



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

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Report No.: SZEM170800876501
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1 Cover Page

RF TEST REPORT

Application No.:	SZEM1708008765CR
Applicant:	Jinhua Chenrong Sports Equipment Co., Ltd
FCC ID:	2AM9KCR009
Equipment Under Test (EUT): NOTE: The following sample(s) submitted was/were identified on behalf of the client as	
Product Name:	Remoter for Caster Board Twistilk Electric
Model No.(EUT):	CR009
Standards:	FCC PART 15 Subpart C
Date of Receipt:	2017-08-02
Date of Test:	2017-08-03 to 2017-08-30
Date of Issue:	2017-08-31
Test Result:	Pass*

*In the configuration tested, the EUT detailed in this report complied with the standards specified above.



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.

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Revision				
Version	Chapter	Date	Modifier	Remark
00	/	2017-08-31	/	Original

Authorized for issue by:				
Engineer				2017-08-31
		Foray Chen /Project Engineer		Date
Reviewer				2017-08-31
		Eric Fu /Reviewer		Date



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2 Test Summary

Test Item	Test Requirement	Test method	Result
Antenna Requirement	FCC Part 15, Subpart C Section 15.203	---	PASS
Duty Cycle	FCC Part 15, Subpart C Section 15.35(c)	ANSI C63.10 (2013) Section 7.5	PASS
AC Power Line Conducted Emission	FCC Part 15, Subpart C Section 15.207	ANSI C63.10 (2013) Section 6.3	N/A
Field Strength of the Fundamental Signal	FCC Part 15, Subpart C Section 15.249 (a)	ANSI C63.10 (2013) Section 6.6	PASS
Radiated Spurious Emissions and Band-edge	FCC Part 15, Subpart C Section 15.249 (a) & 15.209 & 15.205	ANSI C63.10 (2013) Section 6.4 & 6.5 & 6.6 & 6.10	PASS
20dB Bandwidth	FCC Part 15, Subpart C Section 15.215 (c)	ANSI C63.10 (2013) Section 6.9.2	PASS
Remark: N/A: Not Applicable. Please refer to Section 6.3 of this report for details.			



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4 General Information

4.1 Client Information

Applicant: Jinhua Chenrong Sports Equipment Co., Ltd
Address of Applicant: No.123,Jindu North district,Jindu Village,Huajie Town,Yongkang,Zhejiang
Manufacturer: Jinhua Chenrong Sports Equipment Co., Ltd
Address of Manufacturer: No.123,Jindu North district,Jindu Village,Huajie Town,Yongkang,Zhejiang
Factory: Jinhua Chenrong Sports Equipment Co., Ltd
Address of Factory: No.123,Jindu North district,Jindu Village,Huajie Town,Yongkang,Zhejiang

4.2 General Description of E.U.T.

Product Description: Portable product with 2.4GHz function
Power Supply: DC 3V, 2* AAA size batteries

4.3 Technical Specifications:

Operation Frequency: 2405MHz, 2445MHz, 2475MHz
Modulation Technique: GFSK
Number of Channel: 3
Antenna Type: PCB Antenna
Antenna Gain: 0 dbi

4.4 Description of Support Units

The EUT has been tested independently.

4.5 Test Mode

Test Mode	Description of Test Mode
Engineering mode:	Keep EUT working in continuously transmitting mode.

4.6 Test Location

All tests were performed at:

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No tests were sub-contracted.

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4.7 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 –Designation Number: CN1178**

SGS-CSTC Standards Technical Services Co., Ltd., Shenzhen EMC Laboratory has been recognized as an accredited testing laboratory.

Designation Number: CN1178. Test Firm Registration Number: 406779.

- **Industry Canada (IC)**

Two 3m Semi-anechoic chambers and the 10m Semi-anechoic chamber of SGS-CSTC Standards Technical Services Co., Ltd. Shenzhen Branch EMC Lab have been registered by Certification and Engineering Bureau of Industry Canada for radio equipment testing with Registration No.: 4620C-1, 4620C-2, 4620C-3.



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4.8 Measurement Uncertainty

No.	Parameter	Measurement Uncertainty
1	Radio Frequency	$< \pm 1 \times 10^{-5}$
2	Total RF power, conducted	$< \pm 1.5 \text{ dB}$
3	RF power density, conducted	$< \pm 3 \text{ dB}$
4	Spurious emissions, conducted	$< \pm 3 \text{ dB}$
5	All emissions, radiated	$< \pm 6 \text{ dB}$ (Below 1GHz) $< \pm 6 \text{ dB}$ (Above 1GHz)
6	Temperature	$< \pm 1^{\circ}\text{C}$
7	Humidity	$< \pm 5 \%$
8	DC and low frequency voltages	$< \pm 3 \%$



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5 Equipments Used during Test

Equipment	Manufacturer	Model No	Inventory No	Cal Date	Cal Due Date
Conducted Test					
Spectrum Analyzer	R&S	FSP-30	SHEM002-1	2017-04-24	2018-04-23
Spectrum Analyzer	Agilent	N9020A	SHEM181-1	2017-07-03	2018-07-02
Power meter	R&S	NRP	SHEM057-1	2016-12-29	2017-12-28
Power Sensor	R&S	NRP-Z22	SHEM136-1	2017-07-22	2018-07-21
Power Sensor	R&S	NRP-Z91	SHEM057-2	2016-12-29	2017-12-28
Signal Generator	R&S	SMR40	SHEM058-1	2017-07-03	2018-07-02
Signal Generator	Agilent	N5182A	SHEM182-1	2017-07-03	2018-07-02
Communication Tester	R&S	CMW500	SHEM183-1	2017-07-03	2018-07-02
Switcher	Tonscend	JS0806	SHEM184-1	/	/
Splitter	Anritsu	MA1612A	SHEM185-1	/	/
Coupler	e-meca	803-S-1	SHEM186-1	/	/
High-low Temp Cabinet	Suzhou Zhihe	TL-40	SHEM087-1	2017-09-13	2018-09-12
AC Power Stabilizer	WOCEN	6100	SHEM045-1	2017-01-14	2018-01-13
DC Power Supply	QJE	QJ30003SII	SHEM046-1	2017-01-14	2018-01-13
Radiated Test					
EMI test receiver	R&S	ESU40	SHEM051-1	2017-09-26	2018-09-25
Spectrum Analyzer	R&S	FSP-30	SHEM002-1	2017-04-24	2018-04-23
Loop Antenna (9kHz-30MHz)	Schwarzbeck	FMZB1519	SHEM135-1	2017-04-10	2018-04-09
Antenna (25MHz-2GHz)	Schwarzbeck	VULB9168	SHEM048-1	2017-02-28	2018-02-27
Antenna (25MHz-3GHz)	Schwarzbeck	HL562	SHEM010-1	2017-02-28	2018-02-27
Horn Antenna (1-8GHz)	Schwarzbeck	HF906	SHEM009-1	2016-09-24	2018-09-23
Horn Antenna (1-18GHz)	Schwarzbeck	BBHA9120D	SHEM050-1	2017-01-14	2018-01-13
Horn Antenna (14-40GHz)	Schwarzbeck	BBHA 9170	SHEM049-1	2017-02-13	2018-01-15
Pre-amplifier (9KHz-2GHz)	CLAVIIO	BDLNA-0001-412010	SHEM164-1	2017-08-22	2018-08-21
Pre-amplifier (1-26.5GHz)	CLAVIIO	BDLNA-0118-352810	SHEM050-2	2017-08-22	2018-08-21
Band filter	LORCH	9BRX-875/X150-SR	SHEM156-1	/	/
Band filter	LORCH	13BRX-1950/X500-SR	SHEM083-2	/	/
Band filter	LORCH	5BRX-2400/X200-SR	SHEM155-1	/	/
Band filter	LORCH	5BRX-5500/X1000-SR	SHEM157-2	/	/
High pass Filter	Wainwright	WHK3.0/18G-100SS	SHEM157-1	/	/
High pass Filter	Wainwright	WHKS1700-3SS	SHEM157-3	/	/
Semi/Fully Anechoic	ST	11*6*6M	SHEM078-2	2017-07-22	2018-07-21
RE test Cable	/	RE01, RE02, RE06	/	2016-12-29	2017-12-28



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6 Test Results

6.1 E.U.T. test conditions

Requirements: 15.31(e) For intentional radiators, measurements of the variation of the input power or the radiated signal level of the fundamental frequency component of the emission, as appropriate, shall be performed with the supply voltage varied between 85% and 115% of the nominal rated supply voltage. For battery operated equipment, the equipment tests shall be performed using a new battery.

Operating Environment:	Temperature:	20.0 -25.0 °C
	Humidity:	35-75 % RH
	Atmospheric Pressure:	99.2 -102kPa

Test frequencies: 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:

Frequency range over which device operates	Number of frequencies	Location in the range of operation
1 MHz or less	1	Middle
1 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

Pursuant to Part 15.31(c) For swept frequency equipment, measurements shall be made with the frequency sweep stopped at those frequencies chosen for the measurements to be reported.

Test frequency is the lowest channel: 1 channel (2425MHz), middle channel: 2 channel (2445MHz) and highest channel: 3 channel (2475MHz).

6.2 Antenna Requirement

Standard requirement:

15.203 requirement:

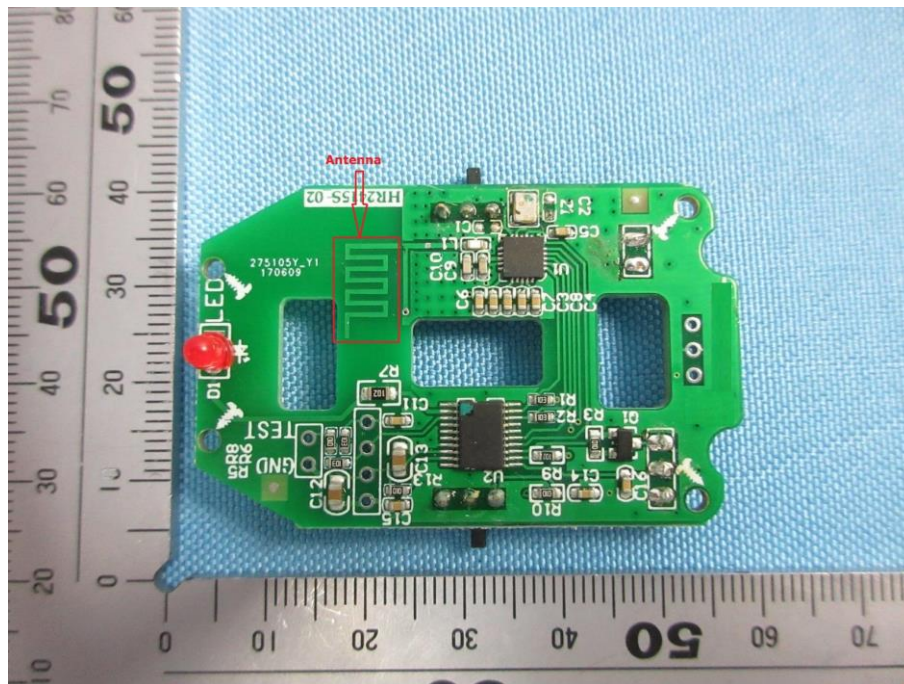
An intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device. The use of a permanently attached antenna or of an antenna that uses a unique coupling to the intentional radiator, the manufacturer may design the unit so that a broken antenna can be replaced by the user, but the use of a standard antenna jack or electrical connector is prohibited

15.247(b) (4) requirement:

The conducted output power limit specified in paragraph (b) of this section is based on the use of antennas with directional gains that do not exceed 6 dBi. Except as shown in paragraph (c) of this section, if transmitting antennas of directional gain greater than 6 dBi are used, the conducted output power from the intentional radiator shall be reduced below the stated values in paragraphs (b)(1), (b)(2), and (b)(3) of this section, as appropriate, by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

EUT Antenna:

The antenna is PCB antenna. The gain of the antenna is less than 0 dBi.



6.3 Conducted Emissions on Mains Terminals

Frequency Range: 150 KHz to 30 MHz

Class/Severity: Class B

Limit:

Frequency range MHz	Class B Limits: dB (μV)	
	Quasi-peak	Average
0.15 to 0.50	66 to 56	56 to 46
0.50 to 5	56	46
5 to 30	60	50

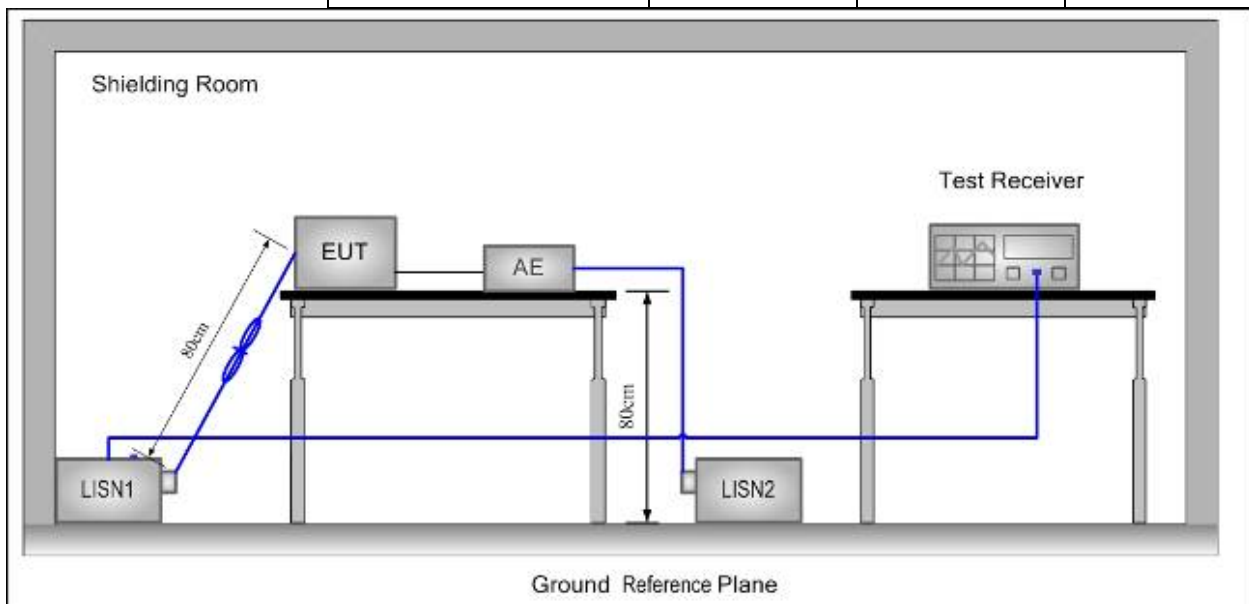
Note1: The limit decreases linearly with the logarithm of the frequency in the range 0.15 MHz to 0.50MHz.

Note2: The lower limit is applicable at the transition frequency.

Test site/setup:

Test instrumentation set-up:

Frequency Range	Detector	RBW	VBW
9KHz to 150Hz	Quasi-peak	200Hz	500Hz
150KHz to 30MHz	Quasi-peak	9kHz	30kHz



Test Procedure:

1. The mains terminal disturbance voltage was measured with the EUT in a shielded room.
2. The EUT was connected to AC power source through a LISN 1 (Line Impedance Stabilization Network) which provides 50Ω/50μH + 5Ω linear impedance. The power cables of all other units of the EUT were connected to a second LISN, which was bonded to the ground reference plane in the same way as the LISN 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



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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, but separated from metallic contact with the ground reference plane by 0.1m of insulation.
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 was placed 0.8 m from the boundary of the unit under test and bonded to a ground reference plane for LISN mounted on top of the ground reference plane. This distance was between the closest points of the LISN and the EUT. The mains lead of EUT excess 0.8m was folded back and forth parallel to the lead so as to form a horizontal bundle with a length between 0.3m and 0.4m. All other units of the EUT and associated equipment were at least 0.8 m from the LISN.

Remark: Pre-scan was performed with peak detected on all ports, Quasi-peak & average measurements were performed at the frequencies at which maximum peak emission level were detected. Please see the attached Quasi-peak and Average test results.

Test Result: N/A

Test Data:

Note: This EUT is powered by battery only; therefore the AC Conducted Emission test is not applicable.



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6.4 Duty Cycle

In order to assist with the determination of the average level of fundamental and spurious emissions field strength, measurements were made of duty cycle to determine the transmission duration and the silent period time of the transmitter. The transmitter duty cycle was measured using a spectrum analyser in the time domain and calculated by using the following calculation:

Duty cycle= T on time / Period

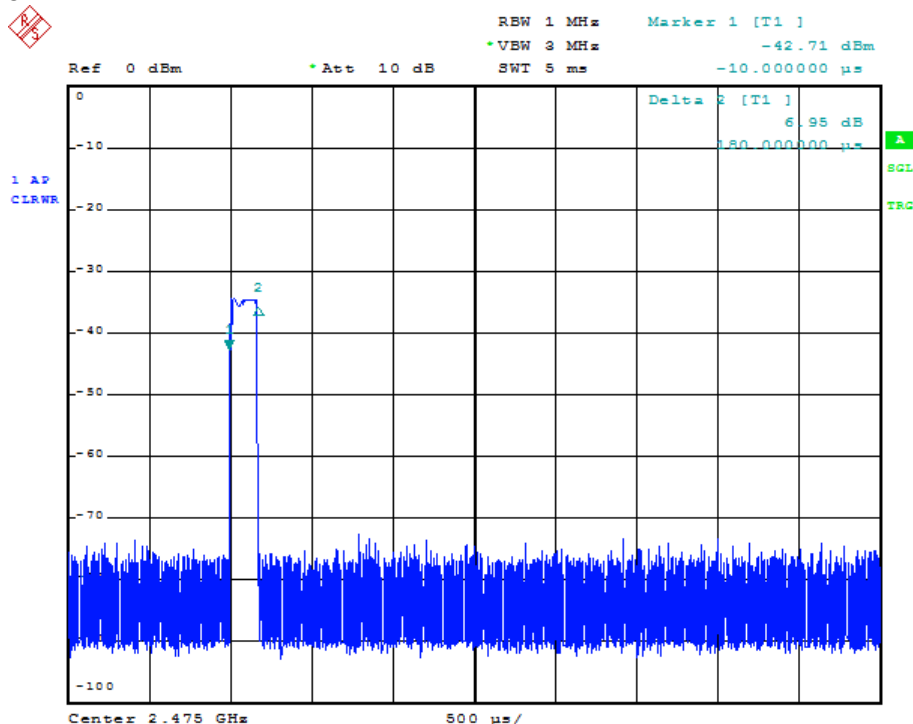
Duty factor = 20 * log (Duty cycle)

Test Data

T on time(ms)	Period(ms)	Duty Cycle	Duty Factor
0.90	100	0.90%	-40.92

Note: The time of one burst is 0.18ms. 5 times bursts are founded in the observe duration(100ms). So the total Ton is 0.18 X 5 =0.90ms

Test plot as follow

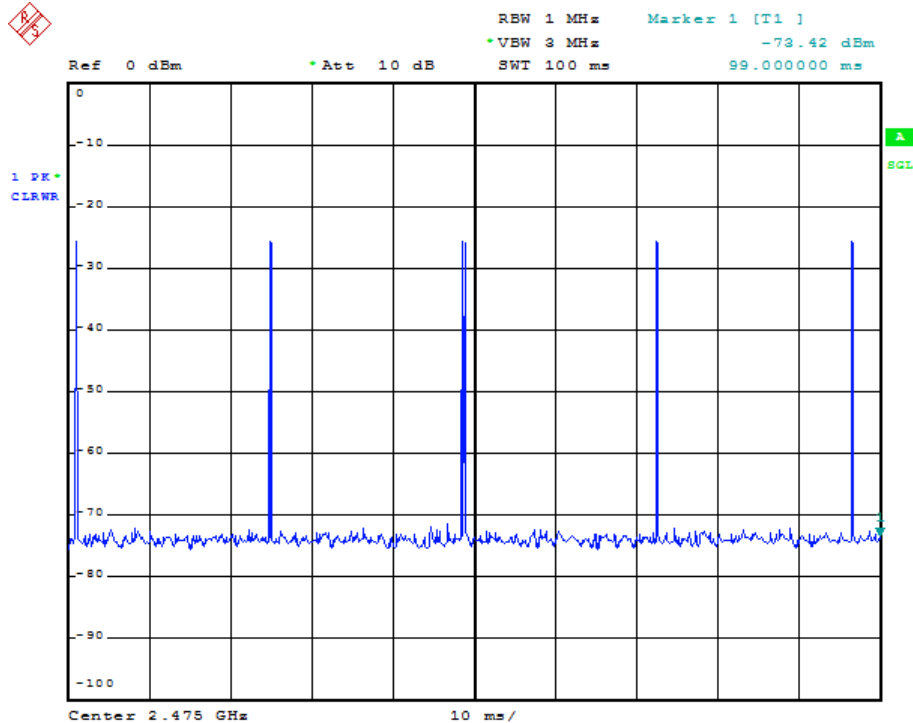




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6.5 Field Strength of the Fundamental Signal

Test Site: Measurement Distance: 3m

Receiver Setup:

Frequency	Detector	RBW	VBW	Remark
Above 1GHz	Peak	1MHz	3MHz	Peak
	Average	1MHz	10Hz	Average
Frequency	Limit (dBuV/m)		Remark	
2400-2483.5 MHz	114		Peak	
	94		Average	

Limit:

Test Setup:

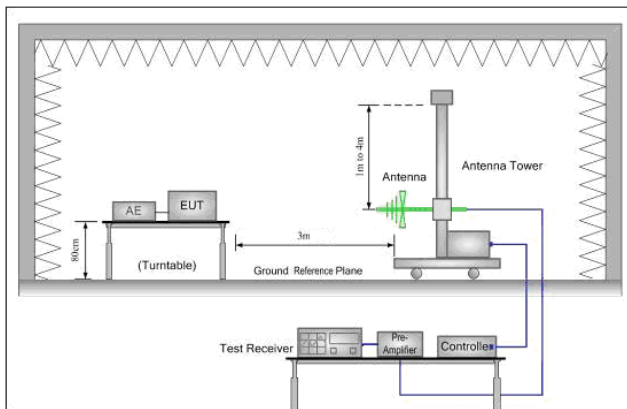


Figure 1. 30MHz to 1GHz

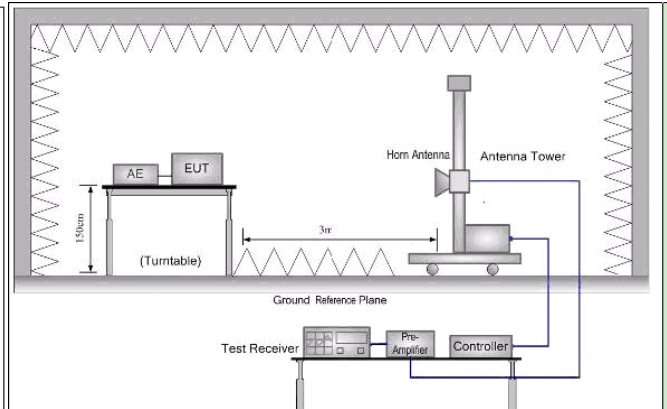


Figure 2. Above 1 GHz

Test Procedure:

- 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.
- The EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower.
- 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.
- 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.
- The test-receiver system was set to Peak Detect Function and Specified Bandwidth with Maximum Hold Mode.
- 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.
- Repeat above procedures until all frequencies measured was complete.



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Test Results: Pass

Test Data

Item	Freq.	Read Level	Factor	Result Level	Limit Line	Over Limit	Detector	Polarity
(Mark)	(MHz)	(dBμV)	(dB/m)	(dBμV/m)	(dBμV/m)	(dB)		
1	2405	90.63	-3.91	86.72	114	-27.28	PK	Horizontal
2	2405	83.98	-3.91	80.07	114	-33.93	PK	Vertical
3	2445	88.94	-3.97	84.97	114	-29.03	PK	Horizontal
4	2445	80.08	-3.97	76.11	114	-37.89	PK	Vertical
5	2475	88.49	-3.99	84.5	114	-29.5	PK	Horizontal
6	2475	83.57	-3.99	79.58	114	-34.42	PK	Vertical

Remark:

- 1) The basic equation with a sample calculation is as follows: Level = Read Level + Factor.
(The Factor is calculated by adding the Antenna Factor, Cable Loss and Preamp Factor)
- 2) If the Peak value below the AV Limit, the AV test doesn't perform for this submission.



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6.6 Radiated Spurious Emissions and Band-edge

Frequency Range: 9KHz to 25GHz

Test site/setup: Measurement Distance: 3m
Test instrumentation set-up:

Frequency Range	Detector	RBW	VBW
0.009MHz-0.090MHz	Peak	10kHz	30kHz
0.009MHz-0.090MHz	Average	10kHz	30kHz
0.090MHz-0.110MHz	Quasi-peak	10kHz	30kHz
0.110MHz-0.490MHz	Peak	10kHz	30kHz
0.110MHz-0.490MHz	Average	10kHz	30kHz
0.490MHz -30MHz	Quasi-peak	10kHz	30kHz
30MHz-1GHz	Quasi-peak	100kHz	300kHz
Above 1GHz	Peak	RBW=1MHz	VBW≥RBW
	Average		VBW=10Hz

Sweep=Auto

15.209 Limit:

Frequency	Limit (dBuV/m)
0.009MHz-0.490MHz	128.5 ~ 93.8
0.490MHz-1.705MHz	73.8 ~63.0
1.705MHz-30MHz	69.5
30MHz-88MHz	40.0
88MHz-216MHz	43.5
216MHz-960MHz	46.0
960MHz-1GHz	54.0
Above 1GHz	54.0

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.

Test Configuration: Receive antenna scan height 1 m - 4 m. polarization Vertical / Horizontal

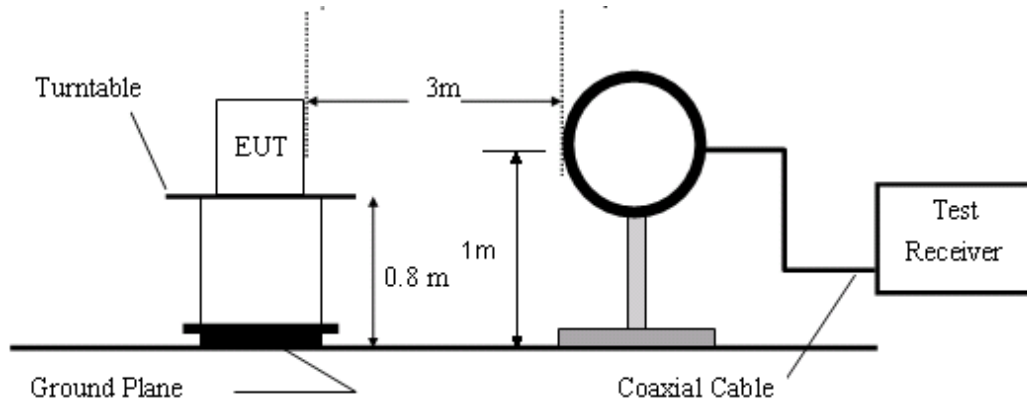


Figure1. Below 30MHz radiated emissions test configuration

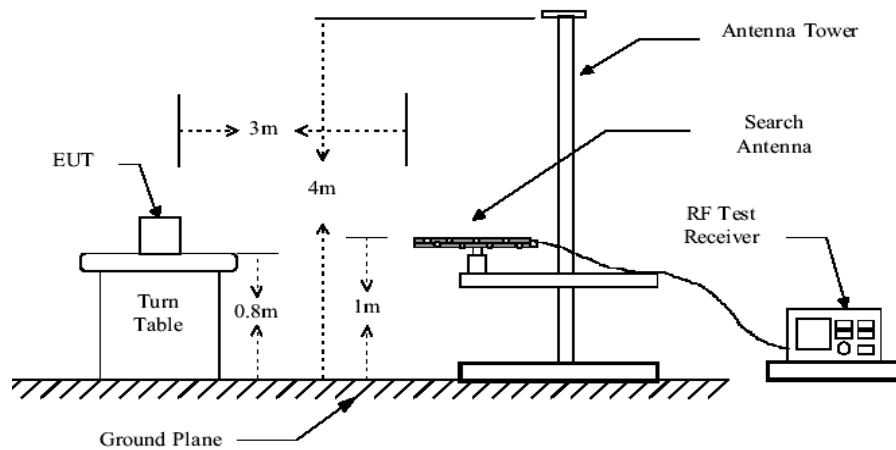


Figure2. 30MHz to 1GHz radiated emissions test configuration

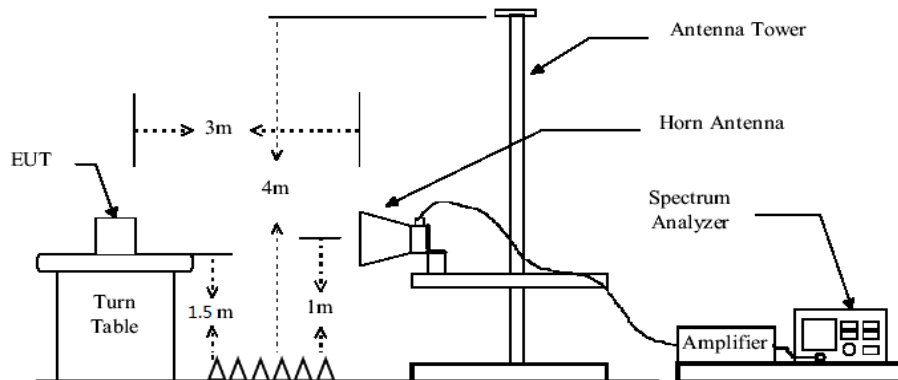


Figure3. Above 1GHz radiated emissions test configuration



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Test Procedure: The procedure used was ANSI Standard C63.10:2013. The receiver was scanned from 9KHz to 25GHz. When an emission was found, the table was rotated to produce the maximum signal strength. An initial pre-scan was performed for in peak detection mode using the receiver. The EUT was measured for both the Horizontal and Vertical polarities and performed a pre-test three orthogonal planes. For intentional radiators, measurements of the variation of the input power or the radiated signal level of the fundamental frequency component of the emission, as appropriate, shall be performed with the supply voltage varied between 85% and 115% of the nominal rated supply voltage. The worst case emissions were reported.

Low noise amplifier was used below 1GHz, High pass Filter was used above 3GHz.

Between 1G and 3GHz, we did not use any amplifier or filter.

Pre-test was performed on Antenna A and Antenna B mode, Compliance test was performed on worse case (Antenna A mode).

Test were performed for their spatial orthogonal(X, Y, Z), the worst test data (X orthogonal) was submitted.

- 1) For this intentional radiator operates below 25 GHz. the spectrum shall be investigated to the tenth harmonic of the highest fundamental frequency. And above the third harmonic of this intentional radiator, the disturbance is very low. So the test result only displays to 5rd harmonic.
- 2) As shown in Section, for frequencies above 1000MHz. 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.

Test Result: Pass



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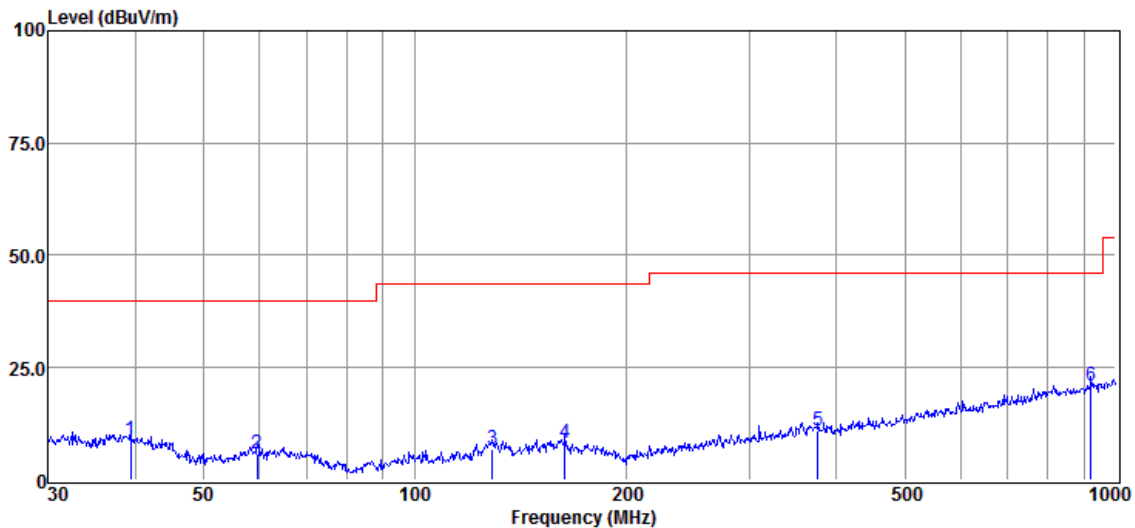
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6.6.1 Radiated Spurious Emissions

30MHz-1GHz:

Vertical:



Item	Freq.	Read Level	Antenna Factor	Preamp Factor	Cable Loss	Result Level	Limit Line	Over Limit	Detector
(Mark)	(MHz)	(dBμV)	(dB/m)	(dB)	(dB)	(dBμV/m)	(dBμV/m)	(dB)	
1	39.30	35.17	16.24	42.68	0.22	8.95	40.00	-31.05	QP
2	59.65	35.73	12.52	42.69	0.30	5.86	40.00	-34.14	QP
3	129.02	36.35	12.56	42.63	0.58	6.86	43.50	-36.64	QP
4	163.76	37.81	12.52	42.55	0.64	8.42	43.50	-35.08	QP
5	375.94	37.35	14.68	42.15	0.95	10.83	46.00	-35.17	QP
6	922.52	37.54	22.96	41.91	2.49	21.08	46.00	-24.92	QP

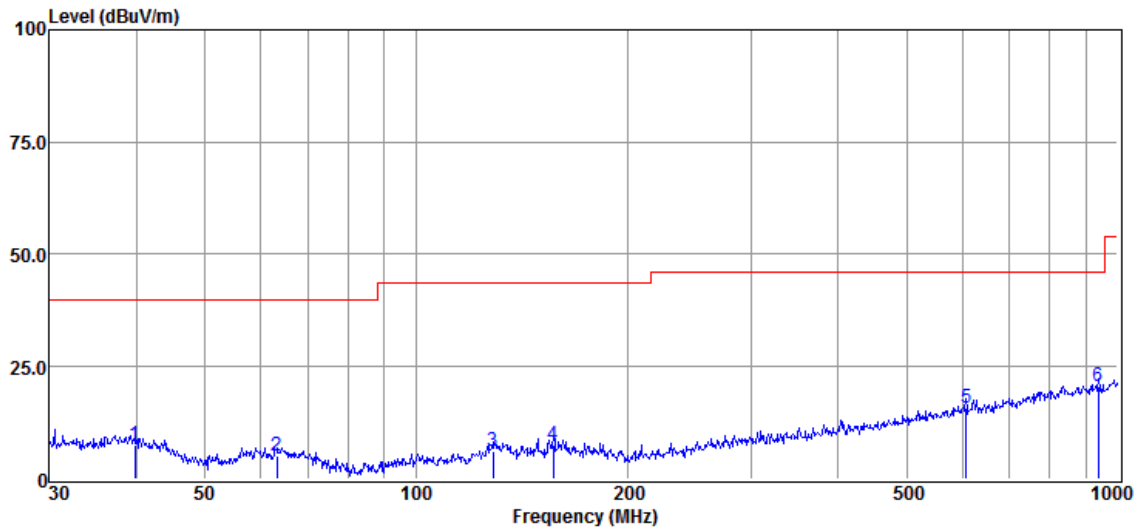


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Horizontal:



Item	Freq.	Read Level	Antenna Factor	Preamplifier Factor	Cable Loss	Result Level	Limit Line	Over Limit	Detector
(Mark)	(MHz)	(dBμV)	(dB/m)	(dB)	(dB)	(dBμV/m)	(dBμV/m)	(dB)	
1	39.72	33.91	16.28	42.68	0.22	7.73	40.00	-32.27	QP
2	63.31	35.21	12.19	42.69	0.31	5.02	40.00	-34.98	QP
3	128.56	35.96	12.43	42.63	0.57	6.33	43.50	-37.17	QP
4	157.01	36.81	12.77	42.56	0.63	7.65	43.50	-35.85	QP
5	607.79	37.16	19.47	42.19	1.38	15.82	46.00	-30.18	QP
6	938.83	36.58	23.14	41.80	2.56	20.48	46.00	-25.52	QP



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Above 1GHz

Channel: lowest

Mark	Frequency (MHz)	Reading (dBuV)	Factor (dB)	Emission (dBuV/m)	Limit (dBuV/m)	Over Limit (dB)	Detector	Polarization
1	4810	63.98	6.2	70.18	74	-3.82	Peak	Horizontal
2	4810			29.26	54	-24.80	Average	Horizontal
3	7215	39.41	10.67	50.08	74	-23.92	Peak	Horizontal
4	9620	36.51	14.37	50.88	74	-23.12	Peak	Horizontal
5	4810	60.81	6.2	67.01	74	-6.99	Peak	Vertical
5	4810			26.09	54	-27.91	Average	Vertical
7	7215	38.36	10.67	49.03	74	-24.97	Peak	Vertical
8	9620	36.37	14.37	50.74	74	-23.26	Peak	Vertical

Channel: Middle

Mark	Frequency (MHz)	Reading (dBuV)	Factor (dB)	Emission (dBuV/m)	Limit (dBuV/m)	Over Limit (dB)	Detector	Polarization
1	4890	55.73	7.08	62.81	74	-11.19	Peak	Horizontal
2	4890			21.89	54	-32.11	Average	Horizontal
3	7335	39.29	11.19	50.48	74	-23.52	Peak	Horizontal
4	9780	35.85	14.36	50.21	74	-23.79	Peak	Horizontal
5	4890	55.73	7.08	62.83	74	-11.17	Peak	Vertical
5	4890			21.91	54	-32.09	Average	Vertical
7	7335	38.15	11.19	49.34	74	-24.66	Peak	Vertical
8	9780	34.27	14.36	48.63	74	-25.37	Peak	Vertical



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Channel: Highest

Mark	Frequency (MHz)	Reading (dBuV)	Factor (dB)	Emission (dBuV/m)	Limit (dBuV/m)	Over Limit (dB)	Detector	Polarization
1	4950	59.6	7.44	67.04	74	-6.96	peak	Horizontal
2	4950			26.12	54	-27.88	Average	Horizontal
3	7425	38.26	11.58	49.84	74	-24.16	peak	Horizontal
4	9900	36.94	14.39	51.33	74	-22.67	peak	Horizontal
5	4950	60.03	7.44	67.47	74	-6.53	peak	Vertical
5	4950			26.55	54	-27.45	Average	Vertical
7	7425	39.74	11.58	51.32	74	-22.68	peak	Vertical
8	9900	35.78	14.39	50.17	74	-23.83	peak	Vertical

Remark: (1) Result Level = Read Level + Antenna Factor + Cable loss - Preamp Factor

(2) Average= Peak+20lg(Duty cycle)

(3) If the Peak value below the AV Limit, the AV test doesn't perform for this submission.



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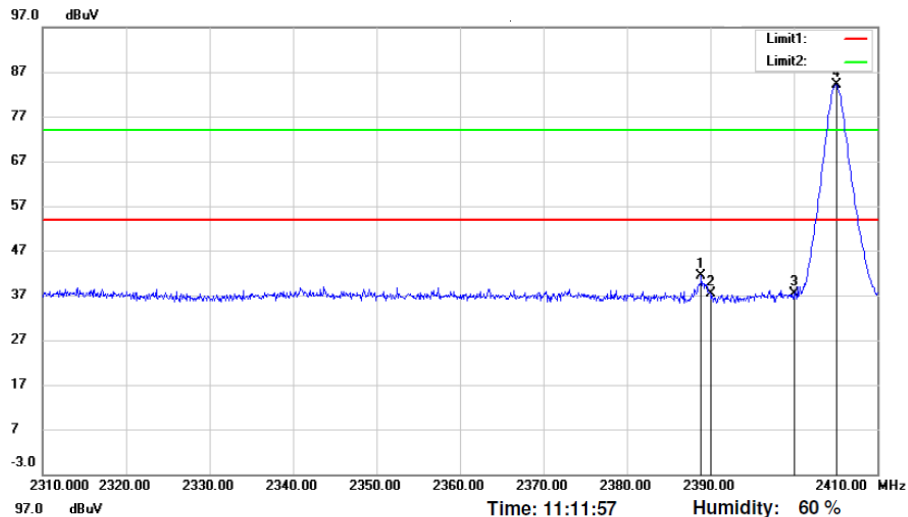
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6.6.2 Radiated Band edge

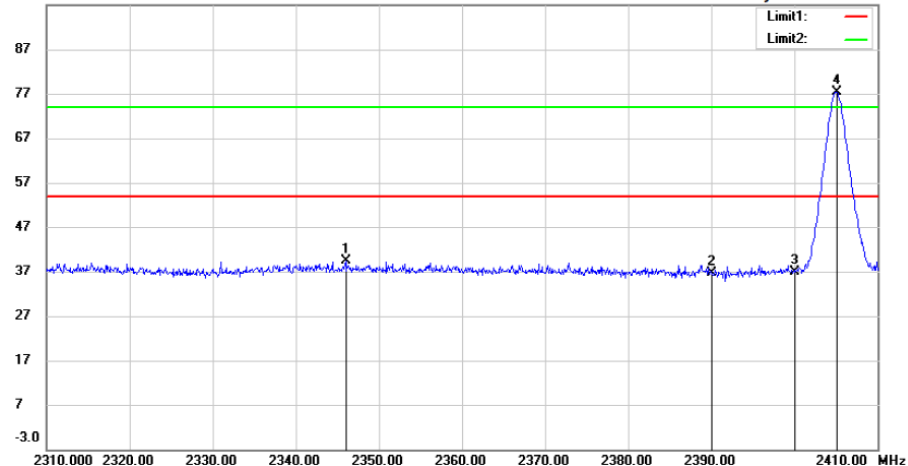
Channel: lowest

MK.	Frequency (MHz)	Reading (dBuV/m)	Corrected factor(dB)	Result (dBuV/m)	Limit (dBuV/m)	Over Limit (dB)	Detector	Polarization
1	2388.9	45.16	-3.89	41.27	54	-12.73	Peak	Horizontal
2	2390	41.36	-3.89	37.47	54	-16.53	Peak	Horizontal
3	2400	41.38	-3.92	37.46	54	-16.54	Peak	Horizontal
4	2405.1	87.97	-3.92	84.05	54	30.05	Peak	Horizontal
1	2346	43.07	-3.76	39.31	54	-14.69	Peak	Vertical
2	2390	40.61	-3.89	36.72	54	-17.28	Peak	Vertical
3	2400	40.79	-3.92	36.87	54	-17.13	Peak	Vertical
4	2405.1	81.37	-3.92	77.45	54	23.45	Peak	Vertical

Horizontal:



Vertical:



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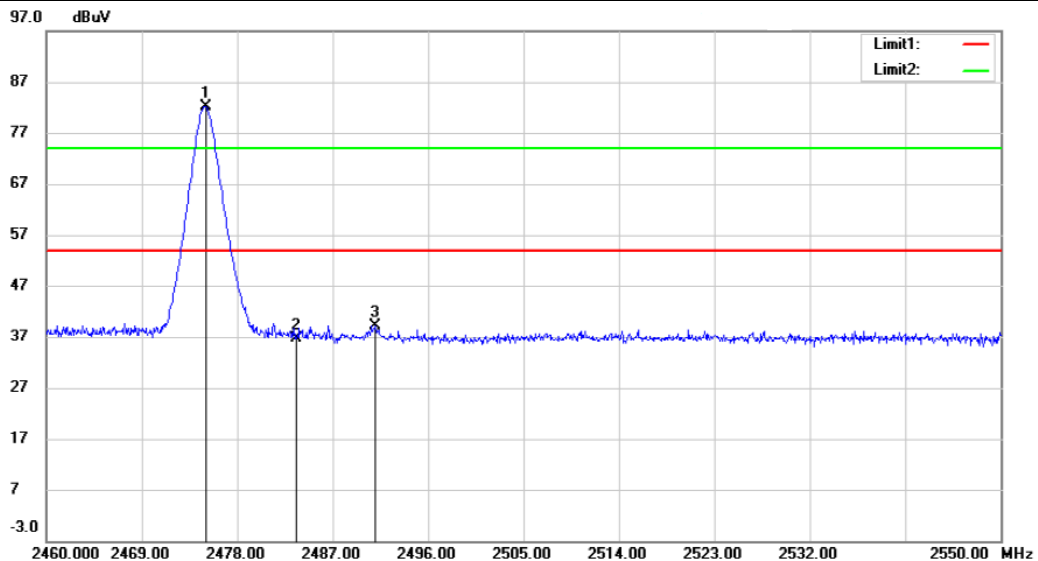
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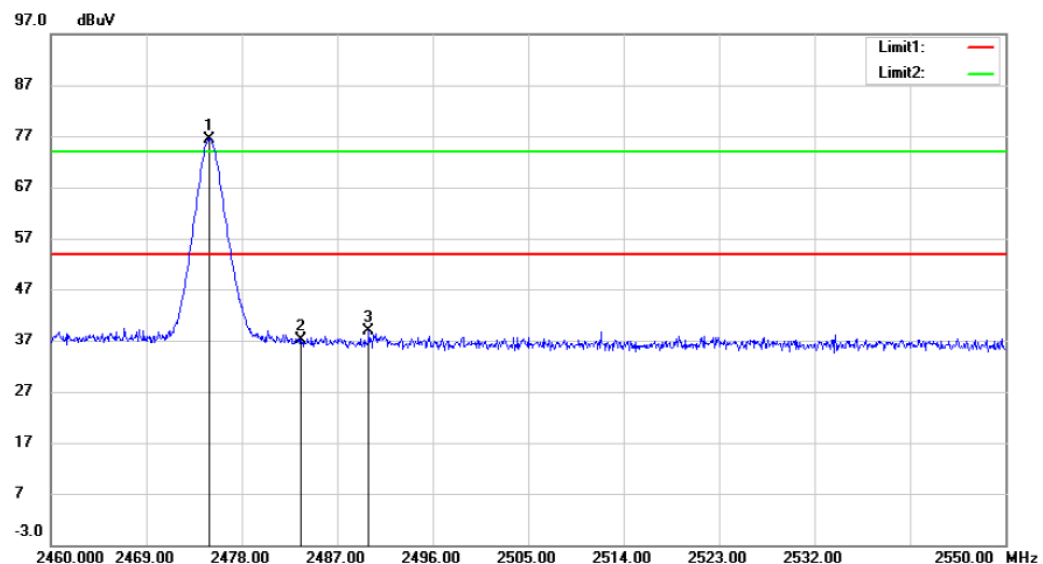
Channel: Highest

MK.	Frequency (MHz)	Reading (dBuV/m)	Corrected factor(dB)	Result (dBuV/m)	Limit (dBuV/m)	Over Limit (dB)	Detector	Polarization
1	2475.03	86.19	-4	82.19	54	28.19	Peak	Horizontal
2	2483.5	40.7	-4.01	36.69	54	-17.31	Peak	Horizontal
3	2491.05	43.27	-4.02	39.25	54	-14.75	Peak	Horizontal
1	2474.94	80.4	-4.01	76.39	54	22.39	Peak	Vertical
2	2483.5	41.06	-4.01	37.05	54	-16.95	Peak	Vertical
3	2489.97	42.88	-4.02	38.86	54	-15.14	Peak	Vertical

Horizontal:



Vertical:



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- Remark: 1. Test Level = Receiver Reading + Antenna Factor + Cable Loss- Preamplifier Factor
2. No any other emission which falls in restricted bands can be detected and be reported.
3. If the Peak value below the AV Limit, the AV test doesn't perform for this submission.

All frequencies within the "Restricted bands" have been evaluated to compliance. Section 15.205 Restricted bands of operation.

Except as shown in paragraph (d) of this section, only spurious emissions are permitted in any of the frequency bands listed below:

MHz	MHz	MHz	GHz
0.090 - 0.110	16.42 - 16.423	399.9 - 410	4.5 - 5.15
¹ 0.495 - 0.505	16.69475 - 16.69525	608 - 614	5.35 - 5.46
2.1735 - 2.1905	16.80425 - 16.80475	960 - 1240	7.25 - 7.75
4.125 - 4.128	25.5 - 25.67	1300 - 1427	8.025 - 8.5
4.17725 - 4.17775	37.5 - 38.25	1435 - 1626.5	9.0 - 9.2
4.20725 - 4.20775	73 - 74.6	1645.5 - 1646.5	9.3 - 9.5
6.215 - 6.218	74.8 - 75.2	1660 - 1710	10.5 - 12.7
6.26775 - 6.26825	108 - 121.94	1718.8 - 1722.2	13.25 - 13.4
6.31175 - 6.31225	123 - 138	2200 - 2300	14.47 - 14.5
8.291 - 8.294	149.9 - 150.05	2310 - 2390	15.35 - 16.2
8.362 - 8.366	156.52475 -	2483.5 - 2500	17.7 - 21.4
8.37625 - 8.38675	156.52525	2655 - 2900	22.01 - 23.12
8.41425 - 8.41475	156.7 - 156.9	3260 - 3267	23.6 - 24.0
12.29 - 12.293	162.0125 - 167.17	3332 - 3339	31.2 - 31.8
12.51975 - 12.52025	167.72 - 173.2	3345.8 - 3358	36.43 - 36.5
12.57675 - 12.57725	240 - 285	3600 - 4400	(²)
13.36 - 13.41	322 - 335.4		

¹ Until February 1, 1999, this restricted band shall be 0.490-0.510 MHz

² Above 38.6



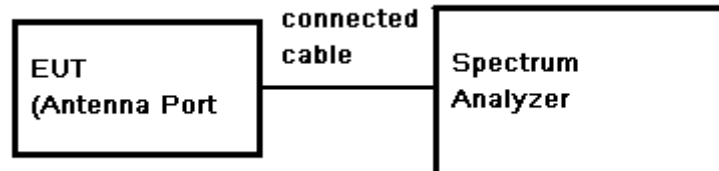
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6.7 20dB Bandwidth

Test Configuration:



Test Procedure:

1. Place the EUT on the table and set it in Engineering mode.
2. Remove the antenna from the EUT and then connect a low loss RF cable from the antenna port to the spectrum analyzer.
3. Set the spectrum analyzer as RBW = approximately 1 % to 5 % of the OBW (set 30 kHz), VBW = 3* RBW, Span=10MHz, Sweep=auto
4. Mark the peak frequency and -20dB (upper and lower) frequency.
5. Repeat above procedures until all frequency measured was complete.

Limit:

N/A

Test Result:

Pass

Test Data:

CH	Frequency (MHz)	Bandwidth (MHz)	Result
Low	2405	1.102	PASS
Mid	2445	1.090	PASS
High	2475	1.120	PASS



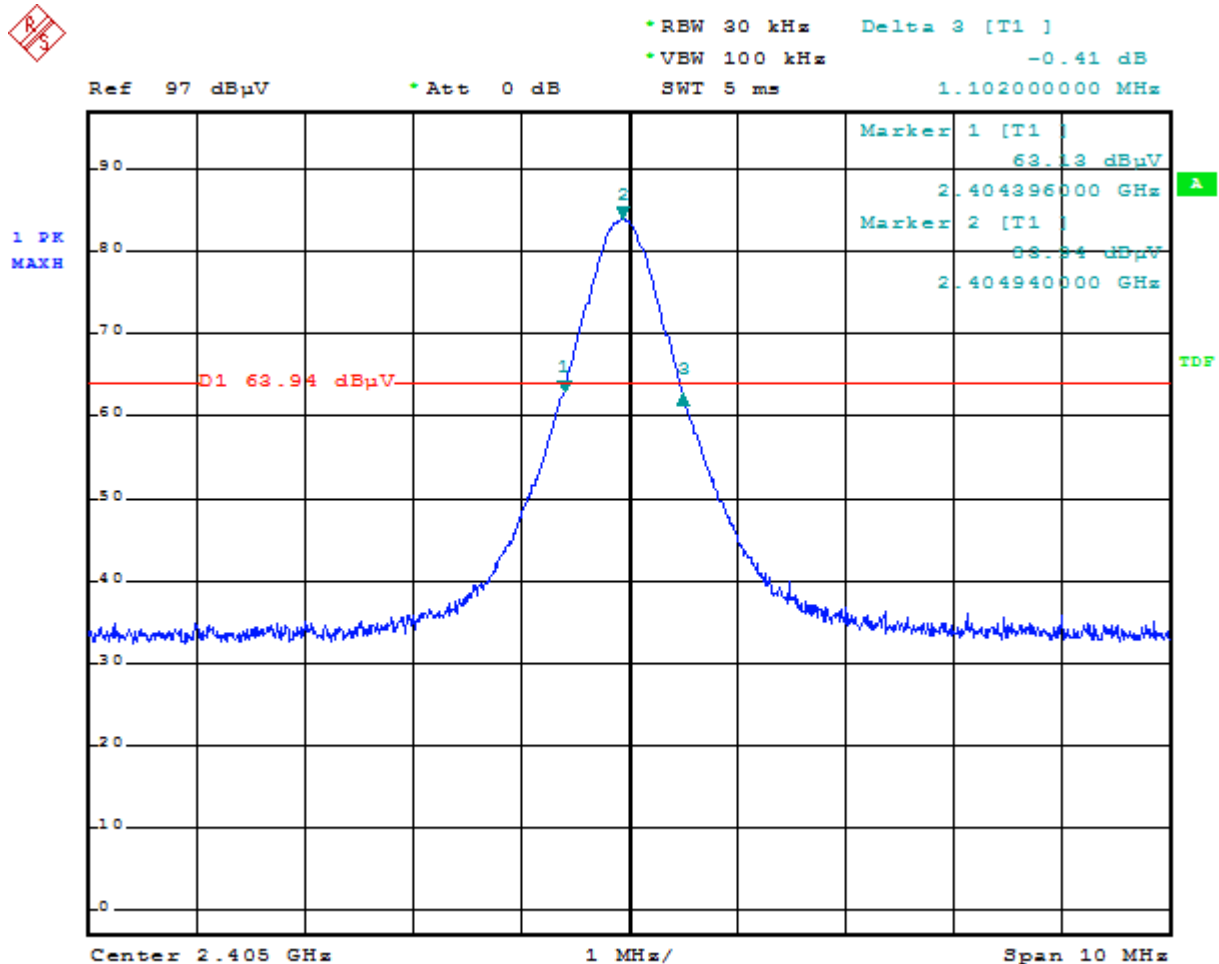
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Test plot as follows:

Channel: Lowest



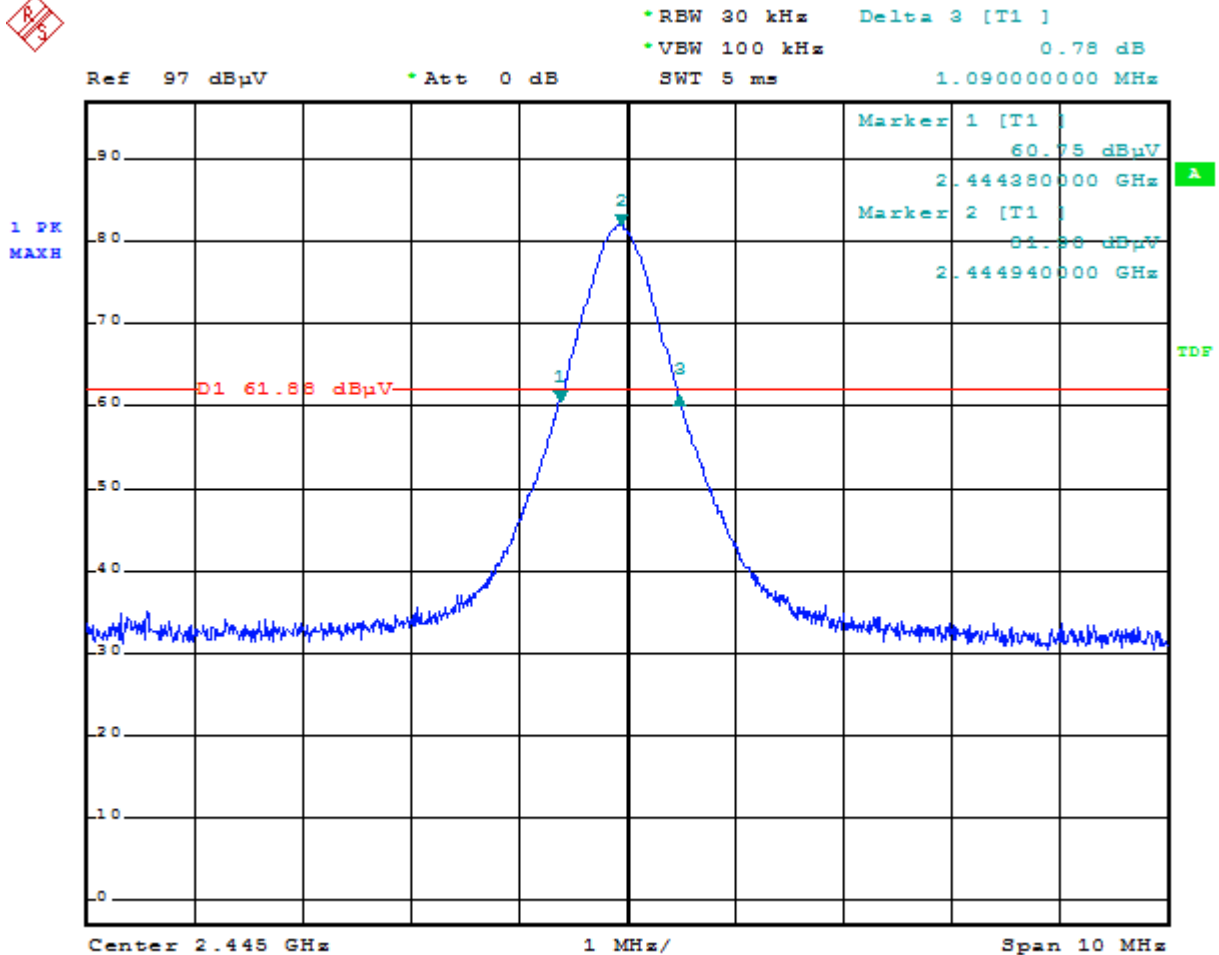


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Channel: Middle



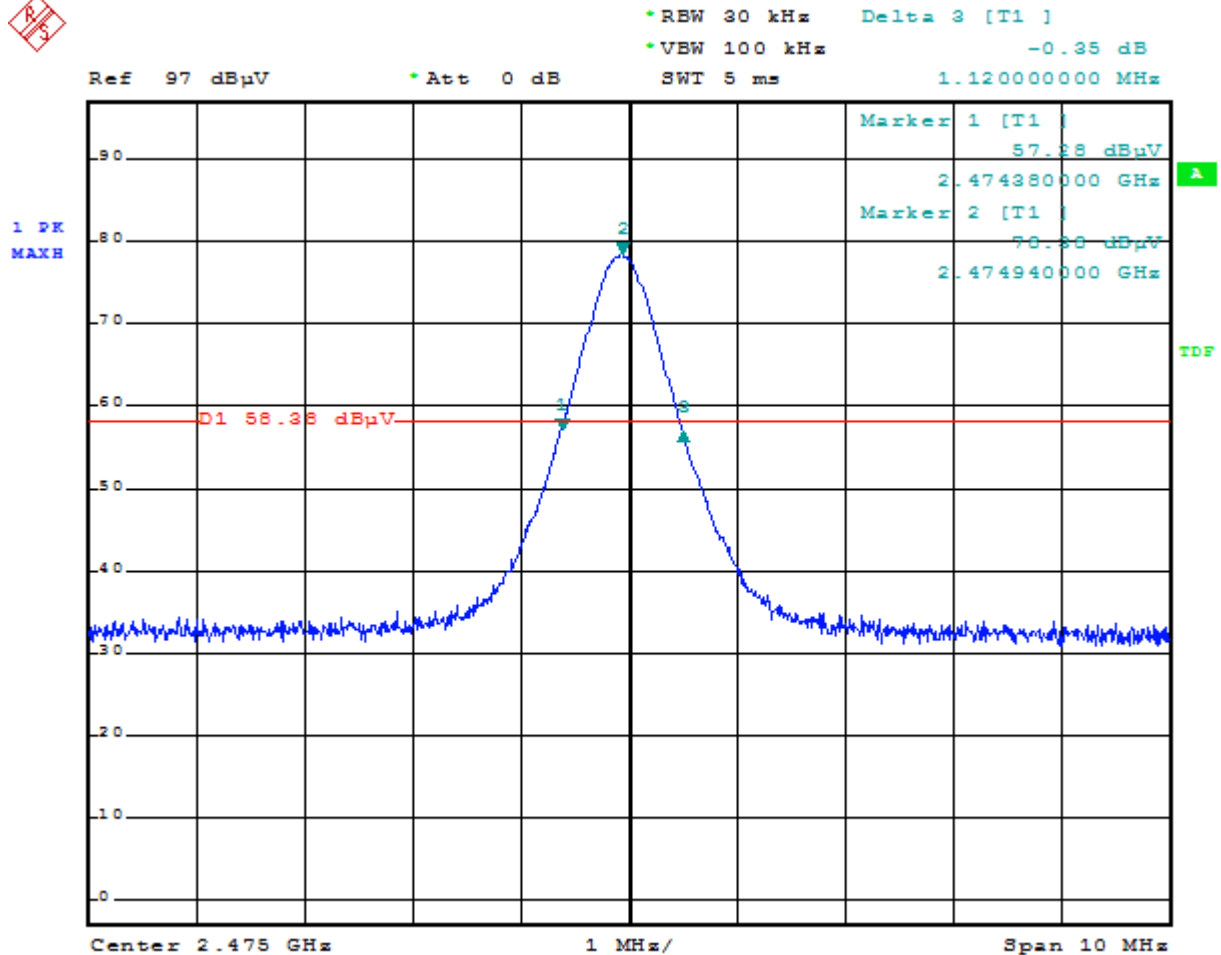


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Channel: High





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7 Test Setup Photo

Refer to the < Test Setup photos-FCC>.

8 EUT Construnctional Details

Refer to the < External Photos> & < Internal Photos>.

--End of the Report--