



198 Kezhu Road, Sciencetech Park, Guangzhou Economic & Technological
Development District, Guangzhou, China 510663
Telephone: +86 (0) 20 82155555
Fax: +86 (0) 20 82075059
Email: ee.guangzhou@sgs.com

Report No.: GZEM150300135601
Page: 1 of 27
FCC ID: 2AAFASY-ZXC525

TEST REPORT

The following sample(s) was/were submitted and identified on behalf of the client as:

Application No.:	GZEM1503001356CR
Applicant:	Shantou Double Eagle Toys Industry Co., Ltd.
FCC ID:	2AAFASY-ZXC525
Product Description:	Remote control car series
Model No.:	E510-003, E511-003, E512-003, E516-003, E517-003, E518-003, E519-003, E520-003, E521-003, E522-003, E523-001, E523-003, E524-003, E525-001, E525-003, E526-001, E526-003, E527-003, E528-003, E560-003, E561-003, E562-003, E563-003, E564-003, E513-003, E514-003, E504-002, E504-003, E535-003, E635-003 ♣
♣	Please refer to section 3 of this report for further details.
Standards:	CFR 47 PART 15 Subpart C: 2014 section 15.249
Date of Receipt:	2015-04-09
Date of Test:	2015-04-20 to 2015-04-21
Date of Issue:	2015-06-01
Test Result :	Pass*

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



**Jerry Chan
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.

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.

This document is issued by the Company subject to its General Conditions of Service printed overleaf, available on request or accessible at <http://www.sgs.com/en/Terms-and-Conditions.aspx> and, for electronic format documents, subject to Terms and Conditions for Electronic Documents at <http://www.sgs.com/en/Terms-and-Conditions/Terms-e-Document.aspx>. Attention is drawn to the limitation of liability, indemnification and jurisdiction issues defined therein. Any holder of this document is advised that information contained hereon reflects the Company's findings at the time of its intervention only and within the limits of Client's instructions, if any. The Company's sole responsibility is to its Client and this document does not exonerate parties to a transaction from exercising all their rights and obligations under the transaction documents. This document cannot be reproduced except in full, without prior written approval of the Company. Any unauthorized alteration, forgery or falsification of the content or appearance of this document is unlawful and offenders may be prosecuted to the fullest extent of the law. Unless otherwise stated the results shown in this test report refer only to the sample(s) tested and such sample(s) are retained for 30 days only.



2 Version

Revision Record				
Version	Chapter	Date	Modifier	Remark
00		2015-06-01		Original Report

Authorized for issue by:			
Tested By			2015-04-20 to 2015-04-21 Date
Prepared By			2015-05-28 Date
Checked By			2015-06-01 Date



3 Test Summary

Test	Test Requirement	Test method	Result
Field Strength of Fundamental	FCC PART 15 C section 15.249 (a)	ANSI C63.10: Clause 6.6	PASS
Field Strength of Unwanted Emissions	FCC PART 15 C section 15.249 (a) section 15.249 (d)	ANSI C63.10: Clause 6.4, 6.6 and 6.7	PASS
Band Edges	FCC PART 15 C section 15.249 (d)	ANSI C63.10: Clause 6.9.2	PASS
Occupied Bandwidth	FCC PART 15 C section 15.215(c)	ANSI C63.10: Clause 6.9.1	PASS
Remark: EUT: In this whole report EUT means Equipment Under Test. Tx: In this whole report Tx (or tx) means Transmitter. Rx: In this whole report Rx (or rx) means Receiver. RF: In this whole report RF means Radio Frequency. ANSI C63.10: the detail version is ANSI C63.10:2009 in the whole report.			
♣ Model No.: E510-003, E511-003, E512-003, E516-003, E517-003, E518-003, E519-003, E520-003, E521-003, E522-003, E523-001, E523-003, E524-003, E525-001, E525-003, E526-001, E526-003, E527-003, E528-003, E560-003, E561-003, E562-003, E563-003, E564-003, E513-003, E514-003, E504-002, E504-003, E535-003, E635-003 According to the declaration from the applicant, the electrical circuit design, layout, components used and internal wiring were identical for all models, with only difference being the model no. and appearance. Therefore only one model E525-003 was tested in this report.			



4 Contents

1	1 Cover Page	1
2	Version	2
3	Test Summary	3
4	Contents	4
5	General Information	5
5.1	Client Information	5
5.2	General Description of E.U.T.	5
5.3	Details of E.U.T.	5
5.4	Description of Support Units	5
5.5	Other Information Requested by the Customer	5
5.6	Deviation from Standards	5
5.7	Test Location	5
6	Equipment List	7
7	Test Results	8
7.1	E.U.T. Operation	8
7.2	Antenna Requirement	10
7.3	Field Strength of Fundamental & Field Strength of Unwanted Emissions & Band Edge	11
7.4	Occupied Bandwidth	26



5 General Information

5.1 Client Information

Applicant: Shantou Double Eagle Toys Industry Co., Ltd.
Address of Applicant: XINGDA INDUSTRIAL PARK, CHENGHAI, SHANTOU CITY,
GUANGDONG PROVINCE, CHINA

5.2 General Description of E.U.T.

Product Description: Remote control car series
Model No.: E525-003

5.3 Details of E.U.T.

Operating Frequency: 2402 MHz to 2480 MHz
Type of Modulation: GFSK
Number of Channels: 79
Channel Separation: 1 MHz
Antenna Type: Integral Antenna
Antenna gain: 0 dBi
Function: Remote control car with 2.4GHz
Power Supply: DC 3.0 V size "AA" batteries x 2 for Tx.
Power cord: N/A

5.4 Description of Support Units

The EUT has been test as an independent unit.

5.5 Other Information Requested by the Customer

None.

5.6 Deviation from Standards

Biconical and log periodic antennas were used instead of dipole antennas.

5.7 Test Location

All tests were performed at:

SGS-CSTC Standards Technical Services Co., Ltd., Guangzhou Branch EMC Laboratory,
198 Kezhu Road, Scientech Park, Guangzhou Economic & Technology Development District,
Guangzhou, China 510663

Tel: +86 20 82155555 Fax: +86 20 82075059

No tests were sub-contracted.



6 Equipment List

RE in Chamber						
No.	Test Equipment	Manufacturer	Model No.	Serial No.	Cal. date	Cal. Due date
					(YYYY-MM-DD)	(YYYY-MM-DD)
EMC0525	Compact Semi-Anechoic Chamber	ChangZhou ZhongYu	N/A	N/A	2014-12-5	2015-12-5
EMC0522	EMI Test Receiver	Rohde & Schwarz	ESIB26	100283	2015-03-02	2016-03-02
EMC0056	EMI Test Receiver	Rohde & Schwarz	ESCI	100236	2015-04-07	2016-04-07
EMC0528	RI High frequency Cable	SGS	20 m	N/A	2014-04-19	2016-04-19
EMC2025	Trilog Broadband Antenna 30-1000MHz	SCHWARZBECK MESS-ELEKTRONIK	VULB 9160	9160-3372	2014-07-14	2017-07-14
EMC0524	Bi-log Type Antenna	Schaffner -Chase	CBL6112B	2966	2013-08-31	2016-08-31
EMC0519	Bilog Type Antenna	Schaffner -Chase	CBL6143	5070	2014-05-04	2017-05-04
EMC2026	Horn Antenna 1-18GHz	SCHWARZBECK MESS-ELEKTRONIK	BBHA 9120D	9120D-841	2013-08-31	2016-08-31
EMC0518	Horn Antenna	Rohde & Schwarz	HF906	100096	2012-07-01	2015-07-01
EMC0521	1-26.5 GHz Pre-Amplifier	Agilent	8449B	3008A01649	2015-03-02	2016-03-02
EMC2065	Amplifier	HP	8447F	N/A	2014-08-25	2015-08-25
EMC0075	310N Amplifier	Sonoma	310N	272683	2015-03-02	2016-03-02
EMC0523	Active Loop Antenna	EMCO	6502	42963	2014-03-03	2016-03-03
EMC2041	Broad-Band Horn Antenna (14)15-26.5(40)GHz	SCHWARZBECK MESS-ELEKTRONIK	BBHA 9170	9170-375	2014-05-26	2017-05-26
EMC2079	High Pass Filter(915MHz)	FSY MICROWAVE	HM1465-9SS	009	2015-03-02	2016-03-02
EMC2069	2.4GHz filter	Micro-Tronics	BRM 50702	149	2015-03-02	2016-03-02
EMC0530	10m Semi-Anechoic Chamber	ETS	N/A	N/A	2014-05-03	2016-05-03

General used equipment						
No.	Test Equipment	Manufacturer	Model No.	Serial No.	Cal. date	Cal. Due date
					(YYYY-MM-DD)	(YYYY-MM-DD)
EMC0006	DMM	Fluke	73	70681569	2014-09-15	2015-09-15
EMC0007	DMM	Fluke	73	70671122	2014-09-15	2015-09-15

7 Test Results

7.1 E.U.T. Operation

Test Voltage:	DC 3V by “AA” batteries x 2
Temperature:	20.0 -25.0 °C
Humidity:	38-50 % RH
Atmospheric Pressure:	1000 -1010 mbar

Test frequencies and frequency range: According to the 15.31(m) Measurements on intentional radiators or receivers, other than TV broadcast receivers, shall be performed and, if required, reported for each band in which the device can be operated with the device operating at the number of frequencies in each band specified in the following table:

According to the 15.33 (a) For an intentional radiator, the spectrum shall be investigated from the lowest radio frequency signal generated in the device, without going below 9 kHz, up to at least the frequency shown in the following table:

Number of fundamental frequencies to be tested in EUT transmit band

Frequency range in which device operates	Number of frequencies	Location in frequency range of operation
1 MHz or less	1	Middle
1 MHz to 10 MHz	2	1 near top and 1 near bottom
More than 10 MHz	3	1 near top, 1 near middle and 1 near bottom

Frequency range of radiated emission measurements

Lowest frequency generated in the device	Upper frequency range of measurement
9 kHz to below 10 GHz	10th harmonic of highest fundamental frequency or to 40 GHz, whichever is lower
At or above 10 GHz to below 30 GHz	5th harmonic of highest fundamental frequency or to 100 GHz, whichever is lower
At or above 30 GHz	5th harmonic of highest fundamental frequency or to 200 GHz, whichever is lower, unless otherwise specified



EUT channels and frequencies list:

Channel	Frequency (MHz)
1	2402
2	2440
3	2480

Test frequencies are the lowest channel: 1 channel(2402 MHz), middle channel: 2 channel(2440 MHz) and highest channel: 3 channel(2480 MHz)

7.2 Antenna Requirement

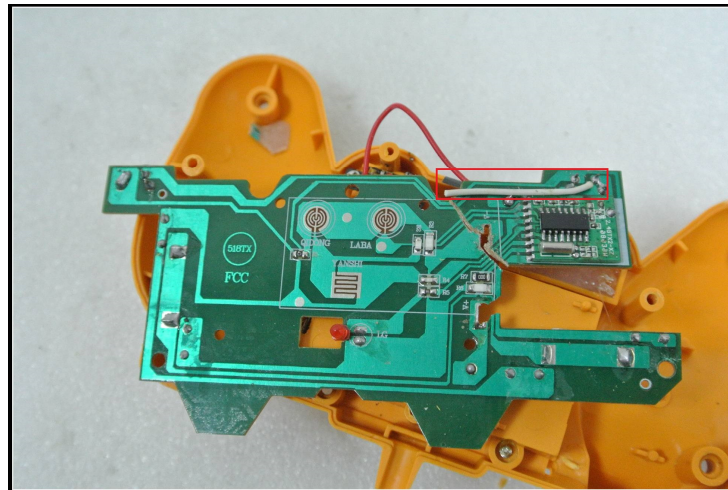
Standard requirement

15.203 requirement:

For intentional device. According to 15.203. an intentional radiator shall be designed to Ensure that no antenna other than that furnished by the responsible party shall be used with the device.

EUT Antenna

The antenna is an integral antenna. The antenna gain is 0 dBi.



Test result: The unit does meet the FCC requirements.

7.3 Field Strength of Fundamental & Field Strength of Unwanted Emissions & Band Edge

Test Requirement: FCC Part 15 C section 15.249

(a) Except as provided in paragraph (b) of this section, the field strength of emissions from intentional radiators operated within these frequency bands shall comply with the following:

Fundamental Frequency (MHz)	Field Strength of Fundamental (dB μ V/m @ 3m)	Field Strength of Harmonics (dB μ V/m @ 3m)
902 to 928	94.0	54.0
2400 to 2483.5	94.0	54.0
5725 to 5875	94.0	54.0
24000 to 24250	108.0	68.0

(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 Section 15.209, whichever is the lesser attenuation.

Limits: The fundamental frequency range is in the frequency band of the EUT is 2402MHz ~ 2480MHz.

The limit for Average field strength dB μ V/m for the fundamental frequency = 94.0 dB μ V/m.

The limit for Peak field strength dB μ V/m for the fundamental frequency = 114.0 dB μ V/m.

No fundamental is allowed in the restricted bands.

The limit for average field strength dB μ V/m for the harmonics = 54.0 dB μ V/m.

The limit for peak field strength dB μ V/m for the harmonics = 74.0 dB μ V/m.

Emission radiated outside of the specified frequency bands, except for harmonics, shall be attenuated by at least 50dB below the level of the fundamental or 54.0 dB μ V/m in 15.209. Here the limit for the other emission is 54.0 dB μ V/m.

Test Method: ANSI C63.10: Clause 6.4, 6.6 and 6.7 for Field Strength of Fundamental & Field Strength of Unwanted Emissions

ANSI C63.10: Clause 6.9.2 for Band Edge

Status: Pre-test the EUT in continuous transmitting mode with setup as stand-alone in X, Y, Z three axes, found the worst case is X axes and report the data.

Measurement Distance: 3m (Semi-Anechoic Chamber)

Frequency range: 9 kHz – 25 GHz for transmitting mode.
Test instrumentation resolution bandwidth
9 kHz (9 kHz - 30 MHz), 120 kHz (30 MHz - 1000 MHz), 1 MHz (1000 MHz – 25 GHz)

Test Procedure:

1) 9 kHz to 30 MHz emissions:

For testing performed with the loop antenna, testing was performed in accordance to ANSI C63.10. The centre of the loop was positioned 1 m above the ground and positioned with its plane vertical at the specified distance from the EUT, During testing the loop was rotated about its vertical axis for maximum response at each azimuth and also investigated with the loop positioned in the horizontal plane.

2) 30 MHz to 1 GHz emissions:

For testing performed with the bi-log type antenna, testing was performed in accordance to ANSI C63.10. The measurement is performed with the EUT rotated 360°, the antenna height scanned between 1m and 4m, and the antenna rotated to repeat the measurement for both the horizontal and vertical antenna polarizations.

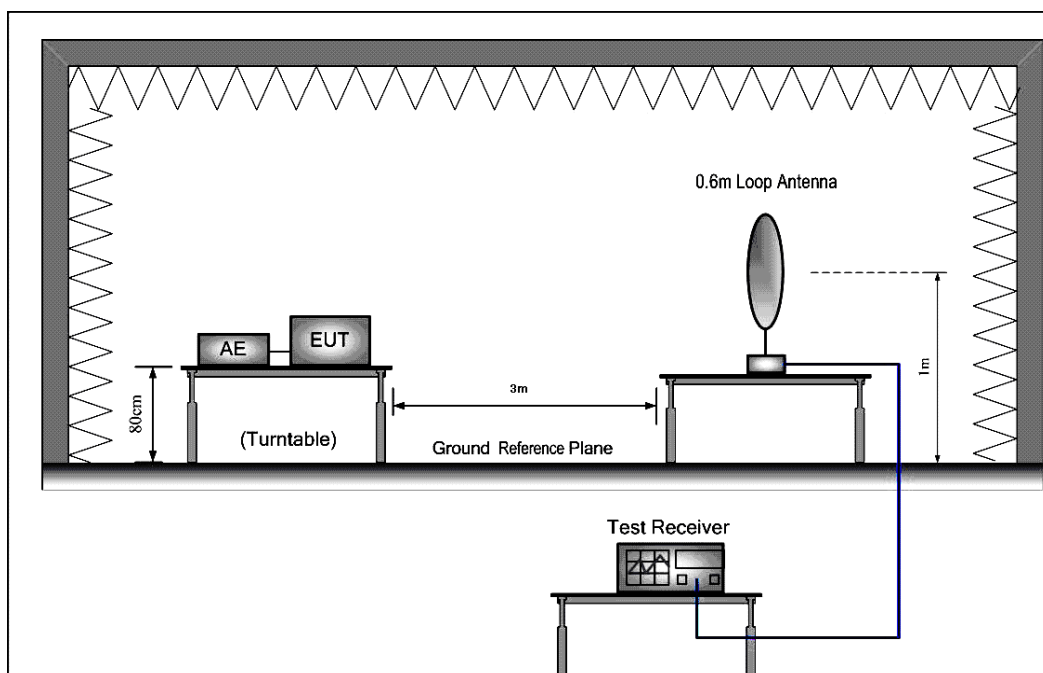
3) 1 GHz to 25 GHz emissions:

Test site with RF absorbing material covering the ground plane that met the site validation criterion called out in CISPR 16-1-4:2007 was used to perform radiated emission test above 1 GHz.

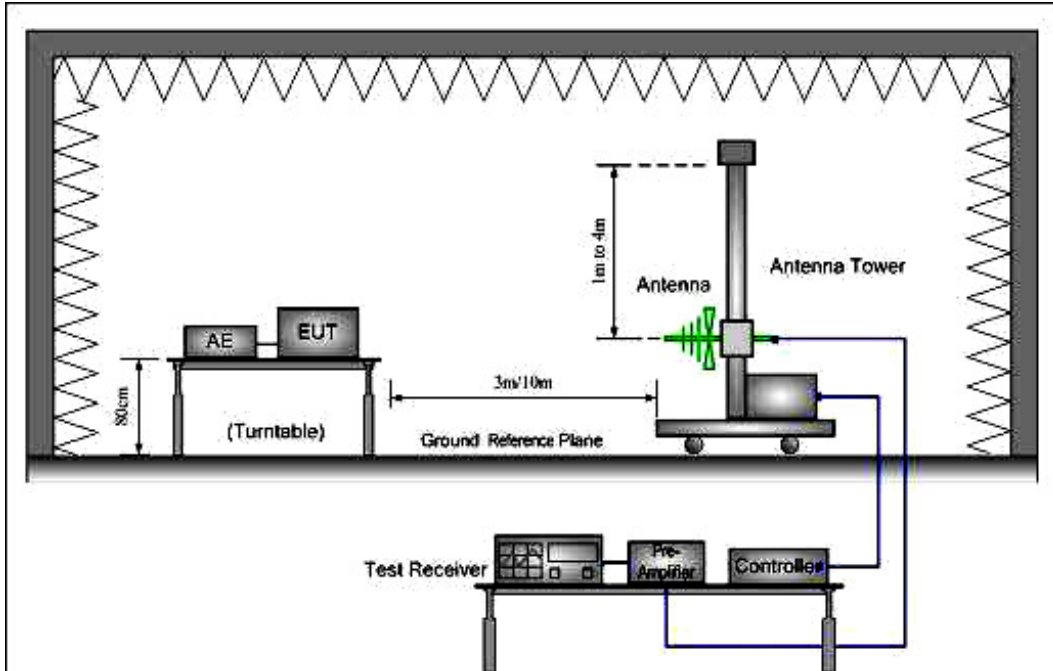
For testing performed with the horn antenna, testing was performed in accordance to ANSI C63.10. The measurement is performed with the EUT rotated 360°, the antenna height scan between 1m and 4m, and the antenna rotated to repeat the measurement for both the horizontal and vertical antenna polarizations.

Test Configuration:

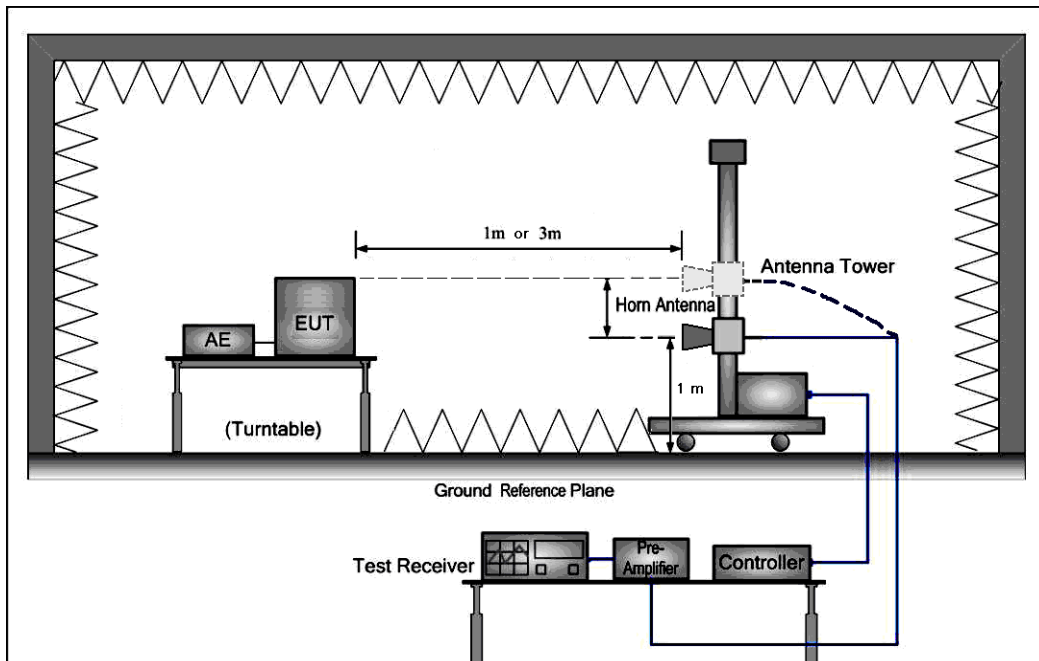
1) 9 kHz to 30 MHz emissions:



2) 30 MHz to 1 GHz emissions:



3) 1 GHz to 25 GHz emissions:



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

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



Test at low Channel in transmitting status

9 kHz~30 MHz Field Strength of Unwanted Emissions. Quasi-Peak Measurement

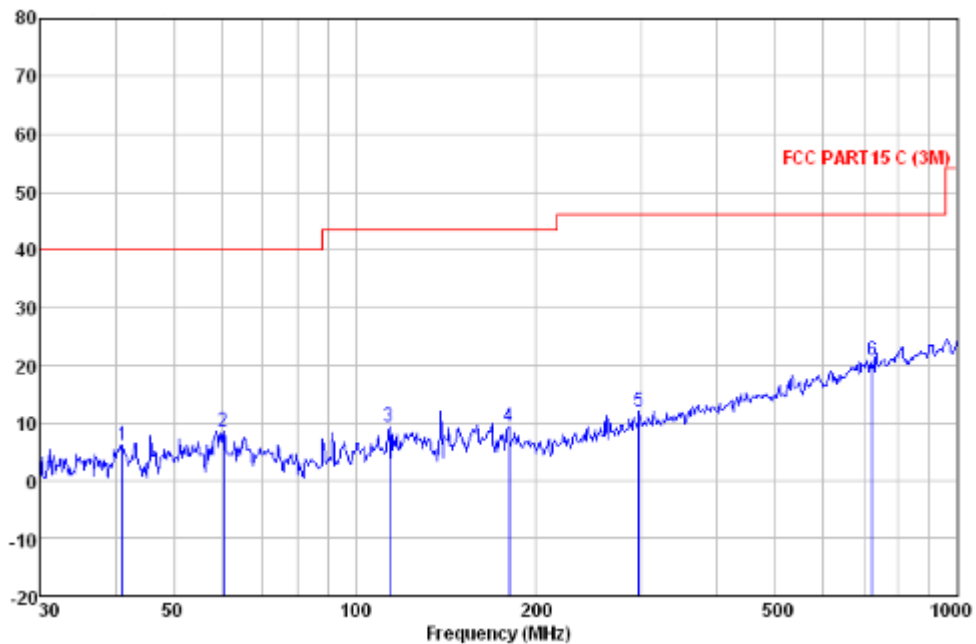
The measurements with active loop antenna were greater than 20dB below the limit, so the test data were not recorded in the test report.

30 MHz~1 GHz Field Strength of Unwanted Emissions. Quasi-Peak Measurement

Vertical:

Peak scan

Level (dB μ V/m)



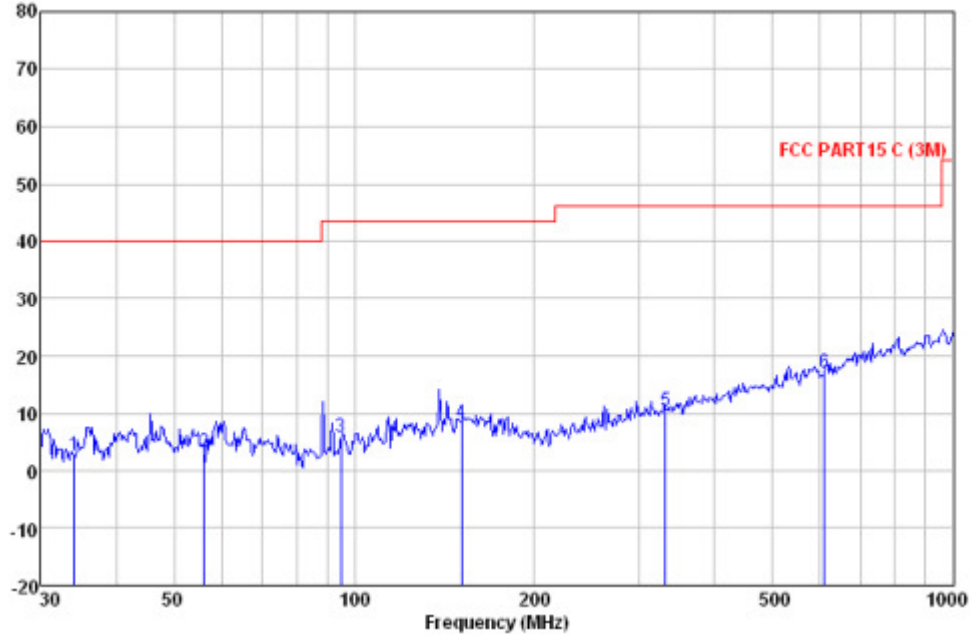
Quasi-peak measurement

Freq	ReadAntenna	Cable	Preamp	Limit	Over	Remark		
MHz	Level	Factor	Loss	Factor	Level	Line	Limit	dB
MHz	dB μ V	dB/m	dB	dB	dB μ V/m	dB μ V/m	dB	
41.132	23.52	12.72	1.01	31.01	6.24	40.00	-33.76	QP
60.492	25.76	12.64	1.10	31.00	8.50	40.00	-31.50	QP
114.114	27.55	11.42	1.44	31.01	9.40	43.50	-34.10	QP
180.017	26.15	12.35	1.85	31.09	9.26	43.50	-34.24	QP
296.184	27.60	13.13	2.39	31.00	12.12	46.00	-33.88	QP
724.261	27.50	20.60	3.54	30.90	20.74	46.00	-25.26	QP



Horizontal:

Peak scan
Level (dB μ V/m)



Quasi-peak measurement

Freq	ReadAntenna Level	Antenna Factor	Cable Loss	Preamp Factor	Level	Limit Line	Over Limit	Remark
MHz	dB μ V	dB/m	dB	dB	dB μ V/m	dB μ V/m	dB	
34.037	20.46	12.34	0.88	31.01	2.67	40.00	-37.33	QP
56.197	20.53	12.46	1.10	31.00	3.09	40.00	-36.91	QP
95.093	25.65	9.74	1.35	31.00	5.74	43.50	-37.76	QP
151.067	23.90	13.90	1.66	31.06	8.40	43.50	-35.10	QP
331.355	24.91	13.91	2.48	30.97	10.33	46.00	-35.67	QP
609.922	25.66	19.18	3.21	30.90	17.15	46.00	-28.85	QP



1~25 GHz Field Strength of Fundamental & Field Strength of Unwanted Emissions.

Peak & Average Measurement

Peak Measurement:							
Frequency (MHz)	Antenna factors (dB/m)	Cable loss (dB)	Preamp factor (dB)	Reading Level (dBμV)	Emission Level (dBμV/m)	Limit (dBμV/m)	Antenna polarization
2402	27.58	6.56	38.25	79.53	75.42	114.00	V
4804	31.53	11.11	38.57	45.17	49.24	74.00	V
7206	36.47	12.90	38.84	46.92	57.45	74.00	V
9608	38.08	15.16	39.70	47.17	60.71	74.00	V
2402	27.58	6.56	38.25	89.08	84.97	114.00	H
4804	31.53	11.11	38.57	44.02	48.09	74.00	H
7206	36.47	12.90	38.84	42.57	53.10	74.00	H
9608	38.08	15.16	39.70	43.10	56.64	74.00	H
Average Measurement:							
Frequency (MHz)	Antenna factors (dB/m)	Cable loss (dB)	Preamp factor (dB)	Reading Level (dBμV)	Emission Level (dBμV/m)	Limit (dBμV/m)	Antenna polarization
2402	27.58	6.56	38.25	89.08	84.97	94.00	V
4804	31.53	11.11	38.57	44.02	48.09	54.00	V
7206	36.47	12.9	38.84	42.57	53.10	54.00	V
9608	38.08	15.16	39.7	43.10	56.64	54.00	V
2402	27.58	6.56	38.25	79.53	75.42	94.00	H
4804	31.53	11.11	38.57	45.17	49.24	54.00	H
7206	36.47	12.90	38.84	46.92	57.45	54.00	H
9608	38.08	15.16	39.70	47.17	60.71	54.00	H



Band Edge:

Peak Measurement:							
Frequency (MHz)	Antenna factors (dB/m)	Cable loss (dB)	Preamp factor (dB)	Reading Level (dB μ V)	Emission Level (dB μ V/m)	Limit (dB μ V/m)	Antenna polarization
2400.00	27.63	6.55	38.25	44.36	40.29	74.00	V
2483.50	27.55	6.99	38.26	45.90	42.18	74.00	V
2400.00	27.63	6.55	38.25	45.42	41.35	74.00	H
2483.50	27.55	6.99	38.26	46.75	43.03	74.00	H
Average Measurement:							
Frequency (MHz)	Antenna factors (dB/m)	Cable loss (dB)	Preamp factor (dB)	Reading Level (dB μ V)	Emission Level (dB μ V/m)	Limit (dB μ V/m)	Antenna polarization
2400.00	27.63	6.55	38.25	37.26	33.19	54.00	V
2483.50	27.55	6.99	38.26	37.34	33.62	54.00	V
2400.00	27.63	6.55	38.25	38.41	34.34	54.00	H
2483.50	27.55	6.99	38.26	38.74	35.02	54.00	H



Test at middle Channel in transmitting status

9 kHz~30 MHz Field Strength of Unwanted Emissions. Quasi-Peak Measurement

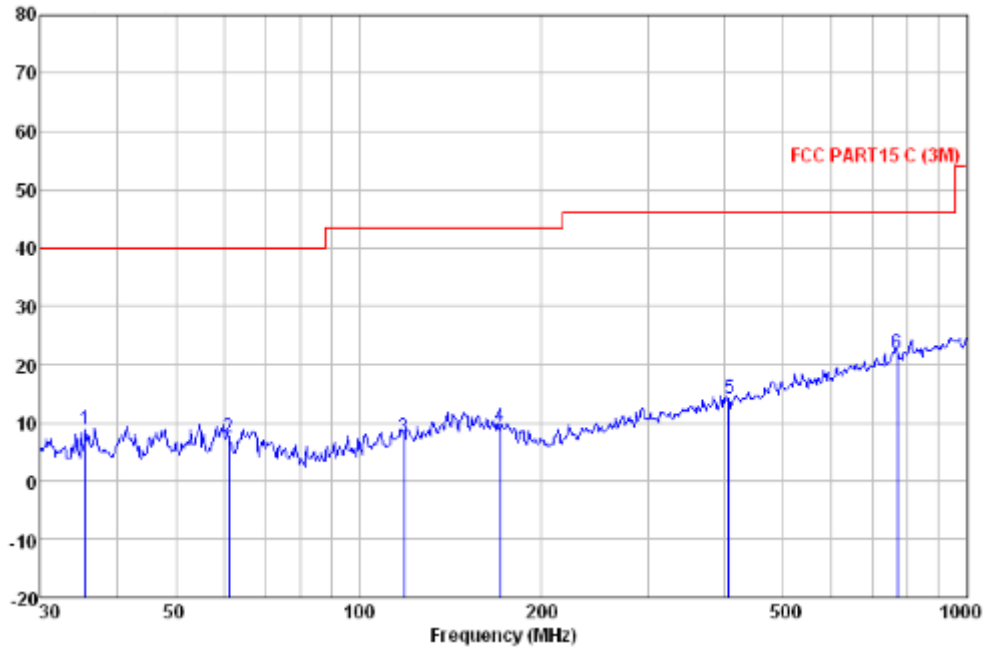
The measurements with active loop antenna were greater than 20dB below the limit, so the test data were not recorded in the test report.

30 MHz~1 GHz Field Strength of Unwanted Emissions. Quasi-Peak Measurement

Vertical:

Peak scan

Level (dB μ V/m)



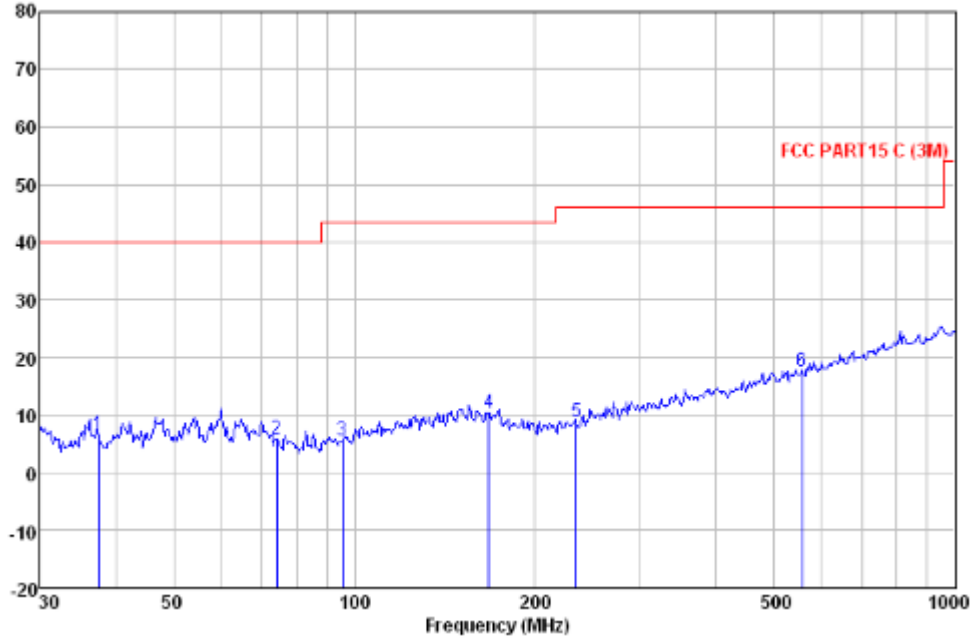
Quasi-peak measurement

Freq MHz	ReadAntenna Level dB μ V	Antenna Factor dB/m	Cable Loss dB	Preamp Factor dB	Level dB μ V/m	Limit Line dB μ V/m	Over Limit dB	Remark
35.499	26.51	12.42	0.92	31.01	8.84	40.00	-31.16	
61.132	24.81	12.61	1.11	31.00	7.53	40.00	-32.47	
118.601	25.08	11.92	1.45	31.02	7.43	43.50	-36.07	
170.793	25.32	13.23	1.81	31.09	9.27	43.50	-34.23	
406.088	26.68	15.42	2.81	30.90	14.01	46.00	-31.99	
768.748	27.61	21.40	3.74	30.90	21.85	46.00	-24.15	

Horizontal:

Peak scan

Level (dB μ V/m)



Quasi-peak measurement

Freq MHz	ReadAntenna Level dB μ V	Factor dB/m	Cable Loss dB	Preamp Factor dB	Level dB μ V/m	Limit Line dB μ V/m	Over Limit dB	Remark
37.548	24.32	12.51	0.96	31.01	6.78	40.00	-33.22	
74.135	25.60	10.04	1.25	31.00	5.89	40.00	-34.11	
95.427	25.50	9.78	1.35	31.00	5.63	43.50	-37.87	
167.237	26.20	13.43	1.79	31.08	10.34	43.50	-33.16	
234.168	26.24	11.51	2.02	31.06	8.71	46.00	-37.29	
556.774	27.32	18.06	3.16	30.93	17.61	46.00	-28.39	



1~25 GHz Field Strength of Fundamental & Field Strength of Unwanted Emissions.

Peak & Average Measurement

Peak Measurement:							
Frequency (MHz)	Antenna factors (dB/m)	Cable loss (dB)	Preamp factor (dB)	Reading Level (dBμV)	Emission Level (dBμV/m)	Limit (dBμV/m)	Antenna polarization
2440	27.57	6.81	38.26	86.36	82.48	114.00	V
4880	31.57	11.24	38.56	44.32	48.57	74.00	V
7320	36.50	13.28	38.88	42.49	53.39	74.00	V
9760	38.46	15.05	39.74	44.46	58.23	74.00	V
2440	27.57	6.81	38.26	89.10	85.22	114.00	H
4880	31.57	11.24	38.56	44.97	49.22	74.00	H
7320	36.50	13.28	38.88	44.03	54.93	74.00	H
9760	38.46	15.05	39.74	42.64	56.41	74.00	H
Average Measurement:							
Frequency (MHz)	Antenna factors (dB/m)	Cable loss (dB)	Preamp factor (dB)	Reading Level (dBμV)	Emission Level (dBμV/m)	Limit (dBμV/m)	Antenna polarization
2440	27.57	6.81	38.26	83.99	80.11	94.00	V
4880	31.57	11.24	38.56	34.84	39.09	54.00	V
7320	36.50	13.28	38.88	36.81	47.71	54.00	V
9760	38.46	15.05	39.74	34.67	48.44	54.00	V
2440	27.57	6.81	38.26	78.95	75.07	94.00	H
4880	31.57	11.24	38.56	35.82	40.07	54.00	H
7320	36.50	13.28	38.88	35.64	46.54	54.00	H
9760	38.46	15.05	39.74	34.94	48.71	54.00	H



Band Edge:

Peak Measurement:							
Frequency (MHz)	Antenna factors (dB/m)	Cable loss (dB)	Preamp factor (dB)	Reading Level (dB μ V)	Emission Level (dB μ V/m)	Limit (dB μ V/m)	Antenna polarization
2400.00	27.63	6.55	38.25	45.80	41.73	74.00	V
2483.50	27.55	6.99	38.26	46.29	42.57	74.00	V
2400.00	27.63	6.55	38.25	44.46	40.39	74.00	H
2483.50	27.55	6.99	38.26	45.22	41.50	74.00	H
Average Measurement:							
Frequency (MHz)	Antenna factors (dB/m)	Cable loss (dB)	Preamp factor (dB)	Reading Level (dB μ V)	Emission Level (dB μ V/m)	Limit (dB μ V/m)	Antenna polarization
2400.00	27.63	6.55	38.25	36.84	32.77	54.00	V
2483.50	27.55	6.99	38.26	39.50	35.78	54.00	V
2400.00	27.63	6.55	38.25	38.52	34.45	54.00	H
2483.50	27.55	6.99	38.26	40.13	36.41	54.00	H



Test at high Channel in transmitting status

9 kHz~30 MHz Field Strength of Unwanted Emissions. Quasi-Peak Measurement

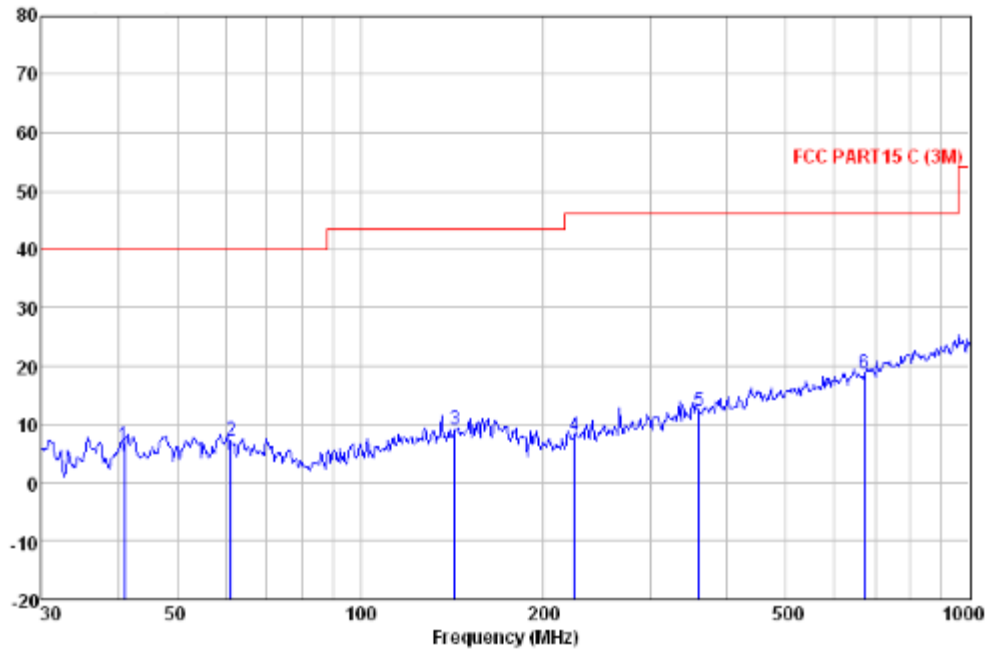
The measurements with active loop antenna were greater than 20dB below the limit, so the test data were not recorded in the test report.

30 MHz~1 GHz Field Strength of Unwanted Emissions. Quasi-Peak Measurement

Vertical:

Peak scan

Level (dB μ V/m)



Quasi-peak measurement

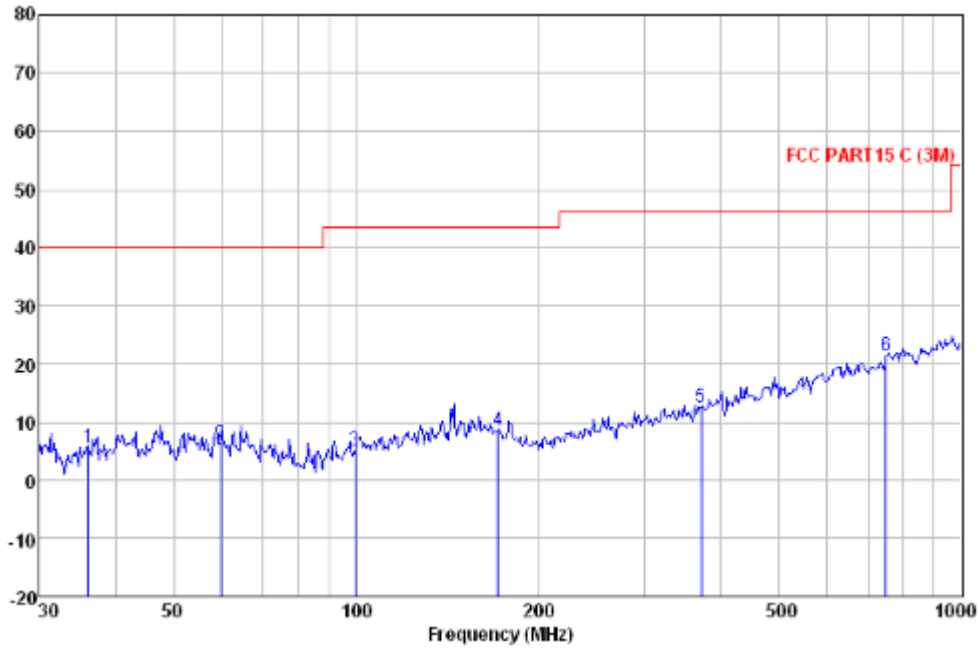
Freq	ReadAntenna	Cable	Preamp	Limit	Over	Remark	
MHz	Level	Factor	Loss	Factor	Line	Limit	
	dB μ V	dB/m	dB	dB	dB μ V/m	dB μ V/m	dB
40.988	23.63	12.72	1.01	31.01	6.35	40.00	-33.65
61.346	24.39	12.59	1.11	31.00	7.09	40.00	-32.91
142.824	24.92	13.51	1.57	31.05	8.95	43.50	-34.55
224.519	26.02	10.96	1.98	31.08	7.88	46.00	-38.12
359.186	26.14	14.37	2.67	30.93	12.25	46.00	-33.75
672.845	26.36	19.79	3.45	30.90	18.70	46.00	-27.30



Horizontal:

Peak scan

Level (dB μ V/m)



Quasi-peak measurement

Freq	ReadAntenna	Cable Preamp	Limit	Over				
MHz	Level	Factor	Loss	Factor	Level	Line	Limit	Remark
	dB μ V	dB/m	dB	dB	dB μ V/m	dB μ V/m	dB	
36.127	23.17	12.45	0.92	31.01	5.53	40.00	-34.47	
59.649	23.46	12.65	1.10	31.00	6.21	40.00	-33.79	
99.528	24.40	10.21	1.40	31.00	5.01	43.50	-38.49	
171.393	24.52	13.23	1.81	31.09	8.47	43.50	-35.03	
370.702	26.00	14.64	2.73	30.92	12.45	46.00	-33.55	
750.108	27.25	21.35	3.65	30.90	21.35	46.00	-24.65	



1~25 GHz Field Strength of Fundamental & Field Strength of Unwanted Emissions.

Peak & Average Measurement

Peak Measurement:							
Frequency (MHz)	Antenna factors (dB/m)	Cable loss (dB)	Preamp factor (dB)	Reading Level (dBμV)	Emission Level (dBμV/m)	Limit (dBμV/m)	Antenna polarization
2480	27.56	6.98	38.26	83.88	80.16	114.00	V
4960	31.70	11.39	38.56	44.65	49.18	74.00	V
7440	36.60	13.60	38.91	43.08	54.37	74.00	V
9920	38.65	14.92	39.78	43.94	57.73	74.00	V
2480	27.56	6.98	38.26	75.44	71.72	114.00	H
4960	31.70	11.39	38.56	44.22	48.75	74.00	H
7440	36.60	13.60	38.91	40.35	51.64	74.00	H
9920	38.65	14.92	39.78	41.18	54.97	74.00	H
Average Measurement:							
Frequency (MHz)	Antenna factors (dB/m)	Cable loss (dB)	Preamp factor (dB)	Reading Level (dBμV)	Emission Level (dBμV/m)	Limit (dBμV/m)	Antenna polarization
2480	27.56	6.98	38.26	80.92	77.20	94.00	V
4960	31.70	11.39	38.56	36.38	40.91	54.00	V
7440	36.60	13.60	38.91	34.29	45.58	54.00	V
9920	38.65	14.92	39.78	33.80	47.59	54.00	V
2480	27.56	6.98	38.26	65.85	62.13	94.00	H
4960	31.70	11.39	38.56	35.76	40.29	54.00	H
7440	36.60	13.60	38.91	32.29	43.58	54.00	H
9920	38.65	14.92	39.78	36.57	50.36	54.00	H



Band Edge:

Peak Measurement:							
Frequency (MHz)	Antenna factors (dB/m)	Cable loss (dB)	Preamp factor (dB)	Reading Level (dBμV)	Emission Level (dBμV/m)	Limit (dBμV/m)	Antenna polarization
2400.00	27.63	6.55	38.25	45.58	41.51	74.00	V
2483.50	27.55	6.99	38.26	47.46	43.74	74.00	V
2400.00	27.63	6.55	38.25	44.88	40.81	74.00	H
2483.50	27.55	6.99	38.26	45.78	42.06	74.00	H
Average Measurement:							
Frequency (MHz)	Antenna factors (dB/m)	Cable loss (dB)	Preamp factor (dB)	Reading Level (dBμV)	Emission Level (dBμV/m)	Limit (dBμV/m)	Antenna polarization
2400.00	27.63	6.55	38.25	38.89	34.82	54.00	V
2483.50	27.55	6.99	38.26	38.55	34.83	54.00	V
2400.00	27.63	6.55	38.25	36.79	32.72	54.00	H
2483.50	27.55	6.99	38.26	36.22	32.50	54.00	H

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 Loss – Preamplifier Factor.

- 2). As shown in Section, for frequencies above 1000 MHz. the above 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.
- 3). The test only perform the EUT in transmitting status since the test frequencies were over 1GHz only required transmitting status.
- 4). For Radiated Emissions fall in the restricted bands (2400MHz is worse case than 2390MHz and report it as above), which set out in Section 15.205 Restricted bands.

Also there is not any other emission which falls in restricted bands can be detected and reported.

Test result: The unit does meet the FCC requirements.

7.4 Occupied Bandwidth

Test Requirement: FCC Part 15 C section 15.249

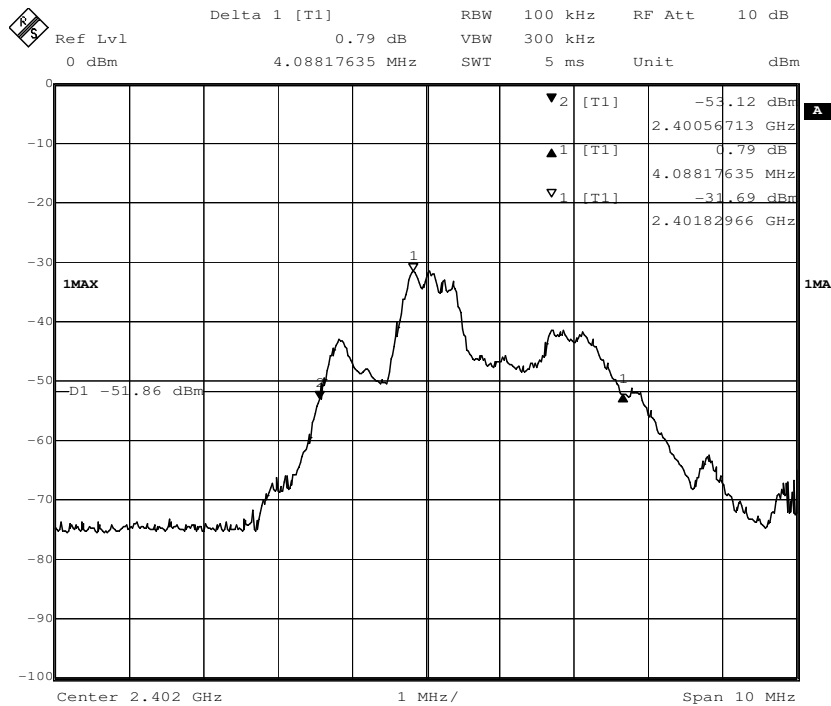
(d) Emissions radiated outside of the specified frequency bands, except for harmonics, shall be attenuated by at least 50 dB below the level of the fundamental or to the general radiated emission limits in Section 15.209, whichever is the lesser attenuation.

Test Method: ANSI C63.10: Clause 6.9.1

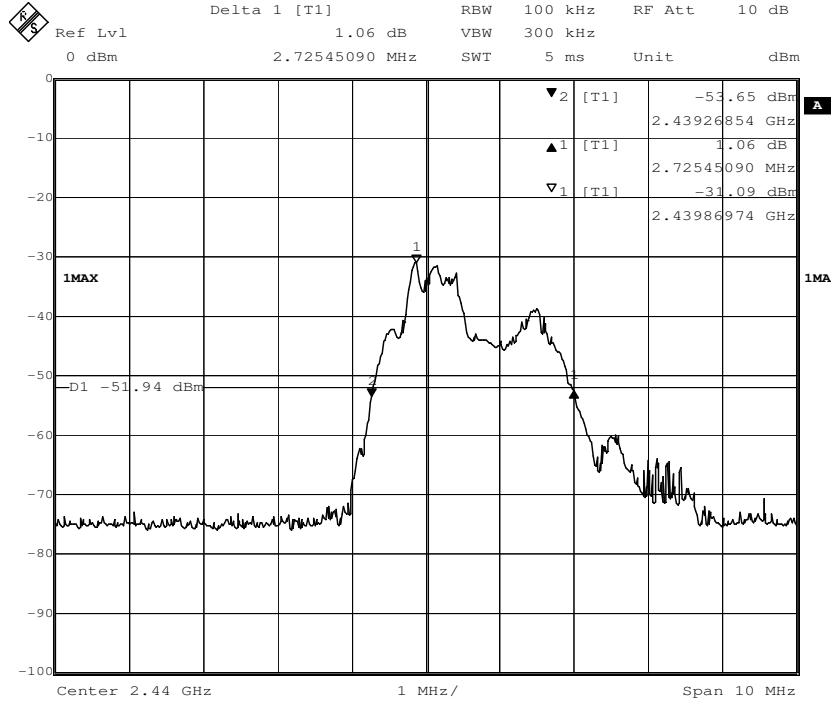
Operation within the band 2.400 to 2.4835 GHz

Method of measurement: A small sample of the transmitter output was fed into the Spectrum Analyzer and the attached plot was taken.

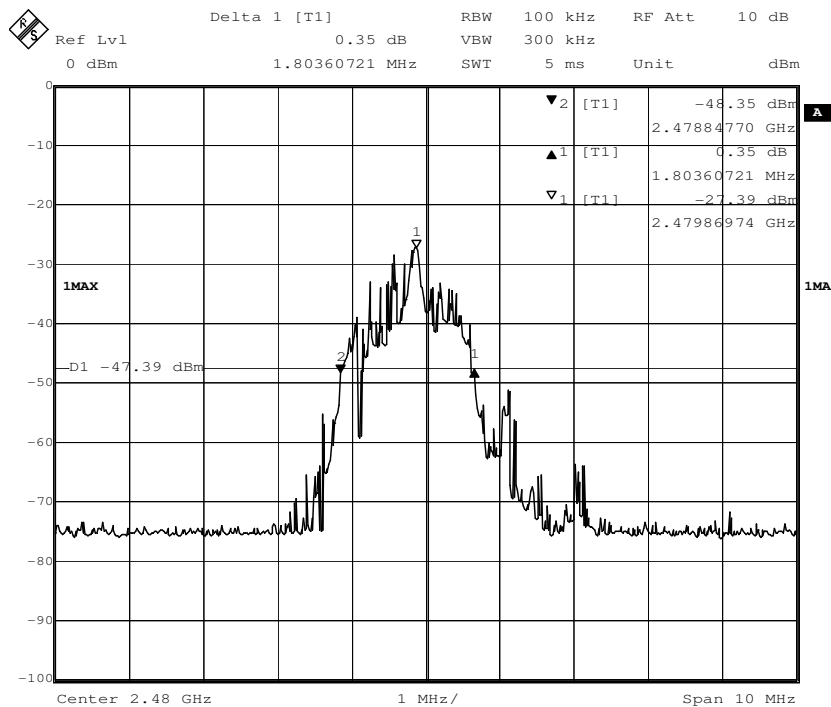
1. Test in the lowest frequency 2.402 GHz



2. Test in the middle frequency 2.440 GHz



3. Test in the highest frequency 2.480 GHz



The results: The unit does meet the FCC requirements.

--End of the report--