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Guangzhou Branch

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TEST REPORT

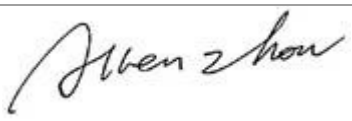
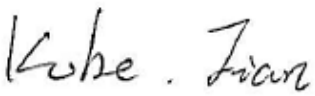
Application No.:	GZEM1702000870HS
Applicant:	Guangdong Midea Consumer Electric Manufacturing Co., Ltd
Address of Applicant:	19 Sanle Road, Beijiao, Shunde, Foshan, Guangdong
Manufacturer:	Same as the applicant
Address of Manufacturer:	Same as the applicant
Factory:	Same as the applicant
Address of Factory:	Same as the applicant
FCC ID:	TAPMC-STW1521A
Equipment Under Test (EUT):	
EUT Name:	Induction cooker
Model No.:	MS-STW1521
Standards:	47 CFR PART 18:2016
Date of Receipt:	2017-02-24
Date of Test:	2017-03-06 to 2017-03-08
Date of Issue:	2017-04-20
Test Result :	**Pass***

* 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.
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. All test results in this report can be traceable to National or International Standards.

Revision Record				
Version	**Chapter**	**Date**	**Modifier**	**Remark**
00		2017-04-20		Original

Authorized for issue by:				
Tested By		 **Allen_Zhou /Project Engineer**		2017-03-06 to 2017-03-08 **Date**
Checked By		 **Kobe_Jian /Reviewer**		2017-03-14 **Date**

2 Test Summary

Emission Part				
Item	**Standard**	**Method**	**Requirement**	**Result**
Conducted Disturbance at Mains Terminals (9KHz-30MHz)	47 CFR Part 18: 2016	FCC OST/MP-5:1986	18.307(a)	Pass
Radiated Disturbance (Magnetic field Strength) (9KHz-30MHz)	47 CFR Part 18: 2016	FCC OST/MP-5:1986	18.305(b)	Pass

N/A: Not applicable

3 Contents

4 General Information

4.1 Details of E.U.T.

Power Supply: AC 120V,60Hz

Cable: 2 wires about 1.5m unscreened AC mains cable

4.2 Description of Support Units

The EUT has been tested with water and ceramic enamel pot supplied by SGS.

4.3 Measurement Uncertainty

No.	Item	Measurement Uncertainty
1	Conduction Emission	3.45dB (9kHz to 150kHz)
		3.0dB (150kHz to 30MHz)
2	Radiated Power	3.64dB
3	Radiated Emission	4.5dB (30MHz-1GHz)
		4.8dB (1GHz-6GHz)
4	Radiated Immunity	1.64dB
5	Conducted Immunity	0.96dB
6	ESD	6 %
7	EFT (Electrical Fast Transients)	5 %
8	Surge Immunity	5 %
9	Voltage Dips and Interruptions	4 %
10	20 System	1.5dB
11	Temperature Test	1℃
12	Humidity Test	3%
13	DC power Test	0.5 %

4.4 Standards Applicable for Testing

Table 1 : Tests Carried Out Under 47 CFR Part 18: 2015

Item	Status
Conducted Disturbance at Mains Terminals (9KHz-30MHz)	√
Conducted Disturbance at Mains Terminals (150KHz-30MHz)	×
Radiated Disturbance (30MHz-1GHz)	×
Radiated Disturbance (Magnetic field Strength) (9KHz-30MHz)	√
Radiated Disturbance (Magnetic field Strength) (150KHz-30MHz)	×
Conducted Disturbance at Mains Terminals (450KHz-30MHz)	×

× Indicates that the test is not applicable
√ Indicates that the test is applicable

4.5 Test Location

All tests were performed at:
SGS-CSTC Standards Technical Services Co., Ltd., Guangzhou Branch EMC Laboratory,
198 Kezhu Road, Scientech Park, Guangzhou Economic & Technology Development District,
Guangzhou, China 510663
Tel: +86 20 82155555 Fax: +86 20 82075059
No tests were sub-contracted.

4.6 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-CL01:2006 accreditation criteria for testing laboratories (identical to ISO/IEC 17025:2005 General Requirements) for the Competence of Testing Laboratories.

- **FCC (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.

- **Industry Canada (Registration No.: 4620B-1)**

  The 3m/10m Alternate Semi-anechoic chamber of SGS-CSTC Standards Technical Services Co., Ltd., has been registered by Certification and Engineering of Industry Canada for radio equipment testing with Registration No. 4620B-1.

- **VCCI (Registration No.: R-2460, C-2584, G-449 and T-1179)**

  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-2460, C-2584, G-449 and T-1179 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.

4.7 Deviation from Standards

None

4.8 Abnormalities from Standard Conditions

None

5 Equipment List

Conducted Disturbance at Mains Terminals (9KHz-30MHz)					
Equipment	**Manufacturer**	**Model No**	**Inventory No**	**Cal Date**	**Cal Due Date**
Shielding Room	Zhong Yu	8 x 3 x 3.8 m3	EMC0306	N/A	N/A
Two-line v-netwok	R&S	ENV216	EMC0118	2017-01-20	2018-01-19
LISN	SCHAFFNER CHASE	MN2050D/1	EMC0102	2016-09-22	2017-09-21
EMI Test Receiver	Rohde & Schwarz	ESCS30	EMC0506	2016-12-02	2017-12-01
Coaxial Cable	SGS	2m	EMC0107	2016-07-24	2018-07-23
Voltage Probe	SGS	N/A	EMC0106	2016-04-05	2018-04-04
Conical metal housing	SGS-EMC	N/A	EMC0167	2016-04-19	2018-04-18

Radiated Disturbance (Magnetic field Strength) (9KHz-30MHz)					
Equipment	**Manufacturer**	**Model No**	**Inventory No**	**Cal Date**	**Cal Due Date**
EMI Test Receiver	Rohde & Schwarz	ESIB26	EMC0522	2017-01-20	2018-01-19
EMI Test Receiver	Rohde & Schwarz	ESCI	EMC0056	2017-01-20	2018-01-19
RI High frequency Cable	SGS	20 m	EMC0528	2016-04-19	2018-04-18
Trilog Broadband Antenna 30-1000MHz	SCHWARZBECK MESS-ELEKTRONIK	VULB 9160	EMC2025	2016-09-08	2019-09-07
Bi-log Type Antenna	Schaffner -Chase	CBL6112B	EMC0524	2016-09-08	2019-09-07
Bilog Type Antenna	Schaffner -Chase	CBL6143	EMC0519	2014-05-04	2017-05-03
Horn Antenna 1-18GHz	SCHWARZBECK MESS-ELEKTRONIK	BBHA 9120D	EMC2026	2016-09-09	2019-09-08
1-26.5 GHz Pre-Amplifier	Agilent	8449B	EMC0521	2017-01-20	2018-01-19
Amplifier	HP	8447F	EMC2065	2016-07-04	2017-07-03
PRE AMPLIFIER MH648A	ANRITSU CORP	MH648A	EMC2086	2016-12-02	2017-12-01
Active Loop Antenna	EMCO	6502	EMC0523	2016-02-27	2018-02-26
Broad-Band Horn Antenna (14)15-26.5(40)GHz	SCHWARZBECK MESS-ELEKTRONI	BBHA 9170	EMC2041	2014-05-26	2017-05-25
High Pass Filter(915MHz)	FSY MICROWAVE	HM1465-9SS	EMC2079	2017-01-20	2018-01-19
2.4GHz filter	Micro-Tronics	BRM 50702	EMC2069	2017-01-20	2018-01-19
10m Semi-Anechoic Chamber	ETS	N/A	EMC0530	2016-04-30	2018-04-29

General used equipment					
Equipment	**Manufacturer**	**Model No**	**Inventory No**	**Cal Date**	**Cal Due Date**
DMM	Fluke	73	EMC0006	2016-09-01	2017-08-31
DMM	Fluke	73	EMC0007	2016-09-01	2017-08-31

6 Emission Test Results

6.1 Conducted Disturbance at Mains Terminals (9KHz-30MHz)

Test Requirement:	47 CFR Part 18: 2016
Test Method:	FCC OST/MP-5:1986
Frequency Range:	9kHz to 30MHz
Limit:	
0.009MHz – 0.05MHz	110dB(μV) quasi-peak
0.05MHz – 0.15MHz	90dB(μV)-80dB(μV) quasi-peak
0.15MHz – 0.5MHz	66dB(μV)-56dB(μV) quasi-peak, 56dB(μV)-46dB(μV) average
0.5MHz – 5MHz	56dB(μV) quasi-peak, 46dB(μV) average
5MHz – 30MHz	60dB(μV) quasi-peak, 50dB(μV) average
Detector:	Peak for pre-scan (200Hz resolution bandwidth) 0.009MHz to 0.15MHz
	Peak for pre-scan (9KHz resolution bandwidth) 0.15MHz to 30MHz

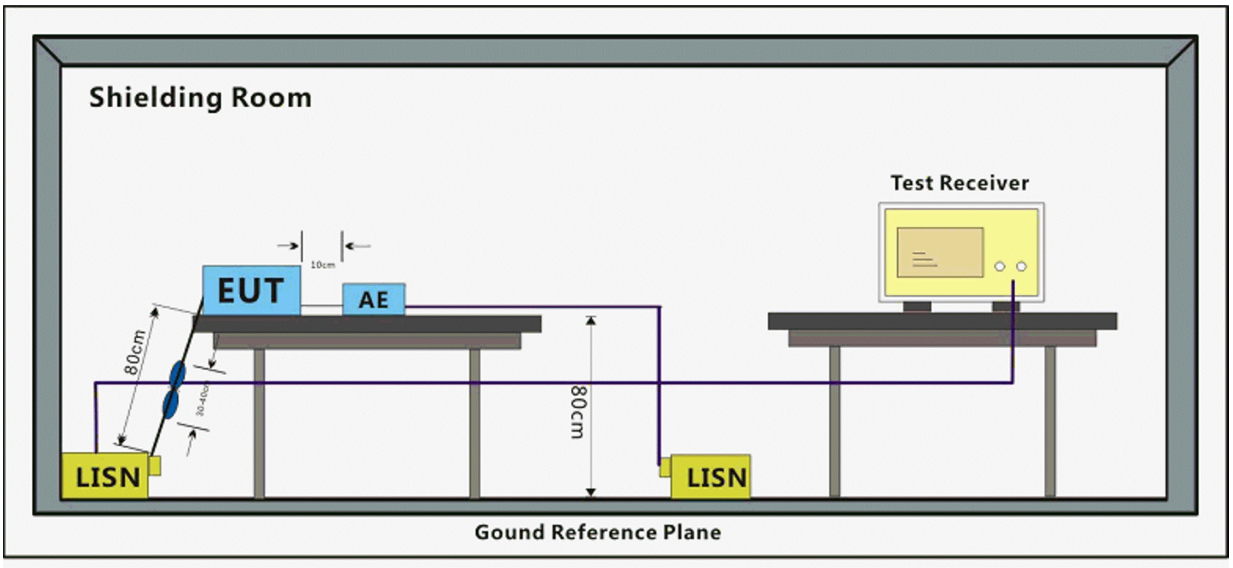
6.1.1 E.U.T. Operation

Operating Environment:

Temperature: 21 °C Humidity: 53 % RH Atmospheric Pressure: 1011 mbar

Pretest these mode to find the worst case:	a:heating mode at maximum power. b:heating mode at middle power. c:heating mode at minimum power.
The worst case for final test:	a:heating mode at maximum power.

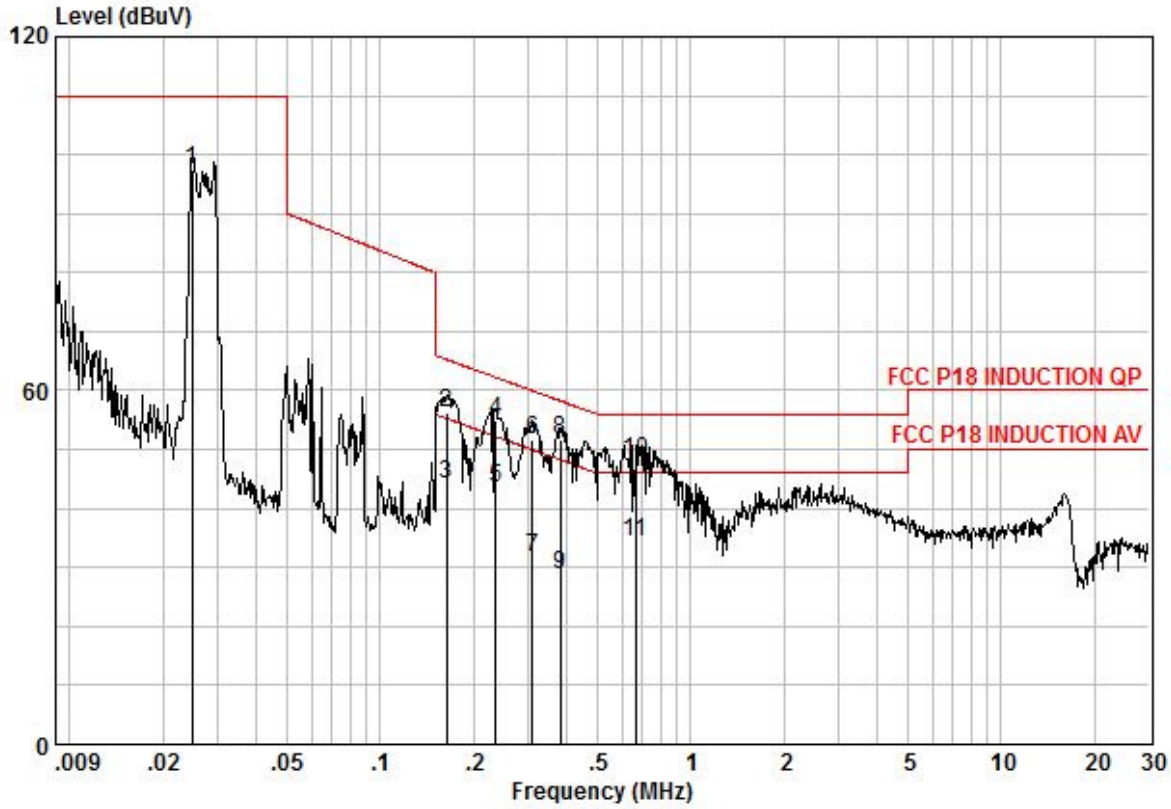
6.1.2 Test Setup Diagram



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.

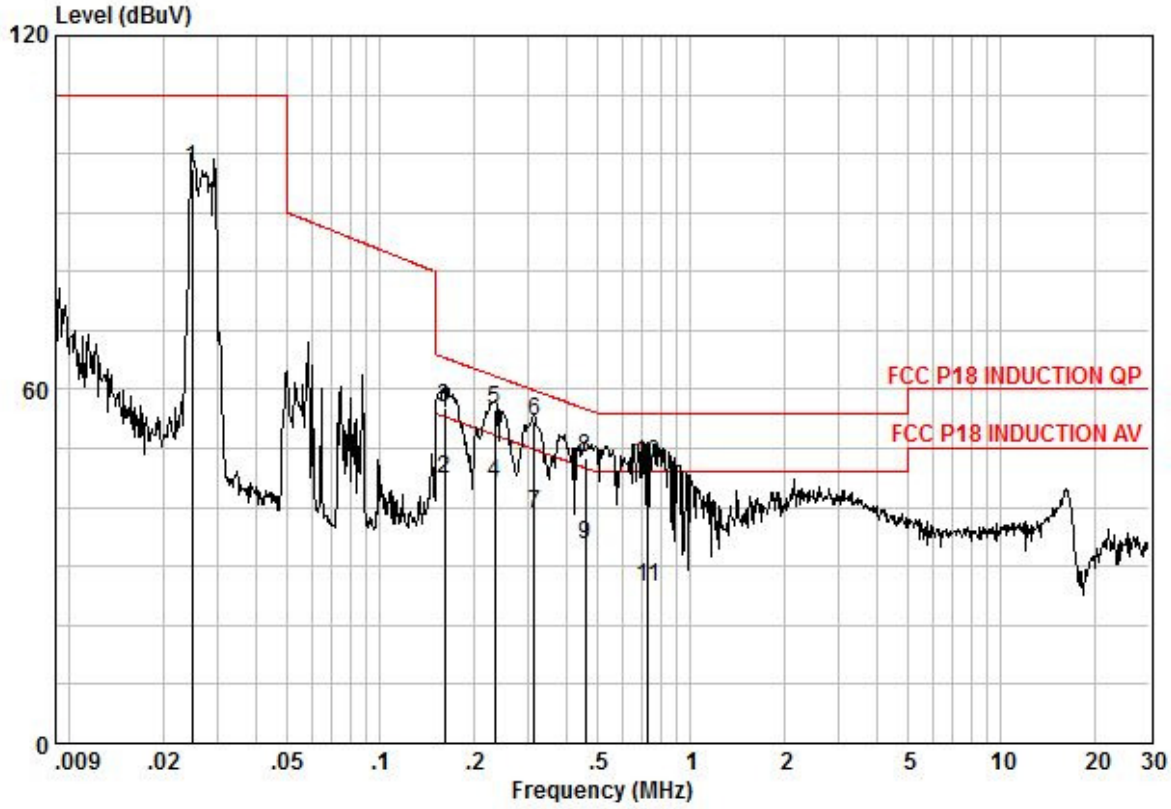
Mode:a; Line:Live Line



Phase : LINE
No :
Model :STW1521

Frequency MHz	read level dBuV	Cable Loss dB	LISN Factor dB	Measured level dBuV	Limit Line dBuV	Over limit dB	Remark
0,02	87,49	0,10	9,91	97,50	110,00	-12,50	QP
0,16	46,36	0,10	9,69	56,15	65,25	-9,10	QP
0,16	34,31	0,10	9,69	44,10	55,25	-11,15	AVERAGE
0,24	45,08	0,12	9,70	54,89	62,26	-7,36	QP
0,24	33,82	0,12	9,70	43,63	52,26	-8,62	AVERAGE
0,31	41,80	0,15	9,69	51,64	59,99	-8,36	QP
0,31	21,98	0,15	9,69	31,82	49,99	-18,18	AVERAGE
0,38	41,87	0,17	9,70	51,74	58,24	-6,50	QP
0,38	18,95	0,17	9,70	28,82	48,24	-19,42	AVERAGE
0,66	38,07	0,24	9,70	48,01	56,00	-7,99	QP
0,66	24,37	0,24	9,70	34,31	46,00	-11,69	AVERAGE

Mode:a; Line:Neutral Line



Phase : NEUTRAL
No :
Model :STW1521

Frequency MHz	read level dBuV	Cable Loss dB	LISN Factor dB	Measured level dBuV	Limit Line dBuV	Over limit dB	Remark
0,02	87,62	0,10	9,78	97,50	110,00	-12,50	QP
0,16	35,11	0,10	9,55	44,76	55,38	-10,62	AVERAGE
0,16	47,38	0,10	9,55	57,03	65,38	-8,35	QP
0,23	34,40	0,12	9,56	44,07	52,30	-8,23	AVERAGE
0,23	46,81	0,12	9,56	56,48	62,30	-5,82	QP
0,31	44,92	0,15	9,55	54,62	59,86	-5,23	QP
0,31	29,15	0,15	9,55	38,85	49,86	-11,00	AVERAGE
0,46	38,74	0,19	9,55	48,48	56,69	-8,21	QP
0,46	23,92	0,19	9,55	33,66	46,69	-13,03	AVERAGE
0,73	37,71	0,25	9,55	47,51	56,00	-8,49	QP
0,73	16,73	0,25	9,55	26,53	46,00	-19,47	AVERAGE

6.2 Radiated Disturbance (Magnetic field Strength) (9KHz-30MHz)

Test Requirement: 47 CFR Part 18: 2015
Test Method: FCC OST/MP-5:1986
Frequency Range: 9kHz to 30MHz
Measurement Distance: 10m
Limit:

Equipment	Operating frequency	RF Power generated by equipment (watts)	Field strength limit (uV/m)	Distance (meters)
Induction cooking ranges	Below 90 kHz On or above 90 kHz	Any Any	1,500 300	[4]30 [4]30

For Induction cooking ranges and the operating frequency is below 90 kHz, the field strength limit is 1,500 μV/m@30m,
i.e. **20lg (1500)+20lg(30/10)=63.52+9.54=73.06dBuV/m @ 10m distance.**

6.2.1 E.U.T. Operation

Operating Environment:

Temperature: 22 °C Humidity: 55 % RH Atmospheric Pressure: 1011 mbar

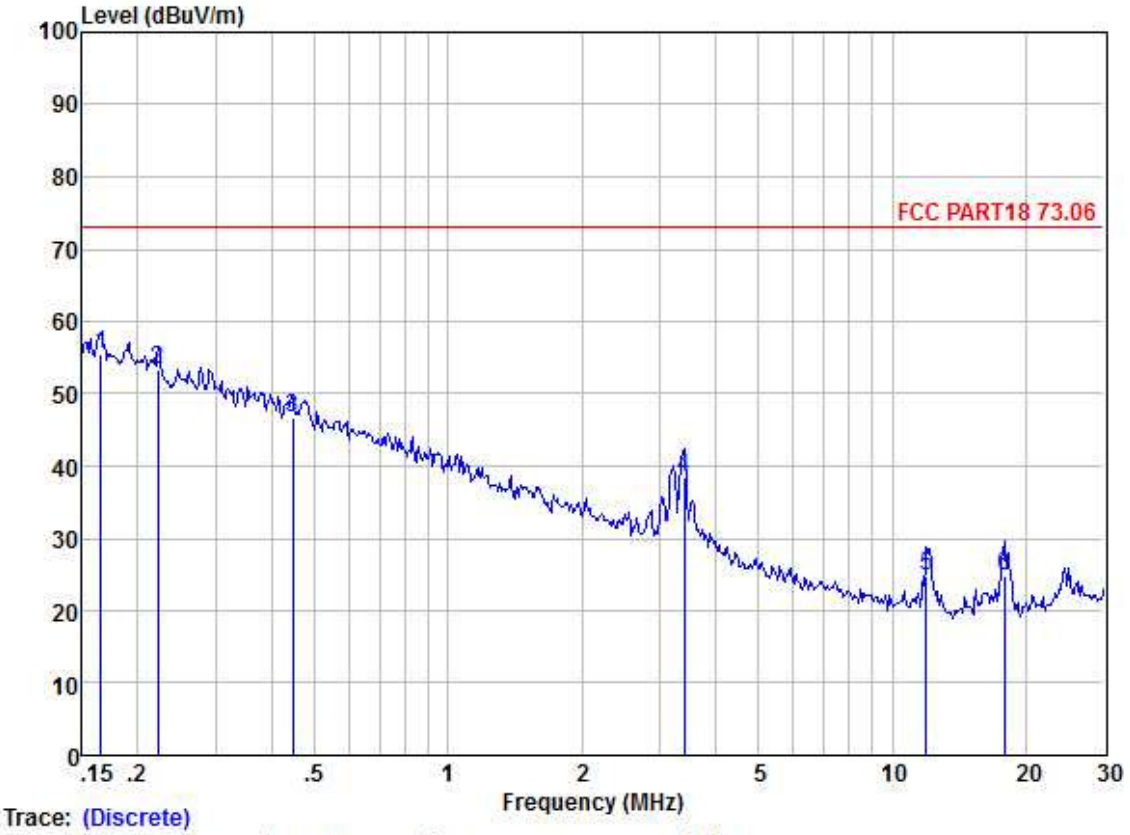
Pretest these mode to find the worst case:
a:heating mode at maximum power.
b:heating mode at middle power.
c:heating mode at minimum power.

The worst case for final test: a:heating mode at maximum power.

6.2.2 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.

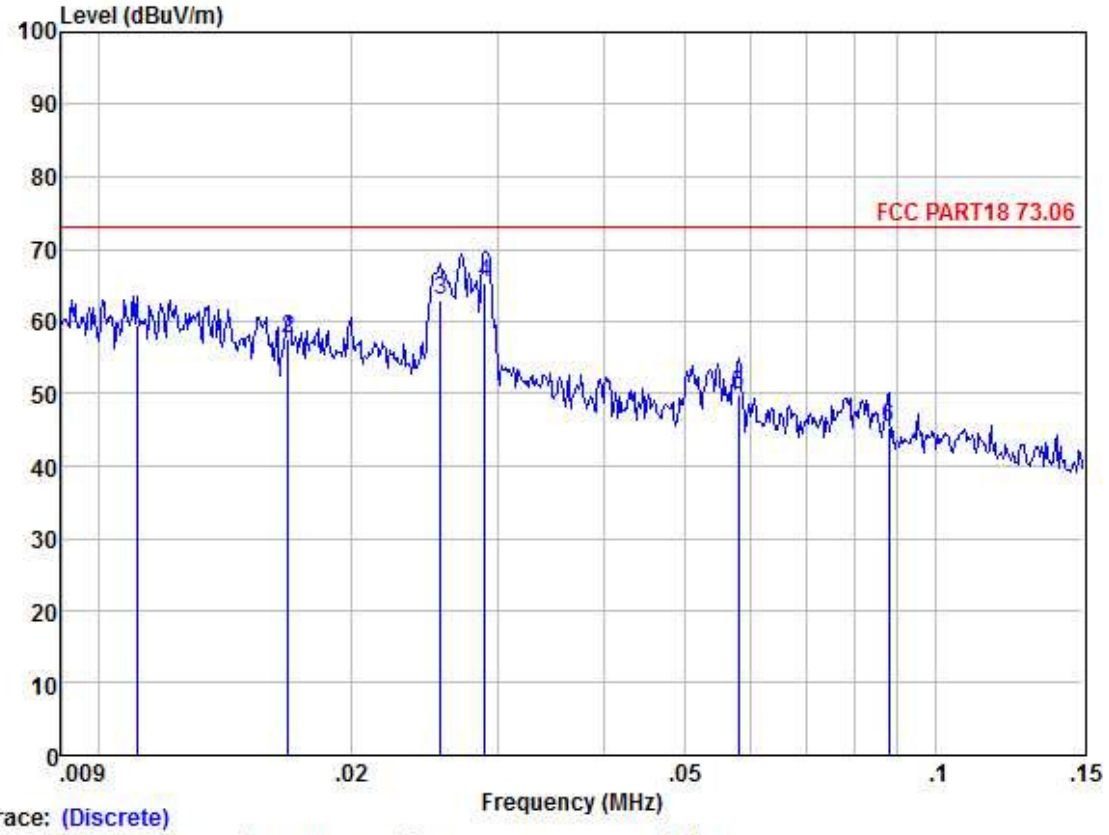
Mode:a; Polarization:Horizontal 150kHz-30MHz



Trace: (Discrete)

	Freq	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Level	Limit Line	Over Limit	Pol/Phase	Remark
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB		
1	0.165	71.90	12.89	0.00	29.30	55.49	73.06	-17.57	HORIZONTAL	Average
2	0.222	69.80	12.82	0.00	29.30	53.32	73.06	-19.74	HORIZONTAL	Average
3	0.447	63.34	12.53	0.10	29.30	46.67	73.06	-26.39	HORIZONTAL	Average
4	3.399	55.20	12.10	0.24	29.20	38.34	73.06	-34.72	HORIZONTAL	Average
5	11.933	43.01	10.49	0.60	29.20	24.90	73.06	-48.16	HORIZONTAL	Average
6	17.849	42.51	10.57	0.70	29.10	24.68	73.06	-48.38	HORIZONTAL	Average

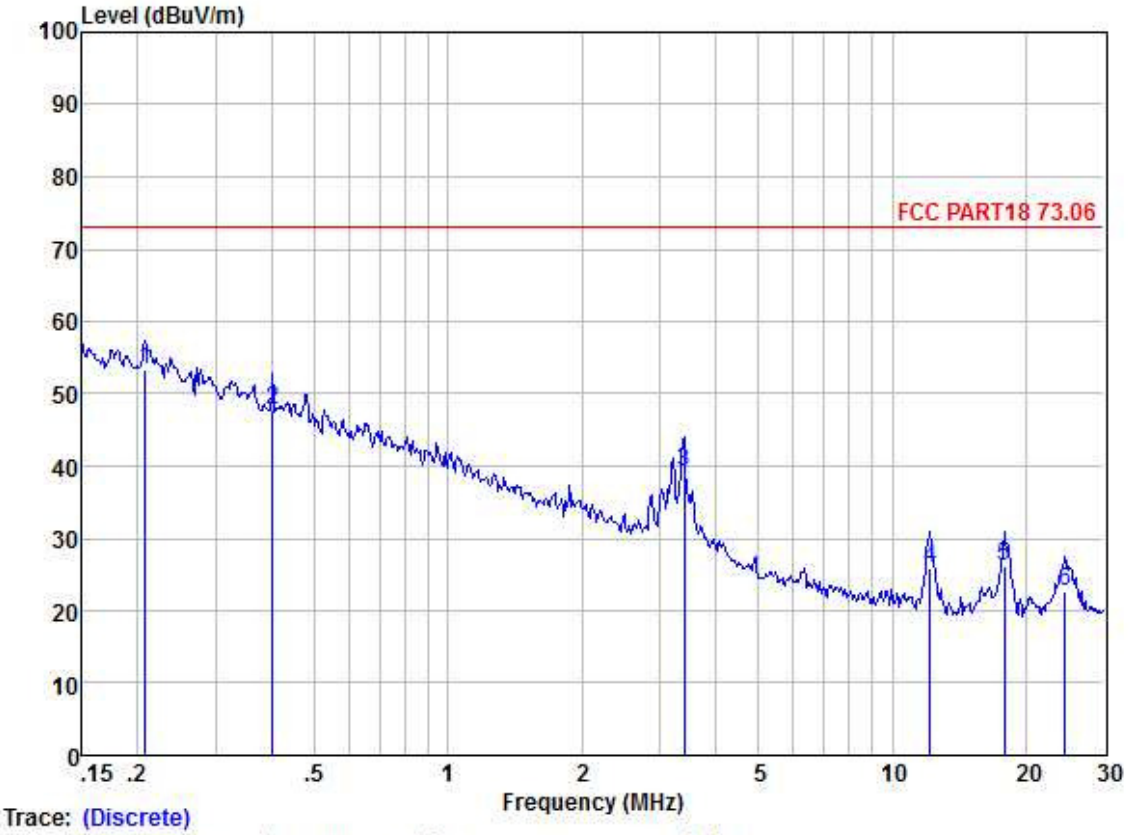
Mode:a; Polarization:Horizontal 9kHz-150kHz



Trace: (Discrete)

	Freq	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Level	Limit Line	Over Limit	Pol/Phase	Remark
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB		
1	0.011	67.07	21.49	0.10	29.20	59.46	73.06	-13.60	HORIZONTAL	Average
2	0.017	68.84	17.77	0.10	29.20	57.51	73.06	-15.55	HORIZONTAL	Average
3	0.026	75.94	16.28	0.00	29.27	62.95	73.06	-10.11	HORIZONTAL	Average
4	0.029	79.03	15.64	0.00	29.30	65.37	73.06	-7.69	HORIZONTAL	Average
5	0.058	66.39	12.76	0.09	29.39	49.85	73.06	-23.21	HORIZONTAL	Average
6	0.088	61.58	12.96	0.01	29.31	45.24	73.06	-27.82	HORIZONTAL	Average

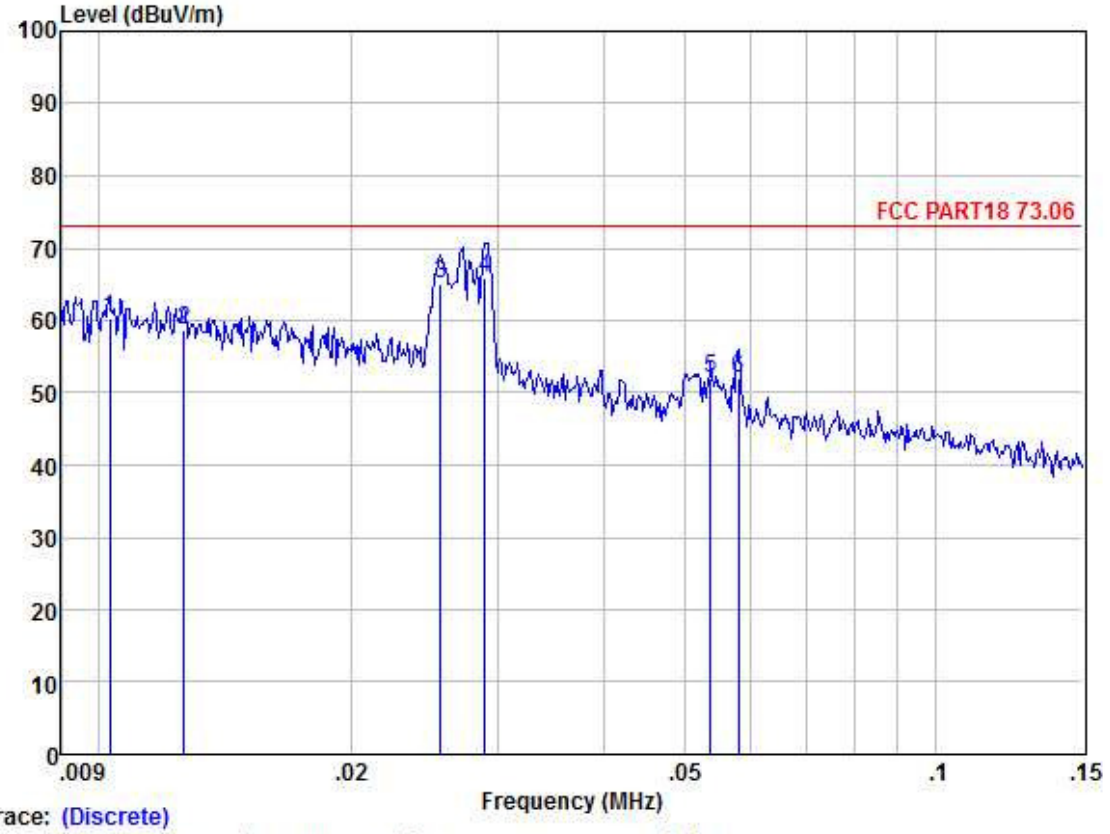
Mode:a; Polarization:Vertical 150kHz-30MHz



Trace: (Discrete)

	Freq	ReadLevel	Antenna Factor	Cable Loss	Preamp Factor	Level	Limit Line	Over Limit	Pol/Phase	Remark
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB		
1	0.208	69.88	12.83	0.00	29.30	53.41	73.06	-19.65	VERTICAL	Average
2	0.402	64.47	12.56	0.10	29.30	47.83	73.06	-25.23	VERTICAL	Average
3	3.399	55.94	12.10	0.24	29.20	39.08	73.06	-33.98	VERTICAL	Average
4	12.188	43.96	10.46	0.57	29.18	25.81	73.06	-47.25	VERTICAL	Average
5	17.849	43.84	10.57	0.70	29.10	26.01	73.06	-47.05	VERTICAL	Average
6	24.529	40.54	10.24	0.80	29.00	22.58	73.06	-50.48	VERTICAL	Average

Mode:a; Polarization:Vertical 9kHz-150kHz



Trace: (Discrete)

	Freq	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Level	Limit Line	Over Limit	Pol/Phase	Remark
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB		
1	0.010	67.49	21.78	0.10	29.20	60.17	73.06	-12.89	VERTICAL	Average
2	0.013	67.13	20.74	0.10	29.20	58.77	73.06	-14.29	VERTICAL	Average
3	0.026	78.00	16.28	0.00	29.27	65.01	73.06	-8.05	VERTICAL	Average
4	0.029	79.41	15.64	0.00	29.30	65.75	73.06	-7.31	VERTICAL	Average
5	0.054	68.64	12.72	0.09	29.39	52.06	73.06	-21.00	VERTICAL	Average
6	0.058	68.48	12.76	0.09	29.39	51.94	73.06	-21.12	VERTICAL	Average

--End of Report--