

FCC Part 15C

Measurement and Test Report

For

MobilePal LLC

248 Route 25A Suite 99, East Setauket, NY 11733, USA

FCC ID: 2AEUJ-QIWI-G2

Test Rule(s):	<u>FCC Part 15C</u>
Product Description:	<u>Wireless power bank</u>
Tested Model:	<u>QIWI-G2</u>
Report No.:	<u>STR15058110I-1</u>
Tested Date:	<u>2015-05-28 to 2015-06-01</u>
Issued Date:	<u>2015-06-02</u>
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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: MobilePal LLC
Address of applicant: 248 Route 25A Suite 99, East Setauket, NY 11733, USA
Manufacturer: HONGKONG ITUS CO.,LTD
Address of manufacturer: C-520,C Bldg Tianhui Building, Donghuan 1st Road, LongHua New District, Shenzhen, Guangdong

General Description of EUT	
Product Name:	Wireless power bank
Trade Name:	MobilePal
Model No.:	QIWI-G2
Adding Model(s):	/
Rated Voltage:	USB :Input:DC5V 2.0A Output:5V 2.1A Max
Note: The test data is gathered from a production sample, provided by the manufacturer.	

Technical Characteristics of EUT	
Frequency Range:	110-205kHz
Rated Voltage:	DC 5V (Wireless output)
Rated Current:	1A (Wireless output)
Rated Power:	5W (Wireless output)

1.2 Test Standards

The following report is prepared on behalf of the MobilePal LLC in accordance with Part 2, Subpart J, and FCC Part 15, Subpart B, Subpart C, and section 15.203, 15.205 and 15.209 of the Federal Communication Commissions rules.

The objective is to determine compliance with FCC Part 15, Subpart C, and section 15.205, 15.207, and 15.209 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 C63.4-2009, 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	/
TM2	Discharging	USB Output
TM3	Discharging	Wireless Output
TM4	Charging	USB Input and Wireless Output

EUT Cable List and Details

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

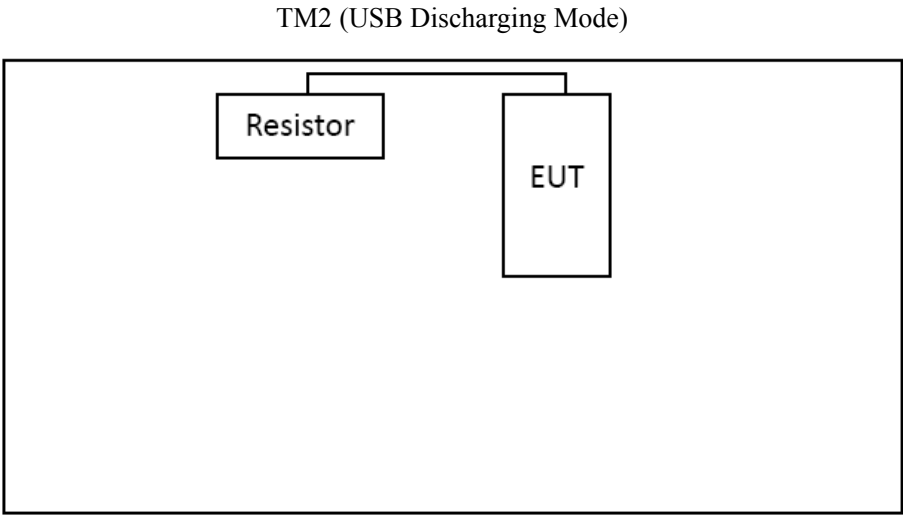
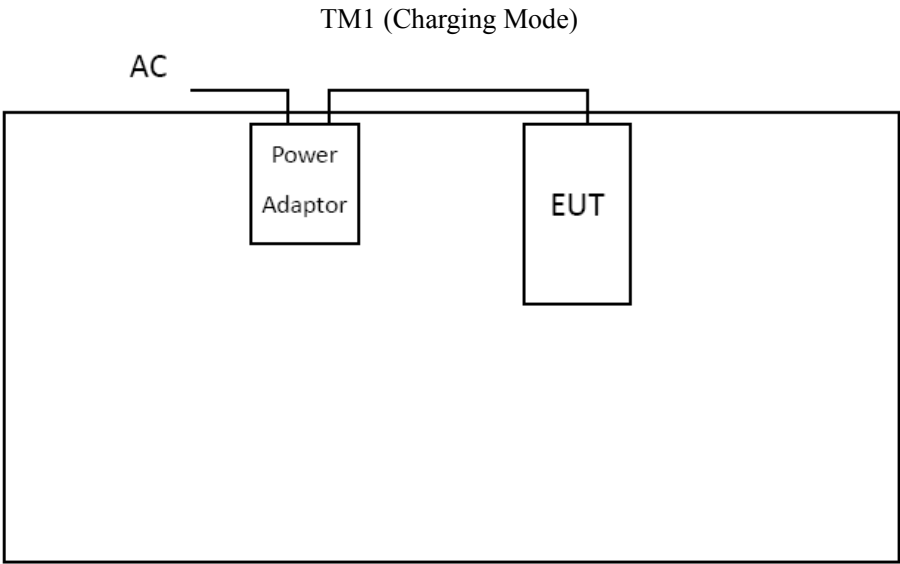
Auxiliary Equipment List and Details

Description	Manufacturer	Model	Serial Number
AC Adaptor	DELL	PSAI10R-050Q	/
Wireless Charger	ZTE	TWC975R	/
Resistor	SEM	5 ohm	/
Resistor	SEM	2.4 ohm	/

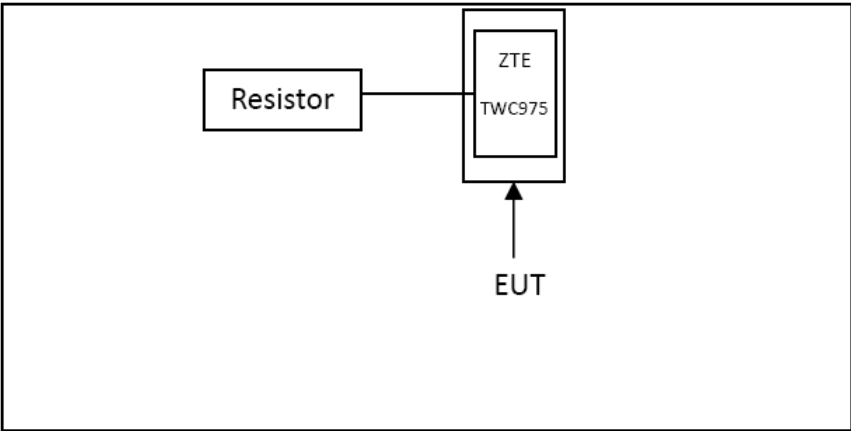
Special Cable List and Details

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

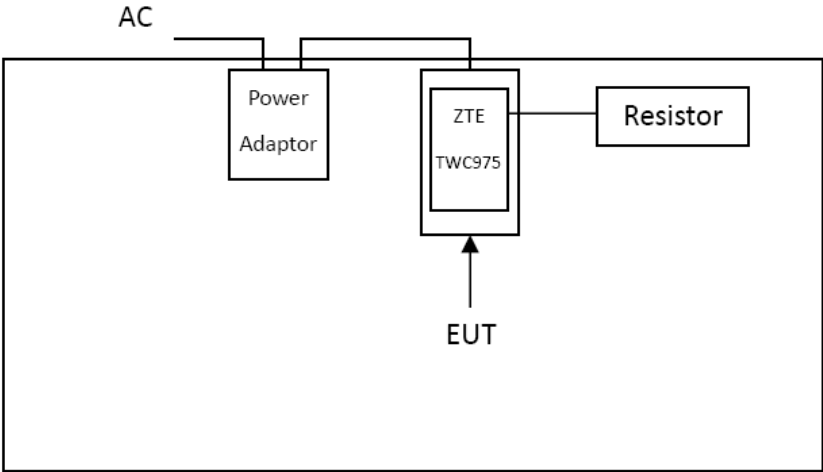
1.6 Set up Drawing Diagram



TM3 (Wireless Discharging Mode)



TM4 (USB Input and Wireless Output)



2. SUMMARY OF TEST RESULTS

FCC Rules	Description of Test Item	Result
§ 15.207 (a)	Conducted Emissions	Compliant
§ 15.209 (a)	Radiated Emissions	Compliant

N/A: not applicable

3. §15.203 - ANTENNA REQUIREMENT

3.1 Standard Applicable

According to FCC 15.203, an intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device. The use of a permanently attached antenna or of an antenna that uses a unique coupling to the intentional radiator shall be considered sufficient to comply with the provisions of this section.

3.2 Test Result

This product has an integral antenna, fulfill the requirement of this section.

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.

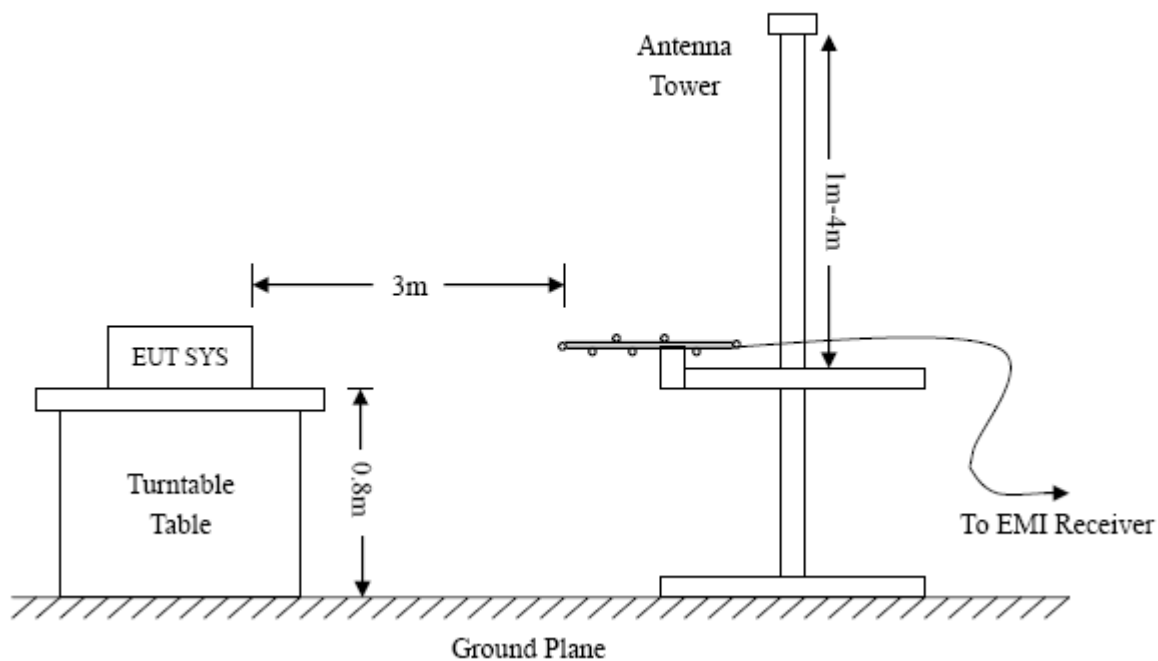
4.2 Test Equipment List and Details

Description	Manufacturer	Model	Serial Number	Cal. Date	Due. Date
Spectrum Analyzer	R&S	FSP	836079/035	2015-05-28	2016-05-27
EMI Test Receiver	R&S	ESVB	825471/005	2015-05-28	2016-05-27
Pre-amplifier	Agilent	8447F	3113A06717	2015-05-28	2016-05-27
Pre-amplifier	Compliance Direction	PAP-0118	24002	2015-05-28	2016-05-27
Trilog Broadband Antenna	SCHWARZBECK	VULB9163	9163-333	2015-05-28	2016-05-27
Loop Antenna	SCHWARZBECK	FMZB 1516	9773	2015-05-28	2016-05-27

4.3 Test Procedure

The setup of EUT is according with per ANSI C63.4-2009 measurement procedure. The specification used was with the FCC Part 15.209 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.



Test Setup Diagram 1

4.4 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

4.5 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:

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

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 C device. The equation for margin calculation is as follows:

$$\text{Margin} = \text{Corr. Ampl.} - \text{FCC Part 15.209(a) Limit}$$

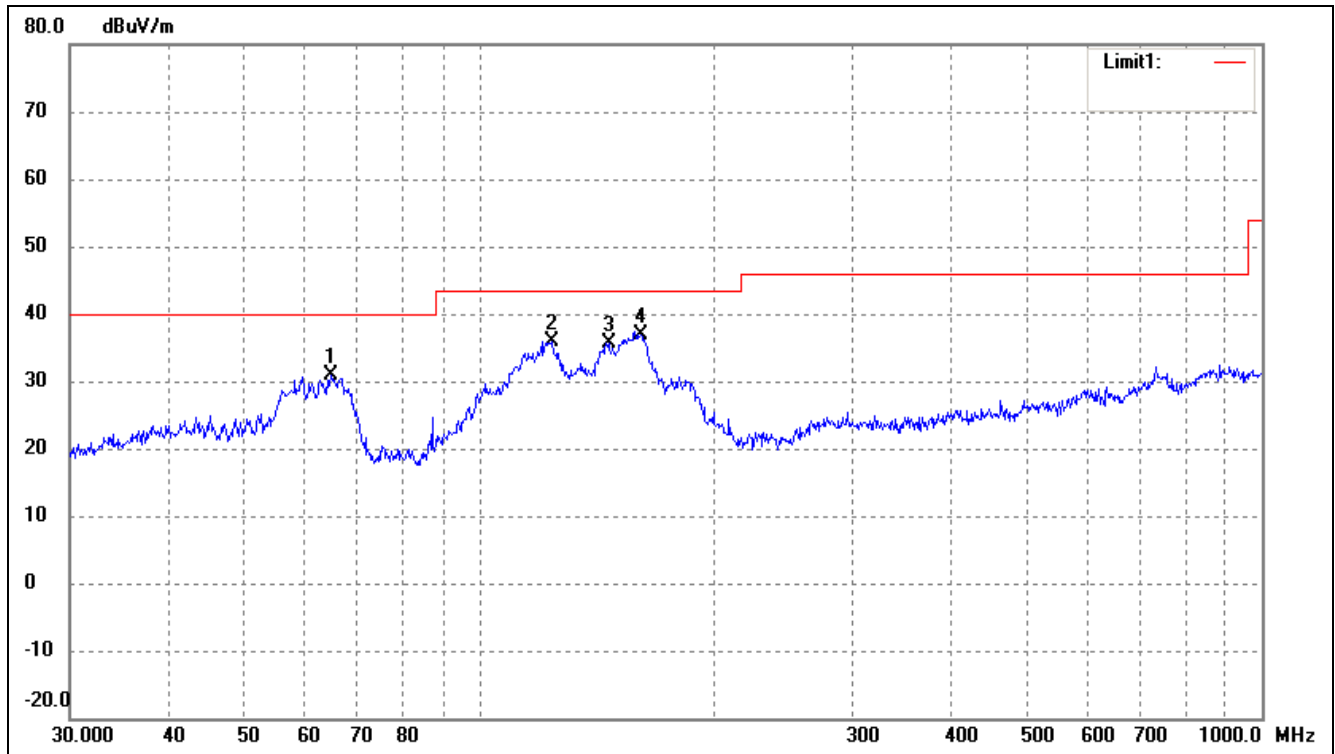
4.6 Environmental Conditions

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

4.7 Summary of Test Results/Plots

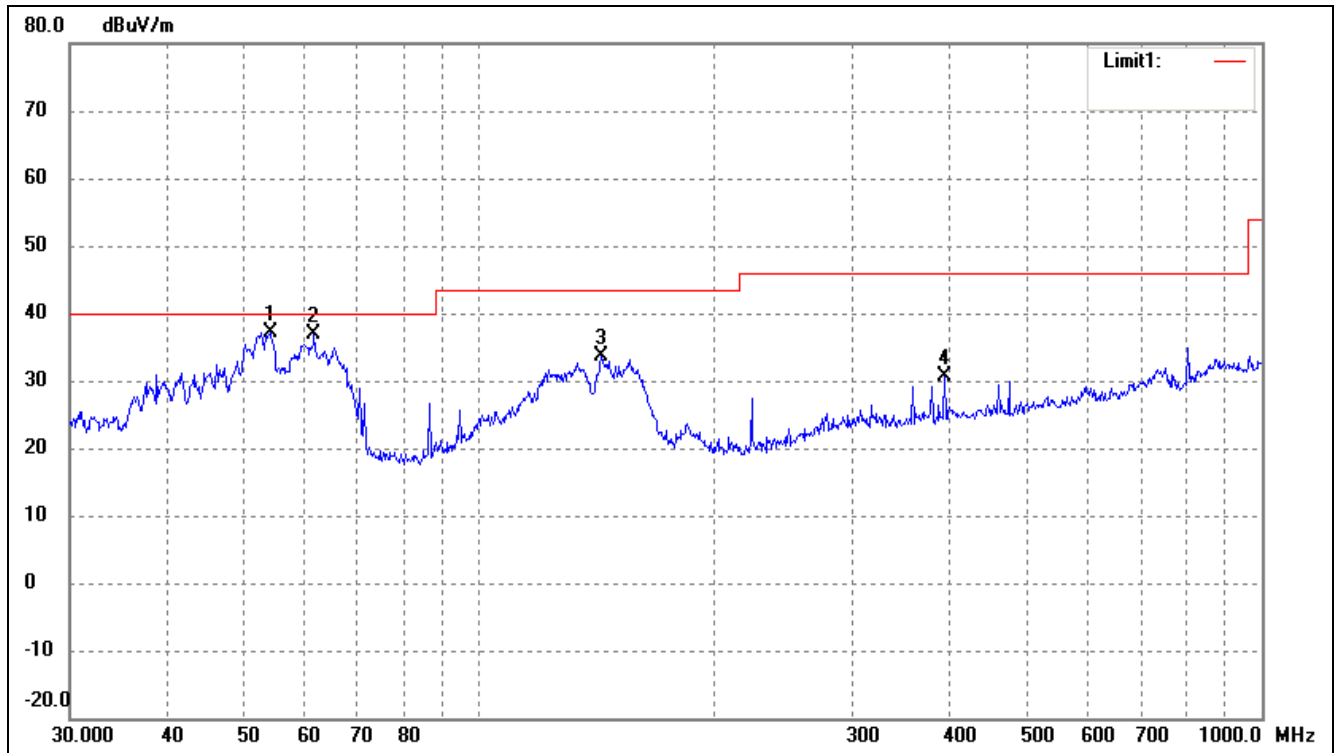
According to the data, the EUT complied with the FCC Part 15.209(a) rule, and had the worst margin of:

-2.76 dB at 54.0711 MHz in the Vertical polarization, 9kHz to 1GHz, 3Meters

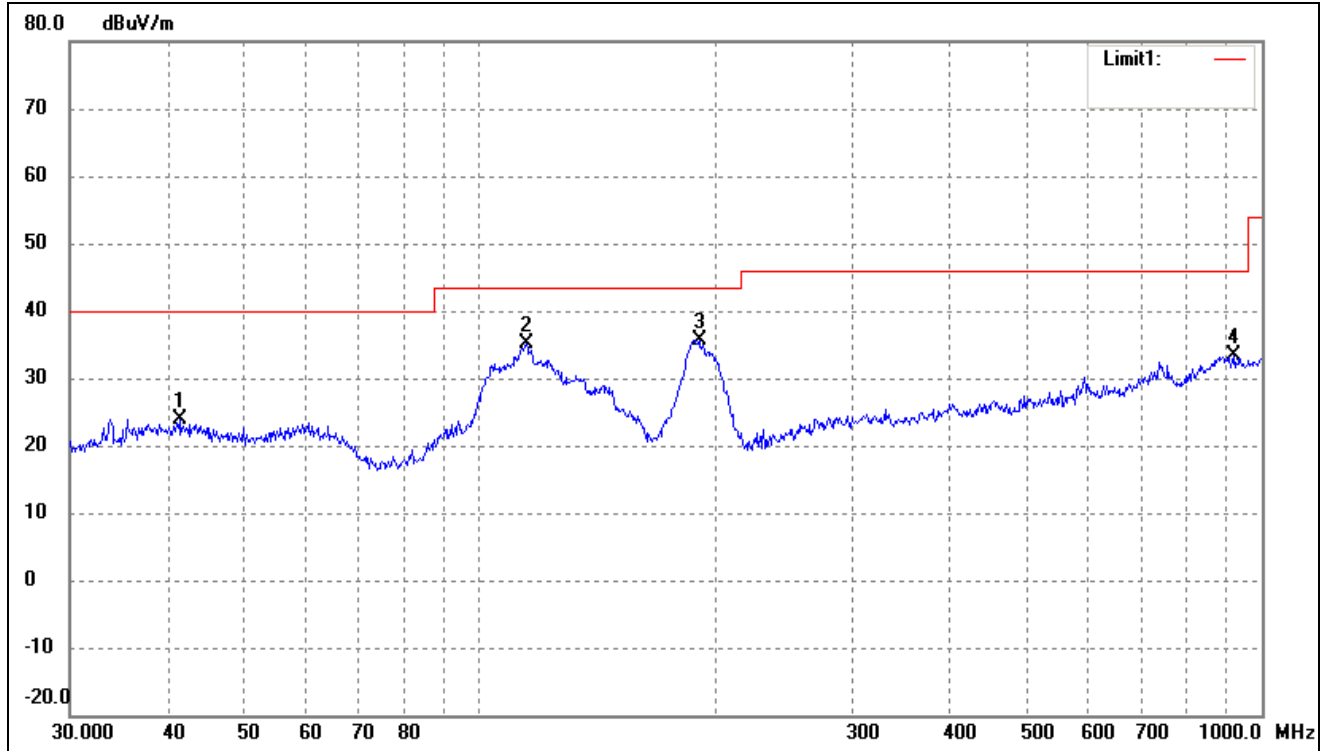
Plot of Radiated Emissions Test Data (30MHz-1GHz)*EUT:* Wireless power bank*Tested Model:* QIWI-G2*Operating Condition:* TM1*Comment:* AC 120V/60Hz*Test Specification:* Horizontal

No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Degree (°)	Height (cm)	Detector
1	64.6594	25.83	4.96	30.79	40.00	-9.21	163	100	peak
2*	123.6984	32.10	3.73	35.83	43.50	-7.67	322	100	peak
3	146.3735	33.22	2.46	35.68	43.50	-7.82	65	100	peak
4	160.9088	34.24	2.62	36.86	43.50	-6.64	236	100	peak

Test Specification: Vertical

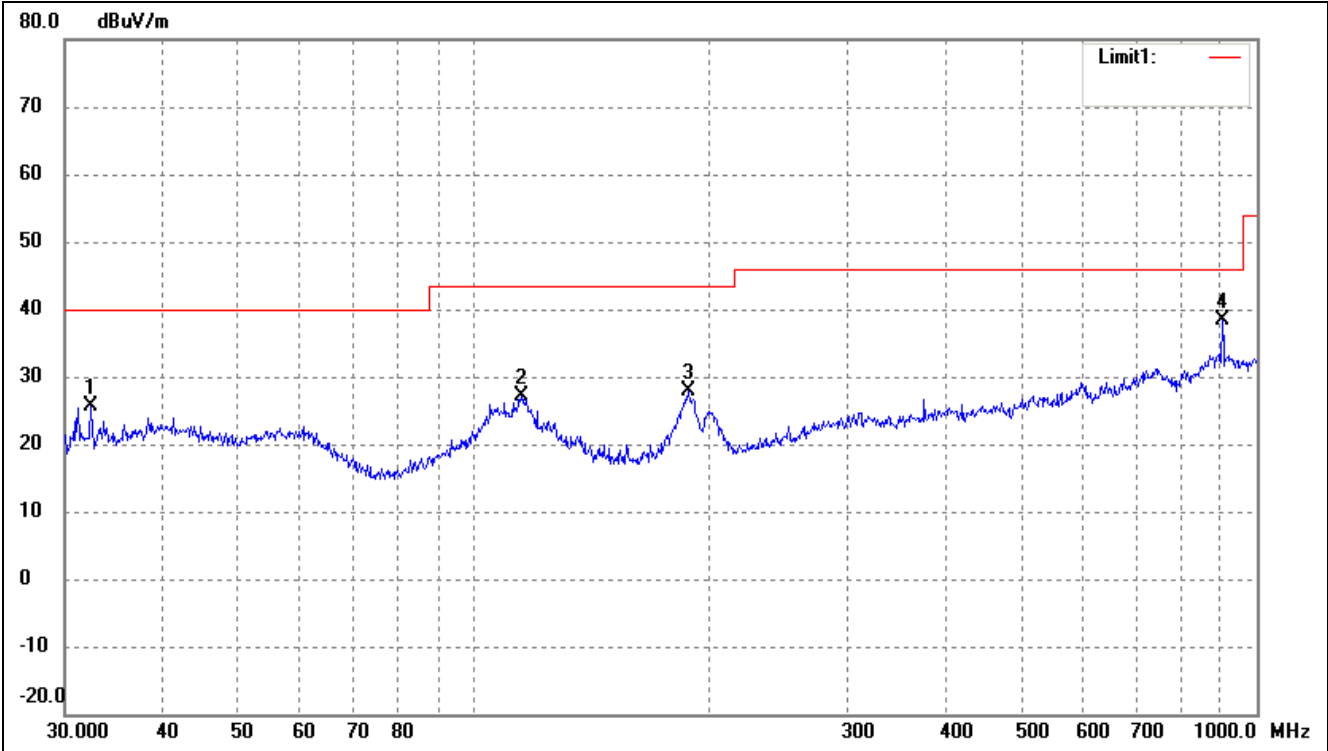


No.	Frequency	Reading	Correct	Result	Limit	Margin	Degree	Height	Detector
	(MHz)	(dBuV)	(dB/m)	(dBuV/m)	(dBuV/m)	(dB)	(°)	(cm)	
1	54.0711	30.52	6.72	37.24	40.00	-2.76	265	100	peak
2*	61.5618	30.27	6.57	36.84	40.00	-3.16	36	100	peak
3	143.3261	31.27	2.45	33.72	43.50	-9.78	95	100	peak
4	393.4723	20.79	9.83	30.62	46.00	-15.38	17	100	peak

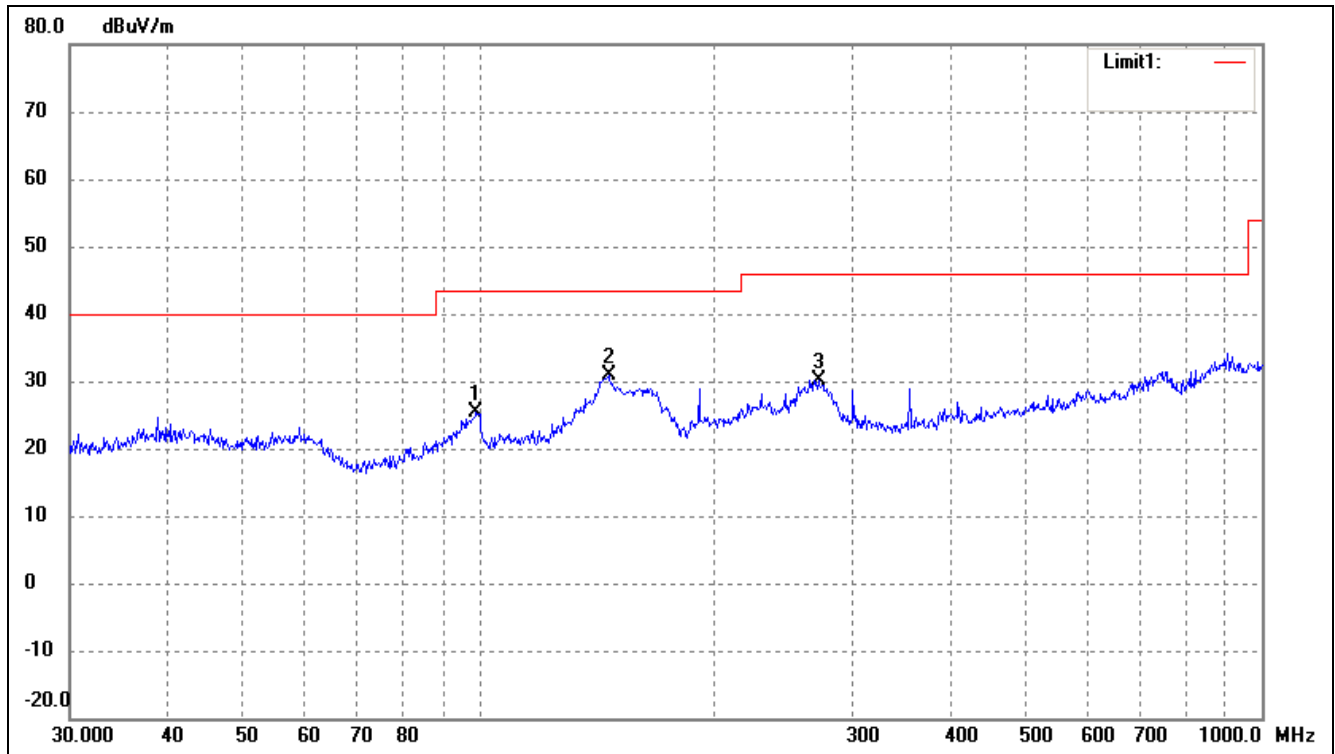
Plot of Radiated Emissions Test Data (30MHz-1GHz)*EUT:* Wireless power bank*Tested Model:* QIWI-G2*Operating Condition:* TM2*Comment:* DC 5V*Test Specification:* Horizontal

No.	Frequency (MHz)	Reading (dBuV/m)	Correct dB/m	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Degree (°)	Height (cm)	Remark
1	41.4215	15.84	8.11	23.95	40.00	-16.05	65	100	peak
2	114.9169	30.45	4.56	35.01	43.50	-8.49	136	100	peak
3	191.0738	32.32	3.25	35.57	43.50	-7.93	239	100	peak
4	922.5157	16.85	16.44	33.29	46.00	-12.71	26	100	peak

Test Specification: Vertical

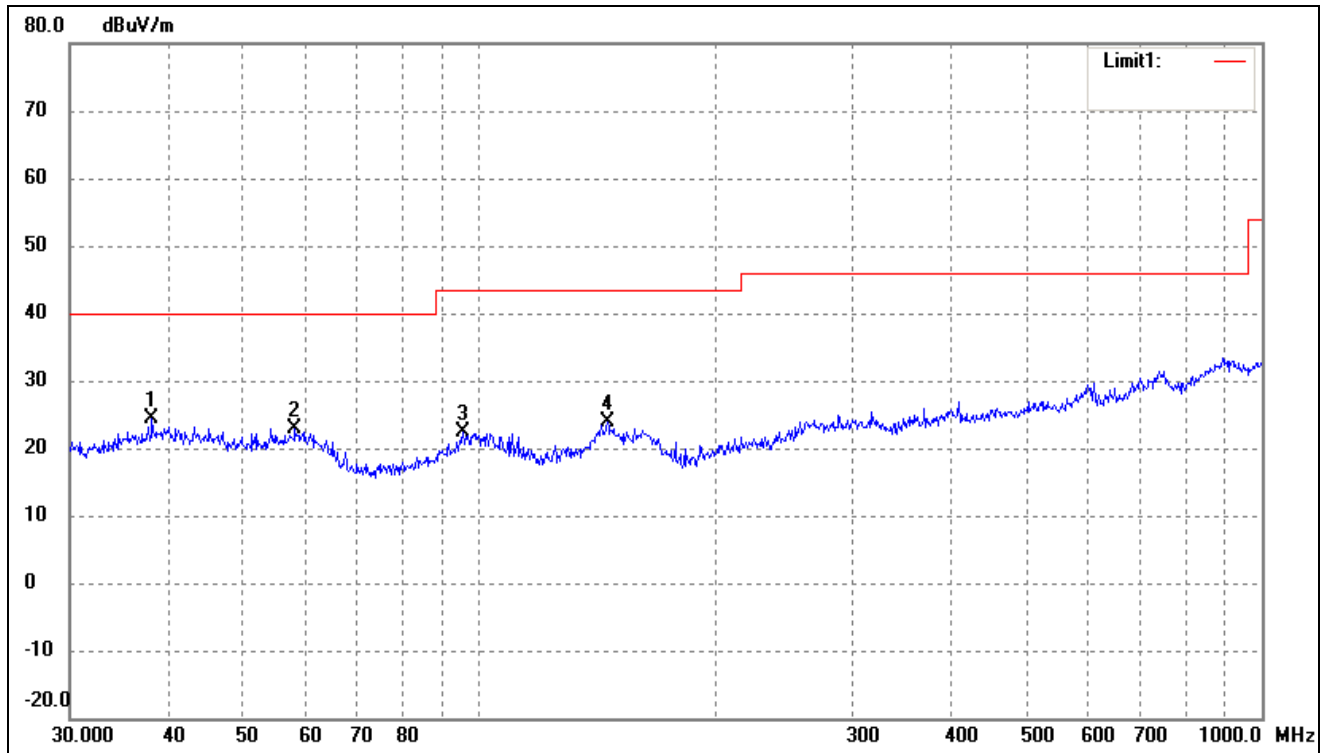


No.	Frequency	Reading	Correct	Result	Limit	Margin	Degree	Height	Remark
	(MHz)	(dBuV/m)	dB/m	(dBuV/m)	(dBuV/m)	(dB)	(°)	(cm)	
1	32.4059	19.28	6.24	25.52	40.00	-14.48	89	100	peak
2	114.9169	22.54	4.56	27.10	43.50	-16.40	66	100	peak
3	187.7530	24.69	3.11	27.80	43.50	-15.70	236	100	peak
4	903.3094	21.69	16.79	38.48	46.00	-7.52	145	100	peak

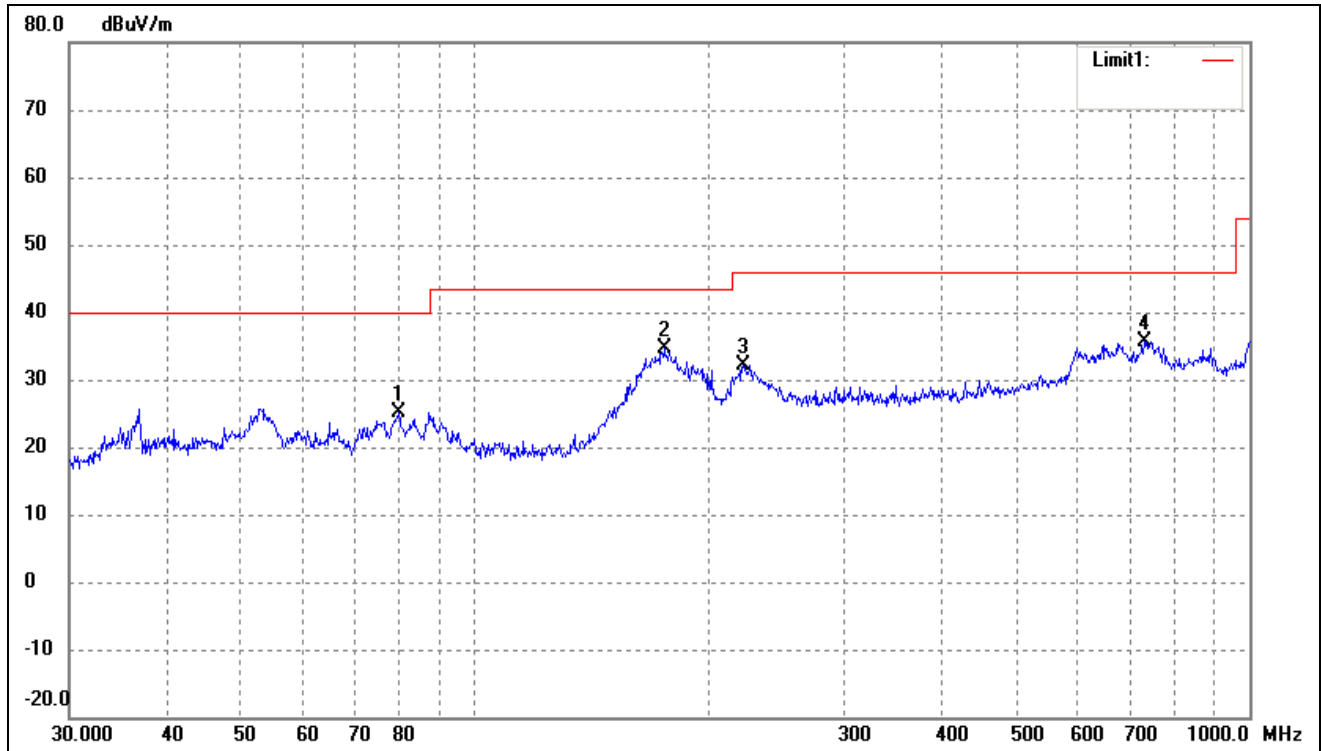
Plot of Radiated Emissions Test Data (30MHz-1GHz)*EUT:* Wireless power bank*Tested Model:* QIWI-G2*Operating Condition:* TM3*Comment:* DC 5V*Test Specification:* Horizontal

No.	Frequency (MHz)	Reading (dBuV/m)	Correct dB/m	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Degree (°)	Height (cm)	Remark
1	99.1797	19.54	5.92	25.46	43.50	-18.04	79	100	peak
2	146.3735	28.36	2.46	30.82	43.50	-12.68	56	100	peak
3	271.3246	22.33	7.81	30.14	46.00	-15.86	156	100	peak

Test Specification: Vertical

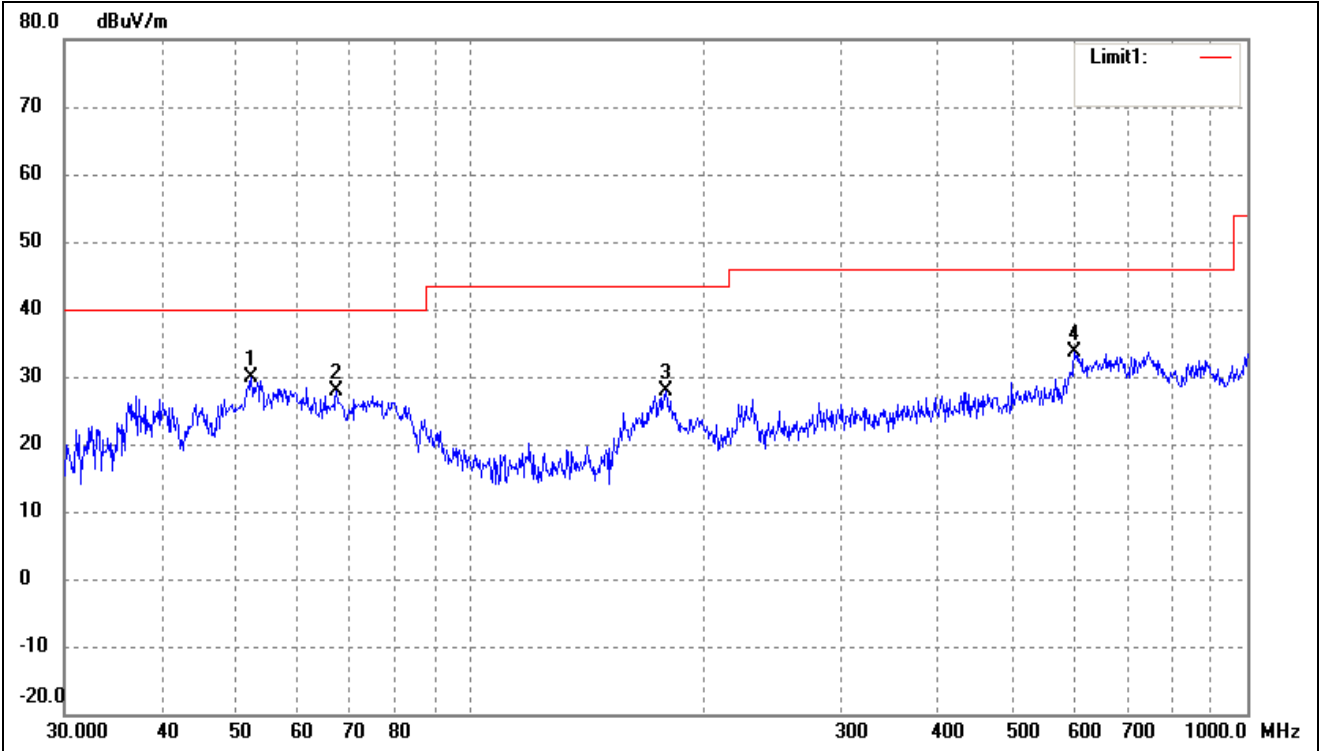


No.	Frequency	Reading	Correct	Result	Limit	Margin	Degree	Height	Remark
	(MHz)	(dBuV/m)	dB/m	(dBuV/m)	(dBuV/m)	(dB)	(°)	(cm)	
1	38.2120	16.54	7.76	24.30	40.00	-15.70	214	100	peak
2	58.2030	15.78	7.17	22.95	40.00	-17.05	156	100	peak
3	95.4270	17.46	4.98	22.44	43.50	-21.06	269	100	peak
4	145.8611	21.42	2.46	23.88	43.50	-19.62	136	100	peak

Plot of Radiated Emissions Test Data (30MHz-1GHz)*EUT:* Wireless power bank*Tested Model:* QIWI-G2*Operating Condition:* TM4*Comment:* AC 120V/60Hz*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	79.8003	23.11	2.02	25.13	40.00	-14.87	200	100	peak
2	175.6516	31.82	2.72	34.54	43.50	-8.96	150	100	peak
3	222.1698	24.01	8.24	32.25	46.00	-13.75	262	100	peak
4	731.9203	16.61	19.08	35.69	46.00	-10.31	133	100	peak

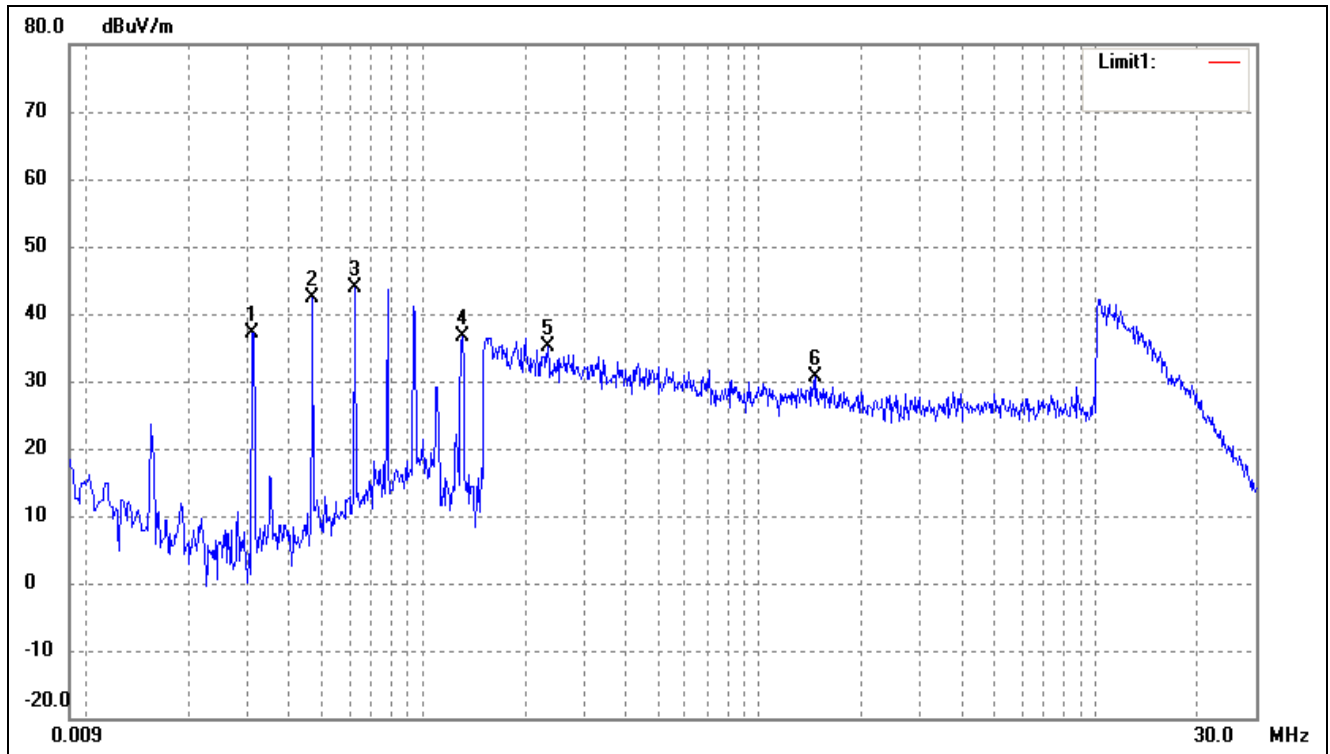
Test Specification: Vertical



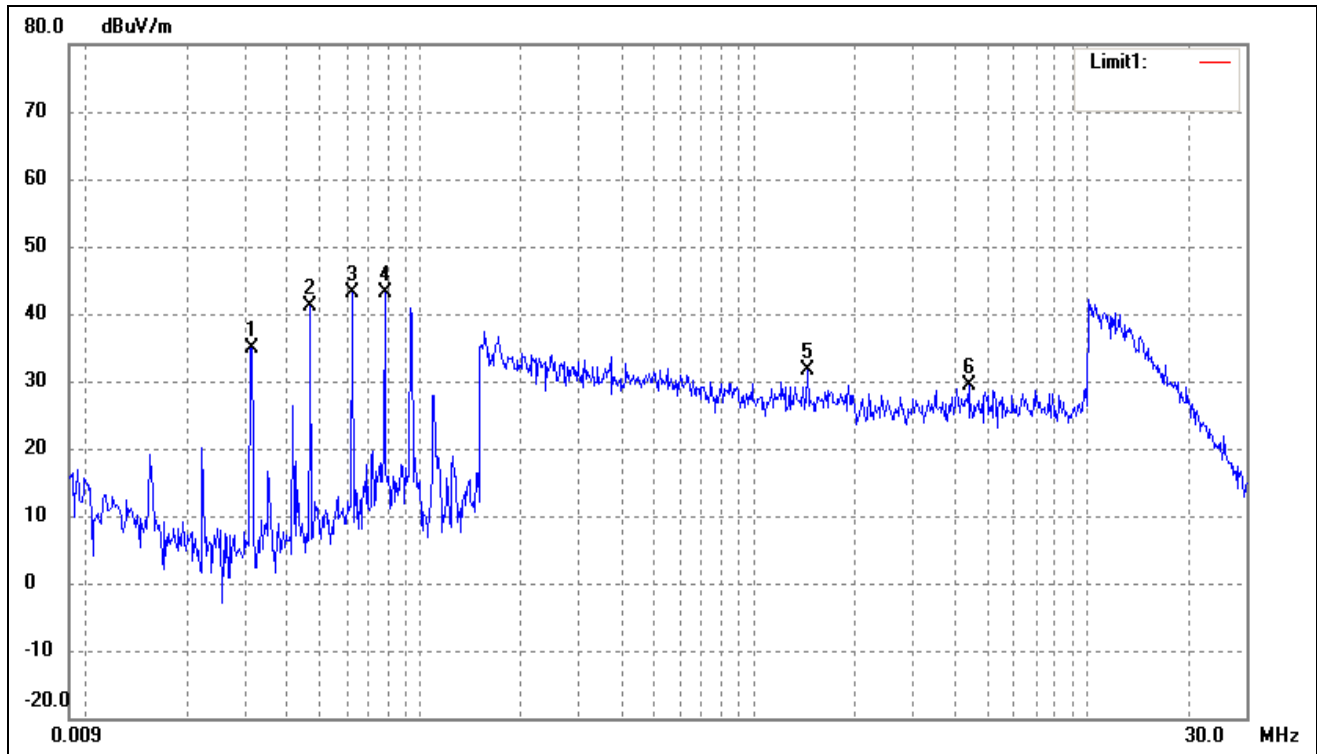
No.	Frequency	Reading	Correct	Result	Limit	Margin	Degree	Height	Remark
	(MHz)	(dBuV/m)	dB/m	(dBuV/m)	(dBuV/m)	(dB)	(°)	(cm)	
1	52.2079	24.69	5.29	29.98	40.00	-10.02	120	100	peak
2	67.2022	23.98	3.81	27.79	40.00	-12.21	124	100	peak
3	178.7584	25.25	2.74	27.99	43.50	-15.51	200	100	peak
4	599.3213	14.32	19.19	33.51	46.00	-12.49	100	100	peak

Plot of Radiated Emissions Test Data(Below 30MHz)EUT: *Wireless power bank*Tested Model: *QIWI-G2*Operating Condition: *TM3*

Comment:

Test Specification: *Loop Antenna*

No.	Frequency (MHz)	Reading (dBuV/m)	Correct dB/m	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Degree (°)	Height (cm)	Remark
1	0.0312	31.31	5.80	37.11	77.72	-40.61	56	100	peak
2	0.0469	36.12	6.22	42.34	74.18	-29.35	126	100	peak
3	0.0625	37.48	6.35	43.83	71.69	-27.86	231	100	peak
4	0.1300	29.52	7.16	36.68	65.33	-28.64	59	100	peak
5	0.2341	25.84	9.29	35.13	60.22	-25.09	265	100	peak
6	1.4718	17.96	12.64	30.60	44.25	-13.65	31	100	peak

Plot of Radiated Emissions Test Data(Below 30MHz)*EUT:* Wireless power bank*Tested Model:* QIWI-G2*Operating Condition:* TM4*Comment:**Test Specification:* Loop Antenna

No.	Frequency (MHz)	Reading (dBuV/m)	Correct dB/m	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Degree (°)	Height (cm)	Remark
1	0.0313	34.91	0.00	34.91	77.69	-42.78	231	100	peak
2	0.0469	41.01	0.00	41.01	74.18	-33.17	156	100	peak
3	0.0625	43.03	0.00	43.03	71.69	-28.66	56	100	peak
4	0.0781	43.03	0.00	43.03	69.75	-26.72	136	100	peak
5	1.4485	19.00	12.63	31.63	44.39	-12.76	231	100	peak
6	4.4071	16.17	13.12	29.29	50.00	-20.71	156	100	peak

5. Conducted Emissions

5.1 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.

5.2 Test Equipment List and Details

Description	Manufacturer	Model	Serial Number	Cal. Date	Due. Date
EMI Test Receiver	Rohde & Schwarz	ESPI	101611	2015-05-28	2016-05-27
L.I.S.N	Schwarz beck	NSLK8126	8126-224	2015-05-28	2016-05-27
Pulse Limiter	Rohde & Schwarz	ESH3-Z2	100911	2015-05-28	2016-05-27

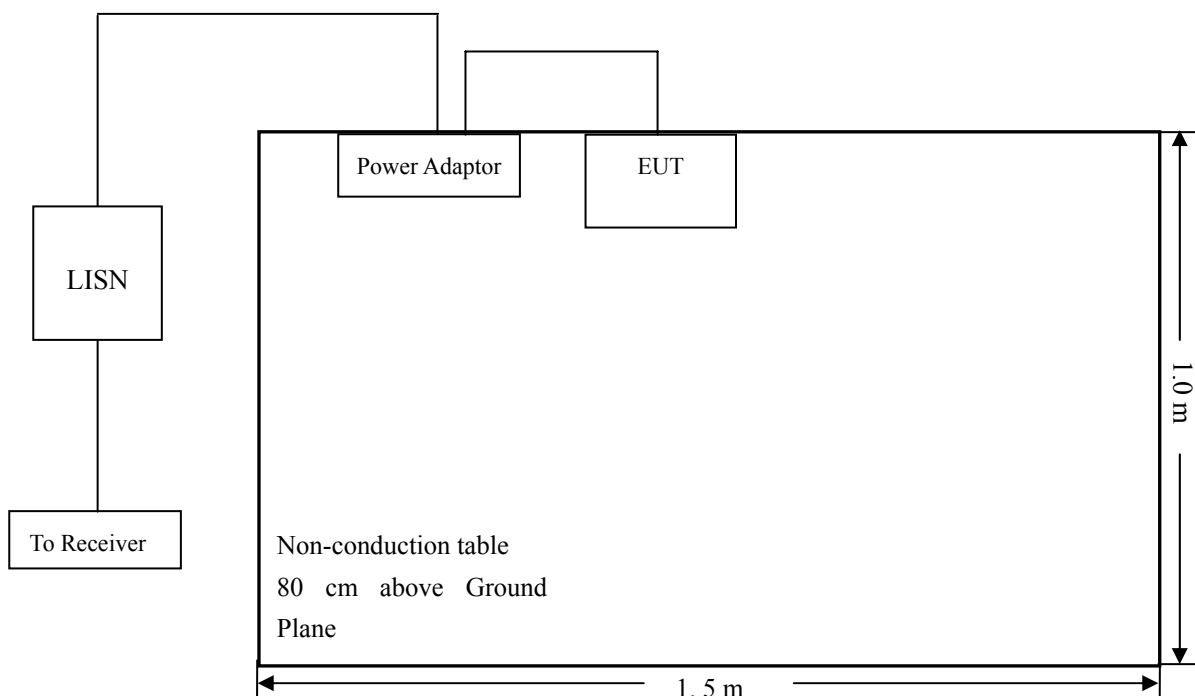
5.3 Test Procedure

The setup of EUT is according with per ANSI C63.4-2003 measurement procedure. The specification used was with the FCC Part 15.207 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.

5.4 Basic Test Setup Block Diagram



5.5 Environmental Conditions

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

5.6 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

5.7 Summary of Test Results/Plots

According to the data in section 5.8, the EUT complied with the FCC Part 15.207 Conducted margin for a Class B device, with the *worst* margin reading of:

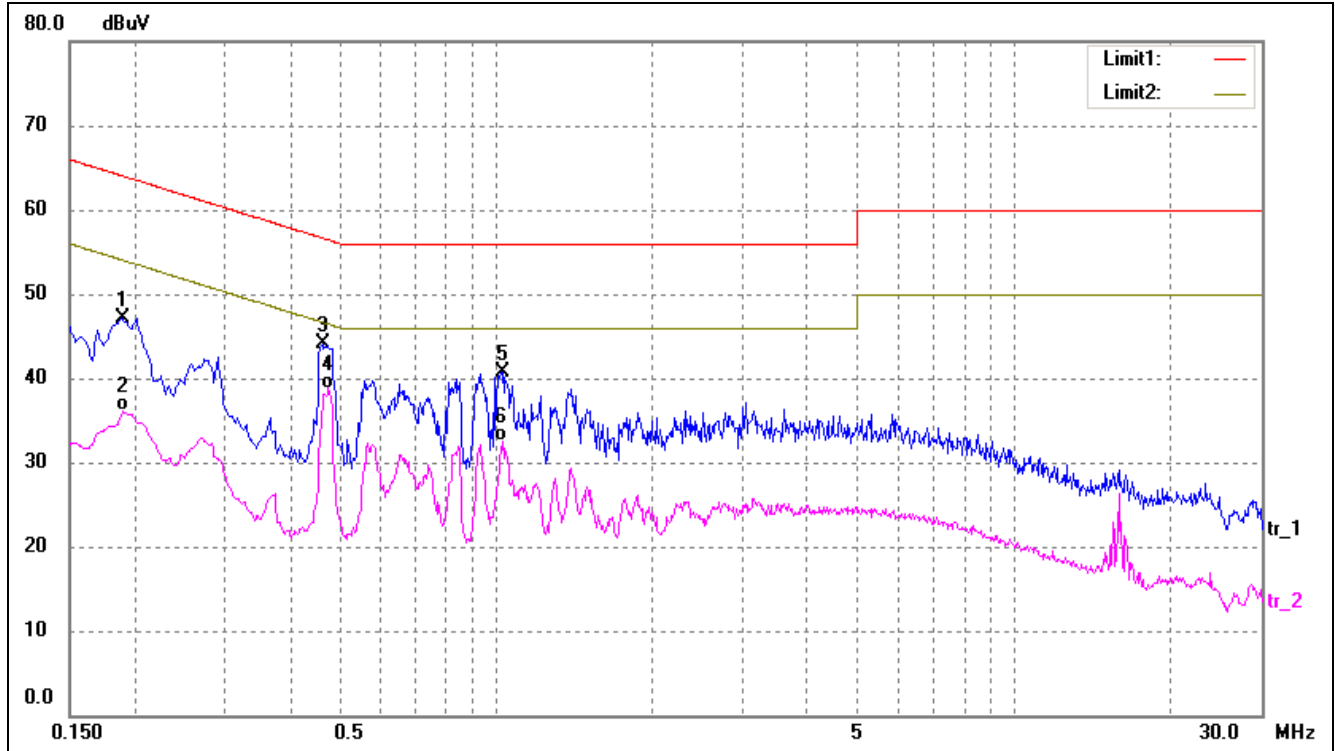
-6.84 dB at 0.478 MHz in the *TM4-Live* mode, Average detector, 0.15-30MHz

5.8 Conducted Emissions Test Data

Plot of Conducted Emissions Test Data

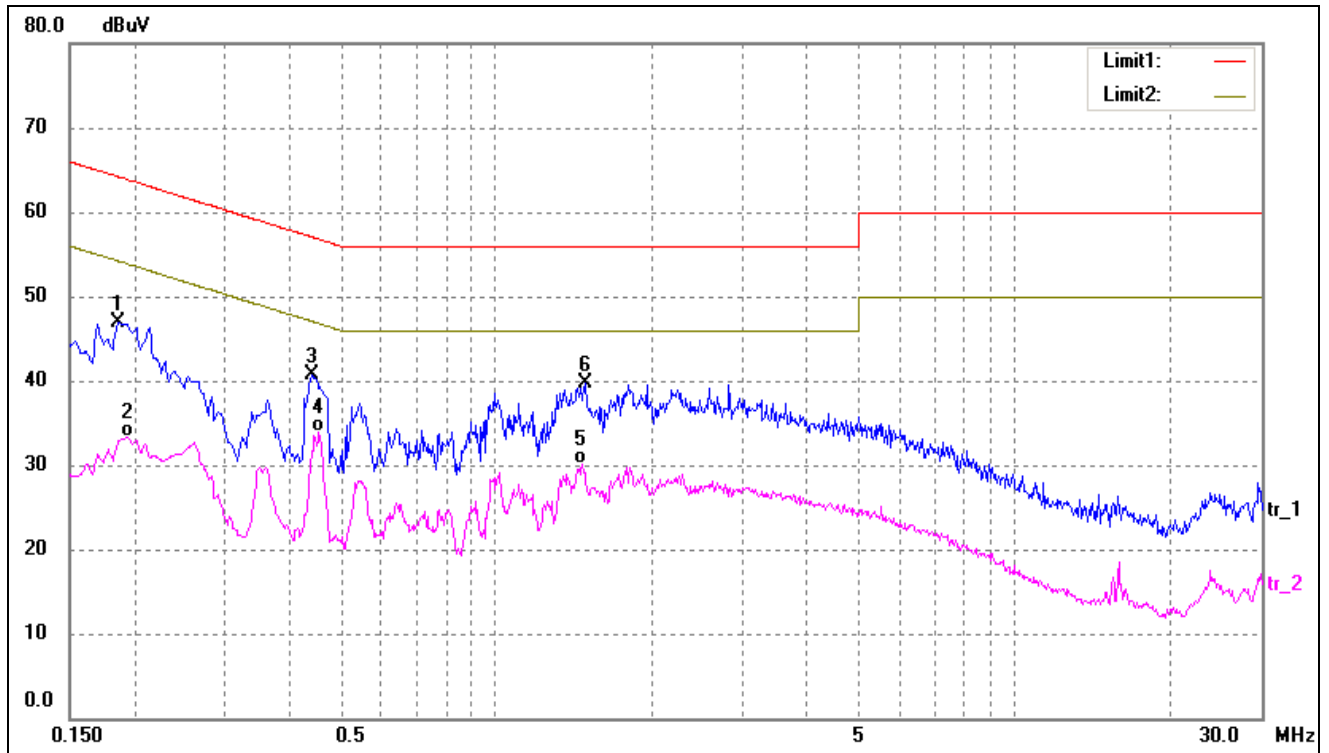
EUT: Wireless power bank
 Tested Model: QIWI-G2
 Operating Condition: TM1
 Comment: AC 120V/60Hz; DC 5V

Test Specification: Neutral



No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV)	Limit (dBuV)	Margin (dB)	Detector
1	0.1900	37.65	9.50	47.15	64.04	-16.89	peak
2	0.1900	26.69	9.50	36.19	54.04	-17.85	AVG
3	0.4620	34.53	9.50	44.03	56.66	-12.63	peak
4	0.4740	29.30	9.50	38.80	46.44	-7.64	AVG
5	1.0300	30.74	10.00	40.74	56.00	-15.26	peak
6	1.0300	22.54	10.00	32.54	46.00	-13.46	AVG

Test Specification: Line

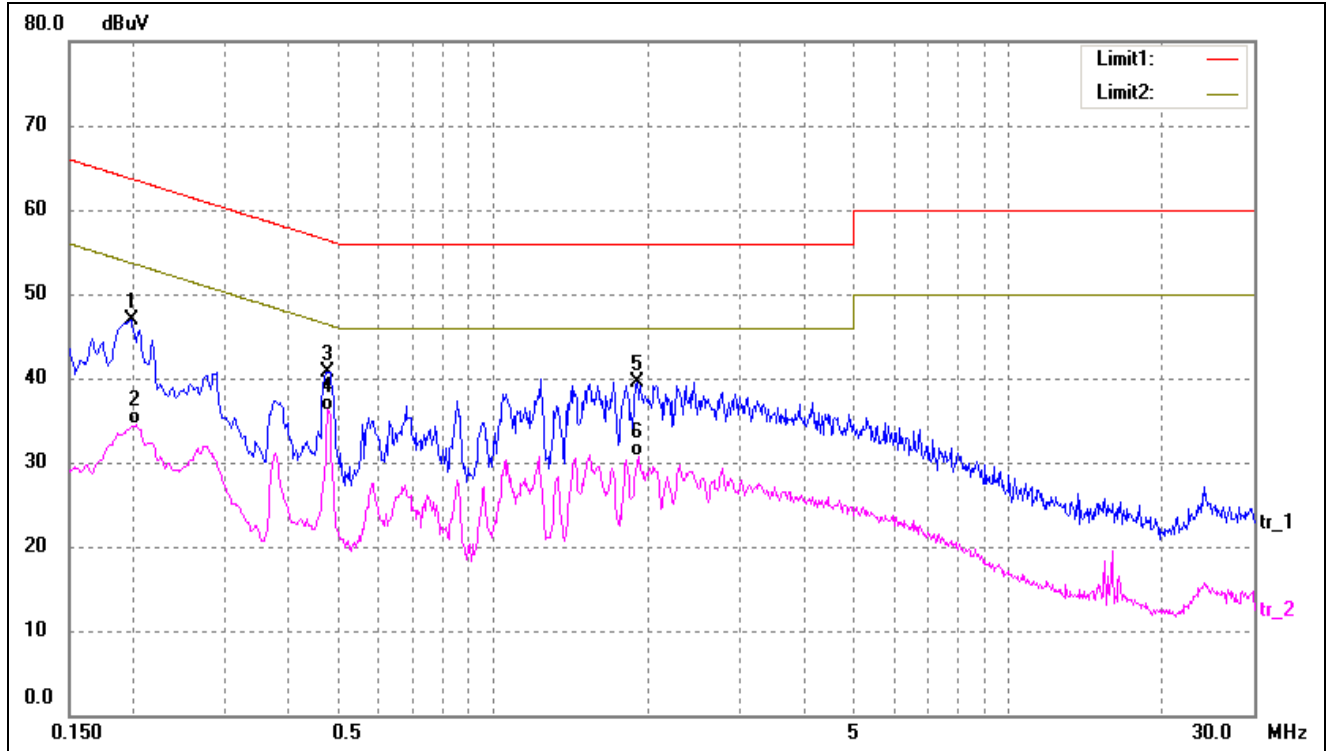


No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV)	Limit (dBuV)	Margin (dB)	Detector
1	0.1860	37.35	9.50	46.85	64.21	-17.36	peak
2	0.1940	23.88	9.50	33.38	53.86	-20.48	AVG
3	0.4420	31.16	9.50	40.66	57.02	-16.36	peak
4	0.4540	24.31	9.50	33.81	46.80	-12.99	AVG
5	1.4700	20.18	10.00	30.18	46.00	-15.82	AVG
6	1.4940	29.61	10.00	39.61	56.00	-16.39	peak

Plot of Conducted Emissions Test Data

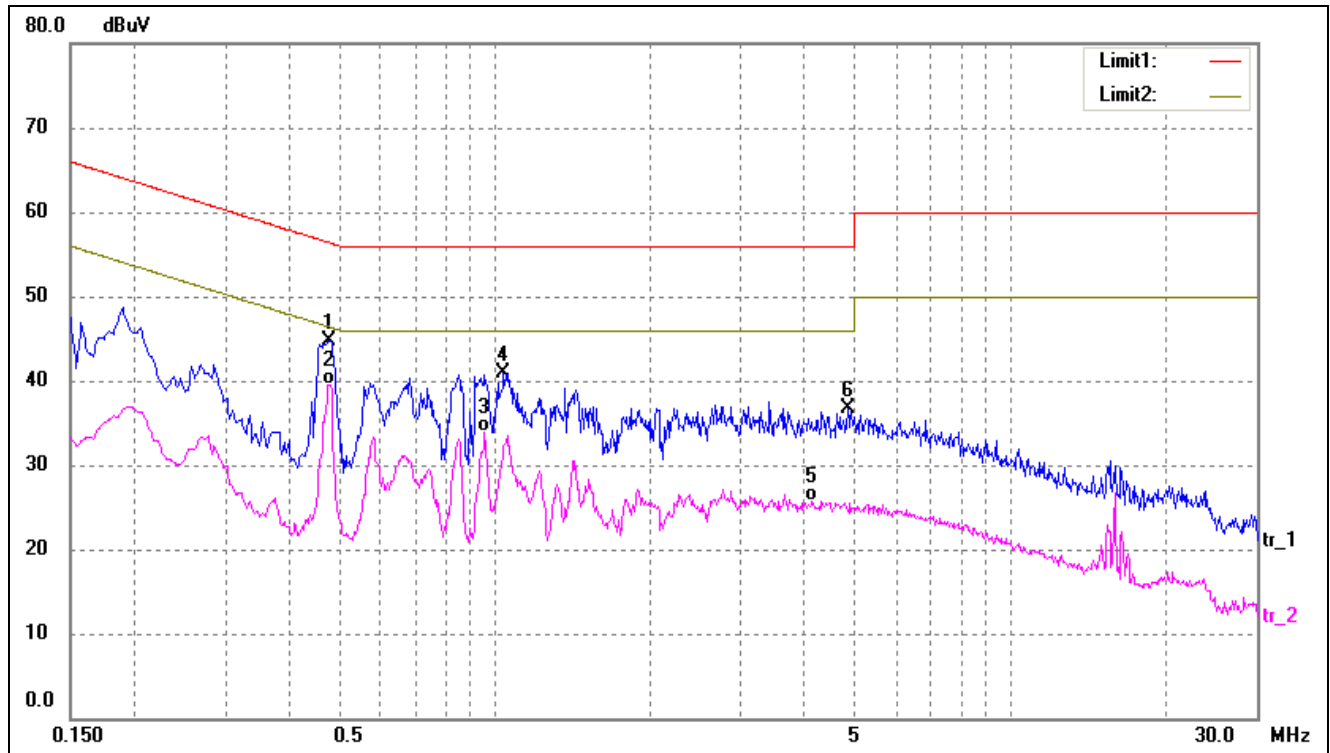
EUT: Wireless power bank
 Tested Model: QIWI-G2
 Operating Condition: TM4
 Comment: AC 120V/60Hz; DC 5V

Test Specification: Neutral



No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV)	Limit (dBuV)	Margin (dB)	Detector
1	0.1980	37.40	9.50	46.90	63.69	-16.79	peak
2	0.2020	24.93	9.50	34.43	53.53	-19.10	AVG
3	0.4780	31.28	9.50	40.78	56.37	-15.59	peak
4*	0.4780	26.70	9.50	36.20	46.37	-10.17	AVG
5	1.9060	29.59	10.00	39.59	56.00	-16.41	peak
6	1.9100	20.64	10.00	30.64	46.00	-15.36	AVG

Test Specification: Line



No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV)	Limit (dBuV)	Margin (dB)	Detector
1	0.4780	35.23	9.50	44.73	56.37	-11.64	peak
2*	0.4780	30.03	9.50	39.53	46.37	-6.84	AVG
3	0.9540	24.03	9.95	33.98	46.00	-12.02	AVG
4	1.0420	30.94	10.00	40.94	56.00	-15.06	peak
5	4.1180	15.79	10.00	25.79	46.00	-20.21	AVG
6	4.8460	26.69	10.00	36.69	56.00	-19.31	peak

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