

TEST REPORT

Application No.: GZEM2401000573HS
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.: GSWWD09S1A09A, GSWWD09S2A09A, GSWWD09BKA09A, D90D25ASPRIII-WD, D90D25(X)RIII-(Y), D90D25(X)-(Y), FMAN09-BL, FM**09-**, D90D25ASPRIII-BM1-FR03, D90D25ASPRIII-WD(L2), D90D25(X)RIII-(Y)(L2), GSWWD09S1A09B
(Variable (X) may be AL, AP, APH, DAPH, 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.
"*" could be 0-9 or A-Z) ♣
♣ 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: 2024-01-25
Date of Test: 2024-01-27 to 2024-01-30
Date of Issue: 2024-02-18

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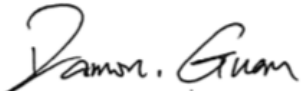
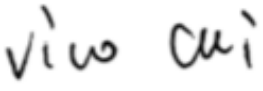
* In the configuration tested, the EUT complied with the standards specified above.



Ricky Liu
Manager



Revision Record			
Version	Report No.	Date	Remark
01	GZEM240100057302	2024-02-18	Original

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.

♣Declaration of EUT Family Grouping:

Model No.: GSWWD09S1A09A, GSWWD09S2A09A, GSWWD09BKA09A, D90D25ASPRIII-WD, D90D25(X)RIII-(Y), D90D25(X)-(Y), FMAN09-BL, FM**09-**, D90D25ASPRIII-BM1-FR03, D90D25ASPRIII-WD(L2), D90D25(X)RIII-(Y)(L2), GSWWD09S1A09B

(Variable (X) may be AL, AP, APH, DAPH, 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.

"" could be 0-9 or A-Z)

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, model name.

Therefore only one model D90D25ASPRIII-WD(L2) 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	11
6.1 Conducted Emissions at Mains Terminals (150kHz-30MHz)	11
6.1.1 E.U.T. Operation	11
6.1.2 Test Mode Description	11
6.1.3 Test Setup Diagram	11
6.1.4 Measurement Procedure and Data	12
6.2 Radiated Emissions (Magnetic field Strength)(9kHz-30MHz)	14
6.2.1 E.U.T. Operation	14
6.2.2 Test Mode Description	14
6.2.3 Test Setup Diagram	14
6.2.4 Measurement Procedure and Data	15
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	35
6.6.2 Test Mode Description	36
6.6.3 Measurement Procedure and Data	36
6.7 Radiation Hazard Test.....	38



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6.7.1	E.U.T. Operation	38
6.7.2	Test Mode Description	38
6.7.3	Measurement Procedure and Data	38
7	Test Setup Photo.....	39
8	EUT Constructional Details (EUT Photos)	40



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4 General Information

4.1 Details of E.U.T.

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

4.2 Description of Support Units

1000mL of water in the beaker for power output and frequency measurement.
One of 700 and the other of 300mL of water for second and third harmonic radiation measurement.
700mL of water for all other measurement

4.3 Measurement Uncertainty

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

4.4 Test Location

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

- **ACMA**

SGS-CSTC Standards Technical Services Co., Ltd., EMC Laboratory can also perform testing for the Australian/New Zealand Regulatory Compliance Mark (RCM).

- **SGS UK(Certificate No.: 32), SGS-TUV SAARLAND and SGS-FIMKO**

Have approved SGS-CSTC Standards Technical Services Co., Ltd., EMC Laboratory as a supplier of EMC TESTING SERVICES and SAFETY TESTING SERVICES.

- **FCC Recognized Accredited Test Firm(Registration No.: 486818)**

SGS-CSTC Standards Technical Services Co., Ltd., EMC Laboratory has been accredited and fully described in a report filed with the (FCC) Federal Communications Commission. The acceptance letter from the FCC is maintained in our files. Designation Number: CN5016, Test Firm Registration Number: 486818.

- **ISED (Registration No.: 4620B, CAB identifier: CN0052)**

SGS-CSTC Standards Technical Services Co., Ltd., has been registered by Innovation Science and Economic Development Canada for Wireless Device Testing laboratories to test to Canadian radio equipment requirements. Registration No. 4620B, CAB identifier: CN0052.

- **VCCI (Registration No.: R-12460, C-12584, G-20107 and T-11179)**

The 10m Semi-anechoic chamber, 966 Anechoic Chamber and Shielded Room of SGS-CSTC Standards Technical Services Co., Ltd. have been registered in accordance with the Regulations for Voluntary Control Measures with Registration No.: R-12460, C-12584, G-20107 and T-11179 respectively.

- **CBTL (Lab Code: TL129)**

SGS-CSTC Standards Technical Services Co., Ltd., E&E Laboratory has been assessed and fully comply with the requirements of ISO/IEC 17025:2017, the Basic Rules, IECEE 01 and Rules of procedure IECEE 02, and the relevant IECEE CB-Scheme Operational documents.

4.6 Deviation from Standards

None

4.7 Abnormalities from Standard Conditions

None



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5 Equipment List

Conducted Emissions at Mains Terminals (150kHz-30MHz)					
Equipment	Manufacturer	Model No.	Inventory No.	Cal Date	Cal Due Date
Coaxial Cable	HangTianXing	2m	EMC0107	2023-08-04	2024-08-03
Shielding Room	ChangZhou ZhongYu	8m x 3m x 3.8m	EMC0306	2022-10-16	2025-10-15
Two-Line V-Network-GZ	Rohde & Schwarz	ENV216	EMC2135	2023-09-08	2024-09-07
EMI Test Receiver (9kHz-3.6GHz)	Rohde & Schwarz	ESR3	EMC2221	2023-05-19	2024-05-18
Test Software E3r	Audix	Ver.6.11812	GZE100-77	N/A	N/A
Artificial Mains Network (LISN)	AFJ Instruments	LT32C	EMC2046	2023-10-20	2024-10-19

Radiated Emissions (Magnetic field Strength)(9kHz-30MHz)					
Equipment	Manufacturer	Model No.	Inventory No.	Cal Date	Cal Due Date
Coaxial Cable (RE 2m Loop)	INFINITE	CC223N-10	EMC0703	2023-06-25	2025-06-24
2m Large Loop Antenna System (ZN3040)	ZHINAN	ZN3040	EMC2187	2022-03-26	2024-03-25
Amplifier(9k-1000MHz)	SONOMA	310	EMC2237	2023-04-13	2024-04-12
Active Loop Antenna-RED	ETS-Lindgren	6502	EMC2190	2022-04-06	2024-04-05
EMI Test Receiver (1Hz-8GHz)	Rohde & Schwarz	ESW8	EMC2229	2023-02-20	2024-02-19
Test Software E3	Audix	Ver.6.120110a	GZE100-61	N/A	N/A
966 Anechoic Chamber	Shenzhen C.R.T	CRTSGSSAC966	EMC2230	2022-04-12	2025-04-11
Coaxial Cable	Mirco-COAX UTIFLEX ve	LA2-C125-8000	EMC2239	2023-06-14	2025-06-13

Radiated Emissions (30MHz-1GHz)					
Equipment	Manufacturer	Model No.	Inventory No.	Cal Date	Cal Due Date
966 Anechoic Chamber	Shenzhen C.R.T	CRTSGSSAC966	EMC2230	2022-04-12	2025-04-11
EMI Test Receiver(1Hz-8GHz)	Rohde & Schwarz	ESW8	EMC2229	2023-02-20	2024-02-19
Amplifier(9k-1000MHz)	SONOMA	310	EMC2237	2023-04-13	2024-04-12
TRILOG Broadband Antenna (25M-2GHz)	SCHWRZBECK	VULB 9168	EMC2238	2022-04-20	2025-04-19
Coaxial Cable	Mirco-COAX UTIFLEX ve	LA2-C125-8000	EMC2239	2023-06-14	2025-06-13
Test Software E3	Audix	Ver.6.191211	GZE100-81	N/A	N/A



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Radiated Emissions (above 1GHz)					
Equipment	Manufacturer	Model No.	Inventory No.	Cal Date	Cal Due Date
1GHz-26.5 GHz Pre-Amplifier	Agilent	8449B	EMC0521	2023-11-10	2024-11-09
EMI Test Receiver (10Hz-26.5GHz)	Rohde & Schwarz	ESIB26	EMC0522	2023-12-15	2024-12-14
Chamber cable (Above 1GHz)	Scoflex	KMKM-8.0m	EMC0545	2022-08-24	2024-08-23
Horn Antenna (1GHz-18GHz)	SCHWARZBECK MESS-ELEKTRONIK	BBHA 9120D	EMC2026	2022-09-23	2025-09-22
2.4GHz Filter	Micro-Tronics	BRM 50702	EMC2069	2023-11-10	2024-11-09
EXA Signal Analyzer (10Hz-44GHz)	Keysight	N9010A	EMC2138	2023-08-23	2024-08-22
966 Anechoic Chamber	C.R.T	9m x 6m x 6m	EMC2142	2023-12-20	2026-12-19
Test Software E3	Audix	Ver.6.120110a	GZE100-61	N/A	N/A

Output Power Measurement					
Equipment	Manufacturer	Model No.	Inventory No.	Cal Date	Cal Due Date
Digital thermometer	FLUKE	51_2	EMC2200	2023-07-25	2024-07-24
Digital power analyzer for harmonics & flicker testing	EMTEST	DPA 500N	EMC2235	2023-04-21	2024-04-20
Programmable multifunctional ac/dc power source	EMTEST	NETWAVE 7-400	EMC2234	2023-04-21	2024-04-20
NET.Control	EMTEST	Ver 3.2.3	GZE100-80	N/A	N/A

Operating Frequency Measurement					
Equipment	Manufacturer	Model No.	Inventory No.	Cal Date	Cal Due Date
EMI Test Receiver (10Hz-26.5GHz)	Rohde & Schwarz	ESIB26	EMC0522	2023-12-15	2024-12-14
Chamber cable (Above 1GHz)	Scoflex	KMKM-8.0m	EMC0545	2022-08-24	2024-08-23
Horn Antenna (1GHz-18GHz)	SCHWARZBECK MESS-ELEKTRONIK	BBHA 9120D	EMC2026	2022-09-23	2025-09-22
966 Anechoic Chamber	C.R.T	9m x 6m x 6m	EMC2142	2023-12-20	2026-12-19
Test Software E3	Audix	Ver.6.120110a	GZE100-61	N/A	N/A

Radiation Hazard Test					
Equipment	Manufacturer	Model No.	Inventory No.	Cal Date	Cal Due Date
Electric Field Probe(100KHz-3GHz)	WANDEL & GOLTERMANN	EMR-20	EMC0907	2023-05-11	2024-05-10



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EMC-TRF-01 Rev 1.1

Report No.: GZEM240100057302

Page: 10 of 40

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

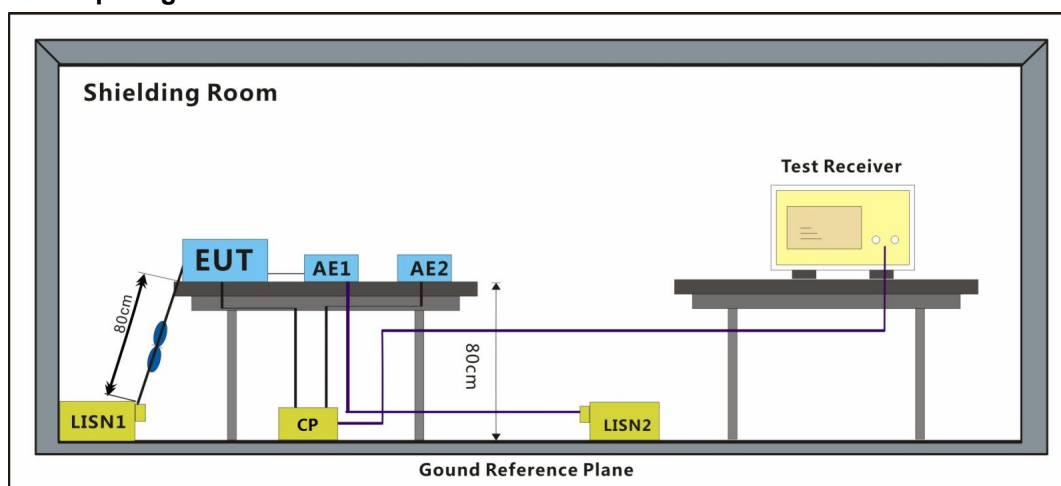
6.1.1 E.U.T. Operation

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

6.1.2 Test Mode Description

Pre-scan / Mode	Code	Description
Final test		
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

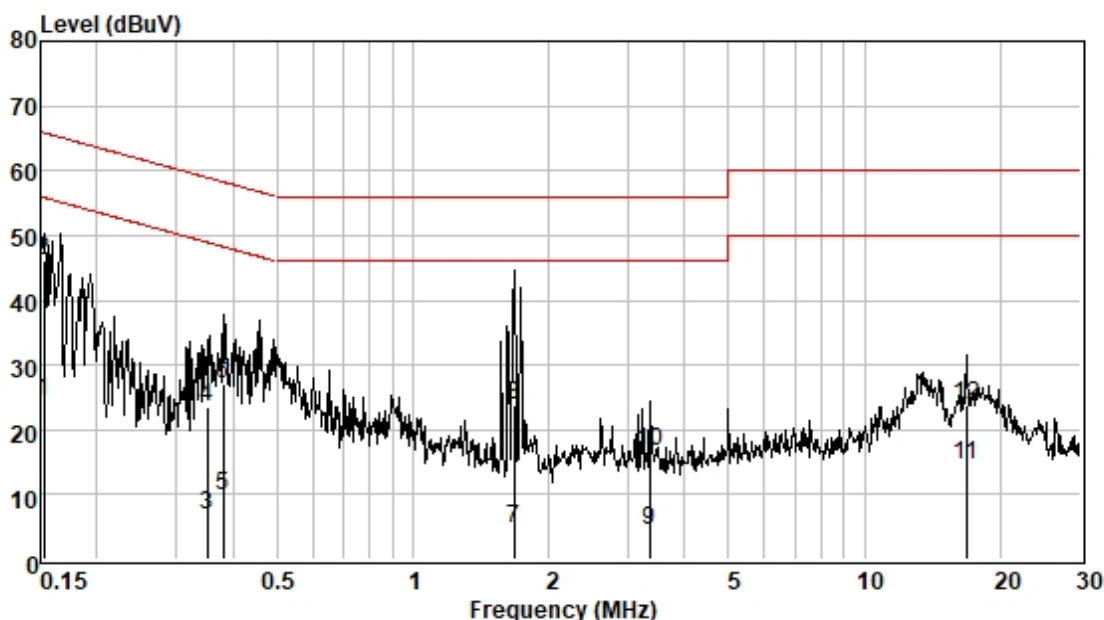
Frequency range: 150KHz-30MHz

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 : Microwave
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	0.152	14.91	0.04	9.55	24.50	55.87	-31.37	Average
2	0.152	36.65	0.04	9.55	46.24	65.87	-19.63	QP
3	0.350	-2.88	0.05	9.57	6.74	48.96	-42.22	Average
4	0.350	14.00	0.05	9.57	23.62	58.96	-35.34	QP
5	0.381	0.06	0.05	9.56	9.67	48.25	-38.58	Average
6	0.381	17.41	0.05	9.56	27.02	58.25	-31.23	QP
7	1.671	-4.87	0.11	9.56	4.80	46.00	-41.20	Average
8	1.671	13.99	0.11	9.56	23.66	56.00	-32.34	QP
9	3.346	-5.22	0.16	9.59	4.53	46.00	-41.47	Average
10	3.346	6.93	0.16	9.59	16.68	56.00	-39.32	QP
11	16.750	4.39	0.35	9.87	14.61	50.00	-35.39	Average
12	16.750	13.55	0.35	9.87	23.77	60.00	-36.23	QP



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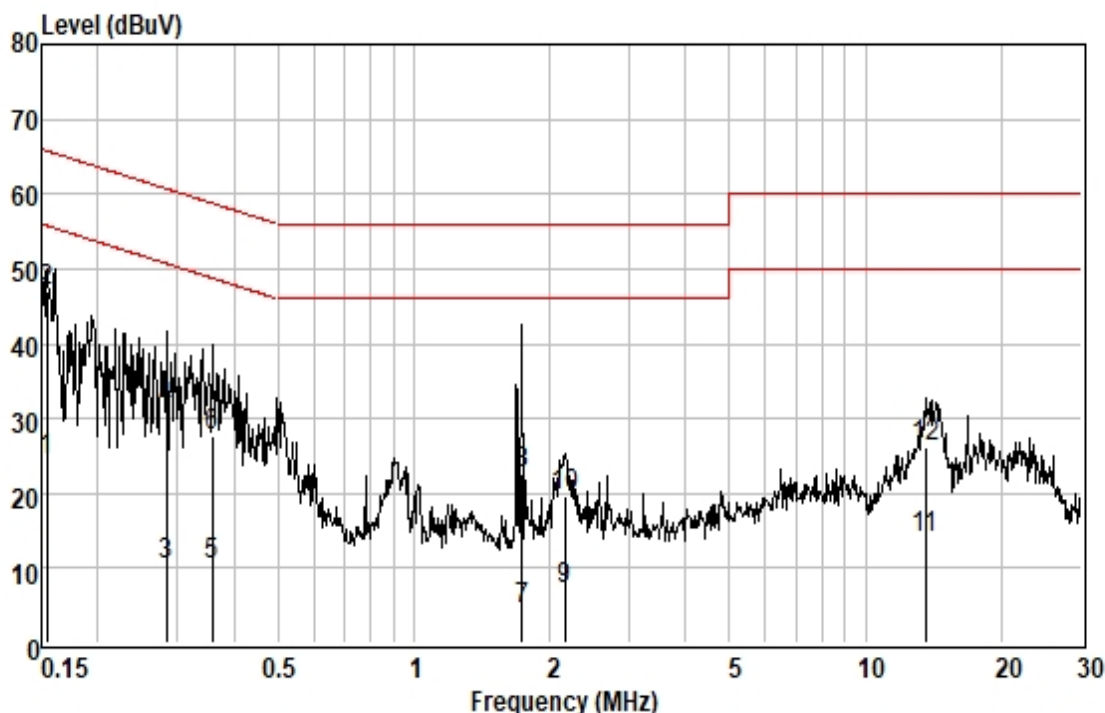
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Test Mode: 00; Line: Neutral Line



Pol : NEUTRAL
Mode : Microwave
Model :
Power :

	Freque MHz	Read Level dBuV	Cable Loss dB	LISN Factor dB	Measured Level dBuV	Limit Line dBuV	Over Limit dB	Remark
1	0.154	14.91	0.04	9.52	24.47	55.78	-31.31	Average
2	0.154	37.31	0.04	9.52	46.87	65.78	-18.91	QP
3	0.283	0.84	0.04	9.53	10.41	50.72	-40.31	Average
4	0.283	21.72	0.04	9.53	31.29	60.72	-29.43	QP
5	0.358	0.83	0.05	9.54	10.42	48.78	-38.36	Average
6	0.358	17.95	0.05	9.54	27.54	58.78	-31.24	QP
7	1.734	-5.26	0.11	9.55	4.40	46.00	-41.60	Average
8	1.734	12.81	0.11	9.55	22.47	56.00	-33.53	QP
9	2.155	-2.65	0.13	9.55	7.03	46.00	-38.97	Average
10	2.155	9.99	0.13	9.55	19.67	56.00	-36.33	QP
11	13.551	3.83	0.31	9.86	14.00	50.00	-36.00	Average
12	13.551	15.86	0.31	9.86	26.03	60.00	-33.97	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	850.7	Limit=20lg(25*SQRT(850.7/500))+20lg(300/3)= 70.27 dBuV/m @ 3m distance.

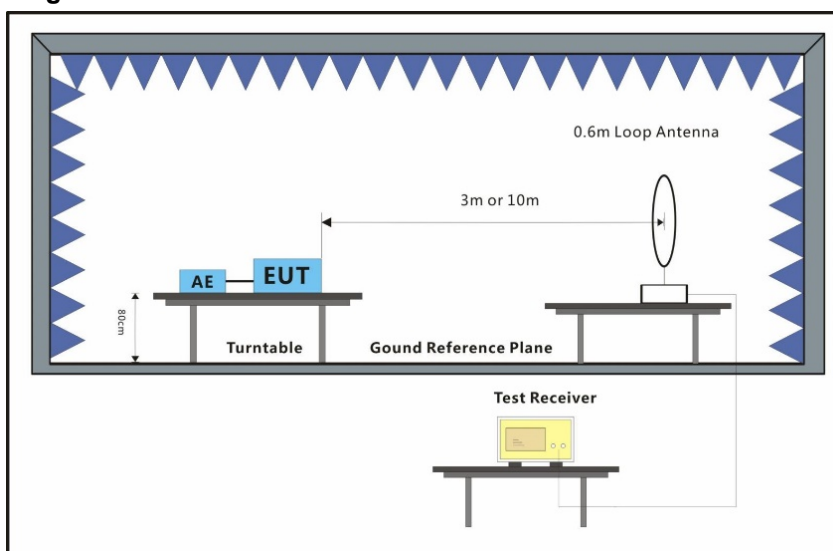
6.2.1 E.U.T. Operation

Operating Environment:
 Temperature: 19.9 °C Humidity: 48.6 % RH Atmospheric Pressure: 1021 mbar

6.2.2 Test Mode Description

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

6.2.3 Test Setup Diagram



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6.2.4 Measurement Procedure and Data

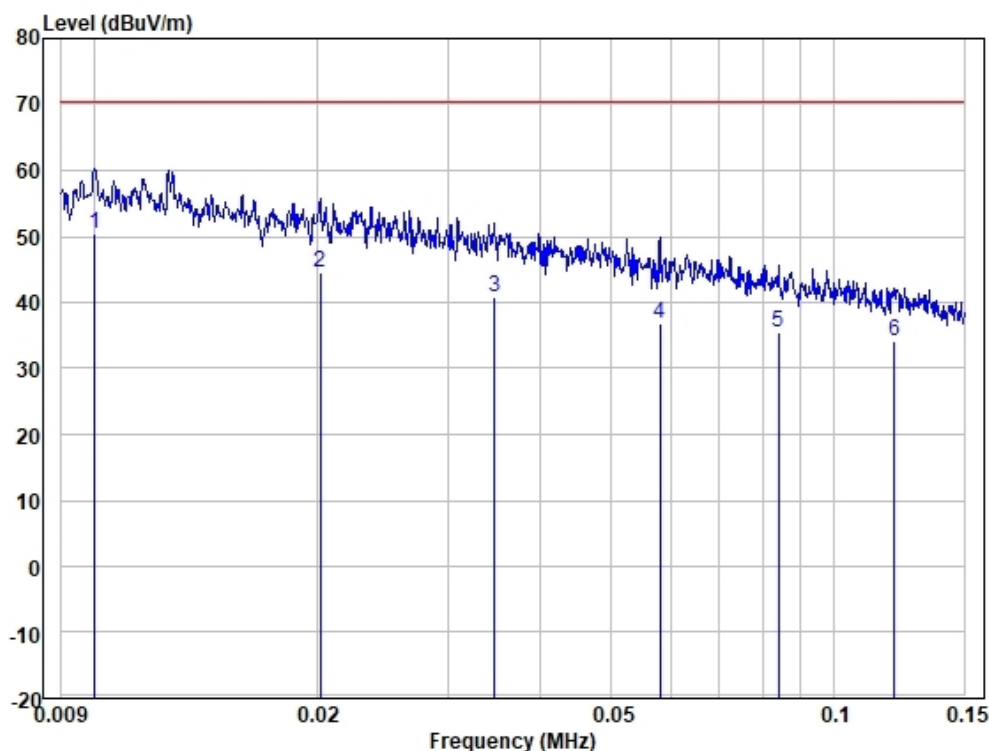
Frequency range: 9KHz-30MHz

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

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

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

Test Mode: 00; Polarity: Horizontal



Site : 966 chamber
Job :
Model :
Power :
Test Mode : microwave

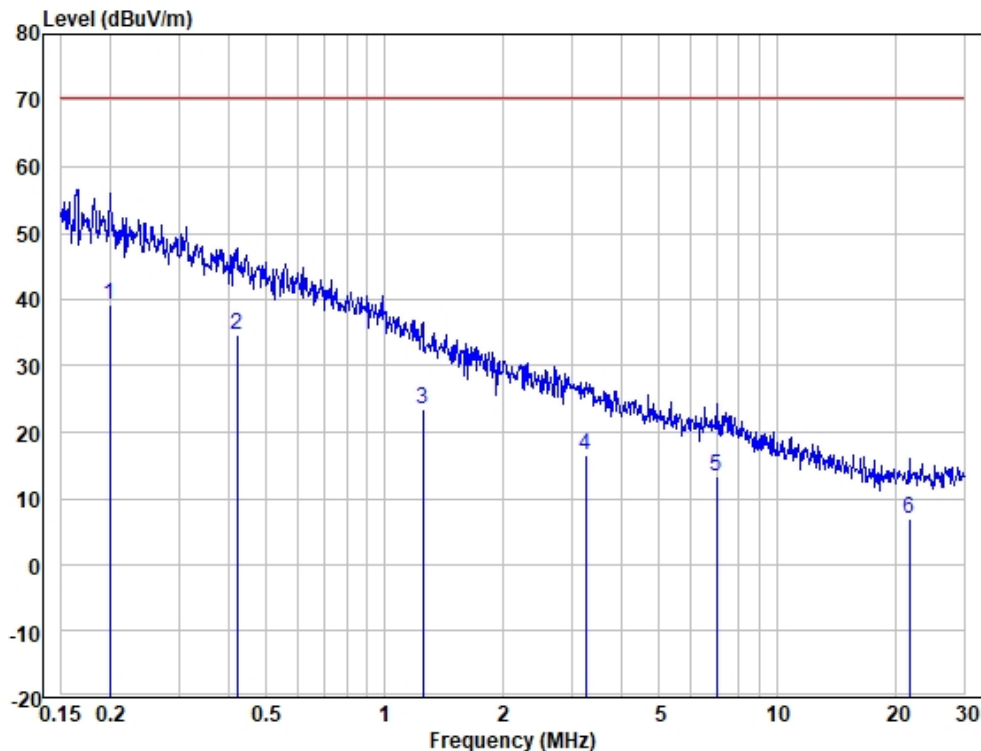
	Freq	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Measured Level	Limit Line	Over Limit	Pol/Phase	Remark
	MHz	dBuV	dBS/m	dB	dB	dBuA/m	dBuA/m	dB		
1	0.010	64.57	18.63	0.01	32.90	50.31	70.27	-19.96	HORIZONTAL	Average
2	0.020	63.34	14.18	0.01	32.90	44.63	70.27	-25.64	HORIZONTAL	Average
3	0.035	61.13	12.69	0.01	32.90	40.93	70.27	-29.34	HORIZONTAL	Average
4	0.058	57.63	12.11	0.01	32.90	36.85	70.27	-33.42	HORIZONTAL	Average
5	0.084	56.43	11.97	0.01	32.90	35.51	70.27	-34.76	HORIZONTAL	Average
6	0.121	55.01	11.93	0.01	32.90	34.05	70.27	-36.22	HORIZONTAL	Average



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Test Mode: 00; Polarity: Horizontal



Site : 966 chamber
Job :
Model :
Power :
Test Mode : microwave

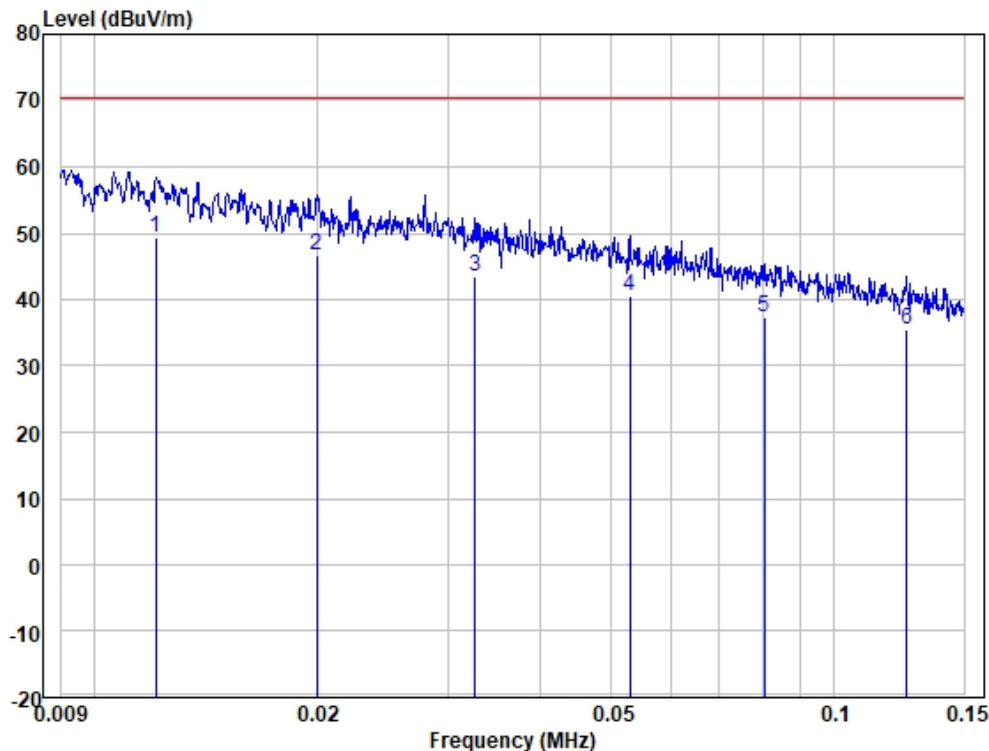
	Freq	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Measured Level	Limit Line	Over Limit	Pol/Phase	Remark
	MHz	dBuV	dBS/m	dB	dB	dBuA/m	dBuA/m	dB		
1	0.200	60.15	11.85	0.01	32.90	39.11	70.27	-31.16	HORIZONTAL	Average
2	0.421	55.65	11.85	0.01	32.90	34.61	70.27	-35.66	HORIZONTAL	Average
3	1.255	44.46	11.84	0.05	32.90	23.45	70.27	-46.82	HORIZONTAL	Average
4	3.258	37.61	11.80	0.07	32.90	16.58	70.27	-53.69	HORIZONTAL	Average
5	7.025	34.28	11.85	0.13	32.90	13.36	70.27	-56.91	HORIZONTAL	Average
6	21.715	31.17	8.41	0.25	32.90	6.93	70.27	-63.34	HORIZONTAL	Average



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Test Mode: 00; Polarity: Vertical



Site : 966 chamber
Job :
Model :
Power :
Test Mode : microwave

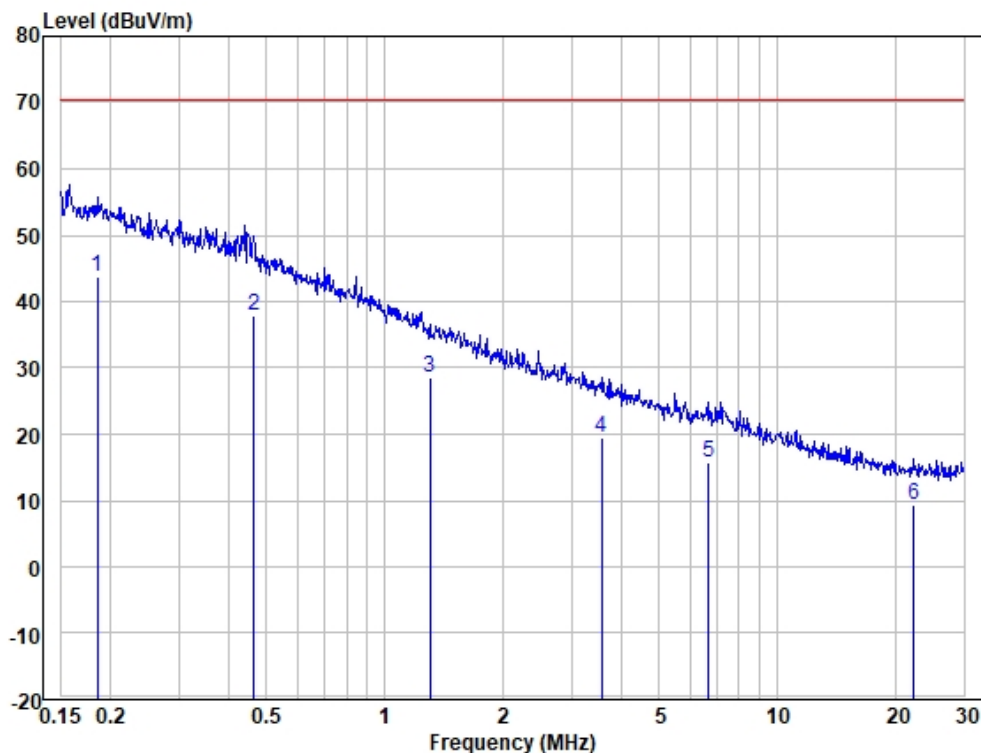
	Freq	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Measured Level	Limit Line	Over Limit	Pol/Phase	Remark
	MHz	dBuV	dBS/m	dB	dB	dBuA/m	dBuA/m	dB		
1	0.012	64.55	17.70	0.01	32.90	49.36	70.27	-20.91	VERTICAL	Average
2	0.020	65.40	14.21	0.01	32.90	46.72	70.27	-23.55	VERTICAL	Average
3	0.033	63.46	12.82	0.01	32.90	43.39	70.27	-26.88	VERTICAL	Average
4	0.053	61.19	12.17	0.01	32.90	40.47	70.27	-29.80	VERTICAL	Average
5	0.081	58.32	11.98	0.01	32.90	37.41	70.27	-32.86	VERTICAL	Average
6	0.125	56.38	11.93	0.01	32.90	35.42	70.27	-34.85	VERTICAL	Average



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Test Mode: 00; Polarity: Vertical



Site : 966 chamber
Job :
Model :
Power :
Test Mode : microwave

	Freq	Read Level	Antenna Factor	Cable Loss	Preamplifier Factor	Measured Level	Limit Line	Over Limit	Pol/Phase	Remark
	MHz	dBuV	dBS/m	dB	dB	dBuA/m	dBuA/m	dB		
1	0.185	64.85	11.86	0.01	32.90	43.82	70.27	-26.45	VERTICAL	Average
2	0.466	59.02	11.82	0.01	32.90	37.95	70.27	-32.32	VERTICAL	Average
3	1.303	49.54	11.84	0.05	32.90	28.53	70.27	-41.74	VERTICAL	Average
4	3.565	40.57	11.73	0.08	32.90	19.48	70.27	-50.79	VERTICAL	Average
5	6.698	36.90	11.64	0.13	32.90	15.77	70.27	-54.50	VERTICAL	Average
6	22.298	33.71	8.29	0.25	32.90	9.35	70.27	-60.92	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	850.7	Limit= $20\lg(25 \cdot \text{SQRT}(850.7/500)) + 20\lg(300/3) = 70.27$ dBuV/m @ 3m distance.

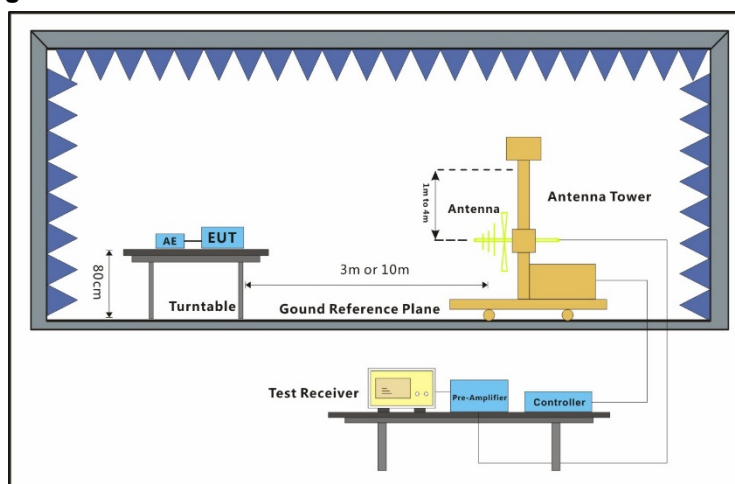
6.3.1 E.U.T. Operation

Operating Environment:
 Temperature: 19.9 °C Humidity: 48.5 % RH Atmospheric Pressure: 1021 mbar

6.3.2 Test Mode Description

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

6.3.3 Test Setup Diagram



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6.3.4 Measurement Procedure and Data

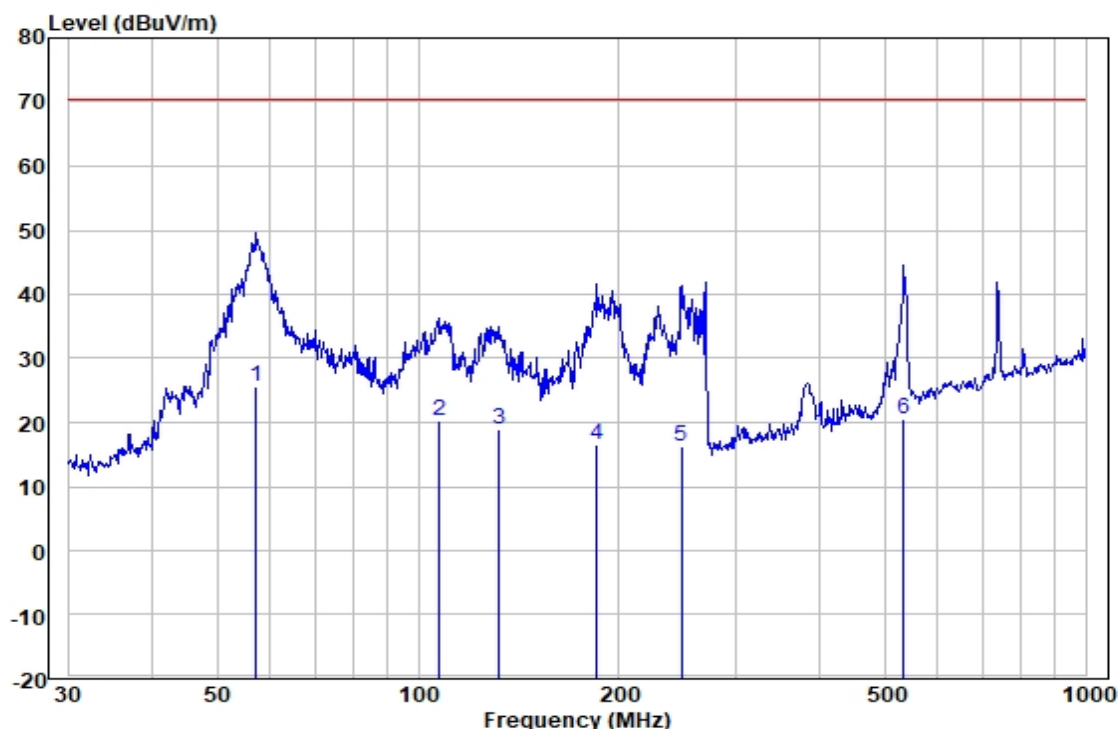
Frequency range: 30MHz-1GHz

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 : microwave

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 57.191	38.95	19.08	0.40	32.80	25.63	70.27	-44.64	HORIZONTAL	Average
2 107.510	36.68	15.78	0.56	32.80	20.22	70.27	-50.05	HORIZONTAL	Average
3 132.221	33.03	18.19	0.63	32.80	19.05	70.27	-51.22	HORIZONTAL	Average
4 185.138	31.72	16.95	0.76	32.80	16.63	70.27	-53.64	HORIZONTAL	Average
5 247.682	30.64	17.52	0.88	32.80	16.24	70.27	-54.03	HORIZONTAL	Average
6 533.832	27.86	24.27	1.32	32.90	20.55	70.27	-49.72	HORIZONTAL	Average



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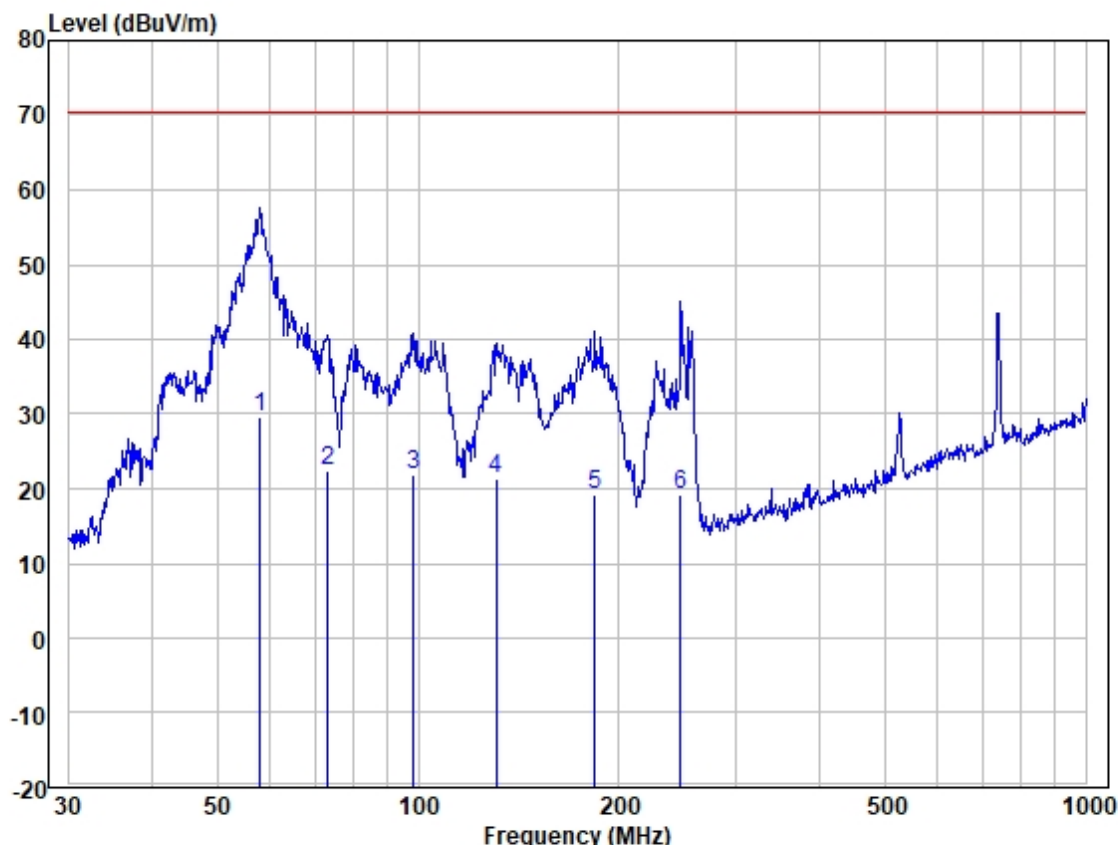
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Test Mode: 00; Polarity: Vertical



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

	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	57.999	43.10	18.99	0.41	32.80	29.70	70.27	-40.57	VERTICAL	Average
2	73.359	38.33	16.44	0.47	32.80	22.44	70.27	-47.83	VERTICAL	Average
3	98.487	39.69	14.41	0.54	32.80	21.84	70.27	-48.43	VERTICAL	Average
4	130.837	35.46	18.12	0.62	32.80	21.40	70.27	-48.87	VERTICAL	Average
5	183.844	34.13	17.09	0.76	32.80	19.18	70.27	-51.09	VERTICAL	Average
6	246.815	33.58	17.52	0.87	32.80	19.17	70.27	-51.10	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	850.7	Limit= $20\lg(25 \cdot \text{SQRT}(850.7/500)) + 20\lg(300/3) = 70.27$ dBuV/m @ 3m distance.

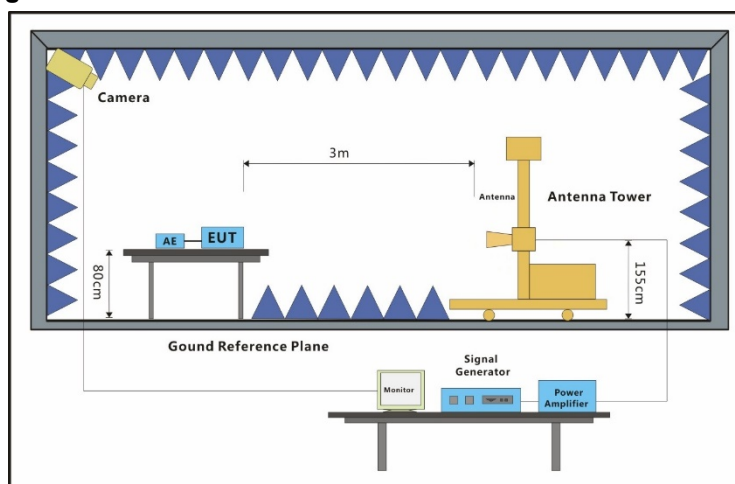
6.4.1 E.U.T. Operation

Operating Environment:
 Temperature: 18.8 °C Humidity: 56.3 % RH Atmospheric Pressure: 1021 mbar

6.4.2 Test Mode Description

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

6.4.3 Test Setup Diagram



6.4.4 Measurement Procedure and Data

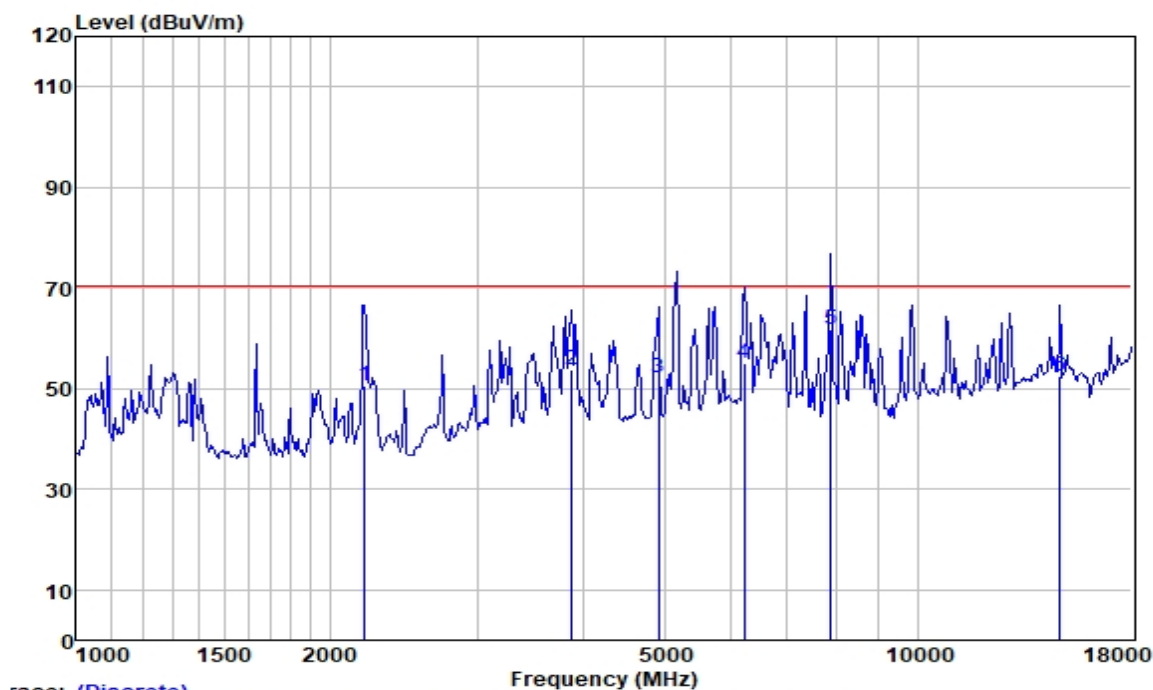
Frequency range: Above 1GHz

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

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

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

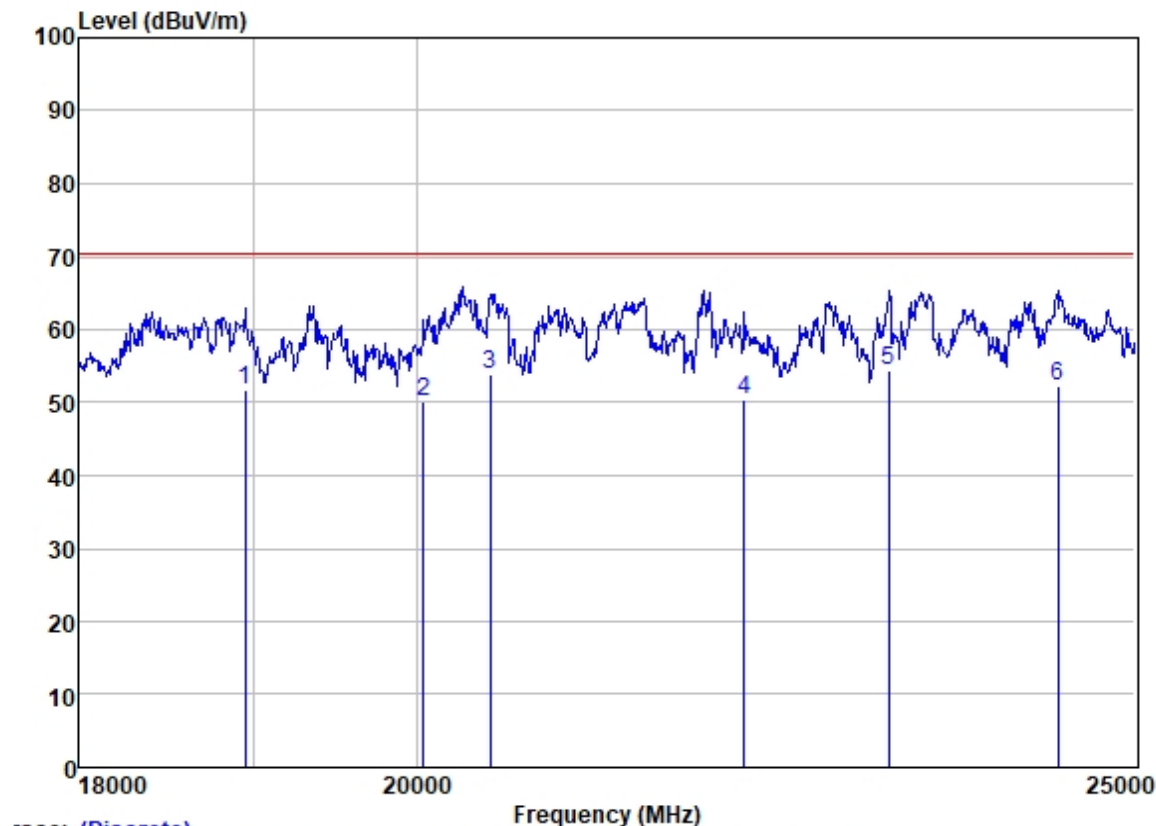
Test Mode: 00; Polarity: Horizontal



Trace: (Discrete)

	Freq	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Level	Limit	Over Limit	Pol/Phase	Remark
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB		
1	2201.352	56.83	27.46	3.52	37.26	50.55	70.27	-19.72	HORIZONTAL	Average
2	3879.027	54.44	30.93	4.85	36.62	53.60	70.27	-16.67	HORIZONTAL	Average
3	4916.490	50.68	32.96	5.25	36.68	52.21	70.27	-18.06	HORIZONTAL	Average
4	6231.427	51.16	34.41	6.21	36.81	54.97	70.27	-15.30	HORIZONTAL	Average
5	7890.735	54.58	37.04	7.01	36.99	61.64	70.27	-8.63	HORIZONTAL	Average
6	14788.150	37.70	40.02	10.54	35.81	52.45	70.27	-17.82	HORIZONTAL	Average

Test Mode: 00; Polarity: Horizontal



Trace: (Discrete)

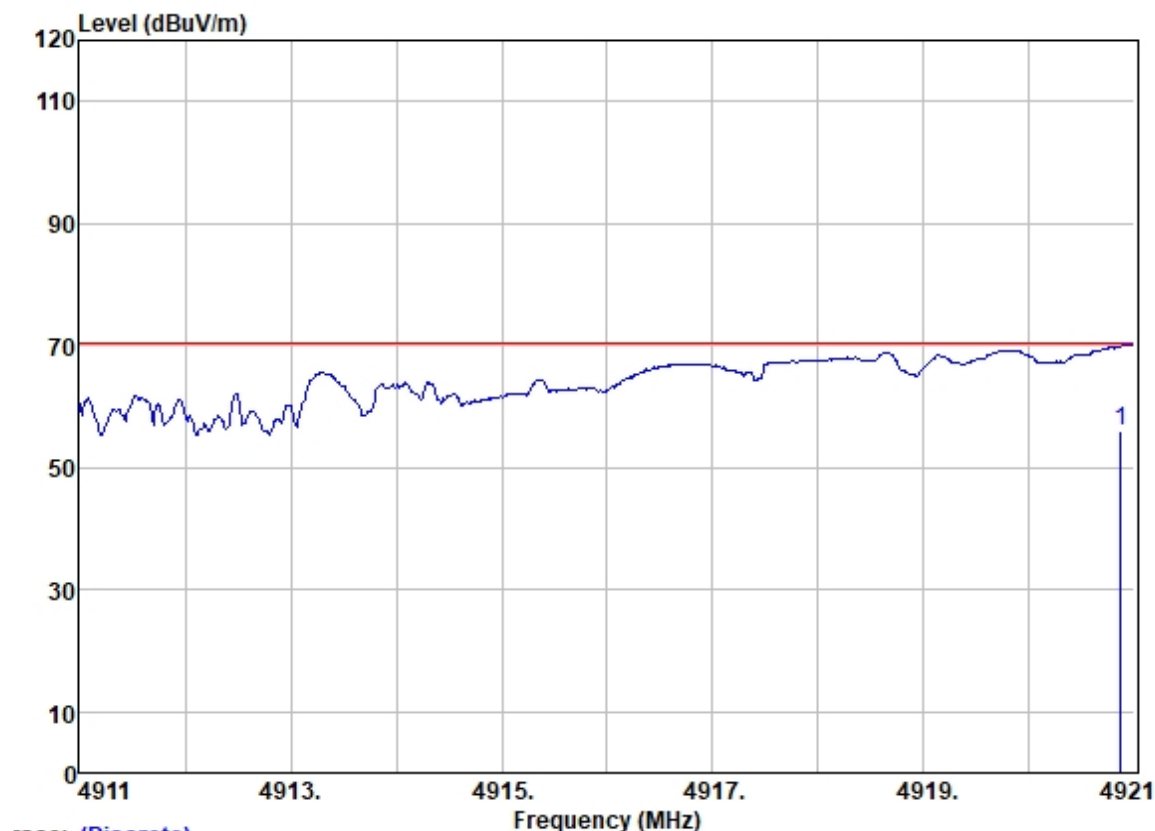
	Freq	ReadAntenna	Cable	Preamp		Limit	Over		
	Level	Factor	Loss	Factor	Level	Line	Limit	Pol/Phase	Remark
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB	
1	18952.710	32.57	38.00	16.89	35.60	51.86	70.27	-18.41	HORIZONTAL Average
2	20034.670	30.53	38.00	17.31	35.59	50.25	70.27	-20.02	HORIZONTAL Average
3	20453.620	33.88	37.96	17.60	35.55	53.89	70.27	-16.38	HORIZONTAL Average
4	22138.750	28.81	38.34	18.65	35.34	50.46	70.27	-19.81	HORIZONTAL Average
5	23157.860	31.18	39.60	19.33	35.79	54.32	70.27	-15.95	HORIZONTAL Average
6	24407.610	28.34	39.49	20.67	36.12	52.38	70.27	-17.89	HORIZONTAL Average



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Test Mode: 00; Polarity: Horizontal



Trace: (Discrete)

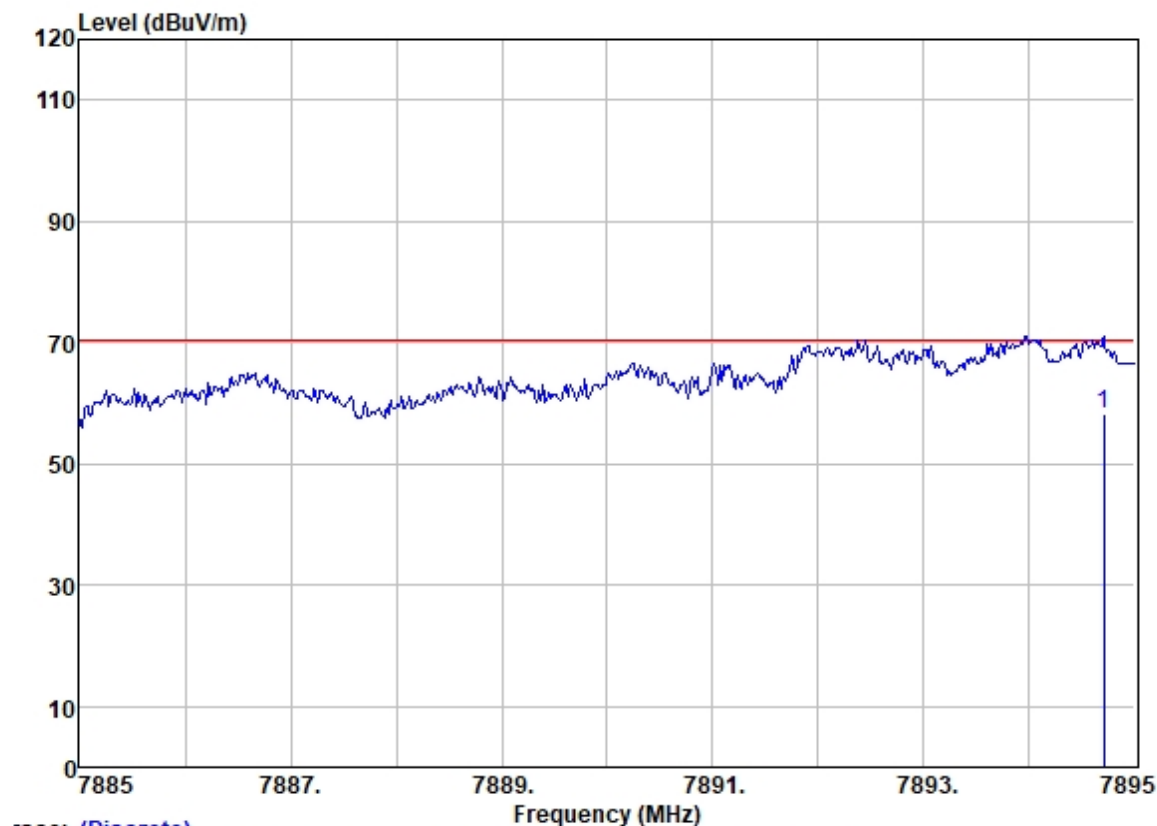
	Read	Antenna	Cable	Preamp		Limit	Over		
Freq	Level	Factor	Loss	Factor	Level	Line	Limit	Pol/Phase	Remark
MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB		
1 4920.860	54.34	32.96	5.25	36.68	55.87	70.27	-14.40	HORIZONTAL	Average



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Test Mode: 00; Polarity: Horizontal



Trace: (Discrete)

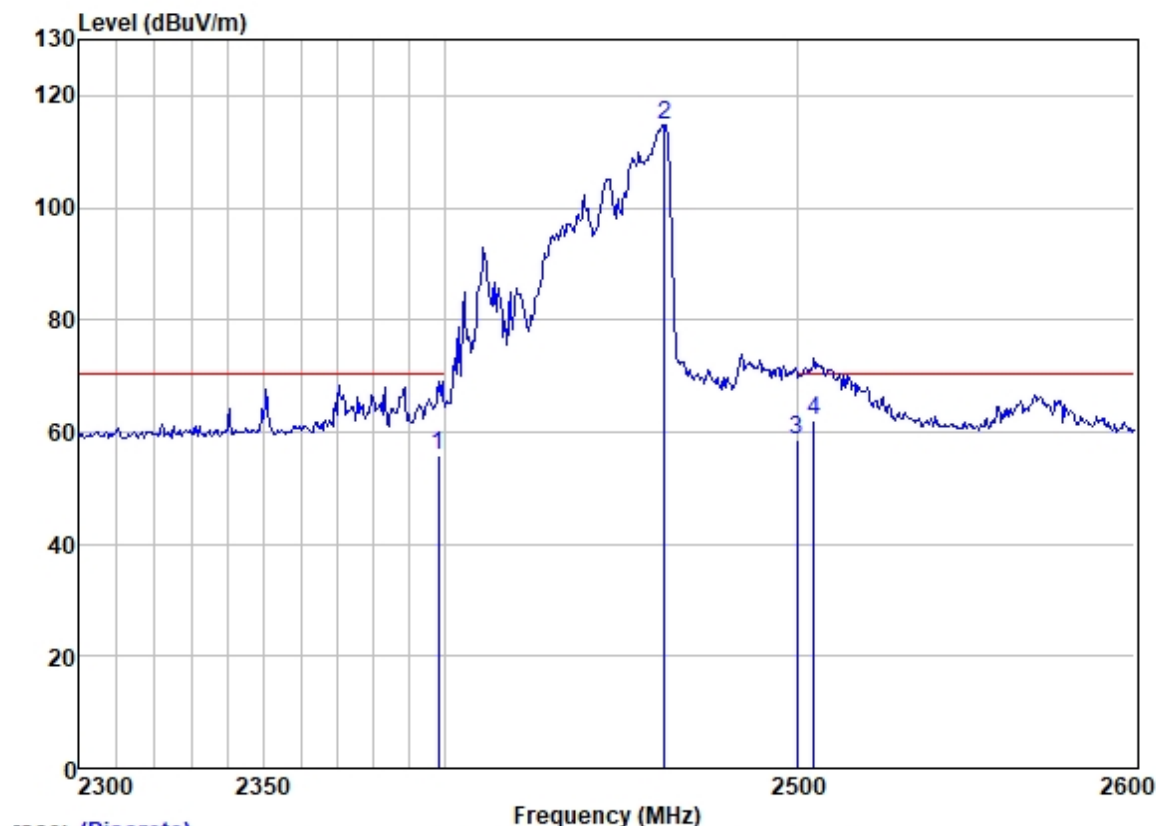
	Freq	ReadAntenna	Cable	Preamp	Level	Limit	Over		
	MHz	Level	Factor	Loss	Factor	Line	Limit	Pol/Phase	Remark
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB	
1	7894.700	51.04	37.04	7.01	36.99	58.10	70.27	-12.17	HORIZONTAL Average



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Test Mode: 00; Polarity: Horizontal



Trace: (Discrete)

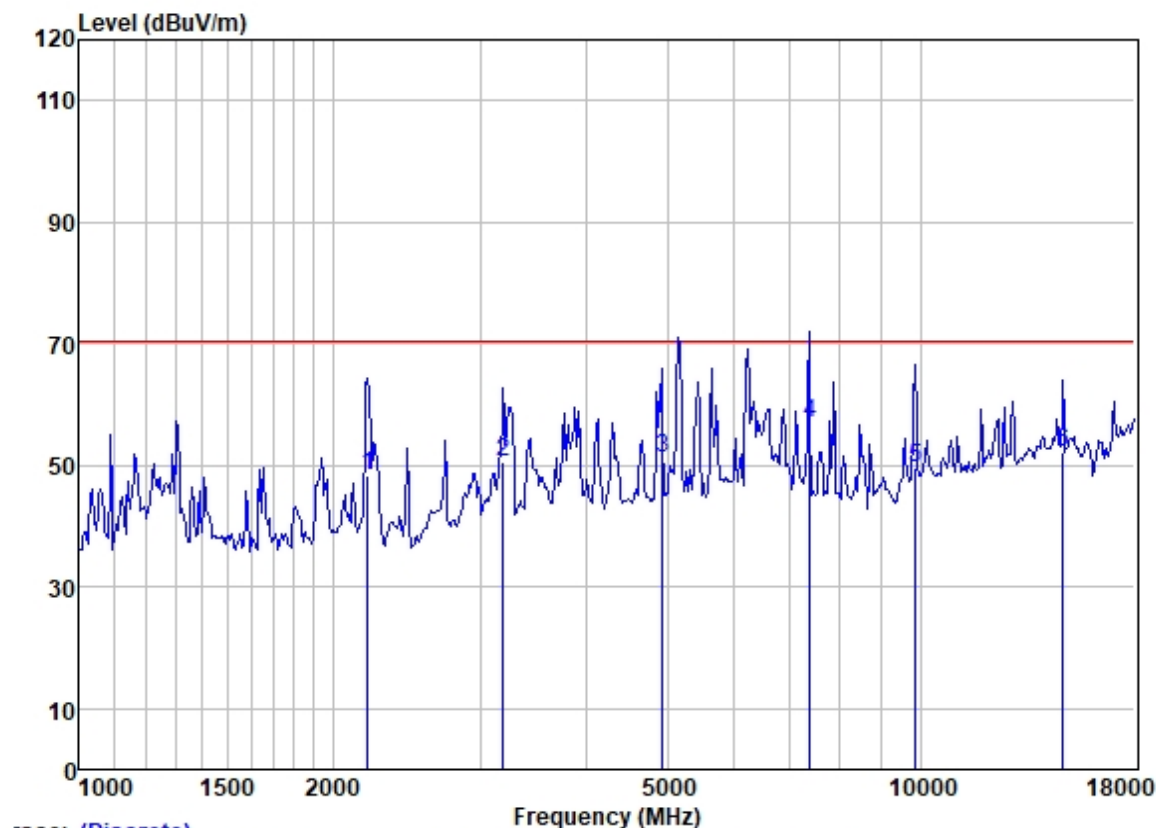
	Freq	ReadAntenna	Cable	Preamp		Limit	Over			
	MHz	Level	Factor	Loss	Factor	Level	Line	Limit	Pol/Phase	Remark
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB		
1	2397.901	24.73	27.46	3.78	0.00	55.97	70.27	-14.30	HORIZONTAL	Average
2	2461.647	83.19	27.72	3.81	0.00	114.72	-----	-----	HORIZONTAL	peak
3	2500.000	26.92	27.85	3.83	0.00	58.60	70.27	-11.67	HORIZONTAL	Peak
4	2504.879	30.45	27.87	3.83	0.00	62.15	70.27	-8.12	HORIZONTAL	Average



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Test Mode: 00; Polarity: Vertical

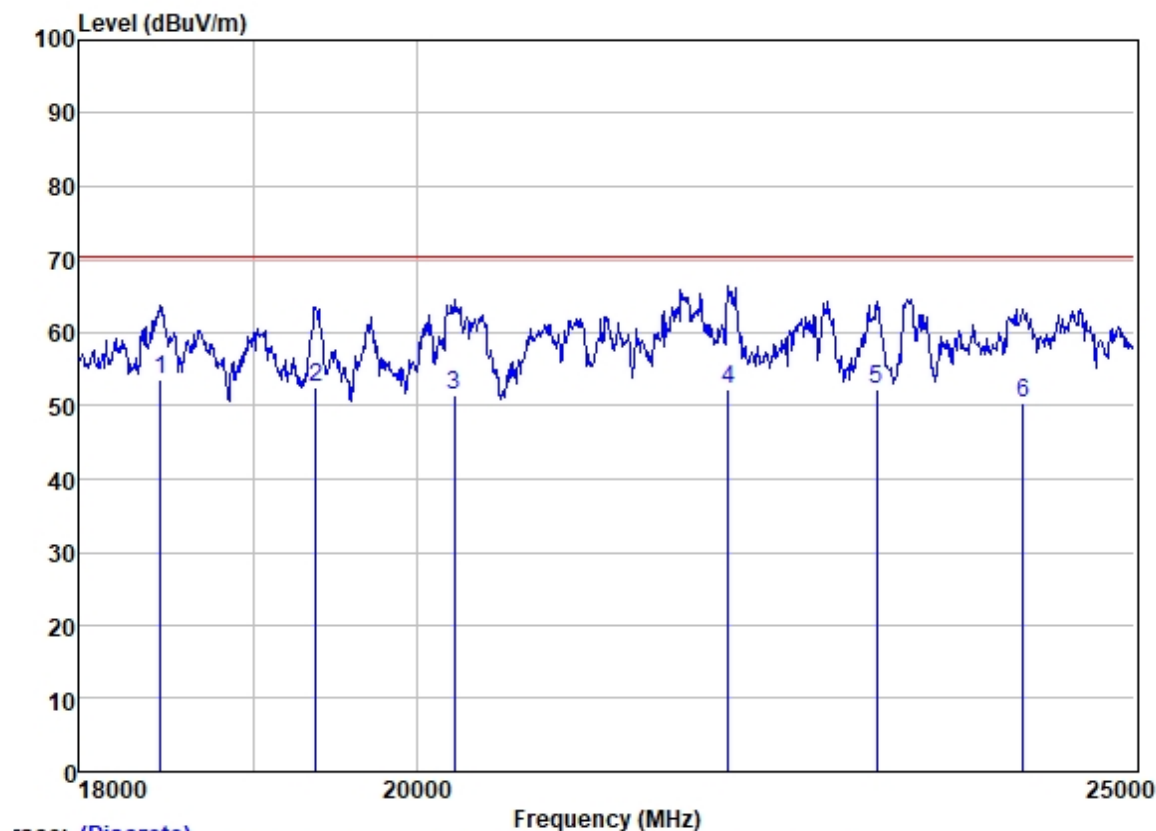


Trace: (Discrete)

	Freq	ReadAntenna	Cable	Preamp		Limit	Over			
	MHz	Level	Factor	Loss	Factor	Level	Line	Limit	Pol/Phase	Remark
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB		
1	2201.352	54.46	27.46	3.52	37.26	48.18	70.27	-22.09	VERTICAL	Average
2	3186.869	53.18	29.87	4.41	36.82	50.64	70.27	-19.63	VERTICAL	Average
3	4940.498	49.47	33.03	5.27	36.69	51.08	70.27	-19.19	VERTICAL	Average
4	7390.595	50.88	36.40	6.75	36.96	57.07	70.27	-13.20	VERTICAL	Average
5	9866.789	40.55	38.27	7.66	36.81	49.67	70.27	-20.60	VERTICAL	Average
6	14788.150	37.41	40.02	10.54	35.81	52.16	70.27	-18.11	VERTICAL	Average



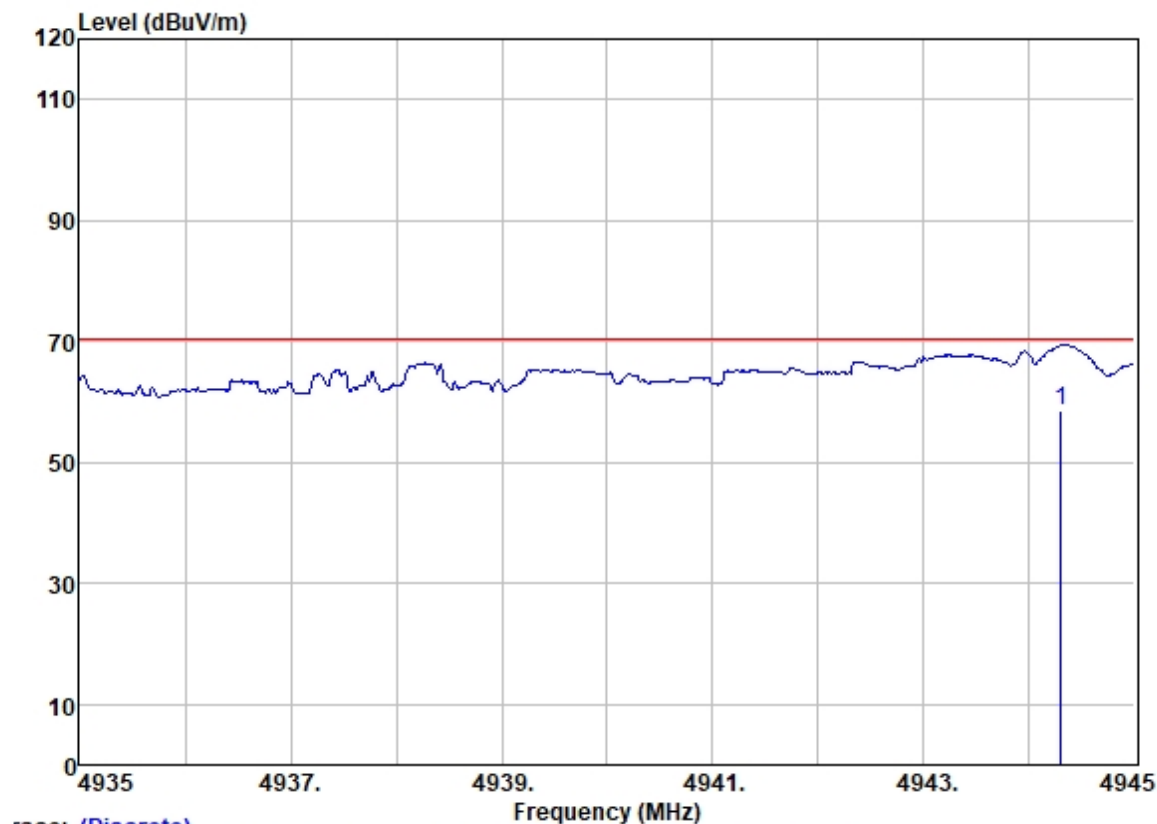
Test Mode: 00; Polarity: Vertical



Trace: (Discrete)

	Freq	ReadAntenna	Cable	Preamp	Level	Limit	Over	Pol/Phase	Remark
	MHz	Level	Factor	Loss	Factor	Level	Line	Limit	
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB	
1	18461.110	34.59	37.94	16.68	35.60	53.61	70.27	-16.66	VERTICAL Average
2	19374.480	33.17	38.00	17.02	35.60	52.59	70.27	-17.68	VERTICAL Average
3	20226.440	31.75	37.98	17.41	35.57	51.57	70.27	-18.70	VERTICAL Average
4	22029.930	30.79	38.24	18.61	35.30	52.34	70.27	-17.93	VERTICAL Average
5	23066.750	29.12	39.60	19.25	35.75	52.22	70.27	-18.05	VERTICAL Average
6	24144.450	26.34	39.57	20.48	36.11	50.28	70.27	-19.99	VERTICAL Average

Test Mode: 00; Polarity: Vertical

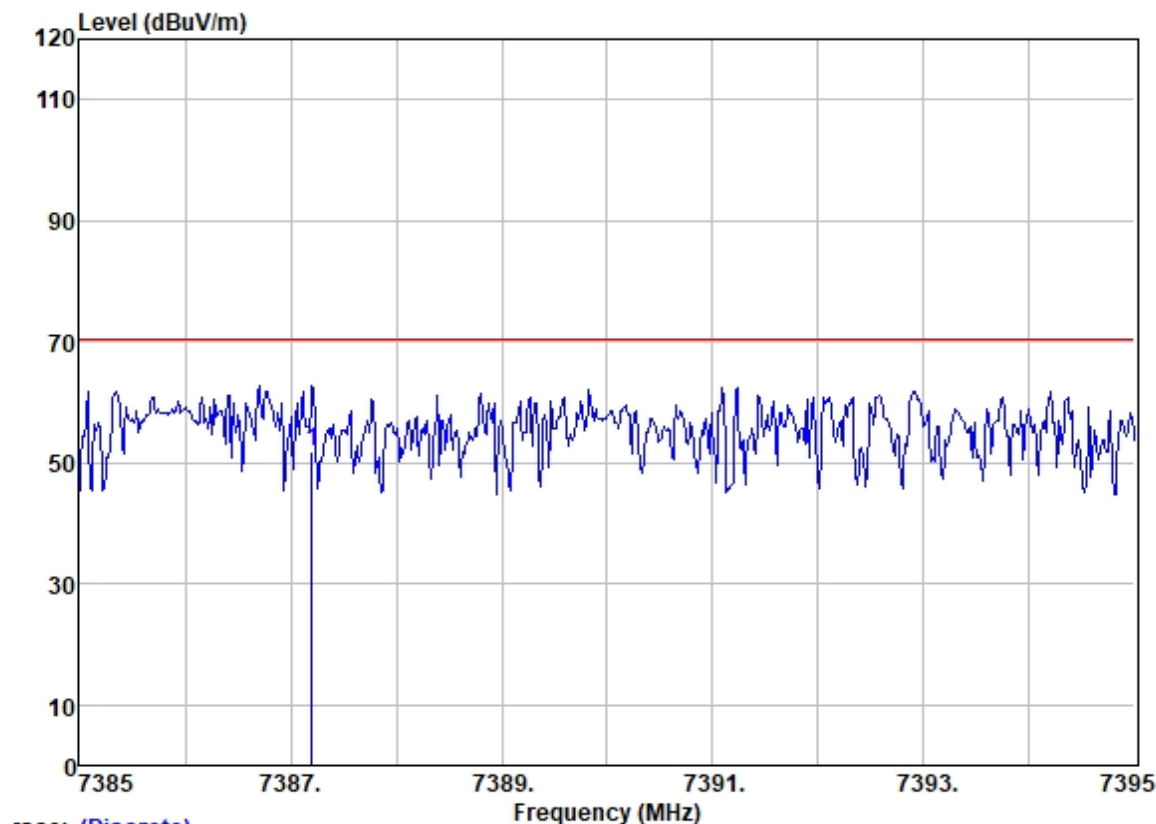


Trace: (Discrete)

	Freq	ReadAntenna	Cable	Preamp	Level	Limit	Over		
		Level	Factor	Loss	Factor	Line	Limit	Pol/Phase	Remark
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB	
1	4944.300	56.80	33.03	5.27	36.69	58.41	70.27	-11.86	VERTICAL Average



Test Mode: 00; Polarity: Vertical

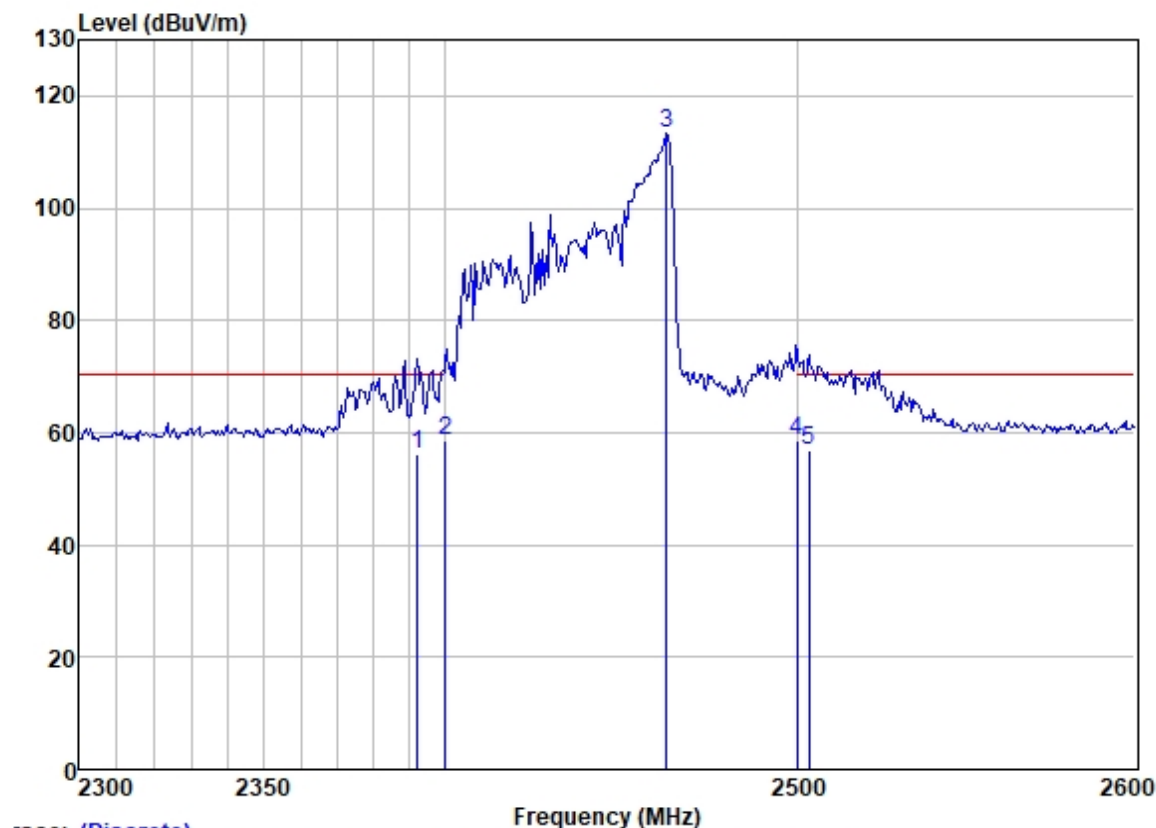


Trace: (Discrete)

	Freq	ReadAntenna	Cable	Preamp	Level	Limit	Over		
		Level	Factor	Loss	Factor	Line	Limit	Pol/Phase	Remark
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB	
1	7387.200	45.58	36.40	6.75	36.96	51.77	70.27	-18.50	VERTICAL Average



Test Mode: 00; Polarity: Vertical



Trace: (Discrete)

	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	2392.029	25.10	27.45	3.77	0.00	56.32	70.27	-13.95	VERTICAL
2	2400.000	27.50	27.46	3.78	0.00	58.74	70.27	-11.53	VERTICAL
3	2462.251	81.77	27.72	3.81	0.00	113.30	-----	-----	VERTICAL
4	2500.000	26.80	27.85	3.83	0.00	58.48	70.27	-11.79	VERTICAL
5	2503.344	25.32	27.85	3.83	0.00	57.00	70.27	-13.27	VERTICAL



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6.5 Output Power Measurement

Test Requirement: 47 CFR Part 18

Test Method: FCC OST/MP-5:1986

Limit:

Power output Measurement:

Formula:

$$P = \frac{4,187 \cdot m_w (T_2 - T_1) + 0,55 \cdot m_c (T_2 - T_0)}{t}$$

NOTE :

P is the microwave power output, in watts

mw is the mass of the water, in grams

mc 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: 22.4 °C

Humidity: 50.5 % RH

Atmospheric Pressure: 1021 mbar

6.5.2 Test Mode Description

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



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6.5.3 Measurement Procedure and Data

Output Power Data

Mass of water (g)	Mass of the container (g)	Ambient temperature (°C)	Initial temperature (°C)	Final temperature (°C)	Heating time (s)	Power output (W)
1004	472	19.9	10.1	20.2	50	850.7

Input Power Data

Input Voltage (V)	Input Current (A)	Power Factor	Measured input power (W)	Rated input power (W)
120.05	11.67	0.938	1314	1350



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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 = **850.7 W** according to clause 6.1.2

Limit=20lg(25*SQRT(power/500))+20lg(300/3)=70.27dBuV/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: 18.8 °C Humidity: 56.3 % RH Atmospheric Pressure: 1021 mbar



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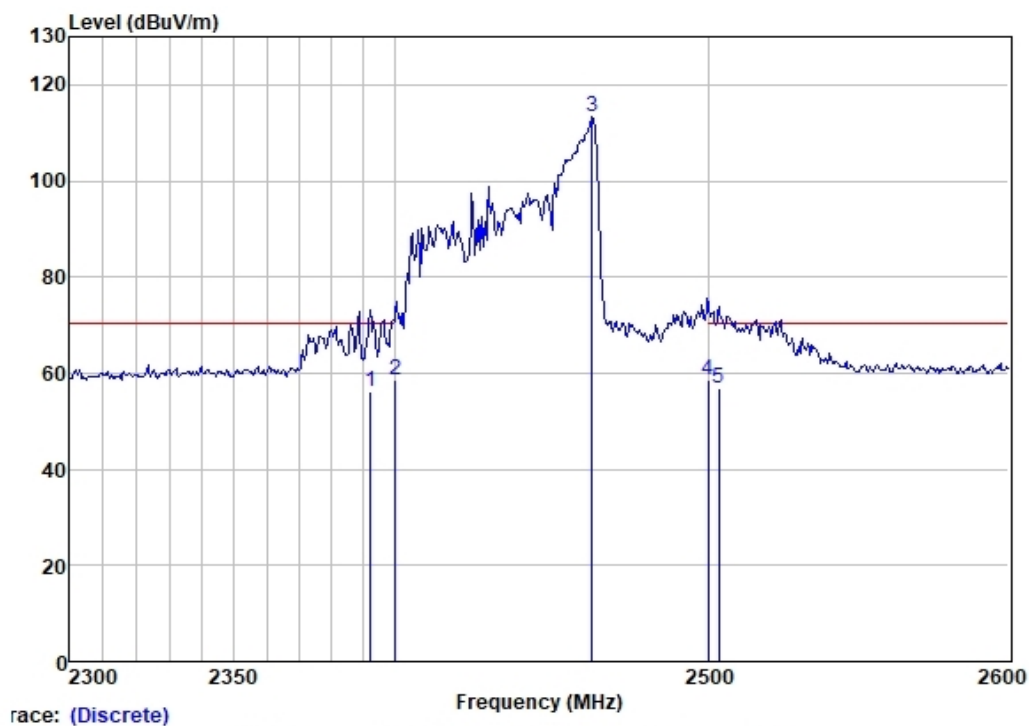
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6.6.2 Test Mode Description

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.

6.6.3 Measurement Procedure and Data

Test Mode: 00; Polarity: Vertical



Trace: (Discrete)

	ReadAntenna	Cable	Preamp	Limit	Over				
Freq	Level	Factor	Loss	Factor	Level	Line	Limit	Pol/Phase	Remark
MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB		
1 2392.029	25.10	27.45	3.77	0.00	56.32	70.27	-13.95	VERTICAL	Average
2 2400.000	27.50	27.46	3.78	0.00	58.74	70.27	-11.53	VERTICAL	Average
3 2462.251	81.77	27.72	3.81	0.00	113.30	-----	-----	VERTICAL	peak
4 2500.000	26.80	27.85	3.83	0.00	58.48	70.27	-11.79	VERTICAL	Average
5 2503.344	25.32	27.85	3.83	0.00	57.00	70.27	-13.27	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	2462



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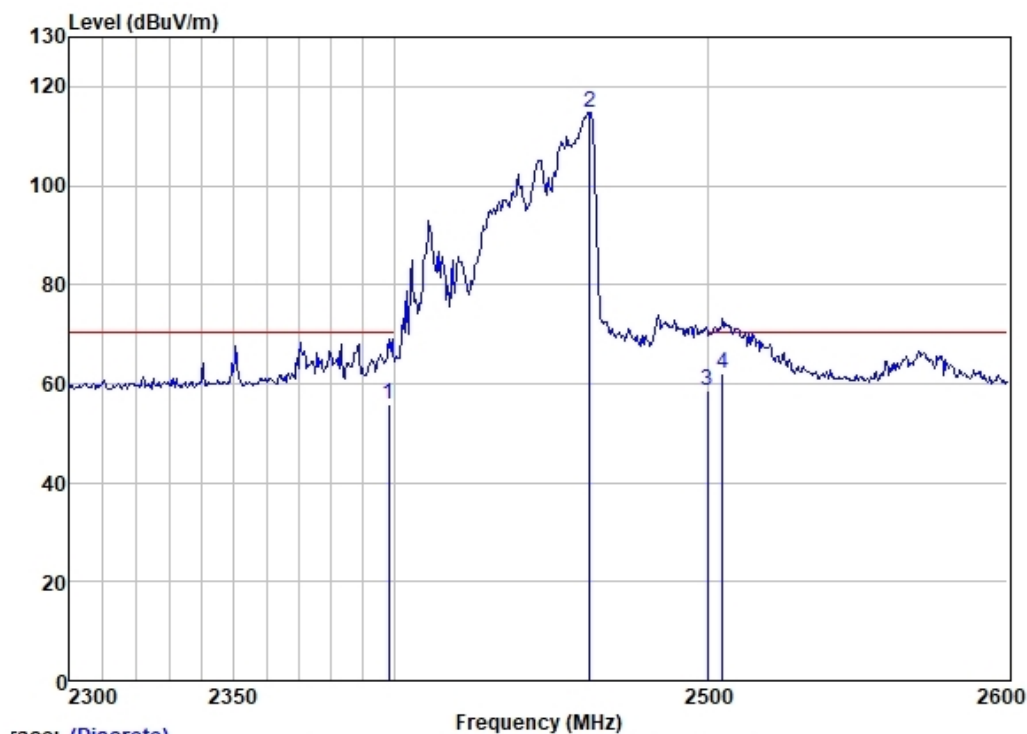
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Test Mode: 00; Polarity: Horizontal



Trace: (Discrete)

	ReadAntenna	Cable	Preamp		Limit	Over			
Freq	Level	Factor	Loss	Factor	Level	Line	Limit	Pol/Phase	Remark
MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB		
1 2397.901	24.73	27.46	3.78	0.00	55.97	70.27	-14.30	HORIZONTAL	Average
2 2461.647	83.19	27.72	3.81	0.00	114.72	-----	-----	HORIZONTAL	peak
3 2500.000	26.92	27.85	3.83	0.00	58.60	70.27	-11.67	HORIZONTAL	Peak
4 2504.879	30.45	27.87	3.83	0.00	62.15	70.27	-8.12	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	2462



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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: 50.8 % RH Atmospheric Pressure: 1021 mbar

6.7.2 Test Mode Description

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

6.7.3 Measurement Procedure and Data

Maximum measure level (mW/cm ²)	Limit (mW/cm ²)	Test Result
0.056	1	Pass



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7 Test Setup Photo

Refer to Appendix - Test Setup Photo for GZEM240100057302



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8 EUT Constructional Details (EUT Photos)

Refer to Appendix - External and Internal Photos for GZEM2401000573HS

- End of the Report -



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