ACCREDITED
TESTING LABORATORY
CERTIFICATE # 4821.01

Bay Area Compliance Labs Corp.

FCC PART 15C

TEST REPORT

For

SDI Technologies Inc.

1299 Main St. Rahway, New Jersey 07065, United States

FCC ID: EMOICVBTW11A

Report Type:	**Product Type:**
Original Report	9” Single Sided Vanity Mirror with Wireless Qi Charging and Bluetooth Audio

Report Number:	RSZ191204K64-00D
Report Date:	2020-01-08
Reviewed By:	Jacob Kong RF Engineer
Prepared By:	Bay Area Compliance Laboratories Corp. (Shenzhen) 6/F., West Wing, Third Phase of Wanli Industrial Building, Shihua Road, Futian Free Trade Zone, Shenzhen, Guangdong, China Tel: +86-755-33320018 Fax: +86-755-33320008 www.baclcorp.com.cn

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GENERAL INFORMATION

Product Description for Equipment Under Test (EUT)

Product	9" Single Sided Vanity Mirror with Wireless Qi Charging and Bluetooth Audio
Tested Model	iCVBTW11
Multiple Model	iCVBTW11X (where X would be any alphabet denote the color of cabinet)
Frequency Range	110-205kHz
Antenna Specification	Coil
Voltage Range	DC 9.0V from adapter
Date of Test	2019-12-20 to 2020-01-07
Sample serial number	RSZ191204K64-RF-S1(Assigned by BACL, Shenzhen)
Received date	2019-12-04
Sample/EUT Status	Good condition
Adapter information	Model: BQ36B-0903600-U Input: AC 100-240V, 50/60Hz, 800mA Output: DC 9.0V, 3600mA

Notes: This series products model iCVBTW11X (where X would be any alphabet denote the color of cabinet) and iCVBTW11 are identical schematics. ModeliCVBTW11 was selected for fully testing, the detailed information can be referred to the declaration which was stated and guaranteed by the applicant.

Objective

This report is prepared on behalf of *SDI Technologies Inc.* 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 EUT with FCC rules, section 15.203, 15.205, 15.207 and 15.209.

Related Submittal(s)/Grant(s)

FCC Part 15.247 DSS, DTS submissions with FCC ID: EMOICVBTW11A.

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. (Shenzhen). The radiated testing was performed at an antenna-to-EUT distance of 3 meters.

Measurement Uncertainty

Item		Uncertainty
AC Power Line Conducted Emissions		±1.95 dB
Radiated emission	9 kHz~30MHz	±4.52 dB
	30MHz~1 GHz	±5.81 dB
Occupied Bandwidth		±0.5 kHz
Temperature		±3.0 ℃
Humidity		±6 %

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

Test Facility

The Test site used by Bay Area Compliance Laboratories Corp. (Shenzhen) to collect test data is located on the 6/F., West Wing, Third Phase of Wanli Industrial Building, Shihua Road, Futian Free Trade Zone, Shenzhen, Guangdong, China.

The test site has been approved by the FCC under the KDB 974614 D01 and is listed in the FCC Public Access Link (PAL) database, FCC Registration No.: 342867, the FCC Designation No.: CN1221.

The test site has been registered with ISED Canada under ISED Canada Registration Number 3062B.

SYSTEM TEST CONFIGURATION

Justification

The system was configured for testing in a test mode

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

EUT Exercise Software

No software used in test.

Support Equipment List and Details

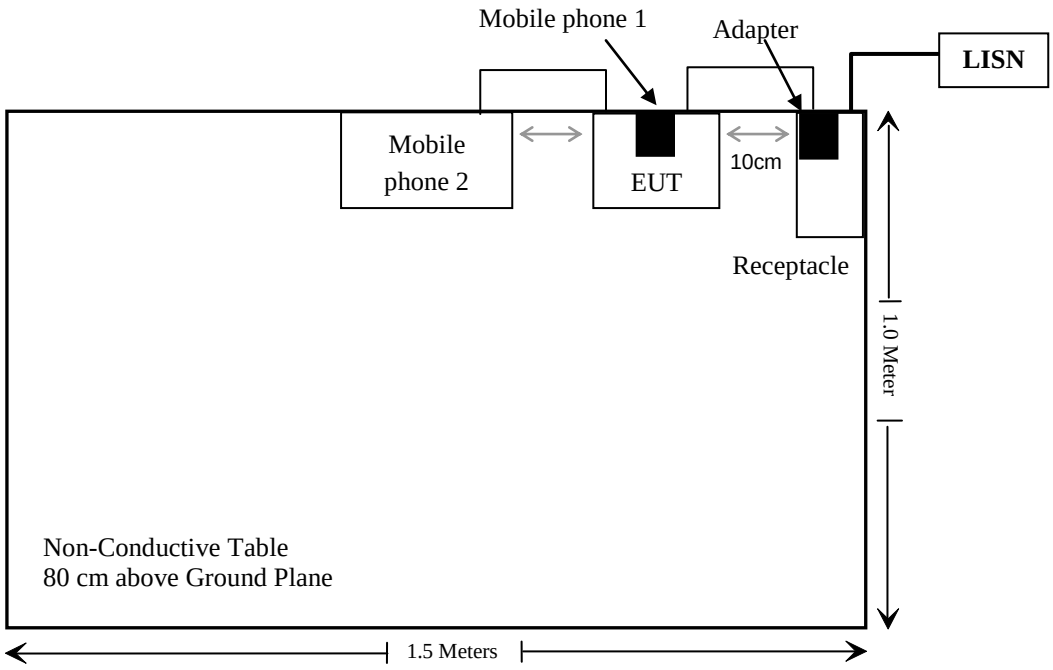
Manufacturer	Description	Model	Serial Number
Samsung	Smartphone	SM-N9500	R28JA0XPAYV
KRIPTO	Mobile phone 2	K55h	M5503K

External I/O Cable

Cable Description	Length (m)	From Port	To
Un-Shielding Detachable USB Cable	1.2	EUT	Mobile phone 2
Un-Shielding UN- Detachable DC Cable	1.0	EUT	Adapter
Un-Shielding Detachable AC Cable	1.0	Receptacle	LISN

Block Diagram of Test Setup

For conducted emission



SUMMARY OF TEST RESULTS

FCC Rules	Description of Test	Result
FCC §1.1310 & §2.1091	Maximum Permissible Exposure(MPE)	Compliance
FCC §15.203	Antenna Requirement	Compliance
FCC §15.207	AC Line Conducted Emission	Compliance
§15.209 §15.205	Radiated Emission Test	Compliance

TEST EQUIPMENT LIST

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
MPE					
Narda	Exposure Level Tester	ELT-400	N-0229	2019-11-15	2021-11-15
Narda	B Field Probe	ELT Probe 100cm^2	M-0666	2019-11-15	2021-11-15
ETS-Lindgreen	Isotropic Field Probe	HI－6005	69461	2018-9-28	2021-9-27
Conducted Emissions Test					
R&S	EMI Test Receiver	ESCI	101120	2019-07-09	2020-07-08
R&S	LISN	ENV216	3560.6650.12-101613-Yb	2019-01-25	2020-01-24
R&S	Transient Limitor	ESH3Z2	DE25985	2019-11-29	2020-11-28
Rohde & Schwarz	CE Test software	EMC 32	V8.53.0	NCR	NCR
RF Radiated test					
Sonoma instrument	Amplifier	310 N	186238	2019-04-20	2020-04-20
R&S	EMI Test Receiver	ESR3	1316.3003K03-101746-zn	2019-07-09	2020-07-08
Sunol Sciences	Broadband Antenna	JB1	A040904-1	2017-12-22	2020-12-21
ETS	Passive Loop Antenna	6512	29604	2018-07-14	2021-07-13
Rohde & Schwarz	Auto test software	EMC 32	V9.10	NCR	NCR

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

FCC §1.1310, §2.1091- 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 v03 clause 3 c)

c) For devices designed for typical desktop applications, such a 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 KDB 680106 D01 RF Exposure Wireless Charging App v03 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 SDoC or a PAG 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.

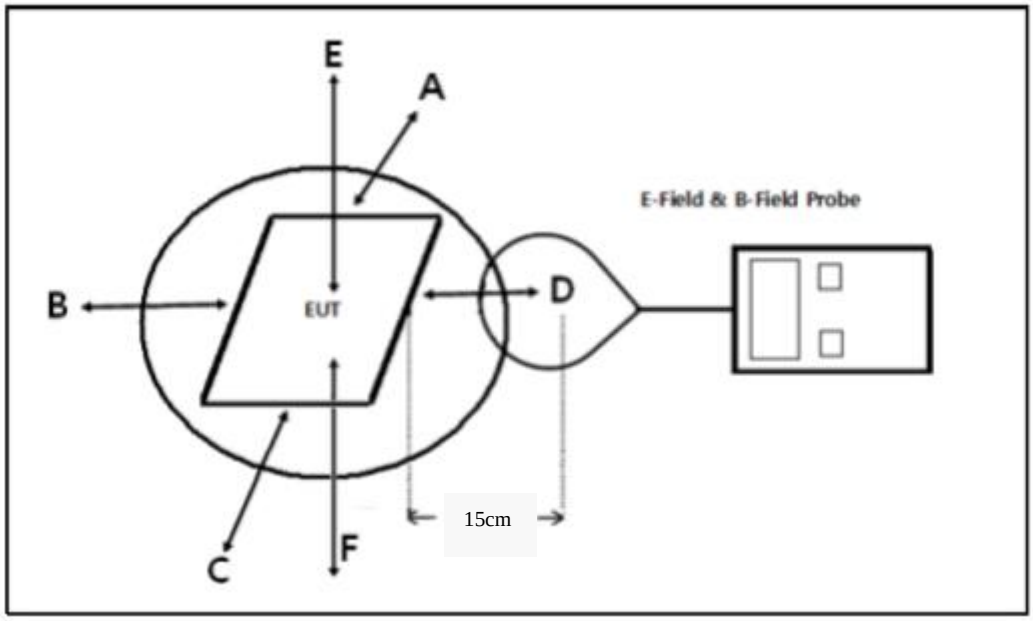
(3) The transfer system includes only single primary and secondary coils. This includes charging systems that may have multiple primary coils and clients that are able to detect and allow coupling only between individual pairs of coils.

(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 at 15 cm surrounding the device and 20 cm above the top surface from all simultaneous transmitting coils are demonstrated to be less than 50% of the MPE limit.

Block Diagram of Test Setup



Note: 20 cm for Top test.

Test Data

Environmental Conditions

Temperature:	23°C
Relative Humidity:	57 %
ATM Pressure:	101.0 kPa

The testing was performed by Zero Yan on 2019-12-31.

Test mode: Transmitting

H-Filed 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 Test (A/m)
110-205	0.089	0.101	0.089	0.093	0.410	0.815	1.63

E-Filed 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 Test (V/m)
110-205	1.203	1.119	1.217	1.218	3.570	307	614

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

Result: Compliance

Considerations of compliance 680106 D01 RF Exposure Wireless Charging App v03 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 9 Watts, less than 15 watts.

(3) The transfer system includes only single primary and secondary coils. This includes charging systems that may have multiple primary coils and clients that are able to detect and allow coupling only between individual pairs of coils.

The transfer system includes only single primary coils to 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 at 15 cm surrounding the device and 20 cm above the top surface from all simultaneous transmitting coils are demonstrated to be less than 50% of the MPE limit.

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

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 a coil antenna arrangement, which was permanently attached, fulfill the requirement of this section. Please refer to the EUT photos.

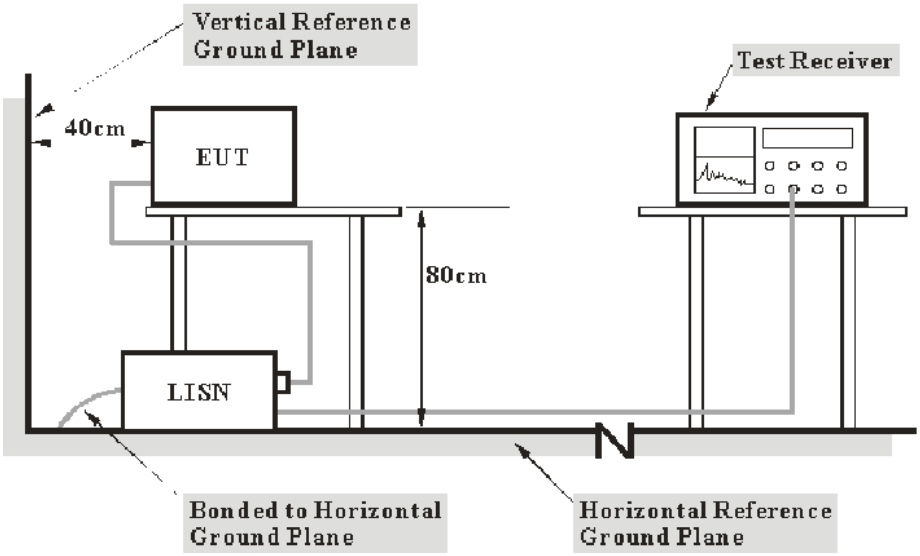
Result: Compliance.

FCC §15.207 – AC LINE CONDUCTED EMISSION

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.

Corrected Factor & Margin Calculation

The Corrected factor is calculated by adding LISN VDF (Voltage Division Factor), Cable Loss and Transient Limiter Attenuation. The basic equation is as follows:

Correction Factor = LISN VDF + Cable Loss + Transient Limiter Attenuation

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

Margin = Limit – Corrected Amplitude

Test Results Summary

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

Test Data

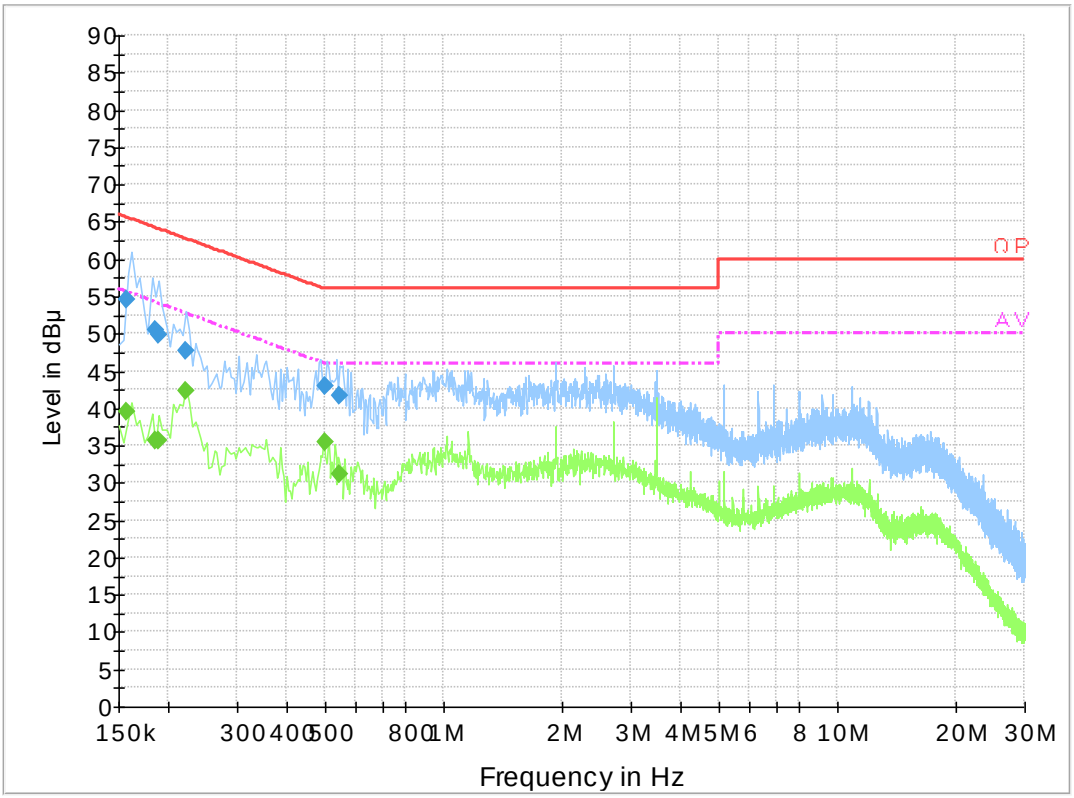
Environmental Conditions

Temperature:	25°C
Relative Humidity:	65 %
ATM Pressure:	101.0 kPa

The testing was performed by Haiguo Li on 2020-01-07.

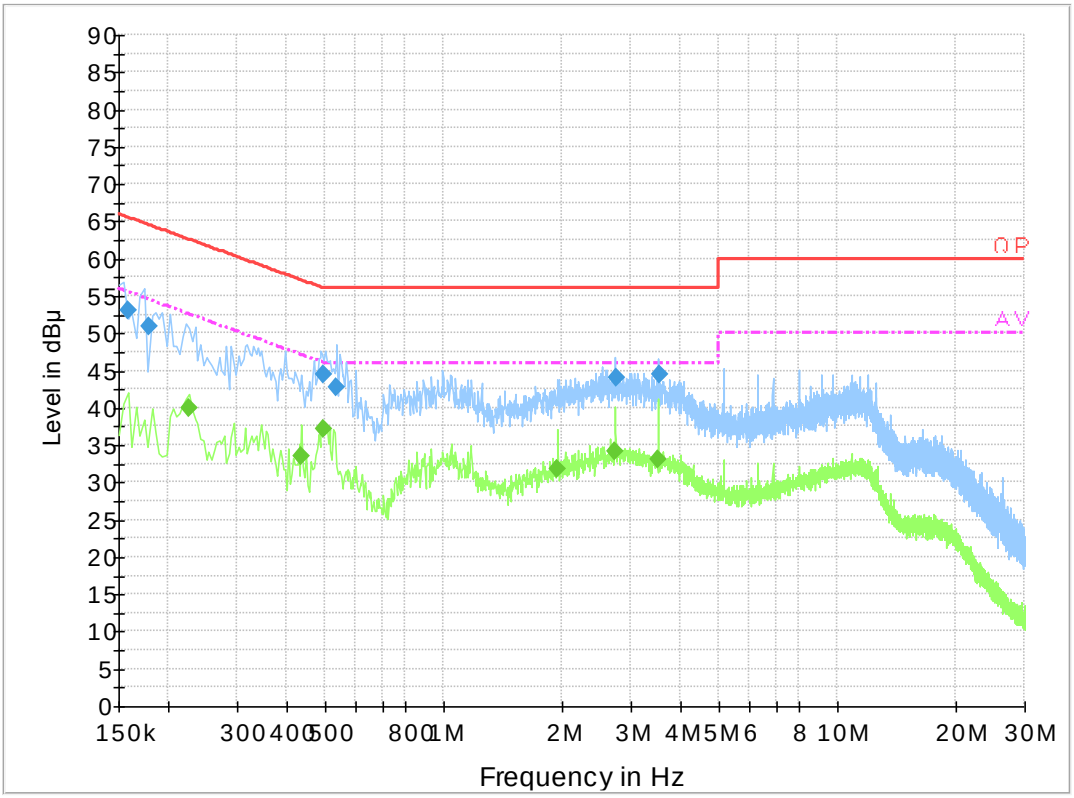
Test Mode: Wireless charging

AC 120 V/60 Hz, Line:



Frequency (MHz)	Corrected Amplitude (dBµV)	Correction Factor (dB)	Limit (dBµV)	Margin (dB)	Detector (PK/Ave./QP)
0.157500	54.5	19.8	65.6	11.1	QP
0.186500	50.5	19.8	64.2	13.7	QP
0.189500	49.8	19.8	64.1	14.3	QP
0.221500	47.7	19.8	62.8	15.1	QP
0.502410	42.9	19.8	56.0	13.1	QP
0.546070	41.7	19.8	56.0	14.3	QP
0.157500	39.6	19.8	55.6	16.0	Ave.
0.186500	35.7	19.8	54.2	18.5	Ave.
0.189500	35.6	19.8	54.1	18.4	Ave.
0.221500	42.3	19.8	52.8	10.4	Ave.
0.502410	35.4	19.8	46.0	10.6	Ave.
0.546070	31.2	19.8	46.0	14.8	Ave.

AC 120V/ 60 Hz, Neutral:



Frequency (MHz)	Corrected Amplitude (dBµV)	Correction Factor (dB)	Limit (dBµV)	Margin (dB)	Detector (PK/Ave./QP)
0.158000	53.0	19.8	65.6	12.6	QP
0.178500	50.8	19.8	64.6	13.8	QP
0.498470	44.4	19.8	56.0	11.6	QP
0.537930	42.7	19.8	56.0	13.3	QP
2.752930	44.0	19.8	56.0	12.0	QP
3.537170	44.4	19.9	56.0	11.6	QP
0.226000	39.9	19.8	52.6	12.7	Ave.
0.438000	33.6	19.8	47.1	13.5	Ave.
0.498000	37.3	19.8	46.0	8.7	Ave.
1.954000	31.8	19.9	46.0	14.2	Ave.
2.738000	34.1	19.8	46.0	11.9	Ave.
3.518000	33.0	19.9	46.0	13.0	Ave.

Note:

1) Correction Factor =LISN VDF (Voltage Division Factor) + Cable Loss + Transient Limiter Attenuation
2) Corrected Amplitude = Reading + Correction Factor
3) Margin = Limit – Corrected Amplitude

FCC §15.205 & §15.209 - RADIATED EMISSIONS TEST

Applicable Standard

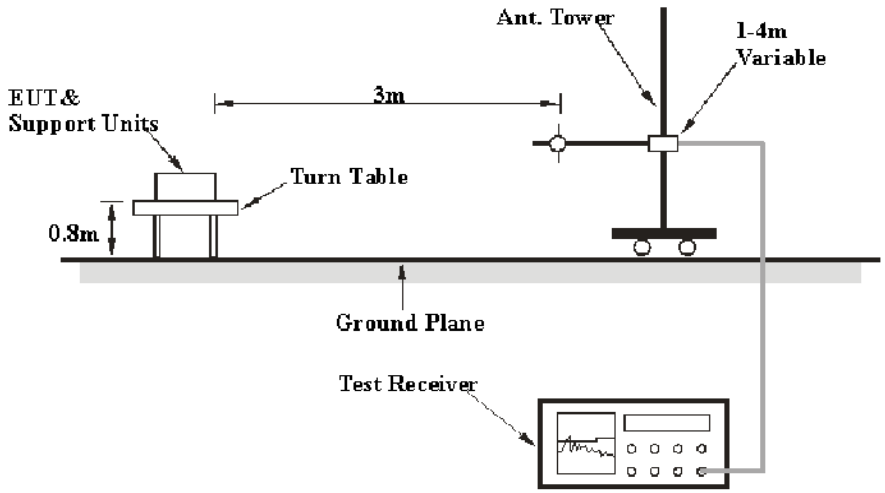
As per FCC Part 15.209

(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:

Corr. Ampl. = Meter Reading + Antenna Factor + Cable Loss - 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:

Margin = Limit - 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

Environmental Conditions

Temperature:	23 °C
Relative Humidity:	56 %
ATM Pressure:	101.0 kPa

The testing was performed by Zero Yan on 2019-12-20 and 2020-01-04.

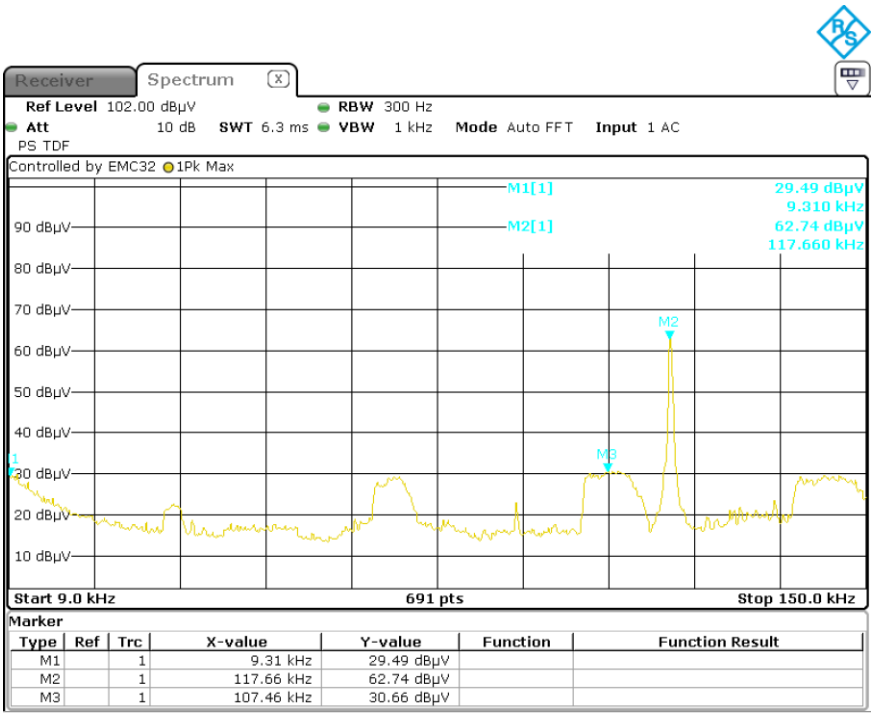
Test mode: Transmitting

1) 9 kHz~30MHz:

Frequency (MHz)	Corrected Amplitude (dBμV/m)	Detector (PK/QP/AV)	Turntable Degree	Rx Antenna Height (m)	Rx Antenna Polar	Corrected Factor (dB/m)	FCC Part 15.205&15.209 Limit (dBμV/m)	FCC Part 15.205&15.209 Margin (dB)	Remark
0.00931	29.49	PK	25	1.1	H	87.1	128.23	98.74	Spurious emission
0.560	61.78	PK	42	1.0	H	51.0	72.64	10.86	
0.11766	62.74	PK	41	1.0	H	64.7	126.19	63.45	Fundamental

NOTE: PK detector data compliance with average detector limit.

9 kHz-150 kHz



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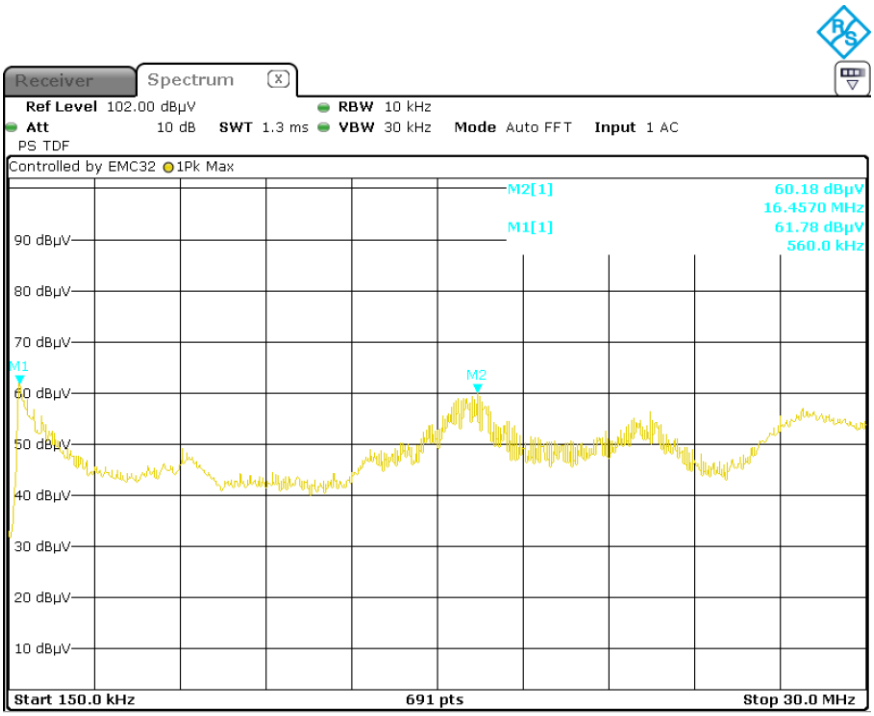
150 kHz-30 MHz



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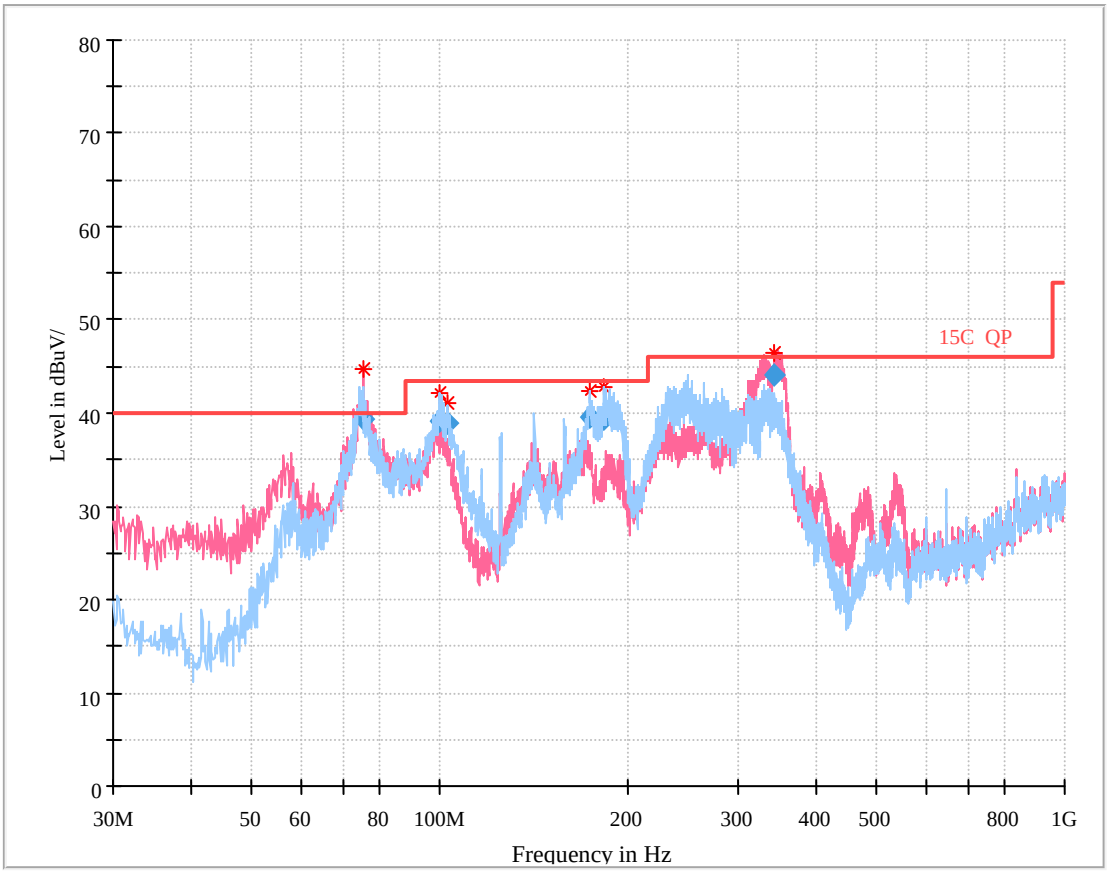
2) 30 MHz ~ 1GHz



Frequency (MHz)	Corrected Amplitude (dBµV/m)	Antenna height (cm)	Antenna Polarity	Turntable position (degree)	Correction Factor (dB/m)	Limit (dBµV/m)	Margin (dB)
75.401250	39.37	185.0	V	174.0	-20.3	40.00	0.63
100.034900	39.12	226.0	H	260.0	-17.2	43.50	4.38
102.582400	38.87	238.0	H	270.0	-16.8	43.50	4.63
173.755675	39.58	150.0	H	94.0	-15.0	43.50	3.92
183.422050	39.34	117.0	H	100.0	-15.2	43.50	4.16
343.372650	44.02	153.0	V	39.0	-10.8	46.00	1.98

Note:
Corrected Amplitude = Corrected Factor + Reading
Corrected Factor=Antenna factor (RX) + cable loss - amplifier factor
Margin = Limit- Corr. Amplitude

Result: Compliance

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