

Page 1 of 33 FCC ID: 2BBLZ-1330

Report No.: LCSA052523047EA



FOR

RGA Top Race US LLC

RC Croc Boat_set of 2_blue boat green croc

Test Model: TOPR-000279

Prepared for : RGA Top Race US LLC

Address : 801 Barton Springs Road, Austin, TX 78704

Prepared by : Shenzhen LCS Compliance Testing Laboratory Ltd

Address 101, 201 Bldg A & 301 Bldg C, Juji Industrial Park Yabianxueziwei,

Shajing Street, Baoan District, Shenzhen, 518000, China

Tel : (+86)755-82591330 Fax : (+86)755-82591332 Web : www.LCS-cert.com

Mail : webmaster@LCS-cert.com

Date of receipt of test sample : May 26, 2023

Number of tested samples : 2

Sample No. : A052523047-1, A052523047-2

Sample number : Prototype

Date of Test : May 26, 2023 ~ June 06, 2023

Date of Report : June 06, 2023





Page 2 of 33

FCC ID: 2BBLZ-1330

FCC TEST REPORT

FCC CFR 47 PART 15 C (15.249)

Report Reference No.: LCSA052523047EA

Date of Issue.....: June 06, 2023

Testing Laboratory Name.....: Shenzhen LCS Compliance Testing Laboratory Ltd.

Address...... Shajing Street, Baoan District, Shenzhen, 518000, China 101, 201 Bldg A & 301 Bldg C, Juji Industrial Park Yabianxueziwei,

Report No.: LCSA052523047EA

Full application of Harmonised standards

Partial application of Harmonised standards Testing Location/ Procedure......

Other standard testing method

Applicant's Name.....: RGA Top Race US LLC

Address.....: 801 Barton Springs Road, Austin, TX 78704

Test Specification

Standard...... : FCC CFR 47 PART 15 C(15.249) / ANSI C63.10: 2013

Test Report Form No.....: LCSEMC-1.0

TRF Originator.....: Shenzhen LCS Compliance Testing Laboratory Ltd.

Master TRF.....: Dated 2011-03

Shenzhen LCS Compliance Testing Laboratory Ltd. All rights reserved.

This publication may be reproduced in whole or in part for non-commercial purposes as long as the Shenzhen LCS Compliance Testing Laboratory Ltd. is acknowledged as copyright owner and source of the material. Shenzhen LCS Compliance Testing Laboratory Ltd. takes no responsibility for and will not assume liability for damages resulting from the reader's interpretation of the reproduced material due to its placement and context.

Test Item Description.....: : RC Croc Boat_set of 2_blue boat green croc

Trade Mark.....: Top Race

Test Model.....: TOPR-000279

Ratings.....: For Remote control handle:Battery:2*1.5V AA

For Remote control Shark:Input: DC 5V

Battery:DC 3.7V, 14500/500mAh

Result: Positive

Li Huan/Administrator

Compiled by: Supervised by:

Cary Luo/ Technique principal

Gavin Liang/ Manager

Approved by:





FCC ID: 2BBLZ-1330 Report No.: LCSA052523047EA



Test Report No. : LCSA052523047EA	June 06, 2023 Date of issue
-----------------------------------	------------------------------

Test Model	:	TOPR-000279		
EUTti.iii to iii to iii to	•	RC Croc Boat_set of 2	blue boat green c	FOC Triffer MERCEN
Applicant	:	RGA Top Race US LI	LC	
Address	:	801 Barton Springs Ro	oad, Austin, TX 787	'04
Telephone	:	1		
Fax	:	1		
Manufacturer	:		- 经测度份	The same
Address	9.11 9.1	Ling Lab		
Telephone	:	1		
Fax	:	1		
Factory	:	1		
Address	:	1		
Telephone	:	1		
Fax	:	I Les Testing L		

Test Result	Positive
-------------	----------

The test report merely corresponds to the test sample.

It is not permitted to copy extracts of these test result without the written permission of the test laboratory.



Shenzhen LCS Compliance Testing Laboratory Ltd.



Page 4 of 33

FCC ID: 2BBLZ-1330

Revision History

	Revision	on History	
Report Version	Issue Date	Revision Content	Revised By
000	June 06, 2023	Initial Issue	(Acc.

Report No.: LCSA052523047EA











FCC ID: 2BBLZ-1330



TABLE OF CONTENTS

1. GENERAL INFORMATION	6
1.1 Description of Device (EUT)	6
1.2. Support Equipment List	7
1.3. External I/O	
1.4. Description of Test Facility	7
1.5. Statement of the measurement uncertainty	<u>7</u>
1.6. Measurement Uncertainty	
1.7. Description of Test Modes	
2. TEST METHODOLOGY	
2.1. EUT Configuration	
2.2. EUT Exercise	
2.3. General Test Procedures	
3. CONNECTION DIAGRAM OF TEST SYSTEM	
3.1. Justification	
3.2. EUT Exercise Software	
Special Accessories	
3.5. Equipment Modifications	
3.6. Test Setup.	
4. SUMMARY OF TEST RESULTS	
5. ANTENNA REQUIREMENT	
6. POWER LINE CONDUCTED EMISSIONS	13
7. RADIATED EMISSION MEASUREMENT	
8. RESULTS FOR BAND EDGE TESTING	
9. 20 DB BANDWIDTH MEASUREMENT	
10. LIST OF MEASURING EQUIPMENT	
11. TEST SETUP PHOTOGRAPHS OF THE EUT	
12. EXTERIOR PHOTOGRAPHS OF THE EUT	
13. INTERIOR PHOTOGRAPHS OF THE EUT	







Report No.: LCSA052523047EA













Page 6 of 33

FCC ID: 2BBLZ-1330

Report No.: LCSA052523047EA

1. GENERAL INFORMATION

1.1 Description of Device (EUT)

EUT : RC Croc Boat set of 2 blue boat green croc

: TOPR-000279 Test Model

Power Supply : For Remote control handle:Battery:2*1.5V AA

For Remote control Shark:Input: DC 5V

Battery:DC 3.7V, 14500/500mAh

Hardware Version

Software Version : /

2.4G

Frequency Range 2415MHz, 2445MHz, 2470MHz

Channel Number : 3

: GFSK Modulation Type

Antenna Description : Internal Antenna, 0dBi(max.)



Shenzhen LCS Compliance Testing Laboratory Ltd.
Add: 101, 201 Bldg A & 301 Bldg C, Juji Industrial Park Yabianxueziwei, Shajing Street, Baoan District, Shenzhen,



Page 7 of 33

FCC ID: 2BBLZ-1330

Report No.: LCSA052523047EA

1.2. Support Equipment List

Manufacturer	Description	Model	Serial Number	Certificate
				1

1.3. External I/O

I/O Port Description	Quantity	Cable

1.4. Description of Test Facility

NVLAP Accreditation Code is 600167-0.

FCC Designation Number is CN5024.

CAB identifier is CN0071.

CNAS Registration Number is L4595.

Test Firm Registration Number: 254912.

The 3m-Semi anechoic test site fulfils CISPR 16-1-4 according to ANSI C63.4:2014 and CISPR 16-1-4:2010 SVSWR requirement for radiated emission above 1GHz.

1.5. Statement of the measurement uncertainty

The data and results referenced in this document are true and accurate. The reader is cautioned that there may be errors within the calibration limits of the equipment and facilities. The measurement uncertainty was calculated for all measurements listed in this test report acc. To CISPR 16-4 "Specification for radio disturbance and immunity measuring apparatus and methods – Part 4: Uncertainty in EMC Measurements" and is documented in the LCS quality system acc. To DIN EN ISO/IEC 17025. Furthermore, component and process variability of devices similar to that tested may result in additional deviation. The manufacturer has the sole responsibility of continued compliance of the device.

1.6. Measurement Uncertainty

Test Item		Frequency Range	Uncertainty	Note
u 6		9KHz~30MHz	±3.10dB	(1)
10 mm 15 th		30MHz~200MHz	±2.96dB	(1)
Radiation Uncertainty	:	200MHz~1000MHz	±3.10dB	(1)
ST LCS TOS		1GHz~26.5GHz	±3.80dB	· (1)
		26.5GHz~40GHz	±3.90dB	(1)
Conduction Uncertainty	:	150kHz~30MHz	±1.63dB	(1)
Power disturbance	:	30MHz~300MHz	±1.60dB	(1)
Occupied Channel	:	1GHz-40GHz	±5%	(1)
Bandwidth				·

(1). This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of k=2.



Shenzhen LCS Compliance Testing Laboratory Ltd.

Add: 101, 201 Bldg A & 301 Bldg C, Juji Industrial Park Yabianxueziwei, Shajing Street, Baoan District, Shenzhen, 518000, China

Tel: +(86) 0755-82591330 | E-mail: webmaster@lcs-cert.com | Web: www.lcs-cert.com Scan code to check authenticity



Page 8 of 33

FCC ID: 2BBLZ-1330

1.7. Description of Test Modes

Operates in the unlicensed ISM Band at 2.4GHz. With basic data rate feature, the data rates can be up to 1 Mb/s by modulating the RF carrier using GFSK techniques. The EUT works in the X-axis, Y-axis, Z-axis. The following operating modes were applied for the related test items. All test modes were tested, only the result of the worst case was recorded in the report.

Mode of Operations		ncy Range ИНz)	Data Rate (Mbps)
	2	2415	1
GFSK	2	2445	1
	2	2470	1
For Conducted Emission			
Test Mode	48	A Lab	TX Mode
For Radiated Emission			
Test Mode	1		TX Mode

Worst-case mode and channel used for 9 KHz-1000 MHz radiated emissions was the mode and channel with the highest output power, that was determined to be TX.

LCS Testing Lab

TS ICS Testing Lab

LCS Testing Lab









Report No.: LCSA052523047EA











Shenzhen LCS Compliance Testing Laboratory Ltd.



Page 9 of 33 FCC ID: 2BBLZ-1330 Report No.: LCSA052523047EA

2. 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.

The radiated testing was performed at an antenna-to-EUT distance of 3 meters. All radiated and conducted emissions measurement was performed at Shenzhen LCS Compliance Testing Laboratory Ltd.

2.1. EUT Configuration

The EUT configuration for testing is installed on RF field strength measurement to meet the Commissions requirement and operating in a manner that intends to maximize its emission characteristics in a continuous normal application.

2.2. EUT Exercise

The EUT was operated in the engineering mode to fix the TX frequency that was for the purpose of the measurements.

According to its specifications, the EUT must comply with the requirements of the Section 15.203, 15.205, 15.207, 15.209 and 15.249 under the FCC Rules Part 15 Subpart C.

2.3. General Test Procedures

2.3.1 Conducted Emissions

The EUT is placed on the turntable, which is 0.8 m above ground plane. According to the requirements in Section 6.2.1 of ANSI C63.10-2013 Conducted emissions from the EUT measured in the frequency range between 0.15 MHz and 30MHz using Quasi-peak and average detector modes.

2.3.2 Radiated Emissions

The EUT is placed on a turn table, which is 0.8 m above ground plane below 1GHz and 1.5 m above ground plane above 1GHz. The turntable shall rotate 360 degrees to determine the position of maximum emission level. EUT is set 3m away from the receiving antenna, which varied from 1m to 4m to find out the highest emission. And also, each emission was to be maximized by changing the polarization of receiving antenna both horizontal and vertical. In order to find out the maximum emissions, exploratory radiated emission measurements were made according to the requirements in Section 6.3 of ANSI C63.10-2013





Report No.: LCSA052523047EA



3. CONNECTION DIAGRAM OF TEST SYSTEM

3.1. Justification

The system was configured for testing in a continuous transmit condition. Continuous transmitting was pre-programmed. It'll keep transmitting with modulated signal at the lowest channel by installing the batter. When press the "up" button, it'll move to the next channel. Repeat press "up" button, it'll transmitting at each of the channel used.

3.2. EUT Exercise Software

Press the corresponding button, and change the channel.

3.3. Special Accessories

N/A

3.4. Block Diagram/Schematics

Please refer to the related document

3.5. Equipment Modifications

Shenzhen LCS Compliance Testing Laboratory Ltd. has not done any modification on the EUT.

3.6. Test Setup

Please refer to the test setup photo.

Scan code to check authenticity









FCC ID: 2BBLZ-1330 Report No.: LCSA052523047EA

4. SUMMARY OF TEST RESULTS

√ C.P	M.C. 18 C. 1	1/1/2011 / C.p	
Applied Standard: FCC Part 15 Subpart C §15.249			
FCC Rules	Description Of Test	Result	
§15.203	Antenna Requirement	Compliant	
§15.207(a)	Power Line Conducted Emissions	N/A	
§15.205(a), §15.209(a), §15.249(a), §15.249(c)	Radiated Emissions Measurement	Compliant	
§15.249 (d)	Band Edges Measurement	Compliant	
§15.215(c)	20 dB Bandwidth	Compliant	

Remark:

N/A* - Not Applicable for this device!!!

















FCC ID: 2BBLZ-1330 Report No.: LCSA052523047EA

5. ANTENNA REQUIREMENT

5.1. Standard Applicable

According to § 15.203 and RSS-Gen, 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.

5.2. Antenna Connected Construction

The EUT use Internal Antenna and maximum antenna gain is 0dBi, antenna cannot replacement, meets FCC Part §15.203 antenna requirement. Please see EUT photo for details.

5.3. Results

Compliance



LCS To Stin







6. POWER LINE CONDUCTED EMISSIONS

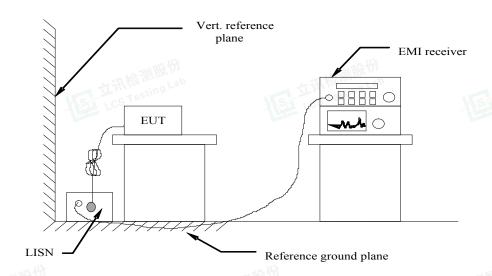
6.1. Standard Applicable

According to §15.207 (a) & RSS-Gen § 8.8: For an intentional radiator which 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 250 microvolts (The limit decreases linearly with the logarithm of the frequency in the range 0.15 MHz to 0.50 MHz). The limits at specific frequency range are listed as follows:

Frequency Range	Limits (dBµV)		
(MHz)	Quasi-peak	Average	
0.15 to 0.50	66 to 56	56 to 46	
0.50 to 5	56	46 \(\sigma \)	
5 to 30	60	50	

^{*} Decreasing linearly with the logarithm of the frequency

6.2. Block Diagram of Test Setup



6.3. Test Results

Not applicable.



Shenzhen LCS Compliance Testing Laboratory Ltd.



7. RADIATED EMISSION MEASUREMENT

7.1. Standard Applicable

According to FCC § 15.249: Emissions radiated outside of the specified frequency bands, except for harmonics, shall be attenuated by at least 50 dB below the level of the fundamental or to the general radiated emission limits in §15.209, whichever is the lesser attenuation.

20dBc in any 100 kHz bandwidth outside the operating frequency band. In case the emission fall within the restricted band specified on 15.205(a), then the 15.209(a) and 15.249 limit in the table below has to be followed.

Fundamental Frequency	Field Strength of fundamental (millivolts/meter)	Field Strength of harmonics (microvolts/meter)
902-928MHz	50	500
2400-2483.5MHz	50	500 Little and Lab
5725-5875MHz	50 5	500
24.0-24.25GHz	250	2500

Frequencies	Field Strength	Measurement Distance
(MHz)	(microvolts/meter)	(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	sting 3

According to RSS-210 B.10:

The field strength of fundamental and harmonic emissions, measured at 3 m, shall not exceed 50 mV/m and 0.5 mV/m respectively.

The field strength limits shall be measured using an average detector, except for the fundamental emission in the frequency band 902-928 MHz, which is based on measurements using an International Special Committee on Radio Interference (CISPR) quasi-peak detector.

Emissions radiated outside of the specified frequency bands, except for harmonic emissions, shall be attenuated by at least 50 dB below the level of the fundamental emissions or to the general field strength limits listed in RSS-Gen, whichever is less stringent.

7.2. Instruments Setting

Please refer to equipment list in this report. The following table is the setting of spectrum analyzer and receiver.

Spectrum Parameter	Setting
Attenuation	Auto
Start Frequency	1000 MHz
Stop Frequency	10 th carrier harmonic
RB / VB (Emission in restricted band)	1MHz / 1MHz for Peak, 1 MHz / 1/B kHz for Average
RB / VB (Emission in non-restricted band)	1MHz / 1MHz for Peak, 1 MHz / 1/B kHz for Average





5 of 33 FCC ID: 2BBLZ-1330

115	15/2
Receiver Parameter	Setting
Attenuation	Auto
Start ~ Stop Frequency	9kHz~150kHz / RB/VB 200Hz/1KHz for QP/AVG
Start ~ Stop Frequency	150kHz~30MHz / RB/VB 9kHz/30KHz for QP/AVG
Start ~ Stop Frequency	30MHz~1000MHz / RB/VB 120kHz/1MHz for QP

Report No.: LCSA052523047EA

7.3. Test Procedure

1) Sequence of testing 9 kHz to 30 MHz

Setup:

- --- The equipment was set up to simulate a typical usage like described in the user manual or described by manufacturer.
- --- If the EUT is a tabletop system, a rotatable table with 0.8 m height is used.
- --- If the EUT is a floor standing device, it is placed on the ground.
- --- Auxiliary equipment and cables were positioned to simulate normal operation conditions.
- --- The AC power port of the EUT (if available) is connected to a power outlet below the turntable.
- --- The measurement distance is 3 meter.
- --- The EUT was set into operation.

Premeasurement:

- --- The turntable rotates from 0° to 315° using 45° steps.
- --- The antenna height is 1.0 meter.
- --- At each turntable position the analyzer sweeps with peak detection to find the maximum of all emissions

Final measurement:

- --- Identified emissions during the premeasurement the software maximizes by rotating the turntable position (0° to 360°) and by rotating the elevation axes (0° to 360°).
- --- The final measurement will be done in the position (turntable and elevation) causing the highest emissions with QPK detector.
- --- The final levels, frequency, measuring time, bandwidth, turntable position, correction factor, margin to the limit and limit will be recorded. Also a plot with the graph of the premeasurement and the limit will be stored.



YEA LOS Testing Lab



FCC ID: 2BBLZ-1330 Report No.: LCSA052523047EA

2) Sequence of testing 30 MHz to 1 GHz

Setup:

- --- The equipment was set up to simulate a typical usage like described in the user manual or described by manufacturer.
- --- If the EUT is a tabletop system, a table with 0.8 m height is used, which is placed on the ground plane.
- --- If the EUT is a floor standing device, it is placed on the ground plane with insulation between both.
- --- Auxiliary equipment and cables were positioned to simulate normal operation conditions
- --- The AC power port of the EUT (if available) is connected to a power outlet below the turntable.
- --- The measurement distance is 3 meter.
- --- The EUT was set into operation.

Premeasurement:

- --- The turntable rotates from 0° to 315° using 45° steps.
- --- The antenna is polarized vertical and horizontal.
- --- The antenna height changes from 1 to 3 meter.
- --- At each turntable position, antenna polarization and height the analyzer sweeps three times in peak to find the maximum of all emissions.

Final measurement:

- --- The final measurement will be performed with minimum the six highest peaks.
- --- According to the maximum antenna and turntable positions of premeasurement the software maximize the peaks by changing turntable position (± 45°) and antenna movement between 1 and 4 meter.
- --- The final measurement will be done with QP detector with an EMI receiver.
- --- The final levels, frequency, measuring time, bandwidth, antenna height, antenna polarization, turntable angle, correction factor, margin to the limit and limit will be recorded. Also a plot with the graph of the premeasurement with marked maximum final measurements and the limit will be stored.



五 上CS Testing Lab



FCC ID: 2BBLZ-1330

Report No.: LCSA052523047EA

3) Sequence of testing 1 GHz to 18 GHz

Setup:

- --- The equipment was set up to simulate a typical usage like described in the user manual or described by manufacturer.
- --- If the EUT is a tabletop system, a rotatable table with 1.5 m height is used.
- --- If the EUT is a floor standing device, it is placed on the ground plane with insulation between both.
- --- Auxiliary equipment and cables were positioned to simulate normal operation conditions
- --- The AC power port of the EUT (if available) is connected to a power outlet below the turntable.
- --- The measurement distance is 3 meter.
- --- The EUT was set into operation.

Premeasurement:

- --- The turntable rotates from 0° to 315° using 45° steps.
- --- The antenna is polarized vertical and horizontal.
- --- The antenna height scan range is 1 meter to 2.5 meter.
- --- At each turntable position and antenna polarization the analyzer sweeps with peak detection to find the maximum of all emissions.

Final measurement:

- --- The final measurement will be performed with minimum the six highest peaks.
- --- According to the maximum antenna and turntable positions of premeasurement the software maximize the peaks by changing turntable position (± 45°) and antenna movement between 1 and 4 meter. This procedure is repeated for both antenna polarizations.
- --- The final measurement will be done in the position (turntable, EUT-table and antenna polarization) causing the highest emissions with Peak and Average detector.
- --- The final levels, frequency, measuring time, bandwidth, turntable position, EUT-table position, antenna polarization, correction factor, margin to the limit and limit will be recorded. Also a plot with the graph of the premeasurement with marked maximum final measurements and the limit will be stored.









FCC ID: 2BBLZ-1330 Report No.: LCSA052523047EA

4) Sequence of testing above 18 GHz

Setup:

- --- The equipment was set up to simulate a typical usage like described in the user manual or described by manufacturer.
- --- If the EUT is a tabletop system, a rotatable table with 1.5 m height is used.
- --- If the EUT is a floor standing device, it is placed on the ground plane with insulation between both.
- --- Auxiliary equipment and cables were positioned to simulate normal operation conditions
- --- The AC power port of the EUT (if available) is connected to a power outlet below the turntable.
- --- The measurement distance is 1 meter.
- --- The EUT was set into operation.

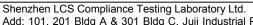
Premeasurement:

--- The antenna is moved spherical over the EUT in different polarizations of the antenna.

Final measurement:

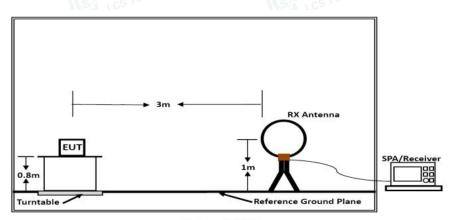
- --- The final measurement will be performed at the position and antenna orientation for all detected emissions that were found during the premeasurements with Peak and Average detector.
- --- The final levels, frequency, measuring time, bandwidth, correction factor, margin to the limit and limit will be recorded. Also a plot with the graph of the premeasurement and the limit will be stored.



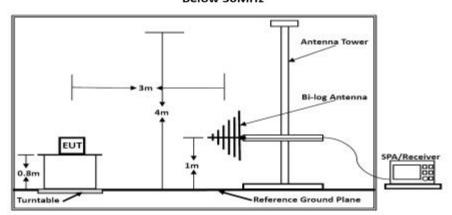




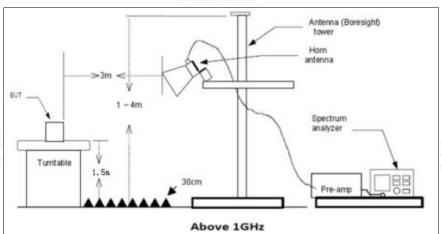
7.4. Block Diagram of Test Setup



Below 30MHz



Below 1GHz



Above 18 GHz shall be extrapolated to the specified distance using an extrapolation factor of 20 dB/decade form 3m to 1m.

7.5 EUT Operation during Test

The EUT was programmed to be in continuously transmitting mode.



Shenzhen LCS Compliance Testing Laboratory Ltd.

Add: 101, 201 Bldg A & 301 Bldg C, Juji Industrial Park Yabianxueziwei, Shajing Street, Baoan District, Shenzhen, 518000, China

Tel: +(86) 0755-82591330 | E-mail: webmaster@lcs-cert.com | Web: www.lcs-cert.com Scan code to check authenticity



Page 20 of 33

FCC ID: 2BBLZ-1330

Report No.: LCSA052523047EA

7.6. Test Results of Radiated Emissions (9 KHz~30 MHz)

			- T. I. P. C.
Temperature	23.8℃	Humidity	52.1%
Test Engineer	Joker Hu		

Freq. (MHz)	•		Over Limit (dBuV)	Remark	
-	-	-	-	See Note	

Note:

The amplitude of spurious emissions which are attenuated by more than 20 dB below the permissible value has no need to be reported.

Distance extrapolation factor = 40 log (specific distance / test distance) (dB);

Limit line = specific limits (dBuV) + distance extrapolation factor.

7.7. Test Results of Radiated Emissions (30 MHz – 1000 MHz)

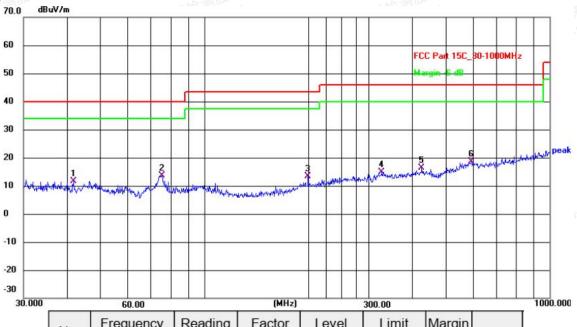
Temperature	23.8℃	Humidity	52.1%
Test Engineer	Joker Hu		



Shenzhen LCS Compliance Testing Laboratory Ltd.







- · ·		00.00		(200	300.00		
	No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector
	1	41.8594	28.97	-17.31	11.66	40.00	-28.34	QP
	2	75.4462	33.41	-19.69	13.72	40.00	-26.28	QP
3	3	199.9855	30.89	-17.39	13.50	43.50	-30.00	QP
g ⁱ C	4	326.7395	29.10	-14.24	14.86	46.00	-31.14	QP
	5	426.5210	30.92	-14.43	16.49	46.00	-29.51	QP
	6	593.0496	29.20	-10.56	18.64	46.00	-27.36	QP

[[] 立语检测度份 [[] LCS To sting Lab

NSI 立流検測機份

LCS Tosting Lab







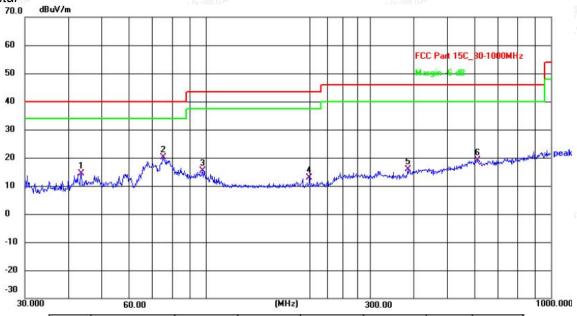












No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector
1	43.6584	31.50	-17.07	14.43	40.00	-25.57	QP
2	75.4462	39.86	-19.69	20.17	40.00	-19.83	QP
3	98.1418	33.77	-18.31	15.46	43.50	-28.04	QP
4	199.9855	30.34	-17.39	12.95	43.50	-30.55	QP
5	385.2803	30.39	-14.60	15.79	46.00	-30.21	QP
6	612.0641	29.97	-10.74	19.23	46.00	-26.77	QP

Note:

- 1). Pre-scan all modes and recorded the worst case results in this report (GFSK).
- 2). Emission level (dBuV/m) = 20 log Emission level (uV/m).
- 3). Level = Reading + Factor, Margin = Level Limit, Factor = Antenna Factor + Cable Loss - Preamp Factor











Shenzhen LCS Compliance Testing Laboratory Ltd.



FCC ID: 2BBLZ-1330

Report No.: LCSA052523047EA



7.8. Results for Radiated Emissions (1 – 26 GHz)

Field Strength of Fundamental (TX-2415 MHz)							
Frequency (MHz)	Pol.	Measure Result (PK, dBuV/m)	Peak Limit (dBuV/m)	AVG Limit (dBuV/m)	Result		
2415.00	Н	93.30	114	94	Pass		
2415.00	V	89.70	114	94	Pass		

Channel 1 / 2415 MHz

Freq. MHz	Reading Level dBuV	Ant. Fac. dB/m	Pre. Fac. dB	Cab. Loss dB	Measured dBuV/m	Limit dBuV/m	Margin dB	Remark	Pol.
4830.00	55.44	33.06	35.04	3.94	57.40	74.00	-16.60	Peak	Horizontal
4830.00	44.32	33.06	35.04	3.94	46.28	54.00	-7.72	Average	Horizontal
4830.00	57.17	33.06	35.04	3.94	59.13	74.00	-14.87	Peak	Vertical
4830.00	43.97	33.06	35.04	3.94	45.93	54.00	-8.07	Average	Vertical

Field Strength of Fundamental (TX-2445 MHz)							
Frequency (MHz)	Pol.	Measure Result (PK, dBuV/m)	Peak Limit (dBuV/m)	AVG Limit (dBuV/m)	Result		
2445.00	Н	92.29	114	94	Pass		
2445.00	V	87.26	114	94	Pass		

Channel 2 / 2445 MHz

Onamici	2 / 2770 WII	12							
Freq. MHz	Reading Level dBuV	Ant. Fac. dB/m	Pre. Fac. dB	Cab. Loss dB	Measured dBuV/m	Limit dBuV/m	Margin dB	Remark	Pol.
4890.00	55.22	33.16	35.15	3.96	57.19	74.00	-16.81	Peak	Horizontal
4890.00	44.32	33.16	35.15	3.96	46.29	54.00	-7.71	Average	Horizontal
4890.00	60.73	33.16	35.15	3.96	62.70	74.00	-11.30	Peak	Vertical
4890.00	45.43	33.16	35.15	3.96	47.40	54.00	-6.60	Average	Vertical

Field Strength of Fundamental (TX-2470 MHz)								
Frequency (MHz) Pol.		Measure Result Peak Limit (PK, dBuV/m) (dBuV/m)		AVG Limit (dBuV/m)	Result			
2470.00	Н	92.47	114	94	Pass			
2470 00	V	88 01	114	94	Pass			

Channel 3 / 2470 MHz

Freq. MHz	Reading Level dBuV	Ant. Fac. dB/m	Pre. Fac. dB	Cab. Loss dB	Measured dBuV/m	Limit dBuV/m	Margin dB	Remark	Pol.	
4940.00	59.12	33.26	35.14	3.98	61.22	74.00	-12.78	Peak	Horizontal	
4940.00	43.04	33.26	35.14	3.98	45.14	54.00	-8.86	Average	Horizontal	
4940.00	52.50	33.26	35.14	3.98	54.60	74.00	-19.40	Peak	Vertical	
4940.00	45.02	33.26	35.14	3.98	47.12	54.00	-6.88	Average	Vertical	

Notes:

- 1). Measuring frequencies from 9 KHz 10th harmonic (ex. 26GHz), at least have 20dB margin found between lowest internal used/generated frequency to 30 MHz.
- 2). Radiated emissions measured in frequency range from 9 KHz 10th harmonic (ex. 26GHz) were made with an instrument using Peak detector mode.
- 3). 18~25 GHz at least have 20dB margin. No recording in the test report.
- 4). Measured Level = Reading Level + Factor, Margin = Measured Level Limit, Factor = Antenna Factor + Cable Loss Preamp Factor



Shenzhen LCS Compliance Testing Laboratory Ltd.

Add: 101, 201 Bldg A & 301 Bldg C, Juji Industrial Park Yabianxueziwei, Shajing Street, Baoan District, Shenzhen, 518000, China

Tel: +(86) 0755-82591330 | E-mail: webmaster@lcs-cert.com | Web: www.lcs-cert.com Scan code to check authenticity

Report No.: LCSA052523047EA

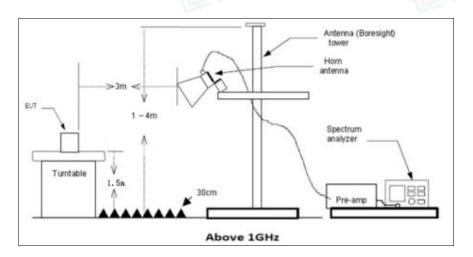
8. RESULTS FOR BAND EDGE TESTING

8.1. Standard Applicable

According to FCC §15.249 (d): Emissions radiated outside of the specified frequency bands, except for harmonics, shall be attenuated by at least 50 dB below the level of the fundamental or to the general radiated emission limits in §15.209, whichever is the lesser attenuation.

According to RSS-210 B.10 (b): Emissions radiated outside of the specified frequency bands, except for harmonic emissions, shall be attenuated by at least 50 dB below the level of the fundamental emissions or to the general field strength limits listed in RSS-Gen, whichever is less stringent.

8.2. Test Setup Layout



8.3. Measuring Instruments and Setting

Please refer to equipment list in this report. The following table is the setting of Spectrum Analyzer.

8.4. Test Procedures

3) Sequence of testing 1 GHz to 18 GHz

Setup:

- --- The equipment was set up to simulate a typical usage like described in the user manual or described by manufacturer.
- --- If the EUT is a tabletop system, a rotatable table with 1.5 m height is used.
- --- If the EUT is a floor standing device, it is placed on the ground plane with insulation between both.
- --- Auxiliary equipment and cables were positioned to simulate normal operation conditions
- --- The AC power port of the EUT (if available) is connected to a power outlet below the turntable.
- --- The measurement distance is 3 meter.





--- The EUT was set into operation.

Premeasurement:

- --- The turntable rotates from 0° to 315° using 45° steps.
- --- The antenna is polarized vertical and horizontal.
- --- The antenna height scan range is 1 meter to 2.5 meter.
- --- At each turntable position and antenna polarization the analyzer sweeps with peak detection to find the maximum of all emissions.

FCC ID: 2BBLZ-1330

Report No.: LCSA052523047EA

Final measurement:

- --- The final measurement will be performed with minimum the six highest peaks.
- --- According to the maximum antenna and turntable positions of premeasurement the software maximize the peaks by changing turntable position (± 45°) and antenna movement between 1 and 4 meter. This procedure is repeated for both antenna polarizations.
- --- The final measurement will be done in the position (turntable, EUT-table and antenna polarization) causing the highest emissions with Peak and Average detector.
- --- The final levels, frequency, measuring time, bandwidth, turntable position, EUT-table position, antenna polarization, correction factor, margin to the limit and limit will be recorded. Also a plot with the graph of the premeasurement with marked maximum final measurements and the limit will be stored.

8.5. Measuring Instruments and Setting

<u> 1000 1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0</u>			237
Temperature	23.5℃	Humidity	52.1%
Test Engineer	Joker Hu		

PASS

Remark:

- 1. The other emission levels were very low against the limit.
- 2. The average measurement was not performed when the peak measured data under the limit of average detection.
- 3. Detector AV is setting spectrum/receiver. RBW=1MHz/VBW=330Hz/Sweep time=Auto/Detector=Peak;
- 4. Please refer to following test plots:



イラ 上ボー 大河 版 け

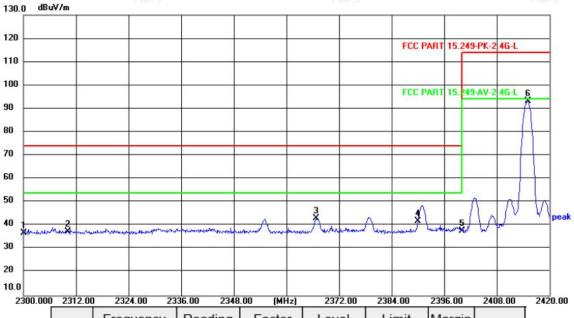
- The real



-\s-

Channel 1 / 2415 MHz

Horizontal



~_	2012.00	2324.00 E	330.00 2340	.oo (mile)	2312.00	2304.00	2330.00	2400.00
	No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector
	1	2300.000	49.02	-12.05	36.97	74.00	-37.03	peak
Ç.	2	2310.000	49.50	-12.02	37.48	74.00	-36.52	peak
	3	2366.840	55.05	-11.81	43.24	74.00	-30.76	peak
	4	2390.000	53.55	-11.73	41.82	74.00	-32.18	peak
	5	2400.000	49.38	-11.70	37.68	74.00	-36.32	peak
	6	2415.080	104.94	-11.64	93.30	114.00	-20.70	peak

[[5] 立语检测股份 [CSTosting Lab

上ST LCS Testing Lab

医 立语控测度份







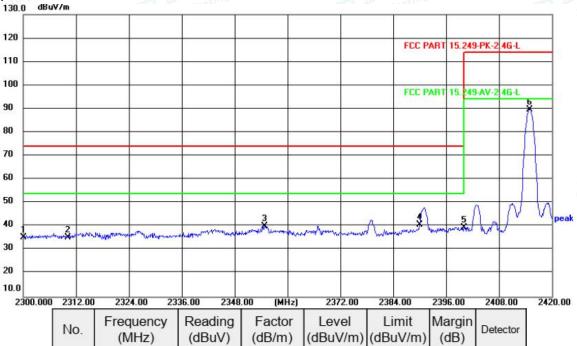




\S

Channel 1 / 2415 MHz

Vertical



No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Photograph bodies visi	Margin (dB)	Detector
1	2300.000	47.35	-12.05	35.30	74.00	-38.70	peak
2	2310.000	47.29	-12.02	35.27	74.00	-38.73	peak
3	2354.720	51.97	-11.86	40.11	74.00	-33.89	peak
4	2390.000	52.40	-11.73	40.67	74.00	-33.33	peak
5	2400.000	51.39	-11.70	39.69	74.00	-34.31	peak
6	2414.960	101.34	-11.64	89.70	114.00	-24.30	peak
	1 2 3 4 5	MHz) 1 2300.000 2 2310.000 3 2354.720 4 2390.000 5 2400.000	MHz) (dBuV) 1 2300.000 47.35 2 2310.000 47.29 3 2354.720 51.97 4 2390.000 52.40 5 2400.000 51.39	NO. (MHz) (dBuV) (dB/m) 1 2300.000 47.35 -12.05 2 2310.000 47.29 -12.02 3 2354.720 51.97 -11.86 4 2390.000 52.40 -11.73 5 2400.000 51.39 -11.70	NO. (MHz) (dBuV) (dB/m) (dBuV/m) 1 2300.000 47.35 -12.05 35.30 2 2310.000 47.29 -12.02 35.27 3 2354.720 51.97 -11.86 40.11 4 2390.000 52.40 -11.73 40.67 5 2400.000 51.39 -11.70 39.69	NO. (MHz) (dBuV) (dB/m) (dBuV/m) (dBuV/m) 1 2300.000 47.35 -12.05 35.30 74.00 2 2310.000 47.29 -12.02 35.27 74.00 3 2354.720 51.97 -11.86 40.11 74.00 4 2390.000 52.40 -11.73 40.67 74.00 5 2400.000 51.39 -11.70 39.69 74.00	NO. (MHz) (dBuV) (dB/m) (dBuV/m) (dBuV/m) (dBuV/m) (dB) 1 2300.000 47.35 -12.05 35.30 74.00 -38.70 2 2310.000 47.29 -12.02 35.27 74.00 -38.73 3 2354.720 51.97 -11.86 40.11 74.00 -33.89 4 2390.000 52.40 -11.73 40.67 74.00 -33.33 5 2400.000 51.39 -11.70 39.69 74.00 -34.31

医红斑检测器钳 LCS Tosting Lab

NET 工语检测股份 LCS Testing Lab







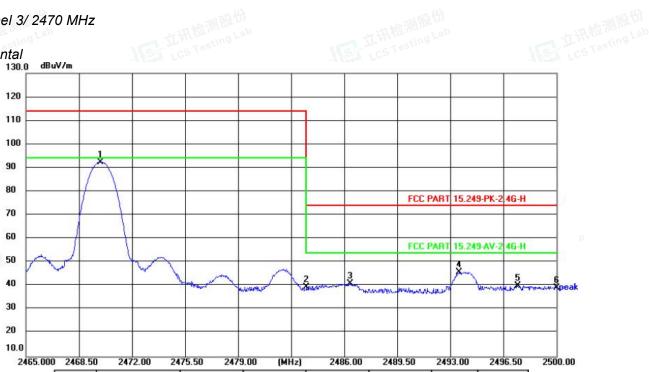






Channel 3/2470 MHz

Horizontal



No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector
1	2469.900	103.92	-11.45	92.47	114.00	-21.53	peak
2	2483.500	51.07	-11.40	39.67	74.00	-34.33	peak
3	2486.385	52.31	-11.39	40.92	74.00	-33.08	peak
4	2493.595	57.31	-11.37	45.94	74.00	-28.06	peak
5	2497.445	51.42	-11.35	40.07	74.00	-33.93	peak
6	2500.000	50.67	-11.34	39.33	74.00	-34.67	peak













Channel 3/2470 MHz

Vertical



No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector
1	2470.145	99.45	-11.44	88.01	114.00	-25.99	peak
2	2483.500	50.13	-11.40	38.73	74.00	-35.27	peak
3	2489.710	51.70	-11.39	40.31	74.00	-33.69	peak
4	2493.945	56.93	-11.37	45.56	74.00	-28.44	peak
5	2497.270	51.70	-11.35	40.35	74.00	-33.65	peak
6	2500.000	50.14	-11.34	38.80	74.00	-35.20	peak











Report No.: LCSA052523047EA

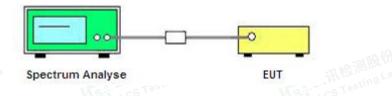


9. 20 DB BANDWIDTH MEASUREMENT

9.1. Standard Applicable

§15.215 (c) Intentional radiators operating under the alternative provisions to the general emission limits, as contained in §§15.217 through 15.257 and in subpart E of this part, must be designed to ensure that the 20 dB bandwidth of the emission, or whatever bandwidth may otherwise be specified in the specific rule section under which the equipment operates, is contained within the frequency band designated in the rule section under which the equipment is operated. In the case of intentional radiators operating under the provisions of subpart E, the emission bandwidth may span across multiple contiguous frequency bands identified in that subpart. The requirement to contain the designated bandwidth of the emission within the specified frequency band includes the effects from frequency sweeping, frequency hopping and other modulation techniques that may be employed as well as the frequency stability of the transmitter over expected variations in temperature and supply voltage. If a frequency stability is not specified in the regulations, it is recommended that the fundamental emission be kept within at least the central 80% of the permitted band in order to minimize the possibility of out-of-band operation.

9.2. Block Diagram of Test Setup



9.3. Test Procedure

Use the following spectrum analyzer settings:

Span = 2MHz

RBW = 10 KHz

VBW = 30 KHz

Sweep = auto

Detector function = peak

Trace = max hold

The EUT should be transmitting at its maximum data rate. Allow the trace to stabilize. Use the marker-to-peak function to set the marker to the peak of the emission. Use the marker-delta function to measure 20 dB down one side of the emission. Reset the marker-delta function, and move the marker to the other side of the emission, until it is (as close as possible to) even with the reference marker level. The marker-delta reading at this point is the 20 dB bandwidth of the emission. If this value varies with different modes of operation (e.g., data rate, modulation format, etc.), repeat this test for each variation. The limit is specified in one of the subparagraphs of this Section. Submit this plot(s).



Shenzhen LCS Compliance Testing Laboratory Ltd.



9.4. Test Results

Temperature	23.5℃	Humidity	52.1%
Test Engineer	Joker Hu		

Test Result of 20dB Bandwidth Measurement								
Test Frequency 20dB Bandwidth Limit								
(MHz)	(MHz)	(MHz)						
2415	1.177	Non-Specified						
2445	1.097	Non-Specified						
2470	1.101	Non-Specified						

Remark:

- 1. Test results including cable loss;
- 2. Please refer following test plots;





Shenzhen LCS Compliance Testing Laboratory Ltd.





FCC ID: 2BBLZ-1330 Report No.: LCSA052523047EA

10. LIST OF MEASURING EQUIPMENT

10). LIST OF MEASUR	ING EQUIPMI	ENT			
Item	Equipment	Manufacturer	Model No.	Serial No.	Cal Date	Due Date
1	MXA Signal Analyzer	Agilent	N9020A	MY49100060	2022-10-29	2023-10-28
2	DC Power Supply	Agilent	E3642A	N/A	2022-10-29	2023-10-28
3	Temperature & Humidity Chamber	GUANGZHOU GOGNWEN	GDS-100	70932	2022-10-06	2023-10-05
4	EMI Test Software	AUDIX	E3	1	N/A	N/A
5	3m Semi Anechoic Chamber	SIDT FRANKONIA	SAC-3M	03CH03-HY	2022-06-16	2023-06-15
6	Positioning Controller	Max-Full	MF7802BS	MF780208586	N/A	N/A
7	Active Loop Antenna	SCHWARZBECK	FMZB 1519B	00005	2021-08-29	2024-08-28
8	By-log Antenna	SCHWARZBECK	VULB9163	9163-470	2021-09-12	2024-09-11
9	Horn Antenna	SCHWARZBECK	BBHA 9120D	9120D-1925	2021-09-05	2024-09-04
10	EMI Test Receiver	R&S	ESR 7	101181	2022-06-16	2023-06-15
11	RS SPECTRUM ANALYZER	R&S	FSP40	100503	2022-10-29	2023-10-28
12	Broadband Preamplifier	1	BP-01M18G	P190501	2022-06-16	2023-06-15
13	EMI Test Receiver	R&S	ESPI	101940	2022-08-18	2023-08-17
14	Artificial Mains	R&S	ENV216	101288	2022-06-16	2023-06-15
15	10dB Attenuator	SCHWARZBECK	MTS-IMP-136	261115-001-0032	2022-06-16	2023-06-15
16	EMI Test Software	Farad	EZ	1	N/A	N/A























Report No.: LCSA052523047EA

11. TEST SETUP PHOTOGRAPHS OF THE EUT

Please refer to separated files for Test Setup Photos of the EUT.

12. EXTERIOR PHOTOGRAPHS OF THE EUT

Please refer to separated files for External Photos of the EUT.

13. INTERIOR PHOTOGRAPHS OF THE EUT

Please refer to separated files for Internal Photos of the EUT.

担答 LCS Testing Lab 担答 LCS Testing Lab

立语检测器的 LCS Testing Lab LCS Testing Lab

-----THE END OF REPORT-----

医在在销检测股份 Ed Les Testing Lab NET LES Testing Lab

上ST LOS Testing Lab



