

# TEST REPORT

**Application No.:**

GZEM2502001013HS

**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.:**

LFMV1846VFA, RED500JCH-PAHH0A, RED500JAH-PAHH0A, RED500JEH-PA0H0A, FFMV1845VS, RED500JRB-PAHH0A, SMO1761KS, RED500(X) H-(Y) series, RED500(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 item was actually tested and which were electrically identical.

**Trade Mark:**

Galanz, Frigidaire, SHARP

**Standard(s) :**

47 CFR Part 18

**Date of Receipt:**

2025-02-19

**Date of Test:**

2025-02-27 to 2025-03-04

**Date of Issue:**

2025-09-16

**Test Result:**

Pass\*

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

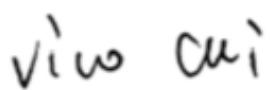


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<b>Revision Record</b>			
<b>Version</b>	<b>Report No.</b>	<b>Date</b>	<b>Remark</b>
01	GZEM190701397902	2019-10-10	Original
02	GZEM190701397903	2020-03-04	Copy report: added new model.
03	GZEM190701397905	2025-09-16	Amendment report: Updated address of applicant; Changed manufacturer and factory information; Added new models and trademark.

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



## 2 Test Summary

<b>Emission Part</b>				
<b>Item</b>	<b>Standard</b>	<b>Method</b>	<b>Requirement</b>	<b>Result</b>
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 <sup>2</sup>	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.

**¤ Declaration of EUT Family Grouping:****Remark for original report GZEM190701397902****Model No.:** LFMV1846VFA, RED500JCH-PAHH0A, RED500JAH-PAHH0A, RED500JEH-PA0H0A, RED500 (X) H-(Y),

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 in the appearance.

And model LFMV1846VFA is identical to RED500JEH-PA0H0A except for the model name and band name.

Therefore, only one model **RED500JEH-PA0H0A** was tested in original report.

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**Remark for updated report GZEM190701397903**

**This report GZEM190701397903 was a supplement report based on original report GZEM190701397902, only added new model.**

According to the declaration of the applicant, the model FFMV1845VS added in this report and models in the original report were identical, with only difference being the model name.

Therefore original data was kept in this report GZEM190701397903.

**Remark for report GZEM190701397905:**

This report GZEM190701397905 is based on original report GZEM190701397903, with the following changes:

1. Updated address of applicant; Changed manufacturer and factory information.
2. Added trademark SHARP.
3. Added new models RED500JRB-PAHH0A, SMO1761KS, RED500(X)-(Y) series.

According to the declaration of the applicant, the models add in this report GZEM190701397905 and models in the original report GZEM190701397903 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 RED500JRB-PAHH0A and recorded the new test results in this report GZEM190701397905.

Other tests please refer to original report GZEM190701397903 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)	± 3.12dB
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)

Remark:

The  $U_{lab}$  (lab Uncertainty) is less than  $U_{cisp}$  (CISPR Uncertainty) or  $U_{ETSI}$  (ETSI Uncertainty).

Emission decision rule:

- 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.

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#### 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

<b>Conducted Emissions at Mains Terminals (150kHz-30MHz)</b>					
<b>Equipment</b>	<b>Manufacturer</b>	<b>Model No.</b>	<b>Inventory No.</b>	<b>Cal Date</b>	<b>Cal Due Date</b>
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

<b>Radiated Emissions (Magnetic field Strength)(9kHz-30MHz)</b>					
<b>Equipment</b>	<b>Manufacturer</b>	<b>Model No.</b>	<b>Inventory No.</b>	<b>Cal Date</b>	<b>Cal Due Date</b>
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	CRTSGSSAC9 66	EMC2230	2022-04-12	2025-04-11
Coaxial Cable	Mirco-COAX UTIFLEX ve	LA2-C125-8000	EMC2239	2024-12-04	2026-12-03

<b>Radiated Emissions (30MHz-1GHz)</b>					
<b>Equipment</b>	<b>Manufacturer</b>	<b>Model No.</b>	<b>Inventory No.</b>	<b>Cal Date</b>	<b>Cal Due Date</b>
966 Anechoic Chamber	Shenzhen C.R.T	CRTSGSSAC9 66	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



## 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

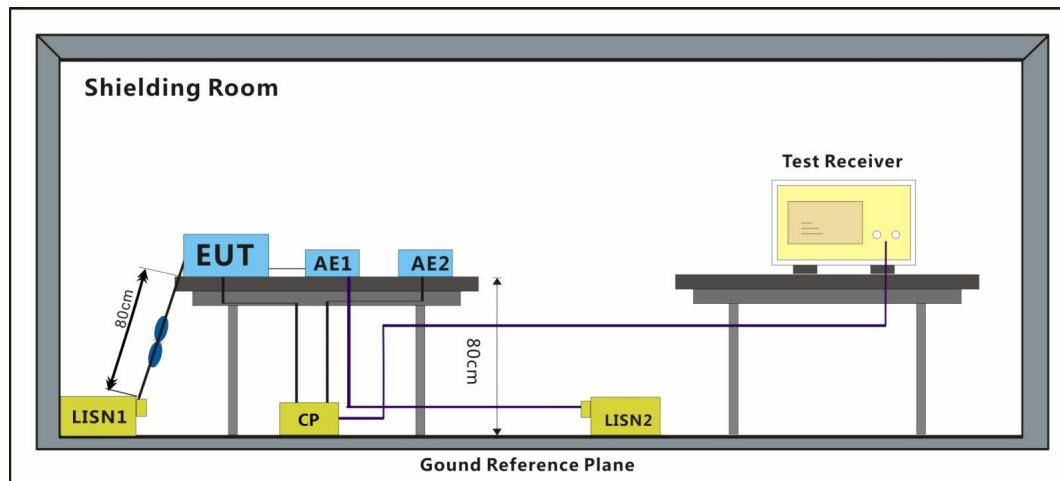
#### 6.1.1 E.U.T. Operation

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

#### 6.1.2 Test Mode Description

Pre-scan / Mode	Final test	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



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**6.1.4 Measurement Procedure and Data**

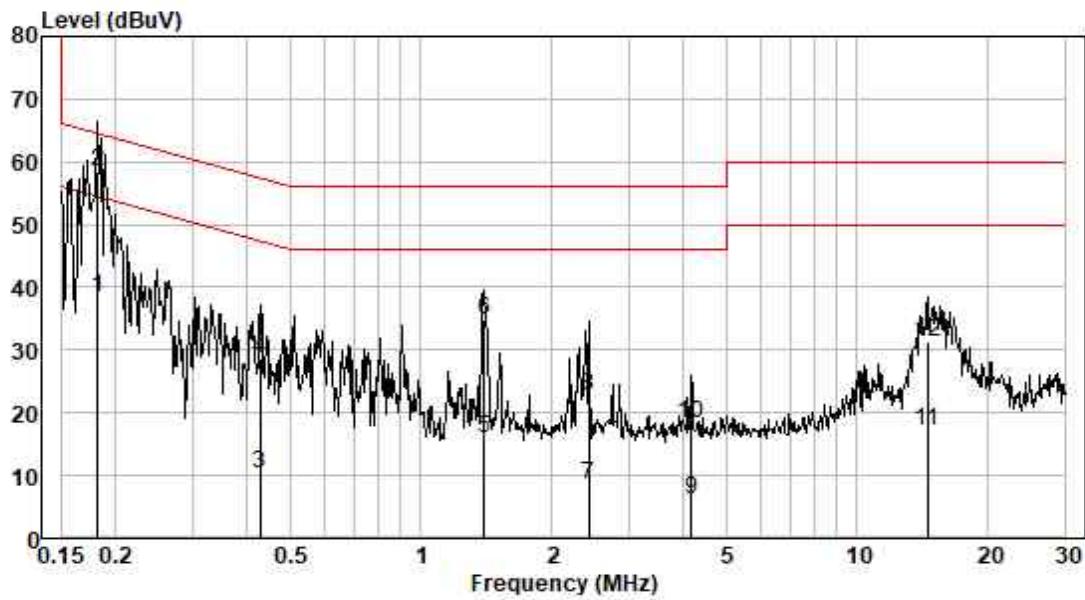
Frequency range: 150KHz-30MHz

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 :

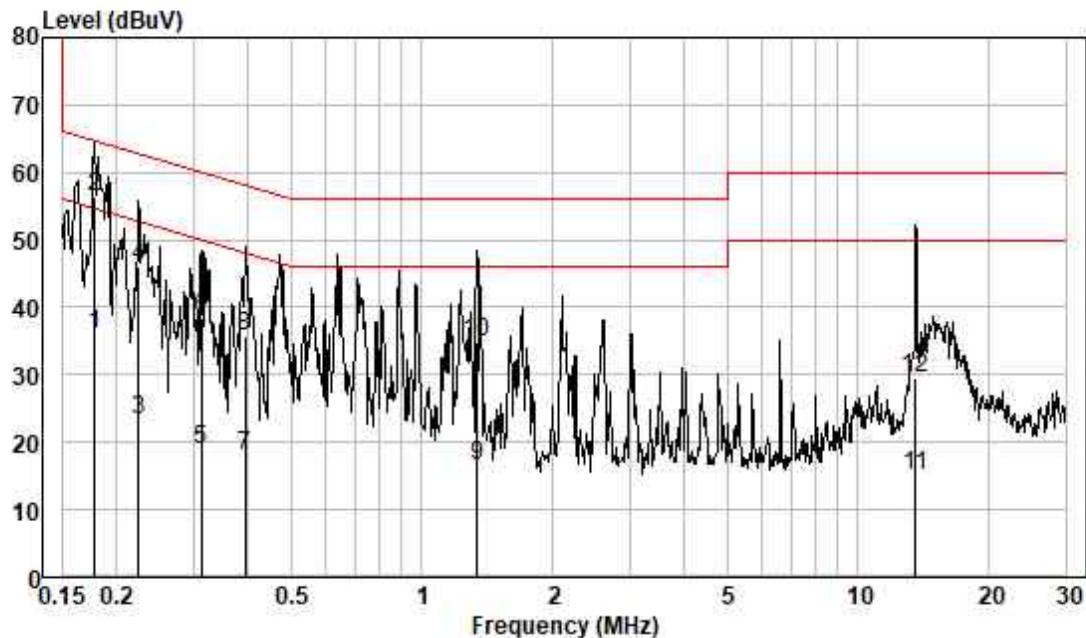
	Frequenc	Read	Cable	LISN	Measured	Limit	Over	Remark
	MHz	Level	Loss	Factor	Level	Line	Limit	
		dBuV	dB	dB	dBuV	dBuV	dB	
1	0.182	28.88	0.04	9.54	38.46	54.42	-15.96	Average
2	0.182	48.74	0.04	9.54	58.32	64.42	-6.10	QP
3	0.428	0.70	0.05	9.55	10.30	47.29	-36.99	Average
4	0.428	19.06	0.05	9.55	28.66	57.29	-28.63	QP
5	1.396	6.16	0.10	9.58	15.84	46.00	-30.16	Average
6	1.396	25.20	0.10	9.58	34.88	56.00	-21.12	QP
7	2.422	-1.19	0.14	9.55	8.50	46.00	-37.50	Average
8	2.422	13.04	0.14	9.55	22.73	56.00	-33.27	QP
9	4.180	-3.64	0.18	9.63	6.17	46.00	-39.83	Average
10	4.180	8.62	0.18	9.63	18.43	56.00	-37.57	QP
11	14.517	7.08	0.32	9.84	17.24	50.00	-32.76	Average
12	14.517	21.21	0.32	9.84	31.37	60.00	-28.63	QP



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Test Mode: 00; Line: Neutral Line



Pol :NEUTRAL

Mode :

Model :

Power :

	Frequenc MHz	Read Level dBuV	Cable Loss dB	LISN Factor dB	Measured Level dBuV	Limit Line dBuV	Over Limit dB	Remark
1	0.178	26.57	0.04	9.54	36.15	54.59	-18.44	Average
2	0.178	46.85	0.04	9.54	56.43	64.59	-8.16	QP
3	0.224	13.74	0.04	9.54	23.32	52.66	-29.34	Average
4	0.224	36.41	0.04	9.54	45.99	62.66	-16.67	QP
5	0.312	9.37	0.04	9.53	18.94	49.93	-30.99	Average
6	0.312	28.75	0.04	9.53	38.32	59.93	-21.61	QP
7	0.393	8.29	0.05	9.54	17.88	47.99	-30.11	Average
8	0.393	26.20	0.05	9.54	35.79	57.99	-22.20	QP
9	1.338	6.88	0.09	9.55	16.52	46.00	-29.48	Average
10	1.338	25.15	0.09	9.55	34.79	56.00	-21.21	QP
11	13.551	4.97	0.31	9.87	15.15	50.00	-34.85	Average
12	13.551	19.47	0.31	9.87	29.65	60.00	-30.35	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	933.9	Limit=20lg(25*SQRT(power/500))+20lg(300/3)=70.67 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

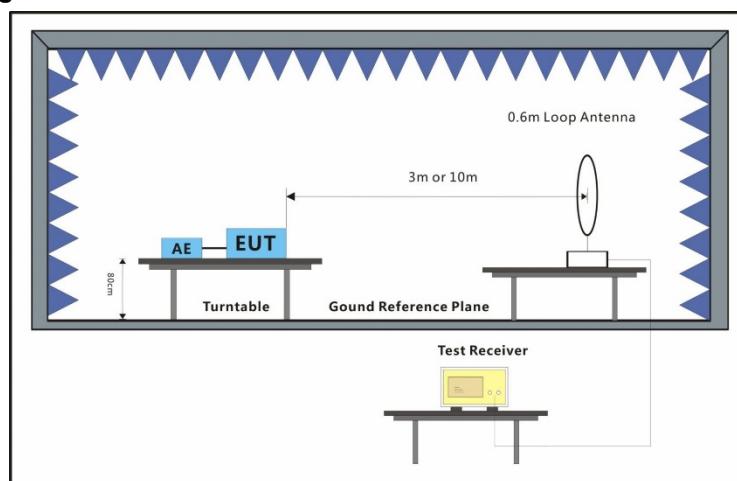
Pre-scan / Mode  
Final test Code Description

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



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#### 6.2.4 Measurement Procedure and Data

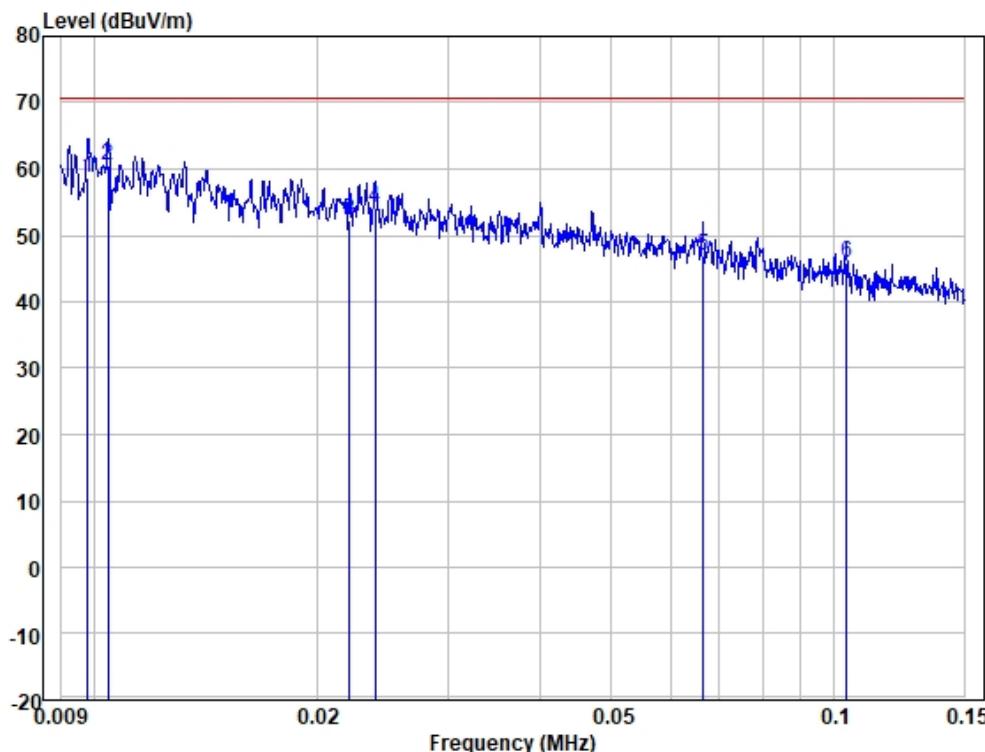
Frequency range: 9KHz-30MHz

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	Antenna	Cable	Preamp	Measured	Limit	Over	Pol/	Remark
	Level	Factor	Loss	Factor	Level	Line	Limit	Phase	
1 0.010	69.73	21.61	0.01	32.72	58.63	70.67	-12.04	HORIZONTAL	Average
2 0.010	71.82	21.36	0.01	32.72	60.47	70.67	-10.20	HORIZONTAL	Average
3 0.022	68.08	16.77	0.01	32.72	52.14	70.67	-18.53	HORIZONTAL	Average
4 0.024	70.43	16.46	0.01	32.72	54.18	70.67	-16.49	HORIZONTAL	Average
5 0.067	64.80	14.83	0.01	32.72	46.92	70.67	-23.75	HORIZONTAL	Average
6 0.104	63.74	14.75	0.01	32.72	45.78	70.67	-24.89	HORIZONTAL	Average

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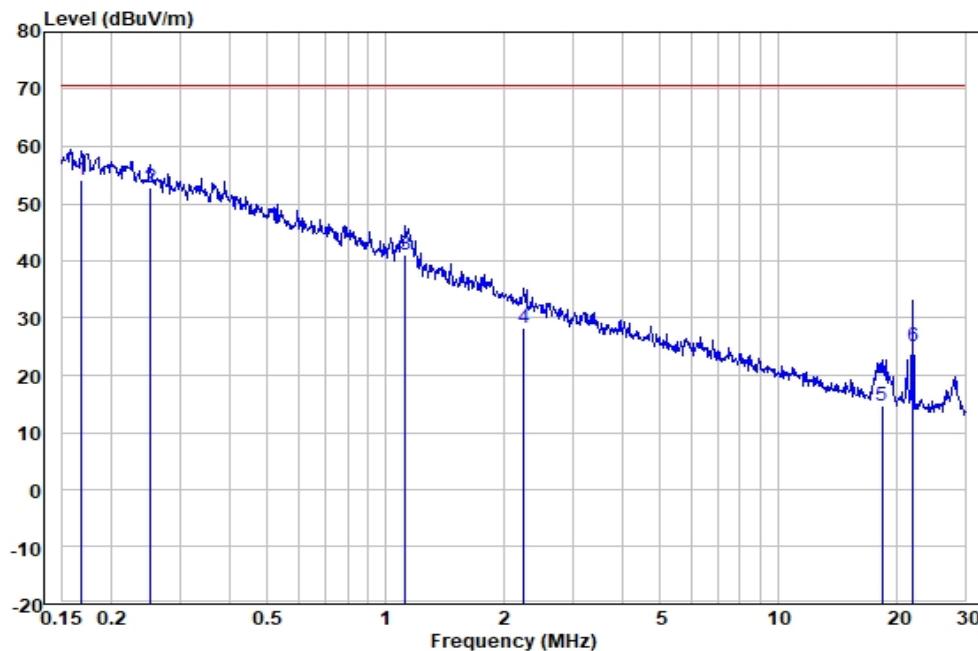
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Test Mode: 00; Polarity: Horizontal



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	0.169	72.11	14.68	0.01	32.72	54.08	70.67	-16.59	HORIZONTAL Average
2	0.252	70.91	14.65	0.01	32.72	52.85	70.67	-17.82	HORIZONTAL Average
3	1.123	60.42	13.37	0.05	32.70	41.14	70.67	-29.53	HORIZONTAL Average
4	2.249	47.04	13.88	0.06	32.70	28.28	70.67	-42.39	HORIZONTAL Average
5	18.426	37.52	9.60	0.23	32.72	14.63	70.67	-56.04	HORIZONTAL Average
6	22.063	49.09	8.50	0.25	32.73	25.11	70.67	-45.56	HORIZONTAL Average



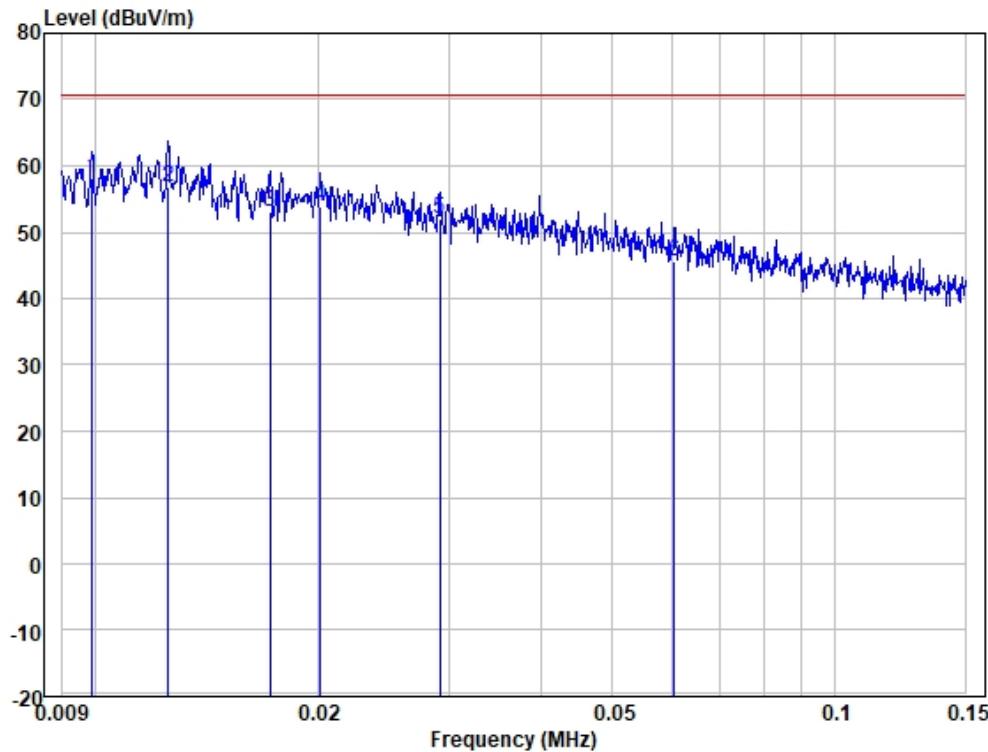
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Test Mode: 00; Polarity: Vertical



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

Freq	Read	Antena	Cable	Preamp	Measured	Limit	Over	Pol/	Remark
	Level	Factor	Loss	Factor	Level	Line	Limit	Phase	
MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB	—	—
1 0.010	69.14	21.58	0.01	32.72	58.01	70.67	-12.66	VERTICAL	Average
2 0.013	69.25	20.24	0.01	32.72	56.78	70.67	-13.89	VERTICAL	Average
3 0.017	68.34	17.51	0.01	32.72	53.14	70.67	-17.53	VERTICAL	Average
4 0.020	69.54	17.00	0.01	32.72	53.83	70.67	-16.84	VERTICAL	Average
5 0.029	68.92	15.78	0.01	32.72	51.99	70.67	-18.68	VERTICAL	Average
6 0.061	63.47	14.82	0.01	32.72	45.58	70.67	-25.09	VERTICAL	Average

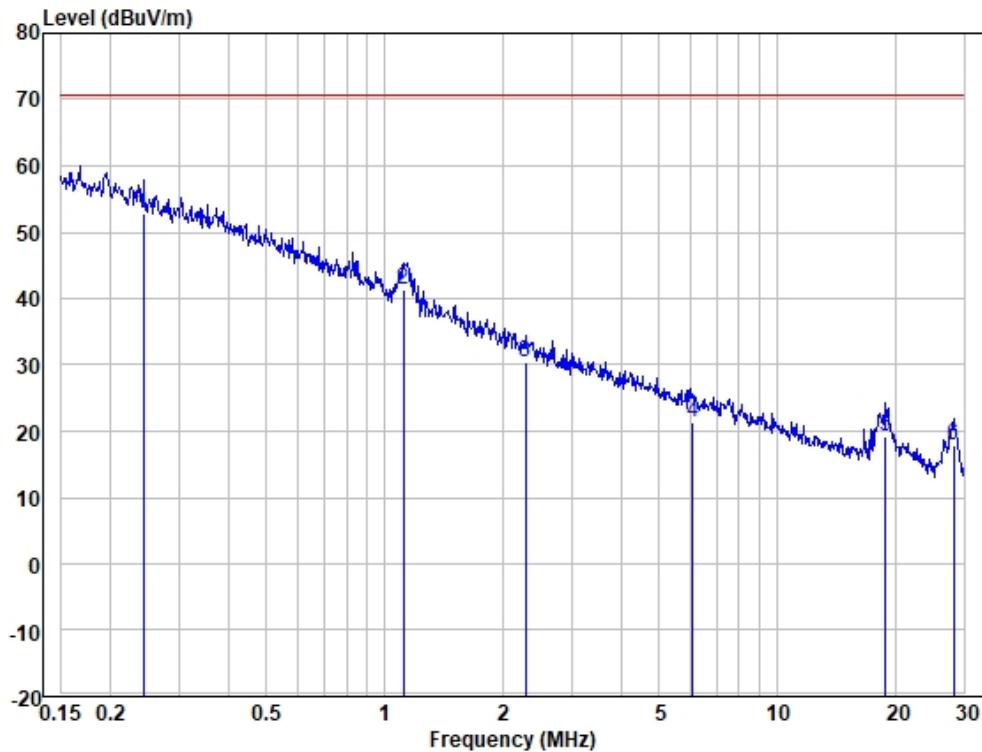
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Test Mode: 00; Polarity: Vertical



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

Freq	Read	Antena	Cable	Preamp	Measured	Limit	Over	Pol/	Remark
	Level	Factor	Loss	Factor	Level	Line	Limit	Phase	
MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB	—	—
1 0.243	70.87	14.66	0.01	32.72	52.82	70.67	-17.85	VERTICAL	Average
2 1.117	60.72	13.37	0.05	32.70	41.44	70.67	-29.23	VERTICAL	Average
3 2.285	49.10	13.86	0.06	32.70	30.32	70.67	-40.35	VERTICAL	Average
4 6.089	41.29	12.71	0.11	32.71	21.40	70.67	-49.27	VERTICAL	Average
5 18.920	42.13	9.53	0.23	32.72	19.17	70.67	-51.50	VERTICAL	Average
6 28.152	44.61	5.74	0.29	32.74	17.90	70.67	-52.77	VERTICAL	Average

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### 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	933.9	Limit=20lg(25*SQRT(power/500))+20lg(300/3)=70.67 dBuV/m @ 3m distance.

#### 6.3.1 E.U.T. Operation

Operating Environment:

Temperature: 24.1 °C Humidity: 49.1 % RH Atmospheric Pressure: 1020 mbar

#### 6.3.2 Test Mode Description

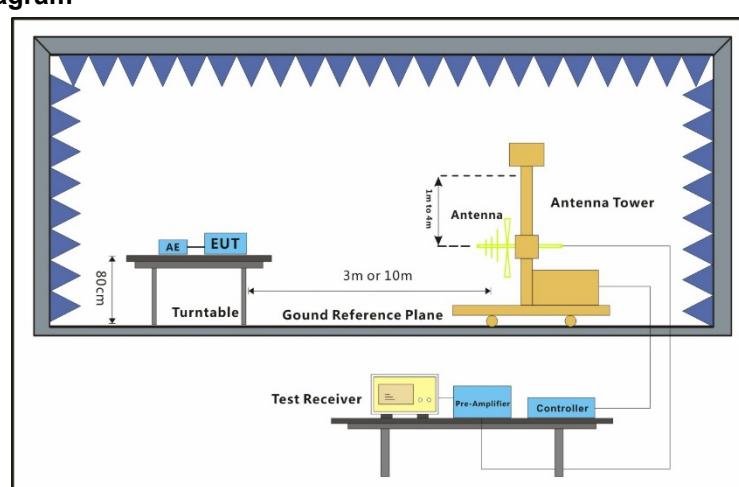
Pre-scan / Mode  
Final test Code Description

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



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### 6.3.4 Measurement Procedure and Data

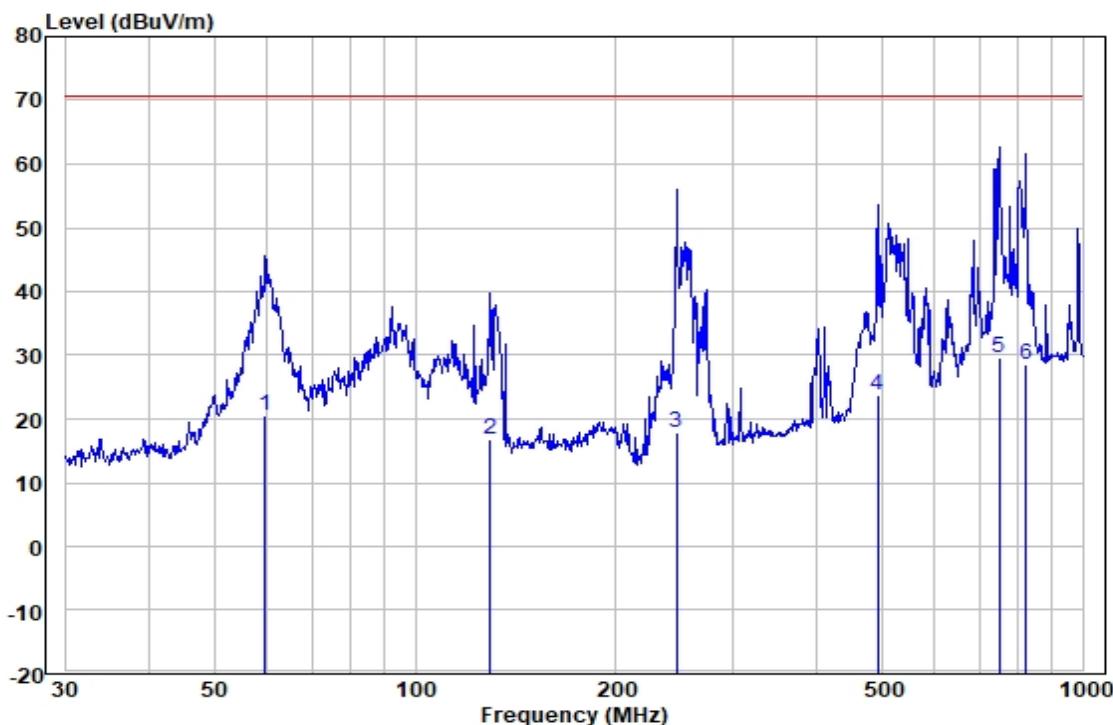
Frequency range: 30MHz-1GHz

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 :

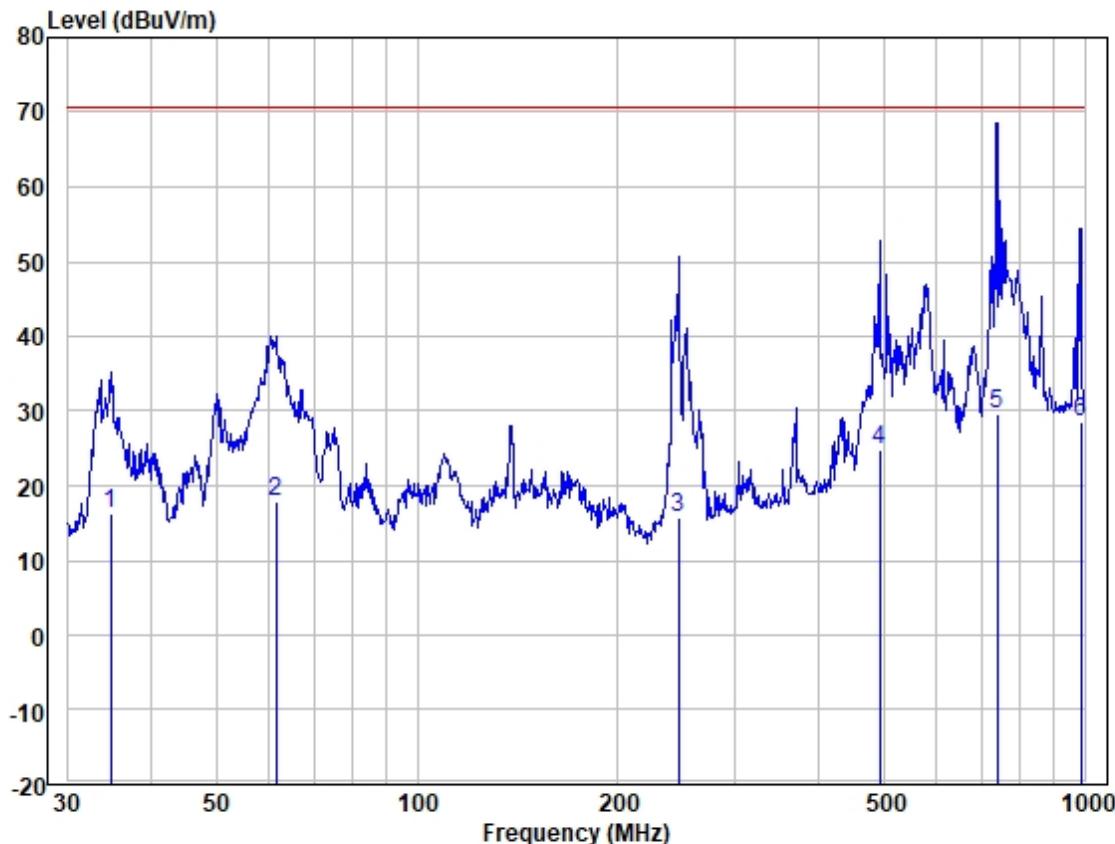
Freq	Read	Antenna	Cable	Preamp	Measured	Limit	Over	Pol/	Remark
	Level	Factor	Loss	Factor	Level	Line	Limit	Phase	
1 59.649	34.22	18.79	0.41	32.78	20.64	70.67	-50.03	HORIZONTAL	Average
2 129.468	30.76	18.05	0.62	32.72	16.71	70.67	-53.96	HORIZONTAL	Average
3 245.951	32.36	17.49	0.87	32.83	17.89	70.67	-52.78	HORIZONTAL	Average
4 492.469	31.95	23.38	1.28	32.94	23.67	70.67	-47.00	HORIZONTAL	Average
5 750.108	31.46	28.23	1.60	31.70	29.59	70.67	-41.08	HORIZONTAL	Average
6 821.710	30.20	28.26	1.67	31.56	28.57	70.67	-42.10	HORIZONTAL	Average



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Test Mode: 00; Polarity: Vertical



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

Freq	Read	Antena	Cable	Preamp	Measured	Limit	Over	Pol/	Remark
	Level	Factor	Loss	Factor	Level	Line	Limit	Phase	
MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB		
1 34.760	30.42	18.23	0.32	32.76	16.21	70.67	-54.46	VERTICAL	Average
2 61.562	31.82	18.47	0.42	32.77	17.94	70.67	-52.73	VERTICAL	Average
3 245.951	30.16	17.49	0.87	32.83	15.69	70.67	-54.98	VERTICAL	Average
4 492.469	33.18	23.38	1.28	32.94	24.90	70.67	-45.77	VERTICAL	Average
5 739.661	32.07	27.71	1.58	31.72	29.64	70.67	-41.03	VERTICAL	Average
6 986.072	27.42	29.85	1.83	30.67	28.43	70.67	-42.24	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
Any type unless otherwise specified (miscellaneous)	Any ISM frequency	933.9	dB(uV/m) average: Limit=20lg(25*SQRT(power/500))+20lg(300/3)=70.67 dBuV/m @ 3m distance.

### 6.4.1 E.U.T. Operation

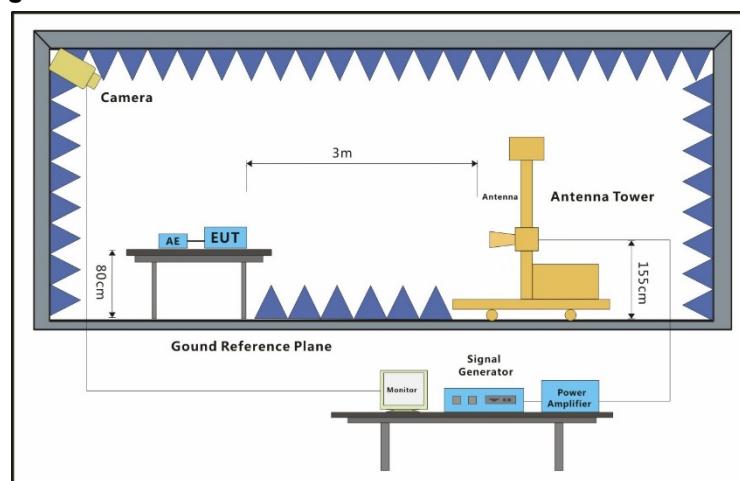
Operating Environment:

Temperature: 23.6 °C      Humidity: 55.5 % 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



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中国·广东·广州高新技术产业开发区科学城科珠路198号      邮编: 510663      t (86-20) 82155555      [sgs.china@sgs.com](mailto:sgs.china@sgs.com)

**6.4.4 Measurement Procedure and Data**

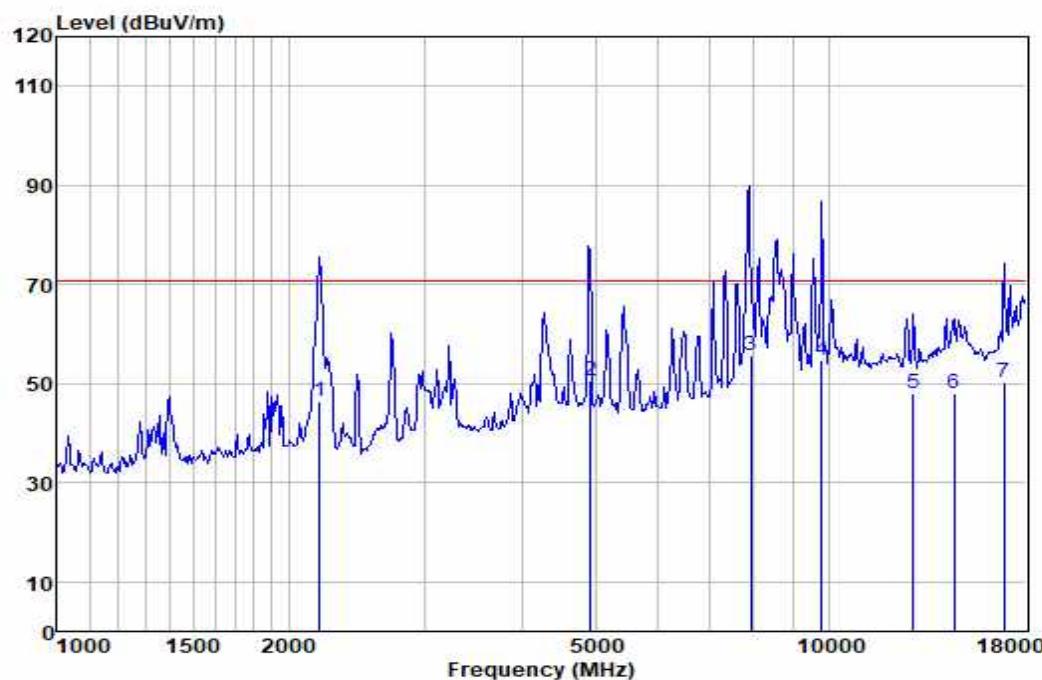
Frequency range: Above 1GHz

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



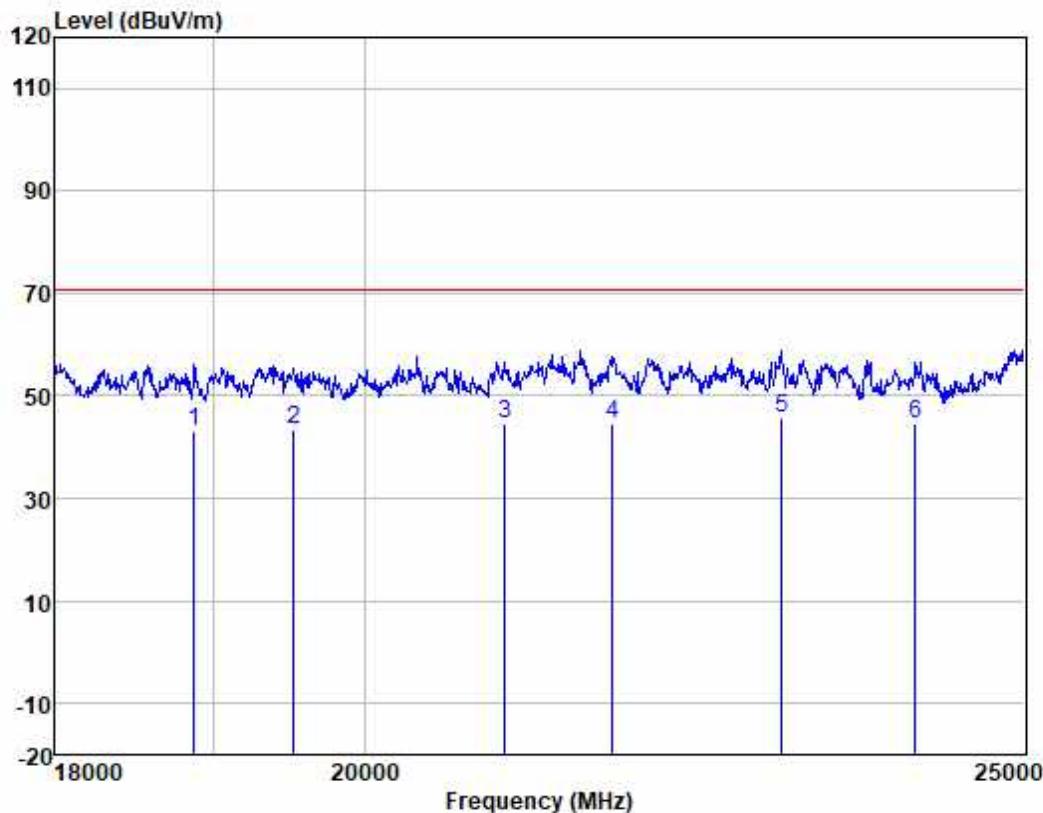
Freq	Read	Antenna	Cable	Preamp	Limit	Over	Pol/Phase	Remark
	MHz	Level	Factor	Loss	Factor	Line		
	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB	
1	2188.663	54.10	26.87	3.24	37.79	46.42	70.67	-24.25 HORIZONTAL Average
2	4911.547	48.93	34.15	4.87	37.34	50.61	70.67	-20.06 HORIZONTAL Average
3	7929.362	49.72	37.07	6.18	37.20	55.77	70.67	-14.90 HORIZONTAL Average
4	9809.916	45.86	38.86	7.14	37.10	54.76	70.67	-15.91 HORIZONTAL Average
5	12872.440	37.73	39.00	8.09	36.84	47.98	70.67	-22.69 HORIZONTAL Average
6	14533.910	33.90	42.33	8.44	36.53	48.14	70.67	-22.53 HORIZONTAL Average
7	16891.040	36.27	41.06	9.41	36.42	50.32	70.67	-20.35 HORIZONTAL Average

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Test Mode: 00; Polarity: Horizontal



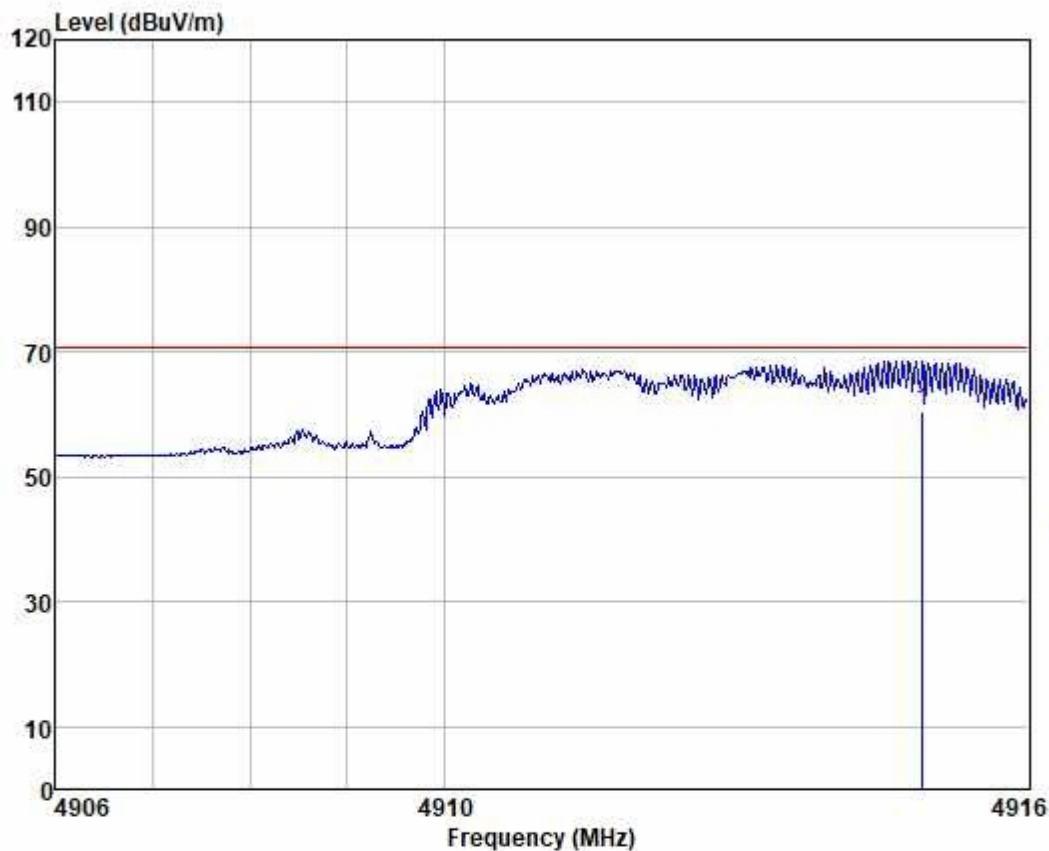
Freq MHz	ReadAntenna Level	Antenna Factor	Cable Loss	Preamp Factor	Level	Limit Line	Over Limit	Pol/Phase	Remark
	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB		
1 18871.940	42.10	37.06	3.20	39.29	43.07	70.67	-27.60	HORIZONTAL	Average
2 19515.010	43.27	36.91	3.10	39.93	43.35	70.67	-27.32	HORIZONTAL	Average
3 20963.810	42.48	37.68	3.22	38.76	44.62	70.67	-26.05	HORIZONTAL	Average
4 21749.490	43.41	37.54	3.32	39.73	44.54	70.67	-26.13	HORIZONTAL	Average
5 23028.900	42.00	38.50	3.33	38.17	45.66	70.67	-25.01	HORIZONTAL	Average
6 24096.900	40.31	38.70	3.45	37.93	44.53	70.67	-26.14	HORIZONTAL	Average



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Test Mode: 00; Polarity: Horizontal



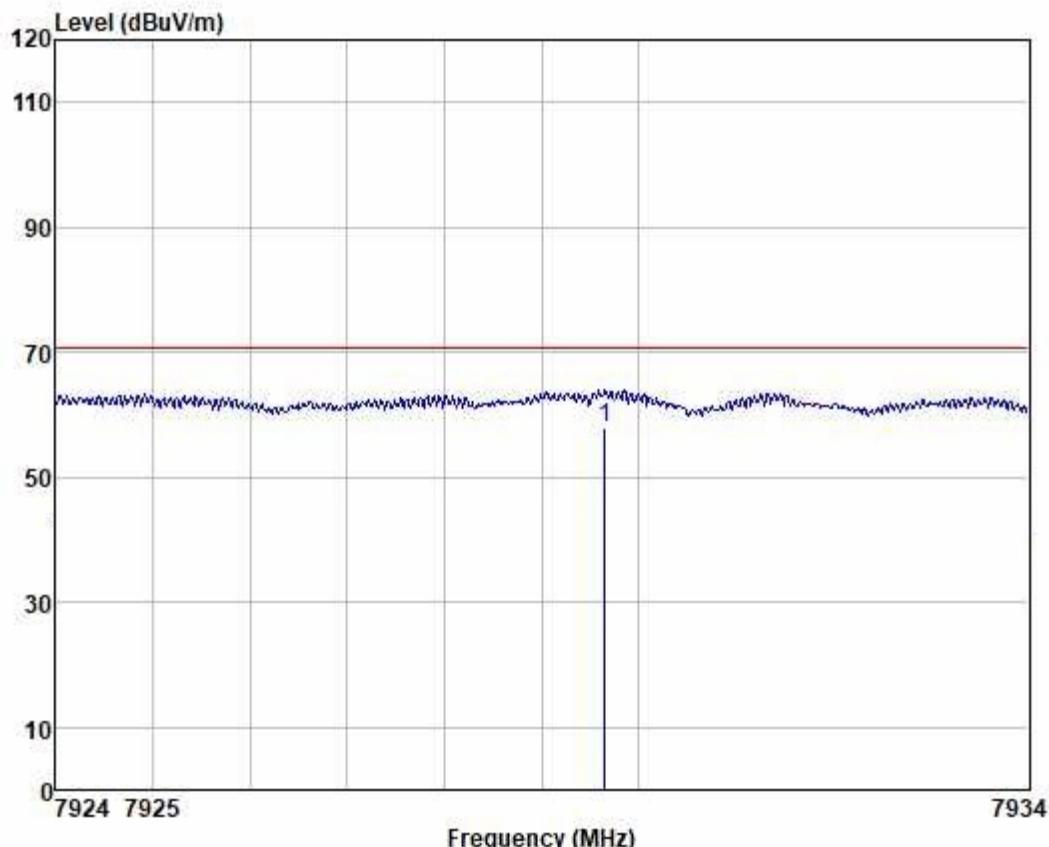
Freq	ReadAntenna	Cable	Preamp	Limit	Over	Limit	Over	Remark
	Level	Factor	Loss					
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB
1	4914.919	58.97	34.15	4.87	37.34	60.65	70.67	-10.02 HORIZONTAL Average



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Test Mode: 00; Polarity: Horizontal



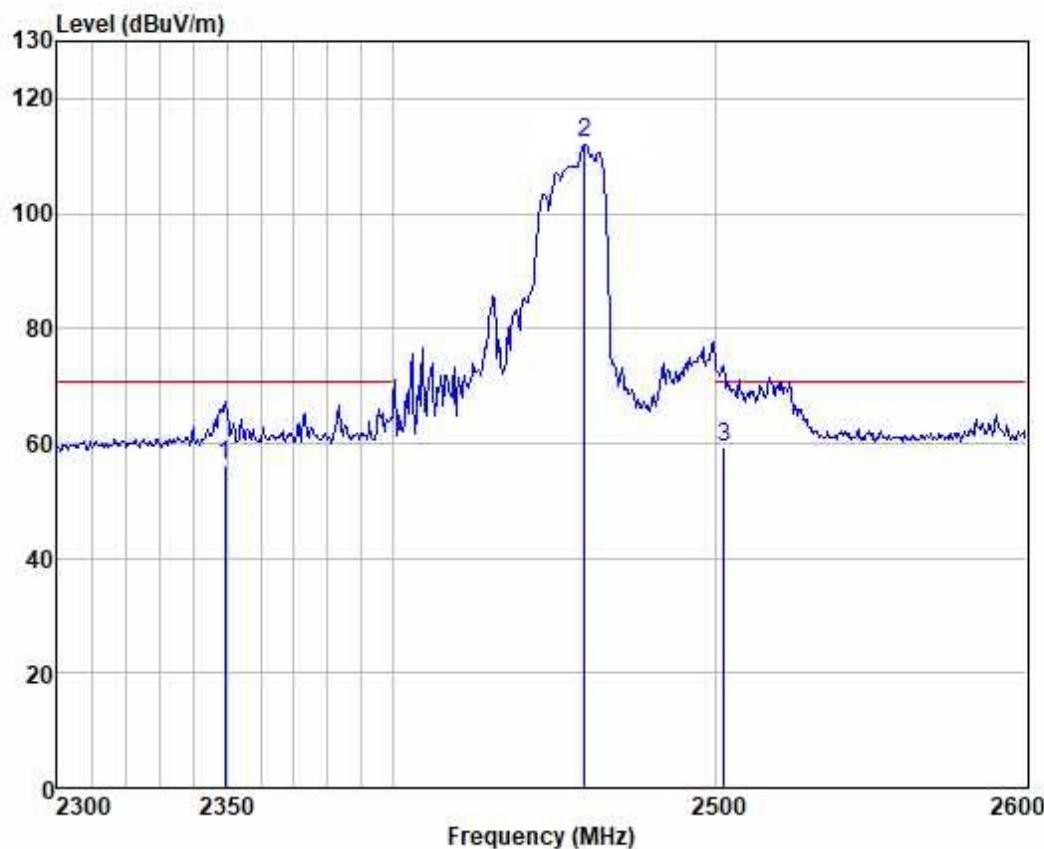
Freq	Read	Antenna	Cable	Preamp	Limit	Over	Limit	Over	Remark
	Level	Factor	Loss	Factor					
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB	
1	7929.648	52.07	37.07	6.18	37.20	58.12	70.67	-12.55	HORIZONTAL Average



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Test Mode: 00; Polarity: Horizontal



Freq	ReadAntenna		Cable		Preamp Level	Limit Line	Over Limit	Over Limit Pol/Phase	Remark
	MHz	Level	Factor	Loss					
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB	
1	2349.304	25.28	27.40	3.42	0.00	56.10	70.67	-14.57	HORIZONTAL Average
2	2458.631	80.84	27.69	3.47	0.00	112.00	-----	-----	HORIZONTAL peak
3	2502.730	27.98	27.85	3.49	0.00	59.32	70.67	-11.35	HORIZONTAL Average

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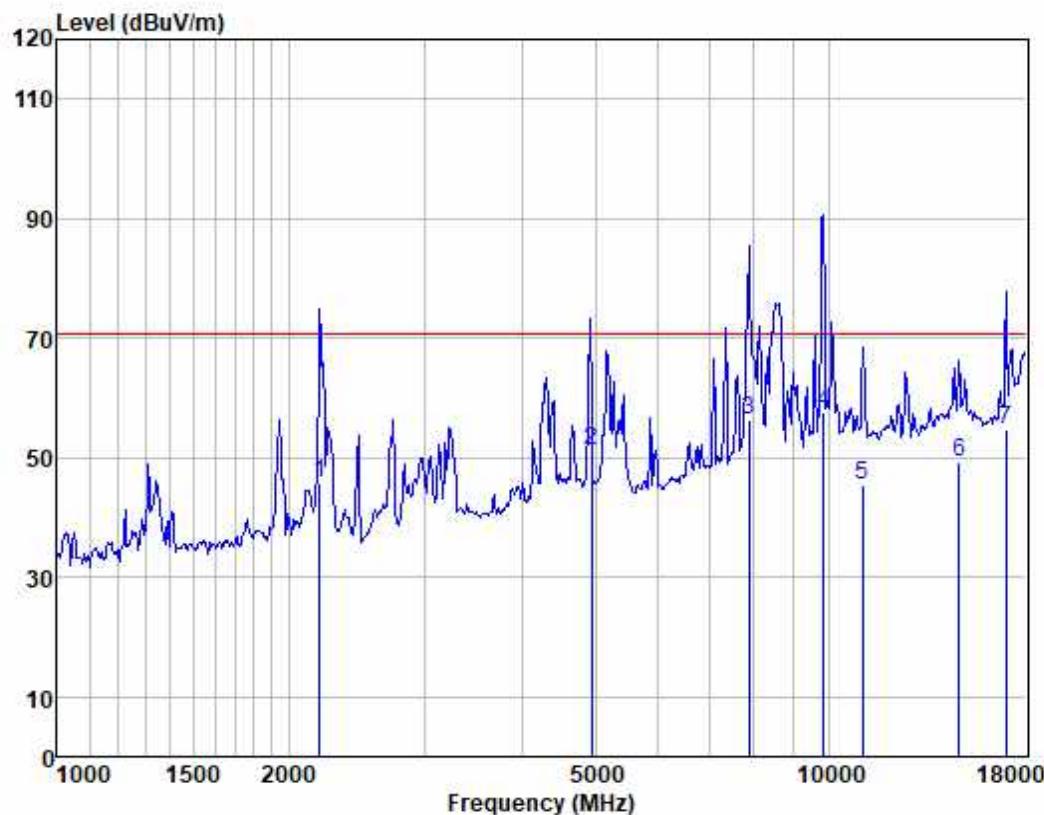
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t (86-20) 82155555 sgs.china@sgs.com

Test Mode: 00; Polarity: Vertical



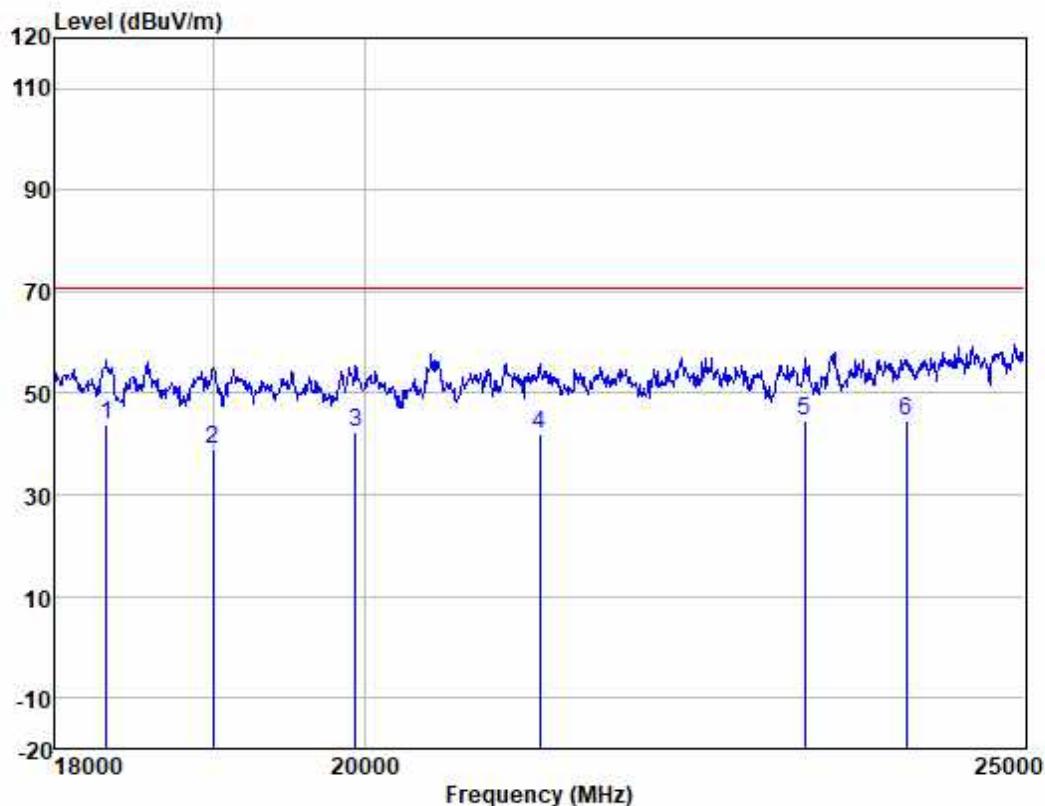
Freq	ReadAntenna		Cable Preamp		Limit Line	Over Limit	Pol/Phase	Remark
	MHz	dBuV	Level Factor	Loss Factor				
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB
1	2188.663	53.52	26.87	3.24	37.79	45.84	70.67	-24.83 VERTICAL Average
2	4926.921	49.47	34.15	4.88	37.33	51.17	70.67	-19.50 VERTICAL Average
3	7895.494	50.30	37.04	6.18	37.20	56.32	70.67	-14.35 VERTICAL Average
4	9866.789	48.64	38.91	7.17	37.10	57.62	70.67	-13.05 VERTICAL Average
5	11076.100	34.54	40.40	7.53	36.98	45.49	70.67	-25.18 VERTICAL Average
6	14788.150	35.55	41.56	8.79	36.51	49.39	70.67	-21.28 VERTICAL Average
7	16988.970	40.09	41.57	9.43	36.42	54.67	70.67	-16.00 VERTICAL Average



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Test Mode: 00; Polarity: Vertical



Freq	ReadAntenna		Cable		Preamp	Limit	Over	Over	Remark
	Level	Factor	Loss	Factor					
MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB	dB	
1 18316.140	43.05	36.72	3.08	39.16	43.69	70.67	-26.98	VERTICAL	Average
2 18990.100	37.95	37.09	3.22	39.31	38.95	70.67	-31.72	VERTICAL	Average
3 19929.640	42.67	37.08	2.98	40.43	42.30	70.67	-28.37	VERTICAL	Average
4 21220.170	39.95	37.66	3.24	38.91	41.94	70.67	-28.73	VERTICAL	Average
5 23211.180	41.00	38.54	3.35	38.13	44.76	70.67	-25.91	VERTICAL	Average
6 24025.770	40.35	38.70	3.46	37.84	44.67	70.67	-26.00	VERTICAL	Average

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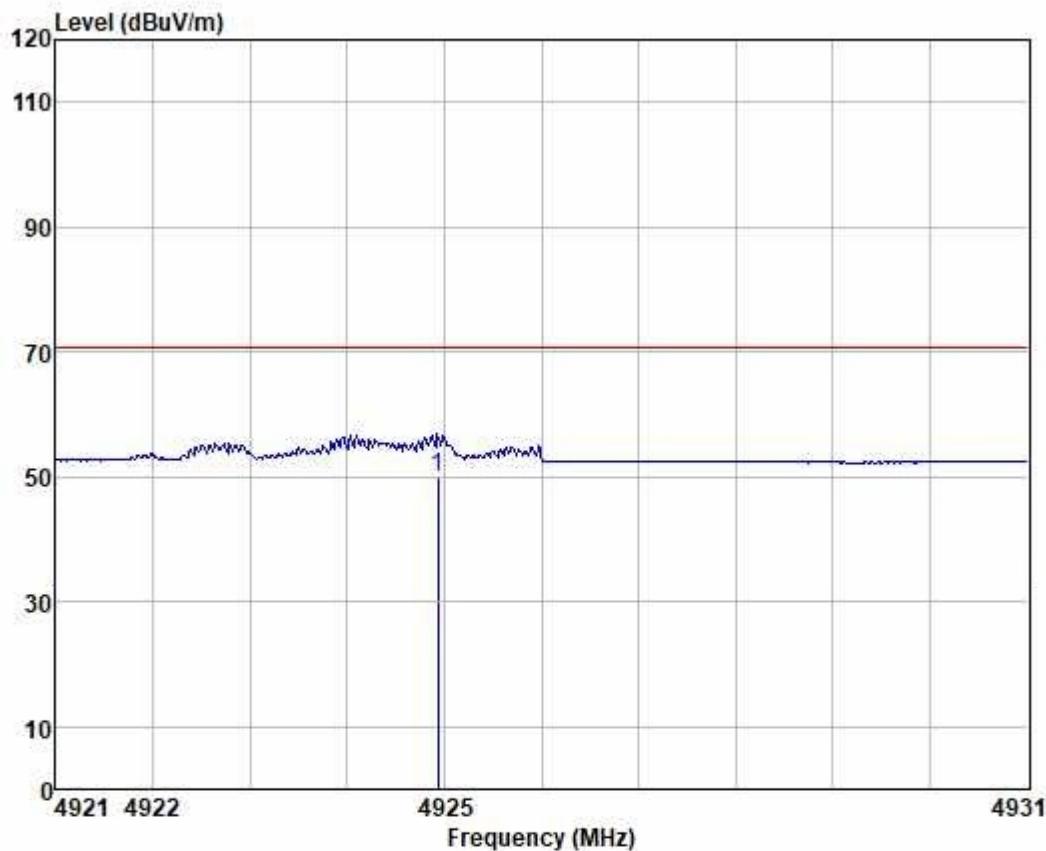
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Test Mode: 00; Polarity: Vertical



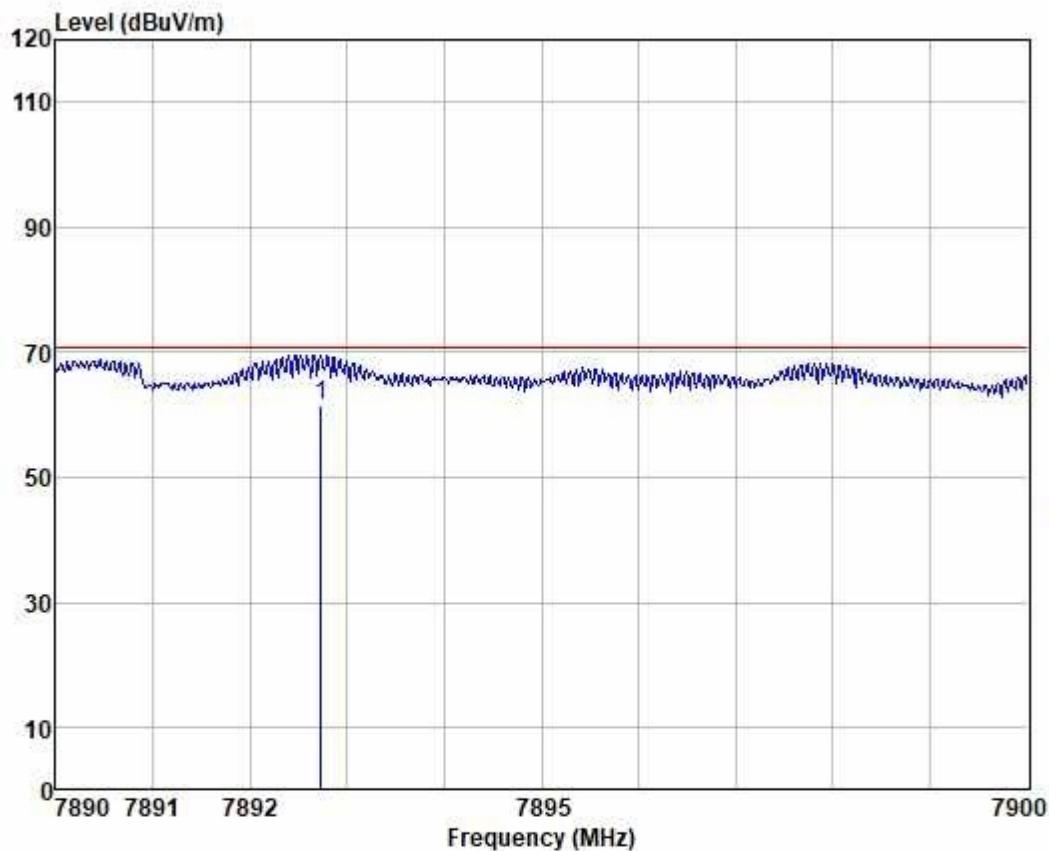
Freq	ReadAntenna	Cable	Preamp	Limit	Over	Limit	Over	Pol/Phase	Remark
	Level	Factor	Loss						
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB	
1	4924.928	48.27	34.15	4.88	37.33	49.97	70.67	-20.70	VERTICAL Average



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Test Mode: 00; Polarity: Vertical



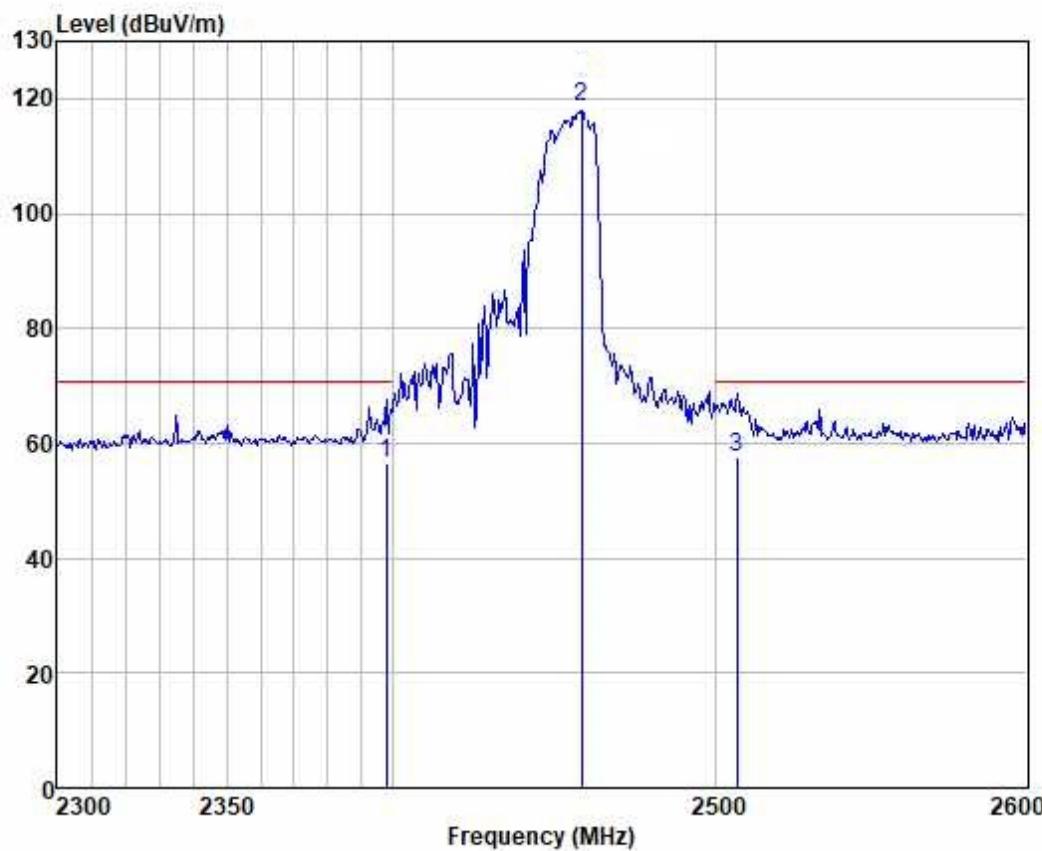
Freq	ReadAntenna	Cable	Preamp	Limit	Over	Over	Remark	
	Level	Factor	Loss					
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB
1	7892.729	55.69	37.04	6.18	37.20	61.71	70.67	-8.96 VERTICAL Average



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Test Mode: 00; Polarity: Vertical



Freq	ReadAntenna		Cable		Preamp	Limit	Over	Over	Remark
	Level	Factor	Loss	Factor					
MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB	dB	
1 2397.901	25.57	27.46	3.45	0.00	56.48	70.67	-14.19	VERTICAL	Average
2 2458.028	87.27	27.69	3.47	0.00	118.43	-----	-----	VERTICAL	peak
3 2506.722	26.12	27.87	3.49	0.00	57.48	70.67	-13.19	VERTICAL	Average

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## 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

$T_0$  is the ambient temperature, in degrees Celsius

$T_1$  is the initial temperature of the water, in degrees Celsius

$T_2$  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: 23.6 °C      Humidity: 55.5 % RH      Atmospheric Pressure: 1012 mbar

### 6.5.2 Test Mode Description

Pre-scan / Final test	Mode Code	Description
-----------------------	-----------	-------------

Final test	00	Test the EUT in microwave mode with maximum power.
------------	----	--



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**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)
1001	413	19.7	10.2	20.2	45	933.9

Input Power Data

Input Voltage (V)	Input Current (A)	Power Factor	Measured input power (W)	Rated input power (W)
119.9	13.04	0.935	1462	1500



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## 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( $2450\text{MHz} \pm 50\text{MHz}$ )  
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	$25 * \text{SQRT}(\text{power}/500)$

Power =933.9 W according to clause 6.1.2

Limit= $20\lg(25 * \text{SQRT}(\text{power}/500)) + 20\lg(300/3) = 70.67\text{dBuV/m} @ 3\text{m distance.}$

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	$\pm 15.0\text{kHz}$
13.56MHz	$\pm 7.0\text{kHz}$
27.12MHz	$\pm 163.0\text{kHz}$
40.68MHz	$\pm 20.0\text{kHz}$
915MHz	$\pm 13.0\text{MHz}$
<b>2450MHz</b>	<b><math>\pm 50.0\text{MHz}</math></b>
5800MHz	$\pm 75.0\text{MHz}$
24125MHz	$\pm 125.0\text{MHz}$
61.25GHz	$\pm 250.0\text{MHz}$
122.5GHz	$\pm 500.0\text{MHz}$
245.00GHz	$\pm 1.0\text{GHz}$



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**6.6.1 E.U.T. Operation**

Operating Environment:

Temperature: 23.6 °C      Humidity: 55.5 % 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.

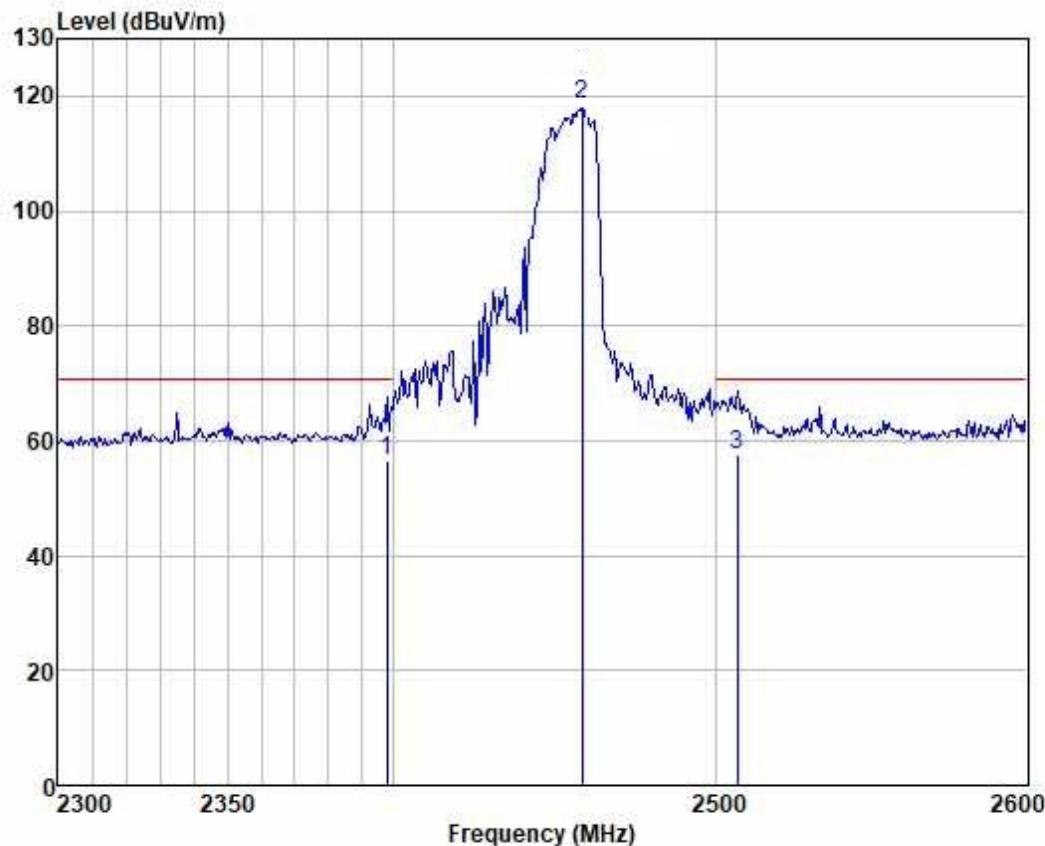


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## 6.6.3 Measurement Procedure and Data

Test Mode: 00; Polarity: Vertical



Freq	ReadAntenna	Cable	Preamp	Limit	Over	Over	Remark	
	Freq	Level	Factor					
MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB	
1	2397.901	25.57	27.46	3.45	0.00	56.48	70.67	-14.19 VERTICAL Average
2	2458.028	87.27	27.69	3.47	0.00	118.43	-----	----- VERTICAL peak
3	2506.722	26.12	27.87	3.49	0.00	57.48	70.67	-13.19 VERTICAL Average

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.

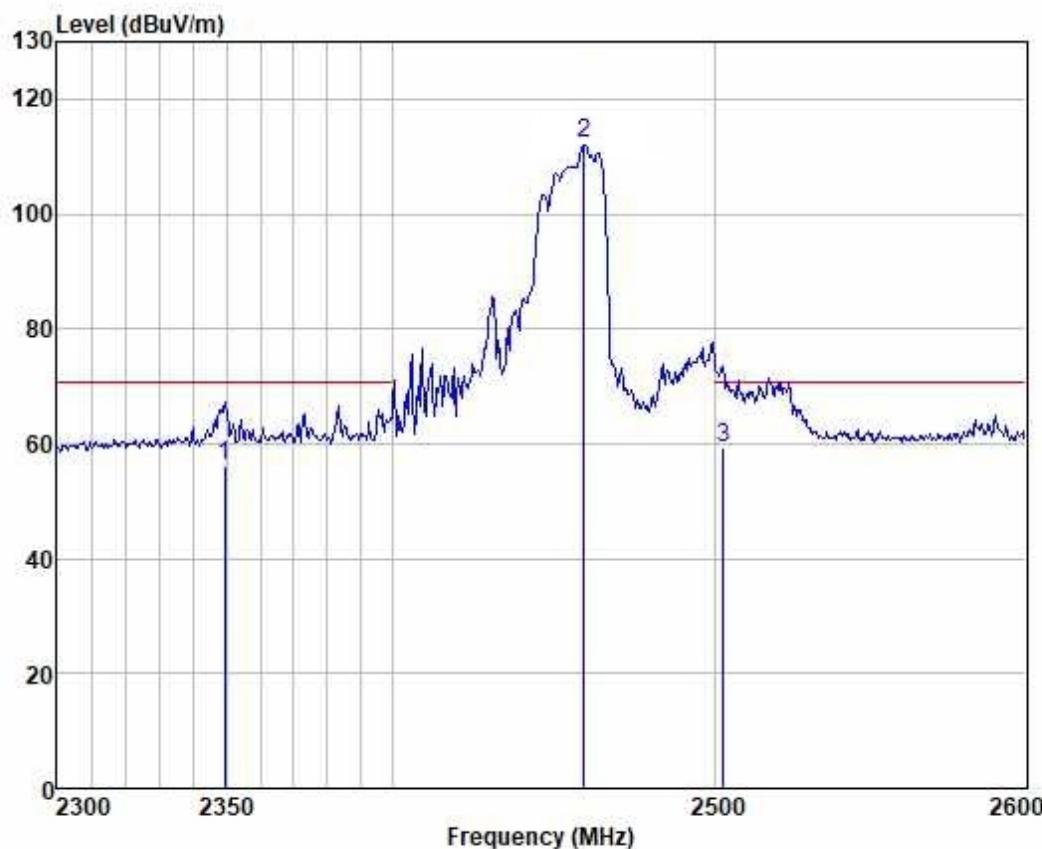
ISM frequency(MHz)	Tolerance(MHz)	Measurement Data(MHz)
2450	±50	2458.028



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Test Mode: 00; Polarity: Horizontal



Freq	Read	Antenna	Cable	Preamp	Limit	Over	Limit	Over	Pol/Phase	Remark
	Freq	Level	Factor	Loss						
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dBuV/m		
1	2349.304	25.28	27.40	3.42	0.00	56.10	70.67	-14.57	HORIZONTAL	Average
2	2458.631	80.84	27.69	3.47	0.00	112.00	-----	-----	HORIZONTAL	peak
3	2502.730	27.98	27.85	3.49	0.00	59.32	70.67	-11.35	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	2458.631



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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	Final test	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 <sup>2</sup> )	Limit (mW/cm <sup>2</sup> )	Test Result
0.024	1	PASS



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## 7 Test Setup Photo

Refer to Appendix - Test Setup Photo for GZEM190701397905



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## 8 EUT Constructional Details (EUT Photos)

Refer to Appendix - External and Internal Photos for GZEM2502001013HS

- End of the Report -



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