



FCC PART 15C

TEST REPORT

For

Macari Baby, Inc.

30 Martin Street Cumberland, RI 02864

FCC ID: 2AJEY-401T

Report Type: Original Report	Product Type: Baby Monitor (Camera Unit)
Report Number: <u>RSZ160805002-00E</u>	
Report Date: <u>2016-10-26</u>	
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Note: This test report is prepared for the customer shown above and for the device described herein. It may not be duplicated or used in part without prior written consent from Bay Area Compliance Laboratories Corp.

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GENERAL INFORMATION

Product Description for Equipment under Test (EUT)

The Macari Baby, Inc.'s product, model number: *BD04010 (FCC ID: 2AJEY-401T)* or the "EUT" in this report was a Baby Monitor (Camera Unit), which was measured approximately: 12.5cm (L) × 9.5 cm (W) × 10.2 cm (H), rated with input voltage: DC 7.5 V from adapter.

Adapter information:

Model: P5 0750500

Input: AC100-240V~50/60Hz, 250 mA

Output: DC 7.5V, 500 mA

*All measurement and test data in this report was gathered from production sample serial number: 1602920 (Assigned by BACL, Kunshan). The EUT supplied by the applicant was received on 2016-08-05.

Objective

This report is prepared on behalf of *Macari Baby, Inc.* in accordance with Part 2-Subpart J, and Part 15-Subparts A, B and C of the Federal Communication Commissions rules.

The tests were performed in order to determine compliance with FCC Part 15, Subpart C, section 15.203, 15.205, 15.207 and 15.209 rules.

Related Submittal(s)/Grant(s)

FCC Part 15.247 DSS submissions with FCC ID: 2AJEY-401T, 2AJEY-401R and 2AJEY-401M.

Test Methodology

All measurements contained in this report were conducted with ANSI C63.10-2013, American National Standard of Procedures for Compliance Testing of Unlicensed Wireless Devices.

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

Measurement Uncertainty

Item	Uncertainty	
AC Power Lines Conducted Emissions	±3.26 dB	
RF conducted test with spectrum	±0.9dB	
RF Output Power with Power meter	±0.5dB	
Radiated emission	30MHz~1GHz	±5.91dB
	Above 1G	±4.92dB
Occupied Bandwidth	±0.5kHz	
Temperature	±1.0 °C	
Humidity	±6%	

Test Facility

The test site used by Bay Area Compliance Laboratories Corp. (Kunshan) to collect test data is located on the Chenghu Lake Road, Kunshan Development Zone No.248, Kunshan, Jiangsu, China

Test site at Bay Area Compliance Laboratories Corp. (Kunshan) has been fully described in reports submitted to the Federal Communication Commission (FCC). The details of these reports have been found to be in compliance with the requirements of Section 2.948 of the FCC Rules on November 06, 2014. The facility also complies with the radiated and AC line conducted test site criteria set forth in ANSI C63.4.

The Federal Communications Commission has the reports on file and is listed under FCC Registration No.: 815570. The test site has been approved by the FCC for public use and is listed in the FCC Public Access Link (PAL) database.

SYSTEM TEST CONFIGURATION

Justification

The system was configured for testing in a typical fashion (as normally used by a typical user).

Note: EUT has one transmitting function at 125kHz.

EUT Exercise Software

N/A

Equipment Modifications

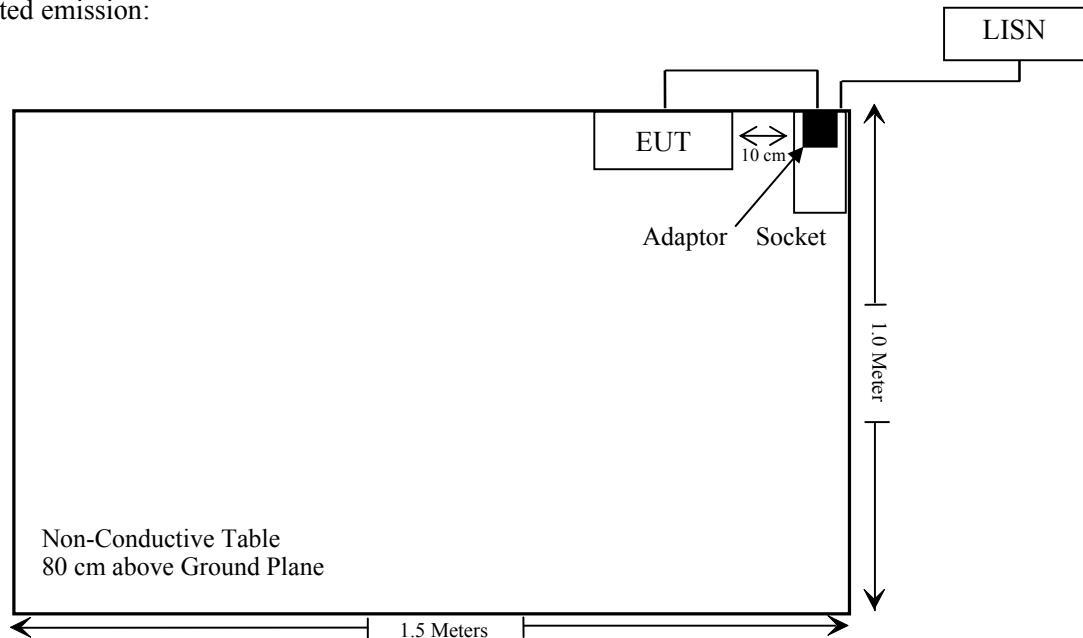
No modification was made to the EUT tested.

External I/O Cable

Cable Description	Length (m)	From Port	To
Unshielded Undetachable DC Power Cable	2.4	EUT	Adapter

Block Diagram of Test Setup

For conducted emission:



SUMMARY OF TEST RESULTS

FCC Rules	Description of Test	Result
1.1307(b),§2.1093	RF Exposure	Compliance
§15.203	Antenna Requirement	Compliance
§15.207(a)	AC Line Conducted Emission	Compliance
15.205, §15.209	Field Strength And Radiated Emissions	Compliance

TEST EQUIPMENT LIST

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
AC Line Conducted test					
Rohde & Schwarz	EMI Test Receiver	ESCS30	834115/007	2015-11-12	2016-11-11
Rohde & Schwarz	LISN	ESH3-Z5	862770/011	2016-10-10	2017-10-10
Rohde & Schwarz	Pulse limiter	ESH3-Z2	879940/0058	2016-06-19	2017-06-18
MICRO-COAX	Coaxial line	UFB-293B-1-0480-50X50	97F0173	2016-09-08	2017-09-08
Rohde & Schwarz	CE Test software	EMC 32	V 09.10.0	NCR	NCR
Radiation test					
Sonoma Instrument	Amplifier	330	171377	2016-10-21	2017-10-21
Rohde & Schwarz	EMI Test Receiver	ESCI	100195	2015-11-12	2016-11-11
Sunol Sciences	Broadband Antenna	JB3	A090314-2	2016-01-09	2019-01-08
ETS	Passive Loop Antenna	6512	00108100	2016-01-09	2019-01-08
R&S	Auto test Software	EMC32	V 09.10.0	NCR	NCR
BACL	RF cable	KS-LAB-012	KS-LAB-012	2015-12-16	2016-12-15
BACL	RF cable	KS-LAB-010	KS-LAB-010	2015-12-16	2016-12-15
RF Exposure					
ETS	Isotropic probe	HI-6005	00200234	2015-04-29	2018-04-28

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

FCC §1.1307(b) & 1.1310 – RF EXPOSURE

Applicable Standard

FCC §1.1307 & 1.1310

KDB 680106 D01 RF Exposure Wireless Charging Apps v02

According to FCC 1.1310: The criteria listed in the following table shall be used to evaluate the environment impact of human exposure to radio frequency (RF) radiation as specified in 1.1307

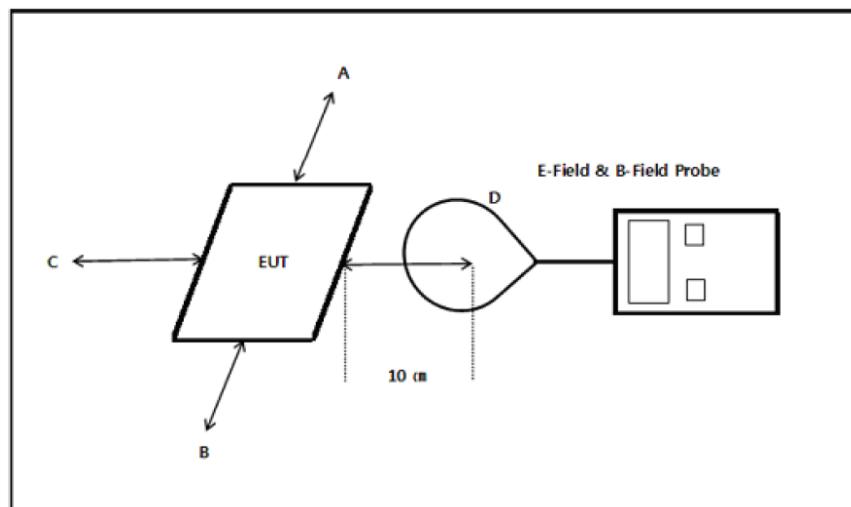
Limits for Maximum Permissible Exposure

Frequency range (MHz)	Electric field strength (V/m)	Magnetic field strength (A/m)	Power density (mW/cm ²)	Averaging time (minutes)
(A) Limits for Occupational/Controlled Exposures				
0.3-3.0	614	1.63	*(100)	6
3.0-30	1842/f	4.89/f	*(900/f ²)	6
30-300	61.4	0.163	1.0	6
300-1500			f/300	6
1500-100,000			5	6
(B) Limits for General Population/Uncontrolled Exposure				
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

Note: f = frequency in MHz

* = plane-wave equipment power density

EUT Setup



Test Result

Environmental Conditions

Temperature:	24 °C
Relative Humidity:	50 %
ATM Pressure:	101.0 kPa

The testing was performed by Layne Li on 2016-10-25.

Test Mode: Wireless charging

1) E-Filed Strength at 10 cm from the edges surrounding the EUT

Probe Position A (V/m)	Probe Position B (V/m)	Probe Position C (V/m)	Probe Position D (V/m)	Limits (V/m)
5.57	5.34	5.67	5.32	614

2) E-Filed Strength (calculated) at 10 cm from the edges surrounding the EUT

Probe Position A (A/m)	Probe Position B (A/m)	Probe Position C (A/m)	Probe Position D (A/m)	Limits (A/m)
0.015	0.014	0.074	0.014	1.63

Note:

E= 377* H,

E = electric field strength (V/m)

H = magnetic field strength (A/m)

According with KDB 680106 D01 RF Exposure Wireless Charging Apps v02, 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

FCC§15.203 - ANTENNA REQUIREMENT

Applicable Standard

For intentional device, according to §15.203, an intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used.

Antenna Connector Construction

The EUT has one internal LC oscillation antenna arrangement, which was permanently attached; fulfill the requirement of this section. Please refer to EUT photos.

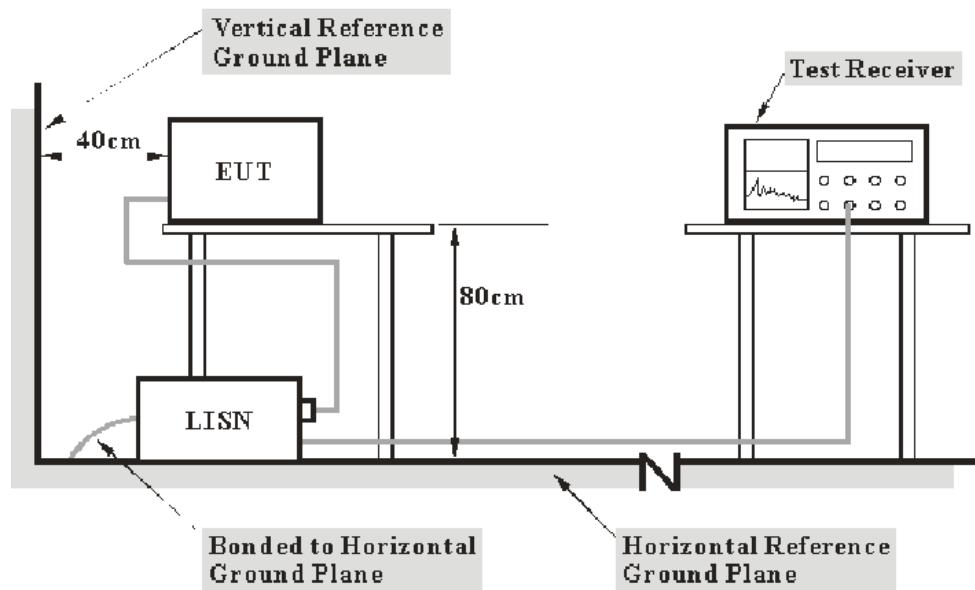
Result: Compliant

FCC §15.207 (a) – AC LINE CONDUCTED EMISSIONS

Applicable Standard

FCC §15.207

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 spacing between the peripherals was 10 cm.

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 Procedure

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

Maximizing procedure was performed on the six (6) highest emissions of the EUT.

All final data was recorded in the Quasi-peak and average detection mode.

Test Results Summary

According to the recorded data in following table,

Refer to CISPR16-4-2:2011 and CISPR 16-4-1:2009, the measured level is in compliance with the limit if

$$L_m + U_{(Lm)} \leq L_{lim} + U_{cisp}$$

In BACL, $U_{(Lm)}$ is less than U_{cisp} , if L_m is less than L_{lim} , it implies that the EUT complies with the limit.

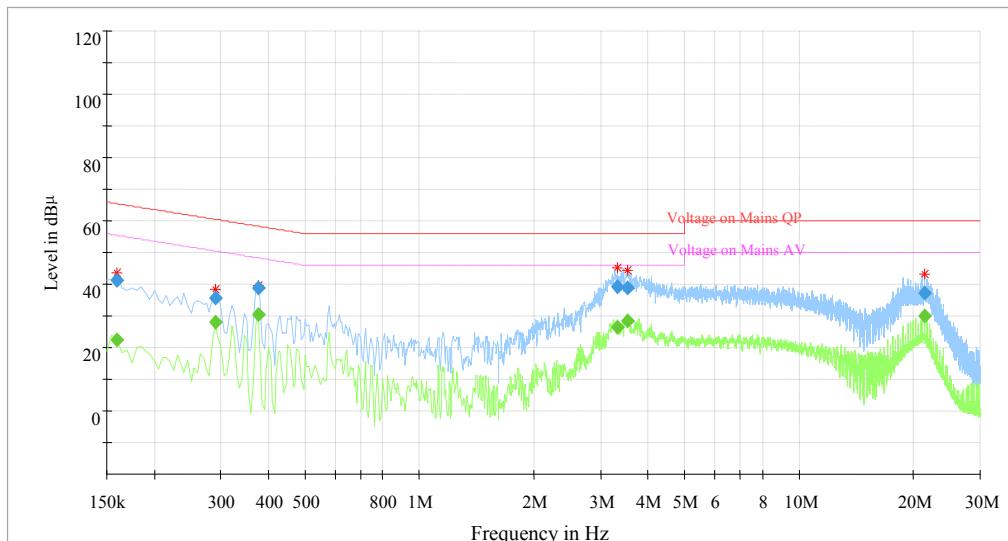
Test Data

Environmental Conditions

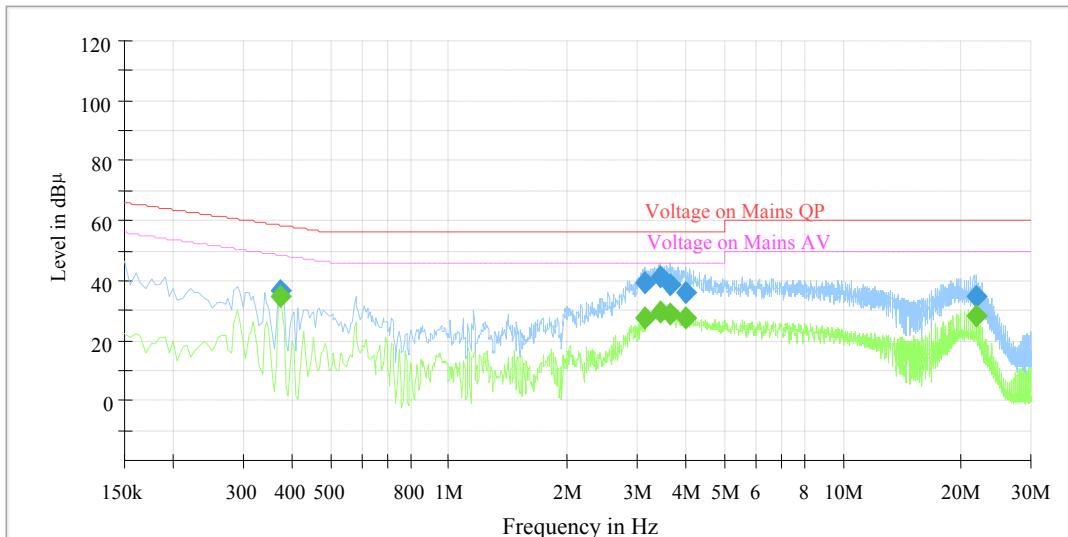
Temperature:	24 °C
Relative Humidity:	50 %
ATM Pressure:	101.0 kPa

The testing was performed by Layne Li on 2016-10-24.

Test Mode: Wireless charging

AC 120 V, 60 Hz, Line:

Frequency (MHz)	QuasiPeak (dBμV)	Average (dB μ V)	Bandwidth (kHz)	Line	Corr. (dB)	Margin (dB)	Limit (dBμV)	Comment
0.160000	---	22.58	9.000	L1	10.3	32.88	55.46	Compliance
0.160000	41.13	---	9.000	L1	10.3	24.33	65.46	Compliance
0.290000	---	27.99	9.000	L1	10.3	22.53	50.52	Compliance
0.290000	35.70	---	9.000	L1	10.3	24.82	60.52	Compliance
0.375000	---	30.55	9.000	L1	10.3	17.84	48.39	Compliance
0.375000	38.70	---	9.000	L1	10.3	19.69	58.39	Compliance
3.320000	---	26.59	9.000	L1	10.5	19.41	46.00	Compliance
3.320000	39.29	---	9.000	L1	10.5	16.71	56.00	Compliance
3.545000	---	28.55	9.000	L1	10.5	17.45	46.00	Compliance
3.545000	38.96	---	9.000	L1	10.5	17.04	56.00	Compliance
21.435000	---	30.13	9.000	L1	10.5	19.87	50.00	Compliance
21.435000	37.35	---	9.000	L1	10.5	22.65	60.00	Compliance

AC 120V, 60 Hz, Neutral:

Frequency (MHz)	QuasiPeak (dB μ V)	Average (dB μ V)	Bandwidth (kHz)	Line	Corr. (dB)	Margin (dB)	Limit (dB μ V)	Comment
0.375000	---	34.91	9.000	N	10.3	13.48	48.39	Compliance
0.375000	36.79	---	9.000	N	10.3	21.60	58.39	Compliance
3.140000	---	27.23	9.000	N	10.5	18.77	46.00	Compliance
3.140000	39.42	---	9.000	N	10.5	16.58	56.00	Compliance
3.425000	---	29.68	9.000	N	10.5	16.32	46.00	Compliance
3.425000	41.23	---	9.000	N	10.5	14.77	56.00	Compliance
3.660000	---	28.58	9.000	N	10.5	17.42	46.00	Compliance
3.660000	38.77	---	9.000	N	10.5	17.23	56.00	Compliance
4.010000	---	27.53	9.000	N	10.5	18.47	46.00	Compliance
4.010000	36.15	---	9.000	N	10.5	19.85	56.00	Compliance
21.730000	---	27.99	9.000	N	10.5	22.01	50.00	Compliance
21.730000	34.94	---	9.000	N	10.5	25.06	60.00	Compliance

Note:

- 1) Corrected Amplitude = Reading + Correction Factor
- 2) Correction Factor = LISN/ISN VDF (Voltage Division Factor) + Cable Loss + Pulse Limiter Attenuation
The corrected factor has been input into the transducer of the test software.
- 3) Margin = Limit – Corrected Amplitude

FCC§15.205 & §15.209 - FIELD STRENGTH AND RADIATED EMISSIONS

Applicable Standard

FCC§15.205, §15.209

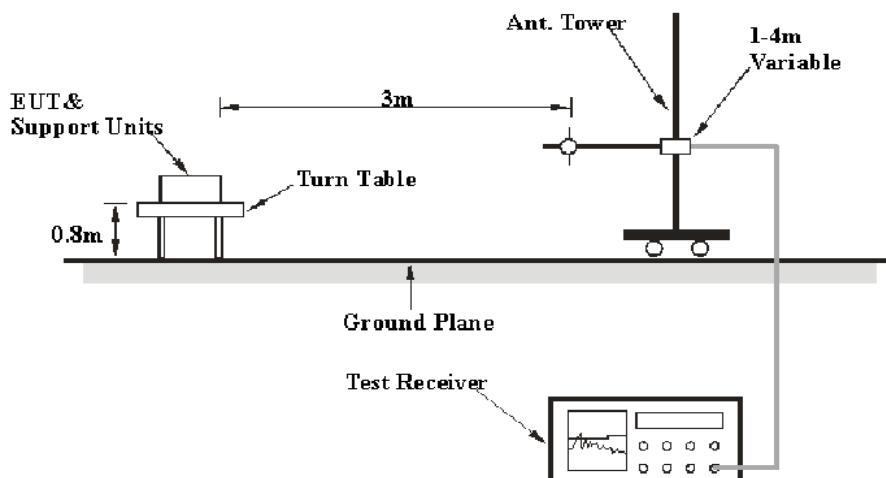
Test Equipment Setup

The spectrum analyzer or receiver is set as:

Frequency Range	RBW	Video B/W	IF B/W	Detector
9 kHz – 30 MHz	10 kHz	30 kHz	9 kHz	QP
30 MHz – 1000 MHz	100 kHz	300 kHz	120kHz	QP

Note: The frequency bands 9-90 kHz and 110-490 kHz, the testing are use an average detector.

EUT Setup



The radiated emission tests were performed in the 3 meters test site, using the setup accordance with the ANSI C63.10-2013. The specification used was the FCC 15.209 and 15.205 limits.

Test Procedure

Maximizing procedure was performed on the highest emissions to ensure that the EUT complied with all installation combinations.

The EUT is set 3 meter away from the testing antenna, which is varied from 1-4 meter, and the EUT is placed on a turntable, which is 0.8 meter above ground plane, the table shall be rotated for 360 degrees to find out the highest emission. The receiving antenna should be changed the polarization both of horizontal and vertical.

Corrected Amplitude & Margin Calculation

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

$$\text{Corrected Amplitude} = \text{Meter Reading} + \text{Antenna Factor} + \text{Cable Loss} - \text{Amplifier Gain}$$

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:

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

Test Results Summary

According to the recorded data in following table, the EUT complied with the FCC Title 47, Part 15, Subpart C, section 15.205 and 15.209

Refer to CISPR16-4-2:2011 and CISPR 16-4-1:2009, the measured level is in compliance with the limit if

$$L_m + + U_{(L_m)} \leq L_{\text{lim}} + + U_{\text{cispr}}$$

In BACL., $U_{(L_m)}$ is less than $+ U_{\text{cispr}}$, if L_m is less than L_{lim} , it implies that the EUT complies with the limit.

Test Data

Environmental Conditions

Temperature:	24 °C
Relative Humidity:	50 %
ATM Pressure:	101.0 kPa

The testing was performed by Layne Li on 2016-10-24.

EUT operation mode: Wireless charging

1) Field Strength of Radiated Emissions, 9 kHz to 30 MHz:

Indicated		Table Angle Degree	Antenna Height (m)	Detector PK/QP/Ave.	Correction Factor		Corrected Amplitude (dB μ V/m) @3m	FCC Part 15C	
Frequency (MHz)	Maximum Reading (dB μ V) @3m				Antenna Factor (dB/m)	Cable Loss (dB)		Limit (dB μ V/m) @3m	Margin (dB)
0.290	32.29	257	1.4	Ave.	57.8	0.15	90.24	98.4	8.16
0.580	18.12	198	1.3	QP	52.3	0.15	70.57	72.3	1.73
0.870	9.91	262	1.4	QP	46.7	0.15	56.76	68.8	12.04

2) Spurious Emission, up to 1000 MHz:

Frequency (MHz)	Corrected Amplitude (dB μ V/m)	Turntable position (Degree)	Antenna height (m)	Detector PK/QP/Ave.	Polarity	Correction Factor (dB)	Limit (dB μ V/m)	Margin (dB)
41.980250	26.55	168.0	1.04	QP	V	-11.44	40.00	13.45
42.637500	25.13	59.0	1.09	QP	V	-11.85	40.00	14.87
144.003375	41.73	96.0	1.96	QP	H	-11.94	43.50	1.77
167.989625	38.81	71.0	1.06	QP	V	-12.15	43.50	4.69
216.008625	43.68	91.0	1.60	QP	H	-12.26	46.00	2.32
959.994125	40.96	0.0	1.00	QP	V	-6.78	46.00	5.04

Test result: Pass.

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