

FCC PART 15C

TEST REPORT

For

Shenzhen Bluecon Technology Co. Ltd

601 Hongtao Building, Longquan Park A, Dalang Street, Longhua District, Shenzhen, Guangdong, China

FCC ID: 2A2JEBR2

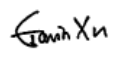
Report Type: Original Report	Product Name: Wireless Car Charger
Report Number: DG3210705-27152E-00	
Report Date: 2021-07-20	
Reviewed By:	Gavin Xu RF Engineer 
Test Laboratory:	Bay Area Compliance Laboratories Corp. (Dongguan) No.12, Pulong East 1 st Road, Tangxia Town, Dongguan, Guangdong, China Tel: +86-769-86858888 Fax: +86-769-86858891 www.baclcorp.com.cn

TABLE OF CONTENTS

GENERAL INFORMATION	3
PRODUCT DESCRIPTION FOR EQUIPMENT UNDER TEST (EUT).....	3
TECHNICAL SPECIFICATION.....	3
OBJECTIVE	3
TEST METHODOLOGY.....	3
MEASUREMENT UNCERTAINTY	3
TEST FACILITY	4
DECLARATIONS	4
SYSTEM TEST CONFIGURATION	5
DESCRIPTION OF TEST CONFIGURATION.....	5
EUT EXERCISE SOFTWARE	5
SUPPORT EQUIPMENT LIST AND DETAILS.....	5
SUPPORT CABLE LIST AND DETAILS.....	5
BLOCK DIAGRAM OF TEST SET	5
TEST EQUIPMENT LIST	6
ENVIRONMENTAL CONDITIONS	6
SUMMARY OF TEST RESULTS	7
1 - MAXIMUM PERMISSIBLE EXPOSURE (MPE)	8
APPLICABLE STANDARD.....	8
BLOCK DIAGRAM OF TEST SETUP	9
TEST DATA.....	10
2 - ANTENNA REQUIREMENT	11
APPLICABLE STANDARD.....	11
ANTENNA CONNECTED CONSTRUCTION.....	11
4 - RADIATED EMISSIONS TEST.....	12
APPLICABLE STANDARD.....	12
TEST SYSTEM SETUP	12
EMI TEST RECEIVER SETUP	13
CORRECTED AMPLITUDE & MARGIN CALCULATION.....	13
TEST RESULTS SUMMARY	13
TEST DATA.....	14

GENERAL INFORMATION

Product Description for Equipment Under Test (EUT)

EUT Name:	Wireless Car Charger
EUT Model:	R2
Multiple Model:	R3, R9, Q1, Q2, Q3, C1, A5
Model Difference:	Refer to the DOS letter
Rated Input Voltage:	DC 5V / 9V
Serial Number:	DG3210705-27152E-RF-S1
EUT Received Date:	2021.07.07
EUT Received Status:	Good

Technical Specification

Operation Frequency Range (kHz):	110-205
Maximum Wireless Output:	10W

Objective

This Type approval report is prepared on behalf of **Shenzhen Bluecon Technology Co. Ltd** in accordance with Part 2, Subpart J, and Part 15, Subparts A and C of the Federal Communications Commission's rules.

The objective is to determine the compliance of the EUT with FCC rules, 15.203, 15.205, 15.209.

Test Methodology

All measurements detailed in this Test Report were performed in accordance with ANSI C63.10-2013 "American National Standard of Procedures for Compliance Testing of Unlicensed Wireless Devices".

All emissions measurement was performed and Bay Area Compliance Laboratories Corp. (Dongguan).
The radiated testing was performed at an antenna-to-EUT distance of 3 meters.

Measurement Uncertainty

Parameter	Measurement Uncertainty
Occupied Channel Bandwidth	±5 %
radiated Emissions	9kHz~30MHz: 4.12dB 30M~200MHz: 4.58 dB for Horizontal, 4.59 dB for Vertical 200M~1GHz: 4.83 dB for Horizontal, 5.85 dB for Vertical
Temperature	±1℃
Humidity	±5%
DC and low frequency voltages	±0.4%
Duty Cycle	1%
AC Power Lines Conducted Emission	3.12 dB (150 kHz to 30 MHz)

Note: Otherwise required by the applicant or Product Regulations, Decision Rule in this report did not consider the uncertainty. The extended uncertainty given in this report is obtained by combining the standard uncertainty times the coverage factor K with the 95% confidence interval.

Test Facility

The Test site used by Bay Area Compliance Laboratories Corp. (Dongguan) to collect test data is located on the No.12, Pulong East 1st Road, Tangxia Town, Dongguan, Guangdong, China.

The lab has been recognized as the FCC accredited lab under the KDB 974614 D01 and is listed in the FCC Public Access Link (PAL) database, FCC Registration No. : 897218, the FCC Designation No. : CN1220.

The lab has been recognized by Innovation, Science and Economic Development Canada to test to Canadian radio equipment requirements, the CAB identifier : CN0022.

Declarations

BACL is not responsible for the authenticity of any test data provided by the applicant. Data included from the applicant that may affect test results are marked with a triangle symbol “▲”. Customer model name, addresses, names, trademarks etc. are not considered data.

Unless otherwise stated the results shown in this test report refer only to the sample(s) tested.

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SYSTEM TEST CONFIGURATION

Description of Test Configuration

The system was configured for testing in a test mode.

The device is a wireless charger operation on frequency 110kHz - 205 kHz.

EUT Exercise Software

No software used in test.

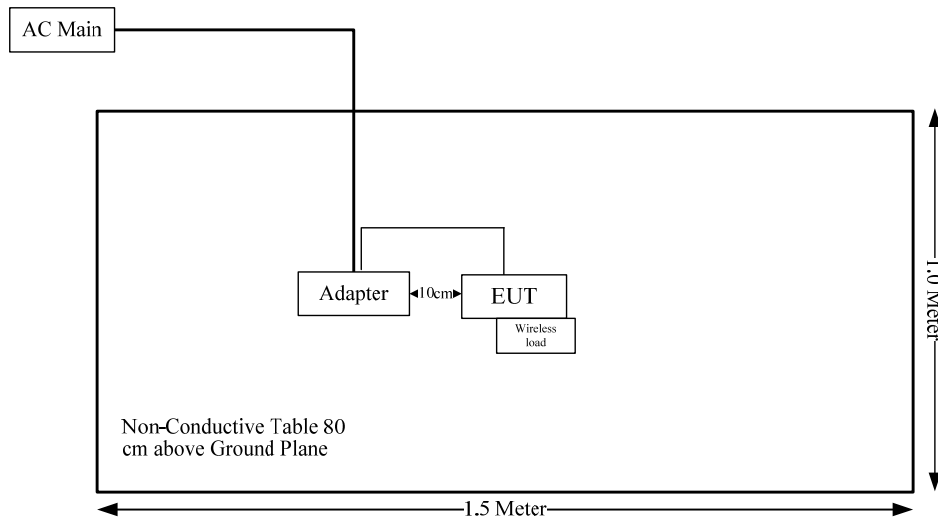
Support Equipment List and Details

Manufacturer	Description	Model	Serial Number
MPOW	Wireless Charging Load	/	/
DJI	Adapter	QC24-CN	/

Support Cable List and Details

Cable Description	Shielding Type	Ferrite Core	Length (m)	From Port	To
USB Cable	Yes	No	0.8	Adapter	EUT

Block Diagram of Test Set



Test Equipment List

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
MPE					
Narda	Exposure Level Tester	ELT-400	N-0229	2019-11-19	2021-11-18
Narda	B Field Probe	ELT Probe 100cm ²	M-0666	2019-11-19	2021-11-18
Amplifier Research	Isotropic Field Probe	FP5000	301825	2018-11-12	2021-11-12
ETS-Lindgreen	Field Probe	HI-6005	6564158	2019-12-10	2022-12-09
Radiated emissions below 1GHz					
TESEQ	Passive Loop	HLA6120	33561	2021-02-03	2022-02-02
Sunol Sciences	Antenna	JB3	A060611-2	2020-08-25	2023-08-25
R&S	EMI Test Receiver	ESCI	100224	2020-09-12	2021-09-12
Unknown	Coaxial Cable	C-NJNJ-50	C-1000-01	2020-09-05	2021-09-05
Unknown	Coaxial Cable	C-NJNJ-50	C-0400-02	2020-09-05	2021-09-05
Unknown	Coaxial Cable	C-NJNJ-50	C-0530-01	2020-09-24	2021-09-24
Sonoma	Amplifier	310N	185914	2020-10-13	2021-10-13
Farad	Test Software	EZ-EMC	V1.1.4.2	N/A	N/A

* Statement of Traceability: Bay Area Compliance Laboratories Corp. (Dongguan) attests that all calibrations have been performed, traceable to National Primary Standards and International System of Units (SI).

Environmental Conditions

Test Item:	MPE	Radiated emissions below 1GHz
Temperature:	28.7°C	26.2°C
Relative Humidity:	46%	56%
ATM Pressure:	100.3kPa	100.3kPa
Tester:	Coco ye	Burt Hu
Test Date:	2021-07-20	2021-07-13

SUMMARY OF TEST RESULTS

S/N	FCC Rules	Description of Test	Result
1	FCC §1.1310, §2.1091	MAXIMUM PERMISSIBLE EXPOSURE (MPE)	Compliance
2	FCC§15.203	Antenna Requirement	Compliance
3	FCC§15.207	AC Line Conducted Emission	Not Applicable
4	§15.209 §15.205	Radiated Emission Test	Compliance

Note:

Not Applicable: EUT is applicable for vehicles.

1 - MAXIMUM PERMISSIBLE EXPOSURE (MPE)

Applicable Standard

According to subpart §1.1310, systems operating under the provisions of this section shall be operated in a manner that ensures that the public is not exposed to radio frequency energy level in excess of the Commission's guidelines.

Limits for Maximum Permissible Exposure (MPE) (§1.1310, §2.1091)

(B) Limits for General Population/Uncontrolled Exposure				
Frequency Range (MHz)	Electric Field Strength (V/m)	Magnetic Field Strength (A/m)	Power Density (mW/cm ²)	Averaging Time (minutes)
0.3–1.34	614	1.63	*(100)	30
1.34–30	824/f	2.19/f	*(180/f ²)	30
30–300	27.5	0.073	0.2	30
300–1500	/	/	f/1500	30
1500–100,000	/	/	1.0	30

f = frequency in MHz; * = Plane-wave equivalent power density;

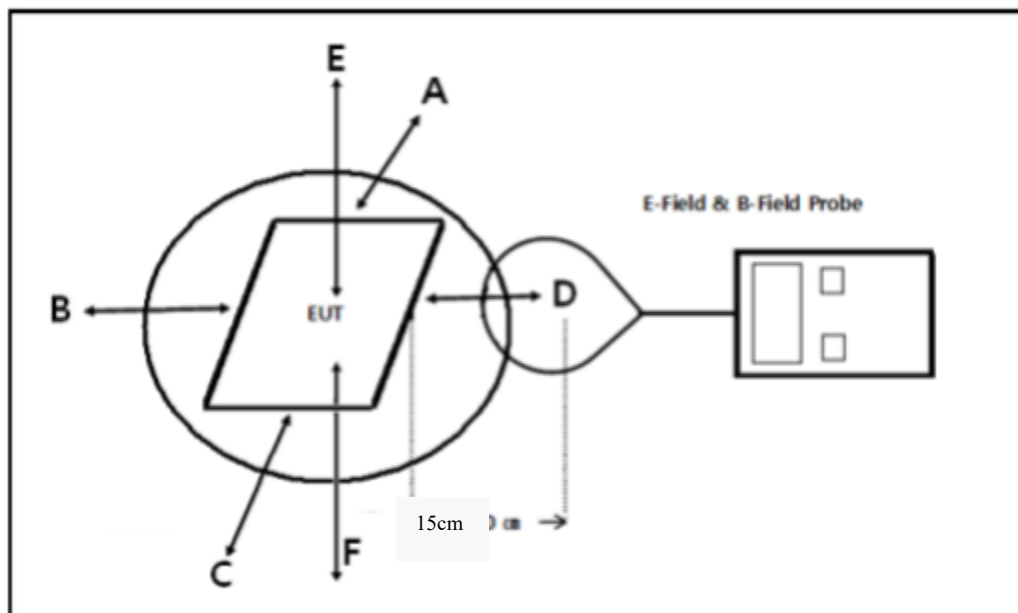
According with KDB 680106 D01 RF Exposure Wireless Charging Apps v03r01 clause 3 c)

- c) For devices designed for typical desktop applications, such as wireless charging pads, RF exposure evaluation should be conducted assuming a user separation distance of 15 cm. E and H field strength measurements or numerical modeling may be used to demonstrate compliance. Measurements should be made from all sides and the top of the primary/client pair, with the 15 cm measured from the center of the probe(s) to the edge of the device. Emissions between 100 kHz to 300 kHz should be assessed versus the limits at 300 kHz in Table 1 of Section 1.1310: 614 V/m and 1.63 A/m. A KDB inquiry is required to determine the applicable exposure limits below 100 kHz.

According to 680106 D01 RF Exposure Wireless Charging App v03r01 clause 5 b)

- b) Inductive wireless power transfer applications with supporting field strength results and meeting all of the following requirements are not required to submit a KDB inquiry for devices approved using SDoC² or a PAG³ for equipment approved using certification to address RF exposure compliance. However, the responsible party is required to keep a copy of the test report in accordance with KDB 865664 D02. A copy of the test report is to be submitted with the application if the device is approved using certification.

- (1) Power transfer frequency is less than 1 MHz
- (2) Output power from each primary coil is less than or equal to 15 watts.
- (3) The system may consist of more than one source primary coils, charging one or more clients. If more than one primary coil is present, the coil pairs may be powered on at the same time.
- (4) Client device is placed directly in contact with the transmitter.
- (5) Mobile exposure conditions only (portable exposure conditions are not covered by this exclusion).
- (6) The aggregate H-field strengths anywhere at or beyond 15 cm surrounding the device, and 20 cm away from the surface from all coils that by design can simultaneously transmit, and while those coils are simultaneously energized, are demonstrated to be less than 50% of the applicable MPE limit.

Block Diagram of Test Setup

Note: 20 cm for Top test.

Test Data**H-field Strength:**

Frequency Range (kHz)	Position A (A/m)	Position B (A/m)	Position C (A/m)	Position D (A/m)	Position E (A/m)	50% Limit (A/m)	Limit (A/m)
110-205	0.219	0.191	0.192	0.189	0.228	0.815	1.63

Note: Test with 15cm distance from the center of the probe(s) to the edge of the device, 20 cm for top(Position E) test.

E-field Strength:

Frequency Range (kHz)	Position A (V/m)	Position B (V/m)	Position C (V/m)	Position D (V/m)	Position E (V/m)	50% Limit (V/m)	Limit (V/m)
110-205	1.86	1.85	1.37	1.46	2.73	307	614

Note: Test with 15cm distance from the center of the probe(s) to the edge of the device, 20 cm for top(Position E) test.

Result: Compliance

Considerations of compliance 680106 D01 RF Exposure Wireless Charging App v03r01 clause 5 b:

(1) Power transfer frequency is less than 1 MHz

Yes, the operation frequency is 110-205 kHz.

(2) Output power from each primary coil is less than or equal to 15 watts.

Yes, the maximum output power of primary coil is less than **15 Watts**.

(3) The system may consist of more than one source primary coils, charging one or more clients. If more than one primary coil is present, the coil pairs may be powered on at the same time.

The transfer system includes only single primary coil, and system detect and allow coupling only between individual pairs of coils.

(4) Client device is placed directly in contact with the transmitter.

Yes, client device is placed directly in contact with the transmitter

(5) Mobile exposure conditions only (portable exposure conditions are not covered by this exclusion).

Yes, mobile exposure conditions only.

(6) The aggregate H-field strengths anywhere at or beyond 15 cm surrounding the device, and 20 cm away from the surface from all coils that by design can simultaneously transmit, and while those coils are simultaneously energized, are demonstrated to be less than 50% of the applicable MPE limit.

Yes, the test result for H and E-field strength less than 50% of the MPE limit.

2 - ANTENNA REQUIREMENT

Applicable Standard

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.

Antenna Connected Construction

The EUT has one integral Coil antenna arrangement, which was permanently attached and fulfill the requirement of this section. Please refer to the EUT photos.

Result: Compliance.

4 - RADIATED EMISSIONS TEST

Applicable Standard

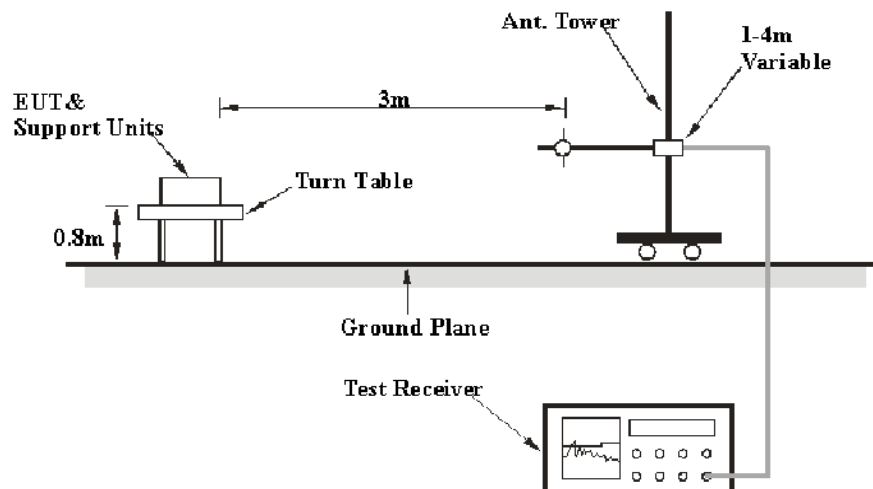
As per FCC Part 15.209

(a) Except as provided elsewhere in this subpart, the emissions from an intentional radiator shall not exceed the field strength levels specified in the following table:

Frequency (MHz)	Field strength (microvolts/meter)	Measurement distance (meters)
0.009-0.490	2400/F(kHz)	300
0.490-1.705	24000/F(kHz)	30
1.705-30.0	30	30
30-88	100**	3
88-216	150**	3
216-960	200**	3
Above 960	500	3

**Except as provided in paragraph (g), fundamental emissions from intentional radiators operating under this section shall not be located in the frequency bands 54-72 MHz, 76-88 MHz, 174-216 MHz or 470-806 MHz. However, operation within these frequency bands is permitted under other sections of this part, e.g., §§15.231 and 15.241.

Test System Setup



The radiated emission tests were performed in the 3-meter chamber test site, using the setup accordance with the ANSI C63.10-2013. The specification used was the FCC Part Subpart C limits.

The spacing between the peripherals was 10 cm.

EMI Test Receiver Setup

The system was investigated from 9 kHz to 1 GHz.

During the radiated emission test, the EMI test Receiver was set with the following configurations:

Frequency Range	RBW	Video B/W	Measurement
9 kHz – 150 kHz	200 Hz	1 kHz	QP/Average
150 kHz – 30 MHz	9 kHz	30 kHz	QP/Average
30 MHz – 1000 MHz	120 kHz	300 kHz	QP

The emission limits shown in the above table are based on measurements employing a CISPR quasi-peak detector except for the frequency bands 9-90 kHz, 110-490 kHz and above 1000 MHz. Radiated emission limits in these three bands are based on measurements employing an average detector.

If the maximized peak measured value complies with the limit, then it is unnecessary to perform an QP/Average measurement

Corrected Amplitude & Margin Calculation

The Corrected Amplitude is calculated by adding the Antenna Factor and Cable Loss, and subtracting the Amplifier Gain from the Amplitude reading. The basic equation is as follows:

$$\text{Corr. Ampl.} = \text{Meter Reading} + \text{Antenna Factor} + \text{Cable Loss} - \text{Amplifier Gain}$$

The “**Margin**” column of the following data tables indicates the degree of compliance with the applicable limit. For example, a margin of 7dB means the emission is 7dB below the limit. The equation for margin calculation is as follows:

$$\text{Margin} = \text{Limit} - \text{Corr. Ampl.}$$

Test Results Summary

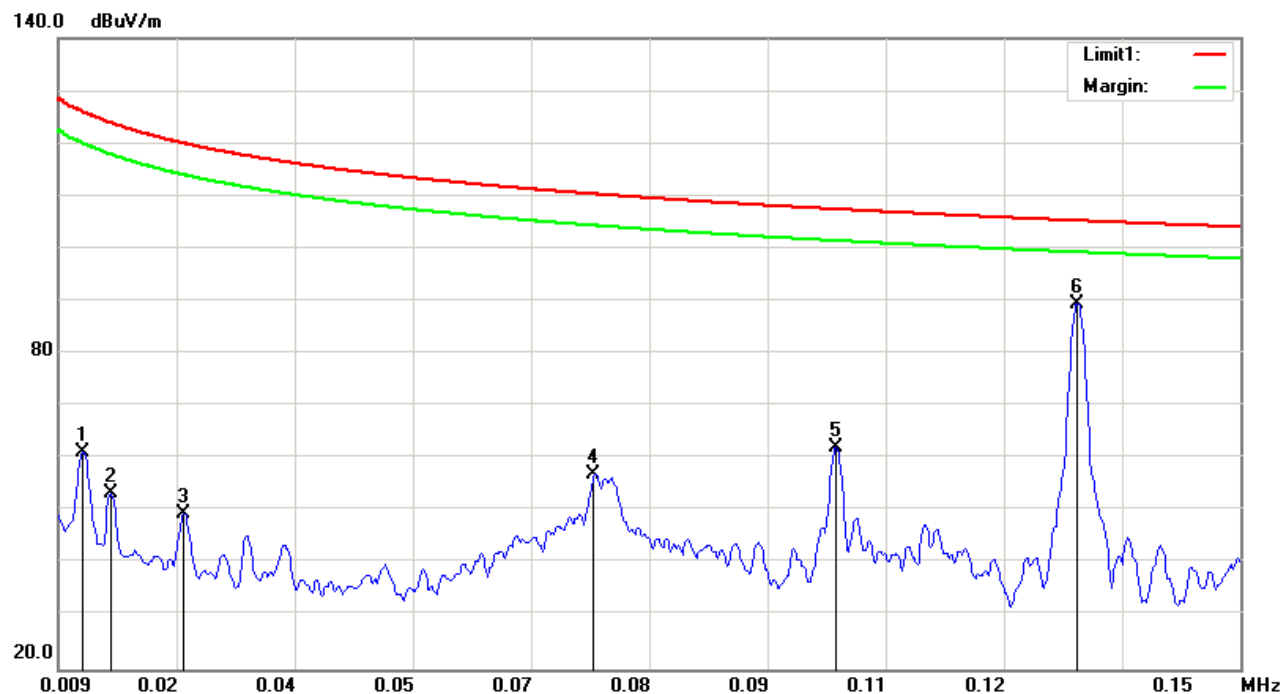
According to the data in the following table, the EUT complied with the FCC Part 15.209&15.205.

Test Data

Result: Compliance, please refer to the below plots and table.

Test Mode: Wireless Charging with full load

1) 9-150 kHz:



Frequency (MHz)	Receiver Reading (dB μ V)	Detector	Correction Factor (dB/m)	Cord. Amp. (dB μ V/m)	Limit (dB μ V/m)	Margin (dB)
0.0120	40.79	peak	20.52	61.31	126.02	64.71
0.0152	33.01	peak	20.52	53.53	123.97	70.44
0.0240	29.17	peak	20.44	49.61	120.00	70.39
0.0730	36.67	peak	20.40	57.07	110.34	53.27
0.1018	41.89	peak	20.22	62.11	107.45	45.34
0.1305*	69.35	peak	20.22	89.57	105.29	15.72

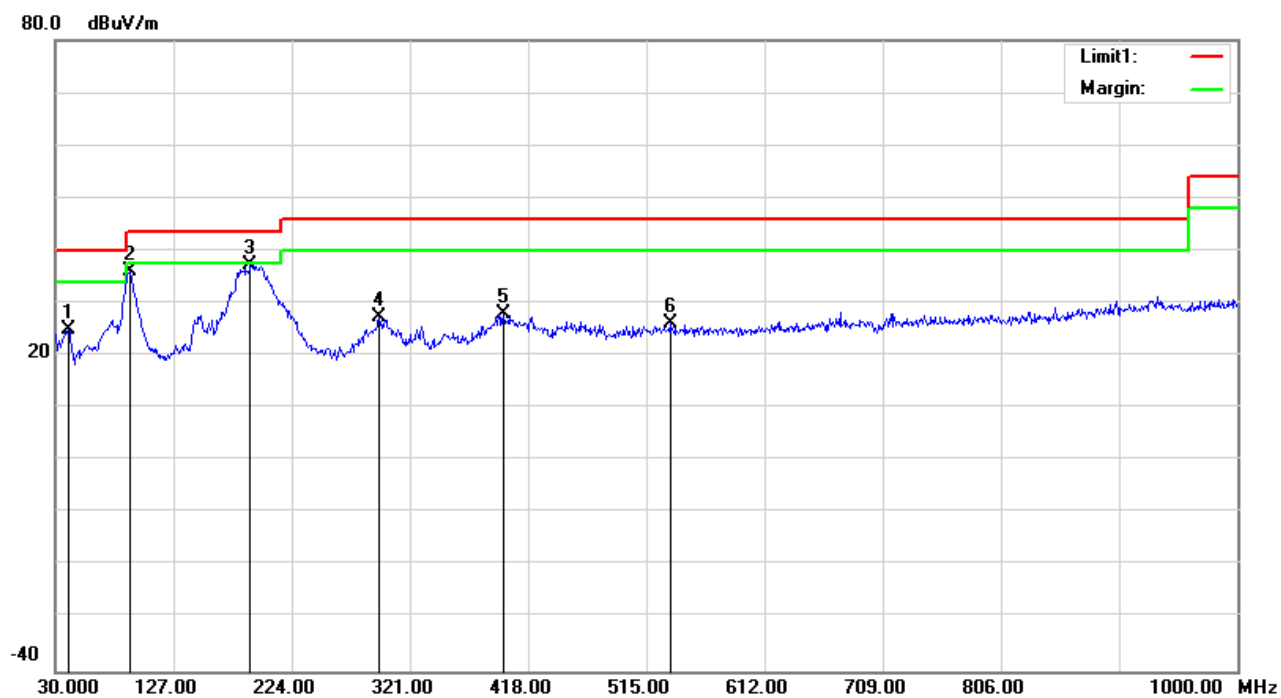
*: Fundamental

2) 150kHz-30 MHz:

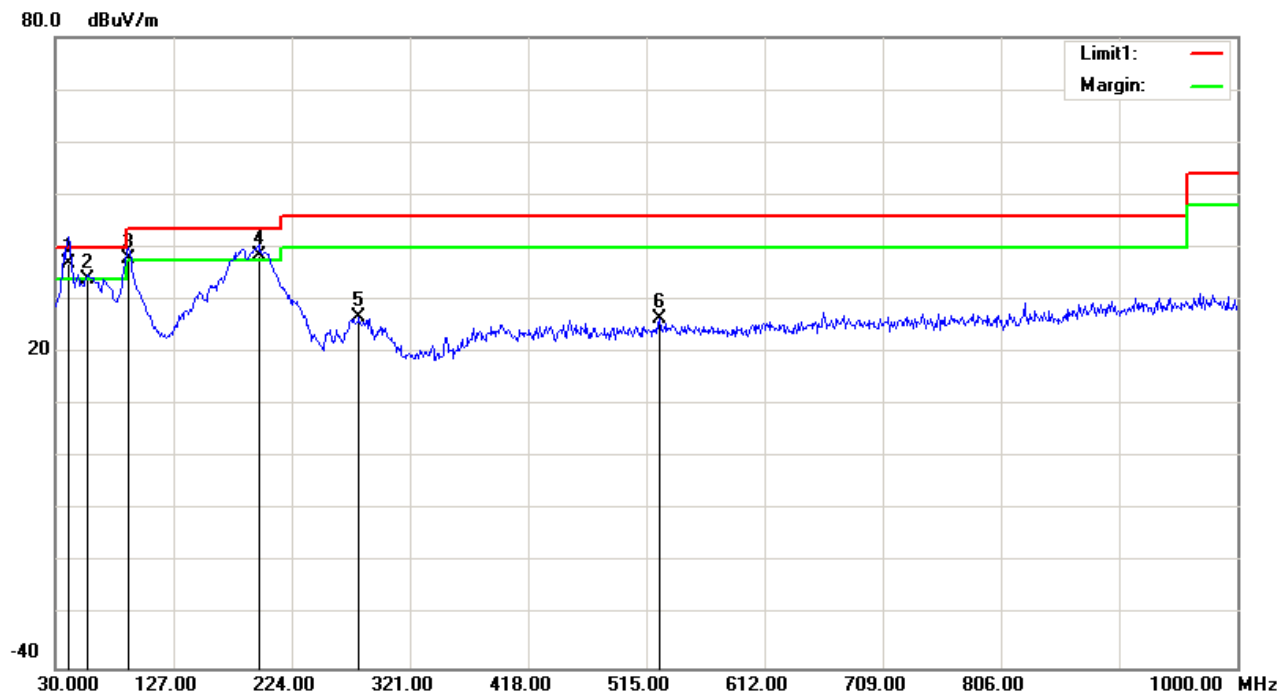


Frequency (MHz)	Receiver Reading (dBμV)	Detector	Correction Factor (dB/m)	Cord. Amp. (dBμV/m)	Limit (dBμV/m)	Margin (dB)
0.3888	47.64	peak	20.09	67.73	95.81	28.08
0.6276	38.84	peak	20.05	58.89	71.64	12.75
0.8963	33.00	peak	20.06	53.06	68.53	15.47
1.1649	28.04	peak	20.05	48.09	66.24	18.15
12.5079	14.09	peak	20.50	34.59	69.54	34.95
19.8809	15.51	peak	20.61	36.12	69.54	33.42

3)30MHz- 1GHz

Horizontal:

Frequency (MHz)	Receiver Reading (dBμV)	Detector	Correction Factor (dB/m)	Cord. Amp. (dBμV/m)	Limit (dBμV/m)	Margin (dB)
40.6700	34.69	peak	-9.67	25.02	40.00	14.98
91.1100	50.90	peak	-14.94	35.96	43.50	7.54
190.0500	48.00	peak	-10.67	37.33	43.50	6.17
295.7800	35.16	peak	-7.70	27.46	46.00	18.54
397.6300	33.12	peak	-5.31	27.81	46.00	18.19
534.4000	28.54	peak	-2.41	26.13	46.00	19.87

Vertical:

Frequency (MHz)	Receiver Reading (dBμV)	Detector	Correction Factor (dB/m)	Cord. Amp. (dBμV/m)	Limit (dBμV/m)	Margin (dB)
40.6700	46.67	QP	-9.67	37.00	40.00	3.00
56.1900	50.32	QP	-16.32	34.00	40.00	6.00
90.1400	52.79	QP	-14.99	37.80	43.50	5.70
196.8400	48.15	QP	-9.65	38.50	43.50	5.00
279.2900	35.34	peak	-8.57	26.77	46.00	19.23
525.6700	28.82	peak	-2.49	26.33	46.00	19.67

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