

ELECTROMAGNETIC EMISSION COMPLIANCE REPORT FOR LOW-POWER, NON-LICENSED TRANSMITTER

Test Report No. : E124R-047
AGR No : A124A-071
Applicant : Remote Solution Co., Ltd.
Address : 92, Chogok-ri, Nam-myun, Kimchon-city, Kyungbuk, 740-871, Korea
Manufacturer : Remote Solution Co., Ltd.
Address : 92, Chogok-ri, Nam-myun, Kimchon-city, Kyungbuk, 740-871, Korea
Type of Equipment : IR&RF Remote
FCC ID. : TX4CRB40A
Model Name : CRB40A
Multiple Model Name : HD UDTA Remote Control
Serial number : None
Total page of Report : 27 pages (including this page)
Date of Incoming : April 09, 2012
Date of issue : April 19, 2012

SUMMARY

The equipment complies with the regulation; **FCC Part 15 Subpart C Section 15.249.**

This test report only contains the result of a single test of the sample supplied for the examination.

It is not a generally valid assessment of the features of the respective products of the mass-production.

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Reviewed by: 
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ONETECH Corp.

CONTENTS

	PAGE
1. VERIFICATION OF COMPLIANCE	4
2. TEST SUMMARY	5
2.1 TEST ITEMS AND RESULTS	5
2.2 ADDITIONS, DEVIATIONS, EXCLUSIONS FROM STANDARDS	5
2.3 RELATED SUBMITTAL(S) / GRANT(S)	5
2.4 PURPOSE OF THE TEST	5
2.5 TEST METHODOLOGY	5
2.6 TEST FACILITY	5
3. GENERAL INFORMATION	6
3.1 PRODUCT DESCRIPTION	6
3.2 MODEL DIFFERENCES	6
4. EUT MODIFICATIONS	6
5. SYSTEM TEST CONFIGURATION	7
5.1 JUSTIFICATION	7
5.2 PERIPHERAL EQUIPMENT	7
5.3 MODE OF OPERATION DURING THE TEST	7
5.4 CONFIGURATION OF TEST SYSTEM	7
5.5 ANTENNA REQUIREMENT	7
6. PRELIMINARY TEST	8
6.1 AC POWER LINE CONDUCTED EMISSIONS TESTS	8
6.2 GENERAL RADIATED EMISSIONS TESTS	8
7. RADIATED EMISSION TEST	9
7.1 TEST SET-UP	9
7.2 MEASUREMENT UNCERTAINTY	9
7.3 TEST EQUIPMENT USED	9
7.4 FINAL RESULT OF MEASUREMENT	10
7.4.1 <i>Field Strength of the Fundamental Frequency</i>	10
7.4.2 <i>Emissions Radiated Outside of the Specified Frequency Bands</i>	11
8. 20 DB BANDWIDTH	25
8.1 OPERATING ENVIRONMENT	25
8.2 TEST SET-UP	25
8.3 TEST EQUIPMENT USED	25
8.4 TEST DATA FOR BANDWIDTH	25

Revision History

Issue Report No.	Issued Date	Revisions	Effect Section
E124R-047	April 19, 2012	Initial Release	All

1. VERIFICATION OF COMPLIANCE

APPLICANT : Remote Solution Co., Ltd.
ADDRESS : 92, Chogok-ri, Nam-myun, Kimchon-city, Kyungbuk, 740-871, Korea
CONTACT PERSON : Mr. Dae-Gyu, Lim / Assistant Research Engineer
TELEPHONE NO : +82-54-420-4500
FCC ID : TX4CRB40A
MODEL NAME : CRB40A
BRAND NAME : N/A
SERIAL NUMBER : N/A
DATE : April 19, 2012

EQUIPMENT CLASS	DXX – Low Power Communications Transmitter
KIND OF EQUIPMENT	IR&RF Remote
THIS REPORT CONCERNS	Original Grant
MEASUREMENT PROCEDURES	ANSI C63.4: 2009
TYPE OF EQUIPMENT TESTED	Pre-Production
KIND OF EQUIPMENT AUTHORIZATION REQUESTED	Certification
EQUIPMENT WILL BE OPERATED UNDER FCC RULES PART(S)	FCC PART 15 SUBPART C Section 15.249
MODIFICATIONS ON THE EQUIPMENT TO ACHIEVE COMPLIANCE	No
FINAL TEST WAS CONDUCTED ON	3 m, semi anechoic chamber

-. The above equipment was tested by ONETECH Corp. for compliance with the requirement set forth in the FCC Rules and Regulations. This said equipment in the configuration described in this report, shows the maximum emission levels emanating from equipment are within the compliance requirements.

2. TEST SUMMARY

2.1 Test items and results

SECTION	TEST ITEMS	RESULTS
15.249 (a)	Field Strength of Emission	Met the Limit / PASS
15.249 (c)	Measurement distance	Met the Requirement / PASS
15.249 (d)	Emissions Radiated Outside of the Specified Frequency Band	Met the Limit / PASS
15.249 (e)	Radiated Emissions above 1 000 MHz	Met the Limit / PASS
15.209	Radiated Emission Limits, General Requirement	Met the Limit / PASS
15.207	Conducted Limits	N/A (See Note)
15.203	Antenna Requirement	Met the Requirement / PASS

Note: This test is not performed because the EUT is operated by DC battery.

2.2 Additions, deviations, exclusions from standards

No additions, deviations or exclusions have been made from standard.

2.3 Related Submittal(s) / Grant(s)

Original submittal only

2.4 Purpose of the test

To determine whether the equipment under test fulfills the requirements of the regulation stated in section 2.1.

2.5 Test Methodology

Radiated testing was performed according to the procedures in ANSI C63.4: 2009 at a distance of 3 m from EUT to the antenna.

2.6 Test Facility

The open area test site and conducted measurement facilities are located on at 301-14, Daessangryung-ri, Chowol-eup, Gwangju-si, Gyeonggi-do, 464-862, Korea. The Onetech Corp. has been accredited as a Conformity Assessment Body (CAB) with designation number KR0013.

3. GENERAL INFORMATION

3.1 Product Description

The Remote Solution Co., Ltd., Model: CRB40A (referred to as the EUT in this report) is an IR&RF Remote. Product specification information described herein was obtained from product data sheet or user’s manual.

DEVICE TYPE	Portable Device
OPERATING FREQUENCY	2 405 MHz ~ 2 480 MHz
RATED RF OUTPUT POWER	0 dBm
ANTENNA TYPE	Inserted into the main board (Pattern Antenna)
MODULATION	O-QPSK
Tx DATA SPEED	250 kbps
USED RF CHIP	Maker: GreenPeak, Model Name: GP561
LIST OF EACH OSC. OR CRY. FREQ.(FREQ. >= 1 MHz)	16 MHz
RATED SUPPLY VOLTAGE	DC 3 V from a battery

3.2 Model Differences

-. The following lists consist of the added model and their differences.

Model Name	Differences	Tested
CRB40A	Basic Model	<input checked="" type="checkbox"/>
HD UDTA Remote Control	This model is identical to basic model except for model designation only according to buyer’s request.	<input type="checkbox"/>

Note: 1. Applicant consigns only basic model to test. Therefore this test report just guarantees the units, which have been tested.

2. The Applicant/manufacturer is responsible for the compliance of all variants.

4. EUT MODIFICATIONS

-. None

5. SYSTEM TEST CONFIGURATION

5.1 Justification

This device was configured for testing in a typical way as a normal customer is supposed to be used. During the test, the following components were installed inside of the EUT.

DEVICE TYPE	MANUFACTURER	MODEL/PART NUMBER	FCC ID
Main Board	N/A	RS-Ver 0.02	N/A

5.2 Peripheral equipment

Defined as equipment needed for correct operation of the EUT, but not considered as tested: None

5.3 Mode of operation during the test

For the testing, software used to control the EUT for staying in continuous transmitting is programmed.

For final testing, the EUT was set at Low Channel (2 405 MHz), Middle Channel (2 450 MHz), and High Channel (2 480 MHz). To get a maximum emission levels from the EUT, the EUT was moved throughout the XY, XZ, and YZ planes and the worst case is “XY” axis.

5.4 Configuration of Test System

Line Conducted Test : It is not need to test this requirement, because the EUT shall be operated by DC battery.

Radiated Emission Test : Preliminary radiated emissions test were conducted using the procedure in ANSI C63.4: 2009 8.3.1.1 and 13.4.1 to determine the worse operating conditions. Final radiated emission tests were conducted at 3 m open area test site.

The turntable was rotated through 360 degrees and the EUT was tested by positioned three orthogonal planes to obtain the highest reading on the field strength meter. Once maximum reading was determined, the search antenna was raised and lowered in both vertical and horizontal polarization.

5.5 Antenna Requirement

According to 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.

Antenna Construction:

The antenna of the EUT is a pattern antenna on the main board in the EUT, so no consideration of replacement by the user.

6. PRELIMINARY TEST

6.1 AC Power line Conducted Emissions Tests

During Preliminary Tests, the following operating mode was investigated

Operation Mode	The Worse operating condition (Please check one only)
It is not need to test this requirement, because the power of the EUT is supplied by battery.	

6.2 General Radiated Emissions Tests

During Preliminary Tests, the following operating modes were investigated

Operation Mode	The Worse operating condition (Please check one only)
TX Mode	X

7. RADIATED EMISSION TEST

7.1 Test set-up

The radiated emissions measurements were on the 3 m, semi anechoic chamber. The EUT and other support equipment were placed on a non-conductive turntable above the ground plane. The interconnecting cables from outside test site were inserted into ferrite clamps at the point where the cables reach the turntable.

The frequency spectrum from up to 25 GHz was scanned and emission levels maximized at each frequency recorded. The system was rotated 360°, and the antenna was varied in height between 1.0 m and 4.0 m in order to determine the maximum emission levels. This procedure was performed for both horizontal and vertical polarization of the receiving antenna.

Test set-up photos are included in appendix I.

7.2 Measurement uncertainty

Radiated emission electric field intensity, 0.15 MHz ~ 30 MHz : ± 2.61 dB

Radiated emission electric field intensity, 30 MHz ~ 300 MHz : ± 4.43 dB

Radiated emission electric field intensity, 300 MHz ~ 1 000 MHz : ± 3.80 dB

Radiated emission electric field intensity, 1 000 MHz ~ 3 000 MHz : ± 4.40 dB

Measurement uncertainty is calculated in accordance with CISPR 16-4-2. The measurement uncertainty is given with a confidence of 95 % with the coverage factor, $k = 2$.

7.3 Test equipment used

Model Number	Manufacturer	Description	Serial Number	Last Cal. (Interval)
□ - ESCI	Rohde & Schwarz	EMI Test Receiver	101012	Feb. 06, 2012 (1Y)
■ - ESU	Rohde & Schwarz	EMI Test Receiver	100261	Sep. 11, 2012 (1Y)
□ - 8564E	HP	Spectrum Analyzer	3650A00756	Jun. 10, 2011 (1Y)
□ - FSP	Rohde & Schwarz	Spectrum Analyzer	100017	Mar 12, 2012(1Y)
■ - 310N	Sonoma Instrument	AMPLIFIER	312544	Oct. 11, 2012(1Y)
■ - FSV30	Rohde & Schwarz	Signal Analyzer	101372	Aug. 29, 2011(1Y)
■ - SCU-18	Rohde & Schwarz	PRE-AMPLIFIER	10041	Dec. 15, 2011 (1Y)
■ - MA240	HD GmbH	Antenna Master	N/A	N/A
■ - HD100	HD GmbH	Position Controller	N/A	N/A
■ - DS420S	HD GmbH	Turn Table	N/A	N/A
■ - HFH2-Z2	Rohde & Schwarz	Loop Antenna	889 285 / 26	Nov. 08, 2010(2Y)
■ - VULB9163	Schwarzbeck	TRILOG Broadband Antenna	VULB9163-202	May 27, 2010(2Y)
■ - BBHA9120D	Schwarzbeck	Horn Antenna	BBHA9120D294	Jun. 17, 2011 (2Y)
■ - BBHA9170	Schwarzbeck	Horn Antenna	BBHA9170178	Jun. 17, 2011 (2Y)

All test equipment used is calibrated on a regular basis.

7.4 Final Result of Measurement

7.4.1 Field Strength of the Fundamental Frequency

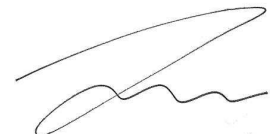
The following table shows the highest levels of radiated emissions on both polarizations of horizontal and vertical.

Humidity Level : 47 % R.H. Temperature: 22 °C
 Limits apply to : FCC CFR 47, PART 15, SUBPART C, SECTION 15.249(a)
 Result : PASSED BY -8.51 dB at 2 405.00 MHz

EUT : IR&RF Remote Date: April 10, 2012
 Operating Condition : TX mode
 Distance : 3 m

Channel	Radiated Emissions			Ant	Correction Factors			Total	FCC Limit	
	Carrier Freq. (MHz)	Amplitude (dBµV)	Detect Mode	Pol.	Antenna (dB/m)	Cable (dB)	Pre-Amp (dB)	Amplitude (dBµV/m)	Limit (dBµV/m)	Margin (dB)
Low	2 405.00	101.12	Peak	H	27.15	5.02	43.10	90.19	113.98	-23.79
		96.40	Average	H				85.47	93.98	-8.51
		98.26	Peak	V				87.33	113.98	-26.65
		93.26	Average	V				82.33	93.98	-11.65
Middle	2 450.00	99.32	Peak	H	27.22	5.04	43.10	88.48	113.98	-25.50
		95.72	Average	H				84.88	93.98	-9.10
		97.26	Peak	V				86.42	113.98	-27.56
		92.47	Average	V				81.63	93.98	-12.35
High	2 480.00	98.65	Peak	H	27.28	5.06	43.10	87.89	113.98	-26.09
		95.68	Average	H				84.92	93.98	-9.06
		97.48	Peak	V				86.72	113.98	-27.26
		93.52	Average	V				82.76	93.98	-11.22

*Remark: To get a maximum emission level from the EUT, the EUT was moved throughout the XY, XZ, and YZ planes, but the worst plane data were recorded in the report.



Tested by: Chang-Uk, Jun / Engineer

7.4.2 Emissions Radiated Outside of the Specified Frequency Bands

7.4.2.1 Test Data for Harmonic

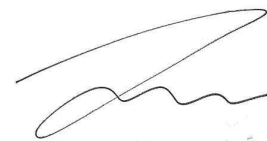
Humidity Level : 47 % R.H. Temperature: 22 °C
 Limits apply to : FCC CFR 47, PART 15, SUBPART C, SECTION 15.249(a)
 Result : PASSED BY -5.37 dB at 4 900.00 MHz

EUT : IR&RF Remote Date: April 10, 2012
 Operating Condition : TX mode
 Distance : 3 m

Channel	Frequency (MHz)	Reading (dBμV)	Detector Mode	Ant. Pol. (H/V)	Ant. Factor	Cable Loss	Pre-Amp (dB)	Total (dBμV/m)	Limits (dBμV/m)	Margin (dB)
Low	4 810.00*	58.23	Peak	H	31.14	6.90	42.80	53.47	73.98	-20.51
		52.35	Average	H				47.59	53.98	-6.39
		55.76	Peak	V				51.00	73.98	-22.98
		47.32	Average	V				42.56	53.98	-11.42
Other frequencies were not found up to 25 GHz.										
Middle	4 900.00*	55.73	Peak	H	31.22	6.93	42.80	51.08	73.98	-22.90
		53.26	Average	H				48.61	53.98	-5.37
		52.48	Peak	V				47.83	73.98	-26.15
		41.65	Average	V				37.00	53.98	-16.98
Other frequencies were not found up to 25 GHz.										
High	4 960.00*	54.23	Peak	H	31.30	6.97	42.80	49.70	73.98	-24.28
		48.48	Average	H				43.95	53.98	-10.03
		53.21	Peak	V				48.68	73.98	-25.30
		46.35	Average	V				41.82	53.98	-12.16
Other frequencies were not found up to 25 GHz.										

Tabulated test data for Restricted Band

Remark: "H": Horizontal, "V": Vertical, "*" Frequency fall in restricted band



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7.4.2.2 Test Data for Frequency range: 30 MHz ~ 1 000 MHz

Humidity Level : 45 % R.H. Temperature: 24 °C

Limits apply to : FCC CFR 47, PART 15, SUBPART C, SECTION 15.249 (d)

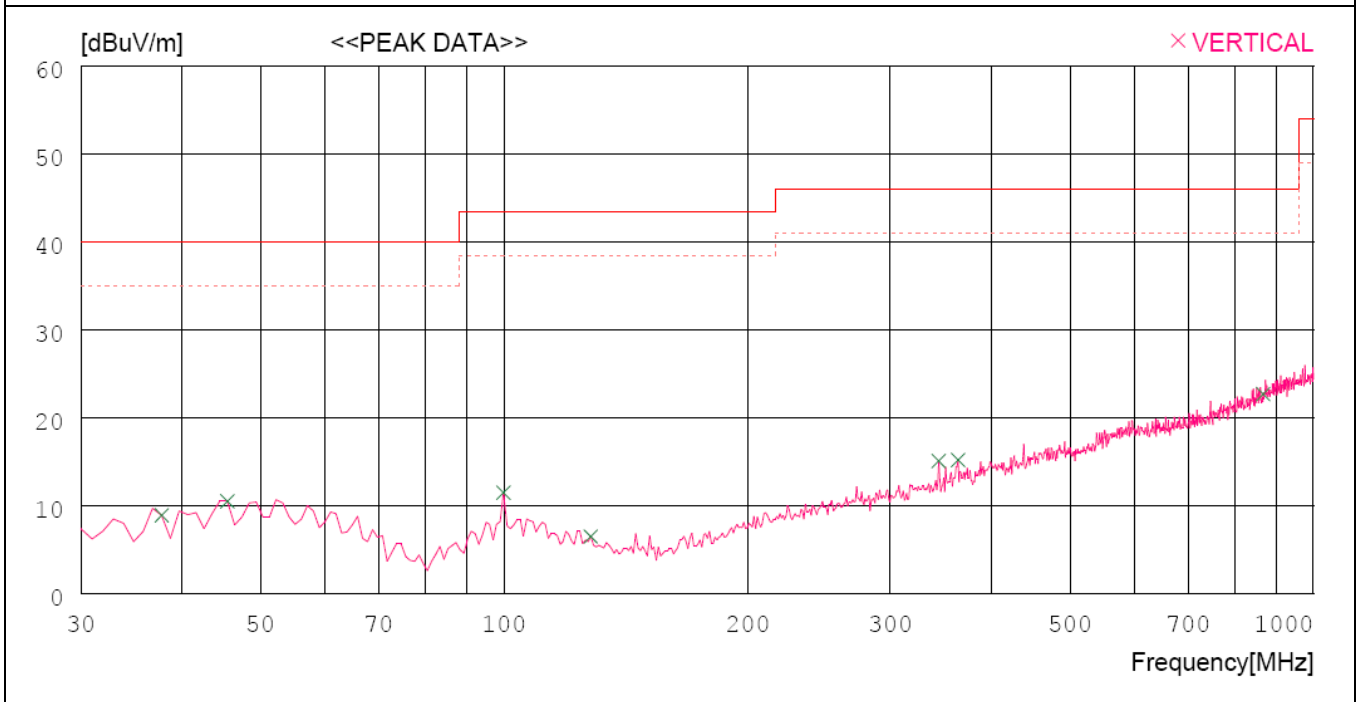
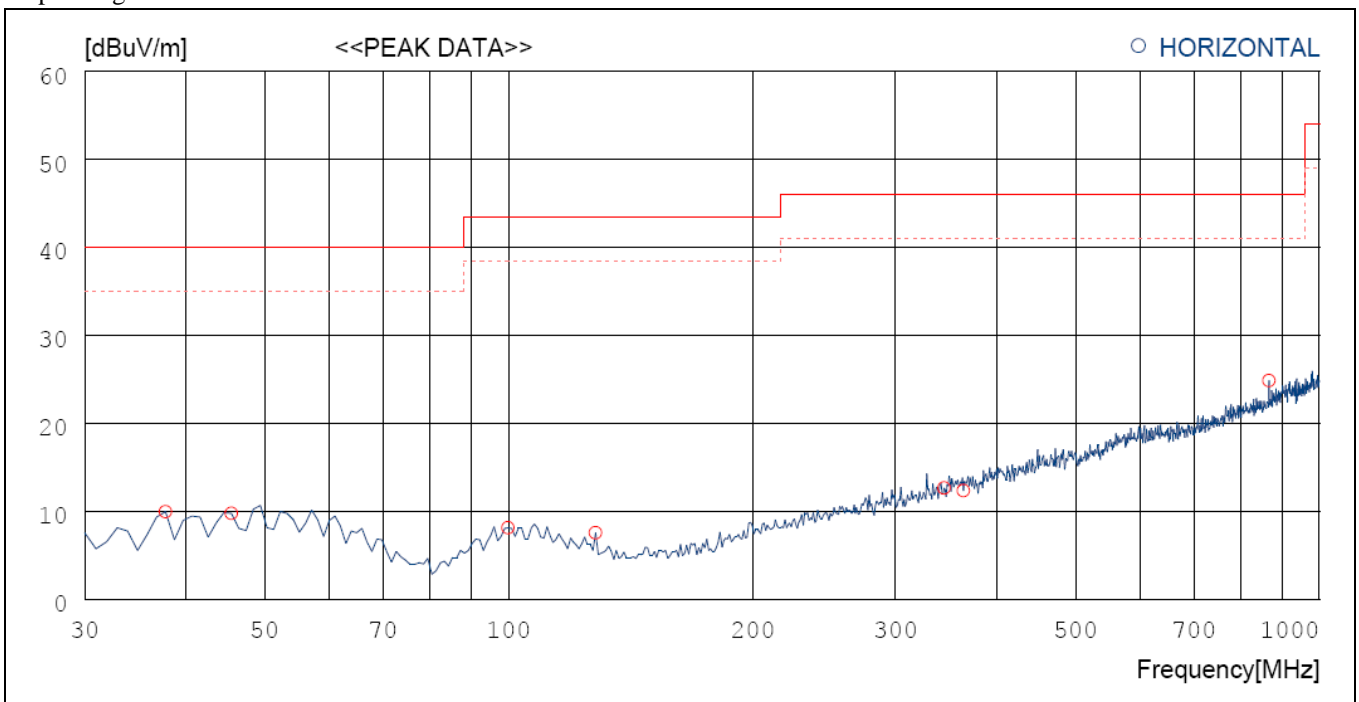
Result : PASSED BY -21.10 dB at 866.13 MHz at low channel

EUT : IR&RF Remote

Date: April 10, 2012

Detector : CISPR Quasi-Peak (6 dB Bandwidth: 120 kHz)

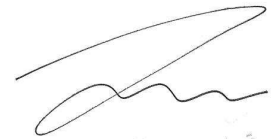
Operating condition : Low Channel



No.	FREQ [MHz]	READING PEAK [dBuV]	ANT FACTOR [dB]	LOSS [dB]	GAIN [dB]	RESULT [dBuV/m]	LIMIT [dBuV/m]	MARGIN [dB]	ANTENNA [cm]	TABLE [DEG]
----- Horizontal -----										
1	37.760	28.9	13.0	1.0	32.9	10.0	40.0	30	300	0
2	45.520	27.9	13.7	1.1	32.9	9.8	40.0	30.2	100	0
3	99.840	27.6	11.8	1.8	33.0	8.2	43.5	35.3	200	359
4	127.970	29.5	9.0	2.0	32.9	7.6	43.5	35.9	200	2
5	344.280	27.9	14.4	3.5	33.1	12.7	46.0	33.3	200	359
6	363.680	26.7	14.9	3.6	32.8	12.4	46.0	33.6	400	359
7	866.130	30.3	21.5	5.9	32.8	24.9	46.0	21.1	300	0
----- Vertical -----										
8	37.760	27.8	13.0	1.0	32.9	8.9	40.0	31.1	100	359
9	45.520	28.6	13.7	1.1	32.9	10.5	40.0	29.5	200	54
10	99.840	30.9	11.8	1.8	33.0	11.5	43.5	32	100	354
11	127.970	28.4	9.0	2.0	32.9	6.5	43.5	37	300	359
12	344.280	30.3	14.4	3.5	33.1	15.1	46.0	30.9	100	359
13	363.680	29.5	14.9	3.6	32.8	15.2	46.0	30.8	400	4
14	866.130	28.1	21.5	5.9	32.8	22.7	46.0	23.3	300	129

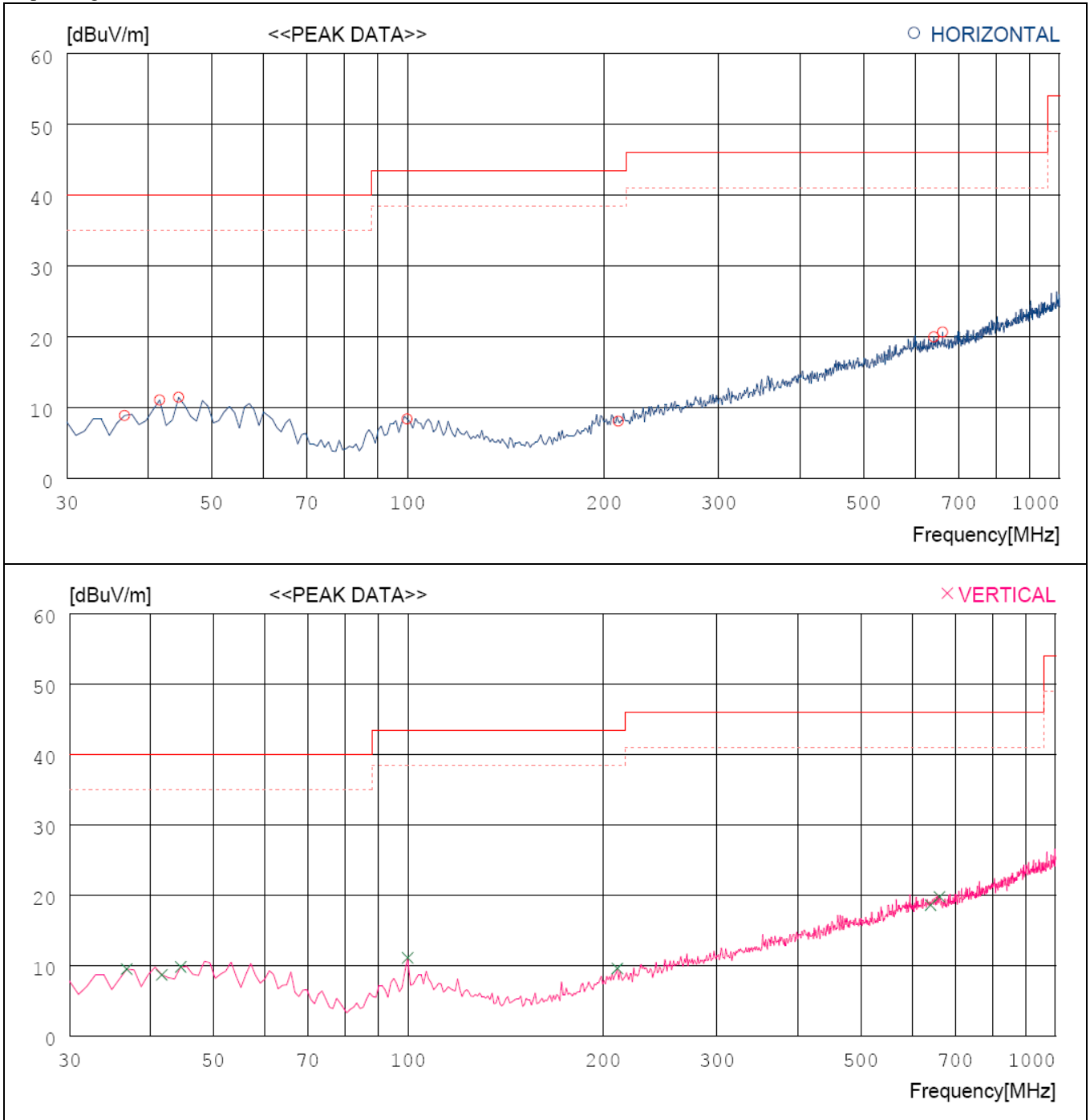
Remark: Margin (dB) = Limit – Result and Result = Reading Peak + Antenna Factor + Loss - Gain

Loss and Gain in above table means Cable Loss and Pre-amplifier gain.



Tested by: Chang-Uk, Jun / Engineer

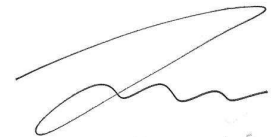
Operating condition : Middle Channel



No.	FREQ [MHz]	READING PEAK [dBuV]	ANT FACTOR [dB]	LOSS [dB]	GAIN [dB]	RESULT [dBuV/m]	LIMIT [dBuV/m]	MARGIN [dB]	ANTENNA [cm]	TABLE [DEG]
----- Horizontal -----										
1	36.790	28.0	12.8	1.0	32.9	8.9	40.0	31.1	200	0
2	41.640	29.5	13.5	1.0	32.9	11.1	40.0	28.9	200	0
3	44.550	29.6	13.7	1.1	32.9	11.5	40.0	28.5	300	158
4	99.840	27.8	11.8	1.8	33.0	8.4	43.5	35.1	400	0
5	210.420	27.3	10.9	2.7	32.8	8.1	43.5	35.4	200	0
6	641.097	29.2	19.1	4.9	33.2	20.0	46.0	26	100	359
7	661.466	29.9	19.2	4.9	33.3	20.7	46.0	25.3	300	294
----- Vertical -----										
8	36.790	28.6	12.8	1.0	32.9	9.5	40.0	30.5	100	305
9	41.640	27.1	13.5	1.0	32.9	8.7	40.0	31.3	300	0
10	44.550	27.9	13.7	1.1	32.9	9.8	40.0	30.2	200	359
11	99.840	30.5	11.8	1.8	33.0	11.1	43.5	32.4	100	214
12	210.420	28.8	10.9	2.7	32.8	9.6	43.5	33.9	200	351
13	641.097	27.8	19.1	4.9	33.2	18.6	46.0	27.4	300	0
14	661.466	29.0	19.2	4.9	33.3	19.8	46.0	26.2	300	18

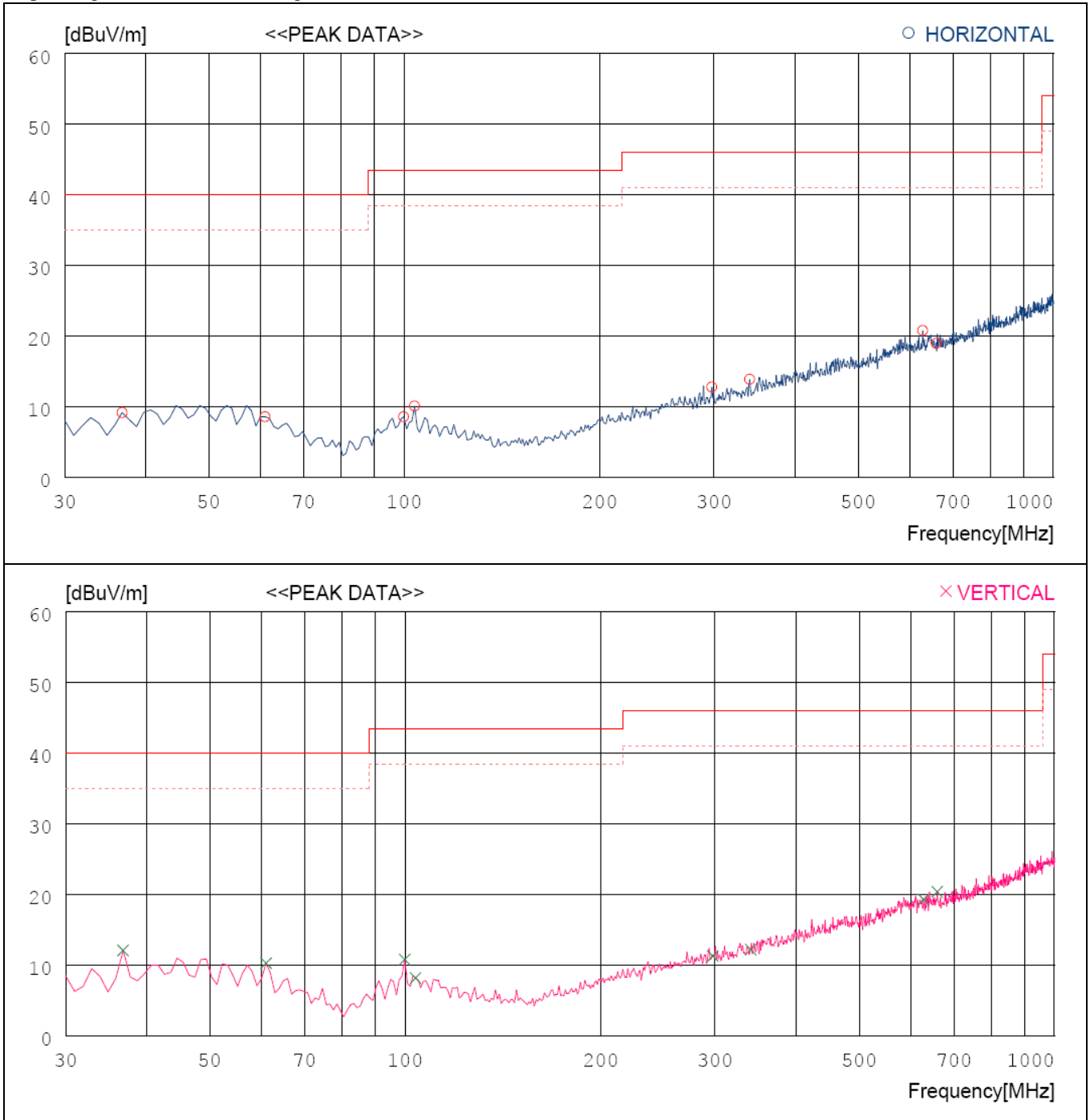
Remark: Margin (dB) = Limit – Result and Result = Reading Peak + Antenna Factor + Loss - Gain

Loss and Gain in above table means Cable Loss and Pre-amplifier gain.



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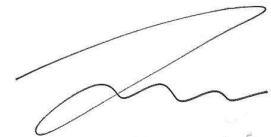
Operating condition : High Channel



No.	FREQ [MHz]	READING PEAK [dBuV]	ANT FACTOR [dB]	LOSS [dB]	GAIN [dB]	RESULT [dBuV/m]	LIMIT [dBuV/m]	MARGIN [dB]	ANTENNA [cm]	TABLE [DEG]
----- Horizontal -----										
1	36.790	28.3	12.8	1.0	32.9	9.2	40.0	30.8	200	0
2	61.040	27.8	12.5	1.3	33.0	8.6	40.0	31.4	100	85
3	99.840	28.0	11.8	1.8	33.0	8.6	43.5	34.9	300	221
4	103.720	29.7	11.5	1.8	32.9	10.1	43.5	33.4	100	359
5	297.720	29.1	13.3	3.2	32.8	12.8	46.0	33.2	200	275
6	340.400	29.1	14.3	3.5	33.0	13.9	46.0	32.1	300	288
7	628.487	30.2	19.0	4.8	33.2	20.8	46.0	25.2	200	0
8	659.526	28.2	19.2	4.9	33.3	19.0	46.0	27	400	0
----- Vertical -----										
9	36.790	31.2	12.8	1.0	32.9	12.1	40.0	27.9	400	323
10	61.040	29.5	12.5	1.3	33.0	10.3	40.0	29.7	100	297
11	99.840	30.2	11.8	1.8	33.0	10.8	43.5	32.7	100	0
12	103.720	27.8	11.5	1.8	32.9	8.2	43.5	35.3	200	126
13	297.720	27.6	13.3	3.2	32.8	11.3	46.0	34.7	100	0
14	340.400	27.4	14.3	3.5	33.0	12.2	46.0	33.8	400	355
15	628.487	28.7	19.0	4.8	33.2	19.3	46.0	26.7	200	359
16	659.526	29.6	19.2	4.9	33.3	20.4	46.0	25.6	200	359

Remark: Margin (dB) = Limit – Result and Result = Reading Peak + Antenna Factor + Loss - Gain

Loss and Gain in above table means Cable Loss and Pre-amplifier gain.



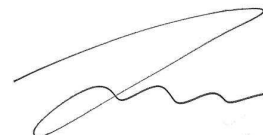
Tested by: Chang-Uk, Jun / Engineer

7.4.2.3 Test Data for Below 30 MHz

Humidity Level : 47 % R.H. Temperature: 22 °C
 Resolution bandwidth : 200 Hz (from 9 kHz to 0.15 MHz), 9 kHz (from 0.15 MHz to 30 MHz)
 Frequency range : 9 kHz ~ 30 MHz
 Measurement distance : 3 m
 Limits apply to : FCC CFR 47, PART 15, SUBPART C, SECTION 15.249 (d)
 Result : PASSED

EUT : IR&RF Remote Date: April 10, 2012
 Detector : CISPR Quasi-Peak (Resolution Bandwidth: 9 kHz)

Frequency (MHz)	Reading (dB μ V)	Ant. Pol. (H/V)	Ant. Height (m)	Angle (°)	Ant. Factor (dB/m)	Cable Loss	Emission Level (dB μ V/m)	Limits (dB μ V/m)	Margin (dB)
It was not observed any emissions from the EUT.									

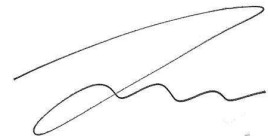


Tested by: Chang-Uk, Jun / Engineer

7.4.2.4 Test Data above 1 GHz except for harmonic

- Test Date : April 10, 2012
- Humidity Level : 47 % R.H.
- Temperature : 22 °C
- Resolution bandwidth : 1 MHz for Peak and Average Mode
- Video bandwidth : 1 MHz for Peak Mode, 10 Hz for Average Mode
- Frequency range : 1 GHz ~ 25 GHz
- Measurement distance : 3 m
- Limits apply to : FCC CFR 47, PART 15, SUBPART C, SECTION 15.249 (d)
- Result : PASSED

Frequency (MHz)	Reading (dBμV)	Ant. Pol. (H/V)	Ant. Height (m)	Angle (°)	Ant. Factor (dB/m)	Cable Loss	Emission Level(dBμV/m)	Limits (dBμV/m)	Margin (dB)
It was not observed any emissions from the EUT.									

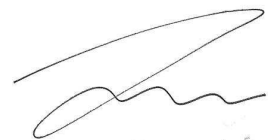


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7.4.2.5 Band Edge

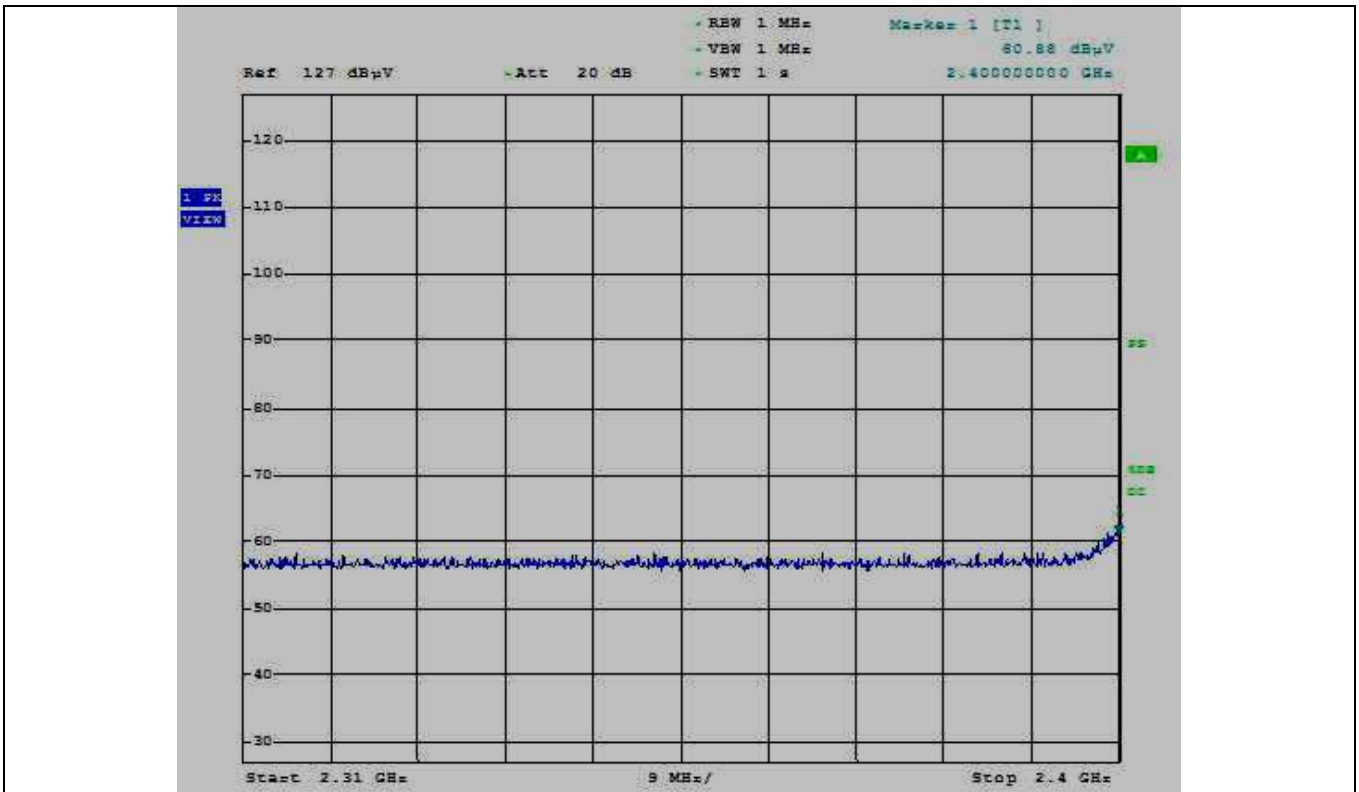
- . Test Date : April 10, 2012
- . Resolution bandwidth : 1 MHz for Peak and Average Mode
- . Video bandwidth : 1 MHz for Peak Mode, 10 Hz for Average Mode
- . Measurement distance : 3 m
- . Operating Condition : Low / High Channel
- . Limits apply to : FCC CFR 47, PART 15, SUBPART C, SECTION 15.249 (d)
- . Result : PASSED BY -13.32 dB at high Channel

Frequency (MHz)	Reading (dBμV)	Detector Mode	Ant. Pol. (H/V)	Ant. Factor	Cable Loss	Pre-Amp (dB)	Total (dBμV/m)	Limits (dBμV/m)	Margin (dB)
Test Data for Low Channel									
2 400.00	60.88	Peak	H	27.05	3.14	43.10	47.97	74.00	-26.03
2 400.00	50.57	Average	H				37.66	54.00	-16.34
2 400.00	58.75	Peak	V				45.84	74.00	-28.16
2 400.00	48.78	Average	V				35.87	54.00	-18.13
Test Data for High Channel									
2 483.50	64.61	Peak	H	27.31	3.17	43.10	51.99	74.00	-22.01
2 483.50	53.30	Average	H				40.68	54.00	-13.32
2 483.50	62.06	Peak	V				49.44	74.00	-24.56
2 483.50	50.58	Average	V				37.96	54.00	-16.04

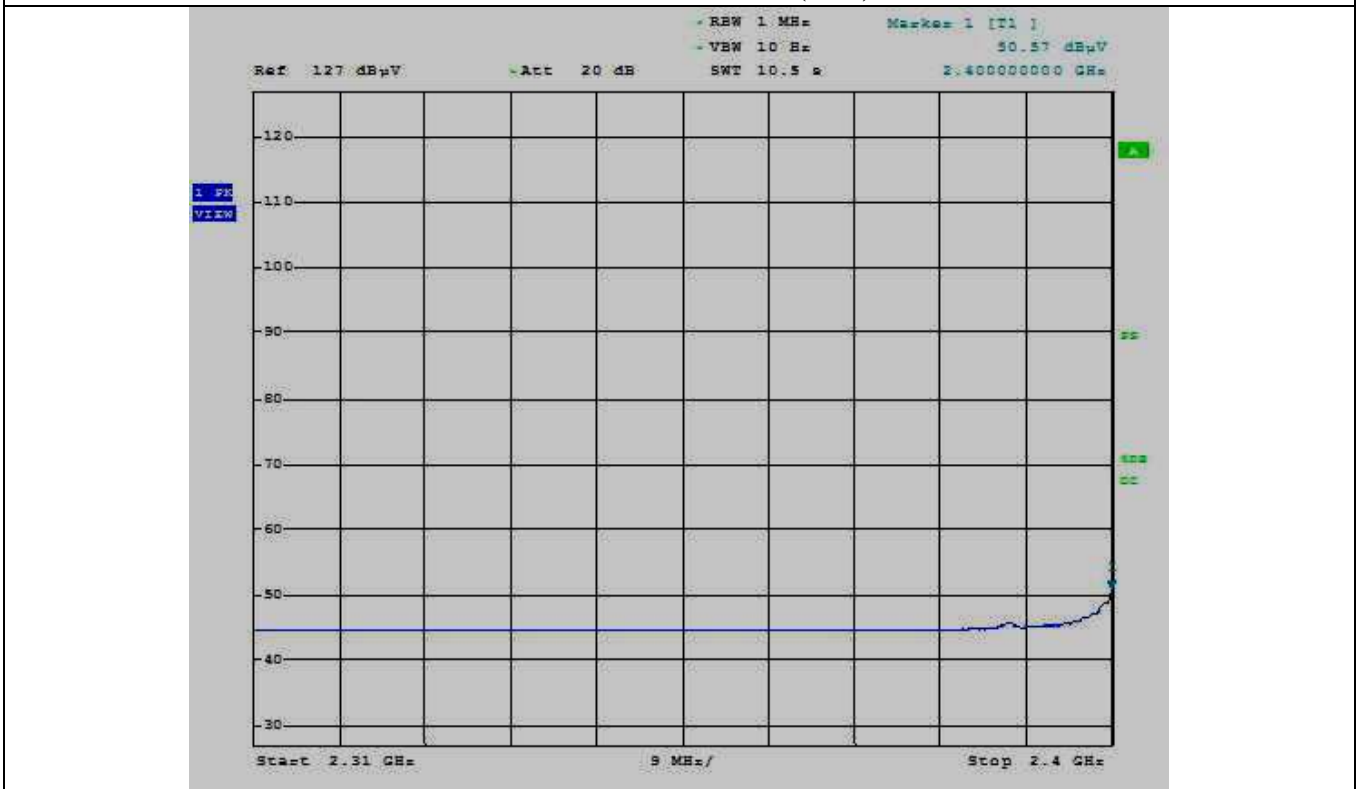


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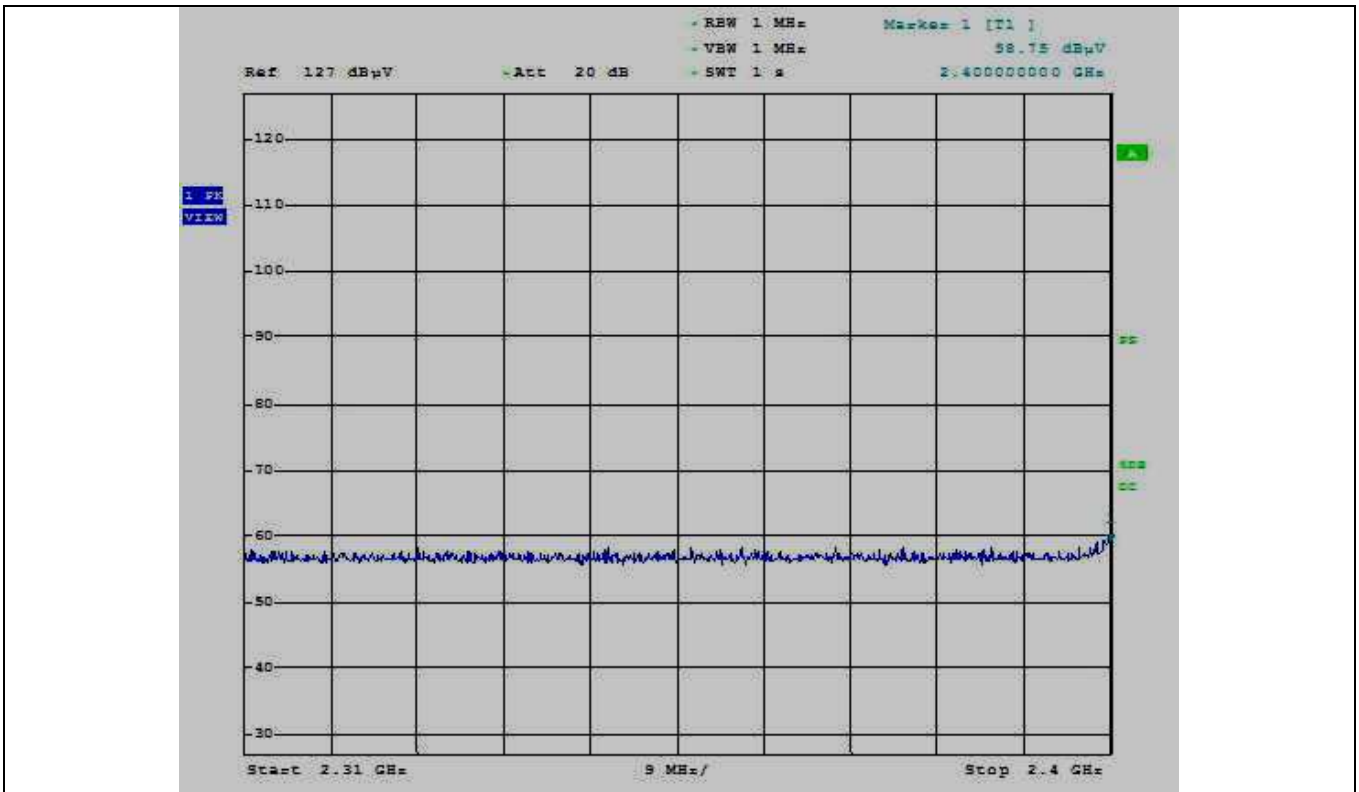
Plotted Data for band edge



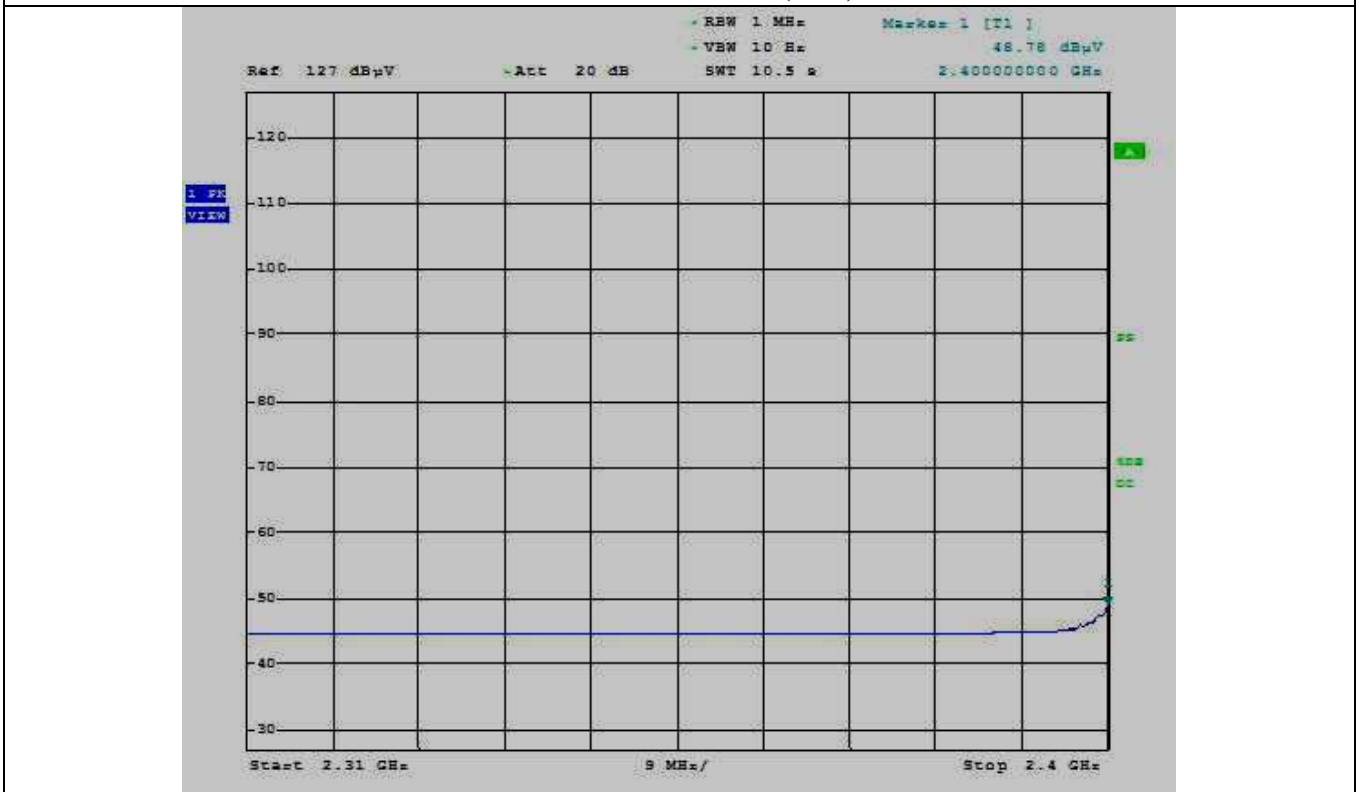
Low Channel – Horizontal (Peak)



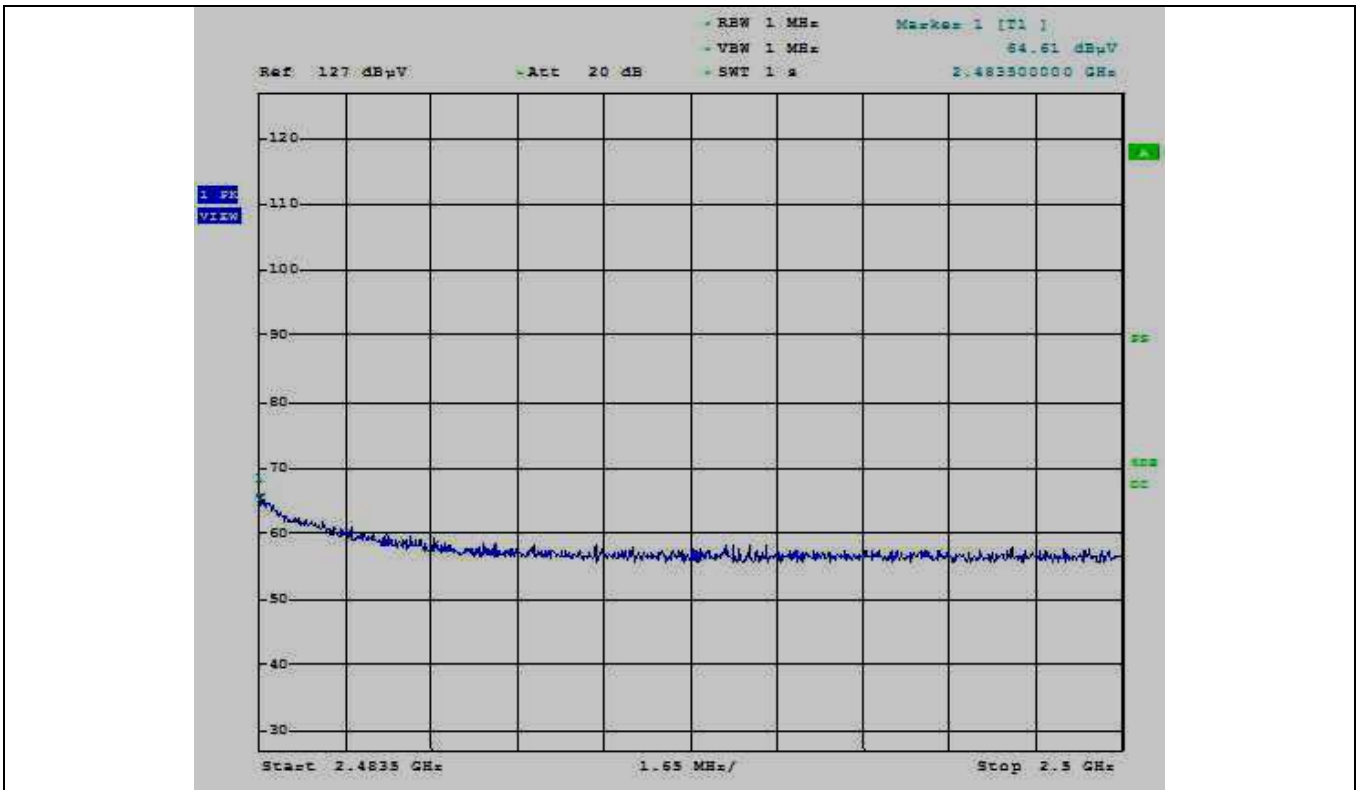
Low Channel – Horizontal (Average)



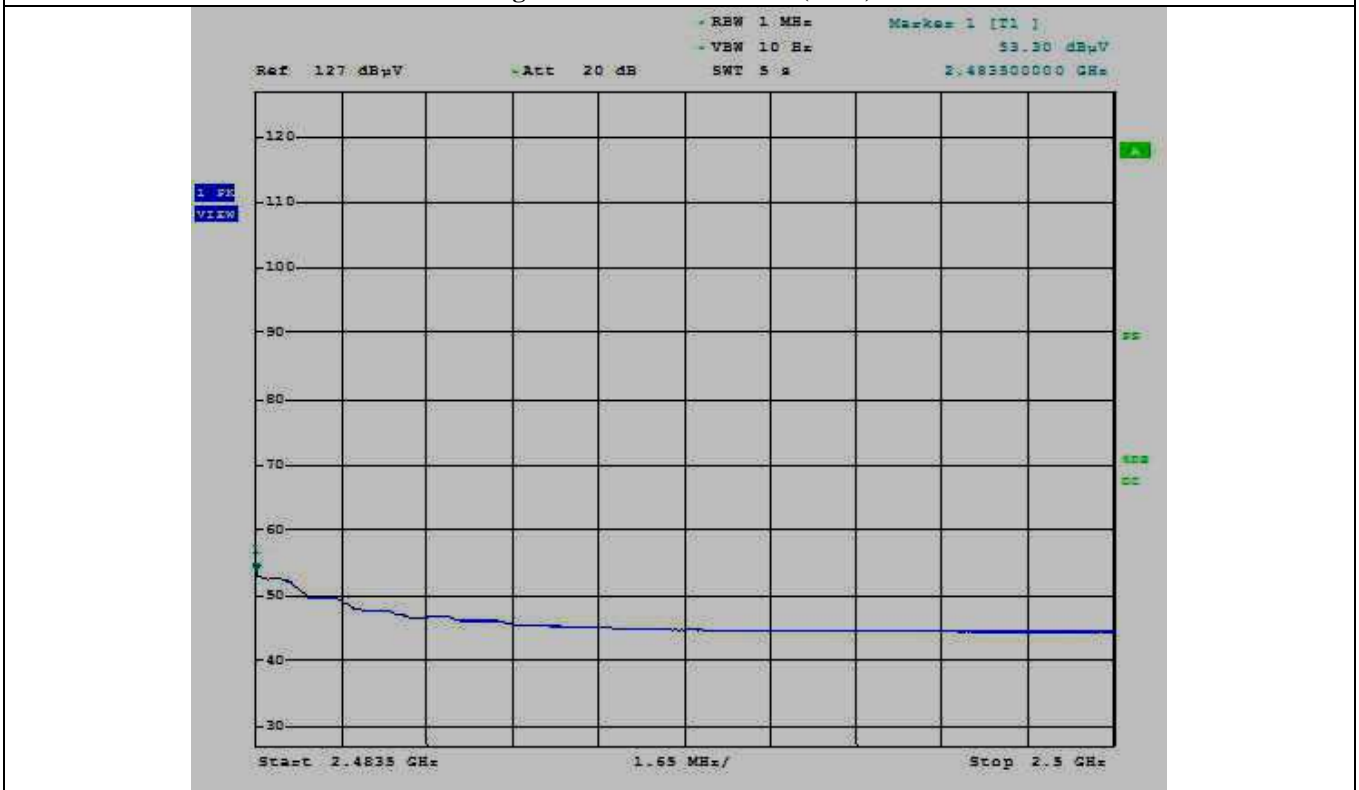
Low Channel – Vertical (Peak)



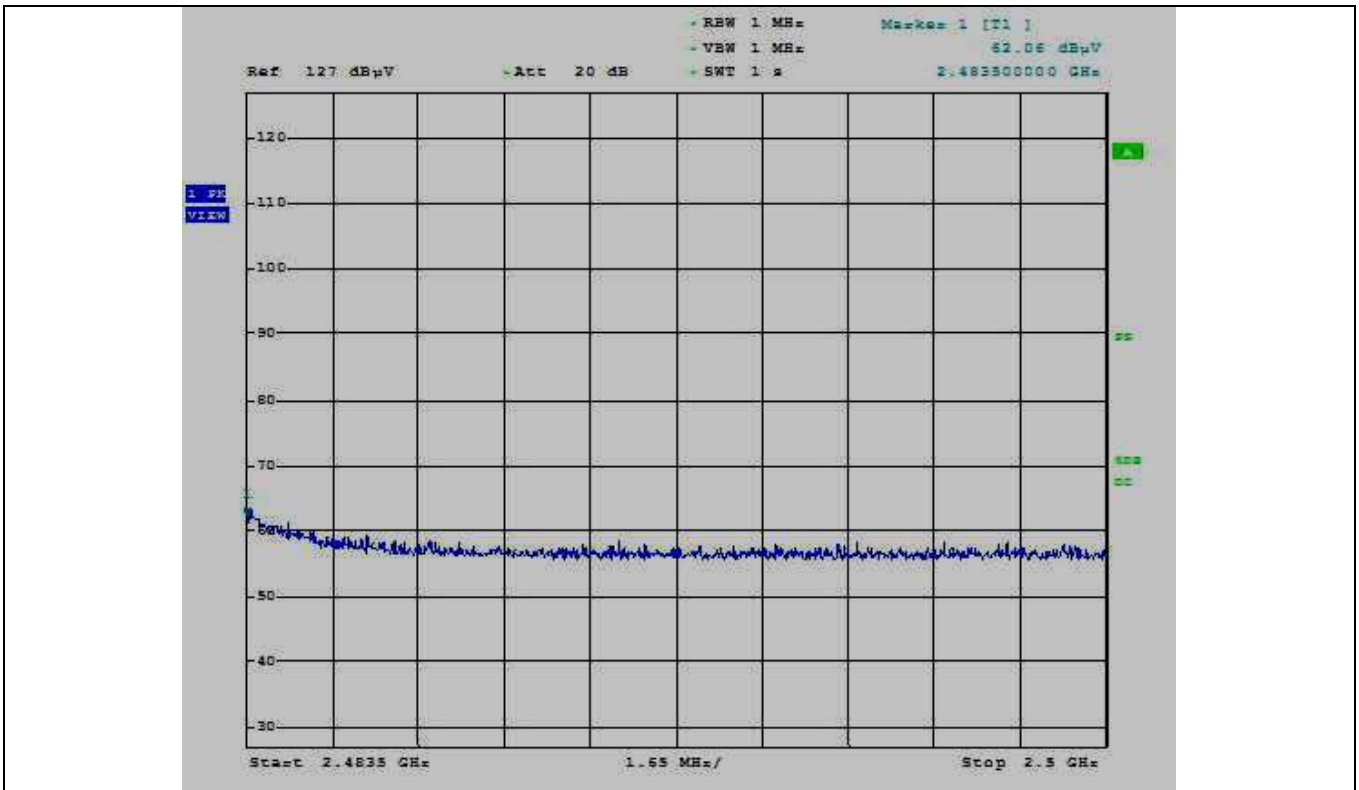
Low Channel – Vertical (Average)



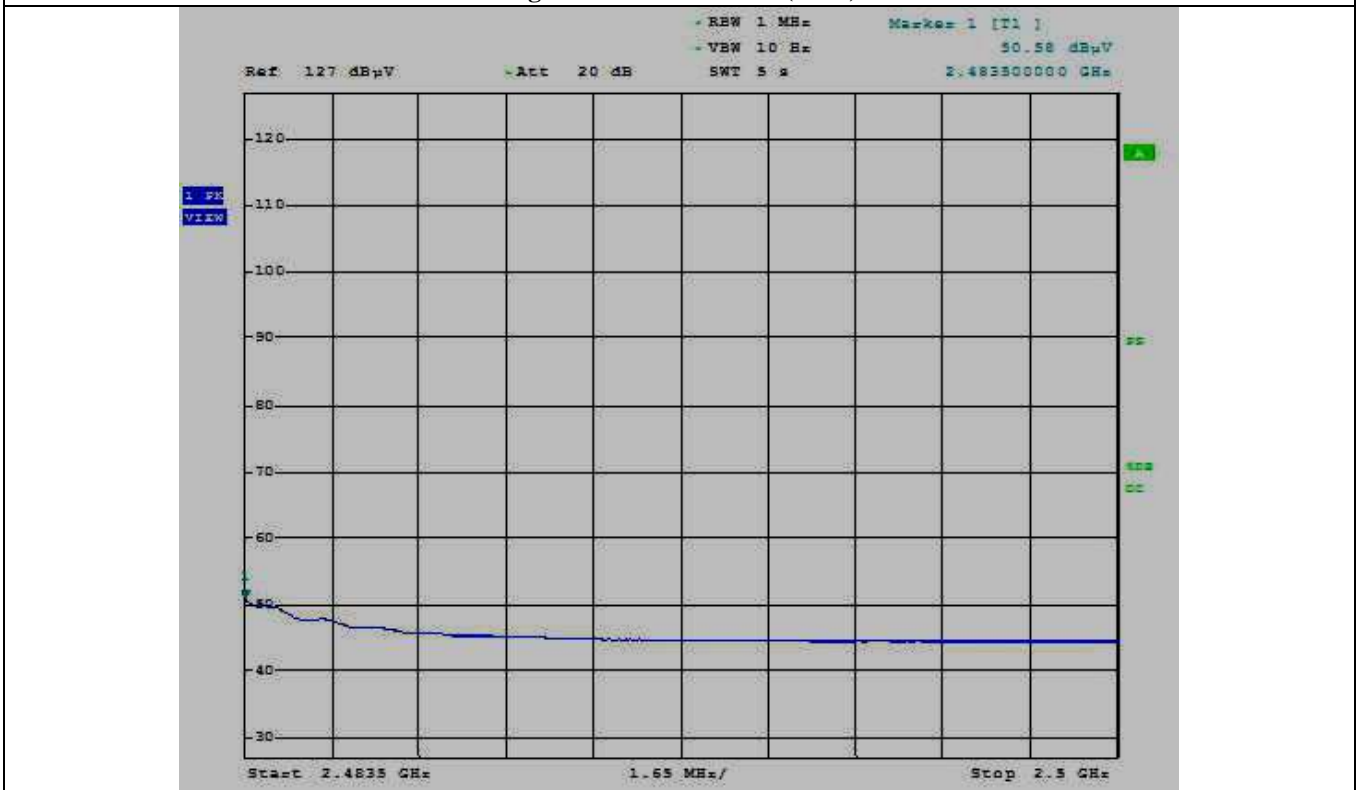
High Channel – Horizontal (Peak)



High Channel – Horizontal (Average)



High Channel – Vertical (Peak)



High Channel – Vertical (Average)

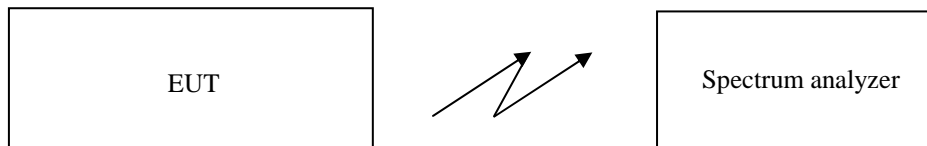
8. 20 dB BANDWIDTH

8.1 Operating environment

Temperature : 22 °C
 Relative humidity : 47 % R.H.

8.2 Test set-up

The output signal of EUT was received by the spectrum analyzer. The resolution bandwidth is set to 10 kHz, and peak detection was used. The 20 dB bandwidth is defined as the total spectrum over which the power is higher than the peak power minus 20 dB.



8.3 Test equipment used

Model Number	Manufacturer	Description	Serial Number	Last Cal. (Interval)
■ - FSV30	R/S	Spectrum Analyzer	101372	Aug. 29, 2011 (1Y)

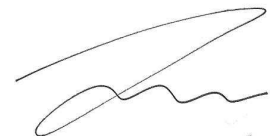
8.4 Test data for Bandwidth

-. Test Date : April 10, 2012
 -. Limits apply to : FCC CFR 47, PART 15, SUBPART C, SECTION 15.215(c)

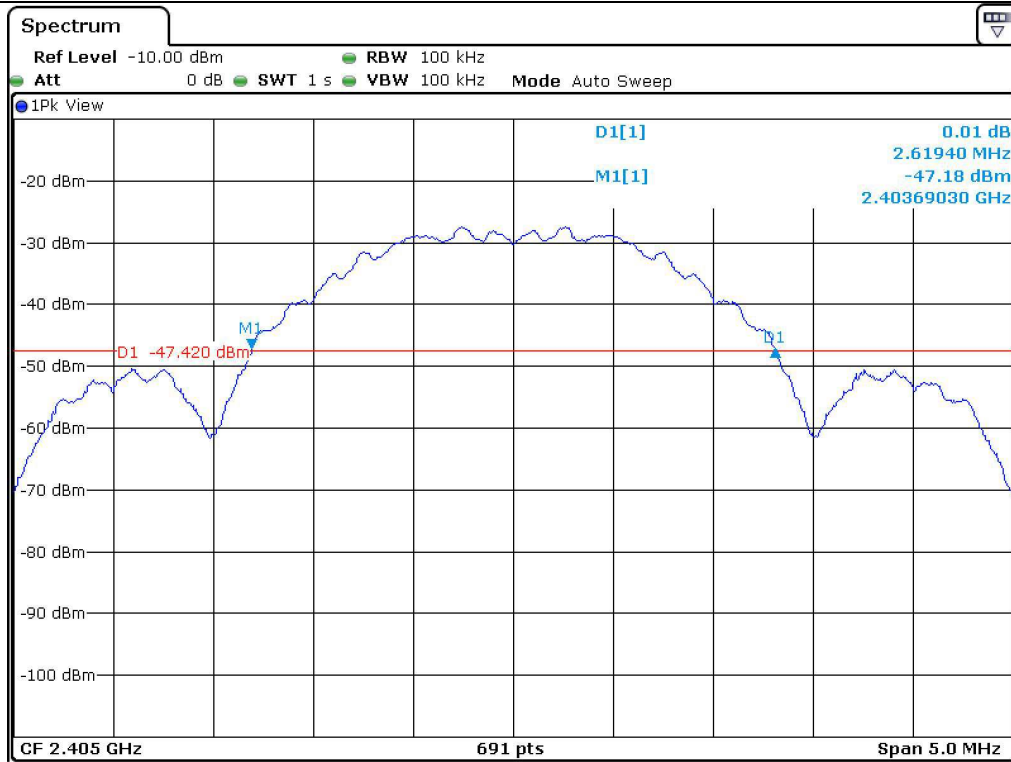
Channel	Operating Freq. (MHz)	20 dB Bandwidth (kHz)	Result
Low	2 405.00	2 619.4	Met the requirement / PASS
Middle	2 450.00	2 612.2	
High	2 480.00	2 626.6	

Remark: See next page for 20 dB Bandwidth test data.

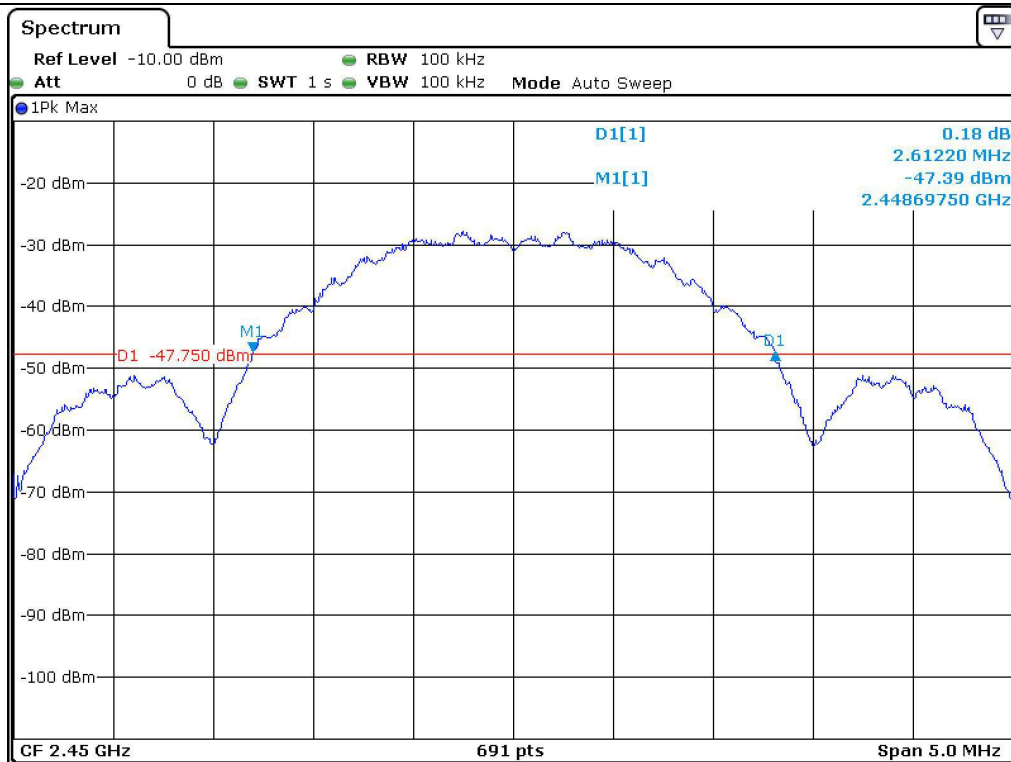
The 20 dB bandwidth is within the assigned frequency band from 2 400 MHz to 2 483.5 MHz.



Tested by: Chang-Uk, Jun / Engineer



Low Channel



Middle Channel

