

FCC PART 15C

TEST REPORT

For

Shenzhen Qianhai Patuoxun Network&Technology co.,ltd

Wuhe RD 49#, Bantian District B-202, 6th Building Shenzhen Guangdong China

FCC ID: 2AOXY-PA226A


Report Type: Original Report	Product Name: 4-IN-1 MAGNETIC WIRELESS CHARGER PAD
Report Number:	DG2210422-13018E-00
Report Date:	2021-05-11
Reviewed By:	Ivan Cao Assistant Manager 
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

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GENERAL INFORMATION

Product Description for Equipment Under Test (EUT)

EUT Name:	4-IN-1 MAGNETIC WIRELESS CHARGER PAD
EUT Model:	PA226A
Multiple Model:	PA226B, PA226C
Operation Frequency:	110.5-205kHz
Maximum Wireless Output:	10W for mobile phones and 5W for earphones
Rated Input Voltage:	DC 5V/2A, 9V/2A from QC Adapter
Serial Number:	DG2210422-13018E-RF-S1
EUT Received Date:	2021.04.24
EUT Received Status:	Good

Note: The series product, models PA226A, PA226B, PA226C are electrically identical, PA226A was fully tested. The difference between them was explained in the declaration letter.

Objective

This Type approval report is prepared on behalf of *Shenzhen Qianhai Patuoxun Network&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, 15.207, 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 °C
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

Justification

The system was configured for testing in a test mode

The device is a wireless charger operation on frequency 110.5kHz - 205 kHz.

EUT Exercise Software

No software used in test.

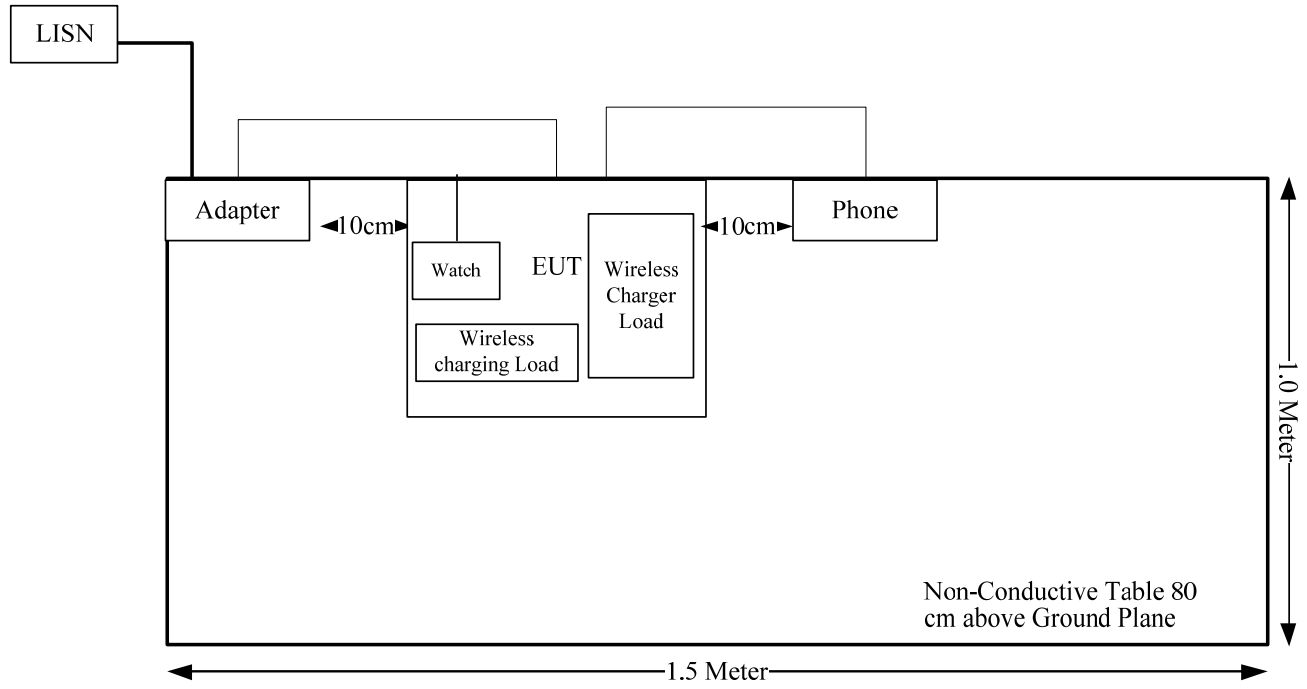
Support Equipment List and Details

Manufacturer	Description	Model	Serial Number
Kingwear	Smart Watch	KW06PRO	KW06PRO-1
Huawei	Phone	BLN-AL40	BLN-AL40C00B120
HUIER	Wireless Charging Load	WXC15WL	HEWX15W002
N/A	Wireless Charging Load	WXC15WL	HEWX15W001
DJI	Adapter	QC24-CN	E215890

Support Cable List and Details

Cable Description	Shielding Type	Ferrite Core	Length (m)	From Port	To
USB Cable	yes	No	0.8	Type-C Port of EUT	Phone
USB Cable	yes	No	0.8	Type-A Port of EUT	Watch
USB Cable	yes	No	0.8	Adapter	EUT

Block Diagram of Test Set



SUMMARY OF TEST RESULTS

FCC Rules	Description of Test	Result
FCC§15.203	Antenna Requirement	Compliance
FCC§15.207	AC Line Conducted Emission	Compliance
§15.209 §15.205	Radiated Emission Test	Compliance

FCC§15.203 - 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.

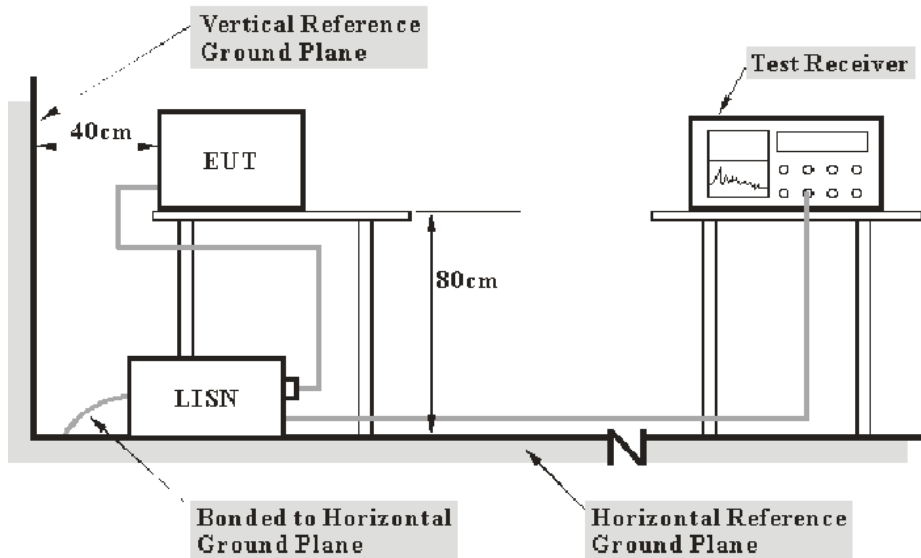
Antenna Connected Construction

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

Result: Compliance.

FCC §15.207 – AC LINE CONDUCTED EMISSION

EUT Setup



- Note:** 1. Support units were connected to second LISN.
 2. Both of LISNs (AMN) 80 cm from EUT and at the least 80 cm from other units and other metal planes support units.

The setup of EUT is according with per ANSI C63.10-2013 measurement procedure. The specification used was with the FCC Part 15.207 limits.

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.

The adapter was connected to the main LISN with an AC 120V/60Hz power source.

EMI Test Receiver Setup

The EMI test receiver was set to investigate the spectrum from 150 kHz to 30 MHz.

During the conducted emission test, the EMI test receiver was set with the following configurations:

Frequency Range	IF B/W
150 kHz – 30 MHz	9 kHz

Test Equipment List and Details

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
R&S	LISN	ENV 216	101614	2020-09-12	2021-09-12
R&S	EMI Test Receiver	ESCI	101121	2020-07-07	2021-07-07
MICRO-COAX	Coaxial Cable	C-NJNJ-50	C-0200-01	2020-09-05	2021-09-05
R&S	Test Software	EMC32	Version 9.10.00	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).

Test Procedure

During the conducted emission test, the adapter was connected to the outlet of the LISN.

The frequency and amplitude of the six highest ac power-line conducted emissions relative to the limit, measured over all the current-carrying conductors of the EUT power cords, and the operating frequency or frequency to which the EUT is tuned (if appropriate), should be reported, unless such emissions are more than 20 dB below the limit. AC power-line conducted emissions measurements are to be separately carried out only on each of the phase ("hot") line(s) and (if used) on the neutral line(s), but not on the ground [protective earth] line(s). If less than six emission frequencies are within 20 dB of the limit, then the noise level of the measuring instrument at representative frequencies should be reported. The specific conductor of the power-line cord for each of the reported emissions should be identified. Measure the six highest emissions with respect to the limit on each current-carrying conductor of each power cord associated with the EUT (but not the power cords of associated or peripheral equipment that are part of the test configuration). Then, report the six highest emissions with respect to the limit from among all the measurements identifying the frequency and specific current-carrying conductor identified with the emission. The six highest emissions should be reported for each of the current-carrying conductors, or the six highest emissions may be reported over all the current-carrying conductors.

According FCC publication number 174176, for a device with a permanent antenna operating at or below 30 MHz, the measurements done with a suitable dummy load, in lieu of the permanent antenna under the following conditions: (1) perform the AC line conducted tests with the permanent antenna to determine compliance with the Section 15.207 limits outside the transmitter's fundamental emission band; (2) retest with a dummy load in lieu of the permanent antenna to determine compliance with the Section 15.207 limits within the transmitter's fundamental emission band.

Corrected Amplitude & Margin Calculation

The basic equation is as follows:

$$V_C = V_R + A_C + VDF$$

Herein,

V_C : corrected voltage amplitude

V_R : reading voltage amplitude

A_C : attenuation caused by cable loss

VDF: voltage division factor of AMN or ISN

The “**Margin**” column of the following data tables indicates the degree of compliance within 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:

$$\text{Margin} = \text{Limit} - \text{Corrected Amplitude}$$

Test Results Summary

According to the recorded data in following table, the EUT complied with the FCC Part 15.207.

Test Data

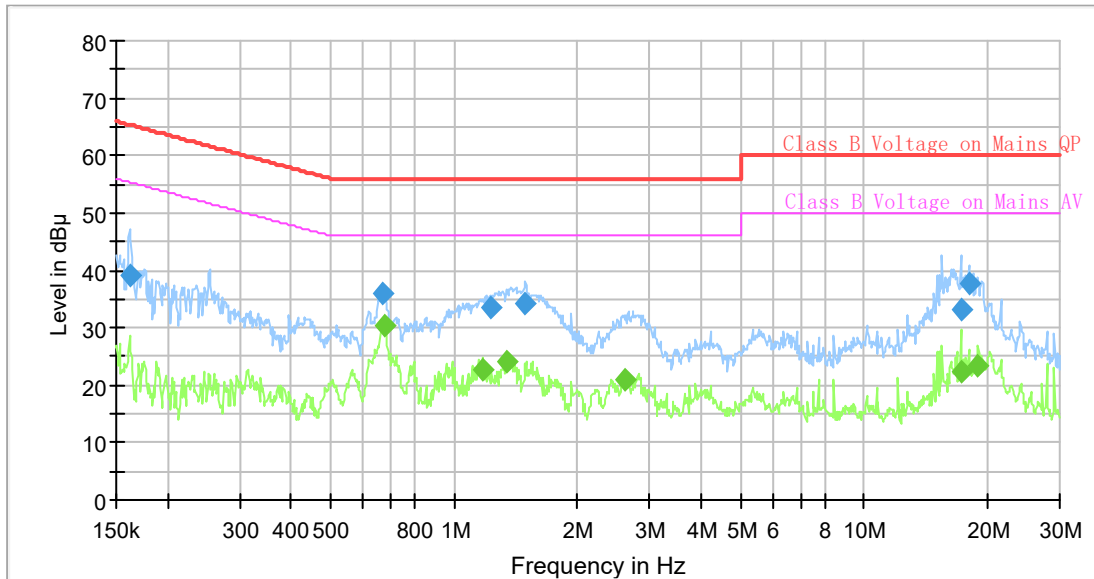
Environmental Conditions

Temperature:	24.9°C
Relative Humidity:	47%
ATM Pressure:	101.0kPa
Test Engineer:	Walker Chen
Test Date	2021-05-06

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

Test Mode: Full Load

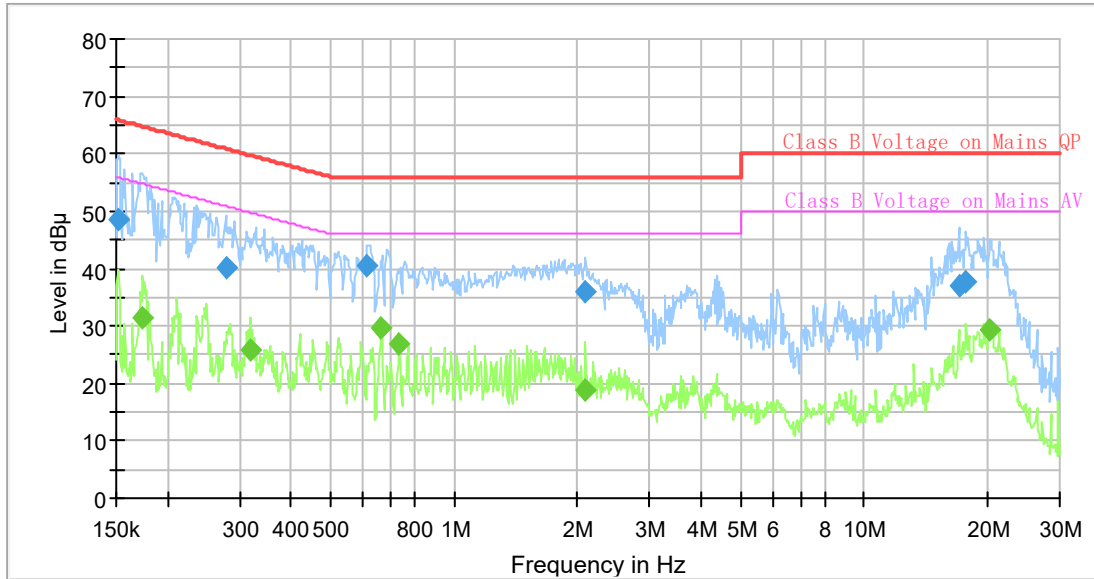
AC 120V, 60 Hz, Line:



Final Result

Frequency (MHz)	QuasiPeak (dB μ V)	Average (dB μ V)	Limit (dB μ V)	Margin (dB)	Bandwidth (kHz)	Line	Corr. (dB)
0.161652	38.98	---	65.38	26.40	9.000	L1	9.6
0.669745	36.15	---	56.00	19.85	9.000	L1	9.6
0.676460	---	30.34	46.00	15.66	9.000	L1	9.6
1.176724	---	22.72	46.00	23.28	9.000	L1	9.7
1.224625	33.53	---	56.00	22.47	9.000	L1	9.7
1.339653	---	24.17	46.00	21.83	9.000	L1	9.7
1.495016	34.38	---	56.00	21.62	9.000	L1	9.7
2.613633	---	21.10	46.00	24.90	9.000	L1	9.7
17.219320	33.19	---	60.00	26.81	9.000	L1	10.1
17.219320	---	22.20	50.00	27.80	9.000	L1	10.1
18.009869	37.64	---	60.00	22.36	9.000	L1	10.1
18.930896	---	23.58	50.00	26.42	9.000	L1	10.0

AC120 V, 60 Hz, Neutral:



Final Result

Frequency (MHz)	QuasiPeak (dB μ V)	Average (dB μ V)	Limit (dB μ V)	Margin (dB)	Bandwidth (kHz)	Line	Corr. (dB)
0.152261	48.61	---	65.88	17.27	9.000	N	9.6
0.174210	---	31.34	54.76	23.42	9.000	N	9.6
0.277024	40.31	---	60.90	20.59	9.000	N	9.6
0.318542	---	25.91	49.74	23.83	9.000	N	9.6
0.615300	40.46	---	56.00	15.54	9.000	N	9.6
0.663098	---	29.77	46.00	16.23	9.000	N	9.6
0.736317	---	26.92	46.00	19.08	9.000	N	9.6
2.088199	35.82	---	56.00	20.18	9.000	N	9.6
2.088199	---	18.74	46.00	27.26	9.000	N	9.6
17.048409	37.13	---	60.00	22.87	9.000	N	9.9
17.742400	37.63	---	60.00	22.37	9.000	N	9.9
20.300000	---	29.35	50.00	20.65	9.000	N	9.9

FCC §15.205 & §15.209 - RADIATED EMISSIONS TEST

Applicable Standard

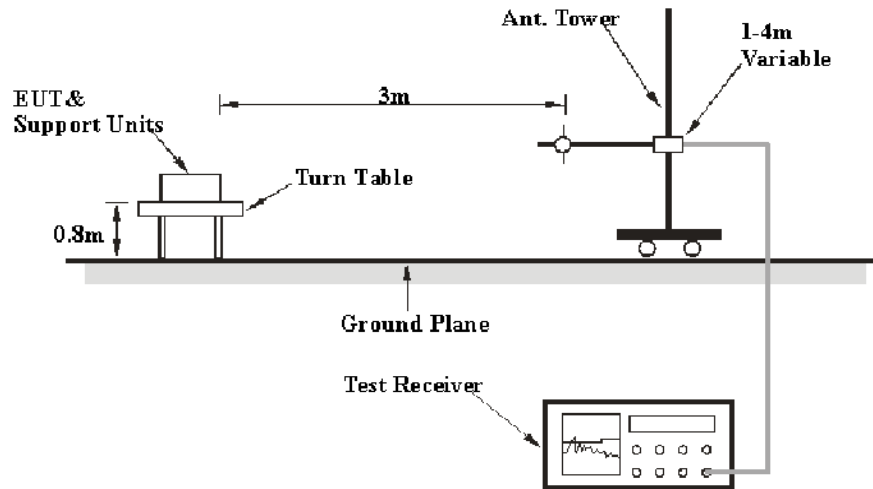
As per FCC Part 15.209

(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.

EUT 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 Equipment List and Details

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
EMCO	Passive Loop	6512	9706-1206	2020-03-05	2023-03-05
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

* **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).

Test Results Summary

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

Test Data

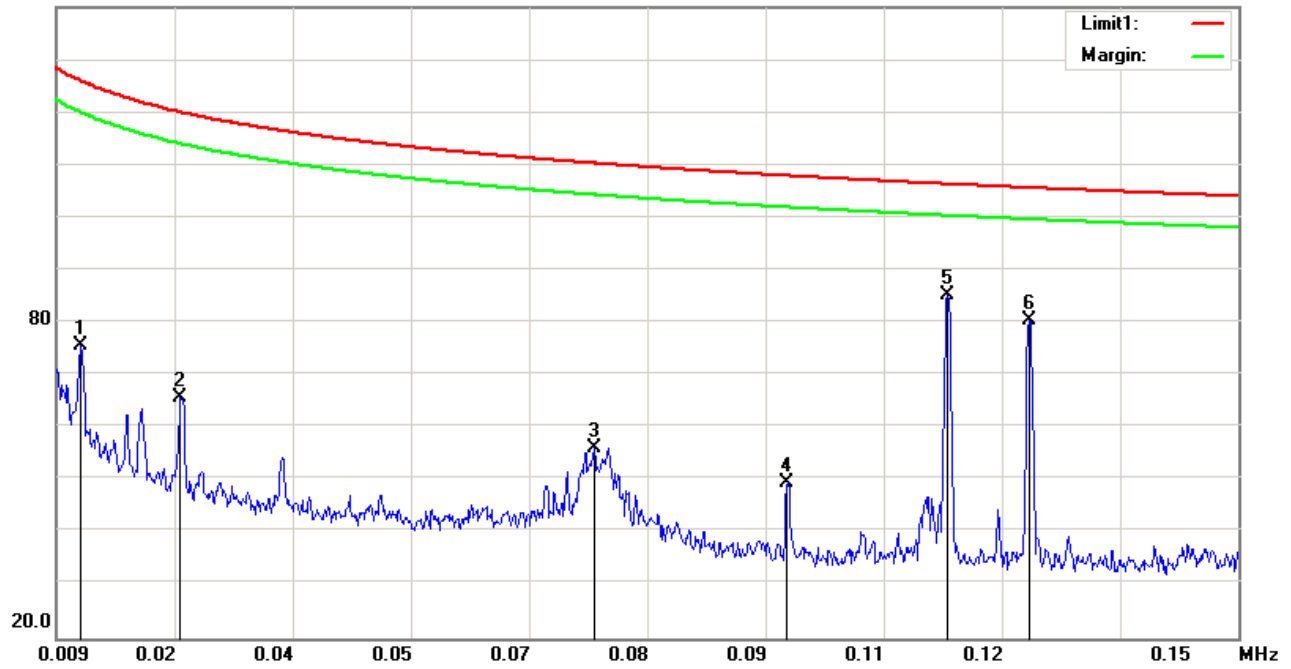
Environmental Conditions

Temperature:	26°C
Relative Humidity:	53%
ATM Pressure:	101.0kPa
Test Engineer:	Asa Chen
Test date:	2021-05-06

Test mode: Full Load

1) 9-150 kHz:

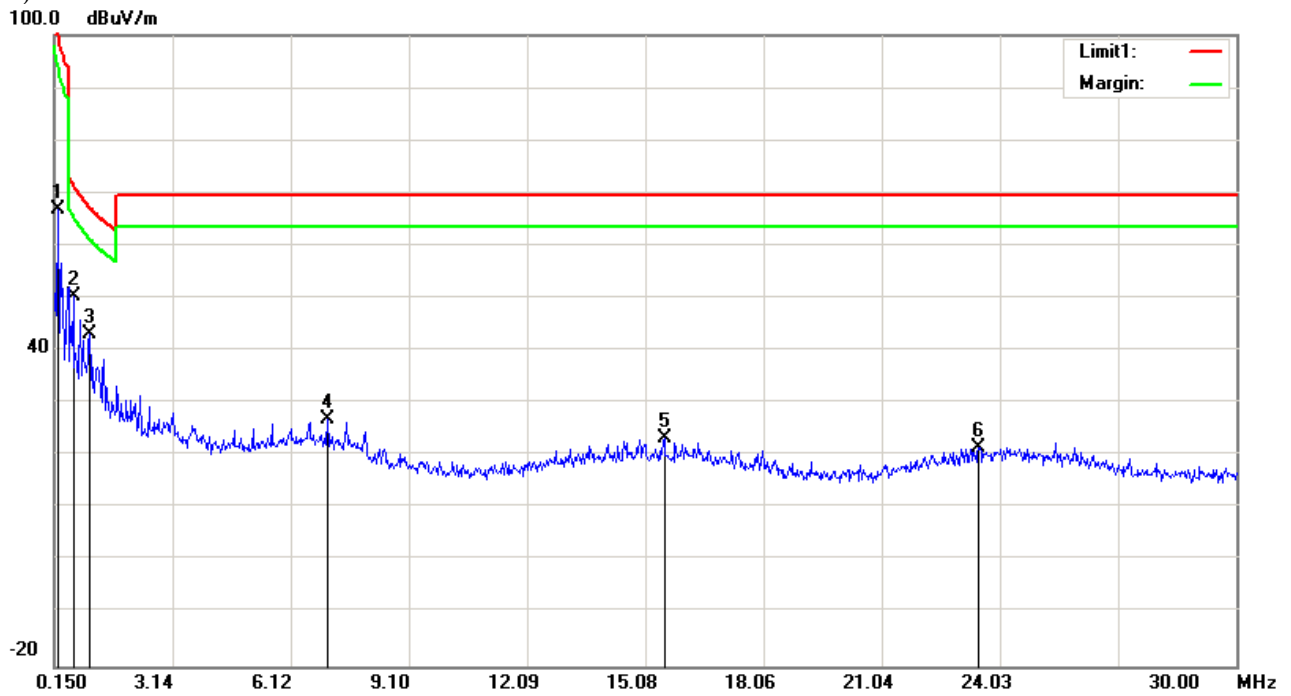
140.0 dB μ V/m



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	19.48	peak	56.25	75.73	126.02	50.29
0.0238	17.40	peak	48.29	65.69	120.07	54.38
0.0732	17.55	peak	38.64	56.19	110.31	54.12
0.0961	13.35	peak	36.17	49.52	107.95	58.43
0.1153*	50.05	peak	35.10	85.15	106.37	21.22
0.1250*	45.93	peak	34.55	80.48	105.66	25.18

*: Fundamental

2) 150kHz-30 MHz:

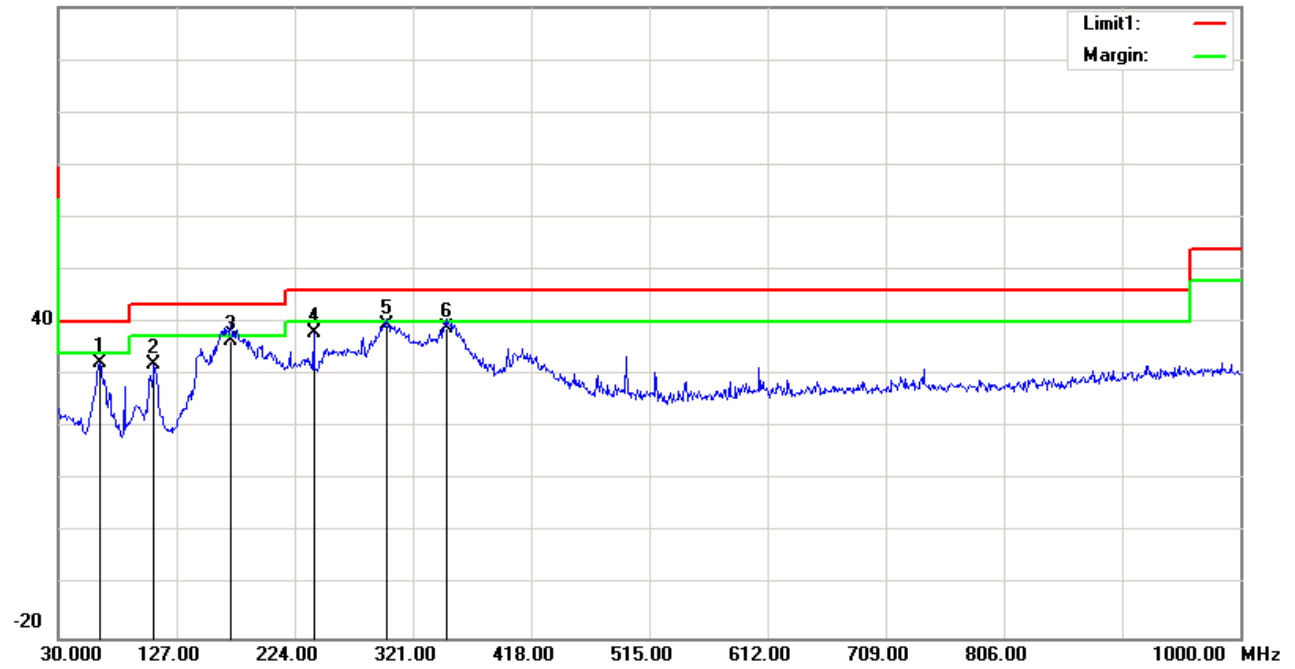


Frequency (MHz)	Receiver Reading (dBµV)	Detector	Correction Factor (dB/m)	Cord. Amp. (dBµV/m)	Limit (dBµV/m)	Margin (dB)
0.2395	38.02	peak	28.88	66.90	100.02	33.12
0.6276	28.98	peak	21.24	50.22	71.64	21.42
1.0455	25.85	peak	17.25	43.10	67.19	24.09
7.0454	21.21	peak	5.84	27.05	69.54	42.49
15.5526	18.37	peak	4.86	23.23	69.54	46.31
23.4927	17.14	peak	4.48	21.62	69.54	47.92

3)30MHz- 1GHz

Horizontal:

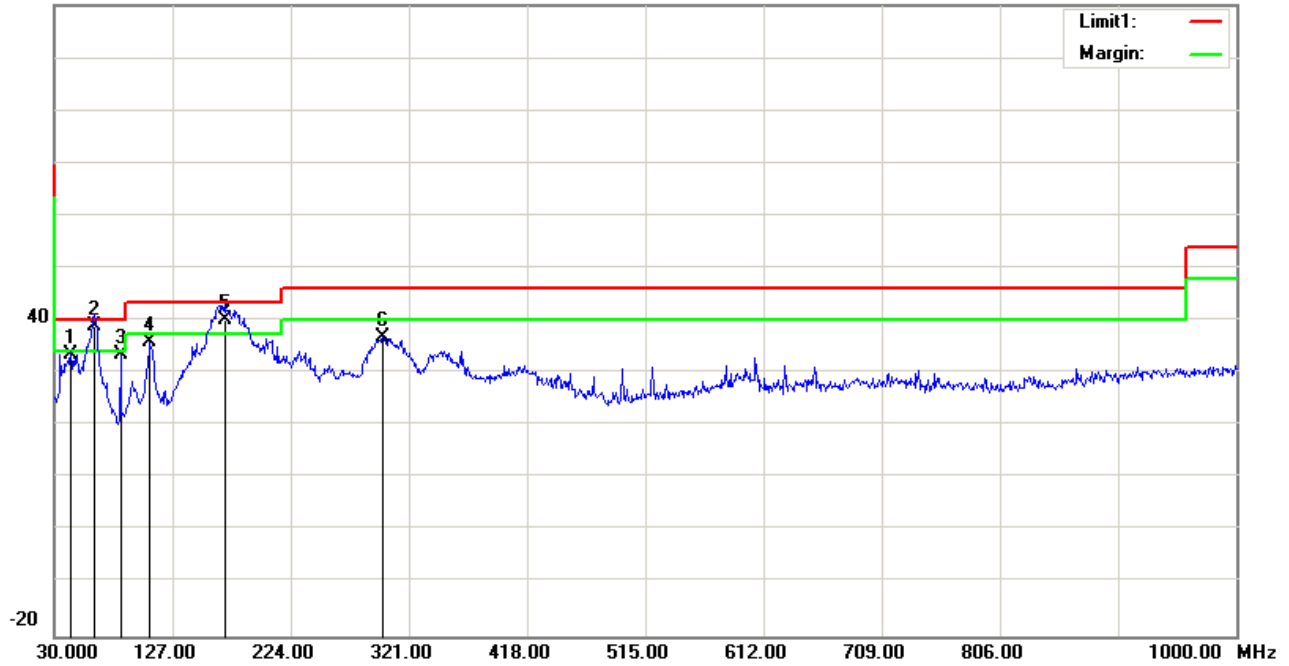
100.0 dB μ V/m



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)
63.9500	48.72	peak	-16.46	32.26	40.00	7.74
108.5700	45.12	peak	-12.98	32.14	43.50	11.36
171.6200	45.97	QP	-9.47	36.50	43.50	7.00
239.5200	47.96	peak	-10.05	37.91	46.00	8.09
299.6600	46.88	QP	-7.38	39.50	46.00	6.50
348.1600	45.35	QP	-6.45	38.90	46.00	7.10

Vertical:

100.0 dB μ V/m



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)
43.5800	45.22	QP	-11.72	33.50	40.00	6.50
62.9800	55.43	QP	-16.43	39.00	40.00	1.00
84.3200	49.03	peak	-15.40	33.63	40.00	6.37
108.5700	48.79	peak	-12.98	35.81	43.50	7.69
169.6800	49.63	QP	-9.53	40.10	43.50	3.40
299.6600	44.38	peak	-7.38	37.00	46.00	9.00

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