FCC PART 15B

MEASUREMENT AND TEST REPORT

FOR

Matsunichi Digital Development (Shenzhen) Co., Ltd

F/22, Matsunichi Building, No.9996, Shennan Boulevard, Nanshan District,

Shenzhen, China

FCC ID: ZDRMP436

Report Concerns: Original Report	**Equipment Type:** WCDMA Smart Phone
Model:	MP436
Report No.:	STR12038238I-4
Test Date:	2012-03-29 to 2012-04-23
Issue Date:	2012-04-24
Tested By:	Silin Chen / 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: Matsunichi Digital Development (Shenzhen) Co., Ltd
Address of applicant: F/22, Matsunichi Building, No.9996, Shennan Boulevard, Nanshan District, Shenzhen, China

Manufacturer 1: Matsunichi Digital Development (Shenzhen) Co., Ltd
Address of manufacturer: No.5, KeJi Road, PingShan Industrial Estate, PinShan New District, Shenzhen, China

Manufacturer 2: Guangzhou Singulargold Electronics Co., Ltd
Address of manufacturer: No.6, Lianhua yan Road, Science City, Guangzhou Hi-Tech Industrial Development Zone, Guangzhou, China

General Description of E.U.T

Items	Description
EUT Description:	WCDMA Smart Phone
Trade Name:	Matsunichi / Le Pan
Model No.:	MP436
Power Supply:	Input 100-240V/50/60Hz Output 5V DC Adaptor DC 3.7V Battery
Adaptor Model:	KSAS0060500120VUU
Rated Voltage:	DC 3.7V
Battery Capacity:	1530mAh（5.66Wh）
For more information refer to the circuit diagram form and the user's manual.	

The test data is gathered from a production sample, provided by the manufacturer.

1.2 Test Standards

The following report is prepared on behalf of the Matsunichi Digital Development (Shenzhen) Co., Ltd 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 15.107, and 15.109 rules.

Maintenance of compliance is the responsibility of the manufacturer. Any modification of the product, which results in lowering the emission/immunity, 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.

The equipment under test (EUT) was configured to measure its highest possible susceptibility against the tested phenomena. The test modes were adapted accordingly in reference to the Operating Instructions.

1.4 Test Facility

- **FCC – Registration No.: 994117**
  SEM.Test Compliance Services 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 994117.

- **Industry Canada (IC) Registration No.: 7673A**
  The 3m Semi-anechoic chamber of SEM.Test Compliance Services Co., Ltd. has been registered by Certification and Engineering Bureau of Industry Canada for radio equipment testing with Registration No.: 7673A.

- **CNAS Registration No.: L4062**
  Shenzhen SEM.Test Electronics Service 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 3/F, Jinbao Commerce Building, Xin'an Fanshen Road, Bao'an District, Shenzhen, P.R.C (518101)

1.5 EUT Exercise Software

The EUT exercise program used during radiated and conducted testing was designed to exercise the system components. The test software, provided by the customer, is started while the EUT is on to simulate the normal work.

1.6 Accessories Equipment List and Details

Description	Manufacturer	Model	Serial Number
Notebook	SAMSUNG	R20	N/A

1.7 EUT Cable List and Details

Cable Description	Length (M)	Shielded/Unshielded	With Core/Without Core
USB Cable	1.0	Shielded	With Core
Earphone Cable	1.4	Unshielded	Without Core

2. SUMMARY OF TEST RESULTS

Description of Test	Result
§15.107 (a) Conducted Emission	Compliant
§15.109(a) Radiated Emission	Compliant

3. §15.107 (a)- CONDUCTED EMISSION

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.

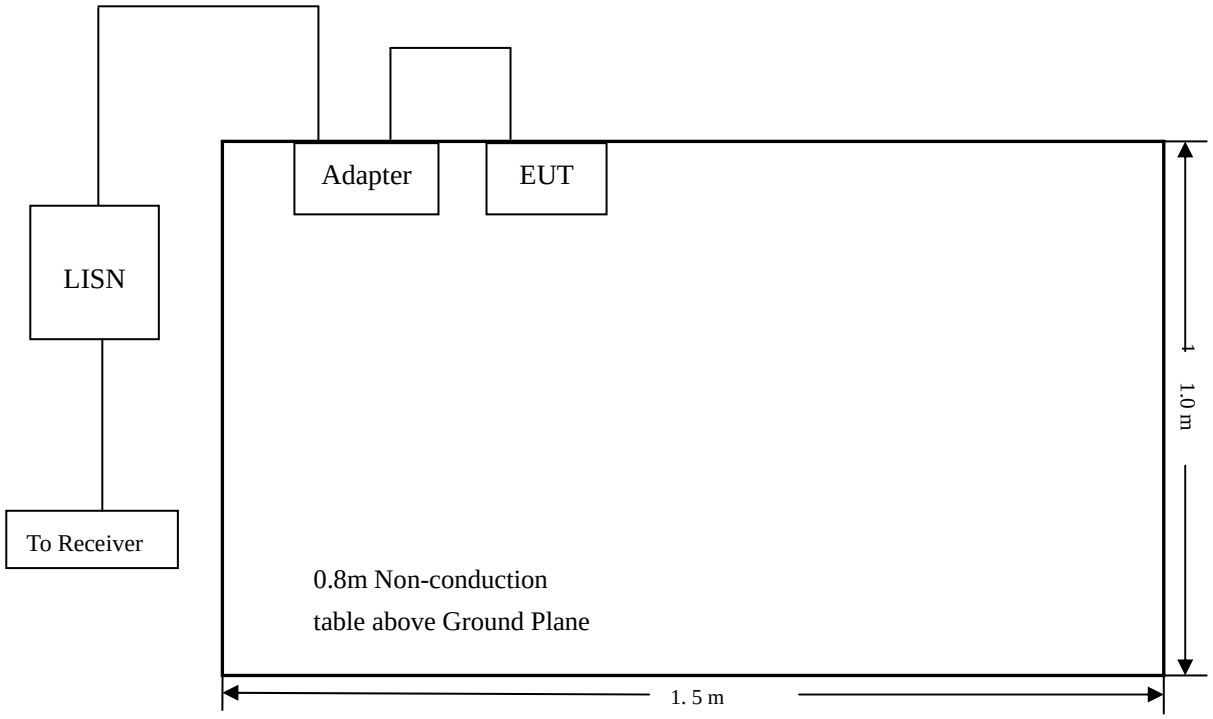
3.2 Test Equipment List and Details

Description	Manufacturer	Model	Serial Number	Cal. Date	Due. Date
EMI Test Receiver	Rohde & Schwarz	ESPI	101611	2012-03-28	2013-03-27
L.I.S.N	Schwarz beck	NSLK8126	8126-224	2012-03-28	2013-03-27
Pulse Limiter	Rohde & Schwarz	ESH3-Z2	100911	2012-03-28	2013-03-27

3.3 Test Procedure

The setup of EUT is according with per ANSI C63.4-2003 measurement procedure. The specification used was with the FCC Part 15.107 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.

3.4 Basic Test Setup Block Diagram



3.5 Environmental Conditions

Temperature:	25 °C
Relative Humidity:	52%
ATM Pressure:	1012 mbar

3.6 Test Receiver Setup

During the conducted emission test, the test receiver was set with the following configurations:

Start Frequency ..... 150 kHz
Stop Frequency..... 30 MHz
Sweep Speed ..... Auto
IF Bandwidth..... 10 kHz
Quasi-Peak Adapter Bandwidth ..... 9 kHz
Quasi-Peak Adapter Mode ..... Normal

3.7 Summary of Test Results/Plots

According to the data in section 3.8, the EUT complied with the FCC Part 15B Conducted margin for a Class B device, with the *worst* margin reading of:

-11.25 dBμV at **1.31 MHz** in the **Line, Average** Detector, 0.15-30MHz

3.8 Conducted Emissions Test Data

Plot of Conducted Emissions Test Data

Conducted Disturbance

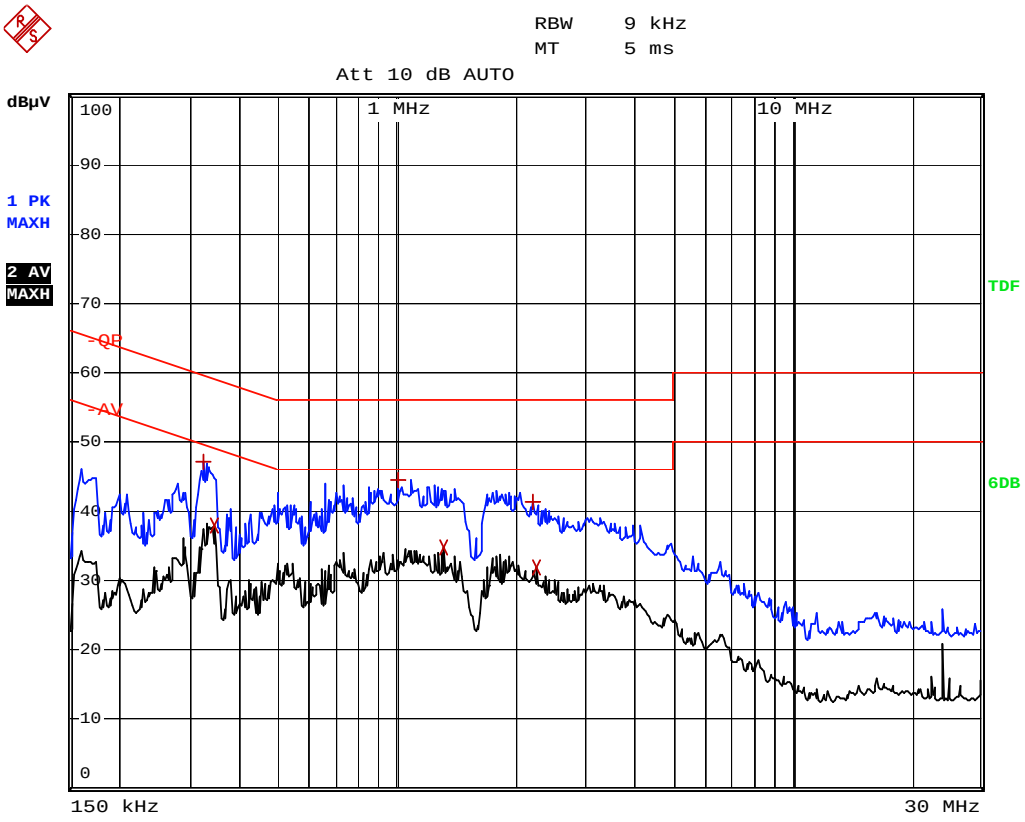
EUT: WCDMA Smart Phone

M/N: MP436

Operating Condition: Charging & Playing

Test Specification: Line

Comment: AC 120V/60Hz/Adapter DC 5V



EDIT PEAK LIST (Prescan Results)			
Trace1:	-QP		
Trace2:	-AV		
Trace3:	---		
TRACE	FREQUENCY	LEVEL dBµV	DELTA LIMIT dB
1 Max Peak	322 kHz	47.14	-12.50
2 Average	342 kHz	37.79	-11.35
1 Max Peak	1.01 MHz	44.46	-11.53
2 Average	1.31 MHz	34.74	-11.25
1 Max Peak	2.21 MHz	41.21	-14.78
2 Average	2.254 MHz	31.90	-14.09

Plot of Conducted Emissions Test Data

Conducted Disturbance

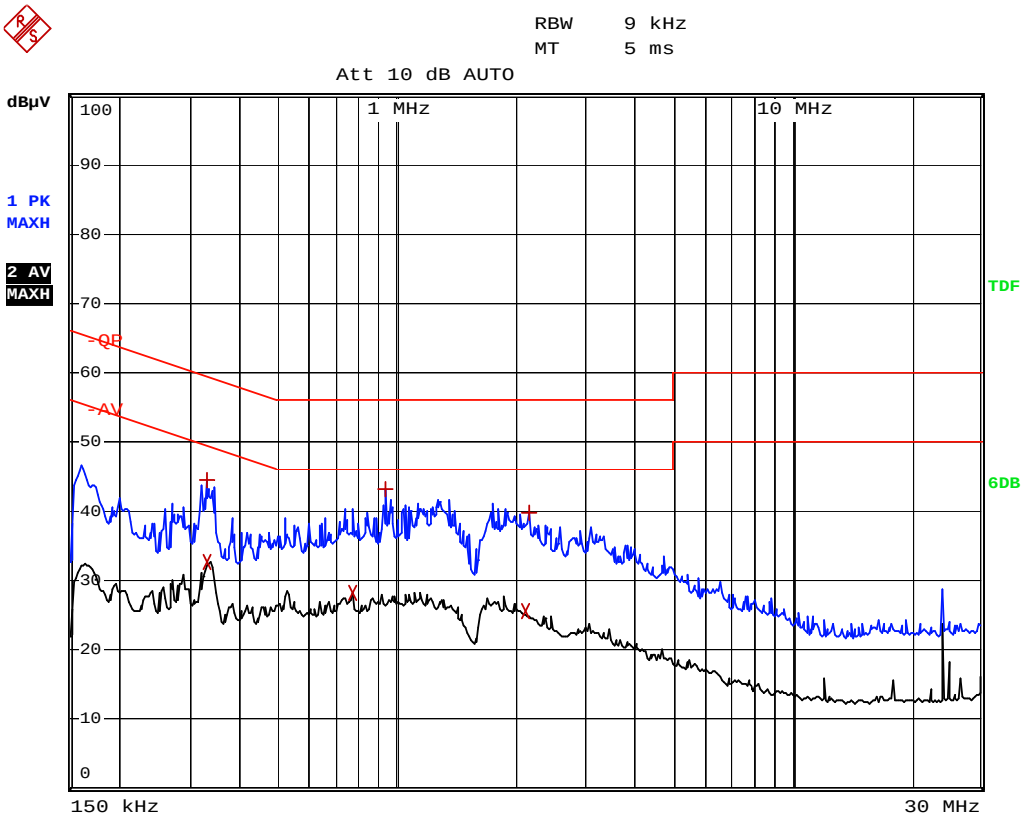
EUT: WCDMA Smart Phone

M/N: MP436

Operating Condition: Charging & Playing

Test Specification: Neutral

Comment: AC 120V/60Hz/Adapter DC 5V



EDIT PEAK LIST (Prescan Results)

Trace1:	-QP
Trace2:	-AV
Trace3:	---

TRACE	FREQUENCY	LEVEL dBµV	DELTA LIMIT dB
1 Max Peak	330 kHz	44.44	-15.00
2 Average	334 kHz	32.76	-16.59
2 Average	774 kHz	28.22	-17.77
1 Max Peak	938 kHz	43.18	-12.81
2 Average	2.122 MHz	25.50	-20.49
1 Max Peak	2.166 MHz	39.74	-16.25

4. §15.109(a)- RADIATED EMISSION

4.1 Measurement Uncertainty

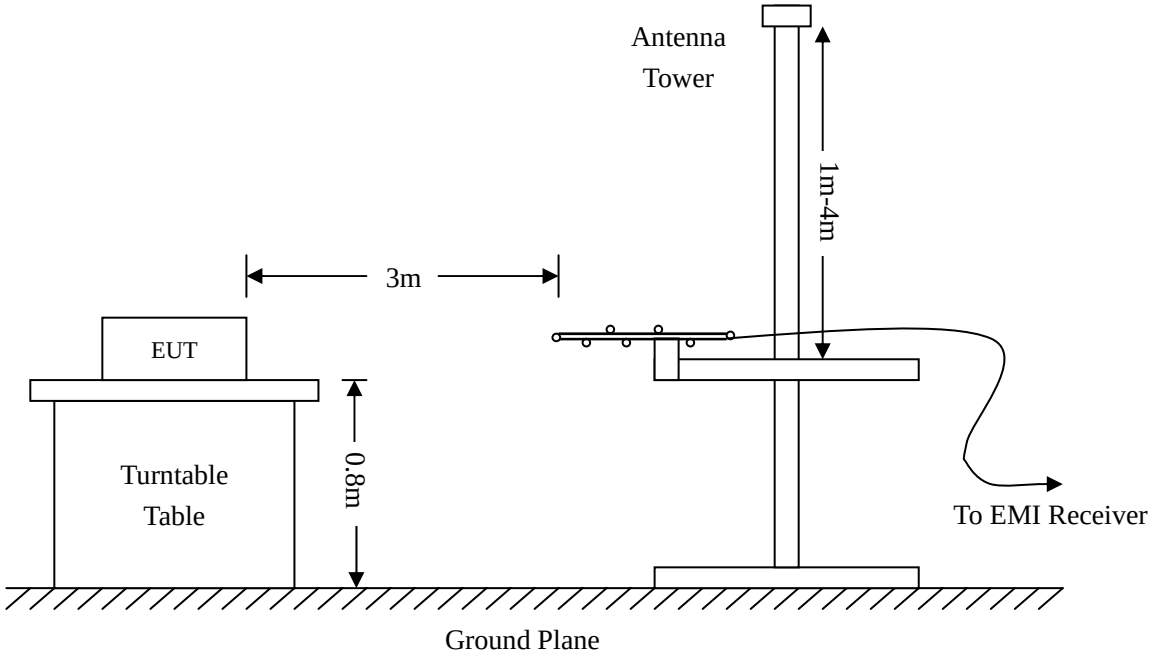
Base on NIS 81, The Treatment of Uncertainty in EMC Measurements, the best estimate of the uncertainty of any radiation emissions measurement is ± 5.10 dB.

4.2 Test Equipment List and Details

Description	Manufacturer	Model	Serial Number	Cal. Date	Due. Date
Spectrum Analyzer	R&S	FSP	836079/035	2012-03-28	2013-03-27
EMI Test Receiver	R&S	ESVB	825471/005	2012-03-28	2013-03-27
Pre-amplifier	Agilent	8447F	3113A06717	2012-03-28	2013-03-27
Pre-amplifier	Compliance Direction	PAP-0118	24002	2012-03-28	2013-03-27
Trilog Broadband Antenna	SCHWARZBECK	VULB9163	9163-333	2012-02-25	2013-02-24
Horn Antenna	ETS	3117	00086197	2012-02-25	2013-02-24
Loop Antenna	SCHWARZECK	HFRA 5165	9365	2012-02-25	2013-02-24

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 15.205 and 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.



4.5 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 Class B. The equation for margin calculation is as follows:

Margin = Corr. Ampl. – FCC Part 15B Limit

4.6 Environmental Conditions

Temperature:	25 °C
Relative Humidity:	54%
ATM Pressure:	1011 mbar

4.7 Summary of Test Results/Plots

According to the data, the EUT complied with the FCC Part 15B Class B standards, and had the worst margin of:

-5.89 dBμV at **416.1791 MHz** in the **Horizontal** polarization, **Charging and Playing** Mode，
9 kHz to 5 GHz, 3Meters

Note: Spurious Radiated Emissions measurements starting below or at the lowest crystal frequency.

Plot of Radiation Emissions Test Data

Radiated Disturbance

EUT: WCDMA Smart Phone

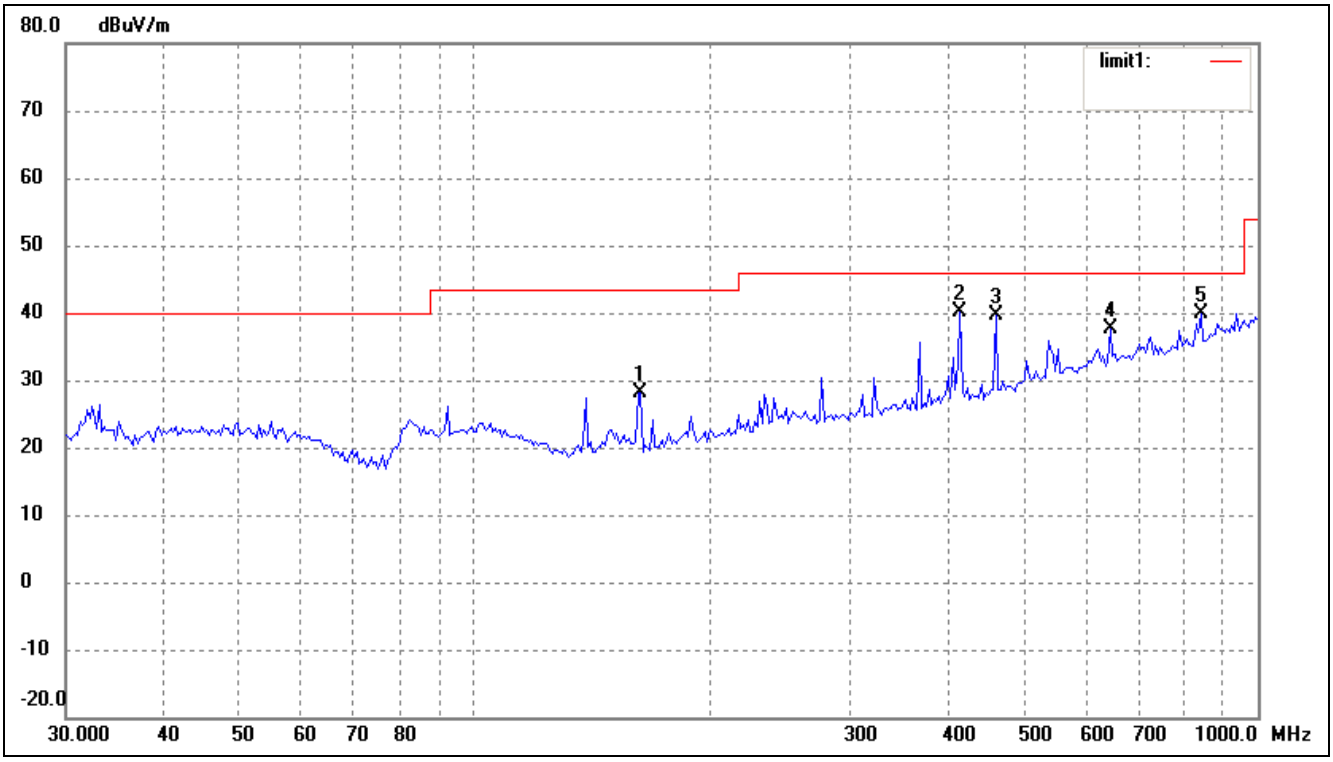
M/N: MP436

Operating Condition: Charging and Playing

Test Specification: Horizontal & Vertical

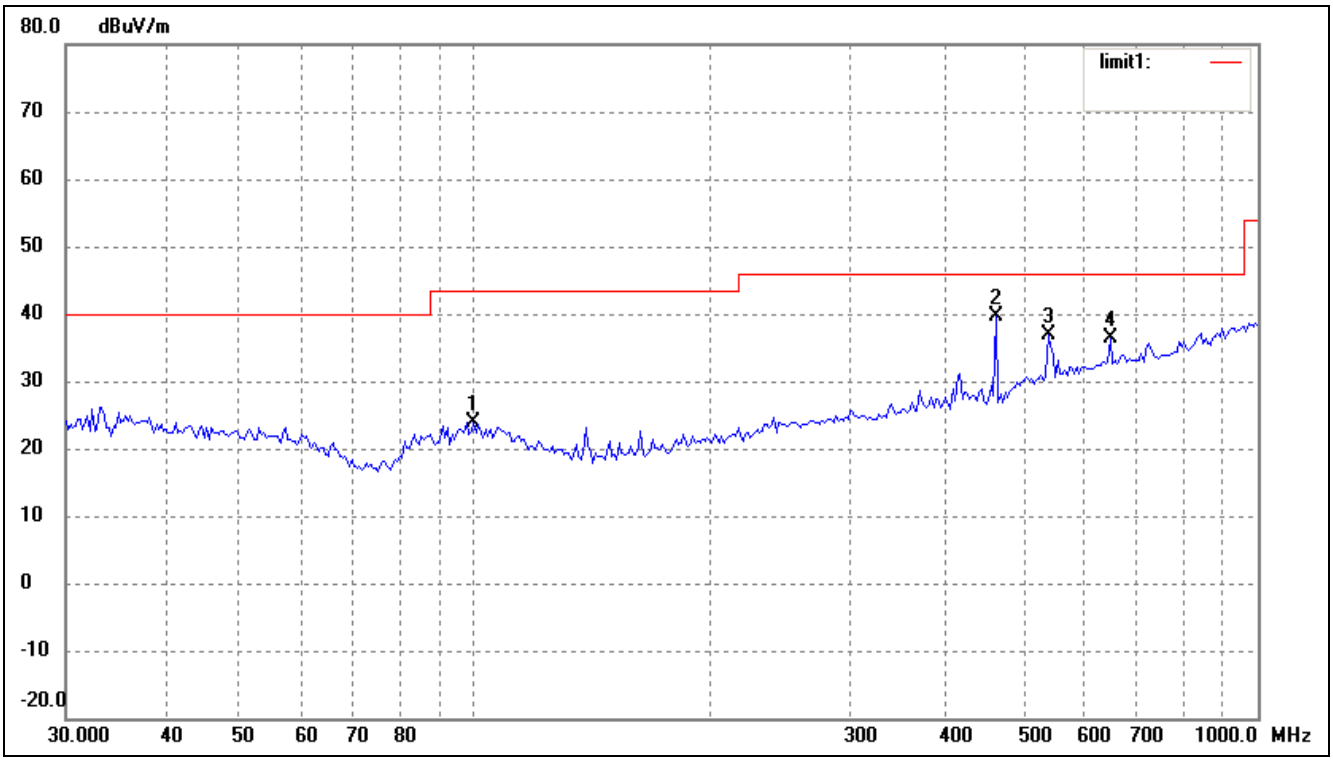
Comment: AC 120V/60Hz DC 5V Adapter

Horizontal



No.	Frequency	Reading	Correct	Result	Limit	Margin	Degree	Height	Remark
	(MHz)	(dBuV/m)	Factor(dB)	(dBuV/m)	(dBuV/m)	(dB)	(°)	(cm)	
1	162.6106	23.52	4.63	28.15	43.50	-15.35	360	100	peak
2	416.1791	28.74	11.37	40.11	46.00	-5.89	360	100	peak
3	462.3455	27.85	11.83	39.68	46.00	-6.32	360	100	peak
4	647.3856	20.51	17.07	37.58	46.00	-8.42	360	100	peak
5	845.0878	20.02	19.86	39.88	46.00	-6.12	360	100	peak

Vertical



No.	Frequency	Reading	Correct	Result	Limit	Margin	Degree	Height	Remark
	(MHz)	(dBuV/m)	Factor(dB)	(dBuV/m)	(dBuV/m)	(dB)	(°)	(cm)	
1	99.5281	15.58	8.40	23.98	43.50	-19.52	360	100	peak
2	462.3455	27.89	11.83	39.72	46.00	-6.28	360	100	peak
3	539.4775	21.54	15.30	36.84	46.00	-9.16	360	100	peak
4	647.3856	19.38	17.07	36.45	46.00	-9.55	360	100	peak

Plot of Radiation Emissions Test Data

Radiated Disturbance

EUT: WCDMA Smart Phone

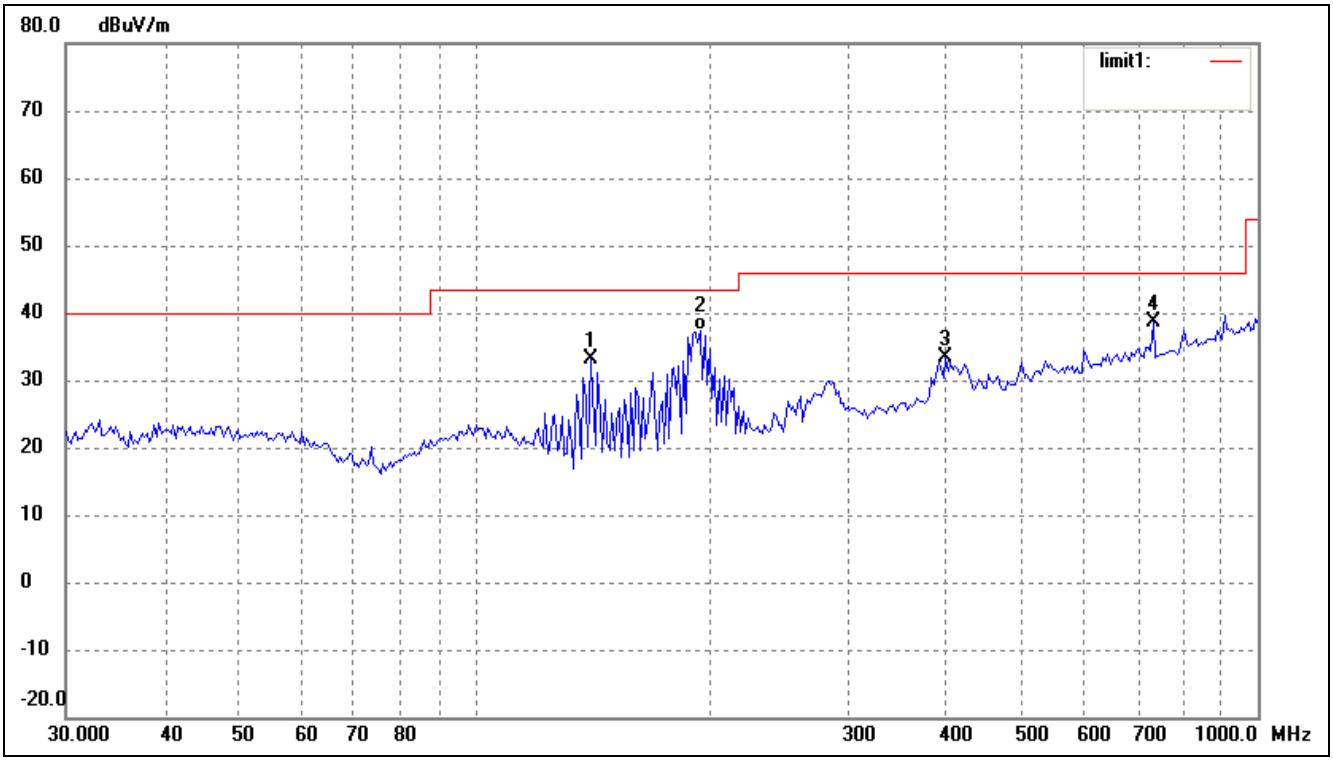
M/N: MP436

Operating Condition: Downloading

Test Specification: Horizontal & Vertical

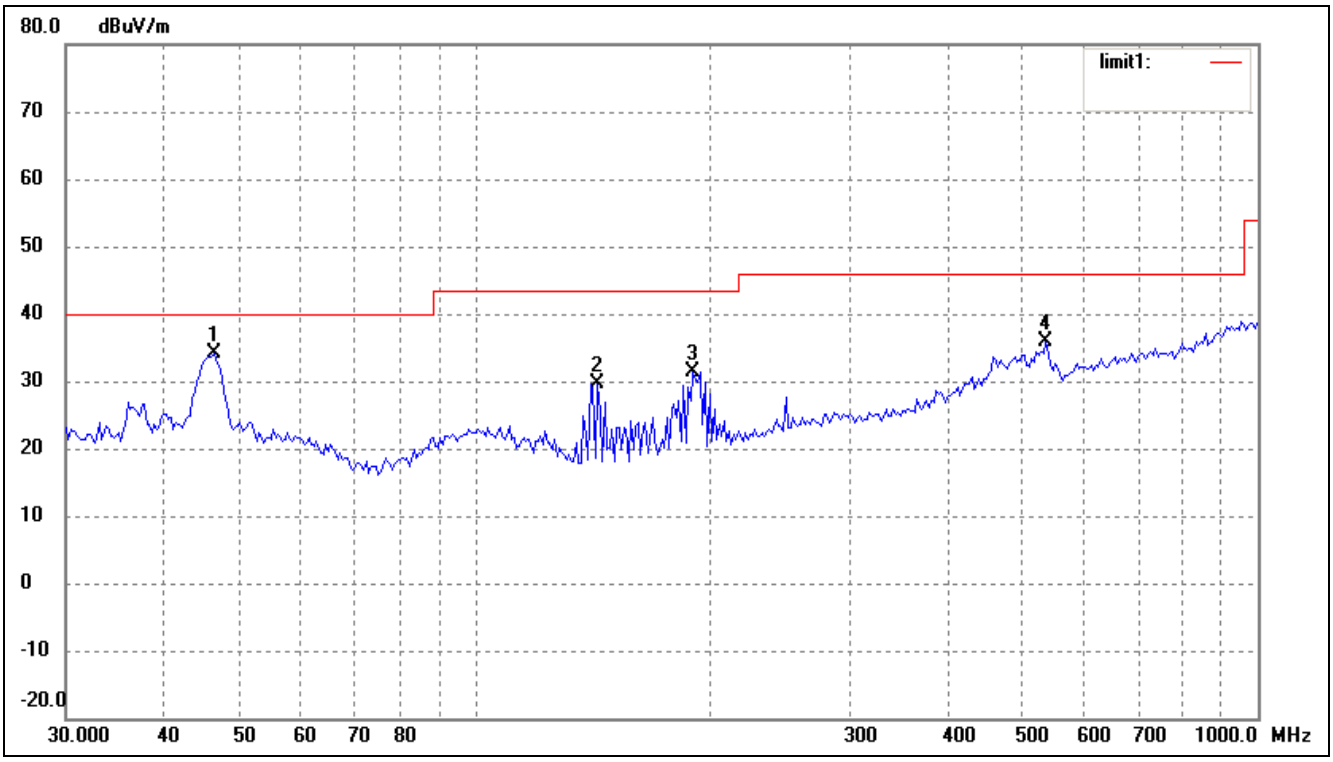
Comment: AC 120V/60Hz

Horizontal



No.	Frequency	Reading	Correct	Result	Limit	Margin	Degree	Height	Remark
	(MHz)	(dBuV/m)	Factor(dB)	(dBuV/m)	(dBuV/m)	(dB)	(°)	(cm)	
1	140.3421	29.07	3.96	33.03	43.50	-10.47	360	100	peak
2	193.7728	30.89	6.56	37.45	43.50	-6.05	125	100	QP
3	399.0302	22.08	11.40	33.48	46.00	-12.52	360	100	peak
4	734.4913	20.71	18.02	38.73	46.00	-7.27	360	100	peak

Vertical



No.	Frequency	Reading	Correct	Result	Limit	Margin	Degree	Height	Remark
	(MHz)	(dBuV/m)	Factor(dB)	(dBuV/m)	(dBuV/m)	(dB)	(°)	(cm)	
1	46.3402	25.92	8.16	34.08	40.00	-5.92	360	100	peak
2	143.3261	25.73	4.00	29.73	43.50	-13.77	360	100	peak
3	189.7385	24.96	6.52	31.48	43.50	-12.02	360	100	peak
4	535.7073	20.66	15.21	35.87	46.00	-10.13	360	100	peak

Plot of Radiation Emissions Test Data (Above 1GHz)

Radiated Disturbance

EUT: WCDMA Smart Phone

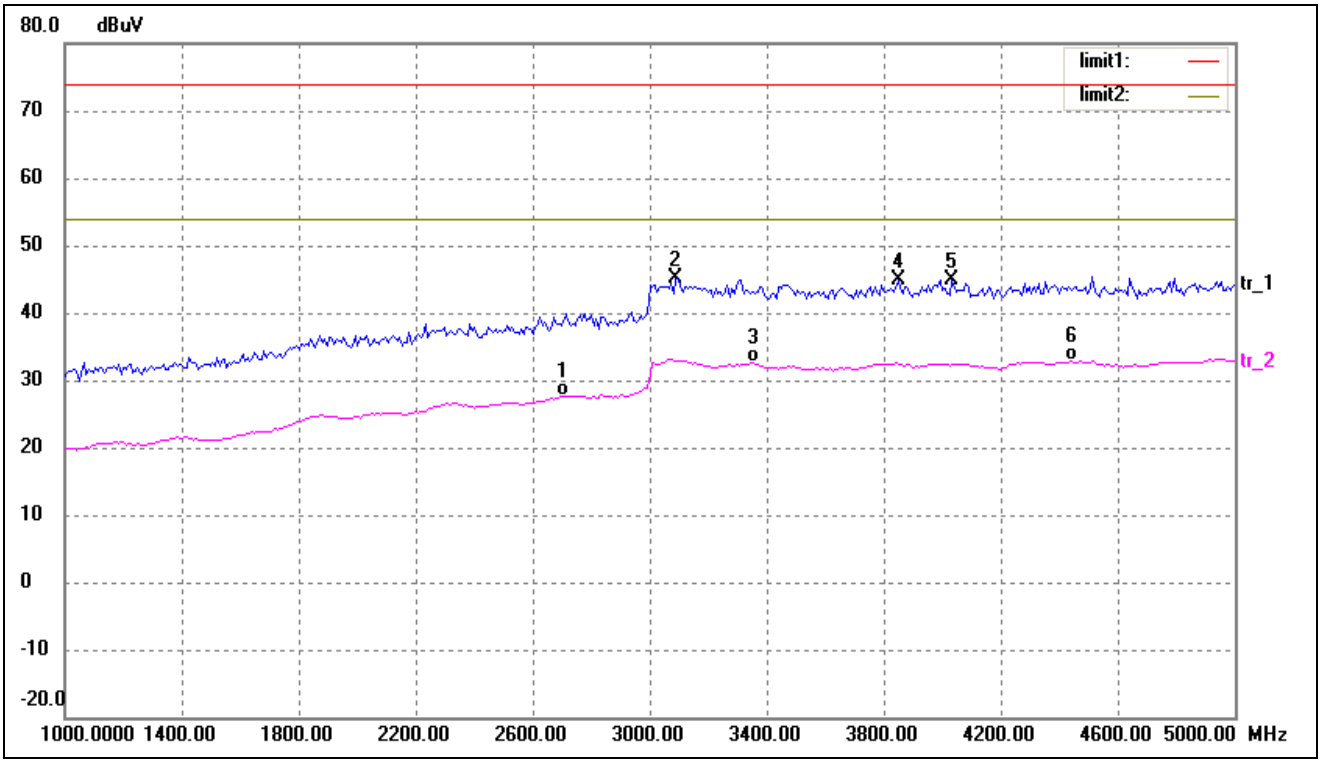
M/N: MP436

Operating Condition: Charging and Playing

Test Specification: Horizontal & Vertical

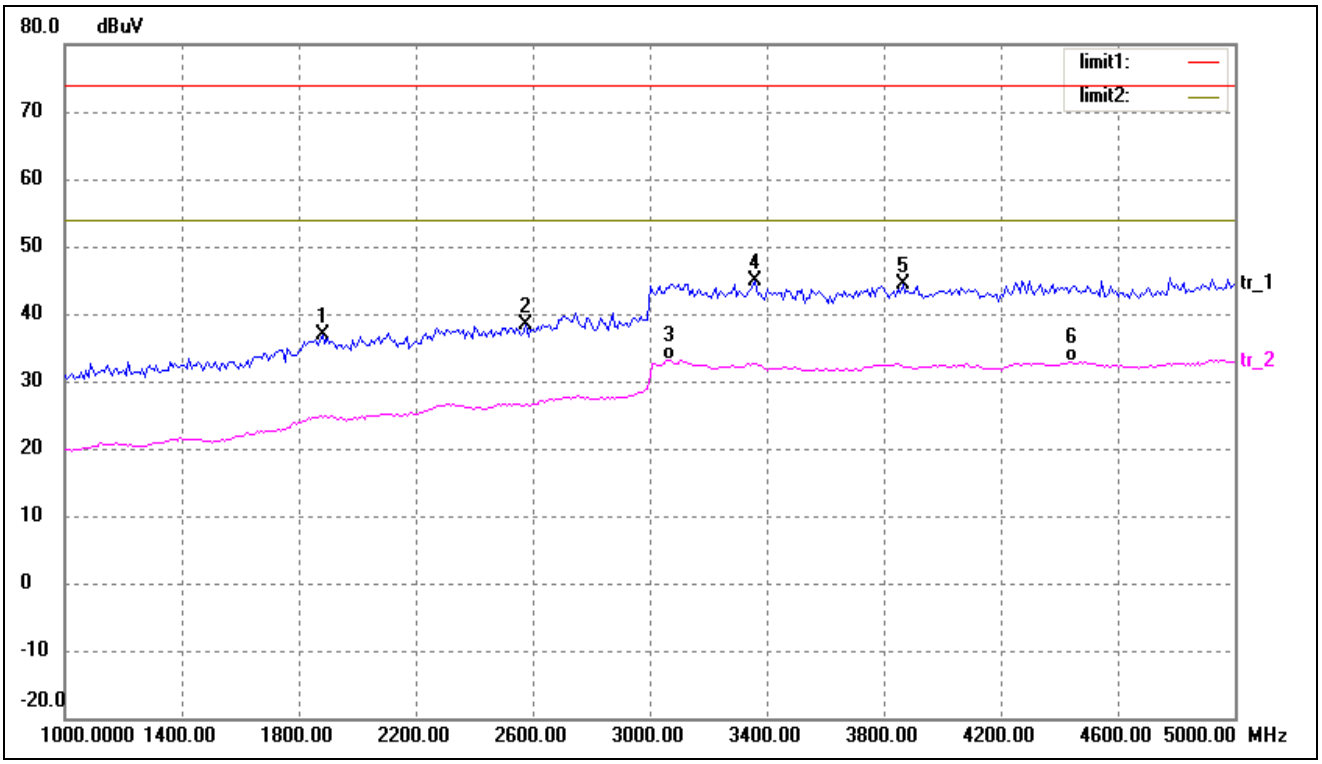
Comment: AC 120V/60Hz DC 5V Adapter

Horizontal:



No.	Frequency	Reading	Correct	Result	Limit	Margin	Degree	Height	Remark
	(MHz)	(dBuV)	dB	(dBuV)	(dBuV)	(dB)	(°)	(cm)	
1	2696.000	34.32	-6.75	27.57	54.00	-26.43	360	100	AVG
2	3088.000	51.29	-6.18	45.11	74.00	-28.89	360	100	peak
3	3352.000	38.68	-6.00	32.68	54.00	-21.32	360	100	AVG
4	3848.000	50.43	-5.52	44.91	74.00	-29.09	360	100	peak
5	4032.000	50.26	-5.33	44.93	74.00	-29.07	360	100	peak
6	4440.000	37.76	-4.97	32.79	54.00	-21.21	360	100	AVG

Vertical:



No.	Frequency	Reading	Correct	Result	Limit	Margin	Degree	Height	Remark
	(MHz)	(dBuV)	dB	(dBuV)	(dBuV)	(dB)	(°)	(cm)	
1	1880.000	45.75	-8.94	36.81	74.00	-37.19	360	100	peak
2	2576.000	45.24	-6.96	38.28	74.00	-35.72	360	100	peak
3	3064.000	39.34	-6.19	33.15	54.00	-20.85	360	100	AVG
4	3360.000	50.96	-5.99	44.97	74.00	-29.03	360	100	peak
5	3864.000	49.89	-5.50	44.39	74.00	-29.61	360	100	peak
6	4440.000	37.91	-4.97	32.94	54.00	-21.06	360	100	AVG

Note: Testing is carried out with frequency rang 9kHz to the tenth harmonics, which above 5th Harmonics are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.
The measurements greater than 20dB below the limit from 9kHz to 30MHz.

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