

Report No. : FC421401

FCC Test Report

APPLICANT : Brightstar Corporation

EQUIPMENT: Mobile Phone

BRAND NAME : Avvio

MODEL NAME : Avvio 295S/Avvio 295 MARKETING NAME : Avvio 295S/Avvio 295

FCC ID : WVBA295X

STANDARD : FCC 47 CFR FCC Part 15 Subpart B

CLASSIFICATION: Certification

The product was received on Feb. 14, 2014 and testing was completed on Mar. 04, 2014. We, SPORTON INTERNATIONAL (SHENZHEN) 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 to be compliant with the applicable technical standards.

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

Reviewed by: Louis Wu / Manager

Louis Win

Approved by: Jones Tsai / Manager

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SPORTON INTERNATIONAL (SHENZHEN) INC.

No. 3 Building, the third floor of south, Shahe River west, Fengzeyuan warehouse, Nanshan District, Shenzhen, Guangdong, P.R.C.

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Testing Laboratory



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REVISION HISTORY

REPORT NO.	VERSION	DESCRIPTION	ISSUED DATE
FC421401	Rev. 01	Initial issue of report	Mar. 05, 2014

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SUMMARY OF TEST RESULT

Report Section	FCC Rule	Description	Limit	Result	Remark
					Under limit
3.1	15.107	AC Conducted Emission	< 15.107 limits	PASS	6.41 dB at
					0.440 MHz
					Under limit
3.2	15.109	Radiated Emission	< 15.109 limits	PASS	3.29 dB at
					408.300 MHz

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1. General Description

1.1. Applicant

Brightstar Corporation

9725 NW 117th Ave., Miami, Florida, FL 33178, United States

1.2. Manufacturer

KCMobile Co., Ltd.

#502, Ace techno tower 8th, 191-7 Guro-dong, Guro-Gu, Seoul, South Korea

1.3. Feature of Equipment Under Test

	Product Feature
Equipment	Mobile Phone
Brand Name	Avvio
Model Name	Avvio 295S/Avvio 295
Marketing Name	Avvio 295S/Avvio 295
FCC ID	WVBA295X
EUT supports Radios application	GSM/GPRS/Bluetooth v2.1 + EDR
HW Version	V1.01
SW Version	6531D_C121I_KCM_K1_QQVGA_32X32_M1_V10
EUT Stage	Production Unit

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Remark:

- 1. The above EUT's information was declared by manufacturer. Please refer to the specifications or user's manual for more detailed description.
- 2. There are two different types of EUT. They are single SIM card mobile (Model Name: Avvio 295) and dual SIM card mobile (Model Name: Avvio 295S). The others are the same including circuit design, PCB board, structure and all components. It is special to declare. After pre-scan two types of EUT, we found test result of the sample that dual SIM (Model Name: Avvio 295S) was the worst, so we choose dual SIM card mobile to perform all test.

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1.4. Product Specification of Equipment Under Test

Product Specif	ication subjective to this standard
	GSM850 : 824.2 MHz ~ 848.8 MHz
Tx Frequency	GSM1900 : 1850.2 MHz ~ 1909.8MHz
	Bluetooth: 2402 MHz ~ 2480 MHz
	GSM850 : 869.2 MHz ~ 893.8 MHz
Rx Frequency	GSM1900 : 1930.2 MHz ~ 1989.8 MHz
	Bluetooth: 2402 MHz ~ 2480 MHz
Antonno Tymo	WWAN: PIFA Antenna
Antenna Type	Bluetooth : Monopole Antenna
	GSM: GMSK
	GPRS: GMSK
Type of Modulation	Bluetooth v2.1 BR (1Mbps) : GFSK
	Bluetooth v2.1 EDR (2Mbps) : π/4-DQPSK
	Bluetooth v2.1 EDR (3Mbps) : 8-DPSK

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1.5. Modification of EUT

No modifications are made to the EUT during all test items.

1.6. 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				
Toot Site No	Sporton Site No.	FCC Registration No.			
Test Site No.	CO01-KS 149928				

Test Site	SPORTON INTERNATIONAL (SHENZHEN)	INC.			
Test Site Location	No. 3 Building, the third floor of south, Shahe River west, Fengzeyuan warehouse, Nanshan District, Shenzhen, Guangdong, P.R.C.				
	TEL: +86-755- 3320-2398				
Test Site No.	Sporton Site No.	FCC Registration No.			
rest site No.	03CH01-SZ	831040			

1.7. 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

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

 ${\it SPORTON\ INTERNATIONAL\ (SHENZHEN)\ INC.}$

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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.

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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.

		Те	st Condition	on
Item	EUT Configuration	EMI AC	EMI RE<1G	EMI RE≥1G
1.	Operating Mode (EUT with earphone)	Note 1	\boxtimes	Note 1
2.	Charging Mode (EUT with adapter)	\boxtimes	\boxtimes	Note 1
3.	Data application transferred mode	\boxtimes	\boxtimes	\boxtimes
	(EUT connected with notebook)			

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 3.

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Test Items	EUT Configure Mode	Function Type
		Mode 1: GSM850 Idle + Adapter + Bluetooth Idle + Camera for SIM1 <fig.1></fig.1>
AC Conducted Emission	2/3	Mode 2: GSM1900 Idle + Adapter + Bluetooth Idle + MPEG4 for SIM1 <fig.1></fig.1>
		Mode 3: GSM850 Idle + USB Cable (Data Link with Notebook) + Bluetooth Idle for SIM1 <fig.2></fig.2>
		Mode 1: GSM850 Idle + Adapter + Bluetooth Idle + Camera for SIM1 <fig.1></fig.1>
Radiated Emissions < 1GHz	1/2/3	Mode 2: GSM1900 Idle + Earphone + Bluetooth Idle + MPEG4 for SIM1 <fig.3></fig.3>
		Mode 3: GSM850 Idle + USB Cable (Data Link with Notebook) + Bluetooth Idle for SIM1 <fig.2></fig.2>
Radiated Emissions ≥ 1GHz	3	Mode 1: GSM850 Idle + USB Cable (Data Link with Notebook) + Bluetooth Idle for SIM1 <fig.2></fig.2>

Remark:

- The worst case of AC is mode 2, and the USB Link Mode of RE is mode 3, the test data of these modes are reported.
- 2. The worst case of RE < 1G is mode 3; only the test data of this mode was reported.
- 3. Link with Notebook means data application transferred mode between EUT and Notebook.

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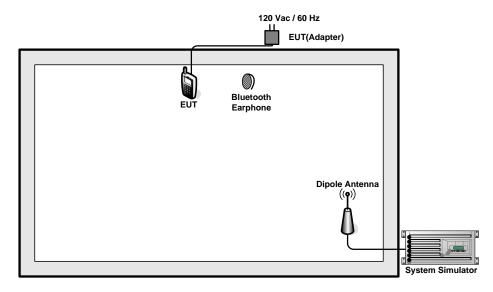
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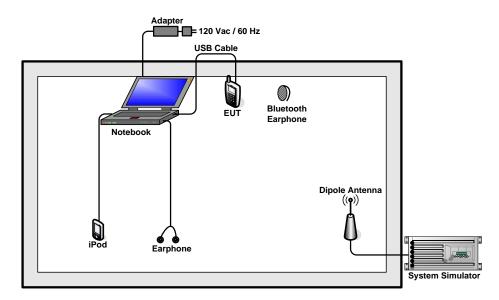


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2.2. Connection Diagram of Test System



<Fig.1>

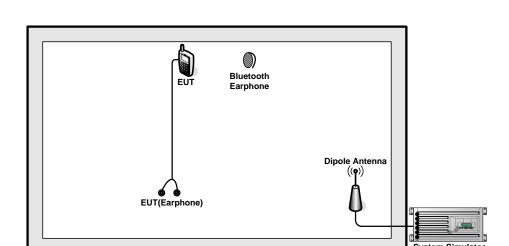


<Fig.2>

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<Fig.3>

2.3. Support Unit used in test configuration and system

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.	System Simulator	R&S	CMW 500	N/A	N/A	Unshielded, 1.8 m
3.	Bluetooth Earphone	Nokia	BH-106	QTLBH-106	N/A	N/A
4.	Bluetooth Earphone	Nokia	BH-108	PYAHS-107W	N/A	N/A
5.	Notebook	Lenovo	G480	N/A	N/A	AC I/P: Unshielded, 0.9 m DC O/P: Shielded, 1.8 m
6.	iPod	Apple	A1199	FCC DoC	Shielded, 1.2 m	N/A
7.	Earphone	Lenovo	SH100	N/A	Unshielded, 1.2 m	N/A
8.	USB Cable	N/A	N/A	N/A	N/A	N/A

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2.4. EUT Operation Test Setup

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

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

- 1. Execute the program, "Winthrax" under WIN7 installed in notebook for files transfer with EUT via USB cable.
- 2. Execute "Windows Media Player" to play MPEG4 files.
- 3. 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

^{*}Decreases with the logarithm of the frequency.

3.1.2 Measuring Instruments

The measuring equipment is listed in the section 4 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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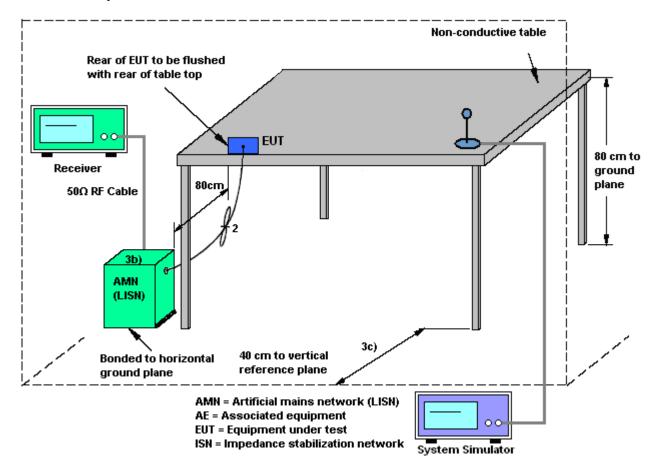
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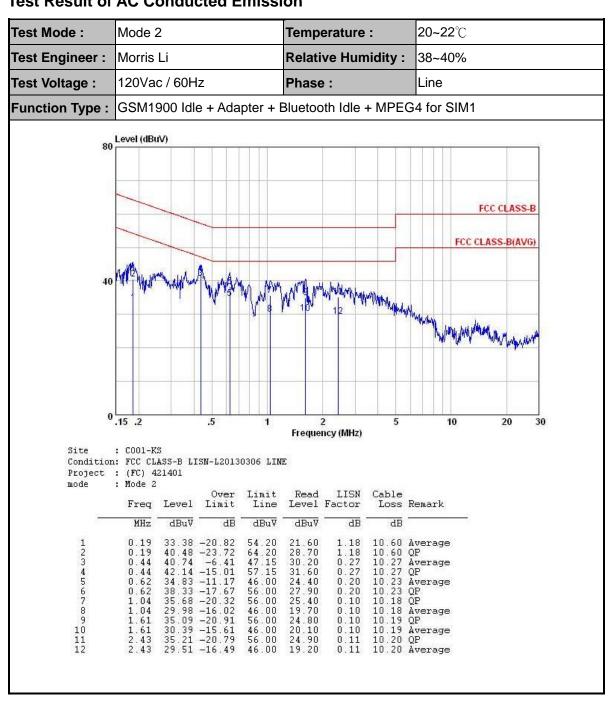
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3.1.4 Test Setup



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3.1.5 Test Result of AC Conducted Emission



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est Mode :	Mode 2	2		Temp	erature	:	20~22	2 ℃	
est Engineer :	Morris	Li		Relati	ve Hun	nidity :	38~40)%	
est Voltage :	120Va	c / 60Hz		Phase	:		Neutr	al	
unction Type :	GSM19	900 Idle + Ada	apter + I	Sluetod	oth Idle	+ MPE	G4 for S	SIM1	
80	Level (dBu			hhpadap ⁿ	and Market And	A Charles Annual Control of the Cont	APANTANA kan	FCC CLASS-B(I	AVG)
					10 1b		W YW	KAN LANAMAN	A HAY
Site	.15 .2 : C001-K:		1	Freque	2 ncy (MHz)	5		0 20	30
Site Condition Project	: C001-K: : FCC CL: : (FC) 4: : Mode 2	s ASS-B LISN-N2013 21401 Over	1	Freque TRAL Read	2	5 Cable			
Site Condition Project	: C001-K: : FCC CL: : (FC) 4: : Mode 2	S ASS-B LISN-N2013 21401	1 80306 NEU Limit	Freque TRAL Read	2 ncy (MHz)	5 Cable	1		

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20~22°℃ Test Mode: Mode 3 Temperature: **Relative Humidity:** 38~40% Test Engineer: Morris Li 120Vac / 60Hz Test Voltage: Phase: Line Function Type: GSM850 Idle + USB Cable (Data Link with Notebook) + Bluetooth Idle for SIM1 80 Level (dBuV) FCC CLASS-B FCC CLASS-B(AVG) 0 .15 .2 .5 1 5 10 20 30 Frequency (MHz) Site : C001-KS Condition: FCC CLASS-B LISN-L20130306 LINE Project : (FC) 421401 : Mode 3 mode Over Limit Read LISN Cable Freq Level Limit Line Level Factor Loss Remark MHz dBuV dB dBuV dB dB dBuV 39.42 -26.45 36.32 -19.55 30.41 -26.26 21.31 -25.36 29.49 -26.51 25.09 -20.91 26.79 -19.21 31.09 -24.91 35.87 -24.13 32.07 -17.93 35.28 -24.72 33.28 -16.72 10.70 QF 10.70 Average 10.27 QP 10.27 Average 10.19 QP 10.19 Average 10.19 QP 10.27 QP 10.27 Average 10.28 QP 10.28 Average 65.87 55.87 56.67 46.67 56.00 46.00 56.00 60.00 26 .81 23 .71 19 .90 10 .80 19 .20 14 .80 16 .50 20 .80 25 .40 21 .60 24 .80 22 .80 0.15 0.46 0.46 1.50 1.50 2.07 2.07 5.39 5.39 5.87 1 2 3 4 5 6 7 8 9 10 1.91 0.24 0.24 0.10 0.10 0.10 0.20 0.20 0.20

60.00 50.00

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20~22℃ Test Mode: Mode 3 Temperature: **Relative Humidity:** 38~40% Test Engineer: Morris Li 120Vac / 60Hz Test Voltage: Phase: Neutral Function Type: GSM850 Idle + USB Cable (Data Link with Notebook) + Bluetooth Idle for SIM1 80 Level (dBuV) FCC CLASS-B FCC CLASS-B(AVG) 0 .15 .2 .5 5 10 20 30 Frequency (MHz) Site : C001-KS Condition: FCC CLASS-B LISN-N20130306 NEUTRAL Project : (FC) 421401 mode : Mode 3 Over Limit Read LISN Cable Freq Level Limit Line Level Factor Loss Remark dBuV MHz dB dBuV dBuV dB dB 36.60 -18.83 41.80 -23.63 35.75 -25.63 28.15 -23.23 29.12 -19.09 35.12 -23.09 29.19 -16.81 34.39 -21.61 34.21 -21.79 29.71 -16.29 38.68 -21.32 35.08 -14.92 10.67 Average 10.67 QP 10.48 QP 10.48 Average 10.29 Average 10.29 QP 10.19 Average 10.19 QP 10.20 QP 10.20 QP 10.20 Average 10.28 QP 24.20 29.40 24.41 16.81 1.73 1.73 0.86 0.86 0.43 0.10 0.10 0.11 0.11 1 2 3 4 5 6 7 8 9 10 55.43 65.43 61.38 51.38 48.21 46.00 56.00 46.00 60.00 50.00 0.16 0.26 0.26 0.38 0.38 1.72 1.72 2.38 2.38 5.68 5.68 18.40 24.40 18.90 24.10 23.90 19.40 28.20

10.28 Average

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Test of Radiated Emission Measurement

3.2.1. Limit of Radiated Emission

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

Frequency (MHz)	Field Strength (microvolts/meter)	Measurement Distance (meters)		
30 – 88	100	3		
88 – 216	150	3		
216 - 960	200	3		
Above 960	500	3		

3.2.2. Measuring Instruments

The measuring equipment is listed in the section 4 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 height is adjusted between one to 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.
- Set the test-receiver system to Peak Detect Function and specified bandwidth with Maximum 6. Hold Mode.
- 7. If the emission level of the EUT in peak mode was 3 dB lower than the limit specified, peak values of EUT will be reported. Otherwise, the emission will be repeated by using the quasi-peak method and reported.
- 8. Emission level (dB μ V/m) = 20 log Emission level (μ V/m)
- 9. Corrected Reading: Antenna Factor + Cable Loss + Read Level - Preamp Factor = Level

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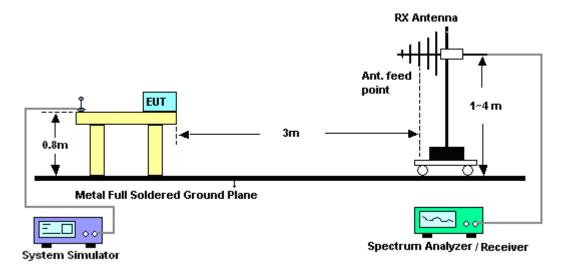
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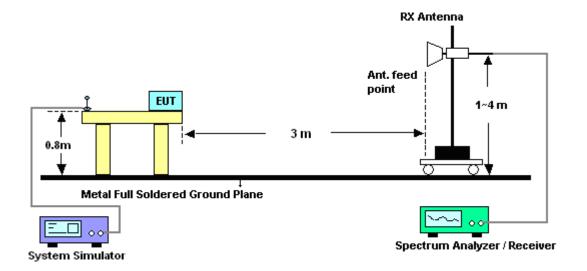
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3.2.4. Test Setup of Radiated Emission

For radiated emissions from 30MHz to 1GHz



For radiated emissions above 1GHz

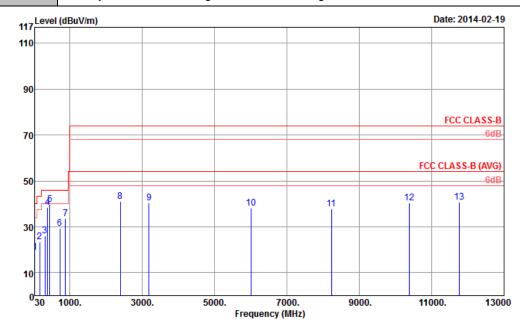


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3.2.5. Test Result of Radiated Emission

Test Mode :	Mode 3	Temperature :	24~25°C				
Test Engineer :	Robin Luo	Relative Humidity :	48~49%				
Test Distance :	3m	Polarization :	Horizontal				
Function Type :	GSM850 Idle + USB Cable (Data Link with Notebook) + Bluetooth Idle for SIM1						
Remark :	#7 is system simulator signal which can be ignored.						



Site : 03CH01-SZ

: FCC CLASS-B 3m LF_ANT_140102 HORIZONTAL : (FC)421401 Condition

Project : Mode 3 Mode

	Freq	Level	Over Limit	Limit Line		Antenna Factor		Preamp Factor	A/Pos	T/Pos	Remark
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB	cm	deg	
1	39.70	18.86	-21.14	40.00	37.23	12.10	0.85	31.32			Peak
2	167.74	23.33	-20.17	43.50	42.00	10.79	1.57	31.03			Peak
3	312.27	25.92	-20.08	46.00	40.07	14.46	2.05	30.66			Peak
4	384.05	38.56	-7.44	46.00	51.28	15.42	2.25	30.39			Peak
5	P 450.01	39.65	-6.35	46.00	51.29	16.10	2.41	30.15	100	0	Peak
6	728.40	29.46	-16.54	46.00	35.72	19.84	3.02	29.12			Peak
7	881.66	33.50			38.00	20.76	3.29	28.55			Peak
8	2398.00	41.01	-32.99	74.00	60.16	31.98	5.62	56.75	195	236	Peak
9	3190.00	40.32	-33.68	74.00	58.00	33.04	6.57	57.29			Peak
10	6020.00	38.06	-35.94	74.00	50.64	34.00	9.28	55.86			Peak
11	8232.00	37.96	-36.04	74.00	47.82	35.30	10.87	56.03			Peak
12	10380.00	40.41	-33.59	74.00	47.68	36.77	12.86	56.90			Peak
13	11760.00	40.77	-33.23	74.00	45.55	38.01	13.44	56.23			Peak

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24~25°C Test Mode: Mode 3 Temperature: Test Engineer: Robin Luo **Relative Humidity:** 48~49% 3m Vertical Test Distance: **Polarization:** GSM850 Idle + USB Cable (Data Link with Notebook) + Bluetooth Idle for SIM1 Function Type: Remark: #7 is system simulator signal which can be ignored. 117 Level (dBuV/m) Date: 2014-02-19 90 FCC CLASS-B 70 FCC CLASS-B (AVG) 50 -6dB 12 13 10 30 10 1000. 3000. 9000. 11000. 13000 5000. Frequency (MHz) Site : 03CH01-SZ Condition : FCC CLASS-B 3m LF_ANT_140102 VERTICAL Project : (FC)421401 Mode : Mode 3 ReadAntenna Cable Preamp A/Pos T/Pos Over Limit Freq Level Limit Line Level Factor Remark Loss Factor MHz dBuV/m dB dBuV/m dBuV dB/m dB dB deg 167.74 22.16 -21.34 43.50 40.83 10.79 1.57 31.03 --- Peak 1 233.70 23.14 -22.86 46.00 40.30 11.90 ------ Peak 1.81 30.87 29.59 -16.41 --- Peak 2.17 408.30 42.71 -3.29 46.00 54.30 16.39 2.32 30.30 100 0 Peak 5 696.39 27.04 -18.96 46.00 34.38 18.94 2.96 29.24 ------ Peak ------ Peak 27.80 -18.20 46.00 32.75 6 832.19 20.50 3.28 28.73 --- Peak 881.66 37.22 41.72 20.76 3.29 28.55 2132.00 45.81 -28.19 74.00 254 Peak --- Peak 3998.00 36.69 -37.31 74.00 54.67 33.10 7.66 58.74 ---6098.00 37.49 - 36.51 74.00 50.12 9.37 10 34.00 56.00 7424.00 38.77 -35.23 74.00 33.96 --- Peak 11 51.79 10.03 57.01

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9888.00

11770.00

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4. List of Measuring Equipment

Instrument	Manufacturer	Model No.	Serial No.	Characteristics	Calibration Date	Test Date	Due Date	Remark
EMI Receiver	R&S	ESCI7	100768	9kHz~7GHz	May 23, 2013	Mar. 04, 2014	May 22, 2014	Conduction (CO01-KS)
AC LISN	MessTec	AN3016	060103	9kHz~30MHz	Dec. 10, 2013	Mar. 04, 2014	Dec. 09, 2014	Conduction (CO01-KS)
AC LISN (for auxiliary equipment)	MessTec	AN3016	060105	9kHz~30MHz	Dec. 10, 2013	Mar. 04, 2014	Dec. 09, 2014	Conduction (CO01-KS)
AC Power Source	Chroma	61602	ABP0000008 11	AC 0V~300V, 45Hz~1000Hz	May 25, 2013	Mar. 04, 2014	May 24, 2014	Conduction (CO01-KS)
Spectrum Analyzer	Agilent Technologies	N9038A	MY52260185	20Hz~26.5GHz	Apr. 04, 2013	Feb. 19, 2014	Apr. 03, 2014	Radiation (03CH01-SZ)
Double Ridge Horn Antenna	ETS Lindgren	3117	00119436	1GHz~18GHz	Oct. 26, 2013	Feb. 19, 2014	Oct. 25, 2014	Radiation (03CH01-SZ)
Bilog Antenna	SCHAFFNER	CBL6112B	2614	30MHz~2GHz	Dec. 23, 2013	Feb. 19, 2014	Dec. 22, 2014	Radiation (03CH01-SZ)
Amplifier	ADVANTEST	BB525C	E9007003	9kHz~3000MHz	Mar. 29, 2013	Feb. 19, 2014	Mar. 28, 2014	Radiation (03CH01-SZ)
Amplifier	Yiai	AV3860B	04030	2GHz~26.5GHz	Mar. 29, 2013	Feb. 19, 2014	Mar. 28, 2014	Radiation (03CH01-SZ)
Turn Table	EM Electronics	EM 1000	N/A	0~360 degree	NCR	Feb. 19, 2014	NCR	Radiation (03CH01-SZ)
Antenna Mast	EM Electronics	EM 1000	N/A	1 m~4 m	NCR	Feb. 19, 2014	NCR	Radiation (03CH01-SZ)

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5. Uncertainty of Evaluation

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

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

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

Measuring Uncertainty for a Level of	3.90
Confidence of 95% (U = 2Uc(y))	3.90

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