

TEST REPORT

Application No.: GZEM2502001011HS

Applicant: Guangdong Galanz Enterprises Co., Ltd.

Address of Applicant: 25 Ronggui Nan. Rd., Shunde, Foshan, Guangdong., China

Manufacturer: Guangdong Galanz Appliances Manufacturing Co., Ltd.

Address of Manufacturer: No. 3, East Xingpu Avenue, Maxin Industrial Zone, Huangpu Town, Zhongshan City, Guangdong Province, China

Factory: 1. Guangdong Galanz Appliances Manufacturing Co., Ltd.
2. Guangdong Galanz Microwave Oven and Electrical Appliances Manufacturing Co., Ltd.

Address of Factory: 1. No. 3, East Xingpu Avenue, Maxin Industrial Zone, Huangpu Town, Zhongshan City, Guangdong Province, China
2. No.25, South Ronggui Avenue, Shunde District, Foshan City, Guangdong Province, China

Product Name: Microwave oven

Model No.: RED560JAH-PAHH0A, RED560JAH-PAHH1A, RED560JAH-PAHH2A, RED560JAH-PAHH4A, RED560JRB-PAHH0A, SMO1961KS, RED560(X)H-(Y) series, RED560(X)-(Y) series
Variable (X): It represents the differences of the appearance, including combination of letters and/or numbers.
Variable (Y): may compose by one to six characters from A to Z and/or numbers from 0 to 9. ♣

♣ Please refer to section 2 of this report which indicates which model was actually tested and which were electrically identical.

Trade Mark: Galanz, SHARP

Standard(s) : 47 CFR Part 18

Date of Receipt: 2025-02-19

Date of Test: 2025-02-24 to 2025-03-04

Date of Issue: 2025-09-16

Test Result:	Pass*
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* In the configuration tested, the EUT complied with the standards specified above.



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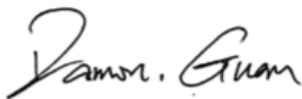
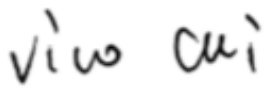
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Revision Record			
Version	Report No.	Date	Remark
01	GZEM190801493802	2019-09-09	Original
02	GZEM190801493804	2024-04-15	Amendment report: Updated address of applicant; Changed manufacturer and factory information.
03	GZEM190801493806	2025-09-16	Amendment report: Added new models and trademark.

Authorized for issue by:			
			
		Damon Guan/Project Engineer	
Approved By			
		Vico Cui/Reviewer	



2 Test Summary

Emission Part				
Item	Standard	Method	Requirement	Result
Conducted Emissions at Mains Terminals (150kHz-30MHz)	47 CFR Part 18	FCC/OST MP-5:1986	18.307	Pass
Radiated Emissions (Magnetic field Strength)(9kHz-30MHz)		FCC/OST MP-5:1986	18.305(b)	Pass
Radiated Emissions (30MHz-1GHz)		FCC/OST MP-5:1986	18.305(b)	Pass
Radiated Emissions (above 1GHz)		FCC/OST MP-5:1986	18.305(b)	Pass
Output Power Measurement		FCC OST/MP-5:1986	FCC OST/MP-5:1986 Clause 4.3	Pass
Operating Frequency Measurement		FCC OST/MP-5:1986	18.301	Pass
Radiation Hazard Test		FCC OST/MP-5:1986	1 mW/cm ²	Pass

Note:

E.U.T./EUT means Equipment Under Test.

Pass means the test result passed the test standard requirement, please find the detailed decision rule in the report relative section.

Remark for report GZEM190801493802
■ Declaration of EUT Family Grouping:

Model No.: RED560JAH-PAHH0A, RED560JAH-PAHH1A, RED560JAH-PAHH2A, RED560JAH-PAHH4A, RED560(X)H-(Y) series

Variable (X): It represents the differences of the appearance, including combination of letters and/or numbers.

Variable (Y): may compose by one to six characters from A to Z and/or numbers from 0 to 9.

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 on the outer appearance.

Therefore only one model **RED560JAH-PAHH0A** was tested in this report.



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◆Remark for report GZEM190801493804:

This report GZEM190801493804 is based on original report GZEM190801493802. Only Updated address of applicant; Changed manufacturer and factory information.

According to FCC Part 2 section 2.1043(b)(1), it is ok to update test report by updated address of applicant; Changed manufacturer and factory information without filing with the Commission.

FCC Part 2 section 2.1043(b)(1):

A Class I permissive change includes those modifications in the equipment which do not degrade the characteristics reported by the manufacturer and accepted by the Commission when certification is granted. No filing with the Commission is required for a Class I permissive change.

All test results in report GZEM190801493802 were kept in this report GZEM190801493804.

Remark for report GZEM190801493806:

This report GZEM190801493806 is based on original report GZEM190801493804, with the following changes:

1. Added trademark SHARP.
2. Added new models RED560JRB-PAHH0A, SMO1961KS, RED560(X)-(Y) series.

According to the declaration of the applicant, the models add in this report GZEM190801493806 and models in the original report GZEM190801493804 were different in the electrical circuit design, layout, components used, internal wiring, the outer appearance and door opening design but the same magnetron.

Considering to above difference, full tests were performed to model RED560JRB-PAHH0A and recorded the new test results in this report GZEM190801493806.

Other tests please refer to original report GZEM190801493804 for details.



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4 General Information

4.1 Details of E.U.T.

Power supply: AC 120V, 60Hz

Test Voltage: AC 120V 60Hz

Cable(s): About 1.0m x 3 wires unscreened AC mains cable.

Remark: The information in this section is provided by the applicant or manufacturer, SGS is not liable to the accuracy, suitability, reliability or/and integrity of the information.

4.2 Description of Support Units

Description	Manufacturer	Model No.	Serial No.
1000mL of water in the beaker for power output and frequency measurement.	/	/	/
One of 700 and the other of 300mL of water for second and third harmonic radiation measurement.	/	/	/
700mL of water for all other measurement	/	/	/

4.3 Measurement Uncertainty

Test Item	Measurement Uncertainty
Conducted Emissions at Mains Terminals (150kHz-30MHz)	3.22dB (150kHz to 30MHz)
Radiated Emissions (Magnetic field Strength)(9kHz-30MHz)	± 3.12 dB
Radiated Emissions (30MHz-1GHz)	5.14dB (30MHz-1GHz):3m; 4.90dB (30MHz-1GHz):10m
Radiated Emissions (above 1GHz)	4.88dB (1GHz-6GHz); 5.06dB (6GHz-18GHz)
<p>Remark:</p> <p>The U_{lab} (lab Uncertainty) is less than U_{CISPR} (CISPR Uncertainty) or U_{ETSI} (ETSI Uncertainty).</p> <p>Emission decision rule:</p> <ul style="list-style-type: none"> – Compliance is deemed to occur if no measured disturbance level exceeds the disturbance limit, marked as Pass in the report. – Non-compliance is deemed to occur if any measured disturbance level exceeds the disturbance limit, marked as Fail in the report. 	

4.4 Test Location

All tests were performed at:

SGS-CSTC Standards Technical Services Co., Ltd., Guangzhou Branch EMC Laboratory,
No.198, Kezhu Road, Science City, Economic & Technological Development Area, Guangzhou,
Guangdong, China 510663

Tel: +86 20 82155555

No tests were sub-contracted.

4.5 Test Facility

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

- **ACMA**

SGS-CSTC Standards Technical Services Co., Ltd., EMC Laboratory can also perform testing for the Australian/New Zealand Regulatory Compliance Mark (RCM).

- **SGS UK(Certificate No.: 32), SGS-TUV SAARLAND and SGS-FIMKO**

Have approved SGS-CSTC Standards Technical Services Co., Ltd., EMC Laboratory as a supplier of EMC TESTING SERVICES and SAFETY TESTING SERVICES.

- **FCC Recognized Accredited Test Firm(Registration No.: 486818)**

SGS-CSTC Standards Technical Services Co., Ltd., EMC Laboratory has been accredited and fully described in a report filed with the (FCC) Federal Communications Commission. The acceptance letter from the FCC is maintained in our files. Designation Number: CN5016, Test Firm Registration Number: 486818.

- **ISED (Registration No.: 4620B, CAB identifier: CN0052)**

SGS-CSTC Standards Technical Services Co., Ltd., has been registered by Innovation Science and Economic Development Canada for Wireless Device Testing laboratories to test to Canadian radio equipment requirements. Registration No. 4620B, CAB identifier: CN0052.

- **VCCI (Registration No.: R-12460, C-12584, G-20107 and T-11179)**

The 10m Semi-anechoic chamber, 966 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.: R-12460, C-12584, G-20107 and T-11179 respectively.

- **CBTL (Lab Code: TL129)**

SGS-CSTC Standards Technical Services Co., Ltd., E&E Laboratory has been assessed and fully comply with the requirements of ISO/IEC 17025:2017, the Basic Rules, IECEE 01 and Rules of procedure IECEE 02, and the relevant IECEE CB-Scheme Operational documents.

4.6 Deviation from Standards

None

4.7 Abnormalities from Standard Conditions

None



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5 Equipment List

Conducted Emissions at Mains Terminals (150kHz-30MHz)					
Equipment	Manufacturer	Model No.	Inventory No.	Cal Date	Cal Due Date
Coaxial Cable	HangTianXing	2m	EMC0107	2023-08-24	2025-08-23
Shielding Room	ChangZhou ZhongYu	8m x 3m x 3.8m	EMC0306	2022-10-16	2025-10-15
Two-Line V-Network-GZ	Rohde & Schwarz	ENV216	EMC2135	2024-09-02	2025-09-01
EMI Test Receiver (9kHz-3.6GHz)	Rohde & Schwarz	ESR3	EMC2221	2024-12-04	2025-12-03
Test Software E3r	Audix	Ver.6.191211	GZE100-77	N/A	N/A
Artificial Mains Network (LISN)	AFJ Instruments	LT32C	EMC2046	2024-10-14	2025-10-13

Radiated Emissions (Magnetic field Strength)(9kHz-30MHz)					
Equipment	Manufacturer	Model No.	Inventory No.	Cal Date	Cal Due Date
Amplifier(9k-1000MHz)	SONOMA	310	EMC2237	2024-12-03	2025-12-02
Active Loop Antenna-RED	ETS-Lindgren	6502	EMC2190	2024-04-08	2026-04-07
EMI Test Receiver (1Hz-8GHz)	Rohde & Schwarz	ESW8	EMC2229	2024-12-03	2025-12-02
Test Software E3	Audix	Ver.6.120110a	GZE100-61	N/A	N/A
966 Anechoic Chamber	Shenzhen C.R.T	CRTSGSSAC966	EMC2230	2022-04-12	2025-04-11
Coaxial Cable	Mirco-COAX UTIFLEX ve	LA2-C125-8000	EMC2239	2024-12-04	2026-12-03

Radiated Emissions (30MHz-1GHz)					
Equipment	Manufacturer	Model No.	Inventory No.	Cal Date	Cal Due Date
966 Anechoic Chamber	Shenzhen C.R.T	CRTSGSSAC966	EMC2230	2022-04-12	2025-04-11
EMI Test Receiver(1Hz-8GHz)	Rohde & Schwarz	ESW8	EMC2229	2024-12-03	2025-12-02
Amplifier(9k-1000MHz)	SONOMA	310	EMC2237	2024-12-03	2025-12-02
Trilog Broadband Antenna (25MHz-2GHz)	Schwarzbeck Mess-Elektronik	VULB 9168	EMC2238	2022-04-20	2025-04-19
Coaxial Cable	Mirco-COAX UTIFLEX ve	LA2-C125-8000	EMC2239	2024-12-04	2026-12-03
Test Software E3	Audix	Ver.6.191211	GZE100-81	N/A	N/A



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Radiated Emissions (above 1GHz)					
Equipment	Manufacturer	Model No.	Inventory No.	Cal Date	Cal Due Date
1GHz-26.5 GHz Pre-Amplifier	Agilent	8449B	EMC0521	2024-10-14	2025-10-13
EMI Test Receiver (10Hz-26.5GHz)	Rohde & Schwarz	ESIB26	EMC0522	2024-09-02	2025-09-01
Chamber cable (Above 1GHz)	Scoflex	KMKM-8.0m	EMC0545	2024-08-19	2026-08-18
Horn Antenna (1GHz-18GHz)	SCHWARZBECK MESS-ELEKTRONIK	BBHA 9120D	EMC2026	2022-09-23	2025-09-22
2.4GHz Filter	Micro-Tronics	BRM 50702	EMC2069	2024-10-14	2025-10-13
EXA Signal Analyzer (10Hz-44GHz)	Keysight	N9010A	EMC2138	2024-08-19	2025-08-18
966 Anechoic Chamber	C.R.T	9m x 6m x 6m	EMC2142	2023-12-20	2026-12-19
Test Software E3	Audix	Ver.6.120110a	GZE100-61	N/A	N/A

Output Power Measurement					
Equipment	Manufacturer	Model No.	Inventory No.	Cal Date	Cal Due Date
Digital thermometer	FLUKE	51_2	EMC2200	2024-07-24	2025-07-23
Digital power analyzer for harmonics & flicker testing	EMTEST	DPA 500N	EMC2235	2024-04-19	2025-04-18
Programmable multifunctional ac/dc power source	EMTEST	NETWAVE 7-400	EMC2234	2024-04-19	2025-04-18
NET.Control	EMTEST	Ver 3.2.3	GZE100-80	N/A	N/A

Operating Frequency Measurement					
Equipment	Manufacturer	Model No.	Inventory No.	Cal Date	Cal Due Date
EMI Test Receiver (10Hz-26.5GHz)	Rohde & Schwarz	ESIB26	EMC0522	2024-09-02	2025-09-01
Chamber cable (Above 1GHz)	Scoflex	KMKM-8.0m	EMC0545	2024-08-19	2026-08-18
Horn Antenna (1GHz-18GHz)	SCHWARZBECK MESS-ELEKTRONIK	BBHA 9120D	EMC2026	2022-09-23	2025-09-22
966 Anechoic Chamber	C.R.T	9m x 6m x 6m	EMC2142	2023-12-20	2026-12-19
Test Software E3	Audix	Ver.6.120110a	GZE100-61	N/A	N/A

Radiation Hazard Test					
Equipment	Manufacturer	Model No.	Inventory No.	Cal Date	Cal Due Date
Electric Field Probe(100KHz-3GHz)	WANDEL & GOLTERMANN	EMR-20	EMC0907	2024-05-13	2025-05-12



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General used equipment					
Equipment	Manufacturer	Model No	Inventory No	Cal Date	Cal Due Date
DMM	Fluke	73	EMC0006	2024-06-13	2025-06-12



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6 Emission Test Results

6.1 Conducted Emissions at Mains Terminals (150kHz-30MHz)

Test Requirement:	47 CFR Part 18
Test Method:	FCC/OST MP-5:1986
Limit:	
Frequency Range:	150kHz to 30MHz
0.15 to 0.5 MHz:	66dB(μV)-56dB(μV) quasi-peak, 56dB(μV)-46dB(μV) average
0.5 to 5 MHz:	56dB(μV) quasi-peak, 46dB(μV) average
5 to 30 MHz:	60dB(μV) quasi-peak, 50dB(μV) average
Detector:	Peak for pre-scan (9kHz resolution bandwidth) 0.15M to 30MHz

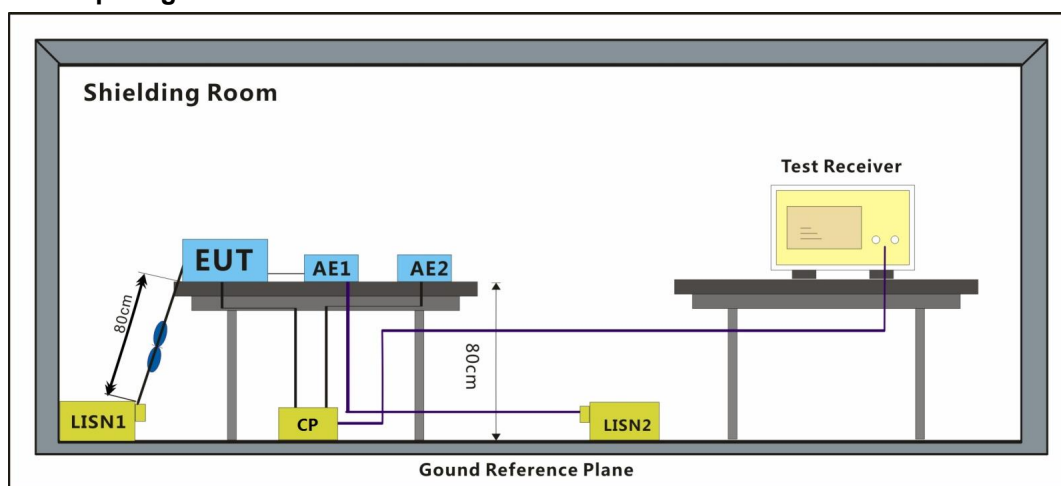
6.1.1 E.U.T. Operation

Operating Environment:			
Temperature:	21.8 °C	Humidity:	53.3 % RH
		Atmospheric Pressure:	1020 mbar

6.1.2 Test Mode Description

Pre-scan / Mode	Code	Description
Final test	00	Test the EUT in microwave mode with maximum power.
Pre-scan	01	Test the EUT in microwave mode with middle power.
Pre-scan	02	Test the EUT in microwave mode with lowest power.

6.1.3 Test Setup Diagram



6.1.4 Measurement Procedure and Data

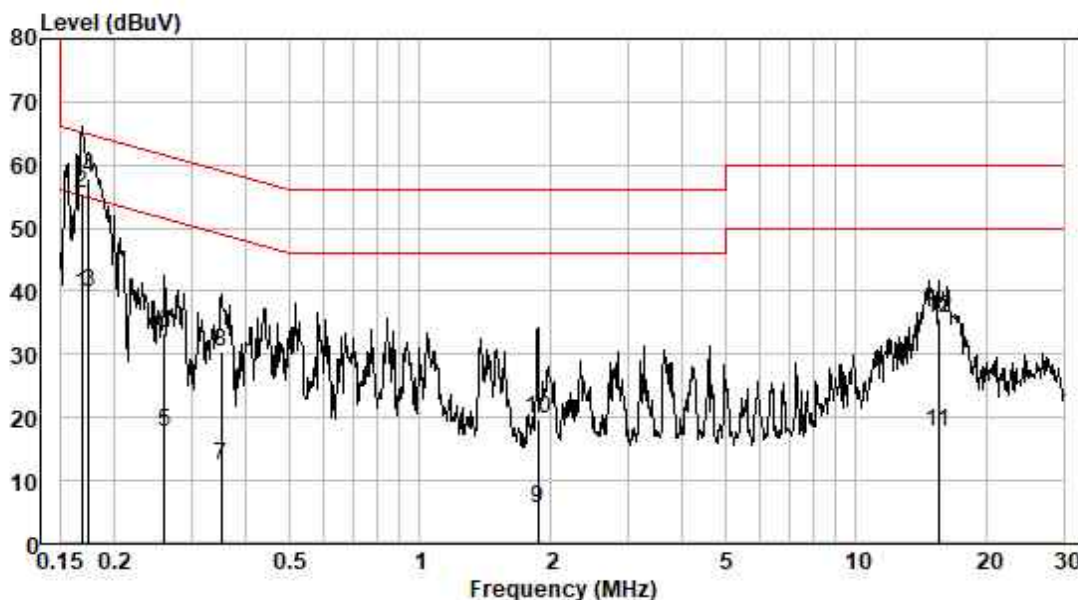
Frequency range: 150KHz-30MHz

An initial pre-scan was performed with peak detector. Quasi-Peak or Average measurement were performed at the frequencies with maximized peak emission were detected.

The red line show in graphic is the limit in standard used in this section.

Measured Level = Read level + Cable Loss + LISN Factor

Test Mode: 00; Line: Live line

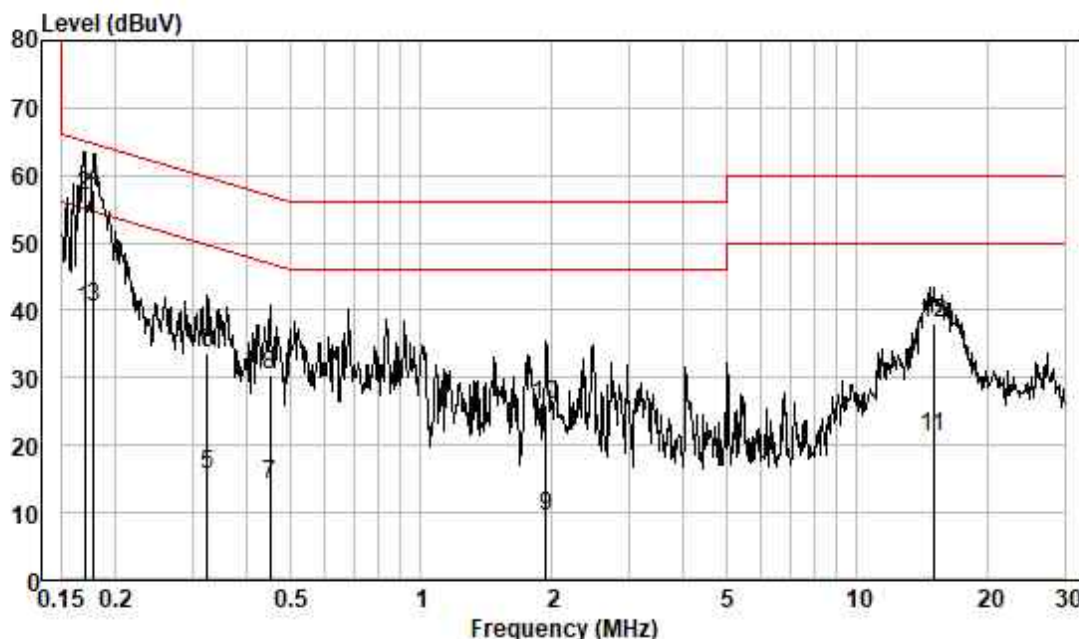


Pol : LINE
Mode :
Model :
Power :

	Freque MHz	Read Level dBuV	Cable Loss dB	LISN Factor dB	Measured Level dBuV	Limit Line dBuV	Over Limit dB	Remark
1	0.168	29.86	0.04	9.54	39.44	55.08	-15.64	Average
2	0.168	45.99	0.04	9.54	55.57	65.08	-9.51	QP
3	0.174	30.30	0.04	9.54	39.88	54.77	-14.89	Average
4	0.174	48.22	0.04	9.54	57.80	64.77	-6.97	QP
5	0.260	8.18	0.04	9.59	17.81	51.42	-33.61	Average
6	0.260	23.75	0.04	9.59	33.38	61.42	-28.04	QP
7	0.350	2.69	0.05	9.59	12.33	48.96	-36.63	Average
8	0.350	20.66	0.05	9.59	30.30	58.96	-28.66	QP
9	1.868	-4.19	0.12	9.61	5.54	46.00	-40.46	Average
10	1.868	9.91	0.12	9.61	19.64	56.00	-36.36	QP
11	15.470	7.58	0.33	9.85	17.76	50.00	-32.24	Average
12	15.470	25.51	0.33	9.85	35.69	60.00	-24.31	QP



Test Mode: 00; Line: Neutral Line



Pol : NEUTRAL
Mode :
Model :
Power :

	Freque	Read	Cable	LISN	Measured	Limit	Over	Remark
	MHz	Level	Loss	Factor	Level	Line	Limit	
		dBuV	dB	dB	dBuV	dBuV	dB	
1	0.169	30.49	0.04	9.54	40.07	64.99	-24.92	Average
2	0.169	47.37	0.04	9.54	56.95	64.99	-8.04	QP
3	0.178	30.91	0.04	9.54	40.49	64.59	-24.10	Average
4	0.178	48.42	0.04	9.54	58.00	64.59	-6.59	QP
5	0.323	6.23	0.04	9.52	15.79	59.62	-43.83	Average
6	0.323	24.24	0.04	9.52	33.80	59.62	-25.82	QP
7	0.452	4.66	0.05	9.56	14.27	56.85	-42.58	Average
8	0.452	20.90	0.05	9.56	30.51	56.85	-26.34	QP
9	1.939	-0.20	0.12	9.52	9.44	56.00	-46.56	Average
10	1.939	16.41	0.12	9.52	26.05	56.00	-29.95	QP
11	14.986	10.91	0.33	9.91	21.15	60.00	-38.85	Average
12	14.986	27.95	0.33	9.91	38.19	60.00	-21.81	QP



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6.2 Radiated Emissions (Magnetic field Strength)(9kHz-30MHz)

Test Requirement: 47 CFR Part 18
 Test Method: FCC/OST MP-5:1986
 Limit:
 Measurement Distance: 3 m
 Frequency Range: 9kHz to 30MHz
 Detector: Peak for pre-scan, Average for the final result
 (200Hz Resolution Bandwidth for 9kHz to 150kHz;
 9kHz Resolution Bandwidth for 150kHz to 30MHz)

Equipment:	Operating frequency:	RF Power generated by equipment (watts):	Limit dB(uV/m) average:
Any type unless otherwise specified (miscellaneous)	Any ISM frequency	945.0	Limit=20lg(25*SQRT(power/500))+20lg(300/3)= 70.72 dBuV/m @ 3m distance.

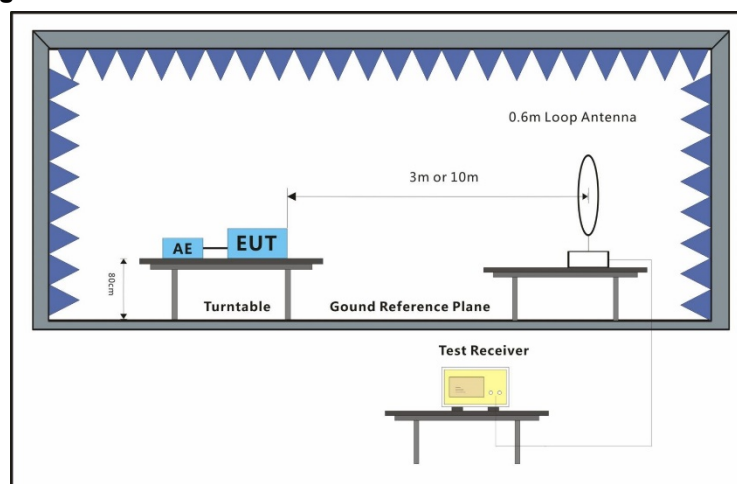
6.2.1 E.U.T. Operation

Operating Environment:
 Temperature: 24.1 °C Humidity: 49.0 % RH Atmospheric Pressure: 1020 mbar

6.2.2 Test Mode Description

Pre-scan / Mode	Code	Description
Final test	00	Test the EUT in microwave mode with maximum power.
Pre-scan	01	Test the EUT in microwave mode with middle power.
Pre-scan	02	Test the EUT in microwave mode with lowest power.

6.2.3 Test Setup Diagram



6.2.4 Measurement Procedure and Data

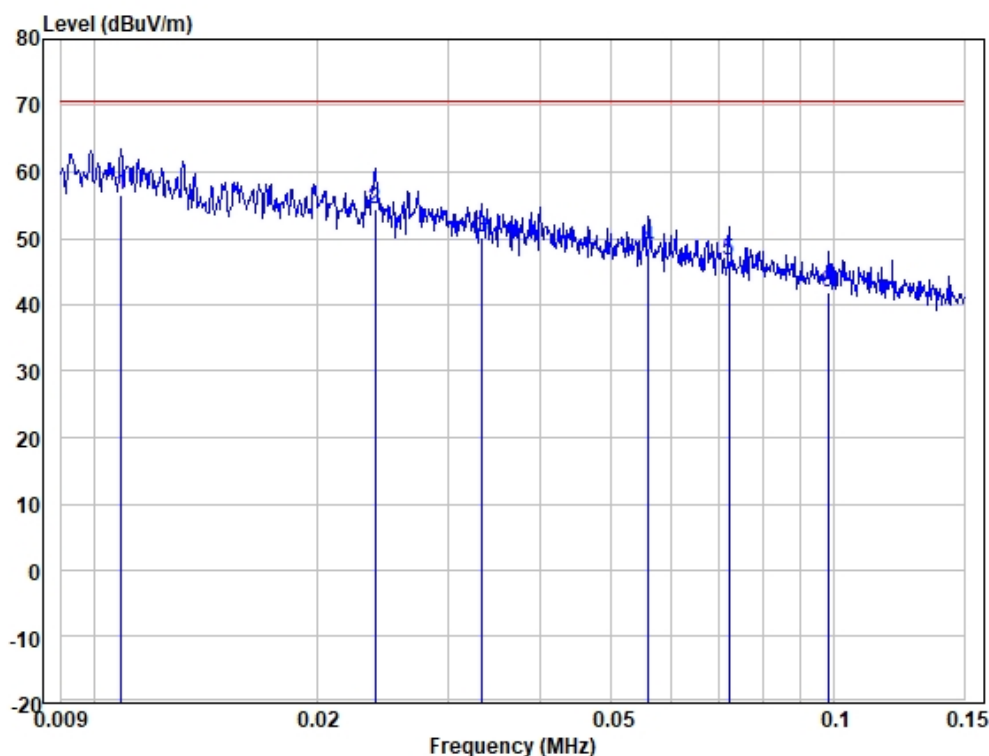
Frequency range: 9KHz-30MHz

An initial pre-scan was performed in the chamber using the spectrum analyser in peak detection mode. Average measurements were conducted based on the peak sweep graph. The EUT was measured by loop antenna with 2 orthogonal polarities.

The red line show in graphic is the limit in standard used in this section.

Level=Read Level + Antenna Factor + Cable Loss - Preamp Factor

Test Mode: 00; Polarity: Horizontal



Site : 966 Chamber
Job :
Model :
Power :
Test Mode :

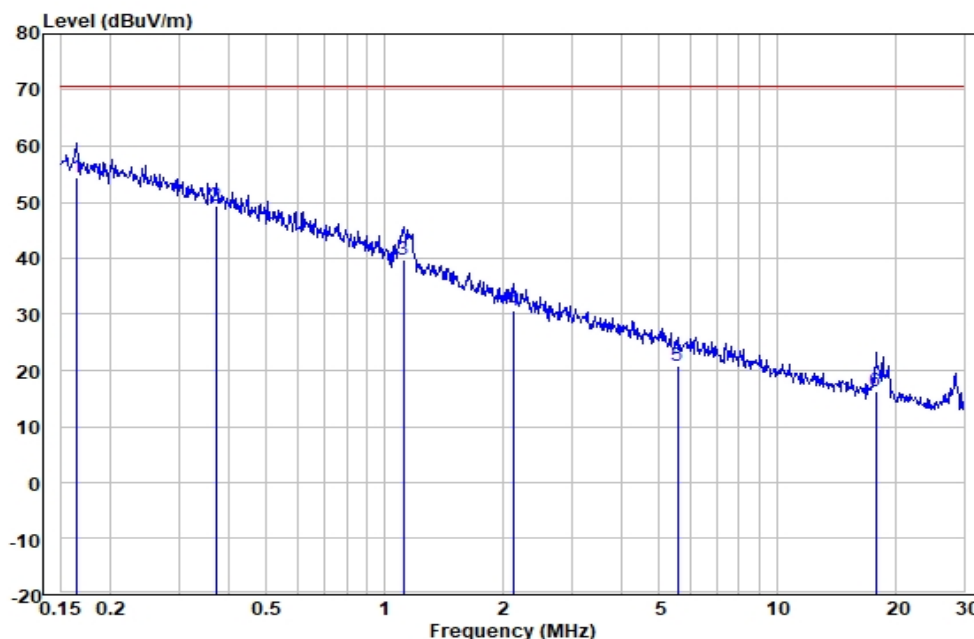
	Freq	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Measured Level	Limit Line	Over Limit	Pol/Phase	Remark
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB		
1	0.011	67.93	21.19	0.01	32.72	56.41	70.72	-14.31	HORIZONTAL	Average
2	0.024	70.75	16.46	0.01	32.72	54.50	70.72	-16.22	HORIZONTAL	Average
3	0.033	67.34	15.54	0.01	32.72	50.17	70.72	-20.55	HORIZONTAL	Average
4	0.056	66.25	14.86	0.01	32.72	48.40	70.72	-22.32	HORIZONTAL	Average
5	0.072	64.65	14.82	0.01	32.72	46.76	70.72	-23.96	HORIZONTAL	Average
6	0.098	59.97	14.69	0.01	32.72	41.95	70.72	-28.77	HORIZONTAL	Average



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Test Mode: 00; Polarity: Horizontal

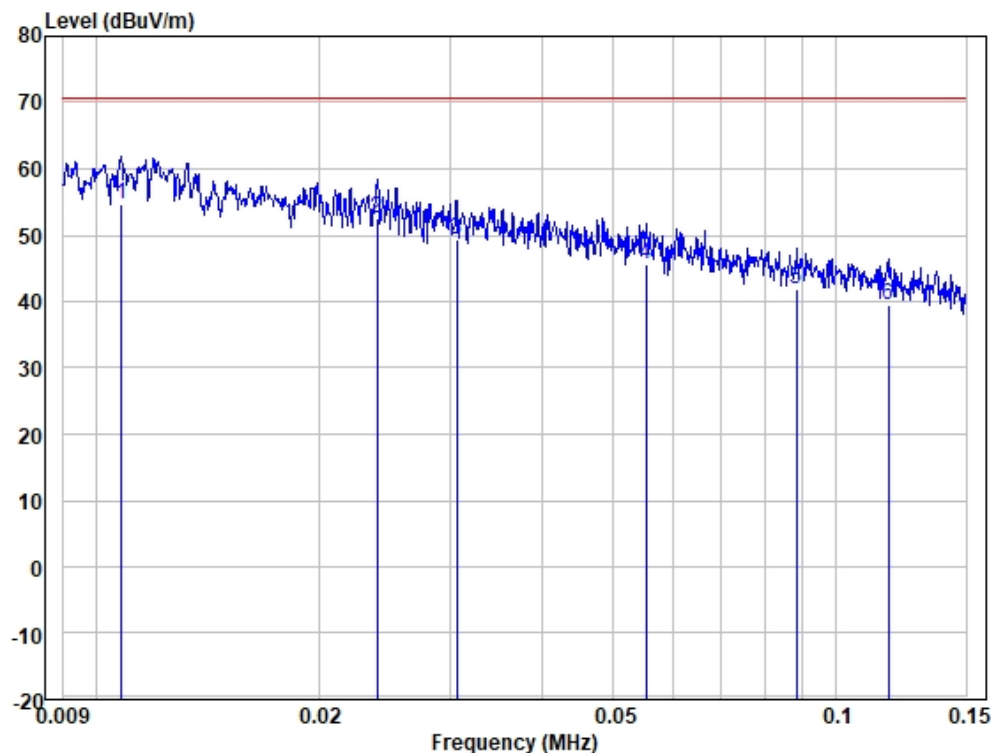


Site : 966 Chamber
Job :
Model :
Power :
Test Mode :

	Freq	Read Level	Antenna Factor	Cable Loss	Preamplifier Factor	Measured Level	Limit Line	Over Limit	Pol/Phase	Remark
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB		
1	0.165	72.47	14.68	0.01	32.72	54.44	70.72	-16.28	HORIZONTAL	Average
2	0.371	67.40	14.57	0.01	32.72	49.26	70.72	-21.46	HORIZONTAL	Average
3	1.117	58.98	13.37	0.05	32.70	39.70	70.72	-31.02	HORIZONTAL	Average
4	2.133	49.24	13.95	0.06	32.70	30.55	70.72	-40.17	HORIZONTAL	Average
5	5.594	40.85	12.66	0.11	32.71	20.91	70.72	-49.81	HORIZONTAL	Average
6	17.849	39.04	9.70	0.23	32.72	16.25	70.72	-54.47	HORIZONTAL	Average



Test Mode: 00; Polarity: Vertical

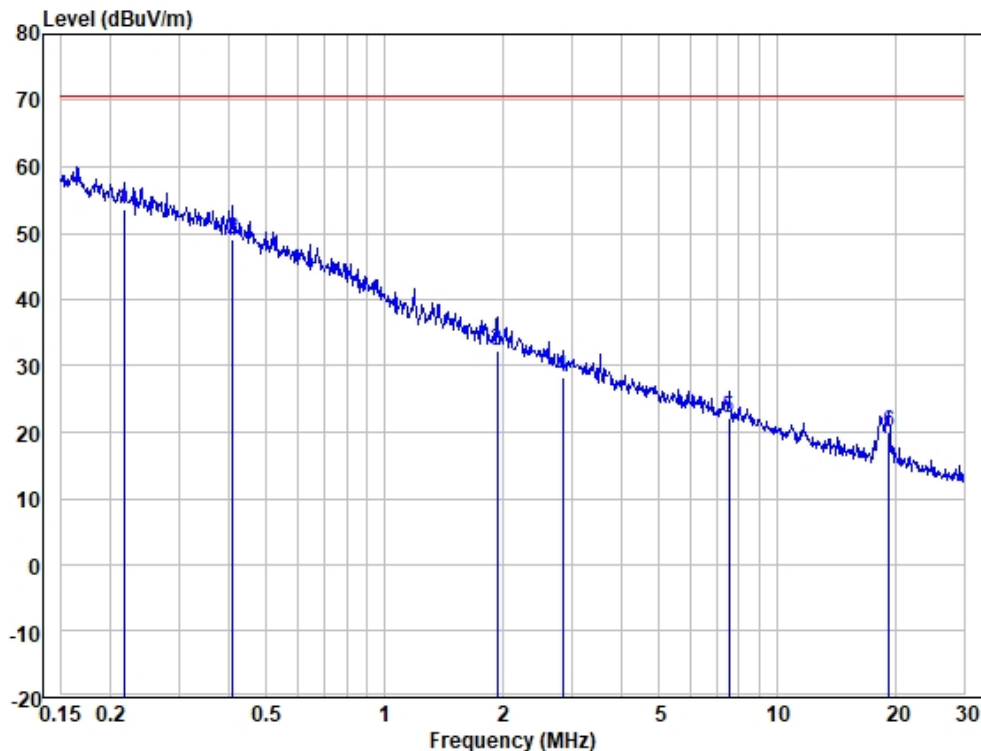


Site : 966 Chamber
Job :
Model :
Power :
Test Mode :

	Freq	Read Level	Antenna Factor	Cable Loss	Preamplifier	Measured Level	Limit Line	Over Limit	Pol/Phase	Remark
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB		
1	0.011	66.32	21.19	0.01	32.72	54.80	70.72	-15.92	VERTICAL	Average
2	0.024	68.68	16.46	0.01	32.72	52.43	70.72	-18.29	VERTICAL	Average
3	0.031	66.22	15.70	0.01	32.72	49.21	70.72	-21.51	VERTICAL	Average
4	0.055	63.50	14.87	0.01	32.72	45.66	70.72	-25.06	VERTICAL	Average
5	0.088	60.23	14.44	0.01	32.72	41.96	70.72	-28.76	VERTICAL	Average
6	0.118	57.33	14.74	0.01	32.72	39.36	70.72	-31.36	VERTICAL	Average



Test Mode: 00; Polarity: Vertical



Site : 966 Chamber
Job :
Model :
Power :
Test Mode :

	Freq	Read Level	Antenna Factor	Cable Loss	Preamplifier	Measured Level	Limit Line	Over Limit	Pol/Phase	Remark
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB		
1	0.217	71.56	14.67	0.01	32.72	53.52	70.72	-17.20	VERTICAL	Average
2	0.410	67.22	14.54	0.01	32.72	49.05	70.72	-21.67	VERTICAL	Average
3	1.939	50.94	13.98	0.06	32.70	32.28	70.72	-38.44	VERTICAL	Average
4	2.839	47.33	13.53	0.07	32.70	28.23	70.72	-42.49	VERTICAL	Average
5	7.526	42.44	12.35	0.14	32.71	22.22	70.72	-48.50	VERTICAL	Average
6	19.326	42.92	9.48	0.23	32.72	19.91	70.72	-50.81	VERTICAL	Average



6.3 Radiated Emissions (30MHz-1GHz)

Test Requirement: 47 CFR Part 18
 Test Method: FCC/OST MP-5:1986
 Limit:
 Measurement Distance: 3 m
 Frequency Range: 30 MHz to 1 GHz
 Detector: Peak for pre-scan, average for the final result
 (120 kHz Resolution Bandwidth for 30 MHz to 1 GHz)

Equipment:	Operating frequency:	RF Power generated by equipment (watts):	Limit dB(uV/m) average:
Any type unless otherwise specified (miscellaneous)	Any ISM frequency	945.0	Limit=20lg(25*SQRT(power/500))+20lg(300/3)= 70.72 dBuV/m @ 3m distance.

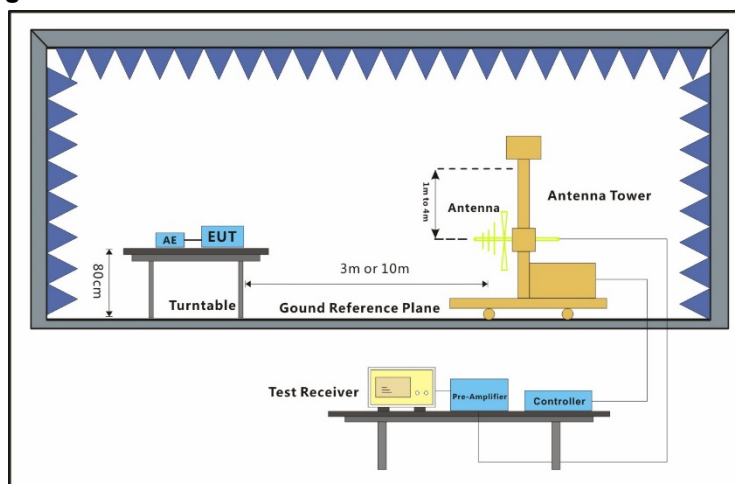
6.3.1 E.U.T. Operation

Operating Environment:
 Temperature: 24.2 °C Humidity: 49.1 % RH Atmospheric Pressure: 1020 mbar

6.3.2 Test Mode Description

Pre-scan / Final test	Mode Code	Description
Final test	00	Test the EUT in microwave mode with maximum power.
Pre-scan	01	Test the EUT in microwave mode with middle power.
Pre-scan	02	Test the EUT in microwave mode with lowest power.

6.3.3 Test Setup Diagram



6.3.4 Measurement Procedure and Data

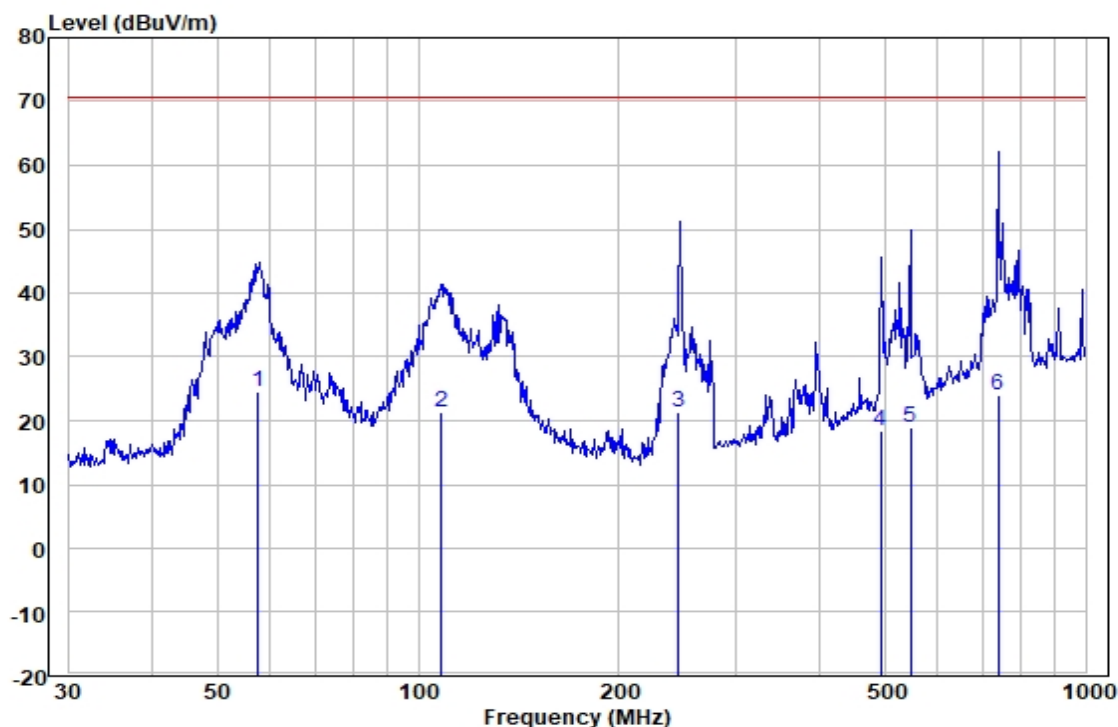
Frequency range: 30MHz-1GHz

An initial pre-scan was performed in the chamber using the spectrum analyser in peak detection mode. Average measurements were conducted based on the peak sweep graph. The EUT was measured by BiConiLog antenna with 2 orthogonal polarities.

The red line show in graphic is the limit in standard used in this section.

Level=Read Level + Antenna Factor + Cable Loss - Preamp Factor

Test Mode: 00; Polarity: Horizontal

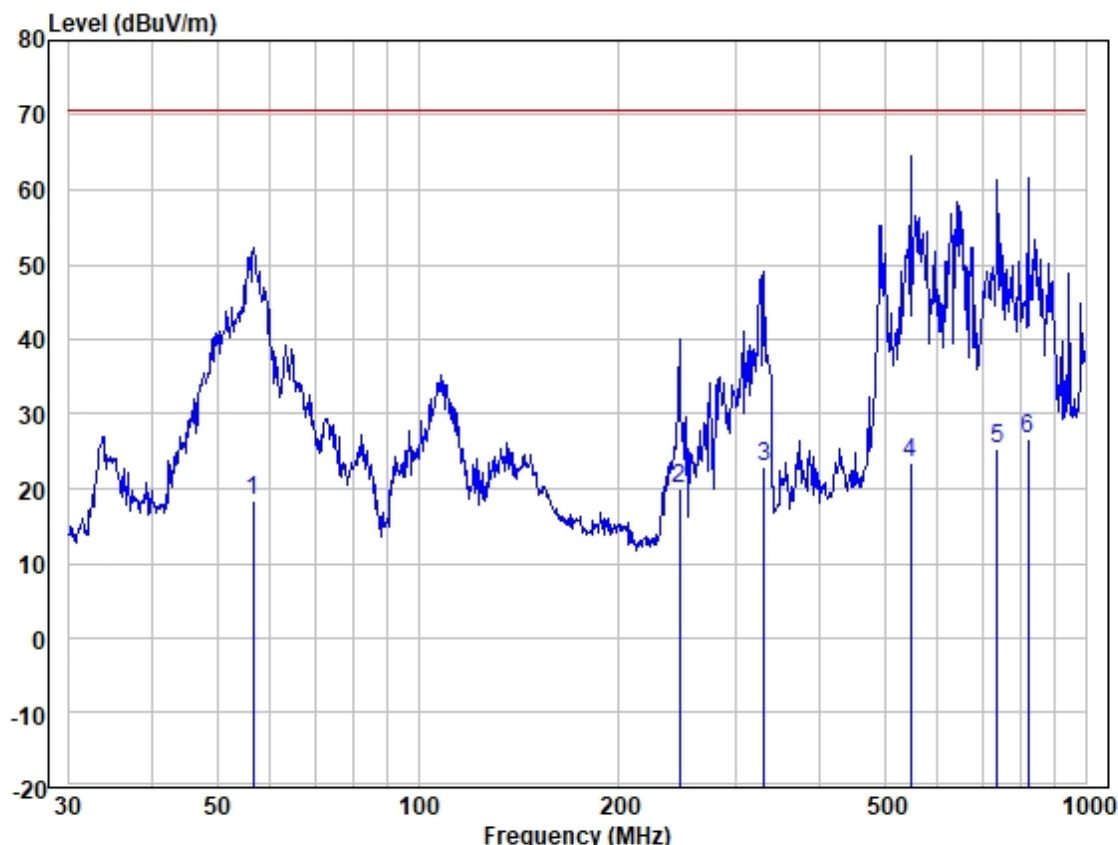


Site : 966 Chamber
Job :
Model :
Power :
Test Mode :

	Freq	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Measured Level	Limit Line	Over Limit	Pol/Phase	Remark
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB		
1	57.550	37.80	19.08	0.41	32.78	24.51	70.72	-46.21	HORIZONTAL	Average
2	108.267	37.62	15.92	0.56	32.70	21.40	70.72	-49.32	HORIZONTAL	Average
3	245.780	35.82	17.46	0.87	32.83	21.32	70.72	-49.40	HORIZONTAL	Average
4	492.469	26.76	23.38	1.28	32.94	18.48	70.72	-52.24	HORIZONTAL	Average
5	547.098	26.17	24.32	1.35	32.86	18.98	70.72	-51.74	HORIZONTAL	Average
6	739.661	26.52	27.71	1.58	31.72	24.09	70.72	-46.63	HORIZONTAL	Average



Test Mode: 00; Polarity: Vertical



Site : 966 Chamber
Job :
Model :
Power :
Test Mode :

	Freq	Read Level	Antenna Factor	Cable Loss	Preamplifier Factor	Measured Level	Limit Line	Over Limit	Pol/Phase	Remark
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB		
1	56.593	31.56	19.18	0.40	32.78	18.36	70.72	-52.36	VERTICAL	Average
2	245.951	34.35	17.49	0.87	32.83	19.88	70.72	-50.84	VERTICAL	Average
3	330.195	34.68	20.19	1.01	32.87	23.01	70.72	-47.71	VERTICAL	Average
4	547.098	30.63	24.32	1.35	32.86	23.44	70.72	-47.28	VERTICAL	Average
5	737.071	27.78	27.61	1.57	31.73	25.23	70.72	-45.49	VERTICAL	Average
6	818.834	28.36	28.19	1.67	31.57	26.65	70.72	-44.07	VERTICAL	Average



6.4 Radiated Emissions (above 1GHz)

Test Requirement: 47 CFR Part 18
 Test Method: FCC/OST MP-5:1986
 Limit:
 Measurement Distance: 3 m
 Frequency Range: Above 1GHz
 Detector: Peak for pre-scan, Average for the final result
 (1MHz Resolution Bandwidth for 1000MHz Above)

Equipment:	Operating frequency:	RF Power generated by equipment (watts):	Limit dB(uV/m) average:
	Any ISM frequency	945.0	Limit=20lg(25*SQRT(power/500))+20lg(300/3)= 70.72 dBuV/m @ 3m distance.

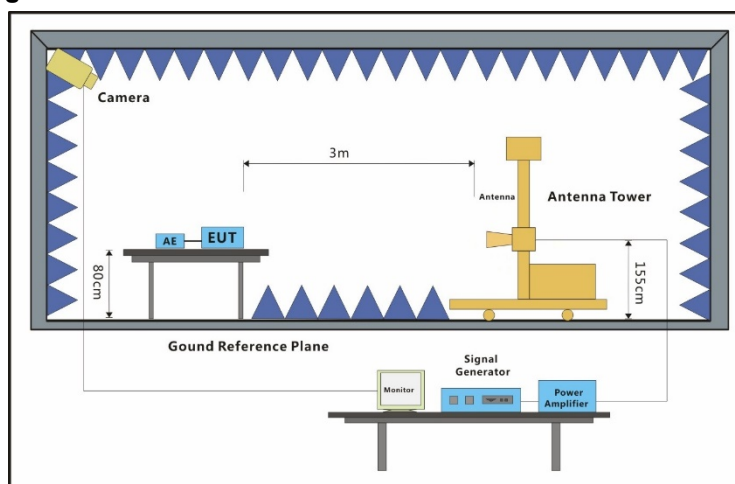
6.4.1 E.U.T. Operation

Operating Environment:
 Temperature: 23.4 °C Humidity: 53.9 % RH Atmospheric Pressure: 1012 mbar

6.4.2 Test Mode Description

Pre-scan / Final test	Mode Code	Description
Final test	00	Test the EUT in microwave mode with maximum power.
Pre-scan	01	Test the EUT in microwave mode with middle power.
Pre-scan	02	Test the EUT in microwave mode with lowest power.

6.4.3 Test Setup Diagram



6.4.4 Measurement Procedure and Data

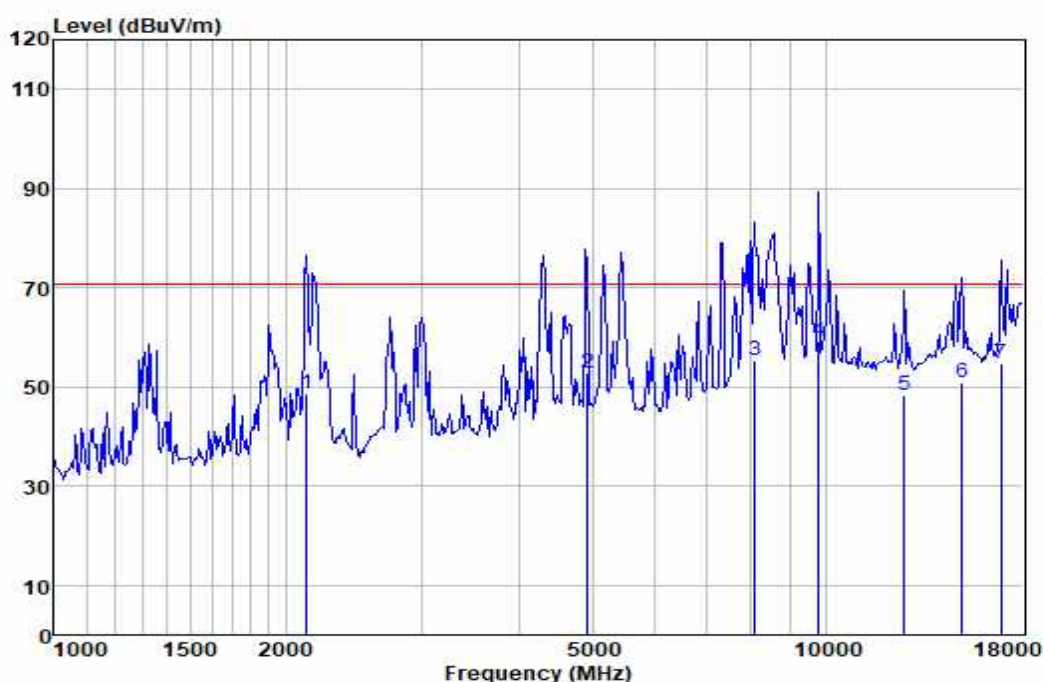
Frequency range: Above 1GHz

An initial pre-scan was performed in the chamber using the spectrum analyser in peak detection mode. Average measurements were conducted based on the peak sweep graph. The EUT was measured by Horn antenna with 2 orthogonal polarities.

The red line show in graphic is the limit in standard used in this section.

Level=Read Level + Antenna Factor + Cable Loss - Preamp Factor

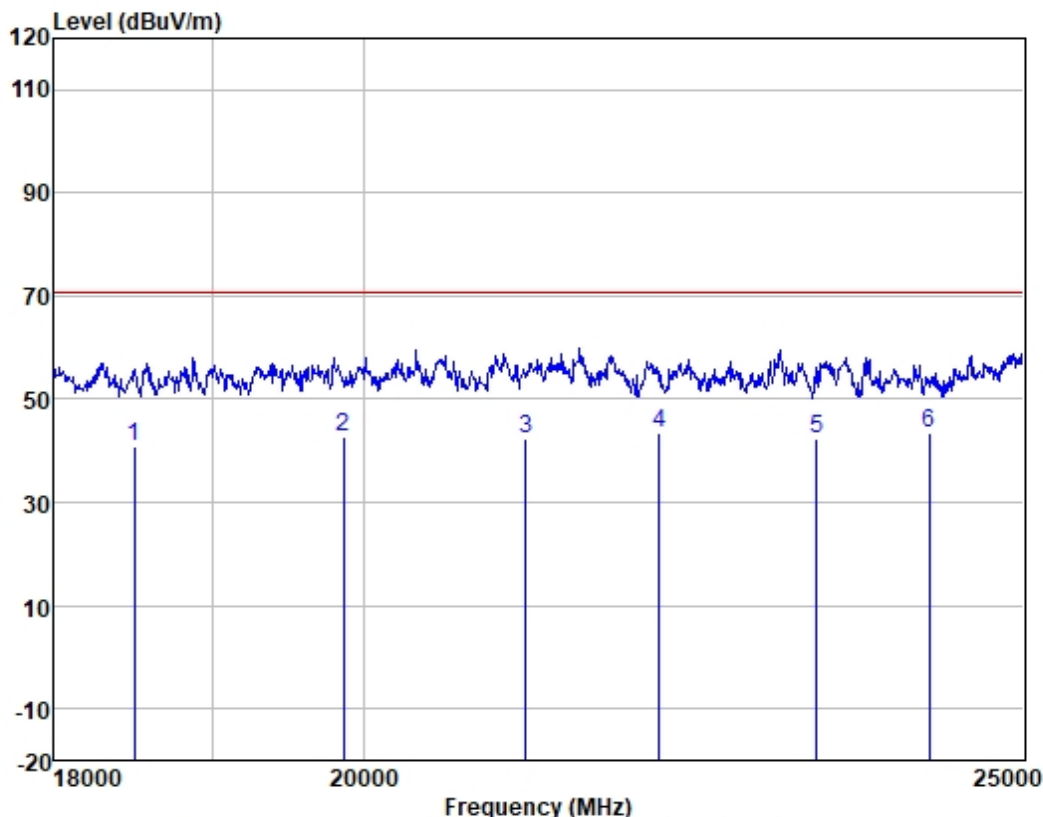
Test Mode: 00; Polarity: Horizontal



	Freq	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Level	Limit Line	Over Limit	Pol/Phase	Remark
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB		
1	2126.308	56.48	26.65	3.19	37.79	48.53	70.72	-22.19	HORIZONTAL	Average
2	4908.741	51.01	34.15	4.86	37.34	52.68	70.72	-18.04	HORIZONTAL	Average
3	8089.314	49.16	37.04	6.24	37.20	55.24	70.72	-15.48	HORIZONTAL	Average
4	9809.916	50.42	38.86	7.14	37.10	59.32	70.72	-11.40	HORIZONTAL	Average
5	12651.130	38.68	38.57	8.00	36.86	48.39	70.72	-22.33	HORIZONTAL	Average
6	15046.850	37.53	40.77	9.07	36.50	50.87	70.72	-19.85	HORIZONTAL	Average
7	16891.040	40.55	41.06	9.41	36.42	54.60	70.72	-16.12	HORIZONTAL	Average

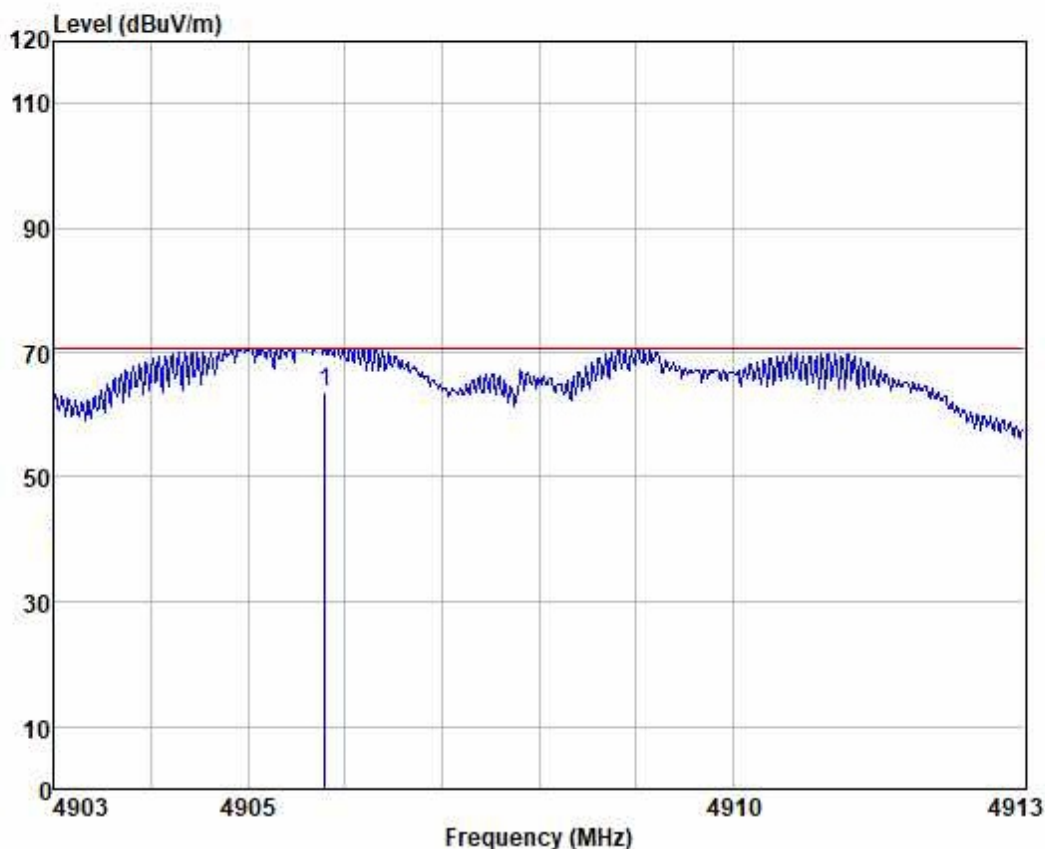


Test Mode: 00; Polarity: Horizontal



	Read Freq	Antenna Level	Cable Factor	Preamp Loss	Level	Limit	Over	Pol/Phase	Remark
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dB		
1	18497.540	39.88	36.90	3.12	39.21	40.69	70.72	-30.03	HORIZONTAL Average
2	19857.750	43.01	37.06	3.00	40.37	42.70	70.72	-28.02	HORIZONTAL Average
3	21122.800	40.40	37.68	3.24	38.82	42.50	70.72	-28.22	HORIZONTAL Average
4	22102.410	42.21	37.60	3.35	39.81	43.35	70.72	-27.37	HORIZONTAL Average
5	23318.170	38.36	38.57	3.37	38.09	42.21	70.72	-28.51	HORIZONTAL Average
6	24223.890	39.39	38.70	3.45	38.16	43.38	70.72	-27.34	HORIZONTAL Average

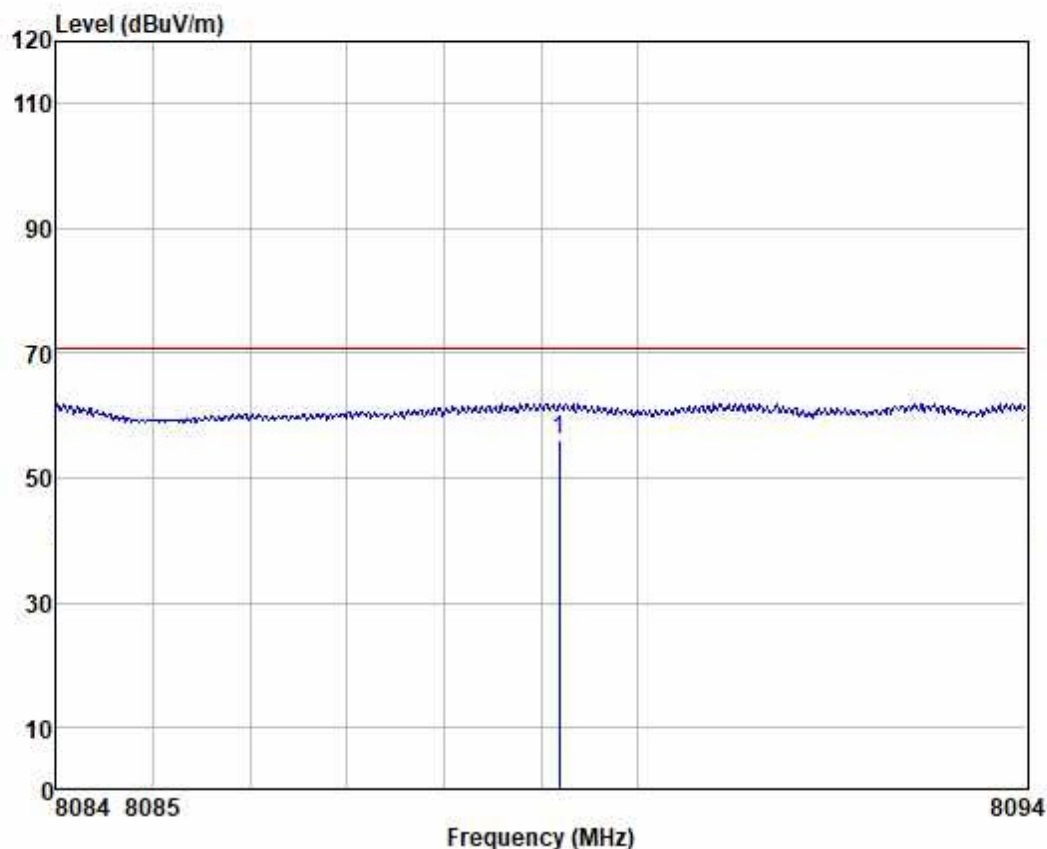
Test Mode: 00; Polarity: Horizontal



	Freq	ReadAntenna Level	Antenna Factor	Cable Loss	Preamplifier Factor	Level	Limit Line	Over Limit	Pol/Phase	Remark
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB		
1	4905.788	61.87	34.15	4.86	37.34	63.54	70.72	-7.18	HORIZONTAL	Average



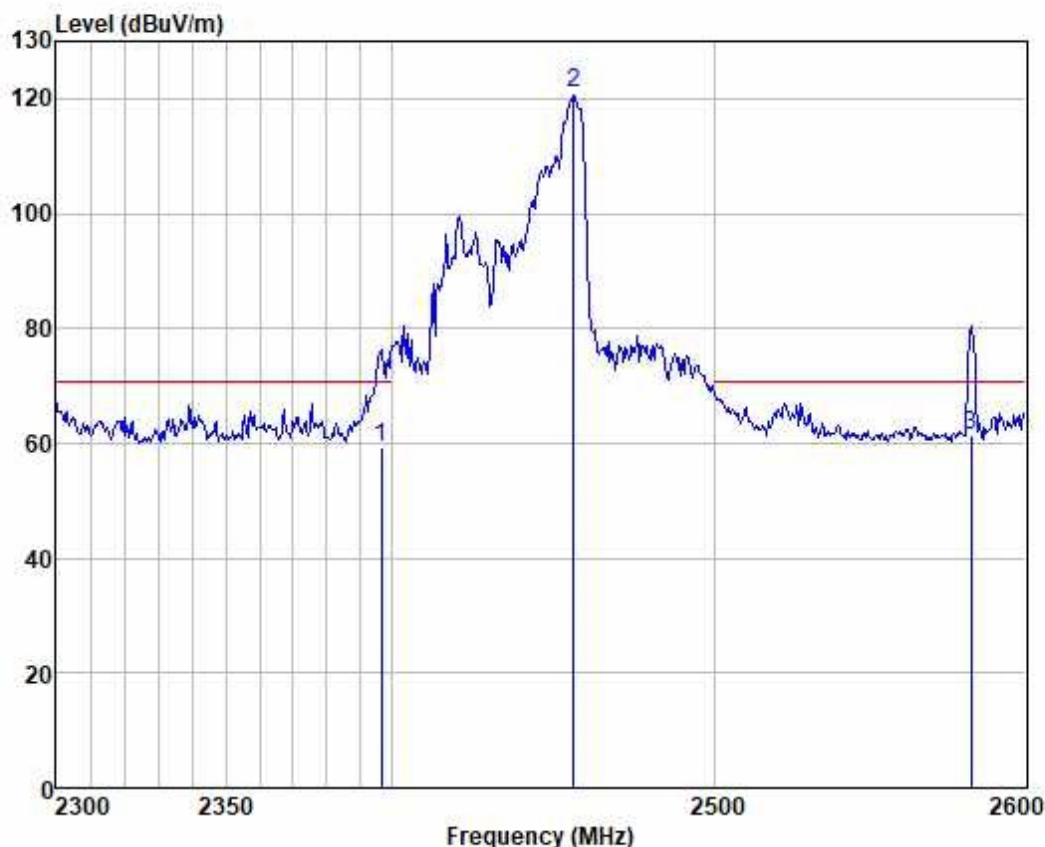
Test Mode: 00; Polarity: Horizontal



	Freq	ReadAntenna	Cable	Preamp	Limit	Over		
	Level	Factor	Loss	Factor	Line	Limit	Pol/Phase	Remark
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dB	
1	8089.188	49.99	37.04	6.24	37.20	56.07	70.72	-14.65 HORIZONTAL Average



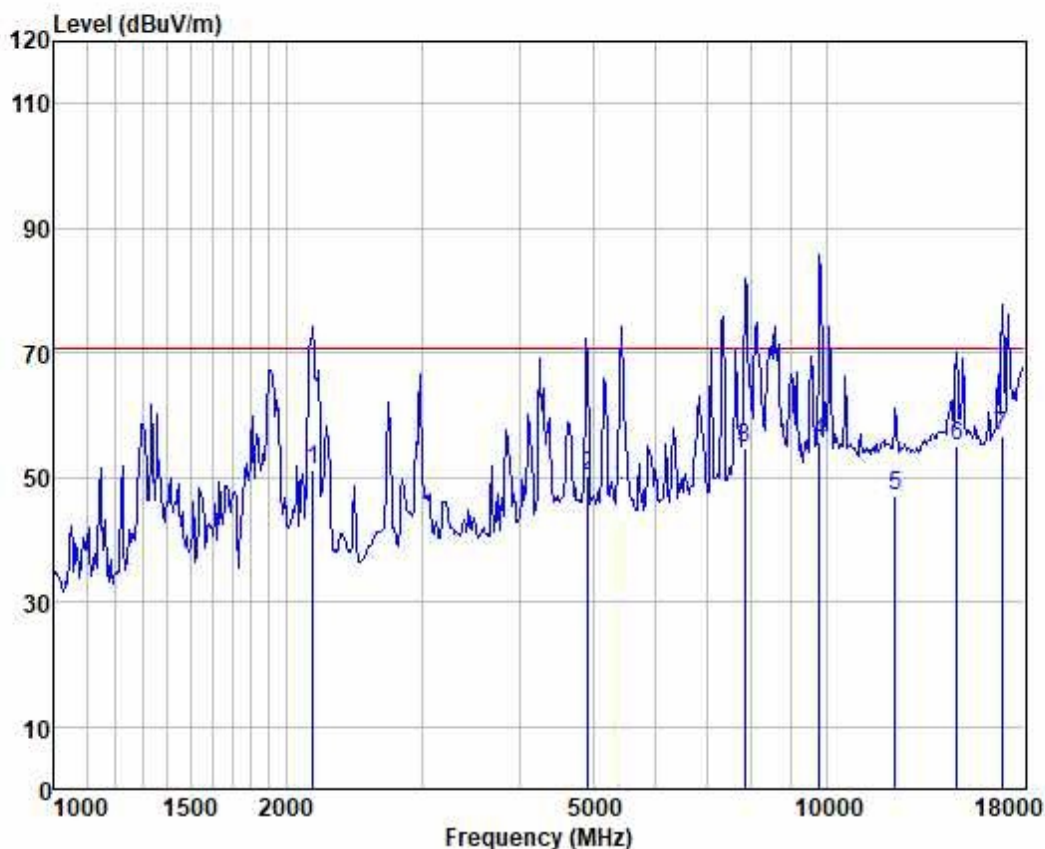
Test Mode: 00; Polarity: Horizontal



	ReadAntenna	Cable	Preamp		Limit	Over			
Freq	Level	Factor	Loss	Factor	Level	Line	Limit	Pol/Phase	Remark
MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB		
1	2396.726	28.29	27.45	3.45	0.00	59.19	70.72	-11.53	HORIZONTAL Average
2	2455.619	88.69	27.69	3.47	0.00	119.85	-----	-----	HORIZONTAL peak
3	2582.527	29.73	28.13	3.53	0.00	61.39	70.72	-9.33	HORIZONTAL Average



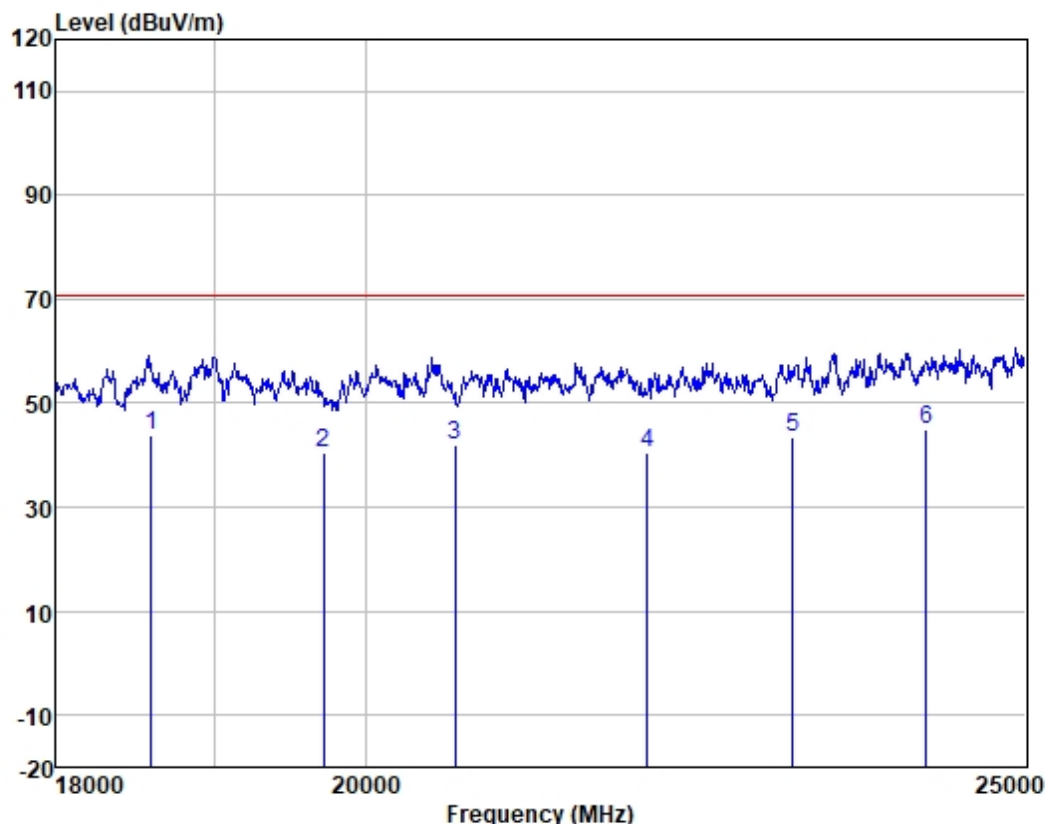
Test Mode: 00; Polarity: Vertical



	ReadAntenna	Cable	Preamp		Limit	Over			
Freq	Level	Factor	Loss	Factor	Level	Line	Limit	Pol/Phase	Remark
MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB		
1	2163.504	58.93	26.77	3.22	37.79	51.13	70.72	-19.59	VERTICAL
2	4938.529	49.61	32.74	5.14	37.17	50.32	70.72	-20.40	VERTICAL
3	7844.484	48.84	36.98	6.16	37.20	54.78	70.72	-15.94	VERTICAL
4	9809.916	46.82	38.86	7.14	37.10	55.72	70.72	-15.00	VERTICAL
5	12290.700	37.51	38.56	7.86	36.88	47.05	70.72	-23.67	VERTICAL
6	14788.150	41.11	41.56	8.79	36.51	54.95	70.72	-15.77	VERTICAL
7	16891.040	42.67	41.06	9.41	36.42	56.72	70.72	-14.00	VERTICAL



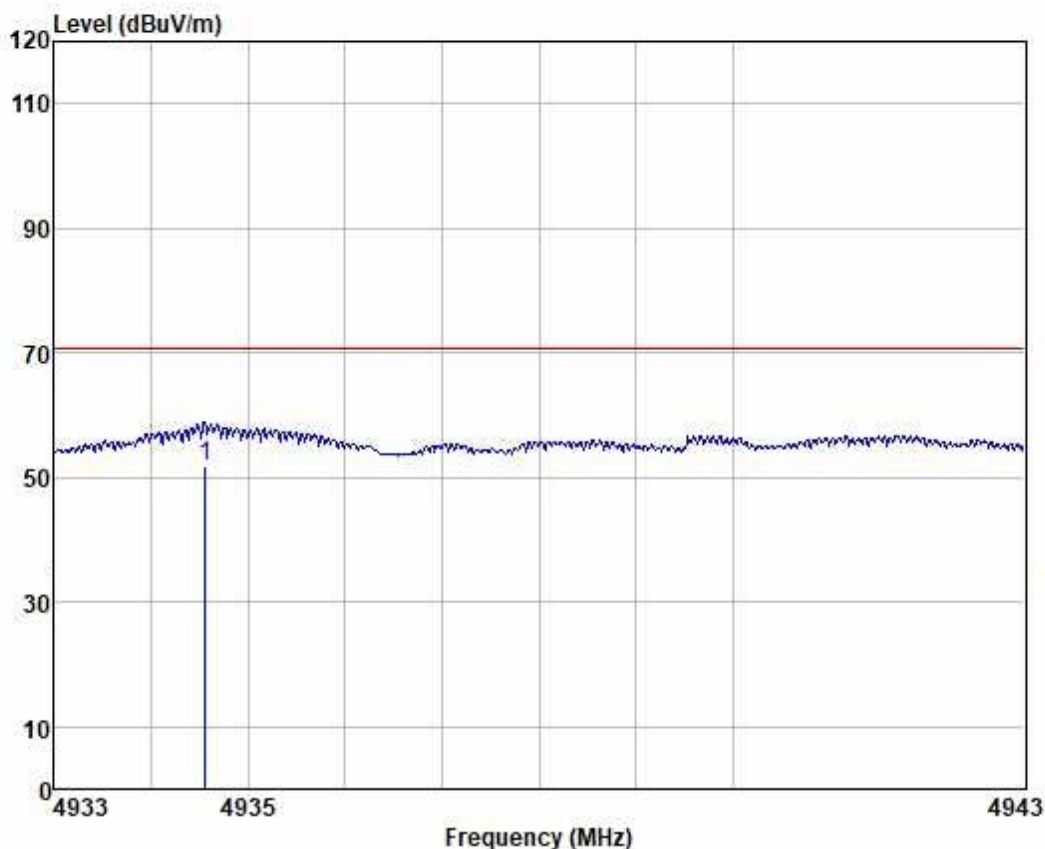
Test Mode: 00; Polarity: Vertical



	Freq	ReadAntenna	Cable	Preamp		Limit	Over		
	MHz	Level	Loss	Factor	Level	Line	Limit	Pol/Phase	Remark
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB	
1	18588.910	42.98	36.93	3.14	39.24	43.81	70.72	-26.91	VERTICAL Average
2	19708.280	40.64	36.98	3.03	40.24	40.41	70.72	-30.31	VERTICAL Average
3	20608.740	40.86	37.38	3.14	39.27	42.11	70.72	-28.61	VERTICAL Average
4	22001.000	39.67	37.52	3.35	39.92	40.62	70.72	-30.10	VERTICAL Average
5	23112.260	39.61	38.52	3.34	38.15	43.32	70.72	-27.40	VERTICAL Average
6	24184.140	40.97	38.70	3.45	38.09	45.03	70.72	-25.69	VERTICAL Average



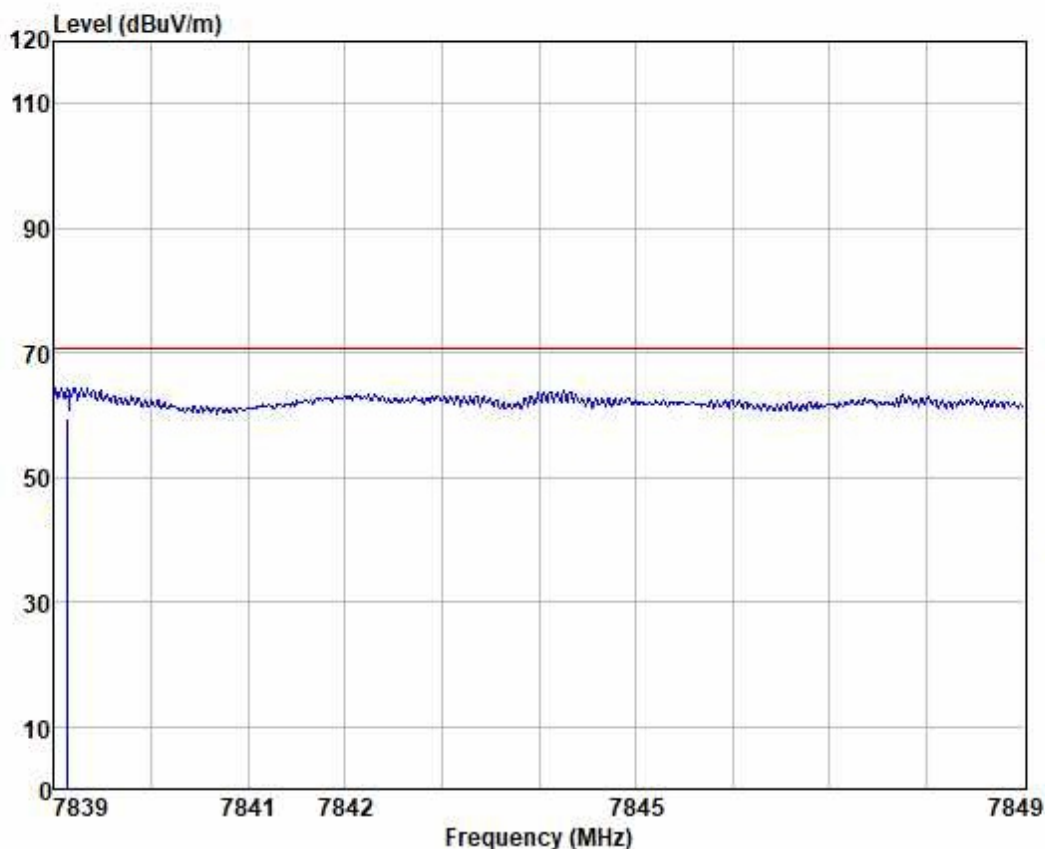
Test Mode: 00; Polarity: Vertical



	Freq	ReadAntenna	Cable	Preamp		Limit	Over		
	Level	Factor	Loss	Factor	Level	Line	Limit	Pol/Phase	Remark
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB	
1	4934.559	51.28	32.74	5.14	37.17	51.99	70.72	-18.73	VERTICAL Average



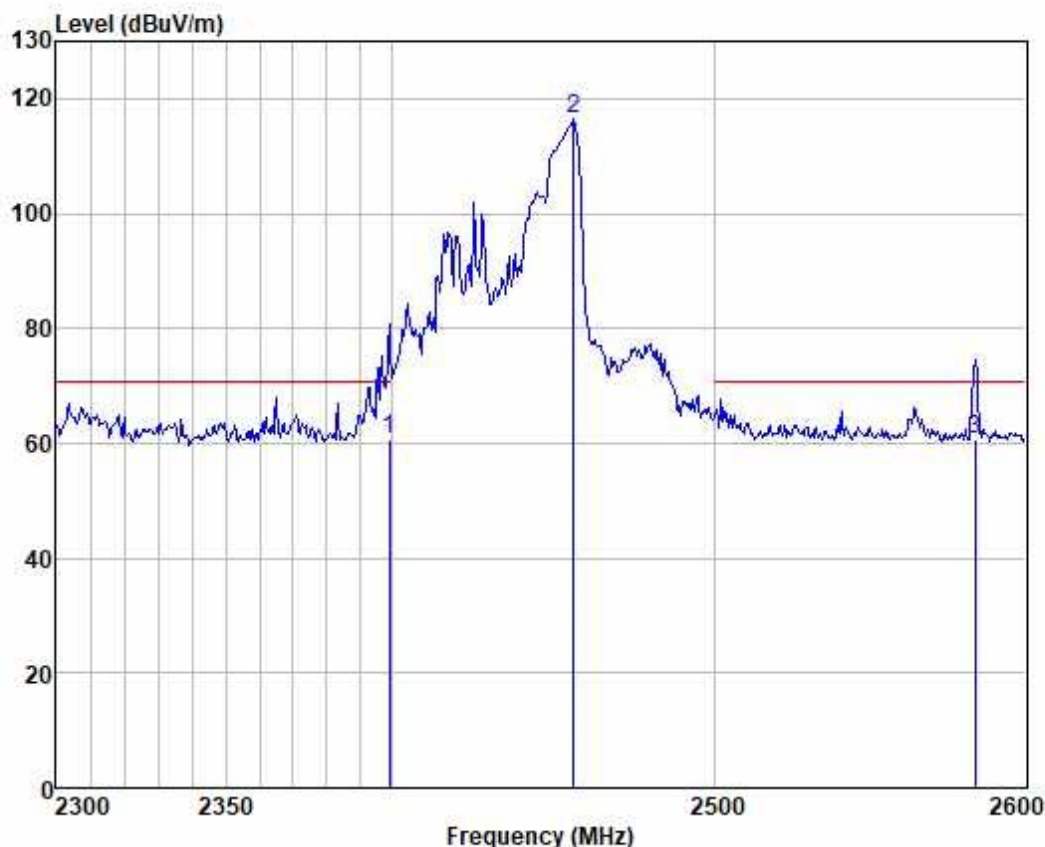
Test Mode: 00; Polarity: Vertical



	Read	Antenna	Cable	Preamp		Limit	Over		
Freq	Level	Factor	Loss	Factor	Level	Line	Limit	Pol/Phase	Remark
MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB		
1 7839.140	53.63	36.95	6.15	37.20	59.53	70.72	-11.19	VERTICAL	Average



Test Mode: 00; Polarity: Vertical



	ReadAntenna	Cable	Preamp		Limit	Over			
Freq	Level	Factor	Loss	Factor	Level	Line	Limit	Pol/Phase	Remark
MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB		
1	2399.078	29.91	27.46	3.45	0.00	60.82	70.72	-9.90	VERTICAL
2	2455.619	84.54	27.69	3.47	0.00	115.70	-----	-----	VERTICAL
3	2583.794	28.85	28.13	3.53	0.00	60.51	70.72	-10.21	VERTICAL



6.5 Output Power Measurement

Test Requirement: 47 CFR Part 18

Test Method: FCC OST/MP-5:1986

Limit:

Power output Measurement:

Formula:

$$P = \frac{4,187 \cdot m_w (T_2 - T_1) + 0,55 \cdot m_c (T_2 - T_0)}{t}$$

NOTE :

P is the microwave power output, in watts

m_w is the mass of the water, in grams

m_c is the mass of the container, in grams

T₀ is the ambient temperature, in degrees Celsius

T₁ is the initial temperature of the water, in degrees Celsius

T₂ is the final temperature of the water, in degrees Celsius

t is the heating time, in seconds, excluding the magnetron filament heating-up time.

Input Power Measurement:

The EUT was set up according to the MP-5 for input power measurement, the input power and current was measured using a power analyzer. Water load in a beaker was located in the center of the oven and the microwave oven was set to maximum power.

Base on the measured input power it was found that the microwave oven can operating as the user manual's specifications.

6.5.1 E.U.T. Operation

Operating Environment:

Temperature: 23.4 °C

Humidity: 53.9 % RH

Atmospheric Pressure: 1012 mbar

6.5.2 Test Mode Description

Pre-scan /	Mode	Description
Final test	Code	
Final test	00	Test the EUT in microwave mode with maximum power.



6.5.3 Measurement Procedure and Data

Output Power Data

Mass of water (g)	Mass of the container (g)	Ambient temperature (°C)	Initial temperature (°C)	Final temperature (°C)	Heating time (s)	Power output (W)
1002	413	19.8	10.1	20.0	44	945.0

Input Power Data

Input Voltage (V)	Input Current (A)	Power Factor	Measured input power (W)	Rated input power (W)
119.7	13.10	0.938	1471	1500



6.6 Operating Frequency Measurement

Test Requirement: 47 CFR Part 18
 Test Method: FCC OST/MP-5:1986
 Limit:
 Frequency Range: 2400-2500 MHz
 Detector: Average for the final result for outside ISM band(2450MHz±50MHz)
 Outside band limit: (a) ISM equipment operation on a frequency specified in §18.301 is permitted unlimited radiated energy in the band specified for that frequency.

(b) The field strength levels of emissions which lie outside the bands specified in §18.301, unless otherwise indicated, shall not exceed the following:

RF Power generated by equipment(watts)	Field strength Limit(uV/m) @300m
Below 500	25
500 or more	25*SQRT(power/500)

Power =945.0 W according to clause 6.1.2

Limit=20lg(25*SQRT(power/500))+20lg(300/3)=70.72dBuV/m @ 3m distance.

ISM band: ISM equipment may be operated on any frequency above 9 kHz.

And the frequency band 2400-2500MHz is allocated for use by ISM equipment.

(§18.301)

ISM frequency	Tolerance
6.78MHz	±15.0kHz
13.56MHz	±7.0kHz
27.12MHz	±163.0kHz
40.68MHz	±20.0kHz
915MHz	±13.0MHz
2450MHz	±50.0MHz
5800MHz	±75.0MHz
24125MHz	±125.0MHz
61.25GHz	±250.0MHz
122.5GHz	±500.0MHz
245.00GHz	±1.0GHz



6.6.1 E.U.T. Operation

Operating Environment:

Temperature: 23.4 °C Humidity: 53.9 % RH Atmospheric Pressure: 1012 mbar

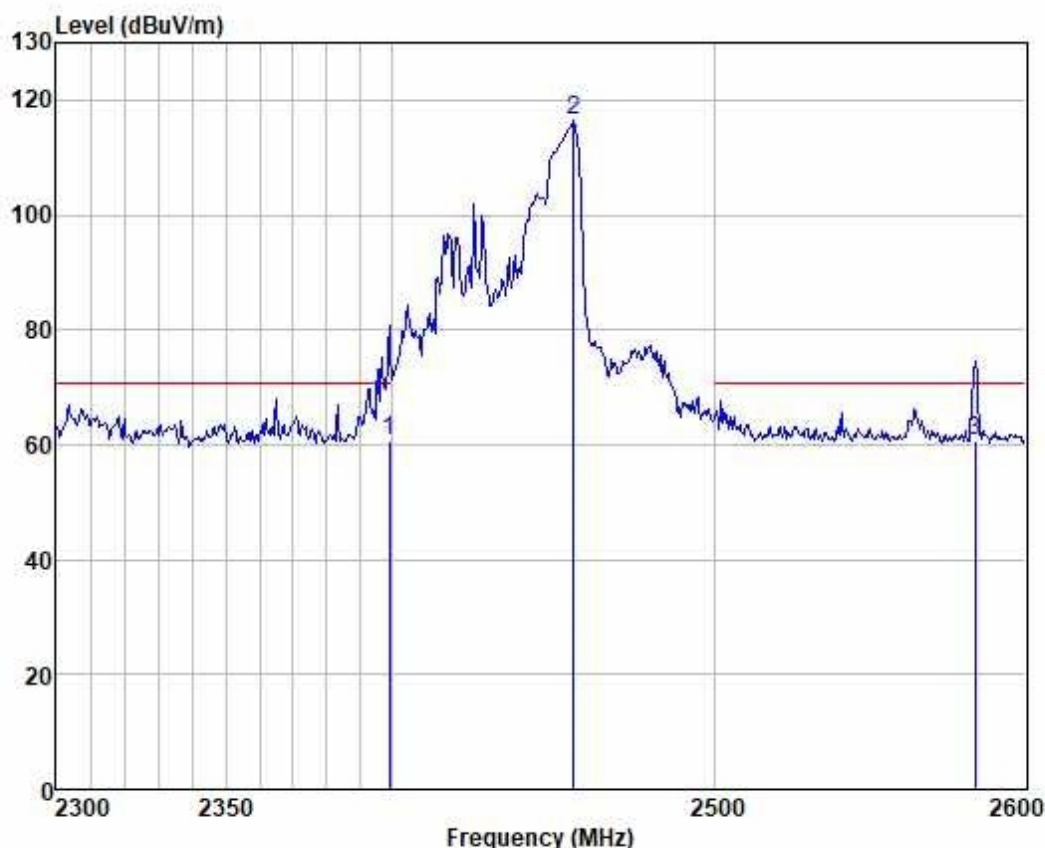
6.6.2 Test Mode Description

Pre-scan / Final test	Mode Code	Description
Final test	00	Test the EUT in microwave mode with maximum power.
Pre-scan	01	Test the EUT in microwave mode with middle power.
Pre-scan	02	Test the EUT in microwave mode with lowest power.



6.6.3 Measurement Procedure and Data

Test Mode: 00; Polarity: Vertical



	Freq	ReadAntenna	Cable	Preamp	Limit	Over			
	MHz	Level	Factor	Loss	Factor	Level	Line	Limit	Pol/Phase
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB	
1	2399.078	29.91	27.46	3.45	0.00	60.82	70.72	-9.90	VERTICAL
2	2455.619	84.54	27.69	3.47	0.00	115.70	-----	-----	VERTICAL
3	2583.794	28.85	28.13	3.53	0.00	60.51	70.72	-10.21	VERTICAL

The variation of frequency with time

The operating frequency was measured using a spectrum analyzer, the supply voltage was setting at the rated AC voltage, measured was start with EUT at room temperature, the operating frequency was monitored until the water load was reduced to 20 percent of the original quantity.

Test record was found the worst situation is when the water load is reduced to 20 percent of the original quantity.

ISM frequency(MHz)	Tolerance(MHz)	Measurement Data(MHz)
2450	±50	2455.619



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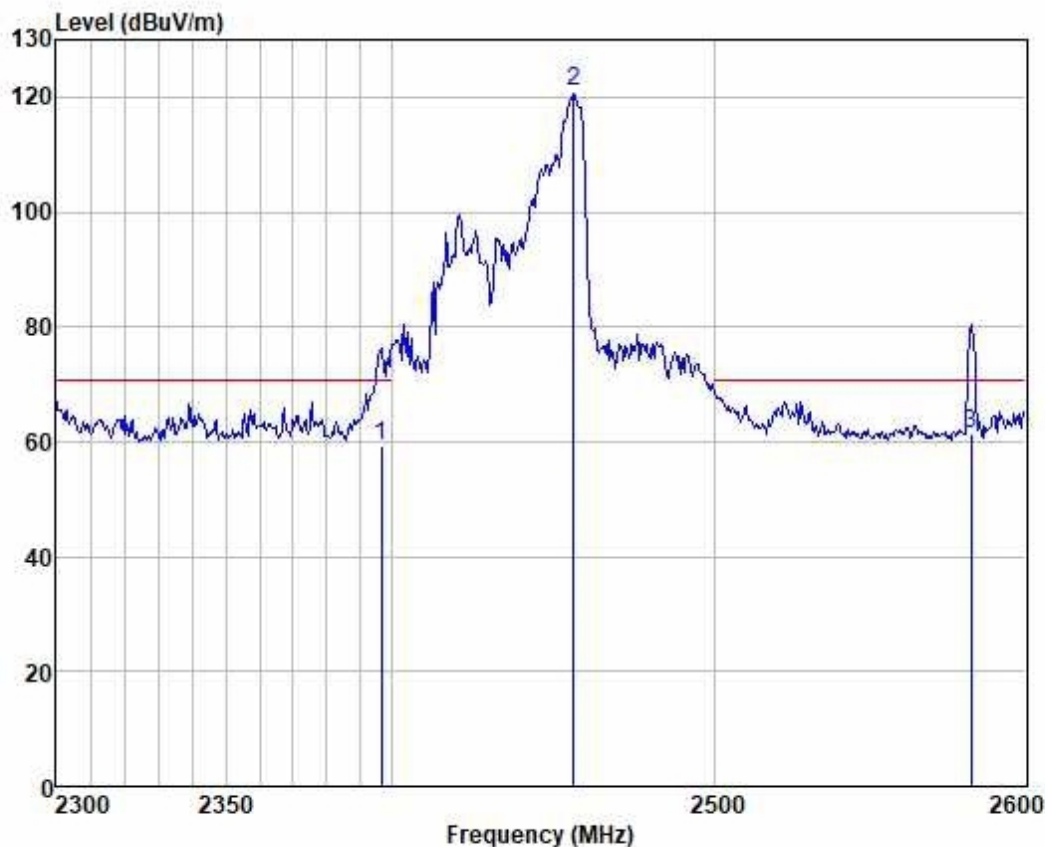
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Test Mode: 00; Polarity: Horizontal



	Freq	ReadAntenna	Cable	Preamp		Limit	Over		
	MHz	Level	Factor	Loss	Factor	Level	Line	Limit	Pol/Phase
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB	
1	2396.726	28.29	27.45	3.45	0.00	59.19	70.72	-11.53	HORIZONTAL Average
2	2455.619	88.69	27.69	3.47	0.00	119.85	-----	-----	HORIZONTAL peak
3	2582.527	29.73	28.13	3.53	0.00	61.39	70.72	-9.33	HORIZONTAL Average

The variation of frequency with line voltage.

The operating frequency was measured using a spectrum analyzer, the supply voltage was setting at the rated AC voltage, measured was start with EUT at room temperature. The EUT was started to warm by at least 10 minutes, the operating frequency was monitored as the rated voltage was varied from 80% to 125%.

Test record was found the worst situation is when the line voltage is 125% of rated AC voltage.

ISM frequency(MHz)	Tolerance(MHz)	Measurement Data(MHz)
2450	±50	2455.619



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6.7 Radiation Hazard Test

Test Requirement: 47 CFR Part 18
Test Method: FCC OST/MP-5:1986

6.7.1 E.U.T. Operation

Operating Environment:
Temperature: 24.1 °C Humidity: 48.9 % RH Atmospheric Pressure: 1020 mbar

6.7.2 Test Mode Description

Pre-scan / Mode	Code	Description
Final test	00	Test the EUT in microwave mode with maximum power.
Pre-scan	01	Test the EUT in microwave mode with middle power.
Pre-scan	02	Test the EUT in microwave mode with lowest power.

6.7.3 Measurement Procedure and Data

Maximum measure level (mW/cm ²)	Limit (mW/cm ²)	Test Result
0.032	1	Pass



7 Test Setup Photo

Refer to Appendix - Test Setup Photo for GZEM190801493806



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8 EUT Constructional Details (EUT Photos)

Refer to Appendix - External and Internal Photos for GZEM2502001011HS

- End of the Report -

