TEST REPORT

Applicant: **12 Speed Products, Inc**

Address: 27231 Burbank Suite 202 Foothill Ranch CA 92610

FCC ID: **2A3LL-DOORMATE2**

Product Name: **Bicycle garage door remote control**

Standard(s): **47 CFR Part 15, Subpart C(15.231)**
ANSI C63.10-2013

The above equipment has been tested and found compliant with the requirement of the relative standards by China Certification ICT Co., Ltd (Dongguan)

Report Number: **CR230420239-00**

Date Of Issue: **2023/5/12**

Reviewed By: **Sun Zhong** Sun Zhong

Title: Manager

Test Laboratory: **China Certification ICT Co., Ltd (Dongguan)**
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Test Facility

The Test site used by China Certification ICT Co., Ltd (Dongguan) to collect test data is located on the No. 113, Pingkang Road, Dalang 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. : 442868, the FCC Designation No. : CN1314.

The lab has been recognized by Innovation, Science and Economic Development Canada to test to Canadian radio equipment requirements, the CAB identifier: CN0123.

Declarations

China Certification ICT Co., Ltd (Dongguan) 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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DOCUMENT REVISION HISTORY

Revision Number	Report Number	Description of Revision	Date of Revision
1.0	CR230420239-00	Original Report	2023/5/12

1. GENERAL INFORMATION

1.1 Product Description for Equipment under Test (EUT)

EUT Name:	Bicycle garage door remote control
EUT Model:	Doormate
Operation Frequency:	310MHz, 315MHz, 318MHz, 390 MHz
Rated Input Voltage:	DC3V from battery
Serial Number:	24TB_2
EUT Received Date:	2023.04.20
EUT Received Status:	Good

Antenna Information Detail▲:

Antenna Type	input impedance (Ohm)	Frequency Range	Antenna Gain
PCB	50	300~400 MHz	Unknown

The Method of §15.203 Compliance:

☒Antenna must be permanently attached to the unit.

☐Antenna must use a unique type of connector to attach to the EUT.

☐Unit must be professionally installed, and installer shall be responsible for verifying that the correct antenna is employed with the unit.

Accessory Information:

Accessory Description	Manufacturer	Model	Parameters
/	/	/	/

1.2 Description of Test Configuration

1.2.1 EUT Operation Condition:

EUT Operation Mode:	The system was configured for testing in Engineering Mode, which was provided by the manufacturer.
Equipment Modifications:	No
EUT Exercise Software:	No
Engineering Mode was provided by manufacturer▲. The maximum power was configured default setting.	

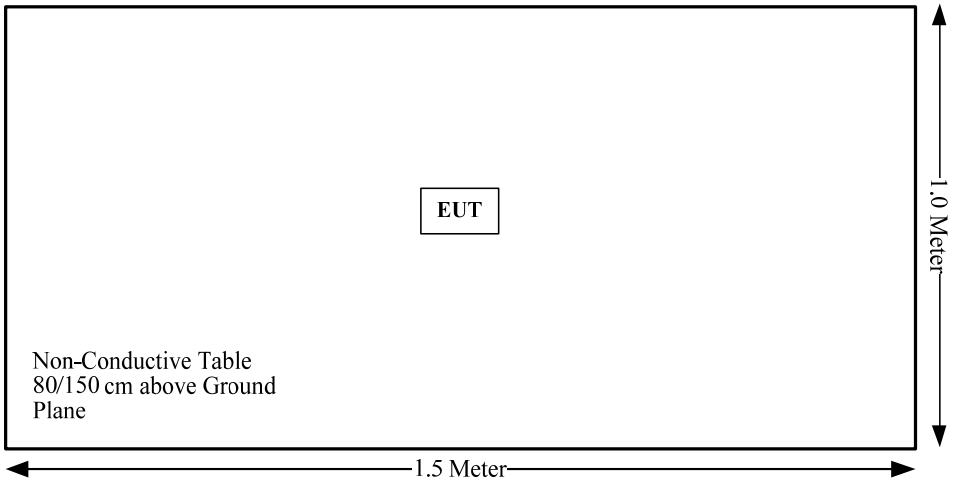
1.2.2 Support Equipment List and Details

Manufacturer	Description	Model	Serial Number
/	/	/	/

1.2.3 Support Cable List and Details

Cable Description	Shielding Type	Ferrite Core	Length (m)	From Port	To
/	/	/	/	/	/

1.2.4 Block Diagram of Test Setup



1.3 Measurement Uncertainty

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.

Parameter	Measurement Uncertainty
Occupied Channel Bandwidth	±5 %
Unwanted Emissions, radiated	30M~200MHz: 4.15 dB,200M~1GHz: 5.61 dB,1G~6GHz: 5.14 dB, 6G~18GHz: 5.93 dB,18G~26.5G:5.47 dB,26.5G~40G:5.63 dB
Unwanted Emissions, conducted	±1.26 dB
Temperature	±1℃
Humidity	±5%
DC and low frequency voltages	±0.4%
Duty Cycle	1%
AC Power Lines Conducted Emission	2.8 dB (150 kHz to 30 MHz)

2. SUMMARY OF TEST RESULTS

Standard(s) Section	Test Items	Result
§15.207 (a)	Conducted Emissions	Not Applicable
§15.205, §15.209, §15.231 (b)	Radiated Emissions	Compliant
§15.231 (c)	20dB Bandwidth	Compliant
§15.231 (a)	Deactivation Testing	Compliant
§15.203	Antenna Requirement	Compliant
§ 1.1307	RF Exposure Evaluation	Compliant

3. REQUIREMENTS AND TEST PROCEDURES

3.1 AC Line Conducted Emissions

3.1.1 Applicable Standard

FCC §15.207(a).

(a) Except as shown in paragraphs (b) and (c) of this section, for an intentional radiator that is designed to be connected to the public utility (AC) power line, the radio frequency voltage that is conducted back onto the AC power line on any frequency or frequencies, within the band 150 kHz to 30 MHz, shall not exceed the limits in the following table, as measured using a 50 μH/50 ohms line impedance stabilization network (LISN). Compliance with the provisions of this paragraph shall be based on the measurement of the radio frequency voltage between each power line and ground at the power terminal. The lower limit applies at the boundary between the frequency ranges.

	Conducted limit (dBμV)	
Frequency of emission (MHz)	Quasi-peak	Average
0.15-0.5	66 to 56*	56 to 46*
0.5-5	56	46
5-30	60	50

*Decreases with the logarithm of the frequency.

(b) The limit shown in paragraph (a) of this section shall not apply to carrier current systems operating as intentional radiators on frequencies below 30 MHz. In lieu thereof, these carrier current systems shall be subject to the following standards:

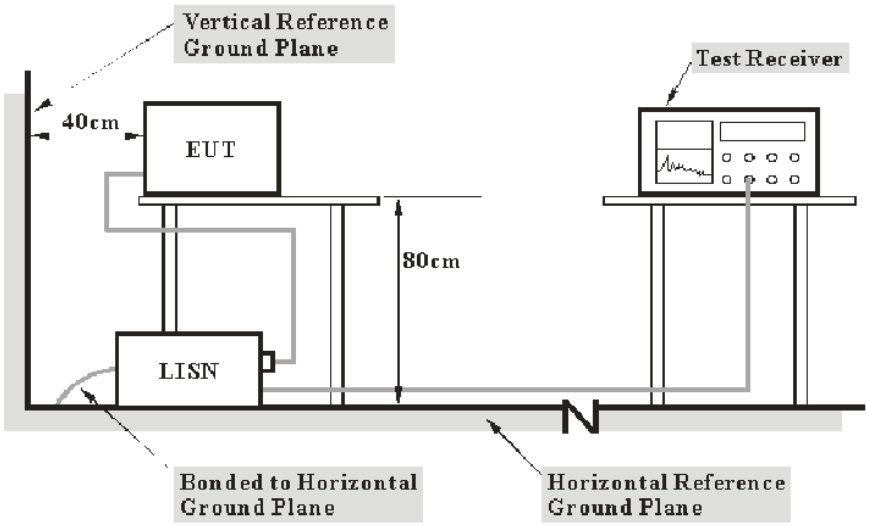
(1) For carrier current system containing their fundamental emission within the frequency band 535-1705 kHz and intended to be received using a standard AM broadcast receiver: no limit on conducted emissions.

(2) For all other carrier current systems: 1000 μV within the frequency band 535-1705 kHz, as measured using a 50 μH/50 ohms LISN.

(3) Carrier current systems operating below 30 MHz are also subject to the radiated emission limits in §15.205, §15.209, §15.221, §15.223, or §15.227, as appropriate.

(c) Measurements to demonstrate compliance with the conducted limits are not required for devices which only employ battery power for operation and which do not operate from the AC power lines or contain provisions for operation while connected to the AC power lines. Devices that include, or make provisions for, the use of battery chargers which permit operating while charging, AC adapters or battery eliminators or that connect to the AC power lines indirectly, obtainig their power through another device which is connected to the AC power lines, shall be tested to demonstrate compliance with the conducted limits.

3.1.2 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.

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

3.1.3 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

3.1.4 Test Procedure

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.

3.1.5 Corrected Amplitude & Margin Calculation

The basic equation is as follows:

Result = Reading + Factor
Factor = attenuation caused by cable loss + voltage division factor of AMN

The "**Margin**" column of the following data tables indicates the degree of compliance within the applicable limit. The equation for margin calculation is as follows:

Margin = Limit – Result

3.2 Radiation Spurious Emissions

3.2.1 Applicable Standard

FCC §15.231 (b);

In addition to the provisions of §15.205, the field strength of emissions from intentional radiators operated under this section shall not exceed the following:

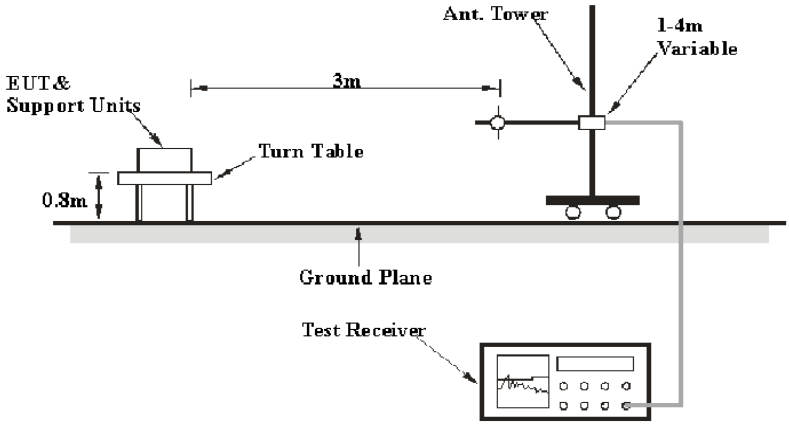
Fundamental frequency (MHz)	Field strength of fundamental (microvolts/meter)	Field strength of spurious emissions (microvolts/meter)
40.66-40.70	2,250	225
70-130	1,250	125
130-174	[1]1,250 to 3,750	[1]125 to 375
174-260	3,750	375
260-470	[1]3,750 to 12,500	[1]375 to 1,250
Above 470	12,500	1,250

1Linear interpolations.

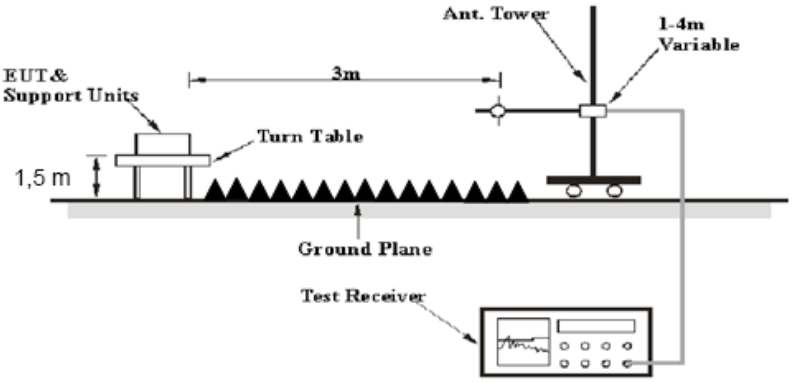
(1) The above field strength limits are specified at a distance of 3 meters. The tighter limits apply at the band edges.
(2) Intentional radiators operating under the provisions of this section shall demonstrate compliance with the limits on the field strength of emissions, as shown in the above table, based on the average value of the measured emissions. As an alternative, compliance with the limits in the above table may be based on the use of measurement instrumentation with a CISPR quasi-peak detector. The specific method of measurement employed shall be specified in the application for equipment authorization. If average emission measurements are employed, the provisions in §15.35 for averaging pulsed emissions and for limiting peak emissions apply. Further, compliance with the provisions of §15.205 shall be demonstrated using the measurement instrumentation specified in that section.
(3) The limits on the field strength of the spurious emissions in the above table are based on the fundamental frequency of the intentional radiator. Spurious emissions shall be attenuated to the average (or, alternatively, CISPR quasi-peak) limits shown in this table or to the general limits shown in §15.209, whichever limit permits a higher field strength.

3.2.2 EUT Setup

Below 1GHz:



Above 1GHz:



The radiated emissions were performed in the 3 meters distance, using the setup accordance with the ANSI C63.10-2013. The specification used was the FCC 15.205, 15.209, and FCC 15.231 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.

3.2.3 EMI Test Receiver & Spectrum Analyzer Setup

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

Frequency Range	RBW	Video B/W	IF B/W	Measurement
30 MHz – 1000 MHz	100 kHz	300 kHz	100 kHz	PK
Above 1 GHz	1 MHz	3 MHz	/	PK

3.2.4 Test Procedure

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

According to §15.231, Intentional radiators operating under the provisions of this Section shall demonstrate compliance with the limits on the field strength of emissions, based on the average value of the measured emissions. As an alternative, compliance with the limits in the above table may be based on the use of measurement instrumentation with a CISPR quasi-peak detector

3.2.5 Corrected Amplitude & Margin Calculation

The basic equation is as follows:

Result = Reading + Factor
Factor = Antenna Factor + Cable Loss- Amplifier Gain

The "**Margin**" column of the following data tables indicates the degree of compliance within the applicable limit. The equation for margin calculation is as follows:

Margin = Limit – Result

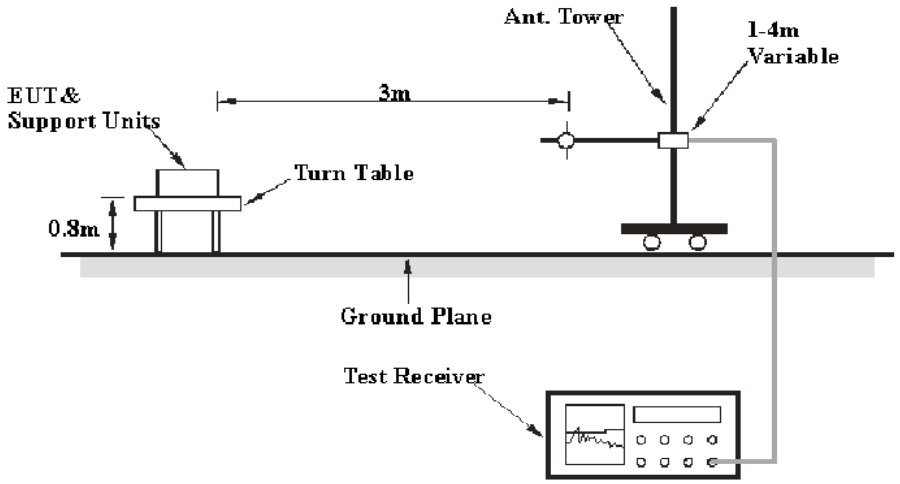
3.3 20 dB Emission Bandwidth:

3.3.1 Applicable Standard

FCC §15.231(c)

The bandwidth of the emission shall be no wider than 0.25% of the center frequency for devices operating above 70 MHz and below 900 MHz. Bandwidth is determined at the points 20 dB down from the modulated carrier.

3.3.2 EUT Setup



3.3.3 Test Procedure

According to ANSI C63.10-2013 Section 6.9.2

a) The spectrum analyzer center frequency is set to the nominal EUT channel center frequency. The span range for the EMI receiver or spectrum analyzer shall be between two times and five times the OBW.
b) The nominal IF filter bandwidth (3 dB RBW) shall be in the range of 1% to 5% of the OBW and video bandwidth (VBW) shall be approximately three times RBW, unless otherwise specified by the applicable requirement.
c) Set the reference level of the instrument as required, keeping the signal from exceeding the maximum input mixer level for linear operation. In general, the peak of the spectral envelope shall be more than [10 log (OBW/RBW)] below the reference level. Specific guidance is given in 4.1.5.2
d) Steps a) through c) might require iteration to adjust within the specified tolerances.
e) The dynamic range of the instrument at the selected RBW shall be more than 10 dB below the target "−xx dB down" requirement; that is, if the requirement calls for measuring the −20 dB OBW, the instrument noise floor at the selected RBW shall be at least 30 dB below the reference value.
f) Set detection mode to peak and trace mode to max hold.
g) Determine the reference value: Set the EUT to transmit an unmodulated carrier or modulated signal, as applicable. Allow the trace to stabilize. Set the spectrum analyzer marker to the highest level of the displayed trace (this is the reference value).

h) Determine the "−xx dB down amplitude" using [(reference value) − xx]. Alternatively, this calculation may be made by using the marker-delta function of the instrument.
i) If the reference value is determined by an unmodulated carrier, then turn the EUT modulation ON, and either clear the existing trace or start a new trace on the spectrum analyzer and allow the new trace to stabilize. Otherwise, the trace from step g) shall be used for step j).

j) Place two markers, one at the lowest frequency and the other at the highest frequency of the envelope of the spectral display, such that each marker is at or slightly below the "−xx dB down amplitude" determined in step h). If a marker is below this "−xx dB down amplitude" value, then it shall be as close as possible to this value. The occupied bandwidth is the frequency difference between the two markers. Alternatively, set a marker at the lowest frequency of the envelope of the spectral display, such that the marker is at or slightly below the "−xx dB down
amplitude" determined in step h). Reset the marker-delta function and move the marker to the other side of the emission until the delta marker amplitude is at the same level as the reference marker amplitude. The marker-delta frequency reading at this point is the specified emission bandwidth.
k) The occupied bandwidth shall be reported by providing plot(s) of the measuring instrument display; the plot axes and the scale units per division shall be clearly labeled. Tabular data may be reported in addition to the plot(s).

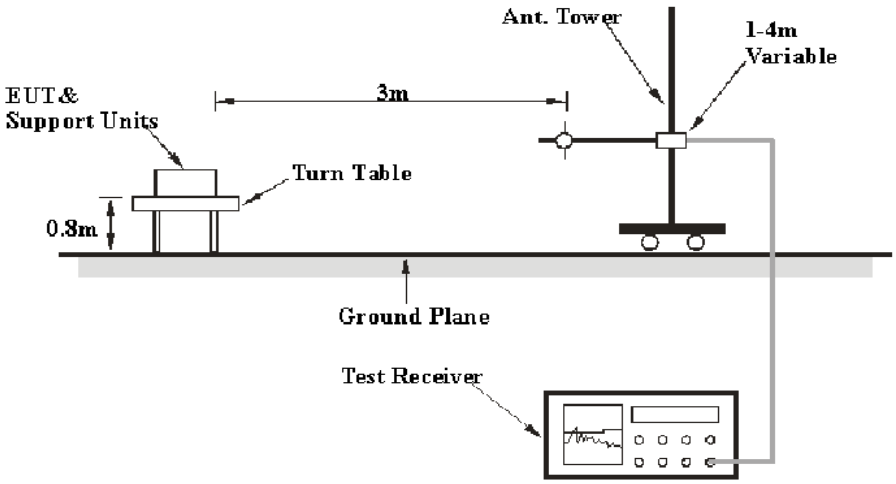
3.4 Deactivation Testing

3.4.1 Applicable Standard

FCC §15.231 (a)(1)

A manually operated transmitter shall employ a switch that will automatically deactivate the transmitter within not more than 5 seconds of being released.

3.4.2 EUT Setup



3.4.3 Test Procedure

The zero-span mode on a spectrum analyzer or EMI receiver if the response time and spacing between bins on the sweep are sufficient to permit accurate measurements of the ON and OFF times of the transmitted signal:
1) Set the center frequency of the instrument to the center frequency of the transmission.
2) Set RBW ≥ OBW if possible; otherwise, set RBW to the largest available value.
3) Set VBW ≥ RBW. Set detector = peak or average.

3.5 Antenna Requirement

3.5.1 Applicable Standard

FCC §15.203

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. The manufacturer may design the unit so that a broken antenna can be replaced by the user, but the use of a standard antenna jack or electrical connector is prohibited. This requirement does not apply to carrier current devices or to devices operated under the provisions of §§15.211, 15.213, 15.217, 15.219, 15.221, or §15.236. Further, this requirement does not apply to intentional radiators that must be professionally installed, such as perimeter protection systems and some field disturbance sensors, or to other intentional radiators which, in accordance with §15.31(d), must be measured at the installation site. However, the installer shall be responsible for ensuring that the proper antenna is employed so that the limits in this part are not exceeded.

3.5.2 Judgment

Compliant. Please refer to the Antenna Information detail in Section 1.

4. Test DATA AND RESULTS

4.1 AC Line Conducted Emissions

Not Applicable, the device was powered by battery.

4.2 Radiation Spurious Emissions

Serial Number:	24TB_2	Test Date:	2023/05/04~2023/05/09
Test Site:	966-2, 966-1	Test Mode:	Transmitting
Tester:	Carl Xue, Mack Huang	Test Result:	Pass

Environmental Conditions:

Temperature: (℃)	24~26.7	Relative Humidity: (%)	60~62	ATM Pressure: (kPa)	100.4~100.7

Test Equipment List and Details:

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
Sunol Sciences	Antenna	JB6	A082520-5	2020/10/19	2023/10/18
R&S	EMI Test Receiver	ESR3	102724	2022/07/15	2023/07/14
TIMES MICROWAVE	Coaxial Cable	LMR-600-UltraFlex	C-0470-02	2022/07/17	2023/07/16
TIMES MICROWAVE	Coaxial Cable	LMR-600-UltraFlex	C-0780-01	2022/07/17	2023/07/16
Sonoma	Amplifier	310N	186165	2022/07/17	2023/07/16
ETS-Lindgren	Horn Antenna	3115	9912-5985	2020/10/13	2023/10/12
R&S	Spectrum Analyzer	FSV40	101591	2022/07/15	2023/07/14
MICRO-COAX	Coaxial Cable	UFA210A-1-1200-70U300	217423-008	2022/08/07	2023/08/06
MICRO-COAX	Coaxial Cable	UFA210A-1-2362-300300	235780-001	2022/08/07	2023/08/06
Mini	Pre-amplifier	ZVA-183-S+	5969001149	2022/11/09	2023/11/08
Audix	Test Software	E3	201021 (V9)	N/A	N/A

** Statement of Traceability: China Certification ICT Co., Ltd (Dongguan) attests that all calibrations have been performed, traceable to National Primary Standards and International System of Units (SI).*

Test Data:

Please refer to the below table and plots.

Note: The device can be mounted in multiple orientations, test was performed with X,Y, Z Axis according to C63.10 Figure 8, the worst orientation was photographed and it`s data was recorded.

Test Data(Button 1 was the worst and recorded):
310MHz
Peak Strength

Frequency (MHz)	Receiver		Polar (H/V)	Factor (dB/m)	Result (dBμV/m)	Limit (dBμV/m)	Margin (dB)
	Reading (dBμV)	Detector					
310.00*	64.38	PK	H	-10.79	53.59	95.32	41.73
310.00*	67.52	PK	V	-10.79	56.73	95.32	38.59
620.00	35.80	PK	H	-4.96	30.84	75.32	44.48
620.00	39.88	PK	V	-4.96	34.92	75.32	40.40
930.00	43.33	PK	H	-0.79	42.54	75.32	32.78
930.00	42.14	PK	V	-0.79	41.35	75.32	33.97
1240.000	38.10	PK	H	-1.70	36.40	74.00	37.60
1240.000	36.17	PK	V	-1.70	34.47	74.00	39.53
1550.000	37.30	PK	H	-0.15	37.15	74.00	36.85
1550.000	41.18	PK	V	-0.15	41.03	74.00	32.97
1860.000	36.01	PK	H	1.60	37.61	75.32	37.71
1860.000	37.31	PK	V	1.60	38.91	75.32	36.41
2170.000	35.80	PK	H	2.86	38.66	75.32	36.66
2170.000	35.69	PK	V	2.86	38.55	75.32	36.77
2480.000	35.44	PK	H	3.62	39.06	75.32	36.26
2480.000	36.61	PK	V	3.62	40.23	75.32	35.09
2790.000	35.27	PK	H	5.07	40.34	74.00	33.66
2790.000	35.82	PK	V	5.07	40.89	74.00	33.11
3100.000	38.29	PK	H	6.39	44.68	75.32	30.64
3100.000	41.13	PK	V	6.39	47.52	75.32	27.80

Note:
*: Fundamental
All the peak emissions are under the peak limit more than 20dB, therefore average detector is unnecessary.

315MHz:
Peak Strength

Frequency (MHz)	Receiver		Polar (H/V)	Factor (dB/m)	Result (dBμV/m)	Limit (dBμV/m)	Margin (dB)
	Reading (dBμV)	Detector					
315.00*	64.68	PK	H	-10.83	53.85	95.62	41.77
315.00*	68.77	PK	V	-10.83	57.94	95.62	37.68
630.00	37.66	PK	H	-4.93	32.73	75.62	42.89
630.00	40.62	PK	V	-4.93	35.69	75.62	39.93
945.00	47.24	PK	H	-0.48	46.76	75.62	28.86
945.00	44.91	PK	V	-0.48	44.43	75.62	31.19
1260.000	39.32	PK	H	-1.71	37.61	75.62	38.01
1260.000	36.71	PK	V	-1.71	35.00	75.62	40.62
1575.000	36.48	PK	H	0.04	36.52	74.00	37.48
1575.000	39.22	PK	V	0.04	39.26	74.00	34.74
1890.000	36.17	PK	H	1.81	37.98	75.62	37.64
1890.000	36.50	PK	V	1.81	38.31	75.62	37.31
2205.000	35.96	PK	H	2.94	38.90	74.00	35.10
2205.000	35.37	PK	V	2.94	38.31	74.00	35.69
2520.000	35.46	PK	H	3.76	39.22	75.62	36.40
2520.000	35.61	PK	V	3.76	39.37	75.62	36.25
2835.000	35.90	PK	H	5.28	41.18	74.00	32.82
2835.000	35.57	PK	V	5.28	40.85	74.00	33.15
3150.000	38.77	PK	H	6.60	45.37	75.62	30.25
3150.000	39.38	PK	V	6.60	45.98	75.62	29.64

Note:
*: Fundamental
All the peak emissions are under the peak limit more than 20dB, therefore average detector is unnecessary.

318MHz:
Peak Strength

Frequency (MHz)	Receiver		Polar (H/V)	Factor (dB/m)	Result (dBμV/m)	Limit (dBμV/m)	Margin (dB)
	Reading (dBμV)	Detector					
318.00*	65.20	PK	H	-10.79	54.41	95.80	41.39
318.00*	69.17	PK	V	-10.79	58.38	95.80	37.42
636.00	38.18	PK	H	-4.78	33.40	75.80	42.40
636.00	43.32	PK	V	-4.78	38.54	75.80	37.26
954.00	43.37	PK	H	-0.30	43.07	75.80	32.73
954.00	44.77	PK	V	-0.30	44.47	75.80	31.33
1272.000	36.01	PK	H	-1.71	34.30	75.80	41.50
1272.000	38.45	PK	V	-1.71	36.74	75.80	39.06
1590.000	36.17	PK	H	0.15	36.32	74.00	37.68
1590.000	40.33	PK	V	0.15	40.48	74.00	33.52
1908.000	37.41	PK	H	1.91	39.32	75.80	36.48
1908.000	36.53	PK	V	1.91	38.44	75.80	37.36
2226.000	36.25	PK	H	2.99	39.24	74.00	34.76
2226.000	35.79	PK	V	2.99	38.78	74.00	35.22
2544.000	35.86	PK	H	3.92	39.78	75.80	36.02
2544.000	36.02	PK	V	3.92	39.94	75.80	35.86
2862.000	36.01	PK	H	5.41	41.42	74.00	32.58
2862.000	35.77	PK	V	5.41	41.18	74.00	32.82
3180.000	39.23	PK	H	6.70	45.93	75.80	29.87
3180.000	40.21	PK	V	6.70	46.91	75.80	28.89

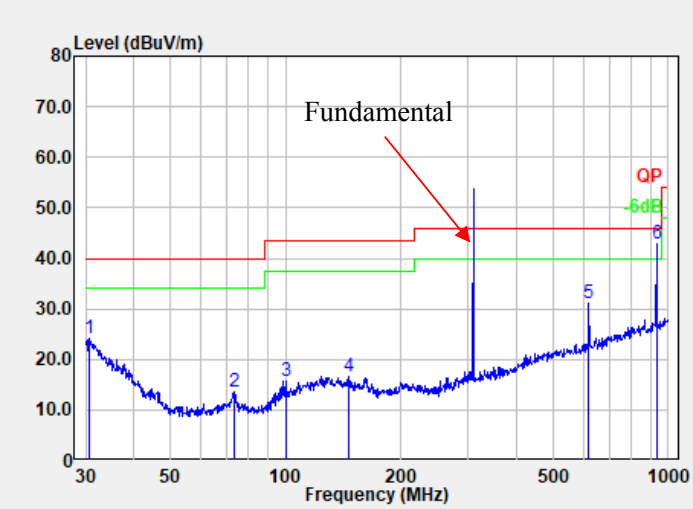
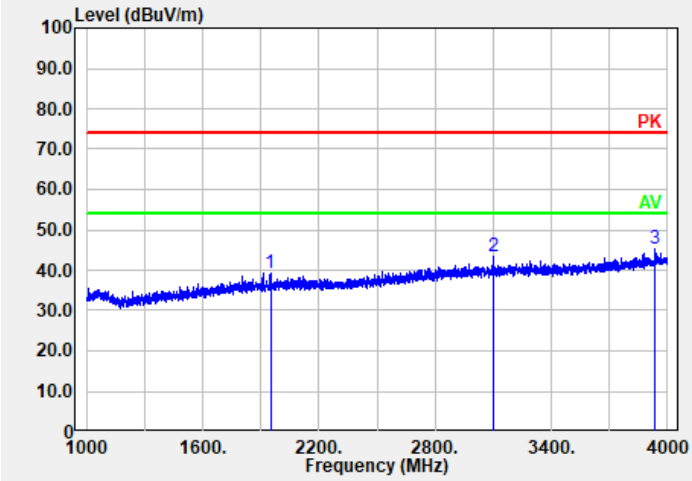
Note:
*: Fundamental
All the peak emissions are under the peak limit more than 20dB, therefore average detector is unnecessary.

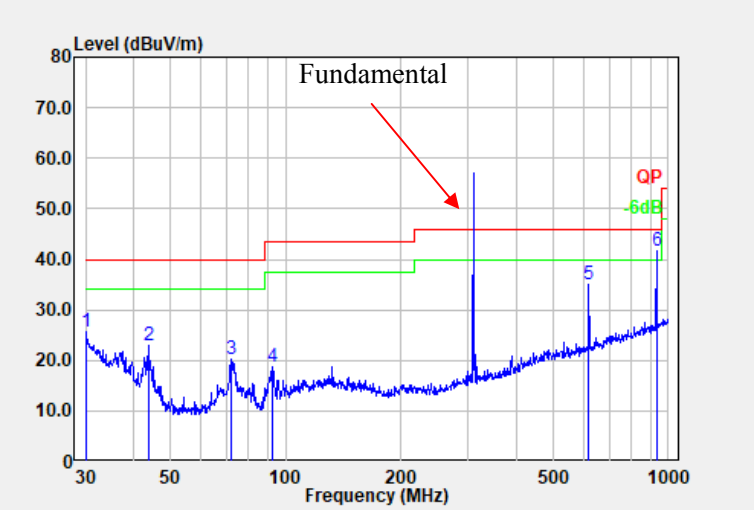
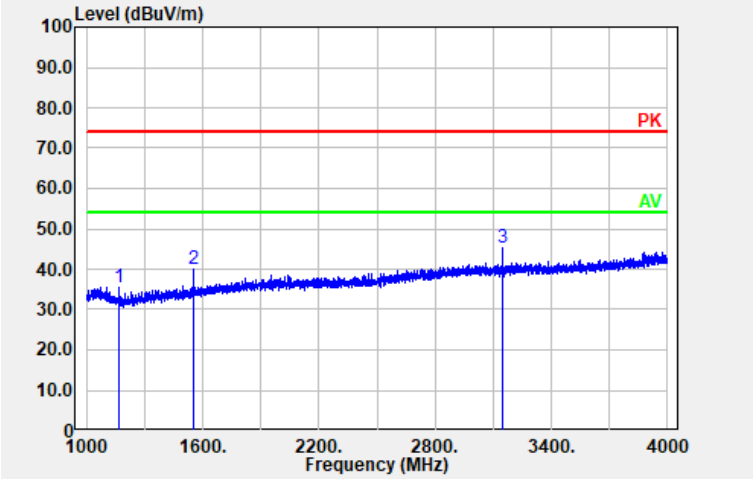
390MHz:
Peak Strength

Frequency (MHz)	Receiver		Polar (H/V)	Factor (dB/m)	Result (dBμV/m)	Limit (dBμV/m)	Margin (dB)
	Reading (dBμV)	Detector					
390.00*	65.54	PK	H	-9.15	56.39	99.24	42.85
390.00*	69.94	PK	V	-9.15	60.79	99.24	38.45
780.00	30.76	PK	H	-2.51	28.25	79.24	50.99
780.00	27.72	PK	V	-2.51	25.21	79.24	54.03
1170.000	40.38	PK	H	-1.84	38.54	74.00	35.46
1170.000	37.45	PK	V	-1.84	35.61	74.00	38.39
1560.000	37.23	PK	H	-0.07	37.16	74.00	36.84
1560.000	37.05	PK	V	-0.07	36.98	74.00	37.02
1950.000	38.57	PK	H	2.08	40.65	79.24	38.59
1950.000	39.70	PK	V	2.08	41.78	79.24	37.46
2340.000	35.11	PK	H	3.27	38.38	74.00	35.62
2340.000	25.56	PK	V	3.27	28.83	74.00	45.17
2730.000	35.44	PK	H	4.85	40.29	74.00	33.71
2730.000	36.41	PK	V	4.85	41.26	74.00	32.74
3120.000	39.28	PK	H	6.47	45.75	79.24	33.49
3120.000	38.80	PK	V	6.47	45.27	79.24	33.97
3510.000	34.87	PK	H	7.64	42.51	79.24	36.73
3510.000	33.60	PK	V	7.64	41.24	79.24	38.00
3900.000	36.78	PK	H	9.01	45.79	74.00	28.21
3900.000	36.69	PK	V	9.01	45.70	74.00	28.30

Note:
*: Fundamental
All the peak emissions are under the peak limit more than 20dB, therefore average detector is unnecessary.

Test Plots:
310MHz was the worst:

Horizontal	
30MHz-1GHz	
1GHz-4GHz	

Vertical	
30MHz-1GHz	
1GHz-4GHz	

4.3 20 dB Emission Bandwidth:

Serial Number:	24TB_2	Test Date:	2023/05/04
Test Site:	966-2	Test Mode:	Transmitting
Tester:	Carl Xue	Test Result:	Pass

Environmental Conditions:					
Temperature: (℃)	26.7	Relative Humidity: (%)	62	ATM Pressure: (kPa)	100.4

Test Equipment List and Details:

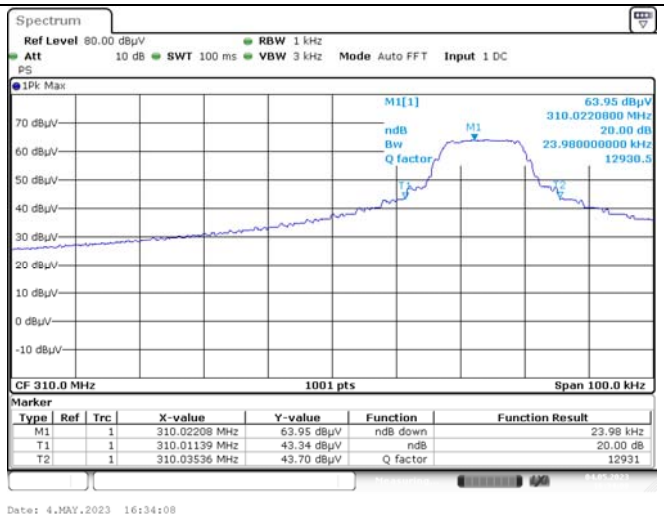
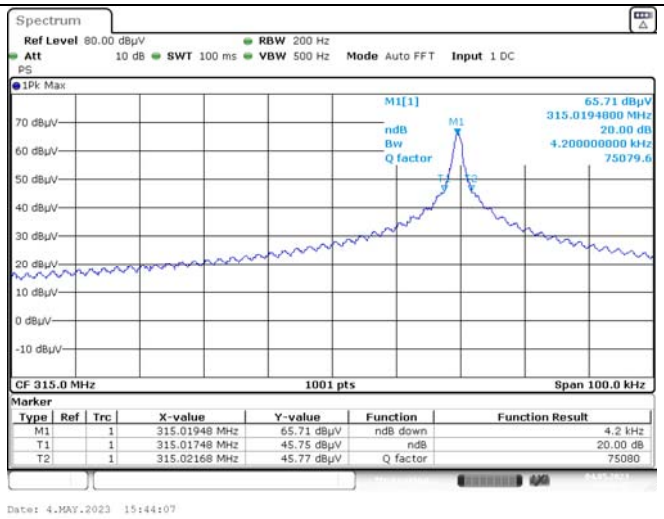
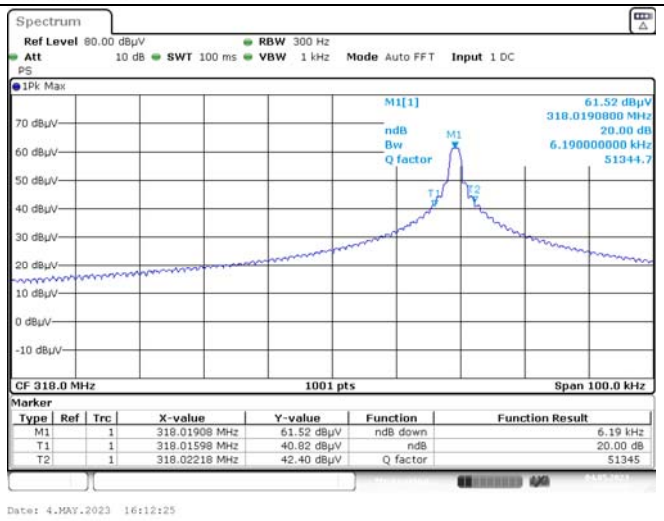
Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
Sunol Sciences	Antenna	JB6	A082520-5	2020/10/19	2023/10/18
R&S	EMI Test Receiver	ESR3	102724	2022/07/15	2023/07/14
TIMES MICROWAVE	Coaxial Cable	LMR-600-UltraFlex	C-0470-02	2022/07/17	2023/07/16
TIMES MICROWAVE	Coaxial Cable	LMR-600-UltraFlex	C-0780-01	2022/07/17	2023/07/16
Sonoma	Amplifier	310N	186165	2022/07/17	2023/07/16

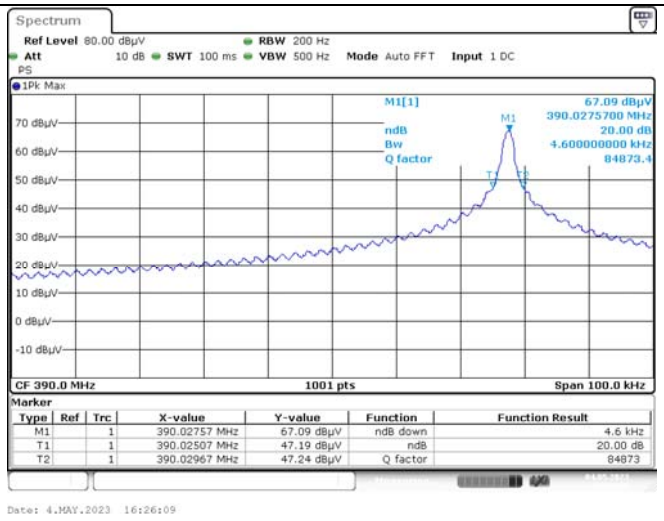
**** Statement of Traceability:*** *China Certification ICT Co., Ltd (Dongguan) attests that all calibrations have been performed, traceable to National Primary Standards and International System of Units (SI).*

Test Data:

Test Frequency (MHz)	20dB Bandwidth (kHz)	Limit (kHz)
310	23.980	775.000
315	4.200	787.500
318	6.190	795.000
390	4.600	975.000

Note: Button 1 was the worst and recorded

20dB Emission Bandwidth	
310MHz	
315 MHz	
318 MHz	

20dB Emission Bandwidth	
390 MHz	

4.4 DEACTIVATION TESTING:

Serial Number:	24TB_2	Test Date:	2023/05/04
Test Site:	966-2	Test Mode:	Transmitting
Tester:	Carl Xue	Test Result:	Pass

Environmental Conditions:					
Temperature: (℃)	26.7	Relative Humidity: (%)	62	ATM Pressure: (kPa)	100.4

Test Equipment List and Details:

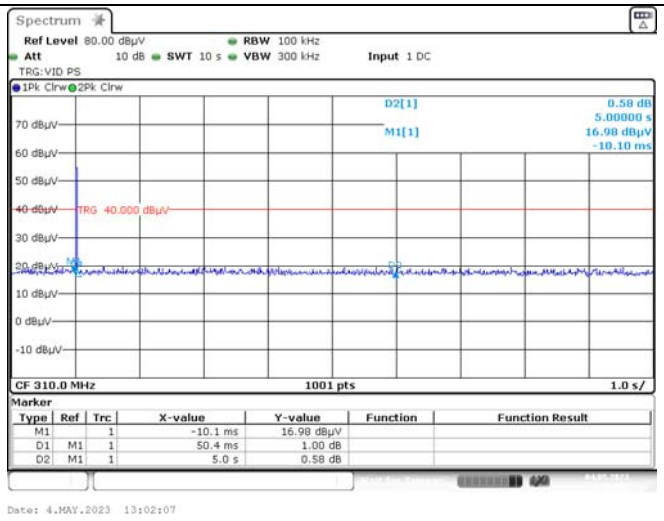
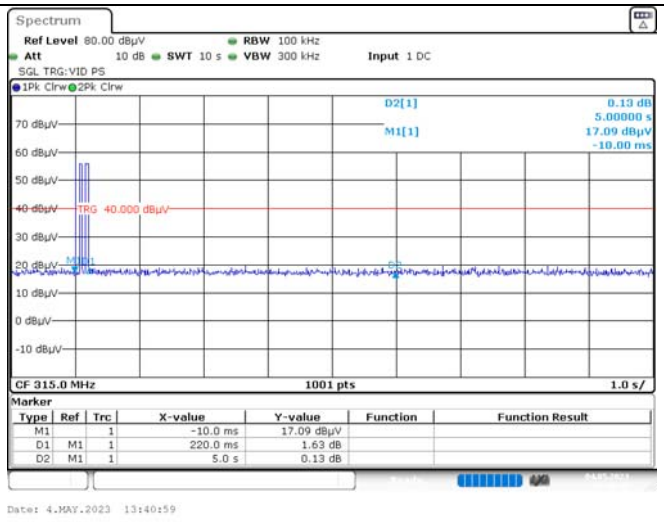
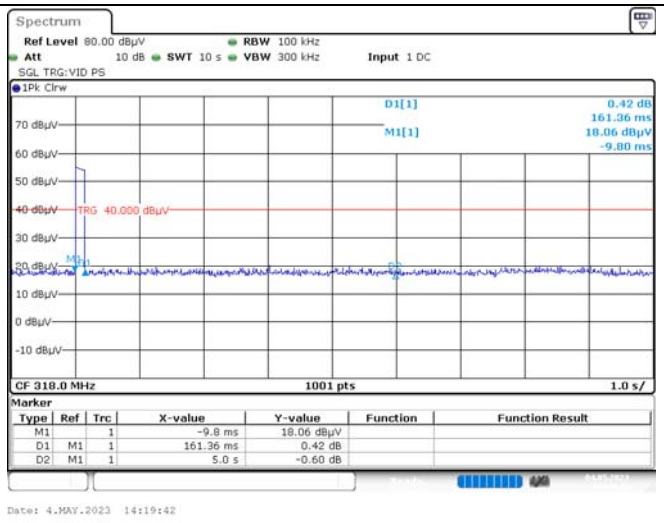
Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
Sunol Sciences	Antenna	JB6	A082520-5	2020/10/19	2023/10/18
R&S	EMI Test Receiver	ESR3	102724	2022/07/15	2023/07/14
TIMES MICROWAVE	Coaxial Cable	LMR-600-UltraFlex	C-0470-02	2022/07/17	2023/07/16
TIMES MICROWAVE	Coaxial Cable	LMR-600-UltraFlex	C-0780-01	2022/07/17	2023/07/16
Sonoma	Amplifier	310N	186165	2022/07/17	2023/07/16

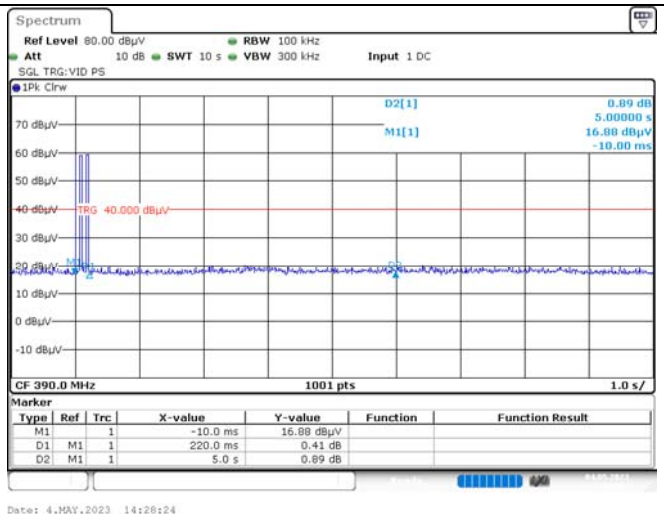
**** Statement of Traceability:*** *China Certification ICT Co., Ltd (Dongguan) attests that all calibrations have been performed, traceable to National Primary Standards and International System of Units (SI).*

Test Data:

Test Frequency (MHz)	Maximum Deactivate Time (s)	Limit (s)
310	0.051	<5
315	0.22	<5
318	0.161	<5
390	0.22	<5

Note: Button 1 was the worst and recorded

DEACTIVATION TESTING	
310MHz	
315 MHz	
318 MHz	

DEACTIVATION TESTING	
390 MHz	

5. RF EXPOSURE EVALUATION

5.1 Applicable Standard

FCC §1.1307(b)(3)(i)(A)

a single RF source is exempt RF device (from the requirement to show data demonstrating compliance to RF exposure limits, as previously mentioned) if the available maximum time-averaged power is no more than 1 mW, regardless of separation distance.

5.2 Procedure

According to 447498 D04 Interim General RF Exposure Guidance v01, clause 2.1.2- 1-mW Test Exemption:

Per §1.1307(b)(3)(i)(A), a single RF source is *exempt RF device* (from the requirement to show data demonstrating compliance to RF exposure limits, as previously mentioned) if the available maximum time-averaged power is no more than 1 mW, regardless of separation distance.

This exemption applies to all operating configurations and exposure conditions, for the frequency range 100 kHz to 100 GHz, regardless of fixed, mobile, or portable device exposure conditions. This is a standalone exemption, and it cannot be applied in conjunction with any other test exemption.

5.3 Measurement Result

Frequency (MHz)	Maximum ERP Power		1-mW Test Exemption
	dBm	mW	
310-390	-34.41	0.0004	Compliant

Note:
1. Chose the maximum power to do RF Exposure analysis.
2. This device maximum E - Field level is 60.79dBμV/m at 3m, so the EIRP power is -34.41dBm, ERP= -36.56dBm
3. EIRP(dBm) = Field Strength of Fundamental(dBuV/m)-95.2
4. ERP = EIRP – 2.15 dB

Result: Compliant. RF Exposure is exemption**.**

===== END OF REPORT =====