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Report No.: SZEM120300124701
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FCC REPORT

Application No.: SZEM1203001247RF
Applicant: Edifier International Limited
Manufacturer: Beijing Edifier Technology Co., Ltd.
Factory: Dongguan Edifier Technology Co., Ltd.
Product Name: Multimedia Speaker
Model No.(EUT): RC30B
FCC ID: Z9G-EDF05
Standards: FCC CFR Title 47 Part 15 (2010)
Date of Receipt: 2012-03-22
Date of Test: 2012-04-03 to 2012-04-16
Date of Issue: 2012-04-25

Test Result :	PASS *
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. * 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 Test

Summary

Test Item	Test Requirement	Test method	Result
Antenna Requirement	FCC CFR Title 47 Part 15C Section 15.203	ANSI C63.10(2009)	PASS
AC Power Line Conducted Emission	FCC CFR Title 47 Part 15C Section 15.207	ANSI C63.10(2009)	PASS
Field Strength of the Fundamental Signal	FCC CFR Title 47 Part 15C Section 15.231 (b)	ANSI C63.10(2009)	PASS
Spurious Emissions	FCC CFR Title 47 Part 15C Section 15.231 (b)/15.209	ANSI C63.10(2009)	PASS
20dB Bandwidth	FCC CFR Title 47 Part 15C Section 15.231 (c)	ANSI C63.10(2009)	PASS
Dwell Time	FCC CFR Title 47 Part 15C Section 15.231 (a)	ANSI C63.10(2009)	PASS

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4 General Information

4.1 Client Information

Applicant:	Edifier International Limited
Address of Applicant:	Room 2207-9, Tower Two, Lippo Centre 89 Queensway, HongKong
Manufacturer:	Beijing Edifier Technology Co., Ltd.
Address of Manufacturer:	No.68 Beishihuanxilu Haidian District, Beijing 100080, China
Factory:	Dongguan Edifier Technology Co., Ltd.
Address of Factory:	No.2 Gongyedong Road, Songshan Lake Sci&Tech Industry Park, Dongguan, Guangdong 523808, PR.China

4.2 General Description of EUT

Name:	Multimedia Speaker
Model No.:	RC30B
Trade Mark:	EDIFIER
Sample Type:	Mobile production
Operation Frequency:	433.960MHz
Channel Numbers:	1
Modulation Type:	ASK
Antenna Type:	Integral
Antenna Gain:	0dBi
Power Supply:	-JY622530-350mAh 3.7V 1.295Wh +110325
Test Voltage:	3.7V





4.3 Test Environment and Mode

Operating Environment:	
Temperature:	25.0 °C
Humidity:	51 % RH
Atmospheric Pressure:	1008 mbar
Test mode:	
Transmitting mode:	Let the EUT transmit continually.

4.4 Description of Support Units

The EUT has been tested with associated equipment below.

Description	Manufacturer	Model No.
Adapter	Edifier	ADT-0505USB CH

4.5 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.



4.6 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 3m Semi-anechoic chamber, Full-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.: R-2197, G-416, 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 3m Semi-anechoic chamber of SGS-CSTC Standards Technical Services Co., Ltd. has been registered by Certification and Engineering Bureau of Industry Canada for radio equipment testing with Registration No.: 4620C-1.

4.7 Deviation from Standards

None.

4.8 Abnormalities from Standard Conditions

None.

4.9 Other Information Requested by the Customer

None.



4.10 Test Instruments 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	2012-06-10
2	EMI Test Receiver	Rohde & Schwarz	ESIB26	SEL0023	2012-05-26
3	EMI Test software	AUDIX	E3	SEL0050	N/A
4	Coaxial cable	SGS	N/A	SEL0028	2012-05-29
5	BiConiLog Antenna (26-3000MHz)	ETS-LINDGREN	3142C	SEL0015	2012-10-29
6	Double-ridged horn (1-18GHz)	ETS-LINDGREN	3117	SEL0006	2012-10-29
7	Pre-amplifier (0.1-1300MHz)	Agilent Technologies	8447D	SEL0053	2012-05-26

Conducted Emission					
Item	Test Equipment	Manufacturer	Model No.	Inventory No.	Cal.Due date (yyyy-mm-dd)
1	Shielding Room	ZhongYu Electron	GB-88	SEL0042	2012-06-10
2	Two-Line V-Network	ETS-LINDGREN	3816/2	SEL0021	2012-05-26
3	LISN	Rohde & Schwarz	ENV216	SEL0152	2012-10-23
4	EMI Test Receiver	Rohde & Schwarz	ESCI	SEL0022	2012-05-26
5	Coaxial Cable	SGS	N/A	SEL0024	2012-05-29

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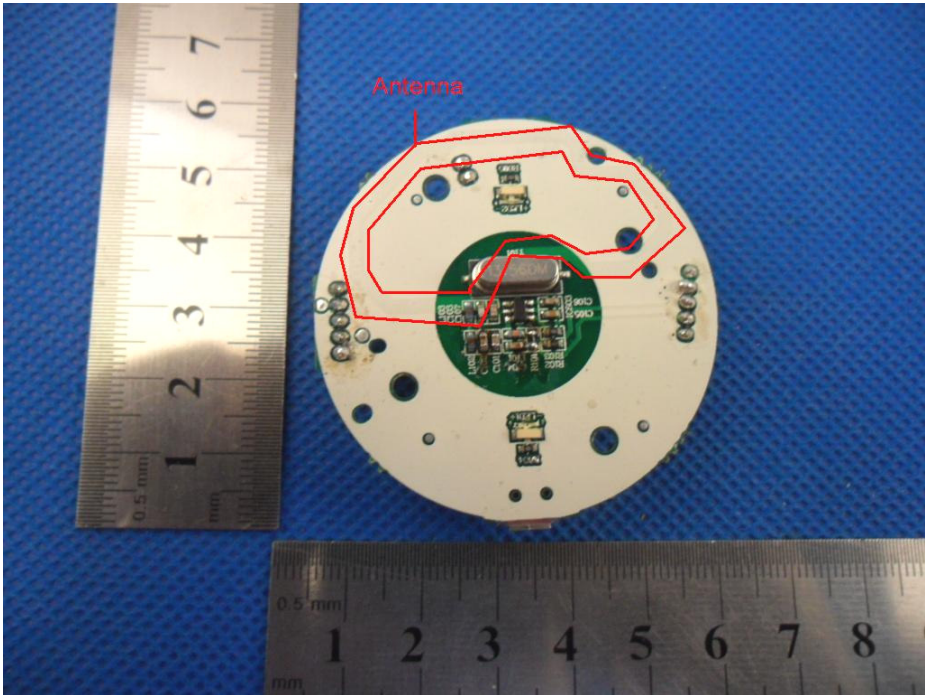
General used equipment					
Item	Test Equipment	Manufacturer	Model No.	Inventory No.	Cal.Due date (yyyy-mm-dd)
1	Humidity/ Temperature Indicator	Shanghai	ZJ1-2B	SEL0102 to SEL0103	2012-10-27
2	Humidity/ Temperature Indicator	Shanghai	ZJ1-2B	SEL0101	2012-10-27
3	Barometer	ChangChun	DYM3	SEL0088	2012-05-18

RF conducted					
Item	Test Equipment	Manufacturer	Model No.	Inventory No.	Cal.Due date (yyyy-mm-dd)
1	Spectrum Analyzer	Rohde & Schwarz	FSP 30	SEL0154	2012-10-23
2	Coaxial cable	SGS	N/A	SEL0028	2012-05-29

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5 Test results and Measurement Data

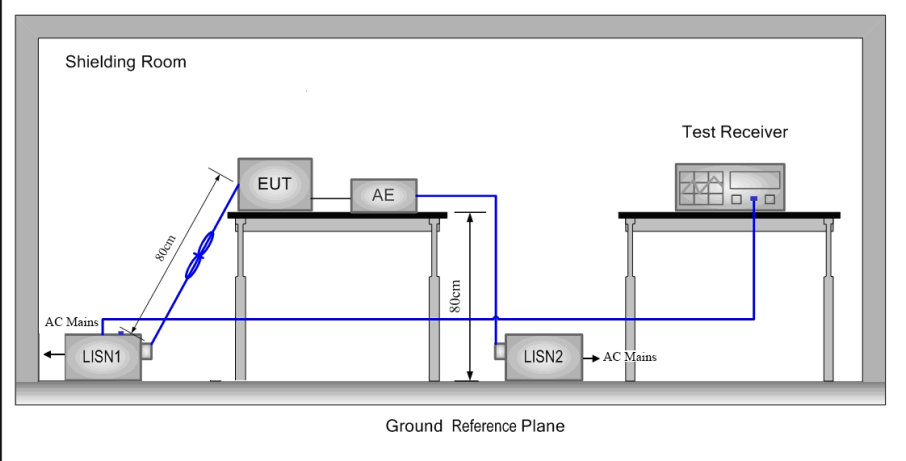
5.1 Antenna Requirement

Standard requirement:	FCC Part15 C Section 15.203
<p>15.203 requirement:</p> <p>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.</p>	
EUT Antenna:	
<p>The antenna is integrated on the main PCB and no consideration of replacement. The best case gain of the antenna is 0dBi.</p>	
	



5.2 Conducted Emissions

Test Requirement:	FCC Part15 C Section 15.207		
Test Method:	ANSI C63.10: 2009		
Test Frequency Range:	150kHz to 30MHz		
Limit:	Frequency range (MHz)	Limit (dBuV)	
		Quasi-peak	Average
	0.15-0.5	66 to 56*	56 to 46*
	0.5-5	56	46
	5-30	60	50
* Decreases with the logarithm of the frequency.			
Test Procedure:	<ol style="list-style-type: none"> 1) The mains terminal disturbance voltage test was conducted in a shielded room. 2) The EUT was connected to AC power source through a LISN 1 (Line Impedance Stabilization Network) which provides a 50Ω/50μH + 5Ω linear impedance. The power cables of all other units of the EUT were connected to a second LISN 2, which was bonded to the ground reference plane in the same way as the LISN 1 for the unit being measured. A multiple socket outlet strip was used to connect multiple power cables to a single LISN provided the rating of the LISN was not exceeded. 3) The tabletop EUT was placed upon a non-metallic table 0.8m above the ground reference plane. And for floor-standing arrangement, the EUT was placed on the horizontal ground reference plane, 4) The test was performed with a vertical ground reference plane. The rear of the EUT shall be 0.4 m from the vertical ground reference plane. The vertical ground reference plane was bonded to the horizontal ground reference plane. The LISN 1 was placed 0.8 m from the boundary of the unit under test and bonded to a ground reference plane for LISNs mounted on top of the ground reference plane. This distance was between the closest points of the LISN 1 and the EUT. All other units of the EUT and associated equipment was at least 0.8 m from the LISN 2. 5) In order to find the maximum emission, the relative positions of equipment and all of the interface cables must be changed according to ANSI C63.10: 2009 on conducted measurement. 		

<p>Test Setup:</p>	
<p>Test Mode:</p>	<p>Transmitting mode</p>
<p>Instruments Used:</p>	<p>Refer to section 4.10 for details</p>
<p>Test Results:</p>	<p>Pass</p>

Measurement Data

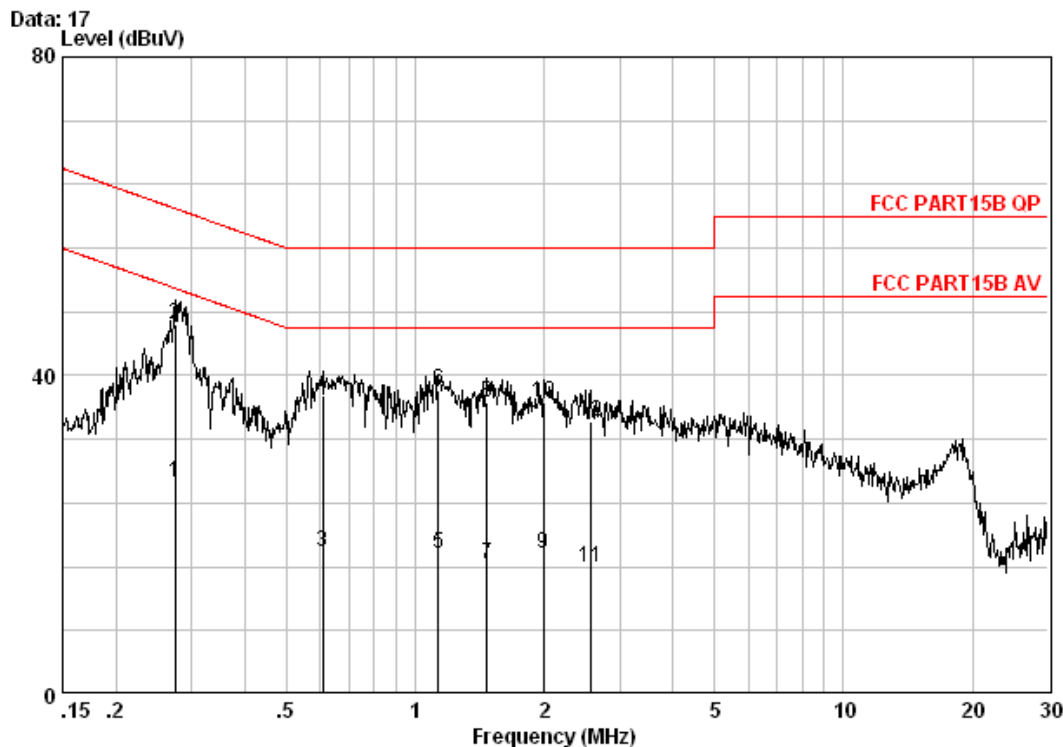
An initial pre-scan was performed on the live and neutral lines with peak detector.

Quasi-Peak and Average measurement were performed at the frequencies with maximized peak emission were detected.

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Live Line:



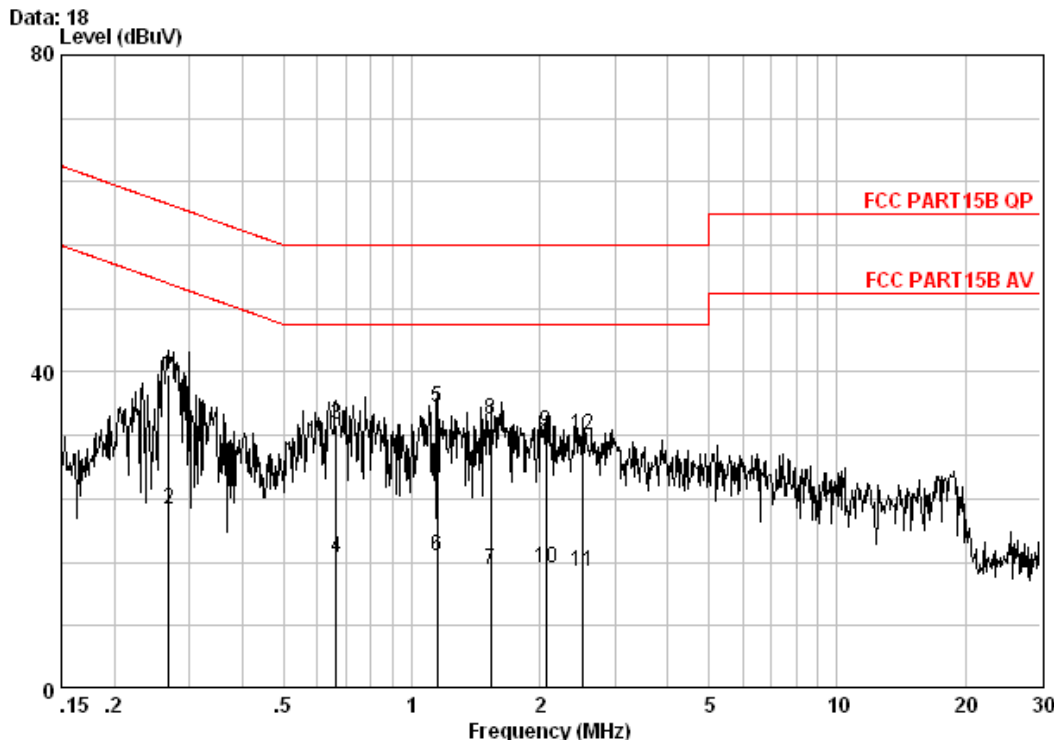
Site : Shielding Room
Condition : FCC PART15B QP CE-20101216 LINE
Job No. : 1247RF
Mode : TX

	Freq	Cable Loss	LISN Factor	Read Level	Level	Limit Line	Over Limit	Remark
	MHz	dB	dB	dBuV	dBuV	dBuV	dB	
1	0.27442	0.05	9.60	16.88	26.52	50.98	-24.46	AVERAGE
2	0.27442	0.05	9.60	36.76	46.41	60.98	-14.57	QP
3	0.60752	0.06	9.66	8.21	17.92	46.00	-28.08	AVERAGE
4	0.60752	0.06	9.66	27.81	37.53	56.00	-18.47	QP
5	1.129	0.09	9.70	7.96	17.74	46.00	-28.26	AVERAGE
6	1.129	0.09	9.70	28.33	38.12	56.00	-17.88	QP
7	1.472	0.10	9.70	6.64	16.44	46.00	-29.56	AVERAGE
8	1.472	0.10	9.70	26.82	36.62	56.00	-19.38	QP
9	1.991	0.12	9.70	7.74	17.55	46.00	-28.45	AVERAGE
10	1.991	0.12	9.70	26.71	36.53	56.00	-19.47	QP
11	2.567	0.13	9.73	6.06	15.92	46.00	-30.08	AVERAGE
12	2.567	0.13	9.73	24.34	34.20	56.00	-21.80	QP

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Neutral Line:



Site : Shielding Room
Condition : FCC PART15B QP CE-20101216 NEUTRAL
Job No. : 1247RF
Mode : TX

	Freq	Cable Loss	LISN Factor	Read Level	Level	Limit Line	Over Limit	Remark
	MHz	dB	dB	dBuV	dBuV	dBuV	dB	
1	0.26866	0.05	9.60	29.99	39.64	61.16	-21.52	QP
2	0.26866	0.05	9.60	13.08	22.73	51.16	-28.43	AVERAGE
3	0.66478	0.06	9.68	23.69	33.43	56.00	-22.57	QP
4	0.66478	0.06	9.68	6.79	16.53	46.00	-29.47	AVERAGE
5	1.147	0.09	9.70	25.67	35.46	56.00	-20.54	QP
6	1.147	0.09	9.70	6.92	16.71	46.00	-29.29	AVERAGE
7	1.535	0.10	9.70	5.32	15.12	46.00	-30.88	AVERAGE
8	1.535	0.10	9.70	24.13	33.93	56.00	-22.07	QP
9	2.066	0.12	9.70	22.67	32.49	56.00	-23.51	QP
10	2.066	0.12	9.70	5.51	15.34	46.00	-30.66	AVERAGE
11	2.513	0.13	9.72	4.87	14.72	46.00	-31.28	AVERAGE
12	2.513	0.13	9.72	22.27	32.12	56.00	-23.88	QP

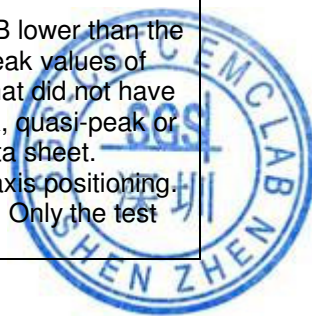
Notes:

1. The following Quasi-Peak and Average measurements were performed on the EUT:
2. Final Test Level = Receiver Reading + LISN Factor + Cable Loss.

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5.3 Spurious Emissions

5.3.1 Spurious Emissions				
Test Requirement:	FCC Part15 C Section 15.231(b) and 15.209			
Test Method:	ANSI C63.10: 2009			
Test Site:	Measurement Distance: 3m (Semi-Anechoic Chamber)			
Receiver Setup:	Frequency	Detector	RBW	VBW
	30MHz-1GHz	Quasi-peak	100kHz	300kHz
	Above 1GHz	Peak	1MHz	3MHz
Limit: (Field strength of the fundamental signal)	Frequency	Limit (dBuV/m @3m)		Remark
	433.92MHz	80.8		Average Value
		100.8		Peak Value
Limit: (Spurious Emissions)	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
74.0		Peak Value		
Or The maximum permitted unwanted emission level is 20 dB below the maximum permitted fundamental level whichever limit permits a higher field strength.				
Test Procedure:	<p>a. The EUT was placed on the top of a rotating table 0.8 meters above the ground at a 3 meter semi-anechoic chamber. The table was rotated 360 degrees to determine the position of the highest radiation.</p> <p>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.</p> <p>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.</p> <p>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.</p> <p>e. The test-receiver system was set to Peak Detect Function and Specified Bandwidth with Maximum Hold Mode.</p> <p>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.</p> <p>g. The radiation measurements are performed in X, Y, Z axis positioning. And found the X axis positioning which it is worse case. Only the test worst case mode is recorded in the report.</p>			



Test Setup:	
Test Mode:	Transmitting mode
Instruments Used:	Refer to section 4.10 for details
Test Results:	Pass

Measurement Data

5.3.1.1 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)	polarization
433.960	2.35	16.59	27.33	86.88	78.48	100.83	-22.35	Horizontal
433.960	2.35	16.59	27.33	88.62	80.22	100.83	-20.61	Vertical

Remark:

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 peak measurements were shown in the report.

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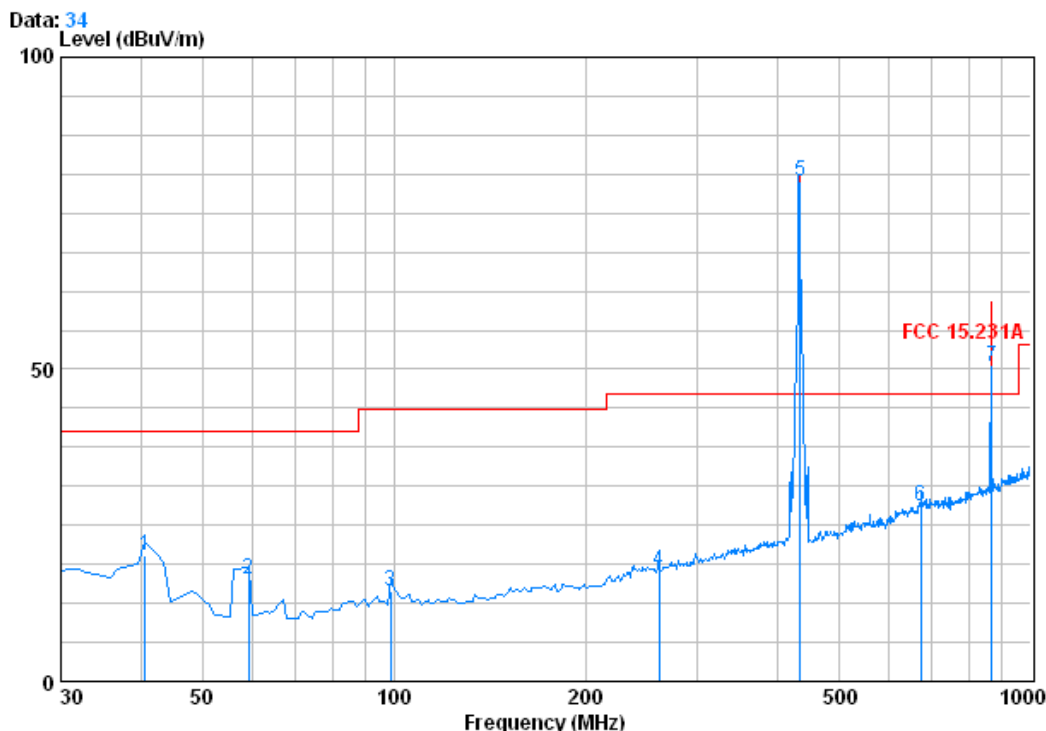


5.3.1.2 Spurious Emissions

Below 1GHz

QP value:

Vertical:



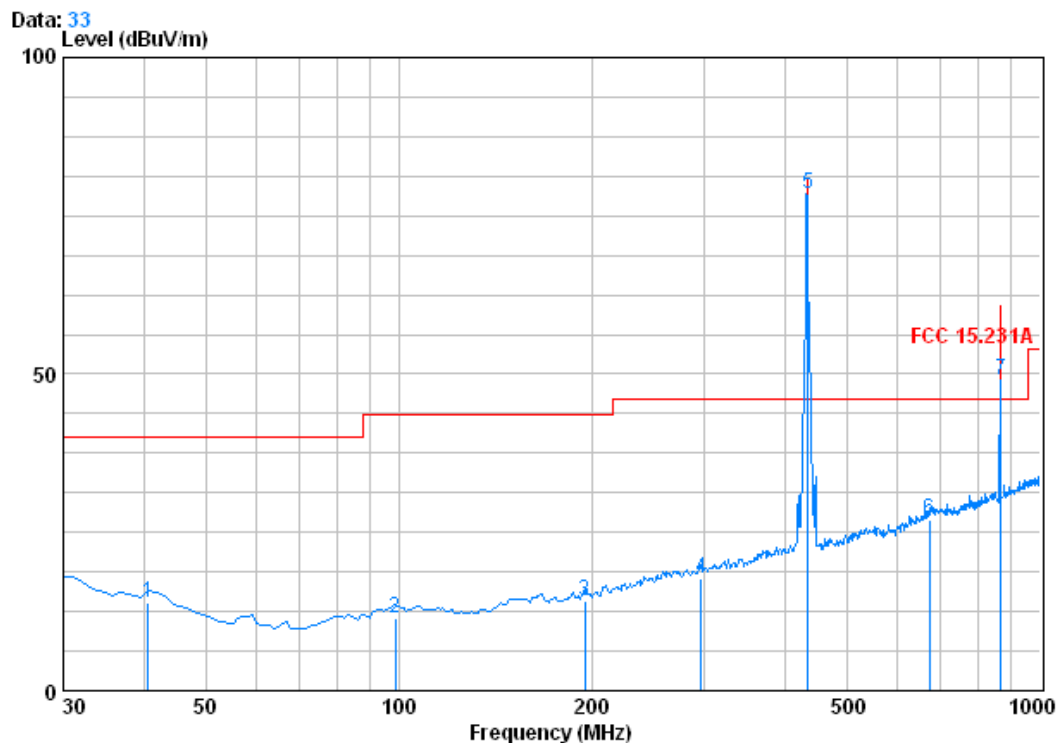
Condition : FCC 15.231A 3m 0042673 VERTICAL
EUT : 1247RF
MODE : TX mode

	Freq	CableAntenna Loss Factor	Preamp Factor	Read Level	Limit	Over	Remark
	MHz	dB	dB/m	dBuV	dBuV/m	dBuV/m	dB
1	40.670	0.61	10.93	27.32	36.03	20.26	40.00 -19.74 QP
2	59.100	0.80	7.27	27.27	35.59	16.38	40.00 -23.62 QP
3	98.870	1.19	9.06	27.20	31.31	14.36	43.50 -29.14 QP
4	260.860	1.73	12.53	26.50	29.92	17.68	46.00 -28.32 QP
5 @	433.960	2.35	16.59	27.33	88.62	80.22	80.83 -0.61 Peak
6	673.110	2.85	21.40	27.45	31.34	28.14	46.00 -17.86 QP
7	867.920	3.48	22.85	26.92	50.89	50.29	60.83 -10.54 QP

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Horizontal:



Condition : FCC 15.231A 3m 0042673 HORIZONTAL
EUT : 1247RF
MODE : TX mode

	Freq	Cable Loss	Antenna Factor	Preamp Factor	Read Level	Limit Level	Limit Line	Over Limit	Remark
	MHz	dB	dB/m	dB	dBuV	dBuV/m	dBuV/m	dB	
1	40.670	0.61	11.53	27.32	29.08	13.91	40.00	-26.09	QP
2	98.870	1.19	9.06	27.20	28.45	11.50	43.50	-32.00	QP
3	194.900	1.39	10.15	26.71	29.26	14.09	43.50	-29.41	QP
4	295.780	1.88	13.72	26.41	28.60	17.79	46.00	-28.21	QP
5 @	433.960	2.35	16.59	27.33	86.88	78.48	80.83	-2.35	Peak
6	672.140	2.85	21.32	27.45	30.24	26.96	46.00	-19.04	QP
7	867.920	3.48	22.85	26.92	49.68	49.08	60.83	-11.75	QP

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Above 1GHz

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)	Polarization
1299.966	2.38	27.76	39.27	57.89	48.76	74.00	-25.24	Vertical
1876.278	2.75	30.94	39.51	49.38	43.56	74.00	-30.44	Vertical
2172.219	2.90	32.11	39.70	51.26	46.57	74.00	-27.43	Vertical
2888.160	3.25	33.24	40.21	49.51	45.79	74.00	-28.21	Vertical
3135.225	3.42	33.34	40.40	50.39	46.75	74.00	-27.25	Vertical
3852.449	4.04	33.63	40.93	49.32	46.06	74.00	-27.94	Vertical
1299.966	2.38	27.76	39.27	50.25	41.12	74.00	-32.88	Horizontal
2172.219	2.90	32.11	39.70	50.89	46.20	74.00	-27.80	Horizontal
2588.757	3.09	32.82	40.00	49.60	45.51	74.00	-28.49	Horizontal
3135.225	3.42	33.34	40.40	50.26	46.62	74.00	-27.38	Horizontal
4222.583	4.31	34.45	41.21	50.15	47.70	74.00	-26.30	Horizontal
4503.363	4.49	35.20	41.40	51.56	49.85	74.00	-24.15	Horizontal

Note:

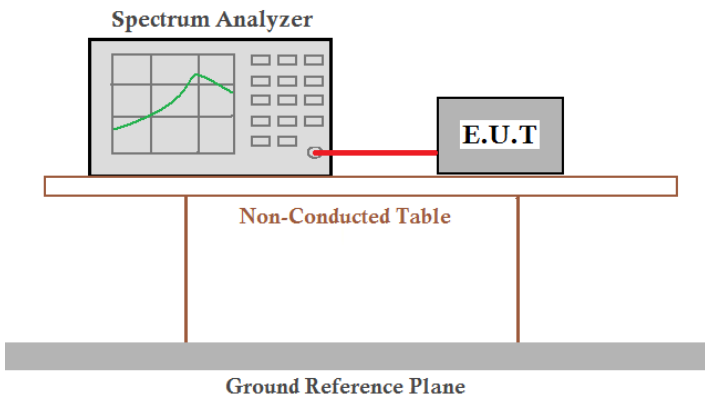
The field strength is calculated by adding the Antenna Factor, Cable Factor & Preamplifier. The basic equation with a sample calculation is as follows:

$$\text{Final Test Level} = \text{Receiver Reading} + \text{Antenna Factor} + \text{Cable Factor} - \text{Preamplifier Factor}$$

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 peak measurements were shown in the report.

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5.4 20dB Bandwidth

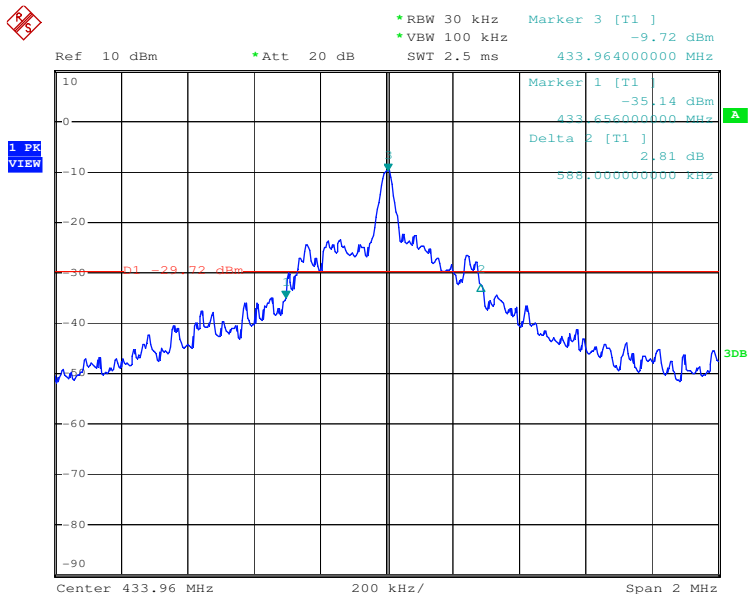
Test Requirement:	FCC Part15 C Section 15.231 (c)
Test Method:	ANSI C63.10:2009
Test Setup:	 <p>The diagram illustrates the test setup. A Spectrum Analyzer is connected via a red cable to an E.U.T. (Equipment Under Test). Both are placed on a Non-Conducted Table. Below the table is a Ground Reference Plane.</p>
Limit:	The bandwidth of the emission shall be no wider than 0.25% of the center frequency for devices operating above 70 MHz and below 900 MHz. For devices operating above 900 MHz, the emission shall be no wider than 0.5% of the center frequency. Bandwidth is determined at the points 20 dB down from the modulated carrier.
Test Mode:	Transmitting mode
Instruments Used:	Refer to section 4.10 for details
Test Results:	Pass

Measurement Data

20dB bandwidth (MHz)	Limit (MHz)	Results
0.588	1.085	PASS

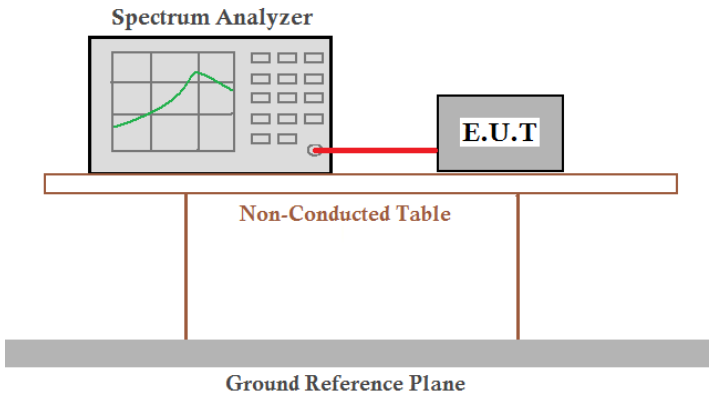


Test plot as follows:



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5.5 Dwell Time

Test Requirement:	FCC Part15 C Section 15.231 (a) (1)
Test Method:	ANSI C63.10:2009
Test Setup:	 <p>The diagram illustrates the test setup. A Spectrum Analyzer is connected via a red cable to an E.U.T. (Equipment Under Test). Both are placed on a Non-Conducted Table. Below the table is a Ground Reference Plane.</p>
Limit:	Not more than 5 seconds
Test mode:	Transmitting mode
Instruments Used:	Refer to section 4.10 for details
Test results:	Pass

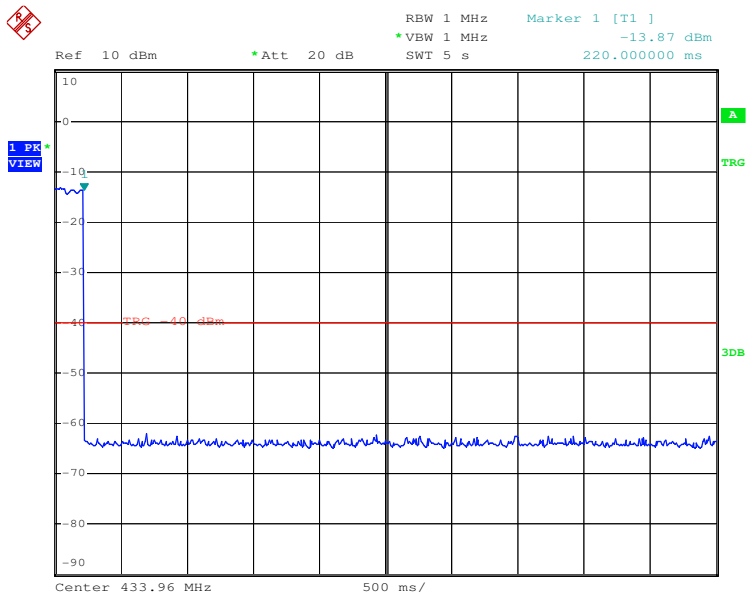
Measurement Data

Transmitting time(ms)	Limit (sec)	Results
220	≤5S	PASS

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Test plot as follows:



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