

EMC-TRF-01 Rev 1.1 Report No.: GZEM240100050002

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TEST REPORT

Application No.: GZEM2401000500HS

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.: Please refer to page 2.

Trade Mark: GALANZ, HAMILTON BEACH

Standard(s): 47 CFR Part 18

Date of Receipt: 2024-01-19

Date of Test: 2024-01-23 to 2024-01-25

Date of Issue: 2024-01-26

Test Result: Pass*

Sday Liu Ricky Liu



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^{*} In the configuration tested, the EUT complied with the standards specified above.



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Model No.:

P90J23AL-V1(L2), GLCMKZ09**R09*, GLCMKZ09**R-09*, OGCMWP09S*-09, SGCMWP09S*-09, WSCMWP09S*-09, PSCMWP09S*-09, HBCMWP09S*-09, MEWP90*, WLCMWP09S*B-09, OGCMWP09BK-09, OGCMWP09WE-09, SGCMWP09BK-09, SGCMWP09WE-09, WSCMWP09BK-09, WSCMWP09WE-09, WLCMWP09BKB-09, WLCMWP09WEB-09, PSCMWP09BK-09, PSCMWP09WE-09, HBCMWP09BK-09, HBCMWP09WE-09, MEWP901, MEWP902, 043-7016-0, HH1004190, P90J23AL-WP(L2), WLCMWP09S*-09, VSCMWP09**-09, GLCMWP09**-09, GLCMWP09BK-09, HB54**100112161, EMW953-BLACK, P90J23AL-B8A(L2), P90J23(X)-(Y) Series, P90J23AL-PG(L2), P90J23(X)-(Y)(L2) Series, HB8436127995-01, HB8436127995-02,

(P: with microwave function only.

90: denote the output power is 900W.

J23: denote different cavity in 23 liters.

Variable (X) may be L, P, SL, SP, TL, TP, 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.

检验检测专用音

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Revision Record					
Version Report No. Date Remark					
01	GZEM240100050002	2024-01-26	Original		

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



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Test Summary

Emission Part	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				

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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♣ Declaration of EUT Family Grouping:

Model No.: P90J23AL-V1(L2), GLCMKZ09**R09*, GLCMKZ09**R-09*, OGCMWP09S*-09, SGCMWP09S*-09, WSCMWP09S*-09, PSCMWP09S*-09, HBCMWP09S*-09, MEWP90*, WLCMWP09S*B-09, OGCMWP09BK-09, OGCMWP09WE-09, SGCMWP09BK-09, SGCMWP09WE-09, WSCMWP09BK-09, WSCMWP09WE-09, WLCMWP09BKB-09, WLCMWP09WEB-09, PSCMWP09BK-09, PSCMWP09WE-09, HBCMWP09BK-09, HBCMWP09WE-09, MEWP901, MEWP902, 043-7016-0 .HH1004190, P90J23AL-WP(L2), WLCMWP09S*-09, VSCMWP09**-09, GLCMWP09**-09, GLCMWP09BK-09, HB54**100112161, EMW953-BLACK, P90J23AL-B8A(L2), P90J23(X)-(Y) Series, P90J23AL-PG(L2), P90J23(X)-(Y)(L2) Series, HB8436127995-01, HB8436127995-02,

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Variable (X) may be L, P, SL, SP, TL, TP, 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 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 P90J23AL-PG(L2) was tested in this report.



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General Information

4.1 Details of E.U.T.

Power supply: AC 120V 60Hz Test voltage: AC 120V 60Hz Microwave frequency: 2450MHz

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_{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:

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

Tel: +86 20 82155555 Fax: +86 20 82075059

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:

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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Equipment List 5

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	CRTSGSSAC9 66	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	CRTSGSSAC9 66	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	2023-12-23	2026-12-22	
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 equipmen	t				
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: $66dB(\mu V)$ - $56dB(\mu V)$ quasi-peak, $56dB(\mu V)$ - $46dB(\mu V)$ average

0.5 to 5 MHz: 56dB(μ V) quasi-peak, 46dB(μ V) average 5 to 30 MHz: 60dB(μ V) quasi-peak, 50dB(μ V) average

Detector: Peak for pre-scan (9kHz resolution bandwidth) 0.15M to 30MHz

6.1.1 E.U.T. Operation

Operating Environment:

Temperature: 23.6 °C Humidity: 56.3 % RH Atmospheric Pressure: 1021 mbar

6.1.2 Test Mode Description

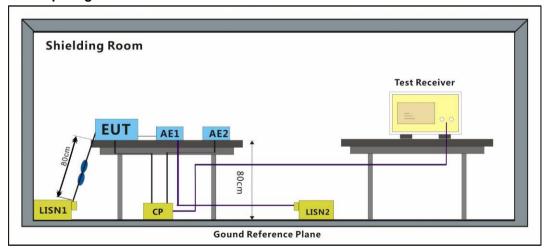
Pre-scan / Mode Final test Code Description

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

Pre-scan 01 Test the EUT in microwave mode with middle power.

Pre-scan 02 Test the EUT in microwave mode with lowest power.

6.1.3 Test Setup Diagram





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6.1.4 Measurement Procedure and Data

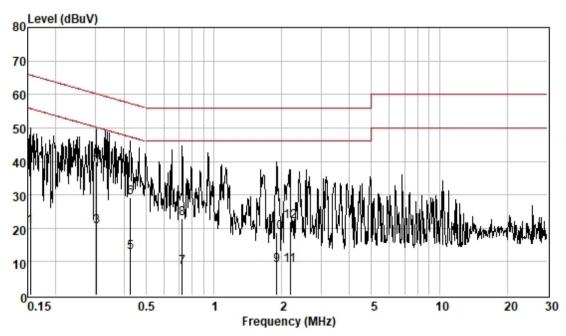
Frequency range: 150KHz-30MHz

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

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

Measured Level = Read level + Cable Loss + LISN Factor

Test Mode: 00; Line: Live line



Pol :LINE Mode : Model : Power :

		Read	Cable	LISN	Measured	Limit	Over	
	Frequenc	Level	Loss	Factor	Level	Line	Limit	Remark
	MHz	dBuV	dB	dB	dBuV	dBuV	dB	
1	0.154	10.94	0.04	9.55	20.53	55.78	-35.25	Average
2	0.154	31.85	0.04	9.55	41.44	65.78	-24.34	QP
3	0.303	10.78	0.04	9.56	20.38	50.15	-29.77	Average
4	0.303	30.39	0.04	9.56	39.99	60.15	-20.16	QP
5	0.428	3.17	0.05	9.56	12.78	47.29	-34.51	Average
6	0.428	19.49	0.05	9.56	29.10	57.29	-28.19	QP
7	0.724	-1.24	0.06	9.57	8.39	46.00	-37.61	Average
8	0.724	13.39	0.06	9.57	23.02	56.00	-32.98	QP
9	1.898	-0.71	0.12	9.57	8.98	46.00	-37.02	Average
10	1.898	9.02	0.12	9.57	18.71	56.00	-37.29	QP
11	2.178	-0.63	0.13	9.57	9.07	46.00	-36.93	Average
12	2.178	12.31	0.13	9.57	22.01	56.00	-33.99	QP



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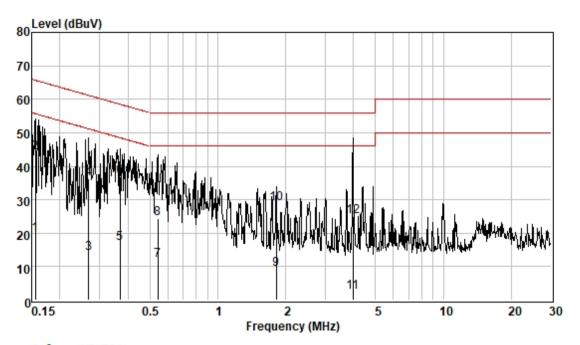
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Test Mode: 00; Line: Neutral Line



Pol :NEUTRAL

Mode Model: Power:

		Read	Cable	LISN	Measured	Limit	Over	
	Frequenc	Level	Loss	Factor	Level	Line	Limit	Remark
	MHz	dBuV	dB	dB	dBuV	dBuV	dB	
1	0.156	10.03	0.04	9.52	19.59	55.69	-36.10	Average
2	0.156	34.44	0.04	9.52	44.00	65.69	-21.69	QP
3	0.269	4.52	0.04	9.53	14.09	51.16	-37.07	Average
4	0.269	26.77	0.04	9.53	36.34	61.16	-24.82	QP
5	0.369	7.35	0.05	9.54	16.94	48.52	-31.58	Average
6	0.369	27.26	0.05	9.54	36.85	58.52	-21.67	QP
7	0.544	2.18	0.05	9.54	11.77	46.00	-34.23	Average
8	0.544	14.83	0.05	9.54	24.42	56.00	-31.58	QP
9	1.819	-0.32	0.12	9.55	9.35	46.00	-36.65	Average
10	1.819	19.12	0.12	9.55	28.79	56.00	-27.21	QP
11	3.964	-7.53	0.18	9.59	2.24	46.00	-43.76	Average
12	3.964	15.29	0.18	9.59	25.06	56.00	-30.94	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	859.5	Limit=20lg(25*SQRT(859.5 / 500))+20lg(300/3)= 70.31 dBuV/m @ 3m distance.

6.2.1 E.U.T. Operation

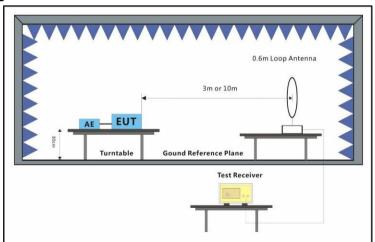
Operating Environment:

Temperature: 25.2 °C Humidity: 55.7 % RH Atmospheric Pressure: 1021 mbar

6.2.2 Test Mode Description Pre-scan / Mode

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

6.2.3 Test Setup Diagram





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6.2.4 Measurement Procedure and Data

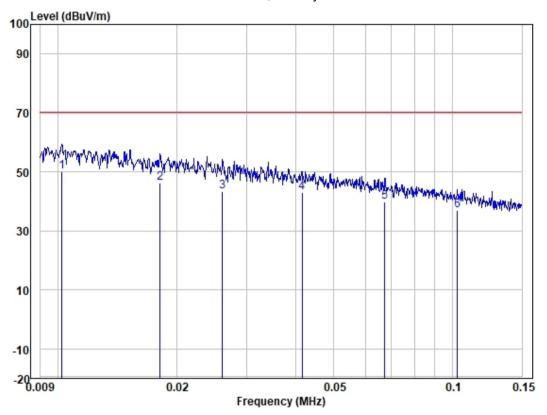
Frequency range: 9KHz-30MHz

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

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

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

Test Mode: 00; Polarity: Horizontal



Site : 966 Chamber

Job : Model : Power : Test Mode :

	Freq					Measured Level			Pol/ Phase	Remark
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB		
1	0.010	64.57	18.54	0.01	32.90	50.22	70.31	-20.09	HORIZONTAL	Average
2	0.018	64.59	14.51	0.01	32.90	46.21	70.31	-24.10	HORIZONTAL	Average
3	0.026	62.88	13.28	0.01	32.90	43.27	70.31	-27.04	HORIZONTAL	Average
4	0.042	63.57	12.40	0.01	32.90	43.08	70.31	-27.23	HORIZONTAL	Average
5	0.067	60.84	12.03	0.01	32.90	39.98	70.31	-30.33	HORIZONTAL	Average
6	0.103	57.97	11.95	0.01	32.90	37.03	70.31	-33.28	HORIZONTAL	Average



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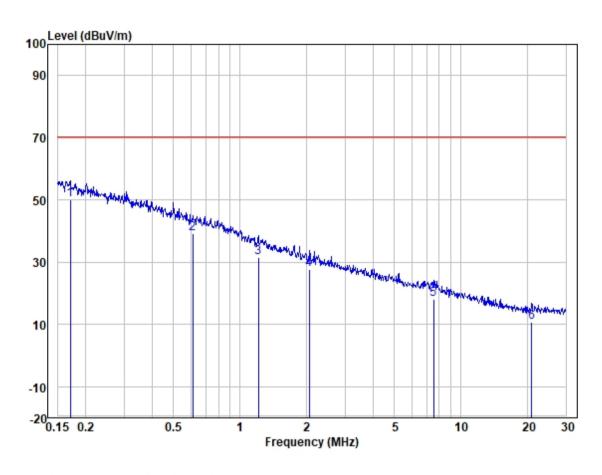


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Test Mode: 00; Polarity: Horizontal



Site : 966 Chamber

Job : Model : Power : Test Mode :

	Freq					Measured Level			Pol/ Phase	Remark
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB		
1	0.171	71.18	11.86	0.01	32.90	50.15	70.31	-20.16	HORIZONTAL	Average
2	0.611	60.11	11.81	0.05	32.90	39.07	70.31	-31.24	HORIZONTAL	Average
3	1.216	52.68	11.84	0.05	32.90	31.67	70.31	-38.64	HORIZONTAL	Average
4	2.066	48.68	11.84	0.06	32.90	27.68	70.31	-42.63	HORIZONTAL	Average
5	7.526	39.10	11.78	0.14	32.90	18.12	70.31	-52.19	HORIZONTAL	Average
6	20.924	34.97	8.54	0.25	32.90	10.86	70.31	-59.45	HORIZONTAL	Average



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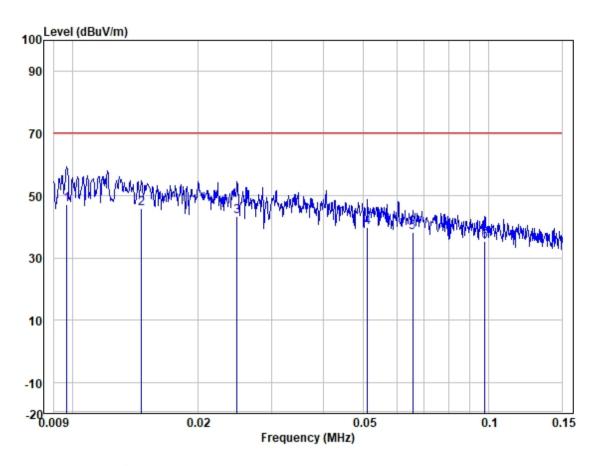
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Test Mode: 00; Polarity: Vertical



Site : 966 Chamber

Job Model Power : Test Mode

		Read	Anterna	Cable	Preamp	Measured	Limit	0ver	Pol/	
	Freq	Level	Factor	Loss	Factor	Level	Line	Limit	Phase	Remark
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB		
	nnz	ubuv	ub/III	ub	ub	ubuv/III	ubuv/III	ub		
1	0.010	61.40	18.74	0.01	32.90	47.25	70.31	-23.06	VERTICAL	Average
2	0.015	63.26	15.59	0.01	32.90	45.96	70.31	-24.35	VERTICAL	Average
3	0.025	62.85	13.49	0.01	32.90	43.45	70.31	-26.86	VERTICAL	Average
4	0.051	60.50	12.19	0.01	32.90	39.80	70.31	-30.51	VERTICAL	Average
5	0.066	59.00	12.05	0.01	32.90	38.16	70.31	-32.15	VERTICAL	Average
6	0.098	56.19	11.95	0.01	32.90	35.25	70.31	-35.06	VERTICAL	Average
										_



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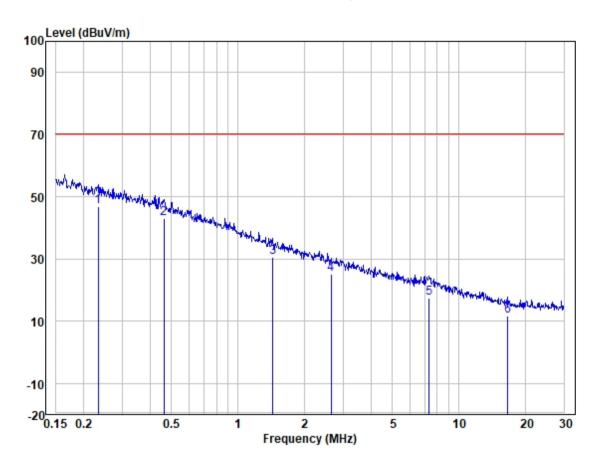


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Test Mode: 00; Polarity: Vertical



Site : 966 Chamber

Job :
Model :
Power :
Test Mode :

	Freq					Measured Level			Pol/ Phase	Remark
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB		
1	0.233	67.99	11.86	0.01	32.90	46.96	70.31	-23.35	VERTICAL	Average
2	0.464	64.22	11.82	0.01	32.90	43.15	70.31	-27.16	VERTICAL	Average
3	1.441	51.59	11.84	0.05	32.90	30.58	70.31	-39.73	VERTICAL	Average
4	2.650	46.23	11.84	0.07	32.90	25.24	70.31	-45.07	VERTICAL	Average
5	7.368	38.39	11.81	0.13	32.90	17.43	70.31	-52.88	VERTICAL	Average
6	16.661	34.98	9.45	0.22	32.90	11.75	70.31	-58.56	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	859.5	Limit=20lg(25*SQRT(859.5 / 500))+20lg(300/3)= 70.31 dBuV/m @ 3m distance.

6.3.1 E.U.T. Operation

Operating Environment:

Temperature: 22.6 °C Humidity: 42.4 % RH Atmospheric Pressure: 1021 mbar

6.3.2 Test Mode Description

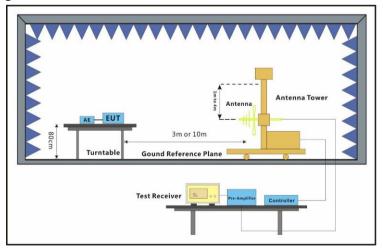
Pre-scan / Mode Final test Code Description

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

Pre-scan 01 Test the EUT in microwave mode with middle power.

Pre-scan 02 Test the EUT in microwave mode with lowest power.

6.3.3 Test Setup Diagram





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6.3.4 Measurement Procedure and Data

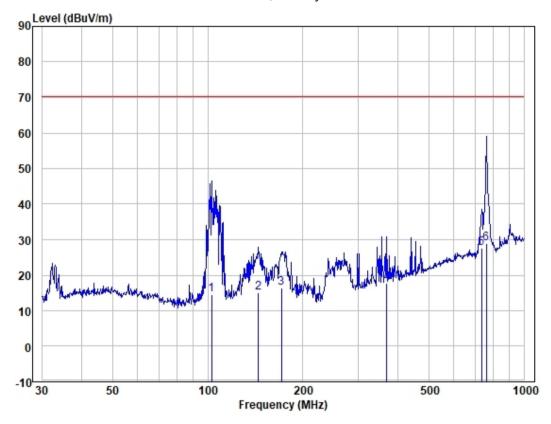
Frequency range: 30MHz-1GHz

An initial pre-scan was performed in the chamber using the spectrum analyser in peak detection mode. 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					Measured Level			Pol/ Phase	Remark
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB		
1	103.080	31.75	15.02	0.55	32.80	14.52	70.31	-55.79	HORIZONTAL	Average
2	144.842	28.30	18.80	0.65	32.80	14.95	70.31	-55.36	HORIZONTAL	Average
3	171.393	29.96	18.58	0.73	32.80	16.47	70.31	-53.84	HORIZONTAL	Average
4	368.112	28.81	20.65	1.12	32.80	17.78	70.31	-52.53	HORIZONTAL	Average
5	734.491	31.12	27.52	1.57	32.61	27.60	70.31	-42.71	HORIZONTAL	Average
6	760.704	31.71	28.05	1.62	32.42	28.96	70.31	-41.35	HORIZONTAL	Average



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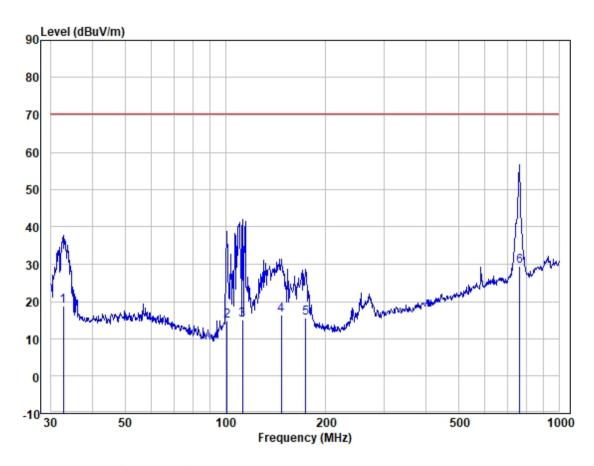


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Test Mode: 00; Polarity: Vertical



Site : 966 Chamber

Job :
Model :
Power :
Test Mode :

	Freq					Measured Level		Over Limit	Pol/ Phase	Remark
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB		
1	32.749	33.55	17.79	0.31	32.86	18.79	70.31	-51.52	VERTICAL	Average
2	101.289	32.44	14.71	0.54	32.80	14.89	70.31	-55.42	VERTICAL	Average
3	112.524	30.92	16.40	0.58	32.80	15.10	70.31	-55.21	VERTICAL	Average
4	146.888	29.66	18.91	0.66	32.80	16.43	70.31	-53.88	VERTICAL	Average
5	173.814	29.28	18.40	0.74	32.80	15.62	70.31	-54.69	VERTICAL	Average
6	763.376	32.21	28.13	1.63	32.41	29.56	70.31	-40.75	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	859.5	Limit=20lg(25*SQRT(859.5 / 500))+20lg(300/3)= 70.31 dBuV/m @ 3m distance.

6.4.1 E.U.T. Operation

Operating Environment:

Temperature: 19.4 °C Humidity: 48.7 % RH Atmospheric Pressure: 1021 mbar

6.4.2 Test Mode Description

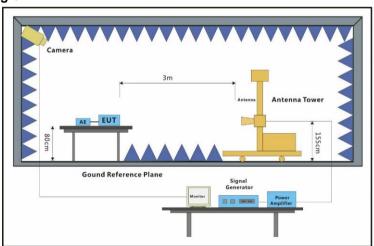
Pre-scan / Mode Final test Code Description

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

Pre-scan 01 Test the EUT in microwave mode with middle power.

Pre-scan 02 Test the EUT in microwave mode with lowest power.

6.4.3 Test Setup Diagram





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6.4.4 Measurement Procedure and Data

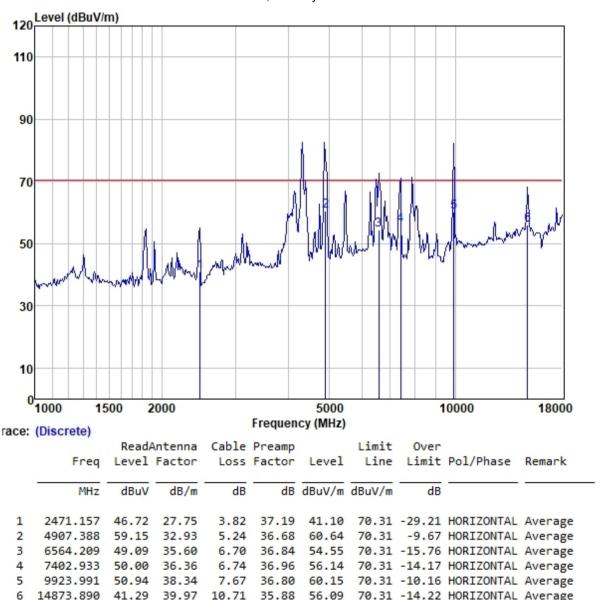
Frequency range: Above 1GHz

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





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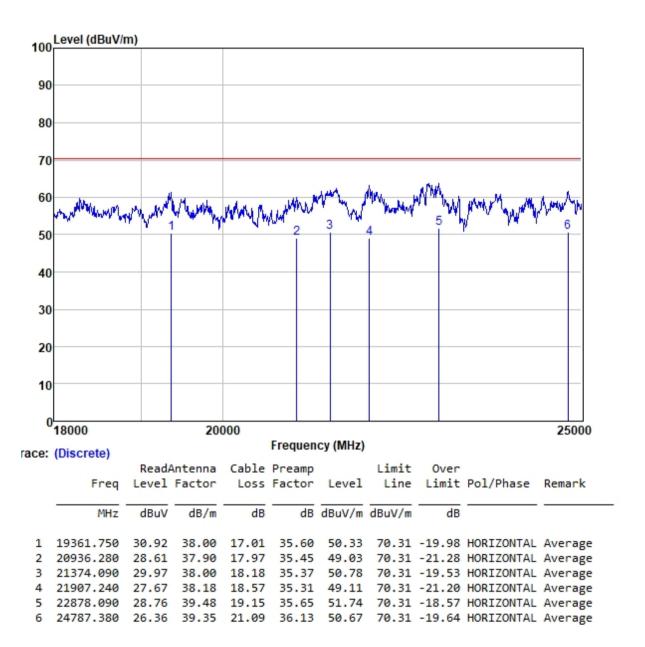
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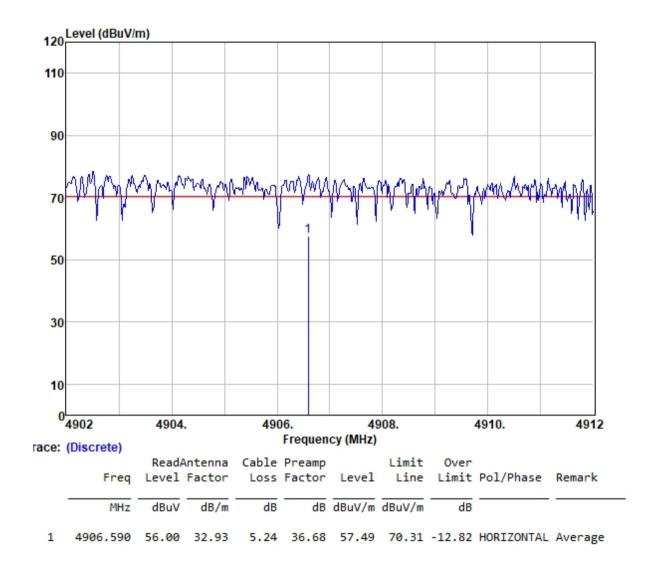
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Test Mode: 00; Polarity: Horizontal





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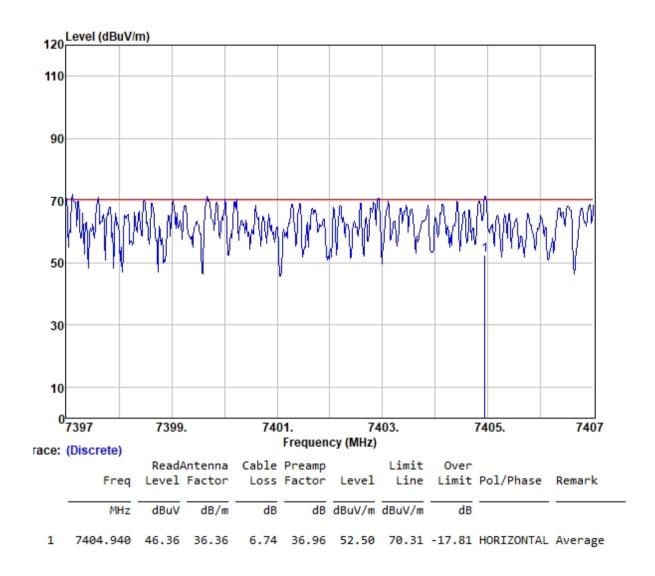
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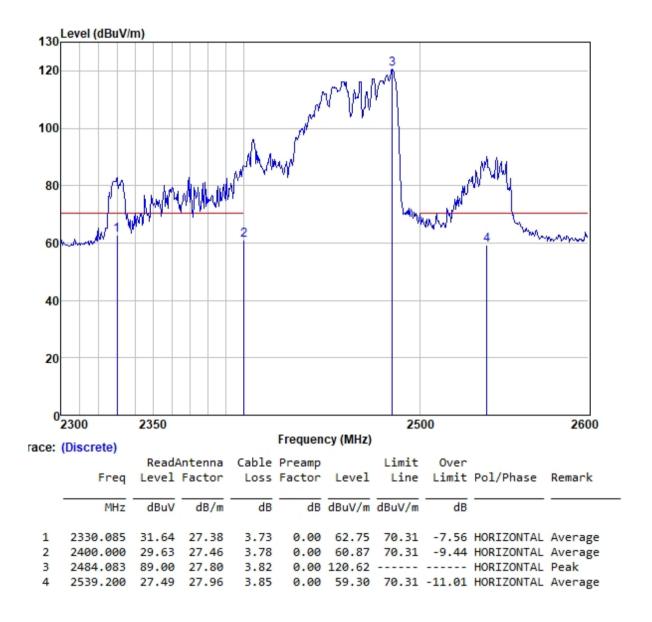
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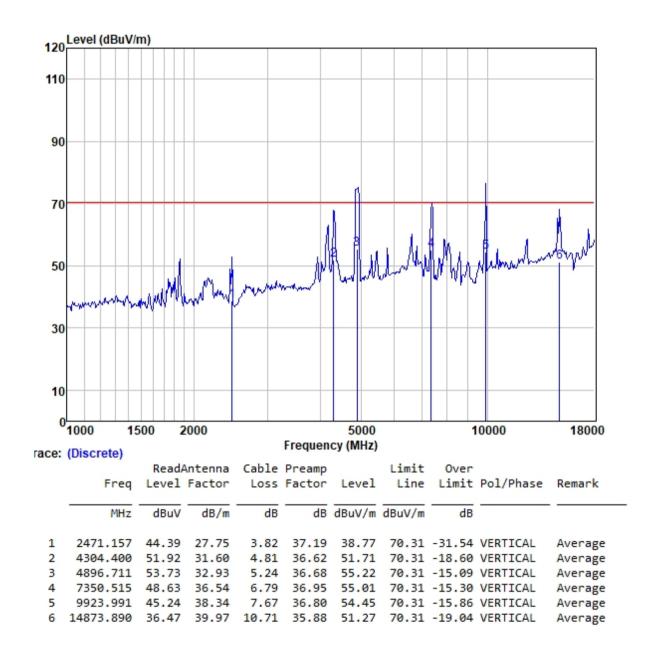
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Test Mode: 00; Polarity: Vertical





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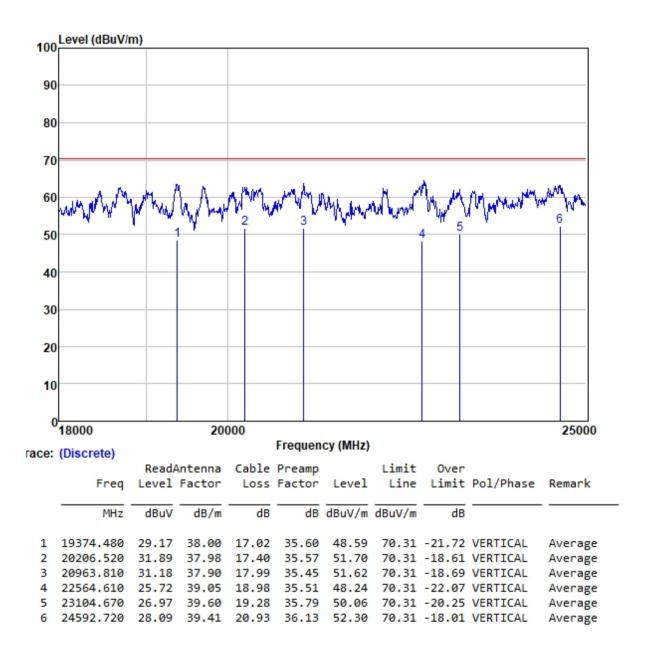
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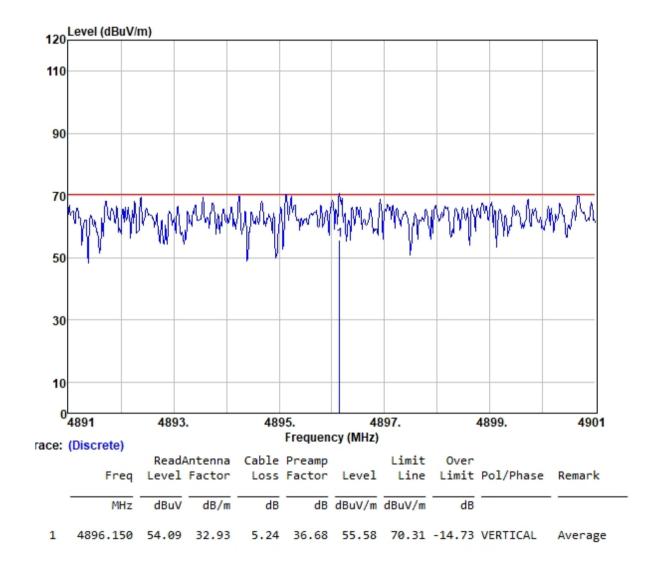
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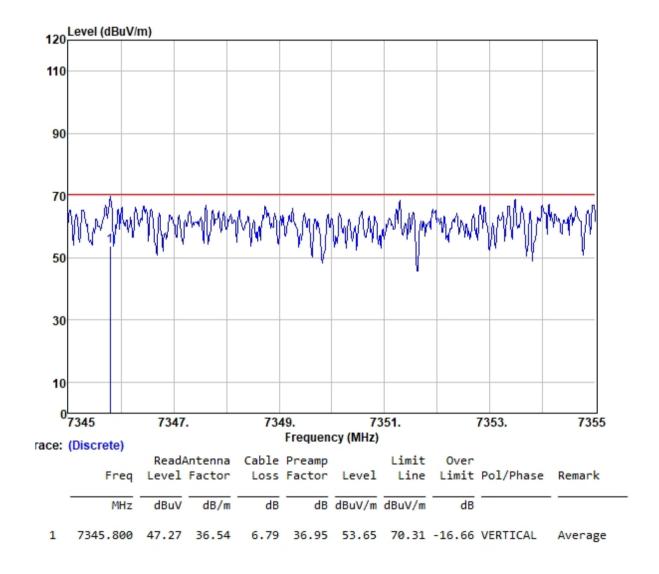
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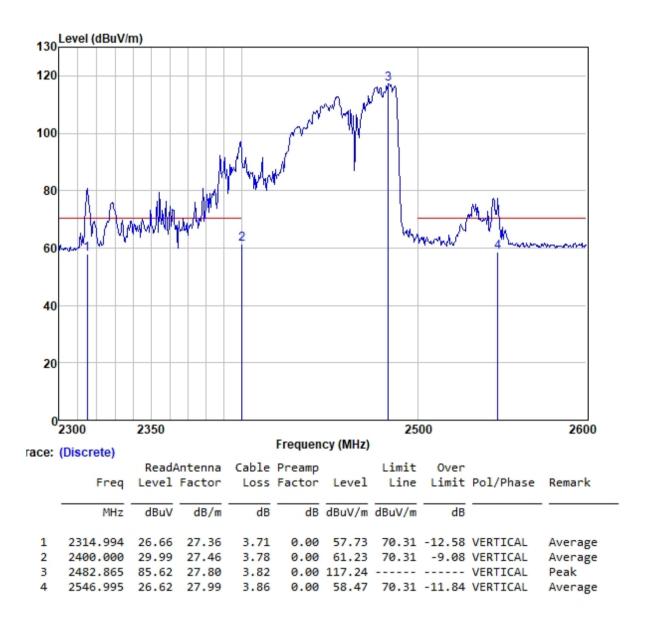
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6.5 Output Power Measurement

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

Limit:

Power output Measurement:

Formula:

$$P = \frac{4,187 \cdot m_{\rm W} (T_2 - T_1) + 0,55 \cdot m_{\rm C} (T_2 - T_0)}{t}$$

NOTE:

P is the microwave power output, in watts

mw is the mass of the water, in grams

mc is the mass of the container, in grams

To 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: 19.8 °C Humidity: 52.5 % RH Atmospheric Pressure: 1021 mbar

6.5.2 Test Mode Description

Pre-scan / Mode Final test Code Description

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



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6.5.3 Measurement Procedure and Data

Output Power Data

Mass of water (g)	Mass of the container (g)	Ambient temperature (°C)	Initial temperature (°ℂ)	Final temperature (°C)	Heating time (s)	Power output (W)
1003	436	19.8	10.3	20.3	49	859.5

Input Power Data

Input Voltage (V)	Input Current (A)	Power Factor	Measured input power (W)	Rated input power (W)
120.02	12.04	0.942	1361	1400



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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
500 or more	25*SQRT(power/500)

Power =859.5 W according to clause 6.1.2

Limit=20lg(25*SQRT(power/500))+20lg(300/3)=70.31dBuV/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: 19.4 °C Humidity: 48.7 % RH Atmospheric Pressure: 1021 mbar



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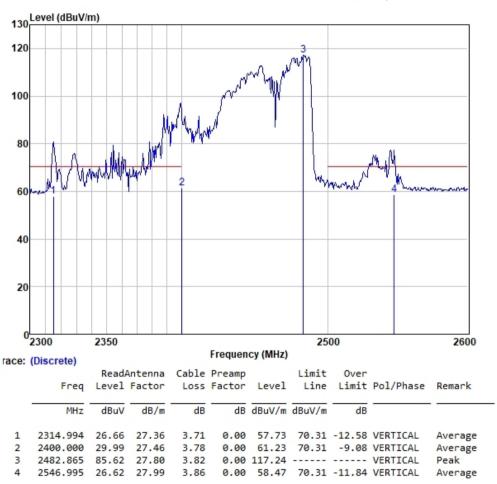
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6.6.2 Test Mode Description

Pre-scan / Final test		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 time



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	2483



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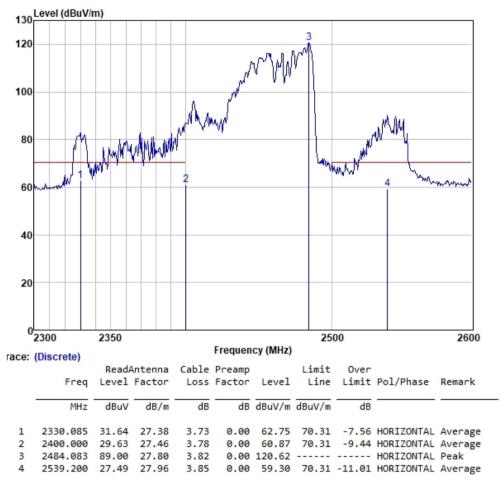
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Test Mode: 00; The variation of frequency with line voltage



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	2484



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6.7 Radiation Hazard Test

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

Test distance: Five centimeters from the oven surface

6.7.1 E.U.T. Operation

Operating Environment:

Temperature: 22.5 °C Atmospheric Pressure: 1021 mbar Humidity: 52.4 % RH

6.7.2 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. Test the EUT in microwave mode with lowest power. Pre-scan 02

6.7.3 Measurement Procedure and Data

Maximum measure level (mW/cm²)	Limit (mW/cm²)	Test Result	
0.085	1	Pass	



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Test Setup Photo 7

Refer to Appendix - Test Setup Photo for GZEM240100050002



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EUT Constructional Details (EUT Photos) 8

Refer to Appendix - External and Internal Photos for GZEM2401000500HS

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