

TEST REPORT

Application No.: GZEM2403001785HS

Applicant: Guangdong Galanz Enterprises Co., Ltd.

Address of Applicant: 25 Ronggui Nan Road, 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.: Please refer to page 2.

Trade Mark: GALANZ, Whirlpool, KitchenAid

Standard(s) : 47 CFR Part 18

Date of Receipt: 2024-04-01

Date of Test: 2024-04-02 to 2024-04-09

Date of Issue: 2024-05-13

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

Ricky Liu

Ricky Liu
Manager



SGS-CSTC Standards Technical Services Co., Ltd.
Guangzhou Branch Testing Center EMC Laboratory

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Model No.: P120D60(X)-(Y), P120D60(X)H-(Y), P120D60(X)H-(Y)-FR**, P120D60APH-SUA(L2), P120D60(X)-(Y)(L2), P120D60(X)H-(Y)(L2), P120D60(X)H-(Y)(L2)-FR**, KMCS324RBS**, KMCS324RPS**, UMCS5022RZ**, WMCS7024RB**, WMCS7024RW**, WMCS7024RZ**

P: with microwave function only

120: denote the output power is 1200W

D60: denote different cavity in 60liters.

Variable (X) may be

A, AL, AP, AJ, 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 or from A to Z or blank ♣

♣

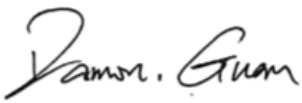
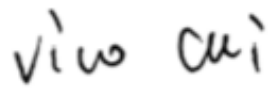
Please refer to section 2 of this report which indicates which item was actually tested and which were electrically identical.



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Revision Record			
Version	Report No.	Date	Remark
01	GZEM230300129802	2023-05-12	Original
02	GZEM230300129804	2024-05-13	Amendment report: Updated manufacturer's and factory's information; Updated models; Added trademark.

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

2 Test Summary

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

Note:

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

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

Remark for report GZEM230300129802:

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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♣Remark for report GZEM230300129804:

This report GZEM230300129804 is based on original report GZEM230300129802, with the following changes:

1. Updated manufacturer's and factory's information.
2. Added trademark Whirlpool, KitchenAid.
3. Updated models as below:

P120D60(X)-(Y), P120D60(X)H-(Y), P120D60(X)H-(Y)-FR**, P120D60APH-SUA(L2), P120D60(X)-(Y)(L2), P120D60(X)H-(Y)(L2), P120D60(X)H-(Y)(L2)-FR**, KMCS324RBS**, KMCS324RPS**, UMCS5022RZ**, WMCS7024RB**, WMCS7024RW**, WMCS7024RZ**

P: with microwave function only

120: denote the output power is 1200W

D60: denote different cavity in 60liters.

Variable (X) may be

A, AL, AP, AJ, 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 or from A to Z or blank

According to the declaration from the applicant, the models in this report GZEM230300129804 and models in original report GZEM230300129802 were identical in mechanical and electrical construction, only being different on the door open method.

All tests items were performed to model P120D60APH-SUA(L2) and recorded the new test results in this report GZEM230300129804.

Other tests please refer to original report GZEM230300129802 for details.



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4 General Information

4.1 Details of E.U.T.

Power supply: AC 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); 5.61dB (18GHz-40GHz)
<p>Remark:</p> <p>The U_{lab} (lab Uncertainty) is less than U_{cisprr} (CISPR Uncertainty), so the test results</p> <ul style="list-style-type: none"> – 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,
No.198, Kezhu Road, Science City, Economic & Technological Development Area, Guangzhou,
Guangdong, China 510663

Tel: +86 20 82155555

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	2024-03-22	2026-03-21
Amplifier(9k-1000MHz)	SONOMA	310	EMC2237	2024-03-22	2025-03-21
Active Loop Antenna-RED	ETS-Lindgren	6502	EMC2190	2024-04-08	2026-04-07
EMI Test Receiver (1Hz-8GHz)	Rohde & Schwarz	ESW8	EMC2229	2024-02-19	2025-02-18
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	2024-02-19	2025-02-18
Amplifier(9k-1000MHz)	SONOMA	310	EMC2237	2024-03-22	2025-03-21
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	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	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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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 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

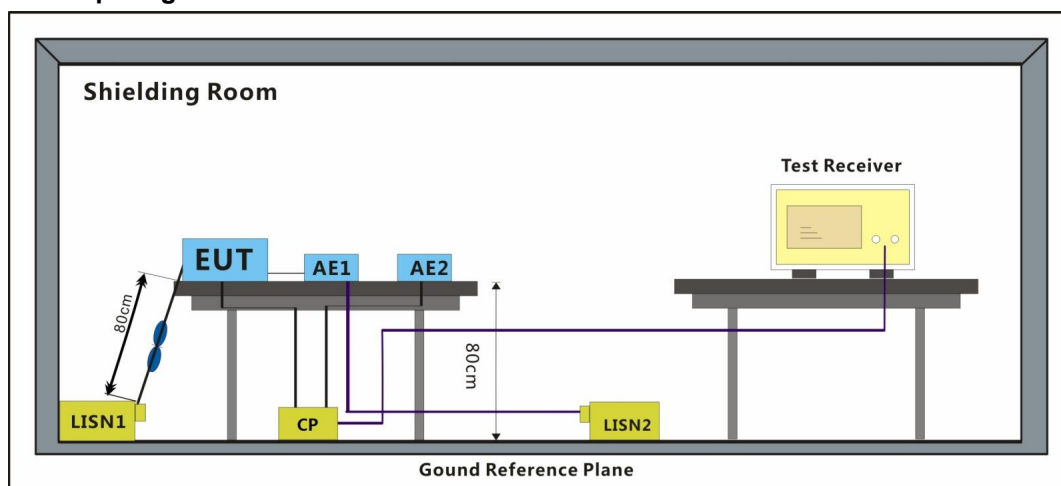
6.1.1 E.U.T. Operation

Operating Environment:
 Temperature: 26.5 °C Humidity: 56.3 % 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

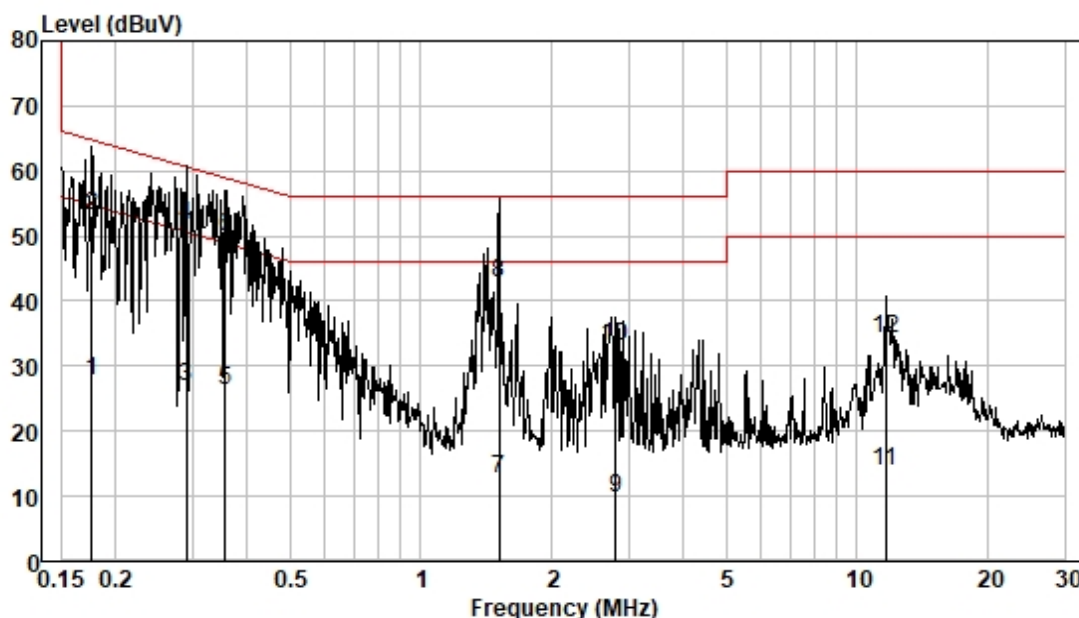
Frequency range: 150KHz-30MHz

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 :

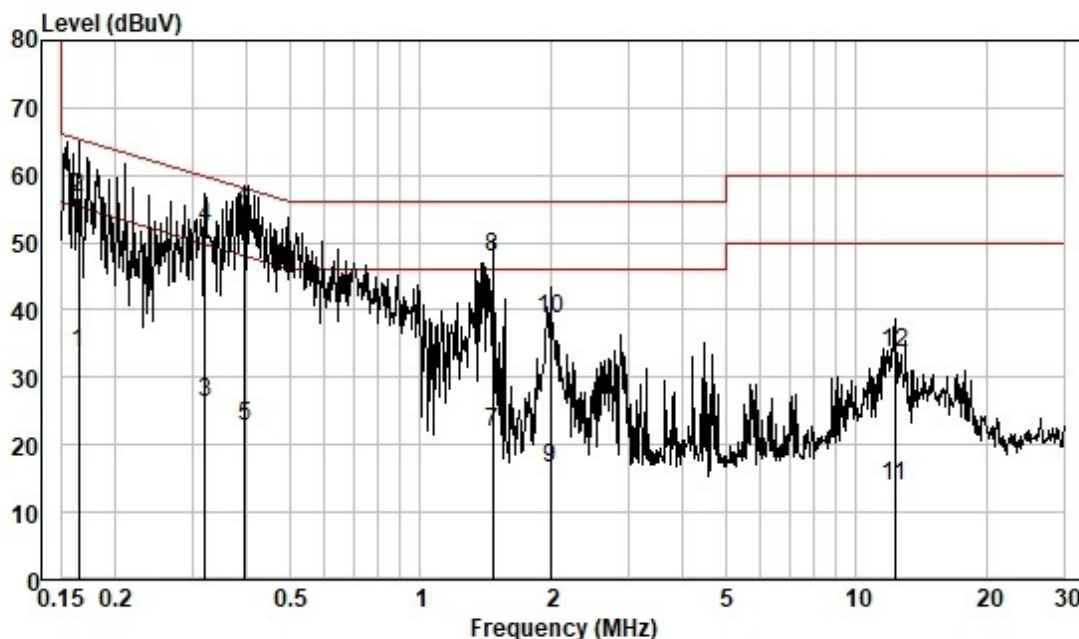
	Freque	Read	Cable	LISN	Measured	Limit	Over	Remark
	nc	Level	Loss	Factor	Level	Line	Limit	
	MHz	dBuV	dB	dB	dBuV	dBuV	dB	
1	0.176	18.24	0.04	9.55	27.83	64.68	-36.85	Average
2	0.176	43.52	0.04	9.55	53.11	64.68	-11.57	QP
3	0.289	17.32	0.04	9.56	26.92	60.54	-33.62	Average
4	0.289	42.01	0.04	9.56	51.61	60.54	-8.93	QP
5	0.356	16.76	0.05	9.57	26.38	58.83	-32.45	Average
6	0.356	40.20	0.05	9.57	49.82	58.83	-9.01	QP
7	1.511	2.95	0.10	9.56	12.61	56.00	-43.39	Average
8	1.511	33.00	0.10	9.56	42.66	56.00	-13.34	QP
9	2.794	0.13	0.15	9.58	9.86	56.00	-46.14	Average
10	2.794	23.38	0.15	9.58	33.11	56.00	-22.89	QP
11	11.621	3.69	0.28	9.79	13.76	60.00	-46.24	Average
12	11.621	24.19	0.28	9.79	34.26	60.00	-25.74	QP



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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	0.164	24.11	0.04	9.52	33.67	65.25	-31.58	Average
2	0.164	47.20	0.04	9.52	56.76	65.25	-8.49	QP
3	0.320	16.67	0.04	9.53	26.24	59.71	-33.47	Average
4	0.320	42.83	0.04	9.53	52.40	59.71	-7.31	QP
5	0.396	13.00	0.05	9.54	22.59	57.95	-35.36	Average
6	0.396	45.34	0.05	9.54	54.93	57.95	-3.02	QP
7	1.464	12.30	0.10	9.55	21.95	56.00	-34.05	Average
8	1.464	38.23	0.10	9.55	47.88	56.00	-8.12	QP
9	1.991	6.78	0.12	9.55	16.45	56.00	-39.55	Average
10	1.991	29.13	0.12	9.55	38.80	56.00	-17.20	QP
11	12.253	3.73	0.29	9.82	13.84	60.00	-46.16	Average
12	12.253	23.53	0.29	9.82	33.64	60.00	-26.36	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	1168.8	Limit=20lg(25*SQRT(1168.8/500))+20lg(300/3)= 71.65 dBuV/m @ 3m distance.

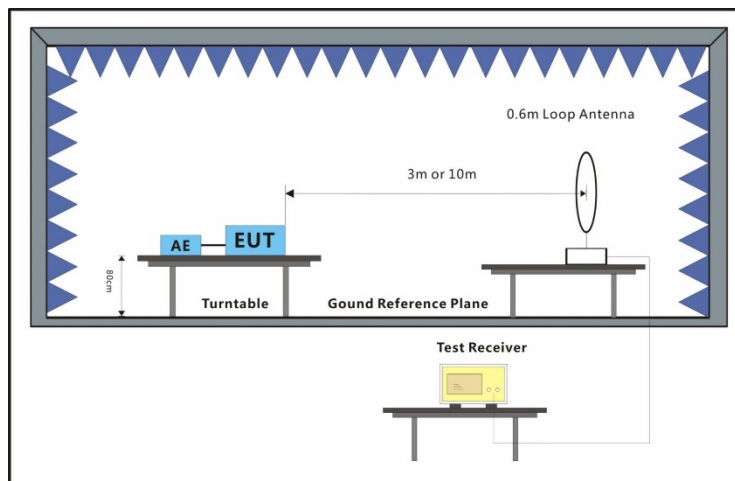
6.2.1 E.U.T. Operation

Operating Environment:
 Temperature: 23.2 °C Humidity: 53.7 % RH Atmospheric Pressure: 1020 mbar

6.2.2 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.

6.2.3 Test Setup Diagram



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6.2.4 Measurement Procedure and Data

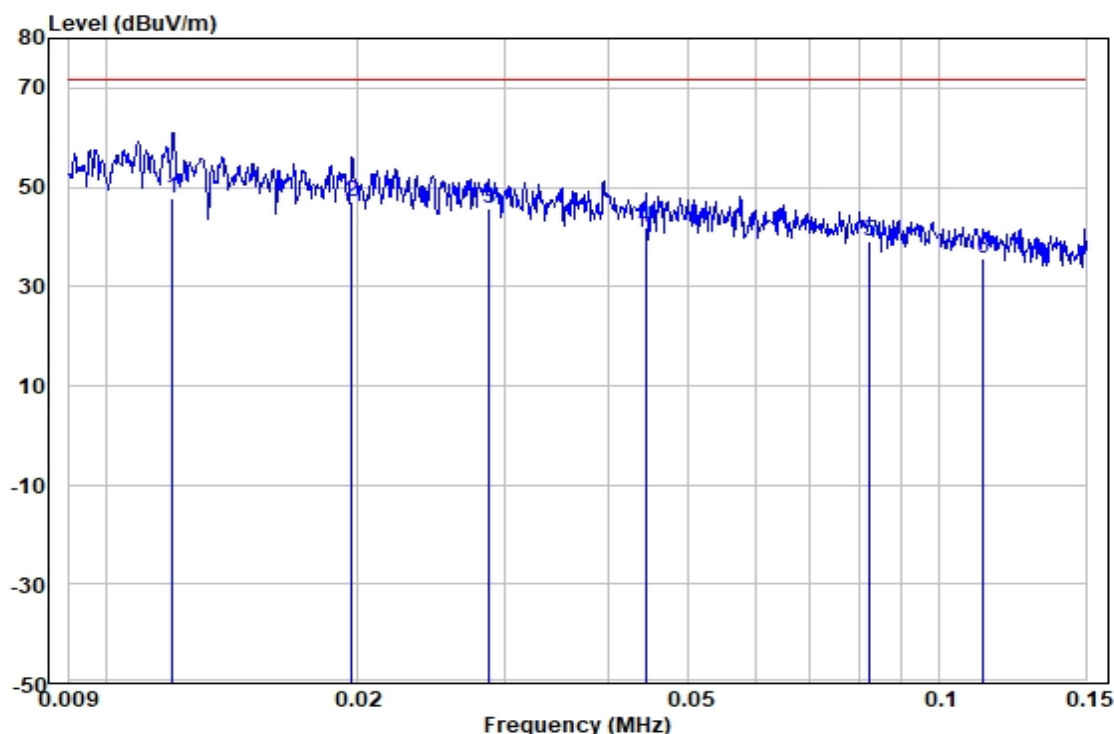
Frequency range: 9KHz-30MHz

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	0.012	63.03	17.76	0.01	32.90	47.90	71.65	-23.75	HORIZONTAL	Average
2	0.020	65.66	14.26	0.01	32.90	47.03	71.65	-24.62	HORIZONTAL	Average
3	0.029	65.41	13.03	0.01	32.90	45.55	71.65	-26.10	HORIZONTAL	Average
4	0.044	62.42	12.33	0.01	32.90	41.86	71.65	-29.79	HORIZONTAL	Average
5	0.082	60.01	11.97	0.01	32.90	39.09	71.65	-32.56	HORIZONTAL	Average
6	0.113	56.42	11.94	0.01	32.90	35.47	71.65	-36.18	HORIZONTAL	Average

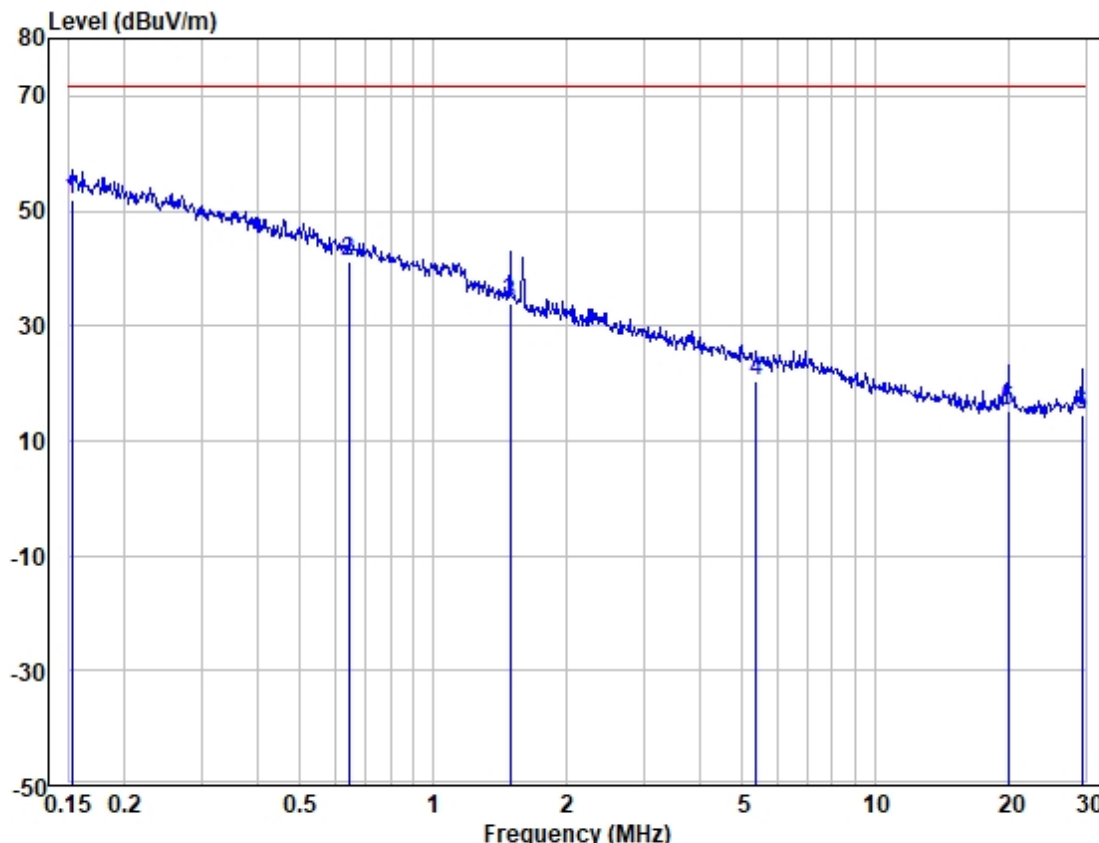


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Test Mode: 00; Polarity: Horizontal



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

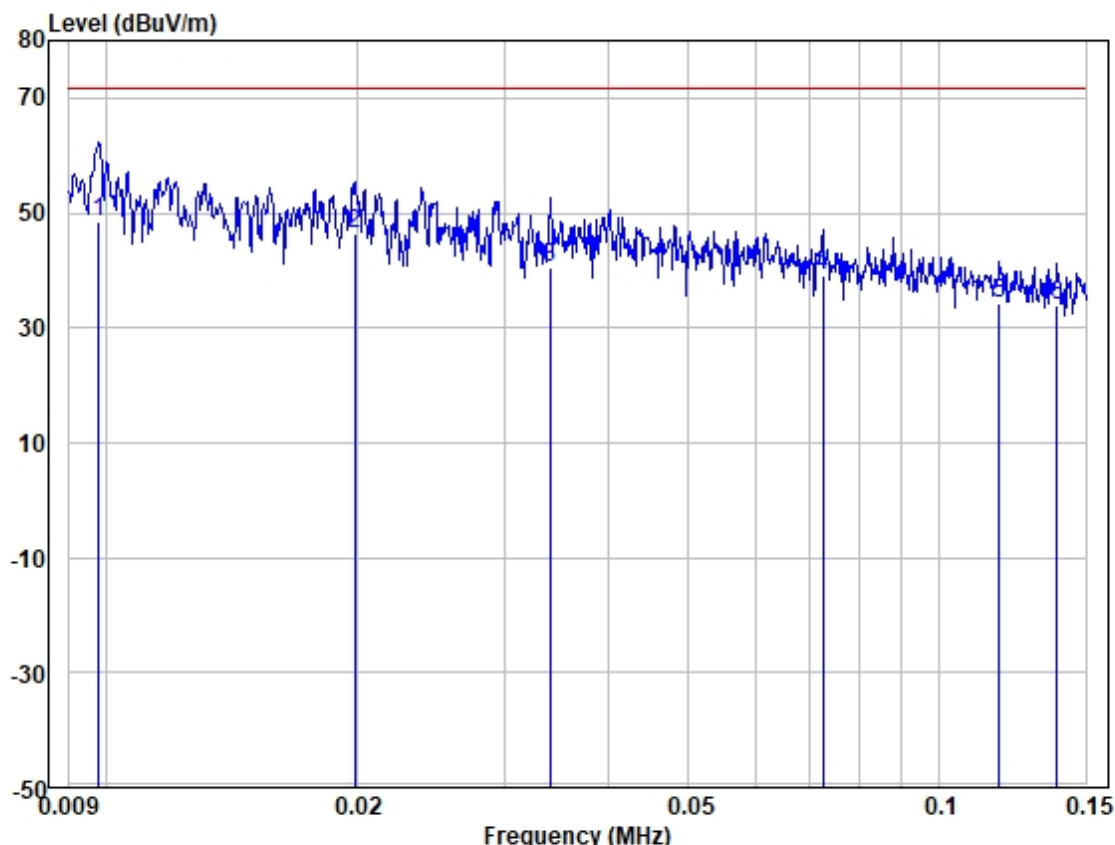
	Freq	Read Level	Antenna Factor	Cable Loss	Preamplifier Factor	Measured Level	Limit Line	Over Limit	Pol/Phase	Remark
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB		
1	0.152	73.02	11.88	0.01	32.90	52.01	71.65	-19.64	HORIZONTAL	QP
2	0.644	62.12	11.81	0.05	32.90	41.08	71.65	-30.57	HORIZONTAL	QP
3	1.495	54.92	11.84	0.05	32.90	33.91	71.65	-37.74	HORIZONTAL	QP
4	5.390	41.88	11.32	0.10	32.90	20.40	71.65	-51.25	HORIZONTAL	QP
5	20.056	39.06	8.68	0.24	32.90	15.08	71.65	-56.57	HORIZONTAL	QP
6	29.371	40.55	6.47	0.29	32.88	14.43	71.65	-57.22	HORIZONTAL	QP



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Test Mode: 00; Polarity: Vertical



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

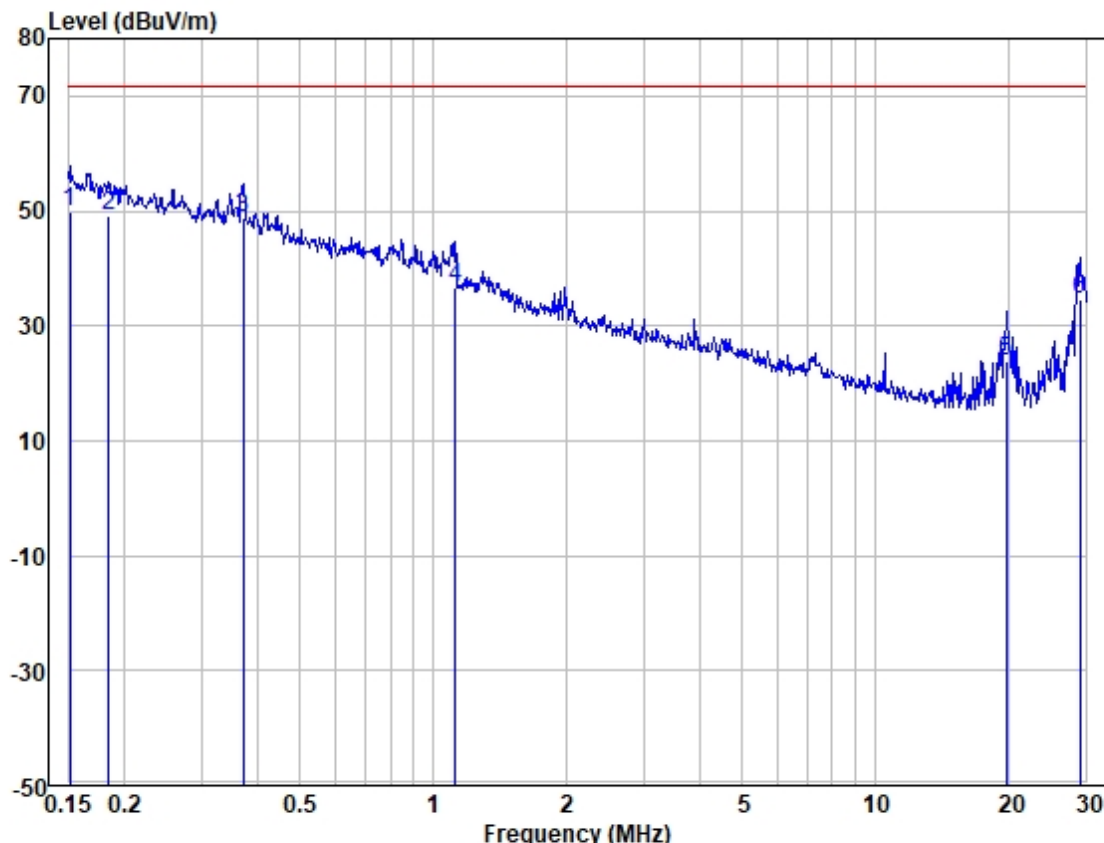
	Freq	Read Level	Antenna Factor	Cable Loss	Preamplifier Factor	Measured Level	Limit Line	Over Limit	Pol/Phase	Remark
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB		
1	0.010	62.46	18.71	0.01	32.90	48.28	71.65	-23.37	VERTICAL	Average
2	0.020	64.97	14.23	0.01	32.90	46.31	71.65	-25.34	VERTICAL	Average
3	0.034	60.79	12.74	0.01	32.90	40.64	71.65	-31.01	VERTICAL	Average
4	0.072	59.94	12.00	0.01	32.90	39.05	71.65	-32.60	VERTICAL	Average
5	0.118	55.30	11.94	0.01	32.90	34.35	71.65	-37.30	VERTICAL	Average
6	0.139	55.02	11.91	0.01	32.90	34.04	71.65	-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	0.151	70.80	11.88	0.01	32.90	49.79	71.65	-21.86	VERTICAL	Average
2	0.184	70.03	11.86	0.01	32.90	49.00	71.65	-22.65	VERTICAL	Average
3	0.371	69.88	11.86	0.01	32.90	48.85	71.65	-22.80	VERTICAL	Average
4	1.123	57.75	11.84	0.05	32.90	36.74	71.65	-34.91	VERTICAL	Average
5	19.845	47.63	8.70	0.24	32.90	23.67	71.65	-47.98	VERTICAL	Average
6	29.061	60.79	6.53	0.29	32.88	34.73	71.65	-36.92	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	1168.8	Limit=20lg(25*SQRT(1168.8/500))+20lg(300/3)= 71.65 dBuV/m @ 3m distance.

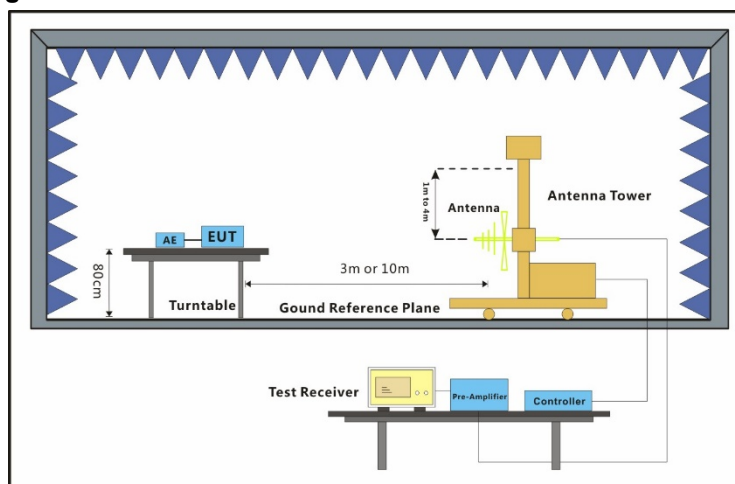
6.3.1 E.U.T. Operation

Operating Environment:
 Temperature: 22.5 °C Humidity: 53.7 % RH Atmospheric Pressure: 1020 mbar

6.3.2 Test Mode Description

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

6.3.3 Test Setup Diagram



6.3.4 Measurement Procedure and Data

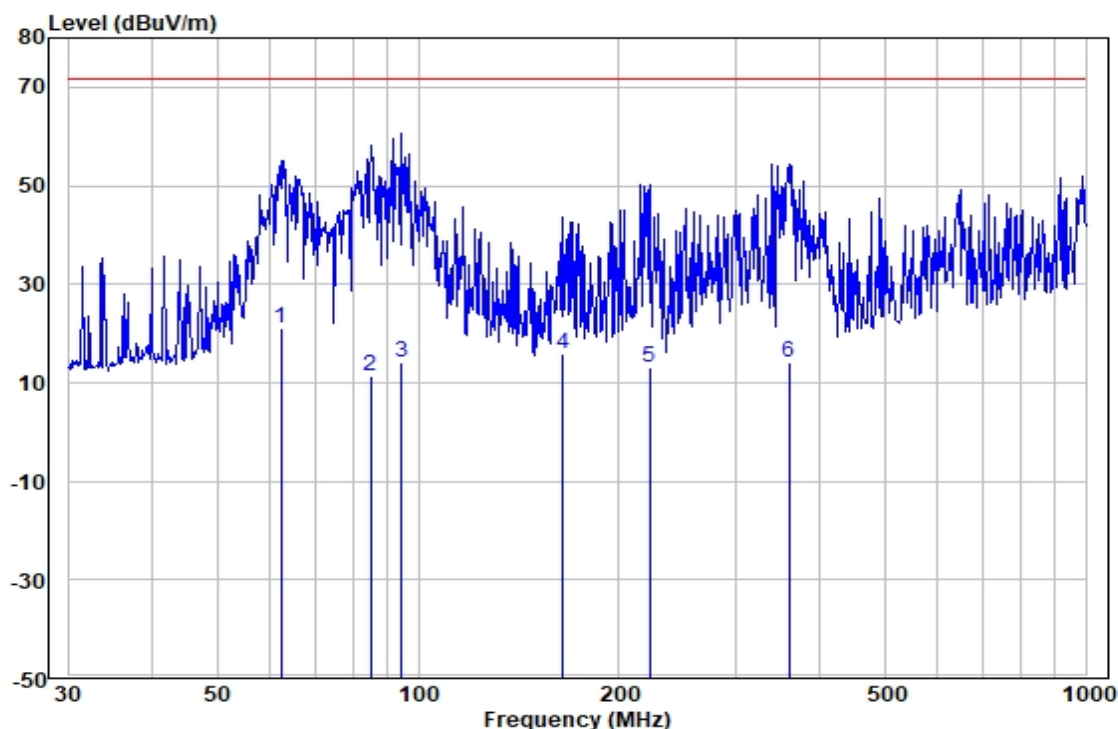
Frequency range: 30MHz-1GHz

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

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

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

Test Mode: 00; Polarity: Horizontal



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

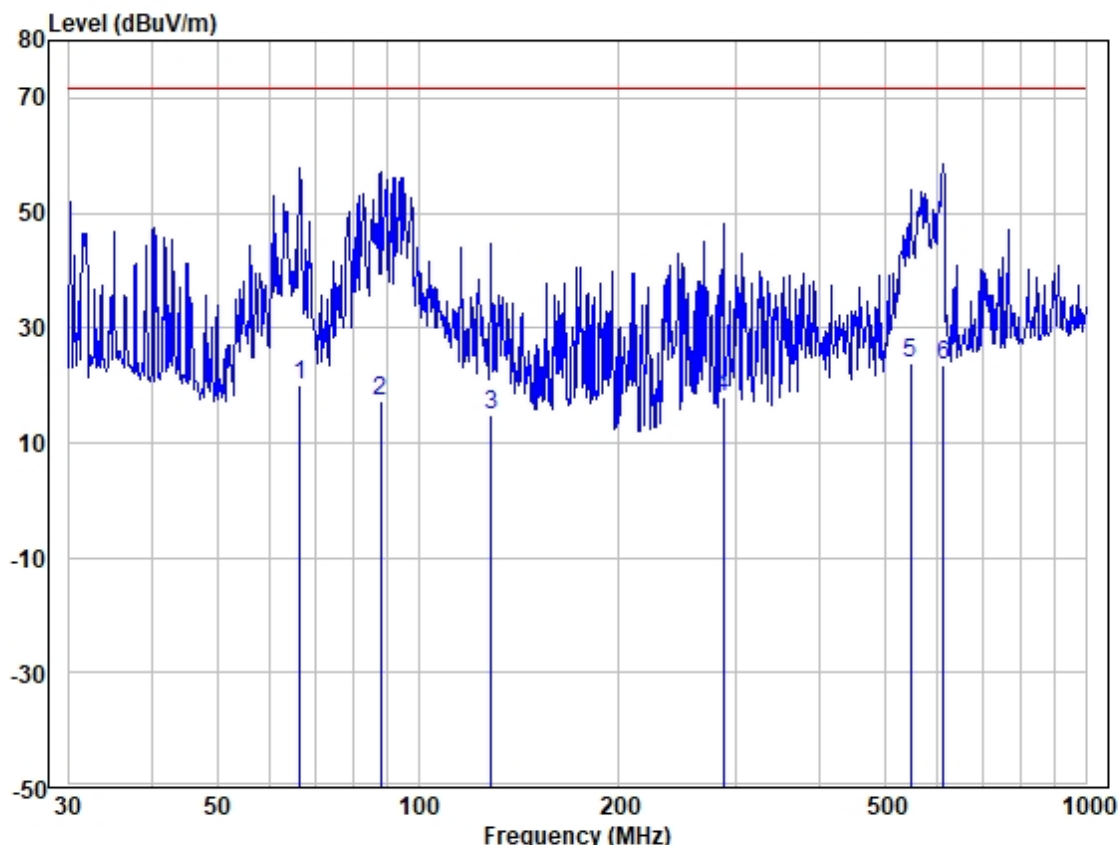
	Freq	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Measured Level	Limit Line	Over Limit	Pol/Phase	Remark
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB		
1	62.431	34.87	18.47	0.42	32.80	20.96	71.65	-50.69	HORIZONTAL	Average
2	84.999	29.37	14.23	0.51	32.80	11.31	71.65	-60.34	HORIZONTAL	Average
3	94.428	32.69	13.83	0.53	32.80	14.25	71.65	-57.40	HORIZONTAL	Average
4	164.908	28.77	19.05	0.71	32.80	15.73	71.65	-55.92	HORIZONTAL	Average
5	222.170	29.38	15.78	0.81	32.80	13.17	71.65	-58.48	HORIZONTAL	Average
6	359.186	25.54	20.41	1.10	32.80	14.25	71.65	-57.40	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	66.499	34.70	17.68	0.44	32.80	20.02	71.65	-51.63	VERTICAL	Average
2	88.033	35.58	13.91	0.52	32.80	17.21	71.65	-54.44	VERTICAL	Average
3	128.563	28.97	17.98	0.62	32.80	14.77	71.65	-56.88	VERTICAL	Average
4	285.978	30.82	18.98	0.97	32.80	17.97	71.65	-53.68	VERTICAL	Average
5	547.098	31.13	24.32	1.35	32.90	23.90	71.65	-47.75	VERTICAL	Average
6	612.064	29.12	25.87	1.44	32.89	23.54	71.65	-48.11	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	1168.8	Limit=20lg(25*SQRT(1168.8/500))+20lg(300/3)= 71.65 dBuV/m @ 3m distance.

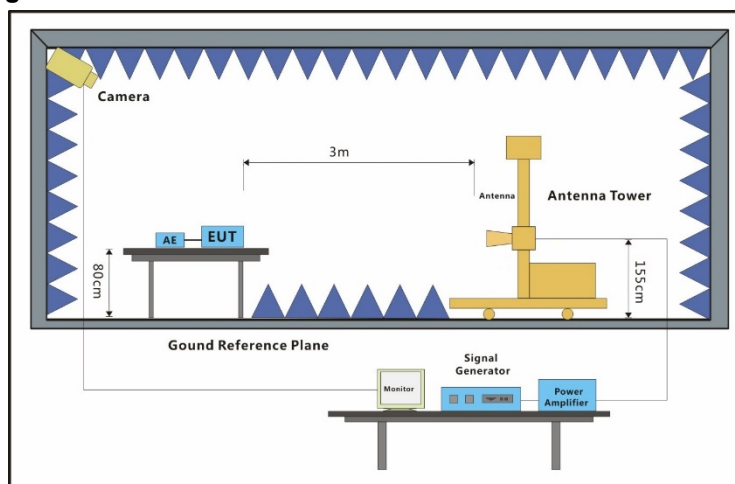
6.4.1 E.U.T. Operation

Operating Environment:
 Temperature: 24.2 °C Humidity: 56.7 % RH Atmospheric Pressure: 1020 mbar

6.4.2 Test Mode Description

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

6.4.3 Test Setup Diagram



6.4.4 Measurement Procedure and Data

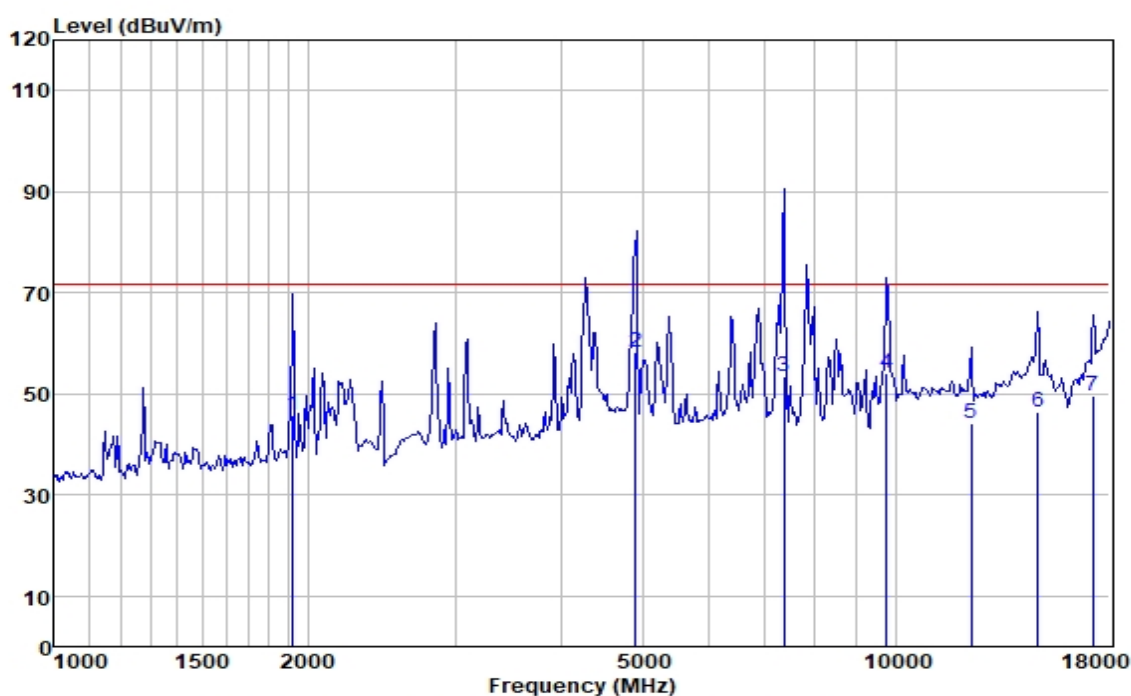
Frequency range: Above 1GHz

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

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

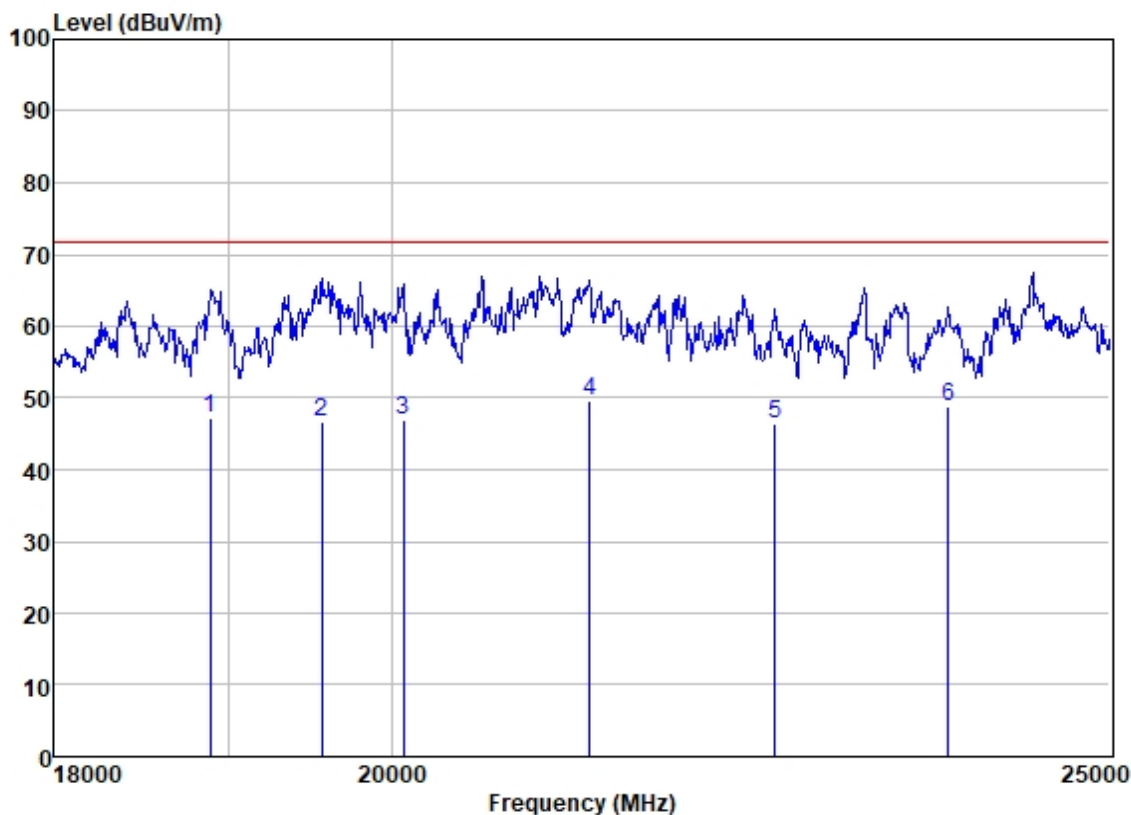
Level=Read Level + Antenna Factor + Cable Loss - Preamp Factor

Test Mode: 00; Polarity: Horizontal



	Freq	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Level	Limit Line	Over Limit	Pol/Phase	Remark
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB		
1	1921.727	53.43	26.24	3.31	37.32	45.66	71.65	-25.99	HORIZONTAL	Average
2	4911.645	55.48	34.15	5.25	36.68	58.20	71.65	-13.45	HORIZONTAL	Average
3	7378.470	47.42	36.18	6.77	36.96	53.41	71.65	-18.24	HORIZONTAL	Average
4	9753.371	44.31	38.81	7.65	36.81	53.96	71.65	-17.69	HORIZONTAL	Average
5	12290.700	32.33	38.56	9.71	36.49	44.11	71.65	-27.54	HORIZONTAL	Average
6	14788.150	29.98	41.56	10.54	35.81	46.27	71.65	-25.38	HORIZONTAL	Average
7	17186.530	31.54	42.28	12.01	36.10	49.73	71.65	-21.92	HORIZONTAL	Average

Test Mode: 00; Polarity: Horizontal



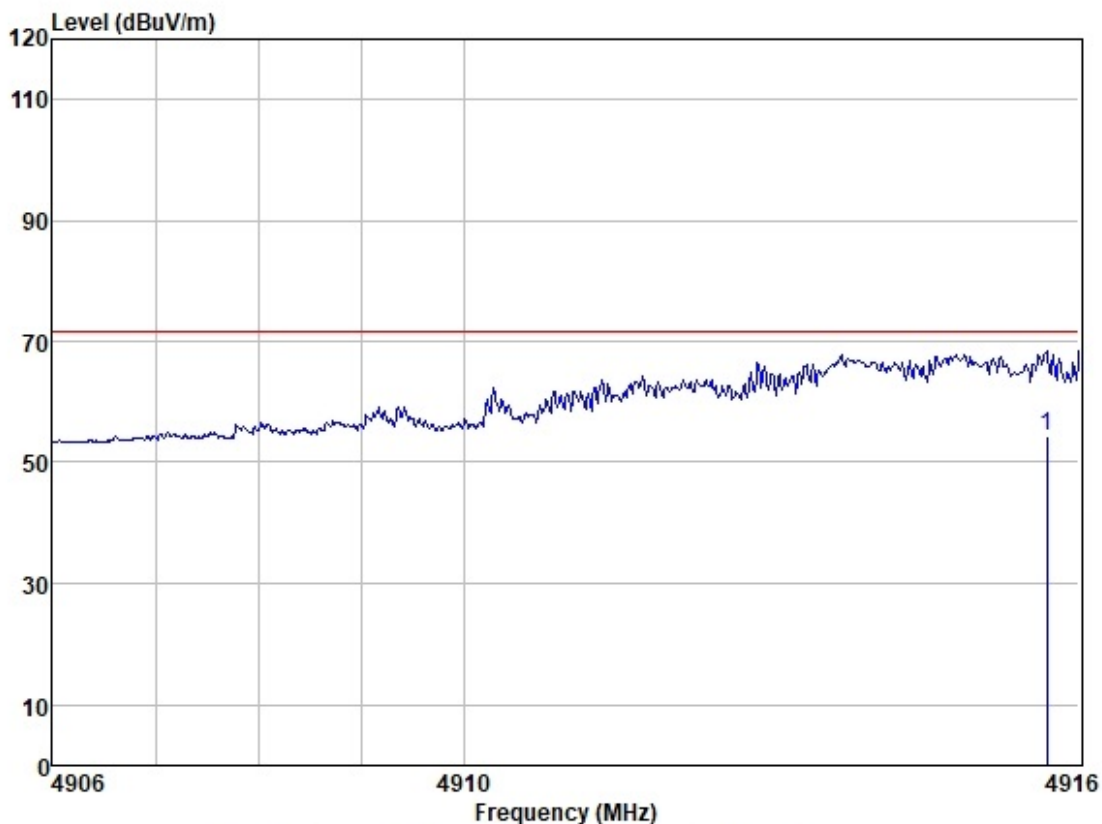
		ReadAntenna		Cable	Preamp		Limit	Over		
	Freq	Level	Factor	Loss	Factor	Level	Line	Limit	Pol/Phase	Remark
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB		
1	18896.760	27.84	37.99	16.88	35.60	47.11	71.65	-24.54	HORIZONTAL	Average
2	19559.930	27.13	38.00	17.15	35.60	46.68	71.65	-24.97	HORIZONTAL	Average
3	20067.600	27.07	38.00	17.33	35.59	46.81	71.65	-24.84	HORIZONTAL	Average
4	21262.040	28.79	37.96	18.12	35.39	49.48	71.65	-22.17	HORIZONTAL	Average
5	22527.570	23.92	39.01	18.94	35.47	46.40	71.65	-25.25	HORIZONTAL	Average
6	23774.530	24.99	39.60	20.21	36.06	48.74	71.65	-22.91	HORIZONTAL	Average



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Test Mode: 00; Polarity: Horizontal



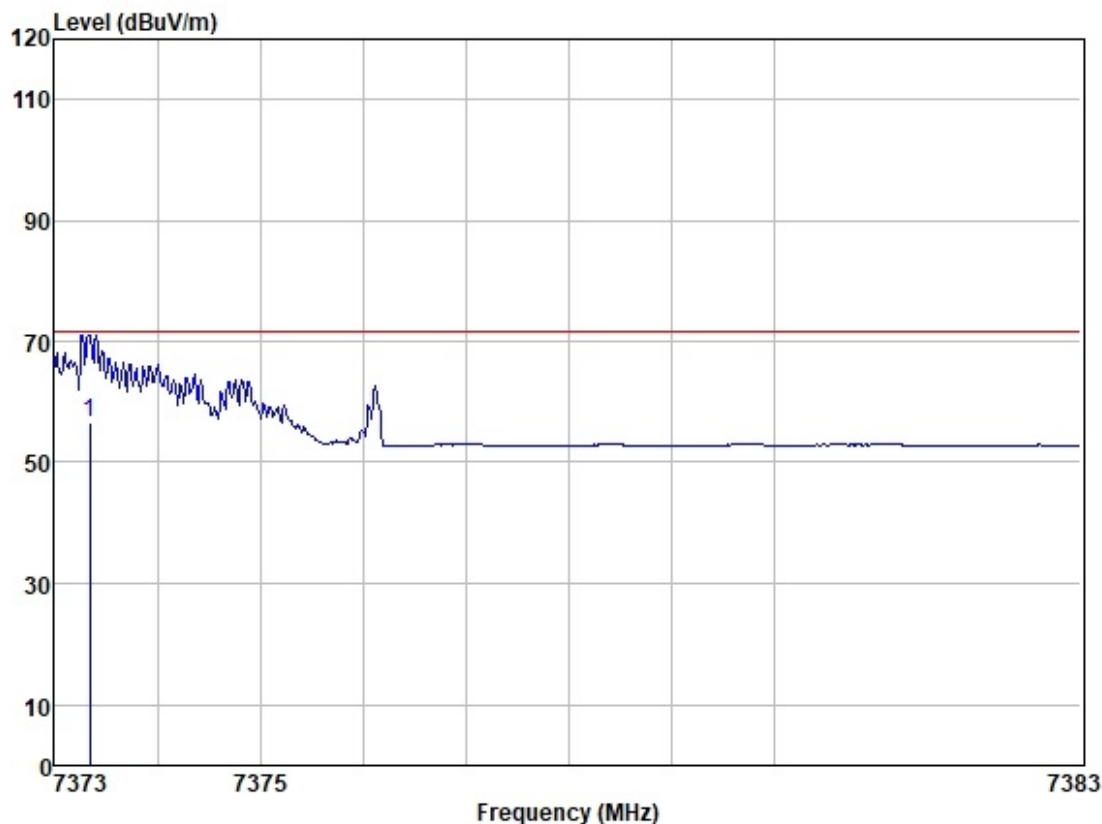
	Freq	ReadAntenna	Cable	Preamp	Level	Limit	Over		
	MHz	Level	Factor	Loss	Factor	Line	Limit	Pol/Phase	Remark
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB	
1	4915.680	51.61	34.15	5.25	36.68	54.33	71.65	-17.32	HORIZONTAL Average



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Test Mode: 00; Polarity: Horizontal



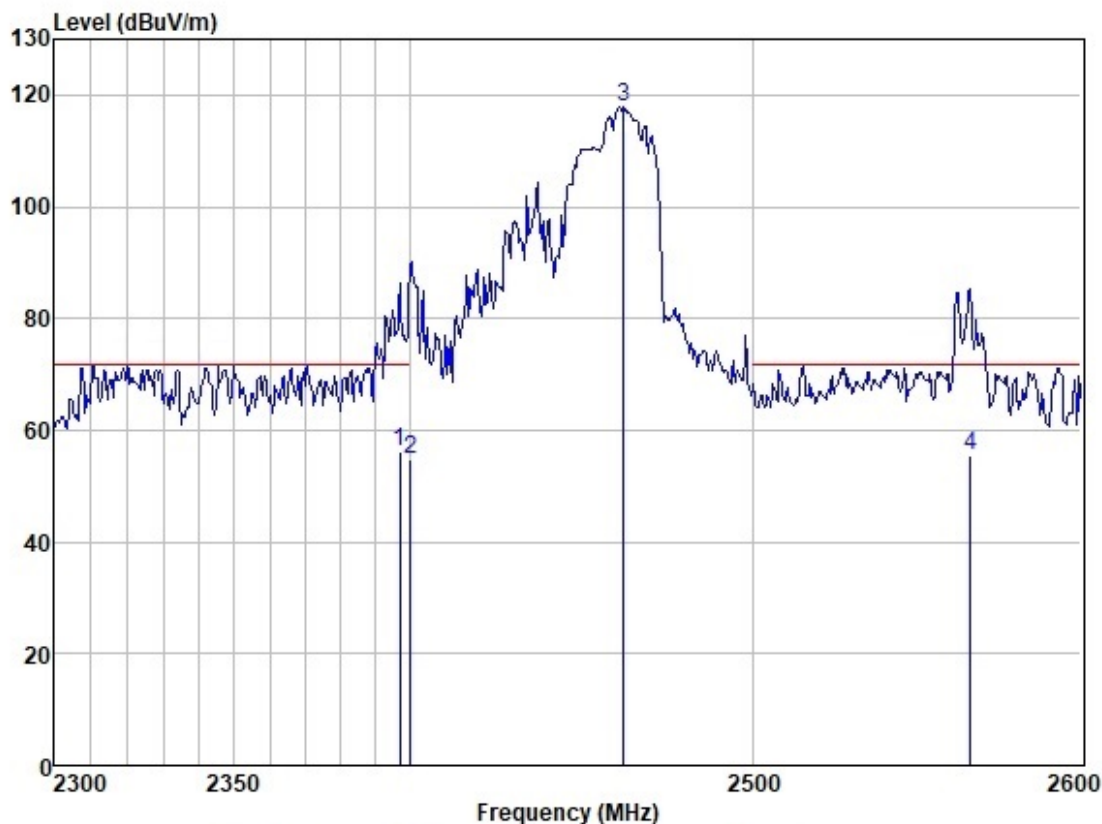
	Freq	ReadAntenna	Cable	Preamp	Level	Limit	Over		
	MHz	Level	Factor	Loss	Factor	Line	Limit	Pol/Phase	Remark
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB	
1	7373.340	50.47	36.18	6.77	36.96	56.46	71.65	-15.19	HORIZONTAL Average



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Test Mode: 00; Polarity: Horizontal



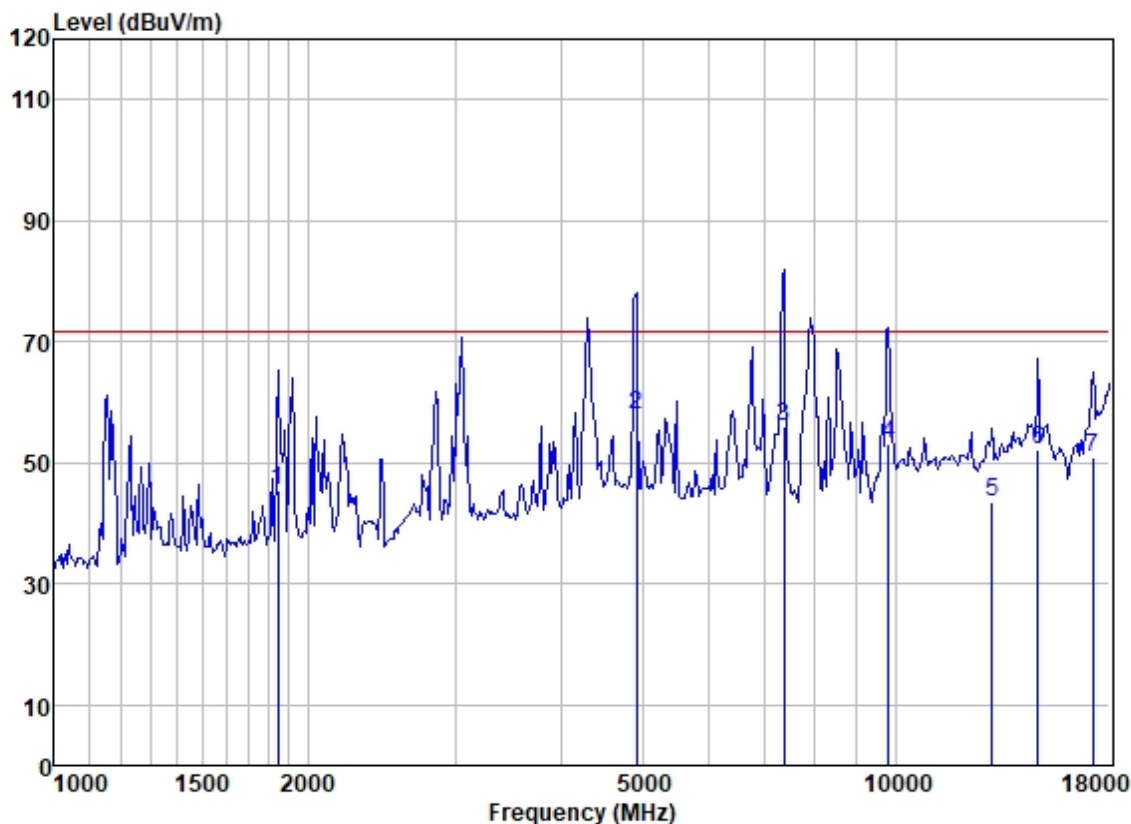
	Freq	ReadAntenna	Cable	Preamp	Level	Limit	Over		
	MHz	Level	Factor	Loss	Factor	Line	Limit	Pol/Phase	Remark
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB	
1	2396.726	24.83	27.70	3.77	0.00	56.30	71.65	-15.35	HORIZONTAL Average
2	2400.000	23.45	27.71	3.78	0.00	54.94	71.65	-16.71	HORIZONTAL Average
3	2461.647	85.29	27.82	3.81	0.00	116.92	-----	-----	HORIZONTAL peak
4	2565.800	23.51	27.94	3.87	0.00	55.32	71.65	-16.33	HORIZONTAL Average



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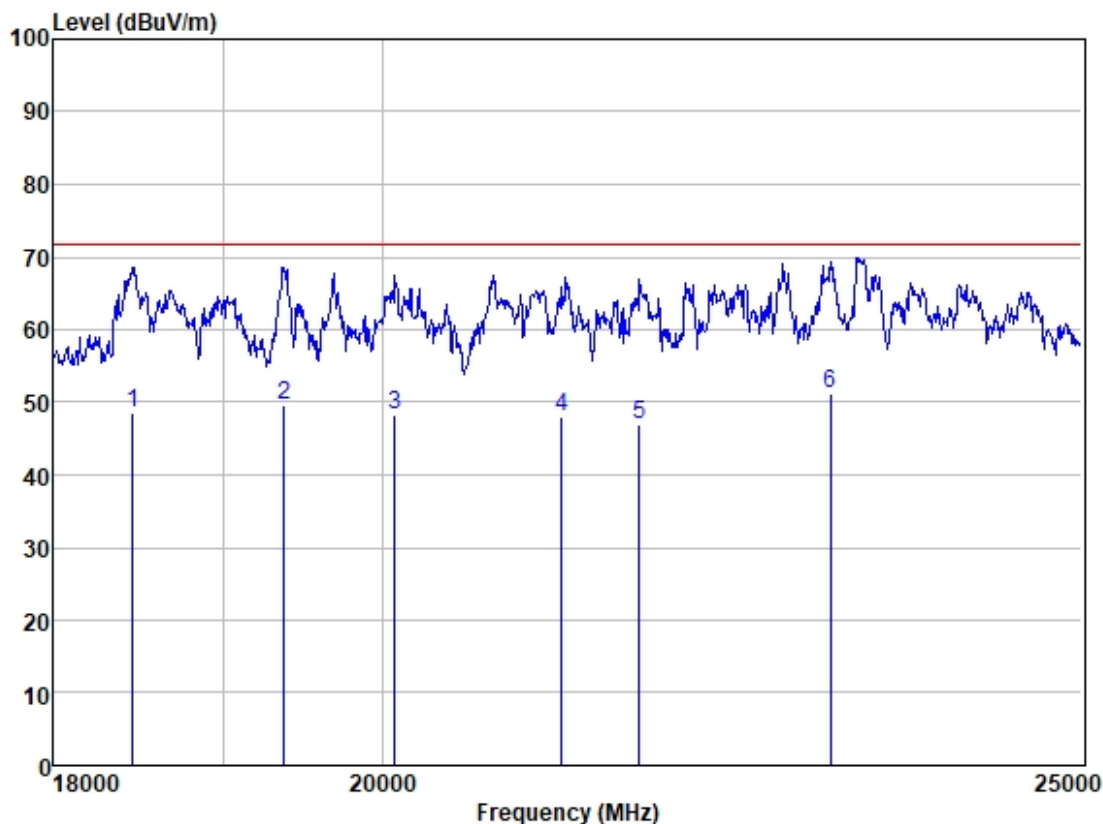
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Test Mode: 00; Polarity: Vertical



	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	1845.516	53.40	26.04	3.27	37.34	45.37	71.65	-26.28	VERTICAL	Average
2	4916.490	55.34	34.15	5.25	36.68	58.06	71.65	-13.59	VERTICAL	Average
3	7371.557	50.00	36.18	6.77	36.96	55.99	71.65	-15.66	VERTICAL	Average
4	9809.916	43.53	38.86	7.66	36.81	53.24	71.65	-18.41	VERTICAL	Average
5	13022.130	30.70	39.23	9.63	35.96	43.60	71.65	-28.05	VERTICAL	Average
6	14788.150	35.78	41.56	10.54	35.81	52.07	71.65	-19.58	VERTICAL	Average
7	17186.530	32.78	42.28	12.01	36.10	50.97	71.65	-20.68	VERTICAL	Average

Test Mode: 00; Polarity: Vertical



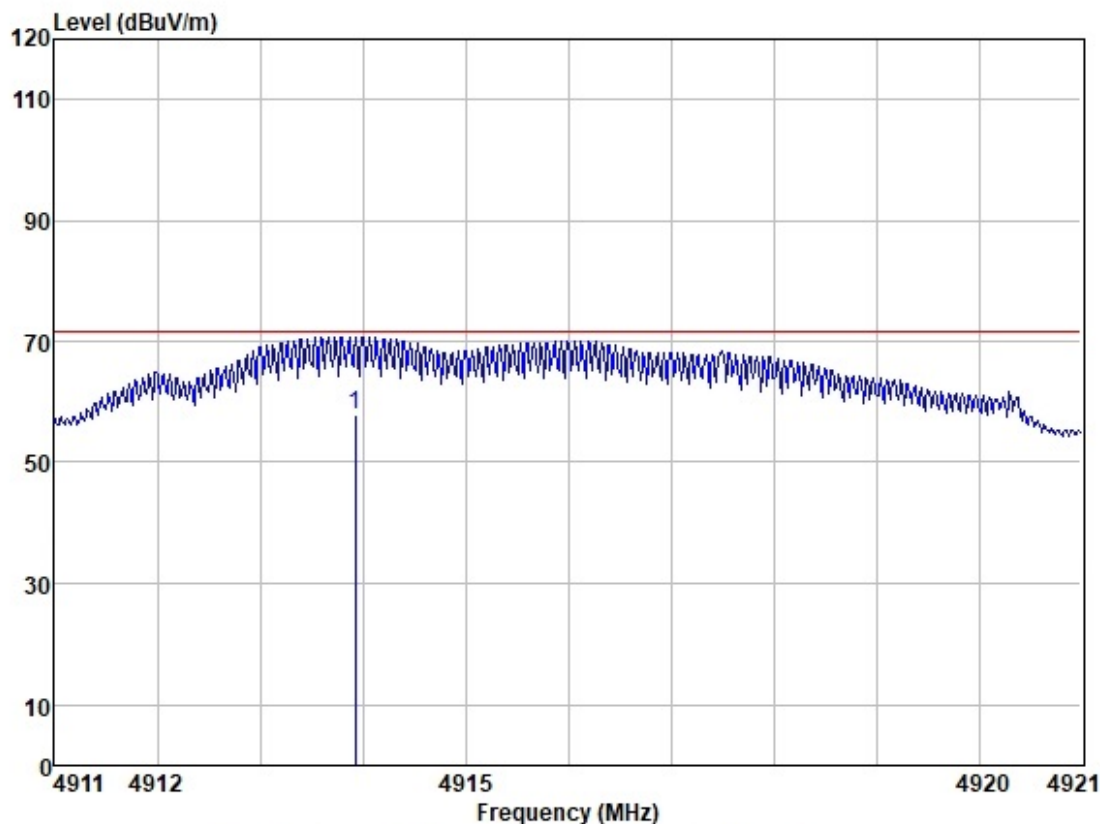
	Freq	ReadAntenna	Cable	Preamp		Limit	Over		
	MHz	Level	Factor	Loss	Factor	Line	Limit	Pol/Phase	Remark
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB	
1	18461.110	29.59	37.94	16.68	35.60	48.61	71.65	-23.04	VERTICAL Average
2	19374.480	30.17	38.00	17.02	35.60	49.59	71.65	-22.06	VERTICAL Average
3	20074.190	28.65	38.00	17.33	35.59	48.39	71.65	-23.26	VERTICAL Average
4	21171.430	27.34	37.93	18.07	35.41	47.93	71.65	-23.72	VERTICAL Average
5	21699.530	25.58	38.13	18.47	35.33	46.85	71.65	-24.80	VERTICAL Average
6	23066.750	28.12	39.60	19.25	35.75	51.22	71.65	-20.43	VERTICAL Average



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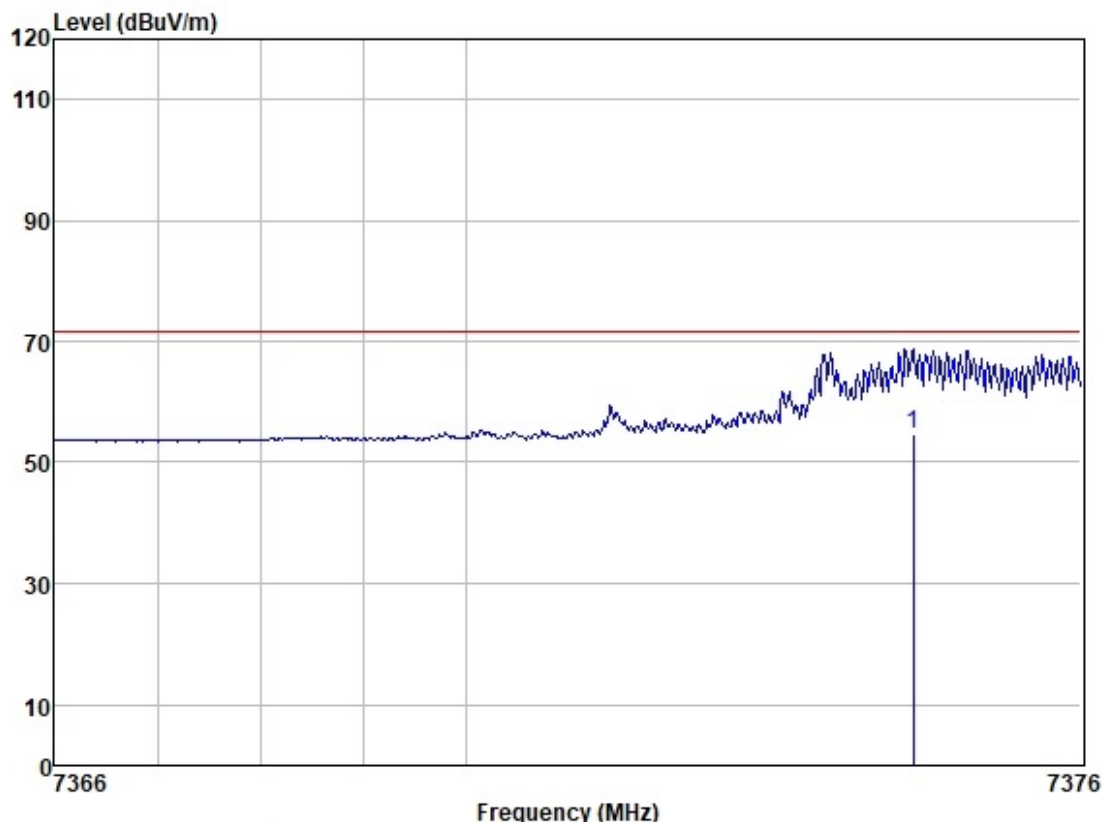
	Freq	ReadAntenna	Cable	Preamp	Level	Limit	Over		
	MHz	Level	Loss	Factor	dBuV/m	Line	Limit	Pol/Phase	Remark
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dB		
1	4913.928	54.88	34.15	5.25	36.68	57.60	71.65	-14.05	VERTICAL Average



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Test Mode: 00; Polarity: Vertical



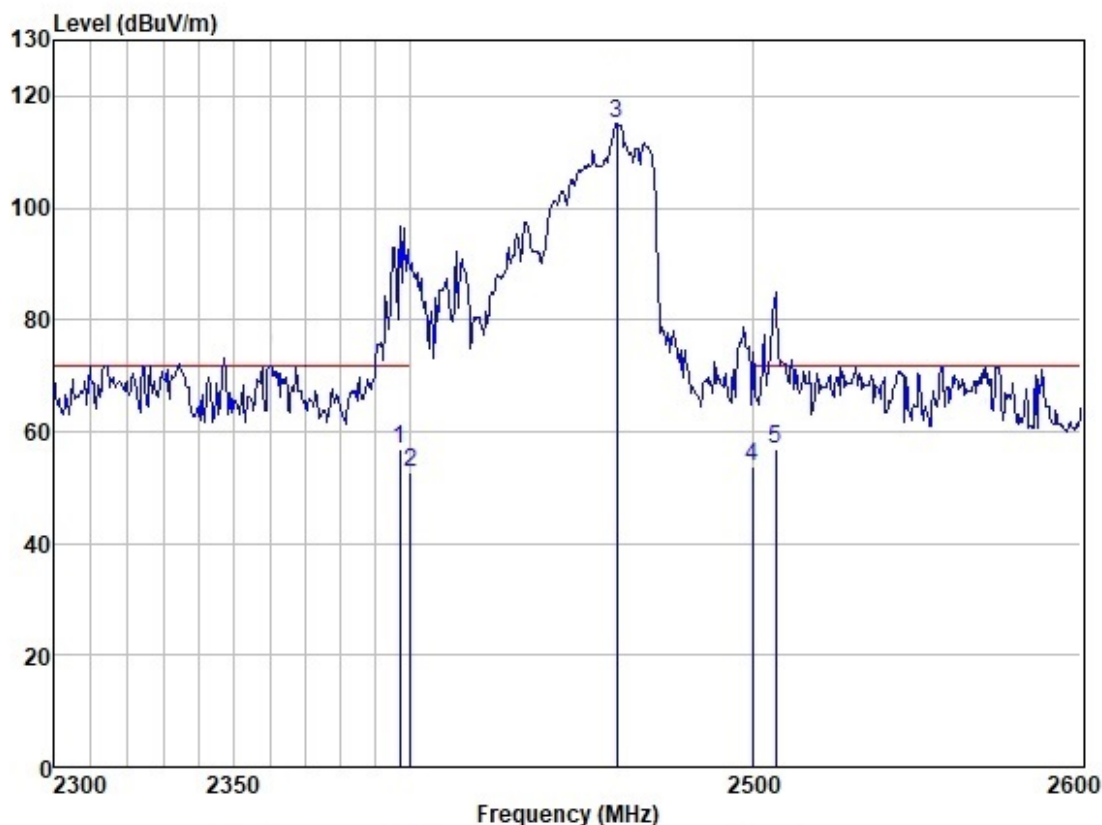
	Freq	ReadAntenna	Cable	Preamp	Level	Limit	Over		
	MHz	Level	Factor	Loss	Factor	Line	Limit	Pol/Phase	Remark
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB	
1	7374.359	48.72	36.18	6.77	36.96	54.71	71.65	-16.94	VERTICAL Average



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Test Mode: 00; Polarity: Vertical



	Freq	ReadAntenna	Cable	Preamp	Level	Limit	Over	Pol/Phase	Remark
	MHz	Level	Factor	Loss	Factor	Line	Limit		
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB	
1	2396.726	25.42	27.70	3.77	0.00	56.89	71.65	-14.76	VERTICAL Average
2	2400.000	21.04	27.71	3.78	0.00	52.53	71.65	-19.12	VERTICAL Average
3	2459.837	85.10	27.81	3.81	0.00	116.72	-----	-----	VERTICAL peak
4	2500.000	21.94	27.87	3.83	0.00	53.64	71.65	-18.01	VERTICAL Average
5	2506.722	25.14	27.88	3.83	0.00	56.85	71.65	-14.80	VERTICAL Average



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: 22.5 °C

Humidity: 52.3 % 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)
1201	412	19.9	10.3	20.5	44	1168.8

Input Power Data

Input Voltage (V)	Input Current (A)	Power Factor	Measured input power (W)	Rated input power (W)
119.99	14.64	0.933	1639	1700



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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(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 = **1168.8 W** according to clause 6.1.2

Limit=20lg(25*SQRT(power/500))+20lg(300/3)=**71.65dBuV/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



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6.6.1 E.U.T. Operation

Operating Environment:

Temperature: 24.2 °C Humidity: 56.7 % 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.

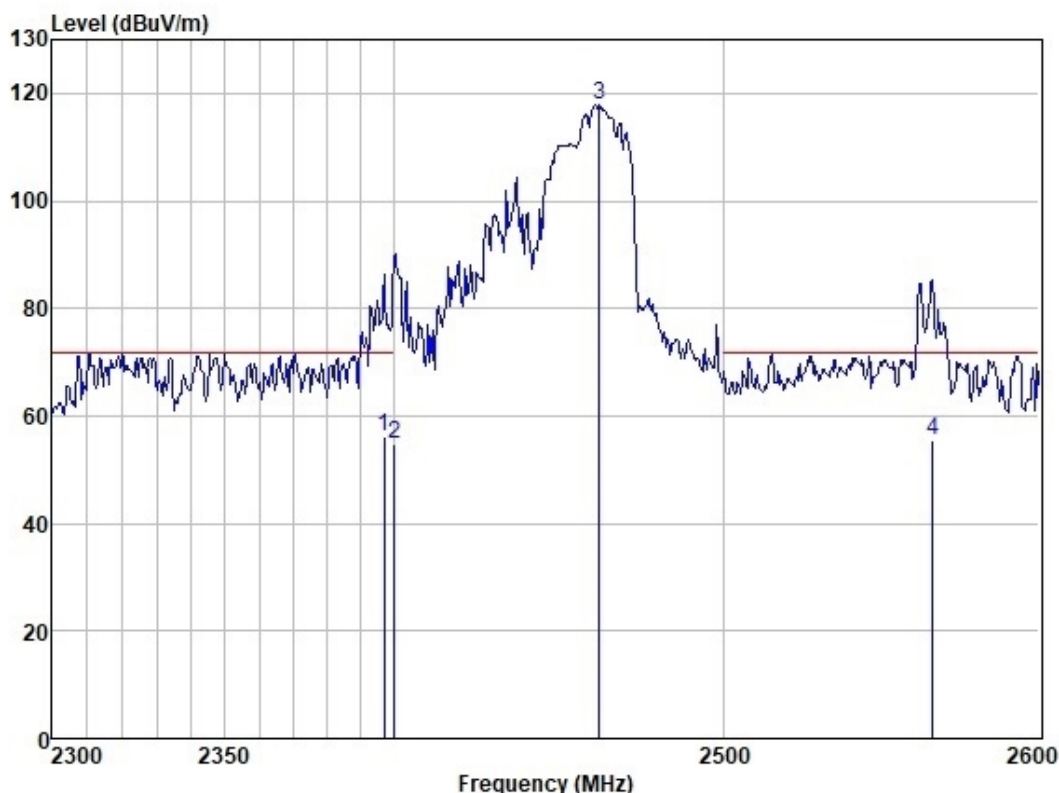


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6.6.3 Measurement Procedure and Data

Test Mode: 00; The variation of frequency with line voltage



		ReadAntenna		Cable	Preamp		Limit	Over		
	Freq	Level	Factor	Loss	Factor	Level	Line	Limit	Pol/Phase	Remark
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB		
1	2396.726	24.83	27.70	3.77	0.00	56.30	71.65	-15.35	HORIZONTAL	Average
2	2400.000	23.45	27.71	3.78	0.00	54.94	71.65	-16.71	HORIZONTAL	Average
3	2461.647	85.29	27.82	3.81	0.00	116.92	-----	-----	HORIZONTAL	peak
4	2565.800	23.51	27.94	3.87	0.00	55.32	71.65	-16.33	HORIZONTAL	Average

The variation of frequency with line voltage.

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

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

ISM frequency(MHz)	Tolerance(MHz)	Measurement Data(MHz)
2450	±50	2461.647



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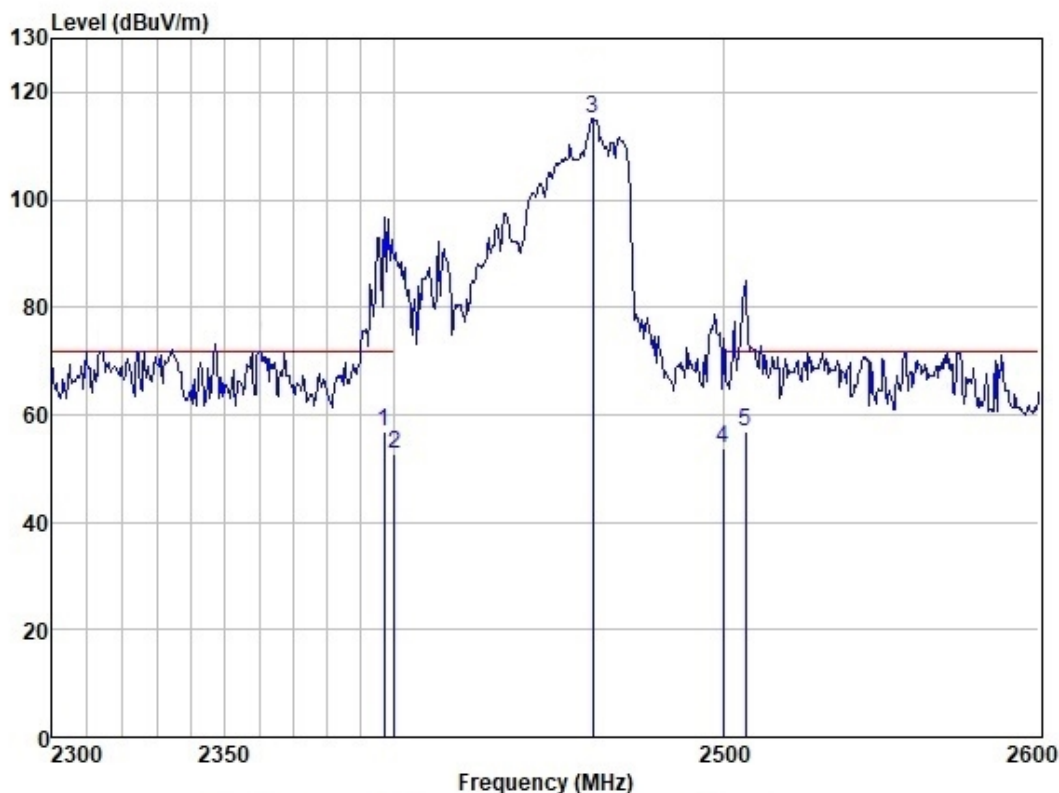
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Test Mode: 00; The variation of frequency with time



	ReadAntenna	Cable	Preamp		Limit	Over			
Freq	Level	Factor	Loss	Factor	Level	Line	Limit	Pol/Phase	Remark
MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB		
1	2396.726	25.42	27.70	3.77	0.00	56.89	71.65	-14.76	VERTICAL
2	2400.000	21.04	27.71	3.78	0.00	52.53	71.65	-19.12	VERTICAL
3	2459.837	85.10	27.81	3.81	0.00	116.72	-----	-----	VERTICAL
4	2500.000	21.94	27.87	3.83	0.00	53.64	71.65	-18.01	VERTICAL
5	2506.722	25.14	27.88	3.83	0.00	56.85	71.65	-14.80	VERTICAL

The variation of frequency with time

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

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

ISM frequency(MHz)	Tolerance(MHz)	Measurement Data(MHz)
2450	±50	2459.837



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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: 52.1 % 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
0.098	1	PASS



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7 Test Setup Photo

Refer to Appendix - Test Setup Photo for GZEM230300129804



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8 EUT Constructional Details (EUT Photos)

Refer to Appendix - External and Internal Photos for GZEM2403001785HS

- End of the Report -

