



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

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Report No.: GZEM190801510402
Page: 1 of 37
FCC ID: UHW9028001

TEST REPORT

Application No.: GZEM1908015104HS
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: UHW9028001
EUT Name: Microwave Oven
Model No.: D90N28MSLRHHV-WA, D90N28MSLRHHV-WAB, D90N28(X)RIHHV-(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: 2019-08-15
Date of Test: 2019-08-19 to 2019-08-28
Date of Issue: 2019-09-19

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

Kobe Jian

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.



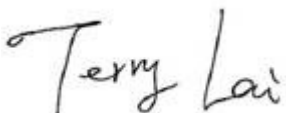
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Revision Record				
Version	Chapter	Date	Modifier	Remark
01		2019-09-19		Original

Authorized for issue by:			
Tested By	 Damon_Guan /Project Engineer		2019-08-19 to 2019-08-28
			Date
Checked By	 Terry_Lai /Reviewer		2019-09-19
			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
RF Output Power Measurement	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
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
N/A: not applicable.				

✧ Declaration of EUT Family Grouping:

Model No.: D90N28MSLRIIHV-WA, D90N28MSLRIIHV-WAB, D90N28(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.

Therefore only one model D90N28MSLRIIHV-WA was tested in this report.



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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	Temperature	±0.4℃
5	Humidity	±1.3%
6	DC power	±0.5 %

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,
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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	2018-09-21	2019-09-20
EMI Test Receiver	Rohde & Schwarz	ESCS30	EMC0506	2018-11-19	2019-11-18
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 30MHz-1GHz	SCHWARZBECKME SS-ELEKTRONIK	VULB 9160	EMC2025	2016-09-08	2019-09-07
Trilog Broadband Antenna 30MHz-1GHz	SCHWARZBECKME SS-ELEKTRONIK	VULB 9168	SEM003-18	2019-02-22	2022-02-22
Bi-log Type Antenna	Schaffner -Chase	CBL6112B	EMC0524	2016-09-08	2019-09-07
Bi-log Type Antenna	Schaffner -Chase	CBL6143	EMC0519	2017-05-04	2020-05-03
Horn Antenna 1GHz-18GHz	SCHWARZBECK MESS-ELEKTRONIK	BBHA 9120D	EMC2026	2016-09-09	2019-09-08
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	2018-11-19	2019-11-18
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	2018-12-08	2019-12-07
966 Anechoic Chamber	C.R.T	9m x 6m x 6m	EMC2142	2017-12-19	2019-12-18
MXE EMI Receiver	Keysight	N9038A	EMC2139	2018-11-19	2019-11-18
EXA Signal Analyzer	Keysight	N9010A	EMC2138	2018-11-19	2019-11-18
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 30MHz-1GHz	SCHWARZBECKME SS-ELEKTRONIK	VULB 9160	EMC2025	2016-09-08	2019-09-07
Bi-log Type Antenna	Schaffner -Chase	CBL6112B	EMC0524	2016-09-08	2019-09-07
Bi-log Type Antenna	Schaffner -Chase	CBL6143	EMC0519	2017-05-04	2020-05-03
Horn Antenna 1GHz-18GHz	SCHWARZBECK MESS-ELEKTRONIK	BBHA 9120D	EMC2026	2016-09-09	2019-09-08
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	2018-11-19	2019-11-18
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	2018-12-08	2019-12-07
966 Anechoic Chamber	C.R.T	9m x 6m x 6m	EMC2142	2017-12-19	2019-12-18
MXE EMI Receiver	Keysight	N9038A	EMC2139	2018-11-19	2019-11-18
EXA Signal Analyzer	Keysight	N9010A	EMC2138	2018-11-19	2019-11-18
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 30MHz-1GHz	SCHWARZBECKME SS-ELEKTRONIK	VULB 9160	EMC2025	2016-09-08	2019-09-07
Trilog Broadband Antenna 30MHz-1GHz	SCHWARZBECKME SS-ELEKTRONIK	VULB 9168	SEM003-18	2019-02-22	2022-02-22
Bi-log Type Antenna	Schaffner -Chase	CBL6112B	EMC0524	2016-09-08	2019-09-07
Bi-log Type Antenna	Schaffner -Chase	CBL6143	EMC0519	2017-05-04	2020-05-03
Horn Antenna 1GHz-18GHz	SCHWARZBECK MESS-ELEKTRONIK	BBHA 9120D	EMC2026	2016-09-09	2019-09-08
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	2018-11-19	2019-11-18
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	2018-12-08	2019-12-07
966 Anechoic Chamber	C.R.T	9m x 6m x 6m	EMC2142	2017-12-19	2019-12-18
MXE EMI Receiver	Keysight	N9038A	EMC2139	2018-11-19	2019-11-18
EXA Signal Analyzer	Keysight	N9010A	EMC2138	2018-11-19	2019-11-18
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

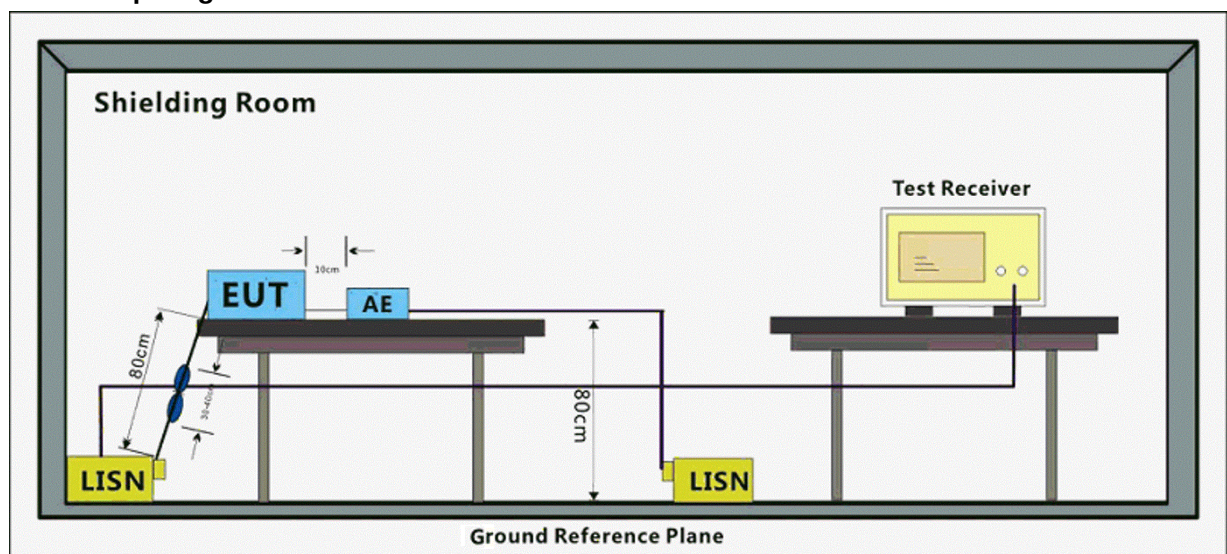
6.1.1 E.U.T. Operation

Operating Environment:

Temperature: 25 °C Humidity: 69.3 % 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



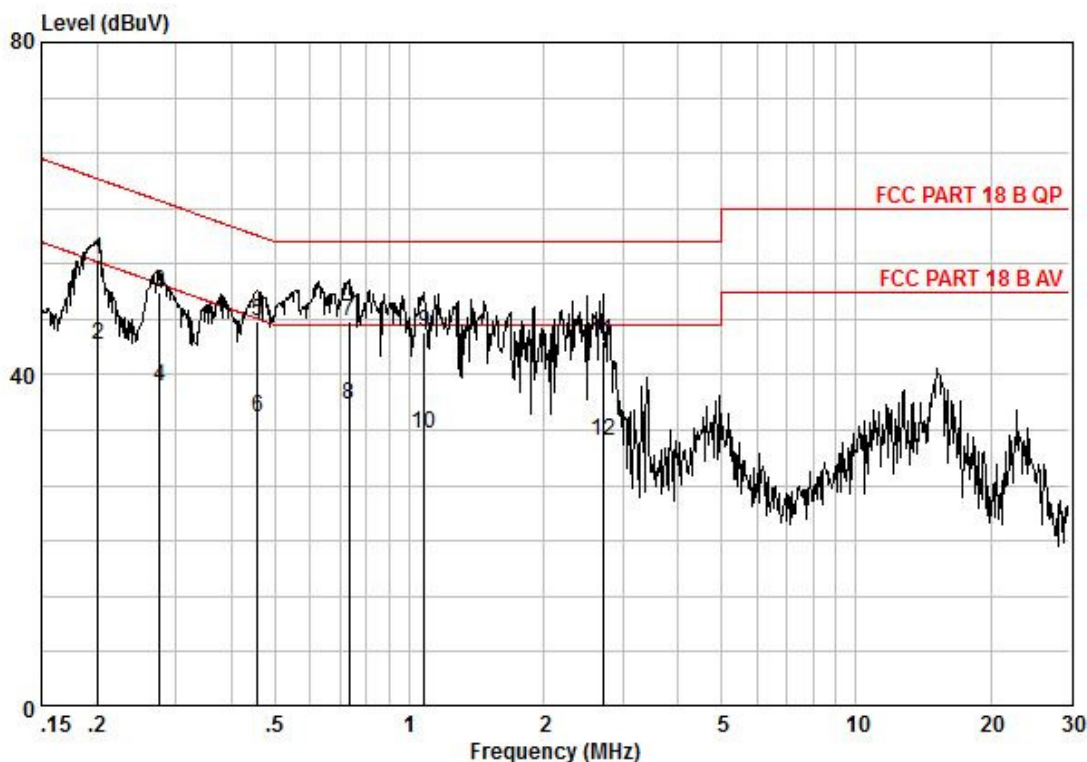
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Mode:a; Line:Live Line

Pol :LIVE
No :
Model :

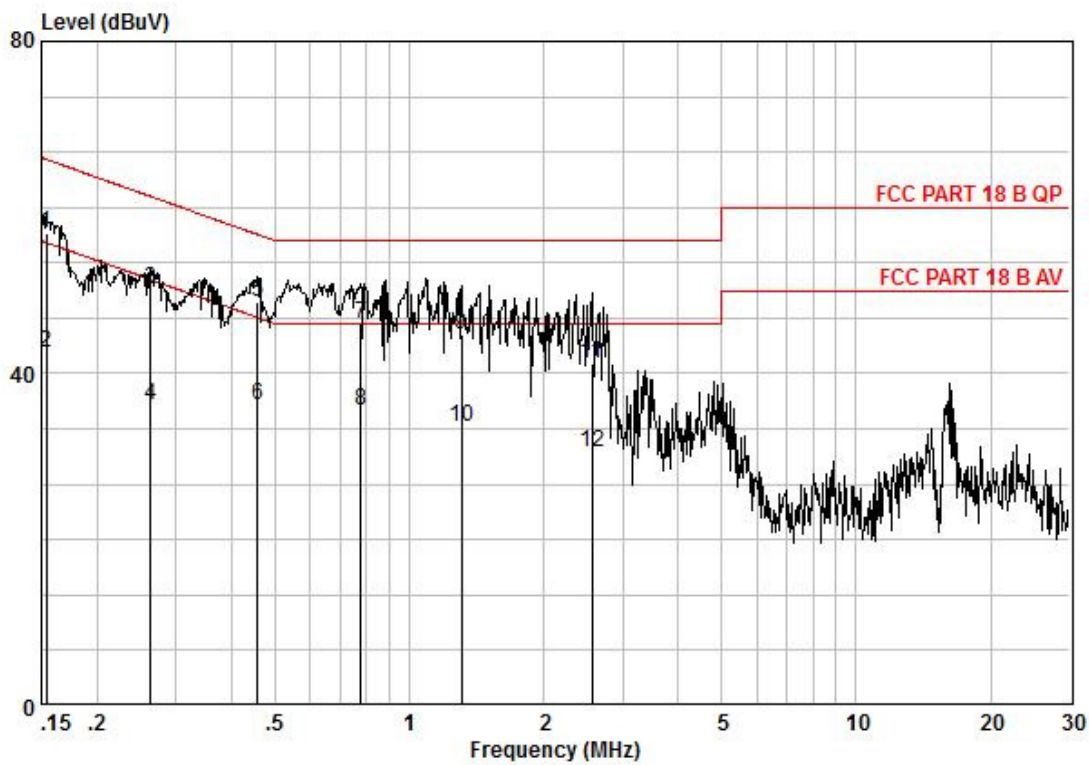
Frequency MHz	read level dBUV	Cable Loss dB	LISN Factor dB	Measured level dBUV	Limit Line dBUV	Over limit dB	Remark
0.20	44.03	0.10	9.66	53.79	63.58	-9.79	QP
0.20	33.85	0.10	9.66	43.61	53.58	-9.97	AVERAGE
0.28	40.17	0.10	9.67	49.94	60.94	-11.00	QP
0.28	28.71	0.10	9.67	38.48	50.94	-12.46	AVERAGE
0.46	36.65	0.10	9.67	46.42	56.76	-10.34	QP
0.46	25.08	0.10	9.67	34.85	46.76	-11.91	AVERAGE
0.73	36.75	0.10	9.67	46.52	56.00	-9.48	QP
0.73	26.64	0.10	9.67	36.41	46.00	-9.59	AVERAGE
1.08	35.43	0.10	9.67	45.20	56.00	-10.80	QP
1.08	23.07	0.10	9.67	32.84	46.00	-13.16	AVERAGE
2.71	34.22	0.17	9.69	44.08	56.00	-11.92	QP
2.71	22.14	0.17	9.69	32.00	46.00	-14.00	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	47,15	0,10	9,58	56,83	65,78	-8,95	QP
0,15	32,72	0,10	9,58	42,40	55,78	-13,38	AVERAGE
0,26	40,36	0,10	9,59	50,05	61,34	-11,29	QP
0,26	26,47	0,10	9,59	36,16	51,34	-15,18	AVERAGE
0,46	38,91	0,10	9,60	48,61	56,76	-8,15	QP
0,46	26,46	0,10	9,60	36,16	46,76	-10,60	AVERAGE
0,78	36,32	0,10	9,61	46,03	56,00	-9,97	QP
0,78	25,84	0,10	9,61	35,55	46,00	-10,45	AVERAGE
1,31	35,08	0,10	9,61	44,79	56,00	-11,21	QP
1,31	23,83	0,10	9,61	33,54	46,00	-12,46	AVERAGE
2,57	31,42	0,16	9,62	41,20	56,00	-14,80	QP
2,57	20,67	0,16	9,62	30,45	46,00	-15,55	AVERAGE



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6.2 RF Output Power Measurement

Test Requirement: 47 CFR Part 18

Test Method: FCC OST/MP-5:1986

6.2.1 E.U.T. Operation

Operating Environment:

Temperature: 22.5 °C Humidity: 52.5 % RH Atmospheric Pressure: 1011 mbar

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

6.2.2 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)
1000	410	21.5	9.6	20.4	52	867.5

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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6.3 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±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 = 867.5 W according to clause 6.2.2

Limit = $20\lg(25 \cdot \sqrt{\text{power}/500}) + 20\lg(300/3) = 30.35 + 40 = 70.35 \text{ dBuV/m @ 3m distance.}$

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

6.3.1 E.U.T. Operation

Operating Environment:

Temperature: 25.2 °C Humidity: 55.7 % RH Atmospheric Pressure: 1019 mbar

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

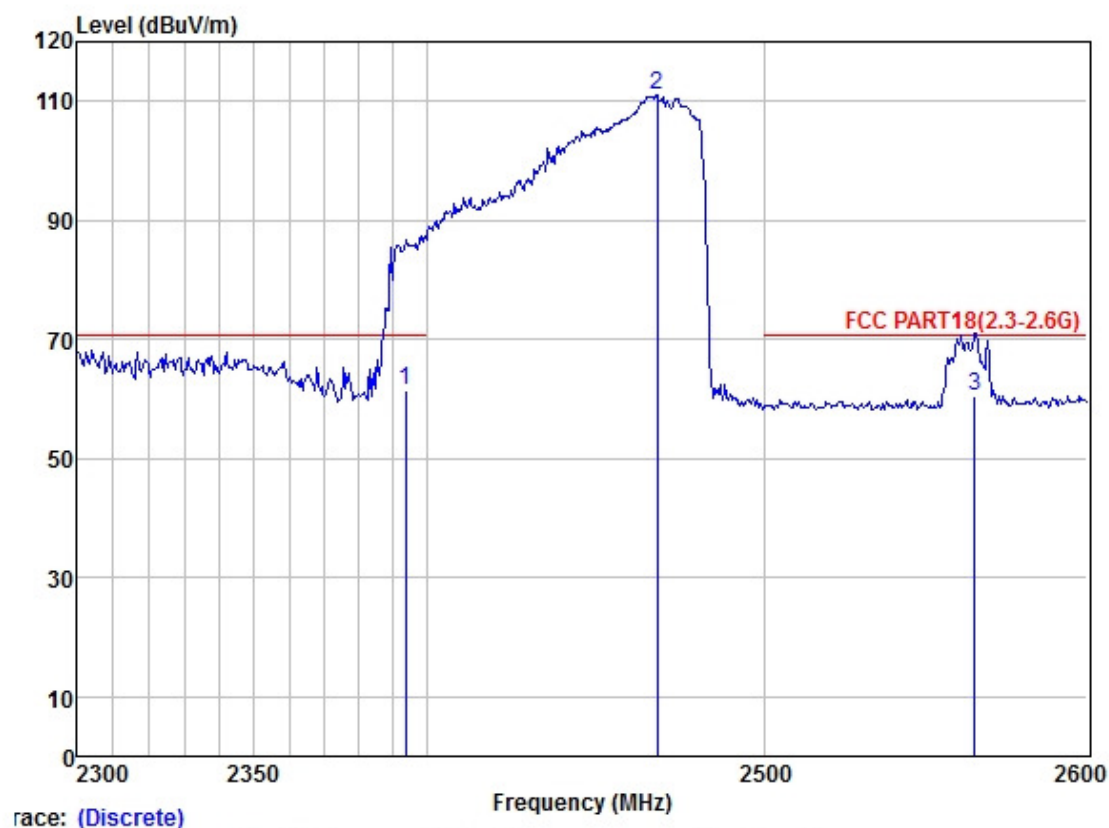


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6.3.2 Measurement Data

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

Mode:a; Polarization:Horizontal



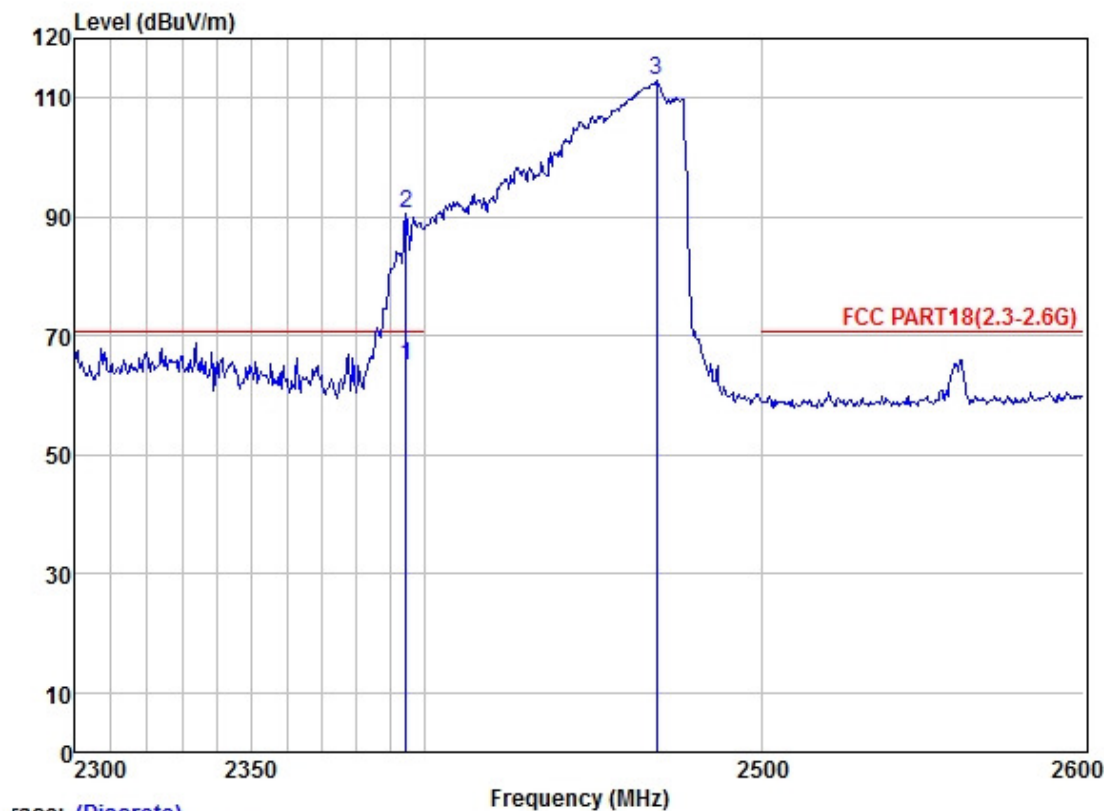
	ReadAntenna	Cable	Preamp	Limit	Over				
Freq	Level	Factor	Loss	Factor	Level	Line	Limit	Pol/Phase	Remark
MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB		
1 2393.551	31.60	26.44	3.49	0.00	61.53	70.35	-8.82	HORIZONTAL	Average
2 2467.691	80.82	26.56	3.55	0.00	110.93	-----	-----	HORIZONTAL	Peak
3 2564.542	30.21	26.71	3.47	0.00	60.39	70.35	-9.96	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	2394.376	34.96	26.44	3.49	0.00	64.89	70.35	-5.46	VERTICAL
2 *	2394.376	60.77	26.44	3.49	0.00	90.70	70.35	20.35	VERTICAL
3	2468.296	82.86	26.56	3.55	0.00	112.97	-----	-----	VERTICAL



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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	$25 \times \text{SQRT}(\text{power}/500)$

Power = 867.5 W according to clause 6.2.2

Limit = $20 \lg(25 \times \text{SQRT}(\text{power}/500)) + 20 \lg(300/3) = 30.35 + 40 = 70.35 \text{ dBuV/m}$
@ 3m distance.

6.4.1 E.U.T. Operation

Operating Environment:

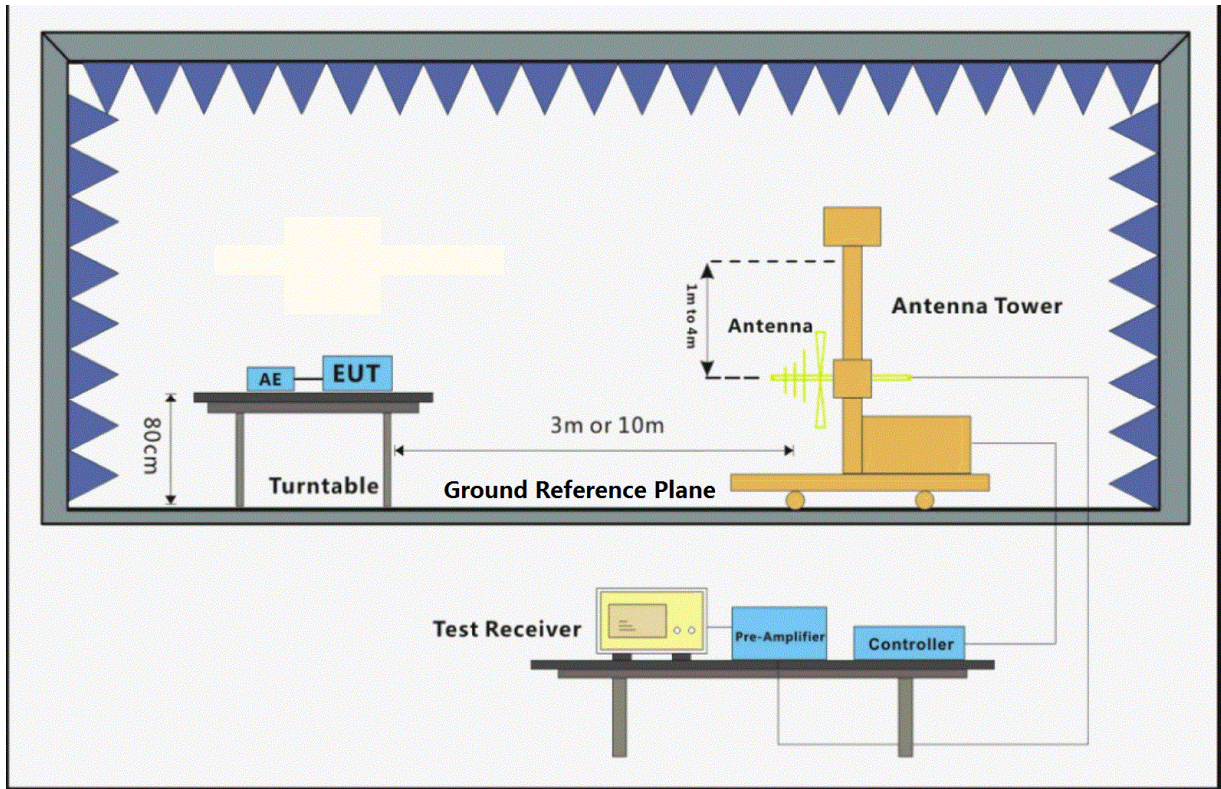
Temperature: 21 °C Humidity: 52 % RH Atmospheric Pressure: 1020 mbar

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.

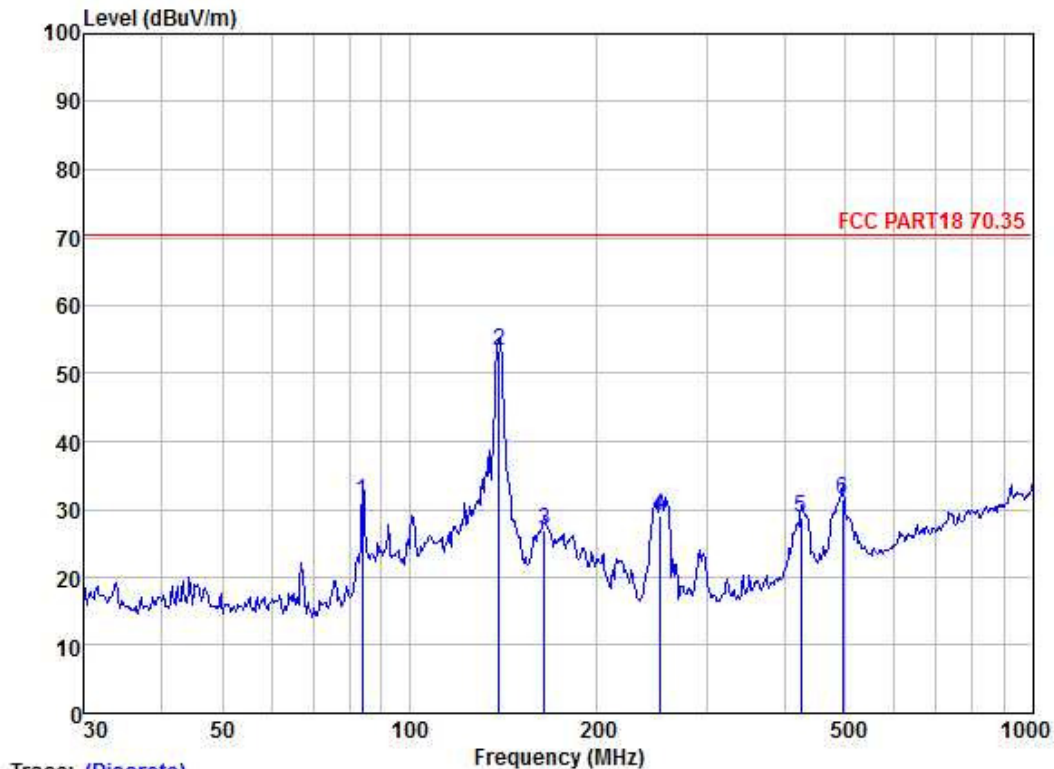
Level=Read Level + Antenna Factor + Cable Loss - Preamp Factor



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Mode:a; Polarization:Horizontal



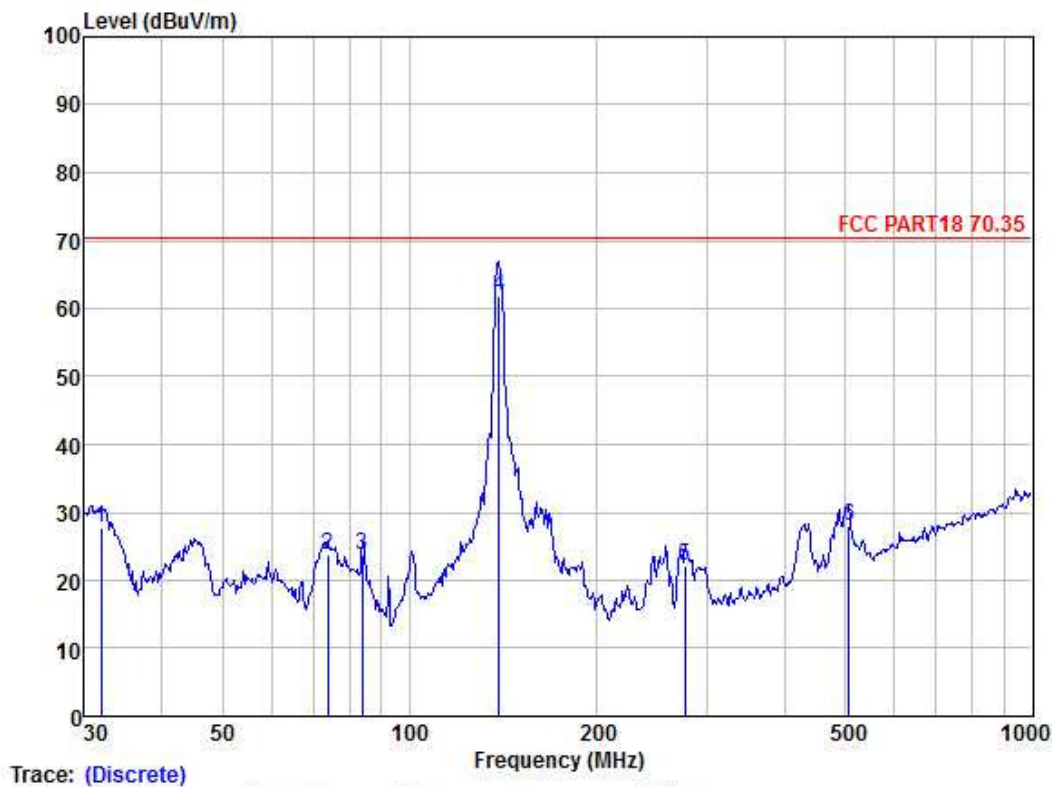
	ReadAntenna	Cable	Preamp		Limit	Over			
Freq	Level	Factor	Loss	Factor	Level	Line	Limit	Pol/Phase	Remark
MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB		
1	83.816	47.87	8.04	1.62	26.41	31.12	70.35	-39.23	HORIZONTAL Average
2	138.874	64.63	13.15	1.96	26.42	53.32	70.35	-17.03	HORIZONTAL Average
3	164.330	37.79	13.48	2.19	26.44	27.02	70.35	-43.33	HORIZONTAL Average
4	252.063	40.79	12.10	2.70	26.58	29.01	70.35	-41.34	HORIZONTAL Average
5	425.028	35.95	16.50	3.66	27.39	28.72	70.35	-41.63	HORIZONTAL Average
6	495.934	37.12	17.90	4.03	27.47	31.58	70.35	-38.77	HORIZONTAL Average



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		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	31.955	40.52	12.70	1.01	26.56	27.67	70.35	-42.68	VERTICAL	Average
2	73.876	37.86	10.90	1.43	26.43	23.76	70.35	-46.59	VERTICAL	Average
3	83.816	40.56	8.04	1.62	26.41	23.81	70.35	-46.54	VERTICAL	Average
4	138.874	73.13	13.15	1.96	26.42	61.82	70.35	-8.53	VERTICAL	Average
5	276.124	32.90	13.05	2.76	26.66	22.05	70.35	-48.30	VERTICAL	Average
6	506.479	33.45	18.04	3.89	27.47	27.91	70.35	-42.44	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
 (1 MHz Resolution Bandwidth for 1,000MHz to 25,000MHz)

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 =867.5 W according to clause 6.2.2

Limit= $20\lg(25 \times \sqrt{\text{power}/500}) + 20\lg(300/3) = 30.35 + 40 = 70.35 \text{ dBuV/m}$
 @ 3m distance.

6.5.1 E.U.T. Operation

Operating Environment:

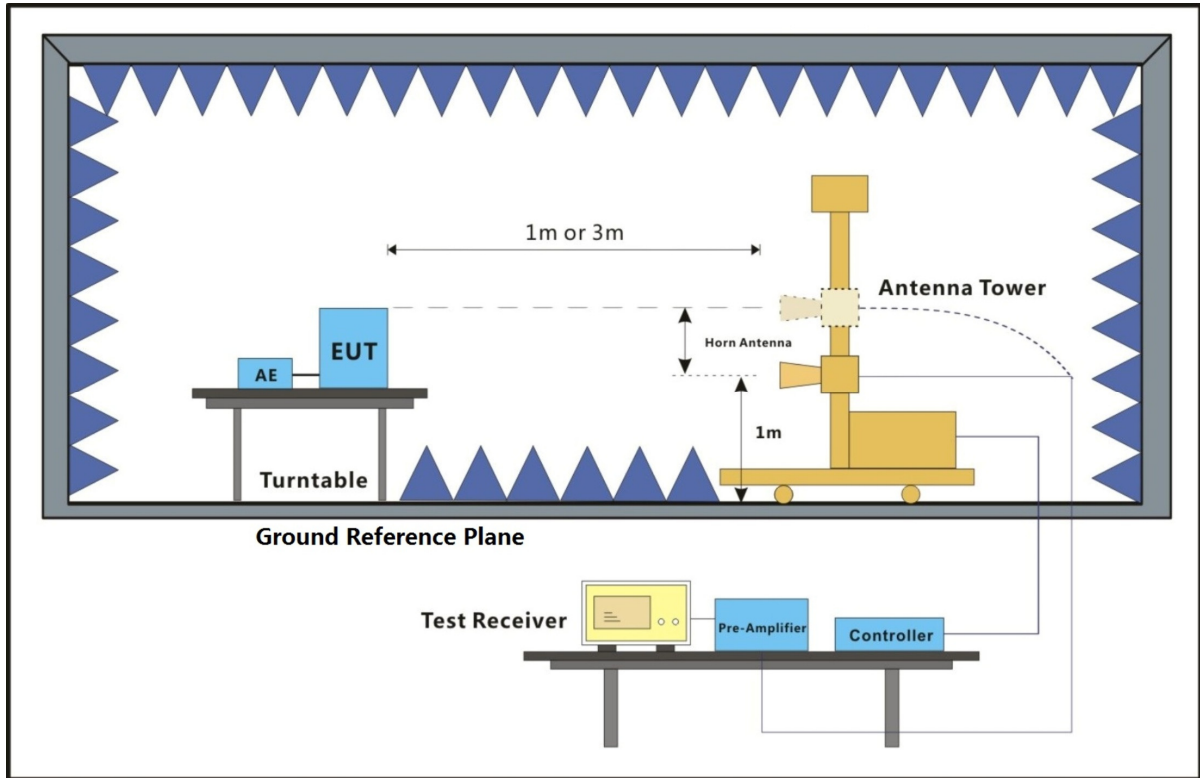
Temperature: 23 °C Humidity: 52 % RH Atmospheric Pressure: 1020 mbar

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



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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.

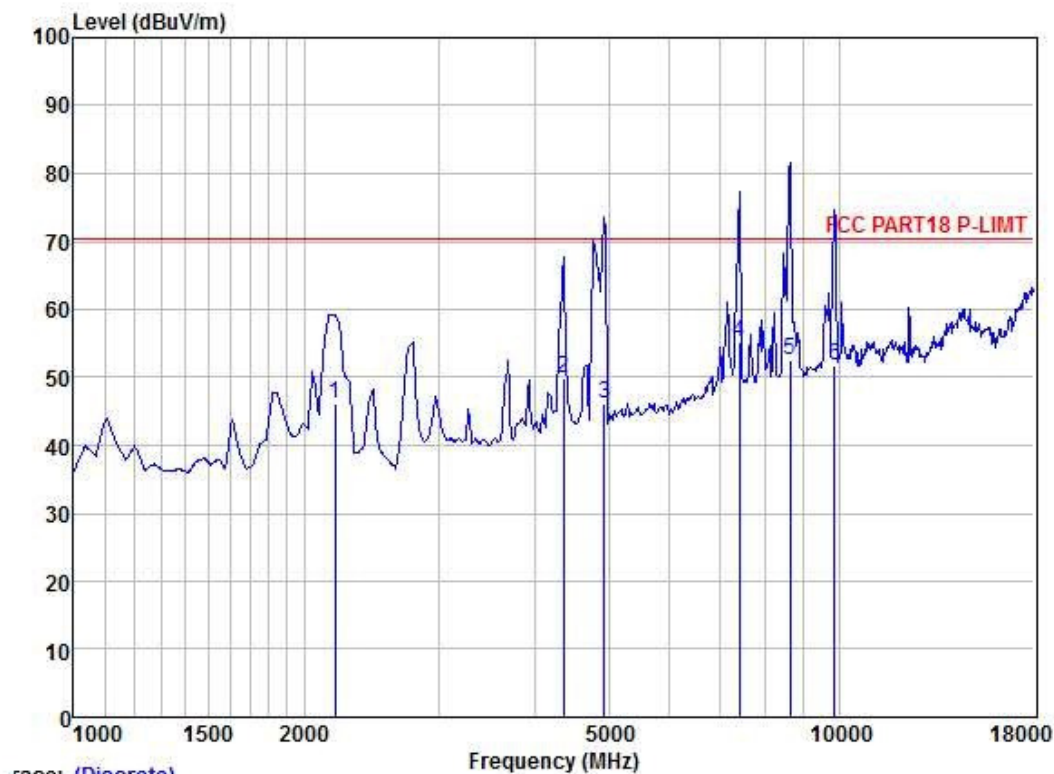
Level=Read Level + Antenna Factor + Cable Loss - Preamp Factor



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Mode:a; Polarization:Horizontal



Trace: (Discrete)

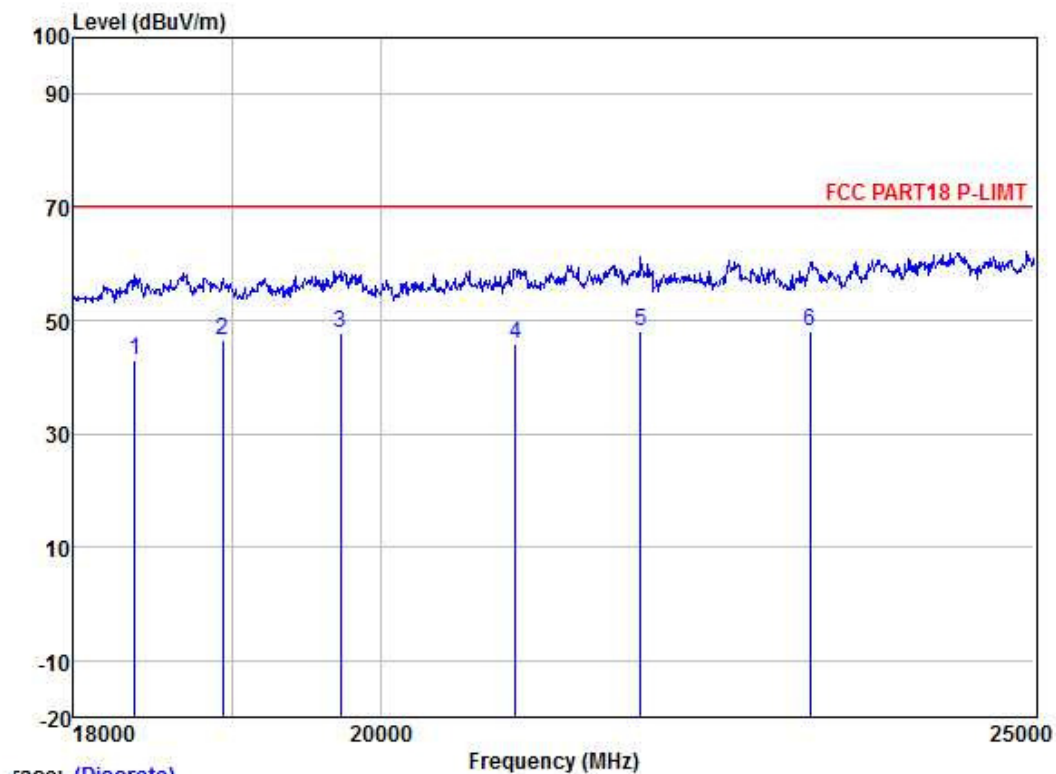
	Freq	ReadAntenna	Cable	Preamp	Limit	Over			
	MHz	Level	Factor	Loss	Factor	Line	Limit	Pol/Phase	Remark
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB	
1	2194.998	54.83	25.69	3.20	37.47	46.25	70.35	-24.10	HORIZONTAL Average
2	4367.058	52.08	29.99	4.68	36.91	49.84	70.35	-20.51	HORIZONTAL Average
3	4937.665	46.50	31.03	5.62	36.95	46.20	70.35	-24.15	HORIZONTAL Average
4	7405.316	50.10	35.89	6.20	36.92	55.27	70.35	-15.08	HORIZONTAL Average
5	8638.399	46.34	36.20	6.92	36.95	52.51	70.35	-17.84	HORIZONTAL Average
6	9866.789	43.96	37.86	6.98	37.09	51.71	70.35	-18.64	HORIZONTAL Average



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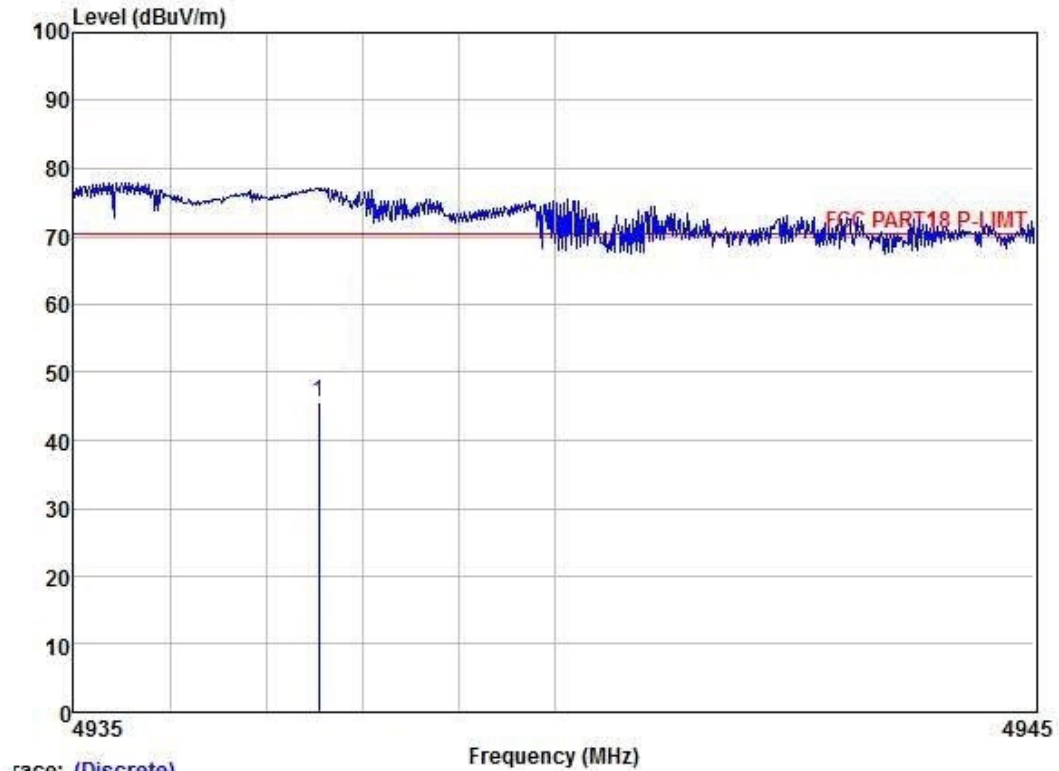
	ReadAntenna	Cable	Preamp	Limit	Over				
Freq	Level	Factor	Loss	Factor	Level	Line	Limit	Pol/Phase	Remark
MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB		
1 18382.440	24.14	37.93	16.62	35.60	43.09	70.35	-27.26	HORIZONTAL	Average
2 18940.260	27.22	38.00	16.89	35.60	46.51	70.35	-23.84	HORIZONTAL	Average
3 19721.230	28.21	38.00	17.22	35.60	47.83	70.35	-22.52	HORIZONTAL	Average
4 20936.280	25.61	37.90	17.97	35.45	46.03	70.35	-24.32	HORIZONTAL	Average
5 21849.740	26.86	38.17	18.55	35.31	48.27	70.35	-22.08	HORIZONTAL	Average
6 23157.860	25.18	39.60	19.33	35.79	48.32	70.35	-22.03	HORIZONTAL	Average



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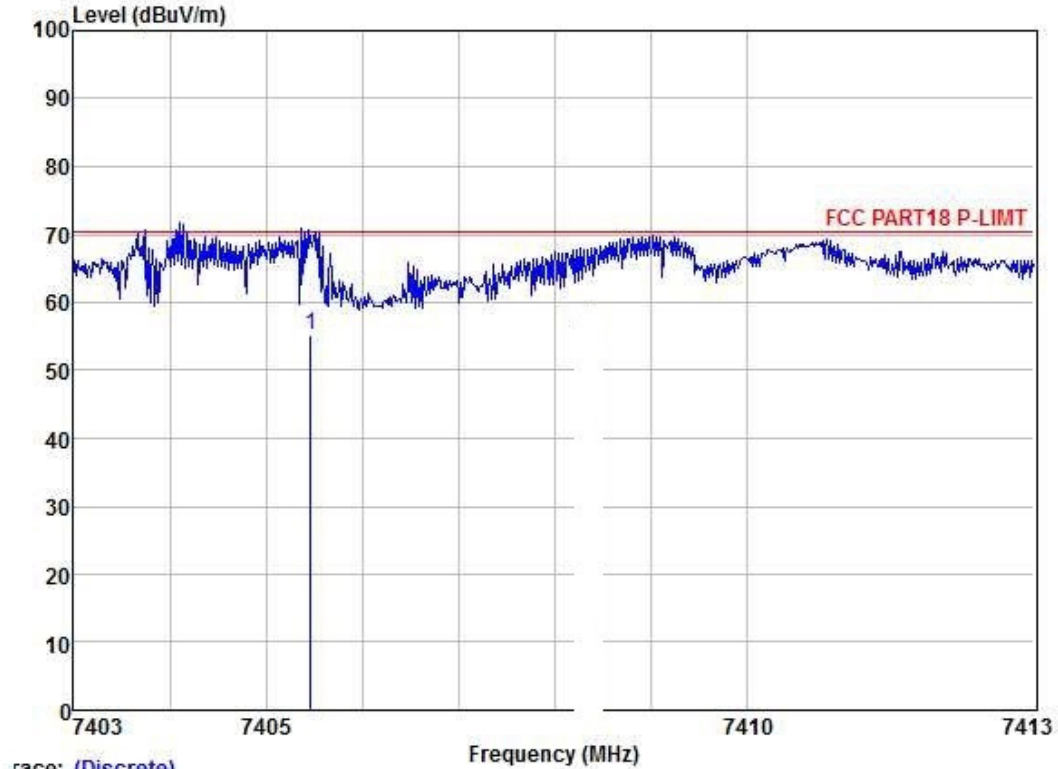
Trace: (Discrete)									
Freq	ReadAntenna	Cable	Preamp		Limit	Over			
MHz	Level	Factor	Loss	Factor	Level	Line	Limit	Pol/Phase	Remark
	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB		
1	4937.665	46.50	31.03	5.62	36.95	46.20	70.35	-24.15	HORIZONTAL Average



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Mode:a; Polarization:Horizontal



Trace: (Discrete)

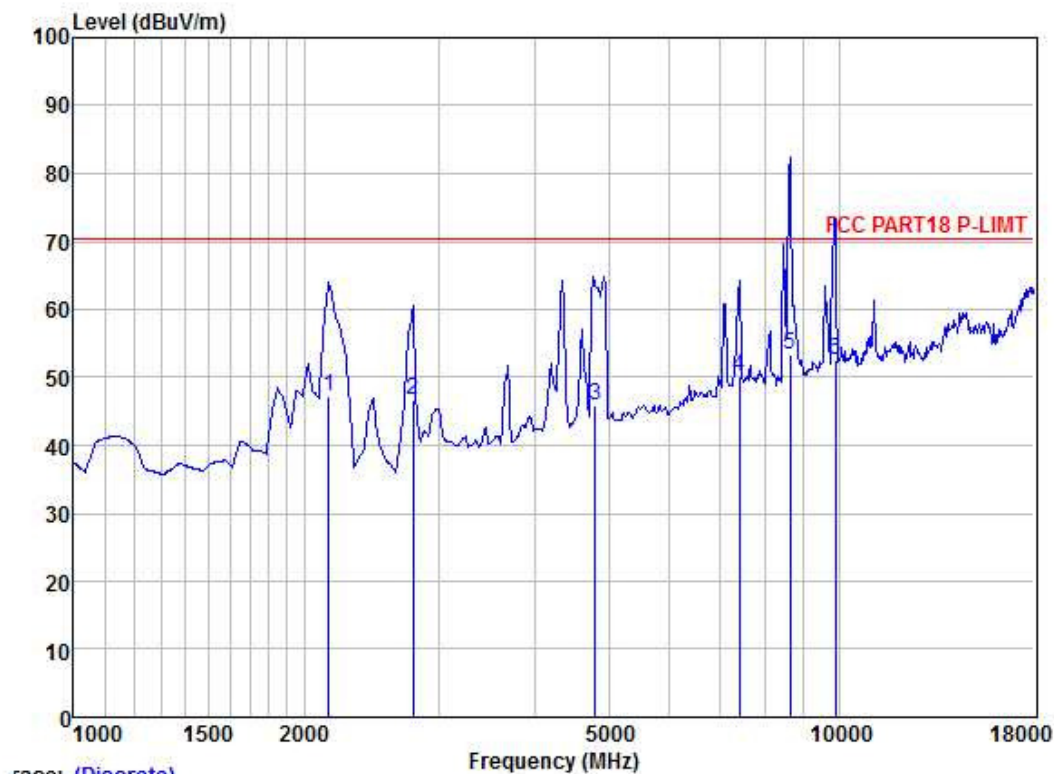
	ReadAntenna	Cable	Preamp		Limit	Over		
Freq	Level	Factor	Loss	Factor	Level	Line	Limit	Pol/Phase
MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB	
1 7405.316	50.01	35.89	6.20	36.92	55.18	70.35	-15.17	HORIZONTAL Average



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Mode:a; Polarization:Vertical



Trace: (Discrete)

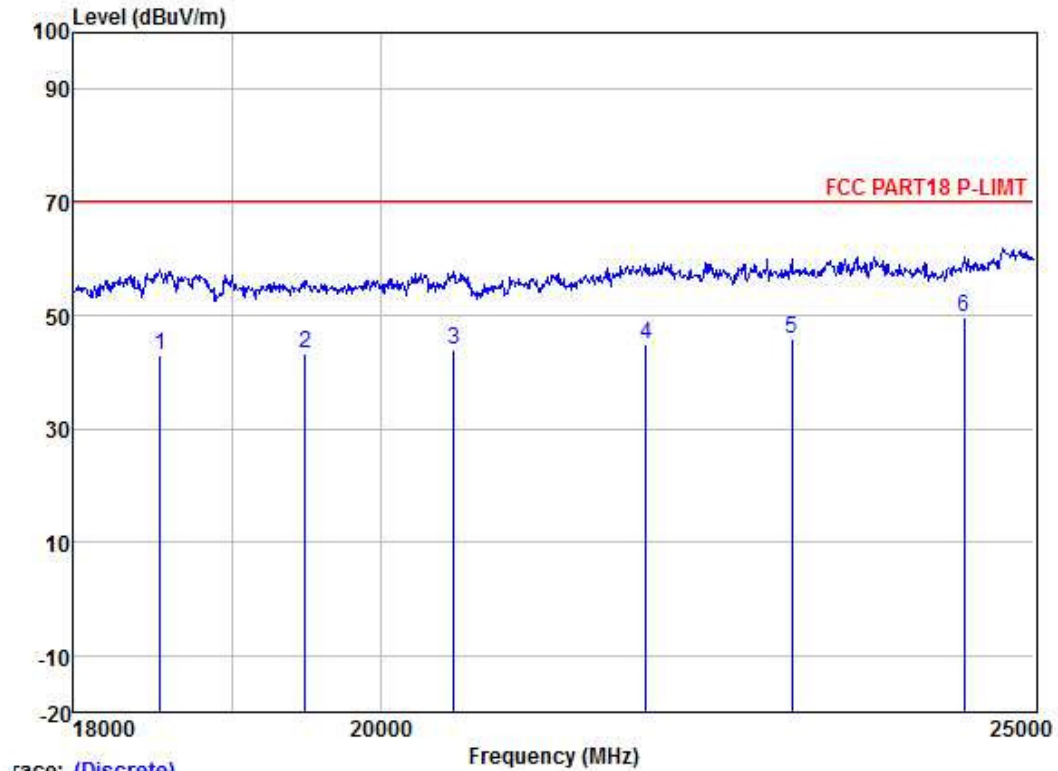
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Freq	Level	Factor	Loss	Factor	Level	Line	Limit	Pol/Phase	Remark
MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB		
1	2157.260	55.86	25.55	3.18	37.47	47.12	70.35	-23.23	VERTICAL Average
2	2774.030	52.70	27.43	3.68	37.26	46.55	70.35	-23.80	VERTICAL Average
3	4797.650	46.50	30.79	5.40	36.94	45.75	70.35	-24.60	VERTICAL Average
4	7412.306	44.90	35.89	6.20	36.92	50.07	70.35	-20.28	VERTICAL Average
5	8638.399	47.19	36.20	6.92	36.95	53.36	70.35	-16.99	VERTICAL Average
6	9895.349	44.64	37.89	6.97	37.09	52.41	70.35	-17.94	VERTICAL Average



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Trace: (Discrete)

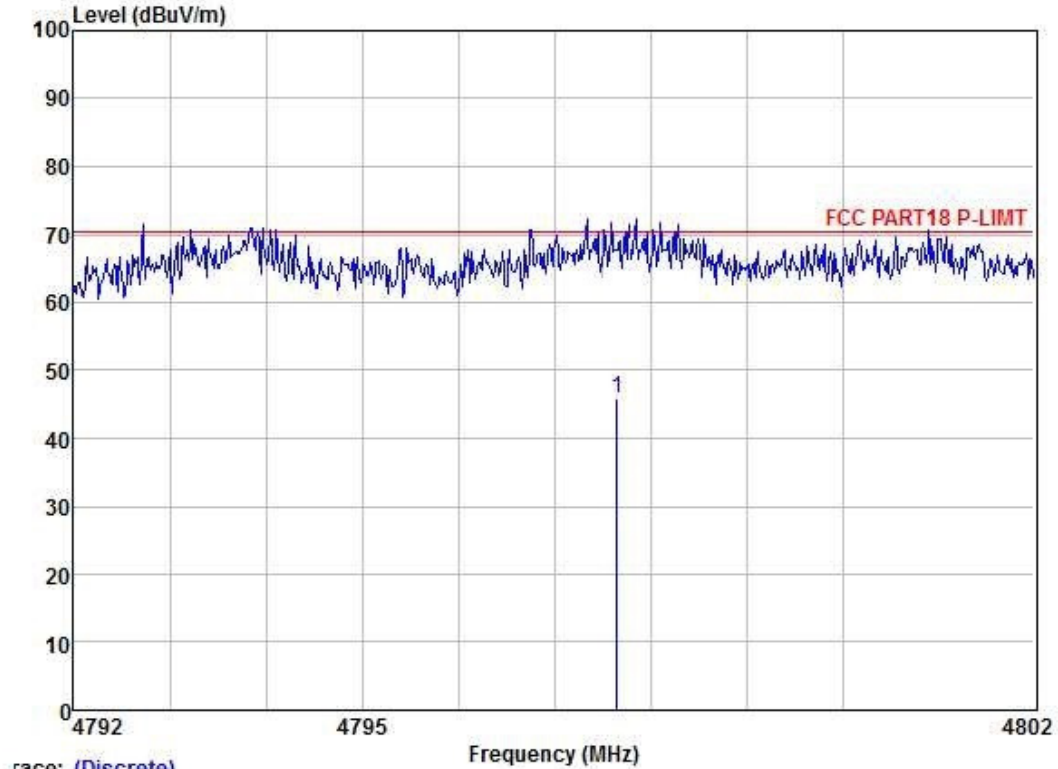
	ReadAntenna	Cable	Preamp		Limit	Over			
Freq	Level	Factor	Loss	Factor	Level	Line	Limit	Pol/Phase	Remark
MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB		
1 18540.120	23.93	37.96	16.74	35.60	43.03	70.35	-27.32	VERTICAL	Average
2 19482.980	23.80	38.00	17.09	35.60	43.29	70.35	-27.06	VERTICAL	Average
3 20500.710	23.77	37.95	17.67	35.54	43.85	70.35	-26.50	VERTICAL	Average
4 21892.850	23.52	38.18	18.56	35.31	44.95	70.35	-25.40	VERTICAL	Average
5 23013.770	22.78	39.60	19.21	35.75	45.84	70.35	-24.51	VERTICAL	Average
6 24407.610	25.71	39.49	20.67	36.12	49.75	70.35	-20.60	VERTICAL	Average



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Mode:a; Polarization:Vertical



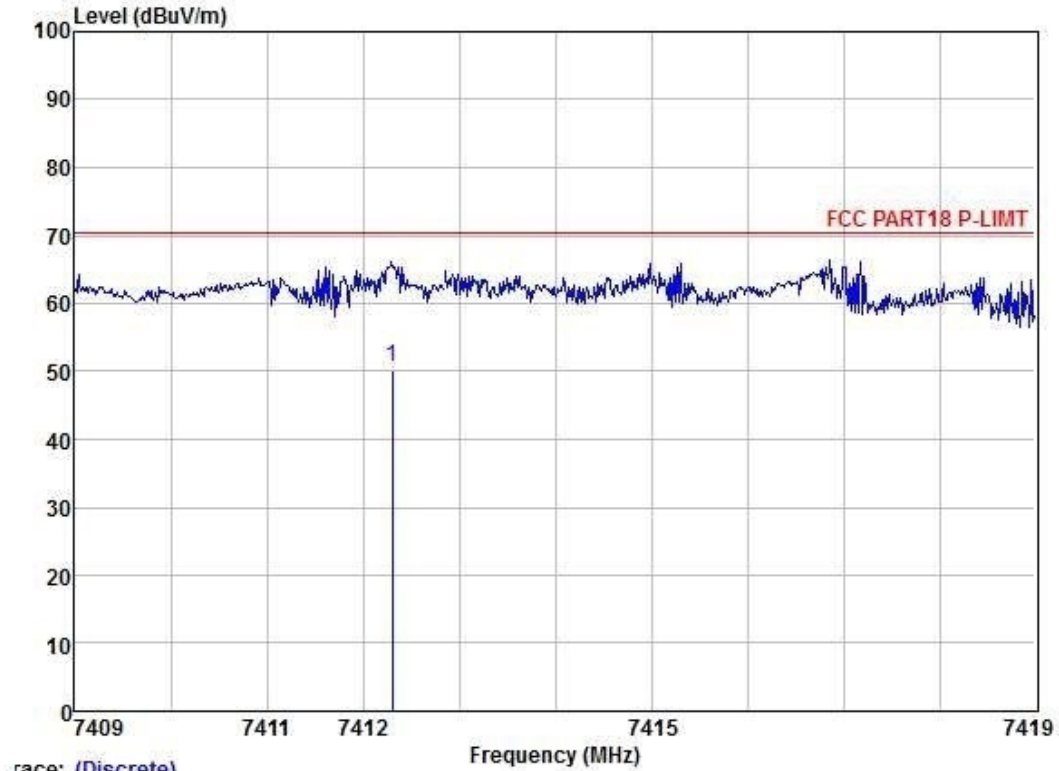
race: (Discrete)									
Freq	ReadAntenna	Cable	Preamp		Limit	Over			
MHz	Level	Factor	Loss	Factor	Level	Line	Limit	Pol/Phase	Remark
	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB		
1	4797.650	46.50	30.79	5.40	36.94	45.75	70.35	-24.60	VERTICAL Average



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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 7412.306	44.90	35.89	6.20	36.92	50.07	70.35	-20.28	VERTICAL	Average



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 Guangzhou Branch Testing Center EEC Laboratory

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

6.6 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
(200 Hz Resolution Bandwidth for 9 kHz to 150 kHz
9 kHz Resolution Bandwidth for 150 kHz to 30 MHz)

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 = 867.5 W according to clause 6.2.2

Limit = $20 \lg(25 \times \sqrt{\text{power}/500}) + 20 \lg(300/10) = 59.89 \text{ dBuV/m @ 10m distance.}$ **6.6.1 E.U.T. Operation**

Operating Environment:

Temperature: 22 °C Humidity: 50 % RH Atmospheric Pressure: 1020 mbar

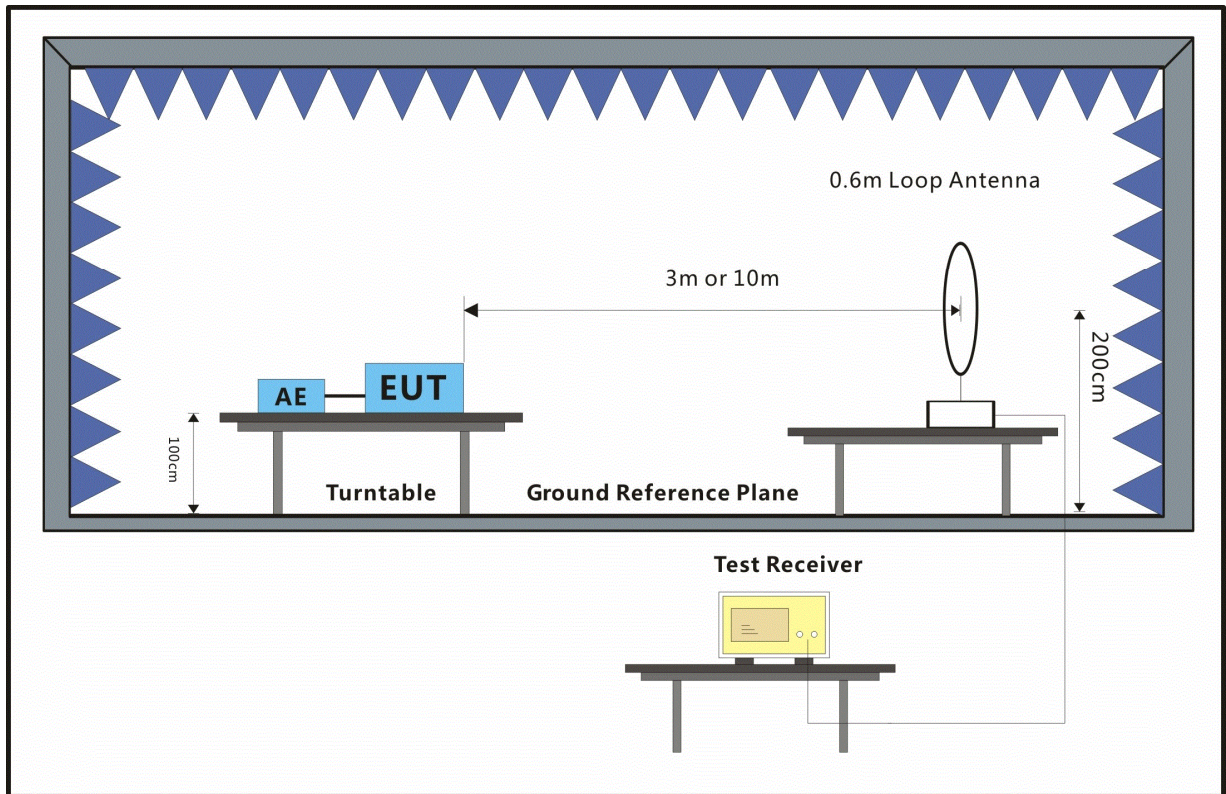
Test mode a: Test the EUT in microwave mode with maximum power.



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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

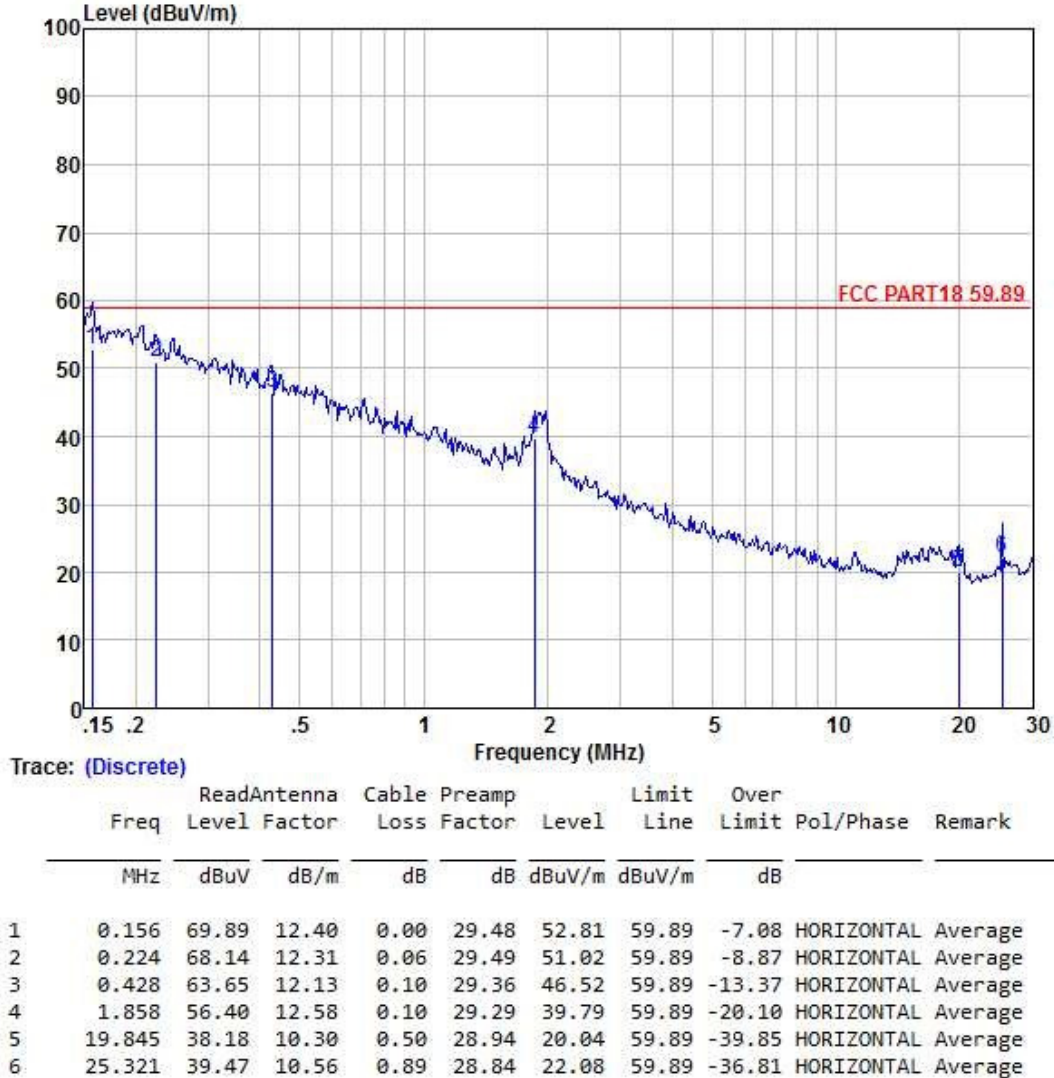


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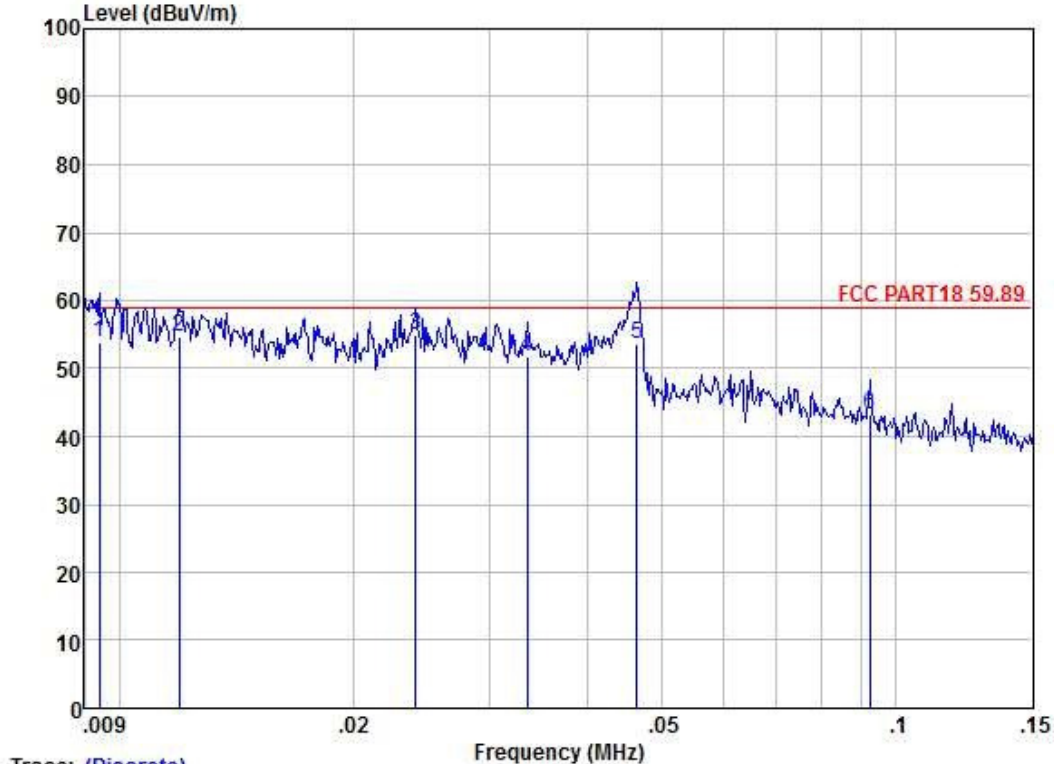
Mode:a; Polarization:Horizontal



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Mode:a; Polarization:Horizontal



Trace: (Discrete)

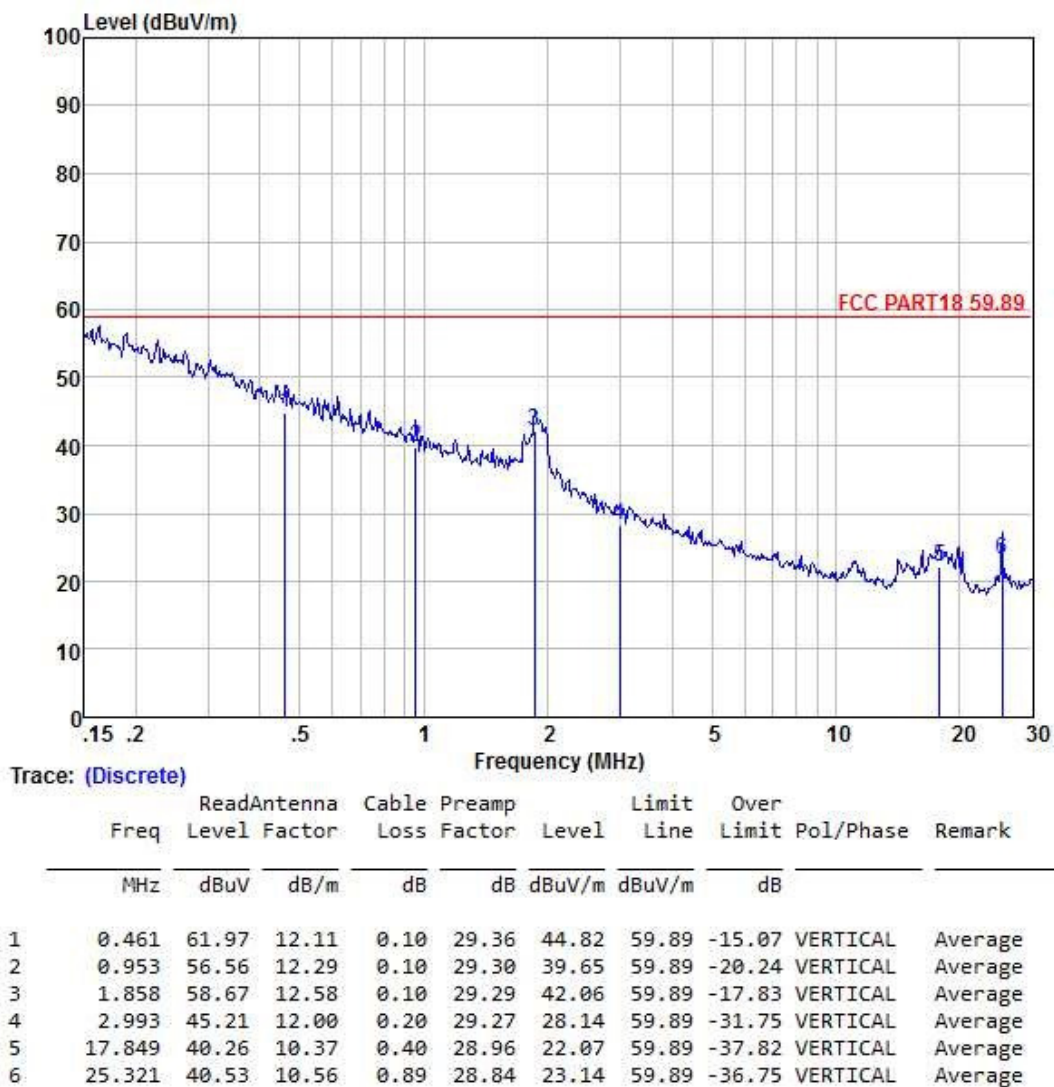
	ReadAntenna	Cable	Preamp	Limit	Over				
Freq	Level	Factor	Loss	Factor	Level	Line	Limit	Pol/Phase	Remark
MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB		
1	0.009	61.85	21.60	0.00	29.50	53.95	59.89	-5.94	HORIZONTAL Average
2	0.012	63.32	20.73	0.00	29.50	54.55	59.89	-5.34	HORIZONTAL Average
3	0.024	68.66	15.78	0.00	29.48	54.96	59.89	-4.93	HORIZONTAL Average
4	0.033	67.47	13.78	0.00	29.45	51.80	59.89	-8.09	HORIZONTAL Average
5	0.046	70.34	12.64	0.00	29.43	53.55	59.89	-6.34	HORIZONTAL Average
6	0.092	60.20	12.40	0.00	29.42	43.18	59.89	-16.71	HORIZONTAL Average



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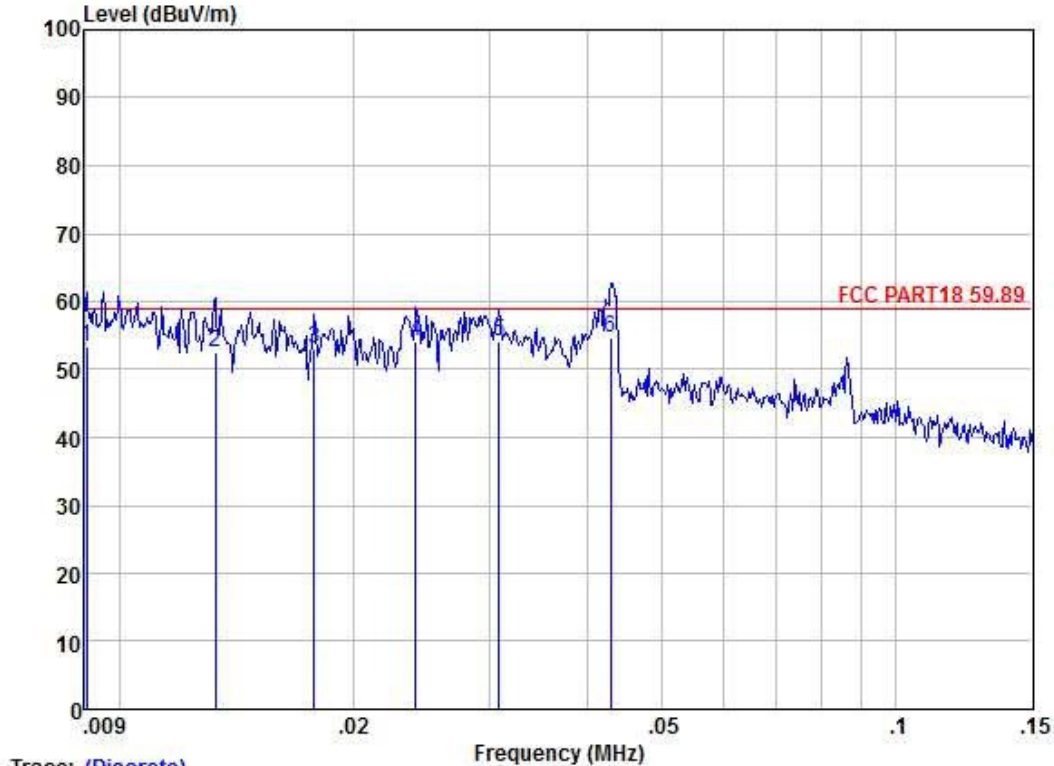
Mode:a; Polarization:Vertical



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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	0.009	61.28	21.60	0.00	29.50	53.38	59.89	-6.51	VERTICAL
2	0.013	62.25	19.85	0.00	29.49	52.61	59.89	-7.28	VERTICAL
3	0.018	65.91	16.71	0.00	29.49	53.13	59.89	-6.76	VERTICAL
4	0.024	67.80	15.78	0.00	29.48	54.10	59.89	-5.79	VERTICAL
5	0.031	68.95	14.53	0.00	29.46	54.02	59.89	-5.87	VERTICAL
6	0.043	71.26	12.82	0.00	29.44	54.64	59.89	-5.25	VERTICAL

--End of Report--



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