

# TEST REPORT

**Application No.:** GZEM2401000103HS  
**Applicant:** Guangdong Galanz Enterprises Co., Ltd.  
**Address of Applicant:** 25 Ronggui Nan Road, Shunde, Foshan, Guangdong, China  
**Manufacturer:** Guangdong Galanz Microwave Electrical Appliances Manufacturing Co., Ltd.  
**Address of Manufacturer:** 3 Xingpu Avenue, Huangpu, Zhongshan, Guangdong, China.  
**Factory:** 1 Guangdong Galanz Microwave Electrical Appliances Manufacturing Co., Ltd.  
2 Guangdong Galanz Microwave Oven and Electrical Appliances Manufacturing Co., Ltd.  
**Address of Factory:** 1 3 Xingpu Avenue, Huangpu, Zhongshan, Guangdong, China.  
2 25 Ronggui Nan Road, Shunde, Foshan, Guangdong, China  
**Product Name:** Microwave oven  
**Model No.:** P90D25AL-HP7, P90D25(X)-Y, WMC30309LB, WMC30309LS, YWMC30309LS, WMC30309LB\*\*, WMC30309LS\*\*, YWMC30309LS\*\*, WMC3019RB, WMC3019RS, WMC3019RB\*\*, WMC3019RS\*\*, P90D25AL-HP7(L2), P90D25AL-HP7B(L2), P90D25(X)-Y(L2)  
P: with microwave function only  
90: denote the output power is 900W  
D25: denote different cavity in 25 liters.  
Variable (X) may be  
L, P, SL, SP, TL, TP, AL, AP, ASL, ASP, ATL, ATP, EL, EP, ESL, ESP, ETL, ETP, ML, MP, MSL, MSP, MTL, MTP, MYL.  
Variable (Y) may compose by one to five characters from A to Z and/or numbers from 0 to 9. It represents the differences of the appearance.  
\*\* may be letters or alphanumeric characters designating different model name ♣  
♣ Please refer to section 2 of this report which indicates which item was actually tested and which were electrically identical.  
**Trade Mark:** GALANZ, Whirlpool  
**Standard(s) :** 47 CFR Part 18  
**Date of Receipt:** 2024-01-04  
**Date of Test:** 2024-01-05 to 2024-01-11  
**Date of Issue:** 2024-02-01

<b>Test Result:</b>	<b>Pass*</b>
---------------------	--------------

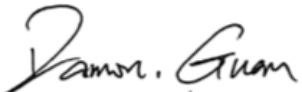

\* In the configuration tested, the EUT complied with the standards specified above.



Ricky Liu  
Manager



Revision Record			
Version	Report No.	Date	Remark
01	GZEM210100026302	2021-02-19	Original
02	GZEM210100026304	2024-02-01	Amendment report: Add new models.

Authorized for issue by:				
				
		Damon Guan/Project Engineer		
				
		Terry Lai/Reviewer		



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## 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(c)	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.



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**Remark for report GZEM210100026302:**

**■ Declaration of EUT Family Grouping:**

Models: P90D25AL-HP7, P90D25(X)-Y, WMC30309LB, WMC30309LS, YWMC30309LS, WMC30309LB\*\*, WMC30309LS\*\*, YWMC30309LS\*\*

P: with microwave function only

90: denote the output power is 900W

D25: denote different cavity in 25 liters.

Variable (X) may be

L, P, SL, SP, TL, TP, AL, AP, ASL, ASP, ATL, ATP, EL, EP, ESL, ESP, ETL, ETP, ML, MP, MSL, MSP, MTL, MTP, MYL.

Variable (Y) may compose by one to five characters from A to Z and/or numbers from 0 to 9. It represents the differences of the appearance.

\*\* may be letters or alphanumeric characters designating different model name

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 and model name.

Therefore only one model P90D25AL-HP7 was tested in this report.

**Remark for report GZEM210100026304:**

This report GZEM210100026304 is based on original report GZEM210100026302, only add new models WMC3019RB, WMC3019RS, WMC3019RB\*\*, WMC3019RS\*\*, P90D25AL-HP7(L2), P90D25AL-HP7B(L2), P90D25(X)-Y(L2).

According to the declaration from the applicant, models added in this report GZEM210100026304 and models in original report GZEM210100026302 are totally same, with difference on the door opening structure.

Base on GZEM210100026302 report, add new models alternative new two-step door opening structure, alternative new mains PCB and filter PCB.

Considering to the changed, model P90D25AL-HP7(L2) was tested full items in this report GZEM210100026304.

Other tests please refer to original report GZEM210100026302 for details.



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## 3 Contents

	Page
<b>1 Cover Page .....</b>	<b>1</b>
<b>2 Test Summary .....</b>	<b>3</b>
<b>3 Contents.....</b>	<b>5</b>
<b>4 General Information .....</b>	<b>7</b>
4.1 Details of E.U.T. ....	7
4.2 Description of Support Units.....	7
4.3 Measurement Uncertainty .....	7
4.4 Test Location .....	7
4.5 Test Facility .....	8
4.6 Deviation from Standards.....	8
4.7 Abnormalities from Standard Conditions .....	8
<b>5 Equipment List .....</b>	<b>9</b>
<b>6 Emission Test Results .....</b>	<b>12</b>
6.1 Conducted Emissions at Mains Terminals (150kHz-30MHz) .....	12
6.1.1 E.U.T. Operation .....	12
6.1.2 Test Mode Description .....	12
6.1.3 Test Setup Diagram .....	12
6.1.4 Measurement Procedure and Data .....	13
6.2 Radiated Emissions (Magnetic field Strength)(9kHz-30MHz) .....	15
6.2.1 E.U.T. Operation .....	15
6.2.2 Test Mode Description .....	15
6.2.3 Test Setup Diagram .....	15
6.2.4 Measurement Procedure and Data .....	16
6.3 Radiated Emissions (30MHz-1GHz).....	20
6.3.1 E.U.T. Operation .....	20
6.3.2 Test Mode Description .....	20
6.3.3 Test Setup Diagram .....	20
6.3.4 Measurement Procedure and Data .....	21
6.4 Radiated Emissions (above 1GHz) .....	23
6.4.1 E.U.T. Operation .....	23
6.4.2 Test Mode Description .....	23
6.4.3 Test Setup Diagram .....	23
6.4.4 Measurement Procedure and Data .....	24
6.5 Output Power Measurement.....	34
6.5.1 E.U.T. Operation .....	34
6.5.2 Test Mode Description .....	34
6.5.3 Measurement Procedure and Data .....	35
6.6 Operating Frequency Measurement.....	36
6.6.1 E.U.T. Operation .....	36
6.6.2 Test Mode Description .....	37
6.6.3 Measurement Procedure and Data .....	37
6.7 Radiation Hazard Test.....	39



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6.7.1	E.U.T. Operation .....	39
6.7.2	Test Mode Description .....	39
6.7.3	Measurement Procedure and Data .....	39
7	Test Setup Photo.....	40
8	EUT Constructional Details (EUT Photos) .....	41



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## 4 General Information

### 4.1 Details of E.U.T.

Power supply: AC 120V 60Hz  
Test voltage: AC 120V 60Hz  
Microwave frequency: 2450MHz  $\pm$  50MHz  
Cable(s): About 1.0m x 3 wires unscreened AC mains cable.

### 4.2 Description of Support Units

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)	2.76dB (150kHz to 30MHz)
Radiated Emissions (Magnetic field Strength)(9kHz-30MHz)	3.08dB(9kHz to 150kHz), 3.12dB(150kHz to 30MHz)
Radiated Emissions (30MHz-1GHz)	5.00dB (30MHz-1GHz):3m; 4.38dB (30MHz-1GHz):10m
Radiated Emissions (above 1GHz)	5.12dB (1GHz-6GHz); 5.38dB (6GHz-18GHz); 5.61dB (18GHz-40GHz)
Remark: The $U_{lab}$ (lab Uncertainty) is less than $U_{cisp}$ (CISPR Uncertainty), so the test results – compliance is deemed to occur if no measured disturbance level exceeds the disturbance limit; – non-compliance is deemed to occur if any measured disturbance level exceeds the disturbance limit.	

### 4.4 Test Location

All tests were performed at:

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

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No tests were sub-contracted.



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#### 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	2023-08-04	2024-08-03
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	2023-09-08	2024-09-07
EMI Test Receiver (9kHz-3.6GHz)	Rohde & Schwarz	ESR3	EMC2221	2023-05-19	2024-05-18
Test Software E3r	Audix	Ver.6.11812	GZE100-77	N/A	N/A
Artificial Mains Network (LISN)	AFJ Instruments	LT32C	EMC2046	2023-10-20	2024-10-19

Radiated Emissions (Magnetic field Strength)(9kHz-30MHz)					
Equipment	Manufacturer	Model No.	Inventory No.	Cal Date	Cal Due Date
Coaxial Cable (RE 2m Loop)	INFINITE	CC223N-10	EMC0703	2023-06-25	2025-06-24
2m Large Loop Antenna System (ZN3040)	ZHINAN	ZN3040	EMC2187	2022-03-26	2024-03-25
Amplifier(9k-1000MHz)	SONOMA	310	EMC2237	2023-04-13	2024-04-12
Active Loop Antenna-RED	ETS-Lindgren	6502	EMC2190	2022-04-06	2024-04-05
EMI Test Receiver (1Hz-8GHz)	Rohde & Schwarz	ESW8	EMC2229	2023-02-20	2024-02-19
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	2023-06-14	2025-06-13

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	2023-02-20	2024-02-19
Amplifier(9k-1000MHz)	SONOMA	310	EMC2237	2023-04-13	2024-04-12
TRILOG Broadband Antenna (25M-2GHz)	SCHWRZBECK	VULB 9168	EMC2238	2022-04-20	2025-04-19
Coaxial Cable	Mirco-COAX UTIFLEX ve	LA2-C125-8000	EMC2239	2023-06-14	2025-06-13
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	2023-11-10	2024-11-09
EMI Test Receiver (10Hz-26.5GHz)	Rohde & Schwarz	ESIB26	EMC0522	2023-12-15	2024-12-14
Chamber cable (Above 1GHz)	Scoflex	KMKM-8.0m	EMC0545	2022-08-24	2024-08-23
Horn Antenna (1GHz-18GHz)	SCHWARZBECK MESS-ELEKTRONIK	BBHA 9120D	EMC2026	2022-09-23	2025-09-22
2.4GHz Filter	Micro-Tronics	BRM 50702	EMC2069	2023-11-10	2024-11-09
EXA Signal Analyzer (10Hz-44GHz)	Keysight	N9010A	EMC2138	2023-08-23	2024-08-22
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

Output Power Measurement					
Equipment	Manufacturer	Model No.	Inventory No.	Cal Date	Cal Due Date
Digital thermometer	FLUKE	51_2	EMC2200	2023-07-25	2024-07-24
Digital power analyzer for harmonics & flicker testing	EMTEST	DPA 500N	EMC2235	2023-04-21	2024-04-20
Programmable multifunctional ac/dc power source	EMTEST	NETWAVE 7-400	EMC2234	2023-04-21	2024-04-20
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	2023-12-15	2024-12-14
Chamber cable (Above 1GHz)	Scoflex	KMKM-8.0m	EMC0545	2022-08-24	2024-08-23
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	2023-05-11	2024-05-10



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EMC-TRF-01 Rev 1.1

Report No.: GZEM210100026304

Page: 11 of 41

General used equipment					
Equipment	Manufacturer	Model No	Inventory No	Cal Date	Cal Due Date
DMM	Fluke	73	EMC0006	2023-06-11	2024-06-10



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### 6.1.4 Measurement Procedure and Data

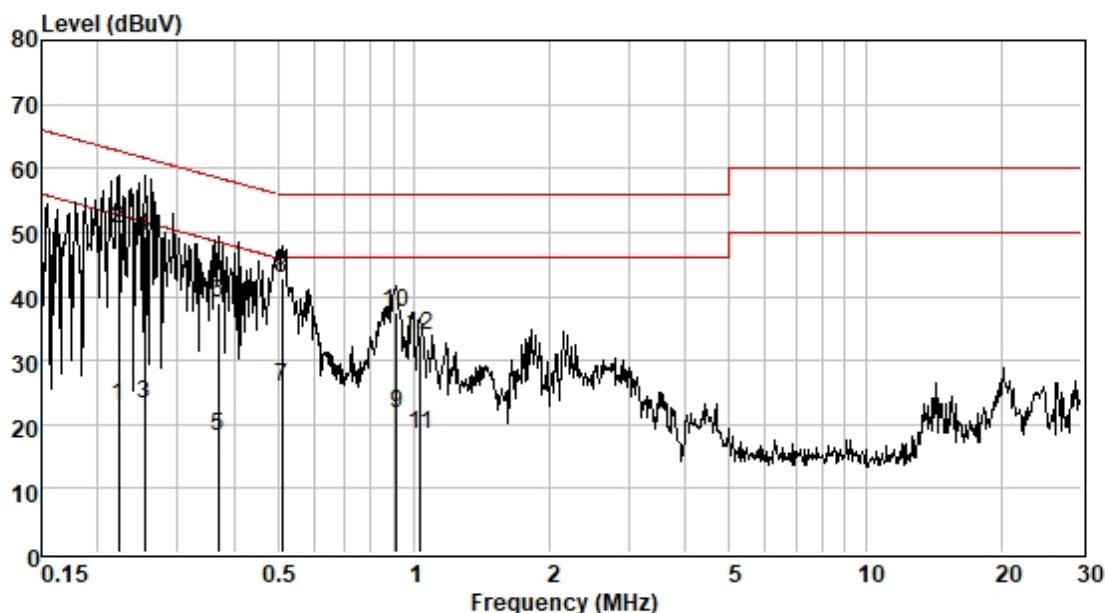
Frequency range: 150KHz-30MHz

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

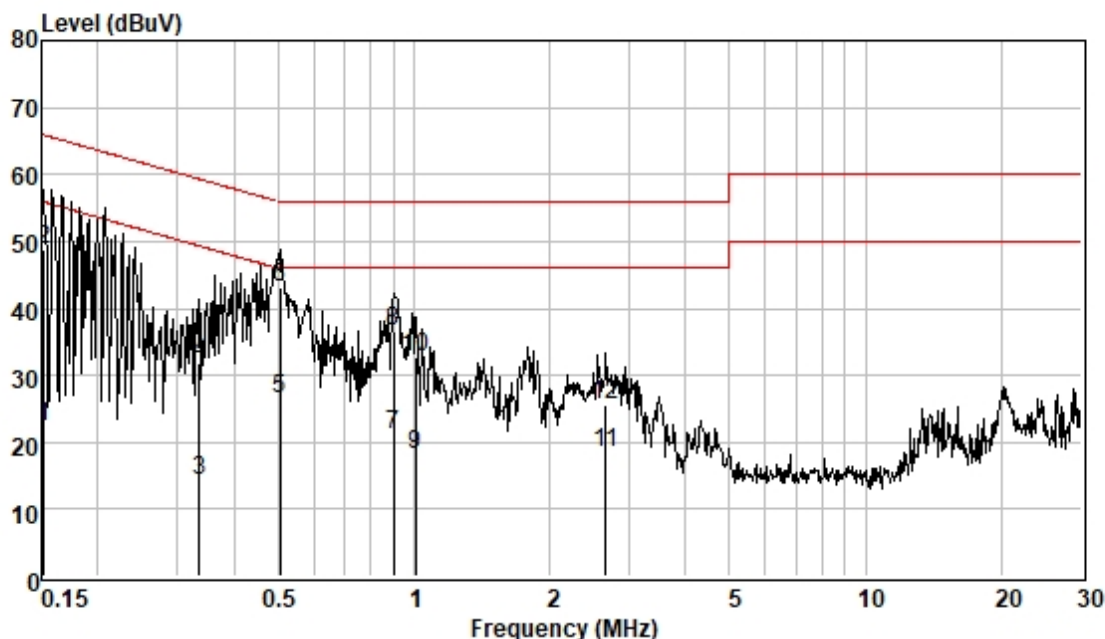
Test Mode: 00; Line: Live line



Pol : LINE  
Mode :  
Model :  
Power :

	Freque MHz	Read Level dBuV	Cable Loss dB	LISN Factor dB	Measured Level dBuV	Limit Line dBuV	Over Limit dB	Remark
1	0.222	13.26	0.04	9.55	22.85	52.74	-29.89	Average
2	0.222	41.03	0.04	9.55	50.62	62.74	-12.12	QP
3	0.253	13.69	0.04	9.56	23.29	51.64	-28.35	Average
4	0.253	39.81	0.04	9.56	49.41	61.64	-12.23	QP
5	0.369	8.65	0.05	9.57	18.27	48.52	-30.25	Average
6	0.369	29.24	0.05	9.57	38.86	58.52	-19.66	QP
7	0.510	16.18	0.05	9.56	25.79	46.00	-20.21	Average
8	0.510	33.28	0.05	9.56	42.89	56.00	-13.11	QP
9	0.914	11.93	0.07	9.57	21.57	46.00	-24.43	Average
10	0.914	27.75	0.07	9.57	37.39	56.00	-18.61	QP
11	1.032	8.73	0.07	9.57	18.37	46.00	-27.63	Average
12	1.032	24.26	0.07	9.57	33.90	56.00	-22.10	QP

Test Mode: 00; Line: Neutral Line



Pol : NEUTRAL  
Mode :  
Model :  
Power :

	Freque	Read	Cable	LISN	Measured	Limit	Over	
	ncy	Level	Loss	Factor	Level	Line	Limit	Remark
	MHz	dBuV	dB	dB	dBuV	dBuV	dB	
1	0.152	12.67	0.04	9.52	22.23	55.91	-33.68	Average
2	0.152	39.31	0.04	9.52	48.87	65.91	-17.04	QP
3	0.336	4.78	0.04	9.54	14.36	49.31	-34.95	Average
4	0.336	22.33	0.04	9.54	31.91	59.31	-27.40	QP
5	0.505	16.92	0.05	9.54	26.51	46.00	-19.49	Average
6	0.505	33.39	0.05	9.54	42.98	56.00	-13.02	QP
7	0.904	11.40	0.07	9.55	21.02	46.00	-24.98	Average
8	0.904	26.97	0.07	9.55	36.59	56.00	-19.41	QP
9	1.010	8.48	0.07	9.55	18.10	46.00	-27.90	Average
10	1.010	23.15	0.07	9.55	32.77	56.00	-23.23	QP
11	2.664	8.85	0.15	9.56	18.56	46.00	-27.44	Average
12	2.664	15.76	0.15	9.56	25.47	56.00	-30.53	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	<b>865.8</b>	Limit=20lg(25*SQRT(865.8/500))+20lg(300/3)= <b>70.34 dBuV/m @ 3m distance.</b>

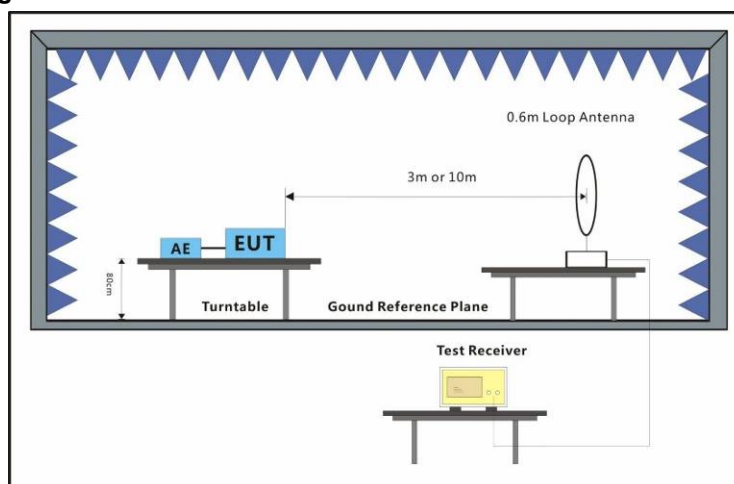
#### 6.2.1 E.U.T. Operation

Operating Environment:  
 Temperature: 22.5 °C Humidity: 52.7 % RH Atmospheric Pressure: 1021 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



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### 6.2.4 Measurement Procedure and Data

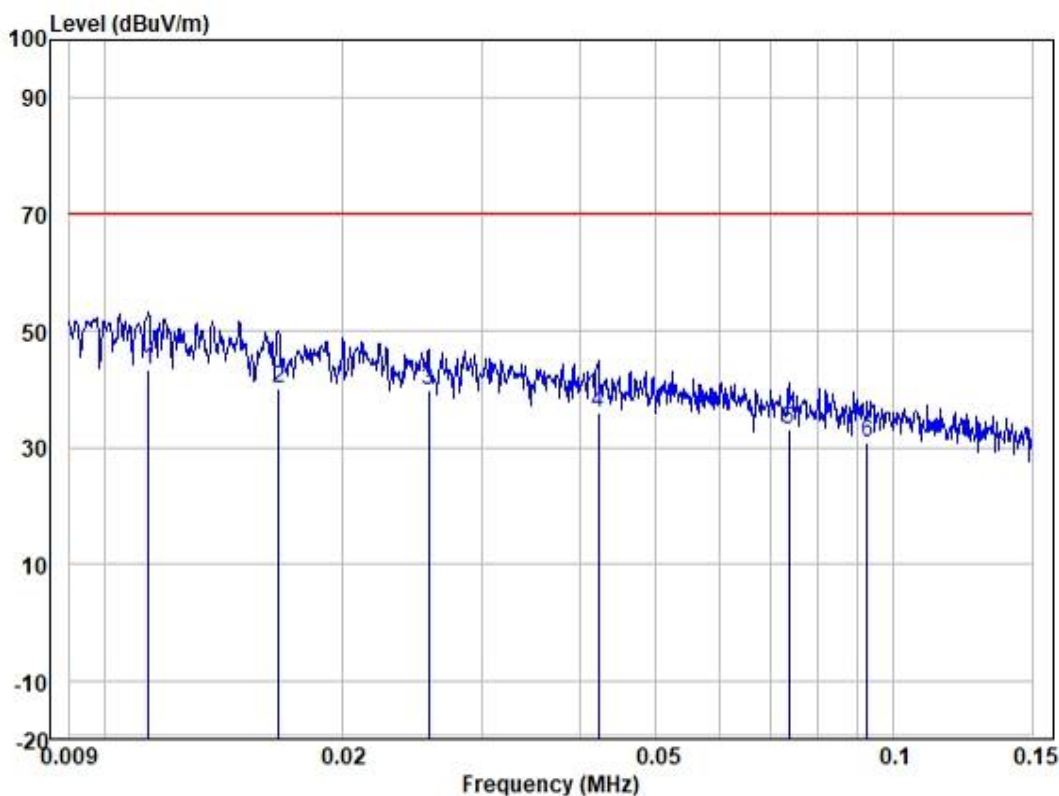
Frequency range: 9KHz-30MHz

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 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	58.05	18.10	0.01	32.90	43.26	70.34	-27.08	HORIZONTAL	Average
2	0.017	58.10	14.87	0.01	32.90	40.08	70.34	-30.26	HORIZONTAL	Average
3	0.026	59.49	13.34	0.01	32.90	39.94	70.34	-30.40	HORIZONTAL	Average
4	0.042	56.38	12.39	0.01	32.90	35.88	70.34	-34.46	HORIZONTAL	Average
5	0.074	53.99	12.00	0.01	32.90	33.10	70.34	-37.24	HORIZONTAL	Average
6	0.093	51.96	11.96	0.01	32.90	31.03	70.34	-39.31	HORIZONTAL	Average

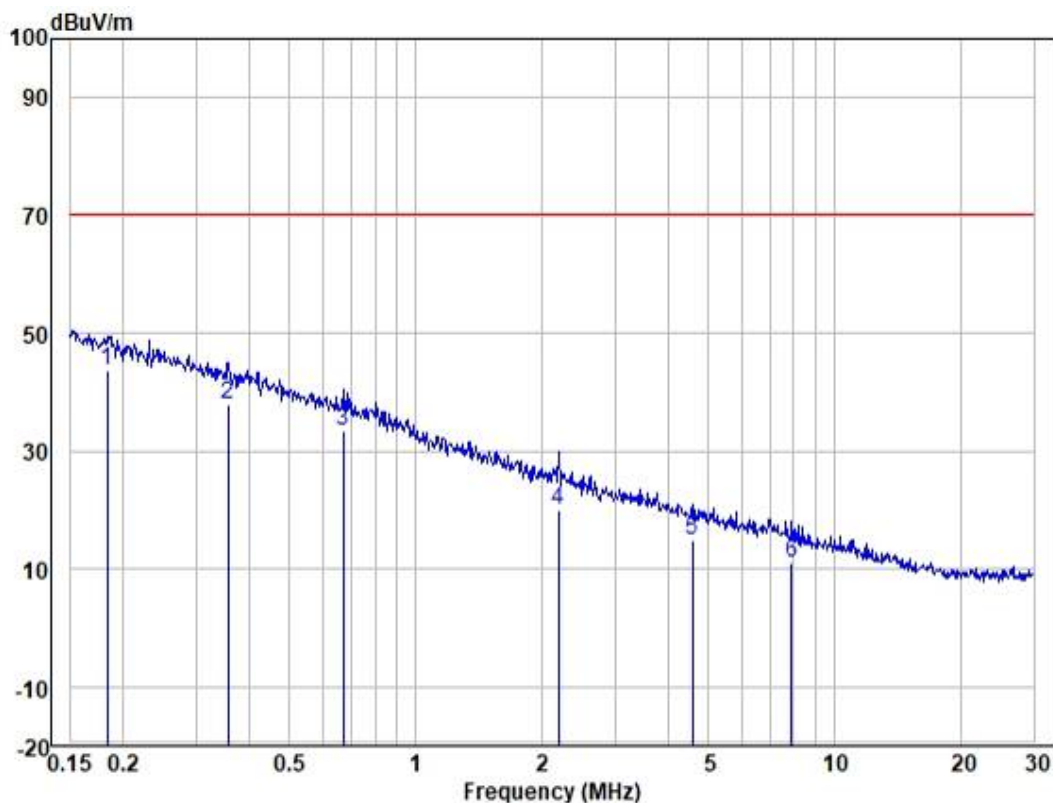


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Test Mode: 00; Polarity: Horizontal



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

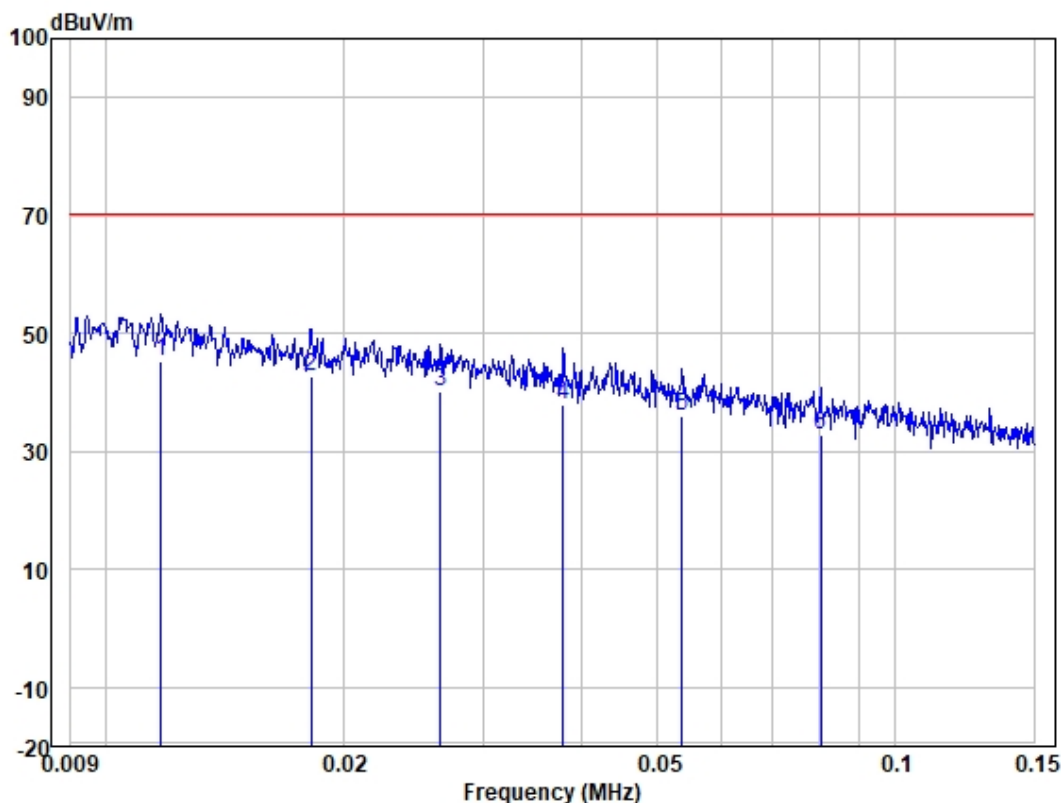
	Freq	Read Level	Antenna Factor	Cable Loss	Preamplifier	Measured Level	Limit Line	Over Limit	Pol/Phase	Remark
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB		
1	0.183	64.60	11.86	0.01	32.90	43.57	70.34	-26.77	HORIZONTAL	Average
2	0.358	59.07	11.86	0.01	32.90	38.04	70.34	-32.30	HORIZONTAL	Average
3	0.672	54.45	11.82	0.05	32.90	33.42	70.34	-36.92	HORIZONTAL	Average
4	2.190	40.85	11.84	0.06	32.90	19.85	70.34	-50.49	HORIZONTAL	Average
5	4.574	36.20	11.51	0.10	32.90	14.91	70.34	-55.43	HORIZONTAL	Average
6	7.893	32.13	11.74	0.14	32.90	11.11	70.34	-59.23	HORIZONTAL	Average



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Test Mode: 00; Polarity: Vertical



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

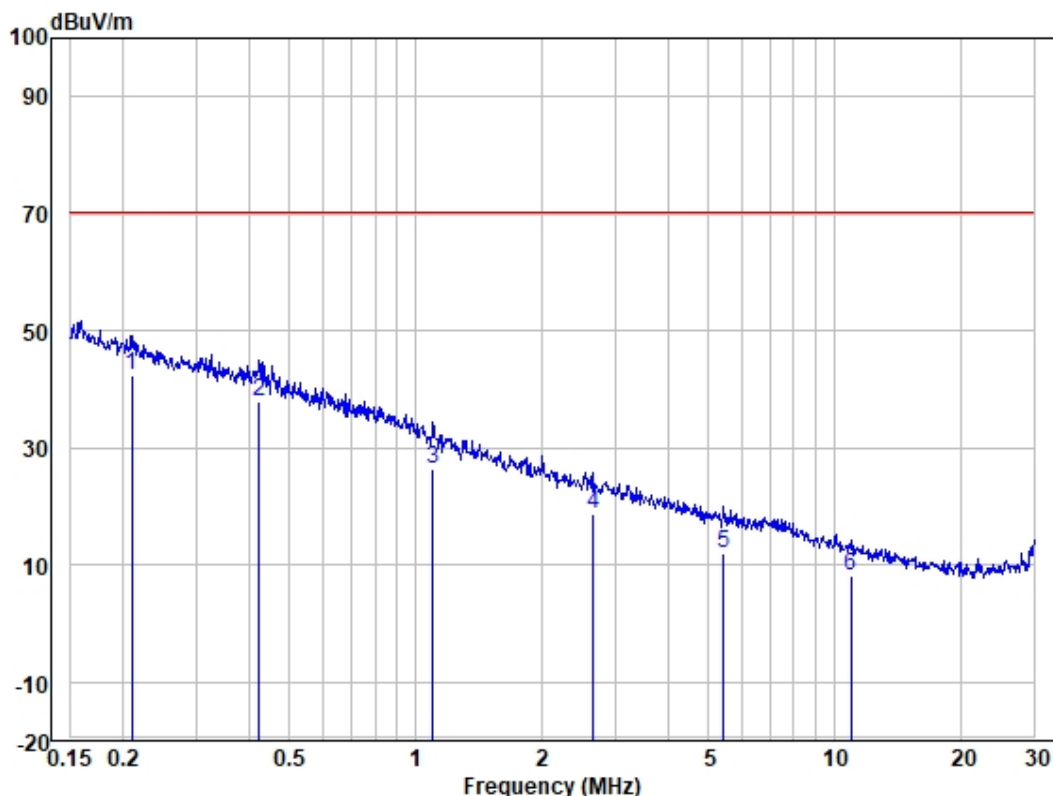
	Freq	Read Level	Antenna Factor	Cable Loss	Preamplifier Factor	Measured Level	Limit Line	Over Limit	Pol/Phase	Remark
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB		
1	0.012	60.25	17.86	0.01	32.90	45.22	70.34	-25.12	VERTICAL	Average
2	0.018	61.18	14.49	0.01	32.90	42.78	70.34	-27.56	VERTICAL	Average
3	0.027	59.71	13.23	0.01	32.90	40.05	70.34	-30.29	VERTICAL	Average
4	0.038	58.20	12.50	0.01	32.90	37.81	70.34	-32.53	VERTICAL	Average
5	0.054	56.71	12.16	0.01	32.90	35.98	70.34	-34.36	VERTICAL	Average
6	0.081	53.64	11.98	0.01	32.90	32.73	70.34	-37.61	VERTICAL	Average



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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	0.211	63.30	11.85	0.01	32.90	42.26	70.34	-28.08	VERTICAL	Average
2	0.424	58.97	11.85	0.01	32.90	37.93	70.34	-32.41	VERTICAL	Average
3	1.100	47.35	11.84	0.05	32.90	26.34	70.34	-44.00	VERTICAL	Average
4	2.664	39.84	11.84	0.07	32.90	18.85	70.34	-51.49	VERTICAL	Average
5	5.447	33.64	11.28	0.10	32.90	12.12	70.34	-58.22	VERTICAL	Average
6	10.963	30.49	10.42	0.18	32.90	8.19	70.34	-62.15	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	<b>865.8</b>	Limit=20lg(25*SQRT(865.8/500))+20lg(300/3)= <b>70.34 dBuV/m @ 3m distance.</b>

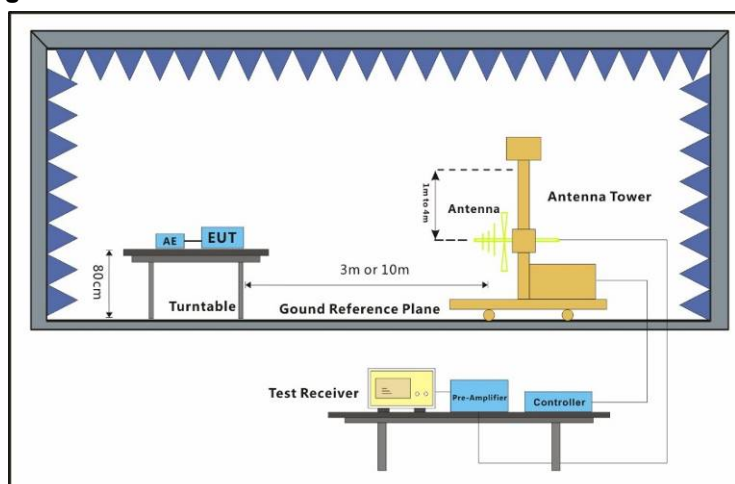
#### 6.3.1 E.U.T. Operation

Operating Environment:  
 Temperature: 22.4 °C Humidity: 51.8 % RH Atmospheric Pressure: 1021 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

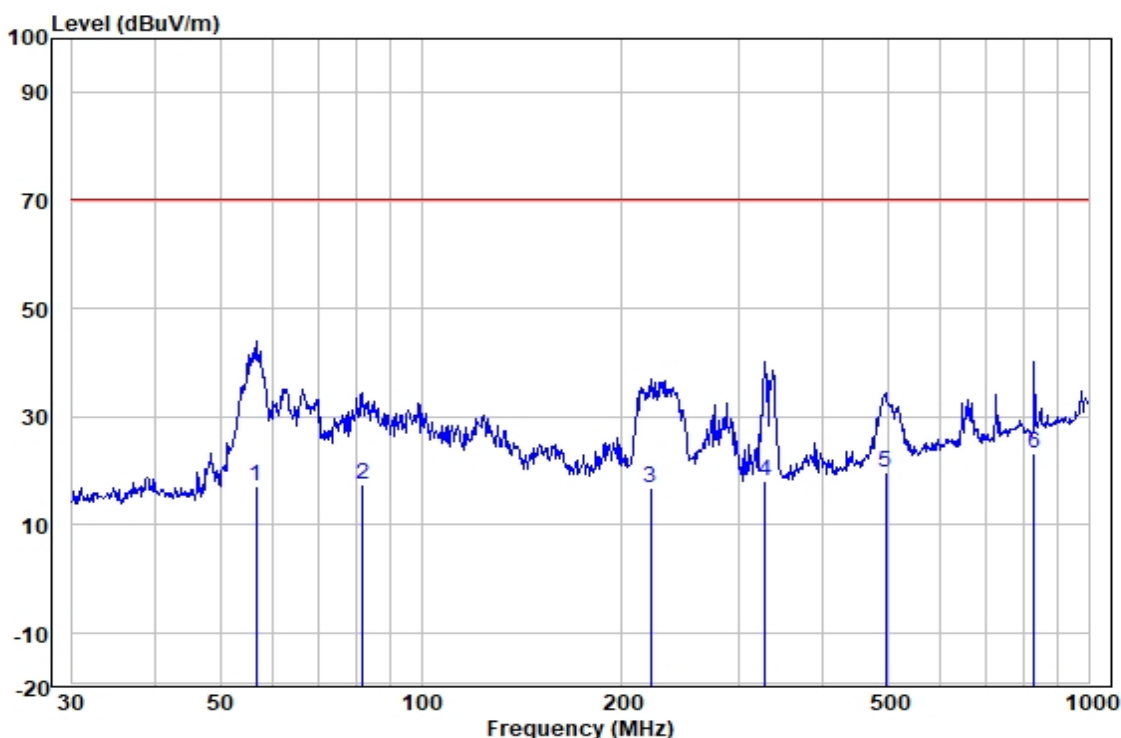
Frequency range: 30MHz-1GHz

An initial pre-scan was performed in the chamber using the spectrum analyser in peak detection mode. Quasi-peak 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 :

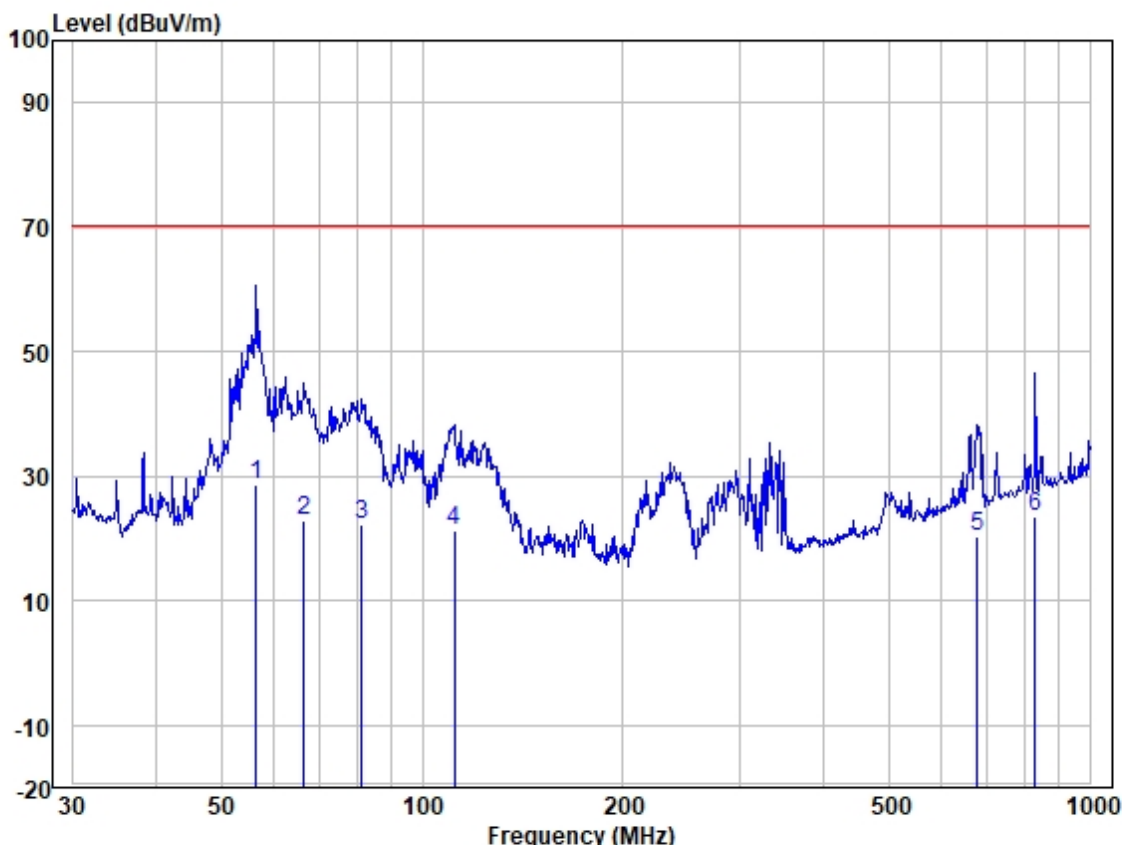
	Freq	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Measured Level	Limit Line	Over Limit	Pol/Phase	Remark
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB		
1	56.593	30.24	19.18	0.40	32.80	17.02	70.34	-53.32	HORIZONTAL	Average
2	81.783	34.66	14.98	0.50	32.80	17.34	70.34	-53.00	HORIZONTAL	Average
3	220.617	33.13	15.72	0.81	32.80	16.86	70.34	-53.48	HORIZONTAL	Average
4	327.887	29.80	20.11	1.01	32.80	18.12	70.34	-52.22	HORIZONTAL	Average
5	495.934	27.69	23.45	1.29	32.90	19.53	70.34	-50.81	HORIZONTAL	Average
6	827.493	25.33	28.41	1.68	32.18	23.24	70.34	-47.10	HORIZONTAL	Average



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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	56.395	41.99	19.18	0.40	32.80	28.77	70.34	-41.57	VERTICAL	Average
2	66.499	37.54	17.68	0.44	32.80	22.86	70.34	-47.48	VERTICAL	Average
3	81.212	39.65	14.98	0.50	32.80	22.33	70.34	-48.01	VERTICAL	Average
4	111.738	37.09	16.29	0.58	32.80	21.16	70.34	-49.18	VERTICAL	Average
5	677.580	24.90	26.50	1.53	32.73	20.20	70.34	-50.14	VERTICAL	Average
6	827.493	25.53	28.41	1.68	32.18	23.44	70.34	-46.90	VERTICAL	Average



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### 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 type unless otherwise specified (miscellaneous)	Any ISM frequency	<b>865.8</b>	Limit= $20\lg(25 \cdot \text{SQRT}(865.8/500)) + 20\lg(300/3) = 70.34$ dBuV/m @ 3m distance.

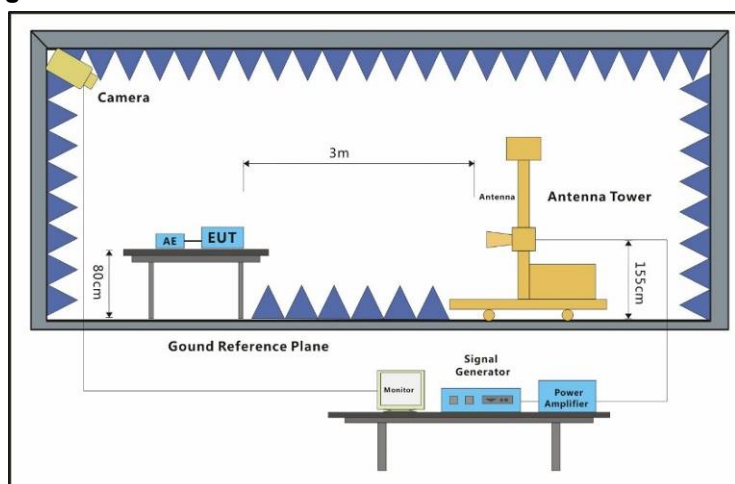
#### 6.4.1 E.U.T. Operation

Operating Environment:  
 Temperature: 22.9 °C Humidity: 61.2 % RH Atmospheric Pressure: 1021 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

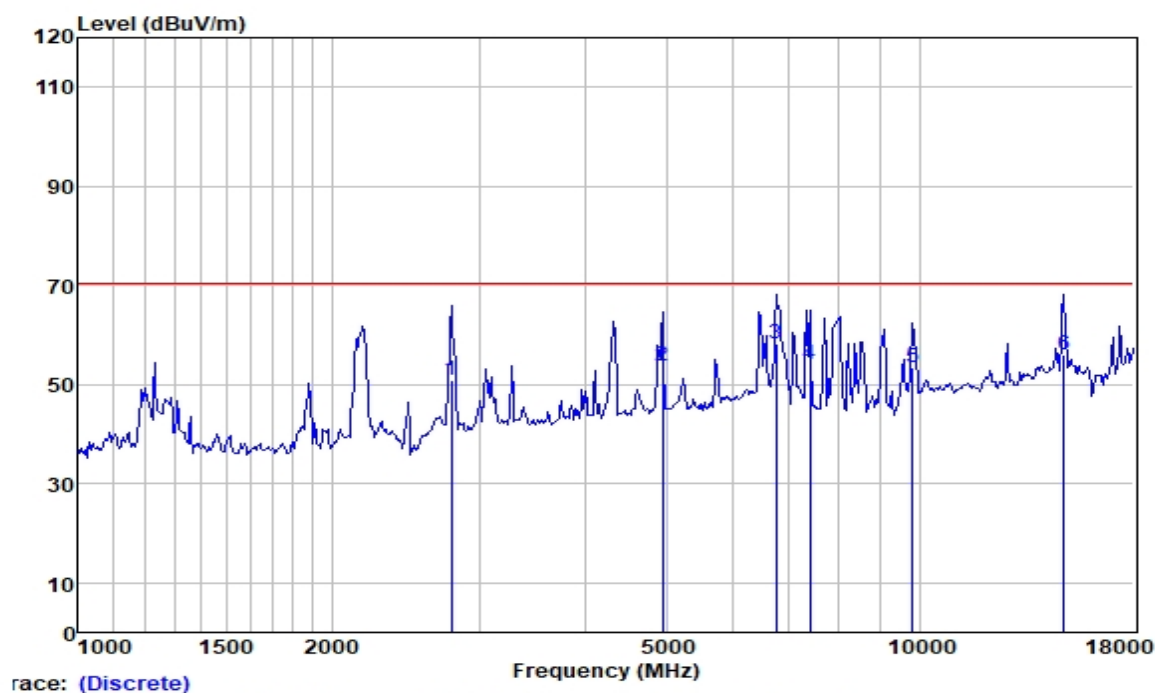
Frequency range: Above 1GHz

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

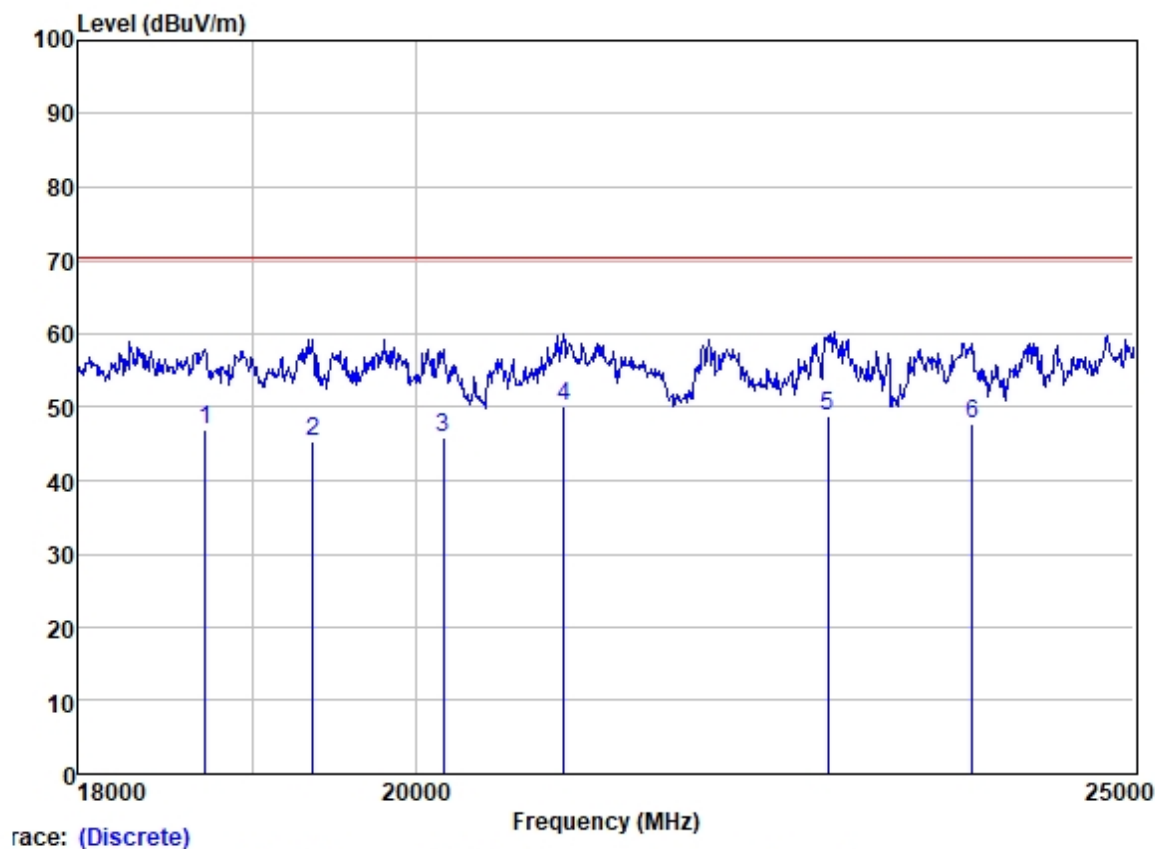


Trace: (Discrete)

	Freq	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Level	Limit	Over Limit	Pol/Phase	Remark
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB		
1	2774.030	55.30	28.55	4.12	37.08	50.89	70.34	-19.45	HORIZONTAL	Average
2	4944.993	52.11	33.03	5.27	36.69	53.72	70.34	-16.62	HORIZONTAL	Average
3	6756.708	52.26	35.87	6.92	36.86	58.19	70.34	-12.15	HORIZONTAL	Average
4	7411.461	47.92	36.36	6.74	36.96	54.06	70.34	-16.28	HORIZONTAL	Average
5	9809.916	44.24	38.22	7.66	36.81	53.31	70.34	-17.03	HORIZONTAL	Average
6	14873.890	41.30	39.97	10.71	35.88	56.10	70.34	-14.24	HORIZONTAL	Average

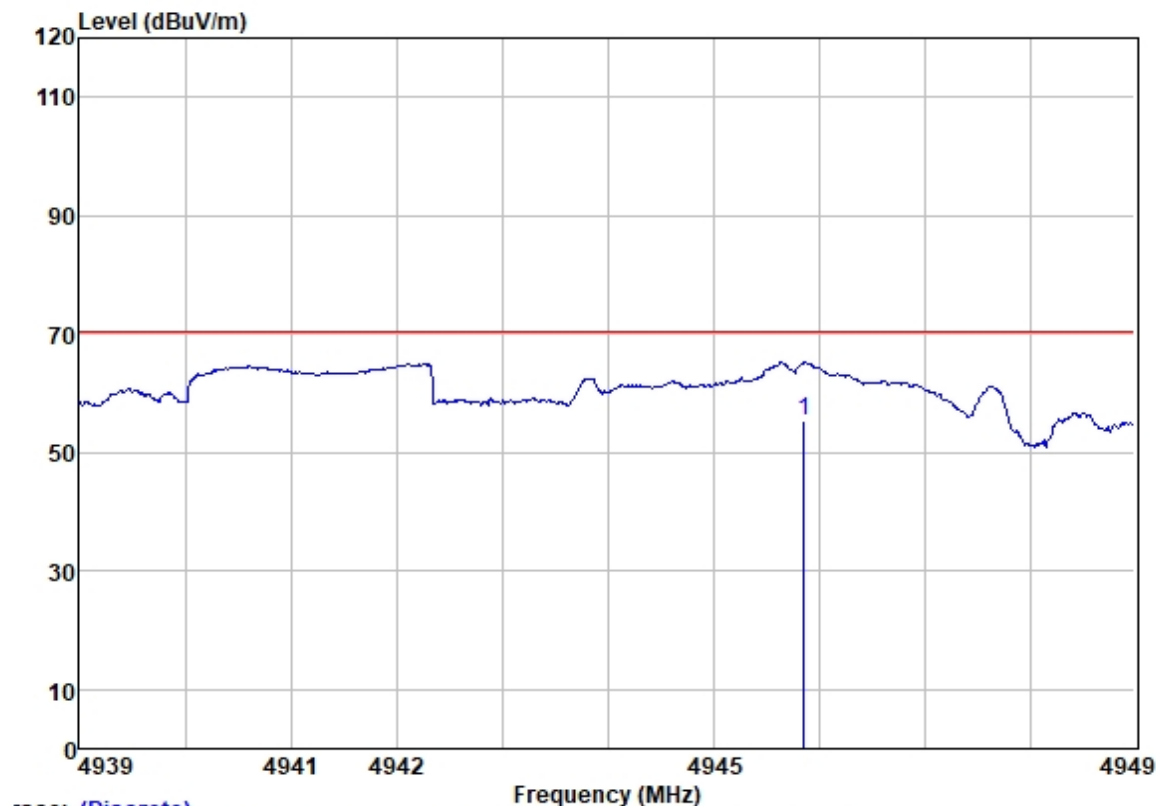


Test Mode: 00; Polarity: Horizontal



		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	18723.740	27.64	37.98	16.82	35.60	46.84	70.34	-23.50	HORIZONTAL	Average
2	19361.750	25.92	38.00	17.01	35.60	45.33	70.34	-25.01	HORIZONTAL	Average
3	20166.730	26.13	37.99	17.37	35.58	45.91	70.34	-24.43	HORIZONTAL	Average
4	20936.280	29.61	37.90	17.97	35.45	50.03	70.34	-20.31	HORIZONTAL	Average
5	22728.270	25.88	39.33	19.09	35.57	48.73	70.34	-21.61	HORIZONTAL	Average
6	23774.530	23.99	39.60	20.21	36.06	47.74	70.34	-22.60	HORIZONTAL	Average

Test Mode: 00; Polarity: Horizontal



Trace: (Discrete)

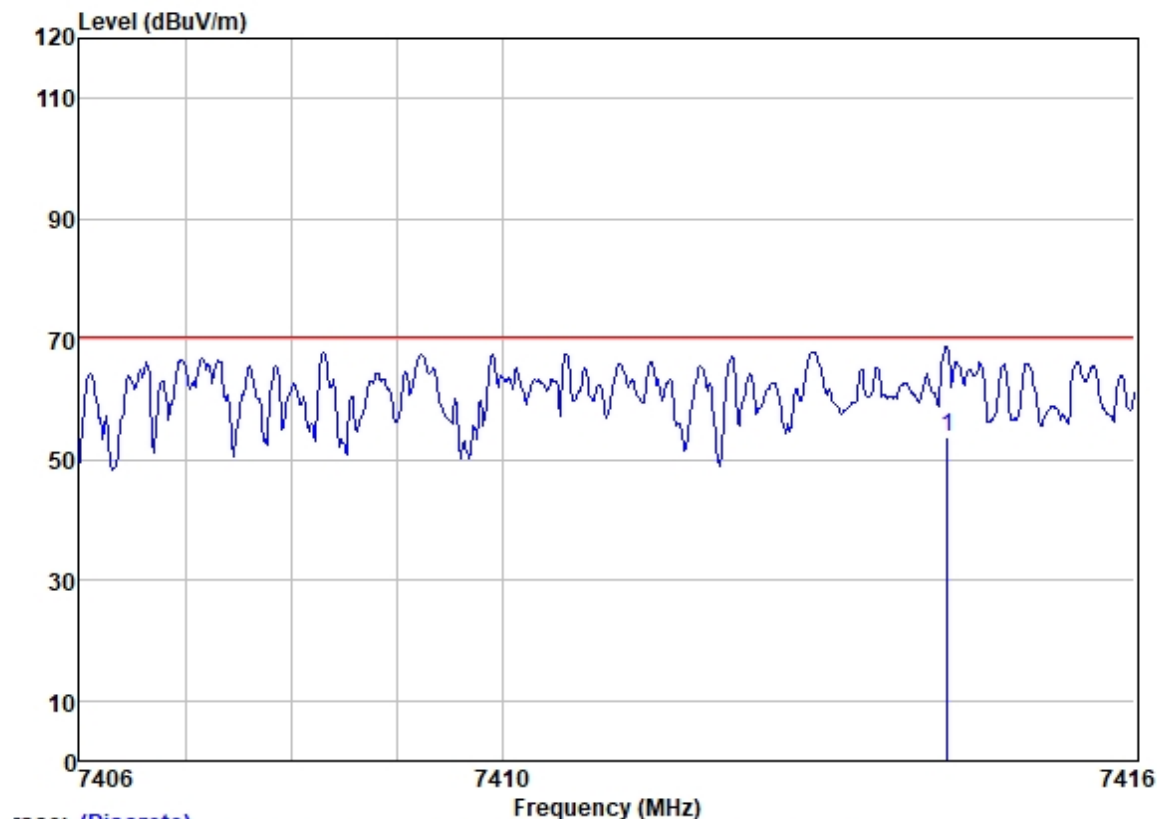
	Freq	ReadAntenna	Cable	Preamp		Limit	Over		
	MHz	Level	Factor	Loss	Factor	Level	Line	Limit	Pol/Phase
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB	
1	4945.858	53.64	33.03	5.27	36.69	55.25	70.34	-15.09	HORIZONTAL Average



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Test Mode: 00; Polarity: Horizontal

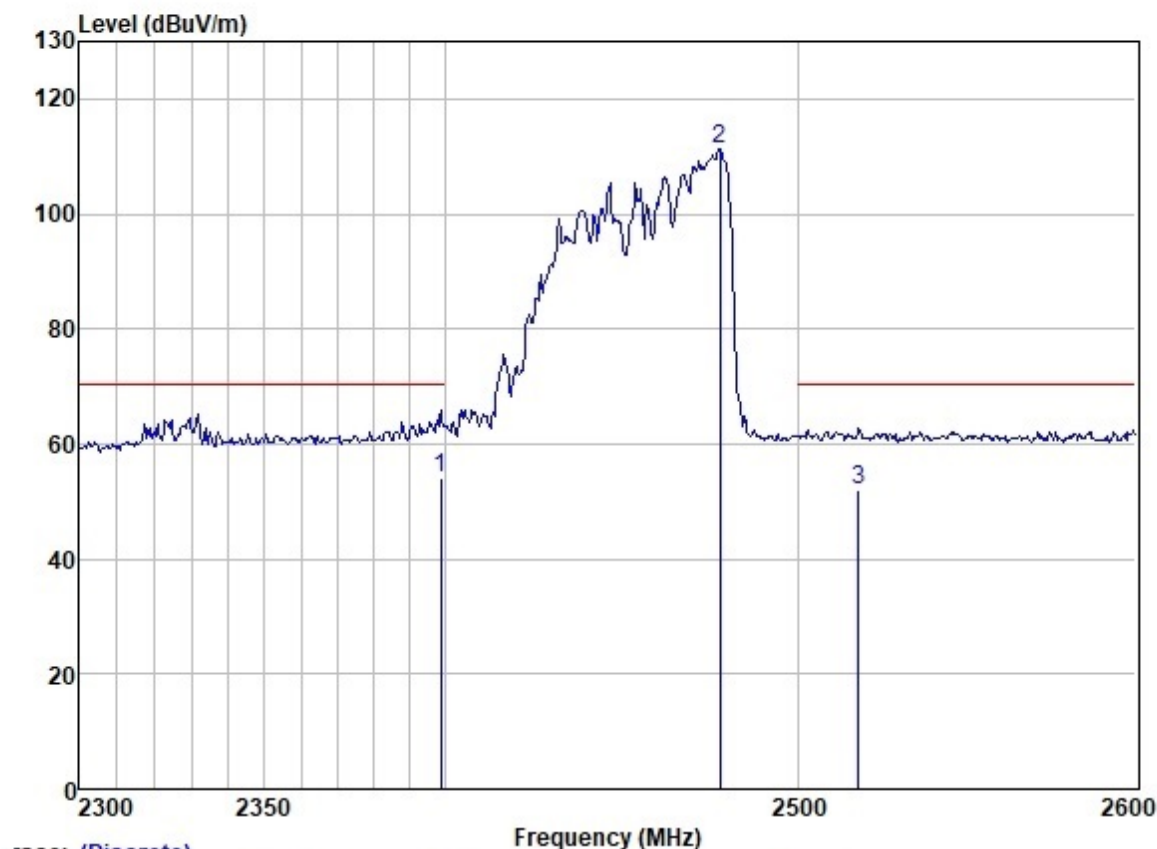


Trace: (Discrete)

	ReadAntenna	Cable	Preamp		Limit	Over		
Freq	Level	Factor	Loss	Factor	Level	Line	Limit	Pol/Phase
MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB	Remark
1 7414.219	47.70	36.36	6.74	36.96	53.84	70.34	-16.50	HORIZONTAL Average



Test Mode: 00; Polarity: Horizontal



Trace: (Discrete)

	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	2398.490	22.78	27.46	3.78	0.00	54.02	70.34	-16.32	HORIZONTAL	Average
2	2477.391	79.18	27.78	3.82	0.00	110.78	-----	-----	HORIZONTAL	Peak
3	2517.502	20.18	27.89	3.84	0.00	51.91	70.34	-18.43	HORIZONTAL	Average

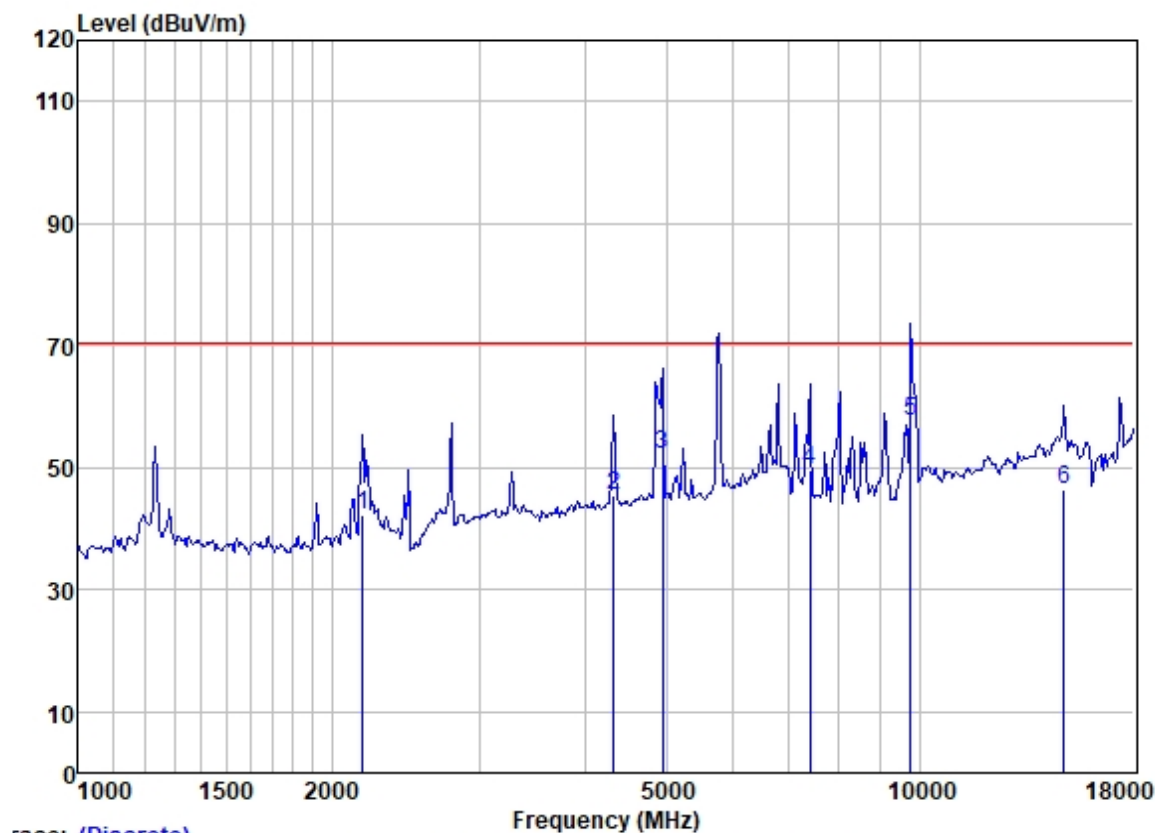


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Test Mode: 00; Polarity: Vertical



Trace: (Discrete)

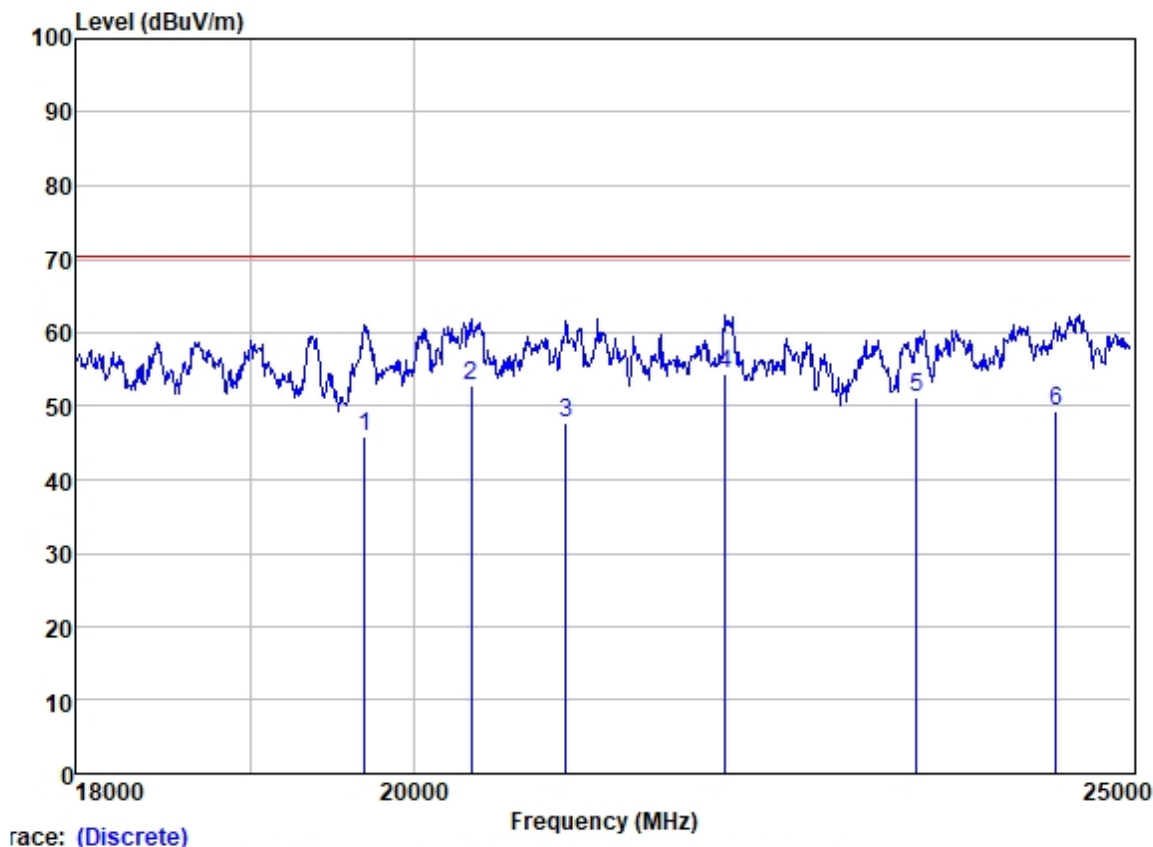
	Freq	ReadAntenna Level	Factor	Cable Loss	Preamp Factor	Level	Limit Line	Over Limit	Pol/Phase	Remark
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB		
1	2176.047	48.61	27.44	3.48	37.27	42.26	70.34	-28.08	VERTICAL	Average
2	4329.354	45.69	31.64	4.81	36.62	45.52	70.34	-24.82	VERTICAL	Average
3	4944.993	50.69	33.03	5.27	36.69	52.30	70.34	-18.04	VERTICAL	Average
4	7411.461	43.39	36.36	6.74	36.96	49.53	70.34	-20.81	VERTICAL	Average
5	9753.371	48.37	38.26	7.65	36.81	57.47	70.34	-12.87	VERTICAL	Average
6	14873.890	31.50	39.97	10.71	35.88	46.30	70.34	-24.04	VERTICAL	Average



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Test Mode: 00; Polarity: Vertical



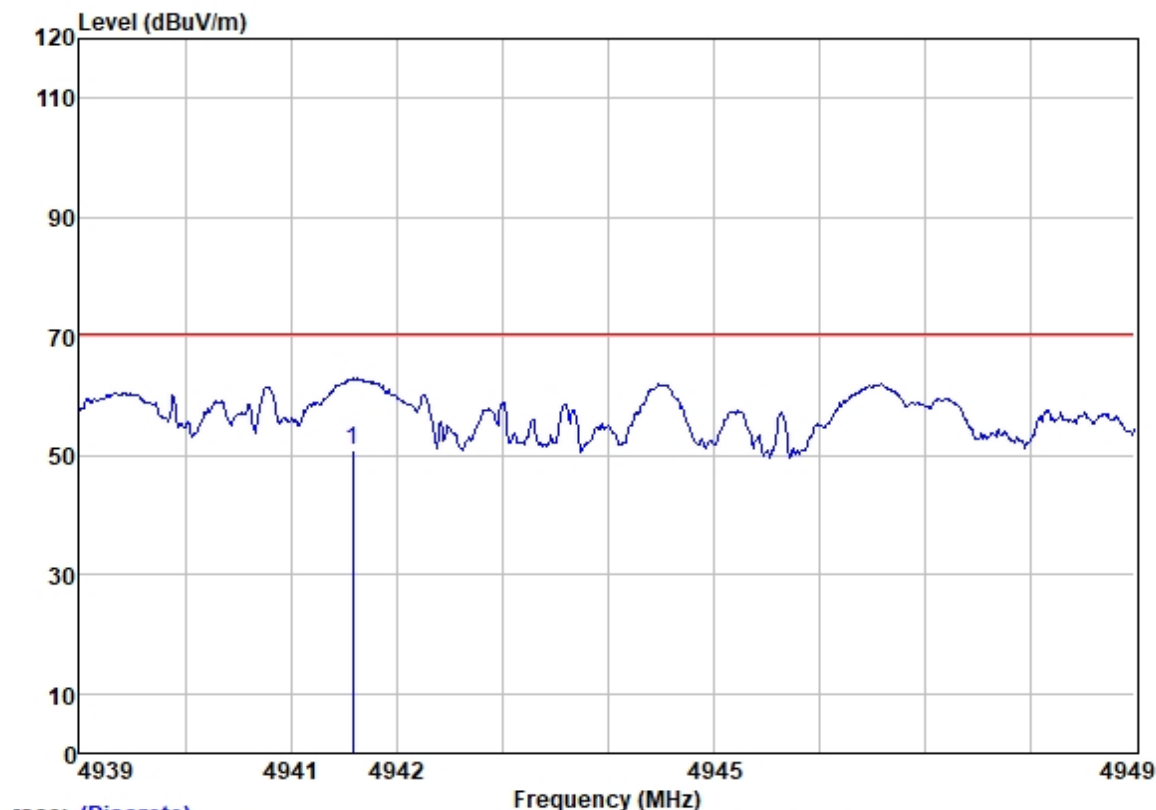
	ReadAntenna	Cable	Preamp		Limit	Over			
Freq	Level	Factor	Loss	Factor	Level	Line	Limit	Pol/Phase	Remark
MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB		
1 19688.870	26.34	38.00	17.21	35.60	45.95	70.34	-24.39	VERTICAL	Average
2 20353.080	32.91	37.97	17.50	35.56	52.82	70.34	-17.52	VERTICAL	Average
3 20963.810	27.18	37.90	17.99	35.45	47.62	70.34	-22.72	VERTICAL	Average
4 22029.930	32.79	38.24	18.61	35.30	54.34	70.34	-16.00	VERTICAL	Average
5 23379.530	28.01	39.60	19.56	35.89	51.28	70.34	-19.06	VERTICAL	Average
6 24415.630	25.36	39.48	20.69	36.12	49.41	70.34	-20.93	VERTICAL	Average



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Test Mode: 00; Polarity: Vertical



Trace: (Discrete)

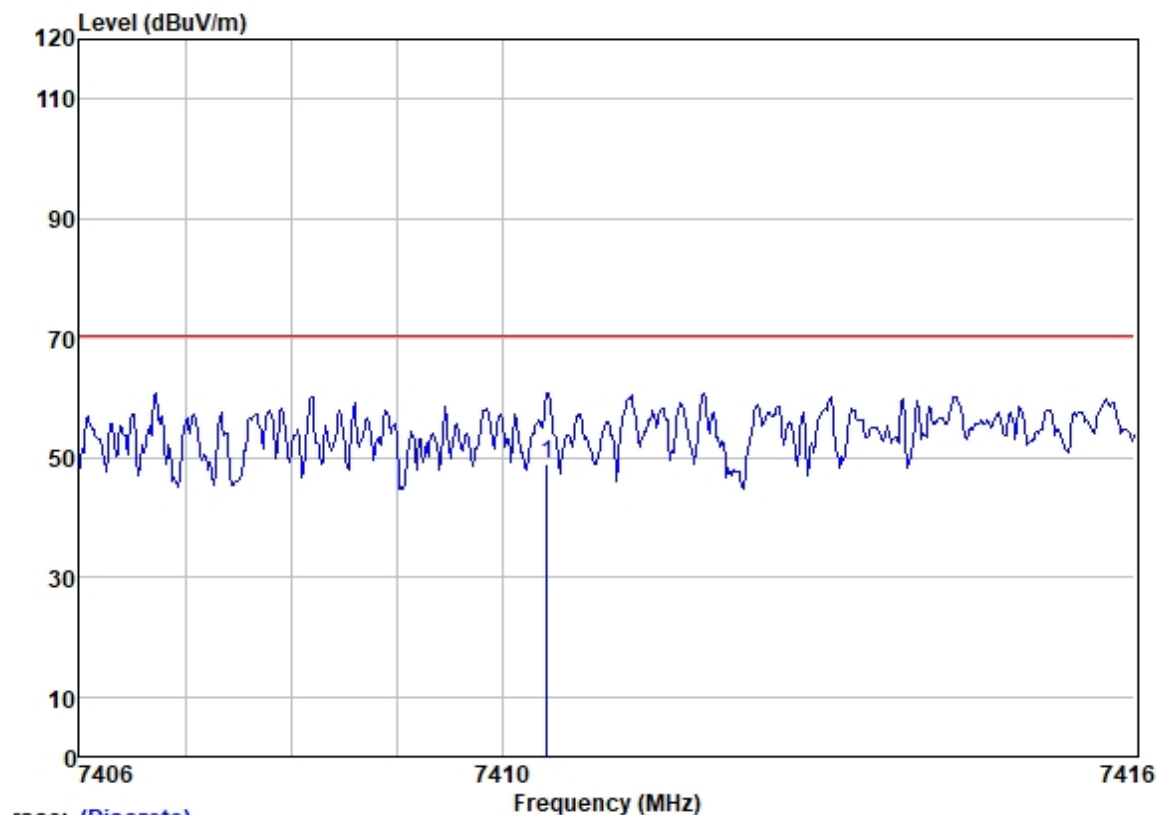
	ReadAntenna	Cable	Preamp		Limit	Over			
Freq	Level	Factor	Loss	Factor	Level	Line	Limit	Pol/Phase	Remark
MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB		
1 4941.588	49.34	33.03	5.27	36.69	50.95	70.34	-19.39	VERTICAL	Average



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Test Mode: 00; Polarity: Vertical



Trace: (Discrete)

	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 7410.428	42.79	36.36	6.74	36.96	48.93	70.34	-21.41	VERTICAL	Average

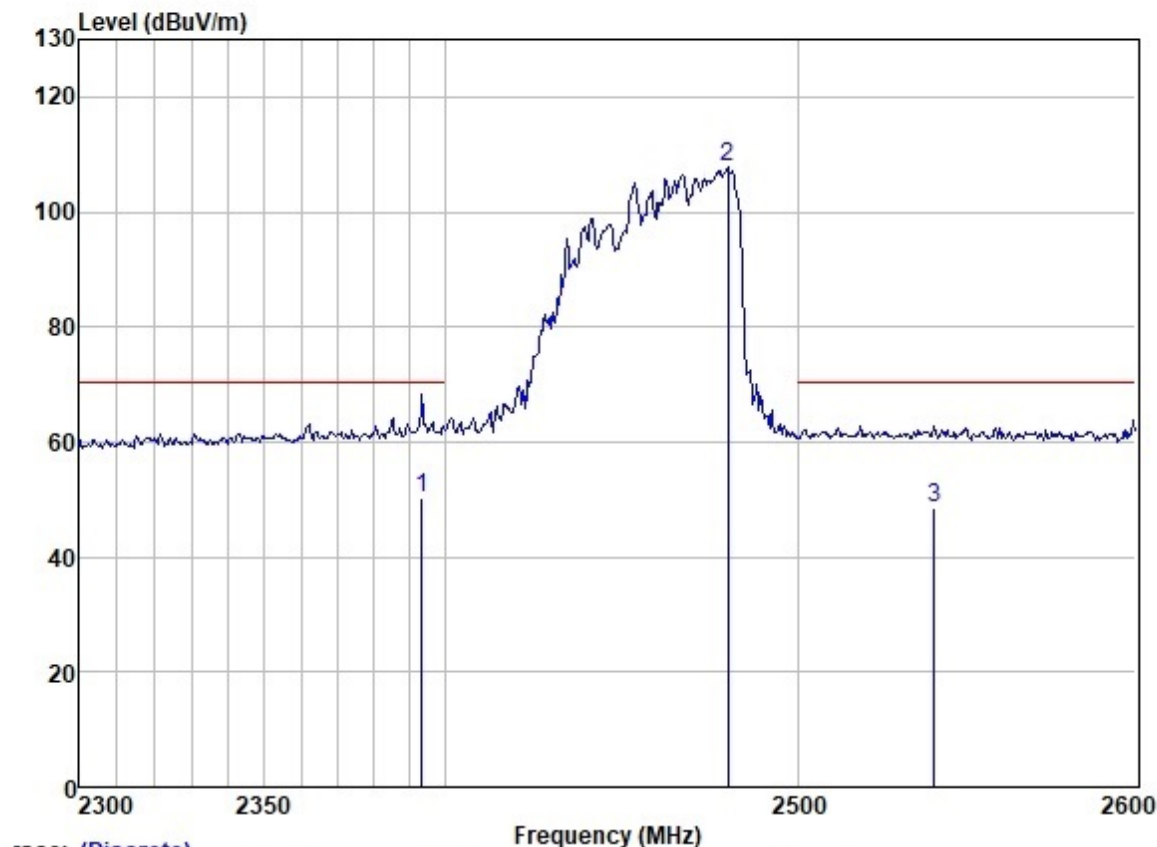


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Test Mode: 00; Polarity: Vertical



Trace: (Discrete)

	Freq	ReadAntenna Level	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	2393.202	19.14	27.45	3.77	0.00	50.36	70.34	-19.98	VERTICAL	Average
2	2479.823	75.34	27.78	3.82	0.00	106.94	-----	-----	VERTICAL	Peak
3	2539.823	16.80	27.96	3.85	0.00	48.61	70.34	-21.73	VERTICAL	Average



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## 6.5 Output Power Measurement

Test Requirement: 47 CFR Part 18

Test Method: FCC OST/MP-5:1986

### 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: 22.5 °C

Humidity: 52.4 % RH

Atmospheric Pressure: 1021 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.



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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	427	19.8	10.1	20.2	49	865.8

#### Input Power Data

Input Voltage (V)	Input Current (A)	Power Factor	Measured input power (W)	Rated input power (W)
120.06	11.64	0.942	1316	1350



## 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 = **865.8 W** according to clause 6.1.2

Limit=20lg(25\*SQRT(power/500))+20lg(300/3)=70.34dBuV/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
<b>2450MHz</b>	<b>±50.0MHz</b>
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: 22.9 °C Humidity: 61.2 % RH Atmospheric Pressure: 1021 mbar



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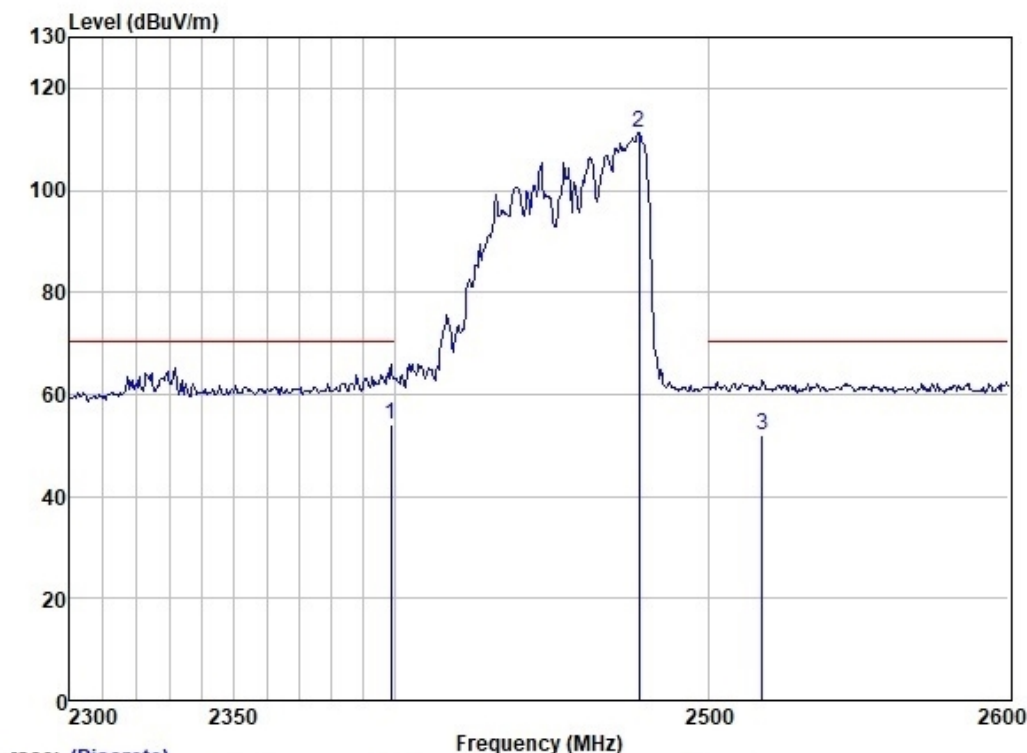


### 6.6.2 Test Mode Description

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.

### 6.6.3 Measurement Procedure and Data

Test Mode: 00; Polarity: Horizontal



Trace: (Discrete)

	Freq	ReadAntenna	Cable	Preamp	Level	Limit	Over	Pol/Phase	Remark
	MHz	Level	Factor	Loss	Factor	Level	Line	Limit	
		dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB	
1	2398.490	22.78	27.46	3.78	0.00	54.02	70.34	-16.32	HORIZONTAL Average
2	2477.391	79.18	27.78	3.82	0.00	110.78	-----	-----	HORIZONTAL Peak
3	2517.502	20.18	27.89	3.84	0.00	51.91	70.34	-18.43	HORIZONTAL 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	2477



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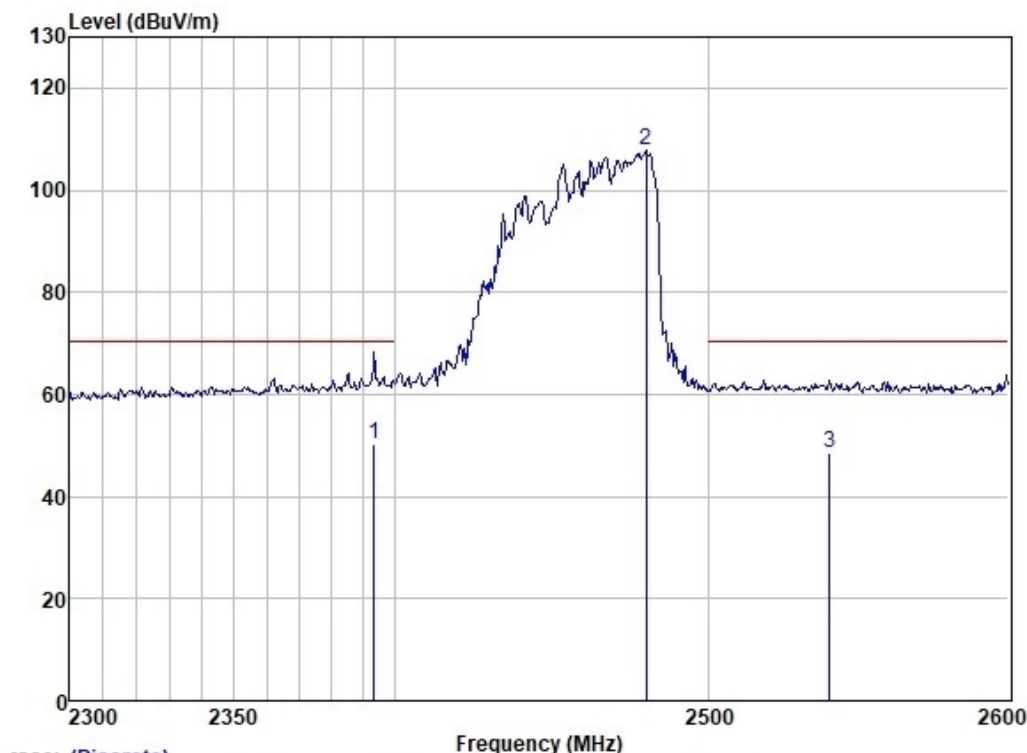
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Test Mode: 00; Polarity: Vertical



Trace: (Discrete)

	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 2393.202	19.14	27.45	3.77	0.00	50.36	70.34	-19.98	VERTICAL	Average
2 2479.823	75.34	27.78	3.82	0.00	106.94	-----	-----	VERTICAL	Peak
3 2539.823	16.80	27.96	3.85	0.00	48.61	70.34	-21.73	VERTICAL	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	2480



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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: 22.5 °C Humidity: 52.6 % RH Atmospheric Pressure: 1021 mbar

#### 6.7.2 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.

#### 6.7.3 Measurement Procedure and Data

Maximum measure level (mW/cm <sup>2</sup> )	Limit (mW/cm <sup>2</sup> )	Test Result
0.067	1	Pass



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## 7 Test Setup Photo

Refer to Appendix - Test Setup Photo for GZEM210100026304



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## 8 EUT Constructional Details (EUT Photos)

Refer to Appendix - External and Internal Photos for GZEM2401000103HS

- End of the Report -



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