FCC Part 15C
Measurement and Test Report
For
Shenzhen Green Fish Technology Co.,Ltd

FCC ID: 2AQAS-M320

FCC Rules:	FCC Part 15C
Product Description:	Wireless charger
Tested Model:	M320
Report No.:	BSL180611300001RF-3
Tested Date:	June 18~22, 2018
Issued Date:	June 25,2018
Tested By:	Lisa. Li / Engineer
Reviewed By:	arno. Liu / EMC Manager
Approved & Authorized By:	Mike mo / PSQ Manager
Prepared By:	

BSL Testing Co.,LTD.
NO. 24, ZH Park, Nantou, Shenzhen, 518000 China
Tel: 86- 755-26508703 Fax: 86- 755-26508703

TABLE OF CONTENTS

1. GENERAL INFORMATION

1.1 Product Description for Equipment Under Test (EUT)

Client Information

Applicant:	Shenzhen Green Fish Technology Co.,Ltd
Address of applicant:	Floor 6 Building C ,No.9 East Area of Shangxue Science & Technology Park，Bantian Road,Longgang District,Shenzhen
Manufacturer:	Shenzhen Green Fish Technology Co.,Ltd
Address of manufacturer:	Floor 6 Building C ,No.9 East Area of Shangxue Science & Technology Park，Bantian Road,Longgang District,Shenzhen

General Description of EUT	
Product Name:	Wireless charger
Trade Name:	GREEN FISH
Model No.:	M320
Adding Model(s):	M220,M420,M520,M620,G100,G400,G500,G600,G700,G800,G10,G20,G30,G40,G50,G60,G70,G80,G90,F100,F200
Note: The test data is gathered from a production sample, provided by the manufacturer.	

Technical Characteristics of EUT	
Frequency Range:	112~205KHz
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 Dolphin Electronics Co., Ltd 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 B, 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 C63.10-2013, American National Standard for Testing Unlicensed Wireless Devices, and 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

BSL Testing Co.,LTD.
NO. 24, ZH Park, Nantou, Shenzhen, 518000 China
Designation Number : CN1217
Test Firm Registration Number: 866035
Tel: 86- 755-26508703
Fax: 86- 755-26508703

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	With load
TM2	Charging	With mobile phone

Note: Test was performed with TM1 and TM2, TM1 is the worst case so it is only showed in this report.

EUT Cable List and Details

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

Auxiliary Equipment List and Details

Description	Manufacturer	Model	Serial Number
Mobile Phone	SAMSUNG	SM-920V	/
Adapter	/	/	/

Special Cable List and Details

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

1.6 Measurement Uncertainty

Measurement uncertainty		
Parameter	Conditions	Uncertainty
RF Output Power	Conducted	±0.42dB
Occupied Bandwidth	Conducted	±1.5%
Power Spectral Density	Conducted	±1.8dB
Conducted Spurious Emission	Conducted	±2.17dB
Conducted Emissions	Conducted	±2.88dB
Transmitter Spurious Emissions	Radiated	±5.1dB

1.7 Test Equipment List and Details

Description	Manufacturer	Model	Serial No.	Cal Date	Due. Date
Communication Tester	Rohde & Schwarz	CMW500	100358	2017-10-21	2018-10-20
Spectrum Analyzer	R&S	FSP40	100550	2017-10-21	2018-10-20
Test Receiver	R&S	ESCI7	US47140102	2017-10-21	2018-10-20
Signal Generator	HP	83630B	3844A01028	2017-10-22	2018-10-21
Test Receiver	R&S	ESPI-3	100180	2017-10-21	2018-10-20
Amplifier	Agilent	8449B	4035A00116	2017-10-22	2018-10-21
Amplifier	HP	8447E	2945A02770	2017-10-22	2018-10-21
Signal Generator	IFR	2023A	202307/242	2017-10-22	2018-10-21
Broadband Antenna	SCHAFFNER	2774	2774	2017-10-17	2018-10-16
Biconical and log periodic antennas	ELECTRO-METRICS	EM-6917B-1	171	2017-10-17	2018-10-16
Horn Antenna	R&S	HF906	100253	2017-10-17	2018-10-16
Horn Antenna	EM	EM-6961	6462	2017-10-17	2018-10-16
LISN	R&S	ESH3-Z5	100196	2017-10-17	2018-10-16
LISN	COM-POWER	LI-115	02027	2017-10-17	2018-10-16
3m Semi-Anechoic Chamber	Chengyu Electron	9 (L)*6 (W)* 6 (H)	BSL086	2017-10-21	2018-10-20
Horn Antenna	A-INFOMW	LB-180400KF	BSL088	2017-10-21	2018-10-20
Loop Antenna	Schwarz beck	FMZB 1516	9773	2017-10-21	2018-10-20

2. SUMMARY OF TEST RESULTS

Description of Test	Result
§15.207 (a) Conducted Emission	Compliant
§15.209(a) Radiated Emission	Compliant

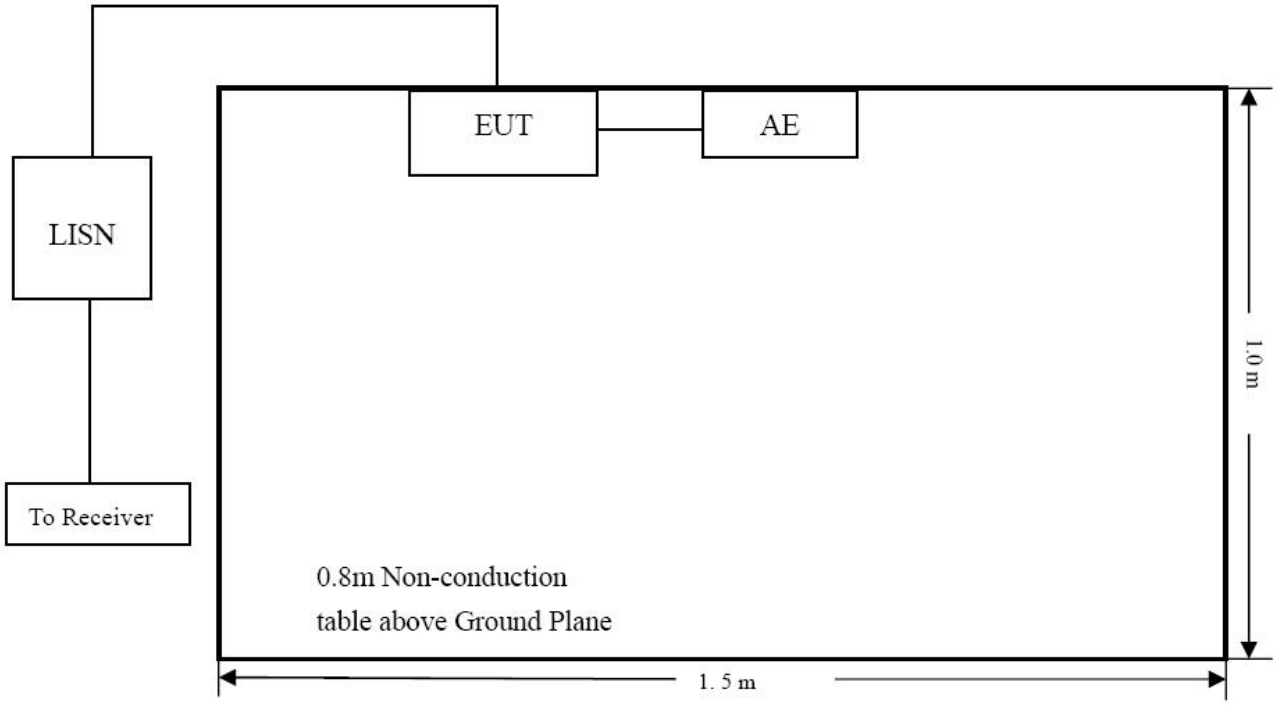
N/A: not applicable

3. CONDUCTED EMISSIONS

3.1 Test Procedure

Test is conducting under the description of ANSI C63.10-2013, 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.

3.2 Basic Test Setup Block Diagram



3.3 Environmental Conditions

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

3.4 Summary of Test Results/Plots

According to the data in section 3.5, the EUT complied with the FCC Part 15.207(a) Conducted margin for this device, with the *worst* margin reading of:

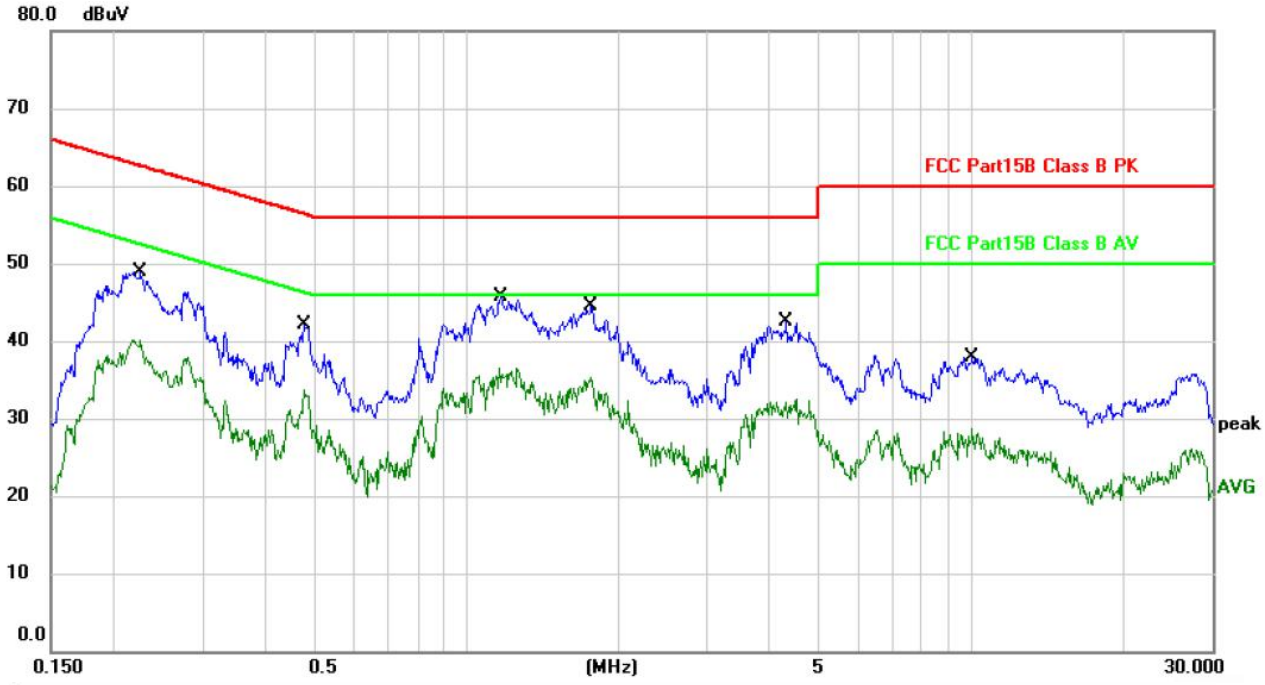
-10.28 dB at 1.1693 MHz in the **Neutral**, **QP** detector, 0.15-30MHz

3.5 Conducted Emissions Test Data

Plot of Conducted Emissions Test Data

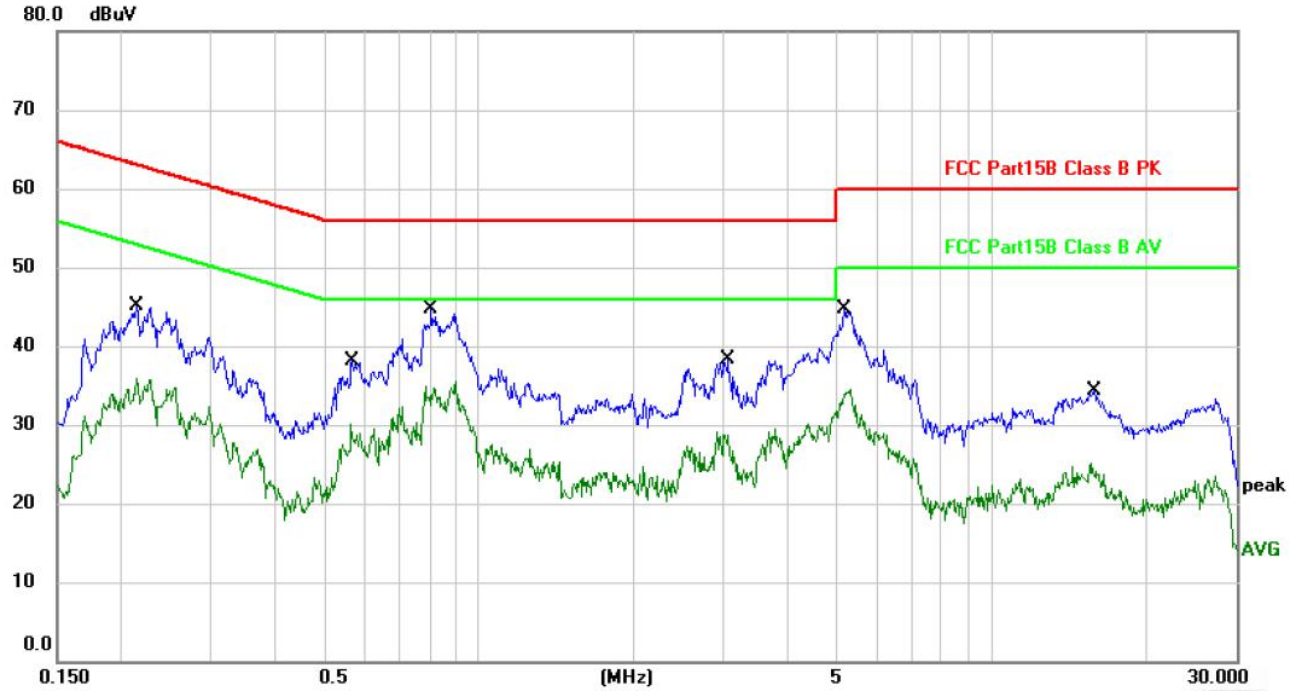
EUT: *Wireless charger*
Tested Model: *M320*
Operating Condition: *TM1*
Comment: *120V/60Hz; Adapter DC 5V*

Test Specification: *Neutral*



No.	Mk.	Freq.	Measure-ment	Limit	Over		
		MHz	dBuV	dBuV	dB	Detector	Comment
1		0.2260	48.97	62.59	-13.62	QP	
2		0.2260	35.21	52.59	-17.38	AVG	
3		0.4778	42.02	56.38	-14.36	QP	
4		0.4778	24.51	46.38	-21.87	AVG	
5	*	1.1693	45.72	56.00	-10.28	QP	
6		1.1693	32.10	46.00	-13.90	AVG	
7		1.7660	44.42	56.00	-11.58	QP	
8		1.7660	28.70	46.00	-17.30	AVG	
9		4.2979	42.41	56.00	-13.59	QP	
10		4.2979	26.68	46.00	-19.32	AVG	
11		10.0579	38.00	60.00	-22.00	QP	
12		10.0579	25.35	50.00	-24.65	AVG	

Test Specification: *Line*



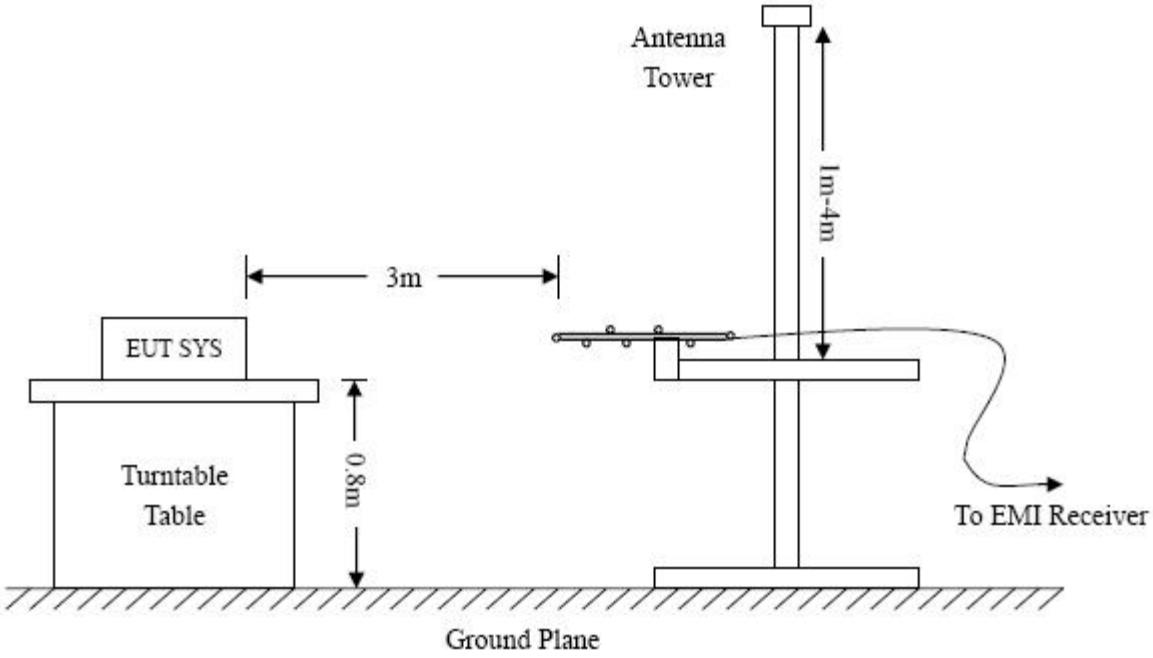
No.	Mk.	Freq.	Measure-ment	Limit	Over		
		MHz	dBuV	dBuV	dB	Detector	Comment
1		0.2139	45.16	63.05	-17.89	QP	
2		0.2139	30.19	53.05	-22.86	AVG	
3		0.5655	38.00	56.00	-18.00	QP	
4		0.5655	26.15	46.00	-19.85	AVG	
5	*	0.8059	44.72	56.00	-11.28	QP	
6		0.8059	32.35	46.00	-13.65	AVG	
7		3.0698	38.31	56.00	-17.69	QP	
8		3.0698	22.87	46.00	-23.13	AVG	
9		5.1459	44.62	60.00	-15.38	QP	
10		5.1459	26.42	50.00	-23.58	AVG	
11		15.8536	34.23	60.00	-25.77	QP	
12		15.8536	21.93	50.00	-28.07	AVG	

4. RADIATED EMISSION

4.1 Test Procedure

The setup of EUT is according with per ANSI C63.10-2013 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.



4.2 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

4.3 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 -6dB μ V means the emission is 6dB μ V below the maximum limit for this device. The equation for margin calculation is as follows:

Margin = Corr. Ampl. – FCC Part 15.209(a) Limit

4.4 Environmental Conditions

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

4.5 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:

-9.73 dB at **51.4806 MHz** in the **Vertical** polarization, 9 **KHz** to **1 GHz**, **3Meters**

Plot of Radiated Emissions Test Data(Below 30MHz)

EUT: *Wireless charger*
Tested Model: *M320*
Operating Condition: *TM1*
Comment: *120V/60Hz; Adapter DC 5V*

Test Specification: *Loop Antenna*

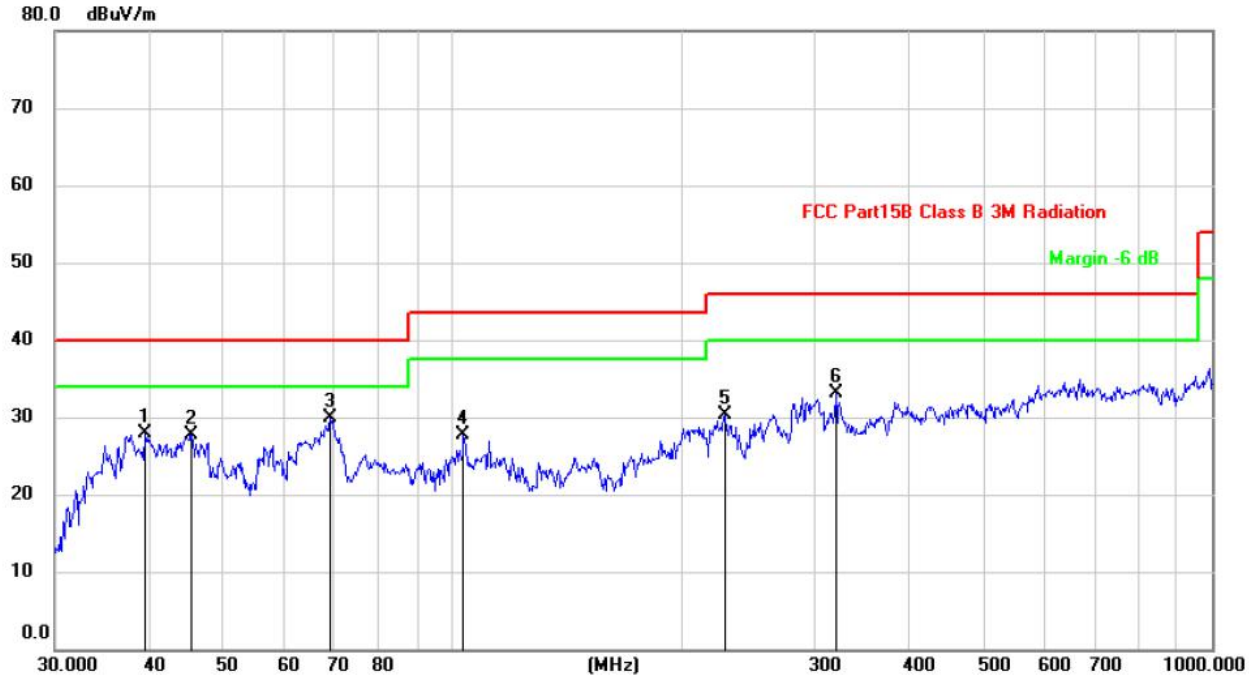
No.	Frequency (KHz)	Reading (dBuV)	Detector (PK/QP/A)	Emission (dBuV/m)	Limit (dBuV/m)	Margin (dB)
1	16	61.80	AV	81.52	123.52	-42.00
2	45	62.54	AV	80.33	114.54	-34.21
3	77	56.09	AV	78.84	109.87	-31.03
4	216	57.28	AV	74.42	100.92	-26.50
5*	386	65.64	AV	76.60	95.87	-19.27
6	402	76.75	AV	79.21	95.52	-16.31
7	471	63.43	AV	67.52	94.14	-26.62
8	1025	54.61	QP	35.88	67.39	-31.51
9	7452	38.85	QP	22.69	50.16	-27.47

1. "*" Means Fundamental frequency
2. Emission Level [dBμV/m] = Reading [dBμV] + Ant. Factor [dB/m] + Cable Loss [dB]
3.Margin [dB] = Emission Level [dBμV/m] – Limit [dBμV/m]
4.Limit calculation: Limit at specified distance + 40log (300/3) = Limit + 80 dB for up to 0.49 MHz Limit at specified distance + 40log (30/3) = Limit + 40 dB for above 0.49 MHz, Below 30 MHz

Plot of Radiated Emissions Test Data (From 30MHz to 1GHz)

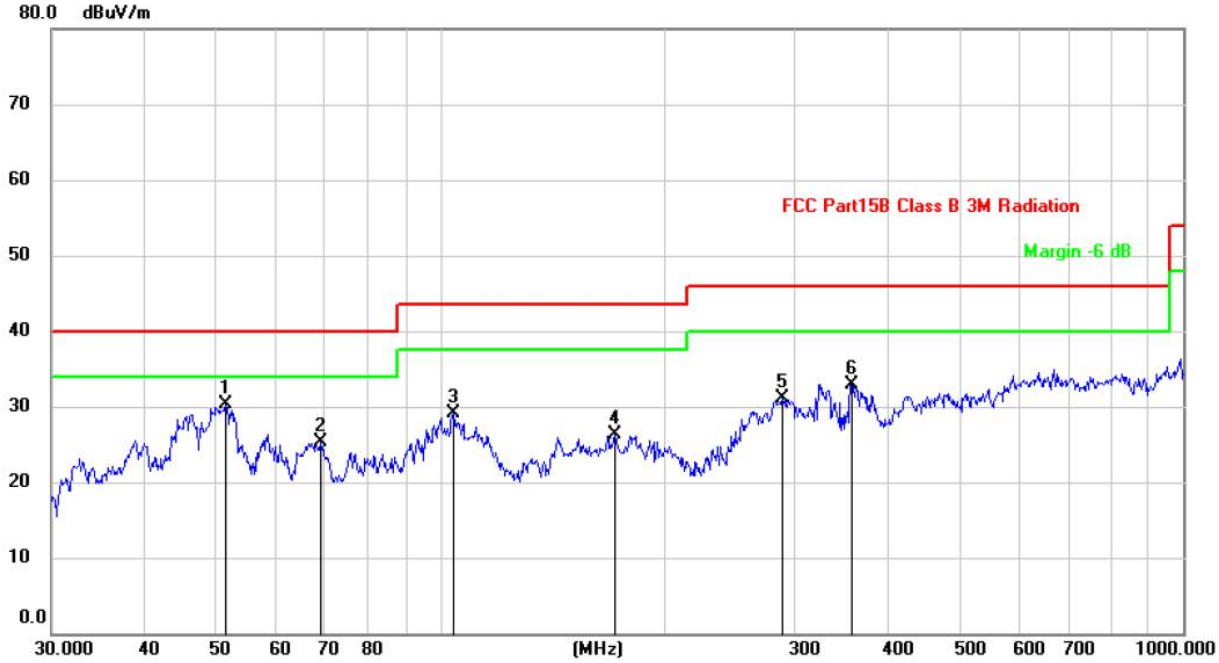
EUT: *Wireless charger*
Tested Model: *M320*
Operating Condition: *TM1*
Comment: *120V/60Hz; Adapter DC 5V*

Test Specification: *Horizontal*



No.	Mk.	Freq.	Measure-ment	Limit	Over		Antenna Height	Table Degree	
		MHz	dBuV/m	dBuV/m	dB	Detector	cm	degree	Comment
1		39.4371	27.86	40.00	-12.14	QP			
2		45.3755	27.77	40.00	-12.23	QP			
3	*	69.1140	29.89	40.00	-10.11	QP			
4		103.4419	27.64	43.50	-15.86	QP			
5		228.4901	30.25	46.00	-15.75	QP			
6		319.9370	33.10	46.00	-12.90	QP			

Test Specification: *Vertical*



No.	Mk.	Freq.	Measure-ment	Limit	Over		Antenna Height	Table Degree	
		MHz	dBuV/m	dBuV/m	dB	Detector	cm	degree	Comment
1	*	51.4806	30.27	40.00	-9.73	QP			
2		69.1140	25.39	40.00	-14.61	QP			
3		104.1701	29.13	43.50	-14.37	QP			
4		171.9944	26.34	43.50	-17.16	QP			
5		289.0020	31.01	46.00	-14.99	QP			
6		357.9286	32.97	46.00	-13.03	QP			

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