

Report No.: SZEM150400177102

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# **FCC REPORT**

Application No.: SZEM1504001771CR

**Applicant:** Hobbico Inc.

Manufacturer/Factory: YITINFU ELECTRONICS TECHNOLOGY(SHENZHEN) CO.,LTD

Product Name: Radio controlled model quadcopter and transmitter/receiver

Model No.(EUT): VISTA 251 QUAD RTF

Add Model No.: MR100

Trade Mark: Dromida

FCC ID: IYFMR100

**Standards:** 47 CFR Part 15, Subpart C (2014)

**Date of Receipt:** 2015-04-17

**Date of Test:** 2015-04-20 to 2015-04-29

**Date of Issue:** 2015-05-08

Test Result: PASS \*

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

### 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.



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# 2 Version

Revision Record								
Version Chapter Date Modifier Remark								
00		2015-05-08		Original				

Authorized for issue by:				
Tested By	Eric Fu	2015-04-29		
	(Eric Fu) /Project Engineer	Date		
Prepared By	Jarole Chen	2015-05-08		
	(Jade Chen) /Clerk	Date		
Checked By	Emen-Li	2015-05-08		
	(Emen Li) /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 (2009)	PASS
Field Strength of the Fundamental Signal	47 CFR Part 15, Subpart C Section 15.249 (a)	ANSI C63.10 (2009)	PASS
Spurious Emissions 47 CFR Part 15, Subpart C Section 15.249 (a)/15.209		ANSI C63.10 (2009)	PASS
Restricted bands around fundamental frequency (Radiated Emission)	47 CFR Part 15, Subpart C Section 15.249(a)	ANSI C63.10 (2009)	PASS
20dB Occupied Bandwidth	47 CFR Part 15, Subpart C Section 15.215 (c)	ANSI C63.10 (2009)	PASS

Remark:

Model No.: VISTA 251 QUAD RTF, MR100.

There are three kinds of color samples for the model. Only the sample in section 7.1 was tested, since the electrical circuit design, layout, components used and internal wiring were identical for all above models. Only different on appearance color and model name for the marketing requirement.



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### 5 General Information

### 5.1 Client Information

Applicant:	Hobbico Inc.		
Address of Applicant:	2904 Research Rd, Champaign, IL USA 61826		
Manufacturer:	YITINFU ELECTRONICS TECHNOLOGY(SHENZHEN) CO.,LTD		
Address of Manufacturer:	3-7/F,Bldg E, jinxiongda Technological Park,Shangwei Villiage,		
	Zhangkengjin,Guanlan Town, Baoan District, Shenzhen 518110, China.		
Factory:	YITINFU ELECTRONICS TECHNOLOGY(SHENZHEN) CO.,LTD		
Address of Factory:	3-7/F,Bldg E, jinxiongda Technological Park,Shangwei Villiage,		
	Zhangkengjin,Guanlan Town, Baoan District, Shenzhen 518110, China.		

## 5.2 General Description of EUT

Product Name:	Radio controlled model quadcopter and transmitter/receiver			
Model No.:	VISTA 251 QUAD RTF			
Trade Mark :	Dromida			
Operating Frequency:	2403 MHz – 2473 MHz			
Modulation Type:	GFSK			
Number of Channels:	16 (declared by the client)			
Sample Type:	Portable production			
Antenna Type:	Integral			
Antenna Gain:	2dBi			
Power Supply:	TX: DC 6.0V (4*1.5V "AAA" Size battery)			
	RX: LiPo Battery DC 3.7V 850mAh			





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Operation Frequency each of channel								
Channel	Frequency	Channel	Frequency	Channel	Frequency			
1CH	2403 MHz	7CH	2432 MHz	13CH	2466 MHz			
2CH	2413 MHz	8CH	2435 MHz	14CH	2468 MHz			
3CH	2415 MHz	9CH	2440 MHz	15CH	2470 MHz			
4CH	2419 MHz	10CH	2453 MHz	16CH	2473 MHz			
5CH	2423 MHz	11CH	2456 MHz					
6CH	2430 MHz	12CH	2460 MHz					

#### Note:

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)	2403MHz
The Middle channel(CH9)	2440MHz
The Highest channel(CH16)	2473MHz



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### 5.3 Test Environment and Mode

Operating Environment:	Operating Environment:						
Temperature:	25.0 °C						
Humidity:	52 % RH						
Atmospheric Pressure:	1010 mbar						
Test mode:							
Transmitting mode:	Keep the EUT in transmitting mode with modulation.						

## 5.4 Description of Support Units

The EUT has been tested independently.

### 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.

#### VCCI

The 10m Semi-anechoic chamber and Shielded Room (7.5m x 4.0m x 3.0m) 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)

Two 3m Semi-anechoic chambers of SGS-CSTC Standards Technical Services Co., Ltd. have been registered by Certification and Engineering Bureau of Industry Canada for radio equipment testing with Registration No.: 4620C-1 & 4620C-2.

### 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.Due date (yyyy-mm-dd)		
1	3m Semi-Anechoic Chamber	ETS-LINDGREN	N/A	SEL0017	2016-05-13		
2	EMI Test Receiver	Agilent Technologies	N9038A	SEL0312	2015-09-16		
3	EMI Test software	AUDIX	E3	SEL0050	N/A		
4	BiConiLog Antenna (26-3000MHz)	ETS-LINDGREN	3142C	SEL0015	2015-10-24		
5	Double-ridged horn (1-18GHz)	ETS-LINDGREN	3117	SEL0006	2015-10-24		
6	Horn Antenna (18-26GHz)	ETS-LINDGREN	3160	SEL0076	2015-10-24		
7	Pre-amplifier (0.1-1300MHz)	Agilent Technologies	8447D	SEL0053	2016-05-13		
8	Pre-Amplifier (0.1-26.5GHz)	Compliance Directions Systems Inc.	PAP-0126	SEL0168	2015-10-24		
9	Coaxial cable	SGS	N/A	SEL0027	2016-05-13		
10	Coaxial cable	SGS	N/A	SEL0189	2016-05-13		
11	Coaxial cable	SGS	N/A	SEL0121	2016-05-13		
12	Coaxial cable	SGS	N/A	SEL0178	2016-05-13		
13	Band filter	Amindeon	82346	SEL0094	2016-05-13		
14	Barometer	Chang Chun	DYM3	SEL0088	2016-05-13		
15	DC Power Supply	Zhao Xin	RXN-305D	SEL0117	2015-10-24		
16	Humidity/ Temperature Indicator	Shanhai Qixiang	ZJ1-2B	SEL0103	2015-10-24		
17	Signal Generator (10M-27GHz)	Rohde & Schwarz	SMR27	SEL0067	2016-05-13		
18	Signal Generator	Rohde & Schwarz	SMY01	SEL0155	2015-10-24		
19	Loop Antenna	Beijing Daze	ZN30401	SEL0203	2016-05-13		



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	RF connected test							
Item Test Equipment		Manufacturer Model No.		Inventory No.	Cal.Due date (yyyy-mm-dd)			
1	DC Power Supply	Zhao Xin	RXN-305D	SEL0117	2015-10-24			
2	Humidity/ Temperature Indicator	HYGRO	ZJ1-2B	SEL0033	2015-10-24			
3	Spectrum Analyzer	Rohde & Schwarz	FSP	SEL0154	2015-10-24			
4	Coaxial cable	SGS	N/A	SEL0178	2016-05-13			
5	Coaxial cable	SGS	N/A	SEL0179	2016-05-13			
6	Barometer	ChangChun	DYM3	SEL0088	2016-05-13			
7	Signal Generator	Rohde & Schwarz	SML03	SEL0068	2016-04-25			
8	Band filter	amideon	82346	SEL0094	2016-05-13			
9	POWER METER	R&S	NRVS	SEL0144	2015-10-24			
10	Attenuator	Beijin feihang taida	TST-2-6dB	SEL0205	2016-04-25			
11	Power Divider(splitter)	Agilent Technologies	11636B	SEL0130	2015-10-24			

Note: The calibration interval is one year, all the instruments are valid.



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## 6 Test results and Measurement Data

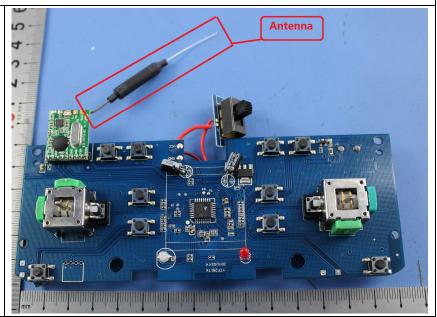
## 6.1 Antenna Requirement

**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.

#### **EUT Antenna:**



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 Spurious Emissions

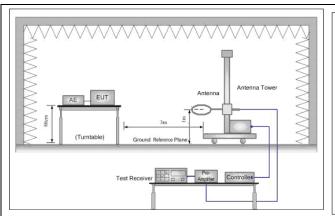
### 6.2.1 Spurious Emissions

Toot Poquirement:		n 15	240 and 15 20	10					
Test Requirement:	47 CFR Part 15C Section 15.249 and 15.209  ANSI C63.10: 2009								
Test Method: Test Site:	Measurement Distance: 3m (Semi-Anechoic Chamber)								
Receiver Setup:									
neceiver Setup.	Frequency		Detector	RBW		VBW	ŀ	Remark	
	0.009MHz-0.090MHz		Peak	10kHz		30KHz		Peak	
	0.009MHz-0.090MHz		Average	10kHz		30KHz		verage	
	0.090MHz-0.110MHz		Quasi-peak	10kHz		30KHz	QL	iasi-peak	
	0.110MHz-0.490MHz		Peak	10kHz		30KHz		Peak	
	0.110MHz-0.490MHz		Average	10kHz		30KHz		verage	
	0.490MHz -30MHz		Quasi-peak	10kHz		30kHz		ıasi-peak	
	30MHz-1GHz		Quasi-peak	100 kHz		300KHz	Qι	ıasi-peak	
	Above 1GHz		Peak	1MHz		3MHz		Peak	
			Peak	1MHz		10Hz	P	verage	
Limit: (Spurious Emissions)	Frequency	uency Field strength (microvolt/meter )		Limit (dBuV/m )		Remark		Measurement distance (m)	
	0.009MHz-0.490MHz	24	400/F (kHz)	-		-		300	
	0.490MHz-1.705MHz	24	1000/F (kHz)	-		-		30	
	1.705MHz-30MHz		30				30		
	30MHz-88MHz		100	40.	0	Quasi-peak		3	
	88MHz-216MHz		150	43.	5	Quasi-peak		3	
	216MHz-960MHz		200	46.	0	Quasi-peak		3	
	960MHz-1GHz		500	54.	0	Quasi-pea	k	3	
	Above 1GHz		500	54.0		Average		3	
	Note: 15.35(b), Unless otherwise specified, the limit on peak radio frequency emiss is 20dB above the maximum permitted average emission limit applicable to equipment under test. This peak limit applies to the total peak emission radiated by the device.								
Limit:	Frequency		Limit (dBuV/	m @3m)	Remark				
(Field strength of the	04001411 0400 51411			- ,		Average Value			
fundamental signal)	2400MHz-2483.5MH	Z	114.0	0		Peak Value			
Test Setup:									



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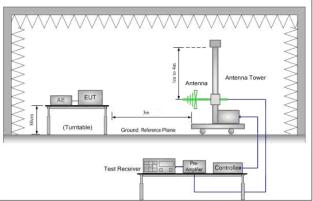


Figure 1. Below 30MHz

Figure 2. 30MHz to 1GHz

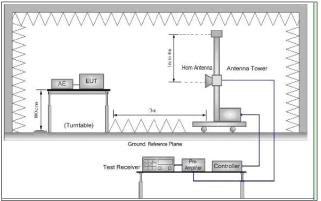


Figure 3. Above 1 GHz

#### Test Procedure:

- a. 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. The EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower.
- c. 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.
- d. 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.
- e. The test-receiver system was set to Peak Detect Function and Specified Bandwidth with Maximum Hold Mode.
- f. 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.
- g. Test the EUT in the lowest channel, the middle channel, the Highest channel
- h. 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.



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	i. Repeat above procedures until all frequencies measured was complete.
Instruments Used:	Refer to section 5.10 for details
Test Mode:	Transmitting mode
Test Results:	Pass

#### **Measurement Data**

### 6.2.1.1 Field Strength Of The Fundamental Signal

#### Peak 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)
2403	(db) 4.92	32.41	38.46	106.34	105.21	114.00	-8.79
2440	4.97	32.42	38.46	109.11	108.04	114.00	-5.96
2473	5.01	32.44	38.46	106.22	105.21	114.00	-8.79

Average 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)
2403	4.92	32.41	38.46	87.23	86.10	94.00	-7.90
2440	4.97	32.42	38.46	89.6	88.53	94.00	-5.47
2473	5.01	32.44	38.46	86.57	85.56	94.00	-8.42

#### Note:

Pre-scan all the Vertical and Horizontal polarity and found the Vertical polarity which is the worse case, so only the the data of Vertical polarity is shown in this report.



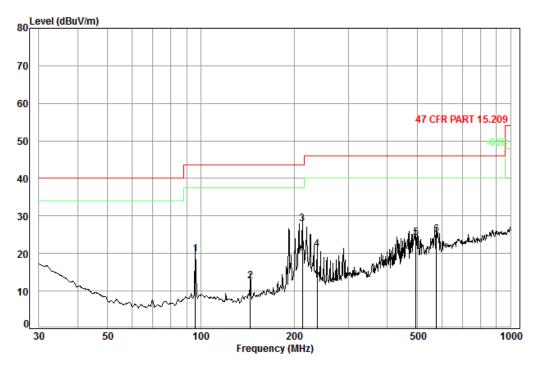
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### 6.2.1.2 Spurious Emissions

30MHz~1GHz		
Test mode:	Transmitting	Horizontal

#### QP value:



Condition: 47 CFR PART 15.209 3m 3142C Horizontal

Job No. : 1771CR Test mode: TX mode

	Freq			Preamp Factor				Over Limit
	MHz	dB	dB/m	dB	dBuV	dBuV/m	dBuV/m	dB
1	96.10	1.16	8.94	27.21	36.96	19.85	43.50	-23.65
2	144.33	1.31	8.49	26.94	29.89	12.75	43.50	-30.75
3	213.02	1.48	10.88	26.65	42.11	27.82	43.50	-15.68
4	237.48	1.61	11.90	26.57	34.17	21.11	46.00	-24.89
5	495.93	2.59	17.80	27.68	31.58	24.29	46.00	-21.71
6	576.64	2.68	19.15	27.57	30.74	25.00	46.00	-21.00

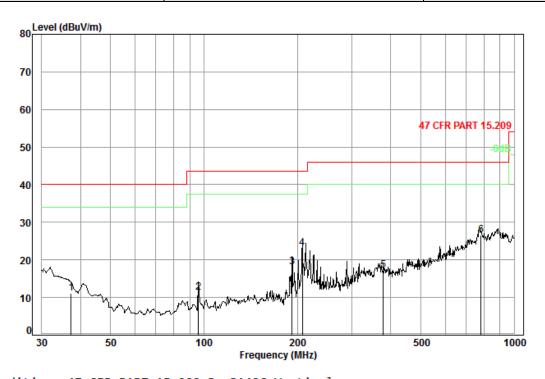




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Test mode: Transmitting Vertical



Condition: 47 CFR PART 15.209 3m 3142C Vertical

Job No. : 1771CR 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	37.29	0.60	14.62	27.33	23.15	11.04	40.00	-28.96
2	96.10	1.16	8.94	27.21	28.37	11.26	43.50	-32.24
3	192.42	1.39	10.12	26.73	33.24	18.02	43.50	-25.48
4	207.85	1.45	10.61	26.67	37.71	23.10	43.50	-20.40
5	378.58	2.14	16.04	26.99	25.93	17.12	46.00	-28.88
6	782.35	3.15	22.03	27.32	28.79	26.65	46.00	-19.35



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4011										
Above 1GHz	<u>.                                    </u>									
Test mode:		Tran	smitting	Test cha	Test channel: Lowest				Horizontal	
Frequency (MHz)		ble ss B)	Antenna Factor (dB/m)	Preamp Factor (dB)	Read Level (dBuV)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)		
3442.058	7.0	80	32.83	38.72	45.94	47.13	74	-26.87	<sup>7</sup> Peak	
3442.058	7.0	80	32.83	38.72	26.58	27.77	54	-26.23	3 Average	
4806.000	6.4	42	34.71	39.24	61.52	63.41	74	-10.59	Peak	
4806.000	6.4	42	34.71	39.24	42.68	44.57	54	-9.43	Average	
6025.661	8.0	07	36.27	39.18	45.97	51.13	74	-22.87	<sup>7</sup> Peak	
6025.661	8.0	07	36.27	39.18	27.24	32.40	54	-21.60	) Average	
7209.000	8.8	93	35.63	39.07	51.78	57.27	74	-16.73	B Peak	
7209.000	8.8	93	35.63	39.07	32.54	38.03	54	-15.97	7 Average	
9612.000	9.9	99	37.34	37.93	43.40	52.80	74	-21.20	) Peak	
9612.000	9.9	99	37.34	37.93	25.36	34.76	54	-19.24	Average	
11505.210	10.	.39	38.23	38.47	24.98	35.13	54	-18.87	7 Average	
11505.210	10.	.39	38.23	38.47	43.81	53.96	74	-20.04	Peak	

Test mode:	Tran	nsmitting	Test chai	nnel:	Lowest	Remark:		Vertical
Frequency (MHz)	Cable Loss (dB)	Antenna Factor (dB/m)	Preamp Factor (dB)	Read Level (dBuV)	(dRuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	Remak
3700.306	6.85	33.08	38.83	47.79	48.89	74	-25.11	Peak
3700.306	6.85	33.08	38.83	28.54	29.64	54	-24.36	Average
4806.000	6.42	34.71	39.24	63.47	65.36	74	-8.64	Peak
4806.000	6.42	34.71	39.24	44.58	46.47	54	-7.53	Average
6025.661	8.07	36.27	39.18	46.34	51.50	74	-22.50	Peak
6025.661	8.07	36.27	39.18	27.51	32.67	54	-21.33	Average
7209.000	8.93	35.63	39.07	53.40	58.89	74	-15.11	Peak
7209.000	8.93	35.63	39.07	34.56	40.05	54	-13.95	Average
9612.000	9.99	37.34	37.93	42.39	51.79	74	-22.21	Peak
9612.000	9.99	37.34	37.93	23.14	32.54	54	-21.46	Average
11112.540	10.31	38.11	38.28	43.78	53.92	74	-20.08	Peak
11112.540	10.31	38.11	38.28	25.12	35.26	54	-18.74	Average



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Test mode:	Tran	smitting	Test char	nnel:	Mic	ddle	Remark:		Но	rizontal
Frequency (MHz)	Cable Loss (dB)	Antenna Factor (dB/m)	Preamp Factor (dB)	Read Leve (dBu\	l	Level (dBuV/m)	Limit Line (dBuV/m)	Ove Lim (dB	it	Remak
3482.133	7.00	32.87	38.73	45.63	3	46.77	74	-27.2	23	Peak
3482.133	7.00	32.87	38.73	26.54	1	27.68	54	-26.3	32	Average
4880.000	6.58	34.78	39.26	42.03	3	44.13	54	-9.8	7	Average
4880.000	6.58	34.78	39.26	61.02	2	63.12	74	-10.8	88	Peak
5999.562	8.08	36.30	39.18	27.34	1	32.54	54	-21.4	46	Average
5999.562	8.08	36.30	39.18	46.32	2	51.52	74	-22.4	18	Peak
7320.000	9.07	35.51	39.06	34.2	1	39.73	54	-14.2	27	Average
7320.000	9.07	35.51	39.06	53.20	)	58.72	74	-15.2	28	Peak
9760.000	9.90	37.80	37.84	41.8	1	51.67	74	-22.3	33	Peak
9760.000	9.90	37.80	37.84	22.2	1	32.07	54	-21.9	93	Average
11656.010	10.46	38.36	38.54	24.53	3	34.81	54	-19.1	19	Average
11656.010	10.46	38.36	38.54	43.73	3	54.01	74	-19.9	99	Peak

Test mode:	Tra	nsmitting	Test chai	nnel:	Middle	Remark:	,	Vertical
Frequency (MHz)	Cable Loss (dB)	Antenna Factor (dB/m)	Preamp Factor (dB)	Read Level (dBuV)	(dRuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	Remak
3512.494	6.96	32.91	38.75	45.80	46.92	74	-27.08	Peak
3512.494	6.96	32.91	38.75	26.32	27.44	54	-26.56	Average
4880.000	6.58	34.78	39.26	61.81	63.91	74	-10.09	Peak
4880.000	6.58	34.78	39.26	42.56	44.66	54	-9.34	Average
6034.386	8.07	36.26	39.18	46.32	51.47	74	-22.53	Peak
6034.386	8.07	36.26	39.18	27.56	32.71	54	-21.29	Average
7320.000	9.07	35.51	39.06	51.13	56.65	74	-17.35	Peak
7320.000	9.07	35.51	39.06	32.15	37.67	54	-16.33	Average
9760.000	9.90	37.80	37.84	41.63	51.49	74	-22.51	Peak
9760.000	9.90	37.80	37.84	22.31	32.17	54	-21.83	Average
11689.790	10.47	38.39	38.56	24.76	35.06	54	-18.94	Average
11689.790	10.47	38.39	38.56	43.87	54.17	74	-19.83	Peak



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Test mode:	Trar	nsmitting	Test chai	nnel:	Highest	Remark:		Horizontal
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)	Remak
3743.387	6.83	33.11	38.85	46.00	47.09	74	-26.91	Peak
3743.387	6.83	33.11	38.85	26.58	27.67	54	-26.33	Average
4946.000	6.73	34.85	39.28	61.97	64.27	74	-9.73	Peak
4946.000	6.73	34.85	39.28	42.64	44.94	54	-9.06	Average
6095.816	8.06	36.19	39.17	45.93	51.01	74	-22.99	Peak
6095.816	8.06	36.19	39.17	26.87	31.95	54	-22.05	Average
7419.000	9.20	35.43	39.05	50.67	56.25	74	-17.75	Peak
7419.000	9.20	35.43	39.05	31.58	37.16	54	-16.84	Average
9892.000	9.83	38.19	37.76	42.36	52.62	74	-21.38	Peak
9892.000	9.83	38.19	37.76	23.64	33.90	54	-20.10	Average
11455.380	10.38	38.19	38.45	45.19	55.31	74	-18.69	Peak
11455.380	10.38	38.19	38.45	27.24	37.36	54	-16.64	Average

Test mode:	Tran	smitting	Test chai	nnel:	Highest	Remark:	'	/ertical
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)	Remak
3442.058	7.08	32.83	38.72	45.86	47.05	74	-26.95	Peak
3442.058	7.08	32.83	38.72	26.54	27.73	54	-26.27	Average
4946.000	6.73	34.85	39.28	60.97	63.27	74	-10.73	Peak
4946.000	6.73	34.85	39.28	41.55	43.85	54	-10.15	Average
6095.816	8.06	36.19	39.17	45.93	51.01	74	-22.99	Peak
6095.816	8.06	36.19	39.17	26.54	31.62	54	-22.38	Average
7419.000	9.20	35.43	39.05	52.67	58.25	74	-15.75	Peak
7419.000	9.20	35.43	39.05	33.25	38.83	54	-15.17	Average
9892.000	9.83	38.19	37.76	42.35	52.61	74	-21.39	Peak
9892.000	9.83	38.19	37.76	23.50	33.76	54	-20.24	Average
11455.380	10.38	38.19	38.45	45.19	55.31	74	-18.69	Peak
11455.380	10.38	38.19	38.45	26.24	36.36	54	-17.64	Average

#### 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.



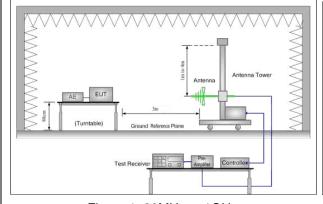
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# 6.3 Restricted bands around fundamental frequency

Test Requirement:	47 CFR Part 15C Section 15.209				
Test Method:	ANSI C63.10: 2009				
Test site:	Measurement Distance: 3m	Measurement Distance: 3m (Semi-Anechoic Chamber)			
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		
	Above 1GHz	54.0	Average Value		
	Above IGHZ	74.0	Peak Value		
Test Setup:					





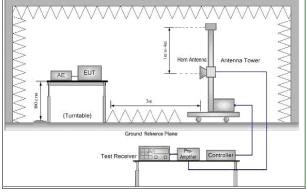


Figure 1. 30MHz to 1GHz

Figure 2. Above 1 GHz



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Test Procedure:	<ul> <li>a. 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.</li> <li>b. The EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower.</li> <li>c. 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.</li> <li>d. 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.</li> <li>e. The test-receiver system was set to Peak Detect Function and Specified Bandwidth with Maximum Hold Mode.</li> <li>f. 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</li> <li>g. Test the EUT in the lowest channel, the Highest channel</li> <li>h. 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</li> <li>i. Repeat above procedures until all frequencies measured was</li> </ul>		
	complete.		
Instruments Used:	Refer to section 5.10 for details		
Test Mode:	Transmitting mode		
Test Results:	Pass		

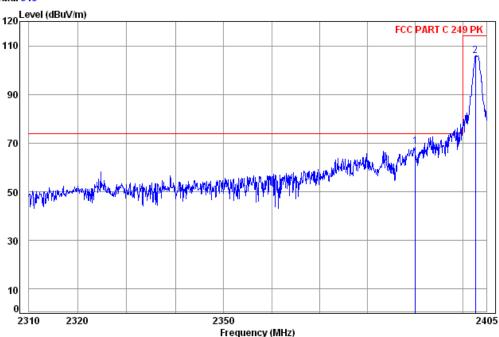


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Band edge (Radiated Emission)						
Test mode:	Transmitting	Test channel:	Lowest	Remark:	Peak	Horizontal





Site : chamber

Condition: FCC PART C 249 PK 3m Horizontal

Job No: : 1771CR

Mode: : 2403 Band edge

Ant Preamp Cable Read Limit 0ver Loss Factor Factor Line Limit Freq Level Level MHz dΒ dB/m dΒ dBuV dBuV/m dBuV/m dΒ 1 pp 2390.00 4.90 32.35 38.46 69.75 68.54 74.00 -5.46 2402.68 4.92 32.41 38.46 106.93 105.80 114.00 -8.20

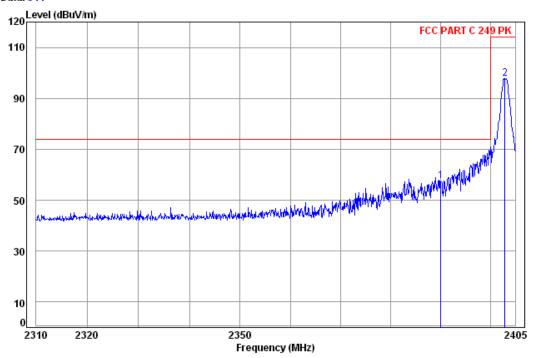


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Test mode: Transmitting Test channel: Lowest Remark: Peak Vertical





Site : chamber

Condition: FCC PART C 249 PK 3m Vertical

Job No: : 1771CR

Mode: : 2403 Band edge

Cable Ant Preamp Read Limit 0∨er Freq Loss Factor Factor Level Level Line Limit MHz dΒ dBuV dBuV/m dBuV/m dB/m dΒ 38.46 58.78 57.57 74.00 -16.43 4.90 32.35 4.92 32.41 38.46 98.75 97.62 114.00 -16.38 2 pp 2402.97

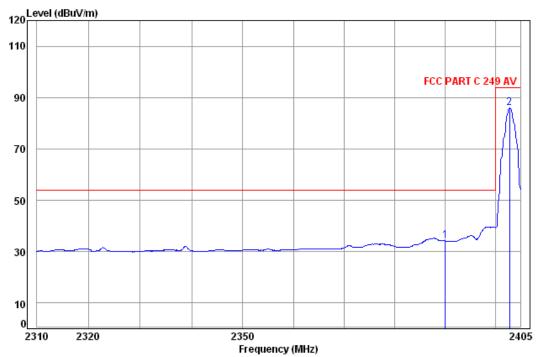


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Test mode: Transmitting Test channel: Lowest Remark: Average Horizontal





Site : chamber

Condition: FCC PART C 249 AV 3m Horizontal

Job No: : 1771CR

Mode: : 2403 Band edge

Ant Preamp 0∨er Cable Read Limit Freq Loss Factor Factor Level Le∨el Line Limit MHz dBuV dBuV/m dBuV/m dΒ dB/m dΒ dΒ 2390.00 4.90 32.35 38.46 35.51 34.30 54.00 -19.70 2402.87 4.92 32.41 38.46 87.01 85.88 94.00 -8.12

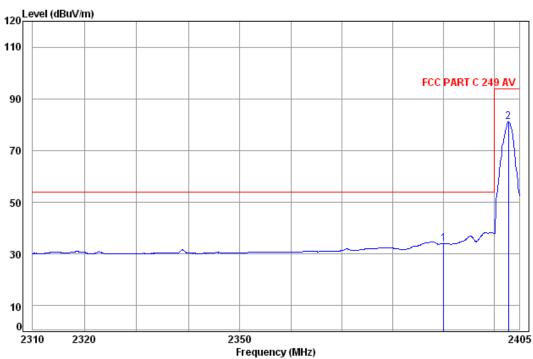


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Test mode: Transmitting Test channel: Lowest Remark: Average Vertical

Data: 297



Site : chamber

Condition: FCC PART C 249 AV 3m Vertical

Job No: : 1771CR

Mode: : 2403 Band edge

Cable Ant Preamp Read Limit 0∨er Loss Factor Factor Level Level Line Limit MHz dΒ dB/m dBuV dBuV/m dBuV/m 2390.00 4.90 32.35 38.46 35.35 34.14 54.00 -19.86 4.92 32.41 38.46 82.16 81.03 94.00 -12.97 2 pp 2402.87

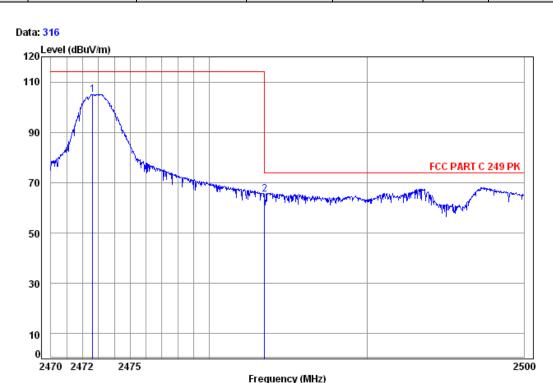




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Test mode: Transmitting Test channel: Highest Remark: Peak Horizontal



Site : chamber

Condition: FCC PART C 249 PK 3m Horizontal

Job No: : 1771CR

Mode: : 2473 Band edge

Cable Ant Preamp Read Limit 0ver Loss Factor Factor Le∨el Level Limit MHz dB/m dBuV dBuV/m dBuV/m 2472.63 5.01 32.44 38.46 106.05 105.04 114.00 2483.50 5.03 32.44 38.47 66.48 65.48 74.00

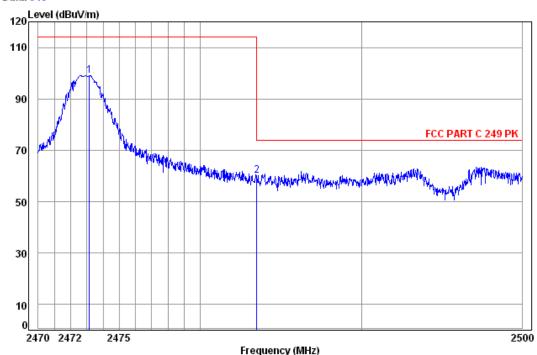


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Test mode: Transmitting Test channel: Highest Remark: Peak Vertical





Site : chamber

Condition: FCC PART C 249 PK 3m Vertical

Job No: : 1771CR

Mode: : 2473 Band edge

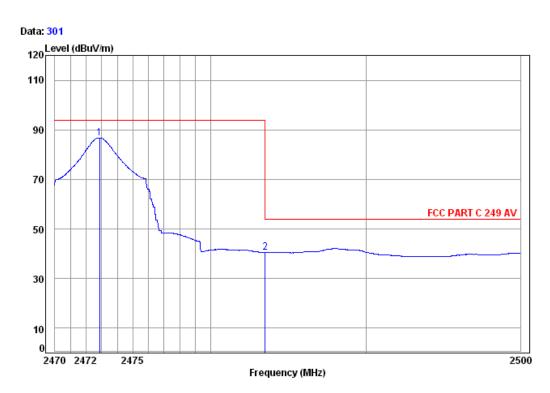
0∨er Ant Preamp Cable Read Limit Freq Loss Factor Factor Level Level Line Limit MHz dBuV dBuV/m dBuV/m dΒ dB/m dB dB 5.01 32.44 38.46 100.03 99.02 114.00 -14.98 2473.16 2483.50 5.03 32.44 38.47 61.13 60.13 74.00 -13.87



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Test mode: Transmitting Test channel: Highest Remark: Average Horizontal



Site : chamber

Condition: FCC PART C 249 AV 3m Horizontal

Job No: : 1771CR

Mode: : 2473 Band edge

Cable Ant Preamp Read Limit 0ver Freq Loss Factor Factor Level Level Line Limit MHz dBuV dBuV/m dBuV/m dΒ dB/m dΒ 32.44 38.46 87.81 86.80 94.00 -7.20 2472.86 5.01 2483.50 5.03 32.44 38.47 41.44 40.44 54.00 -13.56

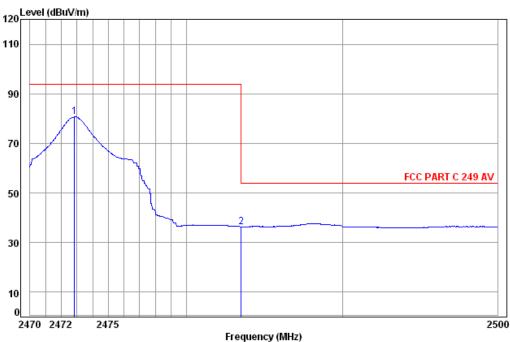


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Test mode: **Transmitting** Test channel: Highest Remark: Average Vertical





Site : chamber

Condition: FCC PART C 249 AV 3m Vertical

Job No: : 1771CR

Mode: : 2473 Band edge

	Freq			Preamp Factor				
-	MHz	dB	dB/m	dB	dBuV	dBuV/m	dBuV/m	dB
• • •	2472.83 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:

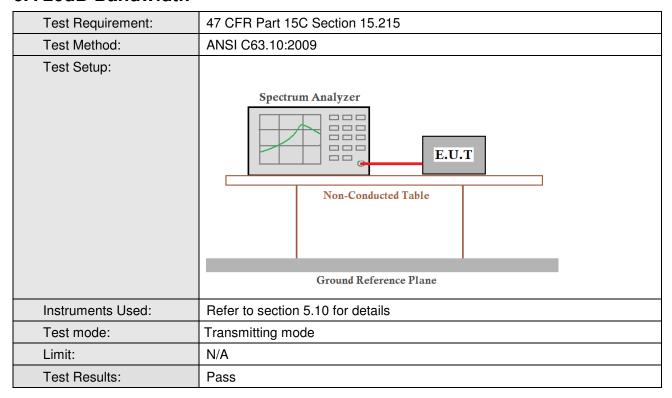
Final Test Level =Receiver Reading + Antenna Factor + Cable Factor - Preamplifier Factor



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### 6.4 20dB Bandwidth



### **Measurement Data**

Test channel	20dB bandwidth (MHz)	Results
Lowest	1.750	Pass
Middle	0.827	Pass
Highest	1.990	Pass

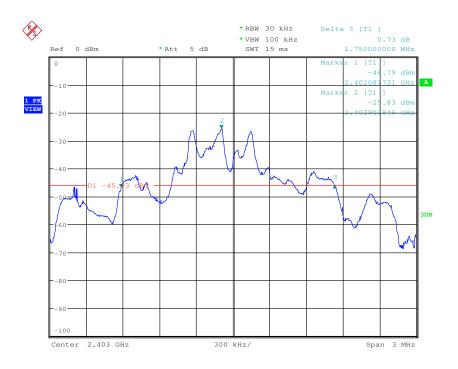


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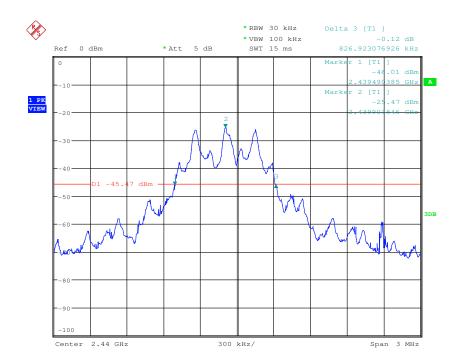
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### Test plot as follows:

Test channel: Lowest



Test channel: Middle

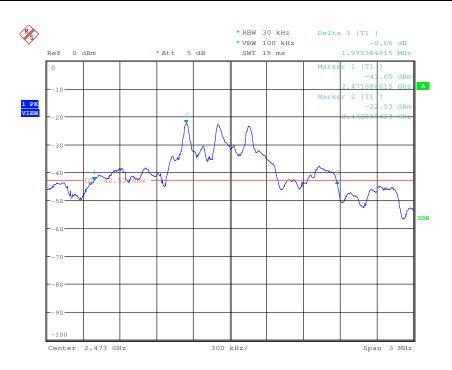




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Test channel: Highest





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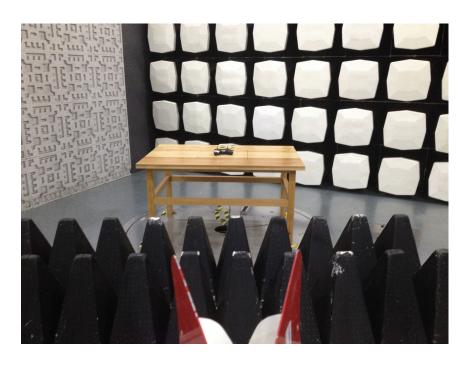
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# 7 Photographs

Test model No.: VISTA 251 QUAD RTF

## 7.1 Radiated Emission Test Setup







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### 7.2 EUT Constructional Details

Refer to Appendix A - Photographs of EUT Constructional Details for SZEM1504001771CR.