



SGS-CSTC Standards Technical Services Co., Ltd. Guangzhou Branch

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Report No.: GZEM191201751602
Page: 1 of 38
FCC ID: UHW10032002

TEST REPORT

Application No.: GZEM1912017516HS
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: Guangdong Galanz Microwave Electrical Appliances Manufacturing Co., Ltd.
Address of Factory: 3 Xingpu Avenue, Huangpu, Zhongshan, Guangdong, China.
Equipment Under Test (EUT):
FCC ID: UHW10032002
EUT Name: Microwave oven
Model No.: D100N32MSLR11HV-WA, D100N32MSLR11HV-WAB, D100N32(X)R11HV-(Y)
(Variable (X) may be L, P, SL, SP, TL, TP, AL, AP, ASL, ASP, ATL, ATP, EL, EP, ESL, ESP, ETL, ETP, ML, MP, MSL, MSP, MTL, MTP.

"L" is pull-out type door, P is push-button type door. When there is no letter before "L", "P", denotes mechanical control model; When there is "A", "E", "M" denote the electrical control model. "S" denotes stainless steel cavity; "T" denotes the painted cavity; When there is neither "S" nor "T" before "L", "P", denotes the epoxy painted cavity.

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.)

✘

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

Trade Mark: Galanz
Standard(s) : 47 CFR Part 18
Date of Receipt: 2019-12-04
Date of Test: 2019-12-11 to 2019-12-17
Date of Issue: 2019-12-23

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

Kobe Jian

EMC Laboratory Manager


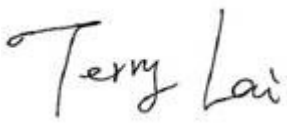
The manufacturer should ensure that all products in series production are in conformity with the product sample detailed in this report. If the product in this report is used in any configuration other than that detailed in the report, the manufacturer must ensure the new system complies with all relevant standards. Any mention of SGS International Electrical Approvals or testing done by SGS International Electrical Approvals in connection with, distribution or use of the product described in this report must be approved by SGS International Electrical Approvals in writing.



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Revision Record				
Version	Chapter	Date	Modifier	Remark
01		2019-12-23		Original

Authorized for issue by:			
Tested By	 Damon_Guan /Project Engineer		2019-12-11 to 2019-12-17
			Date
Checked By	 Terry_Lai /Reviewer		2019-12-23
			Date



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2 Test Summary

Emission Part				
Item	Standard	Method	Requirement	Result
Conducted Emissions at Mains Terminals (150kHz-30MHz)	47 CFR Part 18	FCC OST/MP-5:1986	N/A	Pass
Radiated Emissions (30MHz-1GHz)	47 CFR Part 18	FCC OST/MP-5:1986	N/A	Pass
Radiated Emissions (above 1GHz)	47 CFR Part 18	FCC OST/MP-5:1986	N/A	Pass
Radiated Emissions (Magnetic field Strength) (9kHz-30MHz)	47 CFR Part 18	FCC OST/MP-5:1986	N/A	Pass
Operating Frequency	47 CFR Part 18	FCC OST/MP-5:1986	N/A	Pass

N/A: Not Applicable

Declaration of EUT Family Grouping:

Model No.: D100N32MSLRRIHV-WA, D100N32MSLRRIHV-WAB, D100N32(X)RIIHV-(Y)

(Variable (X) may be L, P, SL, SP, TL, TP, AL, AP, ASL, ASP, ATL, ATP, EL, EP, ESL, ESP, ETL, ETP, ML, MP, MSL, MSP, MTL, MTP.

"L" is pull-out type door, P is push-button type door. When there is no letter before "L", "P", denotes mechanical control model; When there is "A", "E", "M" denote the electrical control model. "S" denotes stainless steel cavity; "T" denotes the painted cavity; When there is neither "S" nor "T" before "L", "P", denotes the epoxy painted cavity.

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.)

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 D100N32MSLRRIHV-WA 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	5
4.1 Details of E.U.T.	5
4.2 Description of Support Units	5
4.3 Measurement Uncertainty	5
4.4 Test Location	5
4.5 Test Facility	6
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 Setup Diagram	11
6.1.3 Measurement Data	11
6.2 Operating Frequency	14
6.2.1 E.U.T. Operation	14
6.2.2 Measurement Data	15
6.3 RF Output Power Measurement	18
6.3.1 E.U.T. Operation	18
6.3.2 Measurement Data	18
6.4 Radiated Emissions (30MHz-1GHz)	19
6.4.1 E.U.T. Operation	19
6.4.2 Test Setup Diagram	20
6.4.3 Measurement Data	20
6.5 Radiated Emissions (above 1GHz)	23
6.5.1 E.U.T. Operation	23
6.5.2 Test Setup Diagram	24
6.5.3 Measurement Data	24
6.6 Radiated Emissions (Magnetic field Strength) (9kHz-30MHz)	33
6.6.1 E.U.T. Operation	33
6.6.2 Test Setup Diagram	34
6.6.3 Measurement Data	34



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4 General Information

4.1 Details of E.U.T.

Power Supply: AC 120V 60Hz
 Test Voltage: AC 120V 60Hz
 Cable: About 1.0m x 3 wires unscreened AC mains cable.

4.2 Description of Support Units

Description	Manufacturer	Model No.	Serial No.
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

EMC

No.	Item	Measurement Uncertainty
1	Conducted Disturbance Voltage at Mains Terminals	±3.63dB (9kHz to 150kHz)
		±3.22dB (150kHz to 30MHz)
2	Disturbance Power	±3.78dB
3	Radiated Emissions	±5.0dB (30MHz-1GHz)
		±5.0dB (1GHz-6GHz)

4.4 Test Location

All tests were performed at:

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

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No tests were sub-contracted.



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4.5 Test Facility

The test facility is recognized, certified, or accredited by the following organizations:

● **NVLAP (Lab Code: 200611-0)**

SGS-CSTC Standards Technical Services Co., Ltd., Guangzhou EMC Laboratory is accredited by the National Voluntary Laboratory Accreditation Program (NVLAP/NIST). NVLAP Code: 200611-0.

The report must not be used by the client to claim product certification, approval, or endorsement by NVLAP, NIST, or any agency of the Federal Government.

● **ACMA**

SGS-CSTC Standards Technical Services Co., Ltd., EMC Laboratory can also perform testing for the Australian C-Tick mark as a result of our NVLAP accreditation.

● **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.

● **CNAS (Lab Code: L0167)**

SGS-CSTC Standards Technical Services Co., Ltd., EMC Laboratory has been assessed and in compliance with CNAS-CL01:2018 accreditation criteria for testing laboratories (identical to

ISO/IEC 17025:2017 General Requirements) for the Competence of Testing Laboratories.

● **FCC Recognized 2.948 Listed Test Firm(Registration No.: 282399)**

SGS-CSTC Standards Technical Services Co., Ltd., EMC Laboratory has been registered and fully described in a report filed with the (FCC) Federal Communications Commission. The acceptance letter from the FCC is maintained in our files. Registration 282399, May 31, 2002.

● **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, Jul 13, 2017.

● **Industry Canada (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-10449 and T-11179)**

The 10m Semi-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-10449 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 17025:2005, the Basic Rules, IECEE 01 and Rules of procedure IECEE 02, and the relevant IECEE CB-Scheme Operational documents.



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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
Shielding Room	Zhong Yu	8m x 3m x 3.8m	EMC0306	N/A	N/A
Two-Line V-Netwok	R&S	ENV216	EMC0118	2019-01-11	2020-01-10
LISN	R&S	ENV216	EMC2135	2019-09-16	2020-09-15
EMI Test Receiver	Rohde & Schwarz	ESCS30	EMC0506	2019-11-18	2020-11-17
Coaxial Cable	HangTianXing	2m	EMC0107	2018-09-20	2020-09-19
Voltage Probe	SGS	N/A	EMC0106	2018-04-04	2020-04-03
Conical Metal Housing	SGS-EMC	N/A	EMC0167	2018-04-19	2020-04-18
Test Software E3c	Audix	Ver. 5.4.1221b	GZE100-62	N/A	N/A

Radiated Emissions (30MHz-1GHz)					
Equipment	Manufacturer	Model No	Inventory No	Cal Date	Cal Due Date
EMI Test Receiver	Rohde & Schwarz	ESIB26	EMC0522	2019-01-20	2020-01-19
EMI Test Receiver	Rohde & Schwarz	ESCI	EMC0056	2019-01-20	2020-01-19
Chamber cable	HangTianXing	N/A	EMC0542	2019-06-28	2021-06-27
Trilog Broadband Antenna 25MHz-1GHz	SCHWARZBECKME SS-ELEKTRONIK	VULB 9168	EMC2174	2018-09-06	2021-09-05
Trilog Broadband Antenna 30MHz-1GHz	SCHWARZBECKME SS-ELEKTRONIK	VULB 9168	SEM003-18	2019-02-22	2022-02-22
Bi-log Type Antenna	Schaffner -Chase	CBL6143	EMC0519	2017-05-04	2020-05-03
Horn Antenna 1GHz-18GHz	R & S	HF906	EMC0518	2018-09-02	2021-09-01
1GHz-26.5 GHz Pre-Amplifier	Agilent	8449B	EMC0521	2019-01-11	2020-01-10
Amplifier	HP	8447F	EMC2065	2019-05-29	2020-05-28
Pre-Amplifier MH648A	ANRITSU CORP	MH648A	EMC2086	2019-11-18	2020-11-17
Active Loop Antenna	EMCO	6502	EMC0523	2018-03-05	2020-03-04
High Pass Filter(915MHz)	FSY MICROWAVE	HM1465-9SS	EMC2079	2019-01-11	2020-01-10
2.4GHz Filter	Micro-Tronics	BRM 50702	EMC2069	2019-01-11	2020-01-10
10m Semi-Anechoic Chamber	ETS	N/A	EMC0530	2019-10-20	2022-10-19
966 Anechoic Chamber	C.R.T	9m x 6m x 6m	EMC2142	2017-12-19	2020-12-18
MXE EMI Receiver	Keysight	N9038A	EMC2139	2019-11-18	2020-11-17
EXA Signal Analyzer	Keysight	N9010A	EMC2138	2019-11-18	2020-11-17
Test Software E3	Audix	Ver.6.120110a	GZE100-61	N/A	N/A



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Radiated Emissions (above 1GHz)					
Equipment	Manufacturer	Model No	Inventory No	Cal Date	Cal Due Date
EMI Test Receiver	Rohde & Schwarz	ESIB26	EMC0522	2019-01-20	2020-01-19
EMI Test Receiver	Rohde & Schwarz	ESCI	EMC0056	2019-01-20	2020-01-19
Chamber cable	HangTianXing	N/A	EMC0542	2019-06-28	2021-06-27
Trilog Broadband Antenna 25MHz-1GHz	SCHWARZBECKME SS-ELEKTRONIK	VULB 9168	EMC2174	2018-09-06	2021-09-05
Bi-log Type Antenna	Schaffner -Chase	CBL6143	EMC0519	2017-05-04	2020-05-03
Horn Antenna 1GHz-18GHz	R & S	HF906	EMC0518	2018-09-02	2021-09-01
1GHz-26.5 GHz Pre-Amplifier	Agilent	8449B	EMC0521	2019-01-07	2020-01-08
Amplifier	HP	8447F	EMC2065	2019-05-29	2020-05-28
Pre-Amplifier MH648A	ANRITSU CORP	MH648A	EMC2086	2019-11-18	2020-11-17
Active Loop Antenna	EMCO	6502	EMC0523	2018-03-05	2020-03-04
High Pass Filter(915MHz)	FSY MICROWAVE	HM1465-9SS	EMC2079	2019-01-11	2020-01-10
2.4GHz Filter	Micro-Tronics	BRM 50702	EMC2069	2019-01-11	2020-01-10
10m Semi-Anechoic Chamber	ETS	N/A	EMC0530	2019-10-20	2022-10-19
966 Anechoic Chamber	C.R.T	9m x 6m x 6m	EMC2142	2017-12-19	2020-12-18
MXE EMI Receiver	Keysight	N9038A	EMC2139	2019-11-18	2020-11-17
EXA Signal Analyzer	Keysight	N9010A	EMC2138	2019-11-18	2020-11-17
Trilog Broadband Antenna 30MHz-1GHz	SCHWARZBECKME SS-ELEKTRONIK	VULB 9168	SEM003-18	2019-02-22	2022-02-22
Test Software E3	Audix	Ver.6.120110a	GZE100-61	N/A	N/A



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Radiated Emissions (Magnetic field Strength) (9kHz-30MHz)					
Equipment	Manufacturer	Model No	Inventory No	Cal Date	Cal Due Date
EMI Test Receiver	Rohde & Schwarz	ESIB26	EMC0522	2019-01-20	2020-01-19
EMI Test Receiver	Rohde & Schwarz	ESCI	EMC0056	2019-01-20	2020-01-19
Chamber cable	HangTianXing	N/A	EMC0542	2019-06-28	2021-06-27
Trilog Broadband Antenna 25MHz-1GHz	SCHWARZBECKME SS-ELEKTRONIK	VULB 9168	EMC2174	2018-09-06	2021-09-05
Trilog Broadband Antenna 30MHz-1GHz	SCHWARZBECKME SS-ELEKTRONIK	VULB 9168	SEM003-18	2019-02-22	2022-02-22
Bi-log Type Antenna	Schaffner -Chase	CBL6143	EMC0519	2017-05-04	2020-05-03
Horn Antenna 1GHz-18GHz	R & S	HF906	EMC0518	2018-09-02	2021-09-01
1GHz-26.5 GHz Pre-Amplifier	Agilent	8449B	EMC0521	2019-01-11	2020-01-10
Amplifier	HP	8447F	EMC2065	2019-05-29	2020-05-28
Pre-Amplifier MH648A	ANRITSU CORP	MH648A	EMC2086	2019-11-18	2020-11-17
Active Loop Antenna	EMCO	6502	EMC0523	2018-03-05	2020-03-04
High Pass Filter(915MHz)	FSY MICROWAVE	HM1465-9SS	EMC2079	2019-01-11	2020-01-10
2.4GHz Filter	Micro-Tronics	BRM 50702	EMC2069	2019-01-11	2020-01-10
10m Semi-Anechoic Chamber	ETS	N/A	EMC0530	2019-10-20	2022-10-19
966 Anechoic Chamber	C.R.T	9m x 6m x 6m	EMC2142	2017-12-19	2020-12-18
MXE EMI Receiver	Keysight	N9038A	EMC2139	2019-11-18	2020-11-17
EXA Signal Analyzer	Keysight	N9010A	EMC2138	2019-11-18	2020-11-17
Test Software E3	Audix	Ver.6.120110a	GZE100-61	N/A	N/A

General used equipment					
Equipment	Manufacturer	Model No	Inventory No	Cal Date	Cal Due Date
DMM	Fluke	73	EMC0006	2019-07-16	2020-07-15
DMM	Fluke	73	EMC0007	2019-07-16	2020-07-15



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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
Frequency Range:	150kHz to 30MHz
Limit:	
0.15M-0.5MHz	66dB(μV)-56dB(μV) quasi-peak, 56dB(μV)-46dB(μV) average
0.5M-5MHz	56dB(μV) quasi-peak, 46dB(μV) average
5M-30MHz	60dB(μV) quasi-peak, 50dB(μV) average
Detector:	Peak for pre-scan (9kHz resolution bandwidth) 0.15M to 30MHz

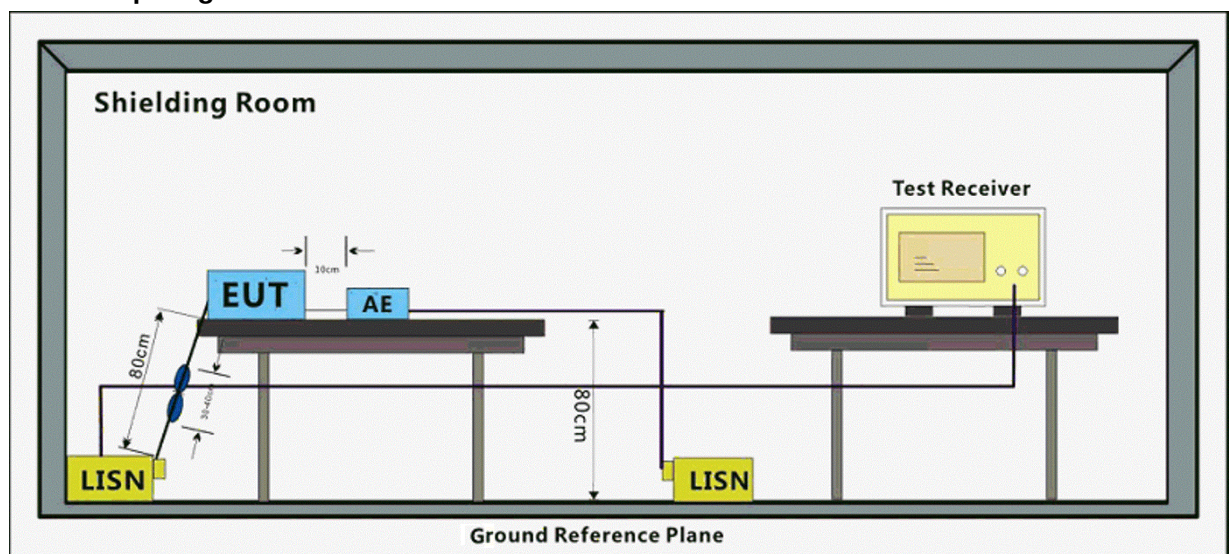
6.1.1 E.U.T. Operation

Operating Environment:

Temperature: 23 °C Humidity: 52 % RH Atmospheric Pressure: 1020 mbar

Test mode a: Test the EUT in microwave mode with maximum power.

6.1.2 Test Setup Diagram



6.1.3 Measurement Data

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.

Measured Level = Read level + Cable Loss + LISN Factor

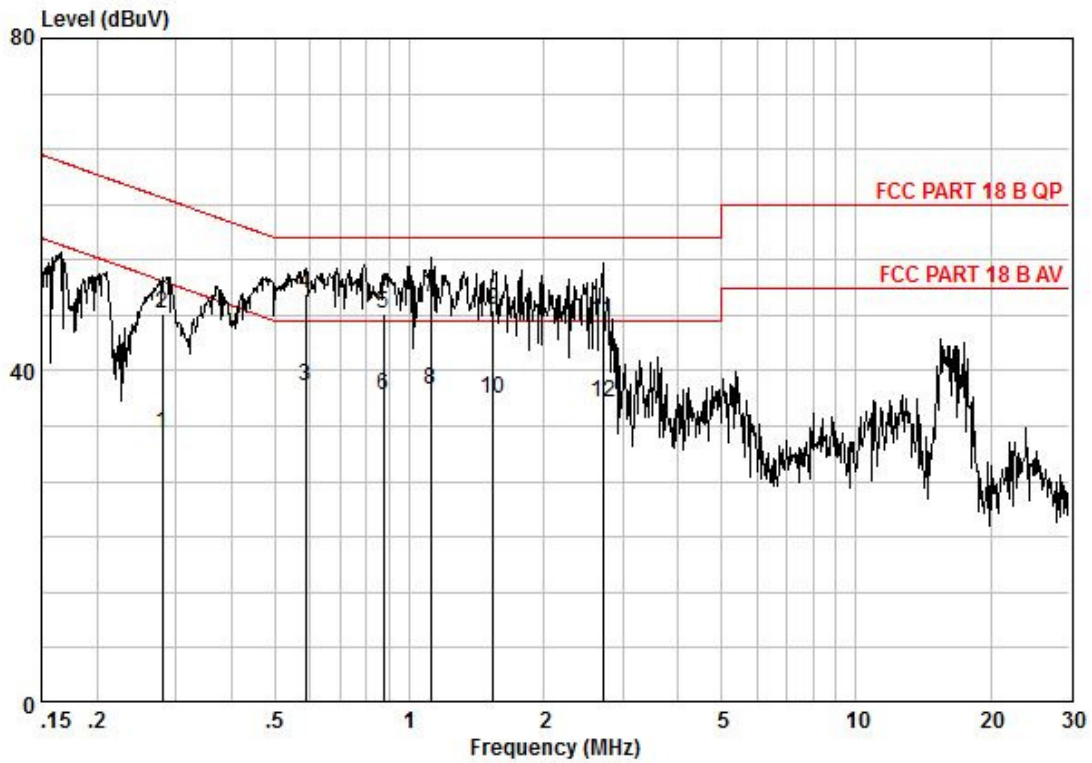


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 Guangzhou Branch Testing Center EEC Laboratory. 中国·广州·经济技术开发区科学城科珠路198号 邮编: 510663 t (86-20) 82155555 f (86-20) 82075058 sgs.china@sgs.com

Mode:a; Line:Live Line

Pol :LIVE
No :
Model :

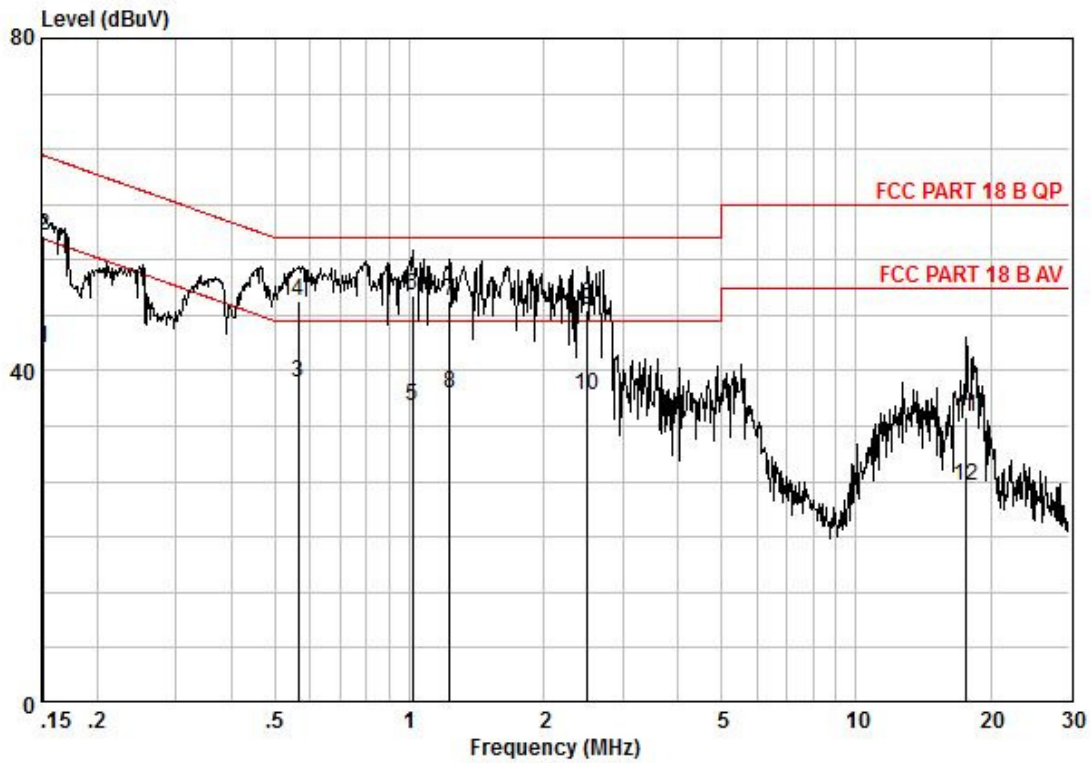
Frequency MHz	read level dBuV	Cable Loss dB	LISN Factor dB	Measured level dBuV	Limit Line dBuV	Over limit dB	Remark
0.28	22.65	0.10	9.67	32.42	50.81	-18.39	AVERAGE
0.28	37.04	0.10	9.67	46.81	60.81	-14.00	QP
0.59	28.36	0.10	9.67	38.13	46.00	-7.87	AVERAGE
0.59	39.54	0.10	9.67	49.31	56.00	-6.69	QP
0.88	37.17	0.10	9.67	46.94	56.00	-9.06	QP
0.88	27.32	0.10	9.67	37.09	46.00	-8.91	AVERAGE
1.12	39.11	0.10	9.68	48.89	56.00	-7.11	QP
1.12	28.03	0.10	9.68	37.81	46.00	-8.19	AVERAGE
1.54	37.55	0.10	9.68	47.33	56.00	-8.67	QP
1.54	26.83	0.10	9.68	36.61	46.00	-9.39	AVERAGE
2.71	36.15	0.17	9.69	46.01	56.00	-9.99	QP
2.71	26.25	0.17	9.69	36.11	46.00	-9.89	AVERAGE



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Mode:a; Line:Neutral Line

Pol : NEUTRAL
No :
Model :

Frequency MHz	read level dBuV	Cable Loss dB	LISN Factor dB	Measured level dBuV	Limit Line dBuV	Over limit dB	Remark
0,15	33,12	0,10	9,58	42,80	55,91	-13,11	AVERAGE
0,15	46,65	0,10	9,58	56,33	65,91	-9,58	QP
0,56	28,79	0,10	9,60	38,49	46,00	-7,51	AVERAGE
0,56	38,67	0,10	9,60	48,37	56,00	-7,63	QP
1,02	26,12	0,10	9,61	35,83	46,00	-10,17	AVERAGE
1,02	39,29	0,10	9,61	49,00	56,00	-7,00	QP
1,23	38,66	0,10	9,61	48,37	56,00	-7,63	QP
1,23	27,67	0,10	9,61	37,38	46,00	-8,62	AVERAGE
2,50	37,47	0,16	9,62	47,25	56,00	-8,75	QP
2,50	27,29	0,16	9,62	37,07	46,00	-8,93	AVERAGE
17,66	24,20	0,40	9,90	34,50	60,00	-25,50	QP
17,66	15,85	0,40	9,90	26,15	50,00	-23,85	AVERAGE



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6.2 Operating Frequency

- Test Requirement: 47 CFR Part 18
- Test Method: FCC OST/MP-5:1986
- Frequency Range: 2400-2500 MHz
- Detector: Average for the final result for outside ISM band(2450MHz \pm 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 =948.5 W according to clause 6.3.2

Limit=20lg(25*SQRT(power/500))+20lg(300/3)=30.78+40=70.78dBuV/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	\pm 15.0kHz
13.56MHz	\pm 7.0kHz
27.12MHz	\pm 163.0kHz
40.68MHz	\pm 20.0kHz
915MHz	\pm 13.0MHz
2450MHz	\pm 50.0MHz
5800MHz	\pm 75.0MHz
24125MHz	\pm 125.0MHz
61.25GHz	\pm 250.0MHz
122.5GHz	\pm 500.0MHz
245.00GHz	\pm 1.0GHz

6.2.1 E.U.T. Operation

- Operating Environment:
- Temperature: 23.7 °C Humidity: 54.9 % RH Atmospheric Pressure: 1020 mbar
- Test mode a: Test the EUT in microwave mode with maximum power.



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6.2.2 Measurement Data

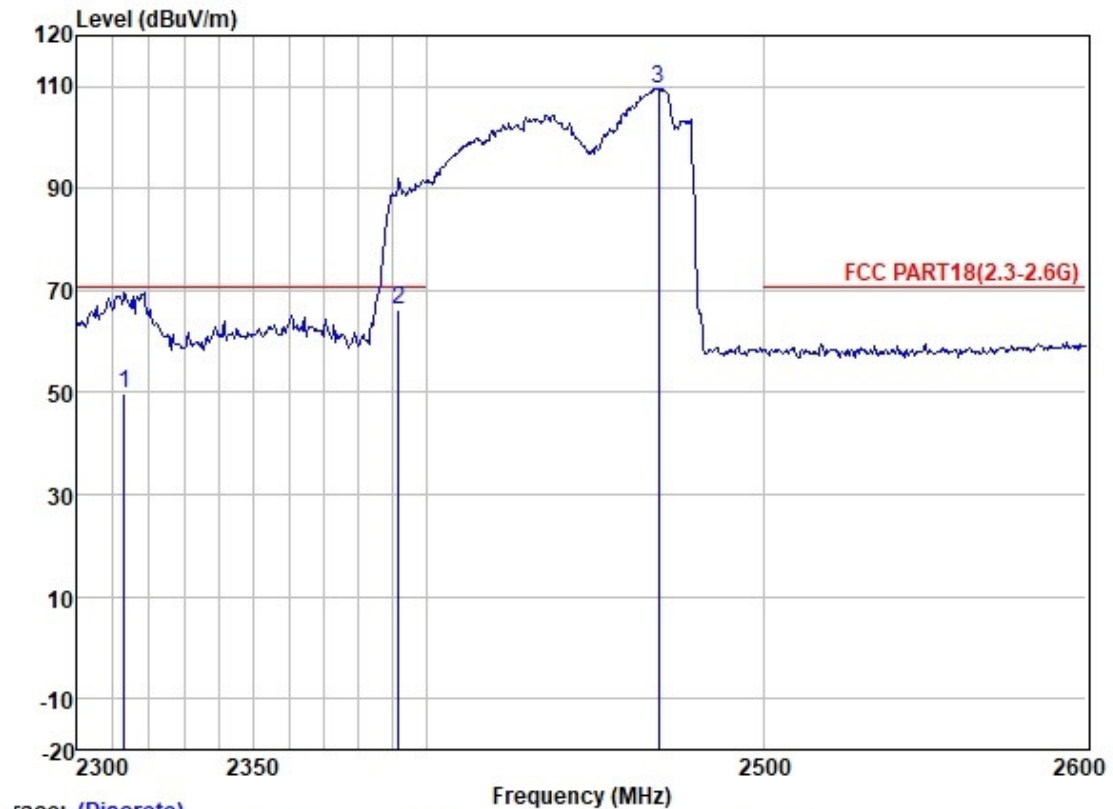
Polarization	ISM frequency(MHz)	Tolerance(MHz)	Measurement Data(MHz)
Horizontal	2450	±50	2468
Vertical	2450	±50	2448



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Mode:a; Polarization:Horizontal



Trace: (Discrete)

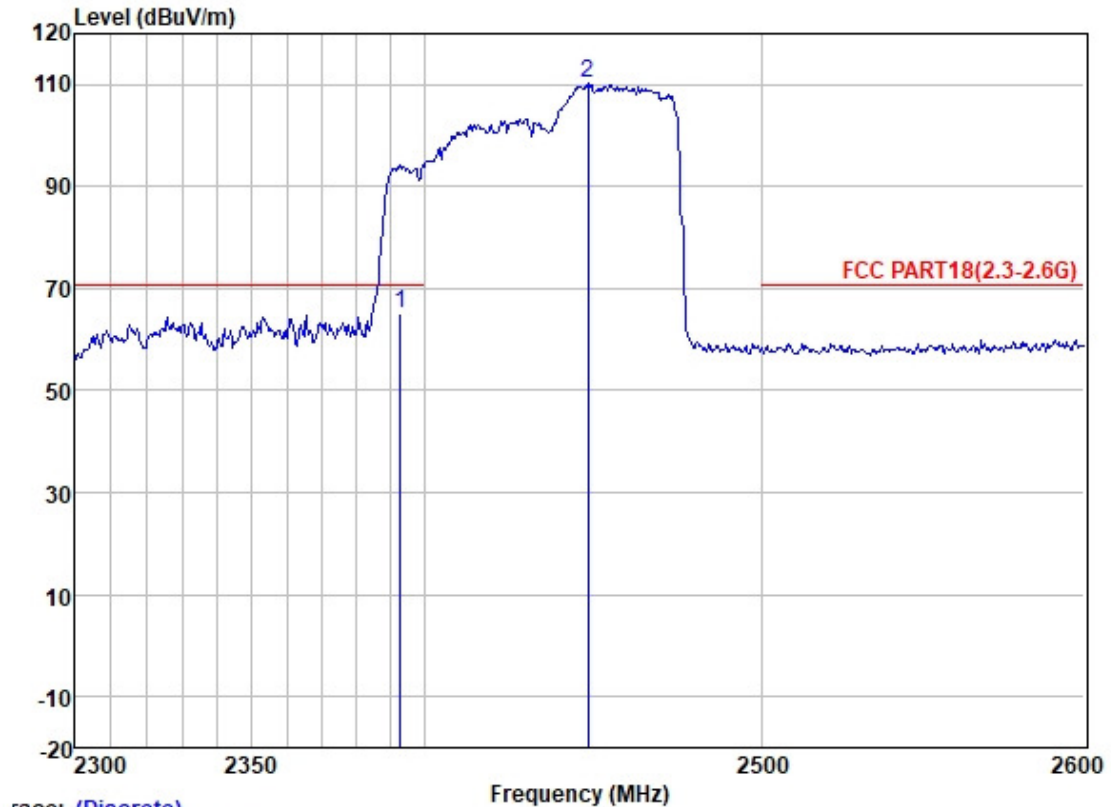
	ReadAntenna	Cable	Preamp	Limit	Over				
Freq	Level	Factor	Loss	Factor	Level	Line	Limit	Pol/Phase	Remark
MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB		
1	2313.292	20.21	26.25	3.32	0.00	49.78	70.78	-21.00	HORIZONTAL Average
2	2391.442	36.19	26.44	3.49	0.00	66.12	70.78	-4.66	HORIZONTAL Average
3	2468.296	79.48	26.56	3.55	0.00	109.59	-----	-----	HORIZONTAL Peak



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Mode:a; Polarization: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	2392.615	35.17	26.44	3.49	0.00	65.10	70.78	-5.68	VERTICAL	Average
2	2447.803	80.26	26.53	3.40	0.00	110.19	-----	-----	VERTICAL	Peak



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6.3 RF Output Power Measurement

Test Requirement: 47 CFR Part 18

Test Method: FCC OST/MP-5:1986

6.3.1 E.U.T. Operation

Operating Environment:

Temperature: 23.7 °C Humidity: 54.9 % RH Atmospheric Pressure: 1020 mbar

Test mode a: Test the EUT in microwave mode with maximum power.

6.3.2 Measurement 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)
998	410	19.8	10.2	20.0	43	956.3

Formula :

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

NOTE :

P is the microwave power output, in watts

m_w is the mass of the water, in grams

m_c is the mass of the container, in grams

T₀ is the ambient temperature, in degrees Celsius

T₁ is the initial temperature of the water, in degrees Celsius

T₂ is the final temperature of the water, in degrees Celsius

t is the heating time, in seconds, excluding the magnetron filament heating-up time.



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6.4 Radiated Emissions (30MHz-1GHz)

Test Requirement: 47 CFR Part 18

Test Method: FCC OST/MP-5:1986

Frequency Range: 30MHz to 1GHz

Measurement Distance: 3m

Detector: Peak for pre-scan, Average for the final result
 (100 kHz Resolution Bandwidth for 30MHz to 1,000MHz)

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	$25 \times \sqrt{\text{power}/500}$

Power =948.5 W according to clause 6.3.2

Limit= $20\lg(25 \times \sqrt{\text{power}/500}) + 20\lg(300/3) = 30.78 + 40 = 70.78 \text{ dBuV/m}$
 @ 3m distance.

6.4.1 E.U.T. Operation

Operating Environment:

Temperature: 21.1 °C Humidity: 46.5 % RH Atmospheric Pressure: 1020 mbar

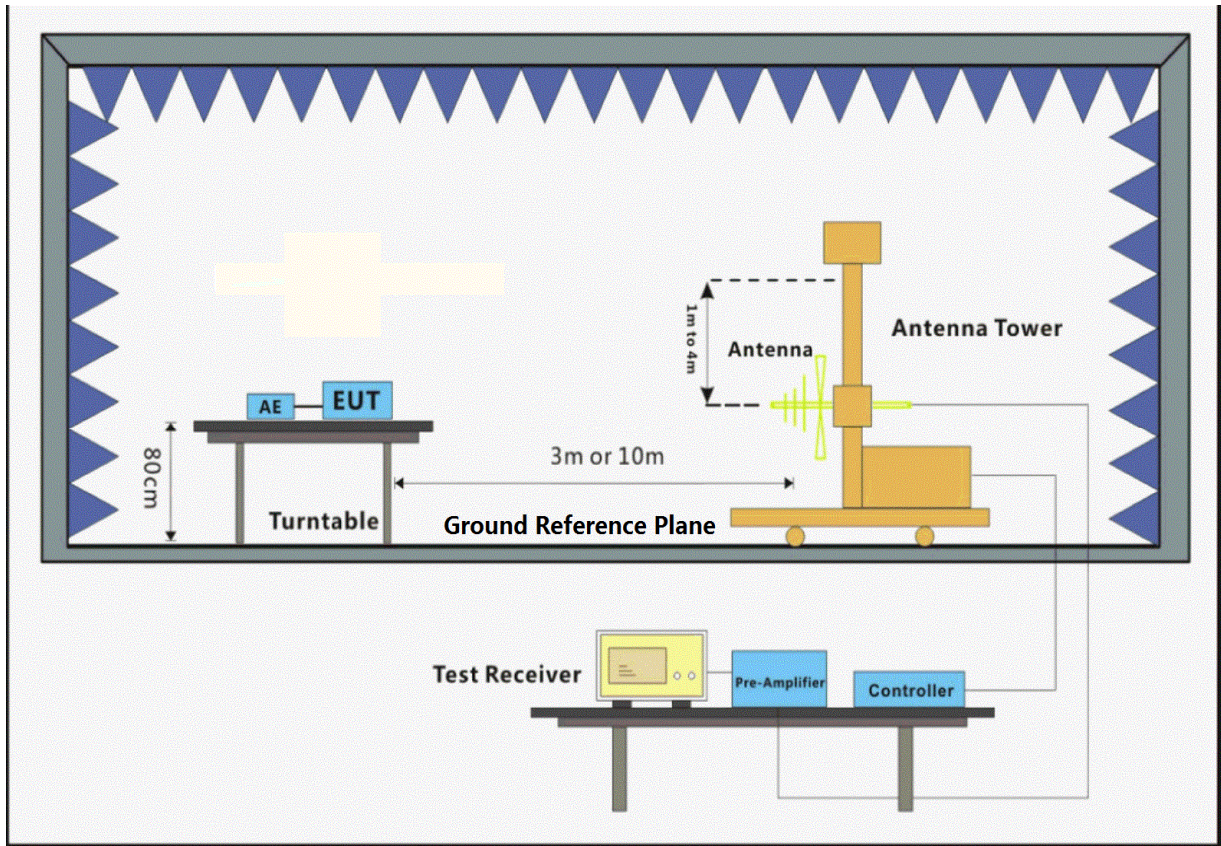
Test mode a: Test the EUT in microwave mode with maximum power.



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6.4.2 Test Setup Diagram

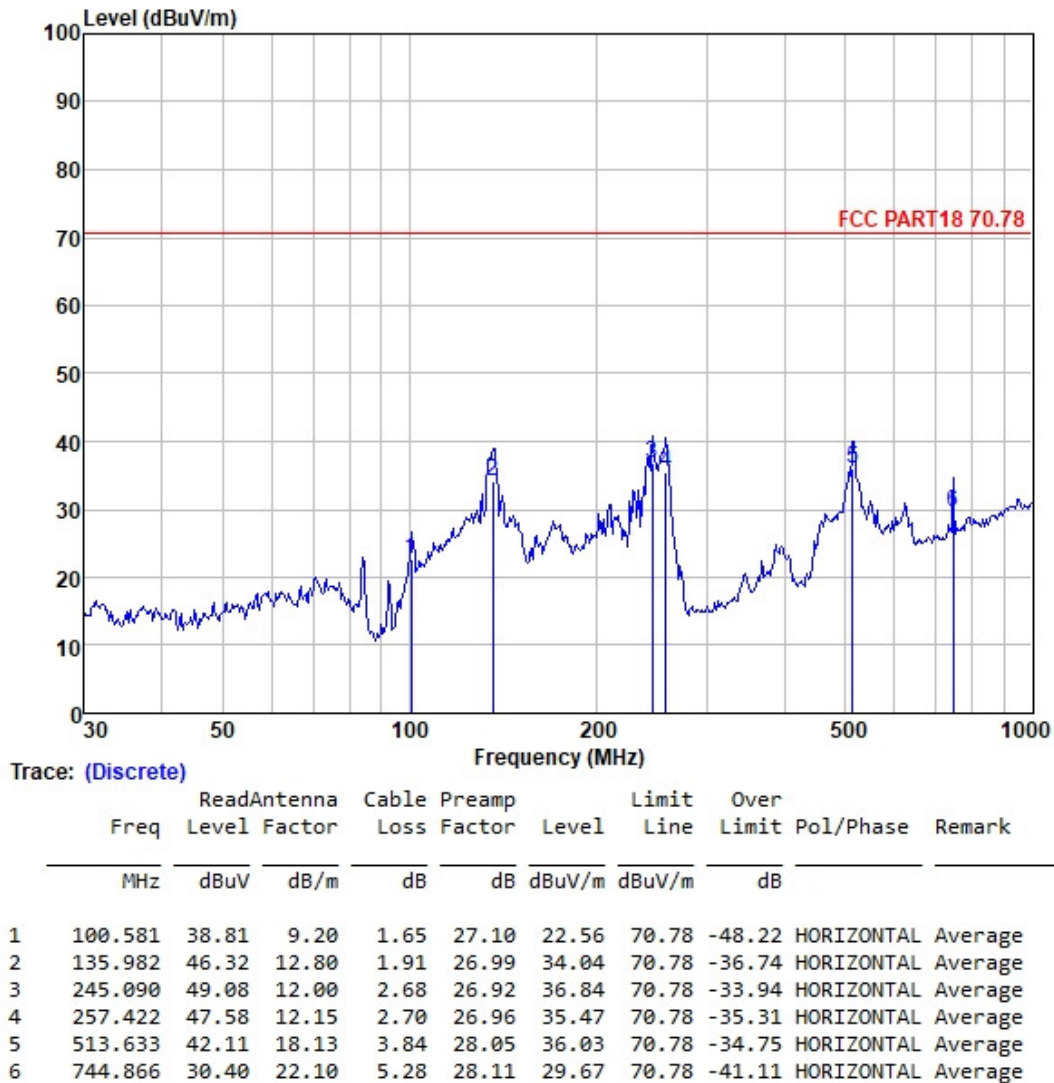


6.4.3 Measurement Data

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.

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

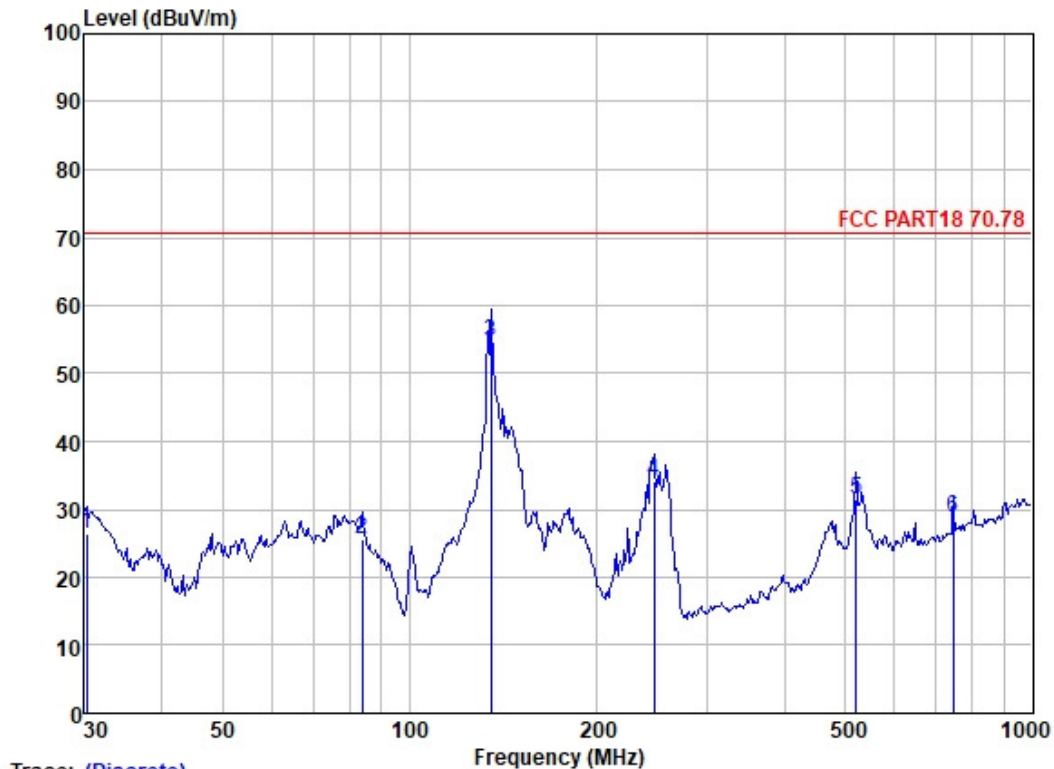
Mode:a; Polarization:Horizontal



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Mode:a; Polarization: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	30.211	40.07	12.43	1.02	27.20	26.32	70.78	-44.46	VERTICAL	Average
2	83.816	42.96	8.04	1.62	27.11	25.51	70.78	-45.27	VERTICAL	Average
3	135.032	67.02	12.65	1.91	27.00	54.58	70.78	-16.20	VERTICAL	Average
4	246.815	46.22	12.03	2.69	26.92	34.02	70.78	-36.76	VERTICAL	Average
5	520.888	37.51	18.20	3.93	28.05	31.59	70.78	-39.19	VERTICAL	Average
6	744.866	29.48	22.10	5.28	28.11	28.75	70.78	-42.03	VERTICAL	Average



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6.5 Radiated Emissions (above 1GHz)

Test Requirement: 47 CFR Part 18

Test Method: FCC OST/MP-5:1986

Frequency Range: Above 1GHz

Measurement Distance: 3m

Detector: Peak for pre-scan, Average for the final result
 (100 kHz Resolution Bandwidth for 30MHz to 1,000MHz)

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	$25 \times \sqrt{\text{power}/500}$

Power =948.5 W according to clause 6.3.2

Limit= $20\lg(25 \times \sqrt{\text{power}/500}) + 20\lg(300/3) = 30.78 + 40 = 70.78 \text{ dBuV/m}$
 @ 3m distance.

6.5.1 E.U.T. Operation

Operating Environment:

Temperature: 21.1 °C Humidity: 51.5 % RH Atmospheric Pressure: 1020 mbar

Test mode a: Test the EUT in microwave mode with maximum power.



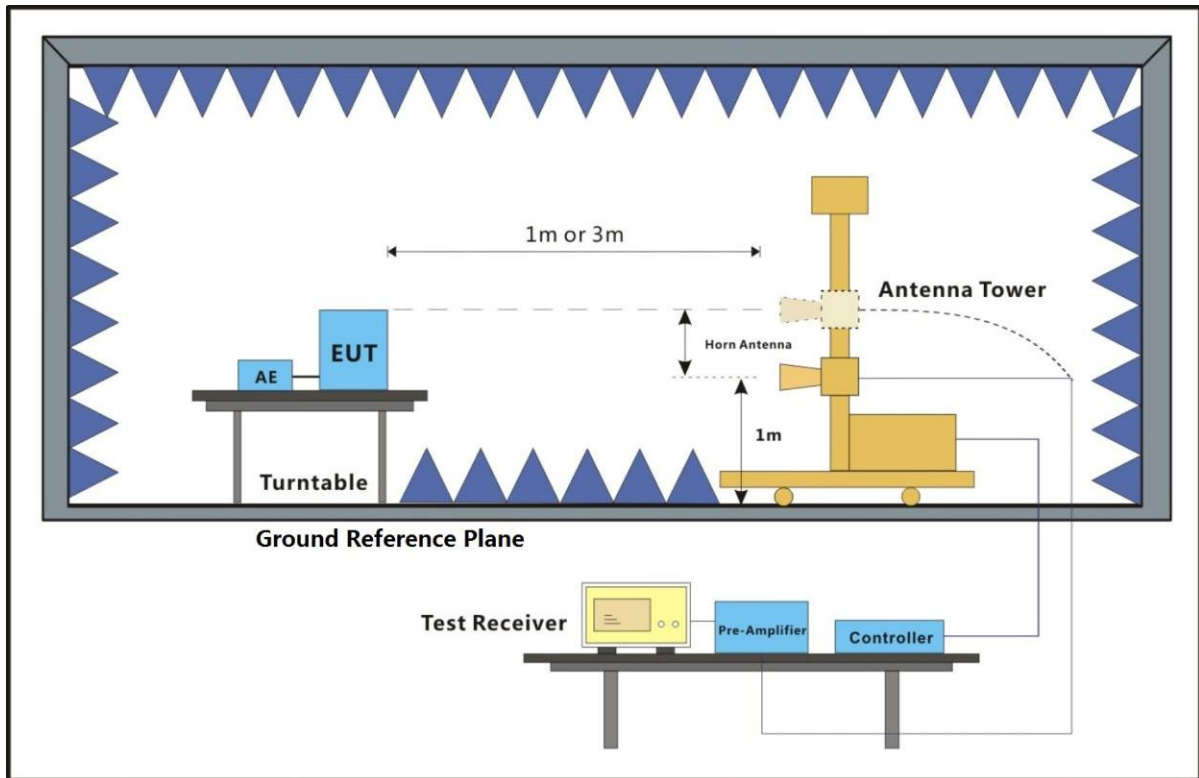
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6.5.2 Test Setup Diagram



6.5.3 Measurement Data

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.

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



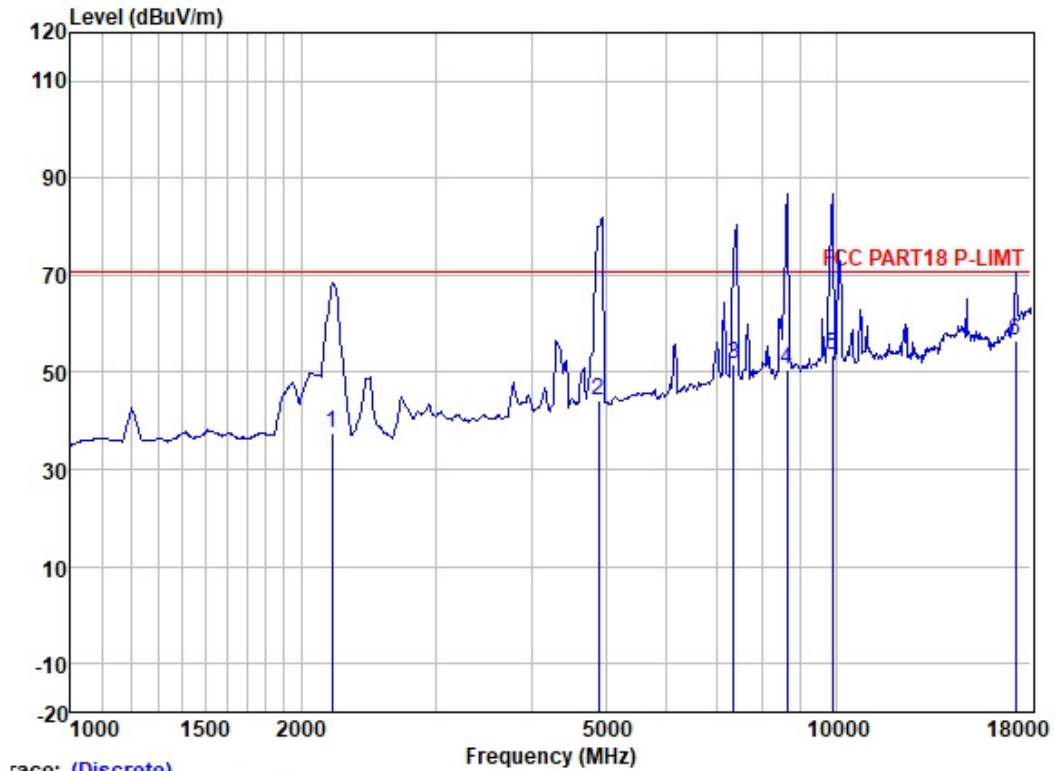
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Mode:a; Polarization:Horizontal



Trace: (Discrete)

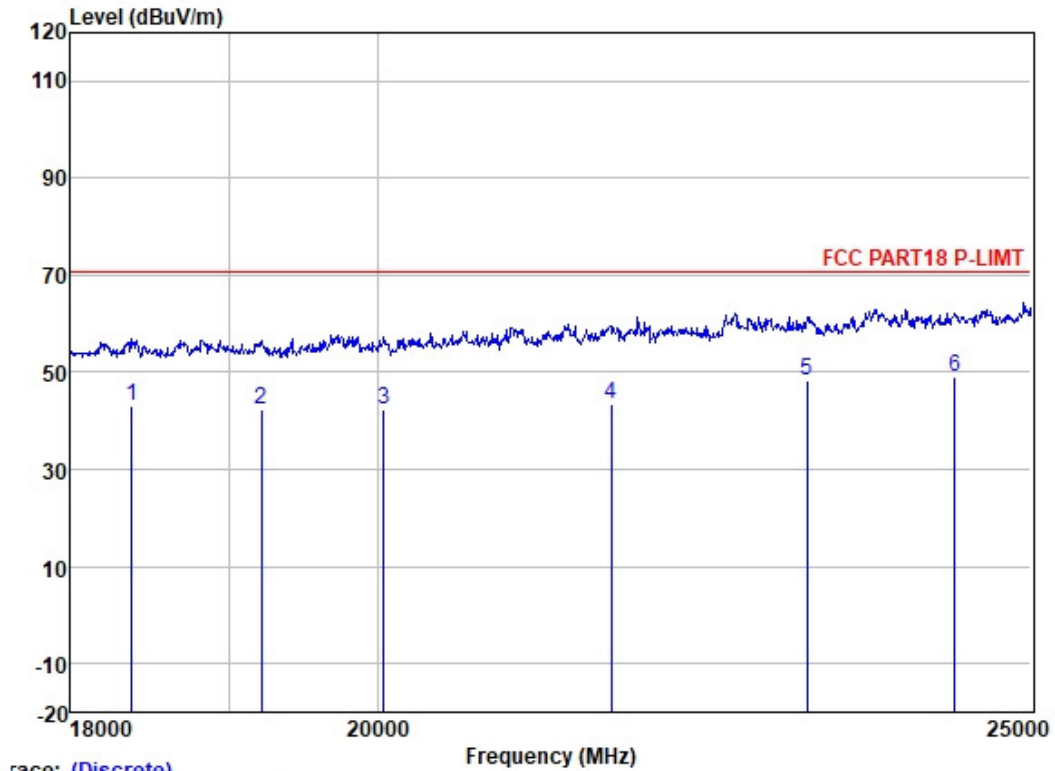
	ReadAntenna	Cable	Preamp		Limit	Over			
Freq	Level	Factor	Loss	Factor	Level	Line	Limit	Pol/Phase	Remark
MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB		
1	2194.998	46.13	25.69	3.20	37.47	37.55	70.78	-33.23	HORIZONTAL Average
2	4893.078	44.51	30.95	5.52	36.95	44.03	70.78	-26.75	HORIZONTAL Average
3	7356.386	46.53	35.78	6.15	36.92	51.54	70.78	-19.24	HORIZONTAL Average
4	8638.399	44.54	36.20	6.92	36.95	50.71	70.78	-20.07	HORIZONTAL Average
5	9895.349	45.85	37.89	6.97	37.09	53.62	70.78	-17.16	HORIZONTAL Average
6	17186.530	40.46	42.11	9.92	35.80	56.69	70.78	-14.09	HORIZONTAL Average



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Mode:a; Polarization:Horizontal



race: (Discrete)

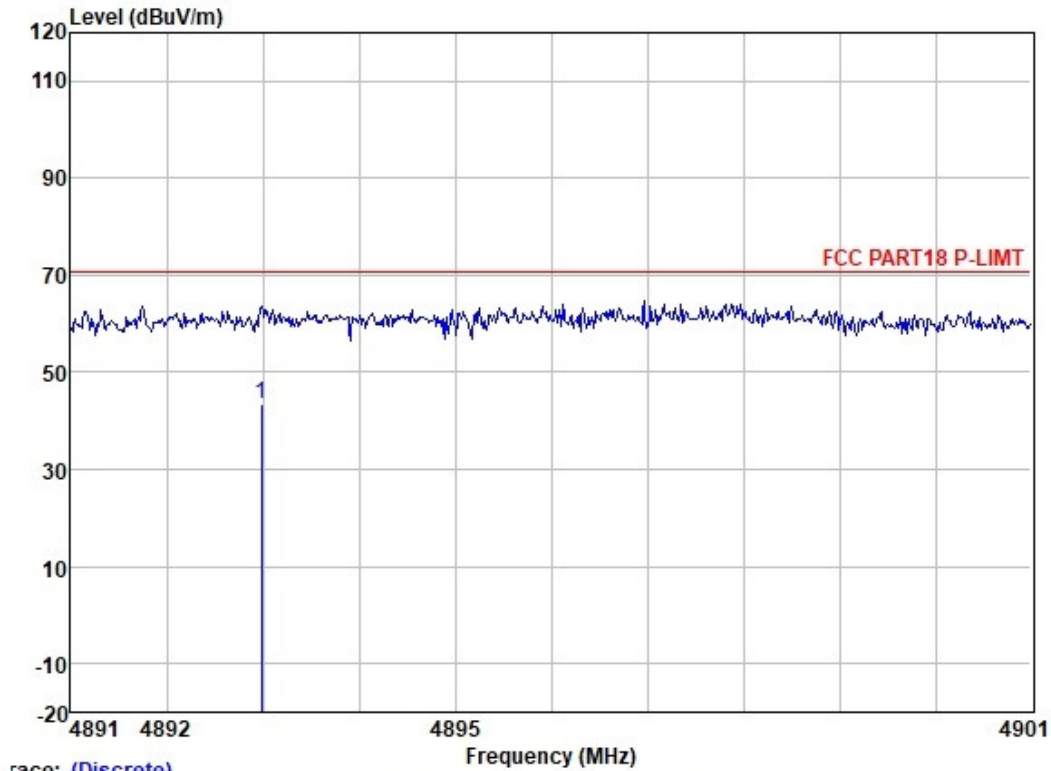
	ReadAntenna	Cable	Preamp		Limit	Over			
Freq	Level	Factor	Loss	Factor	Level	Line	Limit	Pol/Phase	Remark
MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB		
1 18382.440	24.14	37.93	16.62	35.60	43.09	70.78	-27.69	HORIZONTAL	Average
2 19216.020	23.08	38.00	16.96	35.60	42.44	70.78	-28.34	HORIZONTAL	Average
3 20034.670	22.53	38.00	17.31	35.59	42.25	70.78	-28.53	HORIZONTAL	Average
4 21656.800	22.41	38.12	18.45	35.34	43.64	70.78	-27.14	HORIZONTAL	Average
5 23157.860	25.18	39.60	19.33	35.79	48.32	70.78	-22.46	HORIZONTAL	Average
6 24351.550	25.05	39.51	20.62	36.11	49.07	70.78	-21.71	HORIZONTAL	Average



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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 4892.988	45.08	30.95	5.52	36.95	44.60	70.78	-26.18	HORIZONTAL	Average



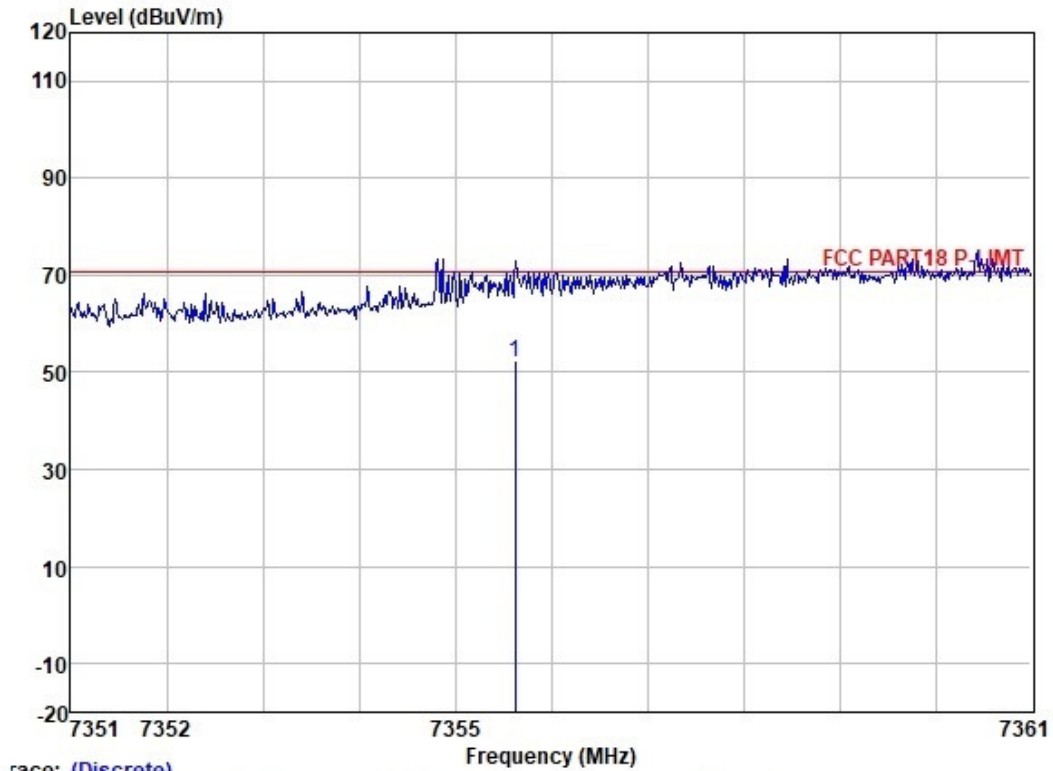
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Mode:a; Polarization:Horizontal



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 7355.628	47.11	35.78	6.15	36.92	52.12	70.78	-18.66	HORIZONTAL	Average



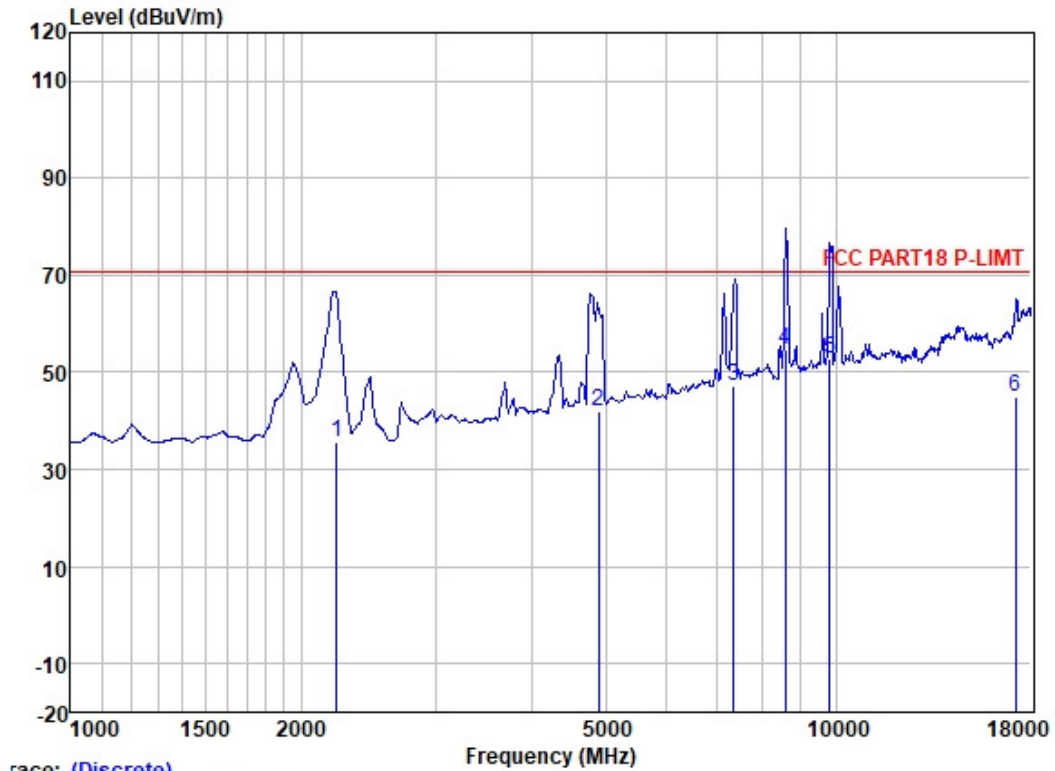
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Mode:a; Polarization:Vertical



race: (Discrete)

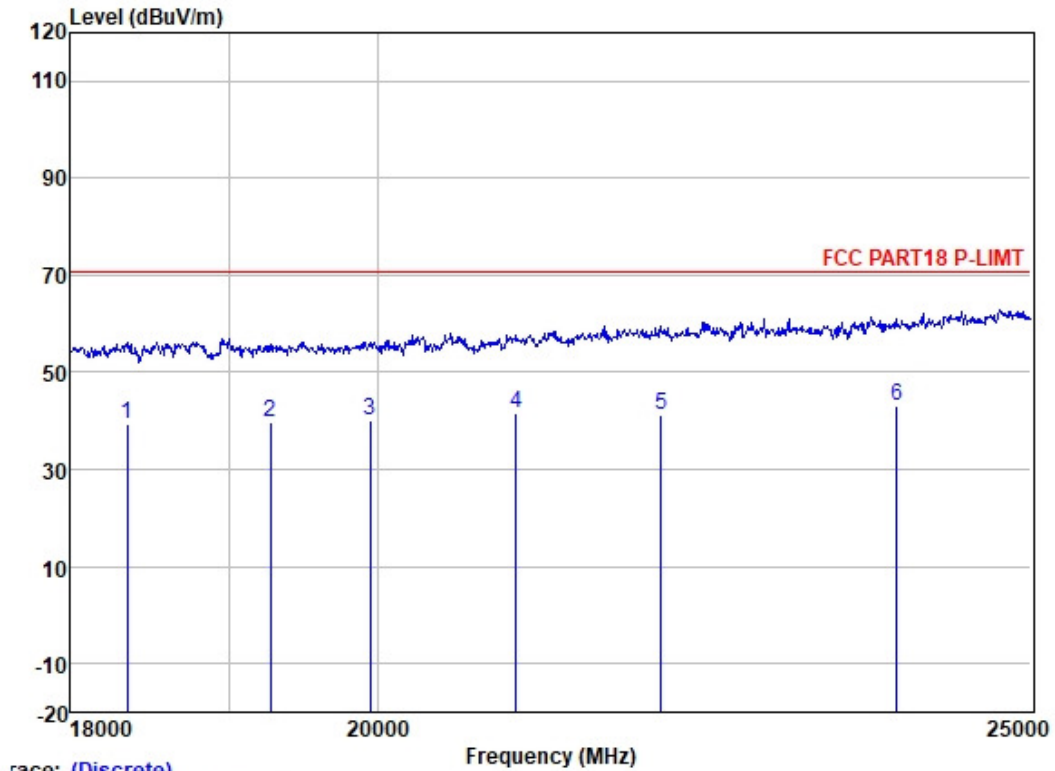
		ReadAntenna	Cable	Preamp		Limit	Over			
	Freq	Level	Factor	Loss	Factor	Level	Line	Limit	Pol/Phase	Remark
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB		
1	2226.950	44.02	25.86	3.23	37.46	35.65	70.78	-35.13	VERTICAL	Average
2	4892.450	42.55	30.95	5.52	36.95	42.07	70.78	-28.71	VERTICAL	Average
3	7351.266	42.29	35.78	6.15	36.92	47.30	70.78	-23.48	VERTICAL	Average
4	8588.607	48.59	36.16	6.84	36.95	54.64	70.78	-16.14	VERTICAL	Average
5	9809.916	44.93	37.79	7.00	37.09	52.63	70.78	-18.15	VERTICAL	Average
6	17186.530	28.82	42.11	9.92	35.80	45.05	70.78	-25.73	VERTICAL	Average



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race: (Discrete)

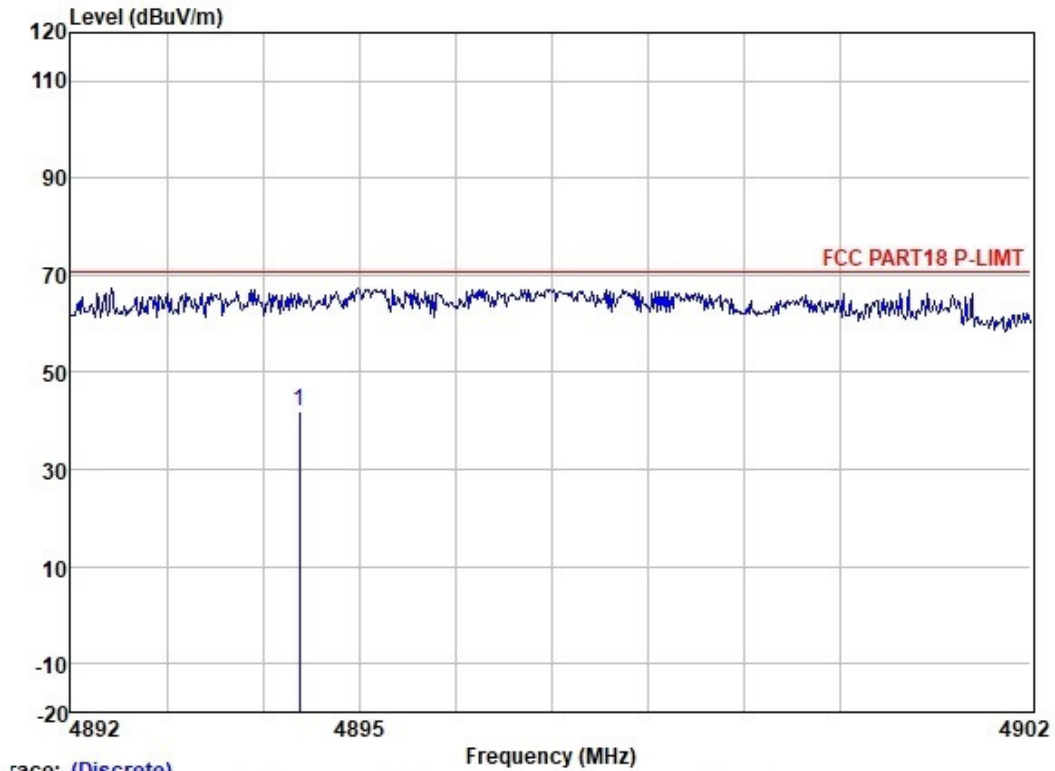
		ReadAntenna	Cable	Preamp		Limit	Over			
	Freq	Level	Factor	Loss	Factor	Level	Line	Limit	Pol/Phase	Remark
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB		
1	18352.270	20.34	37.93	16.61	35.60	39.28	70.78	-31.50	VERTICAL	Average
2	19272.910	20.39	38.00	16.98	35.60	39.77	70.78	-31.01	VERTICAL	Average
3	19942.740	20.56	38.00	17.29	35.60	40.25	70.78	-30.53	VERTICAL	Average
4	20963.810	21.18	37.90	17.99	35.45	41.62	70.78	-29.16	VERTICAL	Average
5	22029.930	19.79	38.24	18.61	35.30	41.34	70.78	-29.44	VERTICAL	Average
6	23876.270	19.29	39.60	20.31	36.08	43.12	70.78	-27.66	VERTICAL	Average



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Mode:a; Polarization: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 4894.378	43.54	30.95	5.52	36.95	43.06	70.78	-27.72	VERTICAL	Average



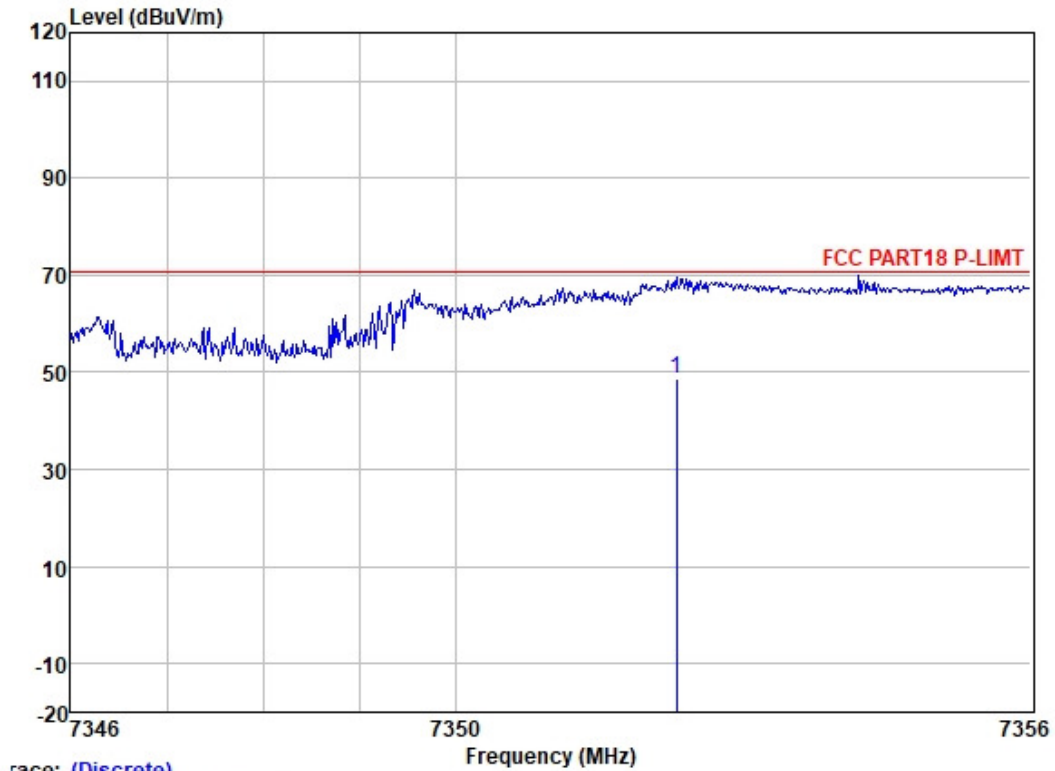
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Mode:a; Polarization:Vertical



race: (Discrete)

	ReadAntenna	Cable	Preamp		Limit	Over			
Freq	Level	Factor	Loss	Factor	Level	Line	Limit	Pol/Phase	Remark
MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB		
1 7352.309	43.67	35.78	6.15	36.92	48.68	70.78	-22.10	VERTICAL	Average



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

Test Requirement: 47 CFR Part 18

Test Method: FCC OST/MP-5:1986

Frequency Range: 9kHz to 30MHz

Measurement Distance: 10m

Detector: Peak for pre-scan, Average for the final result
 (200Hz Resolution Bandwidth for 9kHz to 150kHz;
 9kHz Resolution Bandwidth for 150kHz to 30MHz)

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 =948.5 W according to clause 6.3.2

Limit=20lg(25*SQRT(power/500))+20lg(300/10)=60.32dBuV/m @ 10m distance.

6.6.1 E.U.T. Operation

Operating Environment:

Temperature: 21.1 °C Humidity: 46.5 % RH Atmospheric Pressure: 1020 mbar

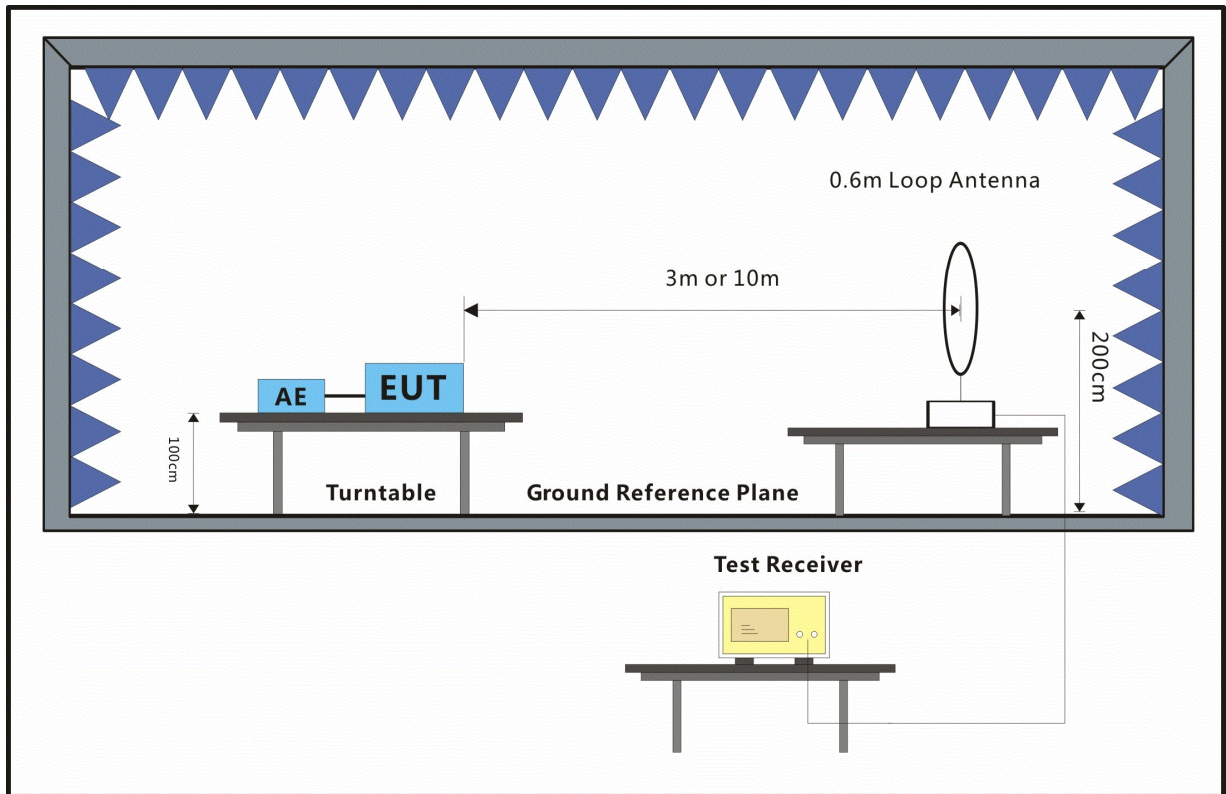
Test mode a: Test the EUT in microwave mode with maximum power.



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6.6.2 Test Setup Diagram



6.6.3 Measurement Data

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.

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



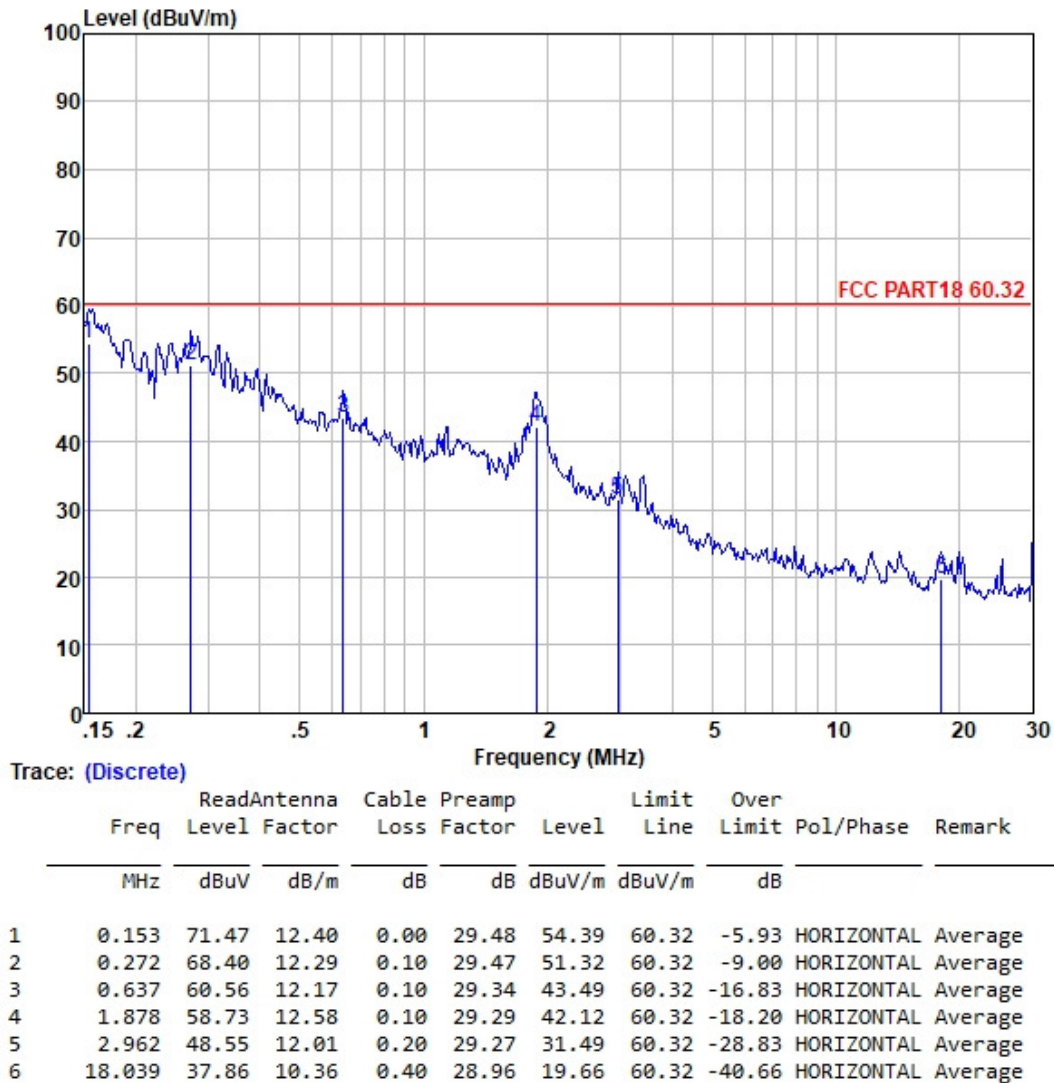
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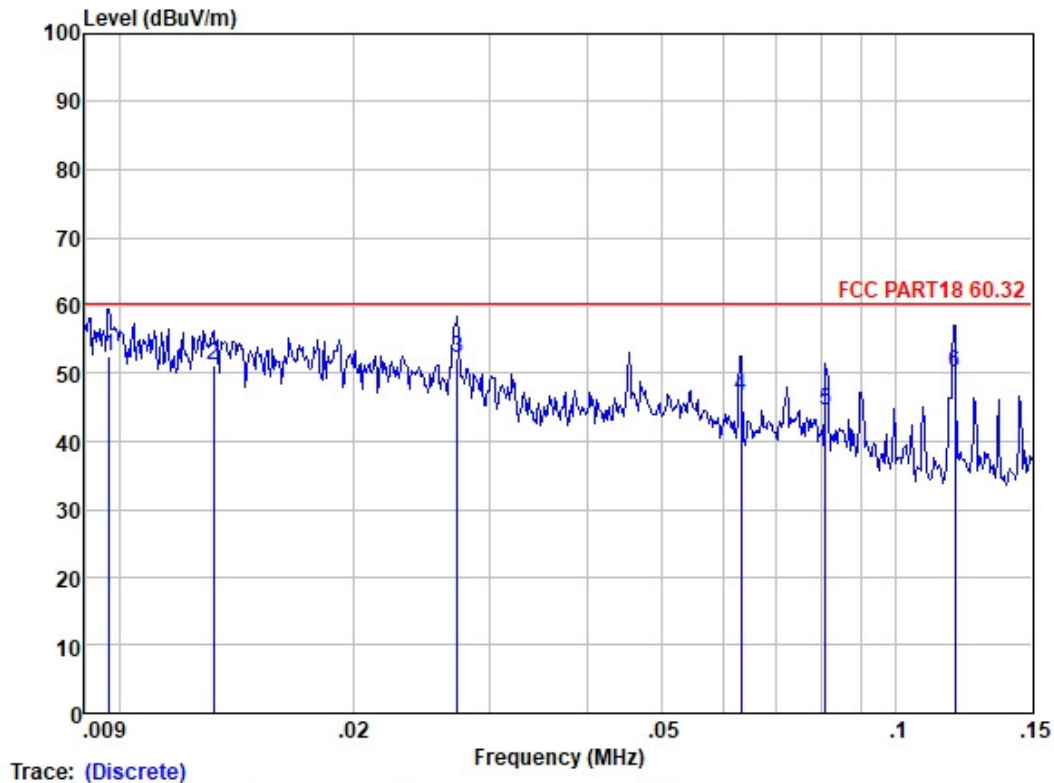
Mode:a; Polarization:Horizontal



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Mode:a; Polarization: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	0.010	60.41	21.60	0.00	29.50	52.51	60.32	-7.81	HORIZONTAL Average
2	0.013	60.87	19.94	0.00	29.49	51.32	60.32	-9.00	HORIZONTAL Average
3	0.027	66.40	15.36	0.00	29.47	52.29	60.32	-8.03	HORIZONTAL Average
4	0.063	63.60	12.44	0.00	29.43	46.61	60.32	-13.71	HORIZONTAL Average
5	0.081	61.44	12.40	0.00	29.42	44.42	60.32	-15.90	HORIZONTAL Average
6	0.119	67.04	12.40	0.00	29.43	50.01	60.32	-10.31	HORIZONTAL Average



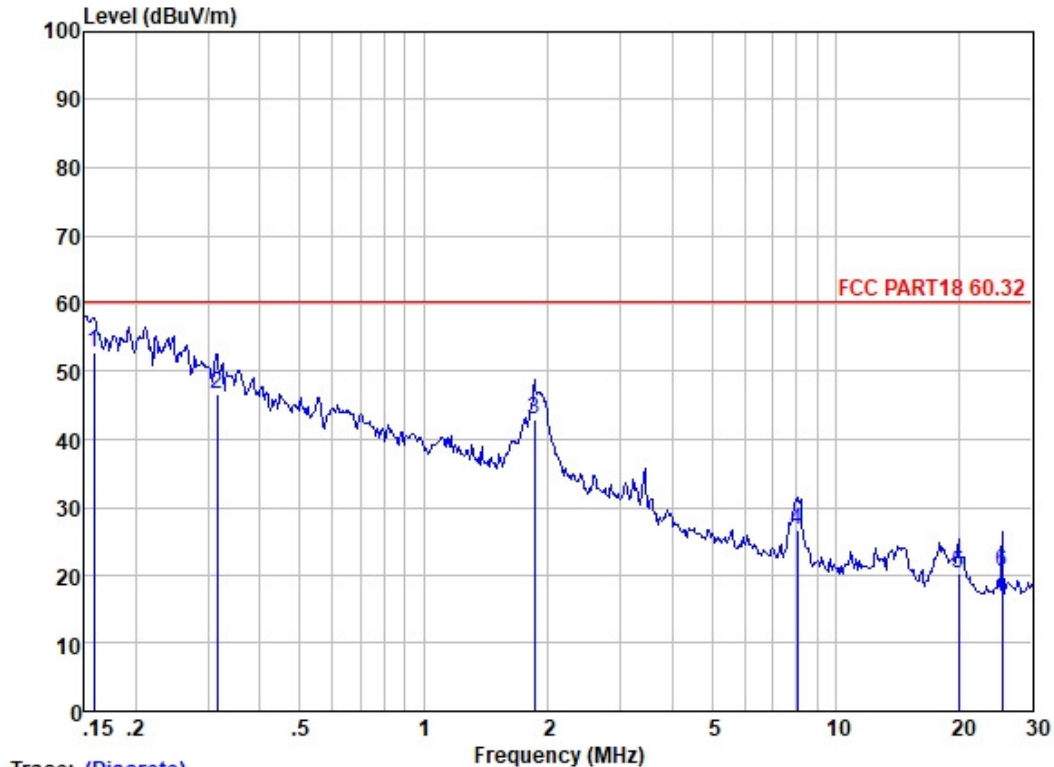
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Mode:a; Polarization:Vertical



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	0.158	70.00	12.39	0.00	29.48	52.91	60.32	-7.41	VERTICAL
2	0.315	63.72	12.25	0.10	29.42	46.65	60.32	-13.67	VERTICAL
3	1.858	59.46	12.58	0.10	29.29	42.85	60.32	-17.47	VERTICAL
4	8.062	44.58	10.81	0.30	29.11	26.58	60.32	-33.74	VERTICAL
5	19.845	38.45	10.30	0.50	28.94	20.31	60.32	-40.01	VERTICAL
6	25.321	37.86	10.56	0.89	28.84	20.47	60.32	-39.85	VERTICAL



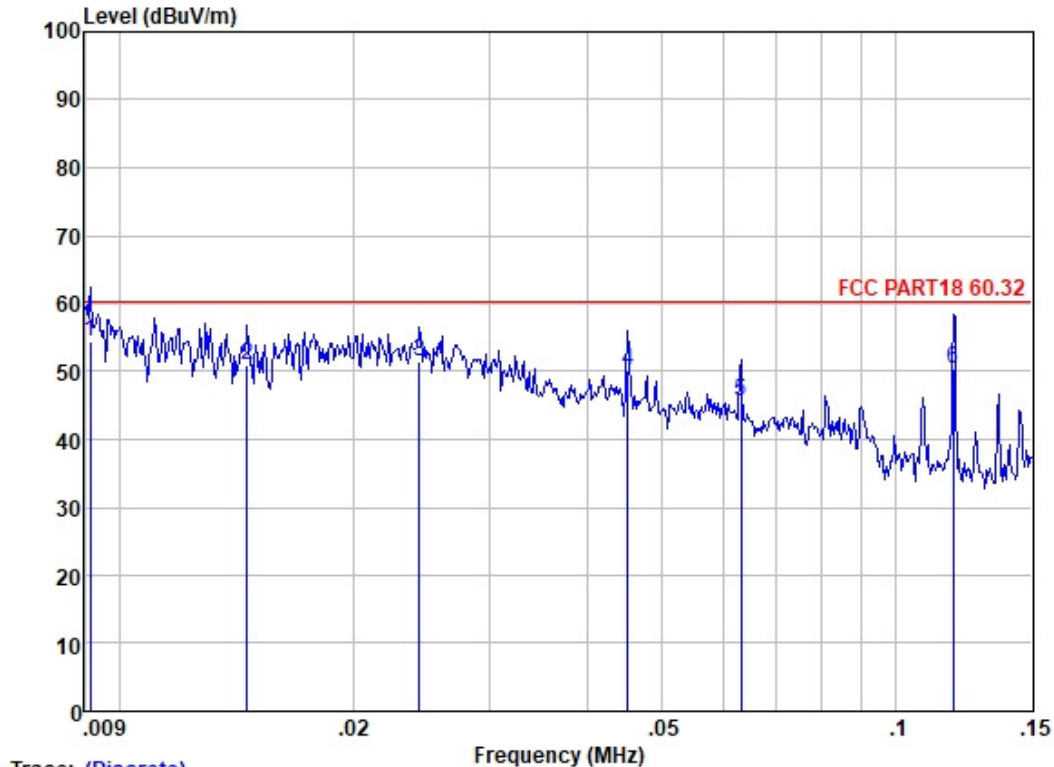
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Mode:a; Polarization:Vertical



Trace: (Discrete)

	Freq	ReadAntenna Level Factor	Cable Loss	Preamp Factor	Level	Limit Line	Over Limit	Pol/Phase	Remark	
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB		
1	0.009	62.21	21.60	0.00	29.50	54.31	60.32	-6.01	VERTICAL	Average
2	0.015	61.99	18.35	0.00	29.49	50.85	60.32	-9.47	VERTICAL	Average
3	0.024	65.25	15.76	0.00	29.48	51.53	60.32	-8.79	VERTICAL	Average
4	0.045	66.80	12.69	0.00	29.43	50.06	60.32	-10.26	VERTICAL	Average
5	0.063	62.61	12.44	0.00	29.43	45.62	60.32	-14.70	VERTICAL	Average
6	0.118	67.30	12.40	0.00	29.43	50.27	60.32	-10.05	VERTICAL	Average

--End of Report--



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