

Report No. : FD130433

# **FCC Test Report**

APPLICANT : CT Asia

**EQUIPMENT**: mobile phone

BRAND NAME : BLU
MODEL NAME : Magic

FCC ID : YHLBLUMAGIC

STANDARD : FCC 47 CFR FCC Part 15 Subpart B

**CLASSIFICATION**: Certification

The product was received on Mar. 04, 2011 and completely tested on Mar. 16, 2011. 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 (KUNSHAN) INC., the test report shall not be reproduced except in full.

Reviewed by:

Roy Wu / Manager





SPORTON INTERNATIONAL (KUNSHAN) INC. No. 3-2, PingXiang Road, Kunshan, Jiangsu Province, P.R.C.

SPORTON INTERNATIONAL (KUNSHAN) INC.

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**REVISION HISTORY** 

REPORT NO.	VERSION	DESCRIPTION	ISSUED DATE
FD130433	Rev. 01	Initial issue of report	Apr. 20, 2011

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**SUMMARY OF TEST RESULT** 

Report Section	FCC Rule	IC Rule	Description	Limit	Result	Remark
3.1	15.107	7.2.2	AC Conducted Emission	< 15.107 limits < RSS-Gen table 2 limits	PASS	Under limit 13.17 dB at 1.65 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 5.08 dB at 134.22 MHz

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# 1. General Description

# 1.1. Applicant

**CT** Asia

RMA 2011, 20/F., GOLDEN CENTRAL TOWER, NO. 3037# JINTIAN ROAD, FUTIAN DISTRICT

### 1.2. Manufacturer

**CT Asia** 

RMA 2011, 20/F., GOLDEN CENTRAL TOWER, NO. 3037# JINTIAN ROAD, FUTIAN DISTRICT

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1.3. Feature of Equipment Under Test

Product Feature & Specification					
Equipment	mobile phone				
Brand Name	BLU				
Model Name	Magic				
FCC ID	YHLBLUMAGIC				
Tx Frequency Range	GSM850: 824 MHz ~ 849 MHz GSM1900: 1850 MHz ~ 1910 MHz WCDMA Band V: 824 MHz ~ 849 MHz WCDMA Band II: 1850 MHz ~ 1910 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 WCDMA Band II: 1930 MHz ~ 1990 MHz Bluetooth: 2400 MHz ~ 2483.5 MHz WLAN: 2400 MHz ~ 2483.5 MHz				
Antenna Type	WWAN : Fixed Internal Antenna WLAN : Chip Antenna Bluetooth : Chip Antenna				
HW Version	HW03				
SW Version	SW07				
Type of Modulation	GSM / GPRS : GMSK EDGE : 8PSK WCDMA : QPSK HSDPA : QPSK / 16QAM Bluetooth (1Mbps) : GFSK Bluetooth EDR (2Mbps) : π/4-DQPSK Bluetooth EDR (3Mbps) : 8-DPSK 802.11b : DSSS (BPSK / QPSK / CCK) 802.11g : OFDM (BPSK / QPSK / 16QAM / 64QAM)				
EUT Stage	Identical Prototype				
Demand The above FUTI Street	* *				

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

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1.4. Test Site

Test Site SPORTON INTERNATIONAL (KUNSHAN) INC.					
	No. 3-2, PingXiang Road, Kunshan, Jiangsu Province, P.R.C.				
Test Site Location	TEL: +86-0512-5790-0158				
	FAX: +86-0512-5790-0958				
Tool Cita No	Sporton	Site No.			
Test Site No.	CO01-KS	03CH01-KS			

# 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.	Bluetooth Earphone	Nokia	HS-12W	PYAHS-12W	N/A	N/A
3.	Bluetooth Earphone	Cellink	BTHS-6025-F	PQY-4710874200357	N/A	N/A
4.	(USB)Mouse	DELL	MO56UC	FCC DoC	Shielded, 1.8 m	N/A
5.	(USB)Keyboard	DELL	L100	FCC DoC	Shielded, 1.8 m with core	N/A
6.	PC	DELL	MT320	FCC DoC	N/A	Unshielded, 1.8 m
7.	iPod	Apple	A1199	FCC DoC	Unshielded, 1.2 m	N/A
8.	Printer	HP	Laser Jet 1018	FCC DoC	Shielded, 1.8 m	Unshielded, 1.8 m
9.	Monitor	DELL	E1910Hc	FCC DoC	Shielded, 1.2 m	Unshielded, 1.8 m
10.	Router	D-Link	DIR-855	KA2DIR855A2	N/A	Unshielded, 1.8 m
11.	Notebook	Acer	Trave Imate 2413Lci	QDS-BRCM1016	N/A	AC I/P: Unshielded, 1.8 m DC O/P: Shielded, 1.8 m
12.	GPS Station	T&E	GS-50	N/A	N/A	Unshielded, 1.8 m

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

		Test Condition				
Item	EUT Configuration	EMI	EMI	EMI		
		AC	RE<1G	RE≥1G		
1.	Charging Mode (EUT with adapter)		$\boxtimes$	Note 1		
2.	Charging Mode (EUT with PC)			$\boxtimes$		

#### 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.

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Test Items	EUT Configure Mode	Function Type
		Mode 1: GSM850 Idle + Bluetooth Idle + WLAN Idle + GPS Rx + Earphone + Camera + Adapter
AC Conducted Emission	1/2	Mode 2: GSM1900 Idle + Bluetooth Idle + WLAN Idle + GPS Rx + Earphone + MPEG4 + Adapter
		Mode 3: WCDMA Band V Idle + Bluetooth Idle + WLAN Idle + GPS Rx + Earphone + USB Cable (Link with PC)
		Mode 1: GSM850 Idle + Bluetooth Idle + WLAN Idle + GPS Rx + Earphone + Camera + Adapter
Radiated Emissions < 1GHz	1/2	Mode 2: GSM1900 Idle + Bluetooth Idle + WLAN Idle + GPS Rx + Earphone + MPEG4 + Adapter
		Mode 3: WCDMA Band II Idle + Bluetooth Idle + WLAN Idle + GPS Rx + Earphone + USB Cable (Link with PC)
Radiated Emissions ≥ 1GHz	2	Mode 1: WCDMA Band II Idle + Bluetooth Idle + WLAN Idle + GPS Rx + Earphone + USB Cable (Link with PC)

#### Remark:

- 1. The worst case of AC is mode 3; only the test data of this mode was reported.
- 2. The worst case of RE < 1G is mode 3; only the test data of this mode was reported.

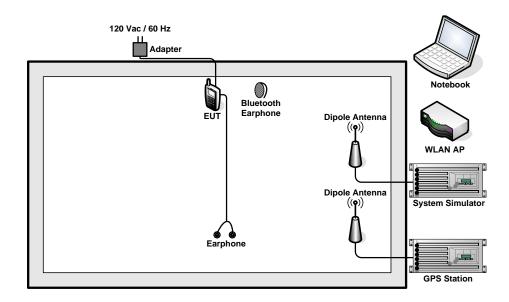
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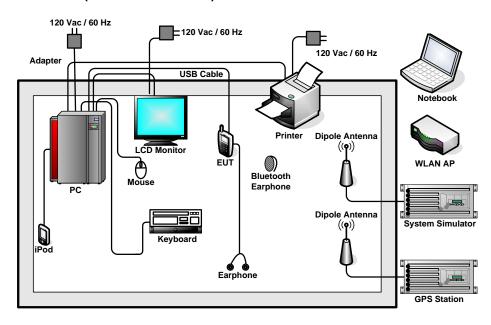
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## 2.2. Connection Diagram of Test System

<EUT with Adapter Mode>



#### <EUT with USB Cable (Link with Notebook) Mode>



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#### 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 or WLAN AP, and the following programs installed in the EUT were programmed during the test.

- 1. Execute the program, "WINTHRAX.EXE", installed in PC for active sync files transfer with EUT via USB cable.
- 2. Receive signals from GPS station continuously.
- 3. Execute "Video Player" to play MPEG4 files.
- 4. Turn on camera to capture images.

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

<sup>\*</sup>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.

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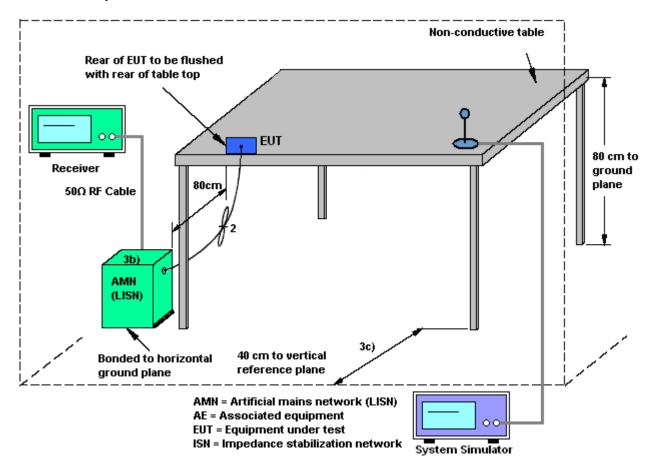
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### 3.1.4 Test Setup



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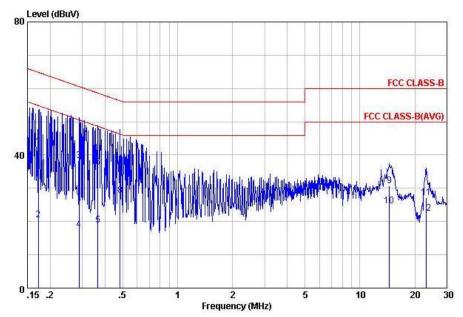
3.1.5 Test Result of AC Conducted Emission

Test Mode :	Mode 3			Tempera	ature	:	20-	~21	$^{\circ}\!\mathbb{C}$				
Test Engineer :	Jason Chia			Relative	Hum	nidity :	40	40~41%					
Test Voltage :	120Vac / 60H	łz		Phase :			Lin	Line					
	WCDMA Bar	WCDMA Band V Idle + Bluetooth Idle + WLAN Idle + GPS Rx + Earphone + US											
Function Type :	Cable (Link v	vith PC)											
Remark :	All emissions	not repo	orted h	ere are n	nore t	han 10	dB b	elc	w th	e pr	escr	ibed	limi
	_ Level (dBuV)												
		Andre .							191. 2000		LASS-I		
4	0 .15 .2	.5	1	2 Frequency	/ (MHz)	5		10 10		M 91	1 1 1 1 1 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2	30	
Site	0 .15 .2 : C001-KS on: FCC CLASS-B L			53.5	/ (MHz)					9	1 1 1 1 1 1 2 1 2 2 2 2 2 2 2 2 2 2 2 2	30	
Site	: COO1-KS on: FCC CLASS-B L : mode 3	ISN-100807 Over	7 LINE Limit	Frequency Read	LISN	5 Cable		10		91	1 1 1/4/4	30	
Site Conditi	: C001-KS on: FCC CLASS-B L : mode 3 Freq Level	ISN-10080 Over Limit	7 LINE Limit Line	Read Level Fa	LISN	5 Cable Loss	Remai	10		91	11/4/4	30	
Site Conditi	: COO1-KS on: FCC CLASS-B L : mode 3	Over Limit dB	7 LINE Limit Line dBuV	Read Level Fa	LISN actor dB	Cable Loss	Remai	100		10 mm	20	30	

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**20~21**℃ Test Mode: Mode 3 Temperature: Jason Chia 40~41% Test Engineer: Relative Humidity: 120Vac / 60Hz Phase: Neutral Test Voltage: GSM1900 Idle + Bluetooth Idle + WLAN Idle + GPS Rx + Earphone + MPEG4 + **Function Type:** Adapter Remark: All emissions not reported here are more than 10 dB below the prescribed limit.



Site : COO1-KS

Condition: FCC CLASS-B LISN-100807 NEUTRAL

Mode	: mode 3 Freq	Level	Over Limit	Limit Line	Read Level	LISN Factor	Cable Loss	Remark
-	MHz	dBuV	dB	dBuV	dBuV	dB	dB	-
1	0.17	42 50	-22.34	64.84	32.20	-0.08	10.38	OP
2	0.17	20.60	-34.24	54.84	10.30	-0.08	10.38	Average
3	0.29	38.33	-22.27	60.60	28.00	-0.07	10.40	OP
1 2 3 4 5 6 7 8	0.29		-32.97	50.60	7.30	-0.07	10.40	Average
5	0.37	18.83	-29.78	48.61	8.50	-0.08	10.41	Average
6	0.37	36.23	-22.38	58.61	25.90	-0.08	10.41	
7	0.48	32.65	-23.64	56.29	22.30	-0.08	10.43	QP
8	0.48	27.75	-18.54	46.29	17.40	-0.08	10.43	Average
9	14.52	30.66	-29.34	60.00	19.90	-0.06	10.82	QP
10	14.52	24.66	-25.34	50.00	13.90	-0.06	10.82	Average
11	23.02	27.29	-32.71	60.00	16.19	0.07	11.03	QP
12	23.02	22.49	-27.51	50.00	11.39	0.07	11.03	Average

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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	Field Strength	Measurement Distance
(MHz)	(microvolts/meter)	(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.

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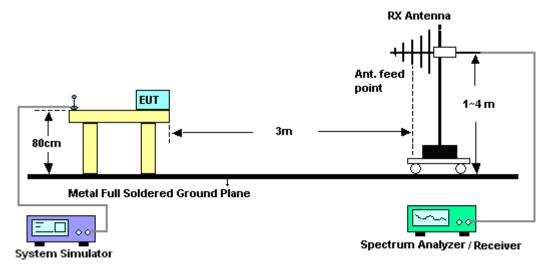
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#### 3.2.3. Test Procedures

- 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.
- The table was rotated 360 degrees to determine the position of the highest radiation. 3.
- 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



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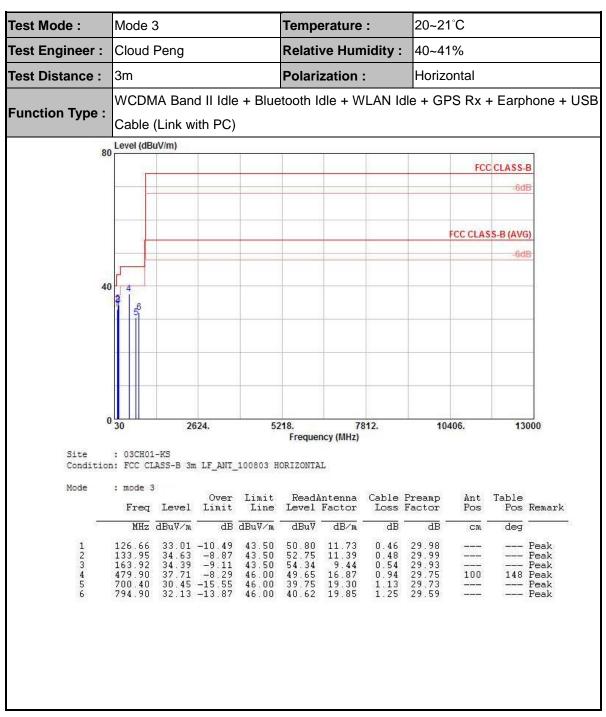
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3.2.5. Test Result of Radiated Emission



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Test Mode: Mode 3

Temperature: 20~21°C

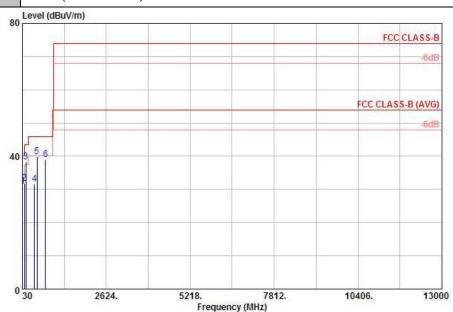
Test Engineer: Cloud Peng

Relative Humidity: 40~41%

Test Distance: 3m

Polarization: Vertical

WCDMA Band II Idle + Bluetooth Idle + WLAN Idle + GPS Rx + Earphone + USB Cable (Link with PC)



Site : 03CH01-KS

Condition: FCC CLASS-B 3m LF\_ANT\_100803 VERTICAL

Mode : mode 3

	Freq	Level	Over Limit			Antenna Factor		Preamp Factor	Ant Pos	Table Pos	Remark
0.7	MHz	dBuV/m	dB	$\overline{\mathtt{dBuV/m}}$	dBuV	dB/m	dB	dB	CM	deg	A
1	32.97	30.95	-9.05	40.00	44.76	16.04	0.24	30.09			Peak
2	88.86	31.97	-11.53	43.50	52.96	8.61	0.39	29.99			Peak
3 !	134.22	38.42	-5.08	43.50	56.54	11.39	0.48	29.99			Peak
4	400.10	31.54	-14.46	46.00	44.53	16.00	0.84	29.83	-		Peak
5	479.90	39.96	-6.04	46.00	51.90	16.87	0.94	29.75	100	360	QP
6	749.40	38.95	-7.05	46.00	47.41	19.90	1.18	29.54			Peak

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# 4. List of Measuring Equipment

Instrument	Manufacturer	Model No.	Serial No.	Characteristics	Calibration Date	Due Date	Remark
EMI Receiver	R&S	ESCI7	100768	9kHz~7GHz	Jun. 22, 2010	Jun. 21, 2011	Conduction (CO01-KS)
LISN	MessTec	AN3016	60103	9kHz~30MHz	Jan. 07, 2011	Jan. 06, 2012	Conduction (CO01-KS)
LISN	MessTec	AN3016	60105	9kHz~30MHz	Jan. 07, 2011	Jan. 06, 2012	Conduction (CO01-KS)
AC Power Source	Chroma	61602	ABP0000008 11	N/A	Nov. 10, 2010	Nov. 09, 2011	Conduction (CO01-KS)
DC- LISN	MessTec	AN20200	060102	0.1MHz~108MH z	Jan. 07, 2011	Jan. 06, 2012	Conduction (CO01-KS)
DC- LISN	MessTec	AN20200	060107	0.1MHz~108MH z	Jan. 07, 2011	Jan. 06, 2012	Conduction (CO01-KS)
ISN	TESEQ	ISNT800	27103	9kHz – 30MHz	Dec. 02, 2010	Dec. 01, 2011	Conduction (CO01-KS)
ISN	TESEQ	ISNT400A	25675	9kHz – 30MHz	Dec. 02, 2010	Dec. 01, 2011	Conduction (CO01-KS)
ISN	TESEQ	ISNST08	26583	9kHz – 30MHz	Dec. 02, 2010	Dec. 01, 2011	Conduction (CO01-KS)
EMI Test Receiver	R&S	ESCI	100534	9kHz~3GHz	Nov. 16, 2010	Nov. 15, 2011	Radiation (03CH01-KS)
Spectrum Analyzer	R&S	FSP40	100319	9kHz~40GHz	Jan. 07, 2011	Jan. 06, 2012	Radiation (03CH01-KS)
Bilog Antenna	SCHAFFNER	CBL6112D	23182	25MHz~2GHz	Dec. 07, 2010	Dec. 06, 2011	Radiation (03CH01-KS)
Double Ridge Horn Antenna	EMCO	3117	00075959	1GHz~18GHz	Jan. 07, 2011	Jan. 06, 2012	Radiation (03CH01-KS)
Amplifier	Wireless	FPA-6592G	060004	30MHz~2GHz	Dec. 09, 2010	Dec. 08, 2011	Radiation (03CH01-KS)
Amplifier	Agilent	8449B	3008A02370	1GHz~26.5GHz	Jan. 07, 2011	Jan. 06, 2012	Radiation (03CH01-KS)
Actice hore antenna	com-power	AHA-118	701023	1G-18GHz	Nov. 09, 2010	Nov. 08, 2011	Radiation (03CH01-KS)
Signal Generator	R&S	SMR40	100455	10MHz~40GHz	Jan. 06, 2011	Jan. 05, 2012	Radiation (03CH01-KS)
SHF-EHF Horn	Schwarzbeck	BBHA 9170	BBHA170249	15-40GHz	Oct. 15, 2010	Oct. 14, 2011	Radiation (03CH01-KS)
Loop Antenna	R&S	HFH2-Z2	860004/001	9 kHz~30 MHz	Jul. 29, 2010	Jul. 28, 2011	Radiation (03CH01-KS)
System Simulator	R&S	CMU200	837587/066	Full-Band	Jan. 07, 2011	Jan. 06, 2012	-
GPS Station	T&E	GS-50	N/A	N/A	N/A	N/A	-

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# 5. Uncertainty of Evaluation

#### <u>Uncertainty of Conducted Emission Measurement (150 kHz ~ 30 MHz)</u>

	Uncerta				
Contribution	dB	Probability Distribution	u(X <sub>i</sub> )		
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		
Combined Standard Uncertainty Uc(y)	1.13				
Measuring Uncertainty for a Level of Confidence of 95% (U = 2Uc(y))	2.26				

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

	Uncerta			
Contribution	dB	Probability Distribution	u(X <sub>i</sub> )	
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	
Combined Standard Uncertainty Uc(y)	1.27			
Measuring Uncertainty for a Level of Confidence of 95% (U = 2Uc(y))	2.54			

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

	Uncertai					
Contribution	dB	Probability Distribution	u(X <sub>i</sub> )	C <sub>i</sub>	C <sub>i</sub> * u(X <sub>i</sub> )	
Receiver Reading	±0.10	Normal (k=2)	0.10	1	0.10	
Antenna Factor Calibration	±1.70	Normal (k=2)	0.85	1	0.85	
Cable Loss Calibration	±0.50	Normal (k=2)	0.25	1	0.25	
Receiver Correction	±2.00	Rectangular	1.15	1	1.15	
Antenna Factor Directional	±1.50	Rectangular	0.87	1	0.87	
Site Imperfection	±2.80	Triangular	1.14	1	1.14	
Mismatch Receiver VSWR $\Gamma$ 1 = 0.197 Antenna VSWR $\Gamma$ 2 = 0.194 Uncertainty = 20Log(1- $\Gamma$ 1* $\Gamma$ 2)	+0.34 / -0.35	U-Shape	0.244	1	0.244	
Combined Standard Uncertainty Uc(y)	2.36					
Measuring Uncertainty for a Level of Confidence of 95% (U = 2Uc(y))	4.72					

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# Appendix A. Photographs of EUT

Please refer to Sporton report number EP130433 as below.

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