350.00	62.76	74.00	-11.24	58.32	4.44	Peak	260	98
7		10460.00	56.33	68.20	-11.87	42.66	13.67	Peak	100	232
8		15690.00	52.96	54.00	-1.04	38.50	14.46	Average	100	232
9		15690.00	65.94	74.00	-8.06	51.48	14.46	Peak	100	232

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:"*" is Peak / Average value of fundamental frequency

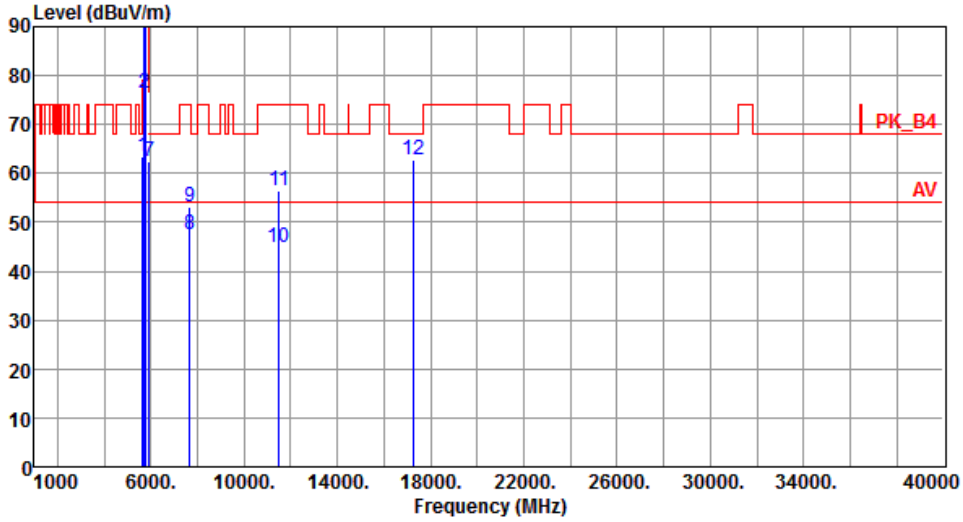
Modulation	VHT40	Test Freq. (MHz)	5755
Polarization	Horizontal		



		Freq. MHz	Emission level dBuV/m	Limit dBuV/m	Margin dB	SA reading dBuV	Factor dB	Remark	ANT High cm	Turn Table deg
1		5650.00	61.69	68.20	-6.51	56.96	4.73	Peak	100	35
2		5700.00	71.93	105.20	-33.27	67.12	4.81	Peak	100	35
3		5720.00	83.26	110.80	-27.54	78.42	4.84	Peak	100	35
4		5725.00	84.64	122.20	-37.56	79.80	4.84	Peak	100	35
5	*	5755.00	106.26			101.37	4.89	Average	100	35
6	*	5755.00	117.84			112.95	4.89	Peak	100	35
7		5925.00	62.85	68.20	-5.35	57.72	5.13	Peak	100	35
8		7673.00	45.32	54.00	-8.68	36.68	8.64	Average	100	295
9		7673.00	53.15	74.00	-20.85	44.51	8.64	Peak	100	295
10		11510.00	43.89	54.00	-10.11	29.80	14.09	Average	100	272
11		11510.00	55.31	74.00	-18.69	41.22	14.09	Peak	100	272
12		17265.00	62.16	68.20	-6.04	44.14	18.02	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).
Note 3:"*" is Peak / Average value of fundamental frequency

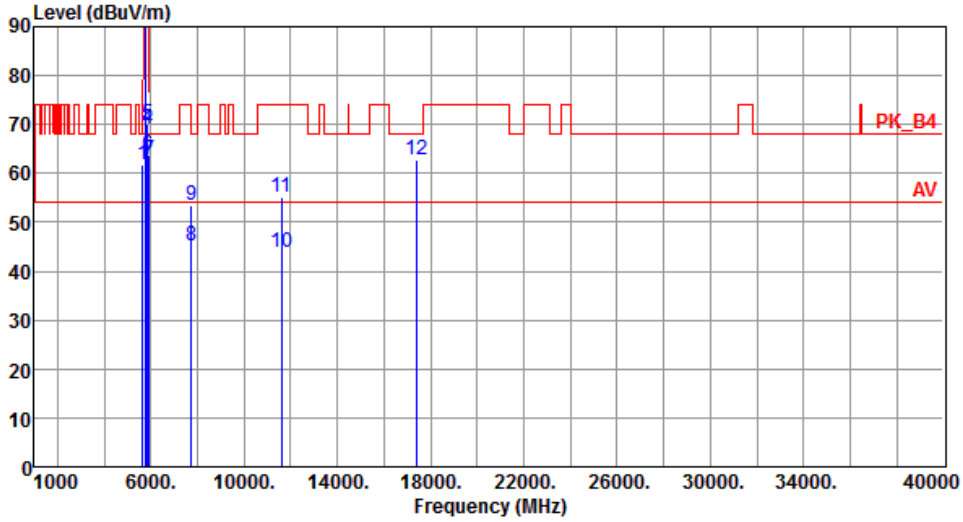
Modulation	VHT40	Test Freq. (MHz)	5755
Polarization	Vertical		



		Freq. MHz	Emission level dBuV/m	Limit dBuV/m	Margin dB	SA reading dBuV	Factor dB	Remark	ANT High cm	Turn Table deg
1		5650.00	63.37	68.20	-4.83	58.64	4.73	Peak	100	42
2		5700.00	76.50	105.20	-28.70	71.69	4.81	Peak	100	42
3		5720.00	90.87	110.80	-19.93	86.03	4.84	Peak	100	42
4		5725.00	92.69	122.20	-29.51	87.85	4.84	Peak	100	42
5	*	5755.00	111.19			106.30	4.89	Average	100	42
6	*	5755.00	123.74			118.85	4.89	Peak	100	42
7		5925.00	62.38	68.20	-5.82	57.25	5.13	Peak	200	5
8		7673.00	47.39	54.00	-6.61	38.75	8.64	Average	100	45
9		7673.00	53.19	74.00	-20.81	44.55	8.64	Peak	100	45
10		11510.00	44.94	54.00	-9.06	30.85	14.09	Average	100	87
11		11510.00	56.55	74.00	-17.45	42.46	14.09	Peak	100	87
12		17265.00	62.64	68.20	-5.56	44.62	18.02	Peak	200	5

Note 1: Emission Level (dBuV/m) = SA Reading (dBuV/m) + Factor* (dB)
*Factor includes antenna factor , cable loss and amplifier gain
Note 2: Margin (dB) = Emission level (dBuV/m) – Limit (dBuV/m).
Note 3:"*" is Peak / Average value of fundamental frequency

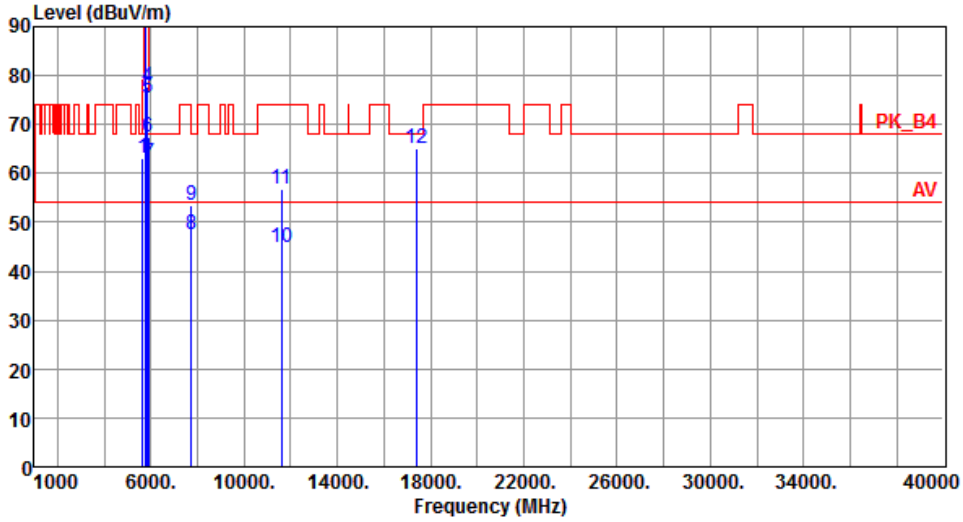
Modulation	VHT40	Test Freq. (MHz)	5795
Polarization	Horizontal		



		Freq. MHz	Emission level dBuV/m	Limit dBuV/m	Margin dB	SA reading dBuV	Factor dB	Remark	ANT High cm	Turn Table deg
1		5650.00	61.67	68.20	-6.53	56.94	4.73	Peak	100	36
2	*	5795.00	106.10			101.15	4.95	Average	100	36
3	*	5795.00	118.02			113.07	4.95	Peak	100	36
4		5850.00	69.05	122.20	-53.15	64.01	5.04	Peak	100	36
5		5855.00	70.06	110.80	-40.74	65.02	5.04	Peak	100	36
6		5875.00	63.62	105.20	-41.58	58.55	5.07	Peak	100	36
7		5925.00	62.74	68.20	-5.46	57.61	5.13	Peak	100	36
8		7727.00	45.24	54.00	-8.76	36.52	8.72	Average	100	296
9		7727.00	53.41	74.00	-20.59	44.69	8.72	Peak	100	296
10		11590.00	43.88	54.00	-10.12	29.94	13.94	Average	100	274
11		11590.00	55.25	74.00	-18.75	41.31	13.94	Peak	100	274
12		17385.00	62.61	68.20	-5.59	44.28	18.33	Peak	100	266

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:"*" is Peak / Average value of fundamental frequency

Modulation	VHT40	Test Freq. (MHz)	5795
Polarization	Vertical		

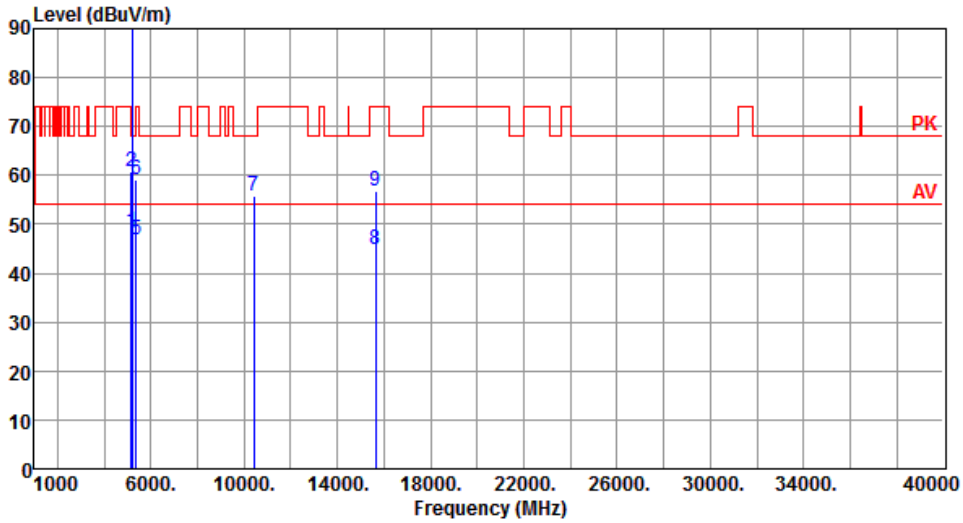


		Freq. MHz	Emission level dBuV/m	Limit dBuV/m	Margin dB	SA reading dBuV	Factor dB	Remark	ANT High cm	Turn Table deg
1		5650.00	63.13	68.20	-5.07	58.40	4.73	Peak	100	40
2	*	5795.00	111.52			106.57	4.95	Average	100	40
3	*	5795.00	123.79			118.84	4.95	Peak	100	40
4		5850.00	77.58	122.20	-44.62	72.54	5.04	Peak	100	40
5		5855.00	75.52	110.80	-35.28	70.48	5.04	Peak	100	40
6		5875.00	67.39	105.20	-37.81	62.32	5.07	Peak	100	40
7		5925.00	62.26	68.20	-5.94	57.13	5.13	Peak	100	40
8		7727.00	47.42	54.00	-6.58	38.70	8.72	Average	100	45
9		7727.00	53.34	74.00	-20.66	44.62	8.72	Peak	100	45
10		11590.00	44.84	54.00	-9.16	30.90	13.94	Average	100	90
11		11590.00	56.69	74.00	-17.31	42.75	13.94	Peak	100	90
12		17385.00	65.11	68.20	-3.09	46.78	18.33	Peak	207	84

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:"*" is Peak / Average value of fundamental frequency

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

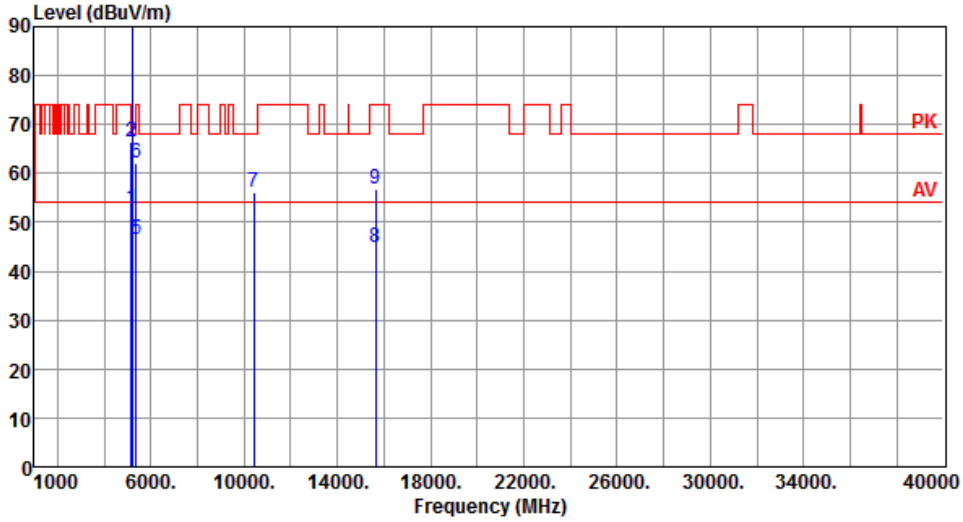
Modulation	VHT80	**Test Freq. (MHz)**	5210
Polarization	Horizontal		



		Freq. MHz	Emission level dBuV/m	Limit dBuV/m	Margin dB	SA reading dBuV	Factor dB	Remark	ANT High cm	Turn Table deg
1		5150.00	48.62	54.00	-5.38	44.34	4.28	Average	100	295
2		5150.00	60.75	74.00	-13.25	56.47	4.28	Peak	100	295
3	*	5210.00	93.05			88.73	4.32	Average	100	295
4	*	5210.00	103.56			99.24	4.32	Peak	100	295
5		5350.00	46.84	54.00	-7.16	42.40	4.44	Average	100	295
6		5350.00	59.15	74.00	-14.85	54.71	4.44	Peak	100	295
7		10420.00	55.90	68.20	-12.30	42.24	13.66	Peak	100	50
8		15630.00	44.97	54.00	-9.03	30.43	14.54	Average	100	33
9		15630.00	56.79	74.00	-17.21	42.25	14.54	Peak	100	33

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:"*" is Peak / Average value of fundamental frequency

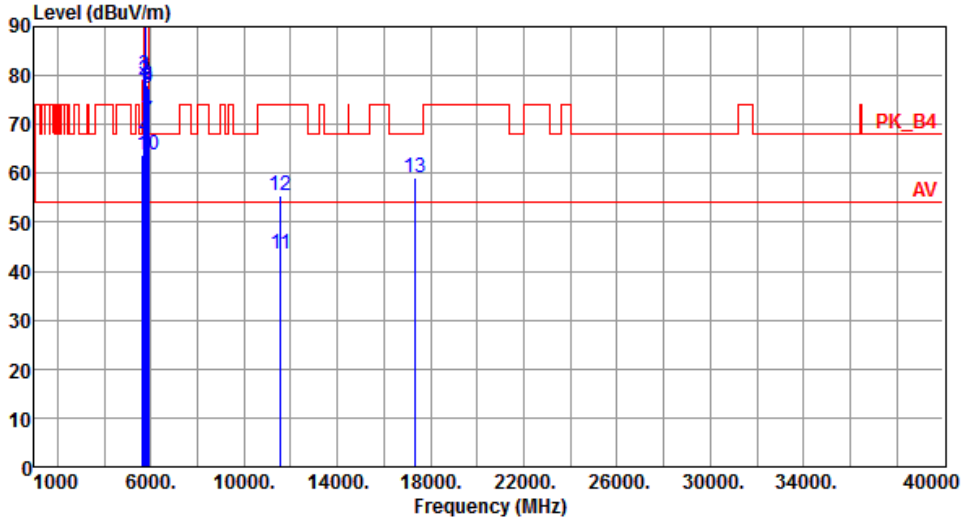
Modulation	VHT80	Test Freq. (MHz)	5210
Polarization	Vertical		



		Freq. MHz	Emission level dBuV/m	Limit dBuV/m	Margin dB	SA reading dBuV	Factor dB	Remark	ANT High cm	Turn Table deg
1		5150.00	52.94	54.00	-1.06	48.66	4.28	Average	263	104
2		5150.00	66.50	74.00	-7.50	62.22	4.28	Peak	263	104
3	*	5210.00	95.34			91.02	4.32	Average	263	94
4	*	5210.00	106.85			102.53	4.32	Peak	263	94
5		5350.00	46.53	54.00	-7.47	42.09	4.44	Average	263	94
6		5350.00	61.98	74.00	-12.02	57.54	4.44	Peak	263	94
7		10420.00	56.25	68.20	-11.95	42.59	13.66	Peak	100	39
8		15630.00	44.87	54.00	-9.13	30.33	14.54	Average	100	240
9		15630.00	56.92	74.00	-17.08	42.38	14.54	Peak	100	240

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:"*" is Peak / Average value of fundamental frequency

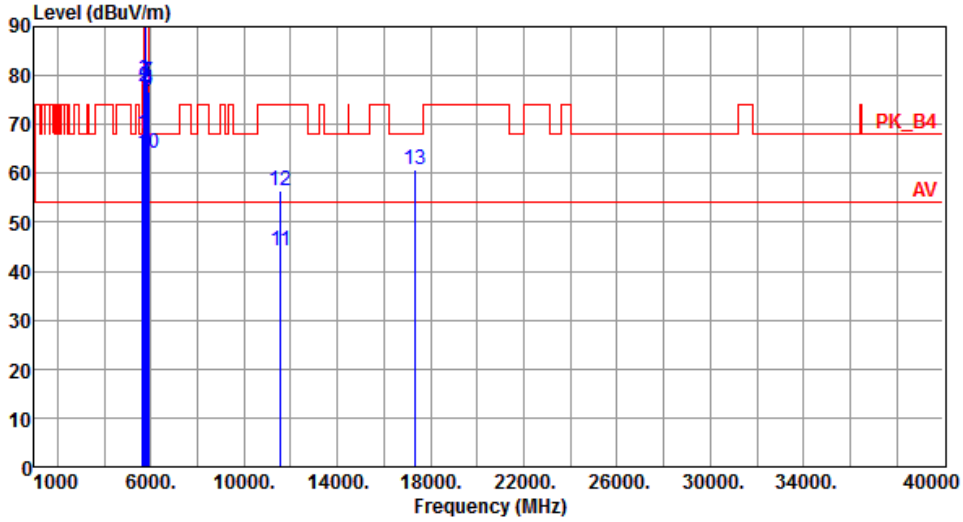
Modulation	VHT80	Test Freq. (MHz)	5775
Polarization	Horizontal		



		Freq. MHz	Emission level dBuV/m	Limit dBuV/m	Margin dB	SA reading dBuV	Factor dB	Remark	ANT High cm	Turn Table deg
1		5650.00	63.78	68.20	-4.42	59.05	4.73	Peak	100	145
2		5700.00	78.92	105.20	-26.28	74.11	4.81	Peak	100	145
3		5720.00	79.96	110.80	-30.84	75.12	4.84	Peak	100	145
4		5725.00	67.26	122.20	-54.94	62.42	4.84	Peak	100	145
5	*	5755.00	100.33			95.44	4.89	Average	100	145
6	*	5755.00	111.62			106.73	4.89	Peak	100	145
7		5850.00	70.65	122.20	-51.55	65.61	5.04	Peak	100	145
8		5855.00	78.12	110.80	-32.68	73.08	5.04	Peak	100	145
9		5875.00	77.38	105.20	-27.82	72.31	5.07	Peak	100	145
10		5925.00	63.78	68.20	-4.42	58.65	5.13	Peak	100	145
11		11550.00	43.34	54.00	-10.66	29.33	14.01	Average	100	258
12		11550.00	55.40	74.00	-18.60	41.39	14.01	Peak	100	258
13		17325.00	59.16	68.20	-9.04	40.99	18.17	Peak	100	286

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:"*" is Peak / Average value of fundamental frequency

Modulation	VHT80	Test Freq. (MHz)	5775
Polarization	Vertical		



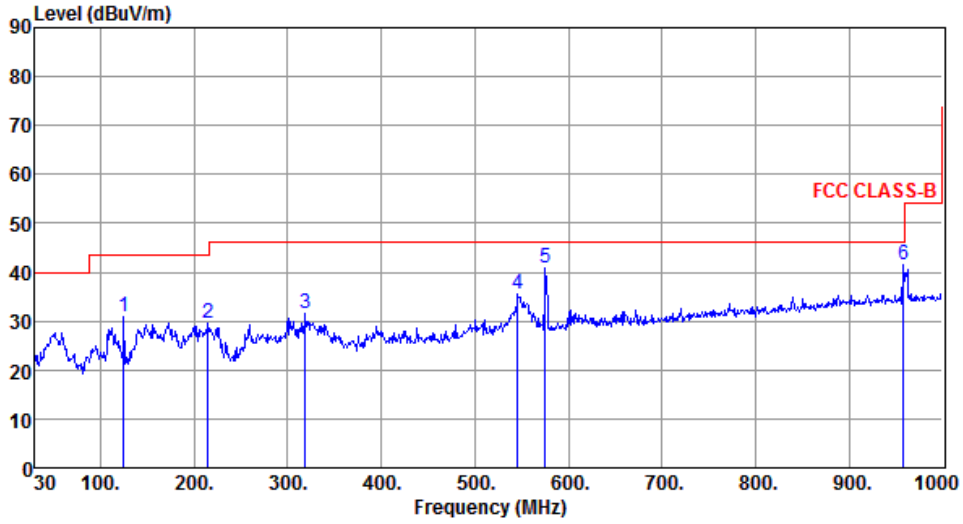
		Freq. MHz	Emission level dBuV/m	Limit dBuV/m	Margin dB	SA reading dBuV	Factor dB	Remark	ANT High cm	Turn Table deg
1		5650.00	68.04	68.20	-0.16	63.31	4.73	Peak	100	346
2		5700.00	77.85	105.20	-27.35	73.04	4.81	Peak	100	346
3		5720.00	79.03	110.80	-31.77	74.19	4.84	Peak	100	346
4		5725.00	78.34	122.20	-43.86	73.50	4.84	Peak	100	346
5	*	5755.00	104.10			99.21	4.89	Average	100	346
6	*	5755.00	115.02			110.13	4.89	Peak	100	346
7		5850.00	78.74	122.20	-43.46	73.70	5.04	Peak	100	346
8		5855.00	77.26	110.80	-33.54	72.22	5.04	Peak	100	346
9		5875.00	76.75	105.20	-28.45	71.68	5.07	Peak	100	346
10		5925.00	63.99	68.20	-4.21	58.86	5.13	Peak	100	346
11		11550.00	44.33	54.00	-9.67	30.32	14.01	Average	100	103
12		11550.00	56.41	74.00	-17.59	42.40	14.01	Peak	100	103
13		17325.00	60.64	68.20	-7.56	42.47	18.17	Peak	100	236

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:"*" is Peak / Average value of fundamental frequency

Beamforming mode

3.5.9 Transmitter Radiated Unwanted Emissions (Below 1GHz)

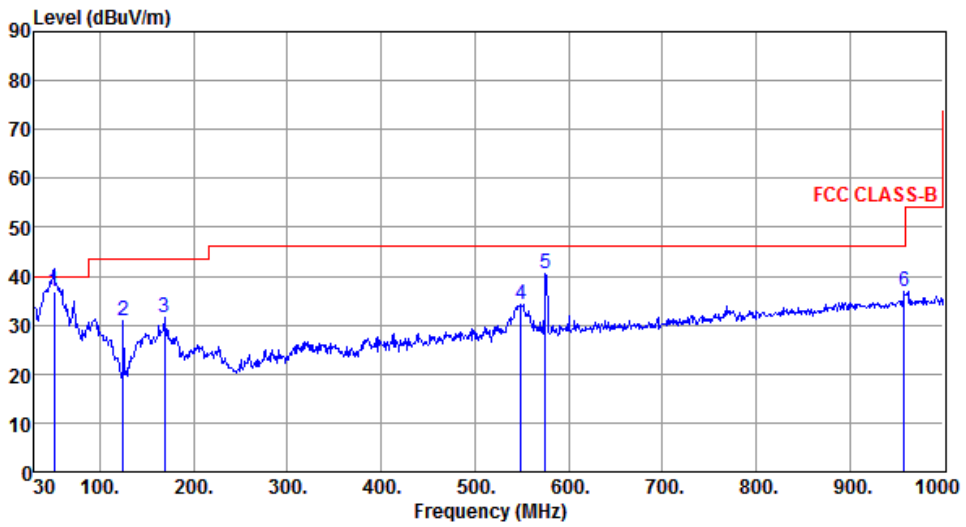
Modulation	VHT20	**Test Freq. (MHz)**	5785
Polarization	Horizontal		



	Freq. MHz	Emission level dBuV/m	Limit dBuV/m	Margin dB	SA reading dBuV	Factor dB	Remark	ANT High cm	Turn Table deg
1	125.06	30.72	43.50	-12.78	40.79	-10.07	Peak	---	---
2	215.27	29.71	43.50	-13.79	40.49	-10.78	Peak	---	---
3	319.06	31.42	46.00	-14.58	38.59	-7.17	Peak	---	---
4	546.04	35.62	46.00	-10.38	37.44	-1.82	Peak	---	---
5	575.14	40.85	46.00	-5.15	42.05	-1.20	Peak	---	---
6	958.29	41.50	46.00	-4.50	36.51	4.99	Peak	---	---

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

Modulation	VHT20	Test Freq. (MHz)	5785
Polarization	Vertical		

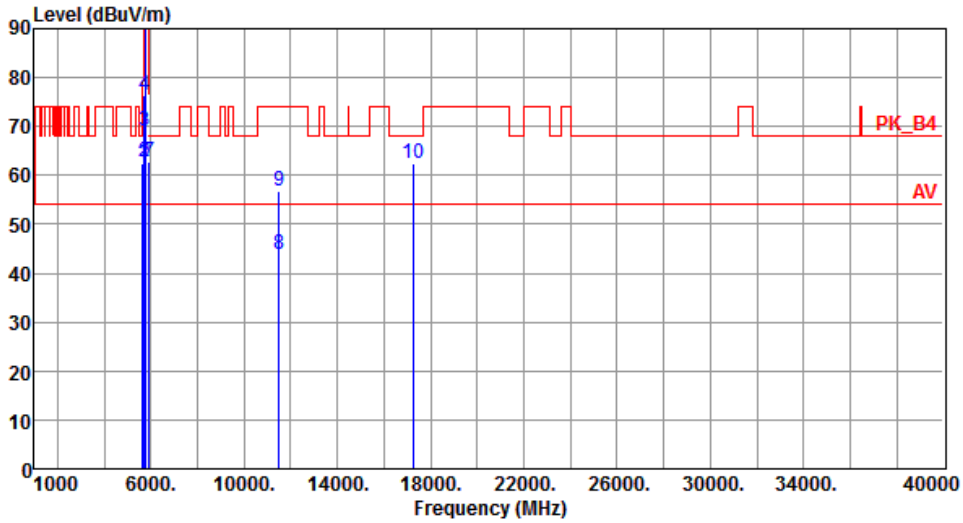


	Freq. MHz	Emission level dBuV/m	Limit dBuV/m	Margin dB	SA reading dBuV	Factor dB	Remark	ANT High cm	Turn Table deg
1	51.34	36.91	40.00	-3.09	44.68	-7.77	QP	100	205
2	125.06	30.99	43.50	-12.51	41.06	-10.07	Peak	---	---
3	168.71	31.71	43.50	-11.79	40.23	-8.52	Peak	---	---
4	548.95	34.34	46.00	-11.66	36.09	-1.75	Peak	---	---
5	575.14	40.66	46.00	-5.34	41.86	-1.20	Peak	---	---
6	958.29	36.88	46.00	-9.12	31.89	4.99	Peak	---	---

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

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

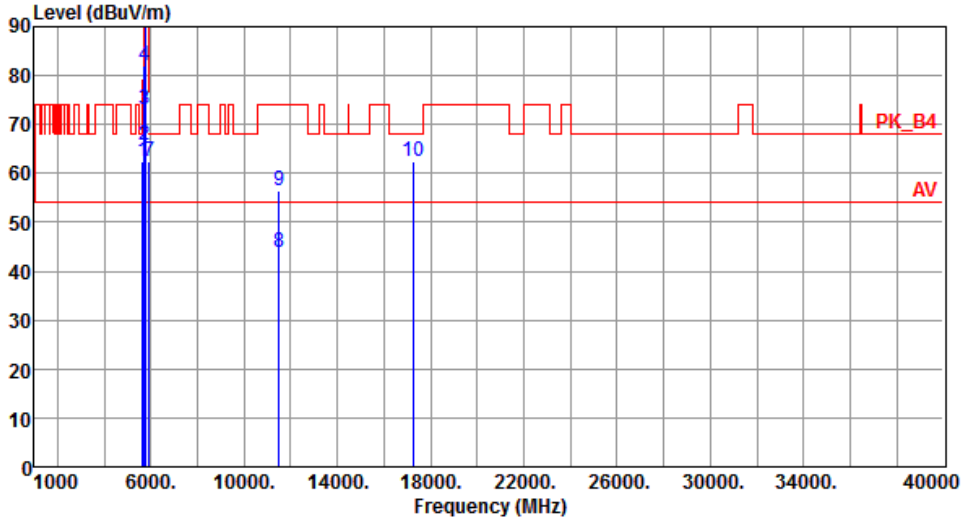
Modulation	VHT20	**Test Freq. (MHz)**	5745
Polarization	Horizontal		



		Freq. MHz	Emission level dBuV/m	Limit dBuV/m	Margin dB	SA reading dBuV	Factor dB	Remark	ANT High cm	Turn Table deg
1		5650.00	62.36	68.20	-5.84	57.63	4.73	Peak	121	34
2		5700.00	62.85	105.20	-42.35	58.04	4.81	Peak	121	34
3		5720.00	69.24	110.80	-41.56	64.40	4.84	Peak	121	34
4		5725.00	76.51	122.20	-45.69	71.67	4.84	Peak	121	34
5	*	5745.00	112.41			107.54	4.87	Average	121	34
6	*	5745.00	121.93			117.06	4.87	Peak	121	34
7		5925.00	62.62	68.20	-5.58	57.49	5.13	Peak	121	34
8		11490.00	43.93	54.00	-10.07	29.82	14.11	Average	100	50
9		11490.00	56.80	74.00	-17.20	42.69	14.11	Peak	100	50
10		17235.00	62.30	68.20	-5.90	44.36	17.94	Peak	371	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).
Note 3:"*" is Peak / Average value of fundamental frequency

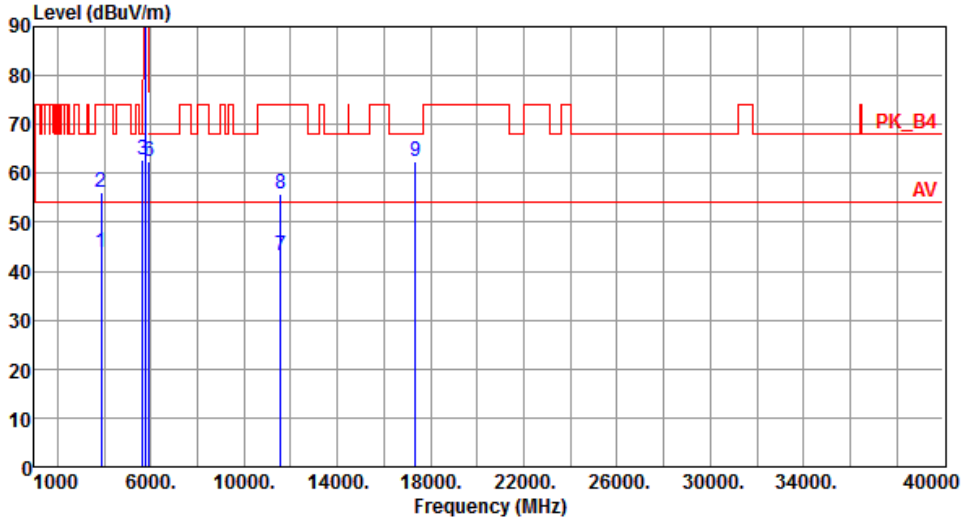
Modulation	VHT20	Test Freq. (MHz)	5745
Polarization	Vertical		



		Freq. MHz	Emission level dBuV/m	Limit dBuV/m	Margin dB	SA reading dBuV	Factor dB	Remark	ANT High cm	Turn Table deg
1		5650.00	62.41	68.20	-5.79	57.68	4.73	Peak	123	347
2		5700.00	65.88	105.20	-39.32	61.07	4.81	Peak	123	347
3		5720.00	73.15	110.80	-37.65	68.31	4.84	Peak	123	347
4		5725.00	81.93	122.20	-40.27	77.09	4.84	Peak	123	347
5	*	5745.00	113.97			109.10	4.87	Average	123	347
6	*	5745.00	123.95			119.08	4.87	Peak	123	347
7		5925.00	62.46	68.20	-5.74	57.33	5.13	Peak	123	347
8		11490.00	43.95	54.00	-10.05	29.84	14.11	Average	100	56
9		11490.00	56.47	74.00	-17.53	42.36	14.11	Peak	100	56
10		17235.00	62.54	68.20	-5.66	44.60	17.94	Peak	385	230

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:"*" is Peak / Average value of fundamental frequency

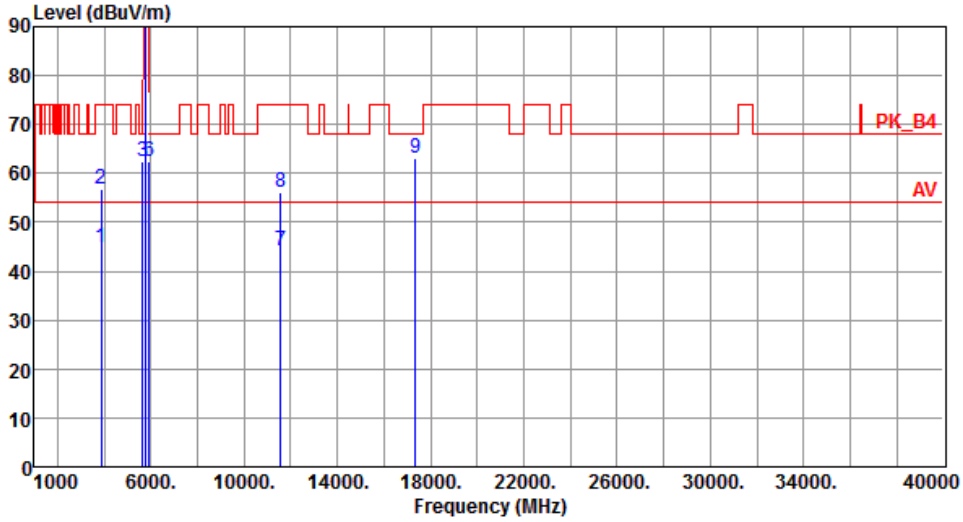
Modulation	VHT20	Test Freq. (MHz)	5785
Polarization	Horizontal		



		Freq. MHz	Emission level dBuV/m	Limit dBuV/m	Margin dB	SA reading dBuV	Factor dB	Remark	ANT High cm	Turn Table deg
1		3856.66	43.74	54.00	-10.26	43.26	0.48	Average	100	2
2		3856.66	56.28	74.00	-17.72	55.80	0.48	Peak	100	2
3		5650.00	62.61	68.20	-5.59	57.88	4.73	Peak	100	101
4	*	5785.00	112.94			108.00	4.94	Average	100	101
5	*	5785.00	124.02			119.08	4.94	Peak	100	101
6		5925.00	62.38	68.20	-5.82	57.25	5.13	Peak	100	101
7		11570.00	43.20	54.00	-10.80	29.22	13.98	Average	100	16
8		11570.00	55.82	74.00	-18.18	41.84	13.98	Peak	100	16
9		17355.00	62.49	68.20	-5.71	44.24	18.25	Peak	369	18

Note 1: Emission Level (dBuV/m) = SA Reading (dBuV/m) + Factor* (dB)
*Factor includes antenna factor , cable loss and amplifier gain
Note 2: Margin (dB) = Emission level (dBuV/m) – Limit (dBuV/m).
Note 3:"*" is Peak / Average value of fundamental frequency

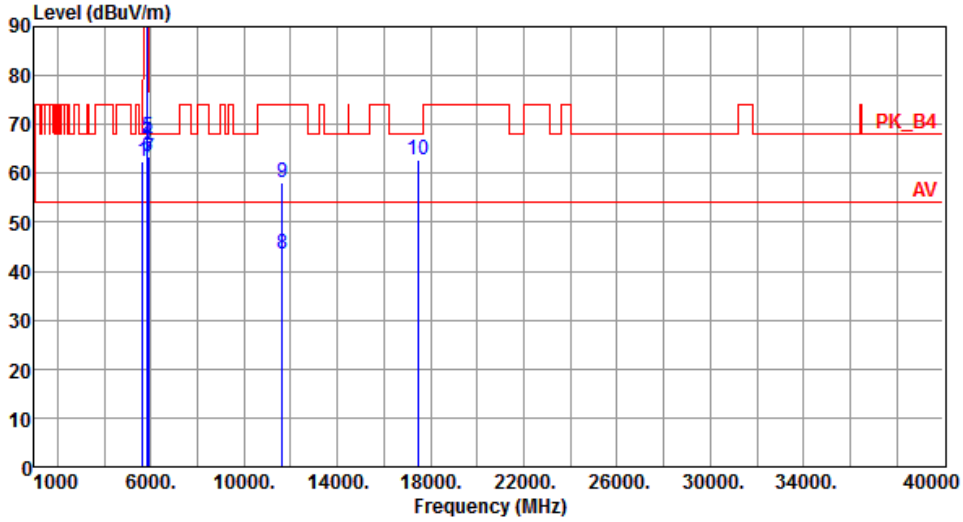
Modulation	VHT20	Test Freq. (MHz)	5785
Polarization	Vertical		



		Freq. MHz	Emission level dBuV/m	Limit dBuV/m	Margin dB	SA reading dBuV	Factor dB	Remark	ANT High cm	Turn Table deg
1		3856.66	44.71	54.00	-9.29	44.23	0.48	Average	100	307
2		3856.66	56.83	74.00	-17.17	56.35	0.48	Peak	100	307
3		5650.00	62.53	68.20	-5.67	57.80	4.73	Peak	100	95
4	*	5785.00	113.21			108.27	4.94	Average	100	95
5	*	5785.00	123.17			118.23	4.94	Peak	100	95
6		5925.00	62.56	68.20	-5.64	57.43	5.13	Peak	100	95
7		11570.00	44.21	54.00	-9.79	30.23	13.98	Average	100	38
8		11570.00	56.21	74.00	-17.79	42.23	13.98	Peak	100	38
9		17355.00	63.05	68.20	-5.15	44.80	18.25	Peak	355	213

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:"*" is Peak / Average value of fundamental frequency

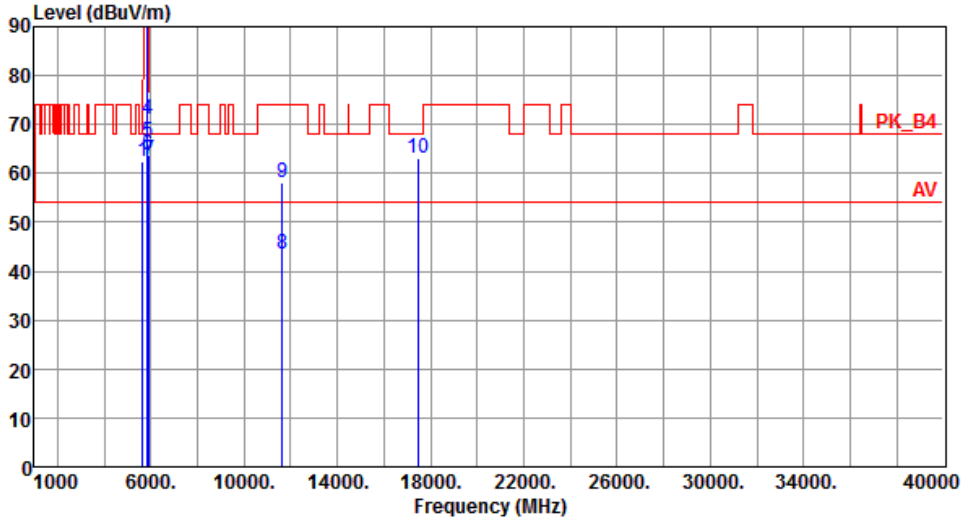
Modulation	VHT20	Test Freq. (MHz)	5825
Polarization	Horizontal		



		Freq. MHz	Emission level dBuV/m	Limit dBuV/m	Margin dB	SA reading dBuV	Factor dB	Remark	ANT High cm	Turn Table deg
1		5650.00	62.48	68.20	-5.72	57.75	4.73	Peak	130	104
2	*	5825.00	109.57			104.58	4.99	Average	130	104
3	*	5825.00	119.18			114.19	4.99	Peak	130	104
4		5850.00	66.58	122.20	-55.62	61.54	5.04	Peak	130	104
5		5855.00	67.44	110.80	-43.36	62.40	5.04	Peak	130	104
6		5875.00	63.47	105.20	-41.73	58.40	5.07	Peak	130	104
7		5925.00	63.22	68.20	-4.98	58.09	5.13	Peak	130	104
8		11650.00	43.64	54.00	-10.36	29.81	13.83	Average	100	20
9		11650.00	58.06	74.00	-15.94	44.23	13.83	Peak	383	20
10		17475.00	62.80	68.20	-5.40	44.25	18.55	Peak	100	20

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:"*" is Peak / Average value of fundamental frequency

Modulation	VHT20	Test Freq. (MHz)	5825
Polarization	Vertical		

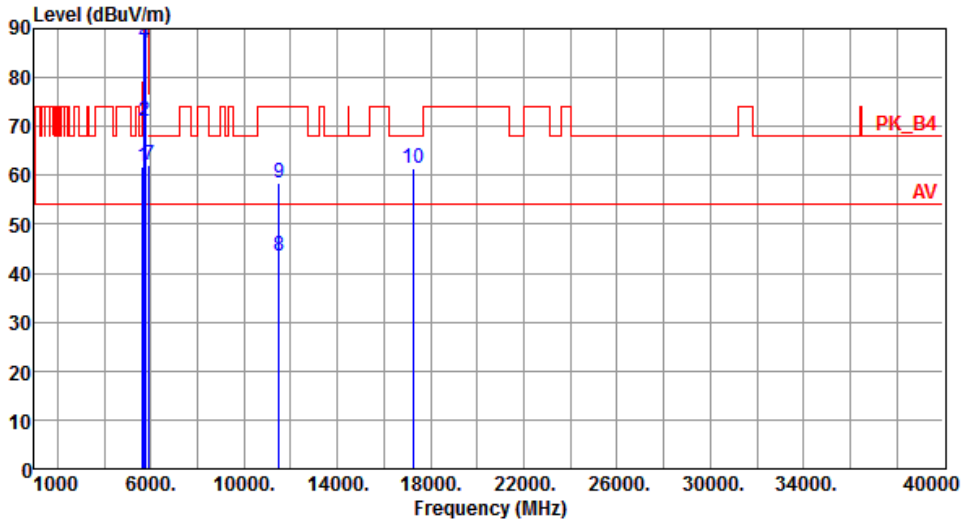


		Freq. MHz	Emission level dBuV/m	Limit dBuV/m	Margin dB	SA reading dBuV	Factor dB	Remark	ANT High cm	Turn Table deg
1		5650.00	62.38	68.20	-5.82	57.65	4.73	Peak	100	343
2	*	5825.00	113.71			108.72	4.99	Average	100	343
3	*	5825.00	124.89			119.90	4.99	Peak	100	343
4		5850.00	71.21	122.20	-50.99	66.17	5.04	Peak	100	343
5		5855.00	66.42	110.80	-44.38	61.38	5.04	Peak	100	343
6		5875.00	63.65	105.20	-41.55	58.58	5.07	Peak	100	343
7		5925.00	62.65	68.20	-5.55	57.52	5.13	Peak	100	343
8		11650.00	43.41	54.00	-10.59	29.58	13.83	Average	100	51
9		11650.00	58.04	74.00	-15.96	44.21	13.83	Peak	100	51
10		17475.00	63.07	68.20	-5.13	44.52	18.55	Peak	375	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).
Note 3:"*" is Peak / Average value of fundamental frequency

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

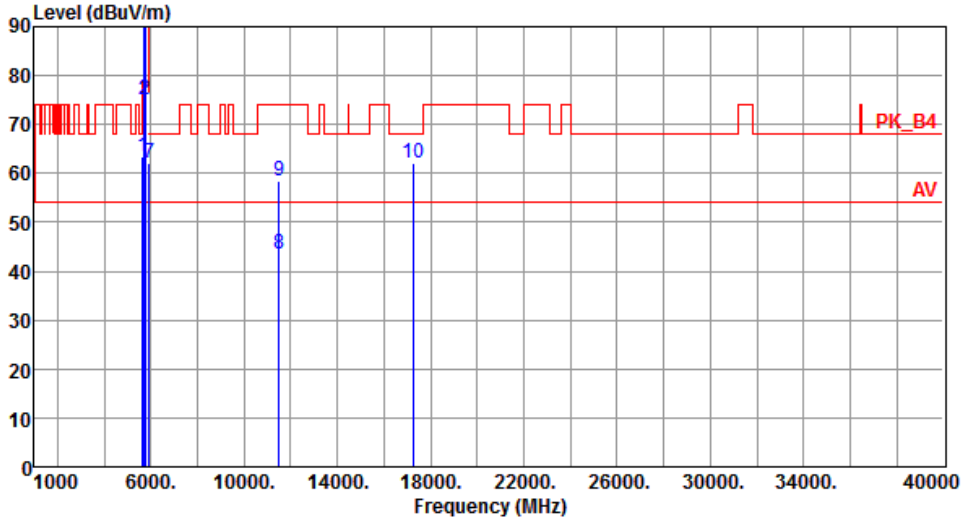
Modulation	VHT40	**Test Freq. (MHz)**	5755
Polarization	Horizontal		



		Freq. MHz	Emission level dBuV/m	Limit dBuV/m	Margin dB	SA reading dBuV	Factor dB	Remark	ANT High cm	Turn Table deg
1		5650.00	61.71	68.20	-6.49	56.98	4.73	Peak	100	95
2		5700.00	71.06	105.20	-34.14	66.25	4.81	Peak	100	95
3		5720.00	88.87	110.80	-21.93	84.03	4.84	Peak	100	95
4		5725.00	87.09	122.20	-35.11	82.25	4.84	Peak	100	95
5	*	5755.00	107.97			103.08	4.89	Average	100	95
6	*	5755.00	118.74			113.85	4.89	Peak	100	95
7		5925.00	62.10	68.20	-6.10	56.97	5.13	Peak	100	95
8		11510.00	43.63	54.00	-10.37	29.54	14.09	Average	100	27
9		11510.00	58.33	74.00	-15.67	44.24	14.09	Peak	100	27
10		17265.00	61.42	68.20	-6.78	43.40	18.02	Peak	386	26

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:"*" is Peak / Average value of fundamental frequency

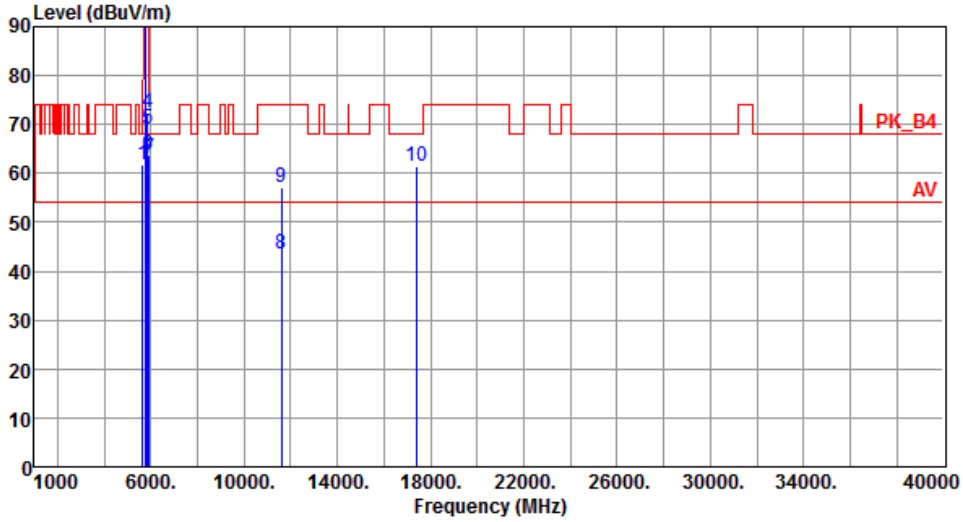
Modulation	VHT40	Test Freq. (MHz)	5755
Polarization	Vertical		



		Freq. MHz	Emission level dBuV/m	Limit dBuV/m	Margin dB	SA reading dBuV	Factor dB	Remark	ANT High cm	Turn Table deg
1		5650.00	63.27	68.20	-4.93	58.54	4.73	Peak	100	346
2		5700.00	74.99	105.20	-30.21	70.18	4.81	Peak	100	346
3		5720.00	91.09	110.80	-19.71	86.25	4.84	Peak	100	346
4		5725.00	95.57	122.20	-26.63	90.73	4.84	Peak	100	346
5	*	5755.00	110.64			105.75	4.89	Average	100	346
6	*	5755.00	122.24			117.35	4.89	Peak	100	346
7		5925.00	62.21	68.20	-5.99	57.08	5.13	Peak	100	346
8		11510.00	43.63	54.00	-10.37	29.54	14.09	Average	100	36
9		11510.00	58.29	74.00	-15.71	44.20	14.09	Peak	100	36
10		17265.00	62.12	68.20	-6.08	44.10	18.02	Peak	356	167

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:"*" is Peak / Average value of fundamental frequency

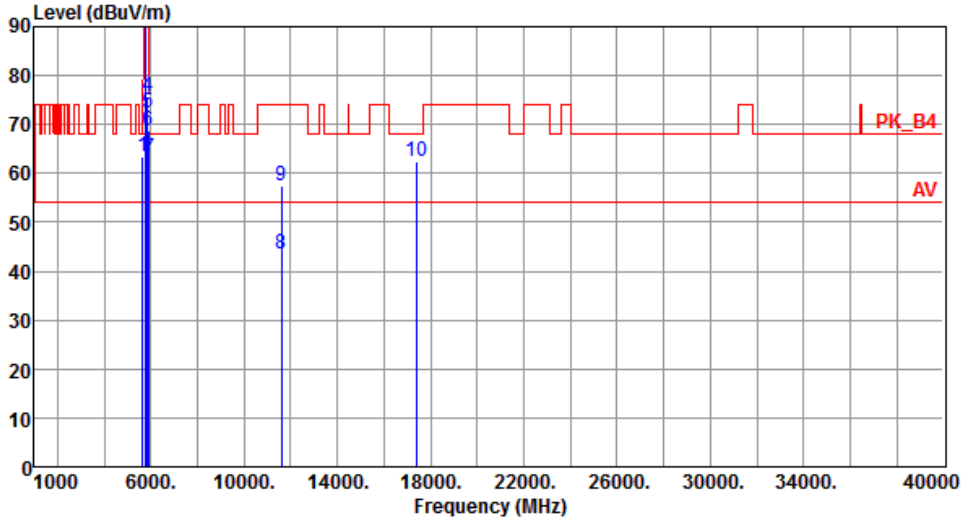
Modulation	VHT40	Test Freq. (MHz)	5795
Polarization	Horizontal		



		Freq. MHz	Emission level dBuV/m	Limit dBuV/m	Margin dB	SA reading dBuV	Factor dB	Remark	ANT High cm	Turn Table deg
1		5650.00	61.89	68.20	-6.31	57.16	4.73	Peak	100	100
2	*	5795.00	108.88			103.93	4.95	Average	100	100
3	*	5795.00	119.79			114.84	4.95	Peak	100	100
4		5850.00	72.36	122.20	-49.84	67.32	5.04	Peak	100	100
5		5855.00	69.24	110.80	-41.56	64.20	5.04	Peak	100	100
6		5875.00	63.81	105.20	-41.39	58.74	5.07	Peak	100	100
7		5925.00	62.96	68.20	-5.24	57.83	5.13	Peak	376	15
8		11590.00	43.41	54.00	-10.59	29.47	13.94	Average	100	23
9		11590.00	57.23	74.00	-16.77	43.29	13.94	Peak	100	23
10		17385.00	61.54	68.20	-6.66	43.21	18.33	Peak	376	15

Note 1: Emission Level (dBuV/m) = SA Reading (dBuV/m) + Factor* (dB)
*Factor includes antenna factor , cable loss and amplifier gain
Note 2: Margin (dB) = Emission level (dBuV/m) – Limit (dBuV/m).
Note 3:"*" is Peak / Average value of fundamental frequency

Modulation	VHT40	Test Freq. (MHz)	5795
Polarization	Vertical		

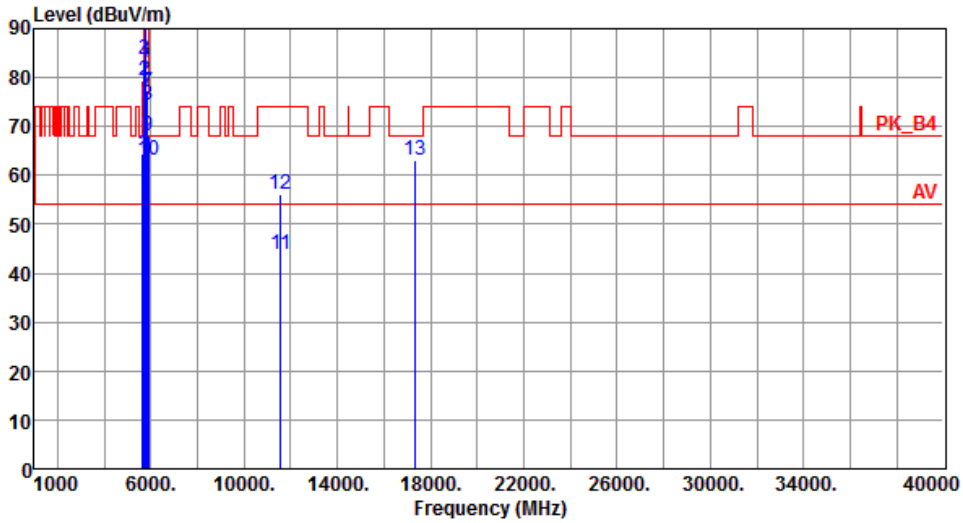


		Freq. MHz	Emission level dBuV/m	Limit dBuV/m	Margin dB	SA reading dBuV	Factor dB	Remark	ANT High cm	Turn Table deg
1		5650.00	63.31	68.20	-4.89	58.58	4.73	Peak	112	11
2	*	5795.00	110.96			106.01	4.95	Average	112	11
3	*	5795.00	122.24			117.29	4.95	Peak	112	11
4		5850.00	75.76	122.20	-46.44	70.72	5.04	Peak	112	11
5		5855.00	72.49	110.80	-38.31	67.45	5.04	Peak	112	11
6		5875.00	68.86	105.20	-36.34	63.79	5.07	Peak	112	11
7		5925.00	62.97	68.20	-5.23	57.84	5.13	Peak	112	11
8		11590.00	43.58	54.00	-10.42	29.64	13.94	Average	100	29
9		11590.00	57.51	74.00	-16.49	43.57	13.94	Peak	100	29
10		17385.00	62.43	68.20	-5.77	44.10	18.33	Peak	381	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).
Note 3:"*" is Peak / Average value of fundamental frequency

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

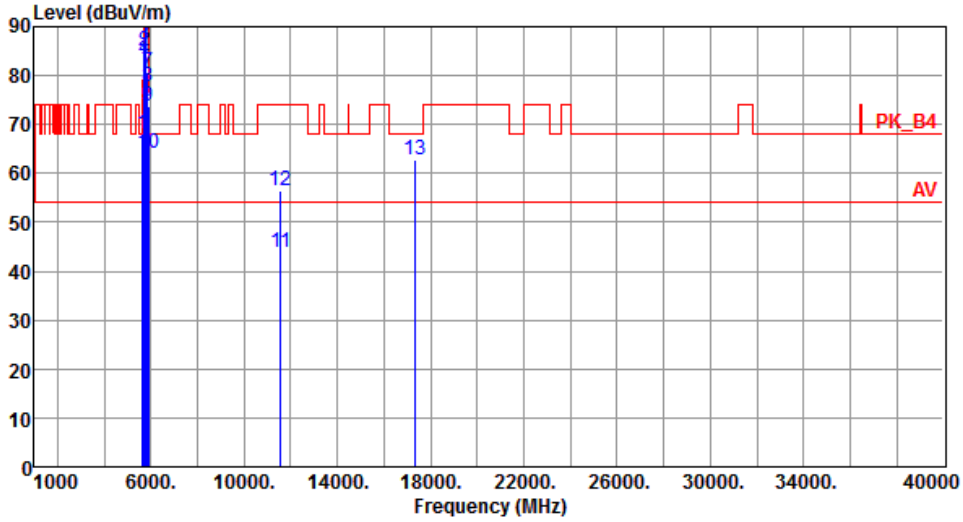
Modulation	VHT80	**Test Freq. (MHz)**	5775
Polarization	Horizontal		



		Freq. MHz	Emission level dBuV/m	Limit dBuV/m	Margin dB	SA reading dBuV	Factor dB	Remark	ANT High cm	Turn Table deg
1		5650.00	64.49	68.20	-3.71	59.76	4.73	Peak	240	0
2		5700.00	79.43	105.20	-25.77	74.62	4.81	Peak	240	0
3		5720.00	83.81	110.80	-26.99	78.97	4.84	Peak	240	0
4		5725.00	83.11	122.20	-39.09	78.27	4.84	Peak	240	0
5	*	5775.00	103.72			98.80	4.92	Average	240	0
6	*	5775.00	115.43			110.51	4.92	Peak	240	0
7		5850.00	77.09	122.20	-45.11	72.05	5.04	Peak	240	0
8		5855.00	74.26	110.80	-36.54	69.22	5.04	Peak	240	0
9		5875.00	68.18	105.20	-37.02	63.11	5.07	Peak	240	0
10		5925.00	63.12	68.20	-5.08	57.99	5.13	Peak	240	0
11		11550.00	43.68	54.00	-10.32	29.67	14.01	Average	100	312
12		11550.00	56.11	74.00	-17.89	42.10	14.01	Peak	100	312
13		17325.00	63.01	68.20	-5.19	44.84	18.17	Peak	360	347

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:"*" is Peak / Average value of fundamental frequency

Modulation	VHT80	Test Freq. (MHz)	5775
Polarization	Vertical		



		Freq. MHz	Emission level dBuV/m	Limit dBuV/m	Margin dB	SA reading dBuV	Factor dB	Remark	ANT High cm	Turn Table deg
1		5650.00	68.05	68.20	-0.15	63.32	4.73	Peak	100	345
2		5700.00	84.99	105.20	-20.21	80.18	4.81	Peak	100	345
3		5720.00	86.20	110.80	-24.60	81.36	4.84	Peak	100	345
4		5725.00	83.50	122.20	-38.70	78.66	4.84	Peak	100	345
5	*	5775.00	104.25			99.33	4.92	Average	100	345
6	*	5775.00	116.74			111.82	4.92	Peak	100	345
7		5850.00	80.64	122.20	-41.56	75.60	5.04	Peak	100	345
8		5855.00	77.60	110.80	-33.20	72.56	5.04	Peak	100	345
9		5875.00	73.77	105.20	-31.43	68.70	5.07	Peak	100	345
10		5925.00	64.20	68.20	-4.00	59.07	5.13	Peak	100	345
11		11550.00	43.97	54.00	-10.03	29.96	14.01	Average	100	335
12		11550.00	56.33	74.00	-17.67	42.32	14.01	Peak	100	335
13		17325.00	62.91	68.20	-5.29	44.74	18.17	Peak	365	136

Note 1: Emission Level (dBuV/m) = SA Reading (dBuV/m) + Factor* (dB)
*Factor includes antenna factor , cable loss and amplifier gain
Note 2: Margin (dB) = Emission level (dBuV/m) – Limit (dBuV/m).
Note 3:"*" is Peak / Average value of fundamental frequency

3.6 Frequency Stability

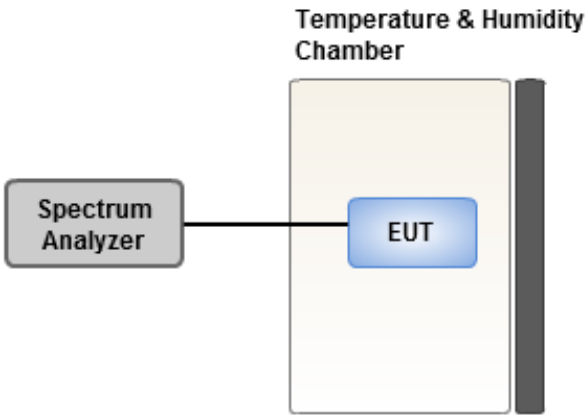
3.6.1 Limit of Frequency Stability

Manufacturers of U-NII devices are responsible for ensuring frequency stability such that an emission is maintained within the band of operation under all conditions of normal operation as specified in the user's manual.

3.6.2 Test Procedures

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

3.6.3 Test Setup



3.6.4 Test Result of Frequency Stability

Frequency: 5200 MHz	Frequency Drift (ppm)			
Temperature (°C)	0 minute	2 minutes	5 minutes	10 minutes
T20°CVmax	5.76	5.91	5.55	5.39
T20°CVmin	5.29	5.37	5.65	6.05
T50°CVnom	5.32	6.27	5.31	5.69
T40°CVnom	5.70	5.96	5.73	6.26
T30°CVnom	5.96	6.03	6.07	5.94
T20°CVnom	6.08	5.59	5.43	5.96
T10°CVnom	5.48	5.43	6.28	5.47
T0°CVnom	6.16	5.88	6.03	5.62
T-10°CVnom	6.11	5.46	5.42	5.82
T-20°CVnom	5.49	6.40	6.32	5.73
T-30°CVnom	5.85	6.04	5.69	5.17
Vnom [Vac]: 120		Vmax [Vac]: 138		Vmin [Vac]: 102
Tnom [°C]: 20		Tmax [°C]: 50		Tmin [°C]: -30

Frequency: 5785 MHz	Frequency Drift (ppm)			
Temperature (°C)	0 minute	2 minutes	5 minutes	10 minutes
T20°CVmax	5.54	5.53	4.84	4.84
T20°CVmin	5.29	4.74	5.46	5.04
T50°CVnom	5.12	4.86	4.95	5.41
T40°CVnom	4.78	5.62	5.45	5.24
T30°CVnom	5.17	4.67	4.92	4.98
T20°CVnom	4.93	5.16	4.96	5.03
T10°CVnom	5.25	4.80	5.09	5.48
T0°CVnom	5.08	4.96	5.04	5.07
T-10°CVnom	5.03	5.49	5.07	5.32
T-20°CVnom	5.71	5.48	4.52	5.30
T-30°CVnom	5.42	5.36	5.14	4.72
Vnom [Vac]: 120		Vmax [Vac]: 138		Vmin [Vac]: 102
Tnom [°C]: 20		Tmax [°C]: 50		Tmin [°C]: -30

4 Receiver Test Results

4.1 Conducted Emissions

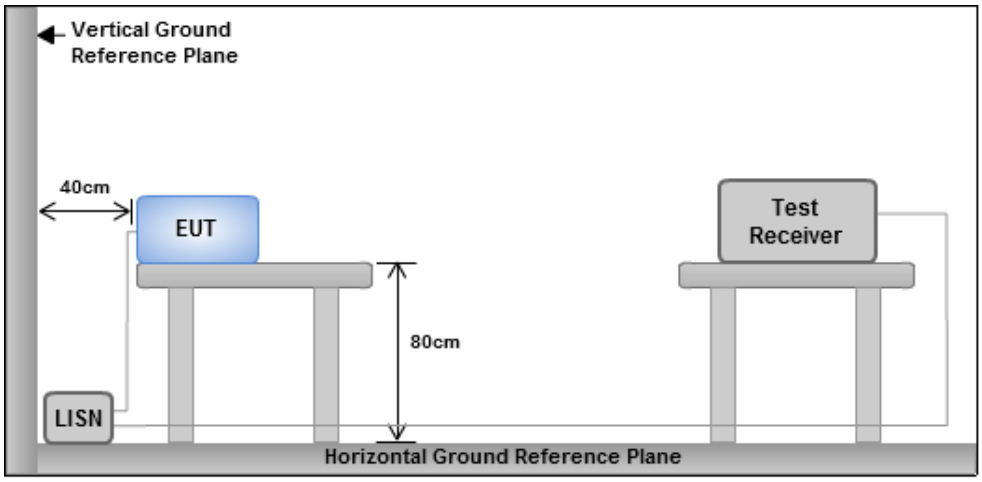
4.1.1 Limit of Conducted Emissions

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.		

4.1.2 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.

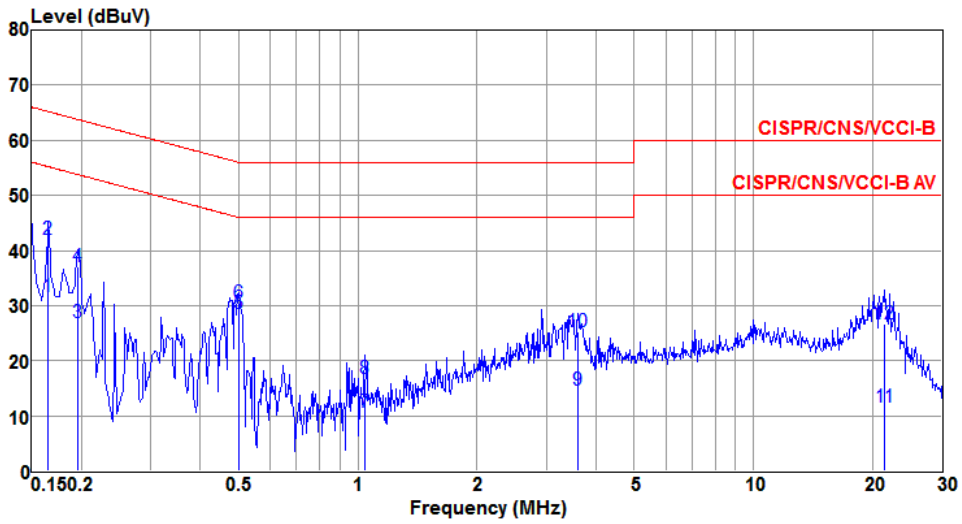
4.1.3 Test Setup



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

4.1.4 Test Result of Conducted Emissions

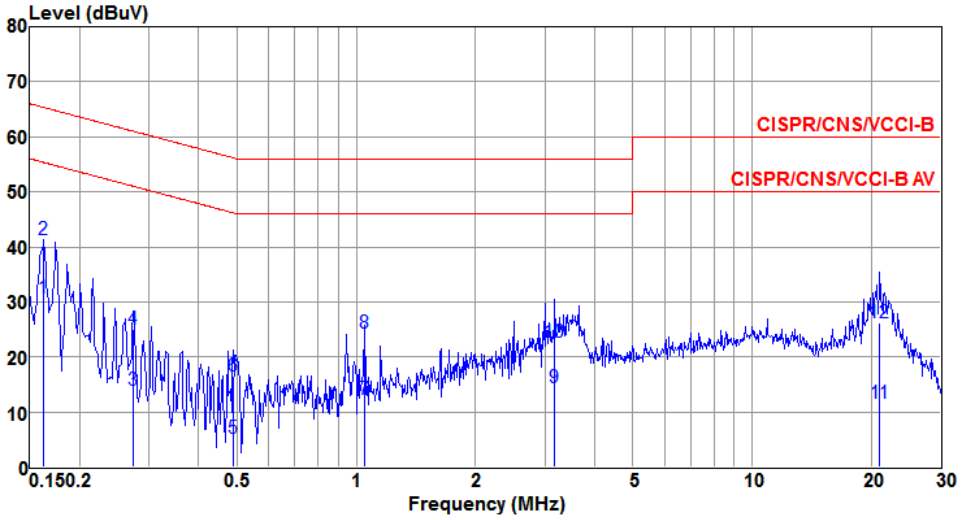
Modulation	VHT20	Test Freq. (MHz)	5240
Power Phase	Line		



	Freq MHz	Level dBuV	Limit Line dBuV	Over Limit dB	Read Level dBuV	LISN factor dB	cable loss dB	Remark
1	0.165	31.67	55.21	-23.54	21.92	9.73	0.02	Average
2	0.165	41.97	65.21	-23.24	32.22	9.73	0.02	QP
3	0.195	26.94	53.80	-26.86	17.18	9.73	0.03	Average
4	0.195	36.98	63.80	-26.82	27.22	9.73	0.03	QP
5@	0.502	28.46	46.00	-17.54	18.71	9.73	0.02	Average
6	0.502	30.36	56.00	-25.64	20.61	9.73	0.02	QP
7	1.043	10.74	46.00	-35.26	0.98	9.73	0.03	Average
8	1.043	16.85	56.00	-39.15	7.09	9.73	0.03	QP
9	3.603	14.63	46.00	-31.37	4.68	9.75	0.20	Average
10	3.603	25.18	56.00	-30.82	15.23	9.75	0.20	QP
11	21.486	11.52	50.00	-38.48	1.46	9.70	0.36	Average
12	21.486	26.65	60.00	-33.35	16.59	9.70	0.36	QP

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

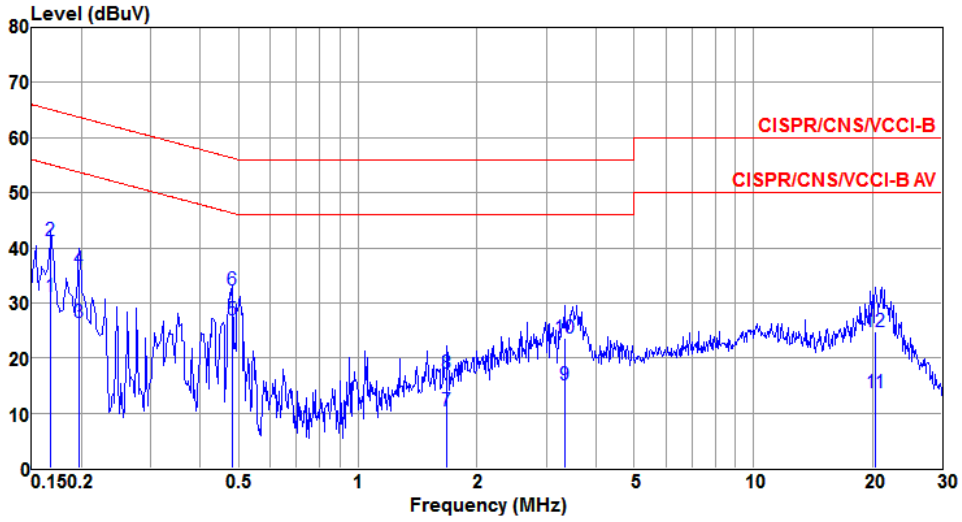
Modulation	VHT20	Test Freq. (MHz)	5240
Power Phase	Neutral		



	Freq MHz	Level dBuV	Limit Line dBuV	Over Limit dB	Read Level dBuV	LISN factor dB	cable loss dB	Remark
1	0.162	30.61	55.34	-24.73	20.91	9.68	0.02	Average
2@	0.162	41.40	65.34	-23.94	31.70	9.68	0.02	QP
3	0.273	13.83	51.03	-37.20	4.13	9.67	0.03	Average
4	0.273	24.95	61.03	-36.08	15.25	9.67	0.03	QP
5	0.489	5.09	46.19	-41.10	-4.60	9.67	0.02	Average
6	0.489	16.59	56.19	-39.60	6.90	9.67	0.02	QP
7	1.049	12.38	46.00	-33.62	2.68	9.67	0.03	Average
8	1.049	24.22	56.00	-31.78	14.52	9.67	0.03	QP
9	3.173	14.41	46.00	-31.59	4.54	9.69	0.18	Average
10	3.173	22.63	56.00	-33.37	12.76	9.69	0.18	QP
11	21.035	11.49	50.00	-38.51	1.31	9.83	0.35	Average
12	21.035	26.10	60.00	-33.90	15.92	9.83	0.35	QP

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

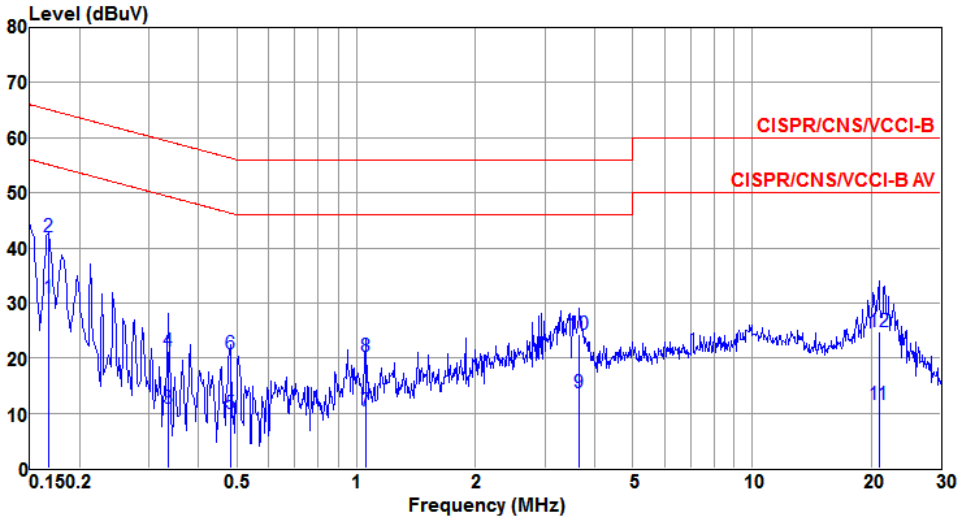
Modulation	11a	Test Freq. (MHz)	5785
Power Phase	Line		



	Freq MHz	Level dBuV	Limit Line dBuV	Over Limit dB	Read Level dBuV	LISN factor dB	cable loss dB	Remark
1	0.168	31.19	55.08	-23.89	21.44	9.73	0.02	Average
2	0.168	41.32	65.08	-23.76	31.57	9.73	0.02	QP
3	0.198	26.55	53.71	-27.16	16.79	9.73	0.03	Average
4	0.198	36.22	63.71	-27.49	26.46	9.73	0.03	QP
5@	0.481	27.00	46.32	-19.32	17.25	9.73	0.02	Average
6	0.481	32.34	56.32	-23.98	22.59	9.73	0.02	QP
7	1.680	10.50	46.00	-35.50	0.67	9.75	0.08	Average
8	1.680	17.14	56.00	-38.86	7.31	9.75	0.08	QP
9	3.328	15.03	46.00	-30.97	5.09	9.75	0.19	Average
10	3.328	23.59	56.00	-32.41	13.65	9.75	0.19	QP
11	20.377	13.72	50.00	-36.28	3.66	9.72	0.34	Average
12	20.377	24.75	60.00	-35.25	14.69	9.72	0.34	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 MHz	Level dBuV	Limit Line dBuV	Over Limit dB	Read Level dBuV	LISN factor dB	cable loss dB	Remark
1	0.168	30.96	55.08	-24.12	21.26	9.68	0.02	Average
2@	0.168	42.00	65.08	-23.08	32.30	9.68	0.02	QP
3	0.334	10.90	49.35	-38.45	1.21	9.67	0.02	Average
4	0.334	21.16	59.35	-38.19	11.47	9.67	0.02	QP
5	0.481	10.03	46.32	-36.29	0.34	9.67	0.02	Average
6	0.481	20.67	56.32	-35.65	10.98	9.67	0.02	QP
7	1.054	10.36	46.00	-35.64	0.66	9.67	0.03	Average
8	1.054	20.40	56.00	-35.60	10.70	9.67	0.03	QP
9	3.661	13.69	46.00	-32.31	3.80	9.69	0.20	Average
10	3.661	24.21	56.00	-31.79	14.32	9.69	0.20	QP
11	20.924	11.66	50.00	-38.34	1.48	9.83	0.35	Average
12	20.924	24.81	60.00	-35.19	14.63	9.83	0.35	QP

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

4.2 Radiated Emissions

4.2.1 Limit of Radiated 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.

4.2.2 Test Procedures

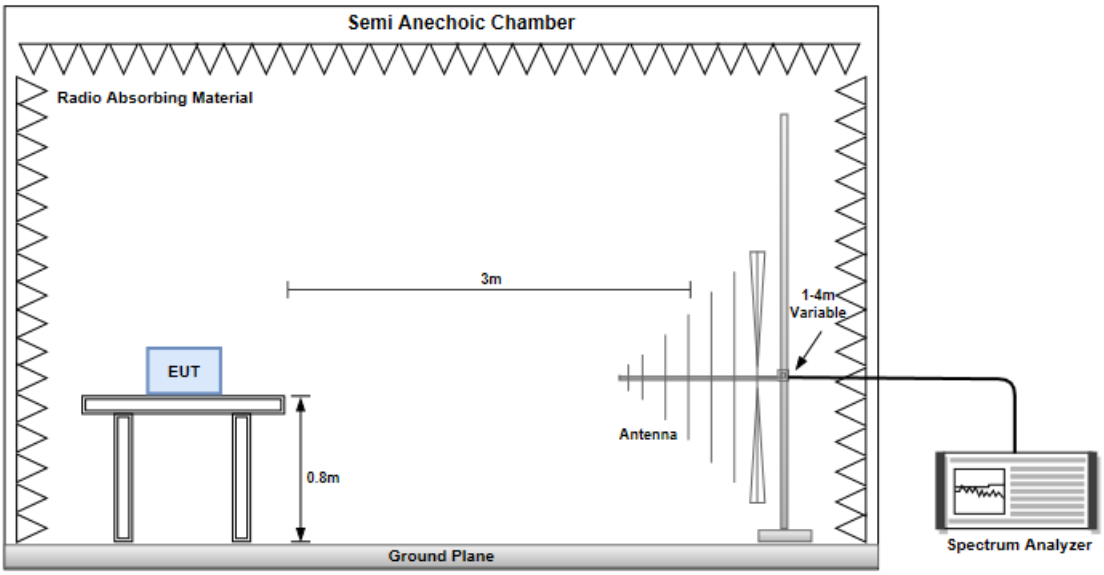
1. Measurement is made at a semi-anechoic chamber that incorporates a turntable allowing a EUT rotation of 360°. A continuously-rotating, remotely-controlled turntable is installed at the test site to support the EUT and facilitate determination of the direction of maximum radiation for each EUT emission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

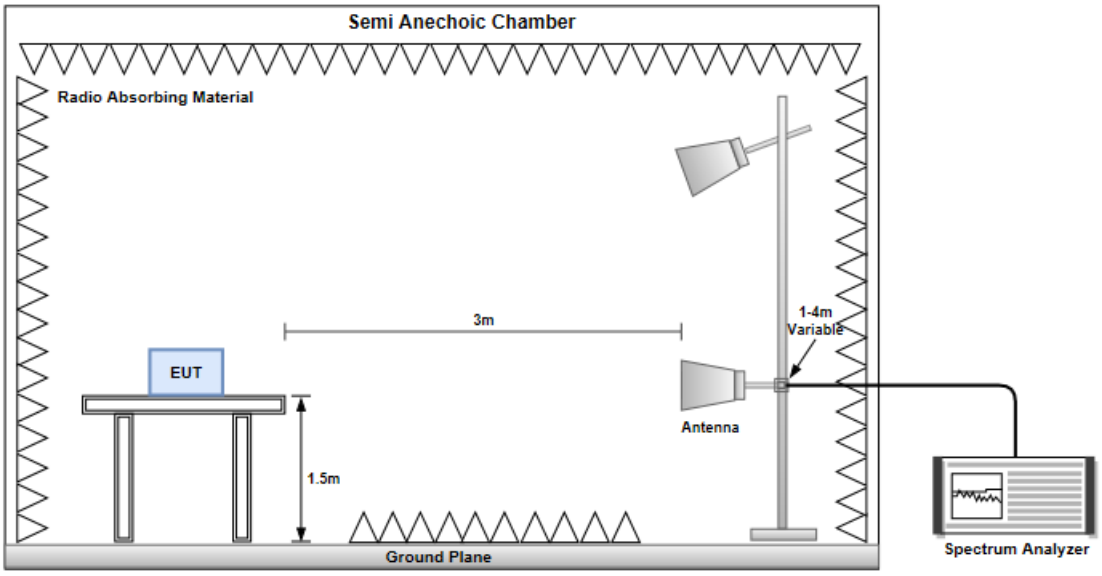
1. 120kHz measurement bandwidth of test receiver and Quasi-peak detector is for radiated emission below 1GHz.
2. RBW=1MHz, VBW=3MHz and Peak detector is for peak measured value of radiated emission above 1GHz.
3. RBW=1MHz, VBW=3MHz and RMS detector is for average measured value of radiated emission above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

4.2.3 Test Setup

Radiated Emissions below 1 GHz

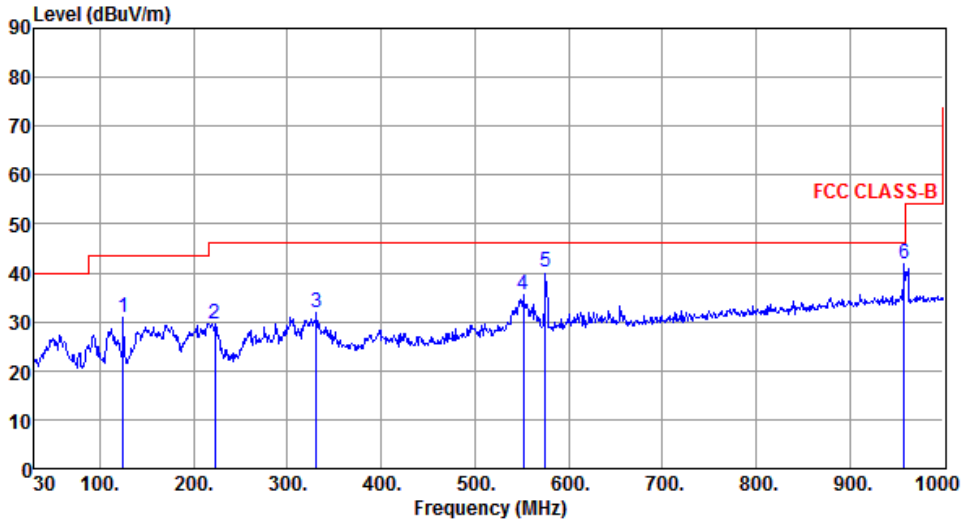


Radiated Emissions above 1 GHz



4.2.4 Receiver Emissions (Below 1GHz)

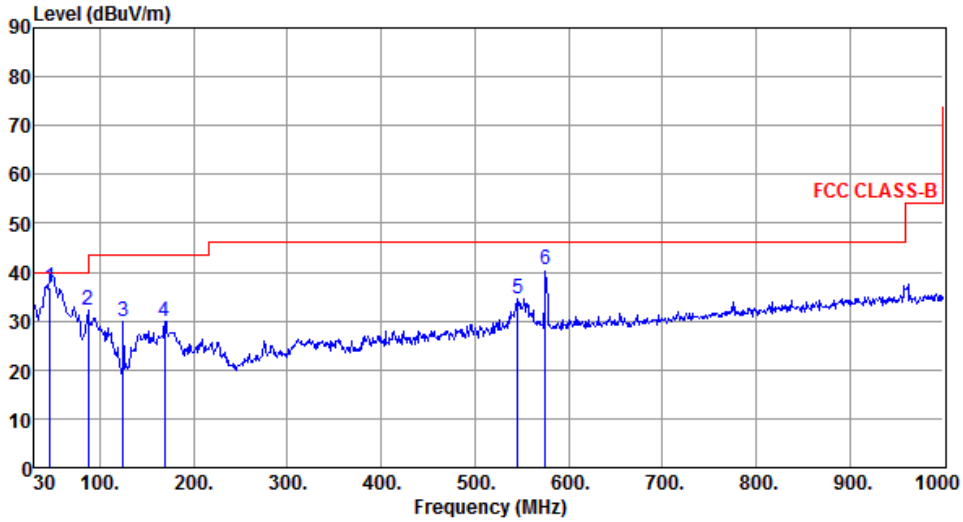
Modulation	VHT20	Test Freq. (MHz)	5240
Polarization	Horizontal		



	Freq. MHz	Emission level dBuV/m	Limit dBuV/m	Margin dB	SA reading dBuV	Factor dB	Remark	ANT High cm	Turn Table deg
1	125.06	31.04	43.50	-12.46	41.11	-10.07	Peak	---	---
2	223.03	29.67	46.00	-16.33	40.29	-10.62	Peak	---	---
3	330.70	31.99	46.00	-14.01	38.87	-6.88	Peak	---	---
4	551.86	35.69	46.00	-10.31	37.39	-1.70	Peak	---	---
5	575.14	40.17	46.00	-5.83	41.37	-1.20	Peak	---	---
6	958.29	41.79	46.00	-4.21	36.80	4.99	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.

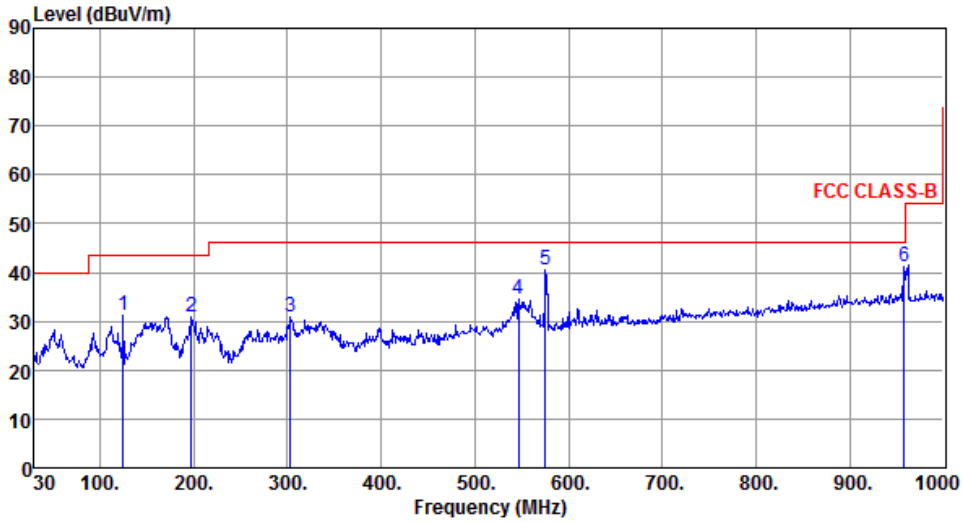
Modulation	VHT20	Test Freq. (MHz)	5240
Polarization	Vertical		



	Freq. MHz	Emission level dBuV/m	Limit dBuV/m	Margin dB	SA reading dBuV	Factor dB	Remark	ANT High cm	Turn Table deg
1	46.47	36.98	40.00	-3.02	44.71	-7.73	QP	100	202
2	87.23	32.34	40.00	-7.66	46.38	-14.04	Peak	---	---
3	125.06	29.97	43.50	-13.53	40.04	-10.07	Peak	---	---
4	168.71	30.02	43.50	-13.48	38.54	-8.52	Peak	---	---
5	546.04	34.53	46.00	-11.47	36.35	-1.82	Peak	---	---
6	575.14	40.53	46.00	-5.47	41.73	-1.20	Peak	---	---

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

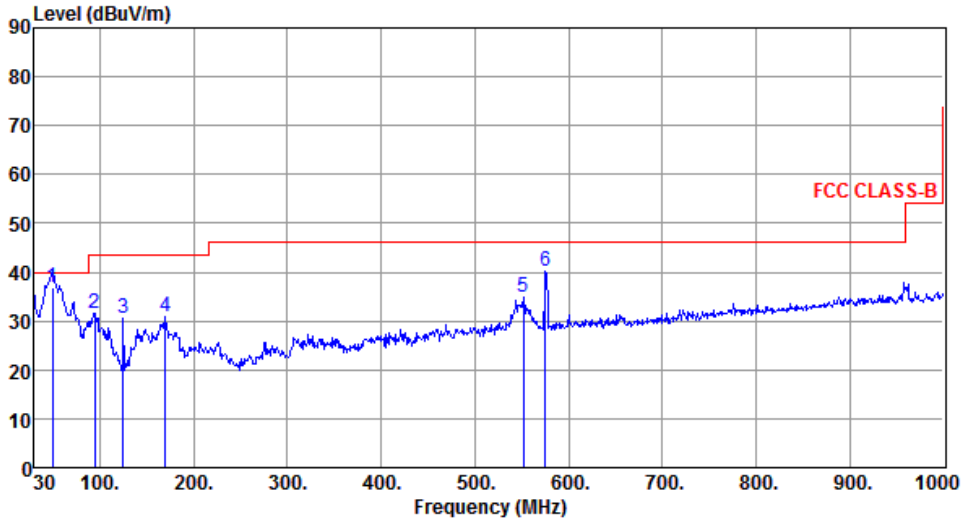
Modulation	11a	Test Freq. (MHz)	5785
Polarization	Horizontal		



	Freq. MHz	Emission level dBuV/m	Limit dBuV/m	Margin dB	SA reading dBuV	Factor dB	Remark	ANT High cm	Turn Table deg
1	125.06	31.36	43.50	-12.14	41.43	-10.07	Peak	---	---
2	197.81	31.00	43.50	-12.50	41.76	-10.76	Peak	---	---
3	303.54	30.81	46.00	-15.19	38.36	-7.55	Peak	---	---
4	547.01	34.64	46.00	-11.36	36.43	-1.79	Peak	---	---
5	575.14	40.65	46.00	-5.35	41.85	-1.20	Peak	---	---
6	958.29	41.34	46.00	-4.66	36.35	4.99	Peak	---	---

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

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

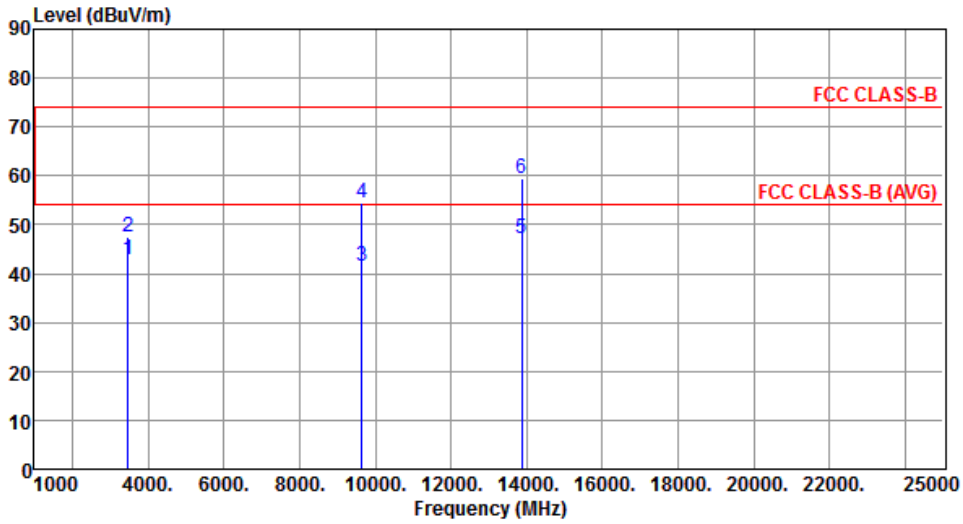


	Freq. MHz	Emission level dBuV/m	Limit dBuV/m	Margin dB	SA reading dBuV	Factor dB	Remark	ANT High cm	Turn Table deg
1	49.40	36.94	40.00	-3.06	44.61	-7.67	QP	100	207
2	94.02	31.61	43.50	-11.89	45.48	-13.87	Peak	---	---
3	125.06	30.50	43.50	-13.00	40.57	-10.07	Peak	---	---
4	169.68	30.85	43.50	-12.65	39.40	-8.55	Peak	---	---
5	551.86	34.89	46.00	-11.11	36.59	-1.70	Peak	---	---
6	575.14	40.26	46.00	-5.74	41.46	-1.20	Peak	---	---

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

4.2.5 Receiver Emissions (Above 1GHz)

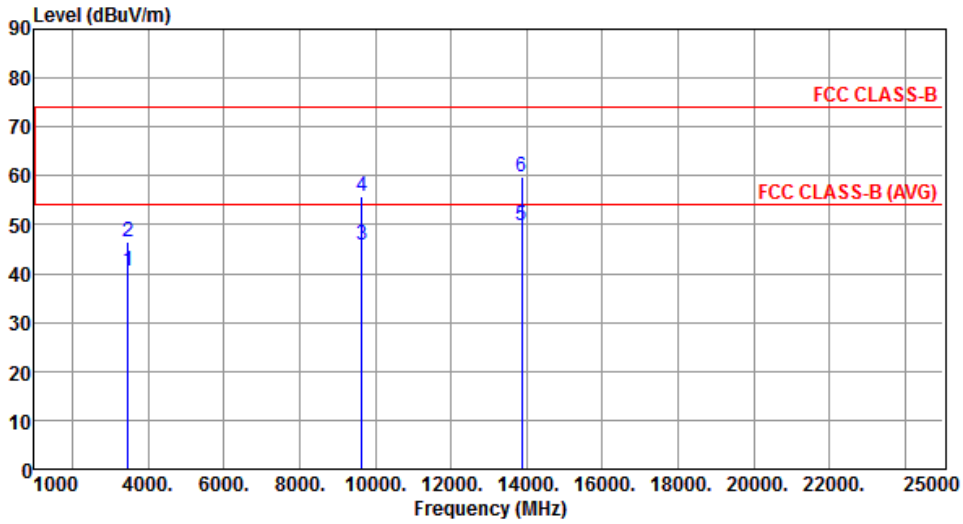
Modulation	VHT20	Test Freq. (MHz)	5240
Polarization	Horizontal		



	Freq. MHz	Emission level dBuV/m	Limit dBuV/m	Margin dB	SA reading dBuV	Factor dB	Remark	ANT High cm	Turn Table deg
1	3466.00	42.97	54.00	-11.03	43.41	-0.44	Average	352	202
2	3466.00	47.60	74.00	-26.40	48.04	-0.44	Peak	352	202
3	9647.00	41.56	54.00	-12.44	29.03	12.53	Average	100	162
4	9647.00	54.33	74.00	-19.67	41.80	12.53	Peak	100	162
5	13866.00	47.19	54.00	-6.81	30.93	16.26	Average	100	186
6	13866.00	59.45	74.00	-14.55	43.19	16.26	Peak	100	186

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).

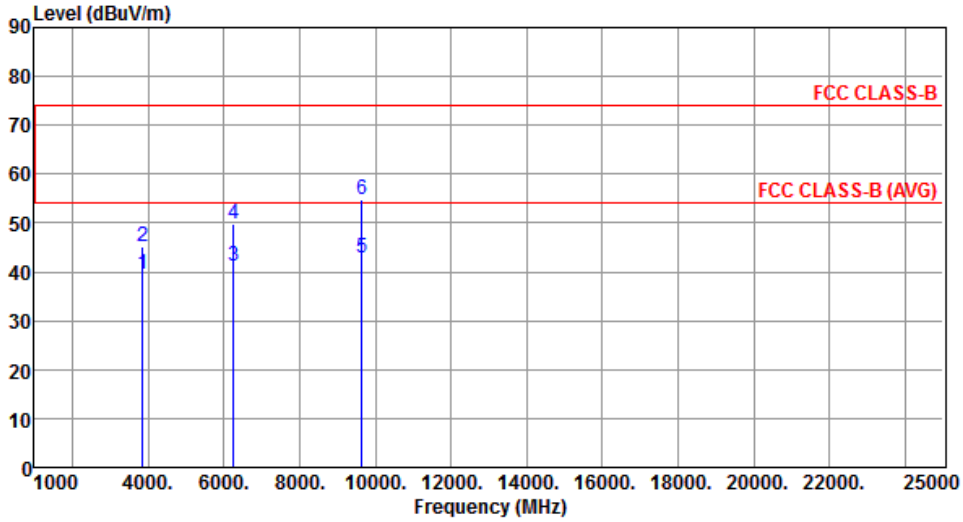
Modulation	VHT20	Test Freq. (MHz)	5240
Polarization	Vertical		



	Freq. MHz	Emission level dBuV/m	Limit dBuV/m	Margin dB	SA reading dBuV	Factor dB	Remark	ANT High cm	Turn Table deg
1	3466.00	40.54	54.00	-13.46	40.98	-0.44	Average	100	32
2	3466.00	46.37	74.00	-27.63	46.81	-0.44	Peak	100	32
3	9647.00	45.86	54.00	-8.14	33.33	12.53	Average	116	33
4	9647.00	55.65	74.00	-18.35	43.12	12.53	Peak	116	33
5	13866.00	49.71	54.00	-4.29	33.45	16.26	Average	100	46
6	13866.00	59.85	74.00	-14.15	43.59	16.26	Peak	100	46

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

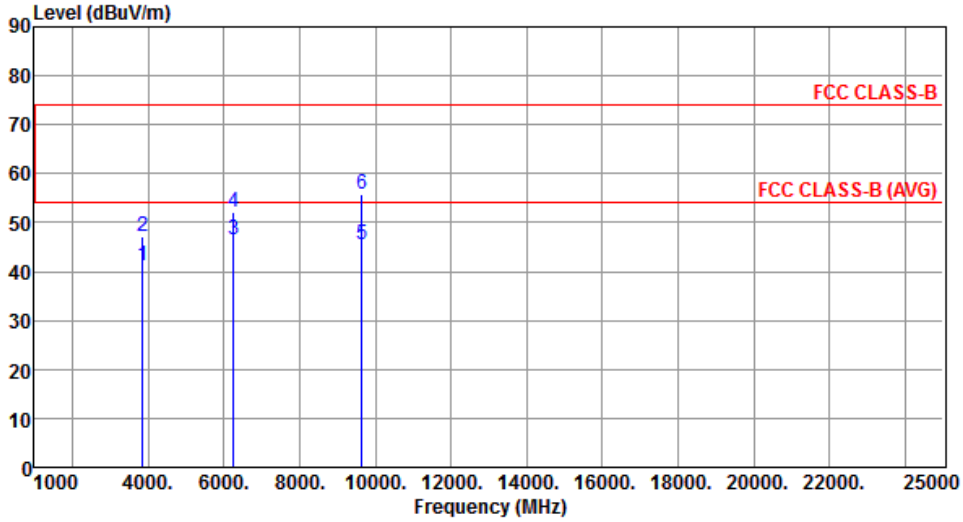
Modulation	11a	Test Freq. (MHz)	5785
Polarization	Horizontal		



	Freq. MHz	Emission level dBuV/m	Limit dBuV/m	Margin dB	SA reading dBuV	Factor dB	Remark	ANT High cm	Turn Table deg
1	3857.00	39.52	54.00	-14.48	39.04	0.48	Average	100	320
2	3857.00	45.13	74.00	-28.87	44.65	0.48	Peak	100	320
3	6249.00	41.03	54.00	-12.97	35.04	5.99	Average	100	315
4	6249.00	49.73	74.00	-24.27	43.74	5.99	Peak	100	315
5	9647.00	42.98	54.00	-11.02	30.45	12.53	Average	100	161
6	9647.00	54.95	74.00	-19.05	42.42	12.53	Peak	100	161

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

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



	Freq. MHz	Emission level dBuV/m	Limit dBuV/m	Margin dB	SA reading dBuV	Factor dB	Remark	ANT High cm	Turn Table deg
1	3857.00	41.28	54.00	-12.72	40.80	0.48	Average	100	122
2	3857.00	47.00	74.00	-27.00	46.52	0.48	Peak	100	122
3	6249.00	46.34	54.00	-7.66	40.35	5.99	Average	353	198
4	6249.00	52.29	74.00	-21.71	46.30	5.99	Peak	353	198
5	9647.00	45.49	54.00	-8.51	32.96	12.53	Average	100	31
6	9647.00	55.79	74.00	-18.21	43.26	12.53	Peak	100	31

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).

5 Test laboratory information

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

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

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

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

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

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