



SGS-CSTC Standards Technical Services (Shanghai) Co., Ltd.

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Report No.: SHEM140900245603
Page: 1 of 28

1 Cover Page

FCC REPORT

Application No.:	SHEM1409002456RF
Applicant:	Kohler Company.
FCC ID:	N82-KOHLER016
IC:	4554A-KOHLER016
Equipment Under Test (EUT): NOTE: The following sample(s) submitted was/were identified on behalf of the client as	
Product Name:	VEIL INTEGRATED TOILET
Model No.(EUT):	K-5401
Standards:	FCC PART 15 Subpart C Section 15.245: 2013 RSS-210 Issue 8 (December 2010) RSS-Gen Issue 3 (December 2010)
Date of Receipt:	September 28, 2014
Date of Test:	October 28, 2014 to November 01, 2014
Date of Issue:	November 20, 2014
Test Result:	Pass*

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



Tony Wu

E&E Section Manager

SGS-CSTC (Shanghai) Co., Ltd.

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.


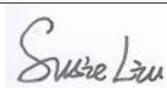
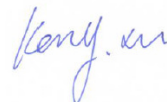
The report must not be used by the client to claim product certification, approval, or endorsement by NVLAP, NIST, or any agency of the federal government. All test results in this report can be traceable to National or International Standards.

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2 Version

Revision Record				
Version	Chapter	Date	Modifier	Remark
00		November 20, 2014		Original

Authorized for issue by:				
Engineer		Eddy Zong _____ Print Name		 _____
Clerk		Susie Liu _____ Print Name		 _____
Reviewer		Keny Xu _____ Print Name		 _____

3 Test Summary

Test Item	Test Requirement	IC Standard	Test method	Result
Antenna Requirement	FCC Part 15, Subpart C Section 15.203	RSS-Gen 7.1.2	---	PASS
AC Power Line Conducted Emission	FCC Part 15, Subpart C Section 15.207	RSS-Gen Issue 8 Clause 7.2.4	ANSI C63.10 (2009) Section 6.2	PASS
Field Strength of the Fundamental Signal	FCC Part 15, Subpart C Section 15.249 (a)	RSS-210 issue 8	ANSI C63.10 (2009) Section 6.12	PASS
Radiated Emissions and Bandedge	FCC Part 15, Subpart C Section 15.249 (a)/15.209/15.205	RSS-210 Issue 8	ANSI C63.10 (2009) Section 6.12	PASS
20dB Bandwidth	FCC Part 15, Subpart C Section 15.215 (c)	RSS-210 Issue 8 Annex 8	ANSI C63.10 (2009) Section 6.9	PASS
99% Occupied bandwidth	-	RSS-Gen Issue 3 Clause 4.6.1	RSS-Gen Issue 3 Clause 4.6.1	PASS



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5 General Information

5.1 Client Information

Applicant: Kohler Company.
Address of Applicant: 444 Highland Drive Kohler, WI, 53044
Manufacturer: Shanghai Kohler Electronics, Ltd.
Address of Manufacturer: Building E, 18 Jindian road, Pudong New area, Shanghai
Factory: Shanghai Kohler Electronics, Ltd.
Address of Factory: Building E, 18 Jindian road, Pudong New area, Shanghai

5.2 General Description of E.U.T.

Product Description: Fixed Product
Power Supply: AC 120V 60Hz

5.3 Technical Specifications:

Operation Frequency: 10.525GHz
Antenna Type: Integral
Antenna Gain: 8 dBi

5.4 E.U.T Operation Mode

Test Mode	Description of Test Mode
Transmitting mode	Keep EUT working continuous transmitting mode.

5.5 Description of Support Units

The EUT has been tested independently.

5.6 Test Location

All tests were performed at:
SGS-CSTC Standards Technical Services (Shanghai) Co., Ltd. E&E Lab
No.588 West Jindu Road, Songjiang District, Shanghai, China. 201612.
Tel: +86 21 6191 5666
Fax: +86 21 6191 5678
No tests were sub-contracted.

5.7 Test Facility

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

- **CNAS (No. CNAS L0599)**

CNAS has accredited SGS-CSTC Standards Technical Services (Shanghai) Co., Ltd. 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. Date of expiry: 2017-07-14.

- **FCC – Registration No.: 402683**

SGS-CSTC Standards Technical Services (Shanghai) Co., Ltd. has been registered and fully described in a report filed with the Federal Communications Commission (FCC). The acceptance letter from the FCC is maintained in our files. Registration No.: 402683, Expiry Date: 2017-09-16.

- **Industry Canada (IC) – IC Assigned Code: 8617A**

The 3m Semi-anechoic chamber of SGS-CSTC Standards Technical Services (Shanghai) Co., Ltd. has been registered by Certification and Engineering Bureau of Industry Canada for radio equipment testing with Registration No.: 8617A-1. Expiry Date: 2017-06-18.

- **VCCI (Member No.: 3061)**

The 3m Semi-anechoic chamber and Shielded Room of SGS-CSTC Standards Technical Services (Shanghai) Co., Ltd. has been registered in accordance with the Regulations for Voluntary Control Measures with Registration No.: R-3868 and C-4336 respectively. Date of Registration: 2012-05-29. Date of Expiry: 2015-05-28.

5.8 Measurement Uncertainty

No.	Parameter	Measurement Uncertainty
1	Radio Frequency	$< \pm 1 \times 10^{-5}$
2	Total RF power, conducted	$< \pm 1.5$ dB
3	RF power density, conducted	$< \pm 3$ dB
4	Spurious emissions, conducted	$< \pm 3$ dB
5	All emissions, radiated	$< \pm 6$ dB (30MHz – 1GHz) $< \pm 6$ dB (above 1GHz)
6	Temperature	$< \pm 1^{\circ}\text{C}$
7	Humidity	$< \pm 5$ %
8	DC and low frequency voltages	$< \pm 3$ %

6 Equipments List

Item	Test Equipment	Manufacturer	Model No.	Serial No.	Cal. Date	Cal. Due date
1	EMI test receiver	Rohde & Schwarz	ESCS30	100086	2014-02-14	2015-02-13
2	Line impedance stabilization network	SCHWARZBECK	NSLK8127	8127-490	2014-02-14	2015-02-13
3	Line impedance stabilization network	ETS	3816/2	00034161	2014-02-14	2015-02-13
4	Spectrum Analyzer	Rohde & Schwarz	FSP-30	2705121009	2014-02-14	2015-02-13
5	EMI test receiver	Rohde & Schwarz	ESU40	100109	2014-02-14	2015-02-13
6	Spectrum Analyzer	Rohde & Schwarz	FSU43	2705124267	2014-02-14	2015-02-13
7	Active Loop Antenna (9kHz to 30MHz)	Rohde & Schwarz	FMZB 1519	1519-034	2014-03-19	2015-03-18
8	Broadband UHF-VHF ANTENNA (25MHz to 2GHz)	SCHWARZBECK	VULB9168	9168-313	2014-02-14	2015-02-13
9	Ultra broadband antenna (25MHz to 3GHz)	Rohde & Schwarz	HL562	100227	2014-10-09	2015-10-08
10	Horn Antenna (1GHz to 18GHz)	Rohde & Schwarz	HF906	100284	2014-02-14	2015-02-13
11	Horn Antenna (1GHz to 18GHz)	SCHWARZBECK	BBHA9120D	9120D-679	2014-07-28	2015-07-27
12	Horn Antenna (14GHz to 40GHz)	SCHWARZBECK	BBHA 9170	BBHA9170373	2014-02-14	2015-02-13
13	Harmonic Mixer (40GHz to 60GHz)	Rohde & Schwarz	FS-Z60	100098	2014-02-14	2015-02-13
14	Harmonic Mixer (50GHz to 75GHz)	Rohde & Schwarz	FS-Z75	100542	2014-02-14	2015-02-13
15	Pre-amplifier (9KHz – 2GHz)	LNA6900	TESEQ	71033	2014-02-14	2015-02-13
16	Pre-amplifier (1GHz – 26.5GHz)	Rohde & Schwarz	SCU-F0118-G40-BZ4-CSS(F)	10001	2014-02-14	2015-02-13
17	Pre-amplifier (14GHz – 40GHz)	Rohde & Schwarz	SCU-F1840-G35-BZ3-CSS(F)	10001	2014-02-14	2015-02-13
18	High pass Filter	FSCW	HP 12/2800-5AA2	19A45-02	2014-06-02	2015-06-01
19	3m Semi-anechoic chamber	Kehuan	/	SHEM079-1	2014-02-13	2015-02-12

7 Test results and Measurement Data

7.1 E.U.T. test conditions

Test Power: AC 120V 60Hz

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:	24.0 °C
	Humidity:	52 % RH
	Atmospheric Pressure:	100.8 kPa

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 10.525GHz at one and only channel.

7.2 Antenna Requirement

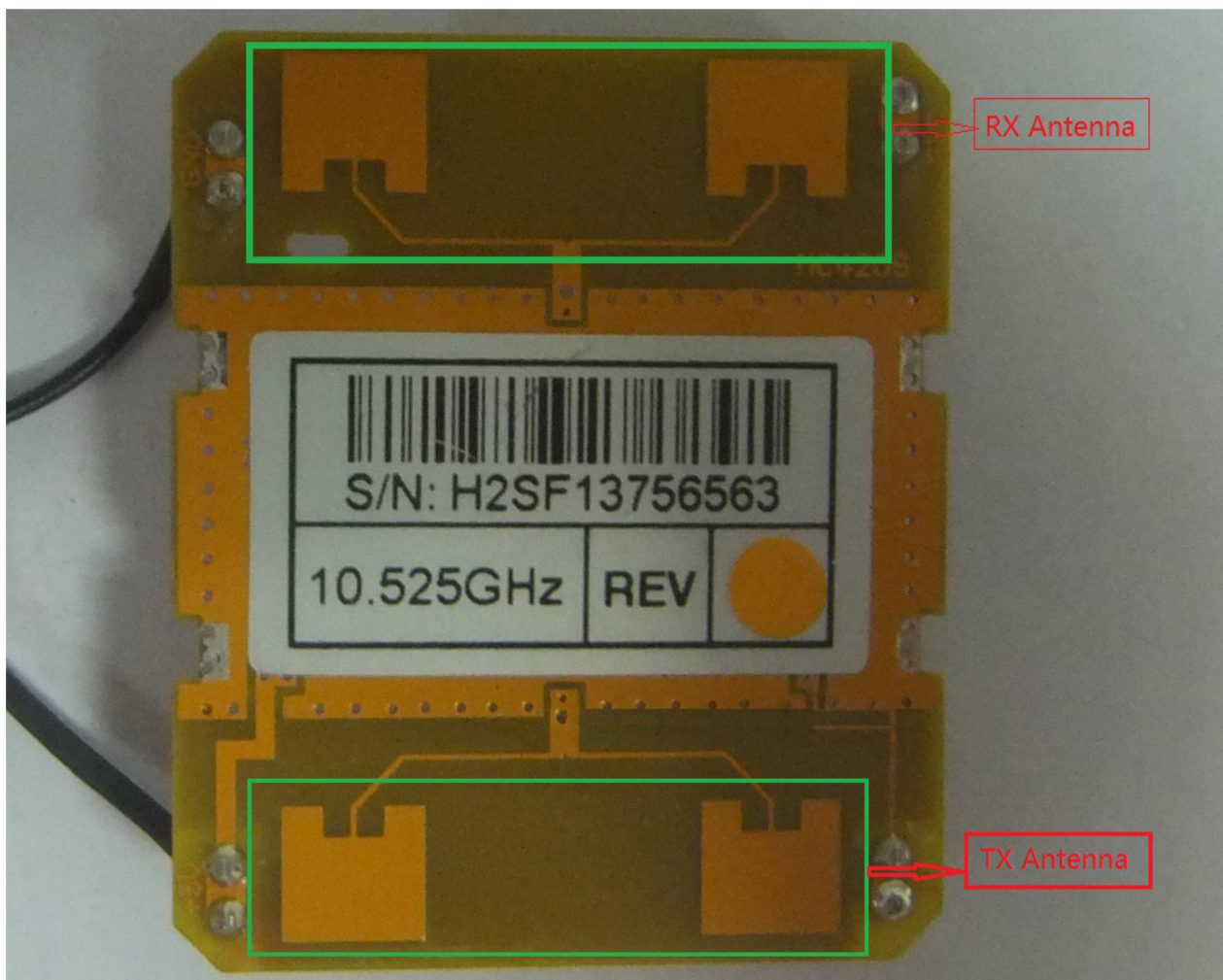
15.203 Requirement:

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.

EUT Antenna:

The antenna is integrated on the main PCB and no consideration of replacement.

Antenna Configuration:



7.3 Conducted Emissions

Test Frequency Range: 150kHz to 30MHz

Limit:

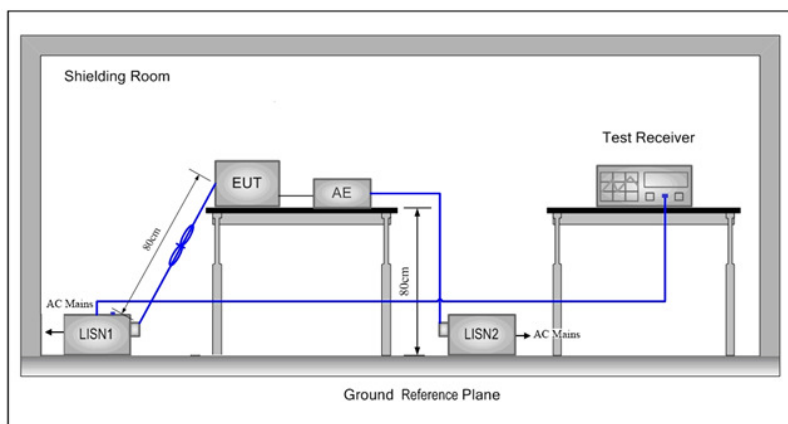
Frequency range (MHz)	Limit (dBuV)	
	Quasi-peak	Average
0.15-0.5	66 to 56*	56 to 46*
0.5-5	56	46
5-30	60	50

* Decreases with the logarithm of the frequency.

Test Procedure:

- 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 $50\Omega/50\mu\text{H} + 5\Omega$ 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.

Test Setup:

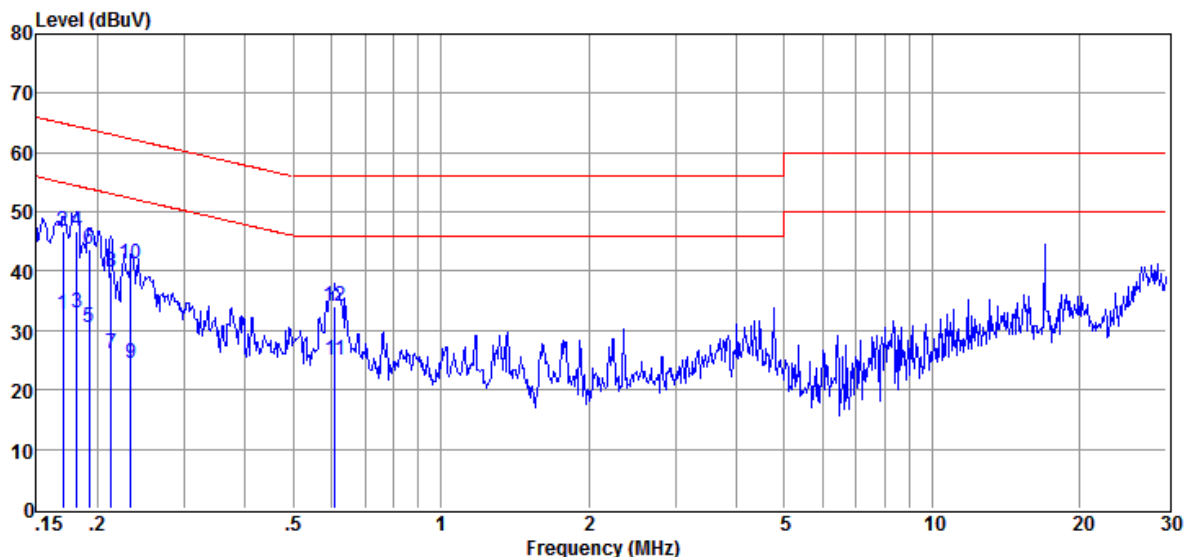


Test Results:

Pass

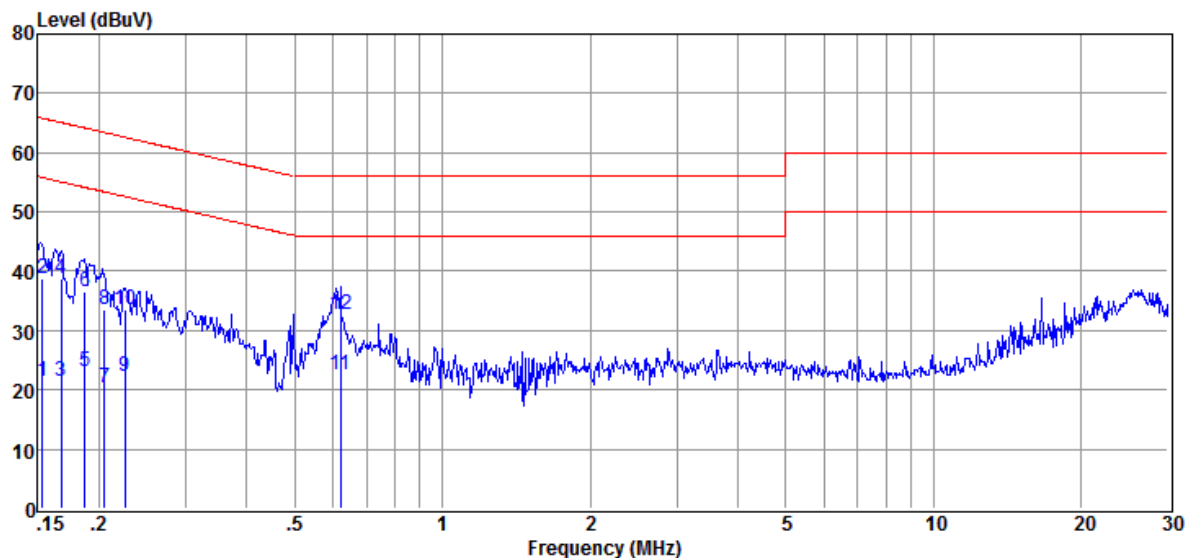
Test Data:

Live Line:



Item	Freq.	Read Level	LISN Factor	Cable Loss	Level	Limit Line	Over Limit	Detector
(Mark)	(MHz)	(dBμV)	(dB)	(dB)	(dBμV)	(dBμV)	(dB)	
1	0.170	32.41	0.30	0.10	32.81	54.94	-22.13	Average
2	0.170	46.37	0.30	0.10	46.77	64.94	-18.17	QP
3	0.182	32.63	0.28	0.10	33.01	54.42	-21.41	Average
4	0.182	46.28	0.28	0.10	46.66	64.42	-17.76	QP
5	0.192	30.09	0.27	0.10	30.46	53.93	-23.47	Average
6	0.192	43.35	0.27	0.10	43.72	63.93	-20.21	QP
7	0.213	25.71	0.26	0.10	26.07	53.10	-27.03	Average
8	0.213	39.45	0.26	0.10	39.81	63.10	-23.29	QP
9	0.234	24.01	0.26	0.10	24.37	52.30	-27.93	Average
10	0.234	40.77	0.26	0.10	41.13	62.30	-21.17	QP
11	0.608	24.69	0.23	0.10	25.02	46.00	-20.98	Average
12	0.608	33.64	0.23	0.10	33.97	56.00	-22.03	QP

Neutral Line:



Item	Freq.	Read Level	LISN Factor	Cable Loss	Level	Limit Line	Over Limit	Detector
(Mark)	(MHz)	(dBμV)	(dB)	(dB)	(dBμV)	(dBμV)	(dB)	
1	0.153	21.07	0.34	0.10	21.51	55.82	-34.31	Average
2	0.153	38.29	0.34	0.10	38.73	65.82	-27.09	QP
3	0.168	21.15	0.32	0.10	21.57	55.08	-33.51	Average
4	0.168	38.42	0.32	0.10	38.84	65.08	-26.24	QP
5	0.187	22.59	0.30	0.10	22.99	54.15	-31.16	Average
6	0.187	36.22	0.30	0.10	36.62	64.15	-27.53	QP
7	0.205	19.90	0.29	0.10	20.29	53.40	-33.11	Average
8	0.205	33.11	0.29	0.10	33.50	63.40	-29.90	QP
9	0.226	21.79	0.29	0.10	22.18	52.61	-30.43	Average
10	0.226	33.21	0.29	0.10	33.60	62.61	-29.01	QP
11	0.621	22.31	0.23	0.10	22.64	46.00	-23.36	Average
12	0.621	32.30	0.23	0.10	32.63	56.00	-23.37	QP

Level = Read Level + LISN/ISN Factor + Cable Loss.

7.4 Field Strength of the Fundamental Signal

Test Site: Measurement Distance: 3m (Semi-Anechoic Chamber)

Frequency	Detector	RBW	VBW	Remark
Above 1GHz	Peak	1MHz	3MHz	Peak
	Peak	1MHz	10Hz	Average

Frequency	Limit (dBuV/m)	Remark
10.5 to 10.55GHz	148	Peak
	128	Average

Test Setup:

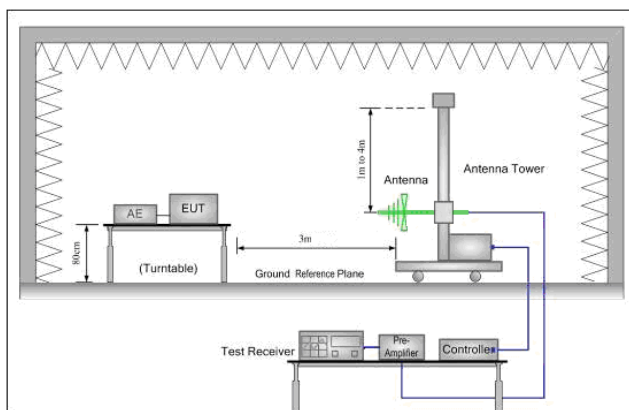


Figure 1. 30MHz to 1GHz

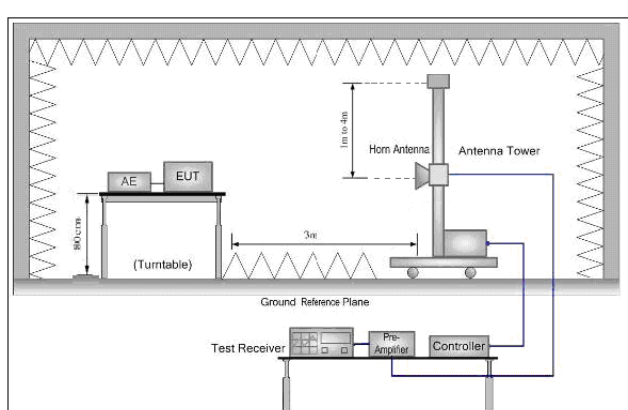


Figure 2. Above 1 GHz

- 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.

Test Results: Pass



Measurement Data:

Frequency (GHz)	Read Level (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	Detector	Polarization
10.525	81.18	14.05	95.23	128	-32.77	Peak	Horizontal
10.525	84.64	14.05	98.69	128	-29.31	Peak	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.

7.5 Radiated Emissions and band edge

Test frequency range: 9KHz – 60GHz

Test Site: Measurement Distance: 3m (Semi-Anechoic Chamber)

Receiver Setup:

Frequency	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	100 kHz	300KHz	
Above 1GHz	Peak	1MHz	3MHz	
	Average	1MHz	10Hz	
Frequency	Field strength (uV/m)	Limit (dBuV/m)	Remark	Measurement distance (m)
0.009MHz-0.490MHz	2400/F(kHz)	-	-	300
0.490MHz-1.705MHz	24000/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
Above 1GHz	500	54.0	Average	3
Note: 15.35(b), Unless otherwise specified, the limit on peak radio frequency emissions is 20dB above the maximum permitted average emission limit applicable to the equipment under test. This peak limit applies to the total peak emission level radiated by the device.				

Limit:

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.

- 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.

Test Setup:

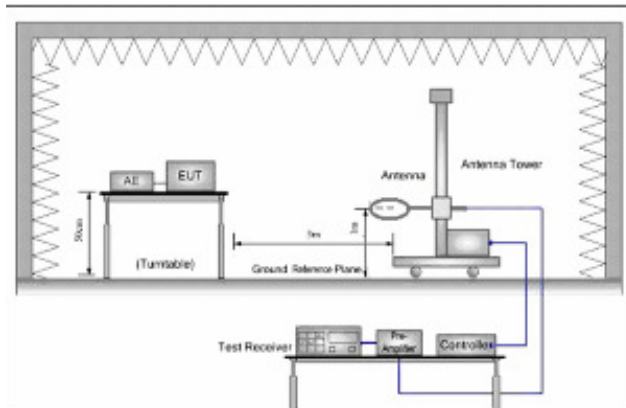


Figure 1. Below 30MHz

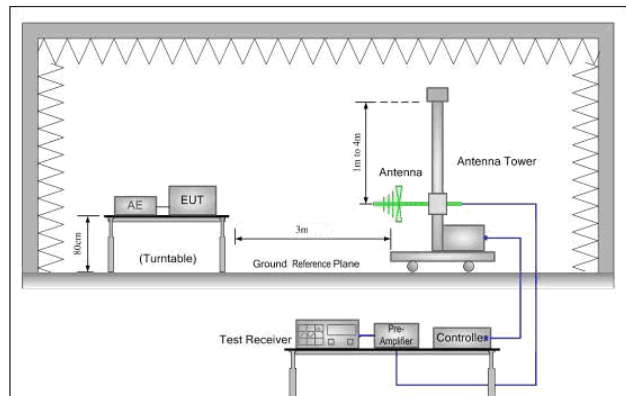


Figure 2. 30MHz to 1GHz

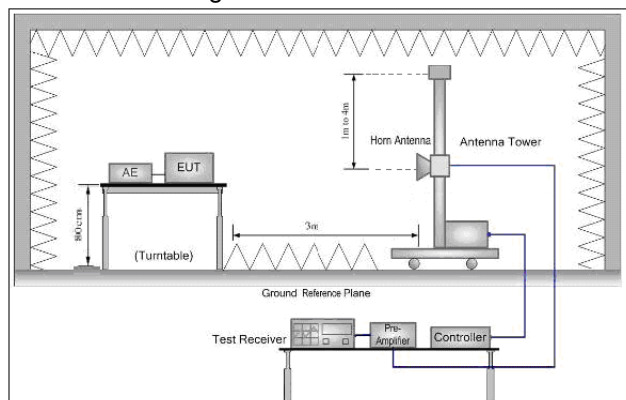


Figure 3. 1GHz to 40GHz

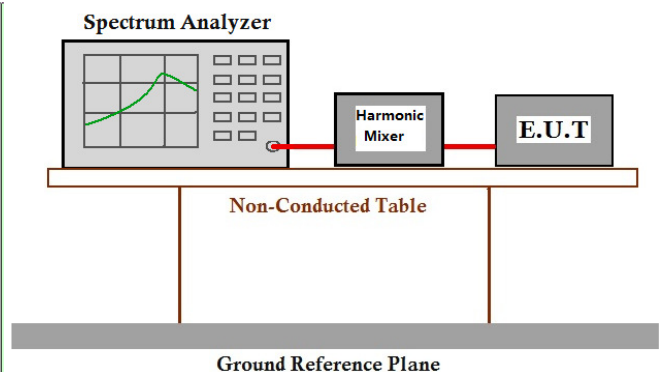


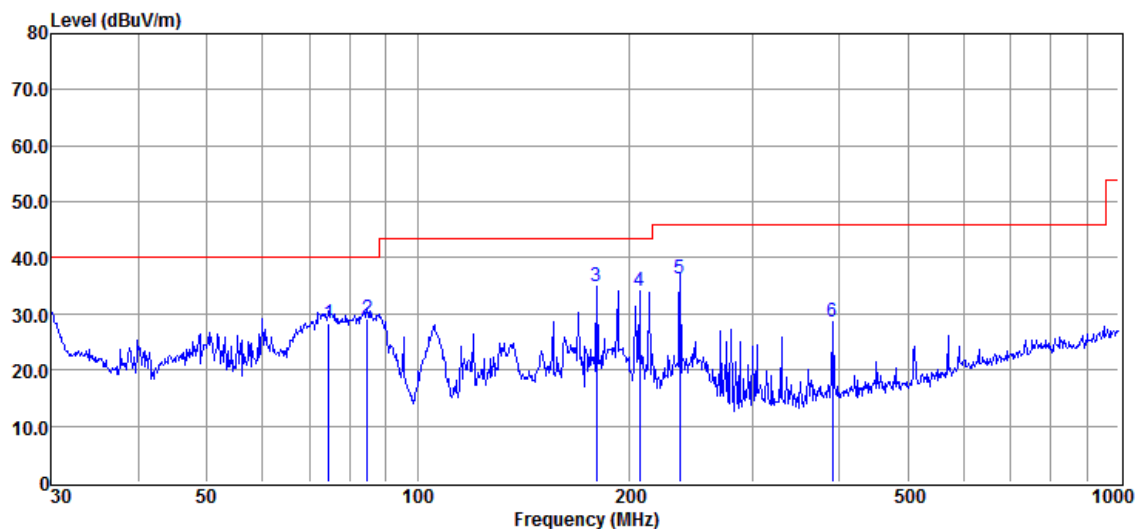
Figure 4. Above 40GHz

Test Results: Pass

Radiated Emissions:

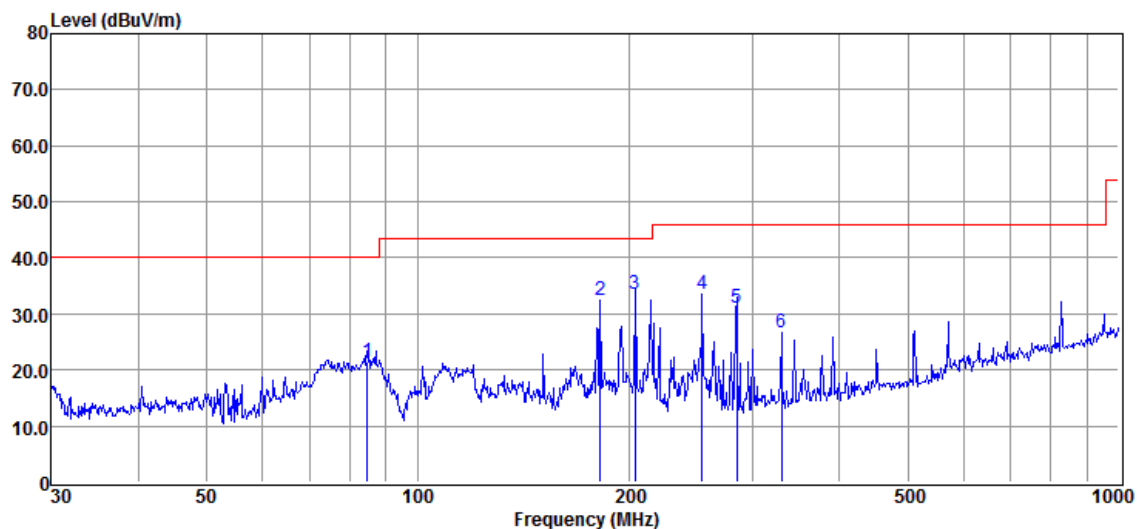
30MHz-1GHz:

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	74.657	41.79	9.64	23.67	0.64	28.40	40.00	-11.60	QP
2	84.702	43.34	8.59	23.67	0.75	29.01	40.00	-10.99	QP
3	180.016	45.15	12.10	23.63	1.33	34.95	43.50	-8.55	QP
4	207.123	47.12	9.15	23.62	1.43	34.08	43.50	-9.42	QP
5	236.645	48.47	9.86	23.64	1.52	36.21	46.00	-9.79	QP
6	390.723	36.00	14.23	23.70	2.14	28.67	46.00	-17.33	QP

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	84.702	35.75	8.59	23.67	0.75	21.42	40.00	-18.58	QP
2	181.920	42.85	11.99	23.63	1.35	32.56	43.50	-10.94	QP
3	204.238	46.41	9.21	23.62	1.41	33.41	43.50	-10.09	QP
4	254.728	45.25	10.44	23.65	1.59	33.63	46.00	-12.37	QP
5	284.977	41.63	11.34	23.66	1.80	31.11	46.00	-14.89	QP
6	330.195	35.31	13.12	23.68	1.92	26.67	46.00	-19.33	QP

Test Level = Receiver Reading + Antenna Factor + Cable Factor – Preamplifier Factor

Above 1GHz:

Item (Mark)	Freq. (MHz)	Read Level (dBμV)	Factor (dB/m)	Result Level (dB)	Limit Line (dB)	Over Limit (dBμV/m)	Detector	polarization
1	6540	39.49	7.87	47.36	54	-6.64	Peak	Horizontal
2	8529	39.73	11.00	50.73	54	-3.27	Peak	Horizontal
3	13020	40.25	10.62	50.87	54	-3.13	Peak	Horizontal
1	6540	39.85	7.87	47.72	54	-6.28	Peak	Vertical
2	8649.5	38.38	11.49	49.87	54	-4.13	Peak	Vertical
3	14140	30.28	18.63	48.91	54	-5.09	Peak	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. No any other emissions level which are attenuated less than 20dB below the limit.

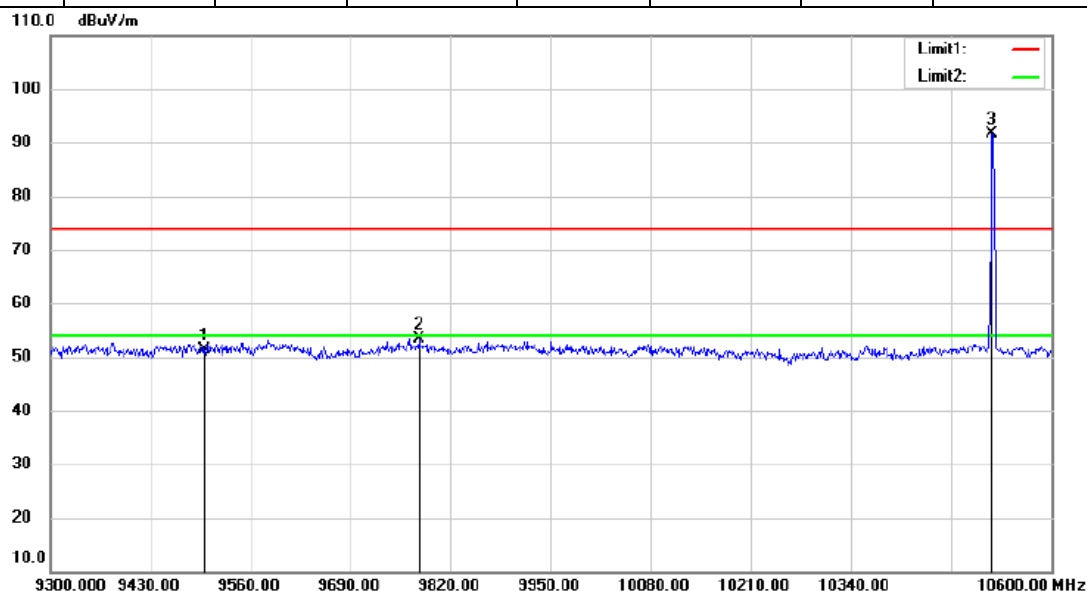
According to 15.31(o), the amplitude of spurious emissions from intentional radiators and emissions from unintentional radiators which are attenuated more than 20 dB below the permissible value need not be reported unless specifically required elsewhere in this Part. Hence there no other emissions have been reported.

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

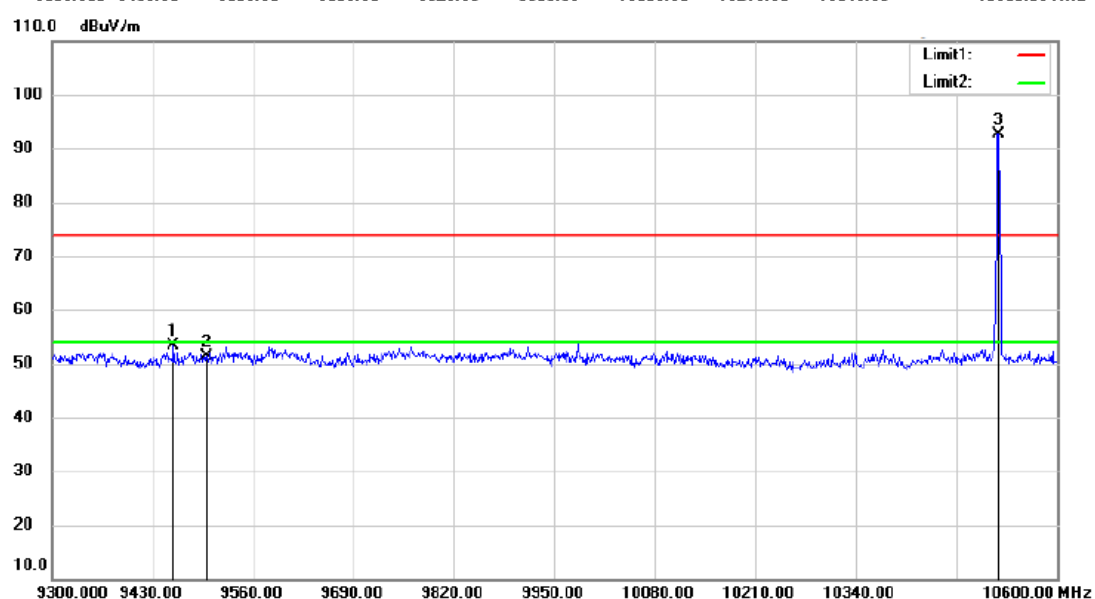
Band-edge-Low:

Item (Mark)	Frequency (MHz)	Reading Level (dBuV/m)	Corrected Factor(dB)	Result Level (dBuV/m)	Limit (dBuV/m)	Over Limit (dB)	Detector	Polarization
1	9500	36.94	14.42	51.36	54	-2.64	Peak	Horizontal
2	9778.4	39.01	14.36	53.37	54	-0.63	Peak	Horizontal
3	10523.3	77.62	14.05	91.67	54	37.67	Peak	Horizontal
1	9457.3	38.93	14.41	53.34	54	-0.66	Peak	Vertical
2	9500	36.94	14.42	51.36	54	-2.64	Peak	Vertical
3	10524.6	78.63	14.04	92.67	54	38.67	Peak	Vertical

Horizontal:



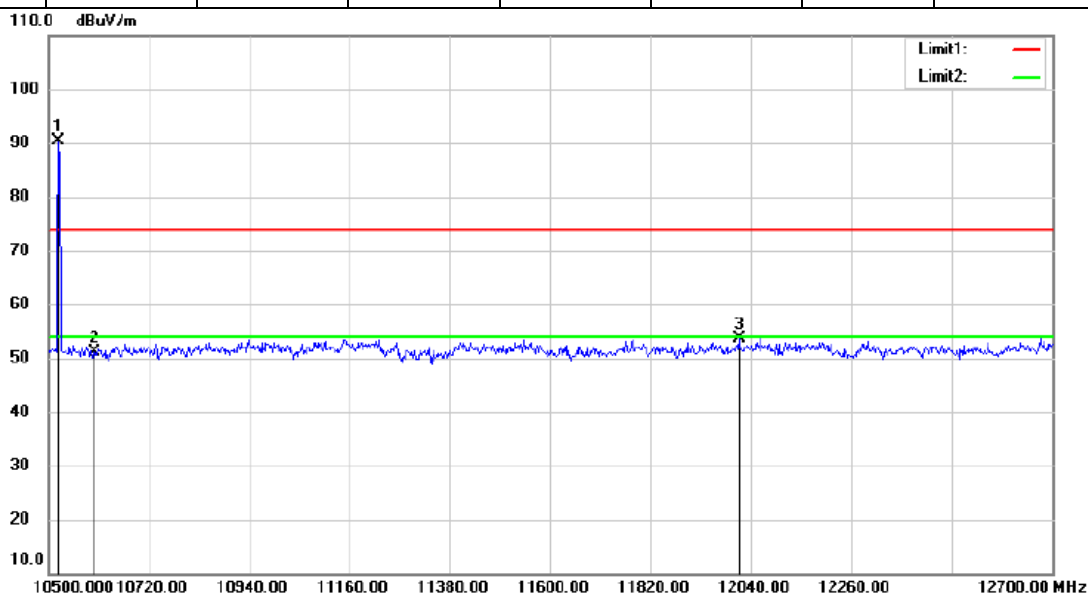
Vertical:



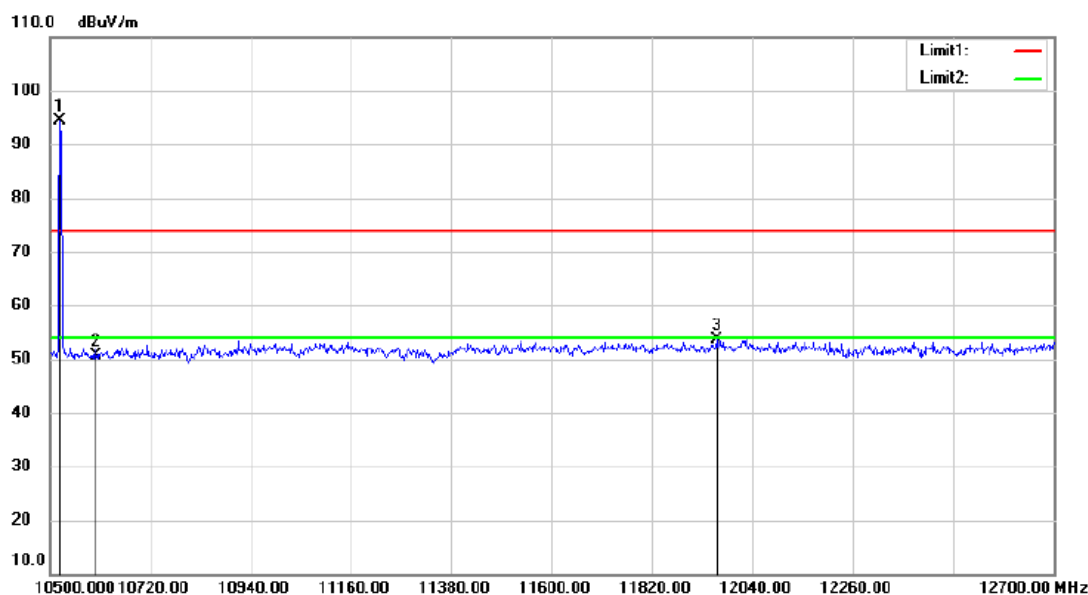
Band-edge-Upper:

MK.	Frequency (MHz)	Reading (dBuV/m)	Corrected factor(dB)	Result (dBuV/m)	Limit (dBuV/m)	Over Limit (dB)	Detector	Polarization
1	10522	76.25	14.04	90.29	54	36.29	Peak	Horizontal
2	10600	37.17	14.05	51.22	54	-2.78	Peak	Horizontal
3	12013.6	39.89	13.82	53.71	54	-0.29	Peak	Horizontal
1	10522	80.40	14.04	94.44	54	40.44	Peak	Vertical
2	10600	36.67	14.05	50.72	54	-3.28	Peak	Vertical
3	11960.8	39.80	13.82	53.62	54	-0.38	Peak	Vertical

Horizontal:



Vertical:



Remark: 1. Result Level = Reading Level + Corrected factor

2. No any other emissions level which are attenuated less than 20dB below the limit. According to 15.31(o), the amplitude of spurious emissions from intentional radiators and emissions from unintentional radiators which are attenuated more than 20 dB below the permissible value need not be reported unless specifically required elsewhere in this Part. Hence there no other emissions have been 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. only spurious emissions are permitted in any of the frequency bands listed below:

1). FCC Part 15, Subpart C Section 15.205 Restricted bands of operation.

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	10.6 - 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 - 156.52525	2483.5 - 2500	17.7 - 21.4
8.37625 - 8.38675	156.7 - 156.9	2655 - 2900	22.01 - 23.12
8.41425 - 8.41475	162.0125 - 167.17	3260 - 3267	23.6 - 24.0
12.29 - 12.293	167.72 - 173.2	3332 - 3339	31.2 - 31.8
12.51975 - 12.52025	240 - 285	3345.8 - 3358	36.43 - 36.5
12.57675 - 12.57725	322 - 335.4	3600 - 4400	
13.36 - 13.41			

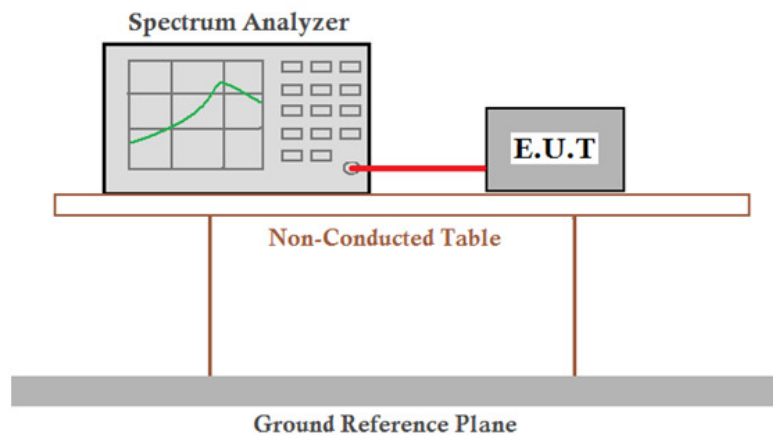


2). RSS-Gen section 7.2.2 Restricted bands of operation

MHz	MHz	GHz
0.090-0.110	240-285	9.0-9.2
2.1735-2.1905	322-335.4	9.3-9.5
3.020-3.026	399.9-410	10.6-12.7
4.125-4.128	608-614	13.25-13.4
4.17725-4.17775	960-1427	14.47-14.5
4.20725-4.20775	1435-1626.5	15.35-16.2
5.677-5.683	1645.5-1646.5	17.7-21.4
6.215-6.218	1660-1710	22.01-23.12
6.26775-6.26825	1718.8-1722.2	23.6-24.0
6.31175-6.31225	2200-2300	31.2-31.8
8.291-8.294	2310-2390	36.43-36.5
8.362-8.366	2655-2900	Above 38.6
8.37625-8.38675	3260-3267	
8.41425-8.41475	3332-3339	
12.29-12.293	3345.8-3358	
12.51975-12.52025	3500-4400	
12.57675-12.57725	4500-5150	
13.36-13.41	5350-5460	
16.42-16.423	7250-7750	
16.69475-16.69525	8025-8500	
16.80425-16.80475		
25.5-25.67		
37.5-38.25		
73-74.6		
74.8-75.2		
108-138		
156.52475-156.52525		
156.7-156.9		

7.6 20dB Bandwidth

Test Setup:



Frequency Range: 10.505 to 10.545GHz

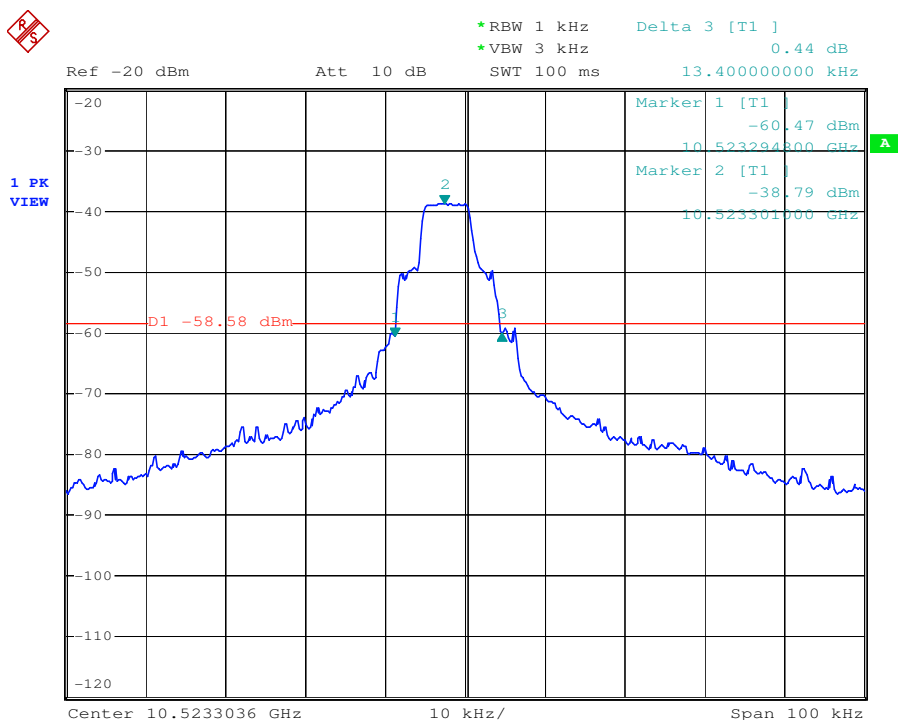
Requirements: Intentional radiators operating under the alternative provisions to the general emission limits, as contained in §15.217 through §15.257 and in subpart E of this part, must be designed to ensure that the 20 dB bandwidth of the emission is contained within the frequency band designated in the rule section under which the equipment is operated. The requirement to contain the 20 dB bandwidth of the emission within the specified frequency band includes the effects from frequency sweeping, frequency hopping and other modulation techniques that may be employed as well as the frequency stability of the transmitter over expected variations in temperature and supply voltage. If frequency stability is not specified in the regulations, it is recommended that the fundamental emission be kept within at least the central 80% of the permitted band in order to minimize the possibility of out-of-band operation.

Test Result: Pass

Test Data:

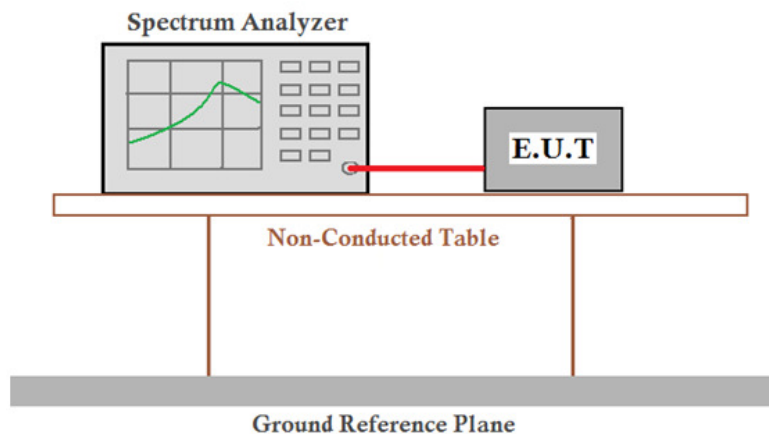
Frequency (GHz)	20dB bandwidth (KHz)
10.525	13.400

Test plot as follows:



7.7 99% Occupied Bandwidth

Test Setup:



Test Procedure:

1. Remove the antenna from the EUT and then connect a low RF cable from the antenna port to the spectrum;
2. Set the spectrum analyzer: Span = approximately 2 to 3 times the 20dB bandwidth, centred on the hopping channel;
3. Set the spectrum analyzer: RBW \geq 1% of the selected span (set 1 kHz). VBW \geq RBW. Sweep = auto; Detector Function = Peak. Trace = Max Hold.
4. Mark the peak frequency and 99% bandwidth points.

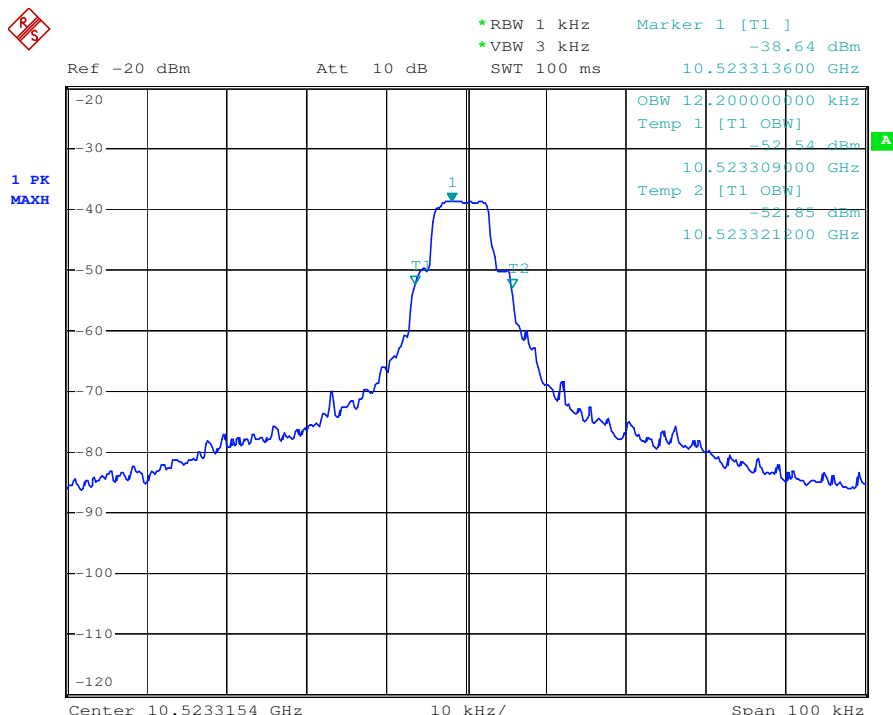
Test Result:

Pass

Test Data:

Frequency (GHz)	Occupied bandwidth (KHz)
10.525	12.200

Test plot as follows:





8 Test Setup Photographs

Refer to the < K-5401 _Test Setup Photos-FCC >

9 EUT Constructional Details

Refer to the <K-5401 _External Photos-FCC> & < K-5401 _Internal Photos-FCC>.

--End of the Report--