

FCC RF Test Report

APPLICANT : CT Asia

EQUIPMENT: Mobile phone

BRAND NAME : BLU

MODEL NAME : Dash 4.5
MARKETING NAME : Dash 4.5

FCC ID : YHLBLUDASH45

STANDARD : FCC Part 15 Subpart C §15.247

CLASSIFICATION : (DTS) Digital Transmission System

The product was received on Apr. 25, 2013 and completely tested on May 09, 2013. We, SPORTON INTERNATIONAL (KUNSHAN) INC., would like to declare that the tested sample has been evaluated in accordance with the procedures 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:

Jones Tsai / Manager





Report No.: FR342511B

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

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REVISION HISTORY

REPORT NO.	VERSION	DESCRIPTION	ISSUED DATE
FR342511B	Rev. 01	Initial issue of report	Jun. 01, 2013

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SUMMARY OF TEST RESULT

Report Section	FCC Rule	Description	Limit	Result	Remark
3.1	15.247(a)(2)	6dB Bandwidth	≥ 0.5MHz	Pass	-
3.2	15.247(b)(1)	Peak Output Power	≤ 30dBm	Pass	-
3.5	15.247(e)	Power Spectral Density	≤ 8dBm	Pass	-
3.4	15.247(d)	Conducted Band Edges and Spurious Emission	≤ 20dBc	Pass	-
3.5	15.247(d)	Radiated Band Edges and Spurious Emission	15.209(a) & 15.247(d)	Pass	Under limit 9.69 dB at 835.100 MHz
3.6	15.207	AC Conducted Emission	15.207(a)	Pass	Under limit 7.58 dB at 0.370 MHz
3.7	15.203 & 15.247(b)	Antenna Requirement	N/A	Pass	-

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1 **General Description**

Applicant 1.1

CT Asia

Unit 01, 15/F, Seaview Centre, 139-141 Hoi bun road, Kwun Tong, Kowloon, Hongkong

1.2 Manufacturer

Ragentek Technology Group

Building D10-D11, No. 58-60, Lane 3188, Xiupu Road, PuDong District, Shanghai, PRC

1.3 **Feature of Equipment Under Test**

Product Feature				
Equipment	Mobile phone			
Brand Name	BLU			
Model Name	Dash 4.5			
Marketing Name	Dash 4.5			
FCC ID	YHLBLUDASH45			
EUT supports Radios application	GSM/GPRS/WCDMA/HSPA/HSPA+/WLAN 11bgn/Bluetooth/Bluetooth v4.0 - LE			
HW Version	V1.2			
SW Version	BLU-D310-V05-GENERIC			
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.

Product Specification of Equipment Under Test 1.4

Product Specification subjective to this standard				
Tx/Rx Frequency Range	2402 MHz ~ 2480 MHz			
Number of Channels	40			
Carrier Frequency of Each Channel	2402+n*2 MHz; n=0~39			
Maximum Output Power to Antenna	Bluetooth v4.0 - LE : -0.20 dBm (0.0010 W)			
Antenna Type	Monopole Antenna type with gain 0 dBi			
Type of Modulation	Bluetooth v4.0 - LE : GFSK			

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Testing Site 1.5

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

Test Site	SPORTON INTERNAT	IONAL (SHENZHEN) INC.
Test Site Location	No. 3 Building, the thir Nanshan District, Shen TEL: +86-755- 3320-23	zhen, Guangdong, F	he River west, Fengzeyuan warehouse,
Test Site No.	Sporton S	ite No.	FCC/IC Registration No.
rest Site No.	TH01-SZ	CO01-SZ	831040/4086F-1

The test site complies with ANSI C63.4 2003 requirement.

Applied Standards 1.6

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

- FCC Part 15 Subpart C §15.247
- FCC KDB Publication No. 558074 D01 DTS Meas. Guidance v03r01
- ANSI C63.10-2009

Remark:

- All test items were verified and recorded according to the standards and without any deviation during the test.
- 2. This EUT has also been tested and complied with the requirements of FCC Part 15, Subpart B, recorded in a separate test report.

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2 Test Configuration of Equipment Under Test

2.1 Descriptions of Test Mode

The RF output power was recorded in the following table:

	•	
		Bluetooth 4.0 – LE RF Output Power
Channal	Eroguenov	Data Rate / Modulation
Channel	Frequency	GFSK
		1Mbps
Ch00	2402MHz	-2.22 dBm
Ch19	2440MHz	-1.55 dBm
Ch39	2480MHz	- <mark>-0.20</mark> dBm

- a. The EUT has been associated with peripherals pursuant to ANSI C63.4-2003 and ANSI C63.10-2009 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 (9 KHz to the 10th harmonic of the highest fundamental frequency or to 40 GHz, whichever is lower). Pre-scanned tests, X, Y, Z in three orthogonal panels to determine the final configuration (Y plane as worst plane) from all possible combinations.
- b. AC power line Conducted Emission was tested under maximum output power.

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2.2 Test Mode

The following summary table is showing all test modes to demonstrate in compliance with the standard.

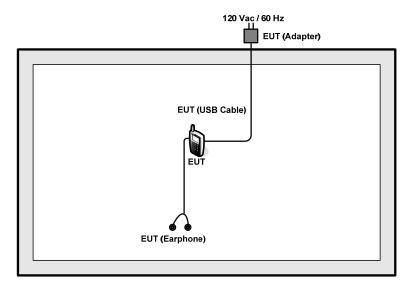
	Summary table of Test Cases				
Test Item	Data Rate / Modulation				
rest item	Bluetooth 4.0 – LE / GFSK				
Conducted	Mode 1: Bluetooth Tx CH00_2402 MHz_1Mbps				
TCs	Mode 2: Bluetooth Tx CH19_2440 MHz_1Mbps				
ics	Mode 3: Bluetooth Tx CH39_2480 MHz_1Mbps				
Radiated	Mode 1: Bluetooth Tx CH00_2402 MHz_1Mbps				
TCs	Mode 2: Bluetooth Tx CH19_2440 MHz_1Mbps				
108	Mode 3: Bluetooth Tx CH39_2480 MHz_1Mbps				
AC	Mode 1 :GSM850 Idle + Bluetooth Link + WLAN Link + USB Cable (Charging from				
Conducted	, 5				
Emission	Adapter) + Earphone				

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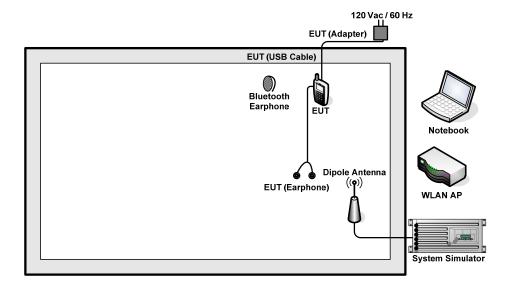


Connection Diagram of Test System 2.3

<Bluetooth 4.0 - LE Tx Mode>



<AC Conducted Emission Mode>



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2.4 Support Unit used in test configuration and system

Item	Equipment	Trade Name	Model Name	FCC ID	Data Cable	Power Cord
1.	System Simulator	Agilent	E5515C	N/A	N/A	Unshielded, 1.8 m
2.	DC Power Supply	TOPWORD	3303DR	N/A	N/A	Unshielded, 1.8 m
3.	WLAN AP	Netcore	NW616	N/A	N/A	Unshielded, 1.8 m
4.	Notebook	DELL	P08S	QDS-BRCM1030	N/A	AC I/P: Unshielded, 1.8 m DC O/P: Shielded, 1.8 m
5.	Bluetooth Earphone	Nokia	BH-108	N/A	N/A	N/A

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2.5 Description of RF Function Operation Test Setup

For Bluetooth function, the engineering test program was provided and enabled to make EUT continuous transmit/receive.

2.6 Measurement Results Explanation Example

For conducted test items:

The offset level is set in the spectrum analyzer to compensate the RF cable loss and 10dB attenuator between EUT conducted output port and spectrum analyzer. With the offset compensation, the spectrum analyzer reading level is exactly the EUT RF output level.

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The spectrum analyzer offset is derived from RF cable loss and 10dB attenuator factor.

Offset = RF cable loss + attenuator factor.

Following table shows an offset computation example with cable loss 5.60 dB.

Example:

Offset(dB) = RF cable loss(dB) + attenuator factor(dB). = 7.50 + 10 = 17.50 (dB)



3 **Test Result**

3.1 6dB Bandwidth Measurement

3.1.1 Limit of 6dB Bandwidth

The minimum 6 dB bandwidth shall be at least 500 KHz.

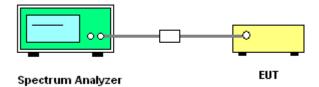
3.1.2 Measuring Instruments

See list of measuring instruments of this test report.

3.1.3 Test Procedures

- 1. The testing follows FCC KDB Publication No. 558074 D01 DTS Meas. Guidance v03r01.
- 2. The RF output of EUT was connected to the spectrum analyzer by RF cable and attenuator. The path loss was compensated to the results for each measurement.
- Set to the maximum power setting and enable the EUT transmit continuously.
- Make the measurement with the spectrum analyzer's resolution bandwidth (RBW) = 100 kHz. 4. Set the Video bandwidth (VBW) = 300 kHz. In order to make an accurate measurement. The 6 dB bandwidth must be greater than 500 kHz.
- 5. Measure and record the results in the test report.

3.1.4 Test Setup



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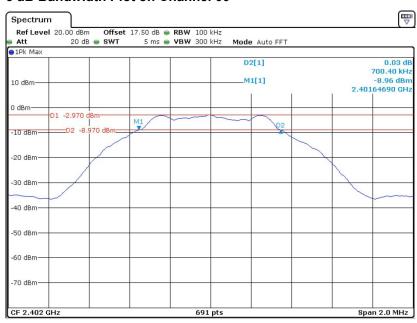


3.1.5 Test Result of 6dB Bandwidth

Test Mode :	Bluetooth 4.0 - LE	Temperature :	24~25 ℃
Test Engineer :	Fly Chen	Relative Humidity :	50~53%

Channel	Frequency (MHz)	6dB Bandwidth (MHz)
00	2402	0.7004
19	2440	0.7004
39	2480	0.7004

6 dB Bandwidth Plot on Channel 00

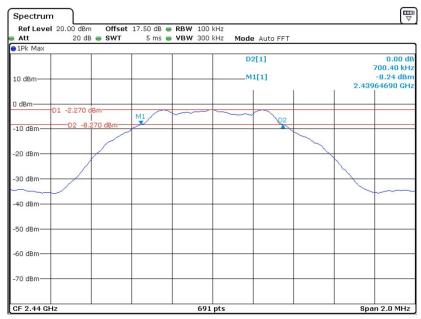


Date: 5.MAY.2013 09:03:06

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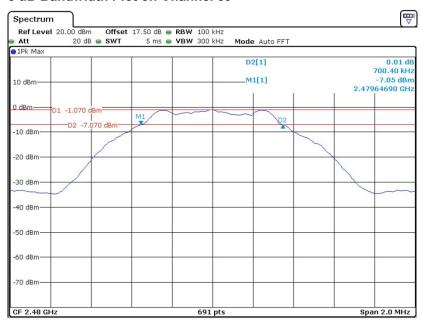


6 dB Bandwidth Plot on Channel 19



Date: 5.MAY.2013 09:04:14

6 dB Bandwidth Plot on Channel 39



Date: 5.MAY.2013 09:06:08

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3.2 **Peak Output Power Measurement**

3.2.1 **Limit of Peak Output Power**

For systems using digital modulation in the 2400-2483.5MHz, the limit for peak output power is 30dBm. If transmitting antenna of directional gain greater than 6dBi is used, the peak output power from the intentional radiator shall be reduced below the above stated value by the amount in dB that the directional gain of the antenna exceeds 6 dBi. In case of point-to-point operation, the limit has to be reduced by 1dB for every 3dB that the directional gain of the antenna exceeds 6dBi.

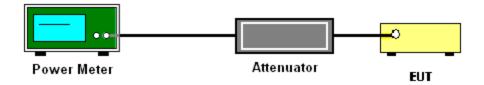
3.2.2 Measuring Instruments

See list of measuring instruments of this test report.

3.2.3 Test Procedures

- 1. The testing follows the Measurement Procedure of FCC KDB No. 558074 D01 DTS Meas. Guidance v03r01.
- 2. The RF output of EUT was connected to the power meter by RF cable and attenuator. The path loss was compensated to the results for each measurement.
- 3. Set to the maximum power setting and enable the EUT transmit continuously.
- 4. Measure the conducted output power and record the results in the test report.

3.2.4 Test Setup



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3.2.5 Test Result of Peak Output Power

Test Mode :	Bluetooth 4.0 - LE	Temperature :	24~25℃
Test Engineer :	Fly Chen	Relative Humidity :	50~53%

	Eroguanov	R	RF Power (dBm)		
Channel	Frequency (MHz)	GFSK	Max. Limits (dBm)	Pass/Fail	
00	2402	-2.22	30.00	Pass	
19	2440	-1.55	30.00	Pass	
39	2480	-0.20	30.00	Pass	

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3.3 Power Spectral Density Measurement

3.3.1 Limit of Power Spectral Density

The peak power spectral density shall not be greater than 8dBm in any 3kHz band at any time interval of continuous transmission.

3.3.2 Measuring Instruments

See list of measuring instruments of this test report.

3.3.3 Test Procedures

- The testing follows Measurement Procedure 10.2 Option 1 of FCC KDB Publication No. 558074
 D01 DTS Meas. Guidance v03r01
- 2. The RF output of EUT was connected to the spectrum analyzer by RF cable and attenuator. The path loss was compensated to the results for each measurement.
- 3. Set to the maximum power setting and enable the EUT transmit continuously.
- 4. Make the measurement with the spectrum analyzer's resolution bandwidth (RBW) = 3 kHz. Video bandwidth VBW = 10 kHz In order to make an accurate measurement, set the span to 1.5 times DTS Channel Bandwidth. (6dB BW)
- 5. Detector = peak, Sweep time = auto couple, Trace mode = max hold, Allow trace to fully stabilize. Use the peak marker function to determine the maximum power level.
- 6. Measure and record the results in the test report.
- 7. The Measured power density (dBm)/ 100 kHz is a reference level and used as 20dBc down limit line for Conducted Band Edges and Conducted Spurious Emission.

3.3.4 Test Setup



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3.3.5 Test Result of Power Spectral Density

Test Mode :	Bluetooth 4.0 - LE	Temperature :	24~25 ℃
Test Engineer :	Fly Chen	Relative Humidity :	50~53%

Channal	Frequency	Power	Density	Max. Limits	Dage/Fail
Channel	(MHz)	PSD/100kHz (dBm)	PSD/3kHz (dBm)	(dBm/3kHz)	Pass/Fail
00	2402	-2.98	-17.81	8	Pass
19	2440	-2.28	-17.11	8	Pass
39	2480	-1.08	-15.90	8	Pass

Note:

- 1. Measured power density (dBm) has offset with cable loss.
- 2. The Measured power density (dBm)/ 100kHz is reference level and used as 20dBc down for Conducted Band Edges and Conducted Spurious Emission limit line.

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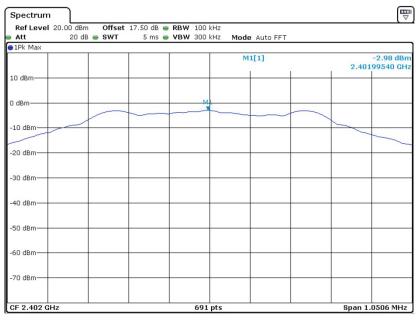
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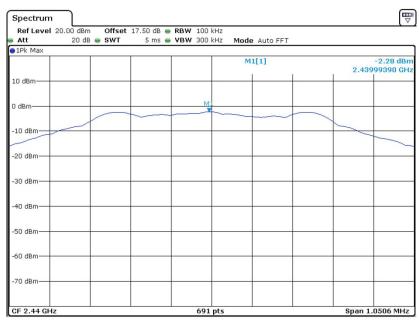
3.3.6 Test Result of Power Spectral Density Plots (100kHz)

PSD 100kHz Plot on Channel 00



Date: 5.MAY.2013 09:15:15

PSD 100kHz Plot on Channel 19

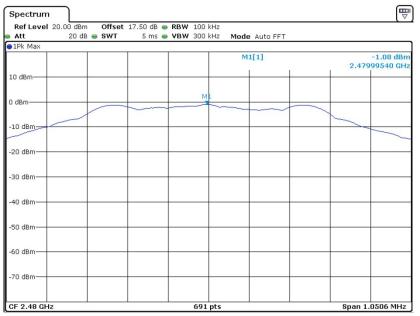


Date: 5.MAY.2013 09:14:35

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PSD 100kHz Plot on Channel 39



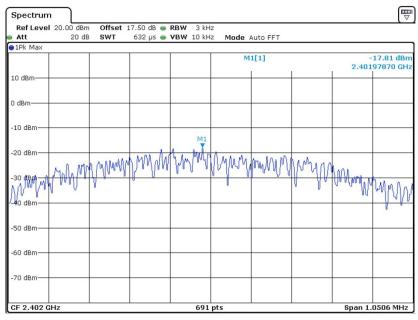
Date: 5.MAY.2013 09:13:55

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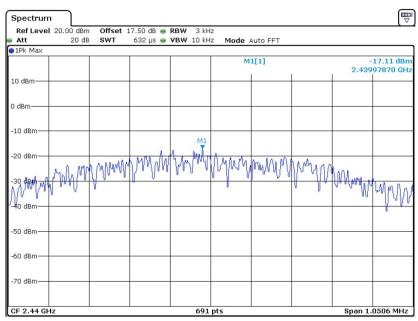
3.3.7 Test Result of Power Spectral Density Plots (3kHz)

PSD 3kHz Plot on Channel 00



Date: 5.MAY.2013 09:19:05

PSD 3kHz Plot on Channel 19



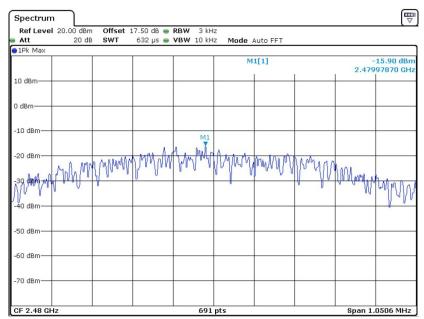
Date: 5.MAY.2013 09:20:04

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PSD 3kHz Plot on Channel 39



Date: 5.MAY.2013 09:20:29

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3.4 **Conducted Band Edges and Spurious Emission Measurement**

3.4.1 **Limit of Conducted Band Edges and Spurious Emission**

All harmonics/spurious must be at least 20 dB down from the highest emission level within the authorized band.

3.4.2 **Measuring Instruments**

See list of measuring instruments of this test report.

3.4.3 Test Procedure

- 1. The testing follows FCC KDB Publication No. 558074 D01 DTS Meas. Guidance v03r01.
- 2. The RF output of EUT was connected to the spectrum analyzer by RF cable and attenuator. The path loss was compensated to the results for each measurement.
- 3. Set to the maximum power setting and enable the EUT transmit continuously.
- 4. Set RBW = 100 kHz, VBW=300 kHz, Peak Detector. Unwanted Emissions measured in any 100 kHz bandwidth outside of the authorized frequency band shall be attenuated by at least 20 dB relative to the maximum in-band peak PSD level in 100 kHz when maximum peak conducted output power procedure is used. If the transmitter complies with the conducted power limits based on the use of RMS averaging over a time interval, the attenuation required under this paragraph shall be 30 dB instead of 20 dB per 15.247(d).
- 5. Measure and record the results in the test report.
- 6. The RF fundamental frequency should be excluded against the limit line in the operating frequency band.

3.4.4 Test Setup



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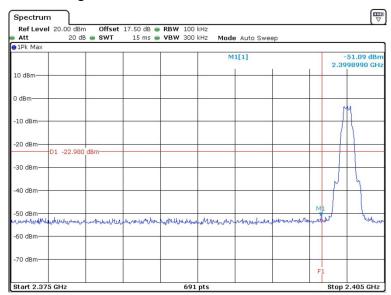
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3.4.5 Test Result of Conducted Band Edges

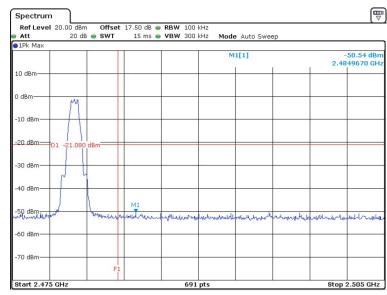
Test Mode :	Bluetooth 4.0 - LE	Temperature :	24~25 ℃
Test Channel :	00 and 39	Relative Humidity :	50~53%
		Test Engineer :	Fly Chen

Low Band Edge Plot on Channel 00



Date: 5.MAY.2013 10:27:56

High Band Edge Plot on Channel 39



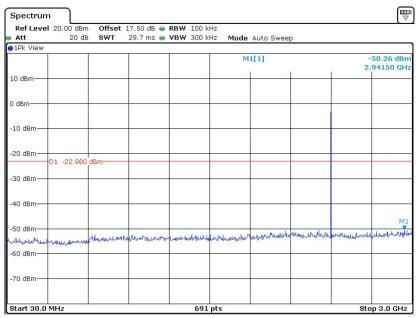
Date: 5.MAY.2013 10:26:18

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3.4.6 Test Result of Conducted Spurious Emission

Test Mode :	Bluetooth 4.0 - LE	Temperature :	24~25 ℃
Test Channel :	00	Relative Humidity :	50~53%
		Test Engineer :	Fly Chen

Conducted Spurious Emission Plot on Bluetooth LE GFSK Channel 00

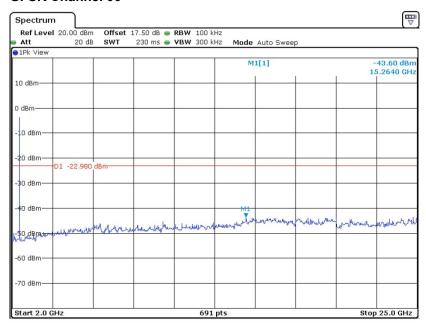


Date: 5.MAY.2013 10:29:07

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Conducted Spurious Emission Plot on Bluetooth LE GFSK Channel 00



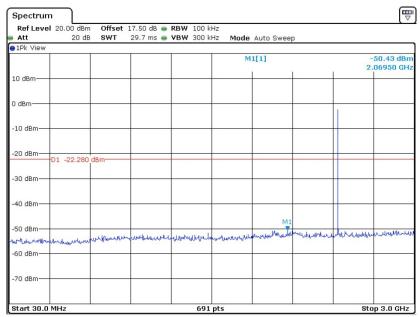
Date: 5.MAY.2013 10:29:50

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Test Mode :	Bluetooth 4.0 - LE	Temperature :	24~25 ℃
Test Channel :	19	Relative Humidity :	50~53%
		Test Engineer :	Fly Chen

Conducted Spurious Emission Plot on Bluetooth LE GFSK Channel 19

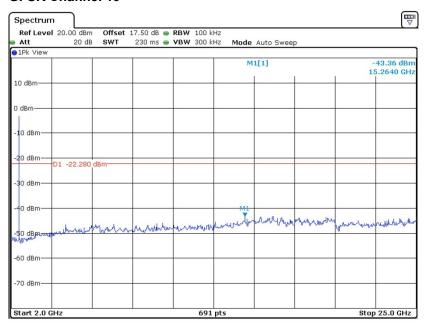


Date: 5.MAY.2013 10:30:33

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Conducted Spurious Emission Plot on Bluetooth LE GFSK Channel 19



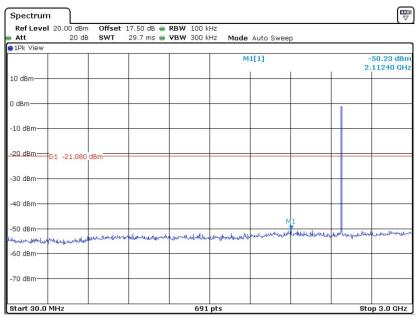
Date: 5.MAY.2013 10:31:07

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Test Mode :	Bluetooth 4.0 - LE	Temperature :	24~25 ℃
Test Channel :	39	Relative Humidity :	50~53%
		Test Engineer :	Fly Chen

Conducted Spurious Emission Plot on Bluetooth LE GFSK Channel 39

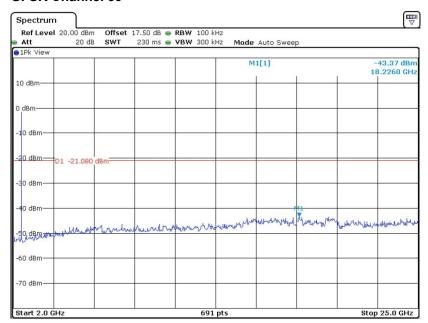


Date: 5.MAY.2013 10:32:06

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Conducted Spurious Emission Plot on Bluetooth LE GFSK Channel 39



Date: 5.MAY.2013 10:32:48

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3.5 Radiated Band Edges and Spurious Emission Measurement

3.5.1 Limit of Radiated Band Edges and Spurious Emission

In any 100 kHz bandwidth outside the intentional radiator frequency band, all harmonics/spurious must be at least 20 dB below the highest emission level within the authorized band. If the output power of this device was measured by spectrum analyzer, the attenuation under this paragraph shall be 30 dB instead of 20 dB. In addition, radiated emissions which fall in the restricted bands must also comply with the FCC section 15.209 limits as below.

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

3.5.2 Measuring Instruments

See list of measuring instruments of this test report.

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3.5.3 Test Procedures

- 1. The testing follows the guidelines in ANSI C63.10-2009 and ANSI C63.4-2003 test site requirement.
- 2. 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. A pre-amp and a high pass filter are used for the test in order to get better signal level.
- 3. The EUT was placed on a turntable with 0.8 meter above ground.
- 4. The EUT was set 3 meters from the interference receiving antenna, which was mounted on the top of a variable height antenna tower.
- 5. Corrected Reading: Antenna Factor + Cable Loss + Read Level - Preamp Factor = Level
- 6. For measurement below 1GHz, If the emission level of the EUT measured by the peak detector is 3 dB lower than the applicable limit, the peak emission level will be reported. Otherwise, the emission measurement will be repeated using the quasi-peak detector and reported.
- 7. Use the following spectrum analyzer settings:
 - (1) Span shall wide enough to fully capture the emission being measured;
 - (2) Set RBW=100 kHz for f < 1 GHz; VBW ≥ RBW; Sweep = auto; Detector function = peak; Trace = max hold;
 - (3) Set RBW = 1 MHz, VBW= 3MHz for $f \ge 1$ GHz for peak measurement. For average measurement:
 - VBW = 10 Hz, when duty cycle is no less than 98 percent.
 - VBW ≥ 1/T, when duty cycle is less than 98 percent where T is the minimum transmission duration over which the transmitter is on and is transmitting at its maximum power control level for the tested mode of operation.

Band	Duty Cycle(%)	T(ms)	1/T(kHz)	VBW Setting	
Bluetooth 4.0 - LE	64.269	0.401	2.491	3kHz	

Note: For average measurement with duty cycle < 98%, use reduced VBW measurement method 4.2.3.2.3 in ANSI C63.10.

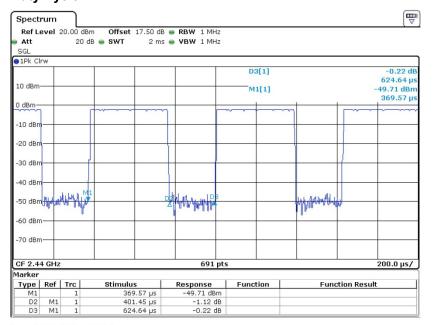
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Duty Cycle



Date: 3.MAY.2013 06:07:51

Note:

The total loss is 17.5dB of the RF cable and attenuator, and has been compensated to the spectrum analyzer by setting into the amplitude level offset. That means the measured result shown on the spectrum analyzer has added the total loss and been compliance with the limit line.

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Marker-Delta method:

(1) Set RBW = 1 MHz, VBW = 3 MHz, peak detector.

Repeat the measurement with an average detector, use RBW = 1MHz

VBW = 10 Hz, when duty cycle is no less than 98 percent.

VBW ≥ 1/T, when duty cycle is less than 98 percent

- (2) Set span = 10MHz, that encompasses both the peak of the fundamental emission and the band-edge emission under investigation. Set RBW = 100kHz, 1% of the total span. Set VBW = 100kHz >= RBW.
- (3) Subtract the delta measured in step (2) from the field strengths measured in step (1). The resultant field strengths (peak/average) are then used to determine band-edge compliance as required by Section 15.205.

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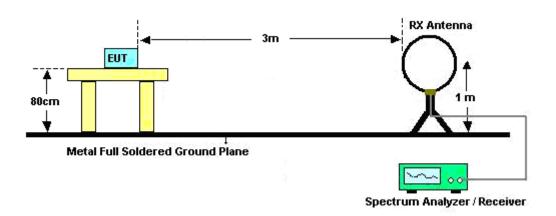
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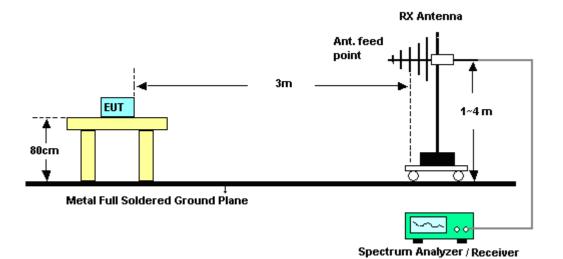


3.5.4 Test Setup

For radiated emissions below 30MHz



For radiated emissions from 30MHz to 1GHz

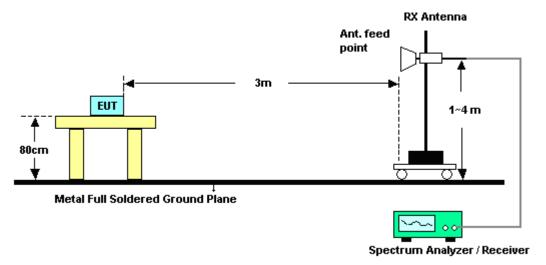


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For radiated emissions above 1GHz



3.5.5 Test Results of Radiated Spurious Emission (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.

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3.5.6 Test Result of Radiated Band Edges

Test Mode :	Mode 1	Temperature :	23~24°C
Test Channel :	00	Relative Humidity :	43~44%
		Test Engineer :	Stone Gu

	ANTENNA POLARITY : HORIZONTAL									
Frequency	Frequency Level Over Limit Read Antenna Cable Preamp Ant Table Remark								Remark	
		Limit	Line	Level	Factor	Loss	Factor	Pos	Pos	
(MHz)	(dBuV/m)	(dB)	(dBuV/m)	(dBuV)	(dB)	(dB)	(dB)	(cm)	(deg)	
2385.78	49.72	-24.28	74	46.26	32.86	2.11	31.51	167	75	Peak
2386.14	38.3	-15.7	54	34.84	32.86	2.11	31.51	167	75	Average

ANTENNA POLARITY : VERTICAL										
Frequency	Level	Over	Limit	Read	Antenna	Cable	Preamp	Ant	Table	Remark
		Limit	Line	Level	Factor	Loss	Factor	Pos	Pos	
(MHz)	(dBuV/m)	(dB)	(dBuV/m)	(dBuV)	(dB)	(dB)	(dB)	(cm)	(deg)	
2386.32	50.73	-23.27	74	47.27	32.86	2.11	31.51	101	143	Peak
2385.78	38.71	-15.29	54	35.25	32.86	2.11	31.51	101	143	Average

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Test Mode :	Mode 3	Temperature :	23~24°C
Test Channel :	39	Relative Humidity :	43~44%
		Test Engineer :	Stone Gu

	ANTENNA POLARITY : HORIZONTAL									
Frequency	Level	Over	Limit	Read	Antenna	Cable	Preamp	Ant	Table	Remark
		Limit	Line	Level	Factor	Loss	Factor	Pos	Pos	
(MHz)	(dBuV/m)	(dB)	(dBuV/m)	(dBuV)	(dB)	(dB)	(dB)	(cm)	(deg)	
2483.5	58.94	-15.06	74	55.28	33.01	2.16	31.51	107	45	Peak
2483.5	55.5	1.5	54	51.84	33.01	2.16	31.51	107	45	Average
2483.5	42.96	-31.04	74	-	-	-	-	-	-	Peak
2483.5	41.63	-12.37	54	-	-	-	-	-	-	Average

Summary results of marker-delta method:

Test mode	Maximum field strength of the fundamental emission (dBμV/m)	Delta Result (dB)	Measurement Result (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Result
Peak	97.55	54.59	42.96	74	-31.04	Pass
Average	96.22	54.59	41.63	54	-12.37	Pass

Note: Measurement result = Maximum field strength – Delta result

	ANTENNA POLARITY: VERTICAL									
Frequency	Level	Over	Limit	Read	Antenna	Cable	Preamp	Ant	Table	Remark
		Limit	Line	Level	Factor	Loss	Factor	Pos	Pos	
(MHz)	(dBuV/m)	(dB)	(dBuV/m)	(dBuV)	(dB)	(dB)	(dB)	(cm)	(deg)	
2483.5	57.31	-16.69	74	53.65	33.01	2.16	31.51	100	115	Peak
2483.5	53.56	-0.44	54	49.9	33.01	2.16	31.51	100	115	Average
2483.5	42.56	-31.44	74	-	-	-	-	-	-	Peak
2483.5	41.72	-12.28	54	-	-	-	-	-	-	Average

Summary results of marker-delta method:

Test mode	Maximum field strength of the fundamental emission (dBμV/m)	Delta Result (dB)	Measurement Result (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Result
Peak	95.6	53.04	42.56	74	-31.44	Pass
Average	94.76	53.04	41.72	54	-12.28	Pass

Note: Measurement result = Maximum field strength – Delta result

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Test Mode: 23~24°C Mode 3 Temperature : 39 Test Channel: **Relative Humidity:** 43~44% Test Engineer: Stone Gu Polarization: Horizontal 120 Level (dBuV/m) 110.0 100.0 90.0 80.0 FCC PART 15C 70.0 60.0 FCC PART 15C (AVG) 50.0 40.0 30.0 20.0 10.0 0^{2476.5} 2481. 2482. 2483.5 2478. 2479. 2480. Frequency (MHz) Site : 03CH01-KS Condition : FCC PART 15C 3m HF ANT-100803 HORIZONTAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Remark MHz dBuV/m dB dBuV/m dBuV dB/m dB dB deg 2.16 31.51 2.16 31.51 45 Peak 45 Average 106 106 Maximum field strength of the fundamental emission

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Test Mode: 23~24°C Mode 3 Temperature : Test Channel: 39 43~44% **Relative Humidity:** Stone Gu Polarization: Horizontal Test Engineer: 120 Level (dBuV/m) 110.0 100.0 90.0 80.0 FCC PART 150 70.0 60.0 50.0 40.0 30.0 20.0 10.0 0<mark>247</mark>6 2477. 2478. 2479. 2480. 2482. 2483. 2484. 2485. 2486 2481. Frequency (MHz) Site : 03CH01-KS Condition : FCC PART 15C 3m HF ANT-100803 HORIZONTAL : RBW:100.000KHz VBW:100.000KHz SWT:Auto Cable Preamp A/Pos T/Pos ReadAntenna Remark Loss Factor MHz dBuV/m dB dBuV/m dBuV dB/m dΒ cm deg 2.16 31.51 2.16 31.51 46 Peak 46 Peak 107 107 Marker-Delta Method (RBW/VBW=100kHz): 54.59 dB, single carrier Mode

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Test Mode: 23~24°C Mode 3 Temperature : Test Channel: 39 43~44% **Relative Humidity:** Test Engineer: Stone Gu Polarization: Vertical 120 Level (dBuV/m) 110.0 100.0 90.0 80.0 FCC PART 150 70.0 60.0 FCC PART 15C (AVG) 50.0 40.0 30.0 20.0 10.0 0^{2476.5} 2482. 2478. 2479. 2483.5 2480. 2481. Frequency (MHz) Site : 03CH01-KS Condition : FCC PART 15C 3m HF ANT-100803 VERTICAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Over Limit ReadAntenna Freq Level Limit Line Level Factor ReadAntenna Cable Preamp A/Pos T/Pos Remark Loss Factor MHz dBuV/m dB dBuV/m dBuV dB/m dB deg cm 2.16 31.51 100 101 Peak 2.16 31.51 101 Average

SPORTON INTERNATIONAL (KUNSHAN) INC.

Maximum field strength of the fundamental emission

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Test Mode: 23~24°C Mode 3 Temperature : Test Channel: 39 43~44% **Relative Humidity:** Stone Gu Polarization: Test Engineer: Vertical 120 Level (dBuV/m) 110.0 100.0 90.0 80.0 70.0 60.0 50.0 40.0 30.0 20.0 10.0 ⁰2476 2477. 2478. 2479. 2481. 2482. 2483. 2484. 2485. 2486 Frequency (MHz) Site : 03CH01-KS Condition : FCC PART 15C 3m HF ANT-100803 VERTICAL : RBW:100.000KHz VBW:100.000KHz SWT:Auto Over Limit ReadAntenna Freq Level Limit Line Level Factor ReadAntenna Cable Preamp A/Pos T/Pos Loss Factor MHz dBuV/m dB dBuV/m dBuV dB/m dB cm deg 2480.00 94.60 20.60 74.00 90.94 2483.50 41.56 -32.44 74.00 37.90 2.16 31.51 2.16 31.51 122 Peak 122 Peak

SPORTON INTERNATIONAL (KUNSHAN) INC.

Marker-Delta Method (RBW/VBW=100kHz): 53.04 dB, single carrier Mode

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3.5.7 Test Result of Radiated Spurious Emission (30 MHz ~ 10th Harmonic)

Note: Below 1GHz for radiated emission measurement, pre-scanned all test modes and only choose the worst case mode was recorded in the report.

Test Mode :	Mode 1		Temperature :	23~24°C				
Test Channel :	00		Relative Humidity :	43~44%				
Test Engineer :	Ston	e Gu	Polarization :	Horizontal				
	2402 MHz is fundamental signal which can be ignored.							
	2. 2399 MHz and 7206 MHz are not within restricted band							
Remark :		are 20dB below the h	ighest emission level.	For example, 94.28 dBuV/m -				
Remark :		20dB = 74.28 dBuV/m.						
	3.	Average measurement was not performed if peak level went lower than the						
		average limit.						

Frequency	Level	Over	Limit	Read	Antenna	Cable	Preamp	Ant	Table	Remark
		Limit	Line	Level	Factor	Loss	Factor	Pos	Pos	
(MHz)	(dBuV/m)	(dB)	(dBuV/m)	(dBuV)	(dB)	(dB)	(dB)	(cm)	(deg)	
2399	61.52	-12.76	74.28	58.06	32.86	2.11	31.51	167	75	Peak
2402	94.28	-	-	90.82	32.86	2.11	31.51	109	309	Peak
2402	93.51	-	-	90.05	32.86	2.11	31.51	109	309	Average
4804	48.69	-25.31	74	41.98	35.17	3.08	31.54	125	23	Peak
7206	50.61	-23.67	74.28	42.17	36.16	3.24	30.96	100	321	Peak

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Test Mode :	Mode 1		Temperature :	23~24°C			
Test Channel :	00		Relative Humidity :	43~44%			
Test Engineer :	Sto	one Gu	Polarization :	Vertical			
	2402 MHz is fundamental signal which can be ignored.						
	2.	2399 MHz and 7206 MH	Iz are not within restric	ted bands, and its limit lines are			
Remark :		20dB below the highest	emission level.				
3. Average measurement was not performed if peak level went lower th							
		average limit.					

Frequency	Level	Over Limit	Limit Line	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Ant Pos	Table Pos	Remark
(MHz)	(dBuV/m)	(dB)	(dBuV/m)		(dB)	(dB)	(dB)	(cm)	(deg)	
2399	61.77	-16.27	78.04	58.31	32.86	2.11	31.51	101	143	Peak
2402	98.04	-	-	94.58	32.86	2.11	31.51	100	125	Peak
2402	97.19	-	-	93.73	32.86	2.11	31.51	100	125	Average
4804	49.38	-24.62	74	42.67	35.17	3.08	31.54	100	230	Peak
7206	50.21	-27.83	78.04	41.77	36.16	3.24	30.96	100	231	Peak

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Test Mode :	Mode 2	Temperature :	23~24°C				
Test Channel :	19	Relative Humidity :	43~44%				
Test Engineer :	Stone Gu	Polarization :	Horizontal				
	1. 2440 MHz is fundament	2440 MHz is fundamental signal which can be ignored.					
Remark :	2. Average measurement	Average measurement was not performed if peak level went lower than the					
	average limit.						

Frequency	Level	Over Limit	Limit Line	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Ant Pos	Table Pos	Remark
(MHz)	(dBuV/m)	(dB)	(dBuV/m)	(dBuV)	(dB)	(dB)	(dB)	(cm)	(deg)	
2440	96.96	-	-	93.38	32.95	2.14	31.51	111	76	Peak
2440	96.18	-	-	92.6	32.95	2.14	31.51	111	76	Average
4880	49.69	-24.31	74	42.91	35.18	3.12	31.52	100	0	Peak
7320	50.04	-23.96	74	41.56	36.21	3.21	30.94	121	68	Peak

Test Mode :	Mode 2	Temperature :	23~24°C				
Test Channel :	19	Relative Humidity :	43~44%				
Test Engineer :	Stone Gu	Polarization :	Vertical				
	1. 2440 MHz is fundament	al signal which can be	ignored.				
Remark :	2. Average measurement	Average measurement was not performed if peak level went lower than the					
	average limit.						

Frequency	Level	Over	Limit	Read	Antenna	Cable	Preamp	Ant	Table	Remark
		Limit	Line	Level	Factor	Loss	Factor	Pos	Pos	
(MHz)	(dBuV/m)	(dB)	(dBuV/m)	(dBuV)	(dB)	(dB)	(dB)	(cm)	(deg)	
2440	97.83	-	-	94.25	32.95	2.14	31.51	125	105	Peak
2440	96.9	-	-	93.32	32.95	2.14	31.51	125	105	Average
4880	47.58	-26.42	74	40.8	35.18	3.12	31.52	215	45	Peak
7320	49.23	-24.77	74	40.75	36.21	3.21	30.94	121	68	Peak

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Test Mode :	Mode 3	Temperature :	23~24°C
Test Channel :	39	Relative Humidity :	43~44%
Test Engineer :	Stone Gu	Polarization :	Horizontal
	1. 2480 MHz is fundament	al signal which can be	ignored.
Remark :	2. Average measurement	was not performed if	peak level went lower than the
	average limit.		

Frequency	Level	Over Limit	Limit Line	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Ant Pos	Table Pos	Remark
(MHz)	(dBuV/m)	(dB)	(dBuV/m)	(dBuV)	(dB)	(dB)	(dB)	(cm)	(deg)	
98.87	32.58	-10.92	43.5	55.29	10.33	0.58	33.62	100	320	Peak
182.29	28.72	-14.78	43.5	53.08	8.42	0.79	33.57	-	-	Peak
265.71	26.14	-19.86	46	46.35	12.27	0.94	33.42	-	-	Peak
556.71	19.18	-26.82	46	32.34	18.51	1.34	33.01	-	-	Peak
835.1	34.16	-11.84	46	44.89	20.35	1.63	32.71	-	-	Peak
941.8	32.55	-13.45	46	42.54	20.7	1.75	32.44	-	-	Peak
2480	97.38	-	-	93.72	33.01	2.16	31.51	106	47	Peak
2480	96.53	-	-	92.87	33.01	2.16	31.51	106	47	Average
4960	47.63	-26.37	74	40.78	35.2	3.16	31.51	100	237	Peak
7440	50.5	-23.5	74	41.97	36.27	3.18	30.92	154	89	Peak

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Test Mode :	Mode 3	Temperature :	23~24°C
Test Channel :	39	Relative Humidity :	43~44%
Test Engineer :	Stone Gu	Polarization :	Vertical
	1. 2480 MHz is fundament	al signal which can be	ignored.
Remark :	2. Average measurement	was not performed if	peak level went lower than the
	average limit.		

Frequency	Level	Over	Limit Line	Read	Antenna	Cable	Preamp	Ant	Table	Remark
(MHz)	(dBuV/m)	Limit (dB)	(dBuV/m)	Level (dBuV)	Factor (dB)	Loss (dB)	Factor (dB)	Pos (cm)	Pos (deg)	
43.58	26.18	-13.82	40	49.36	10.03	0.41	33.62	-	-	Peak
96.93	31.06	-12.44	43.5	54.08	10.03	0.57	33.62	-	-	Peak
128.94	22.4	-21.1	43.5	43.61	11.71	0.67	33.59	-	-	Peak
170.65	20.98	-22.52	43.5	44.65	9.14	0.76	33.57	-	-	Peak
835.1	36.31	-9.69	46	47.04	20.35	1.63	32.71	125	49	Peak
941.8	33.42	-12.58	46	43.41	20.7	1.75	32.44	-	-	Peak
2480	96.78	-	-	93.12	33.01	2.16	31.51	100	104	Peak
2480	95.98	-	-	92.32	33.01	2.16	31.51	100	104	Average
4960	47.83	-26.17	74	40.98	35.2	3.16	31.51	100	326	Peak
7440	49.69	-24.31	74	41.16	36.27	3.18	30.92	100	234	Peak

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3.6 **AC Conducted Emission Measurement**

3.6.1 **Limit 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 (MUz)	Conducted limit (dBuV)				
Frequency of emission (MHz)	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.

3.6.2 Measuring Instruments

See list of measuring instruments of this test report.

3.6.3 **Test Procedures**

- 1. The testing follows the guidelines in ANSI C63.10-2009 and ANSI C63.4-2003 test site requirement.
- 2. 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.
- 3. Connect EUT to the power mains through a line impedance stabilization network (LISN).
- 4. All the support units are connecting to the other LISN.
- 5. The LISN provides 50 ohm coupling impedance for the measuring instrument.
- 6. The FCC states that a 50 ohm, 50 microhenry LISN should be used.
- 7. Both sides of AC line were checked for maximum conducted interference.
- 8. The frequency range from 150 kHz to 30 MHz was searched.
- 9. Set the test-receiver system to Peak Detect Function and specified bandwidth with Maximum Hold Mode.

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3.6.4 Test Setup



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3.6.5 Test Result of AC Conducted Emission

Test Mode :	Mode 1				Temperature :			24~25 °C		
Test Engineer :	Leo Liao			Rel	ative H	umidity :	50~5	50~51%		
Гest Voltage :	120Vac /	60Hz		Pha	se:		Line	Line		
Function Type :	GSM850 + Earpho		Bluetooth	h Link +	WLAN	Link + US	SB Cab	le (Charging	from Adap	
Remark :	All emiss	ions no	t reporte	ed here a	ere are more than 10 dB below the prescribed li					
100L	evel (dBuV)	(dBuV) Date: 2013-05-09 Time: 15:15:28								
90										
80										
70										
-								FCC 15C_Q	P	
60	_							Mark Control of Nation		
50	-	AA-						FCC 15C_AV	6	
40	May 1	1 3 m. pu	Market Market	Mary Mary Mary Mary	had			, N	A. C	
57900	AW.MA	MA	V S	10. 4	Variation that	hypotherisa na	Market Walter	Mary property (1942)	1 ₹/	
30		9		*				1	1	
20	-									
							12 (01/50)			
20 10										
10	5 .2	.5	1		2	5	10	20	30	
10 0.1			1		2 ency (MHz)	7.5	10	20	30	
10 0.1 Site	5 .2 : COO1-S n: FCC 15	Z		Frequ	ency (MHz)	7.5	10	20	30	
10 0.1 Site	: C001-S	Z	SN_L_2000	Frequ	ency (MHz)	7.5	10	20	30	
10 0.1 Site	: C001-S n: FCC 15	Z C_QP LI:	SN_L_2000	Frequ	ency (MHz)	LISN	Cable		30	
10 0.1 Site	: C001-S n: FCC 15	Z C_QP LI:	SN_L_2000	Frequ	ency (MHz))	Cable	20 Remark	30	
10 0.1 Site	: C001-S n: FCC 15	Z C_QP LI:	SN_L_2000	Frequ	ency (MHz)	LISN	Cable		30	
10 0.1 Site	: C001-S n: FCC 15 Freq	Z C_QP LI: Level	SN_L_2000 Over Limit	Frequence of the frequency of the freque	Read Level	LISN Factor	Cable Loss dB		30	
10 0.1 Site Conditio	: C001-S n: FCC 15 Freq MHz	Z C_QP LI: Level dBuV 37.69	Over Limit dB	Frequence of the frequency of the freque	Read Level dBuV	LISN Factor dB 0.02 0.02	Cable Loss dB 10.07 10.07	Remark Average QP	30	
10 0.1 Site Conditio	: C001-S n: FCC 15 Freq MHz 0.34 0.34 0.38	Z C_QP LI: dBuV 37.69 45.79 37.30	Over Limit dB -11.49 -13.39 -11.09	Limit Line dBuV 49.18 59.18 48.39	Read Level dBuV 27.60 35.70 27.21	LISN Factor dB 0.02 0.02 0.02 0.02	Cable Loss dB 10.07 10.07 10.07	Remark Average QP Average	30	
10 0.1 Site Conditio	: C001-S n: FCC 15 Freq MHz 0.34 0.34 0.38 0.38	Z C_QF LI: dBuV 37.69 45.79 37.30 44.70	Over Limit dB -11.49 -13.39 -11.09 -13.69	Limit Line dBuV 49.18 59.18 48.39 58.39	Read Level dBuV 27.60 35.70 27.21 34.61	LISN Factor dB 0.02 0.02 0.02 0.02 0.02	Cable Loss dB 10.07 10.07 10.07 10.07	Remark Average QP Average QP	30	
10 0.1 Site Conditio	: C001-S n: FCC 15 Freq MHz 0.34 0.34 0.38 0.38 0.52	Z C_QP LI: dBuV 37.69 45.79 37.30 44.70 27.11	Over Limit dB -11.49 -13.39 -11.09 -13.69 -18.89	Limit Line dBuV 49.18 59.18 48.39 58.39 46.00	Read Level dBuV 27.60 35.70 27.21 34.61 17.00	LISN Factor dB 0.02 0.02 0.02 0.02 0.02 0.02 0.02	Cable Loss dB 10.07 10.07 10.07 10.07 10.07	Remark Average QP Average QP Average	30	
10 0.1 Site Conditio	: C001-S n: FCC 15 Freq MHz 0.34 0.34 0.38 0.38 0.52 0.52	Z C_QP LI: dBuV 37.69 45.79 37.30 44.70 27.11 35.91	Over Limit dB -11.49 -13.39 -11.09 -13.69 -18.89 -20.09	Limit Line dBuV 49.18 59.18 48.39 58.39 46.00 56.00	Read Level dBuV 27.60 35.70 27.21 34.61 17.00 25.80	LISN Factor dB 0.02 0.02 0.02 0.02 0.02 0.02 0.02 0.0	Cable Loss dB 10.07 10.07 10.07 10.07 10.09 10.09	Remark Average QP Average QP Average QP	30	
10 0.1 Site Conditio	: C001-S n: FCC 15 Freq MHz 0.34 0.34 0.38 0.38 0.52 0.52 0.88	Z C_QF LI: dBuV 37.69 45.79 37.30 44.70 27.11 35.91 26.93	Over Limit dB -11.49 -13.39 -11.09 -13.69 -18.89 -20.09 -19.07	Limit Line dBuV 49.18 59.18 48.39 58.39 46.00 56.00 46.00	Read Level dBuV 27.60 35.70 27.21 34.61 17.00 25.80 16.80	LISN Factor dB 0.02 0.02 0.02 0.02 0.02 0.02 0.02 0.	Cable Loss dB 10.07 10.07 10.07 10.09 10.09 10.11	Remark Average QP Average QP Average QP Average	30	
10 0.1 Site Conditio	: C001-S n: FCC 15 Freq MHz 0.34 0.34 0.38 0.38 0.52 0.52 0.88 0.88	Z C_QF LI: dBuV 37.69 45.79 37.30 44.70 27.11 35.91 26.93 35.03	Over Limit dB -11.49 -13.39 -11.09 -13.69 -18.89 -20.09 -19.07 -20.97	D601 LIN Limit Line dBuV 49.18 59.18 48.39 58.39 46.00 56.00 46.00 56.00	Read Level dBuV 27.60 35.70 27.21 34.61 17.00 25.80 16.80 24.90	LISN Factor dB 0.02 0.02 0.02 0.02 0.02 0.02 0.02 0.	Cable Loss dB 10.07 10.07 10.07 10.09 10.09 10.11 10.11	Remark Average QP Average QP Average QP Average QP Average QP	30	
10 0.1 Site Conditio	: C001-S n: FCC 15 Freq MHz 0.34 0.34 0.38 0.52 0.52 0.88 0.88 1.38	Z C_QF LI: dBuV 37.69 45.79 37.30 44.70 27.11 35.91 26.93 35.03 27.35	Over Limit dB -11.49 -13.39 -11.09 -18.89 -20.09 -19.07 -20.97 -18.65	D601 LIN Limit Line dBuV 49.18 59.18 48.39 58.39 46.00 56.00 46.00 56.00	Read Level dBuV 27.60 35.70 27.21 34.61 17.00 25.80 16.80 24.90 17.20	LISN Factor dB 0.02 0.02 0.02 0.02 0.02 0.02 0.02 0.	Cable Loss dB 10.07 10.07 10.07 10.09 10.09 10.11 10.11 10.12	Remark Average QP Average QP Average QP Average QP Average	30	
10 0.1 Site Conditio	: C001-S n: FCC 15 Freq MHz 0.34 0.38 0.38 0.52 0.52 0.88 0.88 1.38	Z C_QP LI: dBuV 37.69 45.79 37.30 44.70 27.11 35.91 26.93 35.03 27.35 34.85	Over Limit dB -11.49 -13.39 -11.09 -13.69 -18.69 -20.09 -19.07 -20.97 -18.65 -21.15	Limit Line dBuV 49.18 59.18 48.39 58.39 46.00 56.00 46.00 56.00 56.00	Read Level dBuV 27.60 35.70 27.21 34.61 17.00 25.80 16.80 24.90 17.20 24.70	LISN Factor dB 0.02 0.02 0.02 0.02 0.02 0.02 0.02 0.	Cable Loss dB 10.07 10.07 10.07 10.09 10.09 10.11 10.11 10.12 10.12	Remark Average QP Average QP Average QP Average QP Average	30	

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Test Mode:	livio	Mode 1			iei	Temperature :			24~25℃		
Test Engineer	: Lec	Liao			Rel	ative H	umidity	: 50~5	50~51%		
Test Voltage :	120)Vac/	60Hz		Pha	ase :		Neut	Neutral		
Function Type		GSM850 Idle + Bluetooth Li + Earphone			th Link +	k + WLAN Link + USB Cab			le (Charç	ging fro	m Ada
Remark :	All	emiss	ions no	t report	ed here	ere are more than 10 dB below the pre				rescrib	ed lim
	00 Level (dBuV)					Da	te: 2013-0	013-05-09 Time: 15:08:26		
	90										
	80		40.00								
	70										
	-	_							FCC 1	5C_QP	
	60		-						Land or the		
	50	-	A						FCC 15	C_AVG	
	MANY	- /	3 4 12	Mary Now	andre.	and .				0.	
	40	كرم إخريها	MM	M. S. M.	10 12 12	Jan Harman	mark and the market with	My My	Jan Varyan Vanna	V~V\	
	30		D D		9 11	7 0		Anna man		100	
	20										
	20										
	20										
			.5		1 Frequ	2 iency (MHz	5	10) 2	0 30	
Site Condi	10 0.15 .2	C001-S	Z	SN_N_200		iency (MHz)			2	0 30	
	10 0.15 .2 : C	FCC 15	Z C_QP LI:	SN_N_200	Frequence of the Frequency of the Freque	rency (MHz) TRAL Read)	Cable	2 Remark	0 30	
	10 0.15 .2 : C	FCC 15	Z C_QP LI:	SN_N_200	Frequence of the Control of the Cont	rency (MHz) TRAL Read	lisn	Cable		20 30	
	10 0.15 .2 : C tion: F	FCC 15	Z C_QP LI: Level	SN_N_200 Over Limit	Frequency Limit Line	TRAL Read Level	LISN Factor	Cable Loss dB	Remark		
Condi	10 0.15 .2 : Ction: F	Freq MHz	Z C_QP LI: Level dBuV 41.38	SN_N_200 Over Limit	Frequency Limit Line dBuV 49.40	TRAL Read Level dBuV	LISN Factor dB	Cable Loss dB	Remark		
Condi	10 0.15 .2 : Ction: F	Freq MHz 0.33	Z C_QP LI: Level dBuV 41.38 48.28	Over Limit dB -8.02	Limit Line dBuV 49.40 59.40	Read Level dBuV 31.29 38.19	LISN Factor dB 0.02 0.02	Cable Loss dB 10.07 10.07	Remark		
1 2 3	10 0.15 .2 : Ction: F	Freq MHz 0.33 0.33	Z C_QF LI: dBuV 41.38 48.28 40.89	Over Limit dB -8.02	Limit Line dBuV 49.40 59.40 48.47	Read Level dBuV 31.29 38.19 30.80	LISN Factor dB 0.02 0.02 0.02 0.02	Cable Loss dB 10.07 10.07	Remark Average QP Average		
1 2 3 4 5	10 0.15 .2 : C.tion: F	Freq MHz 0.33 0.33 0.37 0.37	Z C_QP LI: dBuV 41.38 48.28 40.89 48.39 30.30	Over Limit dB -8.02 -11.12 -7.58 -10.08 -15.70	Limit Line dBuV 49.40 59.40 48.47 58.47 46.00	Read Level dBuV 31.29 38.19 30.80 38.30 20.19	LISN Factor dB 0.02 0.02 0.02 0.02 0.02 0.02	Cable Loss dB 10.07 10.07 10.07 10.07	Remark Average QP Average QP Average		
1 2 3 4 5	10 0.15 .2 : C.tion: F	Freq MHz 0.33 0.37 0.37 0.52 0.52	Z C_QP LI: dBuV 41.38 48.28 40.89 48.39 30.30 39.70	Over Limit dB -8.02 -11.12 -7.58 -10.08 -15.70 -16.30	Limit Line dBuV 49.40 59.40 48.47 58.47 46.00 56.00	Read Level dBuV 31.29 38.19 30.80 38.30 20.19 29.59	LISN Factor dB 0.02 0.02 0.02 0.02 0.02 0.02 0.02 0.	Cable Loss dB 10.07 10.07 10.07 10.09 10.09	Average QP Average QP Average QP		
1 2 3 4 5 6	10 0.15 .2 : C.tion: F	Freq MHz 0.33 0.37 0.37 0.52 0.52 0.80	Z C_QP LI: dBuV 41.38 48.28 40.89 48.39 30.30 39.70 29.93	Over Limit dB -8.02 -11.12 -7.58 -10.08 -15.70 -16.30 -16.07	Limit Line dBuV 49.40 59.40 48.47 58.47 46.00 56.00 46.00	Read Level dBuV 31.29 38.19 30.80 38.30 20.19 29.59 19.80	LISN Factor dB 0.02 0.02 0.02 0.02 0.02 0.02 0.02 0.	Cable Loss dB 10.07 10.07 10.07 10.09 10.09 10.11	Average QP Average QP Average QP Average QP Average		
1 2 3 4 5 6 7 8	10 0.15 .2 : Ction: F	Freq MHz 0.33 0.37 0.37 0.52 0.52 0.80 0.80	Z C_QP LI: dBuV 41.38 48.28 40.89 48.39 30.30 39.70 29.93 37.73	Over Limit dB -8.02 -11.12 -7.58 -10.08 -15.70 -16.30 -16.07 -18.27	Limit Line dBuV 49.40 59.40 48.47 46.00 56.00 46.00 56.00	Read Level dBuV 31.29 30.80 38.19 30.80 20.19 29.59 19.80 27.60	LISN Factor dB 0.02 0.02 0.02 0.02 0.02 0.02 0.02 0.	Cable Loss dB 10.07 10.07 10.07 10.09 10.09 10.11	Average QP Average QP Average QP Average QP		
1 2 3 4 5 6 7 8	10 0.15 .2 : C tion: F	Freq MHz 0.33 0.37 0.37 0.52 0.52 0.80 0.80	Z C_QP LI: dBuV 41.38 48.28 40.89 48.39 30.30 39.70 29.93 37.73 29.14	Over Limit dB -8.02 -11.12 -7.58 -10.08 -15.70 -16.30 -16.07 -18.27 -16.86	Limit Line dBuV 49.40 59.40 48.47 56.00 46.00 56.00 46.00	Read Level dBuV 31.29 38.19 30.80 38.30 20.19 29.59 19.80 27.60 19.01	LISN Factor dB 0.02 0.02 0.02 0.02 0.02 0.02 0.02 0.	Cable Loss dB 10.07 10.07 10.07 10.09 10.11 10.11	Average QP Average QP Average QP Average QP Average QP Average		
1 2 3 4 5 6 7 8 9	10 0.15 .2 : Ction: F	Freq MHz 0.33 0.37 0.52 0.52 0.80 0.80 1.03 1.03	Z C_QP LI: dBuV 41.38 48.28 40.89 30.30 39.70 29.93 37.73 29.14 37.44	Over Limit dB -8.02 -11.12 -7.58 -10.08 -15.70 -16.30 -16.30 -16.30	Limit Line dBuV 49.40 59.40 48.47 46.00 56.00 46.00 56.00 56.00	Read Level dBuV 31.29 38.19 30.80 38.30 20.19 29.59 19.80 27.60 19.01 27.31	LISN Factor dB 0.02 0.02 0.02 0.02 0.02 0.02 0.02 0.	Cable Loss dB 10.07 10.07 10.07 10.09 10.11 10.11 10.11	Remark Average QP Average QP Average QP Average QP Average QP		
1 2 3 4 5 6 7 8	10 0.15 .2 : Ction: F	Freq MHz 0.33 0.37 0.37 0.52 0.52 0.80 0.80 1.03 1.03 1.26	Z C_QP LI: dBuV 41.38 48.28 40.89 48.39 30.30 39.70 29.93 37.73 29.14 37.44 29.05	Over Limit dB -8.02 -11.12 -7.58 -10.08 -15.70 -16.30 -16.07 -18.27 -16.86 -18.56 -16.95	Limit Line dBuV 49.40 59.40 48.47 46.00 56.00 46.00 56.00 46.00 56.00	Read Level dBuV 31.29 38.19 30.80 38.30 20.19 29.59 19.80 27.60 19.01 27.31 18.91	LISN Factor dB 0.02 0.02 0.02 0.02 0.02 0.02 0.02 0.	Cable Loss dB 10.07 10.07 10.07 10.09 10.11 10.11 10.11 10.11 10.12	Average QP Average QP Average QP Average QP Average QP Average		

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3.7 **Antenna Requirements**

3.7.1 **Standard Applicable**

If directional gain of transmitting antennas is greater than 6dBi, the power shall be reduced by the same level in dB comparing to gain minus 6dBi. The use of a permanently attached antenna or of an antenna that uses a unique coupling to the intentional radiator shall be considered sufficient to comply with the FCC rule.

3.7.2 Antenna Connected Construction

Non-standard connector used.

3.7.3 Antenna Gain

The antenna peak gain of EUT is less than 6 dBi. Therefore, it is not necessary to reduce maximum peak output power limit.

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4 List of Measuring Equipment

Instrument	Manufacturer	Model No.	Serial No.	Characteristics	Calibration Date	Test Date	Due Date	Remark
Spectrum Analyzer	R&S	FSP30	101400	9kHz~30GHz	Jun. 01, 2012	May 05, 2013	May 31, 2013	Conducted (TH01-SZ)
Power meter	Anritsu	ML2495A	1218010	N/A	Mar. 28, 2013	May 05, 2013	Mar. 27, 2014	Conducted (TH01-SZ)
Power Senso	Anritsu	MA2411B	1207253	N/A	Mar. 28, 2013	May 05, 2013	Mar. 27, 2014	Conducted (TH01-SZ)
EMI Test Receiver	R&S	ESCI	100534	9kHz~3GHz	Nov. 08, 2012	May 09, 2013	Nov. 07, 2013	Radiation (03CH01-KS)
Spectrum Analyzer	R&S	FSP30	100400	9kHz~30GHz	Jun. 01, 2012	May 09, 2013	May 31, 2013	Radiation (03CH01-KS)
Bilog Antenna	SCHAFFNER	CBL6112D	23182	25MHz~2GHz	Dec. 07, 2012	May 09, 2013	Dec. 06, 2013	Radiation (03CH01-KS)
HFH2-Z2 Loop Antenna	R&S	HFH2-Z2	100321	9kHZ-30MHZ	Oct. 22, 2012	May 09, 2013	Oct. 21, 2013	Radiation (03CH01-KS)
Double Ridge Horn Antenna	ETS-Lindgren	1908/7/13	00075957	1GHz~18GHz	Dec. 07, 2012	May 09, 2013	Dec. 06, 2013	Radiation (03CH01-KS)
Amplifier	com-power	PA-103A	161069	1MHz~1GHz	Jun. 01, 2012	May 09, 2013	May 31, 2013	Radiation (03CH01-KS)
Amplifier	Agilent	8449B	3008A02370	1GHz~26.5GHz	Dec. 29, 2012	May 09, 2013	Dec. 28, 2013	Radiation (03CH01-KS)
Active Horn Antenna	com-power	AHA-118	701023	1GHz~18GHz	Nov. 07, 2012	May 09, 2013	Nov. 06, 2013	Radiation (03CH01-KS)
SHF-EHF Horn	Schwarzbeck	BBHA 9170	9170249	15GHz~40GHz	Nov. 23, 2012	May 09, 2013	Nov. 22, 2013	Radiation (03CH01-KS)
ESCIO TEST Receiver	R&S	1142.8007.0	100724	9kHz -3GHz	Mar. 28, 2013	May 09, 2013	Mar. 27, 2014	Conduction (CO01-SZ)
AC LISN	ETS-LINDGRE N	3816/2SH	00103912	9kHz~30MHz	Mar. 28, 2013	May 09, 2013	Mar. 27, 2014	Conduction (CO01-SZ)
AC LISN	ETS-LINDGRE N	3816/2SH	00103892	9kHz~30MHz	Mar. 28, 2013	May 09, 2013	Mar. 27, 2014	Conduction (CO01-SZ)
AC Source	Chroma	61602	616020000891	N/A	Nov.20, 2012	May 09, 2013	Nov. 19, 2013	Conduction (CO01-SZ)

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Uncertainty of Evaluation 5

Uncertainty of Conducted Emission Measurement (150 kHz ~ 30 MHz)

Measuring Uncertainty for a Level of Confidence	2.26
of 95% (U = 2Uc(y))	2.20

<u>Uncertainty of Radiated Emission Measurement (30 MHz ~ 1000 MHz)</u>

Measuring Uncertainty for a Level of Confidence	2.54
of 95% (U = 2Uc(y))	2.54

<u>Uncertainty of Radiated Emission Measurement (1 GHz ~ 40 GHz)</u>

Measuring Uncertainty for a Level of Confidence	4.70
of 95% (U = 2Uc(y))	4.72

SPORTON INTERNATIONAL (KUNSHAN) INC.

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Appendix A. Photographs of EUT

Please refer to Sporton report number EP342511 as below.

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