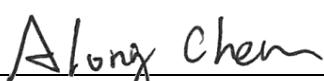


FCC Test Report

FCC ID : A8J-EAP1250
Equipment : AC1300 Ceiling Mount Access Point
Model No. : EAP1250, EWS330AP
(Please refer to section 1.1.1 for more details)
Brand Name : EnGenius
Applicant : EnGenius Technologies
Address : 1580 Scenic Avenue, Costa Mesa CA92626
Standard : 47 CFR FCC Part 15.247
Received Date : Dec. 11, 2017
Tested Date : Dec. 14 ~ Dec. 22, 2017

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

Reviewed by:



Along Chen / Assistant Manager

Approved by:



Gary Chang / Manager



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Release Record

Report No.	Version	Description	Issued Date
FR7D1201AC	Rev. 01	Initial issue	Jan. 29, 2018

Summary of Test Results

FCC Rules	Test Items	Measured	Result
15.207	Conducted Emissions	[dBuV]: 0.513MHz 41.25 (Margin -4.75dB) - AV	Pass
15.247(d) 15.209	Radiated Emissions	[dBuV/m at 3m]: 2390.00MHz 52.99 (Margin -1.01dB) - AV	Pass
15.247(b)(3)	Maximum Output Power	Max Power [dBm]: Non-beamforming mode 25.61 Beamforming mode 22.60	Pass
15.247(a)(2)	6dB Bandwidth	Meet the requirement of limit	Pass
15.247(e)	Power Spectral Density	Meet the requirement of limit	Pass
15.203	Antenna Requirement	Meet the requirement of limit	Pass

1 General Description

1.1 Information

1.1.1 Product Details

The following models are provided to this EUT.

Brand Name	Model Name	Product Name	Description
EnGenius	EWS330AP	AC1300 Ceiling Mount Access Point	For marketing difference
	EAP1250		
→ The above models, model EAP1250 was selected as a representative one for the final test and only its data was recorded in this report.			

1.1.2 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
2400-2483.5	b	2412-2462	1-11 [11]	2	1-11 Mbps
2400-2483.5	g	2412-2462	1-11 [11]	2	6-54 Mbps
2400-2483.5	n (HT20)	2412-2462	1-11 [11]	2	MCS 0-15
2400-2483.5	n (HT40)	2422-2452	3-9 [7]	2	MCS 0-15
2400-2483.5	ac (VHT20)	2412-2462	1-11 [11]	2	MCS 0-15
2400-2483.5	ac (VHT40)	2422-2452	3-9 [7]	2	MCS 0-15

Note 1: RF output power specifies that Maximum Conducted (Average) Output Power.
 Note 2: 802.11b uses a combination of DSSS-DBPSK, DQPSK, CCK modulation.
 Note 3: 802.11g/n/ac uses a combination of OFDM-BPSK, QPSK, 16QAM, 64QAM, 256QAM modulation..
 Note 4: 802.11n/ac supports beamforming function.

1.1.3 Antenna Details

Ant. No.	Model	Type	Connector	Operating Frequency (MHz) / Gain (dBi)			Remark
				2400~2483.5	5150~5250	5725~5850	
1	Antenna 1	Dipole	UFL	4.12	---	---	---
2	Antenna 2	Dipole	UFL	4.03	---	---	---
3	Antenna 3	Dipole	UFL	---	5.11	5.11	---
4	Antenna 4	Dipole	UFL	---	5.03	5.03	---

1.1.4 Power Supply Type of Equipment under Test (EUT)

Power Supply Type	12Vdc from AC adapter 54Vdc from POE (for support unit only)
-------------------	---

1.1.5 Accessories

Accessories		
No.	Equipment	Description
1	AC adapter	Brand: DVE Model: DSA-12PFT-12 FUS 120100 Power Rating: I/P: 100-240Vac, 50/60Hz, 0.5A O/P: 12Vdc, 1A Power Line: 1.5m non-shielded without core

1.1.6 Channel List

Frequency band (MHz)		2400~2483.5	
802.11 b / g / n HT20 / ac VHT20		802.11n HT40 / ac VHT40	
Channel	Frequency(MHz)	Channel	Frequency(MHz)
1	2412	3	2422
2	2417	4	2427
3	2422	5	2432
4	2427	6	2437
5	2432	7	2442
6	2437	8	2447
7	2442	9	2452
8	2447	---	---
9	2452	---	---
10	2457	---	---
11	2462	---	---

1.1.7 Test Tool and Duty Cycle

Test Tool	QCARCT, V3.0.187.0		
Duty Cycle and Duty Factor	Mode	Duty Cycle	Duty factor
	11b	99.08%	0.04
	11g	96.96%	0.13
	VHT20	99.14%	0.04
	VHT40	97.59%	0.11

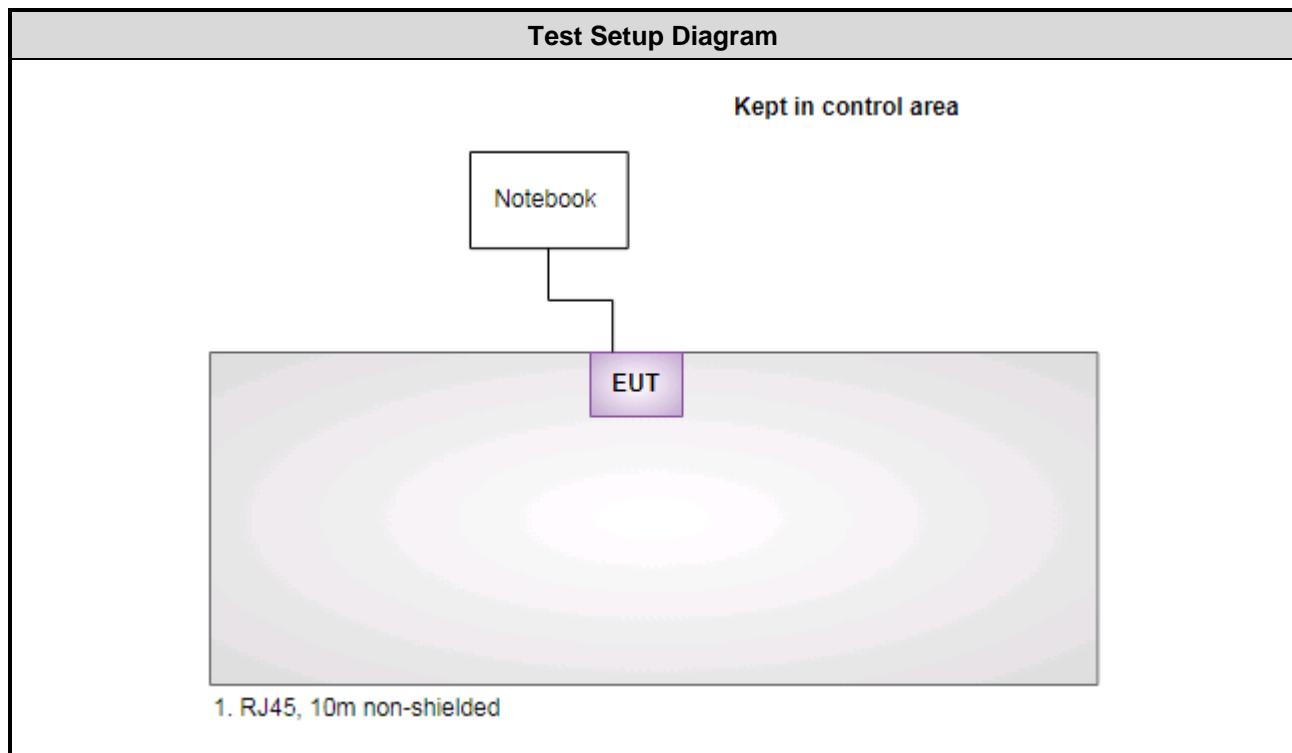
1.1.8 Power Setting

Modulation Mode	Test Frequency (MHz)	Power Set	
		Non-beamforming	Beamforming
11b	2412	17.5	---
11b	2437	19.5	---
11b	2462	18.5	---
11g	2412	16.5	---
11g	2437	23	---
11g	2462	17.5	---
HT20	2412	16	16
HT20	2437	23	23
HT20	2462	17.5	17.5
HT40	2422	14	14
HT40	2437	17.5	17.5
HT40	2452	15	15
VHT20	2412	16	16
VHT20	2437	23	23
VHT20	2462	17.5	17.5
VHT40	2422	14	14
VHT40	2437	17.5	17.5
VHT40	2452	15	15

1.2 Local Support Equipment List

Support Equipment List					
No.	Equipment	Brand	Model	FCC ID	Signal cable / Length (m)
1	Notebook	DELL	Latitude E5420	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)				
Tested date	Dec. 20, 2017				
Instrument	Manufacturer	Model No.	Serial No.	Calibration Date	Calibration Until
Receiver	R&S	ESR3	101658	Nov. 20, 2017	Nov. 19, 2018
LISN	SCHWARZBECK	Schwarzbeck 8127	8127-667	Nov. 13, 2017	Nov. 12, 2018
RF Cable-CON	EMC	EMCCFD300-BM-BM-6000	50821	Dec. 18, 2017	Dec. 17, 2018
Measurement Software	AUDIX	e3	6.120210k	NA	NA

Note: Calibration Interval of instruments listed above is one year.

Test Item	Radiated Emission				
Test Site	966 chamber 3 / (03CH03-WS)				
Tested date	Dec. 14 ~ Dec. 15, 2017				
Instrument	Manufacturer	Model No.	Serial No.	Calibration Date	Calibration Until
Spectrum Analyzer	R&S	FSV40	101499	Dec. 16, 2016	Dec. 15, 2017
Receiver	R&S	ESR3	101658	Nov. 20, 2017	Nov. 19, 2018
Bilog Antenna	SCHWARZBECK	VULB9168	VULB9168-685	Apr. 28, 2017	Apr. 27, 2018
Horn Antenna 1G-18G	SCHWARZBECK	BBHA 9120 D	BBHA 9120 D 1206	Feb. 09, 2017	Feb. 08, 2018
Horn Antenna 18G-40G	SCHWARZBECK	BBHA 9170	BBHA 9170517	Nov. 23, 2017	Nov. 22, 2018
Loop Antenna	R&S	HFH2-Z2	100330	Nov. 13, 2017	Nov. 12, 2018
Loop Antenna Cable	KOAX KABEL	101354-BW	101354-BW	Dec. 07, 2017	Dec. 06, 2018
Preamplifier	EMC	EMC02325	980187	Sep. 04, 2017	Sep. 03, 2018
Preamplifier	Agilent	83017A	MY53270014	Aug. 21, 2017	Aug. 20, 2018
Preamplifier	EMC	EMC184045B	980192	Aug. 22, 2017	Aug. 21, 2018
RF cable-3M	HUBER+SUHNER	SUCOFLEX104	MY22620/4	Nov. 27, 2017	Nov. 26, 2018
RF cable-8M	HUBER+SUHNER	SUCOFLEX104	MY32487/4	Nov. 27, 2017	Nov. 26, 2018
RF cable-1M	HUBER+SUHNER	SUCOFLEX104	MY22624/4	Nov. 27, 2017	Nov. 26, 2018
LF cable-0.8M	EMC	EMC8D-NM-NM-800	EMC8D-NM-NM-800-001	Nov. 27, 2017	Nov. 26, 2018
LF cable-3M	EMC	EMC8D-NM-NM-3000	131103	Nov. 27, 2017	Nov. 26, 2018
LF cable-13M	EMC	EMC8D-NM-NM-13000	131104	Nov. 27, 2017	Nov. 26, 2018
Measurement Software	AUDIX	e3	6.120210g	NA	NA

Note: Calibration Interval of instruments listed above is one year.

Test Item	RF Conducted				
Test Site	(TH01-WS)				
Tested date	Dec. 18 ~ Dec. 22, 2017				
Instrument	Manufacturer	Model No.	Serial No.	Calibration Date	Calibration Until
Spectrum Analyzer	R&S	FSV40	101063	Mar. 15, 2017	Mar. 14, 2018
Spectrum Analyzer	R&S	FSV40	101498	Dec. 04, 2017	Dec. 03, 2018
TEMP&HUMIDITY CHAMBER	GIANT FORCE	GCT-225-40-SP-SD	MAF1212-002	Nov. 27, 2017	Nov. 26, 2018
Power Meter	Anritsu	ML2495A	1241002	Oct. 16, 2017	Oct. 15, 2018
Power Sensor	Anritsu	MA2411B	1207366	Oct. 16, 2017	Oct. 15, 2018
Signal Generator	R&S	SMB100A	175727	Oct. 26, 2017	Oct. 25, 2018
Radio Communication Analyzer	Anritsu	MT8820C	6201240341	Apr. 21, 2017	Apr. 20, 2018
MXG-B RF Vector Signal Generator	Agilent	N5182B	MY53050081	Apr. 15, 2017	Apr. 14, 2018
DC POWER SOURCE	GW INSTEK	GPC-6030D	EM892433	Oct. 26, 2017	Oct. 25, 2018
AC POWER SOURCE	APC	AFC-500W	F312060012	Dec. 01, 2017	Nov. 30, 2018
Measurement Software	Sporton	Sporton_1	1.3.30	NA	NA
Note: Calibration Interval of instruments listed above is one year.					

1.5 Test Standards

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

47 CFR FCC Part 15.247

ANSI C63.10-2013

FCC KDB 558074 D01 DTS Meas Guidance v04

FCC KDB 662911 D01 Multiple Transmitter Output v02r01

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
Power density	±0.463 dB
Conducted emission	±2.670 dB
AC conducted emission	±2.90 dB
Radiated emission ≤ 1GHz	±3.66 dB
Radiated emission > 1GHz	±5.37 dB

2 Test Configuration

2.1 Testing Condition

Test Item	Test Site	Ambient Condition	Tested By
AC Conduction	CO01-WS	23°C / 57%	Alex Tsai
Radiated Emissions	03CH03-WS	23-24°C / 65-66%	Roger Lu Akun Chung
RF Conducted	TH01-WS	21°C / 65%	aska Huang BRAD WU

- FCC Designation No.: TW0009
- FCC site registration No.: 207696
- IC site registration No.: 10807C-1

2.2 The Worst Test Modes and Channel Details

Test item	Modulation Mode	Test Frequency (MHz)	Data Rate (Mbps) / MCS	Test Configuration
Conducted Emissions	VHT20	2437	MCS 0	1, 2
Radiated Emissions ≤1GHz	VHT20	2437	MCS 0	1, 2
Maximum Output Power	11b	2412 / 2437 / 2462	1 Mbps	1
	11g	2412 / 2437 / 2462	6 Mbps	
	HT20	2412 / 2437 / 2462	MCS 0	
	HT40	2422 / 2437 / 2452	MCS 0	
	VHT20	2412 / 2437 / 2462	MCS 0	
	VHT40	2422 / 2437 / 2452	MCS 0	
Maximum Output Power	HT20	2412 / 2437 / 2462	MCS 0	3
	HT40	2422 / 2437 / 2452	MCS 0	
	VHT20	2412 / 2437 / 2462	MCS 0	
	VHT40	2422 / 2437 / 2452	MCS 0	
Radiated Emissions >1GHz 6dB bandwidth Power spectral density	11b	2412 / 2437 / 2462	1 Mbps	1
	11g	2412 / 2437 / 2462	6 Mbps	
	VHT20	2412 / 2437 / 2462	MCS 0	
	VHT40	2422 / 2437 / 2452	MCS 0	

NOTE:

- 1) The EUT was pretested with 3 orientations placed on the table for the radiated emission measurement – X, Y, and Z-plane. The Y-plane result was found as the worst case and was shown in this report.
- 2) Test configurations are listed as below:

- Configuration 1: Non-Beamforming / POE mode
- Configuration 2: Non-Beamforming / Adapter mode
- Configuration 3: Beamforming / POE mode

3 Transmitter Test Results

3.1 Conducted Emissions

3.1.1 Limit of Conducted Emissions

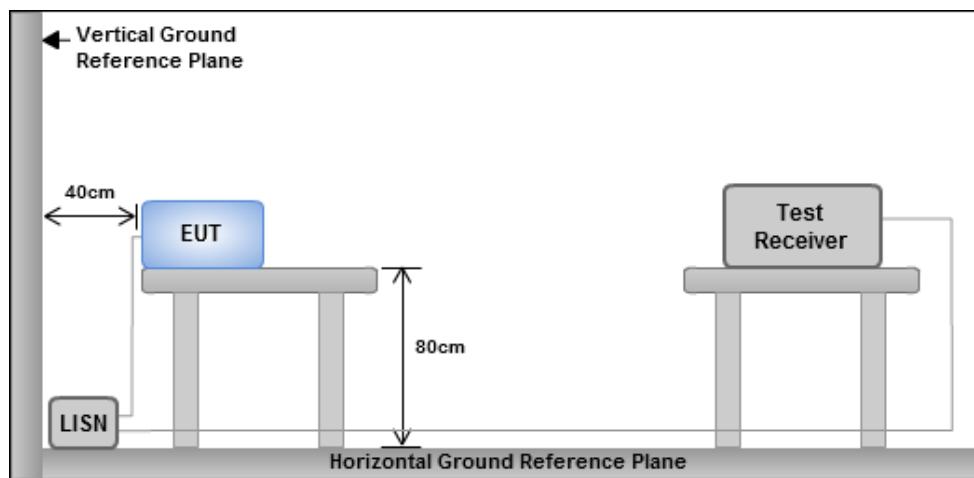
Conducted Emissions Limit		
Frequency Emission (MHz)	Quasi-Peak	Average
0.15-0.5	66 - 56 *	56 - 46 *
0.5-5	56	46
5-30	60	50

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

3.1.2 Test Procedures

1. The device is placed on a test table, raised 80 cm above the reference ground plane. The vertical conducting plane is located 40 cm to the rear of the device.
2. The device is connected to line impedance stabilization network (LISN) and other accessories are connected to other LISN. Measured levels of AC power line conducted emission are across the 50Ω 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.

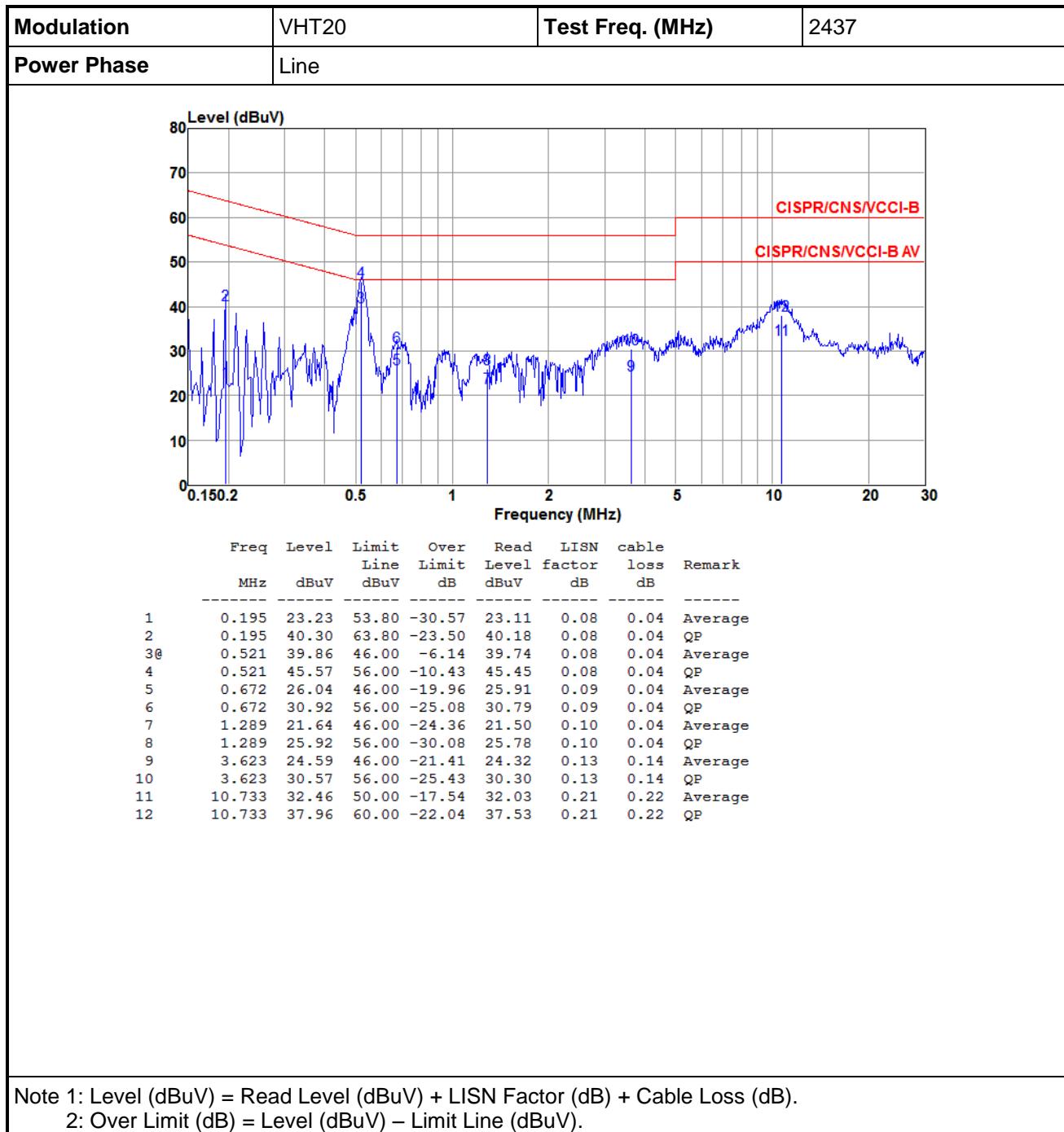
3.1.3 Test Setup

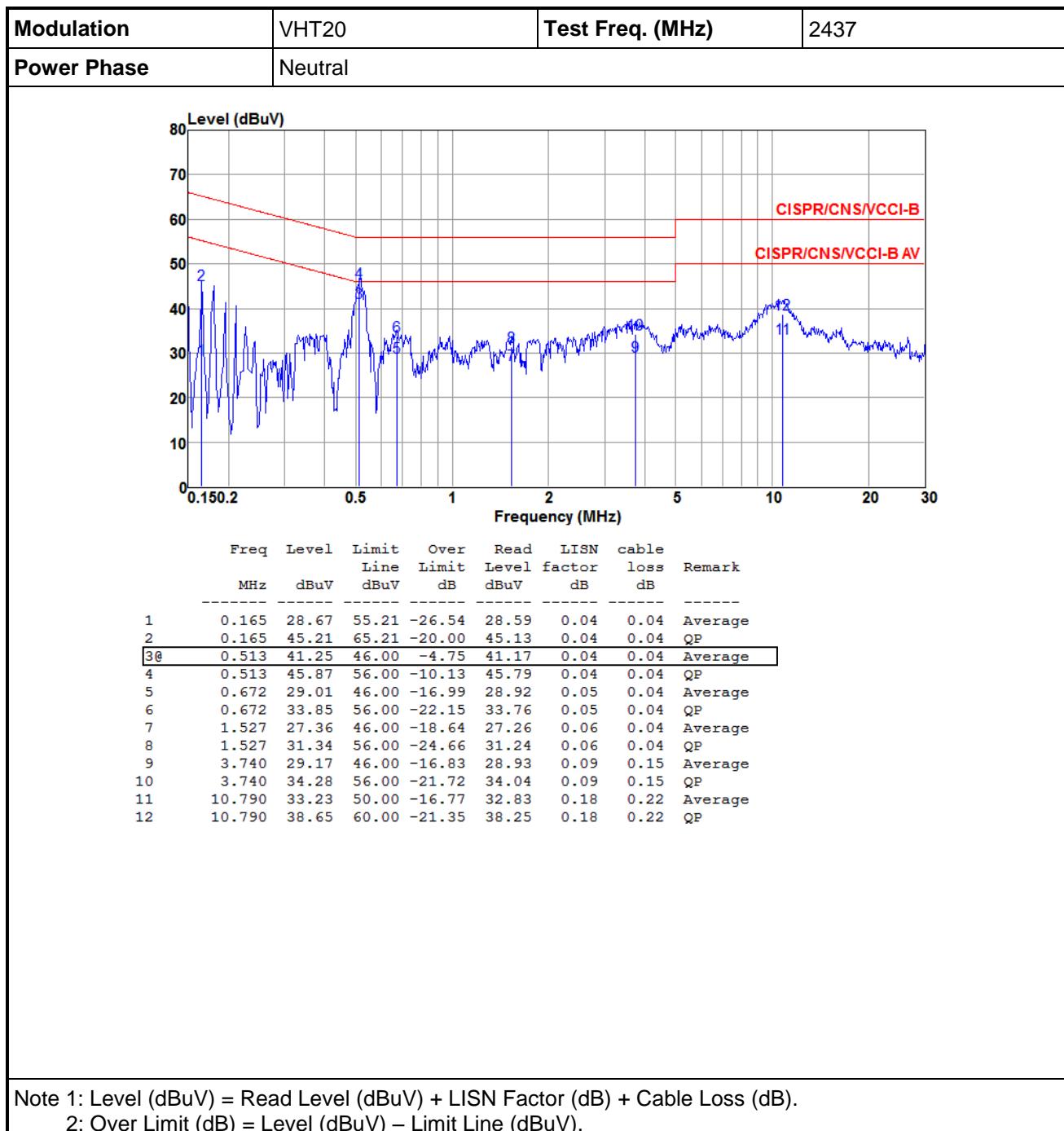


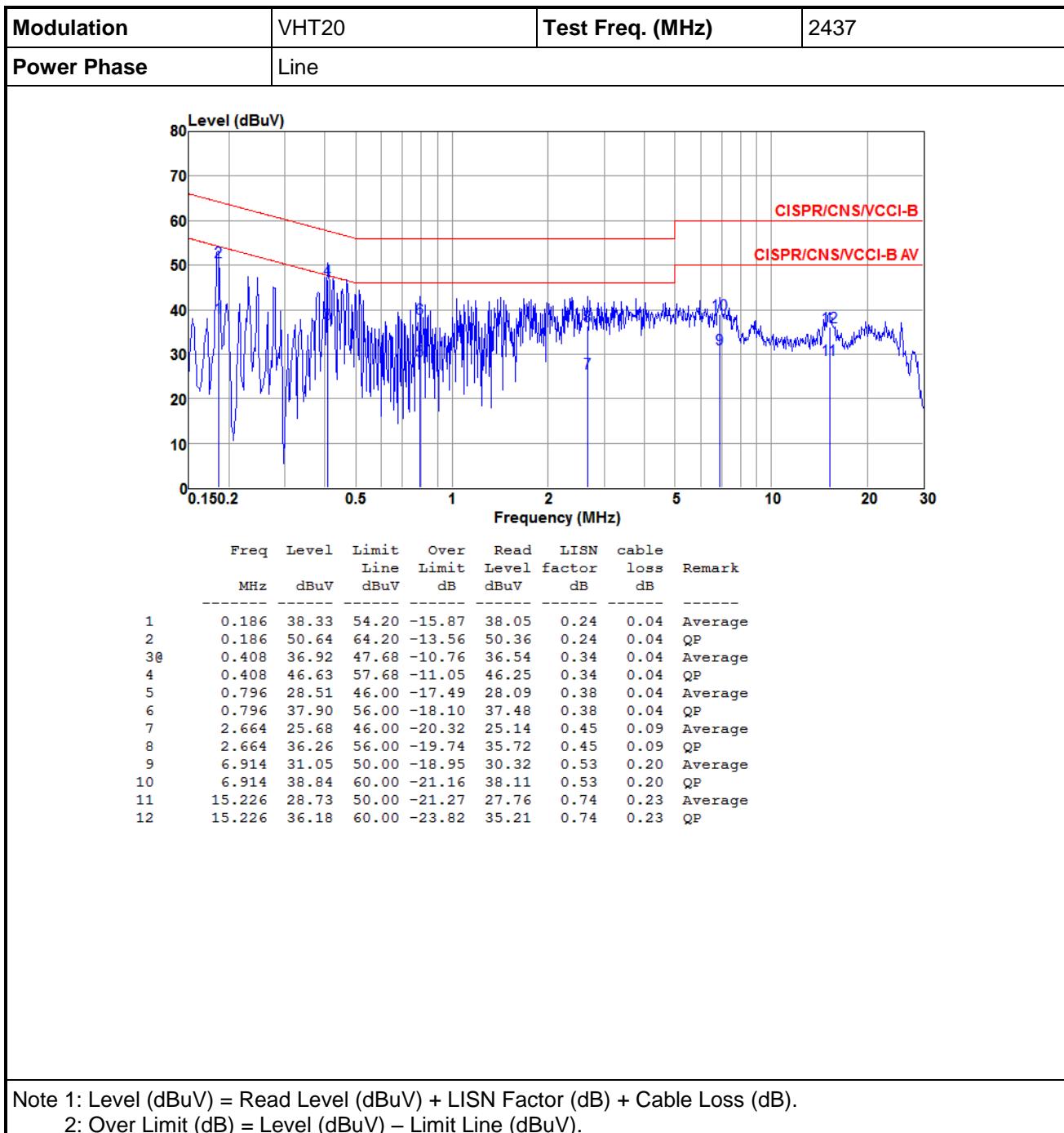
Note: 1. Support units were connected to second LISN.
 2. Both of LISNs (AMN) are 80 cm from EUT and at least 80 cm from other units and other metal planes

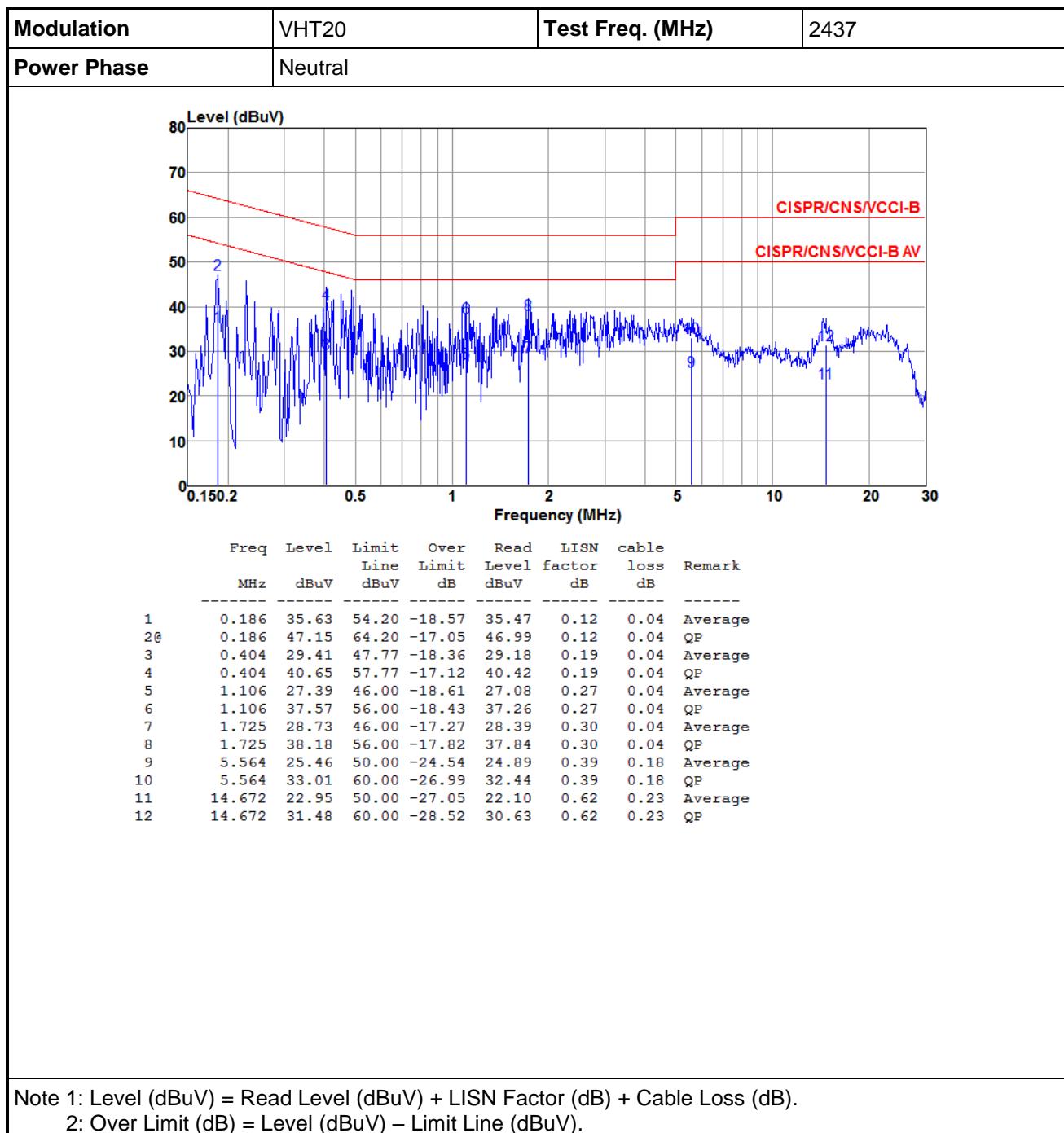
3.1.4 Test Result of Conducted Emissions

Configuration 1: POE mode





Configuration 2: Adapter mode




3.2 6dB and Occupied Bandwidth

3.2.1 Limit of 6dB Bandwidth

The minimum 6dB bandwidth shall be at least 500 kHz.

3.2.2 Test Procedures

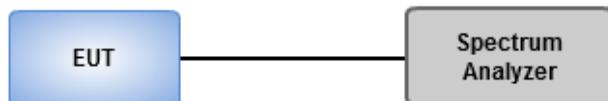
6dB Bandwidth

1. Set resolution bandwidth (RBW) = 100 kHz, Video bandwidth = 300 kHz.
2. Detector = Peak, Trace mode = max hold.
3. Sweep = auto couple, 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) that are attenuated by 6dB relative to the maximum level measured in the fundamental emission.

Occupied Bandwidth

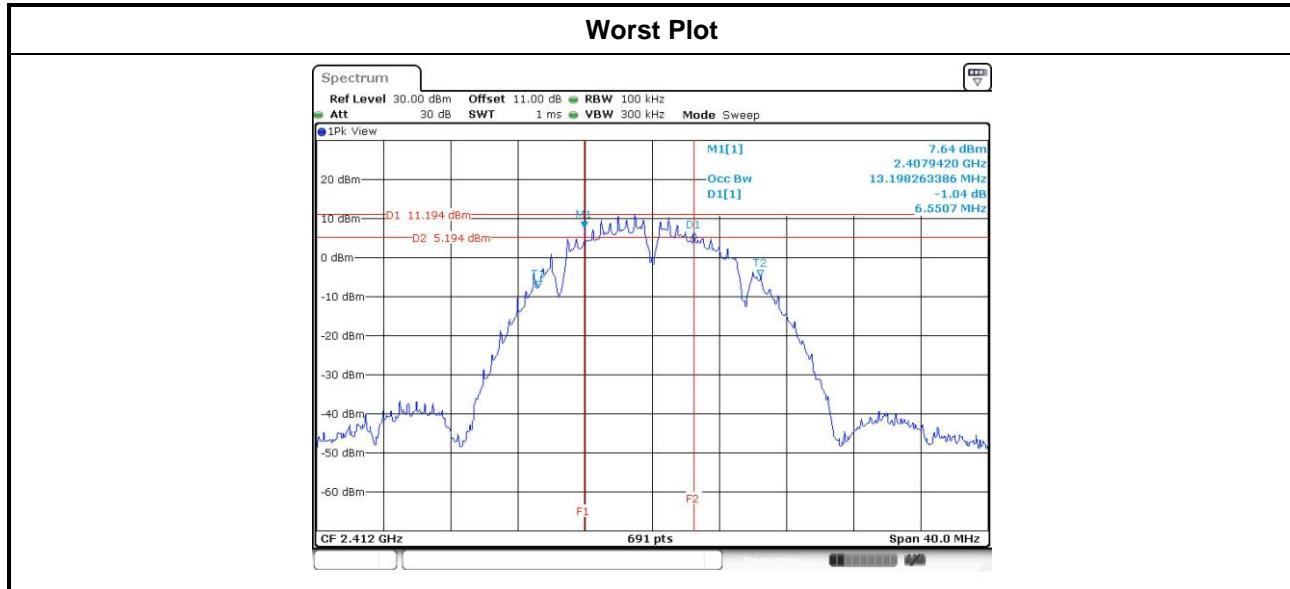
1. Set resolution bandwidth (RBW) = 1 MHz, Video bandwidth = 3 MHz.
2. Detector = Sample, Trace mode = max hold.
3. Sweep = auto couple, Allow the trace to stabilize.
4. Use the OBW measurement function of spectrum analyzer to measure the occupied bandwidth.

3.2.3 Test Setup

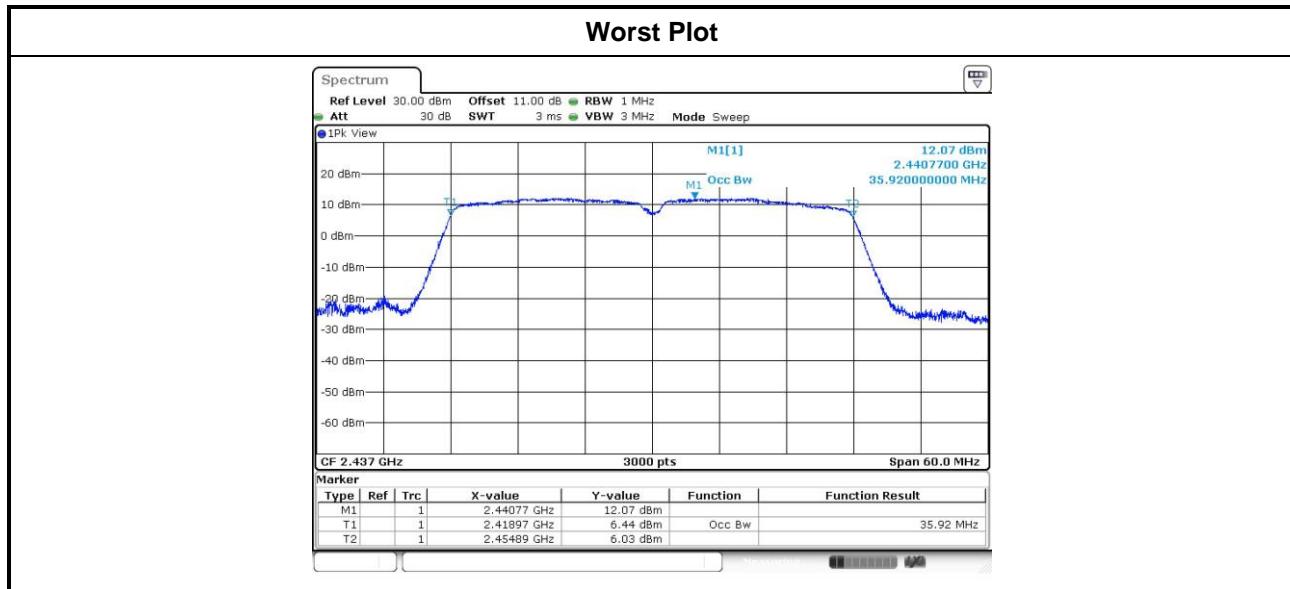


3.2.4 Test Result of 6dB and Occupied Bandwidth

Modulation Mode	N _{TX}	Freq. (MHz)	6dB Bandwidth (MHz)				Limit (kHz)
			Chain 0	Chain 1	Chain 2	Chain 3	
11b	2	2412	8.06	6.55	---	---	500
11b	2	2437	8.06	7.07	---	---	500
11b	2	2462	8.06	7.07	---	---	500
11g	2	2412	16.35	16.35	---	---	500
11g	2	2437	16.35	16.29	---	---	500
11g	2	2462	16.35	16.29	---	---	500
VHT20	2	2412	17.57	17.57	---	---	500
VHT20	2	2437	17.57	17.57	---	---	500
VHT20	2	2462	17.57	17.57	---	---	500
VHT40	2	2422	35.13	35.13	---	---	500
VHT40	2	2437	35.25	35.25	---	---	500
VHT40	2	2452	35.13	35.13	---	---	500



Modulation Mode	N _{TX}	Freq. (MHz)	99% Occupied Bandwidth (MHz)			
			Chain 0	Chain 1	Chain 2	Chain 3
11b	2	2412	13.00	13.11	---	---
11b	2	2437	13.04	13.20	---	---
11b	2	2462	13.01	13.38	---	---
11g	2	2412	16.48	16.46	---	---
11g	2	2437	16.84	17.47	---	---
11g	2	2462	16.47	16.48	---	---
VHT20	2	2412	17.62	17.67	---	---
VHT20	2	2437	17.85	18.74	---	---
VHT20	2	2462	17.62	17.72	---	---
VHT40	2	2422	35.88	35.74	---	---
VHT40	2	2437	35.92	35.86	---	---
VHT40	2	2452	35.90	35.80	---	---



3.3 RF Output Power

3.3.1 Limit of RF Output Power

Conducted power shall not exceed 1Watt.

Antenna gain <= 6dBi, no any corresponding reduction is in output power limit.

Antenna gain > 6dBi

Non Fixed, point to point operations.

The conducted output power from the intentional radiator shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dB

Fixed, point to point operations

Systems operating in the 2400–2483.5 MHz band that are used exclusively for fixed, point-to-point Operations, maximum peak output power of the intentional radiator is reduced by 1 dB for every 3 dB that the directional gain of the antenna exceeds 6 dBi.

Systems operating in the 5725–5850 MHz band that are used exclusively for fixed, point-to-point operations ,no any corresponding reduction is in transmitter peak output power

3.3.2 Test Procedures

Maximum Peak Conducted Output Power

Power meter

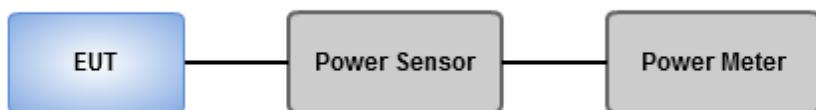
A broadband Peak RF power meter is used for output power measurement. The video bandwidth of power meter is greater than DTS bandwidth of EUT. If duty cycle of test signal is not 100 %, trigger and gating function of power meter will be enabled to capture transmission burst for measuring output power.

Maximum Conducted Output Power

Power meter

A broadband Average RF power meter is used for output power measurement. The video bandwidth of power meter is greater than DTS bandwidth of EUT. If duty cycle of test signal is not 100 %, trigger and gating function of power meter will be enabled to capture transmission burst for measuring output power.

3.3.3 Test Setup



3.3.4 Test Result of Maximum Output Power

Non-beamforming mode

Modulation Mode	N _{TX}	Freq. (MHz)	Conducted (Average) Output Power (dBm)							Ant. Gain (dBi)	EIRP (dBm)	EIRP Limit (dBm)
			Chain 0	Chain 1	Chain 2	Chain 3	Total Power (mW)	Total Power (dBm)	Limit (dBm)			
11b	2	2412	17.49	18.76	---	---	131.267	21.18	30.00	4.12	25.30	36.00
11b	2	2437	19.11	20.28	---	---	188.130	22.74	30.00	4.12	26.86	36.00
11b	2	2462	18.52	19.31	---	---	156.431	21.94	30.00	4.12	26.06	36.00
11g	2	2412	16.59	17.61	---	---	103.280	20.14	30.00	4.12	24.26	36.00
11g	2	2437	22.06	22.94	---	---	357.483	25.53	30.00	4.12	29.65	36.00
11g	2	2462	17.04	17.81	---	---	110.977	20.45	30.00	4.12	24.57	36.00
HT20	2	2412	16.14	17.05	---	---	91.814	19.63	30.00	4.12	23.75	36.00
HT20	2	2437	22.04	22.89	---	---	354.492	25.50	30.00	4.12	29.62	36.00
HT20	2	2462	17.04	17.85	---	---	111.536	20.47	30.00	4.12	24.59	36.00
HT40	2	2422	14.51	15.38	---	---	62.763	17.98	30.00	4.12	22.10	36.00
HT40	2	2437	17.44	18.85	---	---	132.199	21.21	30.00	4.12	25.33	36.00
HT40	2	2452	14.61	15.72	---	---	66.232	18.21	30.00	4.12	22.33	36.00
VHT20	2	2412	16.28	17.12	---	---	93.985	19.73	30.00	4.12	23.85	36.00
VHT20	2	2437	22.15	23.01	---	---	364.045	25.61	30.00	4.12	29.73	36.00
VHT20	2	2462	17.12	17.96	---	---	114.040	20.57	30.00	4.12	24.69	36.00
VHT40	2	2422	14.62	15.49	---	---	64.373	18.09	30.00	4.12	22.21	36.00
VHT40	2	2437	17.56	18.98	---	---	136.084	21.34	30.00	4.12	25.46	36.00
VHT40	2	2452	14.74	15.85	---	---	68.244	18.34	30.00	4.12	22.46	36.00

Beamforming mode

Modulation Mode	N _{TX}	Freq. (MHz)	Conducted (Average) Output Power (dBm)							Ant. Gain (dBi)	EIRP (dBm)	EIRP Limit (dBm)
			Chain 0	Chain 1	Chain 2	Chain 3	Total Power (mW)	Total Power (dBm)	Limit (dBm)			
HT20	2	2412	13.13	14.04	---	---	45.910	16.62	28.91	7.09	23.71	36.00
HT20	2	2437	19.03	19.88	---	---	177.258	22.49	28.91	7.09	29.58	36.00
HT20	2	2462	14.03	14.84	---	---	55.772	17.46	28.91	7.09	24.55	36.00
HT40	2	2422	11.5	12.37	---	---	31.384	14.97	28.91	7.09	22.06	36.00
HT40	2	2437	14.43	15.84	---	---	66.104	18.20	28.91	7.09	25.29	36.00
HT40	2	2452	11.6	12.71	---	---	33.118	15.20	28.91	7.09	22.29	36.00
VHT20	2	2412	13.27	14.11	---	---	46.996	16.72	28.91	7.09	23.81	36.00
VHT20	2	2437	19.14	20.00	---	---	182.035	22.60	28.91	7.09	29.69	36.00
VHT20	2	2462	14.11	14.95	---	---	57.024	17.56	28.91	7.09	24.65	36.00
VHT40	2	2422	11.61	12.48	---	---	32.189	15.08	28.91	7.09	22.17	36.00
VHT40	2	2437	14.55	15.97	---	---	68.047	18.33	28.91	7.09	25.42	36.00
VHT40	2	2452	11.73	12.84	---	---	34.125	15.33	28.91	7.09	22.42	36.00

Note:

1. Directional gain = $10 * \log((10^{4.12/20} + 10^{4.03/20})^2/2) = 7.09 \text{ dBi} > 6 \text{ dBi}$.

Limit shall be reduced to $30 \text{ dBm} - (7.09 \text{ dBi} - 6 \text{ dBi}) = 28.91 \text{ dBm}$.

3.4 Power Spectral Density

3.4.1 Limit of Power Spectral Density

Power spectral density shall not be greater than 8 dBm in any 3 kHz band.

3.4.2 Test Procedures

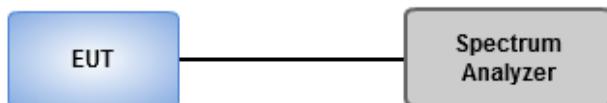
Average PSD (Duty cycle > 98 %)

1. Set the RBW = 30kHz, VBW = 100 kHz, Detector = RMS.
2. Set the sweep time to: $\geq 10 \times (\text{number of measurement points in sweep}) \times (\text{maximum data rate per stream})$.
3. Perform the measurement over a single sweep.
4. Use the peak marker function to determine the maximum amplitude level.

Average PSD (Duty cycle < 98 %)

1. Set the RBW = 30kHz, VBW = 100 kHz, Detector = RMS.
2. Set the sweep time to: $\geq 10 \times (\text{number of measurement points in sweep}) \times (\text{maximum data rate per stream})$.
3. Perform the measurement over 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

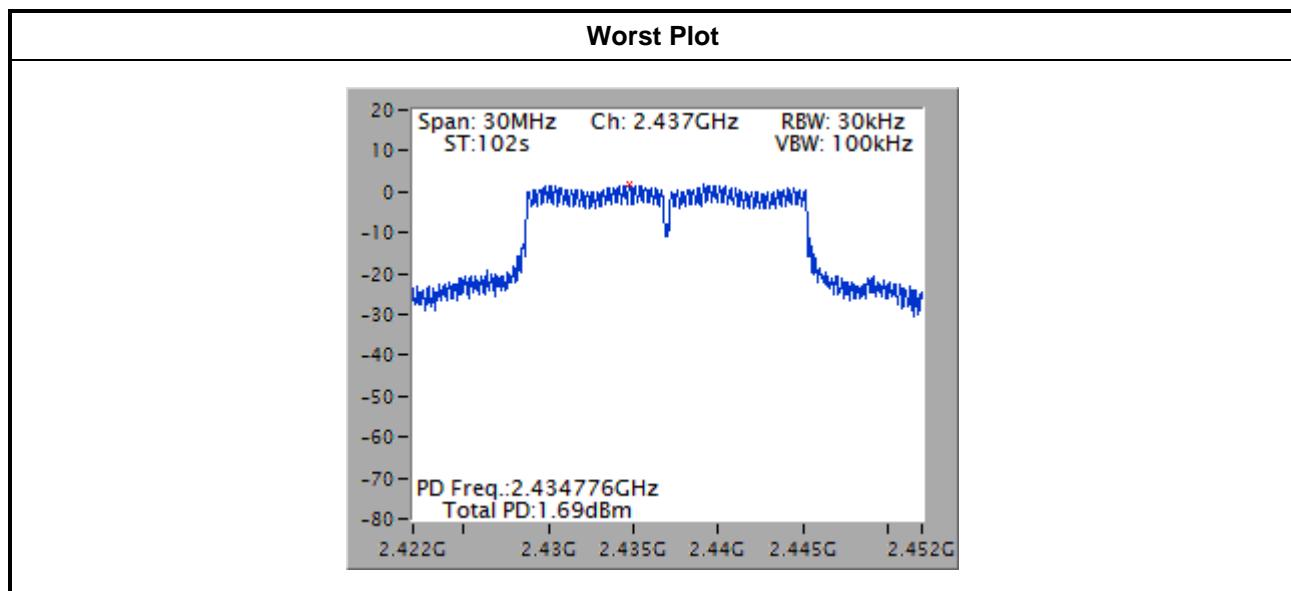


3.4.4 Test Result of Power Spectral Density

Modulation Mode	N _{TX}	Freq. (MHz)	PPSD w/o D.F (dBm/30kHz)	Duty Factor (dB)	PPSD with D.F (dBm/30kHz)	Limit (dBm/3kHz)
11b	2	2412	0.11	0	0.11	8.00
11b	2	2437	1.68	0	1.68	8.00
11b	2	2462	0.3	0	0.3	8.00
11g	2	2412	-3.57	0.13	-3.44	8.00
11g	2	2437	1.69	0.13	1.82	8.00
11g	2	2462	-3.05	0.13	-2.92	8.00
VHT20	2	2412	-4.38	0	-4.38	8.00
VHT20	2	2437	1.57	0	1.57	8.00
VHT20	2	2462	-3.36	0	-3.36	8.00
VHT40	2	2422	-9.17	0.11	-9.06	8.00
VHT40	2	2437	-5.77	0.11	-5.66	8.00
VHT40	2	2452	-8.89	0.11	-8.78	8.00

Note 1: Test result is bin-by-bin summing measured value of each TX port.

Note 2: D.F is duty factor



Note: The plot without duty factor

3.5 Unwanted Emissions into Restricted Frequency Bands

3.5.1 Limit of Unwanted Emissions into Restricted Frequency Bands

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:
Quasi-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.

3.5.2 Test Procedures

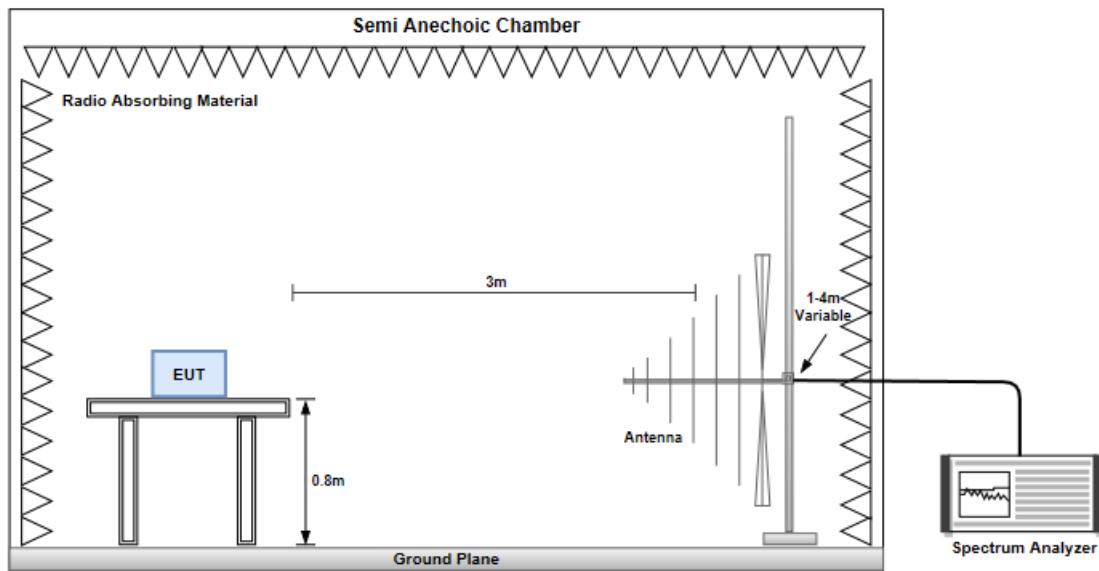
1. Measurement is made at a semi-anechoic chamber that incorporates a turntable allowing a EUT rotation of 360°. A continuously-rotating, remotely-controlled turntable is installed at the test site to support the EUT and facilitate determination of the direction of maximum radiation for each EUT emission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

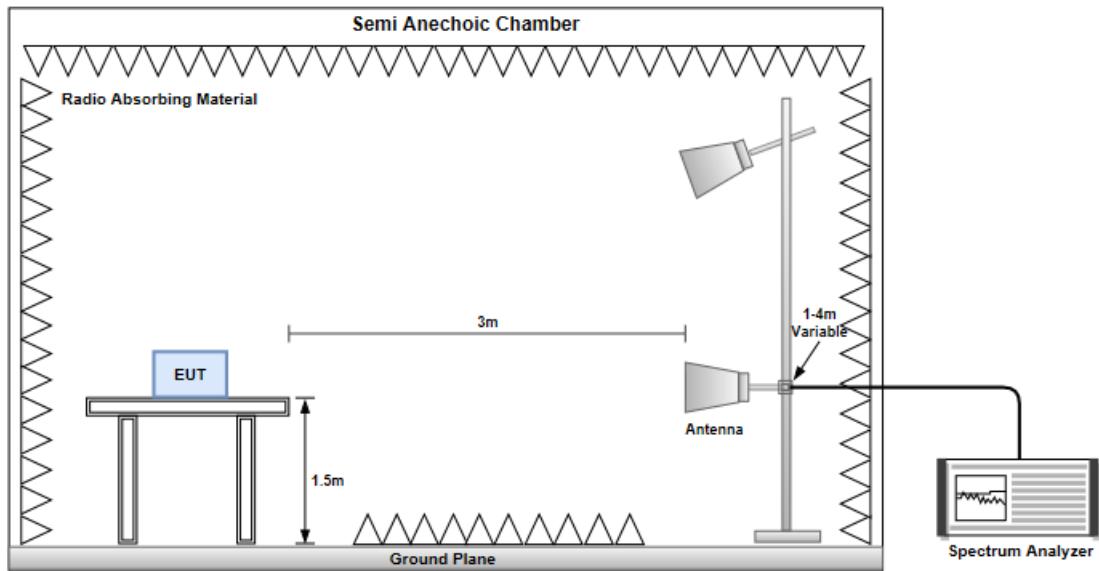
1. 120kHz measurement bandwidth of test receiver and Quasi-peak detector is for radiated emission below 1GHz.
2. RBW=1MHz, VBW=3MHz and Peak detector is for peak measured value of radiated emission above 1GHz.
3. RBW=1MHz, VBW=1/T and Peak detector is for average measured value of radiated emission above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

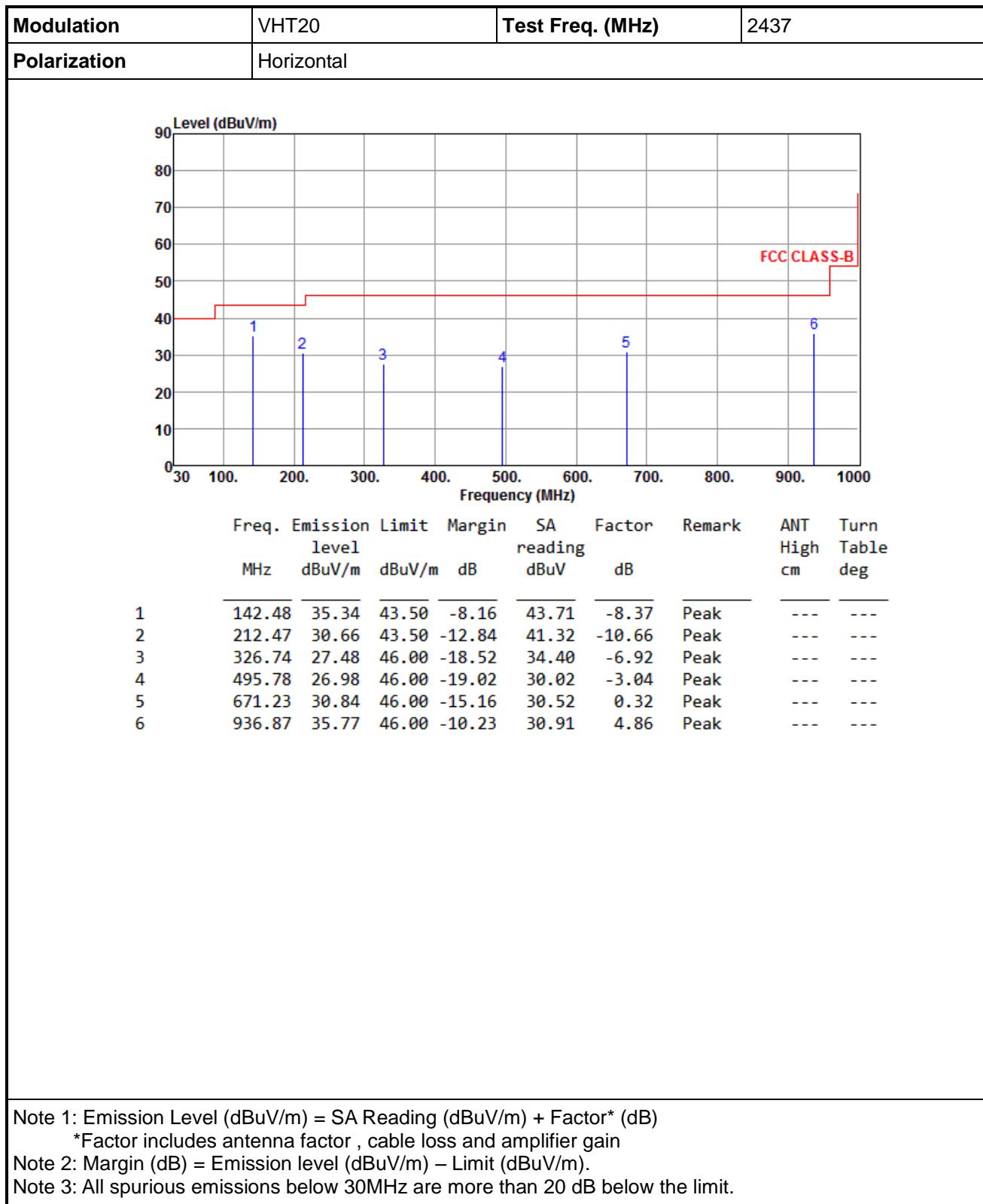
3.5.3 Test Setup

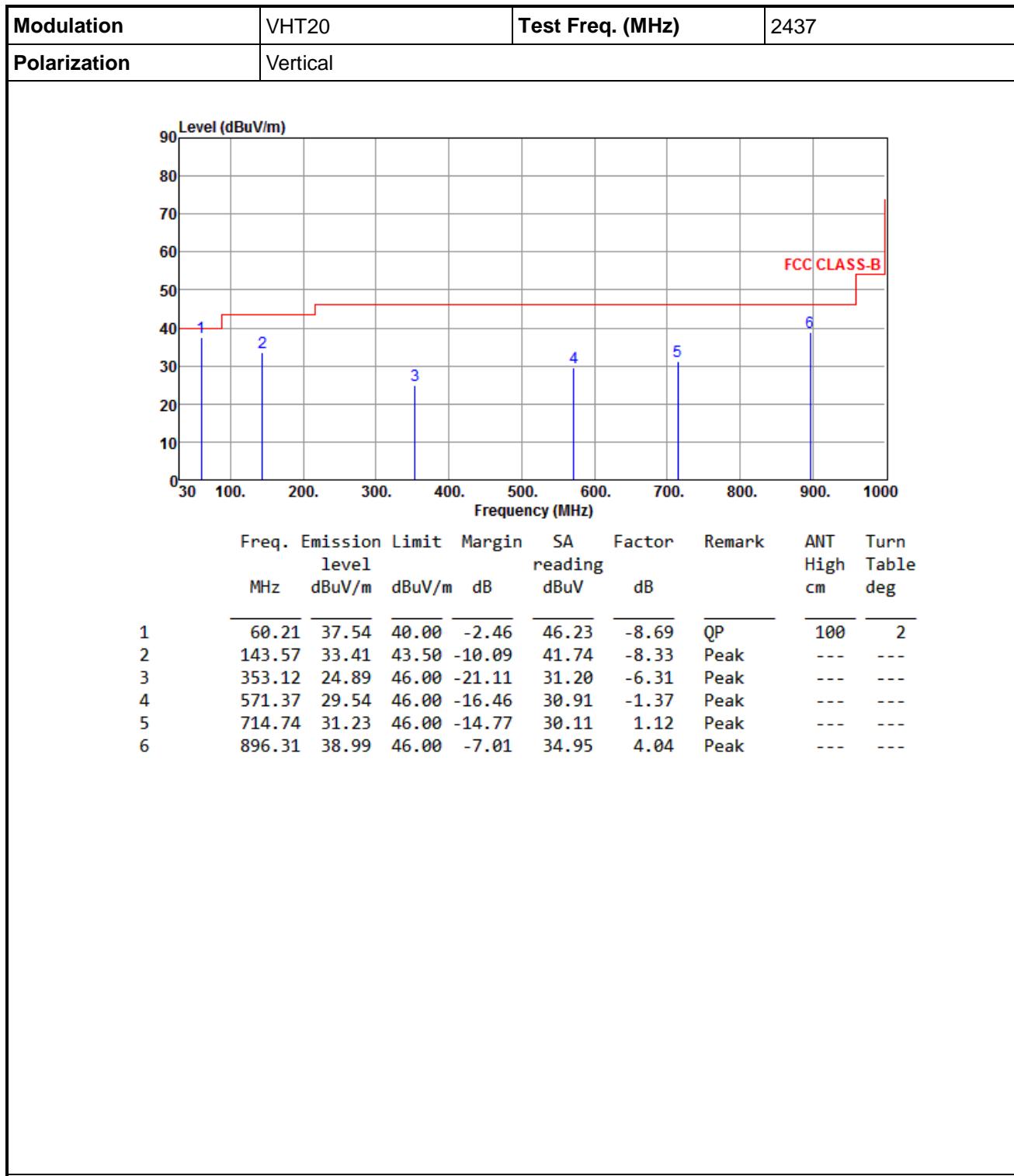
Radiated Emissions below 1 GHz



Radiated Emissions above 1 GHz



Configuration 1: POE mode
3.5.4 Transmitter Radiated Unwanted Emissions (Below 1GHz)




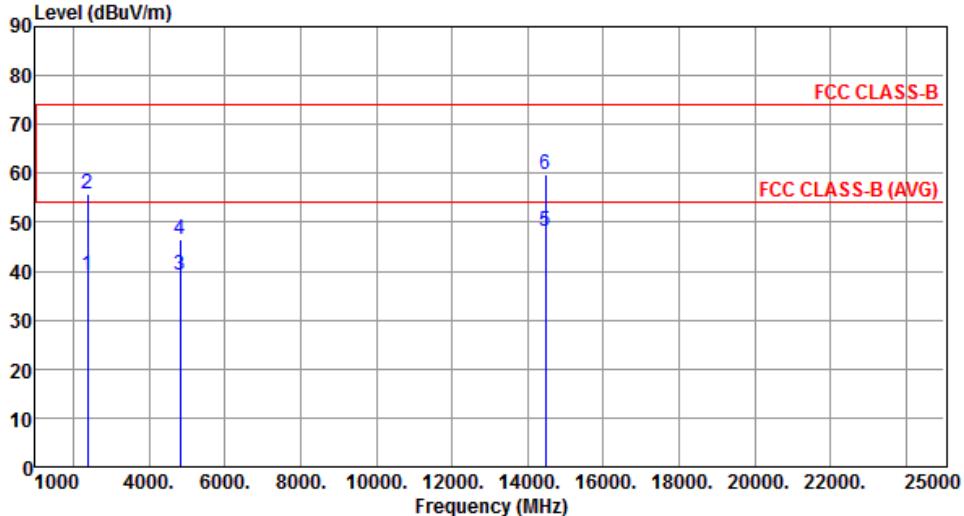
Note 1: Emission Level (dBuV/m) = SA Reading (dBuV/m) + Factor* (dB)

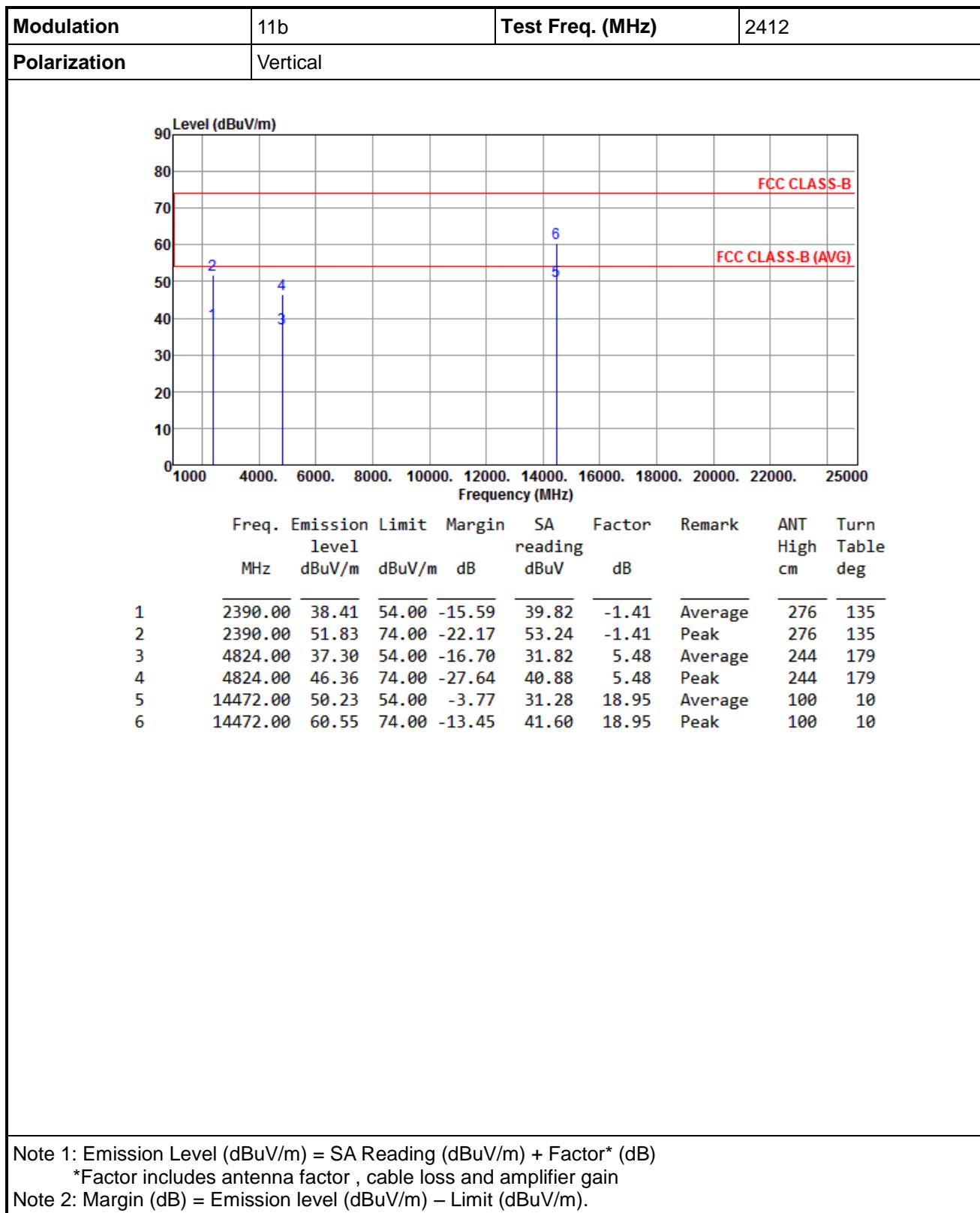
*Factor includes antenna factor , cable loss and amplifier gain

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

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

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

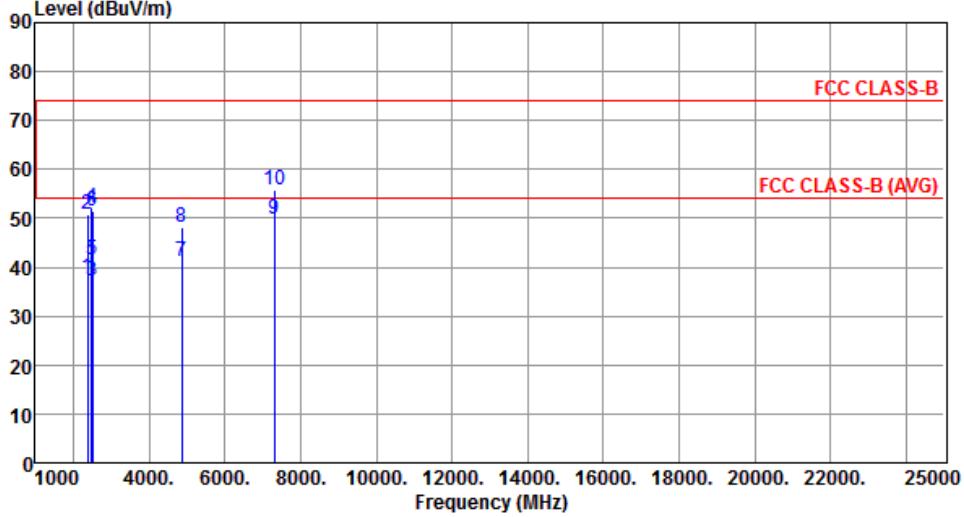
Modulation	11b	Test Freq. (MHz)	2412																																																																												
Polarization	Horizontal																																																																														
																																																																															
<table border="1"> <thead> <tr> <th>Freq.</th> <th>Emission Limit</th> <th>Margin</th> <th>SA</th> <th>Factor</th> <th>Remark</th> <th>ANT</th> <th>Turn</th> </tr> <tr> <th>MHz</th> <th>level</th> <th>dBuV/m</th> <th>reading</th> <th>dBuV</th> <th></th> <th>High</th> <th>Table</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>2390.00</td> <td>39.34</td> <td>54.00</td> <td>-14.66</td> <td>40.75</td> <td>-1.41</td> <td>Average</td> <td>221</td> <td>70</td> </tr> <tr> <td>2</td> <td>2390.00</td> <td>55.77</td> <td>74.00</td> <td>-18.23</td> <td>57.18</td> <td>-1.41</td> <td>Peak</td> <td>221</td> <td>70</td> </tr> <tr> <td>3</td> <td>4824.00</td> <td>39.25</td> <td>54.00</td> <td>-14.75</td> <td>33.77</td> <td>5.48</td> <td>Average</td> <td>166</td> <td>228</td> </tr> <tr> <td>4</td> <td>4824.00</td> <td>46.35</td> <td>74.00</td> <td>-27.65</td> <td>40.87</td> <td>5.48</td> <td>Peak</td> <td>166</td> <td>228</td> </tr> <tr> <td>5</td> <td>14472.00</td> <td>48.28</td> <td>54.00</td> <td>-5.72</td> <td>29.33</td> <td>18.95</td> <td>Average</td> <td>100</td> <td>316</td> </tr> <tr> <td>6</td> <td>14472.00</td> <td>59.93</td> <td>74.00</td> <td>-14.07</td> <td>40.98</td> <td>18.95</td> <td>Peak</td> <td>100</td> <td>316</td> </tr> </tbody> </table>				Freq.	Emission Limit	Margin	SA	Factor	Remark	ANT	Turn	MHz	level	dBuV/m	reading	dBuV		High	Table	1	2390.00	39.34	54.00	-14.66	40.75	-1.41	Average	221	70	2	2390.00	55.77	74.00	-18.23	57.18	-1.41	Peak	221	70	3	4824.00	39.25	54.00	-14.75	33.77	5.48	Average	166	228	4	4824.00	46.35	74.00	-27.65	40.87	5.48	Peak	166	228	5	14472.00	48.28	54.00	-5.72	29.33	18.95	Average	100	316	6	14472.00	59.93	74.00	-14.07	40.98	18.95	Peak	100	316
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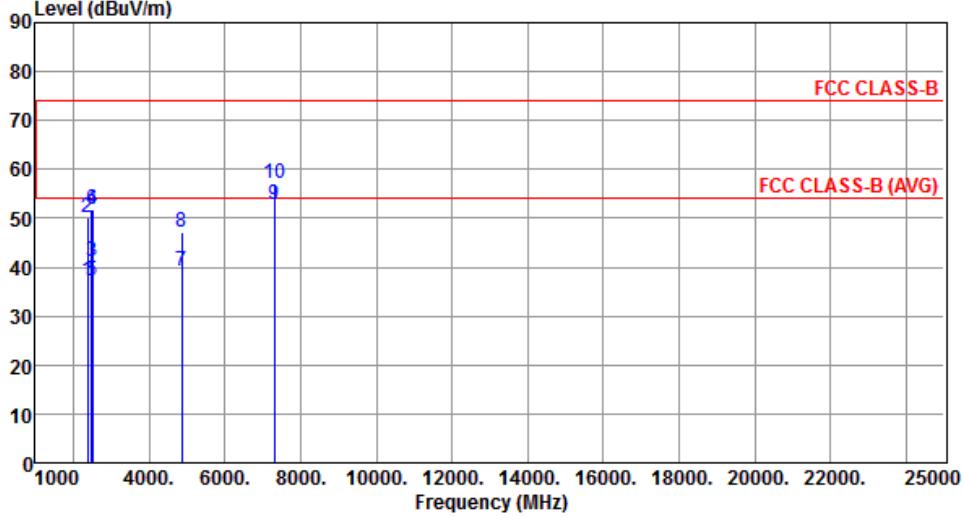


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Note 2: Margin (dB) = Emission level (dBuV/m) – Limit (dBuV/m).

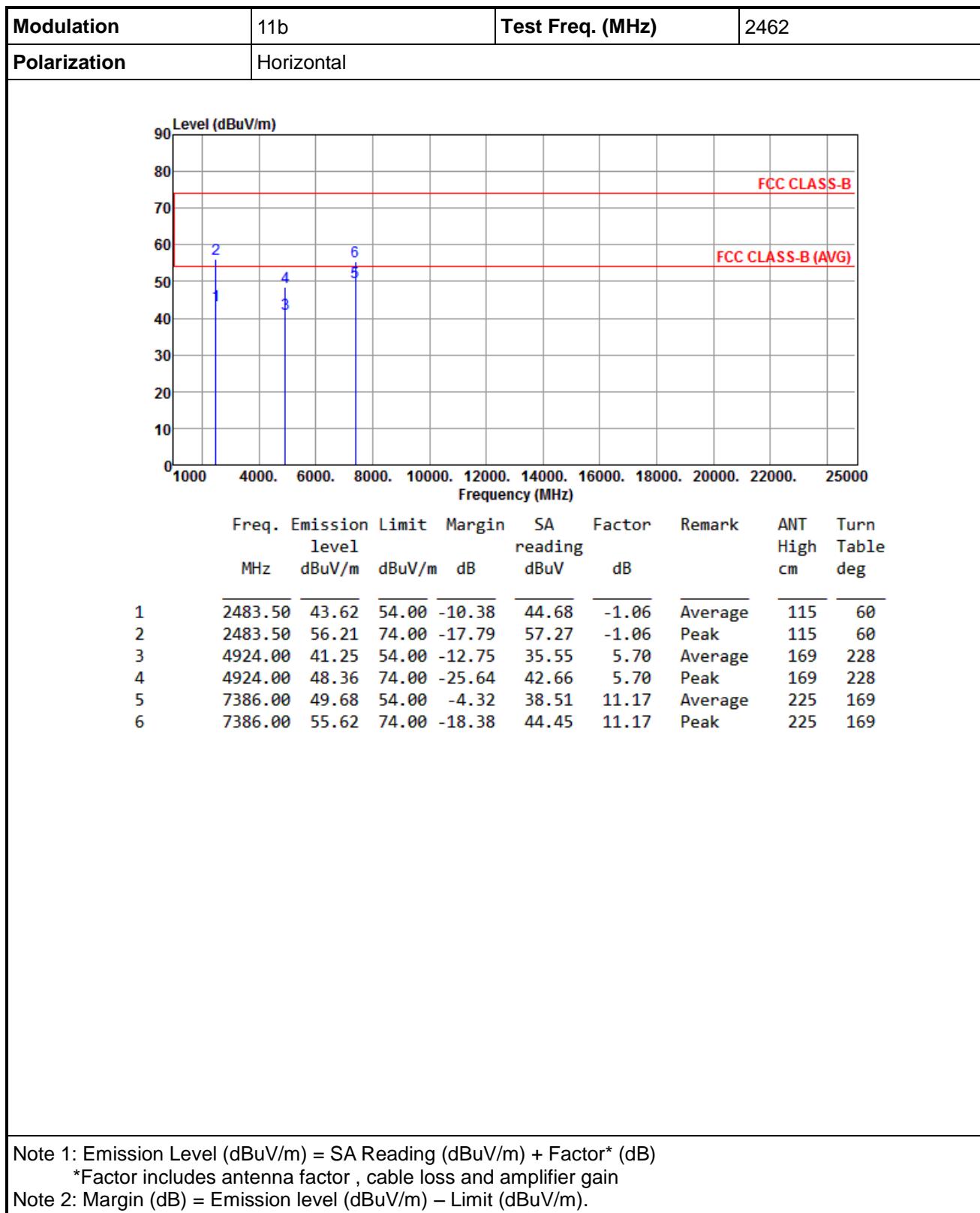
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Modulation	11b	Test Freq. (MHz)	2437																																																																																																																						
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<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="text-align: left;">Freq.</th> <th style="text-align: left;">Emission</th> <th style="text-align: left;">Limit</th> <th style="text-align: left;">Margin</th> <th style="text-align: left;">SA</th> <th style="text-align: left;">Factor</th> <th style="text-align: left;">Remark</th> <th style="text-align: left;">ANT</th> <th style="text-align: left;">Turn</th> </tr> <tr> <th style="text-align: left;">MHz</th> <th style="text-align: left;">level</th> <th style="text-align: left;">dBuV/m</th> <th style="text-align: left;">dB</th> <th style="text-align: left;">reading</th> <th style="text-align: left;">dB</th> <th></th> <th style="text-align: left;">High</th> <th style="text-align: left;">Table</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>2390.00</td> <td>37.11</td> <td>54.00</td> <td>-16.89</td> <td>38.52</td> <td>-1.41</td> <td>Average</td> <td>227</td> <td>136</td> </tr> <tr> <td>2</td> <td>2390.00</td> <td>50.01</td> <td>74.00</td> <td>-23.99</td> <td>51.42</td> <td>-1.41</td> <td>Peak</td> <td>227</td> <td>136</td> </tr> <tr> <td>3</td> <td>2483.50</td> <td>41.05</td> <td>54.00</td> <td>-12.95</td> <td>42.11</td> <td>-1.06</td> <td>Average</td> <td>227</td> <td>136</td> </tr> <tr> <td>4</td> <td>2483.50</td> <td>51.69</td> <td>74.00</td> <td>-22.31</td> <td>52.75</td> <td>-1.06</td> <td>Peak</td> <td>227</td> <td>136</td> </tr> <tr> <td>5</td> <td>2500.00</td> <td>37.26</td> <td>54.00</td> <td>-16.74</td> <td>38.26</td> <td>-1.00</td> <td>Average</td> <td>227</td> <td>136</td> </tr> <tr> <td>6</td> <td>2500.00</td> <td>51.97</td> <td>74.00</td> <td>-22.03</td> <td>52.97</td> <td>-1.00</td> <td>Peak</td> <td>227</td> <td>136</td> </tr> <tr> <td>7</td> <td>4874.00</td> <td>39.07</td> <td>54.00</td> <td>-14.93</td> <td>33.48</td> <td>5.59</td> <td>Average</td> <td>240</td> <td>179</td> </tr> <tr> <td>8</td> <td>4874.00</td> <td>47.03</td> <td>74.00</td> <td>-26.97</td> <td>41.44</td> <td>5.59</td> <td>Peak</td> <td>240</td> <td>179</td> </tr> <tr> <td>9</td> <td>7311.00</td> <td>52.77</td> <td>54.00</td> <td>-1.23</td> <td>41.92</td> <td>10.85</td> <td>Average</td> <td>145</td> <td>21</td> </tr> <tr> <td>10</td> <td>7311.00</td> <td>57.24</td> <td>74.00</td> <td>-16.76</td> <td>46.39</td> <td>10.85</td> <td>Peak</td> <td>145</td> <td>21</td> </tr> </tbody> </table>				Freq.	Emission	Limit	Margin	SA	Factor	Remark	ANT	Turn	MHz	level	dBuV/m	dB	reading	dB		High	Table	1	2390.00	37.11	54.00	-16.89	38.52	-1.41	Average	227	136	2	2390.00	50.01	74.00	-23.99	51.42	-1.41	Peak	227	136	3	2483.50	41.05	54.00	-12.95	42.11	-1.06	Average	227	136	4	2483.50	51.69	74.00	-22.31	52.75	-1.06	Peak	227	136	5	2500.00	37.26	54.00	-16.74	38.26	-1.00	Average	227	136	6	2500.00	51.97	74.00	-22.03	52.97	-1.00	Peak	227	136	7	4874.00	39.07	54.00	-14.93	33.48	5.59	Average	240	179	8	4874.00	47.03	74.00	-26.97	41.44	5.59	Peak	240	179	9	7311.00	52.77	54.00	-1.23	41.92	10.85	Average	145	21	10	7311.00	57.24	74.00	-16.76	46.39	10.85	Peak	145	21
Freq.	Emission	Limit	Margin	SA	Factor	Remark	ANT	Turn																																																																																																																	
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Note 1: Emission Level (dBuV/m) = SA Reading (dBuV/m) + Factor* (dB)

*Factor includes antenna factor , cable loss and amplifier gain

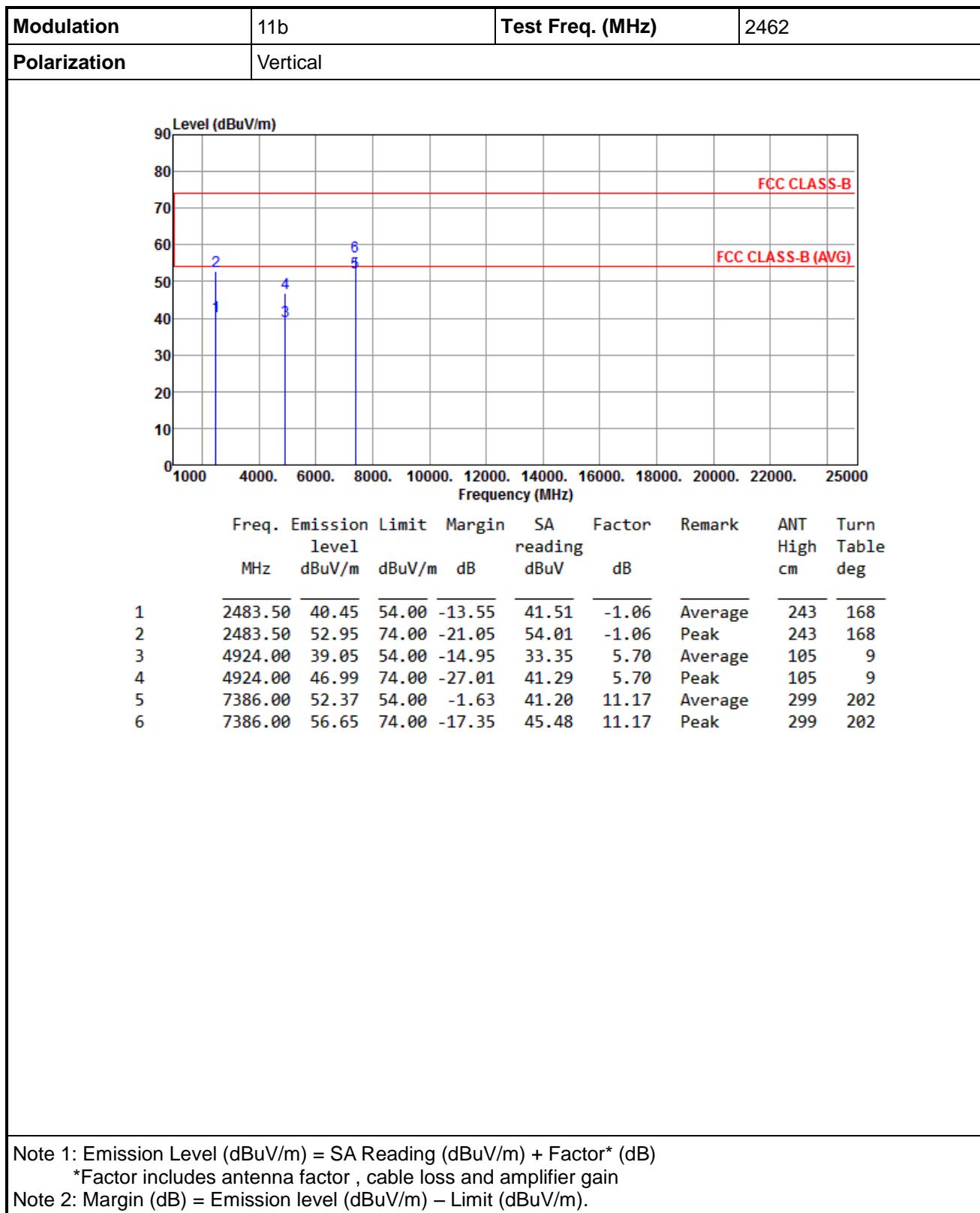
Note 2: Margin (dB) = Emission level (dBuV/m) – Limit (dBuV/m).



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

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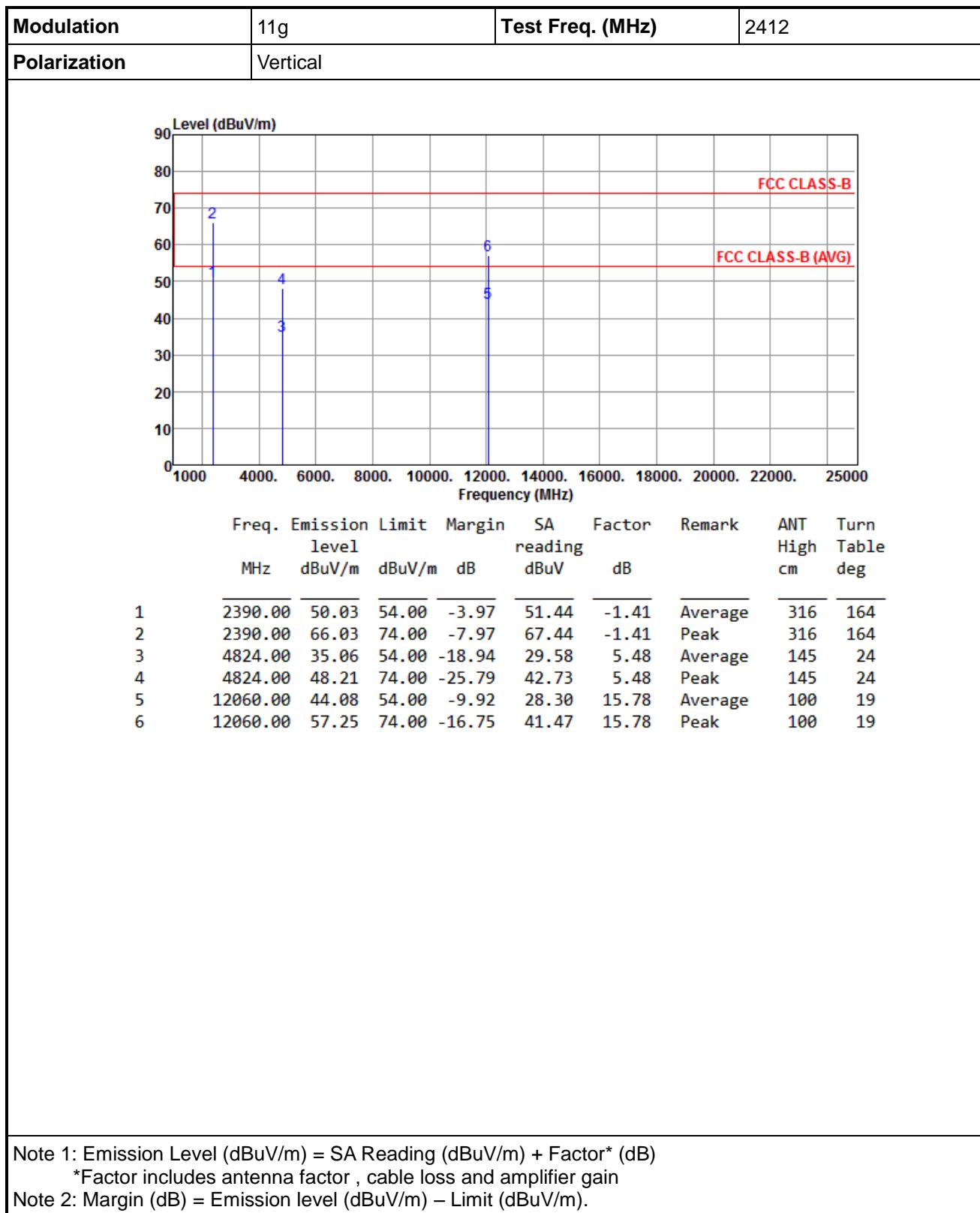
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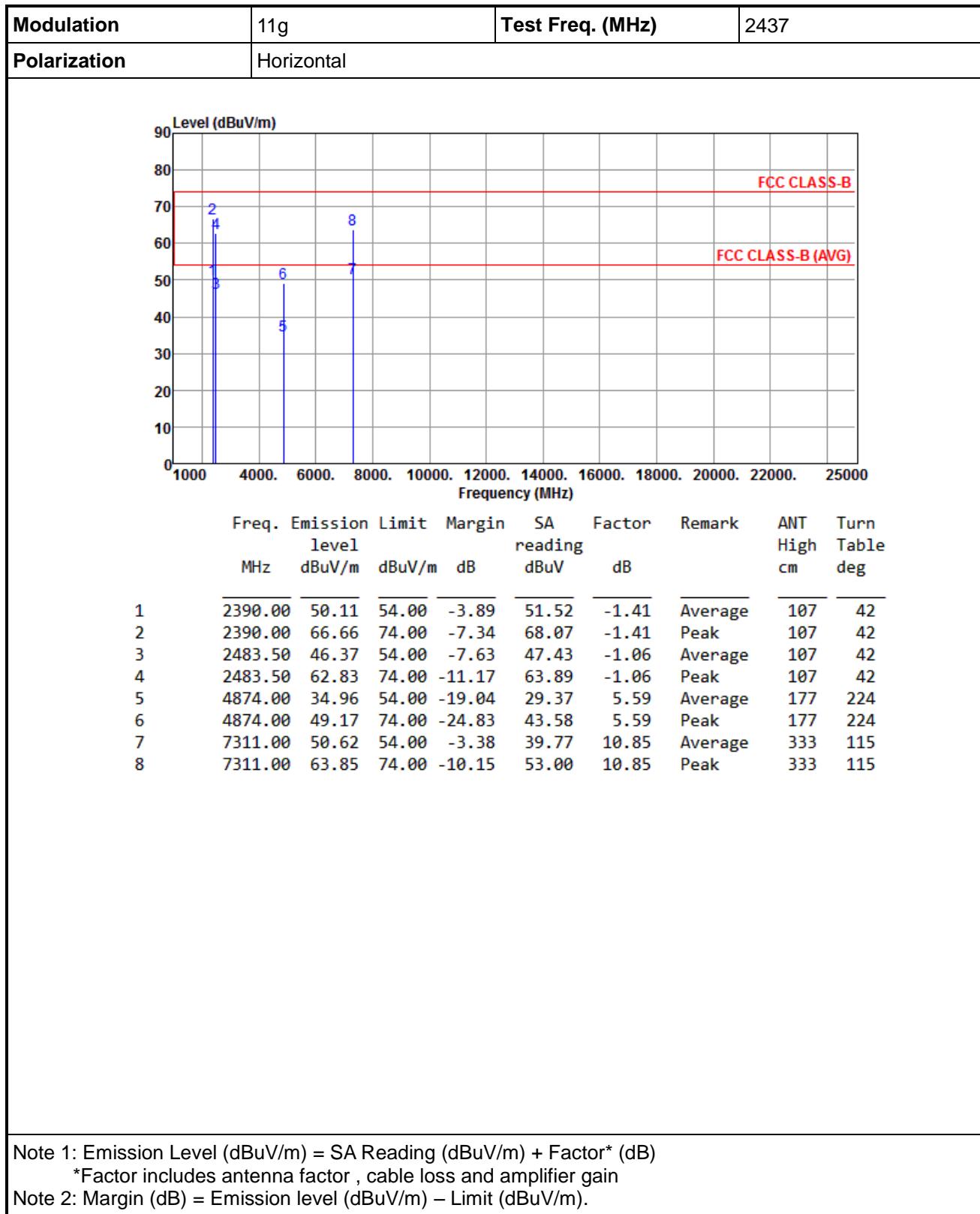
*Factor includes antenna factor , cable loss and amplifier gain

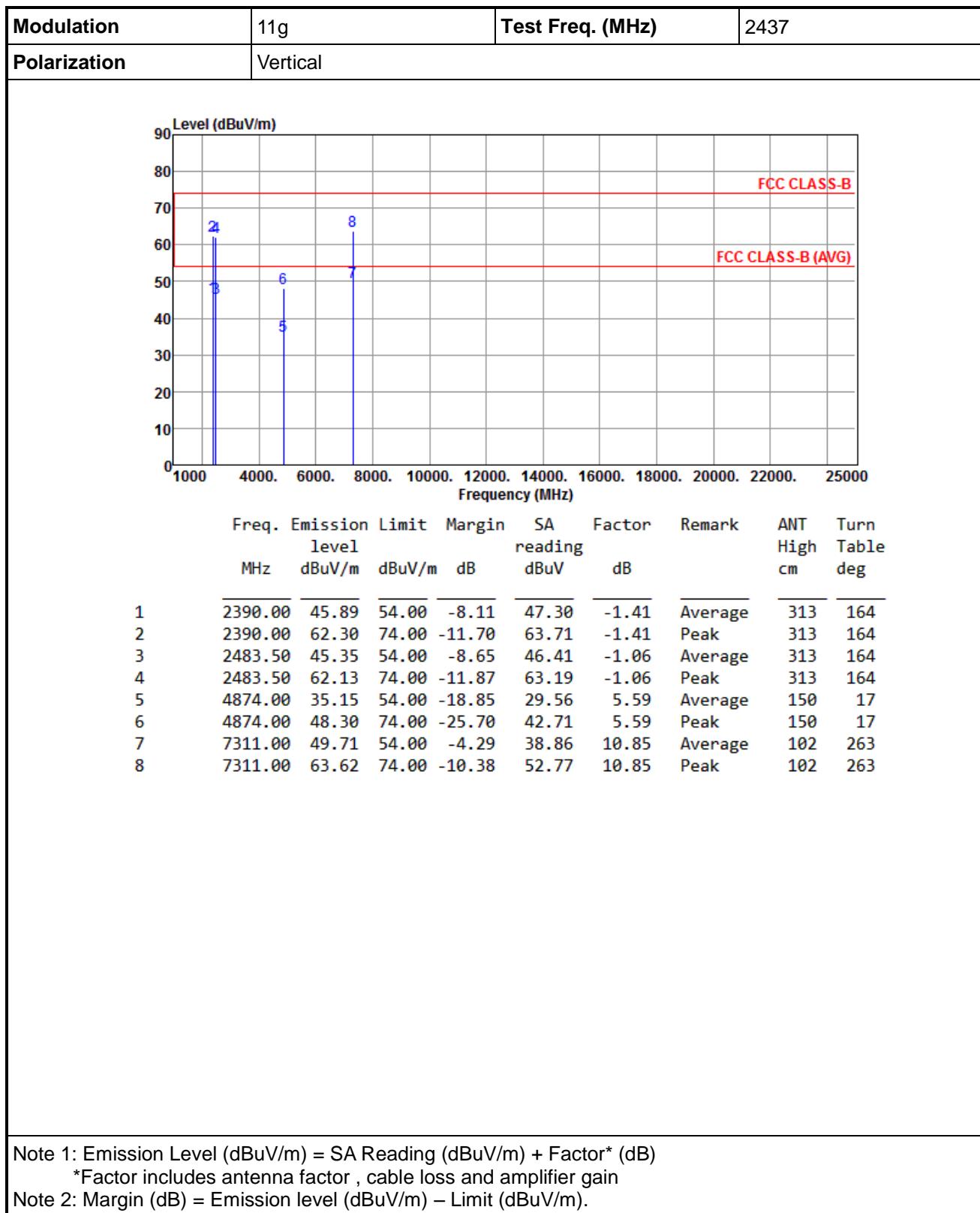
Note 2: Margin (dB) = Emission level (dBuV/m) – Limit (dBuV/m).

3.5.6 Transmitter Radiated Unwanted Emissions (Above 1GHz) for 11g

Modulation	11g	Test Freq. (MHz)	2412																																																																												
Polarization	Horizontal																																																																														
<p>Graph showing Level (dBuV/m) vs Frequency (MHz). The Y-axis ranges from 0 to 90 dBuV/m, and the X-axis ranges from 1000 to 25000 MHz. Six data points are plotted: 1 (54.00 dBuV/m at 2390.00 MHz), 2 (68.37 dBuV/m at 2390.00 MHz), 3 (34.85 dBuV/m at 4824.00 MHz), 4 (49.14 dBuV/m at 4824.00 MHz), 5 (28.16 dBuV/m at 12060.00 MHz), and 6 (56.98 dBuV/m at 12060.00 MHz). Two horizontal lines are shown: FCC CLASS-B (70 dBuV/m) and FCC CLASS-B (AVG) (54 dBuV/m).</p>																																																																															
<table border="1"> <thead> <tr> <th>Freq.</th> <th>Emission Limit</th> <th>Margin</th> <th>SA</th> <th>Factor</th> <th>Remark</th> <th>ANT</th> <th>Turn</th> </tr> <tr> <th>MHz</th> <th>level</th> <th>level</th> <th>reading</th> <th>reading</th> <th></th> <th>High</th> <th>Table</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>2390.00</td> <td>52.59</td> <td>54.00</td> <td>-1.41</td> <td>54.00</td> <td>-1.41</td> <td>Average</td> <td>130</td> <td>318</td> </tr> <tr> <td>2</td> <td>2390.00</td> <td>68.37</td> <td>74.00</td> <td>-5.63</td> <td>69.78</td> <td>-1.41</td> <td>Peak</td> <td>130</td> <td>318</td> </tr> <tr> <td>3</td> <td>4824.00</td> <td>34.85</td> <td>54.00</td> <td>-19.15</td> <td>29.37</td> <td>5.48</td> <td>Average</td> <td>176</td> <td>225</td> </tr> <tr> <td>4</td> <td>4824.00</td> <td>49.14</td> <td>74.00</td> <td>-24.86</td> <td>43.66</td> <td>5.48</td> <td>Peak</td> <td>176</td> <td>225</td> </tr> <tr> <td>5</td> <td>12060.00</td> <td>43.94</td> <td>54.00</td> <td>-10.06</td> <td>28.16</td> <td>15.78</td> <td>Average</td> <td>100</td> <td>319</td> </tr> <tr> <td>6</td> <td>12060.00</td> <td>56.98</td> <td>74.00</td> <td>-17.02</td> <td>41.20</td> <td>15.78</td> <td>Peak</td> <td>100</td> <td>319</td> </tr> </tbody> </table>				Freq.	Emission Limit	Margin	SA	Factor	Remark	ANT	Turn	MHz	level	level	reading	reading		High	Table	1	2390.00	52.59	54.00	-1.41	54.00	-1.41	Average	130	318	2	2390.00	68.37	74.00	-5.63	69.78	-1.41	Peak	130	318	3	4824.00	34.85	54.00	-19.15	29.37	5.48	Average	176	225	4	4824.00	49.14	74.00	-24.86	43.66	5.48	Peak	176	225	5	12060.00	43.94	54.00	-10.06	28.16	15.78	Average	100	319	6	12060.00	56.98	74.00	-17.02	41.20	15.78	Peak	100	319
Freq.	Emission Limit	Margin	SA	Factor	Remark	ANT	Turn																																																																								
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<p>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).</p>																																																																															



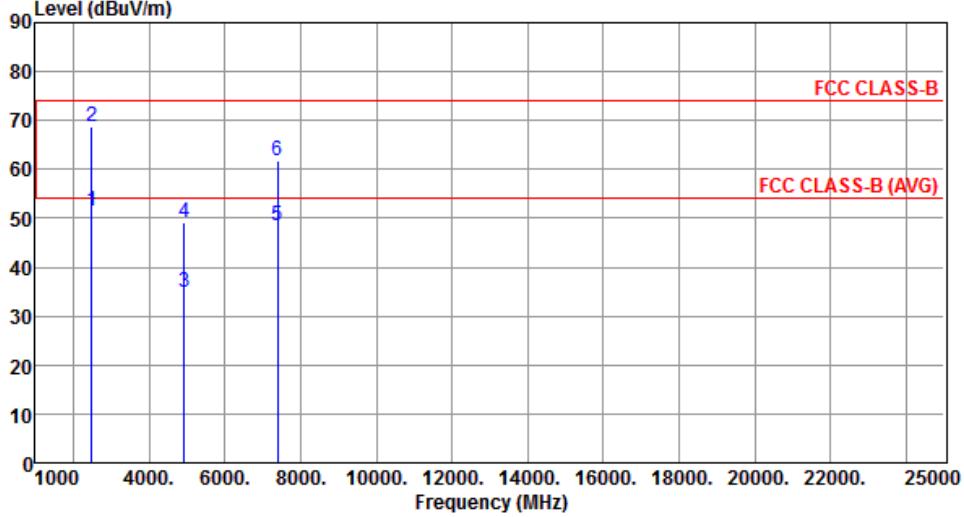




Note 1: Emission Level (dBuV/m) = SA Reading (dBuV/m) + Factor* (dB)

*Factor includes antenna factor , cable loss and amplifier gain

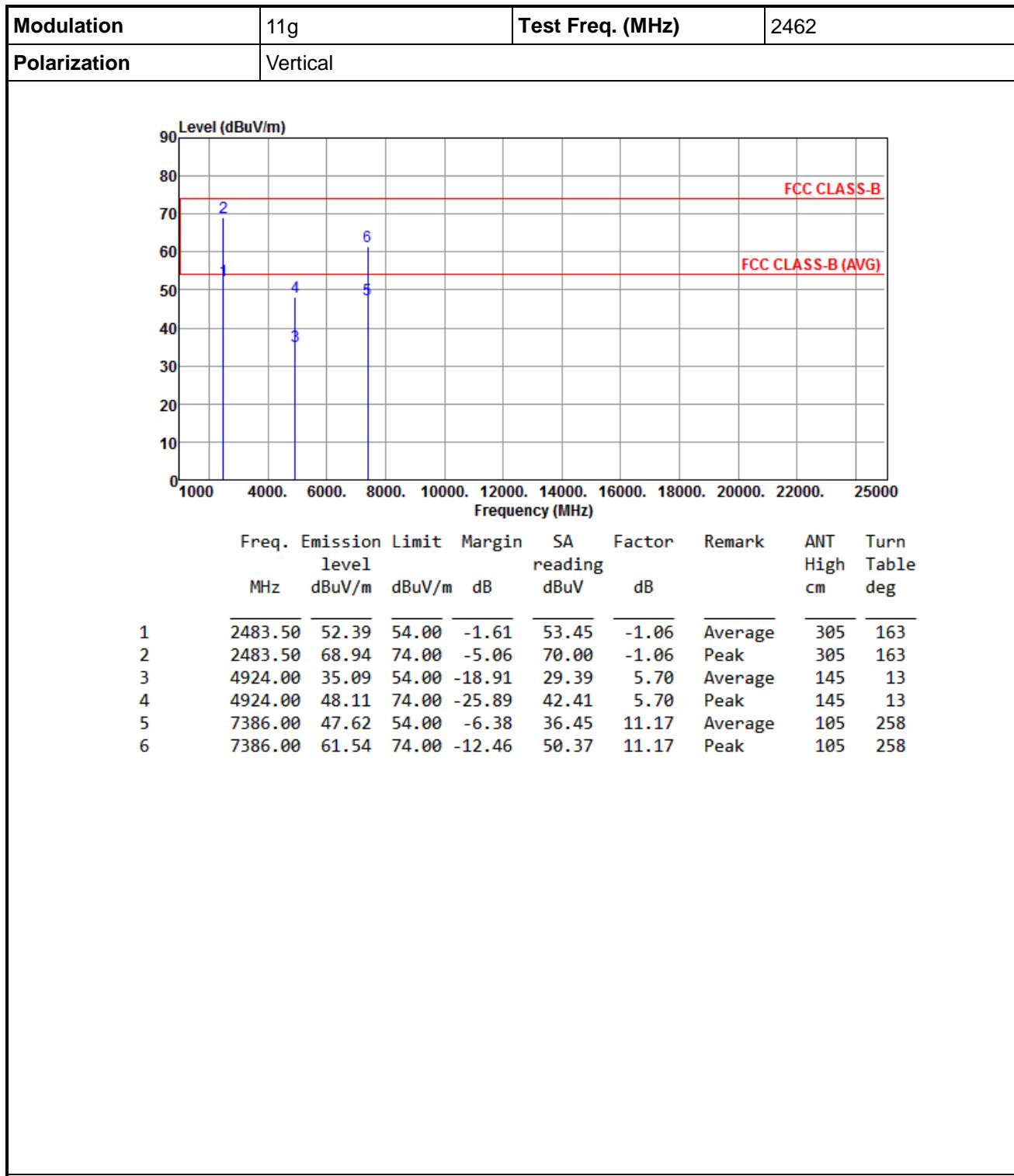
Note 2: Margin (dB) = Emission level (dBuV/m) – Limit (dBuV/m).

Modulation	11g	Test Freq. (MHz)	2462																																																																														
Polarization	Horizontal																																																																																
																																																																																	
<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="text-align: left;">Freq.</th> <th style="text-align: left;">Emission</th> <th style="text-align: left;">Limit</th> <th style="text-align: left;">Margin</th> <th style="text-align: left;">SA</th> <th style="text-align: left;">Factor</th> <th style="text-align: left;">Remark</th> <th style="text-align: left;">ANT</th> <th style="text-align: left;">Turn</th> </tr> <tr> <th style="text-align: left;">MHz</th> <th style="text-align: left;">level</th> <th style="text-align: left;">dBuV/m</th> <th style="text-align: left;">dB</th> <th style="text-align: left;">reading</th> <th style="text-align: left;">dB</th> <th></th> <th style="text-align: left;">High</th> <th style="text-align: left;">Table</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>2483.50</td> <td>51.54</td> <td>54.00</td> <td>-2.46</td> <td>52.60</td> <td>-1.06</td> <td>Average</td> <td>100</td> <td>318</td> </tr> <tr> <td>2</td> <td>2483.50</td> <td>68.84</td> <td>74.00</td> <td>-5.16</td> <td>69.90</td> <td>-1.06</td> <td>Peak</td> <td>100</td> <td>318</td> </tr> <tr> <td>3</td> <td>4924.00</td> <td>34.86</td> <td>54.00</td> <td>-19.14</td> <td>29.16</td> <td>5.70</td> <td>Average</td> <td>175</td> <td>226</td> </tr> <tr> <td>4</td> <td>4924.00</td> <td>49.12</td> <td>74.00</td> <td>-24.88</td> <td>43.42</td> <td>5.70</td> <td>Peak</td> <td>175</td> <td>226</td> </tr> <tr> <td>5</td> <td>7386.00</td> <td>48.53</td> <td>54.00</td> <td>-5.47</td> <td>37.36</td> <td>11.17</td> <td>Average</td> <td>300</td> <td>114</td> </tr> <tr> <td>6</td> <td>7386.00</td> <td>61.74</td> <td>74.00</td> <td>-12.26</td> <td>50.57</td> <td>11.17</td> <td>Peak</td> <td>300</td> <td>114</td> </tr> </tbody> </table>				Freq.	Emission	Limit	Margin	SA	Factor	Remark	ANT	Turn	MHz	level	dBuV/m	dB	reading	dB		High	Table	1	2483.50	51.54	54.00	-2.46	52.60	-1.06	Average	100	318	2	2483.50	68.84	74.00	-5.16	69.90	-1.06	Peak	100	318	3	4924.00	34.86	54.00	-19.14	29.16	5.70	Average	175	226	4	4924.00	49.12	74.00	-24.88	43.42	5.70	Peak	175	226	5	7386.00	48.53	54.00	-5.47	37.36	11.17	Average	300	114	6	7386.00	61.74	74.00	-12.26	50.57	11.17	Peak	300	114
Freq.	Emission	Limit	Margin	SA	Factor	Remark	ANT	Turn																																																																									
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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).



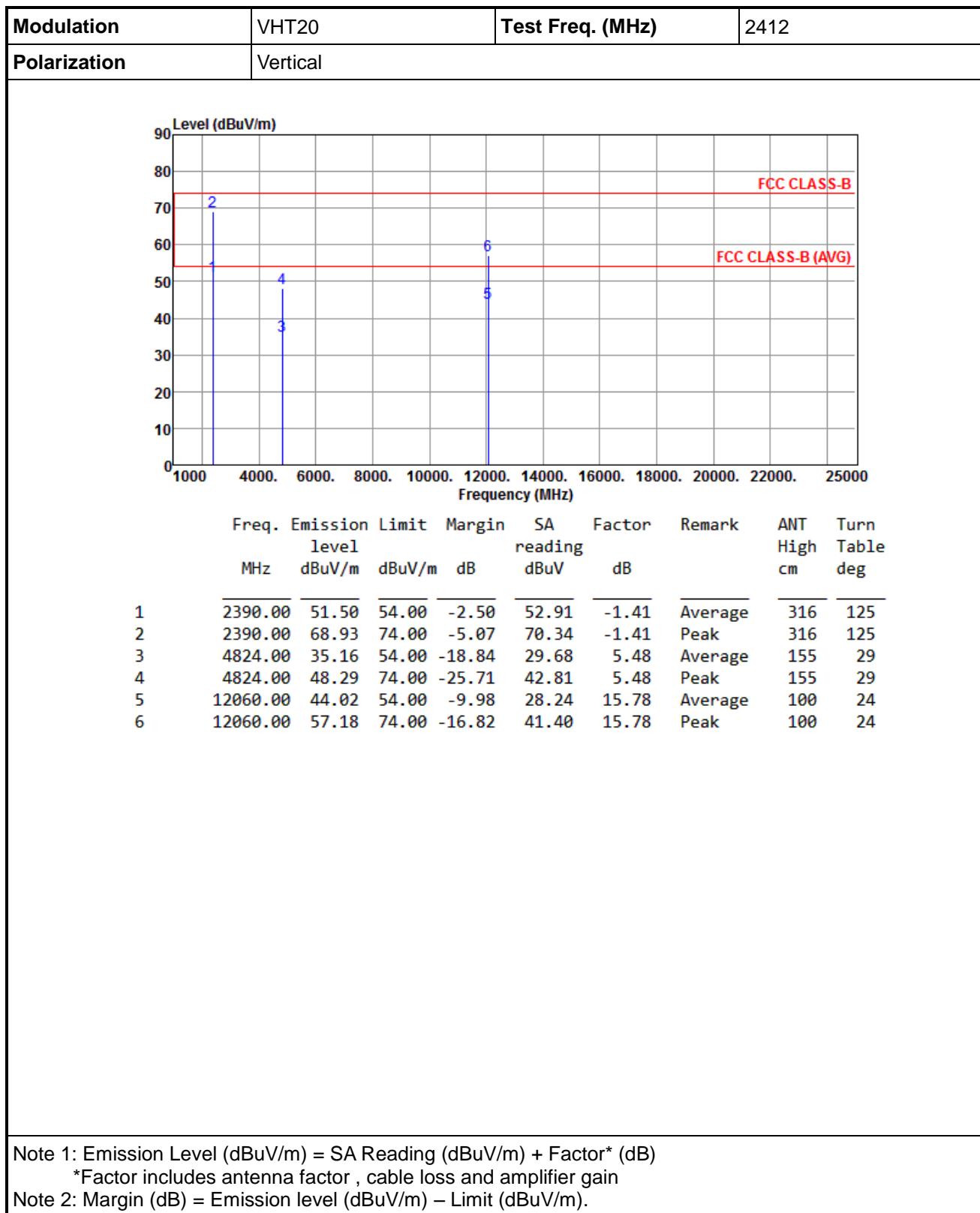
Note 1: Emission Level (dBuV/m) = SA Reading (dBuV/m) + Factor* (dB)

*Factor includes antenna factor , cable loss and amplifier gain

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

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

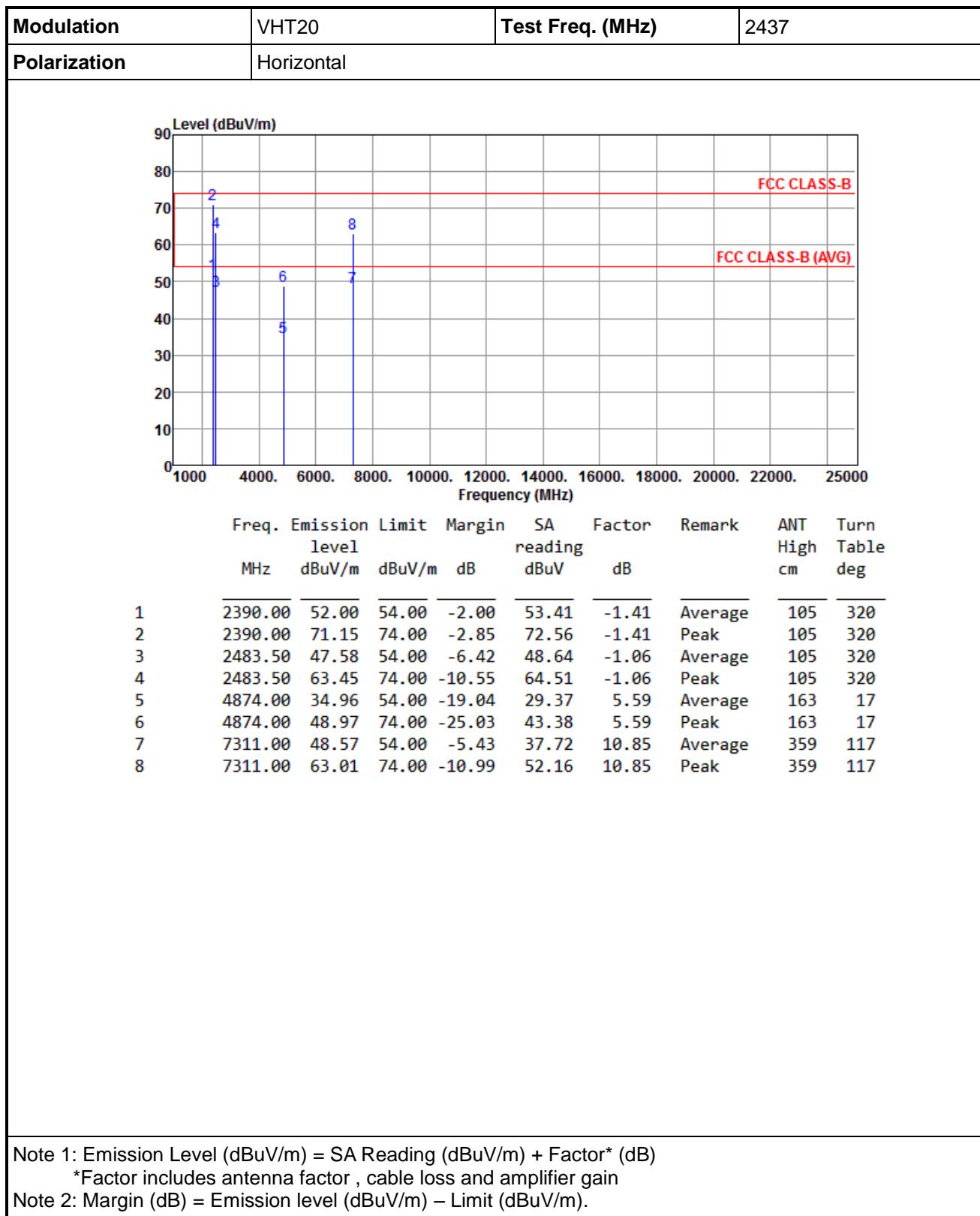
Modulation	VHT20	Test Freq. (MHz)	2412																																																																												
Polarization	Horizontal																																																																														
<p>The graph plots Emission Level (dBuV/m) on the y-axis (0 to 90) against Frequency (MHz) on the x-axis (1000 to 25000). Six data points are marked: 1 (2390.00 MHz, 52.90 dBuV/m), 2 (2390.00 MHz, 70.57 dBuV/m), 3 (4824.00 MHz, 34.86 dBuV/m), 4 (4824.00 MHz, 49.18 dBuV/m), 5 (12060.00 MHz, 43.89 dBuV/m), and 6 (12060.00 MHz, 56.92 dBuV/m). Two horizontal lines represent limits: FCC CLASS-B at 74 dBuV/m and FCC CLASS-B (AVG) at 54.5 dBuV/m.</p>																																																																															
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Freq.	Emission Limit	Margin	SA	Factor	Remark	ANT	Turn																																																																								
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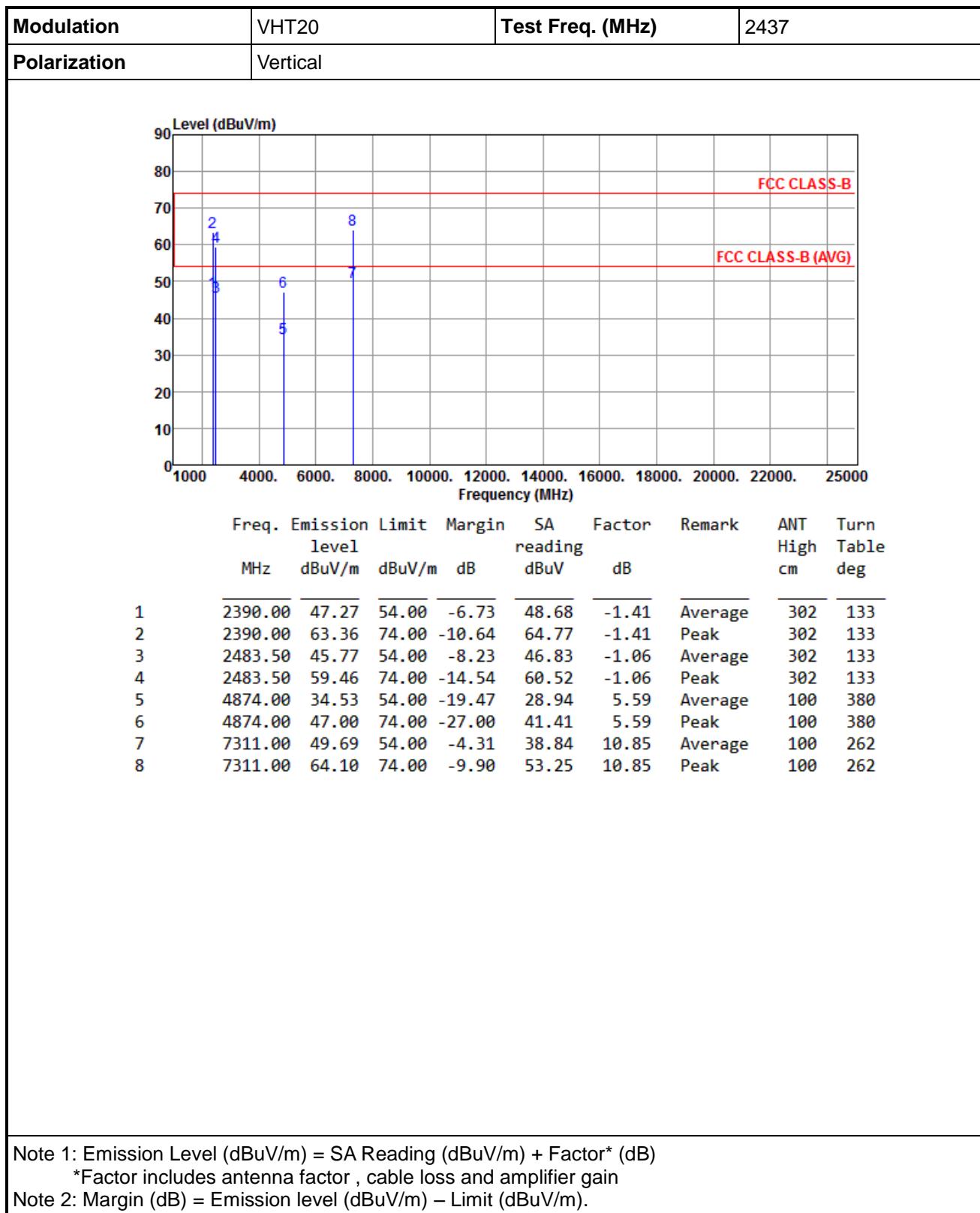


Note 1: Emission Level (dBuV/m) = SA Reading (dBuV/m) + Factor* (dB)

*Factor includes antenna factor , cable loss and amplifier gain

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

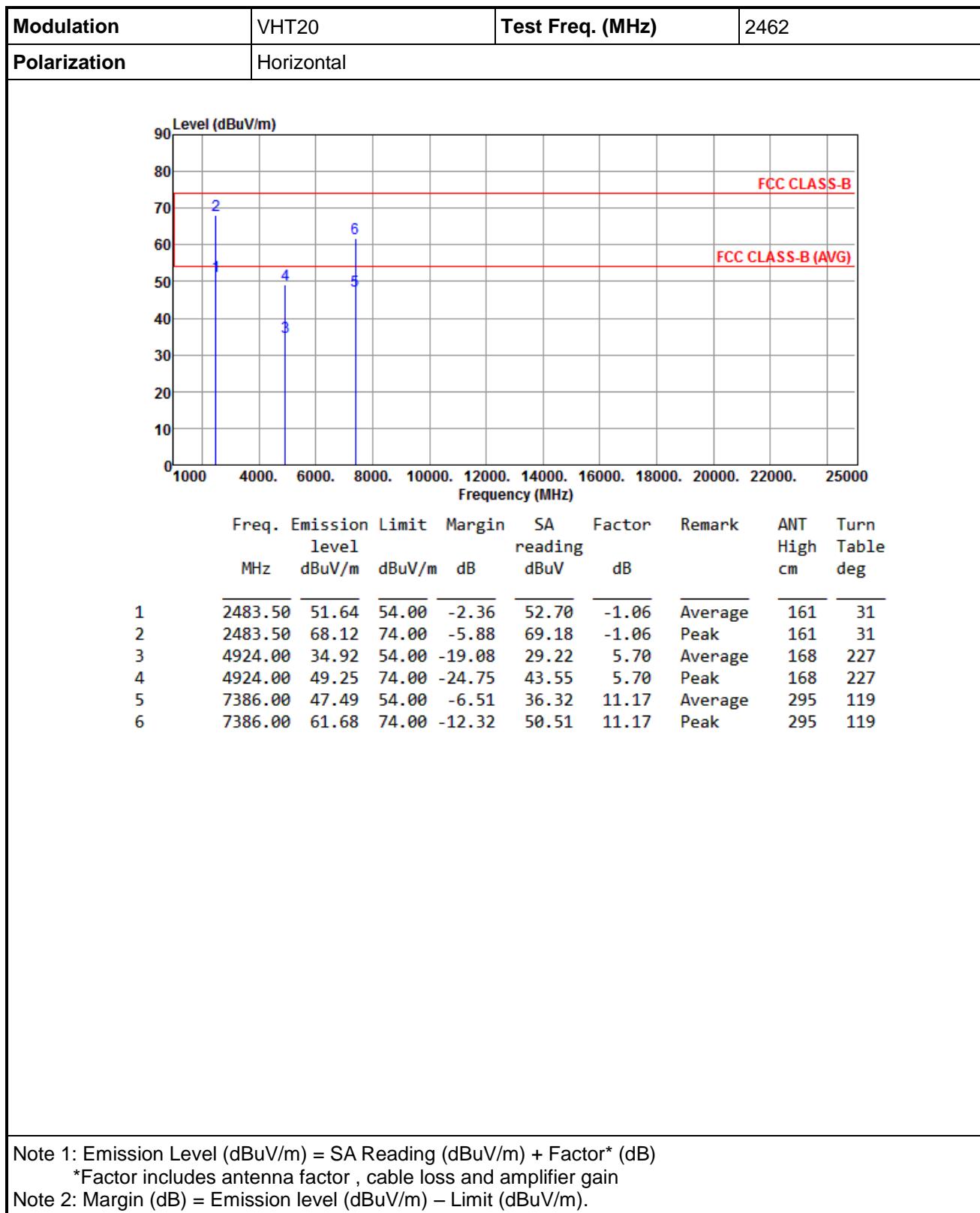




Note 1: Emission Level (dBuV/m) = SA Reading (dBuV/m) + Factor* (dB)

*Factor includes antenna factor , cable loss and amplifier gain

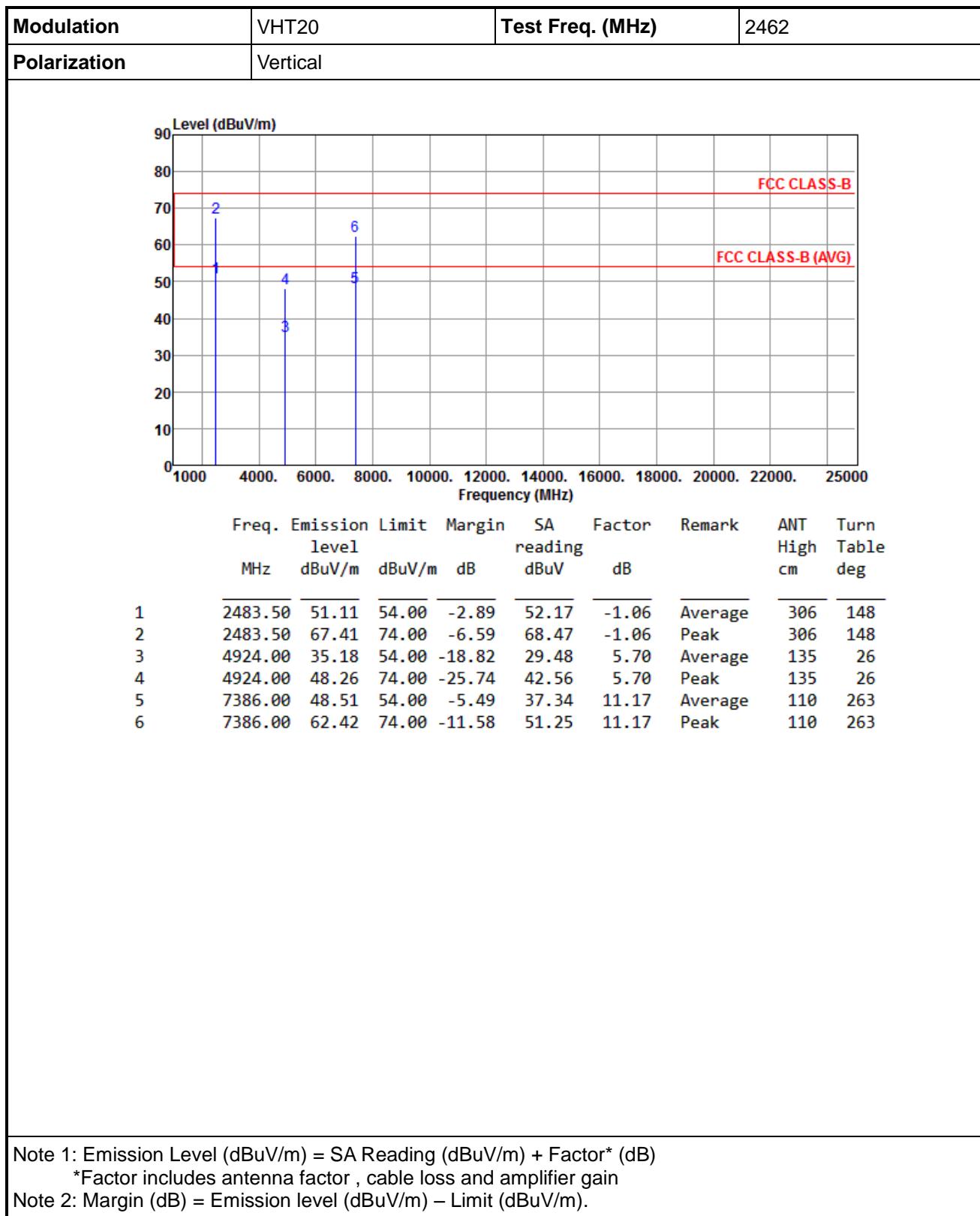
Note 2: Margin (dB) = Emission level (dBuV/m) – Limit (dBuV/m).



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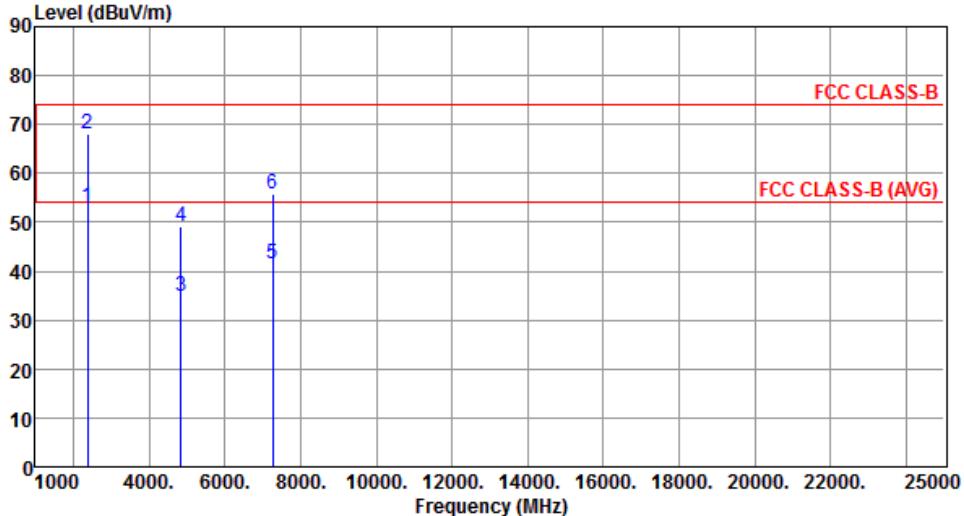


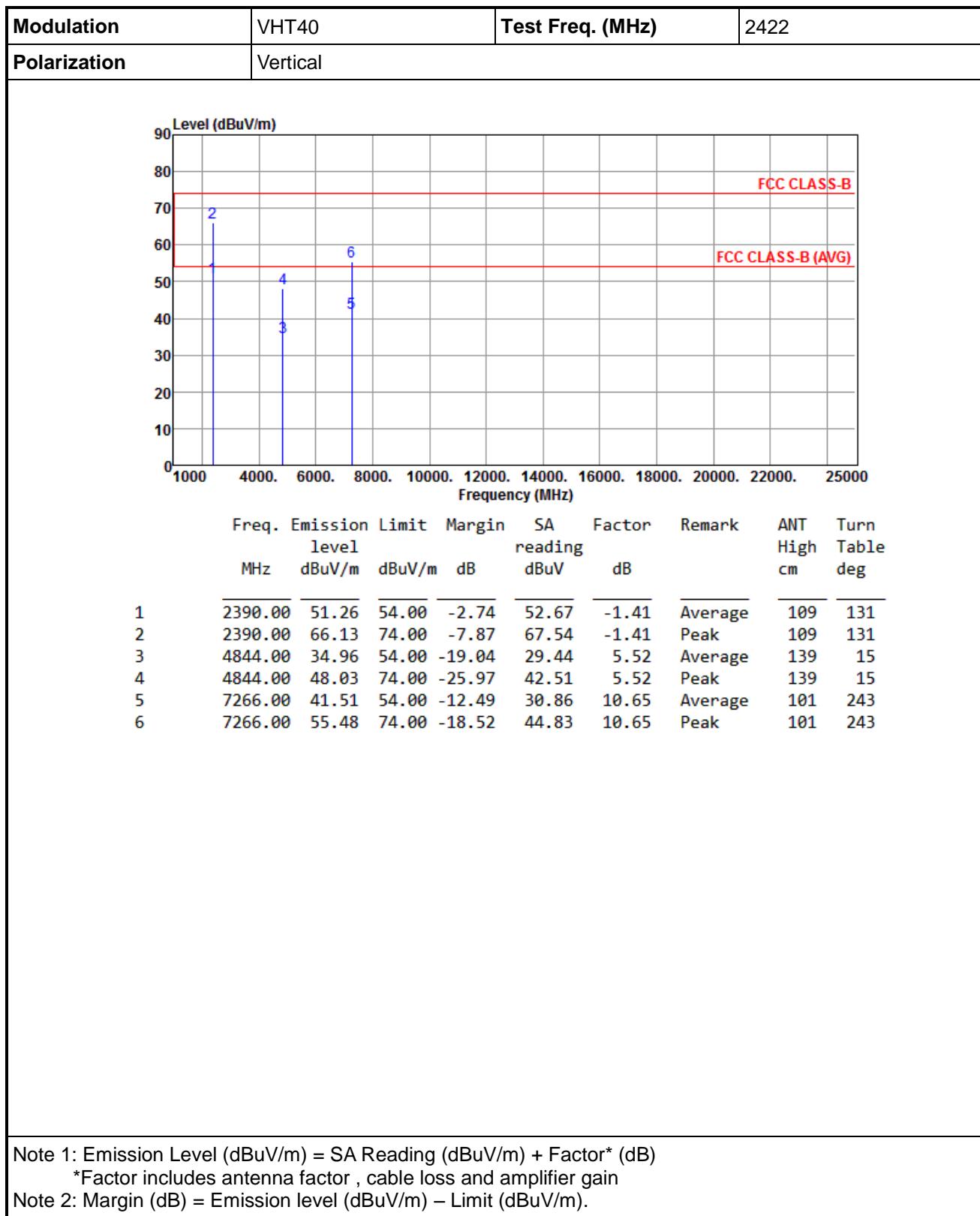
Note 1: Emission Level (dBuV/m) = SA Reading (dBuV/m) + Factor* (dB)

*Factor includes antenna factor , cable loss and amplifier gain

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

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

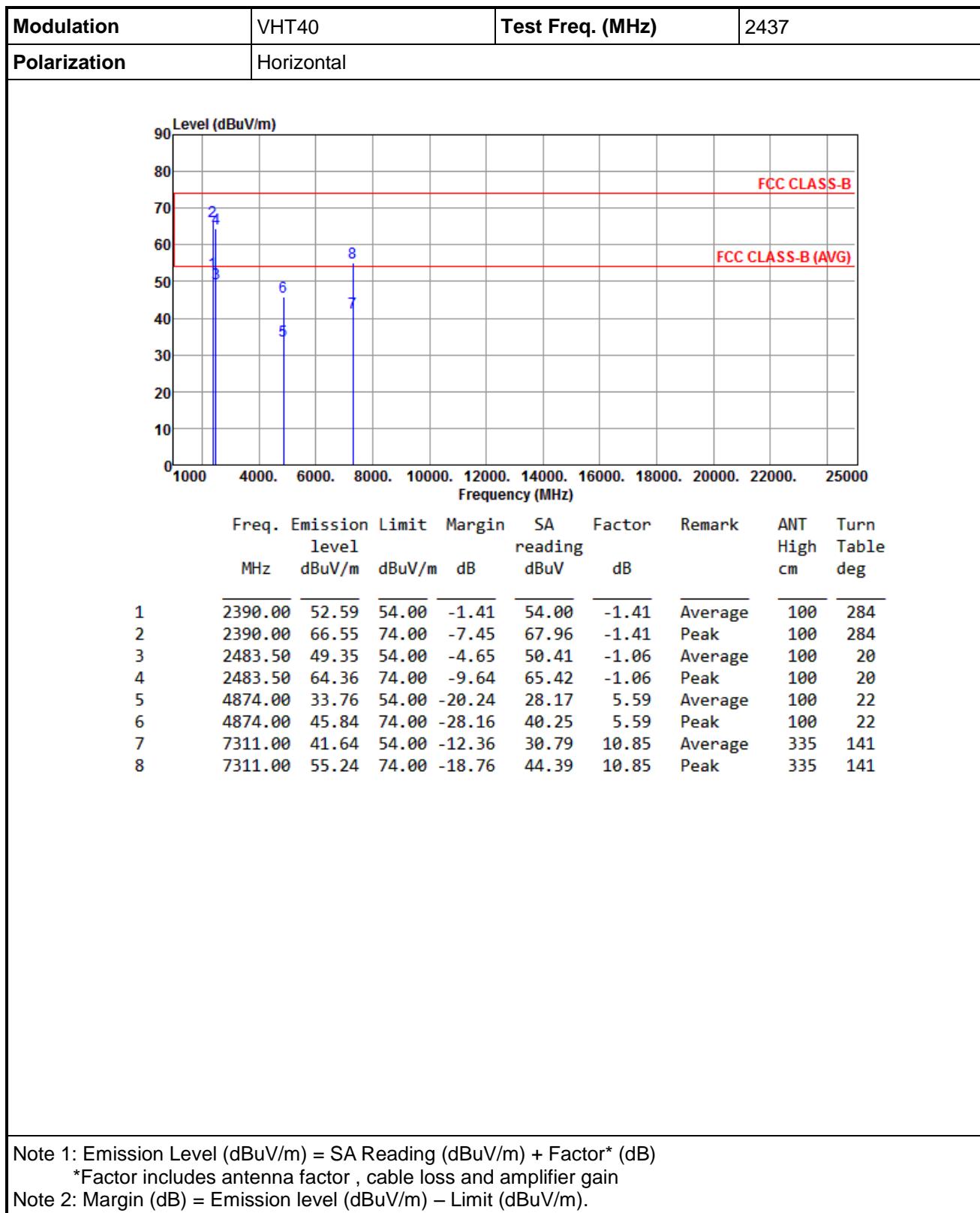
Modulation	VHT40	Test Freq. (MHz)	2422																																																																												
Polarization	Horizontal																																																																														
																																																																															
<table border="1"> <thead> <tr> <th>Freq.</th> <th>Emission Limit</th> <th>Margin</th> <th>SA</th> <th>Factor</th> <th>Remark</th> <th>ANT</th> <th>Turn</th> </tr> <tr> <th>MHz</th> <th>level</th> <th>level</th> <th>reading</th> <th>reading</th> <th></th> <th>High</th> <th>Table</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>2390.00</td> <td>52.99</td> <td>54.00</td> <td>-1.01</td> <td>54.40</td> <td>-1.41</td> <td>Average</td> <td>257</td> <td>62</td> </tr> <tr> <td>2</td> <td>2390.00</td> <td>68.19</td> <td>74.00</td> <td>-5.81</td> <td>69.60</td> <td>-1.41</td> <td>Peak</td> <td>257</td> <td>62</td> </tr> <tr> <td>3</td> <td>4844.00</td> <td>34.75</td> <td>54.00</td> <td>-19.25</td> <td>29.23</td> <td>5.52</td> <td>Average</td> <td>176</td> <td>221</td> </tr> <tr> <td>4</td> <td>4844.00</td> <td>49.08</td> <td>74.00</td> <td>-24.92</td> <td>43.56</td> <td>5.52</td> <td>Peak</td> <td>176</td> <td>221</td> </tr> <tr> <td>5</td> <td>7266.00</td> <td>41.41</td> <td>54.00</td> <td>-12.59</td> <td>30.76</td> <td>10.65</td> <td>Average</td> <td>299</td> <td>116</td> </tr> <tr> <td>6</td> <td>7266.00</td> <td>55.65</td> <td>74.00</td> <td>-18.35</td> <td>45.00</td> <td>10.65</td> <td>Peak</td> <td>299</td> <td>116</td> </tr> </tbody> </table>				Freq.	Emission Limit	Margin	SA	Factor	Remark	ANT	Turn	MHz	level	level	reading	reading		High	Table	1	2390.00	52.99	54.00	-1.01	54.40	-1.41	Average	257	62	2	2390.00	68.19	74.00	-5.81	69.60	-1.41	Peak	257	62	3	4844.00	34.75	54.00	-19.25	29.23	5.52	Average	176	221	4	4844.00	49.08	74.00	-24.92	43.56	5.52	Peak	176	221	5	7266.00	41.41	54.00	-12.59	30.76	10.65	Average	299	116	6	7266.00	55.65	74.00	-18.35	45.00	10.65	Peak	299	116
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*Factor includes antenna factor , cable loss and amplifier gain

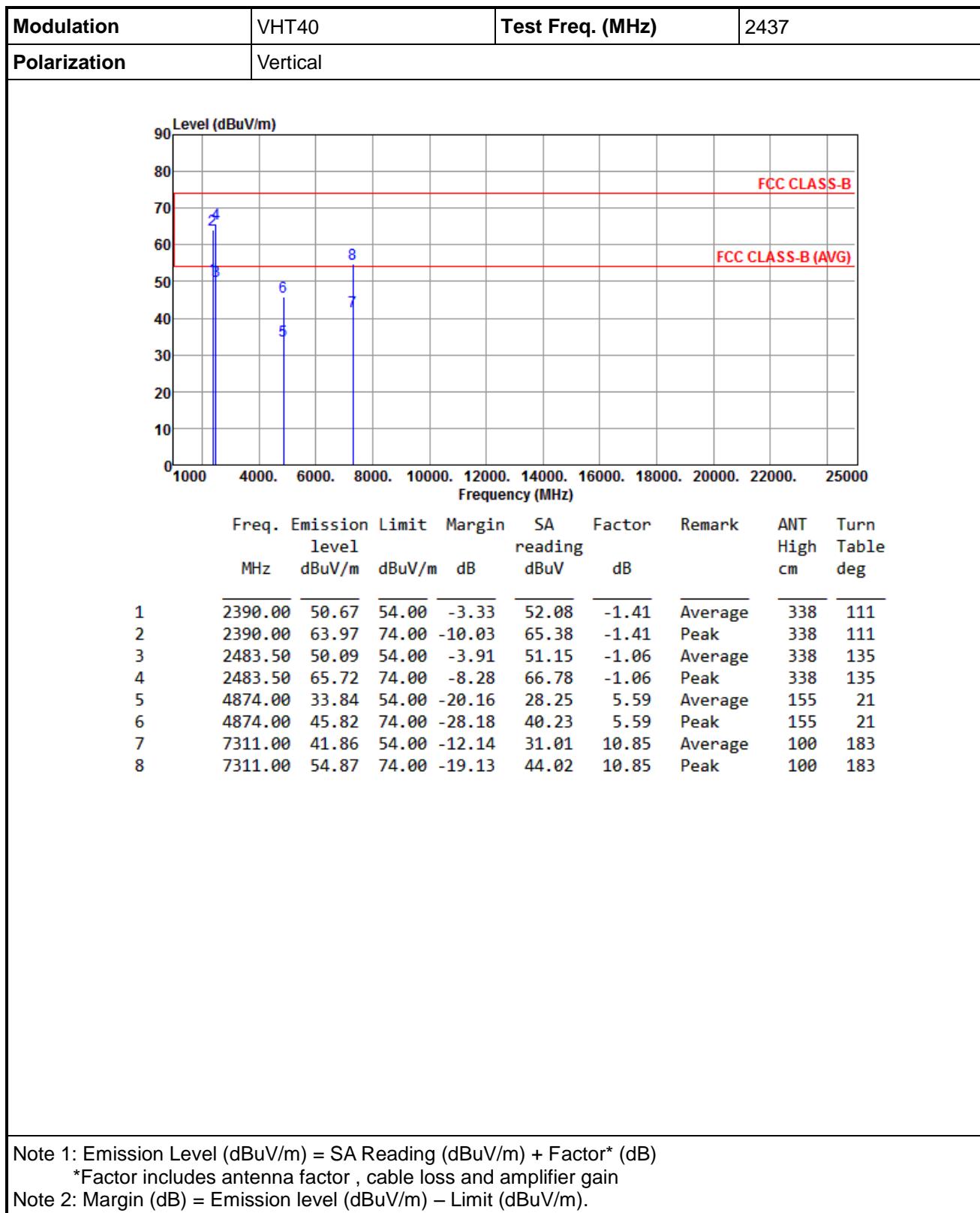
Note 2: Margin (dB) = Emission level (dBuV/m) – Limit (dBuV/m).

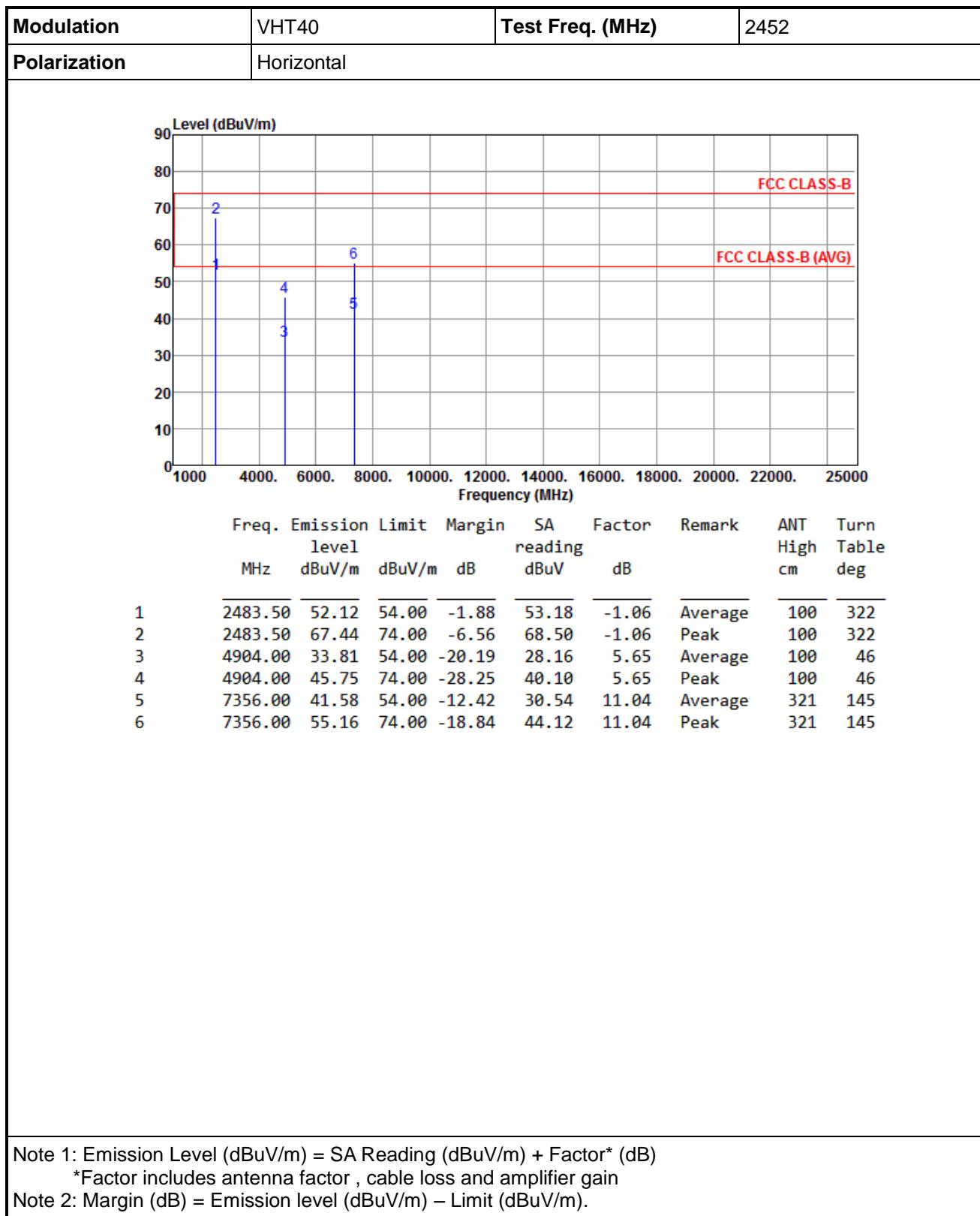


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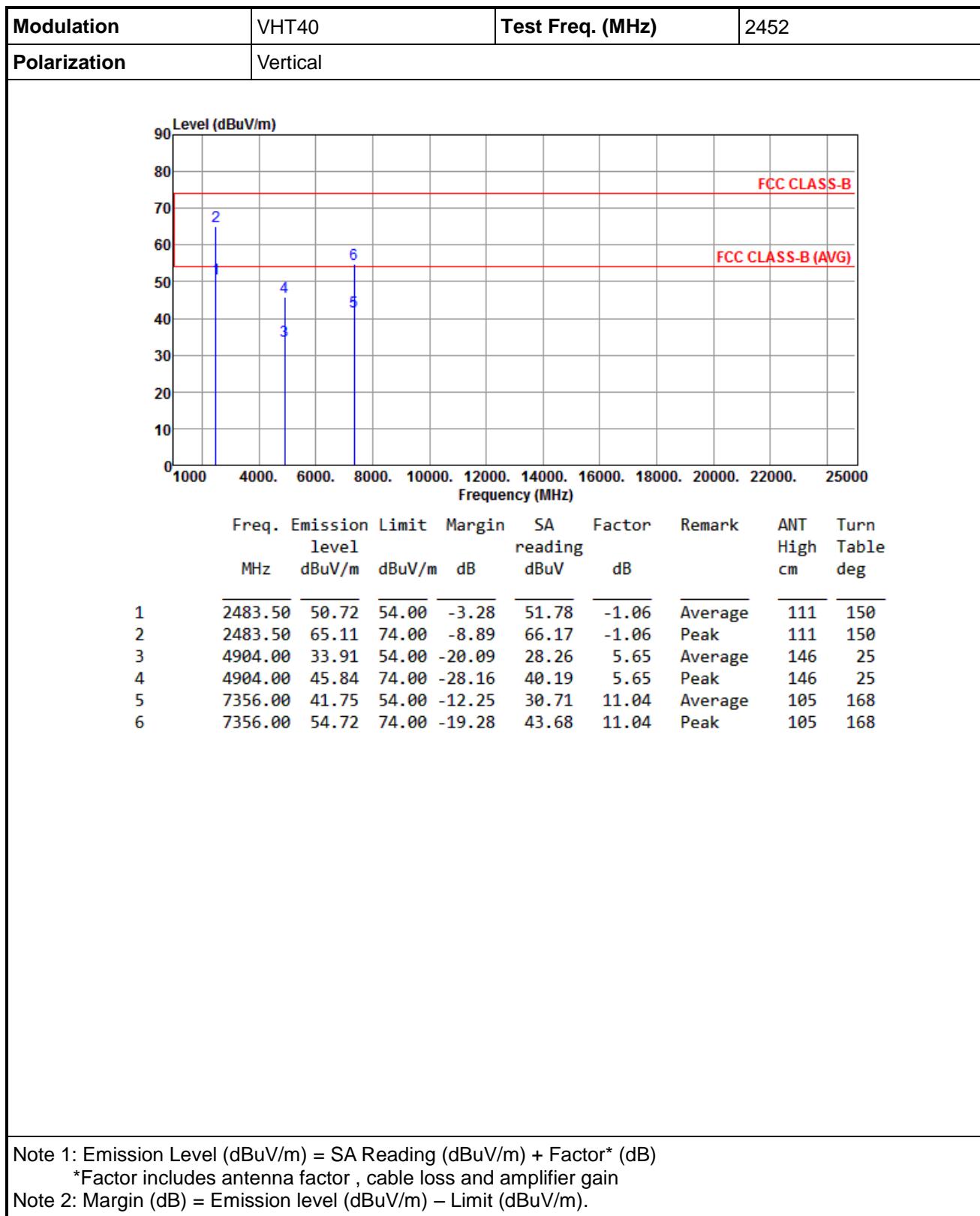




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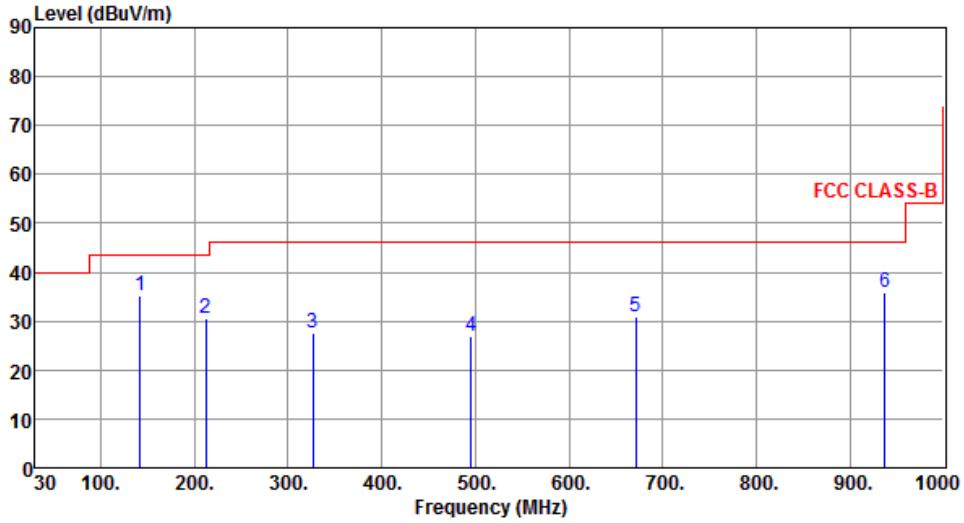


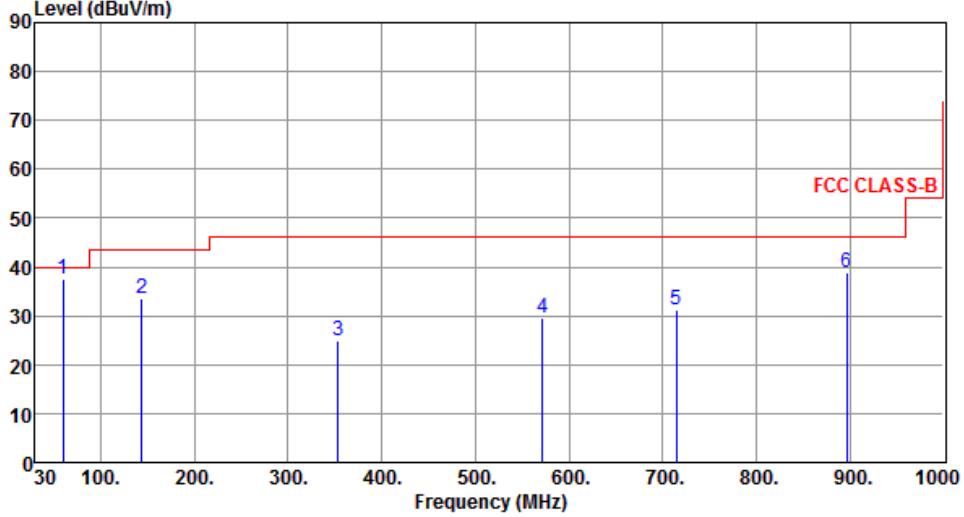
Note 1: Emission Level (dBuV/m) = SA Reading (dBuV/m) + Factor* (dB)

*Factor includes antenna factor , cable loss and amplifier gain

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

Configuration 2: Adapter mode
3.5.9 Transmitter Radiated Unwanted Emissions (Below 1GHz)

Modulation	VHT20	Test Freq. (MHz)	2437																																																																						
Polarization	Horizontal																																																																								
																																																																									
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3.6 Emissions in Non-Restricted Frequency Bands

3.6.1 Emissions in Non-Restricted Frequency Bands Limit

Peak power in any 100 kHz bandwidth outside of the authorized frequency band shall be attenuated by at least 30 dB relative to the maximum in-band peak PSD level in 100 kHz

3.6.2 Test Procedures

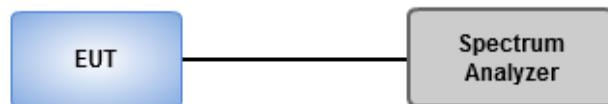
Reference level measurement

1. Set RBW=100kHz, VBW = 300kHz , Detector = Peak, Sweep time = Auto
2. Trace = max hold , Allow Trace to fully stabilize
3. Use the peak marker function to determine the maximum PSD level

Emission level measurement

1. Set RBW=100kHz, VBW = 300kHz , Detector = Peak, Sweep time = Auto
2. Trace = max hold , Allow Trace to fully stabilize
3. Scan Frequency range is up to 25GHz
4. Use the peak marker function to determine the maximum amplitude level

3.6.3 Test Setup

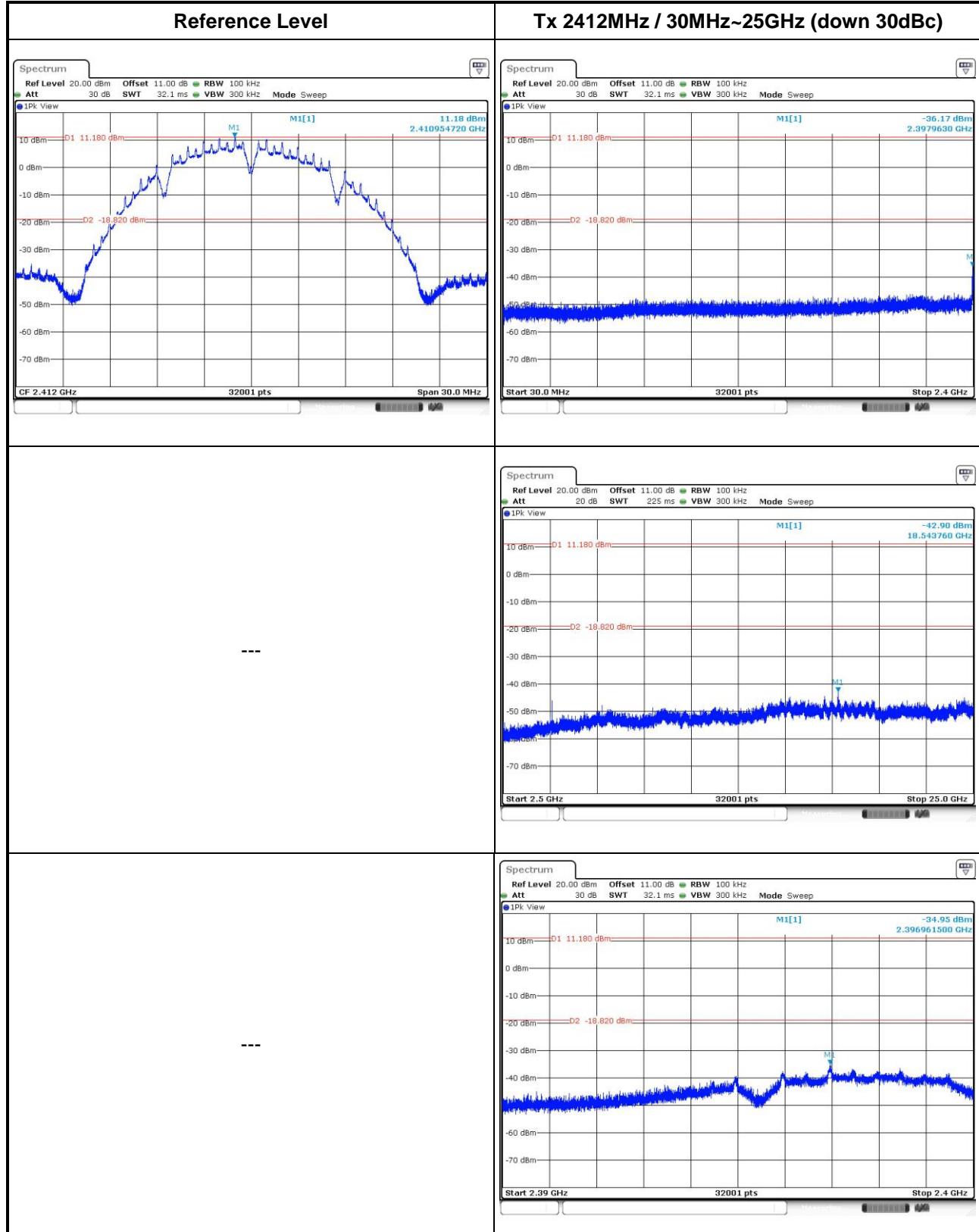


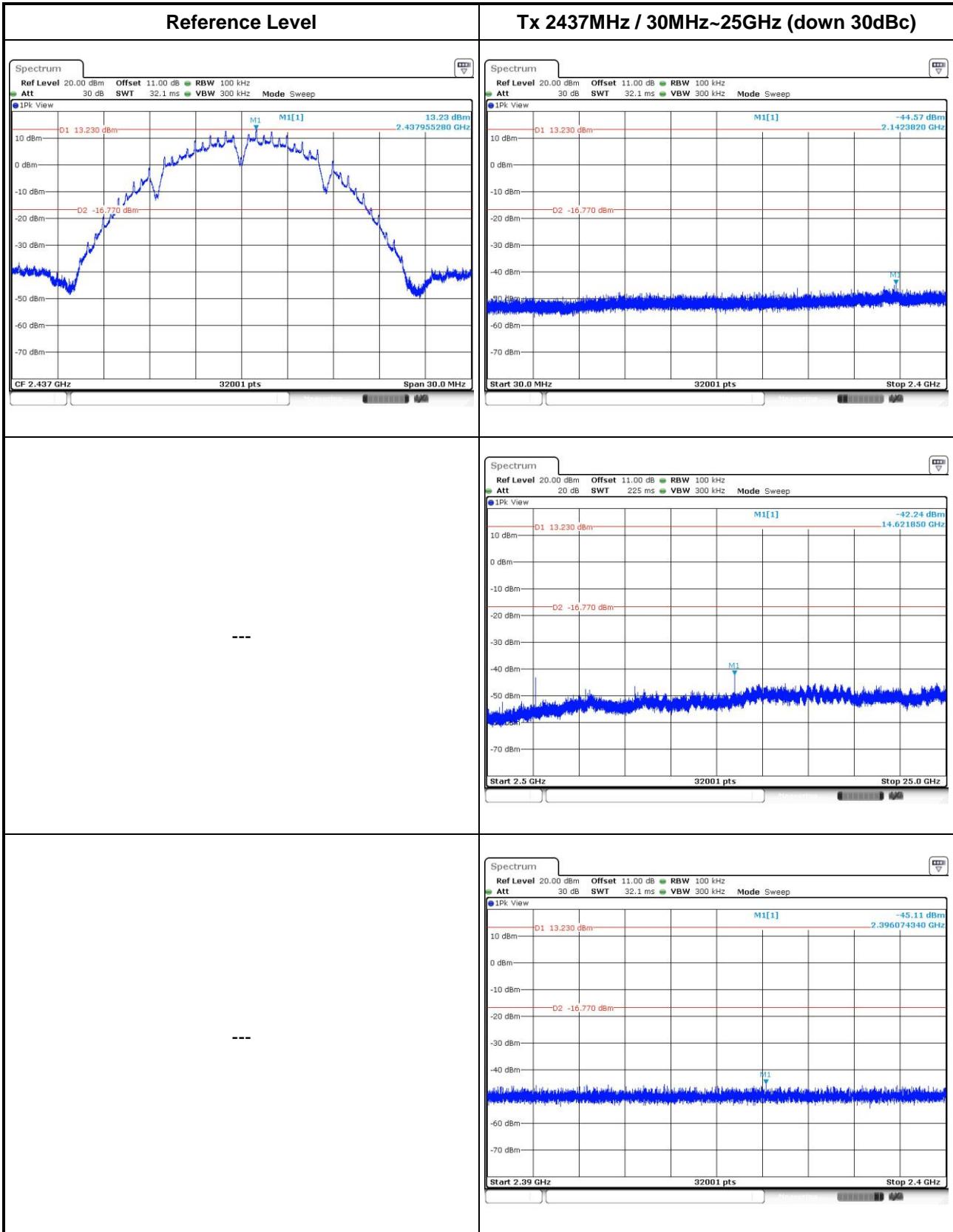
3.6.4 Test Result of Emissions in non-restricted frequency bands

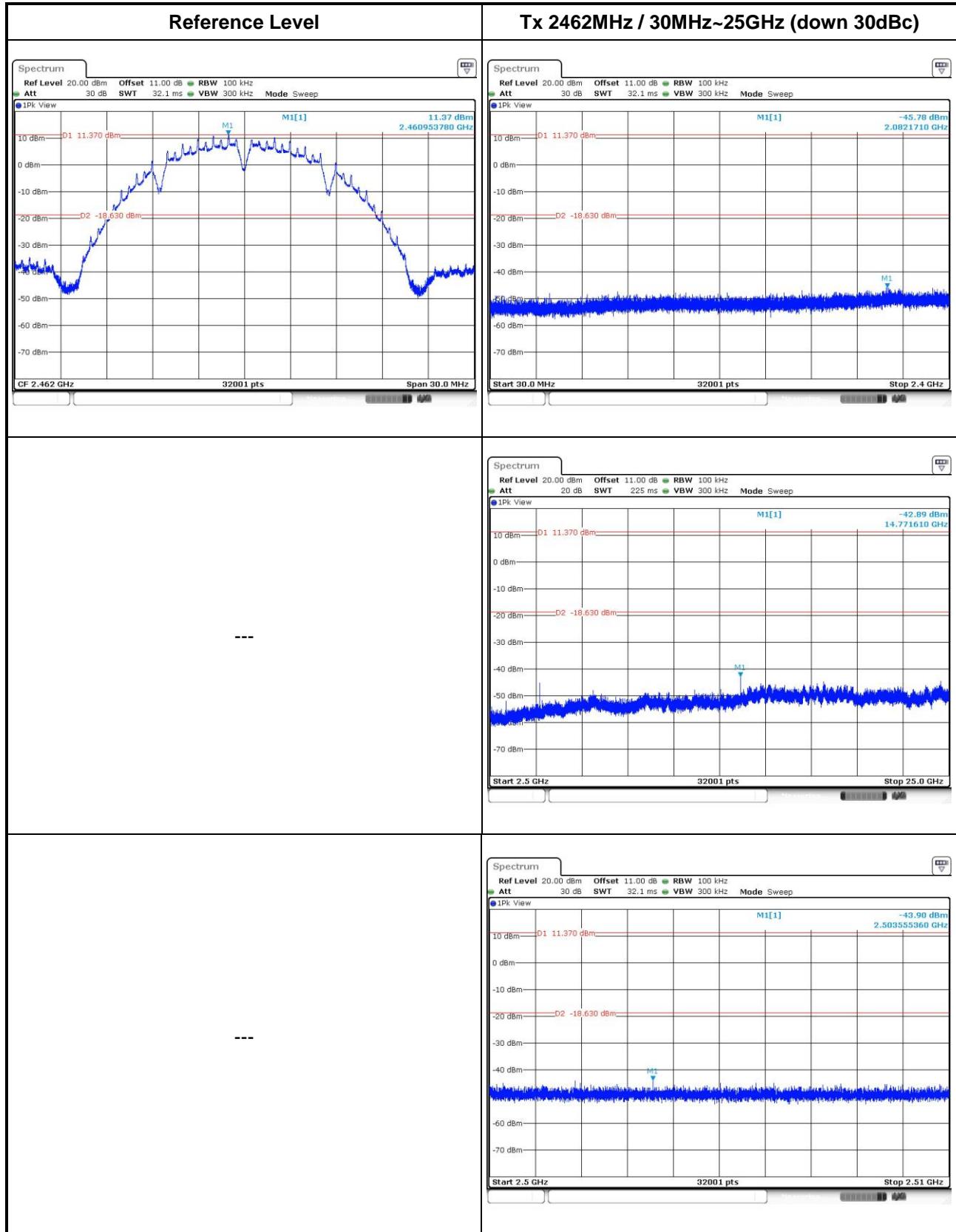
This test item is performed on each TX output individually without summing or adding $10 \log(N_{ANT})$ since measurements are made relative to the in-band emissions on the individual outputs. Only worst test result of each operating mode is presented.

3.6.5 Unwanted Emissions into Non-Restricted Frequency Bands

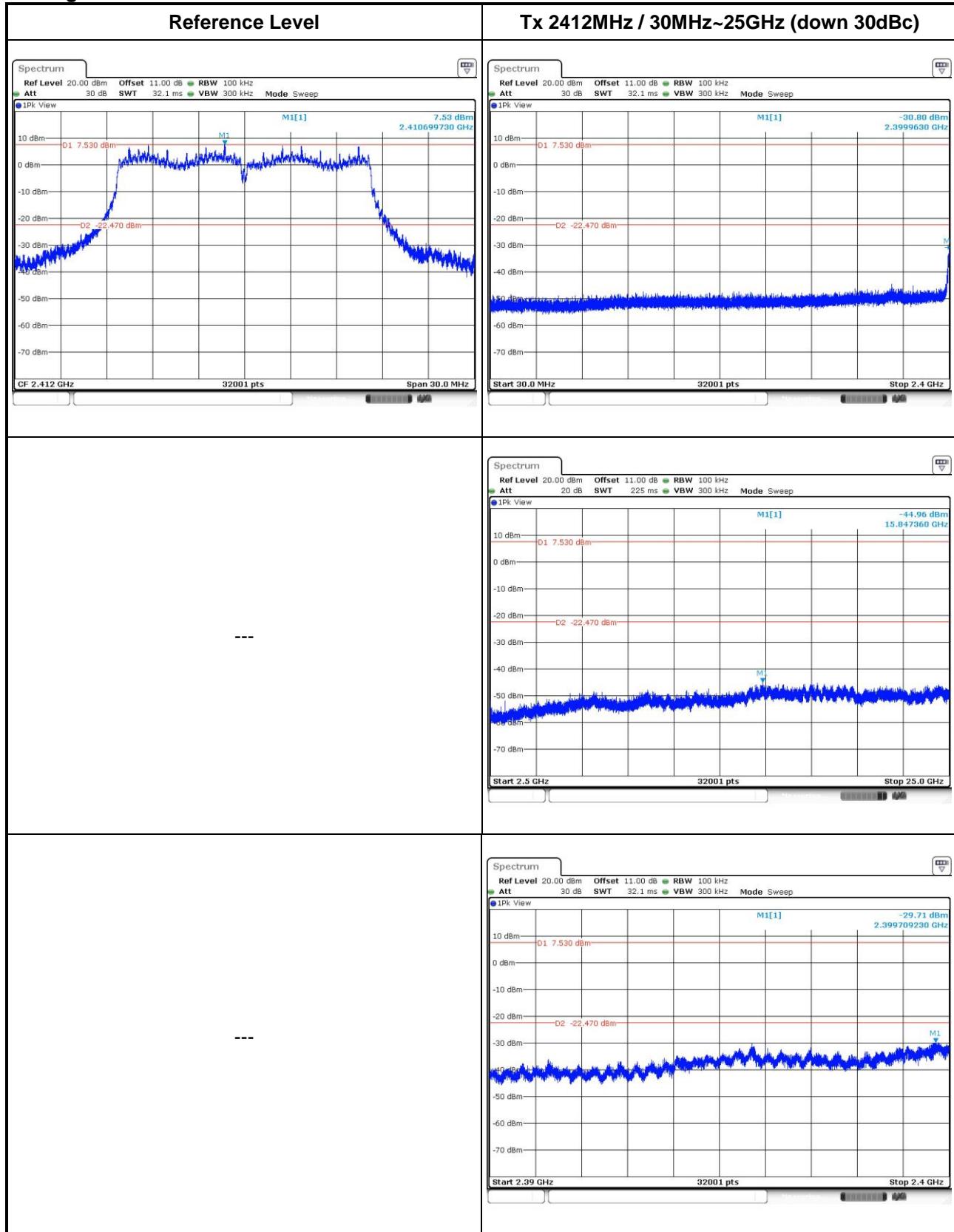
802.11b

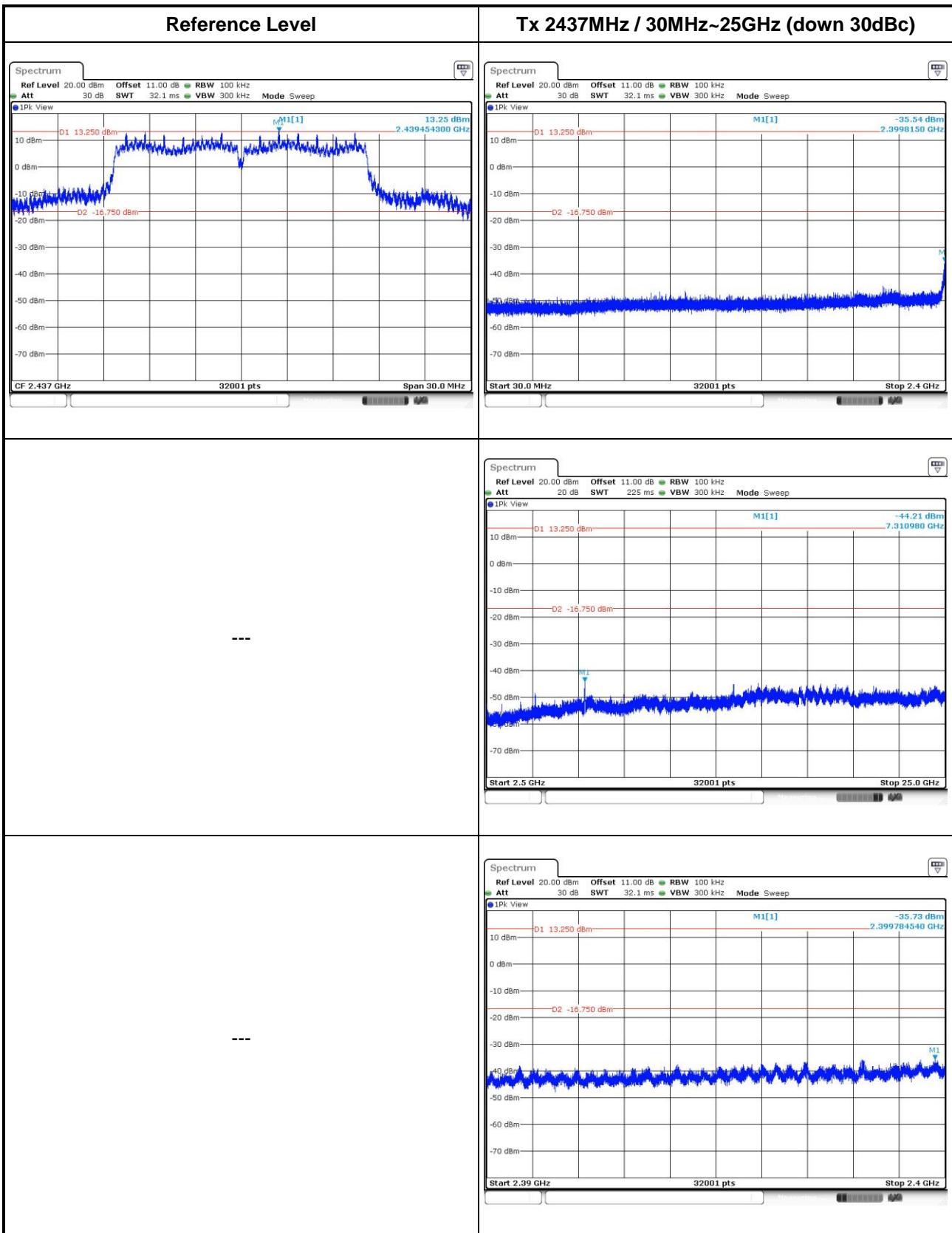


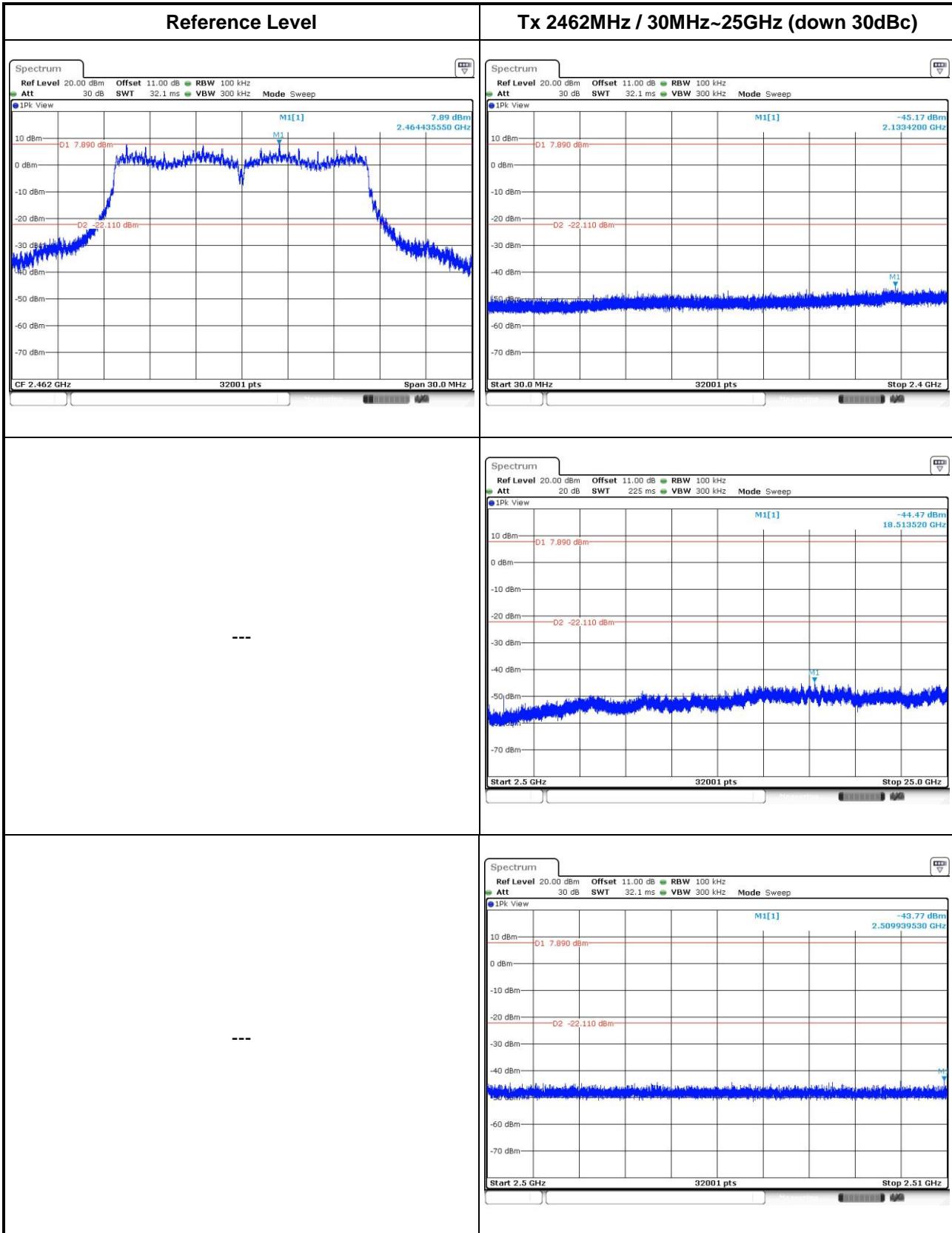




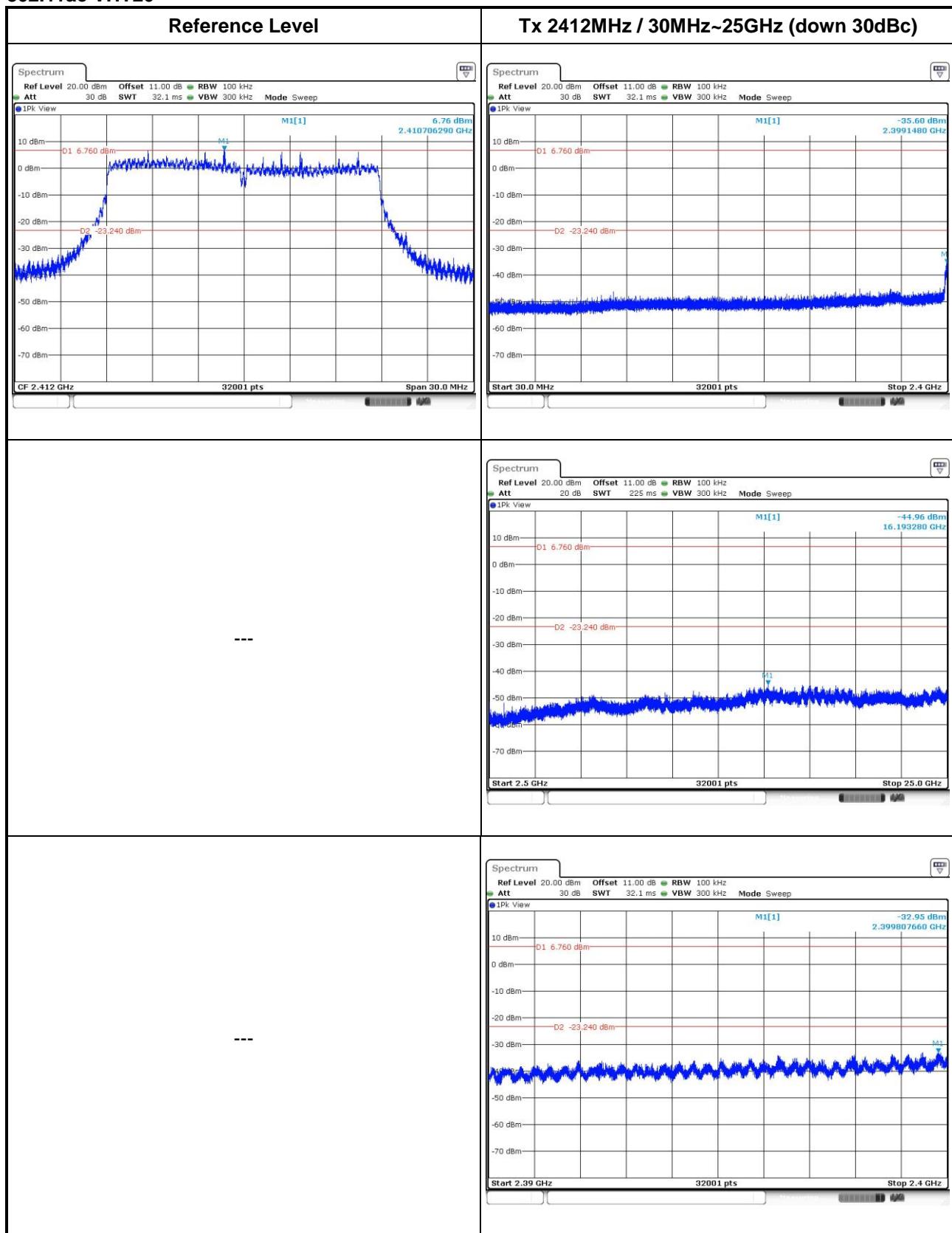
802.11g

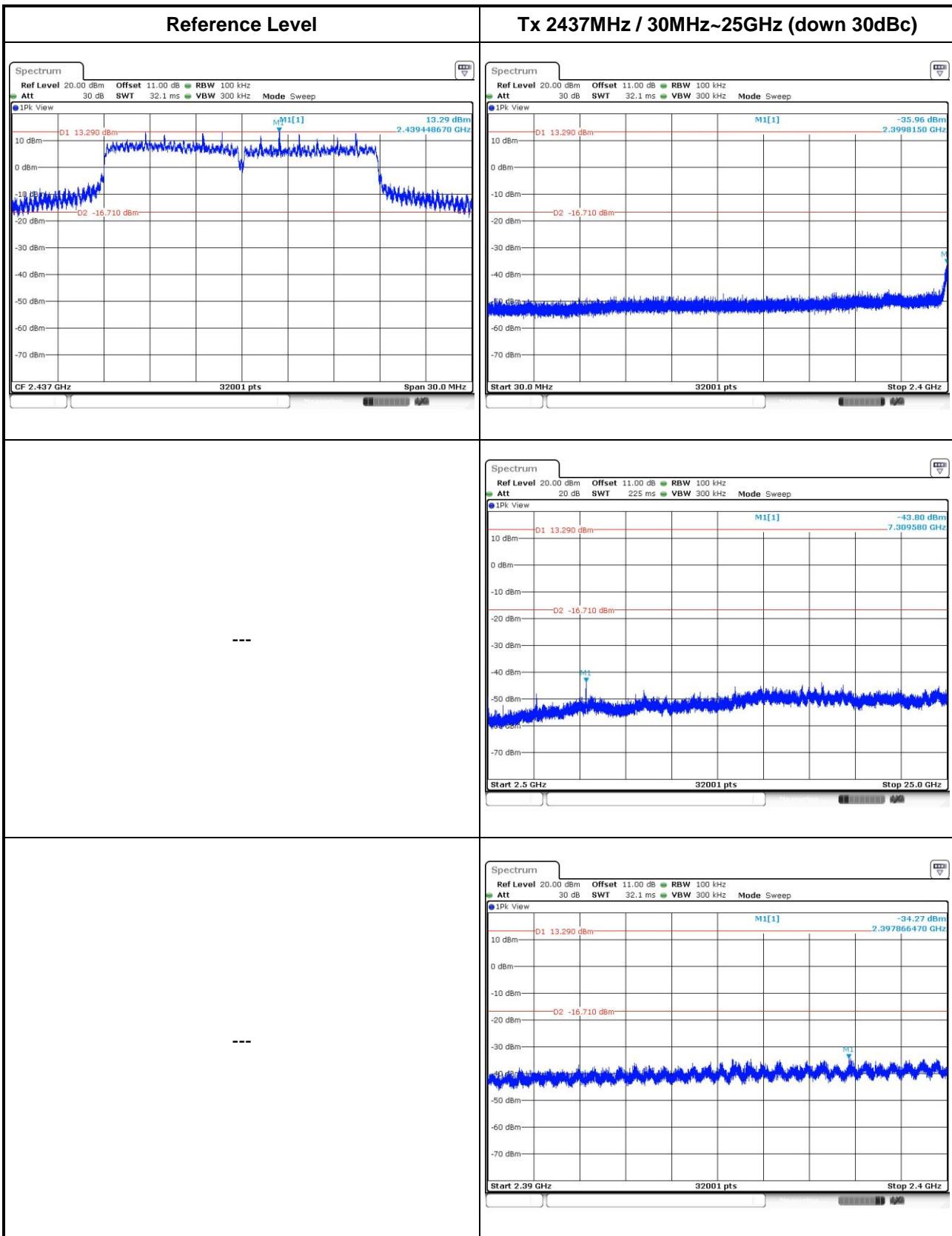


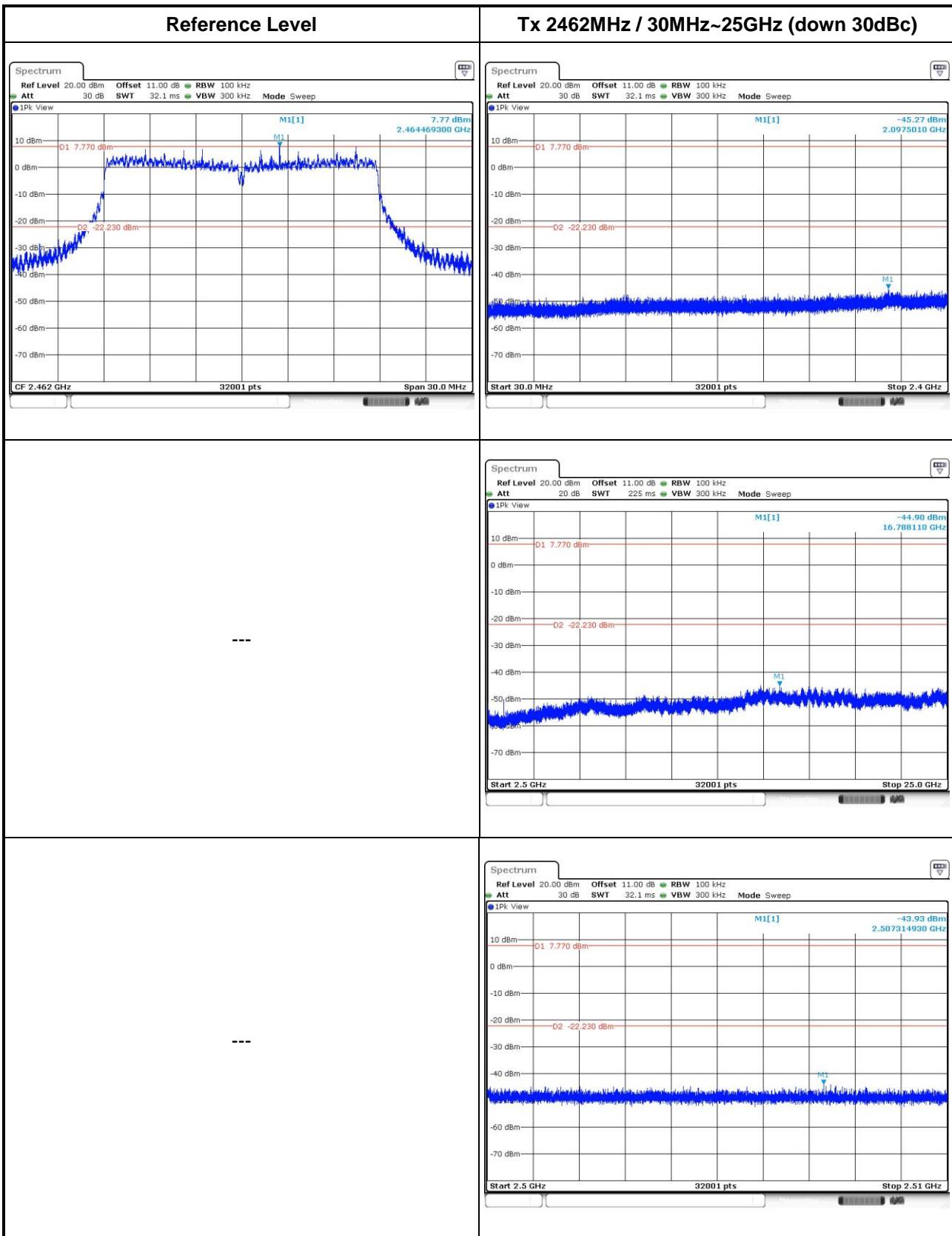




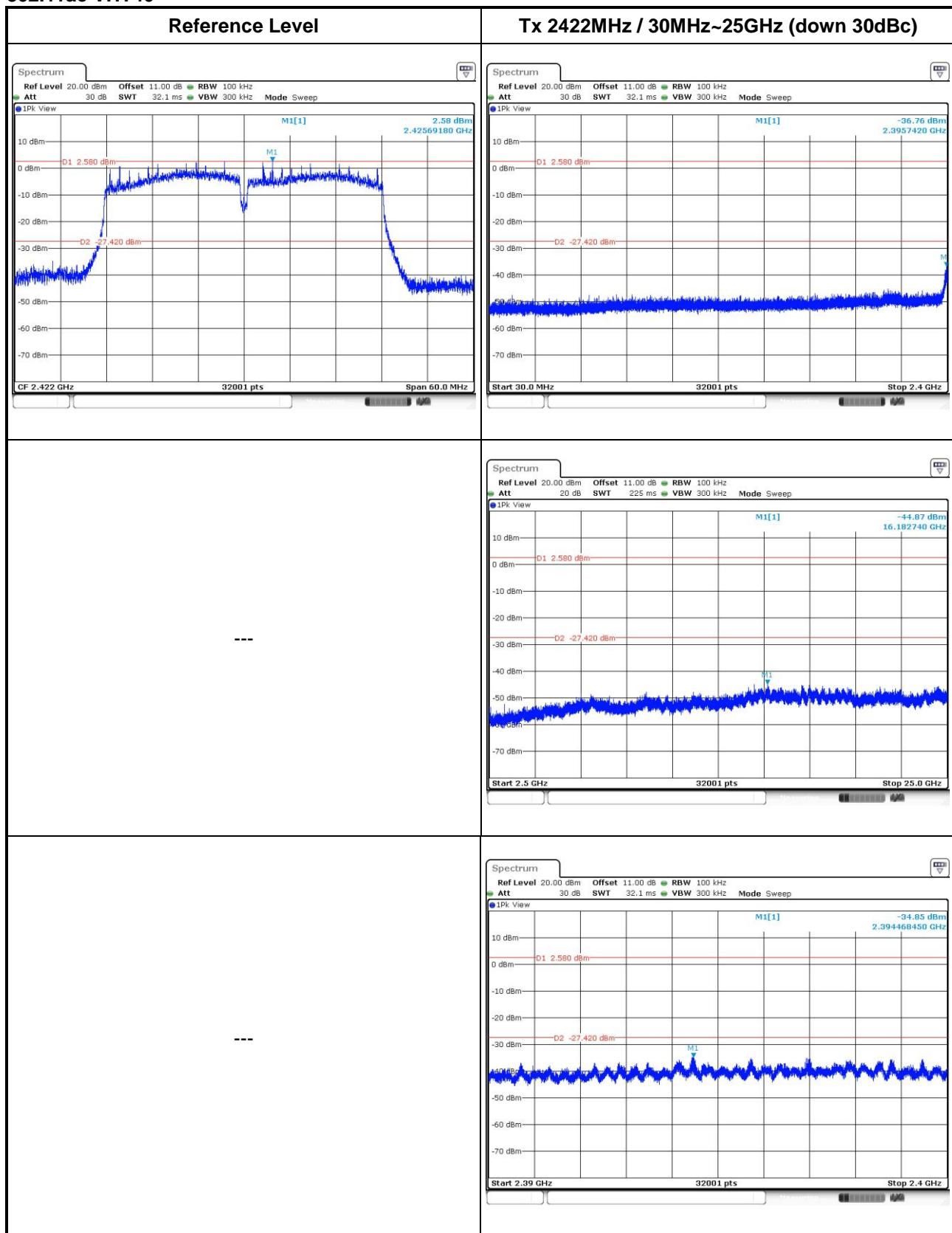
802.11ac VHT20

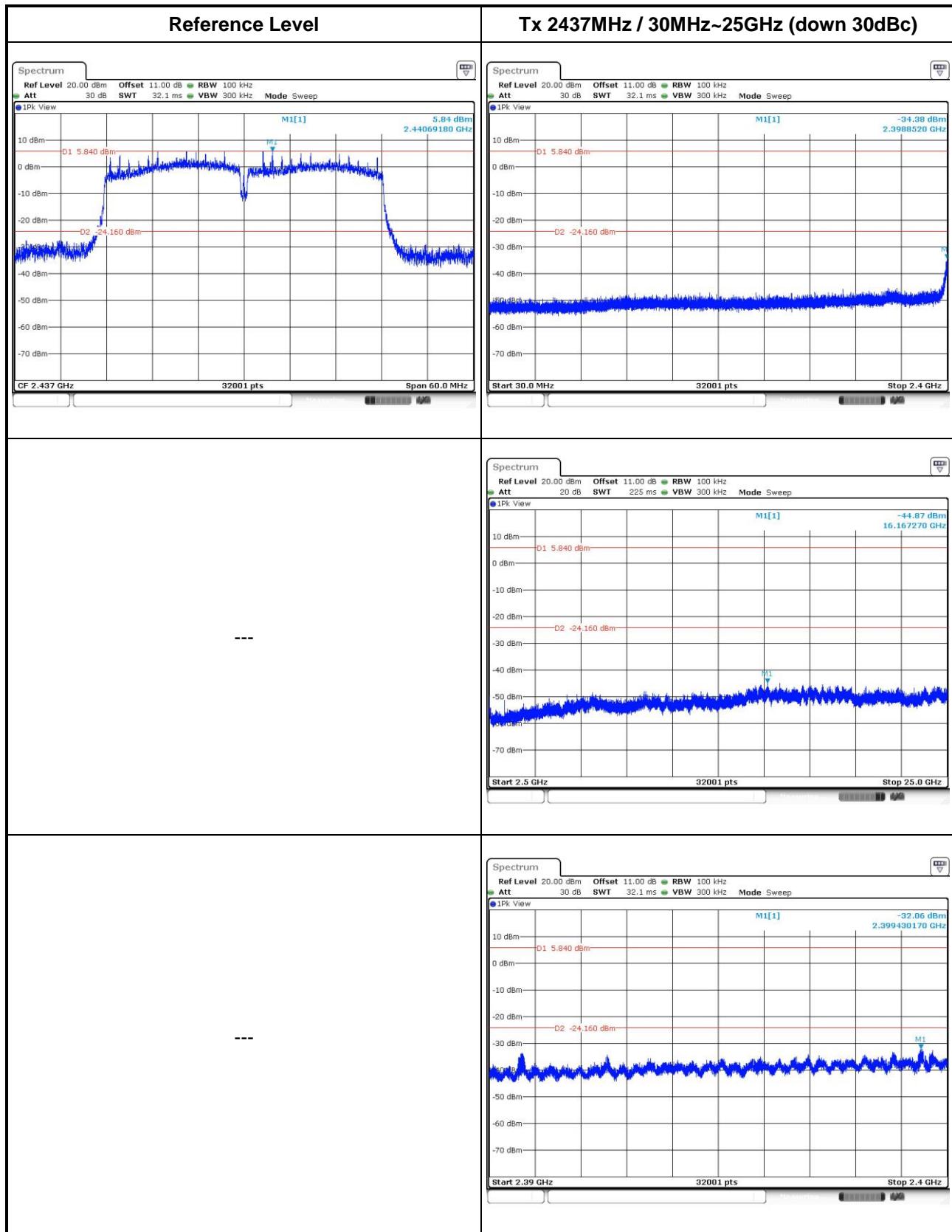


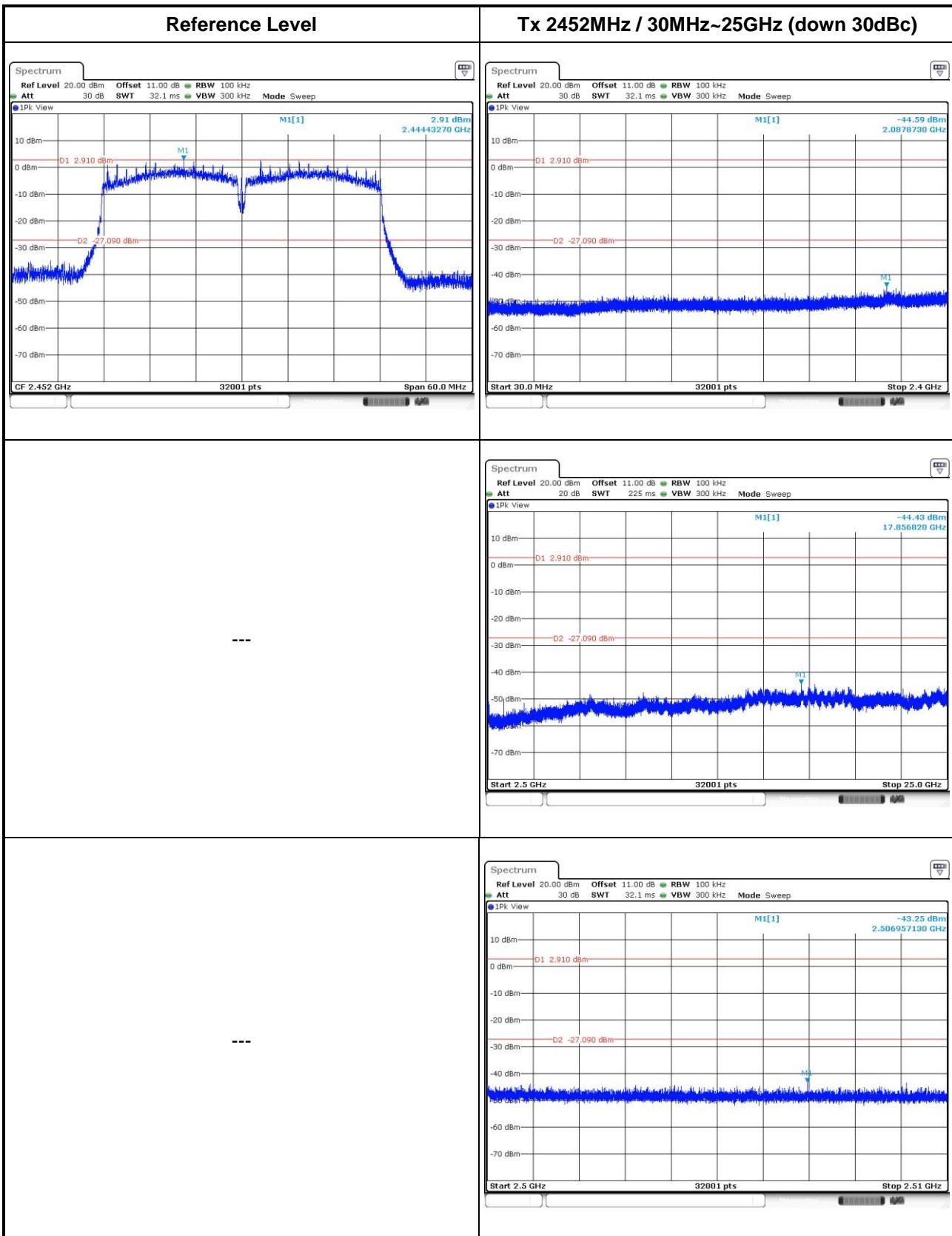




802.11ac VHT40







4 Test laboratory information

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

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

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

Linkou

Tel: 886-2-2601-1640
No. 30-2, Ding Fwu Tsuen, Lin
Kou District, New Taipei City,
Taiwan, R.O.C.

Kwei Shan

Tel: 886-3-271-8666
No. 3-1, Lane 6, Wen San 3rd St.,
Kwei Shan District, Tao Yuan City
333, Taiwan, R.O.C.

Kwei Shan Site II

Tel: 886-3-271-8640
No. 14-1, Lane 19, Wen San 3rd
St., Kwei Shan District, Tao Yuan
City 333, Taiwan, R.O.C.

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

Tel: 886-3-271-8666
Fax: 886-3-318-0155
Email: ICC_Service@icertifi.com.tw

—END—