

FCC TEST REPORT
for
Glory Star Technology Limited

Gatekeeper-key
Model No.: Gatekeeper 01

Prepared for : Glory Star Technology Limited
Address : Rm E, 6/F, Block 15, Tai Po Centre, Tai Po, N.T., HongKong

Prepared By : Shenzhen Anbotek Compliance Laboratory Limited
Address : 1/F., Building 1, SEC Industrial Park, No.0409 Qianhai Road,
Nanshan District, Shenzhen, Guangdong, China
Tel: (86) 755-26066544
Fax: (86) 755-26014772

Report Number : R011409080E
Date of Test : Aug. 25~ Sept. 22, 2014
Date of Report : Sept. 26, 2014

TABLE OF CONTENT

Description

Page

Test Report

1. GENERAL INFORMATION	4
1.1. Description of Device (EUT).....	4
1.2. Auxiliary Equipment Used during Test	5
1.3. Description of Test Facility	6
1.4. Measurement Uncertainty	6
2. TEST METHODOLOGY	7
2.1. Summary of Test Results.....	7
2.2. Description of Test Modes.....	7
3. CONDUCTED EMISSION TEST.....	8
3.1. Block Diagram of Test Setup	8
3.2. Power Line Conducted Emission Measurement Limits (15.207).....	8
3.3. Configuration of EUT on Measurement	8
3.4. Operating Condition of EUT	8
3.5. Test Procedure	9
3.6. Test equipment	9
3.7. Power Line Conducted Emission Measurement Results	9
4. FCC PART 15.247 REQUIREMENTS FOR DSSS & OFDM MODULATION.....	12
4.1 Test Setup	12
4.2 6dB Bandwidth	12
4.3. Maximum Peak output power test	15
4.4. Band Edges Measurement	18
4.5. Peak Power Spectral Density	28
4.6. Radiated Emissions.....	31
5. PHOTOGRAPH.....	42
5.1. Photo of Conducted Emission Measurement.....	42
5.2. Photo of Radiation Emission Test	43
APPENDIX I (EXTERNAL PHOTOS).....	44
APPENDIX II (INTERNAL PHOTOS)	47

Appendix I (3 Pages)

Appendix II (3 Pages)

TEST REPORT

Applicant : Glory Star Technology Limited
Manufacturer : Glory Star Technology Limited
EUT : Gatekeeper-key
Model No. : Gatekeeper 01
Serial No. : N.A.
Trade Mark : N.A.
Rating : DC 3V

Measurement Procedure Used:
FCC Part15 Subpart C, Paragraph 15.247

The device described above is tested by Shenzhen Anbotek Compliance Laboratory Limited to determine the maximum emission levels emanating from the device and the severe levels of the device can endure and its performance criterion. The measurement results are contained in this test report and Shenzhen Anbotek Compliance Laboratory Limited is assumed full of responsibility for the accuracy and completeness of these measurements. Also, this report shows that the EUT (Equipment Under Test) is technically compliant with the FCC Part 15 Subpart C requirements.

This report applies to above tested sample only and shall not be reproduced in part without written approval of Shenzhen Anbotek Compliance Laboratory Limited.

Date of Test : Aug. 25~ Sept. 22, 2014

Prepared by :

Rock zeng

(Tested Engineer / Rock Zeng)

Reviewer :

Amy Ding

(Project Manager / Amy Ding)

Approved & Authorized Signer :

Tom Chen

(Manager / Tom Chen)

1. GENERAL INFORMATION

1.1. Description of Device (EUT)

EUT : Gatekeeper-key

Model Number : Gatekeeper 01

Test Power Supply : DC 3V

Frequency : 2402~2480MHz

Modulation : GFSK

Channel Spacing : 2MHz

Number of Channels : 40

Antenna Type : PCB Trace Antenna

Antenna Specification : PCB Antenna:4 dBi

Applicant : Glory Star Technology Limited
Address : Rm E, 6/F, Block 15, Tai Po Centre, Tai Po, N.T., HongKong

Manufacturer : Glory Star Technology Limited
Address : Rm E, 6/F, Block 15, Tai Po Centre, Tai Po, N.T., HongKong

Factory : Glory Star Technology Limited
Address : Rm E, 6/F, Block 15, Tai Po Centre, Tai Po, N.T., HongKong

Date of receipt : Aug. 25, 2014

Date of Test : Aug. 25~ Sept. 22, 2014

1.2. Auxiliary Equipment Used during Test

Gatekeeper-lock	: M/N: Gatekeeper 01
PC	: Manufacturer: DELL M/N: OPTIPLEX 380 S/N: 1J63X2X CE , FCC: DOC
MONITOR	: Manufacturer: DELL M/N: E170Sc S/N: CN-00V539-64180-055-0UPS CE , FCC: DOC
KEYBOARD	: Manufacturer: DELL M/N: SK-8115 S/N: CN-0DJ313-71616-06C-02XN CE , FCC: DOC Cable: 1m, unshielded
MOUSE	: Manufacturer: DELL M/N: M-UARDEL7 S/N: N/A CE , FCC: DOC Cable: 1m, unshielded
Printer	: Manufacturer: Brother M/N: MFC-3360C S/N: N/A CE, FCC: DOC
Power Line	: Non-Shielded, 1.5m
VGA Cable	: Non-Shielded, 1.5m
Network Cable	: Non-Shielded, 1.5m

1.3. Description of Test Facility

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

CNAS - LAB Code: L3503

Shenzhen Anbotek Compliance Laboratory Limited., Laboratory has been assessed and in compliance with CNAS/CL01: 2006 accreditation criteria for testing laboratories (identical to ISO/IEC 17025:2005 General Requirements) for the Competence of Testing Laboratories.

FCC-Registration No.: 752021

Shenzhen Anbotek Compliance Laboratory Limited, 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 752021, July 10, 2013.

IC-Registration No.: 8058A-1

Shenzhen Anbotek Compliance Laboratory Limited., EMC Laboratory has been registered and fully described in a report filed with the (IC) Industry Canada. The acceptance letter from the IC is maintained in our files. Registration 8058A, February 22, 2013.

Test Location

All Emissions tests were performed at
Shenzhen Anbotek Compliance Laboratory Limited. at 1/F., Building 1, SEC
Industrial Park, No.0409 Qianhai Road, Nanshan District, Shenzhen, Guangdong,
China

1.4. Measurement Uncertainty

Radiation Uncertainty : Ur = 4.3dB

Conduction Uncertainty : Uc = 3.4dB

2. TEST METHODOLOGY

The tests documented in this report were performed in accordance with ANSI C63.4: 2009 and FCC Part 15, Paragraph 15.247.

2.1. Summary of Test Results

The EUT has been tested according to the following specifications:

Standard	Test Type	Result	Notes
FCC Part 15, Paragraph 15.107, 15.207	Conducted Emission Test	PASS	Complies
FCC Part 15, Paragraph 15.247(b)(1)	Peak Output Power	PASS	Complies
FCC Part 15, Paragraph 15.247(a)(2)	6dB Bandwidth	PASS	Complies
FCC Part 15, Paragraph 15.247(c)	100kHz Bandwidth of Frequency Band Edges	PASS	Complies
FCC Part 15, Paragraph 15.209(a)(f)	Spurious Emission	PASS	Complies
FCC Part 15, Paragraph 15.247(a)(1)	Frequency Separation	-	N/A
FCC Part 15, Paragraph 15.247(a)(1)(iii)	Number of Hopping Frequency	-	N/A
FCC Part 15, Paragraph 15.247(a)(1)(iii)	Time of Occupancy	-	N/A
FCC Part 15, Paragraph 15.247(c)	Peak Power Density	PASS	Complies

2.2. Description of Test Modes

The EUT has been tested under operating condition.

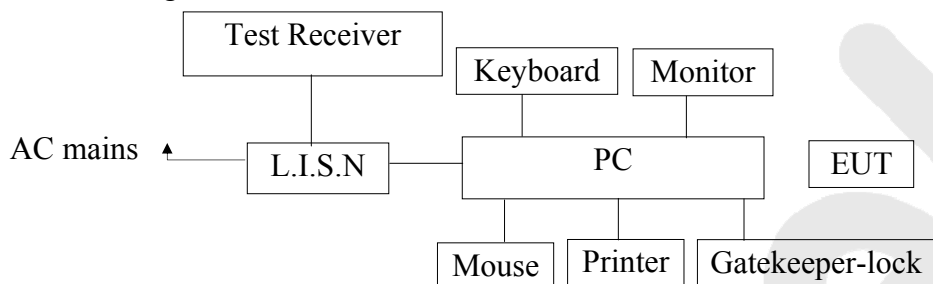
Software used to control the EUT for staying in continuous transmitting and receiving mode is programmed.

Channel Low(2402MHz), Channel Middle(2442MHz) and Channel High(2480MHz) are chosen for the final testing.

3. Conducted Emission Test

3.1. Block Diagram of Test Setup

3.1.1. Block diagram of connection between the EUT and simulators



3.2. Power Line Conducted Emission Measurement Limits (15.207)

Frequency MHz	Limits dB(μV)	
	Quasi-peak Level	Average Level
0.15 ~ 0.50	66 ~ 56*	56 ~ 46*
0.50 ~ 5.00	56	46
5.00 ~ 30.00	60	50

Notes: 1. *Decreasing linearly with logarithm of frequency.
2. The lower limit shall apply at the transition frequencies.

3.3. Configuration of EUT on Measurement

The following equipments are installed on Power Line Conducted Emission Measurement to meet the commission requirement and operating regulations in a manner which tends to maximize its emission characteristics in a normal application.

3.4. Operating Condition of EUT

- 3.4.1. Setup the EUT and simulator as shown as Section 3.1.
- 3.4.2. Turn on the power of all equipment.
- 3.4.3. Let the EUT work in test mode (On) and measure it.

3.5. Test Procedure

The EUT system is connected to the power mains through a line impedance stabilization network (L.I.S.N.). This provides a 50ohm coupling impedance for the EUT system. Please refer the block diagram of the test setup and photographs. Both sides of AC line are checked to find out the maximum conducted emission. In order to find the maximum emission levels, the relative positions of equipment and all of the interface cables shall be changed according to FCC ANSI C63.4-2003 on Conducted Emission Measurement.

The bandwidth of test receiver (ESCI) set at 9KHz.

The frequency range from 150KHz to 30MHz is checked.

The test results are reported on Section 3.6.

3.6. Test equipment

Item	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Interval
1.	Two-Line V-network	Rohde & Schwarz	ENV216	100055	Apr. 22, 2014	1 Year
2.	EMI Test Receiver	Rohde & Schwarz	ESCI	100627	Apr. 22, 2014	1 Year
3.	RF Switching Unit	Compliance Direction	RSU-M2	38303	Apr. 22, 2014	1 Year

3.7. Power Line Conducted Emission Measurement Results

PASS.

The frequency range from 150KHz to 30 MHz is investigated.

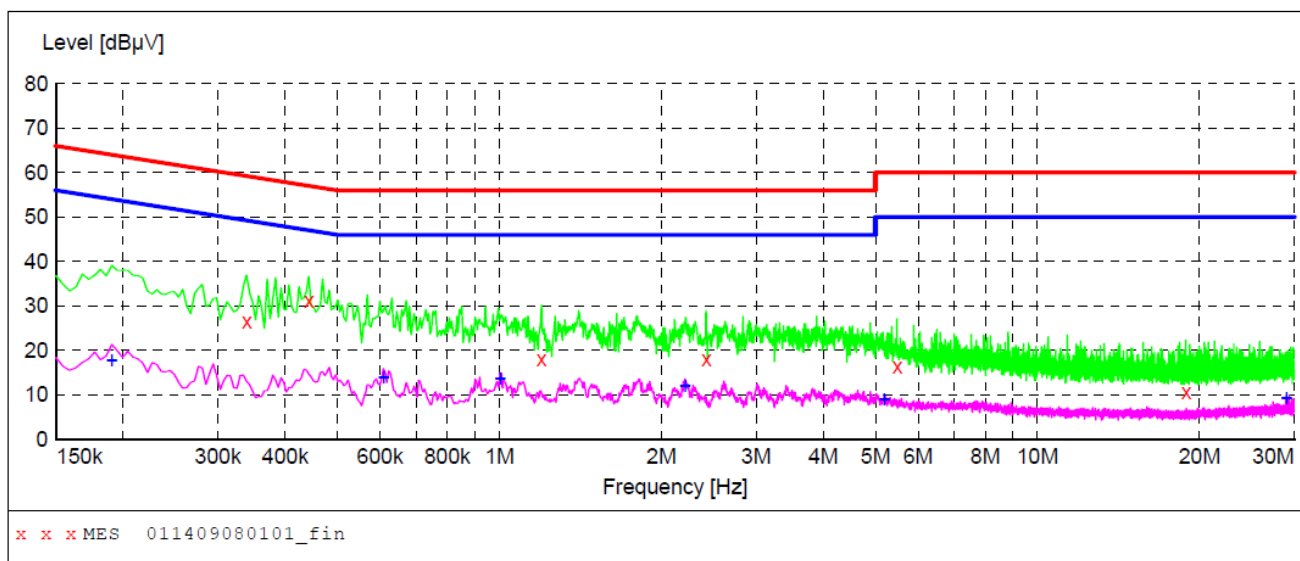
Please refer the following pages.

CONDUCTED EMISSION TEST DATA

Test Site: 1# Shielded Room
Operating Condition: On
Test Specification: DC 3V
Comment: Live Line
Tem:25°C Hum:50%

SCAN TABLE: "Voltage (150K~30M) FIN"

Short Description: 150K-30M Disturbance Voltages



MEASUREMENT RESULT: "011409080101_fin"

8/27/2014 2:14PM

Frequency MHz	Level dBμV	Transd dB	Limit dBμV	Margin dB	Detector	Line	PE
0.339000	26.60	20.1	59	32.6	QP	L1	GND
0.442500	31.20	20.1	57	25.8	QP	L1	GND
1.198000	18.10	20.2	56	37.9	QP	L1	GND
2.422000	18.00	20.3	56	38.0	QP	L1	GND
5.482000	16.50	20.5	60	43.5	QP	L1	GND
18.874000	10.70	20.8	60	49.3	QP	L1	GND

MEASUREMENT RESULT: "011409080101_fin2"

8/27/2014 2:14PM

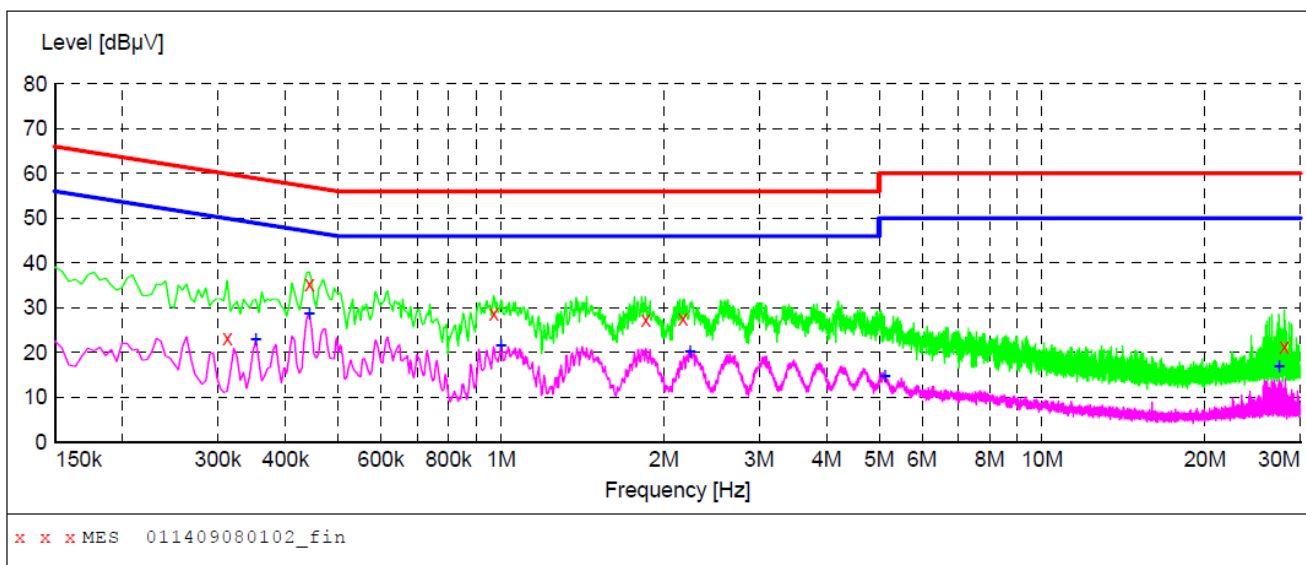
Frequency MHz	Level dBμV	Transd dB	Limit dBμV	Margin dB	Detector	Line	PE
0.190500	17.60	20.1	54	36.4	AV	L1	GND
0.609000	13.90	20.1	46	32.1	AV	L1	GND
1.004500	13.50	20.2	46	32.5	AV	L1	GND
2.215000	12.00	20.3	46	34.0	AV	L1	GND
5.194000	9.00	20.5	50	41.0	AV	L1	GND
28.999000	9.30	20.9	50	40.7	AV	L1	GND

CONDUCTED EMISSION TEST DATA

Test Site: 1# Shielded Room
Operating Condition: On
Test Specification: DC 3V
Comment: Neutral Line
Tem:25°C Hum:50%

SCAN TABLE: "Voltage (150K~30M) FIN"

Short Description: 150K-30M Disturbance Voltages



MEASUREMENT RESULT: "011409080102_fin"

8/27/2014 2:23PM

Frequency MHz	Level dBμV	Transd dB	Limit dBμV	Margin dB	Detector	Line	PE
0.312000	23.20	20.1	60	36.7	QP	N	GND
0.442500	35.30	20.1	57	21.7	QP	N	GND
0.969000	28.70	20.2	56	27.3	QP	N	GND
1.850500	27.30	20.3	56	28.7	QP	N	GND
2.170000	27.50	20.3	56	28.5	QP	N	GND
28.036000	21.40	20.9	60	38.6	QP	N	GND

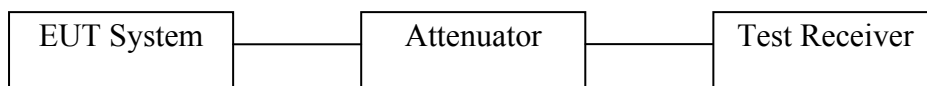
MEASUREMENT RESULT: "011409080102_fin2"

8/27/2014 2:23PM

Frequency MHz	Level dBμV	Transd dB	Limit dBμV	Margin dB	Detector	Line	PE
0.352500	22.90	20.1	49	26.0	AV	N	GND
0.442500	28.70	20.1	47	18.3	AV	N	GND
1.000000	21.70	20.2	46	24.3	AV	N	GND
2.237500	20.20	20.3	46	25.8	AV	N	GND
5.131000	14.60	20.5	50	35.4	AV	N	GND
27.437500	16.90	20.9	50	33.1	AV	N	GND

4. FCC Part 15.247 Requirements for DSSS & OFDM Modulation

4.1 Test Setup



4.2 6dB Bandwidth

a. Limit

For the direct sequence systems, the minimum 6dB bandwidth shall be at least 500kHz.

b. Test Procedure

1. Place the EUT on the table and set it in the transmitting mode.
2. Remove the antenna from the EUT and then connect a low loss RF cable from the antenna port to the spectrum analyzer.
3. Set the spectrum analyzer as:
RBW = 100kHz, VBW \geq 3*RBW = 300kHz,
Detector= Peak
Trace mode= Max hold.
Sweep- auto couple.
4. Mark the peak frequency and -6dB (upper and lower) frequency.
5. Repeat until all the rest channels are investigated.

c. Test Setup See 4.1

d. Test Equipment

Item	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Interval
1.	Spectrum Analysis	Agilent	E4407B	US39390582	Aug. 08, 2014	1 Year
2.	Preamplifier	Instruments corporation	EMC011830	980100	Aug. 08, 2014	1 Year
3.	EMI Test Receiver	Rohde & Schwarz	ESPI	101604	Apr. 22, 2014	1 Year
4.	Double Ridged Horn Antenna	Instruments corporation	GTH-0118	351600	Apr. 04, 2014	1 Year
5.	Bilog Broadband Antenna	Schwarzbeck	VULB9163	VULB 9163-289	Apr. 24, 2014	1 Year
6.	Pre-amplifier	SONOMA	310N	186860	Aug. 08, 2014	1 Year
7.	EMI Test Software EZ-EMC	SHURPLE	N/A	N/A	N/A	N/A

e. Test Results

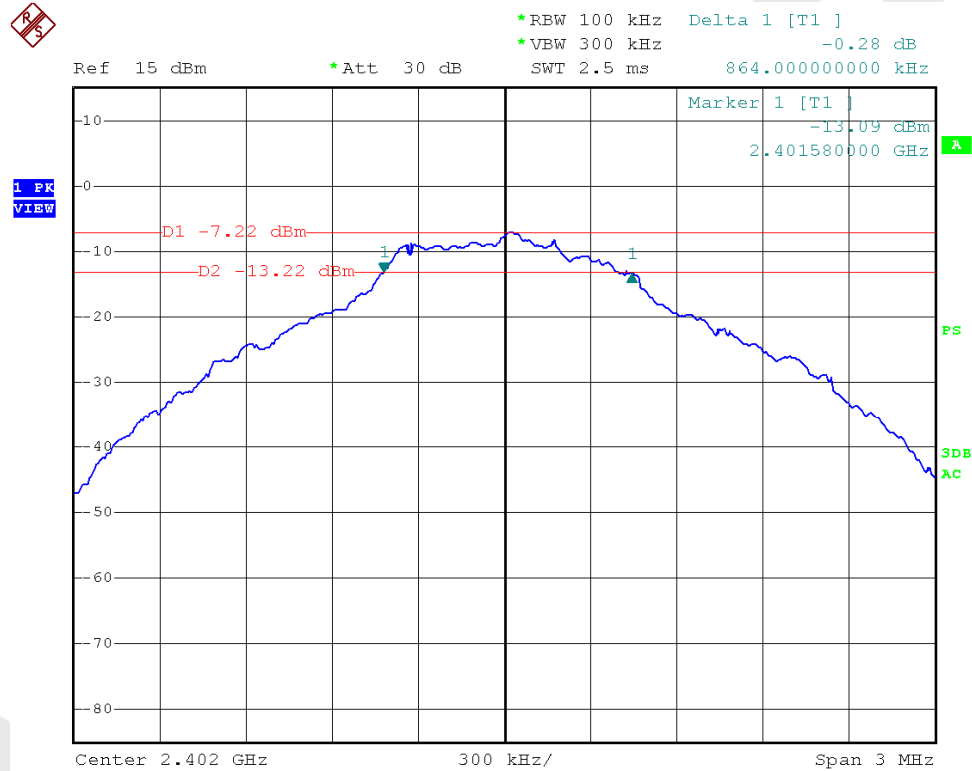
Pass.

f. Test Data

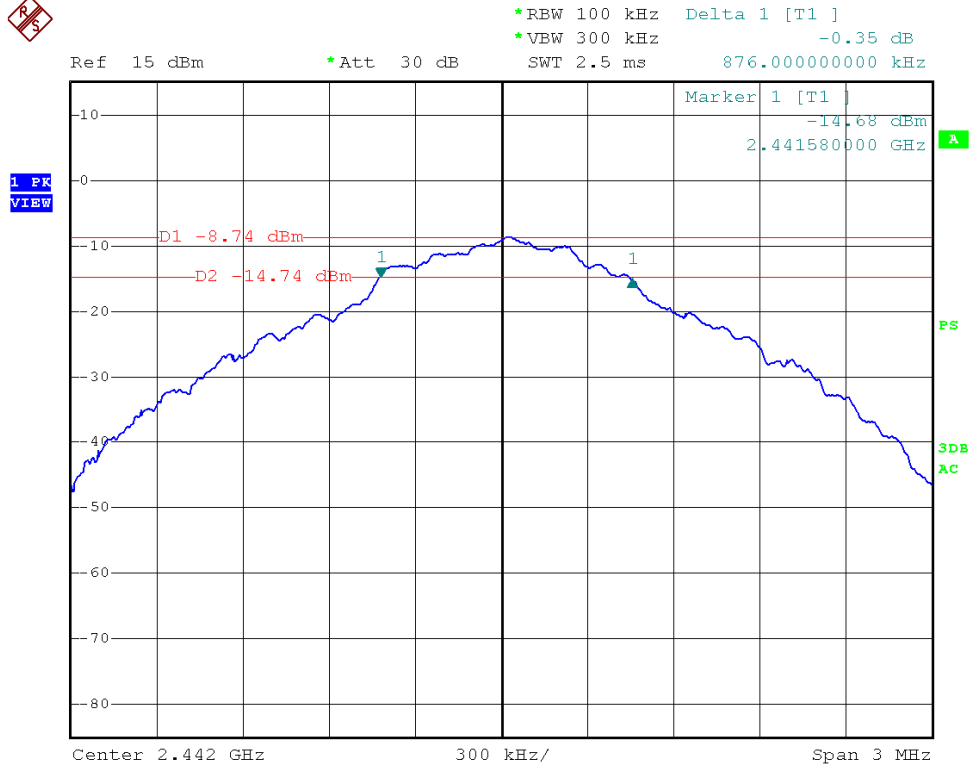
Channel	Frequency (MHz)	Bandwidth (kHz)	Limit (kHz)	Results
Low	2402	864.00		Pass
Mid	2442	876.00	>500	Pass
High	2480	882.00		Pass

Test Plots See the following page.

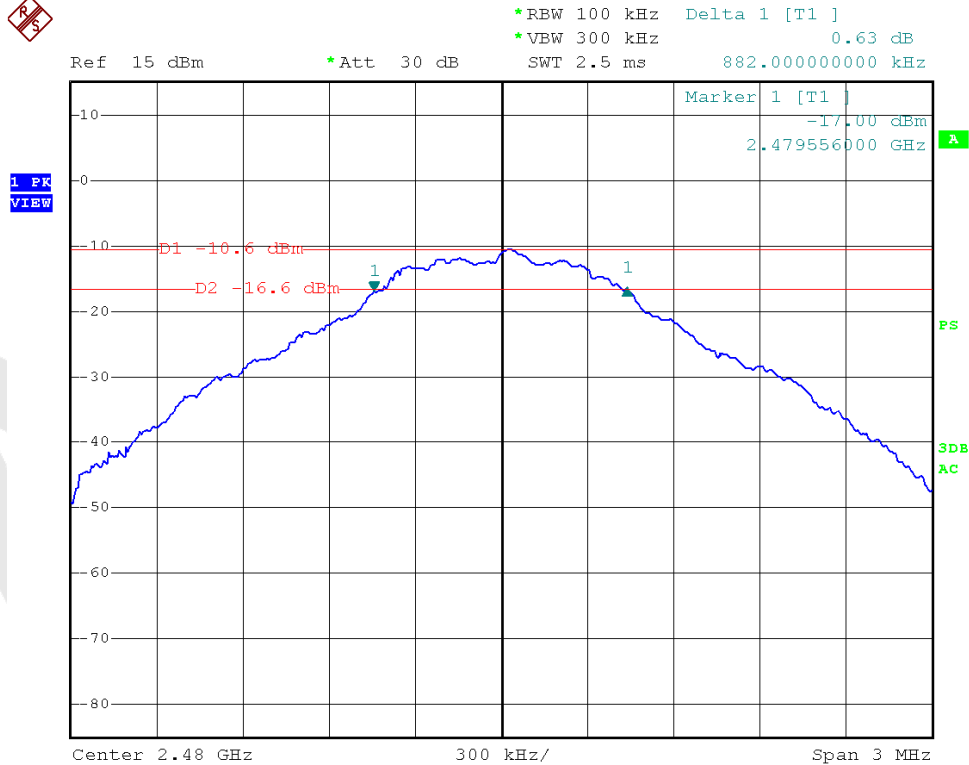
CH Low



CH Mid



CH High



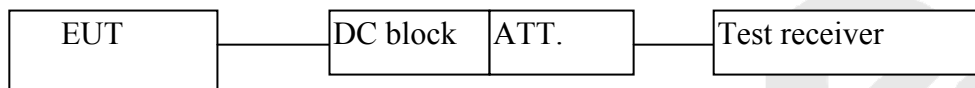
4.3. Maximum Peak output power test

a. Limit

The maximum peak output power of the intentional radiator shall not exceed the following:

1. For systems using digital modulation in the bands of 902-928 MHz, 2400-2483.5 MHz, and 5725-5850 MHz: 1 watt (30dBm).
2. Except as shown in paragraphs (b)(3) (i), (ii) and (iii) of this section, if transmitting antenna of directional gain greater than 6 dBi are used the peak output power from the intentional radiator shall be reduced below the stated values in paragraphs (b)(1) or (b)(2) of this section, as appropriate, by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

b. Configuration of Measurement



c. Test Procedure

This test was according the kDB 558074 9.1.2:

1. This procedure shall be used when the measurement instrument has available a resolution bandwidth that is greater than the DTS bandwidth.
2. Set the RBW \geq DTS bandwidth.
3. Set the VBW $\geq 3 \times$ RBW.
4. Set the span $\geq 3 \times$ RBW.
5. Detector = peak.
6. Sweep time = auto couple.
7. Trace mode = max hold.
8. Allow trace to fully stabilize.
9. Use peak marker function to determine the peak amplitude level.

d. Test Equipment

Same as the equipment listed in 4.2.

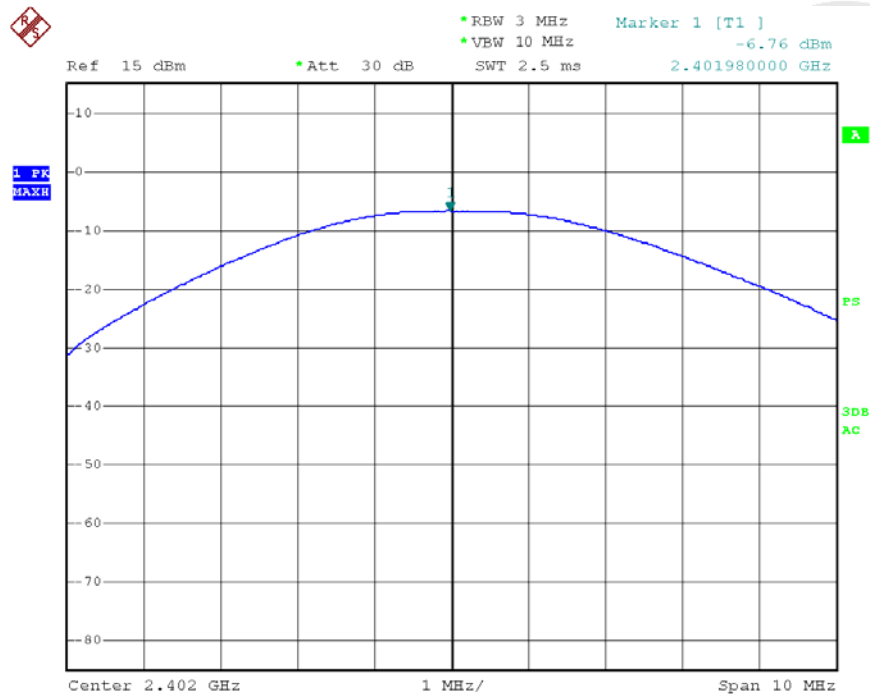
e. Test Results

Pass.

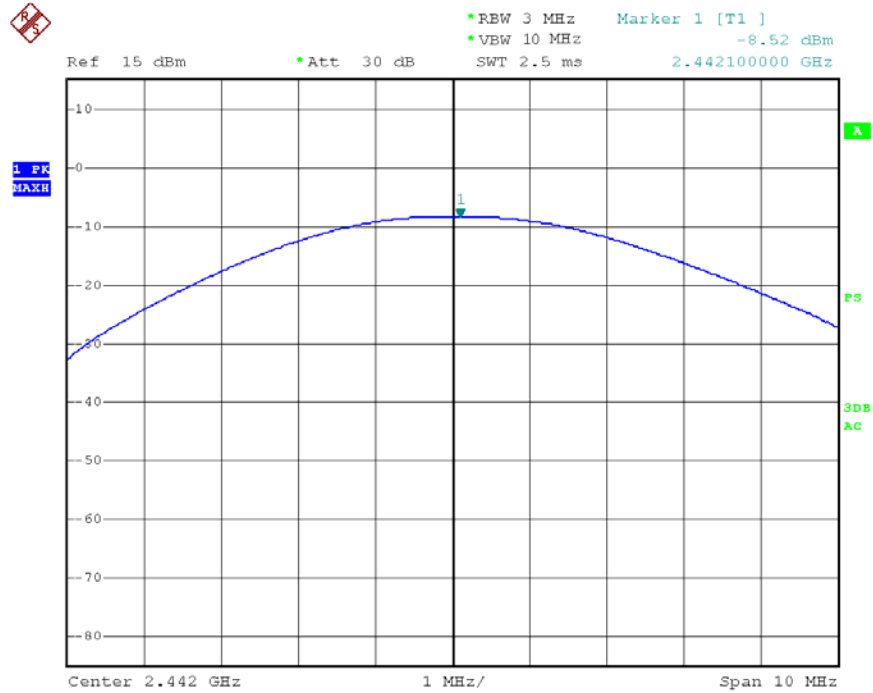
g. Test Data

Channel	Frequency (MHz)	Maximum transmit power	Limit		Result
		(dBm)	(dBm)	(watts)	
Low	2402	-6.76	30	1	Pass
Mid	2442	-8.52			Pass
High	2480	-10.48			Pass

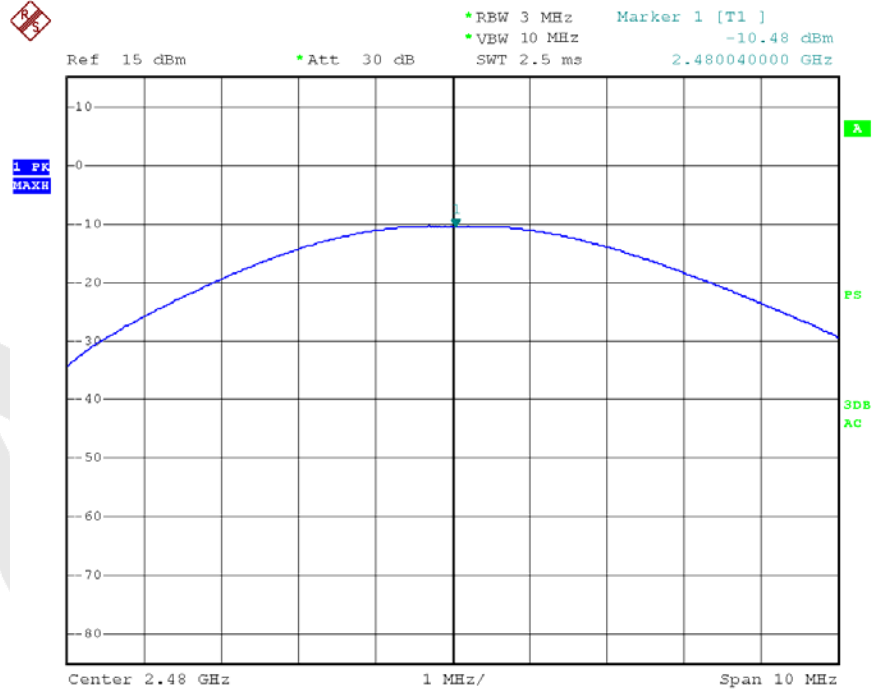
CH Low



CH Mid



CH High



4.4. Band Edges Measurement

a. Limit

According to §15.247(c), in any 100 kHz bandwidth outside the frequency bands in which the spread spectrum intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20dB below that in the 100kHz bandwidth within the band that contains the highest level of the desired power. In addition, radiated emissions which fall in the restricted bands, as defined in §15.205(a), must also comply with the radiated emission limits specified in §15.209(a).

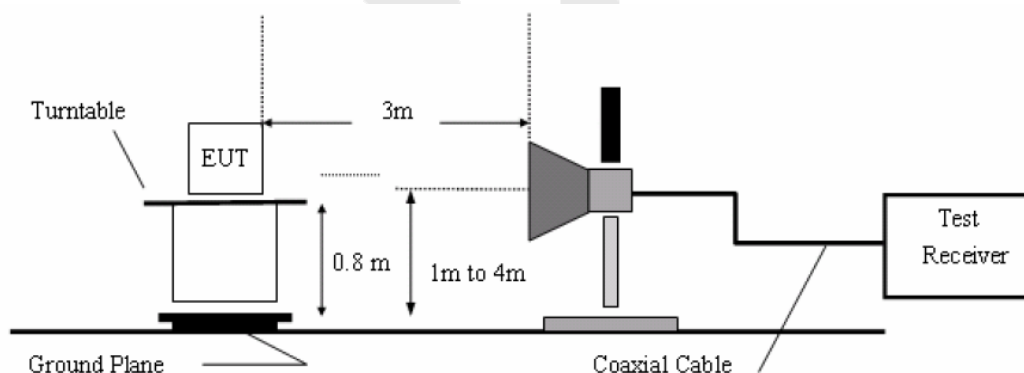
b. Test Procedure

1. Conducted Method:

- 1) Set RBW=100KHz, VBW=300KHz
- 2) Detector=peak
- 3) Sweep time= auto
- 4) Trace mode=max hold.

2. Radiated Method:

- 1) The EUT is placed on a turntable, which is 0.8m above the 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 emission.
- 4) Peak detector: RBW=1MHz, VBW=3MHz, SWT=AUTO
Average detector: RBW=1MHz, VBW=10Hz, SWT=AUTO
The EUT is tested in 9*6*6 Chamber.
- 5) Repeat the procedures until all the PEAK and AVERAGE versus POLARIZATION are measured.



c. Test Equipment

Same as the equipment listed in 4.2.

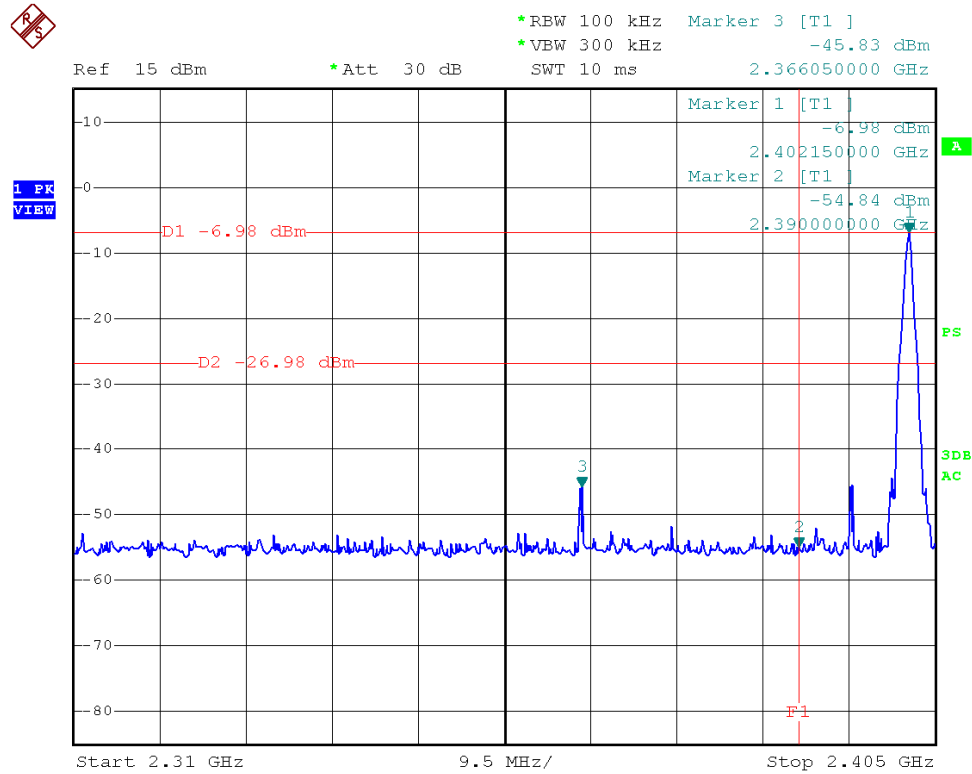
d. Test Results

Pass.

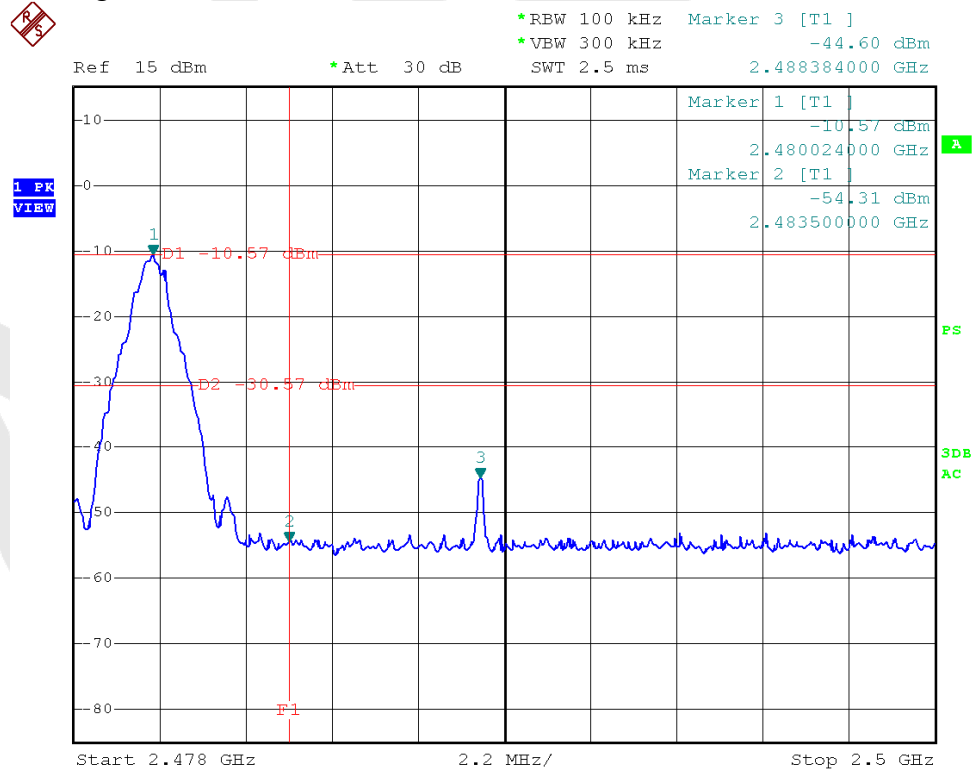
e. Test Plots

See the following page.

CH Low

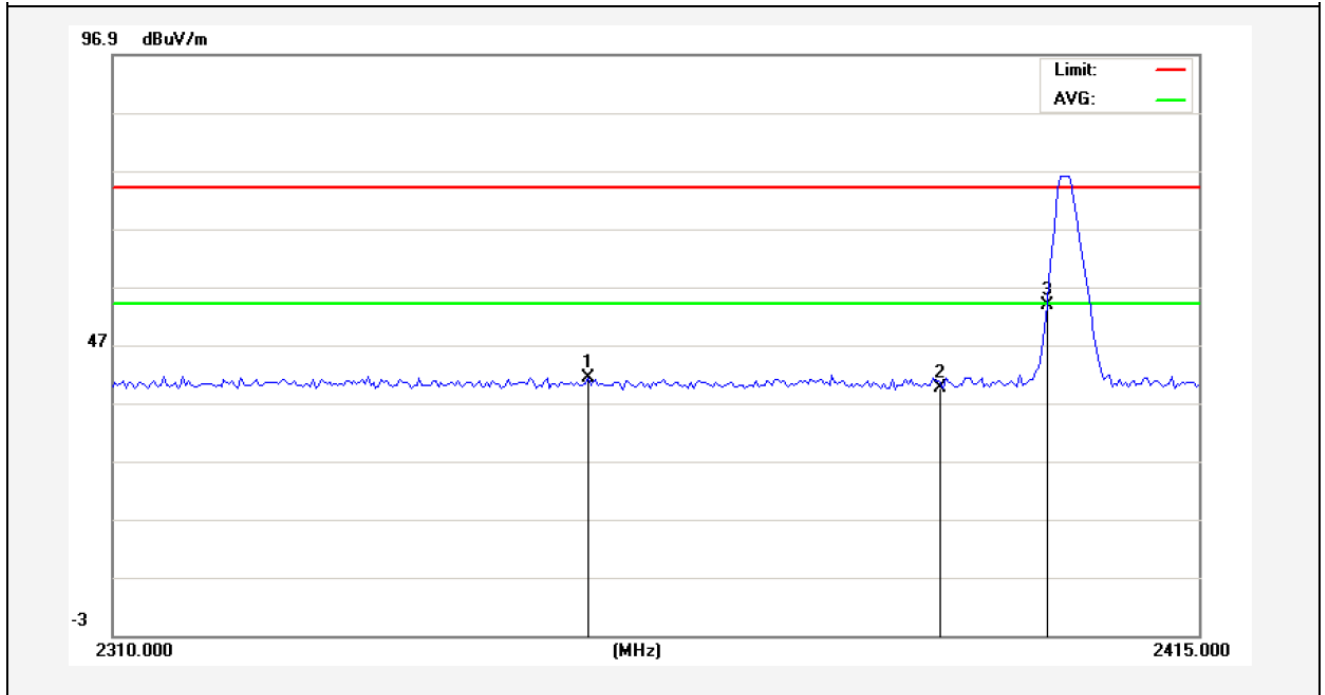


CH High



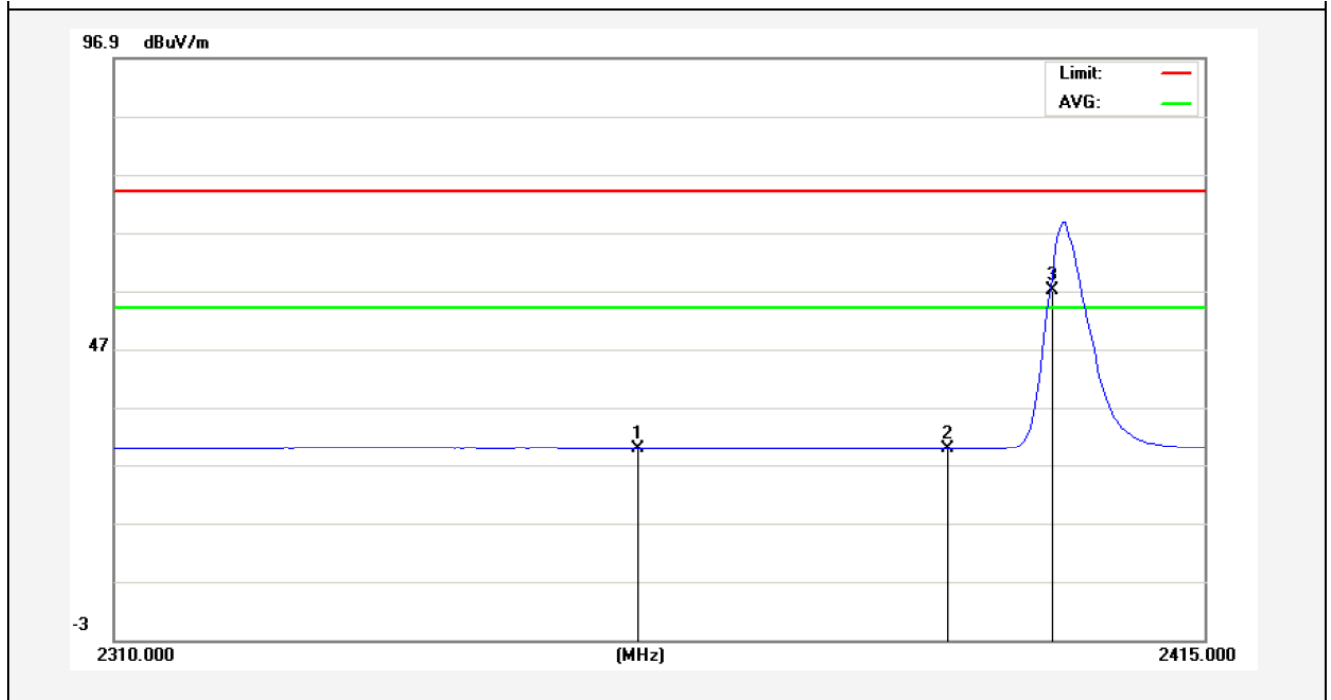
2402MHz

Horizontal-PEAK:



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/)	Over Limit (dB)	Detector	Height (cm)	degree (deg)	Remark
1	2355.412	43.94	-2.59	41.35	74.00	-32.65	peak			
2	2390.000	42.09	-2.51	39.58	74.00	-34.42	peak			
3	2400.000	56.20	-2.49	53.71	74.00	-20.29	peak			

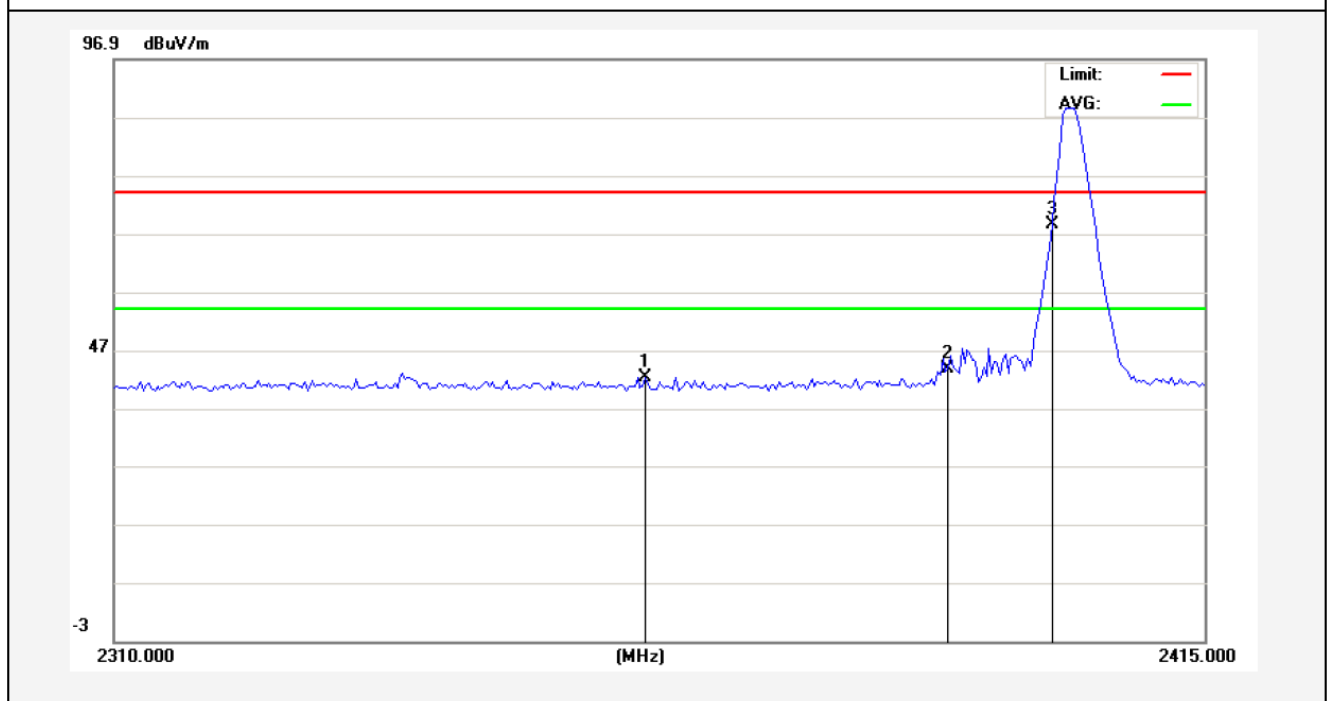
Horizontal-AV:



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/)	Over Limit (dB)	Detector	Height (cm)	degree (deg)	Remark
1	2359.875	32.45	-2.58	29.87	54.00	-24.13	AVG			
2	2390.000	32.39	-2.51	29.88	54.00	-24.12	AVG			
3	2400.000	59.59	-2.49	57.10	54.00	3.10	AVG			

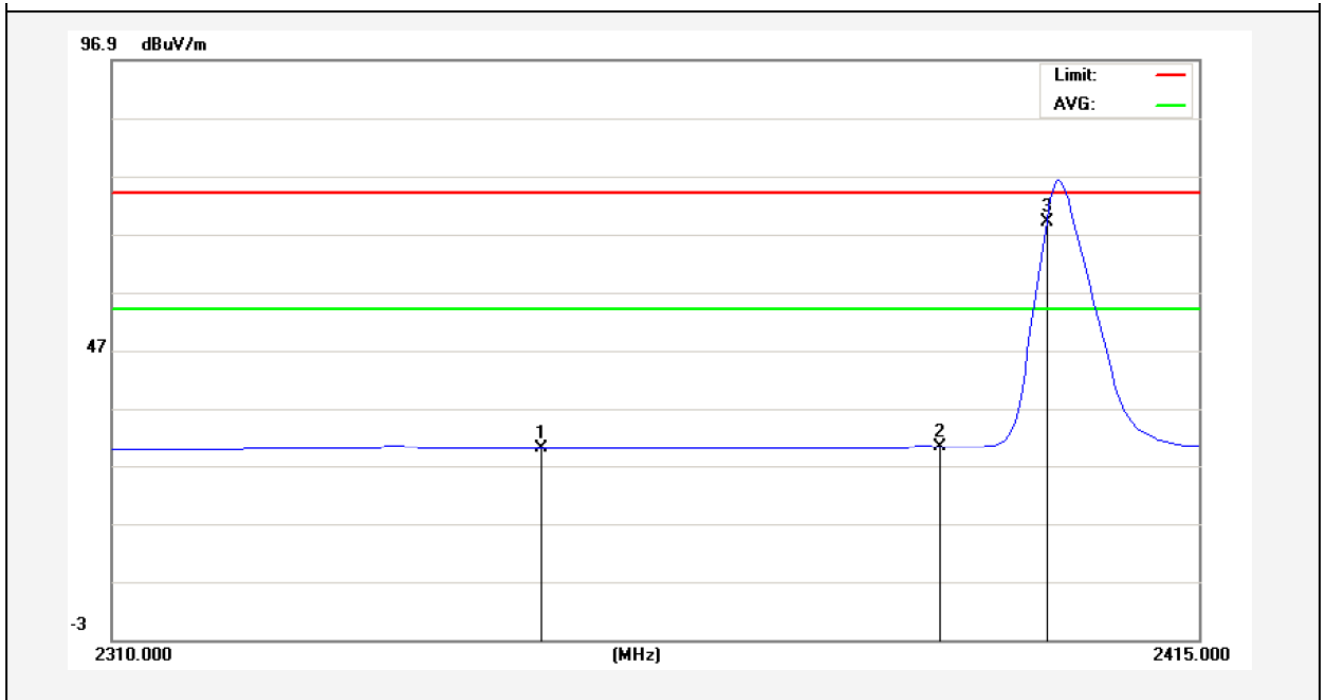
2402MHz

Vertical-PEAK:



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/)	Over Limit (dB)	Detector	Height (cm)	degree (deg)	Remark
1	2360.662	44.96	-2.58	42.38	74.00	-31.62	peak			
2	2390.000	46.39	-2.51	43.88	74.00	-30.12	peak			
3	2400.000	71.09	-2.49	68.60	74.00	-5.40	peak			

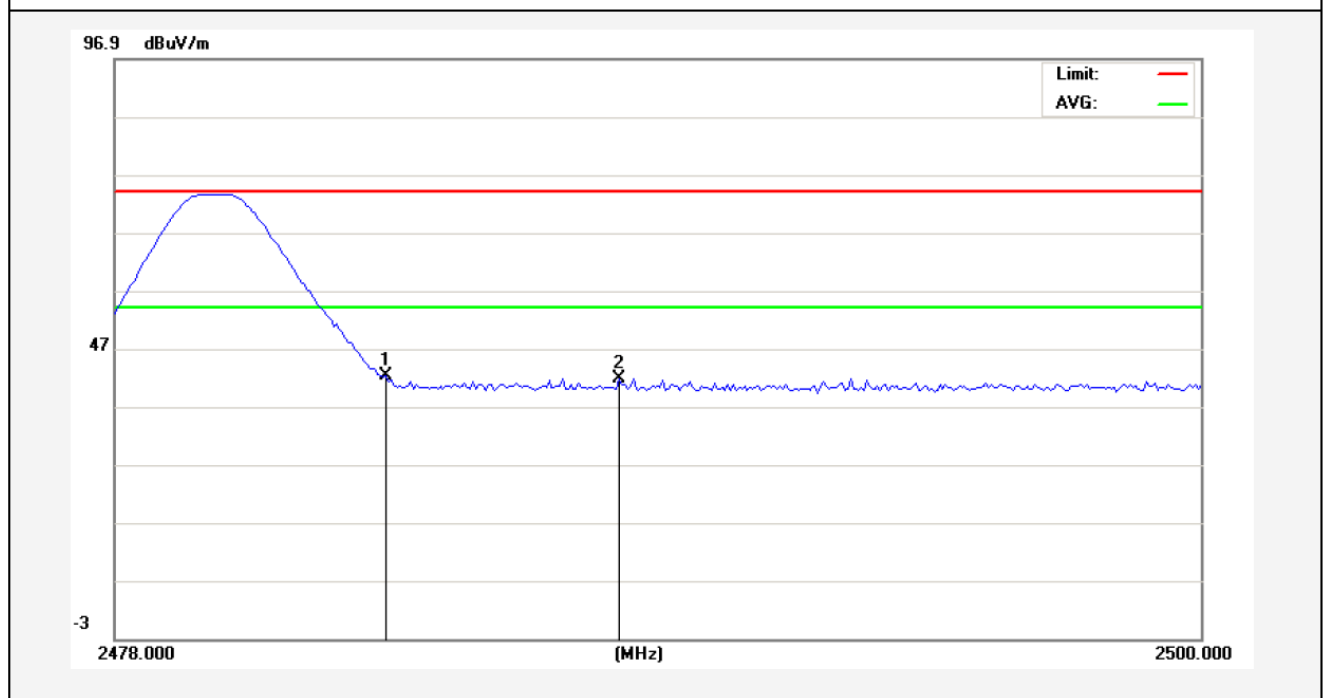
Vertical-AV:



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/)	Over Limit (dB)	Detector	Height (cm)	degree (deg)	Remark
1	2350.950	32.60	-2.60	30.00	54.00	-24.00	AVG			
2	2390.000	32.82	-2.51	30.31	54.00	-23.69	AVG			
3	2400.000	71.62	-2.49	69.13	54.00	15.13	AVG			

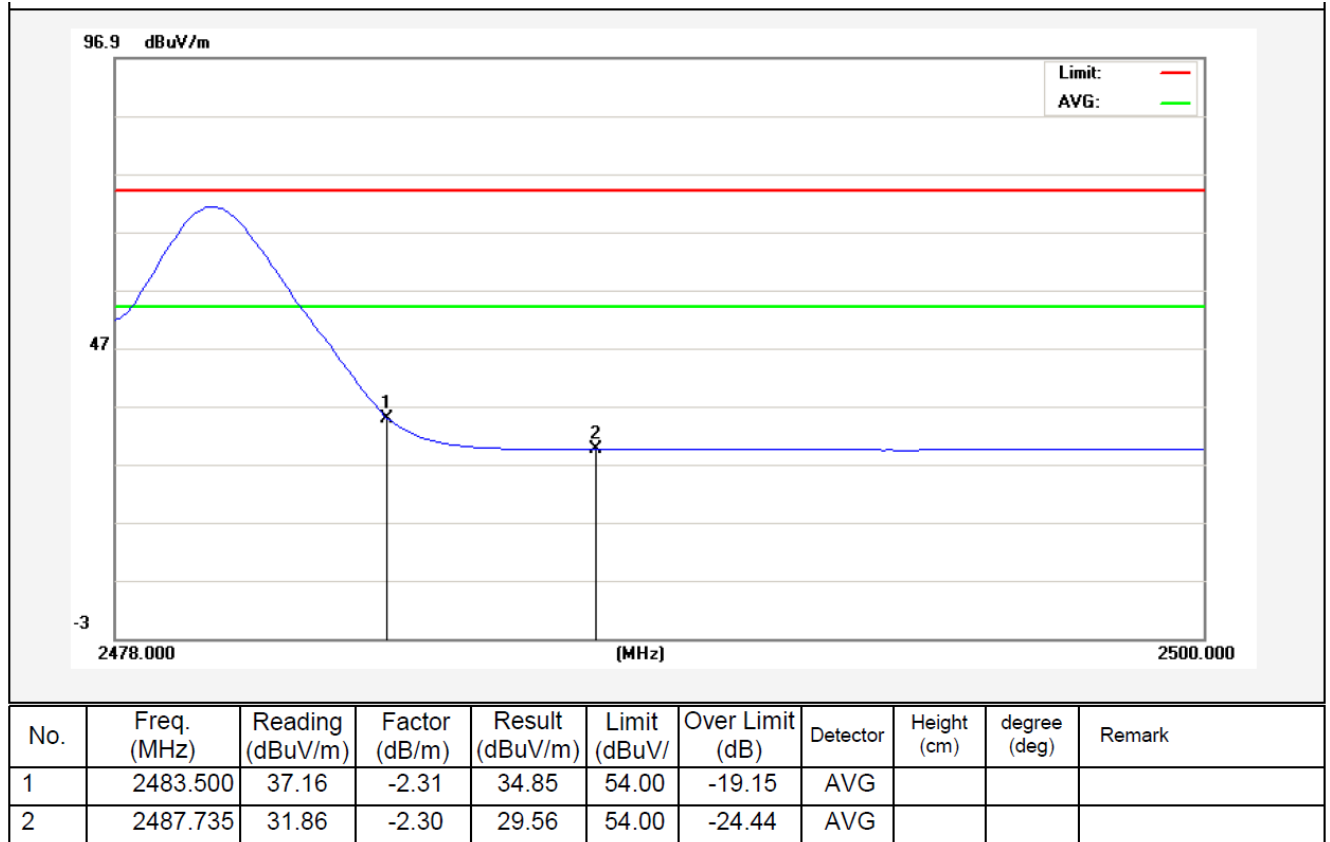
2480MHz

Horizontal-PEAK:



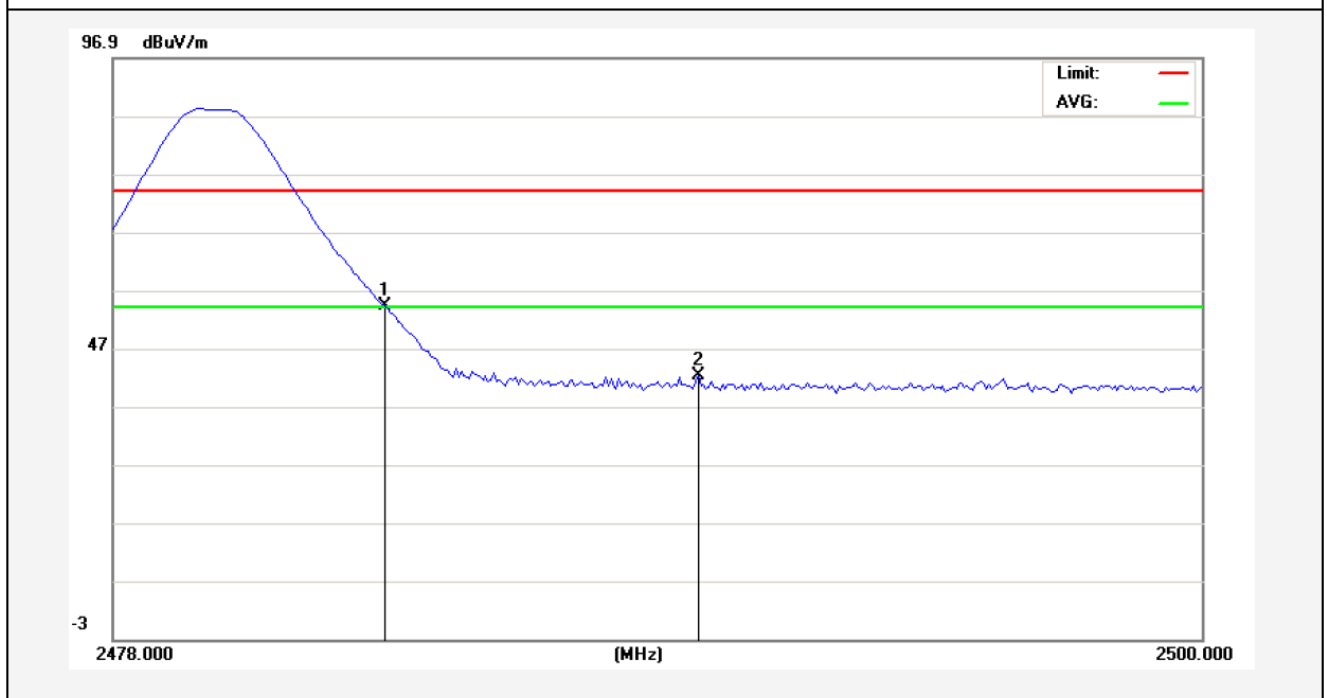
No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/)	Over Limit (dB)	Detector	Height (cm)	degree (deg)	Remark
1	2483.500	44.63	-2.31	42.32	74.00	-31.68	peak			
2	2488.230	44.06	-2.30	41.76	74.00	-32.24	peak			

Horizontal-AV:



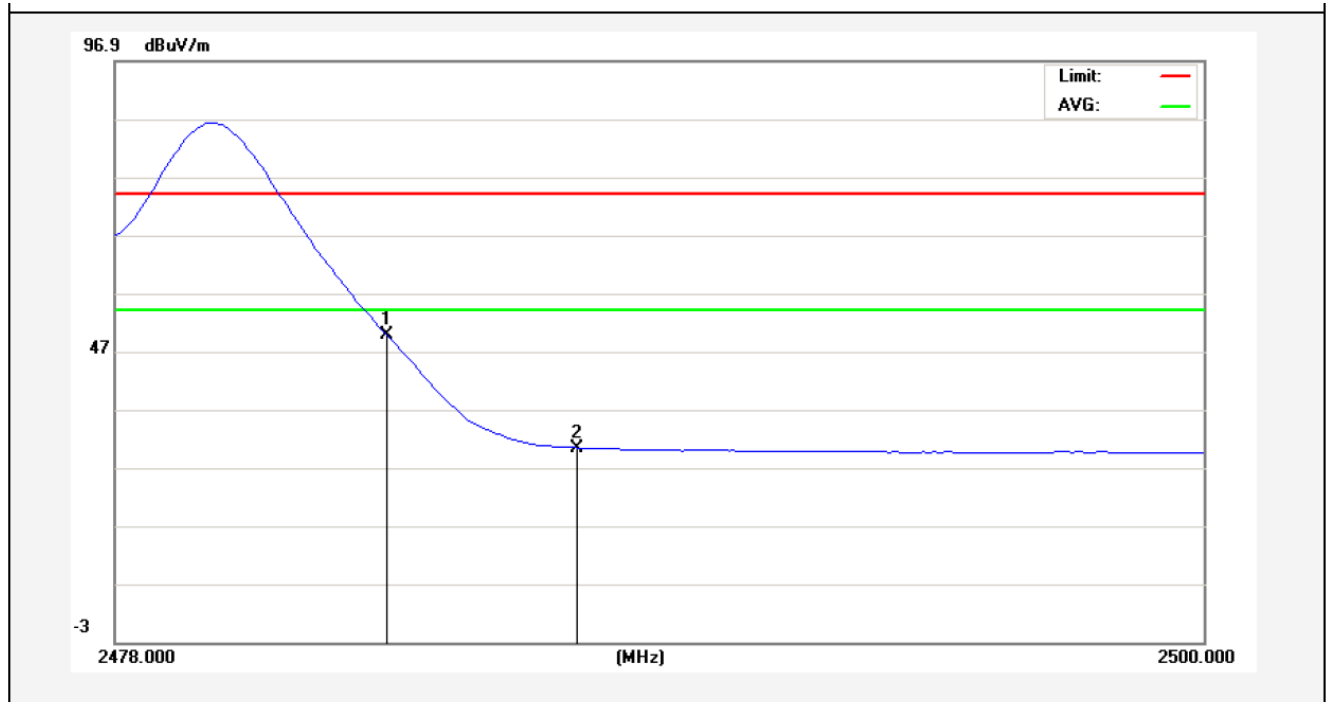
2480MHz

Vertical-PEAK:



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/)	Over Limit (dB)	Detector	Height (cm)	degree (deg)	Remark
1	2483.500	56.61	-2.31	54.30	74.00	-19.70	peak			
2	2489.825	44.54	-2.29	42.25	74.00	-31.75	peak			

Vertical-AV:



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/)	Over Limit (dB)	Detector	Height (cm)	degree (deg)	Remark
1	2483.500	52.19	-2.31	49.88	54.00	-4.12	AVG			
2	2487.350	32.68	-2.30	30.38	54.00	-23.62	AVG			

4.5. Peak Power Spectral Density

a. Limit

1. For direct sequence systems, the peak power spectral density conducted from the intentional radiator to the antenna shall not be greater than 8dBm in any 3kHz band during any time interval of continuous transmission.
2. The direct sequence operating of the hybrid system, with the frequency hopping operation turned off, shall comply with the power density requirements of paragraph (d) of this section.

b. Test Procedure

1. Place the EUT on the table and set it in transmitting mode. Remove the antenna from the EUT and then connect a low loss RF cable from the antenna port to the spectrum analyzer.
2. Set the spectrum analyzer as RBW = 3kHz, VBW = 10kHz, Span = 1.5xOBW, Sweep=500s
3. Record the max. reading.
4. Repeat the above procedure until the measurements for all frequencies are completed.

c. Test Equipment

Same as the equipment listed in 4.2.

d. Test Setup

See 4.1

e. Test Results

Pass

f. Test Data

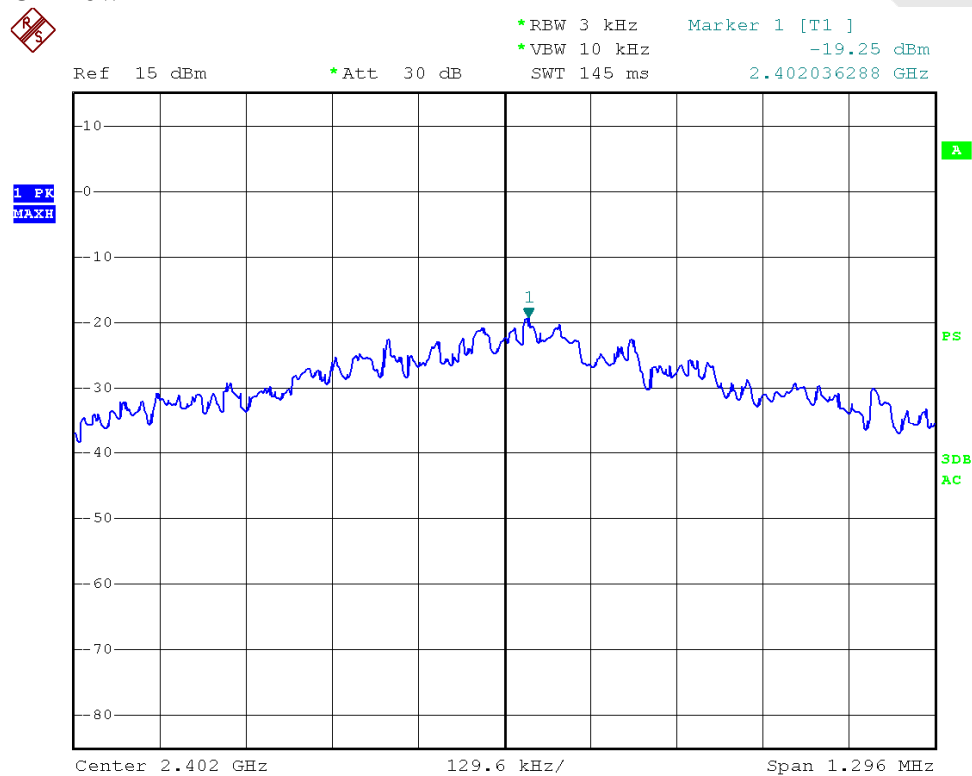
Please refer to the following data.

g. Test Plot See the following pages

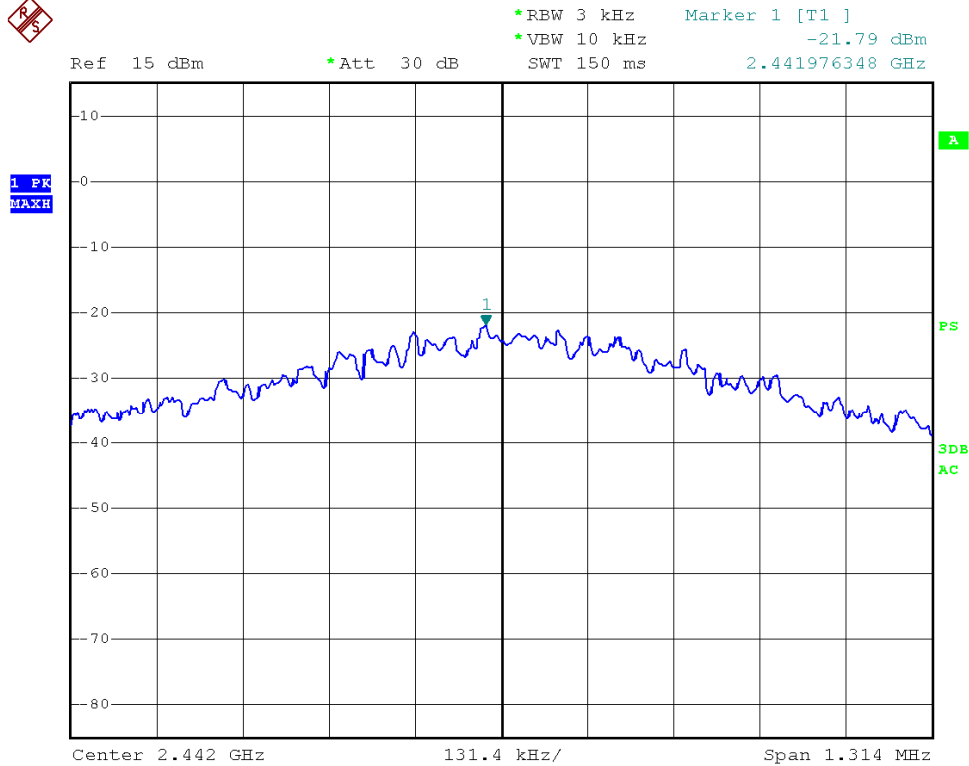
Test mode: IEEE 802.11b

Channel	Frequency (MHz)	PPSD (dBm/3KHz)	ΣPPSD (dBm/3KHz)	Limit (dBm)	Result
Low	2402	-19.25	-	8.00	Pass
Mid	2442	-21.79	-		Pass
High	2480	-23.79	-		Pass

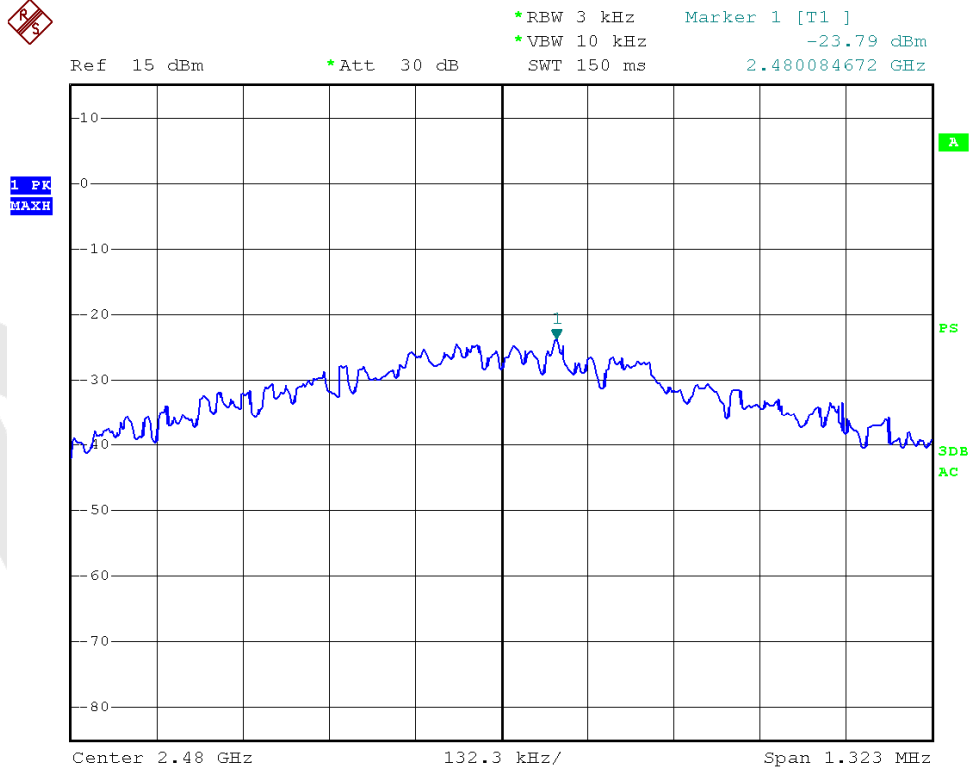
CH Low



CH Mid



CH High



4.6. Radiated Emissions

4.6.1.1. Test Limits (< 30 MHz)

Frequency (MHz)	Field Strength (microvolts/meter)	Measurement Distance (meter)
0.009-0.490	2400/F(kHz)	300
0.490-1.705	24000/F(kHz)	30
1.705-30.0	30	30

4.6.1.2. Test Limits (\geq 30 MHz)

FIELD STRENGTH of Fundamental: @3M	FIELD STRENGTH of Harmonics	S15.209 30 - 88 MHz	40 dBuV/m
902-928 MHz		88 - 216 MHz	43.5
2.4-2.4835 GHz		216 - 960 MHz	46
94 dBuV/m @3m	54 dBuV/m @3m	ABOVE 960 MHz	54dBuV/m

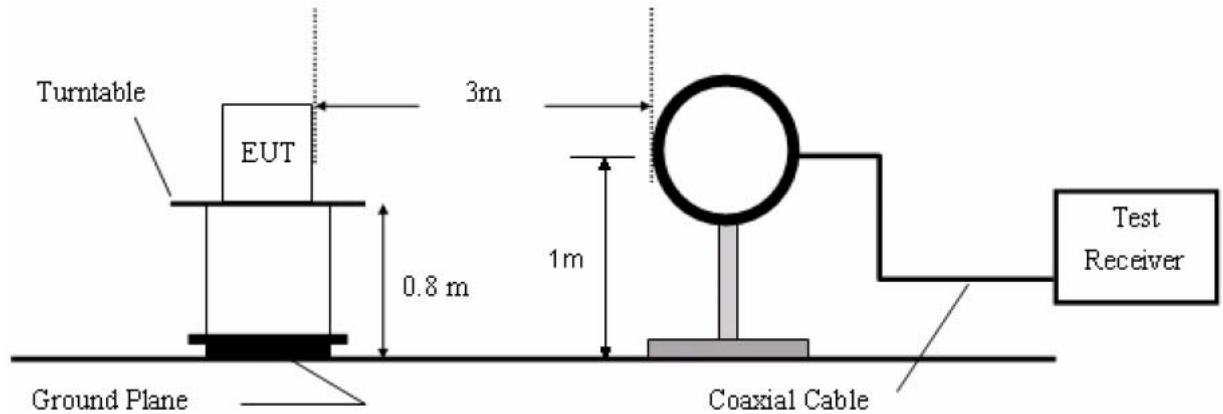
In any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement. 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)).

Test Equipment

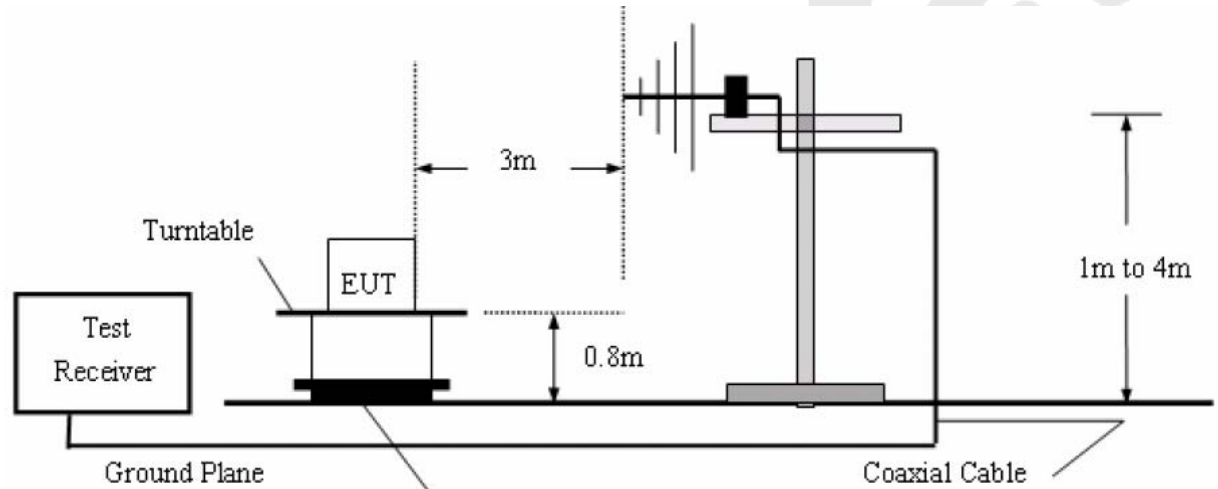
Item	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Interval
1.	Spectrum Analysis	Agilent	E4407B	US39390582	Aug. 08, 2014	1 Year
2.	Preamplifier	Instruments corporation	EMC011830	980100	Aug. 08, 2014	1 Year
3.	EMI Test Receiver	Rohde & Schwarz	ESPI	101604	Apr. 22, 2014	1 Year
4.	Double Ridged Horn Antenna	Instruments corporation	GTH-0118	351600	Apr. 04, 2014	1 Year
5.	Bilog Broadband Antenna	Schwarzbeck	VULB9163	VULB 9163-289	Apr. 24, 2014	1 Year
6.	Pre-amplifier	SONOMA	310N	186860	Aug. 08, 2014	1 Year
7.	EMI Test Software EZ-EMC	SHURPLE	N/A	N/A	N/A	N/A

4.6.2. Test Configuration:

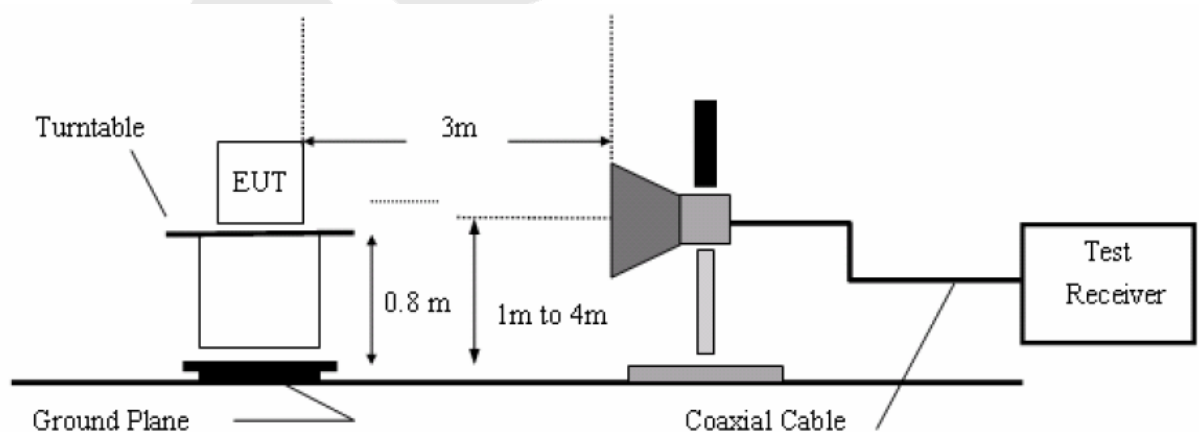
4.6.2.1. 9k to 30MHz emissions:



4.6.2.2. 30M to 1G emissions:



4.6.2.3. 1G to 40G emissions:



4.6.3. Test Procedure

The EUT is placed on a turn table which is 0.8 meter high above the ground. The turn table can rotate 360 degrees to determine the position of the maximum emission level. The EUT is set 3 meters away from the receiving antenna which is mounted on a antenna tower. The antenna can be moved up and down from 1 to 4 meters to find out the maximum emission level. Both horizontal and vertical polarization of the antenna are set on test.

Measurements are made on 9KHz to 30MHz and 30MHz to 26GHz range with the transmitter set to the lowest, middle, and highest channels.

All readings from 30MHz to 1GHz are quasi-peak values with a resolution bandwidth of 120kHz. All reading are above 1GHz, peak & average values with a resolution bandwidth of 1MHz.

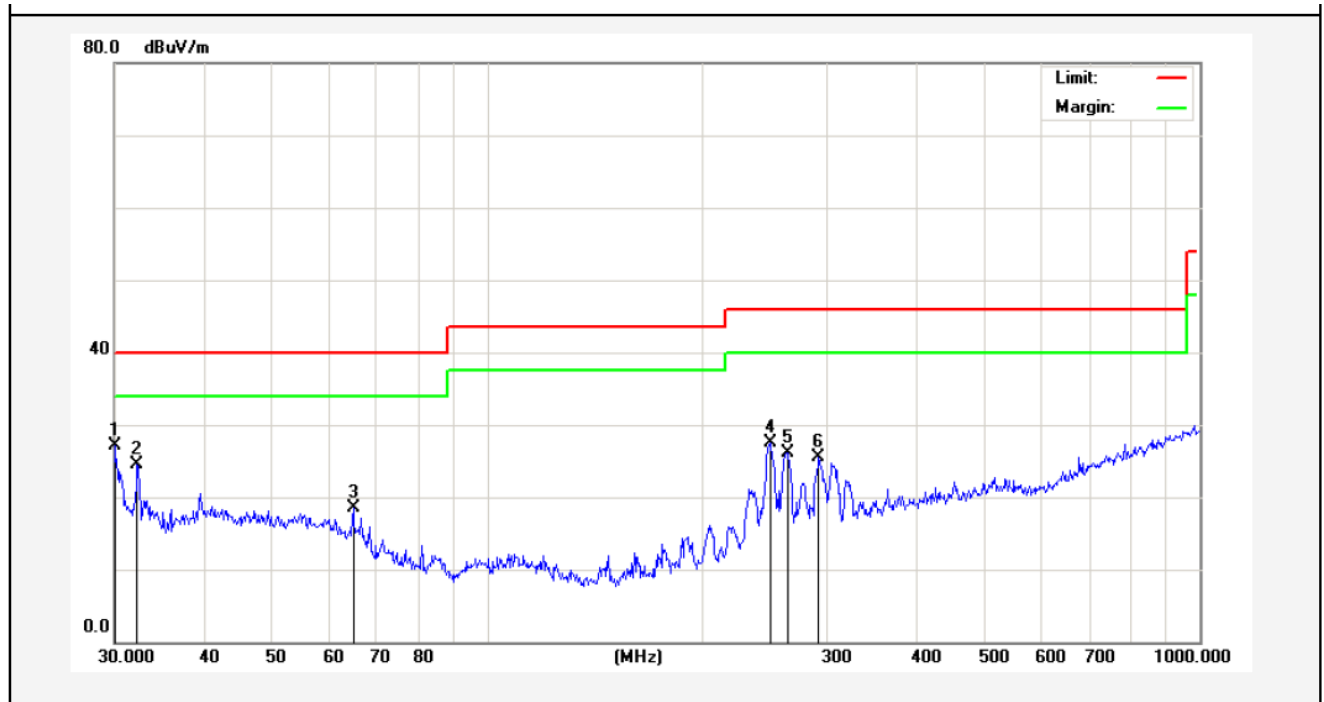
The EUT is tested in 9*6*6 Chamber.

The test results are listed in Section 4.6.4.

4.6.4. Test Results

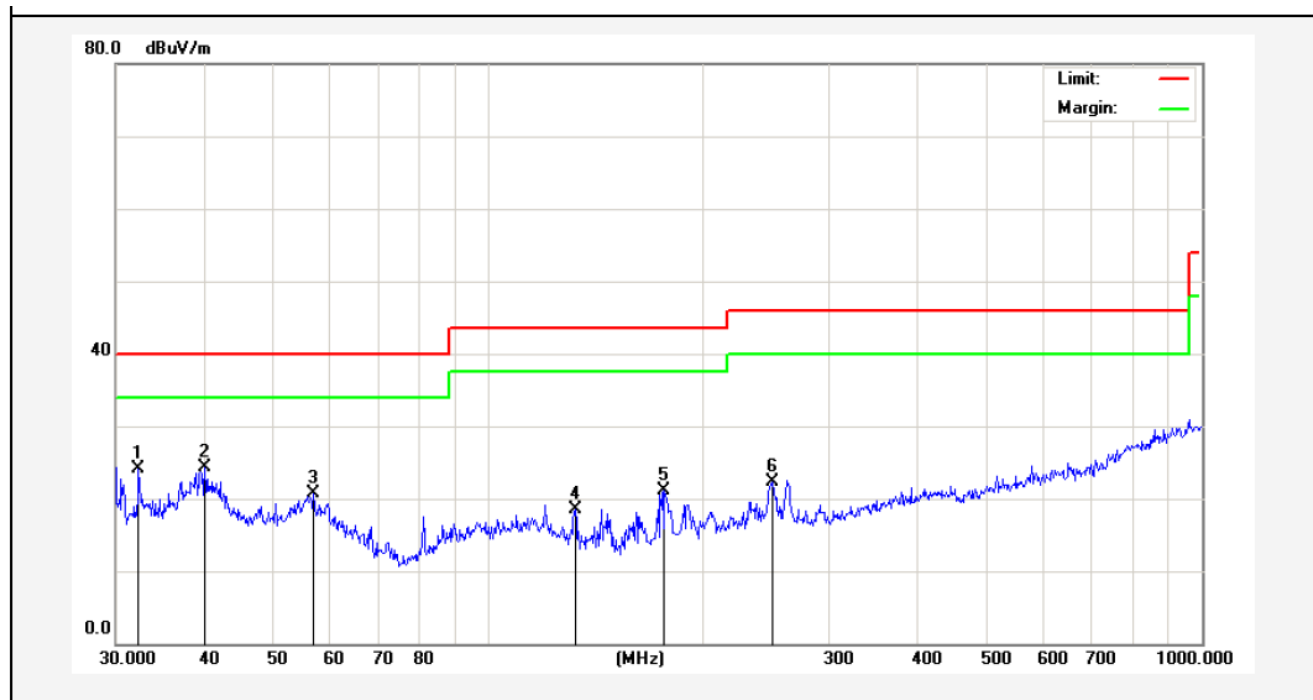
Please refer to the following pages.

Job No.:	011409080E	Polarization:	Horizontal
Standard:	(RE)FCC PART15 C _3m	Power Source:	DC 3V
Test item:	Radiation Test	Temp.(C)/Hum.(%RH):	24.3(C)/55%RH
Test Mode:	On	Distance:	3m



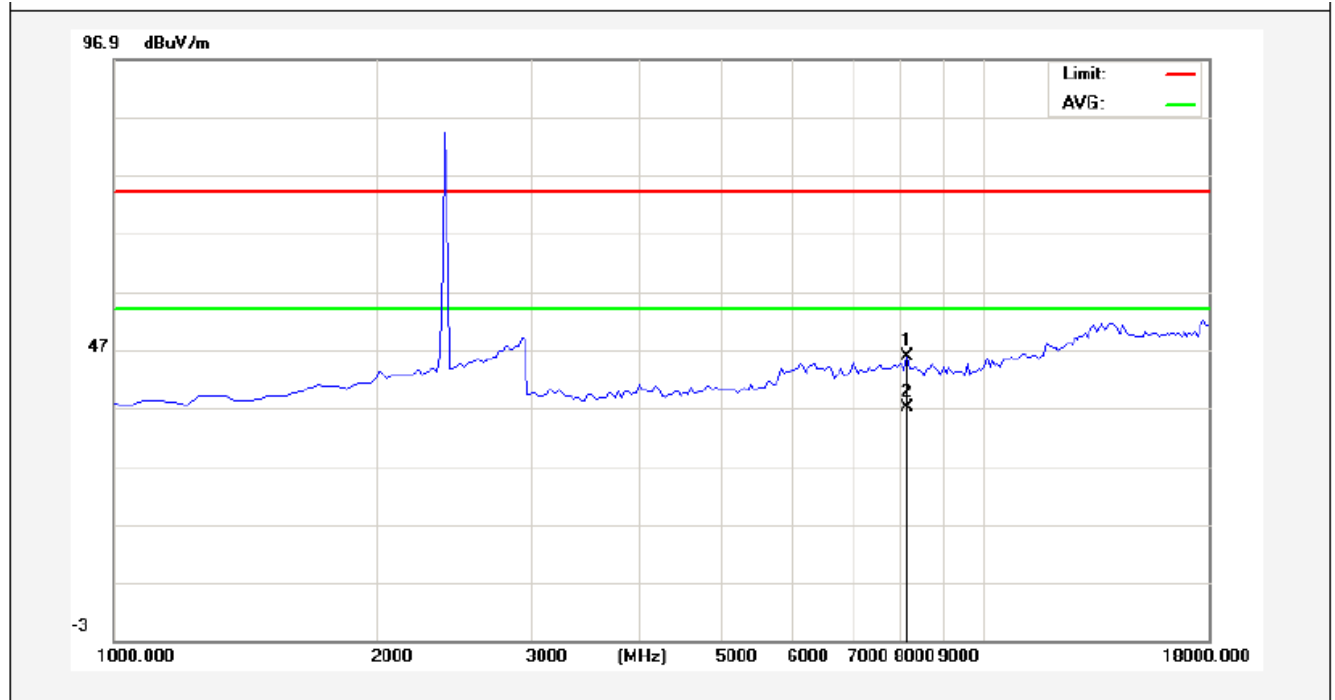
No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/)	Over Limit (dB)	Detector	Height (cm)	degree (deg)	Remark
1	30.0000	44.08	-16.95	27.13	40.00	-12.87	peak			
2	32.2924	41.06	-16.64	24.42	40.00	-15.58	peak			
3	64.8864	35.93	-17.43	18.50	40.00	-21.50	peak			
4	249.4250	45.97	-18.52	27.45	46.00	-18.55	peak			
5	263.8190	44.91	-18.84	26.07	46.00	-19.93	peak			
6	292.0582	43.35	-17.90	25.45	46.00	-20.55	peak			

Job No.:	011409080E	Polarization:	Vertical
Standard:	(RE)FCC PART15 C _3m	Power Source:	DC 3V
Test item:	Radiation Test	Temp.(C)/Hum.(%RH):	24.3(C)/55%RH
Test Mode:	On	Distance:	3m



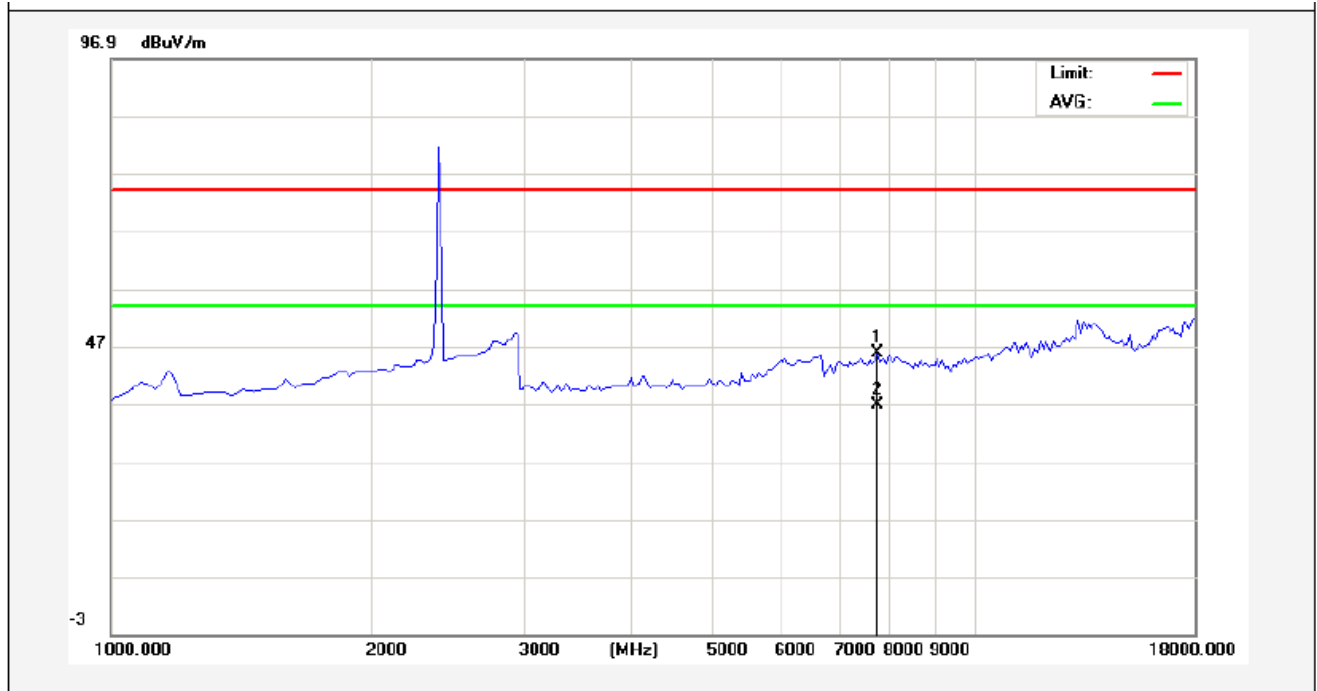
No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/)	Over Limit (dB)	Detector	Height (cm)	degree (deg)	Remark
1	32.2925	40.80	-16.64	24.16	40.00	-15.84	peak			
2	39.9942	38.60	-14.37	24.23	40.00	-15.77	peak			
3	56.7917	35.84	-15.09	20.75	40.00	-19.25	peak			
4	132.2206	36.41	-17.96	18.45	43.50	-25.05	peak			
5	176.2686	38.19	-17.12	21.07	43.50	-22.43	peak			
6	249.4250	36.28	-14.05	22.23	46.00	-23.77	peak			

Job No.:	011409080E	Polarization:	Horizontal
Standard:	(RE)FCC PART15 C _3m	Power Source:	DC 3V
Test item:	Radiation Test	Temp.(C)/Hum.(%RH):	24.3(C)/55%RH
Note:	2402MHz	Distance:	3m



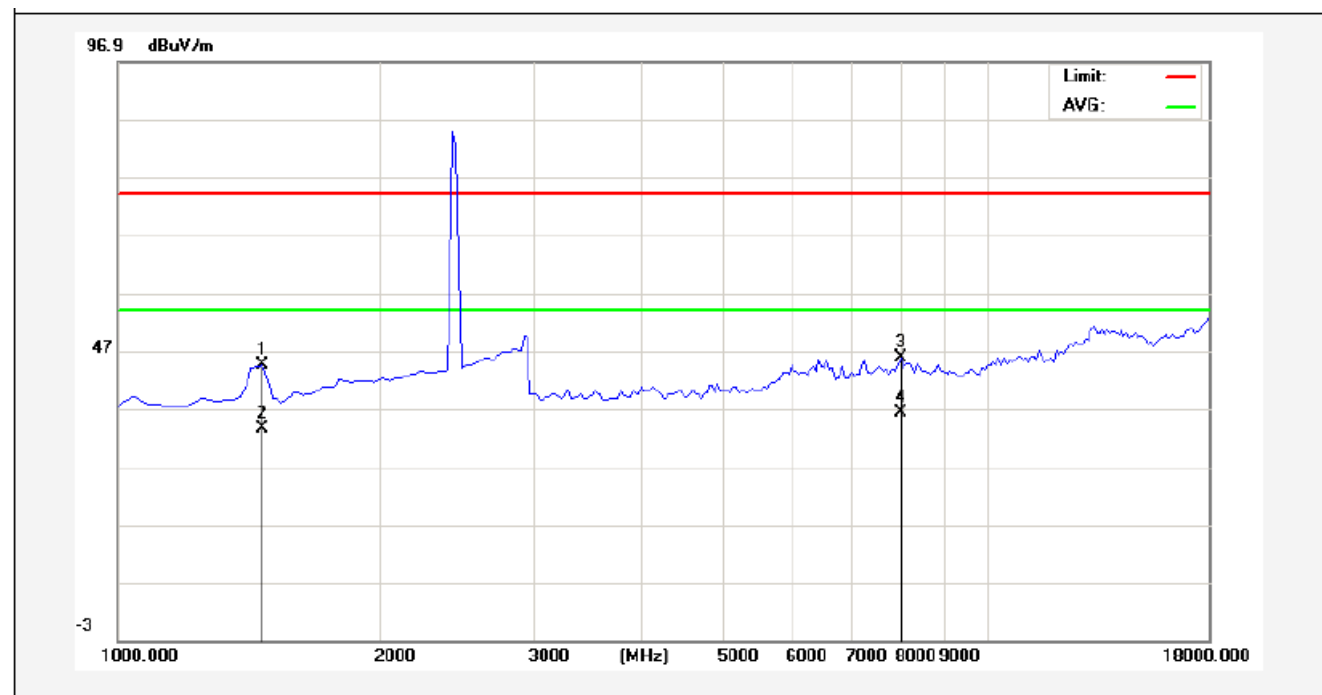
No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/)	Over Limit (dB)	Detector	Height (cm)	degree (deg)	Remark
1	8182.500	36.10	9.66	45.76	74.00	-28.24	peak			
2	8182.500	27.49	9.66	37.15	54.00	-16.85	AVG			

Job No.:	011409080E	Polarization:	Vertical
Standard:	(RE)FCC PART15 C_3m	Power Source:	DC 3V
Test item:	Radiation Test	Temp.(C)/Hum.(%RH):	24.3(C)/55%RH
Note:	2402MHz	Distance:	3m



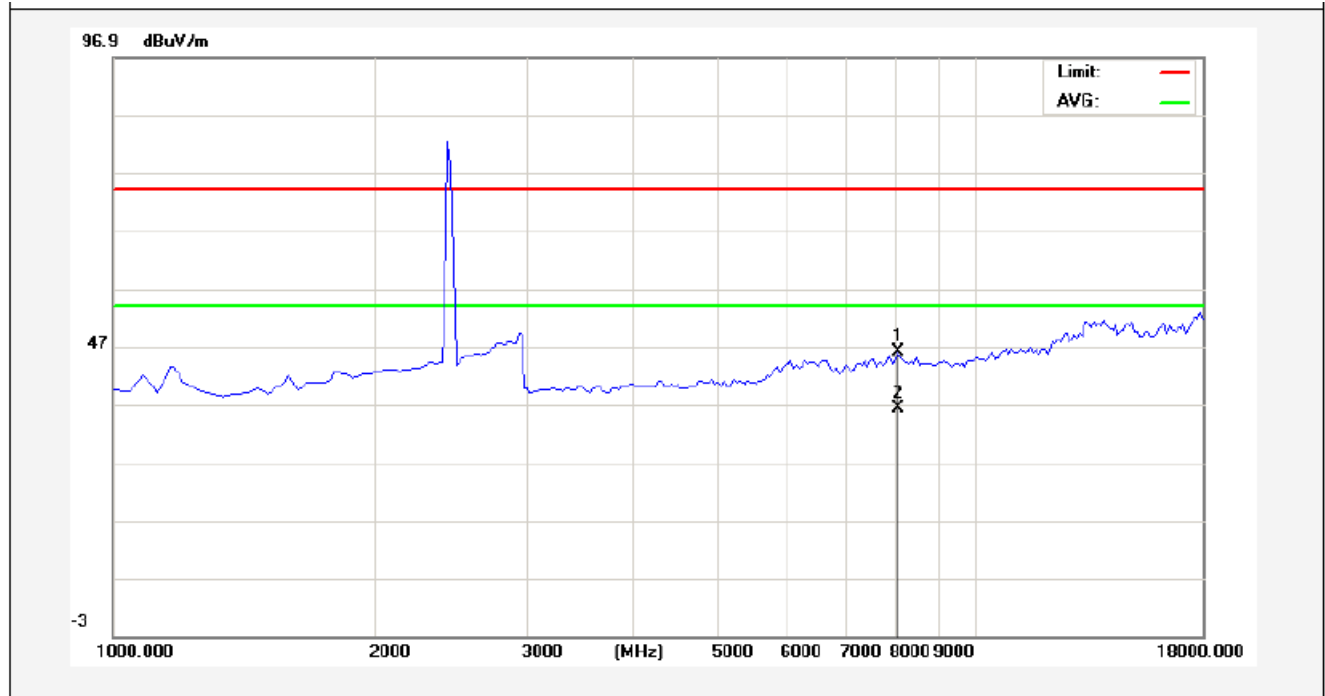
No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/)	Over Limit (dB)	Detector	Height (cm)	degree (deg)	Remark
1	7757.500	36.51	9.24	45.75	74.00	-28.25	peak			
2	7757.500	27.64	9.24	36.88	54.00	-17.12	AVG			

Job No.:	011409080E	Polarization:	Horizontal
Standard:	(RE)FCC PART15 C _3m	Power Source:	DC 3V
Test item:	Radiation Test	Temp.(C)/Hum.(%RH):	24.3(C)/55%RH
Note:	2442MHz	Distance:	3m



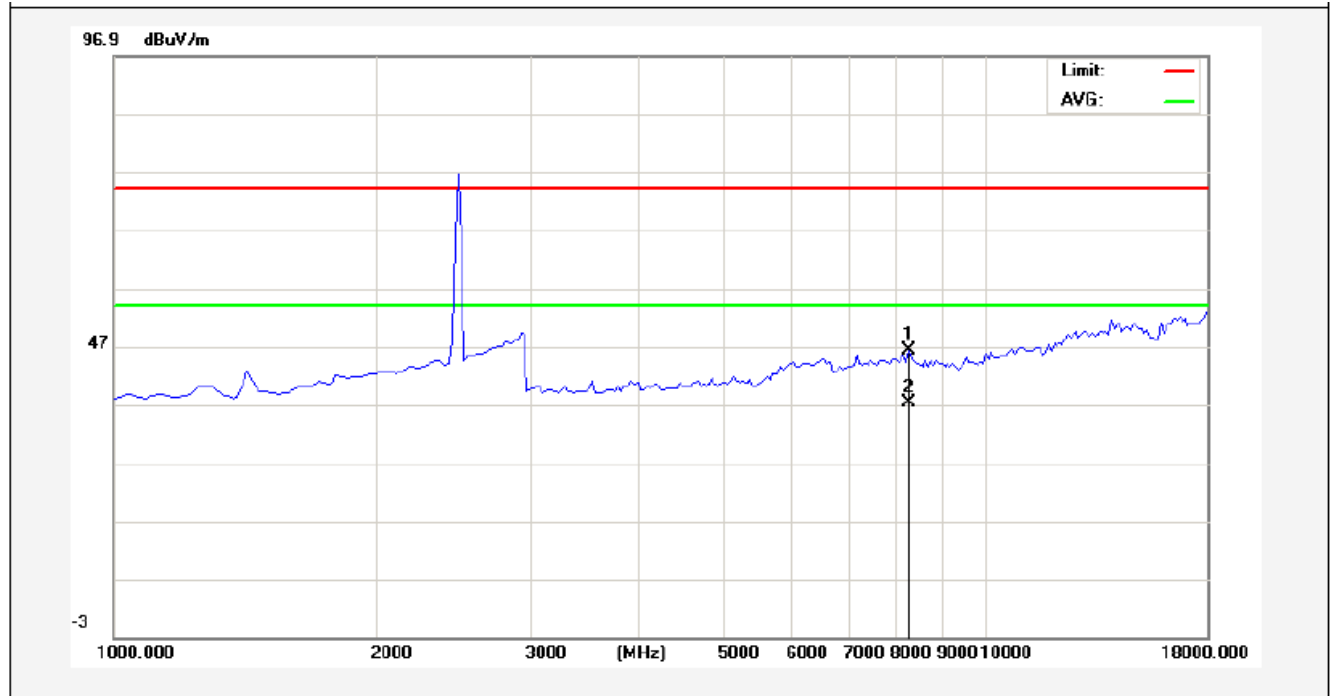
No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/)	Over Limit (dB)	Detector	Height (cm)	degree (deg)	Remark
1	1467.500	50.83	-6.31	44.52	74.00	-29.48	peak			
2	1467.500	39.89	-6.31	33.58	54.00	-20.42	AVG			
3	8012.500	36.04	9.67	45.71	74.00	-28.29	peak			
4	8012.500	26.54	9.67	36.21	54.00	-17.79	AVG			

Job No.:	011409080E	Polarization:	Vertical
Standard:	(RE)FCC PART15 C _3m	Power Source:	DC 3V
Test item:	Radiation Test	Temp.(C)/Hum.(%RH):	24.3(C)/55%RH
Note:	2442MHz	Distance:	3m



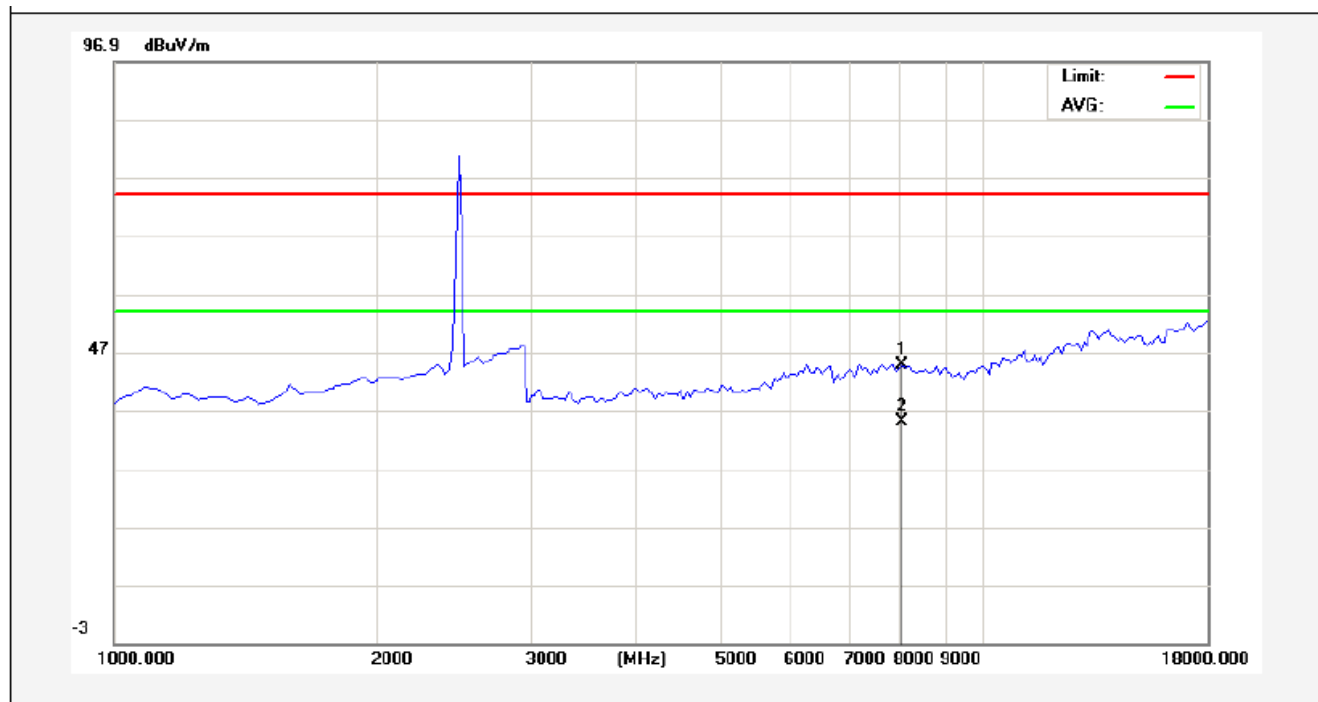
No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/)	Over Limit (dB)	Detector	Height (cm)	degree (deg)	Remark
1	8055.000	36.26	9.67	45.93	74.00	-28.07	peak			
2	8055.000	26.54	9.67	36.21	54.00	-17.79	AVG			

Job No.:	011409080E	Polarization:	Horizontal
Standard:	(RE)FCC PART15 C _3m	Power Source:	DC 3V
Test item:	Radiation Test	Temp.(C)/Hum.(%RH):	24.3(C)/55%RH
Note:	2480MHz	Distance:	3m



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/)	Over Limit (dB)	Detector	Height (cm)	degree (deg)	Remark
1	8225.000	36.62	9.66	46.28	74.00	-27.72	peak			
2	8225.000	27.67	9.66	37.33	54.00	-16.67	AVG			

Job No.:	011409080E	Polarization:	Vertical
Standard:	(RE)FCC PART15 C _3m	Power Source:	DC 3V
Test item:	Radiation Test	Temp.(C)/Hum.(%RH):	24.3(C)/55%RH
Note:	2480MHz	Distance:	3m



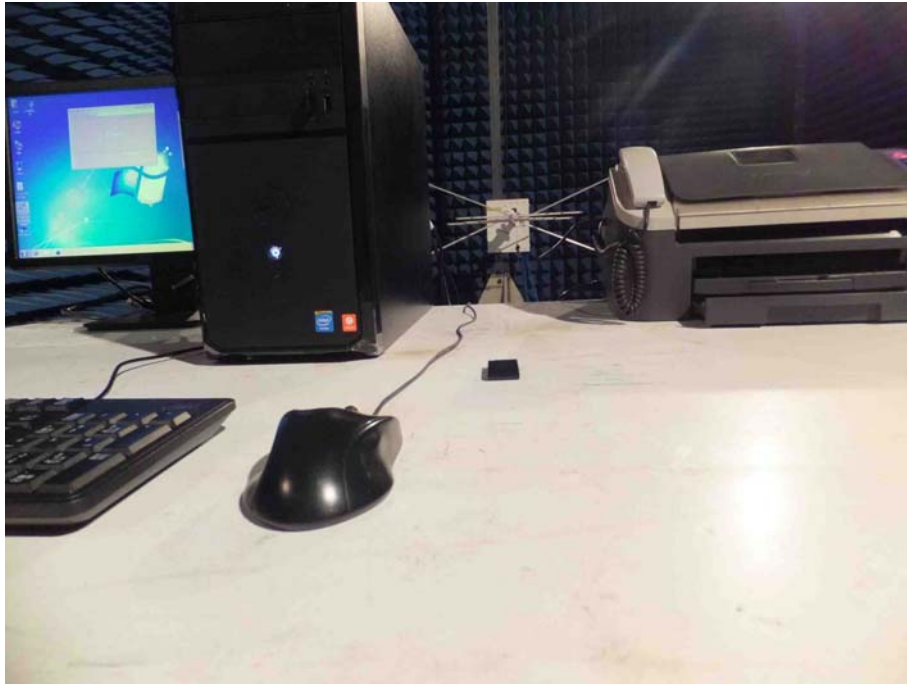
No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/)	Over Limit (dB)	Detector	Height (cm)	degree (deg)	Remark
1	8055.000	35.15	9.67	44.82	74.00	-29.18	peak			
2	8055.000	25.45	9.67	35.12	54.00	-18.88	AVG			

5. PHOTOGRAPH

5.1. Photo of Conducted Emission Measurement



5.2. Photo of Radiation Emission Test



APPENDIX I (EXTERNAL PHOTOS)

Figure 1
The EUT-Top View



Figure 2
The EUT-Bottom View

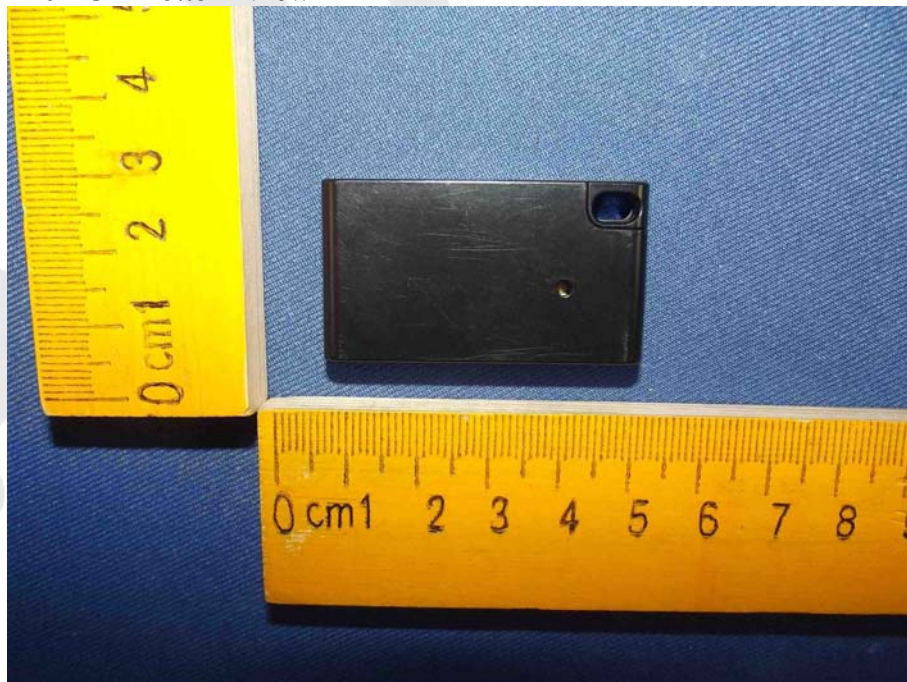


Figure 3
The EUT-Front View

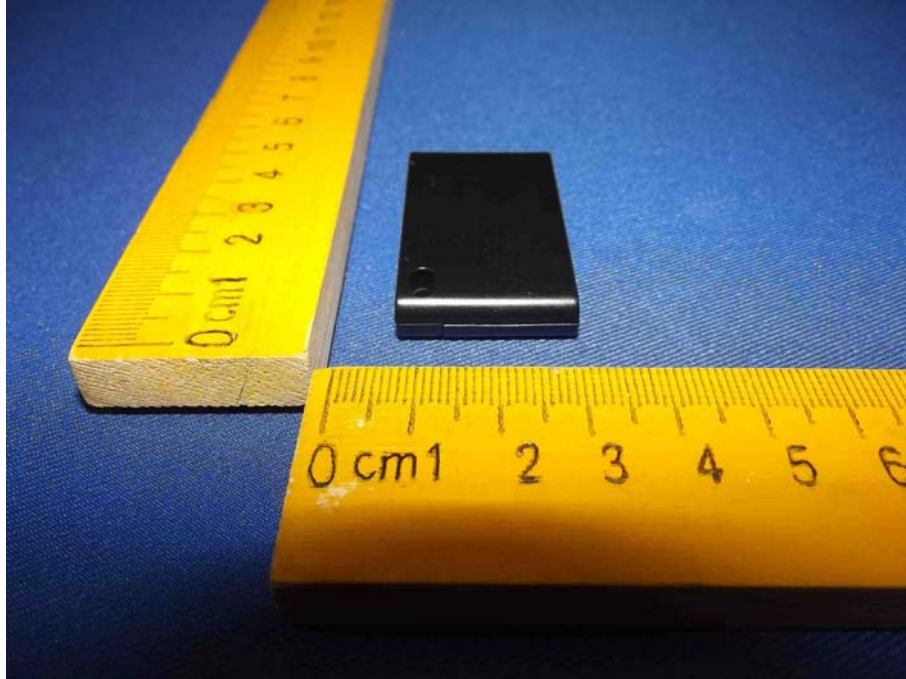


Figure 4
The EUT-Back View

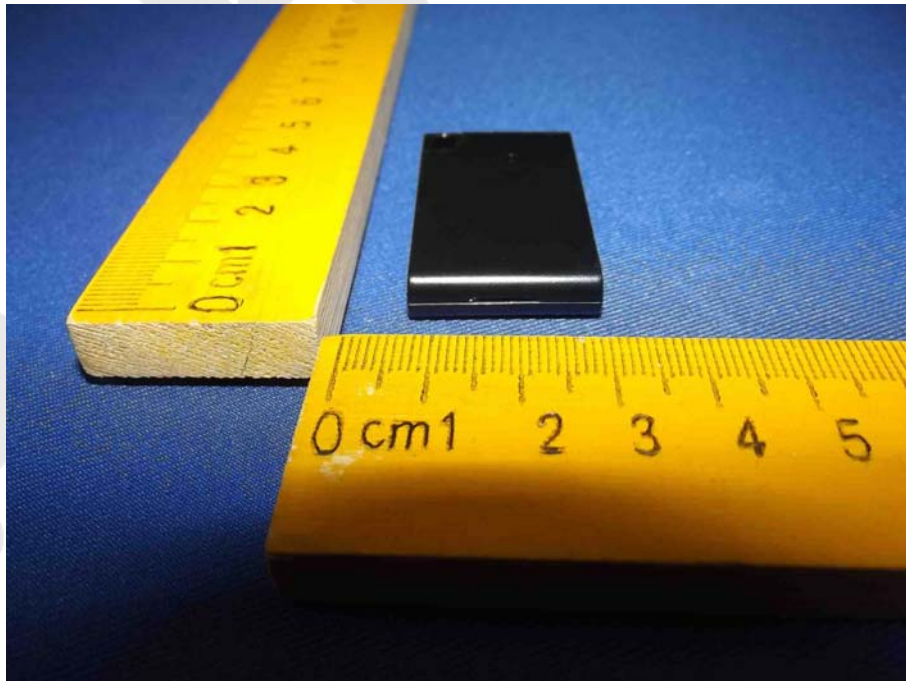


Figure 5
The EUT-Right View

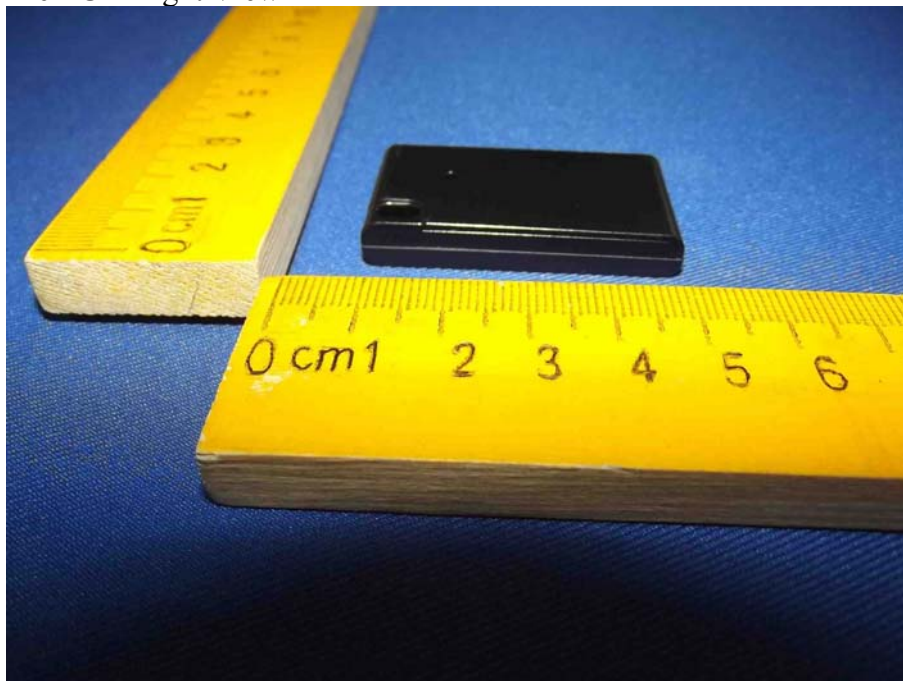
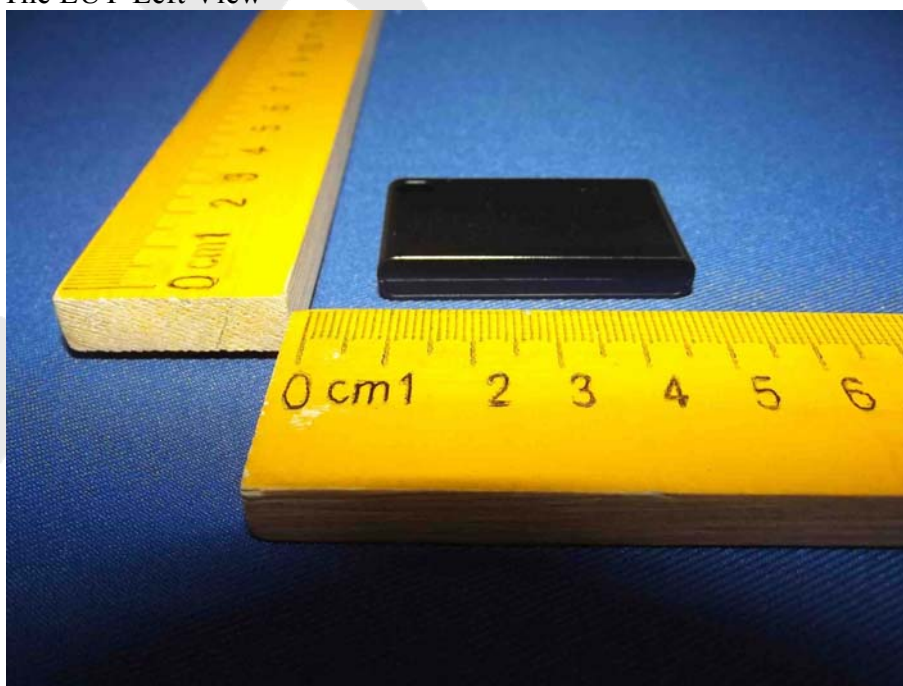


Figure 6
The EUT-Left View



APPENDIX II (INTERNAL PHOTOS)

Figure 7
The EUT-Inside View



Figure 8
The EUT-Inside View



Figure 9
PCB of the EUT-Front View

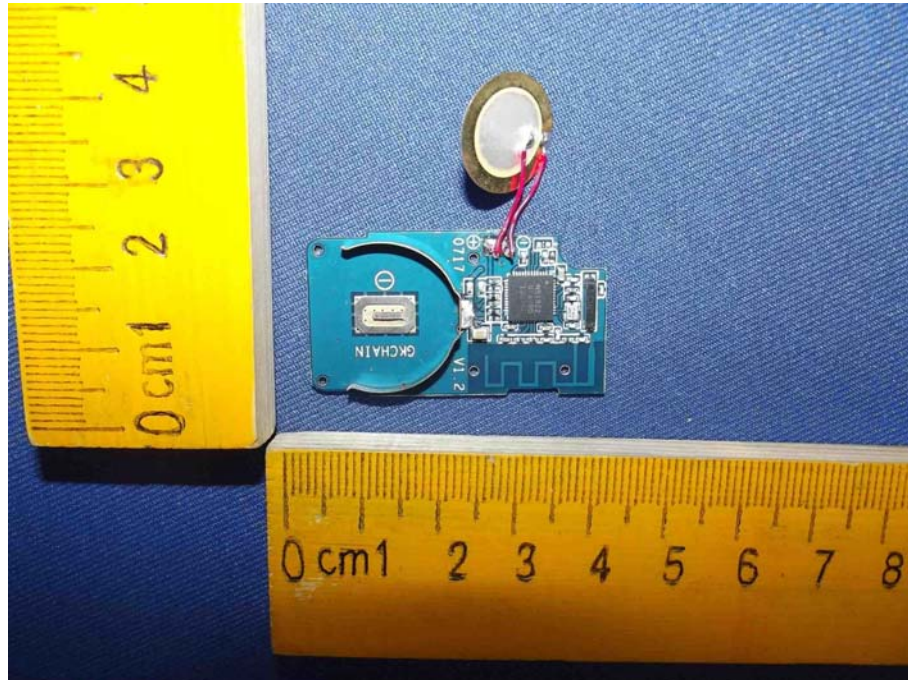


Figure 10
PCB of the EUT-Back View

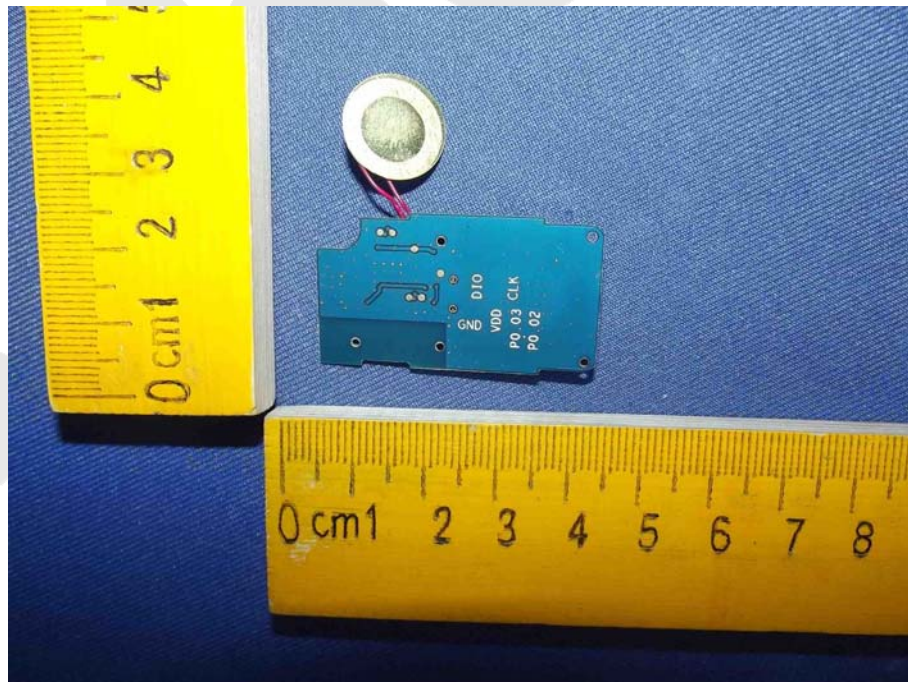


Figure 11
PCB of the Module View

