FCC Part 15B
Measurement and Test Report

For

UNISTAR TELECOM CO., LIMITED

7A01, Tianjing Building, Tian'an High-tech Plaza, Futian District, Shenzhen, China

FCC ID: 2ADIZ-I4

Test Rule(s):	FCC Part 15 Subpart B
Product Description:	Smart Phone
Tested Model:	i4
Report No.:	STR14118097I-4
Tested Date:	2014-11-11 to 2014-11-27
Issued Date:	2014-11-28
Tested By:	Vigoss Liang / Engineer
Reviewed By:	Lahm Peng / EMC Manager
Approved & Authorized By:	Jandy So / PSQ Manager

Prepared By:

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1. GENERAL INFORMATION

1.1 Product Description for Equipment Under Test (EUT)

Client Information

Applicant:	UNISTAR TELECOM CO., LIMITED
Address of applicant:	7A01, Tianjing Building, Tian'an High-tech Plaza, Futian District, Shenzhen, China
Manufacturer:	UNISTAR TELECOM CO., LIMITED
Address of manufacturer:	7A01, Tianjing Building, Tian'an High-tech Plaza, Futian District, Shenzhen, China

General Description of EUT	
Product Name:	Smart Phone
Trade Name:	KATA, UTTA
Model No.:	i4
Adding Model(s):	X1, i4u, i4bs, i4ca
The EUT is GSM850/900/DCS1800/PCS1900, WCDMA Band I/II/V, Smart Phone. the Smart Phone is intended for speech and Multimedia Message Service (MMS) transmission. It is equipped with GPRS/EDGE class 12 for GSM850 and GSM1900 and Wi-Fi, GPS, NFC and camera functions. For more information see the following datasheet.	
Note: The test data is gathered from a production sample provided by the manufacturer. The appearance of others models listed in the report is different from main-test model i4, but the circuit and the electronic construction do not change, declared by the manufacturer.	

Technical Characteristics of EUT	
Rated Voltage:	5.0V
Rated Current:	1.0A
Rated Power:	5W
Power Adapter Model:	/
Lowest Internal Frequency:	32.768KHz
Highest Internal Frequency:	1.7GHz
Classification of ITE:	Class B

1.2 Test Standards

The following report is prepared on behalf of the UNISTAR TELECOM CO., LIMITED in accordance with Part 2, Subpart J, and Part 15, Subparts A and B of the Federal Communication Commissions rules.

The objective is to determine compliance with FCC Part 15, Subpart B, and section 15.205, 15.107, and 15.109 rules.

Maintenance of compliance is the responsibility of the manufacturer. Any modification of the product, which result in lowering the emission, should be checked to ensure compliance has been maintained.

1.3 Test Methodology

All measurements contained in this report were conducted with ANSI C63.4-2003, American National Standard for Methods of Measurement of Radio-Noise Emissions from Low-Voltage Electrical and Electronic Equipment in the range of 9 kHz to 40 GHz.

1.4 Test Facility

- **FCC – Registration No.: 934118**
  Shenzhen SEM.Test Technology Co., Ltd. EMC Laboratory has been registered and fully described in a report filed with the (FCC) Federal Communications Commission. The acceptance letter from the FCC is maintained in our files and the Registration is 934118.

- **Industry Canada (IC) Registration No.: 11464A**
  The 3m Semi-anechoic chamber of Shenzhen SEM.Test Technology Co., Ltd. has been registered by Certification and Engineering Bureau of Industry Canada for radio equipment testing with Registration No.: 11464A.

- **CNAS Registration No.: L4062**
  Shenzhen SEM.Test Technology Co., Ltd. is a testing organization accredited by China National Accreditation Service for Conformity Assessment (CNAS) according to ISO/IEC 17025. The accreditation certificate number is L4062. All measurement facilities used to collect the measurement data are located at 1/F, Building A, Hongwei Industrial Park, Liuxian 2nd Road, Bao'an District, Shenzhen, P.R.C (518101)

1.5 EUT Setup and Operation Mode

The equipment under test (EUT) was configured to measure its highest possible emission level. The test modes were adapted according to the operation manual for use, more detailed description as follows:

Test Mode List:

Test Mode	Description	Remark
TM1	Charging & Playing	Connect to Adapter
TM2	Downloading	Connect to PC
TM3	Camera	/

EUT Cable List and Details

Cable Description	Length (M)	Shielded/Unshielded	With Core/Without Core
/	/	/	/

Auxiliary Equipment List and Details

Description	Manufacturer	Model	Serial Number
Notebook	Lenovo	E10	LR-63C8R

Special Cable List and Details

Cable Description	Length (M)	Shielded/Unshielded	With Core/Without Core
Earphone Cable	1.2	Unshielded	Without Core
USB Cable	0.8	Shielded	Without Core

2. SUMMARY OF TEST RESULTS

FCC Rules	Description of Test Item	Result
§ 15.107 (a)	Conducted Emissions	Compliant
§ 15.109 (a)	Radiated Emissions	Compliant

N/A: not applicable

3. Conducted Emissions

3.1 Measurement Uncertainty

Base on NIS 81, The Treatment of Uncertainty in EMC Measurements, the best estimate of the uncertainty of any conducted emissions measurement is ± 2.88 dB.

3.2 Test Equipment List and Details

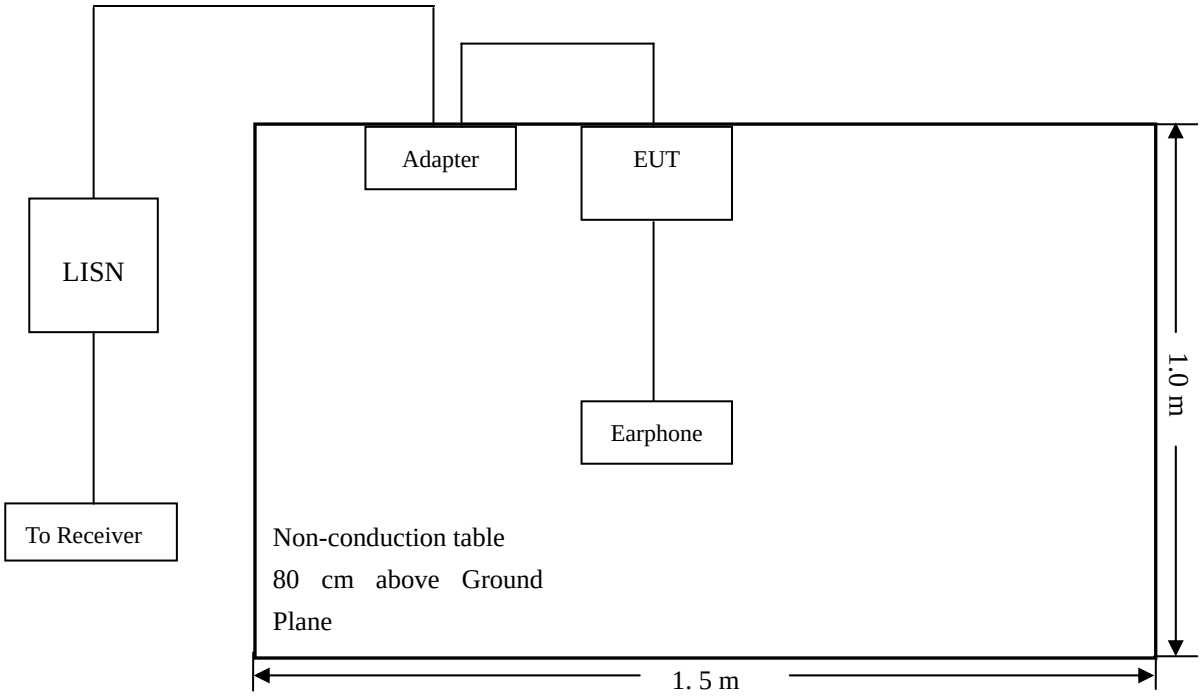
Description	Manufacturer	Model	Serial Number	Cal. Date	Due. Date
EMI Test Receiver	Rohde & Schwarz	ESPI	101611	2014-05-28	2015-05-27
L.I.S.N	Schwarz beck	NSLK8126	8126-224	2014-05-28	2015-05-27
Pulse Limiter	Rohde & Schwarz	ESH3-Z2	100911	2014-05-28	2015-05-27

3.3 Test Procedure

Test is conducting under the description of ANSI C63.4-2003, American National Standard for Methods of Measurement of Radio-Noise Emissions from Low-Voltage Electrical and Electronic Equipment in the range of 9 kHz to 40 GHz.

Note: Base on the calibrated result, for the impedance characteristic and insertion loss, the effect shall be ignored from the placed multiple outlet power strip between the device and LISN.

3.4 Basic Test Setup Block Diagram



3.5 Environmental Conditions

Temperature:	23 °C
Relative Humidity:	52%
ATM Pressure:	1011 mbar

3.6 Summary of Test Results/Plots

According to the data in section 3.7, the EUT complied with the FCC Part 15.107(a) Conducted margin for a Class B device, with the *worst* margin reading of:

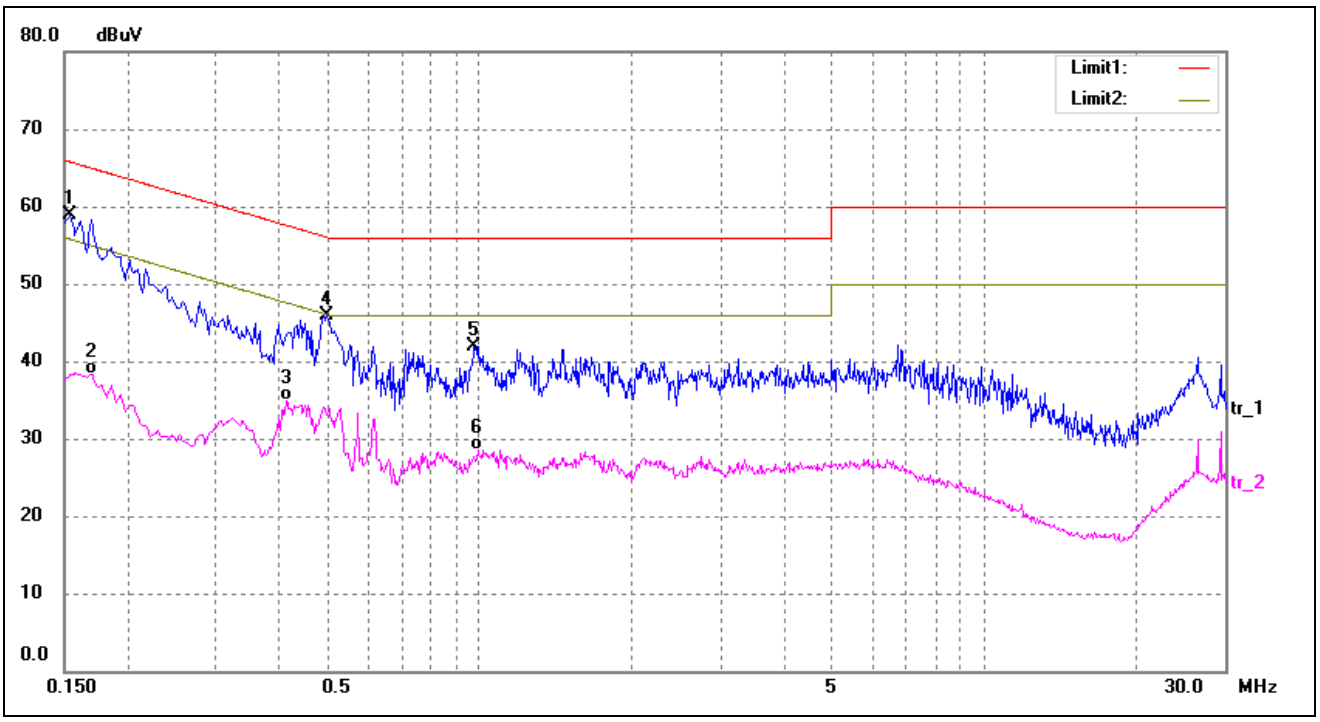
-2.35 dB at **0.1620 MHz** in the **Line, Peak** detector, **0.15-30MHz**

3.7 Conducted Emissions Test Data

Plot of Conducted Emissions Test Data

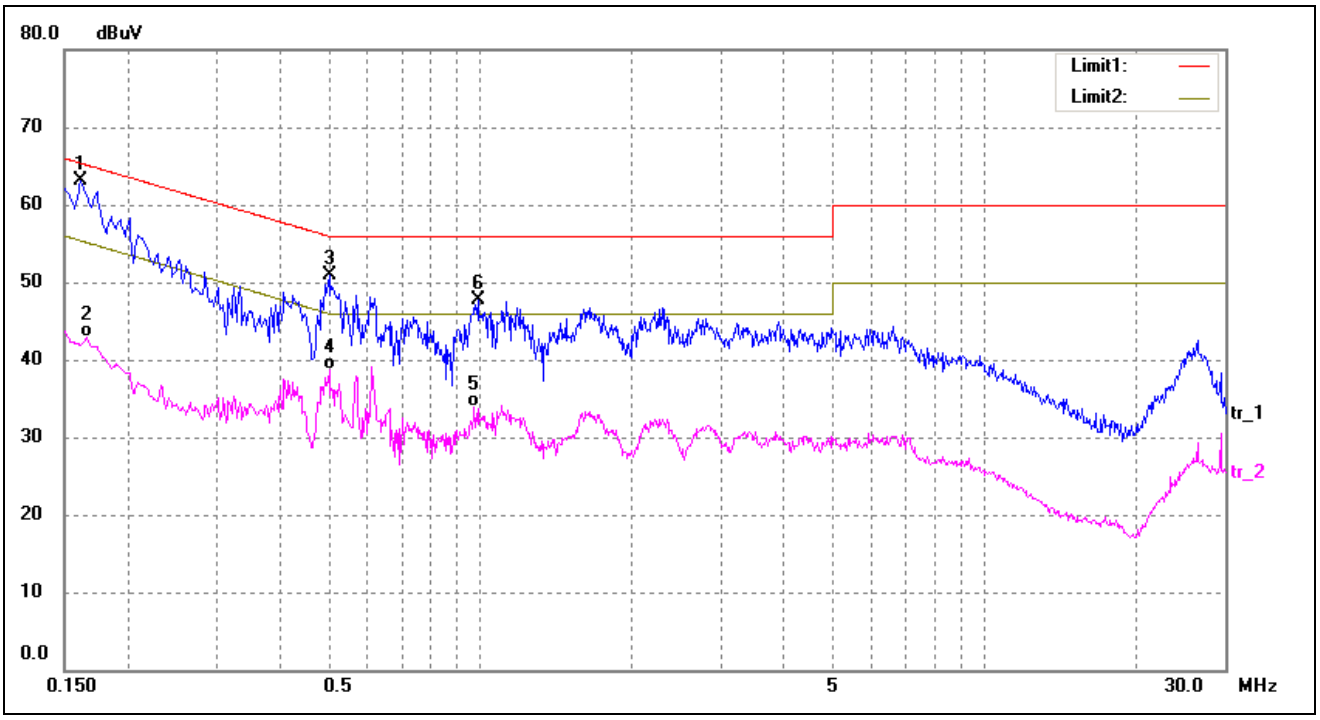
EUT: *Mobile Phone*
Tested Model: *i4*
Operating Condiation: *TM1*
Comment: *AC 120V/60Hz* *Adaptor: DC5V/1.0A*

Test Specification: *Neutral*



No.	Frequency	Reading	Correct	Result	Limit	Margin	Detector
	(MHz)	(dBuV)	(dB/m)	(dBuV)	(dBuV)	(dB)	
1	0.1540	49.49	9.50	58.99	65.78	-6.79	peak
2	0.1700	28.83	9.50	38.33	54.96	-16.63	AVG
3	0.4140	25.36	9.50	34.86	47.57	-12.71	AVG
4	0.4980	36.45	9.50	45.95	56.03	-10.08	peak
5	0.9780	31.95	9.98	41.93	56.00	-14.07	peak
6	0.9900	18.45	9.99	28.44	46.00	-17.56	AVG

Test Specification: *Line*



No.	Frequency	Reading	Correct	Result	Limit	Margin	Detector
	(MHz)	(dBuV)	(dB/m)	(dBuV)	(dBuV)	(dB)	
1	0.1620	53.51	9.50	63.01	65.36	-2.35	peak
2	0.1660	33.31	9.50	42.81	55.16	-12.35	AVG
3	0.5020	41.43	9.50	50.93	56.00	-5.07	peak
4	0.5020	29.17	9.50	38.67	46.00	-7.33	AVG
5	0.9780	23.88	9.98	33.86	46.00	-12.14	AVG
6	0.9940	37.78	9.99	47.77	56.00	-8.23	peak

4. Radiated Emissions

4.1 Measurement Uncertainty

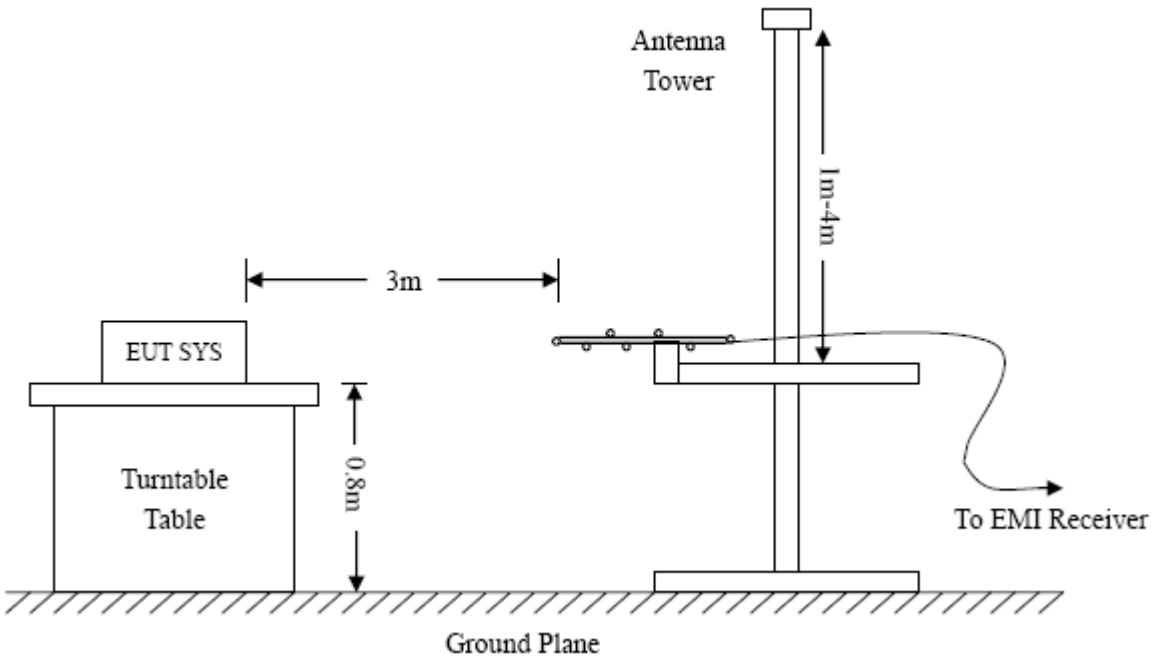
Base on NIS 81, The Treatment of Uncertainty in EMC Measurements, the best estimate of the uncertainty of any radiation emissions measurement is ± 5.10 dB.

4.2 Test Equipment List and Details

Description	Manufacturer	Model	Serial Number	Cal. Date	Due. Date
Spectrum Analyzer	R&S	FSP	836079/035	2014-05-28	2015-05-27
EMI Test Receiver	R&S	ESVB	825471/005	2014-05-28	2015-05-27
Pre-amplifier	Agilent	8447F	3113A06717	2014-05-28	2015-05-27
Pre-amplifier	Compliance Direction	PAP-0118	24002	2014-05-28	2015-05-27
Trilog Broadband Antenna	SCHWARZBECK	VULB9163	9163-333	2014-05-24	2015-05-23
Horn Antenna	ETS	3117	00086197	2014-05-24	2015-05-23
Loop Antenna	SCHWARZECK	HFRA 5165	9365	2014-05-28	2015-05-27

4.3 Test Procedure

The setup of EUT is according with per ANSI C63.4-2003 measurement procedure. The specification used was with the FCC Part 15.109 Limit.
The external I/O cables were draped along the test table and formed a bundle 30 to 40 cm long in the middle.
The spacing between the peripherals was 10 cm.



4.4 Test Receiver Setup

Frequency :9kHz-30MHz	Frequency :30MHz-1GHz	Frequency :Above 1GHz
RBW=10KHz,	RBW=120KHz,	RBW=1MHz,
VBW =30KHz	VBW=300KHz	VBW=3MHz(Peak), 10Hz(AV)
Sweep time= Auto	Sweep time= Auto	Sweep time= Auto
Trace = max hold	Trace = max hold	Trace = max hold
Detector function = peak	Detector function = peak, QP	Detector function = peak, AV

4.5 Corrected Amplitude & Margin Calculation

The Corrected Amplitude is calculated by adding the Antenna Factor and the Cable Factor, and subtracting the Amplifier Gain from the Amplitude reading. The basic equation is as follows:

Corr. Ampl. = Indicated Reading – Corr. Factor

The "**Margin**" column of the following data tables indicates the degree of compliance with the applicable limit. For example, a margin of -6dBμV means the emission is 6dBμV below the maximum limit for a Class B device. The equation for margin calculation is as follows:

Margin = Corr. Ampl. – FCC Part 15.109(a) Limit

4.6 Environmental Conditions

Temperature:	23 °C
Relative Humidity:	55 %
ATM Pressure:	1011 mbar

4.7 Summary of Test Results/Plots

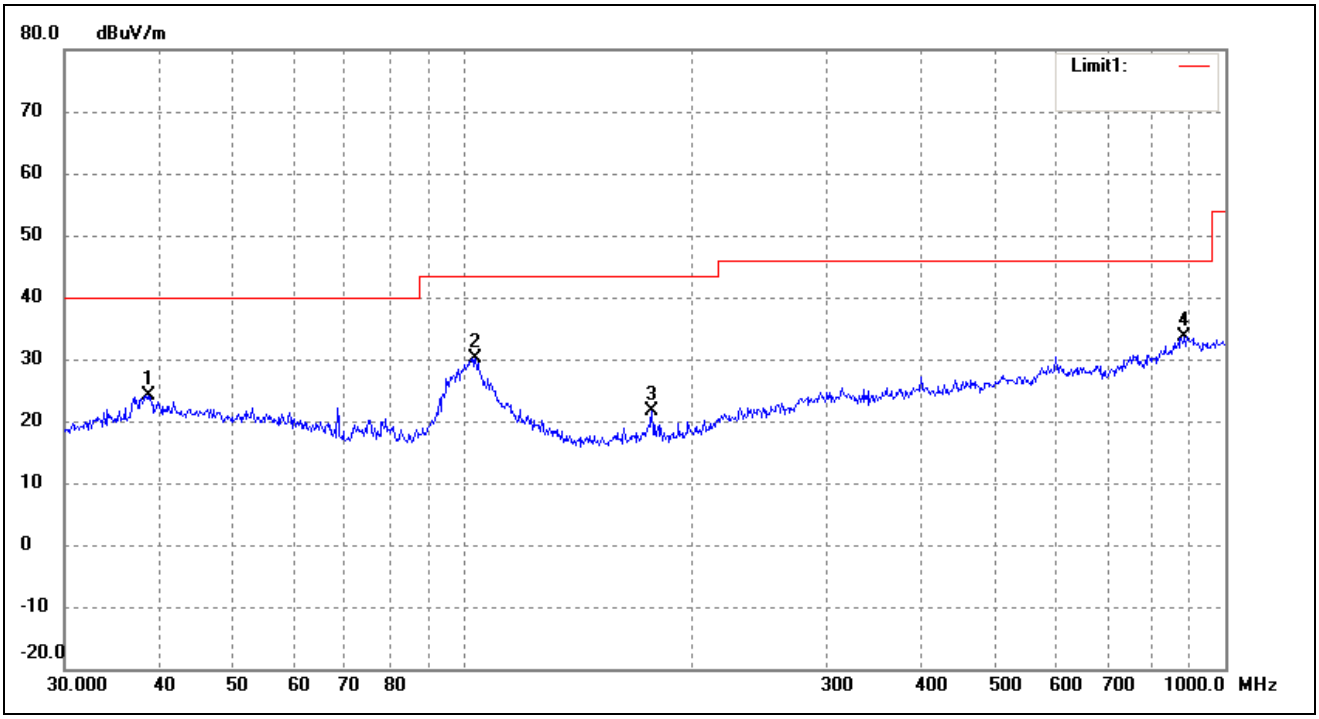
According to the data, the EUT complied with the FCC Part 15.109(a) rule, and had the worst margin of:

-10.09 dB at **640.6110 MHz** in the **Vertical** polarization, **TM2** mode, **9 kHz** to **6 GHz**, **3Meters**

Plot of Radiated Emissions Test Data

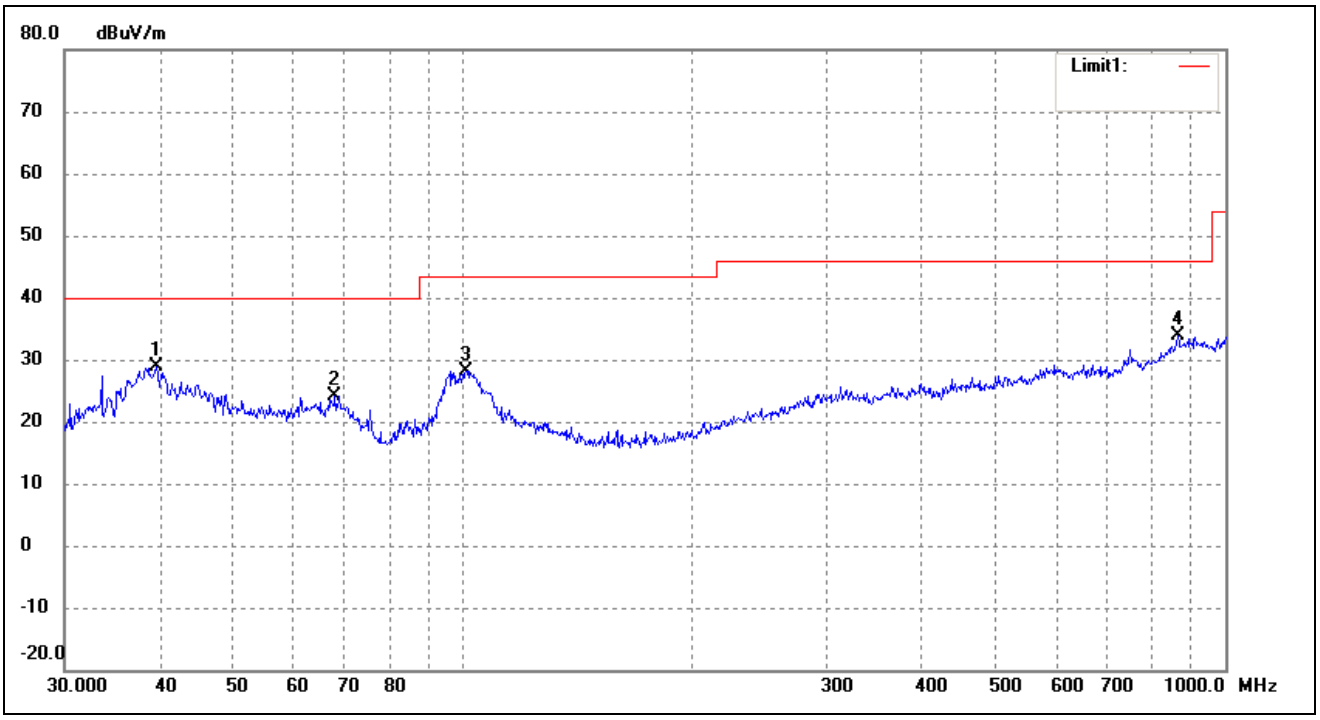
EUT: *Smart Phone*
Tested Model: *i4*
Operating Condition: *TM1*
Comment: *AC 120V/60Hz Adaptor: DC5V/1.0A*

Test Specification: *Horizontal*



No.	Frequency (MHz)	Reading (dBuV/m)	Correct Factor(dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Degree (•)	Height (cm)	Remark
1	38.6161	17.38	6.87	24.25	40.00	-15.75	58	150	peak
2	103.8055	24.29	5.73	30.02	43.50	-13.48	326	100	peak
3	176.8878	18.86	2.73	21.59	43.50	-21.91	29	150	peak
4	884.5029	16.83	16.83	33.66	46.00	-12.34	209	100	peak

Test Specification: *Vertical*

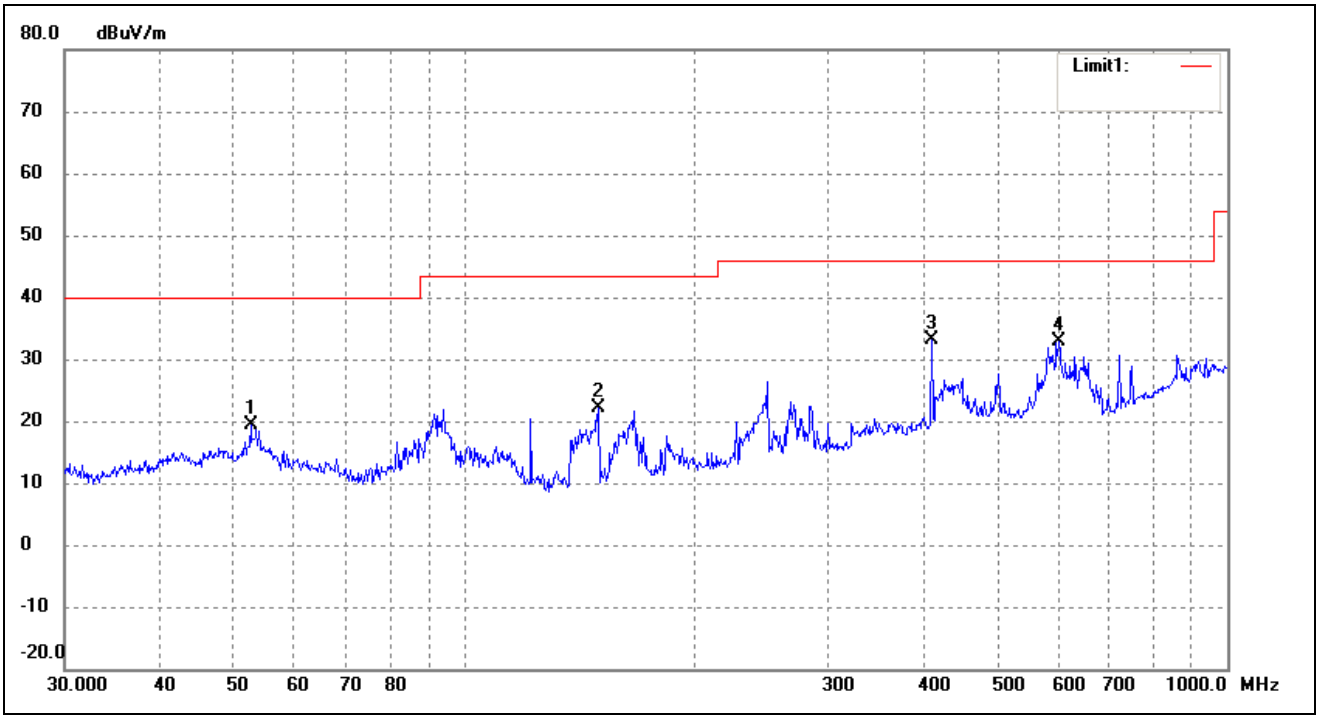


No.	Frequency	Reading	Correct	Result	Limit	Margin	Degree	Height	Remark
	(MHz)	(dBuV/m)	Factor(dB)	(dBuV/m)	(dBuV/m)	(dB)	(•)	(cm)	
1	39.5757	19.73	9.18	28.91	40.00	-11.09	51	100	peak
2	67.9129	21.34	2.86	24.20	40.00	-15.80	308	100	peak
3	100.9340	22.15	6.03	28.18	43.50	-15.32	120	100	peak
4	866.0879	17.48	16.45	33.93	46.00	-12.07	359	100	peak

Plot of Radiated Emissions Test Data

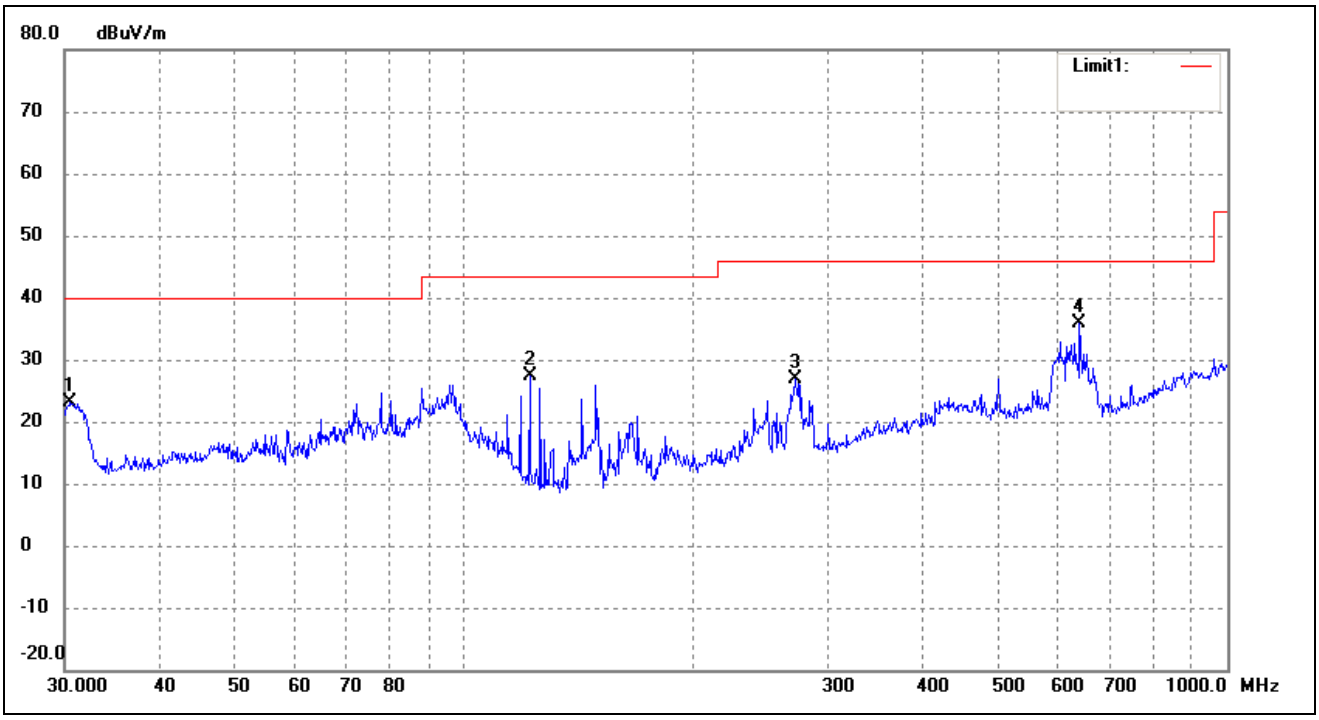
EUT: *Smart Phone*
Tested Model: *i4*
Operating Condition: *TM2*
Comment: *AC 120V/60Hz*

Test Specification: *Horizontal*



No.	Frequency	Reading	Correct	Result	Limit	Margin	Degree	Height	Remark
	(MHz)	(dBuV/m)	Factor(dB)	(dBuV/m)	(dBuV/m)	(dB)	(•)	(cm)	
1	52.5753	27.04	-7.71	19.33	40.00	-20.67	158	150	peak
2	150.0108	35.05	-12.95	22.10	43.50	-21.40	226	100	peak
3	410.3825	35.90	-2.69	33.21	46.00	-12.79	129	150	peak
4	601.4265	34.69	-1.84	32.85	46.00	-13.15	109	100	peak

Test Specification: *Vertical*

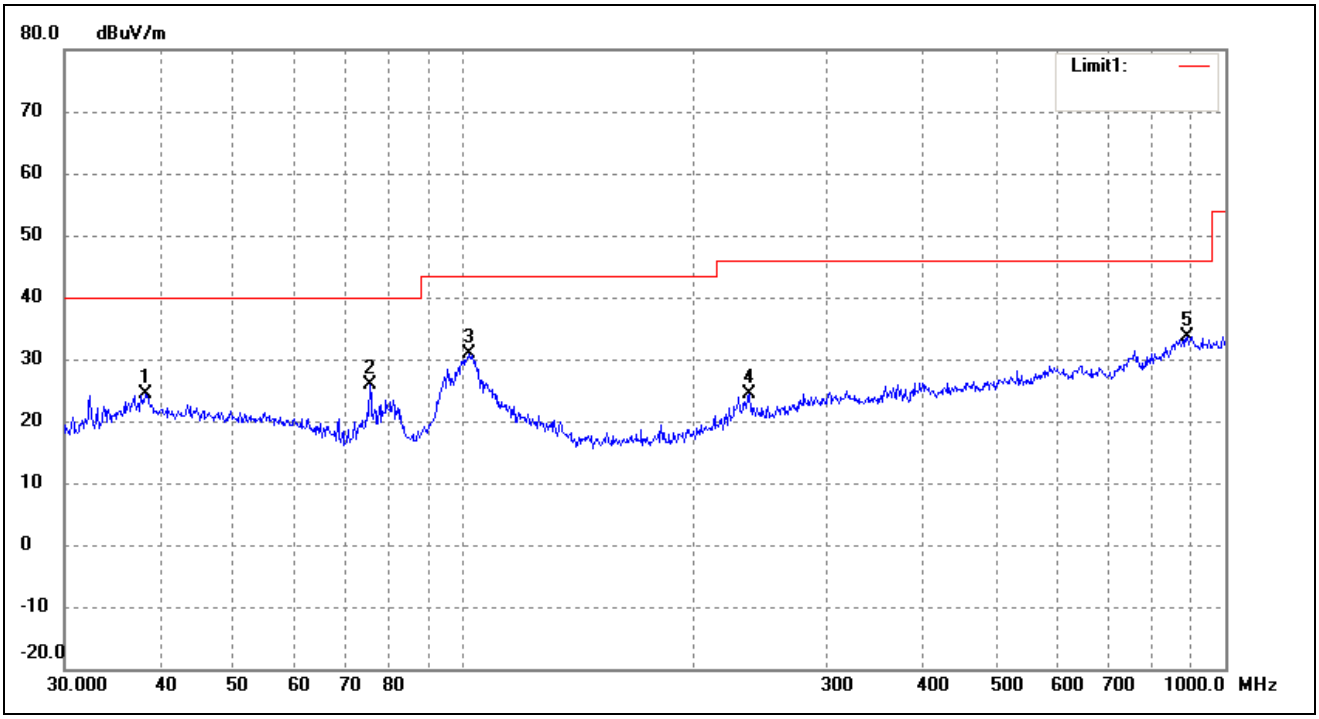


No.	Frequency	Reading	Correct	Result	Limit	Margin	Degree	Height	Remark
	(MHz)	(dBuV/m)	Factor(dB)	(dBuV/m)	(dBuV/m)	(dB)	(•)	(cm)	
1	30.5306	33.49	-10.43	23.06	40.00	-16.94	51	100	peak
2	121.9755	38.87	-11.56	27.31	43.50	-16.19	308	100	peak
3	272.2776	33.84	-6.88	26.96	46.00	-19.04	120	100	peak
4	640.6110	34.21	1.70	35.91	46.00	-10.09	359	100	peak

Plot of Radiated Emissions Test Data

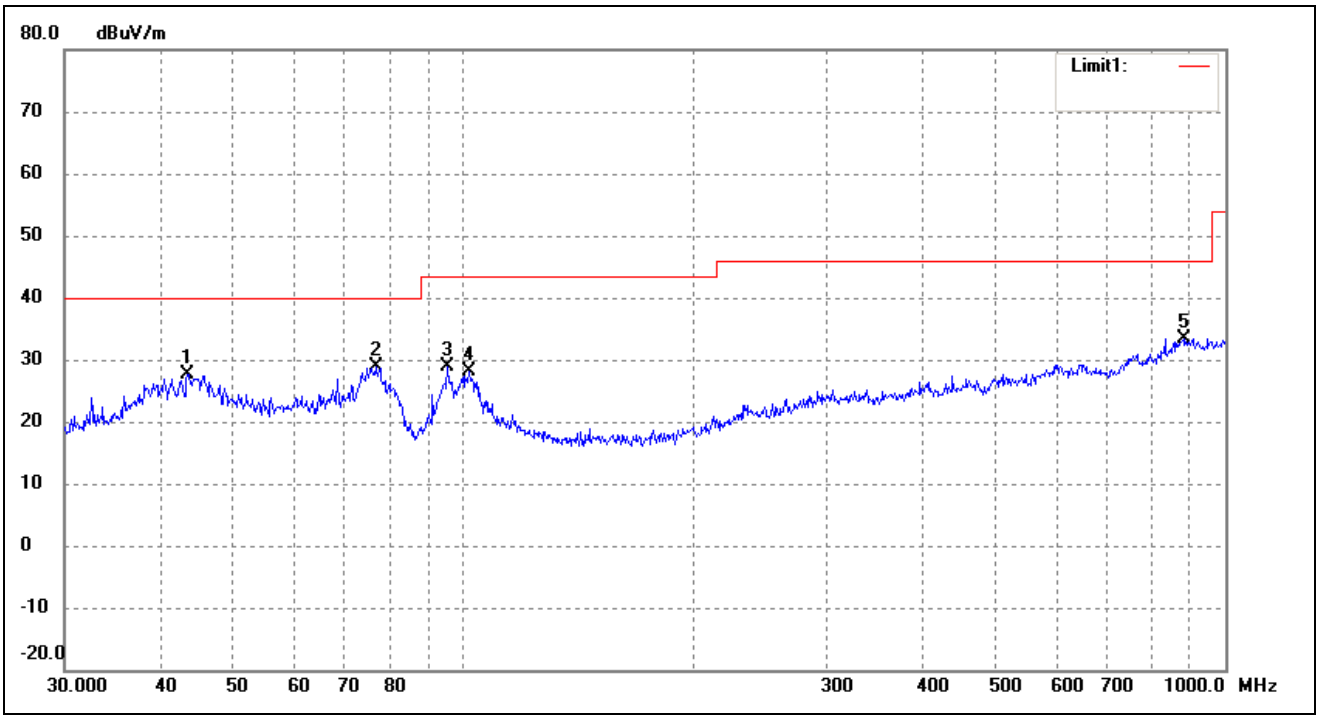
EUT: *Smart Phone*
Tested Model: *i4*
Operating Condition: *TM3*
Comment: *AC 120V/60Hz Adaptor: DC5V/1.0A*

Test Specification: *Horizontal*



No.	Frequency (MHz)	Reading (dBuV/m)	Correct Factor(dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Degree (•)	Height (cm)	Remark
1	38.3462	17.45	6.81	24.26	40.00	-15.74	58	150	peak
2	75.4464	24.26	1.55	25.81	40.00	-14.19	326	100	peak
3	101.6443	24.92	5.95	30.87	43.50	-12.63	29	120	peak
4	237.4760	18.12	6.18	24.30	46.00	-21.70	209	100	peak
5	890.7278	16.83	16.84	33.67	46.00	-12.33	125	100	peak

Test Specification: *Vertical*



No.	Frequency	Reading	Correct	Result	Limit	Margin	Degree	Height	Remark
	(MHz)	(dBuV/m)	Factor(dB)	(dBuV/m)	(dBuV/m)	(dB)	(•)	(cm)	
1	43.5057	19.41	8.20	27.61	40.00	-12.39	51	100	peak
2	76.7808	27.52	1.39	28.91	40.00	-11.09	308	100	peak
3	95.4270	23.82	4.98	28.80	43.50	-14.70	120	100	peak
4	102.0014	22.33	5.91	28.24	43.50	-15.26	359	100	peak
5	881.4067	16.66	16.82	33.48	46.00	-12.52	178	100	peak

Note: Testing is carried out with frequency rang 9kHz to the 6GHz, which above 1GHz is close to the noise base even antenna close up to 1meter distance according the measurement of ANSI C63.4.

******* END OF REPORT *******