

Report No.: GZEM150900467705 Page: 1 of 63 FCC ID: 2AAODBMO700

## **TEST REPORT**

Application No.:	GZEM1911017425HS
Applicant:	Breville Pty Ltd
Address of Applicant:	Ground Floor, Suite 2, 170-180 Bourke Rd, Alexandria, NSW 2015, Australia
Manufacturer:	The same as applicant
Address of Manufacturer:	The same as applicant
Equipment Under Test (EL	JT):
FCC ID: 2AAODBMO700	
EUT Name:	Microwave oven
Model No.:	BMO700 XXXYYY /ZZ (Where "XXX" indicates a different colour and "YYY" indicates different country or region, "ZZ" indicates for internal use. Each "XXX" or "YYY" or "ZZ" can be '0-9','A-Z' or blank) ¤
¤	Please refer to section 2 of this report which indicates which model was actually tested and which were electrically identical.
Trade Mark:	Breville
Standard(s):	47 CFR Part 18
Date of Receipt:	2019-12-03
Date of Test:	2019-12-14 to 2019-12-17
Date of Issue:	2015-12-02 (For original report: GZEM150900467701)
	2020-06-03 (for the report GZEM150900467705)
Test Result:	Pass*

\* In the configuration tested, the EUT complied with the standards specified above.

oke. Ju

Kobe Jian EMC Laboratory Manager



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Revision Record								
Version	Chapter	Date	Modifier	Remark				
01		2015-12-02		Original				
02		2020-06-03		Copy report: add alternative one inverter and two IGBT.				

Authorized for issue by:		
Tested By	Zamon Guar	2019-12-14 to 2019-12-17
	Damon_Guan /Project Engineer	Date
Checked By	Terry Lai	2020-06-03
	Terry_Lai /Reviewer	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	18.307(b)	Pass
Output Power Measurement	47 CFR Part 18	FCC OST/MP-5:1986	FCC OST/MP-5:1986 Clause 4.3	Pass
Operating Frequency Measurement	47 CFR Part 18	FCC OST/MP-5:1986	18.301	Pass
Radiation Hazard Test	47 CFR Part 18	FCC OST/MP-5:1986	1 mW/cm <sup>2</sup>	Pass
Radiated Emissions (30MHz-1GHz)	47 CFR Part 18	FCC OST/MP-5:1986	18.305(b)	Pass
Radiated Emissions (above 1GHz)	47 CFR Part 18	FCC OST/MP-5:1986	18.305(b)	Pass
Radiated Emissions (Magnetic field Strength) (9kHz-30MHz)	47 CFR Part 18	FCC OST/MP-5:1986	18.305(b)	Pass



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#### **¤ Remark for the report GZEM150900467705:**

This test report (Ref. No.: GZEM150900467705) is only valid with the original test report (Ref. No.: GZEM150900467701). Only add alternative one inverter and two IGBT.

#### **Declaration of EUT Family Grouping:**

Model No.: BMO700 XXXYYY /ZZ (Where "XXX" indicates a different colour and "YYY" indicates different country or region, "ZZ" indicates for internal use. Each "XXX" or "YYY" or "ZZ" can be '0-9','A-Z' or blank)

According to the declaration from the applicant, the electrical circuit design, layout, components used and internal wiring were identical for all models, with only difference on the color, plug or texture on the surface finish etc.

Before			After		
Part name	Type No.	manufacturer	Part name	Type No.	manufacturer
Inverter	MD-INV2000-L0 S	SONG RESEARCH Electronic Technology CO.,LTD	Inverter	MD-INV2000 -L4	Guangdong Midea Kitchen Appliances Manufacturying Co.,Ltd
IGBT	IHW30N120R3	Infineon	IGBT 1	IHW30N135 R3	Infineon Technologies
		Technologies	IGBT 2	IHW30N135 R5	Infineon Technologies

Therefore one model BMO700 USC /A with IGBT 1 was tested full items, one model BMO700 USC /A with IGBT 2 was test full items in this report. For original data please refer to report GZEM150900467701.



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## 4 General Information

## 4.1 Details of E.U.T.

Power Supply:	AC 120V 60Hz 1450W
Test Voltage:	AC 120V 60Hz
Cable:	About 1.2m x 3 wires unscreened AC mains cable.

## 4.2 Description of Support Units

Load for microwave ovens for testing:

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

No.	Item	Measurement Uncertainty
4	Conducted Disturbance Voltage at	±3.63dB (9kHz to 150kHz)
1	Mains Terminals	±3.22dB (150kHz to 30MHz)
2	Disturbance Power	±3.78dB
0	Dedicted Emissions	±5.0dB (30MHz-1GHz)
3	3 Radiated Emissions	±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, Scientech Park, Guangzhou Economic & Technology Development District, Guangzhou, China 510663

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

No tests were sub-contracted.



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## 4.5 Test Facility

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

### • 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		

Radiation hazard test					
Equipment	Manufacturer	Model No	Inventory No	Cal Date	Cal Due Date
Electric Field Probe(100kHz-3GHz)	WANDEL & GOLTERMANN	EMR-20	EMC0907	2019-05-21	2020-05-20

Radiated Emissions (30	-	Madal NI	Incombo my NI-		
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



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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

Radiated Emissions (ab	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

Radiated Emissions (Magnetic field Strength) (9kHz-30MHz)					
Equipment	Manufacturer	Model No	<b>Inventory No</b>	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



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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
AC Power Source	California	50001iX	EMC0608	2020-03-27	2021-03-26
Power Analyzer	California	PACS	EMC0607	2020-03-27	2021-03-26
Test Software CTS4	California	Ver 4.14.0	GZE100-66	N/A	N/A



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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( $\mu$ V)-56dB( $\mu$ V) quasi-peak, 56dB( $\mu$ V)-46dB( $\mu$ V) 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:** 

**Test Setup Diagram** 

Temperature:	23	°C	Humidity:	52	% RH	Atmospheric Pressure:	1020	mbar
Pretest these	a: T	est the E	UT in microv	wave	mode with	maximum power.		
modes to find the	b. rest the Lor in merowave mode with mode power.							
worst case:	c: T	est the E	UT in microv	vave	mode with	lowest power.		
The worst case for final test:	a: Test the EUT in microwave mode with maximum power.							

#### 6.1.2

#### Shielding Room Test Receiver Test

### 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.

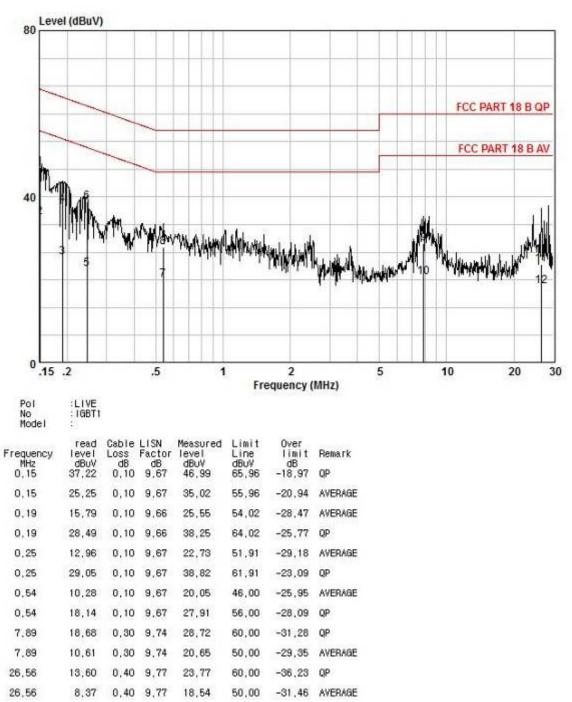
Measured Level = Read level + Cable Loss + LISN Factor



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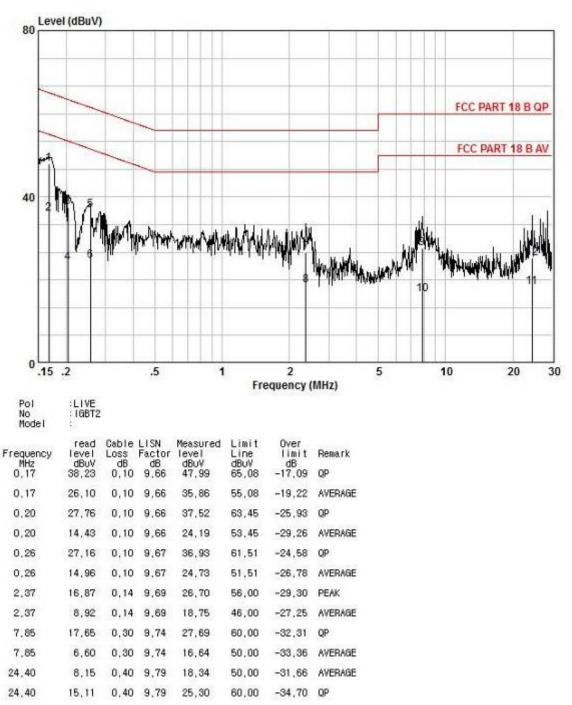
Mode:a; Line:Live Line; model BMO700 USC /A with IGBT 1



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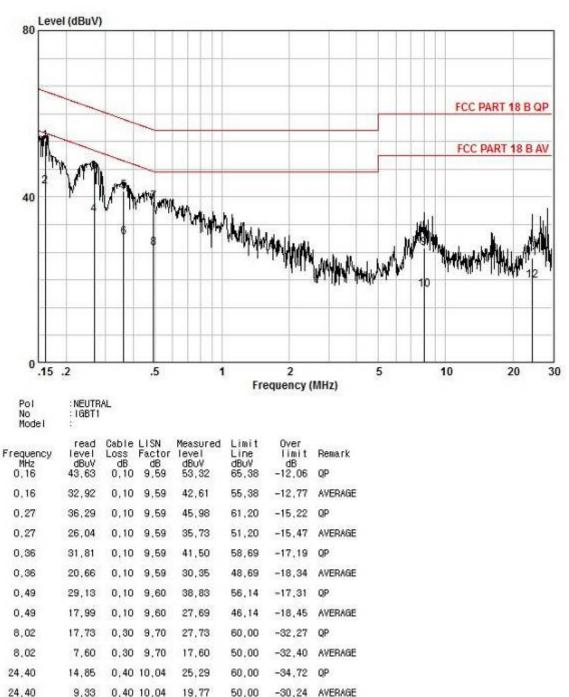
Mode:a; Line:Live Line; model BMO700 USC /A with IGBT 2



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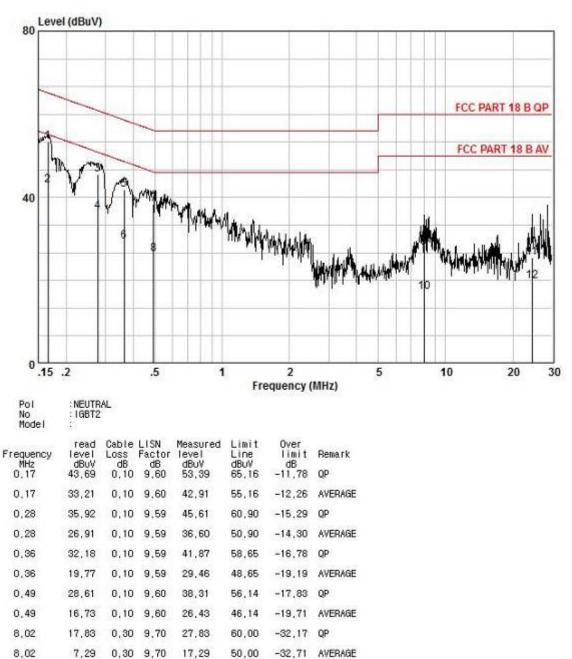
Mode:a; Line:Neutral Line; model BMO700 USC /A with IGBT 1



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Mode:a; Line:Neutral Line; model BMO700 USC /A with IGBT 2



24,40

24,40

15,05

9,49

0,40 10,04

0,40 10,04

25,49

19.93

60,00

50.00

-34,52 QP

-30.08 AVERAGE

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### 6.2 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:24.7 °CHumidity:53.9 % RHAtmospheric Pressure:1022mbarTest modea: Test the EUT in microwave mode with maximum power.

### 6.2.2 Measurement Data

model BMO700 USC /A with IGBT 1

Mass of water	Mass of the container	Ambient temperature	Initial temperature	Final temperature	Heating time(s)	Power output
(g)	(g)	(°C)	(°C)	(°C)		(watts)
1001	410	19.8	10.4	19.6	44	875.3

### model BMO700 USC /A with IGBT 2

Mass of water	Mass of the container	Ambient temperature	Initial temperature	Final temperature	Heating time(s)	Power output
(g)	(g)	(°C)	(°C)	(°C)		(watts)
1002	410	19.9	10.2	19.6	45	874.9

### Formula :

$$P = \frac{4,187 \cdot m_{\rm w} \left(T_2 - T_1\right) + 0,55 \cdot m_{\rm c} \left(T_2 - T_0\right)}{t}$$

NOTE :

P is the microwave power output, in watts

mw is the mass of the water, in grams

mc is the mass of the container, in grams

To is the ambient temperature, in degrees Celsius

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

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

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



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### 6.2.3 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 centre 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.

#### model BMO700 USC /A with IGBT 1

Input Voltage (V)	Input Current (A)	Power Factor	Measured input power (W)	Rated input power (W)
119.9	12.67	0.931	1414	1450

### model BMO700 USC /A with IGBT 2

Input Voltage (V)	Input Current (A)	Power Factor	Measured input power (W)	Rated input power (W)
119.8	12.56	0.933	1404	1450



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### 6.3 Radiation Hazard Test

Test Requirement:	47 CFR Part 18
Test Method:	FCC OST/MP-5:1986
Test distance:	Five centimeters from the oven surface

### 6.3.1 E.U.T. Operation

Operating Environment:

Temperature:23.4 °CHumidity:52.7 % RHAtmospheric Pressure:1019mbarTest modea: Test the EUT in microwave heating mode, setting at maximum power level.

### 6.3.2 Measurement Data

### model BMO700 USC /A with IGBT 1

Maximum measure level	Limit	Pass/Fail
(mW/cm²)	(mW/cm²)	
0.17	1.00	Pass

### model BMO700 USC /A with IGBT 2

Maximum measure level	Limit	Pass/Fail
(mW/cm²)	(mW/cm²)	
0.23	1.00	Pass



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## 6.4 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 $band(2450MHz\pm50MHz)$
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

(b) The field strength levels of emissions which le outside the bands specified i §18.301, unless otherwise indicated, shall not exceed the following:

RF Power generated	Field strength Limit(uV/m)		
by equipment(watts)	@300m		
Below 500	25		
500 or more	25*SQRT(power/500)		

Power =875.3 and 874.9 W according to clause 6.2.2

 $\label{eq:limit} Limit=20 lg(25^*SQRT(power/500))+20 lg(300/3)=30.39+40=70.39 dBuV/m @ 3m distance.$ 

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

### 6.4.1 E.U.T. Operation

**Operating Environment:** 

23.7 °C

Temperature: Pretest these modes to find the worst case:

a: Test the EUT in microwave heating mode, setting at maximum power level.

a: Test the EUT in microwave heating mode, setting at maximum power level.

b: Test the EUT in microwave heating mode, setting at middle power level. c: Test the EUT in microwave heating mode, setting at lowest power level.

Humidity: 54.9 % RH

Worst mode



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mbar

Atmospheric Pressure: 1020



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#### 6.4.2 Measurement Data

#### 1)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.

#### model BMO700 USC /A with IGBT 1

ISM frequency(MHz)	Tolerance(MHz)	Measurement Data(MHz)	
2450	±50	2472	

#### model BMO700 USC /A with IGBT 2

ISM frequency(MHz)	Tolerance(MHz)	Measurement Data(MHz)	
2450	±50	2466	

2)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.

### model BMO700 USC /A with IGBT 1

ISM frequency(MHz)	Tolerance(MHz)	Measurement Data(MHz)
2450	±50	2467

#### model BMO700 USC /A with IGBT 2

ISM frequency(MHz)	Tolerance(MHz)	Measurement Data(MHz)
2450	±50	2476

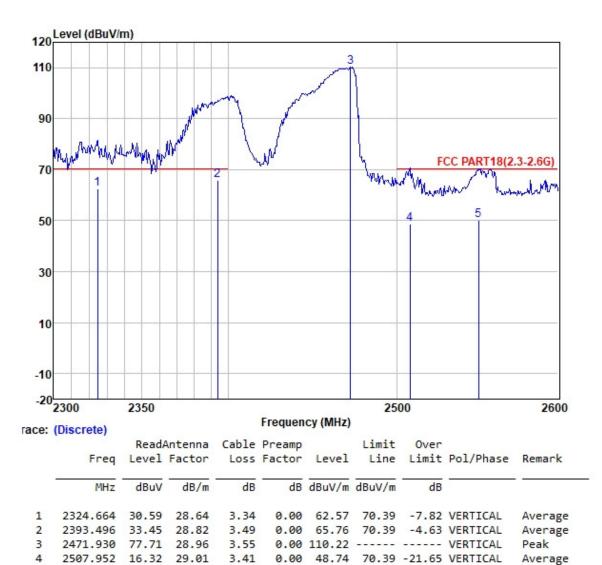


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1)The variation of frequency with time model BMO700 USC /A with IGBT 1





5

2550.120 17.80 29.07

3.45

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0.00 50.32 70.39 -20.07 VERTICAL

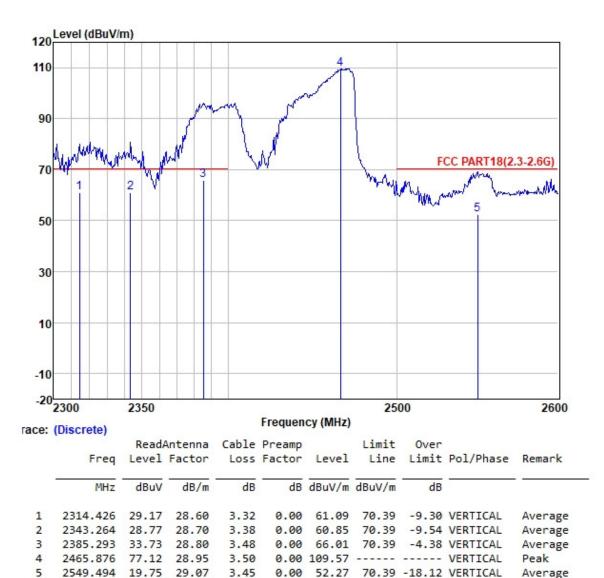
No.198 Kadu Read, Seinted Park, Georgina Economic & Technology Development Detrict, Georgina, Chira 510663 t (86-20) 82155555 f (86-20) 82075058 www.sgsgroup.com.cn 中国 ·广州 ·经济技术开发区科学城科珠路198号 邮编: 510663 t (86-20) 82155555 f (86-20) 82075058 sgs.china@sgs.com

Average



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model BMO700 USC /A with IGBT 2



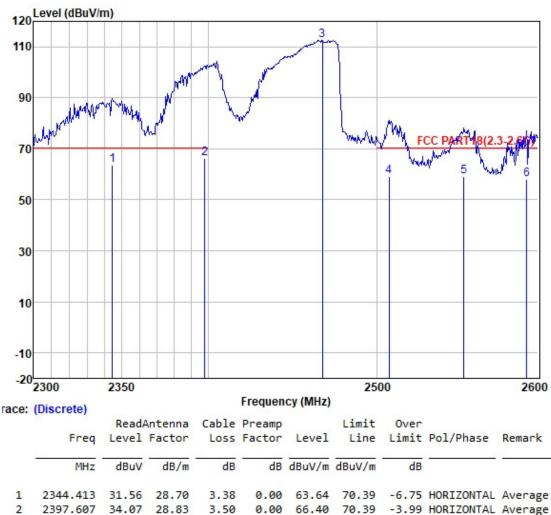


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2)The variation of frequency with line voltage model BMO700 USC /A with IGBT 1



2397.607	34.07	28.83	3.50	0.00	66.40	70.39	-3.99	HORIZONTAL	Average
2467.086	80.26	28.95	3.50	0.00	112.71			HORIZONTAL	Peak
2507.337	26.74	29.01	3.41	0.00	59.16	70.39	-11.23	HORIZONTAL	Average
2553.248	26.52	29.07	3.45	0.00	59.04	70.39	-11.35	HORIZONTAL	Average
2592.679	25.56	29.15	3.49	0.00	58.20	70.39	-12.19	HORIZONTAL	Average
	2397.607 2467.086 2507.337 2553.248	2397.607 34.07 2467.086 80.26 2507.337 26.74 2553.248 26.52	2397.607 34.07 28.83 2467.086 80.26 28.95 2507.337 26.74 29.01 2553.248 26.52 29.07	2397.607 34.07 28.83 3.50   2467.086 80.26 28.95 3.50   2507.337 26.74 29.01 3.41   2553.248 26.52 29.07 3.45	2397.607 34.07 28.83 3.50 0.00   2467.086 80.26 28.95 3.50 0.00   2507.337 26.74 29.01 3.41 0.00   2553.248 26.52 29.07 3.45 0.00	2397.607 34.07 28.83 3.50 0.00 66.40   2467.086 80.26 28.95 3.50 0.00 112.71   2507.337 26.74 29.01 3.41 0.00 59.16   2553.248 26.52 29.07 3.45 0.00 59.04	2397.607 34.07 28.83 3.50 0.00 66.40 70.39   2467.086 80.26 28.95 3.50 0.00 112.71    2507.337 26.74 29.01 3.41 0.00 59.16 70.39   2553.248 26.52 29.07 3.45 0.00 59.04 70.39	2397.607 34.07 28.83 3.50 0.00 66.40 70.39 -3.99   2467.086 80.26 28.95 3.50 0.00 112.71    2507.337 26.74 29.01 3.41 0.00 59.16 70.39 -11.23   2553.248 26.52 29.07 3.45 0.00 59.04 70.39 -11.35	2397.607 34.07 28.83 3.50 0.00 66.40 70.39 -3.99 HORIZONTAL   2467.086 80.26 28.95 3.50 0.00 112.71  HORIZONTAL   2507.337 26.74 29.01 3.41 0.00 59.16 70.39 -11.23 HORIZONTAL   2553.248 26.52 29.07 3.45 0.00 59.04 70.39 -11.35 HORIZONTAL   2592.679 25.56 29.15 3.49 0.00 58.20 70.39 -12.19 HORIZONTAL

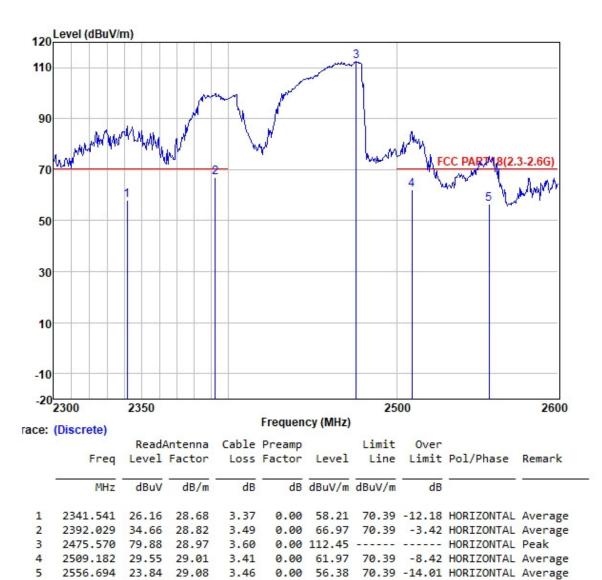


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model BMO700 USC /A with IGBT 2





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## 6.5 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 againment operation on a frequency aposition in \$19,201 is permitted

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 =875.3 and 874.9 W according to clause 6.2.2

Limit=20lg(25\*SQRT(power/500))+20lg(300/3)=30.39+40=70.39dBuV/m @ 3m distance.

### 6.5.1 E.U.T. Operation

Operating Environment:

Temperature:22 °CHumidity:51.2 % RHAtmospheric Pressure:1020mbarPretest thesea: Test the EUT in microwave mode with maximum power.

Pretest these modes to find the worst case:

b: Test the EUT in microwave mode with middle power.

c: Test the EUT in microwave mode with lowest power.

The worst case for final test:

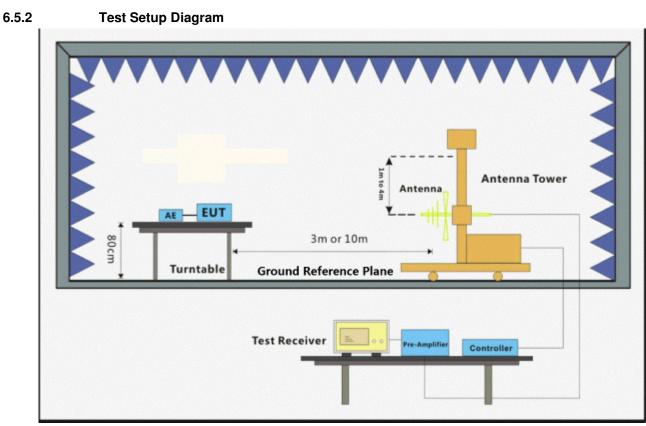
a: Test the EUT in microwave mode with maximum power.



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#### 6.5.3 Me

#### 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.

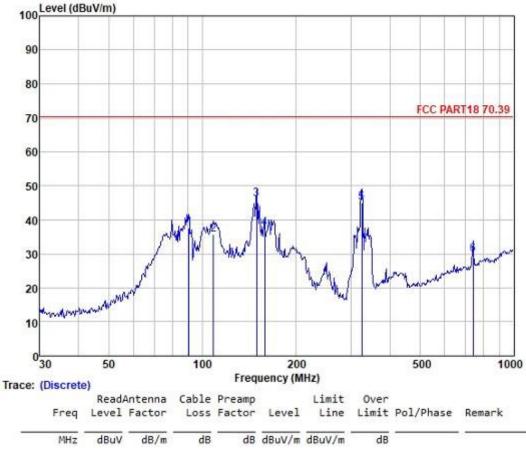
Level=Read Level + Antenna Factor + Cable Loss - Preamp Factor



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Mode:a; Polarization:Horizontal; model BMO700 USC /A with IGBT 1

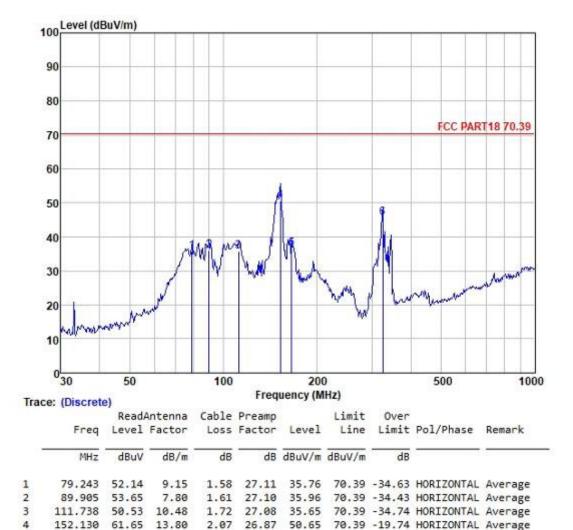
1	90.537	55.11	7.90	1.61	27.10	37.52	70.39	-32.87	HORIZONTAL	Average
2	108.647	50.73	10.33	1.70	27.08	35.68	70.39	-34.71	HORIZONTAL	Average
3	148.963	57.21	13.75	2.05	26.89	46.12	70.39	-24.27	HORIZONTAL	Average
4	158.668	48.59	13.67	2.13	26.85	37.54	70.39	-32.85	HORIZONTAL	Average
5	324.456	55.16	14.40	3.01	27.54	45.03	70.39	-25.36	HORIZONTAL	Average
6	739.661	30.77	22.00	5.24	28.11	29.90	70.39	-40.49	HORIZONTAL	Average



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3.01 27.54 45.47

Mode:a; Polarization:Horizontal; model BMO700 USC /A with IGBT 2



5

6

165.487 47.64 13.42

324.456 55.60 14.40

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2.19 26.84 36.41 70.39 -33.98 HORIZONTAL Average

70.39 -24.92 HORIZONTAL Average



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Mode:a; Polarization:Vertical; model BMO700 USC /A with IGBT 1

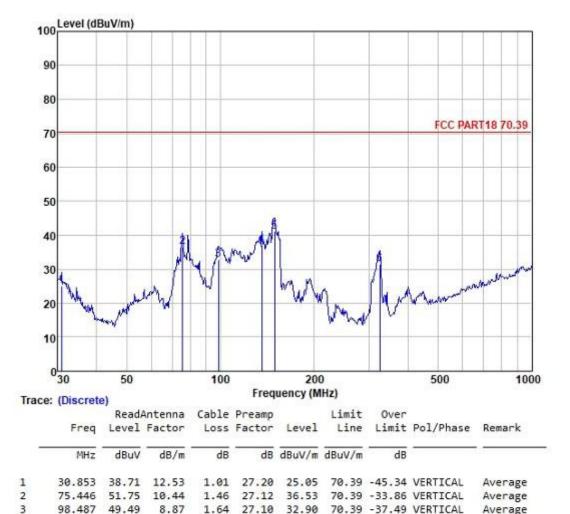
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB		0.00
1	30.853	37.26	12.53	1.01	27.20	23.60	70.39	-46.79	VERTICAL	Average
2	75.446	49.33	10.44	1.46	27.12	34.11	70.39	-36.28	VERTICAL	Average
3	99.878	51.16	9.10	1.65	27.10	34.81	70.39	-35.58	VERTICAL	Average
4	137.903	46.17	13.00	1.94	26.98	34.13	70.39	-36.26	VERTICAL	Average
5	153.200	55.30	13.80	2.09	26.87	44.32	70.39	-26.07	VERTICAL	Average
6	315.481	35.65	14.10	3.00	27.40	25.35	70.39	-45.04	VERTICAL	Average



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Mode:a; Polarization:Vertical; model BMO700 USC /A with IGBT 2



3

4

5

6

8.87

135.982 49.40 12.80

148.963 52.10 13.75

324.456 41.55 14.40

1.64 27.10

1.91 26.99

2.05

32.90

26.89 41.01

3.01 27.54 31.42

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70.39 -37.49 VERTICAL

70.39 -29.38 VERTICAL

70.39 -38.97 VERTICAL

37.12 70.39 -33.27 VERTICAL

Average

Average

Average

Average

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## 6.6 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*SQRT(power/500)			

Power =875.3 and 874.9 W according to clause 6.2.2

Limit=20lg(25\*SQRT(power/500))+20lg(300/3)=30.39+40=70.39dBuV/m @ 3m distance.

### 6.6.1 E.U.T. Operation

Operating Environment:

Temperature:22 °CHumidity:51.2 % RHAtmospheric Pressure:1020mbarPretest thesea: Test the EUT in microwave mode with maximum power.

Pretest these modes to find the worst case:

b: Test the EUT in microwave mode with middle power.

c: Test the EUT in microwave mode with lowest power.

The worst case for final test:

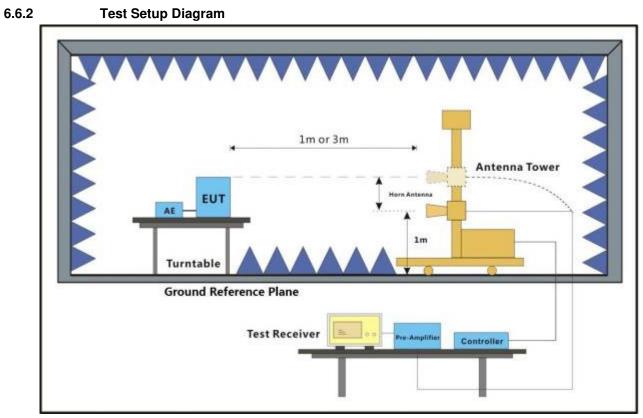
a: Test the EUT in microwave mode with maximum power.



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### 6.6.3 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

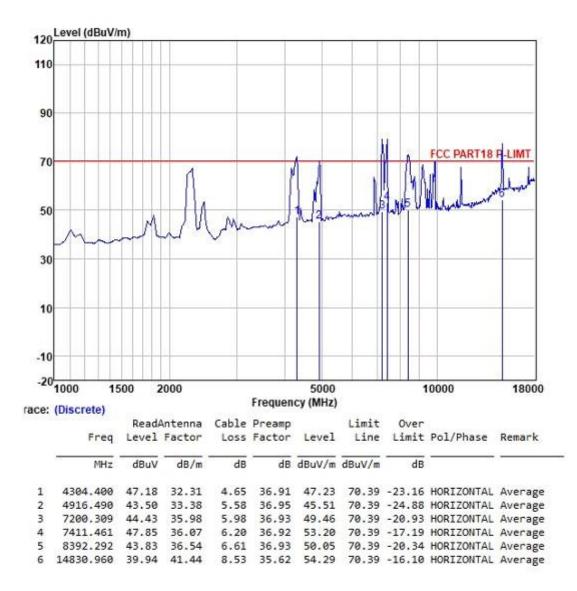


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Mode:a; Polarization:Horizontal; model BMO700 USC /A with IGBT 1





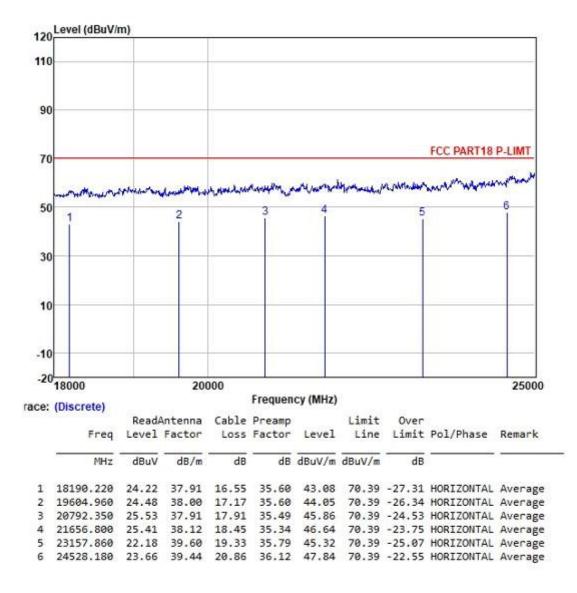
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Mode:a; Polarization:Horizontal; model BMO700 USC /A with IGBT 1



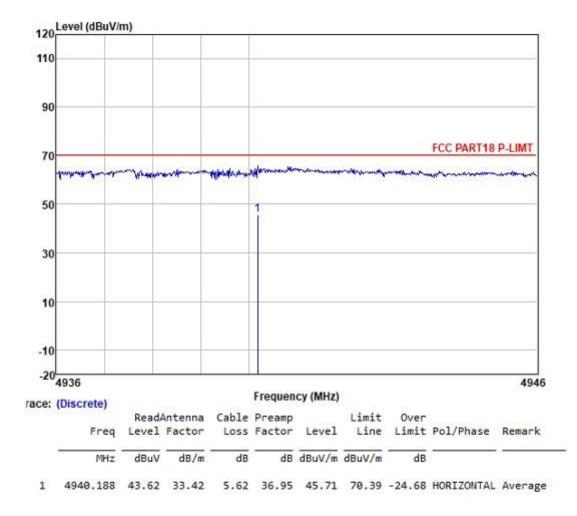


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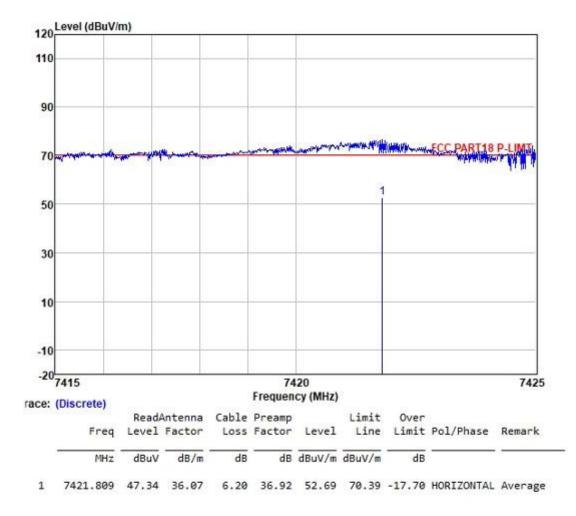


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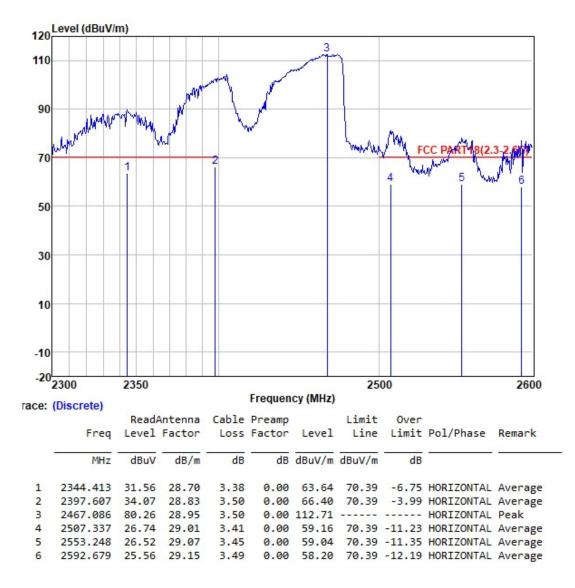


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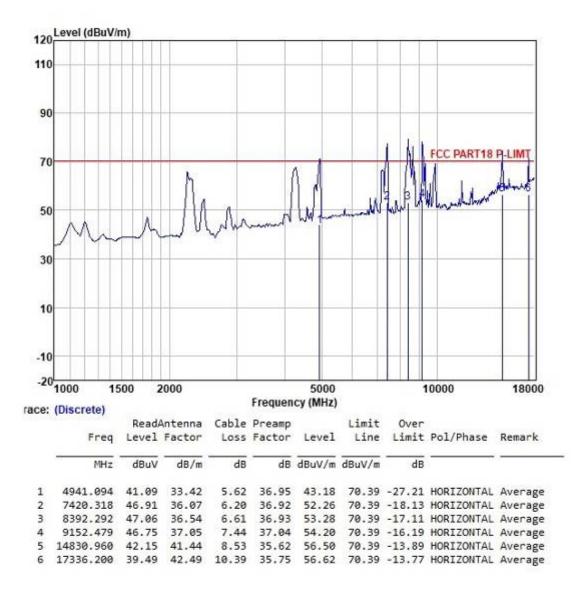
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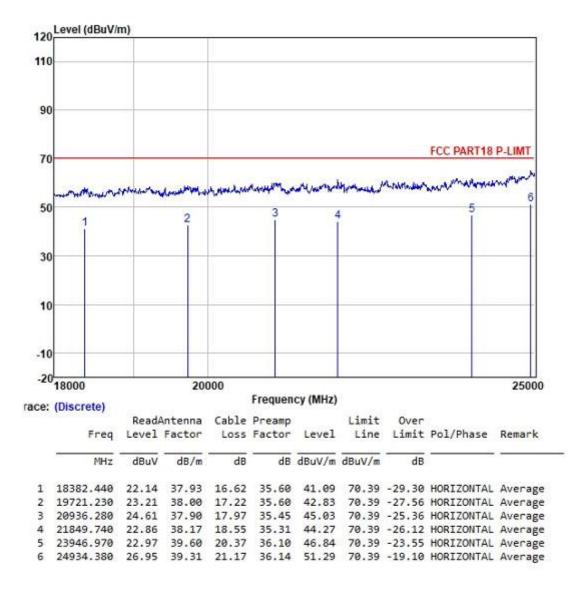


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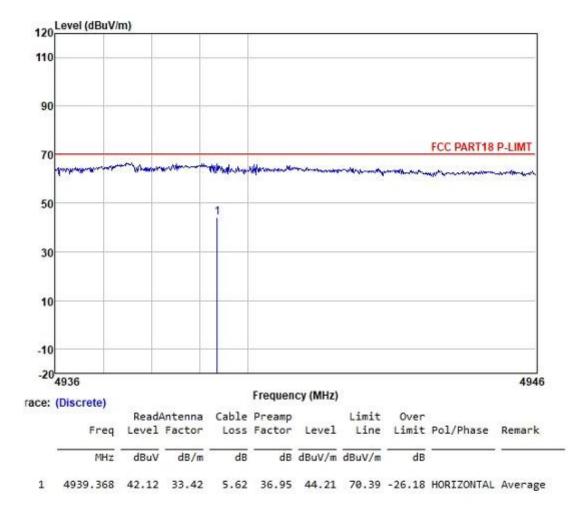
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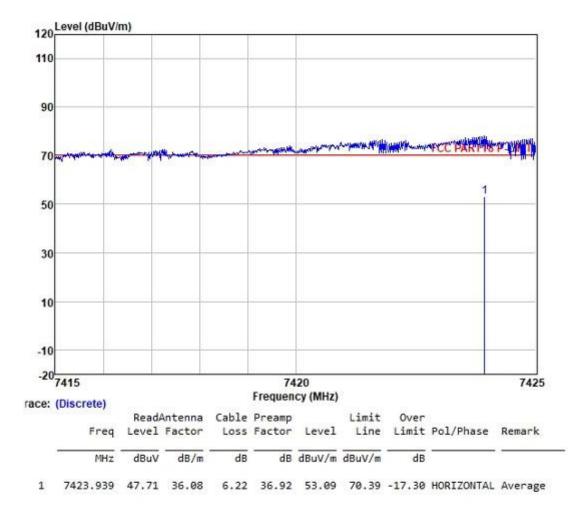


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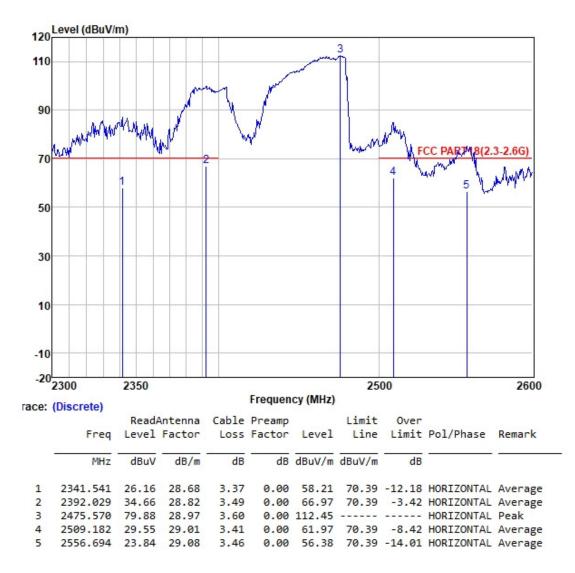


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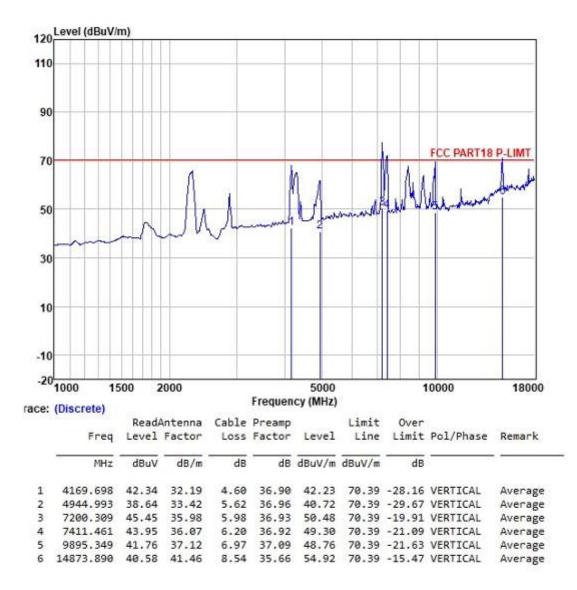


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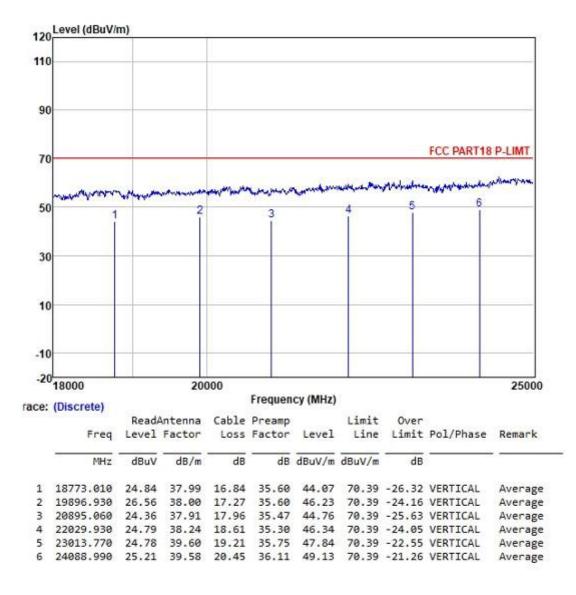


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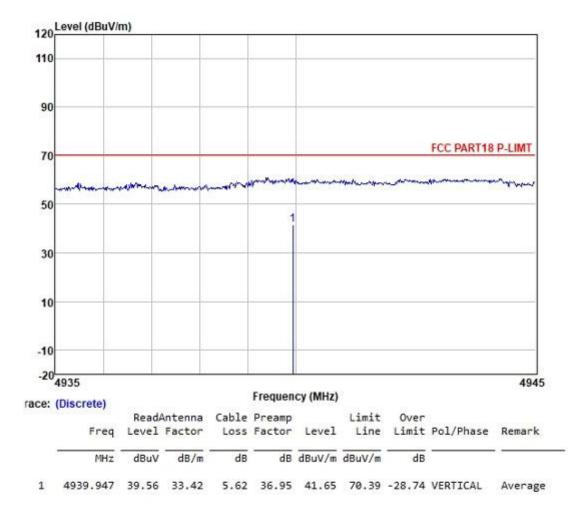


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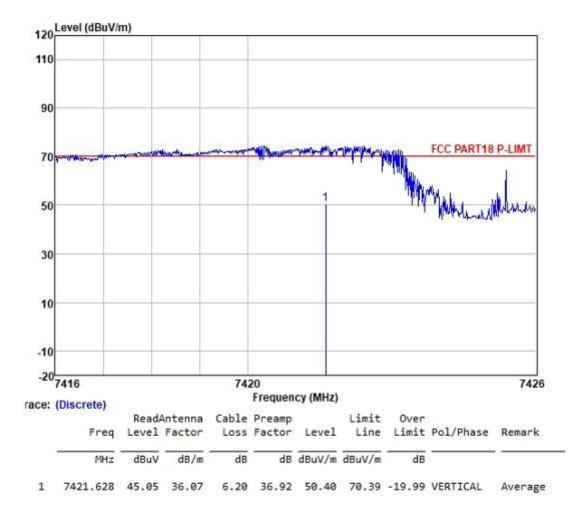


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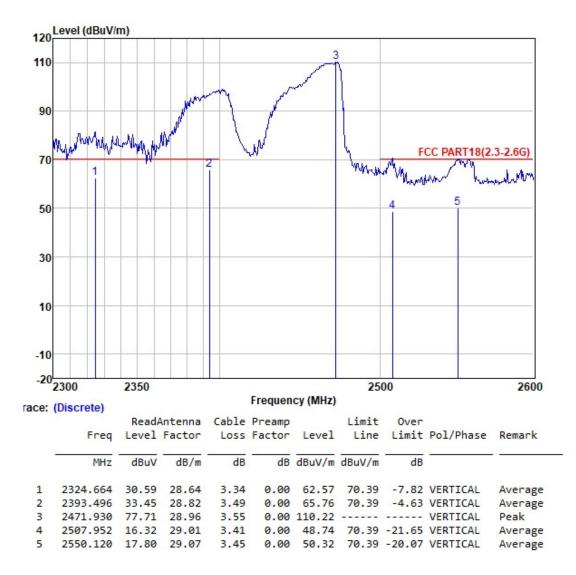


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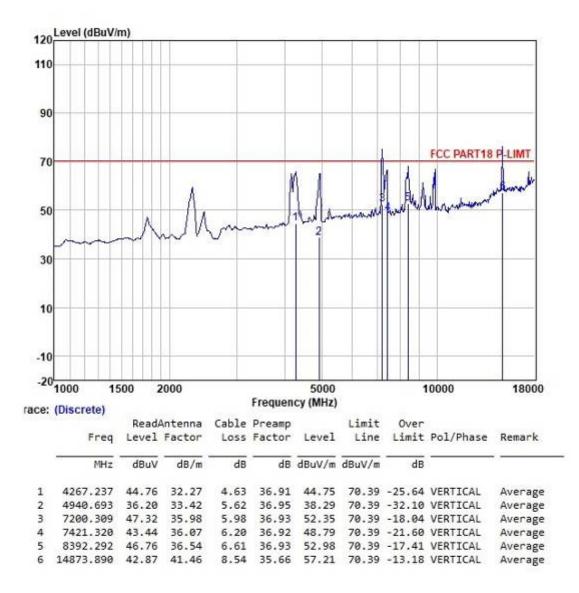


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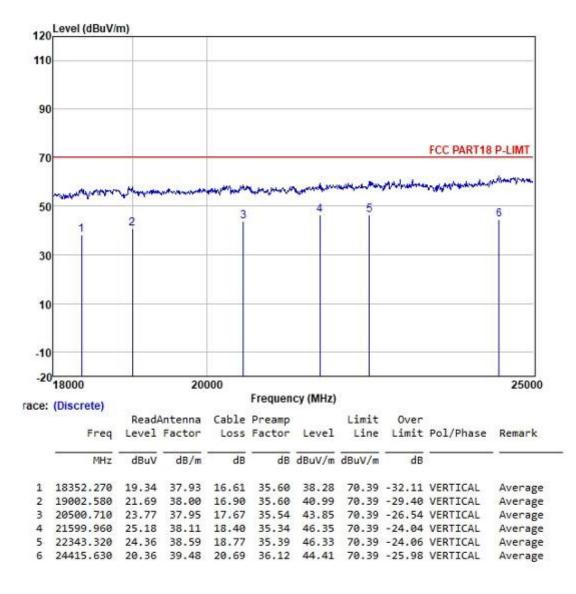


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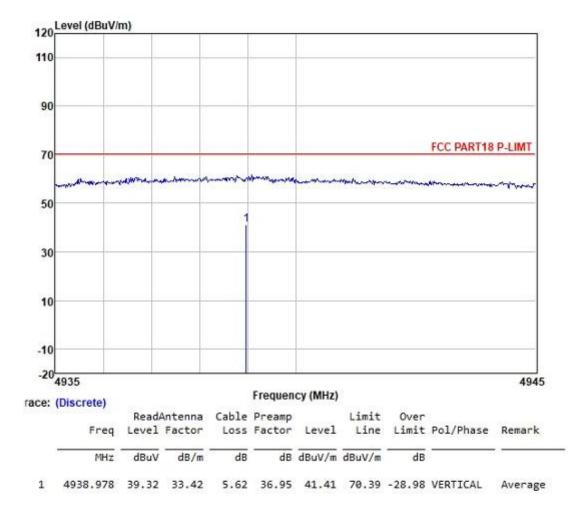


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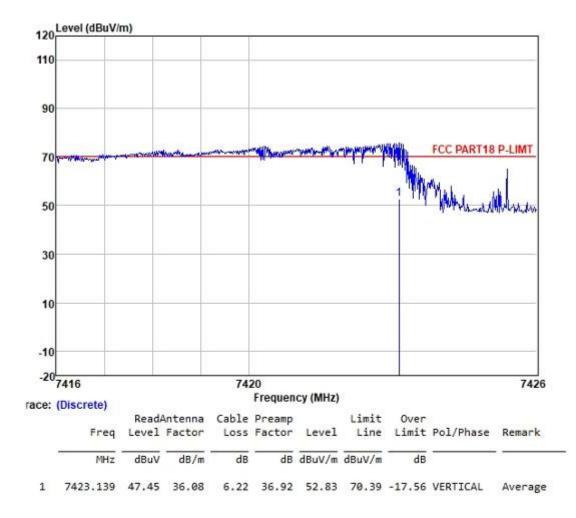


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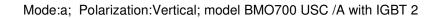


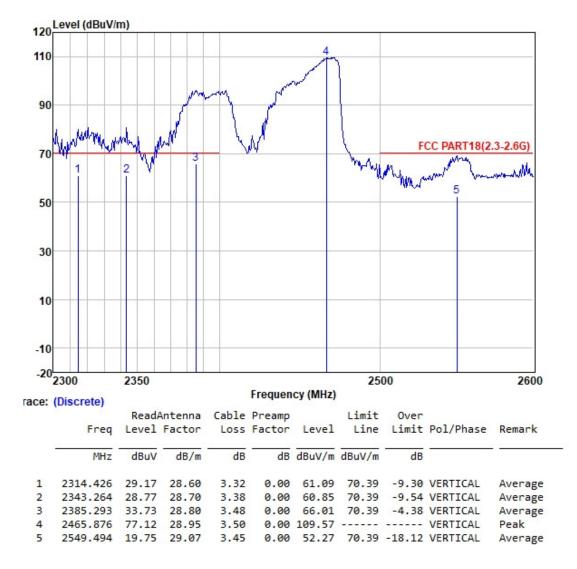


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### 6.7 Radiated Emissions (Magnetic field Strength) (9kHz-30MHz)

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	
	(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	

(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 =875.3 and 874.9 W according to clause 6.2.2

 $\label{eq:limit} \mbox{Limit=20lg(25*SQRT(power/500))+20lg(300/10)=59.93dBuV/m @ 10m distance.}$ 

### 6.7.1 E.U.T. Operation

Operating Environment:

Temperature:22 °CHumidity:51.2 % RHAtmospheric Pressure:1020mbarPretest thesea: Test the EUT in microwave mode with maximum power.

Pretest these modes to find the worst case:

b: Test the EUT in microwave mode with middle power.

c: Test the EUT in microwave mode with lowest power.

The worst case for final test:

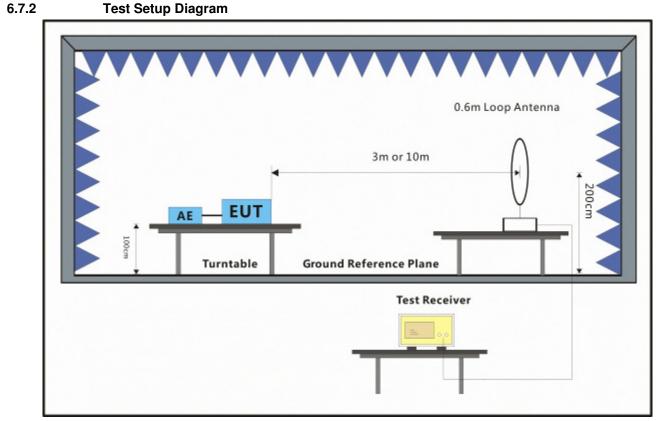
a: Test the EUT in microwave mode with maximum power.



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#### 6.7.3 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.

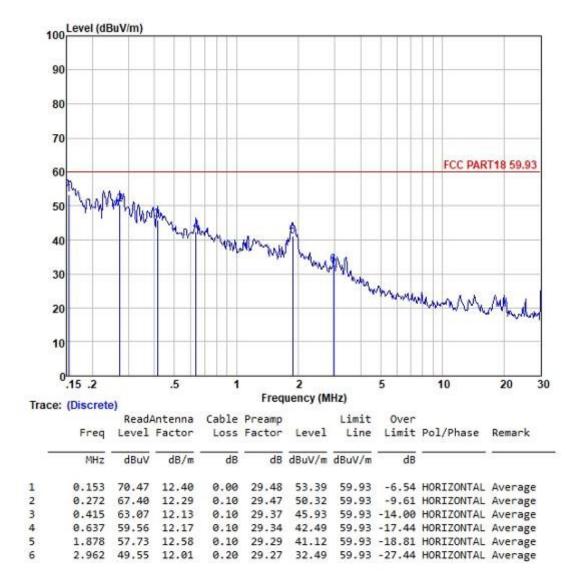
Level=Read Level + Antenna Factor + Cable Loss - Preamp Factor



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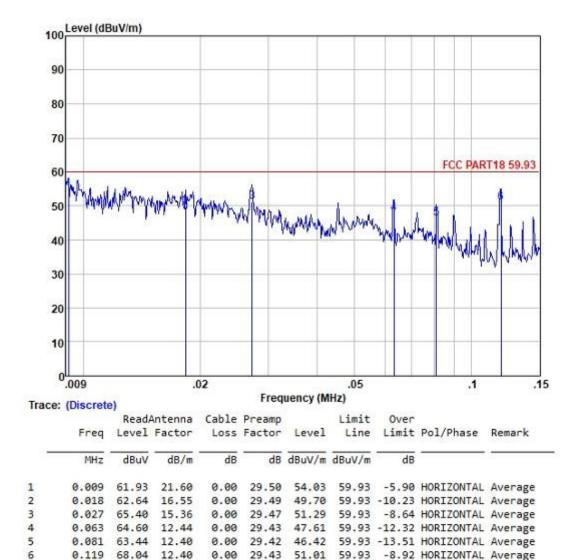
### Mode:a; Polarization:Horizontal; model BMO700 USC /A with IGBT 1



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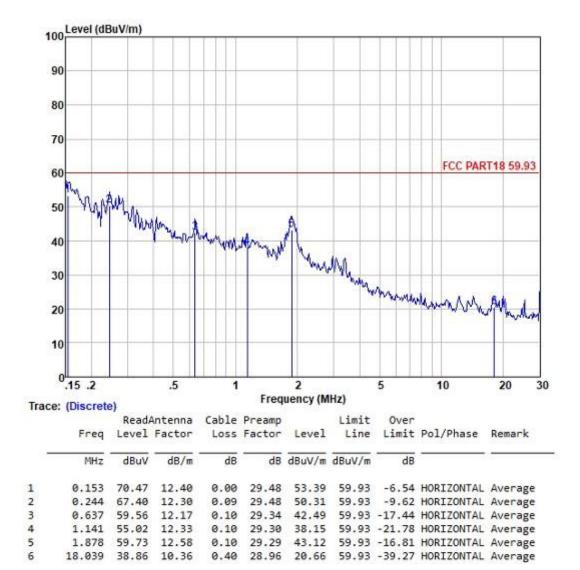
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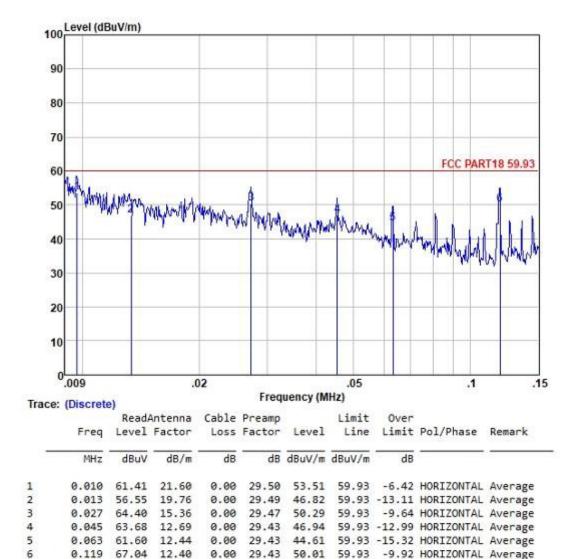
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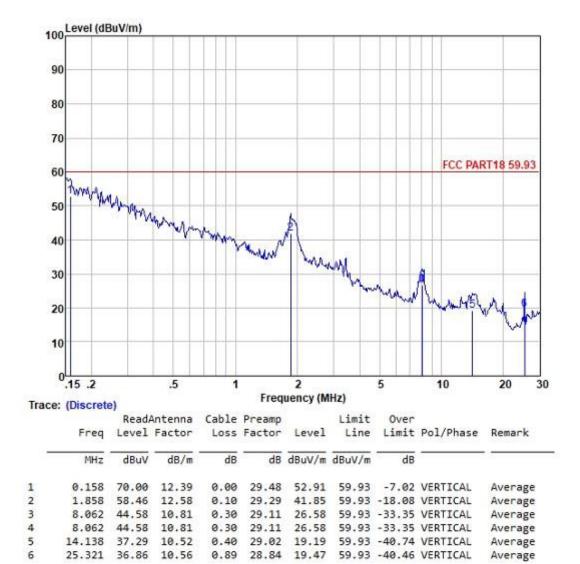
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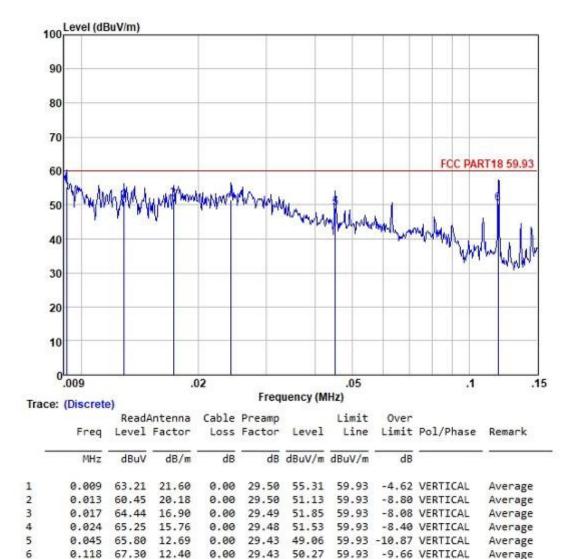
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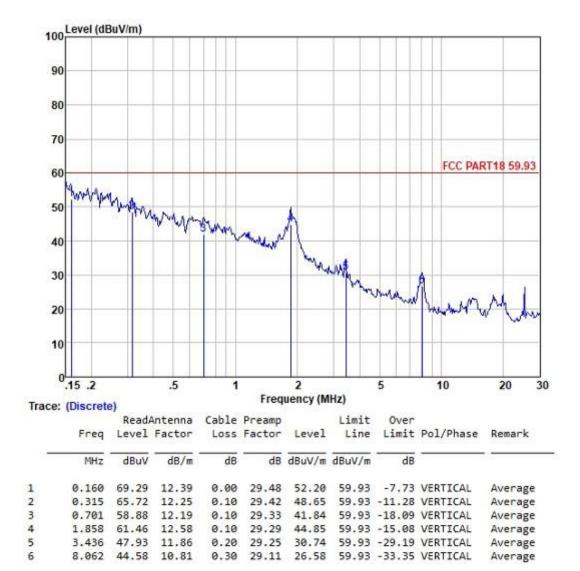
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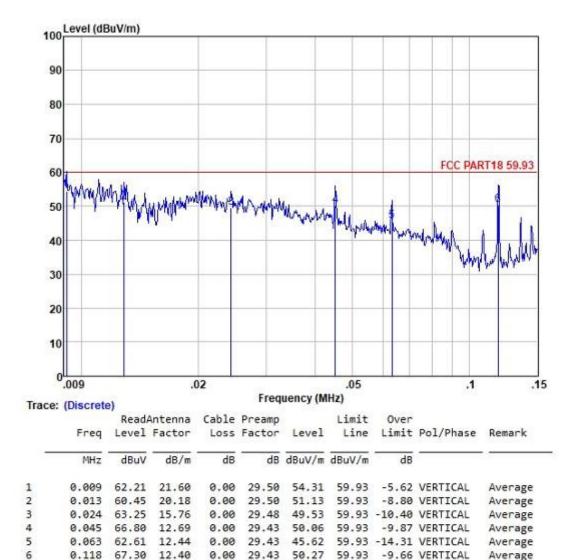
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