

FCC Part 15B

Measurement and Test Report

For

SENWA MEXICO,S.A.DE C.V

Av.Javier Barros Sierra 540,Torre I,Planta 5; COL.LOMAS DE SANTA FE

DELEGACION ALVARO OBREGON Mexico

FCC ID: 2AAA6-S305

Test Rule(s): FCC Part 15 Subpart B

Product Description: Mobile Phone

Tested Model: S305

Report No.: STR16018051I-3

Tested Date: 2016-01-13 to 2016-01-27

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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: SENWA MEXICO,S.A.DE C.V
Address of applicant: Av.Javier Barros Sierra 540,Torre I,Planta 5; COL.LOMAS DE SANTA FE DELEGACION ALVARO OBREGON Mexico

Manufacturer: GPLUS.TELECOM CO.,LIMITED
Address of manufacturer: Office:Room 505-507,East Science And Technology Building, Keyuan Road Science And Technology Park,Nanshan, Shenzhen.

General Description of EUT	
Product Name:	Mobile Phone
Trade Name:	SENWA
Model No.:	S305
Adapter Model:	S305
	INPUT:100-240V,50/60Hz; OUTPUT:5V, 1.5A
Hardware version:	K18 V1.0
Software version:	SENWA_S305_Ver1.0
Note: The test data is gathered from a production sample provided by the manufacturer.	

Technical Characteristics of EUT	
Rated Voltage:	DC 3.7V Li-ion Battery
Battery Capacity:	1000mAh
Rated Power:	3.7V
Lowest Internal Frequency:	26MHz
Highest Internal Frequency:	312MHz
Classification of ITE:	Class B

1.2 Test Standards

The following report is prepared on behalf of the SENWA MEXICO,S.A.DE C.V 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

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	1.2	Unshielded	Without Ferrite

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

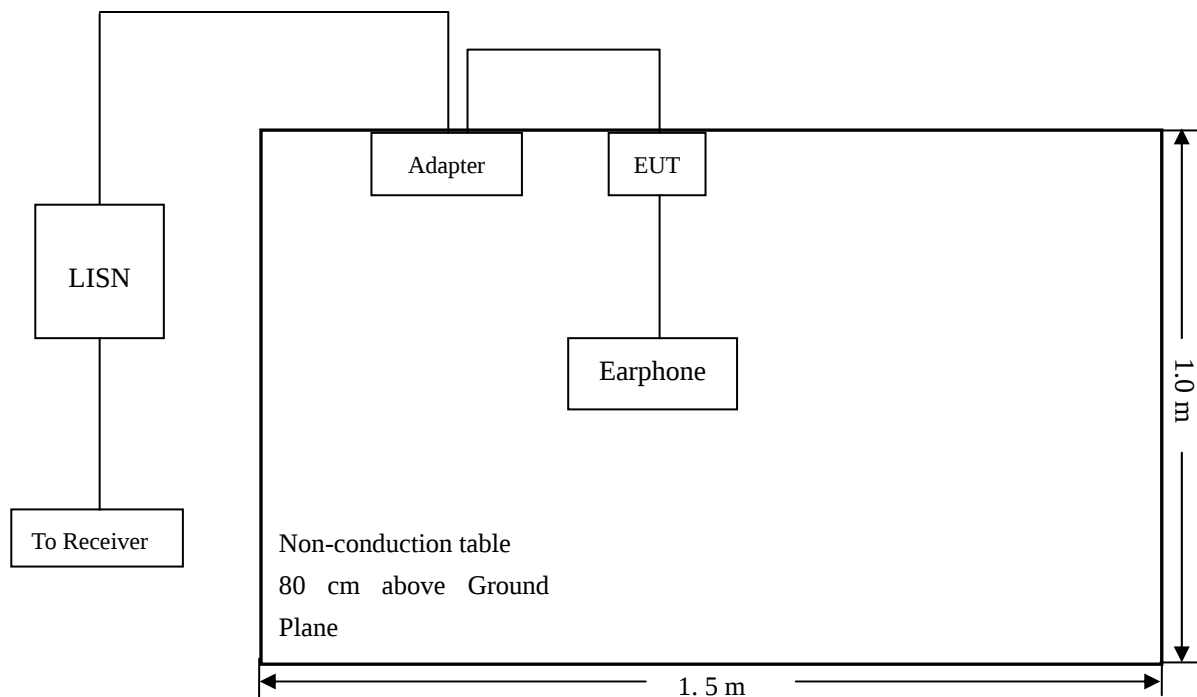
3.1 Measurement Uncertainty

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:

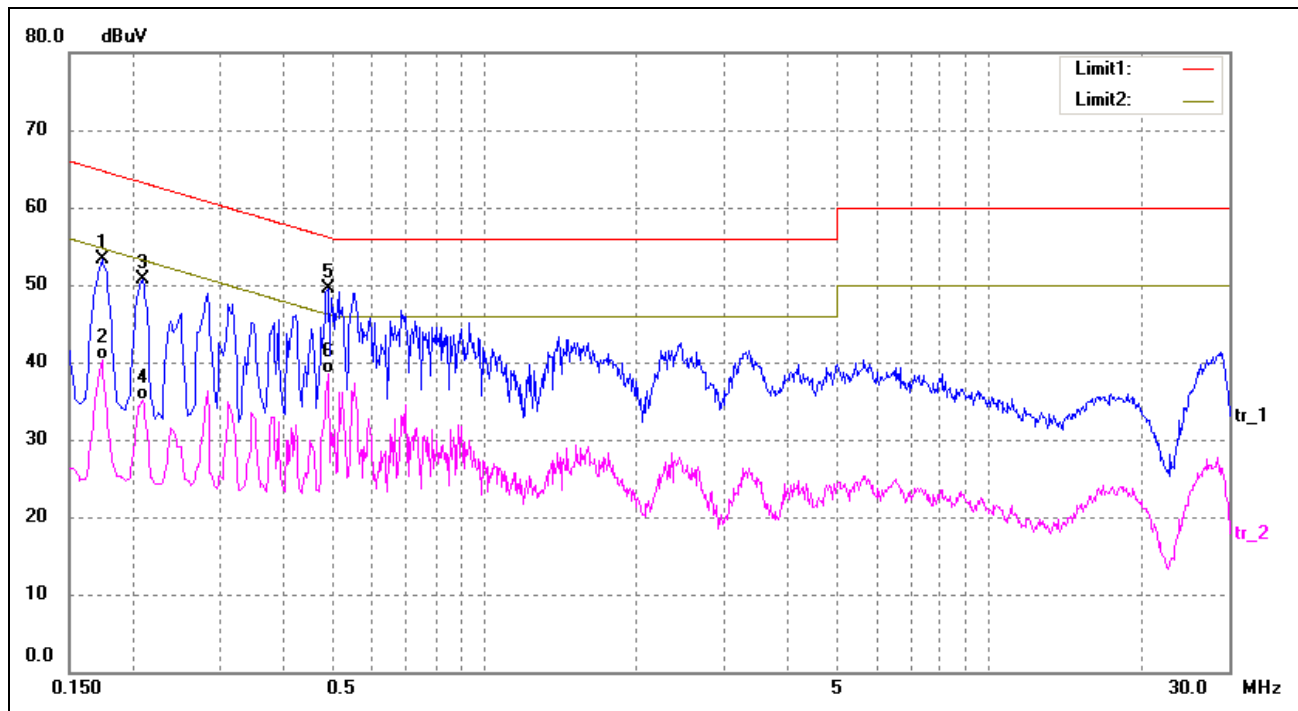
-3.68 dB at 0.5020 MHz in the **Neutral, TM3, Peak** detector, 0.15-30MHz

3.6 Conducted Emissions Test Data

Plot of Conducted Emissions Test Data

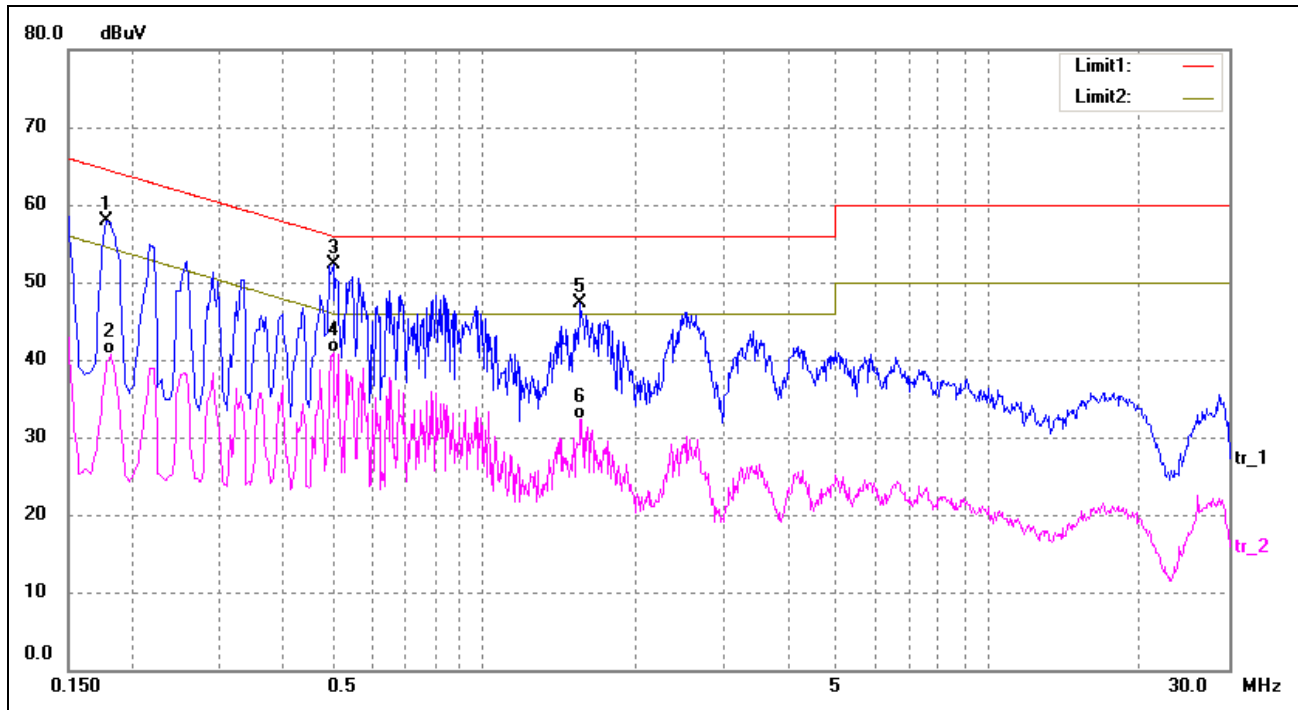
EUT: Mobile Phone
 Tested Model: S305
 Operating Condition: TM1
 Comment: AC 120V/60Hz; Adapter DC 5V

Test Specification: Neutral



No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV)	Limit (dBuV)	Margin (dB)	Detector
1	0.1740	40.82	12.50	53.32	64.77	-11.45	peak
2	0.1740	27.74	12.50	40.24	54.77	-14.53	AVG
3	0.2100	38.26	12.50	50.76	63.21	-12.45	peak
4	0.2100	22.55	12.50	35.05	53.21	-18.16	AVG
5*	0.4900	37.06	12.50	49.56	56.17	-6.61	peak
6	0.4900	25.98	12.50	38.48	46.17	-7.69	AVG

Test Specification: Line

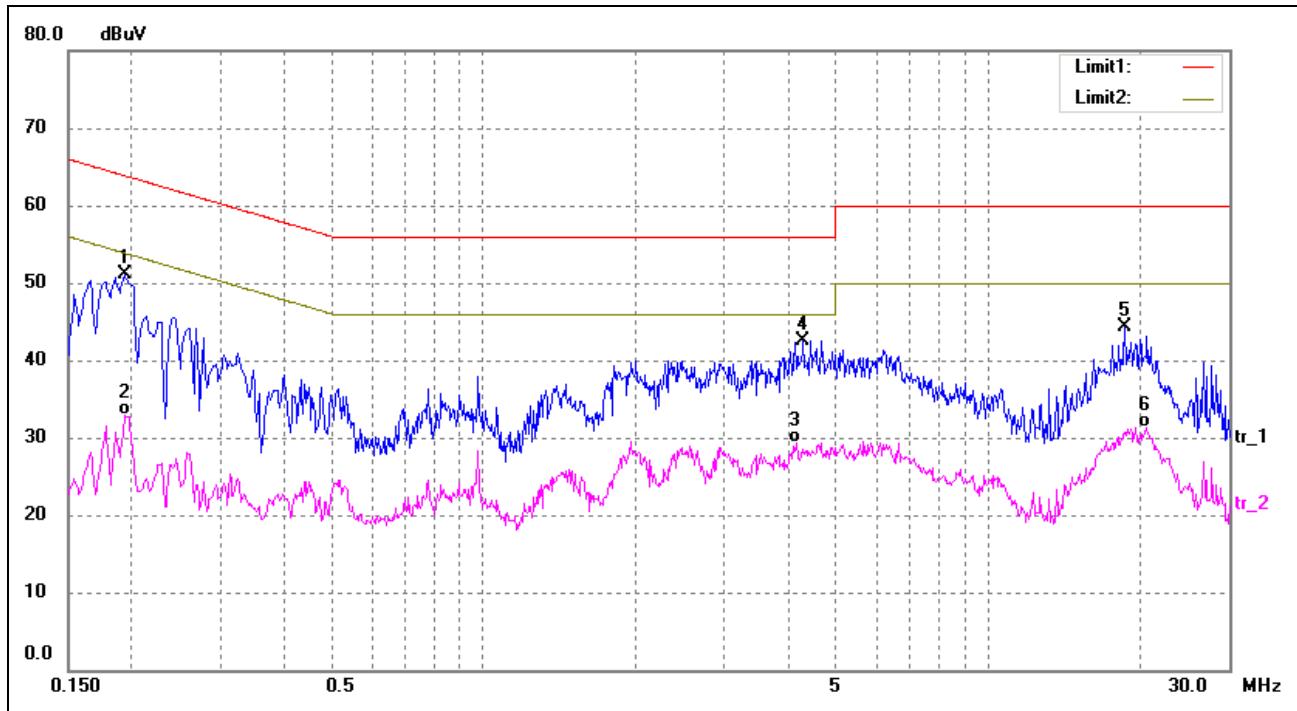


No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV)	Limit (dBuV)	Margin (dB)	Detector
1	0.1780	45.47	12.50	57.97	64.58	-6.61	peak
2	0.1820	28.16	12.50	40.66	54.39	-13.73	AVG
3*	0.5020	39.75	12.50	52.25	56.00	-3.75	peak
4	0.5020	28.33	12.50	40.83	46.00	-5.17	AVG
5	1.5580	34.40	13.00	47.40	56.00	-8.60	peak
6	1.5660	19.37	13.00	32.37	46.00	-13.63	AVG

Plot of Conducted Emissions Test Data

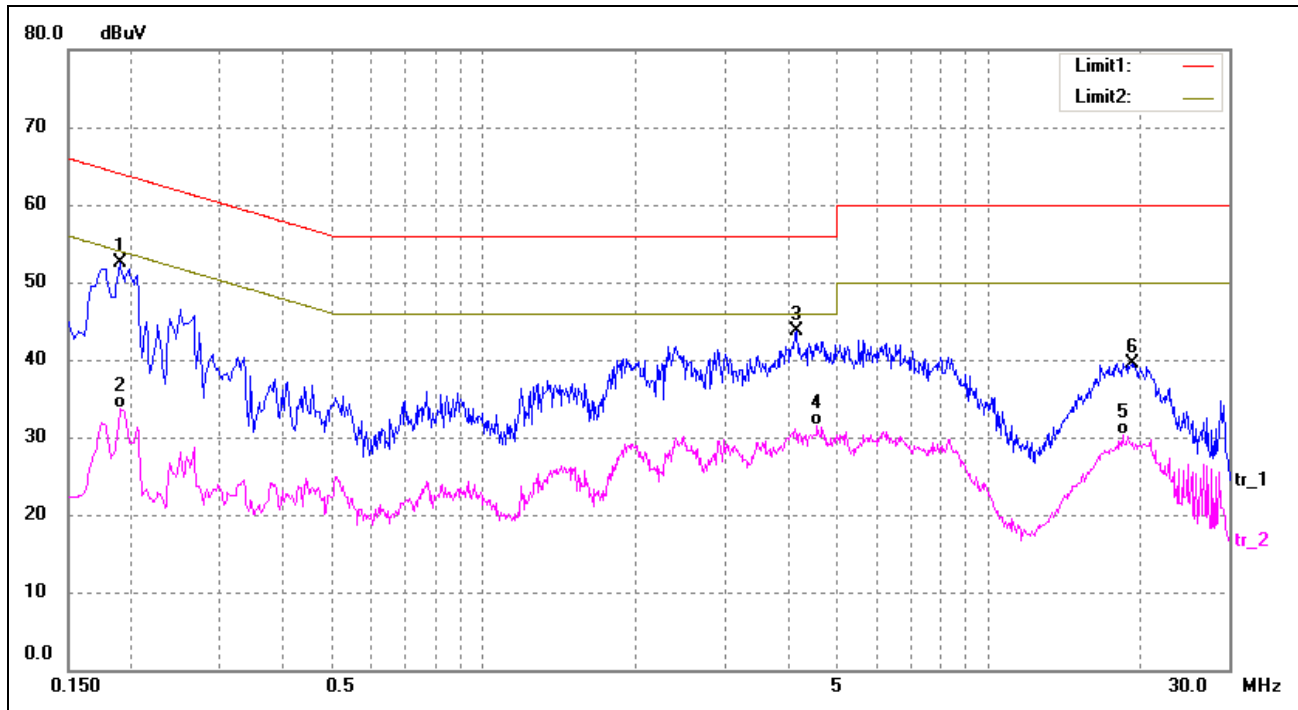
EUT: Mobile Phone
 Tested Model: S305
 Operating Condition: TM2
 Comment: AC 120V/60Hz; USB 5V

Test Specification: Neutral



No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV)	Limit (dBuV)	Margin (dB)	Detector
1*	0.1940	41.54	9.50	51.04	63.86	-12.82	peak
2	0.1940	23.35	9.50	32.85	53.86	-21.01	AVG
3	4.1780	19.31	10.00	29.31	46.00	-16.69	AVG
4	4.3140	32.59	10.00	42.59	56.00	-13.41	peak
5	18.6460	32.48	11.73	44.21	60.00	-15.79	peak
6	20.5260	19.37	12.00	31.37	50.00	-18.63	AVG

Test Specification: Line

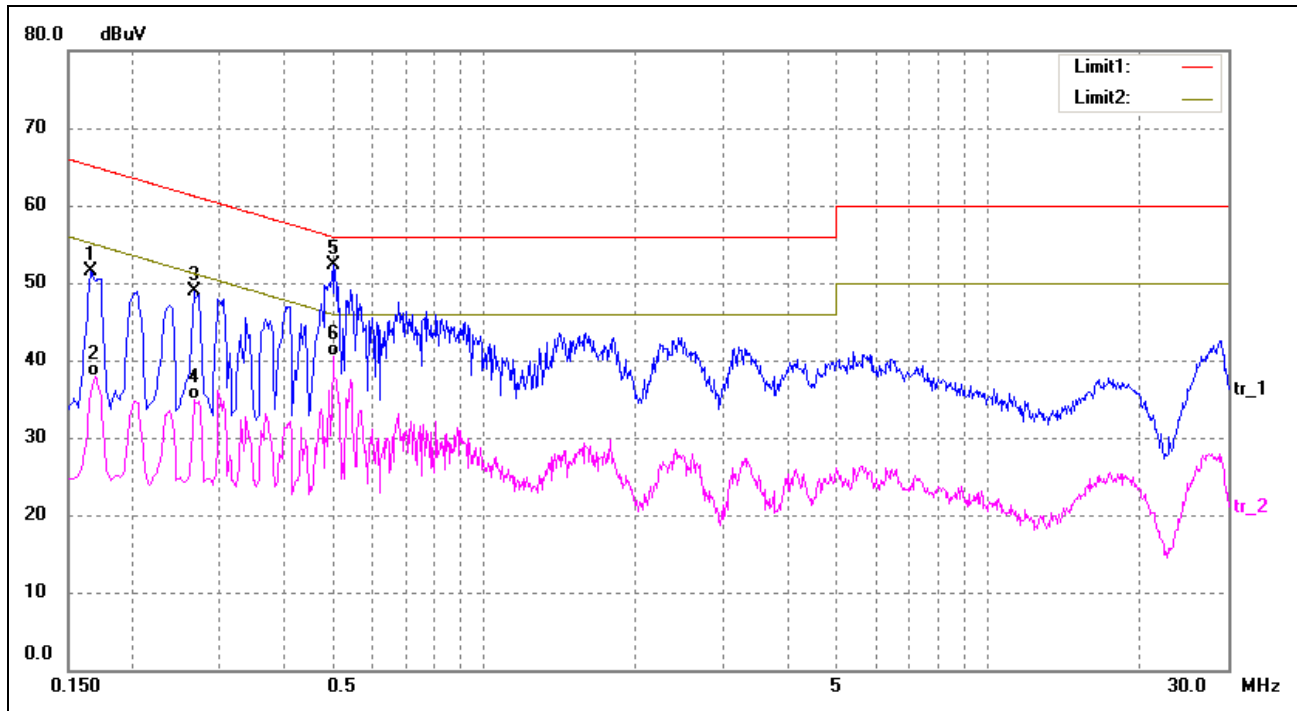


No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV)	Limit (dBuV)	Margin (dB)	Detector
1*	0.1900	42.99	9.50	52.49	64.04	-11.55	peak
2	0.1900	24.17	9.50	33.67	54.04	-20.37	AVG
3	4.1620	33.63	10.00	43.63	56.00	-12.37	peak
4	4.5940	21.53	10.00	31.53	46.00	-14.47	AVG
5	18.5020	18.66	11.70	30.36	50.00	-19.64	AVG
6	19.3300	27.66	11.87	39.53	60.00	-20.47	peak

Plot of Conducted Emissions Test Data

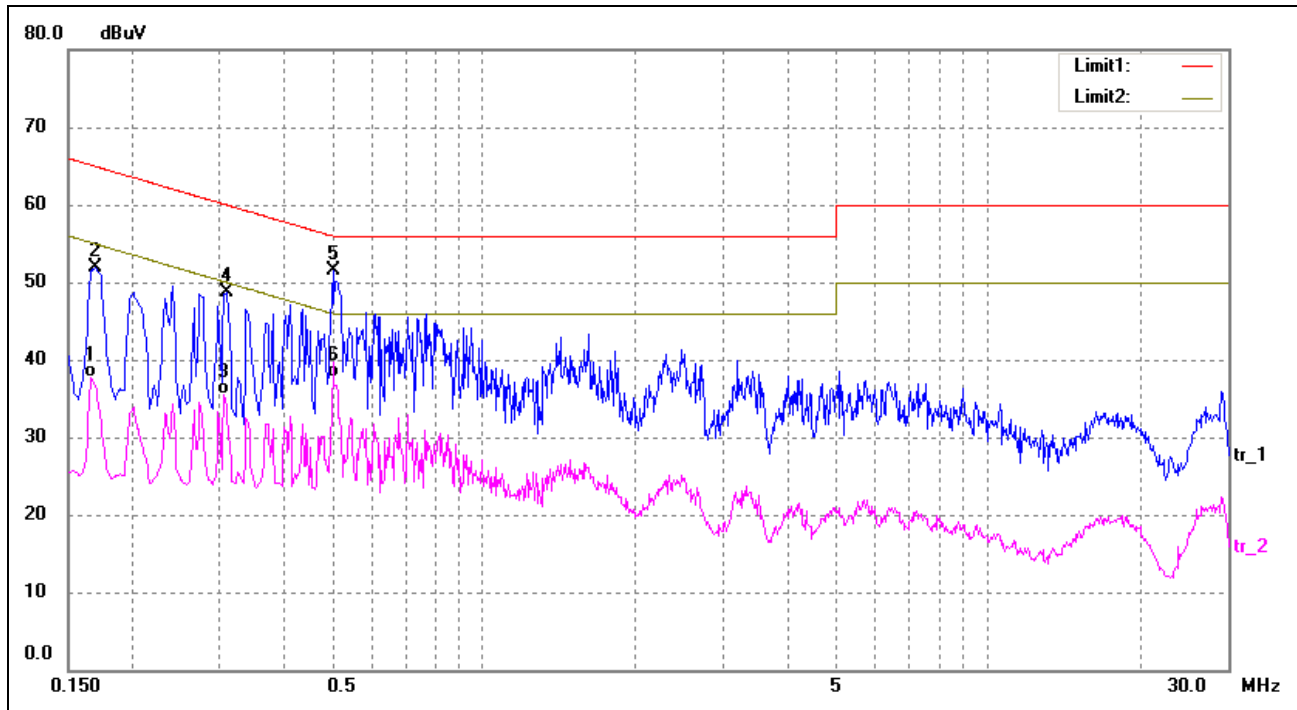
EUT: Mobile Phone
 Tested Model: S305
 Operating Condition: TM3
 Comment: AC 120V/60Hz; Adapter DC 5V

Test Specification: Neutral



No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV)	Limit (dBuV)	Margin (dB)	Detector
1	0.1660	39.08	12.50	51.58	65.16	-13.58	peak
2	0.1700	25.33	12.50	37.83	54.96	-17.13	AVG
3	0.2660	36.39	12.50	48.89	61.24	-12.35	peak
4	0.2660	22.32	12.50	34.82	51.24	-16.42	AVG
5*	0.5020	39.82	12.50	52.32	56.00	-3.68	peak
6	0.5020	27.93	12.50	40.43	46.00	-5.57	AVG

Test Specification: Line



No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV)	Limit (dBuV)	Margin (dB)	Detector
1	0.1660	25.11	12.50	37.61	55.16	-17.55	AVG
2	0.1700	39.40	12.50	51.90	64.96	-13.06	peak
3	0.3060	23.04	12.50	35.54	50.08	-14.54	AVG
4	0.3100	36.20	12.50	48.70	59.97	-11.27	peak
5*	0.5020	39.03	12.50	51.53	56.00	-4.47	peak
6	0.5020	25.11	12.50	37.61	46.00	-8.39	AVG

4. Radiated Emissions

4.1 Measurement Uncertainty

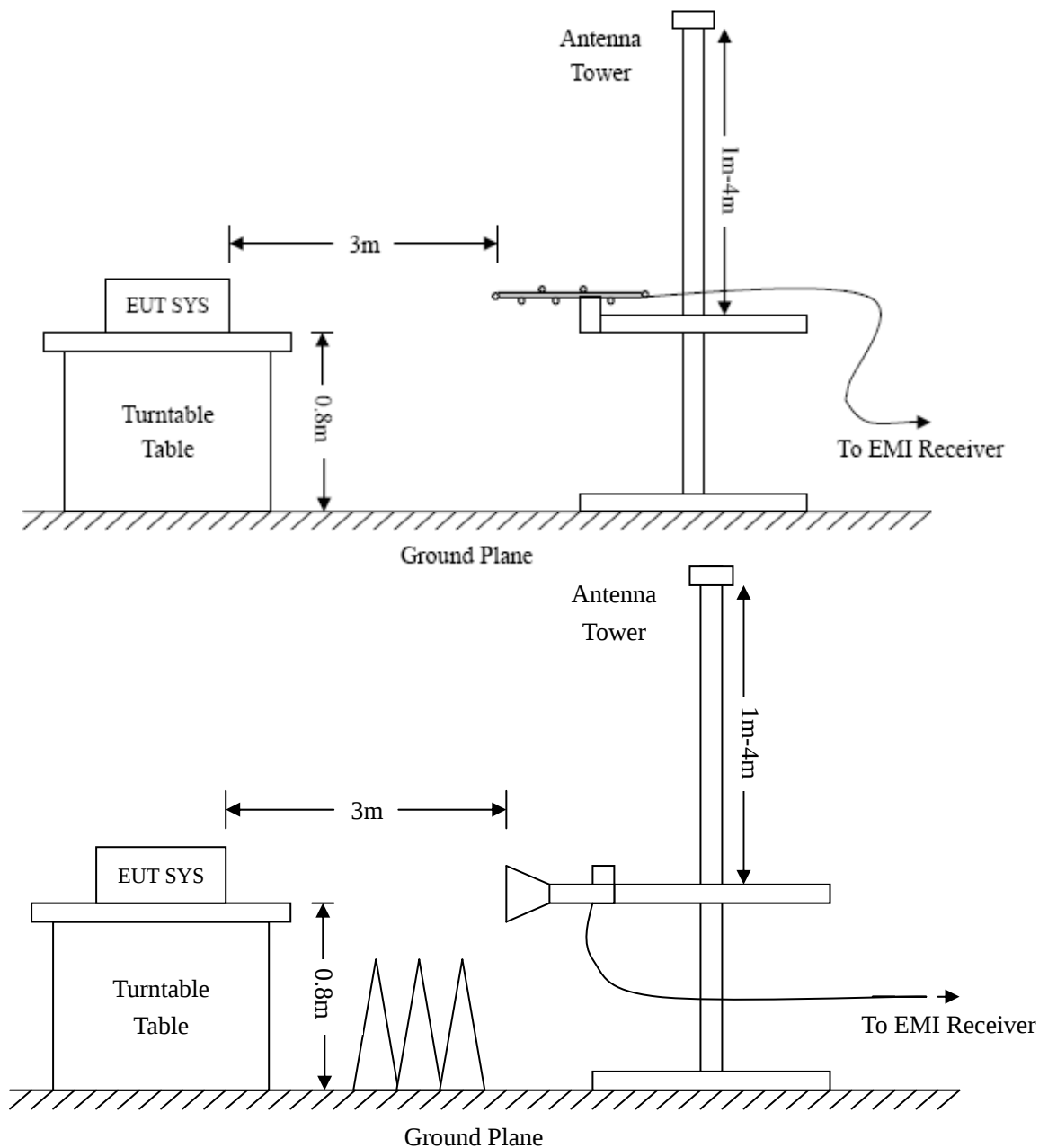
Base on NIS 81, The Treatment of Uncertainty in EMC Measurements, the best estimate of the uncertainty of any radiation emissions measurement is ± 5.10 dB.

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

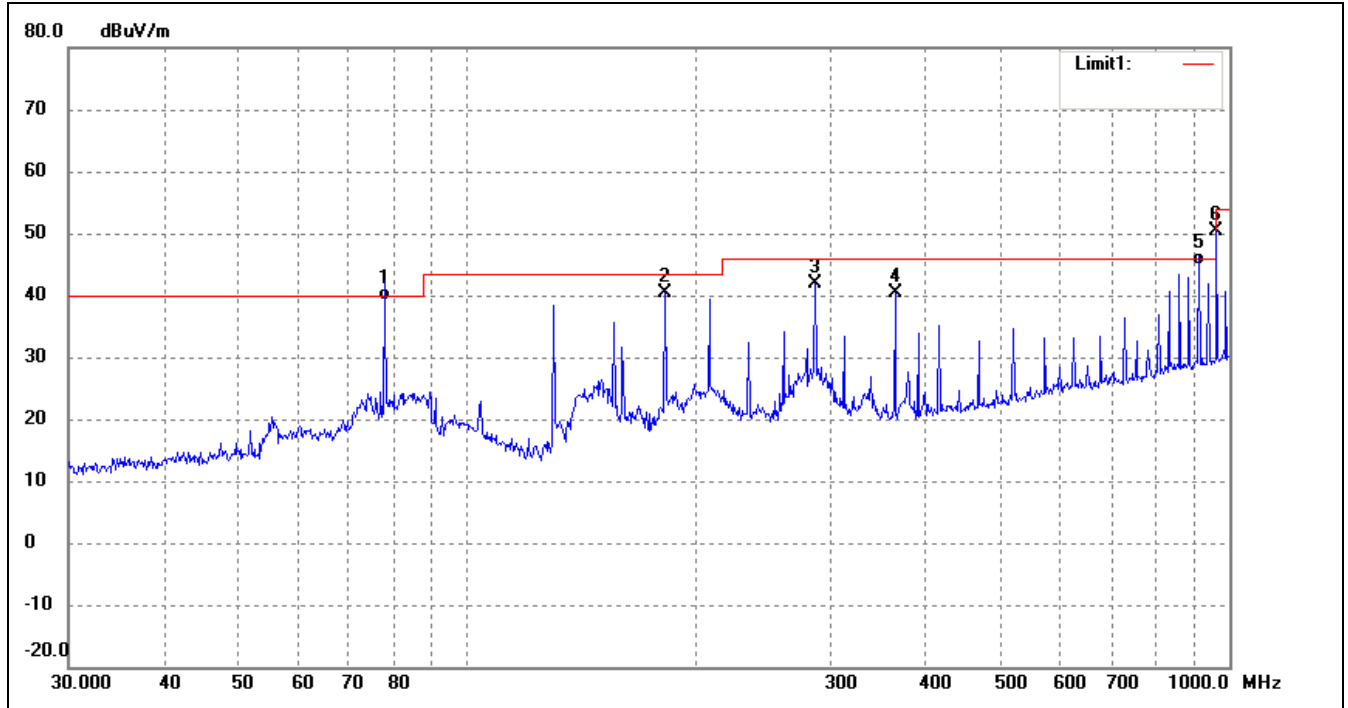
According to the data, the EUT complied with the FCC Part 15.109(a) rule, and had the worst margin of:

-0.78 dB at 77.8654 MHz in the Horizontal polarization, TM1, 30MHz to 2 GHz, 3Meters

Plot of Radiated Emissions Test Data

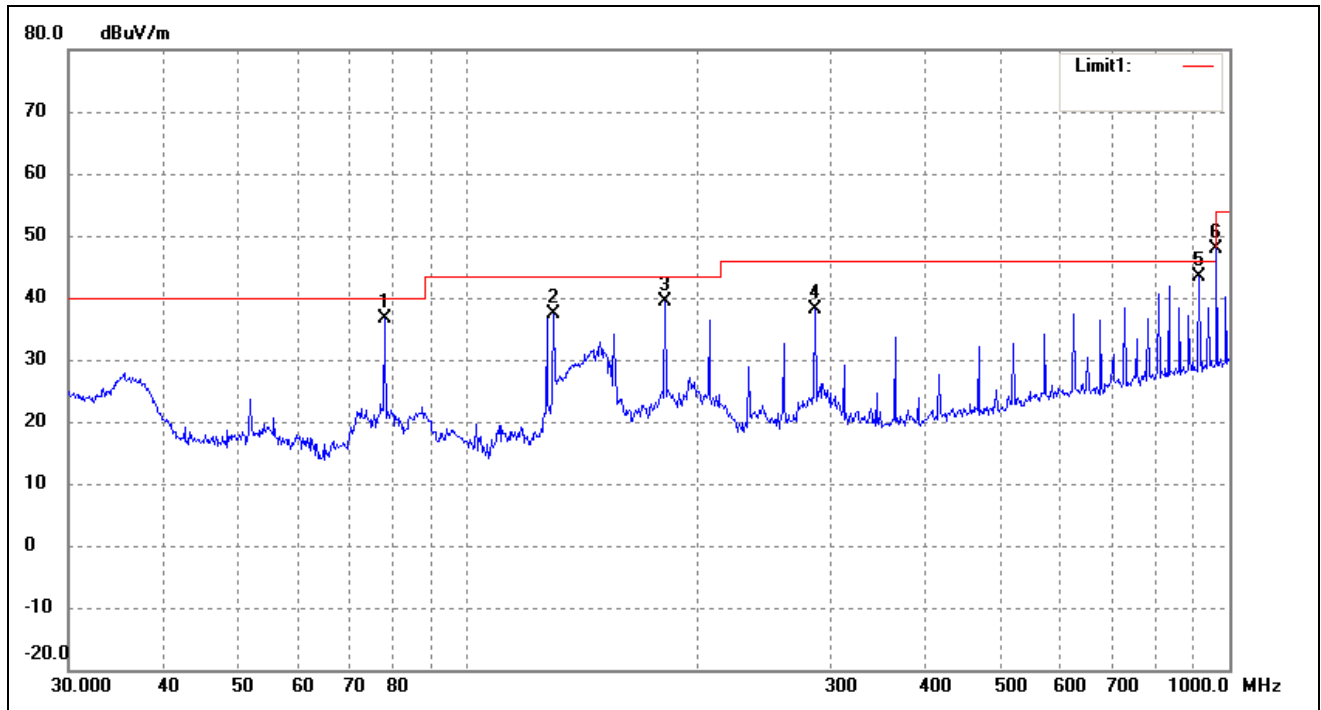
EUT: Mobile Phone
 Tested Model: S305
 Operating Condition: TM1
 Comment: AC 120V/60Hz; Adapter DC 5V

Test Specification: Horizontal



No.	Frequency (MHz)	Reading (dBuV/m)	Correct dB/m	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Degree (°)	Height (cm)	Remark
1	77.8654	52.20	-12.98	39.22	40.00	-0.78	33	100	QP
2	181.9202	50.04	-9.54	40.50	43.50	-3.00	51	100	peak
3	285.9778	47.56	-5.76	41.80	46.00	-4.20	247	100	peak
4	364.2595	44.17	-3.67	40.50	46.00	-5.50	127	100	peak
5	912.8620	39.70	5.14	44.84	46.00	-1.16	35	100	QP
6	962.1623	44.83	5.48	50.31	54.00	-3.69	42	100	peak

Test Specification: Vertical



No.	Frequency (MHz)	Reading (dBuV/m)	Correct dB/m	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Degree (°)	Height (cm)	Remark
1	77.8654	49.72	-12.98	36.74	40.00	-3.26	186	100	peak
2	129.9226	48.79	-11.31	37.48	43.50	-6.02	358	100	peak
3	181.9202	48.96	-9.54	39.42	43.50	-4.08	255	100	peak
4	285.9778	43.84	-5.76	38.08	46.00	-7.92	0	100	peak
5	912.8620	38.19	5.14	43.33	46.00	-2.67	0	100	peak
6	962.1623	42.30	5.48	47.78	54.00	-6.22	52	100	peak

Plot of Radiated Emissions Test Data

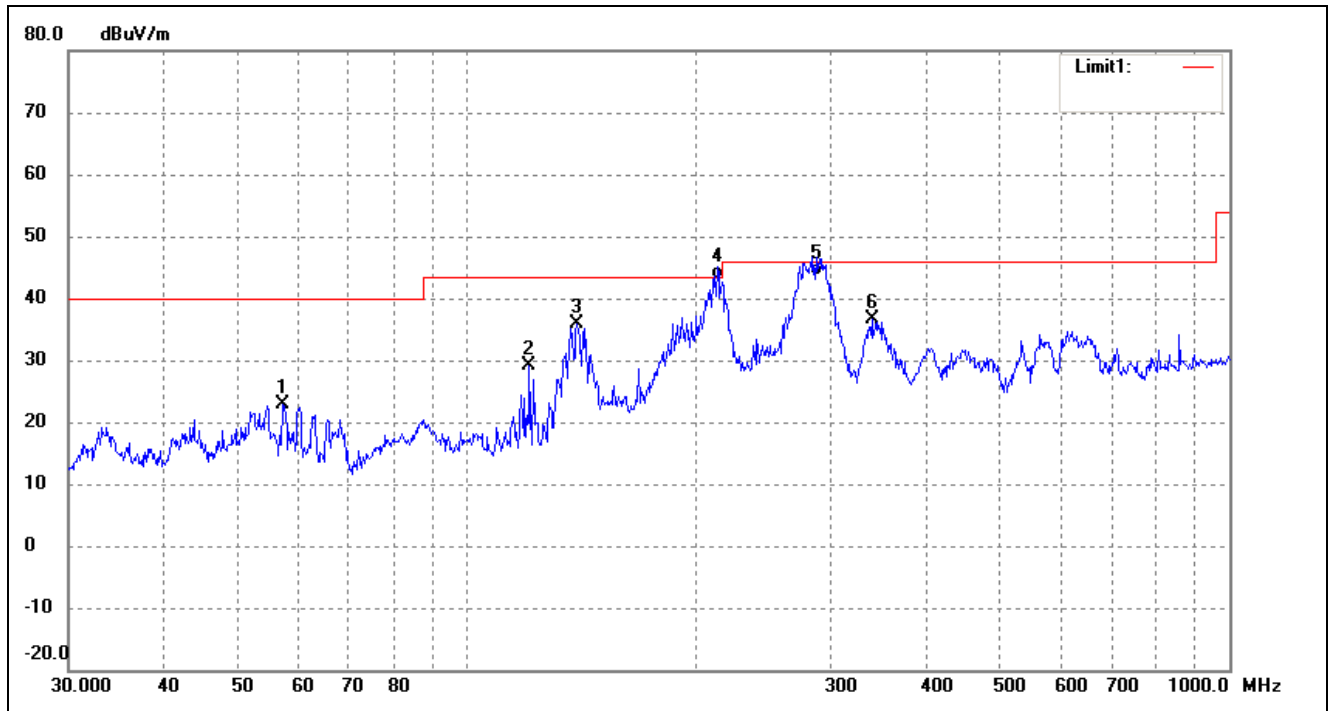
EUT: Mobile Phone

Tested Model: S305

Operating Condition: TM2

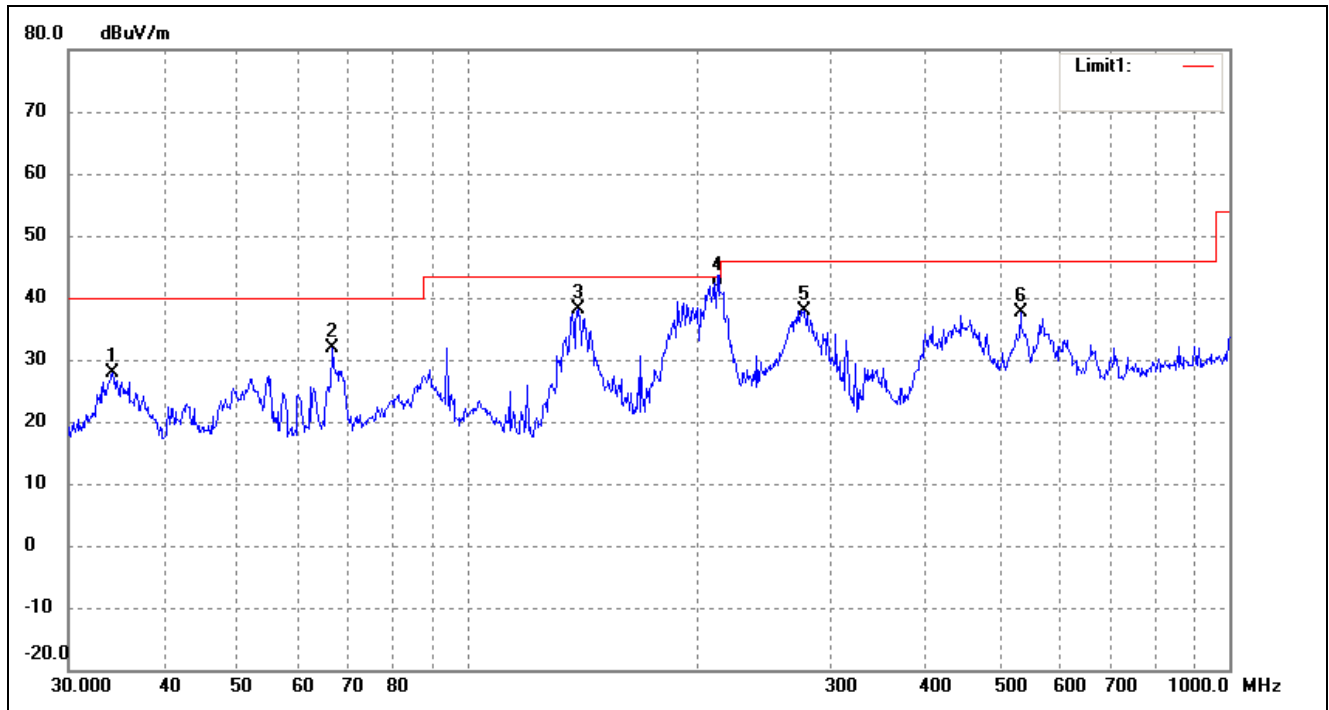
Comment: USB: DC5V

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	57.3923	33.38	-10.53	22.85	40.00	-17.15	51	100	peak
2	120.6991	40.38	-11.22	29.16	43.50	-14.34	37	100	peak
3	139.3613	47.23	-11.44	35.79	43.50	-7.71	58	100	peak
4	213.0151	51.18	-8.07	43.11	43.50	-0.39	86	100	QP
5	286.9823	49.41	-5.71	43.70	46.00	-2.30	124	100	QP
6	339.5888	40.62	-4.06	36.56	46.00	-9.44	203	100	peak

Test Specification: Vertical

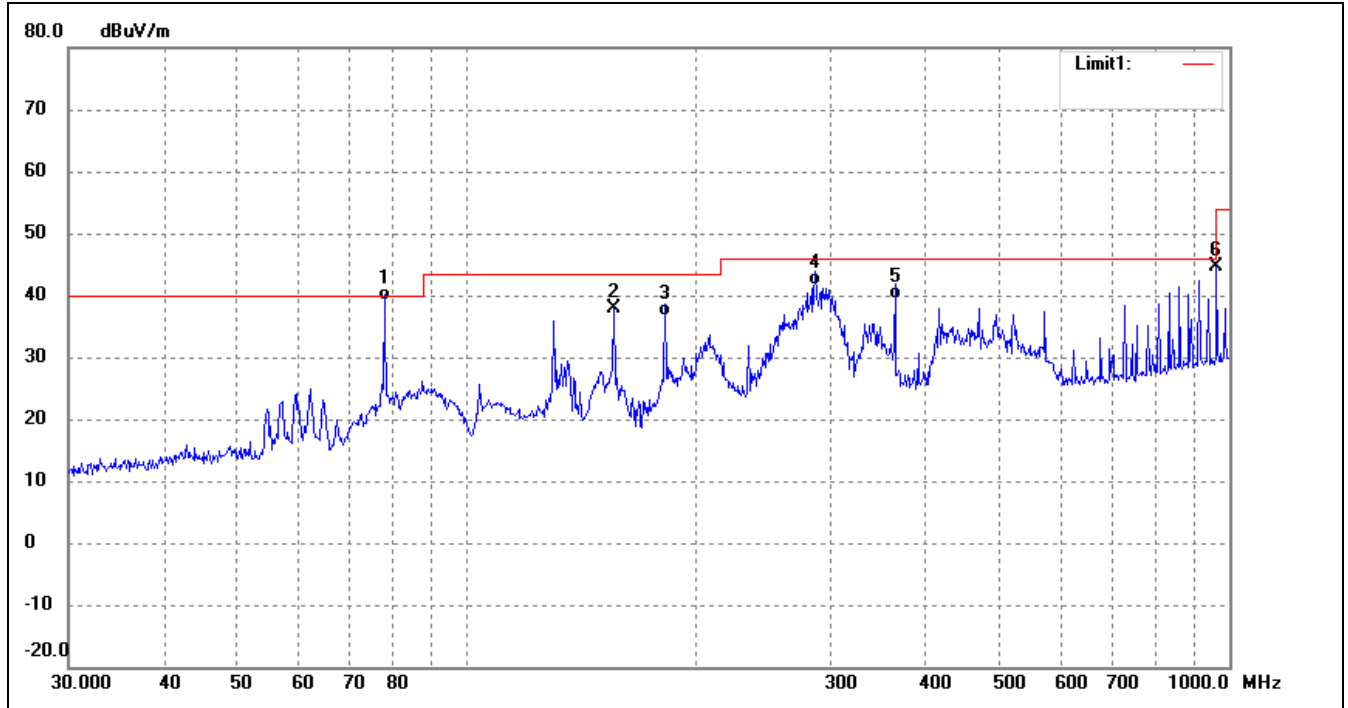


No.	Frequency (MHz)	Reading (dBuV/m)	Correct dB/m	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Degree (°)	Height (cm)	Remark
1	34.2760	39.18	-11.22	27.96	40.00	-12.04	327	100	peak
2	66.4989	44.39	-12.44	31.95	40.00	-8.05	22	100	peak
3	139.8508	49.45	-11.44	38.01	43.50	-5.49	41	100	peak
4	213.0151	49.73	-8.07	41.66	43.50	-1.84	125	100	QP
5	277.0935	44.03	-6.14	37.89	46.00	-8.11	358	100	peak
6	531.9635	38.11	-0.42	37.69	46.00	-8.31	0	100	peak

Plot of Radiated Emissions Test Data

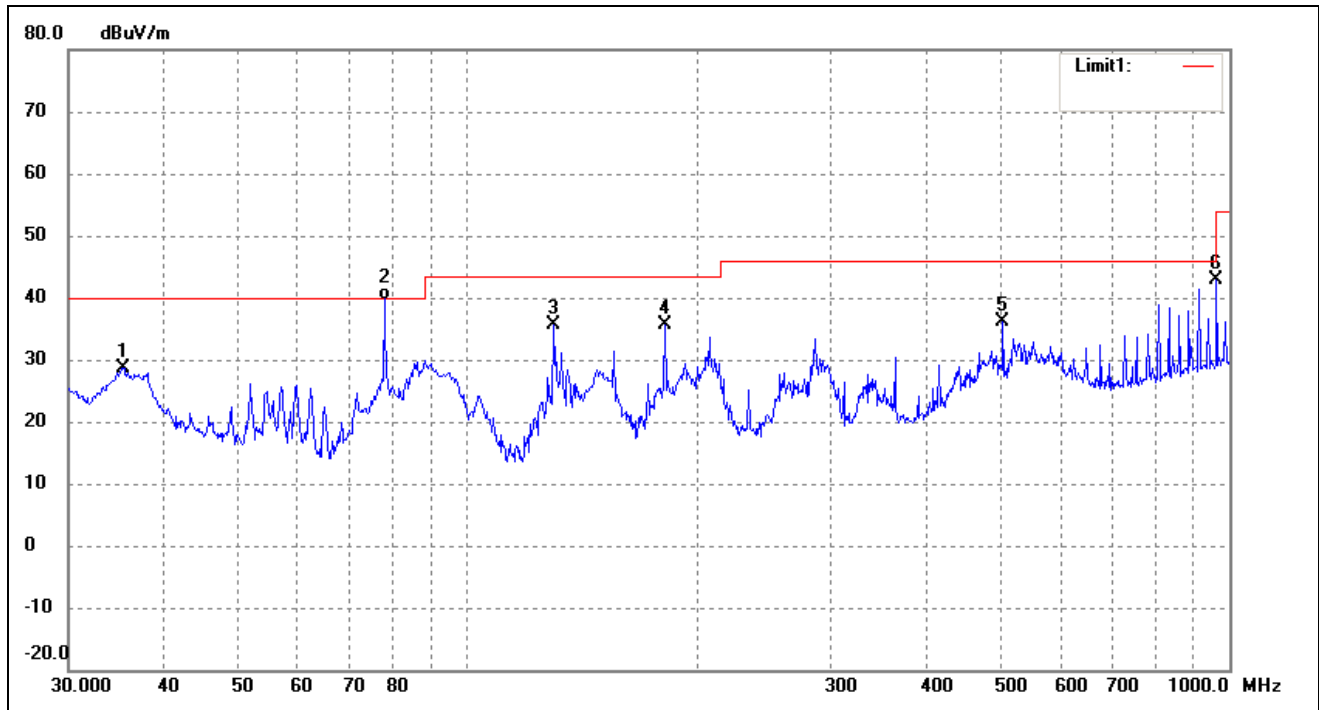
EUT: Mobile Phone
 Tested Model: S305
 Operating Condition: TM3
 Comment: AC 120V/60Hz; Adapter DC 5V

Test Specification: Horizontal



No.	Frequency (MHz)	Reading (dBuV/m)	Correct dB/m	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Degree (°)	Height (cm)	Remark
1	77.8654	52.18	-12.98	39.20	40.00	-0.80	357	100	QP
2	155.9101	49.20	-11.27	37.93	43.50	-5.57	254	100	peak
3	181.9202	46.24	-9.54	36.70	43.50	-6.80	45	100	QP
4	285.9778	47.36	-5.76	41.60	46.00	-4.40	244	100	QP
5	364.2595	43.17	-3.67	39.50	46.00	-6.50	1	100	QP
6	962.1623	39.11	5.48	44.59	54.00	-9.41	0	100	peak

Test Specification: Vertical



No.	Frequency (MHz)	Reading (dBuV/m)	Correct dB/m	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Degree (°)	Height (cm)	Remark
1	35.3750	39.71	-11.07	28.64	40.00	-11.36	43	100	peak
2	77.8654	52.68	-12.98	39.70	40.00	-0.30	45	100	QP
3	129.9226	47.01	-11.31	35.70	43.50	-7.80	225	100	peak
4	181.9202	45.07	-9.54	35.53	43.50	-7.97	241	100	peak
5	504.7062	37.20	-0.95	36.25	46.00	-9.75	241	100	peak
6	962.1623	37.47	5.48	42.95	54.00	-11.05	0	100	peak

Note: Testing is carried out with frequency rang 30MHz to the 2GHz, 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 *****