

# FCC/ISED Test Report

Product Name : Module  
Trade Name : AirPrime  
Model No. : HL7802  
FCC ID : N7NHL7802  
IC ID : 2417C-HL7802

Applicant : Sierra Wireless, Inc.

Address : 13811 Wireless Way, Richmond, BC, Canada V6V 3A4 Canada

Date of Receipt : Dec. 20, 2019  
Issued Date : Jun 08, 2020  
Report No. : 19C0344R-HPUSP55V00  
Report Version : V1.0



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# Test Report Certification

Issued Date : Jun 08, 2020

Report No. : 19C0344R-HPUSP55V00



Product Name : Module  
 Applicant : Sierra Wireless, Inc.  
 Address : 13811 Wireless Way, Richmond, BC, Canada V6V 3A4  
 Canada  
 Manufacturer : Sierra Wireless, Inc.  
 Address : 13811 Wireless Way, Richmond, BC, Canada V6V 3A4  
 Canada  
 Trade name : AirPrime  
 Model No. : HL7802  
 FCC ID : N7NHL7802  
 IC ID : 2417C-HL7802  
 EUT Voltage : DC 3.7V  
 Testing Voltage : DC 3.7V  
 Applicable Standard : FCC CFR Title 47 Part 22 Subpart H  
 FCC CFR Title 47 Part 24 Subpart E  
 FCC CFR Title 47 Part 27 Subpart L, Subpart F  
 FCC CFR Title 47 Part 90 Subpart S, Subpart R  
 Industry Canada RSS-GEN Issue 5  
 Industry Canada RSS-130 Issue 1  
 Industry Canada RSS-132 Issue 3  
 Industry Canada RSS-133 Issue 6  
 Industry Canada RSS-139 Issue 3  
 Industry Canada RSS-140 issue 1  
 ANSI/TIA-603-D-2010  
 Test Lab : Hsin Chu Laboratory  
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 Test Result : Complied

Documented By : *Fonbo Fang*  
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 ( Louis Hsu / Deputy Manager )

### Revision History

Report No.	Version	Description	Issued Date
19C0344R-HPUSP55V00	V1.0	Initial issue of report	Jun 08, 2020

## TABLE OF CONTENTS

Description	Page
1. General Information .....	6
1.1. EUT Description.....	6
1.2. Mode of Operation .....	7
1.3. Tested System Details .....	8
1.4. Configuration of Tested System .....	8
1.5. EUT Exercise Software.....	8
2. Technical Test .....	9
2.1. Summary of Test Result.....	9
2.2. Test Environment .....	17
2.3. List of Test Equipment.....	18
2.4. Uncertainty.....	21
3. RF Output Power .....	22
3.1. Test Setup.....	22
3.2. Test Procedure.....	22
3.3. Test Method .....	22
3.4. Test Result .....	23
4. Occupied Bandwidth.....	45
4.1. Test Setup.....	45
4.2. Test Procedure.....	45
4.3. Test Method .....	45
4.4. Test Result.....	46
5. Peak To Average Ratio .....	326
5.1. Test Setup.....	326
5.2. Test Procedure.....	326
5.3. Test Method .....	326
5.4. Limit .....	326
5.5. Test Result.....	327
6. Spurious Emissions .....	467
6.1. Test Setup.....	467
6.2. Test Procedure.....	468
6.3. Test Method .....	468
6.4. Test Result.....	469

7.	Spurious Emissions at Antenna Terminals .....	850
7.1.	Test Setup .....	850
7.2.	Test Procedure .....	850
7.3.	Test Method .....	850
7.4.	Test Result .....	851
8.	Frequency Stability .....	1048
8.1.	Test Setup .....	1048
8.2.	Test Procedure .....	1048
8.3.	Test Method .....	1048
8.4.	Test Result .....	1049
Attachment 1.....		1072
	Test Setup Photograph .....	1072
Attachment 2.....		1075
	EUT External Photograph.....	1075
Attachment 3.....		1079
	EUT Internal Photograph .....	1079

## 1. General Information

### 1.1. EUT Description

Product Name	Module	
Trade Name	AirPrime	
Model No.	HL7802	
Uplink Frequency Range (MHz)	LTE Band 2: 1850~1910 LTE Band 4: 1710~1755 LTE Band 5: 824~849 LTE Band 12: 698~716	LTE Band 13: 777~787 LTE Band 25: 1850~1915 LTE Band 26: 814~849 LTE Band 66: 1710~1780
Downlink Frequency Range (MHz)	LTE Band 2: 1930~1990 LTE Band 4: 2110~2115 LTE Band 5: 869~894 LTE Band 12: 729~746	LTE Band 13: 746~756 LTE Band 25: 1930~1995 LTE Band 26: 859~894 LTE Band 66: 2110~2200
Modulation	QPSK / 16QAM	
HW Version	1.0	
FW Version	4.4.7.0	
IMEI No.	359459090002929	

Accessories Information	
Antenna Type	3 Pcs (2pcs for GSM, LTE / 1 pc for GPS)

Antenna Information	
MFR. / Model	Pulse / SPDA24700/2700
Antenna Type	Dipole Antenna
Antenna Gain	2dBi

#### Note:

1. This HL7802 support Cat-M1/ NB-IoT-LTE Band 2/4/5/12/13/25/26/66.& GPS & 2G functions.
2. Regarding frequency band operation, the lowest, middle and highest frequency of channel were selected to perform the test, and the details were shown on this report.
3. The EUT description is from the customer declaration.

## 1.2. Mode of Operation

DEKRA has verified the construction and function in typical operation. All the test modes were carried out with the EUT in normal operation, which was shown in this test report and defined as:

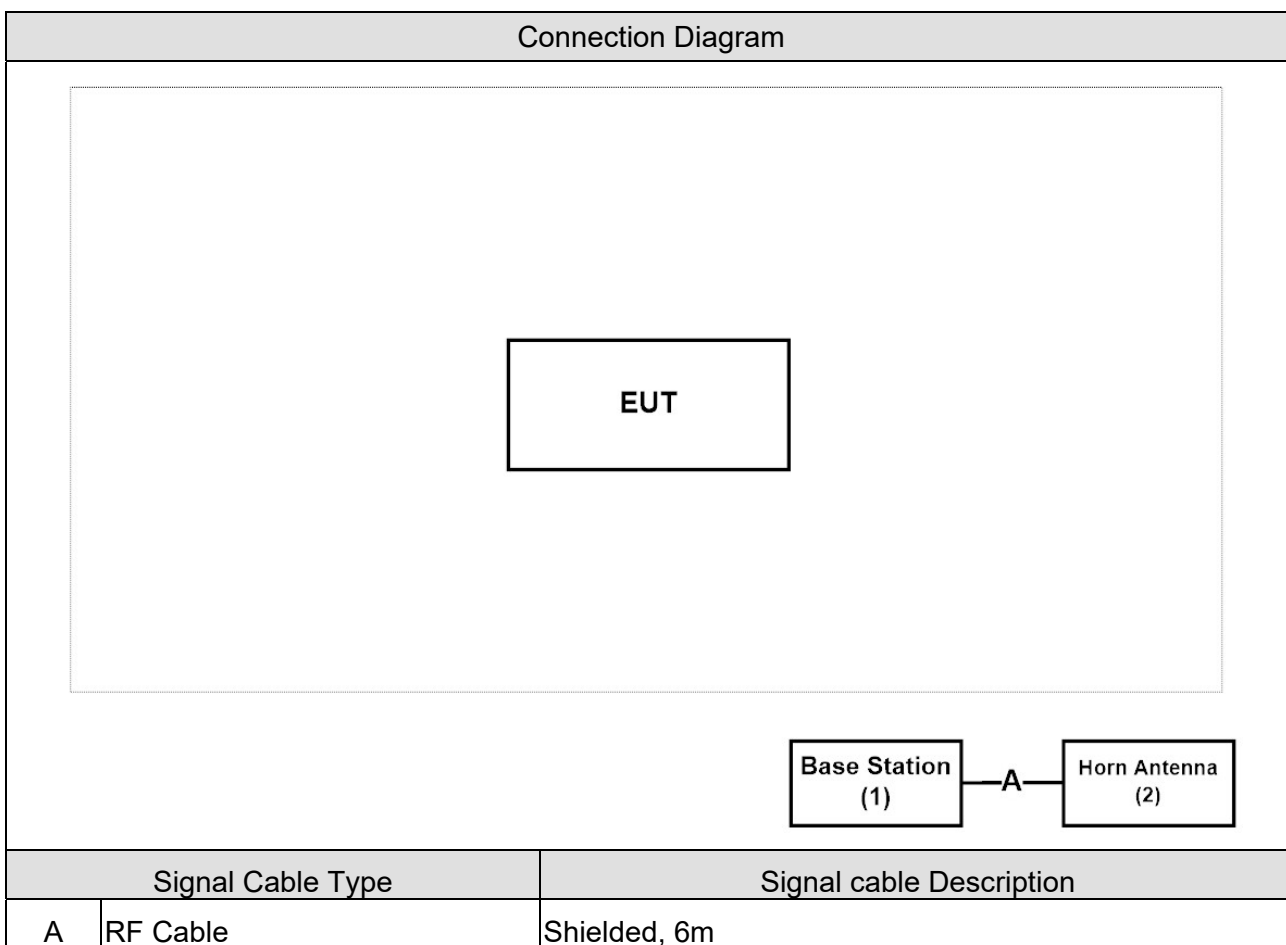
Test Mode
Mode 1 : LTE Cat-M1_Band 2
Mode 2 : LTE Cat-M1_Band 4
Mode 3 : LTE Cat-M1_Band 5
Mode 4 : LTE Cat-M1_Band 12
Mode 5 : LTE Cat-M1_Band 13
Mode 6 : LTE Cat-M1_Band 25
Mode 7 : LTE Cat-M1_Band 26
<b>Mode 8 : LTE Cat-M1_Band 66</b>

### 1.3. Tested System Details

The types for all equipment, plus descriptions of all cables used in the tested system (including inserted cards) are:

Product	Manufacturer	Model No.	Serial No.	FCC ID	Power Cord
1 Base Station	R&S	CMW500	106071	DoC	Non-Shielded, 2m.
2 Horn Antenna	scnwahzbeck	BBHA 9120D	1640	DoC	--

### 1.4. Configuration of Tested System



### 1.5. EUT Exercise Software

1	Setup the EUT and simulators as shown on on 1.4.
2	Turn on the power of all equipment.
3	The EUT will continue receive the signal from Cat-M1 function.
4	Repeat the above procedure.



**2. Technical Test**

**2.1. Summary of Test Result**

- No deviations from the test standards
- Deviations from the test standards as below description:

B2

Uplink: 1850-1910MHz

Downlink: 1930-1990MHz

LTE B2					
FCC Part 24 Subpart E					
Industry Canada RSS-133, issue 6, Industry Canada RSS-GEN					
Test item	FCC Reference section	FCC Limit	IC Reference section	IC Limit	Result
RF Output Power	§2.1033 §2.1046 §24.232	<2 Watts	§6.4	<2 Watts	Pass
Occupied Bandwidth	§2.1049	N/A	RSS-GEN §4.2	N/A	Pass
Peak-to-average power ratio	§24.232	<13 dB	§6.4	<13 dB	Pass
Spurious Emissions	§2.1053 §24.238	<-13dBm	§6.5	<-13dBm	Pass
Spurious Emissions at Antenna Terminals	§27.238	<-13dBm	§6.5	<-13dBm	Pass
Frequency Stability	§2.1055 §24.235	<±2.5 ppm	§6.3	<±2.5 ppm	Pass

Determining compliance shall be based on the results of the compliance measurement, not taking into account measurement instrumentation uncertainty.

B4

Uplink: 1710-1755MHz

Downlink: 2110-2155MHz

LTE B4					
FCC Part 27 Subpart L					
Industry Canada RSS-139, issue 3, Industry Canada RSS-GEN					
Test item	FCC Reference section	FCC Limit	IC Reference section	IC Limit	Result
RF Output Power	§2.1033 §2.1046 §27.50	<1 Watt	§6.5	<1 Watt	Pass
Occupied Bandwidth	§2.1049	N/A	RSS-GEN §4.2	N/A	Pass
Peak-to-average power ratio	§27.50	<13 dB	§6.5	<13 dB	Pass
Spurious Emissions	§2.1053 §27.53	<-13dBm	§6.6	<-13dBm	Pass
Spurious Emissions at Antenna Terminals	§27.53	<-13dBm	§6.6	<-13dBm	Pass
Frequency Stability	§2.1055 §27.54	<2.5 ppm	§6.4	Within the frequency range	Pass

Determining compliance shall be based on the results of the compliance measurement, not taking into account measurement instrumentation uncertainty.

B5

Uplink: 824-849MHz

Downlink: 869-894MHz

LTE B5					
FCC Part 22 Subpart H					
Industry Canada RSS-132, issue 3, Industry Canada RSS-GEN					
Test item	FCC Reference section	FCC Limit	IC Reference section	IC Limit	Result
RF Output Power	§2.1033 §2.1046 §22.913	<7 Watts	§5.4	<11.5 Watts	Pass
Occupied Bandwidth	§2.1049	N/A	RSS-GEN §4.2	N/A	Pass
Peak-to-average power ratio	§22.913	<13 dB	§5.4	<13 dB	Pass
Spurious Emissions	§2.1053 §22.917	<-13dBm	§5.5	<-13dBm	Pass
Spurious Emissions at Antenna Terminals	§22.917	<-13dBm	§5.5	<-13dBm	Pass
Frequency Stability	§2.1055 §22.335	<±2.5 ppm	§5.3	<±2.5 ppm for mobile stations <±1.5 ppm for base stations	Pass

Determining compliance shall be based on the results of the compliance measurement, not taking into account measurement instrumentation uncertainty.

B12

Uplink: 698-716MHz

Downlink: 729-746MHz

LTE B12					
FCC Part 27 Subpart F					
Industry Canada RSS-130, issue 2, Industry Canada RSS-GEN					
Test item	FCC Reference section	FCC Limit	IC Reference section	IC Limit	Result
RF Output Power	§2.1033 §2.1046 §27.50	<3 Watts ERP	§4.6	<3 Watts E.R.P for portable equipment or for indoor fixed subscriber equipment	Pass
Occupied Bandwidth	§2.1049	N/A	RSS-GEN §4.2	N/A	Pass
Peak-to-average power ratio	§27.50	<13 dB	§4.4	<13 dB	Pass
Spurious Emissions	§2.1053 §27.53	<-13dBm	§4.6	<-13dBm The e.i.r.p. in the band 1559-1610 MHz shall not exceed -70 dBW/MHz for wideband signal and -80 dBW for discrete emission with bandwidth less than 700 Hz.	Pass
Spurious Emissions at Antenna Terminals	§27.53	<-13dBm	§4.6	<-13dBm	Pass
Frequency Stability	§2.1055 §27.54	<±2.5 ppm	§4.3	Within the frequency range	Pass

Determining compliance shall be based on the results of the compliance measurement, not taking into account measurement instrumentation uncertainty.

B13

Uplink: 777-787MHz

Downlink: 746-756MHz

LTE B13					
FCC Part 27 Subpart F					
Industry Canada RSS-130, issue 2, Industry Canada RSS-GEN					
RF Output Power	FCC Reference section	FCC Limit	IC Reference section	IC Limit	Result
RF Output Power	§2.1033 §2.1046 §27.50	<3 Watts ERP	§4.6	<3 Watts E.R.P for portable equipment or for indoor fixed subscriber equipment	Pass
Occupied Bandwidth	§2.1049	N/A	RSS-GEN §4.2	N/A	Pass
Peak-to-average power ratio	§27.50	<-13 dB	§4.4	<13 dB	Pass
Spurious Emissions	§2.1053 §27.53	<-13dBm	§4.6	<-13dBm	Pass
Spurious Emissions at Antenna Terminals	§27.53	<-13dBm	§4.6	<-13dBm	Pass
Frequency Stability	§2.1055 §27.54	<±2.5 ppm	§4.5	Within the frequency range	Pass

Determining compliance shall be based on the results of the compliance measurement, not taking into account measurement instrumentation uncertainty.

B25

Uplink: 1850~1915MHz

Downlink: 1930~1995MHz

LTE B25					
FCC Part 24 Subpart E					
Industry Canada RSS-133, issue 6, Industry Canada RSS-GEN					
Test item	FCC Reference section	FCC Limit	IC Reference section	IC Limit	Result
RF Output Power	§2.1033 §2.1046 §24.232	<2 Watts	§6.4	<2 Watts	Pass
Occupied Bandwidth	§2.1049	N/A	RSS-GEN §4.2	N/A	Pass
Peak-to-average power ratio	§24.232	<13 dB	§6.4	<13 dB	Pass
Spurious Emissions	§2.1053 §24.238	<-13dBm	§6.5	<-13dBm	Pass
Spurious Emissions at Antenna Terminals	§27.238	<-13dBm	§6.5	<-13dBm	Pass
Frequency Stability	§2.1055 §24.235	<±2.5 ppm	§6.3	<±2.5 ppm	Pass

Determining compliance shall be based on the results of the compliance measurement, not taking into account measurement instrumentation uncertainty.

B26

Uplink: 814~849MHz (ISED not support 814~824 MHz)

Downlink: 859~894MHz

LTE B26					
FCC Part 22 Subpart H					
FCC Part 90 Subpart S					
Industry Canada RSS-132, issue 3, Industry Canada RSS-GEN					
Test item	FCC Reference section	FCC Limit	IC Reference section	IC Limit	Result
RF Output Power	§2.1033 §2.1046 §90.635(b) §22.913	<100 Watts	§5.4	<11.5 Watts	Pass
Occupied Bandwidth	§2.1049	N/A	RSS-GEN §4.2	N/A	Pass
Peak-to-average power ratio	§22.913	<13 dB	§5.4	<13 dB	Pass
Spurious Emissions	§2.1053 §90.691 §22.917	<-13dBm	§5.5	<-13dBm	Pass
Spurious Emissions at Antenna Terminals	§90.691 §22.917	<-13dBm	§5.5	<-13dBm	Pass
Frequency Stability	§2.1055 §90.213	<±2.5 ppm	§5.2	<±2.5ppm	Pass

Determining compliance shall be based on the results of the compliance measurement, not taking into account measurement instrumentation uncertainty.

B66

Uplink: 1710~1780MHz

Downlink: 2110~2200MHz

LTE B66					
FCC Part 27 Subpart L					
Industry Canada RSS-139, issue3, Industry Canada RSS-GEN					
Test item	FCC Reference section	FCC Limit	IC Reference section	IC Limit	Result
RF Output Power	§2.1033 §2.1046 §27.50	<1 Watts	§6.5	<1 Watts	Pass
Occupied Bandwidth	§2.1049	N/A	RSS-GEN §4.2	N/A	Pass
Peak-to-average power ratio	§27.50	<13 dB	§6.5	<13 dB	Pass
Spurious Emissions	§2.1053 §27.53	<-13dBm	§6.6	<-13dBm	Pass
Spurious Emissions at Antenna Terminals	§27.53	<-13dBm	§6.6	<-13dBm	Pass
Frequency Stability	§2.1055 §27.54	<2.5 ppm	§6.4	Within the frequency range	Pass

Determining compliance shall be based on the results of the compliance measurement, not taking into account measurement instrumentation uncertainty.



## 2.2. Test Environment

Items	Required	Actual	Test Site
Temperature (°C)	15-35	23	2 & 3
Humidity (%RH)	25-75	52	

Note: Test site information refers to Laboratory Information.

## Laboratory Information

**USA** : **FCC Registration Number: TW3024**  
**Canada** : **IC Registration Number: 22397-1 / 22397-2 / 22397-3**

The address and introduction of DEKRA Testing and Certification Co., Ltd. laboratories can be founded in our Web site: <http://www.dekra.com.tw>

If you have any comments, please don't hesitate to contact us. Our test sites as below:

Test Laboratory	DEKRA Testing and Certification Co., Ltd.
Address	1. No. 75-2, 3rd Lin, WangYe Keng, Yonghxing Tsuen, Qionglin Shiang, Hsinchu County 307, Taiwan, R.O.C. 2. No.372, Sec. 4, Zhongxing Rd., Zhudong Township, Hsinchu County 31061, Taiwan, R.O.C. 3. No.372-2, Sec. 4, Zhongxing Rd., Zhudong Township, Hsinchu County 31061, Taiwan, R.O.C.
Phone number	1. +886-3-592-8858 2. +886-3-582-8001 3. +886-3-582-8001
Fax number	1. +886-3-592-8859 2. +886-3-582-8958 3. +886-3-582-8958
E mail address	<a href="mailto:info.tw@dekra.com">info.tw@dekra.com</a>
Website	<a href="http://www.dekra.com.tw">http://www.dekra.com.tw</a>

### 2.3. List of Test Equipment

#### RF Output Power / SR12-H

Instrument	Manufacturer	Model No.	Serial No.	Cal. Date	Next Cal. Date
High Speed Peak Power Meter Dual Input	Anritsu	ML2496A	1602004	2019/12/02	2020/12/01
Pulse Power Sensor	Anritsu	MA2411B	1531043	2019/12/02	2020/12/01
Pulse Power Sensor	Anritsu	MA2411B	1531044	2019/12/02	2020/12/01
Wireless Conn. Tseter	R&S	CMW500	157118	2019/08/08	2020/08/07
Wideband Radio Communication Tester	R&S	CMW500	106071	2020/02/03	2021/02/02

#### Occupied Bandwidth / SR12-H

Instrument	Manufacturer	Model No.	Serial No.	Cal. Date	Next Cal. Date
Signal & Spectrum Analyzer	R&S	FSV40	101049	2019/09/11	2020/09/10
EXA Signal Analyzer	Keysight	N9010A	MY51440132	2019/03/15	2020/03/14
Spectrum Analyzer	Keysight	N9030B	MY57140404	2019/06/18	2020/06/17
Spectrum Analyzer	Keysight	N9010B	MY57110159	2019/05/03	2020/05/02
Wireless Conn. Tseter	R&S	CMW500	157118	2019/08/08	2020/08/07
Wideband Radio Communication Tester	R&S	CMW500	106071	2020/02/03	2021/02/02

#### Peak To Average Ratio / SR12-H

Instrument	Manufacturer	Model No.	Serial No.	Cal. Date	Next Cal. Date
Signal & Spectrum Analyzer	R&S	FSV40	101049	2019/09/11	2020/09/10
EXA Signal Analyzer	Keysight	N9010A	MY51440132	2019/03/15	2020/03/14
Spectrum Analyzer	Keysight	N9030B	MY57140404	2019/06/18	2020/06/17
Spectrum Analyzer	Keysight	N9010B	MY57110159	2019/05/03	2020/05/02
Wireless Conn. Tseter	R&S	CMW500	157118	2019/08/08	2020/08/07
Wideband Radio Communication Tester	R&S	CMW500	106071	2020/02/03	2021/02/02

## Conducted Spurious Emissions / SR12-H

Instrument	Manufacturer	Model No.	Serial No.	Cal. Date	Next Cal. Date
Signal & Spectrum Analyzer	R&S	FSV40	101049	2019/09/11	2020/09/10
EXA Signal Analyzer	Keysight	N9010A	MY51440132	2019/03/15	2020/03/14
Spectrum Analyzer	Keysight	N9030B	MY57140404	2019/06/18	2020/06/17
Spectrum Analyzer	Keysight	N9010B	MY57110159	2019/05/03	2020/05/02
Wireless Conn. Tseter	R&S	CMW500	157118	2019/08/08	2020/08/07
Wideband Radio Communication Tester	R&S	CMW500	106071	2020/02/03	2021/02/02

## Radiated Spurious Emissions / CB2-H

Instrument	Manufacturer	Model No.	Serial No.	Cal. Date	Next Cal. Date
Horn Antenna	Schwarzbeck	BBHA 9120D	639	2019/05/28	2020/05/27
Bilog Antenna	Teseq	CBL6112D	23191	2019/06/17	2020/06/16
Signal & Spectrum Analyzer	R&S	FSV40	101049	2019/09/11	2020/09/10
EXA Signal Analyzer	Keysight	N9010A	MY51440132	2019/03/15	2020/03/14
Signal Analyzer	R&S	FSVA40	101455	2019/10/21	2020/10/20
Horn Antenna	Schwarzbeck	BBHA 9170	202	2019/12/27	2020/12/26
Pre-Amplifier	DEKRA	AP-400C	201801231	2019/12/03	2020/12/02
Pre-Amplifier	EMCI	EMC11830I	980366	2019/12/03	2020/12/02
Horn Antenna	Schwarzbeck	BBHA 9120D	01656	2019/10/25	2020/10/24
Pre-Amplifier	DEKRA	AP-025C	12183122	2019/09/24	2020/09/23
Signal Analyzer	R&S	FSV40	101435	2019/07/08	2020/07/07
Wideband Radio Communication Tester	R&S	CMW500	106071	2020/02/03	2021/02/02
Wireless Conn. Tseter	R&S	CMW500	157118	2019/08/08	2020/08/07
Coaxial Cable(16m)	Huber+Suhner	SF104	CB2-H	2019/07/25	2020/07/24
EMI system	DEKRA	Version 1.0	CB2-H	NA	NA

## Spurious Emissions at Antenna Terminals / SR12-H

Instrument	Manufacturer	Model No.	Serial No.	Cal. Date	Next Cal. Date
Signal & Spectrum Analyzer	R&S	FSV40	101049	2019/09/11	2020/09/10
EXA Signal Analyzer	Keysight	N9010A	MY51440132	2019/03/15	2020/03/14
Spectrum Analyzer	Keysight	N9030B	MY57140404	2019/06/18	2020/06/17
Spectrum Analyzer	Keysight	N9010B	MY57110159	2019/05/03	2020/05/02
Wireless Conn. Tseter	R&S	CMW500	157118	2019/08/08	2020/08/07
Wideband Radio Communication Tester	R&S	CMW500	106071	2020/02/03	2021/02/02

## Frequency Stability / SR12-H

Instrument	Manufacturer	Model No.	Serial No.	Cal. Date	Next Cal. Date
Signal & Spectrum Analyzer	R&S	FSV40	101049	2019/09/11	2020/09/10
EXA Signal Analyzer	Keysight	N9010A	MY51440132	2019/03/15	2020/03/14
Spectrum Analyzer	Keysight	N9030B	MY57140404	2019/06/18	2020/06/17
Spectrum Analyzer	Keysight	N9010B	MY57110159	2019/05/03	2020/05/02
Wireless Conn. Tseter	R&S	CMW500	157118	2019/08/08	2020/08/07
Wideband Radio Communication Tester	R&S	CMW500	106071	2020/02/03	2021/02/02

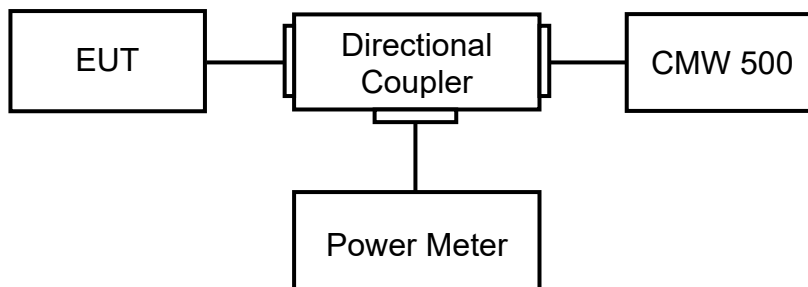
Note: All equipment upon which need to calibrated are with calibration period of 1 year.

## 2.4. Uncertainty

Test Item	Uncertainty
RF Output Power	$\pm 1.27$ dB
Occupied Bandwidth	$\pm 10$ Hz
Peak To Average Ratio	Not exceed 13 dB
Spurious Emissions	$\pm 1.27$ dB for Conducted Measurement $\pm 3.2$ dB for Radiated Measurement
Spurious Emissions at Antenna Terminals	$\pm 3.2$ dB
Frequency Stability	$\pm 10$ Hz

### 3. RF Output Power

#### 3.1. Test Setup



#### 3.2. Test Procedure

- The RF output of the transmitter was connected to base station simulator.
- The RF output of EUT was connected to the spectrum analyzer by RF cable and attenuator. The path loss was compensated to the results for each measurement..
- Set EUT at maximum average power by base station simulator.
- Measure lowest, middle, and highest channels for each bandwidth and different modulation.

Effective Isotropic Radiated Power = Conducted Power(dBm) + Antenna Gain(dBi)

Effective Radiated Power = Conducted Power(dBm) + Antenna Gain(dBi) - 2.15dB

The conversion of dBm to watts is given by the formula:

$$P_{(W)} = 1W \times \frac{10^{\left(\frac{P_{(dBm)}}{10}\right)}}{1000} = 10^{((P_{(dBm)} - 30)/10)}$$

#### 3.3. Test Method

KDB 971168 D01 Power Meas License Digital Systems v03 sub-clause 5.2.4

ANSI C63.26: 2015 Sub-clause 5.2.4.2

### 3.4. Test Result

Product	Module		
Test Item	RF Output Power		
Test Mode	Mode 1 : LTE Cat-M1_Band 2		
Date of Test	2020/01/07	Test Site	SR12-H
Temperature (°C)	22.0	Humidity (%RH)	61.0

Band	Channel Freq. (MHz)	Modulation	RB No.	RB offset	Conducted Output Power (dBm)	RF Output Power (W) EIRP	Limit (W) EIRP
Band 2 1.4MHz	18607 1850.7	QPSK	1	0	23.47	0.352	2
			6	0	21.73	0.236	2
		16-QAM	1	0	22.09	0.256	2
			5	0	21.68	0.233	2
	18900 1880	QPSK	1	0	23.75	0.376	2
			6	0	21.65	0.232	2
		16-QAM	1	0	22.52	0.283	2
			5	0	21.62	0.230	2
	19193 1909.3	QPSK	1	5	23.57	0.361	2
			6	0	21.42	0.220	2
		16-QAM	1	5	22.65	0.292	2
			5	1	21.39	0.218	2

Band	Channel Freq. (MHz)	Modulation	RB No.	RB offset	Conducted Output Power (dBm)	RF Output Power (W) EIRP	Limit (W) EIRP
Band 2 3MHz	18615 1851.5	QPSK	1	0	23.54	0.358	2
			6	0	21.65	0.232	2
		16-QAM	1	0	22.36	0.273	2
			5	0	21.59	0.229	2
	18900 1880	QPSK	1	0	23.57	0.361	2
			6	0	21.63	0.231	2
		16-QAM	1	0	22.35	0.272	2
			5	0	21.62	0.230	2
	19185 1908.5	QPSK	1	5	23.65	0.367	2
			6	0	21.54	0.226	2
		16-QAM	1	5	22.42	0.277	2
			5	1	21.55	0.226	2

Band	Channel Freq. (MHz)	Modulation	RB No.	RB offset	Conducted Output Power (dBm)	RF Output Power (W) EIRP	Limit (W) EIRP
Band 2 5MHz	18625 1852.5	QPSK	1	0	23.48	0.353	2
			6	0	22.62	0.290	2
		16-QAM	1	0	23.50	0.355	2
			5	0	21.46	0.222	2
	18900 1880	QPSK	1	0	23.48	0.353	2
			6	0	22.60	0.288	2
		16-QAM	1	0	23.53	0.357	2
			5	0	21.45	0.221	2
	19175 1907.5	QPSK	1	5	23.46	0.352	2
			6	0	22.59	0.288	2
		16-QAM	1	5	23.40	0.347	2
			5	1	21.33	0.215	2

Band	Channel Freq. (MHz)	Modulation	RB No.	RB offset	Conducted Output Power (dBm)	RF Output Power (W) EIRP	Limit (W) EIRP
Band 2 10MHz	18650 1855	QPSK	1	0	23.50	0.355	2
			6	0	22.61	0.289	2
		16-QAM	1	0	23.46	0.352	2
			5	0	22.45	0.279	2
	18900 1880	QPSK	1	0	23.45	0.351	2
			6	0	22.58	0.287	2
		16-QAM	1	0	23.41	0.348	2
			5	0	22.32	0.270	2
	19150 1905	QPSK	1	5	23.47	0.352	2
			6	0	22.58	0.287	2
		16-QAM	1	5	23.45	0.351	2
			5	1	22.39	0.275	2



Band	Channel Freq. (MHz)	Modulation	RB No.	RB offset	Conducted Output Power (dBm)	RF Output Power (W) EIRP	Limit (W) EIRP
Band 2 15MHz	18675 1857.5	QPSK	1	0	23.44	0.350	2
			6	0	23.40	0.347	2
		16-QAM	1	0	23.37	0.344	2
			5	0	23.32	0.340	2
	18900 1880	QPSK	1	0	23.47	0.352	2
			6	0	23.40	0.347	2
		16-QAM	1	0	23.49	0.354	2
			5	0	23.41	0.348	2
	19125 1902.5	QPSK	1	5	23.47	0.352	2
			6	0	23.39	0.346	2
		16-QAM	1	5	23.46	0.352	2
			5	1	23.29	0.338	2

Band	Channel Freq. (MHz)	Modulation	RB No.	RB offset	Conducted Output Power (dBm)	RF Output Power (W) EIRP	Limit (W) EIRP
Band 2 20MHz	18700 1860	QPSK	1	0	23.48	0.353	2
			6	0	23.40	0.347	2
		16-QAM	1	0	23.41	0.348	2
			5	0	23.34	0.342	2
	18900 1880	QPSK	1	0	23.46	0.352	2
			6	0	23.38	0.345	2
		16-QAM	1	0	23.54	0.358	2
			5	0	23.47	0.352	2
	19100 1900	QPSK	1	5	23.50	0.355	2
			6	0	23.41	0.348	2
		16-QAM	1	5	23.48	0.353	2
			5	1	23.42	0.348	2

Product	Module		
Test Item	RF Output Power		
Test Mode	Mode 2 : LTE Cat-M1_Band 4		
Date of Test	2020/01/07	Test Site	SR12-H
Temperature (°C)	22.0	Humidity (%RH)	61.0

Band	Channel Freq. (MHz)	Modulation	RB No.	RB offset	Conducted Output Power (dBm)	RF Output Power (W) EIRP	Limit (W) EIRP
Band 4 1.4MHz	19957 1710.7	QPSK	1	0	23.61	0.364	1
			6	0	21.96	0.249	1
		16-QAM	1	0	22.03	0.253	1
			5	0	21.67	0.233	1
	20175 1732.5	QPSK	1	0	23.63	0.366	1
			6	0	21.96	0.249	1
		16-QAM	1	0	22.18	0.262	1
			5	0	21.66	0.232	1
	20393 1754.3	QPSK	1	5	24.26	0.423	1
			6	0	21.78	0.239	1
		16-QAM	1	5	22.84	0.305	1
			5	1	21.65	0.232	1

Band	Channel Freq. (MHz)	Modulation	RB No.	RB offset	Conducted Output Power (dBm)	RF Output Power (W) EIRP	Limit (W) EIRP
Band 4 3MHz	19965 1711.5	QPSK	1	0	23.67	0.369	1
			6	0	21.72	0.236	1
		16-QAM	1	0	22.34	0.272	1
			5	0	21.88	0.244	1
	20175 1732.5	QPSK	1	0	23.68	0.370	1
			6	0	21.73	0.236	1
		16-QAM	1	0	22.44	0.278	1
			5	0	21.85	0.243	1
	20385 1753.5	QPSK	1	5	23.94	0.393	1
			6	0	21.79	0.239	1
		16-QAM	1	5	22.72	0.296	1
			5	1	21.76	0.238	1

Band	Channel Freq. (MHz)	Modulation	RB No.	RB offset	Conducted Output Power (dBm)	RF Output Power (W) EIRP	Limit (W) EIRP
Band 4 5MHz	19975 1712.5	QPSK	1	0	23.65	0.367	1
			6	0	22.78	0.301	1
		16-QAM	1	0	23.62	0.365	1
			5	0	21.53	0.225	1
	20175 1732.5	QPSK	1	0	23.64	0.366	1
			6	0	22.80	0.302	1
		16-QAM	1	0	23.51	0.356	1
			5	0	21.46	0.222	1
	20375 1752.5	QPSK	1	5	23.75	0.376	1
			6	0	22.77	0.300	1
		16-QAM	1	5	23.97	0.395	1
			5	1	21.62	0.230	1

Band	Channel Freq. (MHz)	Modulation	RB No.	RB offset	Conducted Output Power (dBm)	RF Output Power (W) EIRP	Limit (W) EIRP
Band 4 10MHz	20000 1715	QPSK	1	0	23.60	0.363	1
			6	0	22.73	0.297	1
		16-QAM	1	0	23.48	0.353	1
			5	0	22.44	0.278	1
	20175 1732.5	QPSK	1	0	23.63	0.366	1
			6	0	22.77	0.300	1
		16-QAM	1	0	23.50	0.355	1
			5	0	22.42	0.277	1
	20350 1750	QPSK	1	5	23.67	0.369	1
			6	0	22.74	0.298	1
		16-QAM	1	5	23.61	0.364	1
			5	1	22.53	0.284	1

Band	Channel Freq. (MHz)	Modulation	RB No.	RB offset	Conducted Output Power (dBm)	RF Output Power (W) EIRP	Limit (W) EIRP
Band 4 15MHz	20025 1717.5	QPSK	1	0	23.58	0.361	1
			6	0	23.51	0.356	1
		16-QAM	1	0	23.41	0.348	1
			5	0	23.30	0.339	1
	20175 1732.5	QPSK	1	0	23.58	0.361	1
			6	0	23.52	0.356	1
		16-QAM	1	0	23.48	0.353	1
			5	0	23.36	0.344	1
	20325 1747.5	QPSK	1	5	23.68	0.370	1
			6	0	23.59	0.362	1
		16-QAM	1	5	23.64	0.366	1
			5	1	23.40	0.347	1

Band	Channel Freq. (MHz)	Modulation	RB No.	RB offset	Conducted Output Power (dBm)	RF Output Power (W) EIRP	Limit (W) EIRP
Band 4 20MHz	20050 1720	QPSK	1	0	23.59	0.362	1
			6	0	23.53	0.357	1
		16-QAM	1	0	23.39	0.346	1
			5	0	23.30	0.339	1
	20175 1732.5	QPSK	1	0	23.61	0.364	1
			6	0	23.55	0.359	1
		16-QAM	1	0	23.45	0.351	1
			5	0	23.31	0.340	1
	20300 1745	QPSK	1	5	23.64	0.366	1
			6	0	23.59	0.362	1
		16-QAM	1	5	23.64	0.366	1
			5	1	23.36	0.344	1

Product	Module		
Test Item	RF Output Power		
Test Mode	Mode 3 : LTE Cat-M1_Band 5		
Date of Test	2020/01/07	Test Site	SR12-H
Temperature (°C)	22.0	Humidity (%RH)	61.0

Band	Channel Freq. (MHz)	Modulation	RB No.	RB offset	Conducted Output Power (dBm)	RF Output Power (W) ERP	Limit (W) ERP
Band 5 1.4MHz	20407 824.7	QPSK	1	0	23.58	0.220	7
			6	0	21.87	0.149	7
		16-QAM	1	0	22.00	0.153	7
			5	0	21.59	0.139	7
	20525 836.5	QPSK	1	0	23.64	0.223	7
			6	0	21.89	0.149	7
		16-QAM	1	0	22.15	0.158	7
			5	0	21.60	0.140	7
	20643 848.3	QPSK	1	5	23.91	0.238	7
			6	0	21.65	0.141	7
		16-QAM	1	5	22.59	0.175	7
			5	1	21.61	0.140	7

Band	Channel Freq. (MHz)	Modulation	RB No.	RB offset	Conducted Output Power (dBm)	RF Output Power (W) ERP	Limit (W) ERP
Band 5 3MHz	20415 825.5	QPSK	1	0	23.65	0.224	7
			6	0	21.60	0.140	7
		16-QAM	1	0	22.47	0.171	7
			5	0	21.55	0.138	7
	20525 836.5	QPSK	1	0	23.68	0.225	7
			6	0	21.65	0.141	7
		16-QAM	1	0	22.40	0.168	7
			5	0	21.69	0.143	7
	20635 847.5	QPSK	1	5	23.71	0.227	7
			6	0	21.59	0.139	7
		16-QAM	1	5	22.73	0.181	7
			5	1	21.68	0.142	7

Band	Channel Freq. (MHz)	Modulation	RB No.	RB offset	Conducted Output Power (dBm)	RF Output Power (W) ERP	Limit (W) ERP
Band 5 5MHz	20425 826.5	QPSK	1	0	23.59	0.221	7
			6	0	22.65	0.178	7
		16-QAM	1	0	23.53	0.218	7
			5	0	21.45	0.135	7
	20525 836.5	QPSK	1	0	23.56	0.219	7
			6	0	22.70	0.180	7
		16-QAM	1	0	23.70	0.226	7
			5	0	21.89	0.149	7
	20625 846.5	QPSK	1	5	23.64	0.223	7
			6	0	22.71	0.180	7
		16-QAM	1	5	23.70	0.226	7
			5	1	21.55	0.138	7

Band	Channel Freq. (MHz)	Modulation	RB No.	RB offset	Conducted Output Power (dBm)	RF Output Power (W) ERP	Limit (W) ERP
Band 5 10MHz	20450 829	QPSK	1	0	23.60	0.221	7
			6	0	22.56	0.174	7
		16-QAM	1	0	23.67	0.225	7
			5	0	22.58	0.175	7
	20525 836.5	QPSK	1	0	23.60	0.221	7
			6	0	22.69	0.179	7
		16-QAM	1	0	23.56	0.219	7
			5	0	22.42	0.169	7
	20600 844	QPSK	1	5	23.62	0.222	7
			6	0	22.68	0.179	7
		16-QAM	1	5	23.69	0.226	7
			5	1	22.53	0.173	7

Product	Module		
Test Item	RF Output Power		
Test Mode	Mode 4 : LTE Cat-M1_Band 12		
Date of Test	2020/01/07	Test Site	SR12-H
Temperature (°C)	22.0	Humidity (%RH)	61.0

Band	Channel Freq. (MHz)	Modulation	RB No.	RB offset	Conducted Output Power (dBm)	RF Output Power (W) ERP	Limit (W) ERP
Band 12 1.4MHz	23017 699.7	QPSK	1	0	23.63	0.223	3
			6	0	21.77	0.145	3
		16-QAM	1	0	22.59	0.175	3
			5	0	21.32	0.131	3
	23095 707.5	QPSK	1	0	23.65	0.224	3
			6	0	21.98	0.152	3
		16-QAM	1	0	22.19	0.160	3
			5	0	21.46	0.135	3
	23173 715.3	QPSK	1	5	23.79	0.231	3
			6	0	21.91	0.150	3
		16-QAM	1	5	22.93	0.190	3
			5	1	22.08	0.156	3

Band	Channel Freq. (MHz)	Modulation	RB No.	RB offset	Conducted Output Power (dBm)	RF Output Power (W) ERP	Limit (W) ERP
Band 12 3MHz	23025 700.5	QPSK	1	0	23.61	0.222	3
			6	0	21.71	0.143	3
		16-QAM	1	0	22.87	0.187	3
			5	0	21.57	0.139	3
	23095 707.5	QPSK	1	0	23.72	0.228	3
			6	0	21.69	0.143	3
		16-QAM	1	0	22.41	0.168	3
			5	0	21.75	0.145	3
	23165 714.5	QPSK	1	5	23.76	0.230	3
			6	0	21.79	0.146	3
		16-QAM	1	5	23.03	0.194	3
			5	1	21.82	0.147	3

Band	Channel Freq. (MHz)	Modulation	RB No.	RB offset	Conducted Output Power (dBm)	RF Output Power (W) ERP	Limit (W) ERP
Band 12 5MHz	23035 701.5	QPSK	1	0	23.62	0.222	3
			6	0	22.69	0.179	3
		16-QAM	1	0	23.61	0.222	3
			5	0	21.55	0.138	3
	23095 707.5	QPSK	1	0	23.71	0.227	3
			6	0	22.56	0.174	3
		16-QAM	1	0	24.04	0.245	3
			5	0	21.84	0.148	3
	23155 713.5	QPSK	1	5	23.67	0.225	3
			6	0	22.72	0.181	3
		16-QAM	1	5	23.71	0.227	3
			5	1	21.56	0.138	3

Band	Channel Freq. (MHz)	Modulation	RB No.	RB offset	Conducted Output Power (dBm)	RF Output Power (W) ERP	Limit (W) ERP
Band 12 10MHz	23060 704	QPSK	1	0	23.62	0.222	3
			6	0	22.69	0.179	3
		16-QAM	1	0	23.58	0.220	3
			5	0	22.44	0.169	3
	23095 707.5	QPSK	1	0	23.61	0.222	3
			6	0	22.61	0.176	3
		16-QAM	1	0	23.66	0.224	3
			5	0	22.55	0.174	3
	23130 711	QPSK	1	5	23.66	0.224	3
			6	0	22.70	0.180	3
		16-QAM	1	5	23.69	0.226	3
			5	1	22.49	0.171	3



Product	Module		
Test Item	RF Output Power		
Test Mode	Mode 5 : LTE Cat-M1_Band 13		
Date of Test	2020/01/07	Test Site	SR12-H
Temperature (°C)	22.0	Humidity (%RH)	61.0

Band	Channel Freq. (MHz)	Modulation	RB No.	RB offset	Conducted Output Power (dBm)	RF Output Power (W) ERP	Limit (W) ERP
Band 13 5MHz	23205 779.5	QPSK	1	0	23.51	0.217	3
			6	0	22.56	0.174	3
		16-QAM	1	0	23.45	0.214	3
			5	0	21.36	0.132	3
	23230 782	QPSK	1	0	23.52	0.217	3
			6	0	22.57	0.175	3
		16-QAM	1	0	23.53	0.218	3
			5	0	21.44	0.135	3
	23255 784.5	QPSK	1	5	23.58	0.220	3
			6	0	22.62	0.177	3
		16-QAM	1	5	23.63	0.223	3
			5	1	21.41	0.134	3

Band	Channel Freq. (MHz)	Modulation	RB No.	RB offset	Conducted Output Power (dBm)	RF Output Power (W) ERP	Limit (W) ERP
Band 13 10MHz	23230 782	QPSK	1	0	23.51	0.217	3
			6	0	22.55	0.174	3
		16-QAM	1	0	23.45	0.214	3
			5	0	22.31	0.164	3
	23230 782	QPSK	1	5	23.58	0.220	3
			6	0	22.62	0.177	3
		16-QAM	1	5	23.51	0.217	3
			5	1	22.42	0.169	3

Product	Module		
Test Item	RF Output Power		
Test Mode	Mode 6 : LTE Cat-M1_Band 25		
Date of Test	2020/01/08	Test Site	SR12-H
Temperature (°C)	22.0	Humidity (%RH)	63.0

Band	Channel Freq. (MHz)	Modulation	RB No.	RB offset	Conducted Output Power (dBm)	RF Output Power (W) EIRP	Limit (W) EIRP
Band 25 1.4MHz	26047 1850.7	QPSK	1	0	23.58	0.361	2
			6	0	21.84	0.242	2
		16-QAM	1	0	22.15	0.260	2
			5	0	21.72	0.236	2
	26365 1882.5	QPSK	1	0	23.58	0.361	2
			6	0	21.91	0.246	2
		16-QAM	1	0	22.16	0.261	2
			5	0	21.63	0.231	2
	26683 1914.3	QPSK	1	5	23.73	0.374	2
			6	0	21.58	0.228	2
		16-QAM	1	5	22.54	0.284	2
			5	1	21.50	0.224	2

Band	Channel Freq. (MHz)	Modulation	RB No.	RB offset	Conducted Output Power (dBm)	RF Output Power (W) EIRP	Limit (W) EIRP
Band 25 3MHz	26055 1851.5	QPSK	1	0	23.63	0.366	2
			6	0	21.71	0.235	2
		16-QAM	1	0	22.34	0.272	2
			5	0	21.81	0.240	2
	26365 1882.5	QPSK	1	0	23.64	0.366	2
			6	0	21.65	0.232	2
		16-QAM	1	0	22.38	0.274	2
			5	0	21.79	0.239	2
	26675 1913.5	QPSK	1	5	23.69	0.371	2
			6	0	21.54	0.226	2
		16-QAM	1	5	22.48	0.281	2
			5	1	21.56	0.227	2

Band	Channel Freq. (MHz)	Modulation	RB No.	RB offset	Conducted Output Power (dBm)	RF Output Power (W) EIRP	Limit (W) EIRP
Band 25 5MHz	26065 1852.5	QPSK	1	0	23.58	0.361	2
			6	0	22.73	0.297	2
		16-QAM	1	0	23.59	0.362	2
			5	0	21.55	0.226	2
	26365 1882.5	QPSK	1	0	23.58	0.361	2
			6	0	22.70	0.295	2
		16-QAM	1	0	23.56	0.360	2
			5	0	21.55	0.226	2
	26665 1912.5	QPSK	1	5	23.56	0.360	2
			6	0	22.68	0.294	2
		16-QAM	1	5	23.54	0.358	2
			5	1	21.40	0.219	2

Band	Channel Freq. (MHz)	Modulation	RB No.	RB offset	Conducted Output Power (dBm)	RF Output Power (W) EIRP	Limit (W) EIRP
Band 25 10MHz	26090 1855	QPSK	1	0	23.57	0.361	2
			6	0	22.66	0.292	2
		16-QAM	1	0	23.58	0.361	2
			5	0	22.56	0.286	2
	26365 1882.5	QPSK	1	0	23.57	0.361	2
			6	0	22.70	0.295	2
		16-QAM	1	0	23.54	0.358	2
			5	0	22.51	0.282	2
	26640 1910	QPSK	1	5	23.54	0.358	2
			6	0	22.66	0.292	2
		16-QAM	1	5	23.53	0.357	2
			5	1	22.39	0.275	2

Band	Channel Freq. (MHz)	Modulation	RB No.	RB offset	Conducted Output Power (dBm)	RF Output Power (W) EIRP	Limit (W) EIRP
Band 25 15MHz	26115 1857.5	QPSK	1	0	23.53	0.357	2
			6	0	23.47	0.352	2
		16-QAM	1	0	23.57	0.361	2
			5	0	23.54	0.358	2
	26365 1882.5	QPSK	1	0	23.56	0.360	2
			6	0	23.50	0.355	2
		16-QAM	1	0	23.50	0.355	2
			5	0	23.42	0.348	2
	26615 1907.5	QPSK	1	5	23.58	0.361	2
			6	0	23.52	0.356	2
		16-QAM	1	5	23.54	0.358	2
			5	1	23.45	0.351	2

Band	Channel Freq. (MHz)	Modulation	RB No.	RB offset	Conducted Output Power (dBm)	RF Output Power (W) EIRP	Limit (W) EIRP
Band 25 20MHz	26140 1860	QPSK	1	0	23.58	0.361	2
			6	0	23.50	0.355	2
		16-QAM	1	0	23.63	0.366	2
			5	0	23.57	0.361	2
	26365 1882.5	QPSK	1	0	23.59	0.362	2
			6	0	23.52	0.356	2
		16-QAM	1	0	23.62	0.365	2
			5	0	23.55	0.359	2
	26590 1905	QPSK	1	5	23.61	0.364	2
			6	0	23.53	0.357	2
		16-QAM	1	5	23.57	0.361	2
			5	1	23.38	0.345	2

Product	Module		
Test Item	RF Output Power (Part 22)		
Test Mode	Mode 7 : LTE Cat-M1_Band 26		
Date of Test	2020/01/09	Test Site	SR12-H
Temperature (°C)	21.0	Humidity (%RH)	61.0

Band	Channel Freq. (MHz)	Modulation	RB No.	RB offset	Conducted Output Power (dBm)	RF Output Power (W) ERP	Limit (W) ERP
Band 26 1.4MHz	26797 824.7	QPSK	1	0	23.92	0.238	100
			6	0	21.74	0.144	100
		16-QAM	1	0	22.95	0.191	100
			5	0	21.66	0.142	100
	26915 836.5	QPSK	1	0	24.13	0.250	100
			6	0	21.78	0.146	100
		16-QAM	1	0	22.83	0.185	100
			5	0	21.82	0.147	100
	27033 848.3	QPSK	1	5	23.81	0.232	100
			6	0	21.95	0.151	100
		16-QAM	1	5	22.24	0.162	100
			5	1	21.47	0.136	100

Band	Channel Freq. (MHz)	Modulation	RB No.	RB offset	Conducted Output Power (dBm)	RF Output Power (W) ERP	Limit (W) ERP
Band 26 3MHz	26805 825.5	QPSK	1	0	23.79	0.231	100
			6	0	21.78	0.146	100
		16-QAM	1	0	22.42	0.169	100
			5	0	21.90	0.150	100
	26915 836.5	QPSK	1	0	23.84	0.234	100
			6	0	21.79	0.146	100
		16-QAM	1	0	22.49	0.171	100
			5	0	21.94	0.151	100
	27025 847.5	QPSK	1	5	23.97	0.241	100
			6	0	21.85	0.148	100
		16-QAM	1	5	22.73	0.181	100
			5	1	21.85	0.148	100

Band	Channel Freq. (MHz)	Modulation	RB No.	RB offset	Conducted Output Power (dBm)	RF Output Power (W) ERP	Limit (W) ERP
Band 26 5MHz	26815 826.5	QPSK	1	0	23.76	0.230	100
			6	0	22.81	0.185	100
		16-QAM	1	0	23.64	0.223	100
			5	0	21.50	0.136	100
	26915 836.5	QPSK	1	0	23.78	0.231	100
			6	0	22.83	0.185	100
		16-QAM	1	0	23.71	0.227	100
			5	0	21.57	0.139	100
	27015 846.5	QPSK	1	5	23.77	0.230	100
			6	0	22.81	0.185	100
		16-QAM	1	5	23.74	0.229	100
			5	1	21.56	0.138	100

Band	Channel Freq. (MHz)	Modulation	RB No.	RB offset	Conducted Output Power (dBm)	RF Output Power (W) ERP	Limit (W) ERP
Band 26 10MHz	26840 829	QPSK	1	0	23.73	0.228	100
			6	0	22.77	0.183	100
		16-QAM	1	0	23.56	0.219	100
			5	0	22.39	0.167	100
	26915 836.5	QPSK	1	0	23.76	0.230	100
			6	0	22.81	0.185	100
		16-QAM	1	0	23.62	0.222	100
			5	0	22.40	0.168	100
	26990 844	QPSK	1	5	23.75	0.229	100
			6	0	22.78	0.183	100
		16-QAM	1	5	23.84	0.234	100
			5	1	22.51	0.172	100

Band	Channel Freq. (MHz)	Modulation	RB No.	RB offset	Conducted Output Power (dBm)	RF Output Power (W) ERP	Limit (W) ERP
Band 26 15MHz	26865 831.5	QPSK	1	0	23.71	0.227	100
			6	0	23.63	0.223	100
		16-QAM	1	0	23.51	0.217	100
			5	0	23.41	0.212	100
	26915 836.5	QPSK	1	0	23.74	0.229	100
			6	0	23.67	0.225	100
		16-QAM	1	0	23.54	0.218	100
			5	0	23.42	0.212	100
	26965 841.5	QPSK	1	5	23.75	0.229	100
			6	0	23.67	0.225	100
		16-QAM	1	5	23.80	0.232	100
			5	1	23.58	0.220	100

Product	Module		
Test Item	RF Output Power (Part 90)		
Test Mode	Mode 7 : LTE Cat-M1_Band 26		
Date of Test	2020/01/08	Test Site	SR12-H
Temperature (°C)	22.0	Humidity (%RH)	63.0

Band	Channel Freq. (MHz)	Modulation	RB No.	RB offset	Conducted Output Power (dBm)	RF Output Power (W) ERP	Limit (W) ERP
Band 26 1.4MHz	26697 814.7	QPSK	1	0	23.74	0.229	100
			6	0	21.96	0.152	100
		16-QAM	1	0	22.47	0.171	100
			5	0	21.09	0.124	100
	26740 819	QPSK	1	0	23.69	0.226	100
			6	0	21.90	0.150	100
		16-QAM	1	0	22.18	0.160	100
			5	0	21.48	0.136	100
	26783 823.3	QPSK	1	5	23.98	0.242	100
			6	0	21.99	0.153	100
		16-QAM	1	5	23.04	0.195	100
			5	1	22.24	0.162	100

Band	Channel Freq. (MHz)	Modulation	RB No.	RB offset	Conducted Output Power (dBm)	RF Output Power (W) ERP	Limit (W) ERP
Band 26 3MHz	26705 815.5	QPSK	1	0	23.82	0.233	100
			6	0	21.70	0.143	100
		16-QAM	1	0	22.46	0.170	100
			5	0	21.86	0.148	100
	26740 819	QPSK	1	0	23.81	0.232	100
			6	0	21.77	0.145	100
		16-QAM	1	0	22.44	0.169	100
			5	0	21.89	0.149	100
	26775 822.5	QPSK	1	5	23.88	0.236	100
			6	0	21.76	0.145	100
		16-QAM	1	5	22.62	0.177	100
			5	1	21.73	0.144	100



Band	Channel Freq. (MHz)	Modulation	RB No.	RB offset	Conducted Output Power (dBm)	RF Output Power (W) ERP	Limit (W) ERP
Band 26 5MHz	26715 816.5	QPSK	1	0	23.75	0.229	100
			6	0	22.79	0.184	100
		16-QAM	1	0	23.58	0.220	100
			5	0	21.47	0.136	100
	26740 819	QPSK	1	0	23.76	0.230	100
			6	0	22.78	0.183	100
		16-QAM	1	0	23.62	0.222	100
			5	0	21.48	0.136	100
	26765 821.5	QPSK	1	5	23.77	0.230	100
			6	0	22.79	0.184	100
		16-QAM	1	5	23.81	0.232	100
			5	1	21.54	0.138	100

Band	Channel Freq. (MHz)	Modulation	RB No.	RB offset	Conducted Output Power (dBm)	RF Output Power (W) ERP	Limit (W) ERP
Band 26 10MHz	26740 819	QPSK	1	0	23.74	0.229	100
			6	0	22.76	0.182	100
		16-QAM	1	0	23.62	0.222	100
			5	0	22.42	0.169	100
	26740 819	QPSK	1	5	23.77	0.230	100
			6	0	22.79	0.184	100
		16-QAM	1	5	23.65	0.224	100
			5	1	22.43	0.169	100

Product	Module		
Test Item	RF Output Power		
Test Mode	Mode 8 : LTE Cat-M1_Band 66		
Date of Test	2020/01/09	Test Site	SR12-H
Temperature (°C)	21.0	Humidity (%RH)	61.0

Band	Channel Freq. (MHz)	Modulation	RB No.	RB offset	Conducted Output Power (dBm)	RF Output Power (W) EIRP	Limit (W) EIRP
Band 66 1.4MHz	131979 1710.7	QPSK	1	0	23.72	0.373	1
			6	0	22.08	0.256	1
		16-QAM	1	0	22.14	0.259	1
			5	0	21.72	0.236	1
	132322 1745	QPSK	1	0	24.03	0.401	1
			6	0	22.07	0.255	1
		16-QAM	1	0	22.94	0.312	1
			5	0	22.00	0.251	1
	132665 1779.3	QPSK	1	5	24.30	0.427	1
			6	0	21.88	0.244	1
		16-QAM	1	5	22.92	0.310	1
			5	1	21.66	0.232	1

Band	Channel Freq. (MHz)	Modulation	RB No.	RB offset	Conducted Output Power (dBm)	RF Output Power (W) EIRP	Limit (W) EIRP
Band 66 3MHz	131987 1711.5	QPSK	1	0	23.93	0.392	1
			6	0	21.86	0.243	1
		16-QAM	1	0	22.76	0.299	1
			5	0	21.83	0.242	1
	132322 1745	QPSK	1	0	23.76	0.377	1
			6	0	21.89	0.245	1
		16-QAM	1	0	22.43	0.277	1
			5	0	22.00	0.251	1
	132657 1778.5	QPSK	1	5	23.87	0.386	1
			6	0	21.76	0.238	1
		16-QAM	1	5	22.92	0.310	1
			5	1	21.77	0.238	1

Band	Channel Freq. (MHz)	Modulation	RB No.	RB offset	Conducted Output Power (dBm)	RF Output Power (W) EIRP	Limit (W) EIRP
Band 66 5MHz	131997 1712.5	QPSK	1	0	23.80	0.380	1
			6	0	22.91	0.310	1
		16-QAM	1	0	23.68	0.370	1
			5	0	21.62	0.230	1
	132322 1745	QPSK	1	0	23.74	0.375	1
			6	0	22.88	0.308	1
		16-QAM	1	0	23.64	0.366	1
			5	0	21.59	0.229	1
	132647 1777.5	QPSK	1	5	23.77	0.378	1
			6	0	22.90	0.309	1
		16-QAM	1	5	23.67	0.369	1
			5	1	21.64	0.231	1

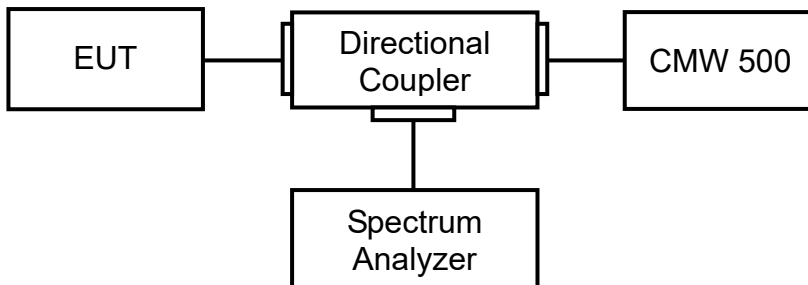
Band	Channel Freq. (MHz)	Modulation	RB No.	RB offset	Conducted Output Power (dBm)	RF Output Power (W) EIRP	Limit (W) EIRP
Band 66 10MHz	132022 1715	QPSK	1	0	23.70	0.372	1
			6	0	22.88	0.308	1
		16-QAM	1	0	23.55	0.359	1
			5	0	22.87	0.307	1
	132322 1745	QPSK	1	0	23.90	0.389	1
			6	0	22.76	0.299	1
		16-QAM	1	0	23.91	0.390	1
			5	0	23.12	0.325	1
	132622 1775	QPSK	1	5	23.77	0.378	1
			6	0	22.87	0.307	1
		16-QAM	1	5	23.71	0.372	1
			5	1	22.61	0.289	1

Band	Channel Freq. (MHz)	Modulation	RB No.	RB offset	Conducted Output Power (dBm)	RF Output Power (W) EIRP	Limit (W) EIRP
Band 66 15MHz	132047 1717.5	QPSK	1	0	23.70	0.372	1
			6	0	23.66	0.368	1
		16-QAM	1	0	23.51	0.356	1
			5	0	23.49	0.354	1
	132322 1745	QPSK	1	0	23.89	0.388	1
			6	0	23.70	0.372	1
		16-QAM	1	0	23.86	0.385	1
			5	0	23.81	0.381	1
	132597 1772.5	QPSK	1	5	23.77	0.378	1
			6	0	23.68	0.370	1
		16-QAM	1	5	23.61	0.364	1
			5	1	23.52	0.356	1

Band	Channel Freq. (MHz)	Modulation	RB No.	RB offset	Conducted Output Power (dBm)	RF Output Power (W) EIRP	Limit (W) EIRP
Band 66 20MHz	132072 1720	QPSK	1	0	23.82	0.382	1
			6	0	23.66	0.368	1
		16-QAM	1	0	23.81	0.381	1
			5	0	23.77	0.378	1
	132322 1745	QPSK	1	0	23.84	0.384	1
			6	0	23.67	0.369	1
		16-QAM	1	0	23.83	0.383	1
			5	0	23.80	0.380	1
	132572 1770	QPSK	1	5	23.88	0.387	1
			6	0	23.75	0.376	1
		16-QAM	1	5	23.85	0.385	1
			5	1	23.80	0.380	1

#### 4. Occupied Bandwidth

##### 4.1. Test Setup



##### 4.2. Test Procedure

1. The EUT was connected to Spectrum Analyzer and Base Station via power divider.
2. The RF output of EUT was connected to the spectrum analyzer by RF cable and attenuator. The path loss was compensated to the results for each measurement.
3. The 26 dB bandwidth and 99% occupied bandwidth of the low & middle & high channel for the highest RF powers were measured.

##### 4.3. Test Method

KDB 971168 D01 Power Meas License Digital Systems v03 sub-clause 4.2 & 4.3  
ANSI C63.26: 2015 Sub-clause 5.4.3 & 5.4.4

**4.4. Test Result**

Product	Module		
Test Item	Occupied Bandwidth		
Test Mode	Mode 1 : LTE Cat-M1_Band 2		
Date of Test	2020/01/10~2020/01/13	Test Site	SR12-H
Temperature (°C)	22.0	Humidity (%RH)	62.0

LTE Band 2_1RB Low/high					
Bandwidth (MHz)	Modulation	Frequency (MHz)	Measure Level (MHz)		Limit (MHz)
			26dB BW	99% BW	
1.4M	QPSK	1850.7	0.366	0.255	N/A
		1880	0.390	0.265	N/A
		1909.3	0.358	0.257	N/A
	16-QAM	1850.7	0.364	0.271	N/A
		1880	0.399	0.291	N/A
		1909.3	0.379	0.300	N/A
3M	QPSK	1851.5	0.399	0.284	N/A
		1880	0.394	0.282	N/A
		1908.5	0.621	0.529	N/A
	16-QAM	1851.5	0.366	0.271	N/A
		1880	0.353	0.266	N/A
		1908.5	0.543	0.530	N/A
5M	QPSK	1852.5	0.357	0.267	N/A
		1880	0.356	0.263	N/A
		1907.5	0.365	0.252	N/A
	16-QAM	1852.5	0.389	0.288	N/A
		1880	0.399	0.288	N/A
		1907.5	0.362	0.272	N/A
10M	QPSK	1855	0.320	0.238	N/A
		1880	0.332	0.241	N/A
		1905	0.360	0.255	N/A
	16-QAM	1855	0.365	0.243	N/A
		1880	0.354	0.243	N/A
		1905	0.391	0.296	N/A

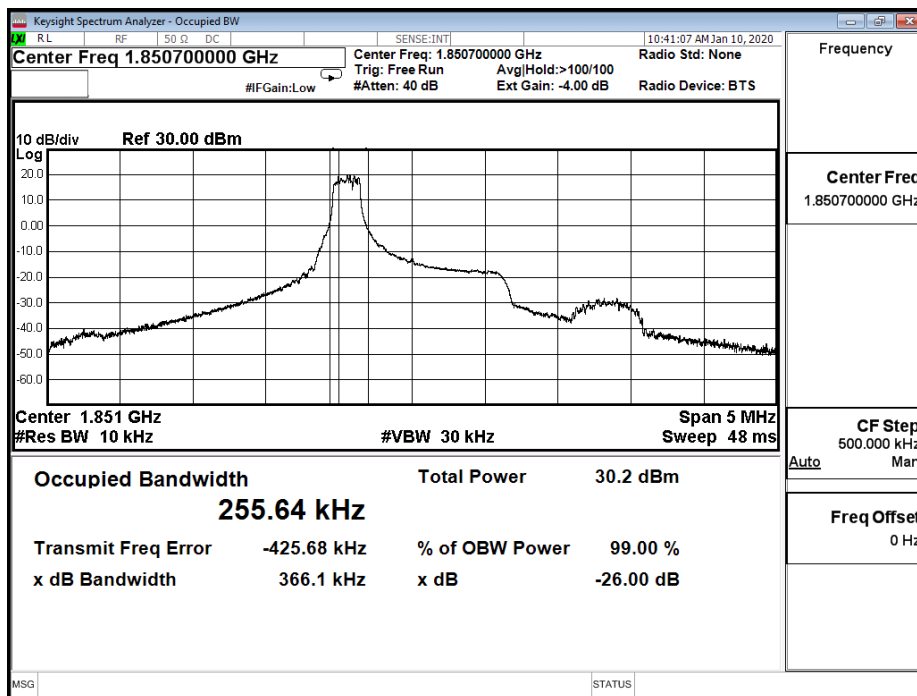
LTE Band 2_1RB Low/high					
Bandwidth (MHz)	Modulation	Frequency (MHz)	Measure Level (MHz)		Limit (MHz)
			26dB BW	99% BW	
15M	QPSK	1857.5	0.350	0.255	N/A
		1880	0.329	0.249	N/A
		1902.5	0.341	0.257	N/A
	16-QAM	1857.5	0.351	0.272	N/A
		1880	0.452	0.310	N/A
		1902.5	0.391	0.276	N/A
20M	QPSK	1860	0.351	0.268	N/A
		1880	0.359	0.264	N/A
		1900	0.380	0.265	N/A
	16-QAM	1860	0.377	0.271	N/A
		1880	0.372	0.276	N/A
		1900	0.366	0.262	N/A

LTE Band 2_Full RB					
Bandwidth (MHz)	Modulation	Frequency (MHz)	Measure Level (MHz)		Limit (MHz)
			26dB BW	99% BW	
1.4M	QPSK	1850.7	1.334	1.116	N/A
		1880	1.319	1.111	N/A
		1909.3	1.389	1.114	N/A
	16-QAM	1850.7	1.292	0.964	N/A
		1880	1.284	0.955	N/A
		1909.3	1.292	0.990	N/A
3M	QPSK	1851.5	1.342	1.110	N/A
		1880	1.320	1.109	N/A
		1908.5	1.314	1.114	N/A
	16-QAM	1851.5	1.266	0.952	N/A
		1880	1.285	0.951	N/A
		1908.5	1.283	0.961	N/A
5M	QPSK	1852.5	1.316	1.113	N/A
		1880	1.321	1.115	N/A
		1907.5	1.302	1.100	N/A
	16-QAM	1852.5	1.309	0.974	N/A
		1880	1.307	0.978	N/A
		1907.5	1.296	1.004	N/A
10M	QPSK	1855	1.316	1.103	N/A
		1880	1.310	1.104	N/A
		1905	1.316	1.106	N/A
	16-QAM	1855	1.308	0.980	N/A
		1880	1.311	0.980	N/A
		1905	1.288	0.951	N/A

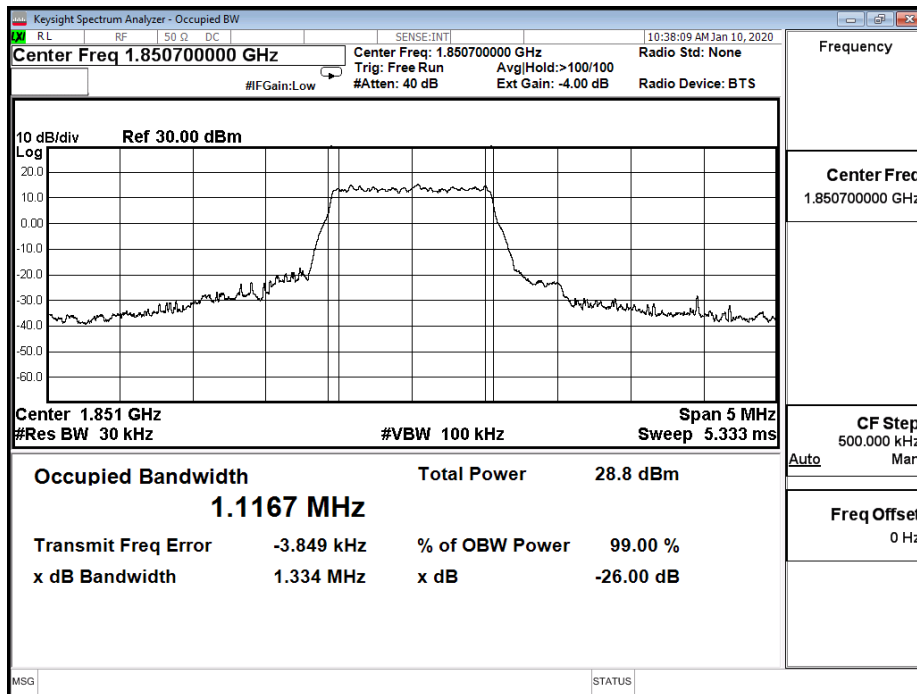


LTE Band 2_Full RB					
Bandwidth (MHz)	Modulation	Frequency (MHz)	Measure Level (MHz)		Limit (MHz)
			26dB BW	99% BW	
15M	QPSK	1857.5	1.332	1.118	N/A
		1880	1.326	1.108	N/A
		1902.5	1.326	1.114	N/A
	16-QAM	1857.5	1.298	0.970	N/A
		1880	1.304	0.962	N/A
		1902.5	1.384	0.979	N/A
20M	QPSK	1860	1.310	1.113	N/A
		1880	1.316	1.111	N/A
		1900	1.318	1.103	N/A
	16-QAM	1860	1.307	0.981	N/A
		1880	1.307	0.978	N/A
		1900	1.300	1.000	N/A

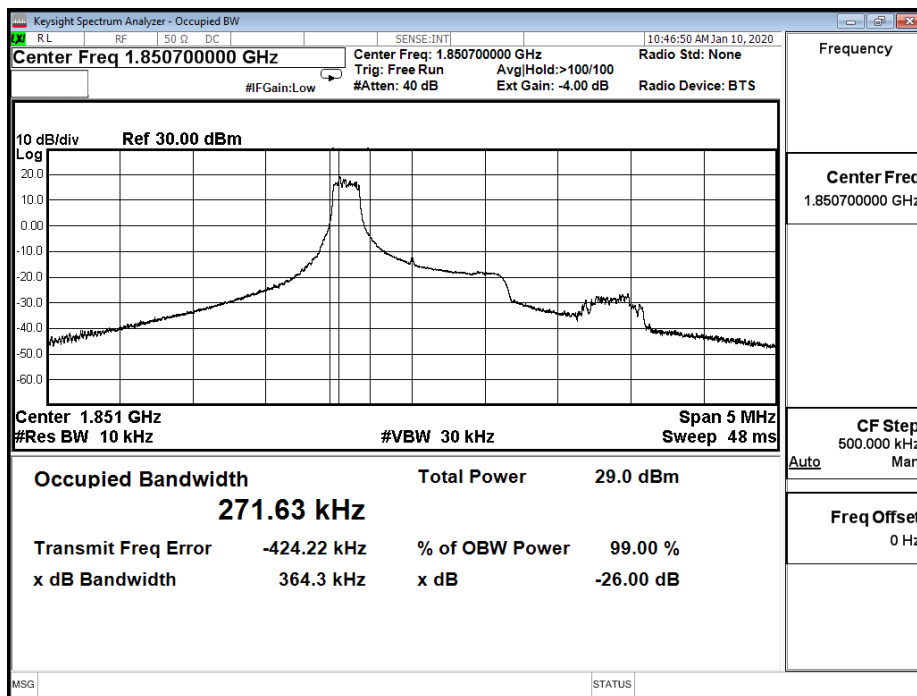
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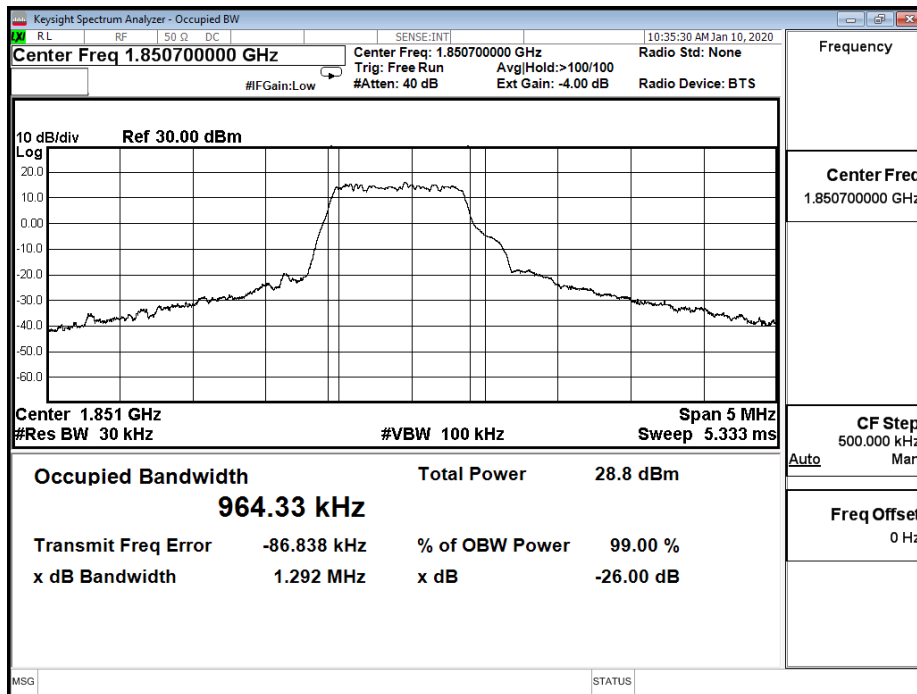
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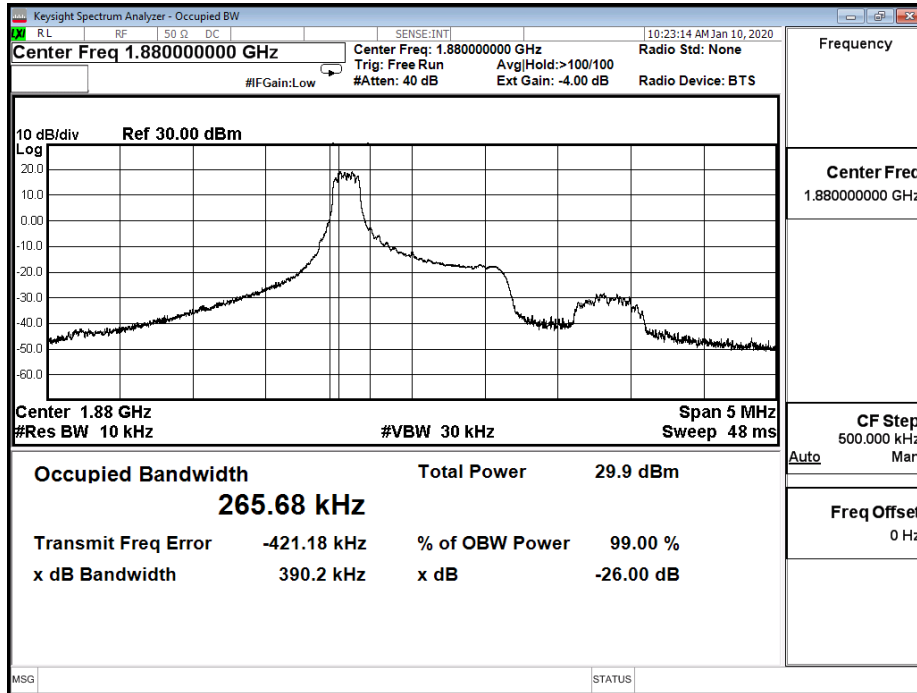
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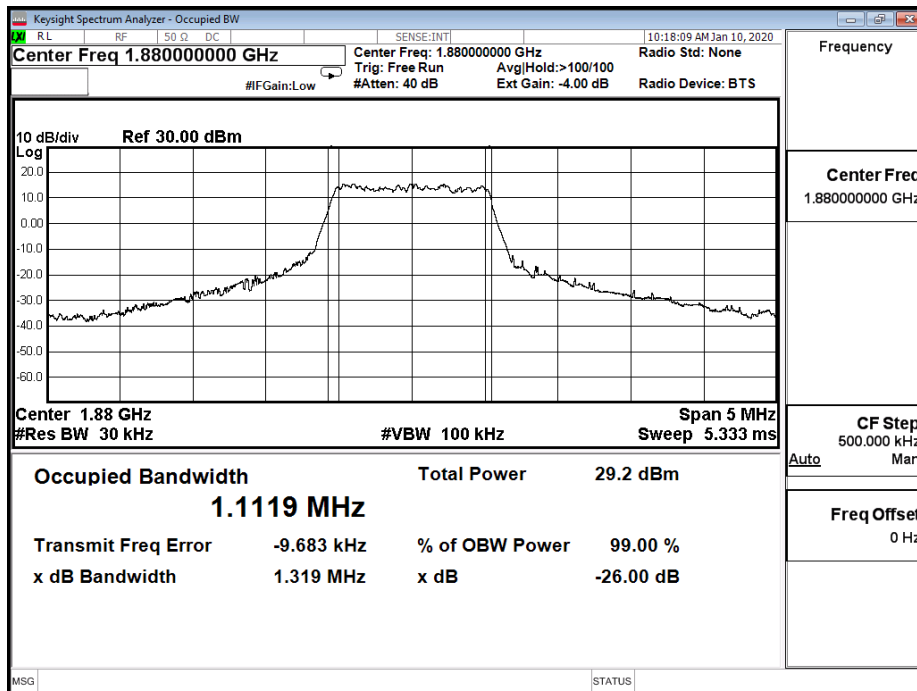
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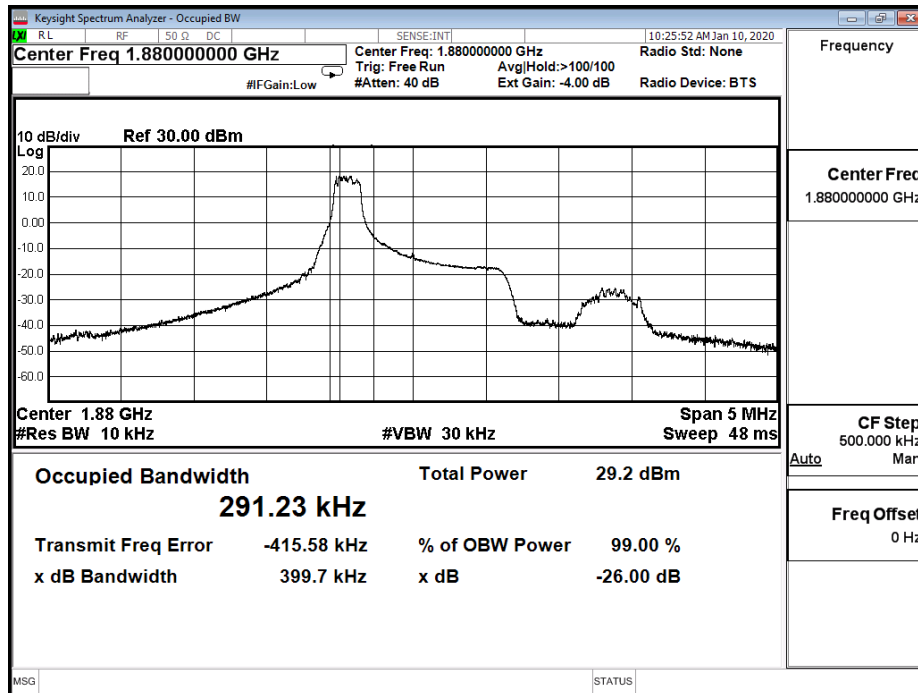
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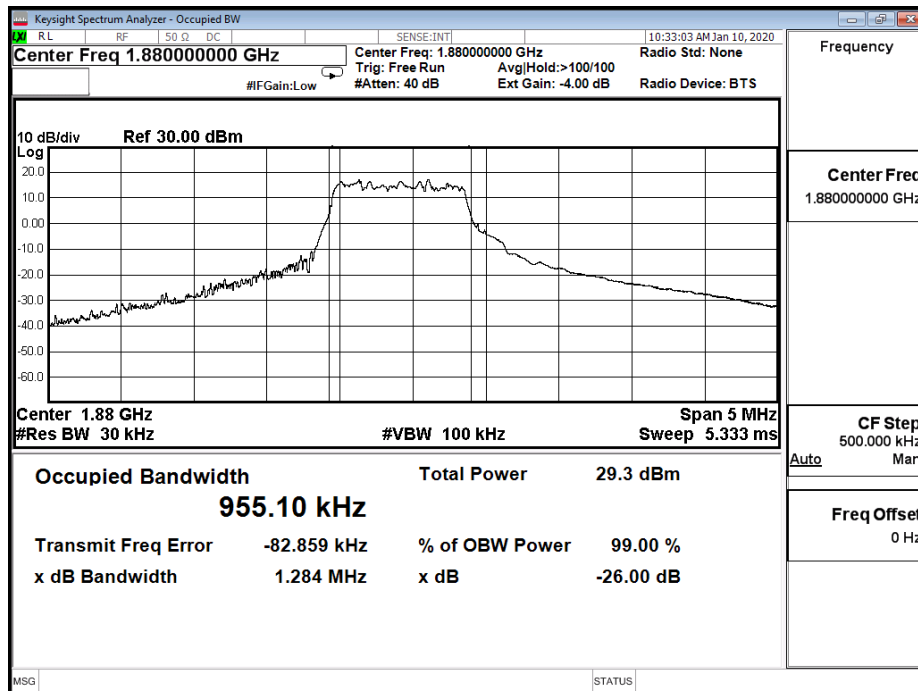
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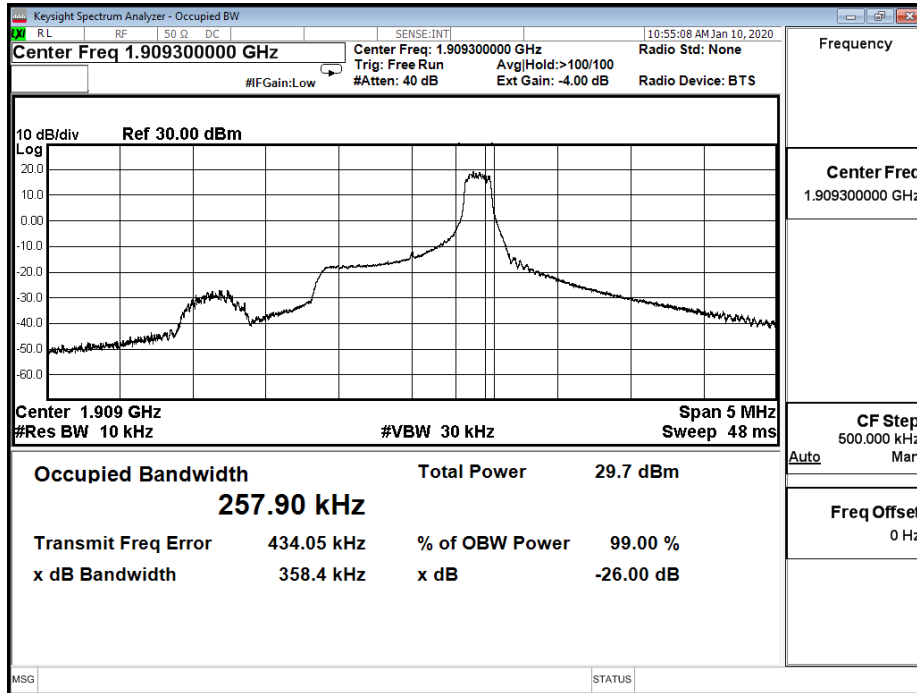
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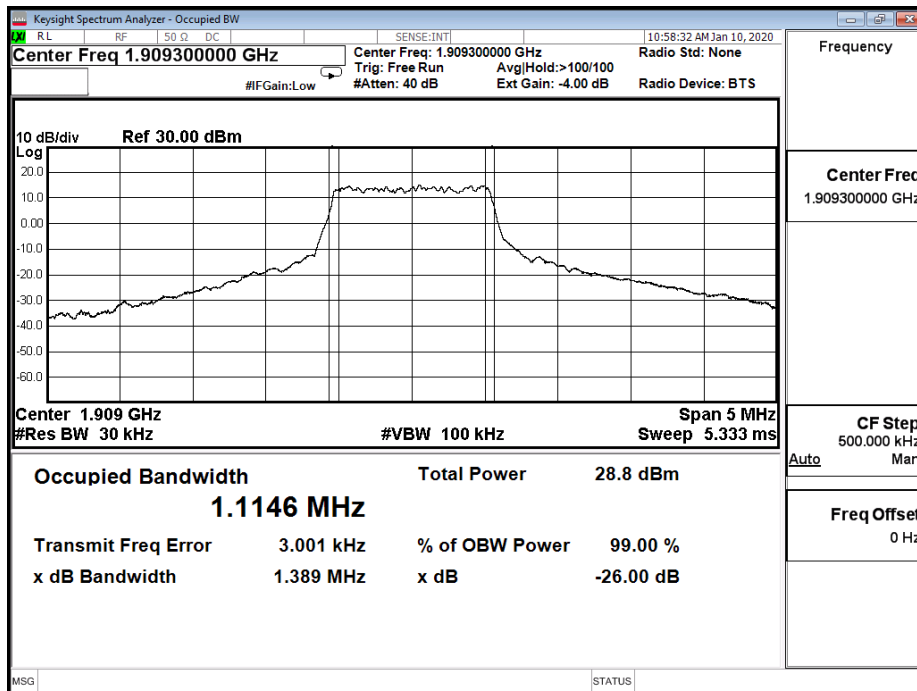
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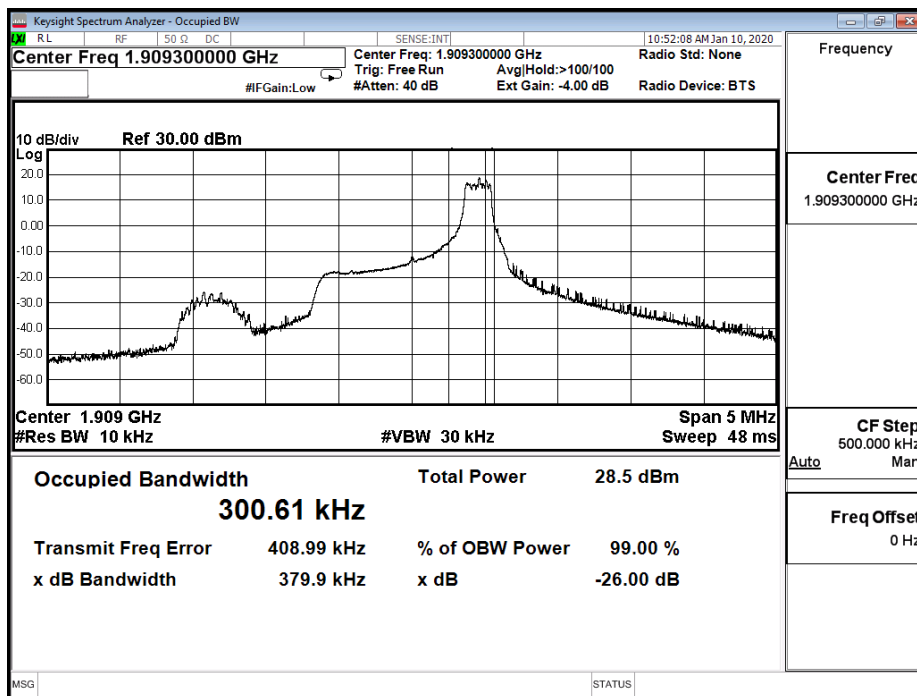
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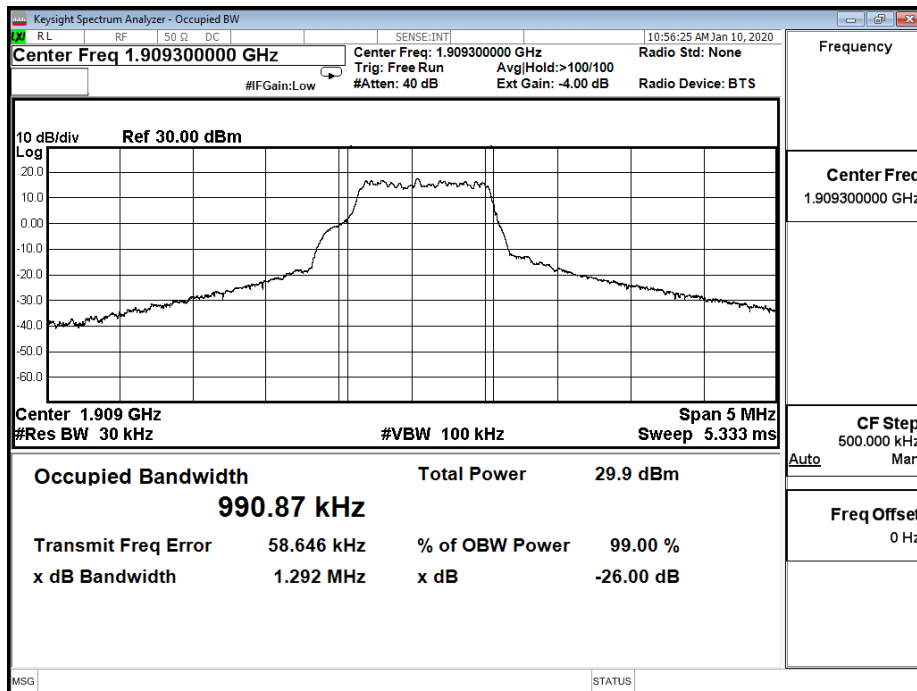
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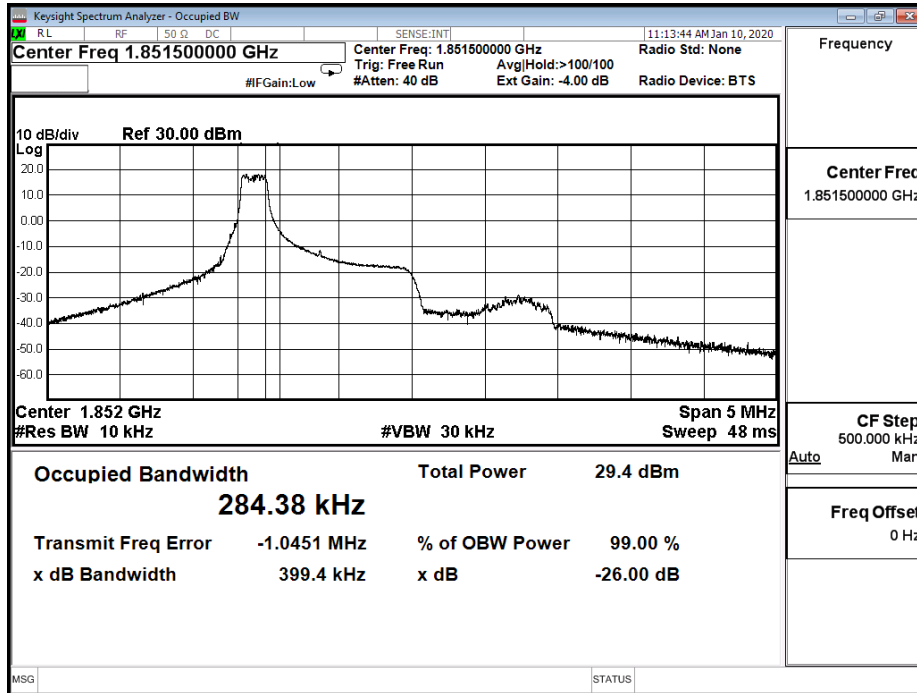
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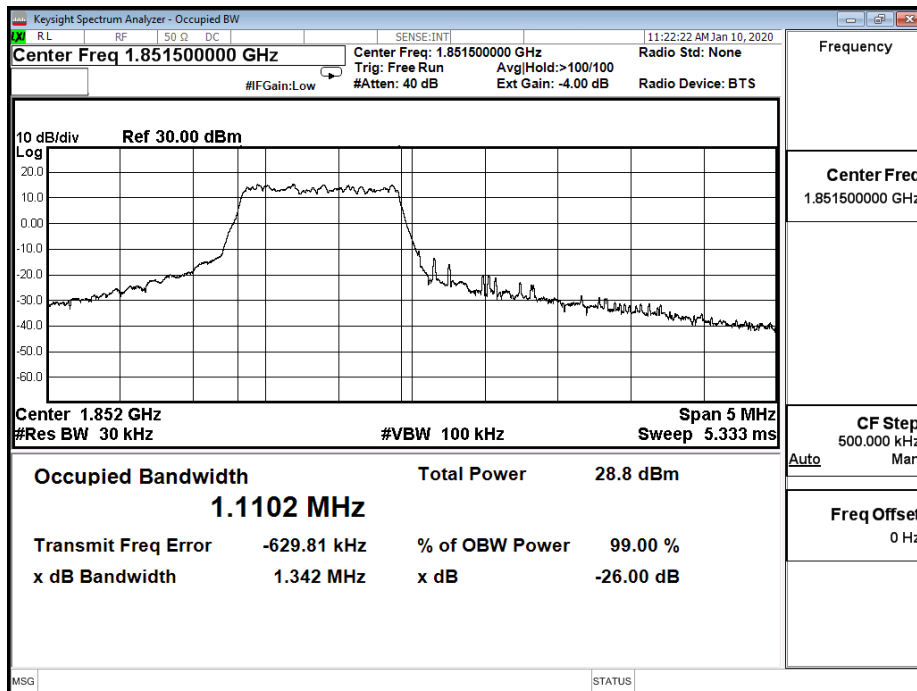
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### B2\_CH18615\_3M\_QPSK\_1RB0

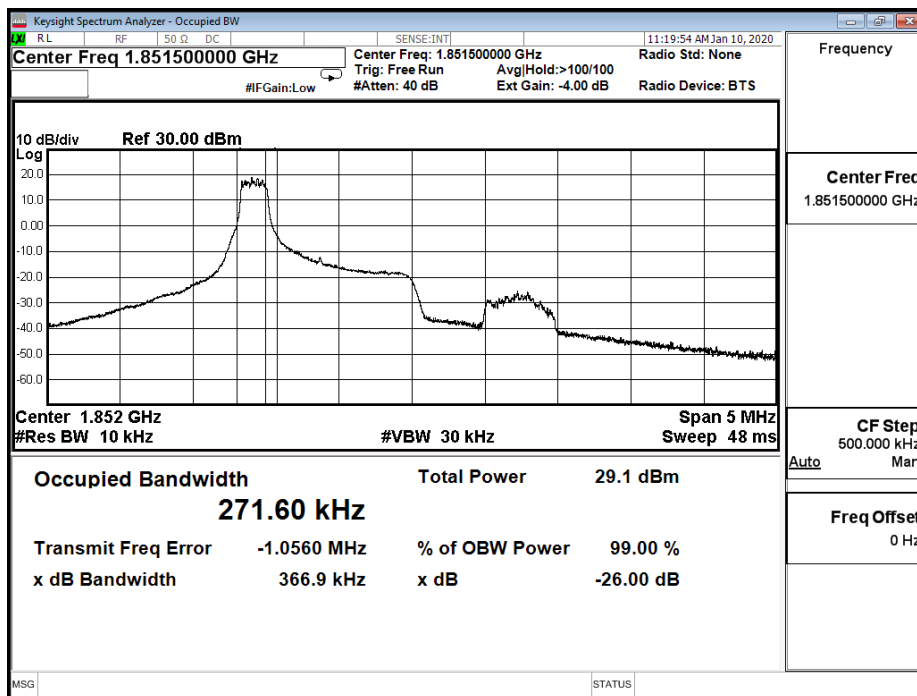


### B2\_CH18615\_3M\_QPSK\_6RB0

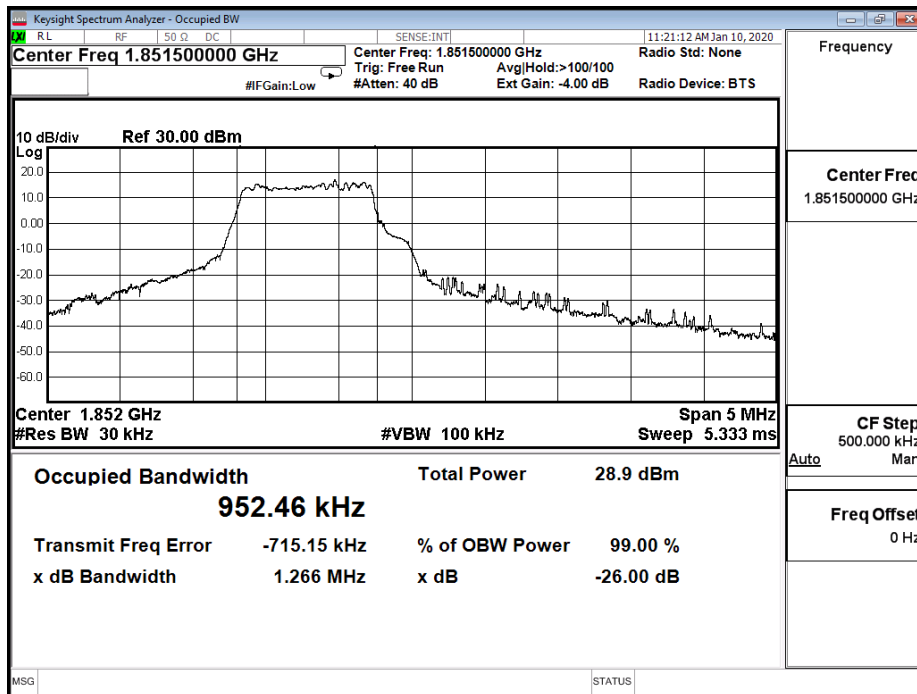




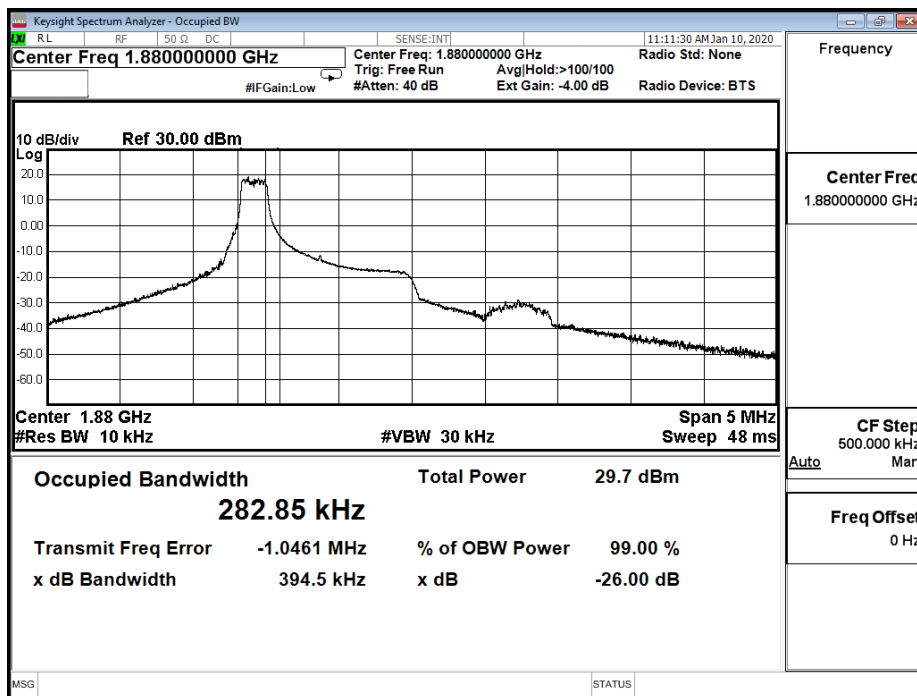
B2\_CH18615\_3M\_16-QAM\_1RB0



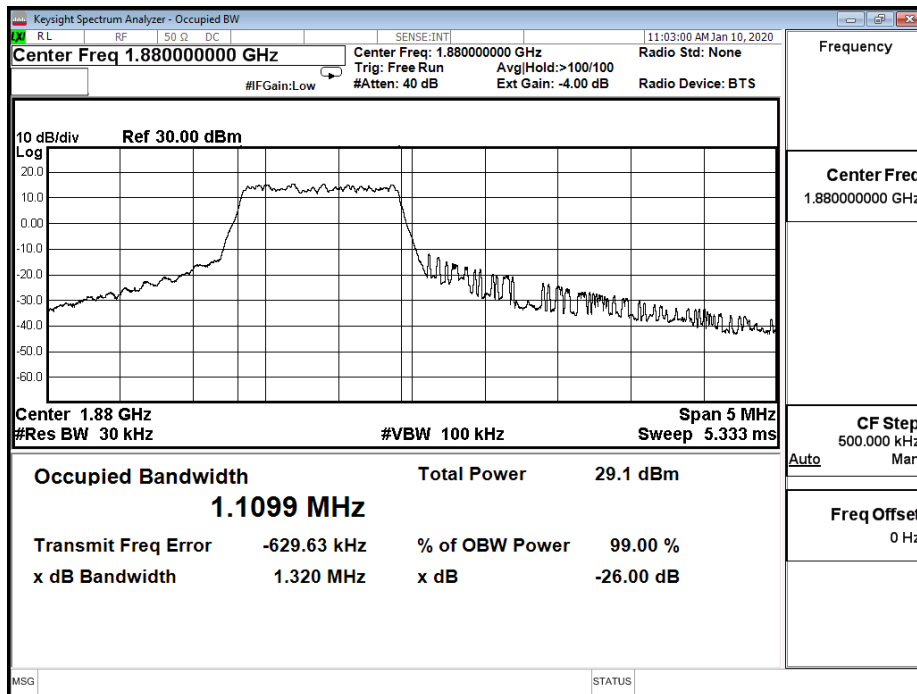
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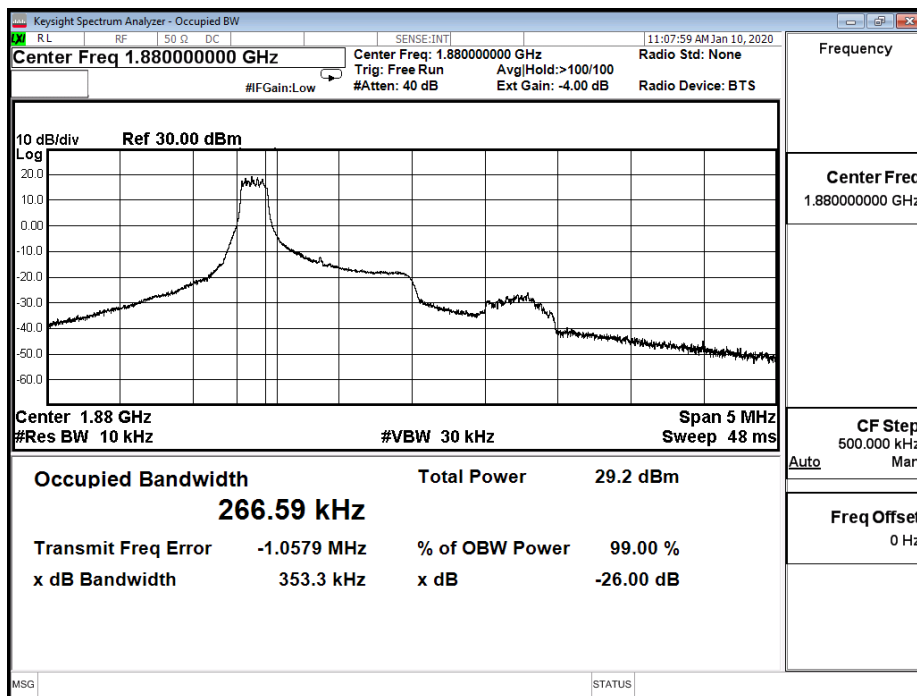
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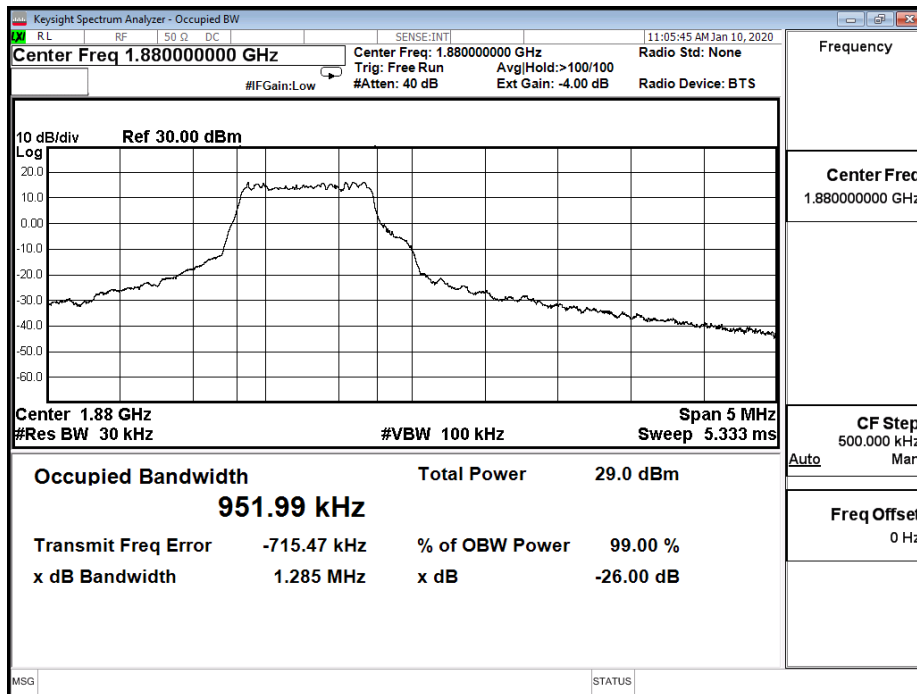
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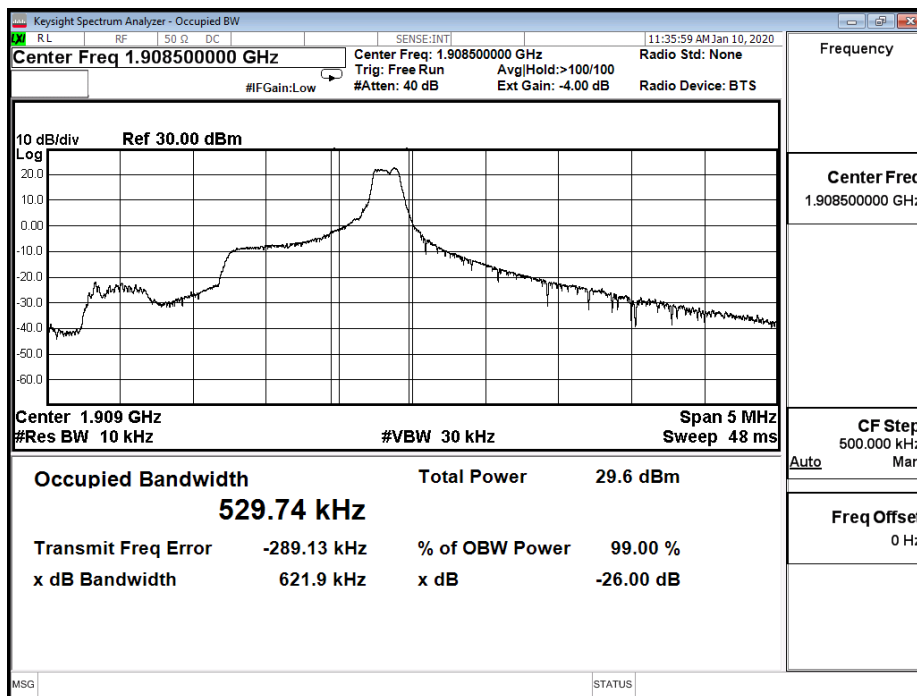
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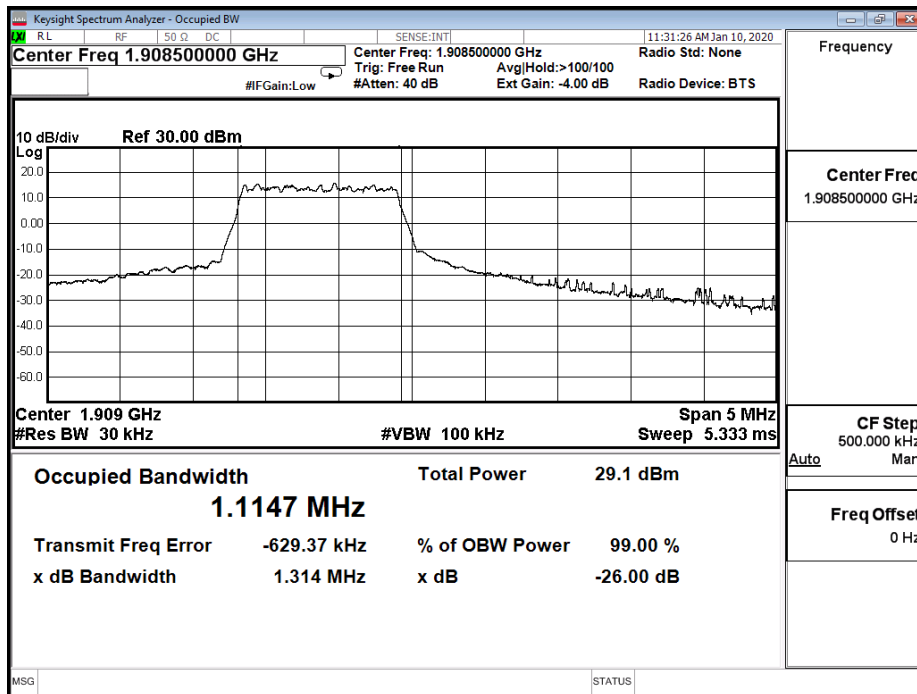
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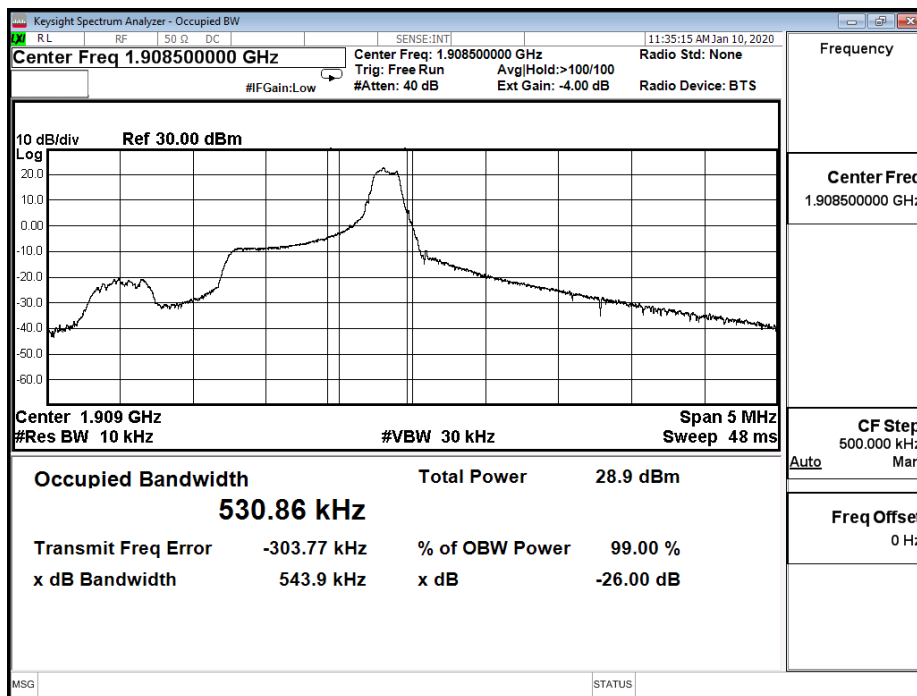
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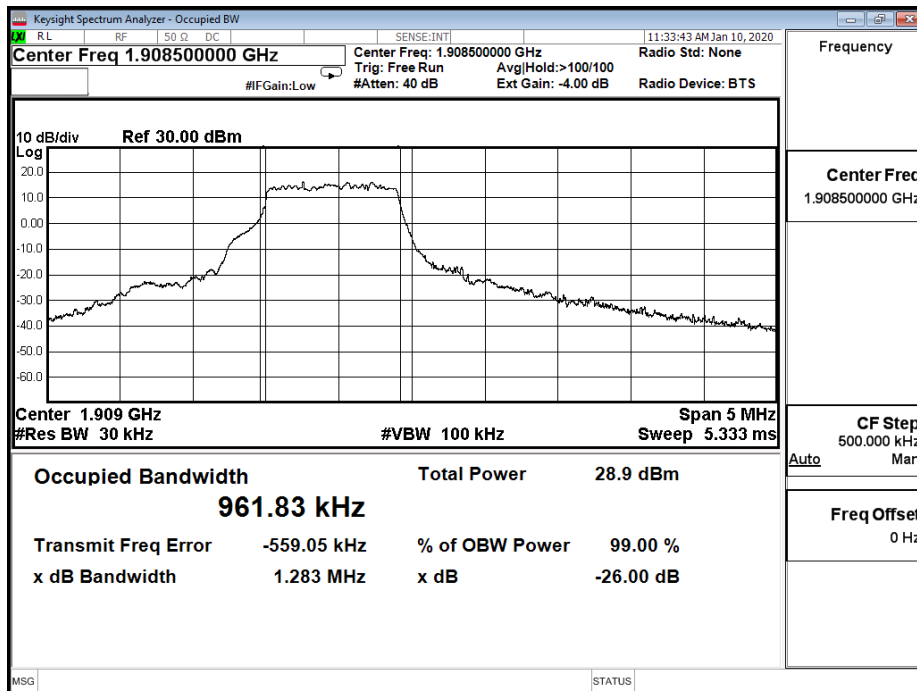
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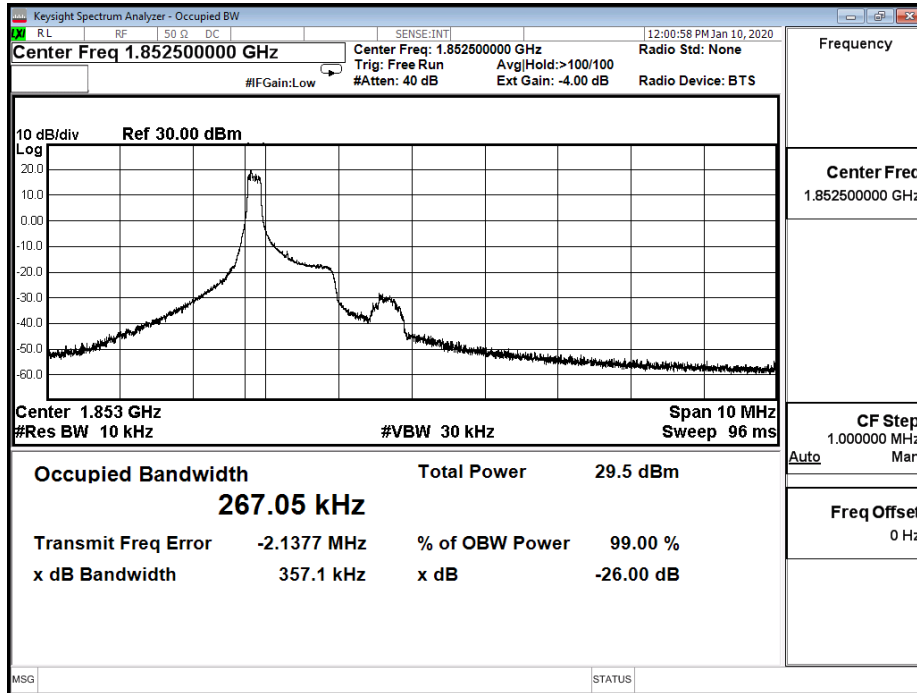
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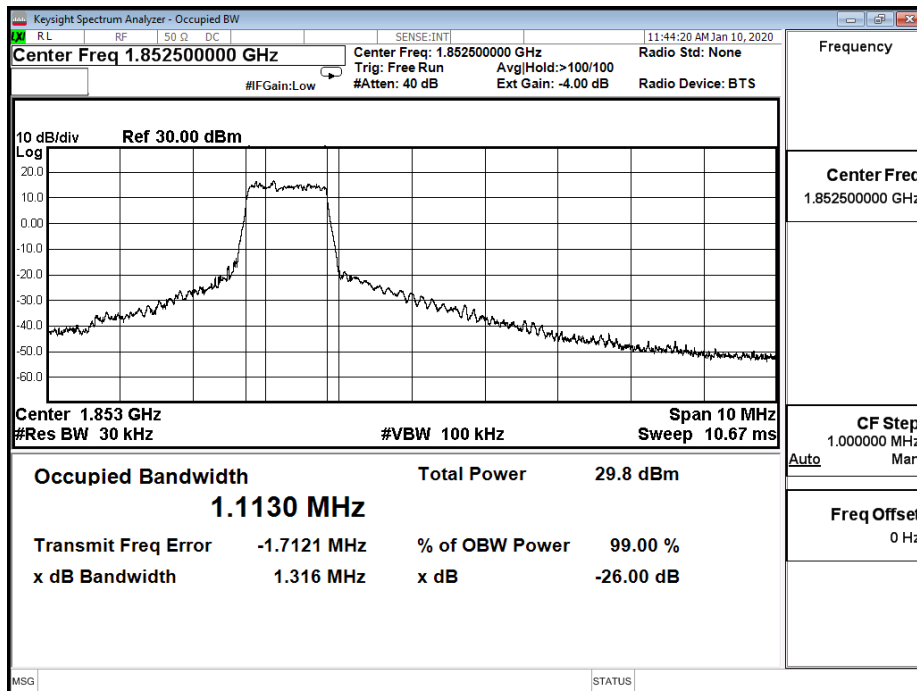
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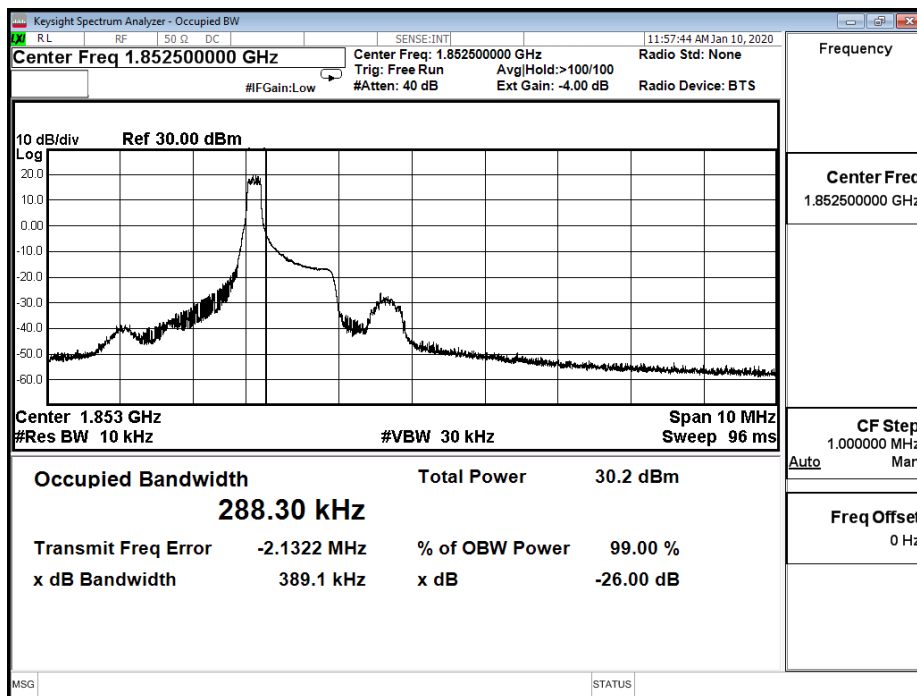
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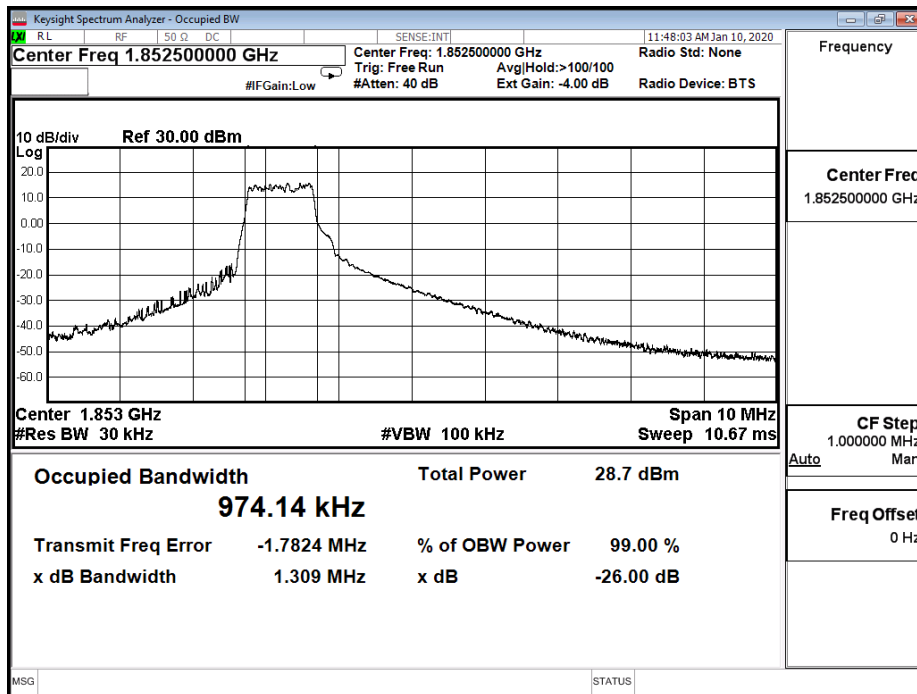
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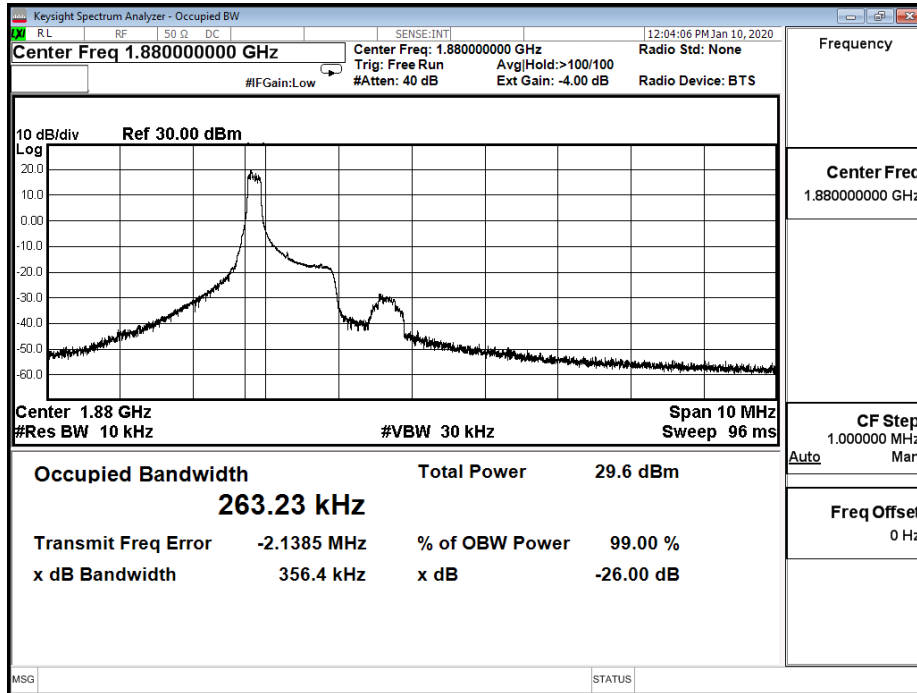
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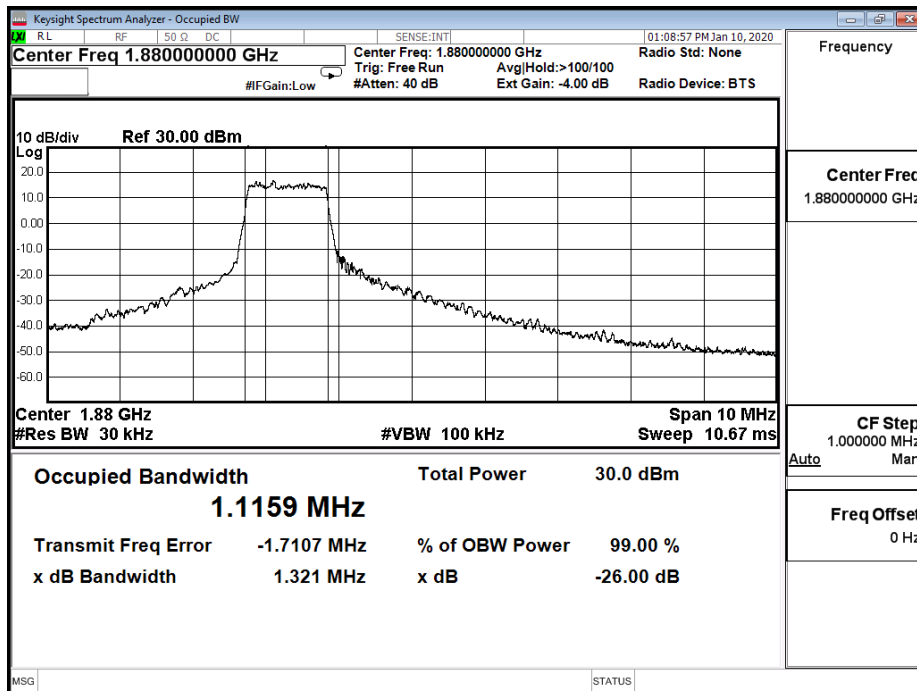
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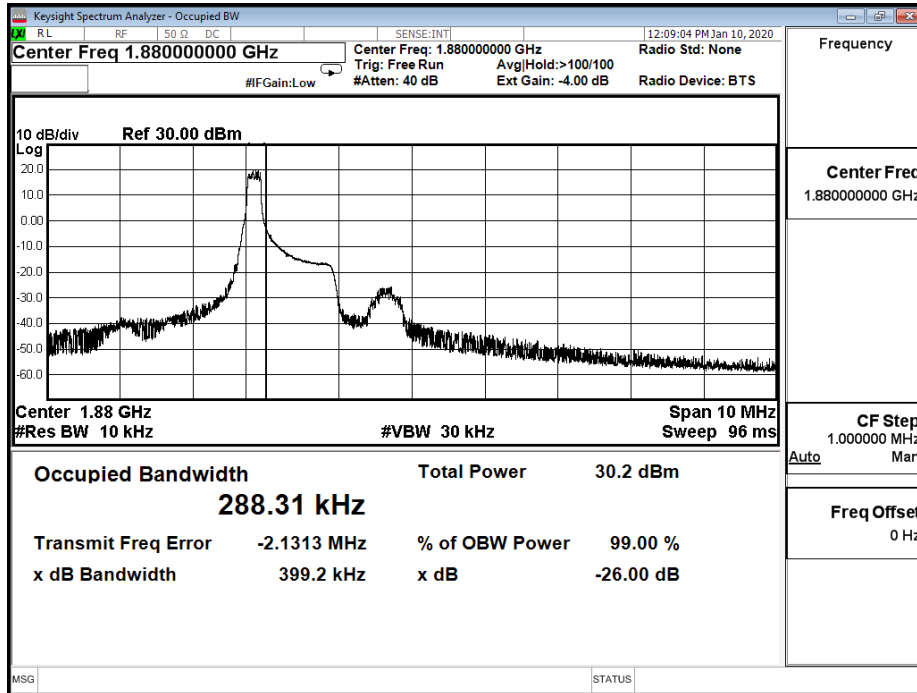


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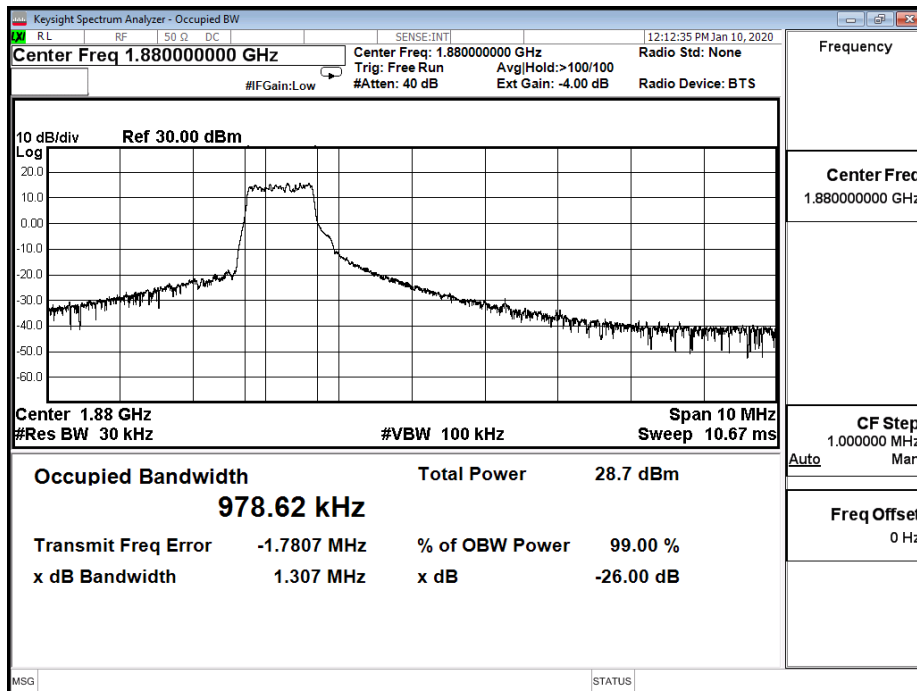




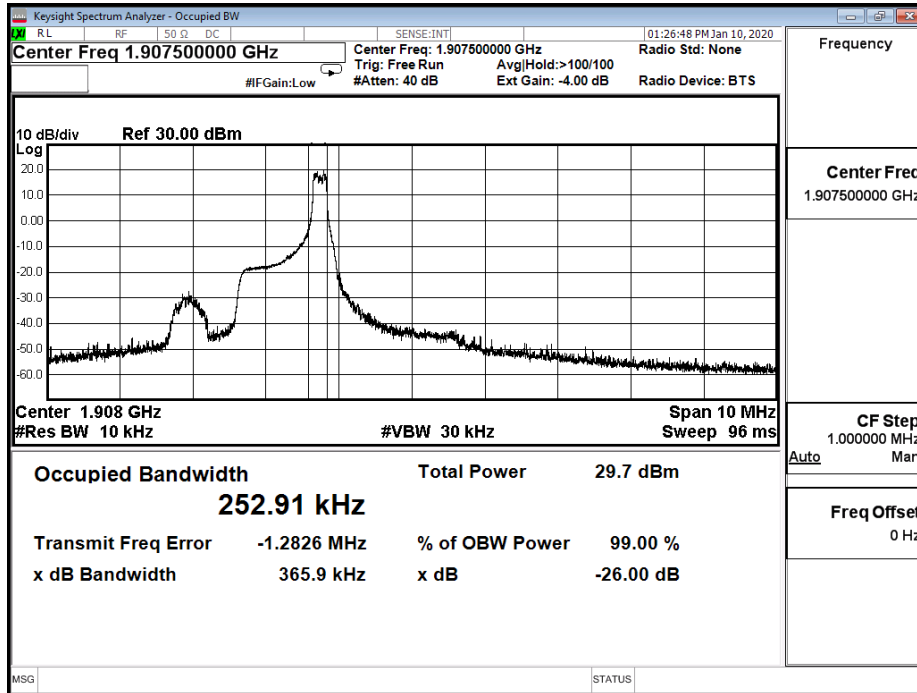
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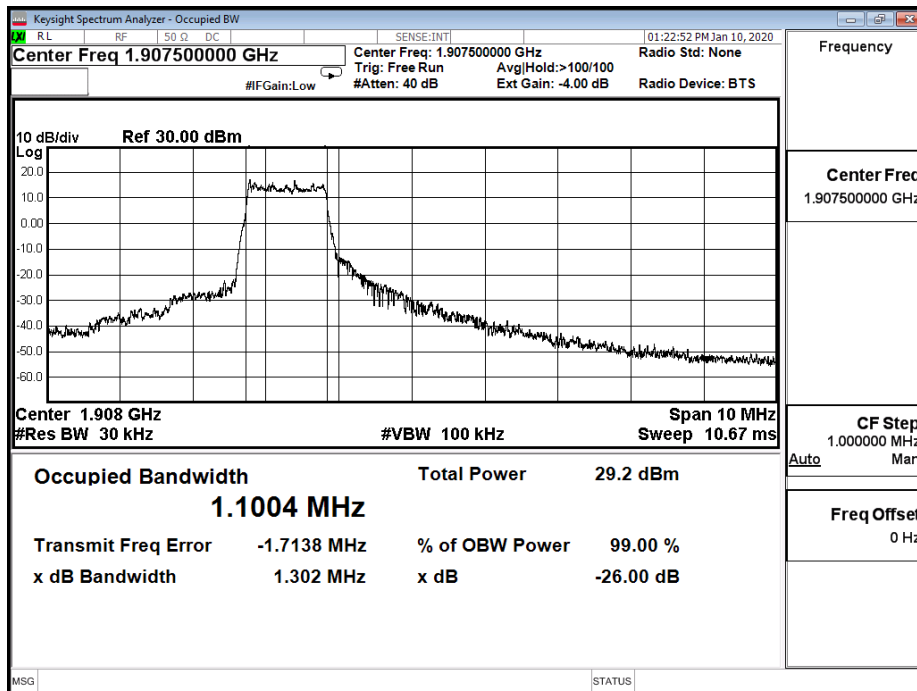
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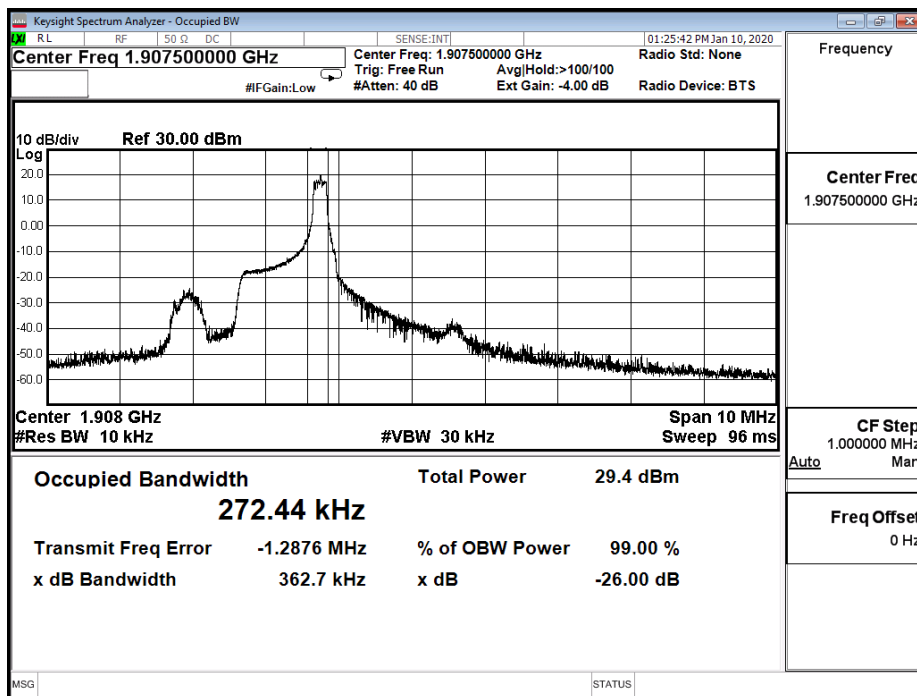
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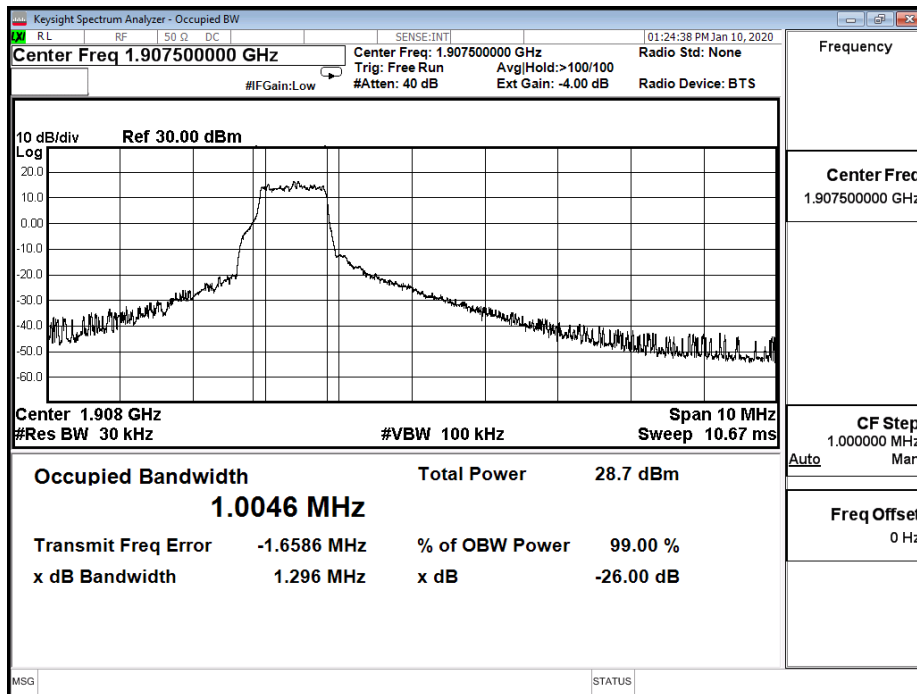
B2\_CH19175\_5M\_QPSK\_6RB0



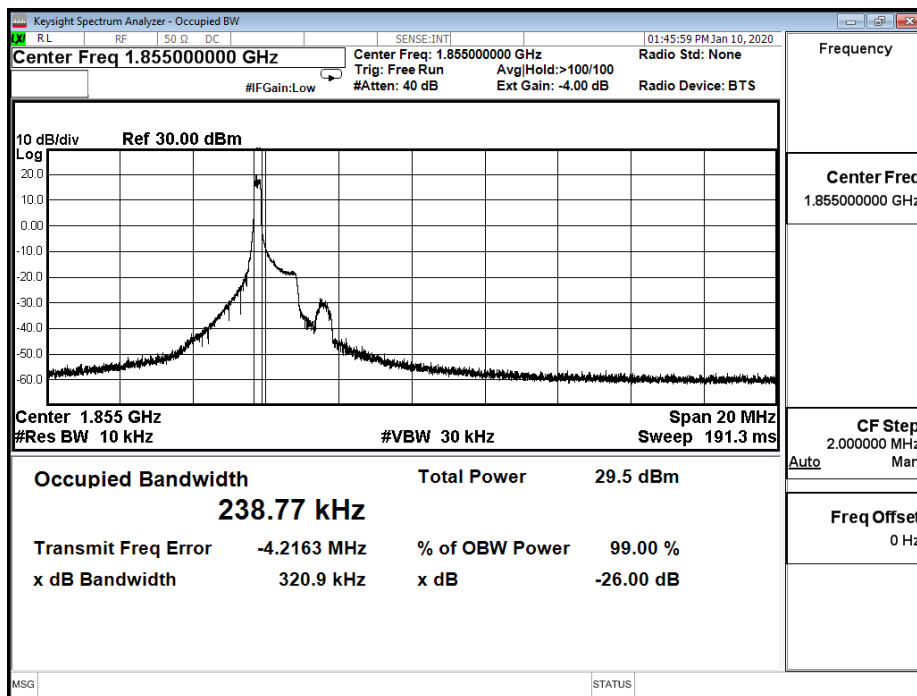
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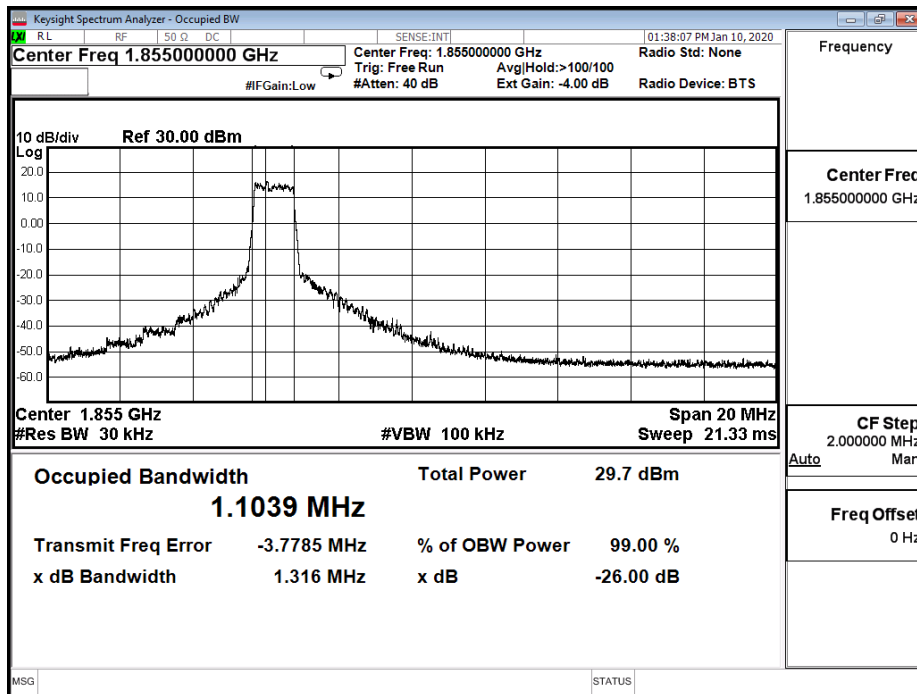
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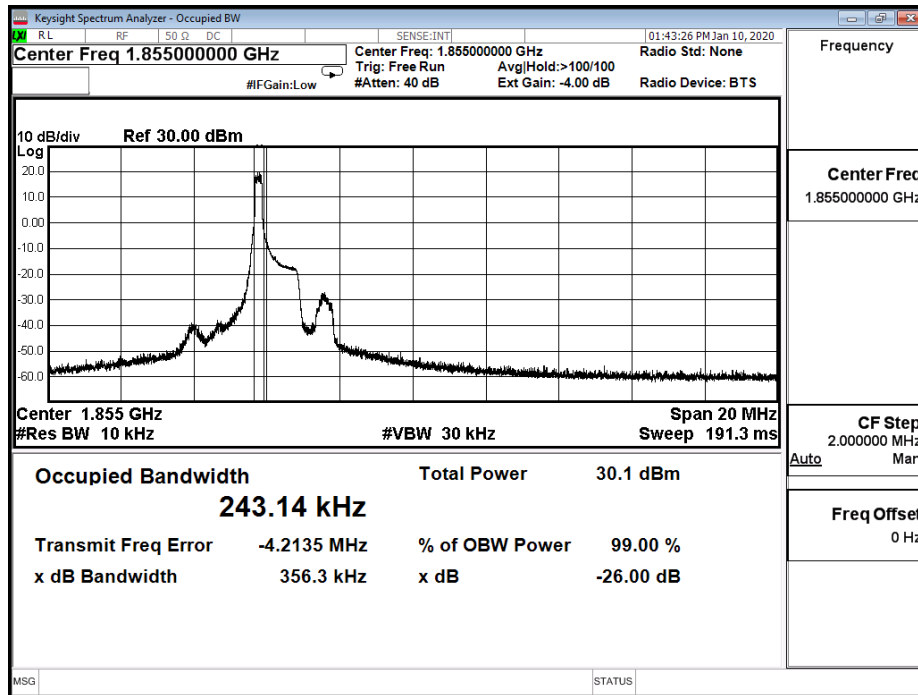
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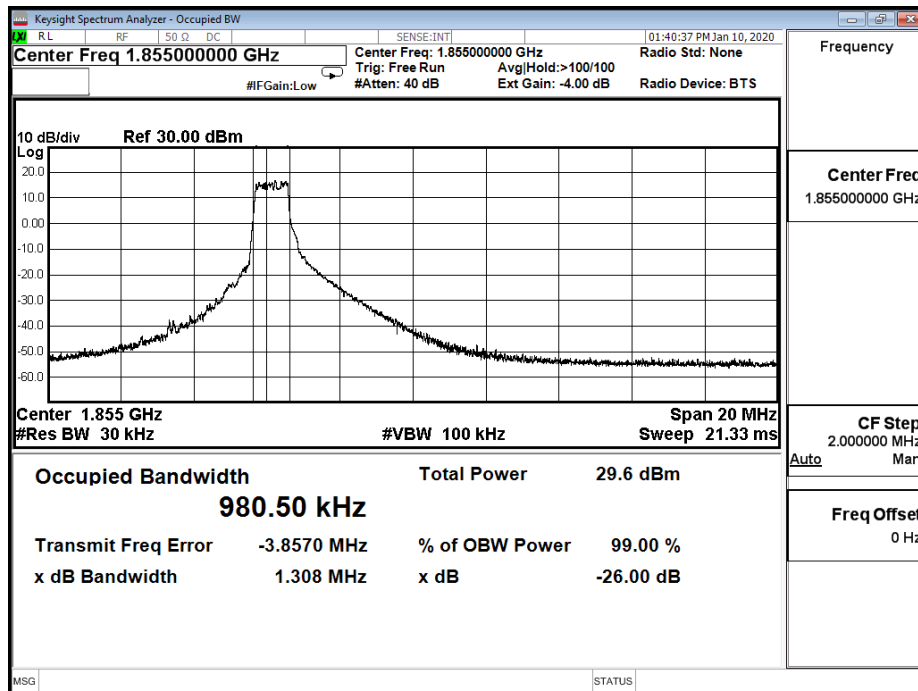
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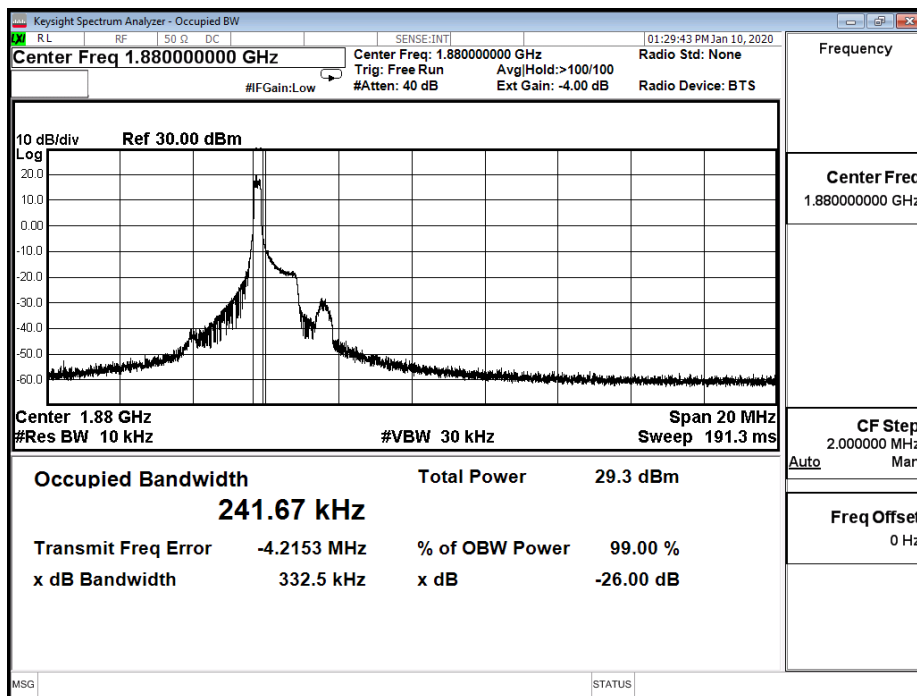
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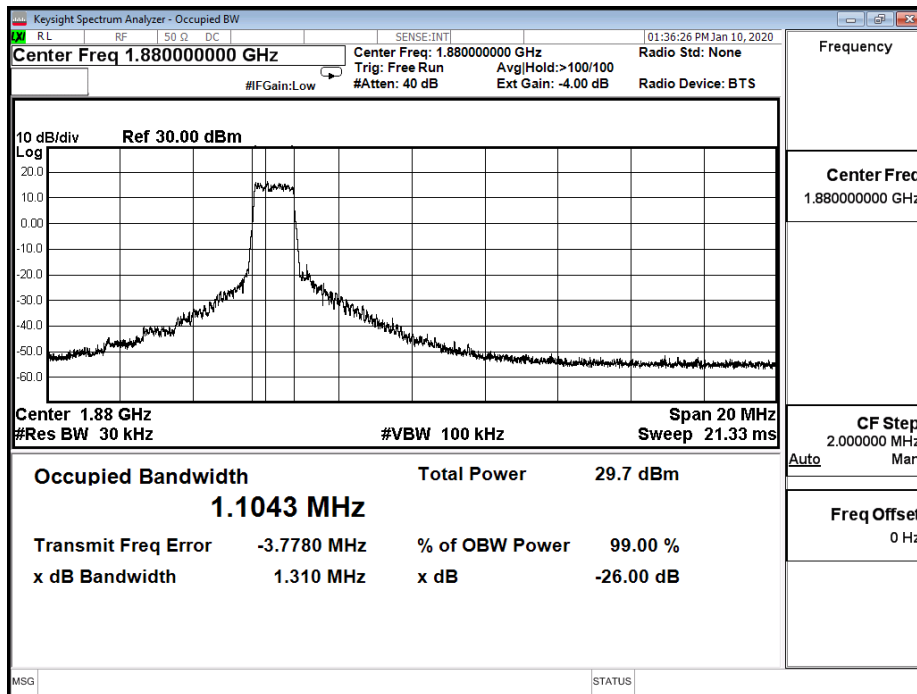
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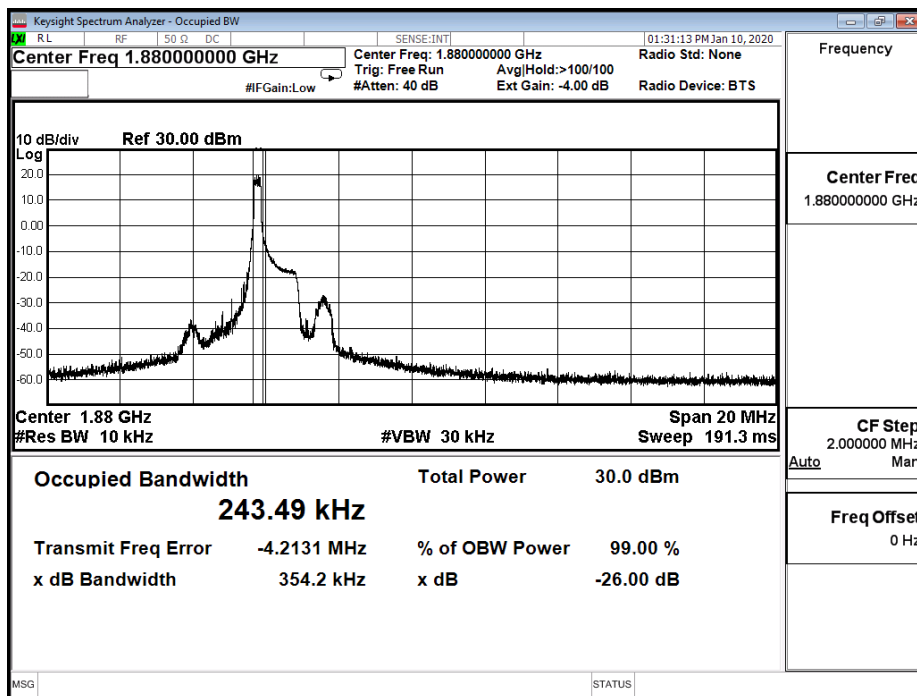
### B2\_CH18900\_10M\_QPSK\_1RB0



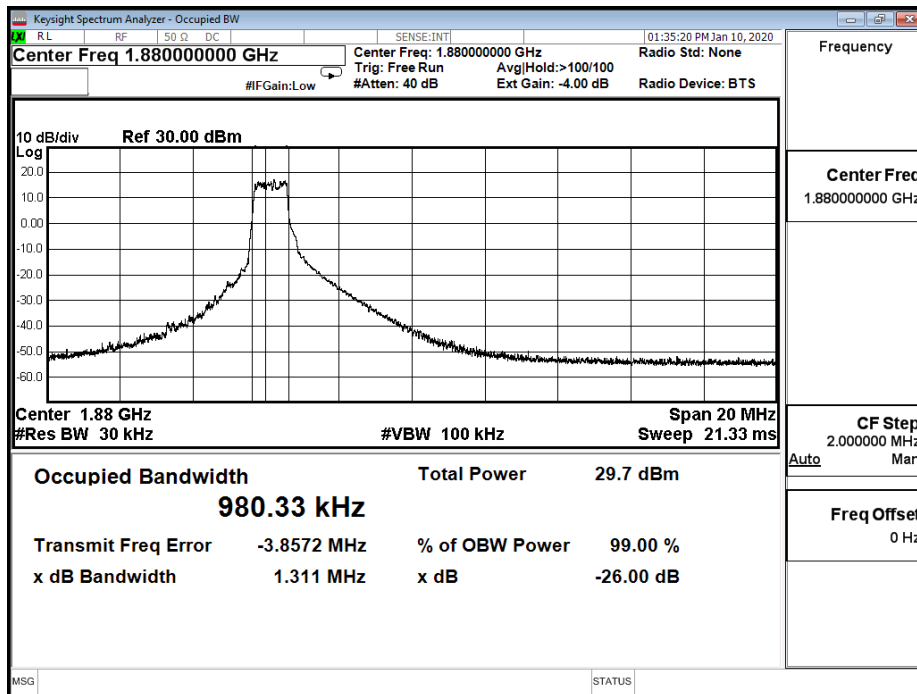
### B2\_CH18900\_10M\_QPSK\_6RB0



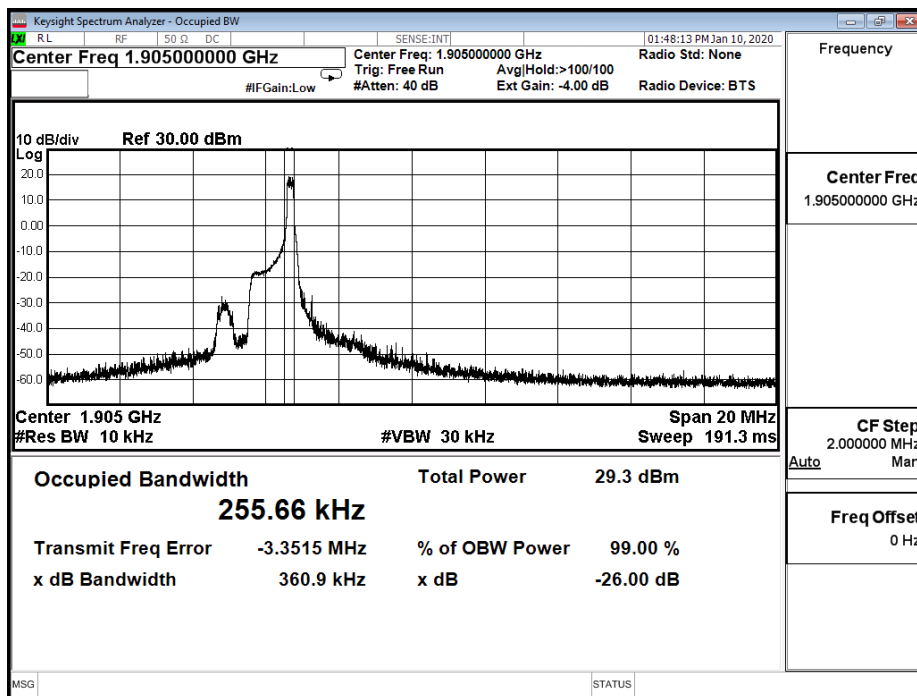
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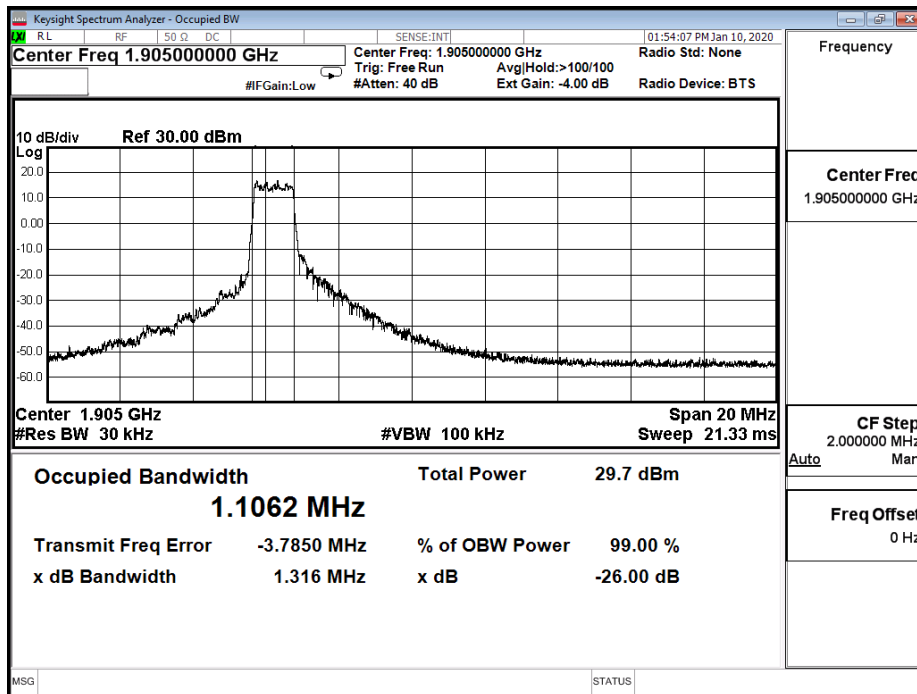
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B2\_CH19150\_10M\_QPSK\_1RB5

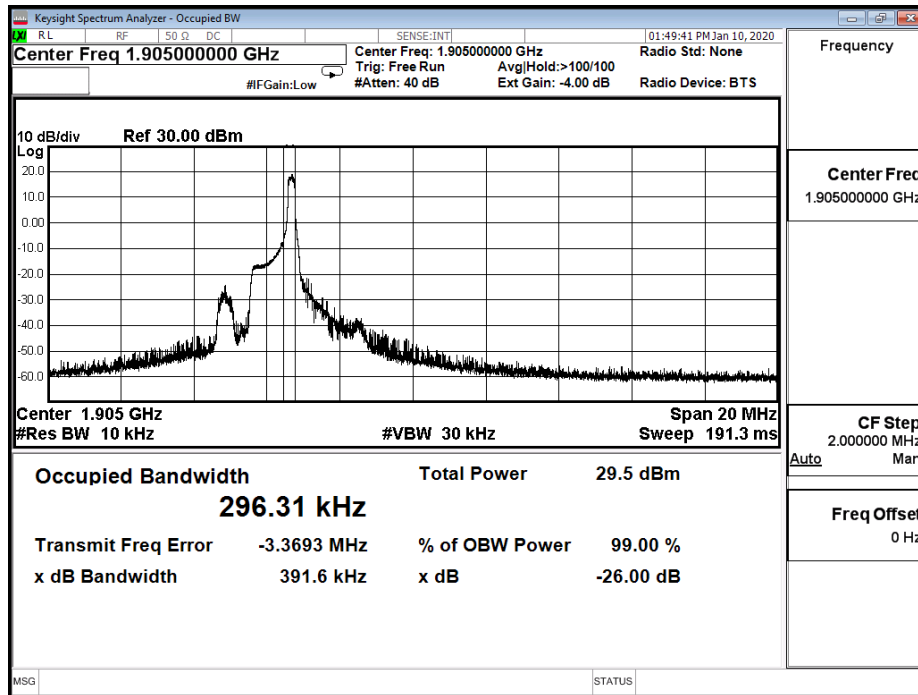


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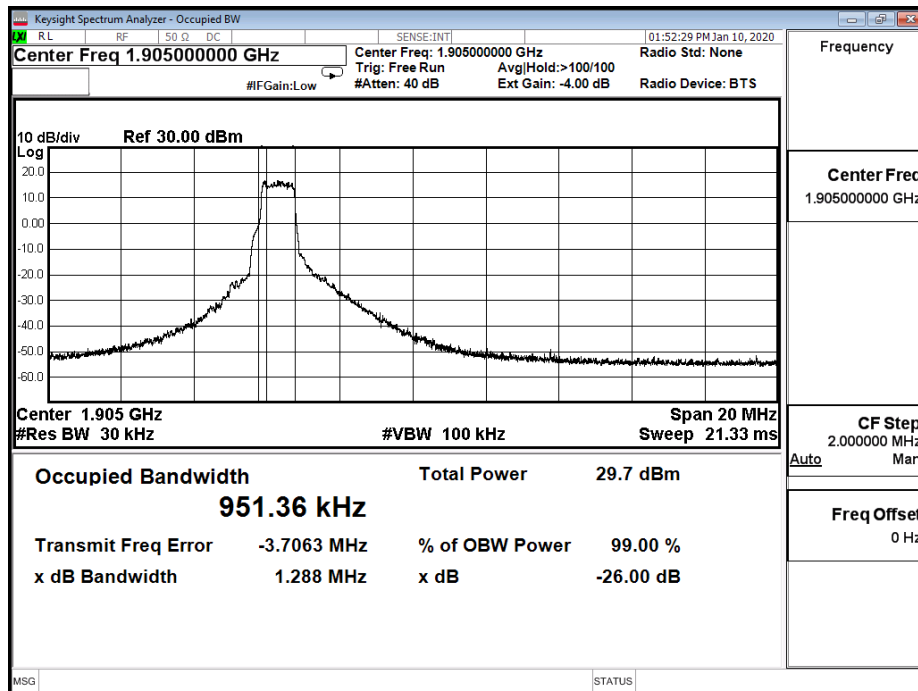




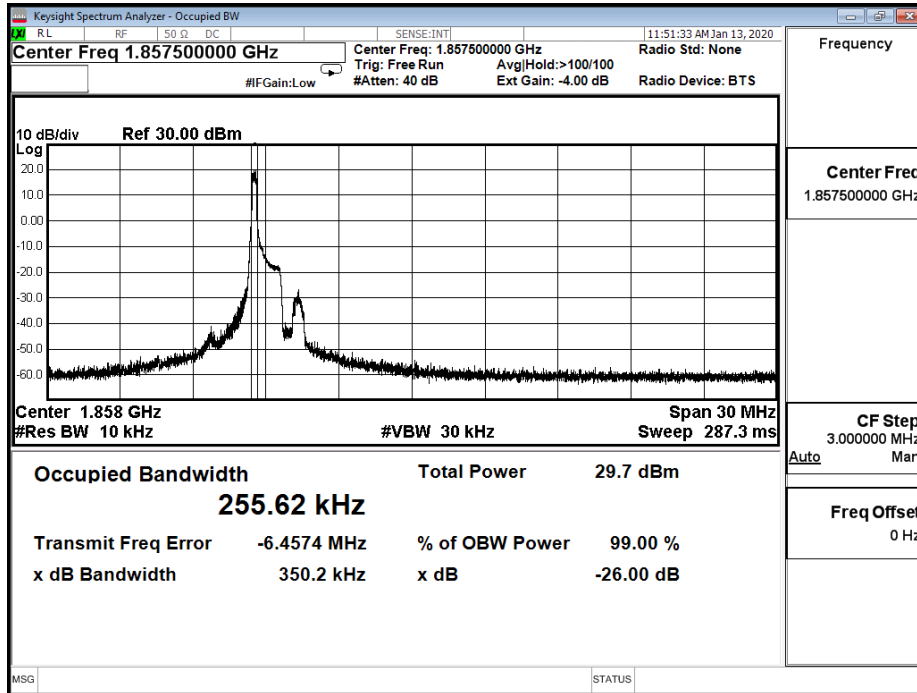
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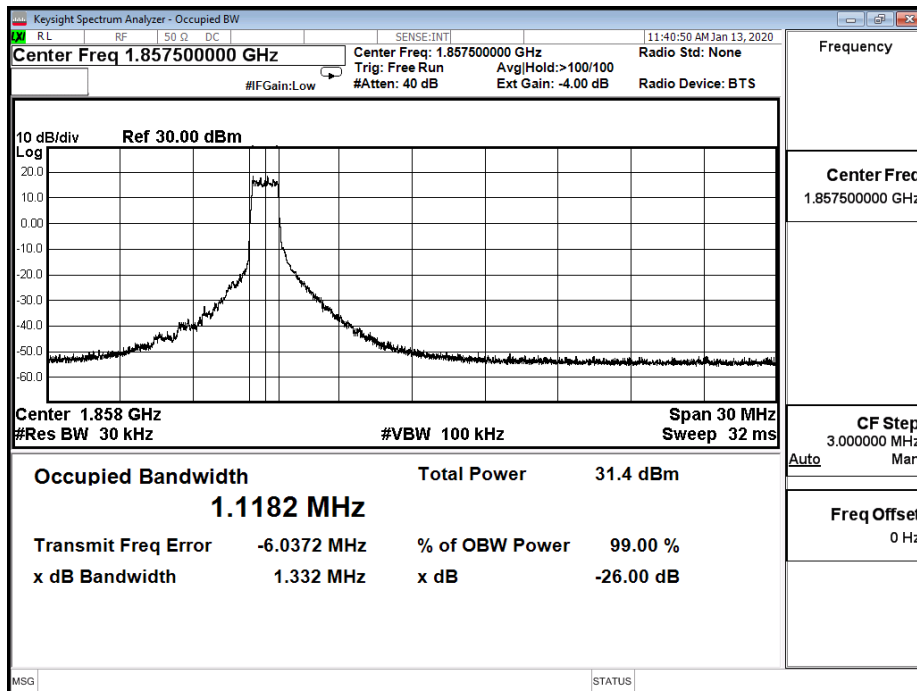
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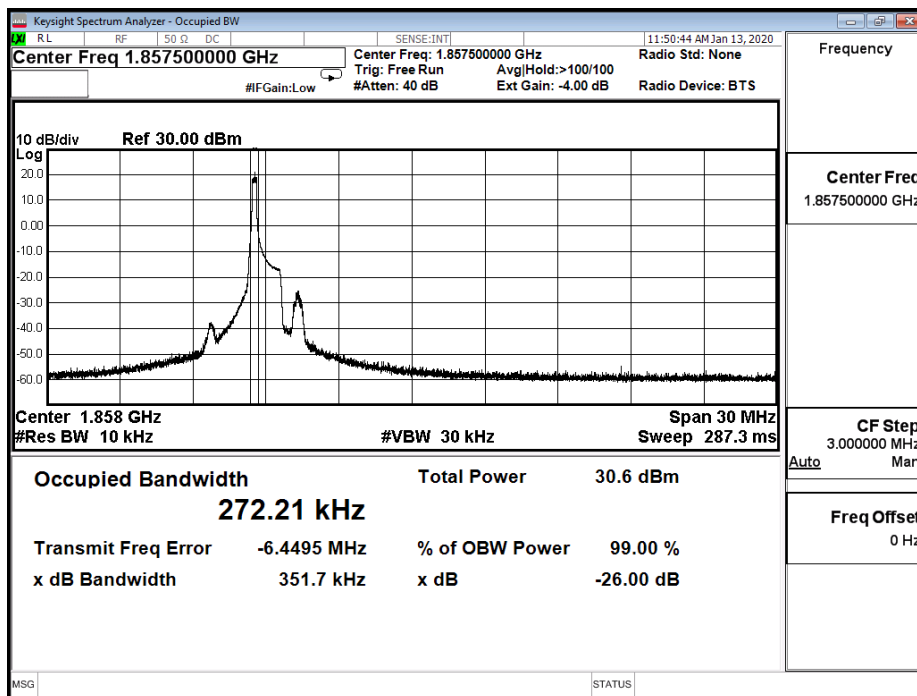
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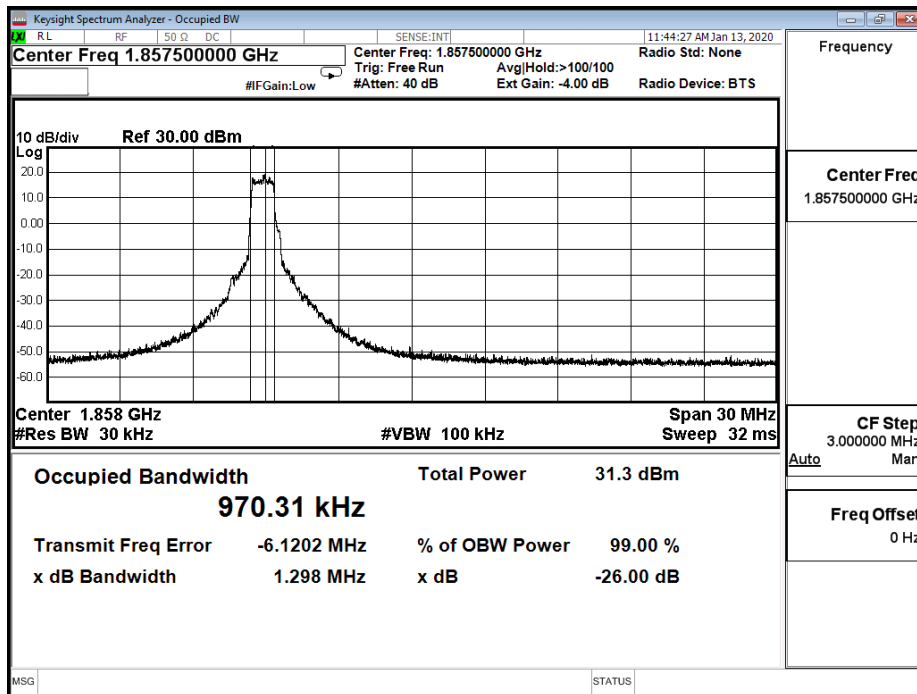
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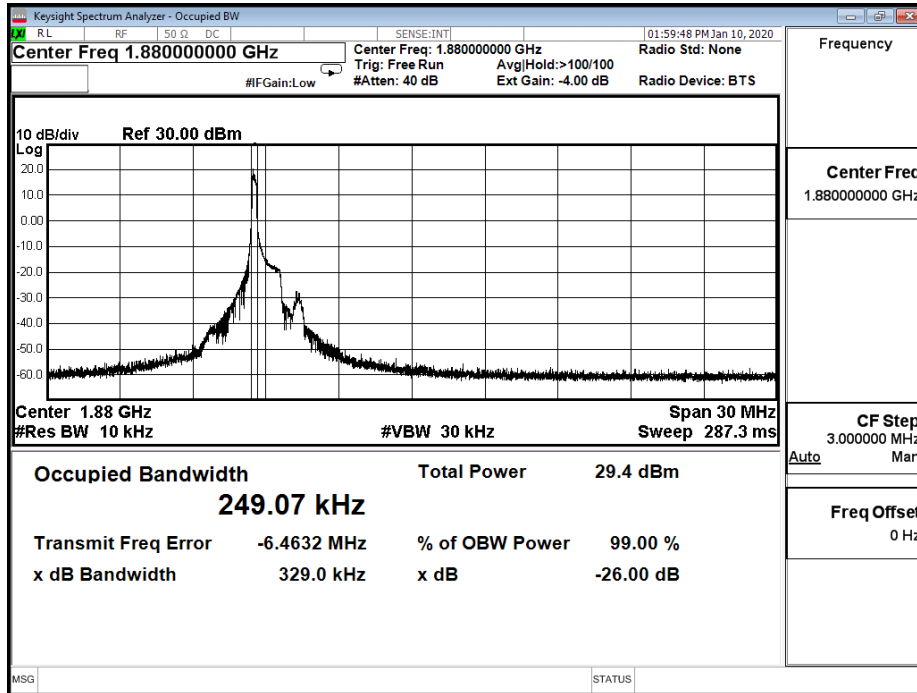
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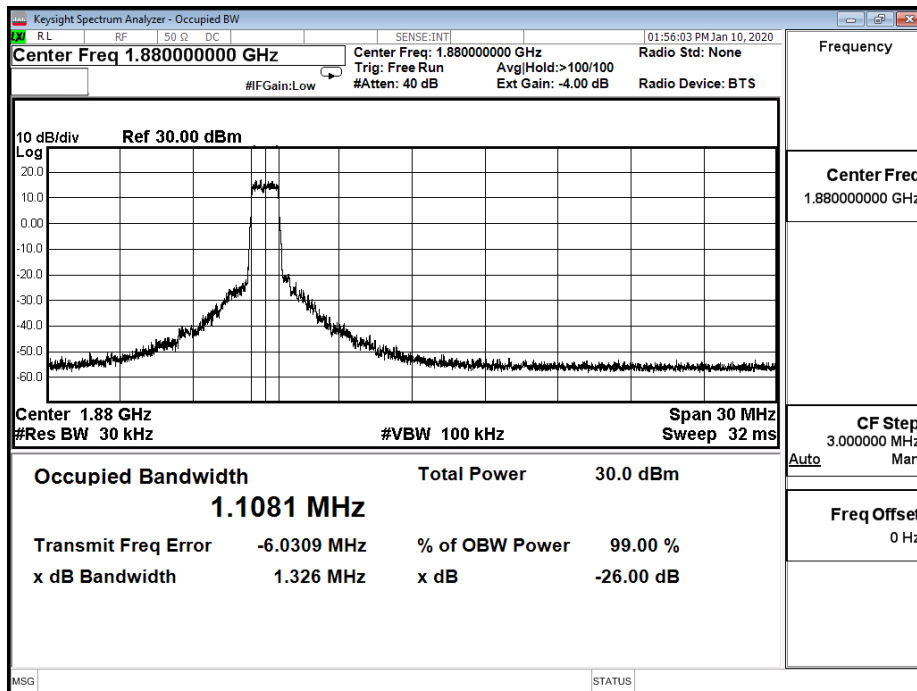
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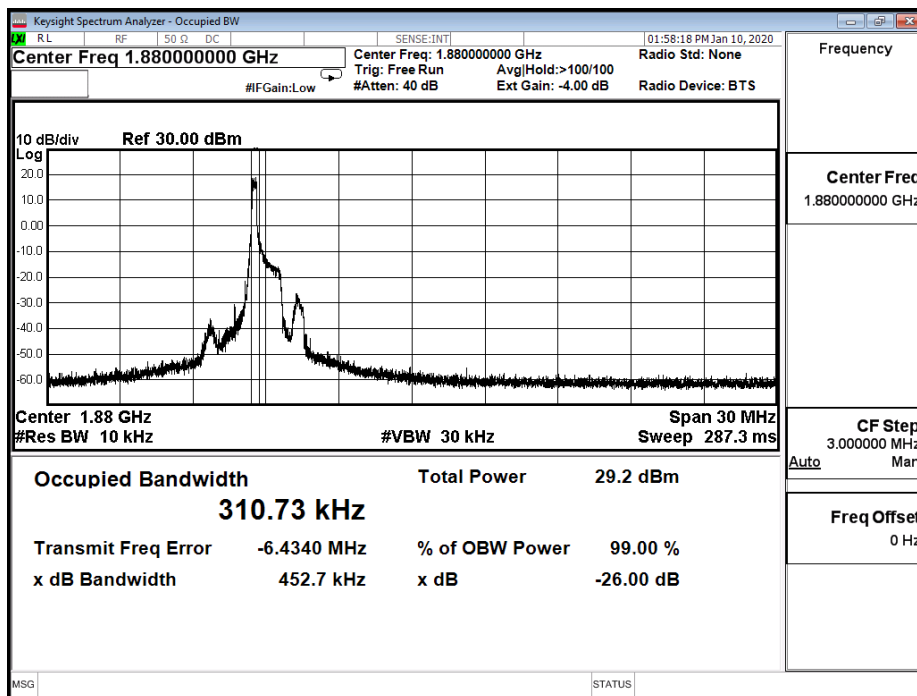
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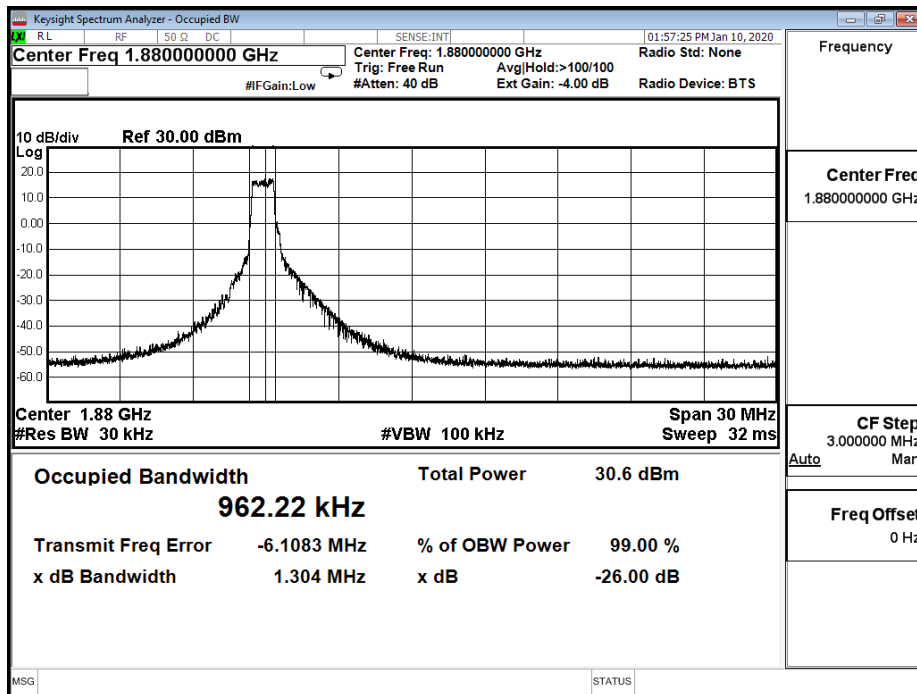
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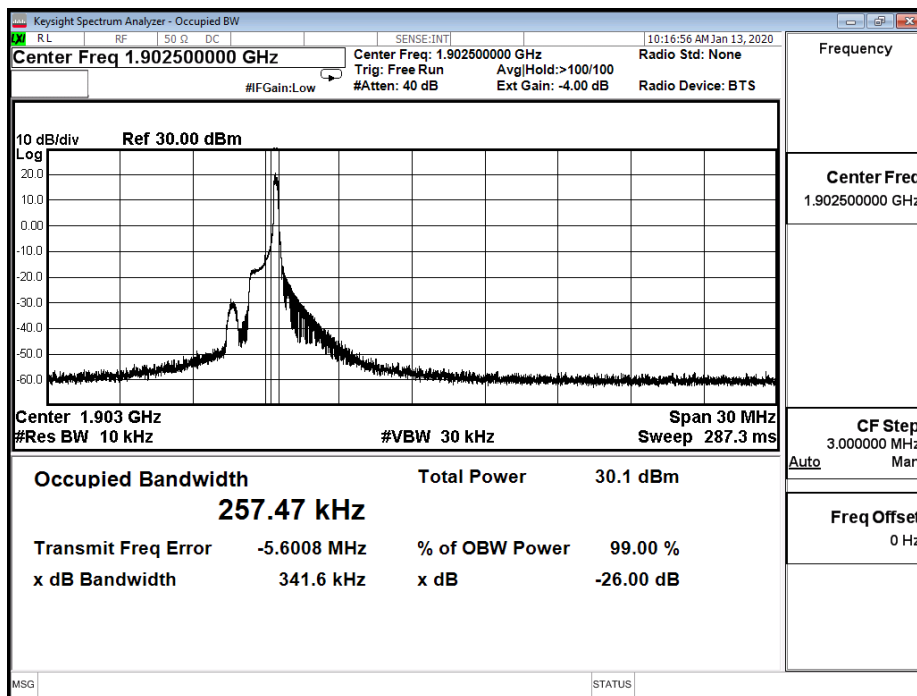
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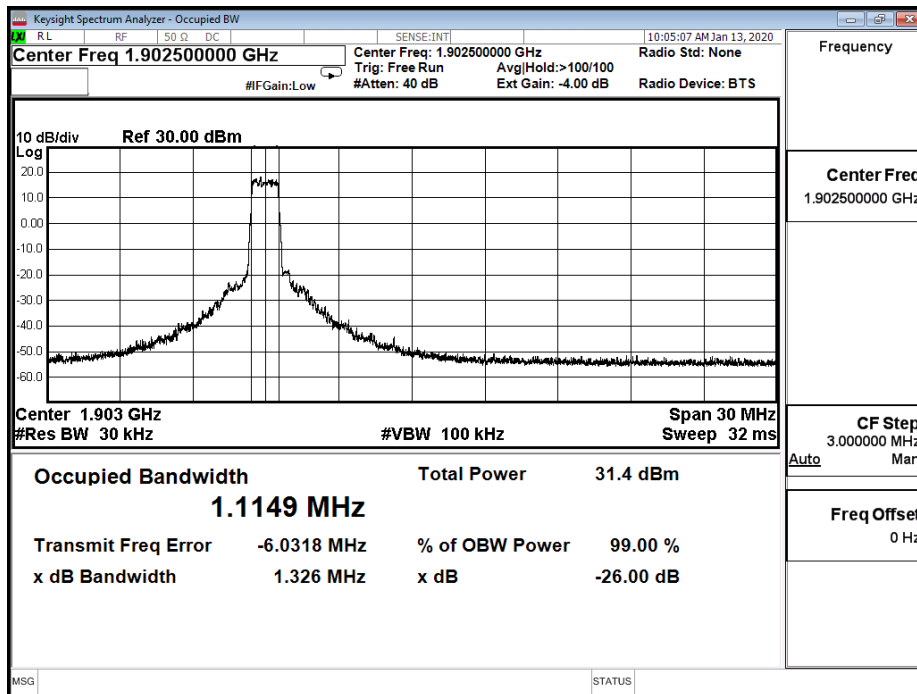
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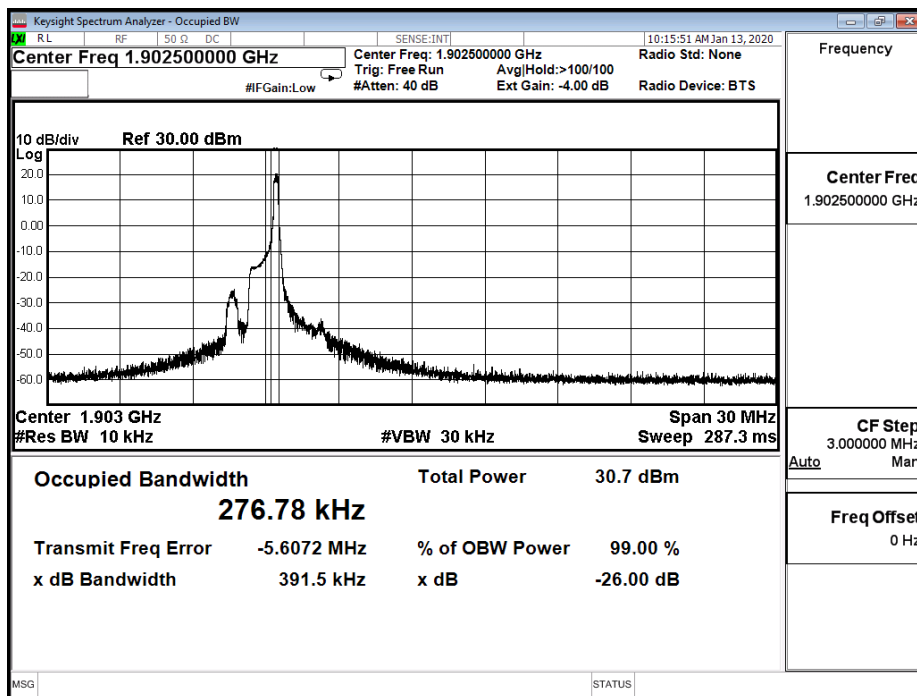
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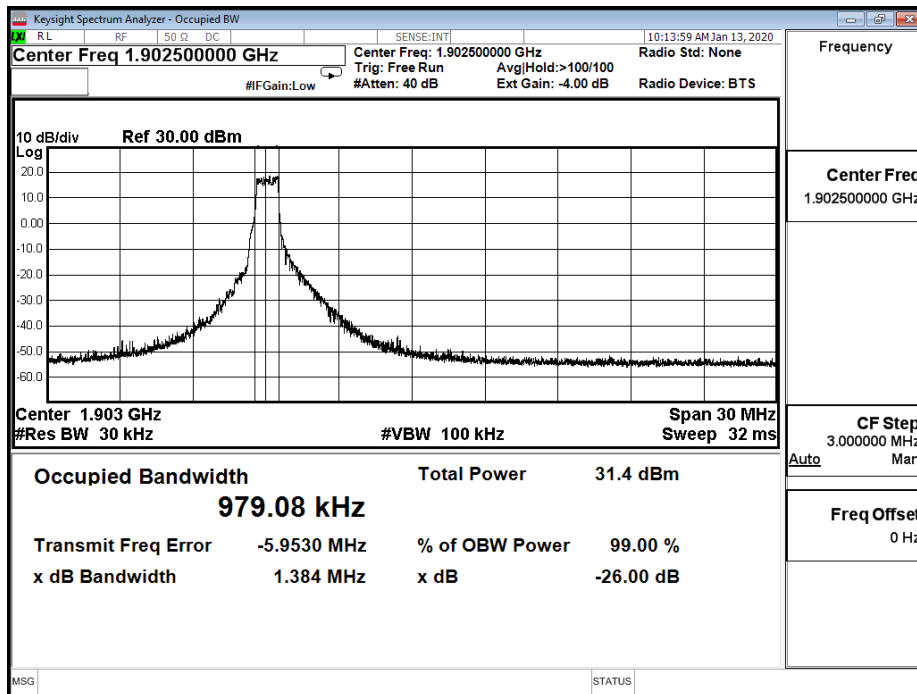
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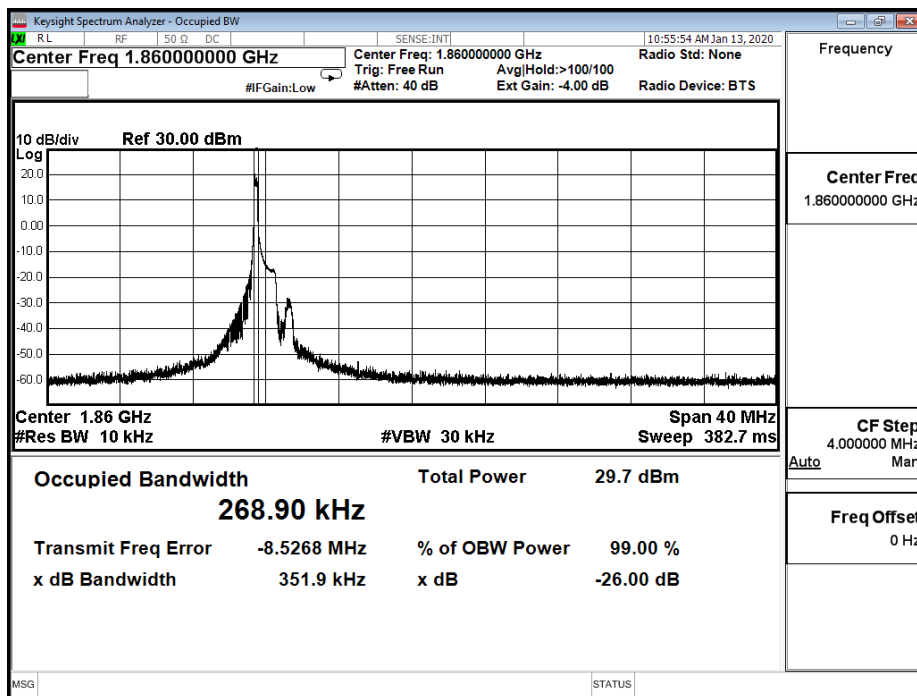
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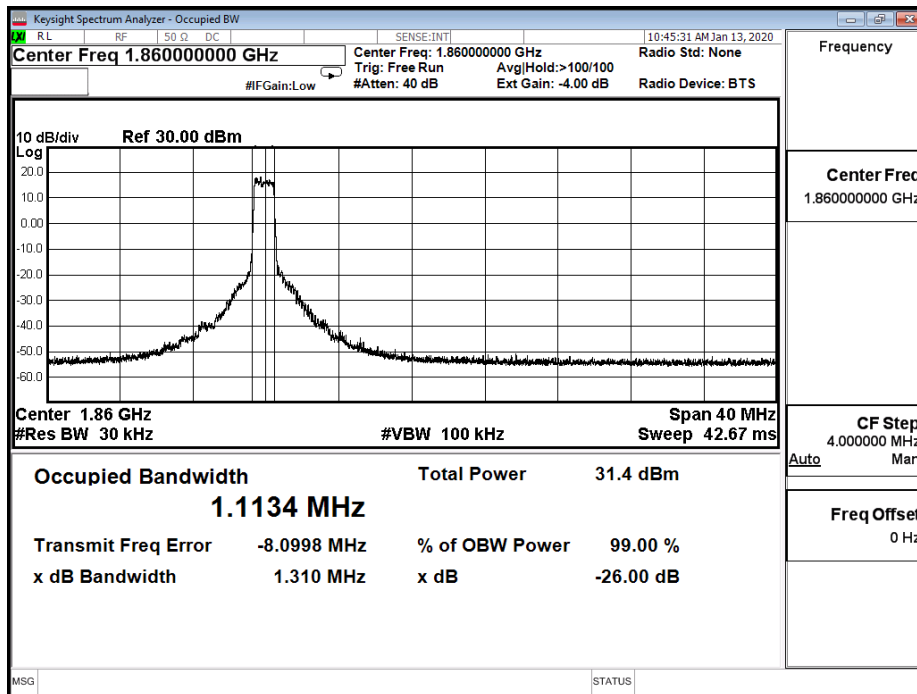
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B2\_CH18700\_20M\_QPSK\_1RB0

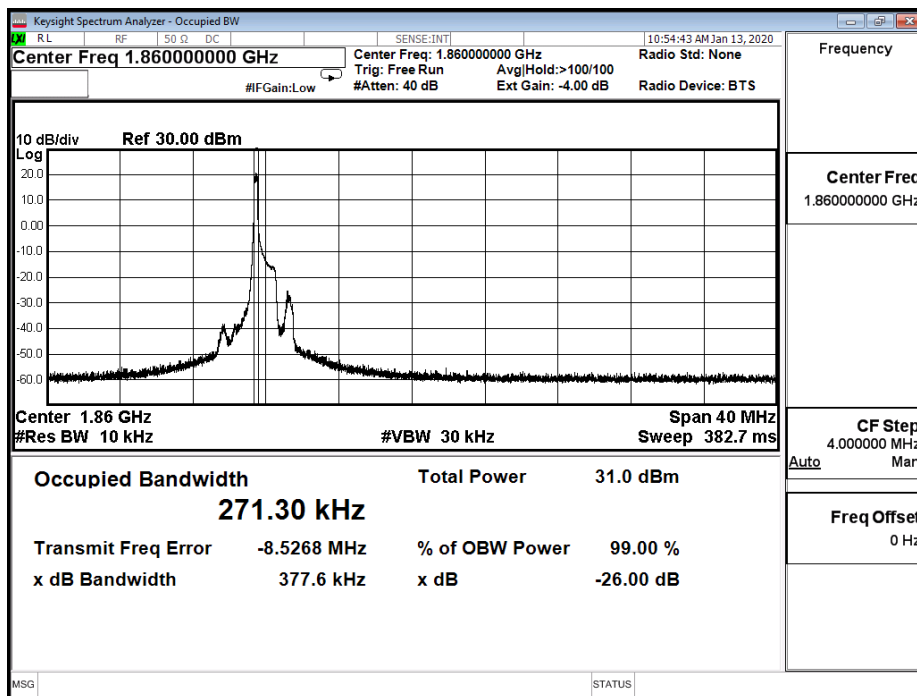


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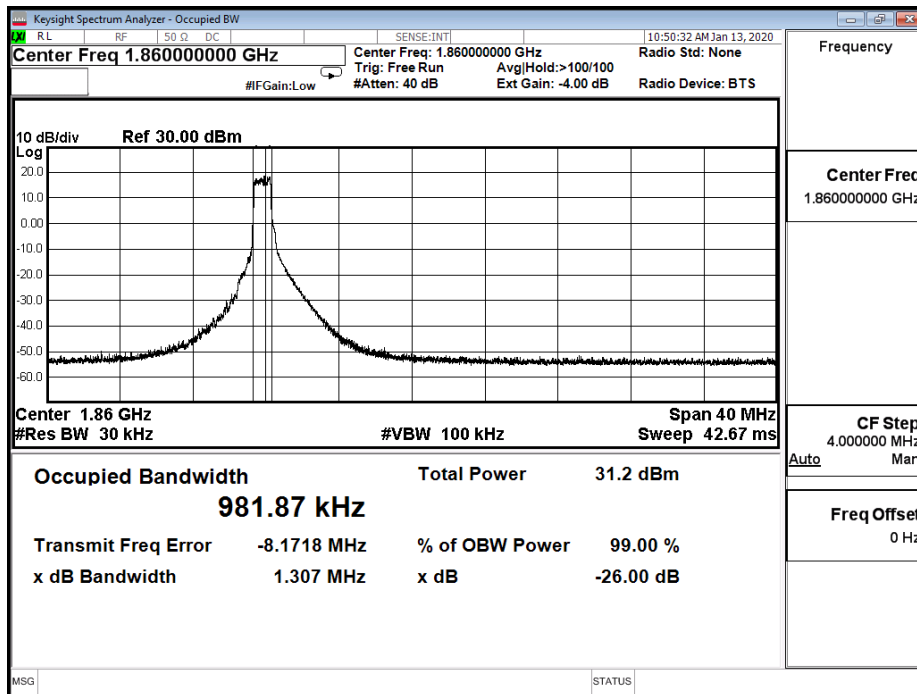




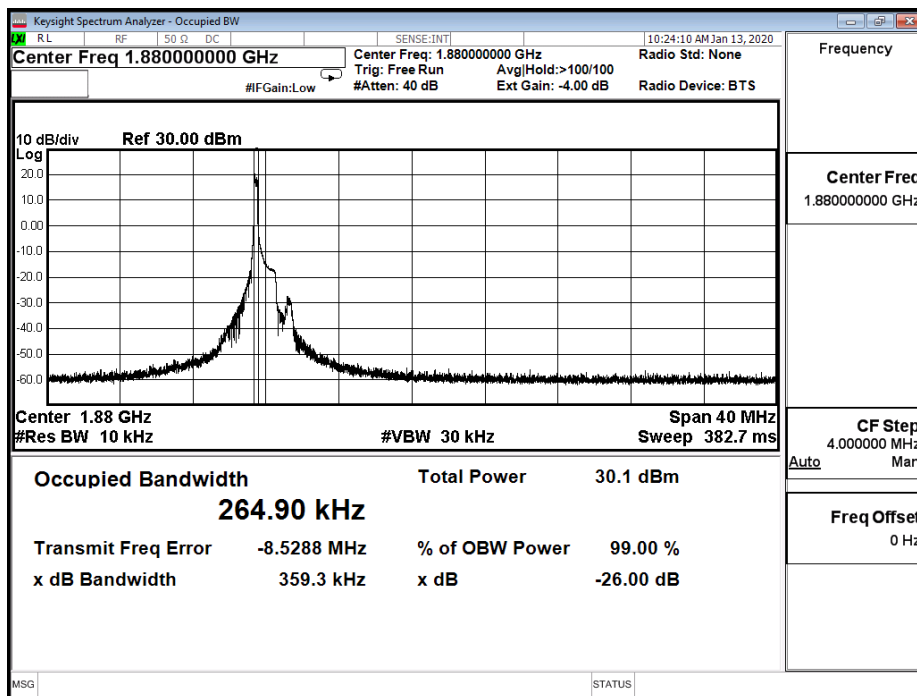
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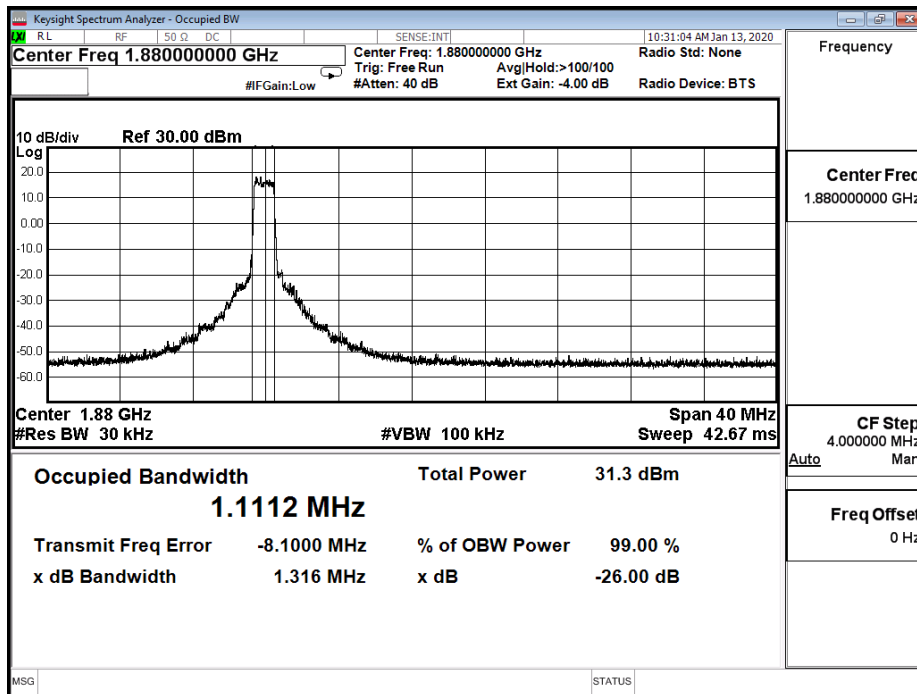
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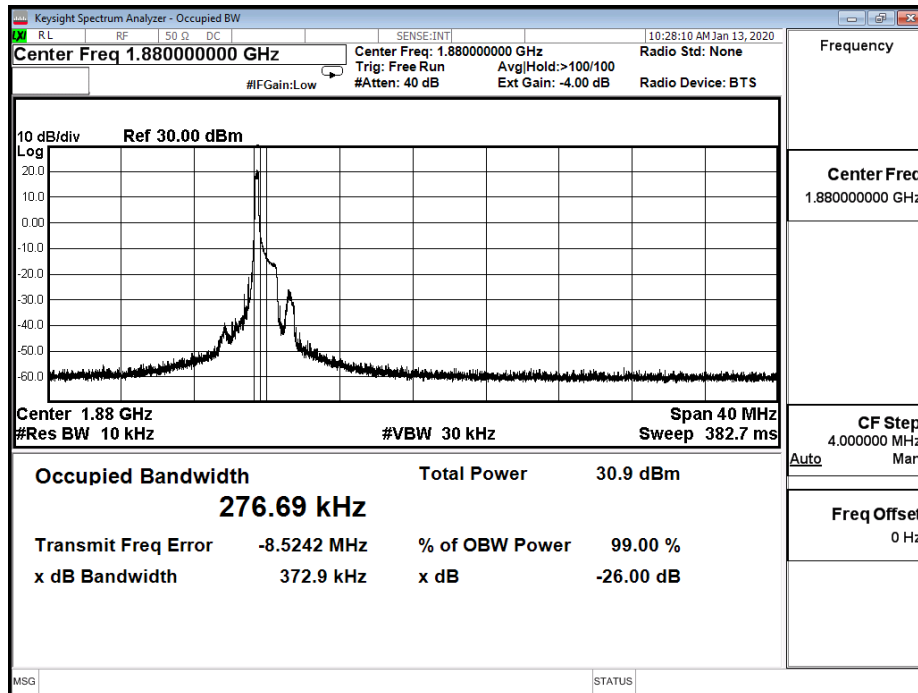
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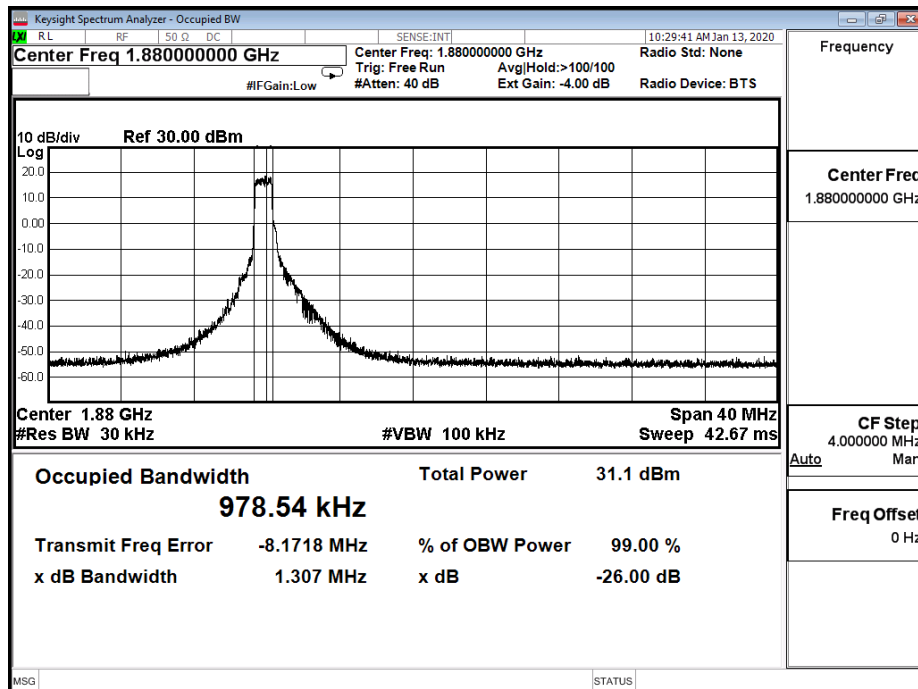
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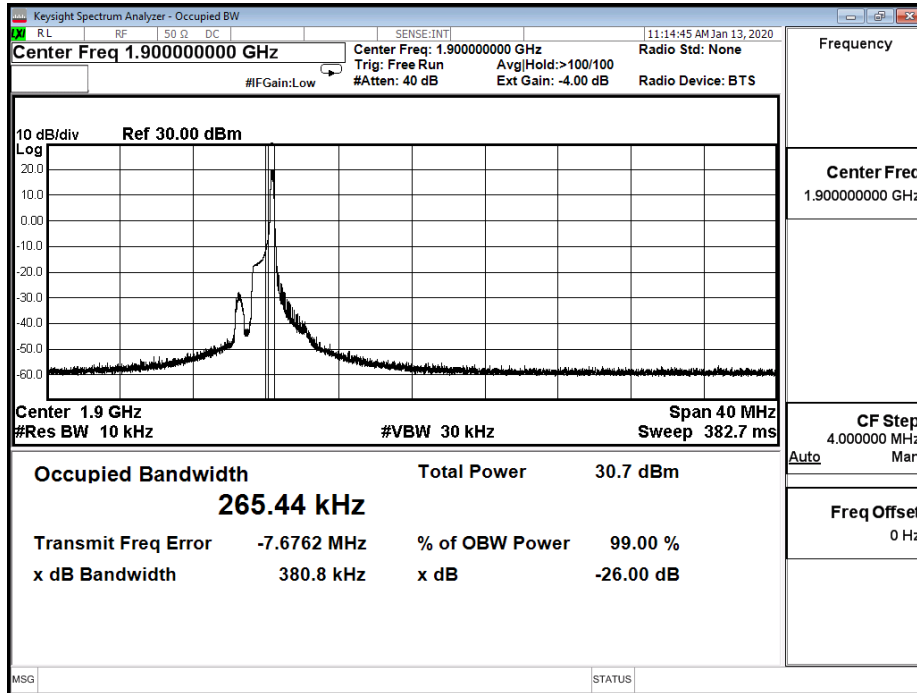
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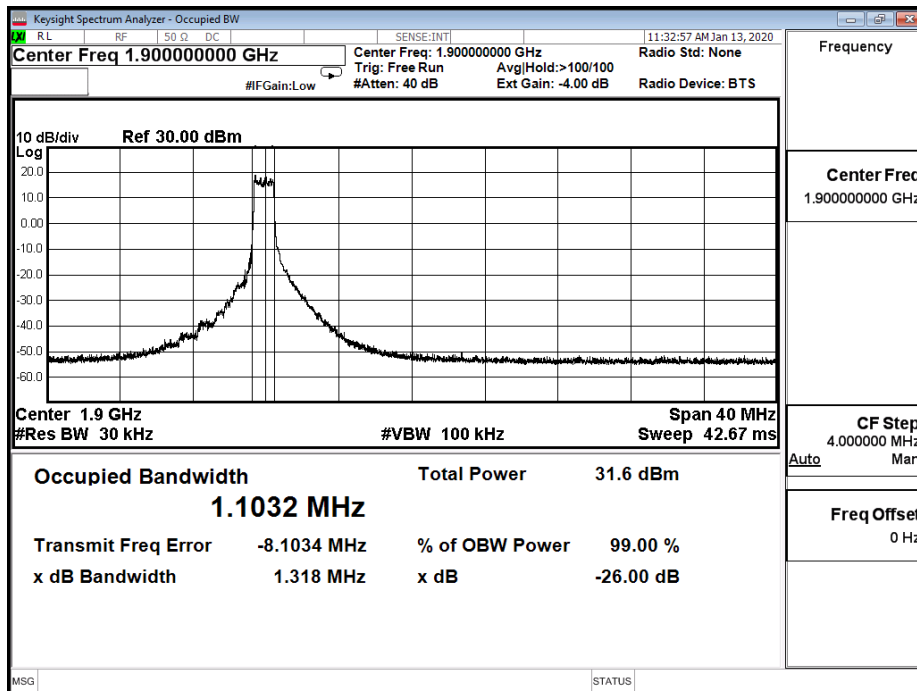
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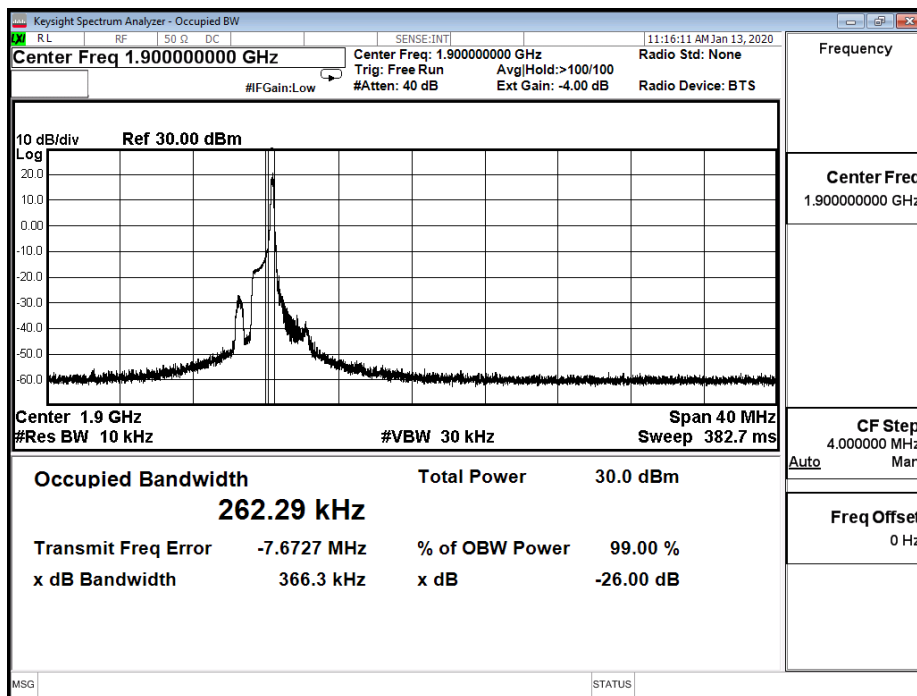
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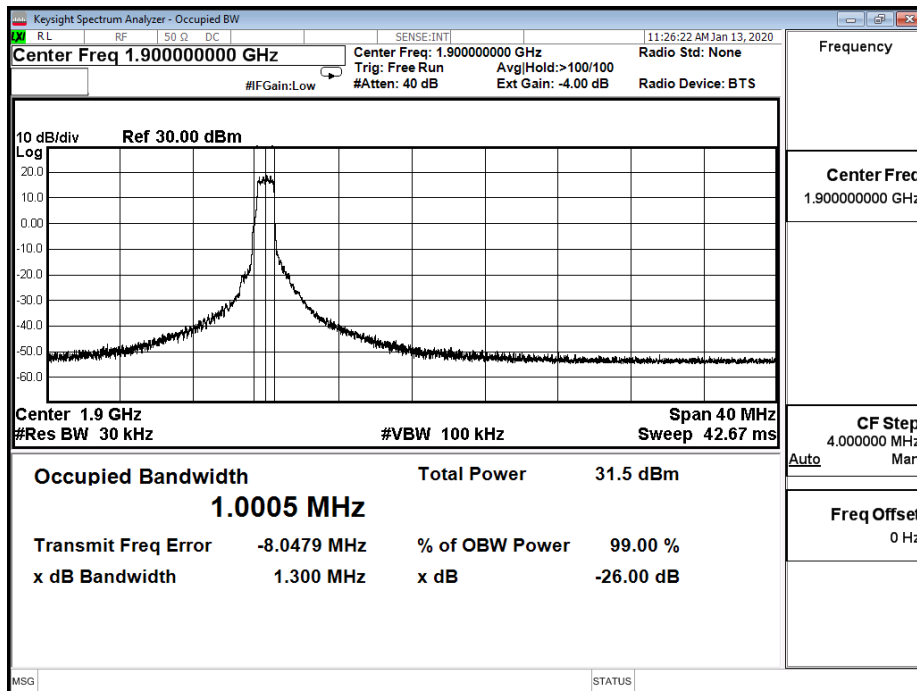
B2\_CH19100\_20M\_QPSK\_6RB0



B2\_CH19100\_20M\_16-QAM\_1RB5



B2\_CH19100\_20M\_16-QAM\_5RB1



Product	Module		
Test Item	Occupied Bandwidth		
Test Mode	Mode 2 : LTE Cat-M1_Band 4		
Date of Test	2020/01/13~2020/01/14	Test Site	SR12-H
Temperature (°C)	20.0	Humidity (%RH)	58.0

LTE Band 4_1RB Low/high					
Band width (MHz)	Modulation	Frequency (MHz)	Measure Level (MHz)		Limit (MHz)
			26dB BW	99% BW	
1.4M	QPSK	1710.7	0.369	0.263	N/A
		1732.5	0.392	0.275	N/A
		1754.3	0.367	0.254	N/A
	16-QAM	1710.7	0.376	0.283	N/A
		1732.5	0.358	0.257	N/A
		1754.3	0.394	0.323	N/A
3M	QPSK	1711.5	0.371	0.279	N/A
		1732.5	0.372	0.281	N/A
		1753.5	0.377	0.265	N/A
	16-QAM	1711.5	0.375	0.271	N/A
		1732.5	0.371	0.273	N/A
		1753.5	0.402	0.269	N/A
5M	QPSK	1712.5	0.377	0.270	N/A
		1732.5	0.362	0.267	N/A
		1752.2	0.363	0.262	N/A
	16-QAM	1712.5	0.387	0.308	N/A
		1732.5	0.379	0.302	N/A
		1752.2	0.365	0.281	N/A
10M	QPSK	1715	0.373	0.271	N/A
		1732.5	0.313	0.240	N/A
		1750	0.373	0.263	N/A
	16-QAM	1715	0.386	0.255	N/A
		1732.5	0.366	0.252	N/A
		1750	0.347	0.255	N/A

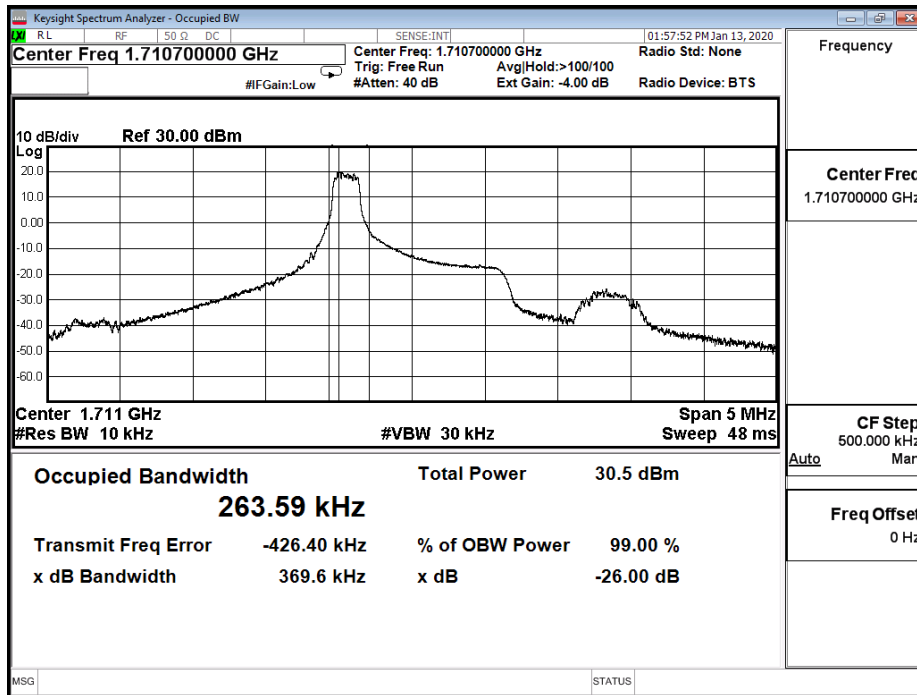
LTE Band 4_1RB Low/high					
Band width (MHz)	Modulation	Frequency (MHz)	Measure Level (MHz)		Limit (MHz)
			26dB BW	99% BW	
15M	QPSK	1717.5	0.336	0.248	N/A
		1732.5	0.330	0.250	N/A
		1747.5	0.364	0.265	N/A
	16-QAM	1717.5	0.384	0.305	N/A
		1732.5	0.387	0.307	N/A
		1747.5	0.388	0.279	N/A
20M	QPSK	1720	0.359	0.268	N/A
		1732.5	0.354	0.265	N/A
		1745	0.340	0.239	N/A
	16-QAM	1720	0.372	0.278	N/A
		1732.5	0.377	0.272	N/A
		1745	0.384	0.263	N/A

LTE Band 4_Full RB					
Band width (MHz)	Modulation	Frequency (MHz)	Measure Level (MHz)		Limit (MHz)
			26dB BW	99% BW	
1.4M	QPSK	1710.7	1.348	1.111	N/A
		1732.5	1.320	1.104	N/A
		1754.3	1.333	1.117	N/A
	16-QAM	1710.7	1.302	0.962	N/A
		1732.5	1.281	0.944	N/A
		1754.3	1.307	0.984	N/A
3M	QPSK	1711.5	1.326	1.110	N/A
		1732.5	1.326	1.110	N/A
		1753.5	1.314	1.113	N/A
	16-QAM	1711.5	1.287	0.951	N/A
		1732.5	1.270	0.949	N/A
		1753.5	1.318	0.959	N/A
5M	QPSK	1712.5	1.300	1.110	N/A
		1732.5	1.313	1.111	N/A
		1752.2	1.294	1.099	N/A
	16-QAM	1712.5	1.312	0.975	N/A
		1732.5	1.304	0.972	N/A
		1752.2	1.296	1.001	N/A
10M	QPSK	1715	1.317	1.107	N/A
		1732.5	1.314	1.106	N/A
		1750	1.316	1.103	N/A
	16-QAM	1715	1.280	0.943	N/A
		1732.5	1.308	0.979	N/A
		1750	1.397	1.007	N/A

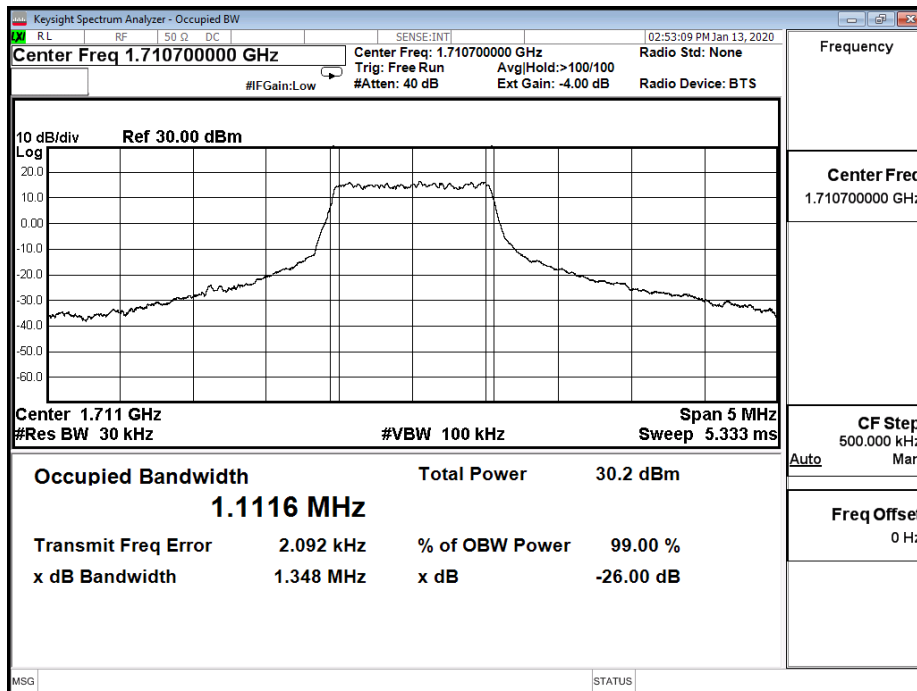


LTE Band 4_Full RB					
Band width (MHz)	Modulation	Frequency (MHz)	Measure Level (MHz)		Limit (MHz)
			26dB BW	99% BW	
15M	QPSK	1717.5	1.323	1.115	N/A
		1732.5	1.325	1.115	N/A
		1747.5	1.326	1.114	N/A
	16-QAM	1717.5	1.301	0.956	N/A
		1732.5	1.314	0.966	N/A
		1747.5	1.399	0.982	N/A
20M	QPSK	1720	1.312	1.111	N/A
		1732.5	1.315	1.112	N/A
		1745	1.311	1.109	N/A
	16-QAM	1720	1.311	0.980	N/A
		1732.5	1.313	0.979	N/A
		1745	1.381	0.957	N/A

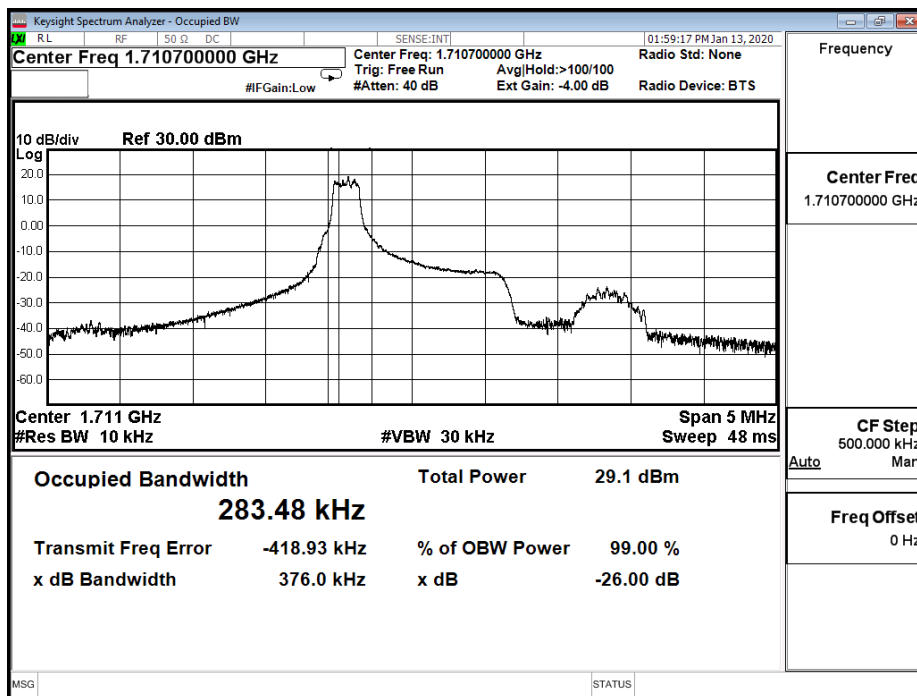
B4\_CH19957\_1.4M\_QPSK\_1RB0



B4\_CH19957\_1.4M\_QPSK\_6RB0



B4\_CH19957\_1.4M\_16-QAM\_1RB0



B4\_CH19957\_1.4M\_16-QAM\_5RB0

