



198 Kezhu Road, Scientech Park, Guangzhou Economic & Technological  
Development District, Guangzhou, China 510663  
Telephone: +86 (0) 20 82155555  
Fax: +86 (0) 20 82075059  
Email: ee.guangzhou@sgs.com

Report No.: GZEM190901605903  
Page: 1 of 112  
FCC ID: 2AVEEGHA01

## **TEST REPORT**

**Application No.:** GZEM1909016059CR  
**Applicant:** Gardyn, Inc.  
**Address of Applicant:** 6701 Pemberton Street, Bethesda MD 20817, USA  
**Manufacturer:** Gardyn, Inc.  
**Address of Manufacturer:** 6701 Pemberton Street, Bethesda MD 20817, USA  
**Factory:** ON Limited  
**Address of Factory:** Suite 1203, 12/F., Car Po Commercial Building 18 - 20 Lyndhurst Terrace, Central District, Hong Kong

**Equipment Under Test (EUT):**

**FCC ID: 2AVEEGHA01**

**EUT Name:** Gardyn Home  
**Model No.:** GH-A01  
**Standard(s) :** 47 CFR Part 15, Subpart C 15.247  
**Date of Receipt:** 2019-09-26  
**Date of Test:** 2019-10-22 to 2019-12-10  
**Date of Issue:** 2019-12-13

<b>Test Result:</b>	<b>Pass*</b>
---------------------	--------------

\* 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.

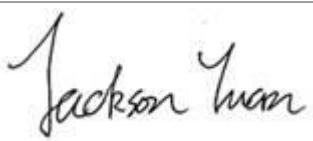
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Revision Record				
Version	Chapter	Date	Modifier	Remark
01		2019-12-13		Original

Authorized for issue by:			
Tested By	 Jackson Yuan		2019-10-22 to 2019-12-10
	Jackson_Yuan /Project Engineer		Date
Checked By	 Ricky Liu		2019-12-13
	Ricky_Liu /Reviewer		Date



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## 2 Test Summary

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

Radio Spectrum Matter Part				
Item	Standard	Method	Requirement	Result
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:	DC 24 V powered by AC/DC adapter as below:
	Model: FY1802407500
	Input: AC 100-240 V, 50/60 Hz, 2.6 A Max
	Output: DC 24 V, 7500 mA
Rated Power:	180W
Test Voltage:	AC 120 V, 60 Hz
Cable:	DC input ports for main unit For AC/DC adapter: AC mains (unshielded, 0.8 m) DC output cables (unshielded, 1.5m)
Antenna Gain	0 dBi
Antenna Type	PCB 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

Description	Manufacturer	Model No.	Serial No.
Monitor	SAMSUNG	225MS	CR22HVMP900646W
Mouse	DELL	MOC5UO	G1B02ZP5
Keyboard	DELL	SK-8115	CN-ODJ331-71616-7B1-109J



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#### 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:

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No tests were sub-contracted.

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## 4.5 Test Facility

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

**● NVLAP (Lab Code: 200611-0)**

SGS-CSTC Standards Technical Services Co., Ltd., Guangzhou EMC Laboratory is accredited by the National Voluntary Laboratory Accreditation Program (NVLAP/NIST). NVLAP Code: 200611-0.

The report must not be used by the client to claim product certification, approval, or endorsement by NVLAP, NIST, or any agency of the Federal Government.

**● ACMA**

SGS-CSTC Standards Technical Services Co., Ltd., EMC Laboratory can also perform testing for the Australian C-Tick mark as a result of our NVLAP accreditation.

**● SGS UK(Certificate No.: 32), SGS-TUV SAARLAND and SGS-FIMKO**

Have approved SGS-CSTC Standards Technical Services Co., Ltd., EMC Laboratory as a supplier of EMC TESTING SERVICES and SAFETY TESTING SERVICES.

**● CNAS (Lab Code: L0167)**

SGS-CSTC Standards Technical Services Co., Ltd., EMC Laboratory has been assessed and in compliance with CNAS-CL01:2018 accreditation criteria for testing laboratories (identical to ISO/IEC 17025:2017 General Requirements) for the Competence of Testing Laboratories.

**● FCC Recognized 2.948 Listed Test Firm(Registration No.: 282399)**

SGS-CSTC Standards Technical Services Co., Ltd., EMC Laboratory has been registered and fully described in a report filed with the (FCC) Federal Communications Commission. The acceptance letter from the FCC is maintained in our files. Registration 282399, May 31, 2002.

**● FCC Recognized Accredited Test Firm(Registration No.: 486818)**

SGS-CSTC Standards Technical Services Co., Ltd., EMC Laboratory has been accredited and fully described in a report filed with the (FCC) Federal Communications Commission. The acceptance letter from the FCC is maintained in our files. Designation Number: CN5016, Test Firm Registration Number: 486818, Jul 13, 2017.

**● Industry Canada (Registration No.: 4620B, CAB identifier: CN0052)**

SGS-CSTC Standards Technical Services Co., Ltd., has been registered by Innovation Science and Economic Development Canada for Wireless Device Testing laboratories to test to Canadian radio equipment requirements. Registration No. 4620B, CAB identifier: CN0052.

**● VCCI (Registration No.: R-12460, C-12584, G-10449 and T-11179)**

The 10m Semi-anechoic chamber and Shielded Room of SGS-CSTC Standards Technical Services Co., Ltd. have been registered in accordance with the Regulations for Voluntary Control Measures with Registration No.: R-12460, C-12584, G-10449 and T-11179 respectively.

**● CBTL (Lab Code: TL129)**

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



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## 4.6 Deviation from Standards

None

## 4.7 Abnormalities from Standard Conditions

None

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## 5 Equipment List

Conducted Emissions at 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	N/A	N/A
Two-Line V-Network	R&S	ENV216	EMC0118	2019-01-11	2020-01-10
LISN	R&S	ENV216	EMC2135	2019-09-16	2020-09-15
EMI Test Receiver	Rohde & Schwarz	ESCS30	EMC0506	2019-11-18	2020-11-17
Coaxial Cable	HangTianXing	2m	EMC0107	2018-09-20	2020-09-19
Voltage Probe	SGS	N/A	EMC0106	2018-04-04	2020-04-03
Conical Metal Housing	SGS-EMC	N/A	EMC0167	2018-04-19	2020-04-18
Test Software E3c	Audix	Ver. 5.4.1221b	GZE100-62	N/A	N/A

Minimum 6dB Bandwidth					
Equipment	Manufacturer	Model No	Inventory No	Cal Date	Cal Due Date
EXA Signal Analyzer	Agilent Technologies	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	Agilent Technologies	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	Agilent Technologies	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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Conducted Band Edges Measurement					
Equipment	Manufacturer	Model No	Inventory No	Cal Date	Cal Due Date
MXA Signal Analyzer	AgilentTechnologies	N9020A	SEM004-10	2019-02-24	2020-02-23
ESG Vector Signal Generator	Keysight	E4438C	SEM006-03	2019-04-05	2020-04-04
EXG Analog Signal Generator	AgilentTechnologies	N5171B	SEM006-04	2017-07-26	2020-07-25
Power Meter	AgilentTechnologies	U2021XA_Ch2	SEM009-02	2019-05-29	2020-05-28
Power Meter	AgilentTechnologies	U2021XA_Ch3	SEM009-03	2019-05-29	2020-05-28
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 Spurious Emissions					
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

Radiated Emissions which fall in the restricted bands					
Equipment	Manufacturer	Model No	Inventory No	Cal Date	Cal Due Date
EMI Test Receiver	Rohde & Schwarz	ESIB26	EMC0522	2019-01-20	2020-01-19
EMI Test Receiver	Rohde & Schwarz	ESCI	EMC0056	2019-01-20	2020-01-19
Chamber cable	HangTianXing	N/A	EMC0542	2019-06-28	2021-06-27
Trilog Broadband Antenna 25MHz-1GHz	SCHWARZBECKMESS-ELEKTRONIK	VULB 9168	EMC2174	2018-09-06	2021-09-05
Bi-log Type Antenna	Schaffner -Chase	CBL6143	EMC0519	2017-05-04	2020-05-03
Horn Antenna 1GHz-18GHz	R & S	HF906	EMC0518	2018-09-02	2021-09-01
1GHz-26.5 GHz Pre-Amplifier	Agilent	8449B	EMC0521	2019-01-07	2020-01-08
Amplifier	HP	8447F	EMC2065	2019-05-29	2020-05-28
Pre-Amplifier MH648A	ANRITSU CORP	MH648A	EMC2086	2019-11-18	2020-11-17
Active Loop Antenna	EMCO	6502	EMC0523	2018-03-05	2020-03-04
High Pass Filter(915MHz)	FSY MICROWAVE	HM1465-9SS	EMC2079	2019-01-11	2020-01-10
2.4GHz Filter	Micro-Tronics	BRM 50702	EMC2069	2019-01-11	2020-01-10

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10m Semi-Anechoic Chamber	ETS	N/A	EMC0530	2019-10-20	2022-10-19
966 Anechoic Chamber	C.R.T	9m x 6m x 6m	EMC2142	2017-12-19	2019-12-18
MXE EMI Receiver	Keysight	N9038A	EMC2139	2019-11-18	2020-11-17
EXA Signal Analyzer	Keysight	N9010A	EMC2138	2019-11-18	2020-11-17
Trilog Broadband Antenna 30MHz-1GHz	SCHWARZBECKMESTE-ELEKTRONIK	VULB 9168	SEM003-18	2019-02-22	2022-02-22
Test Software E3	Audix	Ver.6.120110a	GZE100-61	N/A	N/A

**Radiated Spurious Emissions**

Equipment	Manufacturer	Model No	Inventory No	Cal Date	Cal Due Date
EMI Test Receiver	Rohde & Schwarz	ESIB26	EMC0522	2019-01-20	2020-01-19
EMI Test Receiver	Rohde & Schwarz	ESCI	EMC0056	2019-01-20	2020-01-19
Chamber cable	HangTianXing	N/A	EMC0542	2019-06-28	2021-06-27
Trilog Broadband Antenna 25MHz-1GHz	SCHWARZBECKMESTE-ELEKTRONIK	VULB 9168	EMC2174	2018-09-06	2021-09-05
Bi-log Type Antenna	Schaffner -Chase	CBL6143	EMC0519	2017-05-04	2020-05-03
Horn Antenna 1GHz-18GHz	R & S	HF906	EMC0518	2018-09-02	2021-09-01
1GHz-26.5 GHz Pre-Amplifier	Agilent	8449B	EMC0521	2019-01-07	2020-01-08
Amplifier	HP	8447F	EMC2065	2019-05-29	2020-05-28
Pre-Amplifier MH648A	ANRITSU CORP	MH648A	EMC2086	2019-11-18	2020-11-17
Active Loop Antenna	EMCO	6502	EMC0523	2018-03-05	2020-03-04
High Pass Filter(915MHz)	FSY MICROWAVE	HM1465-9SS	EMC2079	2019-01-11	2020-01-10
2.4GHz Filter	Micro-Tronics	BRM 50702	EMC2069	2019-01-11	2020-01-10
10m Semi-Anechoic Chamber	ETS	N/A	EMC0530	2019-10-20	2022-10-19
966 Anechoic Chamber	C.R.T	9m x 6m x 6m	EMC2142	2017-12-19	2019-12-18
MXE EMI Receiver	Keysight	N9038A	EMC2139	2019-11-18	2020-11-17
EXA Signal Analyzer	Keysight	N9010A	EMC2138	2019-11-18	2020-11-17
Trilog Broadband Antenna 30MHz-1GHz	SCHWARZBECKMESTE-ELEKTRONIK	VULB 9168	SEM003-18	2019-02-22	2022-02-22
Test Software E3	Audix	Ver.6.120110a	GZE100-61	N/A	N/A

**General used equipment**

Equipment	Manufacturer	Model No	Inventory No	Cal Date	Cal Due Date
DMM	Fluke	73	EMC0006	2019-07-16	2020-07-15
DMM	Fluke	73	EMC0007	2019-07-16	2020-07-15

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## 6 Radio Spectrum Technical Requirement

### 6.1 Antenna Requirement

#### 6.1.1 Test Requirement:

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

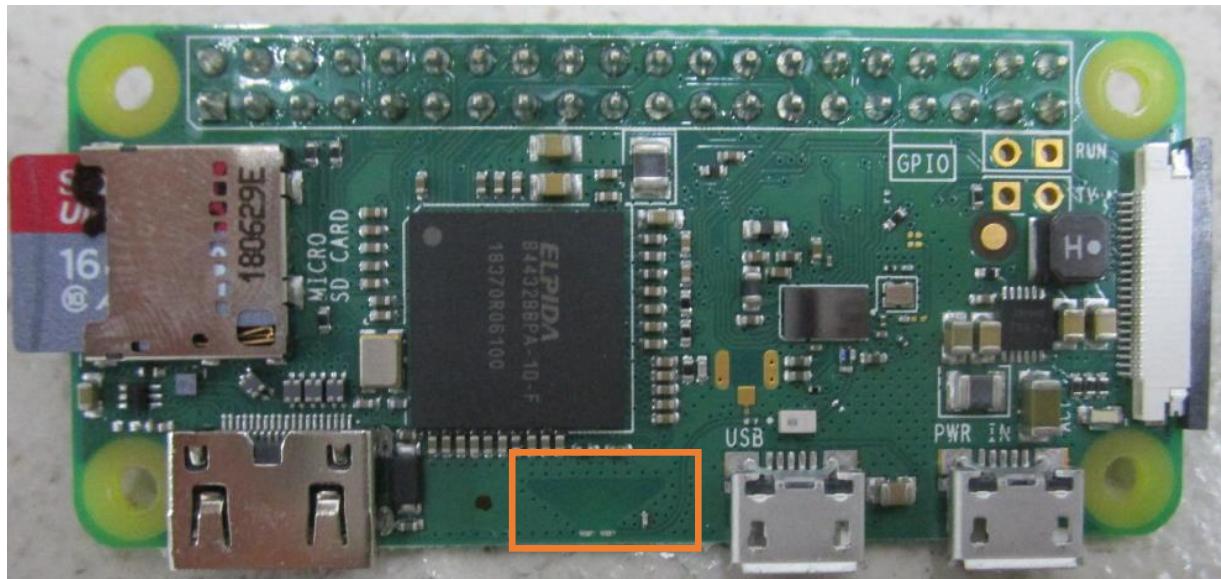
#### 6.1.2 Conclusion

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 0dBi.

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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 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.

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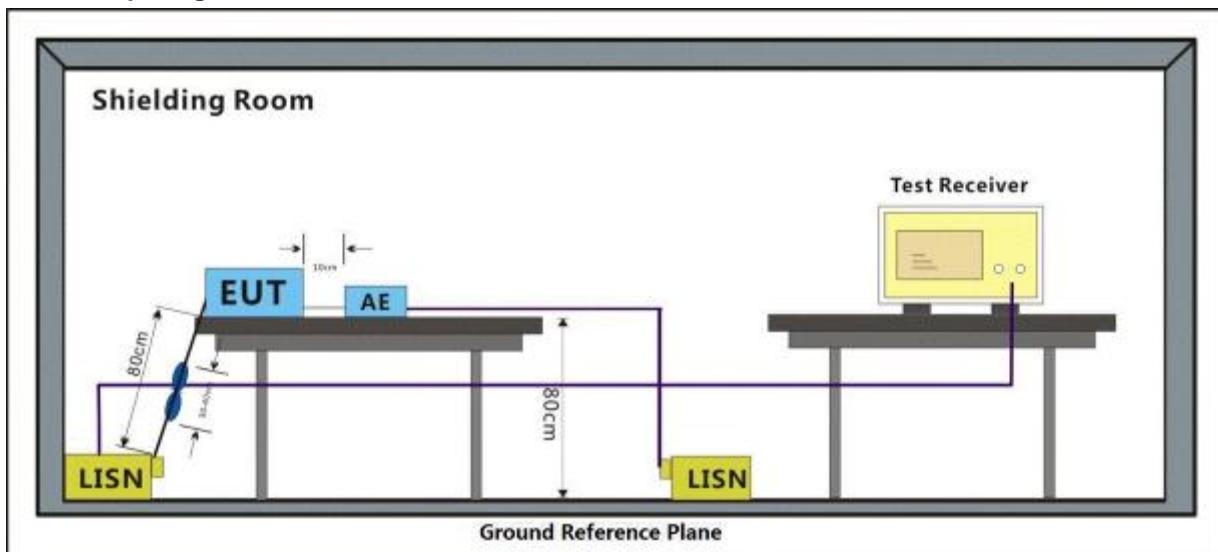
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### 7.1.1 E.U.T. Operation

## Operating Environment:

Temperature: 23 °C      Humidity: 52 % RH      Atmospheric Pressure: 1020 mbar  
Test mode c:TX mode\_Keep the EUT in continuously transmitting mode with all modulation types. All data rates for each modulation type have been tested and found the data rate @ 1Mbps is the worst case of IEEE 802.11b; data rate @ 6Mbps is the worst case of IEEE 802.11g; data rate @ 6.5Mbps is the worst case of IEEE 802.11n(HT20); data rate @ 13.5Mbps is the worst case of IEEE 802.11n(HT40). Only the data of worst case is recorded in the report.

### 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/50 $\mu$ H + 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



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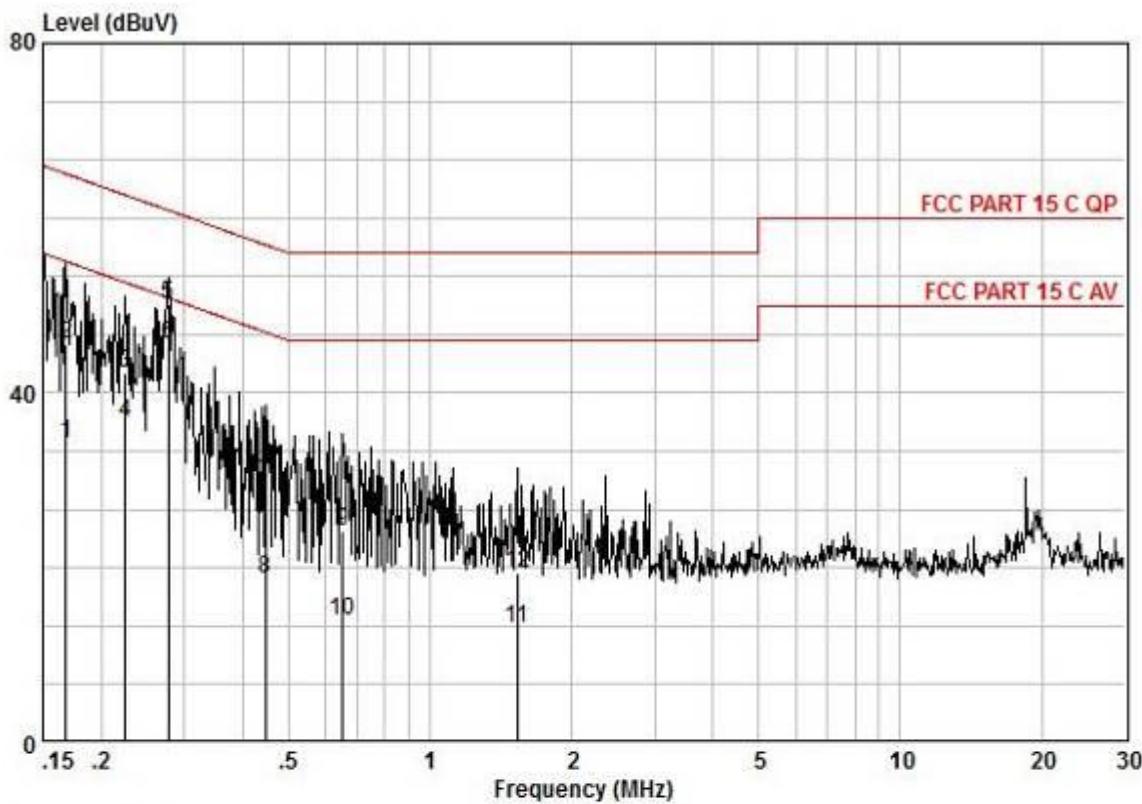
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Mode:c; Line:Live Line



Pol No Model	LIVE							
Frequency MHz	read level dBuV	Cable Loss dB	LISN Factor dB	Measured level dBuV	Limit Line dBuV	Over limit dB	Remark	
0.17	24.56	0.10	9.66	34.32	55.03	-20.71	AVERAGE	
0.17	35.69	0.10	9.66	45.45	65.03	-19.58	QP	
0.22	32.58	0.10	9.67	42.35	62.66	-20.31	QP	
0.22	26.86	0.10	9.67	36.63	52.66	-16.03	AVERAGE	
0.28	40.34	0.10	9.67	50.11	60.90	-10.79	QP	
0.28	35.71	0.10	9.67	45.48	50.90	-5.42	AVERAGE	
0.45	19.85	0.10	9.66	29.61	56.93	-27.32	QP	
0.45	8.98	0.10	9.66	18.74	46.93	-28.19	AVERAGE	
0.65	14.42	0.10	9.67	24.19	56.00	-31.81	QP	
0.65	4.25	0.10	9.67	14.02	46.00	-31.98	AVERAGE	
1.54	3.34	0.10	9.68	13.12	46.00	-32.88	AVERAGE	
1.54	9.60	0.10	9.68	19.38	56.00	-36.62	QP	

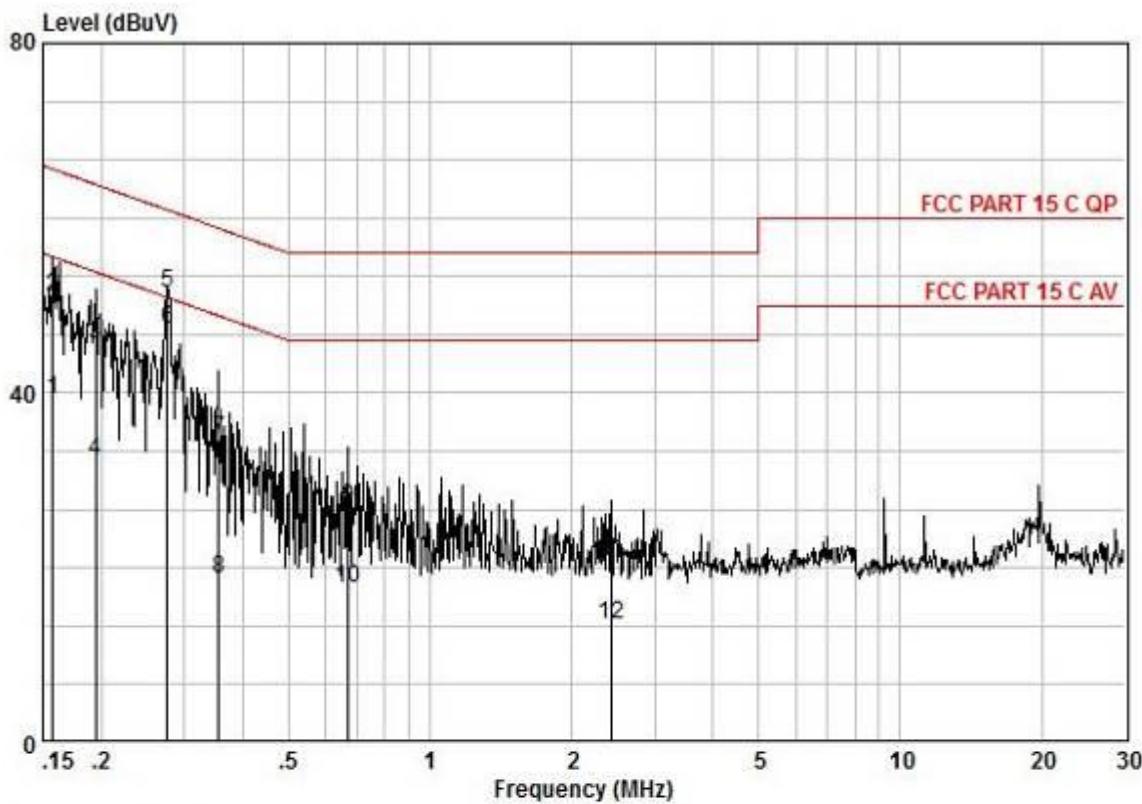
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Mode:c; Line:Neutral Line



Pol No	Model	NEUTRAL						
Frequency MHz	read level dBuV	Cable Loss dB	LISN Factor dB	Measured level dBuV	Limit Line dBuV	Over limit dB	Remark	
0.16	29.64	0.10	9.59	39.33	55.60	-16.26	AVERAGE	
0.16	41.33	0.10	9.59	51.02	65.60	-14.59	QP	
0.19	35.88	0.10	9.60	45.58	63.84	-18.26	QP	
0.19	22.48	0.10	9.60	32.18	53.84	-21.66	AVERAGE	
0.28	41.85	0.10	9.59	51.54	60.94	-9.40	QP	
0.28	37.55	0.10	9.59	47.24	50.94	-3.70	AVERAGE	
0.36	24.91	0.10	9.59	34.60	58.83	-24.23	QP	
0.36	9.13	0.10	9.59	18.82	48.83	-30.01	AVERAGE	
0.67	17.22	0.10	9.60	26.92	56.00	-29.08	QP	
0.67	7.87	0.10	9.60	17.57	46.00	-28.43	AVERAGE	
2.43	10.89	0.15	9.62	20.66	56.00	-35.34	QP	
2.43	3.81	0.15	9.62	13.58	46.00	-32.42	AVERAGE	

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## 7.2 Minimum 6dB Bandwidth

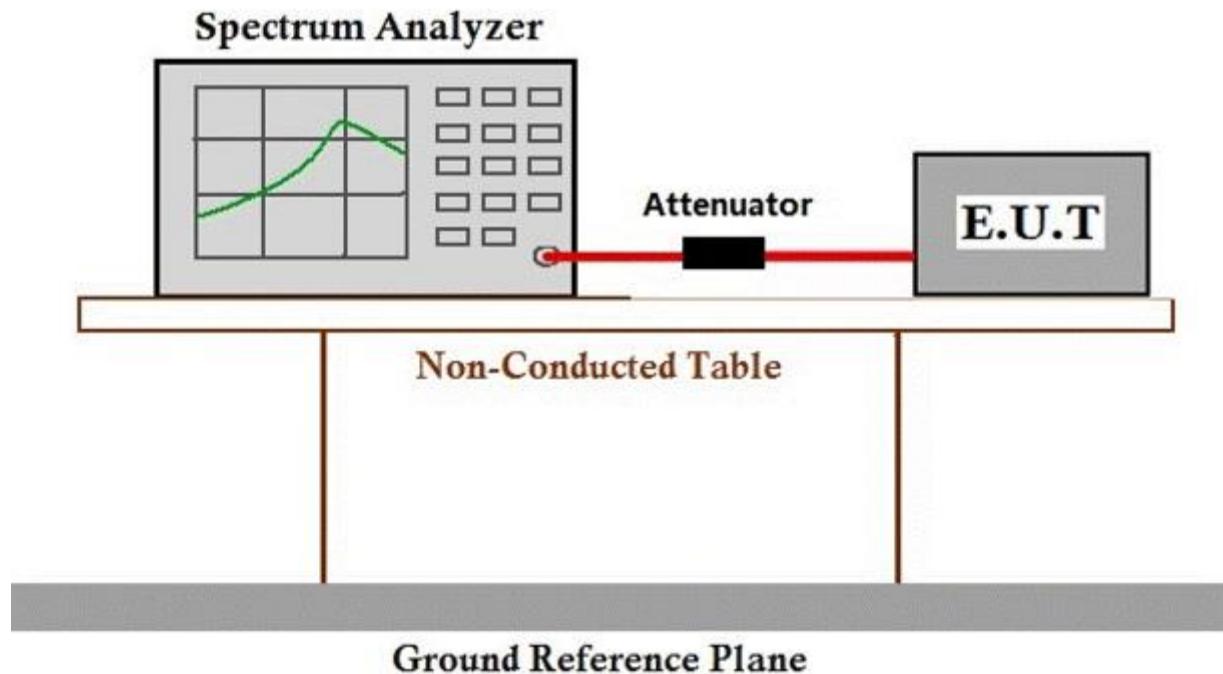
Test Requirement 47 CFR Part 15, Subpart C 15.247a(2)  
Test Method: ANSI C63.10 (2013) Section 11.8.1  
Limit:  $\geq 500$  kHz

### 7.2.1 E.U.T. Operation

Operating Environment:

Temperature: 24.6 °C Humidity: 47.2 % RH Atmospheric Pressure: 1020 mbar  
Test mode c:TX mode\_Keep the EUT in continuously transmitting mode with all modulation types. All data rates for each modulation type have been tested and found the data rate @ 1Mbps is the worst case of IEEE 802.11b; data rate @ 6Mbps is the worst case of IEEE 802.11g; data rate @ 6.5Mbps is the worst case of IEEE 802.11n(HT20); data rate @ 13.5Mbps is the worst case of IEEE 802.11n(HT40). Only the data of worst case is recorded in the report.

### 7.2.2 Test Setup Diagram



### 7.2.3 Measurement Procedure and Data

The detailed test data see: Appendix 15.247

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### 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

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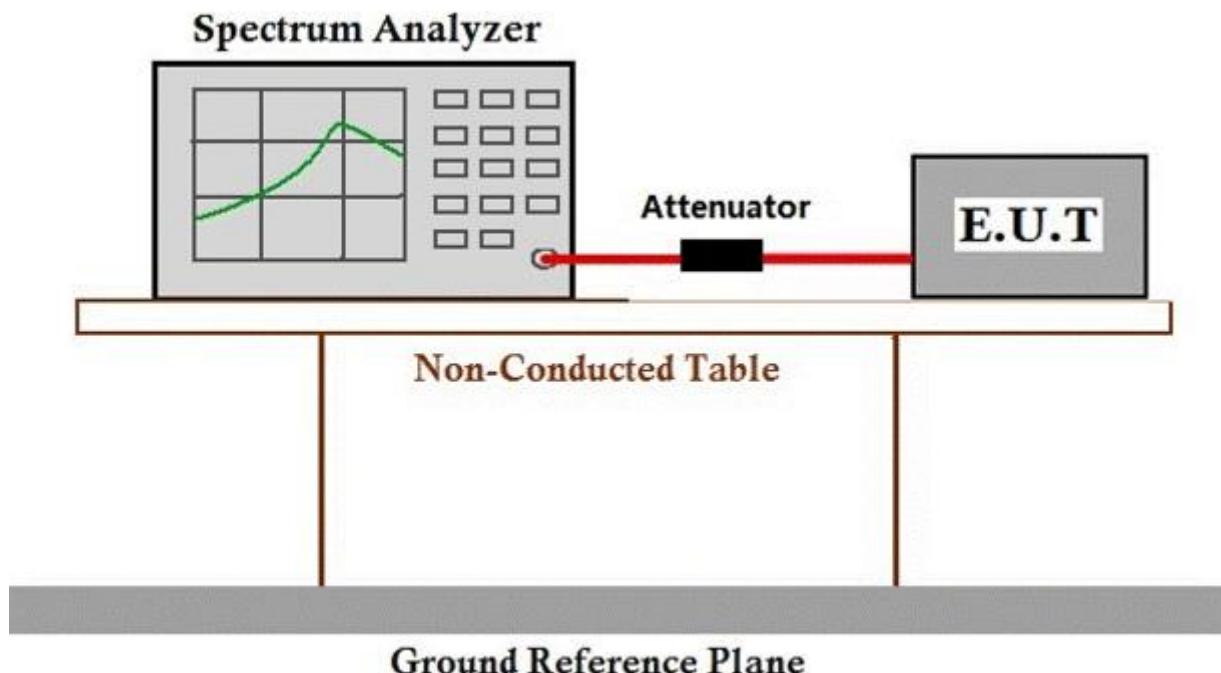
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### 7.3.1 E.U.T. Operation

Operating Environment:

Temperature: 24.6 °C      Humidity: 47.2 % RH      Atmospheric Pressure: 1020 mbar  
Test mode      c:TX mode\_Keep the EUT in continuously transmitting mode with all modulation types. All data rates for each modulation type have been tested and found the data rate @ 1Mbps is the worst case of IEEE 802.11b; data rate @ 6Mbps is the worst case of IEEE 802.11g; data rate @ 6.5Mbps is the worst case of IEEE 802.11n(HT20); data rate @ 13.5Mbps is the worst case of IEEE 802.11n(HT40). Only the data of worst case is recorded in the report.

### 7.3.2 Test Setup Diagram



### 7.3.3 Measurement Procedure and Data

The detailed test data see: Appendix 15.247

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## 7.4 Power Spectrum Density

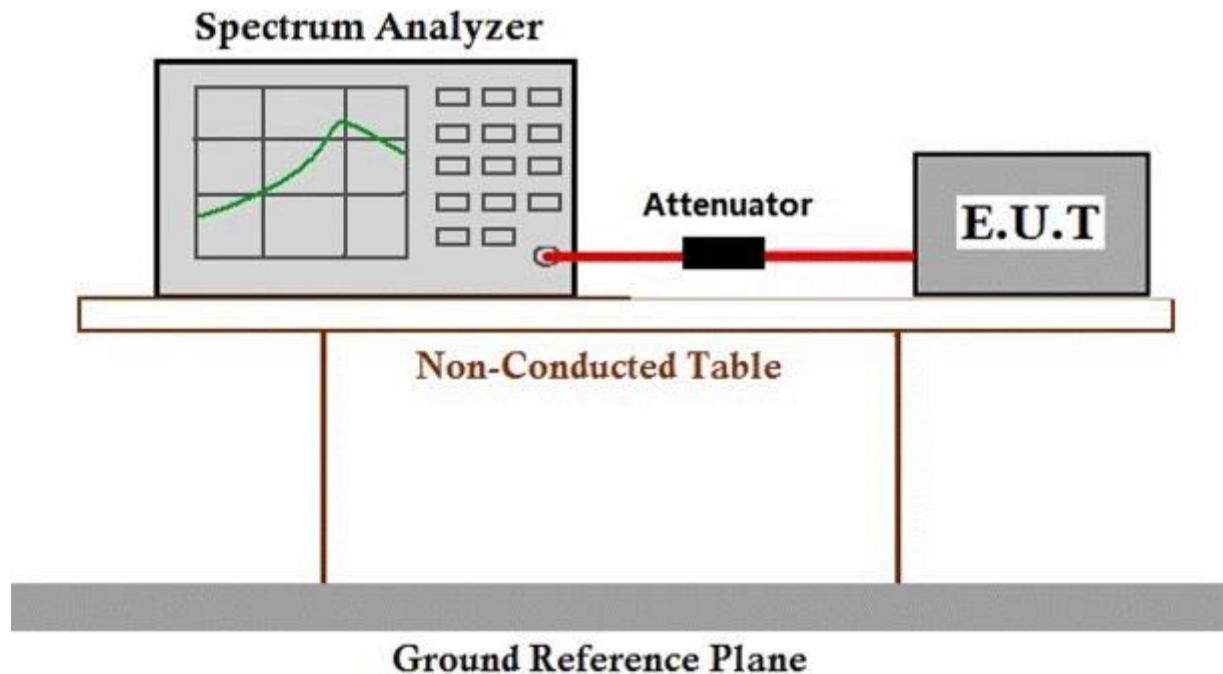
Test Requirement 47 CFR Part 15, Subpart C 15.247(e)  
Test Method: ANSI C63.10 (2013) Section 11.10.2  
Limit:  $\leq 8\text{dBm}$  in any 3 kHz band during any time interval of continuous transmission

### 7.4.1 E.U.T. Operation

Operating Environment:

Temperature: 24.6 °C Humidity: 47.2 % RH Atmospheric Pressure: 1020 mbar  
Test mode c:TX mode\_Keep the EUT in continuously transmitting mode with all modulation types. All data rates for each modulation type have been tested and found the data rate @ 1Mbps is the worst case of IEEE 802.11b; data rate @ 6Mbps is the worst case of IEEE 802.11g; data rate @ 6.5Mbps is the worst case of IEEE 802.11n(HT20); data rate @ 13.5Mbps is the worst case of IEEE 802.11n(HT40). Only the data of worst case is recorded in the report.

### 7.4.2 Test Setup Diagram



### 7.4.3 Measurement Procedure and Data

The detailed test data see: Appendix 15.247

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## 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)



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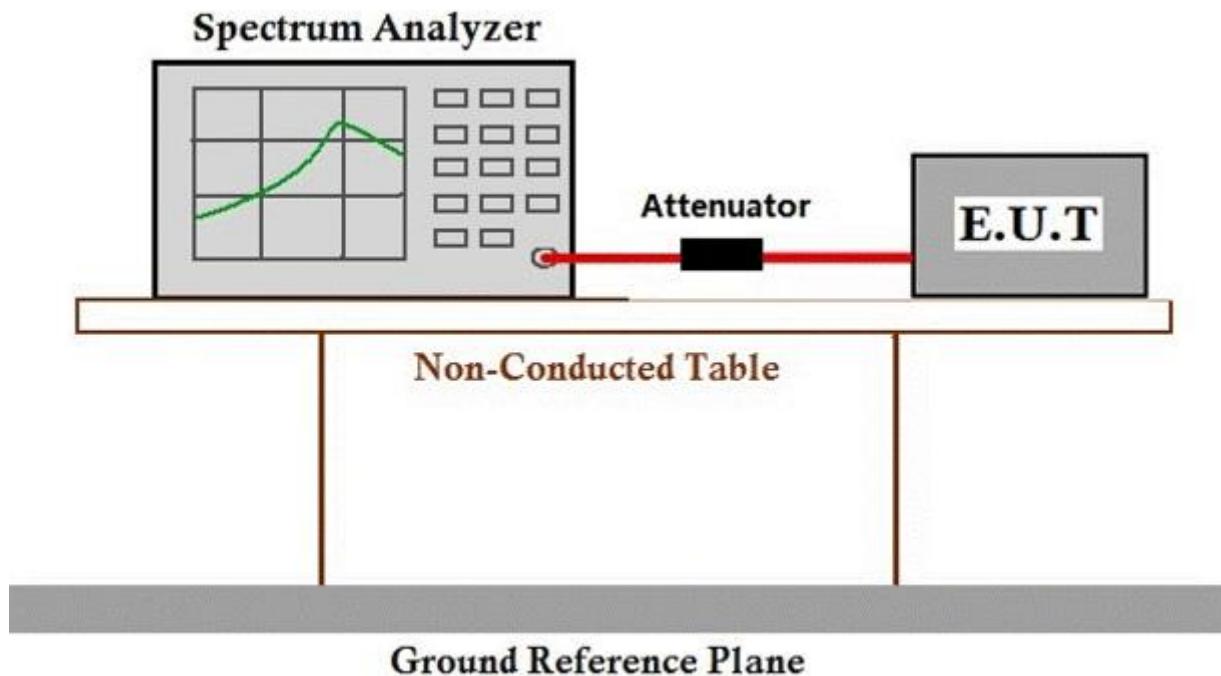
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### 7.5.1 E.U.T. Operation

Operating Environment:

Temperature: 24.6 °C      Humidity: 47.2 % RH      Atmospheric Pressure: 1020 mbar  
Test mode      c:TX mode\_Keep the EUT in continuously transmitting mode with all modulation types. All data rates for each modulation type have been tested and found the data rate @ 1Mbps is the worst case of IEEE 802.11b; data rate @ 6Mbps is the worst case of IEEE 802.11g; data rate @ 6.5Mbps is the worst case of IEEE 802.11n(HT20); data rate @ 13.5Mbps is the worst case of IEEE 802.11n(HT40). Only the data of worst case is recorded in the report.

### 7.5.2 Test Setup Diagram



### 7.5.3 Measurement Procedure and Data

The detailed test data see: Appendix 15.247



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## 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)



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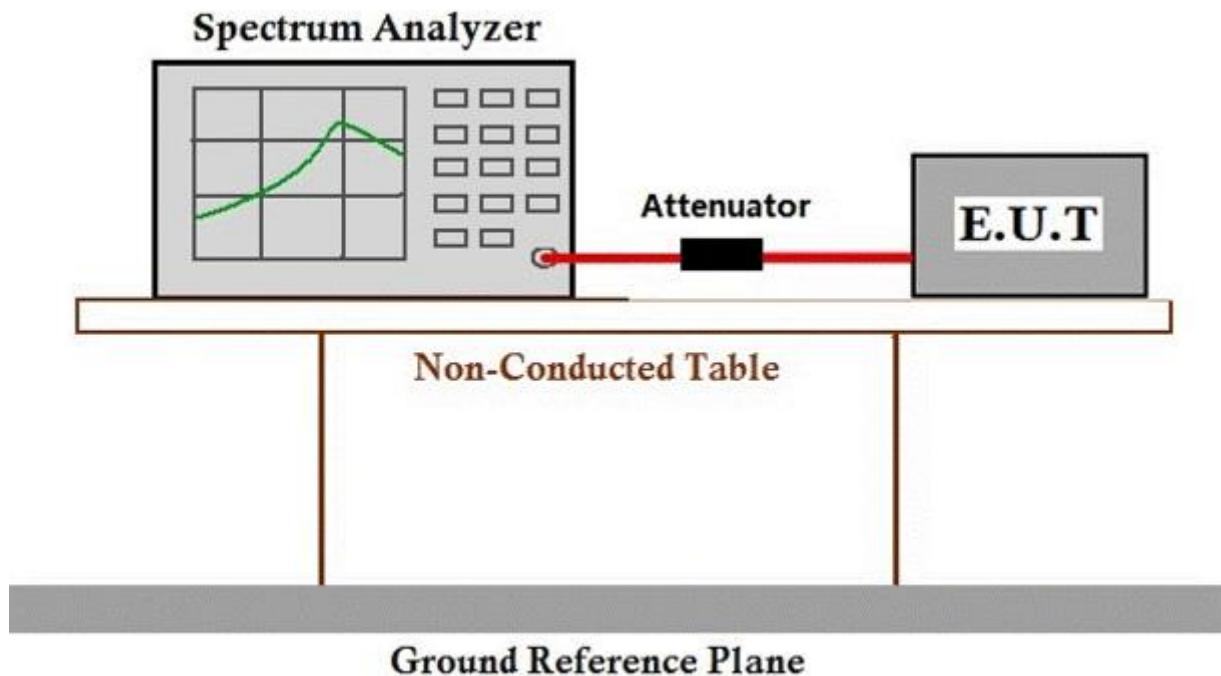
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### 7.6.1 E.U.T. Operation

Operating Environment:

Temperature: 24.6 °C      Humidity: 47.2 % RH      Atmospheric Pressure: 1020 mbar  
Test mode      c:TX mode\_Keep the EUT in continuously transmitting mode with all modulation types. All data rates for each modulation type have been tested and found the data rate @ 1Mbps is the worst case of IEEE 802.11b; data rate @ 6Mbps is the worst case of IEEE 802.11g; data rate @ 6.5Mbps is the worst case of IEEE 802.11n(HT20); data rate @ 13.5Mbps is the worst case of IEEE 802.11n(HT40). Only the data of worst case is recorded in the report.

### 7.6.2 Test Setup Diagram



### 7.6.3 Measurement Procedure and Data

The detailed test data see: Appendix 15.247



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## 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.



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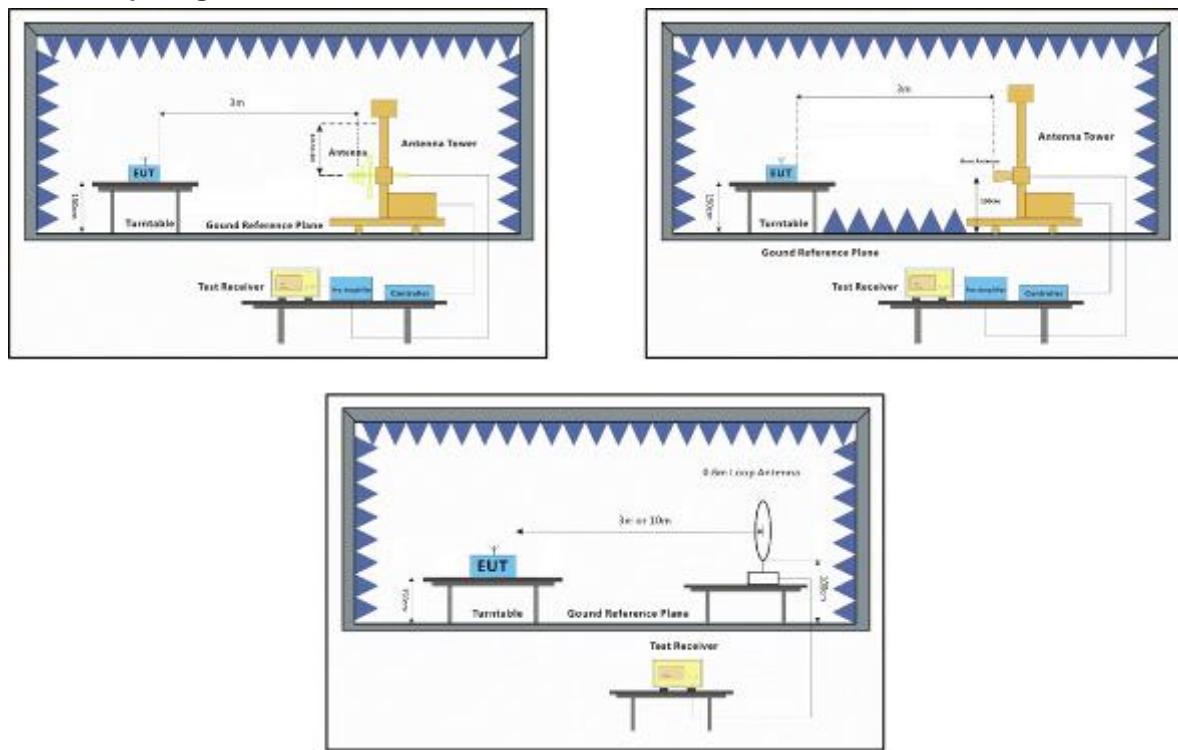
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## 7.7.1 E.U.T. Operation

Operating Environment:

Temperature: 23 °C      Humidity: 55 % RH      Atmospheric Pressure: 1020 mbar  
 Test mode      c:TX mode\_Keep the EUT in continuously transmitting mode with all modulation types. All data rates for each modulation type have been tested and found the data rate @ 1Mbps is the worst case of IEEE 802.11b; data rate @ 6Mbps is the worst case of IEEE 802.11g; data rate @ 6.5Mbps is the worst case of IEEE 802.11n(HT20); data rate @ 13.5Mbps is the worst case of IEEE 802.11n(HT40). Only the data of worst case is recorded in the report.

## 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

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



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Guangzhou Branch Scientific & Technical Laboratory

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

Freq	ReadAntenna		Cable		Preamp	Limit	Over	Pol/Phase	Remark
	Level	Factor	Loss	Factor	Level				
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB	
1	2310.000	32.66	26.25	3.32	37.44	24.79	54.00	-29.21	HORIZONTAL Average
2	2310.000	44.52	26.25	3.32	37.44	36.65	74.00	-37.35	HORIZONTAL Peak
3	2390.000	47.11	26.43	3.48	37.42	39.60	54.00	-14.40	HORIZONTAL Average
4	2390.000	55.70	26.43	3.48	37.42	48.19	74.00	-25.81	HORIZONTAL Peak
5	2483.500	38.20	26.58	3.53	37.40	30.91	54.00	-23.09	HORIZONTAL Average
6	2483.500	49.18	26.58	3.53	37.40	41.89	74.00	-32.11	HORIZONTAL Peak
7	2500.000	34.13	26.60	3.40	37.39	26.74	54.00	-27.26	HORIZONTAL Average
8	2500.000	45.92	26.60	3.40	37.39	38.53	74.00	-35.47	HORIZONTAL Peak

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

Freq	ReadAntenna		Cable		Preamp	Limit	Over	Pol/Phase	Remark
	Level	Factor	Loss	Factor	Level				
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB	
1	2310.000	32.31	26.25	3.32	37.44	24.44	54.00	-29.56	VERTICAL Average
2	2310.000	45.11	26.25	3.32	37.44	37.24	74.00	-36.76	VERTICAL Peak
3	2390.000	44.03	26.43	3.48	37.42	36.52	54.00	-17.48	VERTICAL Average
4	2390.000	54.28	26.43	3.48	37.42	46.77	74.00	-27.23	VERTICAL Peak
5	2483.500	34.72	26.58	3.53	37.40	27.43	54.00	-26.57	VERTICAL Average
6	2483.500	48.03	26.58	3.53	37.40	40.74	74.00	-33.26	VERTICAL Peak
7	2500.000	32.92	26.60	3.40	37.39	25.53	54.00	-28.47	VERTICAL Average
8	2500.000	45.74	26.60	3.40	37.39	38.35	74.00	-35.65	VERTICAL Peak

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

Freq	ReadAntenna		Cable Preamp		Limit Level	Line Limit	Over Pol/Phase	Remark
	Level	Factor	Loss	Factor				
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB
1	2310.000	33.27	26.25	3.32	37.44	25.40	54.00	-28.60 HORIZONTAL Average
2	2310.000	46.11	26.25	3.32	37.44	38.24	74.00	-35.76 HORIZONTAL Peak
3	2390.000	35.81	26.43	3.48	37.42	28.30	54.00	-25.70 HORIZONTAL Average
4	2390.000	47.10	26.43	3.48	37.42	39.59	74.00	-34.41 HORIZONTAL Peak
5	2483.500	44.22	26.58	3.53	37.40	36.93	54.00	-17.07 HORIZONTAL Average
6	2483.500	56.47	26.58	3.53	37.40	49.18	74.00	-24.82 HORIZONTAL Peak
7	2500.000	39.65	26.60	3.40	37.39	32.26	54.00	-21.74 HORIZONTAL Average
8	2500.000	49.57	26.60	3.40	37.39	42.18	74.00	-31.82 HORIZONTAL Peak

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

Freq	ReadAntenna		Cable Preamp		Limit Level	Line Limit	Over Pol/Phase	Remark
	Level	Factor	Loss	Factor				
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB
1	2310.000	36.01	26.25	3.32	37.44	28.14	54.00	-25.86 VERTICAL Average
2	2310.000	45.13	26.25	3.32	37.44	37.26	74.00	-36.74 VERTICAL Peak
3	2390.000	34.72	26.43	3.48	37.42	27.21	54.00	-26.79 VERTICAL Average
4	2390.000	47.21	26.43	3.48	37.42	39.70	74.00	-34.30 VERTICAL Peak
5	2483.500	41.01	26.58	3.53	37.40	33.72	54.00	-20.28 VERTICAL Average
6	2483.500	53.43	26.58	3.53	37.40	46.14	74.00	-27.86 VERTICAL Peak
7	2500.000	36.81	26.60	3.40	37.39	29.42	54.00	-24.58 VERTICAL Average
8	2500.000	47.46	26.60	3.40	37.39	40.07	74.00	-33.93 VERTICAL Peak

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

Freq	ReadAntenna		Cable Preamp		Limit Level	Line Limit	Over Pol/Phase	Remark
	Level	Factor	Loss	Factor				
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB
1	2310.000	32.41	26.25	3.32	37.44	24.54	54.00	-29.46 HORIZONTAL Average
2	2310.000	43.88	26.25	3.32	37.44	36.01	74.00	-37.99 HORIZONTAL Peak
3	2390.000	49.24	26.43	3.48	37.42	41.73	54.00	-12.27 HORIZONTAL Average
4	2390.000	58.65	26.43	3.48	37.42	51.14	74.00	-22.86 HORIZONTAL Peak
5	2483.500	35.01	26.58	3.53	37.40	27.72	54.00	-26.28 HORIZONTAL Average
6	2483.500	48.41	26.58	3.53	37.40	41.12	74.00	-32.88 HORIZONTAL Peak
7	2500.000	34.05	26.60	3.40	37.39	26.66	54.00	-27.34 HORIZONTAL Average
8	2500.000	46.01	26.60	3.40	37.39	38.62	74.00	-35.38 HORIZONTAL Peak

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

Freq	ReadAntenna		Cable Preamp		Limit Level	Line Limit	Over Pol/Phase	Remark
	Level	Factor	Loss	Factor				
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB
1	2310.000	32.99	26.25	3.32	37.44	25.12	54.00	-28.88 VERTICAL Average
2	2310.000	43.15	26.25	3.32	37.44	35.28	74.00	-38.72 VERTICAL Peak
3	2390.000	43.48	26.43	3.48	37.42	35.97	54.00	-18.03 VERTICAL Average
4	2390.000	54.46	26.43	3.48	37.42	46.95	74.00	-27.05 VERTICAL Peak
5	2483.500	34.09	26.58	3.53	37.40	26.80	54.00	-27.20 VERTICAL Average
6	2483.500	45.67	26.58	3.53	37.40	38.38	74.00	-35.62 VERTICAL Peak
7	2500.000	32.67	26.60	3.40	37.39	25.28	54.00	-28.72 VERTICAL Average
8	2500.000	44.21	26.60	3.40	37.39	36.82	74.00	-37.18 VERTICAL Peak

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

Freq	ReadAntenna		Cable Preamp		Limit Level	Line Limit	Over Pol/Phase	Remark
	Level	Factor	Loss	Factor				
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB
1	2310.000	32.69	26.25	3.32	37.44	24.82	54.00	-29.18 HORIZONTAL Average
2	2310.000	46.22	26.25	3.32	37.44	38.35	74.00	-35.65 HORIZONTAL Peak
3	2390.000	37.57	26.43	3.48	37.42	30.06	54.00	-23.94 HORIZONTAL Average
4	2390.000	49.11	26.43	3.48	37.42	41.60	74.00	-32.40 HORIZONTAL Peak
5	2483.500	57.43	26.58	3.53	37.40	50.14	54.00	-3.86 HORIZONTAL Average
6	2483.500	69.18	26.58	3.53	37.40	61.89	74.00	-12.11 HORIZONTAL Peak
7	2500.000	41.55	26.60	3.40	37.39	34.16	54.00	-19.84 HORIZONTAL Average
8	2500.000	53.04	26.60	3.40	37.39	45.65	74.00	-28.35 HORIZONTAL Peak

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

Freq	ReadAntenna		Cable Preamp		Limit Level	Line Limit	Over Pol/Phase	Remark
	Level	Factor	Loss	Factor				
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB
1	2310.000	33.23	26.25	3.32	37.44	25.36	54.00	-28.64 VERTICAL Average
2	2310.000	46.40	26.25	3.32	37.44	38.53	74.00	-35.47 VERTICAL Peak
3	2390.000	36.42	26.43	3.48	37.42	28.91	54.00	-25.09 VERTICAL Average
4	2390.000	49.20	26.43	3.48	37.42	41.69	74.00	-32.31 VERTICAL Peak
5	2483.500	53.40	26.58	3.53	37.40	46.11	54.00	-7.89 VERTICAL Average
6	2483.500	63.26	26.58	3.53	37.40	55.97	74.00	-18.03 VERTICAL Peak
7	2500.000	39.79	26.60	3.40	37.39	32.40	54.00	-21.60 VERTICAL Average
8	2500.000	51.95	26.60	3.40	37.39	44.56	74.00	-29.44 VERTICAL Peak

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

Freq	ReadAntenna		Cable Preamp		Limit Level	Line Limit	Over Pol/Phase	Remark
	Level	Factor	Loss	Factor				
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB
1	2310.000	32.55	26.25	3.32	37.44	24.68	54.00	-29.32 HORIZONTAL Average
2	2310.000	45.29	26.25	3.32	37.44	37.42	74.00	-36.58 HORIZONTAL Peak
3	2390.000	52.22	26.43	3.48	37.42	44.71	54.00	-9.29 HORIZONTAL Average
4	2390.000	59.12	26.43	3.48	37.42	51.61	74.00	-22.39 HORIZONTAL Peak
5	2483.500	36.50	26.58	3.53	37.40	29.21	54.00	-24.79 HORIZONTAL Average
6	2483.500	49.33	26.58	3.53	37.40	42.04	74.00	-31.96 HORIZONTAL Peak
7	2500.000	33.96	26.60	3.40	37.39	26.57	54.00	-27.43 HORIZONTAL Average
8	2500.000	45.68	26.60	3.40	37.39	38.29	74.00	-35.71 HORIZONTAL Peak

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

Freq	ReadAntenna		Cable Preamp		Limit Level	Line Limit	Over Pol/Phase	Remark
	Level	Factor	Loss	Factor				
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB
1	2310.000	32.79	26.25	3.32	37.44	24.92	54.00	-29.08 VERTICAL Average
2	2310.000	44.24	26.25	3.32	37.44	36.37	74.00	-37.63 VERTICAL Peak
3	2390.000	53.55	26.43	3.48	37.42	46.04	54.00	-7.96 VERTICAL Average
4	2390.000	64.94	26.43	3.48	37.42	57.43	74.00	-16.57 VERTICAL Peak
5	2483.500	36.20	26.58	3.53	37.40	28.91	54.00	-25.09 VERTICAL Average
6	2483.500	45.47	26.58	3.53	37.40	38.18	74.00	-35.82 VERTICAL Peak
7	2500.000	35.74	26.60	3.40	37.39	28.35	54.00	-25.65 VERTICAL Average
8	2500.000	47.68	26.60	3.40	37.39	40.29	74.00	-33.71 VERTICAL Peak

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

Freq	ReadAntenna		Cable Preamp		Limit Level	Line Limit	Over Pol/Phase	Remark
	Level	Factor	Loss	Factor				
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB
1	2310.000	33.15	26.25	3.32	37.44	25.28	54.00	-28.72 HORIZONTAL Average
2	2310.000	44.47	26.25	3.32	37.44	36.60	74.00	-37.40 HORIZONTAL Peak
3	2390.000	38.18	26.43	3.48	37.42	30.67	54.00	-23.33 HORIZONTAL Average
4	2390.000	49.16	26.43	3.48	37.42	41.65	74.00	-32.35 HORIZONTAL Peak
5	2483.500	57.77	26.58	3.53	37.40	50.48	54.00	-3.52 HORIZONTAL Average
6	2483.500	65.20	26.58	3.53	37.40	57.91	74.00	-16.09 HORIZONTAL Peak
7	2500.000	44.01	26.60	3.40	37.39	36.62	54.00	-17.38 HORIZONTAL Average
8	2500.000	52.81	26.60	3.40	37.39	45.42	74.00	-28.58 HORIZONTAL Peak

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

Freq	ReadAntenna		Cable Preamp		Limit Level	Line Limit	Over Pol/Phase	Remark
	Level	Factor	Loss	Factor				
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB
1	2310.000	32.28	26.25	3.32	37.44	24.41	54.00	-29.59 VERTICAL Average
2	2310.000	45.01	26.25	3.32	37.44	37.14	74.00	-36.86 VERTICAL Peak
3	2390.000	34.67	26.43	3.48	37.42	27.16	54.00	-26.84 VERTICAL Average
4	2390.000	47.35	26.43	3.48	37.42	39.84	74.00	-34.16 VERTICAL Peak
5	2483.500	52.49	26.58	3.53	37.40	45.20	54.00	-8.80 VERTICAL Average
6	2483.500	61.06	26.58	3.53	37.40	53.77	74.00	-20.23 VERTICAL Peak
7	2500.000	36.92	26.60	3.40	37.39	29.53	54.00	-24.47 VERTICAL Average
8	2500.000	47.88	26.60	3.40	37.39	40.49	74.00	-33.51 VERTICAL Peak

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## 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.



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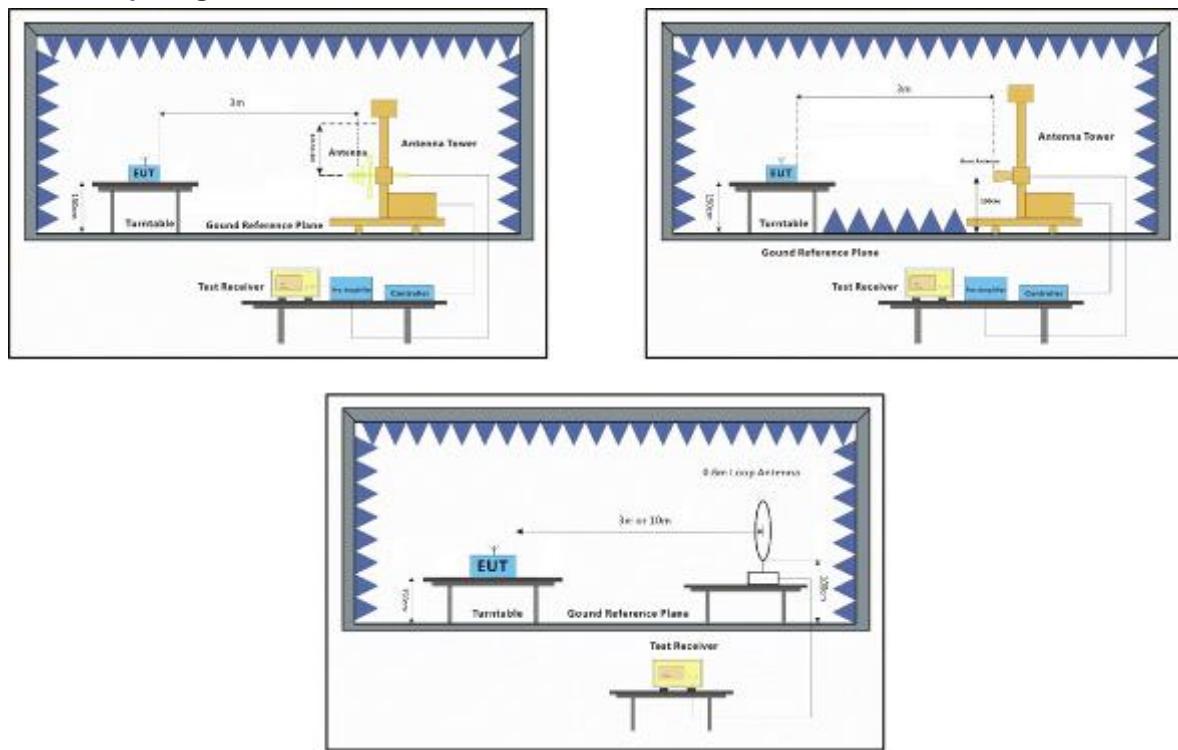
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## 7.8.1 E.U.T. Operation

Operating Environment:

Temperature: 23 °C      Humidity: 55 % RH      Atmospheric Pressure: 1020 mbar  
 Test mode      c:TX mode\_Keep the EUT in continuously transmitting mode with all modulation types. All data rates for each modulation type have been tested and found the data rate @ 1Mbps is the worst case of IEEE 802.11b; data rate @ 6Mbps is the worst case of IEEE 802.11g; data rate @ 6.5Mbps is the worst case of IEEE 802.11n(HT20); data rate @ 13.5Mbps is the worst case of IEEE 802.11n(HT40). Only the data of worst case is recorded in the report.

## 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.

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



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

Freq	ReadAntenna		Cable Preamp		Limit Level	Line	Over Limit	Pol/Phase	Remark
	MHz	dBuV	Level	Factor					
					dB	dB	dBuV/m	dBuV/m	
1	32.634	35.14	12.28	0.15	29.80	17.77	40.00	-22.23	HORIZONTAL QP
2	69.357	41.69	10.86	0.71	29.42	23.84	40.00	-16.16	HORIZONTAL QP
3	120.277	34.71	11.52	0.92	29.40	17.75	43.50	-25.75	HORIZONTAL QP
4	176.269	29.92	12.79	1.33	29.40	14.64	43.50	-28.86	HORIZONTAL QP
5	605.659	30.52	20.63	2.10	29.50	23.75	46.00	-22.25	HORIZONTAL QP
6	878.322	30.74	23.80	2.91	28.90	28.55	46.00	-17.45	HORIZONTAL QP

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

Freq	ReadAntenna		Cable Preamp		Limit Level	Line	Over Limit	Pol/Phase	Remark
	MHz	dBuV	Level	Factor					
					dB	dB	dBuV/m	dBuV/m	
1	2905.331	37.84	27.76	3.71	37.13	32.18	54.00	-21.82	HORIZONTAL Average
2	2905.331	46.84	27.76	3.71	37.13	41.18	74.00	-32.82	HORIZONTAL Peak
3	3834.438	35.19	29.12	4.60	36.91	32.00	54.00	-22.00	HORIZONTAL Average
4	3834.438	44.95	29.12	4.60	36.91	41.76	74.00	-32.24	HORIZONTAL Peak
5	4824.668	36.28	30.82	5.42	36.94	35.58	54.00	-18.42	HORIZONTAL Average
6	4824.668	45.39	30.82	5.42	36.94	44.69	74.00	-29.31	HORIZONTAL Peak
7	7236.914	34.80	35.55	6.03	36.93	39.45	54.00	-14.55	HORIZONTAL Average
8	7236.914	45.20	35.55	6.03	36.93	49.85	74.00	-24.15	HORIZONTAL Peak
9	9648.018	34.10	37.54	7.06	37.08	41.62	54.00	-12.38	HORIZONTAL Average
10	9648.018	45.96	37.54	7.06	37.08	53.48	74.00	-20.52	HORIZONTAL Peak
11	12060.600	30.71	39.46	8.17	37.17	41.17	54.00	-12.83	HORIZONTAL Average
12	12060.600	44.64	39.46	8.17	37.17	55.10	74.00	-18.90	HORIZONTAL Peak

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

Freq	ReadAntenna		Cable Preamp		Limit Level	Line	Over Limit	Pol/Phase	Remark
	MHz	dBuV	Level	Factor					
1	30.962	30.55	12.22	0.07	29.83	13.01	40.00	-26.99	VERTICAL QP
2	47.492	30.22	12.94	0.65	29.51	14.30	40.00	-25.70	VERTICAL QP
3	121.123	31.01	11.57	0.92	29.40	14.10	43.50	-29.40	VERTICAL QP
4	159.225	28.69	13.40	1.26	29.40	13.95	43.50	-29.55	VERTICAL QP
5	734.491	28.48	21.80	3.36	29.42	24.22	46.00	-21.78	VERTICAL QP
6	935.546	28.70	24.35	3.64	28.30	28.39	46.00	-17.61	VERTICAL QP

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

Freq	ReadAntenna		Cable Preamp		Limit Level	Line	Over Limit	Pol/Phase	Remark
	MHz	dBuV	Level	Factor					
1	2905.331	36.58	27.76	3.71	37.13	30.92	54.00	-23.08	VERTICAL Average
2	2905.331	46.30	27.76	3.71	37.13	40.64	74.00	-33.36	VERTICAL Peak
3	3901.516	34.72	29.30	4.60	36.91	31.71	54.00	-22.29	VERTICAL Average
4	3901.516	44.66	29.30	4.60	36.91	41.65	74.00	-32.35	VERTICAL Peak
5	4824.016	36.59	30.82	5.42	36.94	35.89	54.00	-18.11	VERTICAL Average
6	4824.016	46.42	30.82	5.42	36.94	45.72	74.00	-28.28	VERTICAL Peak
7	7236.006	35.75	35.55	6.03	36.93	40.40	54.00	-13.60	VERTICAL Average
8	7236.006	45.63	35.55	6.03	36.93	50.28	74.00	-23.72	VERTICAL Peak
9	9648.390	34.99	37.54	7.06	37.08	42.51	54.00	-11.49	VERTICAL Average
10	9648.390	45.54	37.54	7.06	37.08	53.06	74.00	-20.94	VERTICAL Peak
11	12060.100	32.12	39.46	8.17	37.17	42.58	54.00	-11.42	VERTICAL Average
12	12060.100	44.36	39.46	8.17	37.17	54.82	74.00	-19.18	VERTICAL Peak

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

Freq	ReadAntenna		Cable Preamp		Limit Level	Line Limit	Over Pol/Phase	Remark
	Level	Factor	Loss	Factor				
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB
1	2905.331	37.84	27.76	3.71	37.13	32.18	54.00	-21.82 HORIZONTAL Average
2	2905.331	46.48	27.76	3.71	37.13	40.82	74.00	-33.18 HORIZONTAL Peak
3	3790.361	34.94	28.97	4.60	36.92	31.59	54.00	-22.41 HORIZONTAL Average
4	3790.361	44.35	28.97	4.60	36.92	41.00	74.00	-33.00 HORIZONTAL Peak
5	4884.151	35.21	30.95	5.52	36.95	34.73	54.00	-19.27 HORIZONTAL Average
6	4884.151	45.33	30.95	5.52	36.95	44.85	74.00	-29.15 HORIZONTAL Peak
7	7326.015	34.18	35.74	6.13	36.92	39.13	54.00	-14.87 HORIZONTAL Average
8	7326.015	44.46	35.74	6.13	36.92	49.41	74.00	-24.59 HORIZONTAL Peak
9	9768.187	32.61	37.74	7.01	37.09	40.27	54.00	-13.73 HORIZONTAL Average
10	9768.187	44.07	37.74	7.01	37.09	51.73	74.00	-22.27 HORIZONTAL Peak
11	12210.210	30.28	39.21	8.08	37.06	40.51	54.00	-13.49 HORIZONTAL Average
12	12210.210	43.06	39.21	8.08	37.06	53.29	74.00	-20.71 HORIZONTAL Peak

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

Freq	ReadAntenna		Cable Preamp		Limit Level	Line Limit	Over Pol/Phase	Remark
	Level	Factor	Loss	Factor				
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB
1	2774.030	36.25	27.43	3.68	37.26	30.10	54.00	-23.90 VERTICAL Average
2	2774.030	46.48	27.43	3.68	37.26	40.33	74.00	-33.67 VERTICAL Peak
3	3693.033	34.68	28.47	4.55	36.93	30.77	54.00	-23.23 VERTICAL Average
4	3693.033	45.33	28.47	4.55	36.93	41.42	74.00	-32.58 VERTICAL Peak
5	4884.948	36.58	30.95	5.52	36.95	36.10	54.00	-17.90 VERTICAL Average
6	4884.948	45.82	30.95	5.52	36.95	45.34	74.00	-28.66 VERTICAL Peak
7	7326.144	34.15	35.74	6.13	36.92	39.10	54.00	-14.90 VERTICAL Average
8	7326.144	43.77	35.74	6.13	36.92	48.72	74.00	-25.28 VERTICAL Peak
9	9768.187	34.25	37.74	7.01	37.09	41.91	54.00	-12.09 VERTICAL Average
10	9768.187	44.24	37.74	7.01	37.09	51.90	74.00	-22.10 VERTICAL Peak
11	12210.600	32.17	39.21	8.08	37.06	42.40	54.00	-11.60 VERTICAL Average
12	12210.600	44.77	39.21	8.08	37.06	55.00	74.00	-19.00 VERTICAL Peak

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

Freq	ReadAntenna		Cable Preamp		Limit Level	Line Limit	Over Pol/Phase	Remark
	Level	Factor	Loss	Factor				
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB
1	2939.115	38.24	27.82	3.74	37.10	32.70	54.00	-21.30 HORIZONTAL Average
2	2939.115	46.40	27.82	3.74	37.10	40.86	74.00	-33.14 HORIZONTAL Peak
3	3661.149	35.28	28.34	4.53	36.93	31.22	54.00	-22.78 HORIZONTAL Average
4	3661.149	44.84	28.34	4.53	36.93	40.78	74.00	-33.22 HORIZONTAL Peak
5	4924.977	34.67	31.01	5.60	36.95	34.33	54.00	-19.67 HORIZONTAL Average
6	4924.977	44.41	31.01	5.60	36.95	44.07	74.00	-29.93 HORIZONTAL Peak
7	7386.852	35.30	35.85	6.19	36.92	40.42	54.00	-13.58 HORIZONTAL Average
8	7386.852	43.44	35.85	6.19	36.92	48.56	74.00	-25.44 HORIZONTAL Peak
9	9848.543	34.75	37.82	6.99	37.09	42.47	54.00	-11.53 HORIZONTAL Average
10	9848.543	44.76	37.82	6.99	37.09	52.48	74.00	-21.52 HORIZONTAL Peak
11	12310.850	32.69	39.03	8.01	36.97	42.76	54.00	-11.24 HORIZONTAL Average
12	12310.850	44.51	39.03	8.01	36.97	54.58	74.00	-19.42 HORIZONTAL Peak

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

Freq	ReadAntenna		Cable Preamp		Limit Level	Line Limit	Over Pol/Phase	Remark
	Level	Factor	Loss	Factor				
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB
1	2871.934	37.84	27.70	3.70	37.15	32.09	54.00	-21.91 VERTICAL Average
2	2871.934	46.75	27.70	3.70	37.15	41.00	74.00	-33.00 VERTICAL Peak
3	3834.438	35.28	29.12	4.60	36.91	32.09	54.00	-21.91 VERTICAL Average
4	3834.438	44.83	29.12	4.60	36.91	41.64	74.00	-32.36 VERTICAL Peak
5	4924.490	34.87	31.01	5.60	36.95	34.53	54.00	-19.47 VERTICAL Average
6	4924.490	45.75	31.01	5.60	36.95	45.41	74.00	-28.59 VERTICAL Peak
7	7386.788	34.69	35.85	6.19	36.92	39.81	54.00	-14.19 VERTICAL Average
8	7386.788	44.66	35.85	6.19	36.92	49.78	74.00	-24.22 VERTICAL Peak
9	9848.450	35.02	37.82	6.99	37.09	42.74	54.00	-11.26 VERTICAL Average
10	9848.450	45.24	37.82	6.99	37.09	52.96	74.00	-21.04 VERTICAL Peak
11	12310.620	31.29	39.03	8.01	36.97	41.36	54.00	-12.64 VERTICAL Average
12	12310.620	43.21	39.03	8.01	36.97	53.28	74.00	-20.72 VERTICAL Peak

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

Freq	ReadAntenna		Cable Preamp		Limit Level	Line	Over Limit	Pol/Phase	Remark
	MHz	dBuV	Level	Factor					
					dB	dB	dBuV/m	dBuV/m	
1	31.071	31.52	12.23	0.08	29.83	14.00	40.00	-26.00	HORIZONTAL QP
2	39.715	28.44	12.60	0.60	29.58	12.06	40.00	-27.94	HORIZONTAL QP
3	48.502	28.83	12.97	0.63	29.51	12.92	40.00	-27.08	HORIZONTAL QP
4	120.277	29.80	11.52	0.92	29.40	12.84	43.50	-30.66	HORIZONTAL QP
5	169.005	26.87	13.08	1.31	29.40	11.86	43.50	-31.64	HORIZONTAL QP
6	432.546	40.86	16.89	1.85	29.86	29.74	46.00	-16.26	HORIZONTAL QP

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

Freq	ReadAntenna		Cable Preamp		Limit Level	Line	Over Limit	Pol/Phase	Remark
	MHz	dBuV	Level	Factor					
					dB	dB	dBuV/m	dBuV/m	
1	2774.030	38.15	27.43	3.68	37.26	32.00	54.00	-22.00	HORIZONTAL Average
2	2774.030	47.03	27.43	3.68	37.26	40.88	74.00	-33.12	HORIZONTAL Peak
3	3415.787	36.98	27.90	4.13	36.97	32.04	54.00	-21.96	HORIZONTAL Average
4	3415.787	46.31	27.90	4.13	36.97	41.37	74.00	-32.63	HORIZONTAL Peak
5	4824.887	34.16	30.82	5.42	36.94	33.46	54.00	-20.54	HORIZONTAL Average
6	4824.887	44.45	30.82	5.42	36.94	43.75	74.00	-30.25	HORIZONTAL Peak
7	7236.309	35.65	35.55	6.03	36.93	40.30	54.00	-13.70	HORIZONTAL Average
8	7236.309	44.73	35.55	6.03	36.93	49.38	74.00	-24.62	HORIZONTAL Peak
9	9648.371	35.98	37.54	7.06	37.08	43.50	54.00	-10.50	HORIZONTAL Average
10	9648.371	45.61	37.54	7.06	37.08	53.13	74.00	-20.87	HORIZONTAL Peak
11	12060.420	32.18	39.46	8.17	37.17	42.64	54.00	-11.36	HORIZONTAL Average
12	12060.420	44.00	39.46	8.17	37.17	54.46	74.00	-19.54	HORIZONTAL Peak

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

Freq	ReadAntenna		Cable Preamp		Limit Level	Line	Over Limit	Pol/Phase	Remark
	MHz	dBuV	Level	Factor					
1	31.180	30.50	12.23	0.08	29.83	12.98	40.00	-27.02	VERTICAL QP
2	53.318	30.38	12.78	0.59	29.49	14.26	40.00	-25.74	VERTICAL QP
3	119.436	33.49	11.48	0.92	29.40	16.49	43.50	-27.01	VERTICAL QP
4	180.649	29.65	12.67	1.34	29.40	14.26	43.50	-29.24	VERTICAL QP
5	636.134	29.48	20.86	2.10	29.49	22.95	46.00	-23.05	VERTICAL QP
6	890.728	29.37	23.92	2.87	28.75	27.41	46.00	-18.59	VERTICAL QP

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

Freq	ReadAntenna		Cable Preamp		Limit Level	Line	Over Limit	Pol/Phase	Remark
	MHz	dBuV	Level	Factor					
1	2905.331	38.64	27.76	3.71	37.13	32.98	54.00	-21.02	HORIZONTAL Average
2	2905.331	46.52	27.76	3.71	37.13	40.86	74.00	-33.14	HORIZONTAL Peak
3	3556.843	36.95	28.03	4.44	36.95	32.47	54.00	-21.53	HORIZONTAL Average
4	3556.843	45.48	28.03	4.44	36.95	41.00	74.00	-33.00	HORIZONTAL Peak
5	4924.490	36.81	31.01	5.60	36.95	36.47	54.00	-17.53	HORIZONTAL Average
6	4924.490	45.03	31.01	5.60	36.95	44.69	74.00	-29.31	HORIZONTAL Peak
7	7386.006	34.56	35.85	6.19	36.92	39.68	54.00	-14.32	HORIZONTAL Average
8	7386.006	44.63	35.85	6.19	36.92	49.75	74.00	-24.25	HORIZONTAL Peak
9	9848.684	34.81	37.82	6.99	37.09	42.53	54.00	-11.47	HORIZONTAL Average
10	9848.684	45.37	37.82	6.99	37.09	53.09	74.00	-20.91	HORIZONTAL Peak
11	12310.220	30.16	39.03	8.01	36.97	40.23	54.00	-13.77	HORIZONTAL Average
12	12310.220	42.32	39.03	8.01	36.97	52.39	74.00	-21.61	HORIZONTAL Peak

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

Freq	ReadAntenna		Cable Preamp		Limit Level	Line Limit	Over Pol/Phase	Remark
	Level	Factor	Loss	Factor				
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB
1	2905.331	36.30	27.76	3.71	37.13	30.64	54.00	-23.36 HORIZONTAL Average
2	2905.331	46.55	27.76	3.71	37.13	40.89	74.00	-33.11 HORIZONTAL Peak
3	3714.443	34.76	28.58	4.56	36.93	30.97	54.00	-23.03 HORIZONTAL Average
4	3714.443	44.22	28.58	4.56	36.93	40.43	74.00	-33.57 HORIZONTAL Peak
5	4884.993	35.70	30.95	5.52	36.95	35.22	54.00	-18.78 HORIZONTAL Average
6	4884.993	45.05	30.95	5.52	36.95	44.57	74.00	-29.43 HORIZONTAL Peak
7	7326.006	34.72	35.74	6.13	36.92	39.67	54.00	-14.33 HORIZONTAL Average
8	7326.006	45.00	35.74	6.13	36.92	49.95	74.00	-24.05 HORIZONTAL Peak
9	9768.789	35.29	37.74	7.01	37.09	42.95	54.00	-11.05 HORIZONTAL Average
10	9768.789	46.03	37.74	7.01	37.09	53.69	74.00	-20.31 HORIZONTAL Peak
11	12210.420	32.02	39.21	8.08	37.06	42.25	54.00	-11.75 HORIZONTAL Average
12	12210.420	44.07	39.21	8.08	37.06	54.30	74.00	-19.70 HORIZONTAL Peak

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

Freq	ReadAntenna		Cable Preamp		Limit Level	Line Limit	Over Pol/Phase	Remark
	Level	Factor	Loss	Factor				
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB
1	2734.229	38.17	27.25	3.63	37.28	31.77	54.00	-22.23 VERTICAL Average
2	2734.229	47.09	27.25	3.63	37.28	40.69	74.00	-33.31 VERTICAL Peak
3	3587.818	34.69	28.11	4.49	36.94	30.35	54.00	-23.65 VERTICAL Average
4	3587.818	44.95	28.11	4.49	36.94	40.61	74.00	-33.39 VERTICAL Peak
5	4884.151	35.28	30.95	5.52	36.95	34.80	54.00	-19.20 VERTICAL Average
6	4884.151	45.25	30.95	5.52	36.95	44.77	74.00	-29.23 VERTICAL Peak
7	7326.052	34.76	35.74	6.13	36.92	39.71	54.00	-14.29 VERTICAL Average
8	7326.052	44.70	35.74	6.13	36.92	49.65	74.00	-24.35 VERTICAL Peak
9	9768.018	36.18	37.74	7.01	37.09	43.84	54.00	-10.16 VERTICAL Average
10	9768.018	45.05	37.74	7.01	37.09	52.71	74.00	-21.29 VERTICAL Peak
11	12210.420	32.52	39.21	8.08	37.06	42.75	54.00	-11.25 VERTICAL Average
12	12210.420	44.39	39.21	8.08	37.06	54.62	74.00	-19.38 VERTICAL Peak

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

Freq	ReadAntenna		Cable Preamp		Limit Level	Line Limit	Over Pol/Phase	Remark
	Level	Factor	Loss	Factor				
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB
1	2905.331	37.02	27.76	3.71	37.13	31.36	54.00	-22.64 HORIZONTAL Average
2	2905.331	46.91	27.76	3.71	37.13	41.25	74.00	-32.75 HORIZONTAL Peak
3	3619.064	36.03	28.20	4.51	36.94	31.80	54.00	-22.20 HORIZONTAL Average
4	3619.064	45.76	28.20	4.51	36.94	41.53	74.00	-32.47 HORIZONTAL Peak
5	4924.339	34.03	31.01	5.60	36.95	33.69	54.00	-20.31 HORIZONTAL Average
6	4924.339	44.74	31.01	5.60	36.95	44.40	74.00	-29.60 HORIZONTAL Peak
7	7386.741	34.72	35.85	6.19	36.92	39.84	54.00	-14.16 HORIZONTAL Average
8	7386.741	44.32	35.85	6.19	36.92	49.44	74.00	-24.56 HORIZONTAL Peak
9	9848.432	33.28	37.82	6.99	37.09	41.00	54.00	-13.00 HORIZONTAL Average
10	9848.432	44.94	37.82	6.99	37.09	52.66	74.00	-21.34 HORIZONTAL Peak
11	12310.450	31.67	39.03	8.01	36.97	41.74	54.00	-12.26 HORIZONTAL Average
12	12310.450	44.39	39.03	8.01	36.97	54.46	74.00	-19.54 HORIZONTAL Peak

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

Freq	ReadAntenna		Cable Preamp		Limit Level	Line Limit	Over Pol/Phase	Remark
	Level	Factor	Loss	Factor				
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB
1	2774.030	37.49	27.43	3.68	37.26	31.34	54.00	-22.66 VERTICAL Average
2	2774.030	47.14	27.43	3.68	37.26	40.99	74.00	-33.01 VERTICAL Peak
3	3823.371	36.18	29.08	4.60	36.91	32.95	54.00	-21.05 VERTICAL Average
4	3823.371	45.75	29.08	4.60	36.91	42.52	74.00	-31.48 VERTICAL Peak
5	4924.419	36.99	31.01	5.60	36.95	36.65	54.00	-17.35 VERTICAL Average
6	4924.419	45.51	31.01	5.60	36.95	45.17	74.00	-28.83 VERTICAL Peak
7	7386.806	34.72	35.85	6.19	36.92	39.84	54.00	-14.16 VERTICAL Average
8	7386.806	44.49	35.85	6.19	36.92	49.61	74.00	-24.39 VERTICAL Peak
9	9848.018	35.22	37.82	6.99	37.09	42.94	54.00	-11.06 VERTICAL Average
10	9848.018	44.90	37.82	6.99	37.09	52.62	74.00	-21.38 VERTICAL Peak
11	12310.130	33.02	39.03	8.01	36.97	43.09	54.00	-10.91 VERTICAL Average
12	12310.130	43.82	39.03	8.01	36.97	53.89	74.00	-20.11 VERTICAL Peak

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

Freq	ReadAntenna		Cable Preamp		Limit Level	Line	Over Limit	Pol/Phase	Remark
	MHz	dBuV	Level	Factor					
					dB	dB	dBuV/m	dBuV/m	
1	30.962	31.21	12.22	0.07	29.83	13.67	40.00	-26.33	HORIZONTAL QP
2	48.502	32.58	12.97	0.63	29.51	16.67	40.00	-23.33	HORIZONTAL QP
3	121.976	30.03	11.62	0.93	29.40	13.18	43.50	-30.32	HORIZONTAL QP
4	139.851	36.09	13.10	1.03	29.40	20.82	43.50	-22.68	HORIZONTAL QP
5	560.693	29.29	19.90	2.01	29.54	21.66	46.00	-24.34	HORIZONTAL QP
6	815.968	29.84	22.86	2.78	29.33	26.15	46.00	-19.85	HORIZONTAL QP

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

Freq	ReadAntenna		Cable Preamp		Limit Level	Line	Over Limit	Pol/Phase	Remark
	MHz	dBuV	Level	Factor					
					dB	dB	dBuV/m	dBuV/m	
1	2905.331	37.02	27.76	3.71	37.13	31.36	54.00	-22.64	HORIZONTAL Average
2	2905.331	47.36	27.76	3.71	37.13	41.70	74.00	-32.30	HORIZONTAL Peak
3	3556.843	36.30	28.03	4.44	36.95	31.82	54.00	-22.18	HORIZONTAL Average
4	3556.843	45.90	28.03	4.44	36.95	41.42	74.00	-32.58	HORIZONTAL Peak
5	4824.888	35.29	30.82	5.42	36.94	34.59	54.00	-19.41	HORIZONTAL Average
6	4824.888	45.44	30.82	5.42	36.94	44.74	74.00	-29.26	HORIZONTAL Peak
7	7236.070	34.18	35.55	6.03	36.93	38.83	54.00	-15.17	HORIZONTAL Average
8	7236.070	45.48	35.55	6.03	36.93	50.13	74.00	-23.87	HORIZONTAL Peak
9	9648.430	33.97	37.54	7.06	37.08	41.49	54.00	-12.51	HORIZONTAL Average
10	9648.430	45.03	37.54	7.06	37.08	52.55	74.00	-21.45	HORIZONTAL Peak
11	12060.540	31.72	39.46	8.17	37.17	42.18	54.00	-11.82	HORIZONTAL Average
12	12060.540	43.42	39.46	8.17	37.17	53.88	74.00	-20.12	HORIZONTAL Peak

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

Freq	ReadAntenna		Cable Preamp		Limit Level	Line	Over Limit	Pol/Phase	Remark
	Level	Factor	Loss	Factor					
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB	
1	31.955	30.99	12.25	0.11	29.81	13.54	40.00	-26.46	VERTICAL QP
2	40.135	26.82	12.60	0.61	29.57	10.46	40.00	-29.54	VERTICAL QP
3	53.882	27.31	12.73	0.59	29.49	11.14	40.00	-28.86	VERTICAL QP
4	121.976	30.70	11.62	0.93	29.40	13.85	43.50	-29.65	VERTICAL QP
5	178.133	28.09	12.74	1.34	29.40	12.77	43.50	-30.73	VERTICAL QP
6	878.322	29.69	23.80	2.91	28.90	27.50	46.00	-18.50	VERTICAL QP

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

Freq	ReadAntenna		Cable Preamp		Limit Level	Line	Over Limit	Pol/Phase	Remark
	Level	Factor	Loss	Factor					
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB	
1	2939.115	37.80	27.82	3.74	37.10	32.26	54.00	-21.74	VERTICAL Average
2	2939.115	46.51	27.82	3.74	37.10	40.97	74.00	-33.03	VERTICAL Peak
3	3879.027	34.18	29.24	4.60	36.91	31.11	54.00	-22.89	VERTICAL Average
4	3879.027	45.11	29.24	4.60	36.91	42.04	74.00	-31.96	VERTICAL Peak
5	4824.490	34.01	30.82	5.42	36.94	33.31	54.00	-20.69	VERTICAL Average
6	4824.490	44.89	30.82	5.42	36.94	44.19	74.00	-29.81	VERTICAL Peak
7	7236.114	35.99	35.55	6.03	36.93	40.64	54.00	-13.36	VERTICAL Average
8	7236.114	45.73	35.55	6.03	36.93	50.38	74.00	-23.62	VERTICAL Peak
9	9648.588	34.76	37.54	7.06	37.08	42.28	54.00	-11.72	VERTICAL Average
10	9648.588	44.91	37.54	7.06	37.08	52.43	74.00	-21.57	VERTICAL Peak
11	12060.600	32.02	39.46	8.17	37.17	42.48	54.00	-11.52	VERTICAL Average
12	12060.600	44.87	39.46	8.17	37.17	55.33	74.00	-18.67	VERTICAL Peak

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

Freq	ReadAntenna		Cable Preamp		Limit Level	Line Limit	Over Pol/Phase	Remark
	Level	Factor	Loss	Factor				
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB
1	2905.331	34.18	27.76	3.71	37.13	28.52	54.00	-25.48 HORIZONTAL Average
2	2905.331	46.66	27.76	3.71	37.13	41.00	74.00	-33.00 HORIZONTAL Peak
3	3693.033	35.87	28.47	4.55	36.93	31.96	54.00	-22.04 HORIZONTAL Average
4	3693.033	45.23	28.47	4.55	36.93	41.32	74.00	-32.68 HORIZONTAL Peak
5	4884.419	34.18	30.95	5.52	36.95	33.70	54.00	-20.30 HORIZONTAL Average
6	4884.419	45.52	30.95	5.52	36.95	45.04	74.00	-28.96 HORIZONTAL Peak
7	7326.015	33.69	35.74	6.13	36.92	38.64	54.00	-15.36 HORIZONTAL Average
8	7326.015	44.94	35.74	6.13	36.92	49.89	74.00	-24.11 HORIZONTAL Peak
9	9768.430	32.06	37.74	7.01	37.09	39.72	54.00	-14.28 HORIZONTAL Average
10	9768.430	45.42	37.74	7.01	37.09	53.08	74.00	-20.92 HORIZONTAL Peak
11	12210.930	31.80	39.21	8.08	37.06	42.03	54.00	-11.97 HORIZONTAL Average
12	12210.930	43.77	39.21	8.08	37.06	54.00	74.00	-20.00 HORIZONTAL Peak

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

Freq	ReadAntenna		Cable Preamp		Limit Level	Line Limit	Over Pol/Phase	Remark
	Level	Factor	Loss	Factor				
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB
1	2905.331	37.11	27.76	3.71	37.13	31.45	54.00	-22.55 VERTICAL Average
2	2905.331	46.94	27.76	3.71	37.13	41.28	74.00	-32.72 VERTICAL Peak
3	3757.637	34.77	28.82	4.58	36.92	31.25	54.00	-22.75 VERTICAL Average
4	3757.637	44.77	28.82	4.58	36.92	41.25	74.00	-32.75 VERTICAL Peak
5	4884.490	34.97	30.95	5.52	36.95	34.49	54.00	-19.51 VERTICAL Average
6	4884.490	45.00	30.95	5.52	36.95	44.52	74.00	-29.48 VERTICAL Peak
7	7326.461	36.27	35.74	6.13	36.92	41.22	54.00	-12.78 VERTICAL Average
8	7326.461	45.00	35.74	6.13	36.92	49.95	74.00	-24.05 VERTICAL Peak
9	9768.371	34.72	37.74	7.01	37.09	42.38	54.00	-11.62 VERTICAL Average
10	9768.371	45.86	37.74	7.01	37.09	53.52	74.00	-20.48 VERTICAL Peak
11	12210.750	31.07	39.21	8.08	37.06	41.30	54.00	-12.70 VERTICAL Average
12	12210.750	43.50	39.21	8.08	37.06	53.73	74.00	-20.27 VERTICAL Peak

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

Freq	ReadAntenna		Cable Preamp		Limit Level	Line Limit	Over Pol/Phase	Remark
	Level	Factor	Loss	Factor				
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB
1	2871.934	37.15	27.70	3.70	37.15	31.40	54.00	-22.60 HORIZONTAL Average
2	2871.934	46.72	27.70	3.70	37.15	40.97	74.00	-33.03 HORIZONTAL Peak
3	3725.195	36.89	28.64	4.57	36.92	33.18	54.00	-20.82 HORIZONTAL Average
4	3725.195	45.22	28.64	4.57	36.92	41.51	74.00	-32.49 HORIZONTAL Peak
5	4924.490	34.06	31.01	5.60	36.95	33.72	54.00	-20.28 HORIZONTAL Average
6	4924.490	44.87	31.01	5.60	36.95	44.53	74.00	-29.47 HORIZONTAL Peak
7	7386.741	34.62	35.85	6.19	36.92	39.74	54.00	-14.26 HORIZONTAL Average
8	7386.741	44.48	35.85	6.19	36.92	49.60	74.00	-24.40 HORIZONTAL Peak
9	9848.018	35.15	37.82	6.99	37.09	42.87	54.00	-11.13 HORIZONTAL Average
10	9848.018	44.57	37.82	6.99	37.09	52.29	74.00	-21.71 HORIZONTAL Peak
11	12310.100	30.28	39.03	8.01	36.97	40.35	54.00	-13.65 HORIZONTAL Average
12	12310.100	43.20	39.03	8.01	36.97	53.27	74.00	-20.73 HORIZONTAL Peak

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

Freq	ReadAntenna		Cable Preamp		Limit Level	Line Limit	Over Pol/Phase	Remark
	Level	Factor	Loss	Factor				
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB
1	3060.486	37.06	27.90	3.85	37.05	31.76	54.00	-22.24 VERTICAL Average
2	3060.486	46.34	27.90	3.85	37.05	41.04	74.00	-32.96 VERTICAL Peak
3	3587.818	36.94	28.11	4.49	36.94	32.60	54.00	-21.40 VERTICAL Average
4	3587.818	45.71	28.11	4.49	36.94	41.37	74.00	-32.63 VERTICAL Peak
5	4924.151	34.80	31.01	5.60	36.95	34.46	54.00	-19.54 VERTICAL Average
6	4924.151	45.57	31.01	5.60	36.95	45.23	74.00	-28.77 VERTICAL Peak
7	7386.518	36.22	35.85	6.19	36.92	41.34	54.00	-12.66 VERTICAL Average
8	7386.518	45.14	35.85	6.19	36.92	50.26	74.00	-23.74 VERTICAL Peak
9	9848.257	34.71	37.82	6.99	37.09	42.43	54.00	-11.57 VERTICAL Average
10	9848.257	44.96	37.82	6.99	37.09	52.68	74.00	-21.32 VERTICAL Peak
11	12310.350	31.70	39.03	8.01	36.97	41.77	54.00	-12.23 VERTICAL Average
12	12310.350	43.61	39.03	8.01	36.97	53.68	74.00	-20.32 VERTICAL Peak

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## 8 Appendix

### 8.1 Appendix 15.247

#### 1.6dB Bandwidth

Test Mode	Test Channel	Ant	6dB Bandwidth [MHz]	Limit	Verdict
11B	2412	Ant1	8.440	0.5	PASS
11B	2442	Ant1	8.741	0.5	PASS
11B	2462	Ant1	8.575	0.5	PASS
11G	2412	Ant1	15.39	0.5	PASS
11G	2442	Ant1	15.39	0.5	PASS
11G	2462	Ant1	15.37	0.5	PASS
11N20SISO	2412	Ant1	15.12	0.5	PASS
11N20SISO	2442	Ant1	15.70	0.5	PASS
11N20SISO	2462	Ant1	15.36	0.5	PASS

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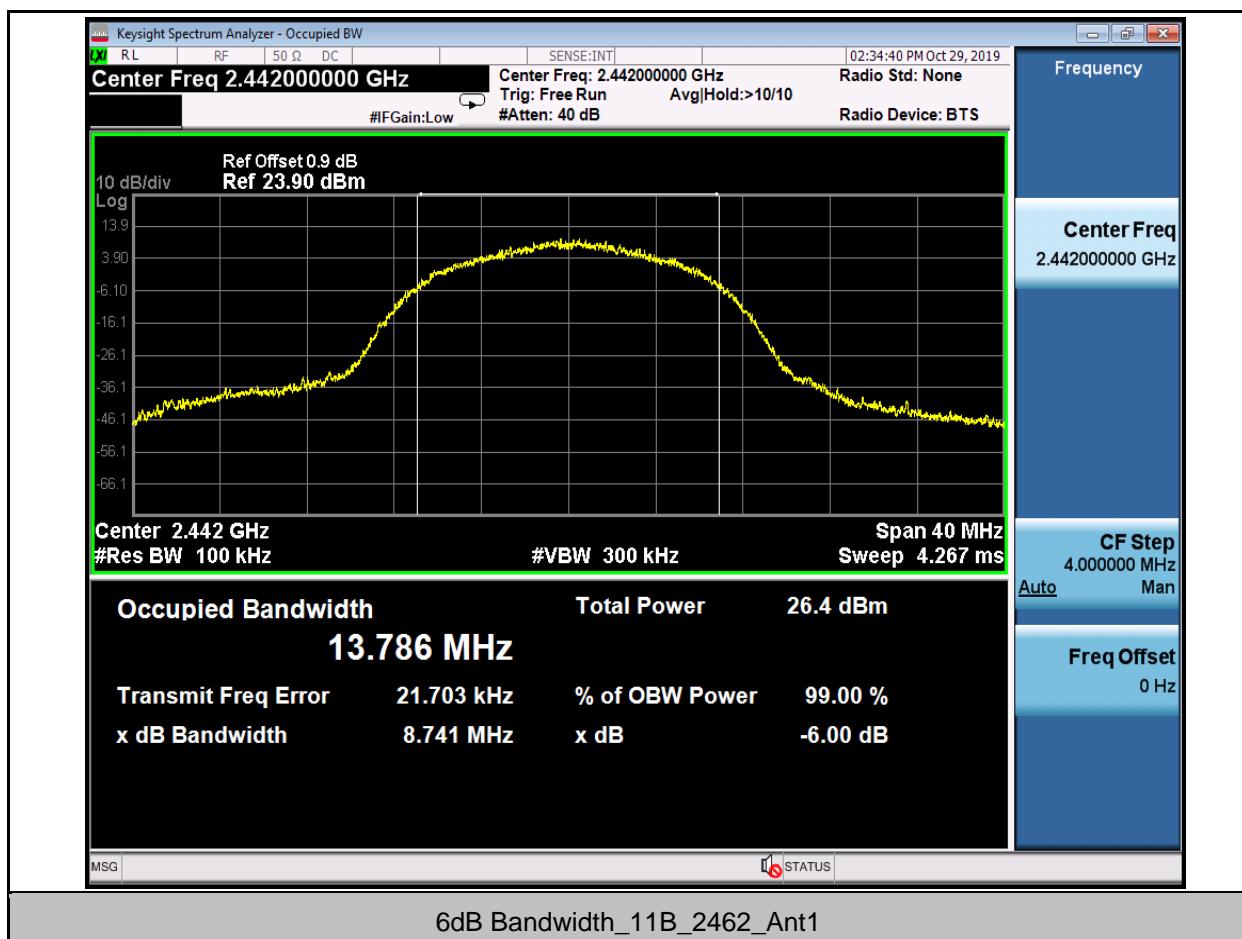
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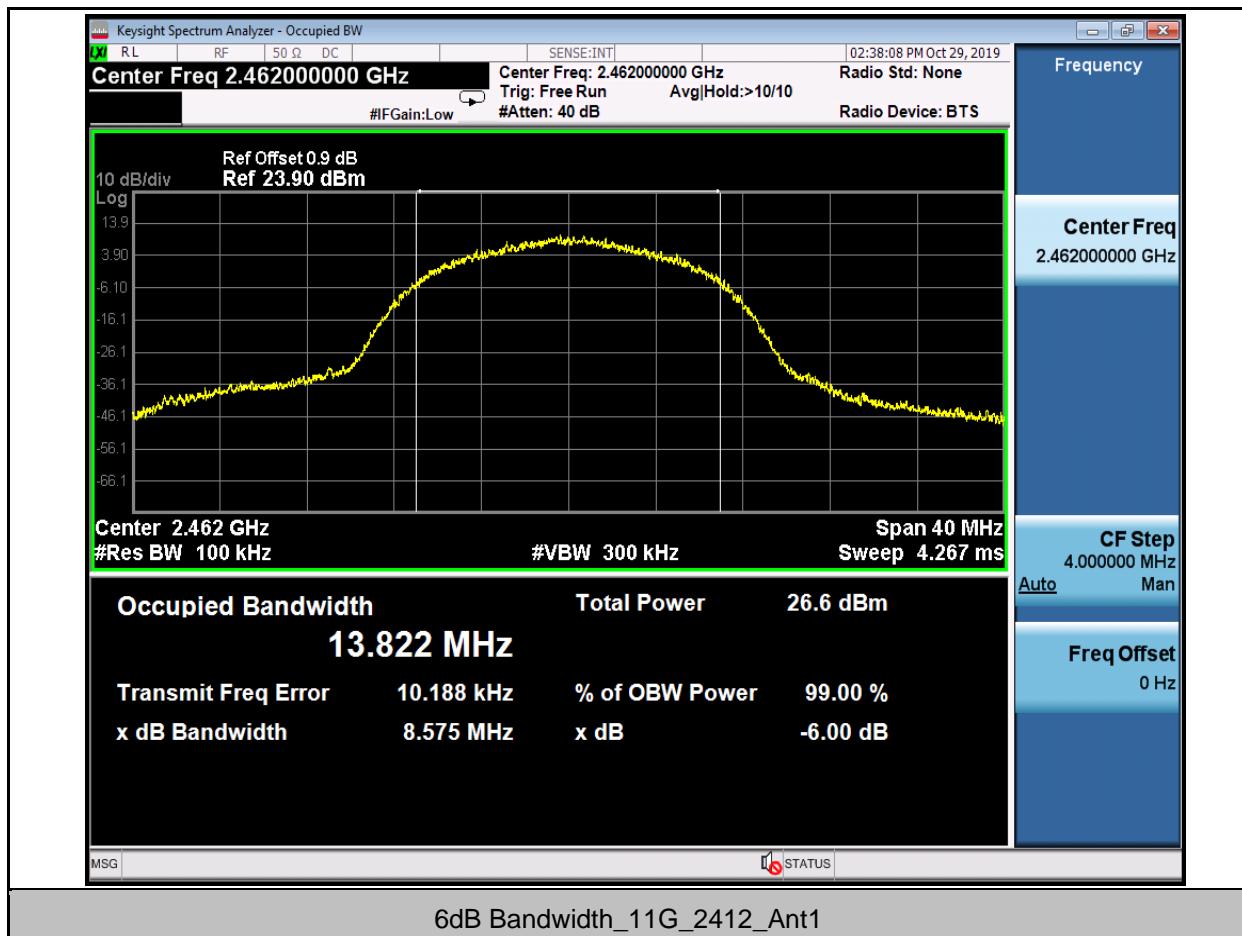
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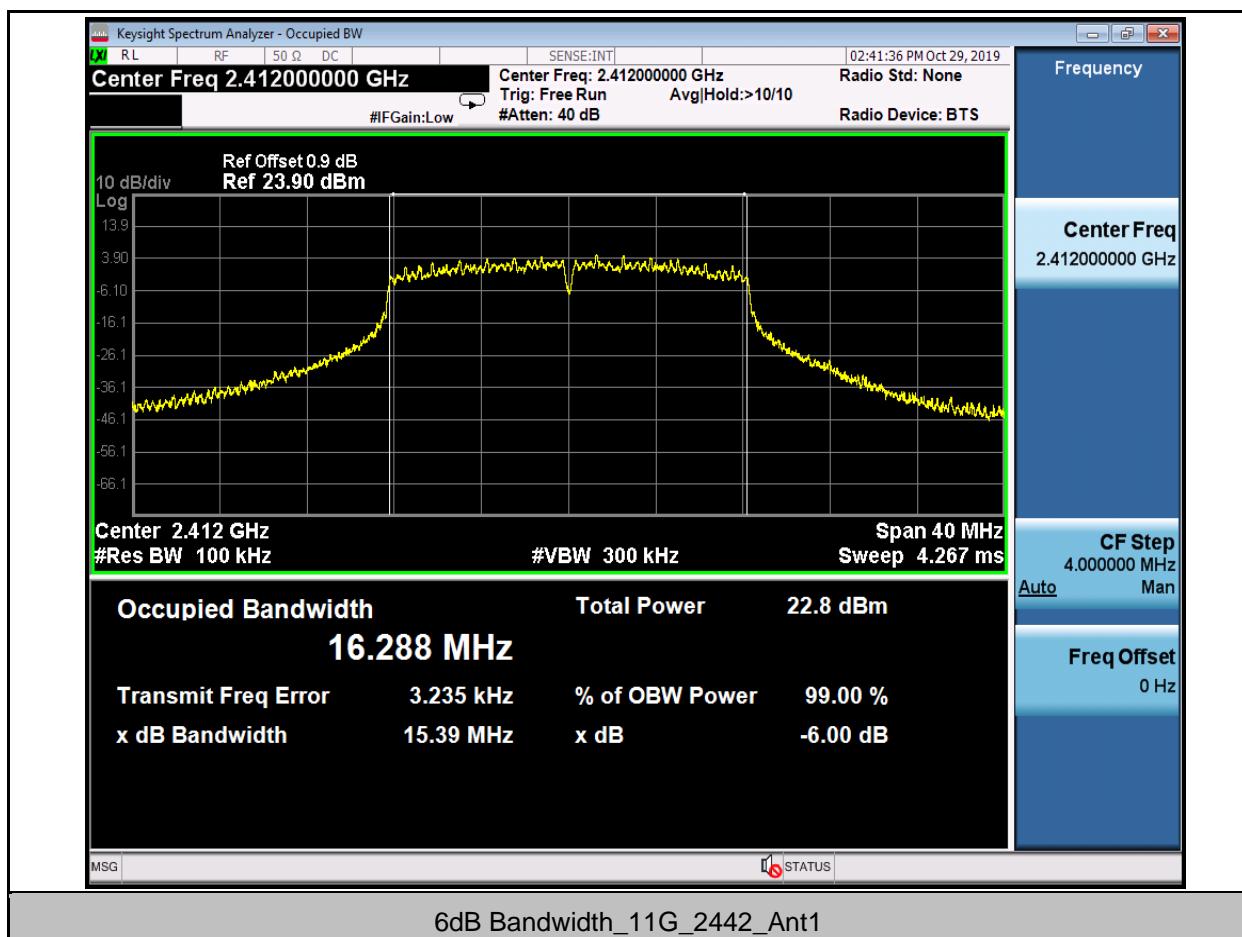


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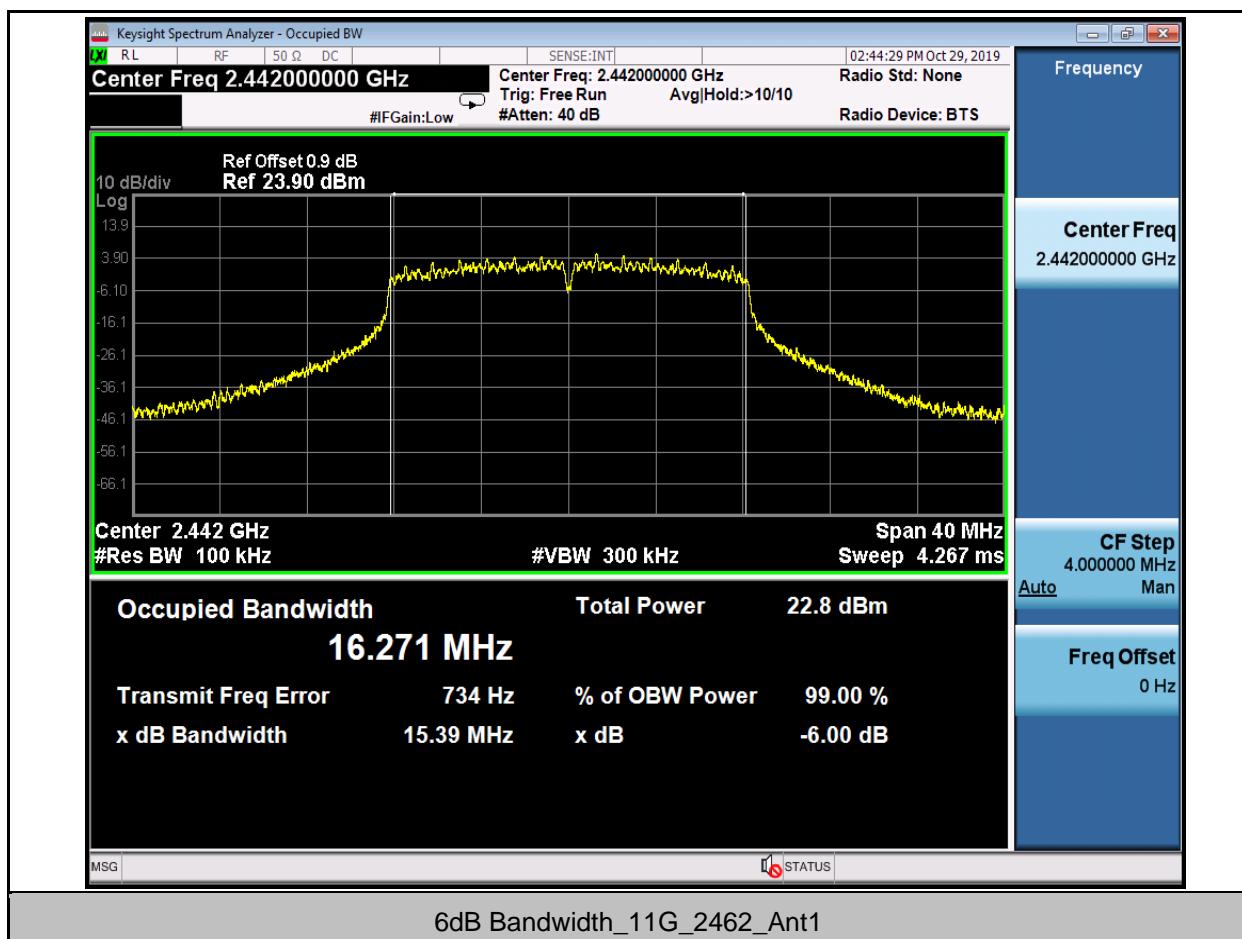


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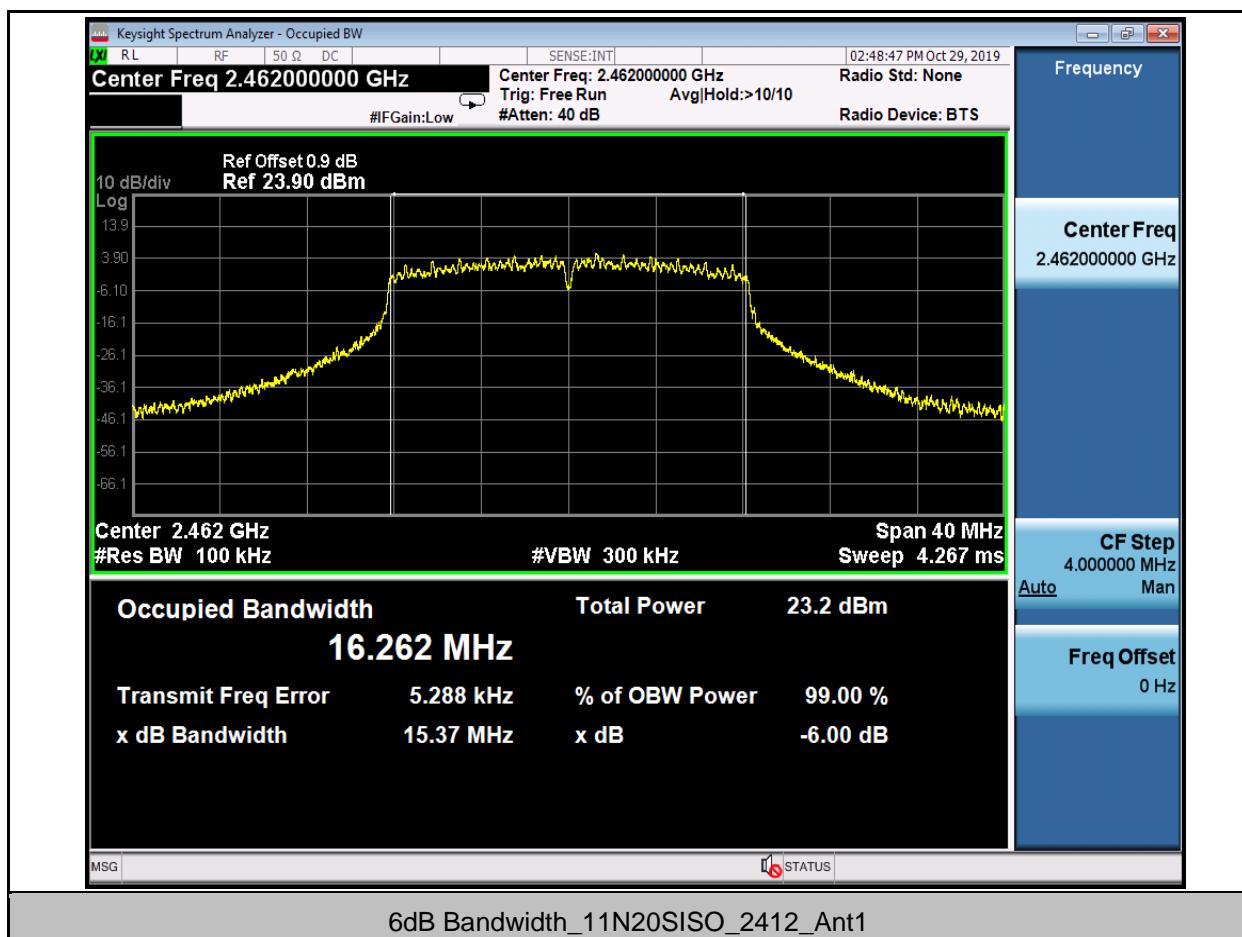


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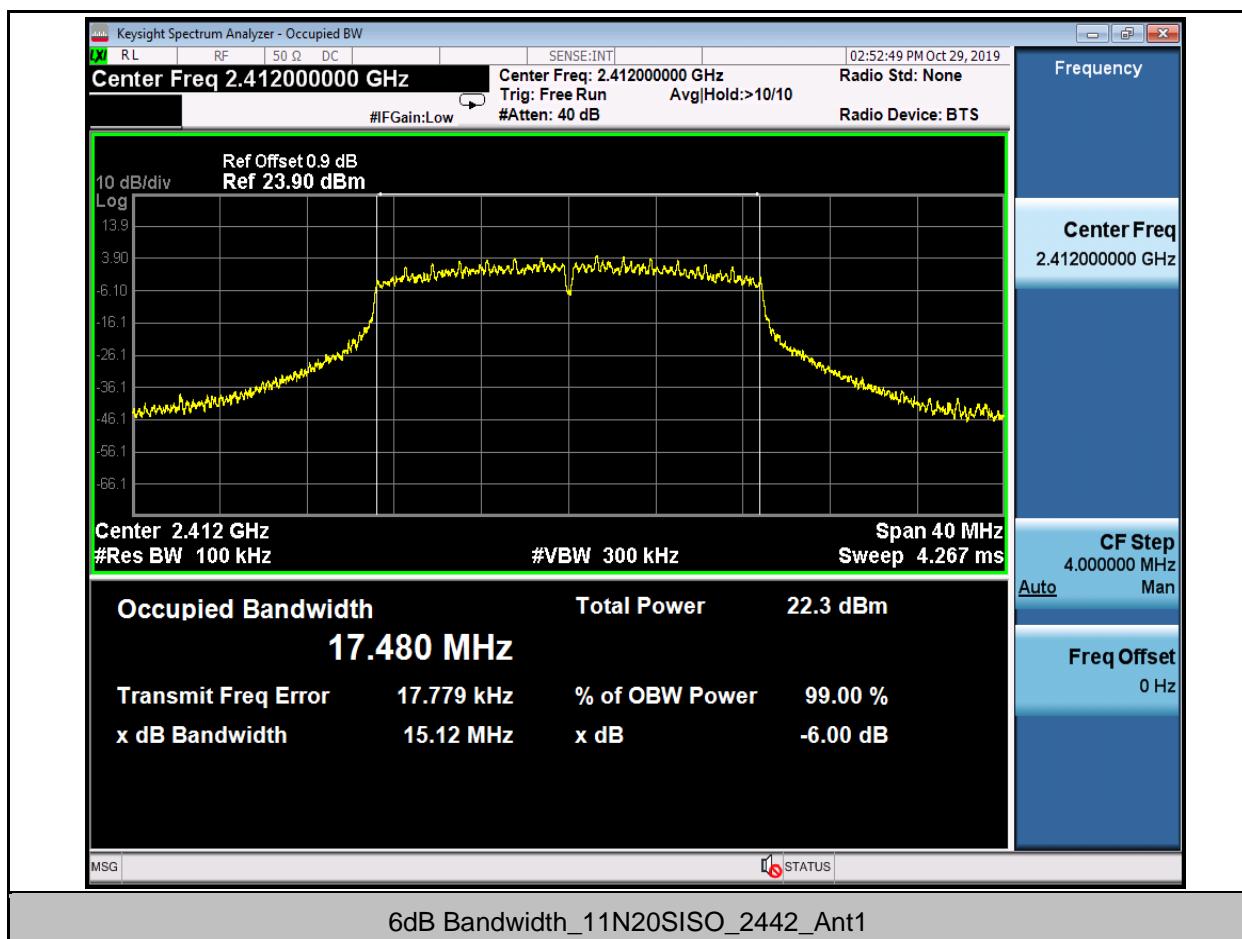


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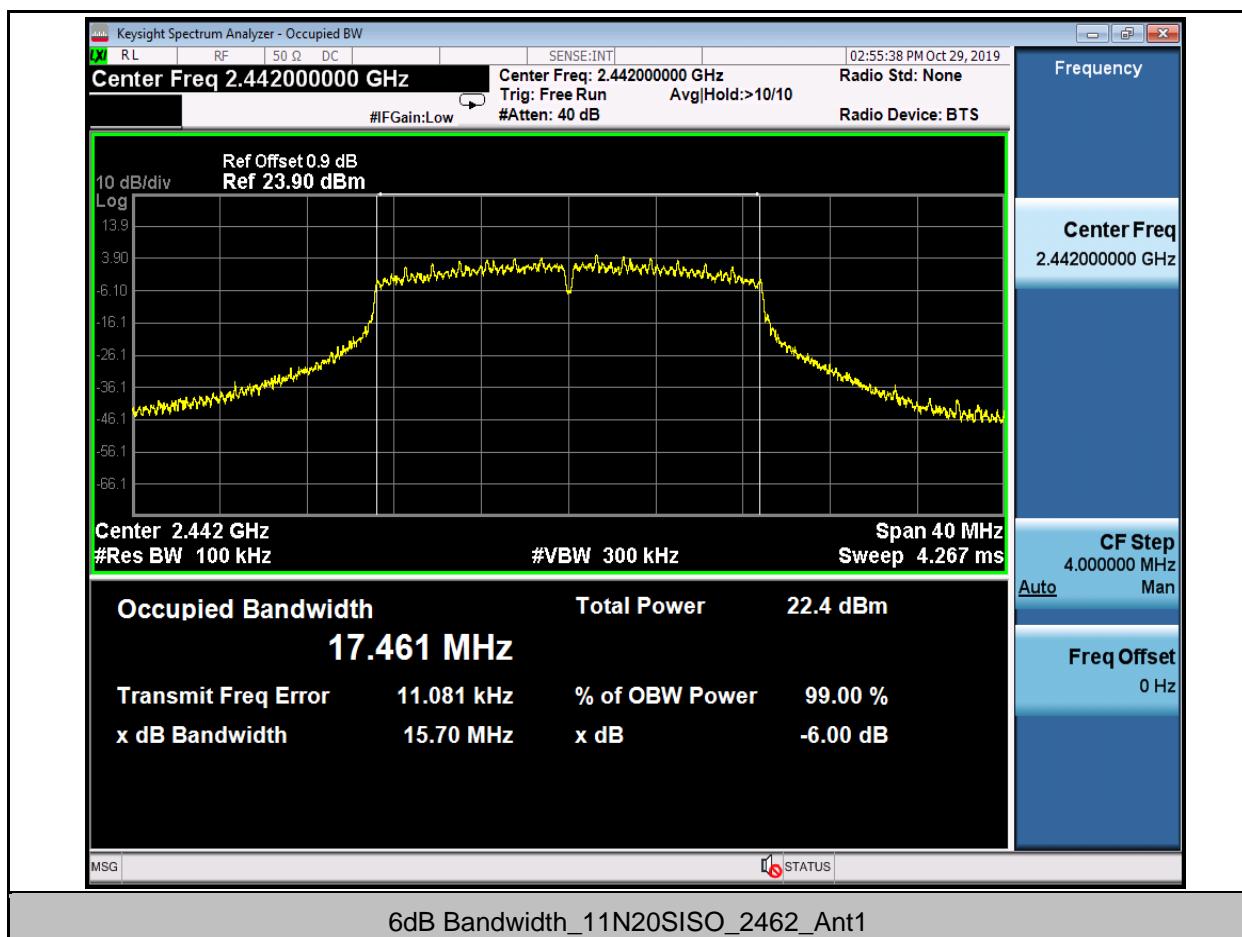


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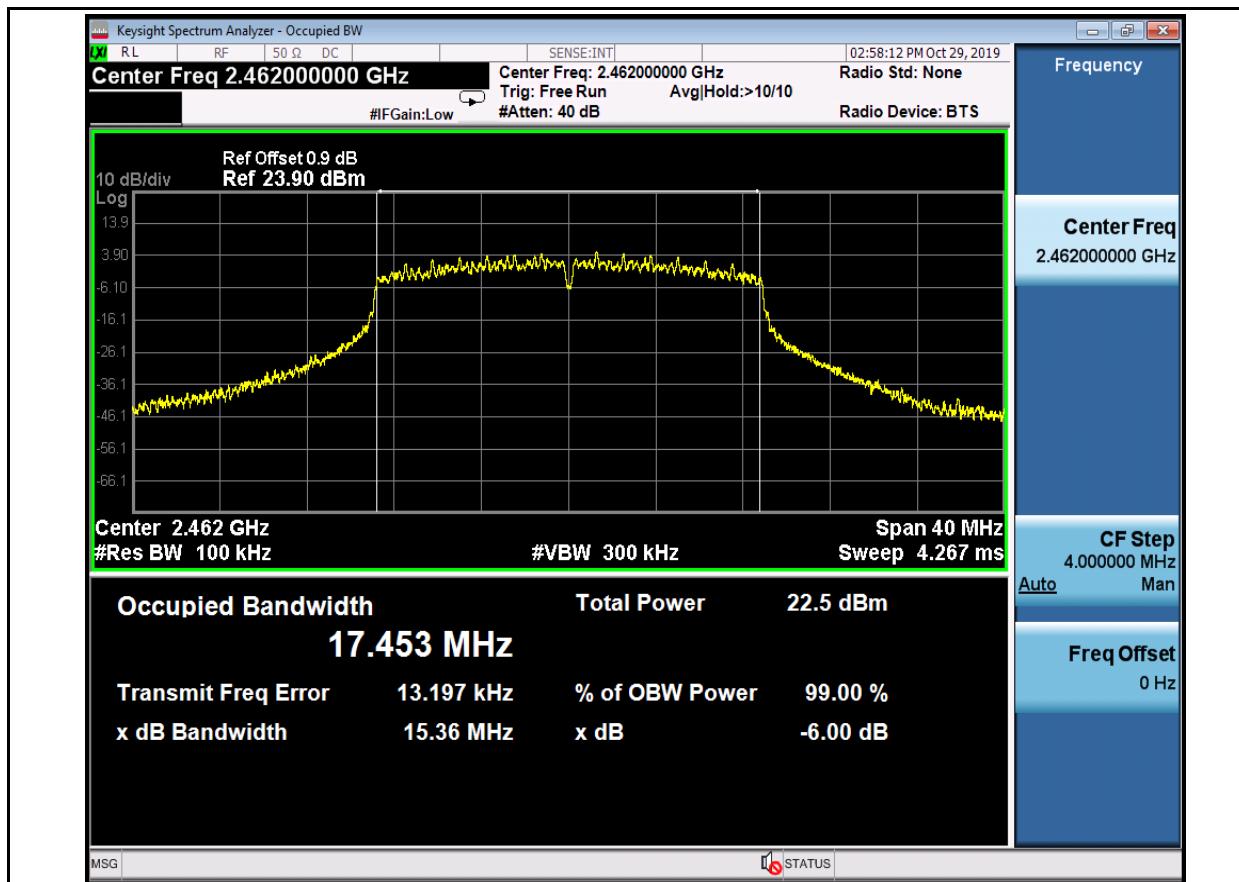
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## 2. Maximum peak conducted output power

Test Mode	Test Channel	Ant	Power[dBm]	Limit[dBm]	Verdict
11B	2412	Ant1	23.64	30	PASS
11B	2442	Ant1	24.02	30	PASS
11B	2462	Ant1	24.18	30	PASS
11G	2412	Ant1	24.15	30	PASS
11G	2442	Ant1	24.29	30	PASS
11G	2462	Ant1	24.48	30	PASS
11N20SISO	2412	Ant1	22.85	30	PASS
11N20SISO	2442	Ant1	23.31	30	PASS
11N20SISO	2462	Ant1	23.3	30	PASS

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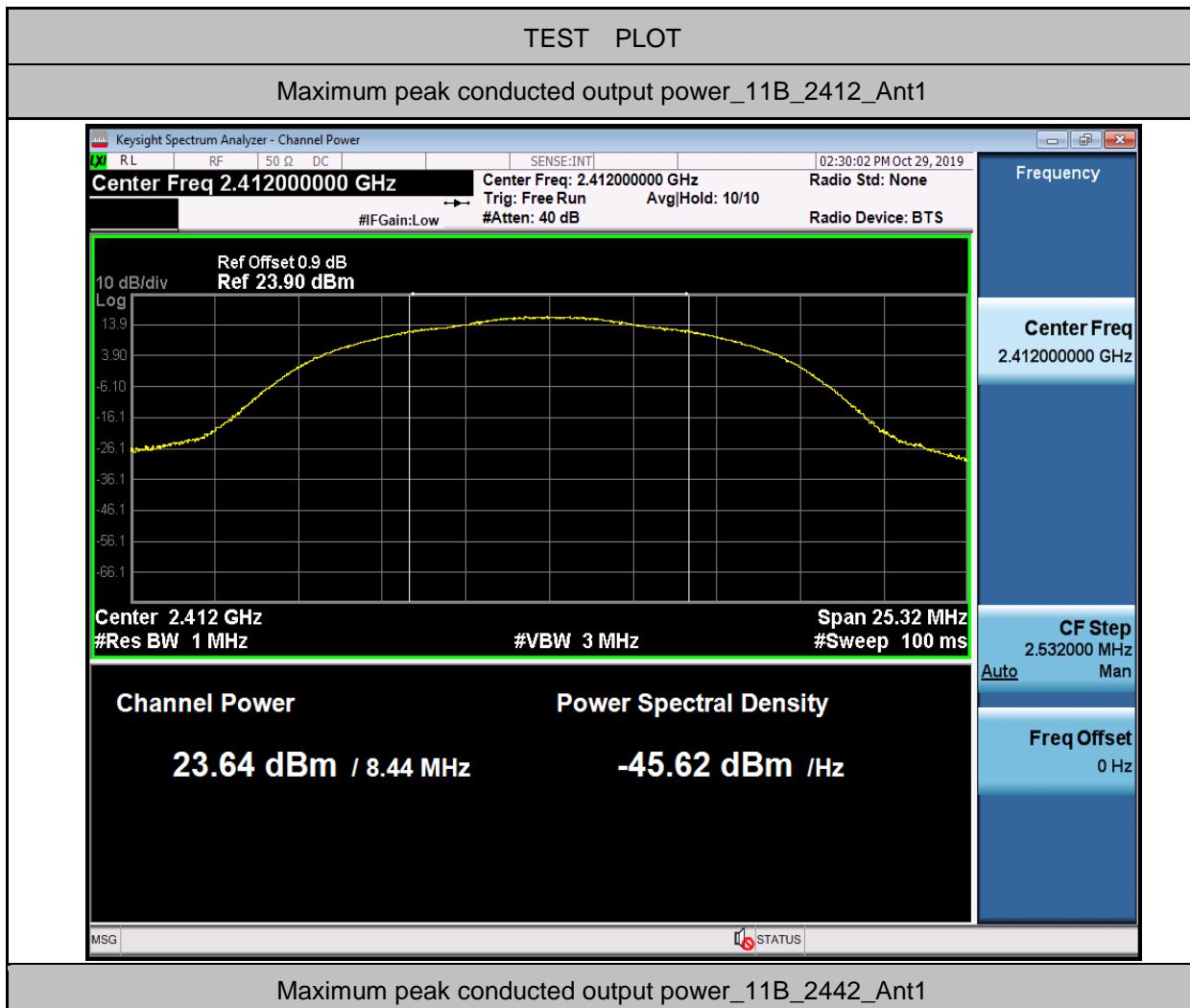
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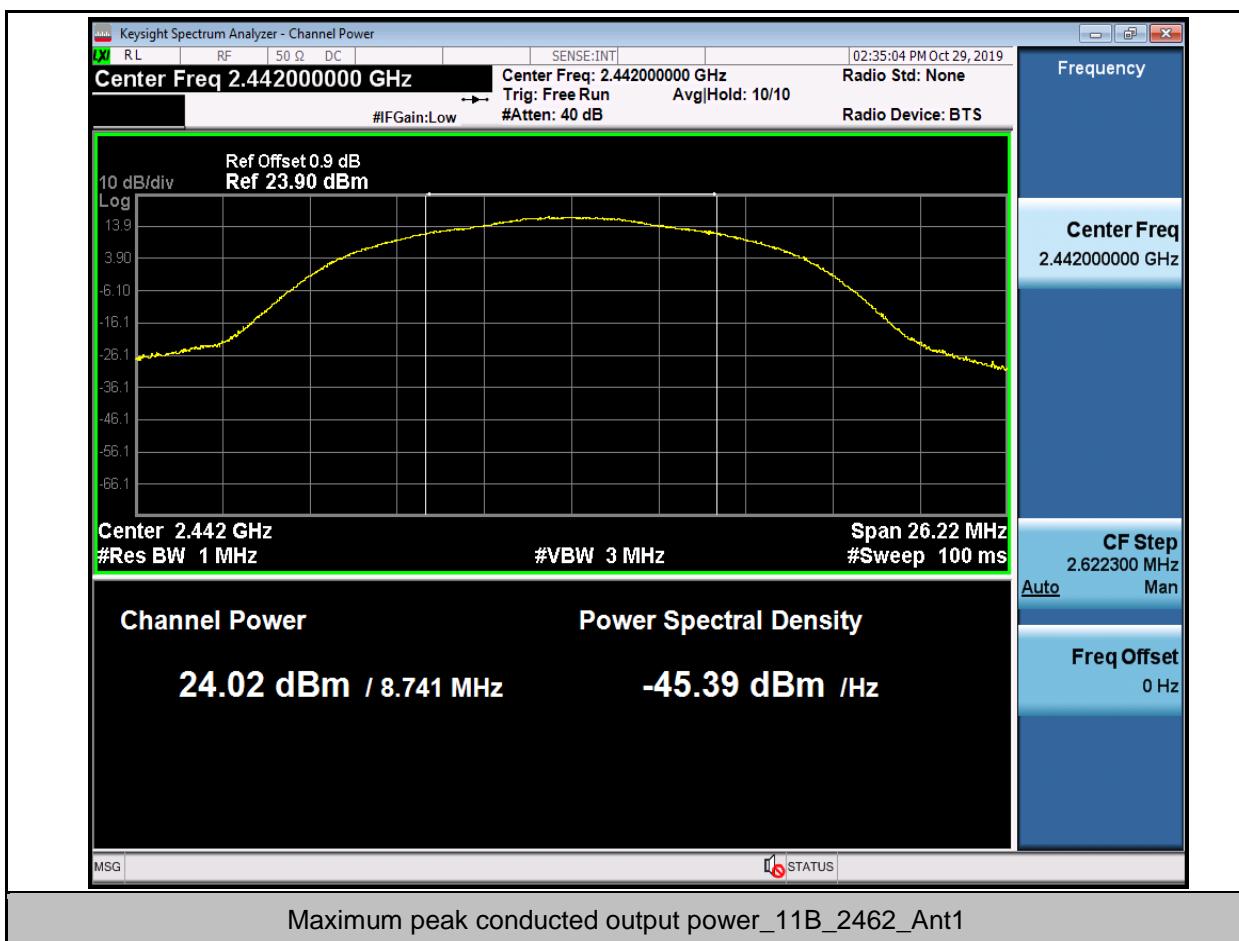
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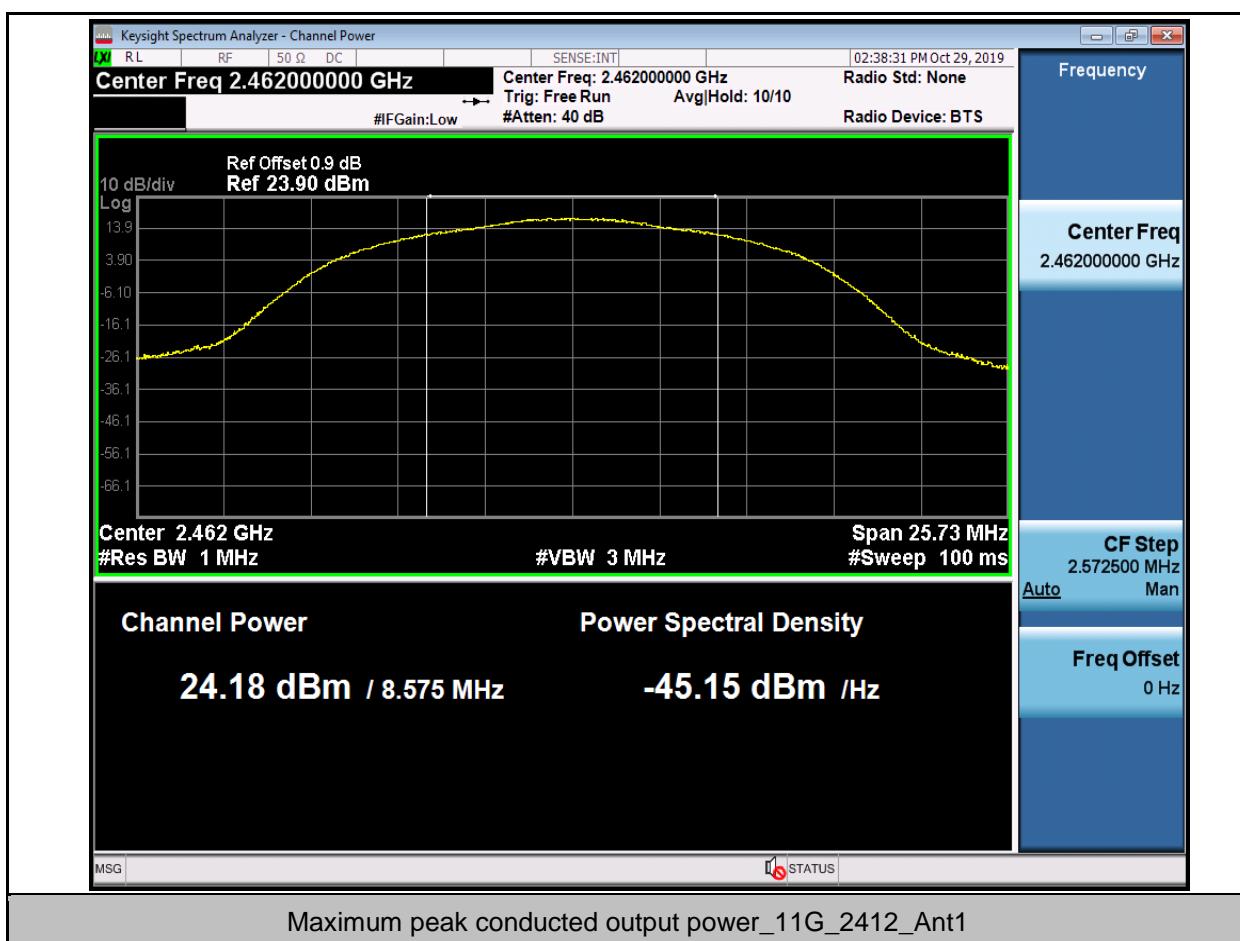


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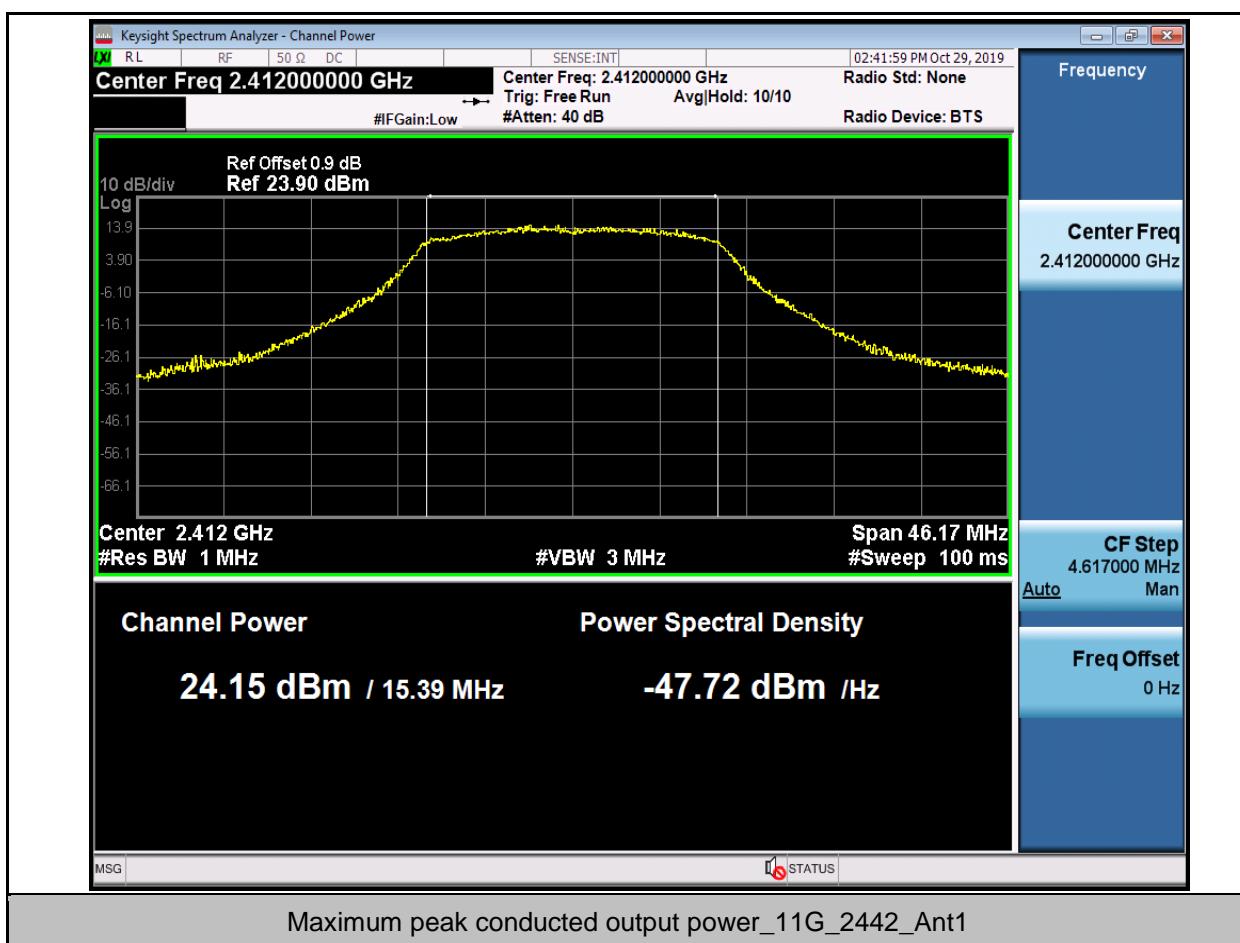
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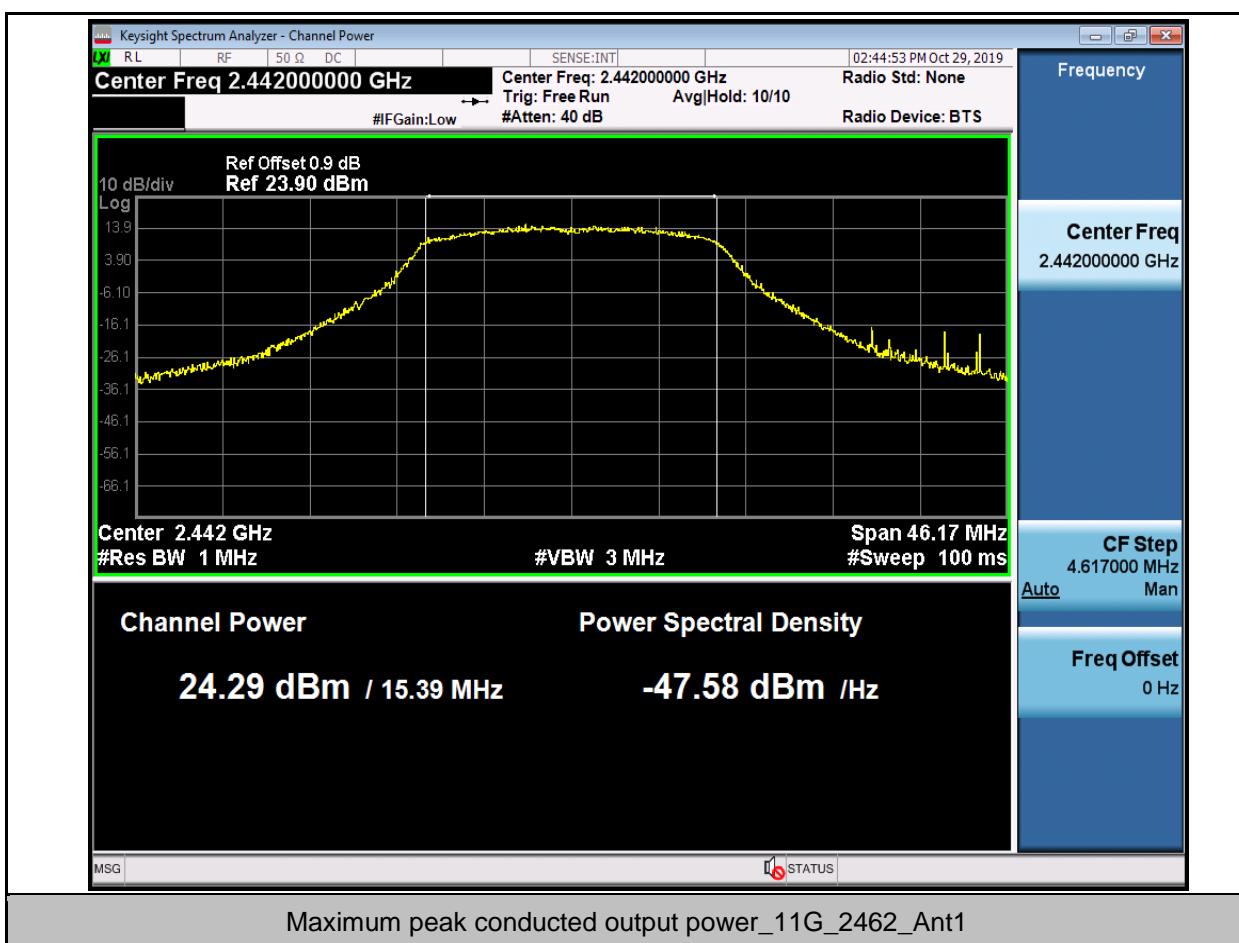


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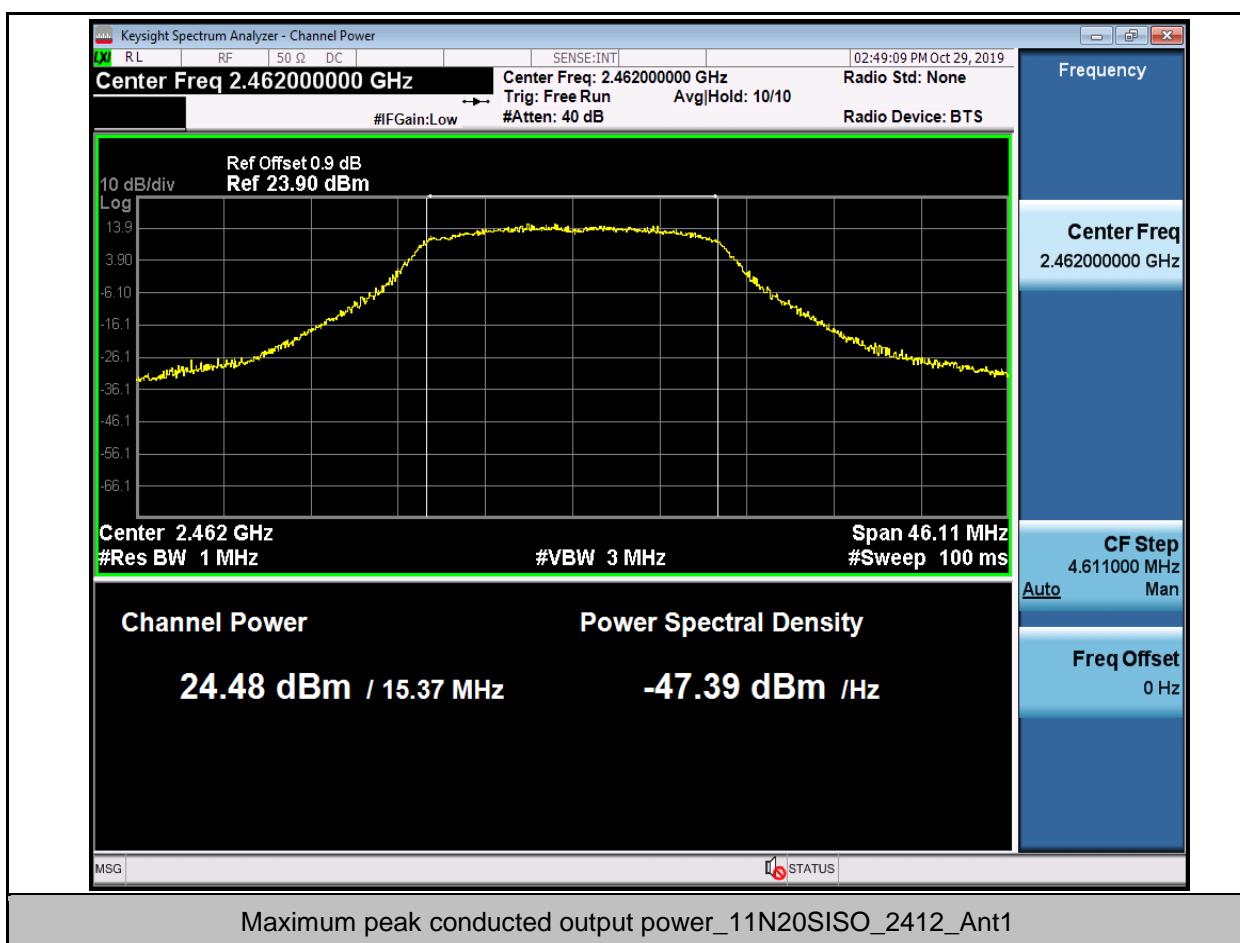


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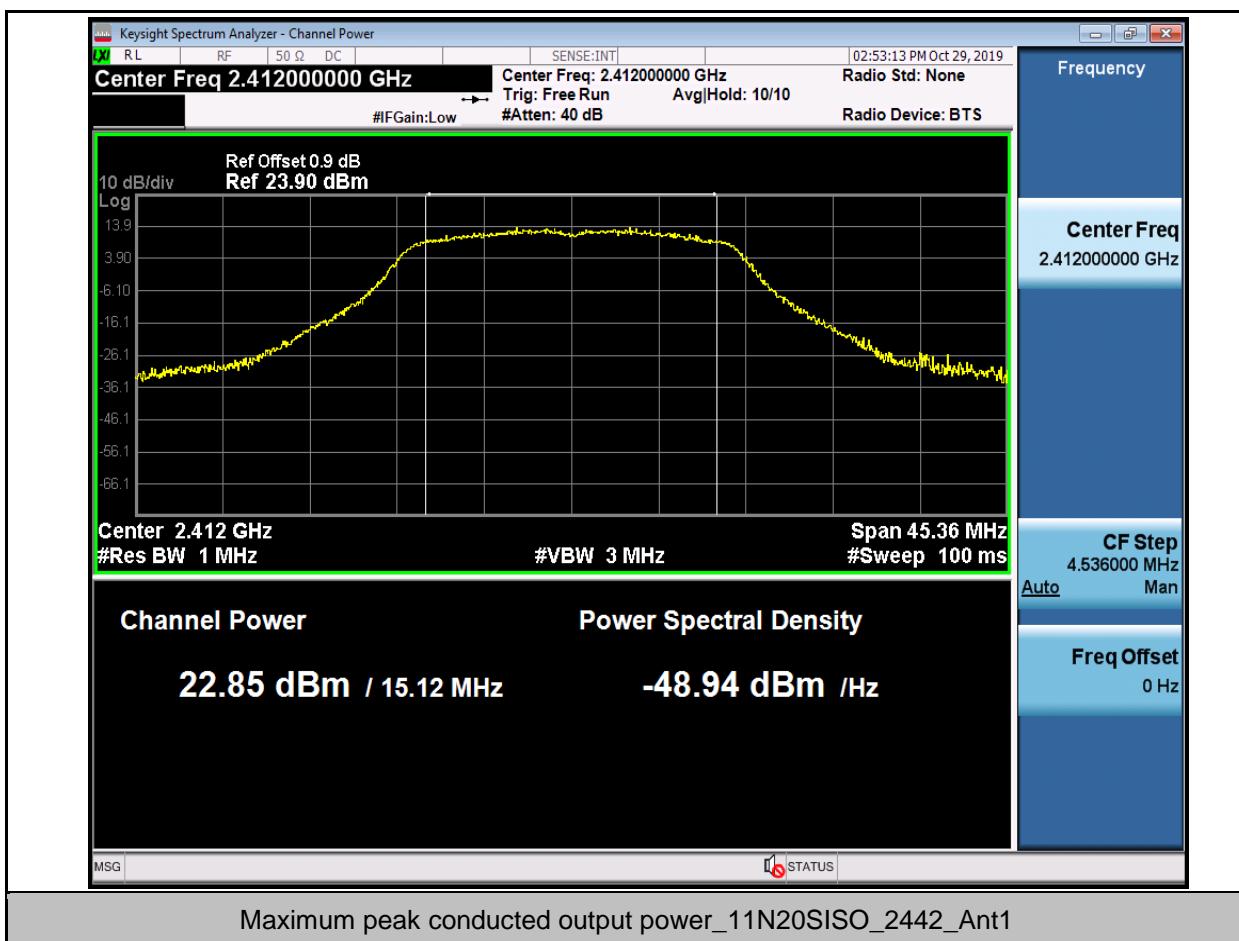


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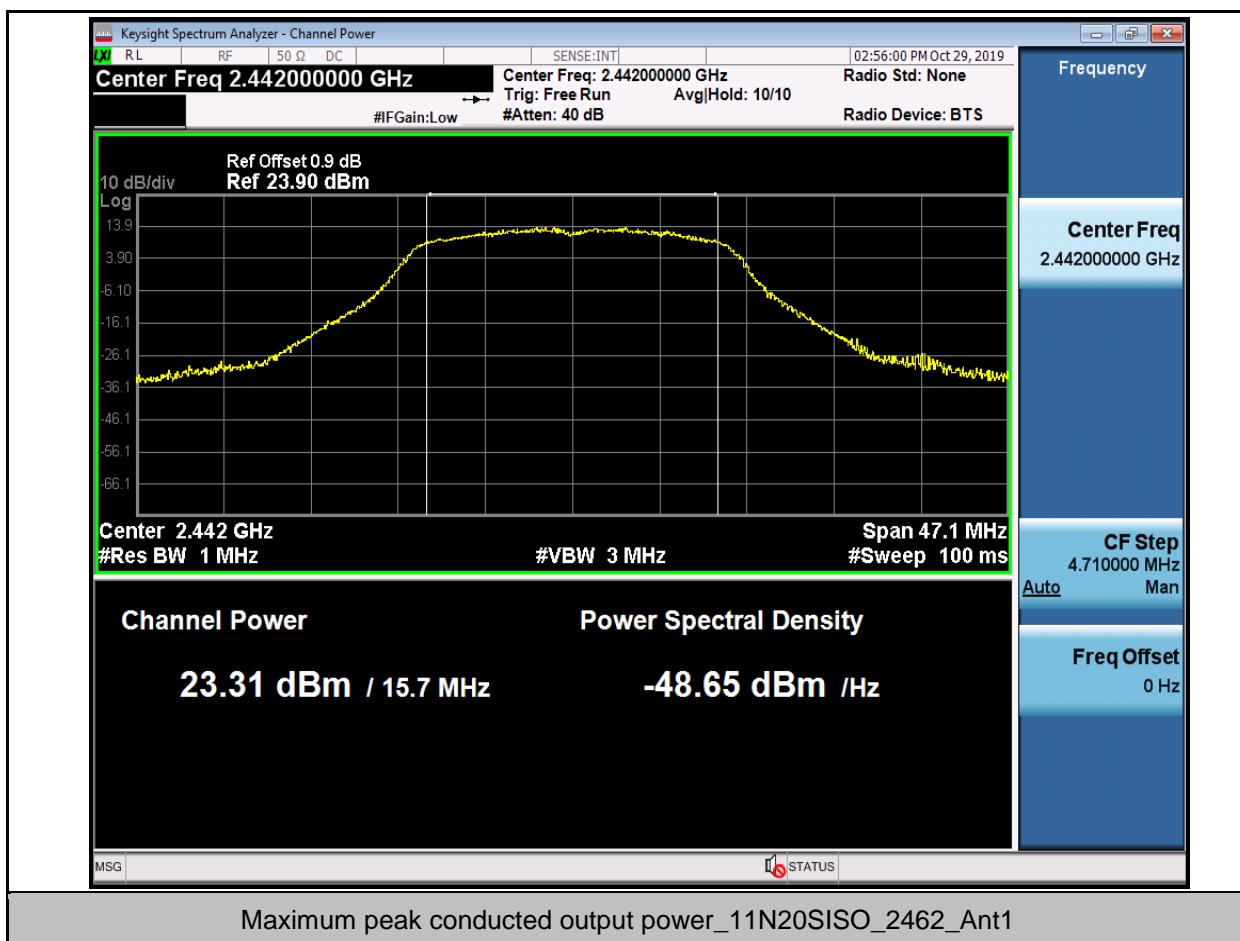


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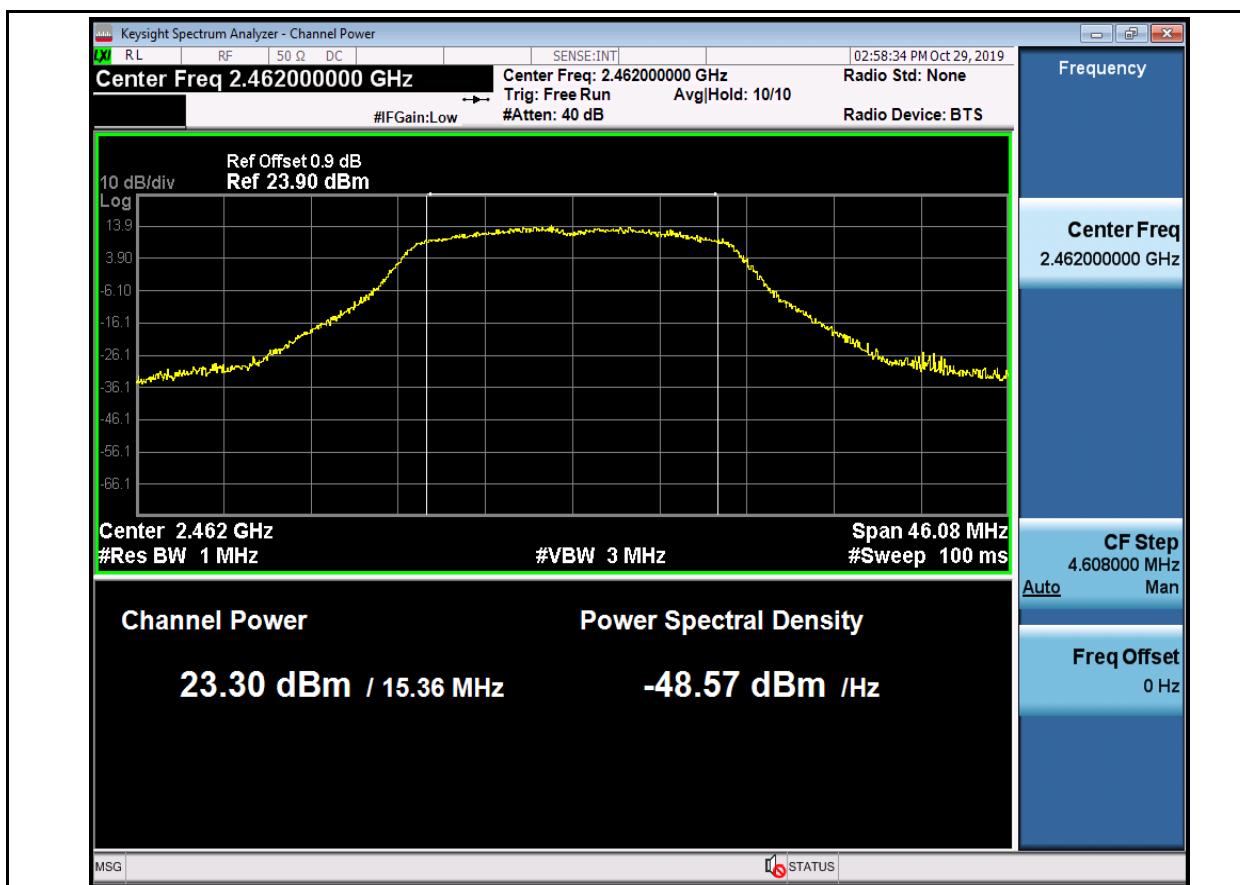


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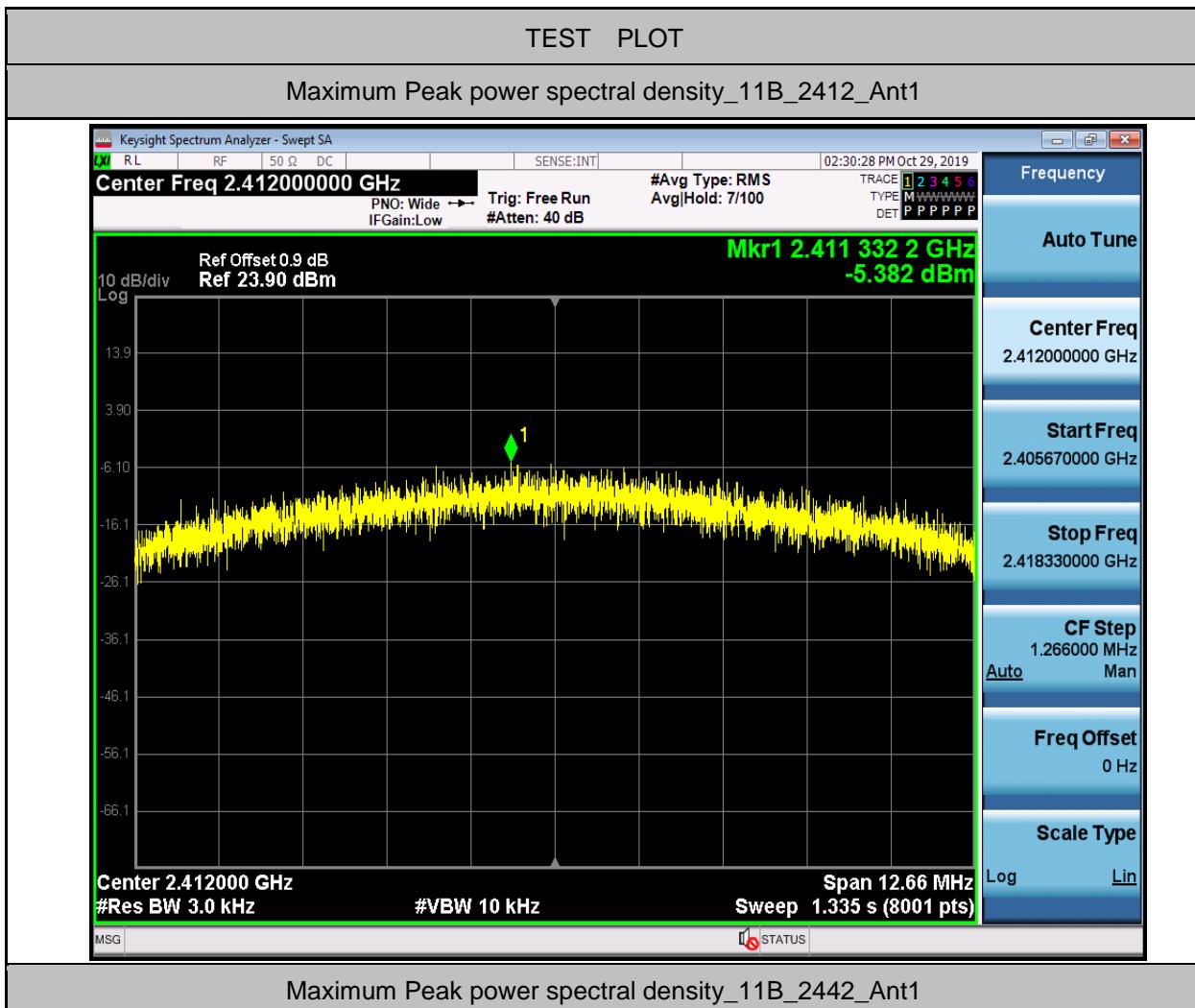
### 3. Maximum Peak power spectral density

Test Mode	Test Channel	Ant	Result	Limit[dBm/3kHz]	Verdict
11B	2412	Ant1	-5.382	8.00	PASS
11B	2442	Ant1	-5.767	8.00	PASS
11B	2462	Ant1	-4.717	8.00	PASS
11G	2412	Ant1	-9.547	8.00	PASS
11G	2442	Ant1	-9.204	8.00	PASS
11G	2462	Ant1	-8.81	8.00	PASS
11N20SISO	2412	Ant1	-10.145	8.00	PASS
11N20SISO	2442	Ant1	-9.227	8.00	PASS
11N20SISO	2462	Ant1	-10.162	8.00	PASS

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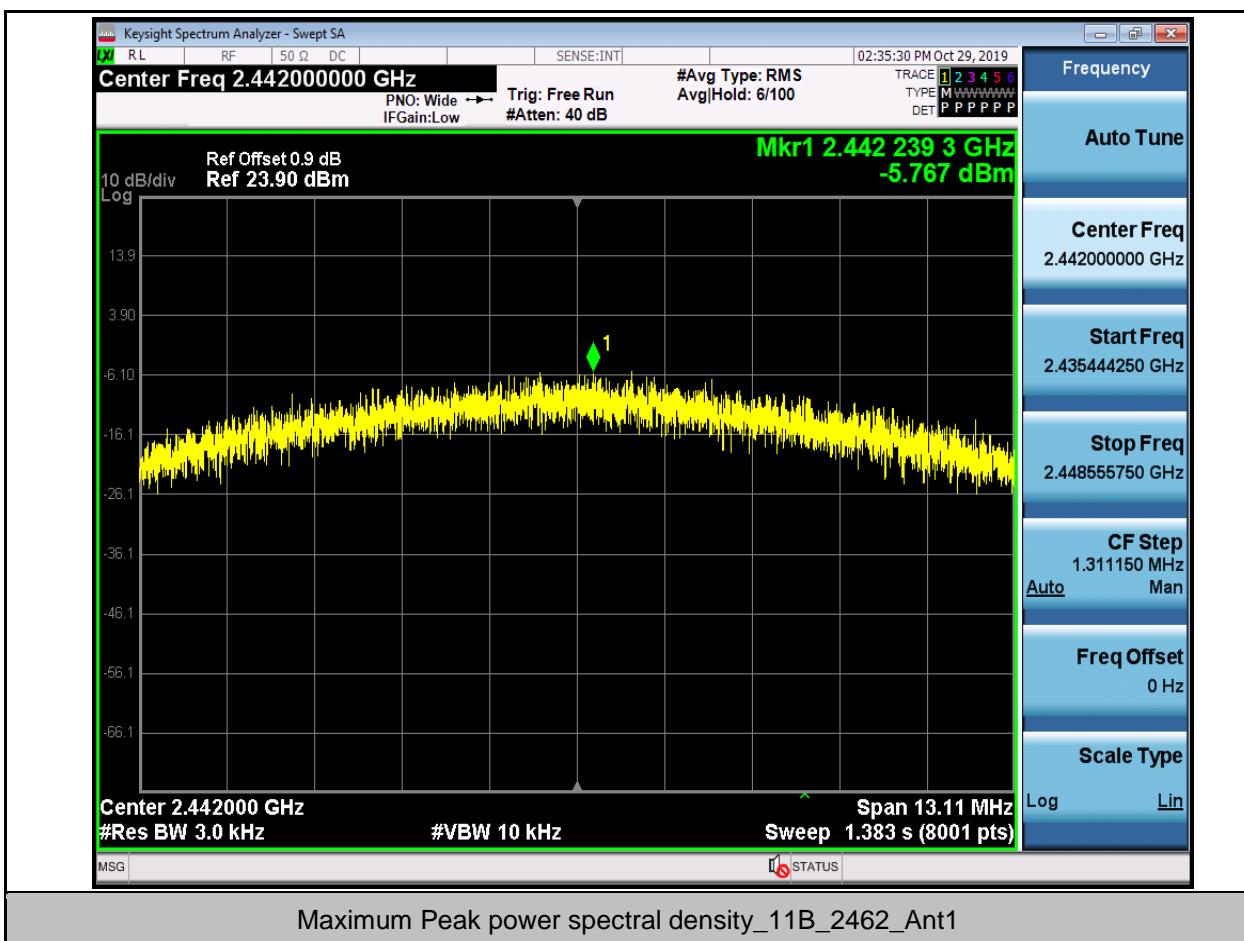
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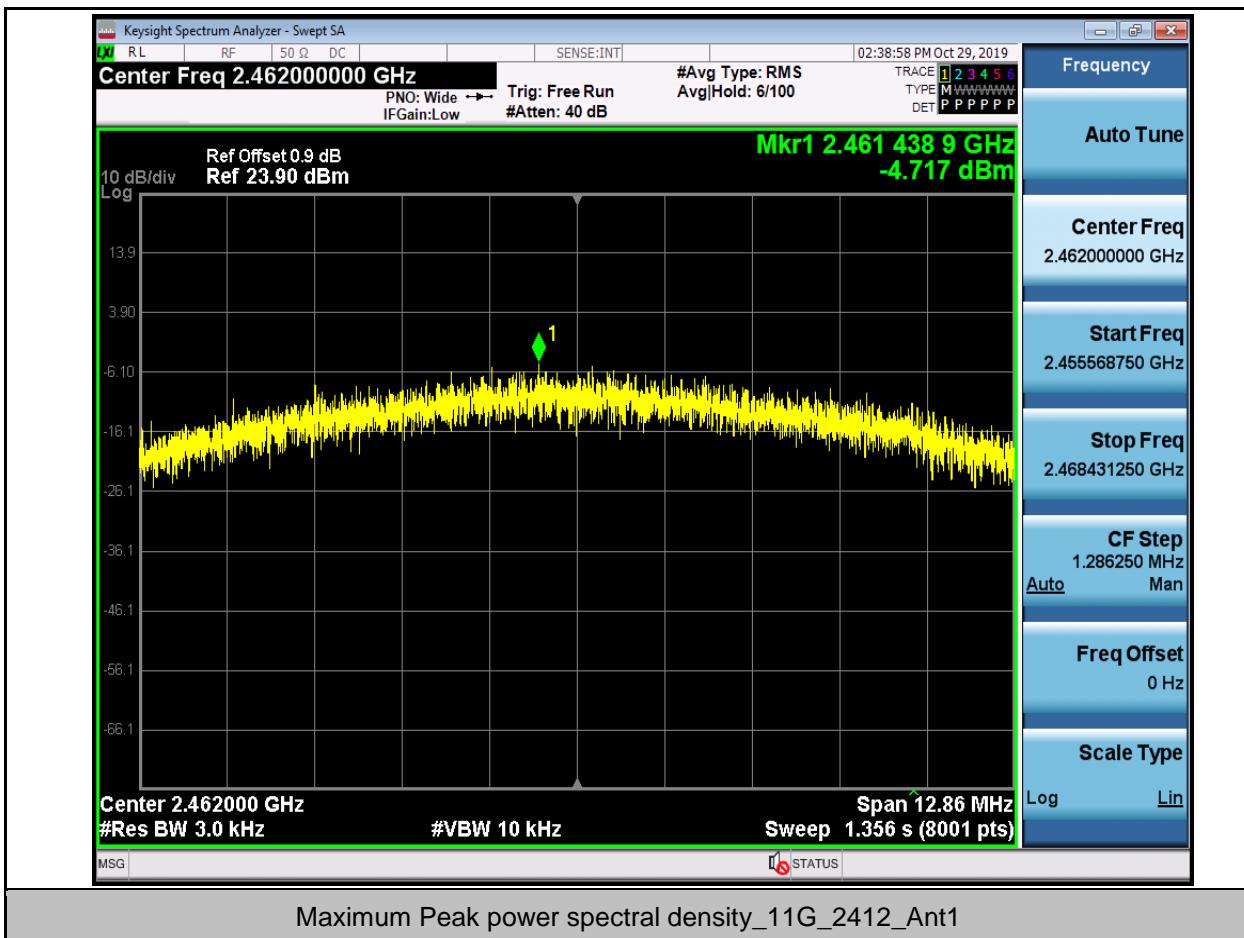
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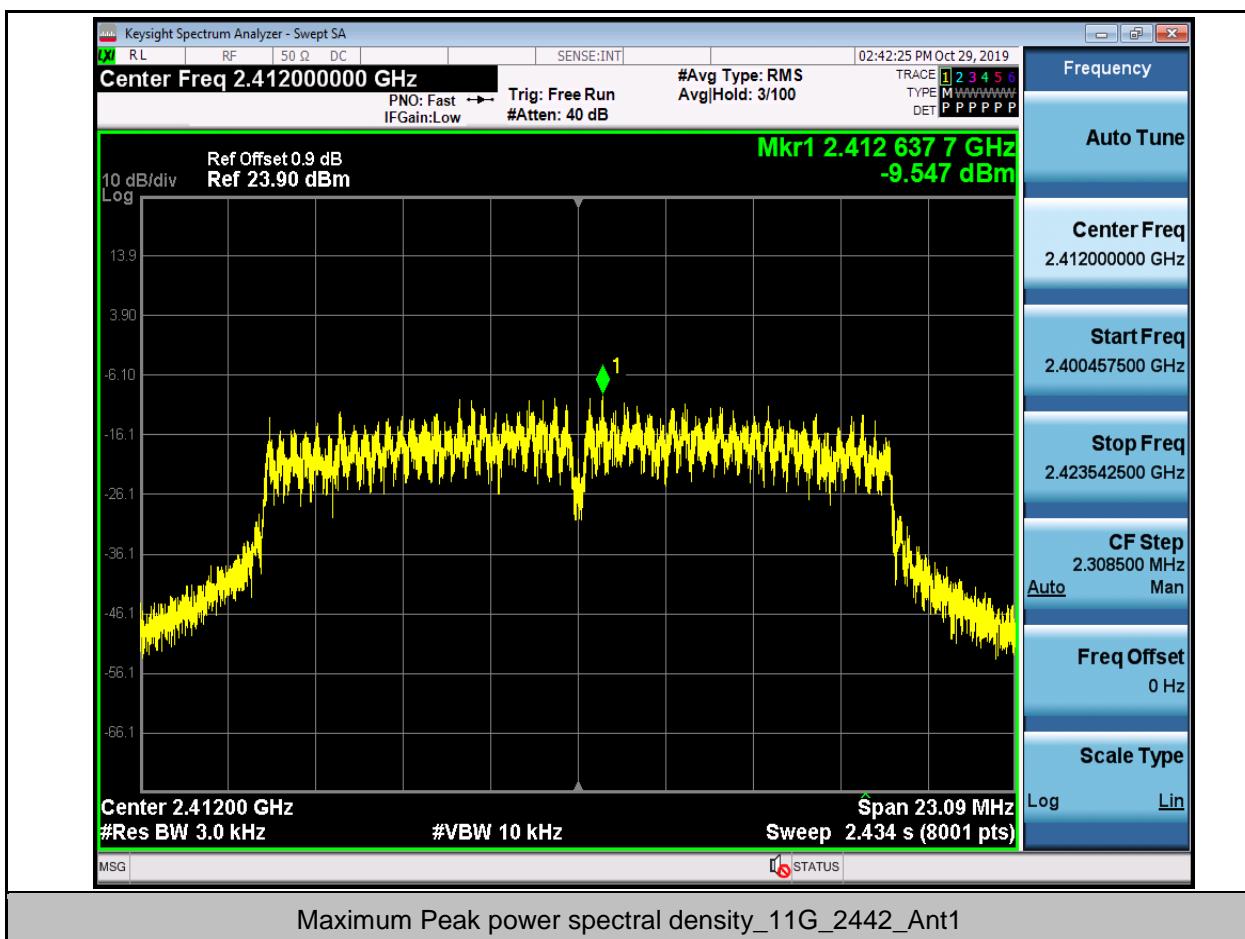


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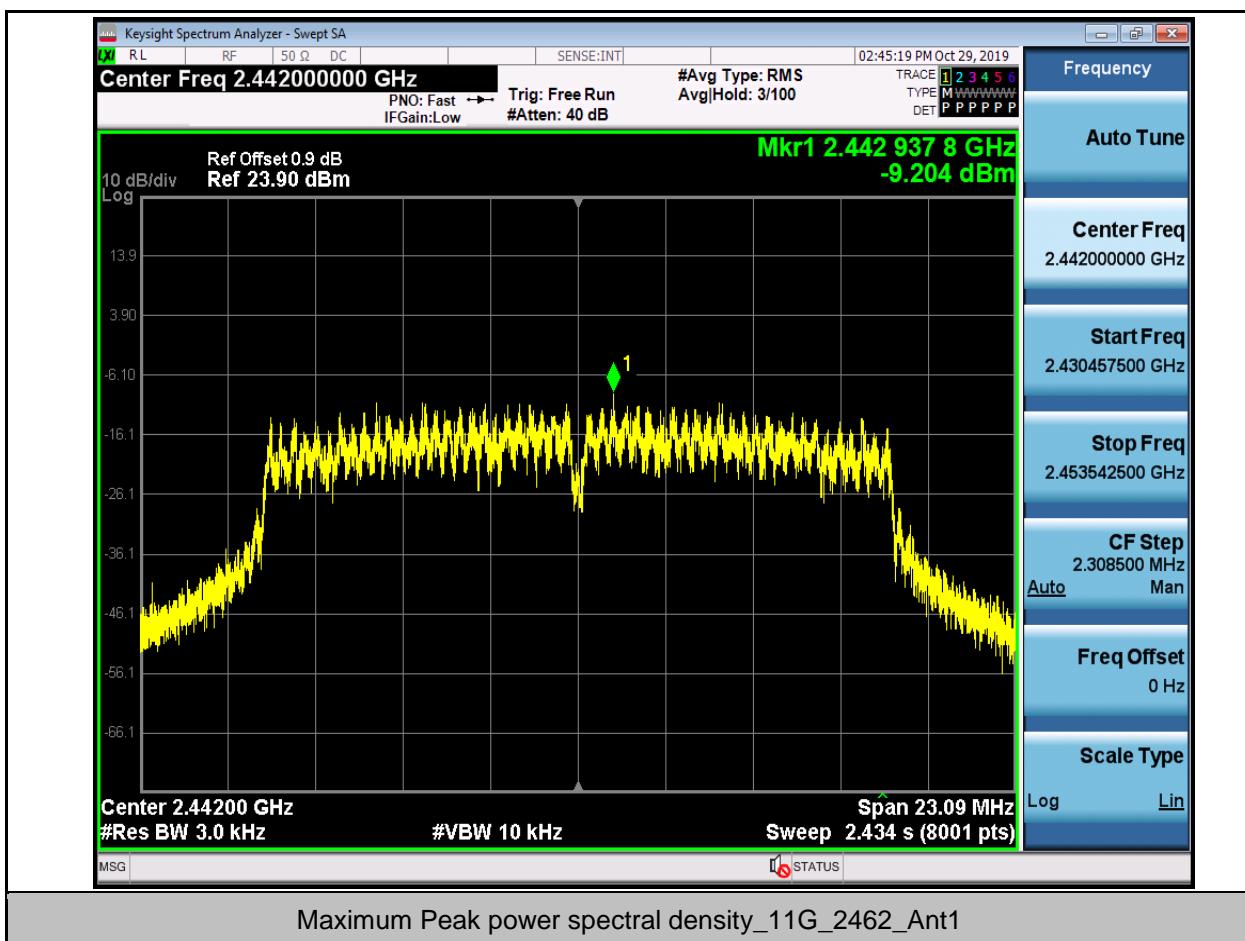


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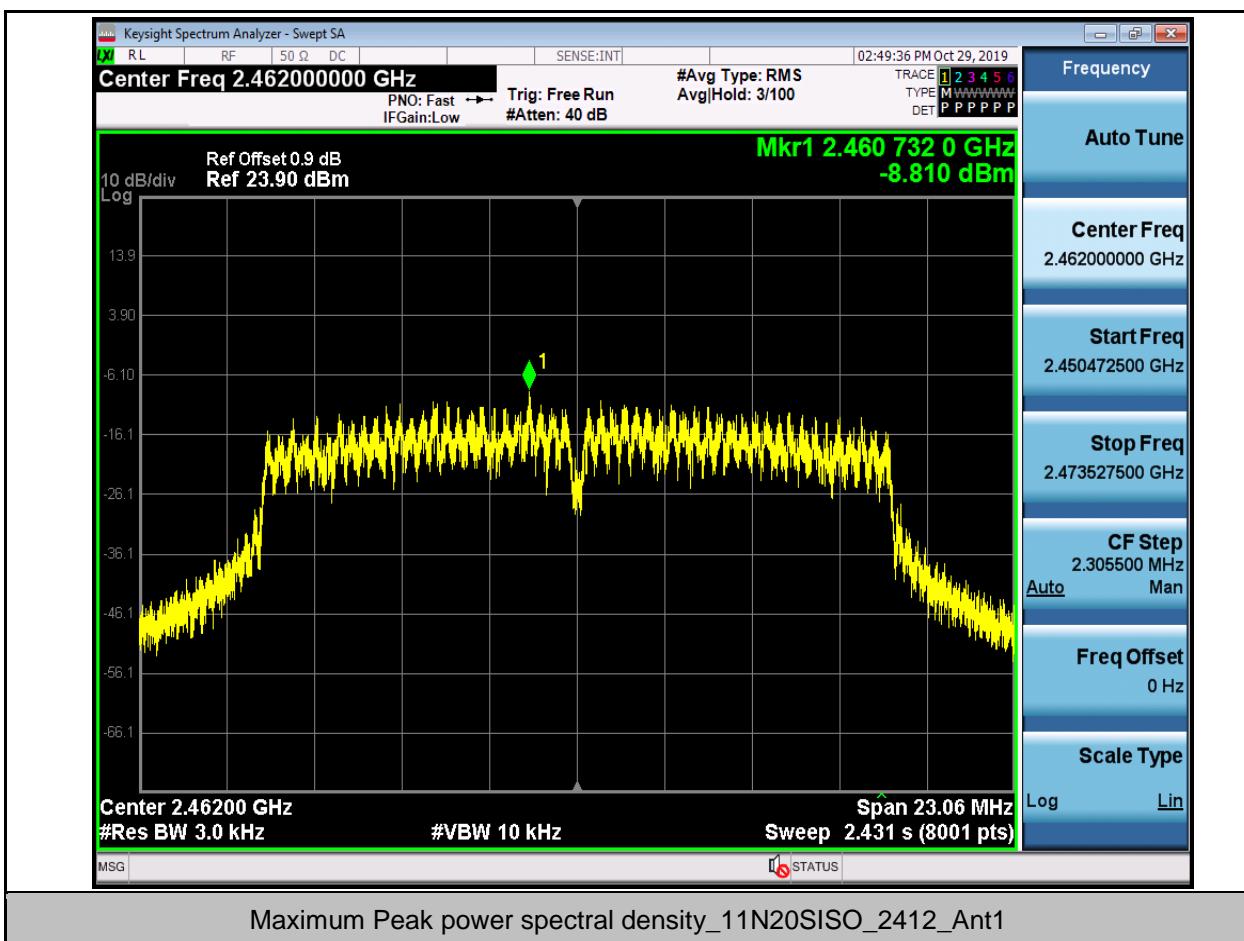


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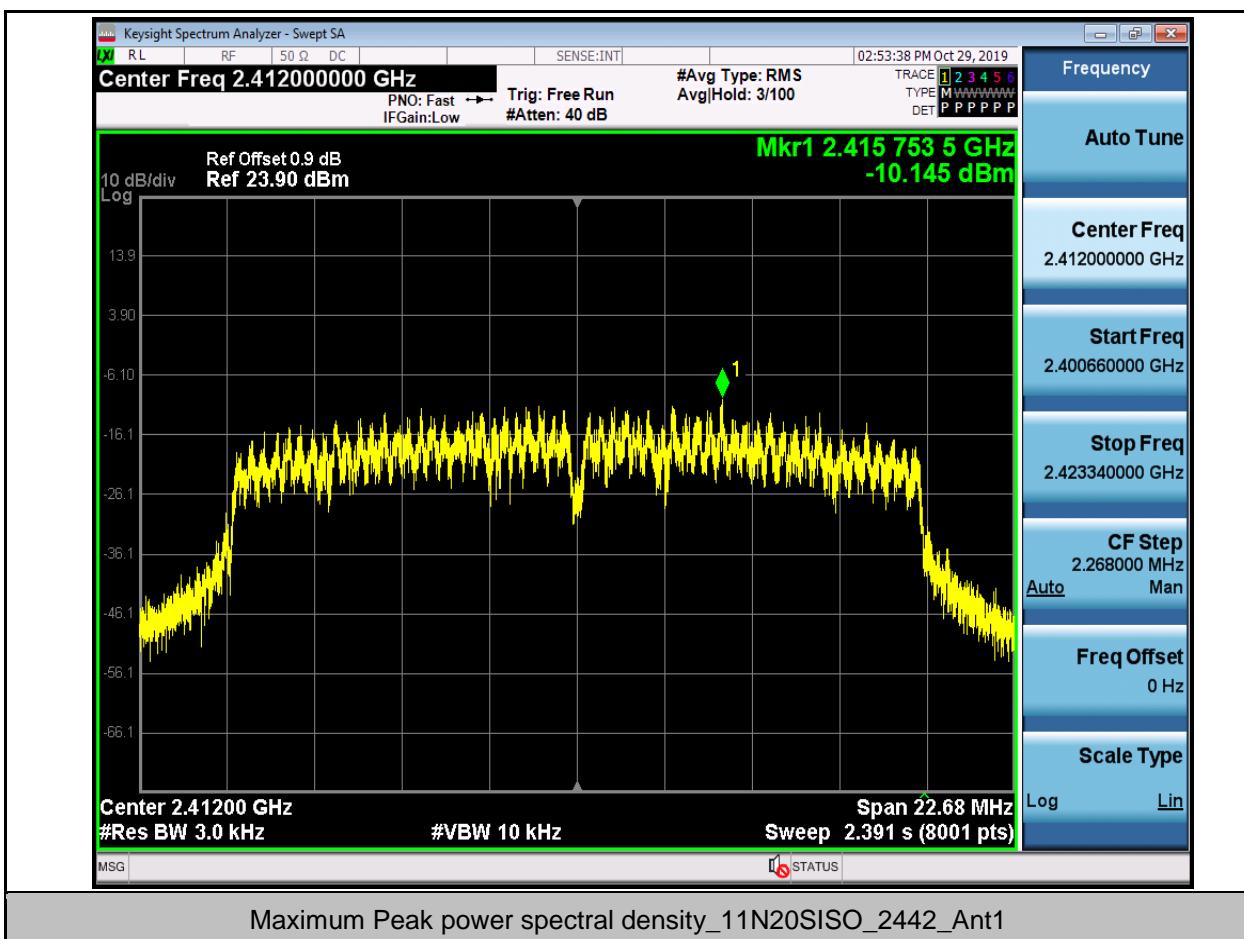


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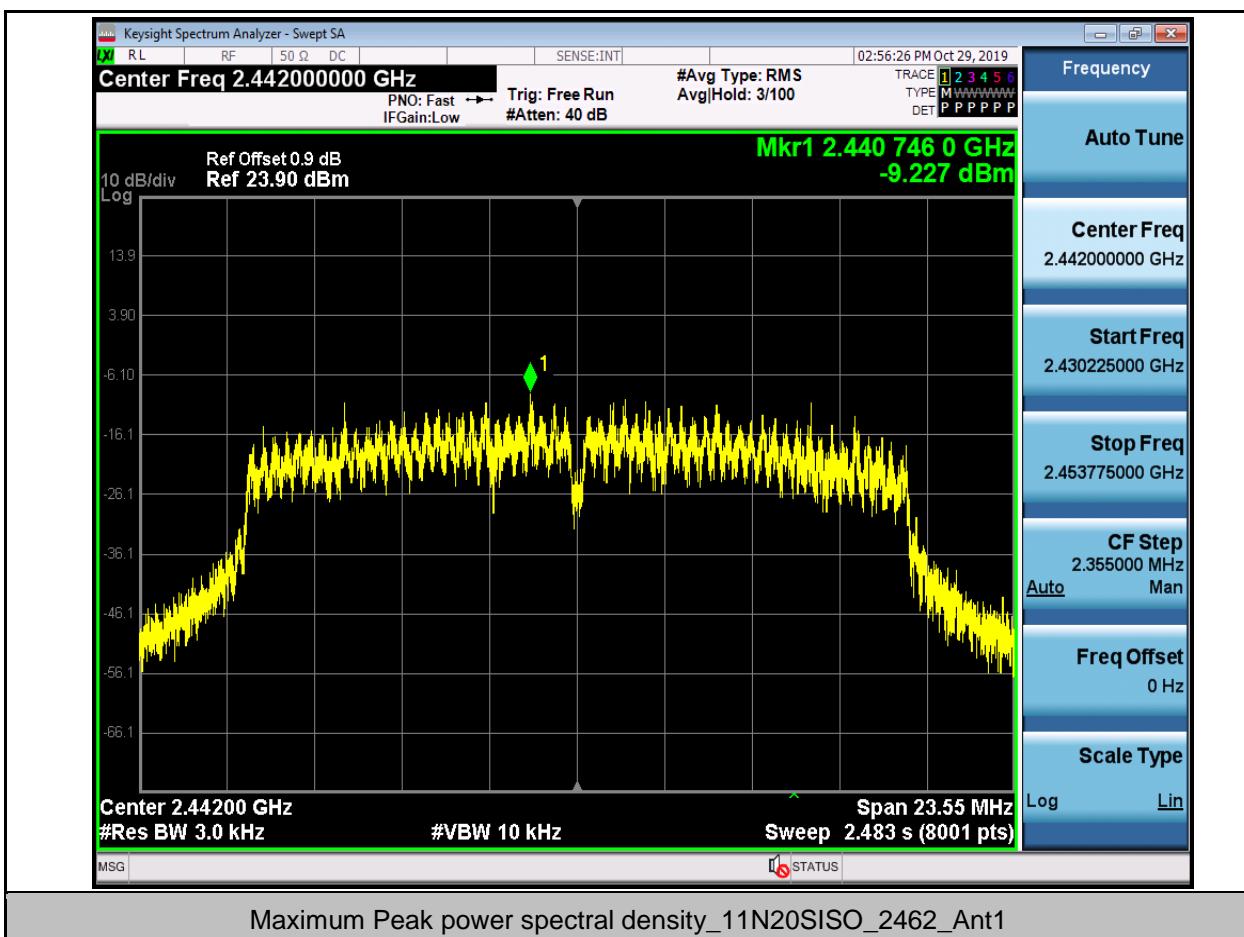
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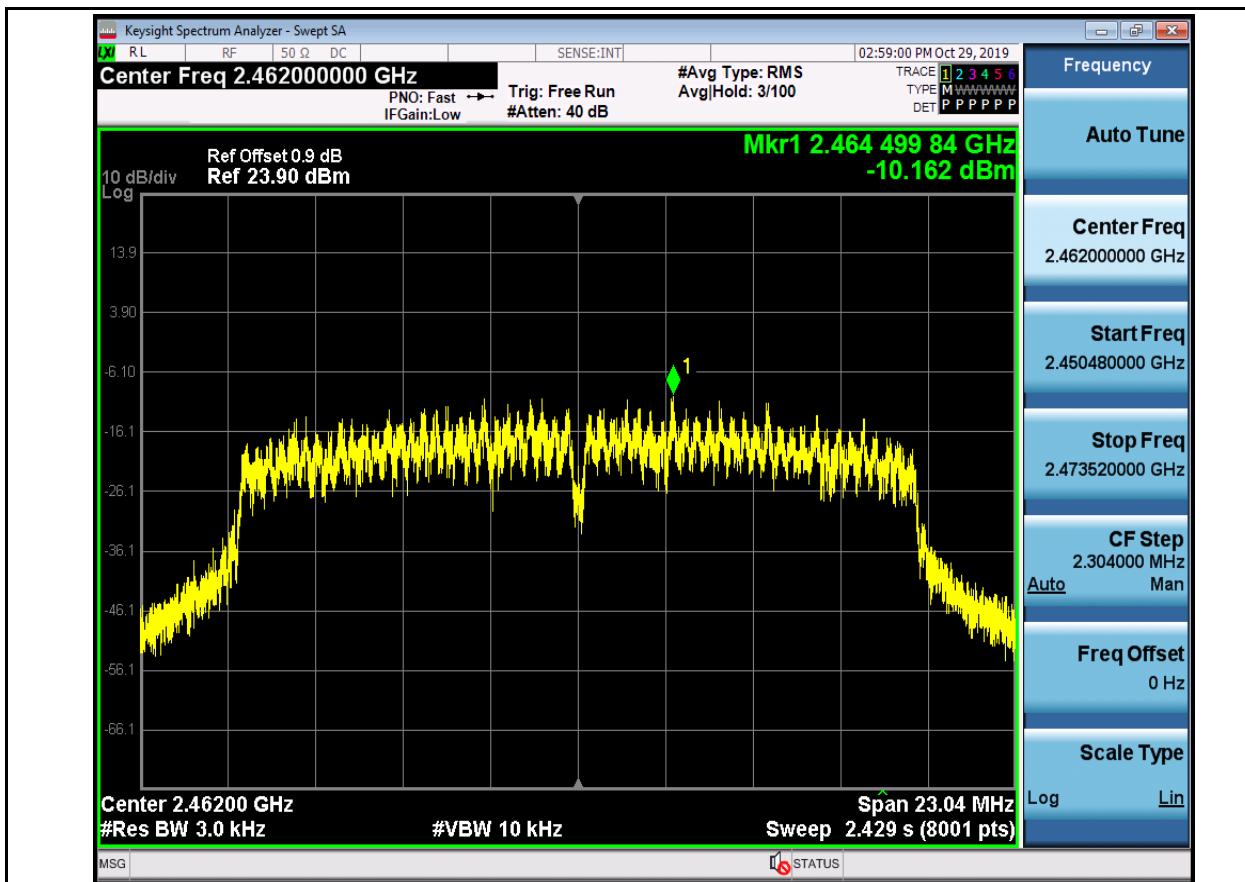


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#### 4. Band-edge for RF Conducted Emissions

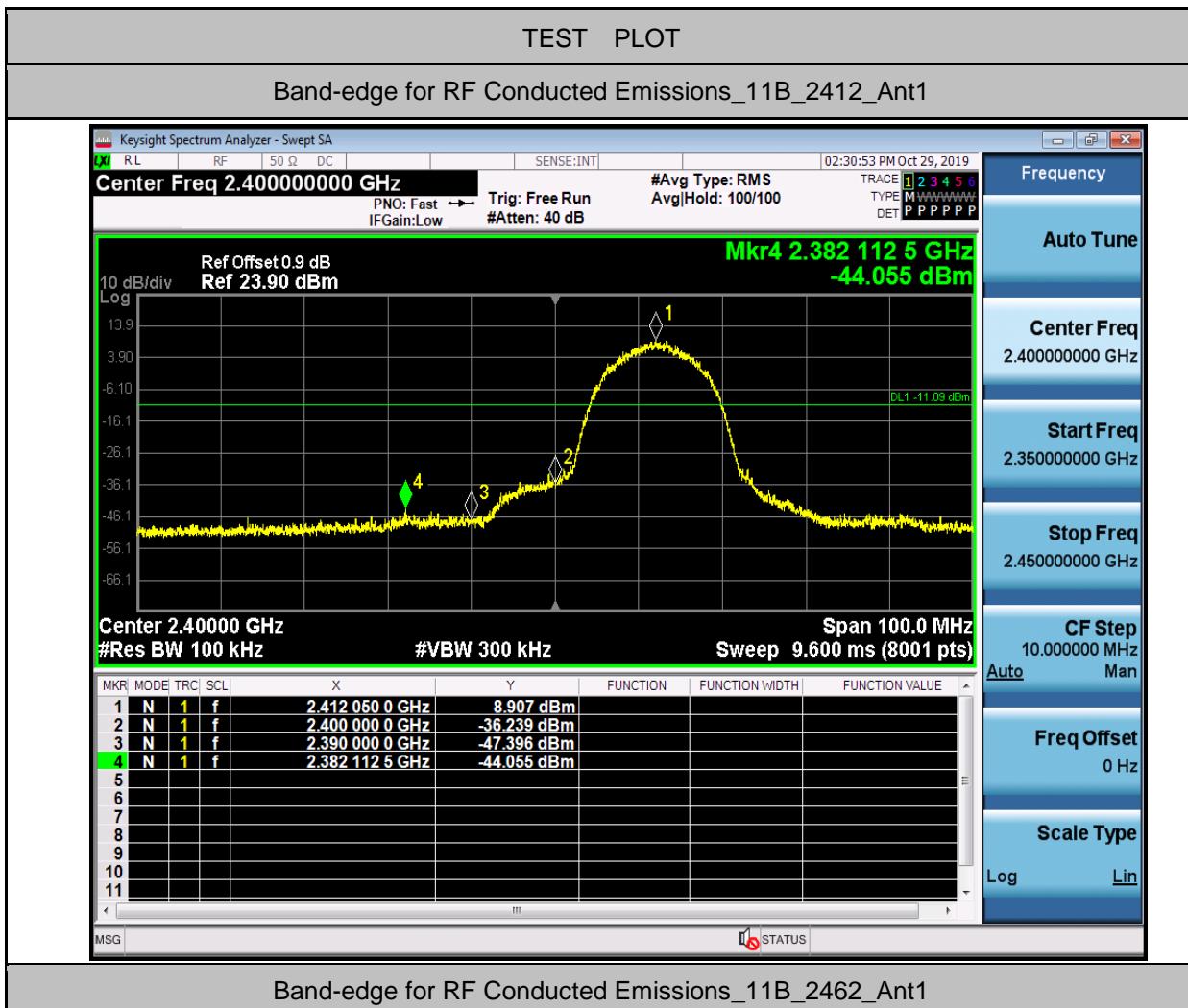
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11B	2412	Ant1	8.907	-44.055	-11.09	PASS
11B	2462	Ant1	9.708	-45.576	-10.29	PASS
11G	2412	Ant1	5.250	-42.310	-14.75	PASS
11G	2462	Ant1	5.542	-22.794	-14.46	PASS
11N20SISO	2412	Ant1	4.670	-42.789	-15.33	PASS
11N20SISO	2462	Ant1	10.972	-41.676	-9.03	PASS

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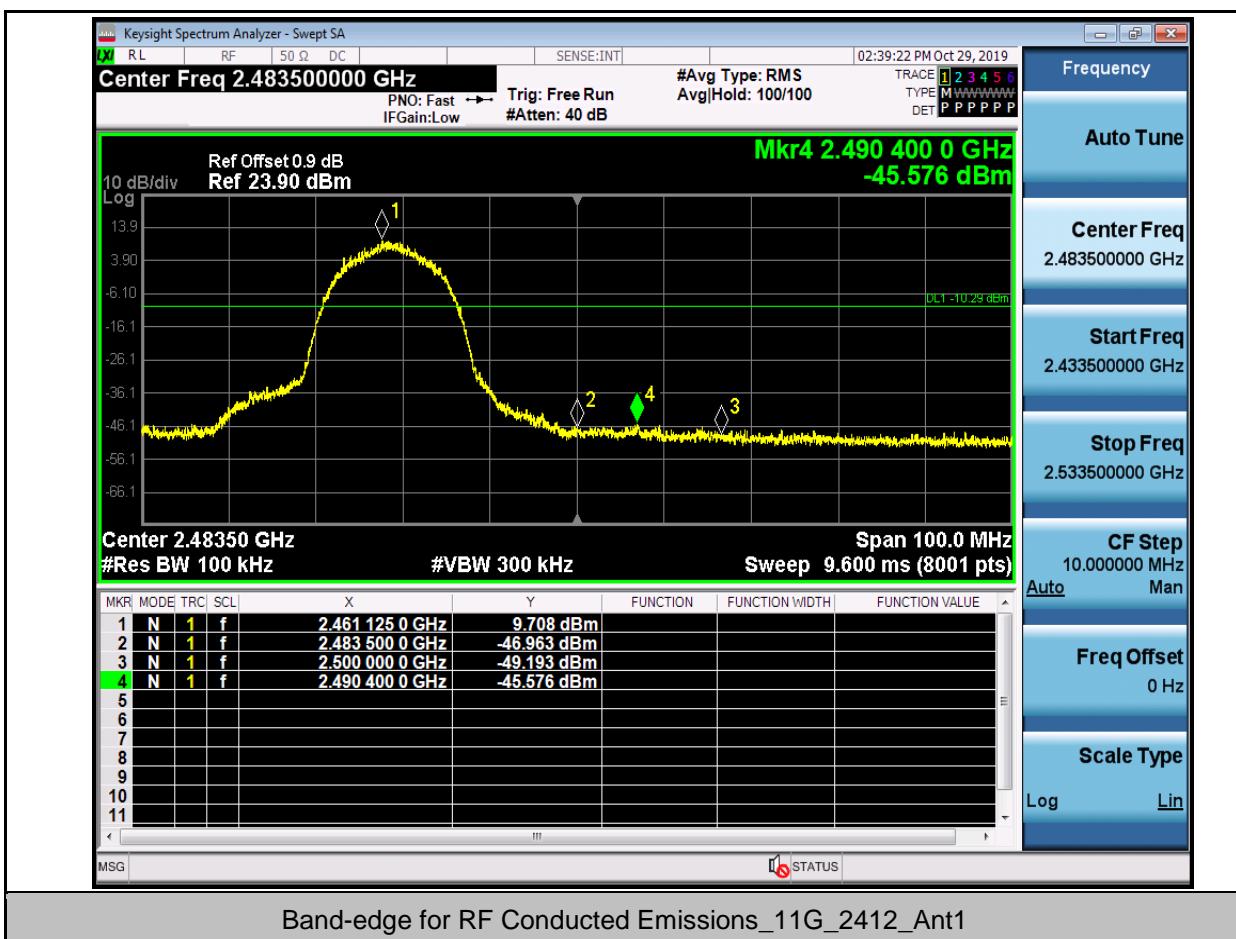


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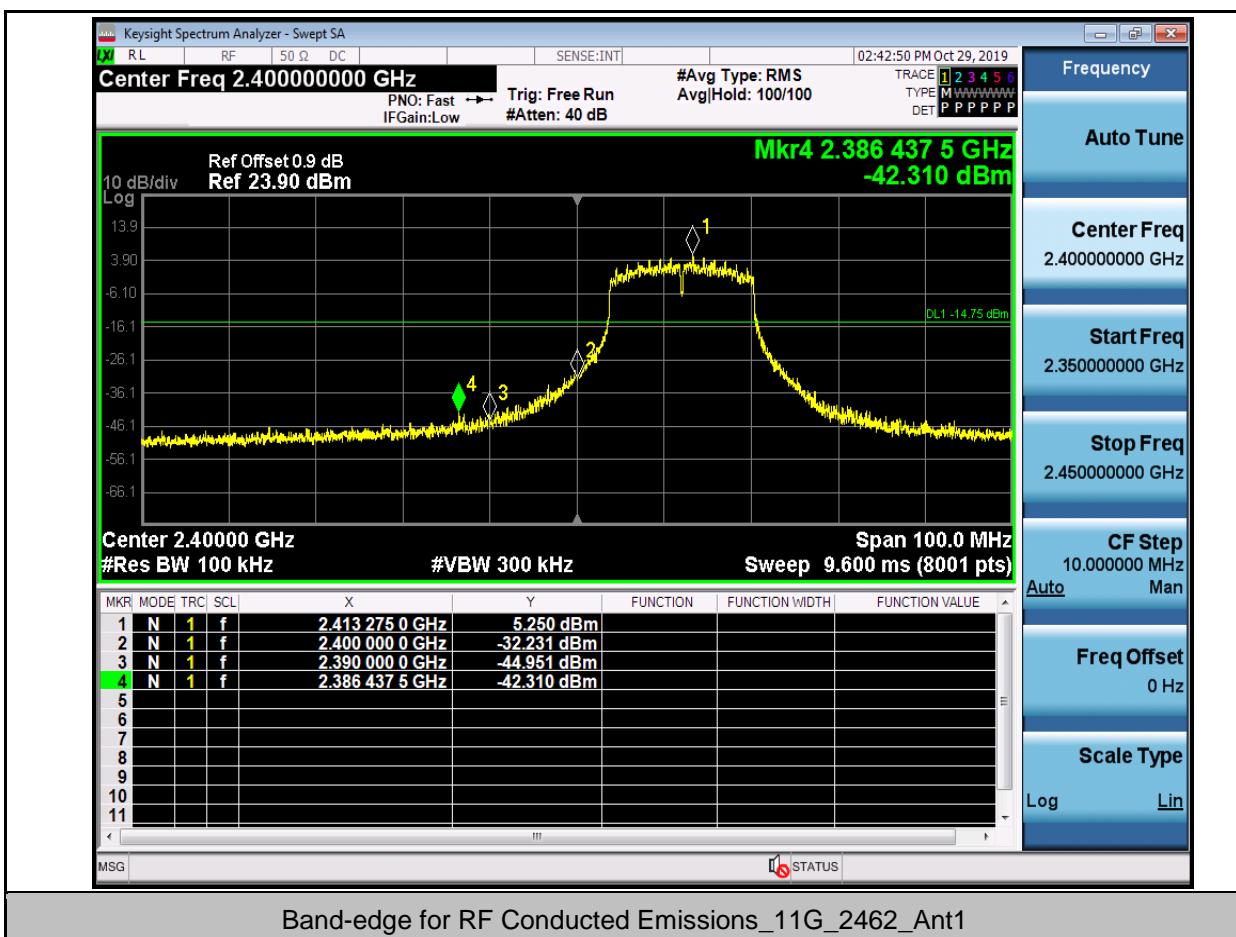
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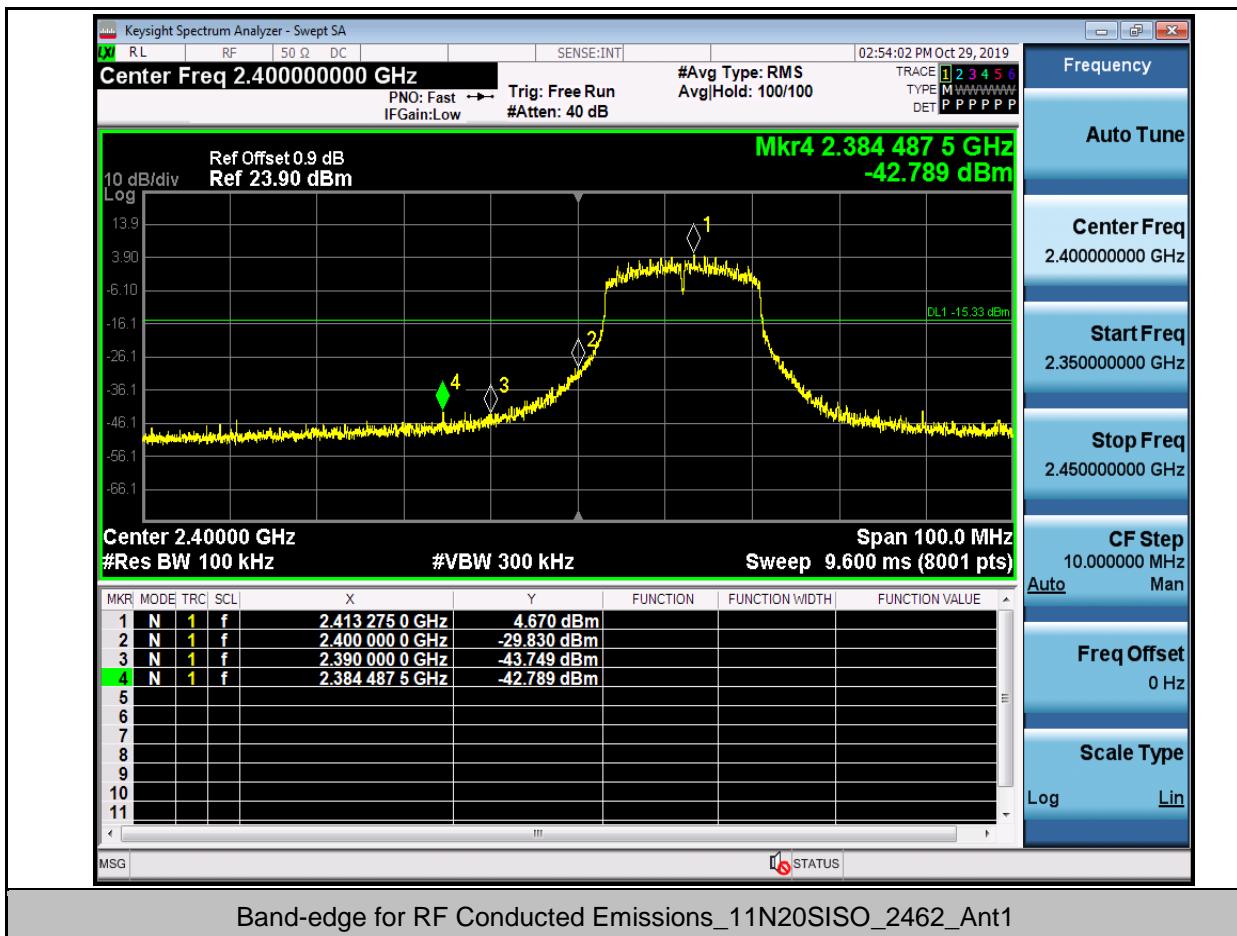
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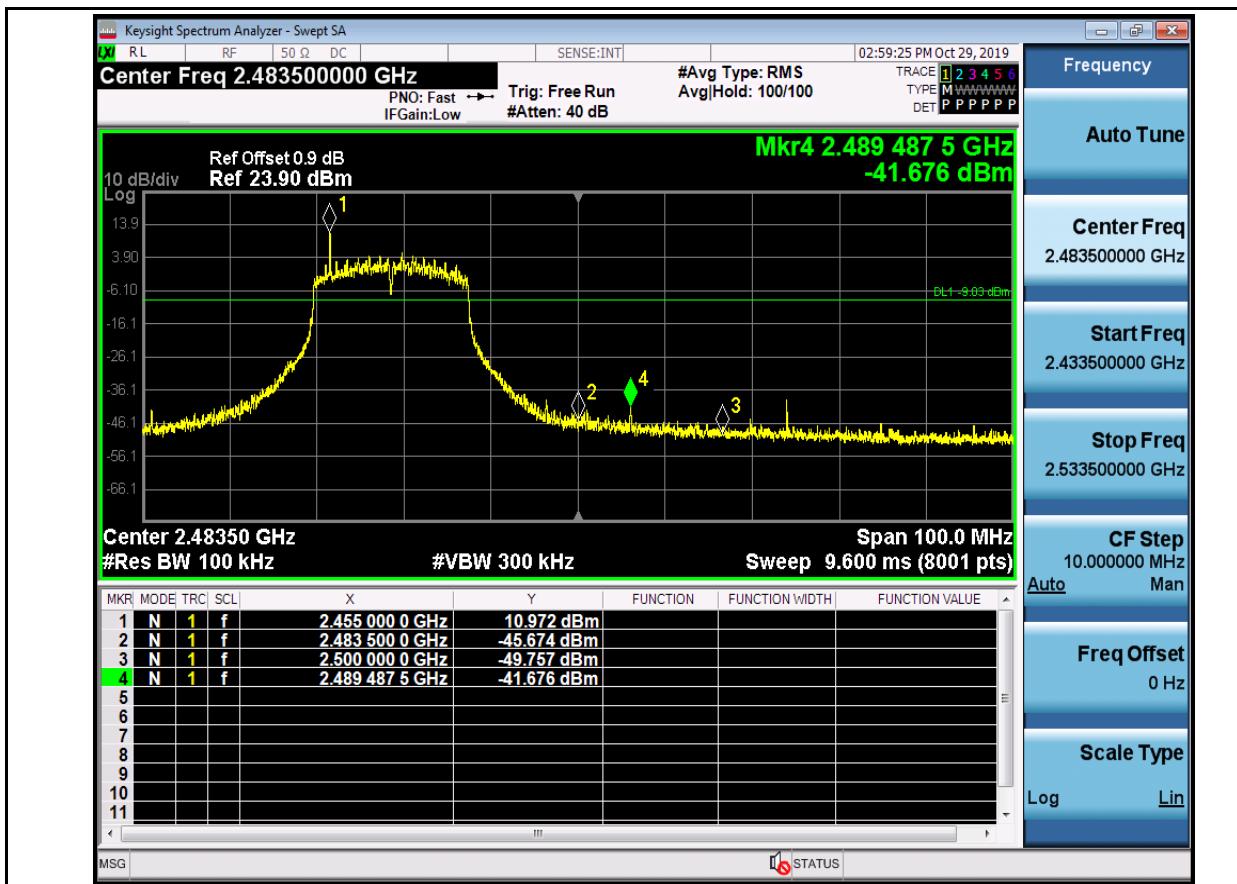


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## 5. RF Conducted Spurious Emissions

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	9.618	-28.410	<-10.382	PASS
11B	2412	Ant1	10000	26000	100	300	9.618	-51.404	<-10.382	PASS
11B	2442	Ant1	30	10000	100	300	10.227	-26.877	<-9.773	PASS
11B	2442	Ant1	10000	26000	100	300	10.227	-52.198	<-9.773	PASS
11B	2462	Ant1	30	10000	100	300	9.867	-33.053	<-10.133	PASS
11B	2462	Ant1	10000	26000	100	300	9.867	-51.281	<-10.133	PASS
11G	2412	Ant1	30	10000	100	300	5.243	-33.360	<-14.757	PASS
11G	2412	Ant1	10000	26000	100	300	5.243	-51.015	<-14.757	PASS
11G	2442	Ant1	30	10000	100	300	5.31	-35.640	<-14.69	PASS
11G	2442	Ant1	10000	26000	100	300	5.31	-51.625	<-14.69	PASS
11G	2462	Ant1	30	10000	100	300	12.138	-37.236	<-7.862	PASS

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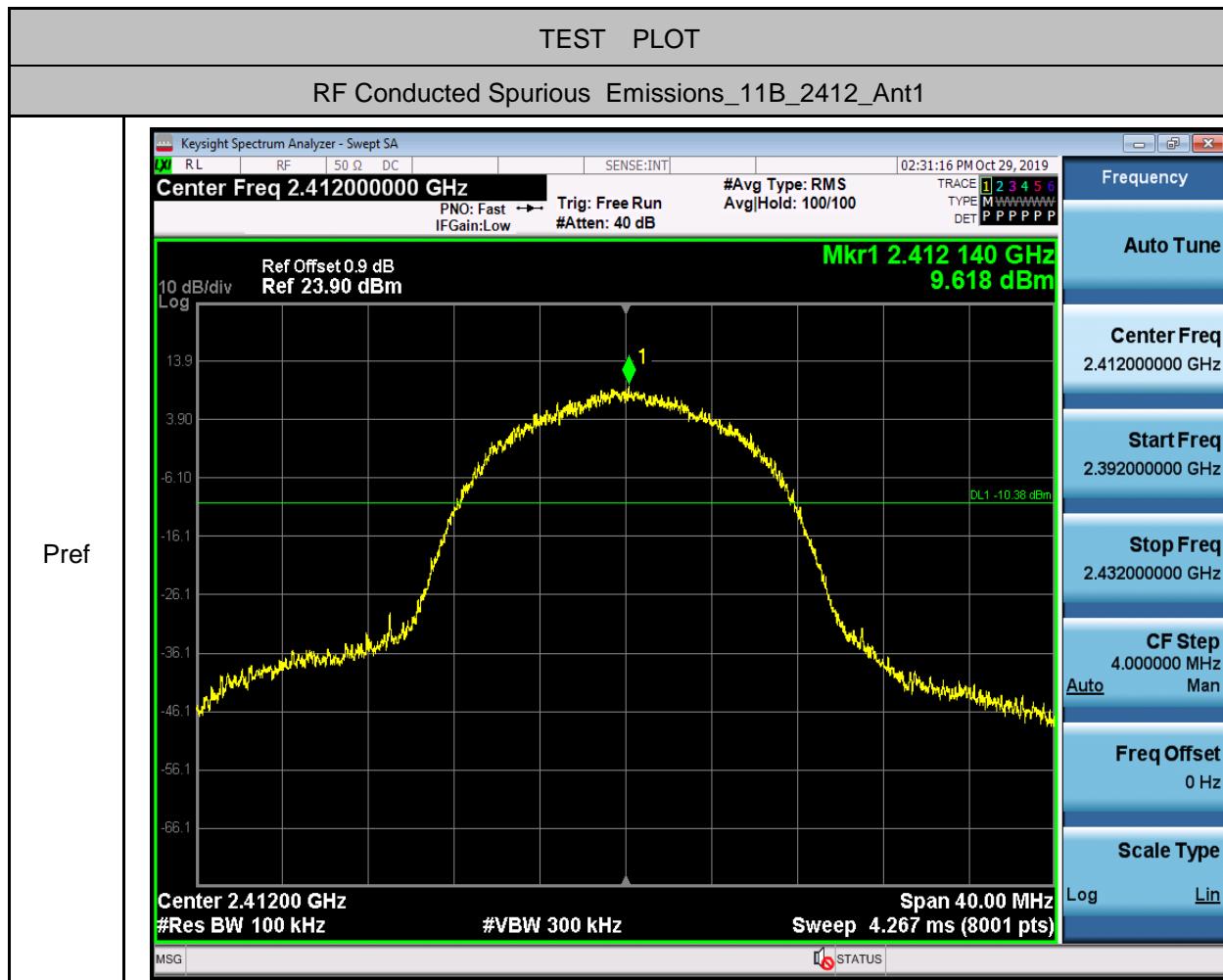
11G	2462	Ant1	10000	26000	100	300	12.138	-52.306	<-7.862	PASS
11N20SISO	2412	Ant1	30	10000	100	300	4.597	-32.280	<-15.403	PASS
11N20SISO	2412	Ant1	10000	26000	100	300	4.597	-51.705	<-15.403	PASS
11N20SISO	2442	Ant1	30	10000	100	300	4.917	-35.652	<-15.083	PASS
11N20SISO	2442	Ant1	10000	26000	100	300	4.917	-51.851	<-15.083	PASS
11N20SISO	2462	Ant1	30	10000	100	300	5.109	-37.589	<-14.891	PASS
11N20SISO	2462	Ant1	10000	26000	100	300	5.109	-51.418	<-14.891	PASS

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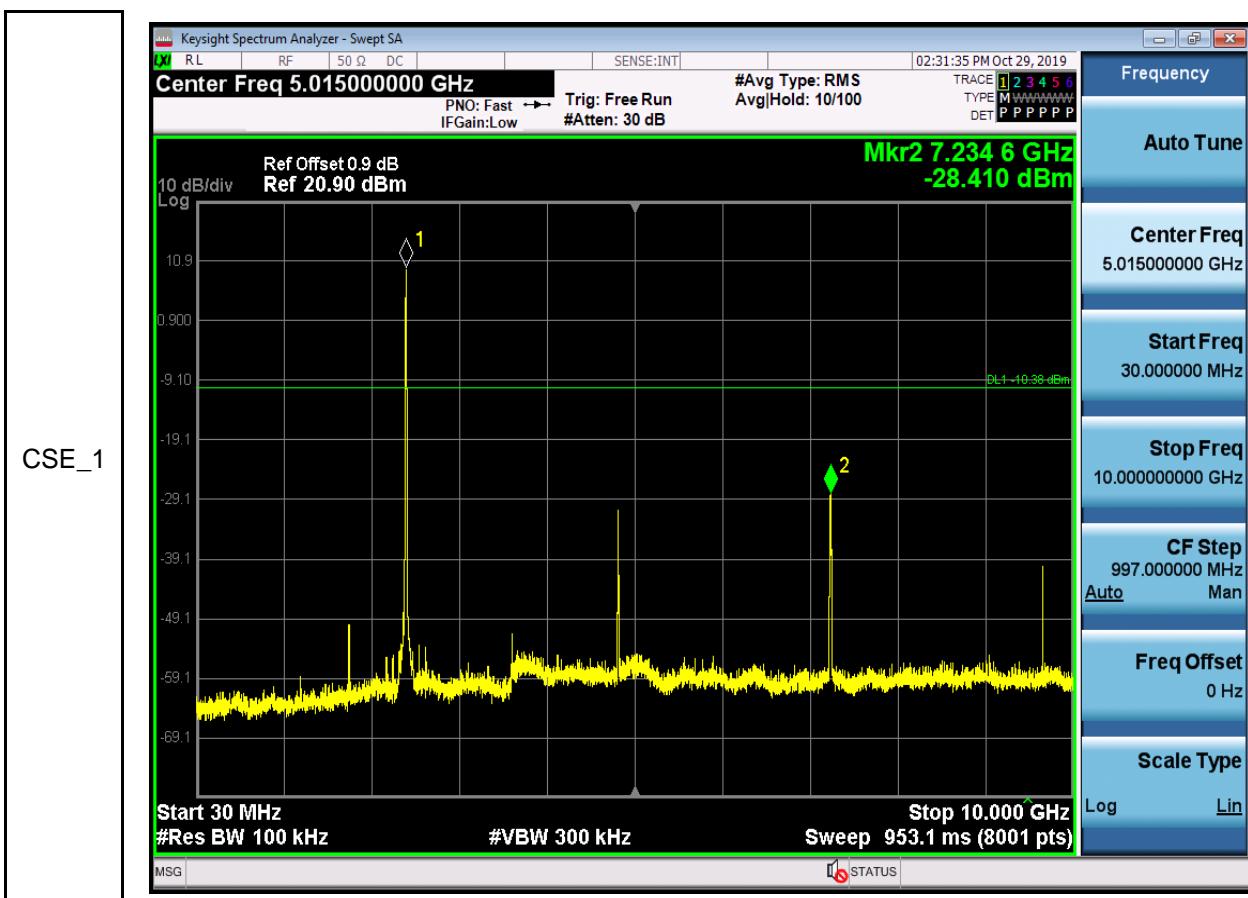
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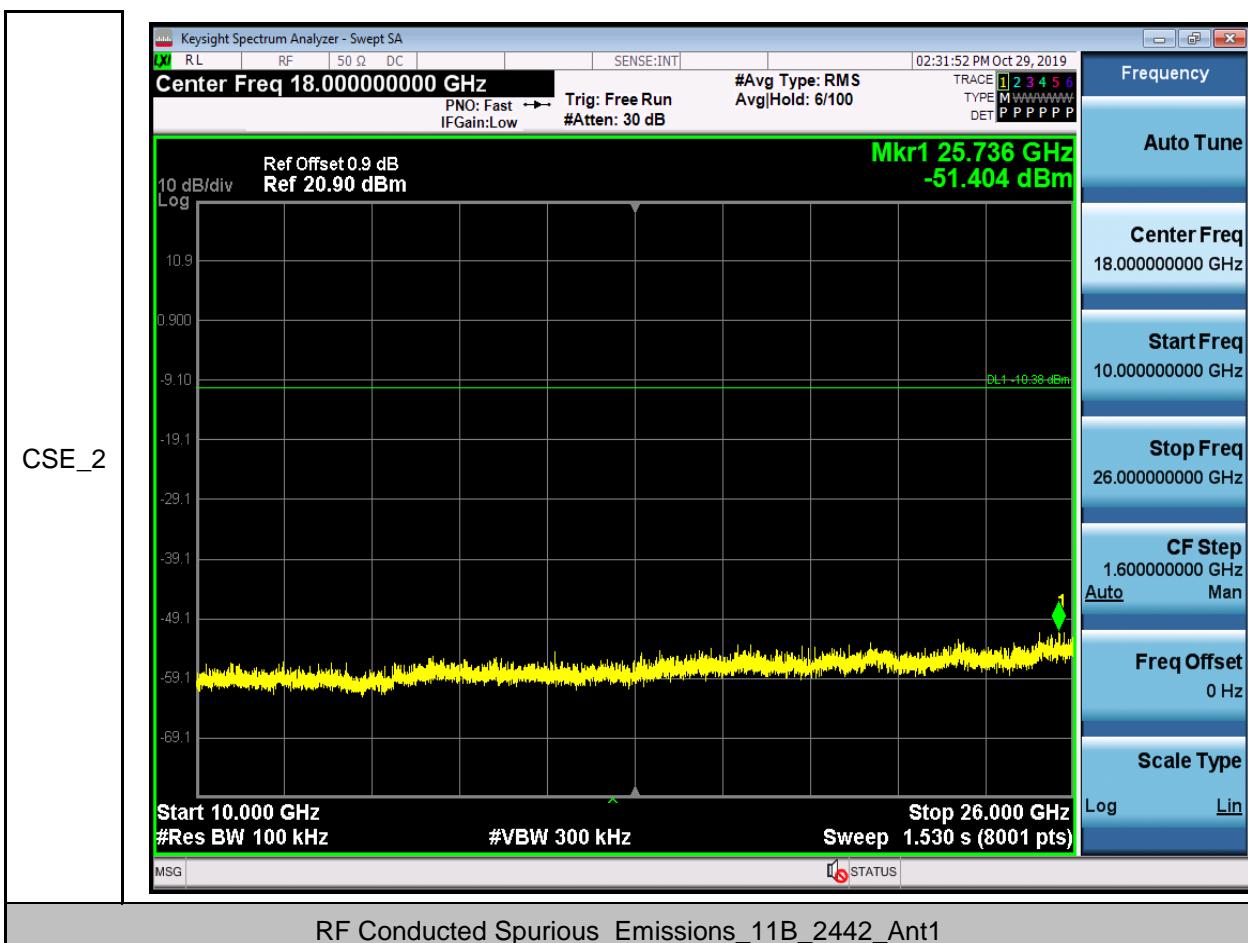


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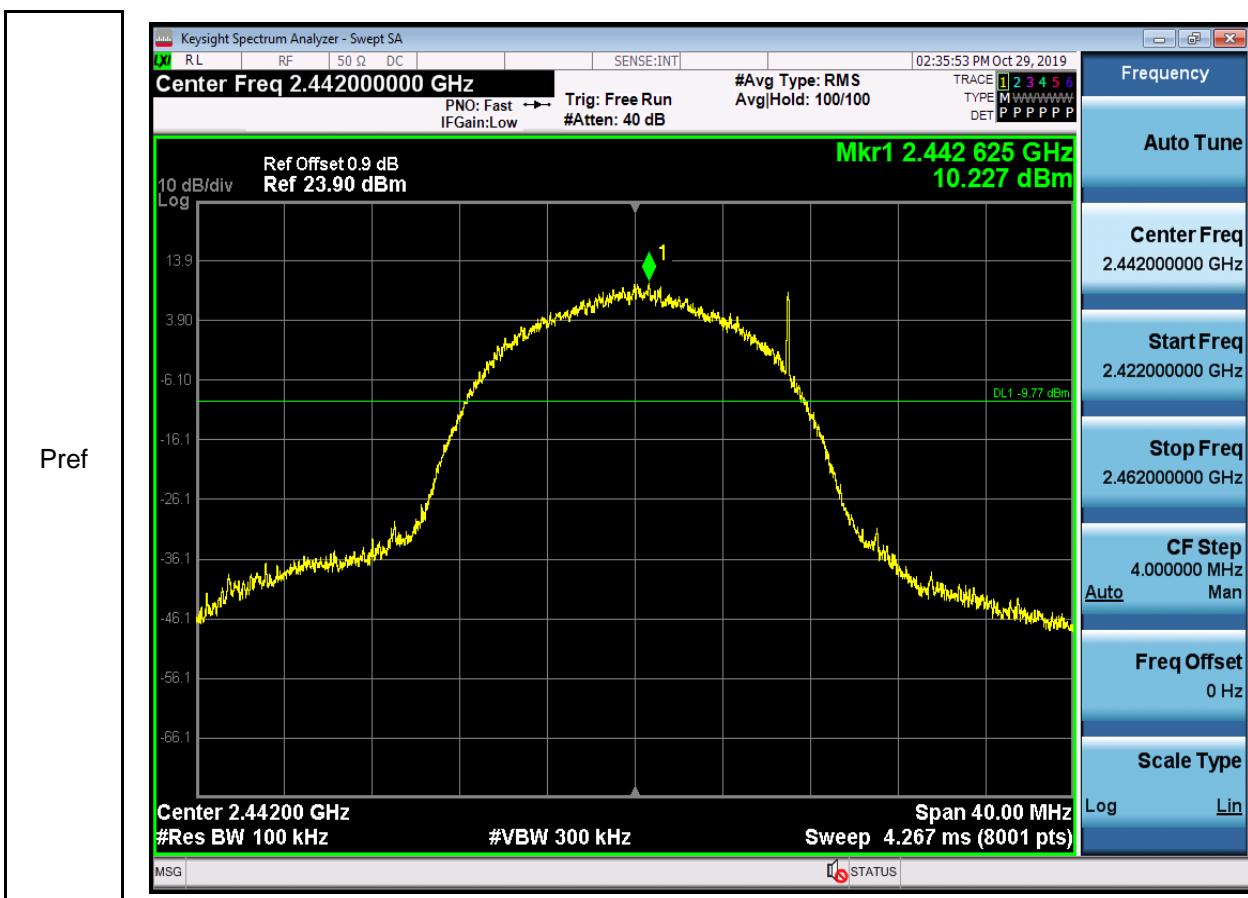
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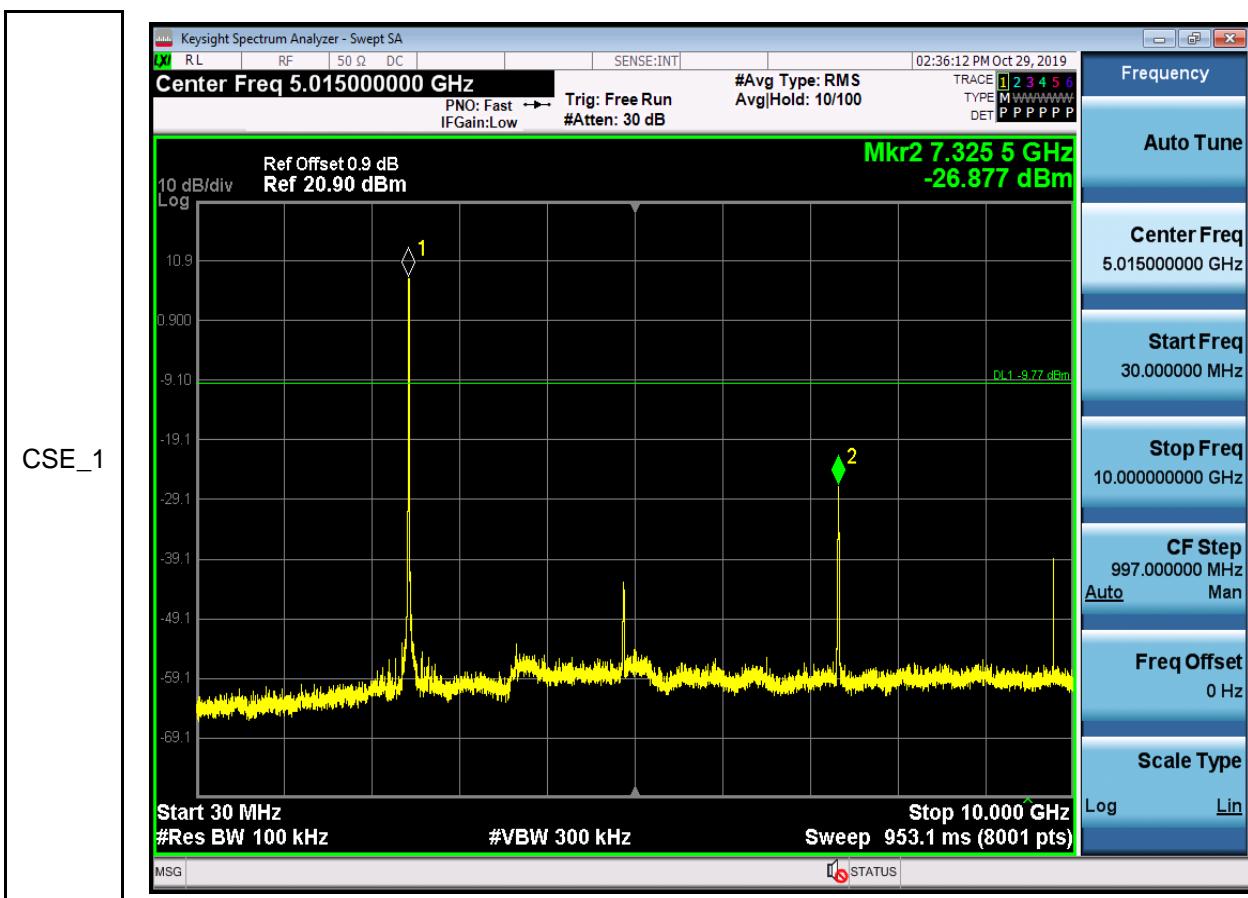


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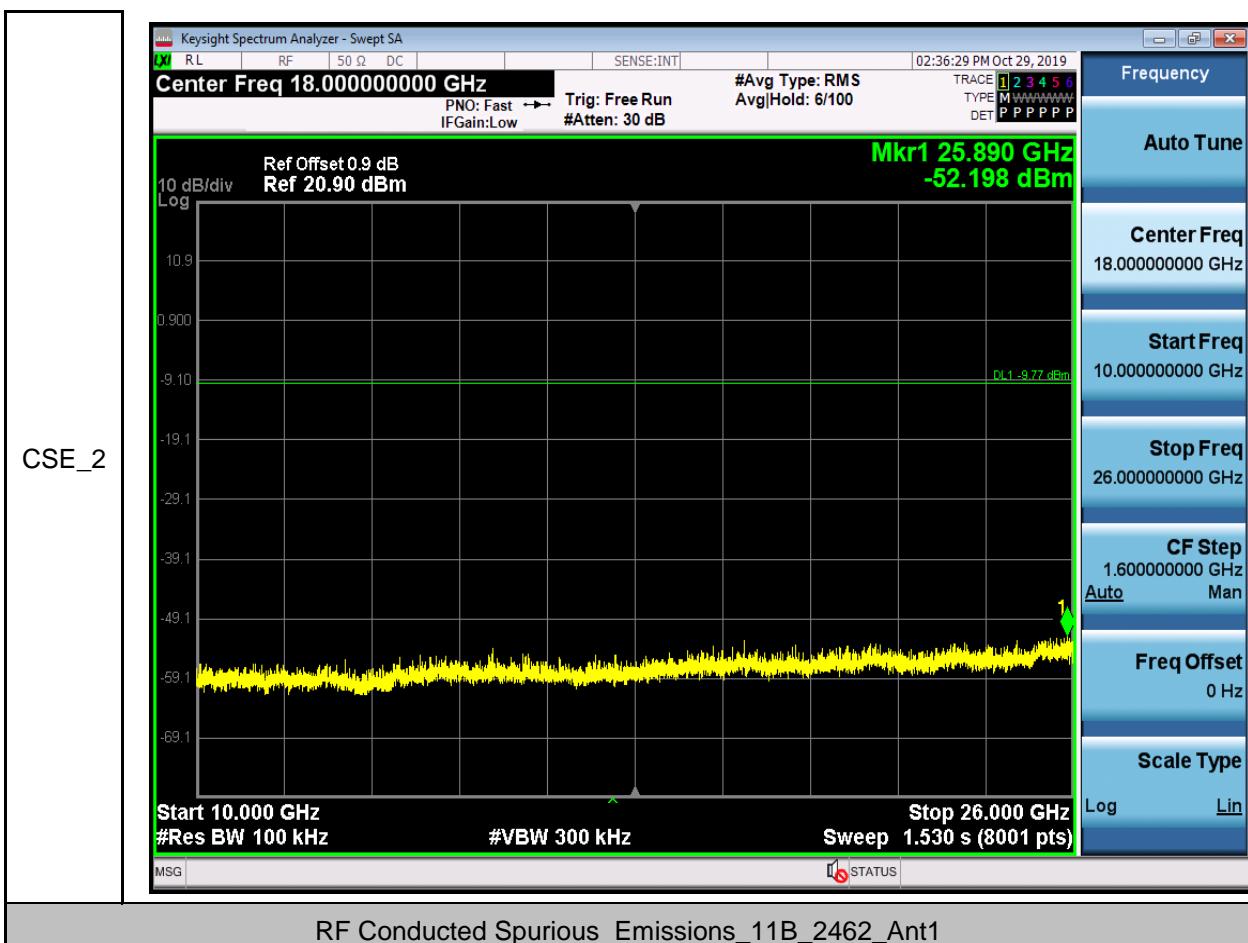
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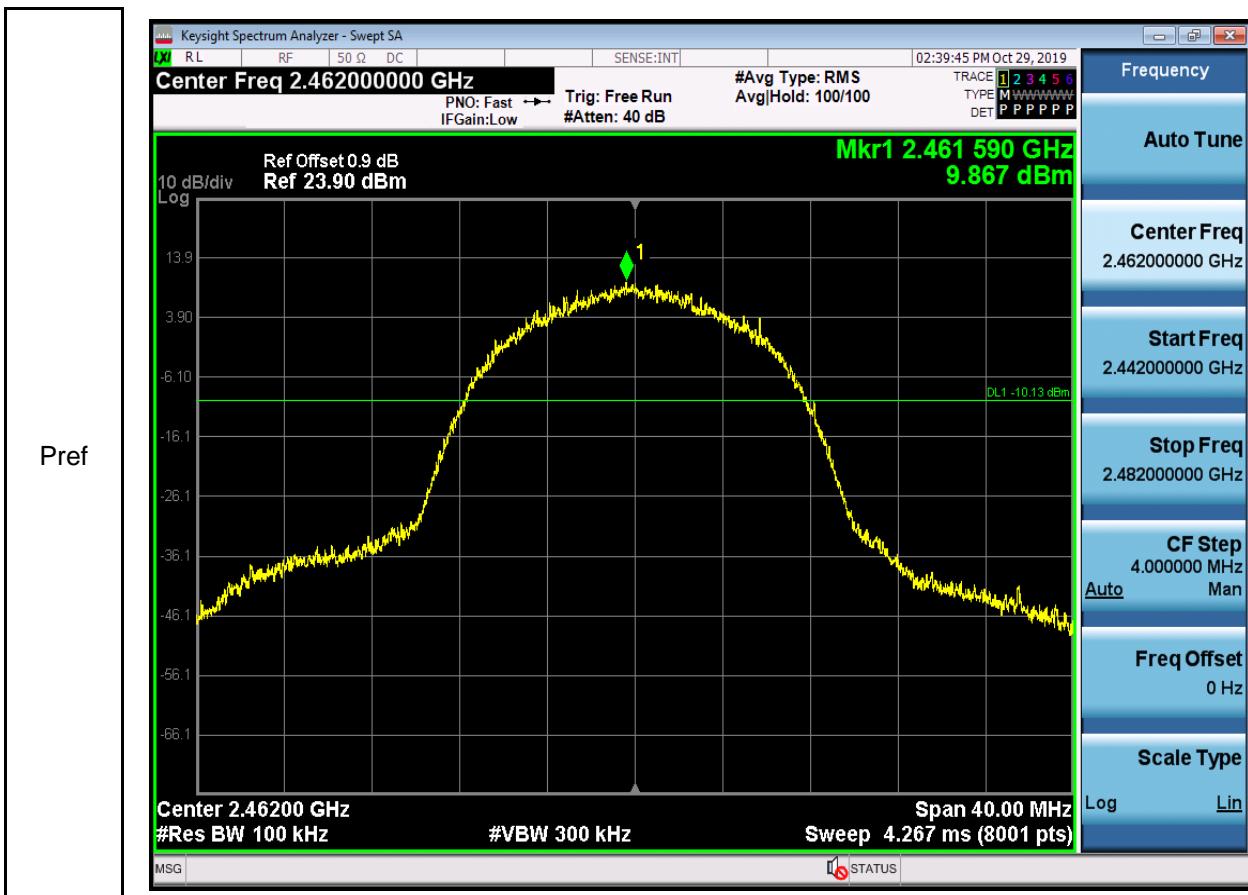


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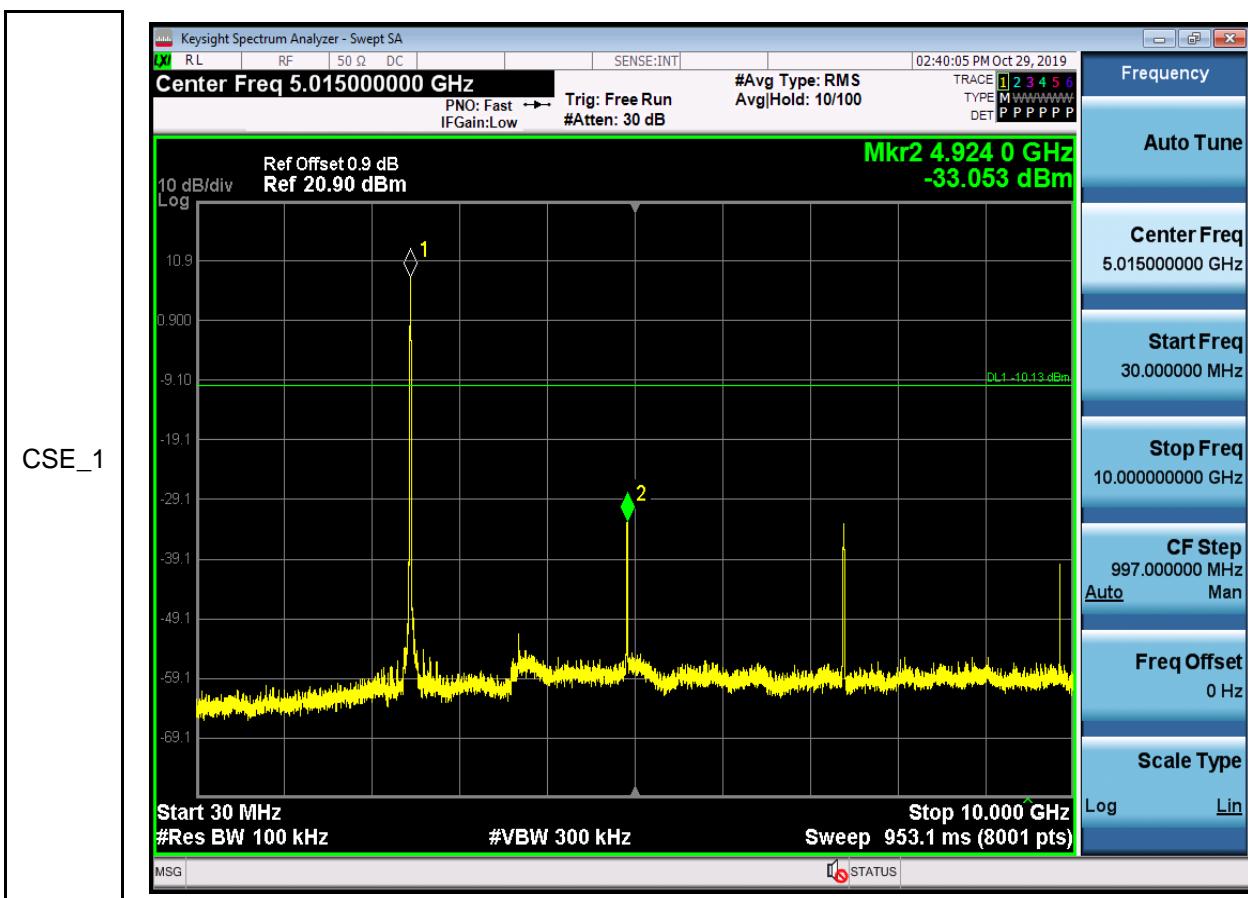
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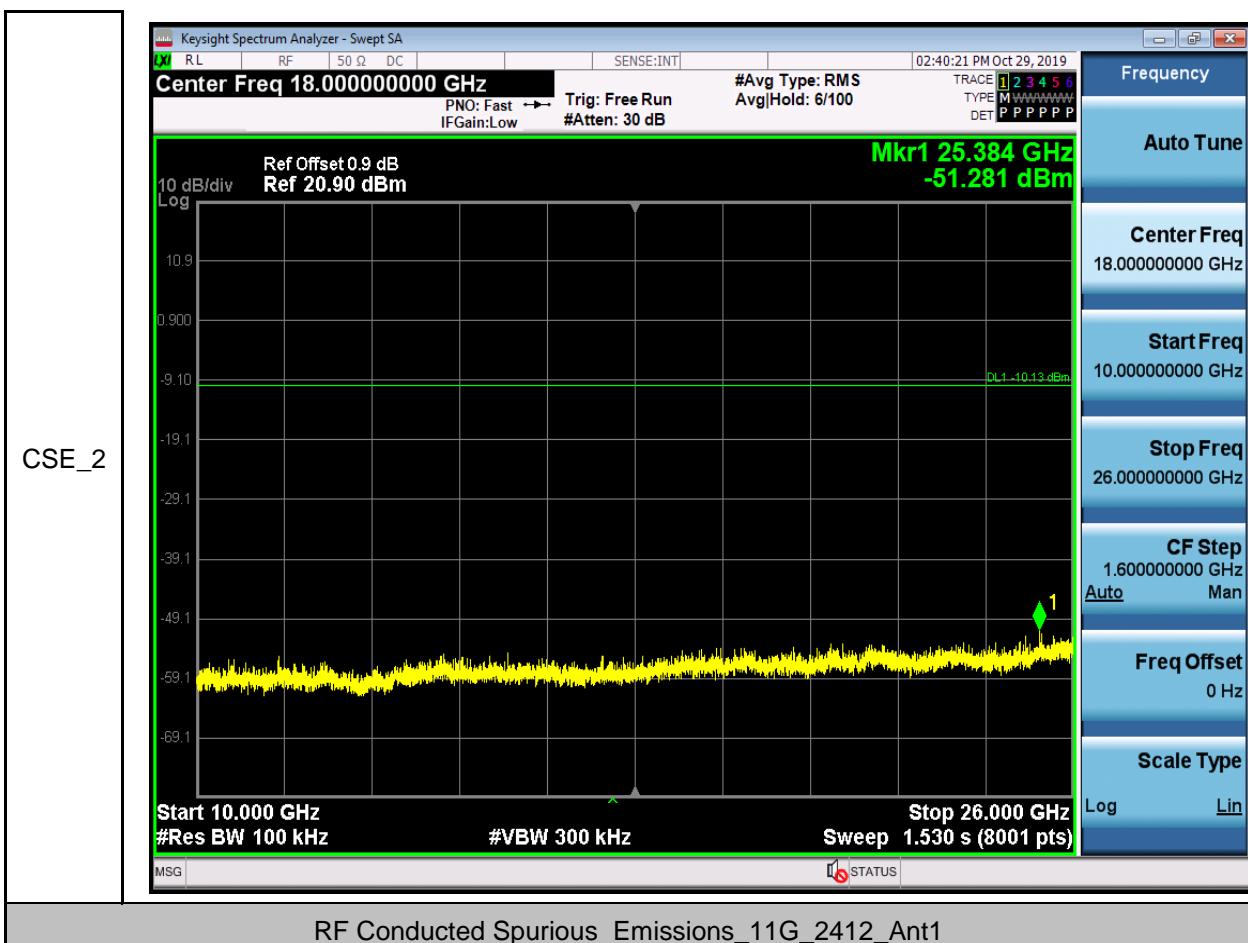


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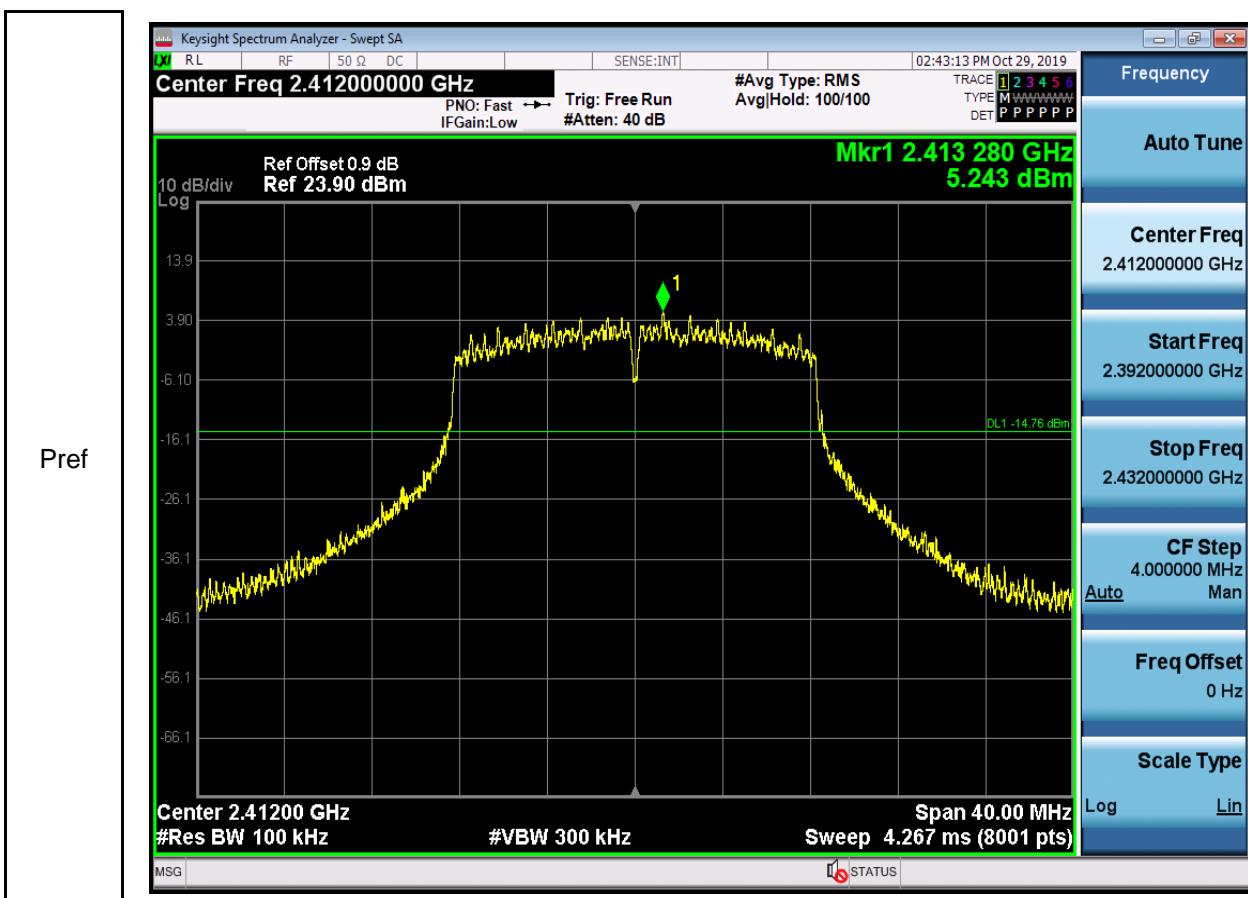
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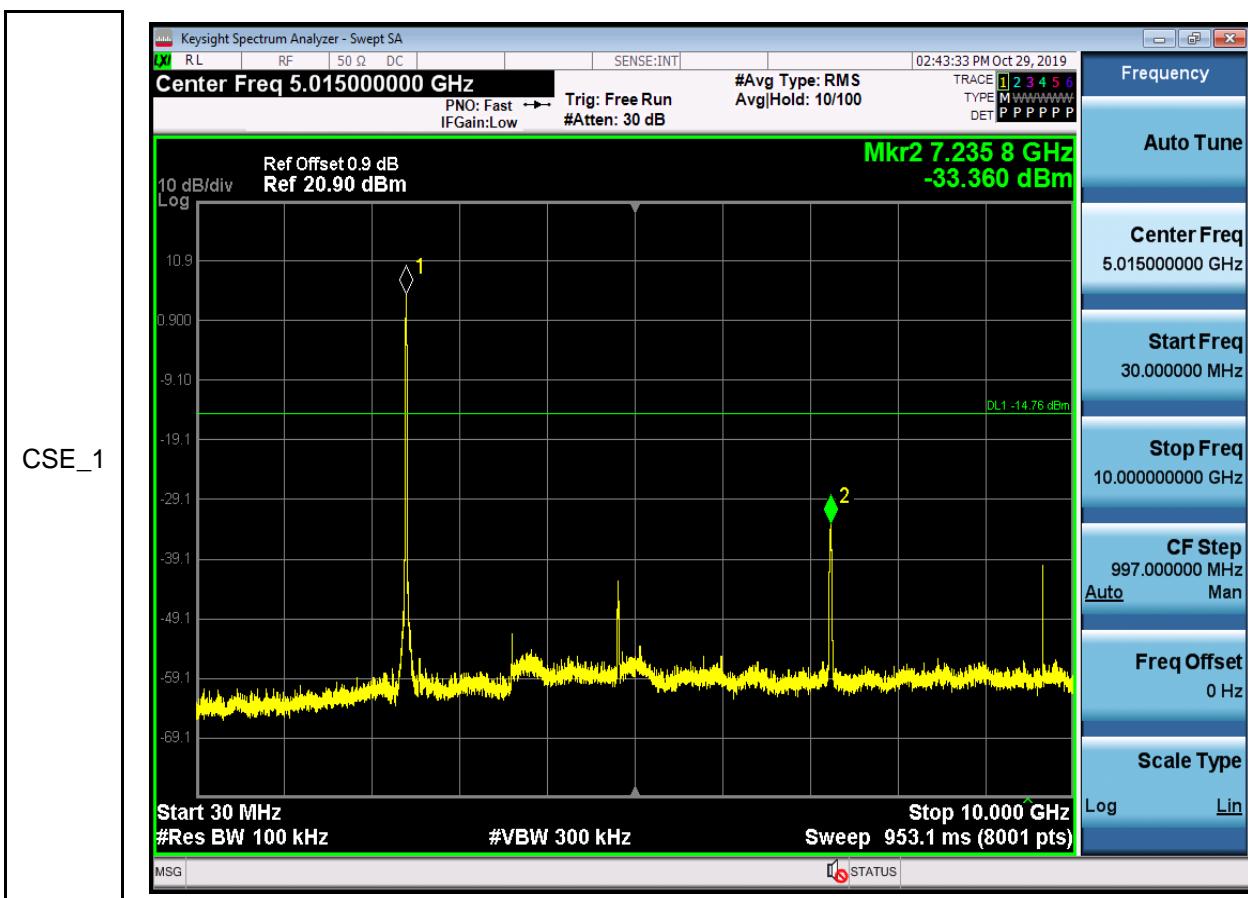
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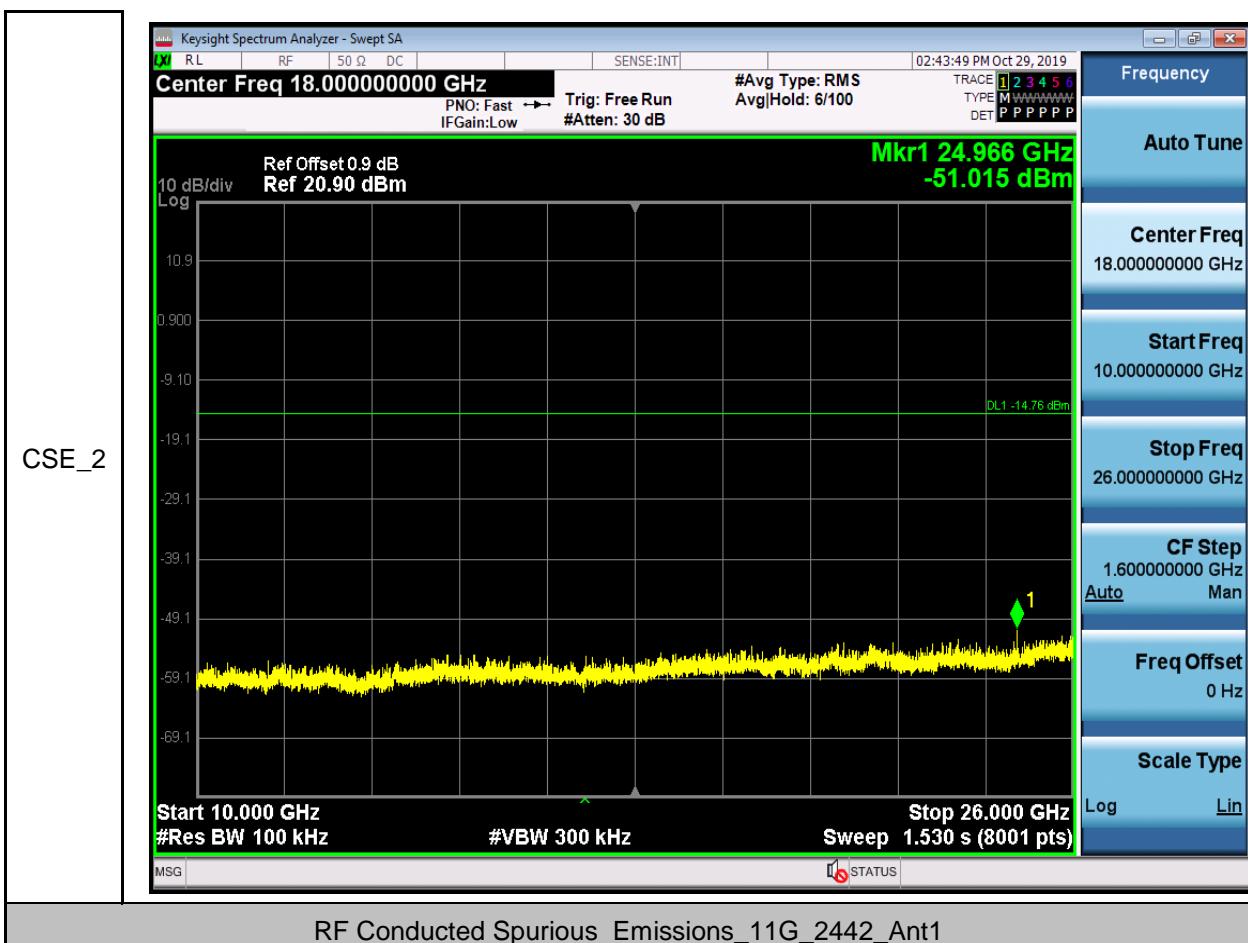
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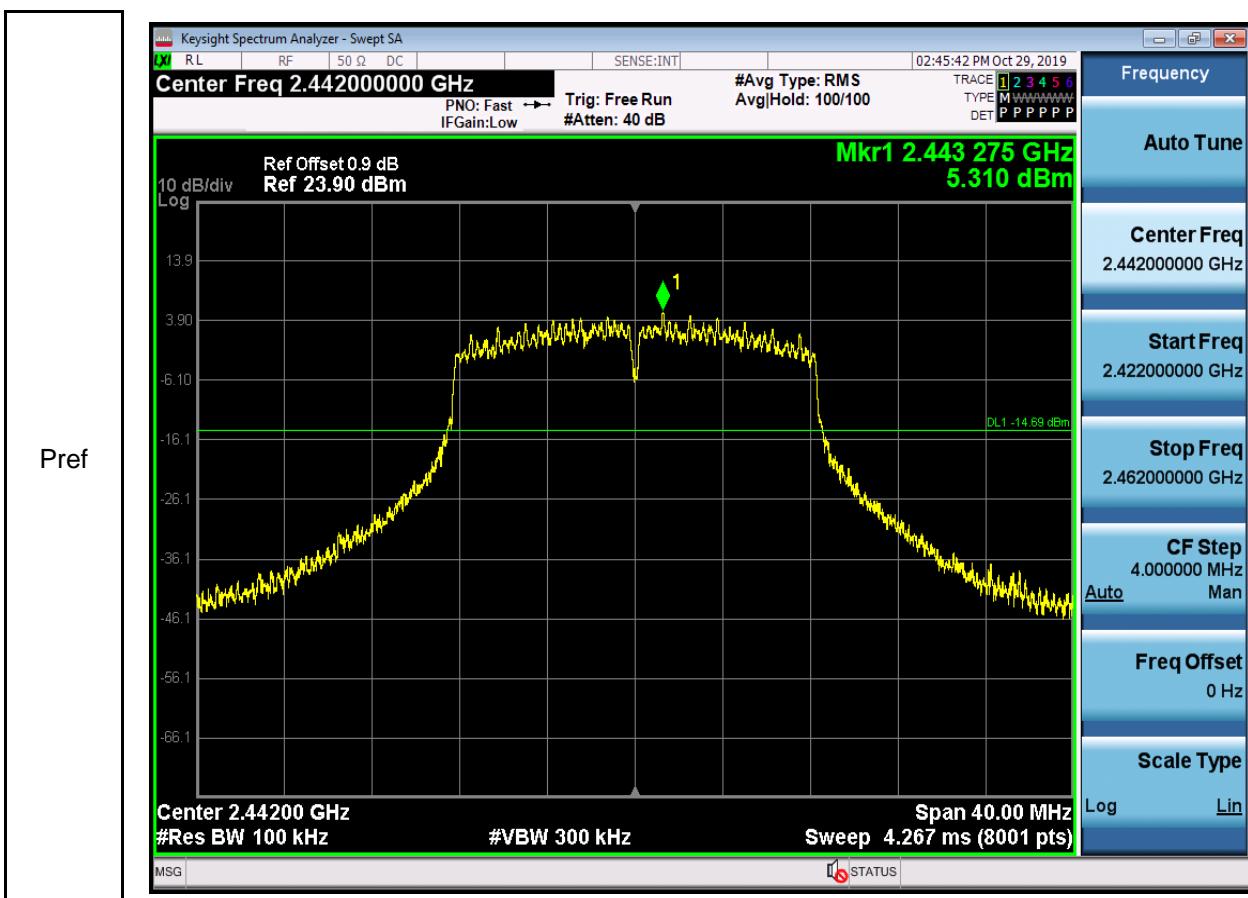


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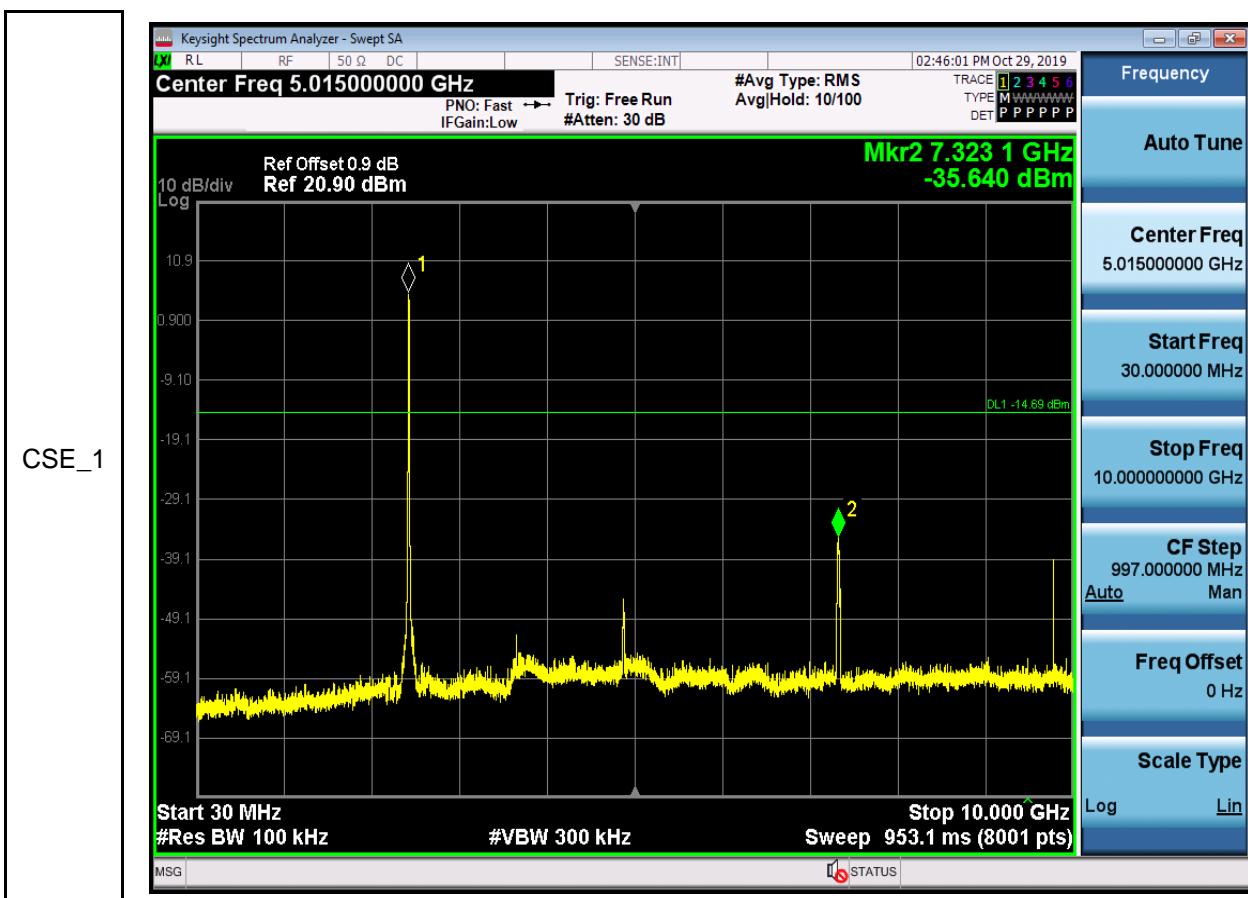
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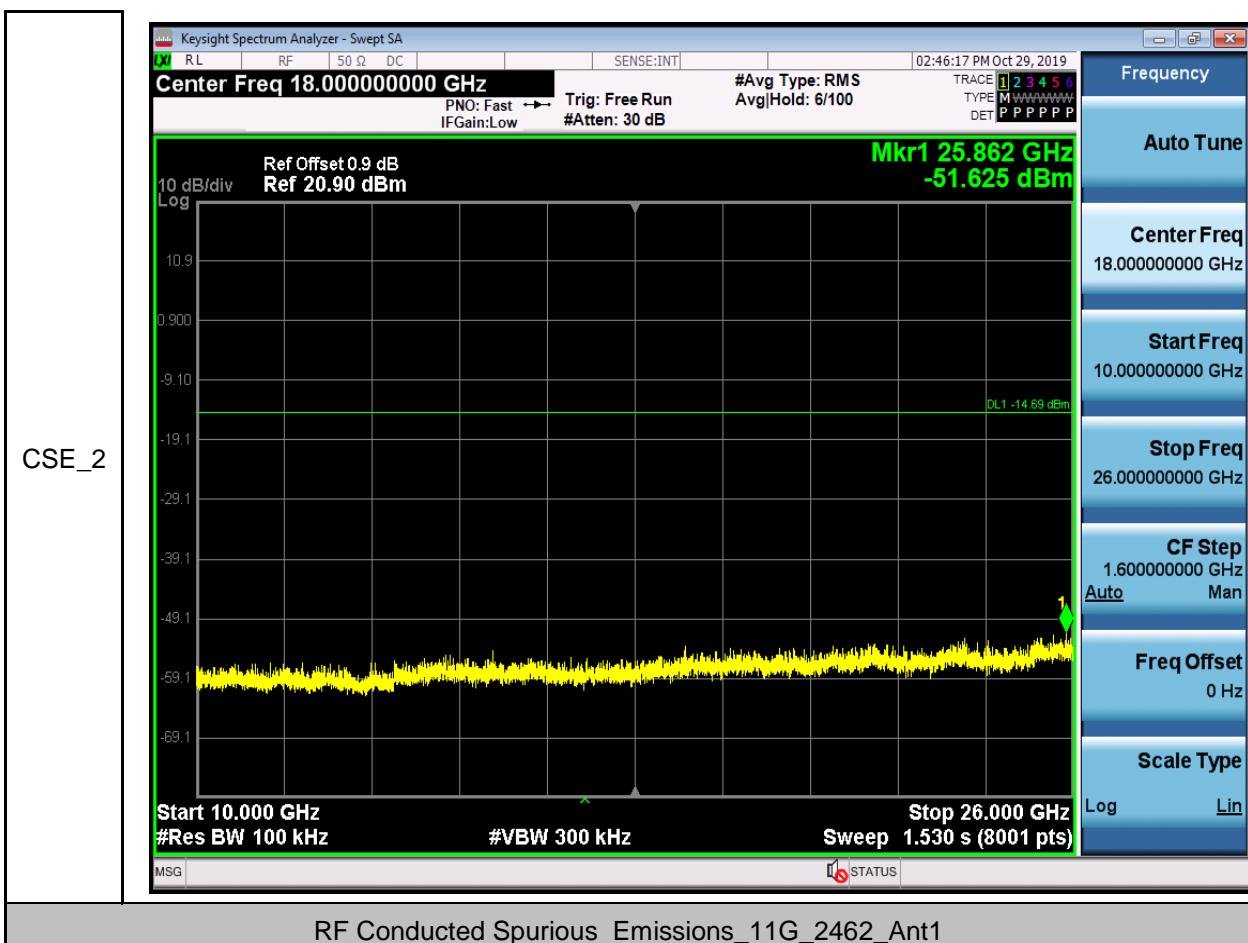


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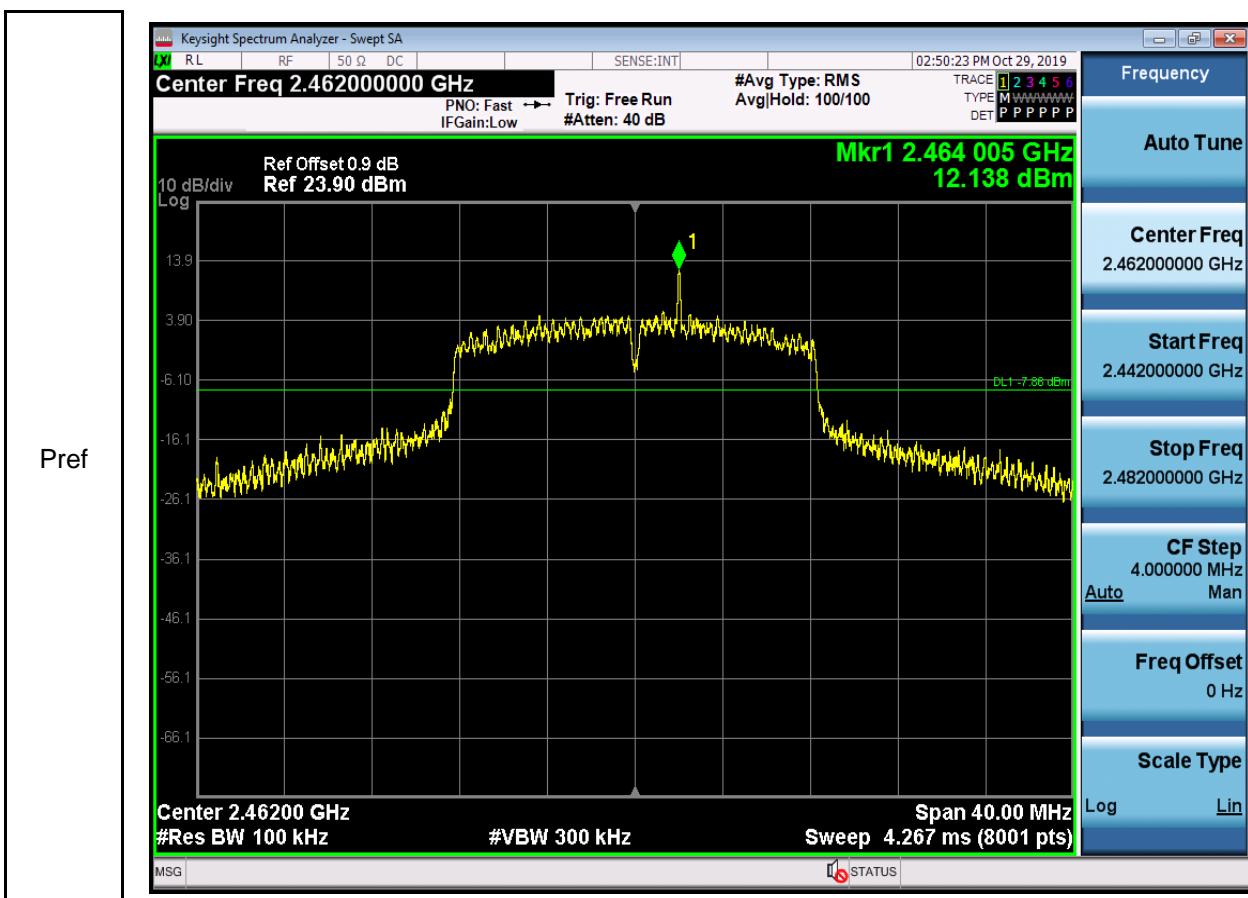


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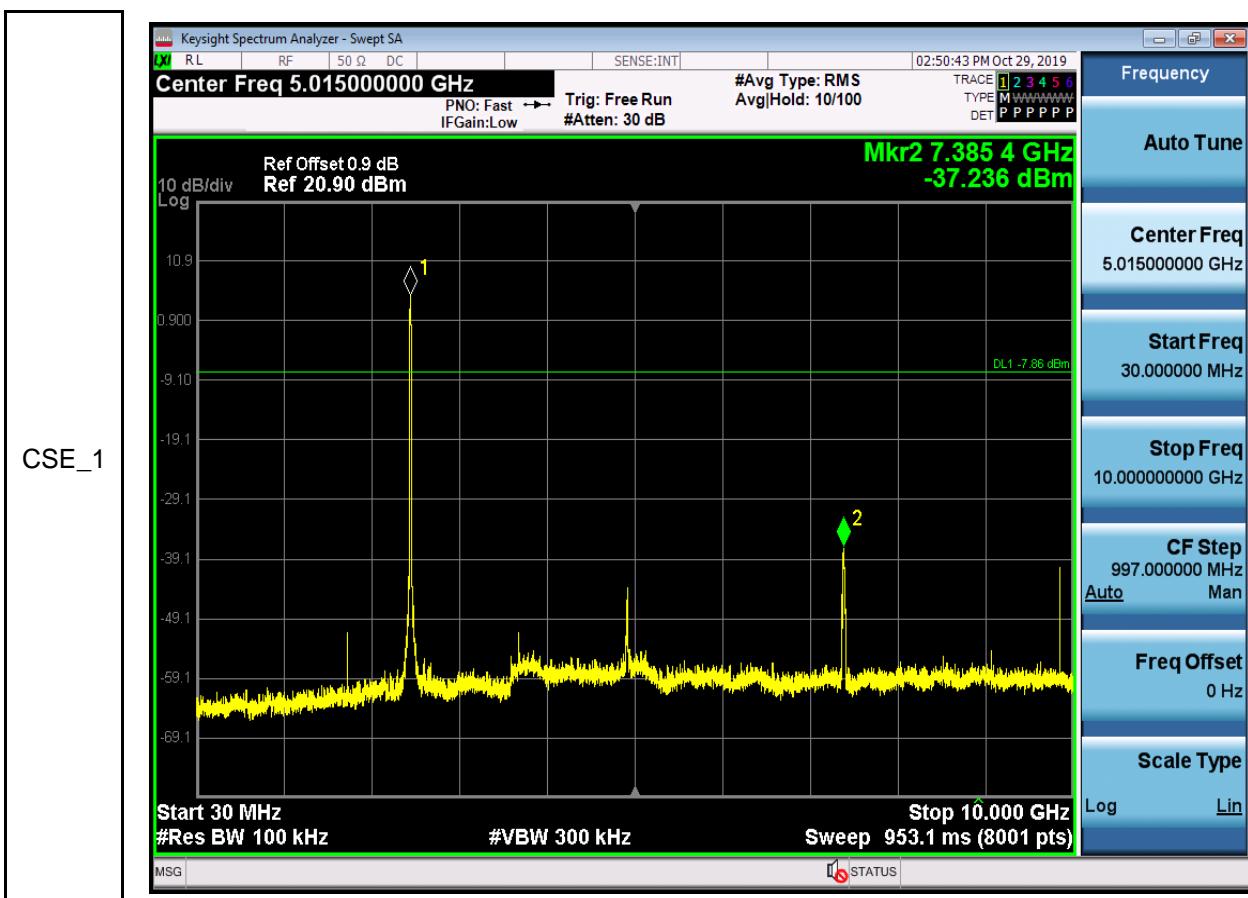


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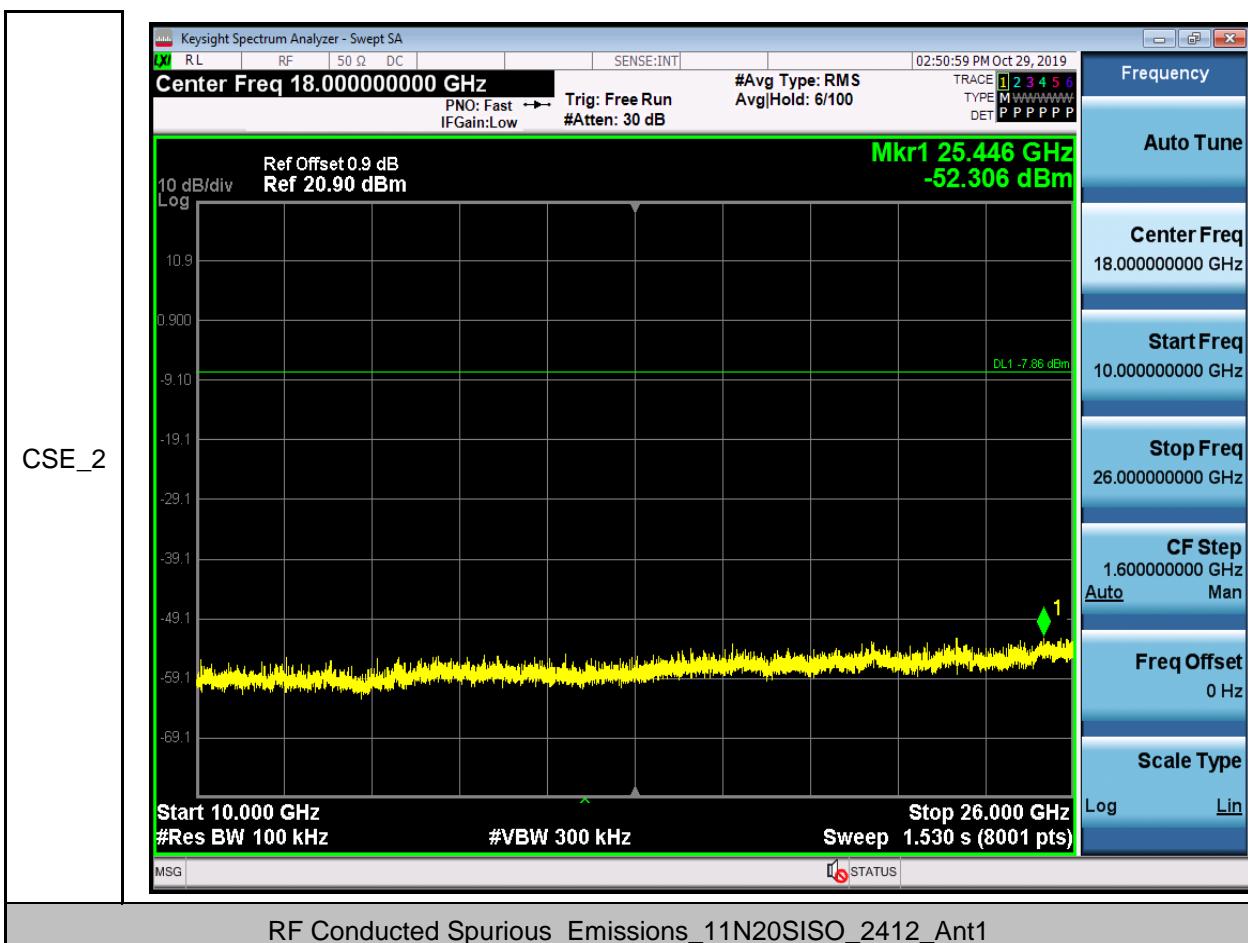


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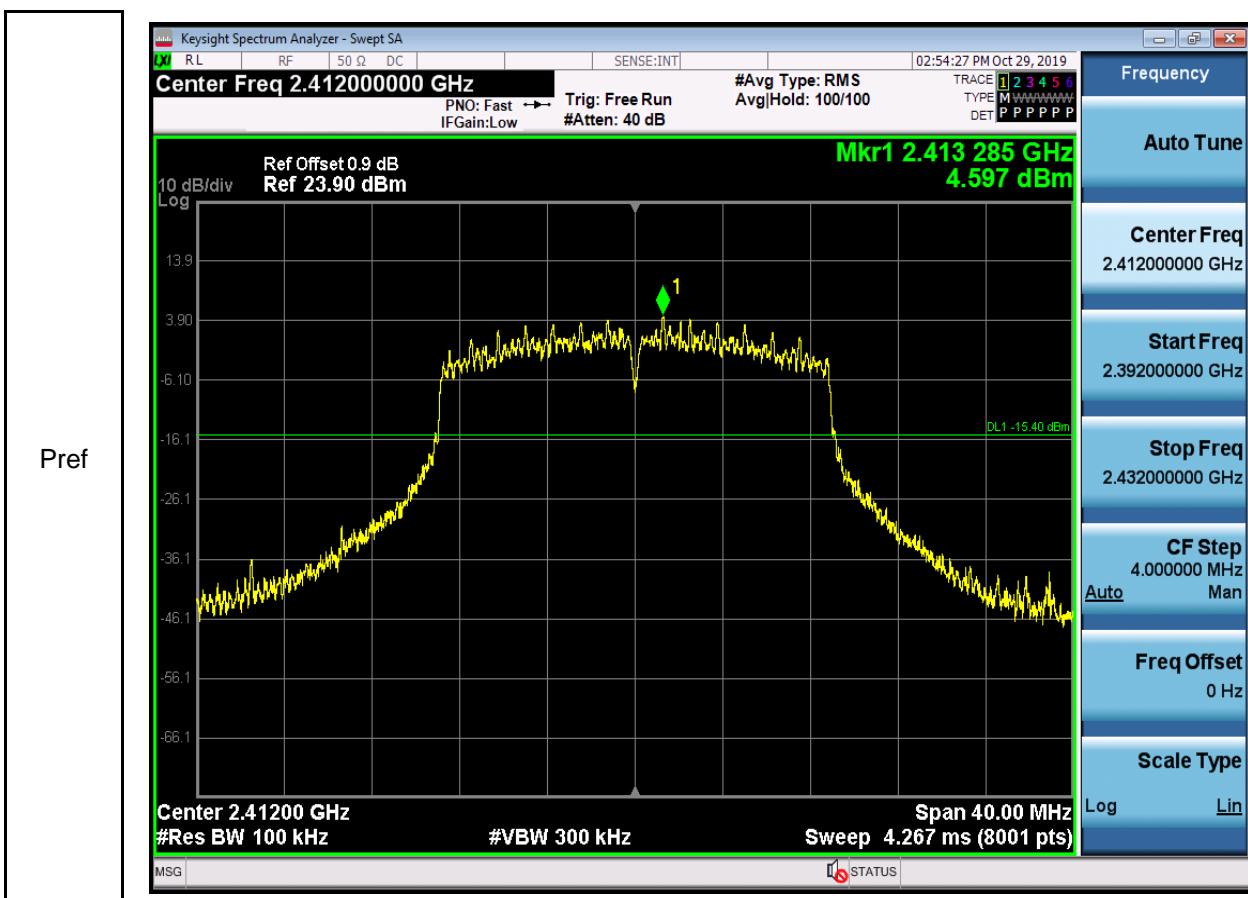


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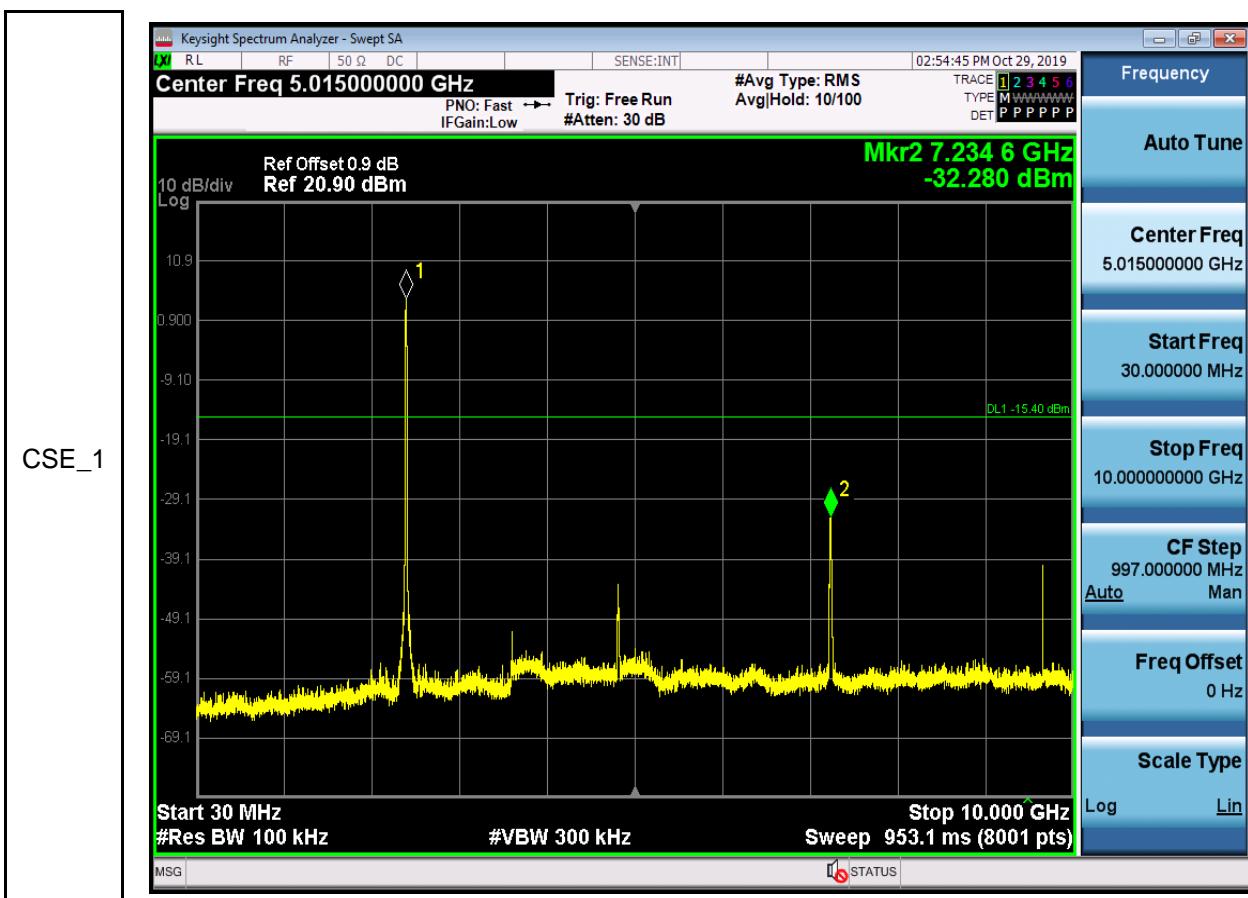


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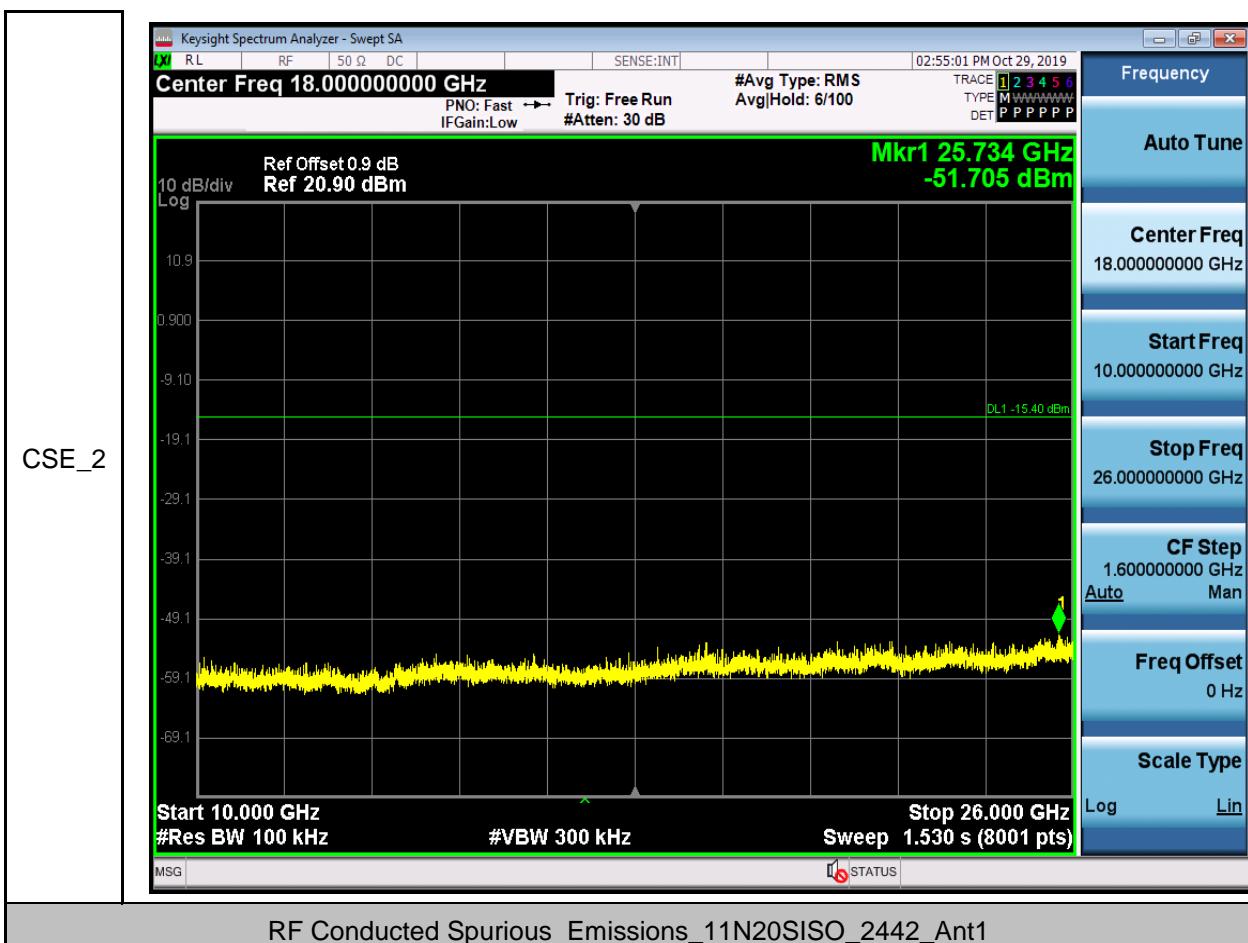
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中国·广州·经济技术开发区科学城科珠路198号 | 邮编: 510663 | (86-20) 82155555 | (86-20) 82075058 | [sgs.china@sgs.com](mailto:sgs.china@sgs.com)



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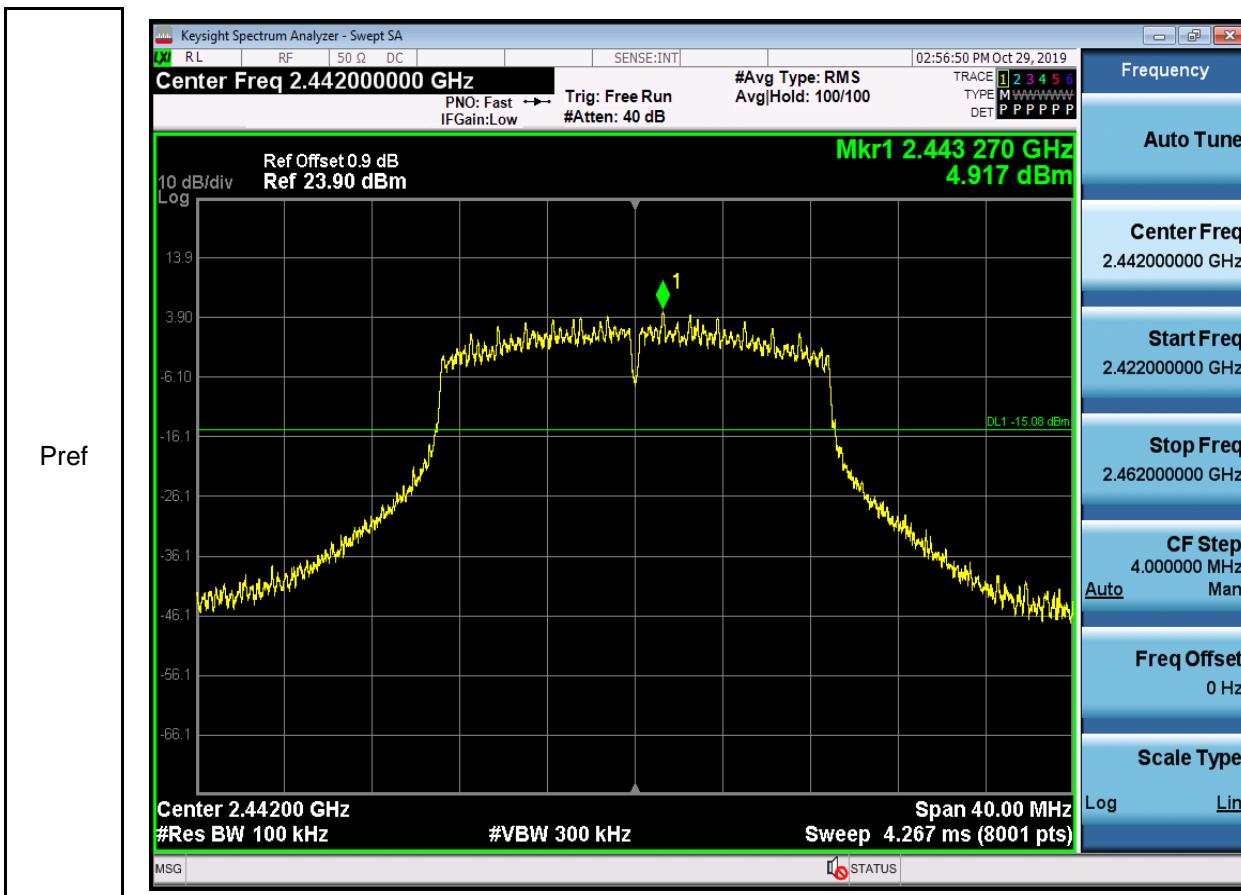


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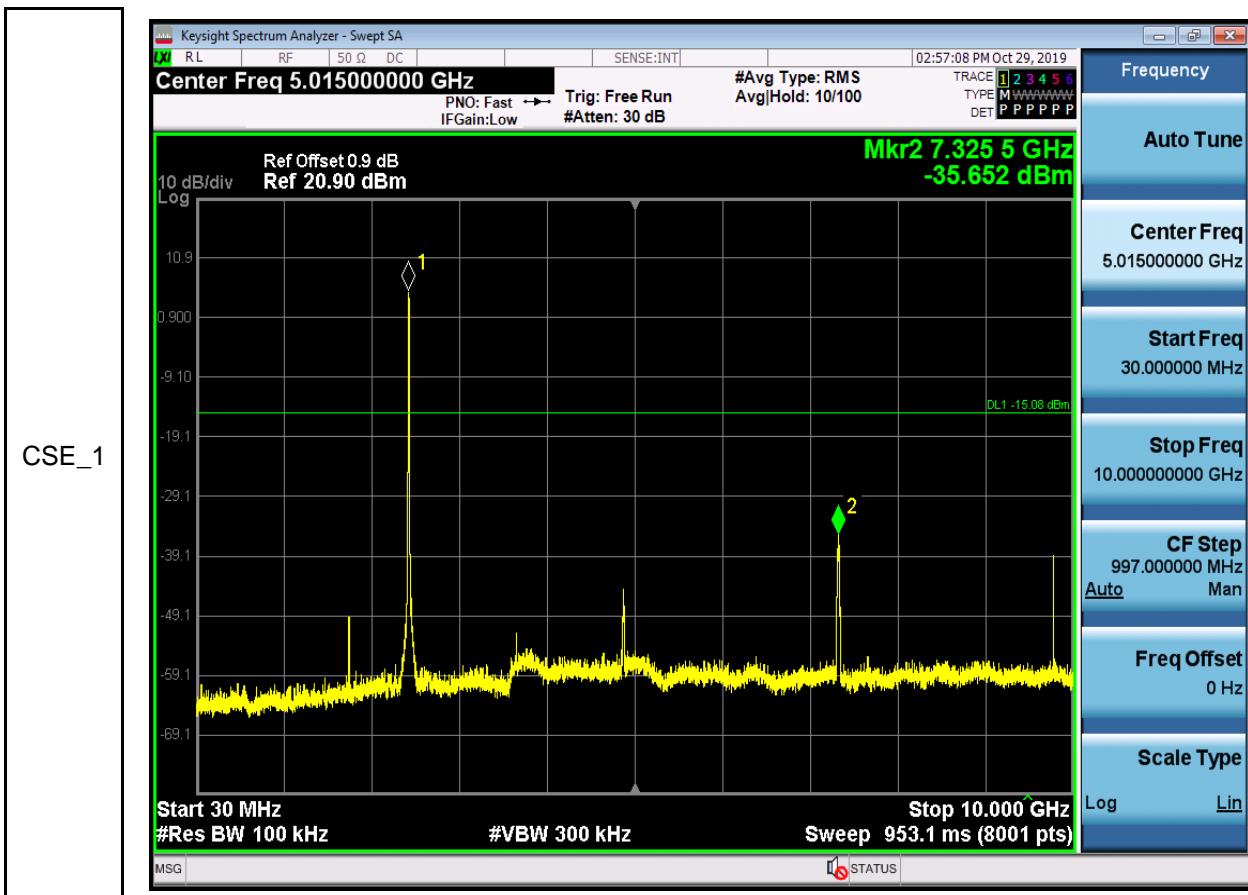
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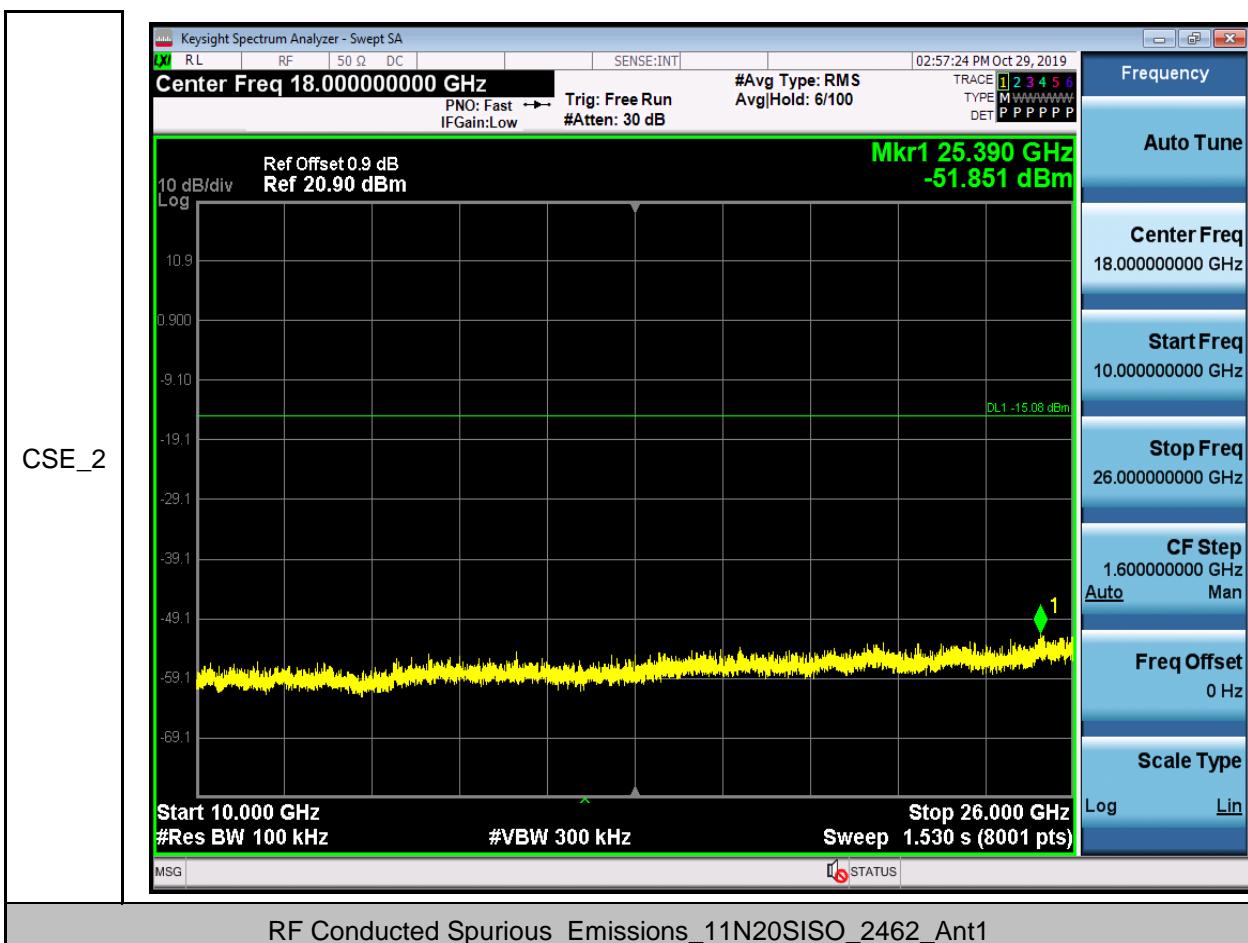


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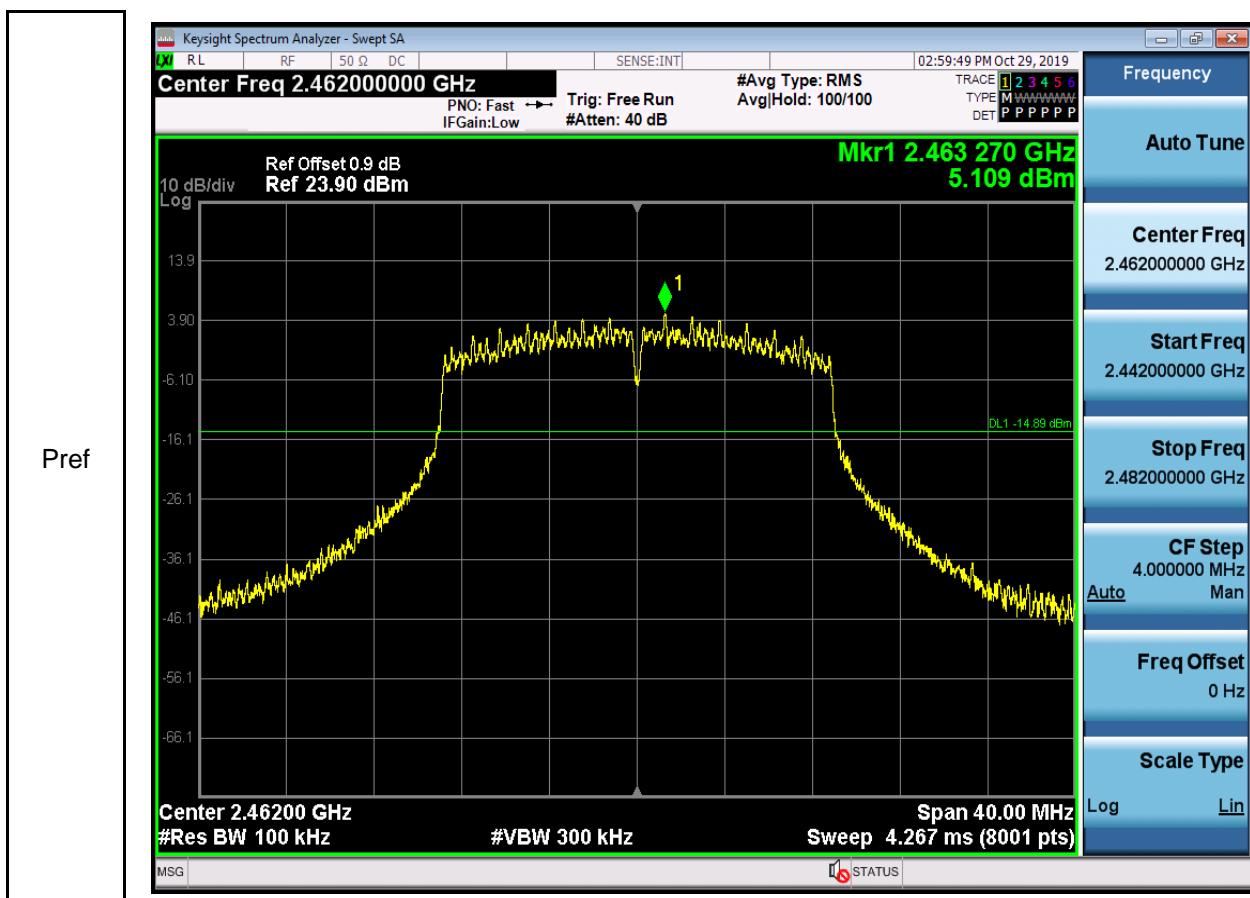
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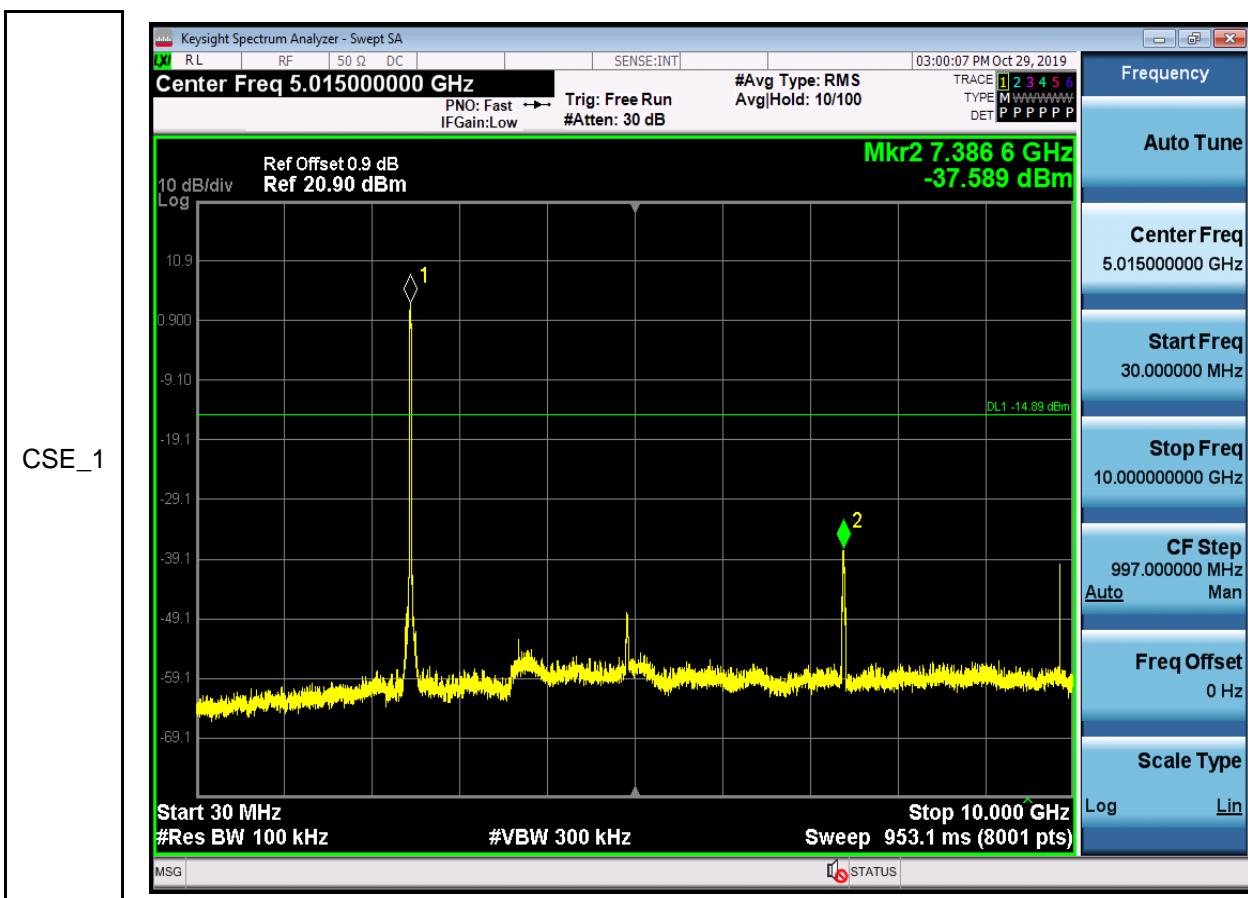
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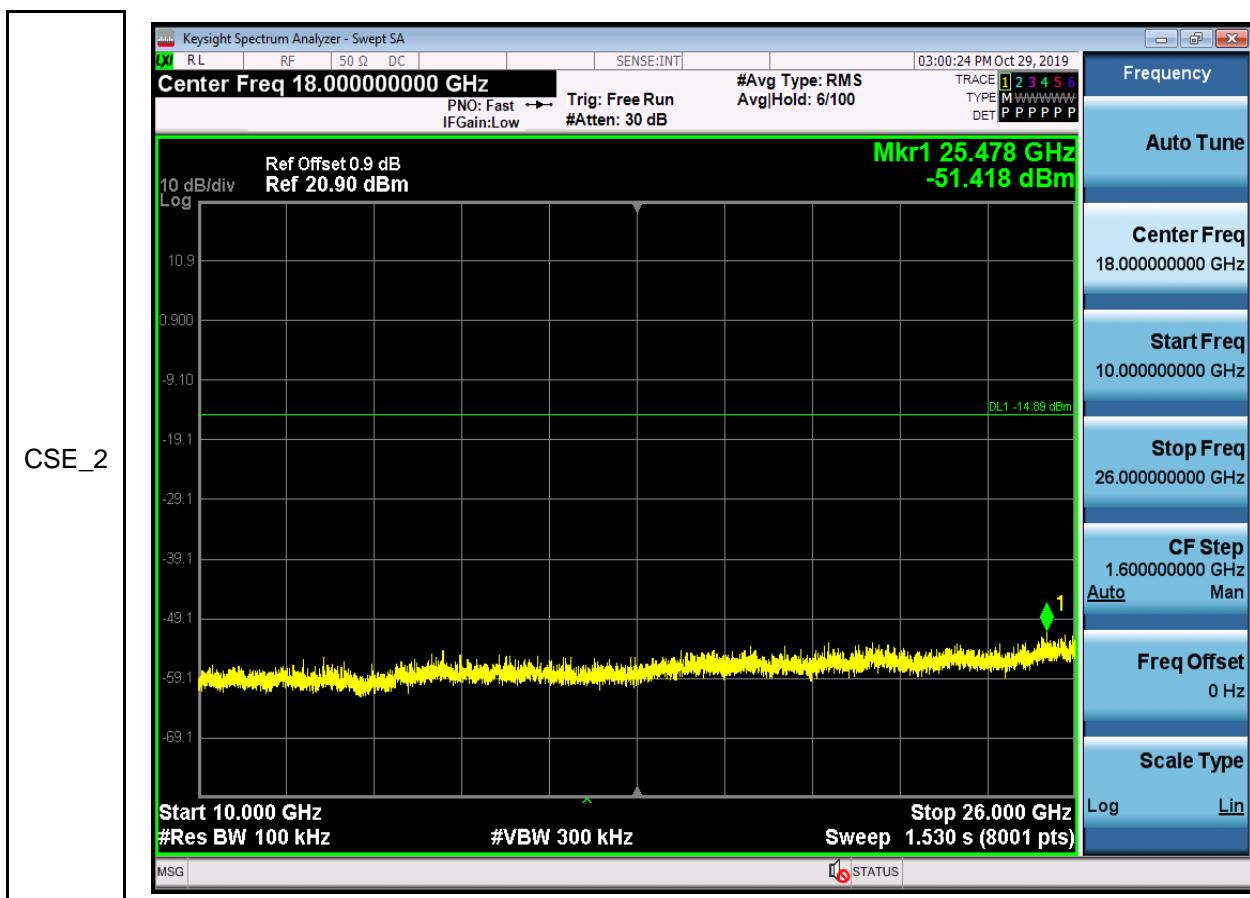
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