

**FCC 15.247 & RSS-247  
2.4 GHz Report**

*for*

**Amtran Technology Co., Ltd.**

**17F., No. 268, Liancheng Rd., Jhonghe District,  
New Taipei City 23553, Taiwan, R.O.C.**

**Brand : CISCO**  
**Product Name : Video Conferencing Equipment**  
**Model Name : AA70WW**  
**FCC ID : MDZAA70WW**  
**IC : 7825A-AA70WW**

**Prepared by: : AUDIX Technology Corporation,  
EMC Department**



## TABLE OF CONTENTS

Description	Page
TEST REPORT CERTIFICATION .....	3
<b>1. REPORT HISTORY.....</b>	<b>4</b>
<b>2. SUMMARY OF TEST RESULTS .....</b>	<b>5</b>
<b>3. GENERAL INFORMATION .....</b>	<b>6</b>
3.1. Description of Application .....	6
3.2. Description of EUT .....	7
3.3. Antenna Information .....	8
3.4. EUT Specifications Assessed in Current Report .....	8
3.5. Test Configuration .....	10
3.6. Tested Supporting System List .....	11
3.7. Setup Configuration .....	12
3.8. Operating Condition of EUT .....	12
3.9. Description of Test Facility .....	13
3.10. Measurement Uncertainty .....	14
<b>4. MEASUREMENT EQUIPMENT LIST .....</b>	<b>15</b>
4.1. Conducted Emission Measurement .....	15
4.2. Radiated Emission Measurement .....	15
<b>5. CONDUCTED EMISSION MEASUREMENT .....</b>	<b>16</b>
5.1. Block Diagram of Test Setup .....	16
5.2. Power Line Conducted Emission Limit .....	16
5.3. Test Procedure .....	16
5.4. Conducted Emission Measurement Results .....	17
<b>6. RADIATED EMISSION MEASUREMENT .....</b>	<b>19</b>
6.1. Block Diagram of Test Setup .....	19
6.2. Radiated Emission Limits .....	21
6.3. Test Procedure .....	22
6.4. Measurement Result Explanation .....	23
6.5. Test Results .....	23
<b>7. DEVIATION TO TEST SPECIFICATIONS.....</b>	<b>31</b>

### APPENDIX A TEST PHOTOGRAPHS

## TEST REPORT CERTIFICATION

Applicant : Amtran Technology Co., Ltd.  
Manufacture : Cisco Systems, Inc.  
EUT Description  
(1) Product : Video Conferencing Equipment  
(2) Model : AA70WW  
(3) Brand : CISCO

### Applicable Standards:

47 CFR FCC Part 15 Subpart C  
RSS-Gen (Issue 4), November 2014  
RSS-247 (Issue 2), February 2017  
ANSI C63.10:2013  
FCC Public Notice DA 00-705

**Audix Technology Corp.** tested the equipment mentioned in accordance with the requirements set forth in the above standards. Test results indicate that the equipment tested is capable of demonstrating compliance with the requirements as documented within this report.

**Audix Technology Corp.** does not assume responsibility for any conclusions and generalizations drawn from the test results with regard to other specimens and samples.

Date of Report: 2017. 05. 15

Reviewed by: Annie Yu (Annie Yu/Administrator)

Approved by: Ben Cheng (Ben Cheng/Manager)

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## 1. REPORT HISTORY

Revision	Date	Revision Summary	Report Number
0	2017. 05. 15	Original Report.	EM-F170207

## 2. SUMMARY OF TEST RESULTS

Rule		Description	Results
FCC	IC		
15.207	RSS-Gen §8.8	Conducted Emission	<b>N/A, Note 2</b>
15.247(d)/ 15.205	RSS-Gen §8.9 RSS-247 §5.5	Radiated Band Edge and Radiated Spurious Emission	<b>PASS</b>
15.247(a)(1)	RSS-247 §5.1(2)	20dB Bandwidth	<b>N/A, Note 1</b>
15.247(a)(1)	RSS-247 §5.1(2)	Carrier Frequency Separation	<b>N/A, Note 1</b>
15.247(a)(1)(iii)	RSS-247 §5.1(4)	Time of Occupancy	<b>N/A, Note 1</b>
15.247(a)(1)(iii)	RSS-247 §5.1(4)	Number of Hopping Channels	<b>N/A, Note 1</b>
15.247(b)(1)	RSS-247 §5.1(2)	Maximum Peak Output Power	<b>N/A, Note 1</b>
15.247(d)	RSS-247 §5.5	Conducted Band Edges and Conducted Spurious Emission	<b>PASS</b>
15.203	---	Antenna Requirement	<b>PASS</b>

Note: 1. All conducted results are authorized to leverage to original grant FCC ID: VOB-P2180 and IC: 7361A-P2180.  
2. The emissions higher than limit were confirmed not emitted from RF transmitter but from TV signal are subject to FCC 15.107 and presented at report number: EM-F170295.

### 3. GENERAL INFORMATION

#### 3.1. Description of Application

Applicant	Amtran Technology Co., Ltd. 17F., No. 268, Liancheng Rd., Jhonghe District, New Taipei City 23553, Taiwan, R.O.C.
Manufacturer	Cisco Systems, Inc. 170 West Tasman Drive, San Jose, CA 95134, USA
Product	Video Conferencing Equipment
Model	AA70WW
Brand	MDZAA70WW

### 3.2. Description of EUT

Test Model	AA70WW																								
Serial Number	N/A																								
Power Rating	100-240VAC, Max. 3.5A, 50/60Hz																								
Firmware Version	N/A																								
Sample Status	Production																								
RF Features	WLAN:802.11a/b/g/n/ac Bluetooth: BT and BLE																								
Transmit Type	<table border="1"> <thead> <tr> <th colspan="2">2.4 GHz</th> </tr> </thead> <tbody> <tr> <td>802.11b</td> <td>1T1R</td> </tr> <tr> <td>802.11g</td> <td>1T1R</td> </tr> <tr> <td>802.11n-HT20</td> <td>2T2R</td> </tr> <tr> <td>802.11n-HT40</td> <td>2T2R</td> </tr> <tr> <td>BT</td> <td>1T1R</td> </tr> <tr> <td>BLE</td> <td>1T1R</td> </tr> </tbody> </table> <table border="1"> <thead> <tr> <th colspan="2">UNII Bands</th> </tr> </thead> <tbody> <tr> <td>802.11a</td> <td>1T1R</td> </tr> <tr> <td>802.11n-HT20/ 802.11ac-VHT20</td> <td>2T2R</td> </tr> <tr> <td>802.11n-HT40/ 802.11ac-VHT40</td> <td>2T2R</td> </tr> <tr> <td>802.11ac-VHT80</td> <td>2T2R</td> </tr> </tbody> </table>	2.4 GHz		802.11b	1T1R	802.11g	1T1R	802.11n-HT20	2T2R	802.11n-HT40	2T2R	BT	1T1R	BLE	1T1R	UNII Bands		802.11a	1T1R	802.11n-HT20/ 802.11ac-VHT20	2T2R	802.11n-HT40/ 802.11ac-VHT40	2T2R	802.11ac-VHT80	2T2R
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802.11ac-VHT80	2T2R																								
Date of Receipt	2017. 03. 02																								
Date of Test	2017. 04. 05 ~ 28																								
AC Power Cord	Unshielded, Detachable, 1.8m (3C)																								
Interface Ports of EUT	One AC power port One LAN port One HDMI port One Audio out port One USB 3.0 port																								

### 3.3. Antenna Information

No.	Antenna Part Number	Manufacture	Antenna Type	Frequency (GHz)	Max Gain (dBi)
1	RFMTA34071AIMLB702 (ANT 1)	Walsin Technology Corporation	PIFA	2.4 to 2.5	2.6
				5.15 to 5.85	4.77
2	RFMTA340772IMLB701 (ANT 2)		PIFA	2.4 to 2.5	2.81
				5.15 to 5.85	4.92

Note: All results have been tested with worst antenna port 1.

### 3.4. EUT Specifications Assessed in Current Report

Mode	Fundamental Range (MHz)	Channel Number	Modulation	Data Rate (Mbps)
Bluetooth	2402-2480	79	FHSS (GFSK, $\pi/4$ DQPSK, 8-DPSK)	1/2/3



Channel List					
Channel Number	Frequency (MHz)	Channel Number	Frequency (MHz)	Channel Number	Frequency (MHz)
00	2402	27	2429	54	2456
01	2403	28	2430	55	2457
02	2404	29	2431	56	2458
03	2405	30	2432	57	2459
04	2406	31	2433	58	2460
05	2407	32	2434	59	2461
06	2408	33	2435	60	2462
07	2409	34	2436	61	2463
08	2410	35	2437	62	2464
09	2411	36	2438	63	2465
10	2412	37	2439	64	2466
11	2413	38	2440	65	2467
12	2414	39	2441	66	2468
13	2415	40	2442	67	2469
14	2416	41	2443	68	2470
15	2417	42	2444	69	2471
16	2418	43	2445	70	2472
17	2419	44	2446	71	2473
18	2420	45	2447	72	2474
19	2421	46	2448	73	2475
20	2422	47	2449	74	2476
21	2423	48	2450	75	2477
22	2424	49	2451	76	2478
23	2425	50	2452	77	2479
24	2426	51	2453	78	2480
25	2427	52	2454		
26	2428	53	2455		

### 3.5. Test Configuration

AC Conduction	
Test Case	Normal operation

	Item	Modulation	Data Rate	Test Channel
Radiated Test Case	Radiated Band Edge	8-DPSK	3Mbps	0/78
	Radiated Spurious Emission Note 2	GFSK	1Mbps	0/39/78

Note 1:

■ Mobile Device

Portable Device, and 3 axis were assessed.

Lie

Side

Stand

Note 2: We performed testing of the highest and lowest data rate.

### 3.6. Tested Supporting System List

#### 3.6.1. Support Peripheral Unit

No.	Product	Brand	Model No.	Serial No.	FCC ID
For Power Line Emission					
1.	PC System	Lenovo	RK4	PBFK922	By DoC
2.	USB Keyboard	IBM	KU-0225	3630	By DoC
3.	USB Mouse	Lenovo	45J4886	N/A	By DoC
4.	USB Printer	SAMSUNG	ML-1630	4561B1CP600023 X	FCC ID: A3LML1630
5.	I-POD Player	APPLE	A1204	4H722TH8VTE	By DoC
6.	Earphone	APPLE	N/A	N/A	N/A
7.	USB 3.0 HDD	SOY	HD-E1	3GDL0T155151C 14	By DoC
8.	Mobile Phone	SAMSUNG	GT-I9300	RF1C86ATMSV	NCC ID: CCAF123G0370T1
9.	AP Server	D-Link	DIR-868L	R3WE1D7002319	FCC ID: KA2IR868LA1
For Radiated Emission					
1.	Notebook PC	acer	MS2362	N/A	PPD-AAR5B225
2.	Earphone	Cheng Jia	CJ-323	N/A	N/A
3.	IPOD Player	APPLE	A1204	4H722TJKVTE	DoC
4.	5G Server	D-Link	DIR-868L	R3WE1D7002319	KA2IR868LA1

### 3.6.2. Cable Lists

No.	Cable Description Of The Above Support Units
For Power Line Emission	
1.	HDMI Cable: Shielded, Detachable, 1.5m, Bonded two ferrite cores
2.	USB Cable: Shielded, Detachable, 1.8m
3.	USB Cable: Shielded, Detachable, 1.8m
4.	USB Cable: Shielded, Detachable, 1.8m
5.	USB Cable: Shielded, Detachable, 1.0m
6.	Earphone Cable: Unshielded, Detachable, 0.9m
7.	USB Cable: Shielded, Detachable, 0.5m
8.	LAN Cable: Unshielded, Detachable, 5.0m
9.	AC Power Cord (3C): Shielded, Detachable, 1.8m
10.	LAN Cable: Unshielded, Detachable, 10.0m
11.	LAN Cable: Unshielded, Detachable, 1.8m
12.	AC Power Cord: Shielded, Detachable, 1.8m*4
For Radiated Emission	
1.	HDMI Cable: Shielded, Detachable, 1.8m Adapter: Chicony, M/N CPA09-A065N1, DC Power Cord: Unshielded, Undetachable, 1.8m, Bonded a ferrite core AC Power Cord: Unshielded, Detachable, 1.8m
2.	Earphone Cable: Unshielded, Detachable, 2.0m
3.	USB Cable: Unshielded, Detachable, 1.0m
4.	LAN Cable: Unshielded, Detachable, 1.8m

## 3.7. Setup Configuration

### 3.7.1. EUT Configuration for Power Line and Radiated Emission

**EUT**

## 3.8. Operating Condition of EUT

Test program “ADB” is used for enabling EUT RF function under continues transmitting and choosing data rate/ channel.

### 3.9. Description of Test Facility

Test Firm Name	:	<b>AUDIX Technology Corporation</b> <b>EMC Department</b> No. 53-11, Dingfu, Linkou Dist., New Taipei City 244, Taiwan
Test Location & Facility	:	<b>No. 7 Shielded Room</b> No. 53-11, Dingfu, Linkou Dist., New Taipei City 244, Taiwan  <b>Semi-Anechoic Chamber</b> No. 53-11, Dingfu, Linkou Dist., New Taipei City 244, Taiwan IC Test Site Registration No.: 5183B-1 Renewal on September 17, 2014  <b>Fully Anechoic Chamber</b> No. 53-11, Dingfu, Linkou Dist., New Taipei City 244, Taiwan IC Test Site Registration No.: 5183B-4 Renewal on August 31, 2015
NVLAP Lab. Code	:	200077-0
TAF Accreditation No	:	1724
FCC OET Designation	:	TW1004 & TW1090

### 3.10.Measurement Uncertainty

Test Item	Frequency Range	Uncertainty
Conduction Test	150kHz~30MHz	±3.5dB
Radiation Test (Distance: 3m)	30MHz~1000MHz	± 3.68dB
	Above 1GHz	± 5.82dB

Remark : Uncertainty =  $ku_c(y)$

Test Item	Uncertainty
20dB Bandwidth	±0.2kHz
Carrier Frequency Separation	±0.2kHz
Time of Occupancy	±0.03sec
Maximum peak Output power	± 0.52dB
Conducted Emission Limitations	± 0.13dB

## 4. MEASUREMENT EQUIPMENT LIST

### 4.1. Conducted Emission Measurement

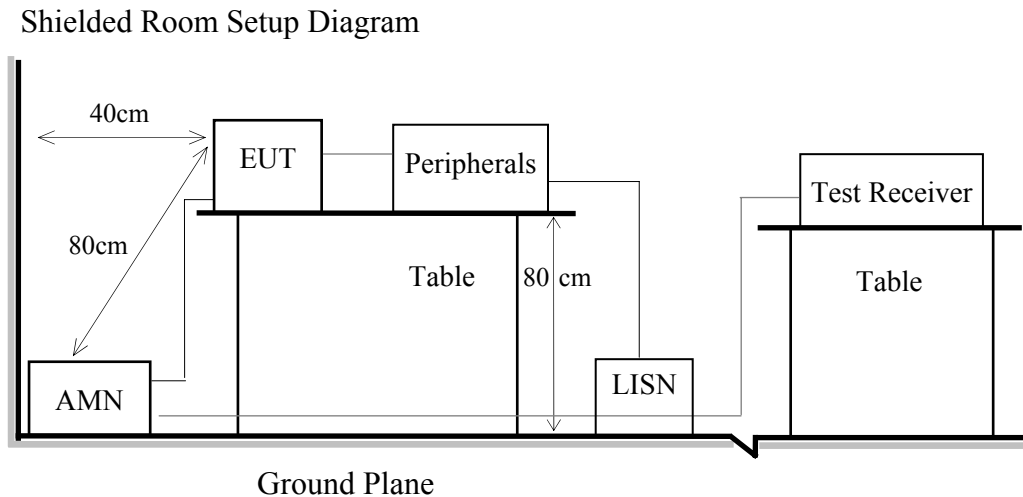
Item	Type	Manufacturer	Model No.	Serial No.	Cal. Date	Cal. Interval
1.	Test Receiver	R & S	ESCI	101276	2017. 03. 23	1 Year
2.	A.M.N.	R&S	ESH2-Z5	100366	2016. 07. 27	1 Year
3.	L.I.S.N.	Kyoritsu	KNW-407	8-1539-3	2017. 01. 21	1 Year
4.	Pulse Limiter	R & S	ESH3-Z2	101495	2017. 01. 16	1 Year
5.	Test Software	Audix	e3	V.6.120424	N.C.R.	N.C.R.

### 4.2. Radiated Emission Measurement

Item	Type	Manufacturer	Model No.	Serial No.	Cal. Date	Cal. Interval
1.	Spectrum Analyzer	Agilent	N9010A-526	MY53400071	2016. 09. 19	1 Year
2.	Spectrum Analyzer	Agilent	N9010A-507	MY52220264	2016. 08. 09	1 Year
3.	Test Receiver	R & S	ESCS30	100338	2016. 06. 22	1 Year
4.	Amplifier	HP	8447D	2944A06305	2017. 02. 16	1 Year
5.	Amplifier	Agilent	8449B	3008A02678	2017. 03. 06	1 Year
6.	Bilog Antenna	CHASE	CBL6112D	33821	2017. 01. 21	1 Year
7.	Loop Antenna	R&S	HFH2-Z2	891847/27	2016. 12. 23	1 Year
8.	2.4GHz Notch Filter	K&L	7NSL10-244 1.5E130.5-00	1	2016. 07. 28	1 Year
9.	Horn Antenna	EMCO	3115	9609-4927	2016. 06. 27	1 Year
10.	Horn Antenna	EMCO	3116	2653	2016. 10. 24	1 Year
11.	Test Software	Audix	e3	V.6.110601	N.C.R.	N.C.R.

## 5. CONDUCTED EMISSION MEASUREMENT

### 5.1. Block Diagram of Test Setup



### 5.2. Power Line Conducted Emission Limit

Frequency	Conducted Limit	
	Quasi-Peak Level	Average Level
150kHz ~ 500kHz	66 ~ 56 dB $\mu$ V	56 ~ 46 dB $\mu$ V
500kHz ~ 5MHz	56 dB $\mu$ V	46 dB $\mu$ V
5MHz ~ 30MHz	60 dB $\mu$ V	50 dB $\mu$ V

Remark 1.: If the average limit is met when using a Quasi-Peak detector, the measurement using the average detector is not required.

2.: The lower limit applies to the band edges.

### 5.3. Test Procedure

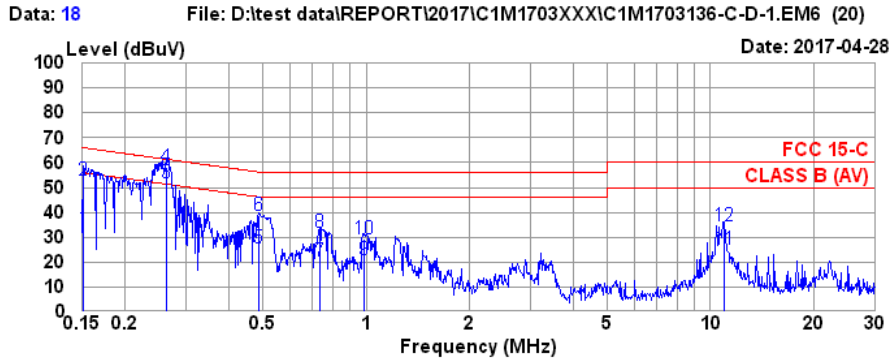
- 5.3.1. To set up the EUT as indicated in ANSI C 63.10. The EUT was placed on the table which has 80 cm height to the ground and 40 cm distance to the conducting wall.
- 5.3.2. Power supplier of the EUT was connected to the AC mains through an Artificial Mains Network (A.M.N.).
- 5.3.3. The AC power supplies to all peripheral devices must be provided through line impedance stabilization network (L.I.S.N.)
- 5.3.4. Checking frequency range from 150 kHz to 30 MHz and record the emission which does not have 20 dB below limit.



### 5.4. Conducted Emission Measurement Results

PASSED.

Test Date	2017/04/28	Temp./Hum.	26 /54%
Test Voltage	AC 120V, 60Hz		



Site no. : No.7 Shielded Room Data no. : 18  
 Condition : ESH2-Z5 366(ADAPTER) Phase : NEUTRAL  
 Limit : FCC 15-C  
 Env. / Ins. : 26\*C / 54% ESCI (1276) Engineer : Nick Du  
 EUT : AA70W  
 Power Rating : 120Vac/60Hz  
 Test Mode : Operating

	Freq. (MHz)	AMN Factor (dB)	Cable Loss (dB)	Pulse Att. (dB)	Reading (dBμV)	Emission Level (dBμV)	Limits (dBμV)	Margin (dB)	Remark
1	0.151	0.19	0.03	9.86	23.69	33.77	55.96	22.19	Average
2	0.151	0.19	0.03	9.86	43.03	53.11	65.96	12.85	QP
* 3	0.264	0.18	0.04	9.86	41.73	51.81	51.29	-0.52	Average
4	0.264	0.18	0.04	9.86	47.94	58.02	61.29	3.27	QP
5	0.486	0.20	0.04	9.86	15.73	25.83	46.23	20.40	Average
6	0.486	0.20	0.04	9.86	28.79	38.89	56.23	17.34	QP
7	0.731	0.21	0.05	9.86	10.24	20.36	46.00	25.64	Average
8	0.731	0.21	0.05	9.86	21.62	31.74	56.00	24.26	QP
9	0.984	0.22	0.06	9.86	10.86	21.00	46.00	25.00	Average
10	0.984	0.22	0.06	9.86	19.11	29.25	56.00	26.75	QP
11	10.963	0.59	0.18	9.90	14.23	24.90	50.00	25.10	Average
12	10.963	0.59	0.18	9.90	23.70	34.37	60.00	25.63	QP

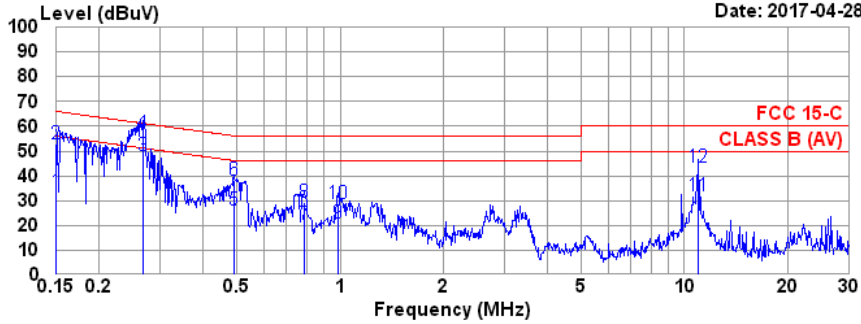
Remarks: 1. Emission Level= AMN Factor + Cable Loss + Pulse Att. + Reading.  
 2. If the average limit is met when using a quasi-peak detector, the EUT shall be deemed to meet both limits and measurement with average detector is unnecessary.  
 3. The emissions higher than limit were confirmed not emitted from RF transmitter but from TV signal are subject to FCC 15.107 and presented at report number: EM-F170295.

Audix Technology Corp.  
 No. 53-11, Dingfu, Linkou, Dist.,  
 New Taipei City244, Taiwan

Tel: +886 2 26099301  
 Fax: +886 2 26099303

Test Date	2017/04/28	Temp./Hum.	26 /54%
Test Voltage	AC 120V, 60Hz		

Data: 17 File: D:\test data\REPORT\2017\IC1M1703XXX\IC1M1703136-C-D-1.EM6 (20) Date: 2017-04-28



Site no. : No.7 Shielded Room Data no. : 17  
 Condition : ESH2-Z5 366(ADAPTER) Phase : LINE  
 Limit : FCC 15-C  
 Env. / Ins. : 26°C / 54% ESCI (1276) Engineer : Nick Du  
 EUT : AA70MW  
 Power Rating : 120Vac/60Hz  
 Test Mode : Operating

	Freq. (MHz)	AMN Factor (dB)	Cable Loss (dB)	Pulse Att. (dB)	Reading (dBμV)	Emission Level (dBμV)	Limits (dBμV)	Margin (dB)	Remark
1	0.150	0.18	0.03	9.86	23.62	33.69	55.99	22.30	Average
2	0.150	0.18	0.03	9.86	42.94	53.01	65.99	12.98	QP
3	0.269	0.17	0.04	9.86	38.21	48.28	51.16	2.88	Average
4	0.269	0.17	0.04	9.86	47.27	57.34	61.16	3.82	QP
5	0.491	0.19	0.04	9.86	16.28	26.37	46.14	19.77	Average
6	0.491	0.19	0.04	9.86	28.15	38.24	56.14	17.90	QP
7	0.788	0.20	0.05	9.86	10.52	20.63	46.00	25.37	Average
8	0.788	0.20	0.05	9.86	19.06	29.17	56.00	26.83	QP
9	0.989	0.21	0.06	9.86	10.75	20.88	46.00	25.12	Average
10	0.989	0.21	0.06	9.86	18.53	28.66	56.00	27.34	QP
11	10.953	0.64	0.18	9.90	21.05	31.77	50.00	18.23	Average
12	10.953	0.64	0.18	9.90	32.84	43.56	60.00	16.44	QP

Remarks: 1. Emission Level= AMN Factor + Cable Loss + Pulse Att. + Reading.  
 2. If the average limit is met when using a quasi-peak detector,  
 the EUT shall be deemed to meet both limits and measurement  
 with average detector is unnecessary.  
 3. The emissions higher than limit were confirmed not emitted from RF transmitter  
 are subject to FCC 15.107 and presented at report number: EM-F170295.

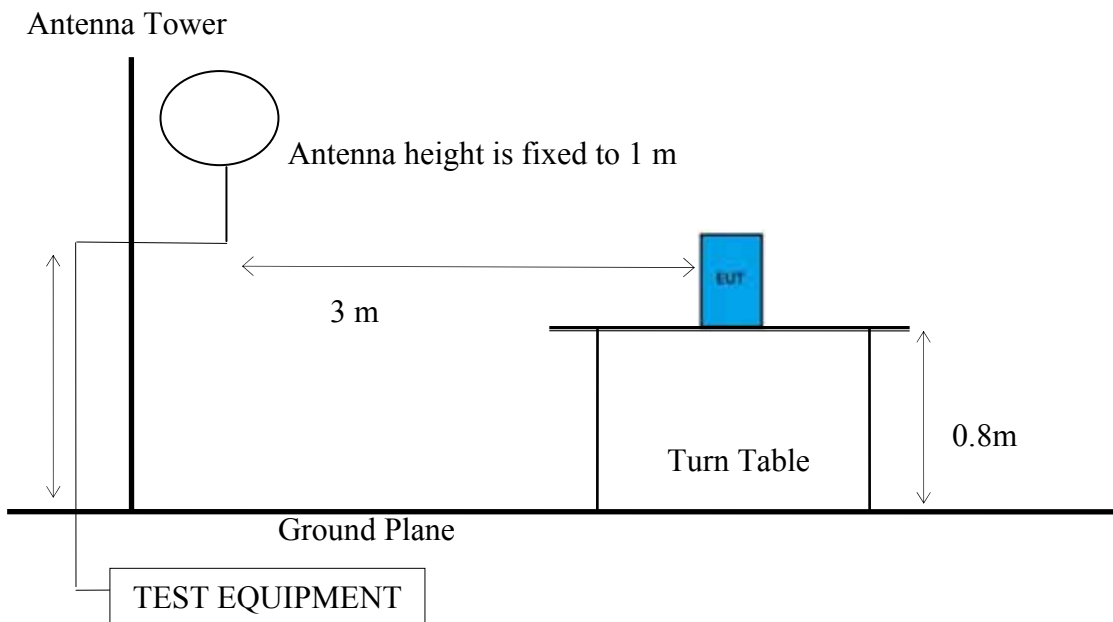
## 6. RADIATED EMISSION MEASUREMENT

### 6.1. Block Diagram of Test Setup

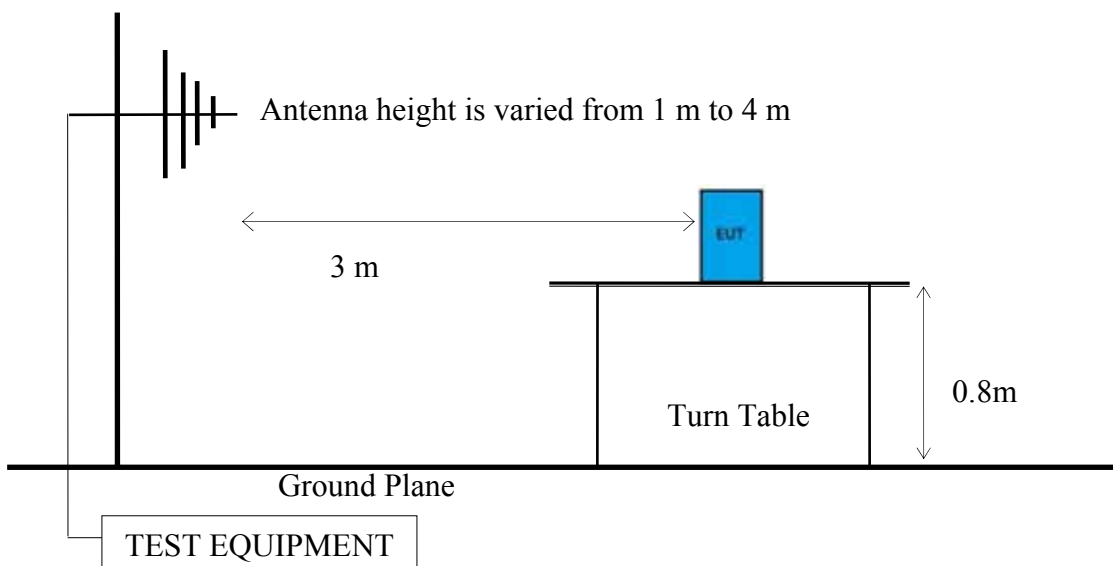
#### 6.1.1. Block Diagram of EUT

Indicated as section 3.5

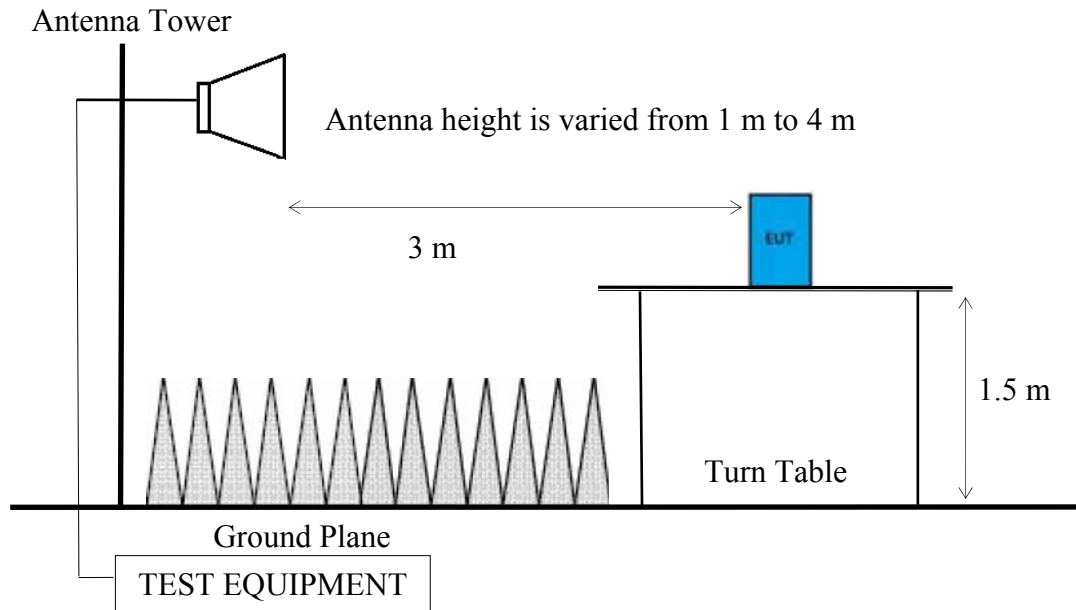
#### 6.1.2. Semi Anechoic Chamber (3m) Setup Diagram for 9kHz-30MHz



#### 6.1.3. Semi Anechoic Chamber (3m) Setup Diagram for 30-1000 MHz



#### 6.1.4. Fully Anechoic Chamber (3m) Setup Diagram for above 1GHz



## 6.2. Radiated Emission Limits

In any 100kHz bandwidth outside the frequency band, the radio frequency power produced by the intentional radiator shall be at least 20dB below that in the 100kHz bandwidth within the band that contains the highest level. In addition, radiated emissions which fall in restricted bands, as defined in Section 15.205, must also comply with the radiated emission limits specified as below.

Frequency (MHz)	Distance (m)	Field Strengths Limits	
		$\mu\text{V/m}$	$\text{dB}\mu\text{V/m}$
0.009 - 0.490	300	67.6	2400/kHz
0.490 - 1.705	30	87.6	24000/kHz
1.705 - 30	30	29.5	30
30 ~ 88	3	100	40.0
88 ~ 216	3	150	43.5
216 ~ 960	3	200	46.0
Above 960	3	500	54.0
Above 1000	3	74.0 $\text{dB}\mu\text{V/m}$ (Peak) 54.0 $\text{dB}\mu\text{V/m}$ (Average)	

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

- (2) The tighter limit applies to the edge between two frequency bands.
- (3) Distance refers to the distance in meters between the measuring instrument antenna and the closed point of any part of the device or system.
- (4) Fundamental and emission fall within operation band are exempted from this section.
- (5) Pursuant to ANSI C63.10: 6.6.4.3, if the maximized peak measured value complies with the average limit, then it is unnecessary to perform an average measurement.

### 6.3. Test Procedure

#### Frequency Range 9kHz~30MHz:

The EUT setup on the turn table which has 0.8 m height to the ground. The turn table rotated 360 degrees and antenna fixed to 1 m to find the maximum emission level. In order to find the maximum emission, all of the interface cables were manipulated according to ANSI C63.10-2013 regulation.

- (1) RBW = 9kHz with peak and average detector.
- (2) Detector: average and peak (9kHz-490kHz)  
Q.P. (490kHz-30MHz)

#### Frequency Range 30MHz ~ 40GHz:

The EUT setup on the turn table which has 1.5m height to the ground. The turn table rotated 360 degrees and antenna varied from 1 m to 4 m to find the maximum emission level. Both horizontal and vertical polarization are required. In order to find the maximum emission, all of the interface cables were manipulated according to ANSI C63.10-2013 regulation.

#### Frequency below 1 GHz:

Spectrum Analyzer is used for pre-testing with following setting:

- (1) RBW = 120KHz
- (2) VBW  $\geq 3 \times$  RBW.
- (3) Detector = Peak.
- (4) Sweep time = auto.
- (5) Trace mode = max hold.
- (6) Allow sweeps to continue until the trace stabilizes.
- (7) When peak-detected value is lower than limit that the measurement using the Q.P. detector is not required. Otherwise using Q.P. for finally measurement.

Frequency above 1GHz to 10th harmonic:

#### Peak Detector:

- (1) RBW = 1MHz
- (2) VBW  $\geq 3 \times$  RBW.
- (3) Detector = Peak.
- (4) Sweep time = auto.
- (5) Trace mode = max hold.
- (6) Allow sweeps to continue until the trace stabilizes.
- (7) When peak-detected value is lower than limit that the measurement using the average detector is not required. Otherwise using average for finally measurement.

**Average Measurement:****Option 1:**

- (1) RBW = 1 MHz
- (2) VBW = 1/T
- (3) Detector = Peak.
- (4) Sweep time = auto.
- (5) Trace mode = max hold.
- (6) Allow sweeps to continue until the trace stabilizes.

**Option 2:**

Average Emission Level = Peak Emission Level + D.C.C.F.

**6.4. Measurement Result Explanation**

Peak Emission Level = Antenna Factor + Cable Loss + Meter Reading

Average Emission Level = Antenna Factor + Cable Loss + Meter Reading

Average Emission Level = Peak Emission Level + DCCF

Duty Cycle Correction Factor (DCCF) =  $20 \log(TX_{on}/100ms)$  presented in section 3.5

ERP = Peak Emission Level - 95.2 dB - 2.14 dB

**6.5. Test Results**

**PASSED.**

Test Date	2017/04/05	Temp./Hum.	20 / 53%
Test Voltage	AC 120V, 60Hz		

6.5.1. Emissions within Restricted Frequency Bands

6.5.1.1. Frequency 9kHz~30MHz

**The emissions (9kHz~30MHz) not reported for there is no emission be found.**

6.5.1.2. Frequency Below 1 GHz

Modulation	8-DPSK	Frequency	TX 2480MHz
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**Antenna at Horizontal Polarization**

Emission Frequency (MHz)	Antenna Factor (dB/m)	Cable Loss (dB)	Meter Reading (dBμV)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Detector
150.28	16.93	2.84	17.00	36.77	43.50	6.73	Peak
238.55	18.22	3.71	21.12	43.05	46.00	2.95	Peak
298.69	19.76	4.29	12.80	36.85	46.00	9.15	Peak
676.99	25.48	7.01	9.54	42.03	46.00	3.97	Peak
720.64	25.87	7.20	12.01	45.08	46.00	0.92	Peak
747.80	26.10	7.34	10.73	44.17	46.00	1.83	Peak

**Antenna at Vertical Polarization**

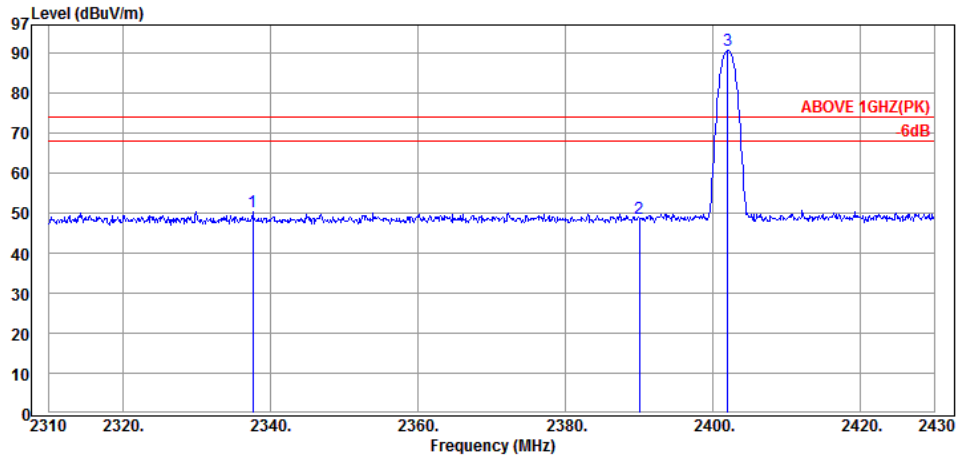
Emission Frequency (MHz)	Antenna Factor (dB/m)	Cable Loss (dB)	Meter Reading (dBμV)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Detector
40.67	19.15	1.41	16.74	37.30	40.00	2.70	Peak
56.19	13.25	1.67	22.14	37.06	40.00	2.94	Peak
149.31	17.01	2.83	23.34	43.18	43.50	0.32	Peak
224.97	17.44	3.59	19.60	40.63	46.00	5.37	Peak
606.18	24.79	6.77	5.41	36.97	46.00	9.03	Peak
723.55	25.90	7.22	8.18	41.30	46.00	4.70	Peak



6.5.1.3. Frequency Above 1 GHz to 10<sup>th</sup> harmonics

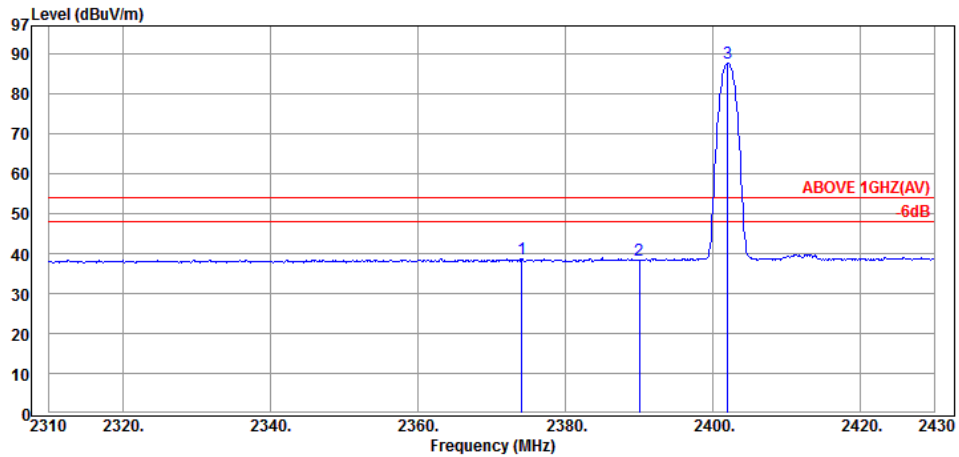
**Band Edge:**

Modulation	8-DPSK	Frequency	TX 2402MHz
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**Antenna at Horizontal Polarization**

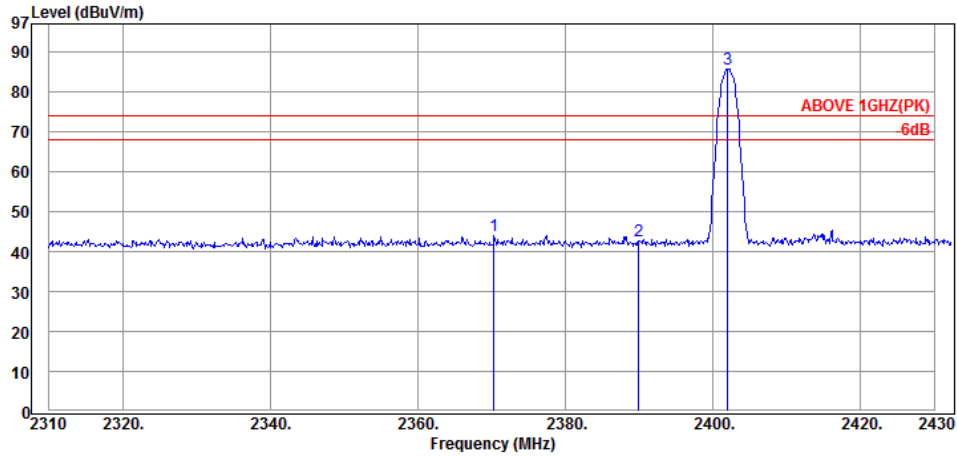
Emission Frequency (MHz)	Antenna Factor (dB/m)	Cable Loss (dB)	Meter Reading (dBμV)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Detector
2337.60	28.29	5.20	16.80	50.29	74.00	23.71	Peak
2390.04	28.35	5.24	14.99	48.58	74.00	25.42	Peak
2402.04	28.37	5.25	57.13	90.75	---	---	Peak



**Antenna at Horizontal Polarization**

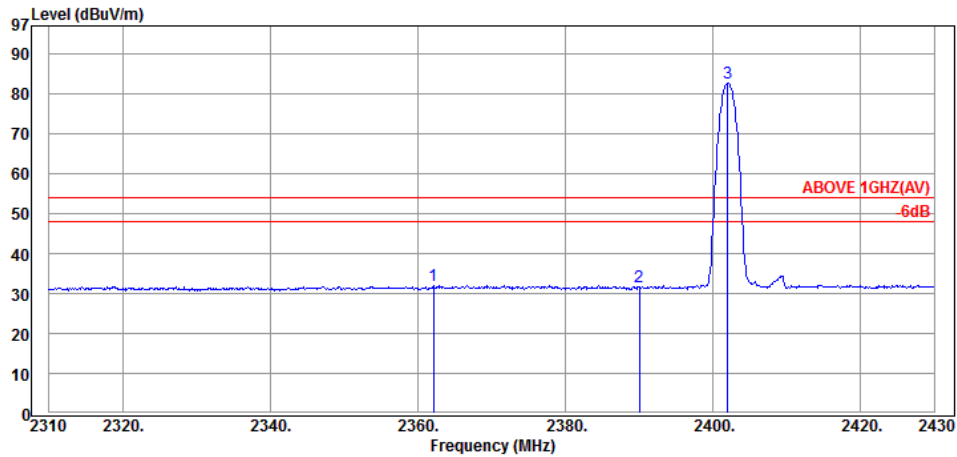
Emission Frequency (MHz)	Antenna Factor (dB/m)	Cable Loss (dB)	Meter Reading (dBμV)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Detector
2374.08	28.34	5.23	5.22	38.79	54.00	15.21	Average
2390.04	28.35	5.24	4.62	38.21	54.00	15.79	Average
2402.04	28.37	5.25	54.03	87.65	---	---	Average

Modulation	8-DPSK	Frequency	TX 2402MHz
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**Antenna at Vertical Polarization**

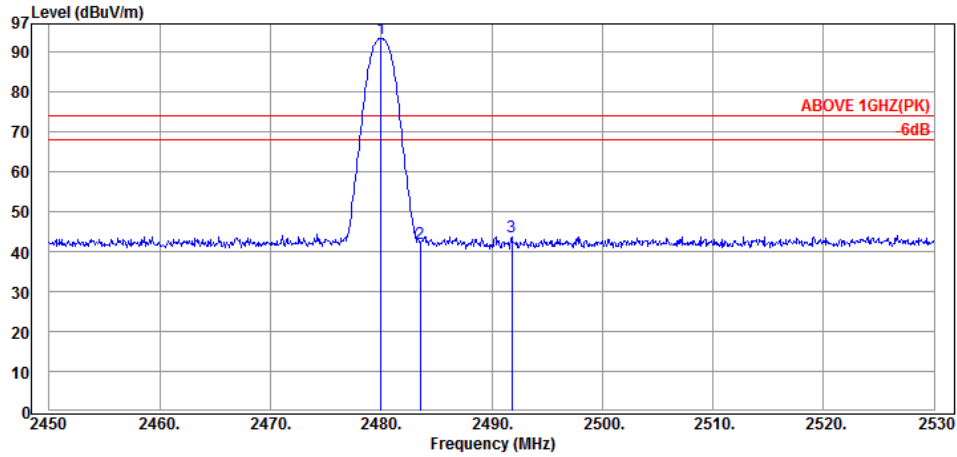
Emission Frequency (MHz)	Antenna Factor (dB/m)	Cable Loss (dB)	Meter Reading (dBμV)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Detector
2370.34	28.34	5.22	10.39	43.95	74.00	30.05	Peak
2389.94	28.35	5.24	9.11	42.70	74.00	31.30	Peak
2401.98	28.37	5.25	52.15	85.77	---	---	Peak



**Antenna at Vertical Polarization**

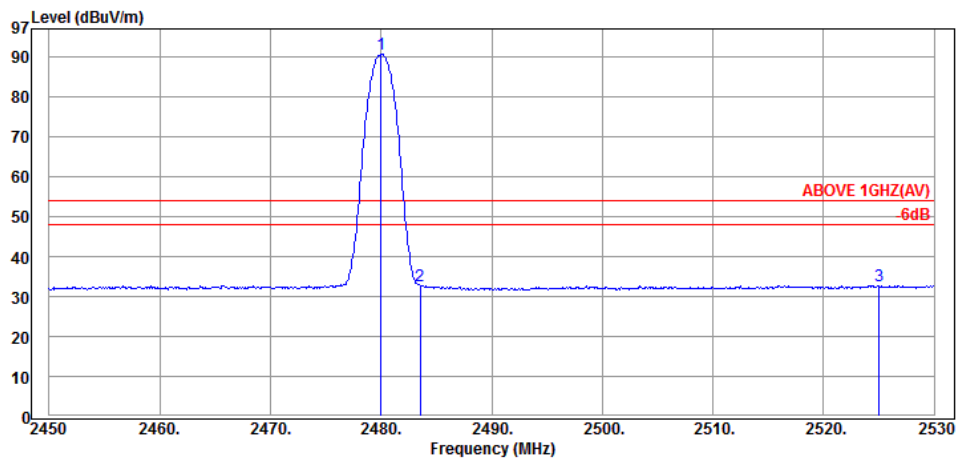
Emission Frequency (MHz)	Antenna Factor (dB/m)	Cable Loss (dB)	Meter Reading (dBμV)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Detector
2362.08	28.32	5.22	-1.56	31.98	54.00	22.02	Average
2390.04	28.35	5.24	-1.98	31.61	54.00	22.39	Average
2402.04	28.37	5.25	49.04	82.66	---	---	Average

Modulation	8-DPSK	Frequency	TX 2480MHz
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**Antenna at Horizontal Polarization**

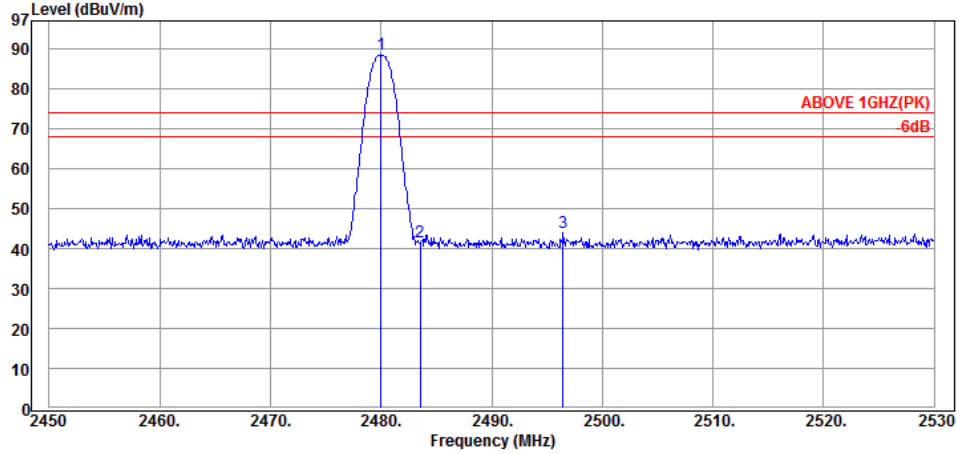
Emission Frequency (MHz)	Antenna Factor (dB/m)	Cable Loss (dB)	Meter Reading (dBμV)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Detector
2480.00	28.47	5.30	59.61	93.38	---	---	Peak
2483.52	28.48	5.31	8.13	41.92	74.00	32.08	Peak
2491.84	28.49	5.31	9.95	43.75	74.00	30.25	Peak



**Antenna at Horizontal Polarization**

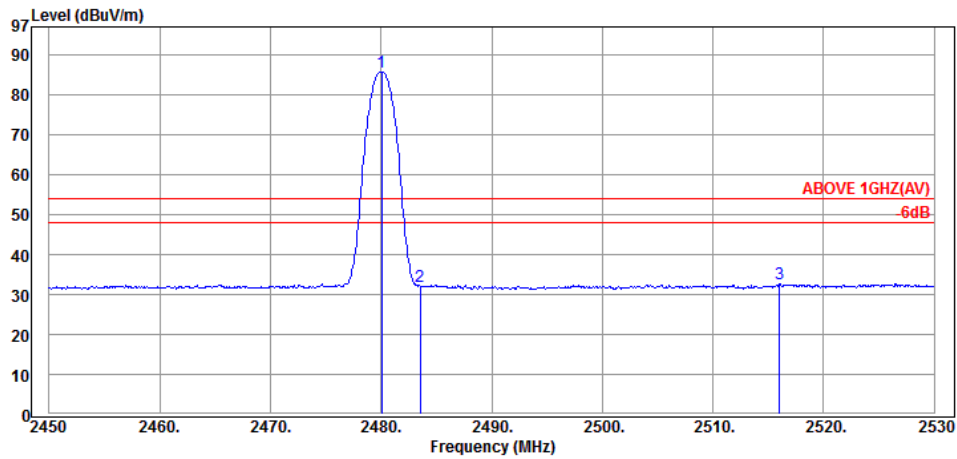
Emission Frequency (MHz)	Antenna Factor (dB/m)	Cable Loss (dB)	Meter Reading (dBμV)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Detector
2480.00	28.47	5.30	56.85	90.62	---	---	Average
2483.52	28.48	5.31	-1.18	32.61	54.00	21.39	Average
2525.04	28.58	5.34	-1.22	32.70	54.00	21.30	Average

Modulation	8-DPSK	Frequency	TX 2480MHz
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**Antenna at Vertical Polarization**

Emission Frequency (MHz)	Antenna Factor (dB/m)	Cable Loss (dB)	Meter Reading (dBμV)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Detector
2480.00	28.47	5.30	54.81	88.58	---	---	Peak
2483.52	28.48	5.31	7.96	41.75	74.00	32.25	Peak
2496.48	28.50	5.31	10.10	43.91	74.00	30.09	Peak



**Antenna at Vertical Polarization**

Emission Frequency (MHz)	Antenna Factor (dB/m)	Cable Loss (dB)	Meter Reading (dBμV)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Detector
2480.08	28.47	5.30	52.04	85.81	---	---	Average
2483.52	28.48	5.31	-1.64	32.15	54.00	21.85	Average
2516.00	28.55	5.33	-1.28	32.60	54.00	21.40	Average

6.5.2. Emissions outside the frequency band:

The emissions (up to 25GHz) not reported for there is no emission be found.

Modulation	8-DPSK	Frequency	TX 2402MHz
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**Antenna at Horizontal Polarization**

Emission Frequency (MHz)	Antenna Factor (dB/m)	Cable Loss (dB)	Meter Reading (dB $\mu$ V)	Emission Level (dB $\mu$ V/m)	Limits (dB $\mu$ V/m)	Margin (dB)	Detector
4805.00	32.82	8.98	7.80	49.60	54.00	4.40	Peak

**Antenna at Vertical Polarization**

Emission Frequency (MHz)	Antenna Factor (dB/m)	Cable Loss (dB)	Meter Reading (dB $\mu$ V)	Emission Level (dB $\mu$ V/m)	Limits (dB $\mu$ V/m)	Margin (dB)	Detector
4805.00	32.82	8.98	7.92	49.72	54.00	4.28	Peak

Modulation	8-DPSK	Frequency	TX 2441MHz
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**Antenna at Horizontal Polarization**

Emission Frequency (MHz)	Antenna Factor (dB/m)	Cable Loss (dB)	Meter Reading (dB $\mu$ V)	Emission Level (dB $\mu$ V/m)	Limits (dB $\mu$ V/m)	Margin (dB)	Detector
4880.00	32.96	9.08	8.21	50.25	54.00	3.75	Peak

**Antenna at Vertical Polarization**

Emission Frequency (MHz)	Antenna Factor (dB/m)	Cable Loss (dB)	Meter Reading (dB $\mu$ V)	Emission Level (dB $\mu$ V/m)	Limits (dB $\mu$ V/m)	Margin (dB)	Detector
4880.00	32.96	9.08	9.44	51.48	54.00	2.52	Peak

Modulation	8-DPSK	Frequency	TX 2480MHz
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**Antenna at Horizontal Polarization**

Emission Frequency (MHz)	Antenna Factor (dB/m)	Cable Loss (dB)	Meter Reading (dB $\mu$ V)	Emission Level (dB $\mu$ V/m)	Limits (dB $\mu$ V/m)	Margin (dB)	Detector
4960.00	33.12	9.20	8.26	50.58	54.00	3.42	Peak

**Antenna at Vertical Polarization**

Emission Frequency (MHz)	Antenna Factor (dB/m)	Cable Loss (dB)	Meter Reading (dB $\mu$ V)	Emission Level (dB $\mu$ V/m)	Limits (dB $\mu$ V/m)	Margin (dB)	Detector
4960.00	33.12	9.20	8.60	50.92	54.00	3.08	Peak

**6.5.3. Emissions in Non-restricted Frequency Bands**

All emission levels below the 15.209 general radiated emissions limits is not required.

## **7. DEVIATION TO TEST SPECIFICATIONS**

**【NONE】**