

# FCC Test Report

APPLICANT : Motorola Mobility, Inc.  
EQUIPMENT : GSM / WCDMA Mobile Phone  
BRAND NAME : Motorola  
MODEL NAME : EX430  
MARKETING NAME : MOTOGO! , EX430  
GPPD NUMBER : 3326  
FCC ID : IHDT56NE3  
STANDARD : FCC 47 CFR FCC Part 15 Subpart B  
CLASSIFICATION : Certification

The product was received on Mar. 06, 2012 and completely tested on Mar. 26, 2012. We, SPORTON INTERNATIONAL INC., would like to declare that the tested sample has been evaluated in accordance with the procedures given in ANSI C63.4-2003 and shown the compliance with the applicable technical standards.

The test results in this report apply exclusively to the tested model / sample. Without written approval of SPORTON INTERNATIONAL INC., the test report shall not be reproduced except in full.

Reviewed by:



Jones Tsai / Manager



## SPORTON INTERNATIONAL INC.

No. 52, Hwa Ya 1<sup>st</sup> Rd., Hwa Ya Technology Park, Kwei-Shan Hsiang, Tao Yuan Hsien, Taiwan, R.O.C.



## TABLE OF CONTENTS

REVISION HISTORY ..... 3

SUMMARY OF TEST RESULT ..... 4

1. GENERAL DESCRIPTION ..... 5

    1.1. Applicant ..... 5

    1.2. Manufacturer ..... 5

    1.3. Feature of Equipment Under Test ..... 5

    1.4. Test Site ..... 6

    1.5. Applied Standards ..... 6

    1.6. Ancillary Equipment List ..... 7

2. TEST CONFIGURATION OF EQUIPMENT UNDER TEST ..... 8

    2.1. Test Mode ..... 8

    2.2. Connection Diagram of Test System ..... 10

    2.3. Test Software ..... 11

3. TEST RESULT ..... 12

    3.1. Test of AC Conducted Emission Measurement ..... 12

    3.2. Test of Radiated Emission Measurement ..... 16

4. LIST OF MEASURING EQUIPMENT ..... 21

5. UNCERTAINTY OF EVALUATION ..... 23





### SUMMARY OF TEST RESULT

Report Section	FCC Rule	IC Rule	Description	Limit	Result	Remark
3.1	15.107	7.2.4	AC Conducted Emission	< 15.107 limits < RSS-Gen table 2 limits	PASS	Under limit 13.50 dB at 1.590 MHz
3.2	15.109	7.2.3.2	Radiated Emission	< 15.109 limits or < RSS-Gen table 1 limits (Section 6)	PASS	Under limit 3.08 dB at 318.900 MHz for Quasi-Peak

# 1. General Description

## 1.1. Applicant

Motorola Mobility, Inc.  
8F., No. 9, Songgao Rd., Taipei 110, Taiwan

## 1.2. Manufacturer

Arima Communications Corp.  
6F., No. 866, Jhongjheng Rd., Jhonghe Dist., New Taipei City 23586, Taiwan

## 1.3. Feature of Equipment Under Test

Product Feature & Specification	
Equipment	GSM / WCDMA Mobile Phone
Brand Name	Motorola
Model Name	EX430
Marketing Name	MOTOGO! , EX430
FCC ID	IHDT56NE3
Tx Frequency Range	GSM850 : 824 MHz ~ 849 MHz GSM1900 : 1850 MHz ~ 1910 MHz WCDMA Band V : 824 MHz ~ 849 MHz Bluetooth : 2400 MHz ~ 2483.5 MHz WLAN : 2400 MHz ~ 2483.5 MHz
Rx Frequency Range	GSM850 : 869 MHz ~ 894 MHz GSM1900 : 1930 MHz ~ 1990 MHz WCDMA Band V : 869 MHz ~ 894 MHz Bluetooth : 2400 MHz ~ 2483.5 MHz WLAN : 2400 MHz ~ 2483.5 MHz
Antenna Type	WWAN : Fixed Internal Antenna WLAN/Bluetooth : PIFA Antenna
HW Version	PCR
SW Version	SILVQ_W_07.07.00RDS
Type of Modulation	GSM: GMSK GPRS: GMSK EDGE: GMSK / 8PSK (Downlink Only) WCDMA: QPSK (Uplink) HSDPA: QPSK (Uplink) Bluetooth (1Mbps) : GFSK Bluetooth EDR (2Mbps) : $\pi/4$ -DQPSK Bluetooth EDR (3Mbps) : 8-DPSK 802.11b : DSSS (BPSK / QPSK / CCK) 802.11g : OFDM (BPSK / QPSK / 16QAM / 64QAM)
EUT Stage	Identical Prototype

**Remark:** The above EUT's information was declared by manufacturer. Please refer to the specifications or user's manual for more detailed description.

### 1.4. Test Site

<b>Test Site</b>	SPORTON INTERNATIONAL INC.		
<b>Test Site Location</b>	No. 52, Hwa Ya 1 <sup>st</sup> Rd., Hwa Ya Technology Park, Kwei-Shan Hsiang, Tao Yuan Hsien, Taiwan, R.O.C. TEL: +886-3-327-3456 FAX: +886-3-328-4978		
<b>Test Site No.</b>	<b>Sporton Site No.</b>		<b>FCC/IC Registration No.</b>
	03CH05-HY		722060/4086B-1

<b>Test Site</b>	SPORTON INTERNATIONAL (KUNSHAN) INC.		
<b>Test Site Location</b>	No. 3-2, PingXiang Road, Kunshan, Jiangsu Province, P.R.C. TEL: +86-0512-5790-0158 FAX: +86-0512-5790-0958		
<b>Test Site No.</b>	<b>Sporton Site No.</b>		<b>FCC/IC Registration No.</b>
	CO01-KS	03CH01-KS	149928/4086E-1

### 1.5. Applied Standards

According to the specifications of the manufacturer, the EUT must comply with the requirements of the following standards:

- FCC 47 CFR FCC Part 15 Subpart B
- ANSI C63.4-2003
- IC RSS-Gen Issue 3

**Remark:** All test items were verified and recorded according to the standards and without any deviation during the test.



### 1.6. Ancillary Equipment List

Item	Equipment	Trade Name	Model Name	FCC ID	Data Cable	Power Cord
1.	System Simulator	R&S	CMU 200	N/A	N/A	Unshielded, 1.8 m
2.	WLAN AP	D-Link	DIR-628	KA2DIR628A2	N/A	Unshielded, 1.8 m
3.	Router	D-Link	DIR-855	KA2DIR855A2	N/A	Unshielded, 1.8 m
4.	LCD Monitor	Dell	U2410	FCC DoC	Shielded, 1.6 m	Unshielded, 1.8 m
5.	Bluetooth Earphone	Sony Ericsson	MW600	PY70DA2029	N/A	N/A
6.	Bluetooth Earphone	Nokia	BH-106	QTLBH-106	N/A	N/A
7.	Bluetooth Earphone	Nokia	BH-102	PYAHS-107W	N/A	N/A
8.	Notebook	DELL	P20G	FCC DoC	N/A	AC I/P: Unshielded, 1.2 m DC O/P: Shielded, 1.8 m
9.	PC	DELL	MT320	FCC DoC	N/A	Unshielded, 1.8 m
10.	Monitor	DELL	E1910Hc	FCC DoC	Shielded, 1.2 m	Unshielded, 1.8 m
11.	(USB)Mouse	DELL	N231	FCC DoC	Shielded, 1.8 m	N/A
12.	(USB) Keyboard	DELL	SK-8115	FCC DoC	Shielded, 1.8 m	N/A
13.	Printer	HP	Laser Jet 1018	FCC DoC	Shielded, 1.8 m	Unshielded, 1.8 m
14.	iPod	Apple	A1199	FCC DoC	Shielded, 1.2 m	N/A

## 2. Test Configuration of Equipment Under Test

### 2.1. Test Mode

The EUT has been associated with peripherals pursuant to ANSI C63.4-2003 and configuration operated in a manner tended to maximize its emission characteristics in a typical application.

Frequency range investigated: conduction (150 kHz to 30 MHz), radiation (30MHz to the 5th harmonic of the highest fundamental frequency or to 40 GHz, whichever is lower).

The EUT uses a USB interface and microprocessor operating 650MHz which is the maximum frequency used.

The following tables are showing the test modes as the worst cases and recorded in this report.

Item	EUT Configuration	Test Condition		
		EMI AC	EMI RE<1G	EMI RE≥1G
1.	Charging Mode (EUT with adapter)	☒	☒	Note 1
2.	Data application transferred mode (EUT with notebook or PC)	☒	☒	☒

**Abbreviations:**

- EMI AC: AC conducted emissions
- EMI RE ≥ 1G: EUT radiated emissions ≥ 1GHz
- EMI RE < 1G: EUT radiated emissions < 1GHz

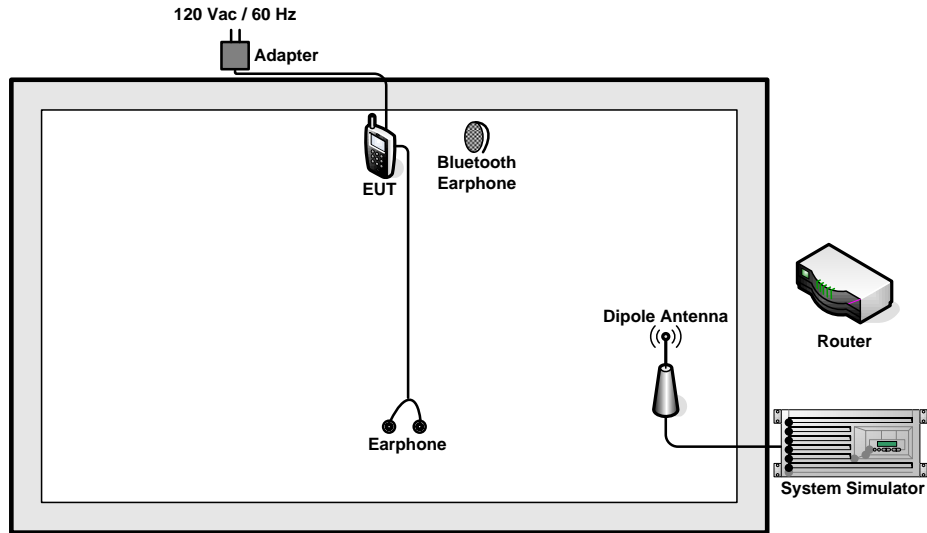
**Note 1:** Testing for this mode is not required or not the worst case.

**Remark:** For signal above 1GHz, the worst case was test item 2.

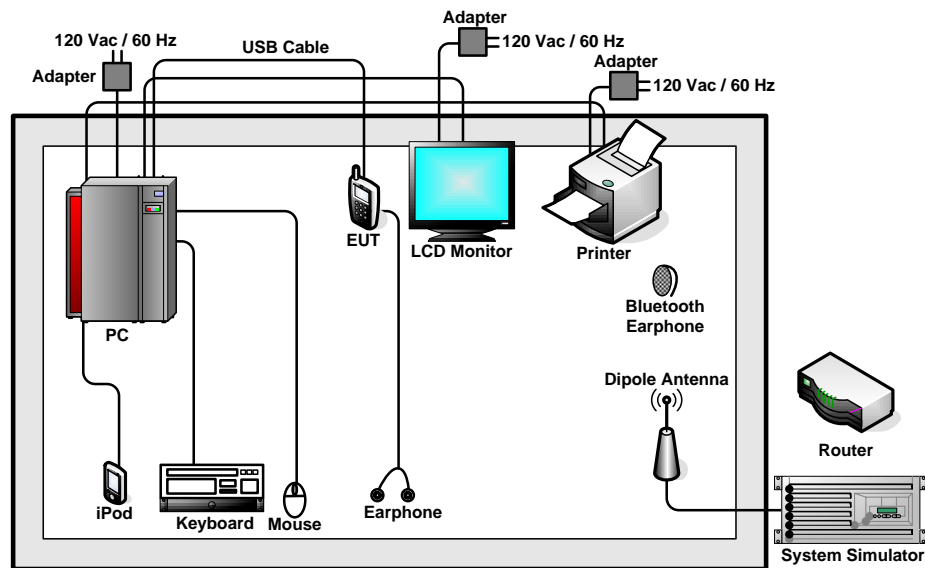
Test Items	EUT Configure Mode	Function Type
AC Conducted Emission	1/2	Mode 1: GSM850 Idle + Bluetooth Idle + WLAN Idle + Earphone + Camera + Adapter <Fig. 1> Mode 2: GSM1900 Idle + Bluetooth Idle + WLAN Idle + Earphone + MP3 + Adapter <Fig. 1> Mode 3: WCDMA Band V Idle + Bluetooth Idle + WLAN Idle + Earphone + Adapter <Fig. 1> Mode 4: WCDMA Band V Idle + Bluetooth Idle + WLAN Idle + Earphone + USB Cable (Data Link with PC) <Fig. 2>
Radiated Emissions < 1GHz	1/2	Mode 1: GSM850 Idle + Bluetooth Idle + WLAN Idle + Earphone + Camera + Adapter <Fig. 1> Mode 2: GSM1900 Idle + Bluetooth Idle + WLAN Idle + Earphone + MP3 + Adapter <Fig. 1> Mode 3: WCDMA Band V Idle + Bluetooth Idle + WLAN Idle + USB Cable (Data Link with Notebook) + Earphone <Fig. 3>
Radiated Emissions ≥ 1GHz	2	Mode 1: WCDMA Band V Idle + Bluetooth Idle + WLAN Idle + USB Cable (Data Link with Notebook) + Earphone <Fig. 3>
<p><b>Remark:</b></p> <ol style="list-style-type: none"> <li>1. The worst case of AC is mode 4 only the test data of this mode was reported.</li> <li>2. The worst case of RE &lt; 1G is mode 3 only the test data of this mode was reported.</li> <li>3. Link with Notebook or PC means data application transferred mode between EUT and Notebook or PC.</li> </ol>		

## 2.2. Connection Diagram of Test System

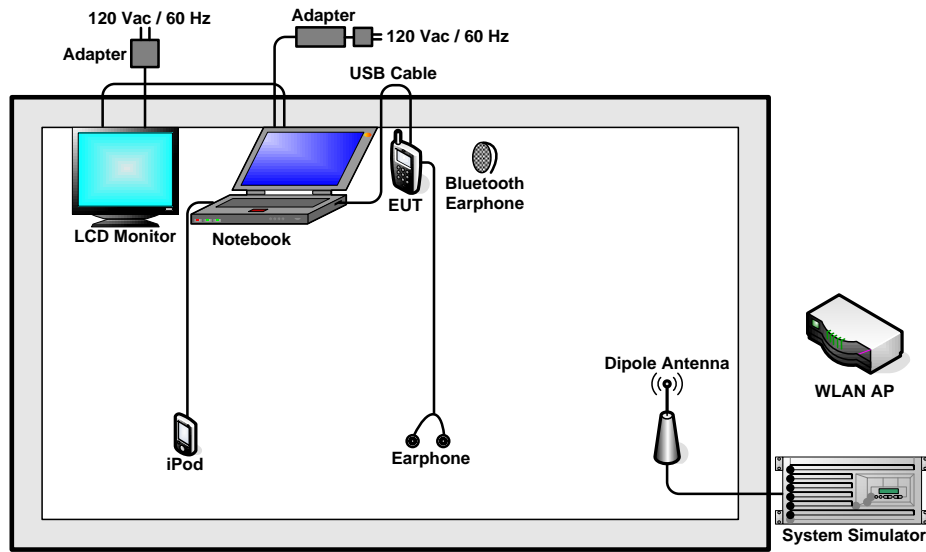
<EUT with Adapter Mode>



<Fig. 1>



<Fig. 2>



&lt;Fig. 3&gt;

## 2.3. Test Software

The EUT was in GSM or WCDMA idle mode during the testing. The EUT was synchronized to the BCCH, and is in continuous receiving mode by setting system simulator's paging reorganization.

At the same time, the EUT was attached to the Bluetooth earphone, WLAN AP or Router, and the following programs installed in the EUT were programmed during the test.

1. Execute the programs, "Winthrax", installed in notebook or PC for active sync files transfer with EUT via USB cable.
2. Execute "Music Player" to play MP3 file.
3. Turn on camera to capture images.

### 3. Test Result

#### 3.1. Test of AC Conducted Emission Measurement

##### 3.1.1 Limits of AC Conducted Emission

For equipment that is designed to be connected to the public utility (AC) power line, the radio frequency voltage that is conducted back onto the AC power line on any frequency or frequencies within the band 150 kHz to 30 MHz shall not exceed the limits in the following table.

Frequency of emission (MHz)	Conducted limit (dBuV)	
	Quasi-peak	Average
0.15-0.5	66 to 56*	56 to 46*
0.5-5	56	46
5-30	60	50

\*Decreases with the logarithm of the frequency.

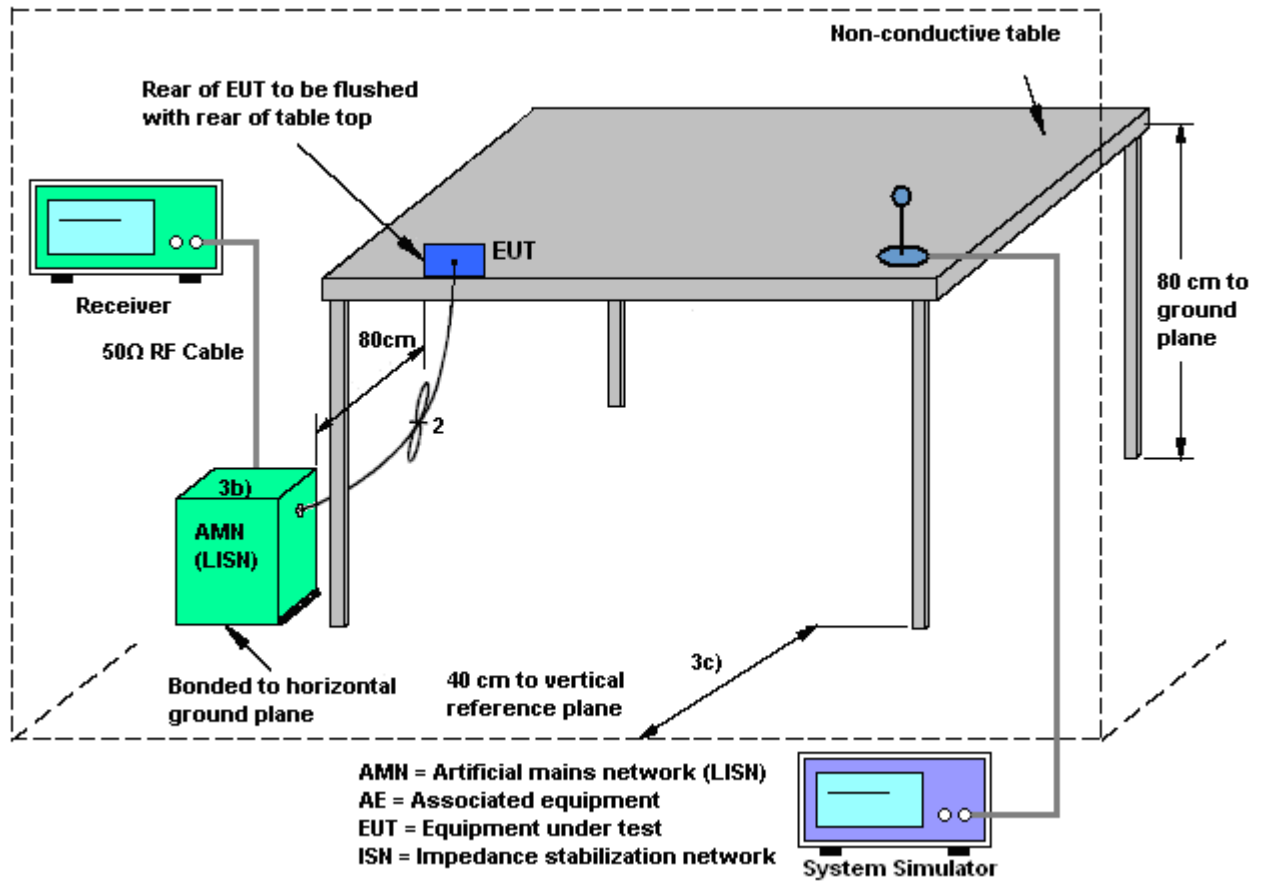
##### 3.1.2 Measuring Instruments

See list of measuring instruments of this test report.

##### 3.1.3 Test Procedure

1. The EUT was placed 0.4 meter from the conducting wall of the shielding room was kept at least 80 centimeters from any other grounded conducting surface.
2. Connect EUT to the power mains through a line impedance stabilization network (LISN).
3. All the support units are connecting to the other LISN.
4. The LISN provides 50 ohm coupling impedance for the measuring instrument.
5. The FCC states that a 50 ohm, 50 microhenry LISN should be used.
6. Both sides of AC line were checked for maximum conducted interference.
7. The frequency range from 150 KHz to 30 MHz was searched.
8. Set the test-receiver system to Peak Detect Function and specified bandwidth with Maximum Hold Mode.

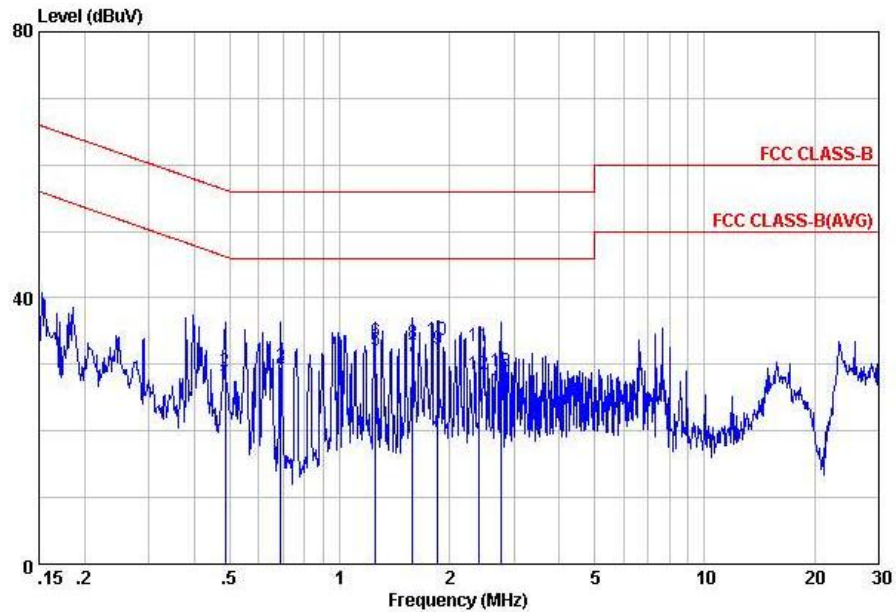
### 3.1.4 Test Setup





3.1.5 Test Result of AC Conducted Emission

Test Mode :	Mode 4	Temperature :	19~20°C
Test Engineer :	Tom Wang	Relative Humidity :	39~40%
Test Voltage :	120Vac / 60Hz	Phase :	Line
Function Type :	WCDMA Band V Idle + Bluetooth Idle + WLAN Idle + Earphone + USB Cable (Data Link with PC)		
Remark :	All emissions not reported here are more than 10 dB below the prescribed limit.		

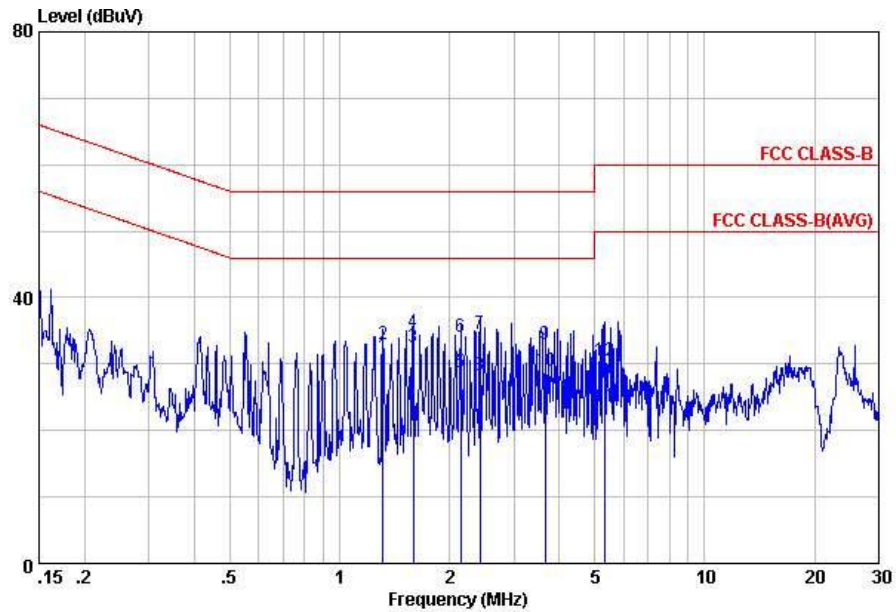


Site : C001-KS  
 Condition: FCC CLASS-B LISN-100807 LINE  
 mode : Mode 4

	Freq	Level	Over	Limit	Read	LISN	Cable	Remark
	MHz	dBuV	Limit	Line	Level	Factor	Loss	
			dB	dBuV	dBuV	dB	dB	
1	0.49	27.03	-19.20	46.23	16.90	-0.08	10.21	Average
2	0.49	28.93	-27.30	56.23	18.80	-0.08	10.21	QP
3	0.69	29.74	-26.26	56.00	19.60	-0.09	10.23	QP
4	0.69	29.04	-16.96	46.00	18.90	-0.09	10.23	Average
5	1.26	32.18	-13.82	46.00	22.00	-0.10	10.28	Average
6	1.26	33.38	-22.62	56.00	23.20	-0.10	10.28	QP
7	1.59	31.10	-14.90	46.00	20.90	-0.11	10.31	Average
8	1.59	33.30	-22.70	56.00	23.10	-0.11	10.31	QP
9	1.86	32.21	-13.79	46.00	22.00	-0.11	10.32	Average
10	1.86	33.71	-22.29	56.00	23.50	-0.11	10.32	QP
11	2.41	32.74	-23.26	56.00	22.50	-0.11	10.35	QP
12	2.41	28.44	-17.56	46.00	18.20	-0.11	10.35	Average
13	2.76	28.95	-27.05	56.00	18.71	-0.12	10.36	QP
14	2.76	26.15	-19.85	46.00	15.91	-0.12	10.36	Average



Test Mode :	Mode 4	Temperature :	19~20°C
Test Engineer :	Tom Wang	Relative Humidity :	39~40%
Test Voltage :	120Vac / 60Hz	Phase :	Neutral
Function Type :	WCDMA Band V Idle + Bluetooth Idle + WLAN Idle + Earphone + USB Cable (Data Link with PC)		
Remark :	All emissions not reported here are more than 10 dB below the prescribed limit.		



Site : C001-KS  
 Condition: FCC CLASS-B LISN-100807 NEUTRAL

mode : Mode 4

	Freq	Level	Over	Limit	Read	LISN	Cable	Remark
	MHz	dBuV	Limit	Line	Level	Factor	Loss	
		dBuV	dB	dBuV	dBuV	dB	dB	
1	1.32	31.19	-14.81	46.00	21.00	-0.10	10.29	Average
2	1.32	32.89	-23.11	56.00	22.70	-0.10	10.29	QP
3	1.59	32.50	-13.50	46.00	22.29	-0.10	10.31	Average
4	1.59	34.70	-21.30	56.00	24.49	-0.10	10.31	QP
5	2.14	28.73	-17.27	46.00	18.50	-0.11	10.34	Average
6	2.14	34.03	-21.97	56.00	23.80	-0.11	10.34	QP
7	2.42	34.44	-21.56	56.00	24.20	-0.11	10.35	QP
8	2.42	28.24	-17.76	46.00	18.00	-0.11	10.35	Average
9	3.66	32.96	-23.04	56.00	22.70	-0.12	10.38	QP
10	3.66	28.86	-17.14	46.00	18.60	-0.12	10.38	Average
11	5.33	23.57	-26.43	50.00	13.30	-0.13	10.40	Average
12	5.33	30.57	-29.43	60.00	20.30	-0.13	10.40	QP

## 3.2. Test of Radiated Emission Measurement

### 3.2.1. Limit of Radiated Emission

The emissions from an intentional radiator shall not exceed the field strength levels specified in the following table:

Frequency (MHz)	Field Strength (microvolts/meter)	Measurement Distance (meters)
0.009 – 0.490	2400/F(KHz)	300
0.490 – 1.705	24000/F(KHz)	30
1.705 – 30.0	30	30
30 – 88	100	3
88 – 216	150	3
216 - 960	200	3
Above 960	500	3

### 3.2.2. Measuring Instruments

See list of measuring instruments of this test report.

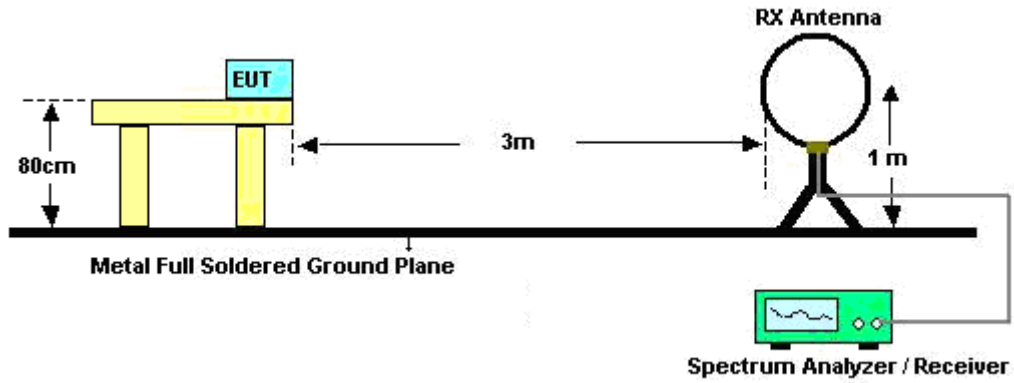


### **3.2.3. Test Procedures**

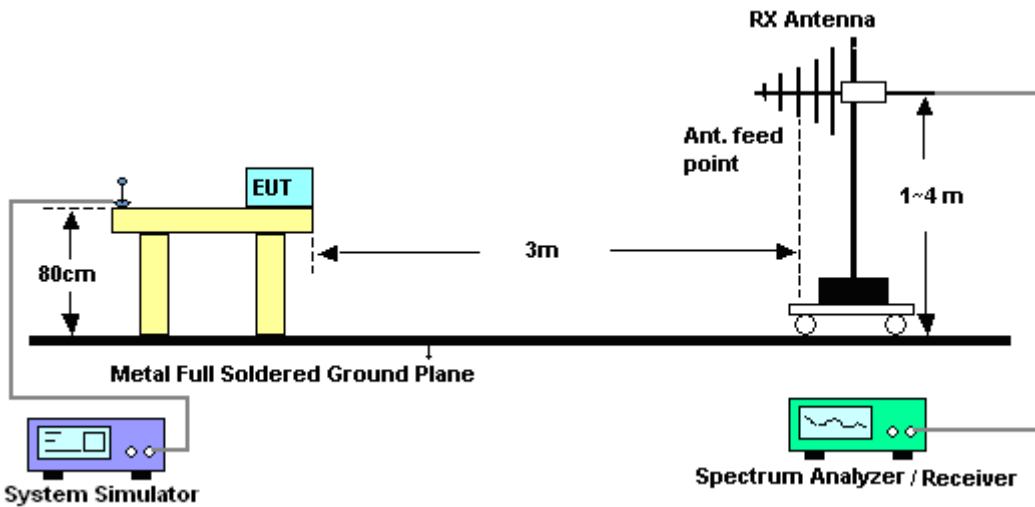
1. The EUT was placed on a turntable with 0.8 meter above ground.
2. The EUT was set 3 meters from the interference receiving antenna, which was mounted on the top of a variable height antenna tower.
3. The table was rotated 360 degrees to determine the position of the highest radiation.
4. The antenna is a Bi-Log antenna and its height is adjusted between one meter and four meters above ground to find the maximum value of the field strength for both horizontal polarization and vertical polarization of the antenna.
5. For each suspected emission, the EUT was arranged to its worst case and then tune the antenna tower (from 1 m to 4 m) and turntable (from 0 degree to 360 degrees) to find the maximum reading.
6. Set the test-receiver system to Peak Detect Function and specified bandwidth with Maximum Hold Mode.
7. If the emission level of the EUT in peak mode was 3 dB lower than the limit specified, then testing will be stopped and peak values of EUT will be reported, otherwise, the emissions will be repeated one by one using the quasi-peak method and reported
8. Emission level (dBuV/m) = 20 log Emission level (uV/m)
9. Corrected Reading: Antenna Factor + Cable Loss + Read Level - Preamp Factor = Level

### 3.2.4. Test Setup of Radiated Emission

For radiated emissions below 30MHz



For radiated emissions above 30MHz



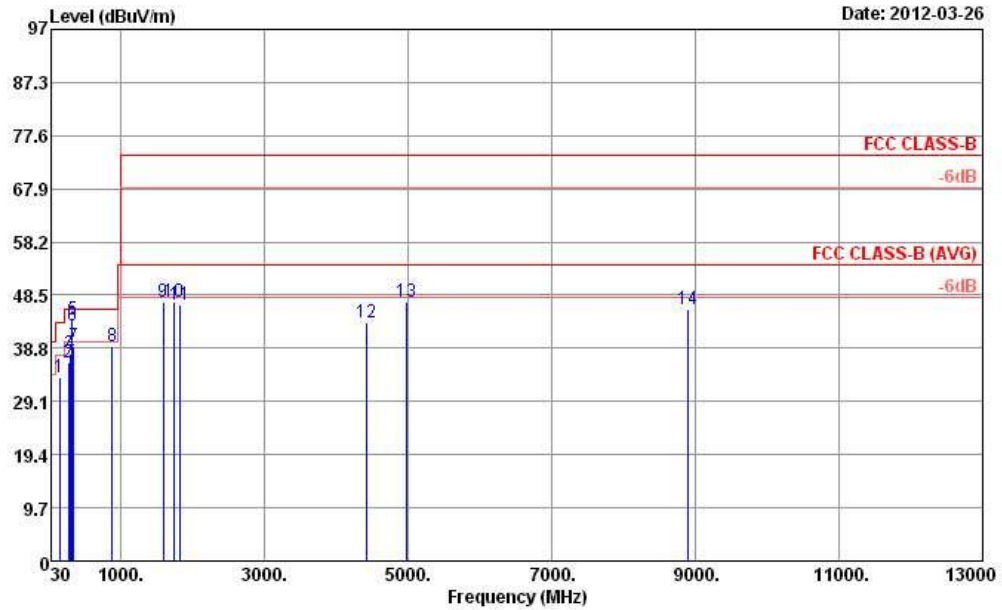
### 3.2.5. Test Results of Radiated Emissions (9 kHz ~ 30 MHz)

The low frequency, which started from 9 KHz to 30MHz, was pre-scanned and the result which was 20dB lower than the limit line per 15.31(o) was not reported.



3.2.6. Test Result of Radiated Emission

Test Mode :	Mode 3	Temperature :	23~24°C
Test Engineer :	Kai Wang	Relative Humidity :	43~44%
Test Distance :	3m	Polarization :	Horizontal
Function Type :	WCDMA Band V Idle + Bluetooth Idle + WLAN Idle + USB Cable (Data Link with Notebook) + Earphone		
Remark :	#8 is system simulator signal which can be ignored.		



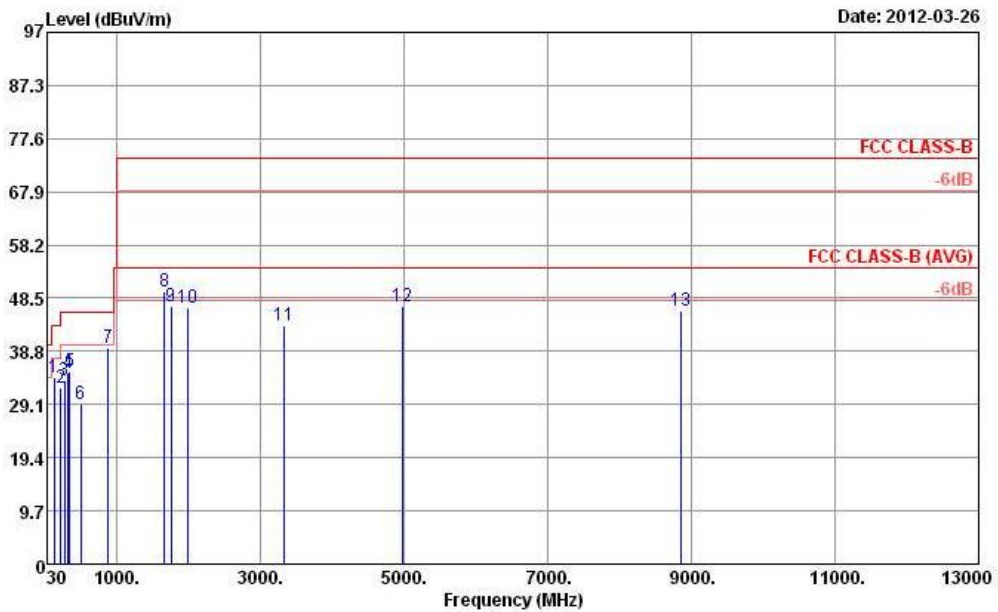
Site : 03CH05-HY  
 Condition : FCC CLASS-B 3m HF\_ANT\_110810 HORIZONTAL  
 Power : From System

Mode : Mode 3

	Freq	Level	Over	Limit	ReadAntenna	Cable	Preamp	A/Pos	T/Pos	Remark
	MHz	dBuV/m	Limit	Line	Level	Loss	Factor	cm	deg	
			dB	dBuV/m	dBuV	dB	dB			
1	150.42	33.45	-10.05	43.50	52.48	11.20	1.27	31.50	---	Peak
2	270.57	36.15	-9.85	46.00	52.87	12.99	1.71	31.42	---	Peak
3	295.14	37.77	-8.23	46.00	53.95	13.35	1.77	31.30	---	Peak
4	307.00	37.80	-8.20	46.00	53.95	13.33	1.80	31.28	---	Peak
5	318.90	43.95	-2.05	46.00	59.93	13.48	1.83	31.29	102	338 Peak
6	318.90	42.92	-3.08	46.00	58.90	13.48	1.83	31.29	102	338 QP
7	344.10	39.27	-6.73	46.00	54.43	14.26	1.89	31.31	---	Peak
8	881.00	39.31			43.72	23.10	2.98	30.49	---	Peak
9	1594.00	47.39	-26.61	74.00	72.88	28.90	3.70	58.09	100	0 Peak
10	1742.00	47.26	-26.74	74.00	71.33	29.95	3.93	57.95	---	Peak
11	1826.00	46.86	-27.14	74.00	70.16	30.53	4.04	57.87	---	Peak
12	4428.00	43.44	-30.56	74.00	62.47	33.82	6.32	59.17	---	Peak
13	4982.00	47.20	-26.80	74.00	64.97	33.80	6.58	58.15	---	Peak
14	8898.00	46.06	-27.94	74.00	56.91	36.04	9.44	56.33	---	Peak



Test Mode :	Mode 3	Temperature :	23~24°C
Test Engineer :	Kai Wang	Relative Humidity :	43~44%
Test Distance :	3m	Polarization :	Vertical
Function Type :	WCDMA Band V Idle + Bluetooth Idle + WLAN Idle + USB Cable (Data Link with Notebook) + Earphone		
Remark :	#7 is system simulator signal which can be ignored.		



Site : 03CH05-HY  
 Condition : FCC CLASS-B 3m HF\_ANT\_110810 VERTICAL  
 Power : From System

Mode : Mode 3

	Freq	Level	Over	Limit	ReadAntenna	Cable	Preamp	A/Pos	T/Pos	Remark
	MHz	dBuV/m	dB	dBuV/m	Level	Loss	Factor	cm	deg	
1	130.17	33.97	-9.53	43.50	52.87	11.40	1.22	31.52	100	248 Peak
2	221.16	32.19	-13.81	46.00	52.74	9.39	1.54	31.48	---	Peak
3	270.57	33.42	-12.58	46.00	50.14	12.99	1.71	31.42	---	Peak
4	318.90	34.90	-11.10	46.00	50.88	13.48	1.83	31.29	---	Peak
5	344.10	35.05	-10.95	46.00	50.21	14.26	1.89	31.31	---	Peak
6	498.80	29.20	-16.80	46.00	39.99	18.06	2.23	31.08	---	Peak
7	881.00	39.50		46.00	43.91	23.10	2.98	30.49	---	Peak
8	1664.00	49.70	-24.30	74.00	74.55	29.37	3.81	58.03	100	0 Peak
9	1758.00	46.99	-27.01	74.00	70.89	30.07	3.96	57.93	---	Peak
10	1996.00	46.61	-27.39	74.00	68.28	31.70	4.34	57.71	---	Peak
11	3322.00	43.55	-30.45	74.00	63.70	32.73	5.61	58.49	---	Peak
12	4988.00	47.05	-26.95	74.00	64.79	33.80	6.58	58.12	---	Peak
13	8848.00	46.11	-27.89	74.00	57.05	36.01	9.44	56.39	---	Peak



### 4. List of Measuring Equipment

Instrument	Manufacturer	Model No.	Serial No.	Characteristics	Calibration Date	Test Date	Due Date	Remark
EMI Test Receiver	R&S	ESCI7	100768	9kHz~7GHz	Jun. 02, 2011	Mar. 12, 2012	Jun. 01, 2012	Conduction (CO01-KS)
LISN	MessTec	AN3016	060103	9kHz~30MHz	Dec. 30, 2011	Mar. 12, 2012	Dec. 29, 2012	Conduction (CO01-KS)
LISN	MessTec	AN3016	060105	9kHz~30MHz	Dec. 30, 2011	Mar. 12, 2012	Dec. 29, 2012	Conduction (CO01-KS)
AC Power Source	Chroma	61602	ABP0000008 11	N/A	Nov. 16, 2011	Mar. 12, 2012	Nov. 15, 2012	Conduction (CO01-KS)
EMI Test Receiver	R&S	ESCI	100534	9kHz~3GHz	Nov. 09, 2011	Mar. 15, 2012	Nov. 08, 2012	Radiation (03CH01-KS)
Spectrum Analyzer	R&S	FSP40	100319	9kHz~40GHz	Dec. 30, 2011	Mar. 15, 2012	Dec. 29, 2012	Radiation (03CH01-KS)
Spectrum Analyzer	R&S	FSP30	101400	9kHz~30GHz	Jun. 02, 2011	Mar. 15, 2012	Jun. 01, 2012	Radiation (03CH01-KS)
Bilog Antenna	SCHAFFNER	CBL6112D	23182	25MHz~2GHz	Dec. 08, 2011	Mar. 15, 2012	Dec. 07, 2012	Radiation (03CH01-KS)
Double Ridge Horn Antenna	EMCO	3117	00075959	1GHz~18GHz	Jan. 06, 2012	Mar. 15, 2012	Jan. 05, 2013	Radiation (03CH01-KS)
Amplifier	Wireless	FPA-6592G	060029	9KHz~2GHz	Jan. 06, 2012	Mar. 15, 2012	Jan. 05, 2013	Radiation (03CH01-KS)
Amplifier	Wireless	FPA-6592G	060004	30MHz~2GHz	Dec. 30, 2011	Mar. 15, 2012	Dec. 29, 2012	Radiation (03CH01-KS)
Amplifier	Agilent	8449B	3008A02370	1GHz~26.5GHz	Dec. 30, 2011	Mar. 15, 2012	Dec. 29, 2012	Radiation (03CH01-KS)
Active Horn Antenna	com-power	AHA-118	701023	1G-18GHz	Nov. 07, 2011	Mar. 15, 2012	Nov. 06, 2012	Radiation (03CH01-KS)
SHF-EHF Horn	Schwarzbeck	BBHA 9170	BBHA170249	15-40GHz	Oct. 11, 2011	Mar. 15, 2012	Oct. 10, 2012	Radiation (03CH01-KS)
System Simulator	R&S	CMU200	116456	Full-Band	Sep. 20, 2011	Mar. 12, 2012~ Mar. 15, 2012	Sep. 19, 2012	-



Instrument	Manufacturer	Model No.	Serial No.	Characteristics	Calibration Date	Test Date	Due Date	Remark
Spectrum Analyzer	R&S	ESU26	100390	20Hz ~ 26.5GHz	Dec. 22, 2011	Mar. 26, 2012	Dec. 21, 2012	Radiation (03CH05-HY)
COM-POWER	Double Ridge Horn	AH-118	701030	1GHz ~ 18GHz	N/A	Mar. 26, 2012	N/A	Radiation (03CH05-HY)
Bilog Antenna	SCHAFFNER	CBL6111C	2725	30MHz ~ 2GHz	Oct. 22, 2011	Mar. 26, 2012	Oct. 21, 2012	Radiation (03CH05-HY)
Turn Table	HD	Deis HD 2000	420/611	0 ~ 360 degree	N/A	Mar. 26, 2012	N/A	Radiation (03CH05-HY)
Antenna Mast	HD	MA 240	240/666	1 m ~ 4 m	N/A	Mar. 26, 2012	N/A	Radiation (03CH05-HY)
Horn Antenna	ESCO	3117	66584	1GHz ~ 18GHz	Aug. 04, 2011	Mar. 26, 2012	Aug. 03, 2012	Radiation (03CH05-HY)
COM-POWER	COM-POWER	PA-103	161075	10Hz ~ 1000MHz Gain:32dB	Mar. 29, 2011	Mar. 26, 2012	Mar. 28, 2012	Radiation (03CH05-HY)
Pre Amplifier	EMCI	EMC051845	SN980048	1GHz~18GHz	Jul. 18, 2011	Mar. 26, 2012	Jul. 17, 2012	Radiation (03CH05-HY)
Pre Amplifier	Agilent	8449B	3008A01917	1GHz~26.5GHz	Aug. 30, 2011	Mar. 26, 2012	Aug. 29, 2012	Radiation (03CH05-HY)
System Simulator	R&S	CMU200	117591	N/A	Oct. 21, 2011	Mar. 26, 2012	Oct. 20, 2012	Radiation (03CH05-HY)
Loop Antenna	R&S	HFH2-Z2	860004/001	9 kHz~30 MHz	Jul. 29, 2010	Mar. 26, 2012	Jul. 28, 2012	Radiation (03CH05-HY)

## 5. Uncertainty of Evaluation

### Uncertainty of Conducted Emission Measurement (150 KHz ~ 30 MHz)

Contribution	Uncertainty of $X_i$		$u(X_i)$
	dB	Probability Distribution	
Receiver Reading	0.10	Normal (k=2)	0.05
Cable Loss	0.10	Normal (k=2)	0.05
AMN Insertion Loss	2.50	Rectangular	0.63
Receiver Specification	1.50	Rectangular	0.43
Site Imperfection	1.39	Rectangular	0.80
Mismatch	+0.34 / -0.35	U-Shape	0.24
<b>Combined Standard Uncertainty <math>Uc(y)</math></b>	<b>1.13</b>		
<b>Measuring Uncertainty for a Level of Confidence of 95% (<math>U = 2Uc(y)</math>)</b>	<b>2.26</b>		

### Uncertainty of Radiated Emission Measurement (30 MHz ~ 1000 MHz)

Contribution	Uncertainty of $X_i$		$u(X_i)$
	dB	Probability Distribution	
Receiver Reading	0.41	Normal (k=2)	0.21
Antenna Factor Calibration	0.83	Normal (k=2)	0.42
Cable Loss Calibration	0.25	Normal (k=2)	0.13
Pre-Amplifier Gain Calibration	0.27	Normal (k=2)	0.14
RCV/SPA Specification	2.50	Rectangular	0.72
Antenna Factor Interpolation for Frequency	1.00	Rectangular	0.29
Site Imperfection	1.43	Rectangular	0.83
Mismatch	+0.39 / -0.41	U-Shape	0.28
<b>Combined Standard Uncertainty <math>Uc(y)</math></b>	<b>1.27</b>		
<b>Measuring Uncertainty for a Level of Confidence of 95% (<math>U = 2Uc(y)</math>)</b>	<b>2.54</b>		



**Uncertainty of Radiated Emission Measurement (1 GHz ~ 40 GHz)**

Contribution	Uncertainty of $X_i$		$u(X_i)$	$C_i$	$C_i * u(X_i)$
	dB	Probability Distribution			
Receiver Reading	$\pm 0.10$	Normal (k=2)	0.10	1	0.10
Antenna Factor Calibration	$\pm 1.70$	Normal (k=2)	0.85	1	0.85
Cable Loss Calibration	$\pm 0.50$	Normal (k=2)	0.25	1	0.25
Receiver Correction	$\pm 2.00$	Rectangular	1.15	1	1.15
Antenna Factor Directional	$\pm 1.50$	Rectangular	0.87	1	0.87
Site Imperfection	$\pm 2.80$	Triangular	1.14	1	1.14
Mismatch Receiver VSWR $\Gamma_1 = 0.197$ Antenna VSWR $\Gamma_2 = 0.194$ Uncertainty = $20\text{Log}(1-\Gamma_1*\Gamma_2)$	+0.34 / -0.35	U-Shape	0.244	1	0.244
<b>Combined Standard Uncertainty <math>U_c(y)</math></b>	<b>2.36</b>				
<b>Measuring Uncertainty for a Level of Confidence of 95% (<math>U = 2U_c(y)</math>)</b>	<b>4.72</b>				