

RF TEST REPORT

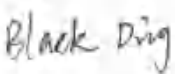
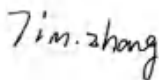
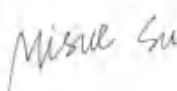
FCC ID: G95-FGA2235

According to

47 CFR FCC Part 15, Subpart C(Section 15.247)

ANSI C63.10:2013

Product description : Dual Band Wi-Fi 6 GPON Gateway
Model No. : FGA2235TCH2
Series Models. : FGA2235XYZn
(XYZ stands for customer abbreviation, e.g. VTR; and n in digit 0 ~ 9 means revision roll-up for same customer and n is optional.)
Trade Mark : 
Product No. : POC230727009-S002
Applicant : Vantiva USA LLC
4855 Peachtree Industrial Blvd. Suite 200, Norcross, Georgia
30092
Receipt date : 2023.07.28
Test date : 2023.08.07~2023.08.24
Issued Date : 2023.10.12

Prepared By:	Checked By:	Approved By:	
Black ding	Tim zhang	Misue Su	
			

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History of this test report

Original Report Issue Date: 2023.10.12

- ☒ No additional attachment
- ☐ Additional attachments were issued following record

Attachment No.	Issue Date	Description

1. General Information

1.1 Applicant

Vantiva USA LLC

4855 Peachtree Industrial Blvd. Suite 200, Norcross, Georgia 30092

1.2 Manufacturer

Vantiva Technologies SAS

8-10 rue du Renard, 75004 Paris, France

1.3 Basic Description of Equipment Under Test

Items	Description	
Equipment Name	Dual Band Wi-Fi 6 GPON Gateway	
Test Model No.	FGA2235TCH2	
Series Models.	FGA2235XYZn (XYZ stands for customer abbreviation, e.g. VTR; and n in digit 0 ~ 9 means revision roll-up for same customer and n is optional.)	
Spec. Difference	All models are identical to each other except for model name.	
Trade Mark		
Power Supply	12.0V  2.5A from adapter	
Adapter information	Model No.: WY-30B12FU Input: 100-240V~, 50-60Hz, Max 0.9A Output: 12 V 2.5 A Brand: APD Technicolor part No.: 6292506A Model No.: ADS-36LE-12Y 12030EPCU Input: 100-240V~, 50-60Hz, Max 0.8A Output: 12 V 2.5 A Brand: HONOTO Technicolor part No.: 6329747	
Hardware Version	LAB2	
Software Version	5.02L.07p2_FGA2235TCH2_R1B030	
Operate temperature	0°C-45°C	
EUT Stage	○ Product Unit	● Final-Sample
Operating Band and Conducted Output Power (Max power)	2400MHz ~ 2483.5MHz	●IEEE 802.11ax(HE20):29.52dBm (0.89536 W)
Product Type	IEEE 802.11b: WLAN (3TX, 3RX) IEEE 802.11g: WLAN (3TX, 3RX) IEEE 802.11n: WLAN (3TX, 3RX) IEEE 802.11ax: WLAN (3TX, 3RX)	
Nominal Bandwidth	20MHz / 40MHz	
Modulation	IEEE 802.11b: DSSS (DBPSK/DQPSK/CCK) IEEE 802.11g: OFDM (BPSK/QPSK/16QAM/64QAM) IEEE 802.11n: OFDM (BPSK/QPSK/16QAM/64QAM) IEEE 802.11ax: OFDMA (BPSK/QPSK/16QAM/64QAM/1024QAM)	
Data Rate (Mbps)	IEEE 802.11b mode: DSSS (1/2/5.5/11) IEEE 802.11g mode: OFDM (6/9/12/18/24/36/48/54) IEEE 802.11n: up to 450 Mbps IEEE 802.11ax: up to 860.4 Mbps	
Antenna gain	Ant1: 3.94dBi, Ant2: 3.85dBi, Ant3: 2.42dBi	

Eleven channels are provided for 802.11b, 802.11g, 802.11n (20MHz), 802.11ax (20MHz):

Frequency Band	Channel No.	Frequency	Channel No.	Frequency
2400MHz ~ 2483.5 MHz	01	2412MHz	07	2442MHz
	02	2417MHz	08	2447MHz
	03	2422MHz	09	2452MHz
	04	2427MHz	10	2457MHz
	05	2432MHz	11	2462MHz
	06	2437MHz	/	/

Seven channels are provided for 802.11n (40MHz), 802.11ax (40MHz):

Frequency Band	Channel No.	Frequency	Channel No.	Frequency
2400MHz ~ 2483.5 MHz	03	2422 MHz	07	2442MHz
	04	2427MHz	08	2447MHz
	05	2432MHz	09	2452MHz
	06	2437MHz	/	/

Note: For 802.11ax mode only support full RU mode.

1.4 Transmit Operating Mode

Transmit Operating Mode						Transmit Multiple Antennas					
☐	Operating mode 1 (single antenna)					☐	1TX				
☐	Operating mode 2 (multiple antenna, no beamforming)					☐	2TX	☐	3TX	☐	4TX
☒	Operating mode 3 (multiple antenna, with beamforming)					☐	2TX	☐	3TX	☐	4TX
☒	802.11b	Operating mode	☐	1TX	☐	2TX	☒	3TX			
☒	802.11g	Operating mode	☐	1TX	☐	2TX	☒	3TX			
☒	802.11n(HT20MHz)	Operating mode	☐	1TX	☐	2TX	☒	3TX			
☒	802.11n(HT40MHz)	Operating mode	☐	1TX	☐	2TX	☒	3TX			
☒	802.11ax(HE20MHz)	Operating mode	☐	1TX	☐	2TX	☒	3TX			
☒	802.11ax(HE40MHz)	Operating mode	☐	1TX	☐	2TX	☒	3TX			

Transmit Operating Mode		Directional Gain (dBi)	
		Power spectral density	Power
802.11b	3TX With CDD	6.45	3.94
802.11g	3TX With CDD	6.45	3.94
802.11n(HT20MHz)	3TX With Beamforming	6.45	6.45
802.11n(HT40MHz)	3TX With Beamforming	6.45	6.45
802.11ax(HE20MHz)	3TX With Beamforming	6.45	6.45
802.11ax(HE40MHz)	3TX With Beamforming	6.45	6.45

Note: Directional gain provided by the manufacturer.

☒ With Beamforming Mode

If all antennas have the same gain, G_{ANT}

☐ Directional gain = $G_{ANT} + 10 \log(N_{ANT}/N_{SS})$ dBi, where N_{SS} = the number of independent spatial streams of data and G_{ANT} is the antenna gain in dBi.

If antenna gains are not equal and each transmit antenna is driven by only one spatial stream, directional gain may be calculated by either of the following two formulas.

☐ Directional gain = $G_{ANT \text{ MAX}} + 10 \log(N_{ANT}/N_{SS})$ dBi, where N_{SS} = the number of independent spatial streams of data and $G_{ANT \text{ MAX}}$ is the gain of the antenna having the highest gain (in dBi).

☒ Or

$$DirectionalGain = 10 \cdot \log \left[\frac{\sum_{j=1}^{N_{SS}} \left\{ \sum_{k=1}^{N_{ANT}} g_{j,k} \right\}^2}{N_{ANT}} \right]$$

where

Each antenna is driven by no more than one spatial stream;

N_{SS} = the number of independent spatial streams of data;

N_{ANT} = the total number of antennas

$g_{j,k} = 10^{G_k/20}$ if the k th antenna is being fed by spatial stream j , or zero if it is not;

G_k is the gain in dBi of the k th antenna.

$$DirectionalGain = 10 \cdot \log \left[\frac{\sum_{j=1}^{N_{SS}} \left\{ \sum_{k=1}^{N_{ANT}} g_{j,k} \right\}^2}{N_{ANT}} \right]$$

where

Each antenna is driven by no more than one spatial stream;

N_{SS} = the number of independent spatial streams of data;

N_{ANT} = the total number of antennas

$g_{j,k} = 10^{G_k/20}$ if the k th antenna is being fed by spatial stream j , or zero if it is not;

G_k is the gain in dBi of the k th antenna.

EUT with the lowest possible NSS =1

☒ With Cyclic Delay Diversity (CDD)

If all antennas have the same gain, G_{ANT} , Directional gain = G_{ANT} + Array Gain, where Array Gain is as follows.

For power spectral density (PSD) measurements on all devices,

Array Gain = $10 \log(N_{ANT}/N_{SS})$ dB.

☒ For power measurements on IEEE 802.11 devices,

Array Gain = 0 dB (i.e., no array gain) for $N_{ANT} \leq 4$;

Array Gain = 0 dB (i.e., no array gain) for channel widths ≥ 40 MHz for any N_{ANT} ;

Array Gain = $5 \log(N_{ANT}/N_{SS})$ dB or 3 dB, whichever is less, for 20-MHz channel widths with $N_{ANT} \geq 5$.

☐ If antenna gains are not equal, the user may use either of the following methods to calculate directional gain, provided that each transmit antenna is driven by only one spatial stream:

☐ Directional gain may be calculated by using the formulas applicable to equal gain antennas with G_{ANT} set equal to the gain of the antenna having the highest gain;

☒ or,

$$DirectionalGain = 10 \cdot \log \left[\frac{\sum_{j=1}^{N_{SS}} \left\{ \sum_{k=1}^{N_{ANT}} g_{j,k} \right\}^2}{N_{ANT}} \right]$$

where

Each antenna is driven by no more than one spatial stream;

N_{SS} = the number of independent spatial streams of data;

N_{ANT} = the total number of antennas

$g_{j,k} = 10^{G_k/20}$ if the k th antenna is being fed by spatial stream j , or zero if it is not;

G_k is the gain in dBi of the k th antenna.

EUT with the lowest possible NSS =1

2. Summary of Test Results

2.1 Summary of Test Items

47 CFR FCC Part 15, Subpart C (Section 15.247)			
Test item	FCC Clause	Results	Remarks
AC Power Conducted Emission	15.207	Pass	Meet the requirement of the limit
Radiated Emission and Band Edge Measurement	15.205/15.209 /15.247(d)	Pass	Meet the requirement of the limit
Spurious Emission at Antenna Port	15.247(d)	Pass	Meet the requirement of the limit
6dB Bandwidth	15.247(a)(2)	Pass	Meet the requirement of the limit
Conducted Power	15.247(b)	Pass	Meet the requirement of the limit
Power Spectral Density	15.247(e)	Pass	Meet the requirement of the limit
Antenna Requirements	15.203	Compliance	Note
Note: The EUT has 3 internal antennas arrangement which was permanently attached.			

2.2 Application of Standard

47 CFR FCC Part 15, Subpart C (Section 15.247)

KDB 558074 D01 15.247 Meas Guidance v05r02

KDB 662911 D01 Multiple Transmitter Output v02r01

ANSI C63.10:2013

2.3 Test Instruments

Radiated Emissions						
No.	Equipment	Manufacturer	Type No.	Serial No.	Cal. date (yyyy/mm/dd)	Cal. Due date (yyyy/mm/dd)
1	Test receiver	Rohde&Schwarz	ESU	100184	2023/5/3	2024/5/2
2	Horn Antenna	Schwarzbeck	BBHA 9120 D	9120D-127 3	2023/4/23	2024/4/22
3	Low frequency amplifier	Unknown	LNA 0920N	2014	2023/5/3	2024/5/2
4	High frequency amplifier	Schwarzbeck	BBV 9718	284	2023/5/3	2024/5/2
5	Loop Antenna	Schwarzbeck	FMZB1519 B	00029	2022/7/4	2025/7/3
6	Log periodic antenna	Schwarzbeck	VULB 9168	1151	2023/4/23	2024/4/22
7	Horn Antenna	Schwarzbeck	BBHA 9120 D	9120D-127 3	2022/5/5	2025/5/4
8	Horn Antenna	Schwarzbeck	BBHA 9170	9170#685	2022/7/4	2025/7/3
9	Temp&Humidity Recorder	Meideshi	JR900	/	2023/5/3	2024/5/2
10	RF cable(966 chamber)9kHz-1 GHz	Unknown	Unknown	Unknown	2023/5/3	2024/5/2
11	RF cable(966 chamber)1GHz- 18GHz	Unknown	Unknown	Unknown	2023/5/3	2024/5/2
12	RF cable(966 chamber)18GHz -40GHz	Unknown	Unknown	Unknown	2023/5/3	2024/5/2
13	Test software	Farad Technology Co., Ltd	EZ-EMC	/	/	/
Conducted Emission						
1	Test receiver	Rohde&Schwarz	ESCI	100718	2023/5/3	2024/5/2
2	LISN	Rohde&Schwarz	ENV216	100075	2023/5/3	2024/5/2
3	Pulse limiter	Rohde&Schwarz	ESH3-Z2	102299	2023/5/3	2024/5/2
4	RF cable (9kHz-30MHz)	Unknown	Unknown	Unknown	2023/5/3	2024/5/2
5	Test software	Farad Technology Co., Ltd	EZ-EMC	/	/	/
RF Conducted Emission						
1	MXA Signal Analyzer	Keysight	N9021B	MY60080 169	2023/4/23	2024/4/22
2	RF Control Unit	dsusoft	JS0806-2	21G80604 49	2023/4/23	2024/4/22
3	power supply unit	dsusoft	JS0806-4 ADC	N/A	2023/4/23	2024/4/22
4	VXG Signal Generator	Keysight	M9384B	MY61270 787	2023/4/23	2024/4/22
5	EXG Analog Signal Generator	Keysight	N5173B	MY59101 282	2023/4/23	2024/4/22
6	Test software	dsusoft	JS1120-3	/	/	/

2.4 Test Mode

Frequency Range : 2400~2483.5 MHz				
Test Items	Mode	Data Rate	Channel	Antenna
AC Power Conducted Emission	Simultaneous transmitting	1Mbps	06	1&2&3
Radiated Emission and Band Edge Measurement	802.11b	1Mbps	01/06/11	1&2&3
	802.11g	6Mbps	01/06/11	1&2&3
	802.11n(20MHz)	MCS0	01/06/11	1&2&3
	802.11n(40MHz)	MCS0	03/06/09	1&2&3
Spurious Emission at Antenna Port	802.11b	1Mbps	01/06/11	1&2&3
	802.11g	6Mbps	01/06/11	1&2&3
	802.11n(20MHz)	MCS0	01/06/11	1&2&3
	802.11n(40MHz)	MCS0	03/06/09	1&2&3
	802.11ax(20MHz)	MCS0	01/06/11	1&2&3
	802.11ax(40MHz)	MCS0	03/06/09	1&2&3
6dB Bandwidth	802.11b	1Mbps	01/06/11	1&2&3
	802.11g	6Mbps	01/06/11	1&2&3
	802.11n(20MHz)	MCS0	01/06/11	1&2&3
	802.11n(40MHz)	MCS0	03/06/09	1&2&3
	802.11ax(20MHz)	MCS0	01/06/11	1&2&3
	802.11ax(40MHz)	MCS0	03/06/09	1&2&3
Conducted Power	802.11b	1Mbps	01/06/11	1&2&3
	802.11g	6Mbps	01/06/11	1&2&3
	802.11n(20MHz)	MCS0	01/06/11	1&2&3
	802.11n(40MHz)	MCS0	03/06/09	1&2&3
	802.11ax(20MHz)	MCS0	01/06/11	1&2&3
	802.11ax(40MHz)	MCS0	03/06/09	1&2&3
Power Spectral Density	802.11b	1Mbps	01/06/11	1&2&3
	802.11g	6Mbps	01/06/11	1&2&3
	802.11n(20MHz)	MCS0	01/06/11	1&2&3
	802.11n(40MHz)	MCS0	03/06/09	1&2&3
	802.11ax(20MHz)	MCS0	01/06/11	1&2&3
	802.11ax(40MHz)	MCS0	03/06/09	1&2&3

Parameters Of Test Software

During testing channel & power controlling software provided by the customer was used to control the operating channel as well as the output power level. The RF output power selection is for the setting of RF output power expected by the customer and is going to be fixed on the firmware of the final end product.

For Power Setting value

Test Software Version	accessMTool_REL_3_2_1_3		
Frequency (MHz)	2412	2437	2462
IEEE 802.11b	97	97	97
IEEE 802.11g	81	98	82
IEEE 802.11n(HT20)	80	98	79
IEEE 802.11ax(HE20)	79	98	78
Frequency (MHz)	2422	2437	2452
IEEE 802.11n(HT40)	75	83	70
IEEE 802.11ax(HE40)	75	83	70

With Cyclic Delay Diversity (CDD) for 802.11b and 802.11g.

The EUT supports non-beamforming and beamforming modes for 802.11n and 802.11ax, both modes have the same power setting, after evaluating, the beamforming mode has been evaluated to be the worst case, so it was selected to Final test.

2.5 Test Condition

Applicable to	Environmental conditions	Input Power	Tested by
AC Power Conducted Emission	24.3°C, 51% RH	AC 120V/60Hz	Albert Fan
Radiated Emission and Band Edge Measurement	24.2°C, 55% RH	AC 120V/60Hz	Albert Fan
Spurious Emission at Antenna Port	24.2°C, 52% RH	AC 120V/60Hz	Jason Huang
6dB Bandwidth	24.2°C, 52% RH	AC 120V/60Hz	Jason Huang
Conducted Power	24.2°C, 52% RH	AC 120V/60Hz	Jason Huang
Power Spectral Density	24.2°C, 52% RH	AC 120V/60Hz	Jason Huang

The applicant declare the operating environment of EUT as below:

Normal conditions: 120V AC, 15~35°C

2.6 Duty Cycle of Test Signal

If duty cycle is $\geq 98\%$, duty factor is not required.

If duty cycle is $< 98\%$, duty factor shall be considered.

All the duty factor of other test mode have been considered.

For radiated emissions frequency above 1 GHz, Final VBW represents the video bandwidth set by the receiver/spectrum analyzer.

TestMode	Antenna	Frequency[MHz]	Transmission Duration [ms]	Transmission Period [ms]	Duty Cycle [%]	Duty Cycle Correction Factor	1/T Minimum VBW(kHz)	Final VBW(kHz)
11B-CDD	Ant1	2412	12.42	13.05	95.17	0.21	0.08	1
	Ant2	2412	12.41	13.06	95.02	0.22	0.08	1
	Ant3	2412	12.41	13.05	95.1	0.22	0.08	1
	Ant1	2437	12.41	13.06	95.02	0.22	0.08	1
	Ant2	2437	12.41	13.05	95.1	0.22	0.08	1
	Ant3	2437	12.42	13.05	95.17	0.21	0.08	1
11G-CDD	Ant1	2412	2.07	2.17	95.39	0.20	0.48	1
	Ant2	2412	2.07	2.18	94.95	0.23	0.48	1
	Ant3	2412	2.06	2.17	94.93	0.23	0.49	1
11N20MIMO	Ant1	2412	1.92	2.02	95.05	0.22	0.52	1
	Ant2	2412	1.92	2.02	95.05	0.22	0.52	1
	Ant3	2412	1.92	2.02	95.05	0.22	0.52	1
11N40MIMO	Ant1	2422	0.94	1.04	90.38	0.44	1.06	2
	Ant2	2422	0.94	1.04	90.38	0.44	1.06	2
	Ant3	2422	0.94	1.04	90.38	0.44	1.06	2
11AX20MIMO	Ant1	2412	1.49	1.52	98.03	0.09	0.67	1
	Ant2	2412	1.49	1.52	98.03	0.09	0.67	1
	Ant3	2412	1.49	1.52	98.03	0.09	0.67	1
11AX40MIMO	Ant1	2422	0.78	0.81	96.3	0.16	1.28	2
	Ant2	2422	0.78	0.81	96.3	0.16	1.28	2
	Ant3	2422	0.78	0.82	95.12	0.22	1.28	2



11B-CDD_Ant1_2437



11B-CDD_Ant2_2437



11B-CDD_Ant3_2437



11G-CDD_Ant1_2412



11G-CDD_Ant2_2412



11G-CDD_Ant3_2412



11N20MIMO_Ant1_2412



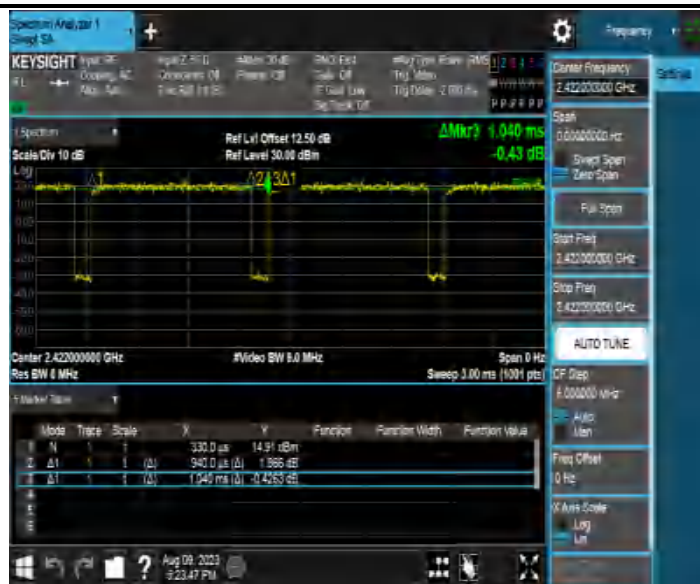
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11N20MIMO_Ant3_2412



11N40MIMO_Ant1_2422



11N40MIMO_Ant2_2422



11N40MIMO_Ant3_2422



11AX20MIMO_Ant1_2412



11AX20MIMO_Ant2_2412



11AX20MIMO_Ant3_2412



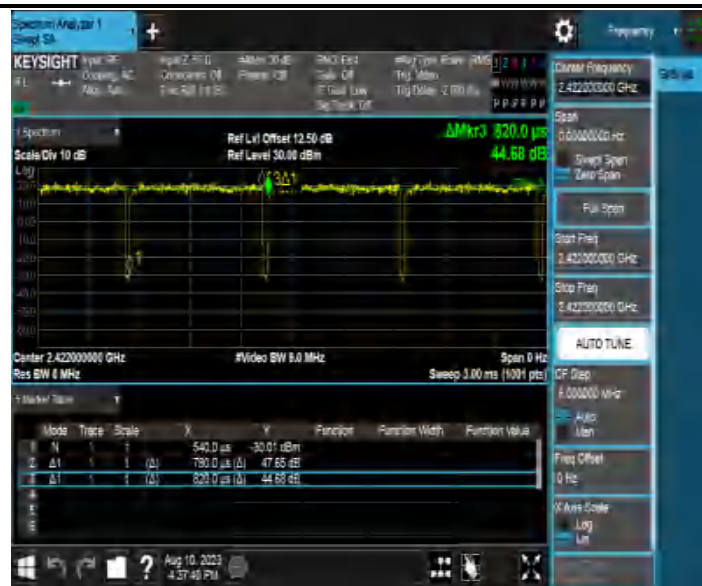
11AX40MIMO_Ant1_2422



11AX40MIMO_Ant2_2422



11AX40MIMO_Ant3_2422



2.7 Measurement Uncertainty

Where relevant, the following measurement uncertainty levels have been estimated for tests performed on the EUT.

This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of $k=2$.

Uncertainty	
Parameter	Uncertainty
Occupied Channel Bandwidth	± 143.88 kHz
Power Spectral Density	± 0.743 dB
Conducted Spurious Emission	± 1.328 dB
RF power conducted	± 0.384 dB
Conducted emission(9kHz~30MHz) AC main	± 2.72 dB
Radiated emission(9kHz~30MHz)	± 2.66 dB
Radiated emission (30MHz~1GHz)	± 4.62 dB
Radiated emission (1GHz~18GHz)	± 4.86 dB
Radiated emission (18GHz~40GHz)	± 3.80 dB

2.8 Test Location

Company:	Shenzhen Haiyun Standard Technical CO., Ltd.
Address:	No. 110-113, 115, 116, Block B, Jinyuan Business Building, Bao'an District, Shenzhen, China
CNAS Registration Number:	CNAS L18252
CAB identifier	CN0145
A2LA Certificate Number	6823.01
Telephone:	0755-26024411

2.9 Description of Support Units

Test associated equipment

No.	Equipment	Manufacturer	Model	Series No
1	PC1	Lenovo	M4500T	/
2	Notebook	L450	Think	/
3	Phone1	TCL	HCD868	/
4	Phone2	TCL	HCD868	/

Cable and Interconnection

Interface	Cable type	Cable length delivered with the modem	“Real life” Cable length that can be attached to this type of interface	Cable length to be used for testing	Internal/external connection
2.5G LAN/WAN, LAN1	UTP Cat.5e	1.5 m	> 10 m	10 m	Internal
FXS	UTP Cat.3	1.5 m	1.5m	1.5m	Internal
FXS	UTP Cat.3	1.5 m	1.5m	1.5m	Internal

2.10 Deviation from Standards

None

3. Test Procedure And Results

3.1 AC Power Line Conducted Emission

3.1.1 Limit

Frequency	Maximum RF Line Voltage	
	Quasi-Peak Level dB(μ V)	Average Level dB(μ V)
150kHz ~ 500kHz	66 ~ 56*	56 ~ 46*
500kHz ~ 5MHz	56	46
5MHz ~ 30MHz	60	50

Notes: 1. * Decreasing linearly with logarithm of frequency.

2. The lower limit shall apply at the transition frequencies.

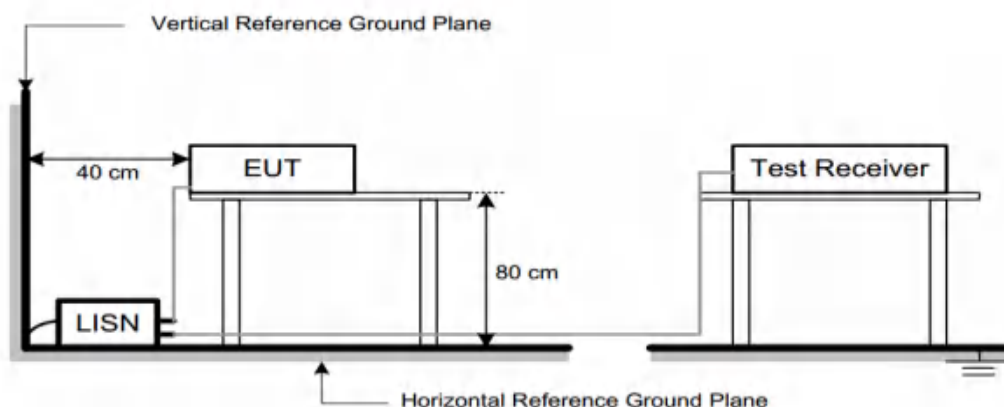
3.1.2 Test Procedure

Test Method	
☒ Conducted Measurement	☐ Radiated Measurement
Test Channels	
☐ Lowest, Middle and Highest Channel	☐ Lowest and Highest Channel
Environmental conditions	
☒ Normal	☐ Normal and Extreme

Note: ● : Test ○ : No Test

- The EUT was placed 0.4 meters from the conducting wall of the shielded room with EUT being connected to the power mains through a line impedance stabilization network (LISN). Other support units were connected to the power mains through another LISN. The two LISNs provide 50 ohm/ 50uH of coupling impedance for the measuring instrument.
- Both lines of the power mains connected to the EUT were checked for maximum conducted interference.
- The frequency range from 150kHz to 30MHz was searched. Emission levels under (Limit - 20dB) was not recorded.

3.1.3 Test Setup



3.1.4 Test Result

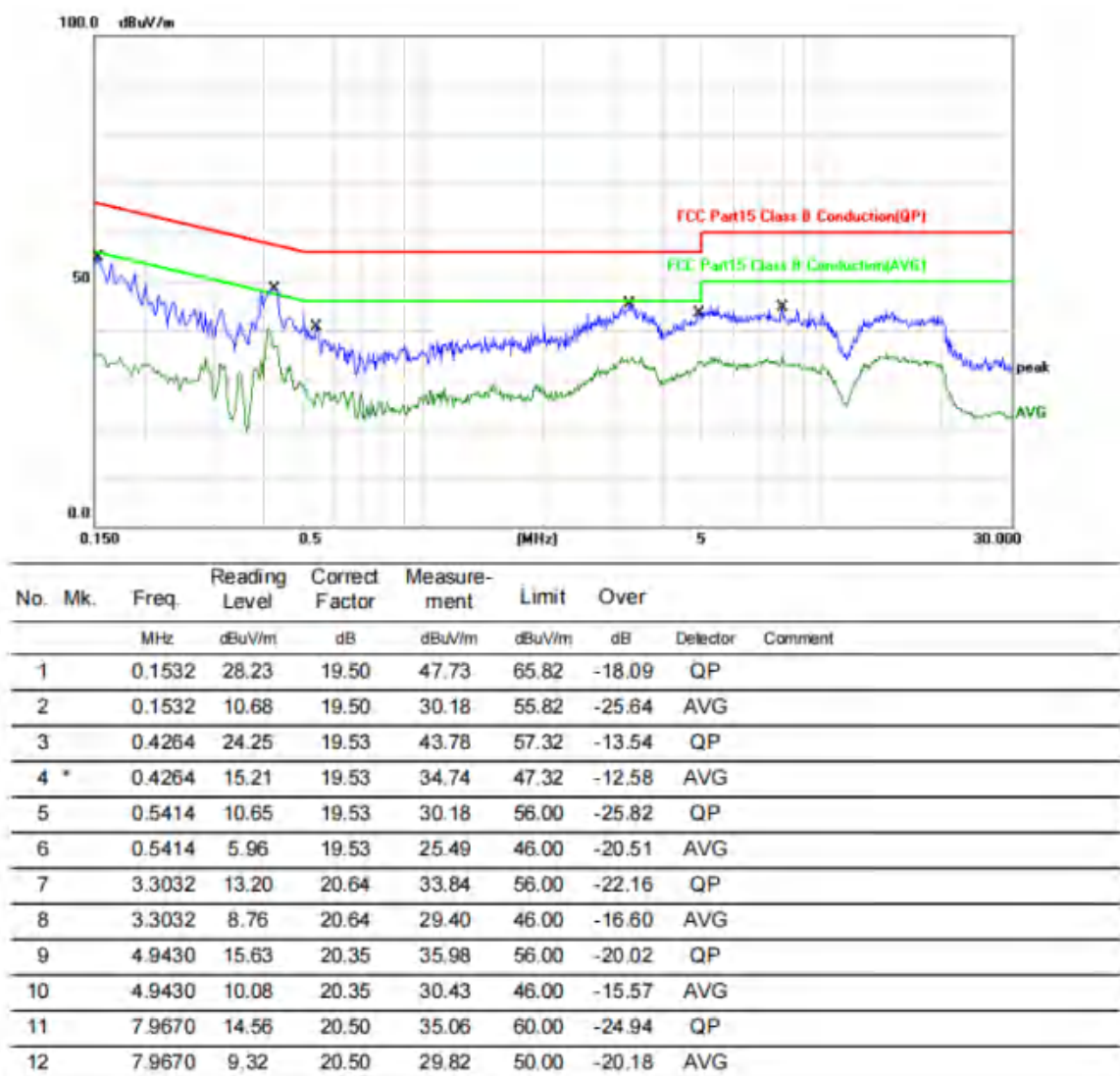
Note:

1. Correct Factor = LISN Factor + Cable Loss + Pulse Limiter Factor, the value was added to Original Receiver Reading by the software automatically.
2. Measurement = Reading + Correct Factor.
3. Over = Measurement – Limit

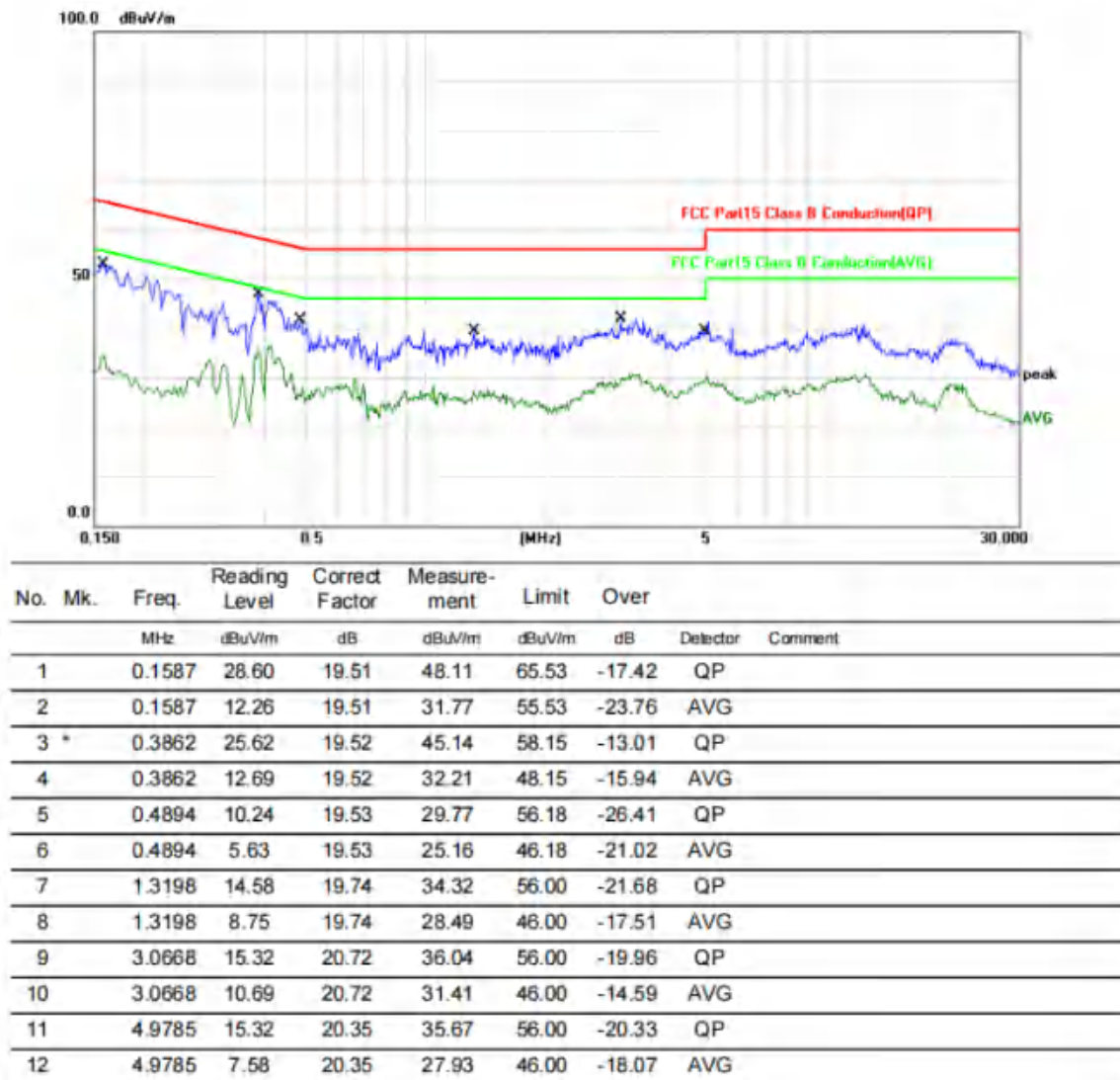
Note: We only recorded the data of the worst mode. Please see the following:

150kHz~30MHz	Worst Case Operating Mode: 11b-CDD_ Channel:6
Adapter Mode:	WY-30B12FU

Line

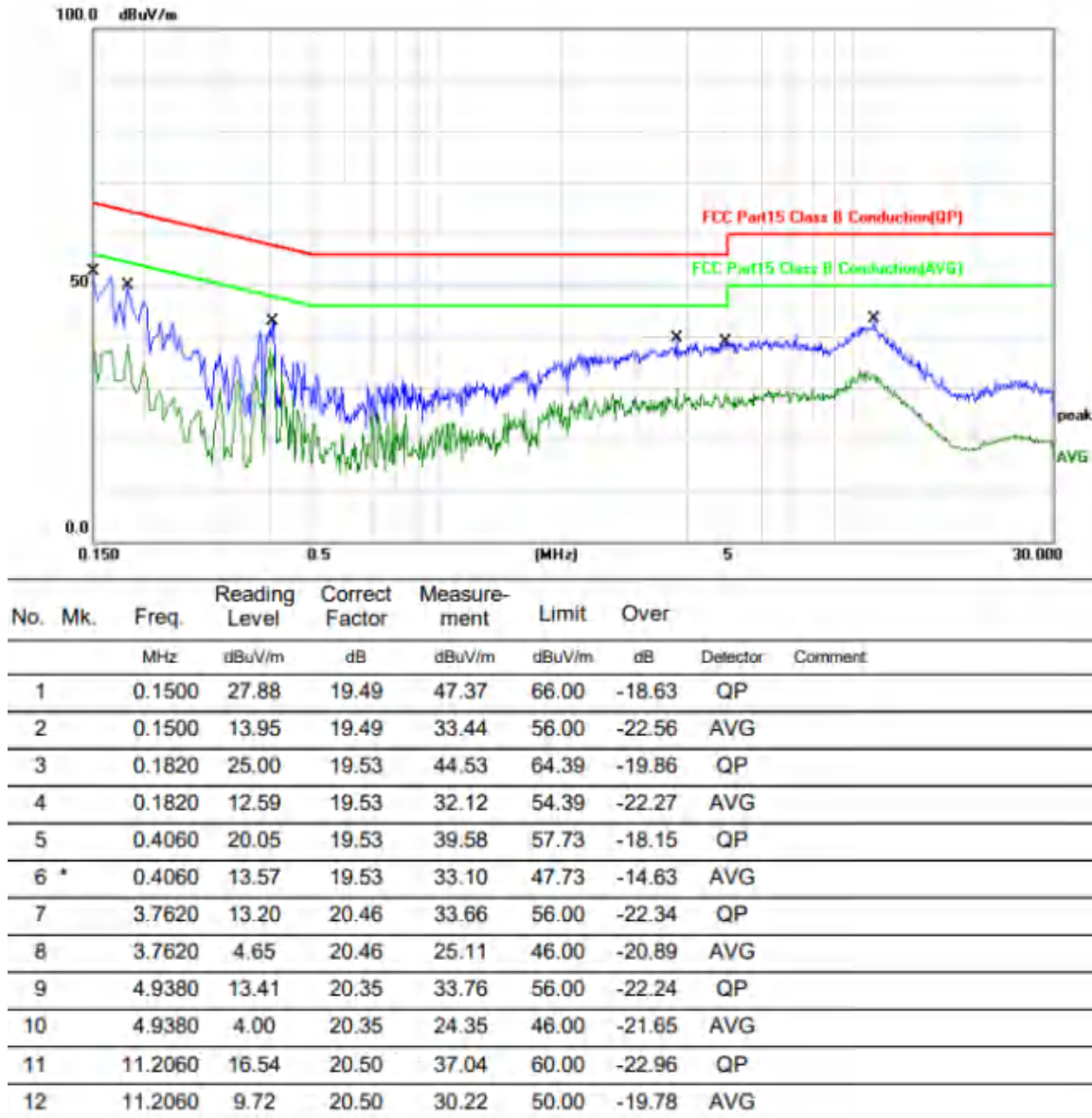


Neutral

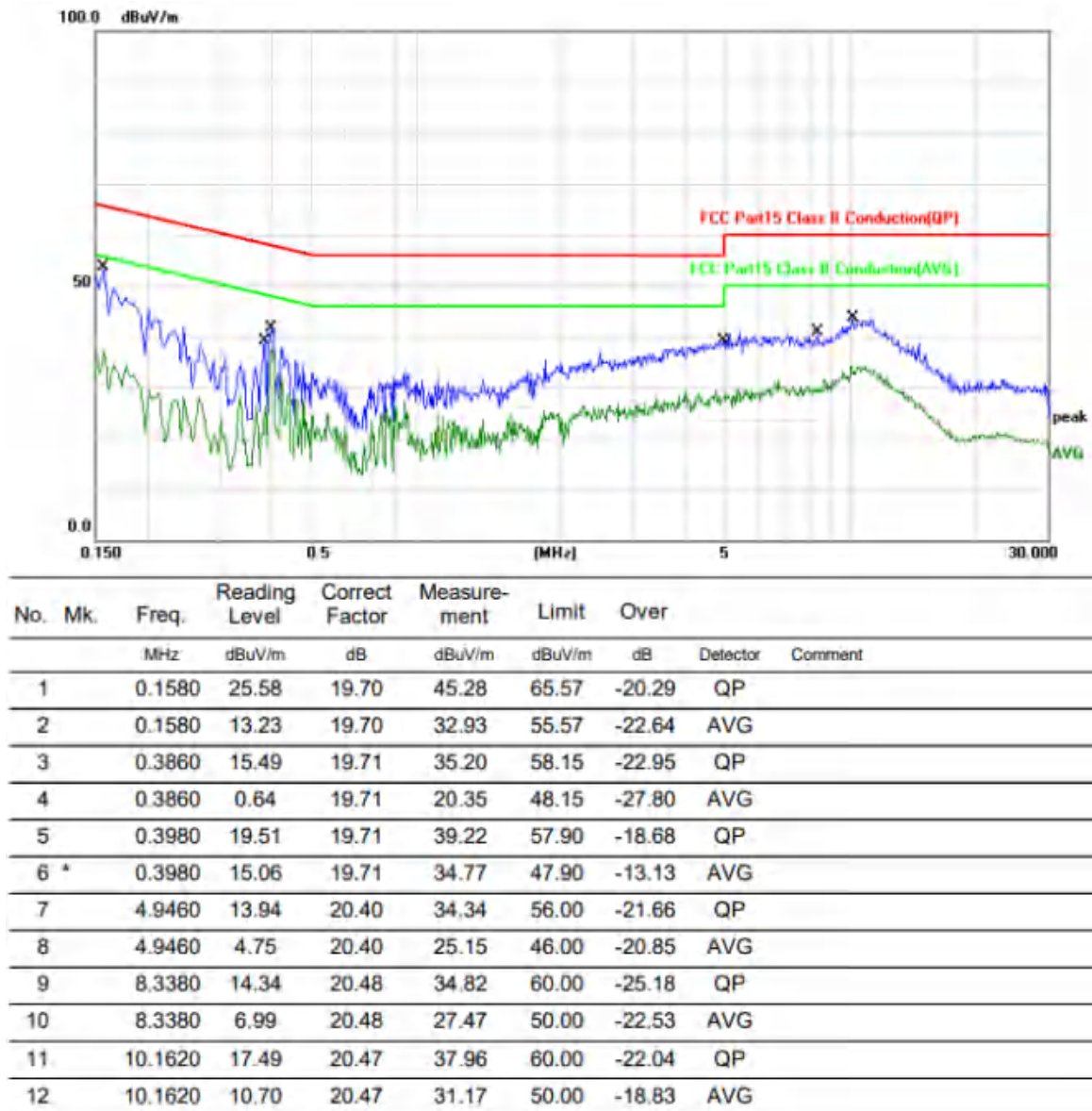


150kHz~30MHz	Worst Case Operating Mode: 11b-CDD_ Channel:6
Adapter Mode:	ADS-36LE-12Y 12030EPCU

Line



Neutral



3.2 Radiated Emission and Band Edge

3.2.1 Limit

Radiated emissions which fall in the restricted bands must comply with the radiated emission limits specified as below table. Other emissions shall be at least 20dB below the highest level of the desired power:

Frequency (MHz)	Distance Meters(m)	Field Strength Limit	
		$\mu\text{V}/\text{m}$	$\text{dB}(\mu\text{V})/\text{m}$
0.009 – 0.49	300	2400/F(kHz)	-
0.490 – 1.705	30	24000/F(kHz)	-
1.705 – 30	30	30	-
30~88	3	100	40.0
88~216	3	150	43.5
216~960	3	200	46.0
960~1000	3	500	54.0
Above 1000	3	74.0 $\text{dB}(\mu\text{V})/\text{m}$ (Peak) 54.0 $\text{dB}(\mu\text{V})/\text{m}$ (Average)	

Note: (1) Emission level $\text{dB}\mu\text{V} = 20 \log$ Emission level $\mu\text{V}/\text{m}$

(2) The smaller limit shall apply at the cross point between two frequency bands.

(3) Distance is the distance in meters between the measuring instrument, antenna and the closest point of any part of the device or system.

3.2.2 Test Procedure

Test Method	
☐ Conducted Measurement	☒ Radiated Measurement
Test Channels	
☒ Lowest, Middle and Highest Channel	☐ Lowest and Highest Channel
Environmental conditions	
☒ Normal	☐ Normal and Extreme
Note: ☒ : Test ☐ : No Test	

- The measuring distance of 3 m shall be used for measurements. The EUT was placed on the top of a rotating table 0.8 meter above the ground at a 3 meter semi-anechoic chamber. The table was rotated 360 degrees to determine the position of the highest radiation.(below 1 GHz)
- The measuring distance of 3 m or 1.5m shall be used for measurements. The EUT was placed on the top of a rotating table 1.5 meter above the ground at a 3 meter semi-anechoic chamber. The table was rotated 360 degrees to determine the position of the highest radiation.(above 1GHz)
- The height of the equipment or of the substitution antenna shall be 0.8m or 1.5m; the height of

the test antenna shall vary between 1 m to 4 m. Both horizontal and vertical polarizations of the antenna are set to make the measurement.

- d) For each suspected emission, the EUT was arranged to its worst case and then the antenna was tuned to heights find the maximum reading (used Bore sight function).
- e) The receiver system was set to peak and average detect function and specified bandwidth with maximum hold mode when the test frequency is above 1 GHz.
- f) The initial step in collecting radiated emission data is a receiver peak detector mode pre-scanning the measurement frequency range. Significant peaks are then marked and then Quasi Peak detector mode re-measured.
- g) All readings are Peak unless otherwise stated QP in column of Note. Peak denotes that the Peak reading compliance with the QP Limits and then QP Mode measurement didn't perform. (below 1 GHz)
- h) All readings are Peak Mode value unless otherwise stated AVG in column of Note. If the Peak Mode Measured value compliance with the Peak Limits and lower than AVG Limits, the EUT shall be deemed to meet both Peak & AVG Limits and then only Peak Mode was measured, but AVG Mode didn't perform. (above 1 GHz)
- i) For the actual test configuration, please refer to the related Item -EUT Test Photos.

The following table is the setting of the receiver:

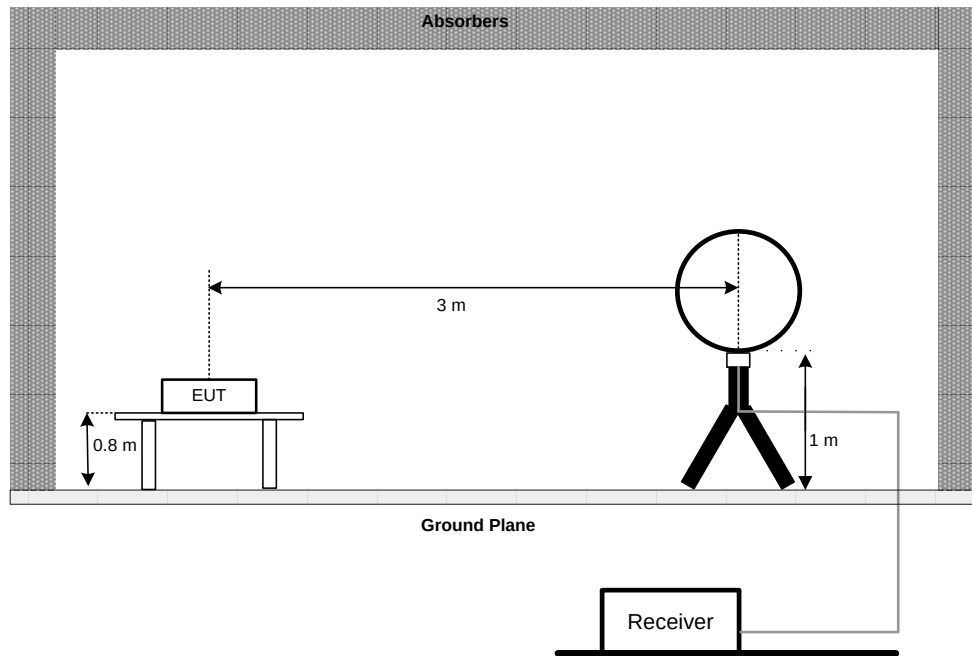
Spectrum Parameters	Setting
Start ~ Stop Frequency	9 kHz~150 kHz for RBW 200 Hz
Start ~ Stop Frequency	0.15 MHz~30 MHz for RBW 9 kHz
Start ~ Stop Frequency	30 MHz~1000 MHz for RBW 100 kHz

Spectrum Parameters	Setting
Start Frequency	1000 MHz
Stop Frequency	10th carrier harmonic
RBW / VBW (Emission in restricted band)	1 MHz / 3 MHz for PK value 1 MHz / 1/T (Refer to Final VBW in Section 2.6)for AVG value

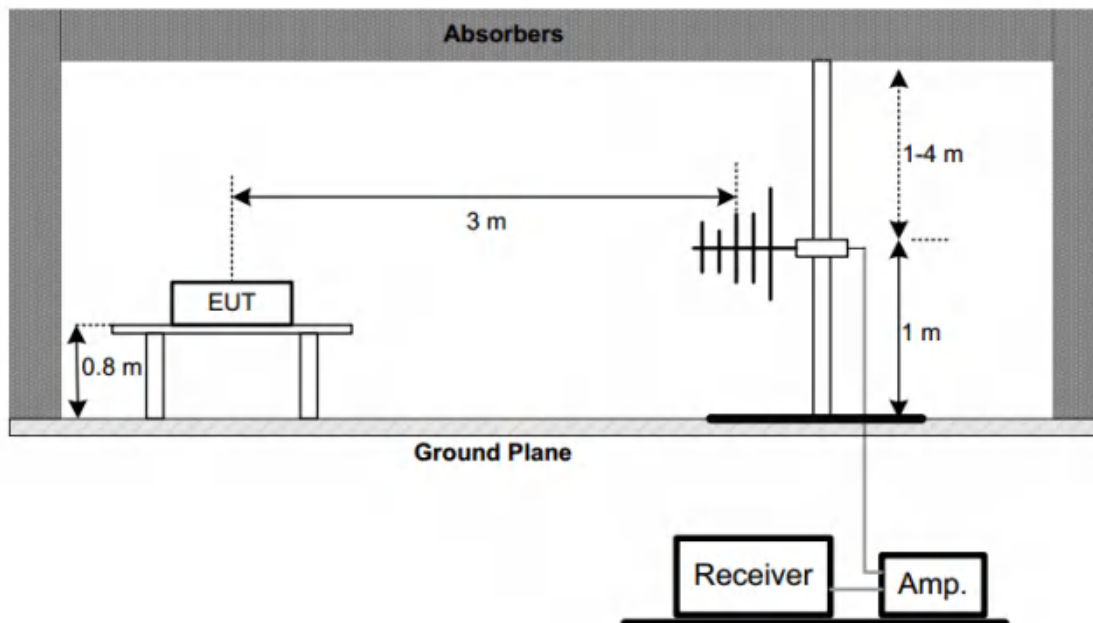
Receiver Parameters	Setting
Start ~ Stop Frequency	9 kHz~90 kHz for PK/AVG detector
Start ~ Stop Frequency	90 kHz~110 kHz for QP detector
Start ~ Stop Frequency	110 kHz~490 kHz for PK/AVG detector
Start ~ Stop Frequency	490 kHz~30 MHz for QP detector
Start ~ Stop Frequency	30 MHz~1000 MHz for QP detector
Start ~ Stop Frequency	1 GHz~26.5 GHz for PK/AVG detector

3.2.3 Test Setup

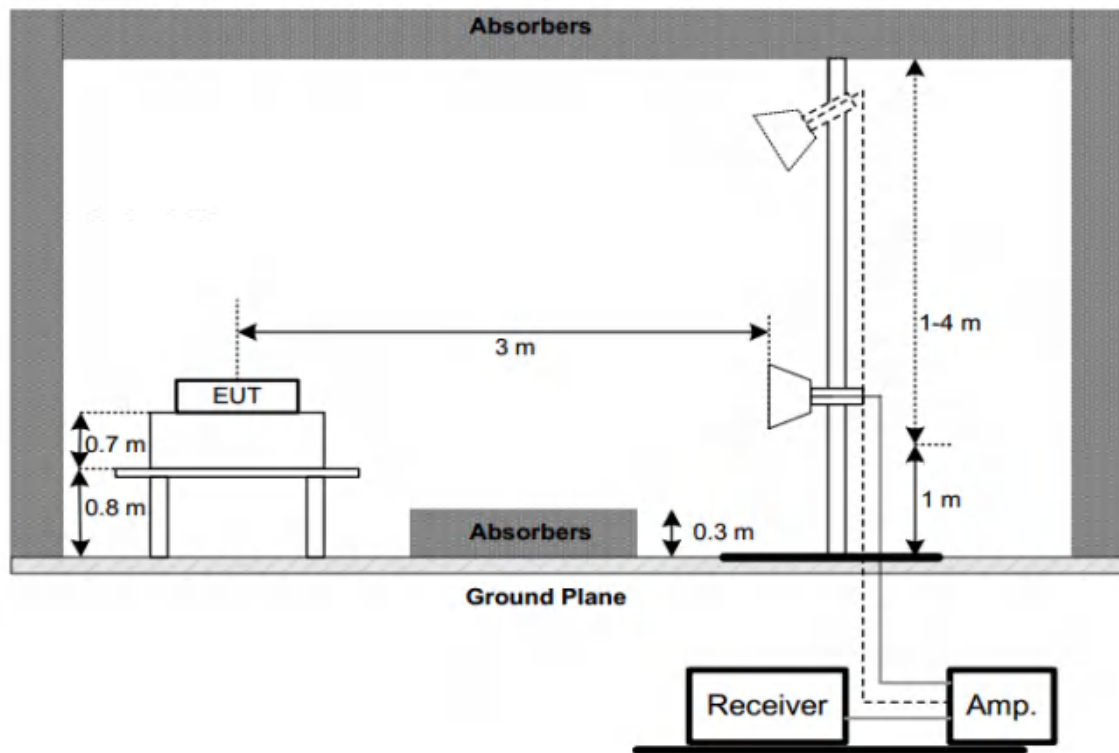
(A) Radiated Emission Test Set-Up Frequency Below 30 MHz



(B) Radiated Emission Test Set-Up Frequency 30 MHz-1000 MHz



(C) Radiated Emission Test Set-Up Frequency Above 1 GHz



3.2.4 Test Result

1) Radiated emission: 9kHz-30MHz

The low frequency, which started from 9 kHz to 30MHz, was pre-scanned and the result which was 20dB lower than the limit line was not recorded in this report.

2) Radiated emission: 30MHz-1G

Note:

1. Measurement = Reading + Correct Factor.
2. Over = Measurement – Limit

We only recorded the data of the worst mode. Please see the following:

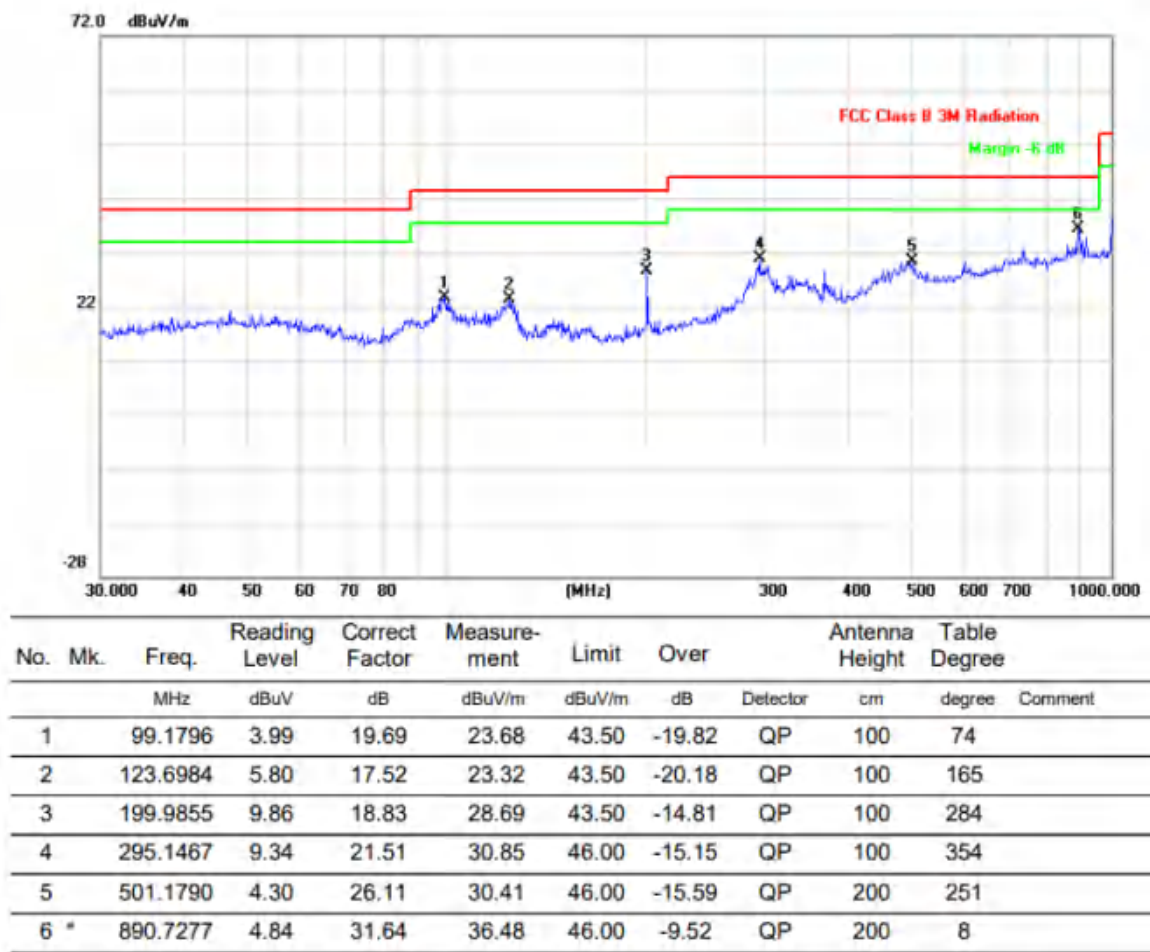
Below 1G (30MHz~1GHz)	Worst Case Operating Mode: 11b-CDD_ Channel:6
Adapter Mode:	WY-30B12FU

VERTICAL



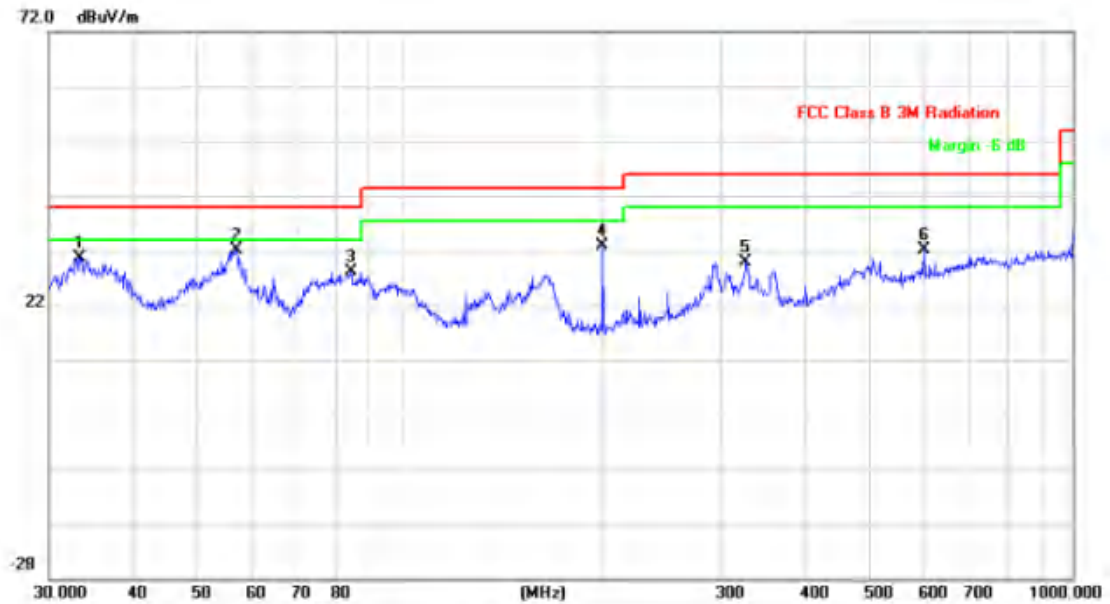
No.	Mk.	Freq.	Reading Level	Correct Factor	Measurement	Limit	Over	Antenna Height	Table Degree	
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	cm	degree	Comment
1		33.2111	9.95	18.73	28.68	40.00	-11.32	QP	100	61
2		64.6594	11.26	18.35	29.61	40.00	-10.39	QP	200	6
3		199.9855	14.85	18.83	33.68	43.50	-9.82	QP	200	123
4		327.8872	7.80	22.89	30.69	46.00	-15.31	QP	100	89
5		601.4265	4.55	28.23	32.78	46.00	-13.22	QP	100	124
6	*	836.2441	6.48	30.90	37.38	46.00	-8.62	QP	100	95

HORIZONTAL



Below 1G (30MHz~1GHz)	Worst Case Operating Mode: 11b-CDD_Channel:6
Adapter Mode:	ADS-36LE-12Y 12030EPCU

VERTICAL



No.	Mk.	Freq.	Reading Level	Correct Factor	Measurement	Limit	Over	Antenna Height	Table Degree	
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	cm	degree
1		33.3278	11.96	18.76	30.72	40.00	-9.28	QP	100	29
2	*	56.9911	12.08	19.98	32.06	40.00	-7.94	QP	100	35
3		84.4054	10.52	17.69	28.21	40.00	-11.79	QP	100	54
4		199.9855	14.10	18.83	32.93	43.50	-10.57	QP	200	259
5		326.7395	6.98	22.82	29.80	46.00	-16.20	QP	200	0
6		601.4265	3.82	28.23	32.05	46.00	-13.95	QP	200	349

HORIZONTAL



No.	Mk.	Freq.	Reading Level	Correct Factor	Measurement	Limit	Over	Antenna Height	Table Degree	
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	cm	degree
1		57.1914	5.35	19.96	25.31	40.00	-14.69	QP	100	58
2		96.7750	6.73	19.49	26.22	43.50	-17.28	QP	100	236
3		199.9855	10.88	18.83	29.71	43.50	-13.79	QP	100	69
4		298.2681	10.89	21.59	32.48	46.00	-13.52	QP	200	249
5		501.1790	5.69	26.11	31.80	46.00	-14.20	QP	200	324
6	*	737.0712	3.32	30.50	33.82	46.00	-12.18	QP	200	152

3) Radiated emission: Above 1G

Note:

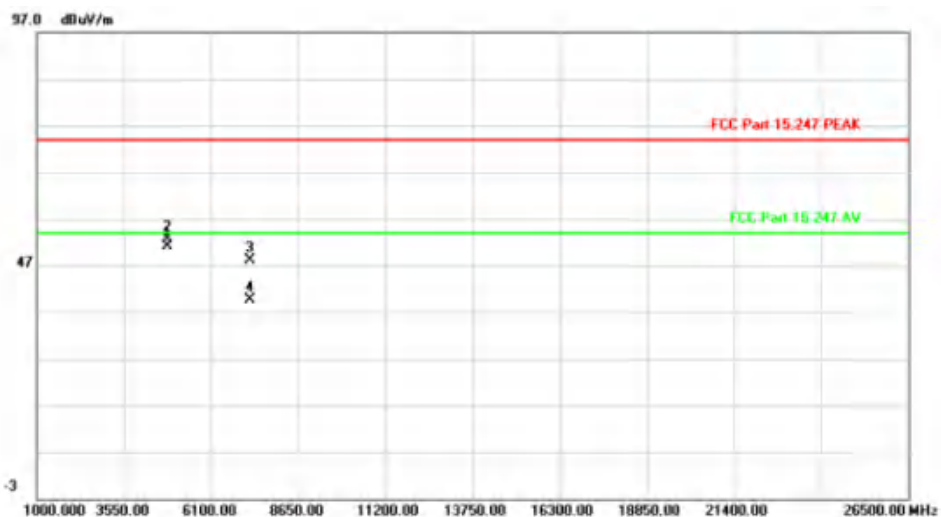
1. Measurement = Reading + Correct Factor.
2. Over = Measurement – Limit

Above 1G (1GHz~18GHz)	Test mode:11B-CDD	Test Channel:1
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VERTICAL

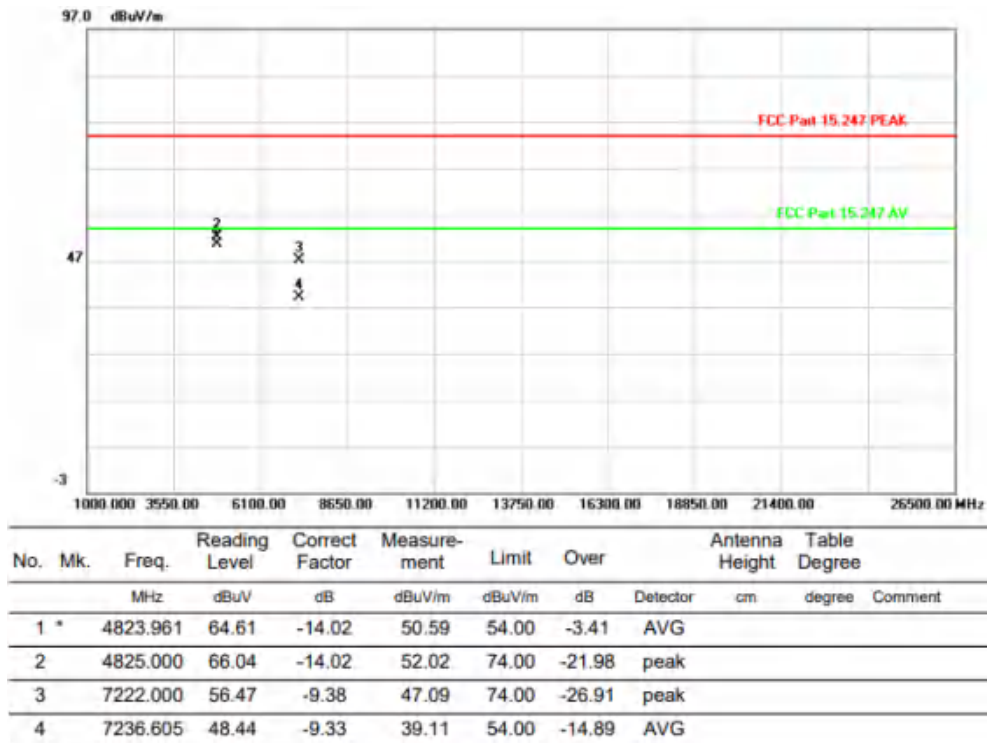
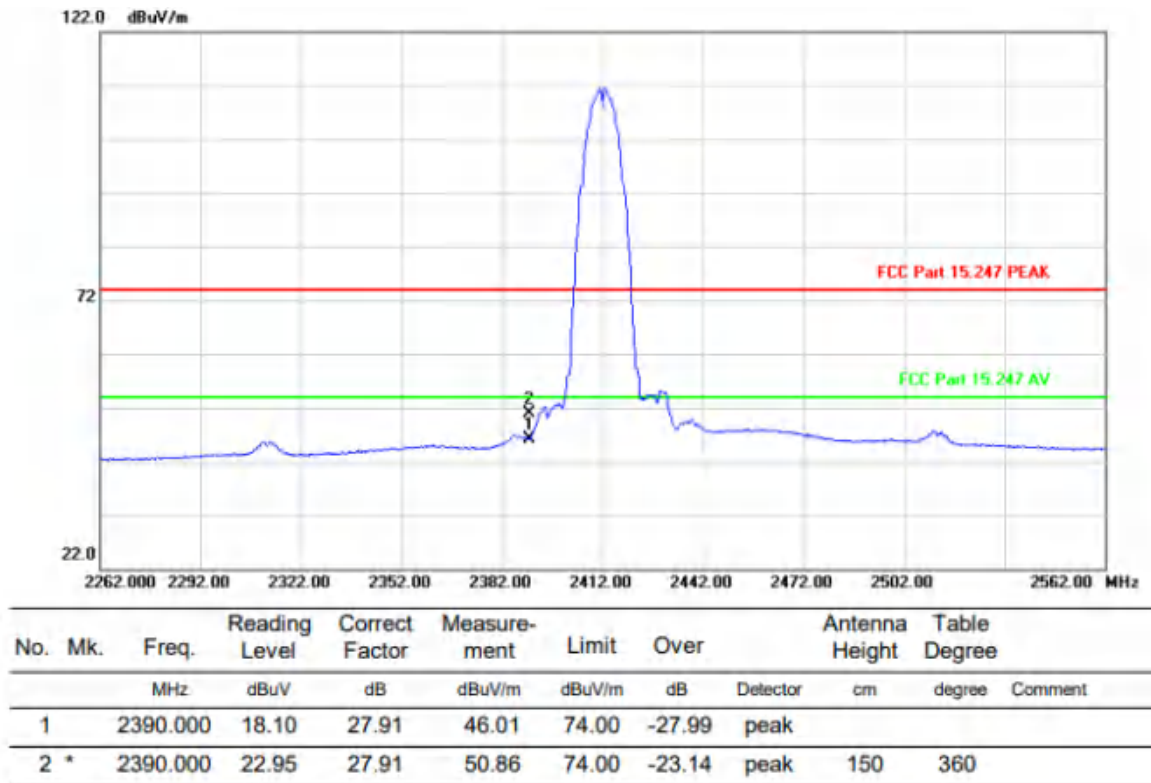


No.	Mk.	Freq.	Reading Level	Correct Factor	Measurement	Limit	Over	Antenna Height	Table Degree	
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	cm	degree	Comment
1	*	2385.300	25.95	27.90	53.85	54.00	-0.15	AVG		
2		2390.000	24.07	27.91	51.98	54.00	-2.02	AVG		
3		2385.300	28.60	27.90	56.50	74.00	-17.50	peak	150	360
4		2390.000	27.78	27.91	55.69	74.00	-18.31	peak	150	360



No.	Mk.	Freq.	Reading Level	Correct Factor	Measurement	Limit	Over	Antenna Height	Table Degree	
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	cm	degree	Comment
1	*	4823.901	65.09	-14.02	51.07	54.00	-2.93	AVG		
2		4825.000	66.56	-14.02	52.54	74.00	-21.46	peak		
3		7222.000	57.55	-9.38	48.17	74.00	-25.83	peak		
4		7236.721	48.87	-9.33	39.54	54.00	-14.46	AVG		

HORIZONTAL



Above 1G (1GHz~18GHz)

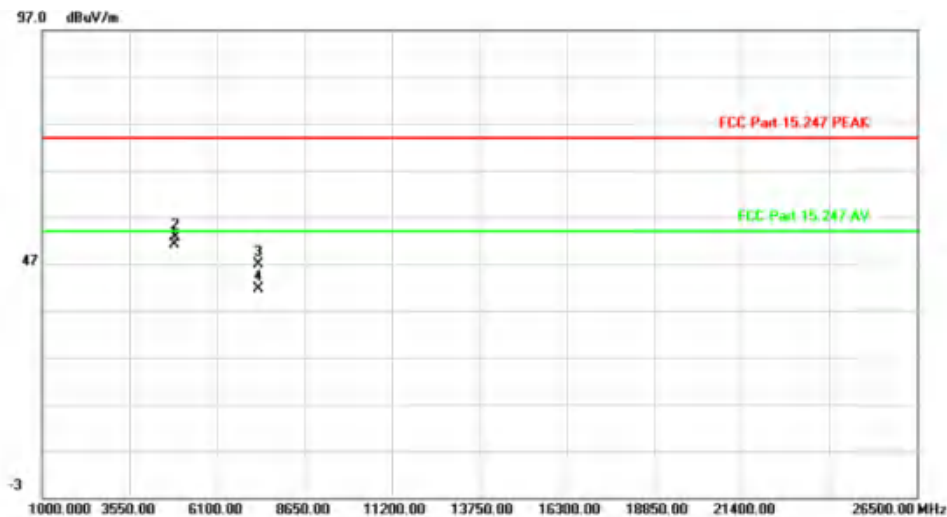
Test mode: 11B-CDD

Test Channel: 6

VERTICAL

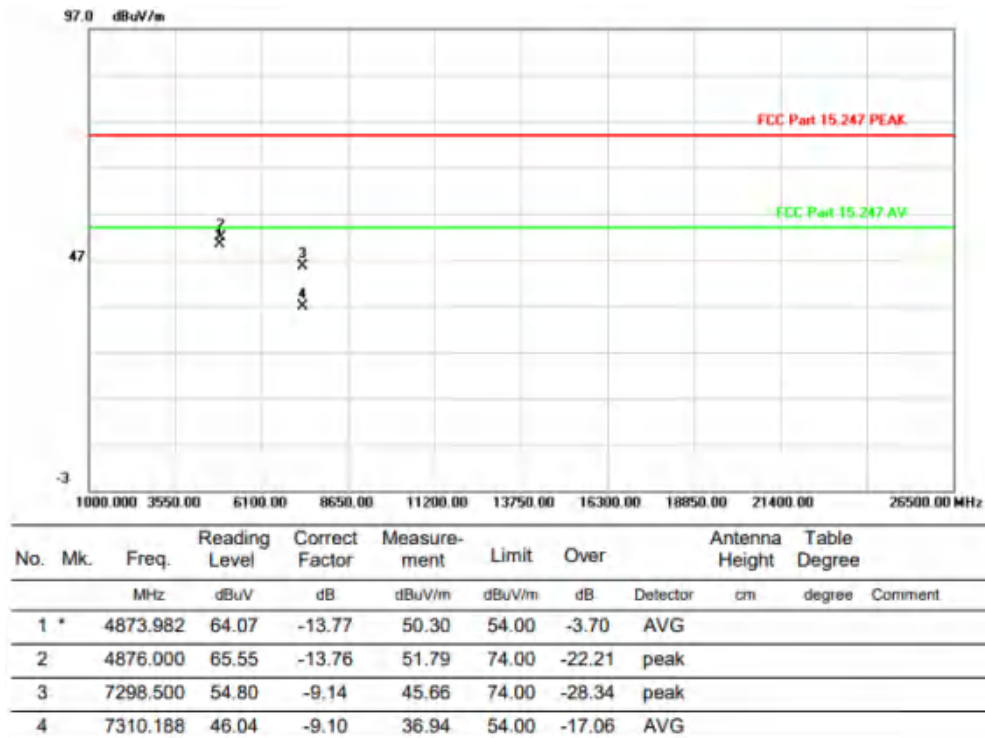
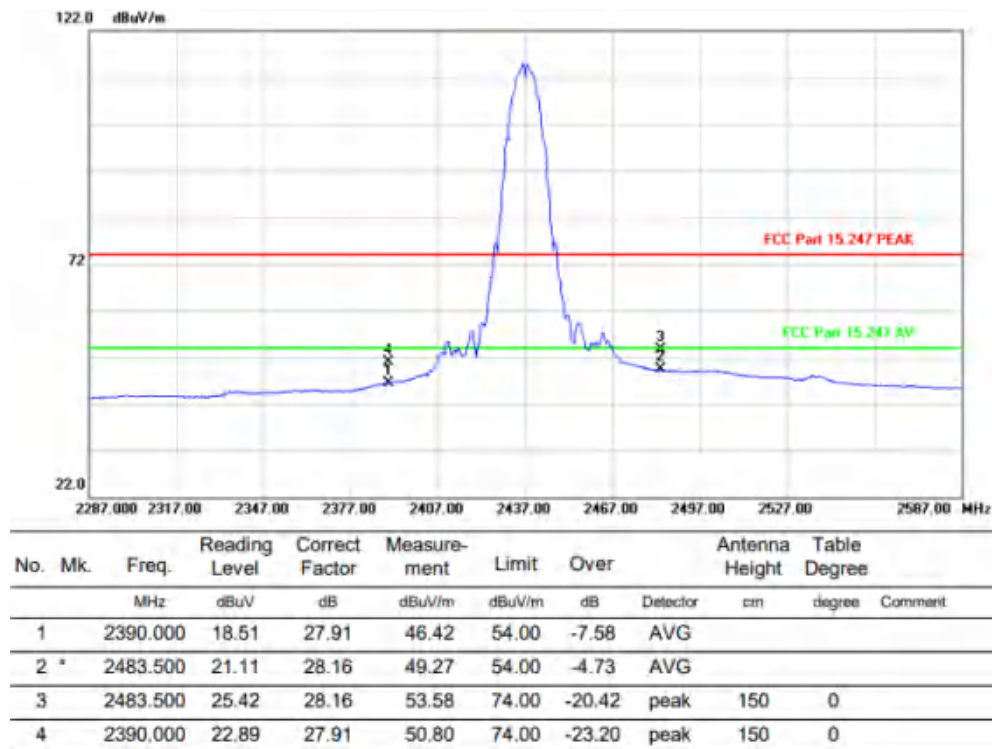


No.	Mk.	Freq.	Reading Level	Correct Factor	Measurement	Limit	Over	Antenna Height	Table Degree
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	cm	degree
1		2390.000	22.69	27.91	50.60	54.00	-3.40	AVG	
2 *		2483.500	22.95	28.16	51.11	54.00	-2.89	AVG	
3		2390.000	26.94	27.91	54.85	74.00	-19.15	peak	150
4		2483.500	26.05	28.16	54.21	74.00	-19.79	peak	150



No.	Mk.	Freq.	Reading Level	Correct Factor	Measurement	Limit	Over	Antenna Height	Table Degree
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	cm	degree
1 *		4873.962	64.78	-13.77	51.01	54.00	-2.99	AVG	
2		4876.000	66.47	-13.76	52.71	74.00	-21.29	peak	
3		7298.500	56.04	-9.14	46.90	74.00	-27.10	peak	
4		7310.128	50.80	-9.10	41.70	54.00	-12.30	AVG	

HORIZONTAL

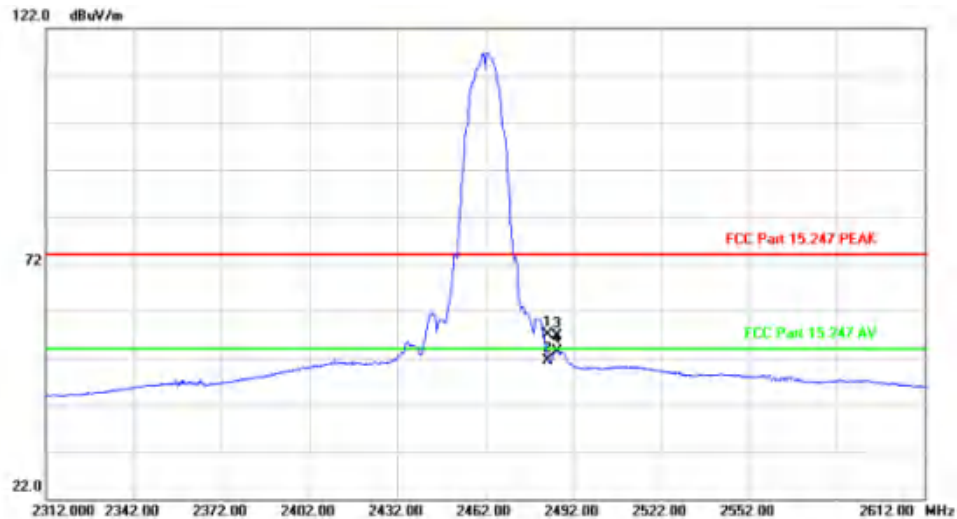


Above 1G (1GHz~18GHz)

Test mode: 11B-CDD

Test Channel:11

VERTICAL



No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV/m	Limit dBuV/m	Over dB	Detector	Antenna Height cm	Table Degree	Comment
1		2483.500	28.76	28.16	56.92	74.00	-17.08	peak	150	0	
2		2483.500	23.25	28.16	51.41	54.00	-2.59	AVG			
3		2486.600	28.35	28.17	56.52	74.00	-17.48	peak	150	0	
4 *		2486.600	25.31	28.17	53.48	54.00	-0.52	AVG			



No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV/m	Limit dBuV/m	Over dB	Detector	Antenna Height cm	Table Degree	Comment
1 *		4923.983	64.21	-13.52	50.69	54.00	-3.31	AVG			
2		4927.000	66.29	-13.51	52.78	74.00	-21.22	peak			
3		9847.861	51.69	-4.24	47.45	54.00	-6.55	AVG			
4		9848.500	55.84	-4.24	51.60	74.00	-22.40	peak			

HORIZONTAL



No.	Mk.	Freq.	Reading Level	Correct Factor	Measurement	Limit	Over	Antenna Height	Table Degree	
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	cm	degree	Comment
1		2483.500	28.34	28.16	56.50	74.00	-17.50	peak	150	0
2		2483.500	21.53	28.16	49.69	54.00	-4.31	AVG		
3		2488.700	28.36	28.17	56.53	74.00	-17.47	peak		
4 *		2488.700	24.07	28.17	52.24	54.00	-1.76	AVG		



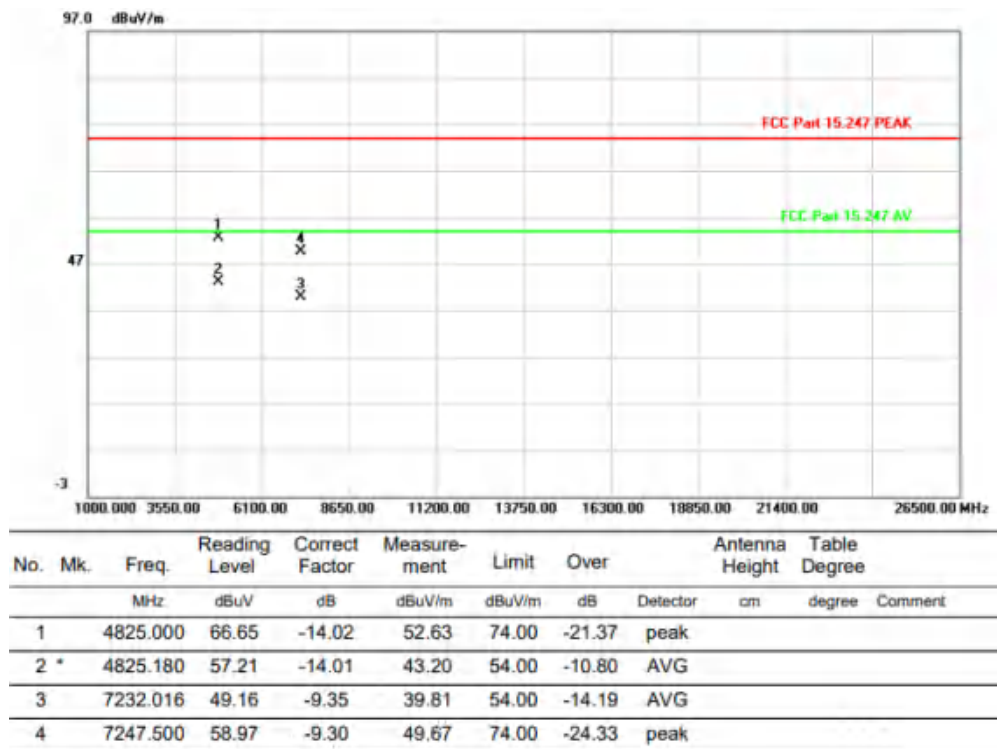
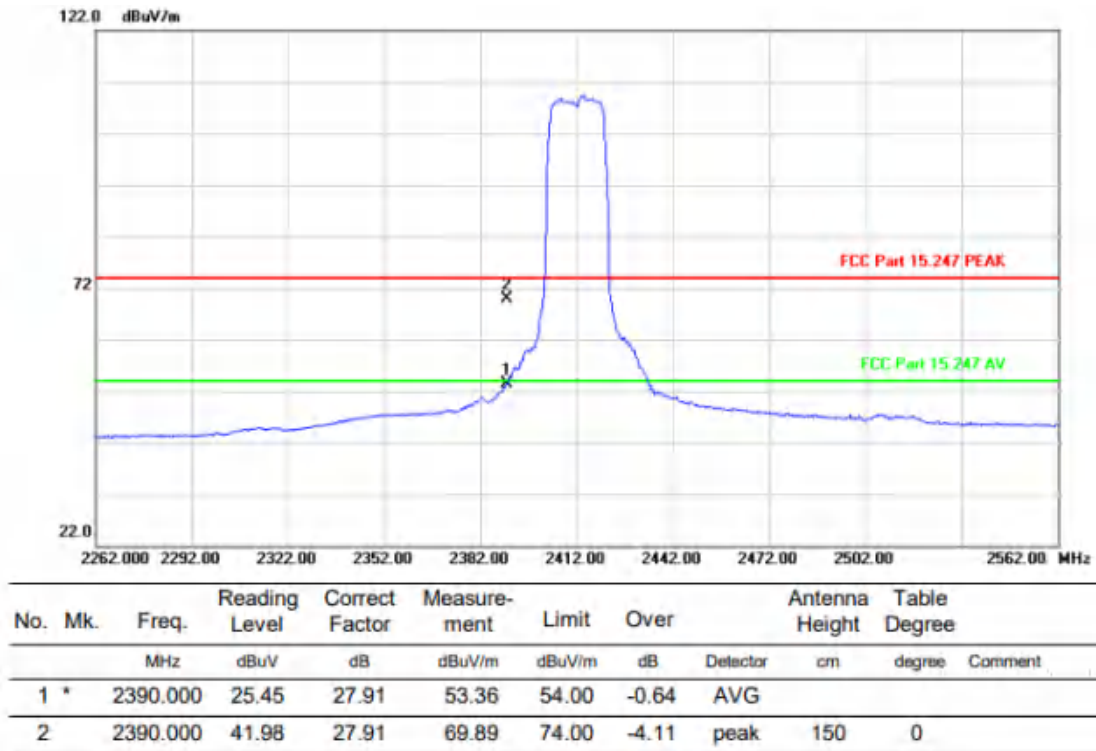
No.	Mk.	Freq.	Reading Level	Correct Factor	Measurement	Limit	Over	Antenna Height	Table Degree	
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	cm	degree	Comment
1 *		4923.923	63.42	-13.52	49.90	54.00	-4.10	AVG		
2		4927.000	65.86	-13.51	52.35	74.00	-21.65	peak		
3		9847.881	51.10	-4.24	46.86	54.00	-7.14	AVG		
4		9848.500	55.20	-4.24	50.96	74.00	-23.04	peak		

Above 1G (1GHz~18GHz)

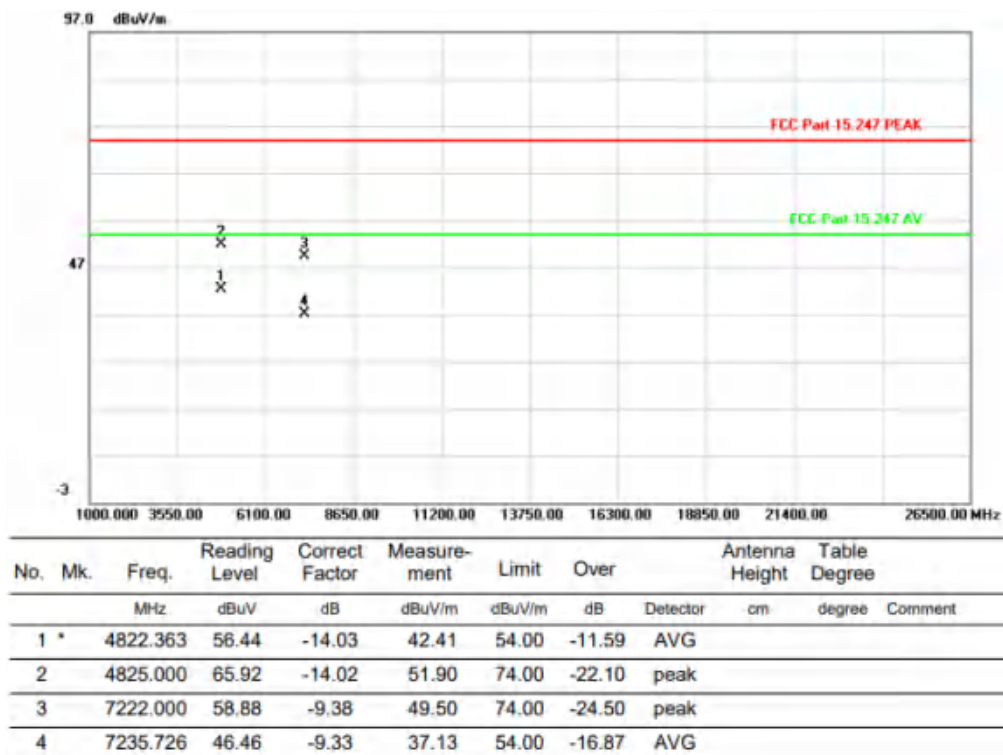
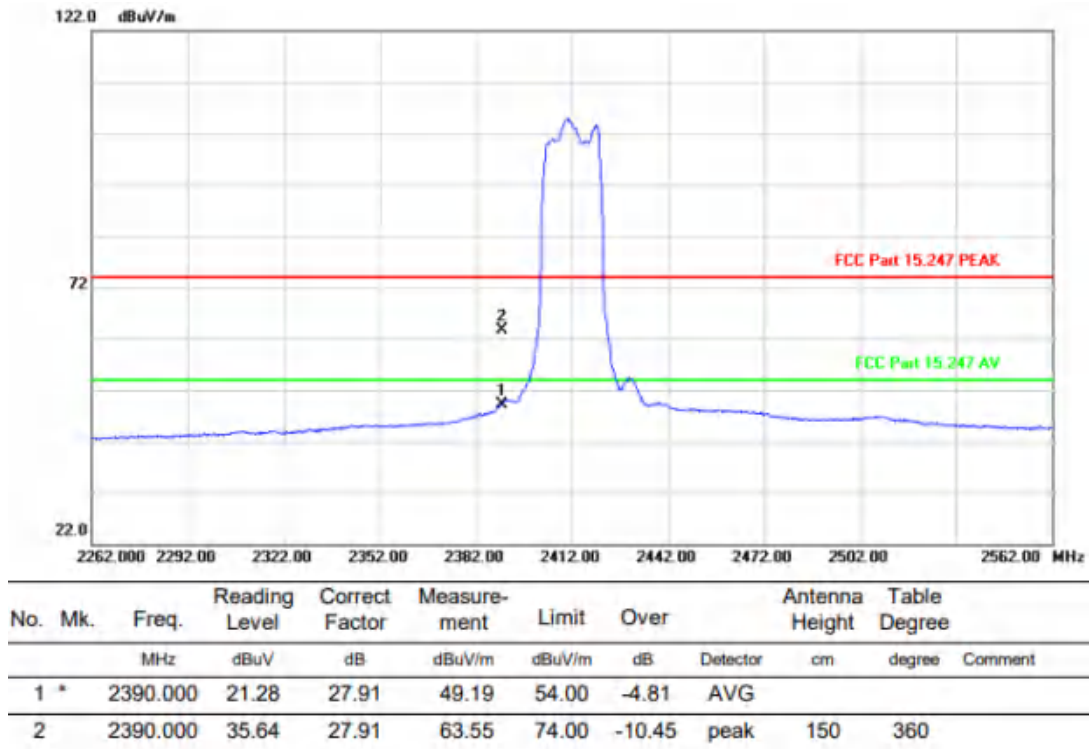
Test mode:11G-CDD

Test Channel:1

VERTICAL



HORIZONTAL

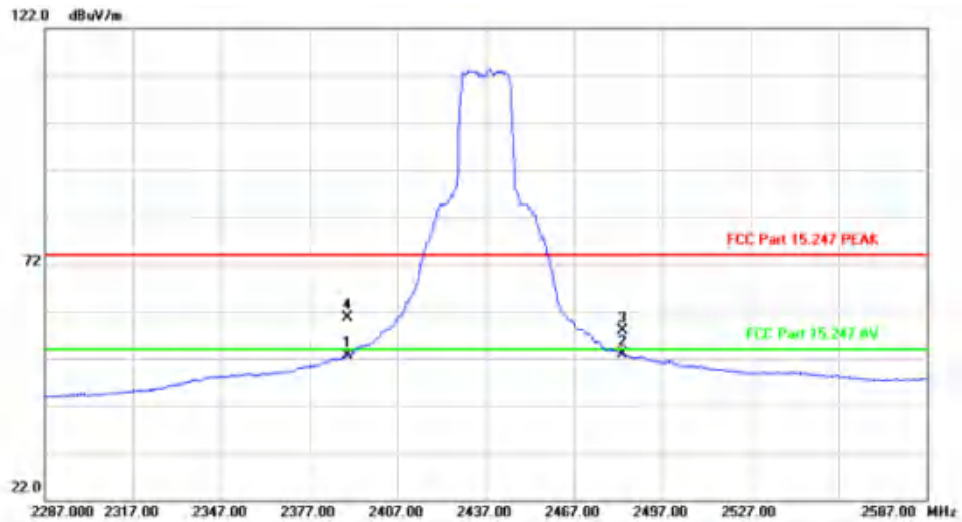


Above 1G (1GHz~18GHz)

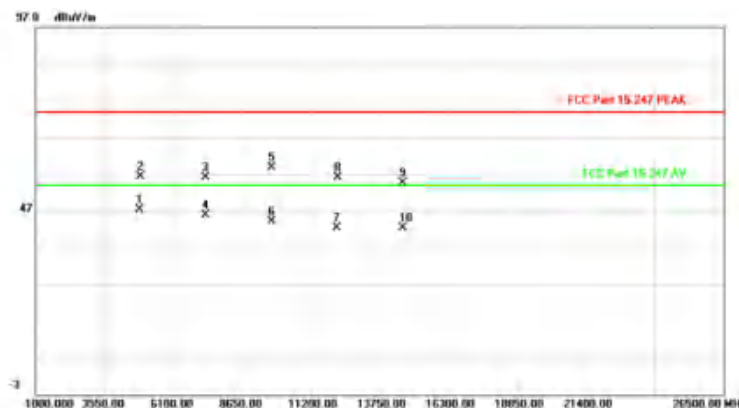
Test mode: 11G-CDD

Test Channel: 6

VERTICAL

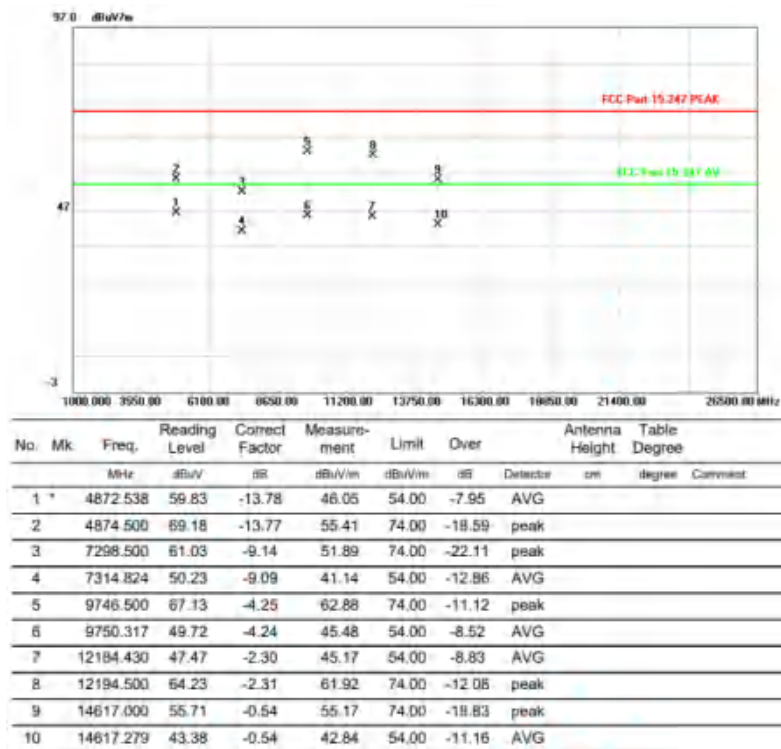
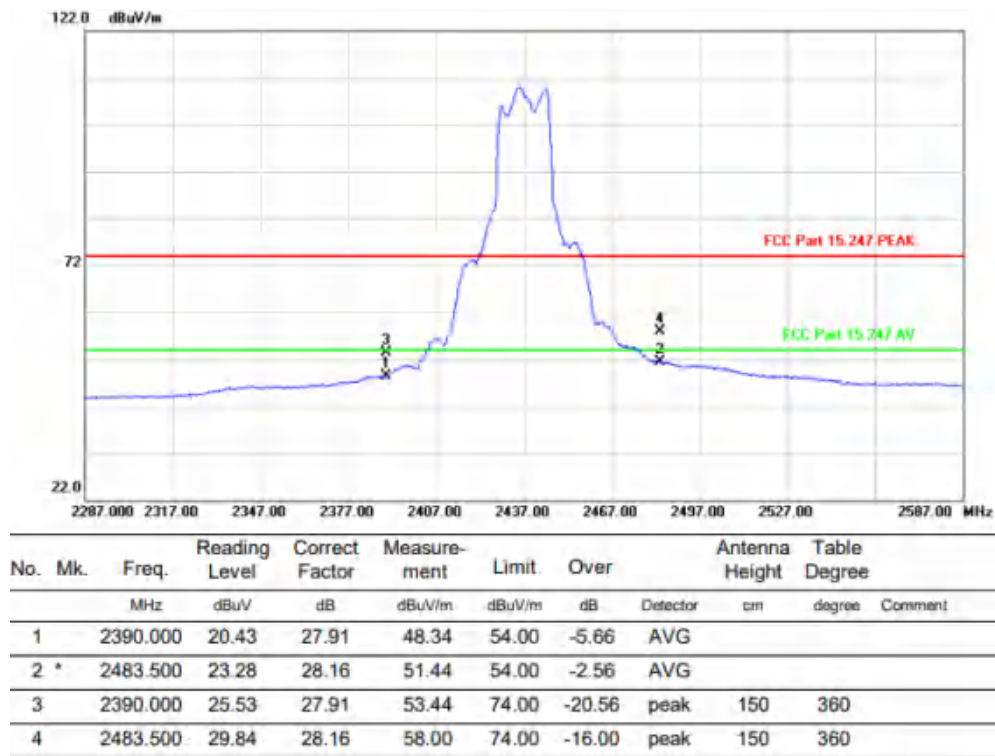


No.	Mk.	Freq.	Reading Level	Correct Factor	Measurement	Limit	Over	Antenna Height	Table Degree
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	cm	degree
1		2390.000	24.81	27.91	52.72	54.00	-1.28	AVG	
2 *		2483.500	24.84	28.16	53.00	54.00	-1.00	AVG	
3		2483.500	29.71	28.16	57.87	74.00	-16.13	peak	150 360
4		2390.000	32.71	27.91	60.62	74.00	-13.38	peak	150 360



No.	Mk.	Freq.	Reading Level	Correct Factor	Measurement	Limit	Over	Antenna Height	Table Degree
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	cm	degree
1 *		4875.221	61.05	-13.76	47.29	54.00	-6.71	AVG	
2		4876.000	70.08	-13.76	56.32	74.00	-17.68	peak	
3		7298.500	65.33	-9.14	56.19	74.00	-17.81	peak	
4		7311.107	55.05	-9.10	45.95	54.00	-8.05	AVG	
5		9746.500	63.08	-4.25	58.83	74.00	-15.17	peak	
6		9748.059	48.29	-4.25	44.04	54.00	-9.96	AVG	
7		12181.573	44.59	-2.30	42.29	54.00	-11.71	AVG	
8		12194.500	58.41	-2.31	56.10	74.00	-17.90	peak	
9		14617.000	55.13	-0.54	54.59	74.00	-19.41	peak	
10		14624.472	42.79	-0.52	42.27	54.00	-11.73	AVG	

HORIZONTAL

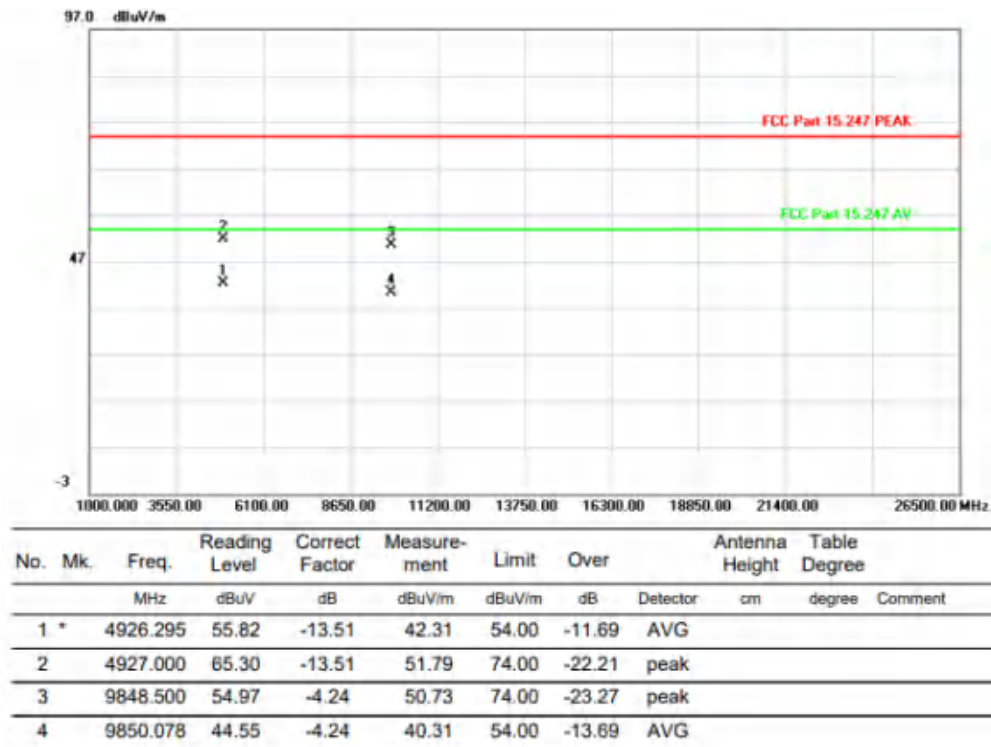
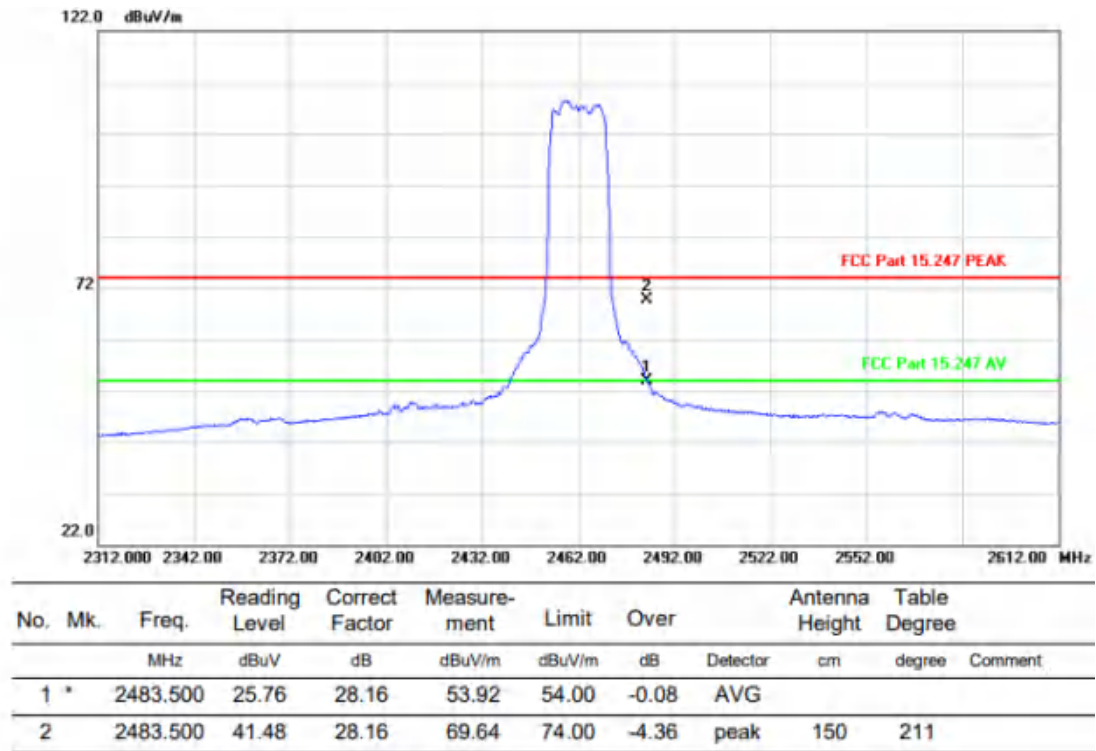


Above 1G (1GHz~18GHz)

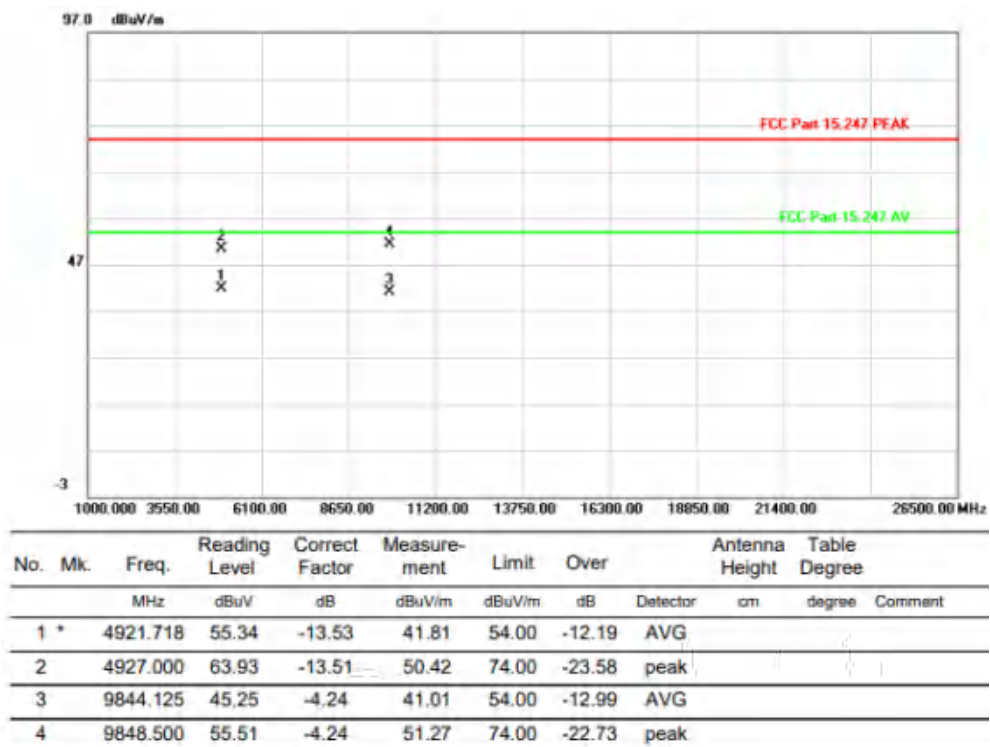
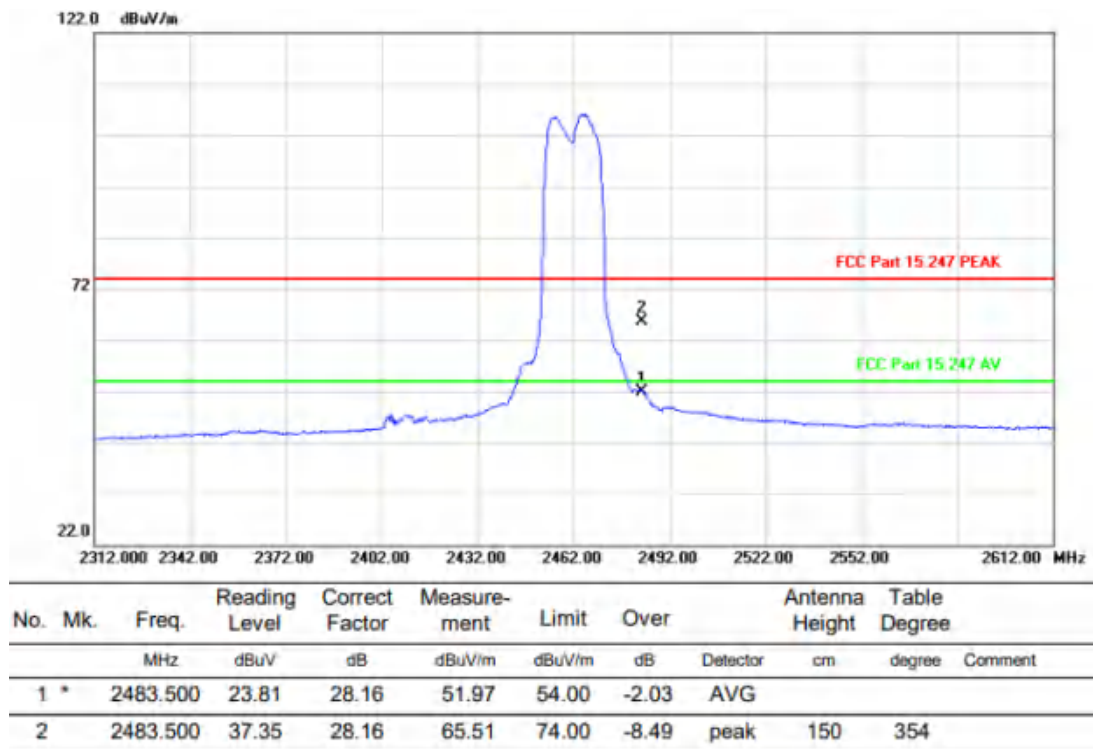
Test mode: 11G-CDD

Test Channel:11

VERTICAL



HORIZONTAL

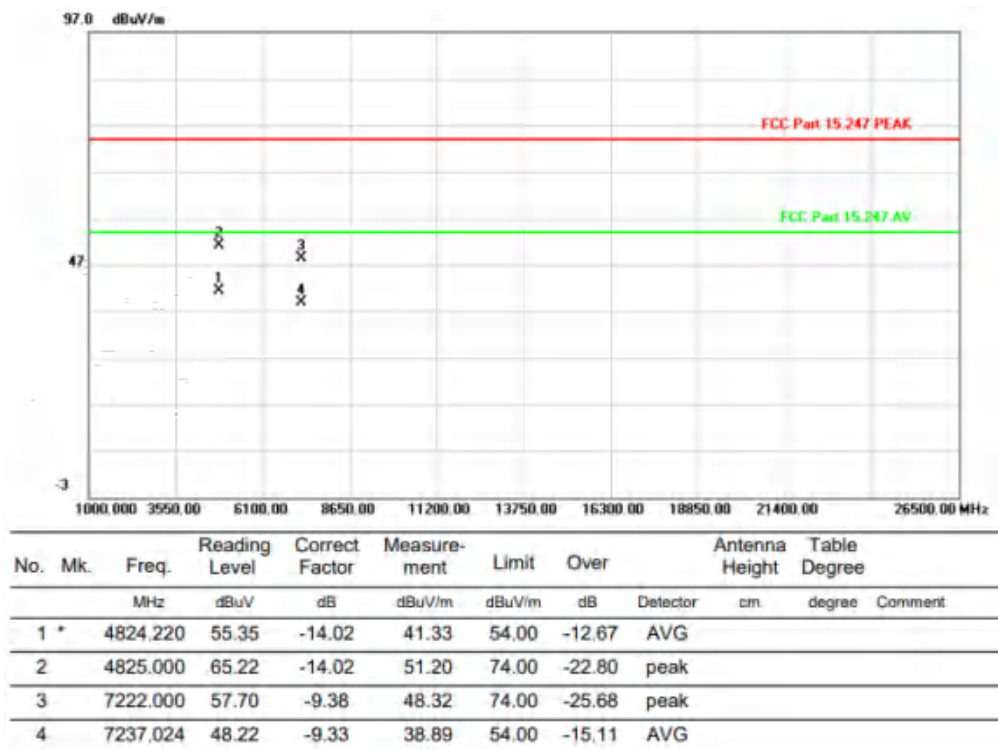
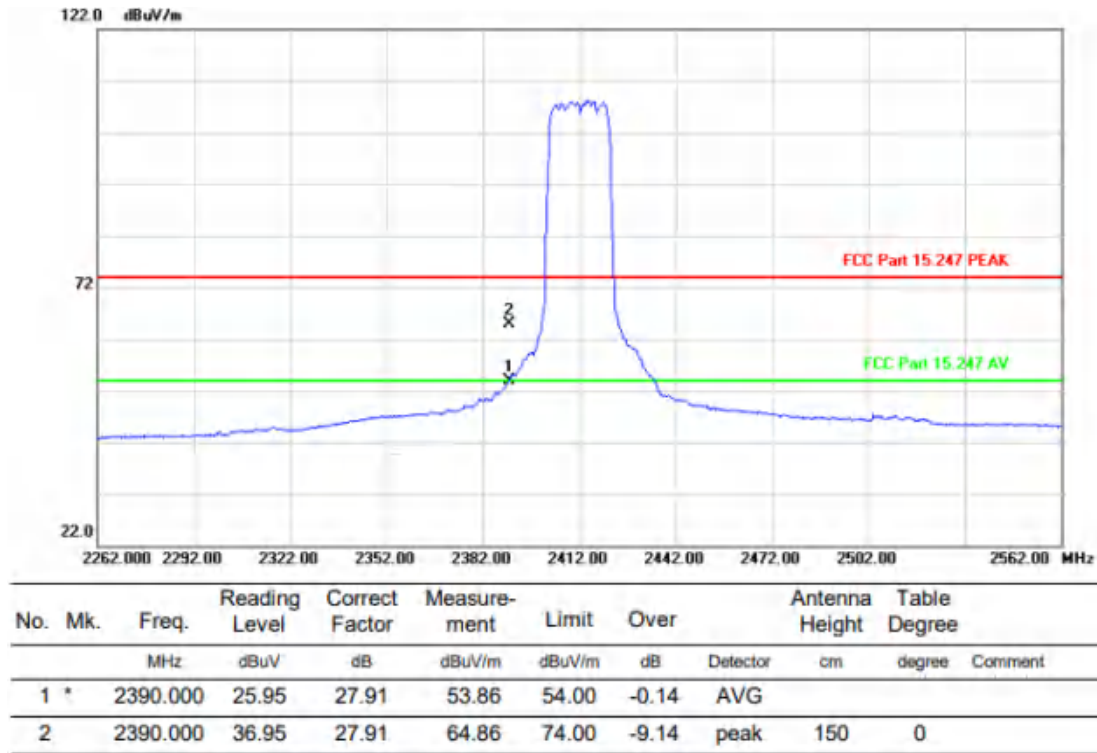


Above 1G (1GHz~18GHz)

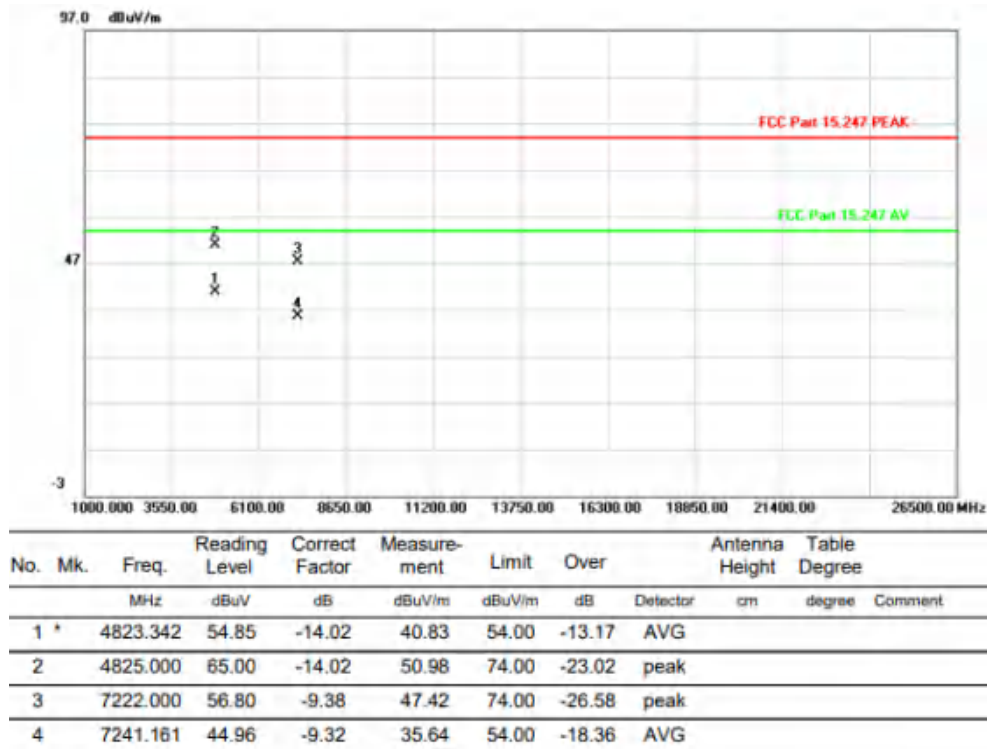
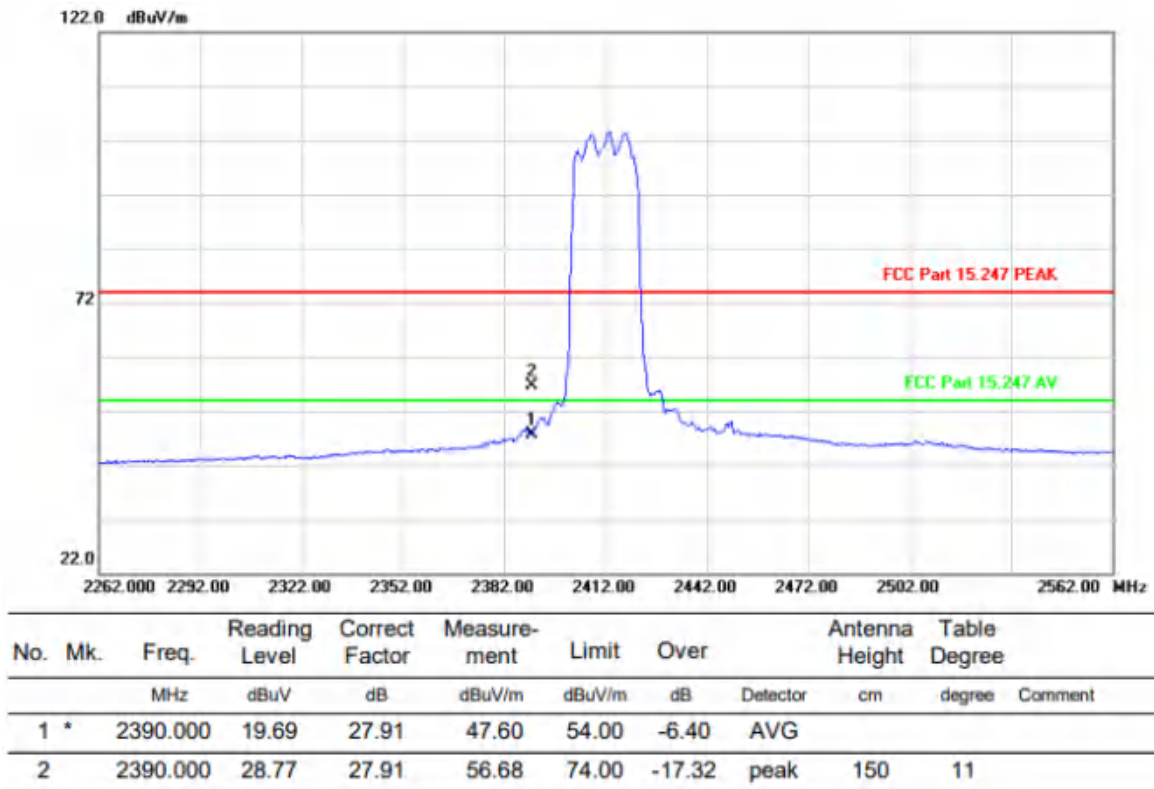
Test mode: 11N20MIMO

Test Channel:1

VERTICAL



HORIZONTAL

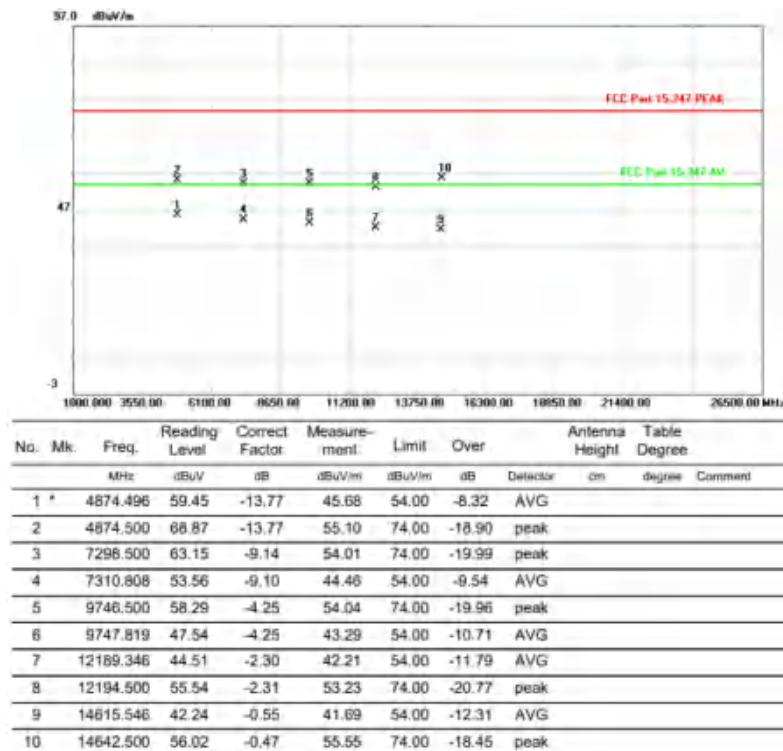
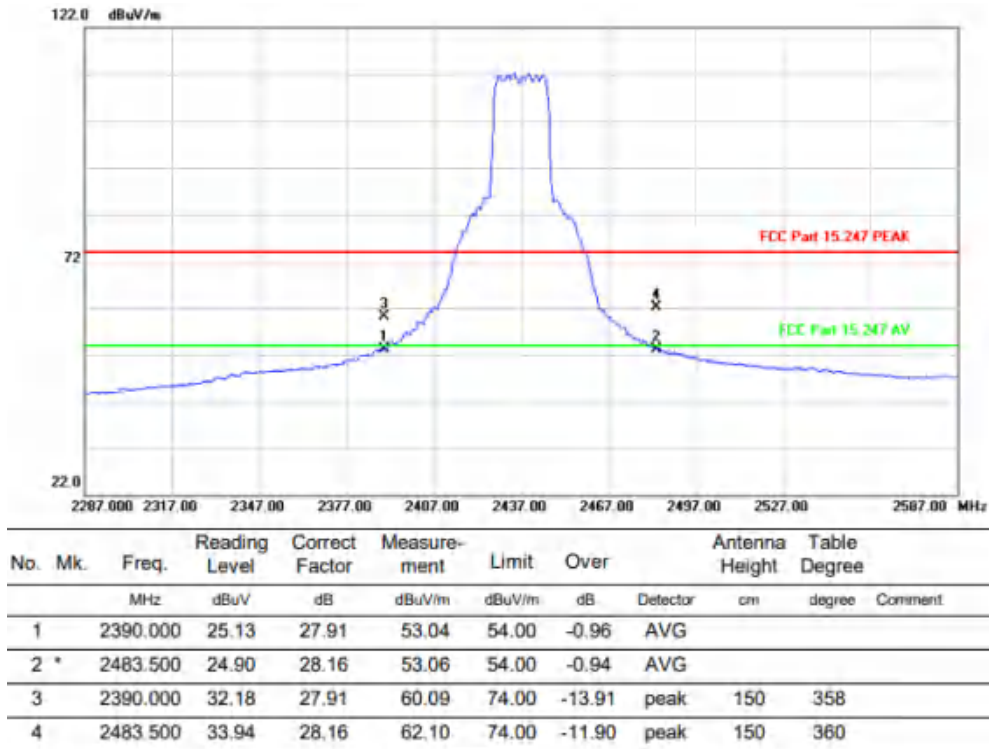


Above 1G (1GHz~18GHz)

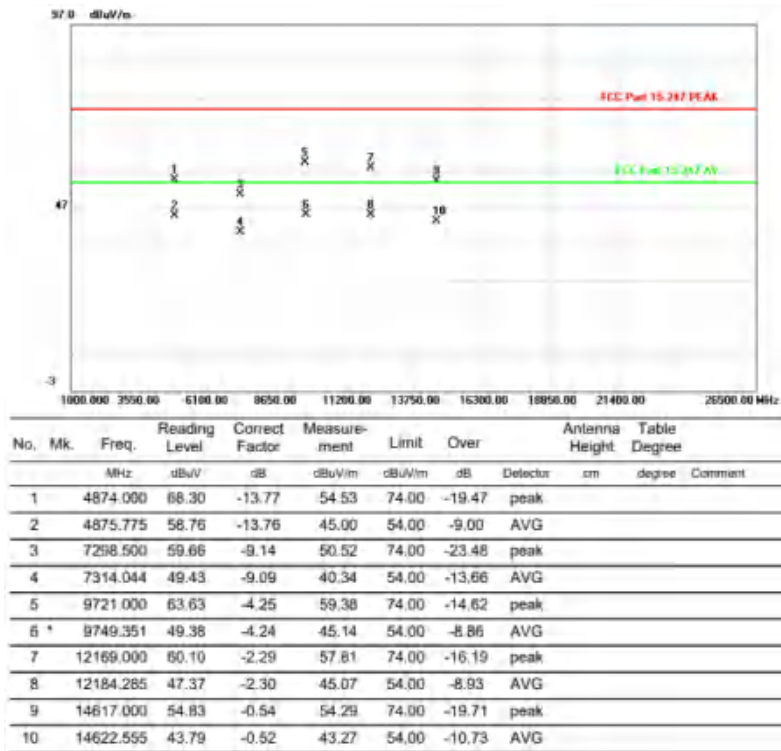
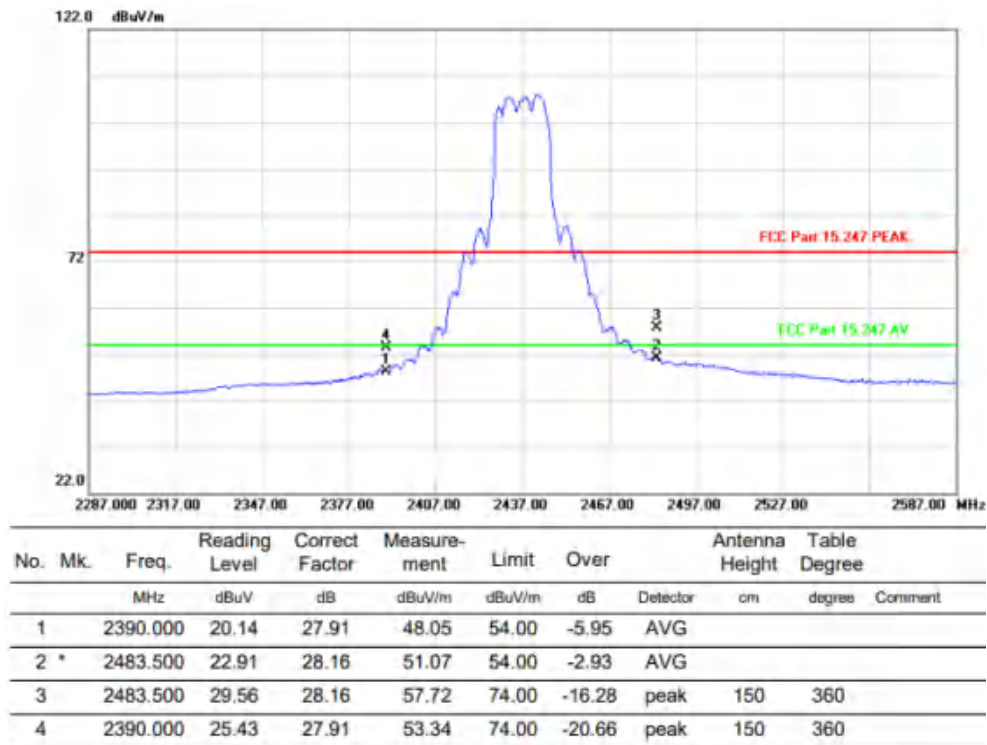
Test mode: 11N20MIMO

Test Channel: 6

VERTICAL



HORIZONTAL

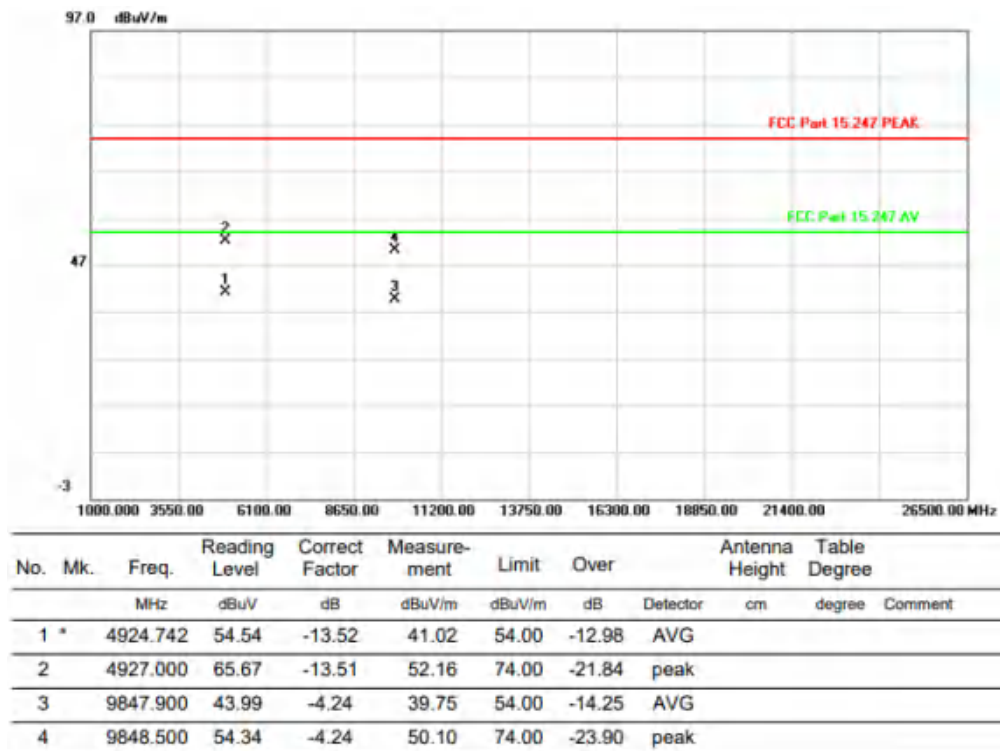
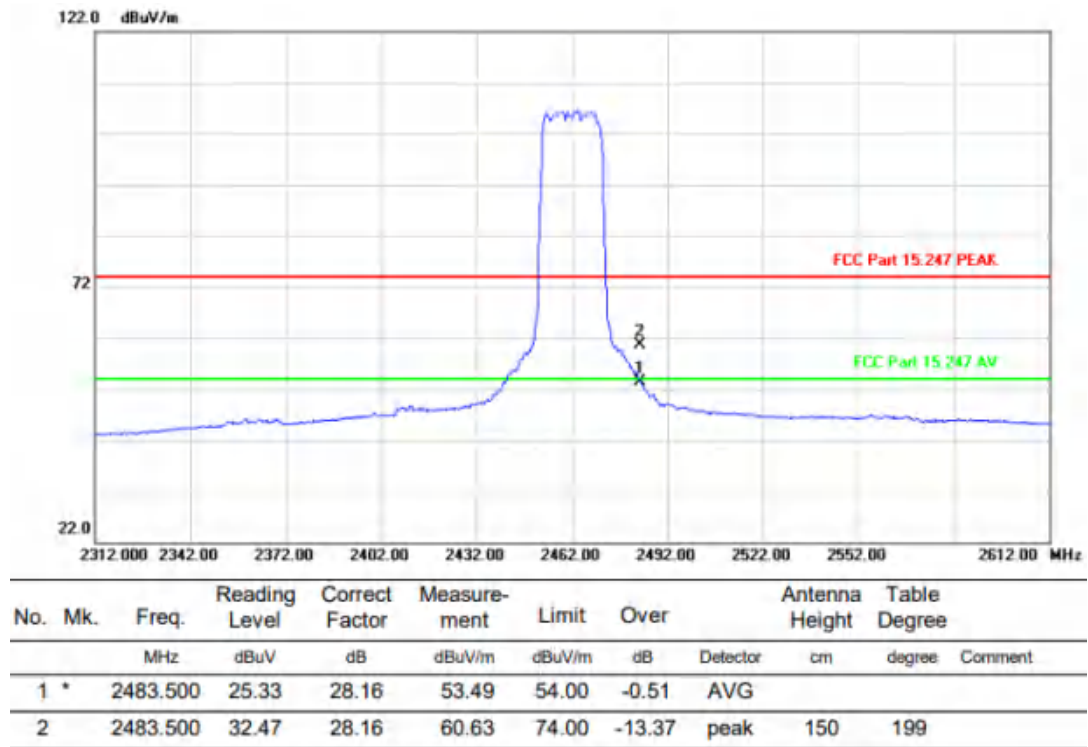


Above 1G (1GHz~18GHz)

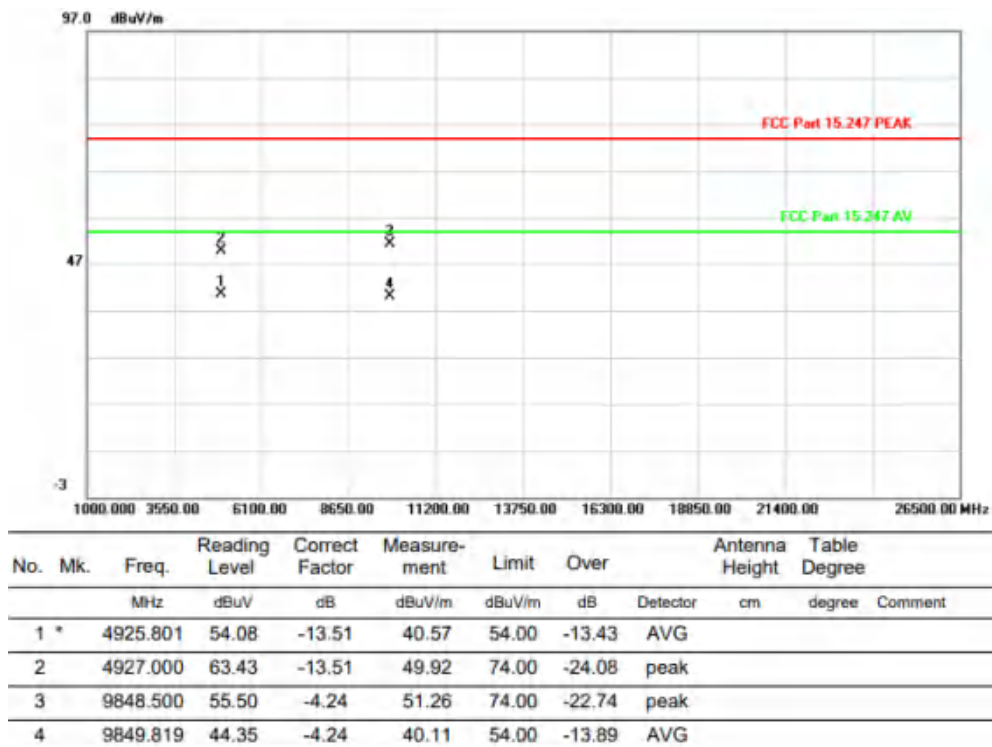
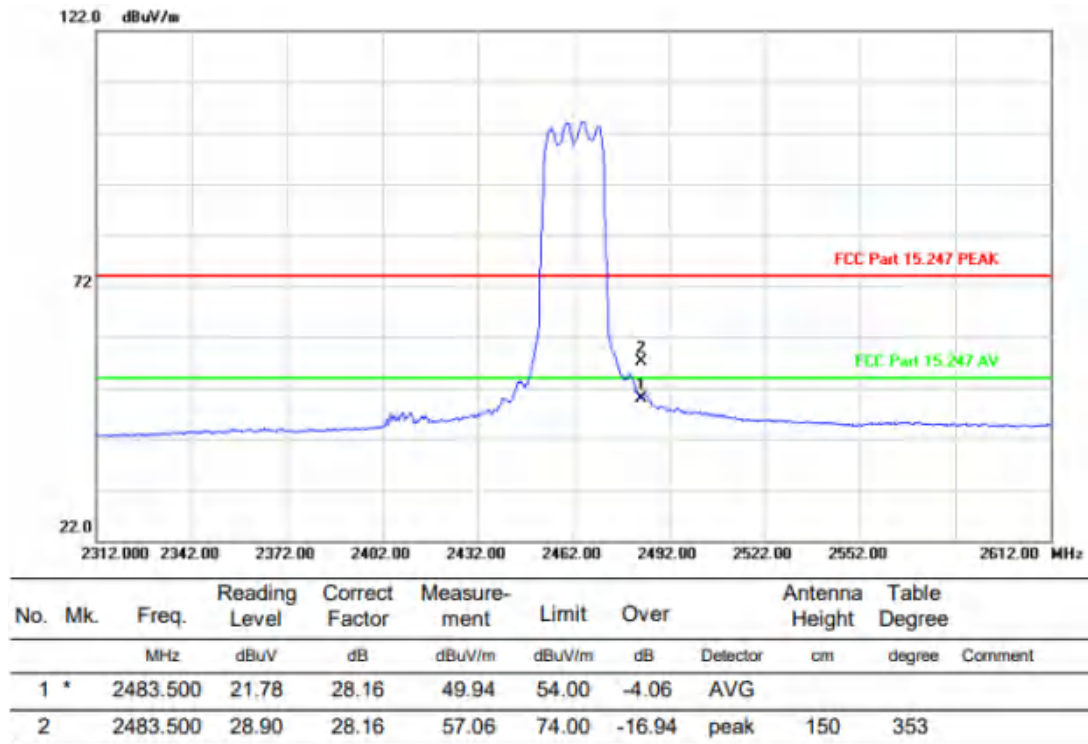
Test mode: 11N20MIMO

Test Channel:11

VERTICAL



HORIZONTAL

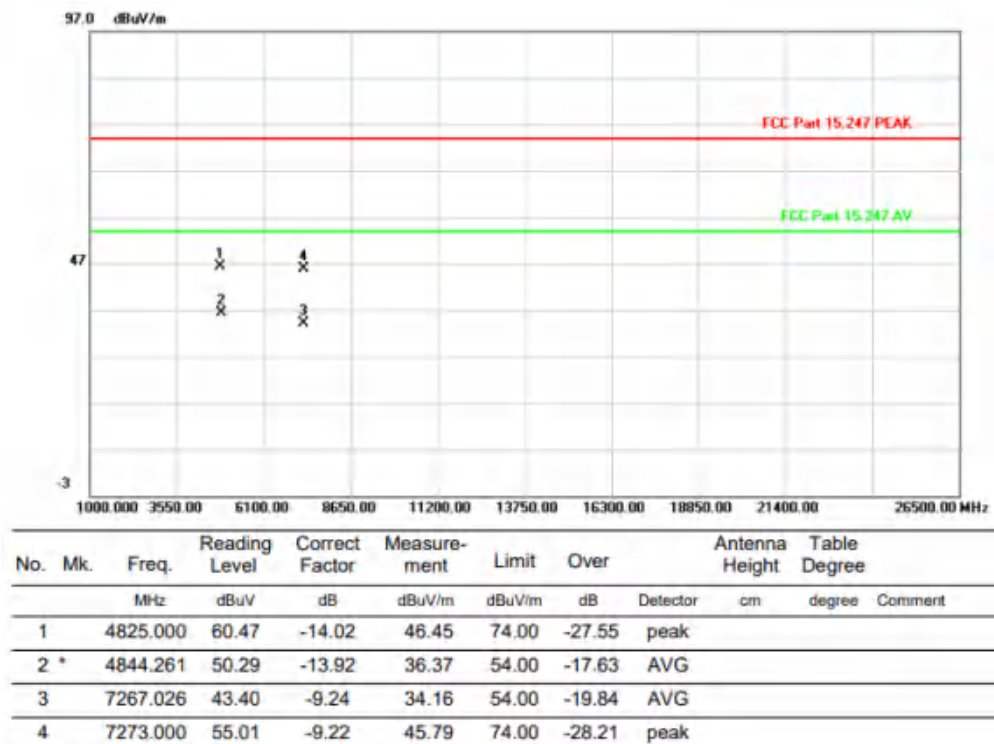
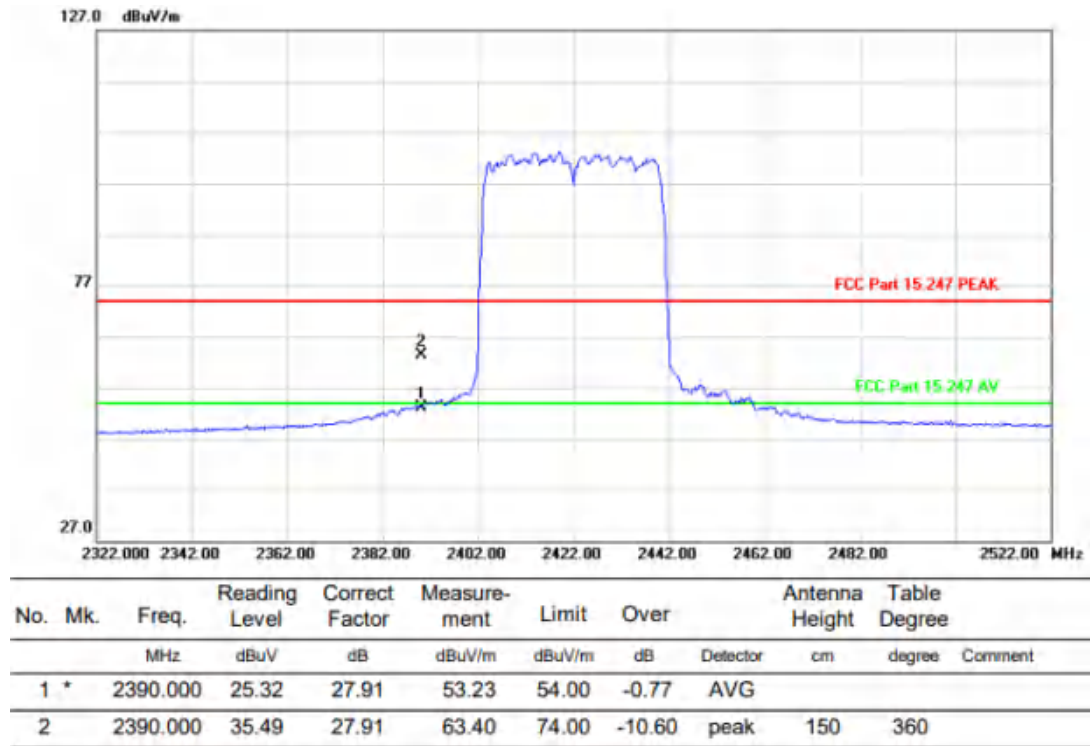


Above 1G (1GHz~18GHz)

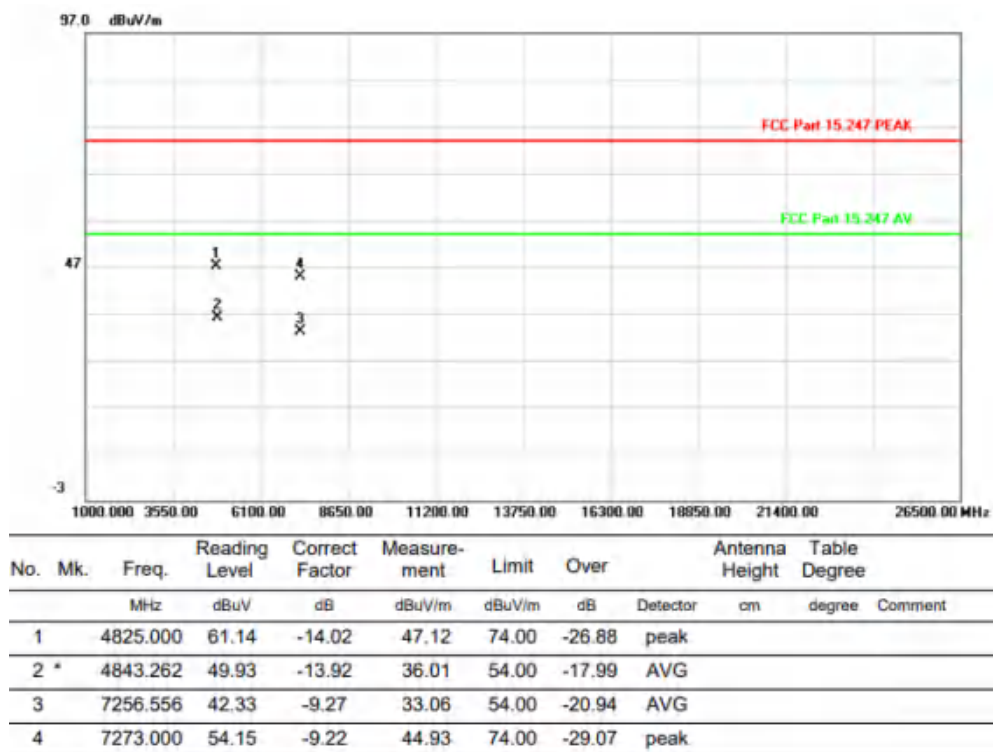
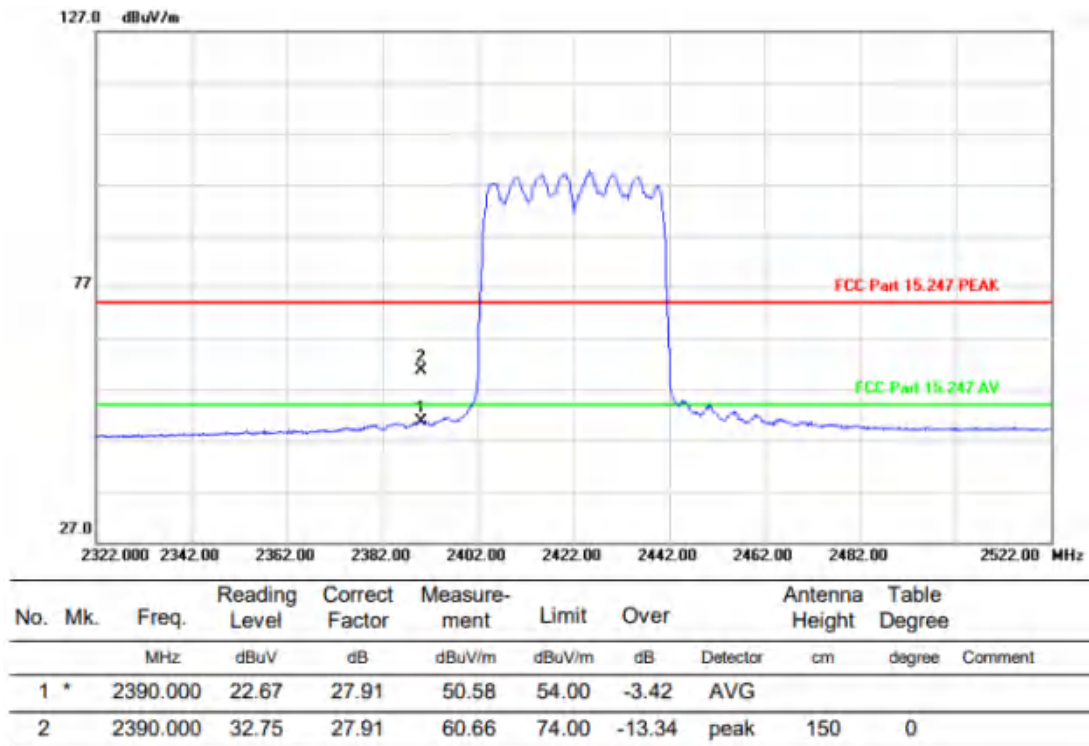
Test mode: 11N40MIMO

Test Channel:3

VERTICAL



HORIZONTAL

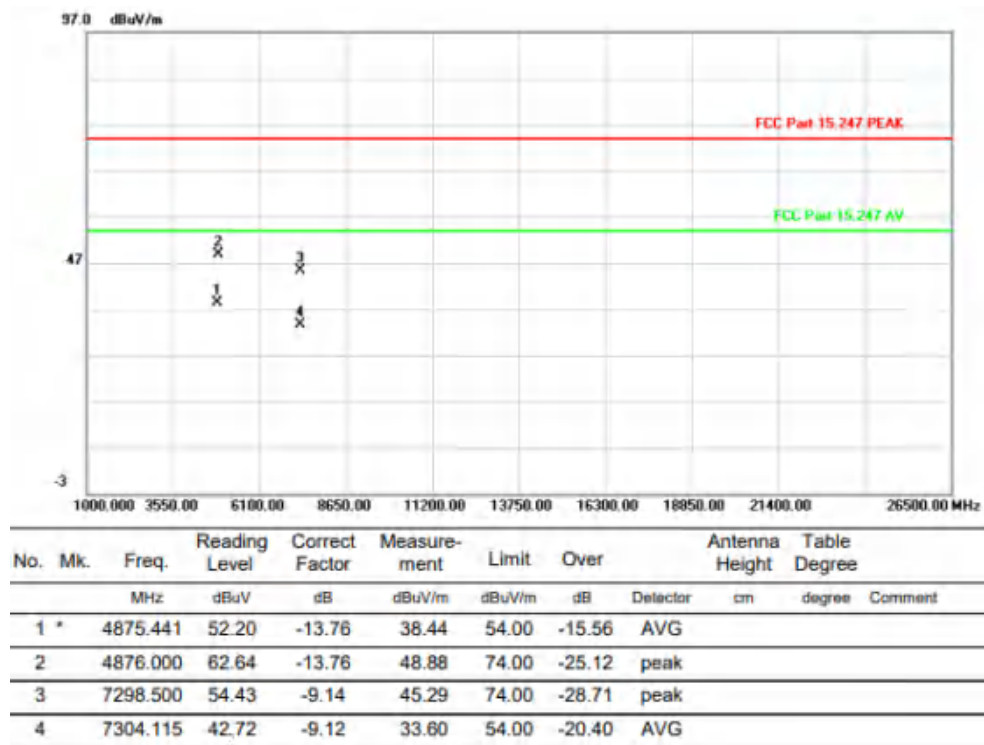
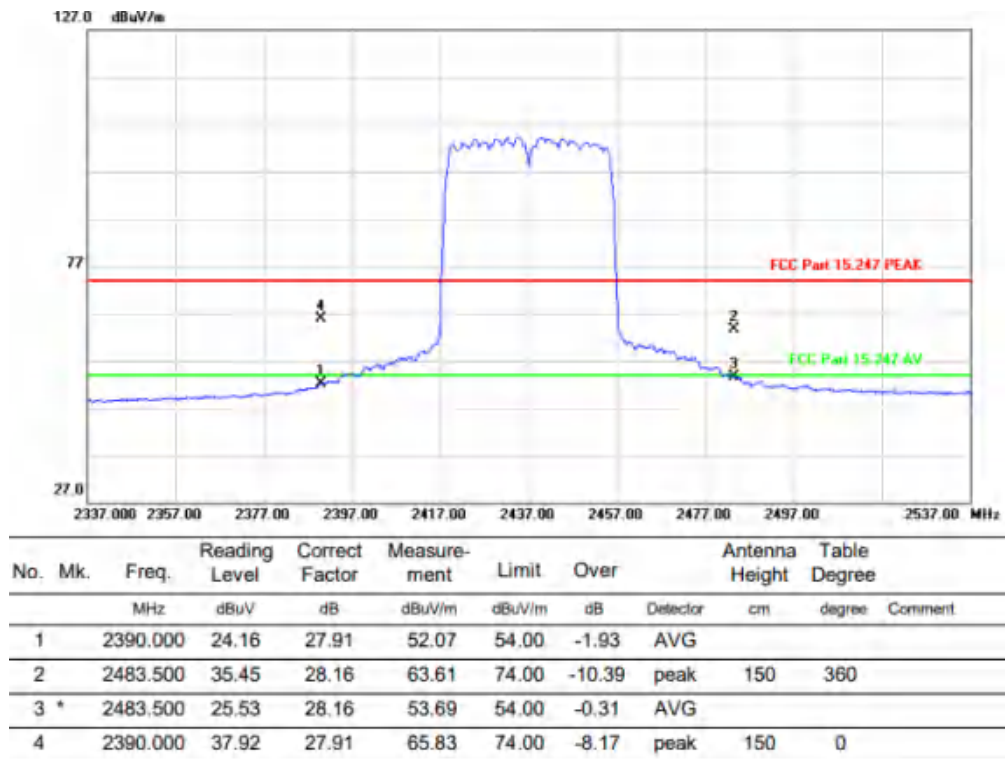


Above 1G (1GHz~18GHz)

Test mode: 11N40MIMO

Test Channel: 6

VERTICAL



HORIZONTAL



No.	Mk.	Freq.	Reading Level	Correct Factor	Measurement	Limit	Over	Antenna Height	Table Degree
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	cm	degree
1		2390.000	22.87	27.91	50.78	54.00	-3.22	AVG	
2		2483.500	29.49	28.16	57.65	74.00	-16.35	peak	150
3 *		2483.500	23.42	28.16	51.58	54.00	-2.42	AVG	0
4		2390.000	34.02	27.91	61.93	74.00	-12.07	peak	150



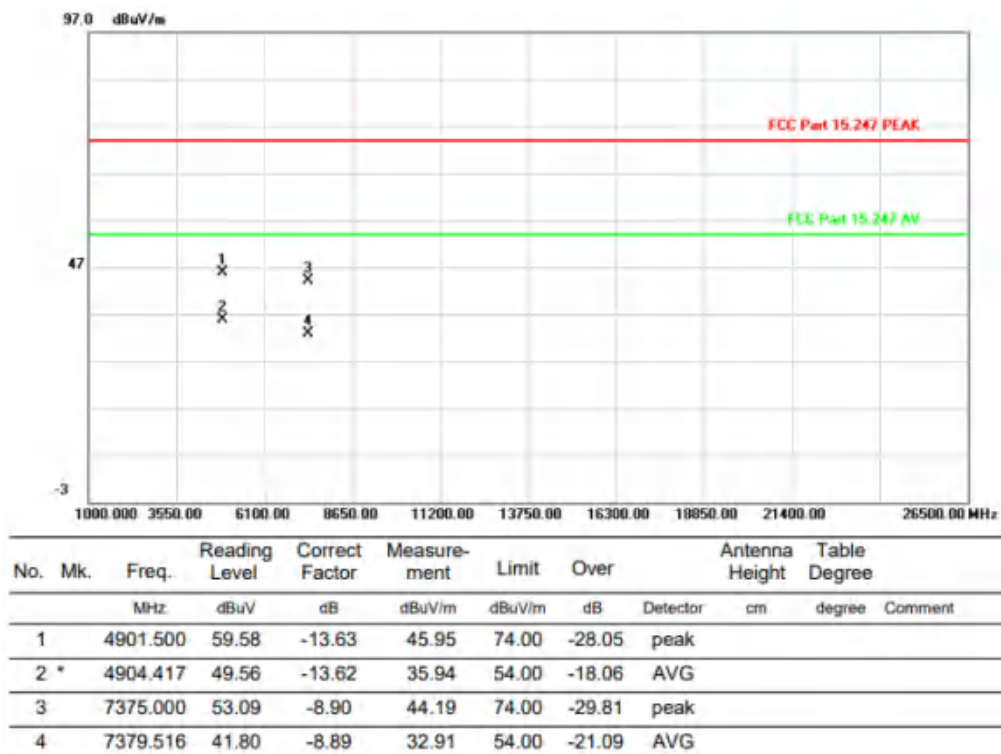
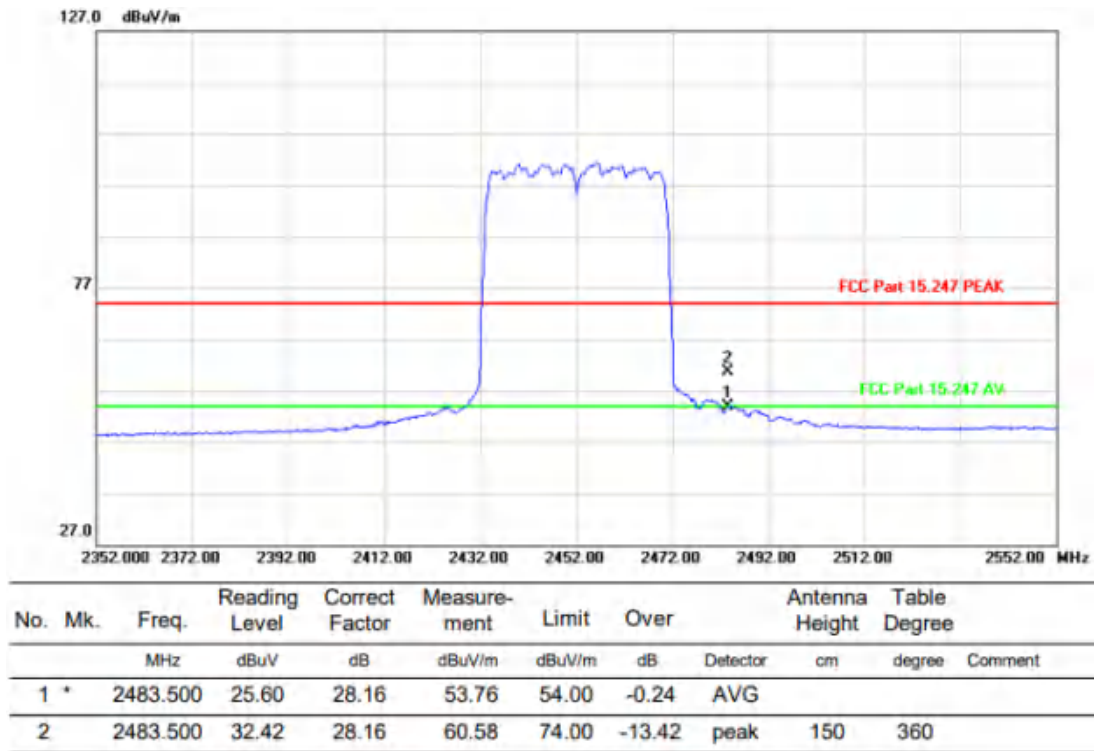
No.	Mk.	Freq.	Reading Level	Correct Factor	Measurement	Limit	Over	Antenna Height	Table Degree
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	cm	degree
1 *		4875.441	52.20	-13.76	38.44	54.00	-15.56	AVG	
2		4876.000	62.64	-13.76	48.88	74.00	-25.12	peak	
3		7298.500	54.43	-9.14	45.29	74.00	-28.71	peak	
4		7304.115	42.72	-9.12	33.60	54.00	-20.40	AVG	

Above 1G (1GHz~18GHz)

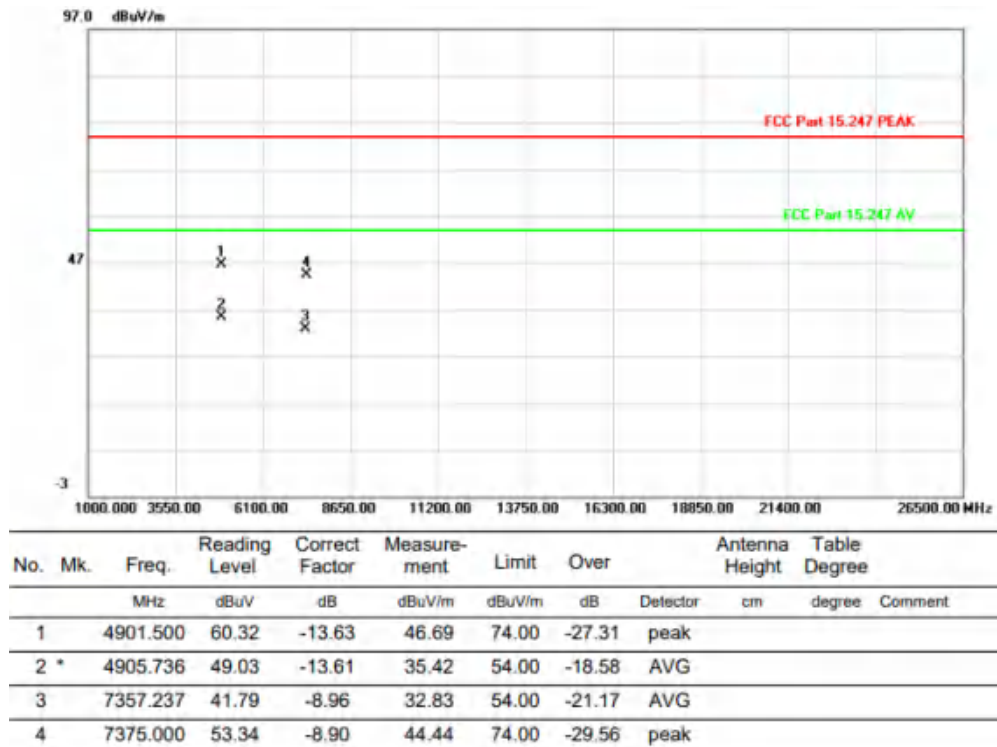
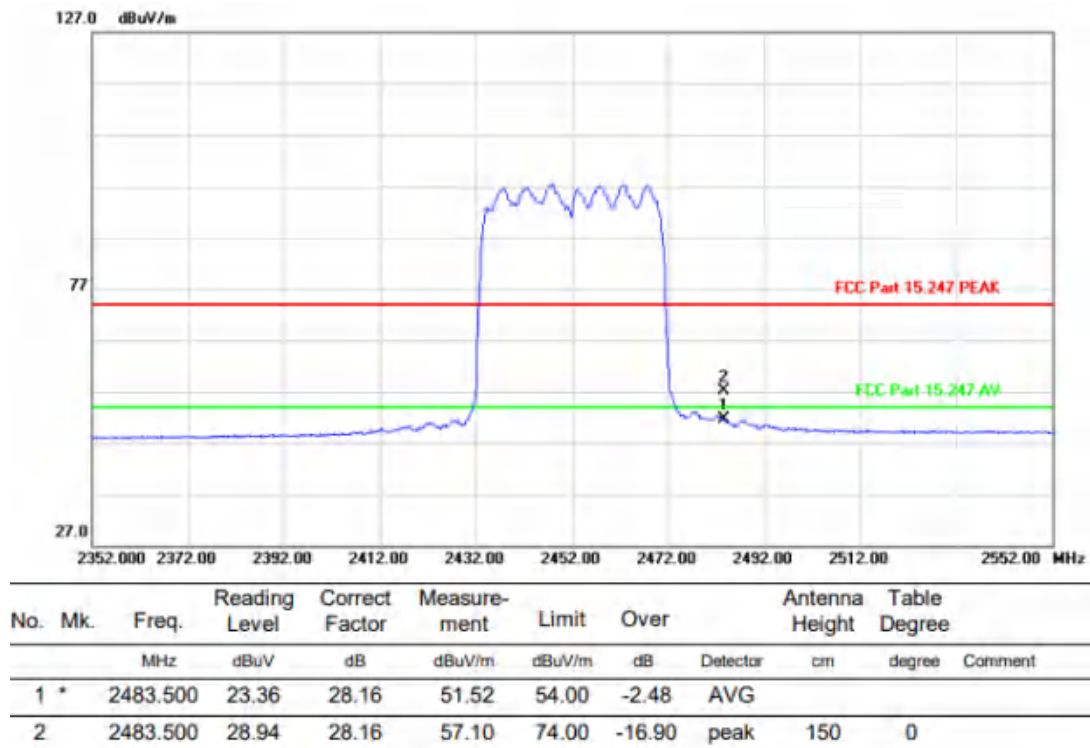
Test mode: 11N40MIMO

Test Channel:9

VERTICAL



HORIZONTAL

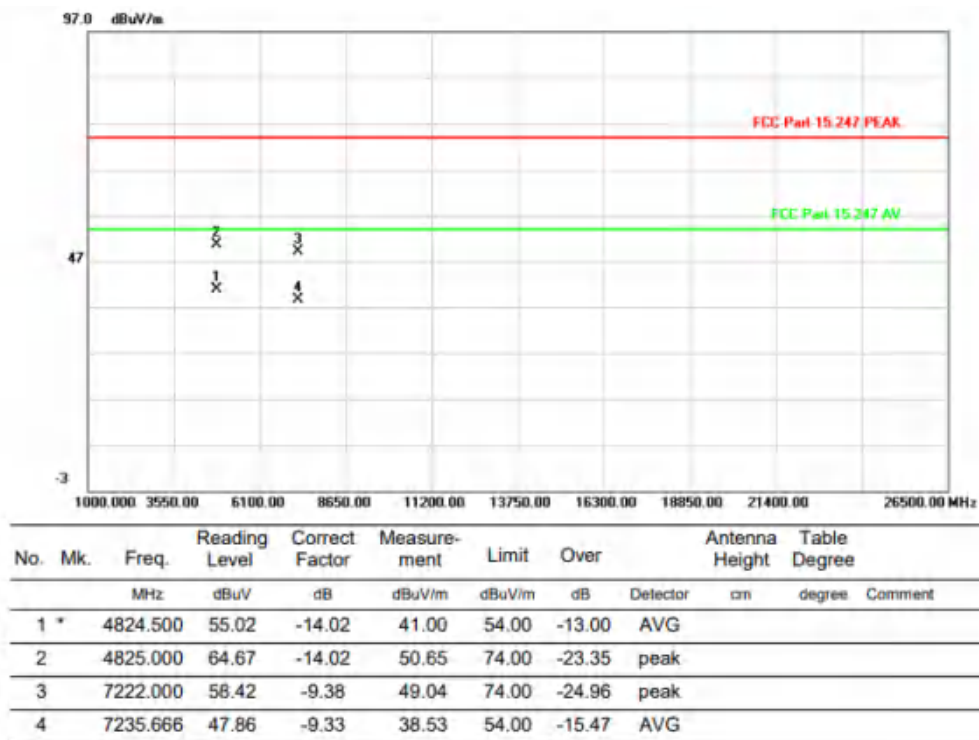
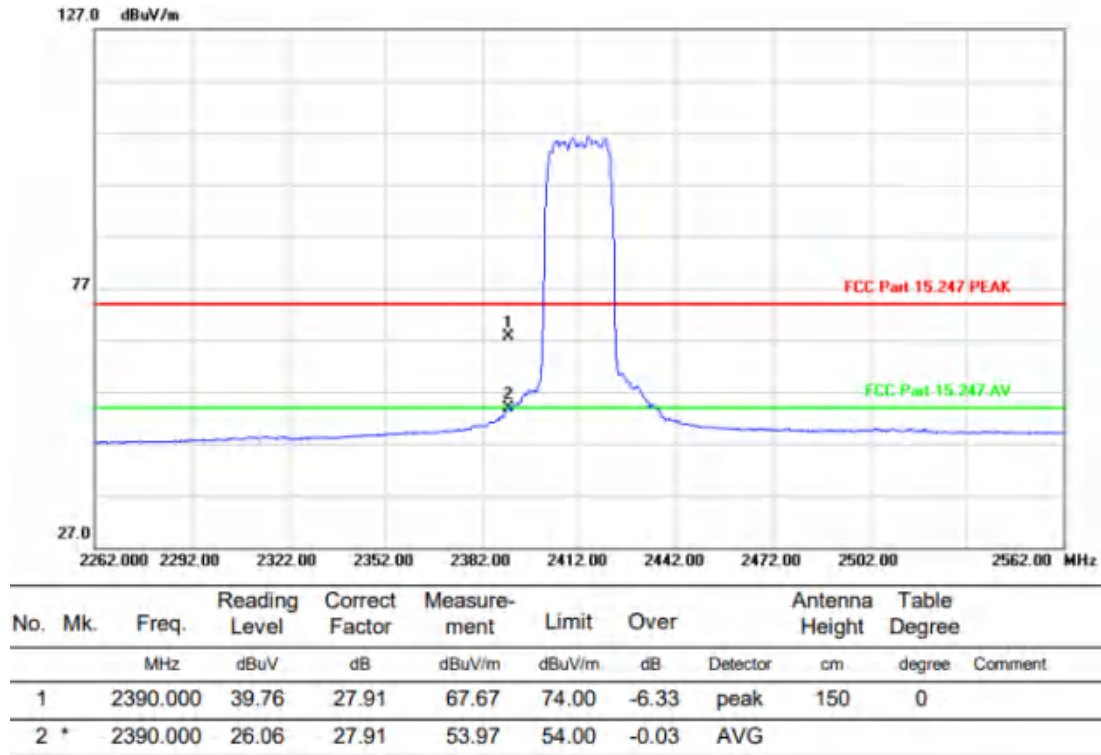


Above 1G (1GHz~18GHz)

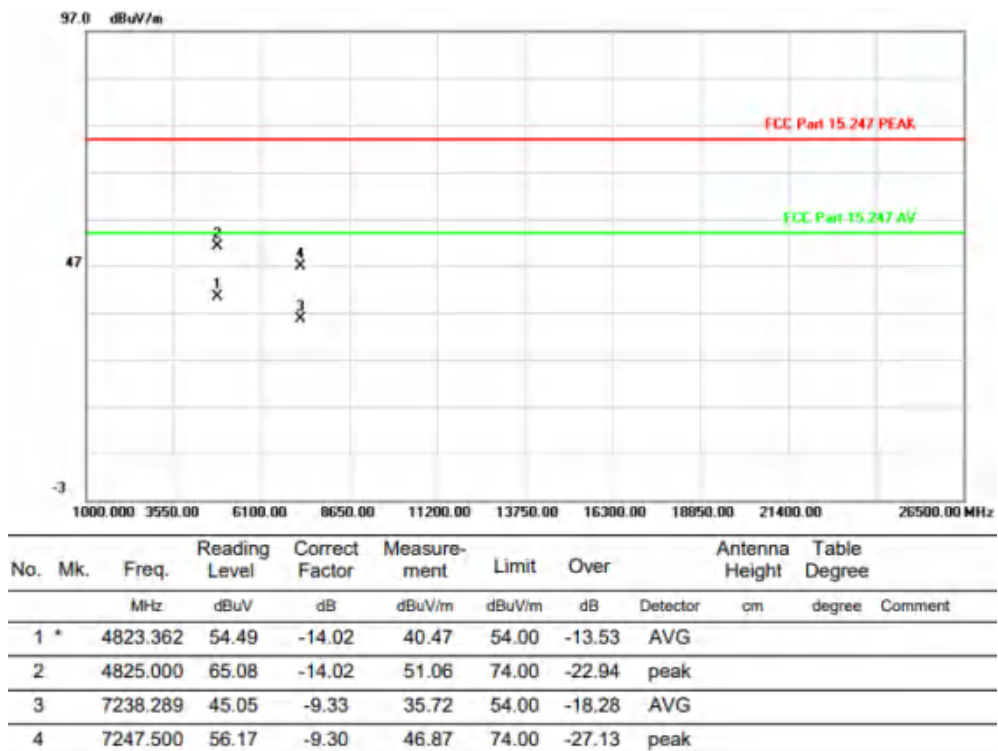
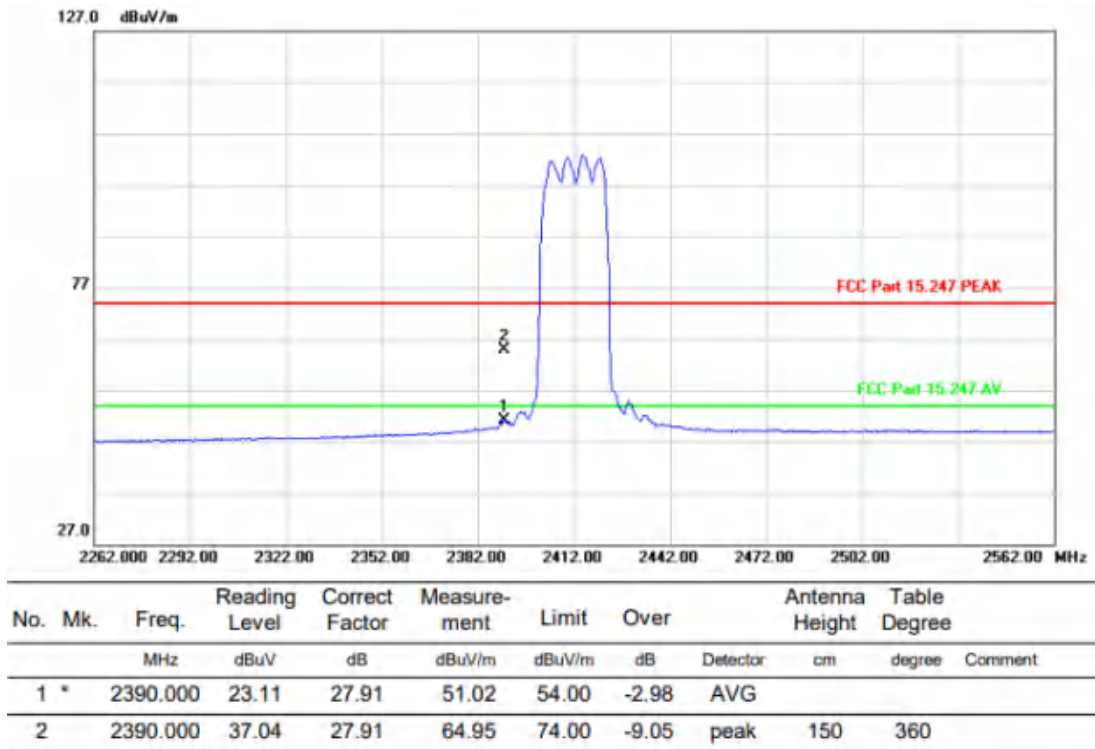
Test mode: 11AX20MIMO

Test Channel:1

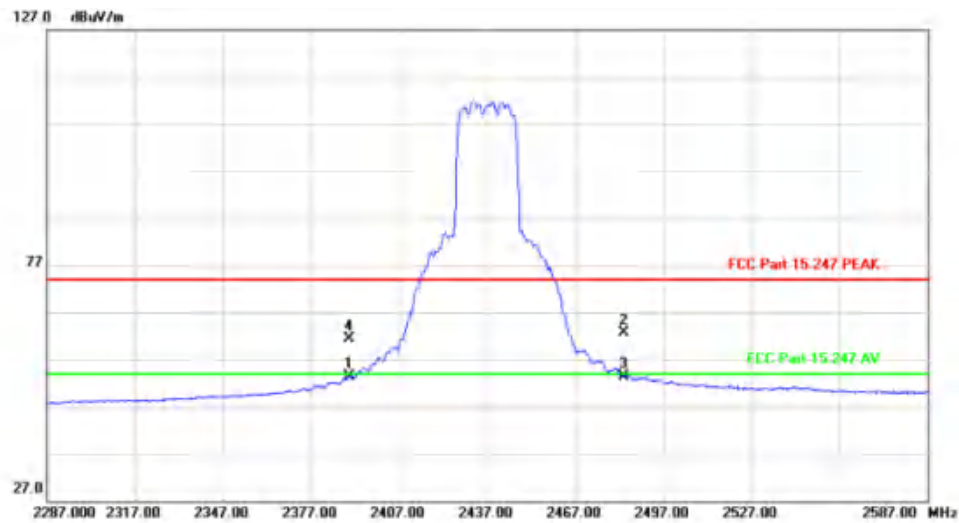
VERTICAL



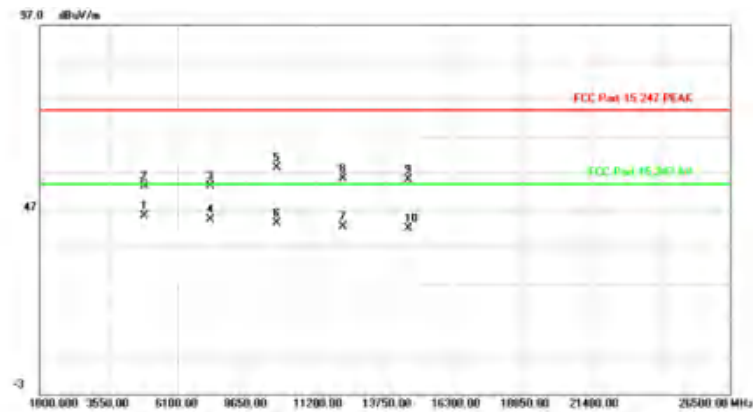
HORIZONTAL



VERTICAL

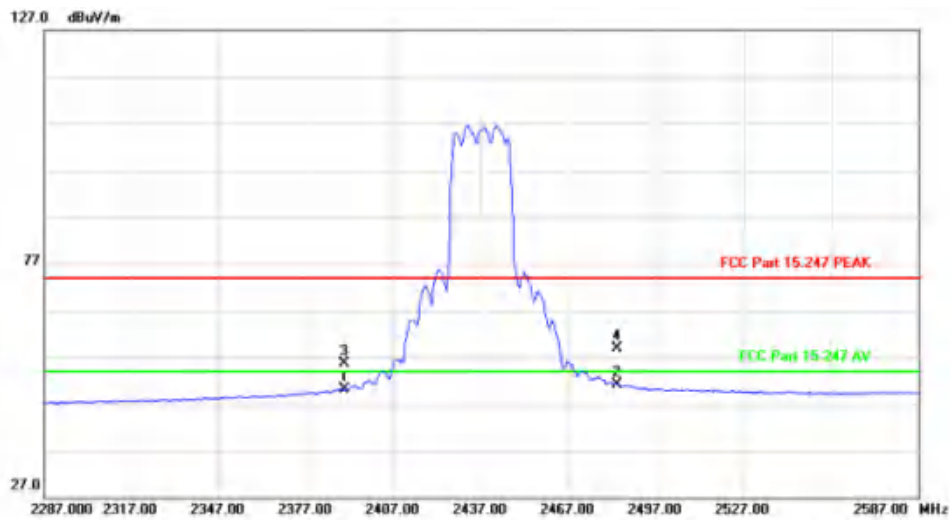


No.	Mk.	Freq.	Reading Level	Correct Factor	Measurement	Limit	Over	Antenna Height	Table Degree	
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	cm	degree	Comment
1		2390.000	25.42	27.91	53.33	54.00	-0.67	AVG		
2		2483.500	34.45	28.16	62.61	74.00	-11.39	peak	150	148
3 *		2483.500	25.32	28.16	53.48	54.00	-0.52	AVG		
4		2390.000	33.58	27.91	61.49	74.00	-12.51	peak	150	343



No.	Mk.	Freq.	Reading Level	Correct Factor	Measurement	Limit	Over	Antenna Height	Table Degree	
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	cm	degree	Comment
1 *		4874.416	59.11	-13.77	45.34	54.00	-8.66	AVG		
2		4875.500	67.09	-13.76	53.33	74.00	-20.67	peak		
3		7298.500	62.53	-9.14	53.39	74.00	-20.61	peak		
4		7306.812	53.43	-9.11	44.32	54.00	-9.68	AVG		
5		9746.500	62.51	-4.25	58.26	74.00	-15.74	peak		
6		9747.738	47.73	-4.25	43.48	54.00	-10.52	AVG		
7		12187.907	44.66	-2.30	42.36	54.00	-11.64	AVG		
8		12194.500	57.74	-2.31	55.43	74.00	-18.57	peak		
9		14617.000	55.69	-0.54	55.15	74.00	-18.85	peak		
10		14625.792	42.50	-0.52	41.98	54.00	-12.02	AVG		

HORIZONTAL



No.	Mk.	Freq.	Reading Level	Correct Factor	Measurement	Limit	Over	Antenna Height	Table Degree
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	cm	degree
1		2390.000	22.21	27.91	50.12	54.00	-3.88	AVG	
2 *		2483.500	23.08	28.16	51.24	54.00	-2.76	AVG	
3		2390.000	27.80	27.91	55.71	74.00	-18.29	peak	150
4		2483.500	30.64	28.16	58.80	74.00	-15.20	peak	150



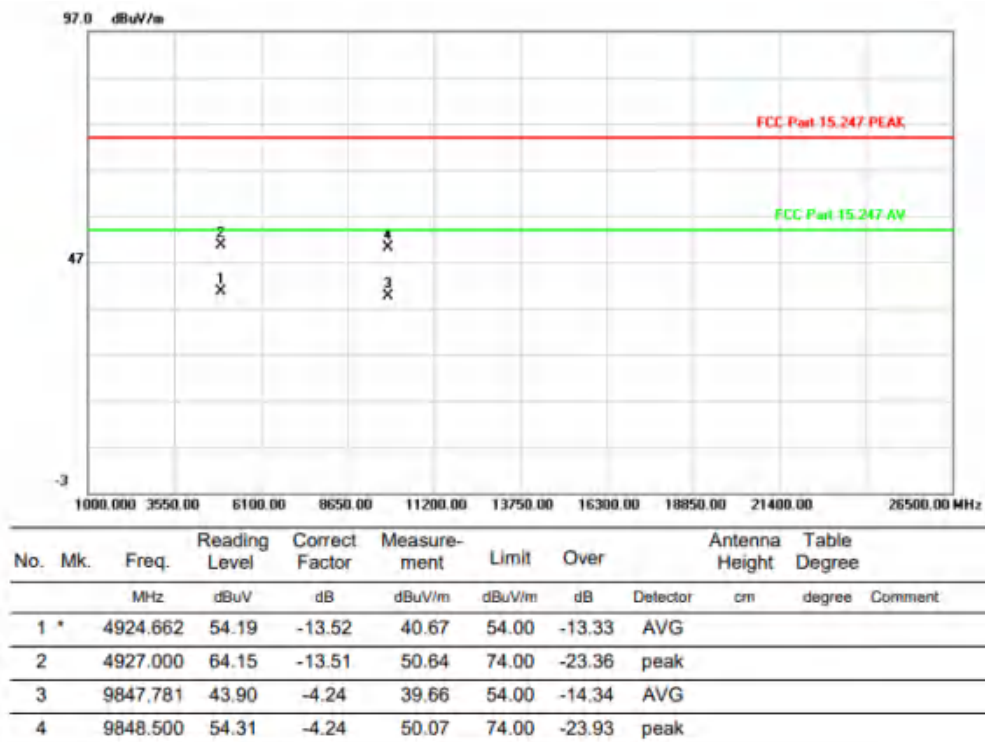
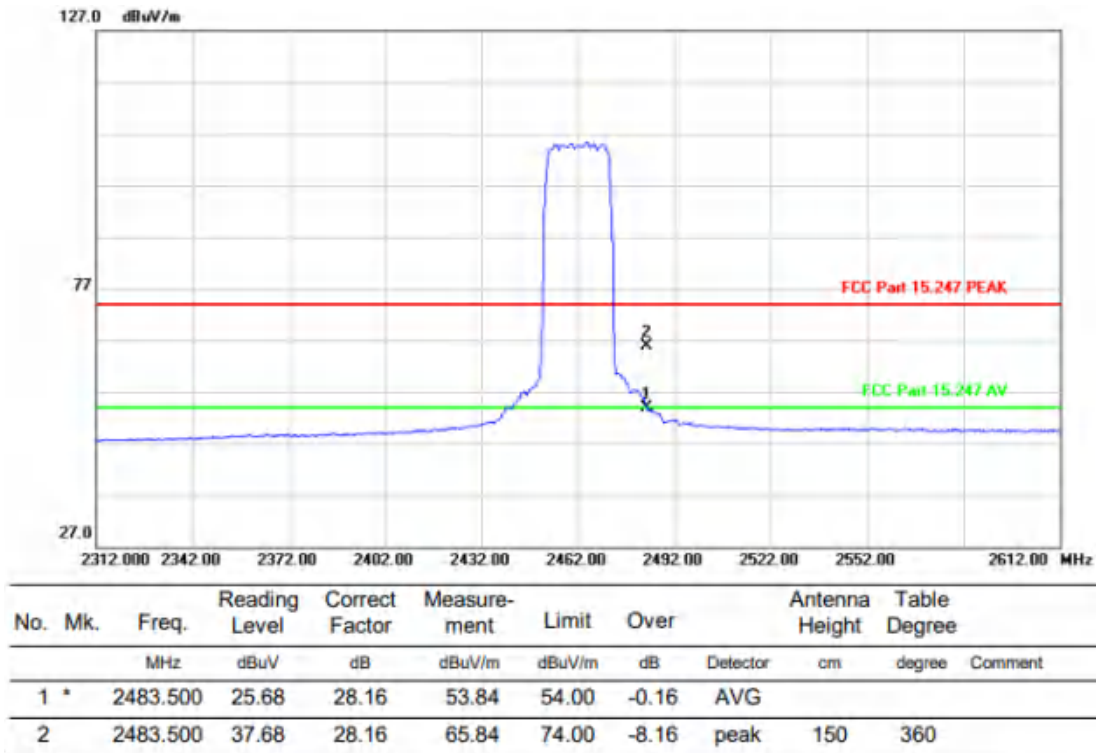
No.	Mk.	Freq.	Reading Level	Correct Factor	Measurement	Limit	Over	Antenna Height	Table Degree
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	cm	degree
1		4873.143	58.38	-13.77	44.61	54.00	-9.39	AVG	
2		4876.000	67.69	-13.76	53.93	74.00	-20.07	peak	
3		7298.500	60.22	-9.14	51.08	74.00	-22.92	peak	
4		7310.887	49.68	-9.10	40.58	54.00	-13.42	AVG	
5		9746.500	67.97	-4.25	63.72	74.00	-10.28	peak	
6 *		9753.454	50.12	-4.24	45.88	54.00	-8.12	AVG	
7		12188.207	47.75	-2.30	45.45	54.00	-8.55	AVG	
8		12194.500	65.44	-2.31	63.13	74.00	-10.87	peak	
9		14617.000	56.01	-0.54	55.47	74.00	-18.53	peak	
10		14622.615	43.71	-0.52	43.19	54.00	-10.81	AVG	

Above 1G (1GHz~18GHz)

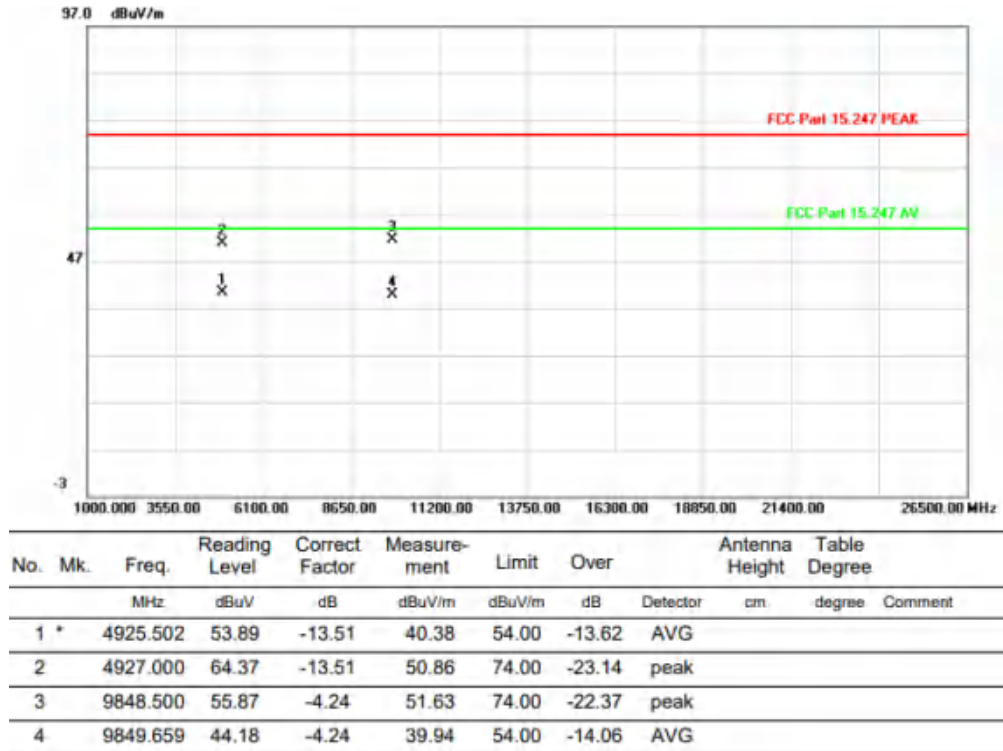
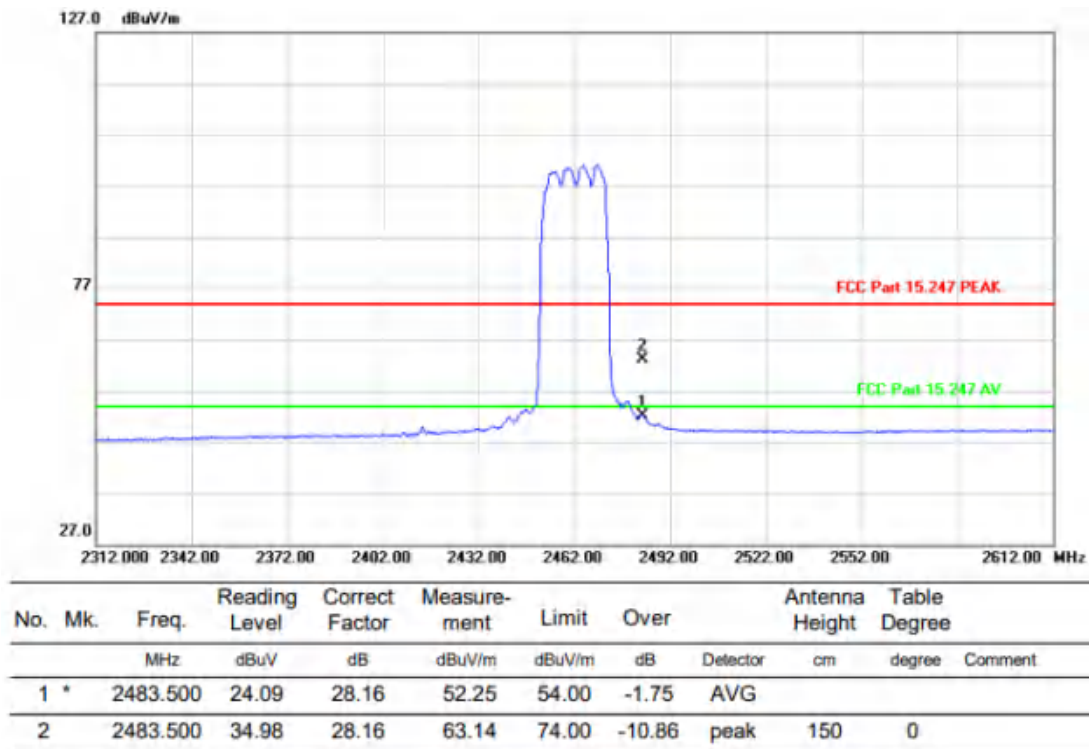
Test mode: 11AX20MIMO

Test Channel:11

VERTICAL



HORIZONTAL

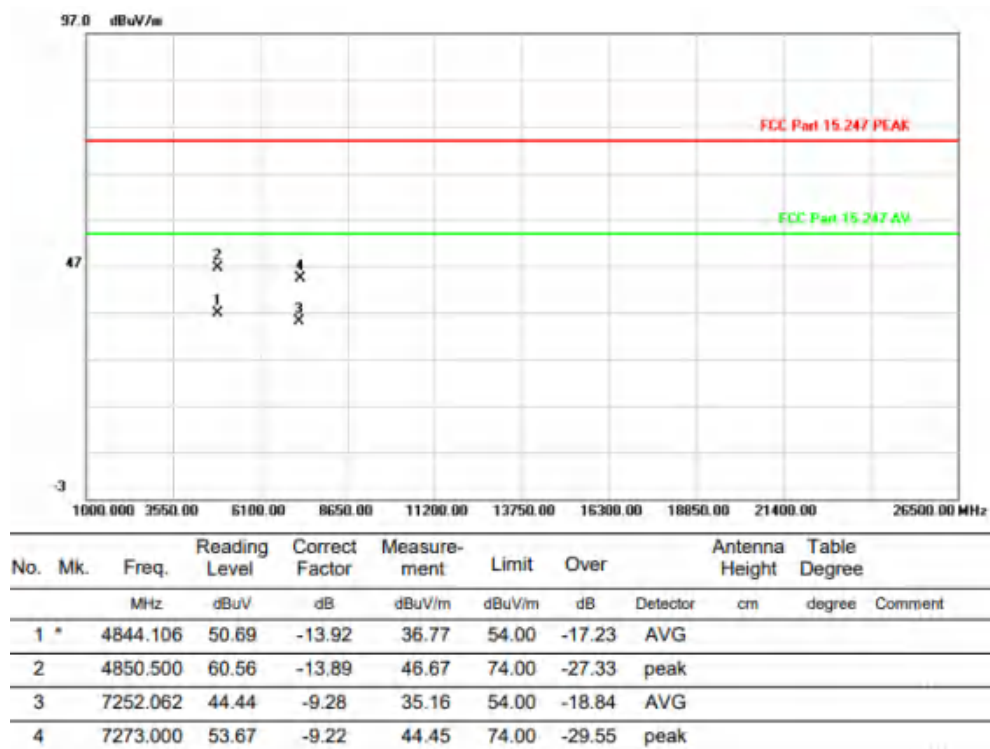
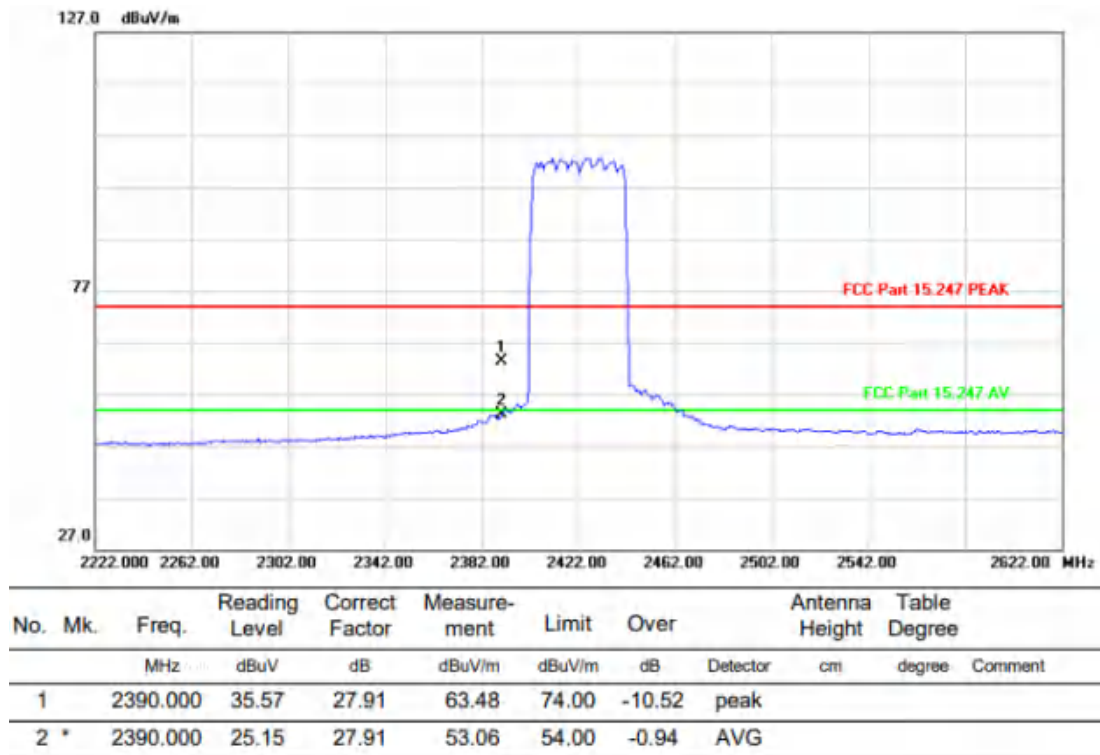


Above 1G (1GHz~18GHz)

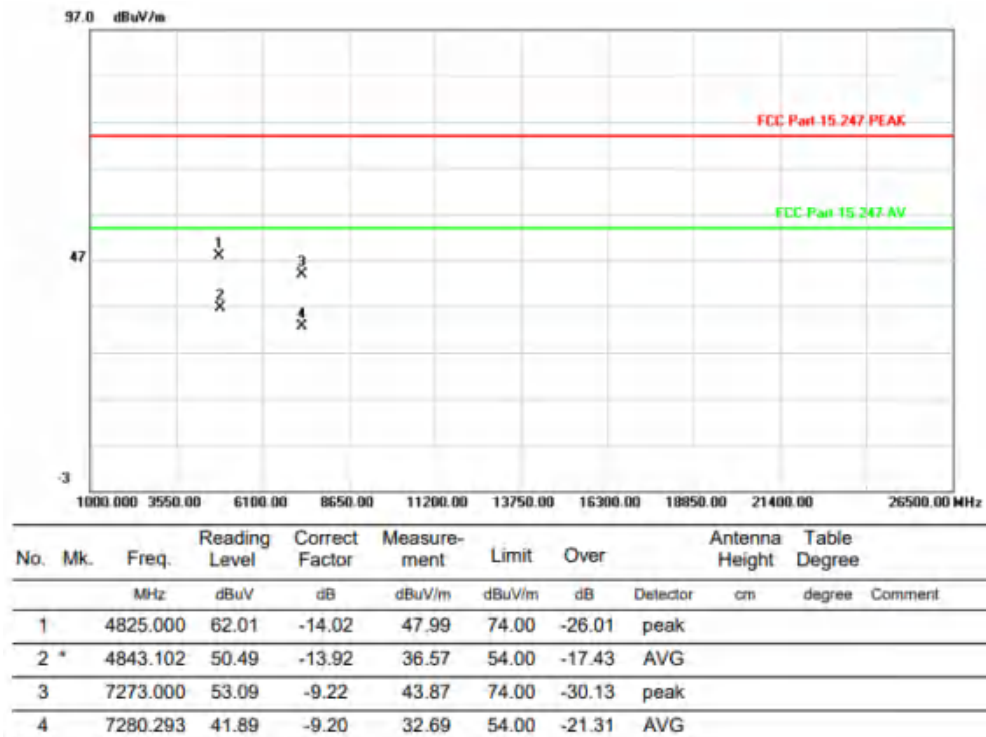
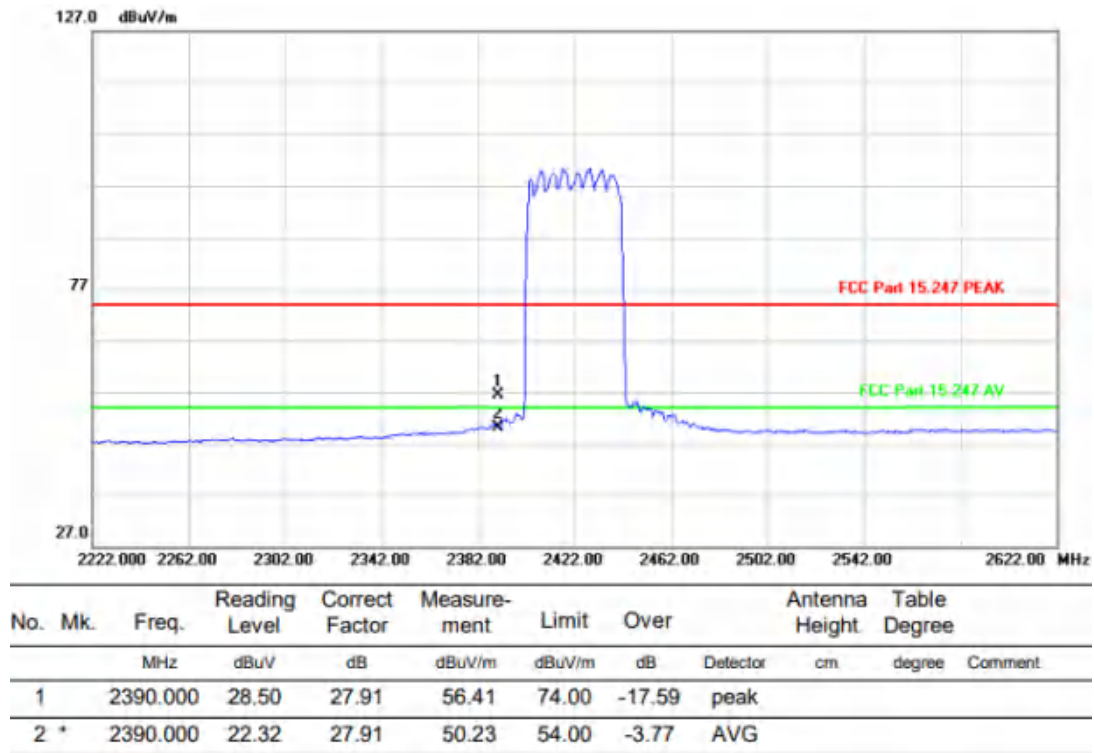
Test mode: 11AX40MIMO

Test Channel:3

VERTICAL



HORIZONTAL

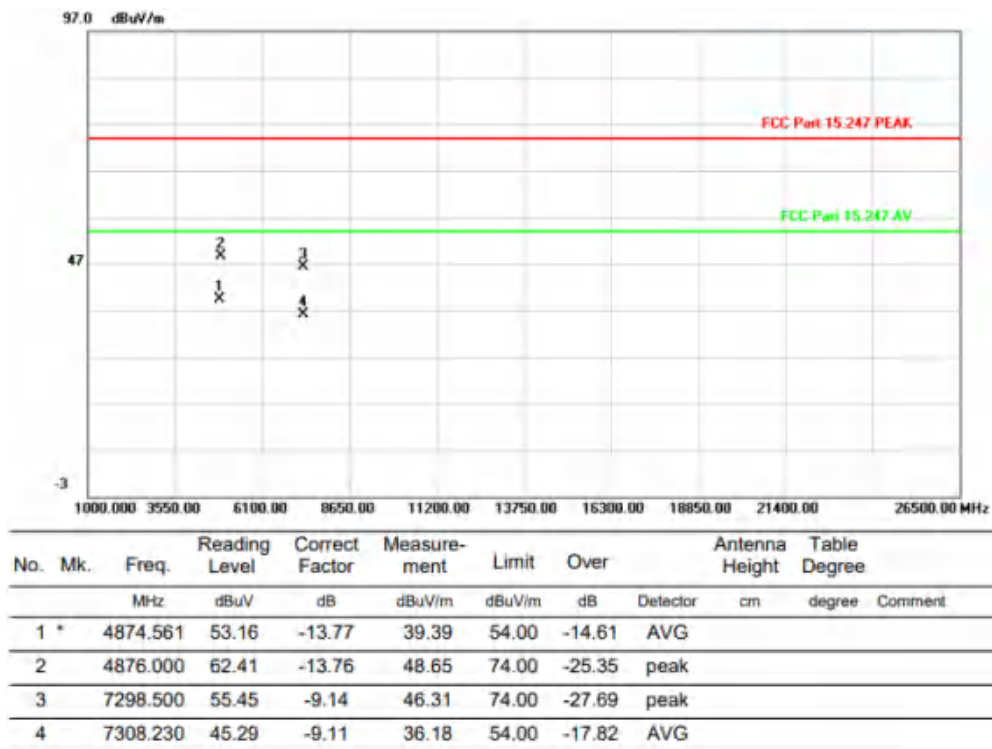
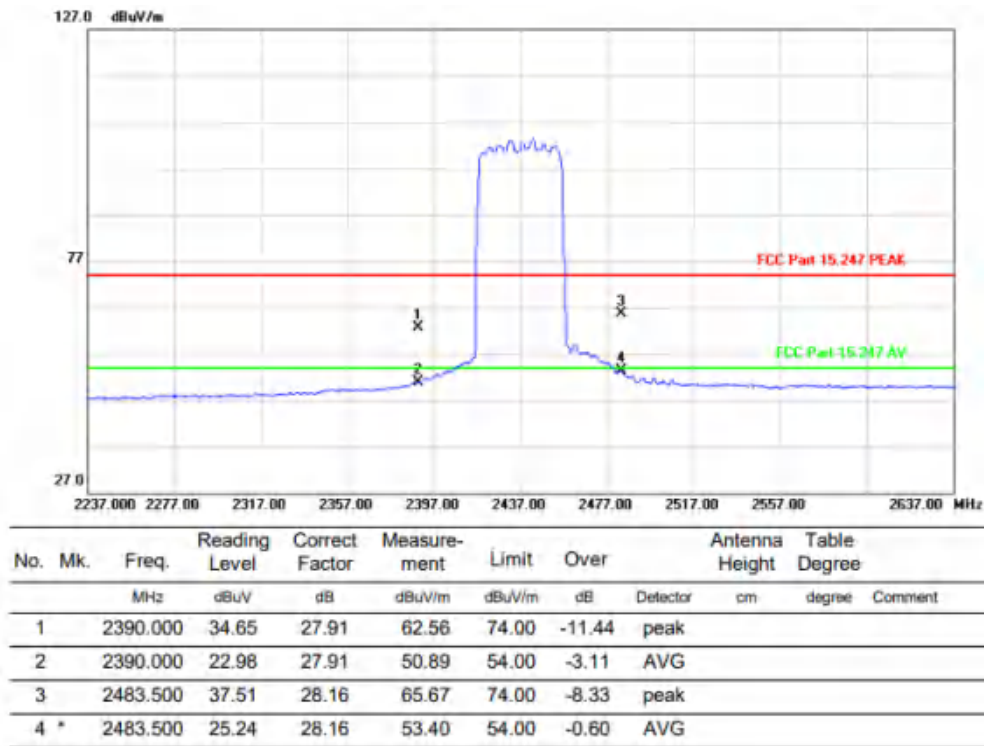


Above 1G (1GHz~18GHz)

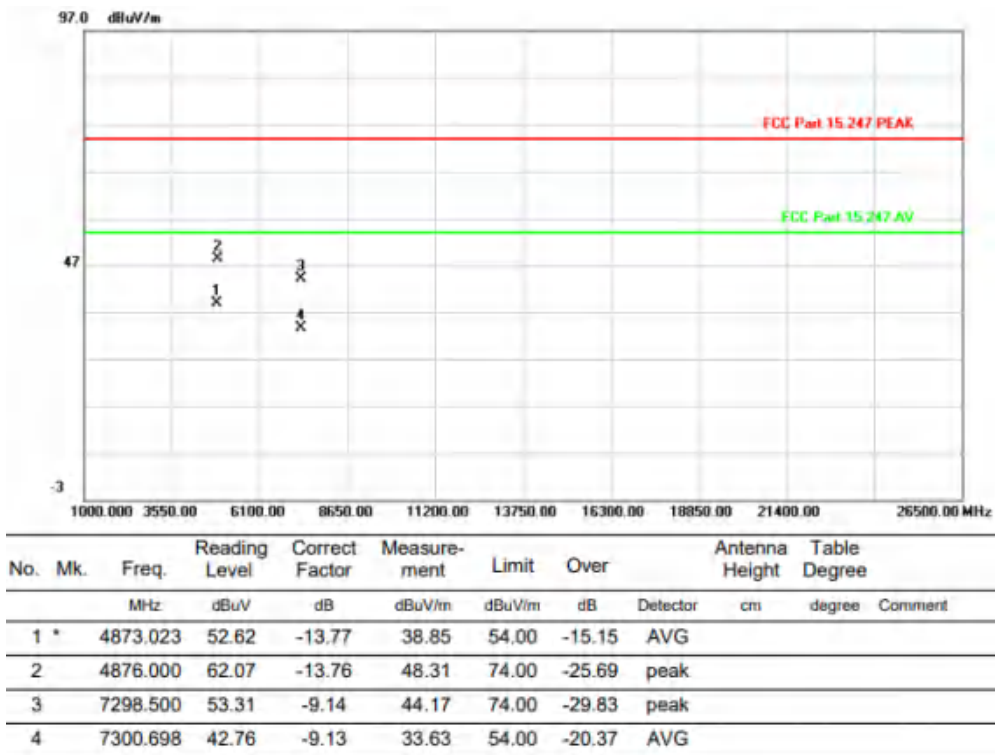
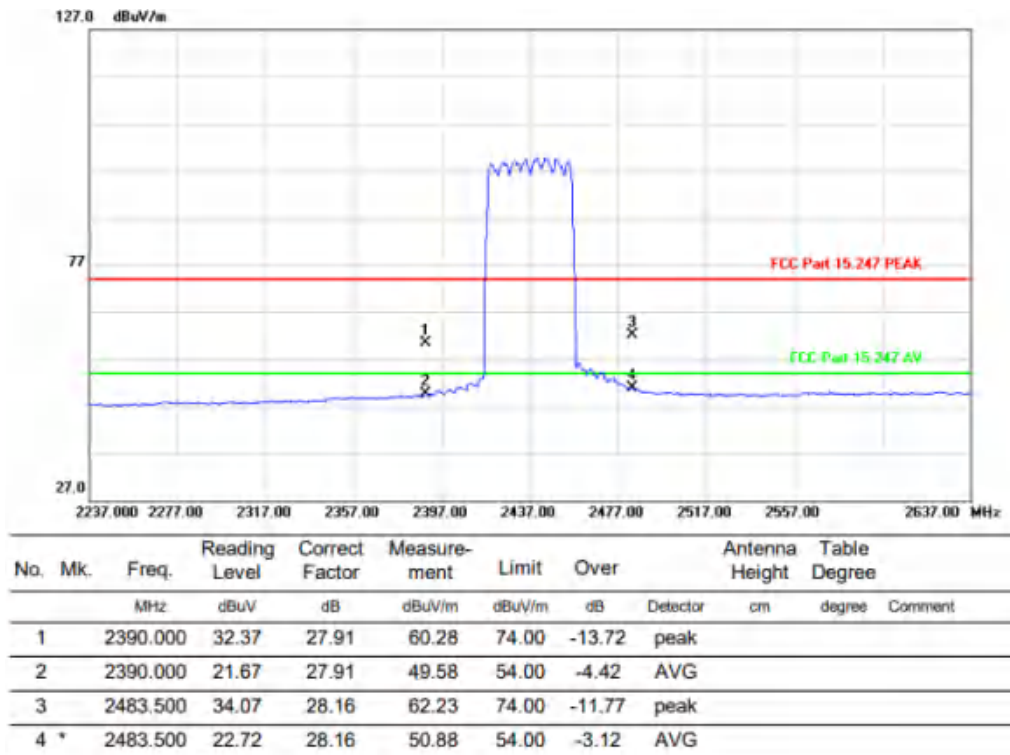
Test mode: 11AX40MIMO

Test Channel: 6

VERTICAL



HORIZONTAL

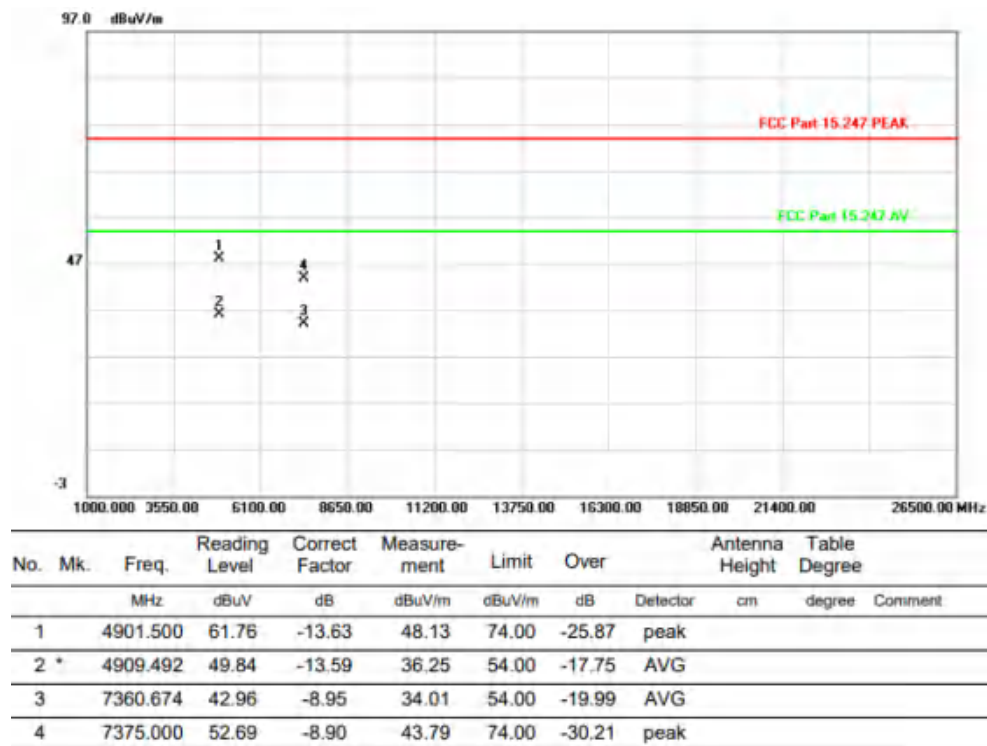
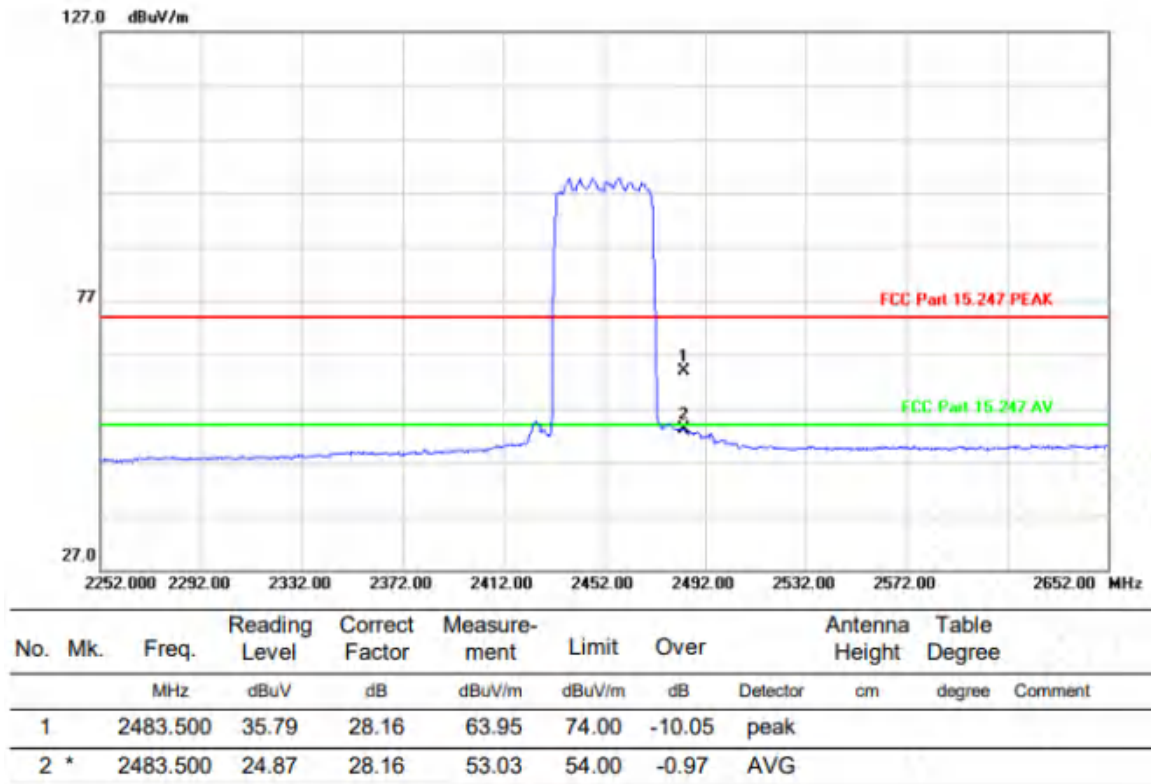


Above 1G (1GHz~18GHz)

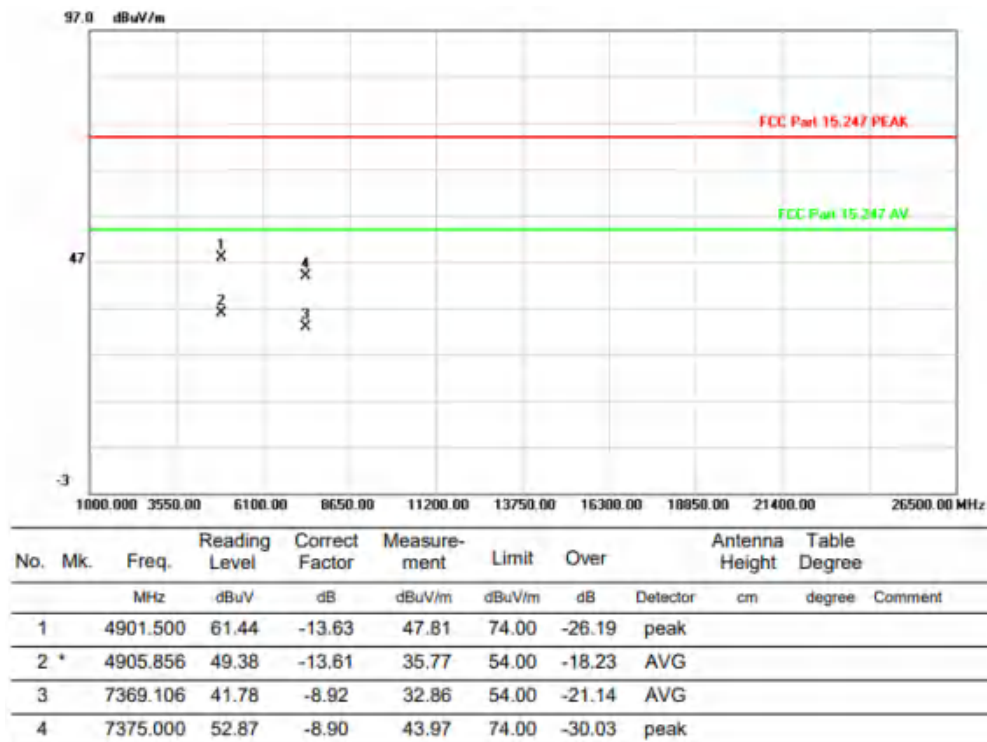
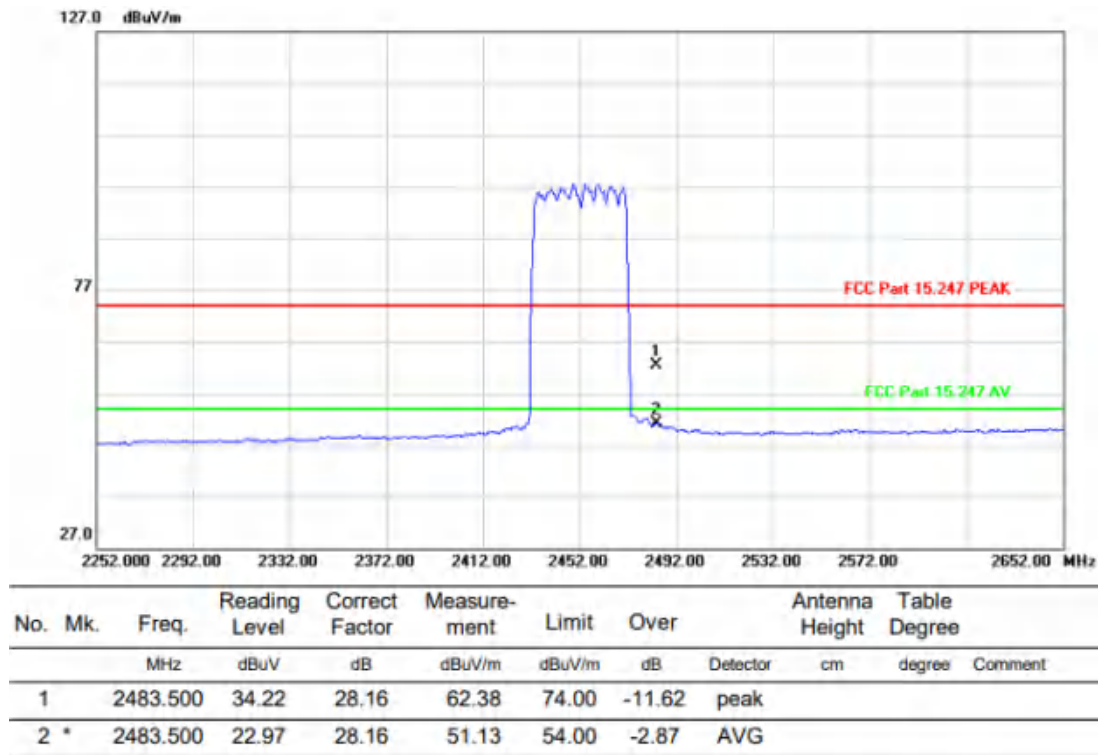
Test mode: 11AX40MIMO

Test Channel:9

VERTICAL



HORIZONTAL



Note: All the EUT's emissions had been evaluated for simultaneous transmission with the WIFI 2.4GHz and WIFI 5GHz, and there were no any additional or worse emissions found.

3.3 Spurious Emission at Antenna Port

3.3.1 Limit

In any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement, provided the transmitter demonstrates compliance with the peak Output Power limits. If the transmitter complies with the Output Power limits based on the use of RMS averaging over a time interval, as permitted under paragraph (b)(3) of this section, the attenuation required under this paragraph shall be 30 dB instead of 20 dB. Attenuation below the general limits specified in Section 15.209(a) is not required. In addition, radiated emissions which fall in the restricted bands, as defined in Section 15.205(a), must also comply with the radiated emission limits specified in Section 15.209(a) (see Section 15.205(c)).

3.3.2 Test Procedure

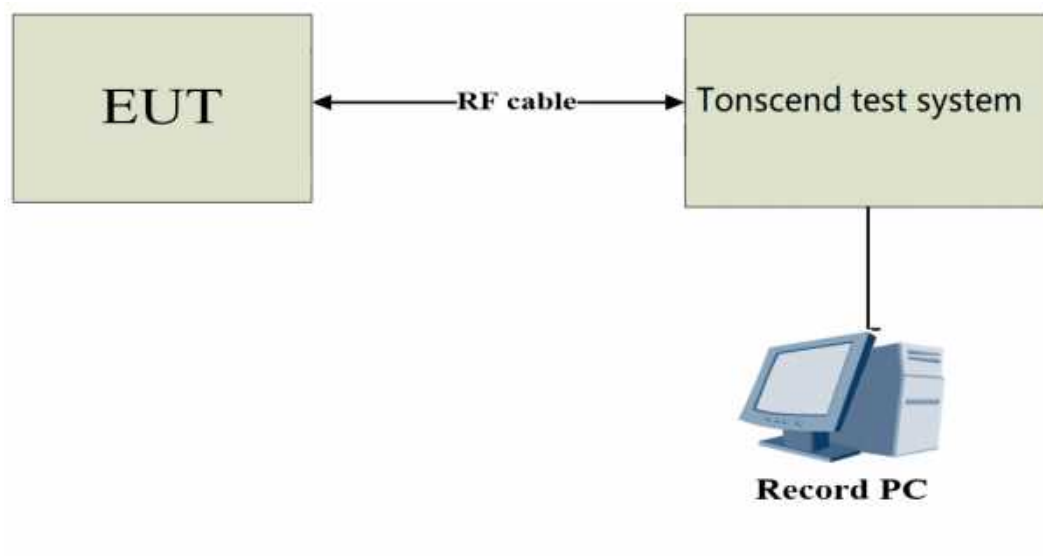
Test Method	
☒ Conducted Measurement	☐ Radiated Measurement
Test Channels	
☒ Lowest, Middle and Highest Channel	☐ Lowest and Highest Channel
Environmental conditions	
☒ Normal	☐ Normal and Extreme
Note: ☒ : Test ☐ : No Test	

a) The EUT was directly connected to the tonscond test system and antenna output port as show in the block diagram below.

b) Spectrum Setting as below:

Centre Frequency	The centre frequency of the channel under test
Spectrum Parameters	Setting
Start Frequency	30 MHz
Stop Frequency	26.5 GHz
RBW	100 kHz
VBW	300 kHz
Detector	Peak
Trace	Max Hold
Sweep Time	Auto

3.3.3 Test Setup



3.3.4 Test Result

Conducted Band edge measurements

TestMode	Antenna	ChName	Frequency[MHz]	RefLevel[dBm]	Result[dBm]	Limit[dBm]	Verdict
11B-CDD	Ant1	Low	2412	15.98	-37.21	≤-14.02	PASS
	Ant2	Low	2412	17.05	-39.68	≤-12.95	PASS
	Ant3	Low	2412	16.46	-38.22	≤-13.54	PASS
	Ant1	High	2462	16.61	-41.91	≤-13.39	PASS
	Ant2	High	2462	16.69	-42.12	≤-13.31	PASS
	Ant3	High	2462	16.27	-42.28	≤-13.73	PASS
11G-CDD	Ant1	Low	2412	8.08	-36.15	≤-21.92	PASS
	Ant2	Low	2412	7.88	-37.14	≤-22.12	PASS
	Ant3	Low	2412	8.98	-32.91	≤-21.02	PASS
	Ant1	High	2462	7.47	-42.13	≤-22.53	PASS
	Ant2	High	2462	8.44	-41.36	≤-21.57	PASS
	Ant3	High	2462	8.52	-41.92	≤-21.48	PASS
11N20MIMO	Ant1	Low	2412	8.22	-36.48	≤-21.78	PASS
	Ant2	Low	2412	7.47	-36.38	≤-22.53	PASS
	Ant3	Low	2412	6.60	-35.81	≤-23.4	PASS
	Ant1	High	2462	8.58	-40.49	≤-21.42	PASS
	Ant2	High	2462	7.33	-43.53	≤-22.67	PASS
	Ant3	High	2462	7.18	-42.33	≤-22.83	PASS
11N40MIMO	Ant1	Low	2422	3.61	-43.14	≤-26.39	PASS
	Ant2	Low	2422	3.97	-41.96	≤-26.03	PASS
	Ant3	Low	2422	4.35	-40.32	≤-25.65	PASS
	Ant1	High	2452	2.40	-41.89	≤-27.6	PASS
	Ant2	High	2452	2.70	-42.17	≤-27.3	PASS
	Ant3	High	2452	4.00	-40.08	≤-26	PASS
11AX20MIMO	Ant1	Low	2412	8.48	-30.48	≤-21.52	PASS
	Ant2	Low	2412	7.63	-33.57	≤-22.37	PASS
	Ant3	Low	2412	7.43	-33.73	≤-22.57	PASS
	Ant1	High	2462	7.89	-38.81	≤-22.11	PASS
	Ant2	High	2462	7.23	-42.1	≤-22.77	PASS
	Ant3	High	2462	7.07	-40.53	≤-22.93	PASS
11AX40MIMO	Ant1	Low	2422	4.79	-41.56	≤-25.21	PASS
	Ant2	Low	2422	3.44	-40.54	≤-26.56	PASS
	Ant3	Low	2422	4.22	-40.96	≤-25.78	PASS
	Ant1	High	2452	3.65	-40.16	≤-26.35	PASS
	Ant2	High	2452	2.40	-38.49	≤-27.6	PASS
	Ant3	High	2452	2.79	-43.15	≤-27.21	PASS

Test Graphs

11B-CDD_Ant1_Low_2412



11B-CDD_Ant2_Low_2412



11B-CDD_Ant3_Low_2412



11B-CDD_Ant1_High_2462



11B-CDD_Ant2_High_2462



11B-CDD_Ant3_High_2462



11G-CDD_Ant1_Low_2412



11G-CDD_Ant2_Low_2412



11G-CDD_Ant3_Low_2412



11G-CDD_Ant1_High_2462



11G-CDD_Ant2_High_2462



11G-CDD_Ant3_High_2462



11N20MIMO_Ant1_Low_2412



11N20MIMO_Ant2_Low_2412



11N20MIMO_Ant3_Low_2412



11N20MIMO_Ant1_High_2462



11N20MIMO_Ant2_High_2462



11N20MIMO_Ant3_High_2462



11N40MIMO_Ant1_Low_2422



11N40MIMO_Ant2_Low_2422



11N40MIMO_Ant3_Low_2422



11N40MIMO_Ant1_High_2452



11N40MIMO_Ant2_High_2452



11N40MIMO_Ant3_High_2452



11AX20MIMO_Ant1_Low_2412



11AX20MIMO_Ant2_Low_2412



11AX20MIMO_Ant3_Low_2412



11AX20MIMO_Ant1_High_2462



11AX20MIMO_Ant2_High_2462



11AX20MIMO_Ant3_High_2462



11AX40MIMO_Ant1_Low_2422



11AX40MIMO_Ant2_Low_2422



11AX40MIMO_Ant3_Low_2422



11AX40MIMO_Ant1_High_2452



11AX40MIMO_Ant2_High_2452



11AX40MIMO_Ant3_High_2452



Conducted Spurious Emission

Test Result

TestMode	Antenna	Frequency[MHz]	FreqRange [Mhz]	RefLevel [dBm]	Result [dBm]	Limit [dBm]	Verdict
11B-CDD	Ant1	2412	Reference	13.81	13.81	---	PASS
			10~30	14.22	-60.07	≤-15.78	PASS
			30~1000	13.81	-58.76	≤-16.19	PASS
			1000~26500	13.81	-33.63	≤-16.19	PASS
	Ant2	2412	Reference	15.66	15.66	---	PASS
			30~1000	15.66	-57.65	≤-14.34	PASS
			1000~26500	15.66	-36.34	≤-14.34	PASS
	Ant3	2412	Reference	14.86	14.86	---	PASS
			30~1000	14.86	-58.53	≤-15.14	PASS
			1000~26500	14.86	-33.32	≤-15.14	PASS
	Ant1	2437	Reference	15.19	15.19	---	PASS
			30~1000	15.19	-58.12	≤-14.81	PASS
			1000~26500	15.19	-33.32	≤-14.81	PASS
	Ant2	2437	Reference	16.44	16.44	---	PASS
			30~1000	16.44	-59.02	≤-13.56	PASS
			1000~26500	16.44	-36.78	≤-13.56	PASS
	Ant3	2437	Reference	13.51	13.51	---	PASS
			30~1000	13.51	-58.84	≤-16.49	PASS
			1000~26500	13.51	-32.95	≤-16.49	PASS
	Ant1	2462	Reference	13.91	13.91	---	PASS
			30~1000	13.91	-58.62	≤-16.09	PASS
			1000~26500	13.91	-33.31	≤-16.09	PASS
	Ant2	2462	Reference	17.34	17.34	---	PASS
			30~1000	17.34	-58.21	≤-12.66	PASS
			1000~26500	17.34	-36.2	≤-12.66	PASS
	Ant3	2462	Reference	14.89	14.89	---	PASS
			30~1000	14.89	-58.3	≤-15.11	PASS
			1000~26500	14.89	-33.43	≤-15.11	PASS
11G-CDD	Ant1	2412	Reference	7.87	7.87	---	PASS
			30~1000	7.87	-58.86	≤-22.13	PASS
			1000~26500	7.87	-43.84	≤-22.13	PASS
	Ant2	2412	Reference	5.08	5.08	---	PASS
			30~1000	5.08	-58.14	≤-24.92	PASS
			1000~26500	5.08	-43.64	≤-24.92	PASS
	Ant3	2412	Reference	6.39	6.39	---	PASS

			30~1000	6.39	-58.1	≤ -23.61	PASS
			1000~26500	6.39	-42.75	≤ -23.61	PASS
	Ant1	2437	Reference	10.80	10.80	---	PASS
			30~1000	10.80	-58.42	≤ -19.2	PASS
			1000~26500	10.80	-42.68	≤ -19.2	PASS
	Ant2	2437	Reference	12.39	12.39	---	PASS
			30~1000	12.39	-58.54	≤ -17.61	PASS
			1000~26500	12.39	-43.5	≤ -17.61	PASS
	Ant3	2437	Reference	9.16	9.16	---	PASS
			30~1000	9.16	-58.11	≤ -20.84	PASS
			1000~26500	9.16	-40.12	≤ -20.84	PASS
	Ant1	2462	Reference	5.25	5.25	---	PASS
			30~1000	5.25	-58.43	≤ -24.75	PASS
			1000~26500	5.25	-42.48	≤ -24.75	PASS
	Ant2	2462	Reference	7.10	7.10	---	PASS
			30~1000	7.10	-58.25	≤ -22.9	PASS
			1000~26500	7.10	-43.45	≤ -22.9	PASS
	Ant3	2462	Reference	5.87	5.87	---	PASS
			30~1000	5.87	-58.01	≤ -24.13	PASS
			1000~26500	5.87	-43.55	≤ -24.13	PASS
11N20MIMO	Ant1	2412	Reference	4.45	4.45	---	PASS
			30~1000	4.45	-58.41	≤ -25.55	PASS
			1000~26500	4.45	-43.02	≤ -25.55	PASS
	Ant2	2412	Reference	4.85	4.85	---	PASS
			30~1000	4.85	-58.16	≤ -25.15	PASS
			1000~26500	4.85	-43.31	≤ -25.15	PASS
	Ant3	2412	Reference	5.14	5.14	---	PASS
			30~1000	5.14	-58.34	≤ -24.86	PASS
			1000~26500	5.14	-42.85	≤ -24.86	PASS
	Ant1	2437	Reference	10.43	10.43	---	PASS
			30~1000	10.43	-57.84	≤ -19.57	PASS
			1000~26500	10.43	-40.16	≤ -19.57	PASS
	Ant2	2437	Reference	12.00	12.00	---	PASS
			30~1000	12.00	-58.16	≤ -18	PASS
			1000~26500	12.00	-39.69	≤ -18	PASS
	Ant3	2437	Reference	13.82	13.82	---	PASS
			30~1000	13.82	-58.67	≤ -16.18	PASS
			1000~26500	13.82	-42.62	≤ -16.18	PASS
	Ant1	2462	Reference	5.40	5.40	---	PASS
			30~1000	5.40	-56.97	≤ -24.6	PASS
			1000~26500	5.40	-42.84	≤ -24.6	PASS

	Ant2	2462	Reference	5.58	5.58	---	PASS
			30~1000	5.58	-58.09	≤ -24.42	PASS
			1000~26500	5.58	-43.34	≤ -24.42	PASS
	Ant3	2462	Reference	4.48	4.48	---	PASS
			30~1000	4.48	-58.91	≤ -25.52	PASS
			1000~26500	4.48	-43.63	≤ -25.52	PASS
11N40MIMO	Ant1	2422	Reference	2.65	2.65	---	PASS
			30~1000	2.65	-58.43	≤ -27.35	PASS
			1000~26500	2.65	-42.67	≤ -27.35	PASS
	Ant2	2422	Reference	3.57	3.57	---	PASS
			30~1000	3.57	-58.01	≤ -26.43	PASS
			1000~26500	3.57	-42.99	≤ -26.43	PASS
	Ant3	2422	Reference	3.72	3.72	---	PASS
			30~1000	3.72	-58.46	≤ -26.28	PASS
			1000~26500	3.72	-43.76	≤ -26.28	PASS
	Ant1	2437	Reference	7.38	7.38	---	PASS
			30~1000	7.38	-57.71	≤ -22.62	PASS
			1000~26500	7.38	-43.4	≤ -22.62	PASS
	Ant2	2437	Reference	4.69	4.69	---	PASS
			30~1000	4.69	-58.53	≤ -25.31	PASS
			1000~26500	4.69	-43.56	≤ -25.31	PASS
	Ant3	2437	Reference	3.23	3.23	---	PASS
			30~1000	3.23	-58.5	≤ -26.77	PASS
			1000~26500	3.23	-43.25	≤ -26.77	PASS
	Ant1	2452	Reference	1.12	1.12	---	PASS
			30~1000	1.12	-58.47	≤ -28.88	PASS
			1000~26500	1.12	-44.03	≤ -28.88	PASS
	Ant2	2452	Reference	0.22	0.22	---	PASS
			30~1000	0.22	-58.38	≤ -29.78	PASS
			1000~26500	0.22	-43.02	≤ -29.78	PASS
	Ant3	2452	Reference	2.20	2.20	---	PASS
			30~1000	2.20	-57.72	≤ -27.8	PASS
			1000~26500	2.20	-42.88	≤ -27.8	PASS
11AX20MIMO	Ant1	2412	Reference	6.08	6.08	---	PASS
			30~1000	6.08	-58.65	≤ -23.92	PASS
			1000~26500	6.08	-43.19	≤ -23.92	PASS
	Ant2	2412	Reference	4.96	4.96	---	PASS
			30~1000	4.96	-57.92	≤ -25.04	PASS
			1000~26500	4.96	-43.25	≤ -25.04	PASS
	Ant3	2412	Reference	5.74	5.74	---	PASS
			30~1000	5.74	-58.76	≤ -24.26	PASS

	Ant1	2437	1000~26500	5.74	-43.07	≤ -24.26	PASS
			Reference	10.66	10.66	---	PASS
			30~1000	10.66	-58.66	≤ -19.34	PASS
			1000~26500	10.66	-42.2	≤ -19.34	PASS
	Ant2	2437	Reference	11.38	11.38	---	PASS
			30~1000	11.38	-58.79	≤ -18.62	PASS
			1000~26500	11.38	-43.36	≤ -18.62	PASS
	Ant3	2437	Reference	9.68	9.68	---	PASS
			30~1000	9.68	-58.74	≤ -20.32	PASS
			1000~26500	9.68	-43.08	≤ -20.32	PASS
	Ant1	2462	Reference	8.38	8.38	---	PASS
			30~1000	8.38	-58.75	≤ -21.62	PASS
			1000~26500	8.38	-42.43	≤ -21.62	PASS
	Ant2	2462	Reference	3.99	3.99	---	PASS
			30~1000	3.99	-58.44	≤ -26.01	PASS
			1000~26500	3.99	-43.55	≤ -26.01	PASS
	Ant3	2462	Reference	4.28	4.28	---	PASS
			30~1000	4.28	-58.75	≤ -25.72	PASS
			1000~26500	4.28	-43.67	≤ -25.72	PASS
11AX40MIMO	Ant1	2422	Reference	4.03	4.03	---	PASS
			30~1000	4.03	-57.89	≤ -25.97	PASS
			1000~26500	4.03	-43.63	≤ -25.97	PASS
	Ant2	2422	Reference	2.79	2.79	---	PASS
			30~1000	2.79	-58.33	≤ -27.21	PASS
			1000~26500	2.79	-43.53	≤ -27.21	PASS
	Ant3	2422	Reference	3.10	3.10	---	PASS
			30~1000	3.10	-57.91	≤ -26.9	PASS
			1000~26500	3.10	-42.81	≤ -26.9	PASS
	Ant1	2437	Reference	4.59	4.59	---	PASS
			30~1000	4.59	-58.08	≤ -25.41	PASS
			1000~26500	4.59	-43.5	≤ -25.41	PASS
	Ant2	2437	Reference	5.58	5.58	---	PASS
			30~1000	5.58	-59.2	≤ -24.42	PASS
			1000~26500	5.58	-43.27	≤ -24.42	PASS
	Ant3	2437	Reference	5.94	5.94	---	PASS
			30~1000	5.94	-58.03	≤ -24.06	PASS
			1000~26500	5.94	-43.45	≤ -24.06	PASS
	Ant1	2452	Reference	1.13	1.13	---	PASS
			30~1000	1.13	-58.14	≤ -28.87	PASS
			1000~26500	1.13	-43.46	≤ -28.87	PASS
	Ant2	2452	Reference	0.56	0.56	---	PASS

	Ant3	2452	30~1000	0.56	-58.3	≤-29.44	PASS
			1000~26500	0.56	-43.38	≤-29.44	PASS
			Reference	3.03	3.03	---	PASS
			30~1000	3.03	-58.51	≤-26.97	PASS
			1000~26500	3.03	-43.54	≤-26.97	PASS

Test Graphs

11B-CDD_Ant1_2412_0~Reference



11B-CDD_Ant1_2412_10~30



11B-CDD_Ant1_2412_30~1000



11B-CDD_Ant1_2412_1000~26500



11B-CDD_Ant2_2412_0~Reference



11B-CDD_Ant2_2412_30~1000



11B-CDD_Ant2_2412_1000~26500



11B-CDD_Ant3_2412_0~Reference



11B-CDD_Ant3_2412_30~1000



11B-CDD_Ant3_2412_1000~26500



11B-CDD_Ant1_2437_0~Reference



11B-CDD_Ant1_2437_30~1000



11B-CDD_Ant1_2437_1000~26500



11B-CDD_Ant2_2437_0~Reference



11B-CDD_Ant2_2437_30~1000



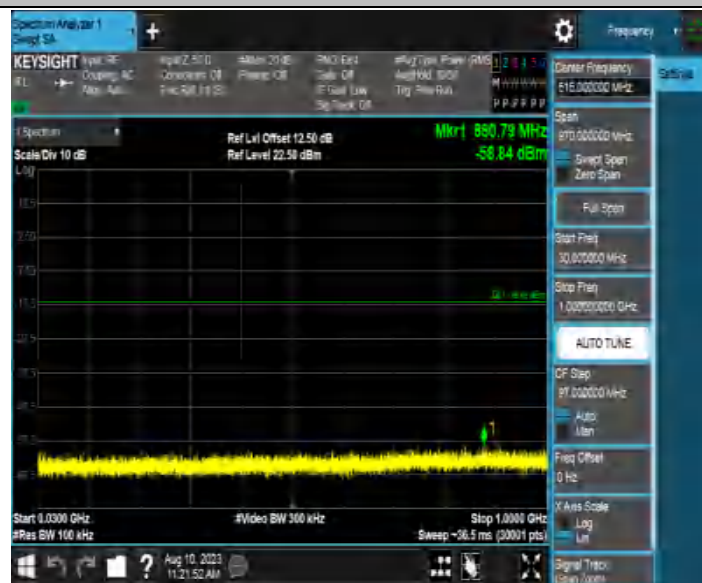
11B-CDD_Ant2_2437_1000~26500



11B-CDD_Ant3_2437_0~Reference



11B-CDD_Ant3_2437_30~1000



11B-CDD_Ant3_2437_1000~26500



11B-CDD_Ant1_2462_0~Reference



11B-CDD_Ant1_2462_30~1000



11B-CDD_Ant1_2462_1000~26500



11B-CDD_Ant2_2462_0~Reference



11B-CDD_Ant2_2462_30~1000



11B-CDD_Ant2_2462_1000~26500



11B-CDD_Ant3_2462_0~Reference



11B-CDD_Ant3_2462_30~1000



11B-CDD_Ant3_2462_1000~26500



11G-CDD_Ant1_2412_0~Reference



11G-CDD_Ant1_2412_30-1000



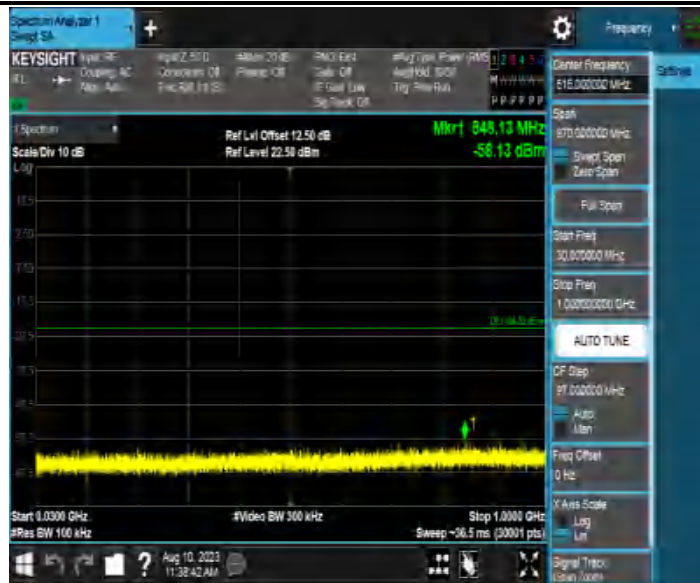
11G-CDD_Ant1_2412_1000-26500



11G-CDD_Ant2_2412_0~Reference



11G-CDD_Ant2_2412_30~1000



11G-CDD_Ant2_2412_1000~26500



11G-CDD_Ant3_2412_0~Reference



11G-CDD_Ant3_2412_30-1000



11G-CDD_Ant3_2412_1000-26500



11G-CDD_Ant1_2437_0~Reference



11G-CDD_Ant1_2437_30~1000



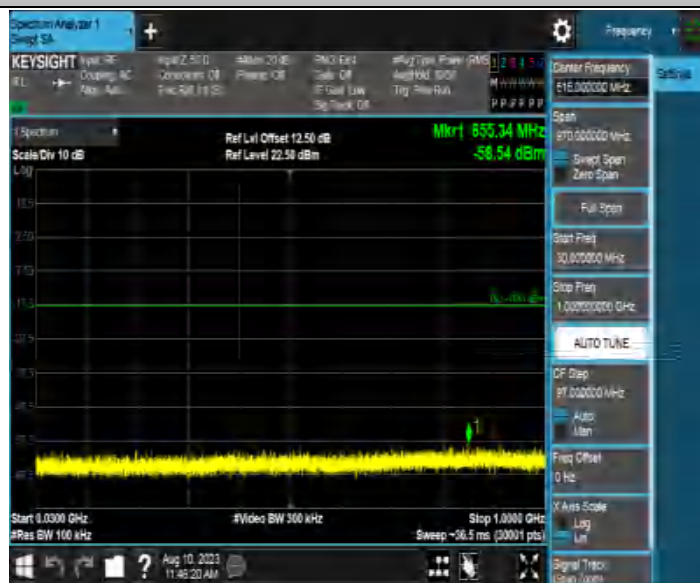
11G-CDD_Ant1_2437_1000~26500



11G-CDD_Ant2_2437_0~Reference



11G-CDD_Ant2_2437_30-1000



11G-CDD_Ant2_2437_1000-26500



11G-CDD_Ant3_2437_0~Reference



11G-CDD_Ant3_2437_30~1000



11G-CDD_Ant3_2437_1000~26500



11G-CDD_Ant1_2462_0~Reference



11G-CDD_Ant1_2462_30-1000



11G-CDD_Ant1_2462_1000-26500



11G-CDD_Ant2_2462_0~Reference



11G-CDD_Ant2_2462_30~1000



11G-CDD_Ant2_2462_1000~26500



11G-CDD_Ant3_2462_0~Reference



11G-CDD_Ant3_2462_30-1000



11G-CDD_Ant3_2462_1000-26500



11N20MIMO_Ant1_2412_0~Reference



11N20MIMO_Ant1_2412_30~1000



11N20MIMO_Ant1_2412_1000~26500



11N20MIMO_Ant2_2412_0~Reference



11N20MIMO_Ant2_2412_30~1000



11N20MIMO_Ant2_2412_1000~26500



11N20MIMO_Ant3_2412_0~Reference



11N20MIMO_Ant3_2412_30~1000



11N20MIMO_Ant3_2412_1000~26500



11N20MIMO_Ant1_2437_0~Reference



11N20MIMO_Ant1_2437_30-1000



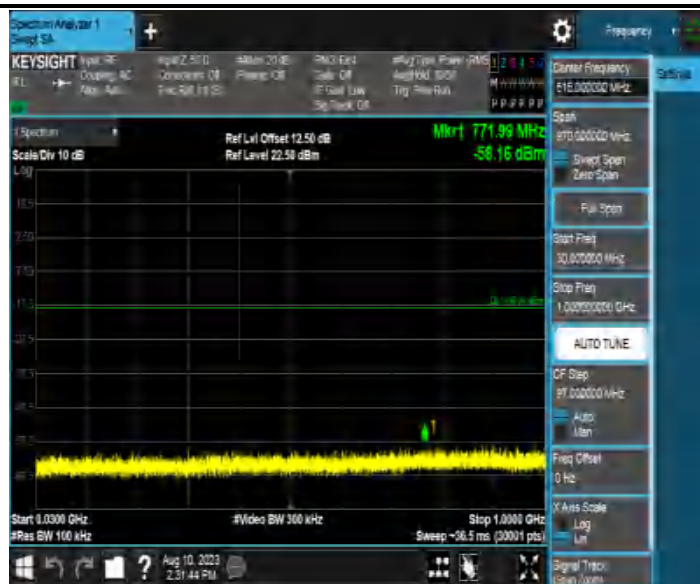
11N20MIMO_Ant1_2437_1000~26500



11N20MIMO_Ant2_2437_0~Reference



11N20MIMO_Ant2_2437_30~1000



11N20MIMO_Ant2_2437_1000~26500



11N20MIMO_Ant3_2437_0~Reference



11N20MIMO_Ant3_2437_30-1000



11N20MIMO_Ant3_2437_1000~26500



11N20MIMO_Ant1_2462_0~Reference



11N20MIMO_Ant1_2462_30~1000



11N20MIMO_Ant1_2462_1000~26500



11N20MIMO_Ant2_2462_0~Reference



11N20MIMO_Ant2_2462_30~1000



11N20MIMO_Ant2_2462_1000~26500



11N20MIMO_Ant3_2462_0~Reference



11N20MIMO_Ant3_2462_30~1000



11N20MIMO_Ant3_2462_1000~26500



11N40MIMO_Ant1_2422_0~Reference



11N40MIMO_Ant1_2422_30~1000



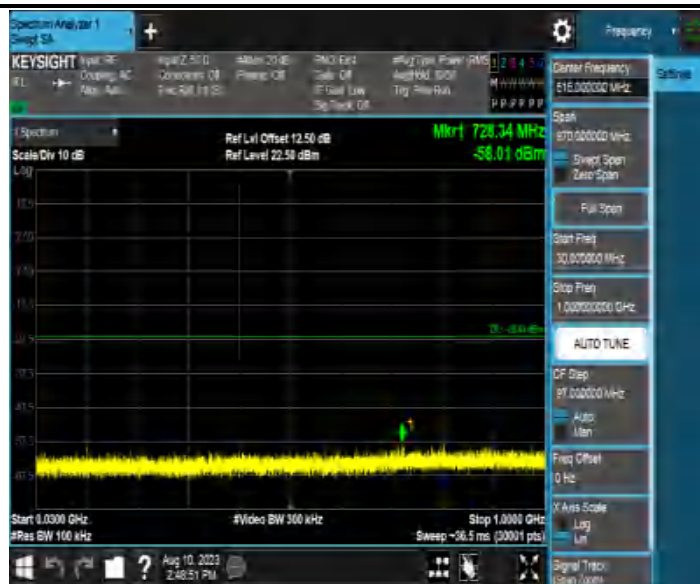
11N40MIMO_Ant1_2422_1000~26500



11N40MIMO_Ant2_2422_0~Reference



11N40MIMO_Ant2_2422_30~1000



11N40MIMO_Ant2_2422_1000~26500



11N40MIMO_Ant3_2422_0~Reference



11N40MIMO_Ant3_2422_30~1000



11N40MIMO_Ant3_2422_1000~26500



11N40MIMO_Ant1_2437_0~Reference



11N40MIMO_Ant1_2437_30~1000



11N40MIMO_Ant1_2437_1000~26500



11N40MIMO_Ant2_2437_0~Reference



11N40MIMO_Ant2_2437_30~1000



11N40MIMO_Ant2_2437_1000~26500



11N40MIMO_Ant3_2437_0~Reference



11N40MIMO_Ant3_2437_30~1000