



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

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Report No.: GZEM180600341001  
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FCC ID: 2AQAGFA4723

## TEST REPORT

**Application No.:** GZEM1806003410CR  
**Applicant:** GUANGDONG PAITE ELECTRICAL TECHNOLOGY CO.,LTD  
**Address of Applicant:** No. 2, South Shenghui Road, Nantou Town, Zhongshan, Guangdong, China  
**Manufacturer:** The same as Applicant  
**Address of Manufacturer:** The same as Applicant  
**Factory:** The same as Applicant  
**Address of Factory:** The same as Applicant  
**Equipment Under Test (EUT):**  
**FCC ID: 2AQAGFA4723**  
**EUT Name:** ELECTRIC FIREPLACE  
**Model No.:** EF20-23B  
**Standard(s) :** 47 CFR Part 15, Subpart C 15.247  
**Date of Receipt:** 2018-06-21  
**Date of Test:** 2018-06-26 to 2018-07-07  
**Date of Issue:** 2018-07-10

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



Kobe Jian

EMC Laboratory Manager

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

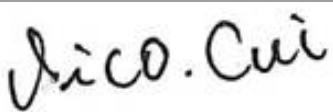
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# SGS-CSTC Standards Technical Services Co., Ltd. Guangzhou Branch

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Revision Record				
Version	Chapter	Date	Modifier	Remark
01		2018-07-10		Original

Authorized for issue by:			
Tested By	 Vico_Cui /Project Engineer		2018-06-26 to 2018-07-07
Checked By	 Ricky_Liu /Reviewer		Date 2018-07-10

## 2 Test Summary

<b>Radio Spectrum Technical Requirement</b>				
<b>Item</b>	<b>Standard</b>	<b>Method</b>	<b>Requirement</b>	<b>Result</b>
Antenna Requirement	47 CFR Part 15, Subpart C 15.247	N/A	47 CFR Part 15, Subpart C 15.203 & 15.247(c)	Pass

<b>Radio Spectrum Matter Part</b>				
<b>Item</b>	<b>Standard</b>	<b>Method</b>	<b>Requirement</b>	<b>Result</b>
Conducted Emissions at AC Power Line (150kHz-30MHz)	47 CFR Part 15, Subpart C 15.247	ANSI C63.10 (2013) Section 6.2	47 CFR Part 15, Subpart C 15.207	Pass
Minimum 6dB Bandwidth	47 CFR Part 15, Subpart C 15.247	ANSI C63.10 (2013) Section 11.8.1	47 CFR Part 15, Subpart C 15.247a(2)	Pass
Conducted Peak Output Power	47 CFR Part 15, Subpart C 15.247	ANSI C63.10 (2013) Section 11.9.1	47 CFR Part 15, Subpart C 15.247(b)(3)	Pass
Power Spectrum Density	47 CFR Part 15, Subpart C 15.247	ANSI C63.10 (2013) Section 11.10.2	47 CFR Part 15, Subpart C 15.247(e)	Pass
Conducted Band Edges Measurement	47 CFR Part 15, Subpart C 15.247	ANSI C63.10 (2013) Section 11.13.3.2	47 CFR Part 15, Subpart C 15.247(d)	Pass
Conducted Spurious Emissions	47 CFR Part 15, Subpart C 15.247	ANSI C63.10 (2013) Section 11.11	47 CFR Part 15, Subpart C 15.247(d)	Pass
Radiated Emissions which fall in the restricted bands	47 CFR Part 15, Subpart C 15.247	ANSI C63.10 (2013) Section 6.10.5	47 CFR Part 15, Subpart C 15.209 & 15.247(d)	Pass
Radiated Spurious Emissions	47 CFR Part 15, Subpart C 15.247	ANSI C63.10 (2013) Section 6.4,6.5,6.6	47 CFR Part 15, Subpart C 15.209 & 15.247(d)	Pass

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## 4 General Information

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

Power Supply:	AC 120V, 60Hz, 1500W
Test Voltage:	AC 120V 60Hz
Cable:	About 1.8m x 3 wires unscreened AC mains cable.
Antenna Gain	3 dBi
Antenna Type	Integrated antenna
Channel Spacing	5MHz
Modulation Type	802.11b: DSSS (CCK, DQPSK, DBPSK) 802.11g/n: OFDM (64QAM, 16QAM, QPSK, BPSK)
Number of Channels	802.11b/g/n(HT20):11
Operation Frequency	802.11b/g/n(HT20): 2412MHz to 2462MHz

### 4.2 Description of Support Units

The EUT has been tested as an independent unit.

### 4.3 Measurement Uncertainty

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, Scientechn Park, Guangzhou Economic & Technology Development District,  
Guangzhou, China 510663

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

No tests were sub-contracted.

## 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-CL01:2006 accreditation criteria for testing laboratories (identical to ISO/IEC 17025:2005 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-1)**

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

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

The 10m Semi-anechoic chamber and Shielded Room of SGS-CSTC Standards Technical Services Co., Ltd. have been registered in accordance with the Regulations for Voluntary Control Measures with Registration No.: R-2460, C-2584, G-449 and T-1179 respectively.

● **CBTL (Lab Code: TL129)**

SGS-CSTC Standards Technical Services Co., Ltd., E&E Laboratory has been assessed and fully comply with the requirements of ISO/IEC 17025:2005, the Basic Rules, IEC600 01 and Rules of procedure IEC600 02, and the relevant IEC600 CB-Scheme Operational documents.

**4.6 Deviation from Standards**

None

**4.7 Abnormalities from Standard Conditions**

None

## 5 Equipment List

<b>Minimum 6dB Bandwidth</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	2017-11-15	2018-11-14
6dB Attenuator	HP	8491A	EMC2062	2018-04-04	2020-04-03
Test Software JS1120-3	HangTianXing	V2.6	GZE100-69	N/A	N/A

<b>Conducted Peak Output Power</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	2017-11-15	2018-11-14
6dB Attenuator	HP	8491A	EMC2062	2018-04-04	2020-04-03
Test Software JS1120-3	HangTianXing	V2.6	GZE100-69	N/A	N/A

<b>Power Spectrum Density</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	2017-11-15	2018-11-14
6dB Attenuator	HP	8491A	EMC2062	2018-04-04	2020-04-03
Test Software JS1120-3	HangTianXing	V2.6	GZE100-69	N/A	N/A

<b>Conducted Band Edges Measurement</b>					
<b>Equipment</b>	<b>Manufacturer</b>	<b>Model No</b>	<b>Inventory No</b>	<b>Cal Date</b>	<b>Cal Due Date</b>
MXA Signal Analyzer	AgilentTechnologies	N9020A	SEM004-10	2018-03-10	2019-03-09
ESG Vector Signal Generator	Keysight	E4438C	SEM006-03	2018-04-10	2019-04-10
EXG Analog Signal Generator	AgilentTechnologies	N5171B	SEM006-04	2017-07-26	2020-07-25
Power Meter	AgilentTechnologies	U2021XA_C_h2	SEM009-02	2017-09-19	2018-09-18
Power Meter	AgilentTechnologies	U2021XA_C_h3	SEM009-03	2017-09-19	2018-09-18
EXA Signal Analyzer	AgilentTechnologies	N9010A	EMC2138	2017-11-15	2018-11-14
6dB Attenuator	HP	8491A	EMC2062	2018-04-04	2020-04-03
Test Software JS1120-3	HangTianXing	V2.6	GZE100-69	N/A	N/A

<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	Agilent Technologies	N9010A	EMC2138	2017-11-15	2018-11-14
6dB Attenuator	HP	8491A	EMC2062	2018-04-04	2020-04-03
Test Software JS1120-3	HangTianXing	V2.6	GZE100-69	N/A	N/A

<b>Radiated Emissions which fall in the restricted bands</b>					
<b>Equipment</b>	<b>Manufacturer</b>	<b>Model No</b>	<b>Inventory No</b>	<b>Cal Date</b>	<b>Cal Due Date</b>
EMI Test Receiver	Rohde & Schwarz	ESIB26	EMC0522	2018-01-19	2019-01-18
EMI Test Receiver	Rohde & Schwarz	ESCI	EMC0056	2018-01-19	2019-01-18
Chamber cable	HangTianXing	N/A	EMC0542	2017-06-30	2019-06-30
Trilog Broadband Antenna 30MHz-1GHz	SCHWARZBECKME SS-ELEKTRONIK	VULB 9160	EMC2025	2016-09-08	2019-09-07
Bi-log Type Antenna	Schaffner -Chase	CBL6112B	EMC0524	2016-09-08	2019-09-07
Bi-log Type Antenna	Schaffner -Chase	CBL6143	EMC0519	2017-05-04	2020-05-03
Horn Antenna 1GHz-18GHz	SCHWARZBECK MESS-ELEKTRONIK	BBHA 9120D	EMC2026	2016-09-09	2019-09-08
1GHz-26.5 GHz Pre-Amplifier	Agilent	8449B	EMC0521	2018-01-08	2019-01-07
Amplifier	HP	8447F	EMC2065	2018-06-01	2019-05-31
Pre-Amplifier MH648A	ANRITSU CORP	MH648A	EMC2086	2017-11-20	2018-11-19
Active Loop Antenna	EMCO	6502	EMC0523	2018-02-24	2019-02-23
High Pass Filter(915MHz)	FSY MICROWAVE	HM1465-9SS	EMC2079	2018-01-19	2019-01-18
2.4GHz Filter	Micro-Tronics	BRM 50702	EMC2069	2018-01-08	2019-01-07
10m Semi-Anechoic Chamber	ETS	N/A	EMC0530	2017-06-18	2019-06-18
966 Anechoic Chamber	C.R.T	9m x 6m x 6m	EMC2142	2017-11-29	2018-11-28
MXE EMI Receiver	Keysight	N9038A	EMC2139	2017-11-15	2018-11-14
EXA Signal Analyzer	Keysight	N9010A	EMC2138	2017-11-15	2018-11-14
Test Software E3	Audix	Ver.6.120110 a	GZE100-61	N/A	N/A

<b>Radiated 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>
EMI Test Receiver	Rohde & Schwarz	ESIB26	EMC0522	2018-01-19	2019-01-18
EMI Test Receiver	Rohde & Schwarz	ESCI	EMC0056	2018-01-19	2019-01-18
Chamber cable	HangTianXing	N/A	EMC0542	2017-06-30	2019-06-30
Trilog Broadband Antenna 30MHz-1GHz	SCHWARZBECKMESS-ELEKTRONIK	VULB 9160	EMC2025	2016-09-08	2019-09-07
Bi-log Type Antenna	Schaffner -Chase	CBL6112B	EMC0524	2016-09-08	2019-09-07
Bi-log Type Antenna	Schaffner -Chase	CBL6143	EMC0519	2017-05-04	2020-05-03
Horn Antenna 1GHz-18GHz	SCHWARZBECK MESS-ELEKTRONIK	BBHA 9120D	EMC2026	2016-09-09	2019-09-08
1GHz-26.5 GHz Pre-Amplifier	Agilent	8449B	EMC0521	2018-01-08	2019-01-07
Amplifier	HP	8447F	EMC2065	2018-06-01	2019-05-31
Pre-Amplifier MH648A	ANRITSU CORP	MH648A	EMC2086	2017-11-20	2018-11-19
Active Loop Antenna	EMCO	6502	EMC0523	2018-02-24	2019-02-23
High Pass Filter(915MHz)	FSY MICROWAVE	HM1465-9SS	EMC2079	2018-01-19	2019-01-18
2.4GHz Filter	Micro-Tronics	BRM 50702	EMC2069	2018-01-08	2019-01-07
10m Semi-Anechoic Chamber	ETS	N/A	EMC0530	2017-06-18	2019-06-18
966 Anechoic Chamber	C.R.T	9m x 6m x 6m	EMC2142	2017-11-29	2018-11-28
MXE EMI Receiver	Keysight	N9038A	EMC2139	2017-11-15	2018-11-14
EXA Signal Analyzer	Keysight	N9010A	EMC2138	2017-11-15	2018-11-14
Test Software E3	Audix	Ver.6.120110a	GZE100-61	N/A	N/A

<b>Conducted Emissions at AC Power Line (150kHz-30MHz)</b>					
<b>Equipment</b>	<b>Manufacturer</b>	<b>Model No</b>	<b>Inventory No</b>	<b>Cal Date</b>	<b>Cal Due Date</b>
Shielding Room	Zhong Yu	8m x 3m x 3.8m	EMC0306	N/A	N/A
Two-Line V-Netwok	R&S	ENV216	EMC0118	2018-01-19	2019-01-18
LISN	SCHAFFNER CHASE	MN2050D/1	EMC0102	2017-09-20	2018-09-19
EMI Test Receiver	Rohde & Schwarz	ESCS30	EMC0506	2017-11-27	2018-11-26
Coaxial Cable	HangTianXing	2m	EMC0107	2016-07-24	2018-07-23
Voltage Probe	SGS	N/A	EMC0106	2018-04-04	2020-04-03
Test Software E3c	Audix	Ver. 5.4.1221b	GZE100-62	N/A	N/A



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Guangzhou Branch**

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<b>General used equipment</b>					
<b>Equipment</b>	<b>Manufacturer</b>	<b>Model No</b>	<b>Inventory No</b>	<b>Cal Date</b>	<b>Cal Due Date</b>
DMM	Fluke	73	EMC0006	2017-07-26	2018-07-25
DMM	Fluke	73	EMC0007	2017-07-26	2018-07-25

## 6 Radio Spectrum Technical Requirement

### 6.1 Antenna Requirement

#### 6.1.1 Test Requirement:

47 CFR Part 15, Subpart C 15.203 & 15.247(c)

#### 6.1.2 Conclusion

Standard Requirement:

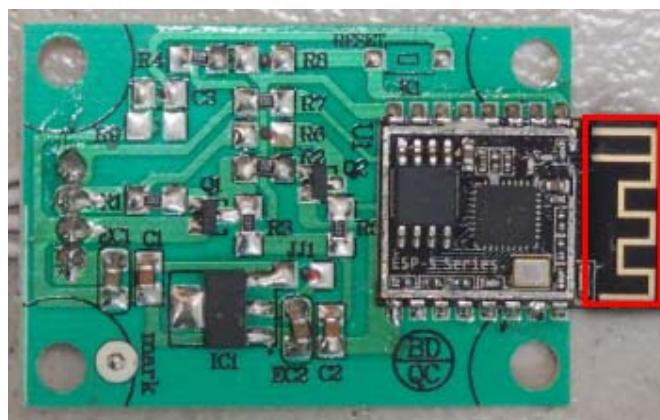
An intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device. The use of a permanently attached antenna or of an antenna that uses a unique coupling to the intentional radiator, the manufacturer may design the unit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

15.247(b) (4) requirement:

The conducted output power limit specified in paragraph (b) of this section is based on the use of antennas with directional gains that do not exceed 6 dBi. Except as shown in paragraph (c) of this section, if transmitting antennas of directional gain greater than 6 dBi are used, the conducted output power from the intentional radiator shall be reduced below the stated values in paragraphs (b)(1), (b)(2), and (b)(3) of this section, as appropriate, by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

EUT Antenna:

The antenna is integrated on the main PCB and no consideration of replacement. The best case gain of the antenna is 3 dBi.



**Verdict: The unit does meet the FCC requirement.**

## 7 Radio Spectrum Matter Test Results

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

Test Requirement 47 CFR Part 15, Subpart C 15.207

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

Limit:

Frequency of emission(MHz)	Conducted limit(dB $\mu$ V)	
	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.

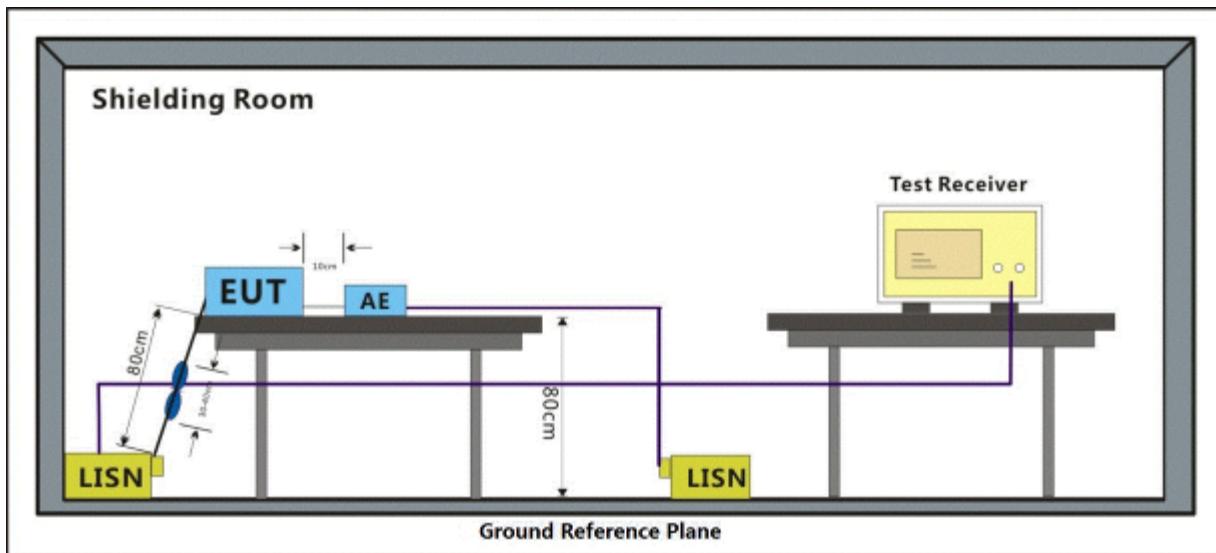
### 7.1.1 E.U.T. Operation

Operating Environment:

Temperature: 25.1 °C      Humidity: 46.8 % RH      Atmospheric Pressure: 1020 mbar

Test mode f: Keep the EUT in WIFI communication mode.

### 7.1.2 Test Setup Diagram

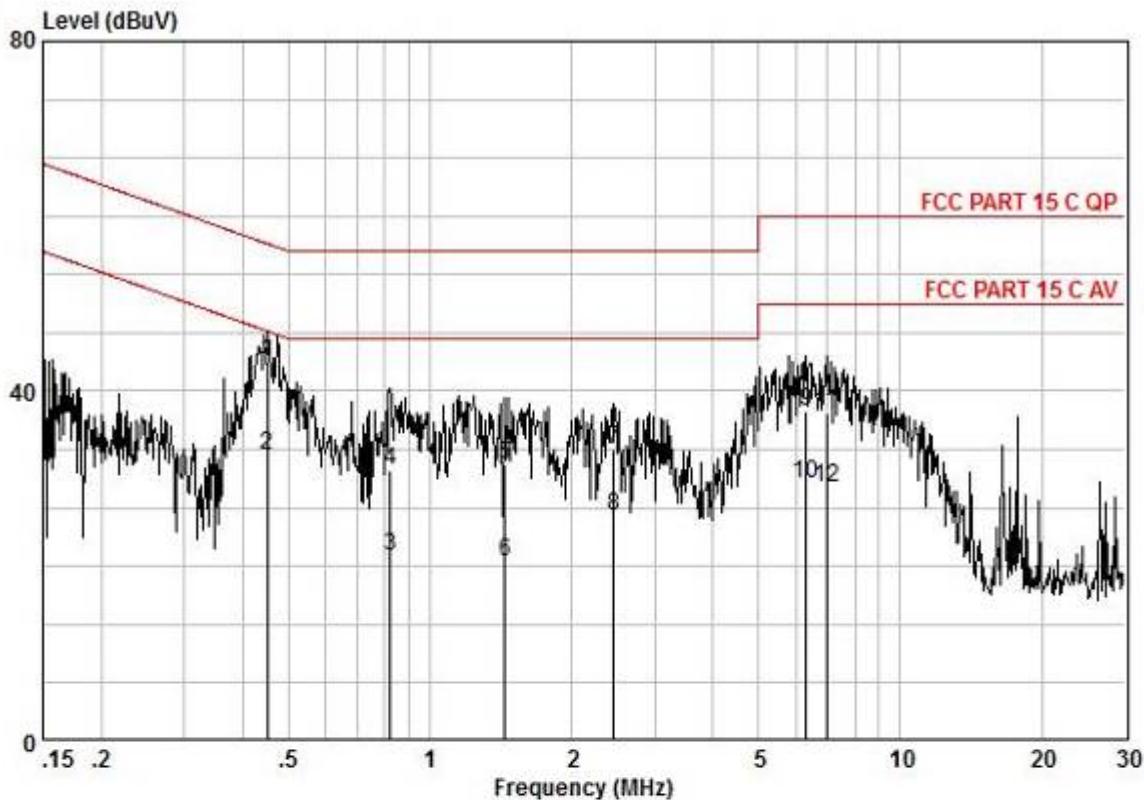


### 7.1.3 Measurement Procedure and Data

- 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/50µH + 50hm 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

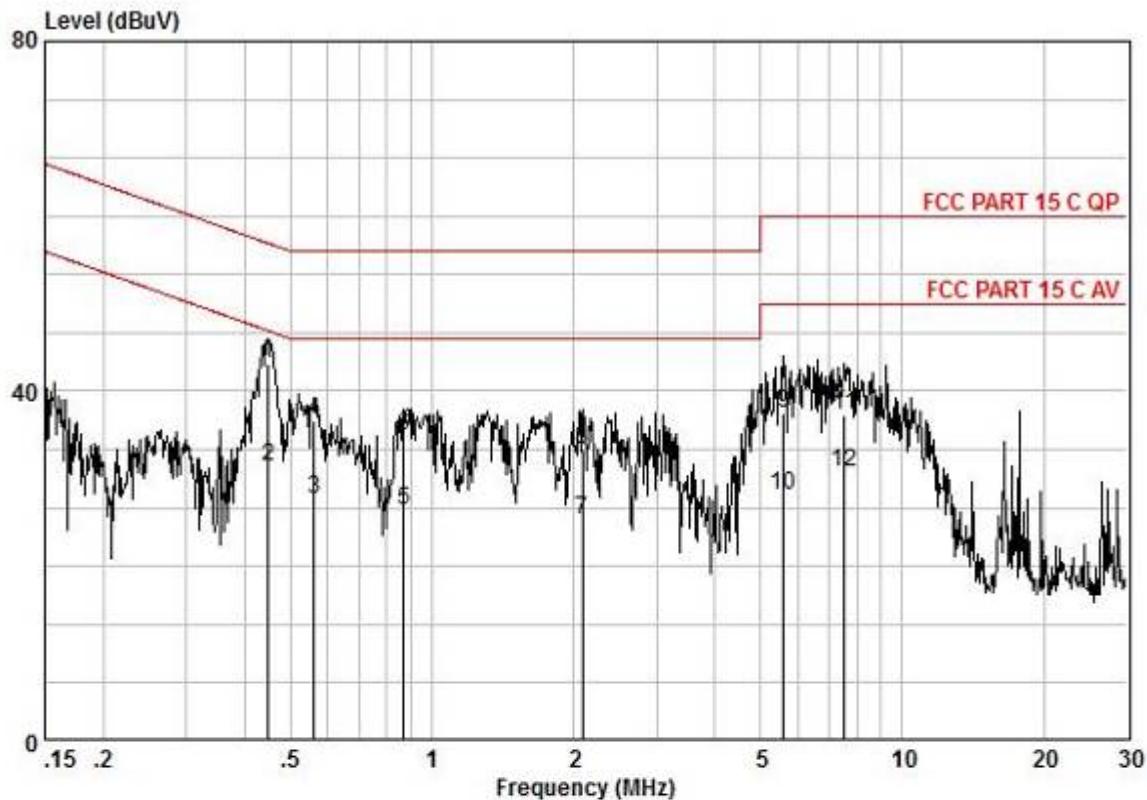
Mode:d; Line:Live Line



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
0.45	33.46	0.19	9.65	43.30	56.85	-13.55	QP
0.45	22.81	0.19	9.65	32.65	46.85	-14.20	AVERAGE
0.82	11.29	0.27	9.62	21.18	46.00	-24.82	AVERAGE
0.82	20.97	0.27	9.62	30.86	56.00	-25.14	QP
1.44	21.68	0.30	9.62	31.60	56.00	-24.40	QP
1.44	10.53	0.30	9.62	20.45	46.00	-25.55	AVERAGE
2.46	23.37	0.47	9.61	33.45	56.00	-22.55	QP
2.46	15.73	0.47	9.61	25.81	46.00	-20.19	AVERAGE
6.32	27.32	0.67	9.63	37.62	60.00	-22.38	QP
6.32	19.23	0.67	9.63	29.53	50.00	-20.47	AVERAGE
6.95	27.26	0.65	9.63	37.54	60.00	-22.46	QP
6.95	18.65	0.65	9.63	28.93	50.00	-21.07	AVERAGE

Mode:d; 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
0.45	33.40	0.19	9.55	43.14	56.89	-13.75	QP
0.45	21.54	0.19	9.55	31.28	46.89	-15.61	AVERAGE
0.56	17.87	0.22	9.56	27.65	46.00	-18.35	AVERAGE
0.56	26.78	0.22	9.56	36.56	56.00	-19.44	QP
0.87	16.55	0.28	9.59	26.42	46.00	-19.58	AVERAGE
0.87	24.92	0.28	9.59	34.79	56.00	-21.21	QP
2.09	15.37	0.41	9.52	25.31	46.00	-20.69	AVERAGE
2.09	23.40	0.41	9.52	33.34	56.00	-22.66	QP
5.59	27.22	0.68	9.60	37.51	60.00	-22.49	QP
5.59	17.89	0.68	9.60	28.18	50.00	-21.82	AVERAGE
7.53	27.10	0.64	9.60	37.34	60.00	-22.66	QP
7.53	20.39	0.64	9.60	30.63	50.00	-19.37	AVERAGE

## 7.2 Minimum 6dB Bandwidth

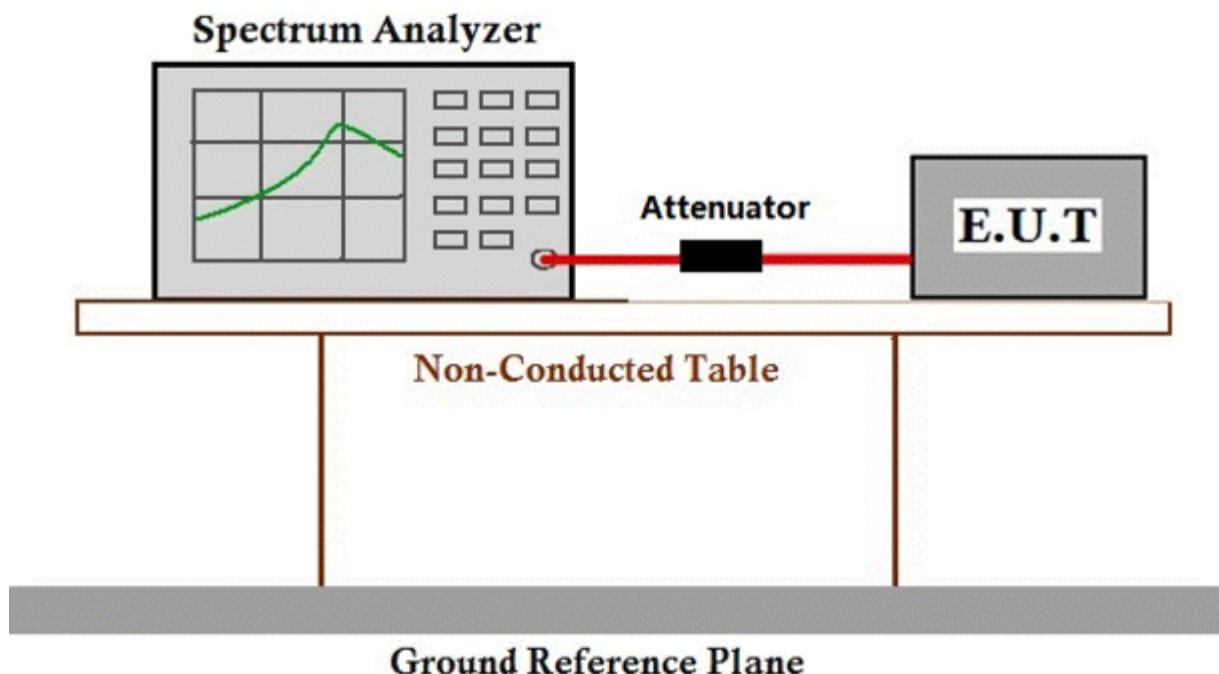
Test Requirement 47 CFR Part 15, Subpart C 15.247a(2)  
Test Method: ANSI C63.10 (2013) Section 11.8.1  
Limit:  $\geq 500$  kHz

### 7.2.1 E.U.T. Operation

Operating Environment:

Temperature: 24.6 °C      Humidity: 51.4 % RH      Atmospheric Pressure: 1020 mbar  
Test mode d: Tx mode\_Keep the EUT operating at the lowest, middle and the highest frequencies. Test and record all kind of modulations and rates included 802.11b, 802.11g and 802.11n (HT20) in the report.

### 7.2.2 Test Setup Diagram



### 7.2.3 Measurement Procedure and Data

The detailed test data see: Appendix 15.247

### 7.3 Conducted Peak Output Power

Test Requirement 47 CFR Part 15, Subpart C 15.247(b)(3)

Test Method: ANSI C63.10 (2013) Section 11.9.1

Limit:

Frequency range(MHz)	Output power of the intentional radiator(watt)
902-928	1 for $\geq 50$ hopping channels
	0.25 for $25 \leq$ hopping channels $< 50$
	1 for digital modulation
2400-2483.5	1 for $\geq 75$ non-overlapping hopping channels
	0.125 for all other frequency hopping systems
	1 for digital modulation
5725-5850	1 for frequency hopping systems and digital modulation

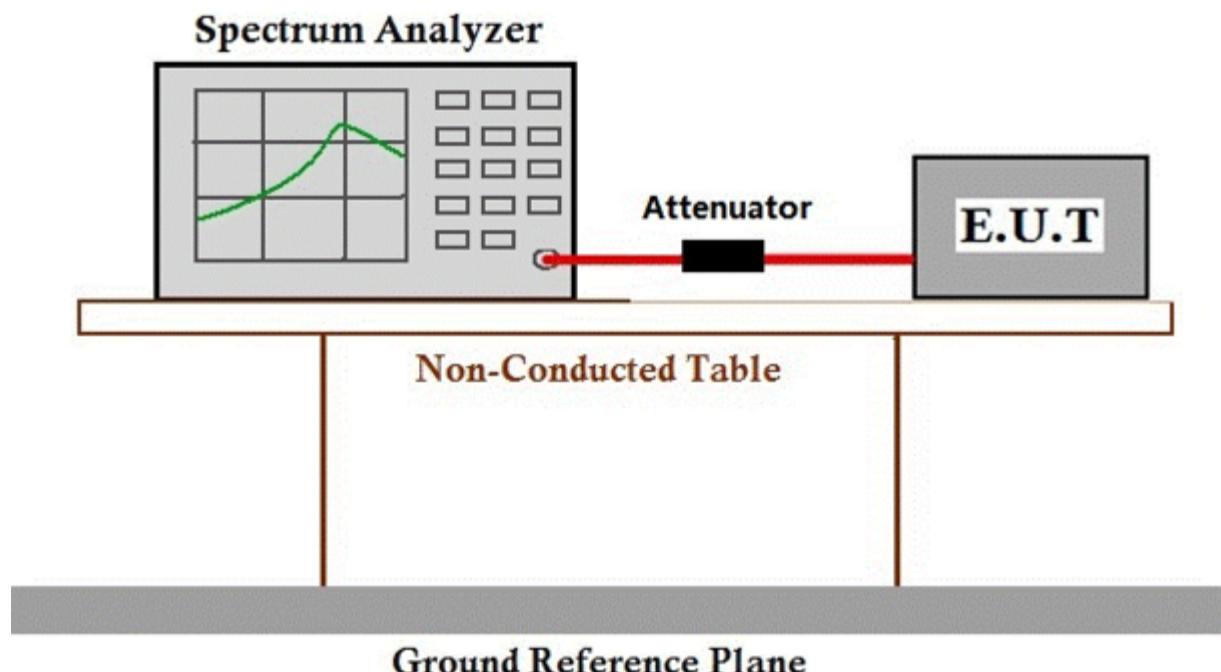
#### 7.3.1 E.U.T. Operation

Operating Environment:

Temperature: 24.6 °C Humidity: 51.5 % RH Atmospheric Pressure: 1020 mbar

Test mode d: Tx mode\_Keep the EUT operating at the lowest, middle and the highest frequencies. Test and record all kind of modulations and rates included 802.11b, 802.11g and 802.11n (HT20) in the report.

#### 7.3.2 Test Setup Diagram



#### 7.3.3 Measurement Procedure and Data

The detailed test data see: Appendix 15.247

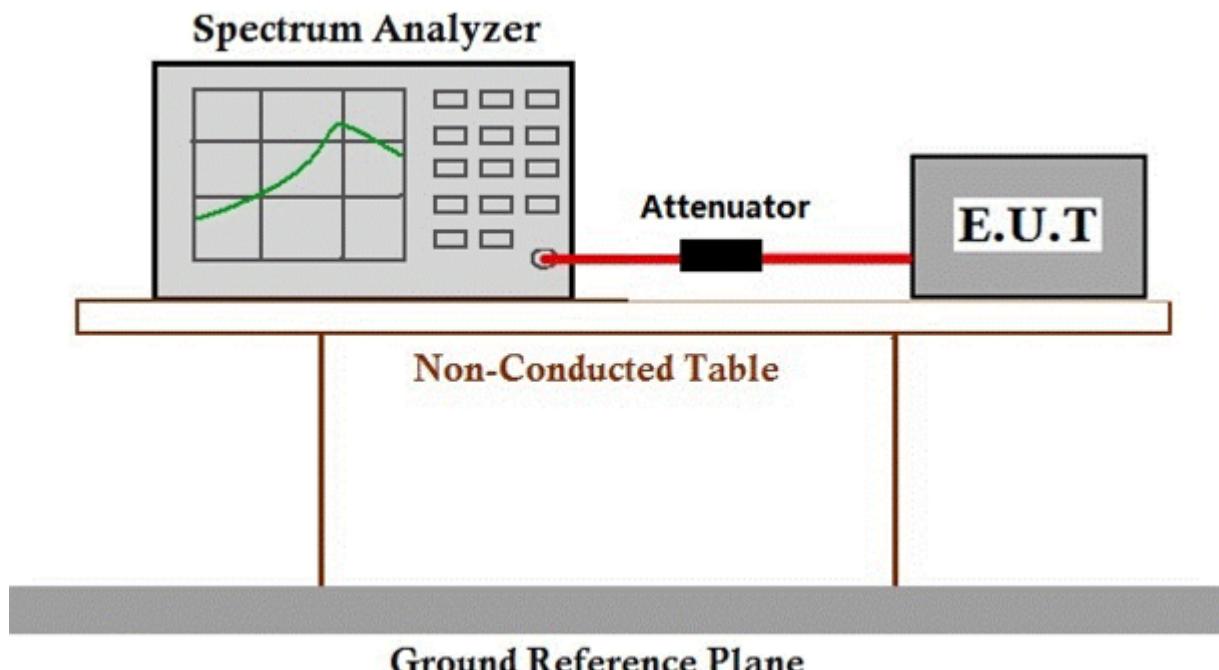
## 7.4 Power Spectrum Density

Test Requirement 47 CFR Part 15, Subpart C 15.247(e)  
Test Method: ANSI C63.10 (2013) Section 11.10.2  
Limit:  $\leq 8\text{dBm}$  in any 3 kHz band during any time interval of continuous transmission

### 7.4.1 E.U.T. Operation

Operating Environment:  
Temperature: 24.6 °C Humidity: 51.4 % RH Atmospheric Pressure: 1020 mbar  
Test mode d: Tx mode\_Keep the EUT operating at the lowest, middle and the highest frequencies. Test and record all kind of modulations and rates included 802.11b, 802.11g and 802.11n (HT20) in the report.

### 7.4.2 Test Setup Diagram



### 7.4.3 Measurement Procedure and Data

The detailed test data see: Appendix 15.247

## 7.5 Conducted Band Edges Measurement

Test Requirement	47 CFR Part 15, Subpart C 15.247(d)
Test Method:	ANSI C63.10 (2013) Section 11.13.3.2
Limit:	In any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement, provided the transmitter demonstrates compliance with the peak conducted power limits. If the transmitter complies with the conducted power limits based on the use of RMS averaging over a time interval, as permitted under paragraph (b)(3) of this section, the attenuation required under this paragraph shall be 30 dB instead of 20 dB. Attenuation below the general limits specified in §15.209(a) is not required. In addition, radiated emissions which fall in the restricted bands, as defined in §15.205(a), must also comply with the radiated emission limits specified in §15.209(a) (see §15.205(c))

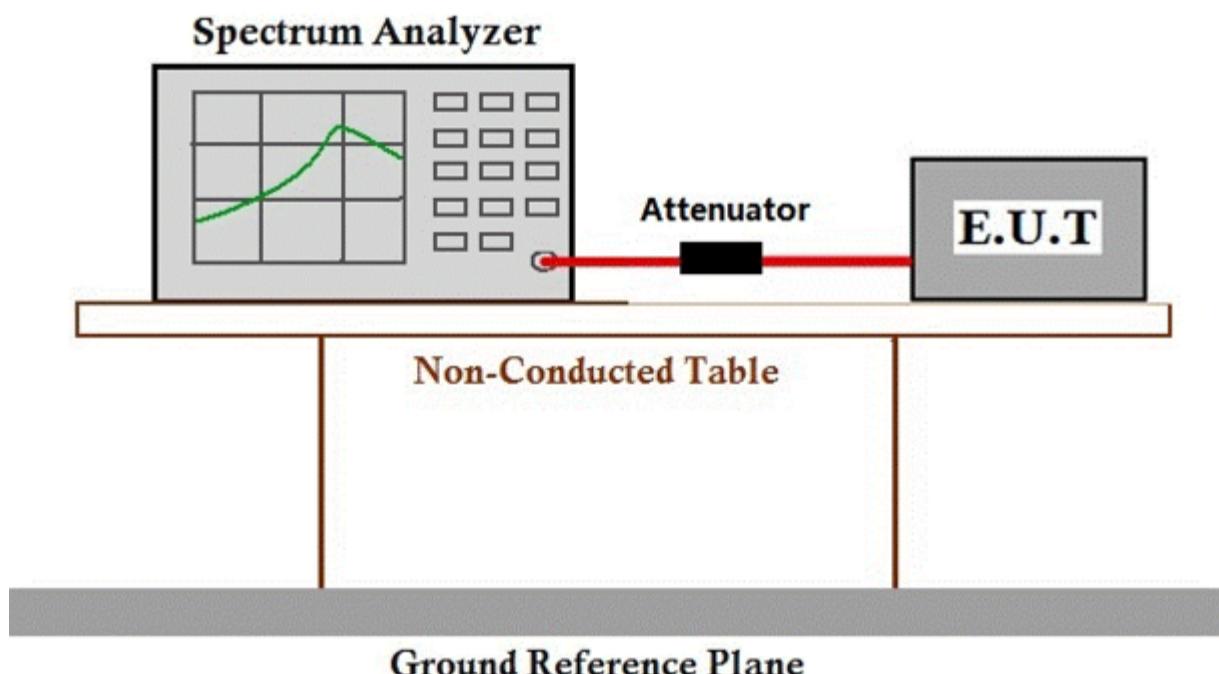
### 7.5.1 E.U.T. Operation

#### Operating Environment:

Temperature: 24.6 °C      Humidity: 51.4 % RH      Atmospheric Pressure: 1020 mbar

Test mode: e: Tx mode\_Keep the EUT operating at the lowest and the highest frequencies.  
Test and record all kind of modulations and rates included 802.11b, 802.11g and 802.11n (HT20) in the report.

### 7.5.2 Test Setup Diagram



### 7.5.3 Measurement Procedure and Data

The detailed test data see: Appendix 15.247

## 7.6 Conducted Spurious Emissions

Test Requirement	47 CFR Part 15, Subpart C 15.247(d)
Test Method:	ANSI C63.10 (2013) Section 11.11
Limit:	In any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement, provided the transmitter demonstrates compliance with the peak conducted power limits. If the transmitter complies with the conducted power limits based on the use of RMS averaging over a time interval, as permitted under paragraph (b)(3) of this section, the attenuation required under this paragraph shall be 30 dB instead of 20 dB. Attenuation below the general limits specified in §15.209(a) is not required. In addition, radiated emissions which fall in the restricted bands, as defined in §15.205(a), must also comply with the radiated emission limits specified in §15.209(a) (see §15.205(c))

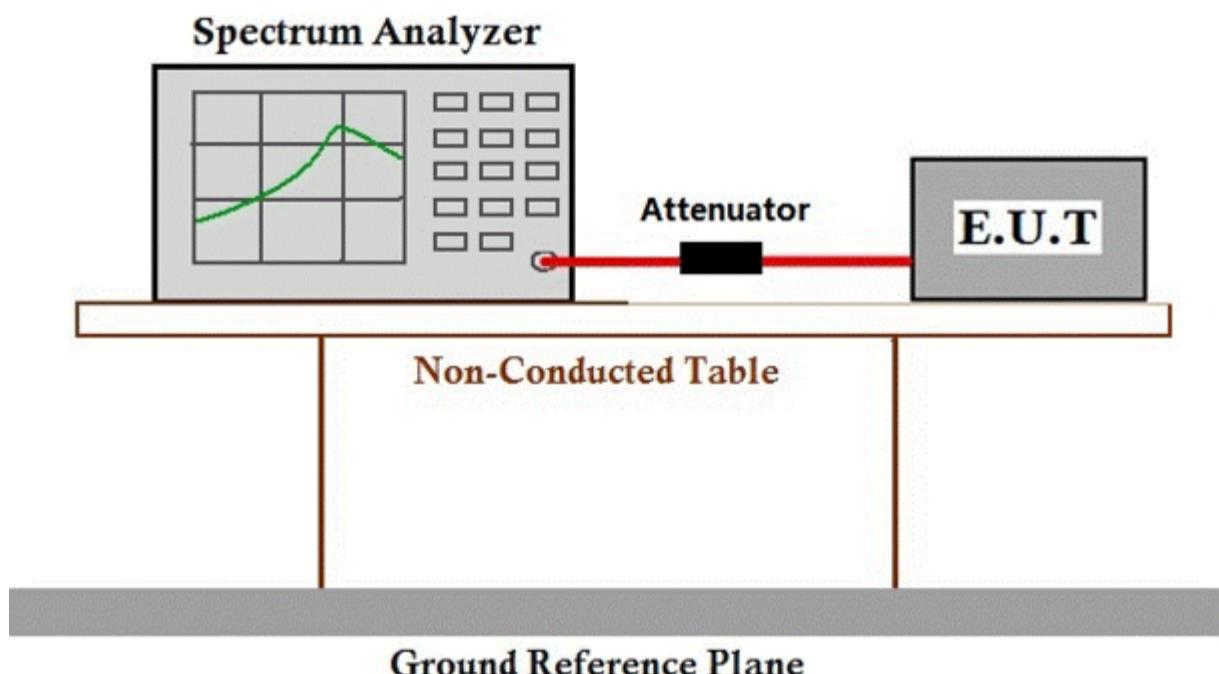
### 7.6.1 E.U.T. Operation

Operating Environment:

Temperature: 24.6 °C      Humidity: 51.4 % RH      Atmospheric Pressure: 1020 mbar

Test mode d: Tx mode\_Keep the EUT operating at the lowest, middle and the highest frequencies. Test and record all kind of modulations and rates included 802.11b, 802.11g and 802.11n (HT20) in the report.

### 7.6.2 Test Setup Diagram



### 7.6.3 Measurement Procedure and Data

The detailed test data see: Appendix 15.247

## 7.7 Radiated Emissions which fall in the restricted bands

Test Requirement 47 CFR Part 15, Subpart C 15.209 & 15.247(d)  
Test Method: ANSI C63.10 (2013) Section 6.10.5  
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.

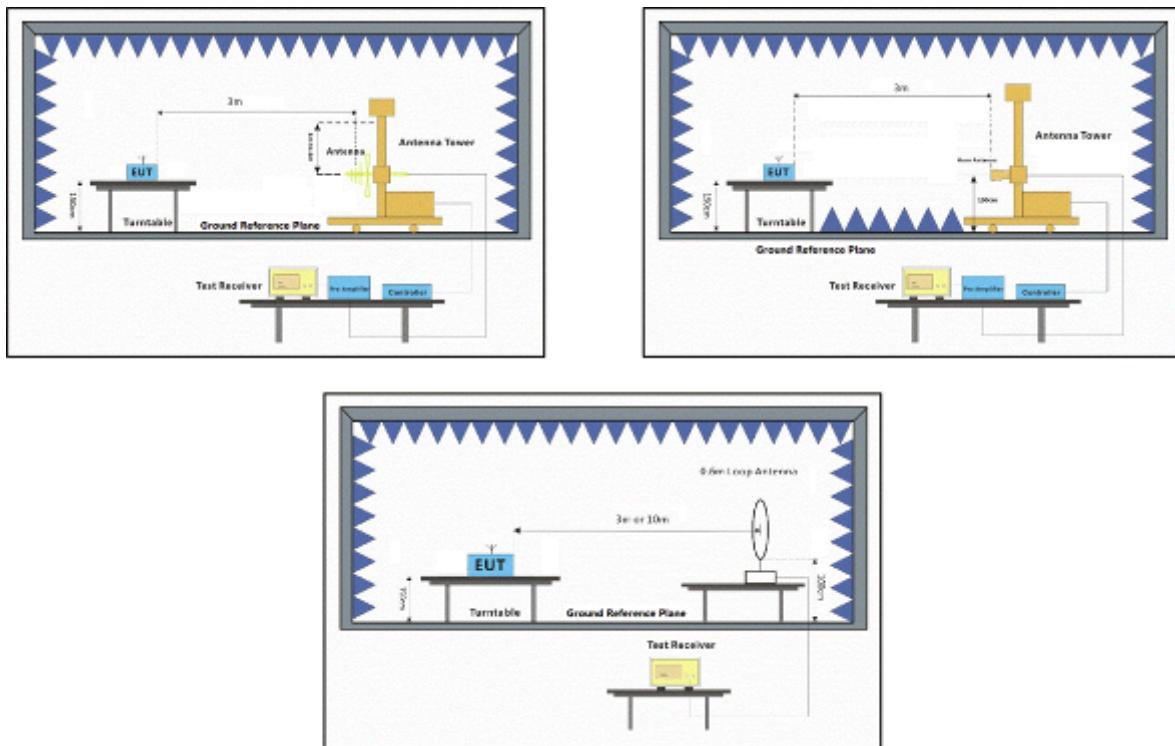
### 7.7.1 E.U.T. Operation

Operating Environment:

Temperature: 23 °C      Humidity: 55 % RH      Atmospheric Pressure: 1020 mbar

Test mode      d: Tx mode\_Keep the EUT operating at the lowest, middle and the highest frequencies. Test and record all kind of modulations and rates included 802.11b, 802.11g and 802.11n (HT20) in the report.

### 7.7.2 Test Setup Diagram



### 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

Remark 2: 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

Mode:d; Polarization:Horizontal; Modulation:b; bandwidth:20MHz; Channel:Low

Freq	ReadAntenna		Cable		Preamp	Level	Limit	Over	Pol/Phase	Remark
	Level	Factor	Loss	Factor						
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB		
1	2310.000	36.38	26.25	5.03	37.44	30.22	54.00	-23.78	HORIZONTAL	Average
2	2310.000	46.29	26.25	5.03	37.44	40.13	74.00	-33.87	HORIZONTAL	Peak
3	2390.000	34.69	26.43	4.88	37.42	28.58	54.00	-25.42	HORIZONTAL	Average
4	2390.000	48.52	26.43	4.88	37.42	42.41	74.00	-31.59	HORIZONTAL	Peak
5	2483.500	36.45	26.58	5.23	37.40	30.86	54.00	-23.14	HORIZONTAL	Average
6	2483.500	47.51	26.58	5.23	37.40	41.92	74.00	-32.08	HORIZONTAL	Peak
7	2500.000	36.30	26.60	4.95	37.39	30.46	54.00	-23.54	HORIZONTAL	Average
8	2500.000	47.78	26.60	4.95	37.39	41.94	74.00	-32.06	HORIZONTAL	Peak

Mode:d; Polarization:Vertical; Modulation:b; bandwidth:20MHz; Channel:Low

Freq	ReadAntenna		Cable		Preamp	Level	Limit	Over	Pol/Phase	Remark
	Level	Factor	Loss	Factor						
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB		
1	2310.000	33.31	26.25	5.03	37.44	27.15	54.00	-26.85	VERTICAL	Average
2	2310.000	45.47	26.25	5.03	37.44	39.31	74.00	-34.69	VERTICAL	Peak
3	2390.000	36.77	26.43	4.88	37.42	30.66	54.00	-23.34	VERTICAL	Average
4	2390.000	46.25	26.43	4.88	37.42	40.14	74.00	-33.86	VERTICAL	Peak
5	2483.500	33.83	26.58	5.23	37.40	28.24	54.00	-25.76	VERTICAL	Average
6	2483.500	45.81	26.58	5.23	37.40	40.22	74.00	-33.78	VERTICAL	Peak
7	2500.000	33.04	26.60	4.95	37.39	27.20	54.00	-26.80	VERTICAL	Average
8	2500.000	46.84	26.60	4.95	37.39	41.00	74.00	-33.00	VERTICAL	Peak

Mode:d; Polarization:Horizontal; Modulation:b; bandwidth:20MHz; Channel:High

Freq	ReadAntenna		Cable Preamp		Limit Line	Over Limit	Pol/Phase	Remark
	Level	Factor	Loss	Factor				
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB
1	2310.000	33.17	26.25	5.03	37.44	27.01	54.00	-26.99 HORIZONTAL Average
2	2310.000	45.88	26.25	5.03	37.44	39.72	74.00	-34.28 HORIZONTAL Peak
3	2390.000	33.25	26.43	4.88	37.42	27.14	54.00	-26.86 HORIZONTAL Average
4	2390.000	45.75	26.43	4.88	37.42	39.64	74.00	-34.36 HORIZONTAL Peak
5	2483.500	34.64	26.58	5.23	37.40	29.05	54.00	-24.95 HORIZONTAL Average
6	2483.500	47.57	26.58	5.23	37.40	41.98	74.00	-32.02 HORIZONTAL Peak
7	2500.000	33.51	26.60	4.95	37.39	27.67	54.00	-26.33 HORIZONTAL Average
8	2500.000	47.19	26.60	4.95	37.39	41.35	74.00	-32.65 HORIZONTAL Peak

Mode:d; Polarization:Vertical; Modulation:b; bandwidth:20MHz; Channel:High

Freq	ReadAntenna		Cable Preamp		Limit Line	Over Limit	Pol/Phase	Remark
	Level	Factor	Loss	Factor				
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB
1	2310.000	34.19	26.25	5.03	37.44	28.03	54.00	-25.97 VERTICAL Average
2	2310.000	45.55	26.25	5.03	37.44	39.39	74.00	-34.61 VERTICAL Peak
3	2390.000	32.61	26.43	4.88	37.42	26.50	54.00	-27.50 VERTICAL Average
4	2390.000	46.01	26.43	4.88	37.42	39.90	74.00	-34.10 VERTICAL Peak
5	2483.500	32.93	26.58	5.23	37.40	27.34	54.00	-26.66 VERTICAL Average
6	2483.500	46.22	26.58	5.23	37.40	40.63	74.00	-33.37 VERTICAL Peak
7	2500.000	34.31	26.60	4.95	37.39	28.47	54.00	-25.53 VERTICAL Average
8	2500.000	45.72	26.60	4.95	37.39	39.88	74.00	-34.12 VERTICAL Peak

Mode:d; Polarization:Horizontal; Modulation:g; bandwidth:20MHz; Channel:Low

Freq	ReadAntenna		Cable Preamp		Limit Line	Over Limit	Pol/Phase	Remark
	Level	Factor	Loss	Factor				
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB
1	2310.000	38.65	26.25	5.03	37.44	32.49	54.00	-21.51 HORIZONTAL Average
2	2310.000	52.42	26.25	5.03	37.44	46.26	74.00	-27.74 HORIZONTAL Peak
3	2390.000	47.29	26.43	4.88	37.42	41.18	54.00	-12.82 HORIZONTAL Average
4	2390.000	60.86	26.43	4.88	37.42	54.75	74.00	-19.25 HORIZONTAL Peak
5	2483.500	44.20	26.58	5.23	37.40	38.61	54.00	-15.39 HORIZONTAL Average
6	2483.500	58.33	26.58	5.23	37.40	52.74	74.00	-21.26 HORIZONTAL Peak
7	2500.000	44.38	26.60	4.95	37.39	38.54	54.00	-15.46 HORIZONTAL Average
8	2500.000	55.22	26.60	4.95	37.39	49.38	74.00	-24.62 HORIZONTAL Peak

Mode:d; Polarization:Vertical; Modulation:g; bandwidth:20MHz; Channel:Low

Freq	ReadAntenna		Cable Preamp		Limit Line	Over Limit	Pol/Phase	Remark
	Level	Factor	Loss	Factor				
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB
1	2310.000	36.30	26.25	5.03	37.44	30.14	54.00	-23.86 VERTICAL Average
2	2310.000	49.31	26.25	5.03	37.44	43.15	74.00	-30.85 VERTICAL Peak
3	2390.000	44.61	26.43	4.88	37.42	38.50	54.00	-15.50 VERTICAL Average
4	2390.000	57.55	26.43	4.88	37.42	51.44	74.00	-22.56 VERTICAL Peak
5	2483.500	41.54	26.58	5.23	37.40	35.95	54.00	-18.05 VERTICAL Average
6	2483.500	55.69	26.58	5.23	37.40	50.10	74.00	-23.90 VERTICAL Peak
7	2500.000	40.59	26.60	4.95	37.39	34.75	54.00	-19.25 VERTICAL Average
8	2500.000	52.74	26.60	4.95	37.39	46.90	74.00	-27.10 VERTICAL Peak

Mode:d; Polarization:Horizontal; Modulation:g; bandwidth:20MHz; Channel:High

Freq	ReadAntenna		Cable Preamp		Limit Line	Over Limit	Pol/Phase	Remark
	Level	Factor	Loss	Factor				
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB
1	2310.000	36.72	26.25	5.03	37.44	30.56	54.00	-23.44 HORIZONTAL Average
2	2310.000	51.16	26.25	5.03	37.44	45.00	74.00	-29.00 HORIZONTAL Peak
3	2390.000	41.69	26.43	4.88	37.42	35.58	54.00	-18.42 HORIZONTAL Average
4	2390.000	54.37	26.43	4.88	37.42	48.26	74.00	-25.74 HORIZONTAL Peak
5	2483.500	51.31	26.58	5.23	37.40	45.72	54.00	-8.28 HORIZONTAL Average
6	2483.500	63.23	26.58	5.23	37.40	57.64	74.00	-16.36 HORIZONTAL Peak
7	2500.000	46.36	26.60	4.95	37.39	40.52	54.00	-13.48 HORIZONTAL Average
8	2500.000	59.47	26.60	4.95	37.39	53.63	74.00	-20.37 HORIZONTAL Peak

Mode:d; Polarization:Vertical; Modulation:g; bandwidth:20MHz; Channel:High

Freq	ReadAntenna		Cable Preamp		Limit Line	Over Limit	Pol/Phase	Remark
	Level	Factor	Loss	Factor				
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB
1	2310.000	33.88	26.25	5.03	37.44	27.72	54.00	-26.28 VERTICAL Average
2	2310.000	45.78	26.25	5.03	37.44	39.62	74.00	-34.38 VERTICAL Peak
3	2390.000	37.26	26.43	4.88	37.42	31.15	54.00	-22.85 VERTICAL Average
4	2390.000	53.15	26.43	4.88	37.42	47.04	74.00	-26.96 VERTICAL Peak
5	2483.500	47.40	26.58	5.23	37.40	41.81	54.00	-12.19 VERTICAL Average
6	2483.500	61.29	26.58	5.23	37.40	55.70	74.00	-18.30 VERTICAL Peak
7	2500.000	46.19	26.60	4.95	37.39	40.35	54.00	-13.65 VERTICAL Average
8	2500.000	58.89	26.60	4.95	37.39	53.05	74.00	-20.95 VERTICAL Peak

Mode:d; Polarization:Horizontal; Modulation:n; bandwidth:20MHz; Channel:Low

Freq	ReadAntenna		Cable Preamp		Limit Line	Over Limit	Pol/Phase	Remark
	Level	Factor	Loss	Factor				
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB
1	2310.000	39.11	26.25	5.03	37.44	32.95	54.00	-21.05 HORIZONTAL Average
2	2310.000	53.31	26.25	5.03	37.44	47.15	74.00	-26.85 HORIZONTAL Peak
3	2390.000	46.76	26.43	4.88	37.42	40.65	54.00	-13.35 HORIZONTAL Average
4	2390.000	61.88	26.43	4.88	37.42	55.77	74.00	-18.23 HORIZONTAL Peak
5	2483.500	43.41	26.58	5.23	37.40	37.82	54.00	-16.18 HORIZONTAL Average
6	2483.500	58.96	26.58	5.23	37.40	53.37	74.00	-20.63 HORIZONTAL Peak
7	2500.000	45.93	26.60	4.95	37.39	40.09	54.00	-13.91 HORIZONTAL Average
8	2500.000	56.80	26.60	4.95	37.39	50.96	74.00	-23.04 HORIZONTAL Peak

Mode:d; Polarization:Vertical; Modulation:n; bandwidth:20MHz; Channel:Low

Freq	ReadAntenna		Cable Preamp		Limit Line	Over Limit	Pol/Phase	Remark
	Level	Factor	Loss	Factor				
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB
1	2310.000	39.59	26.25	5.03	37.44	33.43	54.00	-20.57 VERTICAL Average
2	2310.000	49.92	26.25	5.03	37.44	43.76	74.00	-30.24 VERTICAL Peak
3	2390.000	47.19	26.43	4.88	37.42	41.08	54.00	-12.92 VERTICAL Average
4	2390.000	60.79	26.43	4.88	37.42	54.68	74.00	-19.32 VERTICAL Peak
5	2483.500	41.54	26.58	5.23	37.40	35.95	54.00	-18.05 VERTICAL Average
6	2483.500	53.97	26.58	5.23	37.40	48.38	74.00	-25.62 VERTICAL Peak
7	2500.000	40.97	26.60	4.95	37.39	35.13	54.00	-18.87 VERTICAL Average
8	2500.000	53.68	26.60	4.95	37.39	47.84	74.00	-26.16 VERTICAL Peak

Mode:d; Polarization:Horizontal; Modulation:n; bandwidth:20MHz; Channel:High

Freq	ReadAntenna		Cable		Preamp	Level	Limit	Over	Pol/Phase	Remark
	Level	Factor	Loss	Factor						
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB		
1	2310.000	36.99	26.25	5.03	37.44	30.83	54.00	-23.17	HORIZONTAL	Average
2	2310.000	49.38	26.25	5.03	37.44	43.22	74.00	-30.78	HORIZONTAL	Peak
3	2390.000	42.31	26.43	4.88	37.42	36.20	54.00	-17.80	HORIZONTAL	Average
4	2390.000	53.78	26.43	4.88	37.42	47.67	74.00	-26.33	HORIZONTAL	Peak
5	2483.500	53.17	26.58	5.23	37.40	47.58	54.00	-6.42	HORIZONTAL	Average
6	2483.500	62.22	26.58	5.23	37.40	56.63	74.00	-17.37	HORIZONTAL	Peak
7	2500.000	51.39	26.60	4.95	37.39	45.55	54.00	-8.45	HORIZONTAL	Average
8	2500.000	63.52	26.60	4.95	37.39	57.68	74.00	-16.32	HORIZONTAL	Peak

Mode:d; Polarization:Vertical; Modulation:n; bandwidth:20MHz; Channel:High

Freq	ReadAntenna		Cable		Preamp	Level	Limit	Over	Pol/Phase	Remark
	Level	Factor	Loss	Factor						
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB		
1	2310.000	30.88	26.25	5.03	37.44	24.72	54.00	-29.28	VERTICAL	Average
2	2310.000	43.93	26.25	5.03	37.44	37.77	74.00	-36.23	VERTICAL	Peak
3	2390.000	38.69	26.43	4.88	37.42	32.58	54.00	-21.42	VERTICAL	Average
4	2390.000	47.65	26.43	4.88	37.42	41.54	74.00	-32.46	VERTICAL	Peak
5	2483.500	41.67	26.58	5.23	37.40	36.08	54.00	-17.92	VERTICAL	Average
6	2483.500	54.48	26.58	5.23	37.40	48.89	74.00	-25.11	VERTICAL	Peak
7	2500.000	40.90	26.60	4.95	37.39	35.06	54.00	-18.94	VERTICAL	Average
8	2500.000	49.98	26.60	4.95	37.39	44.14	74.00	-29.86	VERTICAL	Peak

## 7.8 Radiated Spurious Emissions

Test Requirement 47 CFR Part 15, Subpart C 15.209 & 15.247(d)  
Test Method: ANSI C63.10 (2013) Section 6.4,6.5,6.6  
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.

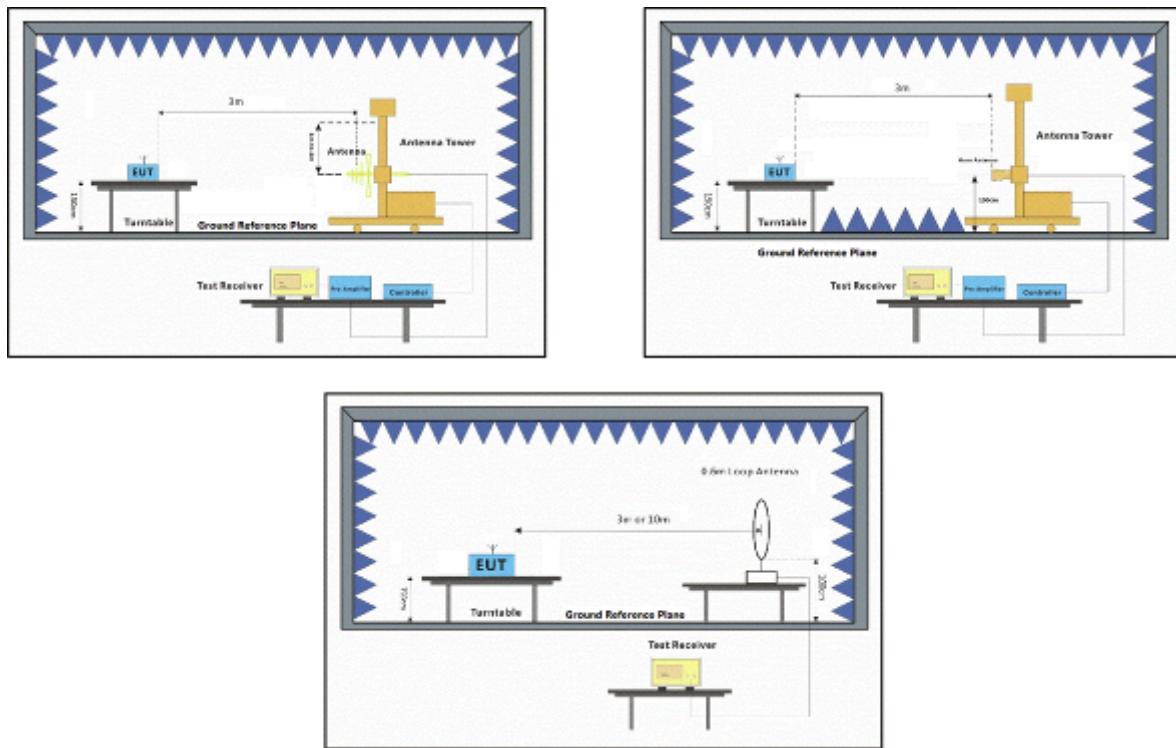
### 7.8.1 E.U.T. Operation

Operating Environment:

Temperature: 23 °C      Humidity: 55 % RH      Atmospheric Pressure: 1020 mbar

Test mode      d: Tx mode\_Keep the EUT operating at the lowest, middle and the highest frequencies. Test and record all kind of modulations and rates included 802.11b, 802.11g and 802.11n (HT20) in the report.

### 7.8.2 Test Setup Diagram



### 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.

Remark:

- 1) For emission below 1GHz, through pre-scan found the worst case is the lowest channel. Only the worst case is recorded in the report.
- 2) The field strength is calculated by adding the Antenna Factor, Cable Factor & Preamplifier. The basic equation with a sample calculation is as follows:  
Final Test Level = Receiver Reading + Antenna Factor + Cable Factor - Preamplifier Factor
- 3) Scan from 9kHz to 25GHz, 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) 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

Mode:d; Polarization:Horizontal; Modulation:b; bandwidth:20MHz; Channel:Low

Freq	ReadAntenna		Cable		Preamp		Limit	Over	Pol/Phase	Remark
	Level	Factor	Loss	Factor	Level	dBuV/m	dBuV/m	dB		
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB		
1	36.766	21.80	12.52	0.34	23.01	11.65	40.00	-28.35	HORIZONTAL	QP
2	54.261	21.78	12.68	0.59	25.01	10.04	40.00	-29.96	HORIZONTAL	QP
3	107.510	29.84	10.25	0.87	27.49	13.47	43.50	-30.03	HORIZONTAL	QP
4	140.342	25.51	13.10	1.04	28.16	11.49	43.50	-32.01	HORIZONTAL	QP
5	189.739	29.00	11.95	1.28	28.19	14.04	43.50	-29.46	HORIZONTAL	QP
6	787.851	28.07	22.61	2.79	28.77	24.70	46.00	-21.30	HORIZONTAL	QP

Mode:d; Polarization:Horizontal; Modulation:b; bandwidth:20MHz; Channel:Low

Freq	ReadAntenna		Cable		Preamp		Limit	Over	Pol/Phase	Remark
	Level	Factor	Loss	Factor	Level	dBuV/m	dBuV/m	dB		
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB		
1	3834.438	34.34	29.12	7.80	36.91	34.35	54.00	-19.65	HORIZONTAL	Average
2	3834.438	45.34	29.12	7.80	36.91	45.35	74.00	-28.65	HORIZONTAL	Peak
3	4831.962	40.52	30.85	6.15	36.94	40.58	54.00	-13.42	HORIZONTAL	Average
4	4831.962	52.55	30.85	6.15	36.94	52.61	74.00	-21.39	HORIZONTAL	Peak
5	6195.508	31.18	33.00	6.92	36.99	34.11	54.00	-19.89	HORIZONTAL	Average
6	6195.508	43.88	33.00	6.92	36.99	46.81	74.00	-27.19	HORIZONTAL	Peak
7	7236.309	30.33	35.55	7.35	36.93	36.30	54.00	-17.70	HORIZONTAL	Average
8	7236.309	43.96	35.55	7.35	36.93	49.93	74.00	-24.07	HORIZONTAL	Peak
9	9047.272	31.85	36.57	8.29	37.02	39.69	54.00	-14.31	HORIZONTAL	Average
10	9047.272	45.06	36.57	8.29	37.02	52.90	74.00	-21.10	HORIZONTAL	Peak
11	12060.070	28.57	39.46	10.71	37.17	41.57	54.00	-12.43	HORIZONTAL	Average
12	12060.070	43.31	39.46	10.71	37.17	56.31	74.00	-17.69	HORIZONTAL	Peak

Mode:d; Polarization:Vertical; Modulation:b; bandwidth:20MHz; Channel:Low

Freq	ReadAntenna		Cable		Preamp		Limit	Over	Pol/Phase	Remark
	Level	Factor	Loss	Factor	Level	dBuV/m	dBuV/m	dB		
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB		
1	32.293	21.93	12.27	0.13	22.03	12.30	40.00	-27.70	VERTICAL	QP
2	48.672	21.00	12.97	0.62	24.79	9.80	40.00	-30.20	VERTICAL	QP
3	120.277	29.13	11.52	0.92	28.19	13.38	43.50	-30.12	VERTICAL	QP
4	199.986	31.85	11.20	1.16	28.42	15.79	43.50	-27.71	VERTICAL	QP
5	485.609	28.48	18.07	2.11	29.49	19.17	46.00	-26.83	VERTICAL	QP
6	744.866	29.56	21.99	3.12	29.18	25.49	46.00	-20.51	VERTICAL	QP

Mode:d; Polarization:Vertical; Modulation:b; bandwidth:20MHz; Channel:Low

Freq	ReadAntenna		Cable		Preamp		Limit	Over	Pol/Phase	Remark
	Level	Factor	Loss	Factor	Level	dBuV/m	dBuV/m	dB		
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB		
1	3214.623	39.39	27.90	5.91	37.01	36.19	54.00	-17.81	VERTICAL	Average
2	3214.623	49.91	27.90	5.91	37.01	46.71	74.00	-27.29	VERTICAL	Peak
3	4824.962	48.16	30.82	6.01	36.94	48.05	54.00	-5.95	VERTICAL	Average
4	4824.962	56.89	30.82	6.01	36.94	56.78	74.00	-17.22	VERTICAL	Peak
5	6451.353	31.38	34.15	7.03	36.98	35.58	54.00	-18.42	VERTICAL	Average
6	6451.353	44.31	34.15	7.03	36.98	48.51	74.00	-25.49	VERTICAL	Peak
7	7236.795	33.31	35.55	7.35	36.93	39.28	54.00	-14.72	VERTICAL	Average
8	7236.795	45.86	35.55	7.35	36.93	51.83	74.00	-22.17	VERTICAL	Peak
9	9648.250	31.91	37.54	8.18	37.08	40.55	54.00	-13.45	VERTICAL	Average
10	9648.250	44.40	37.54	8.18	37.08	53.04	74.00	-20.96	VERTICAL	Peak
11	12060.280	30.01	39.46	10.71	37.17	43.01	54.00	-10.99	VERTICAL	Average
12	12060.280	42.00	39.46	10.71	37.17	55.00	74.00	-19.00	VERTICAL	Peak

Mode:d; Polarization:Horizontal; Modulation:b; bandwidth:20MHz; Channel:middle

Freq	ReadAntenna		Cable		Preamp		Limit	Over	Pol/Phase	Remark
	Level	Factor	Loss	Factor	Level	Line				
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB		
1	3790.361	35.73	28.97	7.83	36.92	35.61	54.00	-18.39	HORIZONTAL	Average
2	3790.361	45.20	28.97	7.83	36.92	45.08	74.00	-28.92	HORIZONTAL	Peak
3	4884.043	42.03	30.95	6.86	36.95	42.89	54.00	-11.11	HORIZONTAL	Average
4	4884.043	54.89	30.95	6.86	36.95	55.75	74.00	-18.25	HORIZONTAL	Peak
5	5797.032	34.13	32.16	7.47	37.00	36.76	54.00	-17.24	HORIZONTAL	Average
6	5797.032	45.27	32.16	7.47	37.00	47.90	74.00	-26.10	HORIZONTAL	Peak
7	7326.092	32.27	35.74	7.39	36.92	38.48	54.00	-15.52	HORIZONTAL	Average
8	7326.092	42.88	35.74	7.39	36.92	49.09	74.00	-24.91	HORIZONTAL	Peak
9	9768.852	31.29	37.74	8.37	37.09	40.31	54.00	-13.69	HORIZONTAL	Average
10	9768.852	44.69	37.74	8.37	37.09	53.71	74.00	-20.29	HORIZONTAL	Peak
11	12210.480	26.28	39.21	10.98	37.06	39.41	54.00	-14.59	HORIZONTAL	Average
12	12210.480	38.77	39.21	10.98	37.06	51.90	74.00	-22.10	HORIZONTAL	Peak

Mode:d; Polarization:Vertical; Modulation:b; bandwidth:20MHz; Channel:middle

Freq	ReadAntenna		Cable		Preamp		Limit	Over	Pol/Phase	Remark
	Level	Factor	Loss	Factor	Level	Line				
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB		
1	4039.212	32.53	29.53	7.13	36.90	32.29	54.00	-21.71	VERTICAL	Average
2	4039.212	44.84	29.53	7.13	36.90	44.60	74.00	-29.40	VERTICAL	Peak
3	4884.151	45.48	30.95	6.86	36.95	46.34	54.00	-7.66	VERTICAL	Average
4	4884.151	54.44	30.95	6.86	36.95	55.30	74.00	-18.70	VERTICAL	Peak
5	6451.353	31.69	34.15	7.03	36.98	35.89	54.00	-18.11	VERTICAL	Average
6	6451.353	43.64	34.15	7.03	36.98	47.84	74.00	-26.16	VERTICAL	Peak
7	7326.838	31.56	35.74	7.39	36.92	37.77	54.00	-16.23	VERTICAL	Average
8	7326.838	44.34	35.74	7.39	36.92	50.55	74.00	-23.45	VERTICAL	Peak
9	9768.916	31.13	37.74	8.37	37.09	40.15	54.00	-13.85	VERTICAL	Average
10	9768.916	45.84	37.74	8.37	37.09	54.86	74.00	-19.14	VERTICAL	Peak
11	12210.210	28.97	39.21	10.98	37.06	42.10	54.00	-11.90	VERTICAL	Average
12	12210.210	42.08	39.21	10.98	37.06	55.21	74.00	-18.79	VERTICAL	Peak

Mode:d; Polarization:Horizontal; Modulation:b; bandwidth:20MHz; Channel:High

Freq	ReadAntenna		Cable		Preamp	Level	Limit	Over	Pol/Phase	Remark
	Level	Factor	Loss	Factor						
	MHz	dBuV	dB/m		dB	dB	dBuV/m	dBuV/m		dB
1	3280.326	36.31	27.90	5.75	36.99	32.97	54.00	-21.03	HORIZONTAL	Average
2	3280.326	48.79	27.90	5.75	36.99	45.45	74.00	-28.55	HORIZONTAL	Peak
3	4924.721	43.07	31.01	7.49	36.95	44.62	54.00	-9.38	HORIZONTAL	Average
4	4924.721	53.81	31.01	7.49	36.95	55.36	74.00	-18.64	HORIZONTAL	Peak
5	6159.797	32.45	32.84	6.95	37.00	35.24	54.00	-18.76	HORIZONTAL	Average
6	6159.797	44.83	32.84	6.95	37.00	47.62	74.00	-26.38	HORIZONTAL	Peak
7	7386.516	30.11	35.85	7.42	36.92	36.46	54.00	-17.54	HORIZONTAL	Average
8	7386.516	42.91	35.85	7.42	36.92	49.26	74.00	-24.74	HORIZONTAL	Peak
9	9848.102	29.35	37.82	8.46	37.09	38.54	54.00	-15.46	HORIZONTAL	Average
10	9848.102	41.71	37.82	8.46	37.09	50.90	74.00	-23.10	HORIZONTAL	Peak
11	12310.800	28.68	39.03	11.10	36.97	41.84	54.00	-12.16	HORIZONTAL	Average
12	12310.800	40.35	39.03	11.10	36.97	53.51	74.00	-20.49	HORIZONTAL	Peak

Mode:d; Polarization:Vertical; Modulation:b; bandwidth:20MHz; Channel:High

Freq	ReadAntenna		Cable		Preamp	Level	Limit	Over	Pol/Phase	Remark
	Level	Factor	Loss	Factor						
	MHz	dBuV	dB/m		dB	dB	dBuV/m	dBuV/m		dB
1	3280.326	36.81	27.90	5.75	36.99	33.47	54.00	-20.53	VERTICAL	Average
2	3280.326	49.86	27.90	5.75	36.99	46.52	74.00	-27.48	VERTICAL	Peak
3	4924.721	44.38	31.01	7.49	36.95	45.93	54.00	-8.07	VERTICAL	Average
4	4924.721	56.16	31.01	7.49	36.95	57.71	74.00	-16.29	VERTICAL	Peak
5	5813.812	32.37	32.17	7.46	37.00	35.00	54.00	-19.00	VERTICAL	Average
6	5813.812	43.63	32.17	7.46	37.00	46.26	74.00	-27.74	VERTICAL	Peak
7	7386.373	30.29	35.85	7.42	36.92	36.64	54.00	-17.36	VERTICAL	Average
8	7386.373	41.57	35.85	7.42	36.92	47.92	74.00	-26.08	VERTICAL	Peak
9	9848.274	29.75	37.82	8.46	37.09	38.94	54.00	-15.06	VERTICAL	Average
10	9848.274	43.66	37.82	8.46	37.09	52.85	74.00	-21.15	VERTICAL	Peak
11	12310.160	27.53	39.03	11.10	36.97	40.69	54.00	-13.31	VERTICAL	Average
12	12310.160	39.26	39.03	11.10	36.97	52.42	74.00	-21.58	VERTICAL	Peak

Mode:d; Polarization:Horizontal; Modulation:g; bandwidth:20MHz; Channel:Low

Freq	ReadAntenna		Cable		Preamp	Level	Limit	Over	Pol/Phase	Remark
	Level	Factor	Loss	Factor						
	MHz	dBuV	dB/m		dB	dB	dBuV/m	dBuV/m		dB
1	3856.668	33.92	29.19	7.73	36.91	33.93	54.00	-20.07	HORIZONTAL	Average
2	3856.668	45.12	29.19	7.73	36.91	45.13	74.00	-28.87	HORIZONTAL	Peak
3	4824.072	32.53	30.82	6.01	36.94	32.42	54.00	-21.58	HORIZONTAL	Average
4	4824.072	45.98	30.82	6.01	36.94	45.87	74.00	-28.13	HORIZONTAL	Peak
5	6756.708	31.29	34.75	7.19	36.97	36.26	54.00	-17.74	HORIZONTAL	Average
6	6756.708	43.24	34.75	7.19	36.97	48.21	74.00	-25.79	HORIZONTAL	Peak
7	7236.475	31.57	35.55	7.35	36.93	37.54	54.00	-16.46	HORIZONTAL	Average
8	7236.475	43.38	35.55	7.35	36.93	49.35	74.00	-24.65	HORIZONTAL	Peak
9	9648.525	33.07	37.54	8.18	37.08	41.71	54.00	-12.29	HORIZONTAL	Average
10	9648.525	44.82	37.54	8.18	37.08	53.46	74.00	-20.54	HORIZONTAL	Peak
11	12060.850	29.19	39.46	10.71	37.17	42.19	54.00	-11.81	HORIZONTAL	Average
12	12060.850	40.39	39.46	10.71	37.17	53.39	74.00	-20.61	HORIZONTAL	Peak

Mode:d; Polarization:Vertical; Modulation:g; bandwidth:20MHz; Channel:Low

Freq	ReadAntenna		Cable		Preamp	Level	Limit	Over	Pol/Phase	Remark
	Level	Factor	Loss	Factor						
	MHz	dBuV	dB/m		dB	dB	dBuV/m	dBuV/m		dB
1	3214.623	35.85	27.90	5.91	37.01	32.65	54.00	-21.35	VERTICAL	Average
2	3214.623	47.34	27.90	5.91	37.01	44.14	74.00	-29.86	VERTICAL	Peak
3	4824.771	33.83	30.82	6.01	36.94	33.72	54.00	-20.28	VERTICAL	Average
4	4824.771	46.40	30.82	6.01	36.94	46.29	74.00	-27.71	VERTICAL	Peak
5	6285.695	32.78	33.51	6.95	36.99	36.25	54.00	-17.75	VERTICAL	Average
6	6285.695	44.70	33.51	6.95	36.99	48.17	74.00	-25.83	VERTICAL	Peak
7	7236.262	34.22	35.55	7.35	36.93	40.19	54.00	-13.81	VERTICAL	Average
8	7236.262	46.47	35.55	7.35	36.93	52.44	74.00	-21.56	VERTICAL	Peak
9	9648.543	33.07	37.54	8.18	37.08	41.71	54.00	-12.29	VERTICAL	Average
10	9648.543	44.40	37.54	8.18	37.08	53.04	74.00	-20.96	VERTICAL	Peak
11	12060.380	26.77	39.46	10.71	37.17	39.77	54.00	-14.23	VERTICAL	Average
12	12060.380	39.29	39.46	10.71	37.17	52.29	74.00	-21.71	VERTICAL	Peak

Mode:d; Polarization:Horizontal; Modulation:g; bandwidth:20MHz; Channel:middle

Freq	ReadAntenna		Cable		Preamp	Level	Limit	Over	Pol/Phase	Remark
	Level	Factor	Loss	Factor						
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB		
1	3834.438	27.05	29.12	7.80	36.91	27.06	54.00	-26.94	HORIZONTAL	Average
2	3834.438	42.07	29.12	7.80	36.91	42.08	74.00	-31.92	HORIZONTAL	Peak
3	4884.977	30.47	30.95	6.86	36.95	31.33	54.00	-22.67	HORIZONTAL	Average
4	4884.977	44.82	30.95	6.86	36.95	45.68	74.00	-28.32	HORIZONTAL	Peak
5	6526.373	31.15	34.32	7.09	36.98	35.58	54.00	-18.42	HORIZONTAL	Average
6	6526.373	43.08	34.32	7.09	36.98	47.51	74.00	-26.49	HORIZONTAL	Peak
7	7326.838	27.70	35.74	7.39	36.92	33.91	54.00	-20.09	HORIZONTAL	Average
8	7326.838	41.38	35.74	7.39	36.92	47.59	74.00	-26.41	HORIZONTAL	Peak
9	9768.312	26.17	37.74	8.37	37.09	35.19	54.00	-18.81	HORIZONTAL	Average
10	9768.312	40.94	37.74	8.37	37.09	49.96	74.00	-24.04	HORIZONTAL	Peak
11	12210.450	25.85	39.21	10.98	37.06	38.98	54.00	-15.02	HORIZONTAL	Average
12	12210.450	41.79	39.21	10.98	37.06	54.92	74.00	-19.08	HORIZONTAL	Peak

Mode:d; Polarization:Vertical; Modulation:g; bandwidth:20MHz; Channel:middle

Freq	ReadAntenna		Cable		Preamp	Level	Limit	Over	Pol/Phase	Remark
	Level	Factor	Loss	Factor						
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB		
1	3261.418	36.29	27.90	5.80	36.99	33.00	54.00	-21.00	VERTICAL	Average
2	3261.418	50.80	27.90	5.80	36.99	47.51	74.00	-26.49	VERTICAL	Peak
3	4884.151	30.30	30.95	6.86	36.95	31.16	54.00	-22.84	VERTICAL	Average
4	4884.151	46.56	30.95	6.86	36.95	47.42	74.00	-26.58	VERTICAL	Peak
5	6526.373	27.03	34.32	7.09	36.98	31.46	54.00	-22.54	VERTICAL	Average
6	6526.373	42.39	34.32	7.09	36.98	46.82	74.00	-27.18	VERTICAL	Peak
7	7326.804	31.18	35.74	7.39	36.92	37.39	54.00	-16.61	VERTICAL	Average
8	7326.804	44.32	35.74	7.39	36.92	50.53	74.00	-23.47	VERTICAL	Peak
9	9768.430	30.90	37.74	8.37	37.09	39.92	54.00	-14.08	VERTICAL	Average
10	9768.430	43.15	37.74	8.37	37.09	52.17	74.00	-21.83	VERTICAL	Peak
11	12210.850	25.96	39.21	10.98	37.06	39.09	54.00	-14.91	VERTICAL	Average
12	12210.850	42.66	39.21	10.98	37.06	55.79	74.00	-18.21	VERTICAL	Peak

Mode:d; Polarization:Horizontal; Modulation:g; bandwidth:20MHz; Channel:High

Freq	ReadAntenna		Cable		Preamp	Level	Limit	Over	Pol/Phase	Remark
	Level	Factor	Loss	Factor						
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB		
1	3834.438	30.19	29.12	7.80	36.91	30.20	54.00	-23.80	HORIZONTAL	Average
2	3834.438	44.79	29.12	7.80	36.91	44.80	74.00	-29.20	HORIZONTAL	Peak
3	4924.982	33.58	31.01	7.49	36.95	35.13	54.00	-18.87	HORIZONTAL	Average
4	4924.982	47.99	31.01	7.49	36.95	49.54	74.00	-24.46	HORIZONTAL	Peak
5	7386.893	28.19	35.85	7.42	36.92	34.54	54.00	-19.46	HORIZONTAL	Average
6	7386.893	42.07	35.85	7.42	36.92	48.42	74.00	-25.58	HORIZONTAL	Peak
7	9021.160	30.10	36.53	8.26	37.02	37.87	54.00	-16.13	HORIZONTAL	Average
8	9021.160	44.89	36.53	8.26	37.02	52.66	74.00	-21.34	HORIZONTAL	Peak
9	9848.530	28.21	37.82	8.46	37.09	37.40	54.00	-16.60	HORIZONTAL	Average
10	9848.530	42.99	37.82	8.46	37.09	52.18	74.00	-21.82	HORIZONTAL	Peak
11	12310.350	26.52	39.03	11.10	36.97	39.68	54.00	-14.32	HORIZONTAL	Average
12	12310.350	40.24	39.03	11.10	36.97	53.40	74.00	-20.60	HORIZONTAL	Peak

Mode:d; Polarization:Vertical; Modulation:g; bandwidth:20MHz; Channel:High

Freq	ReadAntenna		Cable		Preamp	Level	Limit	Over	Pol/Phase	Remark
	Level	Factor	Loss	Factor						
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB		
1	4924.721	31.60	31.01	7.49	36.95	33.15	54.00	-20.85	VERTICAL	Average
2	4924.721	46.80	31.01	7.49	36.95	48.35	74.00	-25.65	VERTICAL	Peak
3	5881.418	29.65	32.23	7.43	37.00	32.31	54.00	-21.69	VERTICAL	Average
4	5881.418	42.17	32.23	7.43	37.00	44.83	74.00	-29.17	VERTICAL	Peak
5	7386.309	25.78	35.85	7.42	36.92	32.13	54.00	-21.87	VERTICAL	Average
6	7386.309	42.51	35.85	7.42	36.92	48.86	74.00	-25.14	VERTICAL	Peak
7	9848.880	29.93	37.82	8.46	37.09	39.12	54.00	-14.88	VERTICAL	Average
8	9848.880	41.70	37.82	8.46	37.09	50.89	74.00	-23.11	VERTICAL	Peak
9	10606.150	23.74	39.16	9.63	37.12	35.41	54.00	-18.59	VERTICAL	Average
10	10606.150	37.04	39.16	9.63	37.12	48.71	74.00	-25.29	VERTICAL	Peak
11	12310.620	26.14	39.03	11.10	36.97	39.30	54.00	-14.70	VERTICAL	Average
12	12310.620	39.24	39.03	11.10	36.97	52.40	74.00	-21.60	VERTICAL	Peak

Mode:d; Polarization:Horizontal; Modulation:n; bandwidth:20MHz; Channel:Low

Freq	ReadAntenna		Cable		Preamp	Level	Limit	Over	Pol/Phase	Remark
	Level	Factor	Loss	Factor						
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB		
1	4824.885	34.46	30.82	6.01	36.94	34.35	54.00	-19.65	HORIZONTAL	Average
2	4824.885	48.43	30.82	6.01	36.94	48.32	74.00	-25.68	HORIZONTAL	Peak
3	6056.092	31.54	32.45	7.06	37.00	34.05	54.00	-19.95	HORIZONTAL	Average
4	6056.092	44.23	32.45	7.06	37.00	46.74	74.00	-27.26	HORIZONTAL	Peak
5	7236.832	31.13	35.55	7.35	36.93	37.10	54.00	-16.90	HORIZONTAL	Average
6	7236.832	44.38	35.55	7.35	36.93	50.35	74.00	-23.65	HORIZONTAL	Peak
7	9648.390	31.38	37.54	8.18	37.08	40.02	54.00	-13.98	HORIZONTAL	Average
8	9648.390	45.55	37.54	8.18	37.08	54.19	74.00	-19.81	HORIZONTAL	Peak
9	10948.780	24.24	39.90	9.96	37.15	36.95	54.00	-17.05	HORIZONTAL	Average
10	10948.780	37.75	39.90	9.96	37.15	50.46	74.00	-23.54	HORIZONTAL	Peak
11	12060.850	26.29	39.46	10.71	37.17	39.29	54.00	-14.71	HORIZONTAL	Average
12	12060.850	39.94	39.46	10.71	37.17	52.94	74.00	-21.06	HORIZONTAL	Peak

Mode:d; Polarization:Vertical; Modulation:n; bandwidth:20MHz; Channel:Low

Freq	ReadAntenna		Cable		Preamp	Level	Limit	Over	Pol/Phase	Remark
	Level	Factor	Loss	Factor						
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB		
1	3105.037	34.69	27.90	5.37	37.03	30.93	54.00	-23.07	VERTICAL	Average
2	3105.037	47.66	27.90	5.37	37.03	43.90	74.00	-30.10	VERTICAL	Peak
3	4039.212	31.76	29.53	7.13	36.90	31.52	54.00	-22.48	VERTICAL	Average
4	4039.212	46.10	29.53	7.13	36.90	45.86	74.00	-28.14	VERTICAL	Peak
5	4824.890	35.83	30.82	6.01	36.94	35.72	54.00	-18.28	VERTICAL	Average
6	4824.890	48.98	30.82	6.01	36.94	48.87	74.00	-25.13	VERTICAL	Peak
7	7236.882	30.12	35.55	7.35	36.93	36.09	54.00	-17.91	VERTICAL	Average
8	7236.882	43.74	35.55	7.35	36.93	49.71	74.00	-24.29	VERTICAL	Peak
9	9648.850	30.06	37.54	8.18	37.08	38.70	54.00	-15.30	VERTICAL	Average
10	9648.850	43.96	37.54	8.18	37.08	52.60	74.00	-21.40	VERTICAL	Peak
11	12060.280	29.36	39.46	10.71	37.17	42.36	54.00	-11.64	VERTICAL	Average
12	12060.280	41.24	39.46	10.71	37.17	54.24	74.00	-19.76	VERTICAL	Peak

Mode:d; Polarization:Horizontal; Modulation:n; bandwidth:20MHz; Channel:middle

Freq	ReadAntenna		Cable		Preamp	Level	Limit	Over	Pol/Phase	Remark
	Level	Factor	Loss	Factor						
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB		
1	3823.371	31.71	29.08	7.83	36.91	31.71	54.00	-22.29	HORIZONTAL	Average
2	3823.371	45.26	29.08	7.83	36.91	45.26	74.00	-28.74	HORIZONTAL	Peak
3	4521.185	31.69	30.14	6.69	36.92	31.60	54.00	-22.40	HORIZONTAL	Average
4	4521.185	44.36	30.14	6.69	36.92	44.27	74.00	-29.73	HORIZONTAL	Peak
5	4884.440	35.62	30.95	6.86	36.95	36.48	54.00	-17.52	HORIZONTAL	Average
6	4884.440	49.03	30.95	6.86	36.95	49.89	74.00	-24.11	HORIZONTAL	Peak
7	7326.516	28.48	35.74	7.39	36.92	34.69	54.00	-19.31	HORIZONTAL	Average
8	7326.516	42.90	35.74	7.39	36.92	49.11	74.00	-24.89	HORIZONTAL	Peak
9	9768.479	30.81	37.74	8.37	37.09	39.83	54.00	-14.17	HORIZONTAL	Average
10	9768.479	43.24	37.74	8.37	37.09	52.26	74.00	-21.74	HORIZONTAL	Peak
11	12210.250	26.82	39.21	10.98	37.06	39.95	54.00	-14.05	HORIZONTAL	Average
12	12210.250	39.59	39.21	10.98	37.06	52.72	74.00	-21.28	HORIZONTAL	Peak

Mode:d; Polarization:Vertical; Modulation:n; bandwidth:20MHz; Channel:middle

Freq	ReadAntenna		Cable		Preamp	Level	Limit	Over	Pol/Phase	Remark
	Level	Factor	Loss	Factor						
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB		
1	3261.418	38.77	27.90	5.80	36.99	35.48	54.00	-18.52	VERTICAL	Average
2	3261.418	50.29	27.90	5.80	36.99	47.00	74.00	-27.00	VERTICAL	Peak
3	4884.043	39.60	30.95	6.86	36.95	40.46	54.00	-13.54	VERTICAL	Average
4	4884.043	50.78	30.95	6.86	36.95	51.64	74.00	-22.36	VERTICAL	Peak
5	6159.797	31.26	32.84	6.95	37.00	34.05	54.00	-19.95	VERTICAL	Average
6	6159.797	44.62	32.84	6.95	37.00	47.41	74.00	-26.59	VERTICAL	Peak
7	7326.527	30.55	35.74	7.39	36.92	36.76	54.00	-17.24	VERTICAL	Average
8	7326.527	43.74	35.74	7.39	36.92	49.95	74.00	-24.05	VERTICAL	Peak
9	9768.221	30.77	37.74	8.37	37.09	39.79	54.00	-14.21	VERTICAL	Average
10	9768.221	45.47	37.74	8.37	37.09	54.49	74.00	-19.51	VERTICAL	Peak
11	12210.750	28.99	39.21	10.98	37.06	42.12	54.00	-11.88	VERTICAL	Average
12	12210.750	41.94	39.21	10.98	37.06	55.07	74.00	-18.93	VERTICAL	Peak

Mode:d; Polarization:Horizontal; Modulation:n; bandwidth:20MHz; Channel:High

Freq	ReadAntenna		Cable		Preamp	Level	Limit	Over	Pol/Phase	Remark
	Level	Factor	Loss	Factor						
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB		
1	3823.371	33.89	29.08	7.83	36.91	33.89	54.00	-20.11	HORIZONTAL	Average
2	3823.371	44.61	29.08	7.83	36.91	44.61	74.00	-29.39	HORIZONTAL	Peak
3	4924.721	33.82	31.01	7.49	36.95	35.37	54.00	-18.63	HORIZONTAL	Average
4	4924.721	46.72	31.01	7.49	36.95	48.27	74.00	-25.73	HORIZONTAL	Peak
5	6377.195	30.11	33.91	6.99	36.99	34.02	54.00	-19.98	HORIZONTAL	Average
6	6377.195	42.16	33.91	6.99	36.99	46.07	74.00	-27.93	HORIZONTAL	Peak
7	7386.893	30.71	35.85	7.42	36.92	37.06	54.00	-16.94	HORIZONTAL	Average
8	7386.893	43.72	35.85	7.42	36.92	50.07	74.00	-23.93	HORIZONTAL	Peak
9	9848.164	30.87	37.82	8.46	37.09	40.06	54.00	-13.94	HORIZONTAL	Average
10	9848.164	43.05	37.82	8.46	37.09	52.24	74.00	-21.76	HORIZONTAL	Peak
11	12310.700	26.36	39.03	11.10	36.97	39.52	54.00	-14.48	HORIZONTAL	Average
12	12310.700	39.44	39.03	11.10	36.97	52.60	74.00	-21.40	HORIZONTAL	Peak

Mode:d; Polarization:Vertical; Modulation:n; bandwidth:20MHz; Channel:High

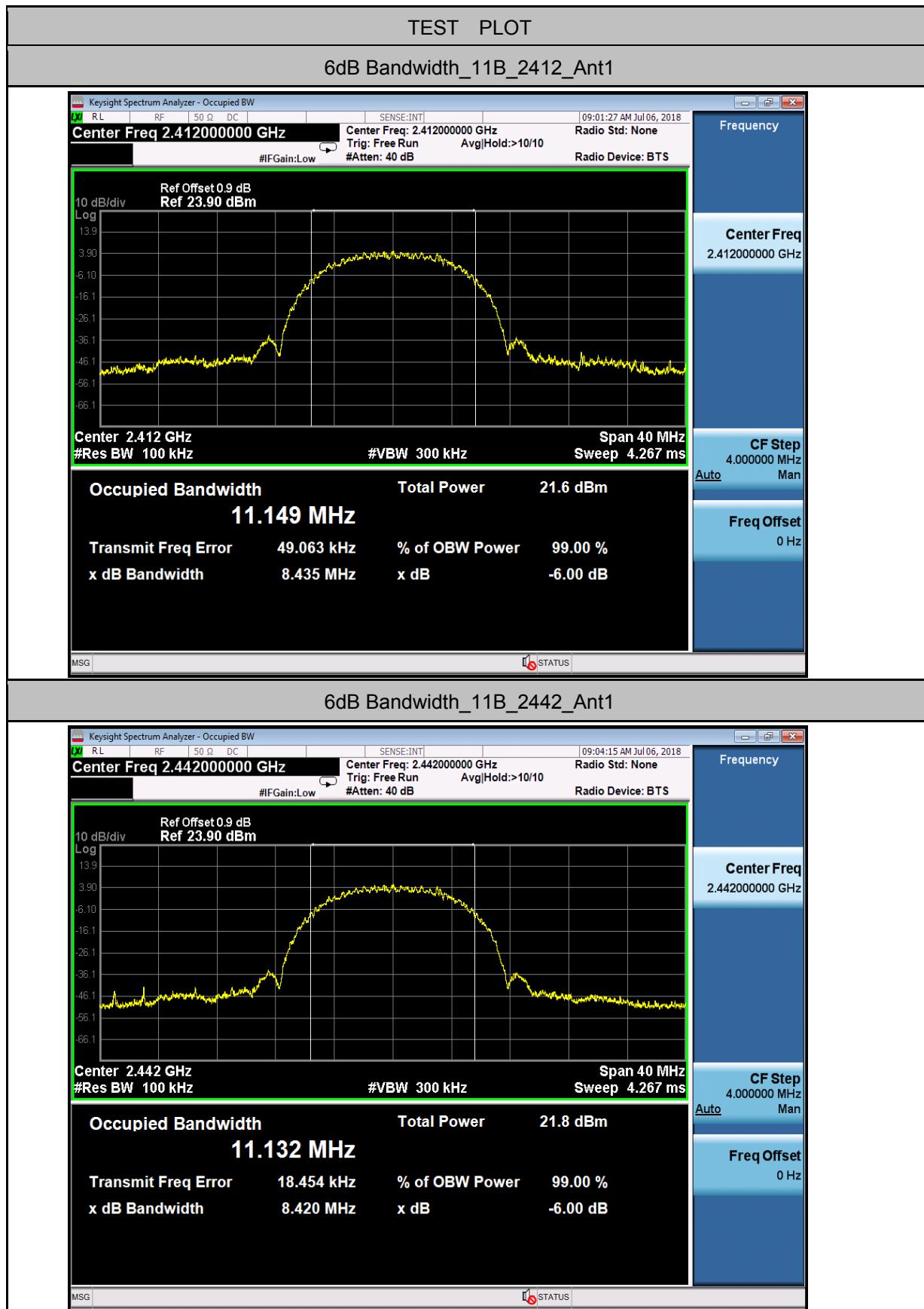
Freq	ReadAntenna		Cable		Preamp	Level	Limit	Over	Pol/Phase	Remark
	Level	Factor	Loss	Factor						
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB		
1	3280.326	38.73	27.90	5.75	36.99	35.39	54.00	-18.61	VERTICAL	Average
2	3280.326	50.42	27.90	5.75	36.99	47.08	74.00	-26.92	VERTICAL	Peak
3	4924.721	35.68	31.01	7.49	36.95	37.23	54.00	-16.77	VERTICAL	Average
4	4924.721	51.48	31.01	7.49	36.95	53.03	74.00	-20.97	VERTICAL	Peak
5	6358.789	30.15	33.84	6.98	36.99	33.98	54.00	-20.02	VERTICAL	Average
6	6358.789	43.98	33.84	6.98	36.99	47.81	74.00	-26.19	VERTICAL	Peak
7	7386.527	30.82	35.85	7.42	36.92	37.17	54.00	-16.83	VERTICAL	Average
8	7386.527	43.54	35.85	7.42	36.92	49.89	74.00	-24.11	VERTICAL	Peak
9	9848.710	31.35	37.82	8.46	37.09	40.54	54.00	-13.46	VERTICAL	Average
10	9848.710	43.35	37.82	8.46	37.09	52.54	74.00	-21.46	VERTICAL	Peak
11	12310.580	27.82	39.03	11.10	36.97	40.98	54.00	-13.02	VERTICAL	Average
12	12310.580	40.12	39.03	11.10	36.97	53.28	74.00	-20.72	VERTICAL	Peak

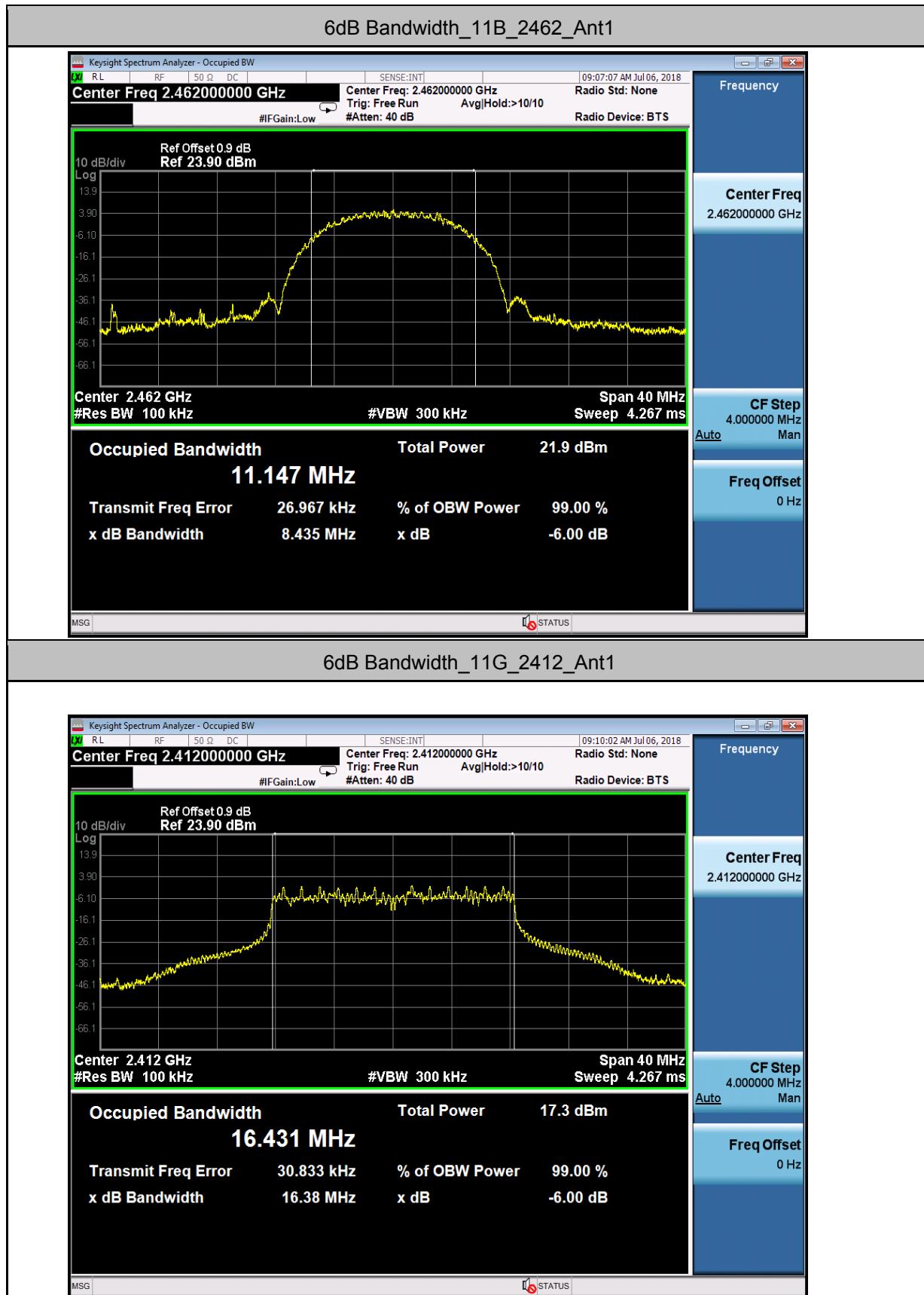
## **8 Appendix**

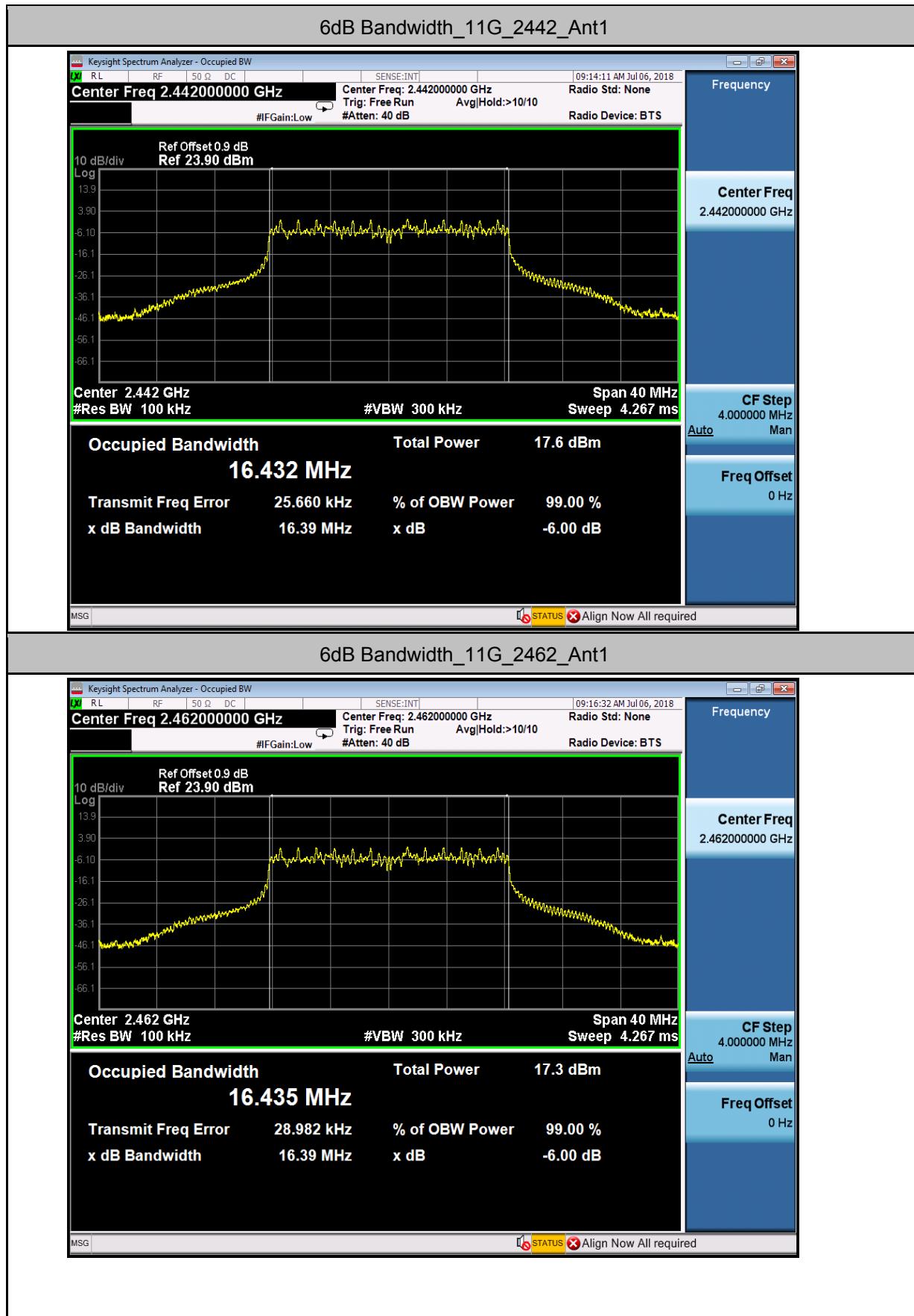
### **8.1 Appendix 15.247**

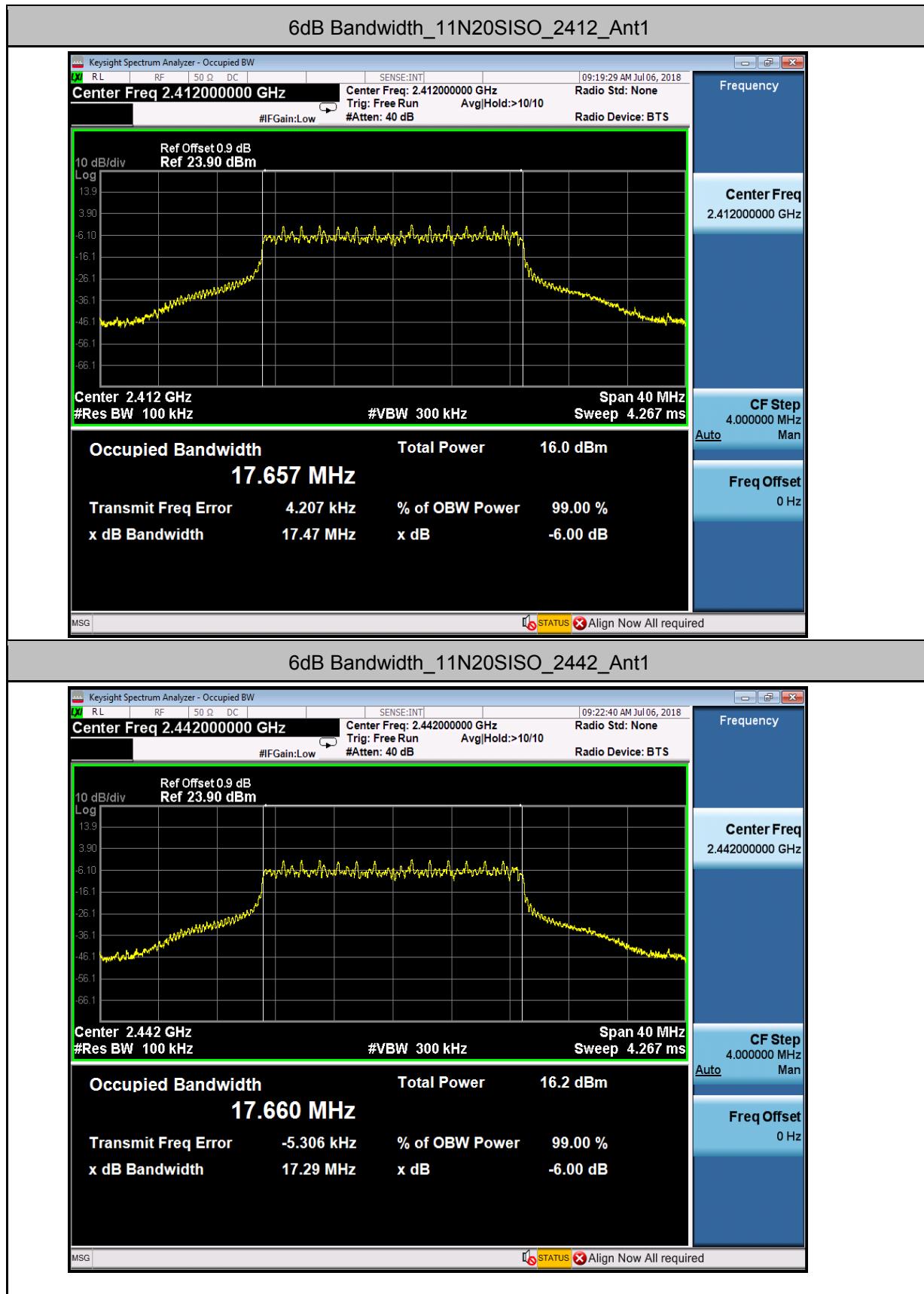
#### **1.6dB Bandwidth**

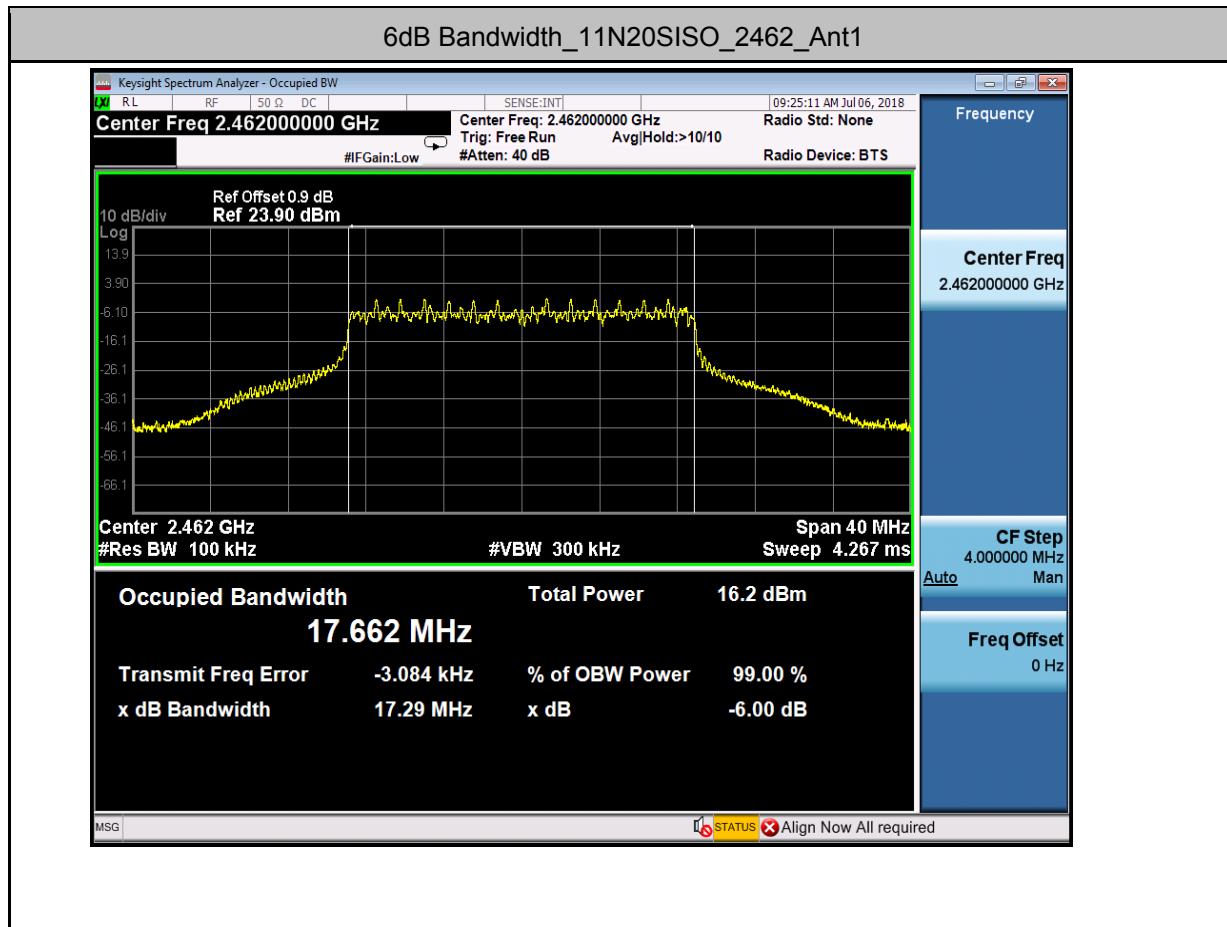
Test Mode	Test Channel	Ant	OBW[MHz]	EBW[MHz]	Limit	Verdict
11B	2412	Ant1	11.149	8.435	0.5	PASS
11B	2442	Ant1	11.132	8.420	0.5	PASS
11B	2462	Ant1	11.147	8.435	0.5	PASS
11G	2412	Ant1	16.431	16.38	0.5	PASS
11G	2442	Ant1	16.432	16.39	0.5	PASS
11G	2462	Ant1	16.435	16.39	0.5	PASS
11N20SISO	2412	Ant1	17.657	17.47	0.5	PASS
11N20SISO	2442	Ant1	17.660	17.29	0.5	PASS
11N20SISO	2462	Ant1	17.662	17.29	0.5	PASS









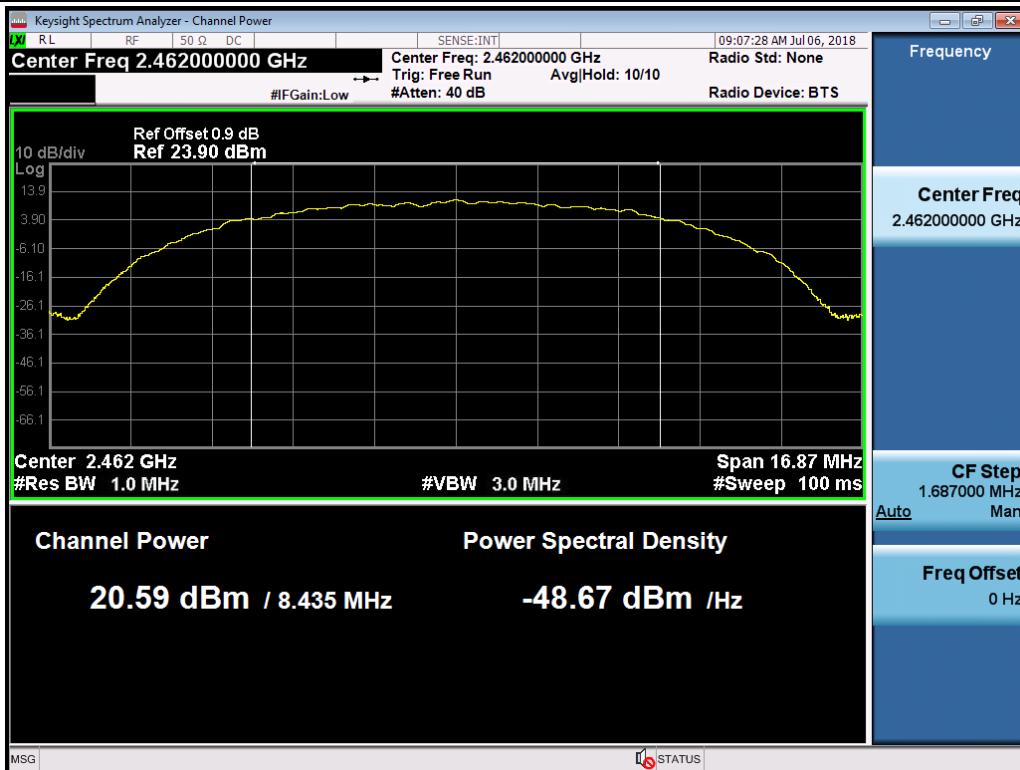


**2. Maximum peak conducted output power**

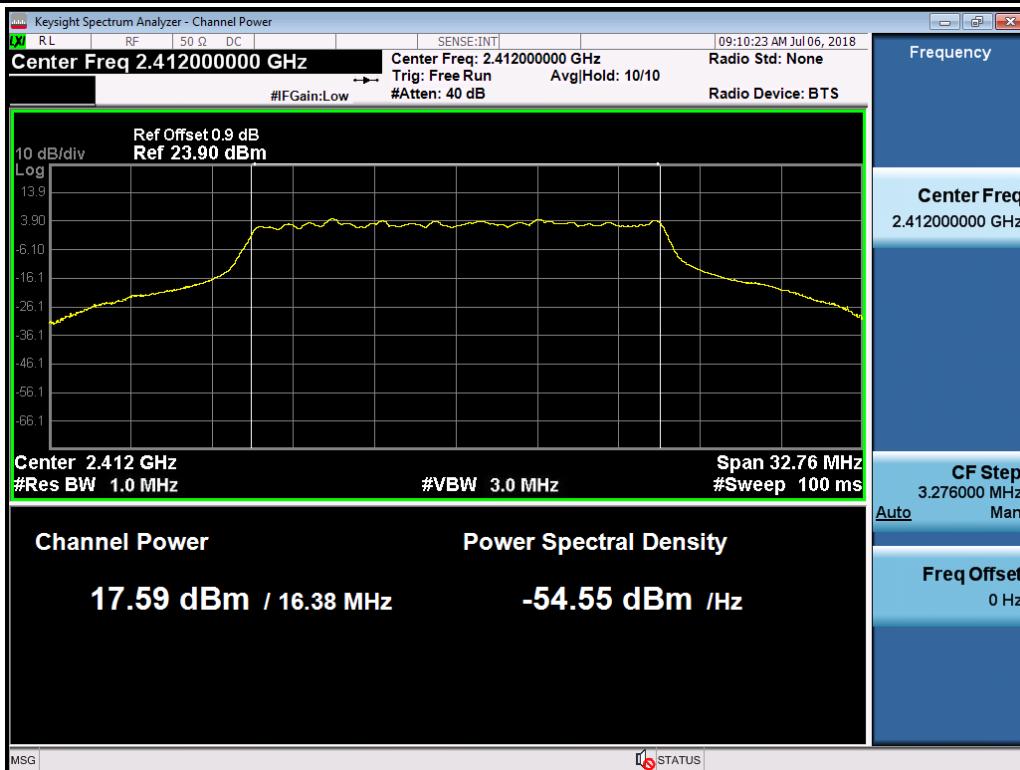
Test Mode	Test Channel	Ant	Power[dBm]	Limit[dBm]	Verdict
11B	2412	Ant1	20.38	30	PASS
11B	2442	Ant1	20.65	30	PASS
11B	2462	Ant1	20.59	30	PASS
11G	2412	Ant1	17.59	30	PASS
11G	2442	Ant1	17.89	30	PASS
11G	2462	Ant1	17.59	30	PASS
11N20SISO	2412	Ant1	16.15	30	PASS
11N20SISO	2442	Ant1	16.38	30	PASS
11N20SISO	2462	Ant1	16.33	30	PASS



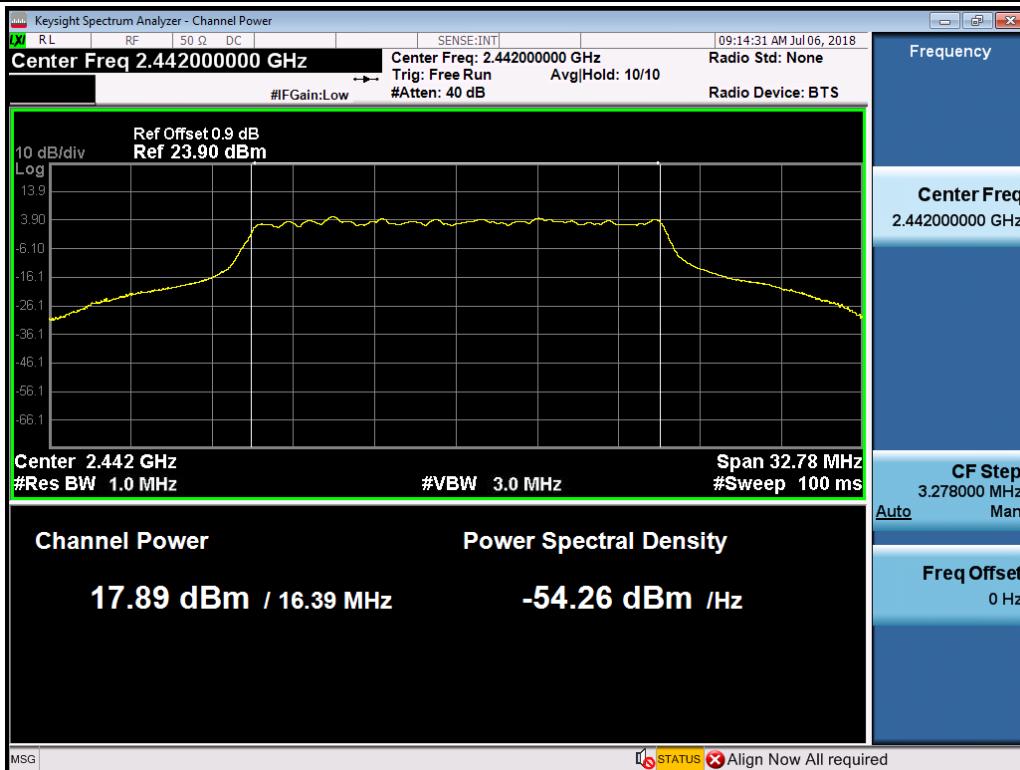
## Maximum peak conducted output power\_11B\_2462\_Ant1



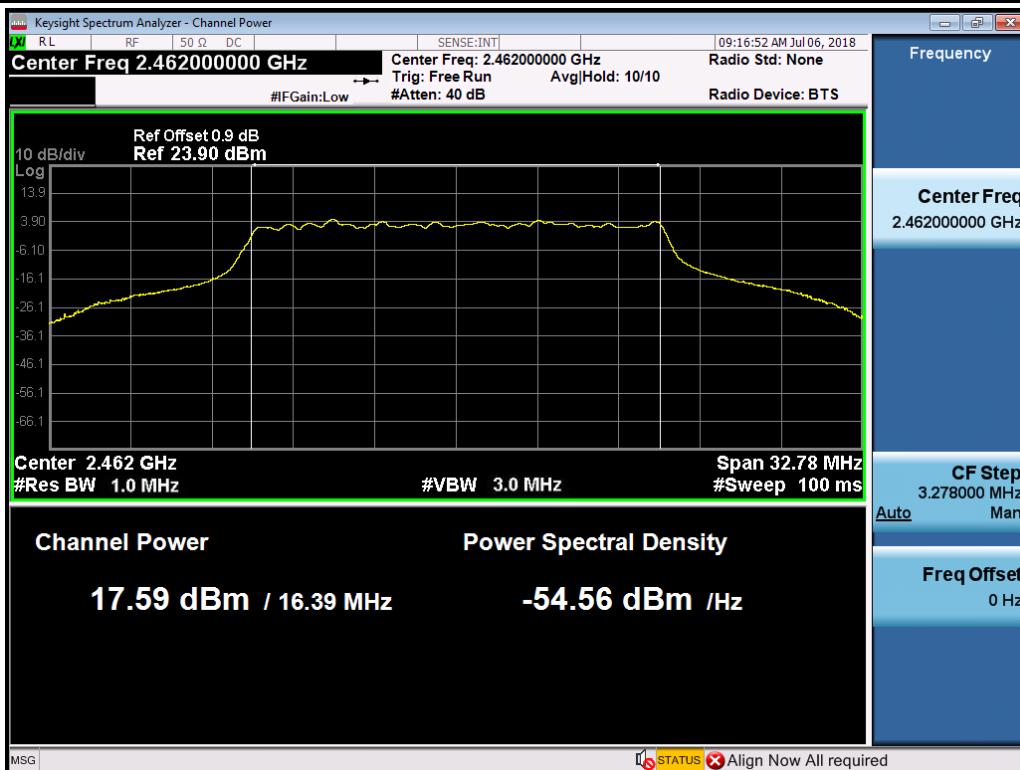
## Maximum peak conducted output power\_11G\_2412\_Ant1



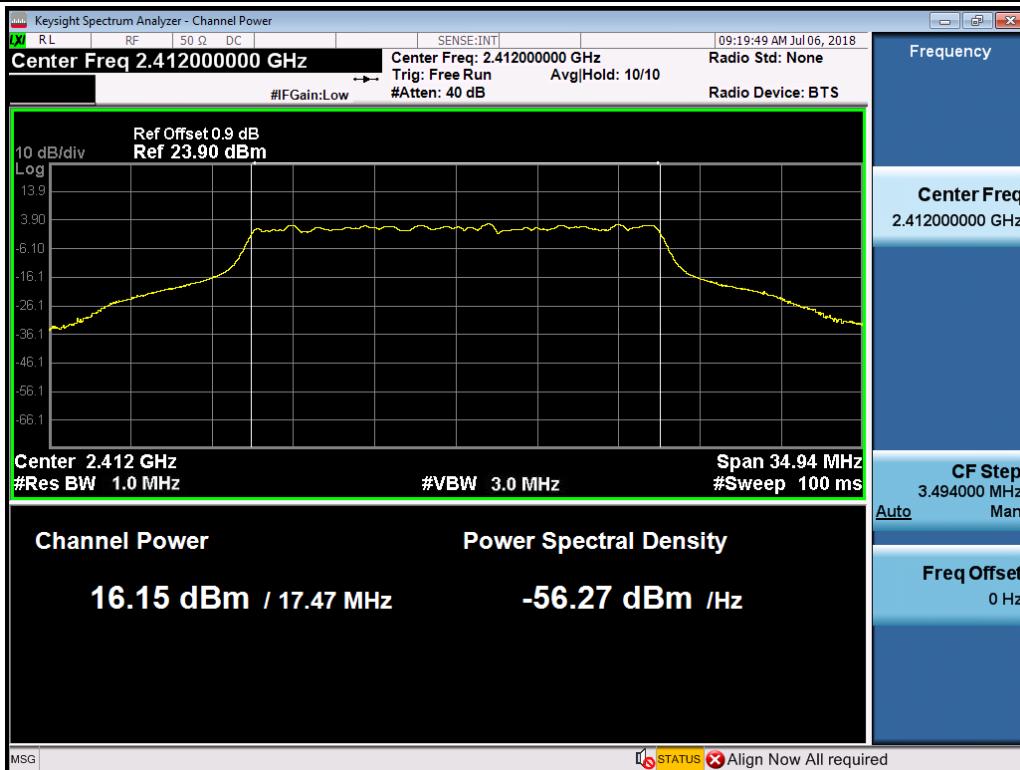
## Maximum peak conducted output power\_11G\_2442\_Ant1



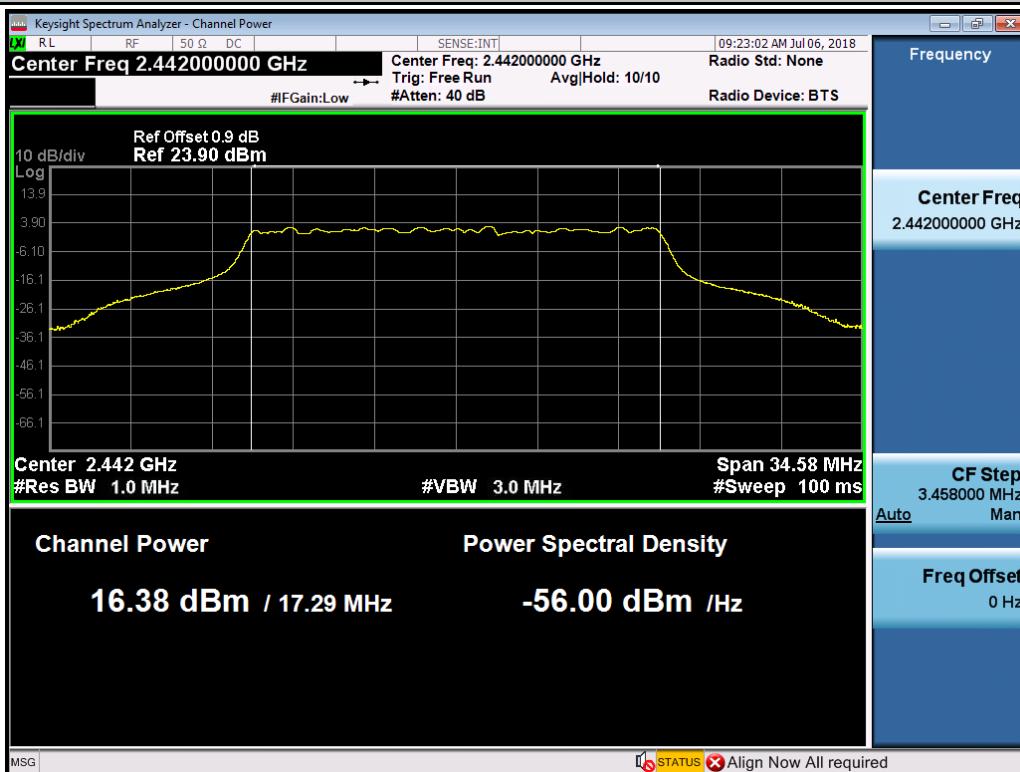
## Maximum peak conducted output power\_11G\_2462\_Ant1

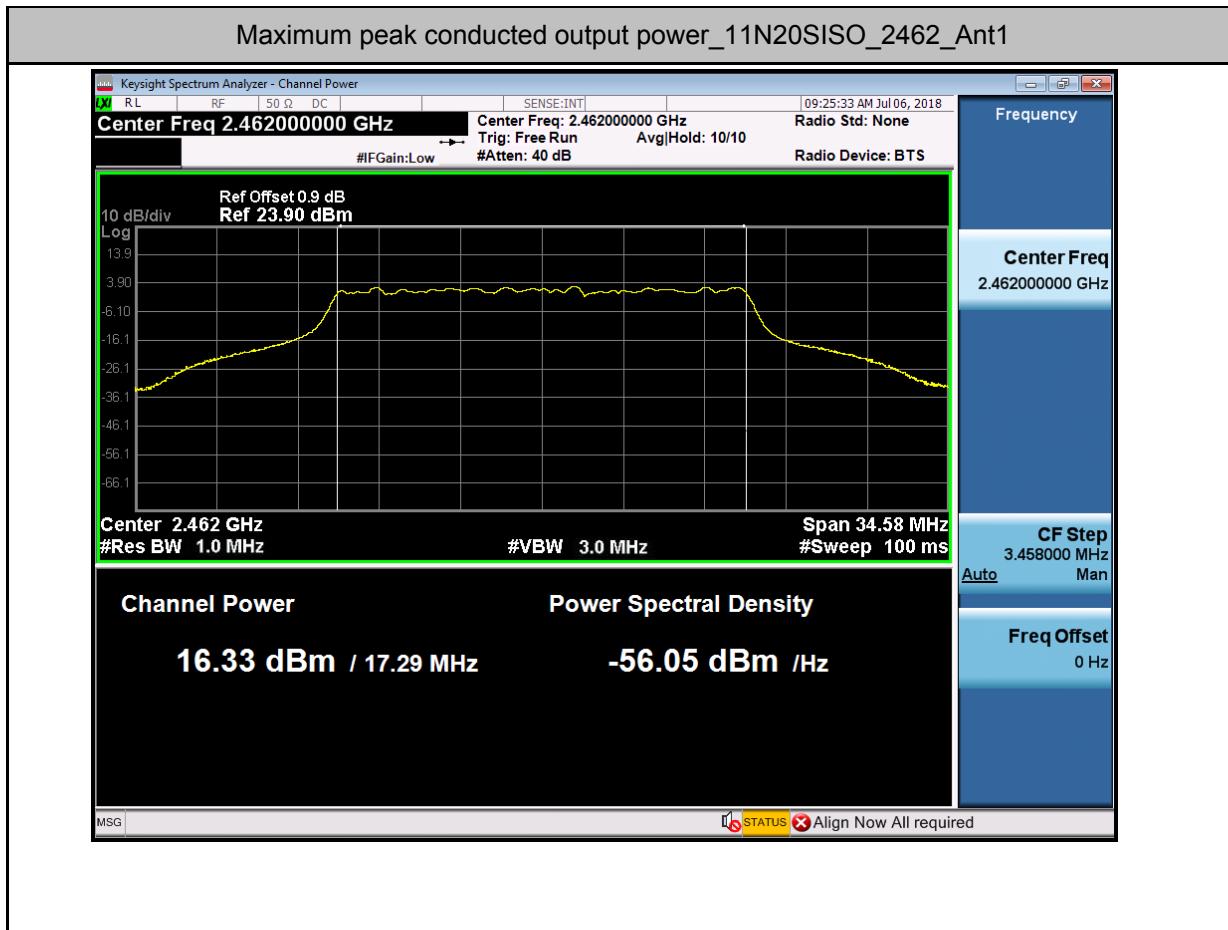


## Maximum peak conducted output power\_11N20SISO\_2412\_Ant1



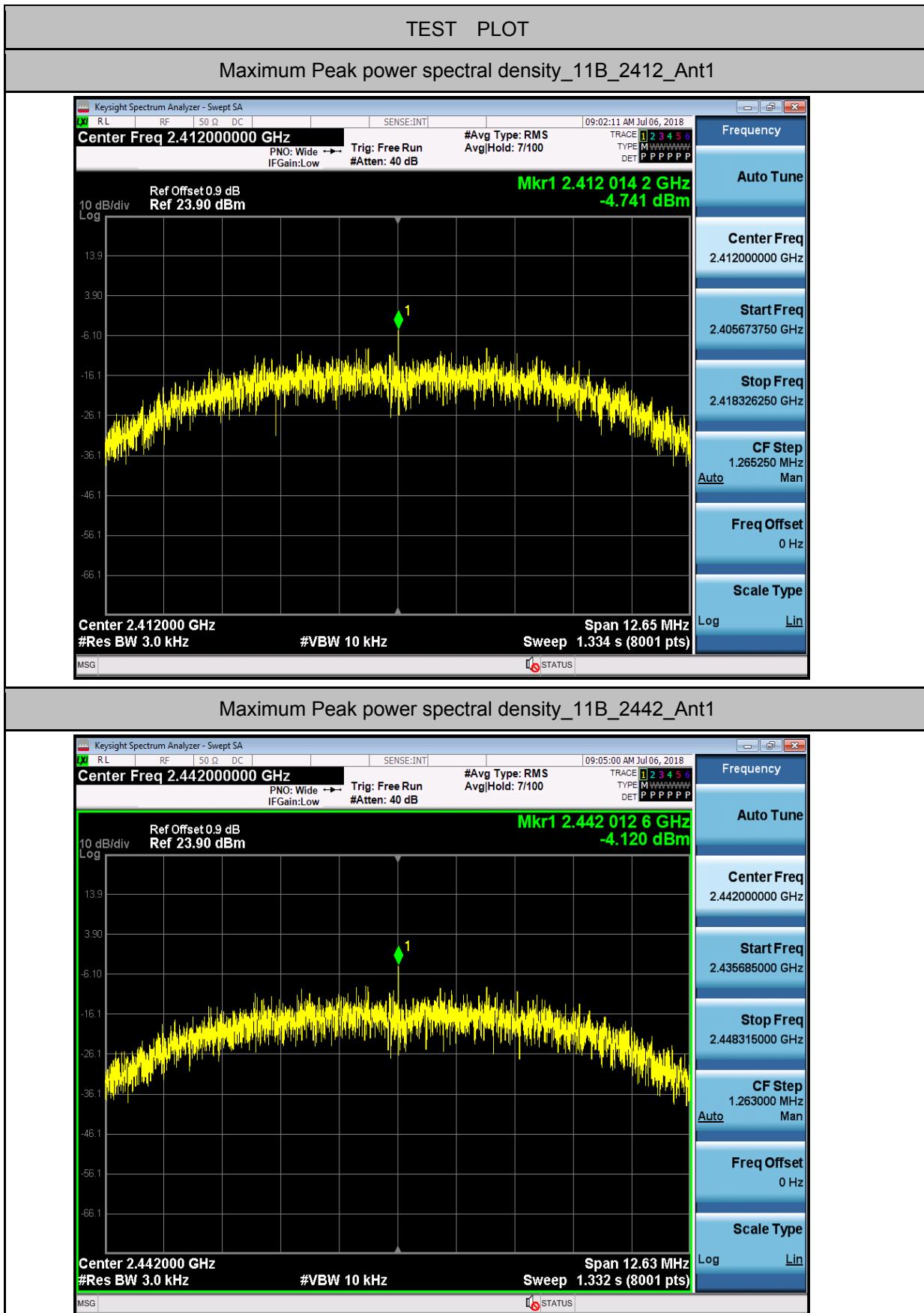
## Maximum peak conducted output power\_11N20SISO\_2442\_Ant1

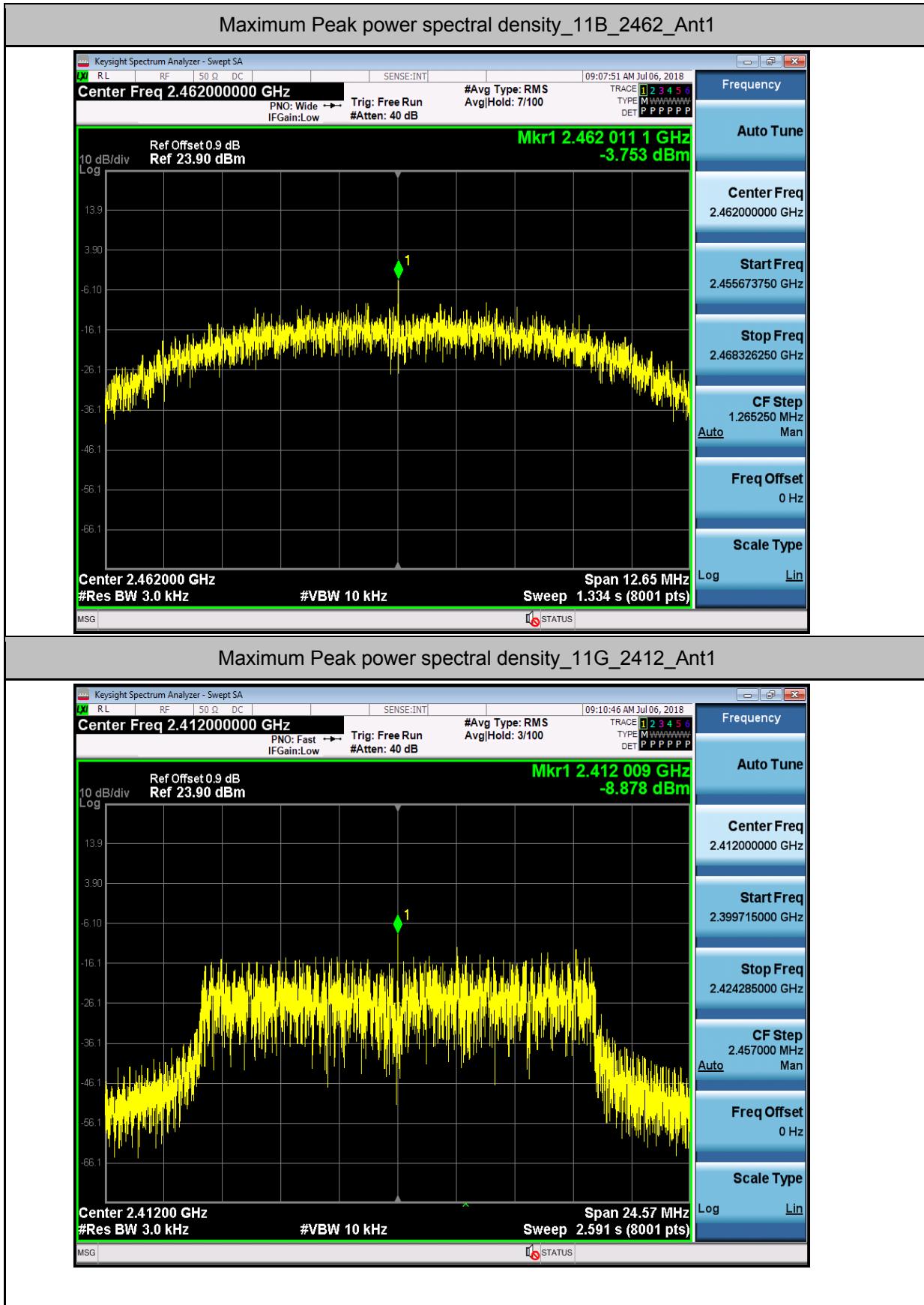


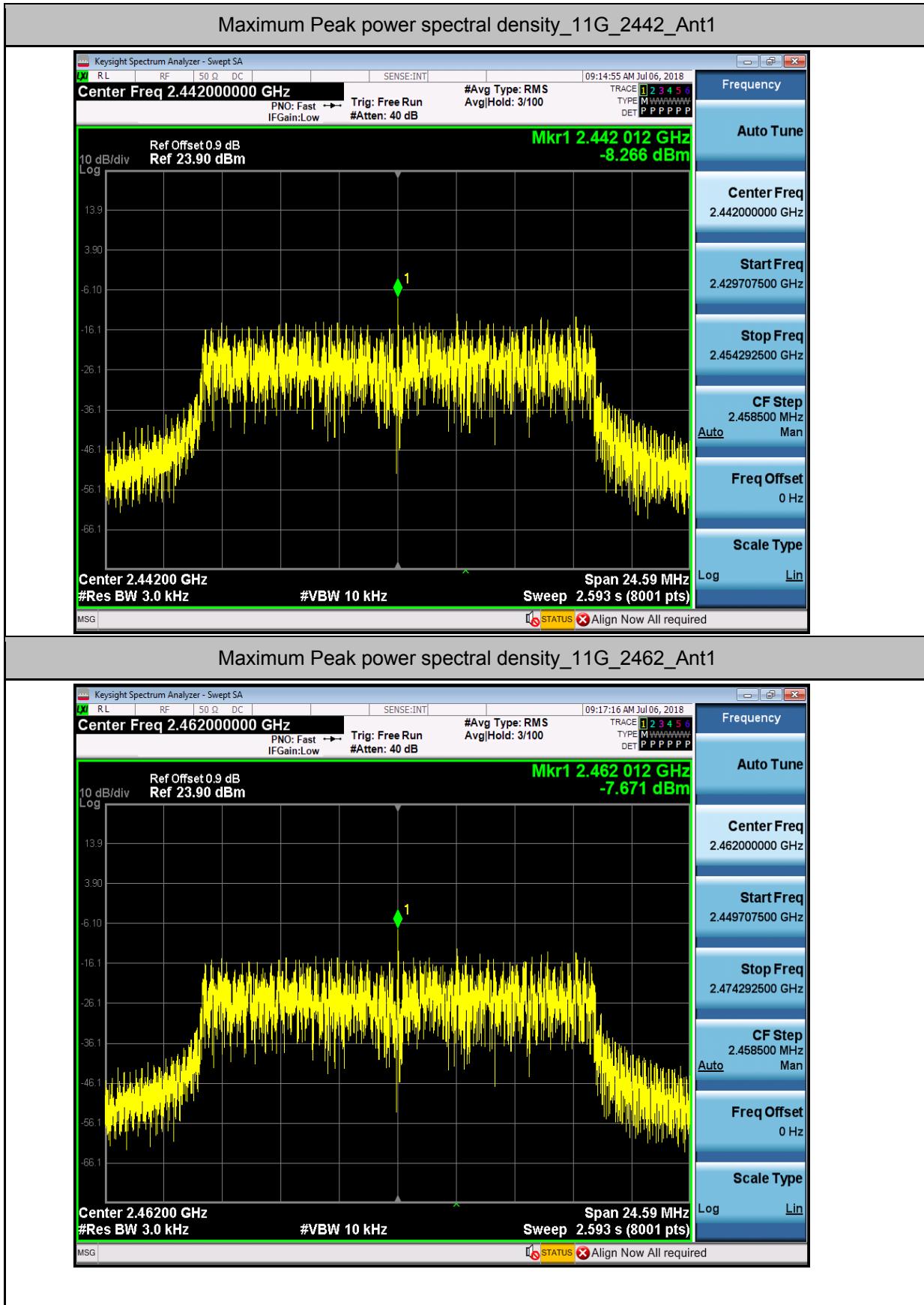


### 3. Maximum Peak power spectral density

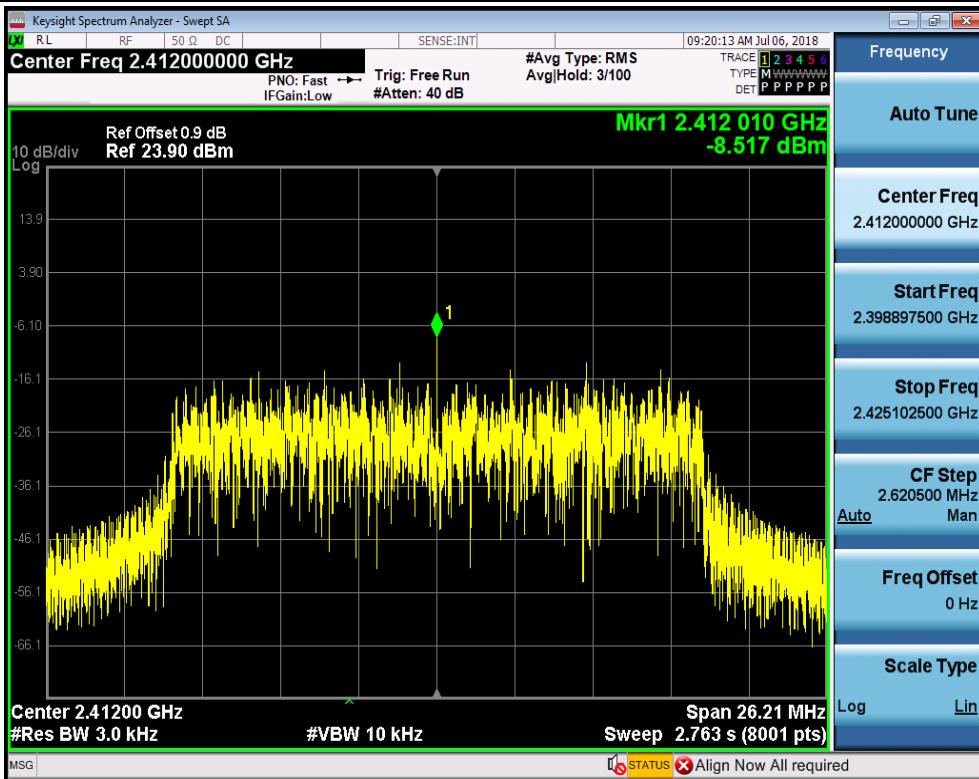
Test Mode	Test Channel	Ant	Result	Limit[dBm/3kHz]	Verdict
11B	2412	Ant1	-4.741	8.00	PASS
11B	2442	Ant1	-4.12	8.00	PASS
11B	2462	Ant1	-3.753	8.00	PASS
11G	2412	Ant1	-8.878	8.00	PASS
11G	2442	Ant1	-8.266	8.00	PASS
11G	2462	Ant1	-7.671	8.00	PASS
11N20SISO	2412	Ant1	-8.517	8.00	PASS
11N20SISO	2442	Ant1	-8.089	8.00	PASS
11N20SISO	2462	Ant1	-7.793	8.00	PASS



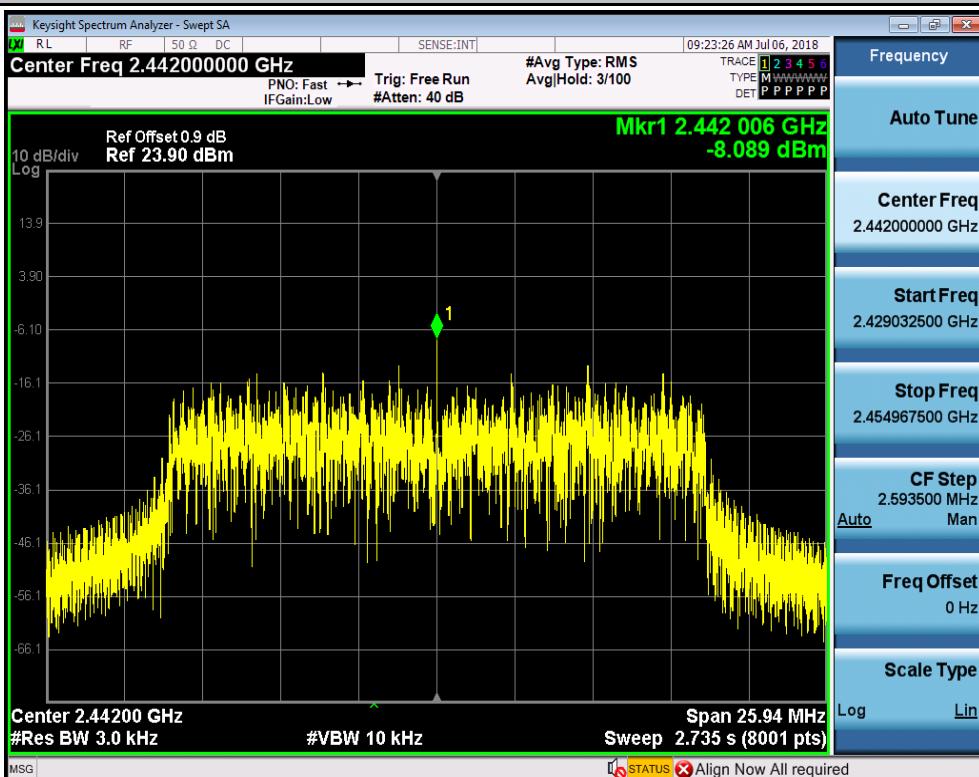


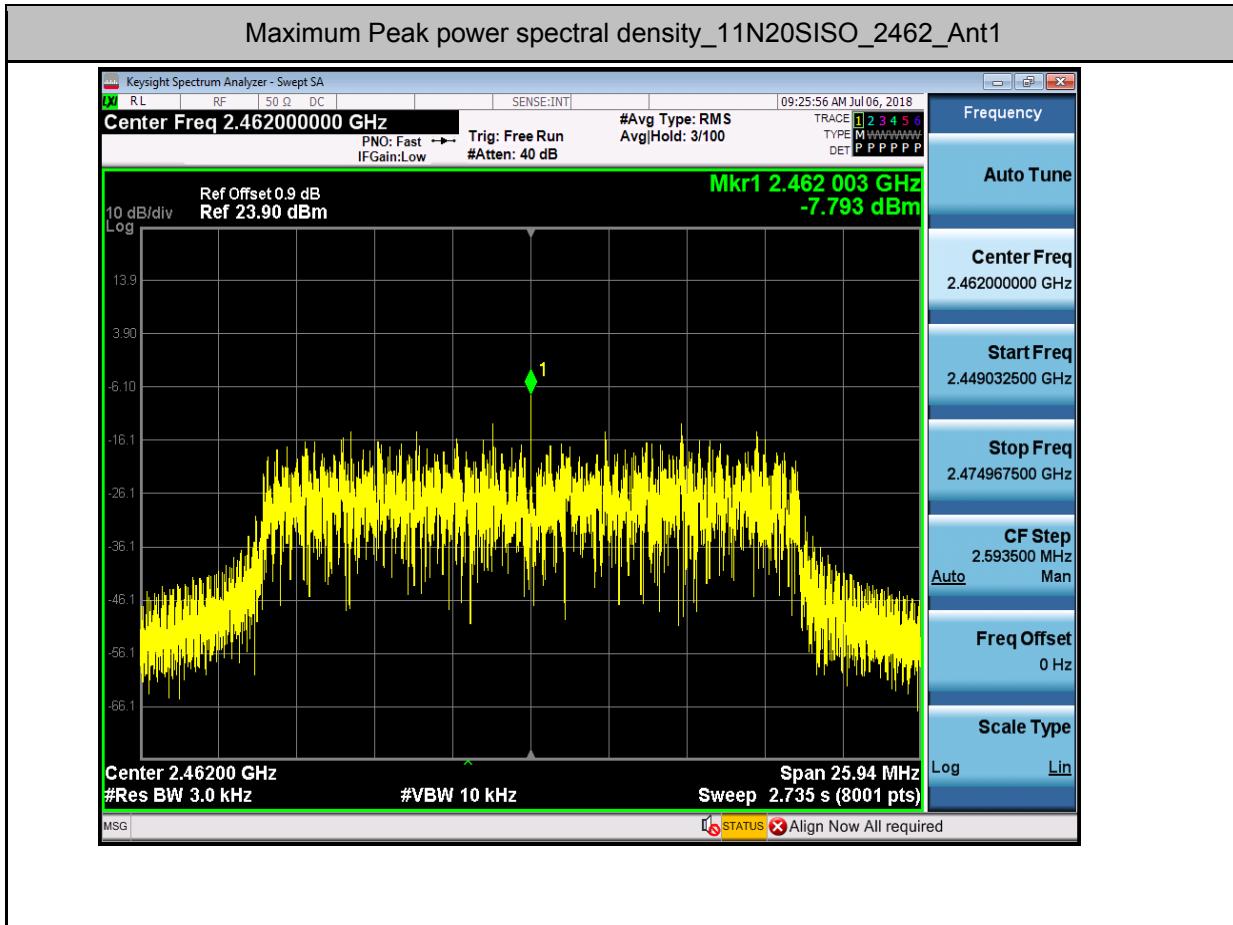


## Maximum Peak power spectral density\_11N20SISO\_2412\_Ant1



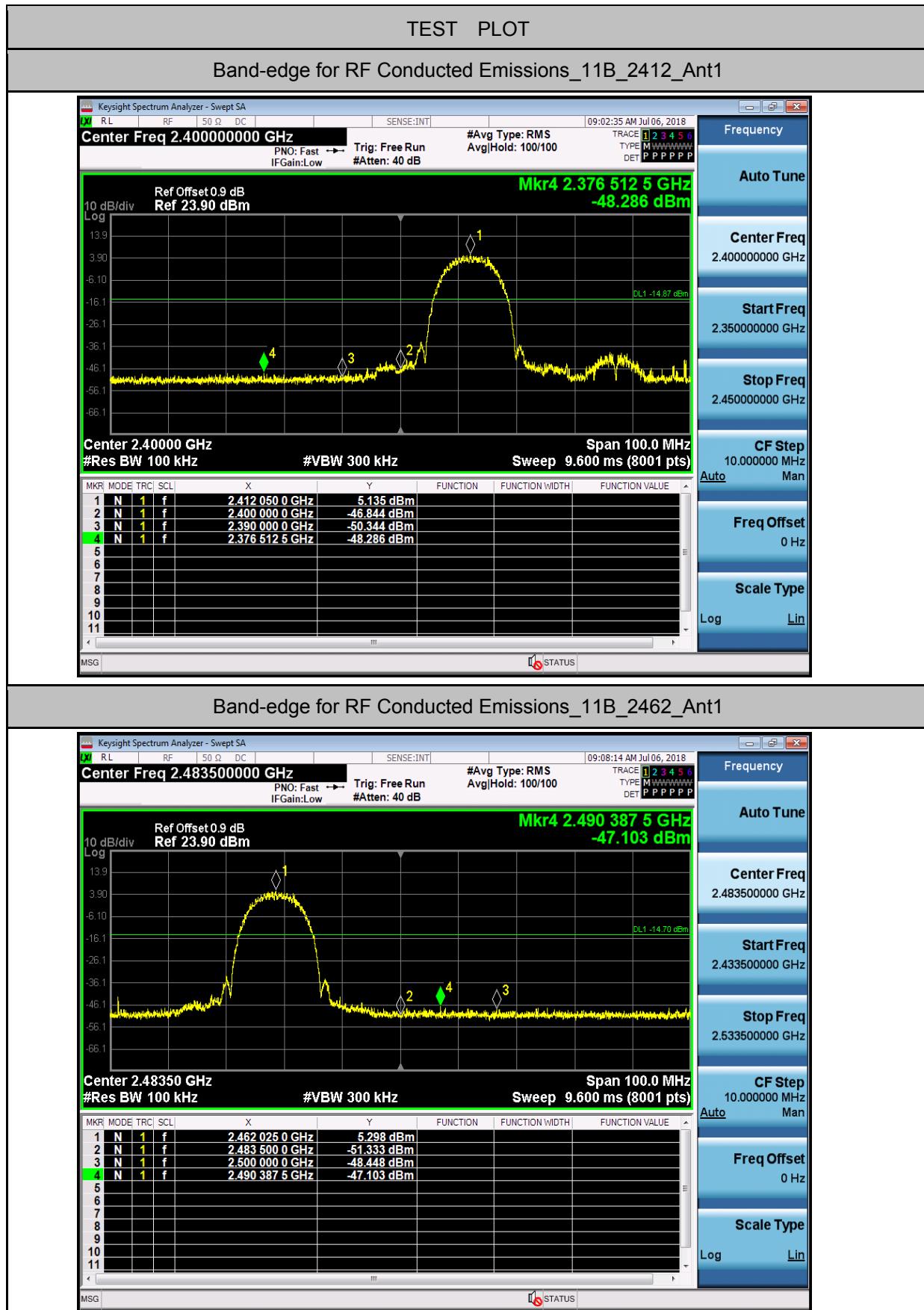
## Maximum Peak power spectral density\_11N20SISO\_2442\_Ant1

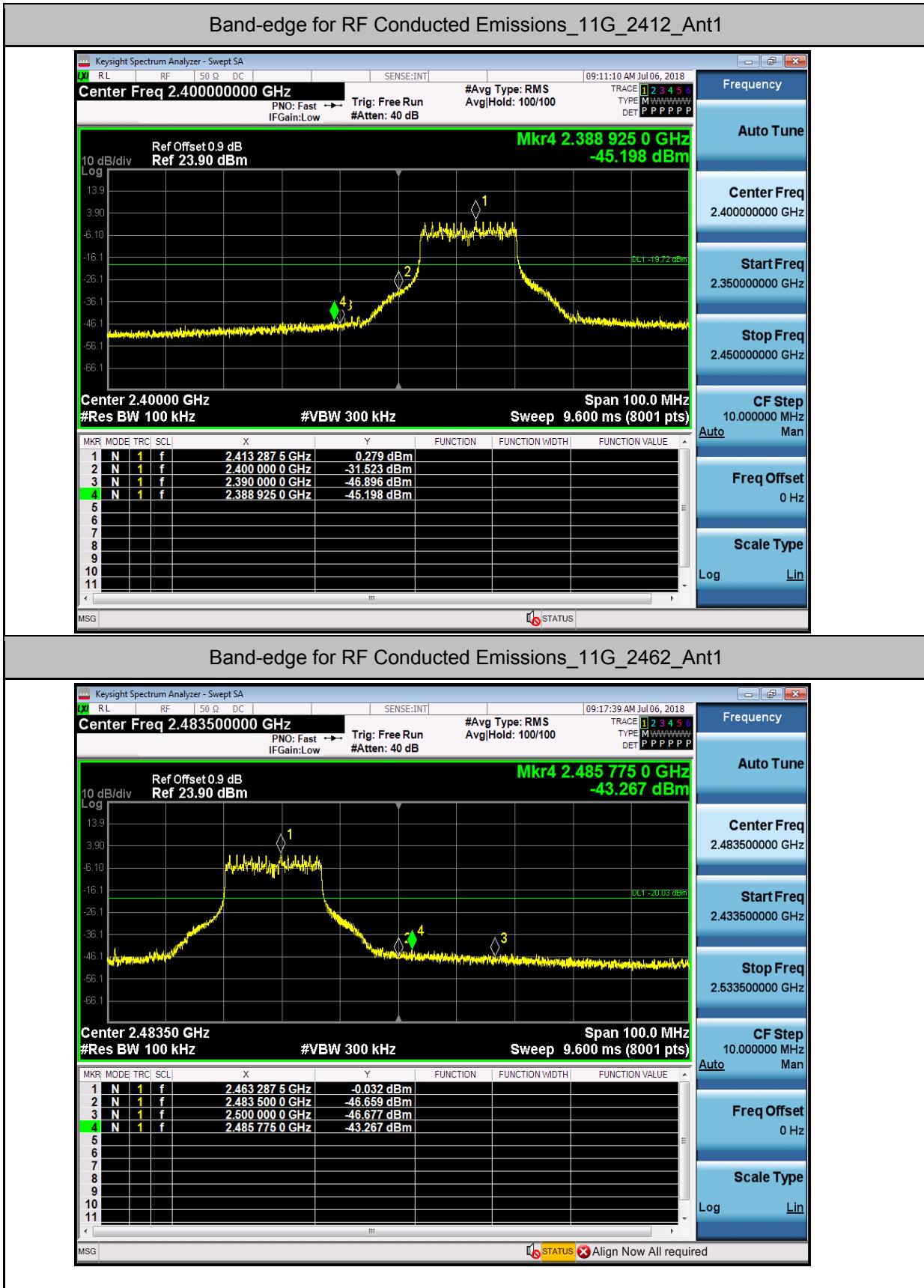


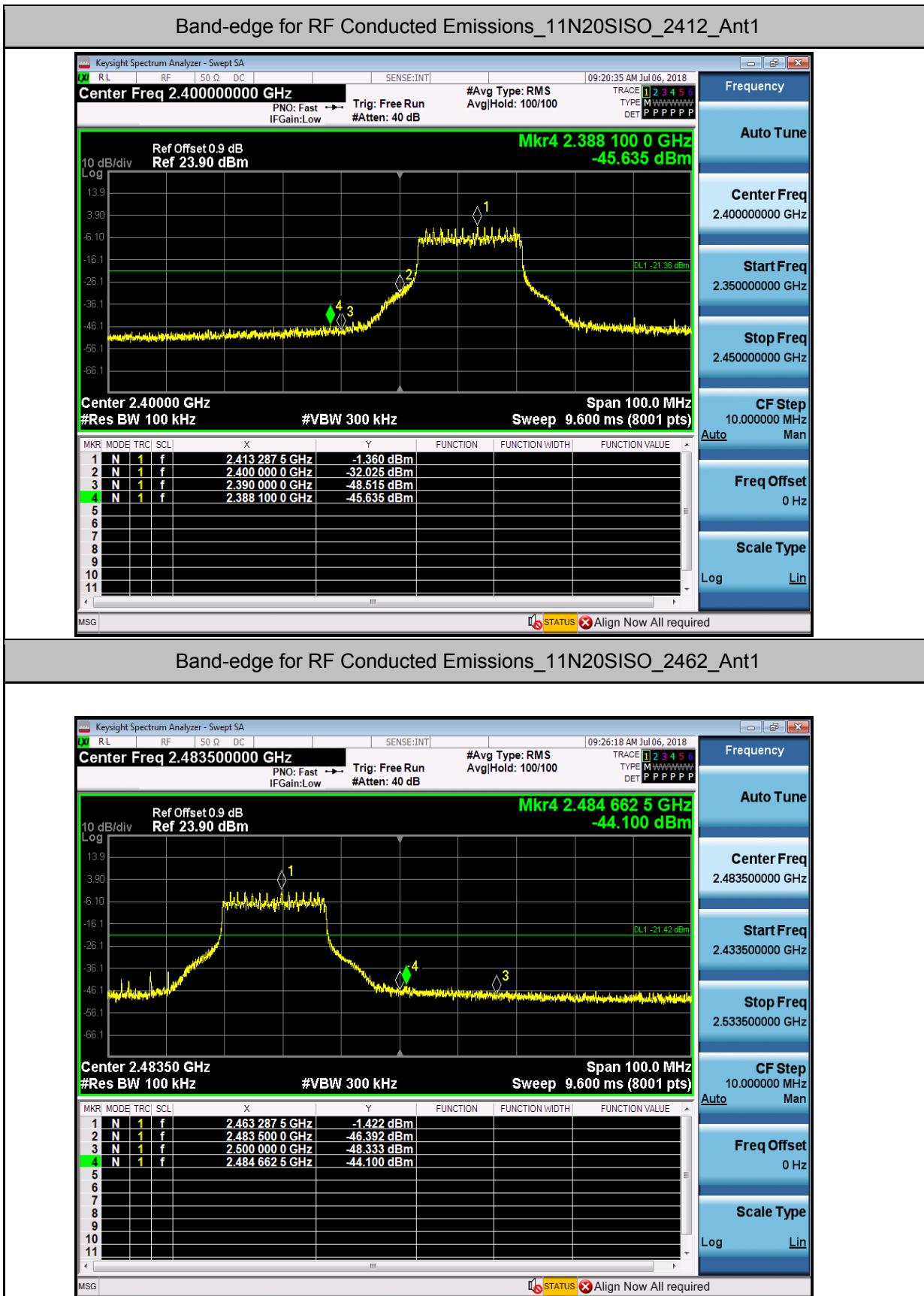


#### 4. Band-edge for RF Conducted Emissions

Test Mode	Test Channel	Ant	Carrier Power[dBm]	Max. Spurious Level [dBm]	Limit [dBm]	Verdict
11B	2412	Ant1	5.135	-48.286	-14.87	PASS
11B	2462	Ant1	5.298	-47.103	-14.7	PASS
11G	2412	Ant1	0.279	-45.198	-19.72	PASS
11G	2462	Ant1	-0.032	-43.267	-20.03	PASS
11N20SISO	2412	Ant1	-1.360	-45.635	-21.36	PASS
11N20SISO	2462	Ant1	-1.422	-44.100	-21.42	PASS

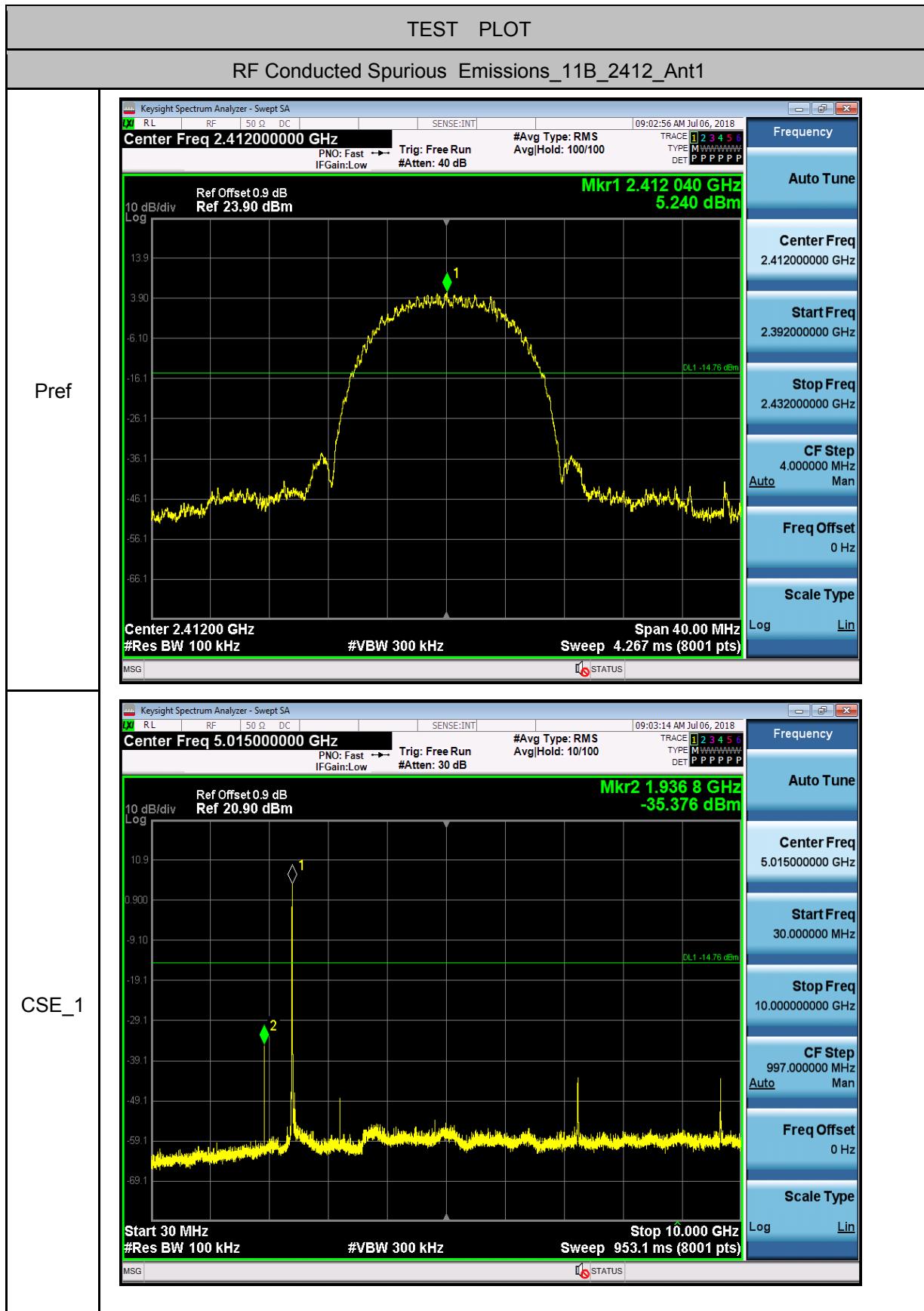


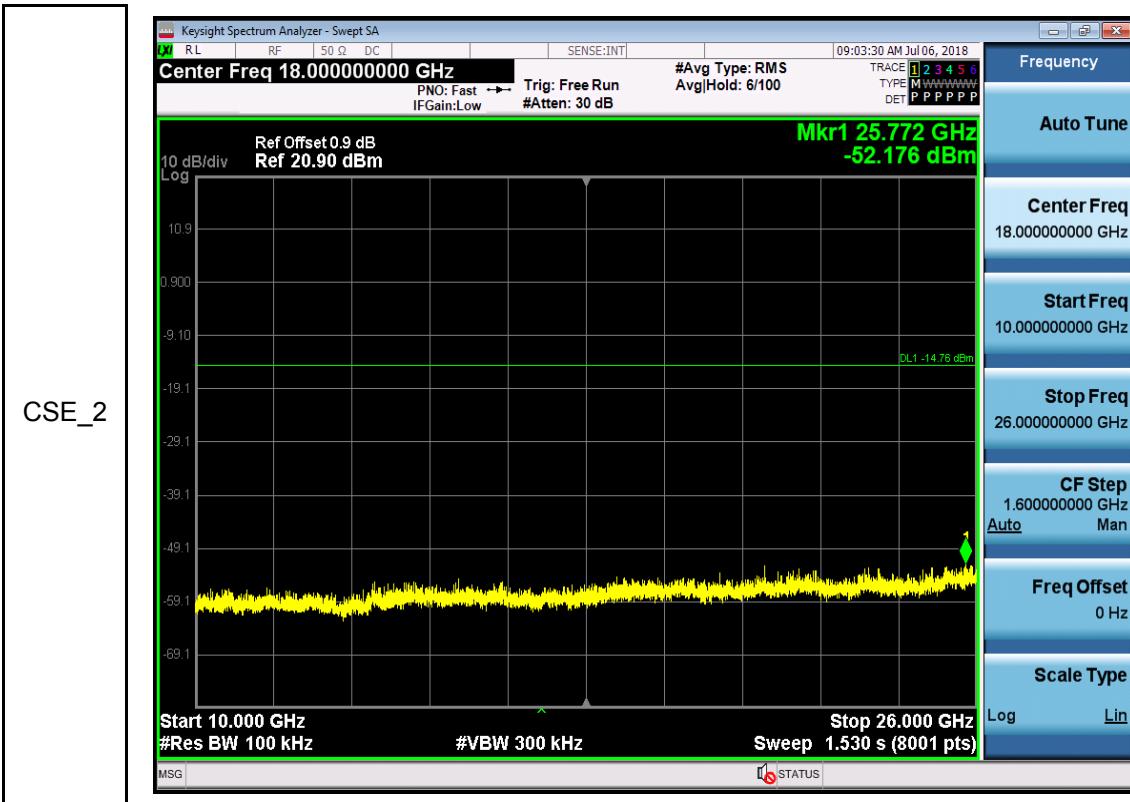




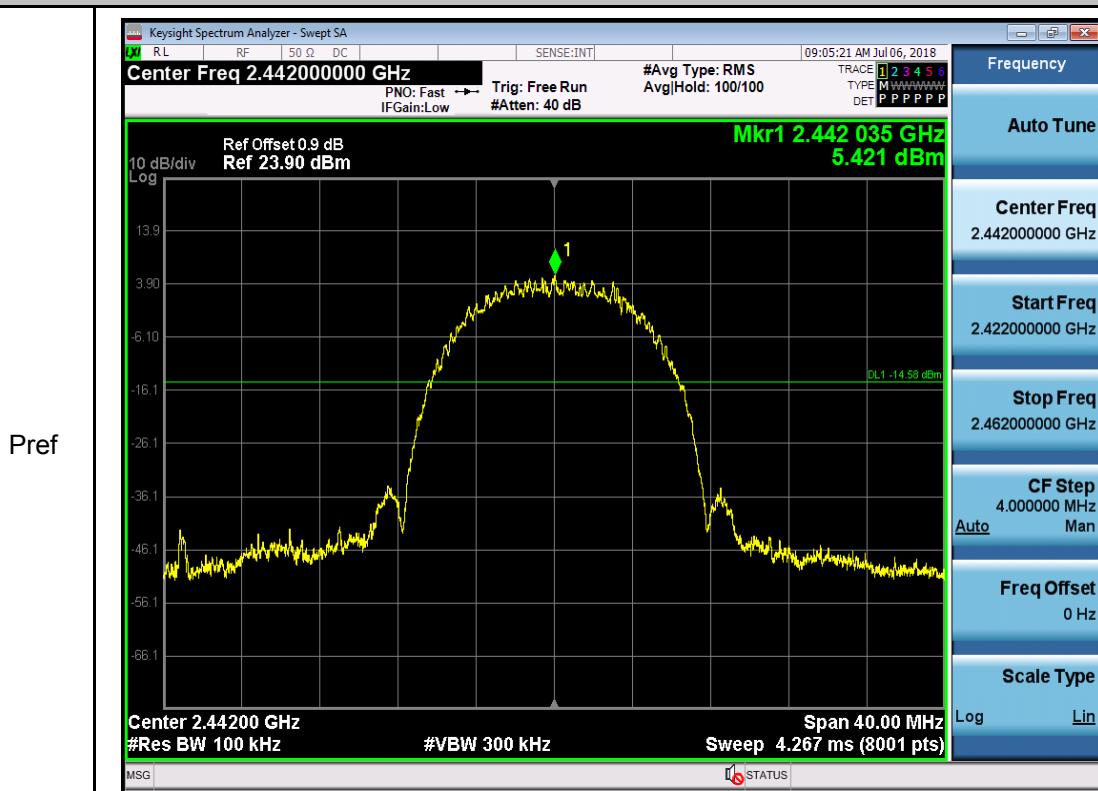
### 5.RF Conducted Spurious Emissions

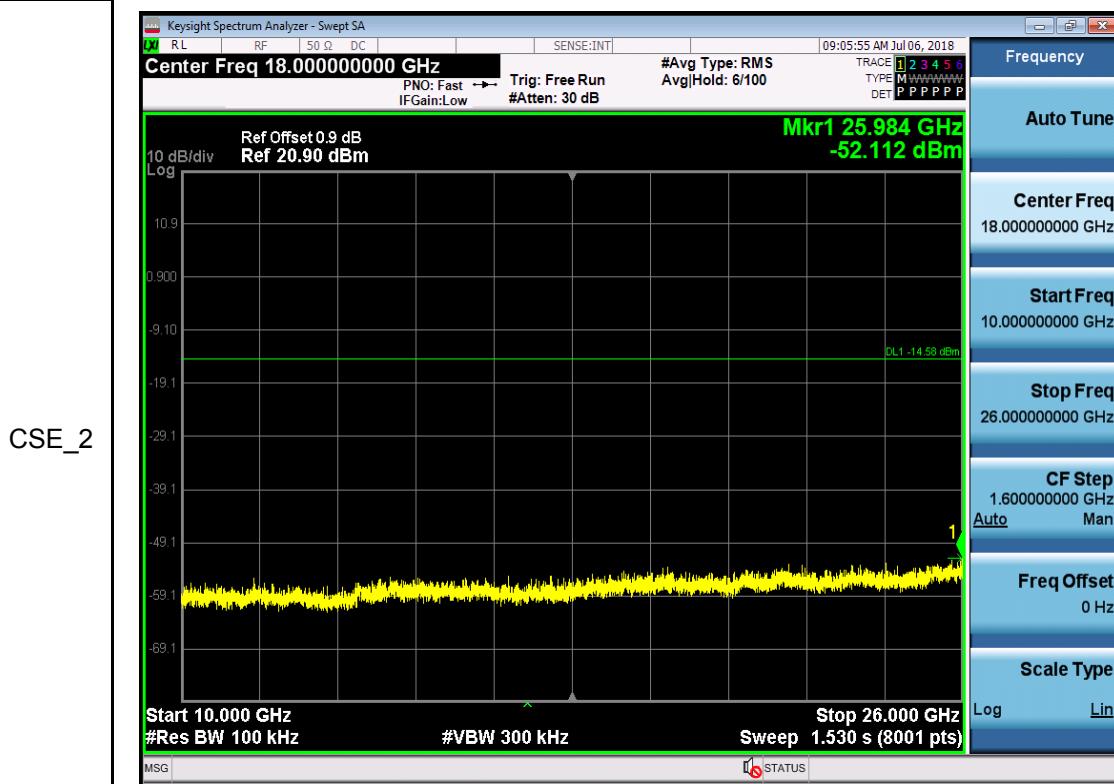
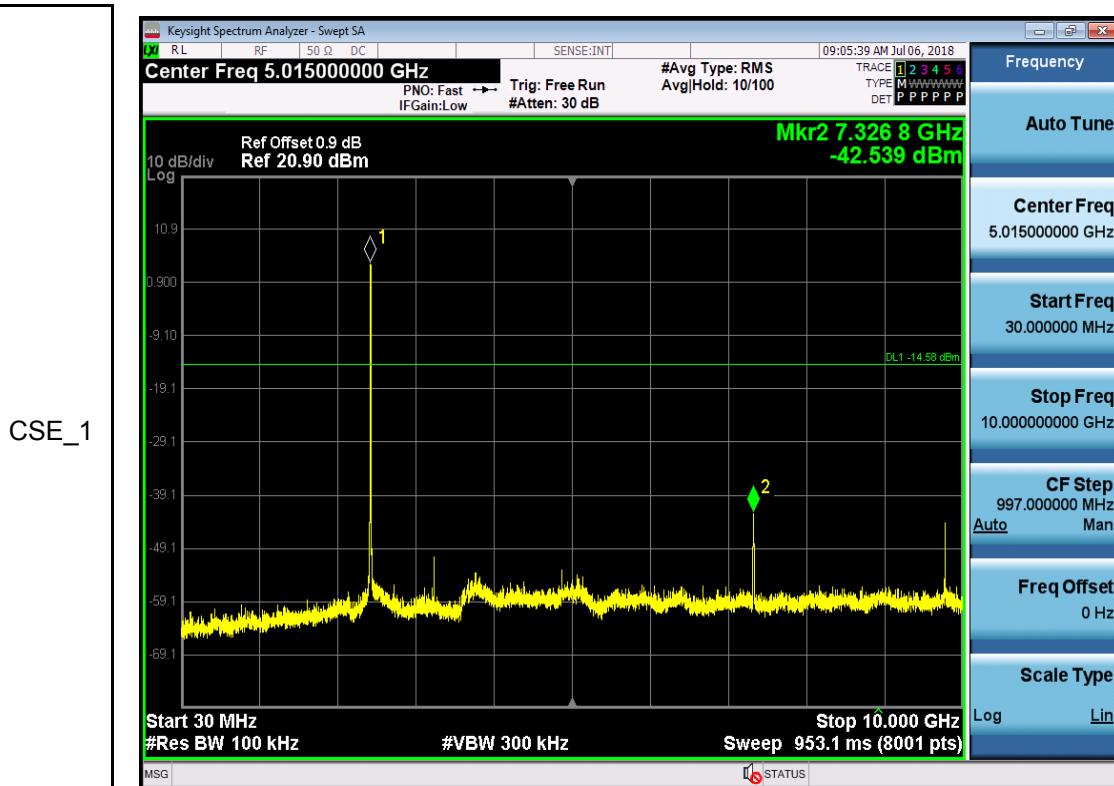
Test Mode	Test Channel	Ant	StartFre [MHz]	StopFre [MHz]	RBW [kHz]	VBW [kHz]	Pref[dBm]	Max. Level [dBm]	Limit [dBm]	Verdict
11B	2412	Ant1	30	10000	100	300	5.24	-35.376	<-14.76	PASS
11B	2412	Ant1	10000	26000	100	300	5.24	-52.176	<-14.76	PASS
11B	2442	Ant1	30	10000	100	300	5.421	-42.539	<-14.579	PASS
11B	2442	Ant1	10000	26000	100	300	5.421	-52.112	<-14.579	PASS
11B	2462	Ant1	30	10000	100	300	5.57	-44.560	<-14.43	PASS
11B	2462	Ant1	10000	26000	100	300	5.57	-51.898	<-14.43	PASS
11G	2412	Ant1	30	10000	100	300	0.161	-48.546	<-19.839	PASS
11G	2412	Ant1	10000	26000	100	300	0.161	-51.824	<-19.839	PASS
11G	2442	Ant1	30	10000	100	300	0.285	-49.157	<-19.715	PASS
11G	2442	Ant1	10000	26000	100	300	0.285	-51.642	<-19.715	PASS
11G	2462	Ant1	30	10000	100	300	-0.031	-50.138	<-20.031	PASS
11G	2462	Ant1	10000	26000	100	300	-0.031	-51.960	<-20.031	PASS
11N20SISO	2412	Ant1	30	10000	100	300	-1.507	-49.063	<-21.507	PASS
11N20SISO	2412	Ant1	10000	26000	100	300	-1.507	-51.829	<-21.507	PASS
11N20SISO	2442	Ant1	30	10000	100	300	-1.163	-49.162	<-21.163	PASS
11N20SISO	2442	Ant1	10000	26000	100	300	-1.163	-52.034	<-21.163	PASS
11N20SISO	2462	Ant1	30	10000	100	300	-1.576	-49.651	<-21.576	PASS
11N20SISO	2462	Ant1	10000	26000	100	300	-1.576	-51.569	<-21.576	PASS

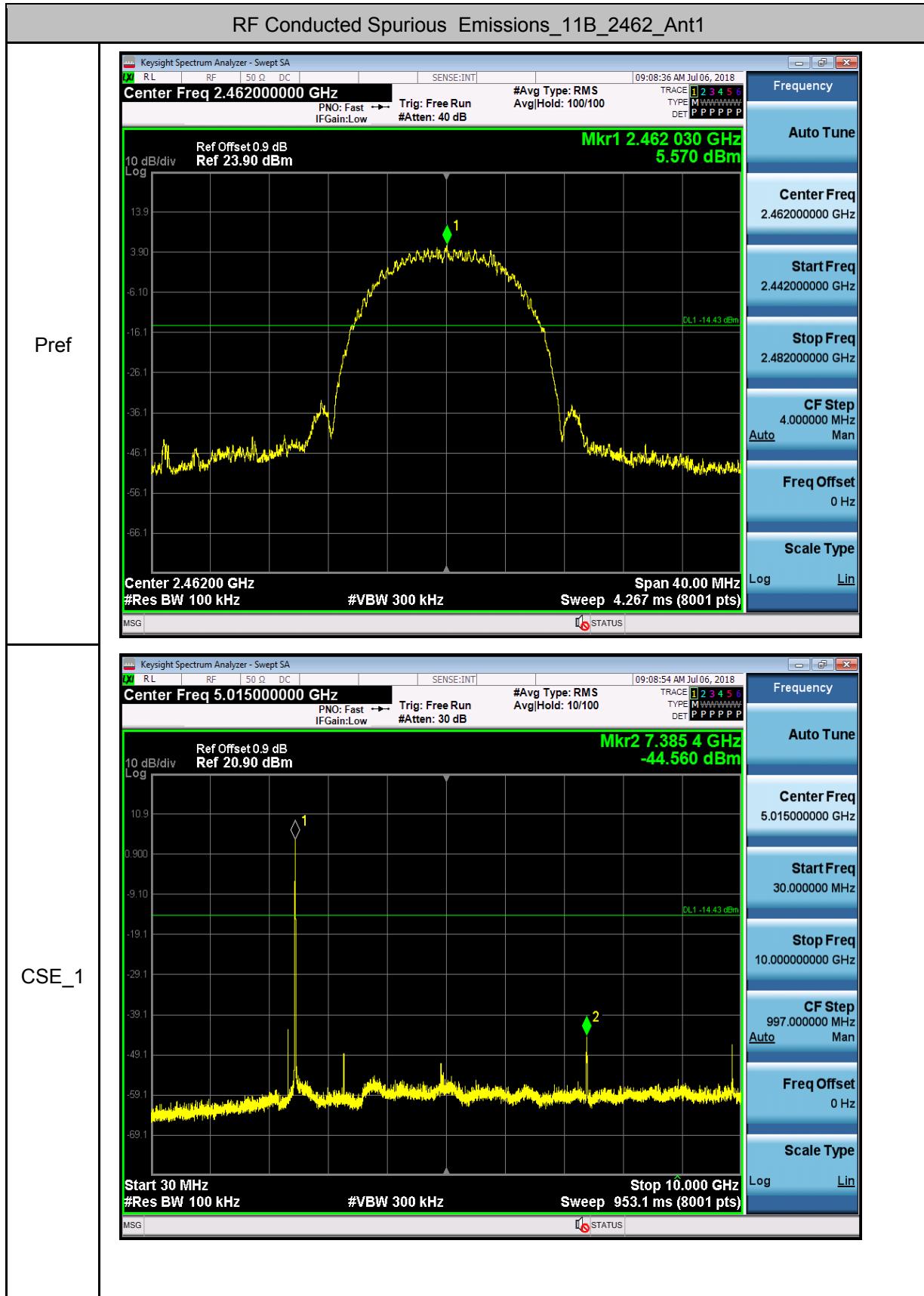


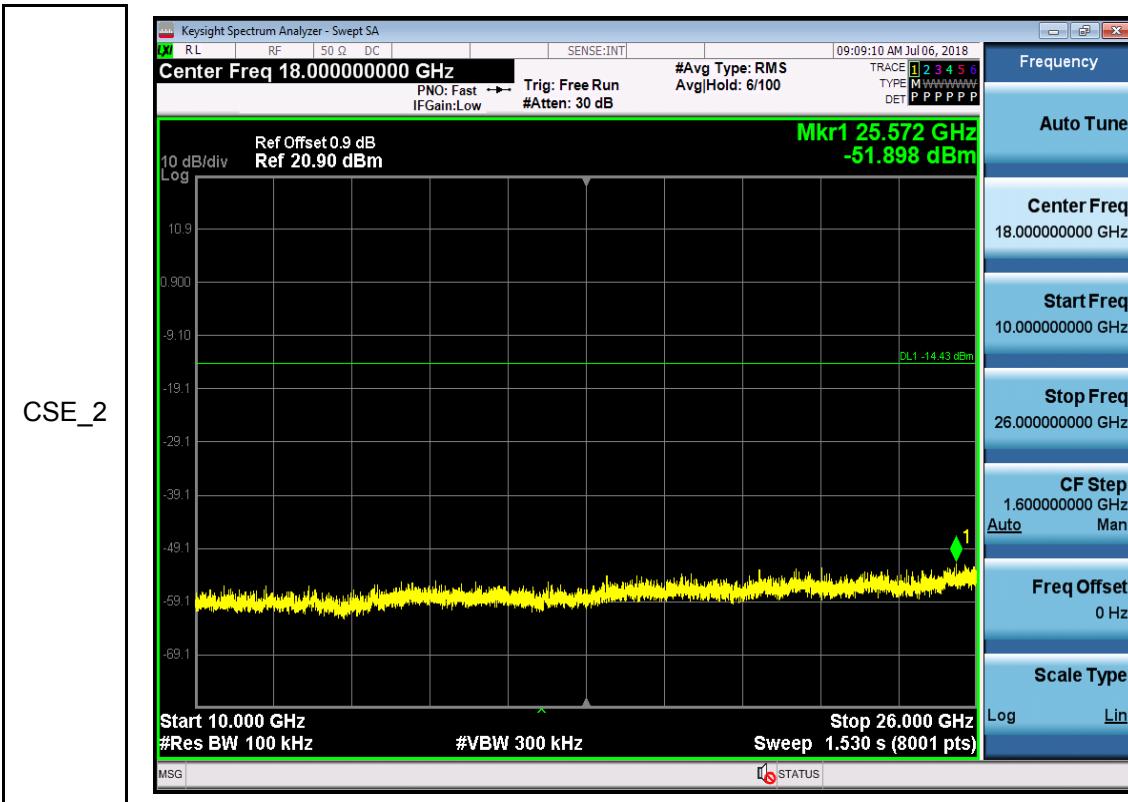


## RF Conducted Spurious Emissions\_11B\_2442\_Ant1

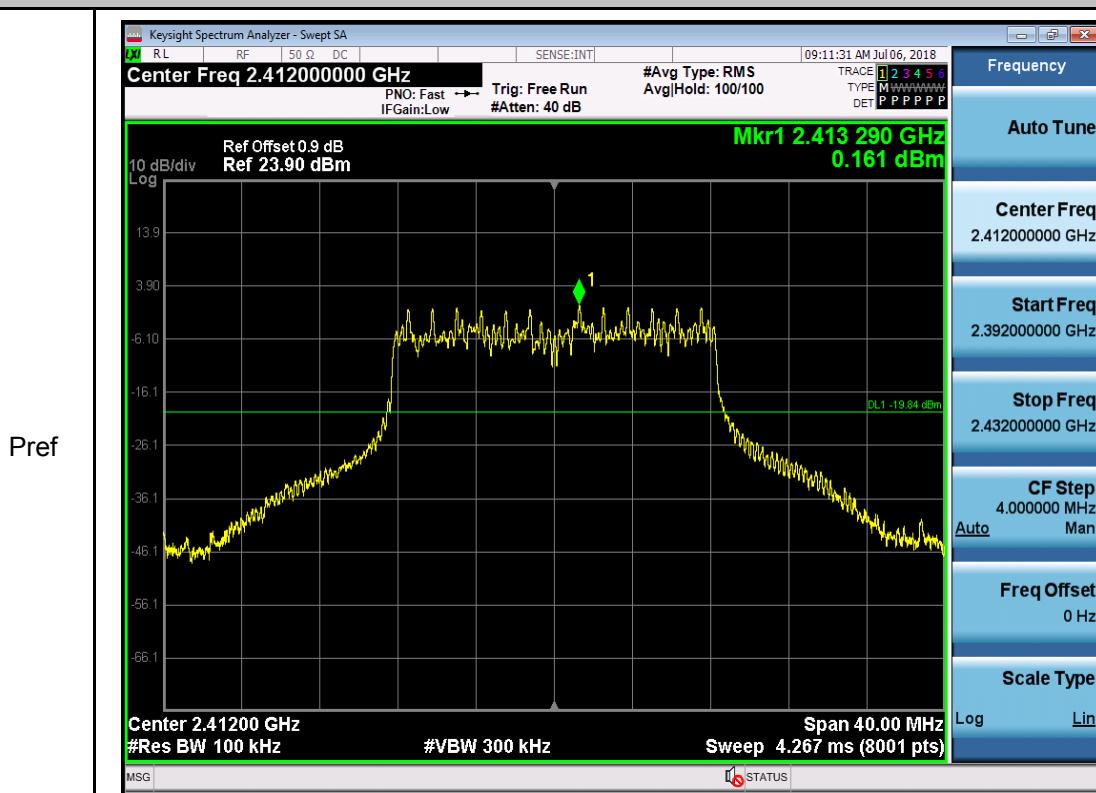


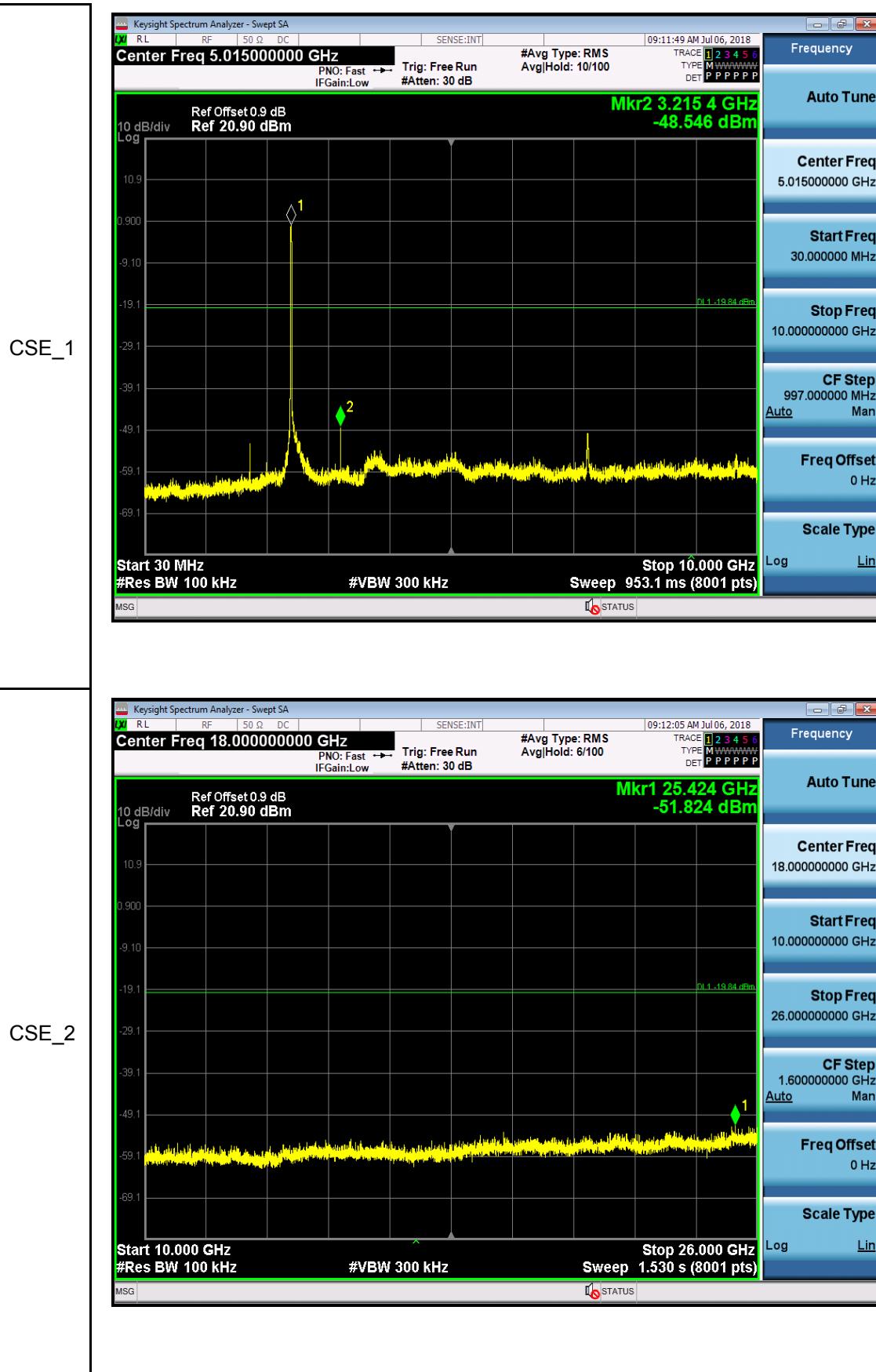


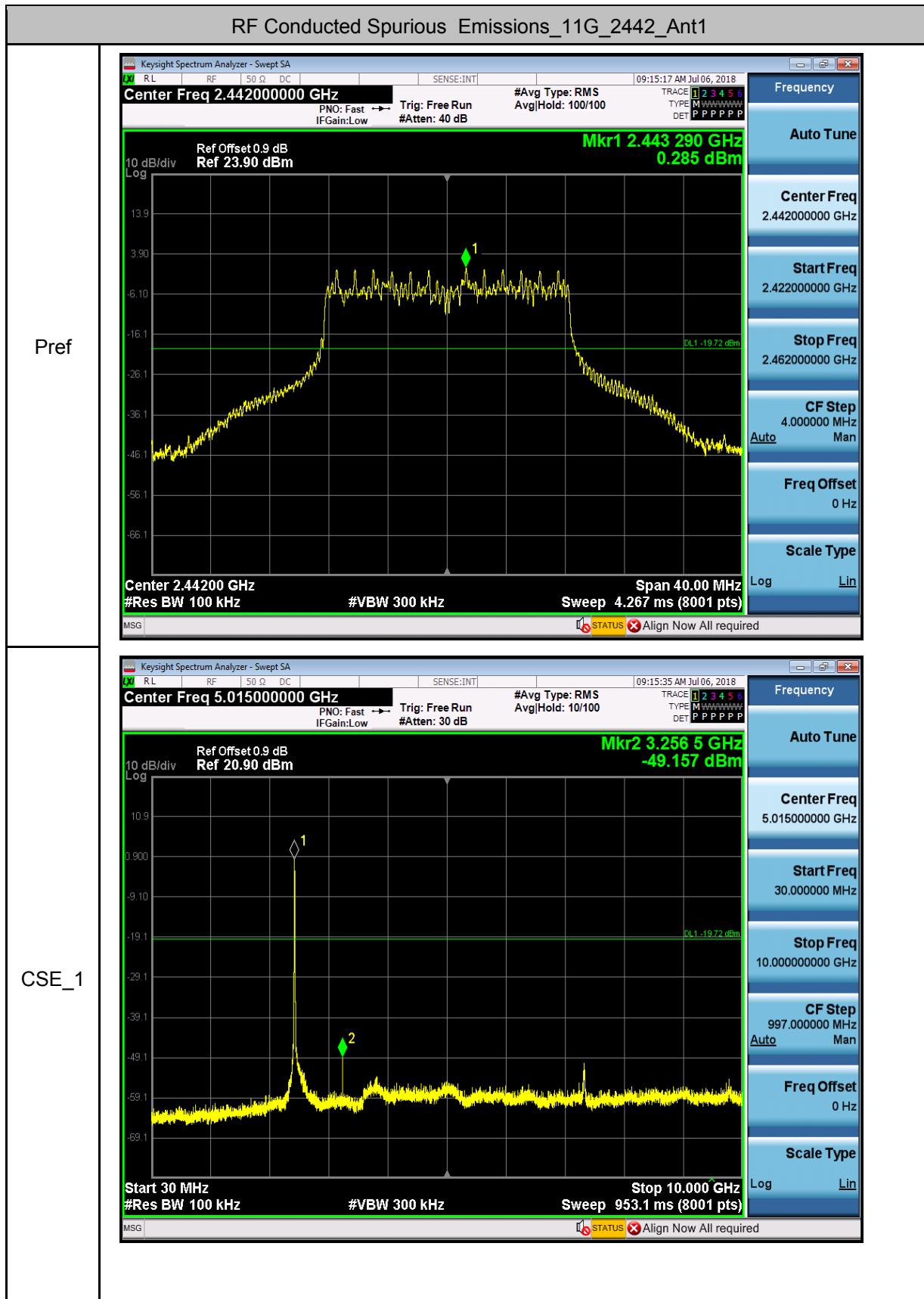


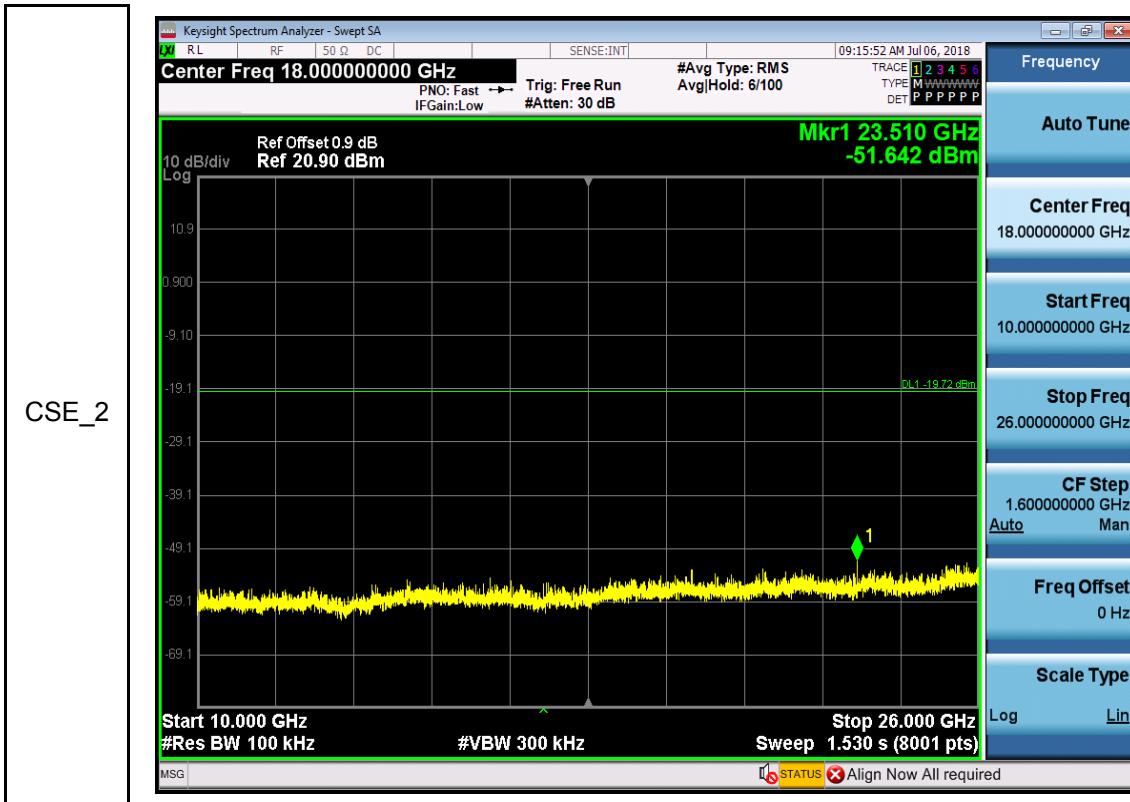


## RF Conducted Spurious Emissions\_11G\_2412\_Ant1

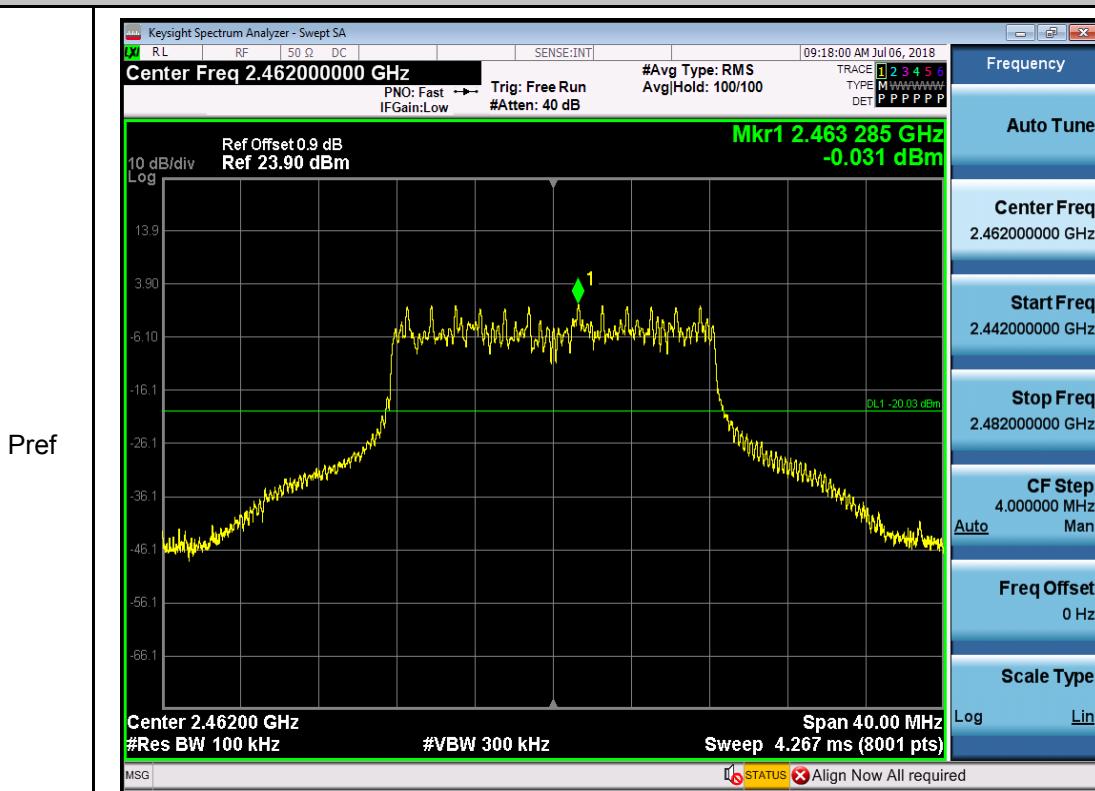


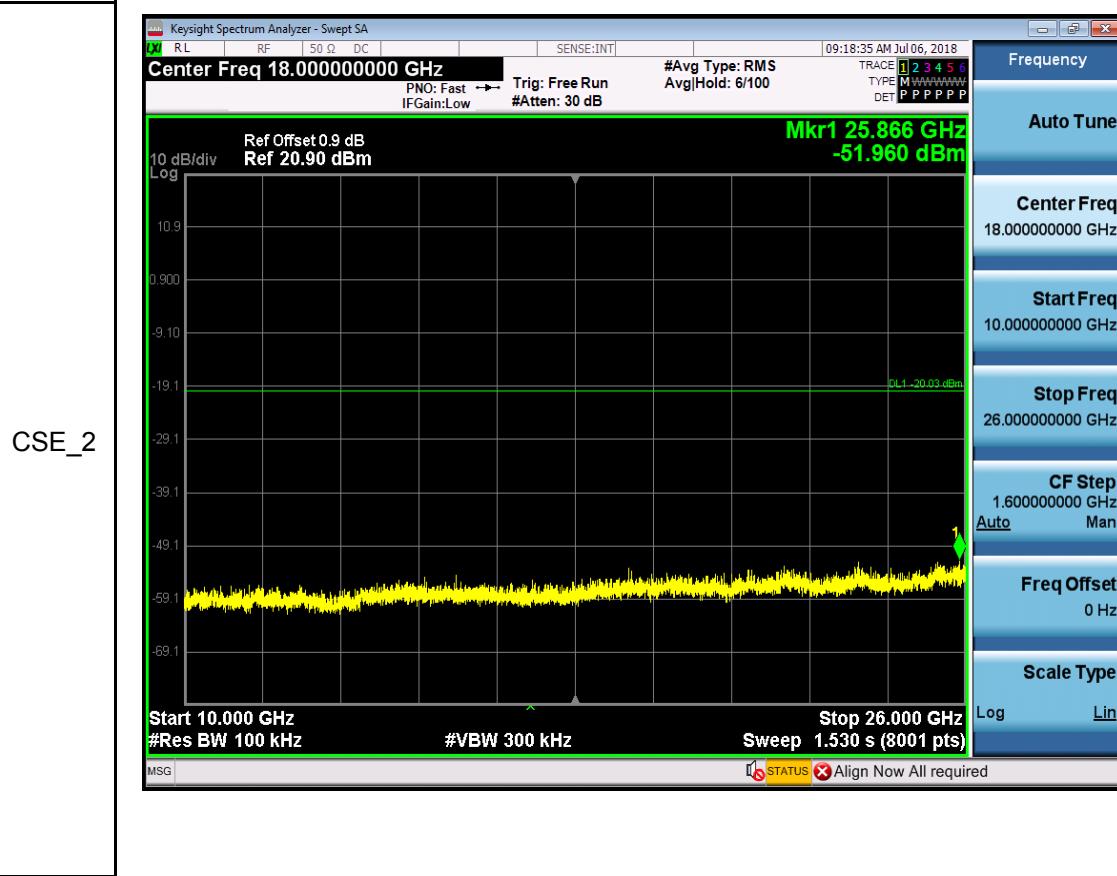
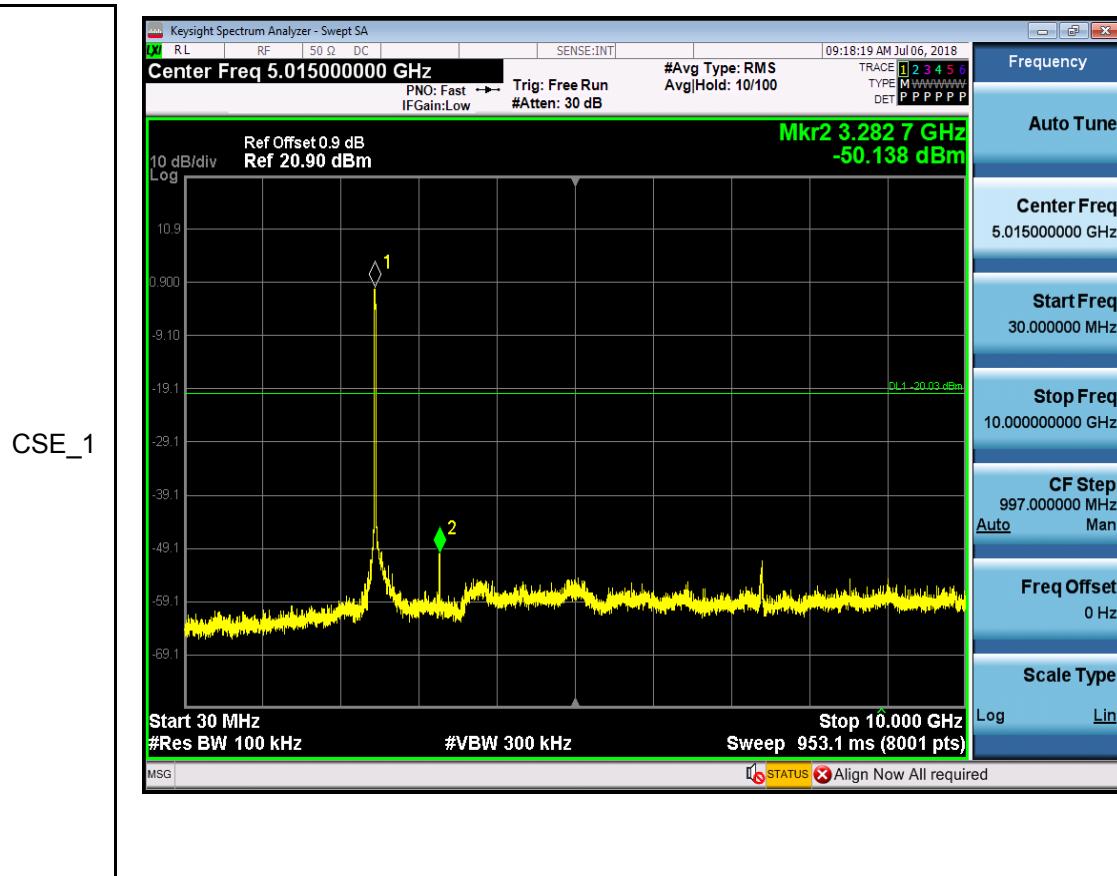


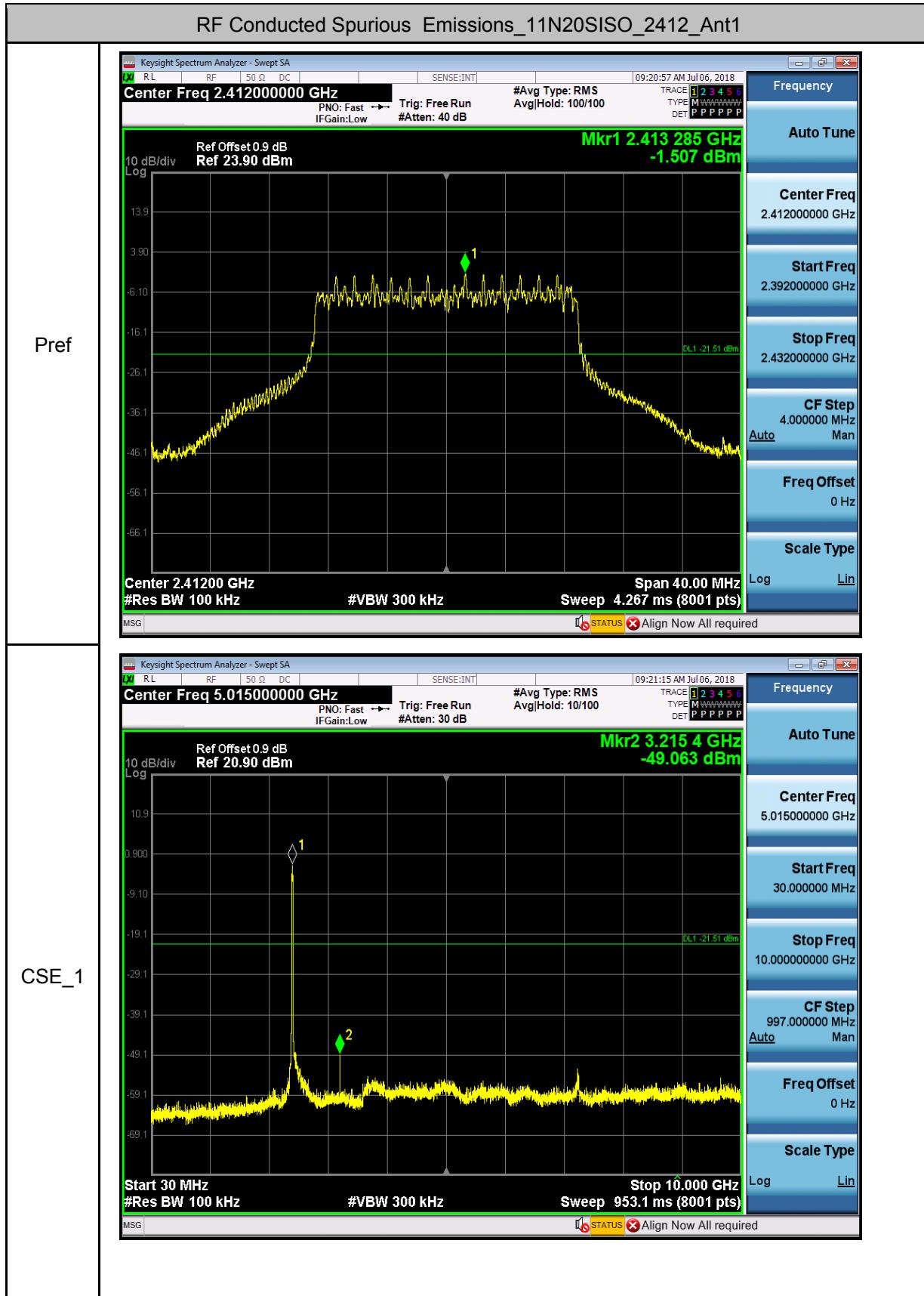


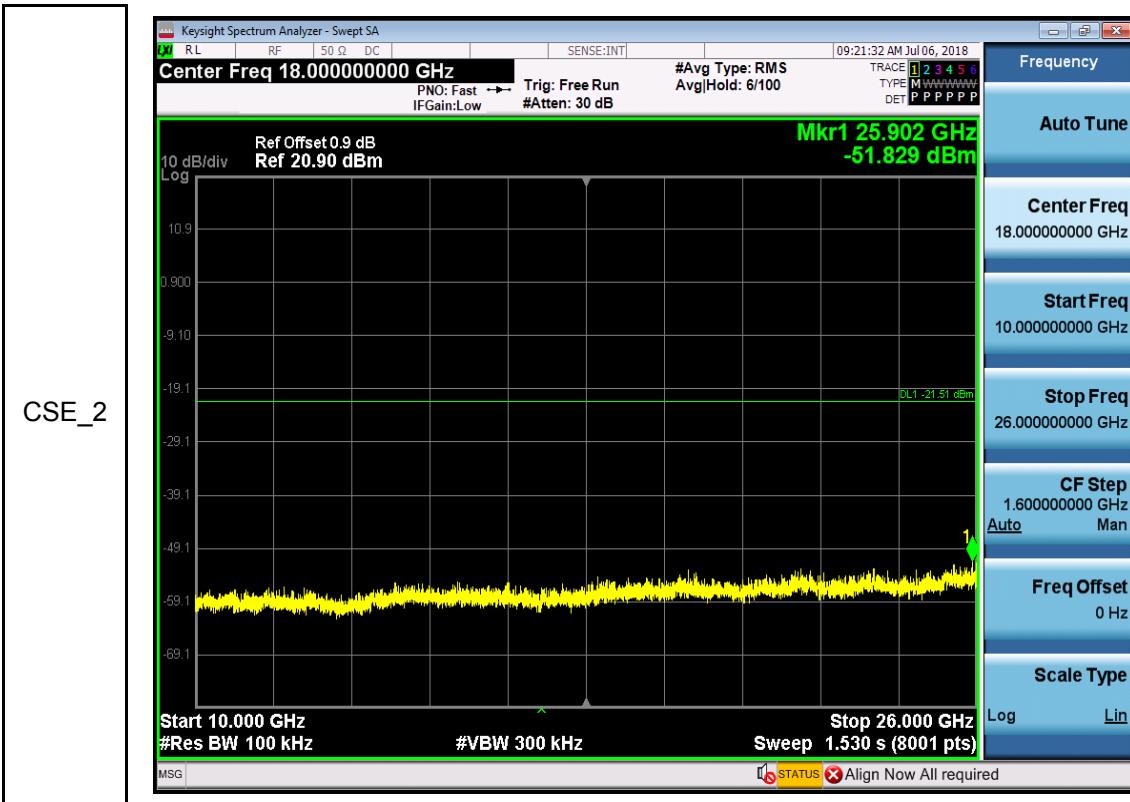


## RF Conducted Spurious Emissions\_11G\_2462\_Ant1

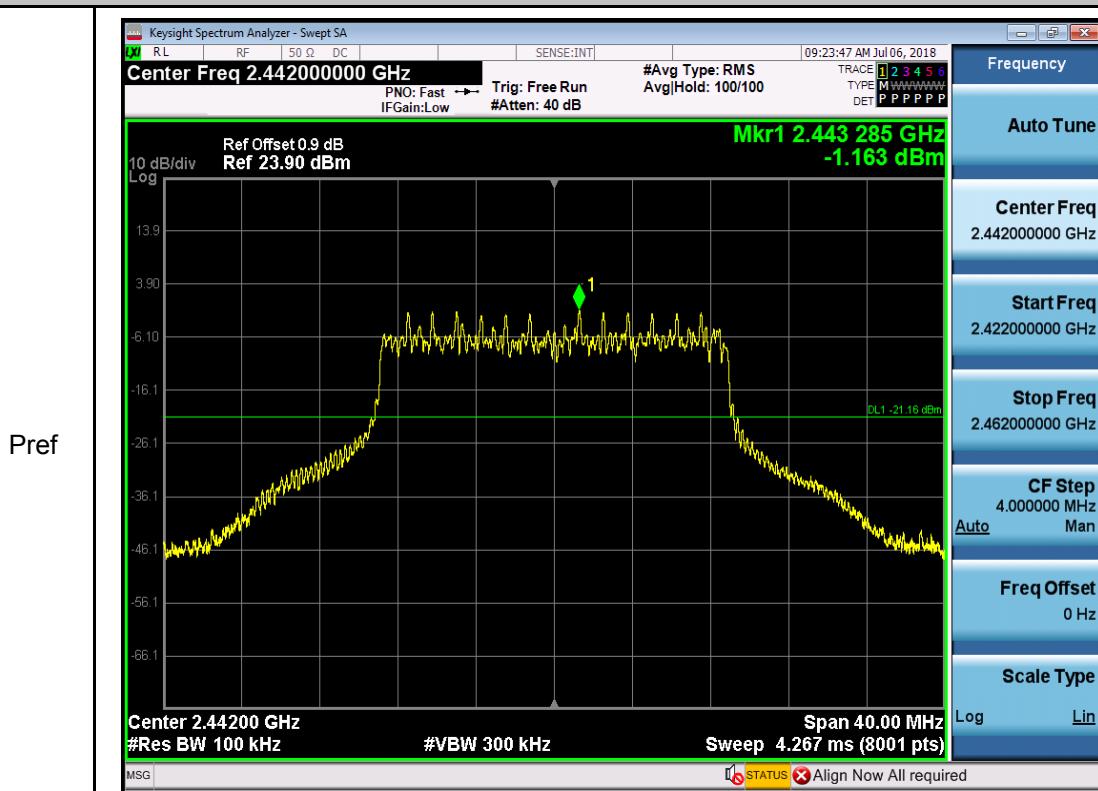


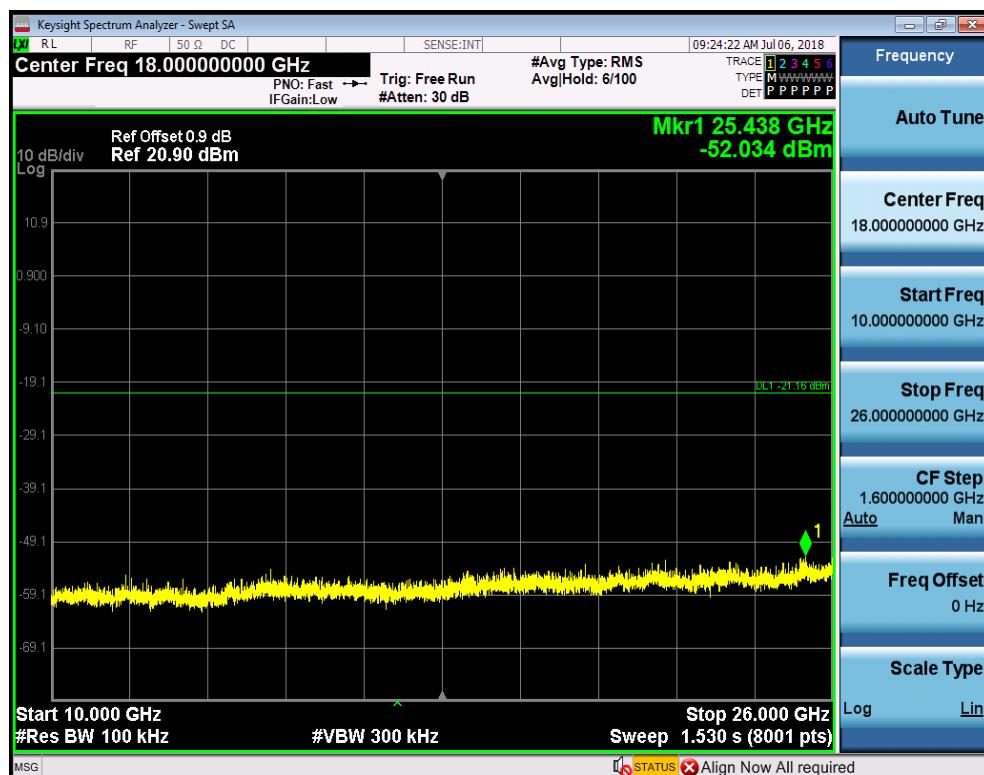
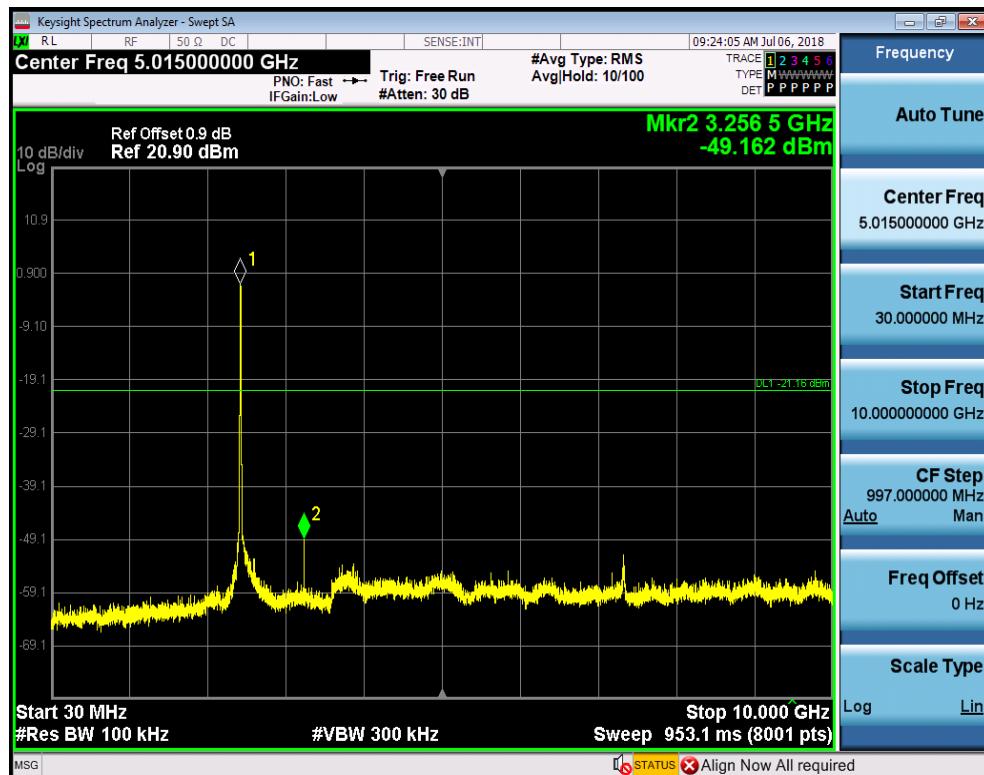


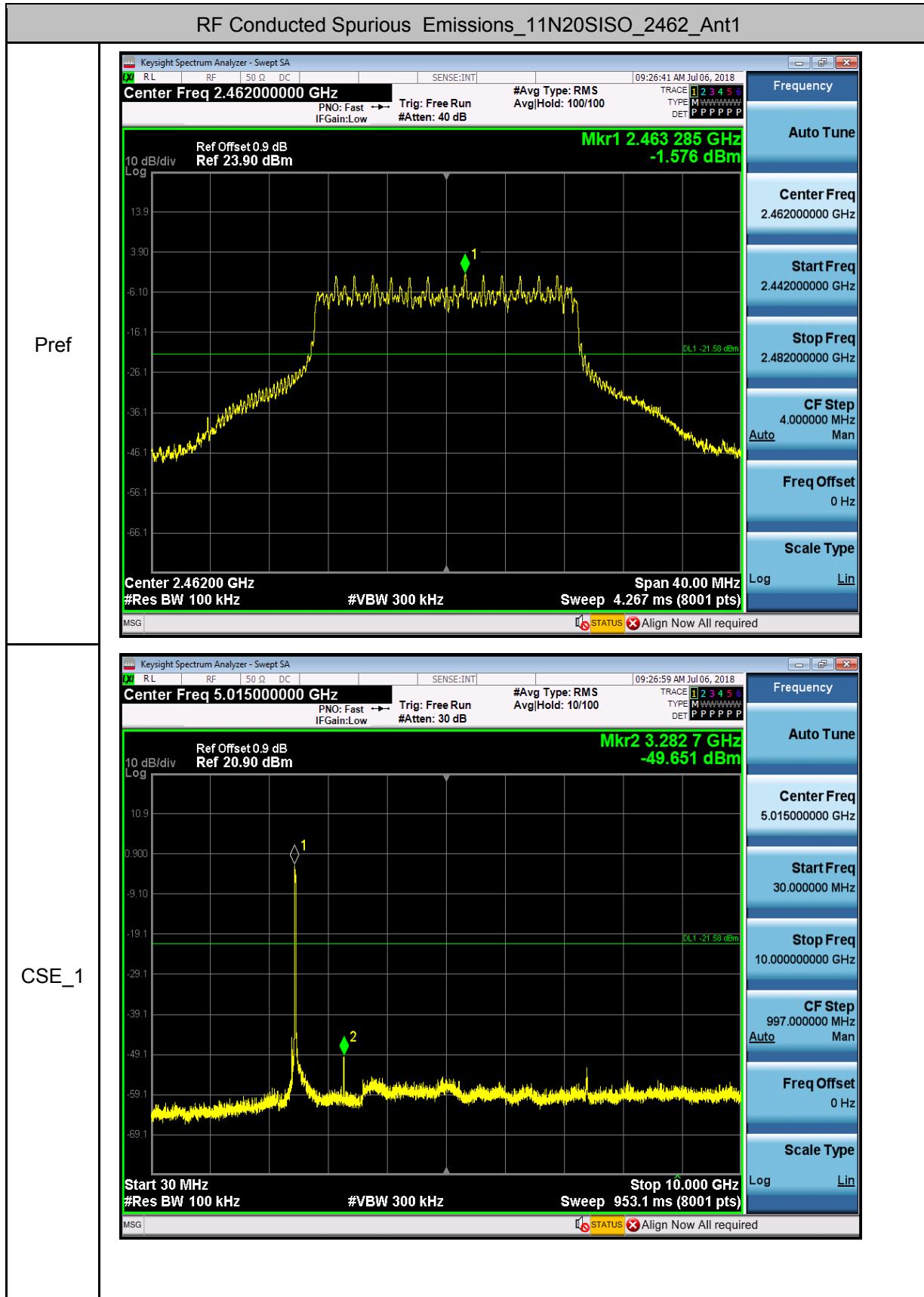


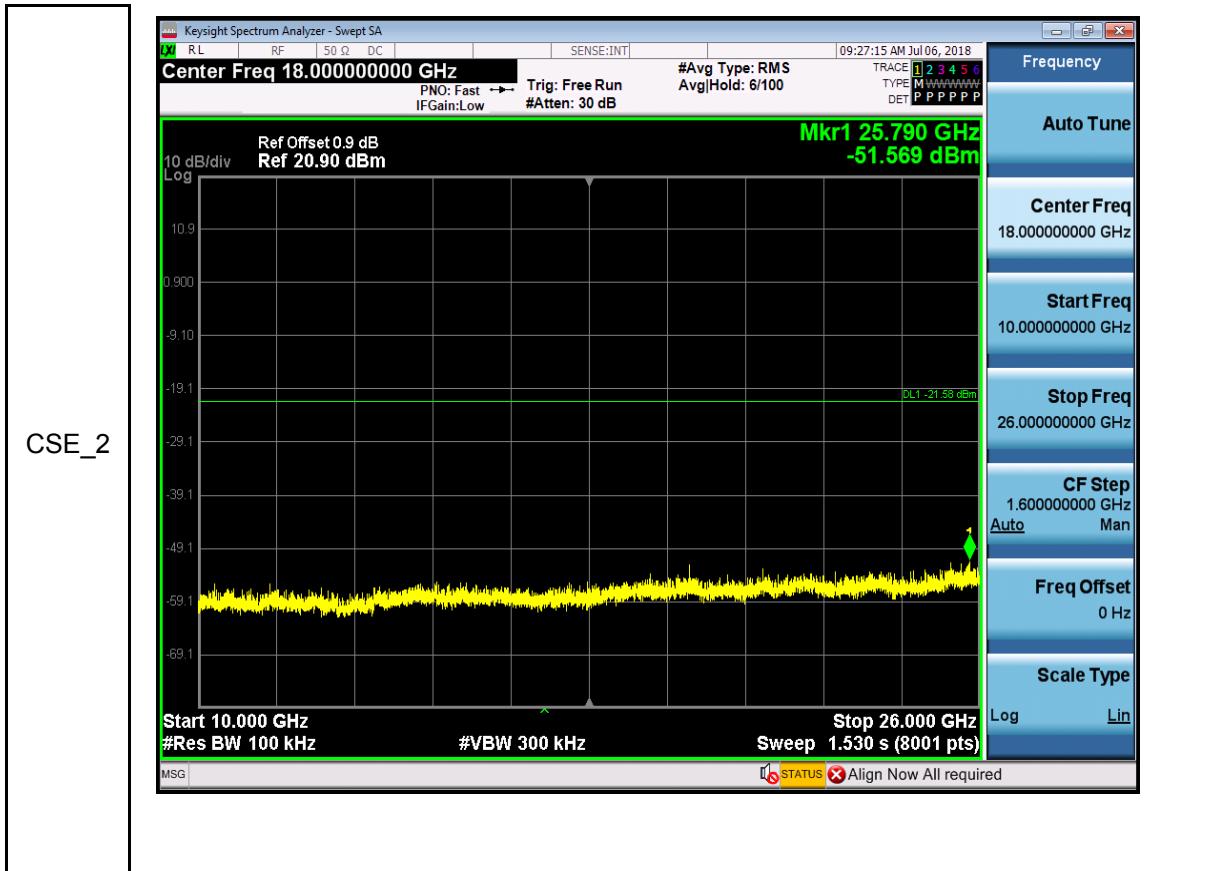


## RF Conducted Spurious Emissions\_11N20SISO\_2442\_Ant1









**--End of Report--**