

Report No.: SZEM160400238301

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FCC REPORT

Application No.: SZEM1604002383CR

Applicant: Guangdong Cheerson Hobby Technology Co., Ltd. Manufacturer: Guangdong Cheerson Hobby Technology Co., Ltd. Guangdong Cheerson Hobby Technology Co., Ltd. Factory:

UFO Product Name:

Model No.(EUT): CX-10W-TX

CX-36, CX-37, CX-38, CX-10W, CX-10DS, CX-94, CX-95, CX-96, CX-97, CX-98, CX-23, CX-24, CX-25, CX-26, CX-10WD, CX-10WD-TX, Add Model No.:

CX-37D, CX-37DS

FCC ID: 2AD6LGC032410232

Standards: 47 CFR Part 15, Subpart C (2015)

Date of Receipt: 2016-04-14

Date of Test: 2016-04-21 to 2016-04-26

Date of Issue: 2016-05-04

Test Result: PASS *

Authorized Signature:



Jack Zhang **EMC Laboratory Manager**

The manufacturer should ensure that all products in series production are in conformity with the product sample detailed in this report. If the product in this report is used in any configuration other than that detailed in the report, the manufacturer must ensure the new system complies with all relevant standards. Any mention of SGS International Electrical Approvals or testing done by SGS International Electrical Approvals in connection with, distribution or use of the product described in this report must be approved by SGS International Electrical Approvals in writing.

The report must not be used by the client to claim product certification, approval, or endorsement by NVLAP, NIST, or any agency of the federal government. All test results in this report can be traceable to National or International Standards.

In the configuration tested, the EUT complied with the standards specified above.



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2 Version

Revision Record				
Version	Chapter Date Modifier Remark			
00		2016-05-04		Original

Authorized for issue by:		
Tested By	feter Gene	2016-04-26
	(Peter Geng) /Project Engineer	Date
Prepared By	Iris Zhou	2016-05-04
	(Iris Zhou) /Clerk	Date
Checked By	Eric Fu	2016-05-04
	(Eric Fu) /Reviewer	Date

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3 Test Summary

Test Item	Test Requirement	Test method	Result
Antenna Requirement	47 CFR Part 15, Subpart C Section 15.203	ANSI C63.10 (2013)	PASS
AC Power Line Conducted Emission	47 CFR Part 15, Subpart C Section 15.207	ANSI C63.10 (2013)	N/A
Field Strength of the Fundamental Signal	47 CFR Part 15, Subpart C Section 15.249 (a)	ANSI C63.10 (2013)	PASS
Spurious Emissions	47 CFR Part 15, Subpart C Section 15.249 (a)/15.209	ANSI C63.10 (2013)	PASS
Restricted bands around fundamental frequency (Radiated Emission)	47 CFR Part 15, Subpart C Section 15.249(a)/15.205	ANSI C63.10 (2013)	PASS
20dB Occupied Bandwidth	47 CFR Part 15, Subpart C Section 15.215 (c)	ANSI C63.10 (2013)	PASS



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5 General Information

5.1 Client Information

Applicant:	Guangdong Cheerson Hobby Technology Co., Ltd.
Address of Applicant:	FENGXIN NO.2 ROAD&LAIMEI ROAD FENGXIN INDUSTRIAL ZONE CHENGHAI SHANTOU GUANGDONG PROVINCE CHINA
Manufacturer:	Guangdong Cheerson Hobby Technology Co., Ltd.
Address of Manufacturer:	FENGXIN NO.2 ROAD&LAIMEI ROAD FENGXIN INDUSTRIAL ZONE CHENGHAI SHANTOU GUANGDONG PROVINCE CHINA
Factory:	Guangdong Cheerson Hobby Technology Co., Ltd.
Address of Factory:	FENGXIN NO.2 ROAD&LAIMEI ROAD FENGXIN INDUSTRIAL ZONE CHENGHAI SHANTOU GUANGDONG PROVINCE CHINA

5.2 General Description of EUT

Product Name:	UFO(Remote)
Model No.:	CX-10W-TX
Modulation Type:	GFSK
Operation frequency:	2420-2460MHz
Channel separation:	1MHz
Channel number:	41
Antenna Type:	Integral
Antenna Gain:	2dBi
PowerSupply:	DC 3V (1.5V x 2"AAA"Size Batteries)

Remark:

Model No.: CX-10W-TX, CX-36, CX-37, CX-38, CX-10W, CX-10DS, CX-94, CX-95, CX-96, CX-97, CX-98, CX-23, CX-24, CX-25, CX-26, CX-10WD, CX-10WD-TX, CX-37D, CX-37DS.

Only the model CX-10W-TX was tested, since the electrical circuit design, layout, components used and internal wiring were identical for the above models, only different on model name.



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In section 15.31(m), regards to the operating frequency range over 10 MHz, the Lowest frequency, the middle frequency, and the highest frequency of channel were selected to perform the test, and the selected channel see below:

Channel	Frequency
The Lowest channel(CH1)	2420MHz
The Middle channel(CH21)	2440MHz
The Highest channel(CH41)	2460MHz



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5.3 Test Environment and Mode

Operating Environment:	Operating Environment:				
Temperature:	25.0 °C				
Humidity:	50 % RH				
Atmospheric Pressure:	1015 mbar				
Test mode:					
Transmitting mode: Keep the EUT in transmitting mode with modulation.					

5.4 Description of Support Units

The EUT has been tested independent unit.

5.5 Test Location

All tests were performed at:

SGS-CSTC Standards Technical Services Co., Ltd., Shenzhen Branch E&E Lab,

No. 1 Workshop, M-10, Middle Section, Science & Technology Park, Shenzhen, Guangdong, China. 518057.

Tel: +86 755 2601 2053 Fax: +86 755 2671 0594

No tests were sub-contracted.



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5.6 Test Facility

The test facility is recognized, certified, or accredited by the following organizations:

• CNAS (No. CNAS L2929)

CNAS has accredited SGS-CSTC Standards Technical Services Co., Ltd. Shenzhen Branch EMC Lab to ISO/IEC 17025:2005 General Requirements for the Competence of Testing and Calibration Laboratories (CNAS-CL01 Accreditation Criteria for the Competence of Testing and Calibration Laboratories) for the competence in the field of testing.

• A2LA (Certificate No. 3816.01)

SGS-CSTC Standards Technical Services Co., Ltd., Shenzhen EMC Laboratory is accredited by the American Association for Laboratory Accreditation(A2LA). Certificate No. 3816.01.

VCCI

The 10m Semi-anechoic chamber and Shielded Room of SGS-CSTC Standards Technical Services Co., Ltd. have been registered in accordance with the Regulations for Voluntary Control Measures with Registration No.: G-823, R-4188, T-1153 and C-2383 respectively.

FCC – Registration No.: 556682

SGS-CSTC Standards Technical Services Co., Ltd., Shenzhen EMC Laboratory has been registered and fully described in a report filed with the (FCC) Federal Communications Commission. The acceptance letter from the FCC is maintained in our files. Registration No.: 556682.

Industry Canada (IC)

The 10m Semi-anechoic chambers of SGS-CSTC Standards Technical Services Co., Ltd. Shenzhen Branch EMC Lab has been registered by Certification and Engineering Bureau of Industry Canada for radio equipment testing with Registration No.: 4620C-3.

5.7 Deviation from Standards

None.

5.8 Abnormalities from Standard Conditions

None.

5.9 Other Information Requested by the Customer

None.



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5.10 Equipment List

	RE in Chamber					
Item	Test Equipment	Manufacturer	Model No.	Inventory No.	Cal. date (yyyy-mm-dd)	Cal.Due date (yyyy-mm-dd)
1	10m Semi-Anechoic Chamber	SAEMC	FSAC1018	SEM001-03	2015-08-01	2016-08-01
2	EMI Test Receiver (9k-3GHz)	Rohde & Schwarz	ESCI	SEM004-01	2016-04-25	2017-04-25
3	Trilog-Broadband Antenna(30M-1GHz)	Schwarzbeck	VULB9168	SEM003-17	2016-01-26	2017-01-26
4	Pre-amplifier	Sonoma Instrument Co	310N	SEM005-03	2015-05-13	2016-05-13
5	Loop Antenna	ETS-Lindgren	6502	SEM003-08	2015-08-14	2016-08-14

	RE in Chamber					
Item	Test Equipment	Manufacturer	Model No.	Inventory No.	Cal. date (yyyy-mm-dd)	Cal.Due date (yyyy-mm-dd)
1	3m Semi-Anechoic Chamber	AUDIX	N/A	SEL0198	2015-05-13	2016-05-13
2	EMI Test Receiver	Rohde & Schwarz	ESIB26	SEL0023	2015-05-13	2016-05-13
3	EMI Test software	AUDIX	E3	SEL0201	N/A	N/A
4	Coaxial cable	SGS	N/A	SEL0202	2015-05-13	2016-05-13
5	BiConiLog Antenna (26-3000MHz)	ETS-LINDGREN	3142C	SEL0015	2015-11-15	2016-11-15
6	Amplifier (0.1-1300MHz)	HP	8447D	SEL0153	2015-10-09	2016-10-09
7	Horn Antenna (1-18GHz)	Rohde & Schwarz	HF907	SEL0311	2015-06-14	2016-06-14
8	Horn Antenna (18-26GHz)	ETS-Lindgren	3160	SEM003-12	2014-11-24	2017-11-24
9	Horn Antenna (18-26GHz)	ETS-Lindgren	3160	SEM003-12	2014-11-24	2017-11-24
10	Low Noise Amplifier	Black Diamond Series	BDLNA- 0118- 352810	SEL0319	2015-10-09	2016-10-09
11	Band filter	Amindeon	Asi 3314	SEL0094	2015-05-13	2016-05-13



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RF connected test						
Item	Test Equipment	Manufacturer	Model No.	Inventory No.	Cal. date (yyyy-mm-dd)	Cal.Due date (yyyy-mm-dd)
1	DC Power Supply	ZhaoXin	RXN-305D	SEM011-02	2015-10-09	2016-10-09
2	Spectrum Analyzer	Rohde & Schwarz	FSP	SEM004-06	2015-10-17	2016-10-17
3	Barometer	ChangChun	DYM3	SEM002-01	2015-05-13	2016-05-13
4	Signal Generator	Rohde & Schwarz	SML03	SEM006-02	2016-04-25	2017-04-25
5	Power Meter	Rohde & Schwarz	NRVS	SEM014-02	2015-10-09	2016-10-09



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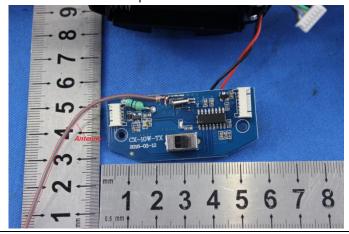
6 Test results and Measurement Data

6.1 Antenna Requirement

Standard requirement: 47 CFR Part 15C Section 15.203

15.203 requirement:

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, 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.



The antenna is integrated on the main PCB and no consideration of replacement. The best case gain of the antenna is 2dBi.



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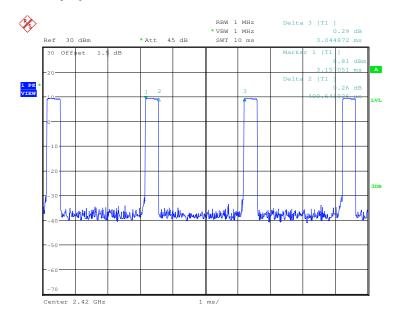
6.2 Radiated Emission

6.2.1 Duty Cycle

Test Requirement:	47 CFR Part 15C Section 15.35 (c)		
·			
Test Method:	ANSI C63.10:2013		
Test Setup:	Spectrum Analyzer E.U.T Non-Conducted Table		
	Ground Reference Plane		
Instruments Used:	Refer to section 5.10 for details		
Limit:	N/A		
Test Mode:	Transmitting mode		
Test Results:	Pass		

Test plot as follows:

Duty cycle numbers





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Test Requirement:	47 CFR Part 15C Section 15.249 and 15.209										
Test Method:	ANSI C63.10: 2013										
Test Site:	Measurement Distance Measurement Distance	,				,					
Receiver Setup:	Frequency		Detector		RBW	VBW	Remar	k			
	0.009MHz-0.090MH	lz	Peak		10kHz	30KHz	Peak				
	0.009MHz-0.090MH	Iz A	Average		10kHz	30KHz	Averag	е			
	0.090MHz-0.110MH	lz Qι	uasi-peak		10kHz	30KHz	Quasi-pe	ak			
	0.110MHz-0.490MH	lz	Peak		10kHz	30KHz	Peak				
	0.110MHz-0.490MH	Iz A	Average		10kHz	30KHz	Averag	е			
	0.490MHz -30MHz	: Qı	uasi-peak		10kHz	30kHz	Quasi-pe	ak			
	30MHz-1GHz	Qı	uasi-peak		100 kHz	300KHz	Quasi-pe	ak			
	Above 1GHz		Peak		1MHz	3MHz	Peak				
	Above Taliz		Peak		1MHz	10Hz	Averag	е			
Limit: (Spurious Emissions)			ld strength ovolt/mete		Limit (dBuV/m)	Remark	Measure distanc				
	0.009MHz-0.490MHz	24	00/F(kHz)	ı	-	-	30	0			
	0.490MHz-1.705MHz	240	000/F(kHz	F(kHz) -		-	30)			
	1.705MHz-30MHz		30		-	-	30)			
	30MHz-88MHz		29.9		40.0	Quasi-peak	10)			
	88MHz-216MHz		44.7		43.5	Quasi-peak	10)			
	216MHz-960MHz		60.3		46.0	Quasi-peak	10)			
	960MHz-1GHz		100		54.0	Quasi-peak	10)			
	Above 1GHz		500		54.0	Average	3				
	Note: 15.35(b), Unless otherwise specified, the limit on peak radio frequency emissions is 20dB above the maximum permitted average emission limit applicable to the equipment under test. This peak limit applies to the total peak emission level radiated by the device.										
Limit:	Frequency		Limit (dE	3u∨	//m @3m)	Rem	Remark				
(Field strength of the	0400MH- 0400 5MH	_	94.0			Average Value					
fundamental signal)	2400MHz-2483.5MF	12		114	.0	Peak \	/alue				

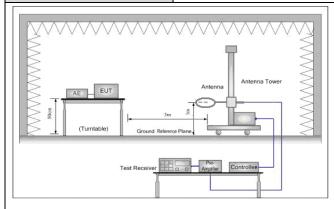
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Test Setup:



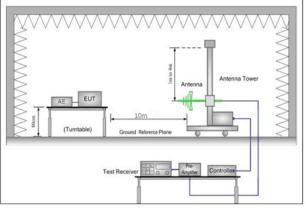


Figure 1. Below 30MHz

Figure 2. 30MHz to 1GHz

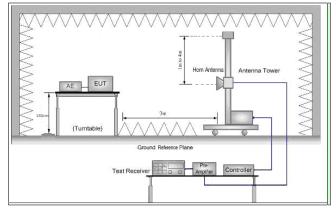


Figure 3. Above 1 GHz

Test Procedure:

- a. For below 1GHz, the EUT was placed on the top of a rotating table 0.8 meters above the ground at a 3 and 10 meter semi-anechoic camber. The table was rotated 360 degrees to determine the position of the highest radiation.
- For above 1GHz, the EUT was placed on the top of a rotating table
 1.5 meters above the ground at a 3 meter semi-anechoic camber.
 The table was rotated 360 degrees to determine the position of the highest radiation.
- c. The EUT was set 3 or 10 meters away from the interferencereceiving antenna, which was mounted on the top of a variableheight antenna tower.
- d. The antenna height is varied from one meter to four meters above the ground to determine the maximum value of the field strength. Both horizontal and vertical polarizations of the antenna are set to make the measurement.
- e. For each suspected emission, the EUT was arranged to its worst case and then the antenna was tuned to heights from 1 meter to 4 meters (for the test frequency of below 30MHz, the antenna was tuned to heights 1 meter) and the rotatable table was turned from 0 degrees to 360 degrees to find the maximum reading.
- f. The test-receiver system was set to Peak Detect Function and



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	1 age. 13 01 32						
	Specified Bandwidth with Maximum Hold Mode.						
	g. If the emission level of the EUT in peak mode was 10dB lower than the limit specified, then testing could be stopped and the peak values of the EUT would be reported. Otherwise the emissions that did not have 10dB margin would be re-tested one by one using peak, quasi-peak or average method as specified and then reported in a data sheet.						
	h. Test the EUT in the lowest channel,the middle channel,the Highes channel						
	 The radiation measurements are performed in X, Y, Z axis positioning for Transmitting mode, And found the X axis positioning which it is worse case. 						
	 Repeat above procedures until all frequencies measured was complete. 						
Exploratory Test Mode:	Transmitting mode						
Final Test Mode:	Transmitting mode						
Instruments Used:	Refer to section 5.10 for details						
Test Results:	Pass						

Average value:						
	Average value=Peak value + PDCF					
Calculate Formula:	PDCF=20 log(Duty cycle)					
	Duty cycle= T on time / T period					
	Ton time =0.401ms					
Test data:	T period =3.045ms					
	PDCF =-17.61					





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Measurement Data

6.2.1.1 Field Strength Of The Fundamental Signal

Peak value:

i can value.								
Frequency (MHz)	Cable Loss (dB)	Antenna Factor (dB/m)	Preamp Factor (dB)	Read Level (dBuV)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	Polarization
2420	5.36	28.69	38.11	103.58	99.52	114.00	-14.48	Horizontal
2420	5.36	28.69	38.11	102.80	98.74	114.00	-15.26	Vertical
2440	5.38	28.79	38.11	102.86	98.92	114.00	-15.08	Horizontal
2440	5.38	28.79	38.11	101.32	97.38	114.00	-16.62	Vertical
2460	5.39	28.88	38.12	101.36	97.51	114.00	-16.49	Horizontal
2460	5.39	28.88	38.12	100.99	97.14	114.00	-16.86	Vertical

Average value:

Frequency (MHz)	PDCF	Peak Level (dBuV/m)	Average Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	Polarization
2420.000		99.52	81.91	94.00	-12.09	Horizontal
2420.000		98.74	81.13	94.00	-12.87	Vertical
2440.000	47.04	98.92	81.31	94.00	-12.69	Horizontal
2440.000	-17.61	97.38	79.77	94.00	-14.23	Vertical
2460.000		97.51	79.90	94.00	-14.10	Horizontal
2460.000		97.14	79.53	94.00	-14.47	Vertical

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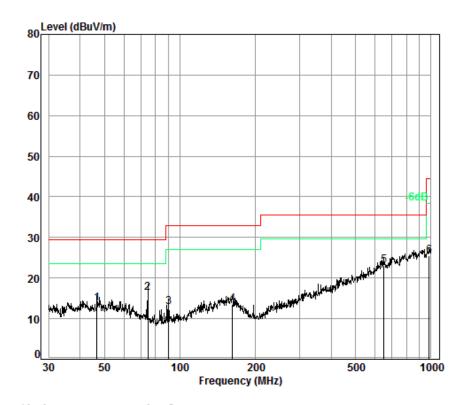


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6.2.1.2 Spurious Emissions

30MHz~1GHz		
Test mode:	Transmitting	Vertical



Condition: 10m Vertical

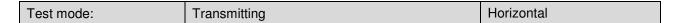
Job No. : 2383CR Test Mode: TX mode

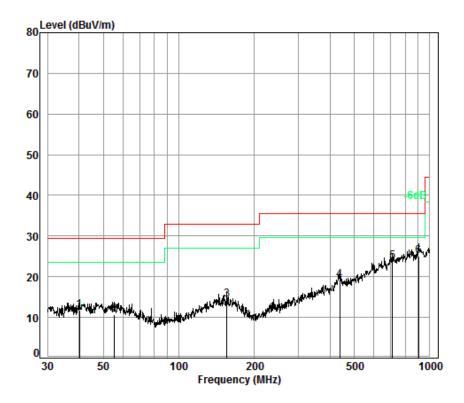
		Cable	Ant	Preamp	Read		Limit	0ver
	Freq	Loss	Factor	Factor	Level	Level	Line	Limit
_								
	MHz	dB	dB/m	dB	dBuV	dBuV/m	dBuV/m	dB
1	46.83	6.84	12.85	33.00	26.97	13.66	29.50	-15.84
2	74.66	7.00	9.33	32.88	32.97	16.42	29.50	-13.08
3	90.22	7.20	8.71	32.83	29.85	12.93	33.00	-20.07
4	162.04	7.50	13.19	32.73	25.57	13.53	33.00	-19.47
5 pp	649.66	9.02	19.53	32.60	27.15	23.10	35.60	-12.50
6	982.62	9.60	22.82	32.50	25.50	25.42	44.40	-18.98



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Condition: 10m Horizontal

Job No. : 2383CR Test Mode: TX mode

	Freq			Preamp Factor				Over Limit
-	MHz	dB	dB/m	dB	dBuV	dBuV/m	dBuV/m	dB
1	40.28	6.80	13.30	32.99	24.68	11.79	29.50	-17.71
2	55.41	7.00	12.34	32.97	24.41	10.78	29.50	-18.72
3	155.36	7.48	13.40	32.74	26.26	14.40	33.00	-18.60
4	438.66	8.40	15.90	32.60	27.46	19.16	35.60	-16.44
5	711.67	9.18	20.27	32.60	26.93	23.78	35.60	-11.82
6 рр	903.31	9.50	22.27	32.50	25.85	25.12	35.60	-10.48



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Above 1GHz	Z										
Test mode: Transmitting		Test char	nnel:	Lc	west	Remark:		Peak			
Frequency (MHz)	Lo	ible oss IB)	Antenna Factor (dB/m)	Preamp Factor (dB)	Read Leve (dBu\	l	Level (dBuV/m)	Limit Line (dBuV/m)	Ov Lin (dl	nit	Polarization
3803.444	7.	74	32.9	38.49	44.58	3	46.73	74.00	-27.	27	Vertical
4840.000	8.	92	34.14	38.76	62.62	2	66.92	74.00	-7.0	08	Vertical
6357.042	10	.11	35.57	38.50	46.5°		52.92	74.00	-21.	08	Vertical
7260.000	10	.70	37.1	37.62	44.40)	53.05	74.00	-20.	95	Vertical
9680.000	12	.54	37.92	36.25	36.15	5	49.54	74.00	-24.	46	Vertical
12639.790	14	.55	32.87	37.79	38.40)	53.08	74.00	-20.	92	Horizontal
3792.453	7.	74	34.14	38.48	44.80)	46.93	74.00	-27.	07	Horizontal
4840.000	8.	92	34.71	38.76	57.94	1	62.24	74.00	-11.	76	Horizontal
6016.949	10	.54	35.57	38.94	45.46	3	51.77	74.00	-22.	23	Horizontal
7260.000	10	.70	32.9	37.62	43.35	5	52.00	74.00	-22.	00	Horizontal

Test mode:		Transmitter	Test of	channel:	Middle	Remark:		Average
Frequency (MHz)		PDCF		Peak Level (dBuV/m)	Average Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	Polarization
4840.000		17.01		66.92	49.31	54	-4.69	Vertical
4840.000		-17.61		57.94	40.33	54	-13.67	Horizontal



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Test mode:	Tran	smitting	Test char	t channel: Middle Remark: Peak		Remark: Pea			
Frequency (MHz)	Cable Loss (dB)	Antenna Factor (dB/m)	Preamp Factor (dB)	Read Level (dBuV	(dB	evel uV/m)	Limit Line (dBuV/m)	Over Limit (dB)	Polarization
3870.060	7.77	32.97	38.51	44.66	4	6.89	74.00	-27.11	Vertical
4880.000	8.97	34.18	38.76	61.12	6	5.51	74.00	-8.49	Vertical
6122.333	10.40	34.76	38.80	45.32	5	1.68	74.00	-22.32	Vertical
7320.000	10.72	35.54	37.59	44.92	5	3.59	74.00	-20.41	Vertical
9760.000	12.58	37.1	36.14	39.05	5	2.59	74.00	-21.41	Vertical
12676.420	14.65	37.94	37.82	38.76	5	3.53	74.00	-20.47	Horizontal
3814.467	7.75	32.91	38.49	44.61	4	6.78	74.00	-27.22	Horizontal
4880.000	8.97	34.18	38.76	57.38	6	1.77	74.00	-12.23	Horizontal
5913.378	10.32	34.49	38.95	45.29	5	1.15	74.00	-22.85	Horizontal
7320.000	10.72	35.54	37.59	43.72	5	2.39	74.00	-21.61	Horizontal

Test mode:	Transmitter Test char		channel:	nnel: Middle		Remark:		
Frequency (MHz)	PDCF		Peak Level (dBuV/m)	Average Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	Polarization	
4880.000	17.61	47.04		47.90	54	-6.10	Vertical	
4880.000			61.77	44.16	54	-9.84	Horizontal	



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Test mode:	Trai	nsmitting	Test chai	nnel:	Hiç	ghest	Remark:		Peak	
Frequency (MHz)	Cable Loss (dB)	Antenna Factor (dB/m)	Preamp Factor (dB)	Read Level (dBuV		Level (dBuV/m)	Limit Line (dBuV/m)	Ove Limi (dB	it P	olarization
3814.467	7.75	32.91	38.49	44.48		46.65	74.00	-27.3	35	Vertical
4920.000	9.03	34.22	38.77	61.90		66.38	74.00	-7.6	2	Vertical
5913.378	10.32	34.49	38.95	45.10		50.96	74.00	-23.0)4	Vertical
7380.000	10.75	35.51	37.56	42.64		51.34	74.00	-22.6	66	Vertical
9840.000	12.63	37.14	36.04	39.09		52.82	74.00	-21.1	18	Vertical
12603.270	14.44	37.90	37.75	39.21		53.80	74.00	-20.2	20	Horizontal
3926.464	7.78	33.03	38.53	44.40		46.68	74.00	-27.3	32	Horizontal
4920.000	9.03	34.22	38.77	55.27	'	59.75	74.00	-14.2	25	Horizontal
6016.949	10.54	34.71	38.94	45.71		52.02	74.00	-21.9	98	Horizontal
7380.000	10.75	35.51	37.56	41.38		50.08	74.00	-23.9	92	Horizontal

Test mode:	Transmitter	Test ch	annel:	Middle	Remark	κ:	Average
Frequency (MHz)	PDCF		Peak Level (dBuV/m)	Average Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	Polarizatio n
4920.000	-17.61		66.38	48.77	54	-5.23	Vertical
4920.000	-17.01		59.75	42.14	54	-11.86	Horizontal

Remark:

- 1) The field strength is calculated by adding the Antenna Factor, Cable Factor & Preamplifier. The basic equation with a sample calculation is as follows:
 - Final Test Level =Receiver Reading + Antenna Factor + Cable Factor Preamplifier Factor
- 2) Scan from 9kHz to 25GHz,The disturbance above 13GHz and below 30MHz was very low, and the above harmonics were the highest point could be found when testing, so only the above harmonics had been displayed. The amplitude of spurious emissions from the radiator which are attenuated more than 20dB below the limit need not be reported.
- 3) As shown in this section, for frequencies above 1GHz, the field strength limits are based on average limits. However, the peak field strength of any emission shall not exceed the maximum permitted average limits specified above by more than 20 dB under any condition of modulation. So, only the above measurement data were shown in the report.

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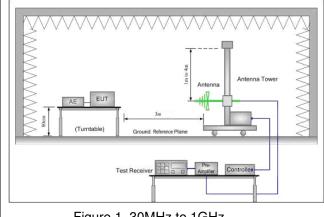
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6.3 Restricted bands around fundamental frequency

Test Requirement:	47 CFR Part 15C Section 15.209 and 15.205					
Test Method:	ANSI C63.10: 2013					
Test Site:	Measurement Distance: 3m	(Semi-Anechoic Chambe	r)			
Limit(Band Edge):	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 Section 15.209, whichever is the lesser attenuation.					
	Frequency Limit (dBuV/m @3m) Remark					
	30MHz-88MHz	40.0	Quasi-peak Value			
	88MHz-216MHz	43.5	Quasi-peak Value			
	216MHz-960MHz	46.0	Quasi-peak Value			
	960MHz-1GHz	54.0	Quasi-peak Value			
	1011	54.0	Average Value			
	Above 1GHz	74.0	Peak Value			
Test Setup:		1				





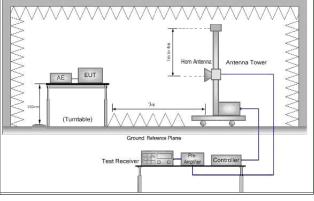


Figure 1. 30MHz to 1GHz

Figure 2. Above 1 GHz

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Test Procedure:	a. For below 1GHz, the EUT was placed on the top of a rotating table 0.8 meters above the ground at a 3 meter semi-anechoic camber. The table was rotated 360 degrees to determine the position of the highest radiation.				
	b. For above 1GHz, the EUT was placed on the top of a rotating table 1.5 meters above the ground at a 3 meter semi-anechoic camber. The table was rotated 360 degrees to determine the position of the highest radiation.				
	c. The EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower.				
	d. The antenna height is varied from one meter to four meters above the ground to determine the maximum value of the field strength. Both horizontal and vertical polarizations of the antenna are set to make the measurement.				
	e. For each suspected emission, the EUT was arranged to its worst case and then the antenna was tuned to heights from 1 meter to 4 meters and the rotatable table was turned from 0 degrees to 360 degrees to find the maximum reading.				
	f. The test-receiver system was set to Peak Detect Function and Specified Bandwidth with Maximum Hold Mode.				
	g. Place a marker at the end of the restricted band closest to the transmit frequency to show compliance. Also measure any emissions in the restricted bands. Save the spectrum analyzer plot. Repeat for each power and modulation for lowest and highest channel				
	h. Test the EUT in the lowest channel, the Highest channel				
	 The radiation measurements are performed in X, Y, Z axis positioning for Transmitting mode, And found the X axis positioning which it is worse case. 				
	j. Repeat above procedures until all frequencies measured was complete.				
Instruments Used:	Refer to section 5.10 for details				
Exploratory Test Mode:	Transmitting mode				
Final Test Mode:	Transmitting mode				
Test Results:	Pass				

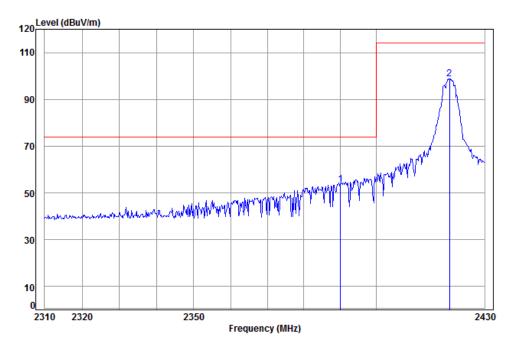


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Test plot as follows:

Test mode: Transmitting Test channel: Lowest Remark: Vertical	Test mode:	Transmitting	Test channel:	Lowest	Remark:	Vertical
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Condition: 3m Vertical Job No: : 2383CR

Mode: : 2420 Band edge

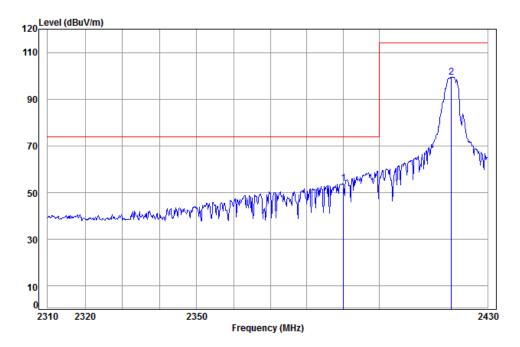
Ant Preamp Cable Read Limit 0ver Loss Factor Factor Level Level Line Limit dBuV dBuV/m dBuV/m MHz dB dB/m dB 5.34 28.57 38.11 57.69 53.49 74.00 -20.51 38.11 102.80 98.74 114.00 -15.26 2420.18 5.36 28.69



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Test mode:	Transmitting	Test channel:	Lowest	Remark:	Horizontal
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Condition: 3m Horizontal

Job No: : 2383CR

Mode: : 2420 Band edge

Cable Ant Preamp Read Limit 0ver Loss Factor Factor Limit MHz dBuV dBuV/m dBuV/m dB 38.11 58.04 53.84 74.00 -20.16 2390.00 5.34 28.57 5.36 28.69 38.11 103.58 99.52 114.00 -14.48 2 pp 2419.93

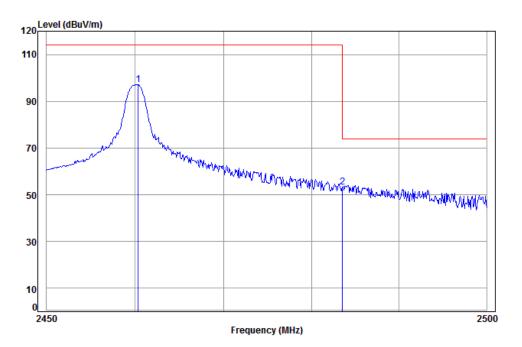




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Test mode: Transmitting Test channel: Highest Remark: Vertical



Condition: 3m Vertical Job No: : 2383CR

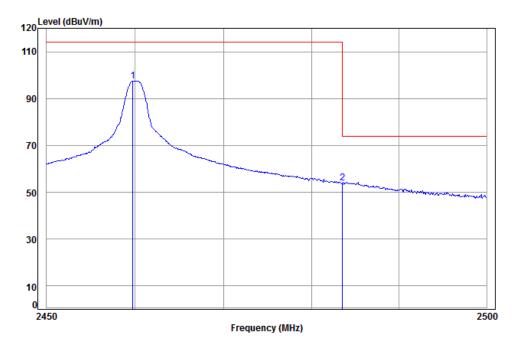
Mode: : 2460 Band edge

Cable Ant Preamp 0ver Read Limit Freq Loss Factor Factor MHz dB dB/m dBuV dBuV/m dBuV/m 2460.32 5.39 28.88 38.12 100.99 97.14 114.00 -16.86 2483.50 5.41 28.98 38.12 56.92 53.19 74.00 -20.81



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Condition: 3m Horizontal

Job No: : 2383CR

Mode: : 2460 Band edge

	Freq						Limit Line	
_	MHz	dB	dB/m	dB	dBuV	dBuV/m	dBuV/m	dB
	2459.72 2483.50							

Note:

The field strength is calculated by adding the Antenna Factor, Cable Factor & Preamplifier. The basic equation with a sample calculation is as follows:

Final Test Level = Receiver Reading + Antenna Factor + Cable Factor - Preamplifier Factor

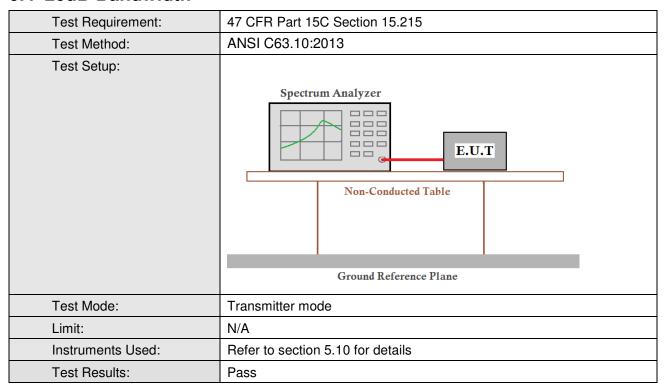
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6.4 20dB Bandwidth



Measurement Data

Test Channel	20dB bandwidth (MHz)	Results
Lowest	1.827	Pass
Middle	1.474	Pass
Highest	1.250	Pass

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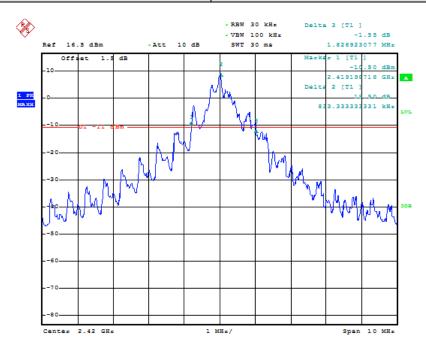


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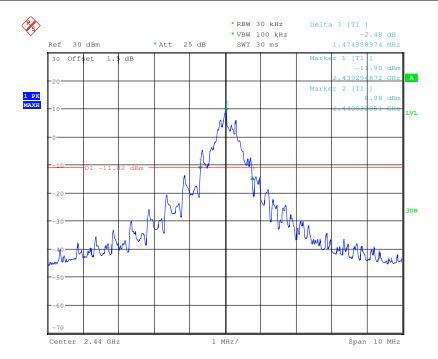
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Test plot as follows:

Test channel: Lowest



Test channel: Middle

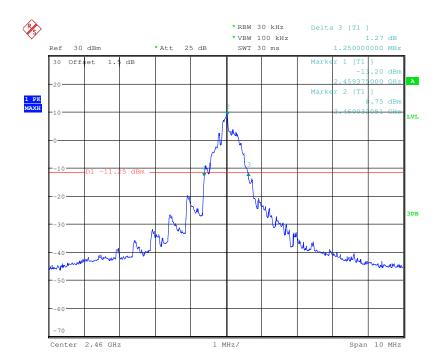




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Test channel: Highest



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7 Photographs

Test model No.: CX-10W-TX

7.1 Radiated Emission Test Setup



7.2 Radiated Spurious Emission Test Setup





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7.3 EUT Constructional Details

Refer to Appendix A - Photographs of EUT Constructional Details for SZEM1604002383CR.