Shenzhen CTL Testing Technology Co., Ltd.
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FCC PART 15 SUBPART C TEST REPORT

Report Reference No.:	**CTL1412022878-WF02**	
Compiled by: (position+printed name+signature)	Happy Guo (File administrators)	Happy Guo
Tested by: (position+printed name+signature)	Nice Nong (Test Engineer)	Nice Nong
Approved by: (position+printed name+signature)	Tracy Qi (Manager)	Tracy Qi

Product Name.....:	Wireless USB Microphone
Model/Type reference.....:	AC-410W-R
Trade Mark.....:	MXL
FCC ID.....:	**PI2AC-410W-R**
Applicant's name.....:	**Marshall Electronics Inc**
Address of applicant.....:	1910 East Maple Ave. El Segundo CA, 90245
Test Firm.....:	**Shenzhen CTL Testing Technology Co., Ltd.**
Address of Test Firm.....:	Floor 1-A, Baisha Technology Park, No.3011, Shahexi Road, Nanshan District, Shenzhen, China 518055
Test specification.....:	
Standard.....:	**FCC Part 15.249:** Operation within the bands 920-928 MHz, 2400-2483.5 MHz, 5725-5850 MHz and 24.0 - 24.25 GHz.
TRF Originator……..:	Shenzhen CTL Testing Technology Co., Ltd.
Master TRF……:	Dated 2011-01
Date of Receipt.....:	July 25, 2015
Date of Test Date.....:	July 25, 2015 - July 30, 2015
Data of Issue.....:	July 31, 2015
Result.....:	**Positive**

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TEST REPORT

Test Report No. :	CTL1412022878-WF02	July 31, 2015 Date of issue

Equipment under Test	:	Wireless USB Microphone
Model /Type	:	AC-410W-R
Applicant	:	**Marshall Electronics Inc**
Address	:	1910 East Maple Ave. El Segundo CA, 90245
Manufacturer	:	**Shanghai Senguo Electronics Ltd.**
Address	:	No.386, Lianyi Village, Huanting Town, Jianding District, Shanghai, China

Test Result according to the standards on page 4:	**Positive**

The test report merely corresponds to the test sample.
It is not permitted to copy extracts of these test result without the written permission of the test laboratory.

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1. TEST STANDARDS

The tests were performed according to following standards:

FCC Rules Part 15.249: Operation within the bands 902 - 928 MHz, 2400 - 2483.5 MHz, 5725 - 5875 MHz, and 24.0 - 24.25 GHz.

ANSI C63.10-2013

ANSI C63.4-2014

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2. SUMMARY

2.1. Equipment Under Test

Power supply system utilised

Power supply voltage : ● 120V / 60 Hz o 115V / 60Hz
● 5 V DC o 24 V DC
o Other (specified in blank below)

DC 5.0V from USB

2.2. Description of the Equipment under Test (EUT)

Name of EUT	Wireless USB Microphone
Model Number	AC-410W-R
Antenna Type	Internal
Operation frequency	2404MHz-2473MHz
Modulation Type	GFSK

Channel List:

Channel	Frequency (MHz)
01	2404
02	2417
03	2431
04	2445
05	2459
06	2473

For more details, refer to the user's manual of the EUT.
Serial number: Prototype

2.3. EUT operation mode

Test Mode(TM)	Description	Remark
TM1	Bottom Channel Transmitting	/
TM2	Middle Channel Transmitting	/
TM3	Top Channel Transmitting	/

The field strength of radiation emission was measured in the following position: EUT stand-up position (Y axis), lie-down position (X, Z axis).
The following data show only with the worst case setup.
The worst case of Y axis was reported.
Based on client request, all normal using modes of the normal function were tested but only the worst test data of the worst mode is reported by this report.
Remark: The worst case mode is TM1(1Mbps) reported for unwanted emission and band edge test.

2.4. EUT configuration

The following peripheral devices and interface cables were connected during the measurement:
o - supplied by the manufacturer

● - supplied by the lab

● Notebook PC Manufacturer : DELL
FCC DOC Approved Model No. : PP18L

2.5. Related Submittal(s) / Grant (s)

This submittal(s) (test report) is intended for FCC ID: **PI2AC-410W-R** filing to comply with Section 15.249 of the FCC Part 15, Subpart C Rules.

2.6. Modifications

No modifications were implemented to meet testing criteria.

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CTL

3. TEST ENVIRONMENT

3.1. Address of the test laboratory

Shenzhen CTL Testing Technology Co., Ltd.
Floor 1-A, Baisha Technology Park, No. 3011, Shahexi Road, Nanshan, Shenzhen 518055 China

There is one 3m semi-anechoic chamber and two line conducted labs for final test. The Test Sites meet the requirements in documents ANSI C63.4 and CISPR 22/EN 55022 requirements.

3.2. Test Facility

The test facility is recognized, certified, or accredited by the following organizations:

IC Registration No.: 9618B

The 3m alternate test site of Shenzhen CTL Testing Technology Co., Ltd. EMC Laboratory has been registered by Certification and Engineer Bureau of Industry Canada for the performance of with Registration No.: 9618B on November 13, 2013.

FCC-Registration No.: 970318

Shenzhen CTL Testing Technology Co., Ltd. EMC Laboratory has been registered and fully described in a report filed with the (FCC) Federal Communications Commission. The acceptance letter from the FCC is maintained in our files. Registration 970318, December 19, 2013.

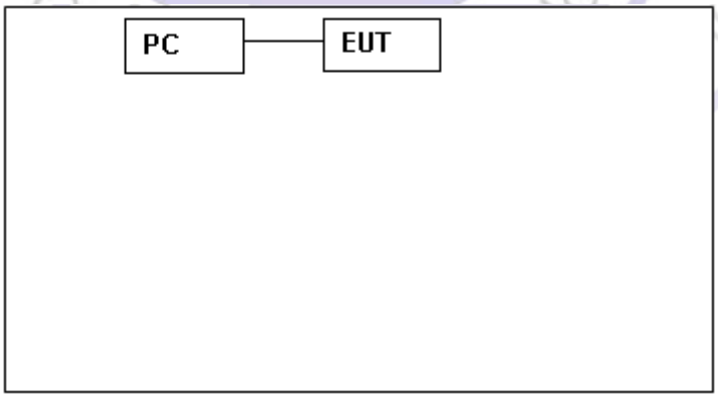
3.3. Environmental conditions

During the measurement the environmental conditions were within the listed ranges:

Temperature:	15-35 ° C
Humidity:	30-60 %
Atmospheric pressure:	950-1050mbar

3.4. Configuration of Tested System

Fig. 2-1 Configuration of Tested System



3.5. Statement of the measurement uncertainty

The data and results referenced in this document are true and accurate. The reader is cautioned that there may be errors within the calibration limits of the equipment and facilities. The measurement uncertainty was calculated for all measurements listed in this test report acc. to CISPR 16 - 4 „Specification for radio disturbance and immunity measuring apparatus and methods – Part 4: Uncertainty in EMC Measurements“ and is documented in the Shenzhen CTL Testing Technology Co., Ltd. quality system acc. to DIN EN ISO/IEC 17025. Furthermore, component and process variability of devices similar to that tested may result in additional deviation. The manufacturer has the sole responsibility of continued compliance of the device.

Hereafter the best measurement capability for CTL laboratory is reported:

Test	Range	Measurement Uncertainty	Notes
Radiated Emission	30~1000MHz	4.10dB	(1)
Radiated Emission	1~26.5GHz	4.32dB	(1)
Conducted Disturbance	0.15~30MHz	3.20dB	(1)

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

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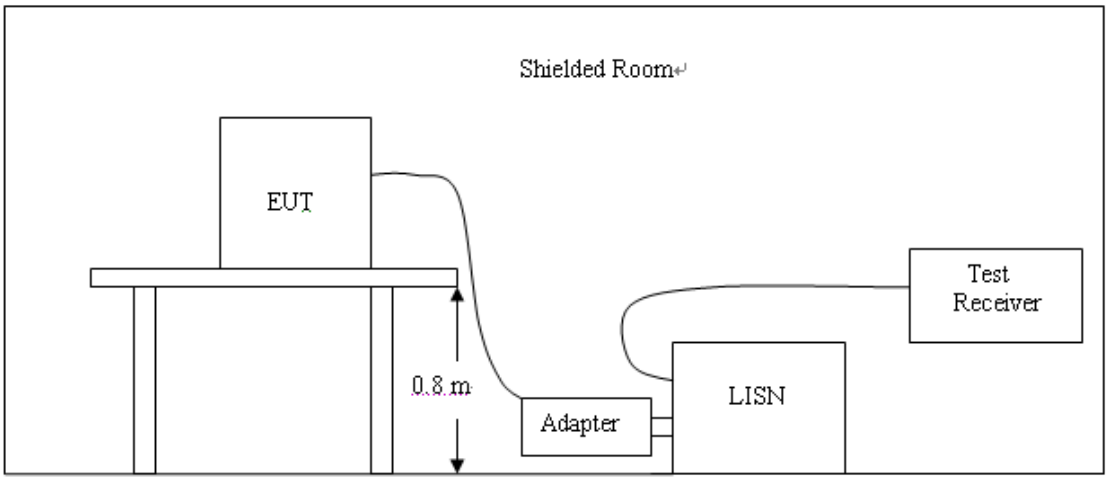
3.6. Equipments Used during the Test

Test Equipment	Manufacturer	Model No.	Serial No.	Calibration Date	Calibration Due Date
ULTRA-ROADBAND ANTENNA	Sunol Sciences Corp.	JB1	A061713	2015/06/02	2016/06/01
EMI Test Receiver	R&S	ESCI	103710	2015/06/02	2016/06/01
Spectrum Analyzer	Agilent	E4407B	MY41440676	2015/05/21	2016/05/20
Controller	EM Electronics	Controller EM 1000	N/A	2015/05/21	2016/05/20
Horn Antenna	Sunol Sciences Corp.	DRH-118	A062013	2015/05/19	2016/05/18
Active Loop Antenna	Daze	ZN30900A	N/A	2015/05/19	2016/05/18
LISN	R&S	ENV216	3560.6550.12	2015/06/02	2016/06/01
LISN	R&S	ESH2-Z5	860014/010	2015/06/02	2016/06/01
ISN	FCC	F-071115-1057-1-09	11229	2015/05/19	2016/05/18
Amplifier	Agilent	8349B	3008A02306	2015/05/19	2016/05/18
Amplifier	Agilent	8447D	2944A10176	2015/05/19	2016/05/18
Transient Limiter	SCHWARZCECK	VTSD 9561F	9666	2015/06/02	2016/06/01
Radio Communication Tester	R&S	CMU200	115419	2015/05/22	2016/05/21
Temperature/Humidity Meter	Gangxing	CTH-608	02	2015/05/20	2016/05/19
SIGNAL GENERATOR	Agilent	E4421B	US40051744	2015/05/20	2016/05/19
Wideband Peak Power Meter	Anritsu	ML2495A	220.23.35	2015/05/20	2016/05/19
Climate Chamber	ESPEC	EL-10KA	A20120523	2015/05/20	2016/05/19
High-Pass Filter	K&L	9SH10-2700/X12750-O/O	N/A	2015/05/20	2016/05/19
High-Pass Filter	K&L	41H10-1375/U12750-O/O	N/A	2015/05/20	2016/05/19
RF Cable	HUBER+SUHNER	RG214	N/A	2015/05/20	2016/05/19

4. TEST CONDITIONS AND RESULTS

4.1. Conducted Emissions Test

TEST CONFIGURATION



TEST PROCEDURE

1 The equipment was set up as per the test configuration to simulate typical actual usage per the user's manual. The EUT is a tabletop system, a wooden table with a height of 0.8 meters is used and is placed on the ground plane as per ANSI C63.10.

2 Support equipment, if needed, was placed as per ANSI C63.10.

3 All I/O cables were positioned to simulate typical actual usage as per ANSI C63.10.

4 If a EUT received DC power from the USB Port of Notebook PC, the PC's adapter received AC120V/60Hz power through a Line Impedance Stabilization Network (LISN) which supplied power source and was grounded to the ground plane.

5 All support equipments received AC power from a second LISN, if any.

6 The EUT test program was started. Emissions were measured on each current carrying line of the EUT using a spectrum Analyzer / Receiver connected to the LISN powering the EUT. The LISN has two monitoring points: Line 1 (Hot Side) and Line 2 (Neutral Side). Two scans were taken: one with Line 1 connected to Analyzer / Receiver and Line 2 connected to a 50 ohm load; the second scan had Line 1 connected to a 50 ohm load and Line 2 connected to the Analyzer / Receiver.

7 Analyzer / Receiver scanned from 150 KHz to 30MHz for emissions in each of the test modes.

8 During the above scans, the emissions were maximized by cable manipulation.

The RBW/VBW for 150KHz to 30MHz: 9KHz

CONDUCTED POWER LINE EMISSION LIMIT

For unintentional device, according to § 15.207(a) Line Conducted Emission Limits is as following：

Frequency (MHz)	Maximum RF Line Voltage (dBμV)			
	CLASS A		CLASS B	
	Q.P.	Ave.	Q.P.	Ave.
0.15 - 0.50	79	66	66-56*	56-46*
0.50 - 5.00	73	60	56	46
5.00 - 30.0	73	60	60	50

* Decreasing linearly with the logarithm of the frequency

For intentional device, according to §15.207(a) Line Conducted Emission Limit is same as above table.

TEST RESULTS

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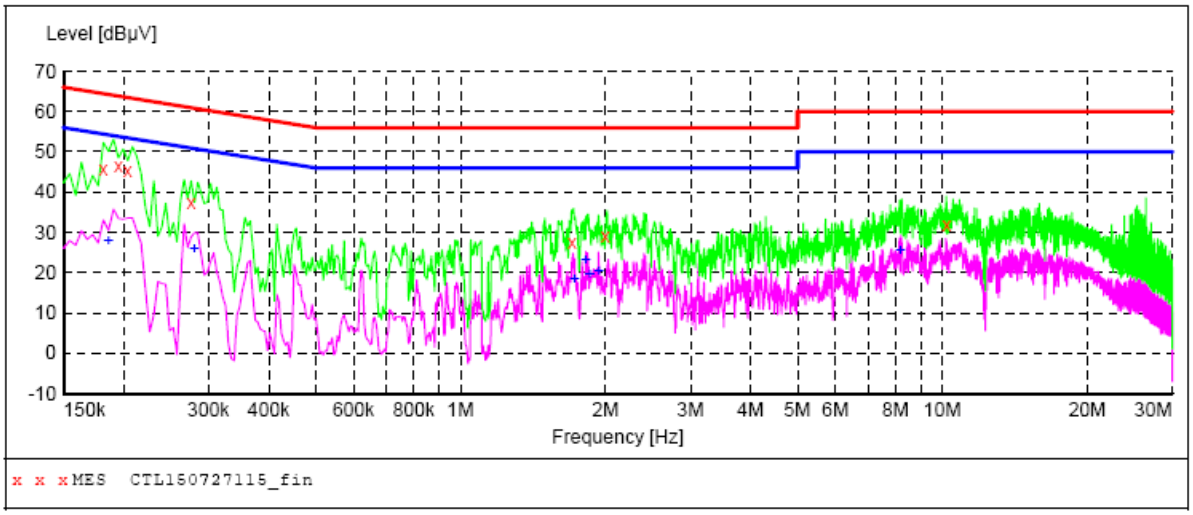
SCAN TABLE: "Voltage (9K-30M)FIN"

Short Description: 150K-30M Voltage



MEASUREMENT RESULT: "CTL150727115_fin"

7/27/2015 3:41PM

Frequency MHz	Level dBµV	Transd dB	Limit dBµV	Margin dB	Detector	Line	PE
0.181500	45.80	10.2	64	18.6	QP	N	GND
0.195000	46.60	10.2	64	17.2	QP	N	GND
0.204000	45.40	10.2	63	18.0	QP	N	GND
0.276000	37.50	10.2	61	23.4	QP	N	GND
1.702500	27.60	10.3	56	28.4	QP	N	GND
1.999500	29.10	10.3	56	26.9	QP	N	GND

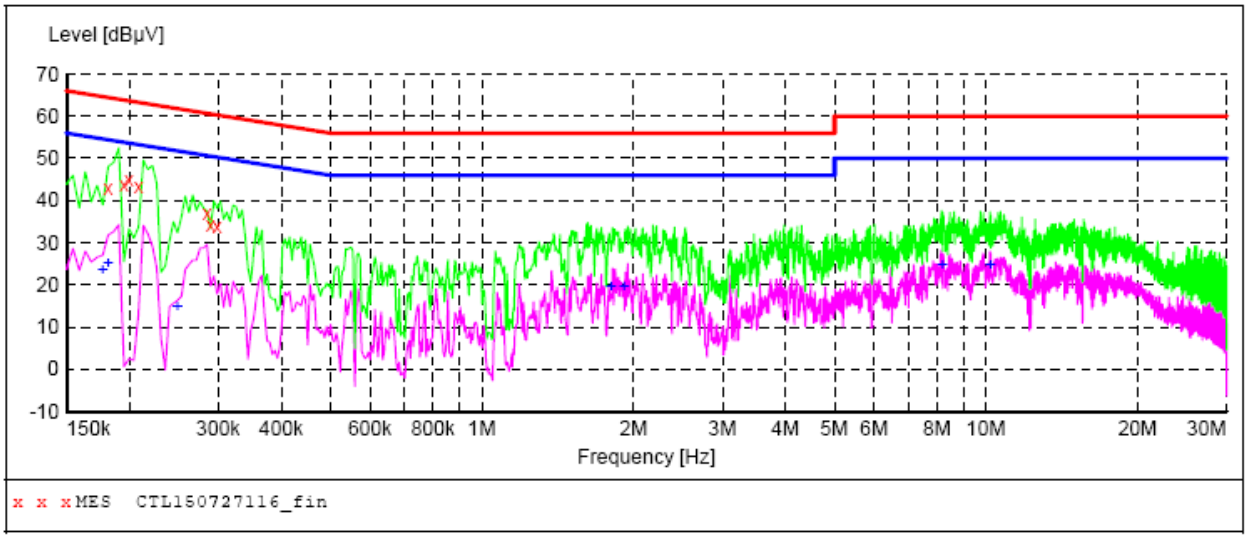
MEASUREMENT RESULT: "CTL150727115_fin2"

7/27/2015 3:41PM

Frequency MHz	Level dBµV	Transd dB	Limit dBµV	Margin dB	Detector	Line	PE
0.186000	27.90	10.2	54	26.3	AV	N	GND
0.280500	25.90	10.2	51	24.9	AV	N	GND
1.725000	18.30	10.3	46	27.7	AV	N	GND
1.819500	23.30	10.3	46	22.7	AV	N	GND
1.855500	19.70	10.3	46	26.3	AV	N	GND
1.936500	20.40	10.3	46	25.6	AV	N	GND

SCAN TABLE: "Voltage (9K-30M)FIN"

Short Description: 150K-30M Voltage



MEASUREMENT RESULT: "CTL150727116_fin"

7/27/2015 3:45PM

Frequency MHz	Level dBµV	Transd dB	Limit dBµV	Margin dB	Detector	Line	PE
0.181500	42.90	10.2	64	21.5	QP	L1	GND
0.195000	43.80	10.2	64	20.0	QP	L1	GND
0.199500	44.80	10.2	64	18.8	QP	L1	GND
0.208500	43.50	10.2	63	19.8	QP	L1	GND
0.285000	37.10	10.2	61	23.6	QP	L1	GND
0.289500	34.20	10.2	61	26.3	QP	L1	GND

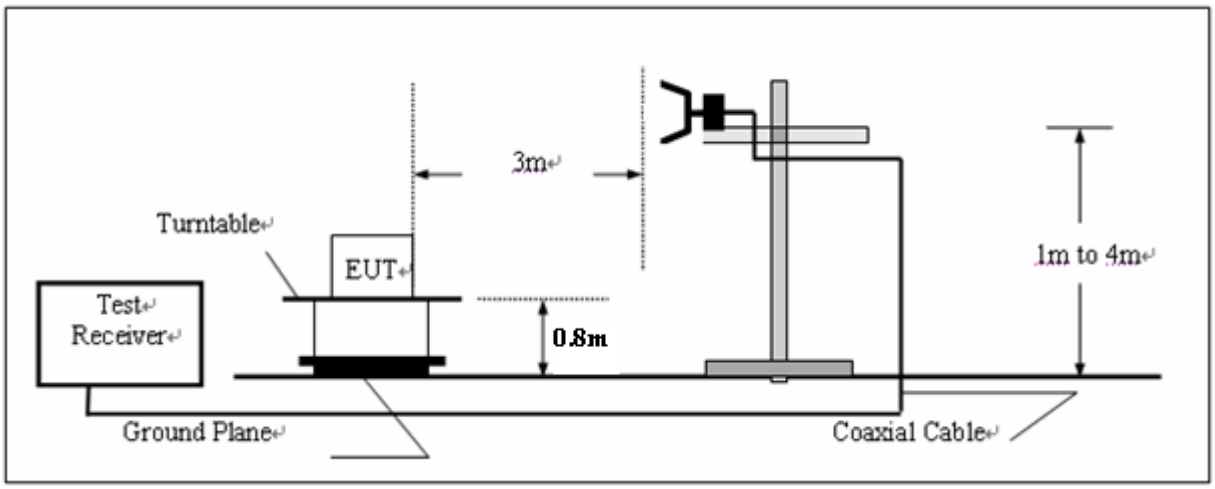
MEASUREMENT RESULT: "CTL150727116_fin2"

7/27/2015 3:45PM

Frequency MHz	Level dBµV	Transd dB	Limit dBµV	Margin dB	Detector	Line	PE
0.177000	23.60	10.2	55	31.0	AV	L1	GND
0.181500	25.00	10.2	54	29.4	AV	L1	GND
0.249000	14.90	10.2	52	36.9	AV	L1	GND
1.806000	19.50	10.3	46	26.5	AV	L1	GND
1.918500	19.50	10.3	46	26.5	AV	L1	GND
8.191500	24.90	10.5	50	25.1	AV	L1	GND

4.2. Fundamental Emissions

TEST CONFIGURATION



Fundamental Emissions Limit

2400-2483.5 MHz Band: 94 dBuV/m (average)

For the transmitter emissions shall be measured using following options below:

Refer as ANSI C63.10, clause 4.2.3.2.2 measurement procedure peak limit.

TEST RESULTS

Field Strength of Fundamental Emissions Result					
Modulation	Frequency	Max.Fundamental	Margin	Limit	Type
Mode	(MHz)	(dBuV/m)@3m	(dB)	(dBuV/m)@3m	
GFSK	2404	83.39	30.61	114	peak
GFSK	2404	65.78	28.22	94	average
GFSK	2445	82.26	31.74	114	peak
GFSK	2445	64.77	29.23	94	average
GFSK	2473	84.01	29.99	114	peak
GFSK	2473	65.83	28.17	94	average

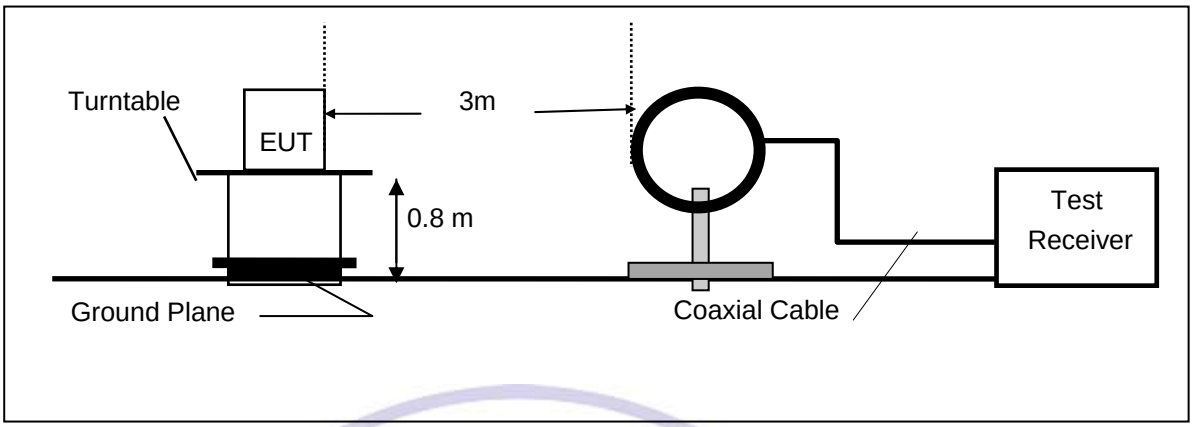
Note: Measurement worst emissions of receive antenna polarization: Vertical.
RBW 3MHz VBW 10MHz Peak detector is for PK value ,RMS detector is for AV value

Horizontal and Vertical polarity all have been tested ,only worse case is reported.

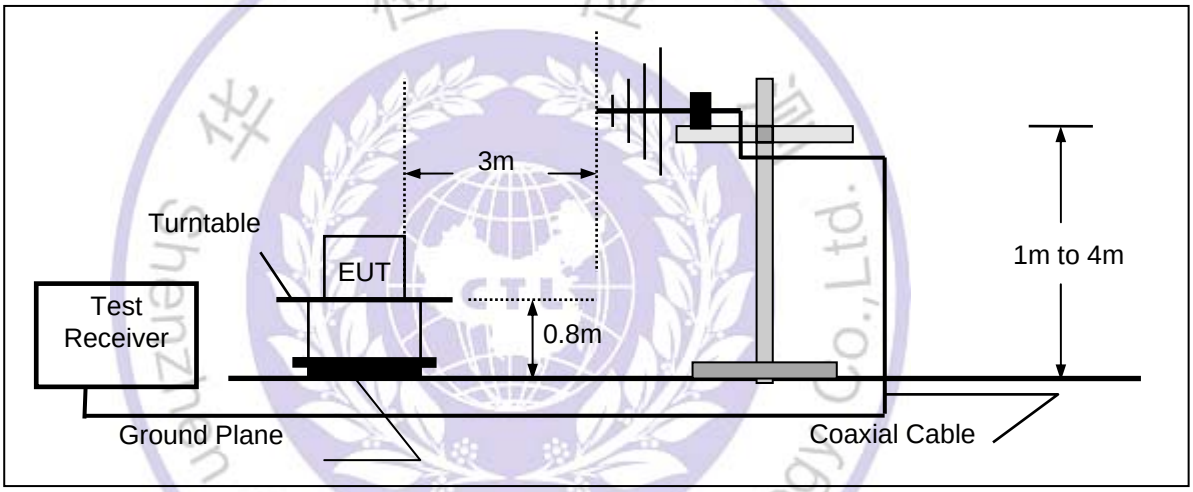
4.3. Transmitter Radiated Unwanted Emissions and Bandedge

TEST CONFIGURATION

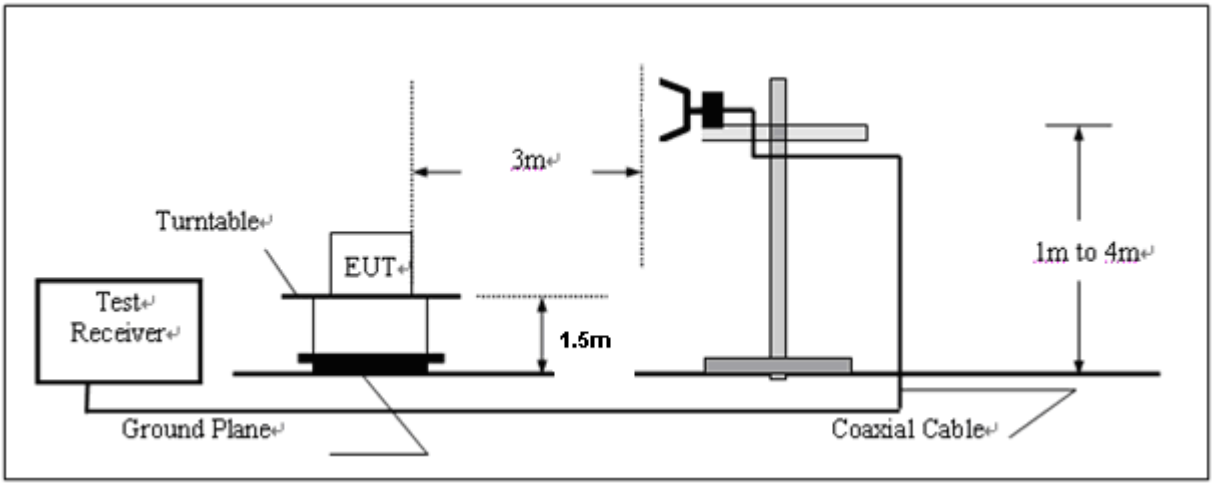
(A) Radiated Emission Test Set-Up, Frequency Below 30MHz



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



(C) Radiated Emission Test Set-Up, Frequency above 1000MHz



FIELD STRENGTH CALCULATION

The field strength is calculated by adding the Antenna Factor and Cable Factor and subtracting the Amplifier Gain and Duty Cycle Correction Factor(if any) from the measured reading. The basic equation with a sample calculation is as follows:

FS = RA + AF + CL - AG

Where FS = Field Strength	CL = Cable Attenuation Factor (Cable Loss)
RA = Reading Amplitude	AG = Amplifier Gain
AF = Antenna Factor	

RADIATION LIMIT

For unintentional device, according to § 15.209(a), except for Class A digital devices, the field strength of radiated emissions from unintentional radiators at a distance of 3 meters shall not exceed the following values：

Frequency (MHz)	Distance (Meters)	Radiated (dBμV/m)	Radiated (μV/m)
30-88	3	40.0	100
88-216	3	43.5	150
216-960	3	46.0	200
Above 960	3	54.0	500

For intentional device, according to § 15.209(a), the general requirement of field strength of radiated emissions from intentional radiators at a distance of 3 meters shall not exceed the above table.

TEST PROCEDURE

1. The EUT is placed on a turntable, which is 0.8m above ground plane.
2. The turntable shall be rotated for 360 degrees to determine the position of maximum emission level.
3. EUT is set 3m away from the receiving antenna, which is varied from 1m to 4m to find out the highest emissions.
4. Maximum procedure was performed on the six highest emissions to ensure EUT compliance.
5. And also, each emission was to be maximized by changing the polarization of receiving antenna both horizontal and vertical.
6. Repeat above procedures until the measurements for all frequencies are complete.
7. Based on the Frequency Generator in the device include 16MHz.The test frequency range from 9KHz to 25GHz per FCC PART 15.33(a).

Note:

Three axes are chosen for pretest, the Y axis is the worst mode for final test.

For battery operated equipment, the equipment tests shall be performed using a new battery.

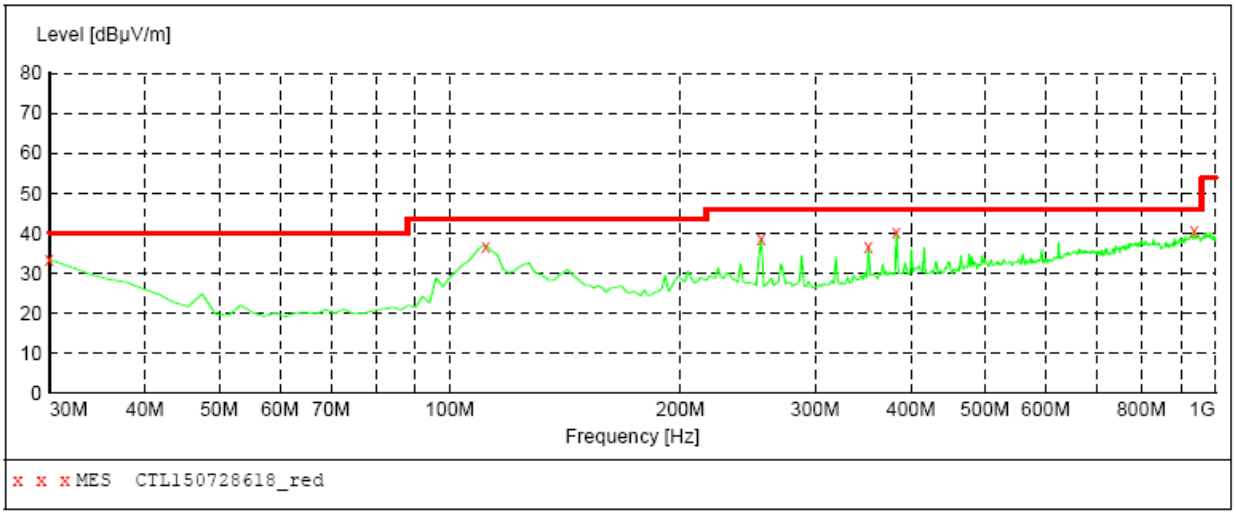
TEST RESULTS

All the test modes (TM1, TM2, TM3) completed for test. The worst case of Radiated Emission is TM1; the test data of this mode was reported.

Below 1GHz Test Results:

SWEEP TABLE: "test (30M-1G)"

Short Description:			Field Strength		
Start Frequency	Stop Frequency	Detector	Meas. Time	IF Bandw.	Transducer
30.0 MHz	1.0 GHz	MaxPeak	300.0 ms	120 kHz	JB1



MEASUREMENT RESULT: "CTL150728618_red"

7/29/2015 9:11AM

Frequency MHz	Level dBµV/m	Transd dB	Limit dBµV/m	Margin dB	Det.	Height cm	Azimuth deg	Polarization
30.000000	33.30	21.1	40.0	6.7	---	0.0	0.00	HORIZONTAL
111.480000	36.80	14.1	43.5	6.7	---	0.0	0.00	HORIZONTAL
255.040000	38.70	14.6	46.0	7.3	---	0.0	0.00	HORIZONTAL
352.040000	36.80	17.0	46.0	9.2	---	0.0	0.00	HORIZONTAL
383.080000	40.10	17.8	46.0	5.9	---	0.0	0.00	HORIZONTAL
937.920000	40.60	26.5	46.0	5.4	---	0.0	0.00	HORIZONTAL

Remark:

(1) Measuring frequencies from 9 KHz to the 1 GHz, Radiated emission test from 9KHz to 30MHz was verified, and no any emission was found except system noise floor.

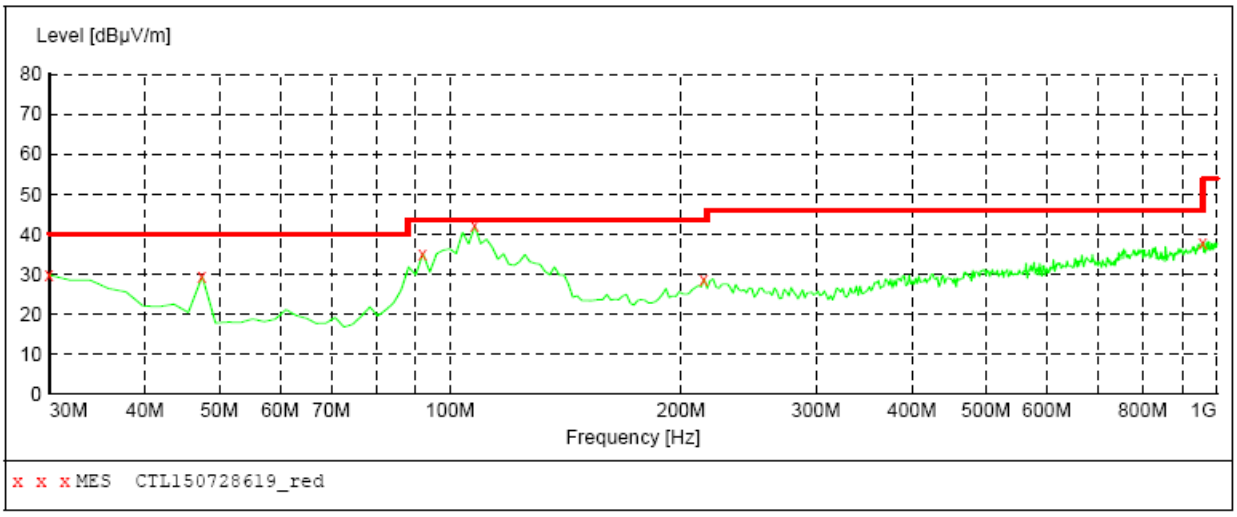
(2) * denotes emission frequency which appearing within the Restricted Bands specified in provision of 15.205, then the general radiated emission limits in 15.209 apply.

(3) The IF bandwidth of EMI Test Receiver between 30MHz to 1GHz was 120KHz, 1 MHz for measuring above 1 GHz, below 30MHz was 10KHz.

SWEEP TABLE: "test (30M-1G)"

Short Description: Field Strength

Start Frequency	Stop Frequency	Detector	Meas. Time	IF Bandw.	Transducer
30.0 MHz	1.0 GHz	MaxPeak	300.0 ms	120 kHz	JB1



MEASUREMENT RESULT: "CTL150728619_red"

7/29/2015 9:14AM

Frequency MHz	Level dBµV/m	Transd dB	Limit dBµV/m	Margin dB	Det.	Height cm	Azimuth deg	Polarization
30.000000	29.70	21.1	40.0	10.3	---	0.0	0.00	VERTICAL
47.460000	29.40	9.1	40.0	10.6	---	0.0	0.00	VERTICAL
92.080000	35.10	10.0	43.5	8.4	---	0.0	0.00	VERTICAL
107.600000	42.00	13.3	43.5	1.5	---	0.0	0.00	VERTICAL
214.300000	28.80	14.3	43.5	14.7	---	0.0	0.00	VERTICAL
959.260000	37.90	26.8	46.0	8.1	---	0.0	0.00	VERTICAL

Remark:

(1) Measuring frequencies from 9 KHz to the 1 GHz, Radiated emission test from 9KHz to 30MHz was verified, and no any emission was found except system noise floor.

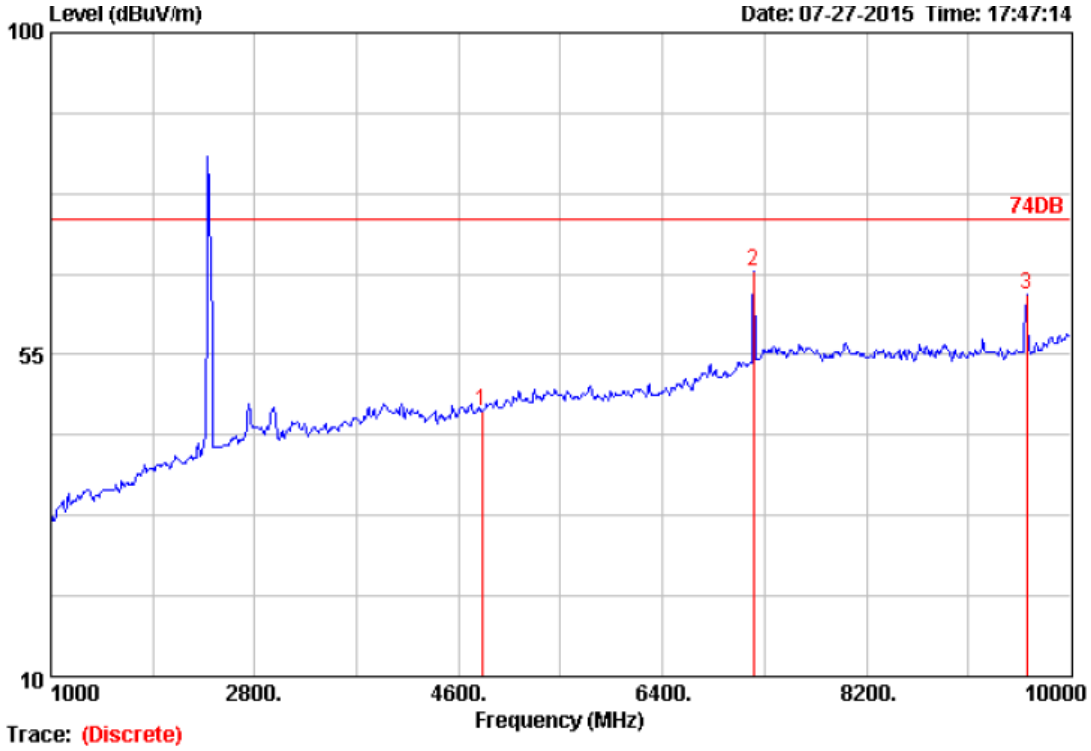
(2) * denotes emission frequency which appearing within the Restricted Bands specified in provision of 15.205, then the general radiated emission limits in 15.209 apply.

(3) The IF bandwidth of EMI Test Receiver between 30MHz to 1GHz was 120KHz, 1 MHz for measuring above 1 GHz, below 30MHz was 10KHz.

Remark: For above 1GHz , RBW 1MHz VBW 3MHz Peak detector is for PK value , RBW 1MHz VBW 10Hz Peak detector is for AV value .

Above 1 GHz Test Results:

2404MHz:



Mark	Frequency MHz	Level dBuV/m	Factor dB	Reading dBuV/m	Limit dB	Margin dB	Det.	Polarization HORIZONTAL
1	4808.00	47.14	6.05	41.09	74.00	26.86	Peak	
2	7201.00	66.71	11.07	55.64	74.00	7.29	Peak	
3	9613.00	63.30	13.54	49.76	74.00	10.70	Peak	

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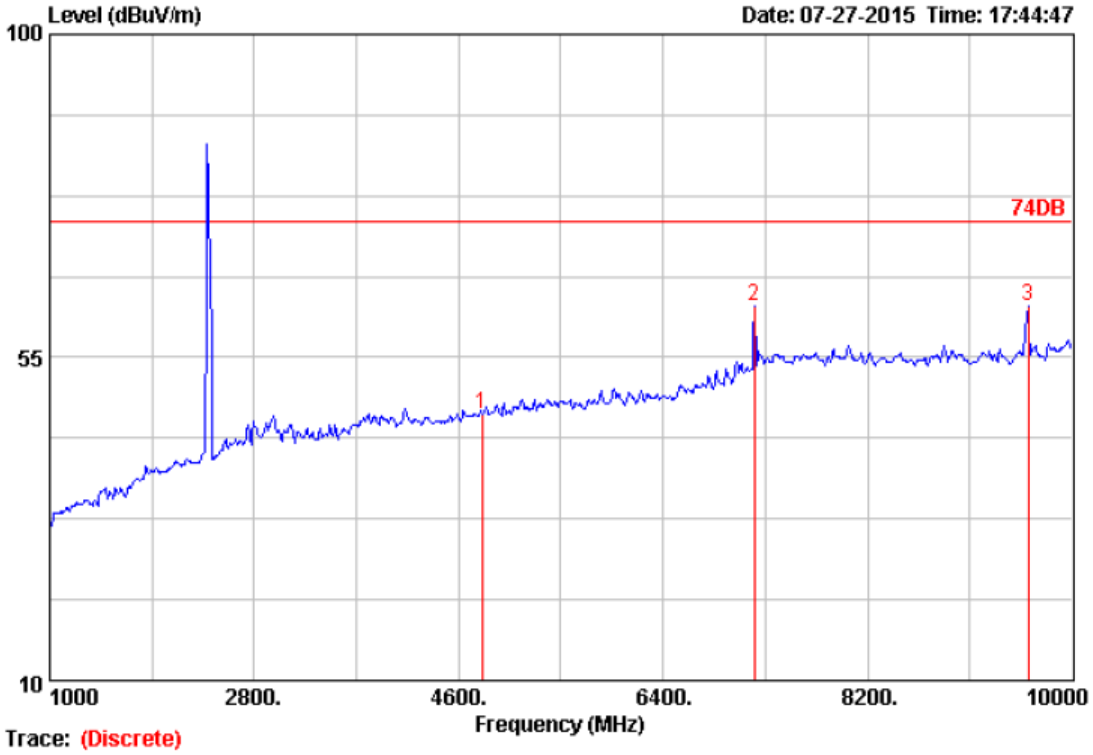

Mark	Frequency MHz	Level dBuV/m	Factor dB	Reading dBuV/m	Limit dB	Margin dB	Det.	Polarization VERTICAL
1	4808.00	47.18	6.05	41.13	74.00	26.82	Peak	
2	7201.00	62.26	11.07	51.19	74.00	11.74	Peak	
3	9613.00	62.21	13.54	48.67	74.00	11.79	Peak	

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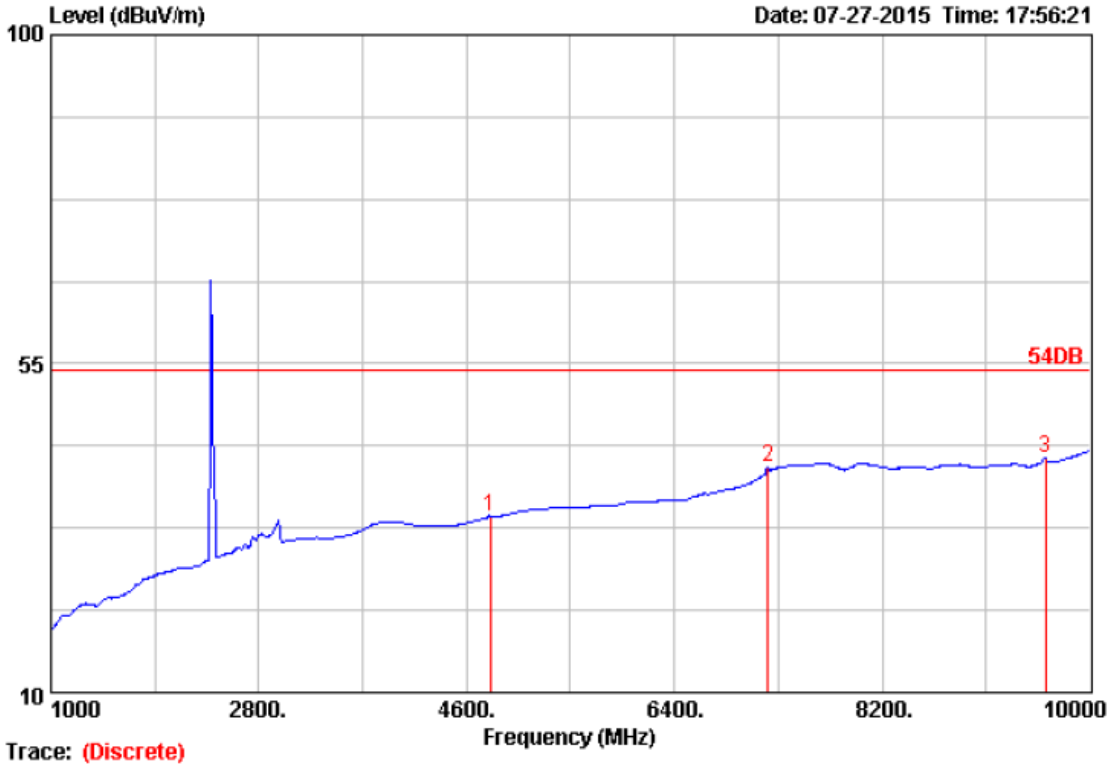

Mark	Frequency MHz	Level dBuV/m	Factor dB	Reading dBuV/m	Limit dB	Margin dB	Det.	Polarization HORIZONTAL
1	4808.00	34.11	6.05	28.06	54.00	19.89	Average	
2	7201.00	40.73	11.08	29.65	54.00	13.27	Average	
3	9616.00	42.21	13.55	28.66	54.00	11.79	Average	

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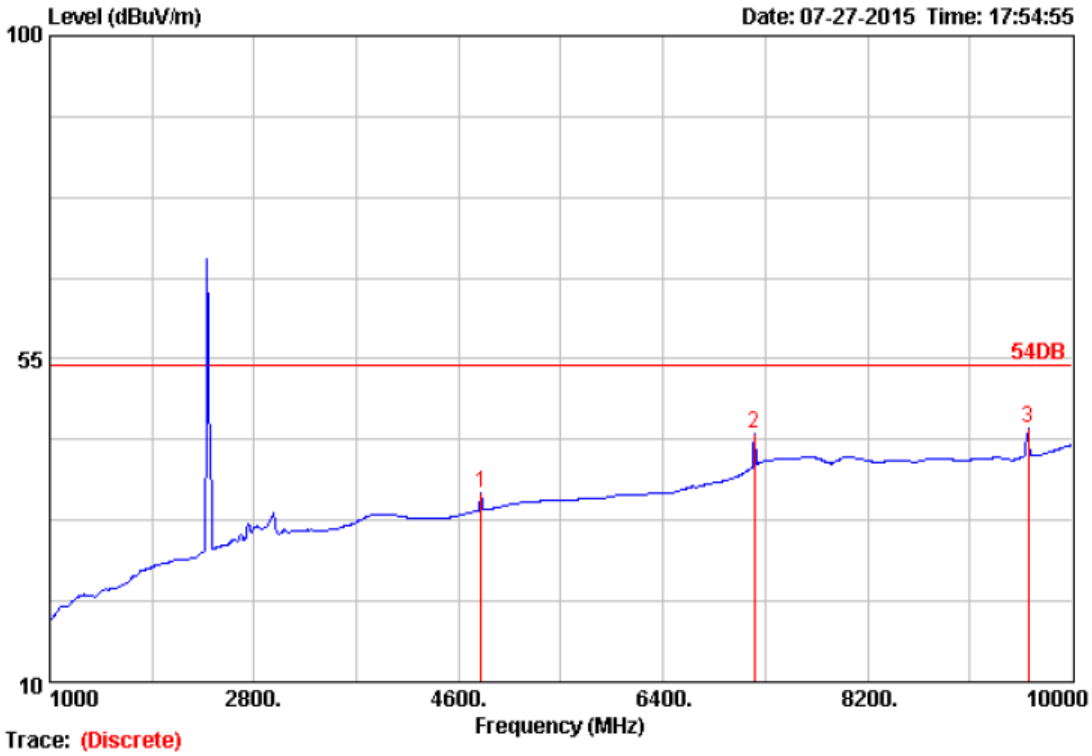

Mark	Frequency MHz	Level dBuV/m	Factor dB	Reading dBuV/m	Limit dB	Margin dB	Det.	Polarization VERTICAL
1	4798.00	36.44	5.99	30.45	54.00	17.56	Average	
2	7201.00	44.68	11.07	33.61	54.00	9.32	Average	
3	9613.00	45.39	13.54	31.85	54.00	8.61	Average	

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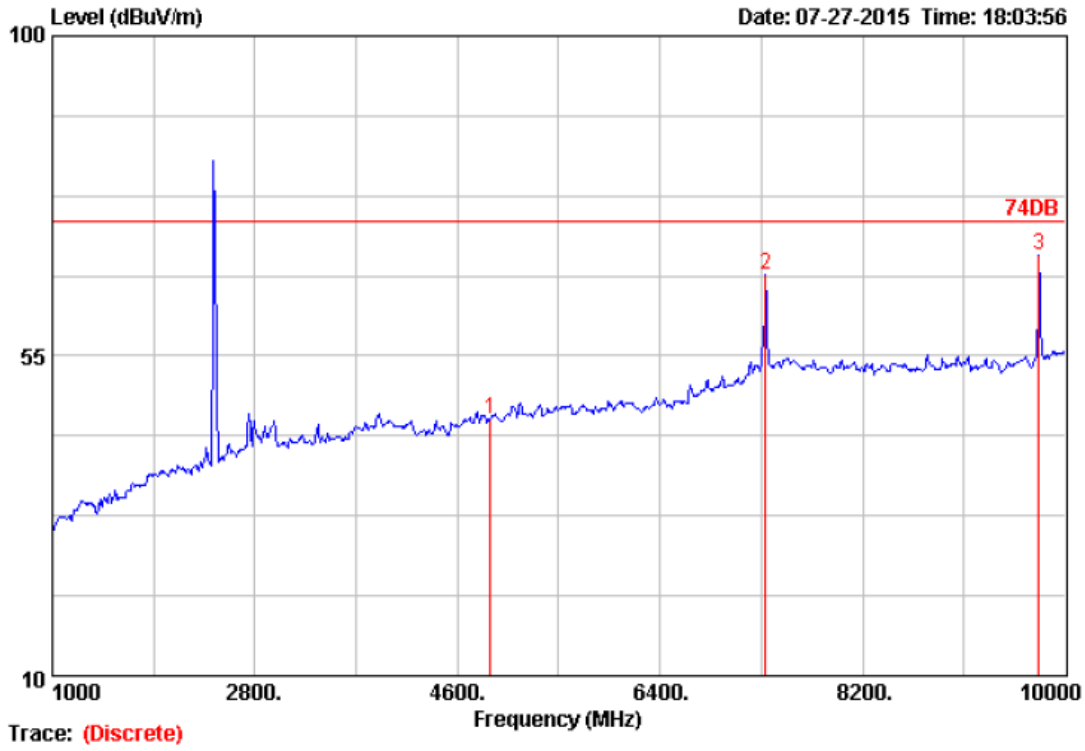
2445MHz:



Mark	Frequency MHz	Level dBuV/m	Factor dB	Reading dBuV/m	Limit dB	Margin dB	Det.	Polarization HORIZONTAL
1	4890.00	46.19	6.30	39.89	74.00	27.81	Peak	
2	7336.00	66.33	11.75	54.58	74.00	7.67	Peak	
3	9766.00	69.05	14.04	55.01	74.00	4.95	Peak	

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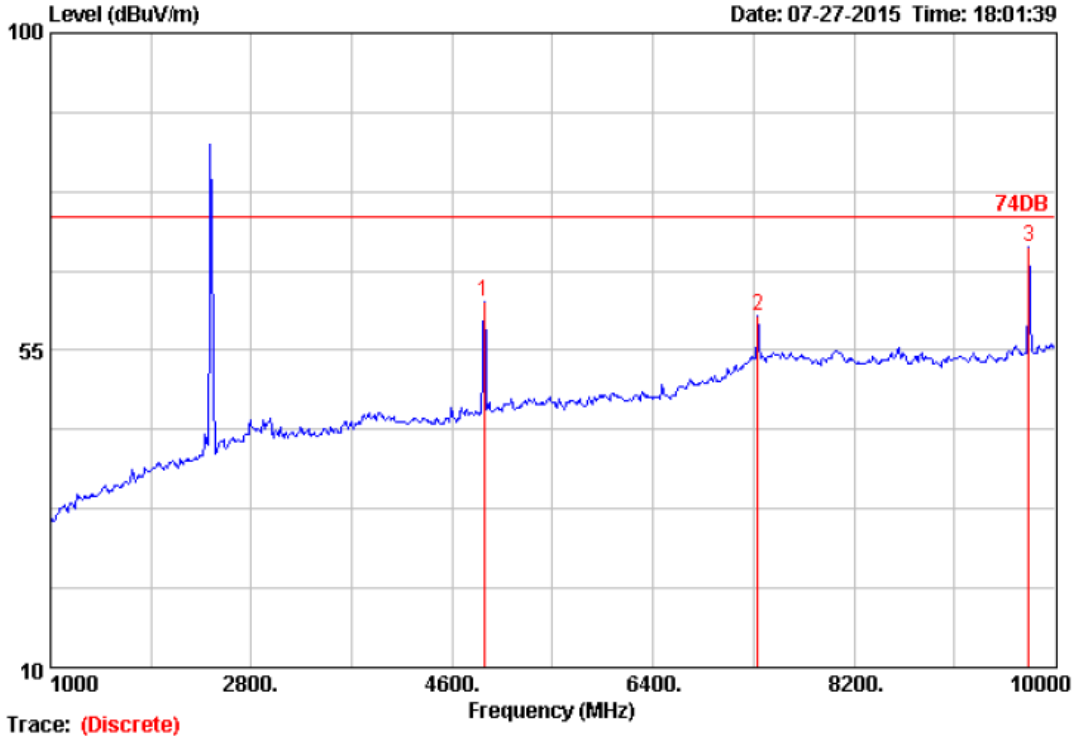

Mark	Frequency MHz	Level dBuV/m	Factor dB	Reading dBuV/m	Limit dB	Margin dB	Det.	Polarization VERTICAL
1	4888.00	61.78	6.30	55.48	74.00	12.22	Peak	
2	7336.00	59.98	11.75	48.23	74.00	14.02	Peak	
3	9766.00	69.71	14.04	55.67	74.00	4.29	Peak	

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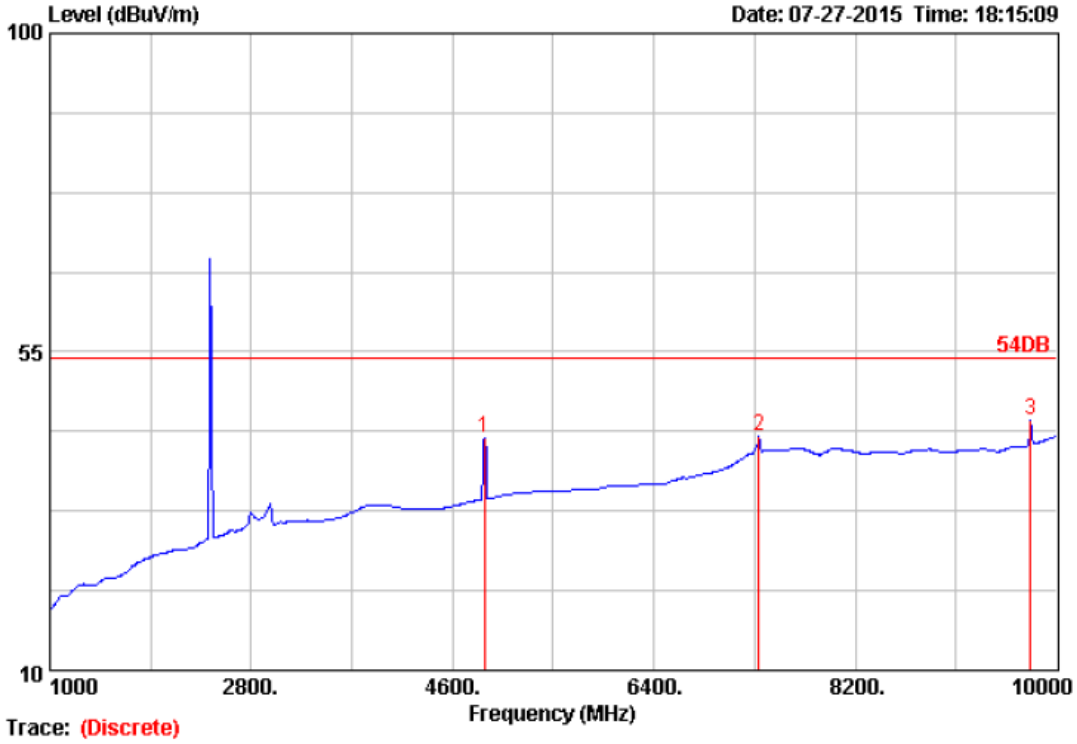

Mark	Frequency MHz	Level dBuV/m	Factor dB	Reading dBuV/m	Limit dB	Margin dB	Det.	Polarization: VERTICAL
1	4888.00	42.77	6.30	36.47	54.00	11.23	Average	
2	7336.00	43.03	11.75	31.28	54.00	10.97	Average	
3	9766.00	45.26	14.04	31.22	54.00	8.74	Average	

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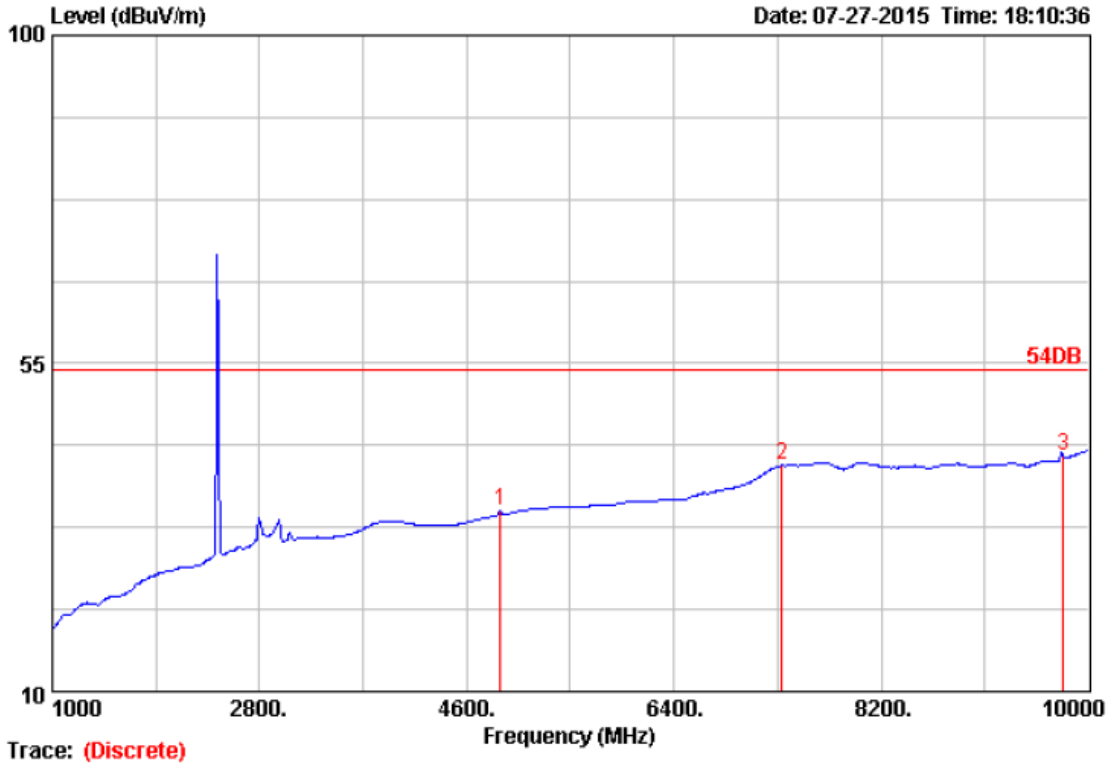

Mark	Frequency MHz	Level dBuV/m	Factor dB	Reading dBuV/m	Limit dB	Margin dB	Det.	Polarization HORIZONTAL
1	4890.00	34.73	6.30	28.43	54.00	19.27	Average	
2	7335.00	41.05	11.75	29.30	54.00	12.95	Average	
3	9766.00	42.25	14.06	28.19	54.00	11.75	Average	

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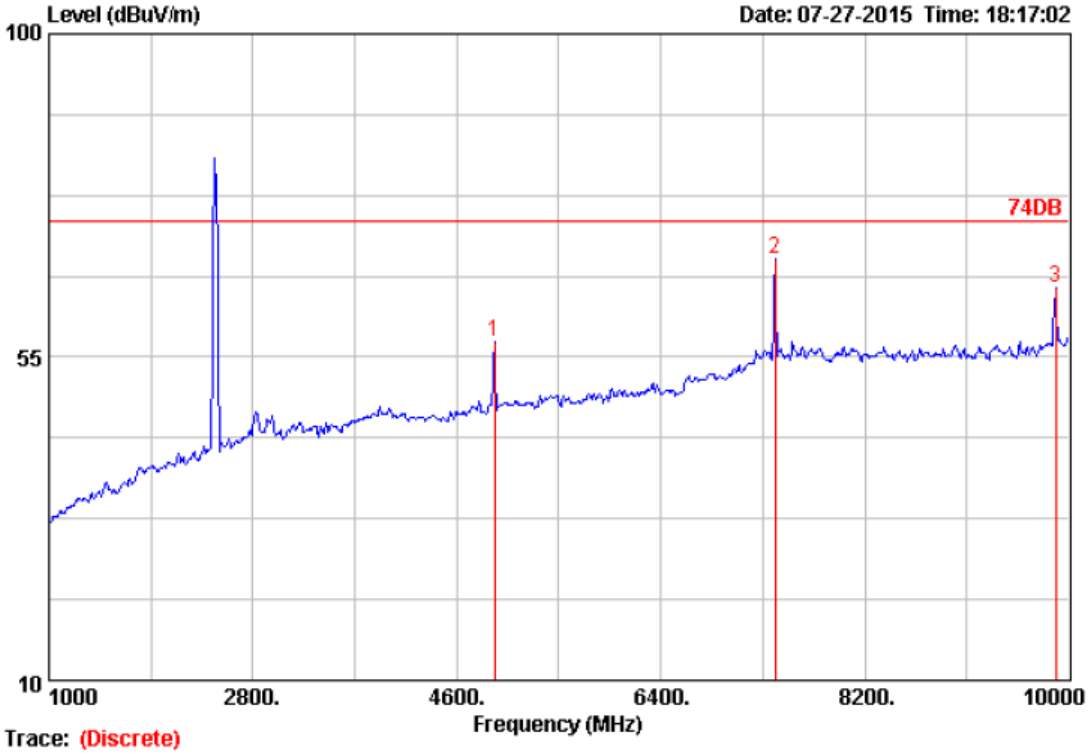
2473MHz:



Mark	Frequency MHz	Level dBuV/m	Factor dB	Reading dBuV/m	Limit dB	Margin dB	Det.	Polarization HORIZONTAL
1	4933.00	57.11	6.47	50.64	74.00	16.89	Peak	
2	7408.00	68.74	11.93	56.81	74.00	5.26	Peak	
3	9883.00	64.54	14.49	50.05	74.00	9.46	Peak	

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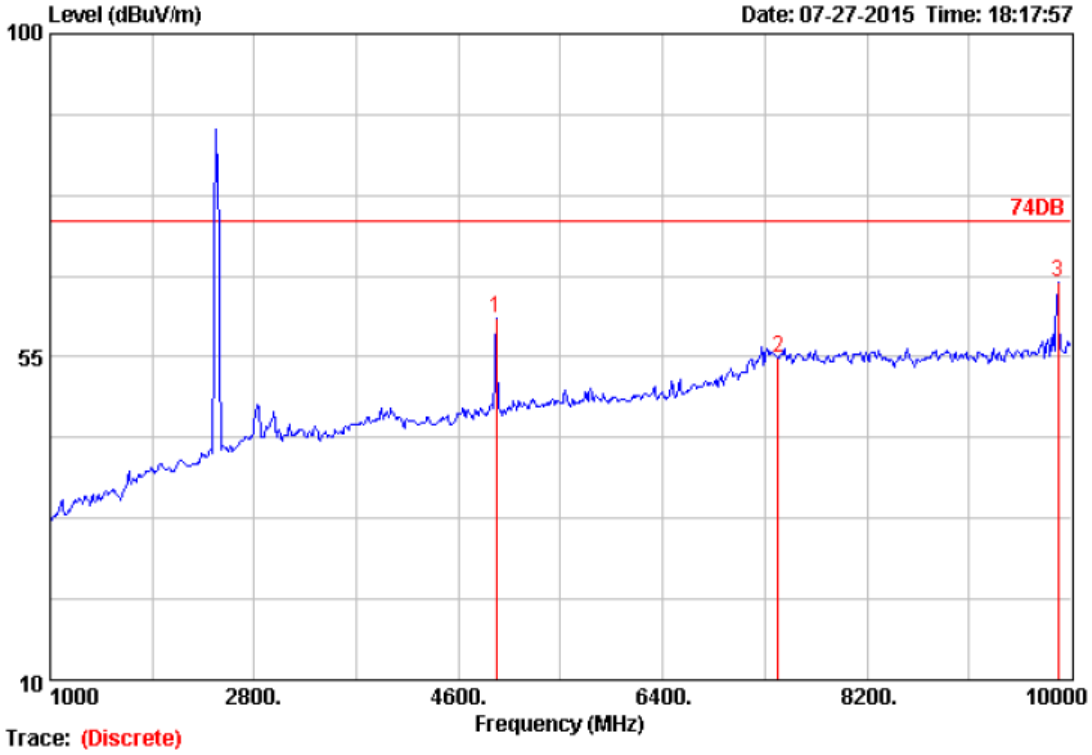
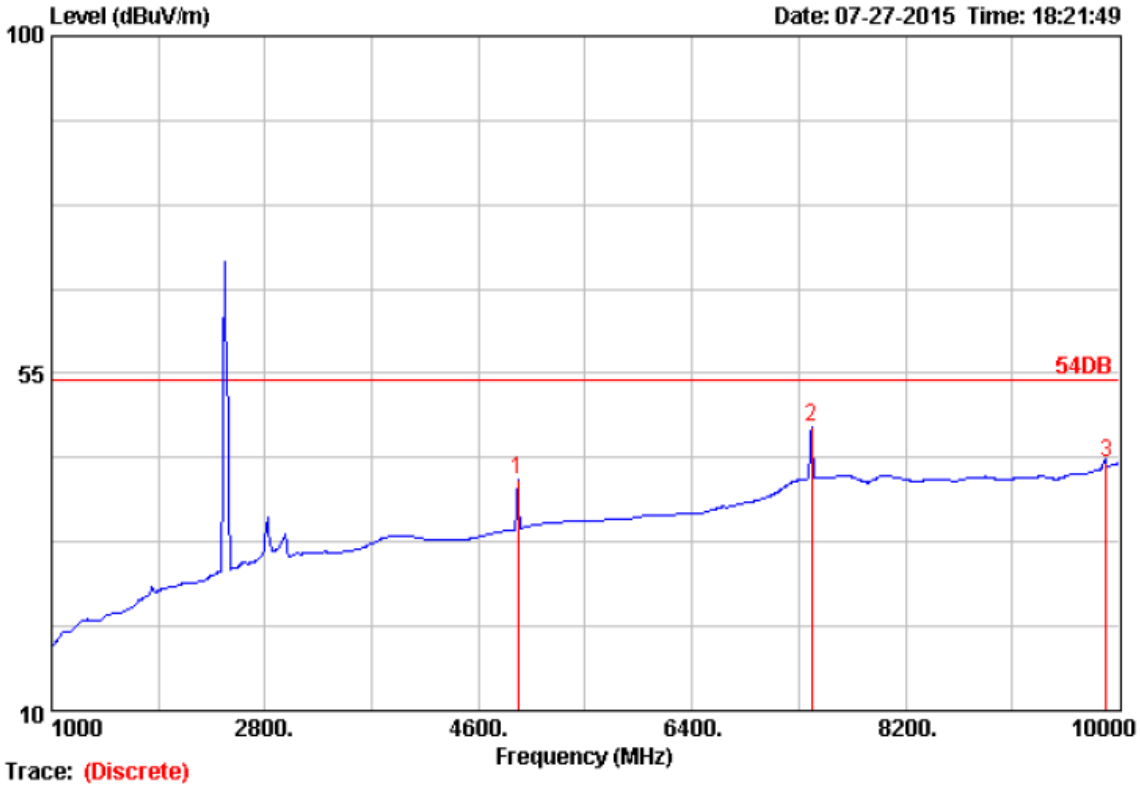


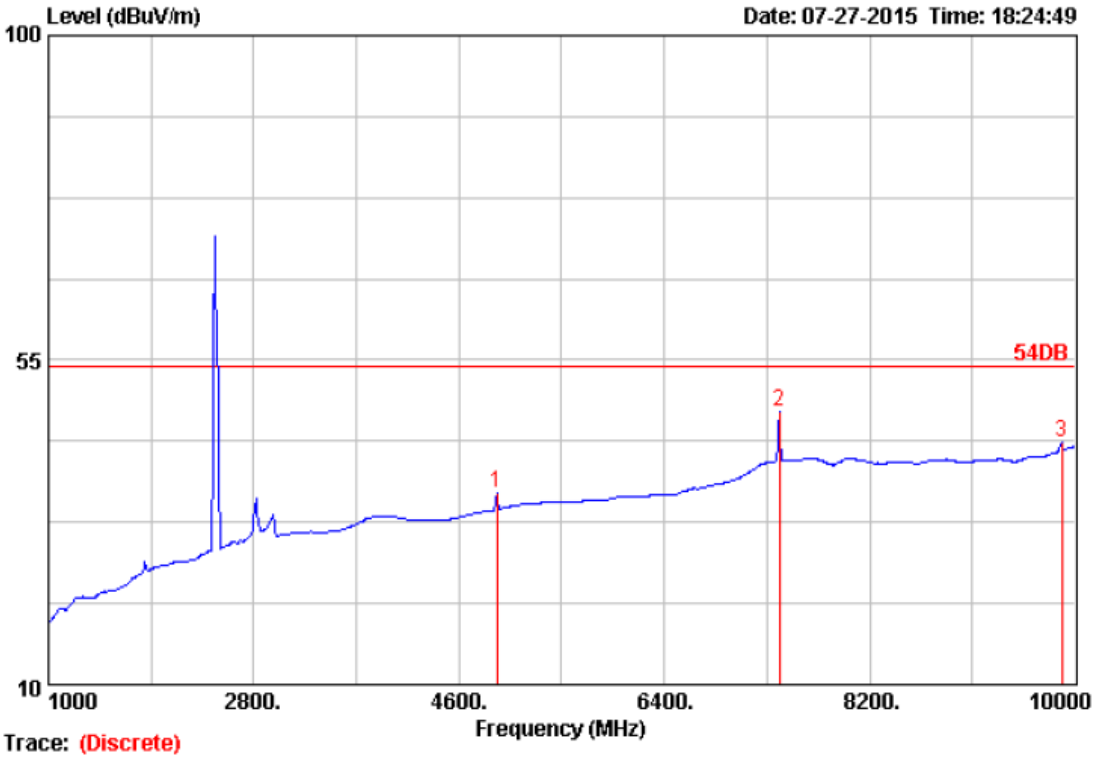
Mark	Frequency MHz	Level dBuV/m	Factor dB	Reading dBuV/m	Limit dB	Margin dB	Det.	Polarization VERTICAL
1	4933.00	60.27	6.47	53.80	74.00	13.73	Peak	
2	7419.00	54.88	11.94	42.94	74.00	19.12	Peak	
3	9883.00	65.29	14.49	50.80	74.00	8.71	Peak	

Shenzhen CTL Testing Technology Co.,L



Mark	Frequency MHz	Level dBuV/m	Factor dB	Reading dBuV/m	Limit dB	Margin dB	Det.	Polarization HORIZONTAL
1	4933.00	40.84	6.47	34.37	54.00	13.16	Average	
2	7408.00	47.82	11.93	35.89	54.00	6.18	Average	
3	9892.00	43.05	14.51	28.54	54.00	10.95	Average	

Shenzhen CTL Testing Technology Co



Mark	Frequency MHz	Level dBuV/m	Factor dB	Reading dBuV/m	Limit dB	Margin dB	Det.	Polarization VERTICAL
1	4933.00	36.66	6.47	30.19	54.00	17.34	Average	
2	7408.00	47.79	11.93	35.86	54.00	6.21	Average	
3	9883.00	43.61	14.49	29.12	54.00	10.39	Average	

Note: above 10GHz up to 25GHz was verified, and no any emission was found except system noise floor.

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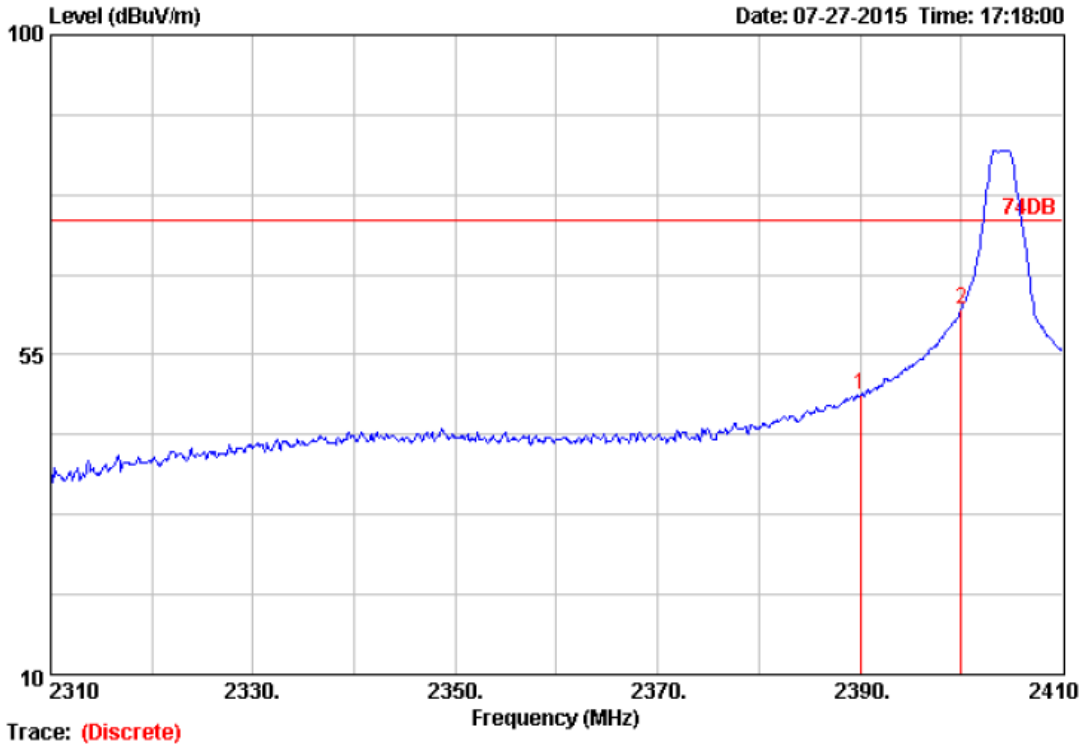
Bandedge:

2404MHz:



Mark	Frequency MHz	Level dBuV/m	Factor dB	Reading dBuV/m	Limit dB	Margin dB	Det.	Polarization HORIZONTAL
1	2390.00	49.24	-1.97	51.21	74.00	24.76	Peak	
2	2400.00	61.39	-1.97	63.36	74.00	12.61	Peak	

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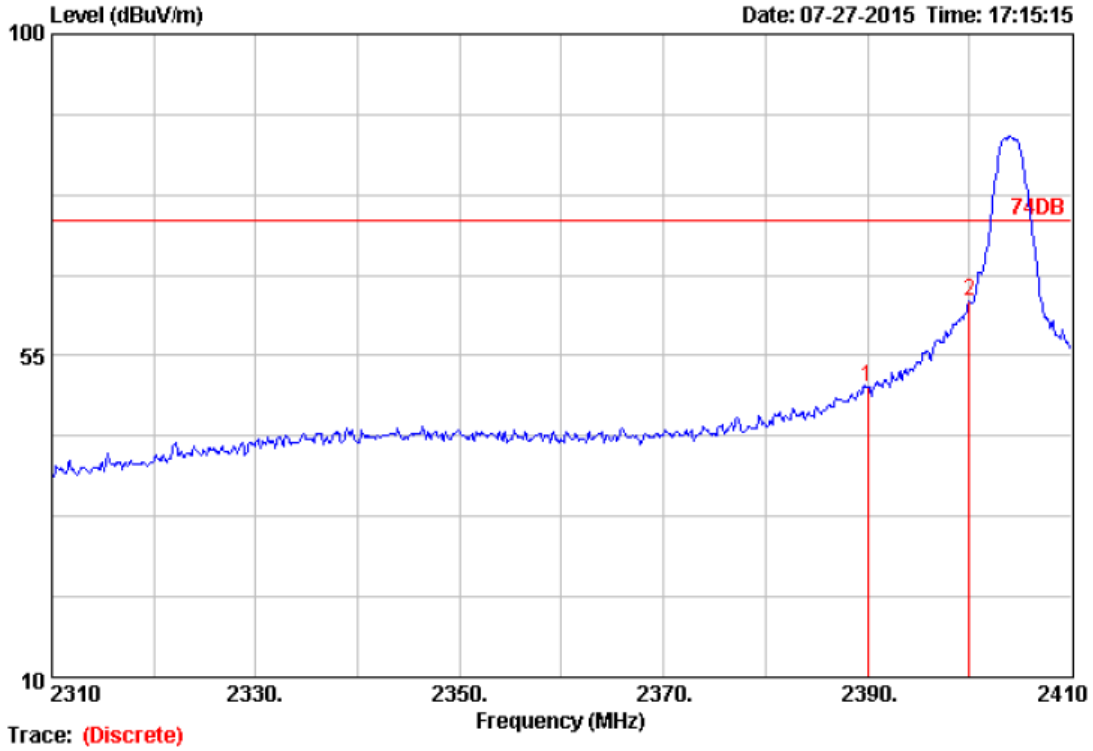

Mark	Frequency MHz	Level dBuV/m	Factor dB	Reading dBuV/m	Limit dB	Margin dB	Det.	Polarization VERTICAL
1	2390.00	50.59	-1.97	52.56	74.00	23.41	Peak	
2	2400.00	62.57	-1.97	64.54	74.00	11.43	Peak	

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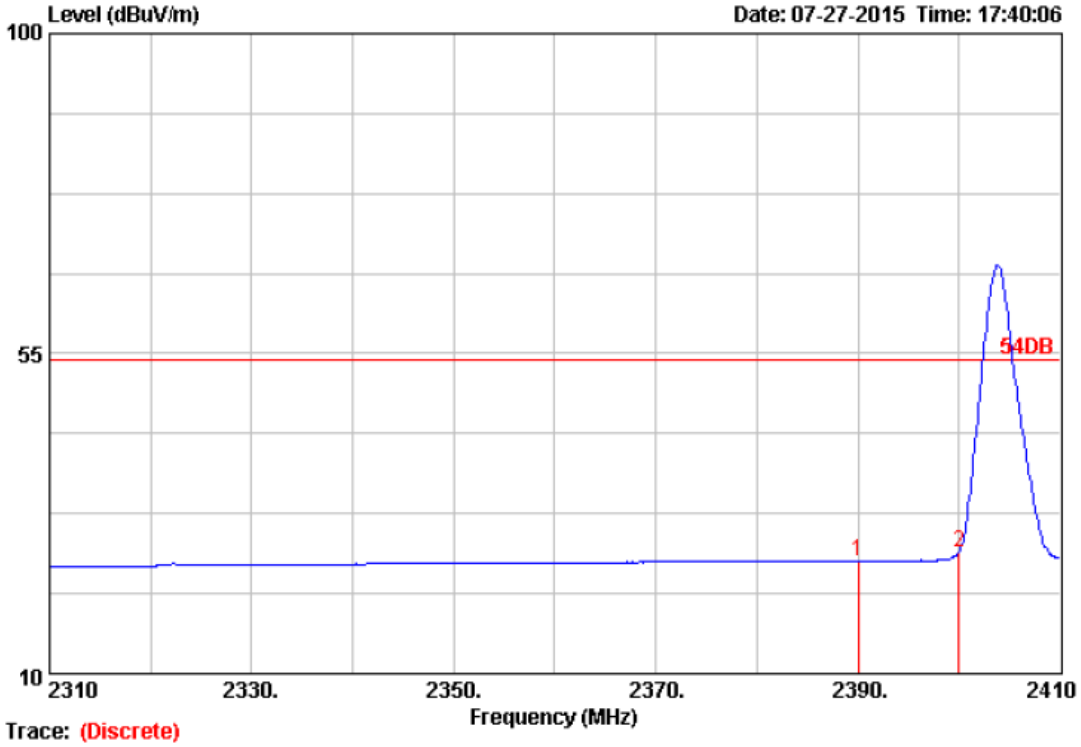

Mark	Frequency MHz	Level dBuV/m	Factor dB	Reading dBuV/m	Limit dB	Margin dB	Det.	Polarization HORIZONTAL
1	2390.00	25.83	-1.97	27.80	54.00	28.17	Average	
2	2400.00	27.12	-1.97	29.09	54.00	26.88	Average	

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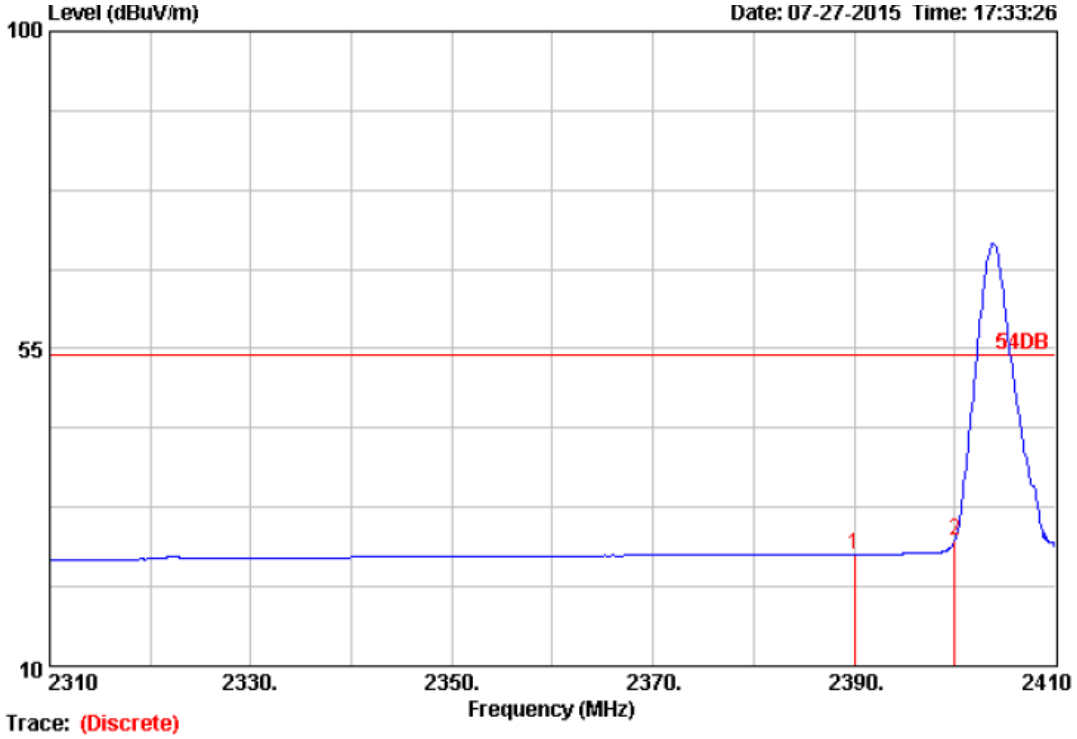

Mark	Frequency MHz	Level dBuV/m	Factor dB	Reading dBuV/m	Limit dB	Margin dB	Det.	Polarization VERTICAL
1	2390.00	25.85	-1.97	27.82	54.00	28.15	Average	
2	2400.00	27.86	-1.97	29.83	54.00	26.14	Average	

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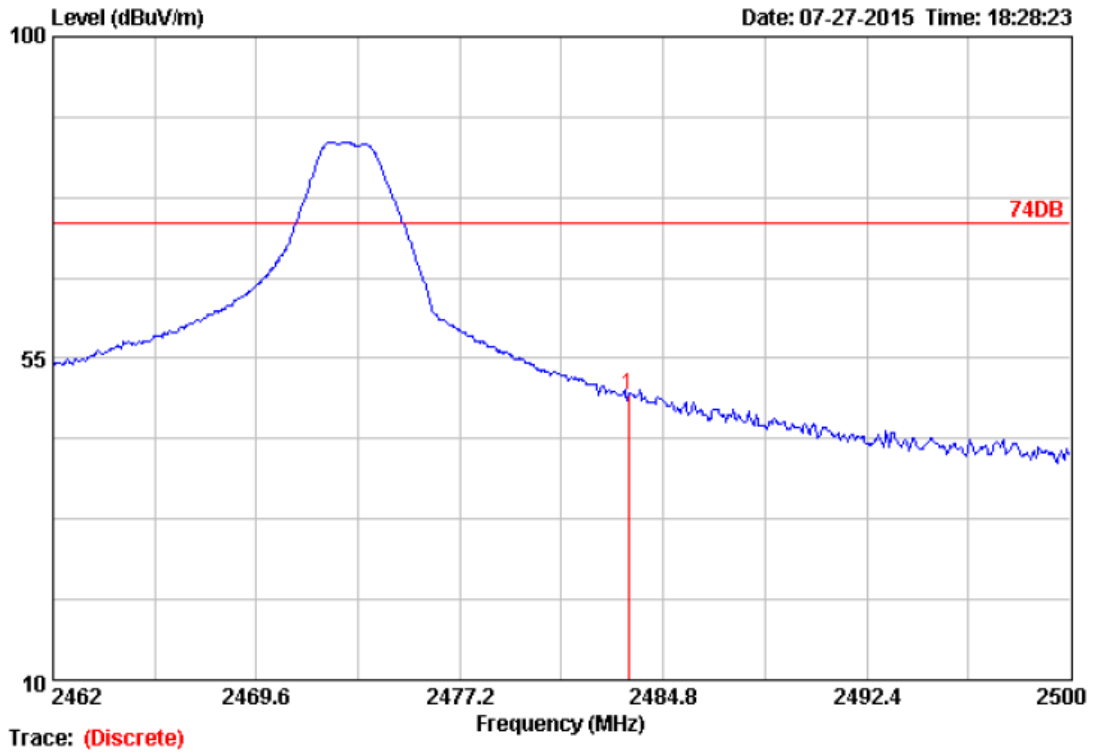
2473MHz:



Mark	Frequency MHz	Level dBuV/m	Factor dB	Reading dBuV/m	Limit dB	Margin dB	Det.	Polarization HORIZONTAL
1	2483.50	49.75	-1.75	51.50	74.00	24.25	Peak	

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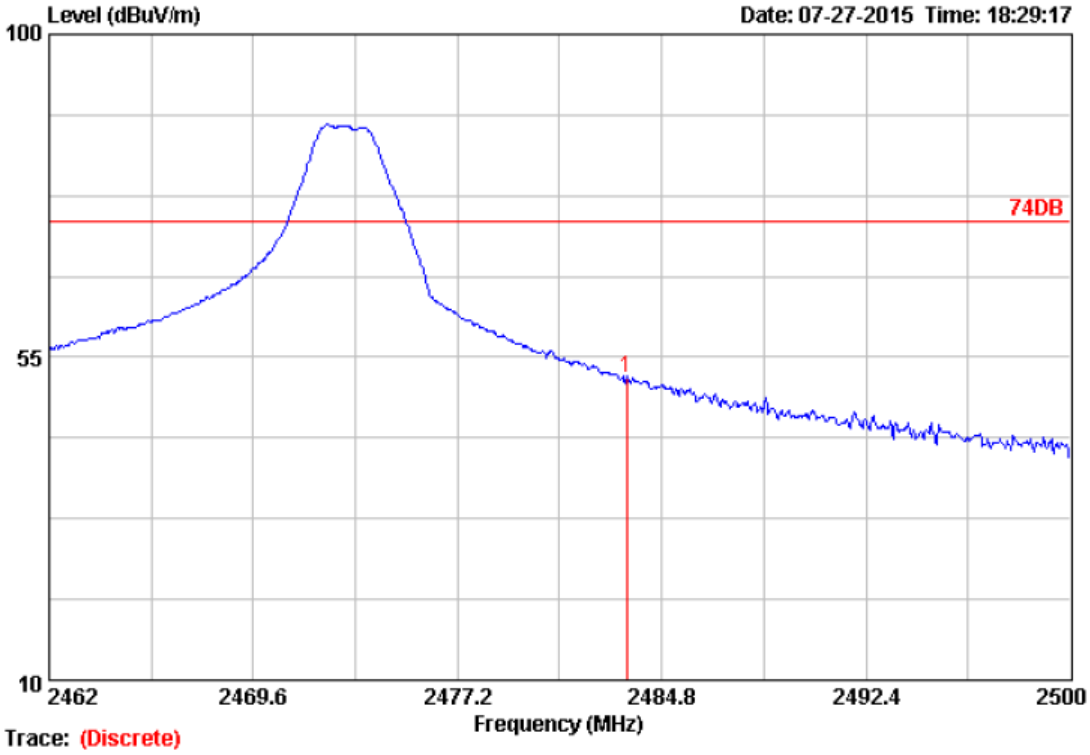

Mark	Frequency MHz	Level dBuV/m	Factor dB	Reading dBuV/m	Limit dB	Margin dB	Det.	Polarization VERTICAL
1	2483.50	51.99	-1.75	53.74	74.00	22.01	Peak	

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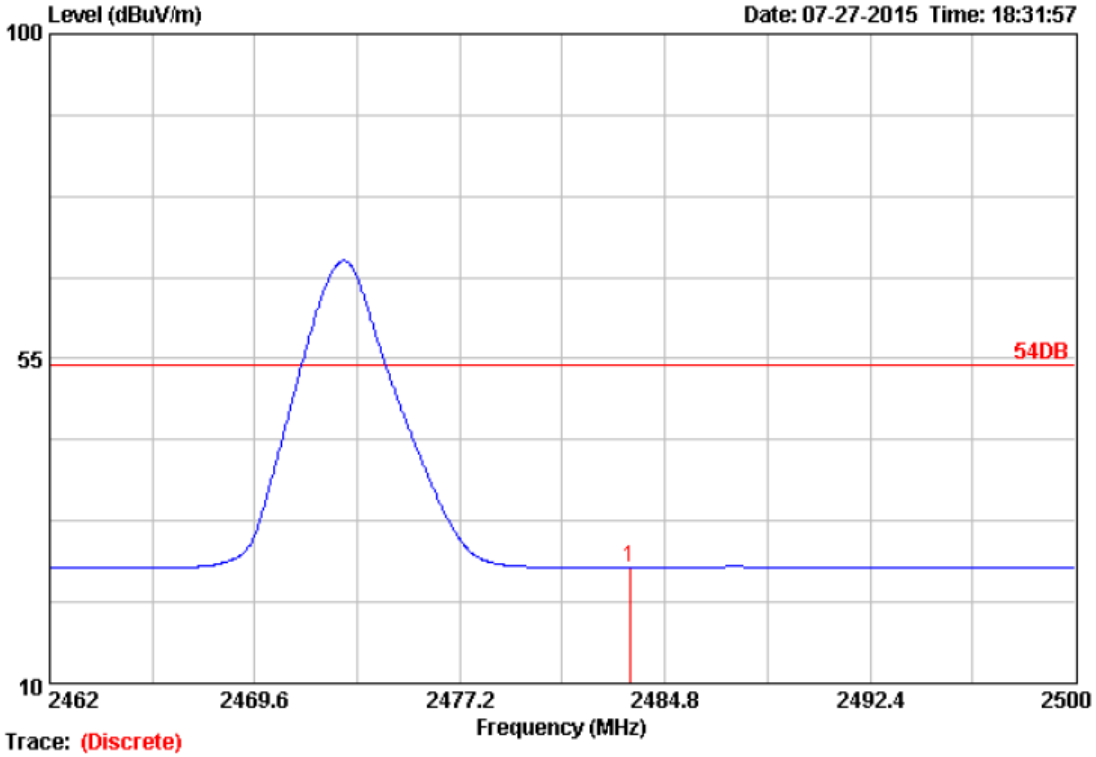

Mark	Frequency MHz	Level dBuV/m	Factor dB	Reading dBuV/m	Limit dB	Margin dB	Det.	Polarization HORIZONTAL
1	2483.50	26.05	-1.75	27.80	54.00	27.95	Average	

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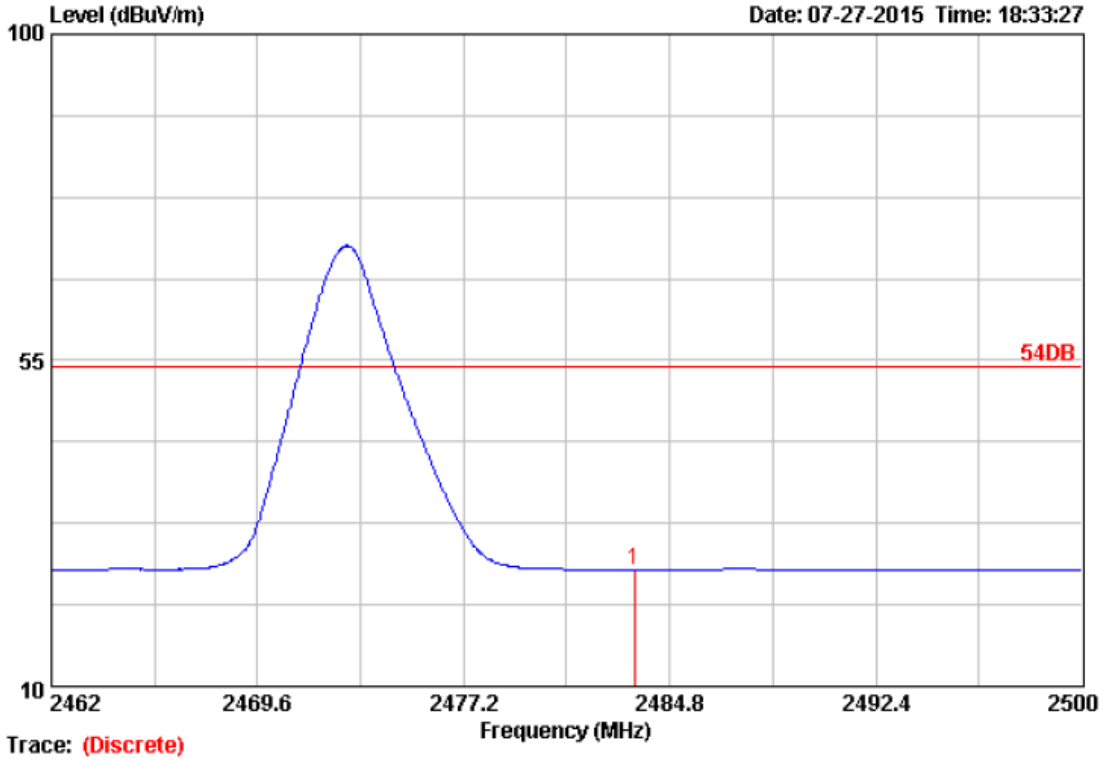

Mark	Frequency MHz	Level dBuV/m	Factor dB	Reading dBuV/m	Limit dB	Margin dB	Det.	Polarization VERTICAL
1	2483.50	26.08	-1.75	27.83	54.00	27.92	Average	

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4.4. Occupied Bandwidth Measurement

Measurement Procedure

1. Set EUT as keeping tx mode.
2. RBW ⩾ 1% of the 20 dB bandwidth, VBW⩾RBW.
3. The useful radiated emission from the EUT was detected by the spectrum analyser with peak detector.

Test SET-UP (Block Diagram of Configuration)

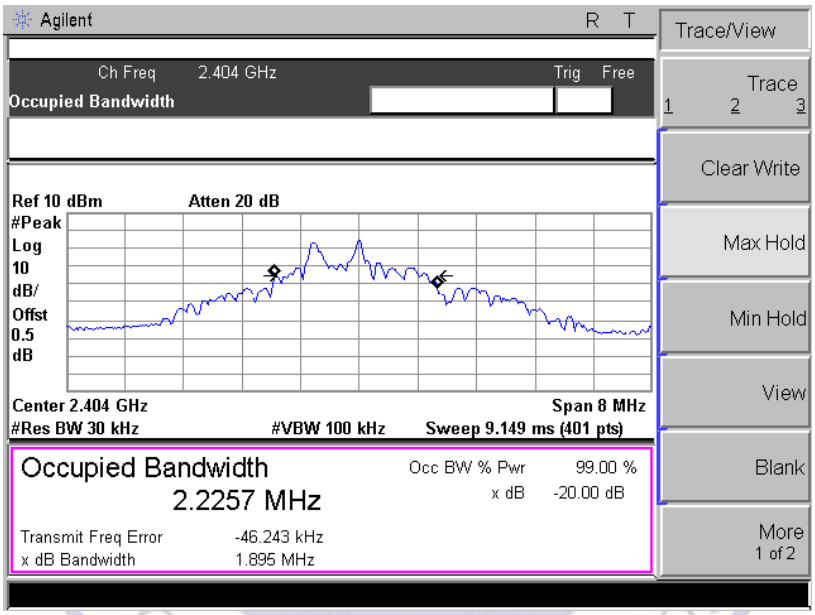
Same as 4.2 Radiated Emission Measurement.

Measurement Equipment Used:

Same as 4.2 Radiated Emission Measurement.

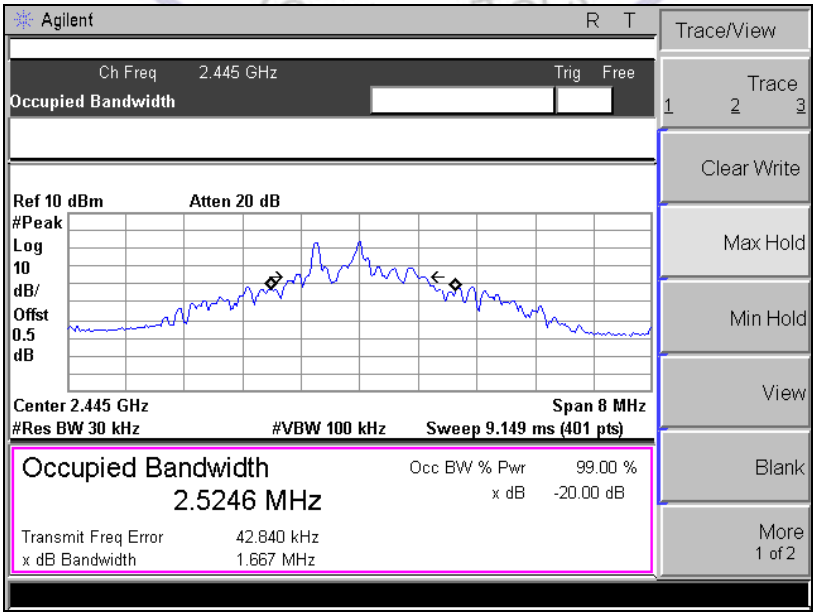
Measurement Results

2404MHz



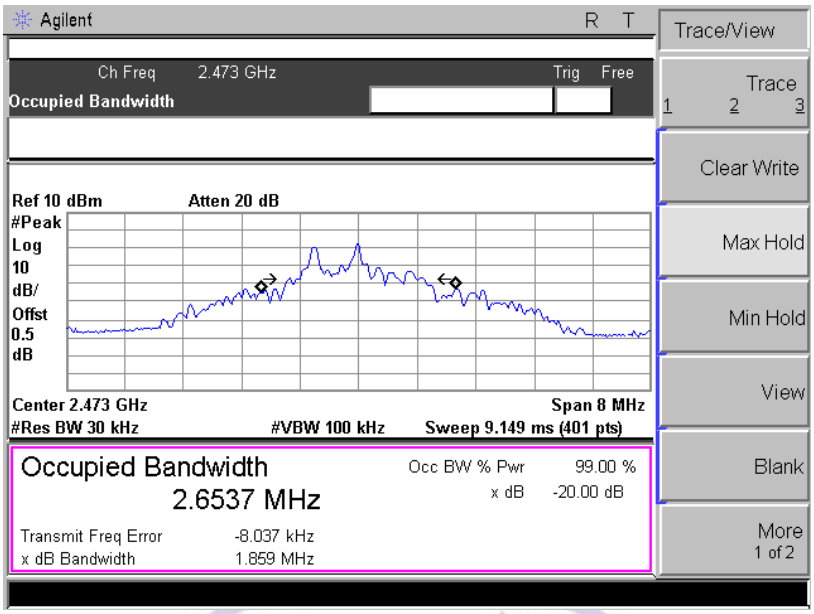
20dB Bandwidth: 1895 KHz

2445MHz



20dB Bandwidth: 1667 KHz

2480MHz



20dB Bandwidth: 1859 KHz

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5. Antenna Requirement

Standard Applicable

For intentional device, according to FCC 47 CFR Section 15.203, an intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device.

And according to FCC 47 CFR Section 15.247 (c), if transmitting antennas of directional gain greater than 6dBi are used, the power shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6dBi.

Refer to statement below for compliance.

The manufacturer may design the unit so that the user can replace a broken antenna, but the use of a standard antenna jack or electrical connector is prohibited. Further, this requirement does not apply to intentional radiators that must be professionally installed.

Antenna Connected Construction

The antenna used in this product is an internal Antenna, The directional gains of antenna used for transmitting is 0 dBi.

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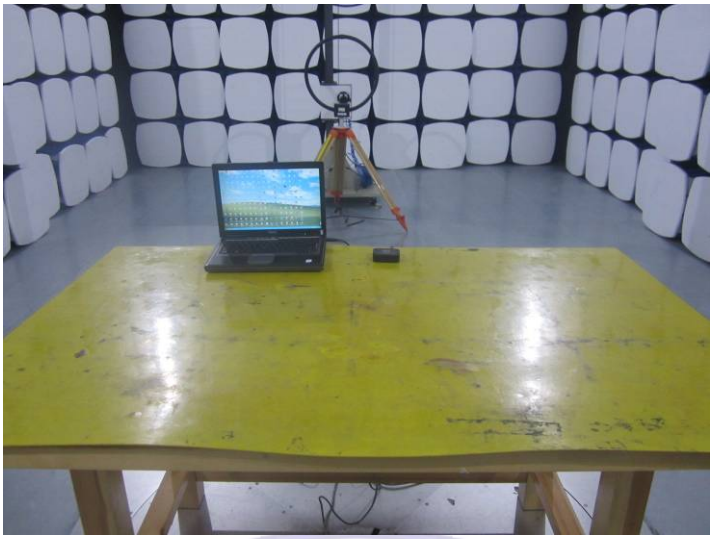
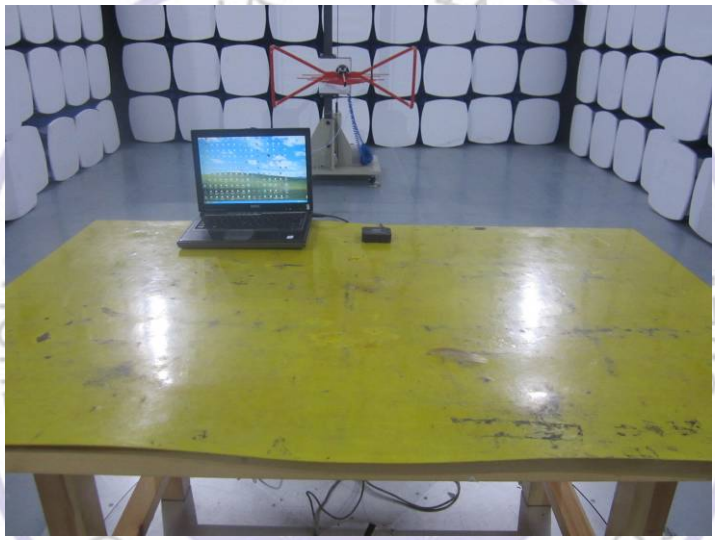
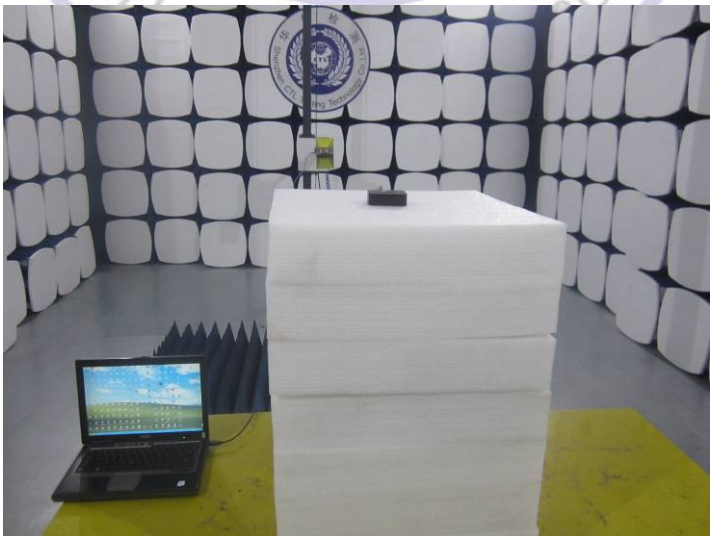
6. Test Setup Photos of the EUT







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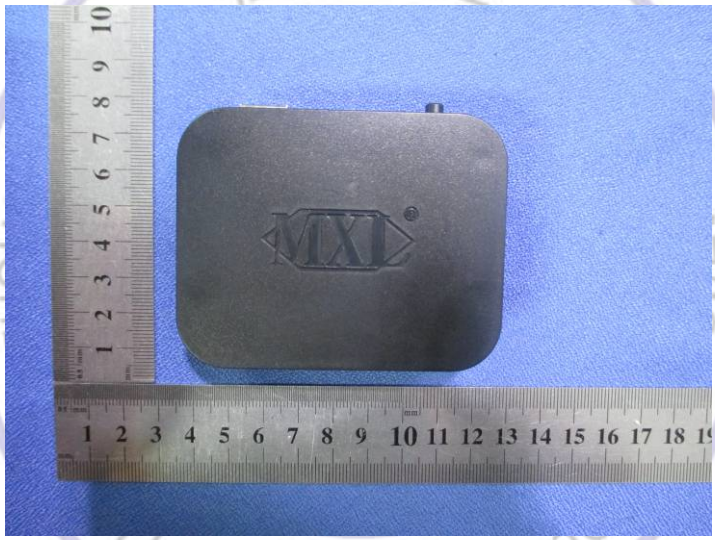
7. External and Internal Photos of the EUT

External Photos of EUT



B
A
Pairing
USB

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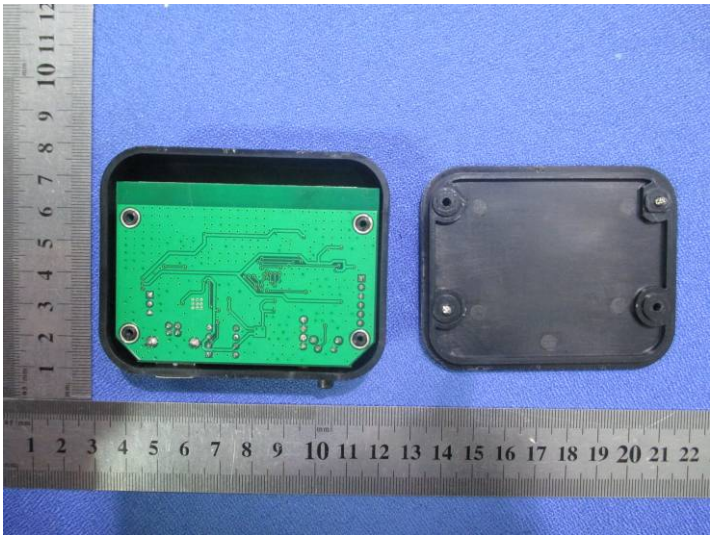
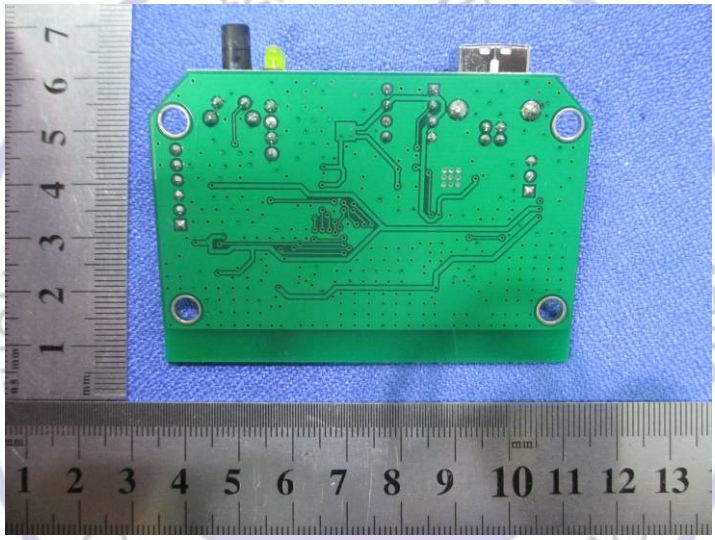
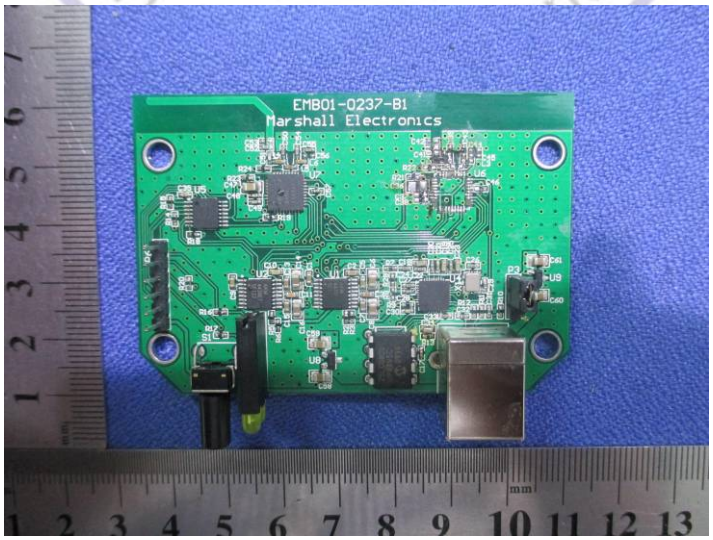
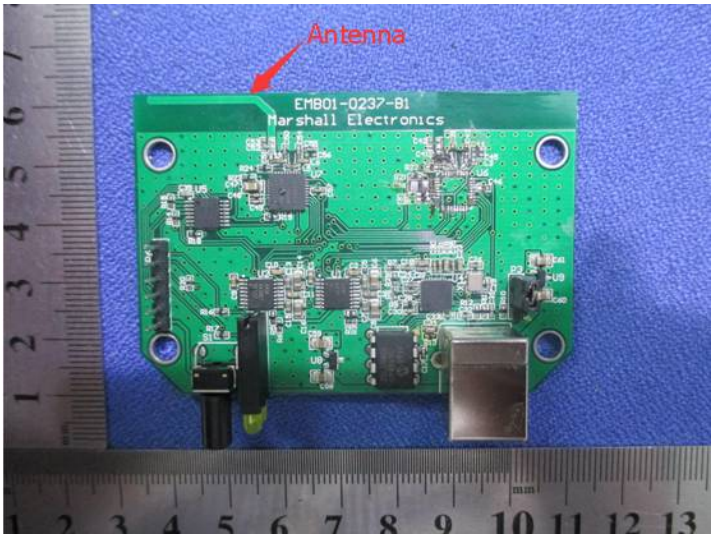
CTL

Internal Photos of EUT









.....End of Report.....

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