

TEST REPORT

Application No.: GZEM2303001298HS

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

Equipment Under Test (EUT):

EUT Name: Microwave Oven

Model No.: P120D60(X)-(Y), P120D60(X)H-(Y), P120D60(X)H-(Y)-FR** ♣

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

Trade Mark: Galanz

Standard(s) : 47 CFR Part 18

Date of Receipt: 2023-03-20

Date of Test: 2023-03-24 to 2023-03-30

Date of Issue: 2023-05-12

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

Ricky Liu

Ricky Liu
Manager

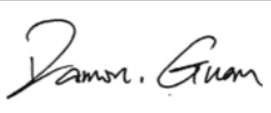
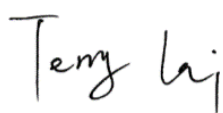


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Revision Record			
Version	Report No.	Date	Remark
01	GZEM230300129802	2023-05-12	Original

Authorized for issue by:			
			
		Damon Guan/Project Engineer	
			
		Terry Lai/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	Pass
Radiated Emissions (30MHz-1GHz)		FCC/OST MP-5:1986	18.305	Pass
Radiated Emissions (above 1GHz)		FCC/OST MP-5:1986	18.305	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.

Model No.: P120D60(X)-(Y), P120D60(X)H-(Y), P120D60(X)H-(Y)-FR**

P: with microwave function only

120: denote the output power is 1200W

D60: denote different cavity in 60liters.

Variable (X) may be

A, 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.

*could be 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 and model name.

Therefore only one model P120D60APH-SU was tested in this report.



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3 Contents

	Page
1 Cover Page	1
2 Test Summary	3
3 Contents.....	4
4 General Information	6
4.1 Details of E.U.T.	6
4.2 Description of Support Units.....	6
4.3 Measurement Uncertainty	6
4.4 Test Location	6
4.5 Test Facility	7
4.6 Deviation from Standards.....	7
4.7 Abnormalities from Standard Conditions	7
5 Equipment List	8
6 Emission Test Results	10
6.1 Conducted Emissions at Mains Terminals (150kHz-30MHz)	10
6.1.1 E.U.T. Operation	10
6.1.2 Test Mode Description	10
6.1.3 Test Setup Diagram	10
6.1.4 Measurement Procedure and Data	10
6.2 Radiated Emissions (Magnetic field Strength)(9kHz-30MHz)	13
6.2.1 E.U.T. Operation	13
6.2.2 Test Mode Description	13
6.2.3 Test Setup Diagram	14
6.2.4 Measurement Procedure and Data	14
6.3 Radiated Emissions (30MHz-1GHz).....	19
6.3.1 E.U.T. Operation	19
6.3.2 Test Mode Description	19
6.3.3 Test Setup Diagram	19
6.3.4 Measurement Procedure and Data	20
6.4 Radiated Emissions (above 1GHz)	22
6.4.1 E.U.T. Operation	22
6.4.2 Test Mode Description	22
6.4.3 Test Setup Diagram	22
6.4.4 Measurement Procedure and Data	23
6.5 Output Power Measurement.....	33
6.5.1 E.U.T. Operation	33
6.5.2 Test Mode Description	33
6.5.3 Measurement Procedure and Data	34
6.6 Operating Frequency Measurement.....	35
6.6.1 E.U.T. Operation	36
6.6.2 Test Mode Description	36
6.6.3 Measurement Procedure and Data	37
6.7 Radiation Hazard Test.....	39



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EMC-TRF-01 Rev 1.1

Report No.: GZEM230300129802

Page: 5 of 41

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: 120V, 60Hz
 Microwave frequency: 2450MHz
 Cable(s): About 1.0m x 3 wires unscreened AC mains cable.

4.2 Description of Support Units

Load for microwave ovens for testing:

1200mL of water in the beaker for power output and frequency measurement.
One of 840 and the other of 360mL of water for second and third harmonic radiation measurement.
840mL 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) (LLAS)
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); 5.61(18GHz-40GHz)
Remark: The U_{lab} (lab Uncertainty) is less than U_{CISPR} (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:

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 198 Kezhu Road, Sciencetech Park, Guangzhou Economic & Technology Development District,
 Guangzhou, China 510663

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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	2022-08-24	2023-08-23
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	2022-09-09	2023-09-08
EMI Test Receiver (9kHz-3.6GHz)	Rohde & Schwarz	ESR3	EMC2221	2022-05-20	2023-05-19
Test Software E3r	Audix	Ver.6.11812	GZE100-77	N/A	N/A
Artificial Mains Network (LISN)	AFJ Instruments	LT32C	EMC2046	2022-10-21	2023-10-20

Radiated Emissions (Magnetic field Strength)(9kHz-30MHz)					
Equipment	Manufacturer	Model No.	Inventory No.	Cal Date	Cal Due Date
10m Semi-Anechoic Chamber	ETS	N/A	EMC0530	2022-10-16	2025-10-15
Chamber cable	HangTianXing	N/A	EMC0542	2022-08-24	2023-08-23
Amplifier (9kHz-1.3GHz)	HP	8447F	EMC2065	2022-06-21	2023-06-20
Active Loop Antenna-RED	ETS-Lindgren	6502	EMC2190	2022-04-06	2024-04-05
EMI Test Receiver (1Hz-8GHz)	Rohde & Schwarz	ESW8	EMC2220	2022-05-20	2023-05-19
Test Software E3	Audix	Ver.6.120110a	GZE100-61	N/A	N/A

Radiated Emissions (30MHz-1GHz)					
Equipment	Manufacturer	Model No.	Inventory No.	Cal Date	Cal Due Date
10m Semi-Anechoic Chamber	ETS	N/A	EMC0530	2022-10-16	2025-10-15
Chamber cable	HangTianXing	N/A	EMC0542	2022-08-24	2023-08-23
Amplifier (9kHz-1.3GHz)	HP	8447F	EMC2065	2022-06-21	2023-06-20
EMI Test Receiver (1Hz-8GHz)	Rohde & Schwarz	ESW8	EMC2220	2022-05-20	2023-05-19
Test Software E3	Audix	Ver.6.120110a	GZE100-61	N/A	N/A
Trilog Broadband Antenna (25MHz-1GHz)	SCHWARZBECK MESS-ELEKTRONIK	VULB 9168	EMC2174	2022-06-19	2025-06-18



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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	2022-12-16	2023-12-15
EMI Test Receiver (10Hz-26.5GHz)	Rohde & Schwarz	ESIB26	EMC0522	2022-12-16	2023-12-15
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
EXA Signal Analyzer (10Hz-44GHz)	Keysight	N9010A	EMC2138	2022-09-08	2023-09-07
966 Anechoic Chamber	C.R.T	9m x 6m x 6m	EMC2142	2020-12-20	2023-12-19
2.4GHz Filter	Micro-Tronics	BRM 50702	EMC2069	2022-12-16	2023-12-15
Test Software E3	Audix	Ver.6.120110a	GZE100-61	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	2022-12-16	2023-12-15
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	2020-12-20	2023-12-19
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	2022-05-13	2023-05-12

General used equipment					
Equipment	Manufacturer	Model No	Inventory No	Cal Date	Cal Due Date
DMM	Fluke	73	EMC0006	2022-06-24	2023-06-23



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

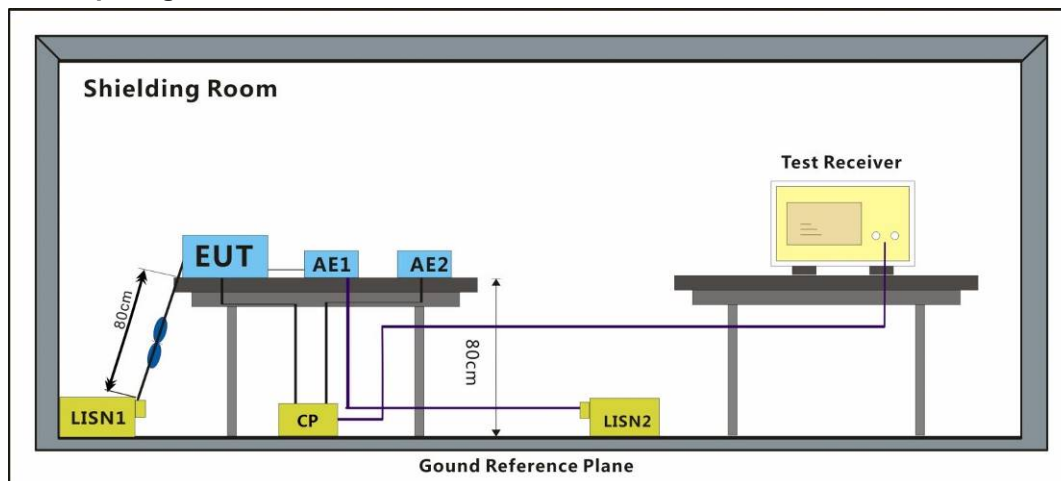
6.1.1 E.U.T. Operation

Operating Environment:
 Temperature: 25.0 °C Humidity: 53.9 % RH Atmospheric Pressure: 1020 mbar

6.1.2 Test Mode Description

Pre-scan / Mode	Description
Final test Code	
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.

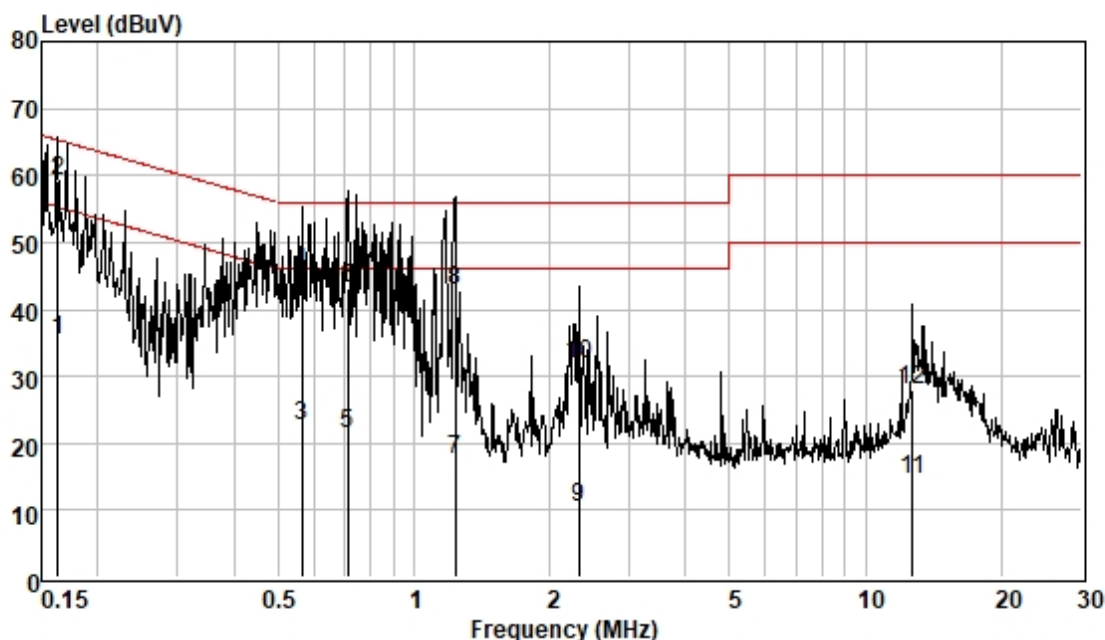
6.1.3 Test Setup Diagram



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

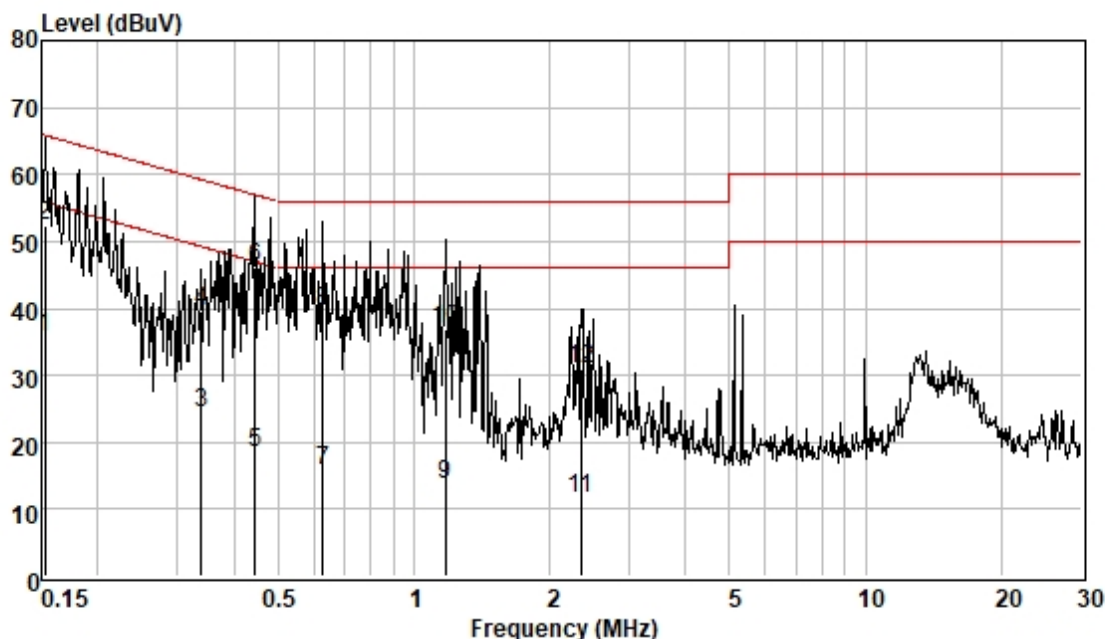


Pol : LINE
Mode :
Model :
Power :

	Freque	Read	Cable	LISN	Measured	Limit	Over	Remark
	ncy	Level	Loss	Factor	Level	Line	Limit	
	MHz	dBuV	dB	dB	dBuV	dBuV	dB	
1	0.163	25.62	0.06	9.61	35.29	55.30	-20.01	Average
2	0.163	49.52	0.06	9.61	59.19	65.30	-6.11	QP
3	0.564	12.84	0.07	9.60	22.51	46.00	-23.49	Average
4	0.564	35.77	0.07	9.60	45.44	56.00	-10.56	QP
5	0.716	11.61	0.07	9.60	21.28	46.00	-24.72	Average
6	0.716	33.57	0.07	9.60	43.24	56.00	-12.76	QP
7	1.236	7.73	0.08	9.60	17.41	46.00	-28.59	Average
8	1.236	33.09	0.08	9.60	42.77	56.00	-13.23	QP
9	2.321	0.77	0.13	9.62	10.52	46.00	-35.48	Average
10	2.321	22.18	0.13	9.62	31.93	56.00	-24.07	QP
11	12.716	4.58	0.26	9.69	14.53	50.00	-35.47	Average
12	12.716	17.95	0.26	9.69	27.90	60.00	-32.10	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	26.11	0.06	9.63	35.80	55.87	-20.07	Average
2	0.152	42.72	0.06	9.63	52.41	65.87	-13.46	QP
3	0.339	14.65	0.06	9.61	24.32	49.22	-24.90	Average
4	0.339	29.86	0.06	9.61	39.53	59.22	-19.69	QP
5	0.444	8.62	0.06	9.61	18.29	46.98	-28.69	Average
6	0.444	36.50	0.06	9.61	46.17	56.98	-10.81	QP
7	0.630	6.21	0.07	9.62	15.90	46.00	-30.10	Average
8	0.630	29.98	0.07	9.62	39.67	56.00	-16.33	QP
9	1.172	4.03	0.08	9.61	13.72	46.00	-32.28	Average
10	1.172	27.26	0.08	9.61	36.95	56.00	-19.05	QP
11	2.346	1.97	0.13	9.61	11.71	46.00	-34.29	Average
12	2.346	21.29	0.13	9.61	31.03	56.00	-24.97	QP

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

Test Requirement: 47 CFR Part 18
 Test Method: FCC/OST MP-5:1986
 Measurement Distance: 10 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	1174.0	Limit=20lg(25*SQRT(1174.0/500))+20lg(300/10)= 61.21 dBuV/m @ 10m distance.

6.2.1 E.U.T. Operation

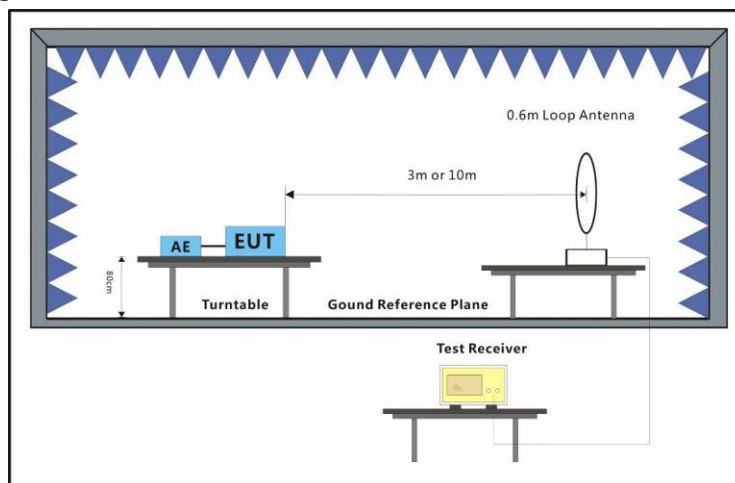
Operating Environment:

Temperature: 22.2 °C Humidity: 52.3 % 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

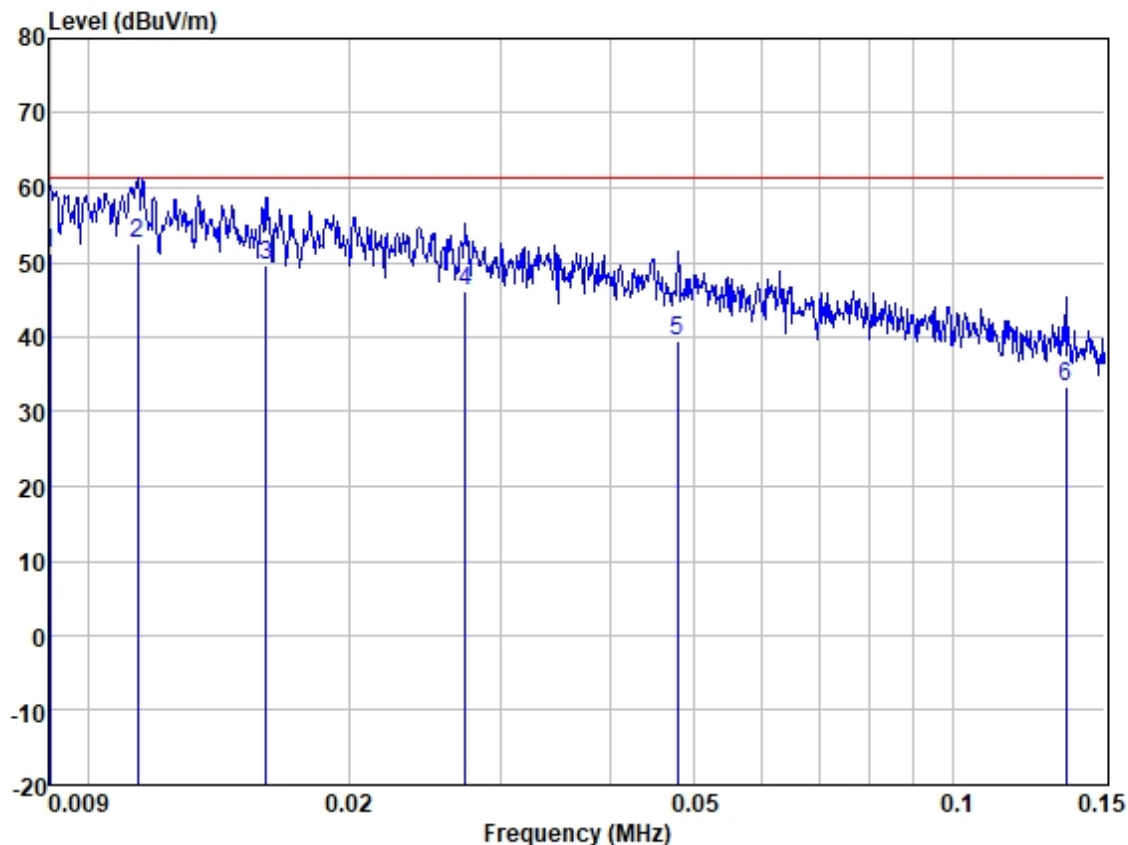
Frequency range: 9KHz-30MHz

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 : SGS
Job :
Model :
Power :
Test Mode :

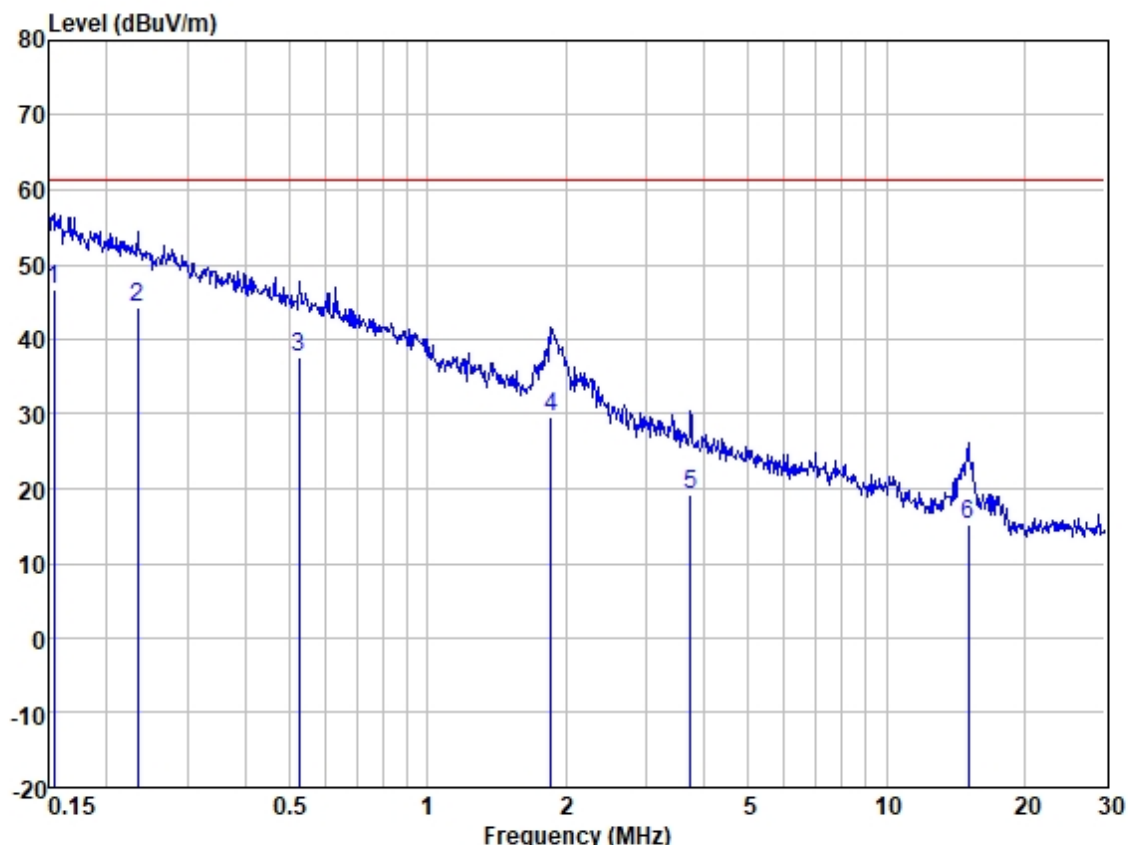
	Freq	Read Level	Antenna Factor	Cable Loss	Preamplifier Factor	Measured Level	Limit Line	Over Limit	Pol/Phase	Remark
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB		
1	0.009	60.75	18.96	0.02	28.40	51.33	61.21	-9.88	HORIZONTAL	Average
2	0.011	63.00	18.06	0.02	28.44	52.64	61.21	-8.57	HORIZONTAL	Average
3	0.016	63.09	15.03	0.02	28.51	49.63	61.21	-11.58	HORIZONTAL	Average
4	0.027	61.72	13.14	0.02	28.77	46.11	61.21	-15.10	HORIZONTAL	Average
5	0.048	56.40	12.23	0.03	29.25	39.41	61.21	-21.80	HORIZONTAL	Average
6	0.135	50.85	11.91	0.05	29.40	33.41	61.21	-27.80	HORIZONTAL	Average



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Test Mode: 00; Polarity: Horizontal



Site : SGS
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	0.153	64.25	11.88	0.05	29.40	46.78	61.21	-14.43	HORIZONTAL	Average
2	0.233	61.77	11.86	0.05	29.40	44.28	61.21	-16.93	HORIZONTAL	Average
3	0.524	55.14	11.80	0.07	29.40	37.61	61.21	-23.60	HORIZONTAL	Average
4	1.858	46.95	11.84	0.17	29.40	29.56	61.21	-31.65	HORIZONTAL	Average
5	3.740	36.58	11.69	0.32	29.32	19.27	61.21	-41.94	HORIZONTAL	Average
6	15.066	34.01	9.77	0.59	29.20	15.17	61.21	-46.04	HORIZONTAL	Average



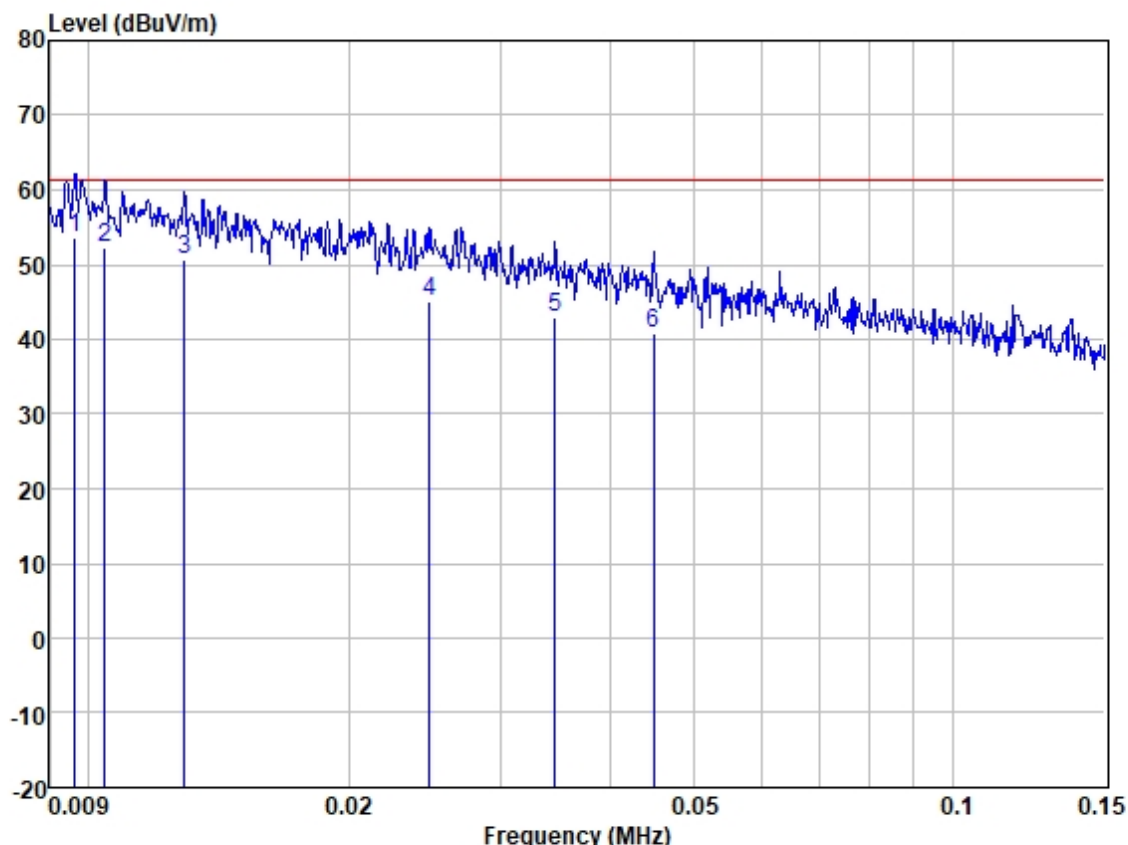
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Test Mode: 00; Polarity: Vertical



Site : SGS
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	0.010	63.30	18.77	0.02	28.41	53.68	61.21	-7.53	VERTICAL	Average
2	0.010	62.13	18.47	0.02	28.42	52.20	61.21	-9.01	VERTICAL	Average
3	0.013	61.91	17.13	0.02	28.46	50.60	61.21	-10.61	VERTICAL	Average
4	0.025	60.11	13.49	0.02	28.68	44.94	61.21	-16.27	VERTICAL	Average
5	0.035	59.37	12.69	0.03	29.09	43.00	61.21	-18.21	VERTICAL	Average
6	0.045	57.57	12.32	0.03	29.22	40.70	61.21	-20.51	VERTICAL	Average



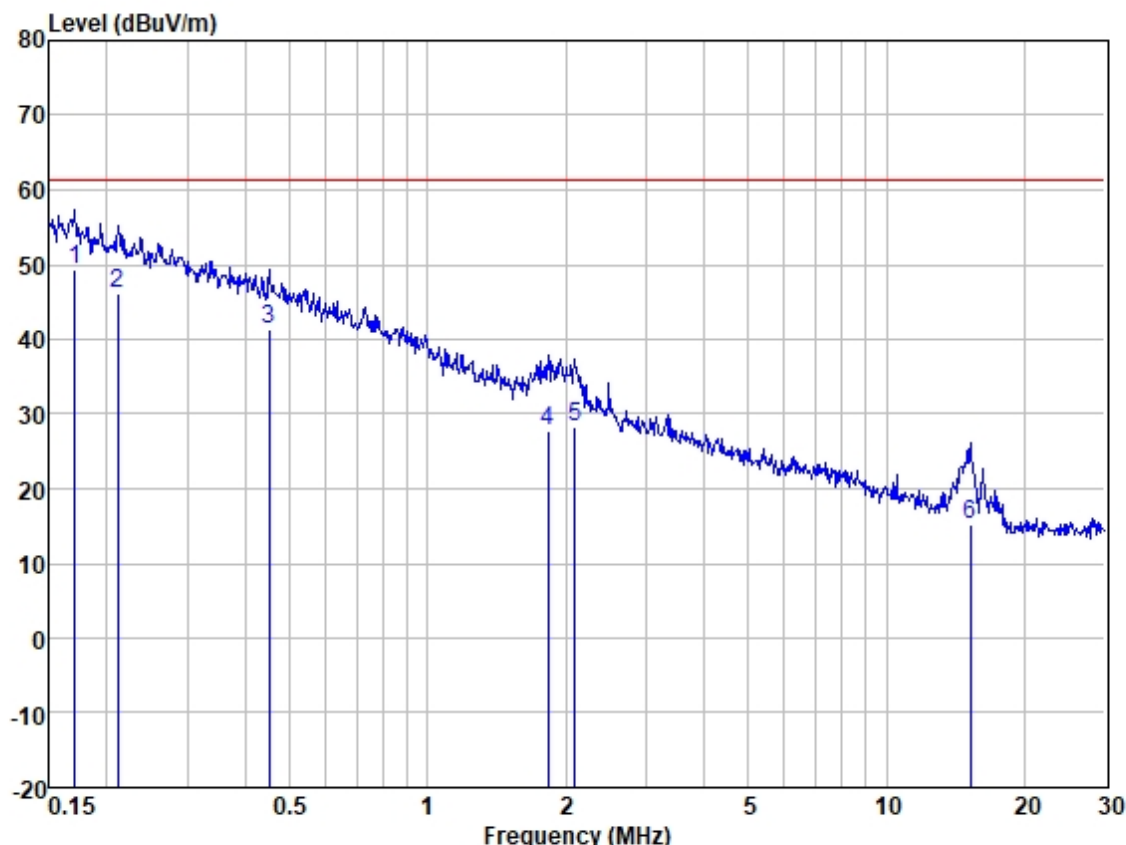
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Test Mode: 00; Polarity: Vertical



Site : SGS
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	0.170	66.89	11.86	0.05	29.40	49.40	61.21	-11.81	VERTICAL	Average
2	0.212	63.67	11.85	0.05	29.40	46.17	61.21	-15.04	VERTICAL	Average
3	0.452	58.79	11.83	0.06	29.40	41.28	61.21	-19.93	VERTICAL	Average
4	1.829	45.25	11.84	0.17	29.40	27.86	61.21	-33.35	VERTICAL	Average
5	2.099	45.69	11.84	0.20	29.40	28.33	61.21	-32.88	VERTICAL	Average
6	15.226	33.93	9.75	0.59	29.20	15.07	61.21	-46.14	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	1174.0	Limit=20lg(25*SQRT(1174.0/500))+20lg(300/3)=71.67 dBuV/m @ 3m distance.

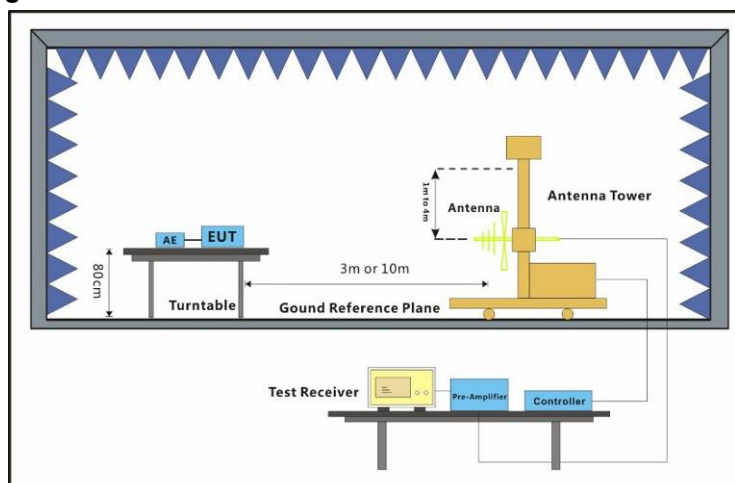
6.3.1 E.U.T. Operation

Operating Environment:
 Temperature: 22.2 °C Humidity: 52.2 % RH Atmospheric Pressure: 1020 mbar

6.3.2 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.

6.3.3 Test Setup Diagram



6.3.4 Measurement Procedure and Data

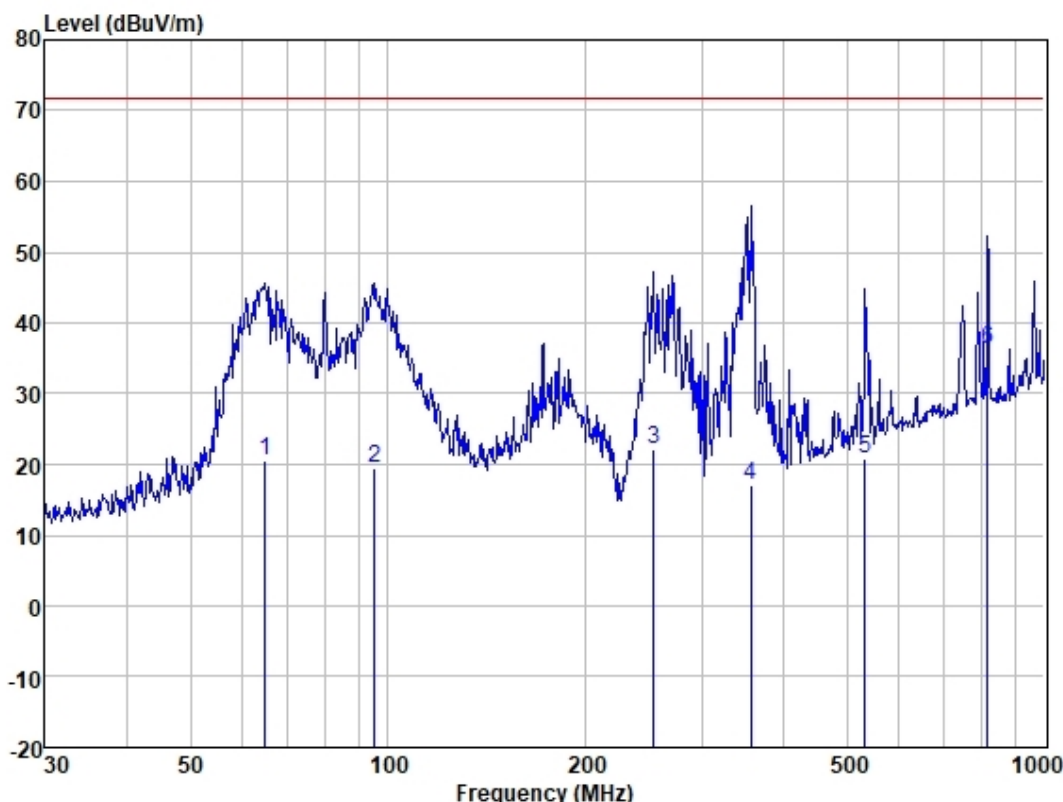
Frequency range: 30MHz-1GHz

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 : SGS
Job :
Model :
Power :
Test Mode :

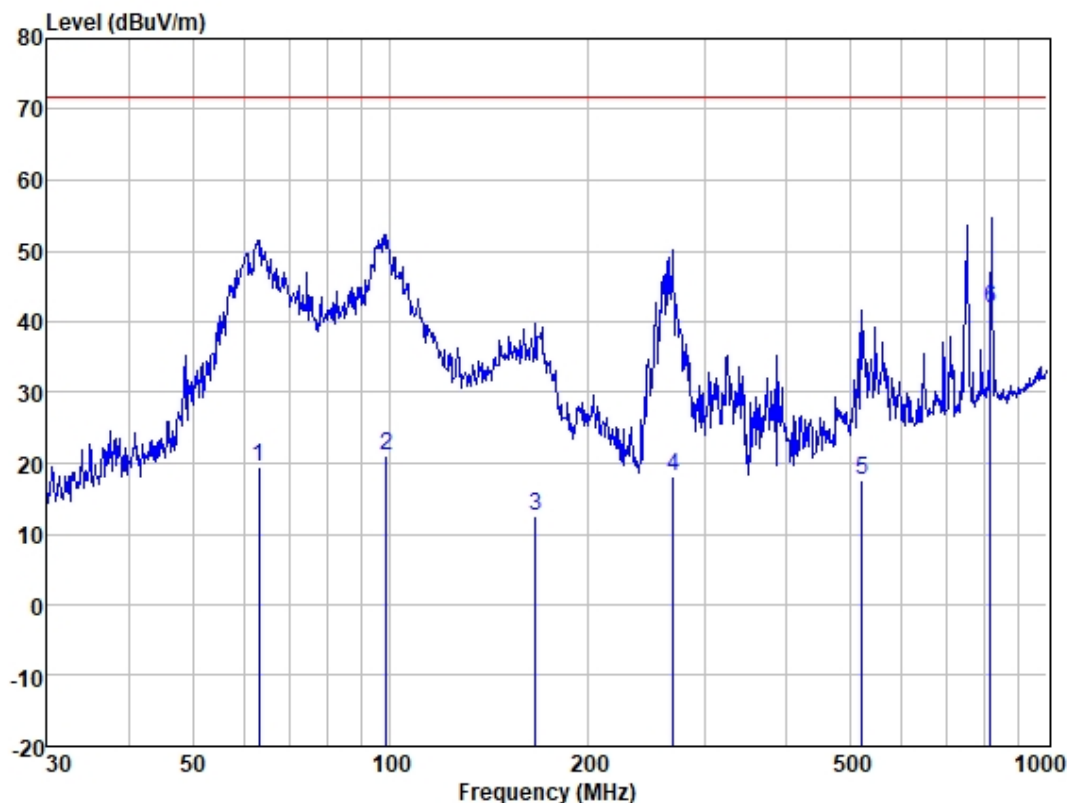
	Freq	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Measured Level	Limit Line	Over Limit	Pol/Phase	Remark
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB		
1	64.887	34.33	12.59	1.35	27.60	20.67	71.67	-51.00	HORIZONTAL	Average
2	95.427	37.16	8.34	1.66	27.60	19.56	71.67	-52.11	HORIZONTAL	Average
3	253.837	34.47	11.93	2.98	27.23	22.15	71.67	-49.52	HORIZONTAL	Average
4	356.676	26.71	14.57	3.65	27.74	17.19	71.67	-54.48	HORIZONTAL	Average
5	531.964	26.37	18.36	4.61	28.66	20.68	71.67	-50.99	HORIZONTAL	Average
6	818.834	35.38	23.39	6.11	28.54	36.34	71.67	-35.33	HORIZONTAL	Average



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Test Mode: 00; Polarity: Vertical



Site : SGS
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	63.092	32.97	12.91	1.31	27.60	19.59	71.67	-52.08	VERTICAL	Average
2	98.487	38.20	8.80	1.68	27.60	21.08	71.67	-50.59	VERTICAL	Average
3	166.068	24.21	13.41	2.36	27.34	12.64	71.67	-59.03	VERTICAL	Average
4	269.428	29.69	12.58	3.09	27.22	18.14	71.67	-53.53	VERTICAL	Average
5	522.718	23.29	18.45	4.53	28.63	17.64	71.67	-54.03	VERTICAL	Average
6	819.700	41.00	23.41	6.11	28.54	41.98	71.67	-29.69	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	1174.0	Limit=20lg(25*SQRT(1174.0/500))+20lg(300/3)=71.67 dBuV/m @ 3m distance.

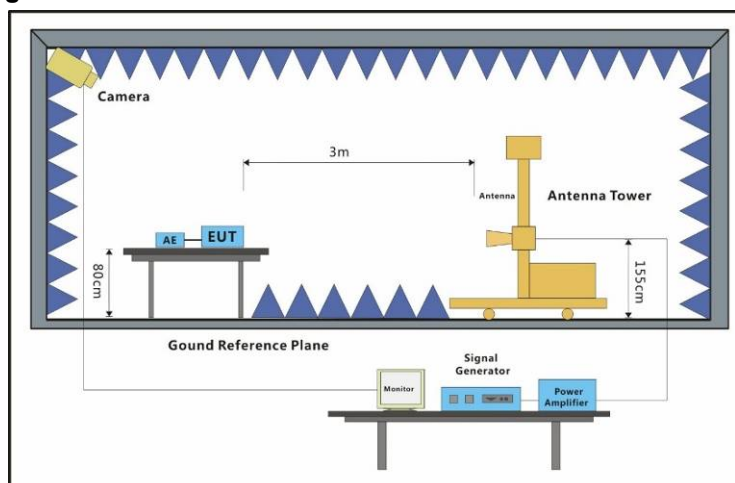
6.4.1 E.U.T. Operation

Operating Environment:
 Temperature: 22.7 °C Humidity: 64.3 % RH Atmospheric Pressure: 1020 mbar

6.4.2 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.

6.4.3 Test Setup Diagram



6.4.4 Measurement Procedure and Data

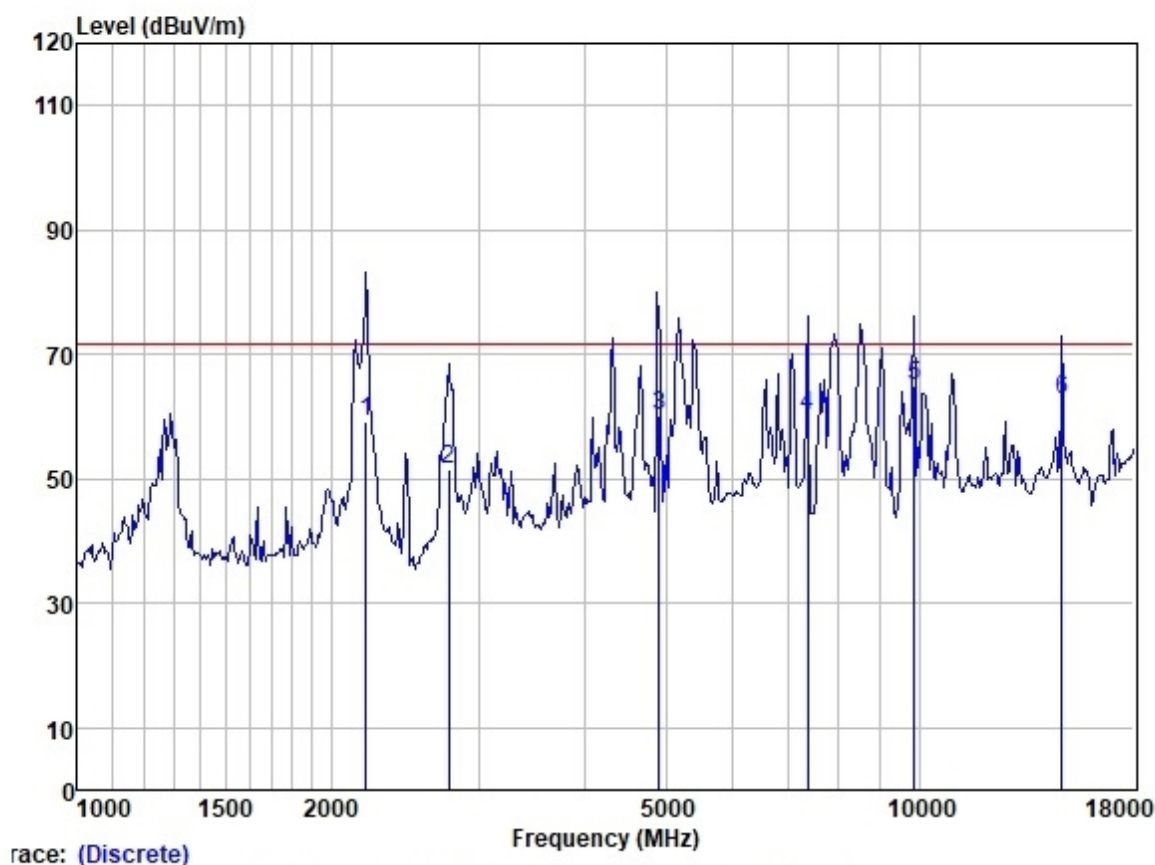
Frequency range: Above 1GHz

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.

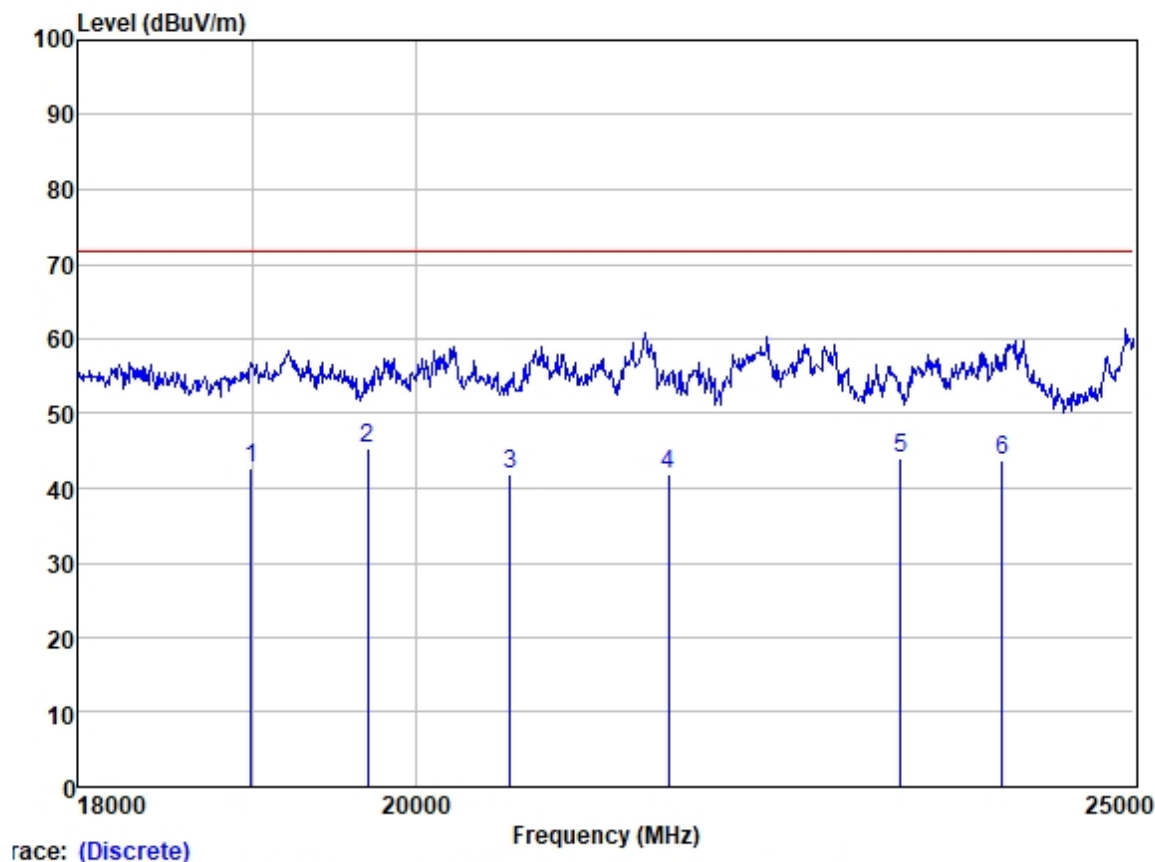
The red line show in graphic is the limit in standard used in this section.

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

Test Mode: 00; Polarity: Horizontal

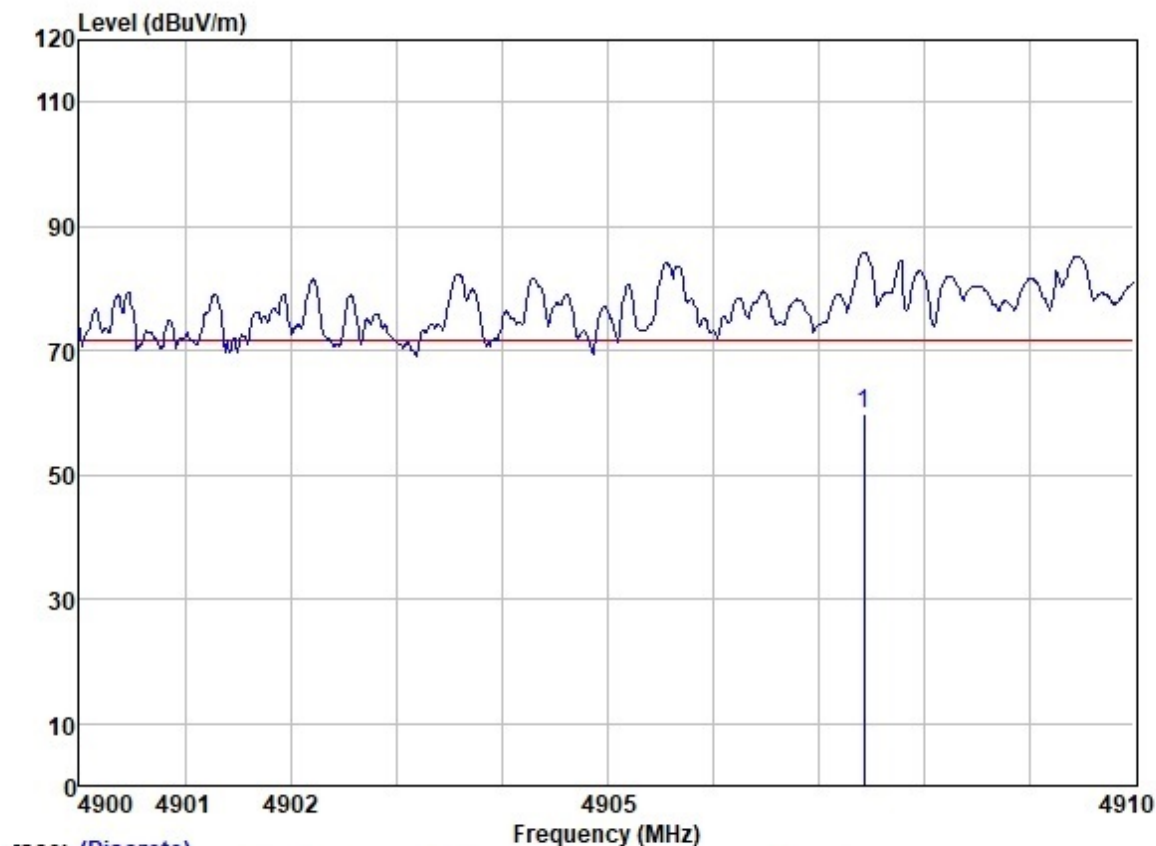


	Freq	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Level	Limit	Over Limit	Pol/Phase	Remark
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB		
1	2201.352	62.41	27.46	6.44	37.17	59.14	71.67	-12.53	HORIZONTAL	Average
2	2758.041	57.06	28.51	2.89	37.02	51.44	71.67	-20.23	HORIZONTAL	Average
3	4905.480	57.18	32.93	5.50	36.64	58.97	71.67	-12.70	HORIZONTAL	Average
4	7372.150	52.02	36.47	6.31	36.78	58.02	71.67	-13.65	HORIZONTAL	Average
5	9866.789	57.05	38.27	6.96	37.19	65.09	71.67	-6.58	HORIZONTAL	Average
6	14788.150	51.12	40.02	7.10	35.44	62.80	71.67	-8.87	HORIZONTAL	Average



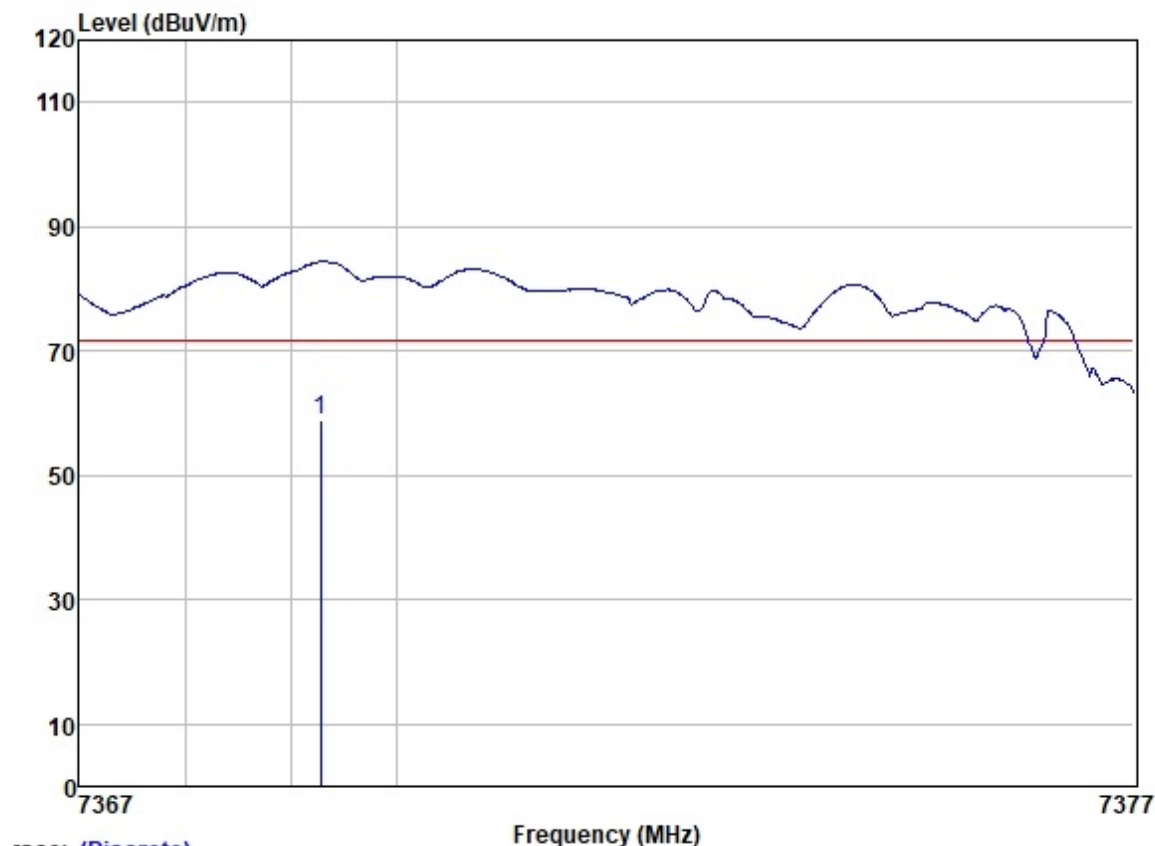
race: (Discrete)

	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 18996.340	23.45	38.00	16.90	35.60	42.75	71.67	-28.92	HORIZONTAL	Average
2 19695.340	25.69	38.00	17.22	35.60	45.31	71.67	-26.36	HORIZONTAL	Average
3 20588.440	21.69	37.93	17.77	35.53	41.86	71.67	-29.81	HORIZONTAL	Average
4 21628.360	20.74	38.12	18.43	35.34	41.95	71.67	-29.72	HORIZONTAL	Average
5 23249.330	20.79	39.60	19.40	35.86	43.93	71.67	-27.74	HORIZONTAL	Average
6 23994.220	19.79	39.60	20.40	36.10	43.69	71.67	-27.98	HORIZONTAL	Average



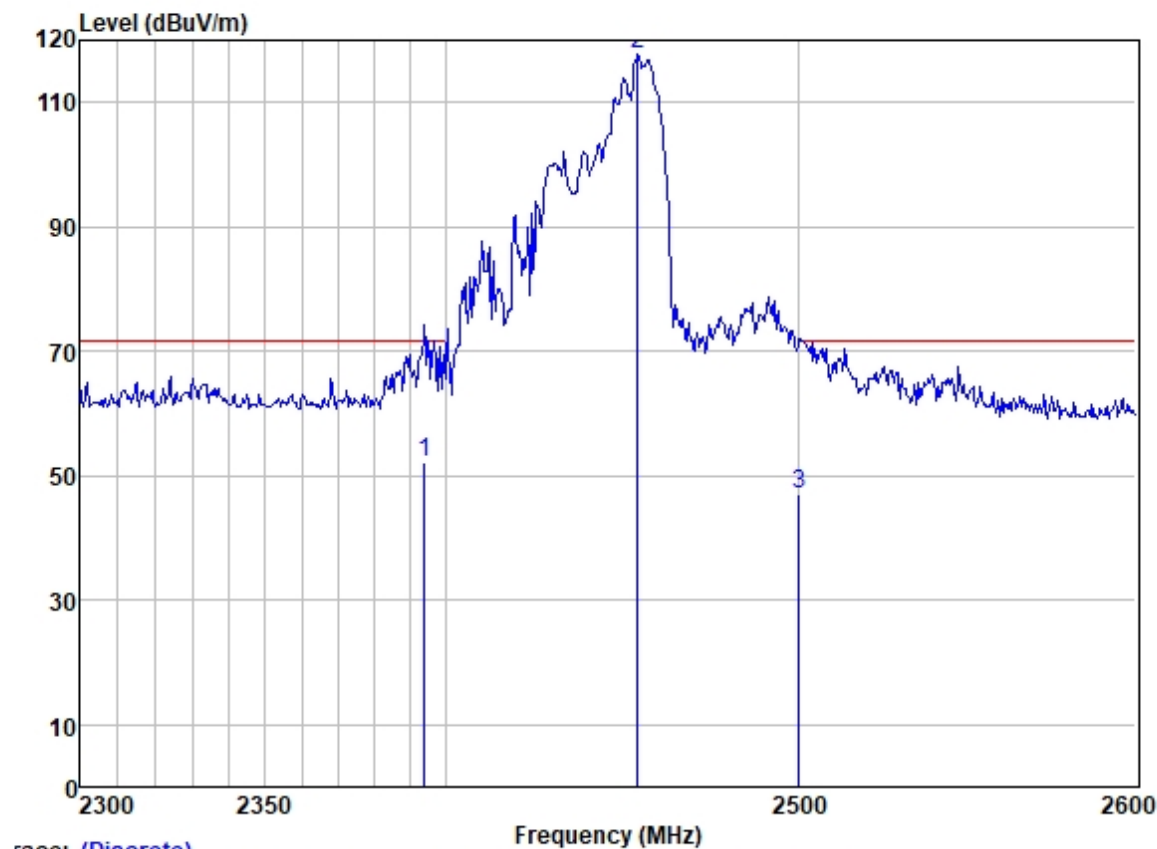
Trace: (Discrete)

	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 4907.438	57.10	32.93	5.50	36.64	58.89	71.67	-12.78	HORIZONTAL	Average



Trace: (Discrete)

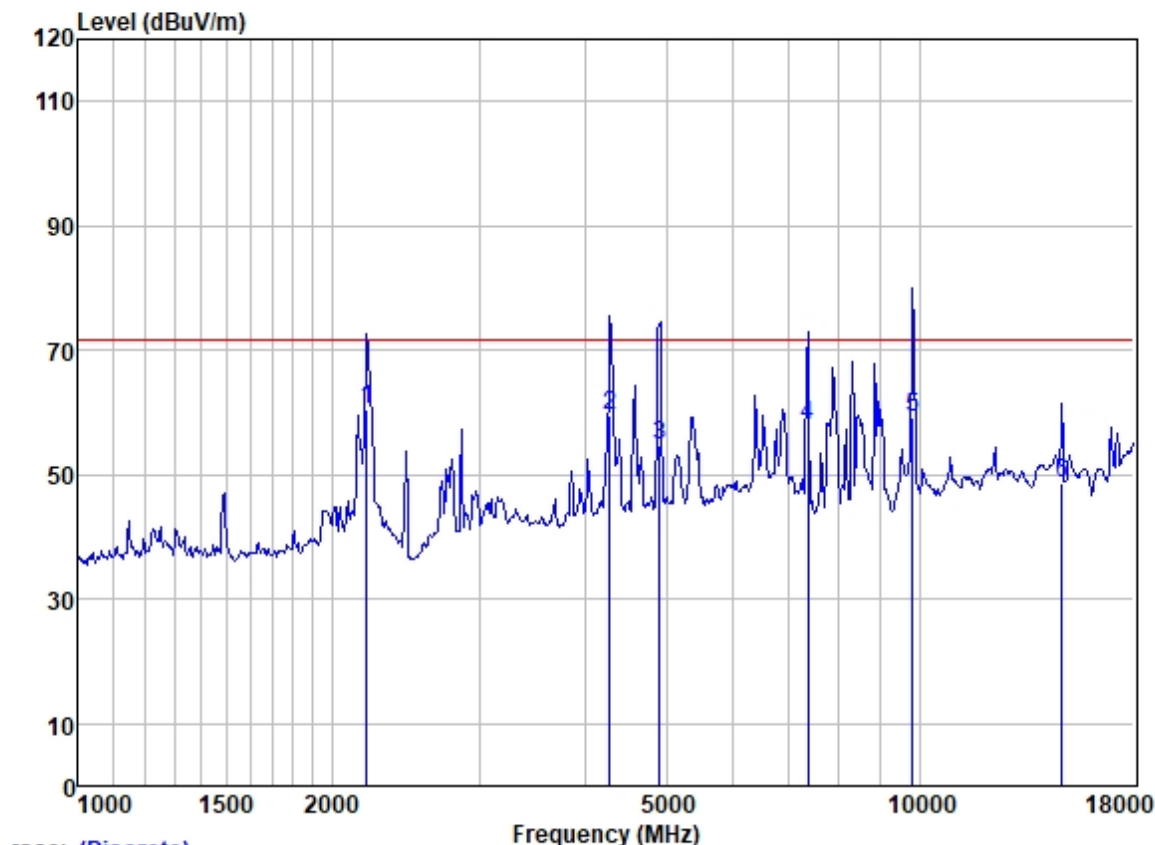
	Read	Antenna	Cable	Preamp		Limit	Over		
Freq	Level	Factor	Loss	Factor	Level	Line	Limit	Pol/Phase	Remark
MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB		
1	7369.289	52.35	36.47	6.31	36.78	58.35	71.67	-12.32	HORIZONTAL Average



Trace: (Discrete)

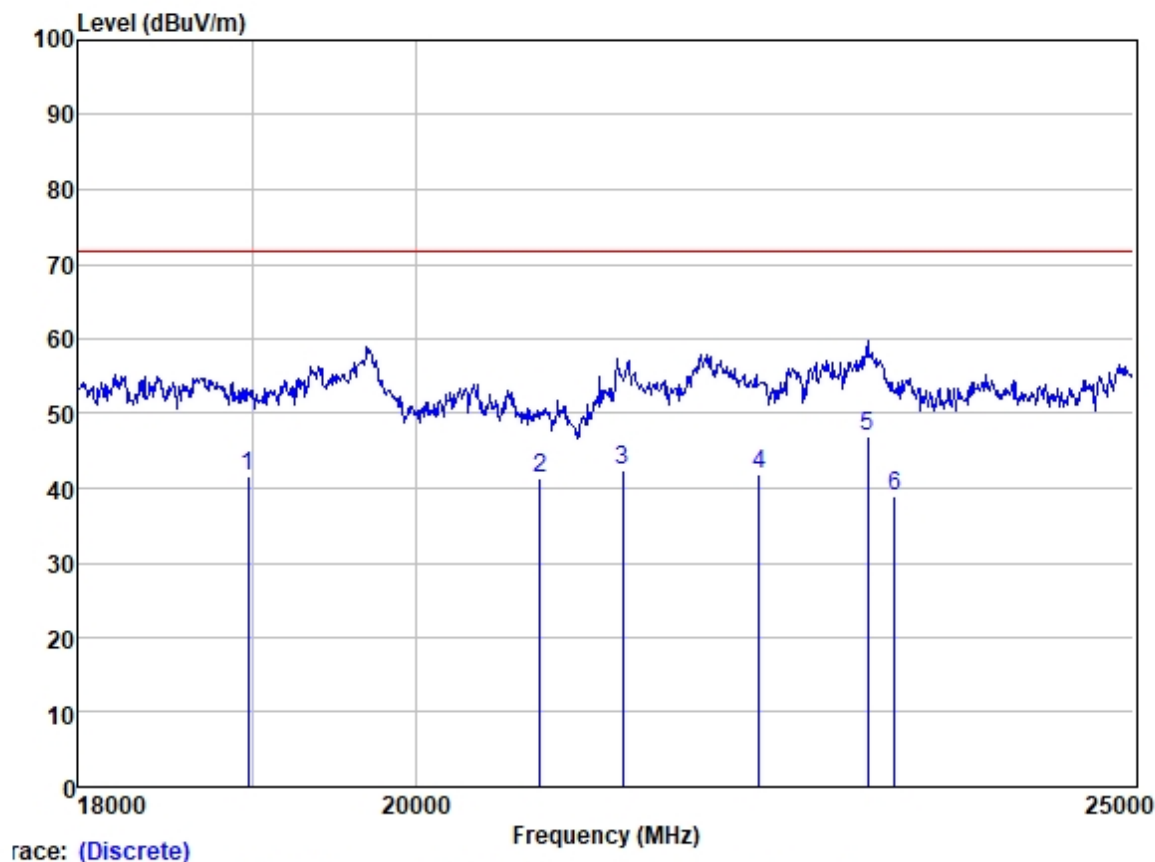
	Read	Antenna	Cable	Preamp		Limit	Over		
Freq	Level	Factor	Loss	Factor	Level	Line	Limit	Pol/Phase	Remark
MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB		
1	2393.789	20.56	27.45	4.16	0.00	52.17	71.67	-19.50	HORIZONTAL Average
2	2453.813	86.39	27.69	3.70	0.00	117.78	-----	-----	HORIZONTAL Peak
3	2500.276	16.02	27.85	3.24	0.00	47.11	71.67	-24.56	HORIZONTAL Average

Test Mode: 00; Polarity: Vertical



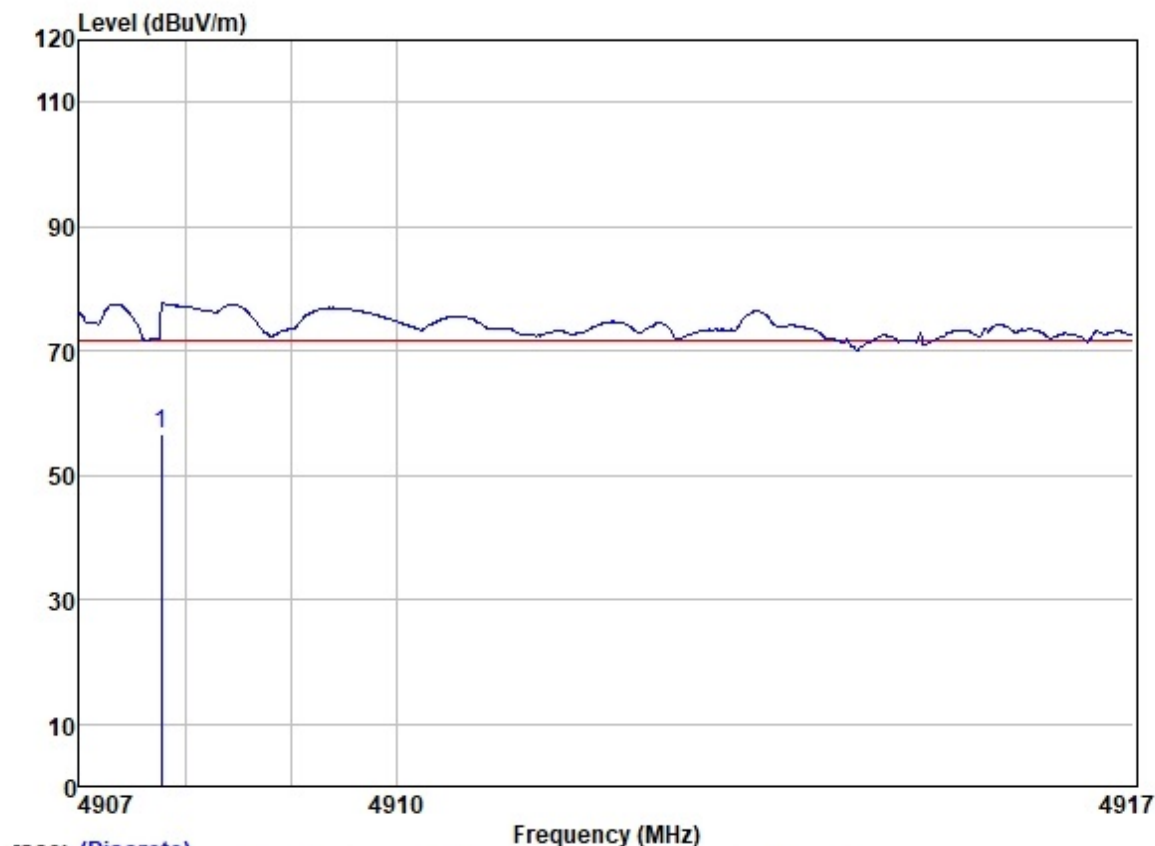
Trace: (Discrete)

	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	2201.352	63.77	27.46	6.44	37.17	60.50	71.67	-11.17	VERTICAL	Average
2	4279.589	59.29	31.53	5.27	36.61	59.48	71.67	-12.19	VERTICAL	Average
3	4912.540	52.87	32.96	5.51	36.64	54.70	71.67	-16.97	VERTICAL	Average
4	7373.560	52.05	36.47	6.31	36.78	58.05	71.67	-13.62	VERTICAL	Average
5	9809.916	50.88	38.22	7.17	37.18	59.09	71.67	-12.58	VERTICAL	Average
6	14788.150	36.92	40.02	7.10	35.44	48.60	71.67	-23.07	VERTICAL	Average



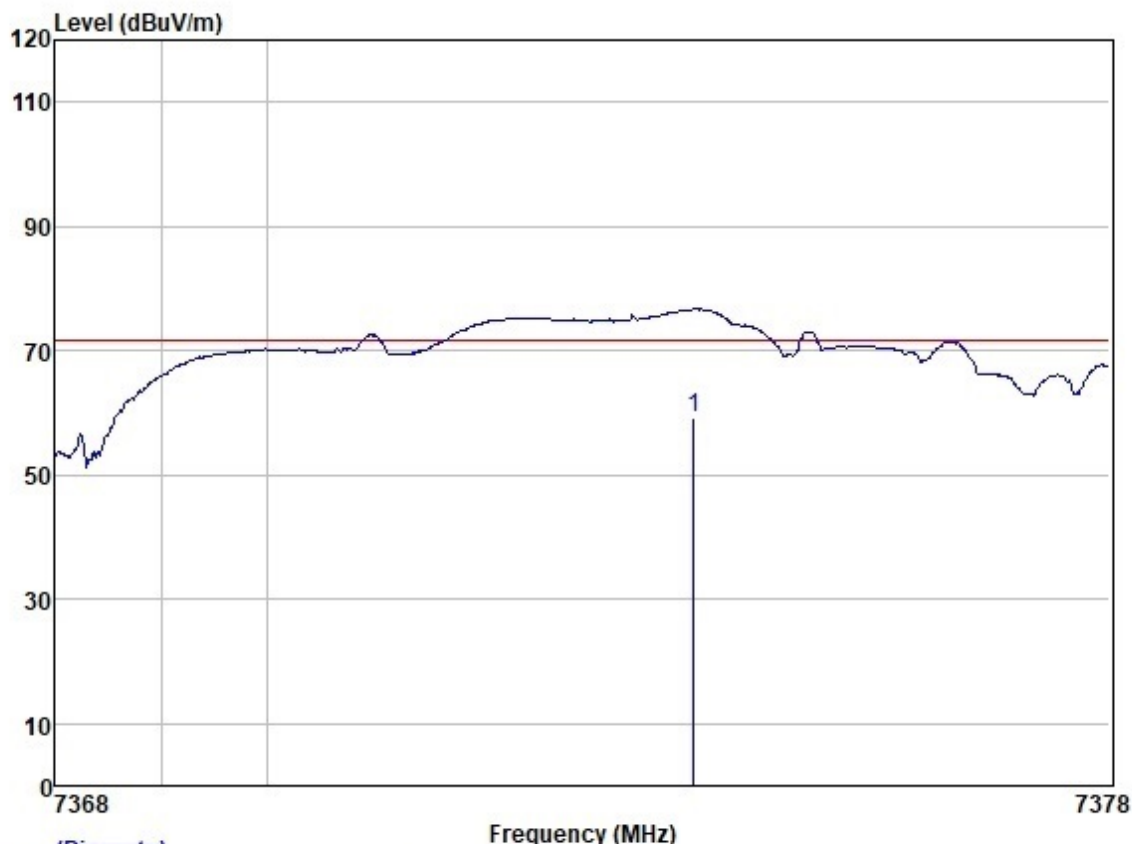
race: (Discrete)

	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 18977.630	22.36	38.00	16.89	35.60	41.65	71.67	-30.02	VERTICAL	Average
2 20778.690	21.04	37.92	17.91	35.49	41.38	71.67	-30.29	VERTICAL	Average
3 21324.990	21.53	37.98	18.15	35.38	42.28	71.67	-29.39	VERTICAL	Average
4 22248.110	20.00	38.47	18.70	35.37	41.80	71.67	-29.87	VERTICAL	Average
5 23013.770	23.78	39.60	19.21	35.75	46.84	71.67	-24.83	VERTICAL	Average
6 23203.550	15.75	39.60	19.36	35.83	38.88	71.67	-32.79	VERTICAL	Average



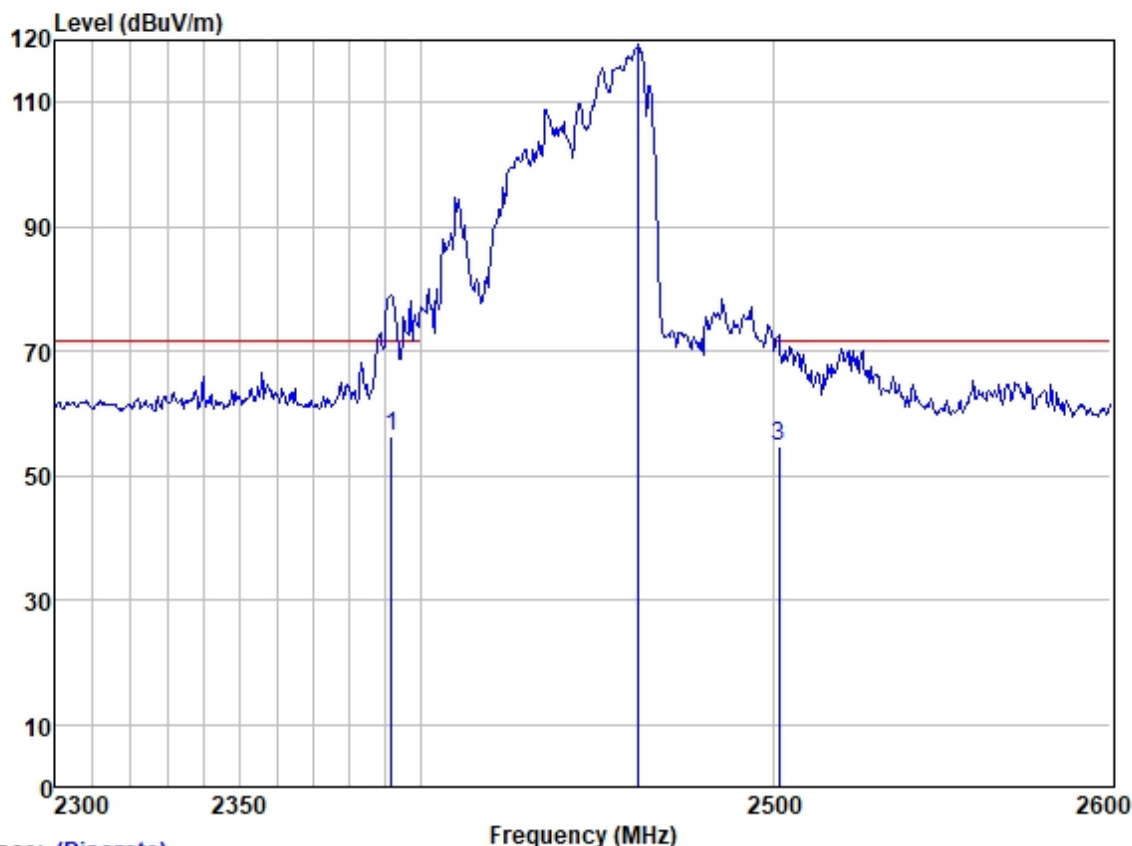
Trace: (Discrete)

	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 4907.779	52.93	32.93	5.50	36.64	54.72	71.67	-16.95	VERTICAL	Average



Trace: (Discrete)

	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 7374.048	52.70	36.47	6.31	36.78	58.70	71.67	-12.97	VERTICAL	Average



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	2391.442	24.59	27.45	4.16	0.00	56.20	71.67	-15.47	VERTICAL
2	2461.044	88.03	27.72	3.64	0.00	119.39	-----	-----	VERTICAL
3	2501.503	23.65	27.85	3.24	0.00	54.74	71.67	-16.93	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: 22.6 °C Humidity: 52.5 % RH Atmospheric Pressure: 1020 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 (watts)
1203	413	19.7	10.2	20.2	43	1174.0

Input Power Data

Input Voltage (V)	Input Current (A)	Power Factor	Measured input power (W)	Rated input power (W)
120.02	14.73	0.932	1648	1700

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 =1174.0 W according to clause 6.1.2

Limit=20lg(25*SQRT(power/500))+20lg(300/3)=71.67dBuV/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:

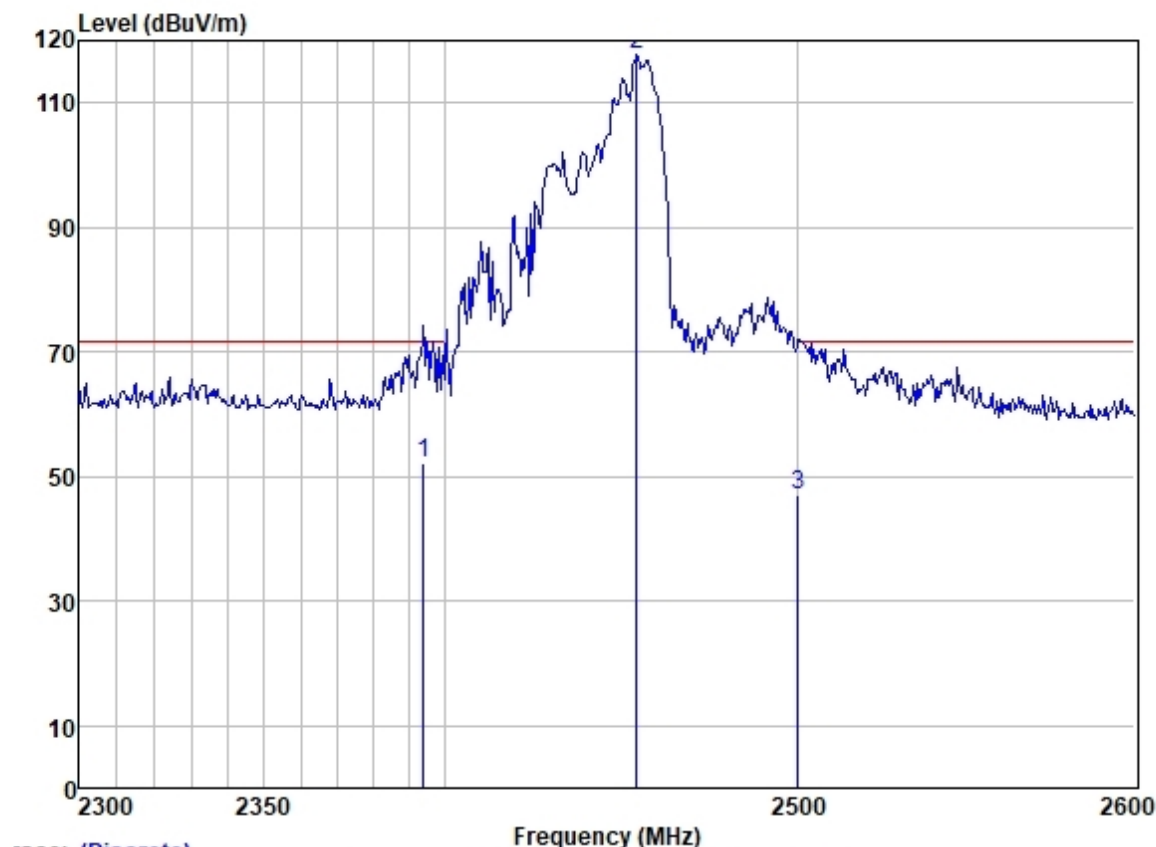
Temperature: 22.7 °C Humidity: 64.3 % RH Atmospheric Pressure: 1020 mbar

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; The variation of frequency with line voltage



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	2393.789	20.56	27.45	4.16	0.00	52.17	71.67	-19.50	HORIZONTAL Average
2	2453.813	86.39	27.69	3.70	0.00	117.78	-----	-----	HORIZONTAL Peak
3	2500.276	16.02	27.85	3.24	0.00	47.11	71.67	-24.56	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	2453



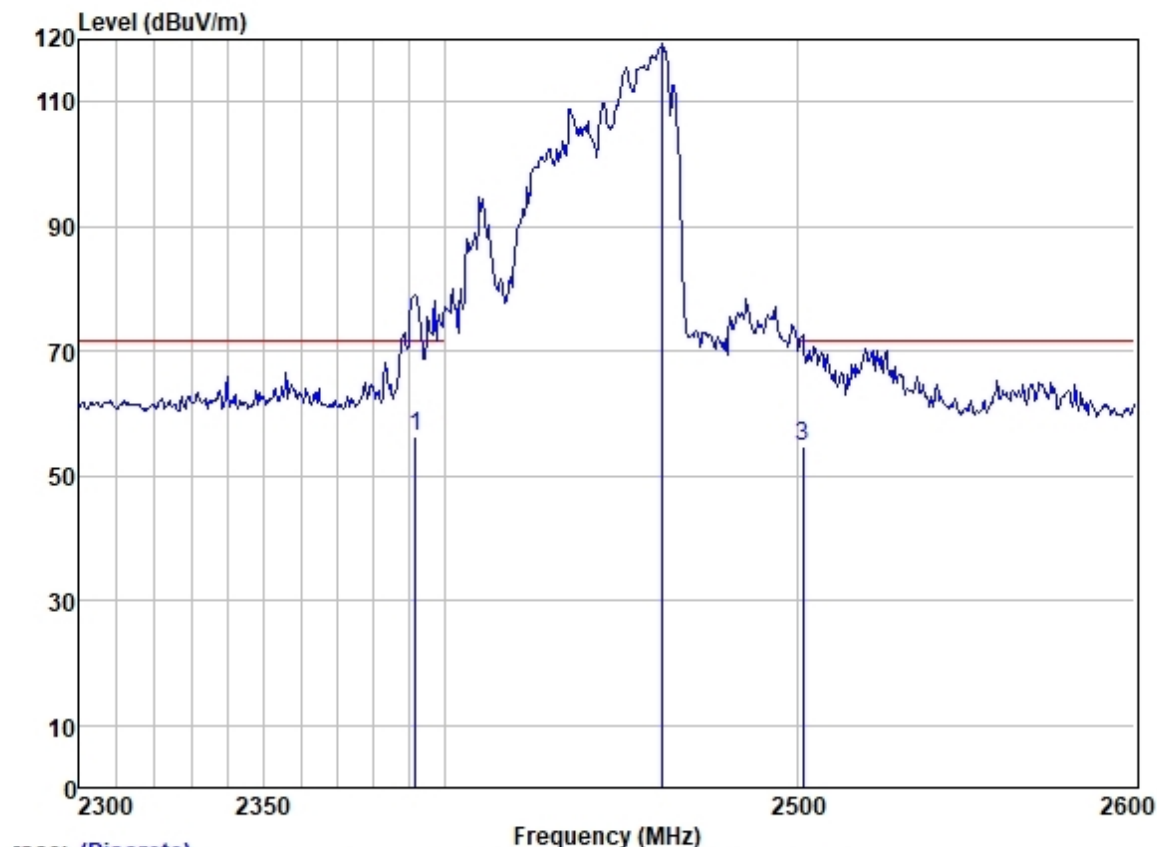
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Guangzhou branch, EMC Laboratory

No. 198 Kezhu Road, Sciotech Park, Guangzhou Economic & Technology Development District, Guangzhou, China 510663 t (86-20) 82155555 f (86-20) 82075058 www.sgs.com.cn
中国·广州·经济技术开发区科学城科珠路198号 邮编: 510663 t (86-20) 82155555 f (86-20) 82075058 sgs.china@sgs.com

Test Mode: 00; The variation of frequency with time



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	2391.442	24.59	27.45	4.16	0.00	56.20	71.67	-15.47	VERTICAL	Average
2	2461.044	88.03	27.72	3.64	0.00	119.39	-----	-----	VERTICAL	Peak
3	2501.503	23.65	27.85	3.24	0.00	54.74	71.67	-16.93	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	2461



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Guangzhou Branch Testing Laboratory

No.198 Kezhu Road, Sciencetech Park, Guangzhou Economic & Technology Development District, Guangzhou, China 510663 t (86-20) 82155555 f (86-20) 82075058 www.sgs.com.cn
中国·广州·经济技术开发区科学城科珠路198号 邮编: 510663 t (86-20) 82155555 f (86-20) 82075058 sgs.china@sgs.com

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: 51.4 % RH Atmospheric Pressure: 1020 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 ²)	Limit (mW/cm ²)	Test Result
0.360	1	Pass



7 Test Setup Photo

Refer to Appendix - Test Setup Photo for GZEM230300129802



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8 EUT Constructional Details (EUT Photos)

Refer to External and Internal Photos for GZEM2303001298HS

- End of the Report -