

FCC Part 15B

Measurement and Test Report

For

FACTORYTECH S.A.

Km 16 Via Daule, Guayaquil- Ecuador

FCC ID: 2AFWX-Z5

Test Rule(s): FCC Part 15 Subpart B

Product Description: Mobile phone

Tested Model: Infineum Z5

Report No.: STR15118240I-6

Tested Date: 2015-11-18 to 2015-12-16

Issued Date: 2015-12-17

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Note: This test report is limited to the above client company and the product model only. It may not be duplicated without prior permitted by Shenzhen SEM.Test Technology Co., Ltd.

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1. GENERAL INFORMATION

1.1 Product Description for Equipment Under Test (EUT)

Client Information

Applicant: FACTORYTECH S.A.
Address of applicant: Km 16 Via Daule, Guayaquil- Ecuador

Manufacturer: FACTORYTECH S.A.
Address of manufacturer: Km 16 Via Daule, Guayaquil- Ecuador

General Description of EUT:	
Product Name:	Mobile phone
Brand Name:	PIXELA
Model No.:	Infineum Z5
Device Category:	Portable Device
<i>The EUT Main board support GSM850/PCS1900, WCDMA Band 2/5, LTE Band 2/4/7 function. It is intended for speech, Multimedia Message Service (MMS) transmission. It is equipped with GPRS/EDGE class 12 for GSM850/PCS1900, GPS, Bluetooth and Wi-Fi functions. For more information see the following datasheet</i>	
<i>Note: The test data is gathered from a production sample provided by the manufacturer.</i>	

Technical Characteristics of EUT	
Rated Voltage:	DC 3.8V Li-ion Battery
Battery Capacity:	2100mAh
Rated Power:	/
Lowest Internal Frequency:	32.768kHz
Highest Internal Frequency:	1.5GHz
Classification of ITE:	Class B

1.2 Test Standards

The following report is prepared on behalf of the FACTORYTECH S.A. 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 C63.4-2014, 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	With Earphone
TM2	Downloading	Connected to PC
TM3	Charging & Camera	/

EUT Cable List and Details

Cable Description	Length (M)	Shielded/Unshielded	With Core/Without Core
USB Cable	1.0	Shielded	Without Ferrite
Earphone Cable	1.2	Unshielded	Without Ferrite

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
/	/	/	/

1.6 Test Equipment List and Details

Description	Manufacturer	Model	Serial Number	Cal Date	Due Date
Spectrum Analyzer	Agilent	E4407B	MY41440400	2015-06-17	2016-06-16
Spectrum Analyzer	Rohde & Schwarz	FSP	836079/035	2015-06-17	2016-06-16
EMI Test Receiver	Rohde & Schwarz	ESVB	825471/005	2015-06-17	2016-06-16
Amplifier	Agilent	8447F	3113A06717	2015-06-17	2016-06-16
Amplifier	C&D	PAP-1G18	2002	2015-06-17	2016-06-16
Broadband Antenna	Schwarz beck	VULB9163	9163-333	2015-06-17	2016-06-16
Horn Antenna	ETS	3117	00086197	2015-06-17	2016-06-16
Loop Antenna	Schwarz beck	FMZB 1516	9773	2015-06-17	2016-06-16
EMI Test Receiver	Rohde & Schwarz	ESPI	101611	2015-06-17	2016-06-16
L.I.S.N	Schwarz beck	NSLK8126	8126-224	2015-06-17	2016-06-16
Pulse Limiter	Rohde & Schwarz	ESH3-Z2	100911	2015-06-17	2016-06-16

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

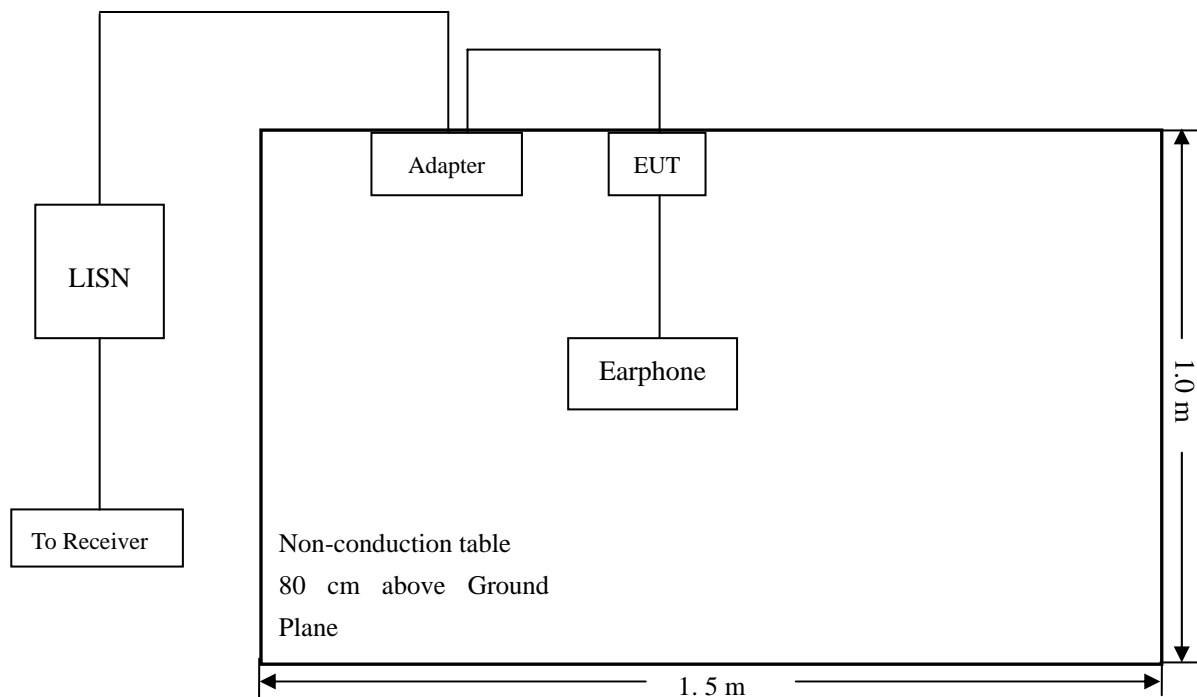
3.1 Measurement Uncertainty

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 Procedure

Test is conducting under the description of ANSI C63.4-2014, 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.

3.3 Basic Test Setup Block Diagram



3.4 Environmental Conditions

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

3.5 Summary of Test Results/Plots

According to the data in section 3.6, the EUT complied with the FCC Part 15.107(a) Conducted margin for a Class B device, with the *worst* margin reading of:

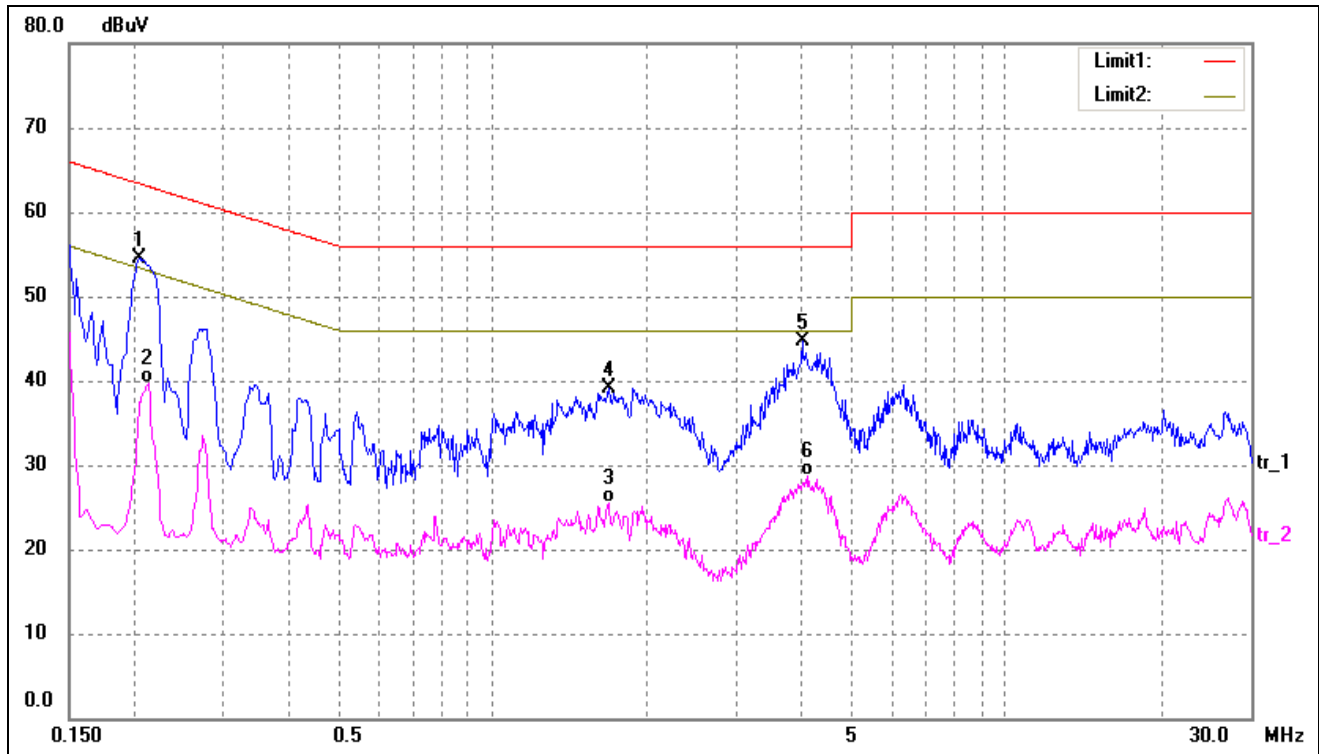
-7.81 dB at 0.2020 MHz in the **Neutral, TM1, QP** detector, 0.15-30MHz

3.6 Conducted Emissions Test Data

Plot of Conducted Emissions Test Data

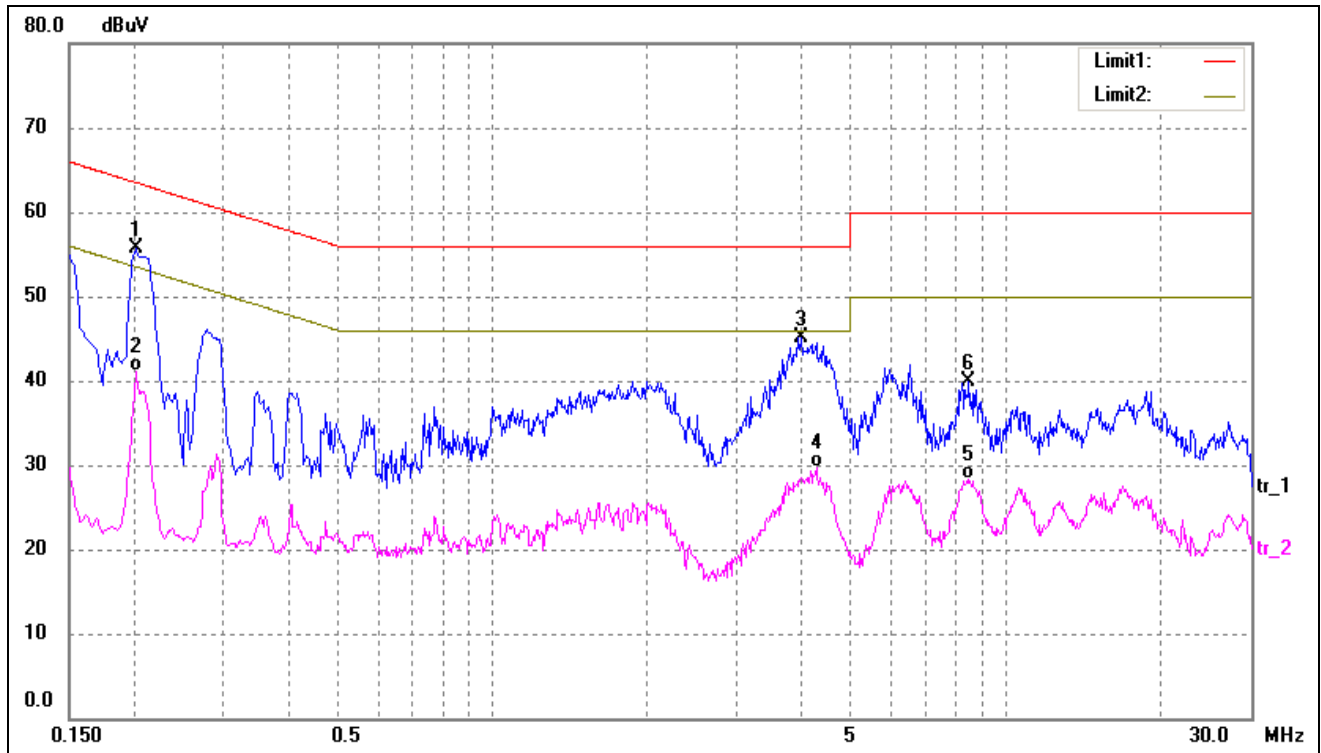
EUT: Mobile phone
 Tested Model: Infineum Z5
 Operating Condition: TM1
 Comment: AC 120V/60Hz; Adapter DC 5V

Test Specification: Line



No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV)	Limit (dBuV)	Margin (dB)	Detector
1*	0.2060	44.99	9.50	54.49	63.37	-8.88	QP
2	0.2140	30.20	9.50	39.70	53.05	-13.35	AVG
3	1.6820	15.50	10.00	25.50	46.00	-20.50	AVG
4	1.6900	29.11	10.00	39.11	56.00	-16.89	QP
5	4.0220	34.74	10.00	44.74	56.00	-11.26	QP
6	4.1300	18.68	10.00	28.68	46.00	-17.32	AVG

Test Specification: Neutral

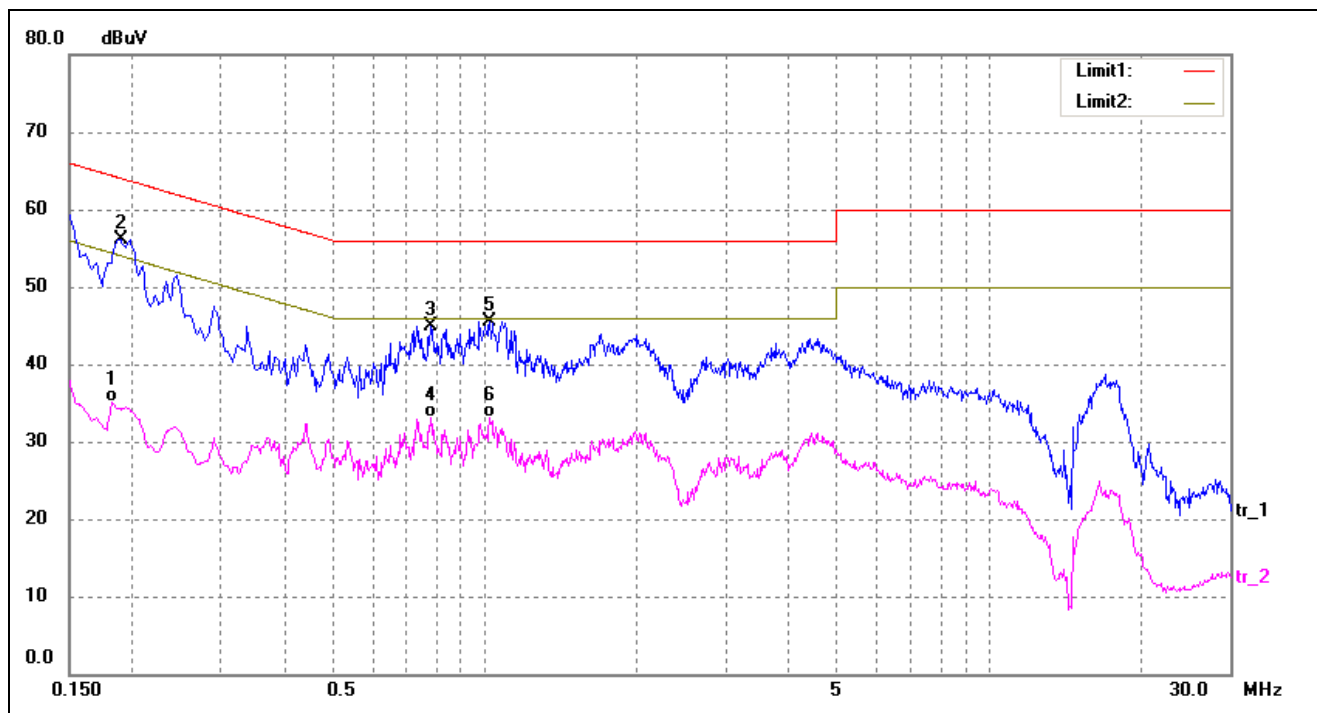


No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV)	Limit (dBuV)	Margin (dB)	Detector
1*	0.2020	46.22	9.50	55.72	63.53	-7.81	QP
2	0.2020	31.54	9.50	41.04	53.53	-12.49	AVG
3	4.0060	35.18	10.00	45.18	56.00	-10.82	QP
4	4.2780	19.77	10.00	29.77	46.00	-16.23	AVG
5	8.4180	18.32	10.00	28.32	50.00	-21.68	AVG
6	8.4860	29.97	10.00	39.97	60.00	-20.03	QP

Plot of Conducted Emissions Test Data

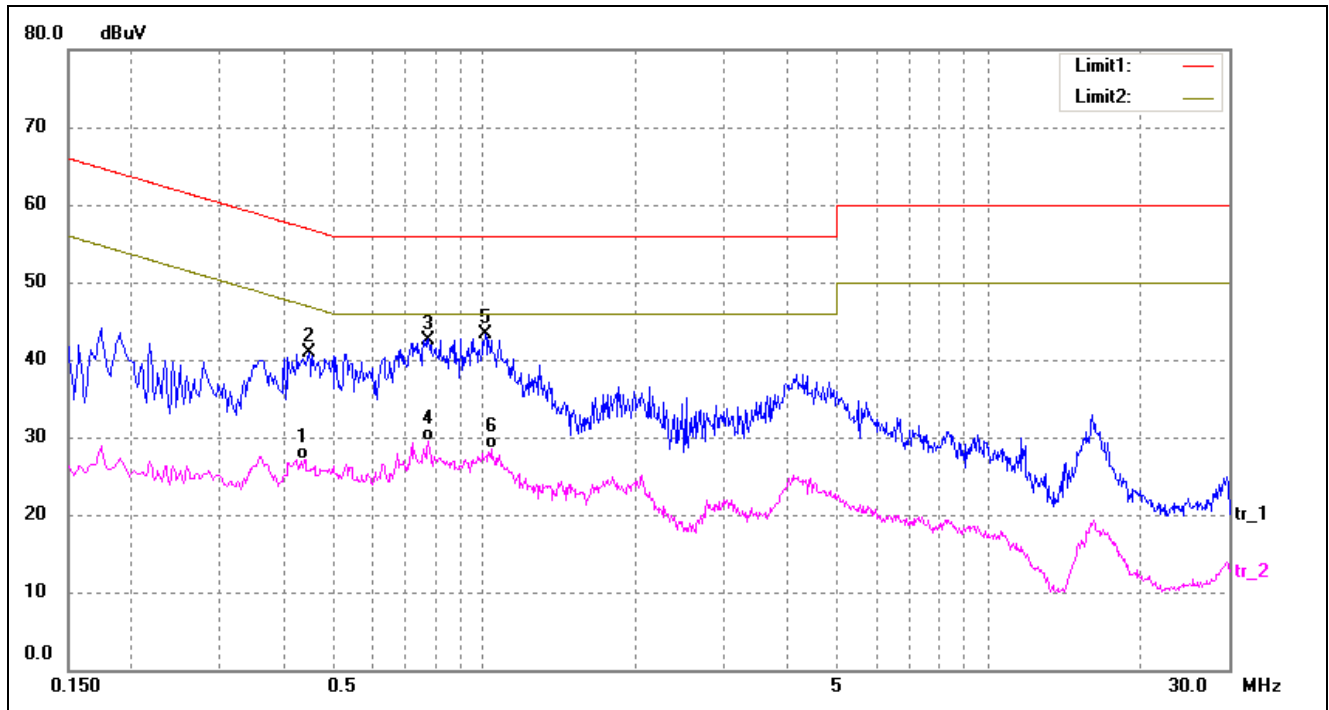
EUT: Mobile phone
 Tested Model: Infineum Z5
 Operating Condition: TM2
 Comment: AC 120V/60Hz; USB 5V

Test Specification: Line



No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV)	Limit (dBuV)	Margin (dB)	Detector
1	0.1820	22.65	12.50	35.15	54.39	-19.24	AVG
2*	0.1900	43.63	12.50	56.13	64.04	-7.91	QP
3	0.7820	32.07	12.78	44.85	56.00	-11.15	QP
4	0.7820	20.36	12.78	33.14	46.00	-12.86	AVG
5	1.0260	32.41	13.00	45.41	56.00	-10.59	QP
6	1.0260	20.08	13.00	33.08	46.00	-12.92	AVG

Test Specification: Neutral



No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV)	Limit (dBuV)	Margin (dB)	Detector
1	0.4420	14.55	12.50	27.05	47.02	-19.97	AVG
2	0.4500	28.45	12.50	40.95	56.88	-15.93	QP
3	0.7780	29.82	12.78	42.60	56.00	-13.40	QP
4	0.7780	16.67	12.78	29.45	46.00	-16.55	AVG
5*	1.0060	30.38	13.00	43.38	56.00	-12.62	QP
6	1.0340	15.45	13.00	28.45	46.00	-17.55	AVG

4. Radiated Emissions

4.1 Measurement Uncertainty

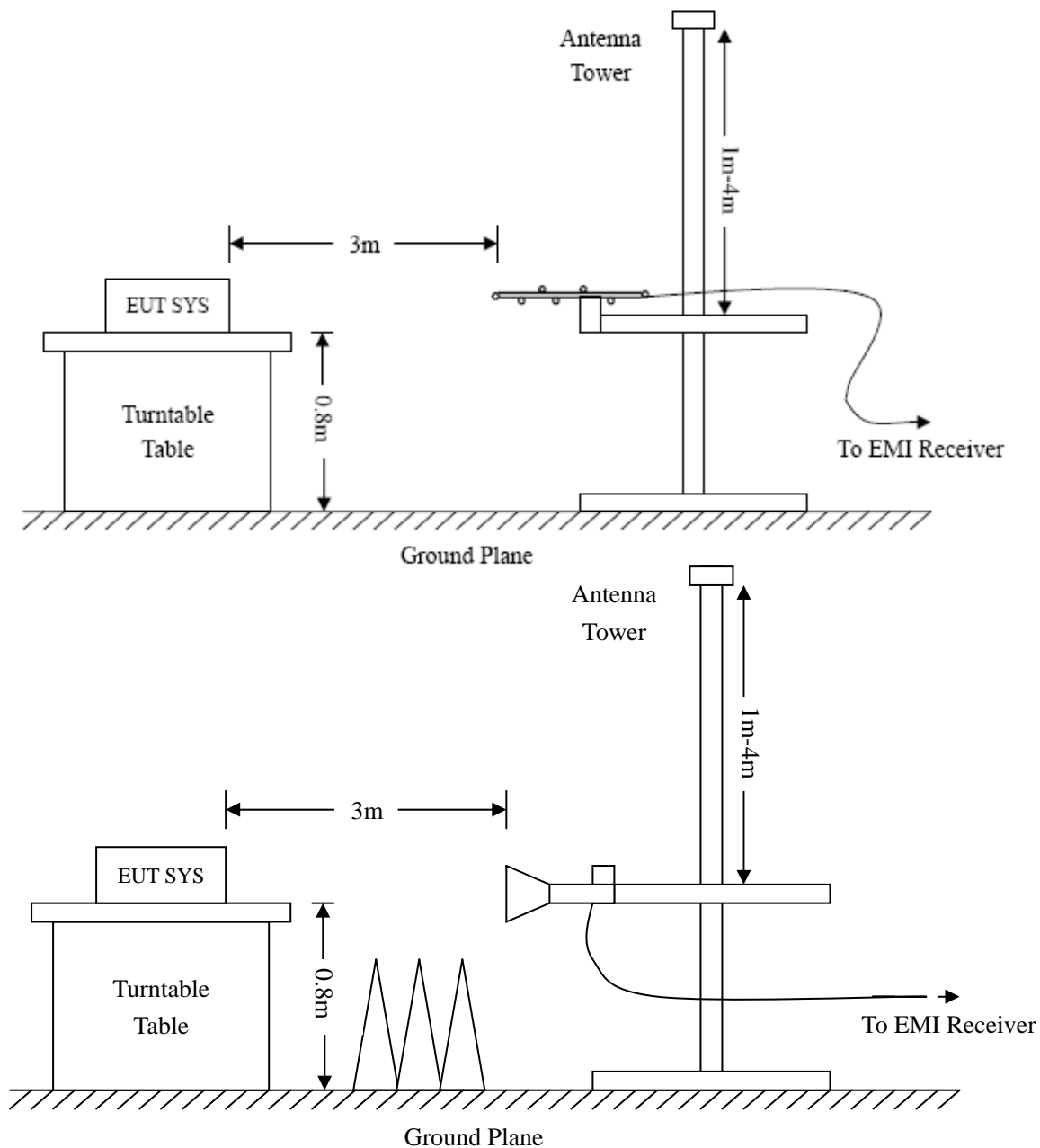
Base on NIS 81, The Treatment of Uncertainty in EMC Measurements, the best estimate of the uncertainty of any radiation emissions measurement is ± 5.10 dB.

4.2 Test Procedure

The setup of EUT is according with per ANSI C63.4-2014 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.



4.3 Test Receiver Setup

Frequency :9kHz-30MHz

RBW=10KHz,

VBW =30KHz

Sweep time= Auto

Trace = max hold

Detector function = peak

Frequency :30MHz-1GHz

RBW=120KHz,

VBW=300KHz

Sweep time= Auto

Trace = max hold

Detector function = peak, QP

Frequency :Above 1GHz

RBW=1MHz,

VBW=3MHz(Peak), 10Hz(AV)

Sweep time= Auto

Trace = max hold

Detector function = peak, AV

4.4 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:

$$\text{Corr. Ampl.} = \text{Indicated Reading} - \text{Corr. Factor}$$

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

$$\text{Margin} = \text{Corr. Ampl.} - \text{FCC Part 15.109(a) Limit}$$

4.5 Environmental Conditions

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

4.6 Summary of Test Results/Plots

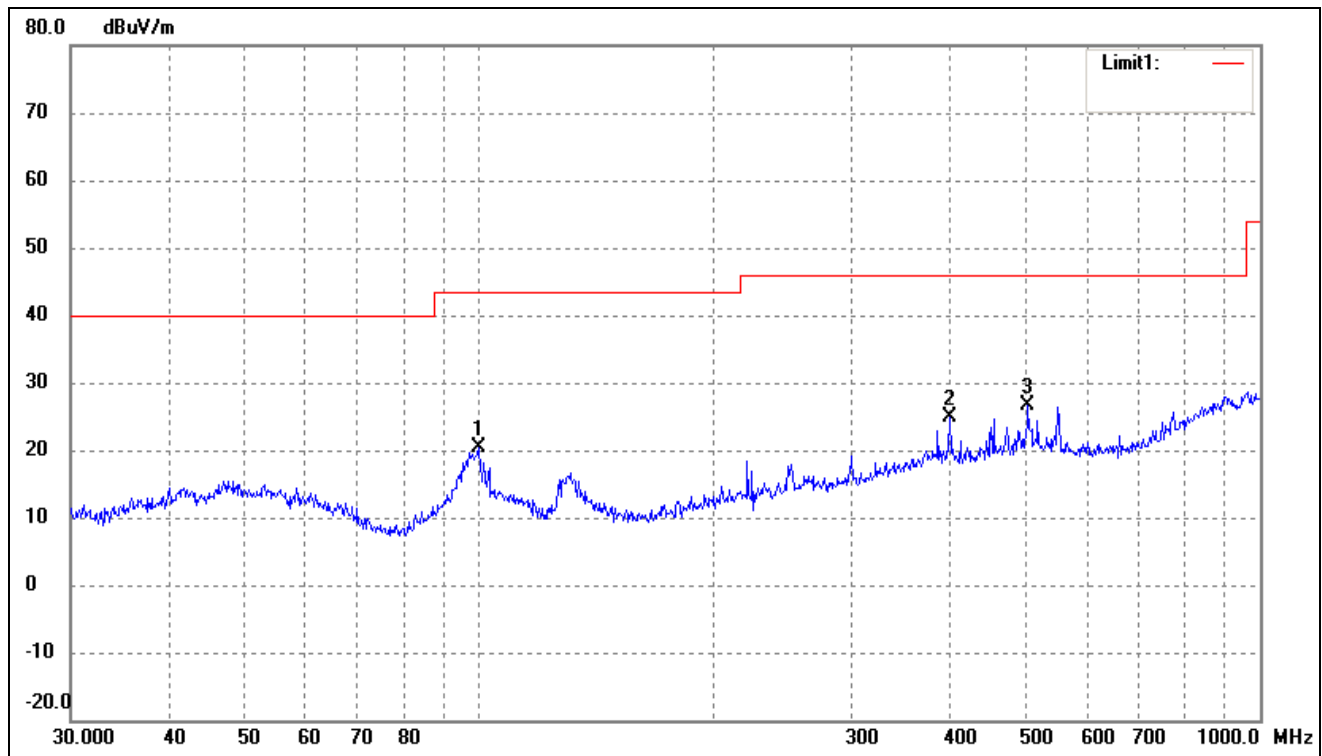
According to the data, the EUT complied with the FCC Part 15.109(a) rule, and had the worst margin of:

-3.93 dB at 79.2426 MHz in the Vertical polarization, TM3, 9 kHz to 7.5 GHz, 3Meters

Plot of Radiated Emissions Test Data

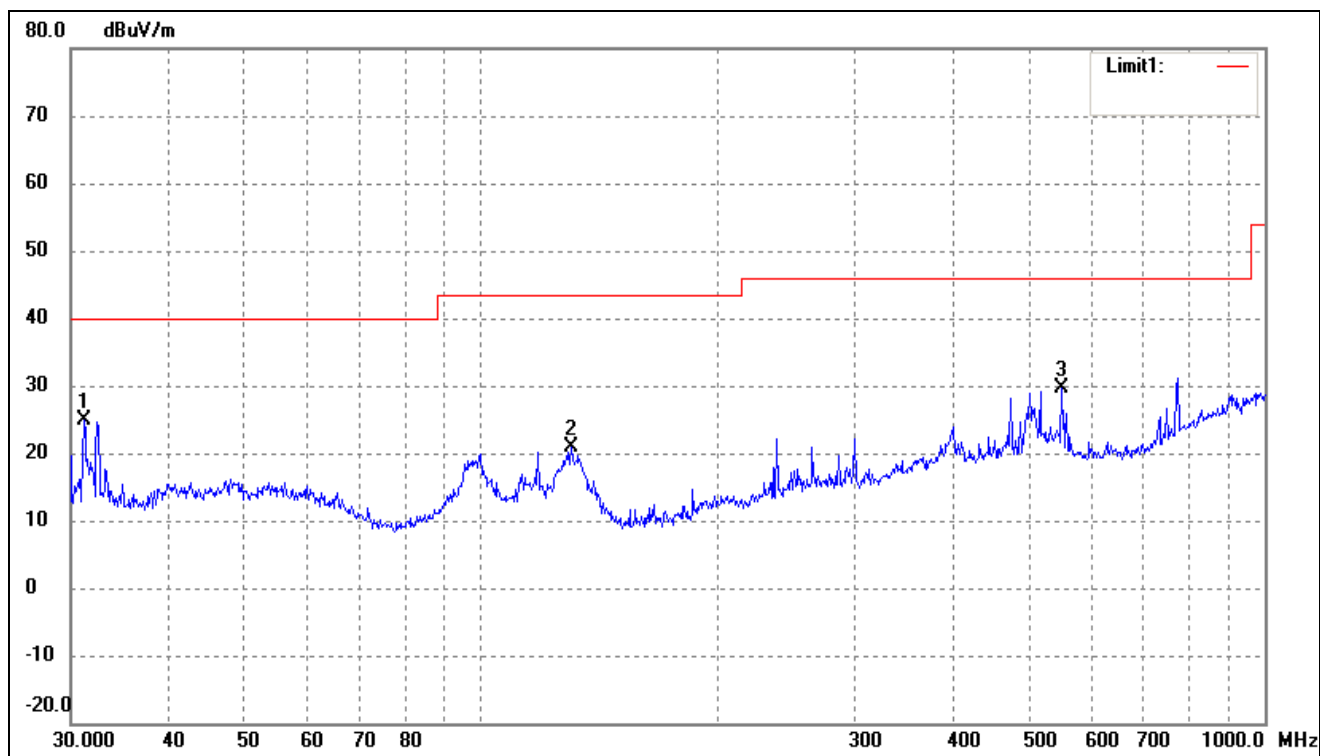
EUT: Mobile phone
Tested Model: Infineum Z5
Operating Condition: TM1
Comment: AC 120V/60Hz; Adapter DC 5V

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	99.8777	30.06	-9.58	20.48	43.50	-23.02	102	100	QP
2	400.4319	27.79	-2.92	24.87	46.00	-21.13	148	100	QP
3	504.7062	27.76	-1.15	26.61	46.00	-19.39	159	100	QP

Test Specification: Vertical



No.	Frequency (MHz)	Reading (dBuV/m)	Correct Factor(dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Degree (°)	Height (cm)	Remark
1	31.1798	35.54	-10.60	24.94	40.00	-15.06	105	100	QP
2	130.3789	33.59	-12.76	20.83	43.50	-22.67	167	100	QP
3	550.9480	29.50	0.16	29.66	46.00	-16.34	188	100	QP

Plot of Radiated Emissions Test Data

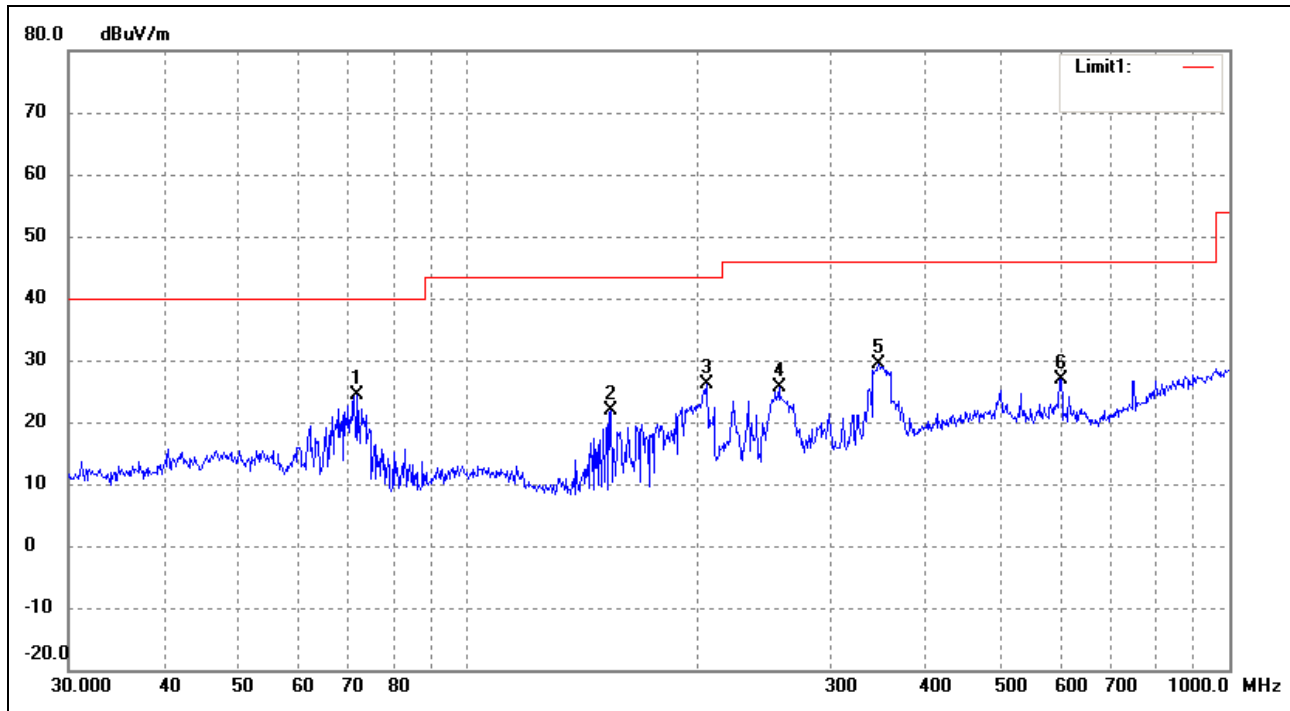
EUT: Mobile phone

Tested Model: Infineum Z5

Operating Condition: TM2

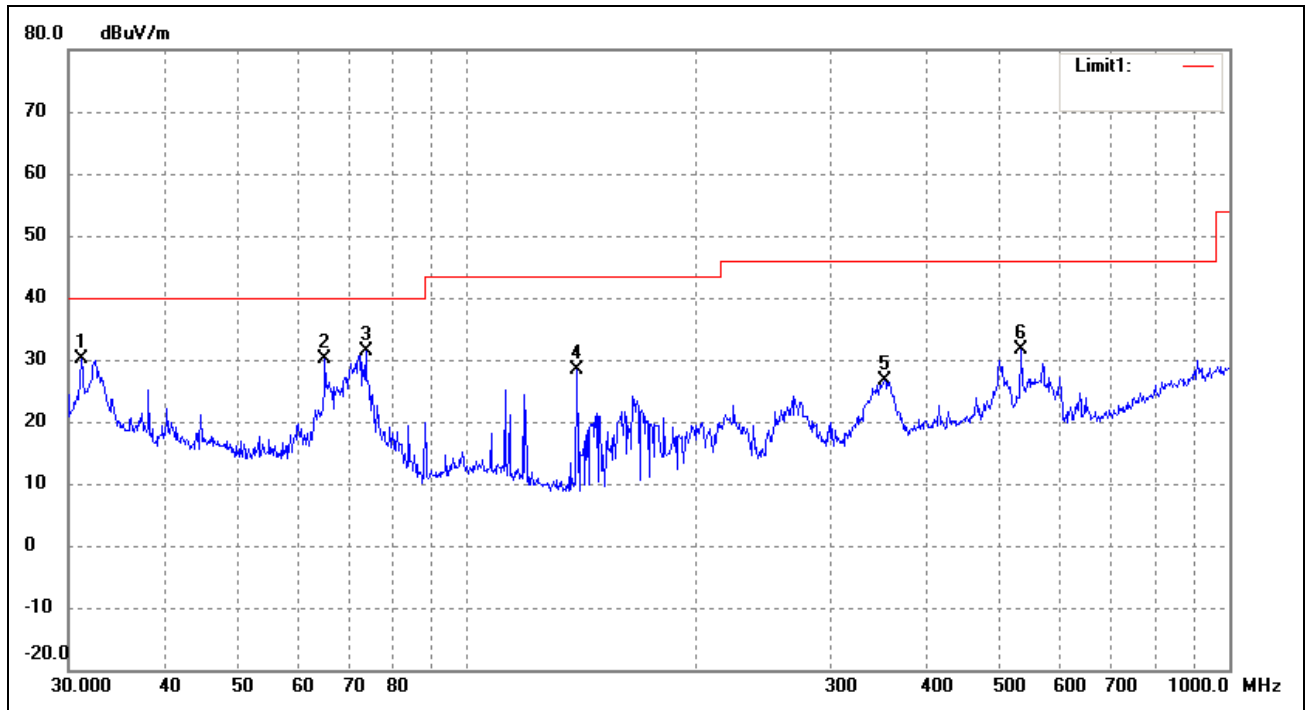
Comment: USB: DC5V

Test Specification: Horizontal



No.	Frequency	Reading	Correct	Result	Limit	Margin	Degree	Height	Detector
	(MHz)	(dBuV)	(dB/m)	(dBuV/m)	(dBuV/m)	(dB)	()	(cm)	
1*	71.8320	36.67	-12.26	24.41	40.00	-15.59	102	100	QP
2	154.2786	34.63	-12.69	21.94	43.50	-21.56	114	100	QP
3	206.3976	35.04	-9.01	26.03	43.50	-17.47	127	100	QP
4	256.5211	32.80	-7.29	25.51	46.00	-20.49	166	100	QP
5	346.8092	33.76	-4.34	29.42	46.00	-16.58	184	100	QP
6	601.4265	28.69	-1.84	26.85	46.00	-19.15	201	100	QP

Test Specification: Vertical

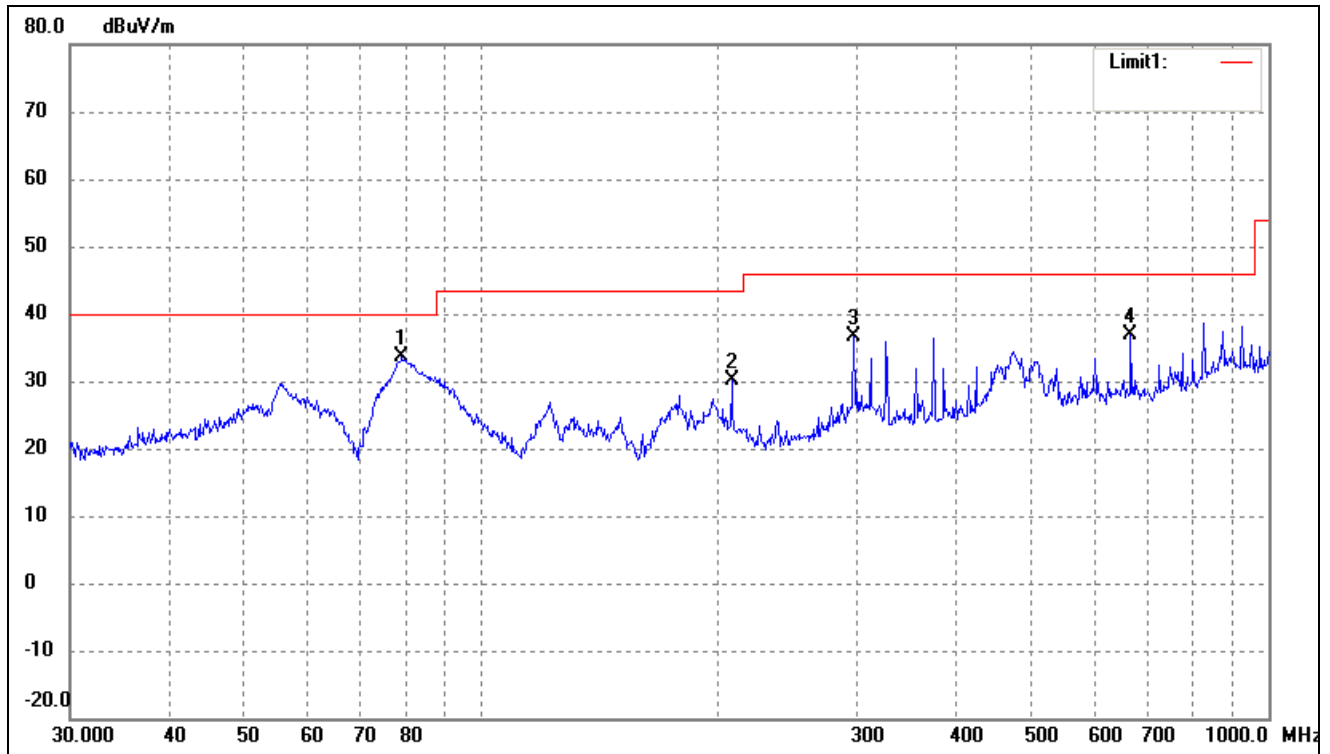


No.	Frequenc y	Reading	Correct	Result	Limit	Margin	Degree	Height	Detector
	(MHz)	(dBuV)	(dB/m)	(dBuV/m)	(dBuV/m)	(dB)	()	(cm)	
1	31.1798	40.67	-10.60	30.07	40.00	-9.93	114	100	QP
2	65.1145	39.95	-9.86	30.09	40.00	-9.91	127	100	QP
3*	73.6170	44.29	-12.80	31.49	40.00	-8.51	149	100	QP
4	139.3613	41.45	-13.13	28.32	43.50	-15.18	166	100	QP
5	352.9434	30.73	-4.21	26.52	46.00	-19.48	184	100	QP
6	531.9635	31.83	-0.32	31.51	46.00	-14.49	201	100	QP

Plot of Radiated Emissions Test Data

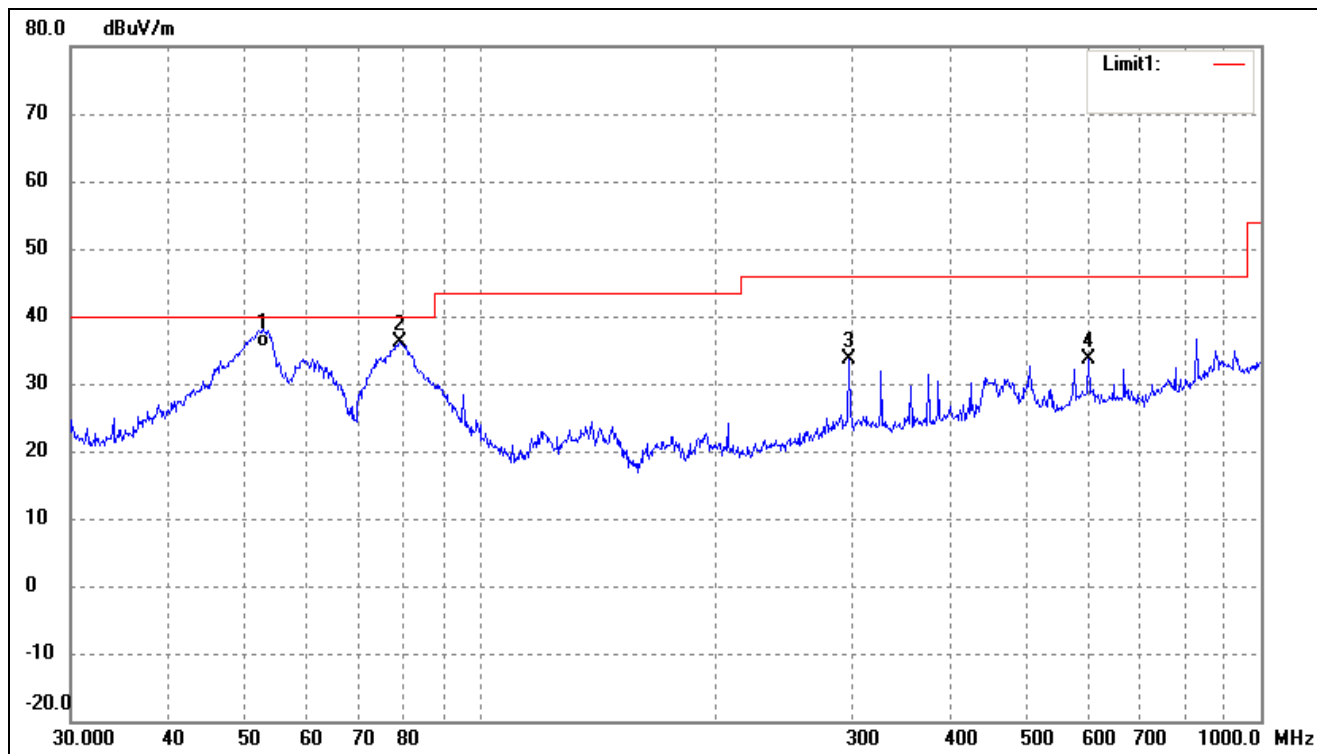
EUT: Mobile phone
 Tested Model: Infineum Z5
 Operating Condition: TM3
 Comment: AC 120V/60Hz; Adapter DC 5V

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	79.2426	32.43	1.09	33.52	40.00	-6.48	58	150	QP
2	207.8501	25.99	4.23	30.22	43.50	-13.28	326	100	QP
3	297.2241	27.49	9.06	36.55	46.00	-9.45	29	120	QP
4	668.1423	24.73	12.19	36.92	46.00	-9.08	209	100	QP

Test Specification: Vertical



No.	Frequency (MHz)	Reading (dBuV/m)	Correct Factor(dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Degree (°)	Height (cm)	Remark
1	52.9453	29.50	6.00	35.50	40.00	-4.50	51	100	QP
2	79.2426	34.98	1.09	36.07	40.00	-3.93	308	100	QP
3	297.2241	24.47	9.06	33.53	46.00	-12.47	120	100	QP
4	601.4265	20.36	13.22	33.58	46.00	-12.42	359	100	QP

Note: Testing is carried out with frequency rang 9kHz to the 7.5GHz, which above 1GHz is close to the noise base even antenna close up to 1meter distance according the measurement of ANSI C63.4.

The measurements greater than 20dB below the limit from 9kHz to 30MHz and test data are not provided.

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