

FCC C2PC Test Report

FCC ID : ACQ-VAP3402
Equipment : 802.11ac 5GHz 4T4R Access Point
Model No. : VAP3402
Brand Name : ARRIS
Applicant : ARRIS Group, Inc.
Address : 101 Tournament Drive, Horsham,
Pennsylvania, United States, 19044
Standard : 47 CFR FCC Part 15.407
Received Date : Aug. 17, 2015
Tested Date : Mar. 03 ~ Apr. 25, 2016

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

Approved & Reviewed by:


Gary Chang / Manager



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Release Record

Report No.	Version	Description	Issued Date
FR452701-02AN	Rev. 01	Initial issue	Jun. 16, 2016

Summary of Test Results

FCC Rules	Test Items	Measured	Result
15.207	Conducted Emissions	[dBuV]: 0.404MHz 44.74 (Margin -3.03dB) - AV	Pass
15.407(b) 15.209	Radiated Emissions	[dBuV/m at 3m]: 17355.00MHz 53.00 (Margin -1.00dB) - AV [dBuV/m at 3m]: 5725.00MHz 53.00 (Margin -1.00dB) - AV	Pass
15.407(a)	Emission Bandwidth	Meet the requirement of limit	Pass
15.407(e)	6dB bandwidth	Meet the requirement of limit	Pass
15.407(a)	RF Output Power	Max Power [dBm]: Non-beamforming mode 5470~5725MHz: 23.52 5725~5850MHz: 24.04 Beamforming mode 5150~5250MHz: 15.81 5250~5350MHz: 22.40 5470~5725MHz: 23.17 5725~5850MHz: 23.96	Pass
15.407(a)	Peak Power Spectral Density	Meet the requirement of limit	Pass
15.407(g)	Frequency Stability	Meet the requirement of limit	Pass
15.203	Antenna Requirement	Meet the requirement of limit	Pass

1 General Description

1.1 Information

This report is prepared for FCC class II Permissive change.

This report is issued as a supplementary report to the original ICC project no. 452701. The modifications are concerned as follows:

- ✧ Complying with New U-NII rule requirement for U-NII band -1 / -2A / -2C / -3.
- ✧ Frequency 5600~5650MHz band activated by software.
- ✧ Support beamforming function by software setting.
- ✧ Additional two adapters
- ✧ Additional one RJ45 cable
- ✧ Adding Resistance / Capacitor to reduce spurious emission below 1GHz

Therefore, related test items had been performed and presented in the following sections.

1.1.1 Specification of the Equipment under Test (EUT)

RF General Information					
Frequency Range (MHz)	IEEE Std. 802.11	Ch. Freq. (MHz)	Channel Number	Transmit Chains (N _{TX})	Data Rate / MCS
5150-5250 5250-5350 5470-5725 5725-5850	a	5180-5240 5260-5320 5500-5720 5745-5825	36-48 [4] 52-64 [4] 100-144 [12] 149-165 [5]	4	6-54 Mbps
5150-5250 5250-5350 5470-5725 5725-5850	n (HT20)	5180-5240 5260-5320 5500-5720 5745-5825	36-48 [4] 52-64 [4] 100-144 [12] 149-165 [5]	4	MCS 0-31
5150-5250 5250-5350 5470-5725 5725-5850	n (HT40)	5190-5230 5270-5310 5510-5710 5755-5795	38-46 [2] 54-62 [2] 102-142[6] 151-159 [2]	4	MCS 0-31
5150-5250 5250-5350 5470-5725 5725-5850	ac (VHT20)	5180-5240 5260-5320 5500-5720 5745-5825	36-48 [4] 52-64 [4] 100-144 [12] 149-165 [5]	4	MCS 0-9
5150-5250 5250-5350 5470-5725 5725-5850	ac (VHT40)	5190-5230 5270-5310 5510-5710 5755-5795	38-46 [2] 54-62 [2] 102-142[6] 151-159 [2]	4	MCS 0-9
5150-5250 5250-5350 5470-5725 5725-5850	ac (VHT80)	5210 5290 5530-5690 5775	42 [1] 58 [1] 106-138 [3] 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.					

1.1.2 Antenna Details

Ant. Group	Ant. No.	Model	Type	Connector	Operating Frequencies (MHz) / Antenna Gain (dBi)		
					5150~5350	5470~5725	5725~5850
1	1	Mag.Layers - PCA-2108-5G0C1-A1	PCB	MHF PLUG	0	0	0.1
	2	Mag.Layers - PCA-2108-5G0C1-A1	PCB	MHF PLUG	0	0	0.1
	3	Mag.Layers - PCA-2108-5G0C1-A2	PCB	MHF PLUG	0	0	0.1
	4	Mag.Layers - PCA-2108-5G0C1-A2	PCB	MHF PLUG	0	0	0.1
2	1	Airgain - N5X20SC-PK1-G65U	PCB	MHF PLUG	0	-0.1	0
	2	Airgain - N5X20SC-PK1-G65U	PCB	MHF PLUG	0	-0.1	0
	3	Airgain - N5X20SC-PK1-G100U	PCB	MHF PLUG	0	-0.1	0
	4	Airgain - N5X20SC-PK1-G100U	PCB	MHF PLUG	0	-0.1	0

Note:

For Antenna group 1

Above antenna gain value is for single TX antenna. Correlated antenna gain is 6.02dBi for 5150~5350 and 5470~5725 MHz and 6.12dBi for 5725~5850 MHz.

For Antenna group 2

Above antenna gain value is for single TX antenna. Correlated antenna gain is 6.02dBi for 5150~5350 and 5725~5850 MHz and 5.92dBi for 5470~5725 MHz.

1.1.3 Power Supply Type of Equipment under Test (EUT)

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

1.1.4 Accessories

Accessories		
No.	Equipment	Description
1	AC Adapter	Brand Name: NetBit Model Name: NBS12E120100VU Power Rating: I/P: 100-120Vac, 50-60Hz, 0.3A O/P: 12Vdc, 1.0A Power Line: 1.8m non-shielded cable w/o core Efficiency Level: VI
2	AC Adapter	Brand Name: APD Model Name: WA-12M12FU Power Rating: I/P: 100-120Vac, 50-60Hz, 0.3A O/P: 12Vdc, 1.0A Power Line: 1.8m non-shielded cable with one core Efficiency Level: VI
3	RJ45 Cable	1.75m non-shielded cable w/o core.

1.1.5 Channel List

802.11 a / HT20 / VHT20		HT40 / VHT40	
Channel	Frequency(MHz)	Channel	Frequency(MHz)
36	5180	38	5190
40	5200	46	5230
44	5220	54	5270
48	5240	62	5310
52	5260	102	5510
56	5280	110	5550
60	5300	118	5590
64	5320	126	5630
100	5500	134	5670
104	5520	142	5710
108	5540	151	5755
112	5560	159	5795
116	5580	VHT80	
120	5600	42	5210
124	5620	58	5290
128	5640	106	5530
132	5660	122	5610
136	5680	138	5690
140	5700	155	5775
144	5720	---	---
149	5745	---	---
153	5765	---	---
157	5785	---	---
161	5805	---	---
165	5825	---	---

1.1.6 Test Tool and Duty Cycle

Test Tool	lperf				
Duty Cycle and Duty Factor	Mode	Non-beamforming		Beamforming	
		Duty cycle (%)	Duty factor (dB)	Duty cycle (%)	Duty factor (dB)
	VHT20	---	---	95.62%	0.19
	VHT40	98.83%	0.05	95.53%	0.20
	VHT80	95.21%	0.21	97.02%	0.13

1.1.7 Power Setting

For Frequency band 5150-5250 MHz			
Modulation Mode	Test Frequency (MHz)	Power Set	
		Non-Beamforming	Beamforming
VHT20	5180	---	9
VHT20	5200	---	9
VHT20	5240	---	9
VHT40	5190	---	10
VHT40	5230	---	10
VHT80	5210	---	10

For Frequency band 5250~5350 MHz			
Modulation Mode	Test Frequency (MHz)	Power Set	
		Non-Beamforming	Beamforming
VHT20	5260	---	16
VHT20	5300	---	16
VHT20	5320	---	16
VHT40	5270	---	16
VHT40	5310	---	14
VHT80	5290	---	11

For Frequency band 5470~5725 MHz			
Modulation Mode	Test Frequency (MHz)	Power Set	
		Non-Beamforming	Beamforming
HT40	5590	17	---
VHT20	5500	---	15
VHT20	5580	---	15
VHT20	5700	---	14
VHT40	5510	---	12
VHT40	5590	17	17
VHT40	5670	---	16
VHT80	5530	---	11
VHT80	5610	17	17

Channel that extends across the 5.725 GHz boundary (Beamforming mode only.)

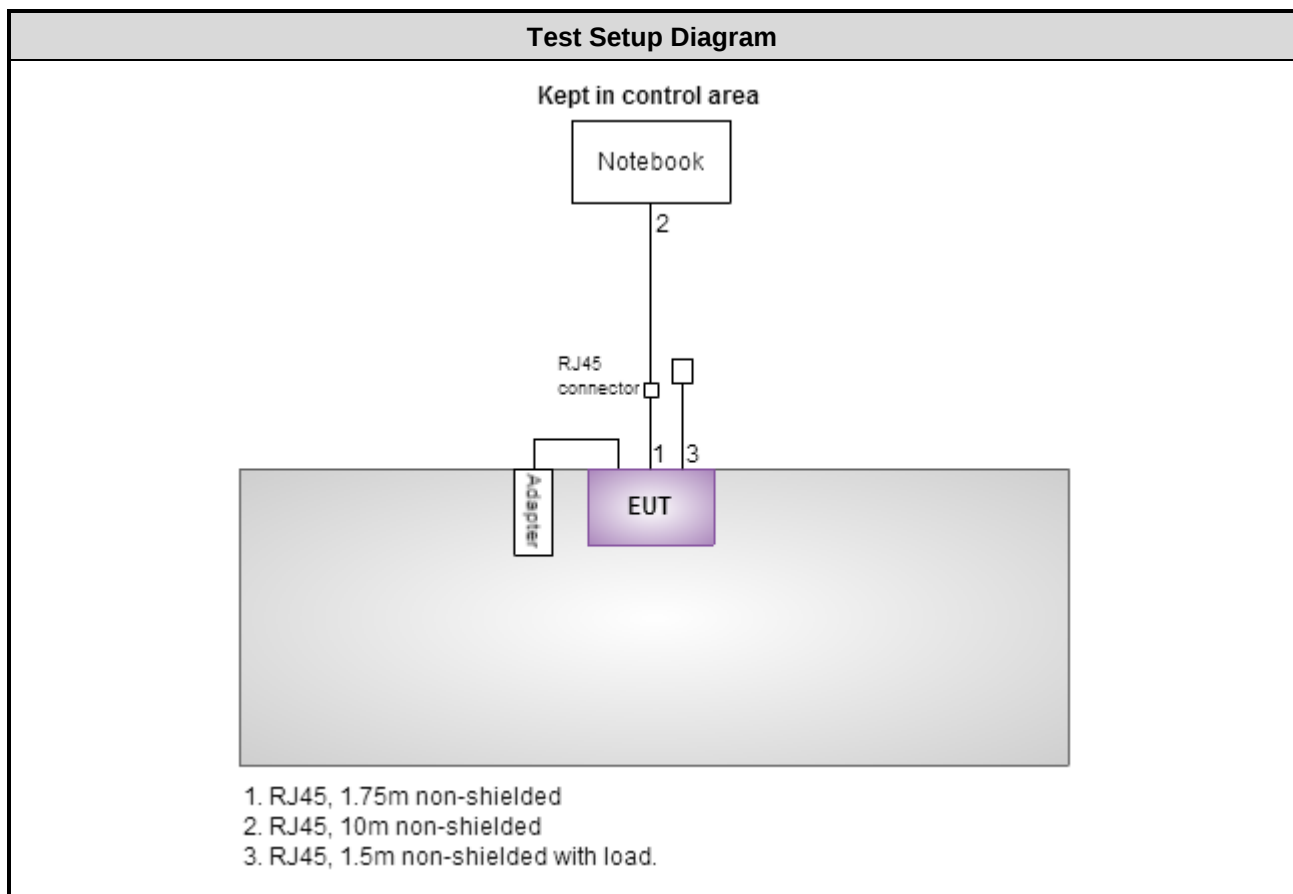
For Frequency band 5470~5725 MHz		
Modulation Mode	Test Frequency (MHz)	Power Set
VHT20	5720	16
VHT40	5710	17
VHT80	5690	17

For Frequency band 5725~5850 MHz			
Modulation Mode	Test Frequency (MHz)	Power Set	
		Non-Beamforming	Beamforming
11a	5745	15	---
11a	5785	16	---
11a	5825	15	---
HT20	5745	15	---
HT20	5785	18	---
HT20	5825	17	---
HT40	5755	14	---
HT40	5795	18	---
VHT20	5745	15	14
VHT20	5785	18	18
VHT20	5825	17	15
VHT40	5755	14	13
VHT40	5795	18	17
VHT80	5775	13	13

1.2 Local Support Equipment List

Support Equipment List					
No.	Equipment	Brand	Model	FCC ID	Signal cable / Length (m)
1	Notebook	DELL	Latitude E6430	DoC	RJ45, 10m non-shielded.

1.3 Test Setup Chart



1.4 The Equipment List

Test Item	Conducted Emission				
Test Site	Conduction room 1 / (CO01-WS)				
Instrument	Manufacturer	Model No.	Serial No.	Calibration Date	Calibration Until
EMC Receiver	R&S	ESCS 30	100169	Oct. 21, 2015	Oct. 20, 2016
LISN	SCHWARZBECK	Schwarzbeck 8127	8127-667	Nov. 13, 2015	Nov. 12, 2016
RF Cable-CON	EMC	EMCCFD300-BM-BM-6000	50821	Dec. 21, 2015	Dec. 20, 2016
Measurement Software	AUDIX	e3	6.120210k	NA	NA
Note: Calibration Interval of instruments listed above is one year.					

Test Item	Radiated Emission				
Test Site	966 chamber1 / (03CH01-WS)				
Instrument	Manufacturer	Model No.	Serial No.	Calibration Date	Calibration Until
Spectrum Analyzer	R&S	FSV40	101498	Dec. 13, 2015	Dec. 12, 2016
Receiver	R&S	ESR3	101658	Nov. 04, 2015	Nov. 03, 2016
Bilog Antenna	SCHWARZBECK	VULB9168	VULB9168-522	Aug. 20, 2015	Aug. 19, 2016
Horn Antenna 1G-18G	SCHWARZBECK	BBHA 9120 D	BBHA 9120 D 1096	Dec. 16, 2015	Dec. 15, 2016
Horn Antenna 18G-40G	SCHWARZBECK	BBHA 9170	BBHA 9170517	Nov. 04, 2015	Nov. 03, 2016
Loop Antenna	R&S	HFH2-Z2	11900	Nov. 16, 2015	Nov. 15, 2016
Loop Antenna Cable	KOAX KABEL	101354-BW	101354-BW	Dec. 10, 2015	Dec. 09, 2016
Preamplifier	Burgeon	BPA-530	SN:100219	Sep. 10, 2015	Sep. 09, 2016
Preamplifier	Agilent	83017A	MY39501308	Oct. 02, 2015	Oct. 01, 2016
Preamplifier	EMC	EMC184045B	980192	Sep. 01, 2015	Aug. 31, 2016
RF Cable	HUBER+SUHNER	SUCOFLEX104	MY16014/4	Dec. 10, 2015	Dec. 09, 2016
RF Cable	HUBER+SUHNER	SUCOFLEX104	MY16019/4	Dec. 10, 2015	Dec. 09, 2016
RF Cable	HUBER+SUHNER	SUCOFLEX104	MY16139/4	Dec. 10, 2015	Dec. 09, 2016
LF cable 3M	Woken	CFD400NL-LW	CFD400NL-001	Dec. 10, 2015	Dec. 09, 2016
LF cable 10M	Woken	CFD400NL-LW	CFD400NL-002	Dec. 10, 2015	Dec. 09, 2016
Measurement Software	AUDIX	e3	6.120210g	NA	NA
Note: Calibration Interval of instruments listed above is one year.					

Test Item	Radiated Emission				
Test Site	966 chamber 2 / (03CH02-WS)				
Instrument	Manufacturer	Model No.	Serial No.	Calibration Date	Calibration Until
Spectrum Analyzer	R&S	FSV40	101499	Dec. 17, 2015	Dec. 16, 2016
Receiver	R&S	ESR3	101657	Jan. 12, 2016	Jan. 11, 2017
Bilog Antenna	SCHWARZBECK	VULB9168	VULB9168-523	Nov. 09, 2015	Nov. 08, 2016
Horn Antenna 1G-18G	SCHWARZBECK	BBHA 9120 D	BBHA 9120 D 1095	Oct. 07, 2015	Oct. 06, 2016
Horn Antenna 18G-40G	SCHWARZBECK	BBHA 9170	BBHA 9170517	Nov. 04, 2015	Nov. 03, 2016
Loop Antenna	R&S	HFH2-Z2	11900	Nov. 16, 2015	Nov. 15, 2016
Loop Antenna Cable	KOAX KABEL	101354-BW	101354-BW	Dec. 10, 2015	Dec. 09, 2016
Preamplifier	Burgeon	BPA-530	100218	Nov. 03, 2015	Nov. 02, 2016
Preamplifier	Agilent	83017A	MY39501309	Sep. 22, 2015	Sep. 21, 2016
Preamplifier	EMC	EMC184045B	980192	Sep. 01, 2015	Aug. 31, 2016
RF Cable	HUBER+SUHNER	SUCOFLEX104	MY16140/4	Dec. 10, 2015	Dec. 09, 2016
RF Cable	HUBER+SUHNER	SUCOFLEX104	MY16018/4	Dec. 10, 2015	Dec. 09, 2016
RF Cable	HUBER+SUHNER	SUCOFLEX104	MY16015/4	Dec. 10, 2015	Dec. 09, 2016
LF cable 3M	Woken	CFD400NL-LW	CFD400NL-003	Dec. 10, 2015	Dec. 09, 2016
LF cable 10M	EMCC	CFD400-E	CFD400-001	Dec. 10, 2015	Dec. 09, 2016
Measurement Software	AUDIX	e3	6.120210g	NA	NA
Note: Calibration Interval of instruments listed above is one year.					

Test Item	RF Conducted				
Test Site	(TH01-WS)				
Instrument	Manufacturer	Model No.	Serial No.	Calibration Date	Calibration Until
Spectrum Analyzer	R&S	FSV40	101063	Feb. 17, 2016	Feb. 16, 2017
TEMP&HUMIDITY CHAMBER	GIANT FORCE	GCT-225-40-SP-SD	MAF1212-002	Nov. 27, 2015	Nov. 26, 2016
Power Meter	Anritsu	ML2495A	1241002	Sep. 21, 2015	Sep. 20, 2016
Power Sensor	Anritsu	MA2411B	1207366	Sep. 21, 2015	Sep. 20, 2016
Measurement Software	Sporton	Sporton_1	1.3.30	NA	NA
Note: Calibration Interval of instruments listed above is one year.					

1.5 Testing Applied Standards

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

47 CFR FCC Part 15.407

ANSI C63.10-2013

FCC KDB 789033 D02 General UNII Test Procedures New Rules v01r01

FCC KDB 644545 D03 Guidance for IEEE 802.11ac New Rules v01

FCC KDB 662911 D01 Multiple Transmitter Output v02r01

FCC KDB 412172 D01 Determining ERP and EIRP v01r01

1.6 Measurement Uncertainty

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

Measurement Uncertainty	
Parameters	Uncertainty
Bandwidth	± 34.134 Hz
Conducted power	± 0.808 dB
Frequency error	± 34.134 Hz
Power density	± 0.463 dB
Conducted emission	± 2.670 dB
AC conducted emission	± 2.90 dB
Radiated emission ≤ 1 GHz (for 03CH01-WS)	± 3.66 dB
Radiated emission > 1 GHz (for 03CH01-WS)	± 5.63 dB
Radiated emission ≤ 1 GHz (for 03CH02-WS)	± 3.87 dB
Radiated emission > 1 GHz (for 03CH02-WS)	± 5.60 dB
Time	$\pm 0.1\%$
Temperature	± 0.6 °C

2 Test Configuration

2.1 Testing Condition

Test Item	Test Site	Ambient Condition	Tested By
AC Conduction	CO01-WS	19°C / 60%	Sky Huang
Radiated Emissions	03CH01-WS 03CH02-WS	20-22°C / 61-63%	Aska Huang Vincent Yeh Felix Sung
RF Conducted	TH01-WS	22°C / 64%	Anderson Hung

- FCC site registration No.: 181692
- IC site registration No.: 10807A-1 / 10807A-2

2.2 The Worst Test Modes and Channel Details

Non-beamforming mode

Frequency band 5470~5725 MHz				
Test item	Modulation Mode	Test Frequency (MHz)	Data Rate (Mbps) / MCS	Test Configuration
Conducted Emissions	VHT40	5590	MCS 0	---
	VHT80	5610	MCS 0	---
Radiated Emissions ≤1GHz	VHT40	5590	MCS 0	---
	VHT80	5610	MCS 0	---
Radiated Emissions >1GHz	VHT40	5590	MCS 0	---
	VHT80	5610	MCS 0	---
RF Output Power	HT40	5590	MCS 0	---
	VHT40	5590	MCS 0	
	VHT80	5610	MCS 0	
Emission Bandwidth Peak Power Spectral Density	VHT40	5590	MCS 0	---
	VHT80	5610	MCS 0	

NOTE:

- Adapter 1 and Adapter 2 had been pretested and found that **Adapter 1** was the worst case and was selected for final testing (**Adapter 1: NetBit adapter**; Adapter 2: APD adapter).
- Only channels within in 5600~5650MHz band are tested. Other channels are tested and recorded in original report.

Frequency band 5725-5850 MHz				
Test item	Modulation Mode	Test Frequency (MHz)	Data Rate (Mbps) / MCS	Test Configuration
Conducted Emissions	VHT40	5795	MCS 0	---
Radiated Emissions ≤ 1 GHz	VHT40	5795	MCS 0	---
RF Output Power	11a	5745 / 5785 / 5825	6 Mbps	---
	HT20	5745 / 5785 / 5825	MCS 0	
	HT40	5755 / 5795	MCS 0	
	VHT20	5745 / 5785 / 5825	MCS 0	
	VHT40	5755 / 5795	MCS 0	
	VHT80	5775	MCS 0	
Radiated Emissions > 1 GHz Emission Bandwidth 6dB bandwidth Peak Power Spectral Density	11a	5745 / 5785 / 5825	6 Mbps	---
	VHT20	5745 / 5785 / 5825	MCS 0	
	VHT40	5755 / 5795	MCS 0	
	VHT80	5775	MCS 0	
Frequency Stability	Un-modulation	5785	---	---
NOTE: 1. Adapter 1 and Adapter 2 had been pretested and found that Adapter 1 was the worst case and was selected for final testing (Adapter 1: NetBit adapter ; Adapter 2: APD adapter).				

Beamforming mode

Frequency band 5150~5350 MHz / 5470~5725 MHz				
Test item	Modulation Mode	Test Frequency (MHz)	Data Rate	Test Configuration
Conducted Emissions	VHT40	5590	MCS 0	---
Radiated Emissions ≤1GHz	VHT40	5590	MCS 0	---
RF Output Power	VHT20	5180 / 5200 / 5240 / 5260 / 5300 5320 / 5500 / 5580 / 5700 / 5720	MCS 0	---
	VHT40	5190 / 5230 / 5270 / 5310 / 5510 5590 / 5670 / 5710	MCS 0	
	VHT80	5210 / 5290 / 5530 / 5610 / 5690	MCS 0	
Radiated Emissions >1GHz Emission Bandwidth Peak Power Spectral Density	VHT20	5180 / 5200 / 5240 / 5260 / 5300 5320 / 5500 / 5580 / 5700 / 5720	MCS 0	---
	VHT40	5190 / 5230 / 5270 / 5310 / 5510 5590 / 5670 / 5710	MCS 0	
	VHT80	5210 / 5290 / 5530 / 5610 / 5690	MCS 0	
NOTE:				
1. Adapter 1 and Adapter 2 had been pretested and found that Adapter 1 was the worst case and was selected for final testing (Adapter 1: NetBit adapter ; Adapter 2: APD adapter).				

Frequency band 5725-5850 MHz				
Test item	Modulation Mode	Test Frequency (MHz)	Data Rate	Test Configuration
Conducted Emissions	VHT20	5785	MCS 0	---
Radiated Emissions $\leq 1\text{GHz}$	VHT20	5785	MCS 0	---
RF Output Power	VHT20	5745 / 5785 / 5825	MCS 0	---
	VHT40	5755 / 5795	MCS 0	
	VHT80	5775	MCS 0	
Radiated Emissions $>1\text{GHz}$ Emission Bandwidth 6dB bandwidth Peak Power Spectral Density	VHT20	5745 / 5785 / 5825	MCS 0	---
	VHT40	5755 / 5795	MCS 0	
	VHT80	5775	MCS 0	
Frequency Stability	Un-modulation	5785	---	---
NOTE:				
1. Adapter 1 and Adapter 2 had been pretested and found that Adapter 1 was the worst case and was selected for final testing (Adapter 1: NetBit adapter ; Adapter 2: APD adapter).				

3 Transmitter Test Results

3.1 Conducted Emissions

3.1.1 Limit of Conducted Emissions

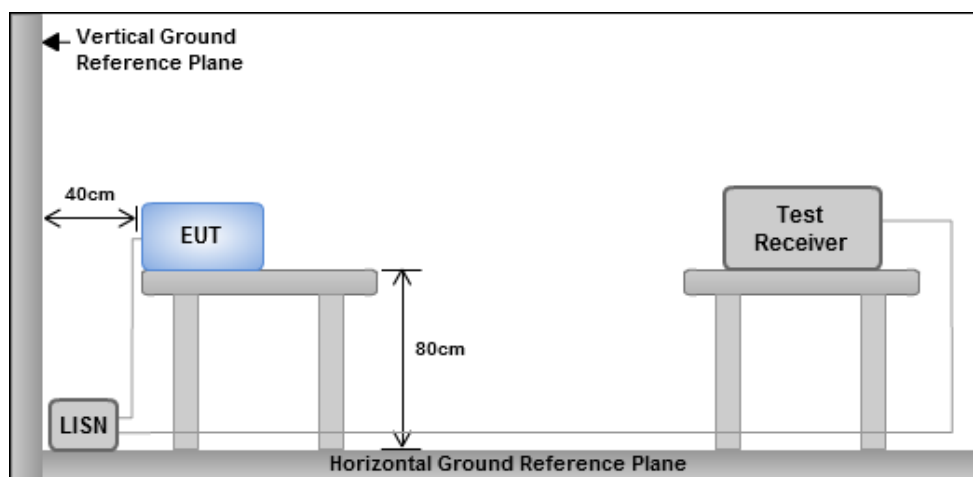
Conducted Emissions Limit		
Frequency Emission (MHz)	Quasi-Peak	Average
0.15-0.5	66 - 56 *	56 - 46 *
0.5-5	56	46
5-30	60	50

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

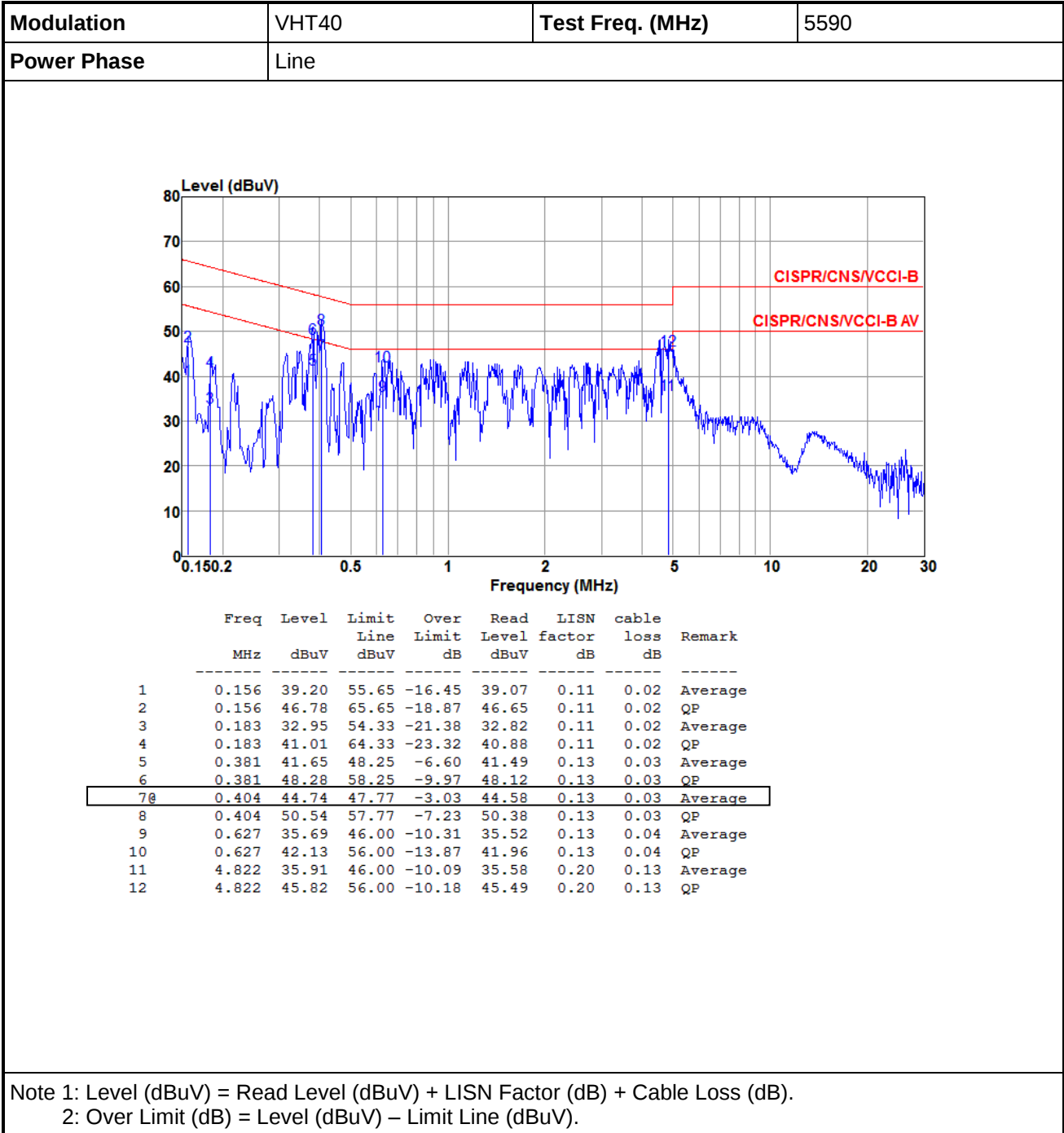
3.1.3 Test Setup



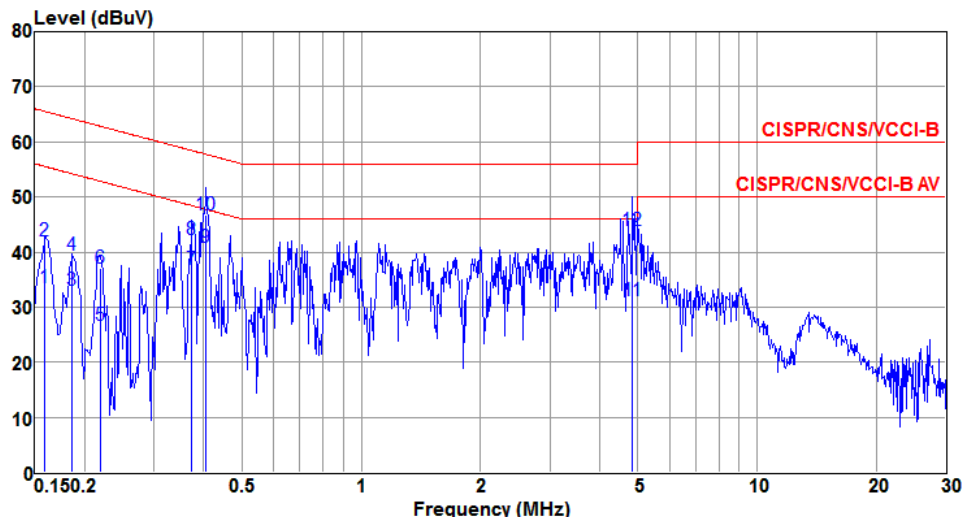
- Note: 1. Support units were connected to second LISN.
 2. Both of LISNs (AMN) are 80 cm from EUT and at least 80 cm from other units and other metal planes

3.1.4 Test Result of Conducted Emissions

Non-beamforming mode



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



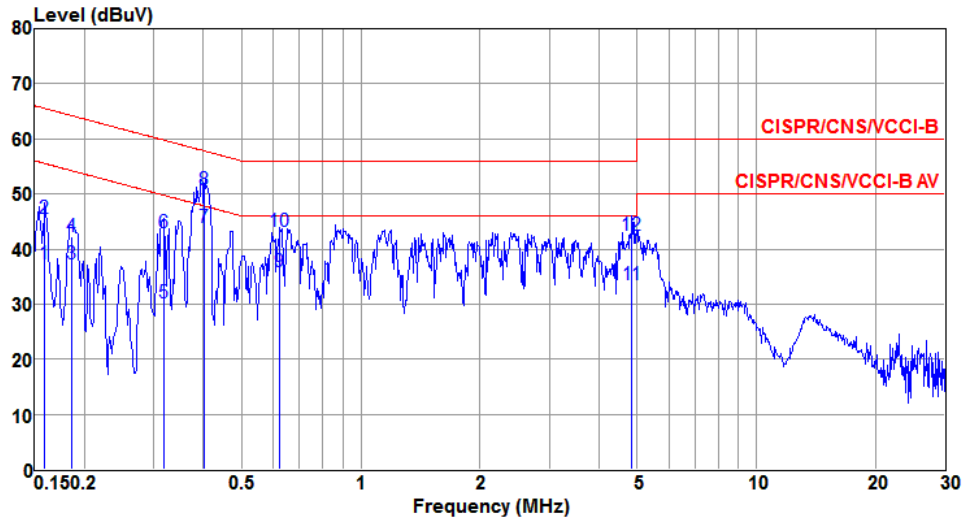
The graph displays the measured level in dBUV across a frequency range from 0.15 to 30 MHz. Two red limit lines are shown: CISPR/CNS/VCCI-B (upper) and CISPR/CNS/VCCI-B AV (lower). The measured signal is a blue line with several peaks, some of which are labeled with numbers 2, 4, 6, 8, 10, and 12. The levels generally decrease as frequency increases, with a notable peak around 4.8 MHz.

	Freq	Level	Limit	Over	Read	LISN	cable	Remark
	MHz	dBuV	Line	Limit	Level	factor	loss	
			dBuV	dB	dBuV	dB	dB	
1	0.159	33.57	55.52	-21.95	33.43	0.12	0.02	Average
2	0.159	41.98	65.52	-23.54	41.84	0.12	0.02	QP
3	0.186	33.12	54.20	-21.08	32.99	0.11	0.02	Average
4	0.186	39.47	64.20	-24.73	39.34	0.11	0.02	QP
5	0.220	26.74	52.83	-26.09	26.61	0.11	0.02	Average
6	0.220	37.12	62.83	-25.71	36.99	0.11	0.02	QP
7	0.373	36.74	48.43	-11.69	36.57	0.14	0.03	Average
8	0.373	42.16	58.43	-16.27	41.99	0.14	0.03	QP
9@	0.406	40.86	47.73	-6.87	40.69	0.14	0.03	Average
10	0.406	46.72	57.73	-11.01	46.55	0.14	0.03	QP
11	4.848	31.25	46.00	-14.75	30.93	0.19	0.13	Average
12	4.848	43.89	56.00	-12.11	43.57	0.19	0.13	QP

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

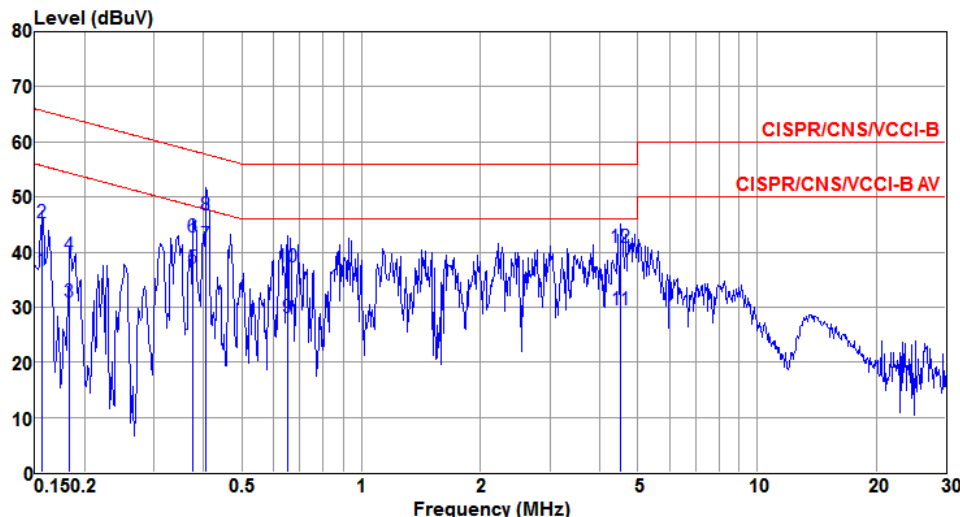
2: Over Limit (dB) = Level (dBUV) – Limit Line (dBUV).

Modulation	VHT80	Test Freq. (MHz)	5610
Power Phase	Line		



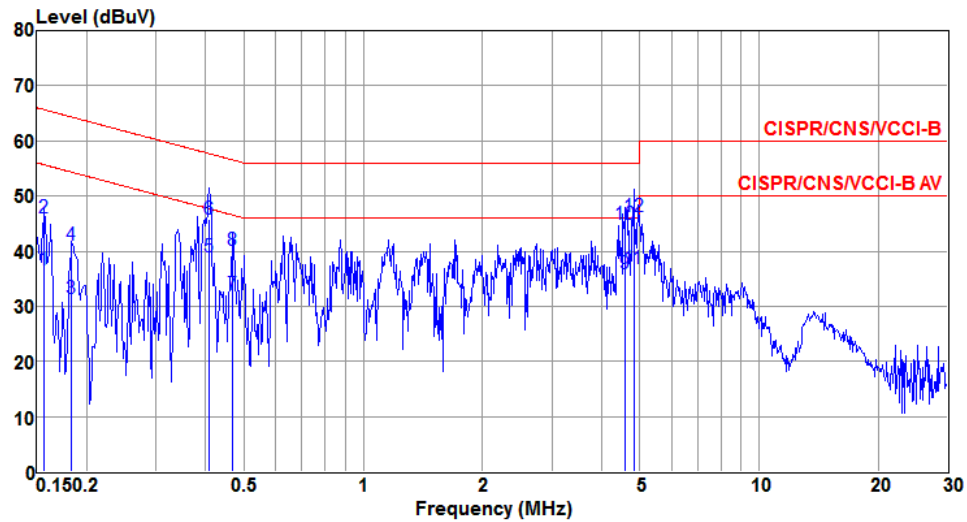
	Freq MHz	Level dBuV	Limit Line dBuV	Over Limit dB	Read Level dBuV	LISN factor dB	cable loss dB	Remark
1	0.159	37.20	55.52	-18.32	37.07	0.11	0.02	Average
2	0.159	45.47	65.52	-20.05	45.34	0.11	0.02	QP
3	0.186	37.20	54.20	-17.00	37.07	0.11	0.02	Average
4	0.186	42.18	64.20	-22.02	42.05	0.11	0.02	QP
5	0.318	30.17	49.75	-19.58	30.02	0.12	0.03	Average
6	0.318	43.06	59.75	-16.69	42.91	0.12	0.03	QP
7@	0.402	43.81	47.81	-4.00	43.65	0.13	0.03	Average
8	0.402	50.66	57.81	-7.15	50.50	0.13	0.03	QP
9	0.624	35.87	46.00	-10.13	35.70	0.13	0.04	Average
10	0.624	43.25	56.00	-12.75	43.08	0.13	0.04	QP
11	4.848	33.60	46.00	-12.40	33.27	0.20	0.13	Average
12	4.848	42.58	56.00	-13.42	42.25	0.20	0.13	QP

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

Modulation	VHT80	Test Freq. (MHz)	5610																																																																																																																																							
Power Phase	Neutral																																																																																																																																									
Level (dBUV)  <table><tr><th></th><th>Freq</th><th>Level</th><th>Limit</th><th>Over</th><th>Read</th><th>LISN</th><th>cable</th><th></th></tr><tr><th></th><th>MHz</th><th>dBuV</th><th>Line</th><th>Limit</th><th>Level</th><th>factor</th><th>loss</th><th>Remark</th></tr><tr><th></th><th></th><th></th><th>dBuV</th><th>dB</th><th>dBuV</th><th>dB</th><th>dB</th><th></th></tr><tr><td>1</td><td>0.156</td><td>36.49</td><td>55.65</td><td>-19.16</td><td>36.34</td><td>0.13</td><td>0.02</td><td>Average</td></tr><tr><td>2</td><td>0.156</td><td>45.35</td><td>65.65</td><td>-20.30</td><td>45.20</td><td>0.13</td><td>0.02</td><td>QP</td></tr><tr><td>3</td><td>0.183</td><td>30.84</td><td>54.33</td><td>-23.49</td><td>30.71</td><td>0.11</td><td>0.02</td><td>Average</td></tr><tr><td>4</td><td>0.183</td><td>39.50</td><td>64.33</td><td>-24.83</td><td>39.37</td><td>0.11</td><td>0.02</td><td>QP</td></tr><tr><td>5</td><td>0.375</td><td>37.15</td><td>48.39</td><td>-11.24</td><td>36.98</td><td>0.14</td><td>0.03</td><td>Average</td></tr><tr><td>6</td><td>0.375</td><td>42.78</td><td>58.39</td><td>-15.61</td><td>42.61</td><td>0.14</td><td>0.03</td><td>QP</td></tr><tr><td>7@</td><td>0.406</td><td>41.21</td><td>47.73</td><td>-6.52</td><td>41.04</td><td>0.14</td><td>0.03</td><td>Average</td></tr><tr><td>8</td><td>0.406</td><td>46.62</td><td>57.73</td><td>-11.11</td><td>46.45</td><td>0.14</td><td>0.03</td><td>QP</td></tr><tr><td>9</td><td>0.651</td><td>27.99</td><td>46.00</td><td>-18.01</td><td>27.81</td><td>0.13</td><td>0.05</td><td>Average</td></tr><tr><td>10</td><td>0.651</td><td>37.21</td><td>56.00</td><td>-18.79</td><td>37.03</td><td>0.13</td><td>0.05</td><td>QP</td></tr><tr><td>11</td><td>4.525</td><td>29.44</td><td>46.00</td><td>-16.56</td><td>29.13</td><td>0.18</td><td>0.13</td><td>Average</td></tr><tr><td>12</td><td>4.525</td><td>40.81</td><td>56.00</td><td>-15.19</td><td>40.50</td><td>0.18</td><td>0.13</td><td>QP</td></tr></table>					Freq	Level	Limit	Over	Read	LISN	cable			MHz	dBuV	Line	Limit	Level	factor	loss	Remark				dBuV	dB	dBuV	dB	dB		1	0.156	36.49	55.65	-19.16	36.34	0.13	0.02	Average	2	0.156	45.35	65.65	-20.30	45.20	0.13	0.02	QP	3	0.183	30.84	54.33	-23.49	30.71	0.11	0.02	Average	4	0.183	39.50	64.33	-24.83	39.37	0.11	0.02	QP	5	0.375	37.15	48.39	-11.24	36.98	0.14	0.03	Average	6	0.375	42.78	58.39	-15.61	42.61	0.14	0.03	QP	7@	0.406	41.21	47.73	-6.52	41.04	0.14	0.03	Average	8	0.406	46.62	57.73	-11.11	46.45	0.14	0.03	QP	9	0.651	27.99	46.00	-18.01	27.81	0.13	0.05	Average	10	0.651	37.21	56.00	-18.79	37.03	0.13	0.05	QP	11	4.525	29.44	46.00	-16.56	29.13	0.18	0.13	Average	12	4.525	40.81	56.00	-15.19	40.50	0.18	0.13	QP
	Freq	Level	Limit	Over	Read	LISN	cable																																																																																																																																			
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Modulation	VHT40	Test Freq. (MHz)	5795																																																																																																																					
Power Phase	Line																																																																																																																							
Level (dBuV) Frequency (MHz) <table><thead><tr><th></th><th>Freq MHz</th><th>Level dBuV</th><th>Limit Line dBuV</th><th>Over Limit dB</th><th>Read Level dBuV</th><th>LISN factor dB</th><th>cable loss dB</th><th>Remark</th></tr></thead><tbody><tr><td>1</td><td>0.159</td><td>37.34</td><td>55.52</td><td>-18.18</td><td>37.21</td><td>0.11</td><td>0.02</td><td>Average</td></tr><tr><td>2</td><td>0.159</td><td>45.89</td><td>65.52</td><td>-19.63</td><td>45.76</td><td>0.11</td><td>0.02</td><td>QP</td></tr><tr><td>3</td><td>0.189</td><td>35.89</td><td>54.06</td><td>-18.17</td><td>35.76</td><td>0.11</td><td>0.02</td><td>Average</td></tr><tr><td>4</td><td>0.189</td><td>42.13</td><td>64.06</td><td>-21.93</td><td>42.00</td><td>0.11</td><td>0.02</td><td>QP</td></tr><tr><td>5</td><td>0.315</td><td>36.82</td><td>49.84</td><td>-13.02</td><td>36.67</td><td>0.12</td><td>0.03</td><td>Average</td></tr><tr><td>6</td><td>0.315</td><td>43.44</td><td>59.84</td><td>-16.40</td><td>43.29</td><td>0.12</td><td>0.03</td><td>QP</td></tr><tr><td>7</td><td>0.400</td><td>43.62</td><td>47.86</td><td>-4.24</td><td>43.46</td><td>0.13</td><td>0.03</td><td>Average</td></tr><tr><td>8</td><td>0.400</td><td>50.98</td><td>57.86</td><td>-6.88</td><td>50.82</td><td>0.13</td><td>0.03</td><td>QP</td></tr><tr><td>9</td><td>0.630</td><td>33.09</td><td>46.00</td><td>-12.91</td><td>32.92</td><td>0.13</td><td>0.04</td><td>Average</td></tr><tr><td>10</td><td>0.630</td><td>42.70</td><td>56.00</td><td>-13.30</td><td>42.53</td><td>0.13</td><td>0.04</td><td>QP</td></tr><tr><td>11</td><td>4.746</td><td>37.00</td><td>46.00</td><td>-9.00</td><td>36.67</td><td>0.20</td><td>0.13</td><td>Average</td></tr><tr><td>12</td><td>4.746</td><td>45.59</td><td>56.00</td><td>-10.41</td><td>45.26</td><td>0.20</td><td>0.13</td><td>QP</td></tr></tbody></table>					Freq MHz	Level dBuV	Limit Line dBuV	Over Limit dB	Read Level dBuV	LISN factor dB	cable loss dB	Remark	1	0.159	37.34	55.52	-18.18	37.21	0.11	0.02	Average	2	0.159	45.89	65.52	-19.63	45.76	0.11	0.02	QP	3	0.189	35.89	54.06	-18.17	35.76	0.11	0.02	Average	4	0.189	42.13	64.06	-21.93	42.00	0.11	0.02	QP	5	0.315	36.82	49.84	-13.02	36.67	0.12	0.03	Average	6	0.315	43.44	59.84	-16.40	43.29	0.12	0.03	QP	7	0.400	43.62	47.86	-4.24	43.46	0.13	0.03	Average	8	0.400	50.98	57.86	-6.88	50.82	0.13	0.03	QP	9	0.630	33.09	46.00	-12.91	32.92	0.13	0.04	Average	10	0.630	42.70	56.00	-13.30	42.53	0.13	0.04	QP	11	4.746	37.00	46.00	-9.00	36.67	0.20	0.13	Average	12	4.746	45.59	56.00	-10.41	45.26	0.20	0.13	QP
	Freq MHz	Level dBuV	Limit Line dBuV	Over Limit dB	Read Level dBuV	LISN factor dB	cable loss dB	Remark																																																																																																																
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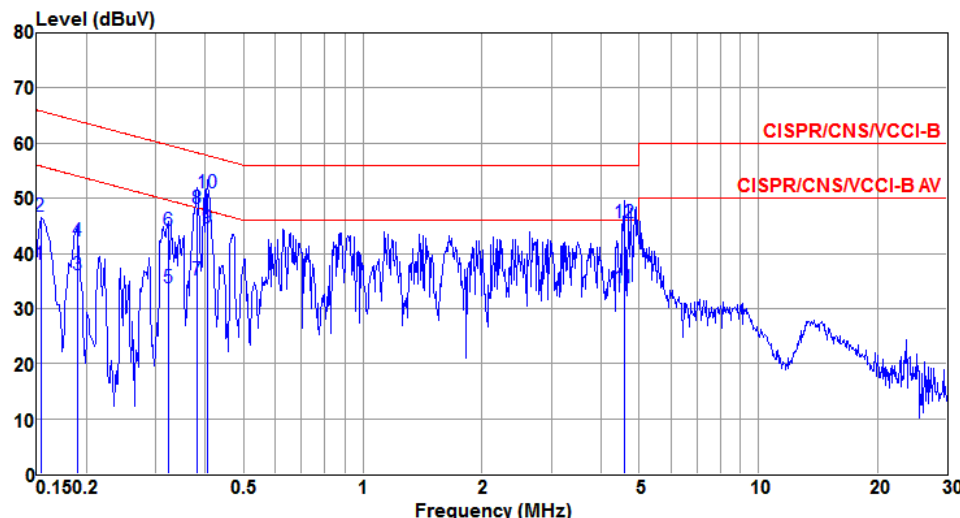
Modulation	VHT40	Test Freq. (MHz)	5795
Power Phase	Neutral		

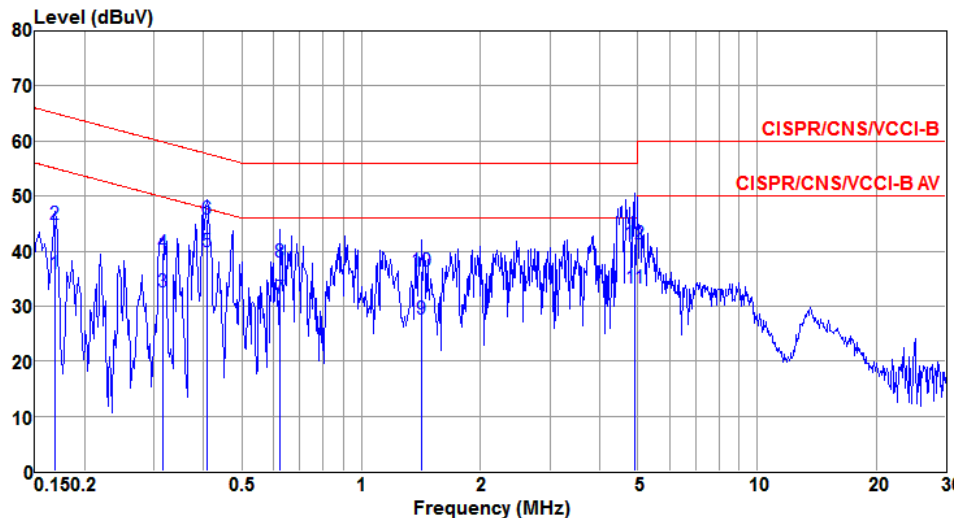


	Freq MHz	Level dBuV	Limit Line dBuV	Over Limit dB	Read Level dBuV	LISN factor dB	cable loss dB	Remark
1	0.156	36.66	55.65	-18.99	36.51	0.13	0.02	Average
2	0.156	45.96	65.65	-19.69	45.81	0.13	0.02	QP
3	0.183	31.51	54.33	-22.82	31.38	0.11	0.02	Average
4	0.183	41.14	64.33	-23.19	41.01	0.11	0.02	QP
5@	0.408	39.03	47.68	-8.65	38.86	0.14	0.03	Average
6	0.408	45.87	57.68	-11.81	45.70	0.14	0.03	QP
7	0.469	32.05	46.54	-14.49	31.87	0.14	0.04	Average
8	0.469	40.13	56.54	-16.41	39.95	0.14	0.04	QP
9	4.598	35.95	46.00	-10.05	35.63	0.19	0.13	Average
10	4.598	44.83	56.00	-11.17	44.51	0.19	0.13	QP
11	4.822	36.76	46.00	-9.24	36.44	0.19	0.13	Average
12	4.822	46.26	56.00	-9.74	45.94	0.19	0.13	QP

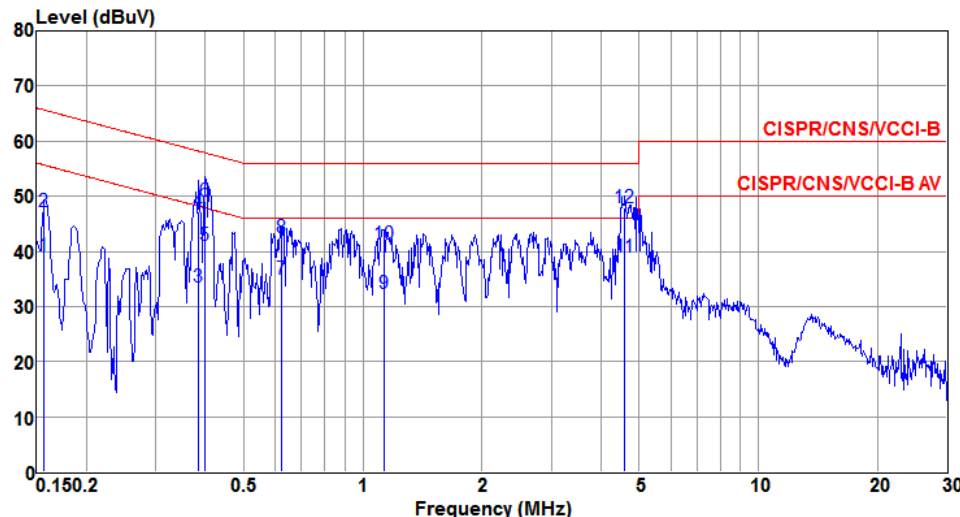
Note 1: Level (dBuV) = Read Level (dBuV) + LISN Factor (dB) + Cable Loss (dB).
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Beamforming mode

Modulation	VHT40	Test Freq. (MHz)	5590																																																																																																																					
Power Phase	Line																																																																																																																							
Level (dBuV)  Frequency (MHz) <table><thead><tr><th></th><th>Freq MHz</th><th>Level dBuV</th><th>Limit Line dBuV</th><th>Over Limit dB</th><th>Read Level dBuV</th><th>LISN factor dB</th><th>cable loss dB</th><th>Remark</th></tr></thead><tbody><tr><td>1</td><td>0.153</td><td>38.02</td><td>55.82</td><td>-17.80</td><td>37.89</td><td>0.11</td><td>0.02</td><td>Average</td></tr><tr><td>2</td><td>0.153</td><td>46.66</td><td>65.82</td><td>-19.16</td><td>46.53</td><td>0.11</td><td>0.02</td><td>QP</td></tr><tr><td>3</td><td>0.189</td><td>36.09</td><td>54.06</td><td>-17.97</td><td>35.96</td><td>0.11</td><td>0.02</td><td>Average</td></tr><tr><td>4</td><td>0.189</td><td>42.30</td><td>64.06</td><td>-21.76</td><td>42.17</td><td>0.11</td><td>0.02</td><td>QP</td></tr><tr><td>5</td><td>0.322</td><td>33.71</td><td>49.66</td><td>-15.95</td><td>33.56</td><td>0.12</td><td>0.03</td><td>Average</td></tr><tr><td>6</td><td>0.322</td><td>44.09</td><td>59.66</td><td>-15.57</td><td>43.94</td><td>0.12</td><td>0.03</td><td>QP</td></tr><tr><td>7</td><td>0.381</td><td>35.24</td><td>48.25</td><td>-13.01</td><td>35.08</td><td>0.13</td><td>0.03</td><td>Average</td></tr><tr><td>8</td><td>0.381</td><td>48.10</td><td>58.25</td><td>-10.15</td><td>47.94</td><td>0.13</td><td>0.03</td><td>QP</td></tr><tr><td>9@</td><td>0.404</td><td>44.71</td><td>47.77</td><td>-3.06</td><td>44.55</td><td>0.13</td><td>0.03</td><td>Average</td></tr><tr><td>10</td><td>0.404</td><td>50.93</td><td>57.77</td><td>-6.84</td><td>50.77</td><td>0.13</td><td>0.03</td><td>QP</td></tr><tr><td>11</td><td>4.574</td><td>33.85</td><td>46.00</td><td>-12.15</td><td>33.52</td><td>0.20</td><td>0.13</td><td>Average</td></tr><tr><td>12</td><td>4.574</td><td>45.44</td><td>56.00</td><td>-10.56</td><td>45.11</td><td>0.20</td><td>0.13</td><td>QP</td></tr></tbody></table>					Freq MHz	Level dBuV	Limit Line dBuV	Over Limit dB	Read Level dBuV	LISN factor dB	cable loss dB	Remark	1	0.153	38.02	55.82	-17.80	37.89	0.11	0.02	Average	2	0.153	46.66	65.82	-19.16	46.53	0.11	0.02	QP	3	0.189	36.09	54.06	-17.97	35.96	0.11	0.02	Average	4	0.189	42.30	64.06	-21.76	42.17	0.11	0.02	QP	5	0.322	33.71	49.66	-15.95	33.56	0.12	0.03	Average	6	0.322	44.09	59.66	-15.57	43.94	0.12	0.03	QP	7	0.381	35.24	48.25	-13.01	35.08	0.13	0.03	Average	8	0.381	48.10	58.25	-10.15	47.94	0.13	0.03	QP	9@	0.404	44.71	47.77	-3.06	44.55	0.13	0.03	Average	10	0.404	50.93	57.77	-6.84	50.77	0.13	0.03	QP	11	4.574	33.85	46.00	-12.15	33.52	0.20	0.13	Average	12	4.574	45.44	56.00	-10.56	45.11	0.20	0.13	QP
	Freq MHz	Level dBuV	Limit Line dBuV	Over Limit dB	Read Level dBuV	LISN factor dB	cable loss dB	Remark																																																																																																																
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5	0.322	33.71	49.66	-15.95	33.56	0.12	0.03	Average																																																																																																																
6	0.322	44.09	59.66	-15.57	43.94	0.12	0.03	QP																																																																																																																
7	0.381	35.24	48.25	-13.01	35.08	0.13	0.03	Average																																																																																																																
8	0.381	48.10	58.25	-10.15	47.94	0.13	0.03	QP																																																																																																																
9@	0.404	44.71	47.77	-3.06	44.55	0.13	0.03	Average																																																																																																																
10	0.404	50.93	57.77	-6.84	50.77	0.13	0.03	QP																																																																																																																
11	4.574	33.85	46.00	-12.15	33.52	0.20	0.13	Average																																																																																																																
12	4.574	45.44	56.00	-10.56	45.11	0.20	0.13	QP																																																																																																																
Note 1: Level (dBuV) = Read Level (dBuV) + LISN Factor (dB) + Cable Loss (dB). Note 2: Over Limit (dB) = Level (dBuV) – Limit Line (dBuV).																																																																																																																								

Modulation	VHT40	Test Freq. (MHz)	5590																																																																																																																																							
Power Phase	Neutral																																																																																																																																									
Level (dBuV)  <table><tr><th></th><th>Freq</th><th>Level</th><th>Limit</th><th>Over</th><th>Read</th><th>LISN</th><th>cable</th><th></th></tr><tr><th></th><th>MHz</th><th>dBuV</th><th>Line</th><th>Limit</th><th>Level</th><th>factor</th><th>loss</th><th>Remark</th></tr><tr><td></td><td></td><td></td><td>dBuV</td><td>dB</td><td>dBuV</td><td>dB</td><td>dB</td><td></td></tr><tr><td>1</td><td>0.169</td><td>35.91</td><td>55.03</td><td>-19.12</td><td>35.77</td><td>0.12</td><td>0.02</td><td>Average</td></tr><tr><td>2</td><td>0.169</td><td>44.76</td><td>65.03</td><td>-20.27</td><td>44.62</td><td>0.12</td><td>0.02</td><td>QP</td></tr><tr><td>3</td><td>0.315</td><td>32.65</td><td>49.84</td><td>-17.19</td><td>32.49</td><td>0.13</td><td>0.03</td><td>Average</td></tr><tr><td>4</td><td>0.315</td><td>39.69</td><td>59.84</td><td>-20.15</td><td>39.53</td><td>0.13</td><td>0.03</td><td>QP</td></tr><tr><td>5@</td><td>0.408</td><td>39.92</td><td>47.68</td><td>-7.76</td><td>39.75</td><td>0.14</td><td>0.03</td><td>Average</td></tr><tr><td>6</td><td>0.408</td><td>45.85</td><td>57.68</td><td>-11.83</td><td>45.68</td><td>0.14</td><td>0.03</td><td>QP</td></tr><tr><td>7</td><td>0.624</td><td>31.30</td><td>46.00</td><td>-14.70</td><td>31.12</td><td>0.14</td><td>0.04</td><td>Average</td></tr><tr><td>8</td><td>0.624</td><td>38.10</td><td>56.00</td><td>-17.90</td><td>37.92</td><td>0.14</td><td>0.04</td><td>QP</td></tr><tr><td>9</td><td>1.426</td><td>27.73</td><td>46.00</td><td>-18.27</td><td>27.51</td><td>0.15</td><td>0.07</td><td>Average</td></tr><tr><td>10</td><td>1.426</td><td>36.35</td><td>56.00</td><td>-19.65</td><td>36.13</td><td>0.15</td><td>0.07</td><td>QP</td></tr><tr><td>11</td><td>4.926</td><td>33.29</td><td>46.00</td><td>-12.71</td><td>32.97</td><td>0.19</td><td>0.13</td><td>Average</td></tr><tr><td>12</td><td>4.926</td><td>41.30</td><td>56.00</td><td>-14.70</td><td>40.98</td><td>0.19</td><td>0.13</td><td>QP</td></tr></table> Note 1: Level (dBuV) = Read Level (dBuV) + LISN Factor (dB) + Cable Loss (dB). 2: Over Limit (dB) = Level (dBuV) – Limit Line (dBuV).					Freq	Level	Limit	Over	Read	LISN	cable			MHz	dBuV	Line	Limit	Level	factor	loss	Remark				dBuV	dB	dBuV	dB	dB		1	0.169	35.91	55.03	-19.12	35.77	0.12	0.02	Average	2	0.169	44.76	65.03	-20.27	44.62	0.12	0.02	QP	3	0.315	32.65	49.84	-17.19	32.49	0.13	0.03	Average	4	0.315	39.69	59.84	-20.15	39.53	0.13	0.03	QP	5@	0.408	39.92	47.68	-7.76	39.75	0.14	0.03	Average	6	0.408	45.85	57.68	-11.83	45.68	0.14	0.03	QP	7	0.624	31.30	46.00	-14.70	31.12	0.14	0.04	Average	8	0.624	38.10	56.00	-17.90	37.92	0.14	0.04	QP	9	1.426	27.73	46.00	-18.27	27.51	0.15	0.07	Average	10	1.426	36.35	56.00	-19.65	36.13	0.15	0.07	QP	11	4.926	33.29	46.00	-12.71	32.97	0.19	0.13	Average	12	4.926	41.30	56.00	-14.70	40.98	0.19	0.13	QP
	Freq	Level	Limit	Over	Read	LISN	cable																																																																																																																																			
	MHz	dBuV	Line	Limit	Level	factor	loss	Remark																																																																																																																																		
			dBuV	dB	dBuV	dB	dB																																																																																																																																			
1	0.169	35.91	55.03	-19.12	35.77	0.12	0.02	Average																																																																																																																																		
2	0.169	44.76	65.03	-20.27	44.62	0.12	0.02	QP																																																																																																																																		
3	0.315	32.65	49.84	-17.19	32.49	0.13	0.03	Average																																																																																																																																		
4	0.315	39.69	59.84	-20.15	39.53	0.13	0.03	QP																																																																																																																																		
5@	0.408	39.92	47.68	-7.76	39.75	0.14	0.03	Average																																																																																																																																		
6	0.408	45.85	57.68	-11.83	45.68	0.14	0.03	QP																																																																																																																																		
7	0.624	31.30	46.00	-14.70	31.12	0.14	0.04	Average																																																																																																																																		
8	0.624	38.10	56.00	-17.90	37.92	0.14	0.04	QP																																																																																																																																		
9	1.426	27.73	46.00	-18.27	27.51	0.15	0.07	Average																																																																																																																																		
10	1.426	36.35	56.00	-19.65	36.13	0.15	0.07	QP																																																																																																																																		
11	4.926	33.29	46.00	-12.71	32.97	0.19	0.13	Average																																																																																																																																		
12	4.926	41.30	56.00	-14.70	40.98	0.19	0.13	QP																																																																																																																																		

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



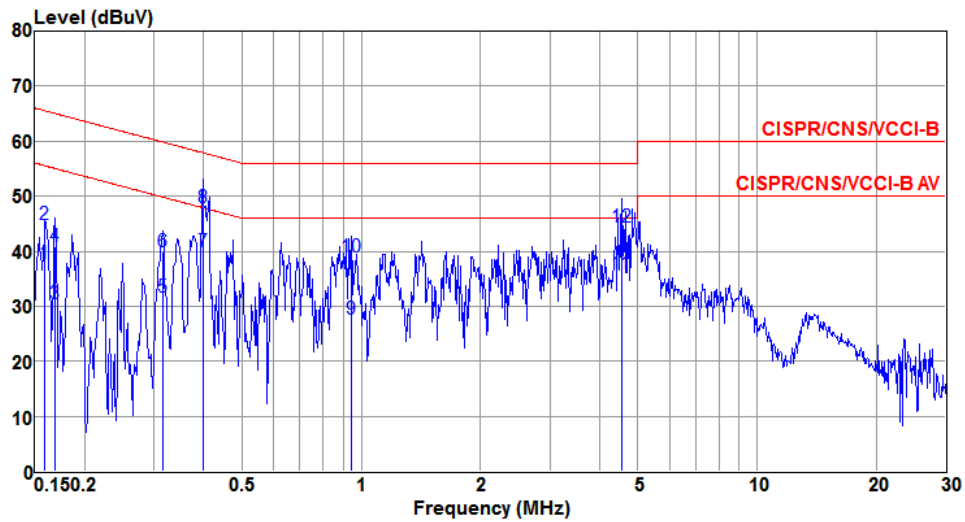
The graph displays the radio frequency interference level in dBuV across a frequency range from 0.150.2 MHz to 30 MHz. Two red lines represent the CISPR/CNS/VCCI-B and CISPR/CNS/VCCI-B AV limits. A blue line shows the measured level, which fluctuates significantly between 0.15 MHz and 5 MHz, then drops and remains relatively stable until 30 MHz. Several peaks are labeled with numbers 1 through 12.

	Freq MHz	Level dBuV	Limit Line dBuV	Over Limit dB	Read Level dBuV	LISN factor dB	cable loss dB	Remark
1	0.156	39.11	55.65	-16.54	38.98	0.11	0.02	Average
2	0.156	47.10	65.65	-18.55	46.97	0.11	0.02	QP
3	0.385	33.41	48.17	-14.76	33.25	0.13	0.03	Average
4	0.385	47.32	58.17	-10.85	47.16	0.13	0.03	QP
5@	0.400	41.17	47.86	-6.69	41.01	0.13	0.03	Average
6	0.400	49.02	57.86	-8.84	48.86	0.13	0.03	QP
7	0.621	34.85	46.00	-11.15	34.68	0.13	0.04	Average
8	0.621	42.37	56.00	-13.63	42.20	0.13	0.04	QP
9	1.129	32.45	46.00	-13.55	32.25	0.14	0.06	Average
10	1.129	41.24	56.00	-14.76	41.04	0.14	0.06	QP
11	4.598	38.86	46.00	-7.14	38.53	0.20	0.13	Average
12	4.598	47.97	56.00	-8.03	47.64	0.20	0.13	QP

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

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

Modulation	VHT20	Test Freq. (MHz)	5785
Power Phase	Neutral		



	Freq	Level	Limit	Over	Read	LISN	cable	
	MHz	dBuV	dBuV	Limit	Level	factor	loss	Remark
				dB	dBuV	dB	dB	
1	0.159	37.69	55.52	-17.83	37.55	0.12	0.02	Average
2	0.159	44.92	65.52	-20.60	44.78	0.12	0.02	QP
3	0.169	30.54	55.03	-24.49	30.40	0.12	0.02	Average
4	0.169	40.76	65.03	-24.27	40.62	0.12	0.02	QP
5	0.315	31.66	49.84	-18.18	31.50	0.13	0.03	Average
6	0.315	39.93	59.84	-19.91	39.77	0.13	0.03	QP
7@	0.398	40.00	47.90	-7.90	39.83	0.14	0.03	Average
8	0.398	47.87	57.90	-10.03	47.70	0.14	0.03	QP
9	0.943	27.69	46.00	-18.31	27.50	0.13	0.06	Average
10	0.943	38.93	56.00	-17.07	38.74	0.13	0.06	QP
11	4.549	35.80	46.00	-10.20	35.49	0.18	0.13	Average
12	4.549	44.34	56.00	-11.66	44.03	0.18	0.13	QP

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

3.2 Emission Bandwidth

3.2.1 Limit of Emission Bandwidth

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

3.2.2 Test Procedures

26dB Bandwidth

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

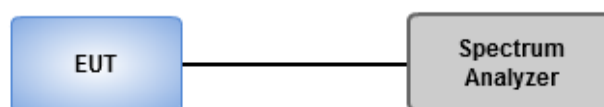
Occupied Bandwidth

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

6dB Bandwidth

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

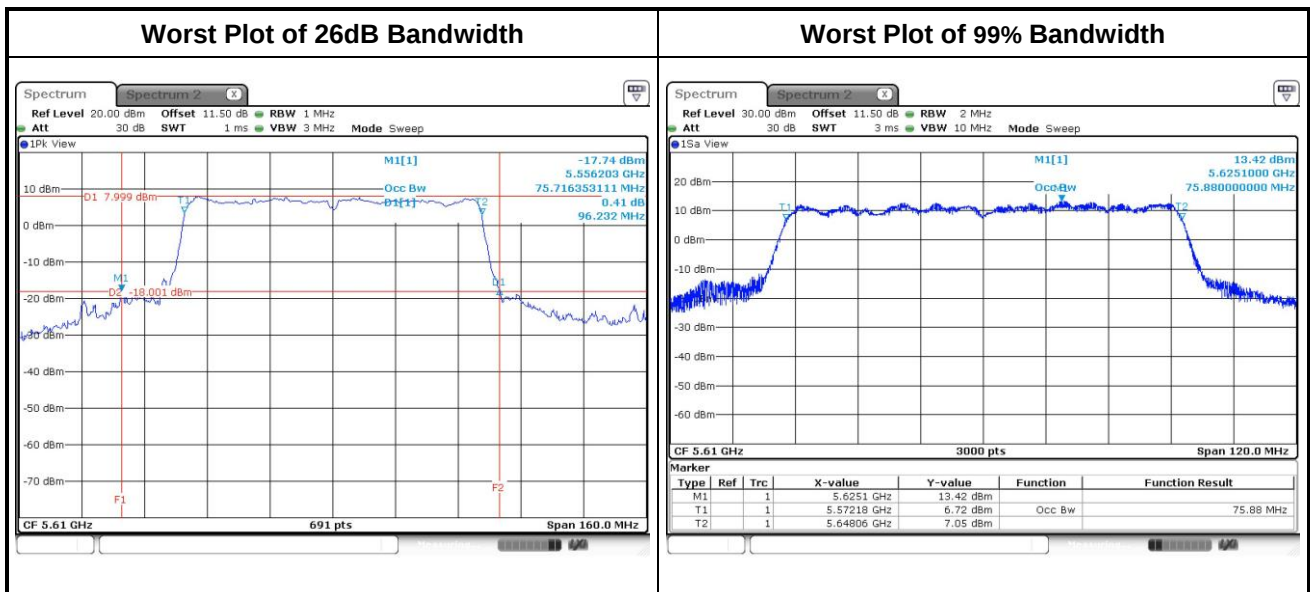
3.2.3 Test Setup



3.2.4 Test Result of Emission Bandwidth

Non-beamforming mode

For Frequency band 5470~5725 MHz											
Mode	N _{TX}	Freq. (MHz)	26dB Bandwidth (MHz)				99% Bandwidth (MHz)				Power Limit (dBm)
			Chain 0	Chain 1	Chain 2	Chain 3	Chain 0	Chain 1	Chain 2	Chain 3	
VHT40	4	5590	44.17	44.87	44.64	44.06	37.14	36.84	36.98	36.86	24.00
VHT80	4	5610	96.23	96.00	96.00	85.56	75.76	75.44	75.72	75.88	24.00

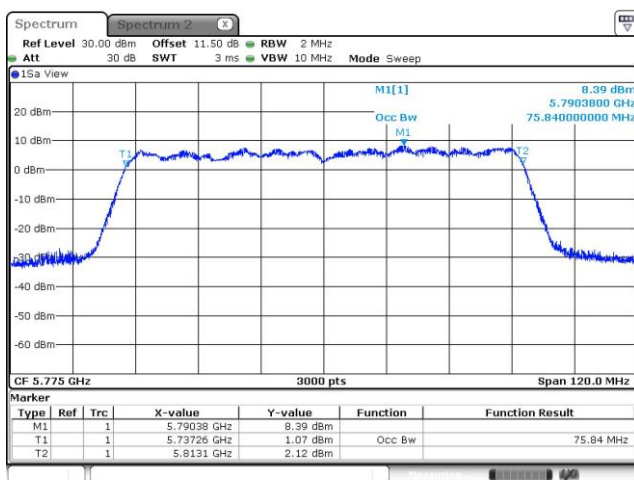


For Frequency band 5725-5850 MHz

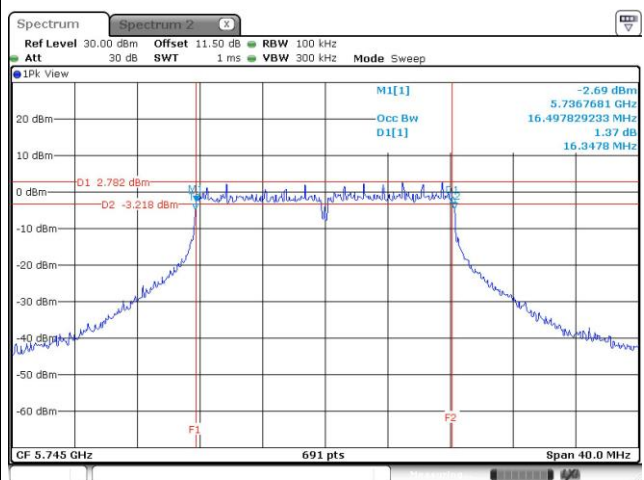
Emission Bandwidth

Mode	N _{TX}	Freq. (MHz)	OBW Bandwidth (MHz)				6dB Bandwidth (MHz)				6dB BW Limit (MHz)
			Chain 0	Chain 1	Chain 2	Chain 3	Chain 0	Chain 1	Chain 2	Chain 3	
11a	4	5745	16.91	17.03	16.97	16.94	16.35	16.35	16.35	16.41	0.5
11a	4	5785	16.94	17.04	17.01	16.95	16.35	16.35	16.35	16.41	0.5
11a	4	5825	16.93	17.01	16.99	16.95	16.41	16.41	16.41	16.41	0.5
VHT20	4	5745	16.91	17.03	16.99	16.94	17.62	17.62	17.62	17.68	0.5
VHT20	4	5785	16.94	17.05	17.00	16.95	17.57	17.57	17.57	17.68	0.5
VHT20	4	5825	16.94	17.04	16.98	16.94	17.57	17.57	17.57	17.57	0.5
VHT40	4	5755	37.08	36.84	37.02	36.82	36.40	36.40	36.40	36.17	0.5
VHT40	4	5795	37.28	37.04	37.08	36.92	36.40	36.40	36.40	36.40	0.5
VHT80	4	5775	75.68	75.40	75.64	75.84	75.13	75.13	75.13	75.13	0.5

Worst Plot of 99% Bandwidth



Worst Plot of 6dB Bandwidth



Beamforming mode

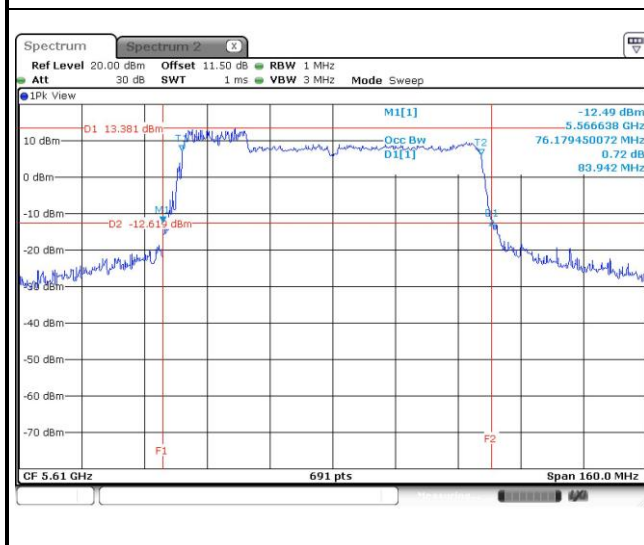
For Frequency band 5150~5250 MHz										
Emission Bandwidth										
Mode	N _{TX}	Freq. (MHz)	26dB Bandwidth (MHz)				99% Bandwidth (MHz)			
			Chain 0	Chain 1	Chain 2	Chain 3	Chain 0	Chain 1	Chain 2	Chain 3
VHT20	4	5180	25.97	26.26	25.68	25.79	18.60	18.49	18.46	18.47
VHT20	4	5200	26.20	25.80	25.62	25.91	18.42	18.59	18.47	18.52
VHT20	4	5240	25.97	25.97	25.80	25.86	18.47	18.47	18.47	18.53
VHT40	4	5190	44.06	44.75	44.17	44.75	37.10	37.12	37.04	37.08
VHT40	4	5230	44.99	43.59	43.13	44.64	37.18	37.20	37.12	37.16
VHT80	4	5210	81.62	80.93	82.09	80.70	76.44	76.40	76.36	75.68

For Frequency band 5250~5350 MHz											
Mode	N _{TX}	Freq. (MHz)	26dB Bandwidth (MHz)				99% Bandwidth (MHz)				Power Limit (dBm)
			Chain 0	Chain 1	Chain 2	Chain 3	Chain 0	Chain 1	Chain 2	Chain 3	
VHT20	4	5260	25.91	25.80	25.68	25.86	18.50	18.49	18.43	18.52	24.00
VHT20	4	5300	26.03	25.57	25.62	25.28	18.65	18.59	18.47	18.60	24.00
VHT20	4	5320	25.74	25.86	25.62	25.86	18.47	18.49	18.47	18.48	24.00
VHT40	4	5270	44.52	44.75	43.59	44.40	37.08	37.14	37.12	37.14	24.00
VHT40	4	5310	43.48	44.17	43.71	43.01	37.18	37.06	37.14	37.14	24.00
VHT80	4	5290	83.48	82.55	80.93	83.01	76.44	76.24	76.12	76.08	24.00

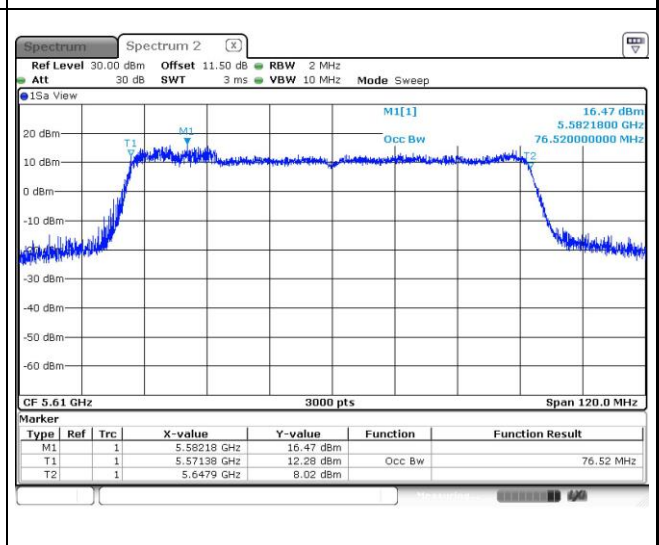
For Frequency band 5470~5725 MHz

Mode	N _{TX}	Freq. (MHz)	26dB Bandwidth (MHz)				99% Bandwidth (MHz)				Power Limit (dBm)
			Chain 0	Chain 1	Chain 2	Chain 3	Chain 0	Chain 1	Chain 2	Chain 3	
VHT20	4	5500	25.74	25.74	25.74	25.74	18.66	18.48	18.39	18.44	24.00
VHT20	4	5580	25.74	25.91	25.74	25.39	18.43	18.47	18.49	18.46	24.00
VHT20	4	5700	25.68	25.57	25.68	25.97	18.46	18.46	18.45	18.46	24.00
VHT40	4	5510	43.94	44.52	44.75	44.52	37.16	37.12	37.14	37.20	24.00
VHT40	4	5590	44.75	44.52	44.64	44.41	37.14	37.06	37.14	37.04	24.00
VHT40	4	5670	44.99	44.41	44.87	44.87	37.18	37.24	37.10	37.18	24.00
VHT80	4	5530	80.93	82.55	83.71	82.32	76.48	76.36	76.36	76.52	24.00
VHT80	4	5610	82.09	83.25	82.09	83.94	76.36	76.36	76.40	76.52	24.00

Worst Plot of 26dB Bandwidth



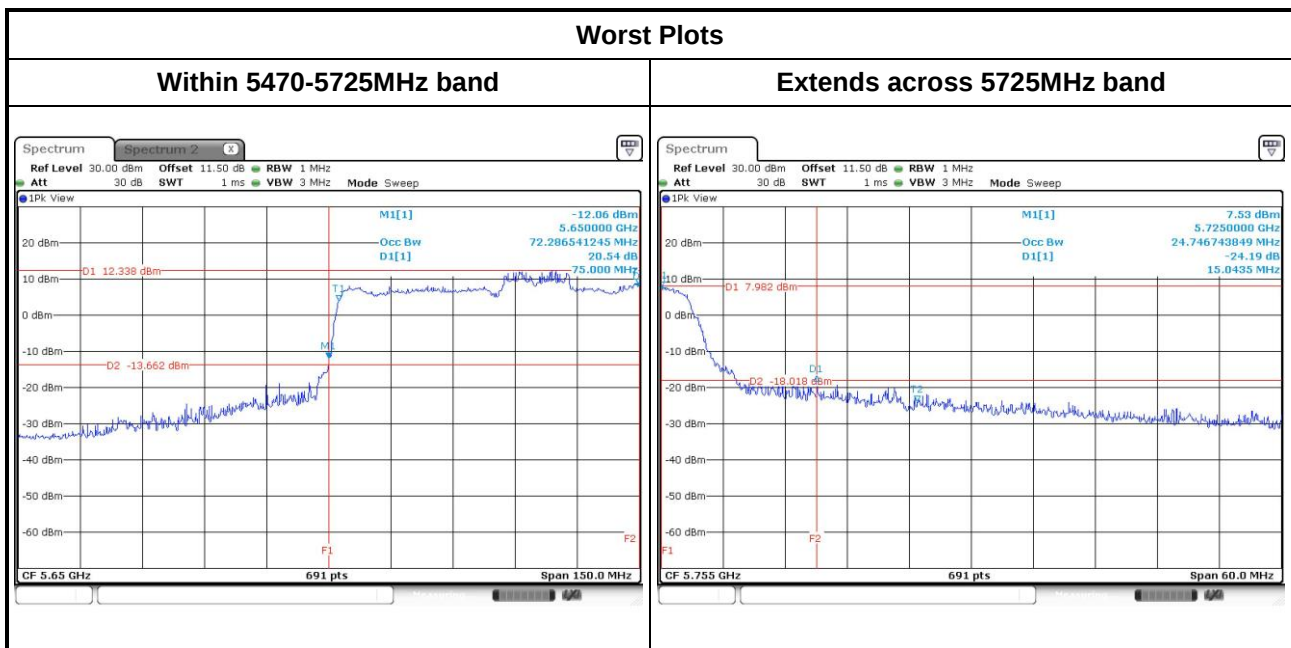
Worst Plot of 99% Bandwidth



Channel that extends across the 5.725 GHz boundary

UNII Emission Bandwidth Result (Within 5470-5725MHz band)											
Mode	N _{TX}	Freq. (MHz)	26dB Bandwidth (MHz)				99% Bandwidth (MHz)				Power Limit (dBm)
			Chain 0	Chain 1	Chain 2	Chain 3	Chain 0	Chain 1	Chain 2	Chain 3	
VHT20	4	5720	18.54	17.99	18.36	18.05	14.27	14.23	14.22	14.27	23.55
VHT40	4	5710	37.44	37.64	37.64	37.23	33.61	33.61	33.65	33.59	24.00
VHT80	4	5690	74.78	75.00	75.00	75.00	72.70	72.66	72.66	72.62	24.00

UNII Emission Bandwidth Result (Extends across 5725MHz band)											
Mode	N _{TX}	Freq. (MHz)	26dB Bandwidth (MHz)				99% Bandwidth (MHz)				Power Limit (dBm)
			Chain 0	Chain 1	Chain 2	Chain 3	Chain 0	Chain 1	Chain 2	Chain 3	
VHT20	4	5720	7.67	7.76	7.98	7.83	4.22	4.23	4.24	4.26	
VHT40	4	5710	12.70	12.52	12.52	9.68	3.49	3.49	3.55	3.57	
VHT80	4	5690	15.04	7.30	12.70	7.57	2.78	2.70	2.78	2.82	

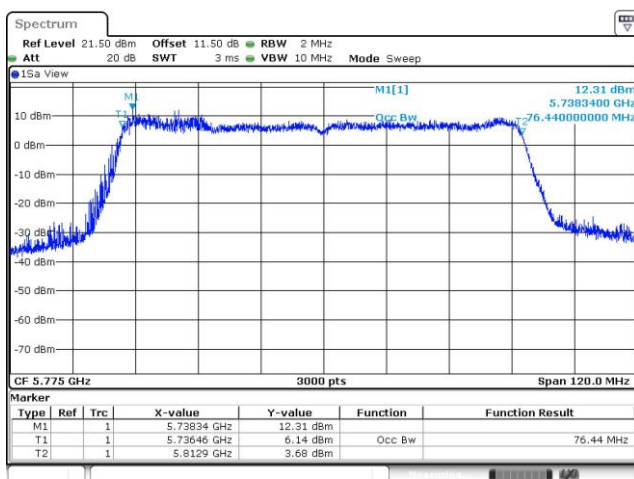


For Frequency band 5725-5850 MHz

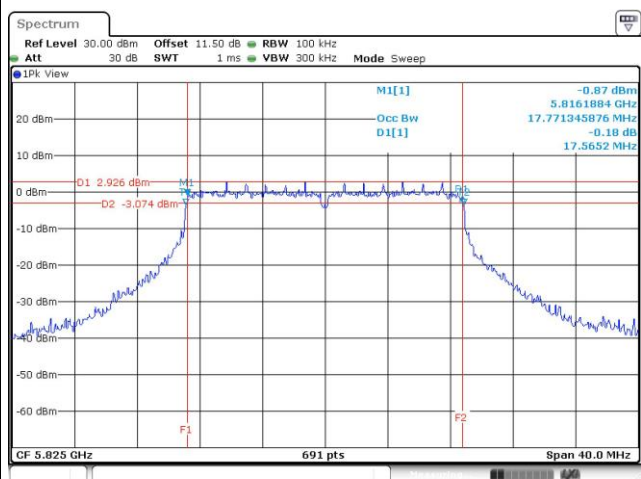
Emission Bandwidth

Mode	N _{TX}	Freq. (MHz)	OBW Bandwidth (MHz)				6dB Bandwidth (MHz)				6dB BW Limit (MHz)
			Chain 0	Chain 1	Chain 2	Chain 3	Chain 0	Chain 1	Chain 2	Chain 3	
VHT20	4	5745	18.45	18.47	18.45	18.44	17.62	17.62	17.62	17.62	0.5
VHT20	4	5785	18.77	18.67	18.65	18.54	17.68	17.62	17.57	17.62	0.5
VHT20	4	5825	18.44	18.51	18.53	18.45	17.57	17.57	17.62	17.57	0.5
VHT40	4	5755	37.10	37.14	37.12	37.12	36.17	36.17	35.83	36.52	0.5
VHT40	4	5795	37.24	37.22	37.22	37.26	35.83	36.17	35.94	36.52	0.5
VHT80	4	5775	76.36	76.40	76.28	76.44	74.90	73.28	73.28	74.67	0.5

Worst Plot of 99% Bandwidth



Worst Plot of 6dB Bandwidth



3.3 RF Output Power

3.3.1 Limit of RF Output Power

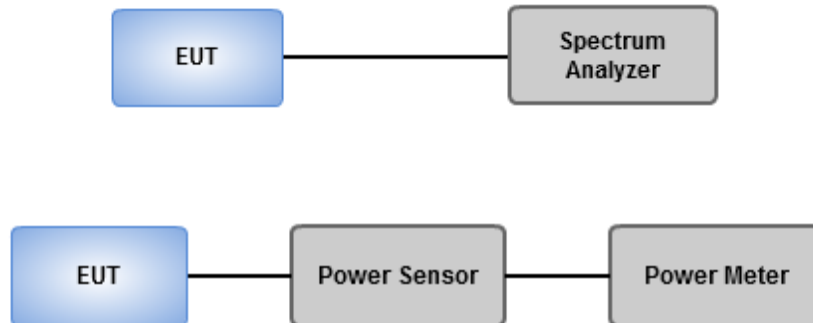
Frequency band 5150-5250 MHz		
Operating Mode		Limit
☐	Outdoor access point	Conducted Power: 1 W The maximum e.i.r.p. at any elevation angle above 30 degrees as measured from the horizon must not exceed 125 mW (21 dBm)
☒	Indoor access point	Conducted Power: 1 W
☐	Fixed point-to-point access points	Conducted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

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

3.3.2 Test Procedures

- ☒ Power meter (For channel that does not extends across the 5.725 GHz boundary)
 - ☒ Measurements is performed using a wideband gated RF power meter provided that the gate parameters are adjusted such that the power is measured only when the EUT is transmitting at its maximum power control level. Since the measurement is made only during the ON time of the transmitter, no duty cycle correction factor is required
- ☒ Spectrum analyzer (For channel that extends across the 5.725 GHz boundary)
 1. Set RBW=1MHz, VBW=3MHz , Sweep time= Auto, Detector = RMS
 2. Trace average at least 100 traces in power averaging mode
 3. Compute power by integrating the spectrum across the 26 dB EBW

3.3.3 Test Setup



3.3.4 Test Result of Maximum Conducted Output Power

Non-beamforming mode

For Frequency band 5470~5725 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			
HT40	4	5590	17.55	17.41	17.28	17.51	221.786	23.46	24.00
VHT40	4	5590	17.62	17.45	17.32	17.60	224.895	23.52	24.00
VHT80	4	5610	16.92	16.93	17.26	17.12	203.255	23.08	24.00

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	15.12	14.58	15.42	14.56	124.626	20.96	30.00
11a	4	5785	15.84	15.65	16.05	15.75	152.954	21.85	30.00
11a	4	5825	14.75	14.58	14.72	14.47	116.200	20.65	30.00
HT20	4	5745	15.12	15.03	15.36	15.04	130.622	21.16	30.00
HT20	4	5785	18.01	17.86	18.12	17.65	247.409	23.93	30.00
HT20	4	5825	17.75	17.62	17.95	17.68	238.363	23.77	30.00
HT40	4	5755	14.46	14.21	14.45	13.62	105.164	20.22	30.00
HT40	4	5795	18.03	18.01	17.96	17.81	249.686	23.97	30.00
VHT20	4	5745	15.24	15.06	15.51	15.11	133.479	21.25	30.00
VHT20	4	5785	18.05	17.91	18.30	17.74	252.666	24.03	30.00
VHT20	4	5825	17.85	17.79	18.04	17.80	245.007	23.89	30.00
VHT40	4	5755	14.52	14.29	14.51	13.76	107.185	20.30	30.00
VHT40	4	5795	18.12	18.06	18.07	17.83	253.632	24.04	30.00
VHT80	4	5775	13.05	12.78	13.09	12.70	78.142	18.93	30.00

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			
VHT20	4	5180	8.02	8.28	7.42	8.72	26.037	14.16	29.98
VHT20	4	5200	7.65	7.31	7.33	8.75	24.110	13.82	29.98
VHT20	4	5240	8.56	8.08	7.82	8.84	27.314	14.36	29.98
VHT40	4	5190	9.58	9.49	10.08	9.98	38.110	15.81	29.98
VHT40	4	5230	9.77	9.07	9.86	9.81	36.811	15.66	29.98
VHT80	4	5210	10.12	8.65	9.34	9.85	35.859	15.55	29.98

Note:

- Correlated antenna gain is 6.02dBi > 6 dBi.
Limit shall be reduced to 30 dBm – (6.02 dBi – 6 dBi) = 29.98 dBm.

For Frequency band 5250~5350 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			
VHT20	4	5260	16.32	16.14	15.32	16.19	159.602	22.03	23.98
VHT20	4	5300	16.02	16.14	15.44	15.81	154.211	21.88	23.98
VHT20	4	5320	15.96	15.98	15.62	15.92	154.633	21.89	23.98
VHT40	4	5270	16.62	15.78	16.55	16.52	173.824	22.40	23.98
VHT40	4	5310	13.85	13.54	13.84	13.69	94.459	19.75	23.98
VHT80	4	5290	10.88	9.45	10.16	10.92	43.791	16.41	23.98

Note:

- Correlated antenna gain is 6.02dBi > 6 dBi.
Limit shall be reduced to 24 dBm – (6.02 dBi – 6 dBi) = 23.98 dBm.

For Frequency band 5470~5725 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			
VHT20	4	5500	15.12	15.24	15.11	15.02	130.131	21.14	23.98
VHT20	4	5580	15.11	15.34	15.52	15.64	138.921	21.43	23.98
VHT20	4	5700	14.30	14.26	14.37	14.05	106.346	20.27	23.98
VHT40	4	5510	12.10	11.71	12.32	11.92	63.664	18.04	23.98
VHT40	4	5590	17.05	17.24	17.16	17.14	207.426	23.17	23.98
VHT40	4	5670	15.98	15.74	16.33	16.49	164.644	22.17	23.98
VHT80	4	5530	10.75	10.02	10.25	10.59	43.979	16.43	23.98
VHT80	4	5610	17.21	16.89	16.82	17.61	207.228	23.16	23.98

Note:

- Correlated antenna gain is 6.02dBi > 6 dBi.
- Limit shall be reduced to 24 dBm – (6.02 dBi – 6 dBi) = 23.98 dBm.

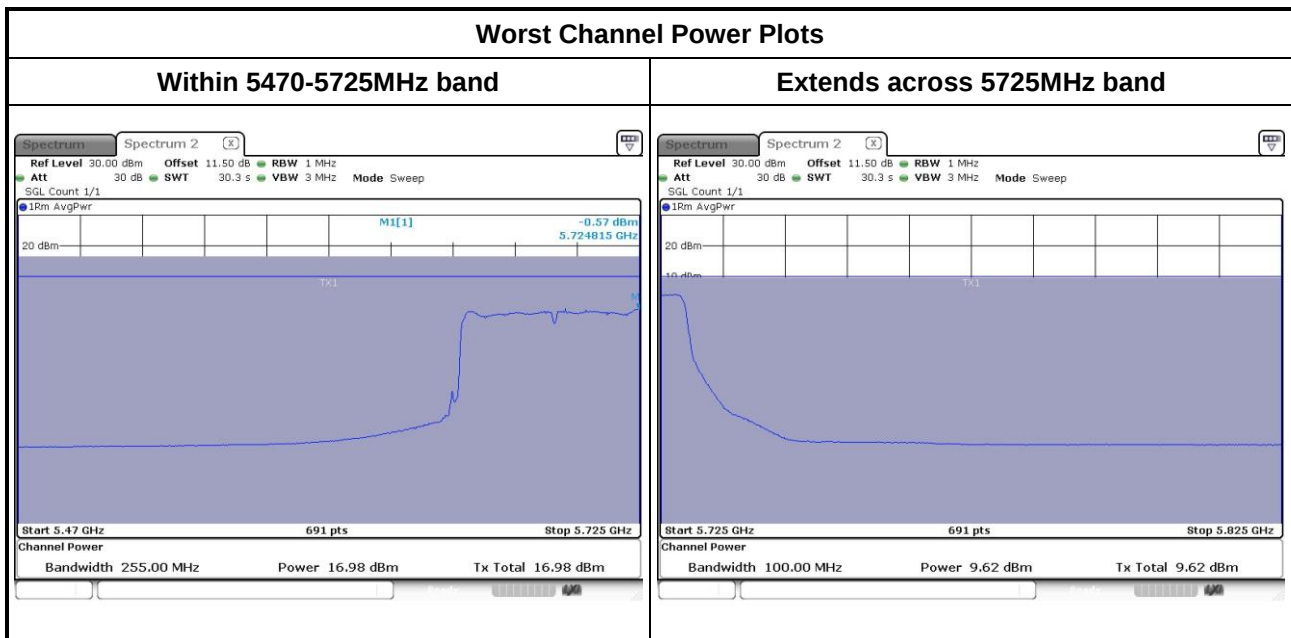
Channel that extends across the 5.725 GHz boundary

Maximum Conducted Output Power (Within 5470-5725MHz band)											
Mode	N _{TX}	Freq. (MHz)	Conducted Power without duty factor					Duty factor (dB)	Total Power (mW)	Total Power (dBm)	Limit (dBm)
			Chain 0	Chain 1	Chain 2	Chain 3	Total Power (dBm)				
VHT20	4	5720	15.02	14.62	15.08	14.63	20.86	0.19	127.449	21.05	23.53
VHT40	4	5710	16.74	16.49	16.57	16.18	22.52	0.20	187.082	22.72	23.98
VHT80	4	5690	16.59	16.40	16.98	16.83	22.73	0.13	193.031	22.86	23.98

Note: Correlated antenna gain is 6.02dBi > 6 dBi. Limit shall be reduced 0.02 dB.

Maximum Conducted Output Power (Extends across 5725MHz band)											
Mode	N _{TX}	Freq. (MHz)	Conducted Power without duty factor					Duty factor (dB)	Total Power (mW)	Total Power (dBm)	Limit (dBm)
			Chain 0	Chain 1	Chain 2	Chain 3	Total Power (dBm)				
VHT20	4	5720	9.52	9.23	9.62	9.14	15.40	0.19	36.246	15.59	29.88
VHT40	4	5710	6.98	6.70	6.76	6.63	12.79	0.20	19.907	12.99	29.88
VHT80	4	5690	2.90	2.83	3.36	3.51	9.18	0.13	8.532	9.31	29.88

Note: Correlated antenna gain is 6.12dBi > 6 dBi. Limit shall be reduced to 30 dBm – (6.12 dBi – 6 dBi) = 29.88 dBm.



Note: Above plots are without duty factor.

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			
VHT20	4	5745	14.28	13.16	14.52	13.58	98.610	19.94	29.88
VHT20	4	5785	17.50	18.25	17.82	18.15	248.916	23.96	29.88
VHT20	4	5825	15.32	14.83	14.78	15.62	130.986	21.17	29.88
VHT40	4	5755	12.80	12.04	12.68	12.96	73.355	18.65	29.88
VHT40	4	5795	17.85	16.95	17.57	16.64	213.778	23.30	29.88
VHT80	4	5775	12.58	12.39	12.95	12.82	74.318	18.71	29.88

Note:

- Correlated antenna gain is 6.12dBi > 6 dBi.
Limit shall be reduced to 30 dBm – (6.12 dBi – 6 dBi) = 29.88 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
☐	Mobile and portable client devices	11 dBm / MHz

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

3.4.2 Test Procedures

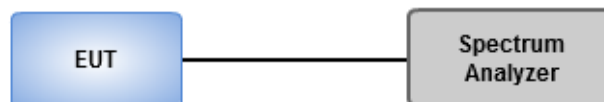
For 5150~5250 MHz, 5250~5350 MHz, 5470~5725 MHz

- ☒ Method SA-1 (For non-beamforming 11ac 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 (For non-beamforming 11ac VHT80, Beamforming: all modes)
 1. Set RBW = 1 MHz, VBW = 3 MHz, Detector = RMS.
 2. Set sweep time $\geq 10 * (\text{number of points in sweep}) * (\text{total on/off period of the transmitted signal})$.
 3. Perform a single sweep.
 4. Use the peak marker function to determine the maximum amplitude level.
 5. Add $10 \log(1/x)$, where x is the duty cycle.

For 5725~5850 MHz

- ☒ Method SA-1 (For non-beamforming 11a / 11ac 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 (For non-beamforming 11ac VHT80 , Beamforming: all modes)
 1. Set RBW = 500 kHz, VBW = 2 MHz, Detector = RMS.
 2. Set sweep time $\geq 10 * (\text{number of points in sweep}) * (\text{total on/off period of the transmitted signal})$.
 3. Perform a single sweep.
 4. Use the peak marker function to determine the maximum amplitude level.
 5. Add $10 \log(1/x)$, where x is the duty cycle.

3.4.3 Test Setup



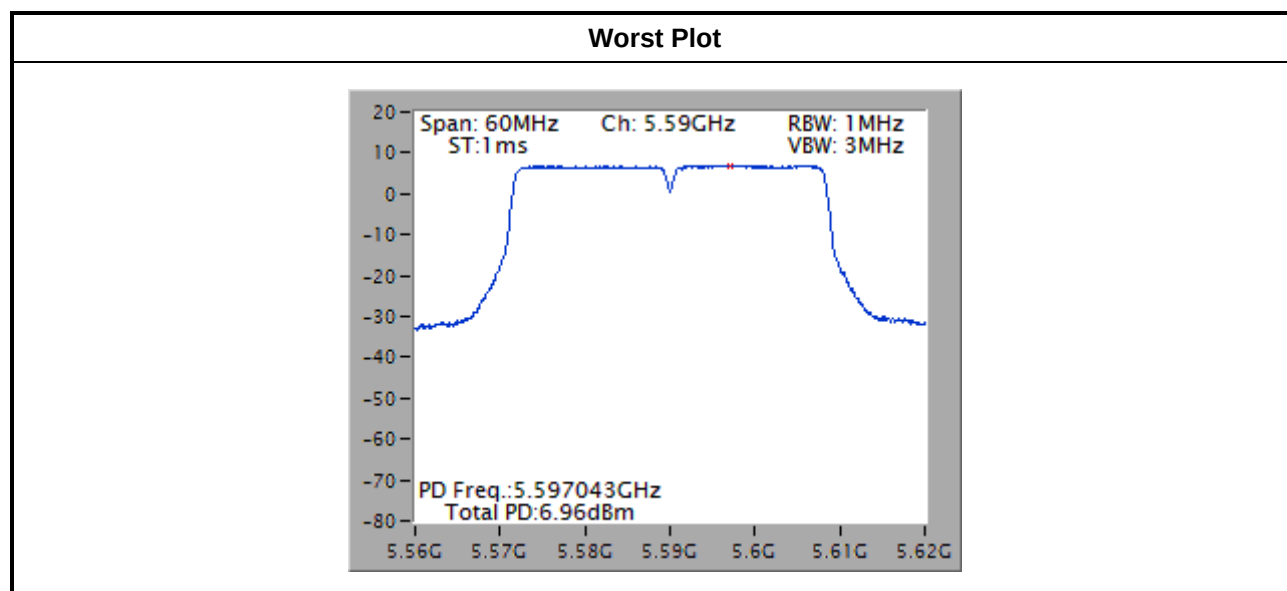
3.4.4 Test Result of Peak Power Spectral Density

Non-beamforming mode

Frequency band			5470~5725 MHz			
Condition			Peak Power Spectral Density (dBm/MHz)			
Mode	N _{TX}	Freq. (MHz)	PPSD w/o D.F (dBm/MHz)	Duty Factor (dB)	PPSD with D.F (dBm/MHz)	PPSD Limit (dBm/MHz)
VHT40	4	5590	6.96	0.00	6.96	10.98
VHT80	4	5690	4.07	0.21	4.28	10.98

Note:

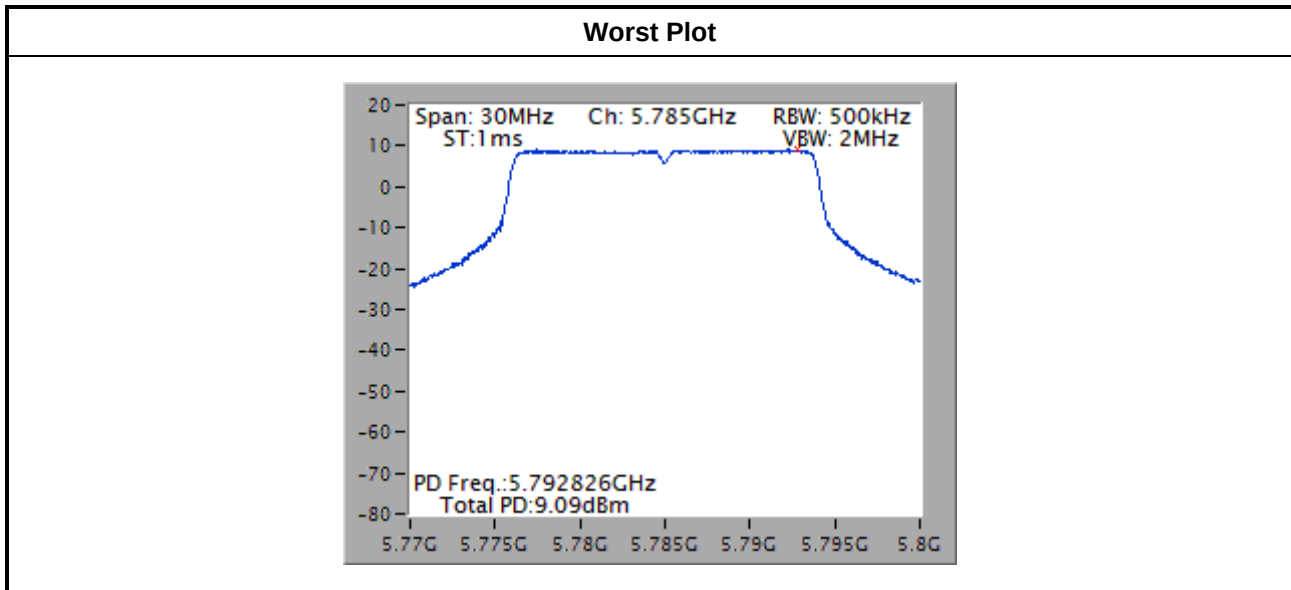
1. D.F is duty factor.
2. Test result is bin-by-bin summing measured value of each TX port.
3. Correlated antenna gain is 6.02dBi > 6 dBi.
Limit shall be reduced to 11 dBm – (6.02 dBi – 6 dBi) = 10.98 dBm



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	6.24	0.00	6.24	29.88
11a	4	5785	7.10	0.00	7.10	29.88
11a	4	5825	5.89	0.00	5.89	29.88
VHT20	4	5745	6.36	0.00	6.36	29.88
VHT20	4	5785	9.09	0.00	9.09	29.88
VHT20	4	5825	8.79	0.00	8.79	29.88
VHT40	4	5755	2.31	0.00	2.31	29.88
VHT40	4	5795	6.19	0.00	6.19	29.88
VHT80	4	5775	-1.66	0.21	-1.45	29.88

Note:

1. D.F is duty factor.
2. Test result is bin-by-bin summing measured value of each TX port.
3. Correlated antenna gain is 6.12dBi > 6 dBi.
Limit shall be reduced to 30 dBm – (6.12 dBi – 6 dBi) = 29.88 dBm



Beamforming mode

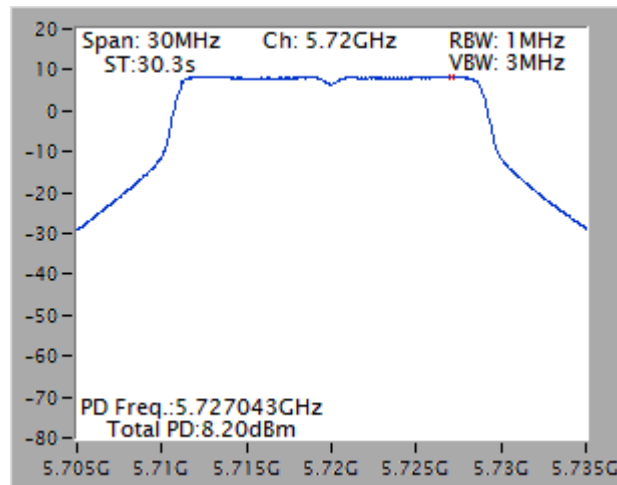
Frequency band			5150~5250 MHz / 5250~5350 MHz			
Condition			Peak Power Spectral Density (dBm/MHz)			
Mode	N _{TX}	Freq. (MHz)	PPSD w/o D.F (dBm/MHz)	Duty Factor (dB)	PPSD with D.F (dBm/MHz)	PPSD Limit (dBm/MHz)
VHT20	4	5180	-0.36	0.19	-0.17	16.98
VHT20	4	5200	-0.43	0.19	-0.24	16.98
VHT20	4	5240	-0.67	0.19	-0.48	16.98
VHT40	4	5190	-1.58	0.20	-1.38	16.98
VHT40	4	5230	-1.72	0.20	-1.52	16.98
VHT80	4	5210	-3.85	0.13	-3.72	16.98
VHT20	4	5260	8.04	0.19	8.23	10.98
VHT20	4	5300	8.11	0.19	8.30	10.98
VHT20	4	5320	7.86	0.19	8.05	10.98
VHT40	4	5270	5.21	0.20	5.41	10.98
VHT40	4	5310	2.95	0.20	3.15	10.98
VHT80	4	5290	-2.73	0.13	-2.60	10.98

Frequency band			5470~5725 MHz			
Condition			Peak Power Spectral Density (dBm/MHz)			
Mode	N _{TX}	Freq. (MHz)	PPSD w/o D.F (dBm/MHz)	Duty Factor (dB)	PPSD with D.F (dBm/MHz)	PPSD Limit (dBm/MHz)
VHT20	4	5500	7.61	0.19	7.80	10.98
VHT20	4	5580	7.53	0.19	7.72	10.98
VHT20	4	5700	6.42	0.19	6.61	10.98
VHT20	4	5720	8.20	0.19	8.39	10.98
VHT40	4	5510	1.17	0.20	1.37	10.98
VHT40	4	5590	6.68	0.20	6.88	10.98
VHT40	4	5670	5.27	0.20	5.47	10.98
VHT40	4	5710	1.04	0.20	1.24	10.98
VHT80	4	5530	-2.26	0.13	-2.13	10.98
VHT80	4	5610	4.60	0.13	4.73	10.98
VHT80	4	5690	4.08	0.13	4.21	10.98

Note:

1. D.F is duty factor.
2. Test result is bin-by-bin summing measured value of each TX port.
3. Correlated antenna gain for 5150~5350MHz is 6.02dBi > 6 dBi.
 For 5150~5250MHz, limit shall be reduced to 17 dBm – (6.02 dBi – 6 dBi) = 16.98 dBm.
 For 5250~5350MHz, and 5470~5725MHz, limit shall be reduced to 11 dBm – (6.02 dBi – 6 dBi) = 10.98 dBm.

Worst Plot

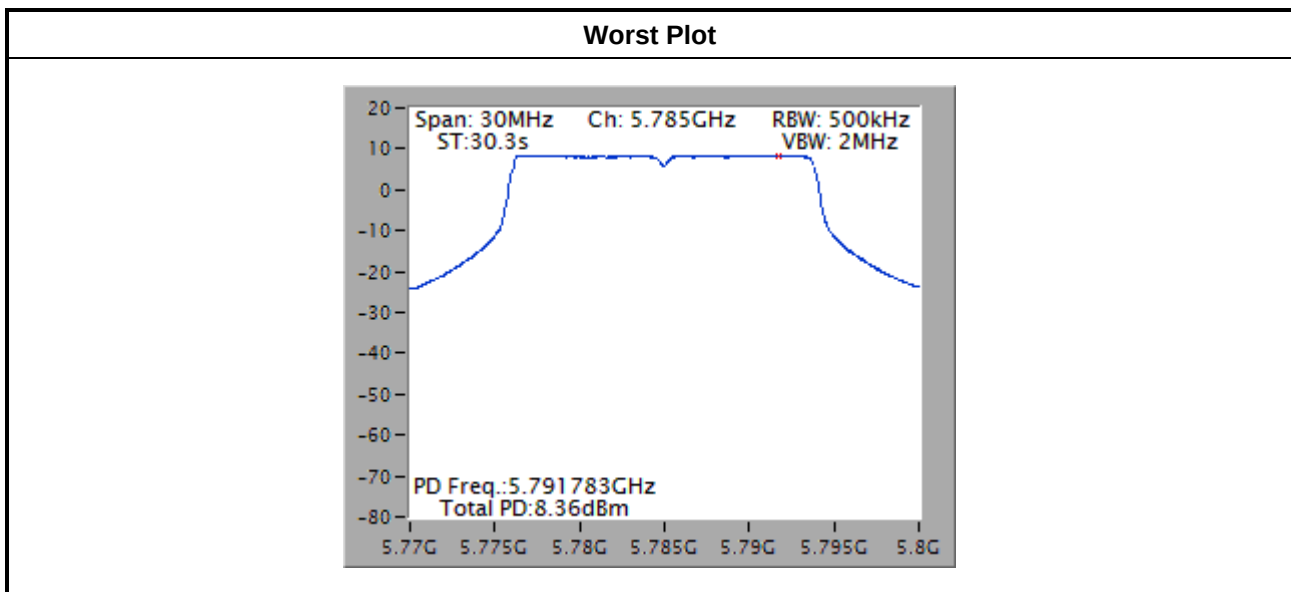


Note: Power density plot without duty factor.

For Frequency band 5725-5850 MHz						
Condition			Peak Power Spectral Density (dBm/500kHz)			
Modulation Mode	N _{TX}	Freq. (MHz)	PPSD w/o D.F (dBm/500kHz)	Duty Factor (dB)	PPSD with D.F (dBm/500kHz)	PPSD Limit (dBm/500kHz)
VHT20	4	5745	4.77	0.19	4.96	29.88
VHT20	4	5785	8.36	0.19	8.55	29.88
VHT20	4	5825	5.54	0.19	5.73	29.88
VHT40	4	5755	0.54	0.20	0.74	29.88
VHT40	4	5795	4.61	0.20	4.81	29.88
VHT80	4	5775	-1.43	0.13	-1.30	29.88

Note:

1. D.F is duty factor.
2. Test result is bin-by-bin summing measured value of each TX port.
3. Correlated antenna gain for 5725~5850MHz is 6.12dBi > 6 dBi.
Limit shall be reduced to 30 dBm – (6.12 dBi – 6 dBi) = 29.88 dBm



Note: Power density plot without duty factor.

3.5 Transmitter Radiated and Band Edge Emissions

3.5.1 Limit of Transmitter Radiated and Band Edge Emissions

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

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

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

Un-restricted band emissions above 1GHz Limit	
Operating Band	Limit
5.15 - 5.25 GHz 5.25 - 5.35 GHz 5.47 - 5.725 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

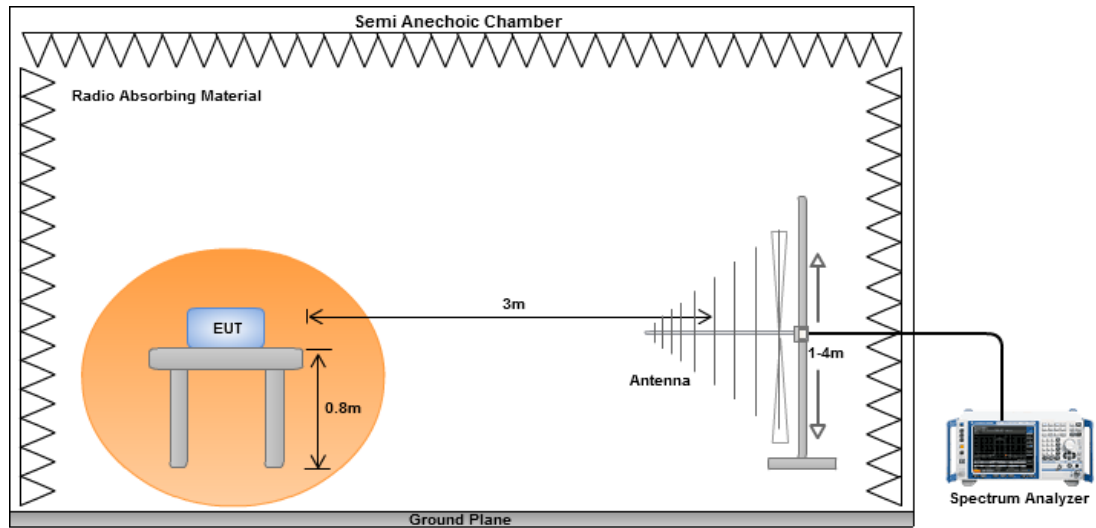
1. Measurement is made at a semi-anechoic chamber that incorporates a turntable allowing a EUT rotation of 360° . A continuously-rotating, remotely-controlled turntable is installed at the test site to support the EUT and facilitate determination of the direction of maximum radiation for each EUT emission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

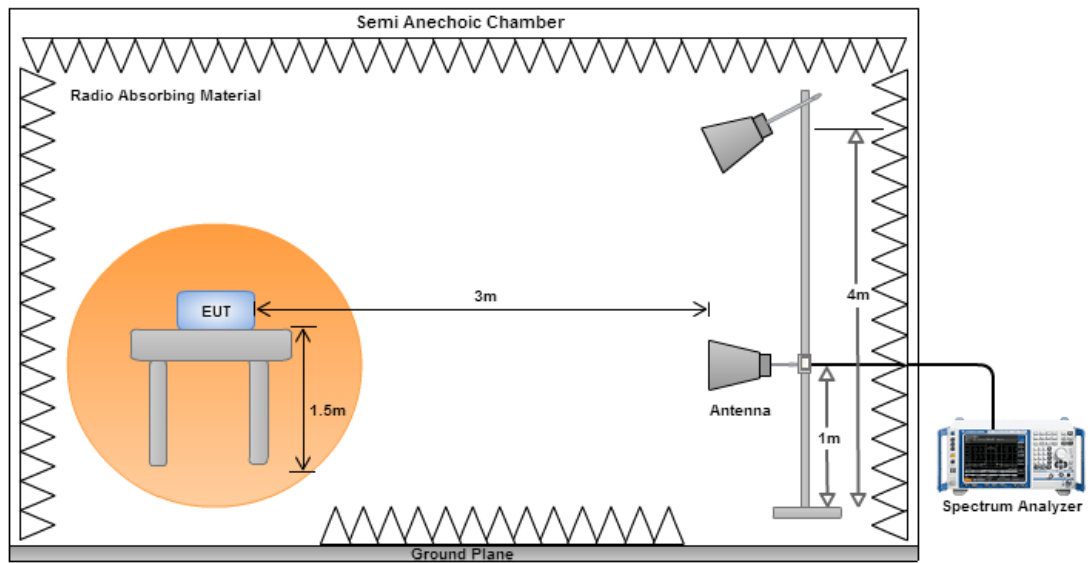
1. 120kHz measurement bandwidth of test receiver and Quasi-peak detector is for radiated emission below 1GHz.
2. RBW=1MHz, VBW=3MHz and Peak detector is for peak measured value of radiated emission above 1GHz.
3. RBW=1MHz, VBW=1/T and Peak detector is for average measured value of radiated emission above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

3.5.3 Test Setup

Radiated Emissions below 1 GHz

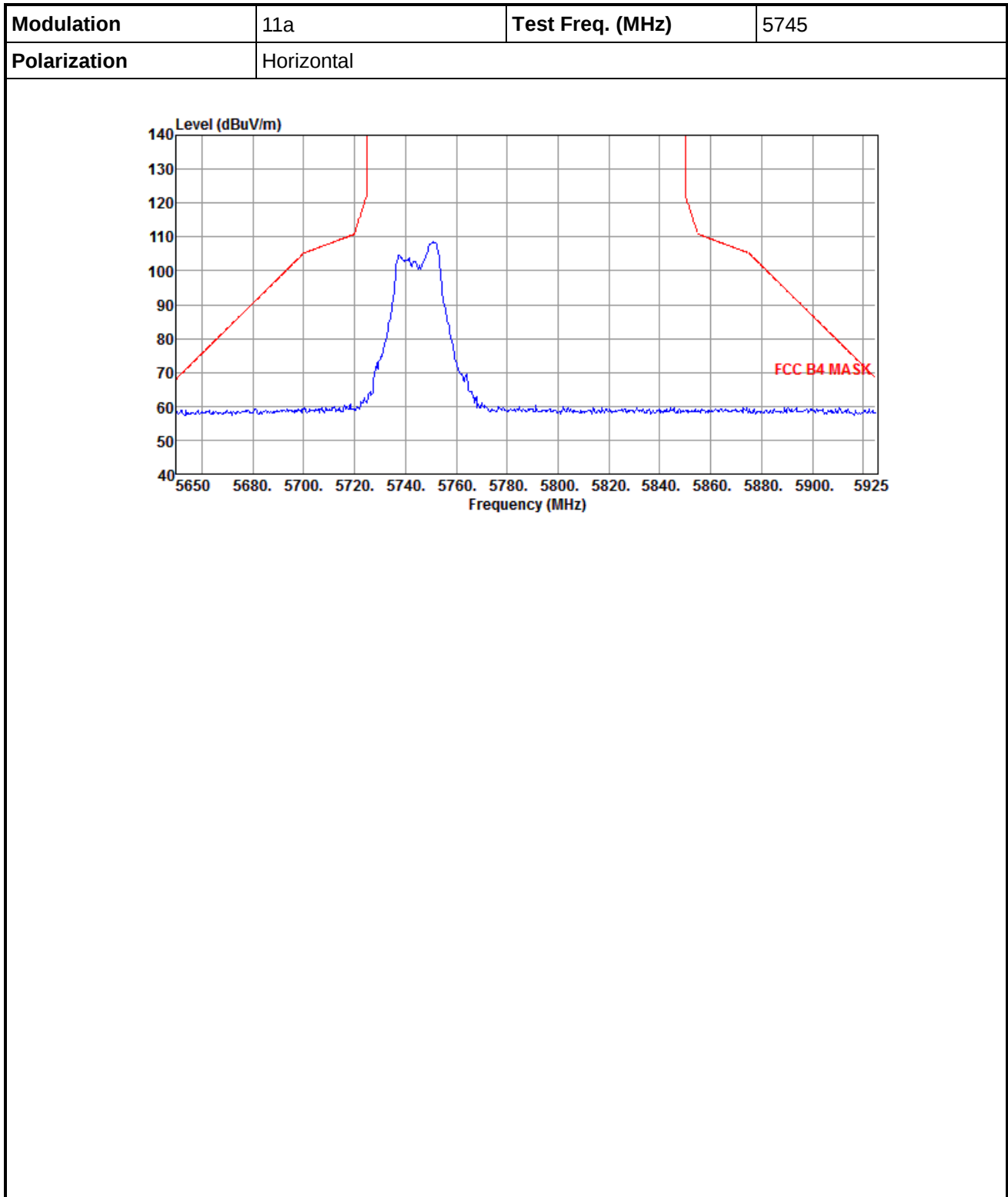


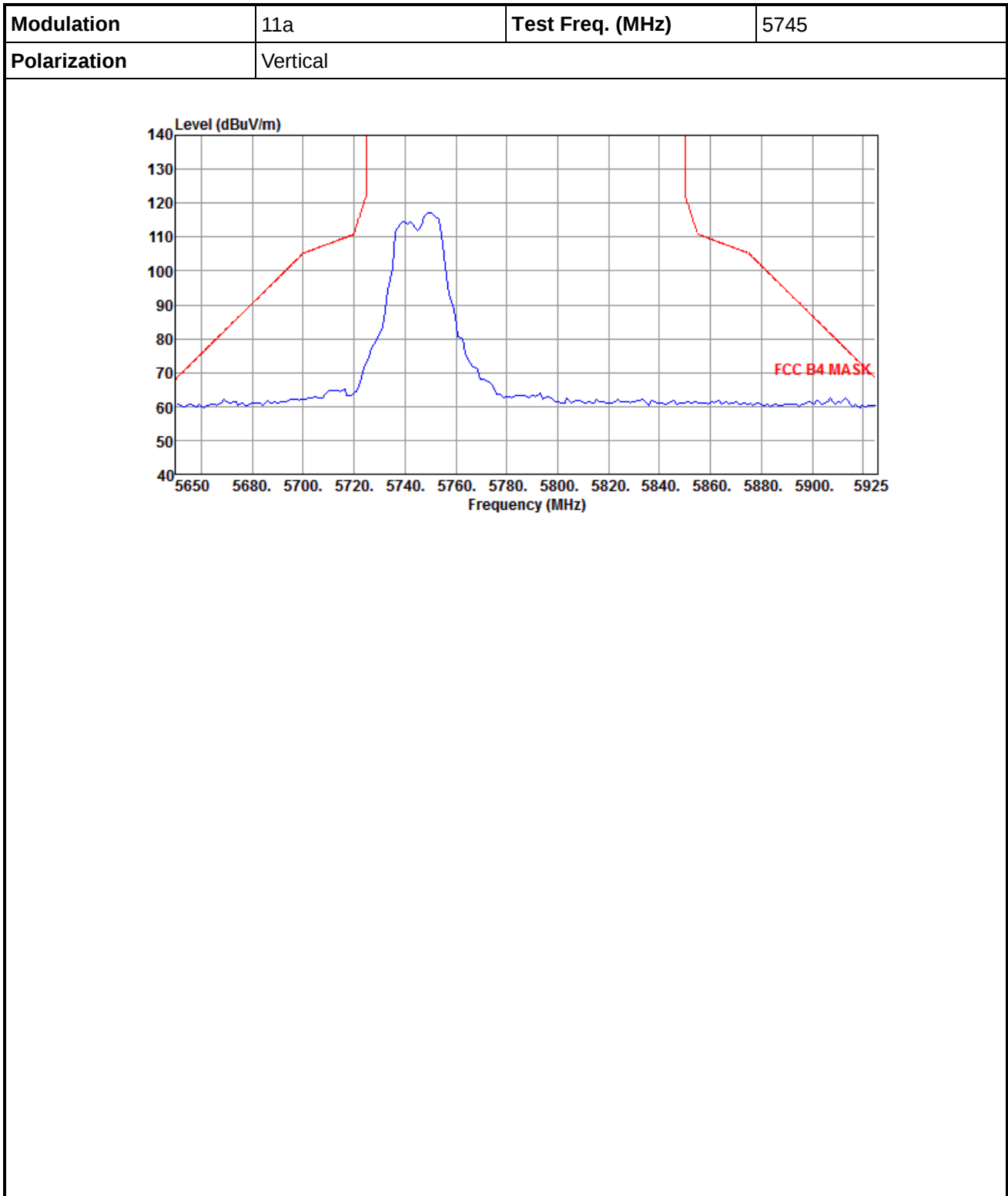
Radiated Emissions above 1 GHz

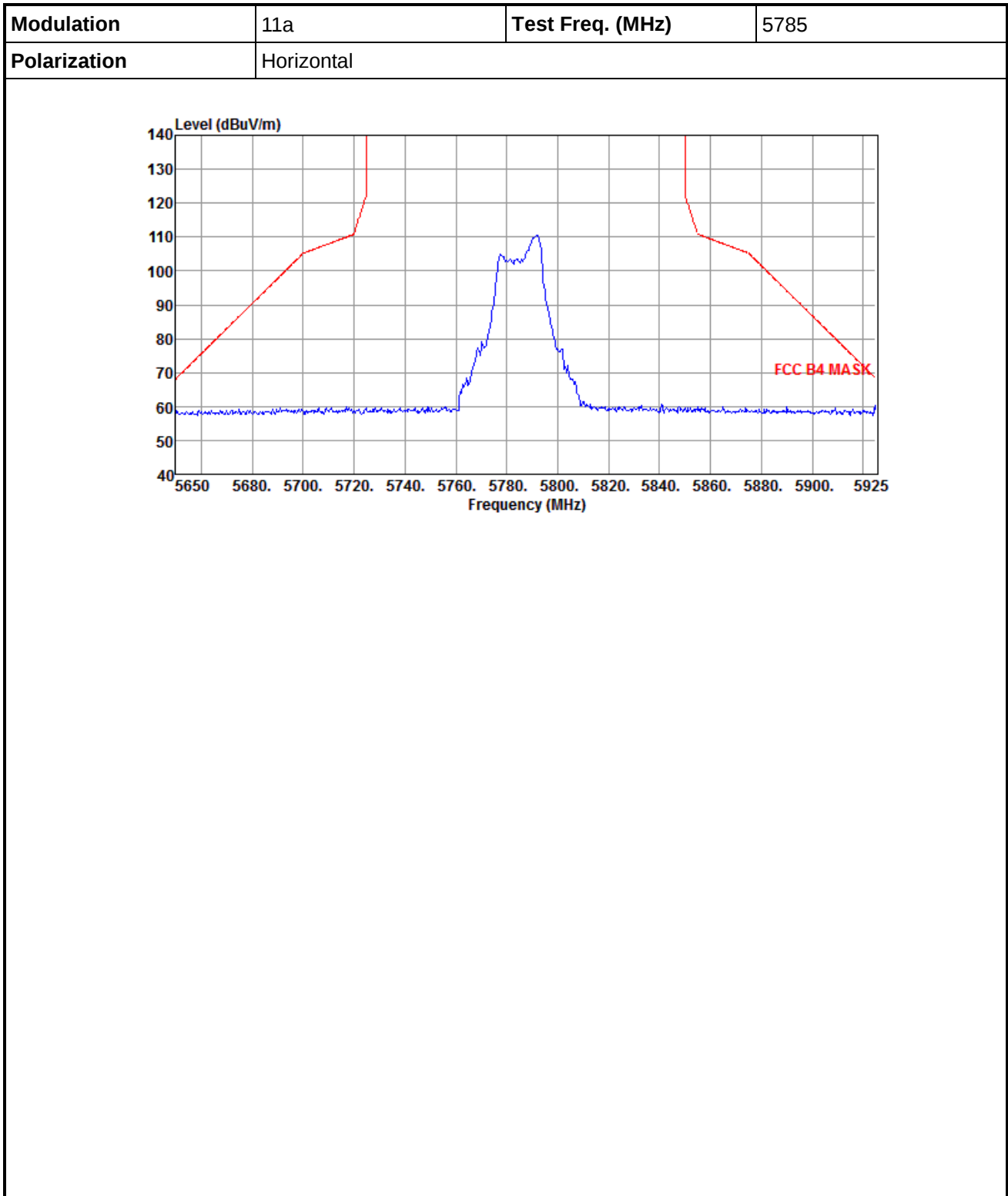


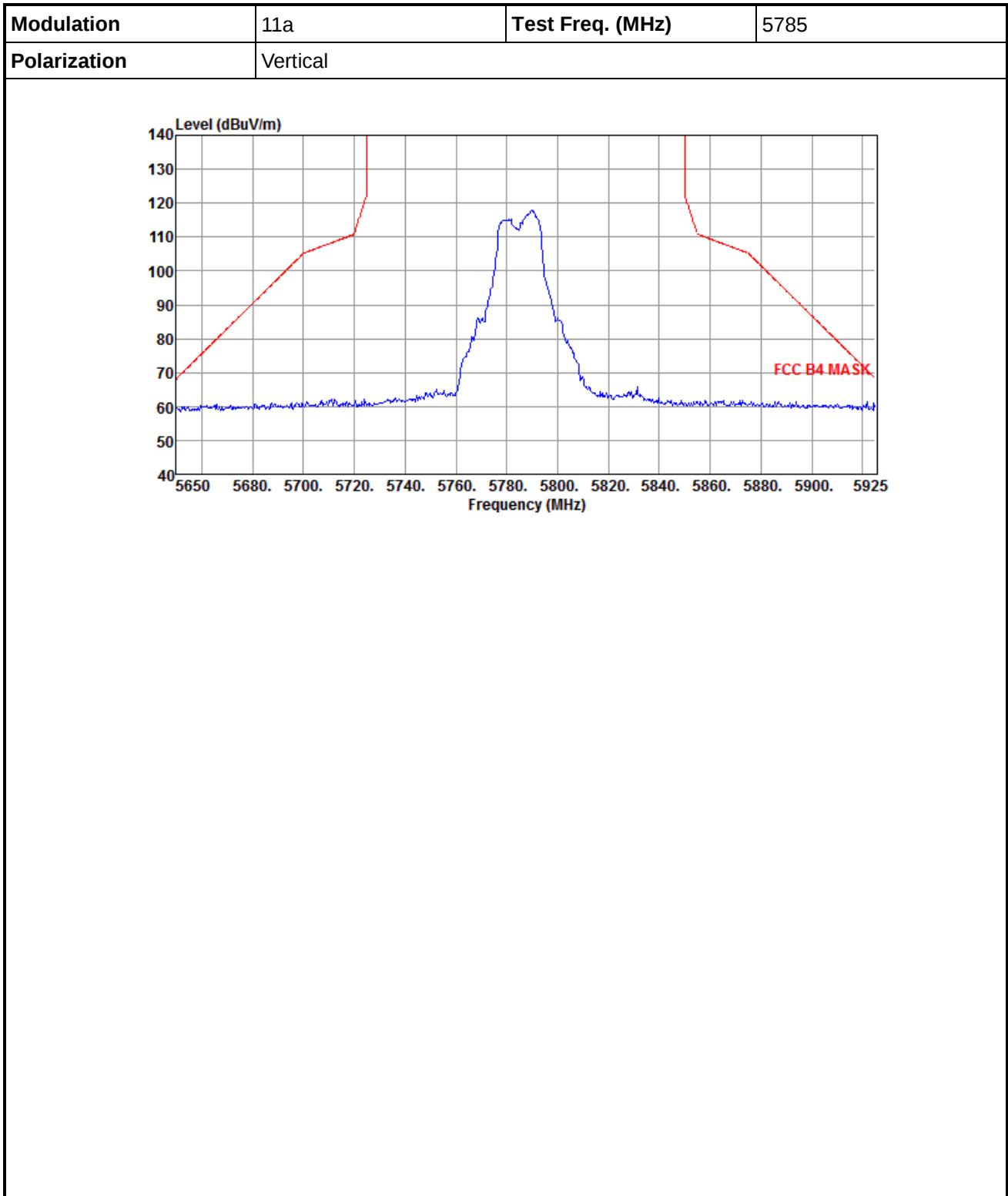
Non- beamforming mode

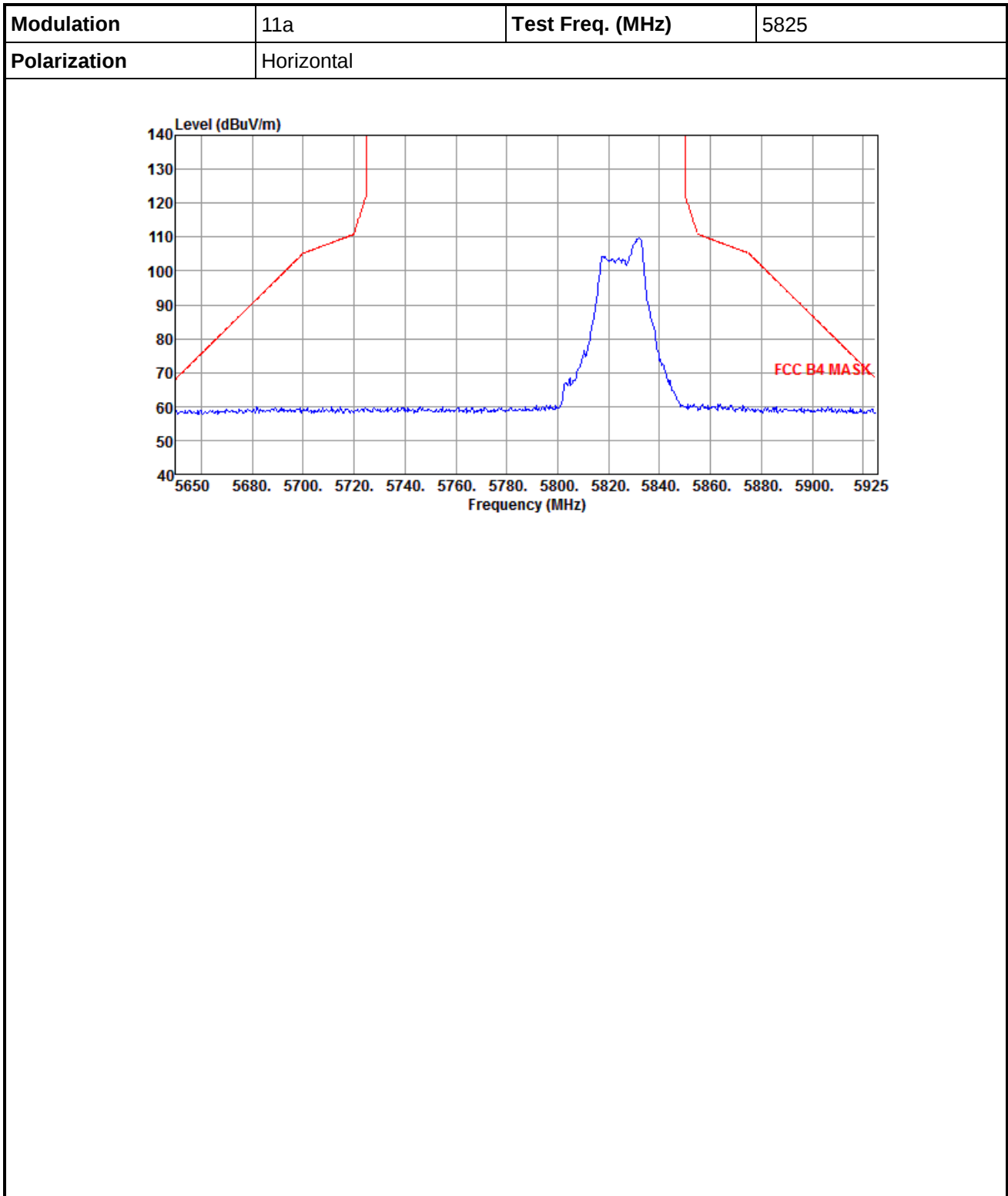
3.5.4 Transmitter Radiated Band Edge for 11a

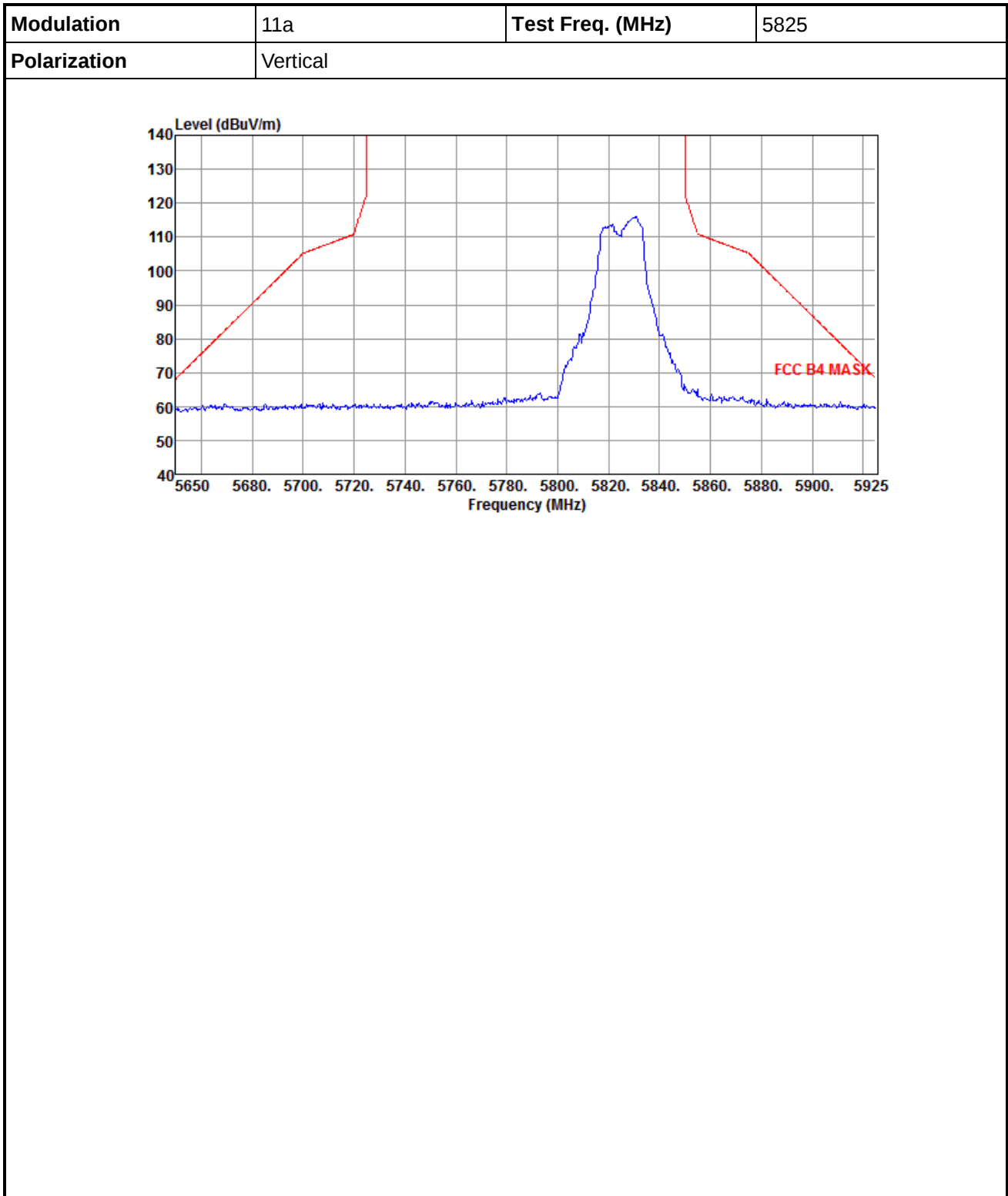




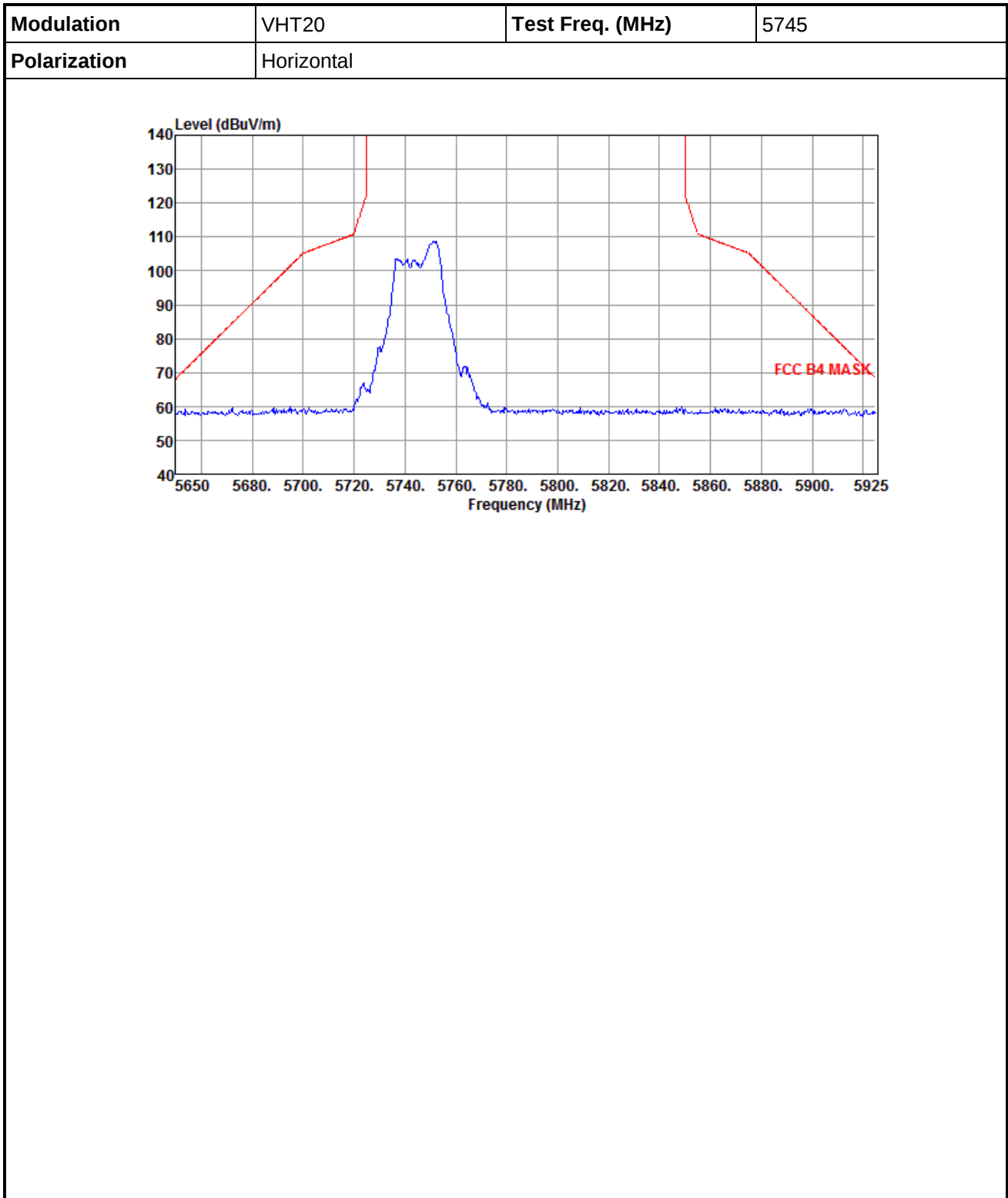


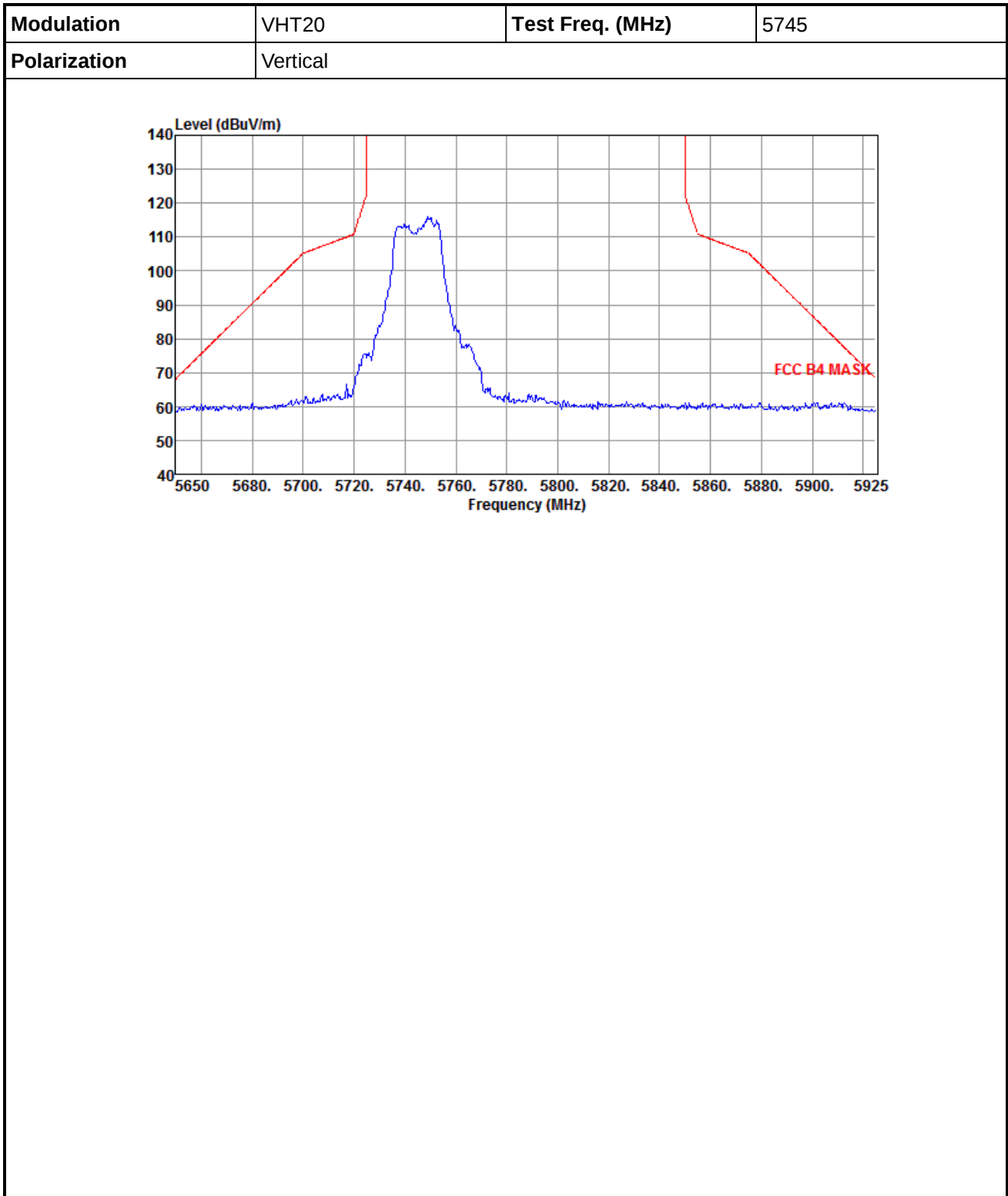


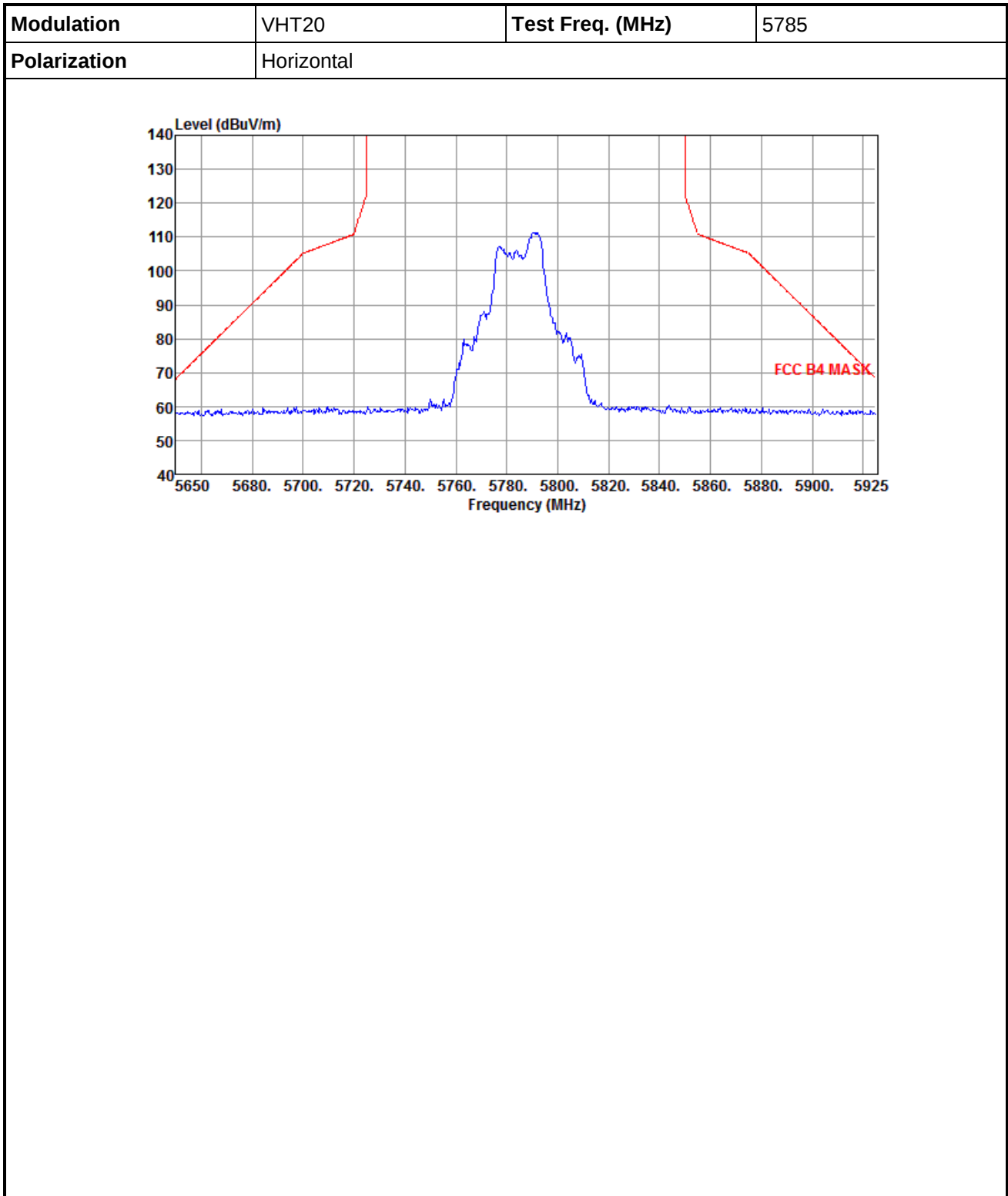


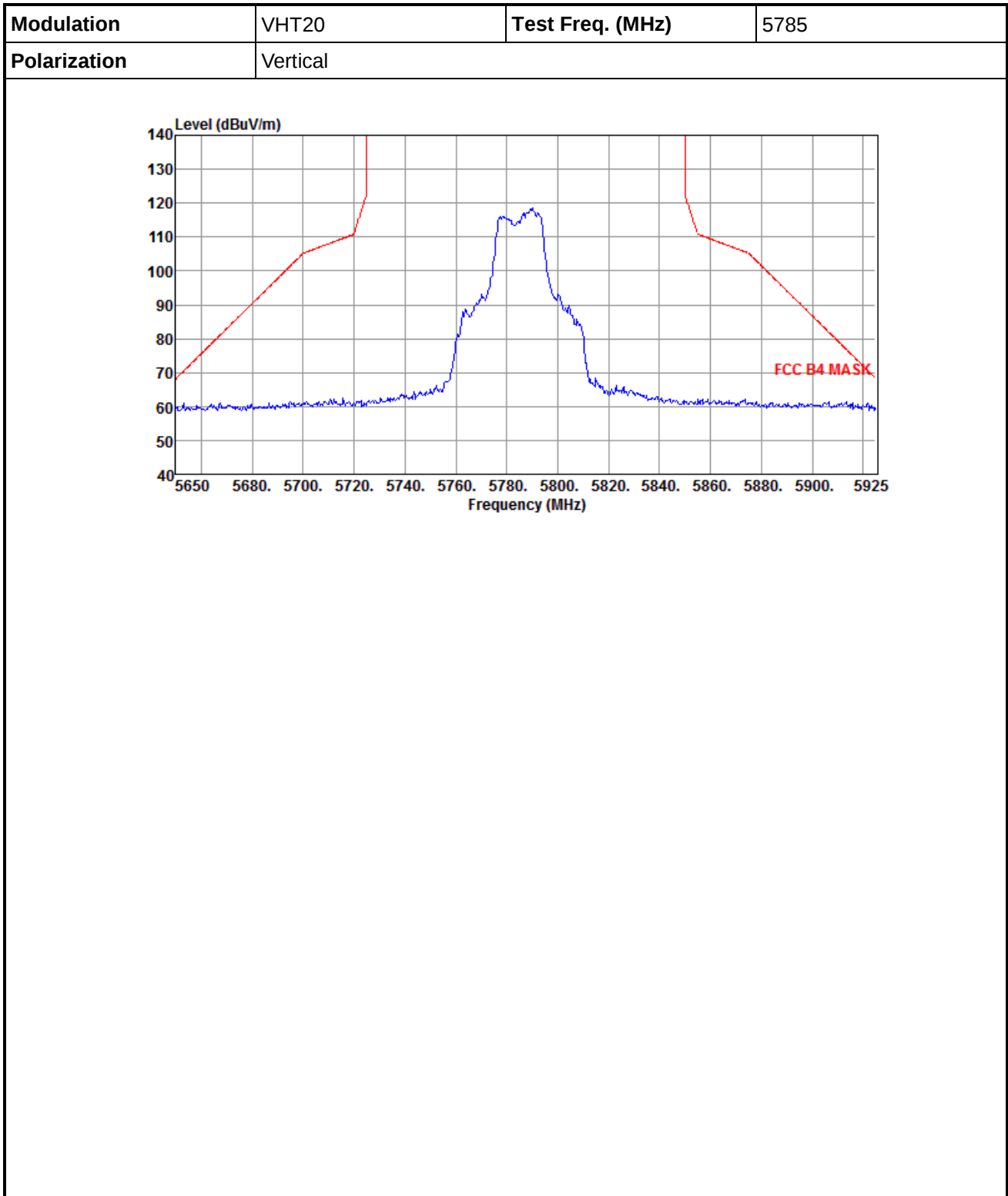


3.5.5 Transmitter Radiated Band Edge for VHT20

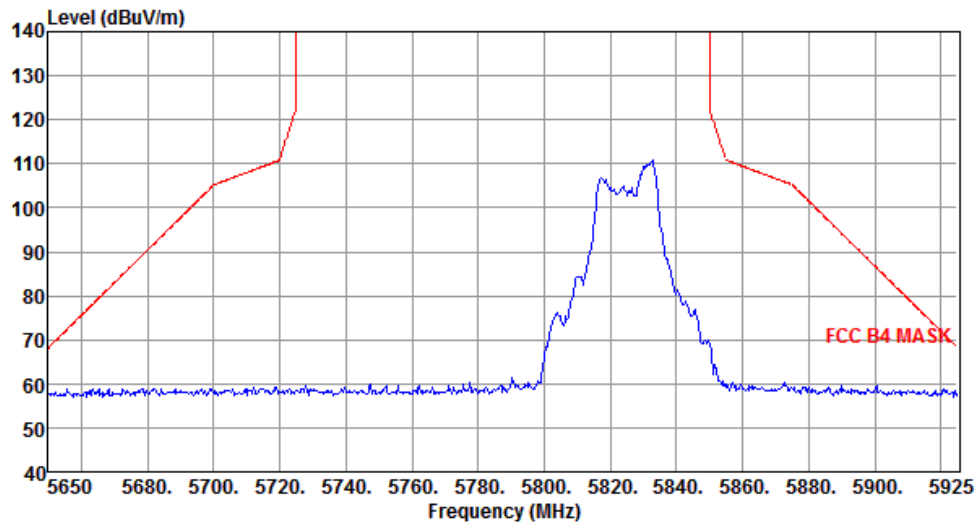


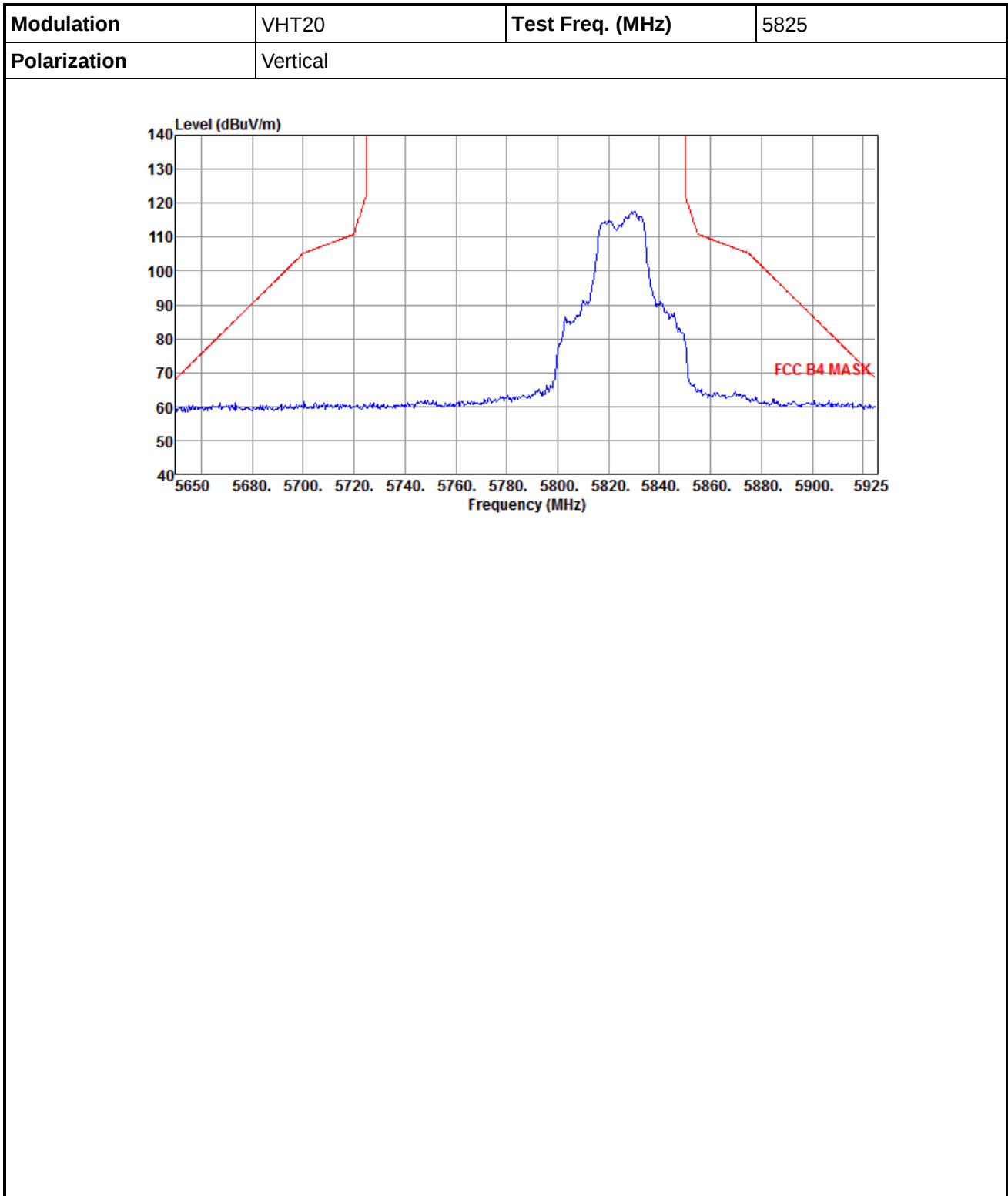




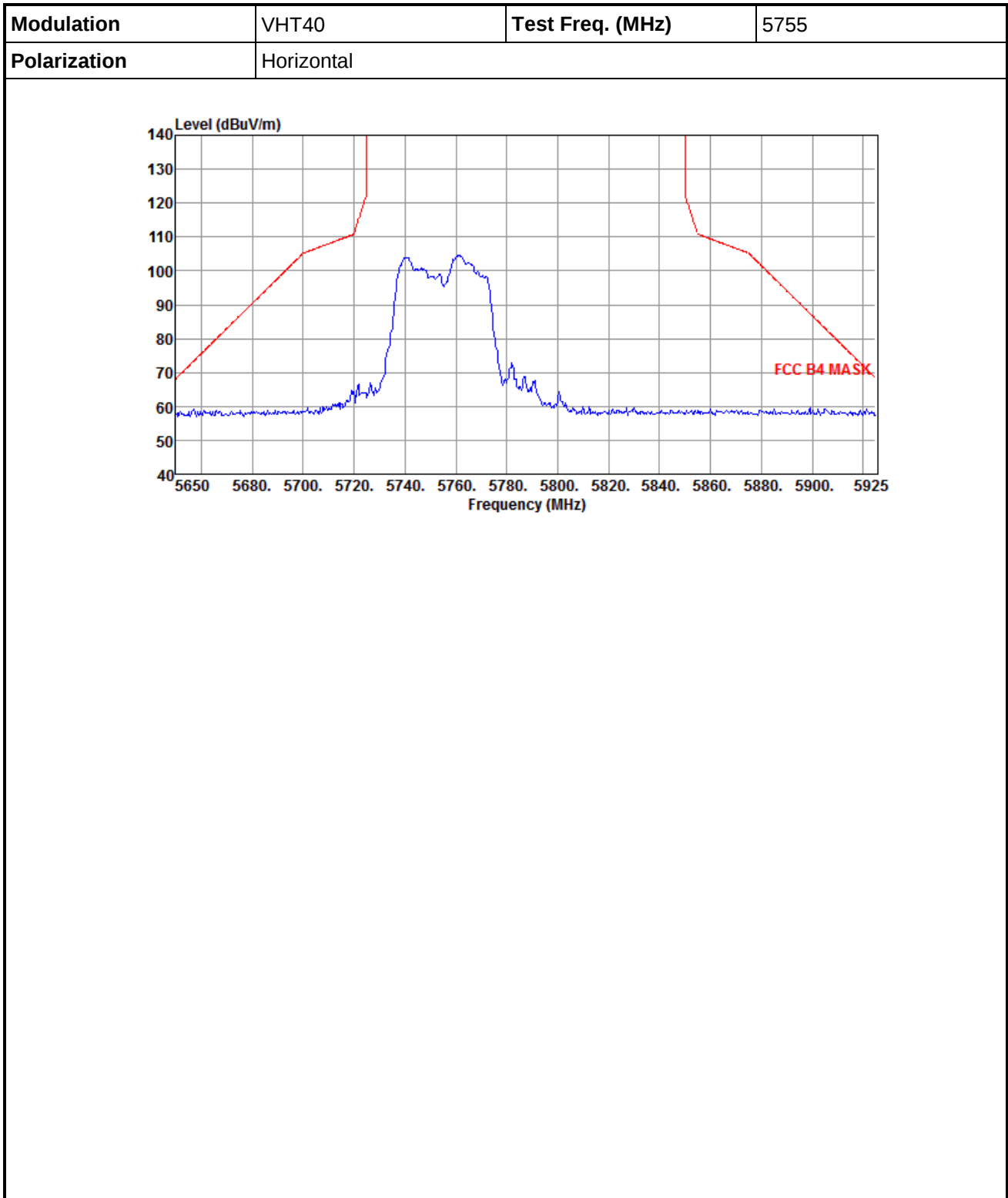


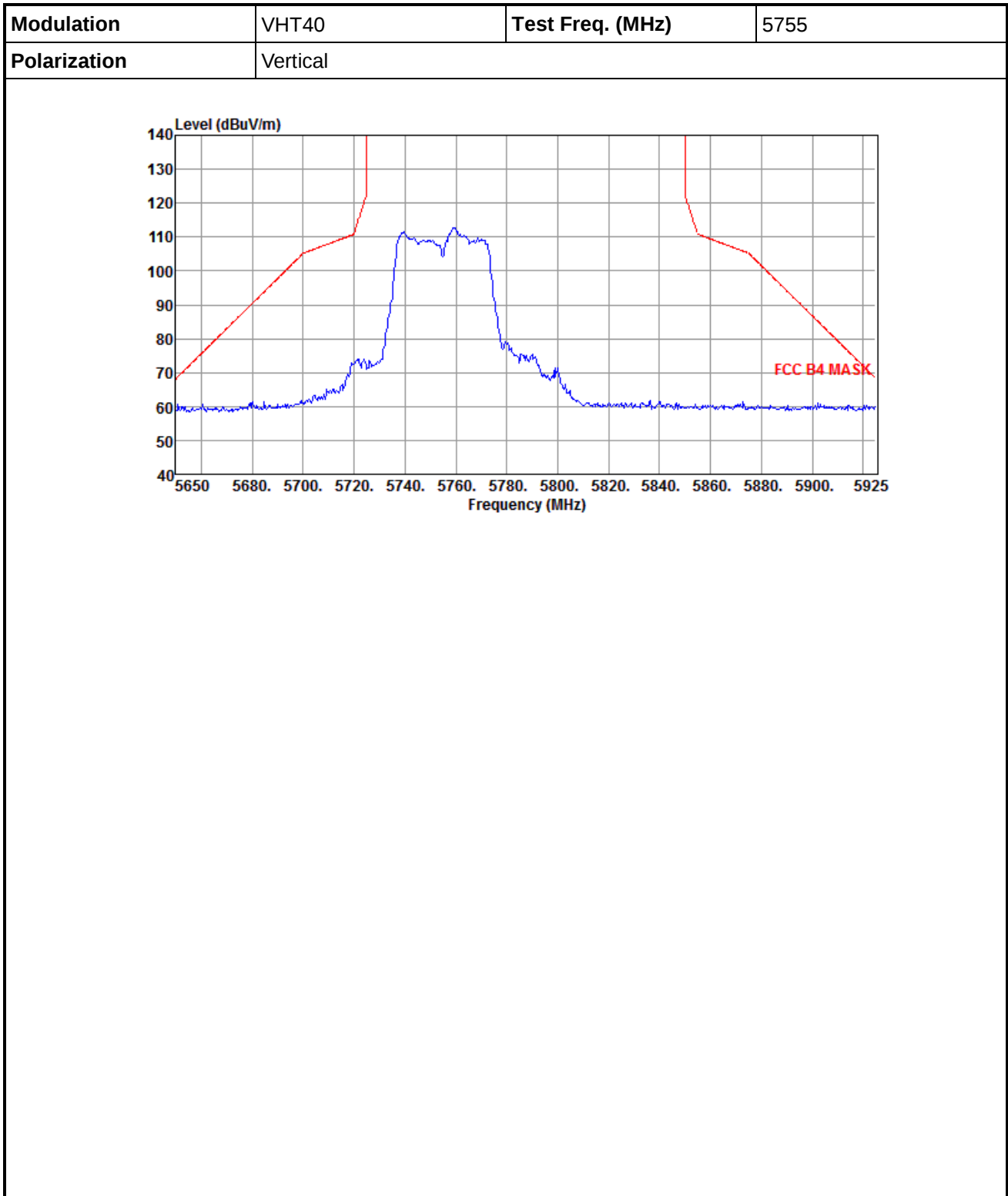
Modulation	VHT20	Test Freq. (MHz)	5825
Polarization	Horizontal		

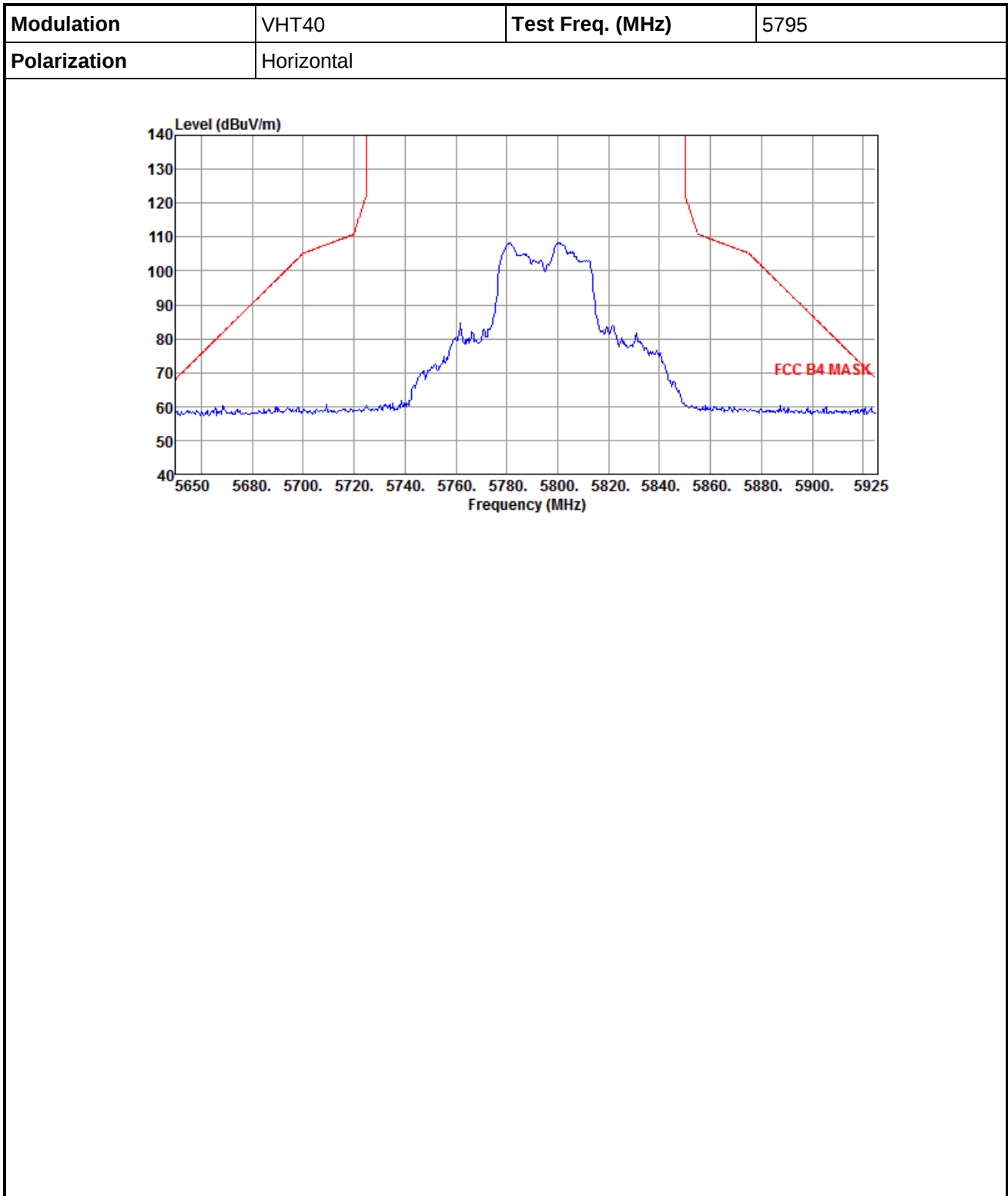


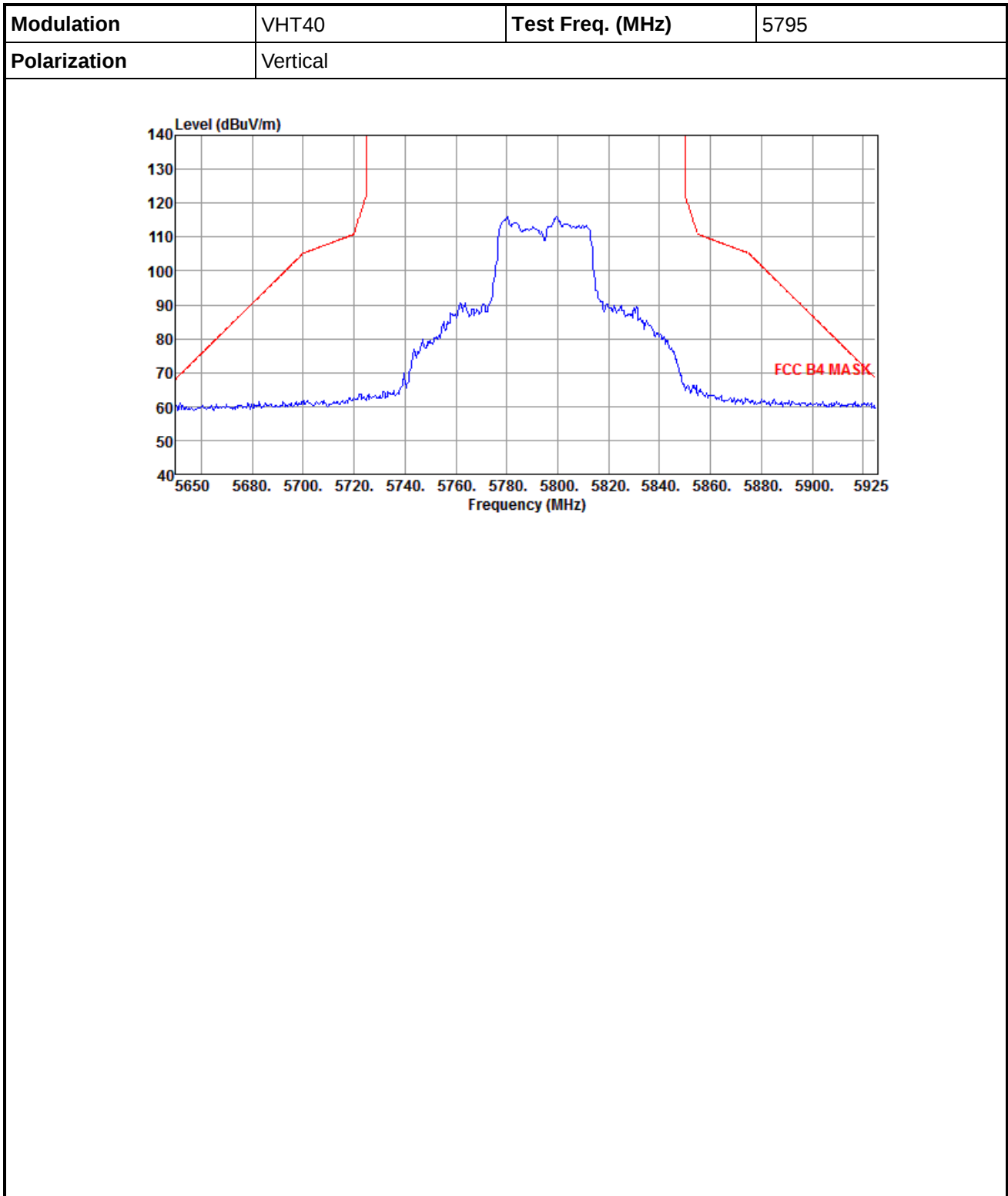


3.5.6 Transmitter Radiated Band Edge for VHT40

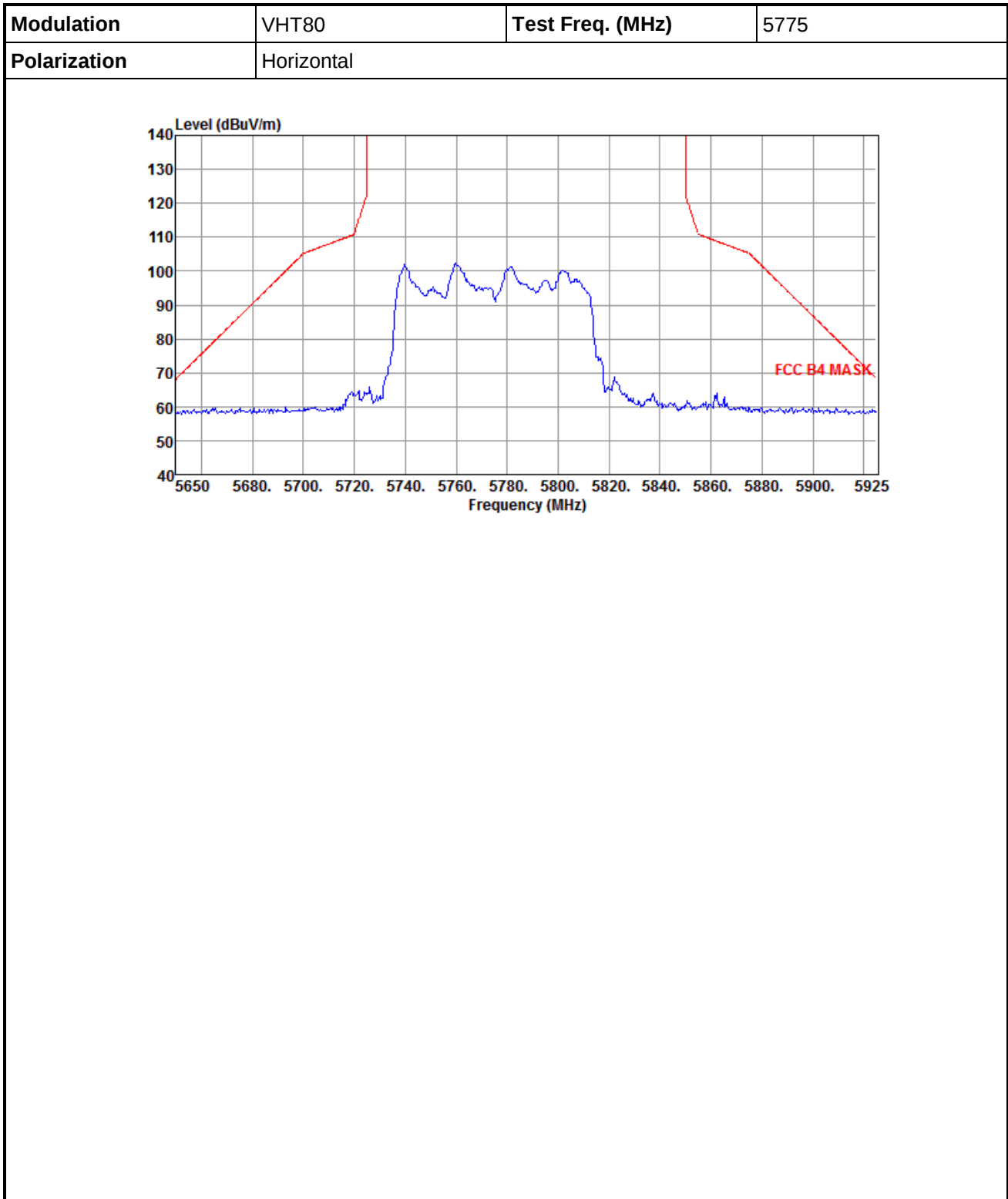


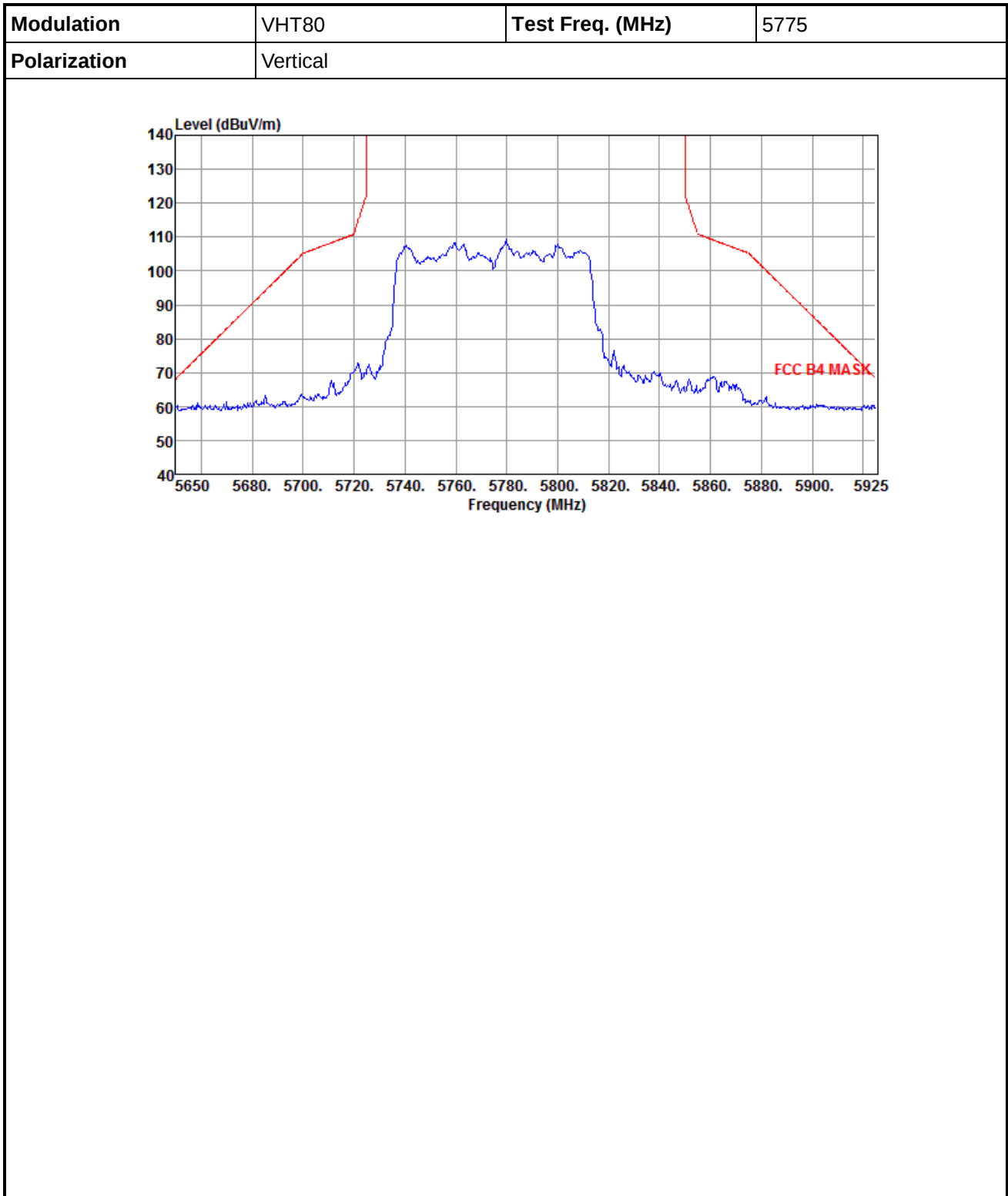






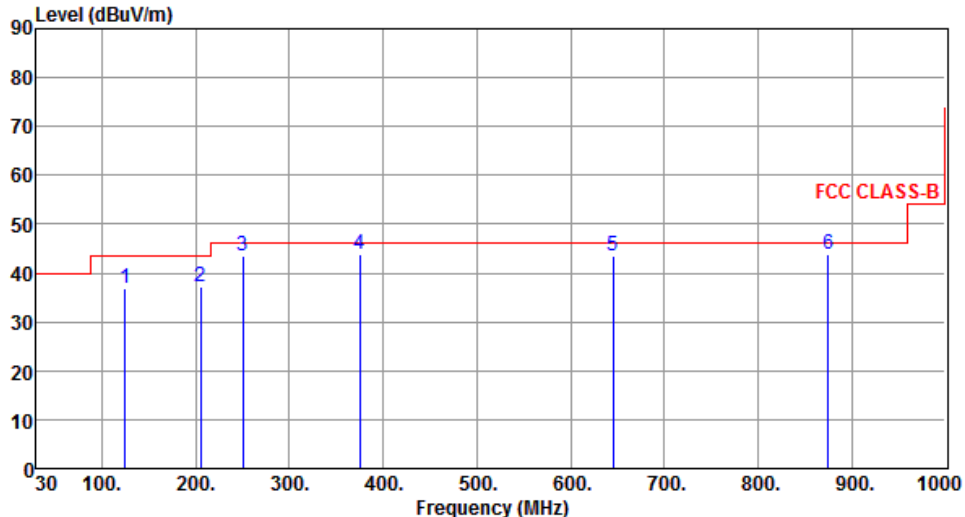
3.5.7 Transmitter Radiated Band Edge for VHT80





3.5.8 Transmitter Radiated Unwanted Emissions (Below 1GHz)

Modulation	VHT40	Test Freq. (MHz)	5590
Polarization	Horizontal		

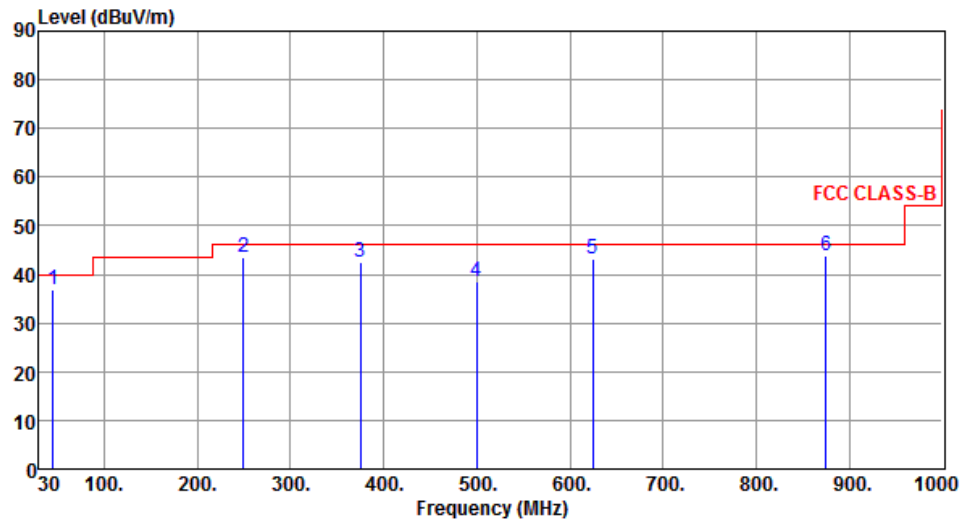


The graph displays the radiated unwanted emissions level in dBuV/m against frequency in MHz from 30 to 1000 MHz. A red line represents the FCC CLASS-B limit, which is 40 dBuV/m from 30 to 100 MHz, 45 dBuV/m from 100 to 1000 MHz, and 55 dBuV/m above 1000 MHz. Six test points are marked with blue vertical lines and numbered 1 through 6. The test results are summarized in the table below:

	Freq. MHz	Emission level dBuV/m	Limit dBuV/m	Margin dB	SA reading dBuV	Factor dB	Remark	ANT High cm	Turn Table deg
1	124.68	37.00	43.50	-6.50	55.46	-18.46	Peak	---	---
2	205.52	37.19	43.50	-6.31	56.51	-19.32	Peak	---	---
3	250.00	43.63	46.00	-2.37	61.35	-17.72	QP	115	251
4	374.98	43.94	46.00	-2.06	58.05	-14.11	QP	100	230
5	645.00	43.66	46.00	-2.34	52.41	-8.75	QP	110	349
6	874.96	43.97	46.00	-2.03	49.53	-5.56	QP	100	226

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

Modulation	VHT40	Test Freq. (MHz)	5590
Polarization	Vertical		



	Freq. MHz	Emission level dBuV/m	Limit dBuV/m	Margin dB	SA reading dBuV	Factor dB	Remark	ANT High cm	Turn Table deg
1	45.41	36.95	40.00	-3.05	53.26	-16.31	Peak	---	---
2	249.65	43.52	46.00	-2.48	61.25	-17.73	Peak	---	---
3	374.99	42.54	46.00	-3.46	56.65	-14.11	QP	100	182
4	499.65	38.39	46.00	-7.61	49.52	-11.13	Peak	---	---
5	624.67	43.33	46.00	-2.67	52.44	-9.11	Peak	---	---
6	874.98	43.98	46.00	-2.02	49.54	-5.56	QP	110	258

Note 1: Emission Level (dBuV/m) = SA Reading (dBuV/m) + Factor* (dB)

*Factor includes antenna factor , cable loss and amplifier gain

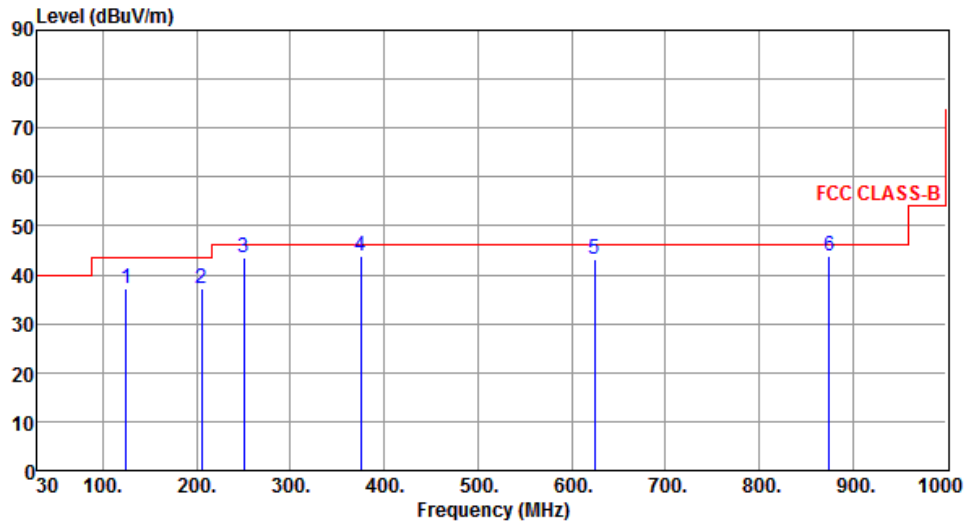
Note 2: Margin (dB) = Emission level (dBuV/m) – Limit (dBuV/m).

Note 3: All spurious emissions below 30MHz are more than 20 dB below the limit.

Modulation	VHT80	Test Freq. (MHz)	5610
Polarization	Horizontal		
Level (dBuV/m) </			

Modulation	VHT80	Test Freq. (MHz)	5610
Polarization	Vertical		
Level (dBuV/m) <			

Modulation	VHT40	Test Freq. (MHz)	5795
Polarization	Horizontal		



	Freq. MHz	Emission level dBuV/m	Limit dBuV/m	Margin dB	SA reading dBuV	Factor dB	Remark	ANT High cm	Turn Table deg
1	124.86	37.32	43.50	-6.18	55.76	-18.44	Peak	---	---
2	205.57	37.33	43.50	-6.17	56.65	-19.32	Peak	---	---
3	250.00	43.51	46.00	-2.49	61.23	-17.72	QP	116	253
4	374.99	43.91	46.00	-2.09	58.02	-14.11	QP	100	229
5	624.98	43.26	46.00	-2.74	52.36	-9.10	QP	112	344
6	874.86	43.86	46.00	-2.14	49.42	-5.56	QP	100	225

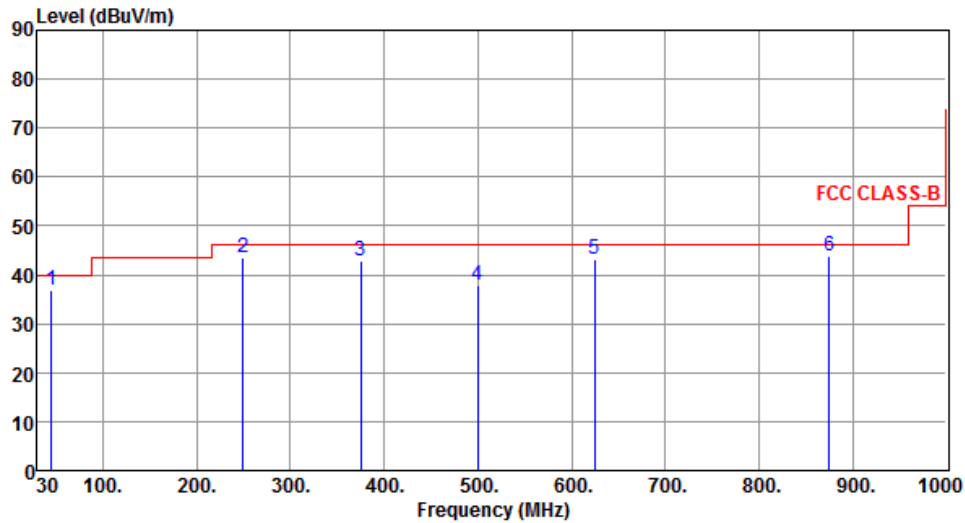
Note 1: Emission Level (dBuV/m) = SA Reading (dBuV/m) + Factor* (dB)

*Factor includes antenna factor , cable loss and amplifier gain

Note 2: Margin (dB) = Emission level (dBuV/m) – Limit (dBuV/m).

Note 3: All spurious emissions below 30MHz are more than 20 dB below the limit.

Modulation	VHT40	Test Freq. (MHz)	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	45.46	36.81	40.00	-3.19	53.12	-16.31	Peak	---	---
2	249.65	43.60	46.00	-2.40	61.33	-17.73	Peak	---	---
3	374.99	42.74	46.00	-3.26	56.85	-14.11	QP	100	185
4	499.96	38.00	46.00	-8.00	49.12	-11.12	Peak	---	---
5	624.85	43.07	46.00	-2.93	52.17	-9.10	Peak	---	---
6	874.98	43.95	46.00	-2.05	49.51	-5.56	QP	109	260

Note 1: Emission Level (dBuV/m) = SA Reading (dBuV/m) + Factor* (dB)

*Factor includes antenna factor , cable loss and amplifier gain

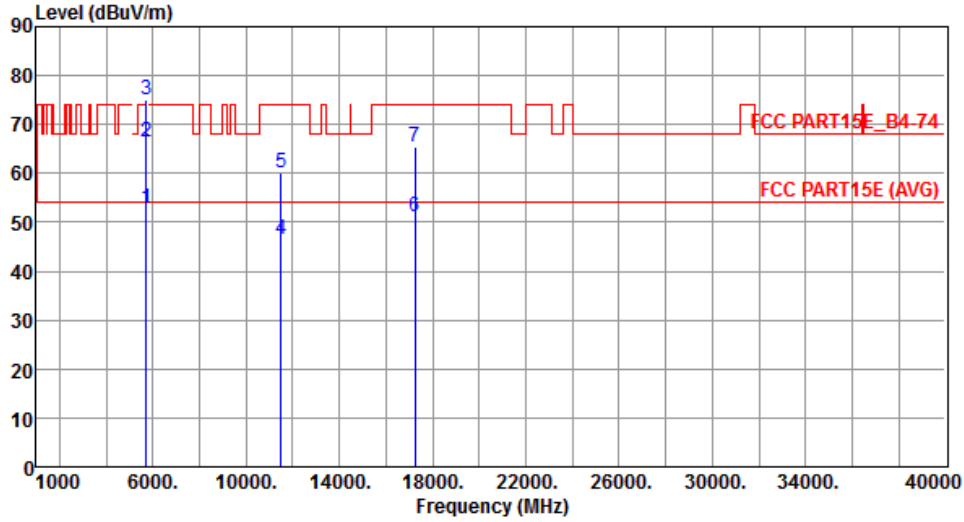
Note 2: Margin (dB) = Emission level (dBuV/m) – Limit (dBuV/m).

Note 3: All spurious emissions below 30MHz are more than 20 dB below the limit.

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

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

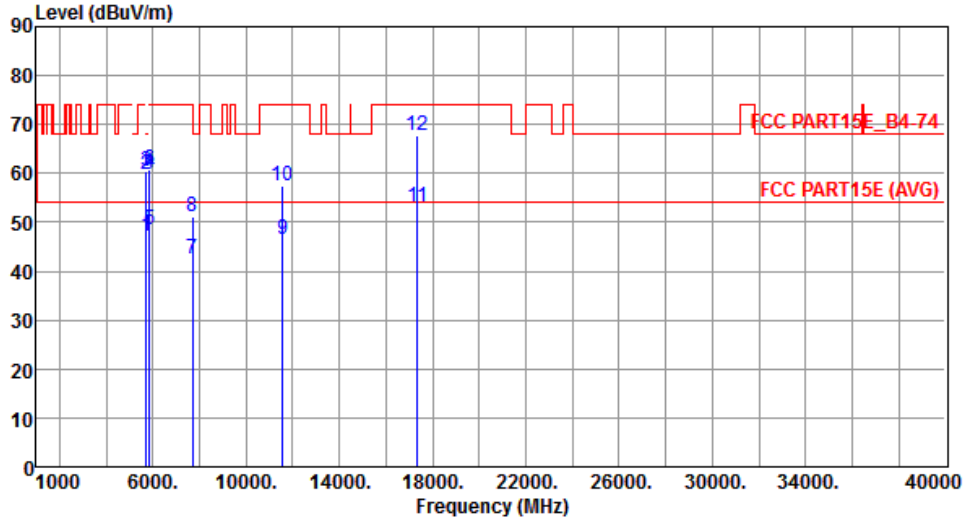
Modulation	11a	Test Freq. (MHz)	5745
Polarization	Vertical		



	Freq. MHz	Emission level dBUV/m	Limit dBUV/m	Margin dB	SA reading dBUV	Factor dB	Remark	ANT High cm	Turn Table deg
1	5715.00	52.92	54.00	-1.08	47.82	5.10	Average	193	183
2	5715.00	66.51	74.00	-7.49	61.41	5.10	Peak	193	183
3	5725.00	75.07	78.20	-3.13	69.98	5.09	Peak	193	183
4	11490.00	46.65	54.00	-7.35	31.12	15.53	Average	221	47
5	11490.00	60.16	74.00	-13.84	44.63	15.53	Peak	221	47
6	17235.00	50.98	54.00	-3.02	32.11	18.87	Average	151	103
7	17235.00	65.32	74.00	-8.68	46.45	18.87	Peak	151	103

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

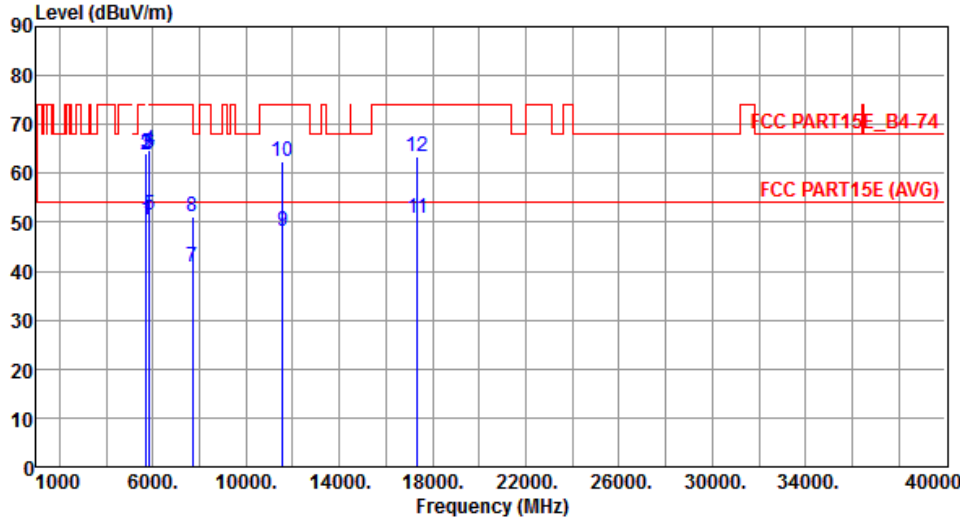
Modulation	11a	Test Freq. (MHz)	5785
Polarization	Horizontal		



	Freq. MHz	Emission level dBuV/m	Limit dBuV/m	Margin dB	SA reading dBuV	Factor dB	Remark	ANT High cm	Turn Table deg
1	5715.00	47.26	54.00	-6.74	42.16	5.10	Average	274	142
2	5715.00	59.88	74.00	-14.12	54.78	5.10	Peak	274	142
3	5725.00	60.36	78.20	-17.84	55.27	5.09	Peak	274	142
4	5850.00	60.26	78.20	-17.94	55.00	5.26	Peak	274	142
5	5860.00	48.36	54.00	-5.64	43.09	5.27	Average	274	142
6	5860.00	60.62	74.00	-13.38	55.35	5.27	Peak	274	142
7	7713.33	42.48	54.00	-11.52	33.74	8.74	Average	212	252
8	7713.33	51.27	74.00	-22.73	42.53	8.74	Peak	212	252
9	11570.00	46.40	54.00	-7.60	31.07	15.33	Average	213	42
10	11570.00	57.41	74.00	-16.59	42.08	15.33	Peak	213	42
11	17355.00	52.99	54.00	-1.01	33.78	19.21	Average	237	114
12	17355.00	67.86	74.00	-6.14	48.65	19.21	Peak	237	114

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).

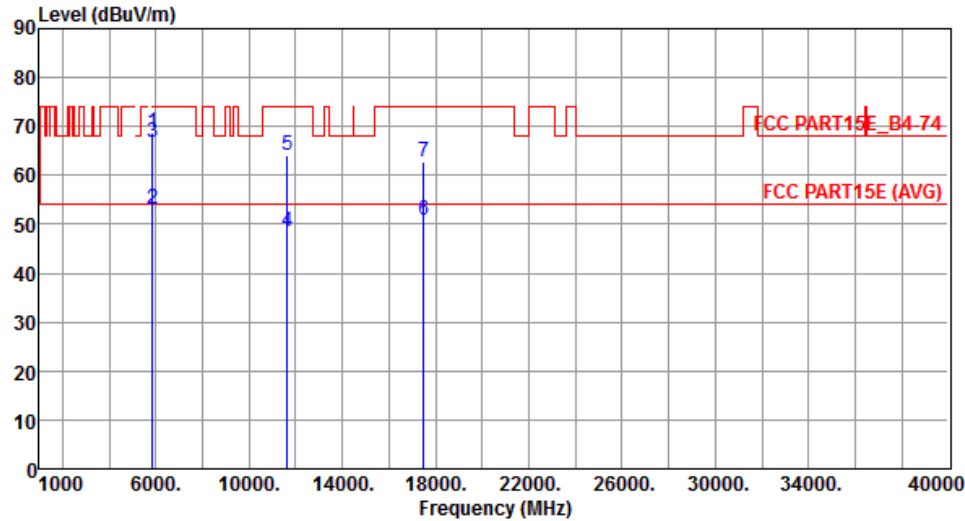
Modulation	11a	Test Freq. (MHz)	5785
Polarization	Vertical		



	Freq. MHz	Emission level dBuV/m	Limit dBuV/m	Margin dB	SA reading dBuV	Factor dB	Remark	ANT High cm	Turn Table deg
1	5715.00	50.56	54.00	-3.44	45.46	5.10	Average	172	185
2	5715.00	63.91	74.00	-10.09	58.81	5.10	Peak	172	185
3	5725.00	64.06	78.20	-14.14	58.97	5.09	Peak	172	185
4	5850.00	64.81	78.20	-13.39	59.55	5.26	Peak	172	185
5	5860.00	51.63	54.00	-2.37	46.36	5.27	Average	172	185
6	5860.00	64.00	74.00	-10.00	58.73	5.27	Peak	172	185
7	7713.33	40.84	54.00	-13.16	32.10	8.74	Average	205	281
8	7713.33	51.03	74.00	-22.97	42.29	8.74	Peak	205	281
9	11570.00	48.05	54.00	-5.95	32.72	15.33	Average	236	49
10	11570.00	62.55	74.00	-11.45	47.22	15.33	Peak	236	49
11	17355.00	50.73	54.00	-3.27	31.52	19.21	Average	194	287
12	17355.00	63.46	74.00	-10.54	44.25	19.21	Peak	194	287

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

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

Modulation	11a	Test Freq. (MHz)	5825						
Polarization	Vertical								
									
	Freq. MHz	Emission level dBuV/m	Limit dBuV/m	Margin dB	SA reading dBuV	Factor dB	Remark	ANT High cm	Turn Table deg
1	5850.00	68.89	78.20	-9.31	63.63	5.26	Peak	187	178
2	5860.00	52.98	54.00	-1.02	47.71	5.27	Average	187	178
3	5860.00	66.84	74.00	-7.16	61.57	5.27	Peak	187	178
4	11650.00	48.43	54.00	-5.57	33.34	15.09	Average	142	0
5	11650.00	63.99	74.00	-10.01	48.90	15.09	Peak	142	0
6	17475.00	50.77	54.00	-3.23	31.22	19.55	Average	142	0
7	17475.00	62.87	74.00	-11.13	43.32	19.55	Peak	137	98

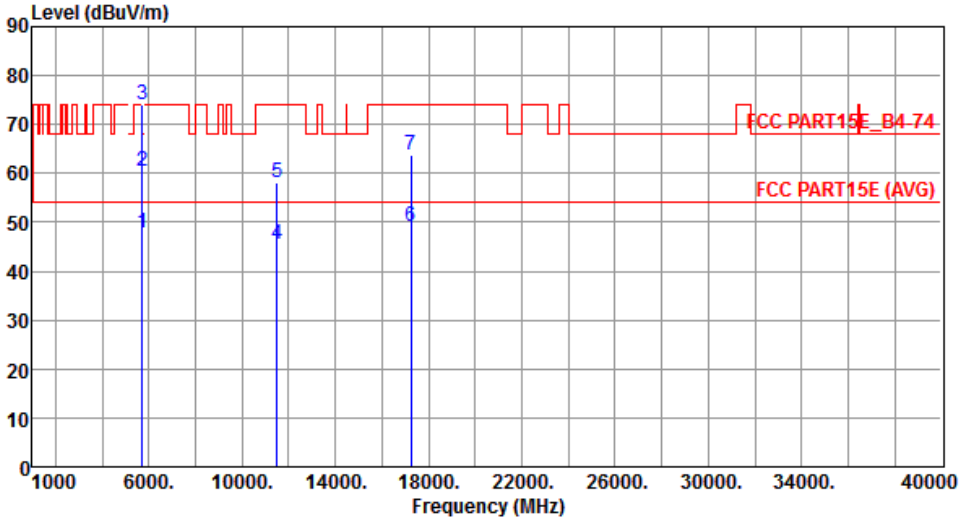
Note 1: Emission Level (dBUV/m) = SA Reading (dBUV/m) + Factor* (dB)

*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		

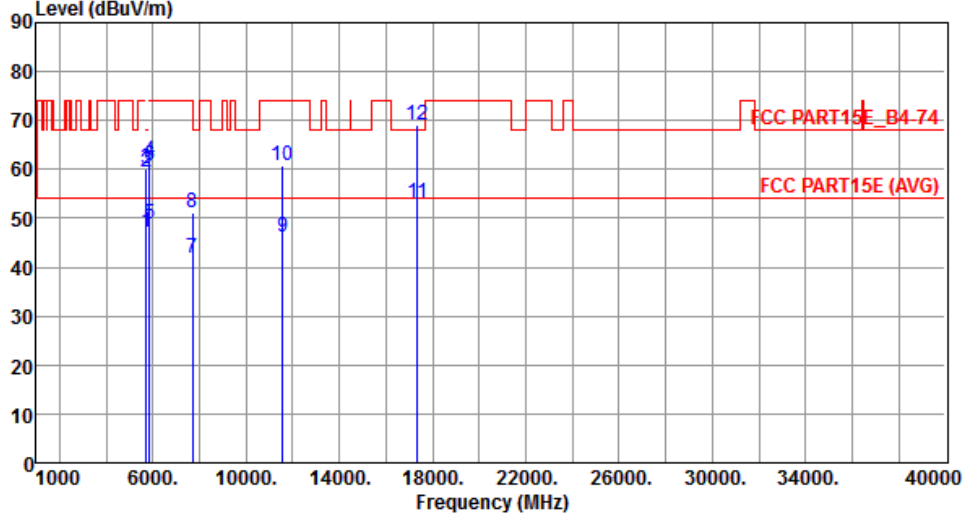


	Freq. MHz	Emission level dBUV/m	Limit dBUV/m	Margin dB	SA reading dBUV	Factor dB	Remark	ANT High cm	Turn Table deg
1	5715.00	47.97	54.00	-6.03	42.87	5.10	Average	100	138
2	5715.00	60.56	74.00	-13.44	55.46	5.10	Peak	100	138
3	5725.00	74.14	78.20	-4.06	69.05	5.09	Peak	100	138
4	11490.00	45.41	54.00	-8.59	29.88	15.53	Average	230	39
5	11490.00	58.00	74.00	-16.00	42.47	15.53	Peak	230	39
6	17235.00	49.07	54.00	-4.93	30.20	18.87	Average	156	115
7	17235.00	63.65	74.00	-10.35	44.78	18.87	Peak	156	115

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

Modulation	VHT20	Test Freq. (MHz)	5745
Polarization	Vertical		
Level (dBuV/m) </			

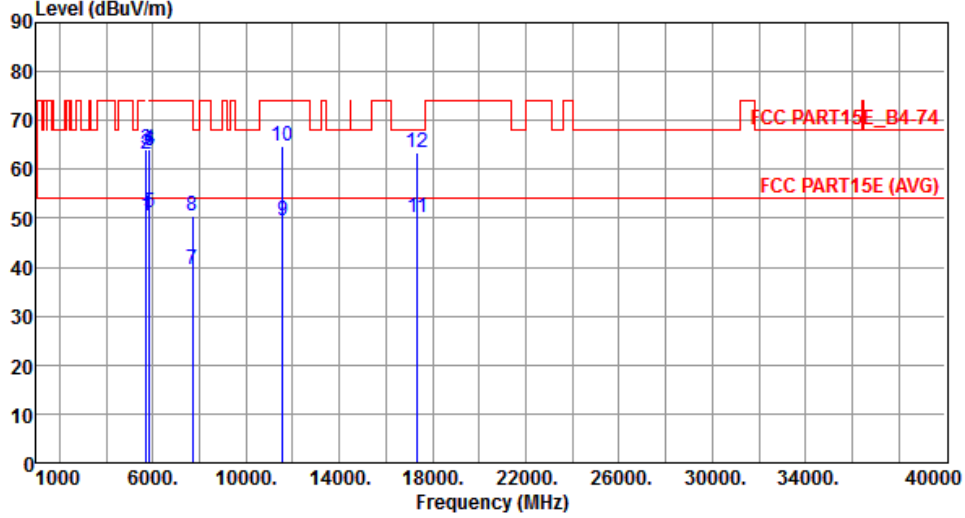
Modulation	VHT20	Test Freq. (MHz)	5785
Polarization	Horizontal		



	Freq. MHz	Emission level dBuV/m	Limit dBuV/m	Margin dB	SA reading dBuV	Factor dB	Remark	ANT High cm	Turn Table deg
1	5715.00	47.32	54.00	-6.68	42.22	5.10	Average	276	141
2	5715.00	59.59	74.00	-14.41	54.49	5.10	Peak	276	141
3	5725.00	59.96	78.20	-18.24	54.87	5.09	Peak	276	141
4	5850.00	61.72	78.20	-16.48	56.46	5.26	Peak	276	141
5	5860.00	48.86	54.00	-5.14	43.59	5.27	Average	276	141
6	5860.00	60.82	74.00	-13.18	55.55	5.27	Peak	276	141
7	7713.33	41.89	54.00	-12.11	33.15	8.74	Average	207	252
8	7713.33	51.28	74.00	-22.72	42.54	8.74	Peak	207	252
9	11570.00	46.17	54.00	-7.83	30.84	15.33	Average	211	43
10	11570.00	60.64	74.00	-13.36	45.31	15.33	Peak	211	43
11	17355.00	53.00	54.00	-1.00	33.79	19.21	Average	237	113
12	17355.00	68.98	74.00	-5.02	49.77	19.21	Peak	237	113

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		

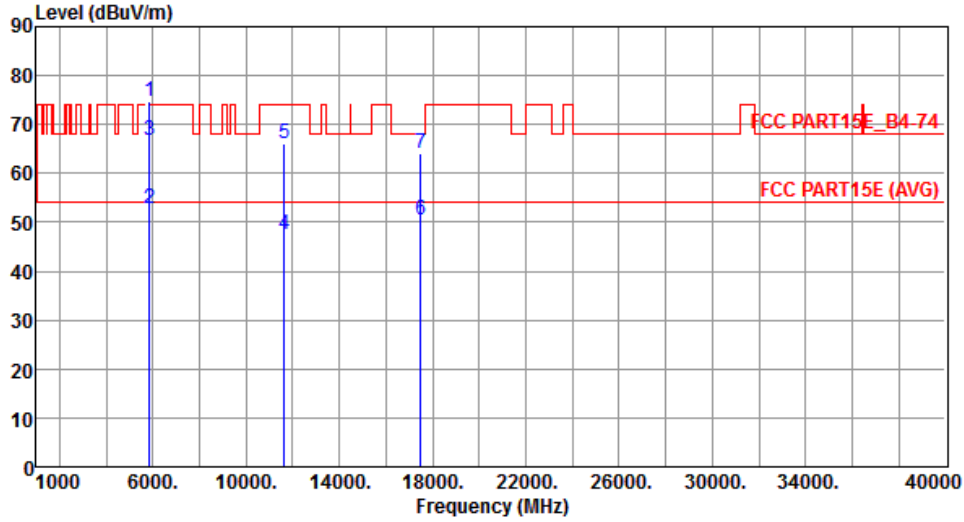


	Freq. MHz	Emission level dBuV/m	Limit dBuV/m	Margin dB	SA reading dBuV	Factor dB	Remark	ANT High cm	Turn Table deg
1	5715.00	50.58	54.00	-3.42	45.48	5.10	Average	202	188
2	5715.00	63.22	74.00	-10.78	58.12	5.10	Peak	202	188
3	5725.00	63.96	78.20	-14.24	58.87	5.09	Peak	202	188
4	5850.00	64.26	78.20	-13.94	59.00	5.26	Peak	202	188
5	5860.00	51.21	54.00	-2.79	45.94	5.27	Average	202	188
6	5860.00	63.69	74.00	-10.31	58.42	5.27	Peak	202	188
7	7713.33	39.54	54.00	-14.46	30.80	8.74	Average	207	282
8	7713.33	50.64	74.00	-23.36	41.90	8.74	Peak	207	282
9	11570.00	49.36	54.00	-4.64	34.03	15.33	Average	241	49
10	11570.00	64.64	74.00	-9.36	49.31	15.33	Peak	241	49
11	17355.00	50.12	54.00	-3.88	30.91	19.21	Average	202	287
12	17355.00	63.44	74.00	-10.56	44.23	19.21	Peak	202	287

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

Modulation	VHT20	Test Freq. (MHz)	5825
Polarization	Horizontal		
Level (dBuV/m)			

Modulation	VHT20	Test Freq. (MHz)	5825
Polarization	Vertical		

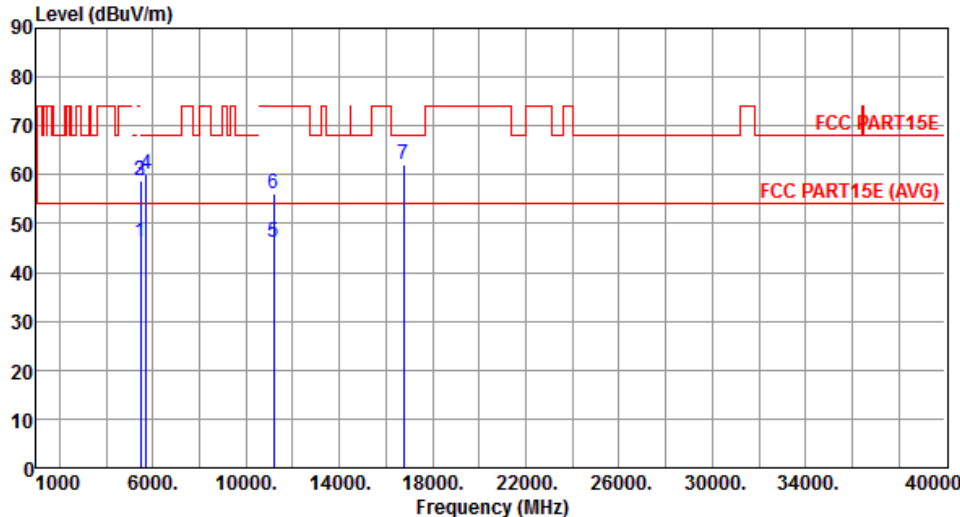


	Freq. MHz	Emission level dBuV/m	Limit dBuV/m	Margin dB	SA reading dBuV	Factor dB	Remark	ANT High cm	Turn Table deg
1	5850.00	74.59	78.20	-3.61	69.33	5.26	Peak	197	181
2	5860.00	52.80	54.00	-1.20	47.53	5.27	Average	280	181
3	5860.00	66.66	74.00	-7.34	61.39	5.27	Peak	280	181
4	11650.00	47.61	54.00	-6.39	32.52	15.09	Average	149	0
5	11650.00	66.07	74.00	-7.93	50.98	15.09	Peak	149	0
6	17475.00	50.57	54.00	-3.43	31.02	19.55	Average	149	103
7	17475.00	64.02	74.00	-9.98	44.47	19.55	Peak	149	103

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).

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

Modulation	VHT40	Test Freq. (MHz)	5590
Polarization	Horizontal		

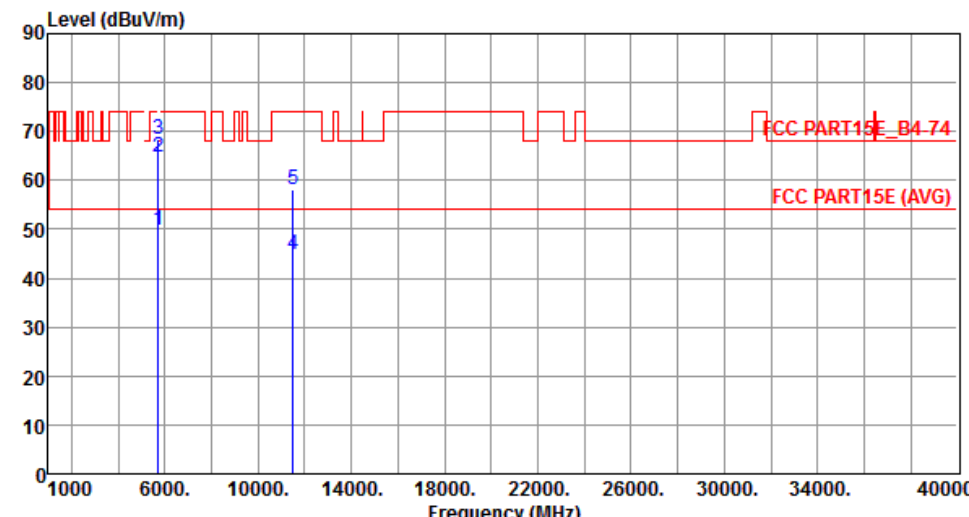


	Freq. MHz	Emission level dBUV/m	Limit dBUV/m	Margin dB	SA reading dBUV	Factor dB	Remark	ANT High cm	Turn Table deg
1	5460.00	46.27	54.00	-7.73	41.49	4.78	Average	110	136
2	5460.00	58.75	74.00	-15.25	53.97	4.78	Peak	110	136
3	5470.00	58.64	68.20	-9.56	53.85	4.79	Peak	110	136
4	5725.00	59.98	68.20	-8.22	54.89	5.09	Peak	110	136
5	11180.00	46.11	54.00	-7.89	30.88	15.23	Average	100	110
6	11180.00	56.09	74.00	-17.91	40.86	15.23	Peak	100	110
7	16770.00	62.03	68.20	-6.17	44.65	17.38	Peak	100	359

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

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

Modulation	VHT40	Test Freq. (MHz)	5755
Polarization	Horizontal		

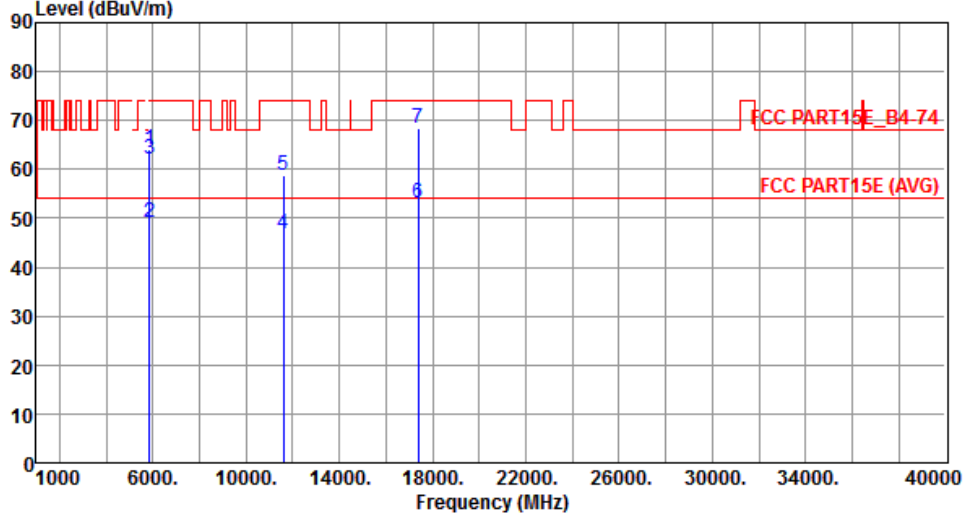


	Freq. MHz	Emission level dBuV/m	Limit dBuV/m	Margin dB	SA reading dBuV	Factor dB	Remark	ANT High cm	Turn Table deg
1	5715.00	49.95	54.00	-4.05	44.85	5.10	Average	282	142
2	5715.00	64.69	74.00	-9.31	59.59	5.10	Peak	282	142
3	5725.00	68.43	78.20	-9.77	63.34	5.09	Peak	282	142
4	11510.00	44.82	54.00	-9.18	29.31	15.51	Average	220	43
5	11510.00	58.16	74.00	-15.84	42.65	15.51	Peak	220	43

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

Modulation	VHT40	Test Freq. (MHz)	5755
Polarization	Vertical		
Level (dBuV/m) </			

Modulation	VHT40	Test Freq. (MHz)	5795
Polarization	Horizontal		



	Freq. MHz	Emission level dBuV/m	Limit dBuV/m	Margin dB	SA reading dBuV	Factor dB	Remark	ANT High cm	Turn Table deg
1	5850.00	64.26	78.20	-13.94	59.00	5.26	Peak	202	141
2	5860.00	49.08	54.00	-4.92	43.81	5.27	Average	202	141
3	5860.00	62.11	74.00	-11.89	56.84	5.27	Peak	202	141
4	11590.00	46.78	54.00	-7.22	31.51	15.27	Average	238	40
5	11590.00	58.71	74.00	-15.29	43.44	15.27	Peak	238	40
6	17385.00	52.99	54.00	-1.01	33.70	19.29	Average	238	115
7	17385.00	68.30	74.00	-5.70	49.01	19.29	Peak	238	115

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

Modulation	VHT40	Test Freq. (MHz)	5795
Polarization	Vertical		
Level (dBuV/m)			

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

Modulation	VHT80	Test Freq. (MHz)	5610
Polarization	Horizontal		
Level (dBuV/m) <			

Modulation	VHT80	Test Freq. (MHz)	5610
Polarization	Vertical		
Level (dBuV/m)			

Modulation	VHT80	Test Freq. (MHz)	5775
Polarization	Horizontal		

	Freq. MHz	Emission level dBuV/m	Limit dBuV/m	Margin dB	SA reading dBuV	Factor dB	Remark	ANT High cm	Turn Table deg
1	5715.00	49.22	54.00	-4.78	44.12	5.10	Average	201	136
2	5715.00	63.13	74.00	-10.87	58.03	5.10	Peak	201	136
3	5725.00	65.49	78.20	-12.71	60.40	5.09	Peak	201	136
4	5850.00	64.01	78.20	-14.19	58.75	5.26	Peak	201	136
5	5860.00	48.08	54.00	-5.92	42.81	5.27	Average	201	136
6	5860.00	64.14	74.00	-9.86	58.87	5.27	Peak	201	136
7	11550.00	44.95	54.00	-9.05	29.55	15.40	Average	100	218
8	11550.00	56.72	74.00	-17.28	41.32	15.40	Peak	100	218

Note 1: Emission Level (dBuV/m) = SA Reading (dBuV/m) + Factor* (dB)

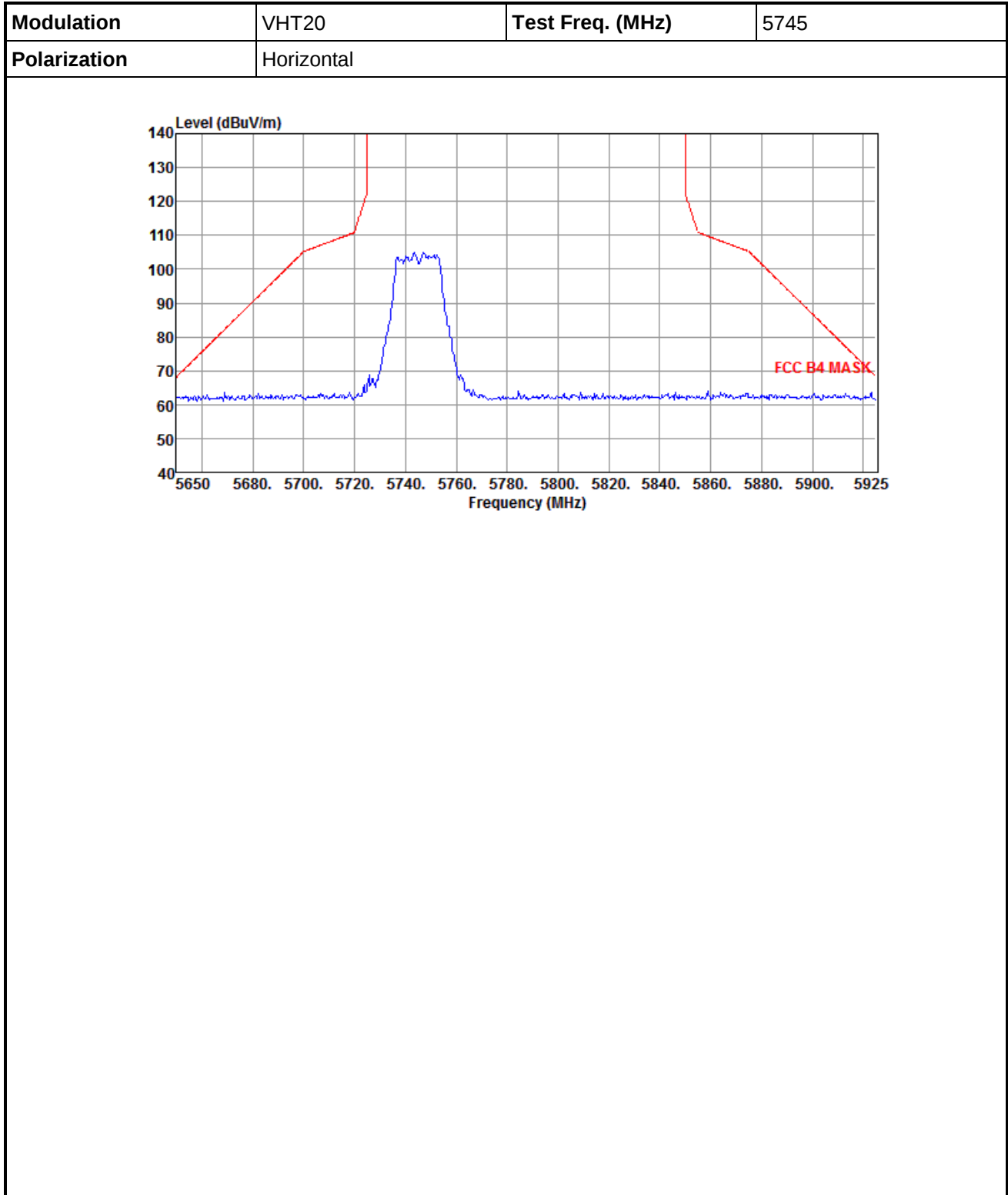
*Factor includes antenna factor , cable loss and amplifier gain

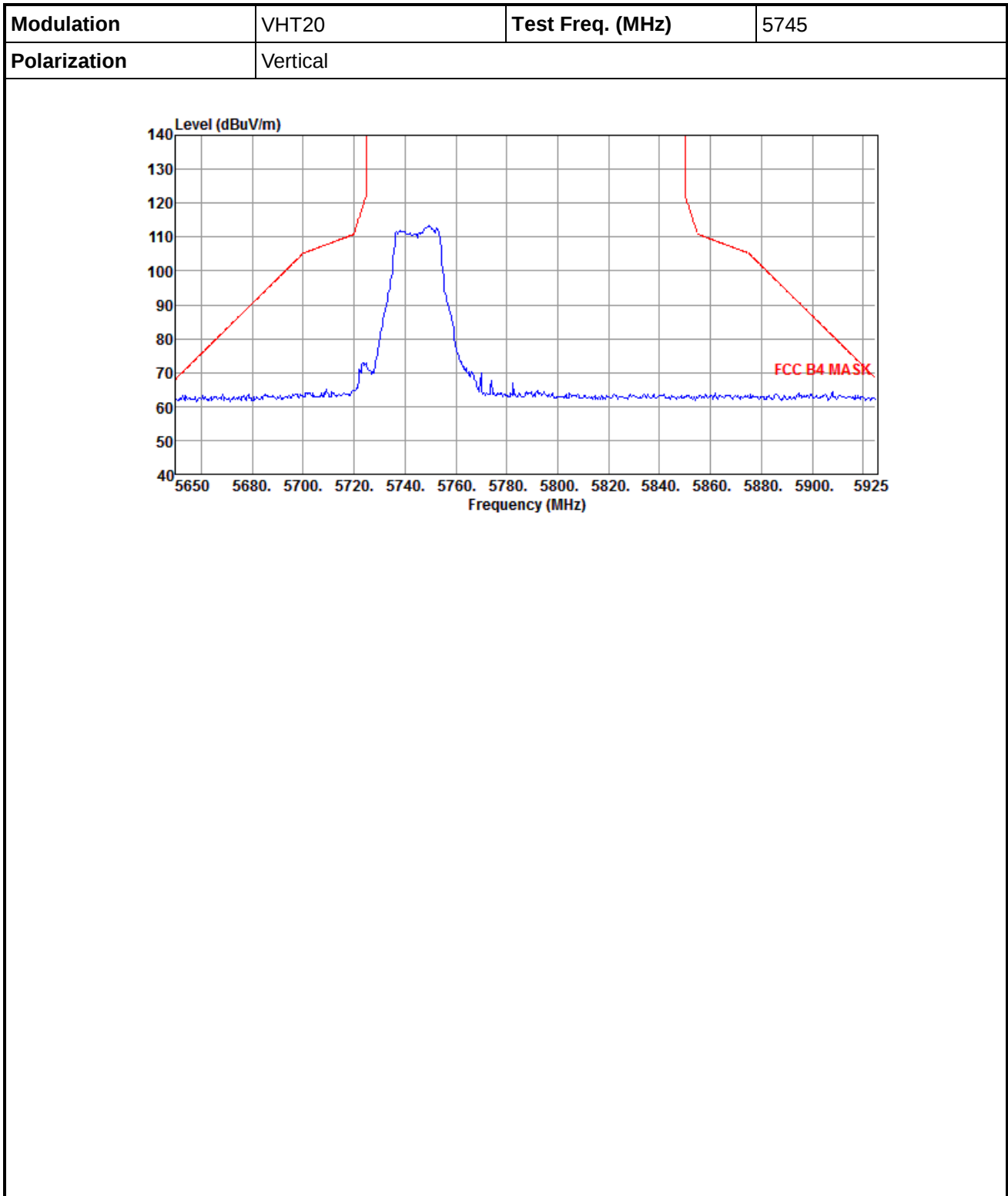
Note 2: Margin (dB) = Emission level (dBuV/m) – Limit (dBuV/m).

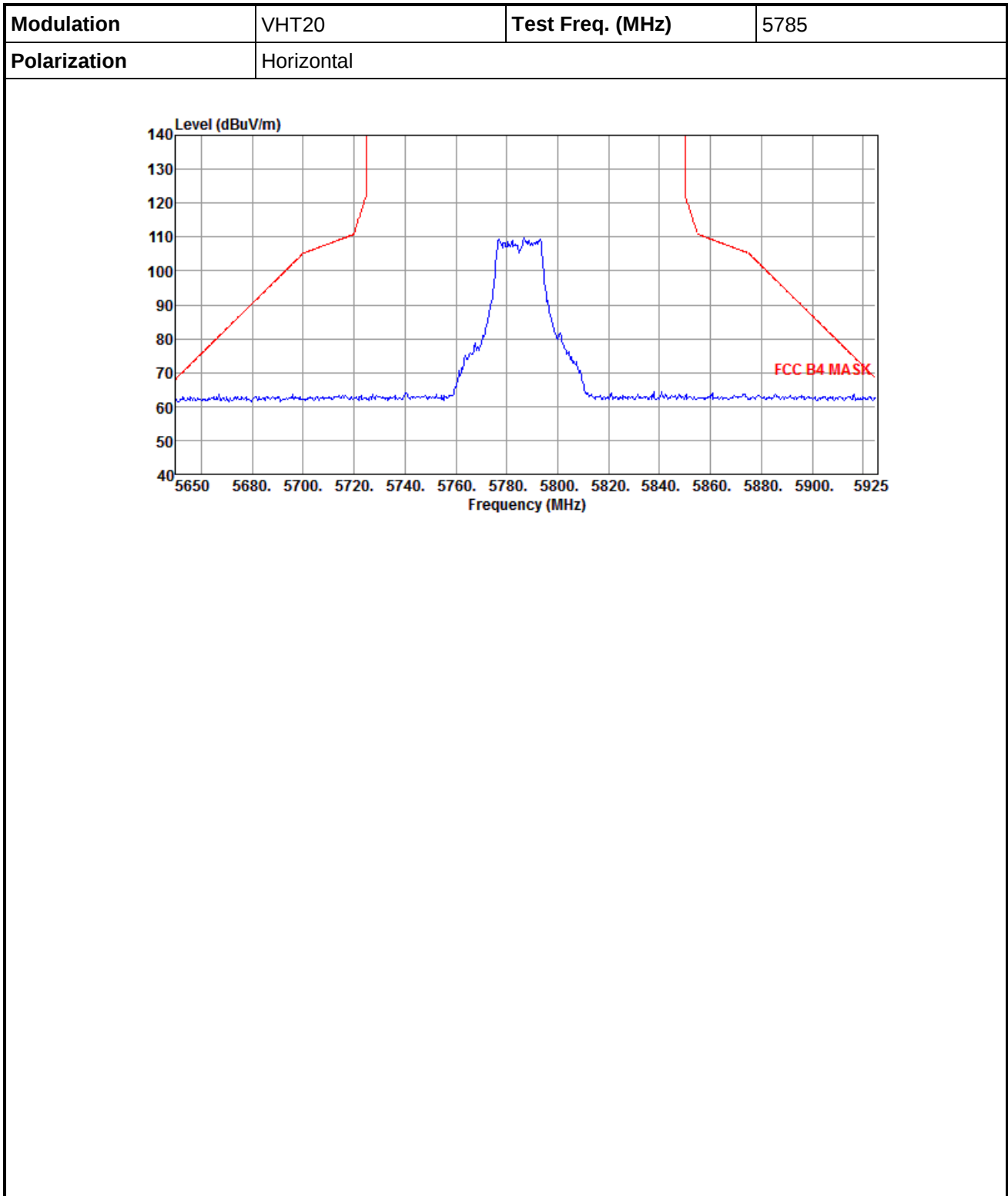
Modulation	VHT80	Test Freq. (MHz)	5775
Polarization	Vertical		
Level (dBuV/m)			

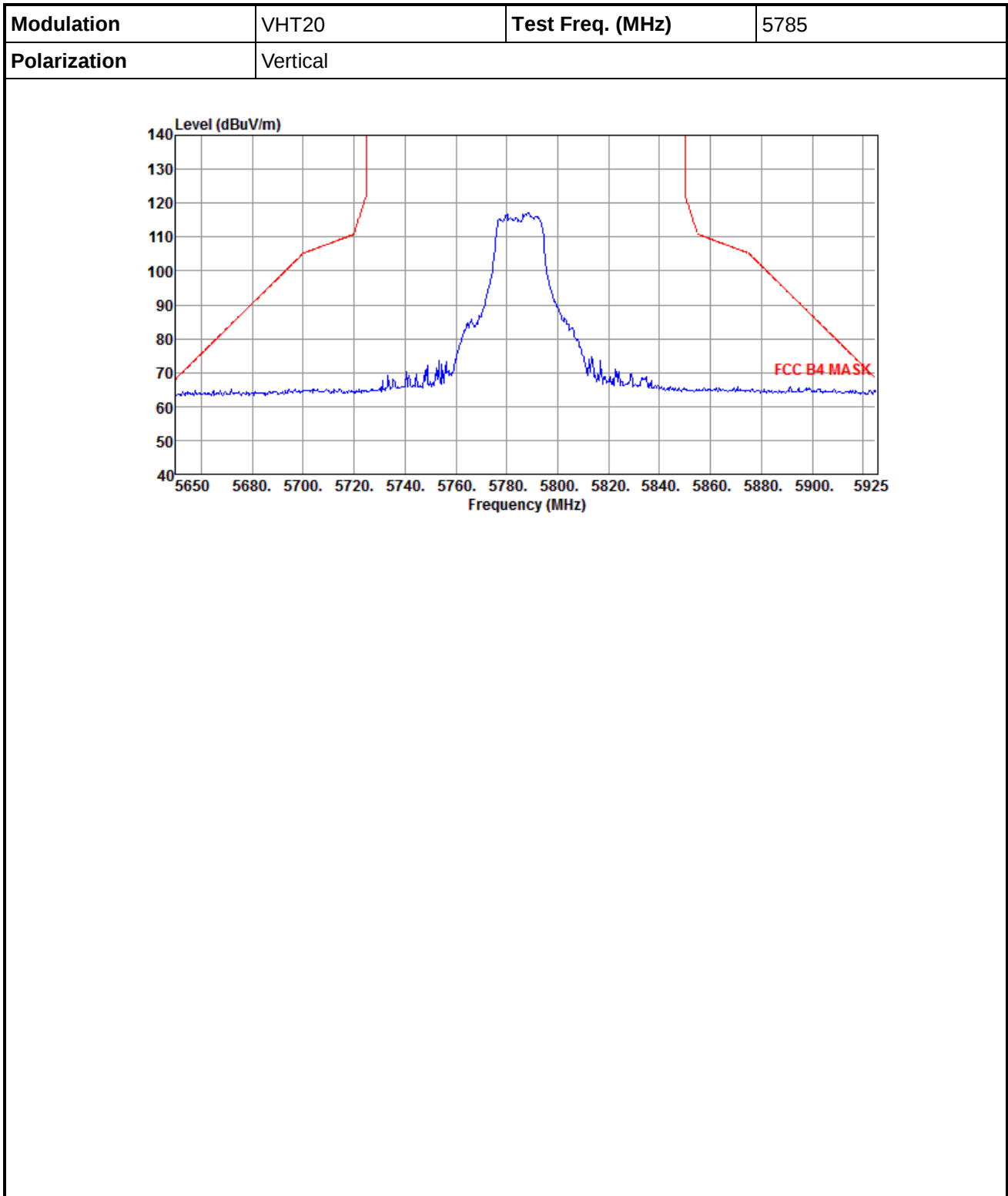
Beamforming mode

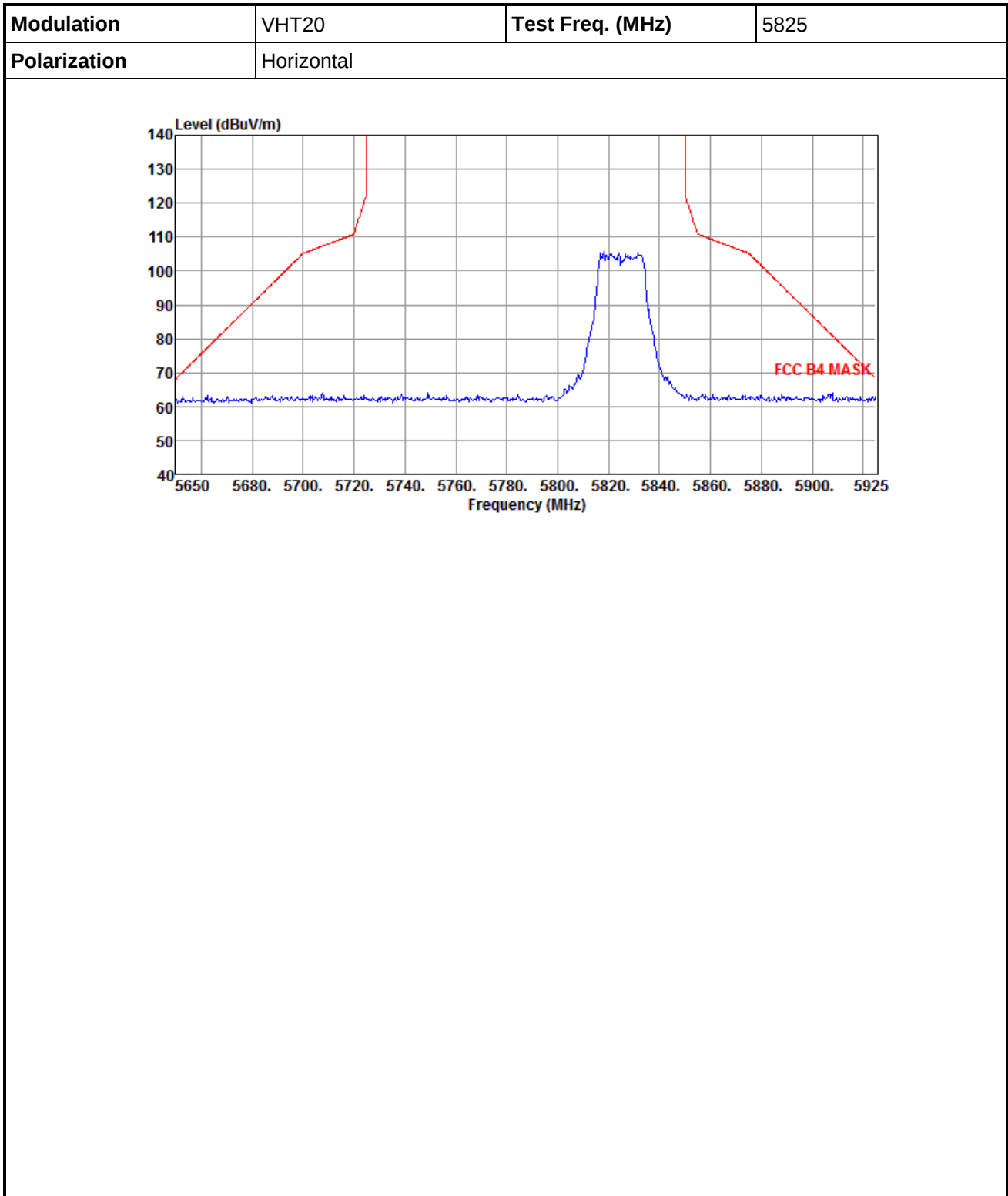
3.5.13 Transmitter Radiated Band Edge for VHT20

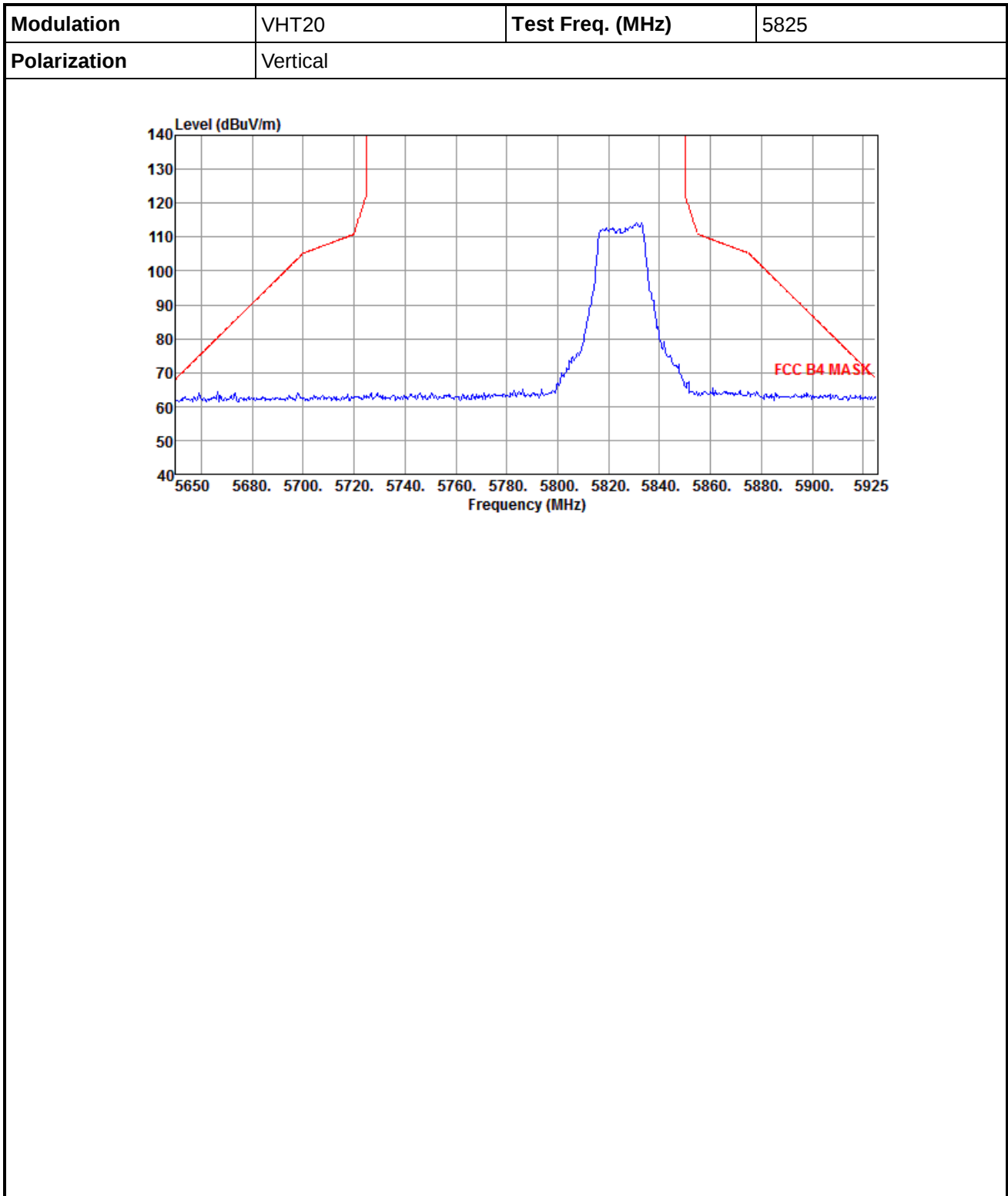




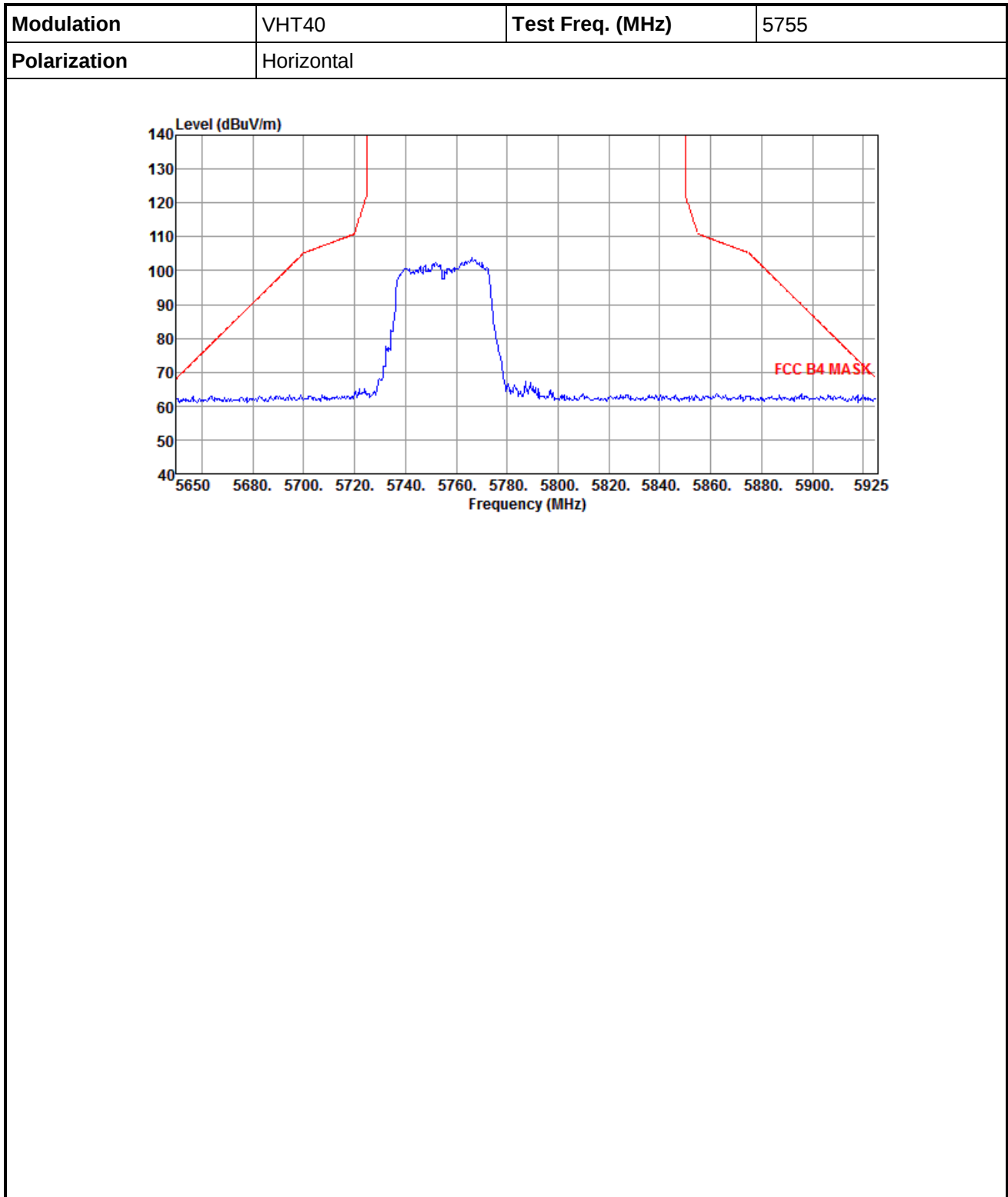


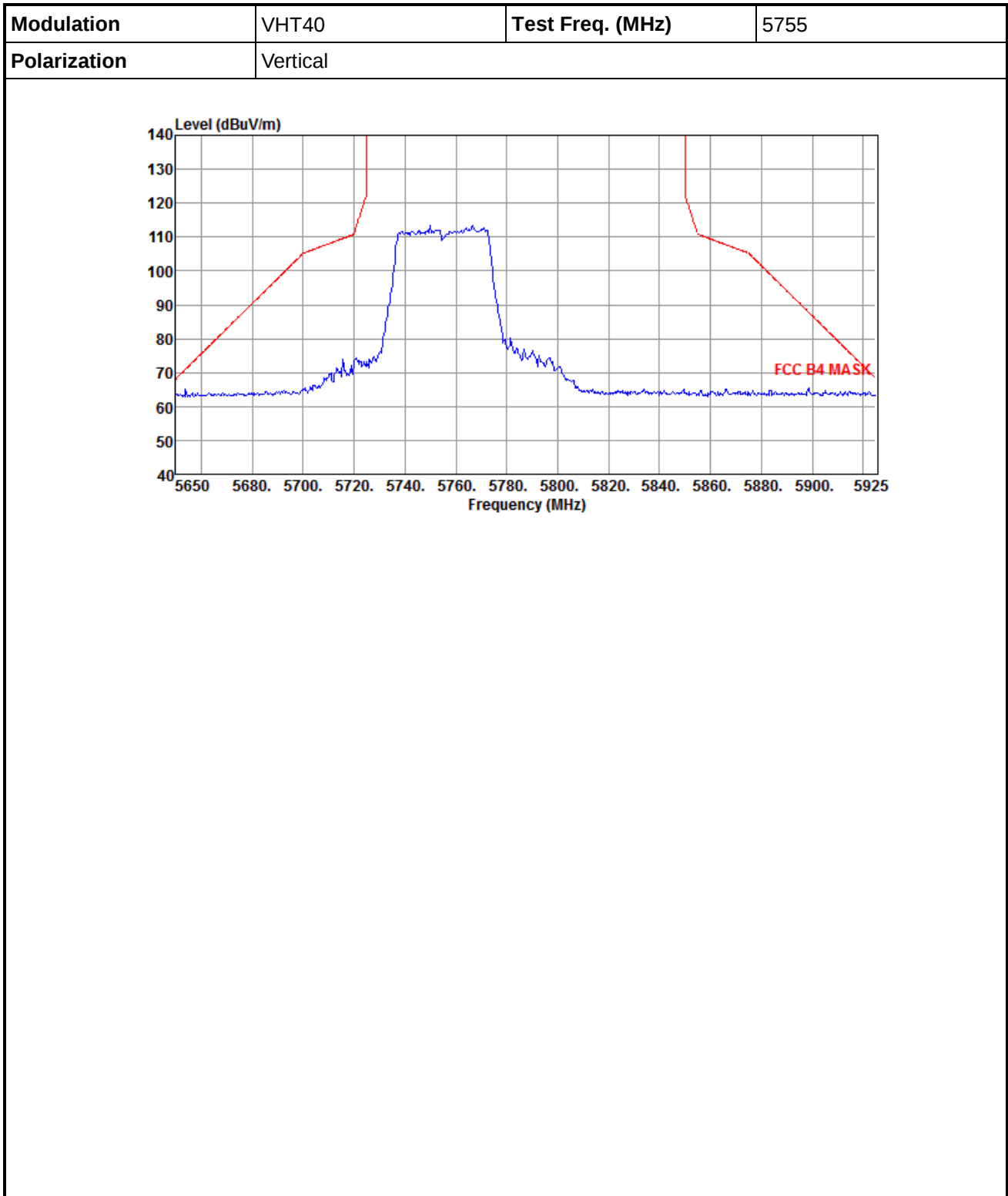


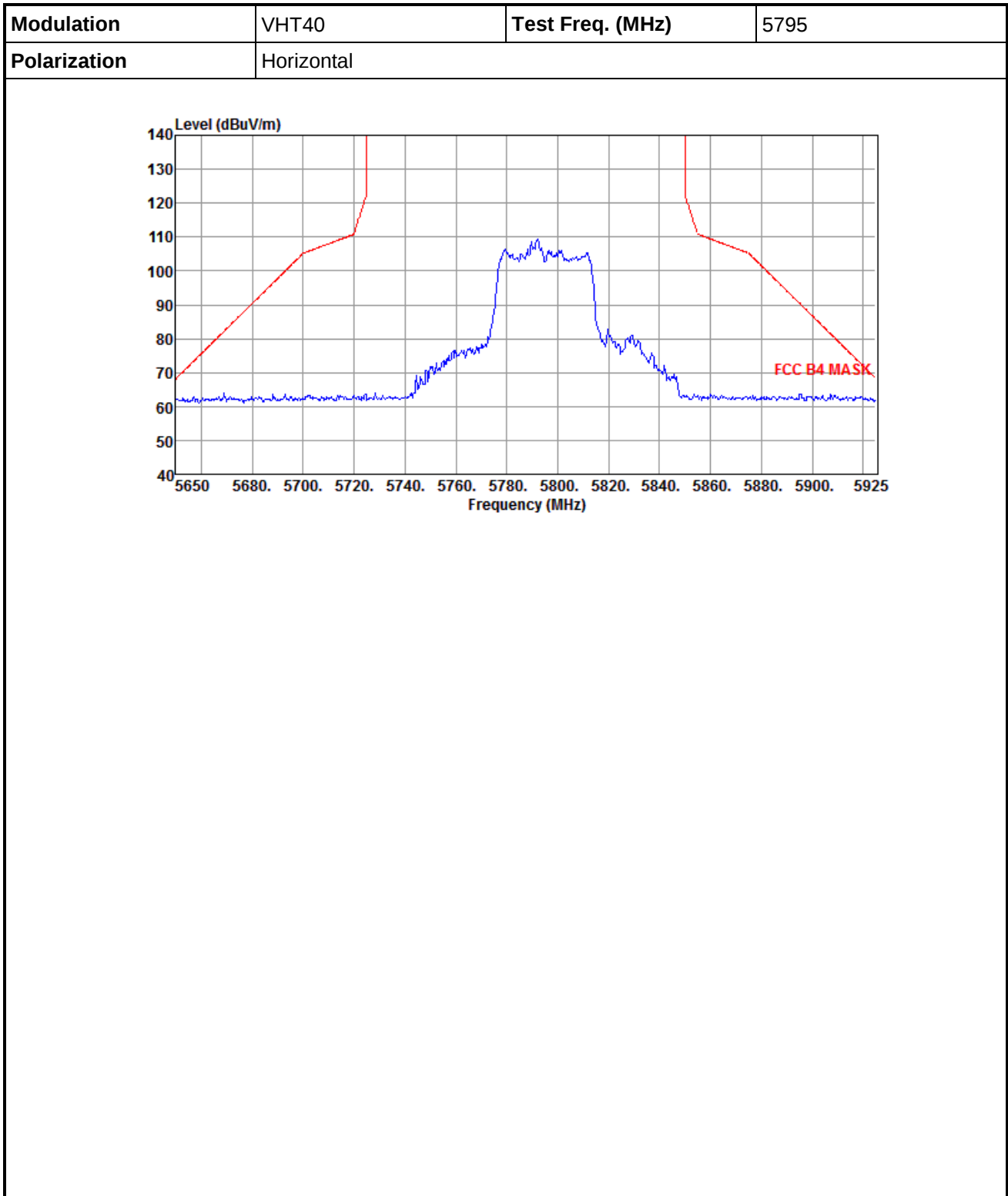


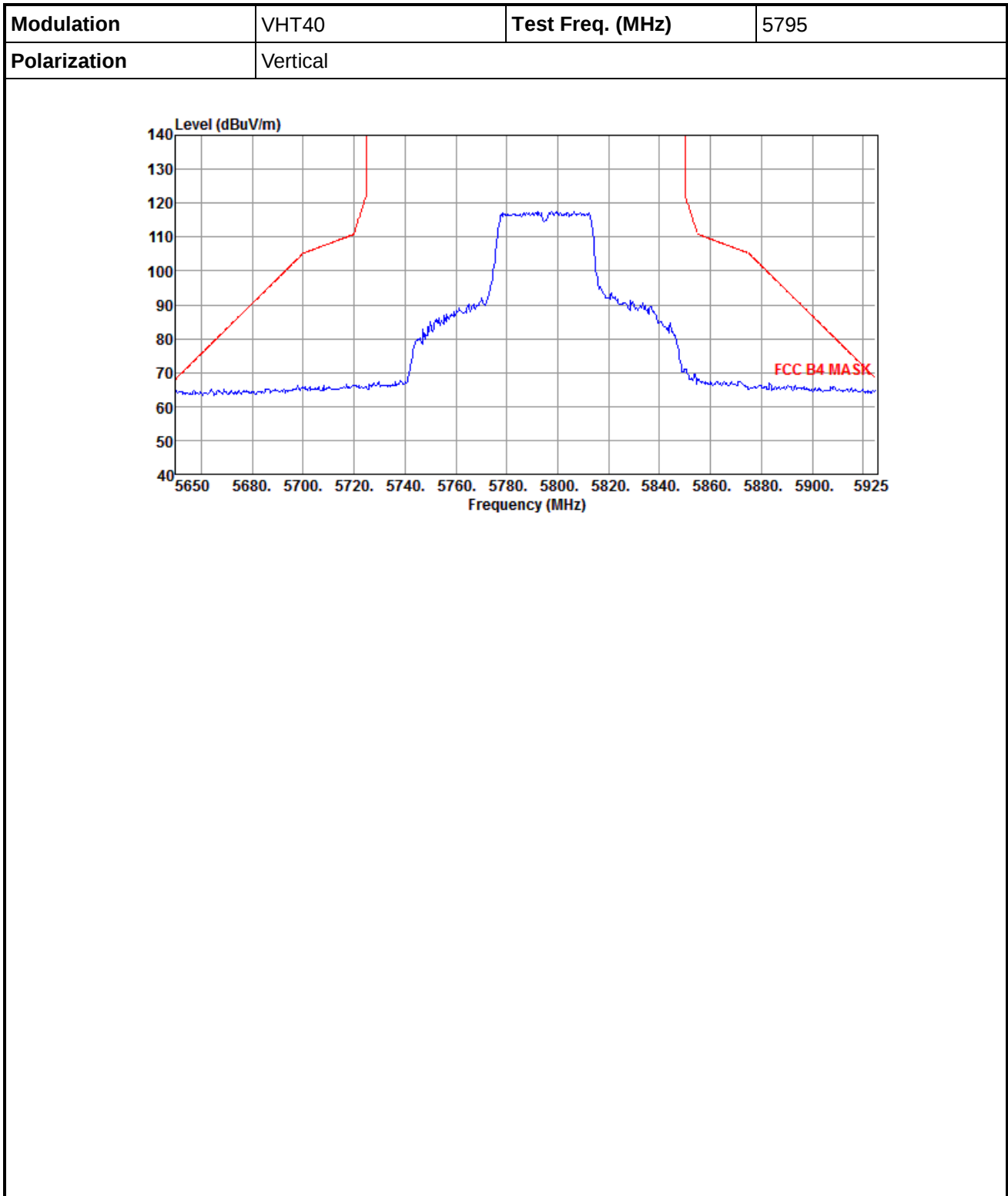


3.5.14 Transmitter Radiated Band Edge for VHT40

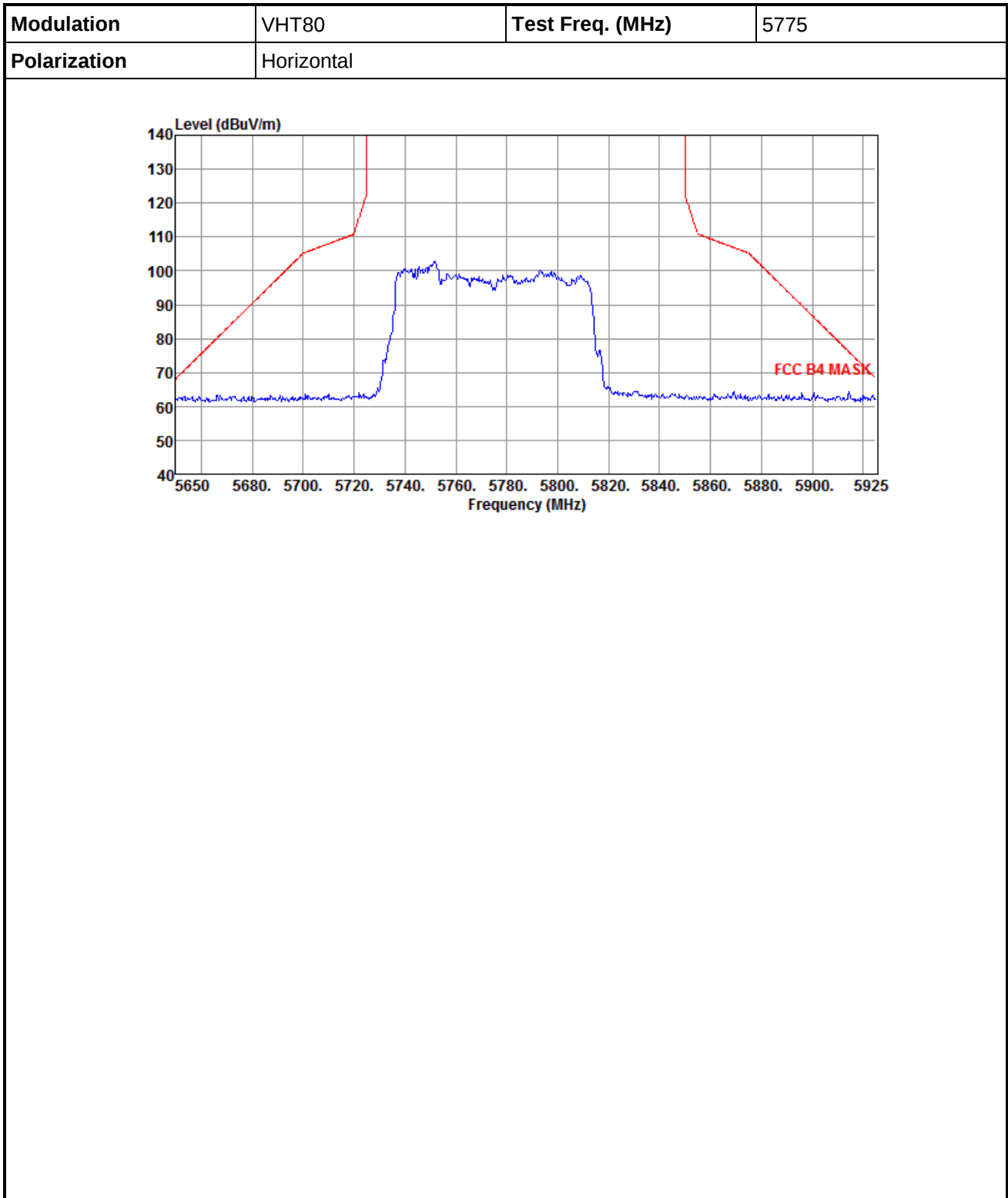


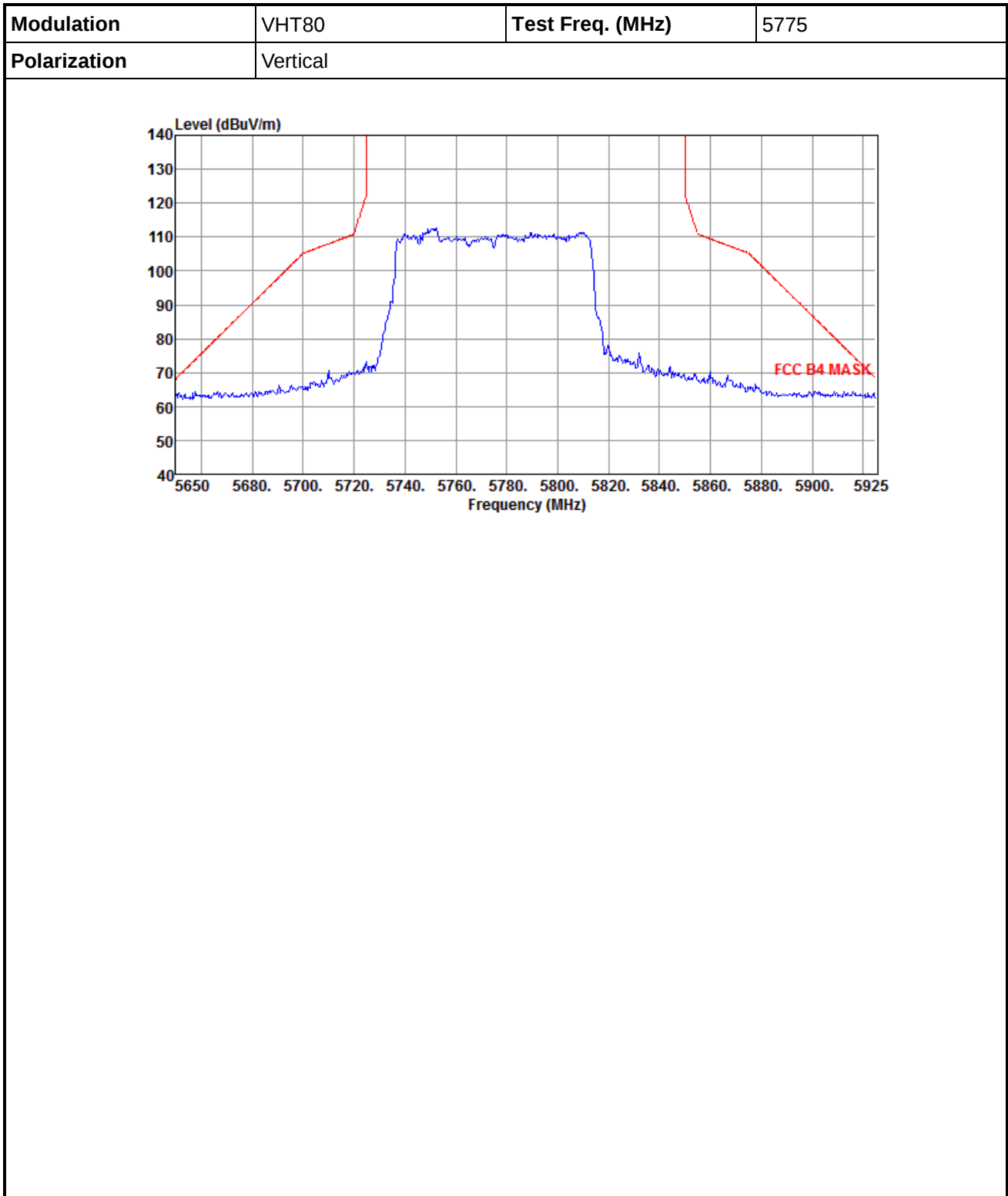






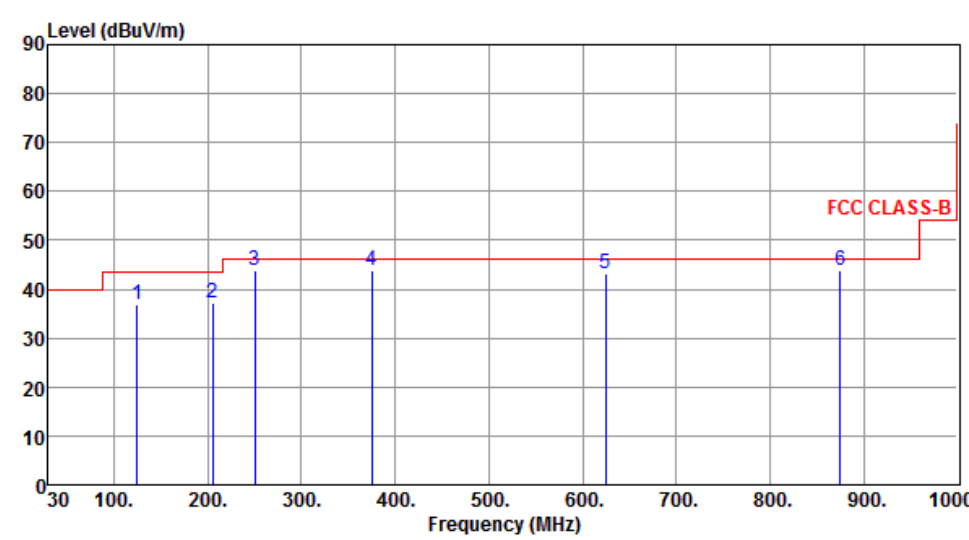
3.5.15 Transmitter Radiated Band Edge for VHT80





3.5.16 Transmitter Radiated Unwanted Emissions (Below 1GHz)

Modulation	VHT40	Test Freq. (MHz)	5590
Polarization	Horizontal		

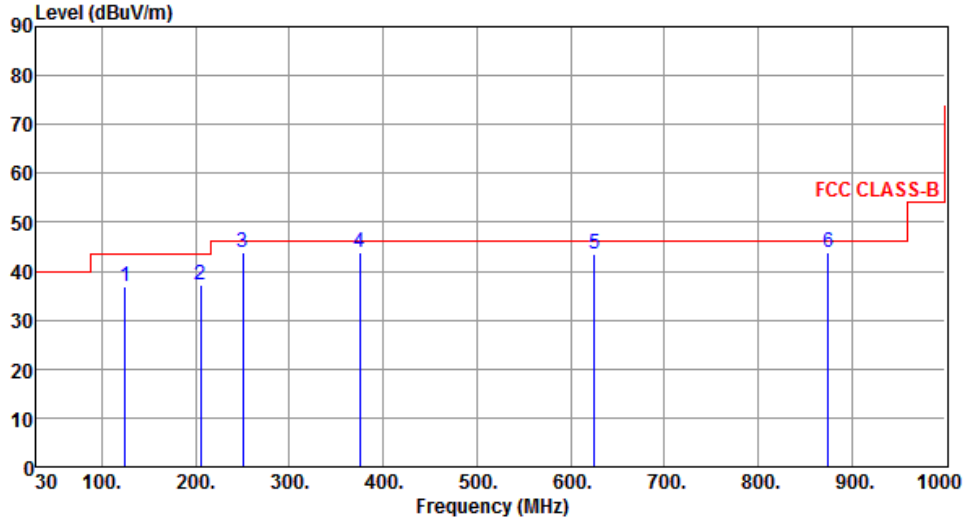


	Freq. MHz	Emission level dBUV/m	Limit dBUV/m	Margin dB	SA reading dBUV	Factor dB	Remark	ANT High cm	Turn Table deg
1	124.56	36.98	43.50	-6.52	55.45	-18.47	Peak	---	---
2	205.45	37.09	43.50	-6.41	56.40	-19.31	Peak	---	---
3	249.96	43.99	46.00	-2.01	61.71	-17.72	QP	115	250
4	374.98	43.94	46.00	-2.06	58.05	-14.11	QP	100	231
5	625.00	43.32	46.00	-2.68	52.42	-9.10	QP	110	343
6	874.98	43.86	46.00	-2.14	49.42	-5.56	QP	100	225

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

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

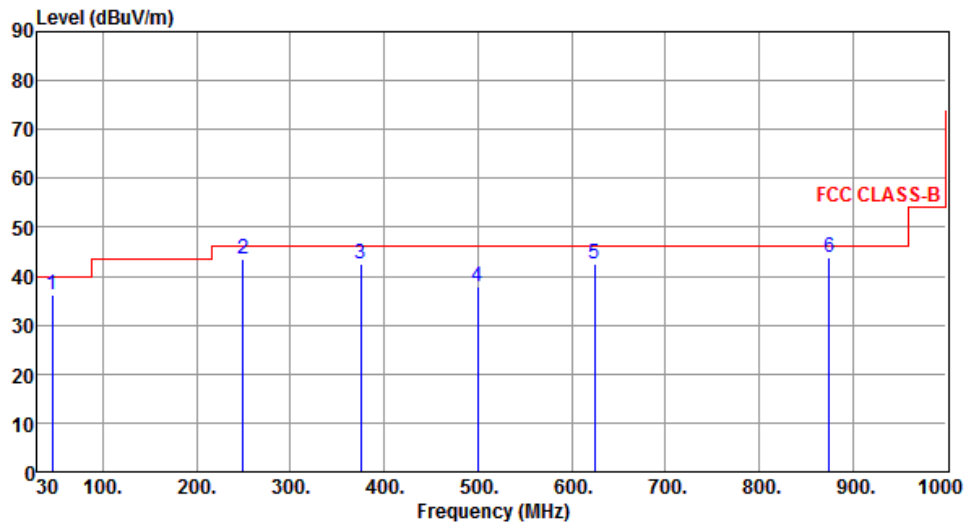
Modulation	VHT20	Test Freq. (MHz)	5785
Polarization	Horizontal		



	Freq. MHz	Emission level dBUV/m	Limit dBUV/m	Margin dB	SA reading dBUV	Factor dB	Remark	ANT High cm	Turn Table deg
1	124.86	36.78	43.50	-6.72	55.22	-18.44	Peak	---	---
2	205.36	37.09	43.50	-6.41	56.40	-19.31	Peak	---	---
3	249.96	43.81	46.00	-2.19	61.53	-17.72	QP	112	251
4	374.95	43.91	46.00	-2.09	58.02	-14.11	QP	100	230
5	625.02	43.44	46.00	-2.56	52.53	-9.09	QP	105	349
6	875.00	43.97	46.00	-2.03	49.52	-5.55	QP	100	225

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)	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	45.53	36.14	40.00	-3.86	52.45	-16.31	Peak	---	---
2	249.63	43.59	46.00	-2.41	61.32	-17.73	Peak	---	---
3	375.00	42.64	46.00	-3.36	56.75	-14.11	QP	100	185
4	499.48	37.99	46.00	-8.01	49.12	-11.13	Peak	---	---
5	624.61	42.45	46.00	-3.55	51.56	-9.11	Peak	---	---
6	874.98	43.95	46.00	-2.05	49.51	-5.56	QP	110	260

Note 1: Emission Level (dBUV/m) = SA Reading (dBUV/m) + Factor* (dB)

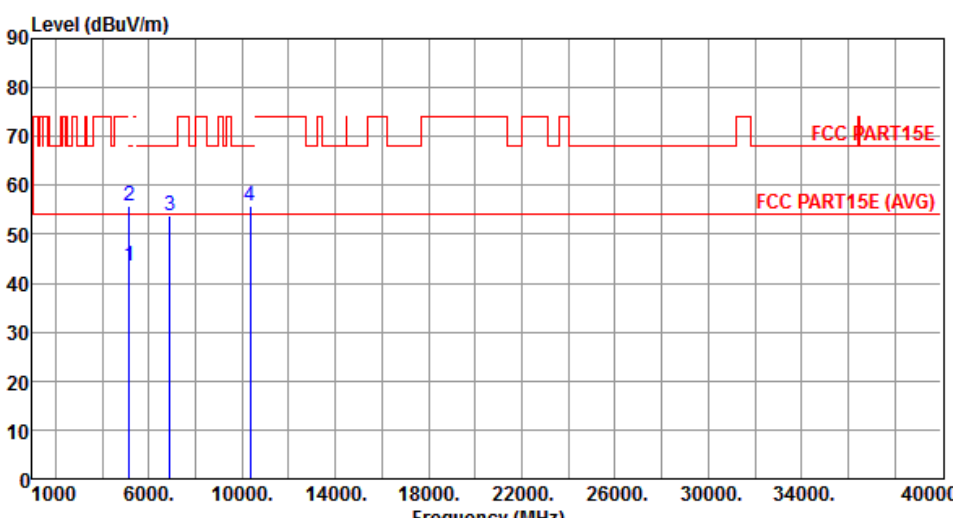
*Factor includes antenna factor , cable loss and amplifier gain

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.

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

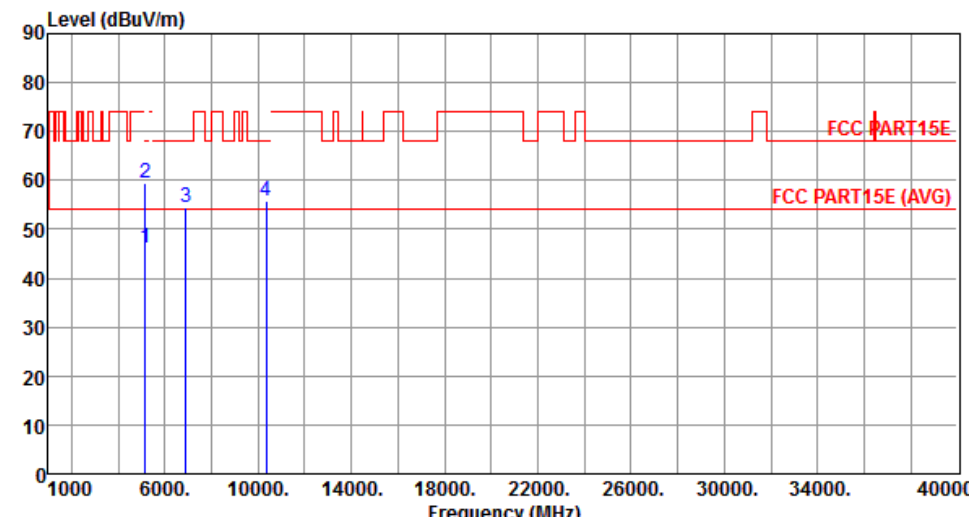
Modulation	VHT20	Test Freq. (MHz)	5180
Polarization	Horizontal		



	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	43.55	54.00	-10.45	39.15	4.40	Average	202	292
2	5150.00	55.90	74.00	-18.10	51.50	4.40	Peak	202	292
3	6906.70	53.74	68.20	-14.46	46.00	7.74	Peak	174	246
4	10360.00	55.65	68.20	-12.55	41.45	14.20	Peak	153	146

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

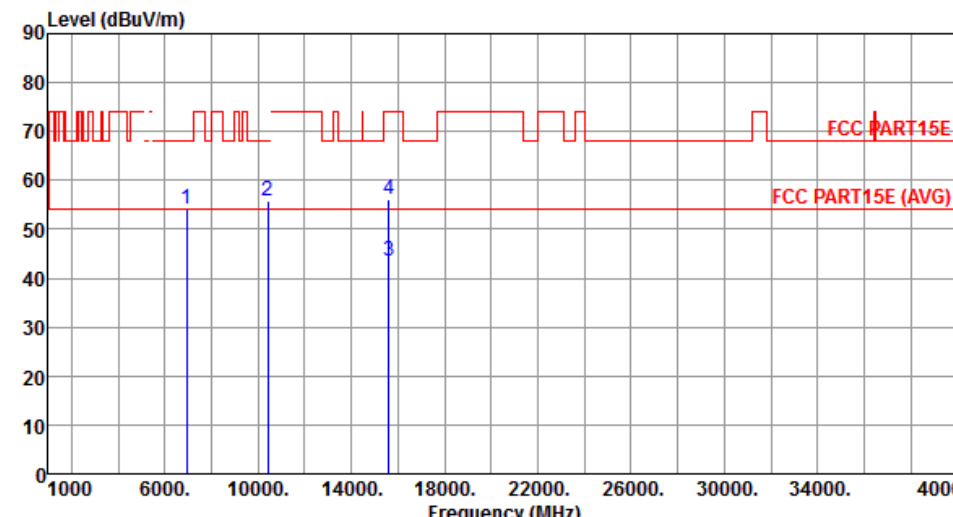
Modulation	VHT20	Test Freq. (MHz)	5180
Polarization	Vertical		



	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	46.17	54.00	-7.83	41.77	4.40	Average	201	289
2	5150.00	59.36	74.00	-14.64	54.96	4.40	Peak	201	289
3	6906.70	54.55	68.20	-13.65	46.81	7.74	Peak	180	217
4	10360.00	55.92	68.20	-12.28	41.72	14.20	Peak	155	229

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

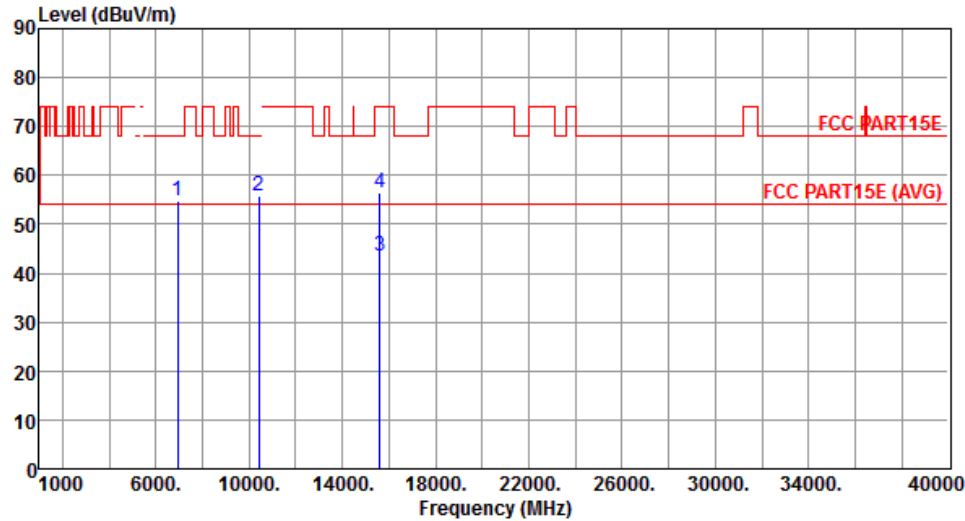
Modulation	VHT20	Test Freq. (MHz)	5200
Polarization	Horizontal		



	Freq. MHz	Emission level dBUV/m	Limit dBUV/m	Margin dB	SA reading dBUV	Factor dB	Remark	ANT High cm	Turn Table deg
1	6933.30	54.08	68.20	-14.12	46.31	7.77	Peak	168	245
2	10400.00	55.74	68.20	-12.46	41.46	14.28	Peak	159	142
3	15600.00	43.39	54.00	-10.61	28.37	15.02	Average	313	274
4	15600.00	56.17	74.00	-17.83	41.15	15.02	Peak	313	274

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

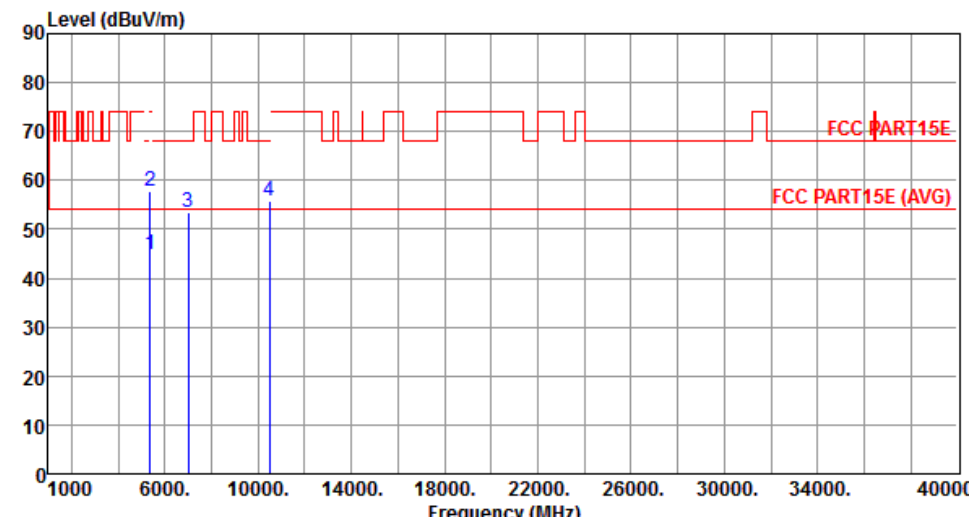
Modulation	VHT20	Test Freq. (MHz)	5200
Polarization	Vertical		



	Freq.	Emission	Limit	Margin	SA	Factor	Remark	ANT	Turn
	MHz	level	dBuV/m	dB	reading	dB		High	Table
		dBuV/m			dBuV			cm	deg
1	6933.30	54.86	68.20	-13.34	47.09	7.77	Peak	173	212
2	10400.00	55.65	68.20	-12.55	41.37	14.28	Peak	159	225
3	15600.00	43.44	54.00	-10.56	28.42	15.02	Average	218	335
4	15600.00	56.58	74.00	-17.42	41.56	15.02	Peak	218	335

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

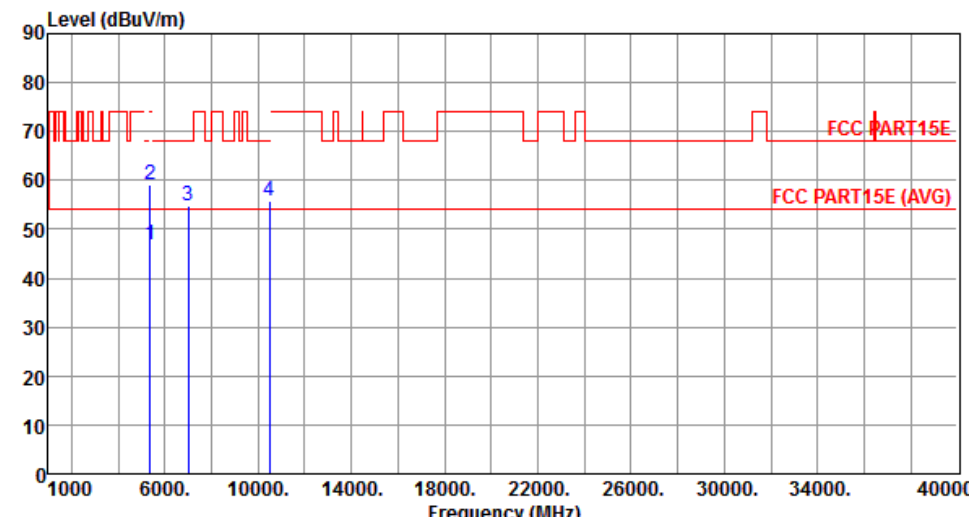
Modulation	VHT20	Test Freq. (MHz)	5240
Polarization	Horizontal		



	Freq. MHz	Emission level dBUV/m	Limit dBUV/m	Margin dB	SA reading dBUV	Factor dB	Remark	ANT High cm	Turn Table deg
1	5350.00	44.95	54.00	-9.05	40.31	4.64	Average	103	256
2	5350.00	57.75	74.00	-16.25	53.11	4.64	Peak	103	256
3	6986.70	53.55	68.20	-14.65	45.71	7.84	Peak	178	245
4	10480.00	55.90	68.20	-12.30	41.47	14.43	Peak	158	143

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

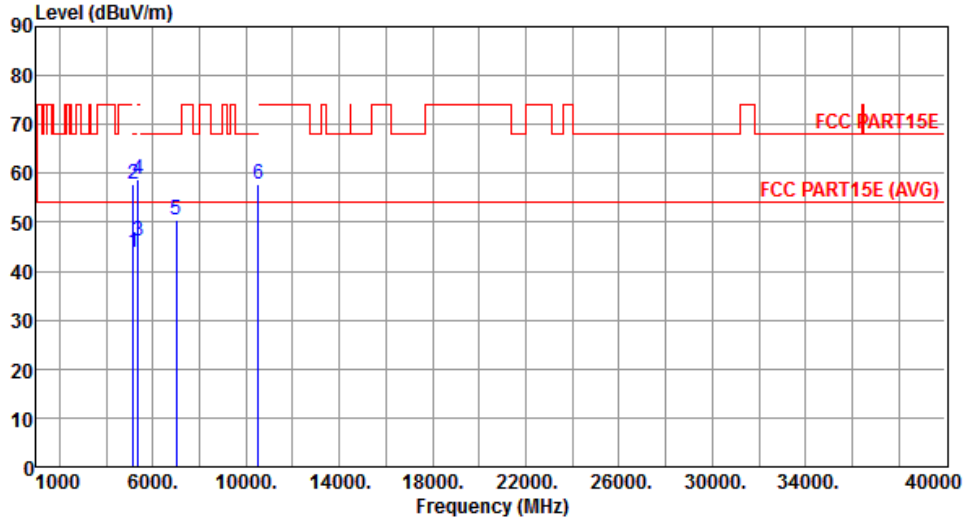
Modulation	VHT20	Test Freq. (MHz)	5240
Polarization	Vertical		



	Freq. MHz	Emission level dBuV/m	Limit dBuV/m	Margin dB	SA reading dBuV	Factor dB	Remark	ANT High cm	Turn Table deg
1	5350.00	46.82	54.00	-7.18	42.18	4.64	Average	173	285
2	5350.00	59.09	74.00	-14.91	54.45	4.64	Peak	173	285
3	5986.70	54.84	68.20	-13.36	47.00	7.84	Peak	176	211
4	10480.00	55.63	68.20	-12.57	41.20	14.43	Peak	152	224

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

Modulation	VHT20	Test Freq. (MHz)	5260
Polarization	Horizontal		



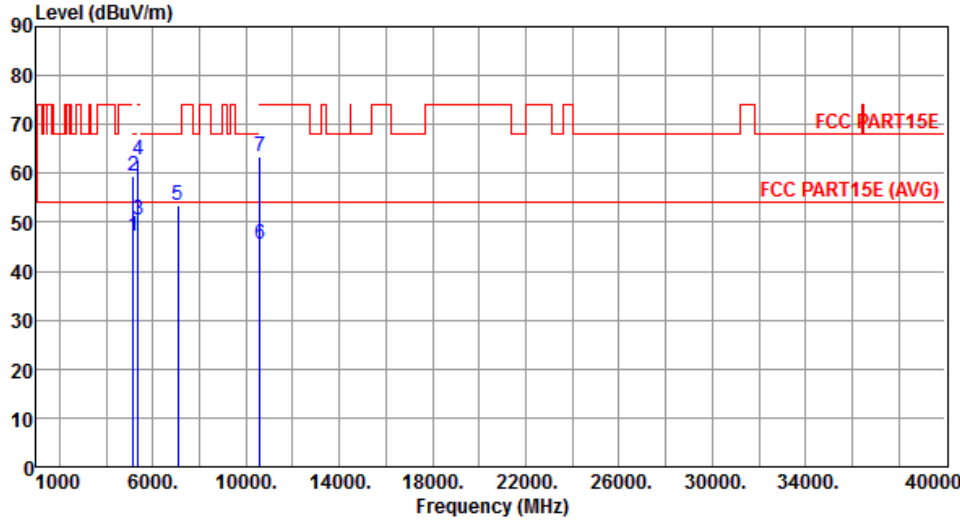
	Freq. MHz	Emission level dBUV/m	Limit dBUV/m	Margin dB	SA reading dBUV	Factor dB	Remark	ANT High cm	Turn Table deg
1	5150.00	43.91	54.00	-10.09	39.51	4.40	Average	273	210
2	5150.00	57.84	74.00	-16.16	53.44	4.40	Peak	273	210
3	5350.00	46.01	54.00	-7.99	41.37	4.64	Average	273	210
4	5350.00	58.85	74.00	-15.15	54.21	4.64	Peak	273	210
5	7013.30	50.32	68.20	-17.88	42.42	7.90	Peak	164	242
6	10520.00	57.64	68.20	-10.56	43.14	14.50	Peak	169	73

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

Modulation	VHT20	Test Freq. (MHz)	5260
Polarization	Vertical		
Level (dBUV/m)			

Modulation	VHT20	Test Freq. (MHz)	5300
Polarization	Horizontal		
Level (dBuV/m)			

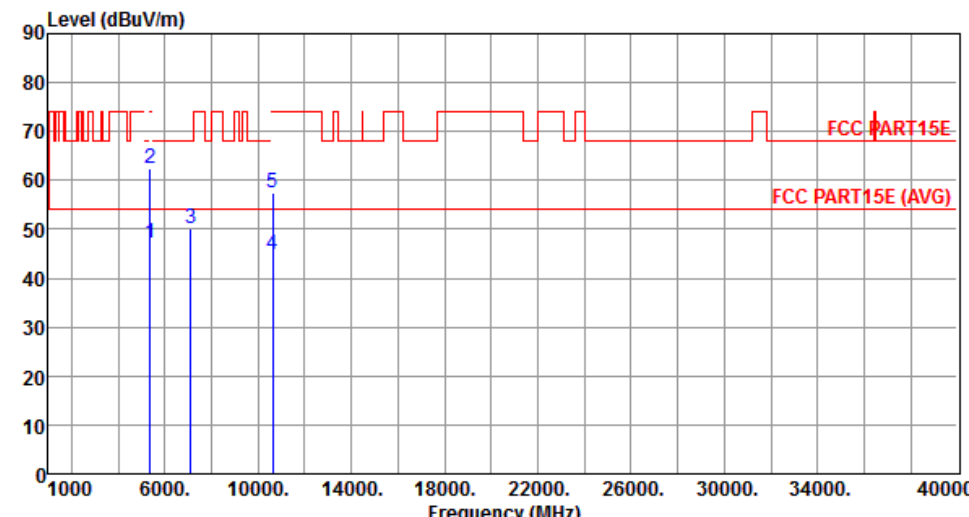
Modulation	VHT20	Test Freq. (MHz)	5300
Polarization	Vertical		



	Freq. MHz	Emission level dBuV/m	Limit dBuV/m	Margin dB	SA reading dBuV	Factor dB	Remark	ANT High cm	Turn Table deg
1	5150.00	47.27	54.00	-6.73	42.87	4.40	Average	198	3
2	5150.00	59.50	74.00	-14.50	55.10	4.40	Peak	198	3
3	5350.00	50.40	54.00	-3.60	45.76	4.64	Average	198	3
4	5350.00	62.83	74.00	-11.17	58.19	4.64	Peak	198	3
5	7066.70	53.33	68.20	-14.87	45.30	8.03	Peak	162	351
6	10600.00	45.53	54.00	-8.47	30.94	14.59	Average	158	181
7	10600.00	63.33	74.00	-10.67	48.74	14.59	Peak	158	181

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).

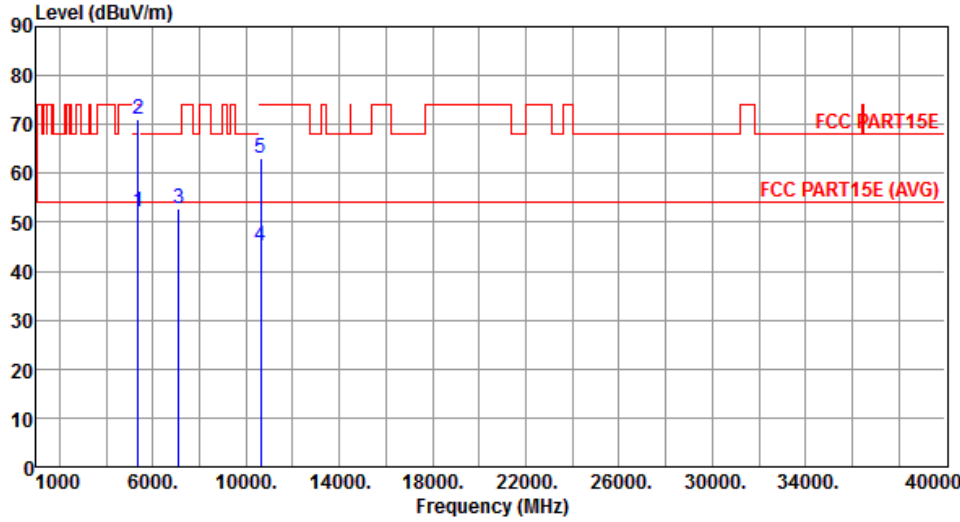
Modulation	VHT20	Test Freq. (MHz)	5320
Polarization	Horizontal		



	Freq. MHz	Emission level dBUV/m	Limit dBUV/m	Margin dB	SA reading dBUV	Factor dB	Remark	ANT High cm	Turn Table deg
1	5350.00	47.20	54.00	-6.80	42.56	4.64	Average	322	222
2	5350.00	62.43	74.00	-11.57	57.79	4.64	Peak	322	222
3	7093.30	50.20	68.20	-18.00	42.09	8.11	Peak	169	244
4	10640.00	44.89	54.00	-9.11	30.25	14.64	Average	163	85
5	10640.00	57.61	74.00	-16.39	42.97	14.64	Peak	163	85

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)	5320
Polarization	Vertical		

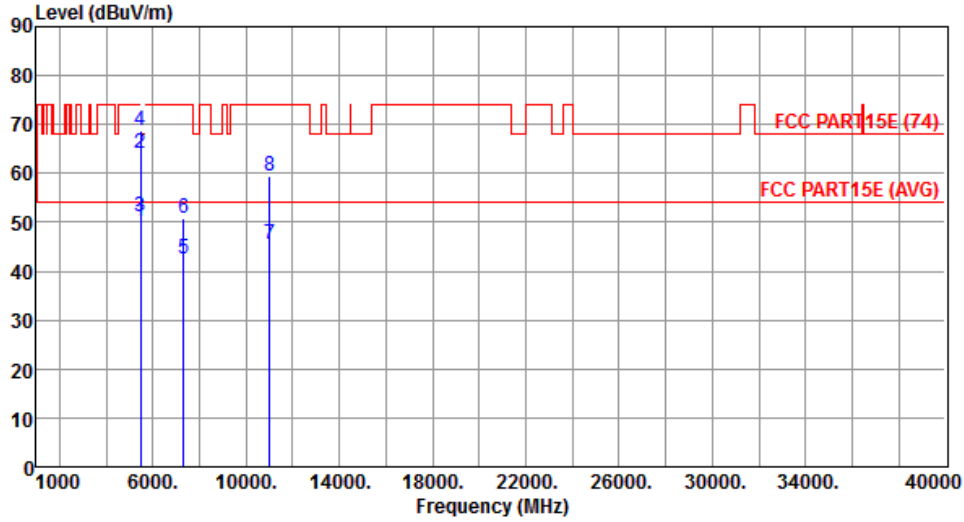


	Freq. MHz	Emission level dBUV/m	Limit dBUV/m	Margin dB	SA reading dBUV	Factor dB	Remark	ANT High cm	Turn Table deg
1	5350.00	52.31	54.00	-1.69	47.67	4.64	Average	197	285
2	5350.00	71.05	74.00	-2.95	66.41	4.64	Peak	197	285
3	7093.30	52.71	68.20	-15.49	44.60	8.11	Peak	168	356
4	10640.00	45.30	54.00	-8.70	30.66	14.64	Average	153	185
5	10640.00	62.99	74.00	-11.01	48.35	14.64	Peak	153	185

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)	5500
Polarization	Horizontal		
Level (dBuV/m) </			

Modulation	VHT20	Test Freq. (MHz)	5500
Polarization	Vertical		

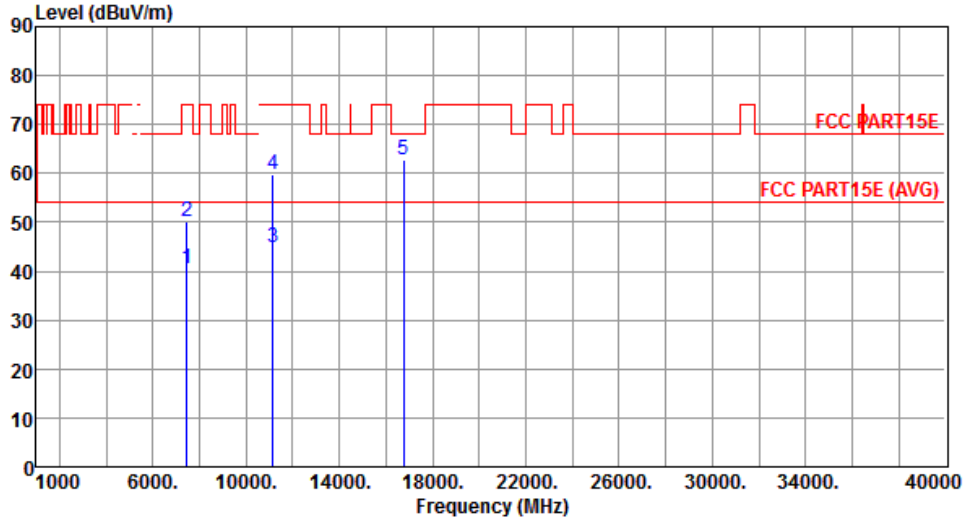


	Freq. MHz	Emission level dBuV/m	Limit dBuV/m	Margin dB	SA reading dBuV	Factor dB	Remark	ANT High cm	Turn Table deg
1	5460.00	50.13	54.00	-3.87	45.35	4.78	Average	197	1
2	5460.00	64.07	74.00	-9.93	59.29	4.78	Peak	197	1
3	5470.00	51.09	54.00	-2.91	46.30	4.79	Average	197	1
4	5470.00	68.64	74.00	-5.36	63.85	4.79	Peak	197	1
5	7333.30	42.47	54.00	-11.53	34.04	8.43	Average	167	350
6	7333.30	50.76	74.00	-23.24	42.33	8.43	Peak	167	350
7	11000.00	45.53	54.00	-8.47	30.47	15.06	Average	170	109
8	11000.00	59.56	74.00	-14.44	44.50	15.06	Peak	170	109

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)	5580
Polarization	Horizontal		
Level (dBuV/m)			

Modulation	VHT20	Test Freq. (MHz)	5580
Polarization	Vertical		

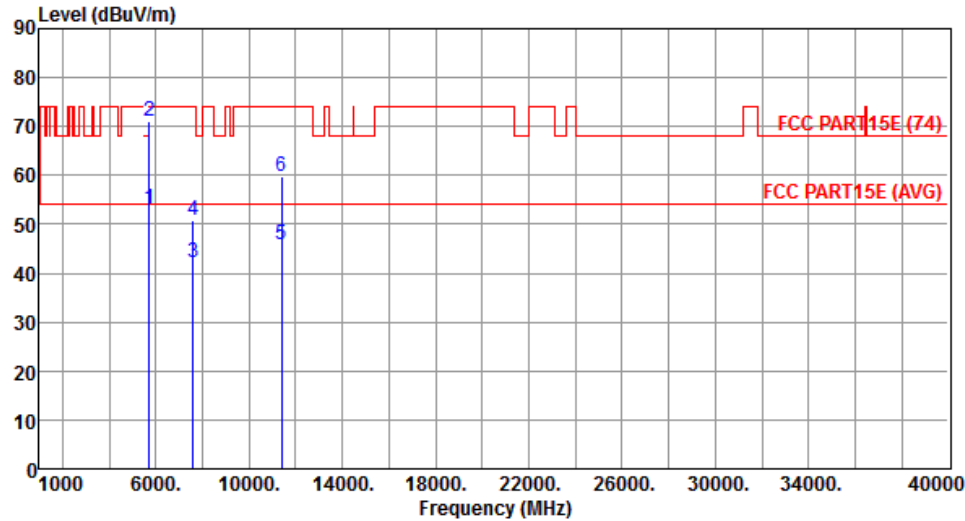


	Freq. MHz	Emission level dBuV/m	Limit dBuV/m	Margin dB	SA reading dBuV	Factor dB	Remark	ANT High cm	Turn Table deg
1	7440.00	40.54	54.00	-13.46	31.98	8.56	Average	164	0
2	7440.00	50.04	74.00	-23.96	41.48	8.56	Peak	164	0
3	11160.00	44.83	54.00	-9.17	29.62	15.21	Average	305	6
4	11160.00	59.72	74.00	-14.28	44.51	15.21	Peak	305	6
5	16740.00	62.92	68.20	-5.28	45.66	17.26	Peak	160	83

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

Modulation	VHT20	Test Freq. (MHz)	5700
Polarization	Vertical		



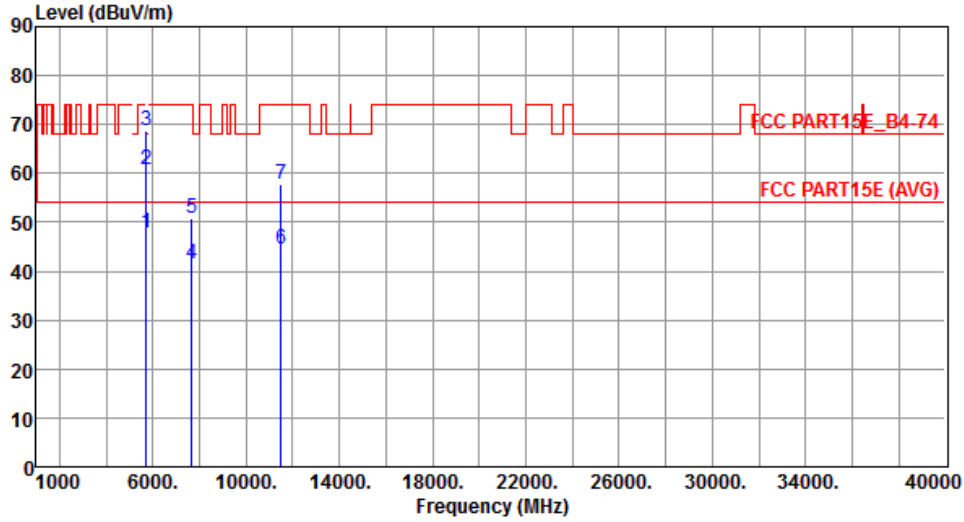
Freq. MHz	Emission level dBUV/m	Limit dBUV/m	Margin dB	SA reading dBUV	Factor dB	Remark	ANT High cm	Turn Table deg	
1	5725.00	52.98	54.00	-1.02	47.89	5.09	Average	223	178
2	5725.00	70.96	74.00	-3.04	65.87	5.09	Peak	223	178
3	7600.00	42.24	54.00	-11.76	33.40	8.84	Average	162	351
4	7600.00	50.80	74.00	-23.20	41.96	8.84	Peak	162	351
5	11400.00	45.83	54.00	-8.17	30.39	15.44	Average	178	103
6	11400.00	59.94	74.00	-14.06	44.50	15.44	Peak	178	103

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

Modulation	VHT20	Test Freq. (MHz)	5720
Polarization	Horizontal		
Level (dBuV/m)			

Modulation	VHT20	Test Freq. (MHz)	5720
Polarization	Vertical		
Level (dBuV/m)			

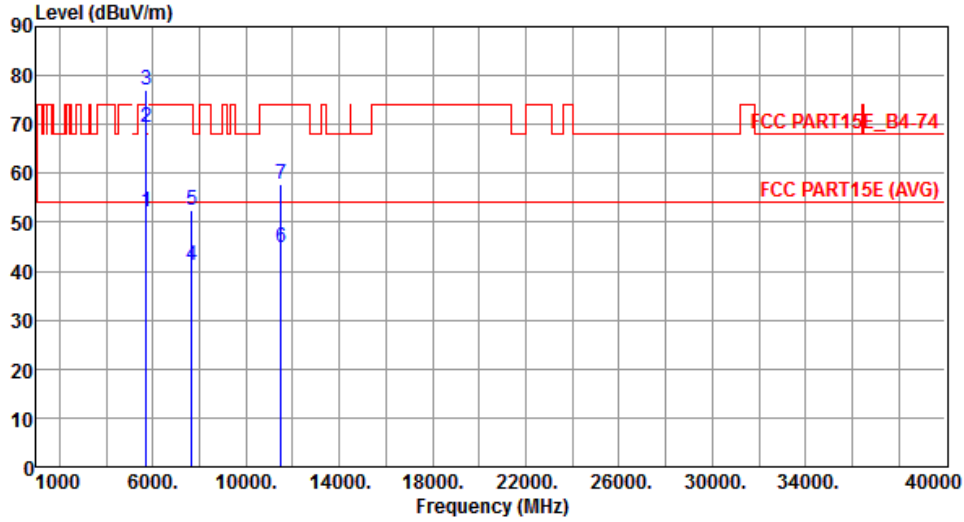
Modulation	VHT20	Test Freq. (MHz)	5745
Polarization	Horizontal		



	Freq. MHz	Emission level dBUV/m	Limit dBUV/m	Margin dB	SA reading dBUV	Factor dB	Remark	ANT High cm	Turn Table deg
1	5715.00	47.83	54.00	-6.17	42.73	5.10	Average	172	136
2	5715.00	60.78	74.00	-13.22	55.68	5.10	Peak	172	136
3	5725.00	68.60	78.20	-9.60	63.51	5.09	Peak	172	136
4	7660.00	41.53	54.00	-12.47	32.74	8.79	Average	217	242
5	7660.00	50.86	74.00	-23.14	42.07	8.79	Peak	217	242
6	11490.00	44.66	54.00	-9.34	29.13	15.53	Average	284	182
7	11490.00	57.63	74.00	-16.37	42.10	15.53	Peak	284	182

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

Modulation	VHT20	Test Freq. (MHz)	5745
Polarization	Vertical		



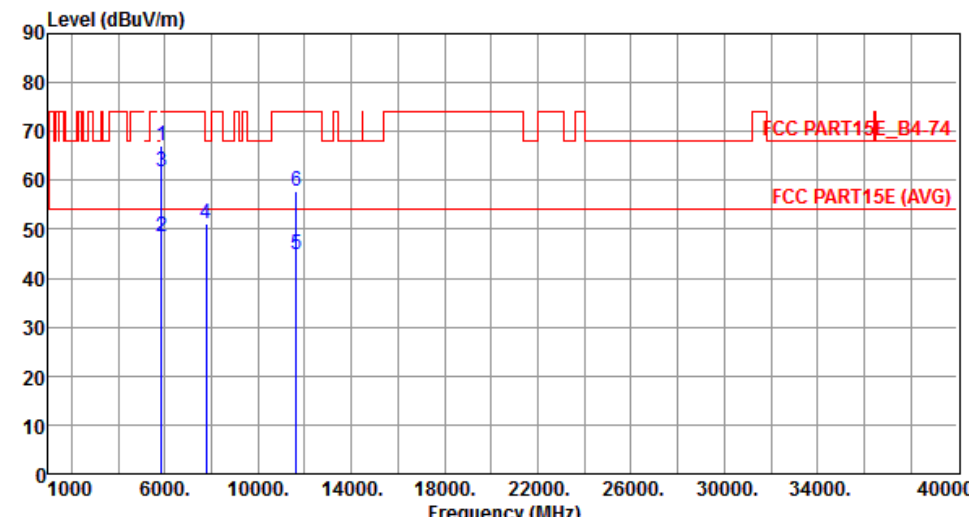
	Freq. MHz	Emission level dBuV/m	Limit dBuV/m	Margin dB	SA reading dBuV	Factor dB	Remark	ANT High cm	Turn Table deg
1	5715.00	52.09	54.00	-1.91	46.99	5.10	Average	202	169
2	5715.00	69.47	74.00	-4.53	64.37	5.10	Peak	202	169
3	5725.00	76.94	78.20	-1.26	71.85	5.09	Peak	202	169
4	7660.00	41.17	54.00	-12.83	32.38	8.79	Average	219	63
5	7660.00	52.49	74.00	-21.51	43.70	8.79	Peak	219	63
6	11490.00	44.86	54.00	-9.14	29.33	15.53	Average	255	347
7	11490.00	57.71	74.00	-16.29	42.18	15.53	Peak	255	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).

Modulation	VHT20	Test Freq. (MHz)	5785
Polarization	Horizontal		
Level (dBuV/m) </			

Modulation	VHT20	Test Freq. (MHz)	5785
Polarization	Vertical		
Level (dBuV/m)			

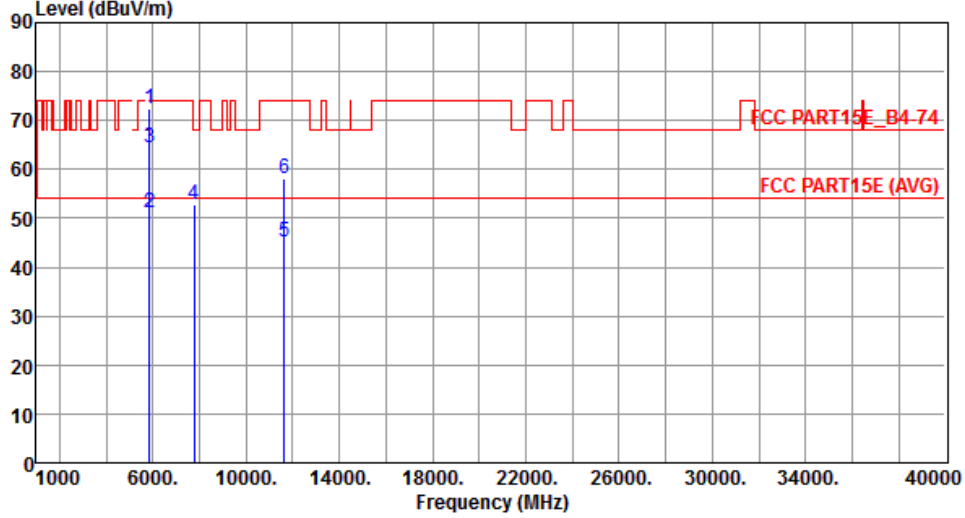
Modulation	VHT20	Test Freq. (MHz)	5825
Polarization	Horizontal		



	Freq. MHz	Emission level dBUV/m	Limit dBUV/m	Margin dB	SA reading dBUV	Factor dB	Remark	ANT High cm	Turn Table deg
1	5850.00	67.00	78.20	-11.20	61.74	5.26	Peak	175	137
2	5860.00	48.47	54.00	-5.53	43.20	5.27	Average	175	137
3	5860.00	61.87	74.00	-12.13	56.60	5.27	Peak	175	137
4	7766.70	51.15	68.20	-17.05	42.46	8.69	Peak	213	248
5	11650.00	44.82	54.00	-9.18	29.73	15.09	Average	255	186
6	11650.00	57.87	74.00	-16.13	42.78	15.09	Peak	255	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)	5825
Polarization	Vertical		



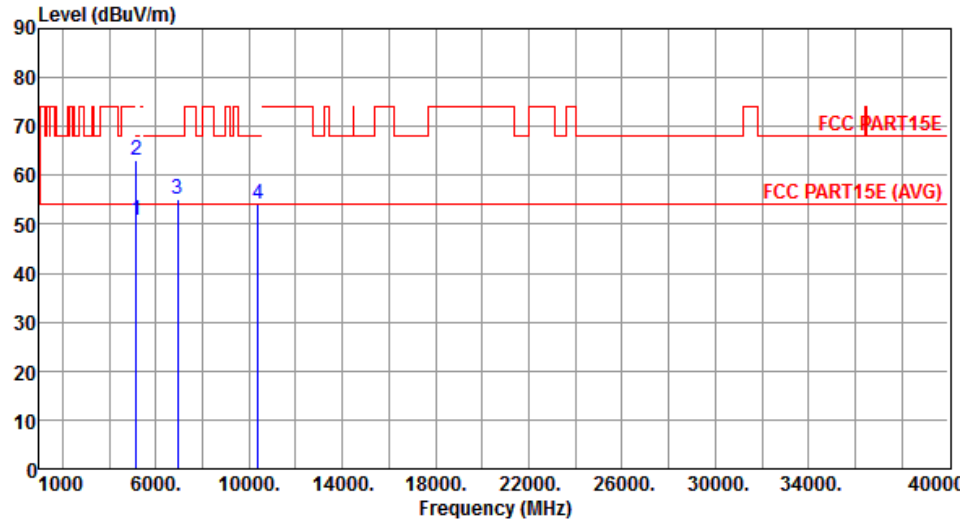
	Freq. MHz	Emission level dBUV/m	Limit dBUV/m	Margin dB	SA reading dBUV	Factor dB	Remark	ANT High cm	Turn Table deg
1	5850.00	72.38	78.20	-5.82	67.12	5.26	Peak	186	5
2	5860.00	51.21	54.00	-2.79	45.94	5.27	Average	186	5
3	5860.00	64.54	74.00	-9.46	59.27	5.27	Peak	186	5
4	7766.70	52.83	68.20	-15.37	44.14	8.69	Peak	215	58
5	11650.00	45.12	54.00	-8.88	30.03	15.09	Average	243	344
6	11650.00	58.05	74.00	-15.95	42.96	15.09	Peak	243	344

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).

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

Modulation	VHT40	Test Freq. (MHz)	5190
Polarization	Horizontal		
Level (dBuV/m)			

Modulation	VHT40	Test Freq. (MHz)	5190
Polarization	Vertical		



	Freq. MHz	Emission level dBuV/m	Limit dBuV/m	Margin dB	SA reading dBuV	Factor dB	Remark	ANT High cm	Turn Table deg
1	5150.00	50.71	54.00	-3.29	46.31	4.40	Average	202	219
2	5150.00	63.18	74.00	-10.82	58.78	4.40	Peak	202	219
3	6920.00	54.97	68.20	-13.23	47.21	7.76	Peak	168	218
4	10380.00	54.28	68.20	-13.92	40.03	14.25	Peak	187	165

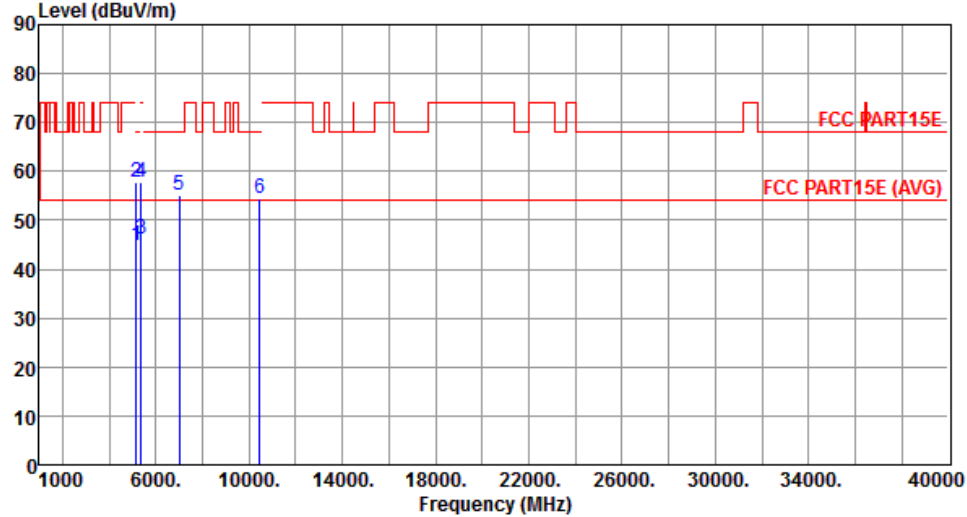
Note 1: Emission Level (dBUV/m) = SA Reading (dBUV/m) + Factor* (dB)

*Factor includes antenna factor , cable loss and amplifier gain

Note 2: Margin (dB) = Emission level (dBUV/m) – Limit (dBUV/m).

Modulation	VHT40	Test Freq. (MHz)	5230
Polarization	Horizontal		
Level (dBuV/m) </			

Modulation	VHT40	Test Freq. (MHz)	5230
Polarization	Vertical		



	Freq. MHz	Emission level dBuV/m	Limit dBuV/m	Margin dB	SA reading dBuV	Factor dB	Remark	ANT High cm	Turn Table deg
1	5150.00	44.93	54.00	-9.07	40.53	4.40	Average	200	218
2	5150.00	57.65	74.00	-16.35	53.25	4.40	Peak	200	218
3	5350.00	46.30	54.00	-7.70	41.66	4.64	Average	200	218
4	5350.00	57.77	74.00	-16.23	53.13	4.64	Peak	200	218
5	6986.66	54.96	68.20	-13.24	47.12	7.84	Peak	166	215
6	10460.00	54.62	68.20	-13.58	40.22	14.40	Peak	176	178

Note 1: Emission Level (dBUV/m) = SA Reading (dBUV/m) + Factor* (dB)

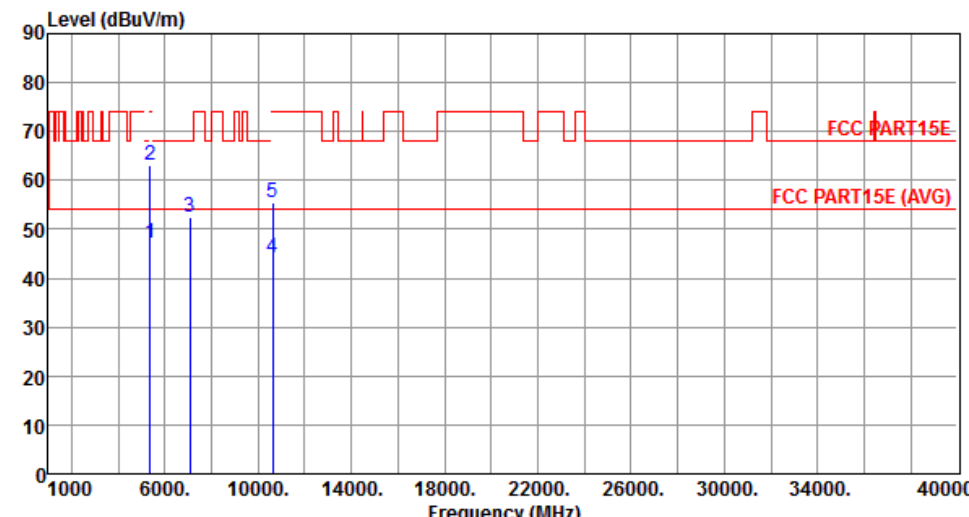
*Factor includes antenna factor , cable loss and amplifier gain

Note 2: Margin (dB) = Emission level (dBUV/m) – Limit (dBUV/m).

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

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

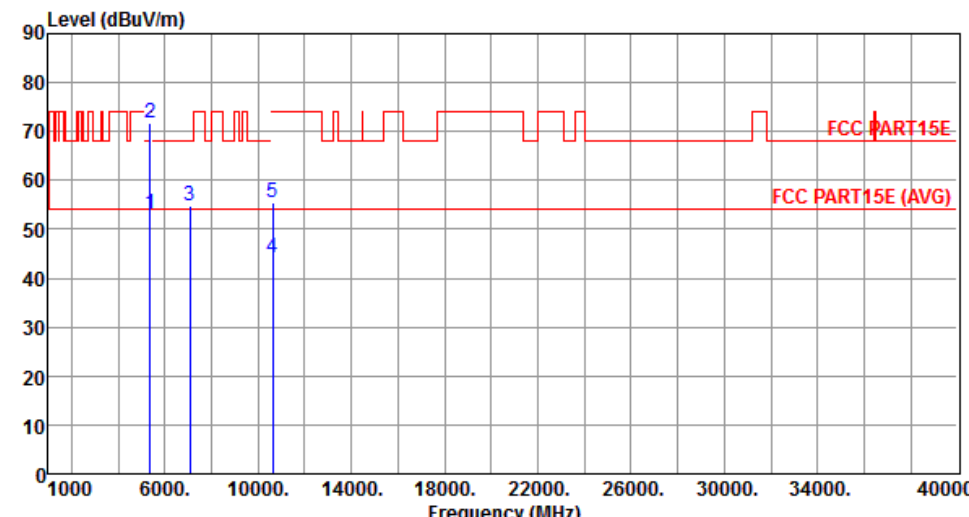
Modulation	VHT40	Test Freq. (MHz)	5310
Polarization	Horizontal		



	Freq. MHz	Emission level dBUV/m	Limit dBUV/m	Margin dB	SA reading dBUV	Factor dB	Remark	ANT High cm	Turn Table deg
1	5350.00	47.04	54.00	-6.96	42.40	4.64	Average	222	225
2	5350.00	63.03	74.00	-10.97	58.39	4.64	Peak	222	225
3	7080.00	52.60	68.20	-15.60	44.53	8.07	Peak	174	255
4	10620.00	44.09	54.00	-9.91	29.48	14.61	Average	166	168
5	10620.00	55.32	74.00	-18.68	40.71	14.61	Peak	166	168

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

Modulation	VHT40	Test Freq. (MHz)	5310
Polarization	Vertical		



	Freq. MHz	Emission level dBUV/m	Limit dBUV/m	Margin dB	SA reading dBUV	Factor dB	Remark	ANT High cm	Turn Table deg
1	5350.00	52.99	54.00	-1.01	48.35	4.64	Average	199	286
2	5350.00	71.77	74.00	-2.23	67.13	4.64	Peak	199	286
3	7080.00	54.82	68.20	-13.38	46.75	8.07	Peak	165	349
4	10620.00	44.15	54.00	-9.85	29.54	14.61	Average	188	256
5	10620.00	55.57	74.00	-18.43	40.96	14.61	Peak	188	256

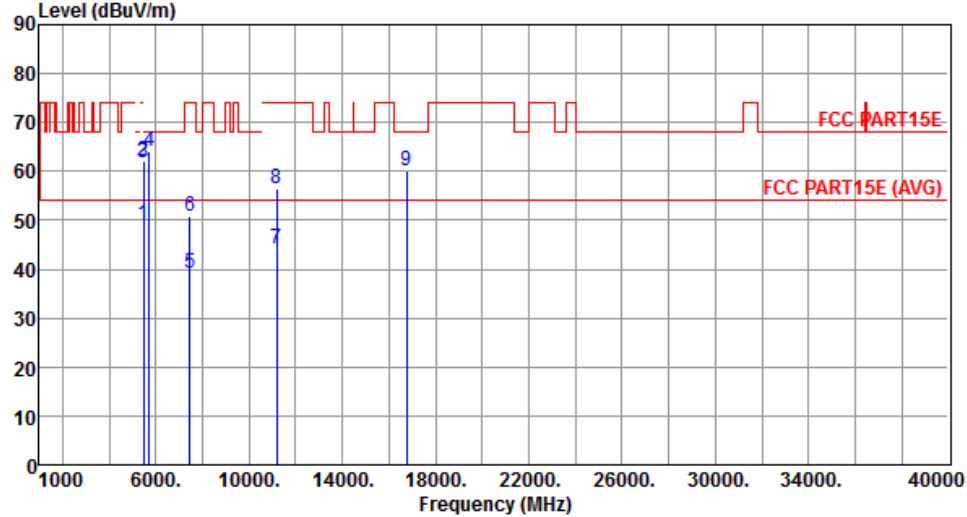
Note 1: Emission Level (dBUV/m) = SA Reading (dBUV/m) + Factor* (dB)
*Factor includes antenna factor , cable loss and amplifier gain
Note 2: Margin (dB) = Emission level (dBUV/m) – Limit (dBUV/m).

Modulation	VHT40	Test Freq. (MHz)	5510
Polarization	Horizontal		
Level (dBuV/m) </			

Modulation	VHT40	Test Freq. (MHz)	5510
Polarization	Vertical		
Level (dBuV/m)			

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

Modulation	VHT40	Test Freq. (MHz)	5590
Polarization	Vertical		



	Freq. MHz	Emission level dBuV/m	Limit dBuV/m	Margin dB	SA reading dBuV	Factor dB	Remark	ANT High cm	Turn Table deg
1	5460.00	49.05	54.00	-4.95	44.27	4.78	Average	180	4
2	5460.00	62.24	74.00	-11.76	57.46	4.78	Peak	180	4
3	5470.00	61.79	68.20	-6.41	57.00	4.79	Peak	180	4
4	5725.00	64.14	68.20	-4.06	59.05	5.09	Peak	180	4
5	7453.33	39.27	54.00	-14.73	30.68	8.59	Average	165	163
6	7453.33	50.87	74.00	-23.13	42.28	8.59	Peak	165	163
7	11180.00	44.31	54.00	-9.69	29.08	15.23	Average	176	37
8	11180.00	56.29	74.00	-17.71	41.06	15.23	Peak	176	37
9	16770.00	60.12	68.20	-8.08	42.74	17.38	Peak	172	207

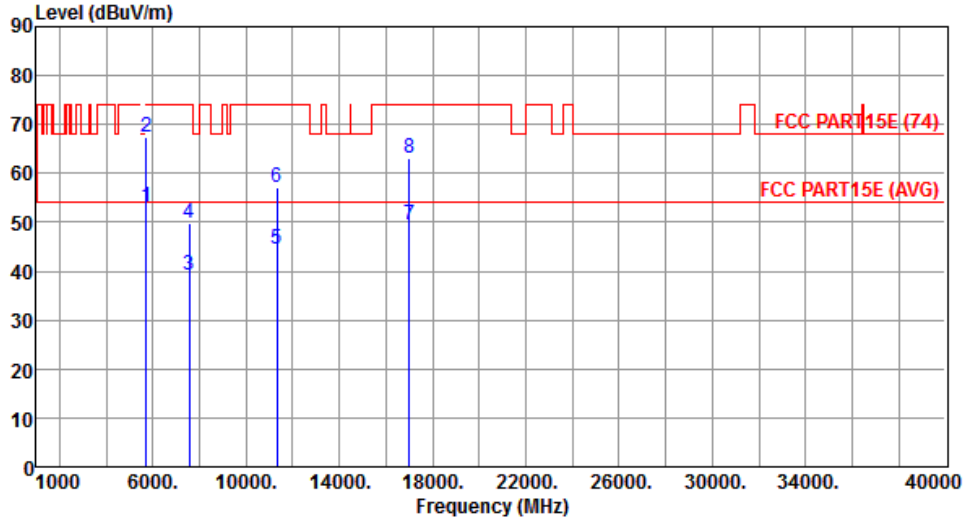
Note 1: Emission Level (dBuV/m) = SA Reading (dBuV/m) + Factor* (dB)

*Factor includes antenna factor , cable loss and amplifier gain

Note 2: Margin (dB) = Emission level (dBuV/m) – Limit (dBuV/m).

Modulation	VHT40	Test Freq. (MHz)	5670
Polarization	Horizontal		
Level (dBuV/m) </			

Modulation	VHT40	Test Freq. (MHz)	5670
Polarization	Vertical		



	Freq. MHz	Emission level dBuV/m	Limit dBuV/m	Margin dB	SA reading dBuV	Factor dB	Remark	ANT High cm	Turn Table deg
1	5725.00	53.00	54.00	-1.00	47.91	5.09	Average	191	178
2	5725.00	67.48	74.00	-6.52	62.39	5.09	Peak	191	178
3	7560.00	39.23	54.00	-14.77	30.45	8.78	Average	176	216
4	7560.00	49.92	74.00	-24.08	41.14	8.78	Peak	176	216
5	11340.00	44.40	54.00	-9.60	29.01	15.39	Average	155	327
6	11340.00	57.12	74.00	-16.88	41.73	15.39	Peak	155	327
7	17010.00	49.49	54.00	-4.51	31.24	18.25	Average	157	108
8	17010.00	63.19	74.00	-10.81	44.94	18.25	Peak	157	108

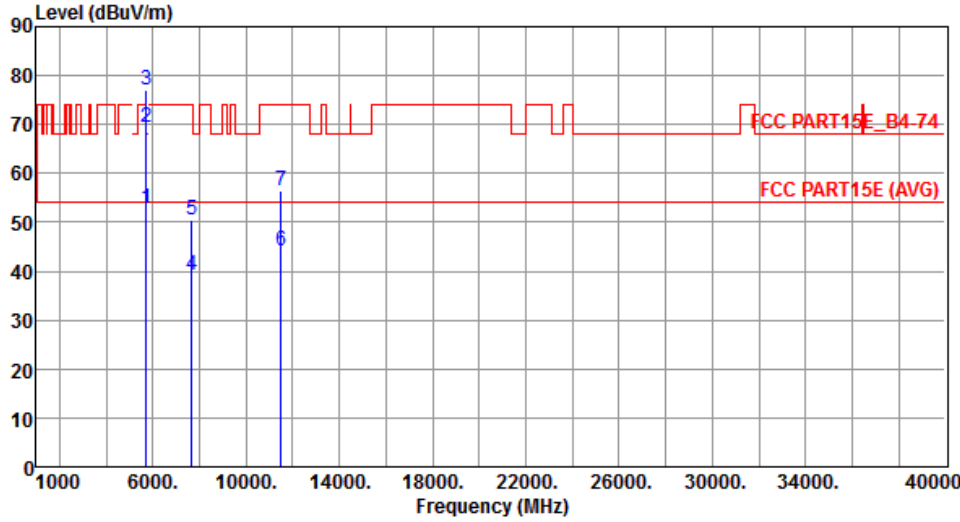
Note 1: Emission Level (dBuV/m) = SA Reading (dBuV/m) + Factor* (dB)
*Factor includes antenna factor , cable loss and amplifier gain
Note 2: Margin (dB) = Emission level (dBuV/m) – Limit (dBuV/m).

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

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

Modulation	VHT40	Test Freq. (MHz)	5755
Polarization	Horizontal		
Level (dBuV/m) </			

Modulation	VHT40	Test Freq. (MHz)	5755
Polarization	Vertical		



	Freq. MHz	Emission level dBuV/m	Limit dBuV/m	Margin dB	SA reading dBuV	Factor dB	Remark	ANT High cm	Turn Table deg
1	5715.00	52.97	54.00	-1.03	47.87	5.10	Average	162	16
2	5715.00	69.28	74.00	-4.72	64.18	5.10	Peak	162	16
3	5725.00	76.90	78.20	-1.30	71.81	5.09	Peak	162	16
4	7673.30	39.19	54.00	-14.81	30.41	8.78	Average	138	290
5	7673.30	50.36	74.00	-23.64	41.58	8.78	Peak	138	290
6	11510.00	44.21	54.00	-9.79	28.70	15.51	Average	210	324
7	11510.00	56.61	74.00	-17.39	41.10	15.51	Peak	210	324

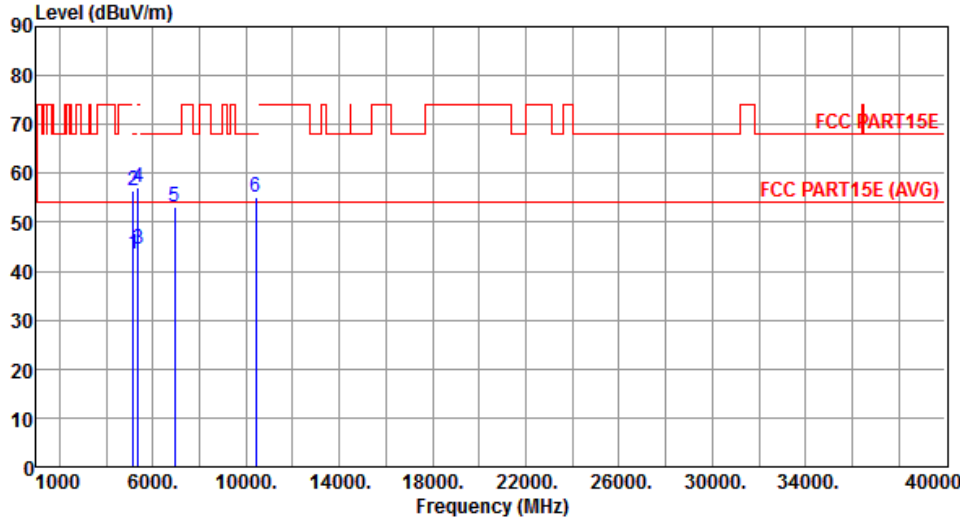
Note 1: Emission Level (dBuV/m) = SA Reading (dBuV/m) + Factor* (dB)
*Factor includes antenna factor , cable loss and amplifier gain
Note 2: Margin (dB) = Emission level (dBuV/m) – Limit (dBuV/m).

Modulation	VHT40	Test Freq. (MHz)	5795
Polarization	Horizontal		
Level (dBuV/m)			

Modulation	VHT40	Test Freq. (MHz)	5795
Polarization	Vertical		
Level (dBuV/m)			

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

Modulation	VHT80	Test Freq. (MHz)	5210
Polarization	Horizontal		

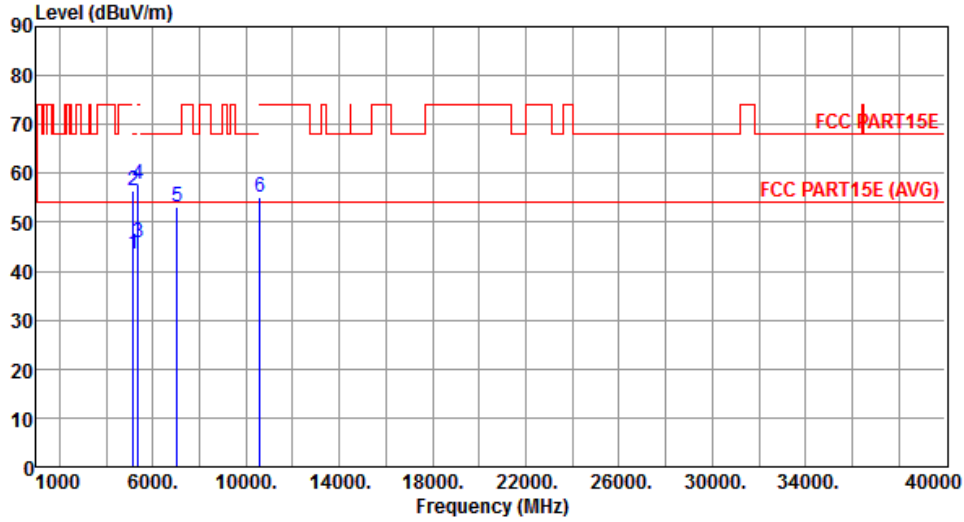


	Freq. MHz	Emission level dBuV/m	Limit dBuV/m	Margin dB	SA reading dBuV	Factor dB	Remark	ANT High cm	Turn Table deg
1	5150.00	43.63	54.00	-10.37	39.23	4.40	Average	227	228
2	5150.00	56.57	74.00	-17.43	52.17	4.40	Peak	227	228
3	5350.00	44.66	54.00	-9.34	40.02	4.64	Average	227	228
4	5350.00	57.11	74.00	-16.89	52.47	4.64	Peak	227	228
5	6946.66	53.20	68.20	-15.00	45.41	7.79	Peak	188	201
6	10420.00	54.97	68.20	-13.23	40.65	14.32	Peak	172	138

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

Modulation	VHT80	Test Freq. (MHz)	5210
Polarization	Vertical		
Level (dBuV/m)			

Modulation	VHT80	Test Freq. (MHz)	5290
Polarization	Horizontal		

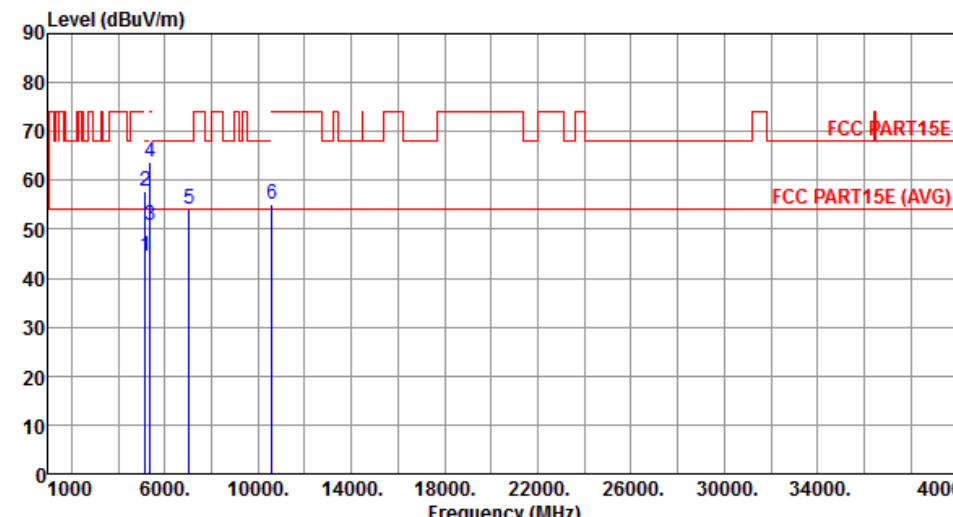


The graph displays the emission level in dBuV/m against frequency in MHz. The y-axis ranges from 0 to 90 dBuV/m, and the x-axis ranges from 1000 to 40000 MHz. A red line represents the FCC PART15E limit, and a blue line represents the test results. The test results show a peak at 5150 MHz and a peak at 10580 MHz, both exceeding the limit. The graph also shows the FCC PART15E (AVG) limit.

	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	43.45	54.00	-10.55	39.05	4.40	Average	209	242
2	5150.00	56.54	74.00	-17.46	52.14	4.40	Peak	209	242
3	5350.00	45.88	54.00	-8.12	41.24	4.64	Average	209	242
4	5350.00	57.81	74.00	-16.19	53.17	4.64	Peak	209	242
5	7053.33	53.12	68.20	-15.08	45.11	8.01	Peak	186	199
6	10580.00	55.29	68.20	-12.91	40.73	14.56	Peak	200	177

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

Modulation	VHT80	Test Freq. (MHz)	5290
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	44.37	54.00	-9.63	39.97	4.40	Average	197	287
2	5150.00	57.68	74.00	-16.32	53.28	4.40	Peak	197	287
3	5350.00	50.69	54.00	-3.31	46.05	4.64	Average	197	287
4	5350.00	63.71	74.00	-10.29	59.07	4.64	Peak	197	287
5	7053.33	54.25	68.20	-13.95	46.24	8.01	Peak	185	206
6	10580.00	55.28	68.20	-12.92	40.72	14.56	Peak	185	213

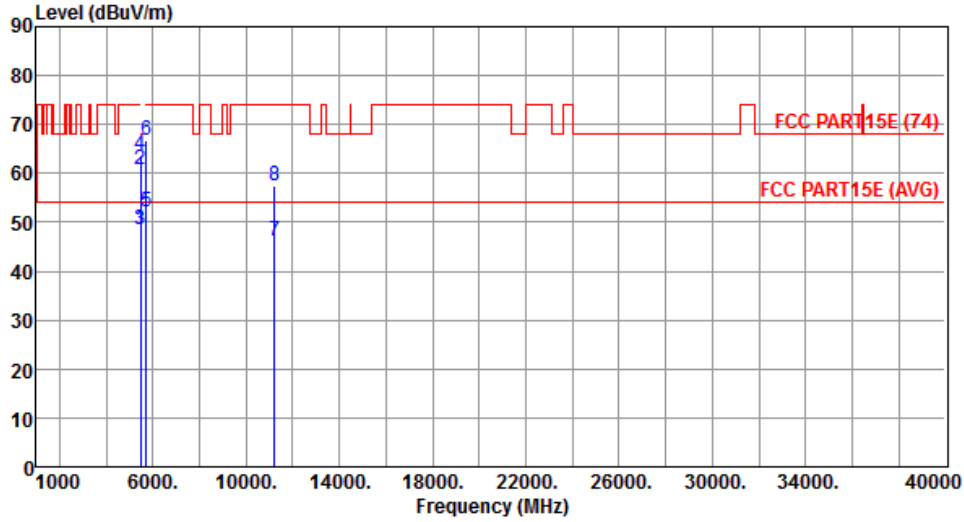
Note 1: Emission Level (dBUV/m) = SA Reading (dBUV/m) + Factor* (dB)
*Factor includes antenna factor , cable loss and amplifier gain
Note 2: Margin (dB) = Emission level (dBUV/m) – Limit (dBUV/m).

Modulation	VHT80	Test Freq. (MHz)	5530
Polarization	Horizontal		
Level (dBuV/m)			

Modulation	VHT80	Test Freq. (MHz)	5530
Polarization	Vertical		
Level (dBuV/m)			

Modulation	VHT80	Test Freq. (MHz)	5610
Polarization	Horizontal		
Level (dBuV/m) </			

Modulation	VHT80	Test Freq. (MHz)	5610
Polarization	Vertical		

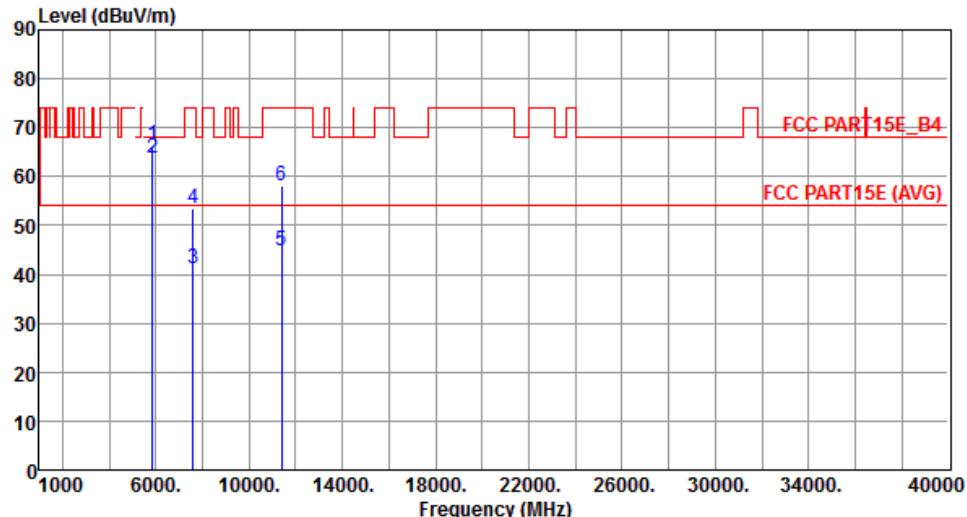


	Freq. MHz	Emission level dBuV/m	Limit dBuV/m	Margin dB	SA reading dBuV	Factor dB	Remark	ANT High cm	Turn Table deg
1	5460.00	48.57	54.00	-5.43	43.79	4.78	Average	198	3
2	5460.00	60.61	74.00	-13.39	55.83	4.78	Peak	198	3
3	5470.00	48.63	54.00	-5.37	43.84	4.79	Average	198	3
4	5470.00	63.80	74.00	-10.20	59.01	4.79	Peak	198	3
5	5725.00	52.05	54.00	-1.95	46.96	5.09	Average	198	3
6	5725.00	66.85	74.00	-7.15	61.76	5.09	Peak	198	3
7	11220.00	46.29	54.00	-7.71	31.02	15.27	Average	186	186
8	11220.00	57.52	74.00	-16.48	42.25	15.27	Peak	186	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	VHT80	Test Freq. (MHz)	5690
Polarization	Horizontal		
 </			

Modulation	VHT80	Test Freq. (MHz)	5690
Polarization	Vertical		



Freq. MHz	Emission level dBUV/m	Limit dBUV/m	Margin dB	SA reading dBUV	Factor dB	Remark	ANT High cm	Turn Table deg	
1	5850.00	66.46	78.20	-11.74	61.20	5.26	Peak	215	183
2	5860.00	63.73	68.20	-4.47	58.46	5.27	Peak	215	183
3	7586.66	41.33	54.00	-12.67	32.51	8.82	Average	177	216
4	7586.66	53.55	74.00	-20.45	44.73	8.82	Peak	177	216
5	11380.00	44.97	54.00	-9.03	29.55	15.42	Average	150	138
6	11380.00	57.95	74.00	-16.05	42.53	15.42	Peak	150	138

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

Modulation	VHT80	Test Freq. (MHz)	5775
Polarization	Horizontal		
Level (dBuV/m) </			

Modulation	VHT80	Test Freq. (MHz)	5775
Polarization	Vertical		
Level (dBuV/m) </			

3.6 Frequency Stability

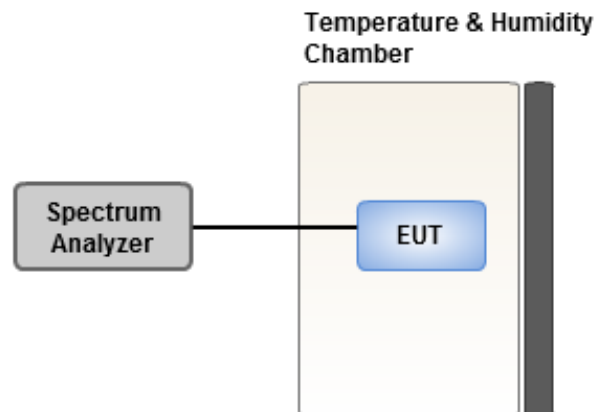
3.6.1 Limit of Frequency Stability

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

3.6.2 Test Procedures

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

3.6.3 Test Setup



3.6.4 Test Result of Frequency Stability

Non-beamforming mode

Frequency: 5785 MHz	Frequency Drift (ppm)			
Temperature (°C)	0 minute	2 minutes	5 minutes	10 minutes
T20°C Vmax	5.40	4.64	5.22	5.06
T20°C Vmin	4.08	3.95	3.94	4.43
T50°C Vnom	4.11	3.43	4.07	3.74
T40°C Vnom	3.84	3.76	3.95	3.95
T30°C Vnom	2.33	2.57	2.74	2.64
T20°C Vnom	2.56	2.32	2.26	2.39
T10°C Vnom	2.73	2.49	2.95	2.20
T0°C Vnom	3.18	2.97	2.67	2.94
T-10°C Vnom	1.69	1.59	1.69	1.42
T-20°C Vnom	1.52	1.15	1.09	1.33
T-30°C Vnom	0.26	0.70	0.68	0.39
Vnom [Vac]: 120	Vmax [Vac]: 138			Vmin [Vac]: 102
Tnom [°C]: 20	Tmax [°C]: 50			Tmin [°C]: -30

Beamforming mode

Frequency: 5785 MHz	Frequency Drift (ppm)			
Temperature (°C)	0 minute	2 minutes	5 minutes	10 minutes
T20°C Vmax	5.89	5.96	5.88	5.86
T20°C Vmin	4.77	4.83	4.87	4.80
T50°C Vnom	4.67	4.72	4.79	4.70
T40°C Vnom	3.92	3.93	3.99	4.03
T30°C Vnom	4.51	4.49	4.42	4.43
T20°C Vnom	3.44	3.44	3.53	3.57
T10°C Vnom	3.50	3.55	3.48	3.56
T0°C Vnom	3.16	3.19	3.20	3.30
T-10°C Vnom	1.42	1.44	1.52	1.61
T-20°C Vnom	1.55	1.69	1.76	1.77
T-30°C Vnom	2.50	2.49	2.52	2.64
Vnom [Vac]: 120	Vmax [Vac]: 138			Vmin [Vac]: 102
Tnom [°C]: 20	Tmax [°C]: 50			Tmin [°C]: -30

4 Test laboratory information

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

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

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

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No. 3-1, Lane 6, Wen San 3rd
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Kwei Shan Site II

Tel: 886-3-271-8640

No. 14-1, Lane 19, Wen San 3rd
St., Kwei Shan Hsiang, Tao Yuan
Hsien 333, Taiwan, R.O.C.

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

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Email: ICC_Service@icertifi.com.tw

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