



# TEST REPORT

**Application No.:** GZEM1907014293CR  
**Applicant:** Kysho Multimedia Ltd.  
**Address of Applicant:** Flat F, 5/F Valiant Industrial Centre, 2-12 Au Pui Wan St, Fo Tan, Shatin  
**Manufacturer:** Kysho Multimedia Ltd.  
**Address of Manufacturer:** Flat F, 5/F Valiant Industrial Centre, 2-12 Au Pui Wan St, Fo Tan, Shatin  
**Factory:** 1. Huizhou ShenKe XinFei Technology Co., Ltd.  
 2. Dongguan Longyi Electronics Co., Ltd.  
**Address of Factory:** 1. Building C Tangxia Area, Chanjing Village Xinxu Town, Huiyang District, Huizhou Guangdong Province, China  
 2. Jieling Industrial Zone No. 8, GuangJingTou Village, Fenggang, Dongguan, 523690

**Equipment Under Test (EUT):**

**EUT Name:** Bluetooth Speaker  
**Model No.:** IMW479L, IMW449 ☐  
 ☐ Please refer to section 2 of this report which indicates which model was actually tested and which were electrically identical.  
**FCC ID:** SP9-00011C  
**Standard(s) :** 47 CFR Part 15, Subpart E 15.407  
**Date of Receipt:** 2019-07-15  
**Date of Test:** 2020-02-10 to 2020-02-15  
**Date of Issue:** 2020-02-18

<b>Test Result:</b>	<b>Pass*</b>
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\* In the configuration tested, the EUT complied with the standards specified above.

Kobe Jian  
 EMC Laboratory Manager

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



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Revision Record				
Version	Chapter	Date	Modifier	Remark
01		2020-02-18		Original

<b>Authorized for issue by:</b>			
<b>Tested By</b>			2020-02-10 to 2020-02-15
	<b>Curry_Wu /Project Engineer</b>		<b>Date</b>
<b>Checked By</b>			2020-02-18
	<b>Ricky_Liu /Reviewer</b>		<b>Date</b>



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## 2 Test Summary

Radio Spectrum Technical Requirement				
Item	Standard	Method	Requirement	Result
Antenna Requirement	47 CFR Part 15, Subpart E 15.407	N/A	47 CFR Part 15, Subpart E 15.405	Pass
Transmission in the Absence of Data	47 CFR Part 15, Subpart E 15.407	N/A	47 CFR Part 15, Subpart E 15.407 (c)	Pass

Radio Spectrum Matter Part				
Item	Standard	Method	Requirement	Result
Conducted Emissions at AC Power Line (150kHz-30MHz)	47 CFR Part 15, Subpart E 15.407	ANSI C63.10 (2013) Section 6.2	47 CFR Part 15, Subpart E15.407 b(6)	Pass
99% Bandwidth	47 CFR Part 15, Subpart E 15.407	KDB 789033 II D	N/A	Pass
26dB Emission bandwidth	47 CFR Part 15, Subpart E 15.407	KDB 789033 D02 II C 1	47 CFR Part 15, Subpart E 15.407 (a)	Pass
Minimum 6 dB bandwidth (5.725-5.85 GHz band )	47 CFR Part 15, Subpart E 15.407	KDB 789033 D02 II C 2	47 CFR Part 15, Subpart E 15.407 (e)	Pass
Maximum Conducted output power	47 CFR Part 15, Subpart E 15.407	KDB 789033 D02 II E	47 CFR Part 15, Subpart E 15.407 (a)	Pass
Peak Power spectrum density	47 CFR Part 15, Subpart E 15.407	KDB 789033 D02 II F	47 CFR Part 15, Subpart E 15.407 (a)	Pass
Radiated Emissions	47 CFR Part 15, Subpart E 15.407	KDB 789033 D02 II G	47 CFR Part 15, 15.407(b)(4) &15.407(b)(6)	Pass
Radiated Emissions which fall in the restricted bands	47 CFR Part 15, Subpart E 15.407	KDB 789033 D02 II G	47 CFR Part 15, 15.407(b)(7)	Pass
Frequency Stability	47 CFR Part 15, Subpart E 15.407	ANSI C63.10 (2013) Section 6.8	47 CFR Part 15, Subpart E 15.407 (g)	Pass

N/A: Not applicable

### ☒ Declaration of EUT Family Grouping:

**Model No.:** IMW479L, IMW449

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 in the Model No.

Therefore only one model **IMW479L** was tested in this report.



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## 4 General Information

### 4.1 Details of E.U.T.

Power Supply:	DC 5V for battery charging DC 3.7V for normal working
Test Voltage:	DC 3.7V & AC 120V 60Hz
Cable:	About 0.5m unscreened USB cable for battery charging.
Antenna Gain:	0 dBi
Antenna Type:	Integrated antenna
Modulation Type:	GFSK
Number of Channels:	16
Operation Frequency:	5727MHz-5800MHz
TPC Function:	Not support

Operation Frequency each of channel							
Channel	Frequency	Channel	Frequency	Channel	Frequency	Channel	Frequency
0	5727MHz	4	5749MHz	8	5767MHz	12	5778MHz
1	5731MHz	5	5753MHz	9	5771MHz	13	5789MHz
2	5734MHz	6	5756MHz	10	5773MHz	14	5796MHz
3	5738MHz	7	5760MHz	11	5774MHz	15	5800MHz

**Note:**

In section 15.31(m), regards to the operating frequency range over 10 MHz, the lowest frequency, the middle frequency, and the highest frequency of channel were selected to perform the test, and the selected channel see below:

Test Channel	Frequency
The lowest channel (CH0)	5727MHz
The middle channel (CH7)	5760MHz
The highest channel (CH15)	5800MHz



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#### 4.2 Description of Support Units

The EUT has been tested as an independent unit.

#### 4.3 Measurement Uncertainty

RF

No.	Item	Measurement Uncertainty
1	Radio Frequency	$\pm 5.5 \times 10^{-8}$
2	Duty cycle	$\pm 0.57\%$
3	Occupied Bandwidth	$\pm 3\%$
4	RF Conducted power	$\pm 0.68\text{dB}$
5	RF Power Density	$\pm 1.50\text{dB}$
6	Conducted Spurious Emissions	$\pm 1.04\text{dB}$
7	RF Radiated Power	$\pm 4.5\text{dB}$ (below 1GHz)
		$\pm 4.8\text{dB}$ (above 1GHz)
8	Radiated Spurious Emission Test	$\pm 4.5\text{dB}$ (30MHz-1GHz)
		$\pm 4.8\text{dB}$ (1GHz-18GHz)
9	Temperature	$\pm 0.4^\circ\text{C}$
10	Humidity	$\pm 1.3\%$
11	Supply Voltages	$\pm 1.5\%$
12	Time	$\pm 3\%$

#### 4.4 Test Location

All tests were performed at:

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

Tel: +86 20 82155555

Fax: +86 20 82075059

No tests were sub-contracted.



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#### 4.5 Test Facility

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

● **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 AC Power Line (150kHz-30MHz)					
Equipment	Manufacturer	Model No	Inventory No	Cal Date	Cal Due Date
Shielding Room	Zhong Yu	8m x 3m x 3.8m	EMC0306	2019-12-26	2022-12-26
Two-Line V-Netwok	R&S	ENV216	EMC0118	2020-01-10	2021-01-09
LISN	R&S	ENV216	EMC2135	2020-01-10	2021-01-09
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

6dB&99%&26dB Bandwidth					
Equipment	Manufacturer	Model No	Inventory No	Cal Date	Cal Due Date
EXA Signal Analyzer	AgilentTechnologies	N9010A	EMC2138	2019-11-18	2020-11-17
6dB Attenuator	HP	8491A	EMC2062	2018-04-04	2020-04-03
Test Software JS1120-3	HangTianXing	V2.6	GZE100-69	N/A	N/A
MI CABLE	SGS	0.8M	EMC2136	2019-11-02	2021-11-01
MI CABLE	SGS	0.8M	EMC2137	2019-11-02	2021-11-01

Conducted Peak Output Power					
Equipment	Manufacturer	Model No	Inventory No	Cal Date	Cal Due Date
EXA Signal Analyzer	AgilentTechnologies	N9010A	EMC2138	2019-11-18	2020-11-17
6dB Attenuator	HP	8491A	EMC2062	2018-04-04	2020-04-03
Test Software JS1120-3	HangTianXing	V2.6	GZE100-69	N/A	N/A
MI CABLE	SGS	0.8M	EMC2136	2019-11-02	2021-11-01
MI CABLE	SGS	0.8M	EMC2137	2019-11-02	2021-11-01

Power Spectrum Density					
Equipment	Manufacturer	Model No	Inventory No	Cal Date	Cal Due Date
EXA Signal Analyzer	AgilentTechnologies	N9010A	EMC2138	2019-11-18	2020-11-17
6dB Attenuator	HP	8491A	EMC2062	2018-04-04	2020-04-03
Test Software JS1120-3	HangTianXing	V2.6	GZE100-69	N/A	N/A
MI CABLE	SGS	0.8M	EMC2136	2019-11-02	2021-11-01
MI CABLE	SGS	0.8M	EMC2137	2019-11-02	2021-11-01



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<b>Conducted Spurious Emissions</b>					
<b>Equipment</b>	<b>Manufacturer</b>	<b>Model No</b>	<b>Inventory No</b>	<b>Cal Date</b>	<b>Cal Due Date</b>
EXA Signal Analyzer	AgilentTechnologies	N9010A	EMC2138	2019-11-18	2020-11-17
6dB Attenuator	HP	8491A	EMC2062	2018-04-04	2020-04-03
Test Software JS1120-3	HangTianXing	V2.6	GZE100-69	N/A	N/A
MI CABLE	SGS	0.8M	EMC2136	2019-11-02	2021-11-01
MI CABLE	SGS	0.8M	EMC2137	2019-11-02	2021-11-01

<b>Frequency Stability</b>					
<b>Equipment</b>	<b>Manufacturer</b>	<b>Model No</b>	<b>Inventory No</b>	<b>Cal Date</b>	<b>Cal Due Date</b>
EXA Signal Analyzer	AgilentTechnologies	N9010A	EMC2138	2019-11-18	2020-11-17
6dB Attenuator	HP	8491A	EMC2062	2018-04-04	2020-04-03
Test Software JS1120-3	HangTianXing	V2.6	GZE100-69	N/A	N/A
MI CABLE	SGS	0.8M	EMC2136	2019-11-02	2021-11-01
MI CABLE	SGS	0.8M	EMC2137	2019-11-02	2021-11-01

<b>15-40GHz Radiated Emission &amp; Spurious Emission</b>					
<b>Equipment</b>	<b>Manufacturer</b>	<b>Model No</b>	<b>Inventory No</b>	<b>Cal Date</b>	<b>Cal Due Date</b>
Horn Antenna (15-40GHz)	Compliance Direction Systems Inc.	PAP-2640-50	SEM005-08	2019-04-02	2020-04-02
Horn Antenna (15-40GHz)	Schwarzbeck	BBHA 9170	EMC2041	2019-06-16	2020-06-16
966 Anechoic Chamber	Schwarzbeck	BBHA 9170	SEM003-15	2019-10-17	2020-10-17
EXA Signal Analyzer (10Hz-44GHz)	Shenzhen C.R.T Technology Co., LTD	9X6X6	EMC2142	2019-11-29	2021-11-29
Horn Antenna 1-18GHz	KEYSIGHT	N9010A	EMC2138	2019/11/19	2021/11/18
Pre-Amplifier (1-26.5GHz)	Schwarzbeck	BBHA 9120D	EMC2026	2019-09-09	2021-09-08
Highpass Filter	Agilent	8449B	EMC0521	2019-01-08	2021-01-07
2.4GHz filter	WAINWRIGHT	WHNX7.0/26.5 G-6SS	EMC2167	2019-12-12	2020-12-12
EXG Analog Signal Generator	Micro-Tronics	BRM 50702	EMC2069	2019-01-08	2021-01-07
Horn Antenna (15-40GHz)	KEYSIGHT	N5173B	SEM006-05	2019-09-27	2020-09-27



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Radiated Emission					
Equipment	Manufacturer	Model No	Inventory No	Cal Date	Cal Due Date
Compact Semi-Anechoic Chamber	ChangZhou ZhongYu	N/A	EMC0525	2019-10-20	2022-10-19
EMI Test Receiver	Rohde & Schwarz	ESIB26	EMC0522	2020-01-10	2021-01-09
EMI Test Receiver	Rohde & Schwarz	ESCI	EMC0056	2020-01-10	2021-01-09
Trilog Broadband Antenna 30-1000MHz	SCHWARZBECK MESS-ELEKTRONIK	VULB 9168	EMC2174	2018-09-06	2021-09-05
Trilog Broadband Antenna 25-2000MHz	SCHWARZBECK MESS-ELEKTRONIK	VULB 9168	SEM003-18	2019-02-22	2022-02-22
Bilog Type Antenna	Schaffner -Chase	CBL6143	EMC0519	2017-05-04	2020-05-03
Horn Antenna (1G~18G)	R& S	HF906	EMC0518	2018-09-02	2021-09-01
1-26.5 GHz Pre-Amplifier	Agilent	8449B	EMC0521	2020-01-10	2021-01-09
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
Broad-Band Horn Antenna 15-26.5GHz	SCHWARZBECK MESS-ELEKTRONIK	BBHA 9170	EMC2041	2017-05-23	2020-05-22
High Pass Filter(915MHz)	FSY MICROWAVE	HM1465-9SS	EMC2079	2020-01-10	2021-01-09
966 Anechoic Chamber	C.R.T	9mX6mX6m	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
2.4GHz Filter	Micro-Tronics	BRM 50702	EMC2069	2020-01-10	2021-01-09
10m Semi-Anechoic Chamber	ETS	N/A	EMC0530	2019-10-20	2022-10-19



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Radiated Emission which fall in restrict band					
Equipment	Manufacturer	Model No	Inventory No	Cal Date	Cal Due Date
Compact Semi-Anechoic Chamber	ChangZhou ZhongYu	N/A	EMC0525	2019-10-20	2022-10-19
EMI Test Receiver	Rohde & Schwarz	ESIB26	EMC0522	2020-01-10	2021-01-09
EMI Test Receiver	Rohde & Schwarz	ESCI	EMC0056	2020-01-10	2021-01-09
Trilog Broadband Antenna 30-1000MHz	SCHWARZBECK MESS-ELEKTRONIK	VULB 9168	EMC2174	2018-09-06	2021-09-05
Trilog Broadband Antenna 25-2000MHz	SCHWARZBECK MESS-ELEKTRONIK	VULB 9168	SEM003-18	2019-02-22	2022-02-22
Bilog Type Antenna	Schaffner -Chase	CBL6143	EMC0519	2017-05-04	2020-05-03
Horn Antenna (1G~18G)	R& S	HF906	EMC0518	2018-09-02	2021-09-01
1-26.5 GHz Pre-Amplifier	Agilent	8449B	EMC0521	2020-01-10	2021-01-09
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
Broad-Band Horn Antenna 15-26.5GHz	SCHWARZBECK MESS-ELEKTRONIK	BBHA 9170	EMC2041	2017-05-23	2020-05-22
High Pass Filter(915MHz)	FSY MICROWAVE	HM1465-9SS	EMC2079	2020-01-10	2021-01-09
966 Anechoic Chamber	C.R.T	9mX6mX6m	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
2.4GHz Filter	Micro-Tronics	BRM 50702	EMC2069	2020-01-10	2021-01-09
10m Semi-Anechoic Chamber	ETS	N/A	EMC0530	2019-10-20	2022-10-19

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 Radio Spectrum Technical Requirement

### 6.1 Antenna Requirement

#### 6.1.1 Test Requirement:

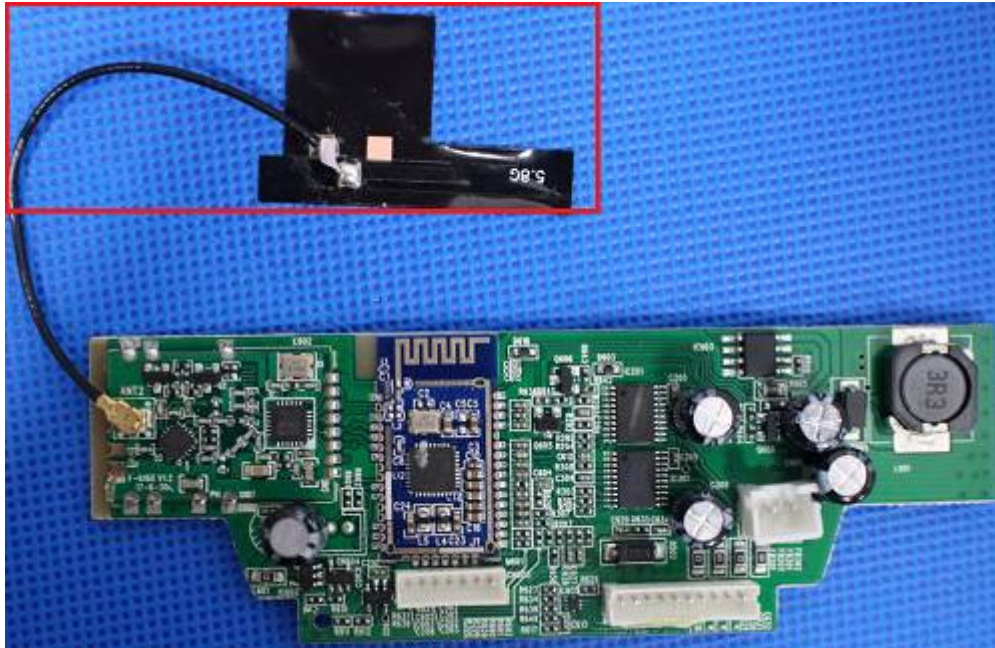
47 CFR Part 15, Subpart E 15.405

#### 6.1.2 Conclusion

Standard Requirement:

An intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device. The use of a permanently attached antenna or of an antenna that uses a unique coupling to the intentional radiator, the manufacturer may design the unit so that a broken antenna can be replaced by the user, but the use of a standard antenna jack or electrical connector is prohibited.

EUT Antenna:



The antenna is integrated on the main PCB and no consideration of replacement. The best-case gain of the antenna is 0 dBi.



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## 6.2 Transmission in the Absence of Data

### 6.2.1 Test Requirement:

47 CFR Part 15, Subpart E 15.407 (c)

### 6.2.2 Conclusion

Standard Requirement:

The device shall automatically discontinue transmission in case of either absence of information to transmit or operational failure. These provisions are not intended to preclude the transmission of control or signalling information, or the use of repetitive codes used by certain digital technologies to complete frame or burst intervals.

Applicants shall include in their application for equipment authorization a description of how this requirement is met.

EUT Details:

Wireless chip support automatically discontinue transmission in case of either absence of information to transmit or operational failure, if the chip detect absence of information to transmit or operational failure, it will be automatically shut off.



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## 7 Radio Spectrum Matter Test Results

### 7.1 Conducted Emissions at AC Power Line (150kHz-30MHz)

Test Requirement 47 CFR Part 15, Subpart E 15.407 b(6)

Test Method: ANSI C63.10 (2013) Section 6.2

Limit:

Frequency of emission (MHz)	Conducted limit(dBμV)	
	Quasi-peak	Average
0.15-0.5	66 to 56*	56 to 46*
0.5-5	56	46
5-30	60	50

\*Decreases with the logarithm of the frequency.

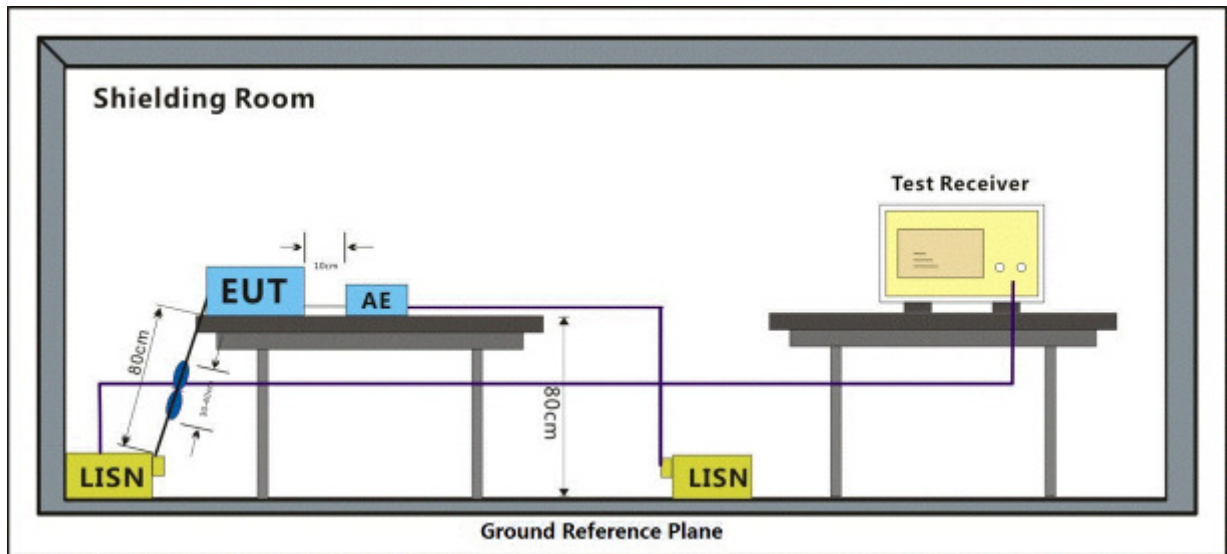
#### 7.1.1 E.U.T. Operation

Operating Environment:

Temperature: 22.7 °C Humidity: 57.1 % RH Atmospheric Pressure: 1020 mbar

Test mode: e: Charge + TX mode, Keep the EUT in charging and continuously transmitting mode with GFSK modulation.

#### 7.1.2 Test Setup Diagram



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### 7.1.3 Measurement Procedure and Data

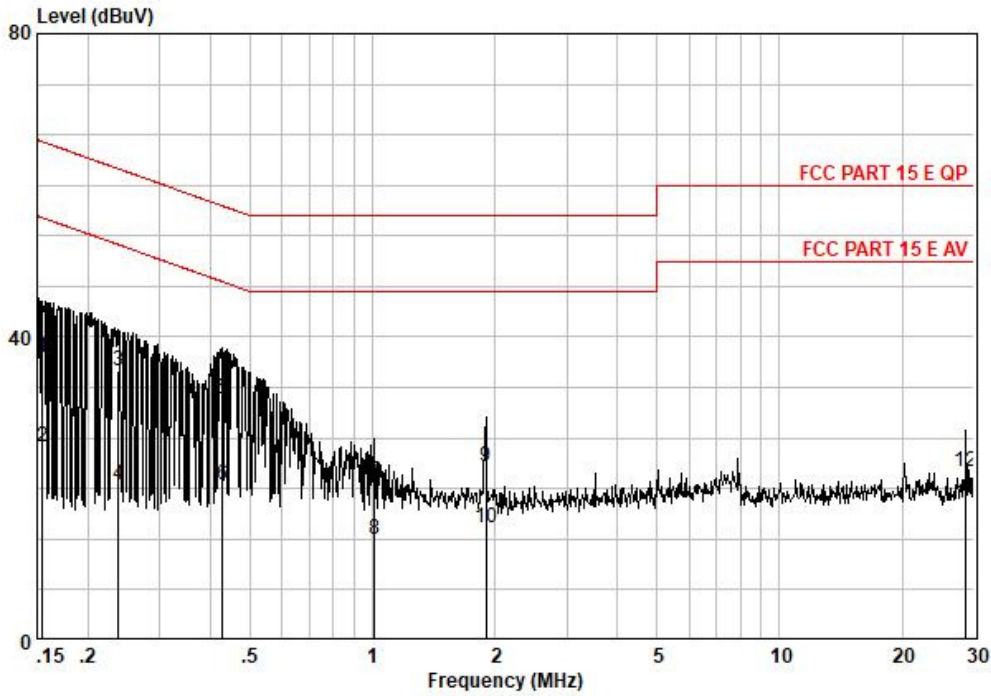
- 1) The mains terminal disturbance voltage test was conducted in a shielded room.
- 2) The EUT was connected to AC power source through a LISN 1 (Line Impedance Stabilization Network) which provides a 50ohm/50 $\mu$ H + 5ohm linear impedance. The power cables of all other units of the EUT were connected to a second LISN 2, which was bonded to the ground reference plane in the same way as the LISN 1 for the unit being measured. A multiple socket outlet strip was used to connect multiple power cables to a single LISN provided the rating of the LISN was not exceeded.
- 3) The tabletop EUT was placed upon a non-metallic table 0.8m above the ground reference plane. And for floor-standing arrangement, the EUT was placed on the horizontal ground reference plane,
- 4) The test was performed with a vertical ground reference plane. The rear of the EUT shall be 0.4 m from the vertical ground reference plane. The vertical ground reference plane was bonded to the horizontal ground reference plane. The LISN 1 was placed 0.8 m from the boundary of the unit under test and bonded to a ground reference plane for LISNs mounted on top of the ground reference plane. This distance was between the closest points of the LISN 1 and the EUT. All other units of the EUT and associated equipment was at least 0.8 m from the LISN 2.
- 5) In order to find the maximum emission, the relative positions of equipment and all of the interface cables must be changed according to ANSI C63.10 on conducted measurement.

Remark: LISN=Read Level+ Cable Loss+ LISN Factor



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Line: Live Line



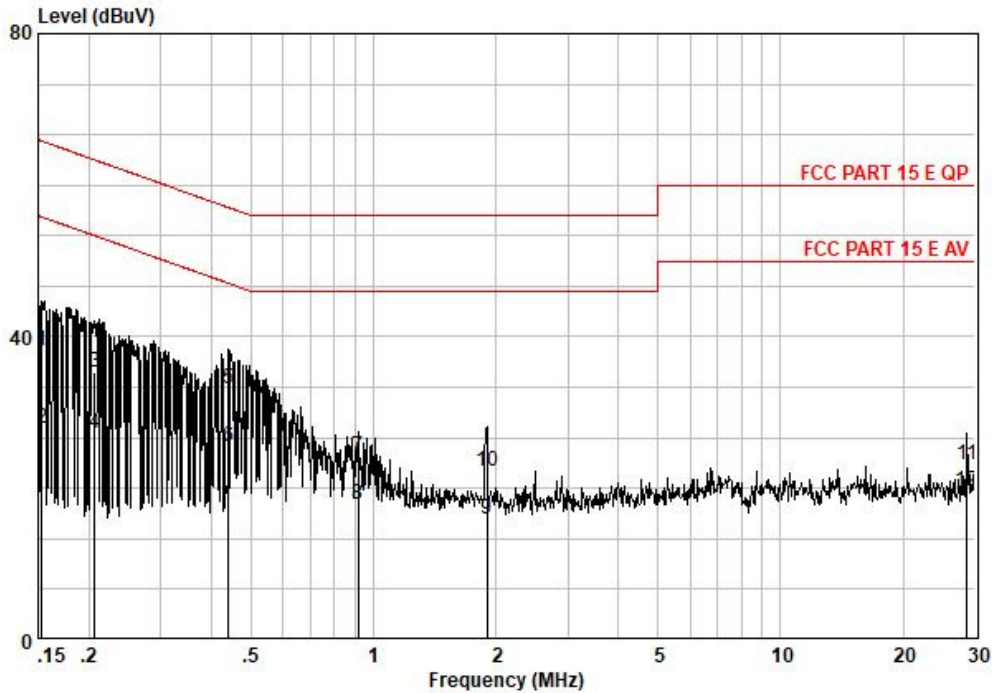
Pol :LIVE  
 No :  
 Model :

Frequency MHz	read level dBuV	Cable Loss dB	LISN Factor dB	Measured level dBuV	Limit Line dBuV	Over limit dB	Remark
0.15	27.80	0.10	9.48	37.38	65.74	-28.36	QP
0.15	15.84	0.10	9.48	25.42	55.74	-30.32	AVERAGE
0.24	25.86	0.12	9.63	35.61	62.17	-26.57	QP
0.24	10.83	0.12	9.63	20.58	52.17	-31.60	AVERAGE
0.43	21.92	0.18	9.64	31.75	57.29	-25.54	QP
0.43	10.75	0.18	9.64	20.58	47.29	-26.71	AVERAGE
1.01	11.06	0.30	9.63	20.99	56.00	-35.01	QP
1.01	3.29	0.30	9.63	13.22	46.00	-32.78	AVERAGE
1.90	12.93	0.38	9.61	22.92	56.00	-33.08	QP
1.90	4.90	0.38	9.61	14.89	46.00	-31.11	AVERAGE
28.75	7.92	0.56	9.61	18.09	50.00	-31.91	AVERAGE
28.75	11.97	0.56	9.61	22.14	60.00	-37.86	QP



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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	28.71	0.10	9.39	38.20	65.82	-27.62	QP
0.15	18.42	0.10	9.39	27.91	55.82	-27.91	AVERAGE
0.21	25.53	0.10	9.59	35.22	63.36	-28.14	QP
0.21	17.57	0.10	9.59	27.26	53.36	-26.10	AVERAGE
0.44	23.45	0.19	9.56	33.19	57.07	-23.88	QP
0.44	15.67	0.19	9.56	25.41	47.07	-21.66	AVERAGE
0.92	14.36	0.29	9.59	24.24	56.00	-31.76	QP
0.92	7.95	0.29	9.59	17.83	46.00	-28.17	AVERAGE
1.90	6.04	0.38	9.52	15.95	46.00	-30.05	AVERAGE
1.90	12.40	0.38	9.52	22.31	56.00	-33.69	QP
28.75	12.85	0.56	9.68	23.09	60.00	-36.91	QP
28.75	9.31	0.56	9.68	19.55	50.00	-30.45	AVERAGE



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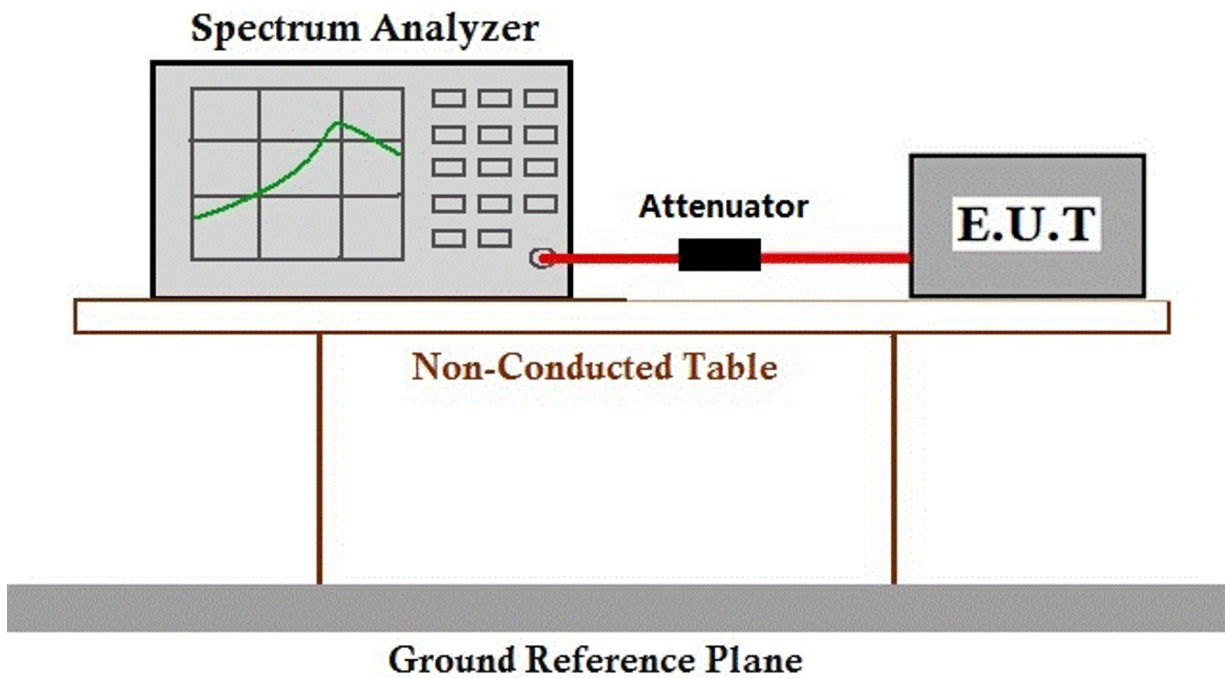
**7.2 99% Bandwidth**

Test Requirement N/A  
 Test Method: KDB 789033 II D

**7.2.1 E.U.T. Operation**

Operating Environment:  
 Temperature: 25.3 °C Humidity: 58.2 % RH Atmospheric Pressure: 1020 mbar  
 Test mode f: TX mode, Keep the EUT in continuously transmitting mode with GFSK modulation types.

**7.2.2 Test Setup Diagram**



**7.2.3 Measurement Procedure and Data**

The detailed test data see: Appendix 15.407



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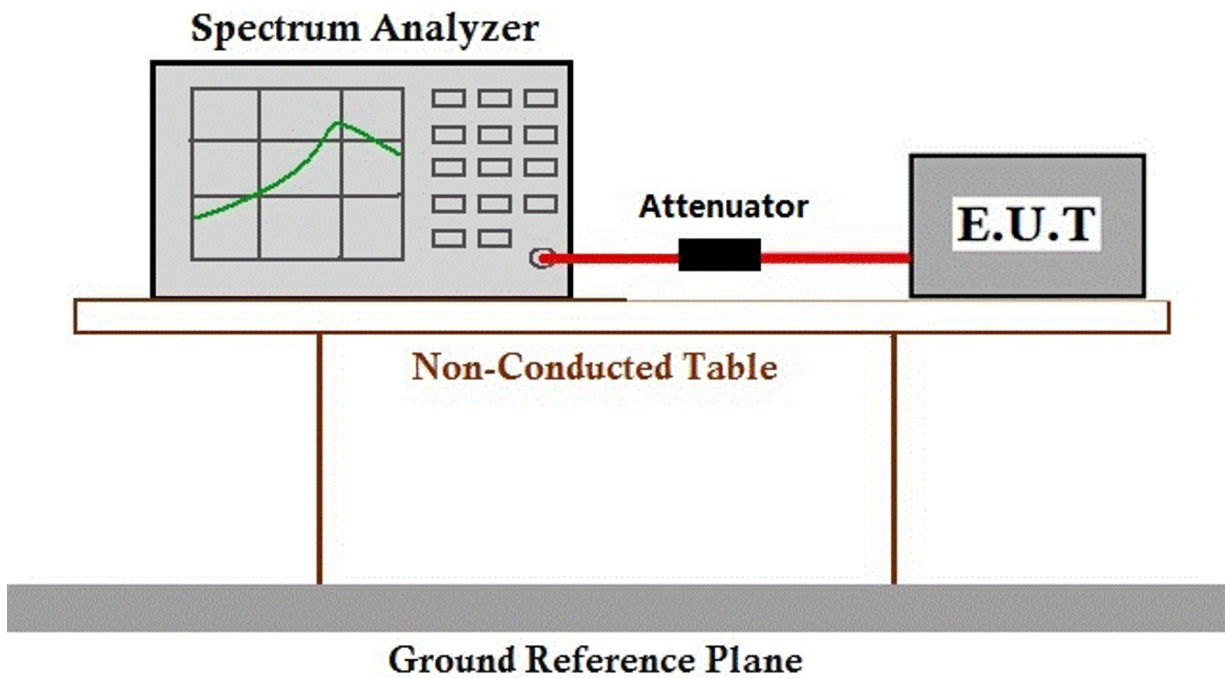
**7.3 26dB Emission bandwidth**

Test Requirement 47 CFR Part 15, Subpart E 15.407 (a)  
 Test Method: KDB 789033 D02 II C 1

**7.3.1 E.U.T. Operation**

Operating Environment:  
 Temperature: 25.3 °C Humidity: 58.3 % RH Atmospheric Pressure: 1020 mbar  
 Test mode f: TX mode, Keep the EUT in continuously transmitting mode with GFSK modulation types.

**7.3.2 Test Setup Diagram**



**7.3.3 Measurement Procedure and Data**

The detailed test data see: Appendix 15.407



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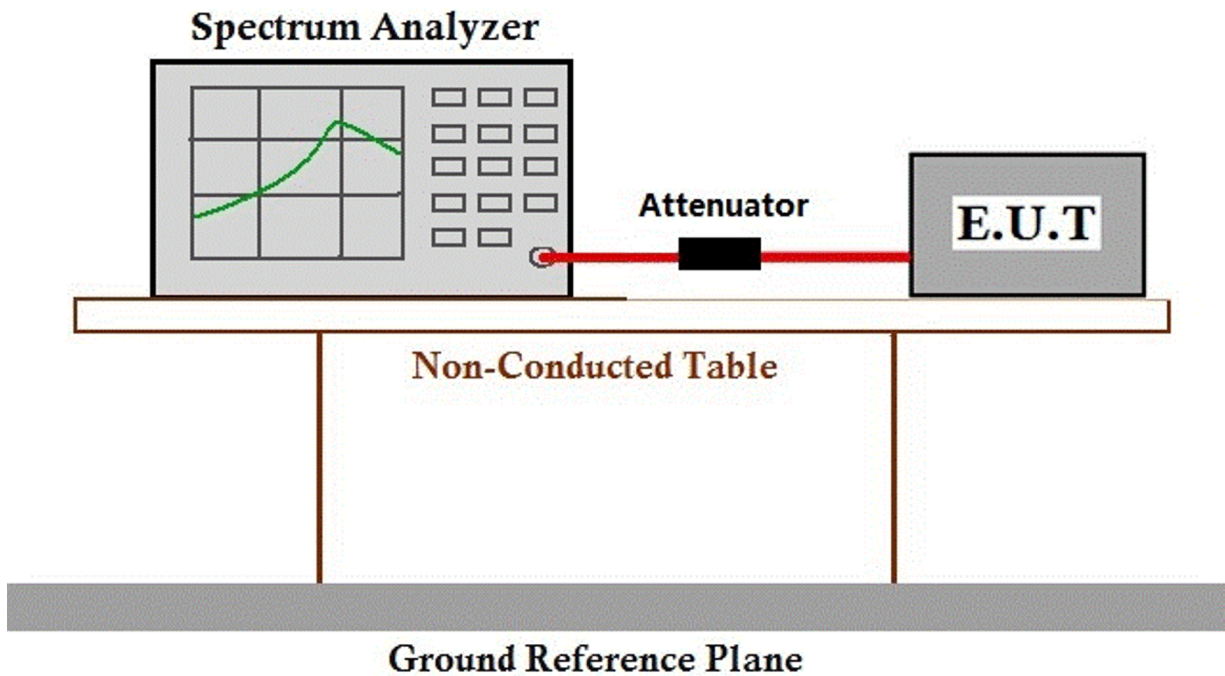
**7.4 Minimum 6 dB bandwidth (5.725-5.85 GHz band)**

Test Requirement 47 CFR Part 15, Subpart E 15.407 (e)  
 Test Method: KDB 789033 D02 II C 2  
 Limit:  $\geq 500$  kHz

**7.4.1 E.U.T. Operation**

Operating Environment:  
 Temperature: 25.3 °C Humidity: 58.3 % RH Atmospheric Pressure: 1020 mbar  
 Test mode f: TX mode, Keep the EUT in continuously transmitting mode with GFSK modulation types.

**7.4.2 Test Setup Diagram**



**7.4.3 Measurement Procedure and Data**

The detailed test data see: Appendix 15.407



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**7.5 Maximum Conducted output power**

Test Requirement 47 CFR Part 15, Subpart E 15.407 (a)

Test Method: KDB 789033 D02 II E

Limit:

Frequency band (MHz)	Limit
5150-5250	≤1W(30dBm) for master device
	≤250mW(24dBm) for client device
5250-5350	≤250mW(24dBm) for client device or 11dBm+10logB*
5470-5725	≤250mW(24dBm) for client device or 11dBm+10logB*
5725-5850	≤1W(30dBm)
Remark:	* Where B is the 26dB emission bandwidth in MHz The maximum conducted output power must be measured over any interval of continuous transmission using instrumentation calibrated in terms of an rms-equivalent voltage.



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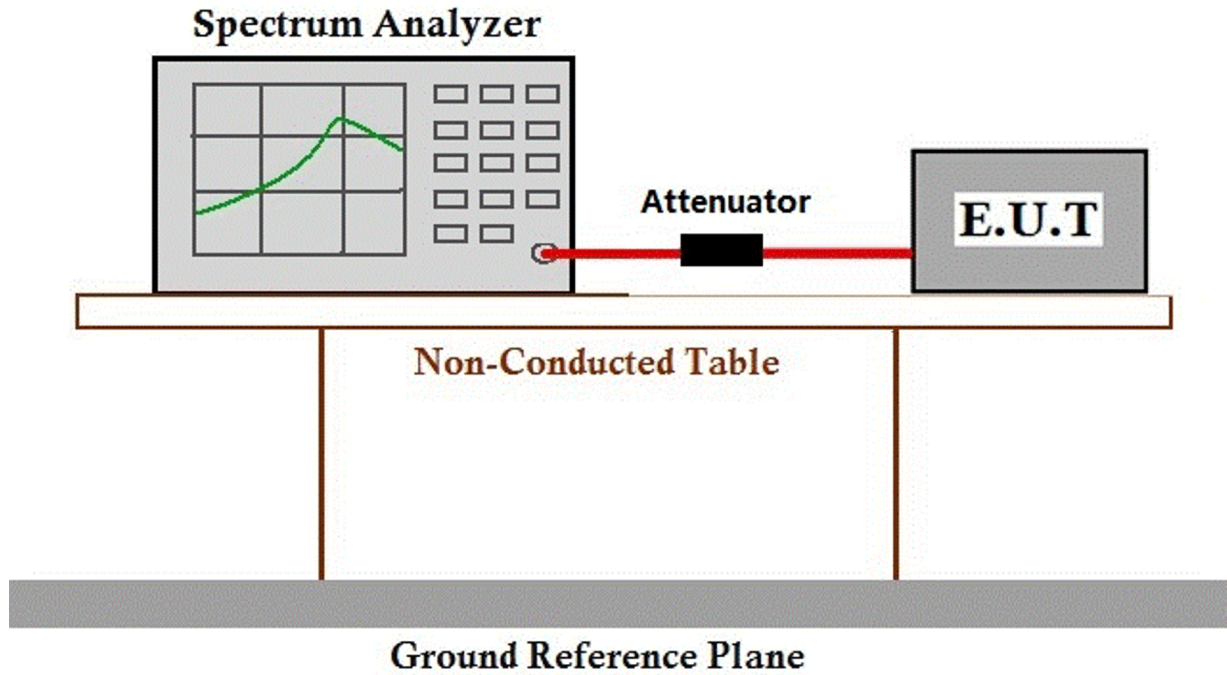
**7.5.1 E.U.T. Operation**

Operating Environment:

Temperature: 25.3 °C Humidity: 58.3 % RH Atmospheric Pressure: 1020 mbar

Test mode f: TX mode, Keep the EUT in continuously transmitting mode with GFSK modulation types.

**7.5.2 Test Setup Diagram**



**7.5.3 Measurement Procedure and Data**

The detailed test data see: Appendix 15.407



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**7.6 Peak Power spectrum density**

Test Requirement 47 CFR Part 15, Subpart E 15.407 (a)

Test Method: KDB 789033 D02 II F

Limit:

Frequency band (MHz)	Limit
5150-5250	≤17dBm in 1MHz for master device
	≤11dBm in 1MHz for client device
5250-5350	≤11dBm in 1MHz for client device
5470-5725	≤11dBm in 1MHz for client device
5725-5850	≤30dBm in 500 kHz
Remark:	The maximum power spectral density is measured as a conducted emission by direct connection of a calibrated test instrument to the equipment under test.
	The limit will be calculated in different RBW.



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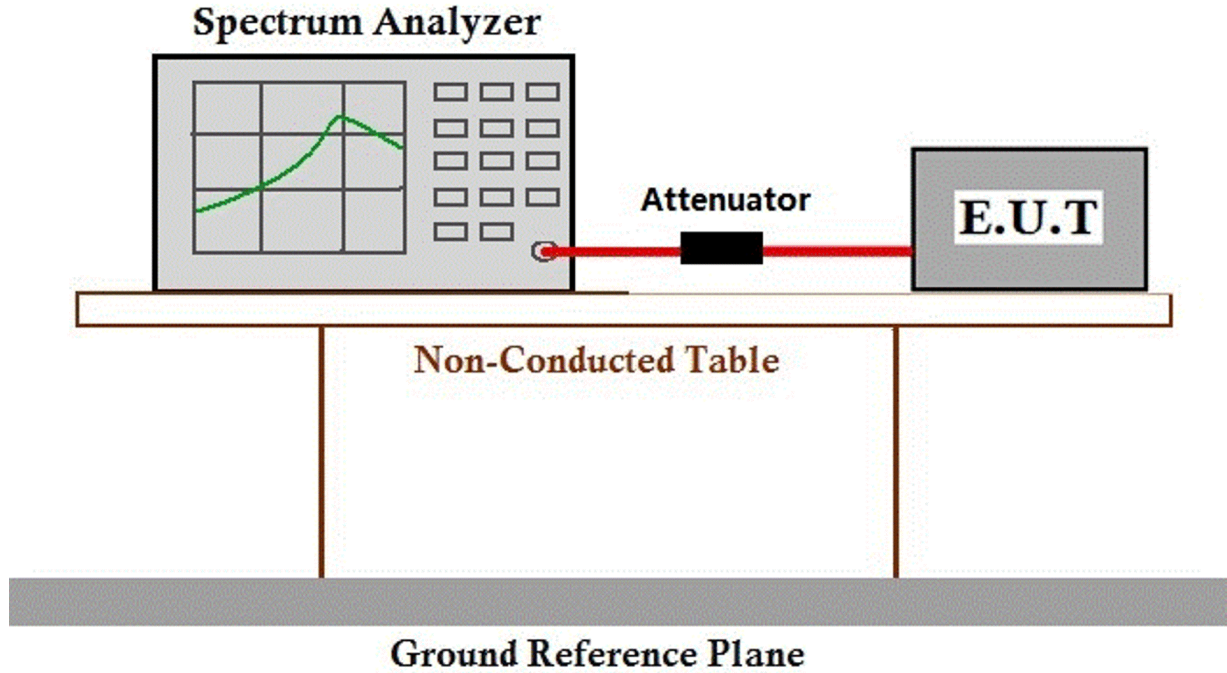
**7.6.1 E.U.T. Operation**

Operating Environment:

Temperature: 25.3 °C Humidity: 58.2 % RH Atmospheric Pressure: 1020 mbar

Test mode f: TX mode, Keep the EUT in continuously transmitting mode with GFSK modulation types.

**7.6.2 Test Setup Diagram**



**7.6.3 Measurement Procedure and Data**

The detailed test data see: Appendix 15.407



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**7.7 Radiated Emissions**

Test Requirement 47 CFR Part 15, Subpart E 15.407(b)(4) & 15.407(b)(6)

Test Method: KDB 789033 D02 II G

Measurement Distance: 3m

Limit: (i) All emissions shall be limited to a level of -27dBm/MHz at 75 MHz or more above or below the band edge increasing linearly to 10 dBm/MHz at 25MHz above or below the band edge, and from 25MHz above or below the band edge increasing linearly to a level of 15.6dBm/MHz at 5MHz above or below the band edge, and from 5MHz above or below the band edge increasing linearly to a level of 27 dBm/MHz at the band edge.

(6) Unwanted emissions below 1GHz must comply with the general field strength limits set forth in 15.209.

Frequency (MHz)	Field strength (microvolts/meter)	Measurement distance (meters)
0.009-0.490	2400/F(kHz)	300
0.490-1.705	24000/F(kHz)	30
1.705-30.0	30	30
30-88	100**	3
88-216	150**	3
216-960	200**	3
Above 960	500	3

**7.7.1 E.U.T. Operation**

Operating Environment:

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

Pretest these modes to find the worst case: f: TX mode, Keep the EUT in continuously transmitting mode with GFSK modulation types.

g: Charge + TX mode, Keep the EUT in charging and continuously transmitting mode with GFSK modulation types.

The worst case for final test: g: Charge + TX mode, Keep the EUT in charging and continuously transmitting mode with GFSK modulation types. Only the data of worst case is recorded in the report.

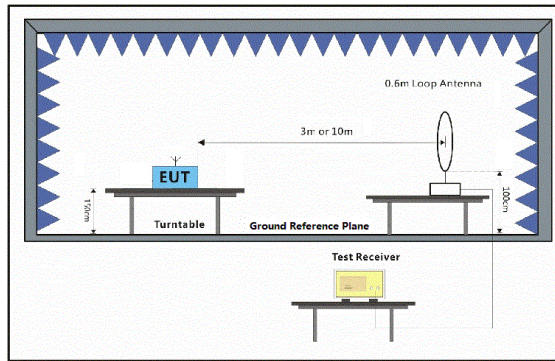
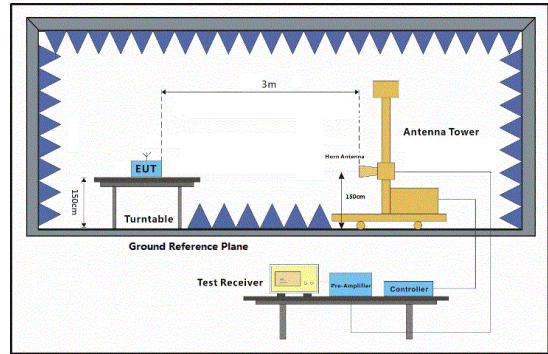
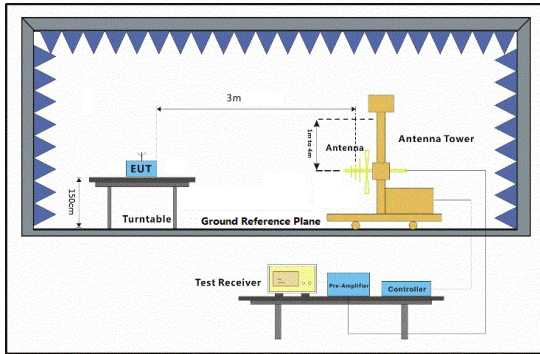


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7.7.2 Test Setup Diagram



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**7.7.3 Measurement Procedure and Data**

- a. For below 1GHz, the EUT was placed on the top of a rotating table 0.8 meters above the ground at a 3 or 10 meter semi-anechoic chamber. The table was rotated 360 degrees to determine the position of the highest radiation.
- b. For above 1GHz, the EUT was placed on the top of a rotating table 1.5 meters above the ground at a 3 meter fully-anechoic chamber. The table was rotated 360 degrees to determine the position of the highest radiation.
- c. The EUT was set 3 or 10 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower.
- d. The antenna height is varied from one meter to four meters above the ground to determine the maximum value of the field strength. Both horizontal and vertical polarizations of the antenna are set to make the measurement.
- e. For each suspected emission, the EUT was arranged to its worst case and then the antenna was tuned to heights from 1 meter to 4 meters (for the test frequency of below 30MHz, the antenna was tuned to heights 1 meter) and the rotatable table was turned from 0 degrees to 360 degrees to find the maximum reading.
- f. The test-receiver system was set to Peak Detect Function and Specified Bandwidth with Maximum Hold Mode.
- g. If the emission level of the EUT in peak mode was 10dB lower than the limit specified, then testing could be stopped and the peak values of the EUT would be reported. Otherwise the emissions that did not have 10dB margin would be re-tested one by one using peak, quasi-peak or average method as specified and then reported in a data sheet.
- h. Test the EUT in the lowest channel, the middle channel, the Highest channel.
- i. The radiation measurements are performed in X, Y, Z axis positioning for Transmitting mode, and found the X axis positioning which it is the worst case.
- j. Repeat above procedures until all frequencies measured was complete.

Remark:

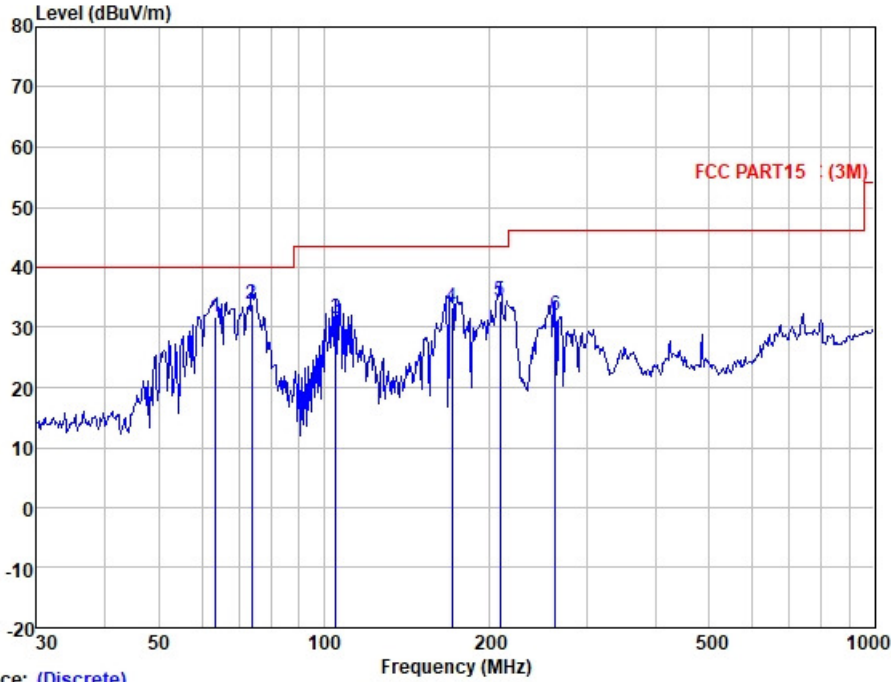
1. Level= Read Level+ Cable Loss+ Antenna Factor- Preamp Factor
2. For emission below 1GHz, through the pre-scan found the worst case is the lowest channel. Only the worst case is recorded in the report.
3. Scan from 9kHz to 40GHz, the disturbance above 18GHz and below 30MHz was very low. The points marked on above plots are the highest emissions could be found when testing, so only above points had been displayed. The amplitude of spurious emissions from the radiator which are attenuated more than 20dB below the limit need not be reported.
4. As shown in this section, for frequencies above 1GHz, the field strength limits are based on average limits. However, the peak field strength of any emission shall not exceed the maximum permitted average limits specified above by more than 20 dB under any condition of modulation. For the emissions whose peak level is lower than the average limit, only the peak measurement is shown in the report.

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



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Polarization:Horizontal; Modulation:GFSK; Channel:Low



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	63.536	43.77	13.68	0.80	26.48	31.77	40.00	-8.23	HORIZONTAL QP
2	73.876	47.65	11.64	0.90	26.43	33.76	40.00	-6.24	HORIZONTAL QP
3	104.903	47.24	9.55	1.12	26.40	31.51	43.50	-11.99	HORIZONTAL QP
4	170.793	45.29	13.11	1.39	26.44	33.35	43.50	-10.15	HORIZONTAL QP
5	208.580	48.09	11.20	1.53	26.47	34.35	43.50	-9.15	HORIZONTAL QP
6	262.896	44.19	12.81	1.69	26.61	32.08	46.00	-13.92	HORIZONTAL QP



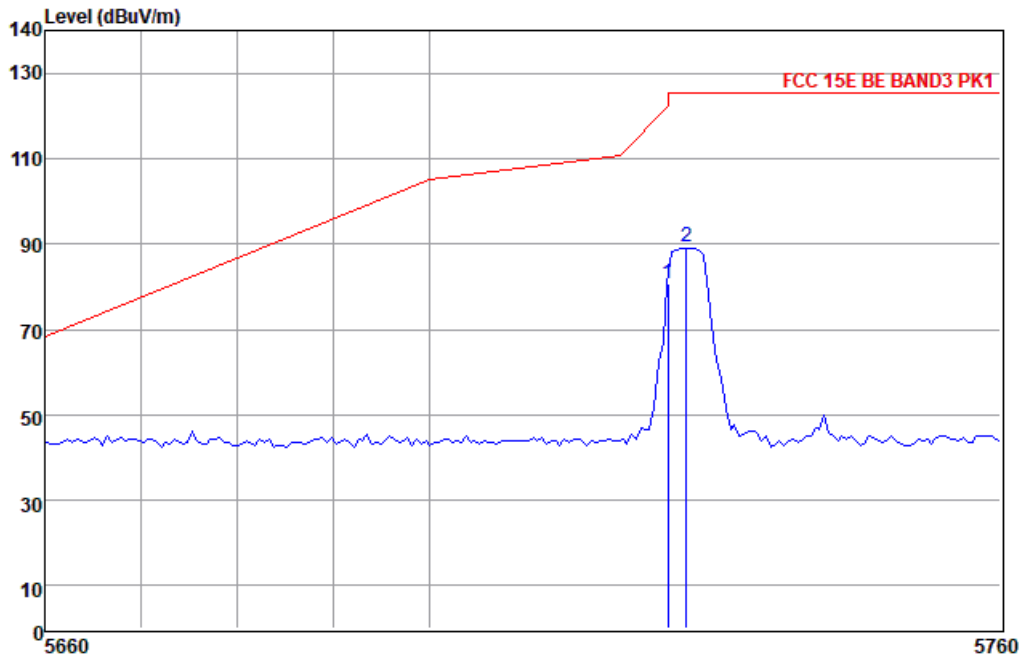
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Polarization:Horizontal; Modulation:GFSK; Channel:Low

	Freq	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Level	Limit Line	Over Limit	Pol/Phase
	MHz	dBm	dB/m	dB	dB	dBm	dBm	dB	
1	1955.34	46.82	25.19	3.01	37.91	37.11	68.20	-31.09	HORIZONTAL
2	3150.24	47.57	27.90	3.96	38.41	41.02	68.20	-27.18	HORIZONTAL
3	7807.26	45.41	36.34	6.19	37.34	50.60	68.20	-17.60	HORIZONTAL
4	10156.14	44.34	38.24	7.05	37.30	52.33	68.20	-15.87	HORIZONTAL
5	14038.45	43.47	41.26	8.26	35.50	57.49	68.20	-10.71	HORIZONTAL
6	17181.80	46.90	42.11	9.92	35.92	63.01	68.20	-5.19	HORIZONTAL

Data: 59 File: C:\Program Files (x86)\e3\Test DATA(total)\Client 2019\2089CR SE.EM6 (65)



	Freq	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Level	Limit Line	Over Limit	Remark
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB	
1	5725.000	79.05	32.08	6.99	37.50	80.62	122.20	-41.58	Peak
2	5727.000	87.72	32.08	6.99	37.50	89.29	125.20	-35.91	Peak

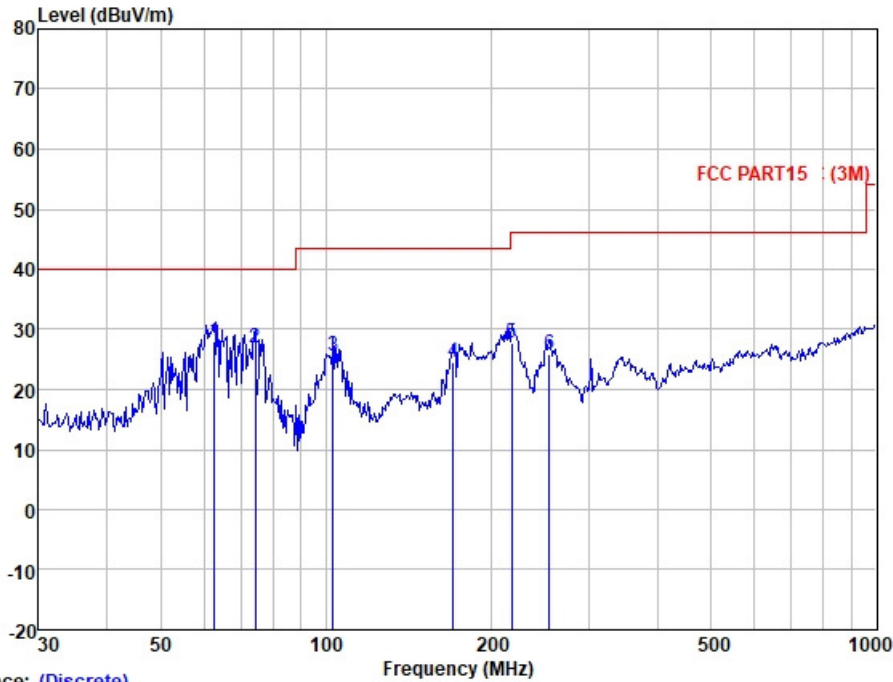


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Polarization:Vertical; Modulation:GFSK; Channel:Low



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	62.651	39.73	13.82	0.80	26.48	27.87	40.00	-12.13	VERTICAL QP
2	74.396	41.09	11.42	0.90	26.43	26.98	40.00	-13.02	VERTICAL QP
3	102.719	41.49	9.38	1.11	26.40	25.58	43.50	-17.92	VERTICAL QP
4	170.195	36.40	13.15	1.39	26.44	24.50	43.50	-19.00	VERTICAL QP
5	217.544	41.44	11.20	1.56	26.49	27.71	46.00	-18.29	VERTICAL QP
6	253.837	38.19	12.63	1.67	26.58	25.91	46.00	-20.09	VERTICAL QP



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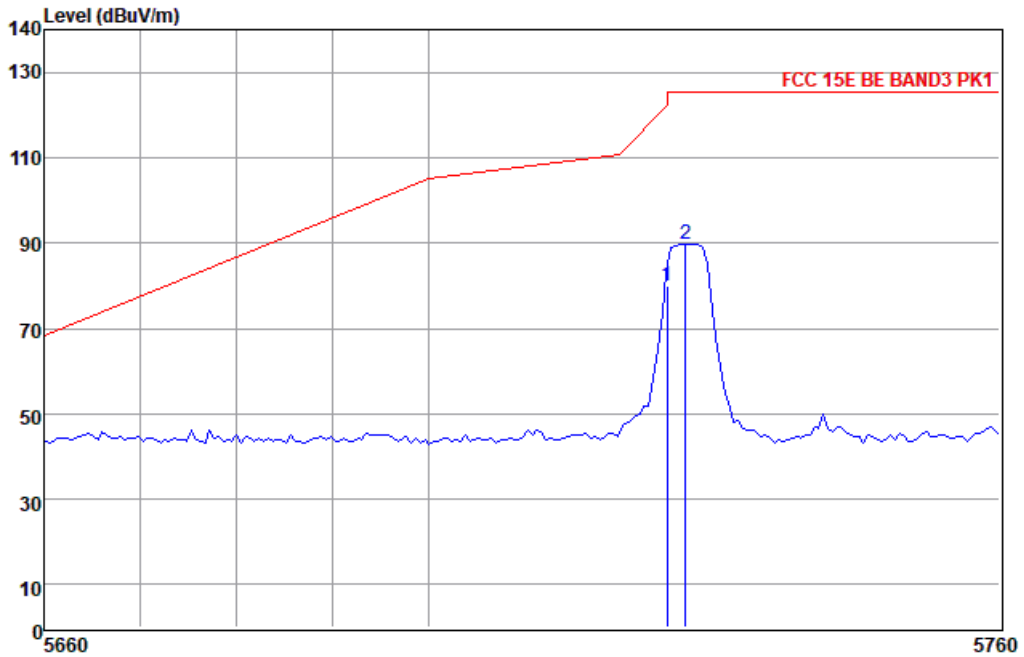
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Polarization:Vertical; Modulation:GFSK; Channel:Low

	Freq	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Level	Limit Line	Over Limit	Pol/Phase
	MHz	dBm	dB/m	dB	dB	dBm	dBm	dB	
1	1972.37	46.20	25.20	3.05	37.82	36.63	68.20	-31.57	VERTICAL
2	2671.73	47.68	26.98	3.57	37.90	40.33	68.20	-27.87	VERTICAL
3	3386.30	45.60	27.90	4.10	38.11	39.49	68.20	-28.71	VERTICAL
4	7852.52	44.62	36.39	6.17	37.32	49.86	68.20	-18.34	VERTICAL
5	10039.39	45.08	38.04	6.96	37.32	52.76	68.20	-15.44	VERTICAL
6	17181.46	43.89	42.11	9.92	35.92	60.00	68.20	-8.20	VERTICAL

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	Freq	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Level	Limit Line	Over Limit	Remark
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB	
1	5725.000	78.42	32.08	6.99	37.50	79.99	122.20	-42.21	Peak
2	5727.000	88.10	32.08	6.99	37.50	89.67	125.20	-35.53	Peak



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Polarization:Horizontal; Modulation:GFSK; Channel:middle

	Freq	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Level	Limit Line	Over Limit	Pol/Phase
	MHz	dBm	dB/m	dB	dB	dBm	dBm	dB	
1	1972.37	46.53	25.20	3.05	37.82	36.96	68.20	-31.24	HORIZONTAL
2	2595.61	45.46	26.78	3.49	37.91	37.82	68.20	-30.38	HORIZONTAL
3	3087.14	47.22	27.90	3.89	38.22	40.79	68.20	-27.41	HORIZONTAL
4	10097.60	43.07	38.13	7.00	37.31	50.89	68.20	-17.31	HORIZONTAL
5	13917.24	41.48	41.08	8.25	35.54	55.27	68.20	-12.93	HORIZONTAL
6	17280.80	43.63	42.29	10.24	35.88	60.28	68.20	-7.92	HORIZONTAL

Polarization:Vertical; Modulation:GFSK; Channel:middle

	Freq	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Level	Limit Line	Over Limit	Pol/Phase
	MHz	dBm	dB/m	dB	dB	dBm	dBm	dB	
1	1888.69	48.51	25.18	2.91	38.18	38.42	68.20	-29.78	VERTICAL
2	2595.61	45.74	26.78	3.49	37.91	38.10	68.20	-30.10	VERTICAL
3	3114.03	46.94	27.90	3.92	38.31	40.45	68.20	-27.75	VERTICAL
4	10068.45	45.17	38.09	6.98	37.32	52.92	68.20	-15.28	VERTICAL
5	13957.53	42.15	41.14	8.25	35.50	56.04	68.20	-12.16	VERTICAL
6	17280.18	45.11	42.29	10.24	35.88	61.76	68.20	-6.44	VERTICAL



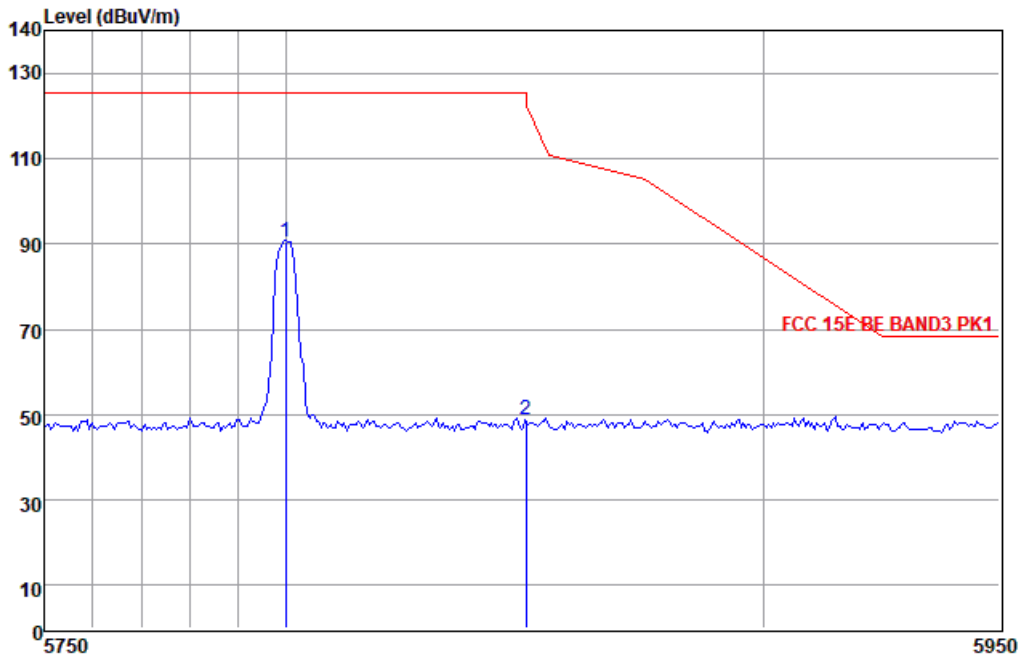
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Polarization:Horizontal; Modulation:GFSK; Channel:High

	Freq	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Level	Limit Line	Over Limit	Pol/Phase
	MHz	dBm	dB/m	dB	dB	dBm	dBm	dB	
1	1955.34	46.82	25.19	3.01	37.91	37.11	68.20	-31.09	HORIZONTAL
2	3078.23	46.56	27.90	3.88	38.19	40.15	68.20	-28.05	HORIZONTAL
3	3536.34	46.02	27.99	4.40	37.95	40.46	68.20	-27.74	HORIZONTAL
4	10244.58	44.03	38.43	7.14	37.34	52.26	68.20	-15.94	HORIZONTAL
5	13997.93	41.83	41.20	8.24	35.50	55.77	68.20	-12.43	HORIZONTAL
6	17400.71	43.28	42.46	10.53	35.85	60.42	68.20	-7.78	HORIZONTAL

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	Freq	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Level	Limit Line	Over Limit	Remark
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB	
1	5800.000	88.62	32.16	7.47	37.80	90.45	125.20	-34.75	Peak
2	5850.000	46.63	32.20	7.44	37.40	48.87	122.20	-73.33	Peak



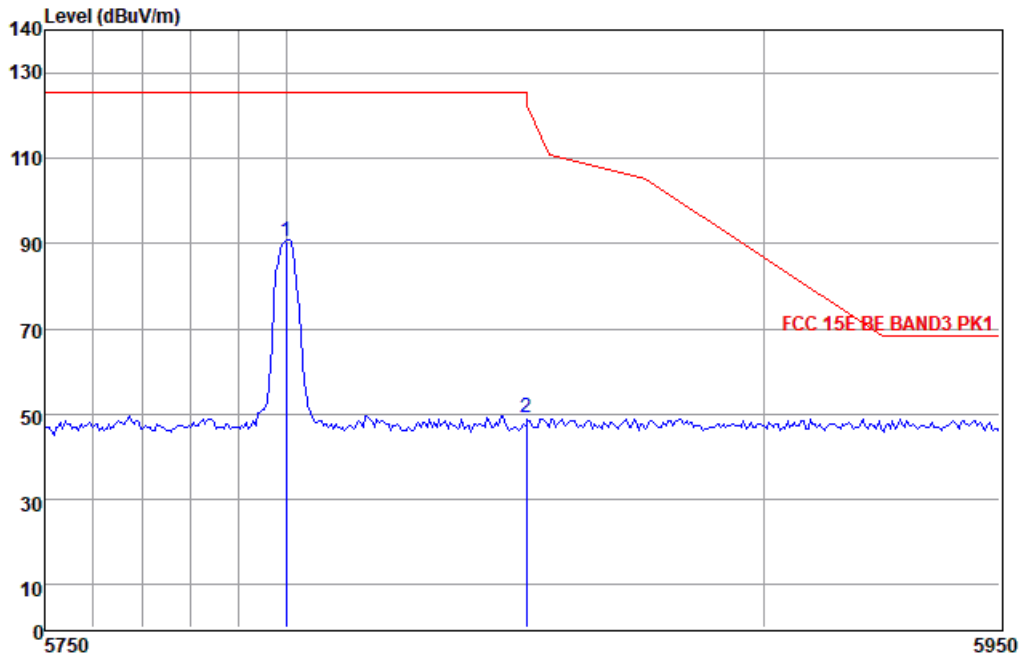
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Polarization:Vertical; Modulation:GFSK; Channel:High

	Freq	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Level	Limit Line	Over Limit	Pol/Phase
	MHz	dBm	dB/m	dB	dB	dBm	dBm	dB	
1	1819.04	48.48	25.16	2.98	38.04	38.58	68.20	-29.62	VERTICAL
2	2939.12	46.17	27.82	3.74	37.94	39.79	68.20	-28.41	VERTICAL
3	3505.81	46.29	27.92	4.33	37.99	40.55	68.20	-27.65	VERTICAL
4	7898.05	44.39	36.43	6.17	37.30	49.69	68.20	-18.51	VERTICAL
5	13957.53	39.82	41.14	8.25	35.50	53.71	68.20	-14.49	VERTICAL
6	17400.18	43.49	42.46	10.53	35.85	60.63	68.20	-7.57	VERTICAL

Data: 60 File: C:\Program Files (x86)\e3\Test DATA(total)\Client 2019\2089CR SE.EM6 (61)



	Freq	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Level	Limit Line	Over Limit	Remark
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB	
1	5800.000	88.50	32.16	7.47	37.80	90.33	125.20	-34.87	Peak
2	5850.000	46.81	32.20	7.44	37.40	49.05	122.20	-73.15	Peak



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**7.8 Radiated Emissions which fall in the restricted bands**

Test Requirement 47 CFR Part 15, Subpart E 15.407(b)(7)

Test Method: KDB 789033 D02 II G

Measurement Distance: 3m

Limit:

Frequency (MHz)	Field strength (microvolts/meter)	Measurement distance (meters)
0.009-0.490	2400/F(kHz)	300
0.490-1.705	24000/F(kHz)	30
1.705-30.0	30	30
30-88	100	3
88-216	150	3
216-960	200	3
Above 960	500	3

Remark: The emission limits shown in the above table are based on measurements employing a CISPR quasi-peak detector except for the frequency bands 9-90kHz, 110-490kHz and above 1000 MHz. Radiated emission limits in these three bands are based on measurements employing an average detector, the peak field strength of any emission shall not exceed the maximum permitted average limits specified above by more than 20 dB under any condition of modulation.

**7.8.1 E.U.T. Operation**

Operating Environment:

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

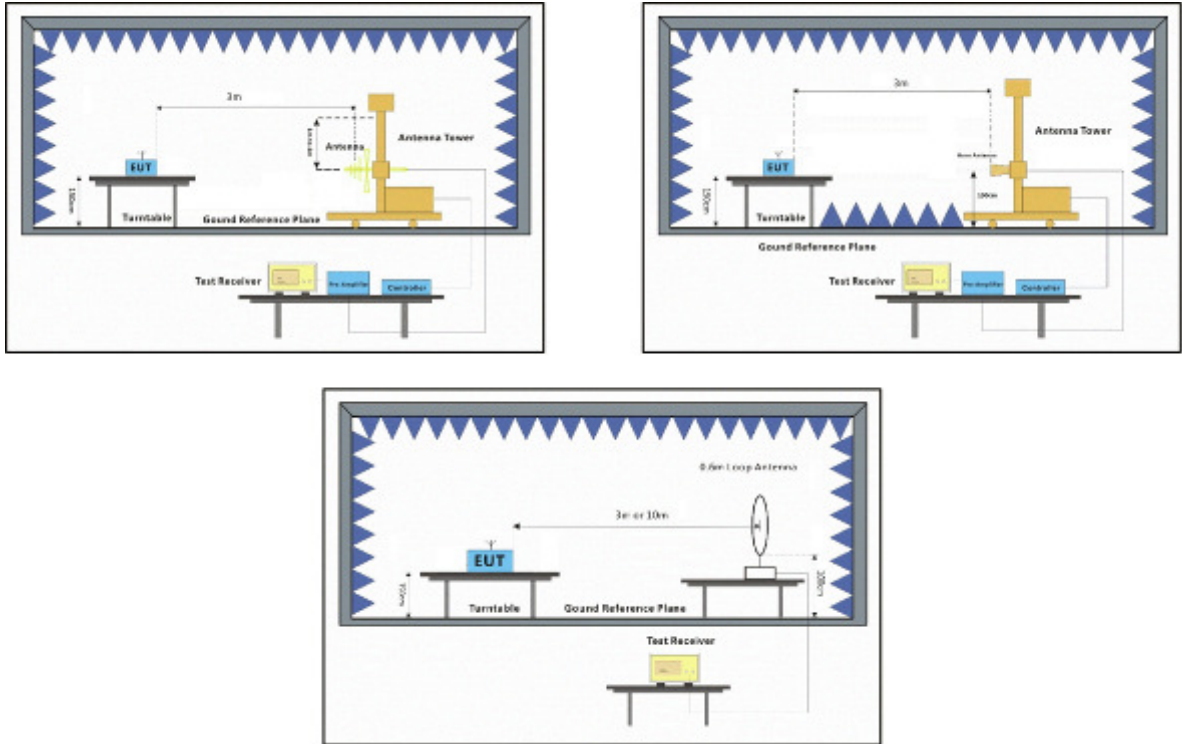
Pretest these modes to find the worst case:  
 f: TX mode, Keep the EUT in continuously transmitting mode with GFSK modulation  
 g: Charge + TX mode, Keep the EUT in charging and continuously transmitting mode with GFSK modulation.

The worst case for final test:  
 f: TX mode, Keep the EUT in continuously transmitting mode with GFSK modulation



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7.8.2 Test Setup Diagram



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### 7.8.3 Measurement Procedure and Data

- a. For below 1GHz, the EUT was placed on the top of a rotating table 0.8 meters above the ground at a 3 or 10 meter semi-anechoic chamber. The table was rotated 360 degrees to determine the position of the highest radiation.
- b. For above 1GHz, the EUT was placed on the top of a rotating table 1.5 meters above the ground at a 3 meter fully-anechoic chamber. The table was rotated 360 degrees to determine the position of the highest radiation.
- c. The EUT was set 3 or 10 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower.
- d. The antenna height is varied from one meter to four meters above the ground to determine the maximum value of the field strength. Both horizontal and vertical polarizations of the antenna are set to make the measurement.
- e. For each suspected emission, the EUT was arranged to its worst case and then the antenna was tuned to heights from 1 meter to 4 meters (for the test frequency of below 30MHz, the antenna was tuned to heights 1 meter) and the rotatable table was turned from 0 degrees to 360 degrees to find the maximum reading.
- f. The test-receiver system was set to Peak Detect Function and Specified Bandwidth with Maximum Hold Mode.
- g. If the emission level of the EUT in peak mode was 10dB lower than the limit specified, then testing could be stopped and the peak values of the EUT would be reported. Otherwise the emissions that did not have 10dB margin would be re-tested one by one using peak, quasi-peak or average method as specified and then reported in a data sheet.
- h. Test the EUT in the lowest channel, the middle channel, the Highest channel.
- i. The radiation measurements are performed in X, Y, Z axis positioning for Transmitting mode, and found the X axis positioning which it is the worst case.
- j. Repeat above procedures until all frequencies measured was complete.

All data meet the requirement of the restrict band and only closest point are show in the report.

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



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Polarization:Horizontal; Modulation:GFSK; Channel:low

	Freq	ReadAntenna		Cable Preamp		Limit Level	Over Limit	Remark
		Level	Factor	Loss	Factor			
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB
1	5460.000	36.89	31.85	6.26	37.86	37.14	54.00	-16.86 Average
2	5460.000	45.23	31.85	6.26	37.86	45.48	74.00	-28.52 Peak

Polarization:Vertical; Modulation:GFSK; Channel:low

	Freq	ReadAntenna		Cable Preamp		Limit Level	Over Limit	Remark
		Level	Factor	Loss	Factor			
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB
1	5460.000	35.20	31.85	6.26	37.86	35.45	54.00	-18.55 Average
2	5460.000	44.44	31.85	6.26	37.86	44.69	74.00	-29.31 Peak

Polarization:Horizontal; Modulation:GFSK; Channel:high

	Freq	ReadAntenna		Cable Preamp		Limit Level	Over Limit	Remark
		Level	Factor	Loss	Factor			
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB
1	7250.000	37.15	35.55	6.03	37.43	41.30	54.00	-12.70 Average
2	7250.000	45.60	35.55	6.03	37.43	49.75	74.00	-24.25 Peak

Polarization:Vertical; Modulation:GFSK; Channel:high

	Freq	ReadAntenna		Cable Preamp		Limit Level	Over Limit	Remark
		Level	Factor	Loss	Factor			
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB
1	7250.000	36.99	35.55	6.03	37.43	41.14	54.00	-12.86 Average
2	7250.000	45.70	35.55	6.03	37.43	49.85	74.00	-24.15 Peak



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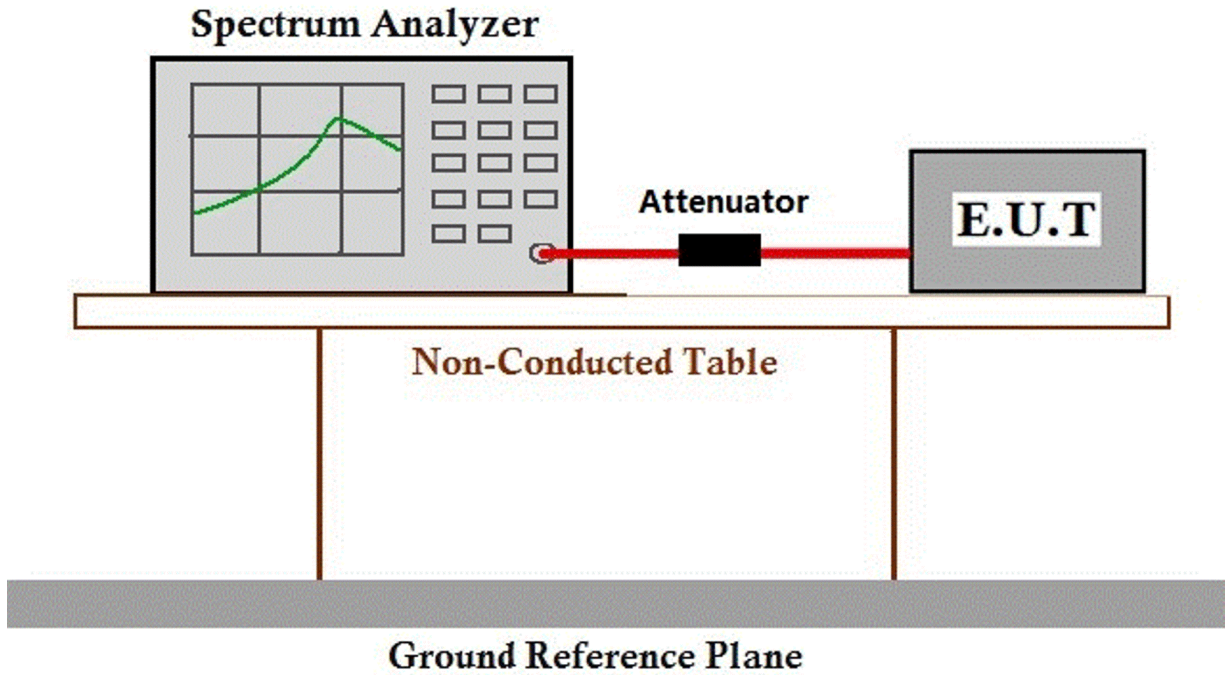
**7.9 Frequency Stability**

Test Requirement 47 CFR Part 15, Subpart E 15.407 (g)  
 Test Method: ANSI C63.10 (2013) Section 6.8  
 Limit: The frequency tolerance shall be maintained within the band of operation frequency over a temperature variation of 0 degrees to 35 degrees C at normal supply voltage, and for a variation in the primary supply voltage from 85% to 115% of the rated supply voltage at a temperature of 20 degrees C.

**7.9.1 E.U.T. Operation**

Operating Environment:  
 Temperature: 25.3 °C Humidity: 58.2 % RH Atmospheric Pressure: 1020 mbar  
 Test mode f: TX mode, Keep the EUT in continuously transmitting mode with GFSK modulation types.

**7.9.2 Test Setup Diagram**



**7.9.3 Measurement Procedure and Data**

The detailed test data see: Appendix 15.407



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## 8 Appendix

### 1. Emission Bandwidth Measurement (26dB bandwidth/ 6dB bandwidth/99% bandwidth)

Test Channel	Ant	-6dBW[MHz]		Limit [MHz]	Verdict
5727	Ant1	1.550		0.5	PASS
5760	Ant1	1.417		0.5	PASS
5800	Ant1	1.461		0.5	PASS
Test Channel	Ant	OBW[MHz]	-26dBW[MHz]	Limit [MHz]	Verdict
5727	Ant1	3.0283	4.120	NA	PASS
5760	Ant1	3.1774	4.118	NA	PASS
5800	Ant1	3.1424	4.120	NA	PASS



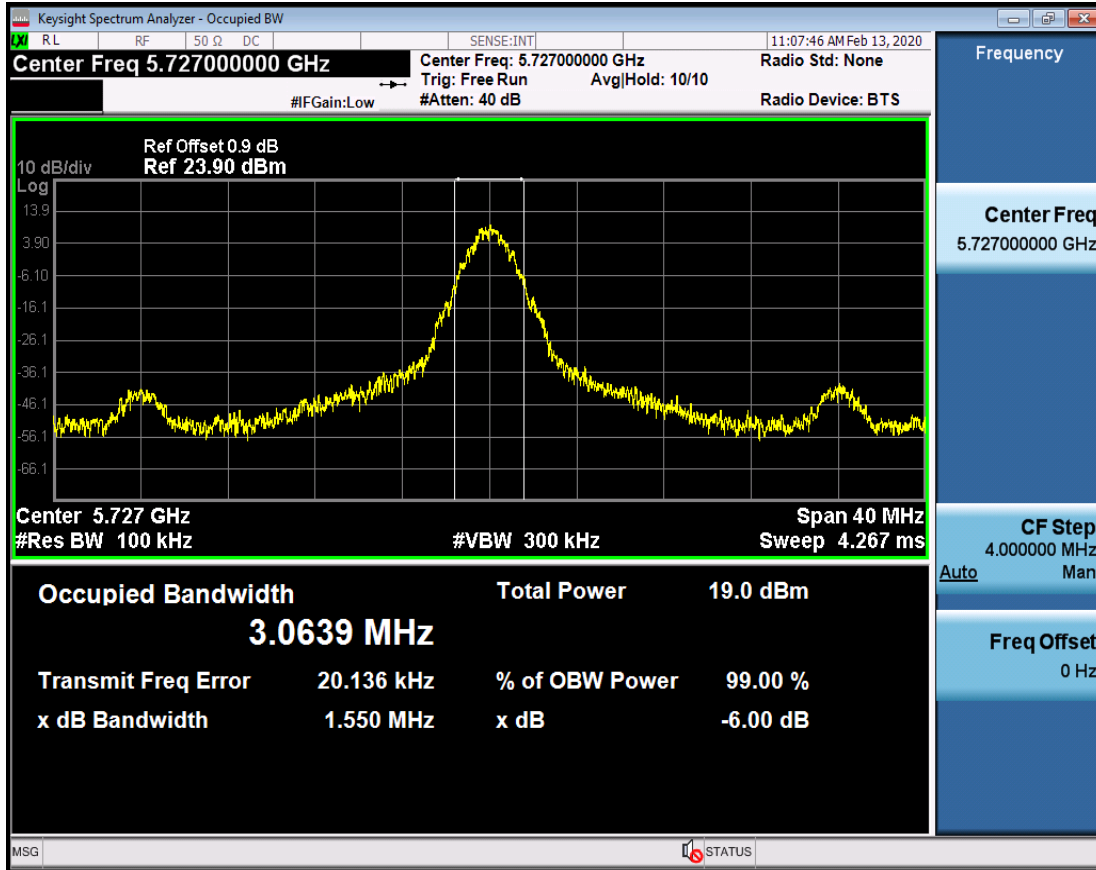
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TEST PLOT

-6dB Bandwidth Measurement\_11A\_5727\_Ant1

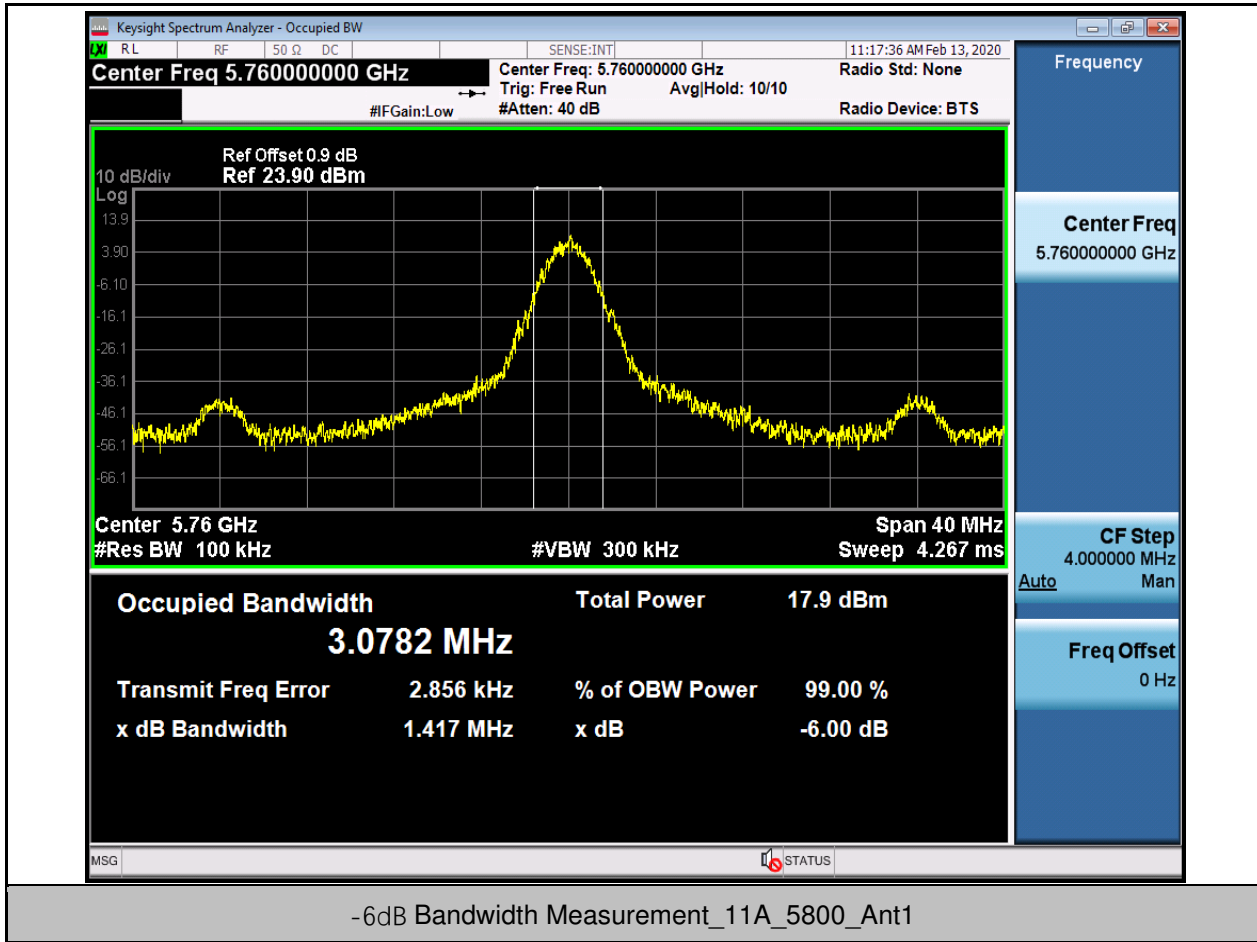


-6dB Bandwidth Measurement\_11A\_5760\_Ant1



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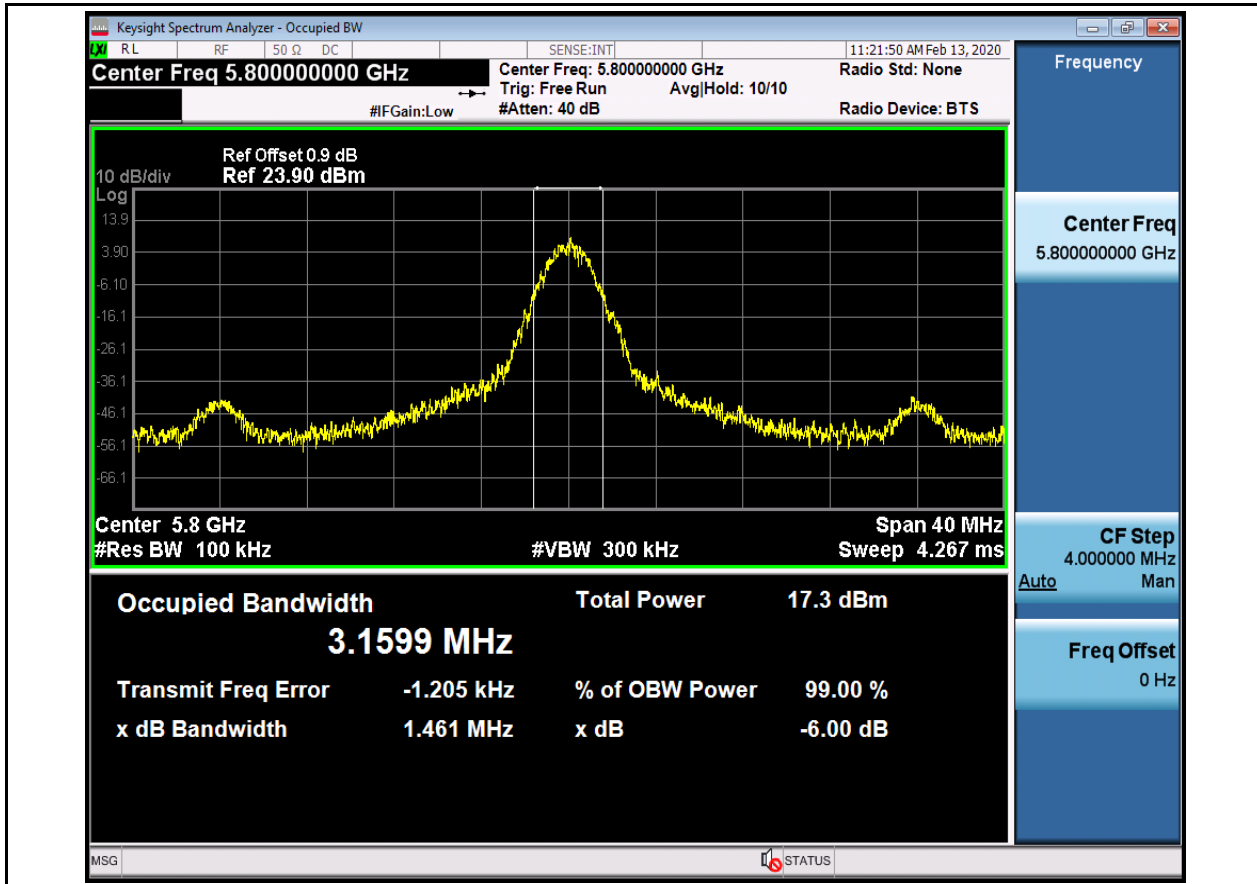


-6dB Bandwidth Measurement\_11A\_5800\_Ant1



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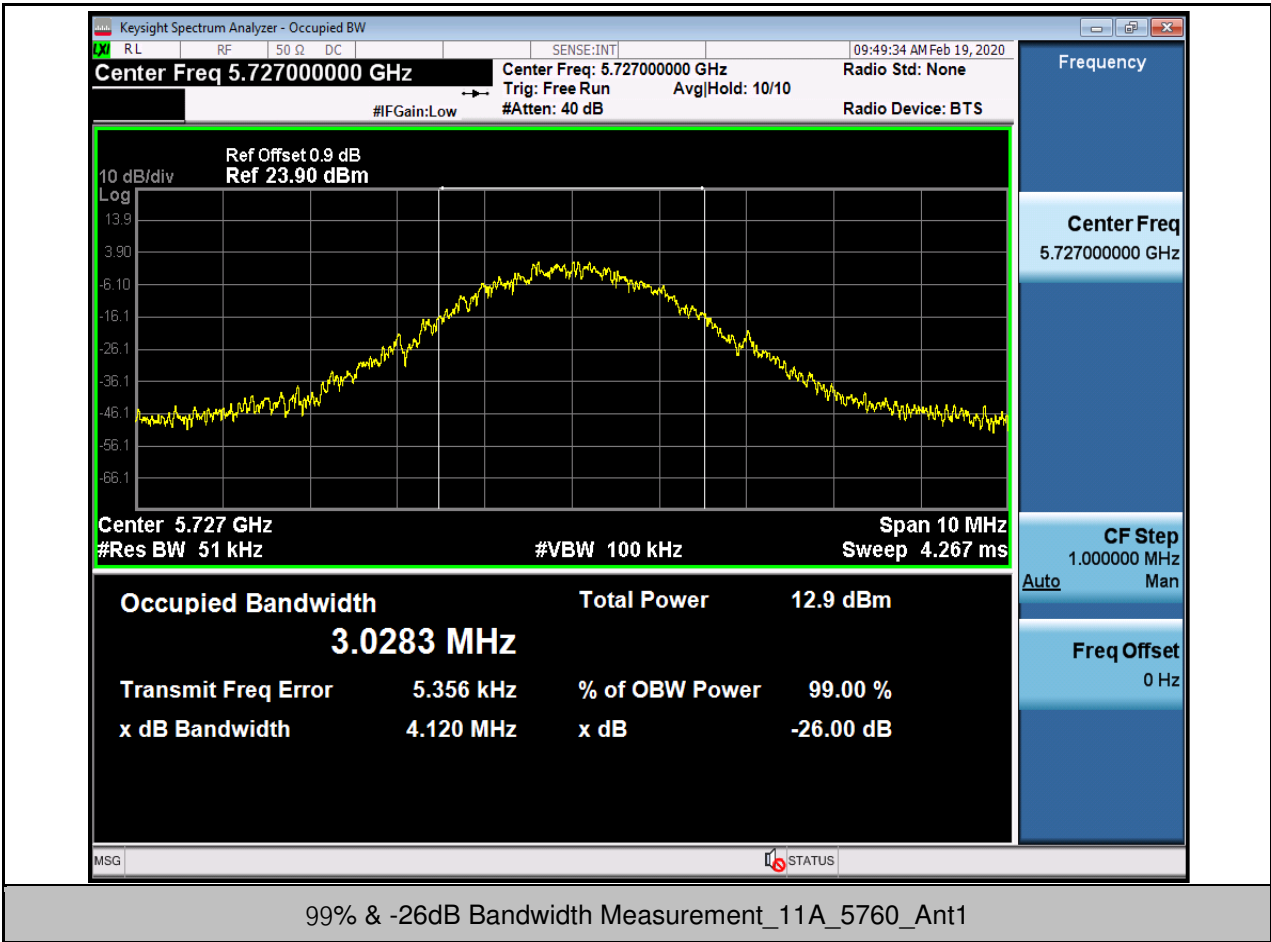
99% & -26dB Bandwidth Measurement\_11A\_5727\_Ant1



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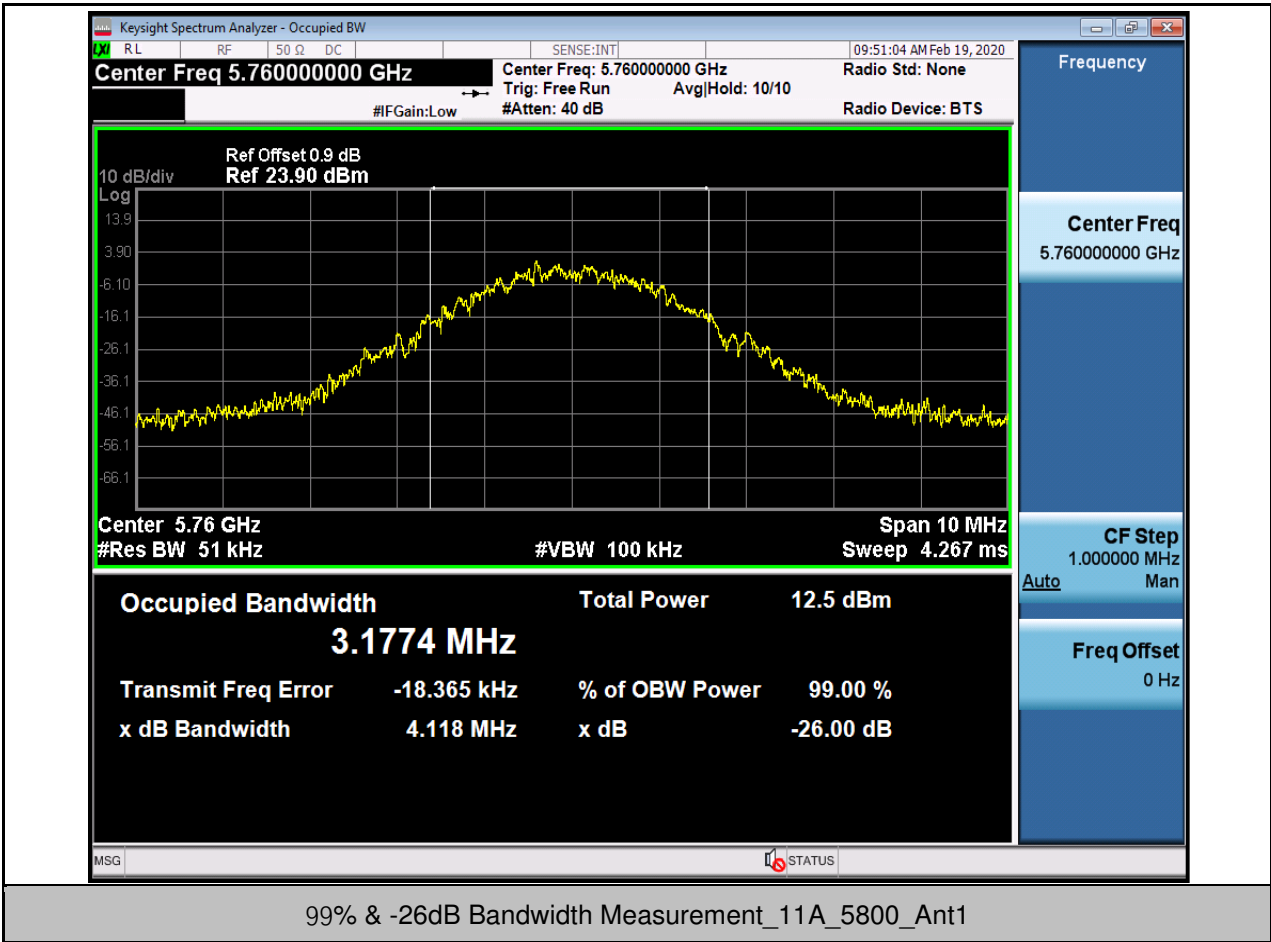


99% & -26dB Bandwidth Measurement\_11A\_5760\_Ant1



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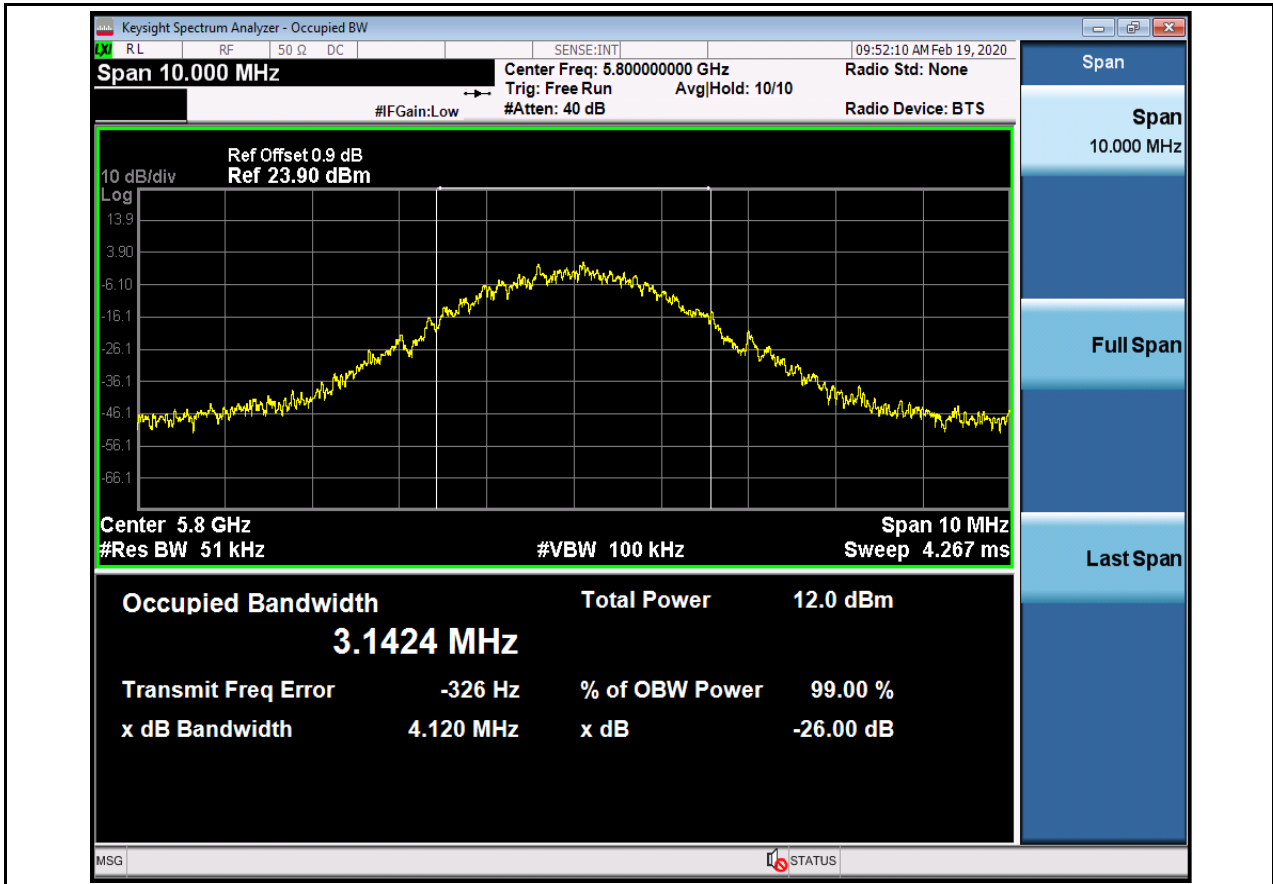


99% & -26dB Bandwidth Measurement\_11A\_5800\_Ant1



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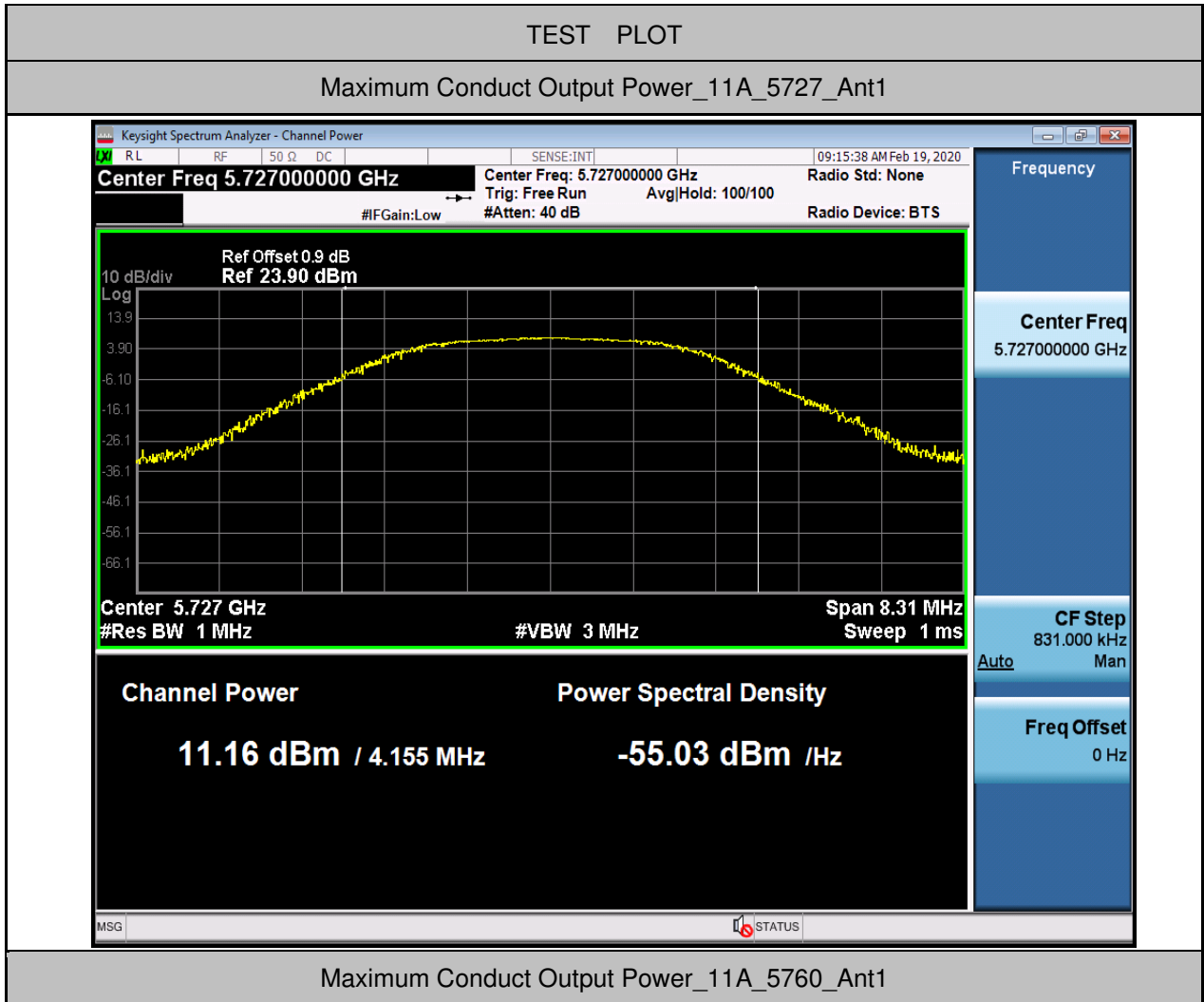


**2.Maximum Conduct Output Power**

Test Mode	Test Channel	Ant	Level [dBm]	10log(1/x) Factor [dB]	Power [dBm]	Limit [dBm]	Verdict
11A	5727	Ant1	11.16	0.00	11.16	30.00	PASS
11A	5760	Ant1	10.94	0.00	10.94	30.00	PASS
11A	5800	Ant1	10.76	0.00	10.76	30.00	PASS

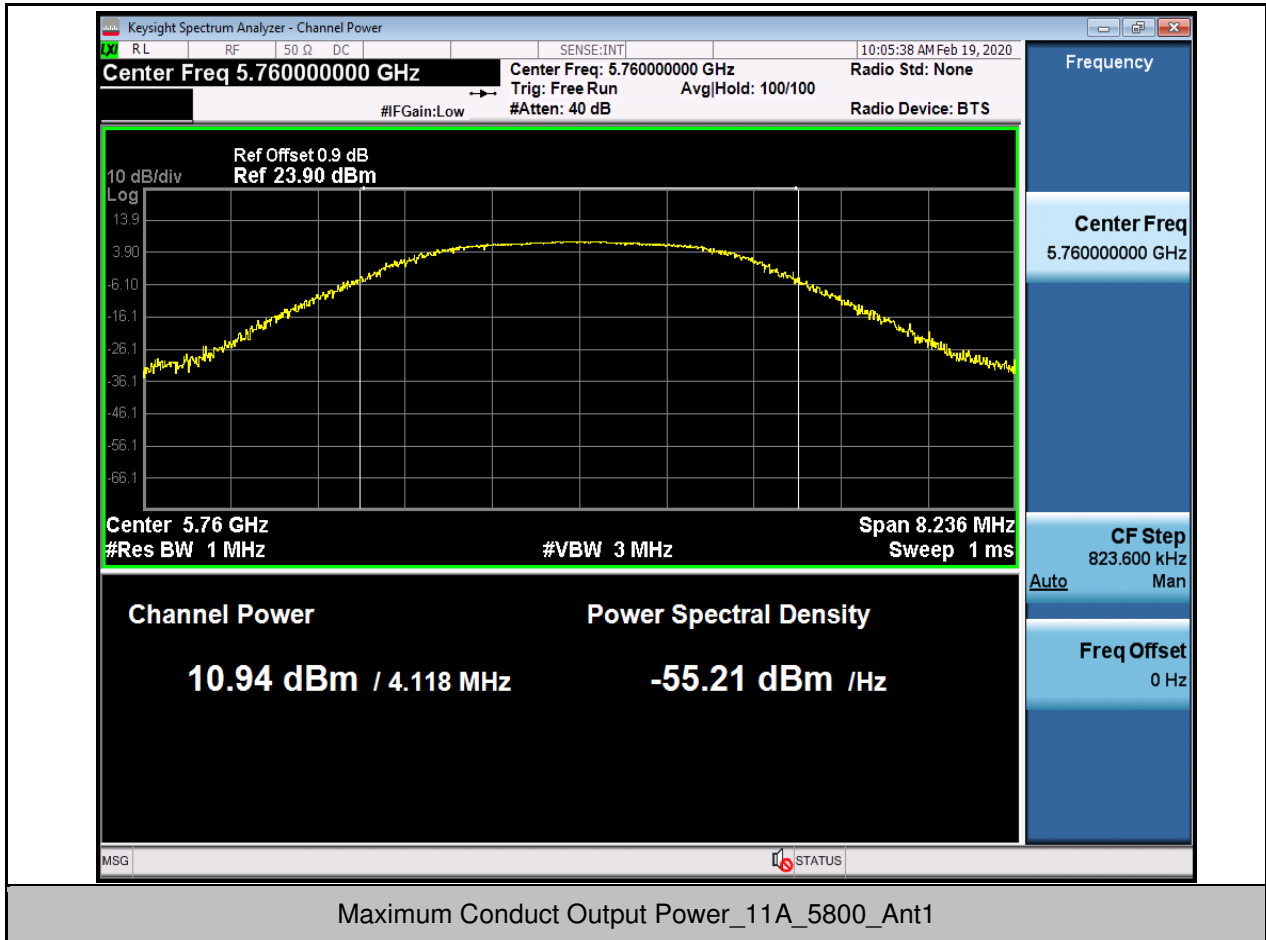


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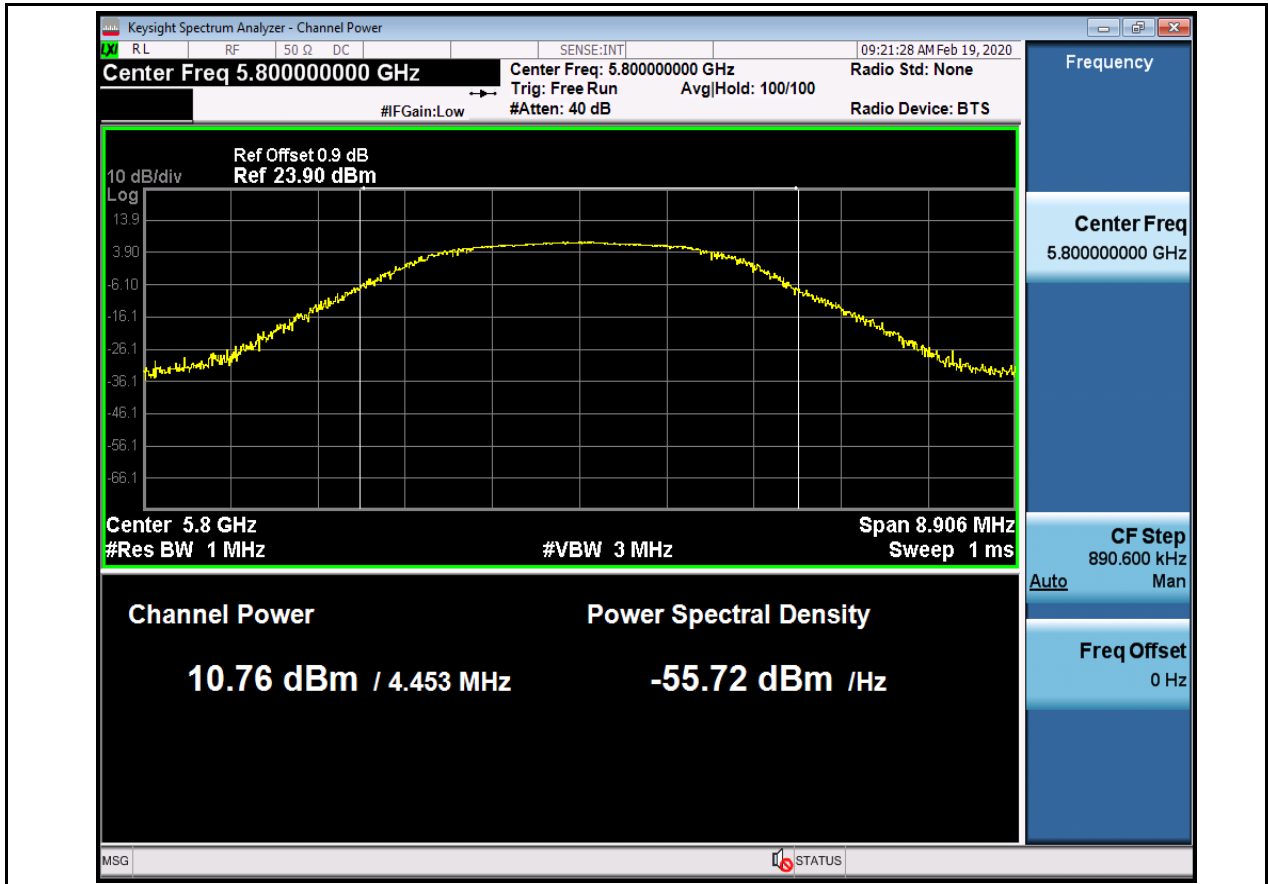
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**3.Maximum Power Spectral Density**

Test Mode	Test Channel	Ant	Level [dBm/300kHz]	10log(1/x) Factor[dB]	10log(500kHz/RBW) Factor [dB]	PSD [dBm/500kHz]	Limit [dBm/500kHz]	Verdict
11A	5727	Ant1	7.115	0	2.218	9.333	30.00	PASS
11A	5760	Ant1	7.012	0	2.218	9.23	30.00	PASS
11A	5800	Ant1	6.612	0	2.218	8.83	30.00	PASS

Remark:

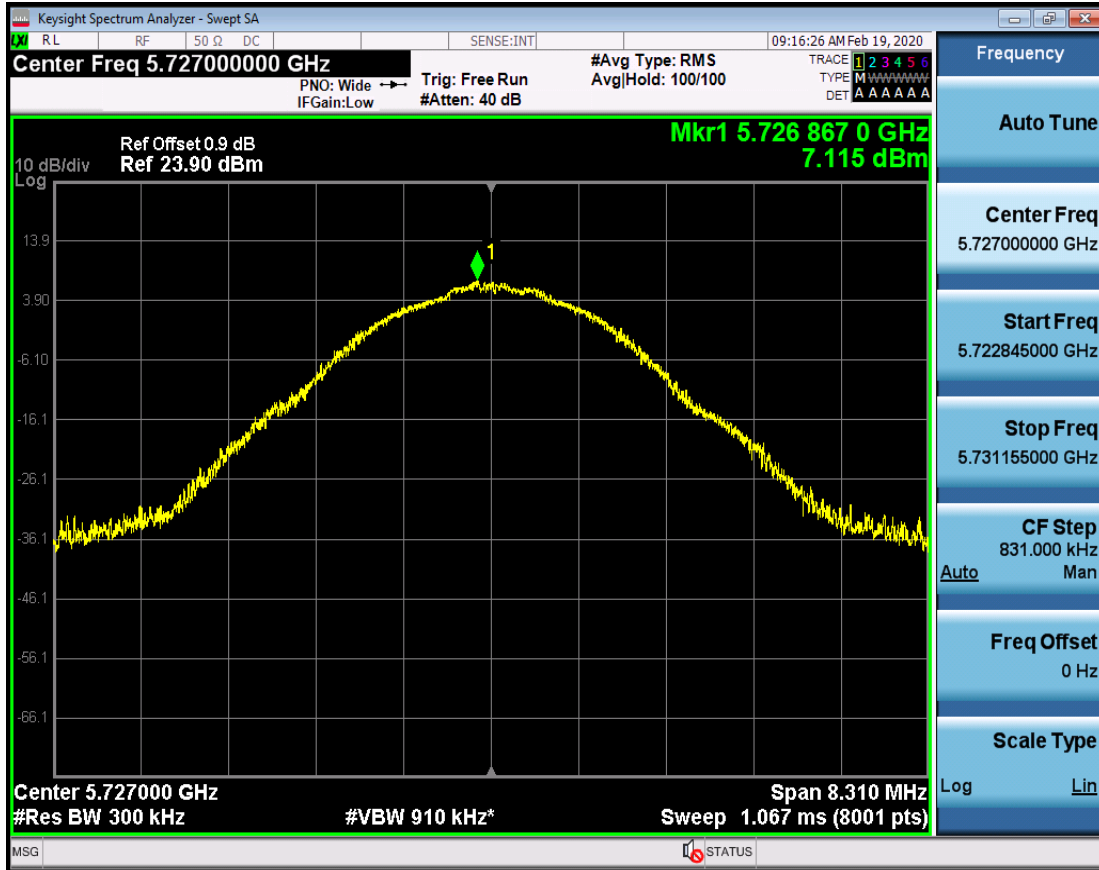
The test set RBW=300Khz, the factor is  $10\log(500\text{kHz}/\text{RBW}) = 10\log(500\text{Khz}/300\text{kHz}) = 2.218\text{dB}$



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TEST PLOT

Maximum Conduct Output Power\_TNVN\_11A\_5727\_Ant1

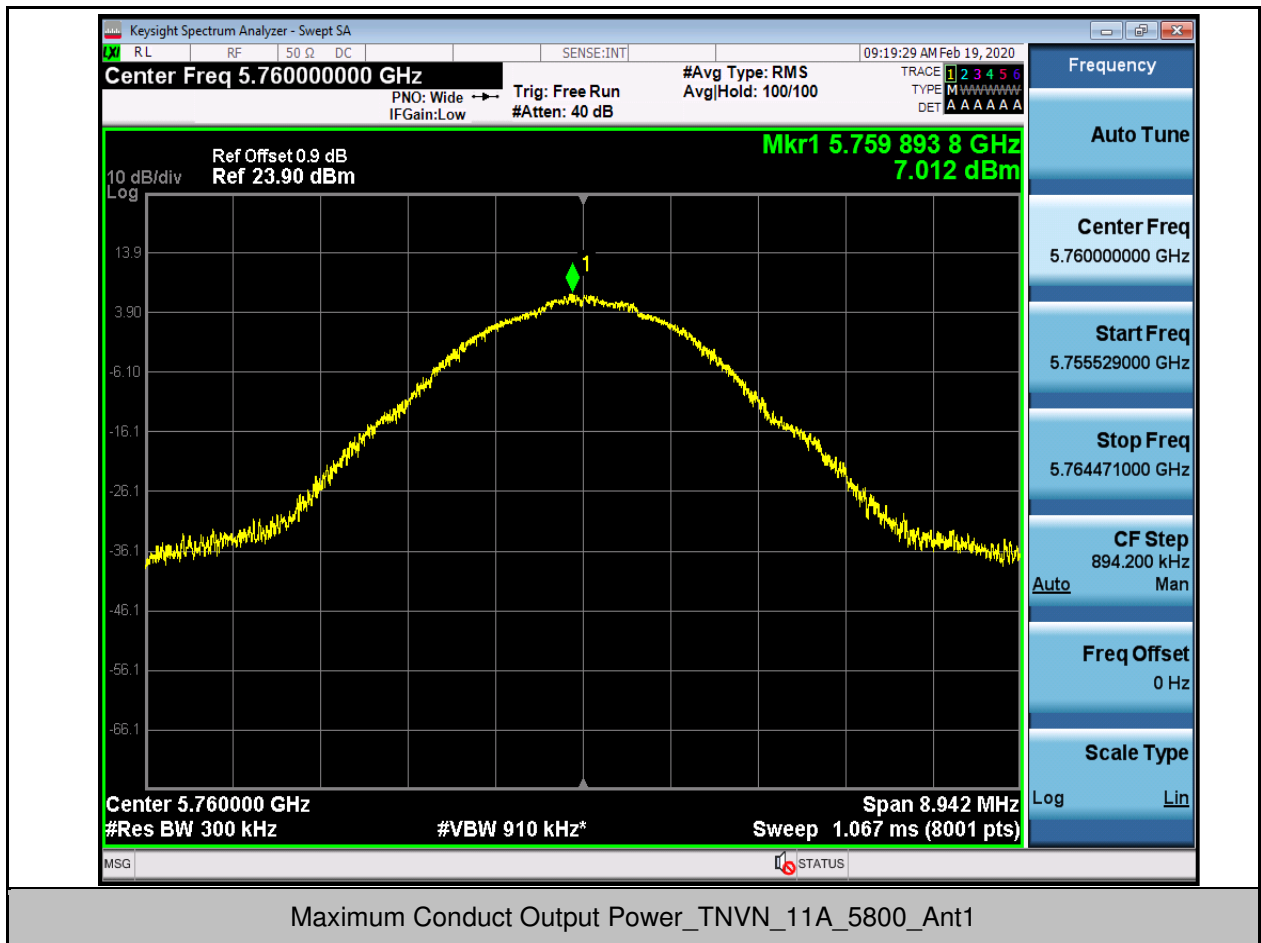


Maximum Conduct Output Power\_TNVN\_11A\_5760\_Ant1



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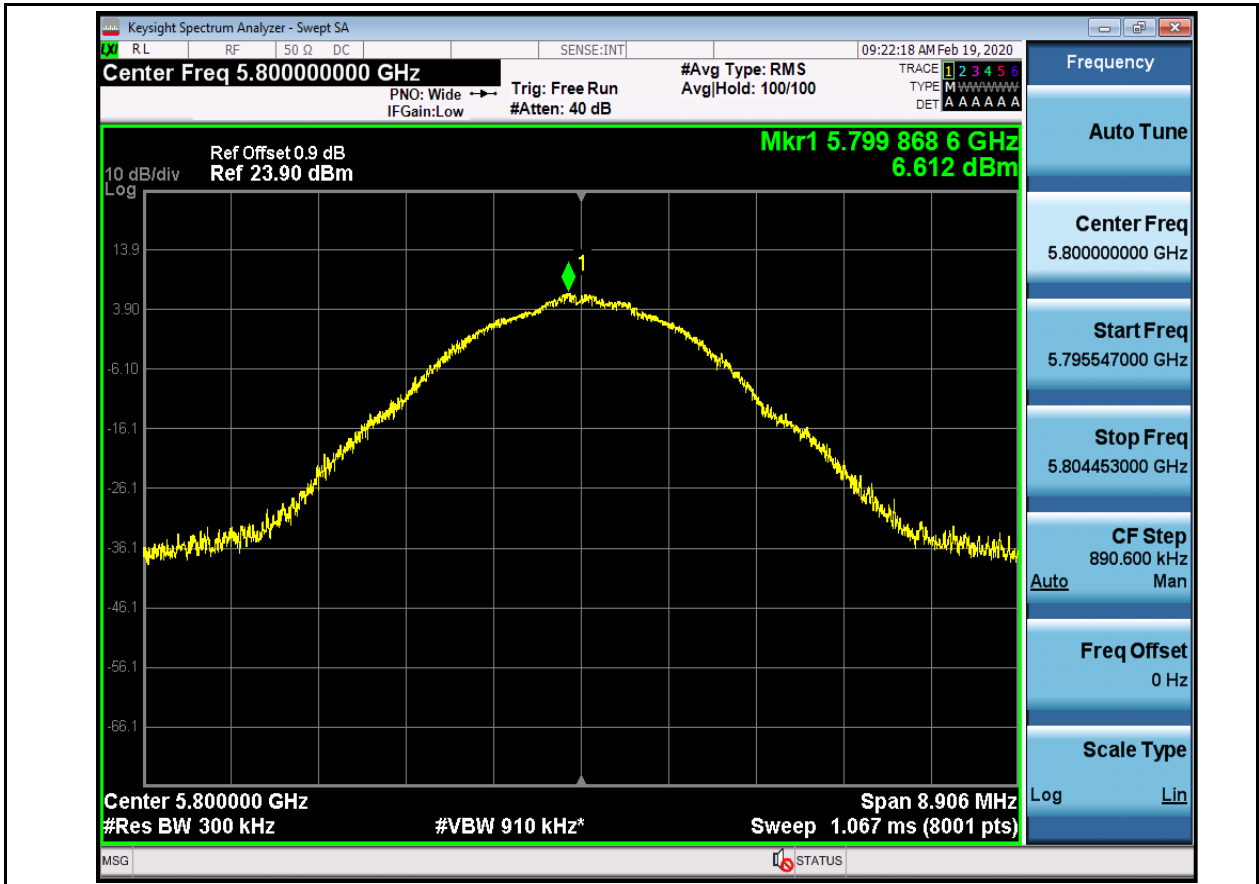
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**5.Frequency Stability**

Test Mode	Test Channel	Ant	Volt.	Temp.	Deviation [MHz]	Limit	Verdict
11A	5727	Ant1	120V	-30	5726.99	5725MHz-5850MHz	PASS
11A	5727	Ant1	120V	-20	5727.00		PASS
11A	5727	Ant1	120V	-10	5726.97		PASS
11A	5727	Ant1	120V	0	5727.03		PASS
11A	5727	Ant1	120V	10	5726.99		PASS
11A	5727	Ant1	138V	20	5727.00		PASS
11A	5727	Ant1	138V	30	5726.99		PASS
11A	5727	Ant1	102V	40	5727.03		PASS
11A	5727	Ant1	102V	50	5726.97		PASS
11A	5760	Ant1	120V	-30	5759.96		PASS
11A	5760	Ant1	120V	-20	5759.99		PASS
11A	5760	Ant1	120V	-10	5760.00		PASS
11A	5760	Ant1	120V	0	5760.02		PASS
11A	5760	Ant1	120V	10	5759.96		PASS
11A	5760	Ant1	138V	20	5759.96		PASS
11A	5760	Ant1	138V	30	5760.03		PASS
11A	5760	Ant1	102V	40	5759.99		PASS
11A	5760	Ant1	102V	50	5760.05		PASS
11A	5800	Ant1	120V	-30	5800.02		PASS
11A	5800	Ant1	120V	-20	5799.99		PASS
11A	5800	Ant1	120V	-10	5800.03		PASS
11A	5800	Ant1	120V	0	5800.00		PASS
11A	5800	Ant1	120V	10	5800.05		PASS
11A	5800	Ant1	138V	20	5800.00		PASS
11A	5800	Ant1	138V	30	5799.99		PASS
11A	5800	Ant1	102V	40	5799.94		PASS
11A	5800	Ant1	102V	50	5799.96		PASS

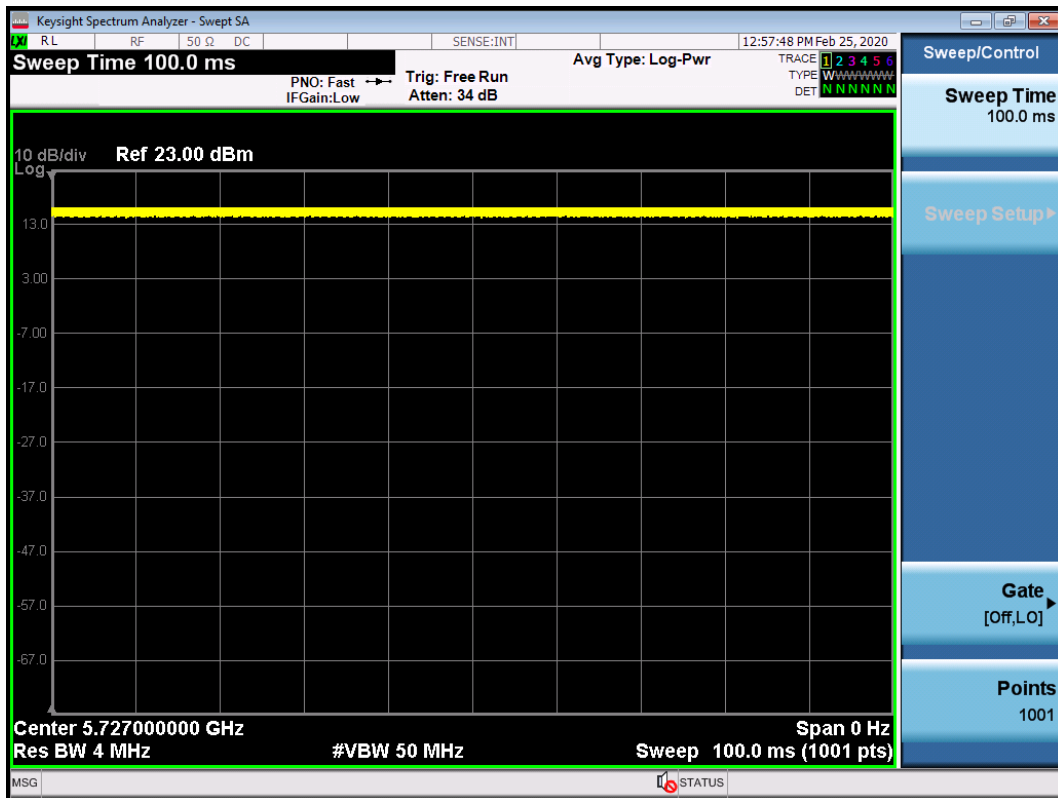


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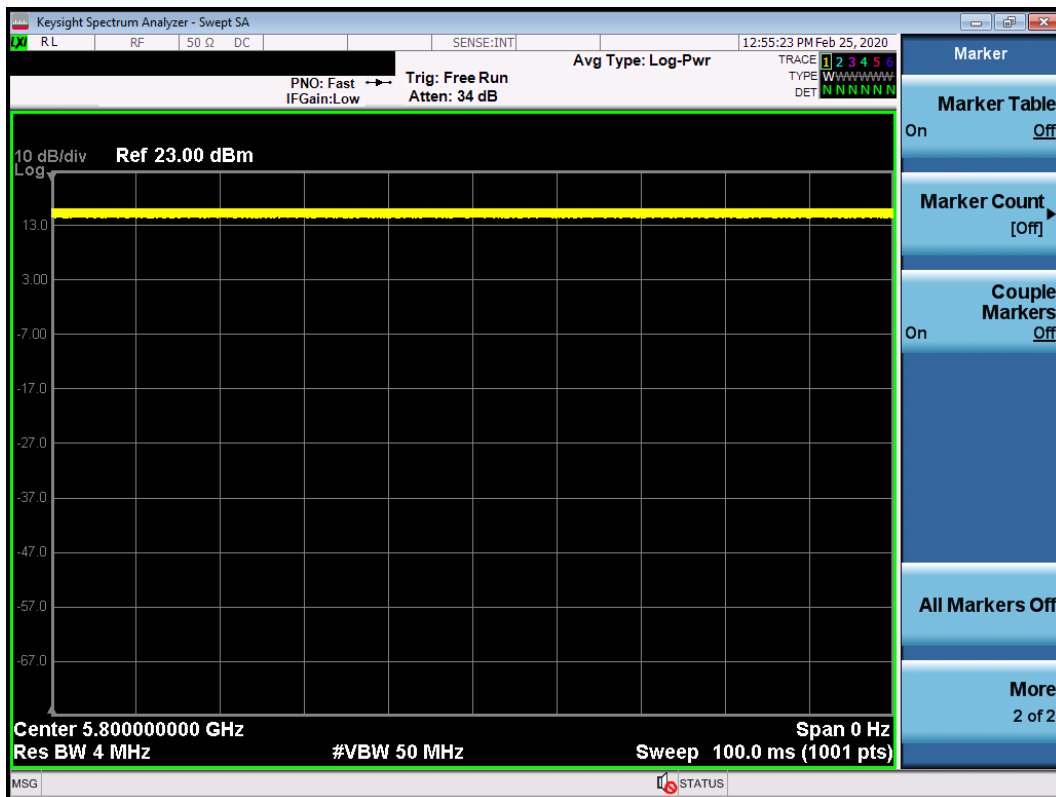
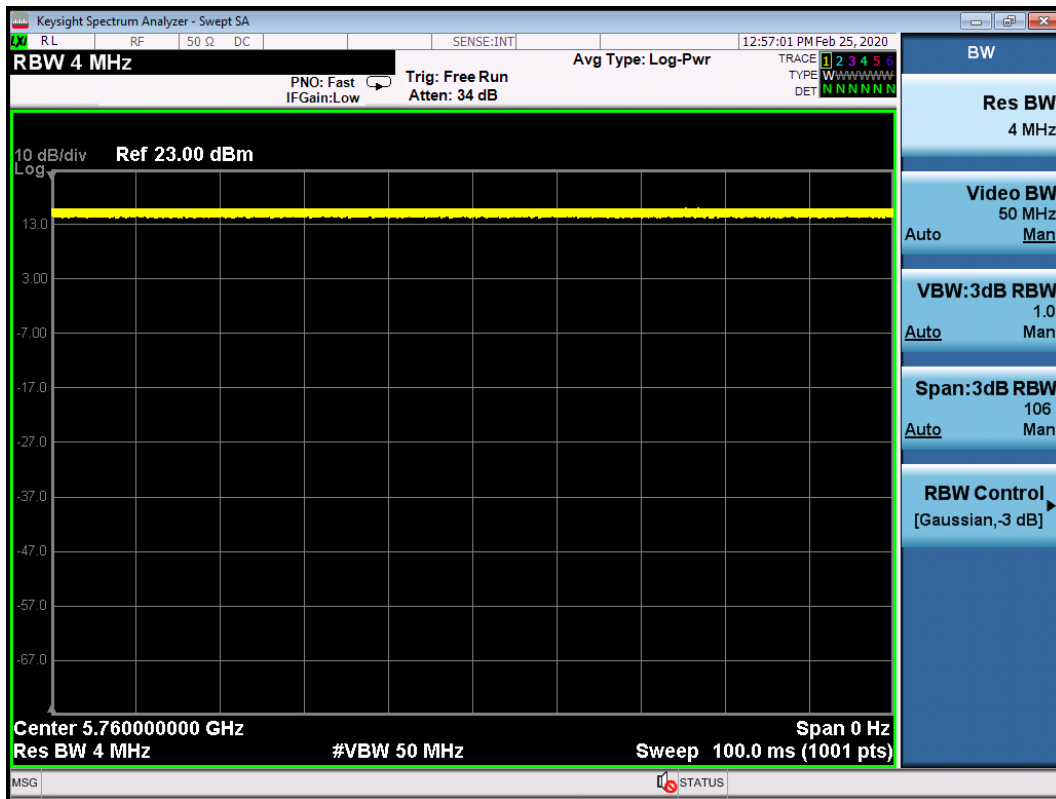
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**6.Duty Cycle (x)**

Test Mode	Test Channel	Ant	Duty Cycle [%]	10log(1/x) Factor[dB]
11A	5727	Ant1	100	0.00
11A	5760	Ant1	100	0.00
11A	5800	Ant1	100	0.00



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