

ELECTROMAGNETIC EMISSIONS
COMPLIANCE REPORT

Applicant: BIONIME CORPORATION
No.100, Sec.2, Daqing St., South Dist., Taichung City 40242,
Taiwan(R.O.C)

Manufacturer: BIONIME CORPORATION
No.100, Sec.2, Daqing St., South Dist., Taichung City 40242,
Taiwan(R.O.C)

Product Name: Blood Glucose Monitoring System

Brand Name: Rightest

Model No.: Max Tel, GM777

Model Difference: For Marketing Purpose

Report Number: TERF2207001076E2

FCC ID ADU-MAXTEL

Date of EUT Received: July 13, 2022

Date of Test: August 12, 2022 ~ August 31, 2022

Issue Date: September 13, 2022

Approved By

Jay Lin

We hereby certify that:

The above equipment was tested by SGS Taiwan Ltd. Central RF Lab. The test data, data evaluation, test procedures, and equipment configurations shown in this report were made in accordance with the procedures given in ANSI C63.26-2015 and the energy emitted by the sample EUT comply with FCC rule part 2, 24E & 27 C.

The results of this report relate only to the sample identified in this report.

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Revision History

Report Number	Revision	Description	Issue Date	Revised By	Remark
TERF2207001076E2	00	Original	September 13, 2022	Violetta Tang	

Note:

- 1、The remark "" indicates modification of the report upon requests from certification body.
- 2、Variant information of model numbers is provided by the applicant, test results of this report are applicable to the sample EUT(s) received and are assessed as electrically identical in RF characteristics, therefore, no further assessment required for the variant(s).

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1 GENERAL PRODUCT INFORMATION

1.1 Product Description

Product Name:	Blood Glucose Monitoring System
Brand Name:	Rightest
Model No.:	Max Tel, GM777
Model Difference:	For Marketing Purpose
Hardware Version:	N/A
Firmware Version:	N/A
EUT Series No.:	TE-2207000072P, TE_SP_20220703501
Power Supply:	3.7Vdc from Rechargeable Li-ion Battery or 5V from AC/DC Power Adapter
Test Software (Name/Version)	Default

1.2 Frequency Range

1.2.1 NB IoT

NB IoT Band	Subcarrier Spacing (kHz)	Operation Frequency (MHz)
2	3.75	1850.1 - 1909.9
	15	
4	3.75	1710.1 - 1754.9
	15	
13	3.75	777.1 - 786.9
	15	

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M1 Band 2			
BW (MHz)	Operation Frequency (MHz)		
1.4	1850.7	-	1909.3
3	1851.5	-	1908.5
5	1852.5	-	1907.5
10	1855.0	-	1905.0

M1 Band 4			
BW (MHz)	Operation Frequency (MHz)		
1.4	1710.7	-	1754.3
3	1711.5	-	1753.5
5	1712.5	-	1752.5
10	1715.0	-	1750.0

M1 Band 12			
BW (MHz)	Operation Frequency (MHz)		
1.4	699.7	-	715.3
3	700.5	-	714.5
5	701.5	-	713.5
10	704.0	-	711.0

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1.3 Antenna Designation

Antenna Type	Antenna Model No.
FPC	Ant 1
Note: Transmission frequencies in this test report are only available by the above antenna(s).	

Operating Frequency (MHz)				Ant 1 Peak Antenna Gain (dBi)
NB-IoT Band 2	1850.1	~	1909.9	3.08
NB-IoT Band 4	1710.1	~	1754.9	3.18
NB-IoT Band 13	777.1	~	786.9	-0.04

Operating Frequency (MHz)				Ant 1 Peak Antenna Gain (dBi)
M1 Band 2	1850.7	~	1909.3	3.08
M1 Band 4	1710.7	~	1754.3	3.18
M1 Band 12	699.7	~	715.3	-3.36

Note: Antenna information is provided by the applicant.

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1.4 Type of Emission & Max ERP/EIRP Power Measurement Result:

1.4.1 NB IoT

NB IoT Band	Modulation	ERP / EIRP (dBm)		(W)	99% BW (kHz)	Type of Emission
2	BPSK	25.20	EIRP	0.331	181.7100	182KG7D
2	QPSK	25.28	EIRP	0.337	198.9700	199KG7D

NB IoT Band	Modulation	ERP / EIRP (dBm)		(W)	99% BW (kHz)	Type of Emission
4	BPSK	25.28	EIRP	0.337	177.3000	177KG7D
4	QPSK	25.36	EIRP	0.344	202.3700	202KG7D

NB IoT Band	Modulation	ERP / EIRP (dBm)		(W)	99% BW (kHz)	Type of Emission
13	BPSK	23.26	ERP	0.212	167.6200	168KG7D
13	QPSK	22.64	ERP	0.184	197.3800	197KG7D

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M1 Band	BW	Frequency		Modulation	ERP / EIRP (dBm)		(W)	99%	Type of Emission
2	1.4	1850.7	1909.3	QPSK	24.68	EIRP	0.294	1.0894	1M09G7D
				16QAM	24.55	EIRP	0.285	0.9268	927KD7W
2	3	1851.5	1908.5	QPSK	25.29	EIRP	0.338	1.1427	1M14G7D
				16QAM	24.63	EIRP	0.290	0.9974	997KD7W
2	5	1852.5	1907.5	QPSK	25.05	EIRP	0.320	1.2324	1M23G7D
				16QAM	24.73	EIRP	0.297	1.0813	1M08D7W
2	10	1855.0	1905.0	QPSK	24.95	EIRP	0.313	1.3526	1M35G7D
				16QAM	24.79	EIRP	0.301	1.2399	1M24D7W

M1 Band	BW	Frequency		Modulation	ERP / EIRP (dBm)		(W)	99%	Type of Emission
4	1.4	1710.7	1754.3	QPSK	24.74	EIRP	0.298	1.0962	1M10G7D
				16QAM	24.65	EIRP	0.292	0.9218	922KD7W
4	3	1711.5	1753.5	QPSK	24.70	EIRP	0.295	1.1451	1M15G7D
				16QAM	24.44	EIRP	0.278	0.9849	985KD7W
4	5	1712.5	1752.5	QPSK	24.55	EIRP	0.285	1.2250	1M23G7D
				16QAM	24.49	EIRP	0.281	1.0807	1M08D7W
4	10	1715.0	1750.0	QPSK	24.75	EIRP	0.299	1.3664	1M37G7D
				16QAM	24.73	EIRP	0.297	1.2450	1M25D7W

M1 Band	BW	Frequency		Modulation	ERP / EIRP (dBm)		(W)	99%	Type of Emission
12	1.4	699.7	715.3	QPSK	17.44	ERP	0.055	1.0964	1M10G7D
				16QAM	17.08	ERP	0.051	0.9247	925KD7W
12	3	700.5	714.5	QPSK	17.21	ERP	0.053	1.1433	1M14G7D
				16QAM	16.76	ERP	0.047	0.9973	997KD7W
12	5	701.5	713.5	QPSK	17.27	ERP	0.053	1.2307	1M23G7D
				16QAM	16.92	ERP	0.049	1.0794	1M08D7W
12	10	704.0	711.0	QPSK	16.94	ERP	0.049	1.3443	1M34G7D
				16QAM	16.62	ERP	0.046	1.2057	1M21D7W

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1.5 Test Methodology of Applied Standards

FCC 47 CFR Part 2, 24E, 27C.

ANSI C63.26-2015

KDB971168 D01 Power Meas license Digital System v03r01

TS 151 010-1 is used to set, and measure the output power.

1.6 Test Facility

Laboratory	Test Site Address	Test Site Name	FCC Designation number	IC CAB identifier
SGS Taiwan Ltd. Central RF Lab. (TAF code 3702)	No.134, Wu Kung Road, New Taipei Industrial Park, Wuku District, New Taipei City, Taiwan.	SAC 1	TW0027	TW3702
		SAC 3		
		Conduction 1		
		Conducted 1		
		Conducted 2		
		Conducted 3		
		Conducted 4		
		Conducted 5		
		Conducted 6		
	No.2, Keji 1st Rd., Guishan District, Taoyuan City, Taiwan 333	Conduction C	TW0028	
		SAC C		
		SAC D		
		SAC G		
		Conducted A		
		Conducted B		
		Conducted C		
		Conducted D		
		Conducted E		
		Conducted F		
		Conducted G		
Note: Test site name is remarked on the equipment list in each section of this report as an indication where measurements occurred in specific test site and address.				

1.7 Special Accessories

No special accessories were used during testing.

1.8 Equipment Modifications

There was no modifications incorporated into the EUT.

1.9 Radiated Emission Test Sites For Measurements From 9 kHz To 30 MHz

Radiated emission below 30MHz is measured in a 9m*6m*6m semi-anechoic chamber, the measurements correspond to those obtained at an open-field test site.

There is a comparison data of both open-field test site and semi-Anechoic chamber, and the result came out very similar.

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2 SYSTEM TEST CONFIGURATION

2.1 EUT Configuration

The EUT configuration for testing is installed on RF field strength measurement to meet the Commissions requirement and operating in a manner which intends to maximize its emission characteristics in a continuous normal application.

2.2 EUT Exercise

The EUT (Transmitter) was operated in the continuous transmission mode employed with the simulator of the Base Station that fixates at test default channels to fix the Tx frequency which was for the purpose of the measurements.

2.3 Test Procedure

2.3.1 Conducted Measurement at Antenna Port

The EUT is placed on a table which is 0.8 m above ground plane. A low loss of RF cable was used to connect the antenna port of EUT to measurement equipment.

2.3.2 Radiated Emissions (ERP/EIRP)

The EUT is placed on a turn table, for emission measurements below 1 GHz is 0.8 m above ground plane, for emission measurements above 1 GHz, the table height shall be 1.5 m. The turn table shall rotate 360 degrees to determine the position of maximum emission level. EUT is set 3m away from the receiving antenna which varied from 1m to 4m to find out the highest emission. And also, each emission was to be maximized by changing the polarization of receiving antenna both Horizontal and Vertical. In order to find out the max. emission, the relative positions of this hand-held transmitter (EUT) was rotated through three orthogonal axes and measurement procedures for electric field radiated emissions above 1 GHz the EUT measurement is to be made "while keeping the antenna in the 'cone of radiation' from that area and pointed at the area both in azimuth and elevation, with polarization oriented for maximum response." is still within the 3dB illumination BW of the measurement antenna.

2.4 Measurement Results Explanation Example

For all conducted test items:

The offset level is set in the spectrum analyzer to compensate the RF cable loss and attenuation factor between EUT conducted port and spectrum analyzer. With the offset compensation, the spectrum analyzer reading level is exactly EUT RF output level.

Note:

The spectrum analyzer offset is derived from RF cable loss and attenuator factor.

2.5 Final Amplifier Voltage and Current Information:

2.5.1 NB IoT

NB-IoT Band 2		
Test mode	DC voltage (V)	DC current (mA)
LTE Band 2_3.75K	3.7	250
LTE Band 2_15K	3.7	240
NB-IoT Band 4		
Test mode	DC voltage (V)	DC current (mA)
LTE Band 4_3.75K	3.7	260
LTE Band 4_15K	3.7	240
NB-IoT Band 13		
Test mode	DC voltage (V)	DC current (mA)
LTE Band 13_3.75K	3.7	280
LTE Band 13_15K	3.7	300

2.5.2 Cat M1

M1 Band 2

Test mode	DC voltage (V)	DC current (mA)
M1 Band 2_20M QPSK	3.7	240

M1 Band 4

Test mode	DC voltage (V)	DC current (mA)
M1 Band 4_20M QPSK	3.7	250

M1 Band 12

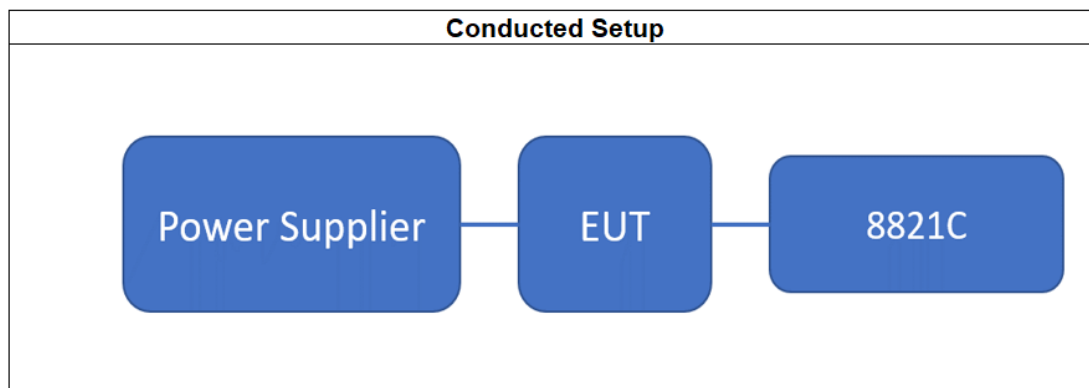
Test mode	DC voltage (V)	DC current (mA)
M1 Band 5_10M QPSK	3.7	290

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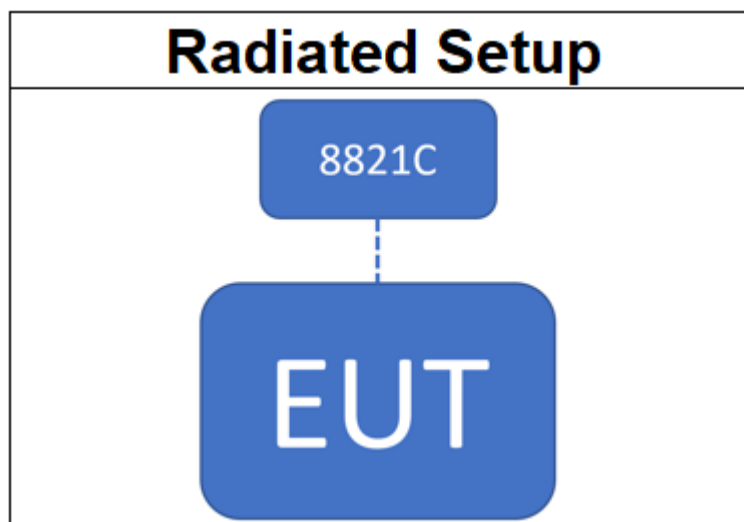
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2.6 Test Configuration

2.6.1 Conducted Emission at the Antenna Port



2.6.2 Radiated Emission



Note: Radio Communication Analyzer is placed in remote side for radiated test.

2.6.3 Equipment used for test

N/A

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3 SUMMARY OF TEST RESULTS

FCC Rules	Description Of Test	Result
§2.1046(a)	RF Power Output	Compliant
§24.232(c) §27.50(b)(10) §27.50(c)(10) §27.50(d)(4)	ERP/ EIRP measurement	Compliant
§2.1049(h)	99% & 26dB Occupied Bandwidth	Compliant
§2.1051 §24.238(a) §27.53(g) §27.53(c)(5)	Out of Band Emissions at Antenna Terminals and Band Edge / Emission mask requirements	Compliant
§2.1053 §24.238(a) §27.53(c)(2),(4) §27.53(f) §27.53(g) §27.53(h)	Field Strength of Spurious Radiation	Compliant
§24.232(d) §27.50(B)	Peak to Average Ratio	Compliant
§2.1055(a)(1) §24.235 §27.54	Frequency Stability	Compliant

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4 DESCRIPTION OF TEST MODES

4.1 The Worst Test Modes and Configuration

1. The EUT has been tested under operating condition.
2. The field strength of radiated emission was measured as the EUT positioned in different orthogonal planes (E1/E2/H) based on actual usage of the EUT to pre-scan the emissions for determining the worst case scenario.

4.2 NB IoT

NB IoT Modes	Test Items	Subcarrier		Modulation		Test		
		3.75	15	BPSK	QPSK	L	M	H
B2	EIRP	V	V	V	V	V	V	V
	Occupied Bandwidth	V	V	V	V	V	V	V
	Band Edge Compliance	V	V	V	V	V	-	V
	Peak-To-Average Ratio	-	V	V	V	V	V	V
	Frequency Stability	-	V	-	V	-	V	-
	Conducted Spurious Emission	-	V	V	V	V	V	V
	Radiated Spurious Emission	-	V	-	V	V	V	V

NB IoT Modes	Test Items	Subcarrier		Modulation		Test		
		3.75	15	BPSK	QPSK	L	M	H
B4	EIRP	V	V	V	V	V	V	V
	Occupied Bandwidth	V	V	V	V	V	V	V
	Band Edge Compliance	V	V	V	V	V	-	V
	Peak-To-Average Ratio	-	V	V	V	V	V	V
	Frequency Stability	-	V	-	V	-	V	-
	Conducted Spurious Emission	-	V	V	V	V	V	V
	Radiated Spurious Emission	-	V	-	V	V	V	V

NB IoT Modes	Test Items	Subcarrier		Modulation		Test		
		3.75	15	BPSK	QPSK	L	M	H
B13	EIRP	V	V	V	V	V	V	V
	Occupied Bandwidth	V	V	V	V	V	V	V
	Band Edge Compliance	V	V	V	V	V	-	V
	Peak-To-Average Ratio	-	V	V	V	V	V	V
	Frequency Stability	-	V	-	V	-	V	-
	Conducted Spurious Emission	-	V	V	V	V	V	V
	Radiated Spurious Emission	V	-	V	-	V	V	V

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4.3 Cat M1

Test Items				Max. Output Power								
Band	Test Channel			Bandwidth (MHz)				Modulation		RB #		
	L	M	H	1.4	3	5	10	QPSK	16QAM	1	Half	Full
2	V	V	V	V	V	V	V	V	V	V	V	V
4	V	V	V	V	V	V	V	V	V	V	V	V
12	V	V	V	V	V	V	V	V	V	V	V	V
Test Items				Frequency Stability								
2	-	V	-				V	V	-	-	-	V
4	-	V	-				V	V	-	-	-	V
12	-	V	-				V	V	-	-	-	V
Test Items				26dB and 99% Bandwidth								
Band	Test Channel			Bandwidth (MHz)				Modulation		RB #		
	L	M	H	1.4	3	5	10	QPSK	16QAM	1	Half	Full
2	V	V	V	V	V	V	V	V	V	-	-	V
4	V	V	V	V	V	V	V	V	V	-	-	V
12	V	V	V	V	V	V	V	V	V	-	-	V
Test Items				Peak-to-Average Ratio								
2	V	V	V	V	V	V	V	-	V	-	-	V
4	V	V	V	V	V	V	V	-	V	-	-	V
12	V	V	V	V	V	V	V	-	V	-	-	V
Test Items				Band Edge								
Band	Test Channel			Bandwidth (MHz)				Modulation		RB #		
	L	M	H	1.4	3	5	10	QPSK	16QAM	1	Half	Full
2	V	-	V	V	V	V	V	V	-	V	V	V
4	V	-	V	V	V	V	V	V	-	V	V	V
12	V	-	V	V	V	V	V	V	-	V	V	V
Test Items				Conducted Emission								
2	V	V	V	V	V	V	V	V	-	V	-	-
4	V	V	V	V	V	V	V	V	-	V	-	-
12	V	V	V	V	V	V	V	V	-	V	-	-

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5 MEASUREMENT UNCERTAINTY

Test Items	Uncertainty
RF Power Output	+/- 1 dB
ERP/ EIRP measurement	+/- 3 dB
	+/- 3 dB
Emission Bandwidth	+/- 1.53 Hz
Out of Band Emissions at Antenna Terminals and Band Edge	+/- 1.68 dB
Peak to Average Ratio	+/- 1 dB
Frequency Stability vs. Temperature	+/- 1.53 Hz
Frequency Stability vs. Voltage	+/- 1.53 Hz
Temperature	+/- 0.4 °C
Humidity	+/- 3.5 %
DC / AC Power Source	+/- 1 %

Radiated Spurious Emission Measurement Uncertainty		
Polarization: Vertical	+/- 2.57 dB	9kHz~30MHz
	+/- 4.85 dB	30MHz - 1000MHz
	+/- 4.45 dB	1GHz - 18GHz
	+/- 4.24 dB	18GHz - 40GHz
Polarization: Horizontal	+/- 2.57 dB	9kHz~30MHz
	+/- 4.37 dB	30MHz - 1000MHz
	+/- 4.45 dB	1GHz - 18GHz
	+/- 4.24 dB	18GHz - 40GHz

This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of k=2.

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6 MEASUREMENT EQUIPMENT USED

6.1 Conducted Measurement

Conducted Emission Test Site: Conducted E					
EQUIPMENT TYPE	MFR	MODEL NUMBER	SERIAL NUMBER	LAST CAL.	CAL DUE.
Radio Communication Analyzer	Anritsu	MT8821C	6262044732	12/29/2021	12/28/2022
DC Power Supply	Gwinstek	SPS-3610	GEV856769	07/28/2022	07/27/2023
Spectrum Analyzer	KEYSIGHT	N9010A	MY54510568	07/07/2022	07/06/2023
Test Software	SGS Taiwan	EMI Tool Function Alpha	Ver.1.0	N.C.R	N.C.R
Coaxial Cables	Woken	00100A1F2A196C	RF93	11/18/2021	11/17/2022
Coaxial Cables	Woken	00100A1F1A185C	RF72	11/18/2021	11/17/2022
Coaxial Cables	Woken	00100A1F1A185C	RF73	11/18/2021	11/17/2022
Attenuator	Marvelous	MVE2213-10	RF06	11/18/2021	11/17/2022
DC Block	PASTERNAK	PE8210	RF158	11/18/2021	11/17/2022
Splitter	Woken	DOM35LW1A2	RF255	11/18/2021	11/17/2022

6.2 Radiated Measurement

Radiated Emission Test Site: SAC D					
EQUIPMENT TYPE	MFR	MODEL NUMBER	SERIAL NUMBER	LAST CAL.	CAL DUE.
Broadband Antenna	SCHWARZBECK	VULB 9168	9168-300	10/19/2021	10/18/2022
Broadband Antenna	SCHWARZBECK	VULB 9168	9168-617	11/12/2021	11/11/2022
Horn Antenna	Schwarzbeck	BBHA9170	184	12/16/2021	12/15/2022
Horn Antenna	Schwarzbeck	BBHA9170	185	08/06/2022	08/05/2023
Horn Antenna	Schwarzbeck	BBHA9120D	1187	01/06/2022	01/05/2023
Horn Antenna	Schwarzbeck	BBHA9120D	1341	05/31/2022	05/30/2023
3m Site NSA	SGS	966 chamber D	N/A	07/12/2022	07/11/2023
Spectrum Analyzer	KEYSIGHT	N9010A	MY57120200	03/24/2022	03/23/2023
Radio Communication Analyzer	Anritsu	MT8821C	6262044732	12/29/2021	12/28/2022
Test Software	audix	e3	E3 20923 SGS Ver.9 (C)	N.C.R	N.C.R
Pre-Amplifier	EMC Instruments	EMC184045B	980135	10/27/2021	10/26/2022
Pre-Amplifier	EMC Instruments	EMC9135	980234	11/18/2021	11/17/2022
Pre-Amplifier	EMC Instruments	EMC12630SE	980273	11/18/2021	11/17/2022
Coaxial Cable	Huber+Suhner	RG 214/U	W21.01	11/18/2021	11/17/2022
Coaxial Cable	Huber Suhner	EMC106-SM-SM-7200	150703	11/18/2021	11/17/2022
Coaxial Cable	Huber Suhner	SUCOFLEX 104	MY17413/4	11/18/2021	11/17/2022

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7 MAXIMUM OUTPUT POWER

7.1 Standard Applicable

A base station simulator was used to establish communication with the EUT. Its parameters were set to transmit the maximum power on the EUT. The measured power in the radio frequency on the transmitter output terminals.

7.2 FCC ERP/EIRP LIMIT

According to FCC §2.1046

FCC 24.232(c)

Mobile and portable stations are limited to 2 W EIRP.

FCC 27.50 (b)

(9) Control stations and mobile stations transmitting in the 746-757 MHz, 776-788 MHz, and 805-806 MHz bands are limited to 30 watts ERP.

(10) Portable stations (hand-held devices) transmitting in the 746-757 MHz, 776-788 MHz, and 805-806 MHz bands are limited to 3 watts ERP.

FCC 27.50(c)

(9) Control and mobile stations in the 698-746 MHz band are limited to 30 watts ERP.

(10) Portable stations (hand-held devices) are limited to 3 watts ERP.

FCC 27.50(d)

(4) Mobile, and portable (hand-held) stations operating in the 1710-1755 MHz, 1695-1710 MHz and 1755-1780 MHz bands are limited to 1W EIRP.

(7) Mobile, and portable (hand-held) stations operating in the 1710-1755 MHz band are limited to 2 watts EIRP.

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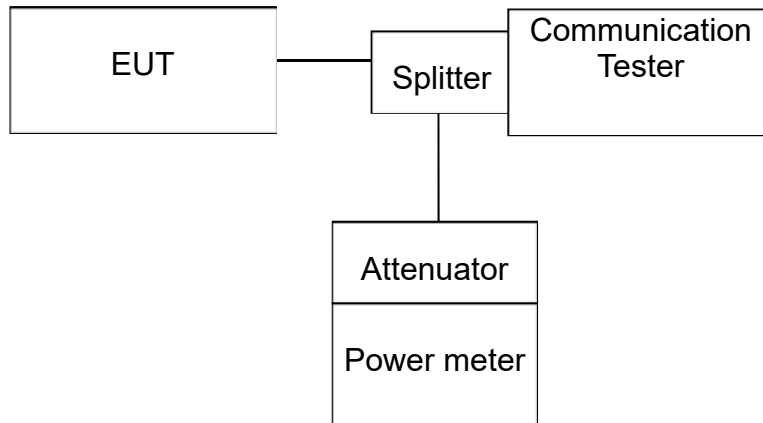
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7.3 Test Set-up



Note: Measurement setup for testing on Antenna connector

7.4 Output Power Measurement Applicable Guidance

The transmitter output was connected to a calibrated attenuator, the other end of which was connected to a power meter. Transmitter output was read off the power meter in dBm. The power output at the transmitter antenna port was determined by adding the value of the attenuator to the power meter reading. TS 151 010-1 is reference to conduct the measurement of output power.

The Procedure of KDB941225 (SAR Measurement Procedures for 3G devices, (WCDMA/HSPA) was used for EUT and Base station setting. RMC 12.2kps is used for this testing, and KDB 971168 D01 Power Meas License Digital System as the supplemental test methodology to adjust the proper setting obtaining the measurement results. Wall bands conducted average power is obtained from the simulator telecommunication test set.

7.5 Determining ERP and/or EIRP from conducted RF output power measurements

$$ERP/EIRP = P_{Meas} + GT - LC$$

Where:

ERP/EIRP	= effective or equivalent radiated power, respectively (expressed in the same units as P_{Meas} , typically dBW or dBm);
P_{Meas}	= measured transmitter output power or PSD, in dBm or dBW;
GT	= gain of the transmitting antenna, in dBd (ERP) or dBi (EIRP)
LC	= signal attenuation in the connecting cable between the transmitter and antenna, in dB.

For devices utilizing multiple antennas, KDB 662911 provides guidance for determining the effective array transmit antenna gain term to be used in the above equation.

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7.6 Measurement Result

7.6.1 NB IoT

Gain: 3.08

NB-IoT Band 2								
Channel	Freq. (MHz)	Modulation	Subcarrier Spacing (kHz)	N _{tones}	Power (dBm)	EIRP (dBm)	Limit (dBm)	Margin (dBm)
18601	1850.1	BPSK	3.75	1@0	22.06	25.14	33.00	7.86
				1@47	22.09	25.17		7.83
		QPSK	15	1@11	22.12	25.2		7.80
				1@0	22.18	25.26		7.74
				1@11	22.2	25.28		7.72
				12@0	22.12	25.2		7.80
18900	1880	BPSK	3.75	1@0	21.97	25.05		7.95
				1@47	21.83	24.91		8.09
		QPSK	15	1@11	21.85	24.93		8.07
				1@0	21.79	24.87		8.13
				1@11	21.83	24.91		8.09
				12@0	21.94	25.02		7.98
19199	1909.9	BPSK	3.75	1@0	21.84	24.92		8.08
				1@47	21.77	24.85		8.15
		QPSK	15	1@11	21.78	24.86		8.14
				1@0	21.89	24.97		8.03
				1@11	21.87	24.95		8.05
				12@0	21.92	25		8.00

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Gain: 3.18

NB-IoT Band 4								
Channel	Freq. (MHz)	Modulation	Subcarrier Spacing (kHz)	N _{tones}	Power (dBm)	EIRP (dBm)	Limit (dBm)	Margin (dBm)
19951	1710.1	BPSK	3.75	1@0	21.71	24.89	30.00	5.11
				1@47	21.7	24.88		5.12
		QPSK	15	1@11	21.69	24.87		5.13
				1@0	21.64	24.82		5.18
				1@11	21.77	24.95		5.05
				12@0	21.65	24.83		5.17
20175	1732.5	BPSK	3.75	1@0	21.84	25.02		4.98
				1@47	21.93	25.11		4.89
		QPSK	15	1@11	21.87	25.05		4.95
				1@0	21.82	25		5.00
				1@11	21.91	25.09		4.91
				12@0	21.92	25.1		4.90
20399	1754.9	BPSK	3.75	1@0	22.1	25.28		4.72
				1@47	21.98	25.16		4.84
		QPSK	15	1@11	22.05	25.23		4.77
				1@0	22.08	25.26		4.74
				1@11	22.18	25.36		4.64
				12@0	22.16	25.34		4.66

Gain: -0.04

NB-IoT Band 13								
Channel	Freq. (MHz)	Modulation	Subcarrier Spacing (kHz)	N _{tones}	Power (dBm)	ERP (dBm)	Limit (dBm)	Margin (dBm)
23181	777.1	BPSK	3.75	1@0	23.28	23.24	34.77	11.53
				1@47	23.3	23.26		11.51
		QPSK	15	1@11	22.35	22.31		12.46
				1@0	22.26	22.22		12.55
				1@11	22.25	22.21		12.56
				12@0	22.24	22.2		12.57
23230	782	BPSK	3.75	1@0	22.43	22.39		12.38
				1@47	22.38	22.34		12.43
		QPSK	15	1@11	22.31	22.27		12.50
				1@0	22.35	22.31		12.46
				1@11	22.37	22.33		12.44
				12@0	22.39	22.35		12.42
23279	786.9	BPSK	3.75	1@0	22.61	22.57		12.20
				1@47	22.56	22.52		12.25
		QPSK	15	1@11	22.58	22.54		12.23
				1@0	22.47	22.43		12.34
				1@11	22.68	22.64		12.13
				12@0	22.58	22.54		12.23

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7.6.2 Cat M1

Antenna gain (dBi)		3.08								
M1 Band 2_Uplink frequency band : 1850 to 1910 MHz										
BW (MHz)	UL Channel	Frequency (MHz)	Modulation	RB Size	RB Offset	Index	Conducted Average (dBm)	EIRP Average (dBm)	EIRP Limit (dBm)	Margin (dB)
1.4	18607	1850.7	QPSK	1	0	0	21.38	24.46	33	-8.54
				1	5	0	21.60	24.68	33	-8.32
				6	0	0	21.51	24.59	33	-8.41
	18900	1880	QPSK	1	0	0	20.99	24.07	33	-8.93
				1	5	0	21.26	24.34	33	-8.66
				6	0	0	21.13	24.21	33	-8.79
	19193	1909.3	QPSK	1	0	0	21.00	24.08	33	-8.92
				1	5	0	21.36	24.44	33	-8.56
				6	0	0	20.96	24.04	33	-8.96
1.4	18607	1850.7	16QAM	1	0	11	21.35	24.43	33	-8.57
				1	4	11	21.40	24.48	33	-8.52
				5	0	11	21.47	24.55	33	-8.45
	18900	1880	16QAM	1	0	11	20.78	23.86	33	-9.14
				1	4	11	20.85	23.93	33	-9.07
				5	0	11	21.10	24.18	33	-8.82
	19193	1909.3	16QAM	1	0	11	20.99	24.07	33	-8.93
				1	4	11	20.89	23.97	33	-9.03
				5	0	11	20.93	24.01	33	-8.99

Antenna gain (dBi)		3.08								
M1 Band 2_Uplink frequency band : 1850 to 1910 MHz										
BW (MHz)	UL Channel	Frequency (MHz)	Modulation	RB Size	RB Offset	Index	Conducted Average (dBm)	EIRP Average (dBm)	EIRP Limit (dBm)	Margin (dB)
3	18615	1851.5	QPSK	1	0	0	21.80	24.88	33	-8.12
				1	5	0	22.07	25.15	33	-7.85
				6	0	0	21.96	25.04	33	-7.96
	18900	1880	QPSK	1	0	0	21.50	24.58	33	-8.42
				1	5	0	21.77	24.85	33	-8.15
				6	0	0	21.65	24.73	33	-8.27
	19185	1908.5	QPSK	1	0	0	21.91	24.99	33	-8.01
				1	5	0	22.21	25.29	33	-7.71
				6	0	0	21.91	24.99	33	-8.01
3	18615	1851.5	16QAM	1	0	11	21.07	24.15	33	-8.85
				1	4	11	21.47	24.55	33	-8.45
				5	0	11	21.55	24.63	33	-8.37
	18900	1880	16QAM	1	0	11	20.43	23.51	33	-9.49
				1	4	11	20.67	23.75	33	-9.25
				5	0	11	20.85	23.93	33	-9.07
	19185	1908.5	16QAM	1	0	11	20.70	23.78	33	-9.22
				1	4	11	20.97	24.05	33	-8.95
				5	0	11	21.12	24.20	33	-8.8

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Antenna gain (dBi)		3.08								
M1 Band 2_Uplink frequency band : 1850 to 1910 MHz										
BW (MHz)	UL Channel	Frequency (MHz)	Modulation	RB Size	RB Offset	Index	Conducted Average (dBm)	EIRP Average (dBm)	EIRP Limit (dBm)	Margin (dB)
5	18625	1852.5	QPSK	1	0	0	21.62	24.70	33	-8.3
				1	5	0	21.94	25.02	33	-7.98
				6	0	0	21.64	24.72	33	-8.28
	18900	1880	QPSK	1	0	0	21.59	24.67	33	-8.33
				1	5	0	21.97	25.05	33	-7.95
				6	0	0	21.58	24.66	33	-8.34
	19175	1907.5	QPSK	1	0	0	21.43	24.51	33	-8.49
				1	5	0	21.67	24.75	33	-8.25
				6	0	0	21.45	24.53	33	-8.47
5	18625	1852.5	16QAM	1	0	11	21.47	24.55	33	-8.45
				1	4	11	21.61	24.69	33	-8.31
				5	0	11	21.61	24.69	33	-8.31
	18900	1880	16QAM	1	0	11	21.14	24.22	33	-8.78
				1	4	11	21.62	24.70	33	-8.3
				5	0	11	21.53	24.61	33	-8.39
	19175	1907.5	16QAM	1	0	11	21.08	24.16	33	-8.84
				1	4	11	21.65	24.73	33	-8.27
				5	0	11	21.42	24.50	33	-8.5

Antenna gain (dBi)		3.08								
M1 Band 2_Uplink frequency band : 1850 to 1910 MHz										
BW (MHz)	UL Channel	Frequency (MHz)	Modulation	RB Size	RB Offset	Index	Conducted Average (dBm)	EIRP Average (dBm)	EIRP Limit (dBm)	Margin (dB)
10	18650	1855	QPSK	1	0	0	21.58	24.66	33	-8.34
				1	5	0	21.87	24.95	33	-8.05
				6	0	0	21.69	24.77	33	-8.23
	18900	1880	QPSK	1	0	0	21.54	24.62	33	-8.38
				1	5	0	21.86	24.94	33	-8.06
				6	0	0	21.52	24.60	33	-8.4
	19150	1905	QPSK	1	0	0	21.42	24.50	33	-8.5
				1	5	0	21.75	24.83	33	-8.17
				6	0	0	21.39	24.47	33	-8.53
10	18650	1855	16QAM	1	0	11	21.32	24.40	33	-8.6
				1	4	11	21.71	24.79	33	-8.21
				5	0	11	21.61	24.69	33	-8.31
	18900	1880	16QAM	1	0	11	20.90	23.98	33	-9.02
				1	4	11	21.50	24.58	33	-8.42
				5	0	11	21.44	24.52	33	-8.48
	19150	1905	16QAM	1	0	11	21.04	24.12	33	-8.88
				1	4	11	21.47	24.55	33	-8.45
				5	0	11	21.36	24.44	33	-8.56

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Antenna gain (dBi)		3.18								
M1 Band 4_Uplink frequency band : 1710 to 1755 MHz										
BW (MHz)	UL Channel	Frequency (MHz)	Modulation	RB Size	RB Offset	Index	Conducted Average (dBm)	EIRP Average (dBm)	EIRP Limit (dBm)	Margin (dB)
1.4	19957	1710.7	QPSK	1	0	0	21.20	24.38	30	-5.62
				1	5	0	21.37	24.55	30	-5.45
				6	0	0	21.09	24.27	30	-5.73
	20175	1732.5	QPSK	1	0	0	21.24	24.42	30	-5.58
				1	5	0	21.38	24.56	30	-5.44
				6	0	0	21.18	24.36	30	-5.64
	20393	1754.3	QPSK	1	0	0	21.19	24.37	30	-5.63
				1	5	0	21.56	24.74	30	-5.26
				6	0	0	21.31	24.49	30	-5.51
1.4	19957	1710.7	16QAM	1	0	11	20.45	23.63	30	-6.37
				1	4	11	20.64	23.82	30	-6.18
				5	0	11	20.73	23.91	30	-6.09
	20175	1732.5	16QAM	1	0	11	20.87	24.05	30	-5.95
				1	4	11	21.27	24.45	30	-5.55
				5	0	11	21.13	24.31	30	-5.69
	20393	1754.3	16QAM	1	0	11	21.47	24.65	30	-5.35
				1	4	11	21.46	24.64	30	-5.36
				5	0	11	21.23	24.41	30	-5.59
Antenna gain (dBi)		3.18								
M1 Band 4_Uplink frequency band : 1710 to 1755 MHz										
BW (MHz)	UL Channel	Frequency (MHz)	Modulation	RB Size	RB Offset	Index	Conducted Average (dBm)	EIRP Average (dBm)	EIRP Limit (dBm)	Margin (dB)
3	19965	1711.5	QPSK	1	0	0	21.09	24.27	30	-5.73
				1	5	0	21.37	24.55	30	-5.45
				6	0	0	21.08	24.26	30	-5.74
	20175	1732.5	QPSK	1	0	0	21.02	24.20	30	-5.8
				1	5	0	21.38	24.56	30	-5.44
				6	0	0	21.12	24.30	30	-5.7
	20385	1753.5	QPSK	1	0	0	21.20	24.38	30	-5.62
				1	5	0	21.52	24.70	30	-5.3
				6	0	0	21.32	24.50	30	-5.5
3	19965	1711.5	16QAM	1	0	11	20.49	23.67	30	-6.33
				1	4	11	20.67	23.85	30	-6.15
				5	0	11	20.85	24.03	30	-5.97
	20175	1732.5	16QAM	1	0	11	20.89	24.07	30	-5.93
				1	4	11	21.25	24.43	30	-5.57
				5	0	11	21.03	24.21	30	-5.79
	20385	1753.5	16QAM	1	0	11	20.75	23.93	30	-6.07
				1	4	11	21.12	24.30	30	-5.7
				5	0	11	21.26	24.44	30	-5.56

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Antenna gain (dBi)		3.18								
M1 Band 4_Uplink frequency band : 1710 to 1755 MHz										
BW (MHz)	UL Channel	Frequency (MHz)	Modulation	RB Size	RB Offset	Index	Conducted Average (dBm)	EIRP Average (dBm)	EIRP Limit (dBm)	Margin (dB)
5	19975	1712.5	QPSK	1	0	0	20.96	24.14	30	-5.86
				1	5	0	21.24	24.42	30	-5.58
				6	0	0	20.85	24.03	30	-5.97
	20175	1732.5	QPSK	1	0	0	21.04	24.22	30	-5.78
				1	5	0	21.37	24.55	30	-5.45
				6	0	0	21.13	24.31	30	-5.69
	20375	1752.5	QPSK	1	0	0	21.16	24.34	30	-5.66
				1	5	0	21.34	24.52	30	-5.48
				6	0	0	21.12	24.30	30	-5.7
5	19975	1712.5	16QAM	1	0	11	20.73	23.91	30	-6.09
				1	4	11	21.13	24.31	30	-5.69
				5	0	11	20.75	23.93	30	-6.07
	20175	1732.5	16QAM	1	0	11	21.03	24.21	30	-5.79
				1	4	11	21.31	24.49	30	-5.51
				5	0	11	21.06	24.24	30	-5.76
	20375	1752.5	16QAM	1	0	11	21.11	24.29	30	-5.71
				1	4	11	21.30	24.48	30	-5.52
				5	0	11	21.10	24.28	30	-5.72

Antenna gain (dBi)		3.18								
M1 Band 4_Uplink frequency band : 1710 to 1755 MHz										
BW (MHz)	UL Channel	Frequency (MHz)	Modulation	RB Size	RB Offset	Index	Conducted Average (dBm)	EIRP Average (dBm)	EIRP Limit (dBm)	Margin (dB)
10	20000	1715	QPSK	1	0	0	21.00	24.18	30	-5.82
				1	5	0	21.39	24.57	30	-5.43
				6	0	0	21.06	24.24	30	-5.76
	20175	1732.5	QPSK	1	0	0	21.26	24.44	30	-5.56
				1	5	0	21.57	24.75	30	-5.25
				6	0	0	21.32	24.50	30	-5.5
	20350	1750	QPSK	1	0	0	21.19	24.37	30	-5.63
				1	5	0	21.47	24.65	30	-5.35
				6	0	0	21.24	24.42	30	-5.58
10	20000	1715	16QAM	1	0	11	20.88	24.06	30	-5.94
				1	4	11	21.29	24.47	30	-5.53
				5	0	11	21.01	24.19	30	-5.81
	20175	1732.5	16QAM	1	0	11	20.99	24.17	30	-5.83
				1	4	11	21.55	24.73	30	-5.27
				5	0	11	21.27	24.45	30	-5.55
	20350	1750	16QAM	1	0	11	20.92	24.10	30	-5.9
				1	4	11	21.40	24.58	30	-5.42
				5	0	11	21.18	24.36	30	-5.64

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Antenna gain (dBi)		-3.36									
M1 Band 12_Uplink frequency band : 699 to 716 MHz											
BW (MHz)	UL Channel	Frequency (MHz)	Modulation	RB Size	RB Offset	Index	Conducted Average (dBm)	ERP Average (dBm)	EIRP Average (dBm)	ERP Limit (dBm)	Margin (dB)
1.4	23017	699.7	QPSK	1	0	0	21.90	16.39	18.54	34.77	-18.38
				1	5	0	22.39	16.88	19.03	34.77	-17.89
				6	0	0	22.10	16.59	18.74	34.77	-18.18
	23095	707.5	QPSK	1	0	0	22.44	16.93	19.08	34.77	-17.84
				1	5	0	22.51	17.00	19.15	34.77	-17.77
				6	0	0	22.40	16.89	19.04	34.77	-17.88
	23173	715.5	QPSK	1	0	0	22.80	17.29	19.44	34.77	-17.48
				1	5	0	22.95	17.44	19.59	34.77	-17.33
				6	0	0	22.76	17.25	19.40	34.77	-17.52
1.4	23017	699.7	16QAM	1	0	11	21.38	15.87	18.02	34.77	-18.90
				1	4	11	21.63	16.12	18.27	34.77	-18.65
				5	0	11	21.73	16.22	18.37	34.77	-18.55
	23095	707.5	16QAM	1	0	11	22.21	16.70	18.85	34.77	-18.07
				1	4	11	22.24	16.73	18.88	34.77	-18.04
				5	0	11	22.31	16.80	18.95	34.77	-17.97
	23173	715.5	16QAM	1	0	11	22.45	16.94	19.09	34.77	-17.83
				1	4	11	22.51	17.00	19.15	34.77	-17.77
				5	0	11	22.59	17.08	19.23	34.77	-17.69

Antenna gain (dBi)		-3.36									
M1 Band 12_Uplink frequency band : 699 to 716 MHz											
BW (MHz)	UL Channel	Frequency (MHz)	Modulation	RB Size	RB Offset	Index	Conducted Average (dBm)	ERP Average (dBm)	EIRP Average (dBm)	ERP Limit (dBm)	Margin (dB)
3	23025	700.5	QPSK	1	0	0	22.09	16.58	18.73	34.77	-18.19
				1	5	0	22.28	16.77	18.92	34.77	-18.00
				6	0	0	22.01	16.50	18.65	34.77	-18.27
	23095	707.5	QPSK	1	0	0	22.24	16.73	18.88	34.77	-18.04
				1	5	0	22.42	16.91	19.06	34.77	-17.86
				6	0	0	22.34	16.83	18.98	34.77	-17.94
	23165	714.5	QPSK	1	0	0	22.55	17.04	19.19	34.77	-17.73
				1	5	0	22.72	17.21	19.36	34.77	-17.56
				6	0	0	22.38	16.87	19.02	34.77	-17.90
3	23025	700.5	16QAM	1	0	11	21.53	16.02	18.17	34.77	-18.75
				1	4	11	21.66	16.15	18.30	34.77	-18.62
				5	0	11	21.89	16.38	18.53	34.77	-18.39
	23095	707.5	16QAM	1	0	11	21.92	16.41	18.56	34.77	-18.36
				1	4	11	21.81	16.30	18.45	34.77	-18.47
				5	0	11	22.16	16.65	18.80	34.77	-18.12
	23165	714.5	16QAM	1	0	11	22.04	16.53	18.68	34.77	-18.24
				1	4	11	22.15	16.64	18.79	34.77	-18.13
				3	2	0	-0.02	-5.53	-3.38	34.77	-40.30
				5	0	11	22.27	16.76	18.91	34.77	-18.01

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Antenna gain (dBi)		-3.36									
M1 Band 12_Uplink frequency band : 699 to 716 MHz											
BW (MHz)	UL Channel	Frequency (MHz)	Modulation	RB Size	RB Offset	Index	Conducted Average (dBm)	ERP Average (dBm)	EIRP Average (dBm)	ERP Limit (dBm)	Margin (dB)
5	23035	701.5	QPSK	1	0	0	22.22	16.71	18.86	34.77	-18.06
				1	5	0	22.39	16.88	19.03	34.77	-17.89
				6	0	0	22.07	16.56	18.71	34.77	-18.21
	23095	707.5	QPSK	1	0	0	22.35	16.84	18.99	34.77	-17.93
				1	5	0	22.31	16.80	18.95	34.77	-17.97
				6	0	0	22.10	16.59	18.74	34.77	-18.18
	23155	713.5	QPSK	1	0	0	22.64	17.13	19.28	34.77	-17.64
				1	5	0	22.78	17.27	19.42	34.77	-17.50
				6	0	0	22.56	17.05	19.20	34.77	-17.72
5	23035	701.5	16QAM	1	0	11	21.50	15.99	18.14	34.77	-18.78
				1	4	11	21.85	16.34	18.49	34.77	-18.43
				5	0	11	22.05	16.54	18.69	34.77	-18.23
	23095	707.5	16QAM	1	0	11	22.25	16.74	18.89	34.77	-18.03
				1	4	11	22.25	16.74	18.89	34.77	-18.03
				5	0	11	22.05	16.54	18.69	34.77	-18.23
	23155	713.5	16QAM	1	0	11	22.43	16.92	19.07	34.77	-17.85
				1	4	11	22.27	16.76	18.91	34.77	-18.01
				5	0	11	22.40	16.89	19.04	34.77	-17.88

Antenna gain (dBi)		-3.36									
M1 Band 12_Uplink frequency band : 699 to 716 MHz											
BW (MHz)	UL Channel	Frequency (MHz)	Modulation	RB Size	RB Offset	Index	Conducted Average (dBm)	ERP Average (dBm)	EIRP Average (dBm)	ERP Limit (dBm)	Margin (dB)
10	23060	704	QPSK	1	0	0	22.30	16.79	18.94	34.77	-17.98
				1	5	0	22.45	16.94	19.09	34.77	-17.83
				6	0	0	22.17	16.66	18.81	34.77	-18.11
	23095	707.5	QPSK	1	0	0	22.13	16.62	18.77	34.77	-18.15
				1	5	0	22.09	16.58	18.73	34.77	-18.19
				6	0	0	21.90	16.39	18.54	34.77	-18.38
	23130	711	QPSK	1	0	0	21.92	16.41	18.56	34.77	-18.36
				1	5	0	22.06	16.55	18.70	34.77	-18.22
				6	0	0	21.87	16.36	18.51	34.77	-18.41
10	23060	704	16QAM	1	0	11	21.96	16.45	18.60	34.77	-18.32
				1	4	11	22.07	16.56	18.71	34.77	-18.21
				5	0	11	22.13	16.62	18.77	34.77	-18.15
	23095	707.5	16QAM	1	0	11	21.95	16.44	18.59	34.77	-18.33
				1	4	11	22.03	16.52	18.67	34.77	-18.25
				5	0	11	21.85	16.34	18.49	34.77	-18.43
	23130	711	16QAM	1	0	11	21.67	16.16	18.31	34.77	-18.61
				1	4	11	21.99	16.48	18.63	34.77	-18.29
				5	0	11	21.84	16.33	18.48	34.77	-18.44

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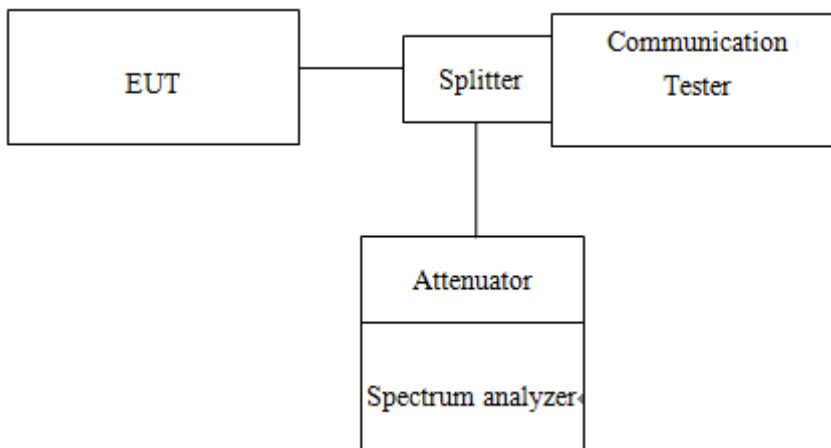
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8 OCCUPIED BANDWIDTH MEASUREMENT

8.1 Standard Applicable

The occupied bandwidth is the frequency bandwidth such that, below its lower and above its upper frequency limits, the mean powers radiated are each equal to 0.5 percent of the total mean power.

8.2 Test Set-up



8.3 Measurement Procedure

99% & 26dB Bandwidth with detector peak

The EUT's output RF connector was connected with a short cable to the spectrum analyzer, RBW was set to about 1% of emission BW, VBW= 3 times RBW, -26dBc display line was placed on the screen (or 26dB bandwidth), the occupied bandwidth is the delta frequency between the two points where the display line intersects the signal trace. Then set RBW to 99% bandwidth, RBW= 1%, VBW= 3 RBW, with span > 2 * Signal BW, set % Power = 99%.

99% Bandwidth with detector sample

The EUT's output RF connector was connected with a short cable to the spectrum analyzer, RBW was set to about 1% ~ 5% of emission BW, VBW= 3 times RBW, -20dBc display line was placed on the screen (or 20dB bandwidth). Set RBW to 99% bandwidth, RBW= 1% ~ 5%, VBW= 3 RBW, with span > 2 * Signal BW, set % Power = 99%.

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8.4 Measurement Result

8.4.1 NB IoT

NB-IoT Band 2						
Channel	Freq. (MHz)	Modulation	Subcarrier Spacing (kHz)	N _{tones}	Measure Result (kHz)	
					99% BW	26dB BW
18601	1850.1	BPSK	3.75	1@0	168.400	181.80
		QPSK	15	1@0	140.660	154.60
		QPSK	15	12@0	196.030	223.00
18900	1880	BPSK	3.75	1@0	168.300	181.90
		QPSK	15	1@0	140.410	129.60
		QPSK	15	12@0	198.970	225.50
19199	1909.9	BPSK	3.75	1@0	181.710	186.60
		QPSK	15	1@0	140.570	154.30
		QPSK	15	12@0	195.290	225.30

NB-IoT Band 4						
Channel	Freq. (MHz)	Modulation	Subcarrier Spacing (kHz)	N _{tones}	Measure Result (kHz)	
					99% BW	26dB BW
19951	1710.1	BPSK	3.75	1@0	168.110	181.80
		QPSK	15	1@0	138.910	154.40
		QPSK	15	12@0	202.370	237.20
20175	1732.5	BPSK	3.75	1@0	168.280	183.30
		QPSK	15	1@0	137.980	130.40
		QPSK	15	12@0	196.260	228.90
20399	1754.9	BPSK	3.75	1@0	177.300	182.70
		QPSK	15	1@0	139.250	154.60
		QPSK	15	12@0	196.670	224.90

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NB-IoT Band 13						
Channel	Freq. (MHz)	Modulation	Subcarrier Spacing (kHz)	N _{tones}	Measure Result (kHz)	
					99% BW	26dB BW
23181	777.1	BPSK	3.75	1@0	167.450	179.70
		QPSK	15	1@0	138.980	140.70
		QPSK	15	12@0	190.310	214.30
23230	782	BPSK	3.75	1@0	167.620	179.80
		QPSK	15	1@0	139.260	141.00
		QPSK	15	12@0	197.380	229.80
23279	786.9	BPSK	3.75	1@0	167.170	179.80
		QPSK	15	1@0	139.110	142.80
		QPSK	15	12@0	194.730	225.40

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8.4.2 Cat M1

M1 BAND 2 Channel bandwidth: 1.4MHz					
Freq. (MHz)	CH	99% BW (MHz)		26 dB BW (MHz)	
		QPSK	16QAM	QPSK	16QAM
1850.7	18607	1.0894	0.9201	1.351	1.268
1880.0	18900	1.0875	0.9219	1.359	1.257
1909.3	19193	1.0890	0.9268	1.389	1.238

M1 BAND 2 Channel bandwidth: 3MHz					
Freq. (MHz)	CH	99% BW (MHz)		26 dB BW (MHz)	
		QPSK	16QAM	QPSK	16QAM
1851.5	18615	1.1409	0.9974	1.454	1.515
1880.0	18900	1.1358	0.9889	1.459	1.392
1908.5	19185	1.1427	0.9862	1.485	1.396

M1 BAND 2 Channel bandwidth: 5MHz					
Freq. (MHz)	CH	99% BW (MHz)		26 dB BW (MHz)	
		QPSK	16QAM	QPSK	16QAM
1852.5	18625	1.2297	1.0783	1.759	1.476
1880.0	18900	1.2324	1.0771	1.830	1.569
1907.5	19175	1.2193	1.0813	1.636	1.567

M1 BAND 2 Channel bandwidth: 10MHz					
Freq. (MHz)	CH	99% BW (MHz)		26 dB BW (MHz)	
		QPSK	16QAM	QPSK	16QAM
1855.0	18650	1.3255	1.2399	1.856	1.667
1880.0	18900	1.3526	1.2317	2.116	2.332
1905.0	19150	1.3394	1.2175	2.032	1.582

M1 BAND 4 Channel bandwidth: 1.4MHz					
Freq. (MHz)	CH	99% BW (MHz)		26 dB BW (MHz)	
		QPSK	16QAM	QPSK	16QAM
1710.7	19957	1.0881	0.9161	1.395	1.240
1732.5	20175	1.0897	0.9218	1.396	1.286
1754.3	20393	1.0962	0.9216	1.363	1.268

M1 BAND 4 Channel bandwidth: 3MHz					
Freq. (MHz)	CH	99% BW (MHz)		26 dB BW (MHz)	
		QPSK	16QAM	QPSK	16QAM
1711.5	19965	1.1308	0.9763	1.483	1.359
1732.5	20175	1.1337	0.9766	1.481	1.374
1753.5	20385	1.1451	0.9849	1.496	1.357

M1 BAND 4 Channel bandwidth: 5MHz					
Freq. (MHz)	CH	99% BW (MHz)		26 dB BW (MHz)	
		QPSK	16QAM	QPSK	16QAM
1712.5	19975	1.2072	1.0793	1.548	1.480
1732.5	20175	1.2099	1.0807	1.503	1.449
1752.5	20375	1.2250	1.0663	1.638	1.449

M1 BAND 4 Channel bandwidth: 10MHz					
Freq. (MHz)	CH	99% BW (MHz)		26 dB BW (MHz)	
		QPSK	16QAM	QPSK	16QAM
1715.0	20000	1.3474	1.2008	1.735	1.664
1732.5	20175	1.3132	1.2022	1.754	1.669
1750.0	20350	1.3664	1.2450	2.190	2.075

M1 BAND 12 Channel bandwidth: 1.4MHz					
Freq. (MHz)	CH	99% BW (MHz)		26 dB BW (MHz)	
		QPSK	16QAM	QPSK	16QAM
699.7	23017	1.0964	0.9247	1.383	1.270
707.5	23095	1.0892	0.9237	1.361	1.252
715.3	23173	1.0890	0.9198	1.375	1.316

M1 BAND 12 Channel bandwidth: 3MHz					
Freq. (MHz)	CH	99% BW (MHz)		26 dB BW (MHz)	
		QPSK	16QAM	QPSK	16QAM
700.5	23025	1.1377	0.9934	1.509	1.423
707.5	23095	1.1312	0.9869	1.489	1.387
714.5	23165	1.1433	0.9973	1.454	1.371

M1 BAND 12 Channel bandwidth: 5MHz					
Freq. (MHz)	CH	99% BW (MHz)		26 dB BW (MHz)	
		QPSK	16QAM	QPSK	16QAM
701.5	23035	1.2177	1.0794	1.590	1.553
707.5	23095	1.2307	1.0582	1.645	1.603
713.5	23155	1.2200	1.0667	1.611	1.735

M1 BAND 12 Channel bandwidth: 10MHz					
Freq. (MHz)	CH	99% BW (MHz)		26 dB BW (MHz)	
		QPSK	16QAM	QPSK	16QAM
704.0	23060	1.3443	1.2057	1.814	1.794
707.5	23095	1.3221	1.1948	1.816	1.726
711.0	23130	1.3347	1.1967	1.957	1.875

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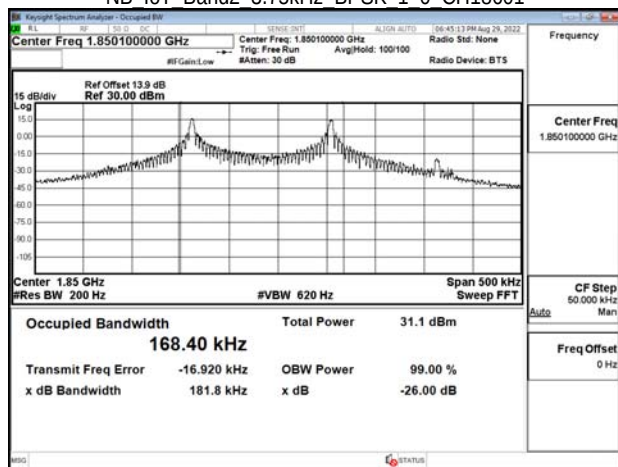
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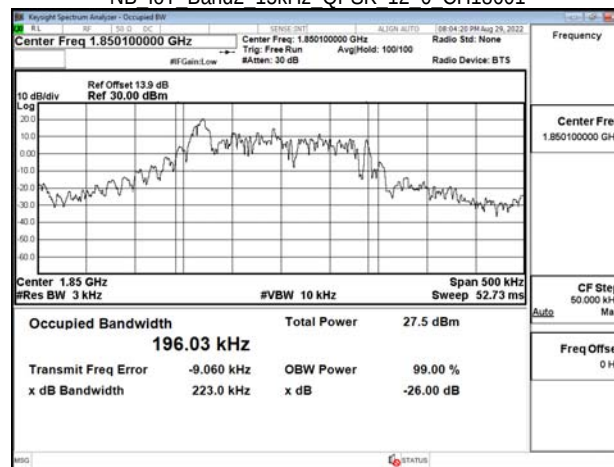
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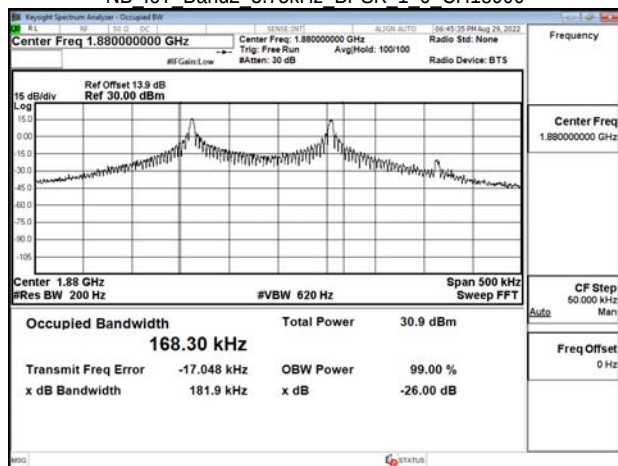
NB IoT Band2 3.75kHz BPSK 1 0 CH18601



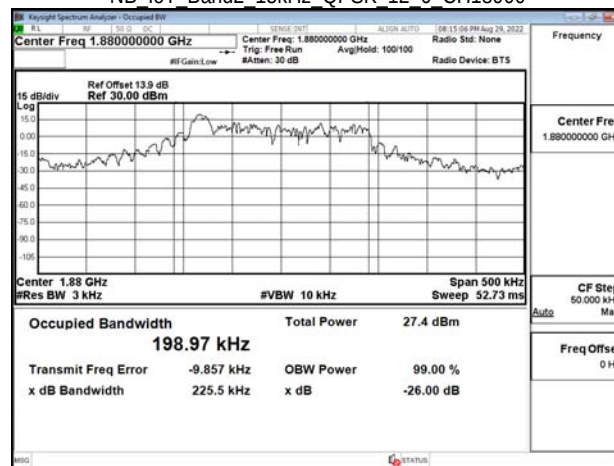
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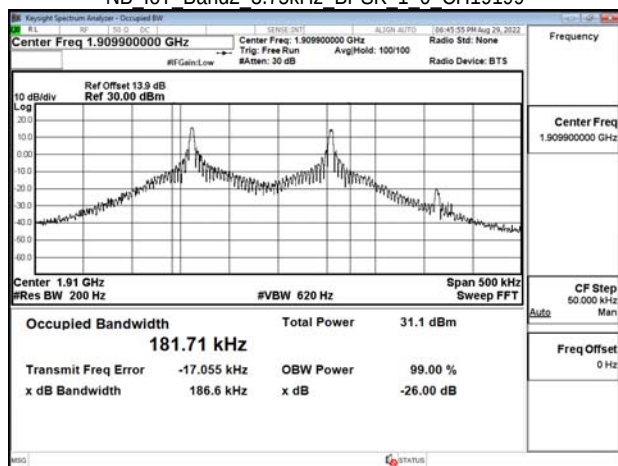
NB IoT Band2 3.75kHz BPSK 1 0 CH18900



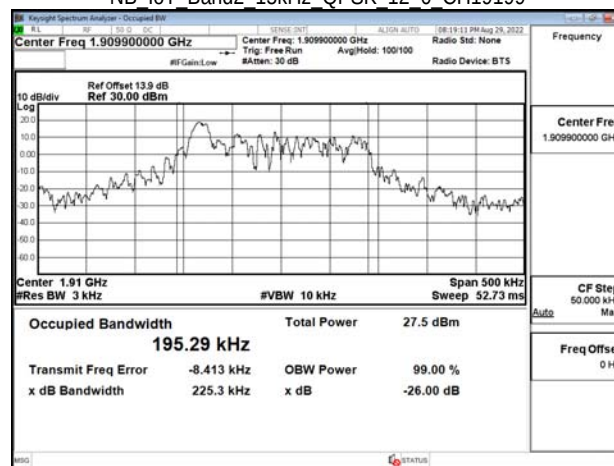
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NB IoT Band2 3.75kHz BPSK 1 0 CH19199



NB IoT Band2 15kHz QPSK 12 0 CH19199

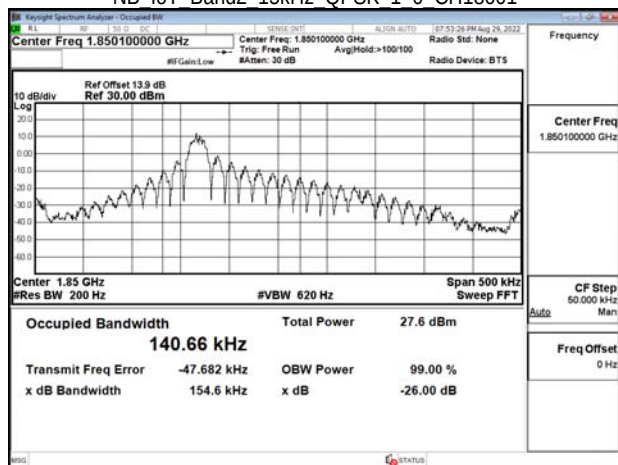


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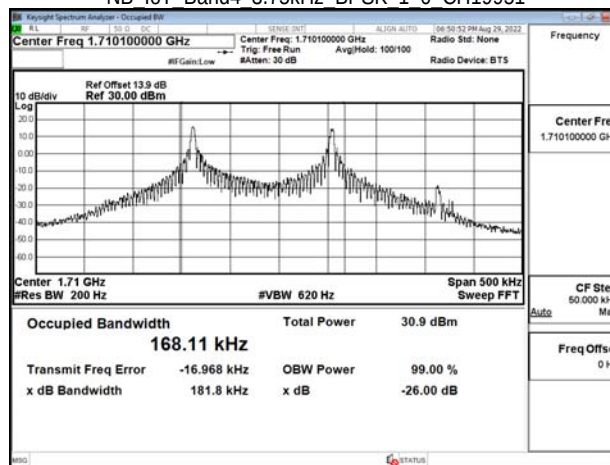
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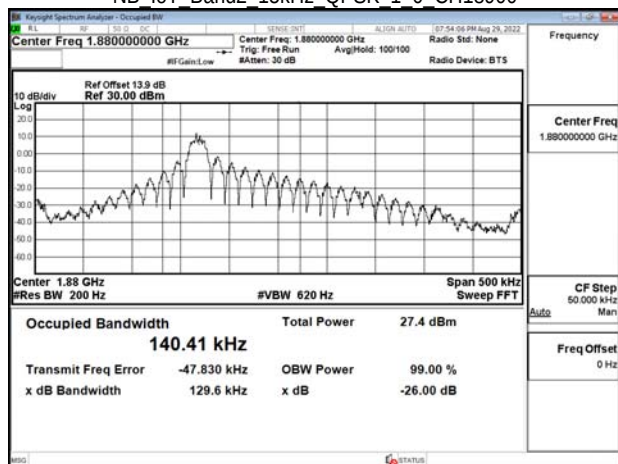
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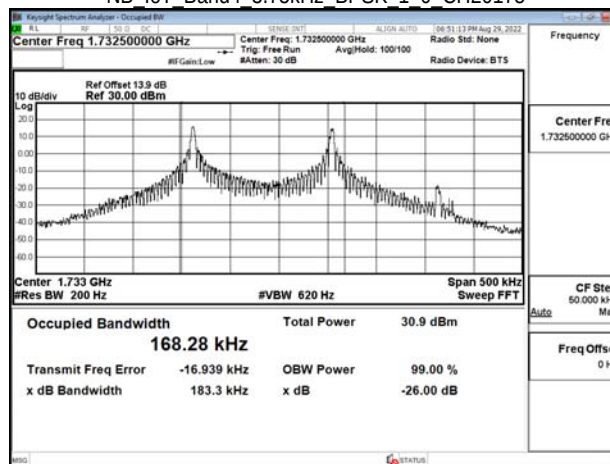
NB IoT Band4 3.75kHz BPSK 1 0 CH19951



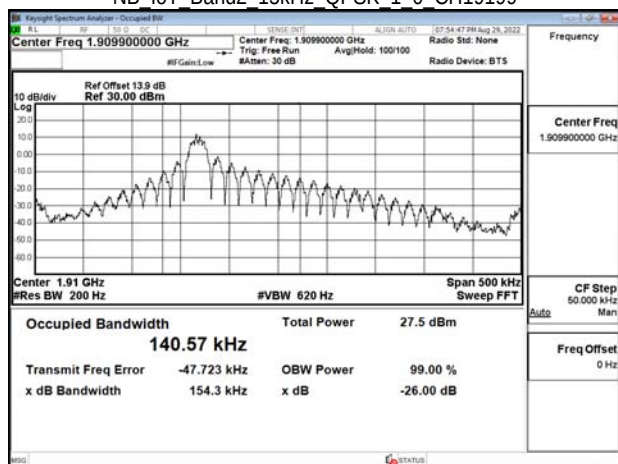
NB IoT Band2 15kHz QPSK 1 0 CH18900



NB IoT Band4 3.75kHz BPSK 1 0 CH20175



NB IoT Band2 15kHz QPSK 1 0 CH19199



NB IoT Band4 3.75kHz BPSK 1 0 CH20399



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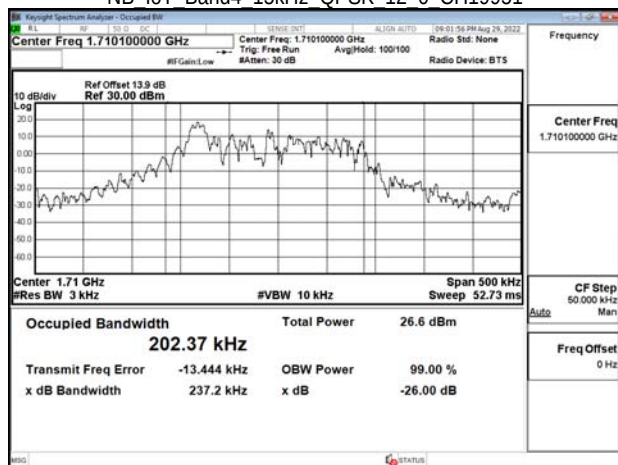
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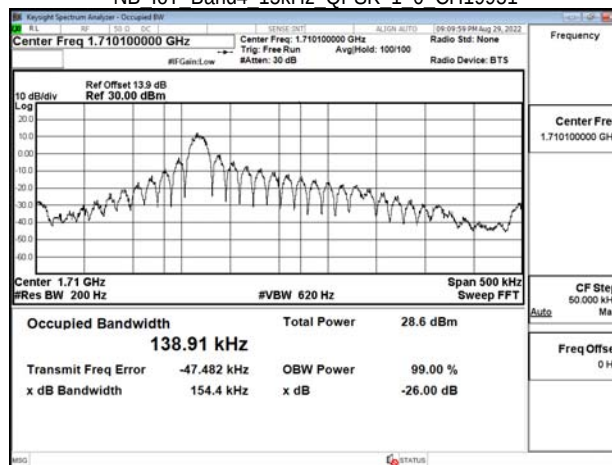
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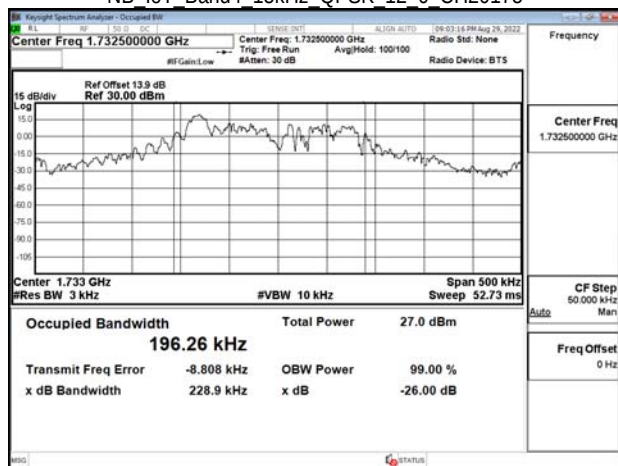
NB IoT Band4 15kHz QPSK 12 0 CH19951



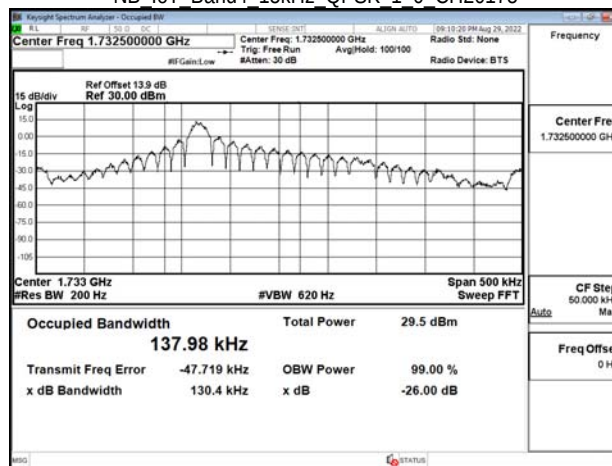
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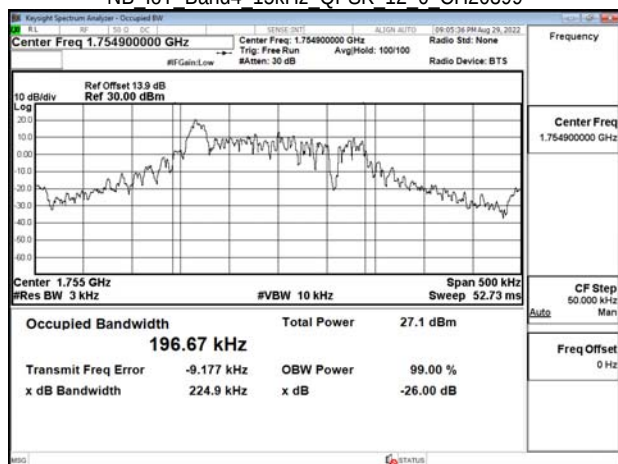
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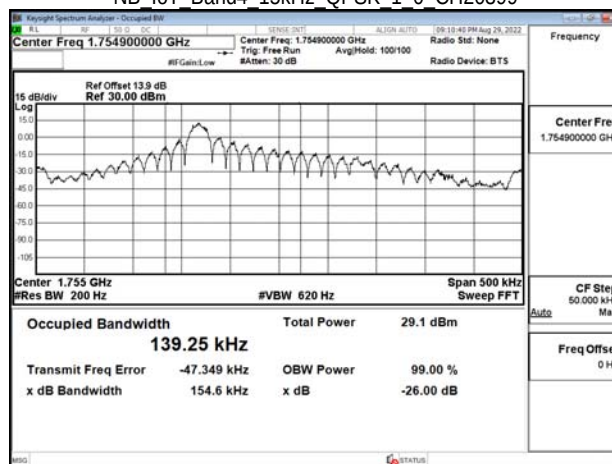
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NB IoT Band4 15kHz QPSK 12 0 CH20399



NB IoT Band4 15kHz QPSK 1 0 CH20399

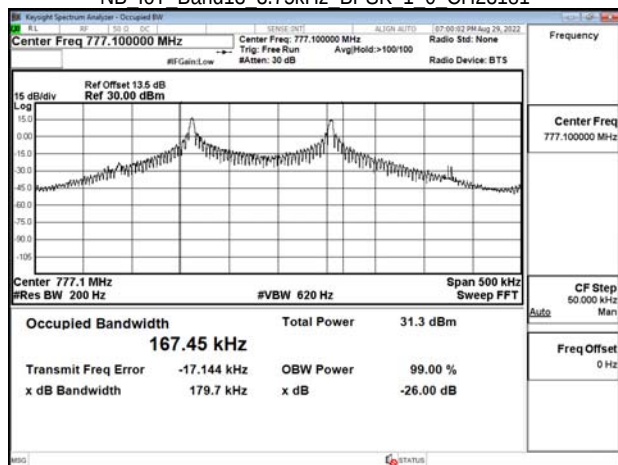


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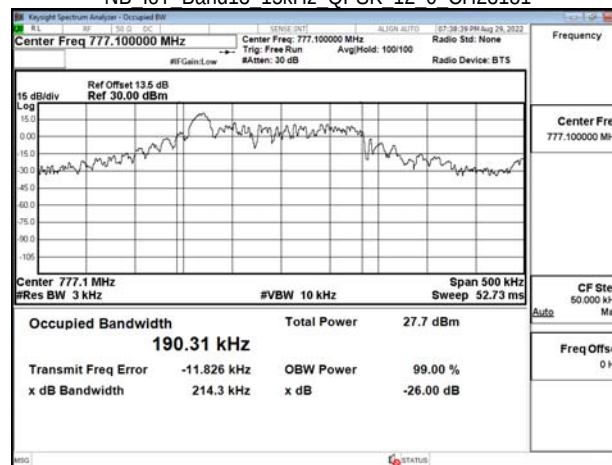
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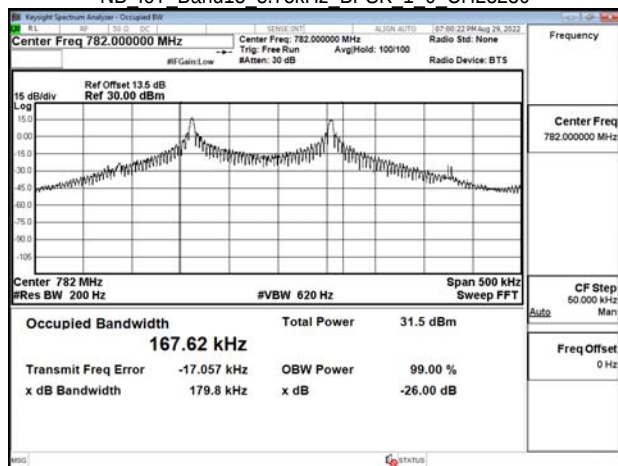
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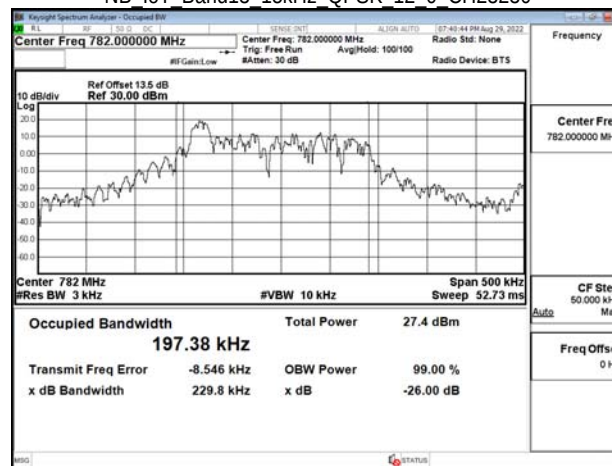
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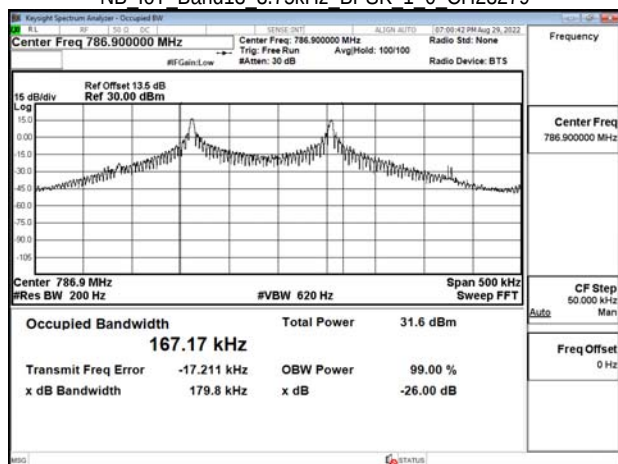
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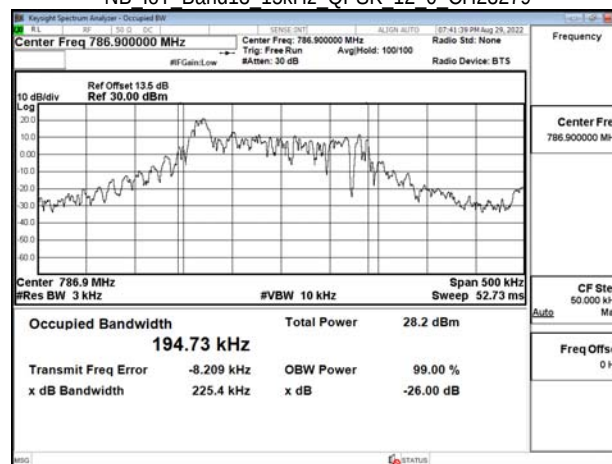
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NB IoT Band13 3.75kHz BPSK 1 0 CH23279



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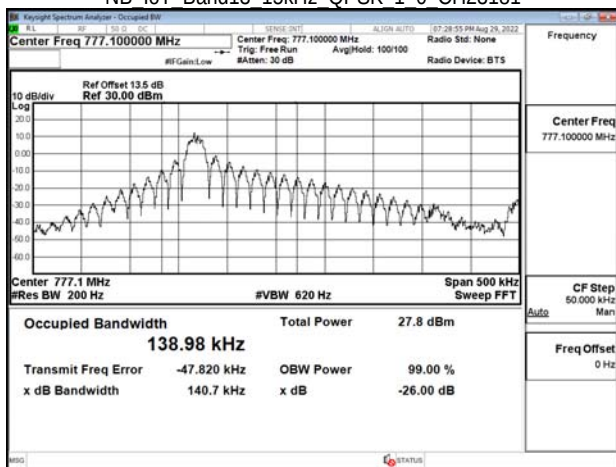


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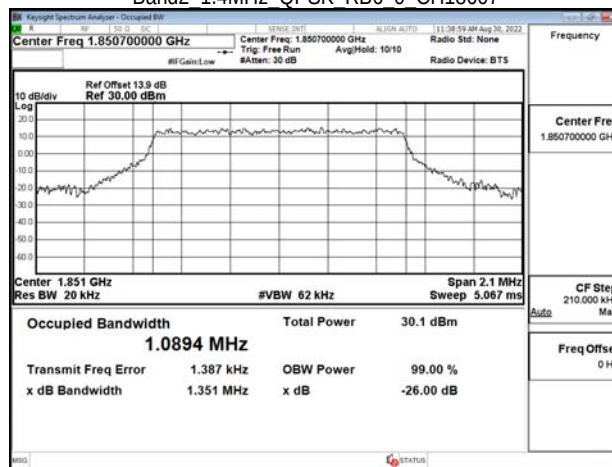
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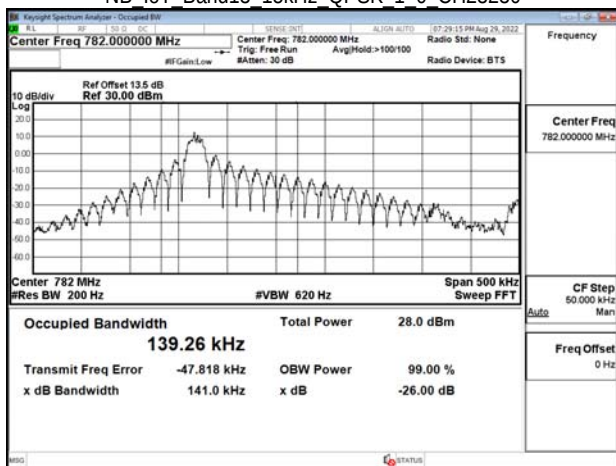
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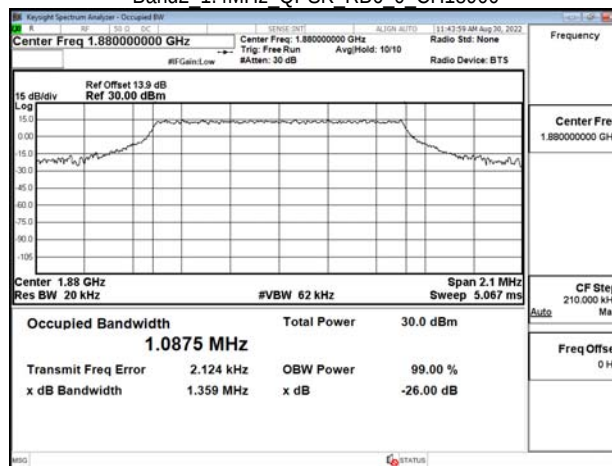
Band2 1.4MHz QPSK RB6 0 CH18607



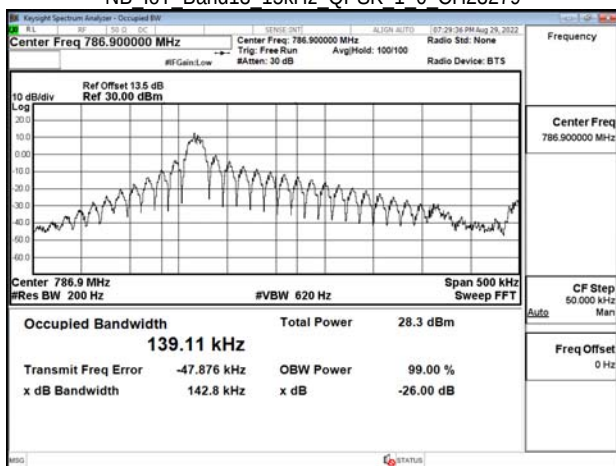
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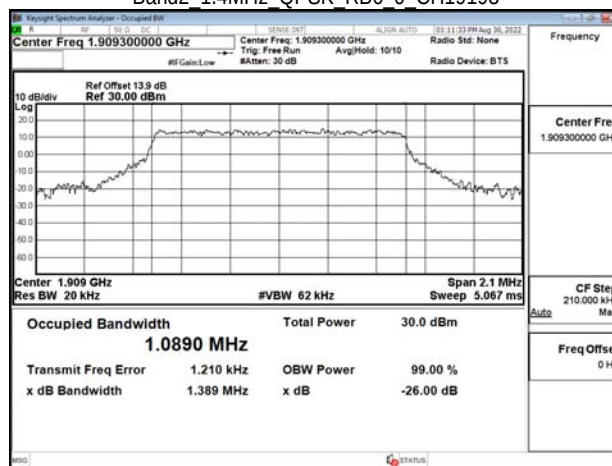
Band2 1.4MHz QPSK RB6 0 CH18900



NB IoT Band13 15kHz QPSK 1 0 CH23279



Band2 1.4MHz QPSK RB6 0 CH19193



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Band2 1.4MHz 16QAM RB5 0 CH18607



Band2 3MHz QPSK RB6 0 CH18615



Band2 1.4MHz 16QAM RB5 0 CH18900



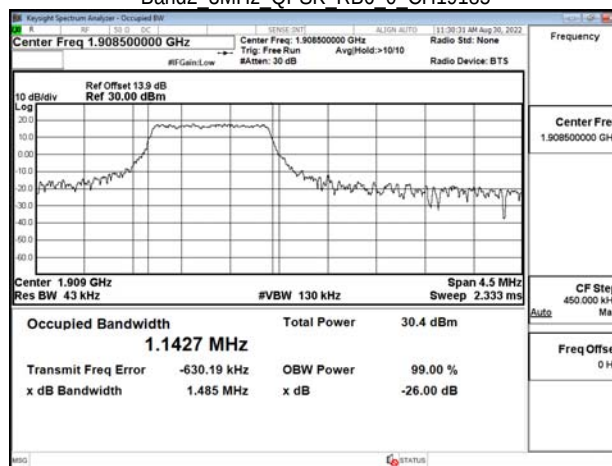
Band2 3MHz QPSK RB6 0 CH18900



Band2 1.4MHz 16QAM RB5 0 CH19193



Band2 3MHz QPSK RB6 0 CH19185



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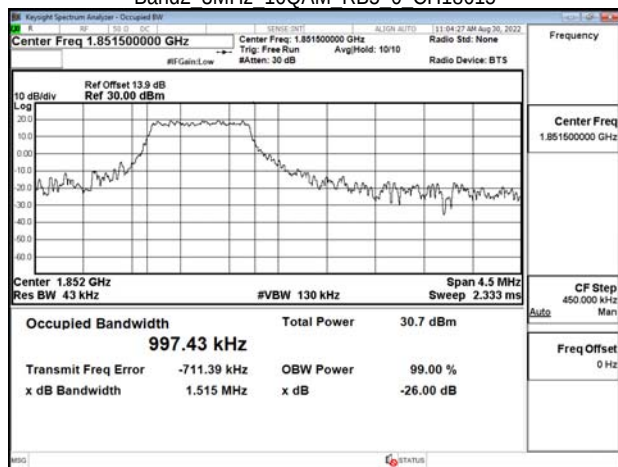
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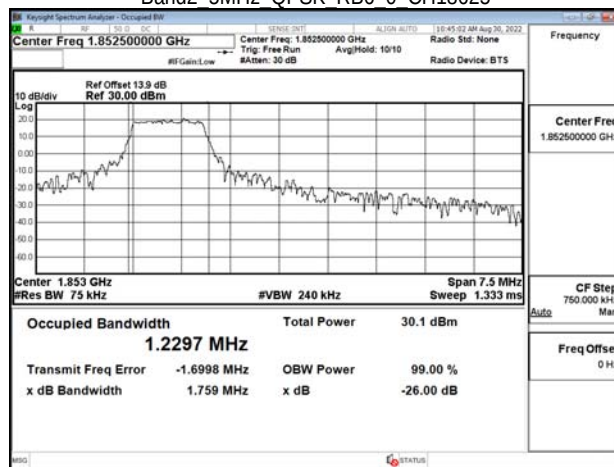
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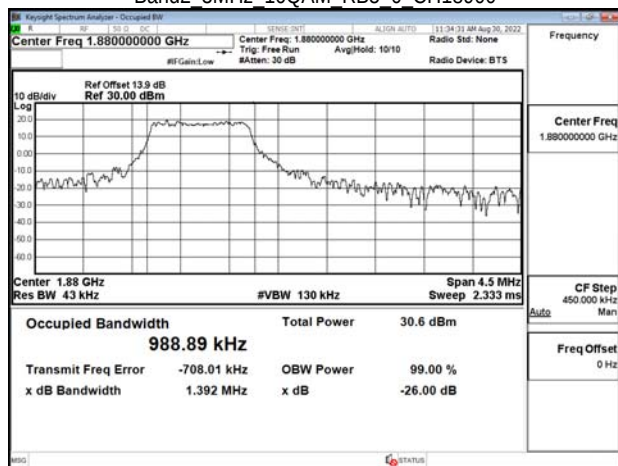
Band2 3MHz 16QAM RB5 0 CH18615



Band2 5MHz QPSK RB6 0 CH18625



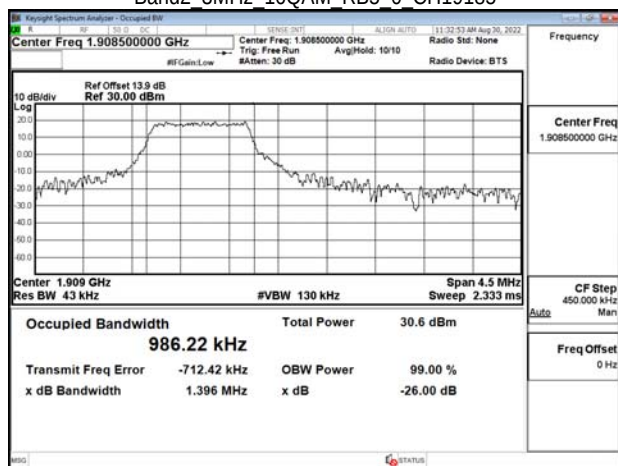
Band2 3MHz 16QAM RB5 0 CH18900



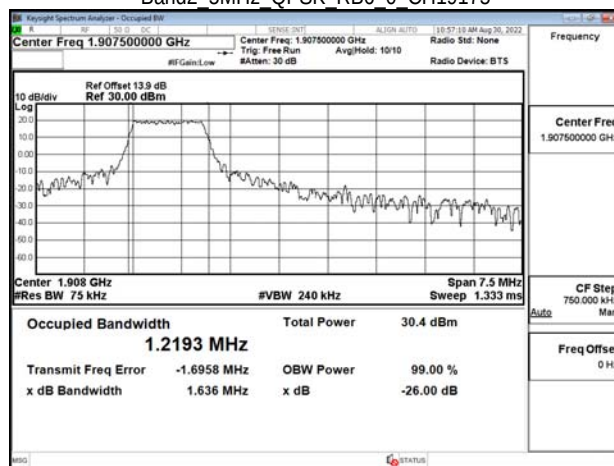
Band2 5MHz QPSK RB6 0 CH18900



Band2 3MHz 16QAM RB5 0 CH19185



Band2 5MHz QPSK RB6 0 CH19175

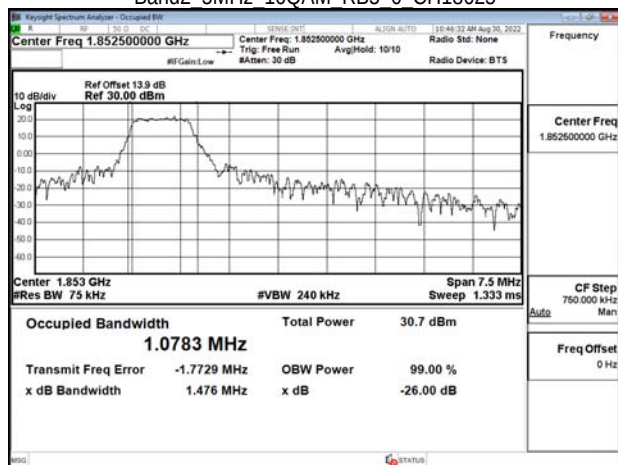


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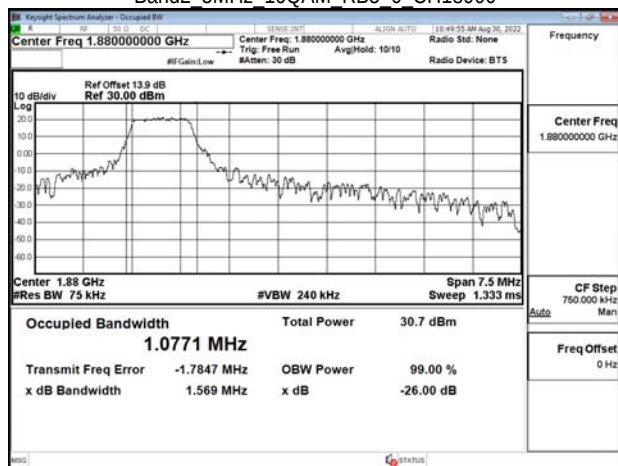
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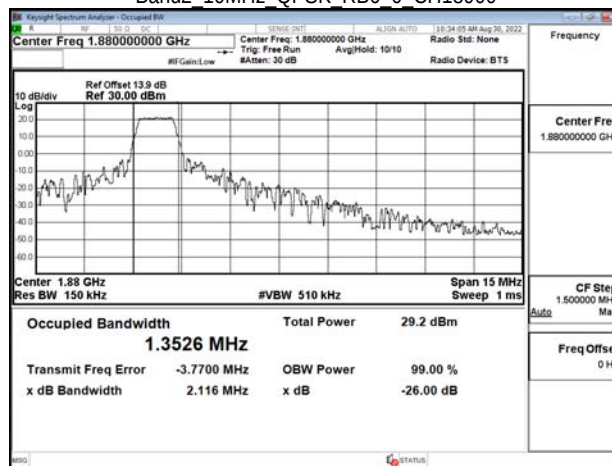
Band2 10MHz QPSK RB6 0 CH18650



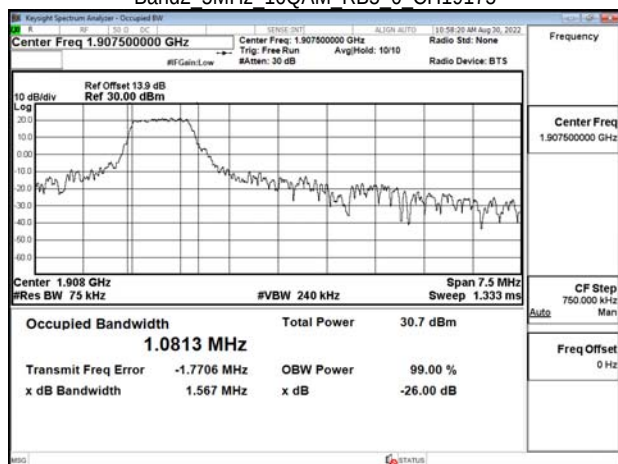
Band2 5MHz 16QAM RB5 0 CH18900



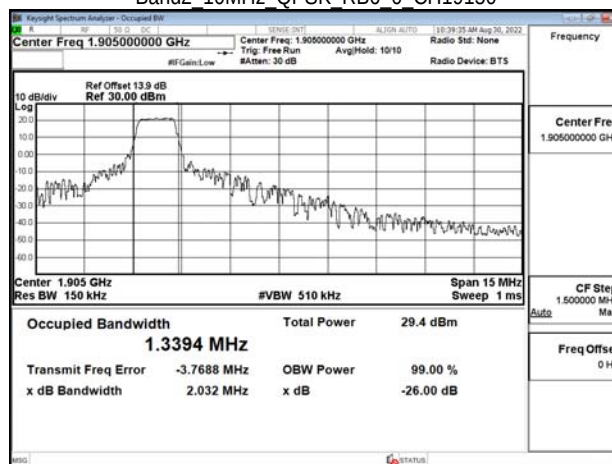
Band2 10MHz QPSK RB6 0 CH18900



Band2 5MHz 16QAM RB5 0 CH19175



Band2 10MHz QPSK RB6 0 CH19150

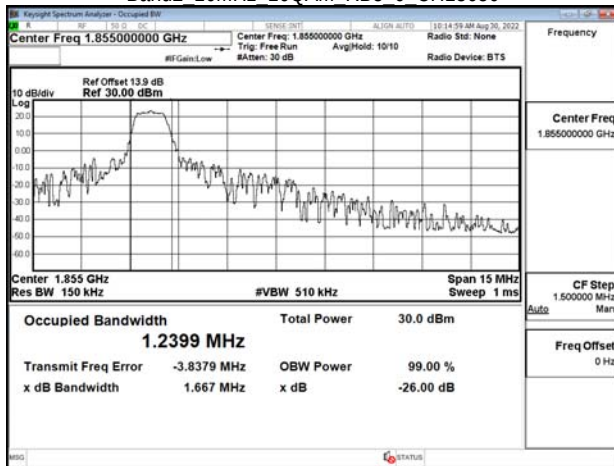


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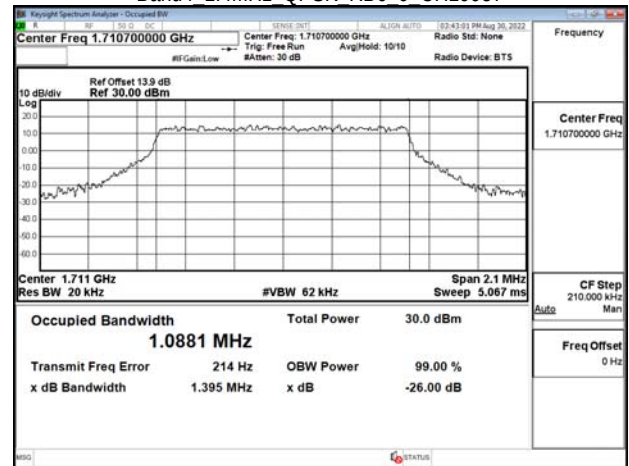
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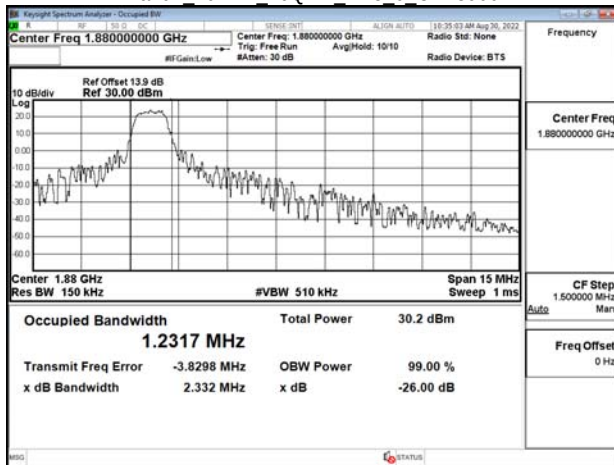
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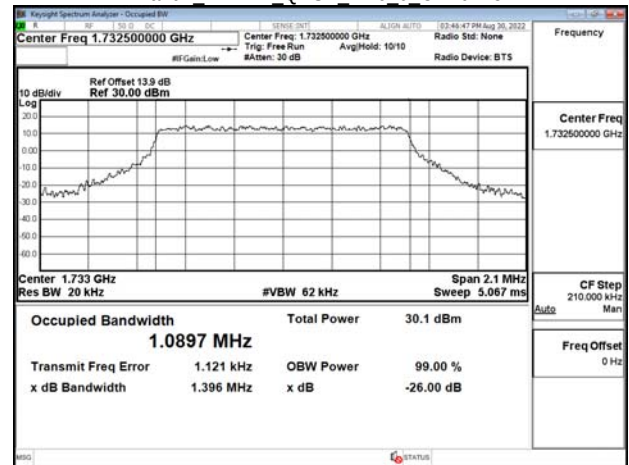
Band4 1.4MHz QPSK RB6 0 CH19957



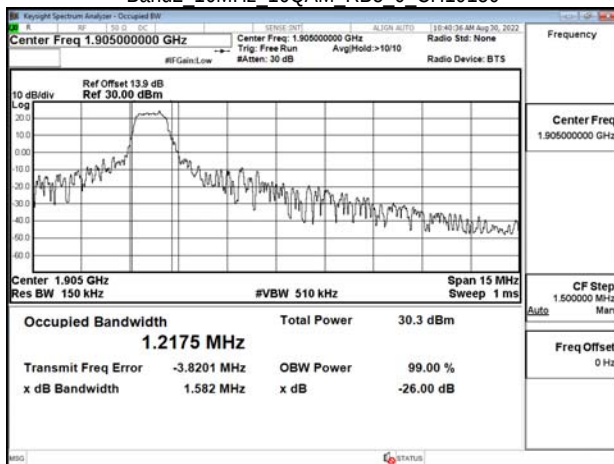
Band2 10MHz 16QAM RB5 0 CH18900



Band4 1.4MHz QPSK RB6 0 CH20175



Band2 10MHz 16QAM RB5 0 CH19150



Band4 1.4MHz QPSK RB6 0 CH20393



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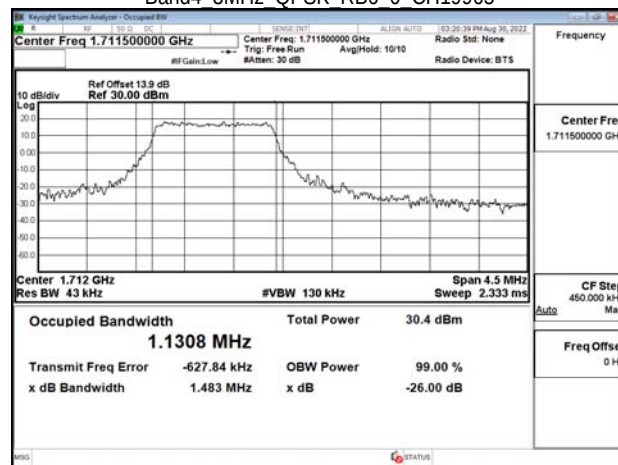
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Band4 1.4MHz 16QAM RB5 0 CH19957



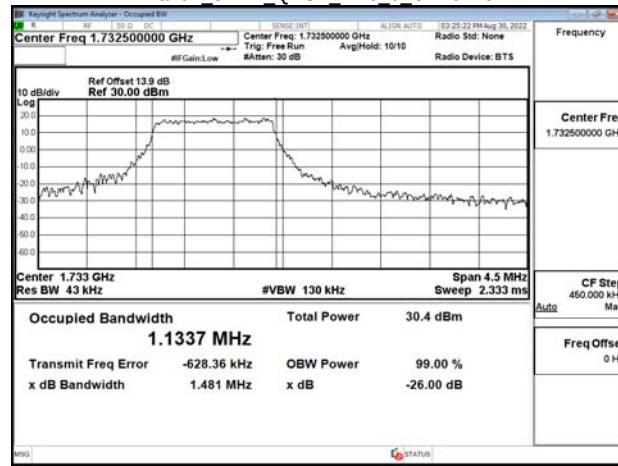
Band4 3MHz QPSK RB6 0 CH19965



Band4 1.4MHz 16QAM RB5 0 CH20175



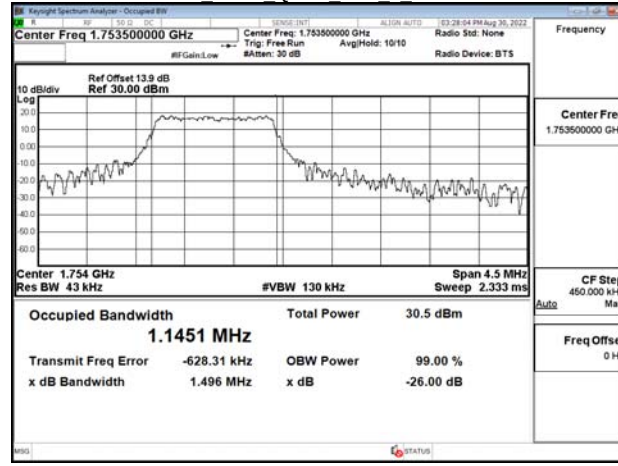
Band4 3MHz QPSK RB6 0 CH20175



Band4 1.4MHz 16QAM RB5 0 CH20393



Band4 3MHz QPSK RB6 0 CH20385



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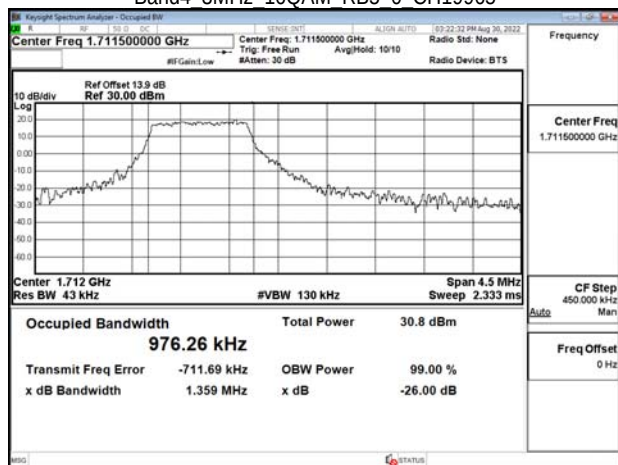
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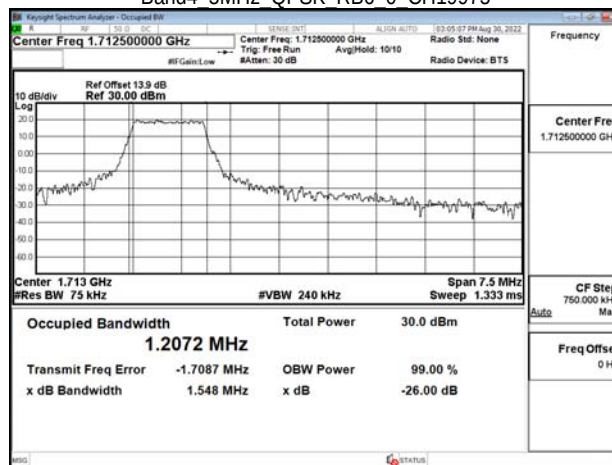
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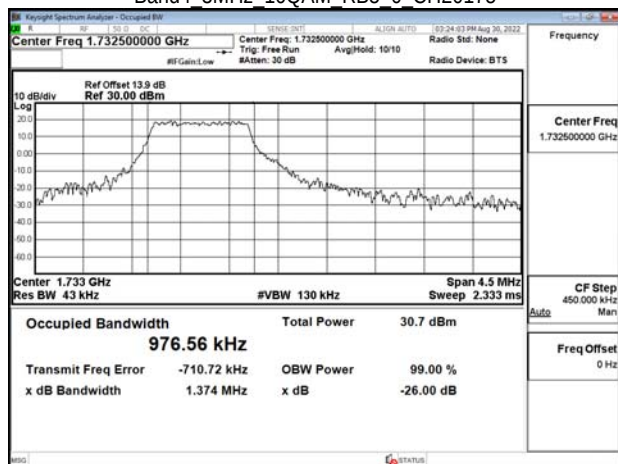
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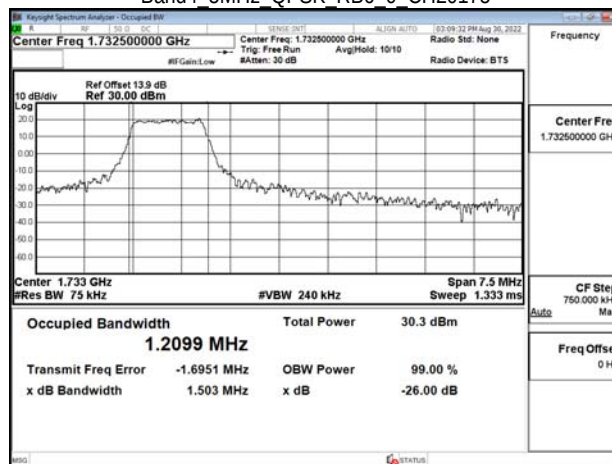
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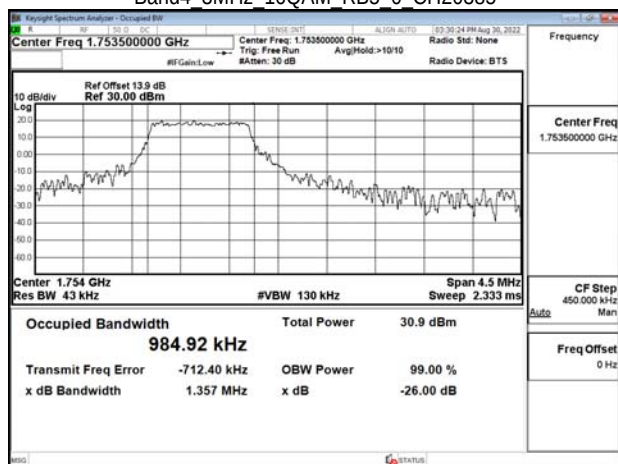
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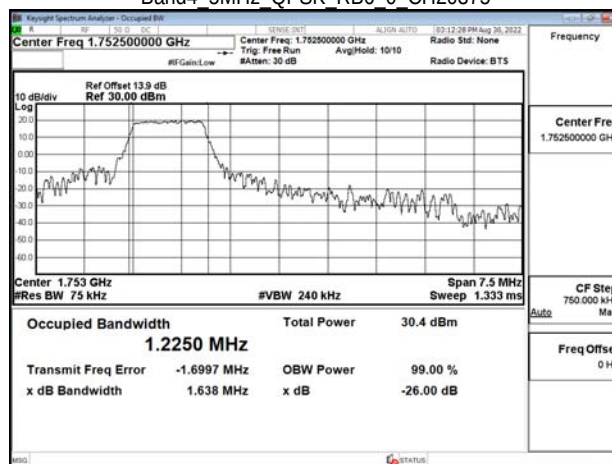
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Band4 3MHz 16QAM RB5 0 CH20385



Band4 5MHz QPSK RB6 0 CH20375

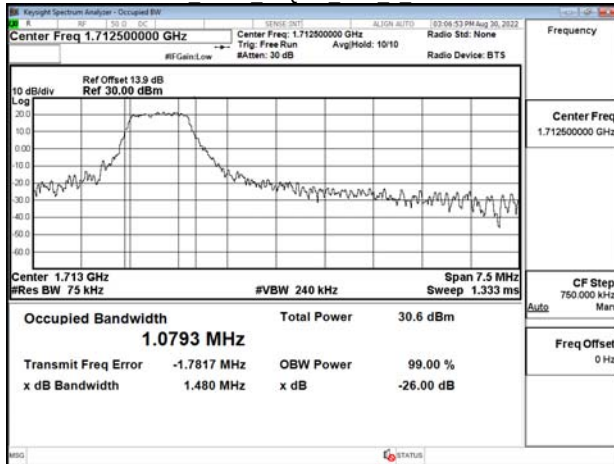


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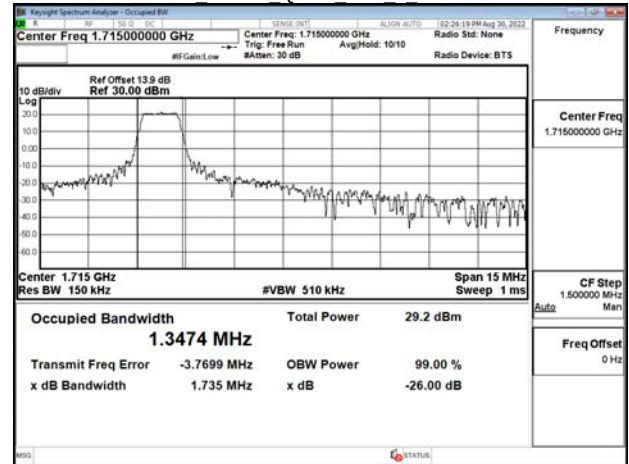
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Band4 5MHz 16QAM RB5 0 CH19975



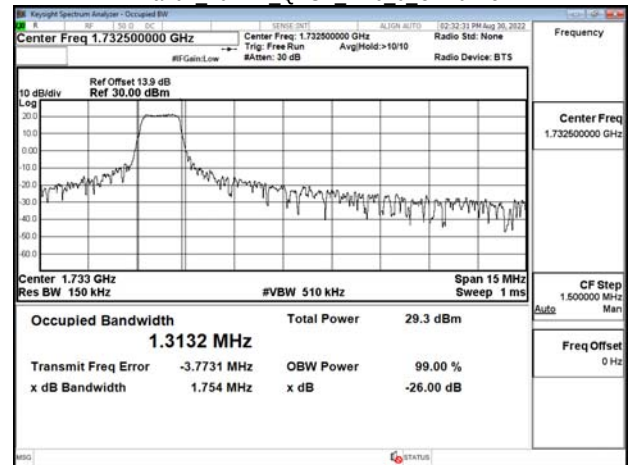
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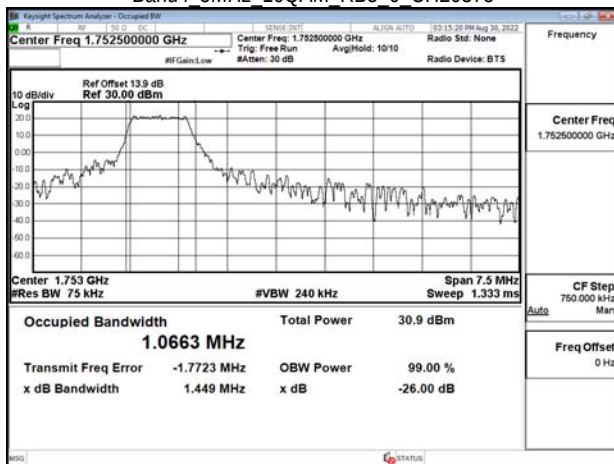
Band4 5MHz 16QAM RB5 0 CH20175



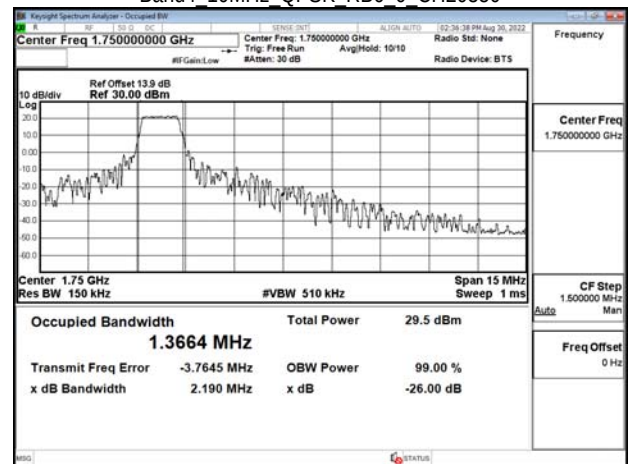
Band4 10MHz QPSK RB6 0 CH20175



Band4 5MHz 16QAM RB5 0 CH20375



Band4 10MHz QPSK RB6 0 CH20350

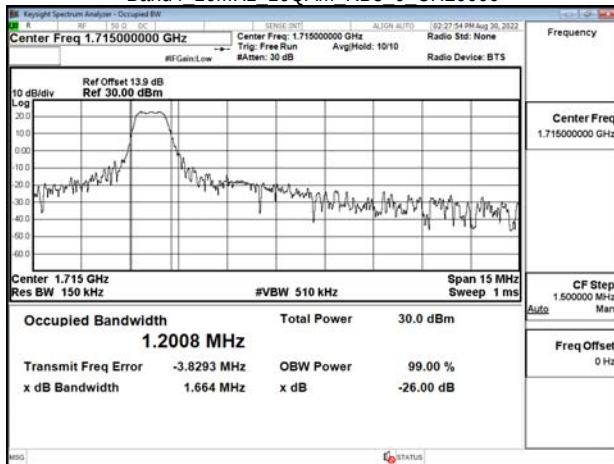


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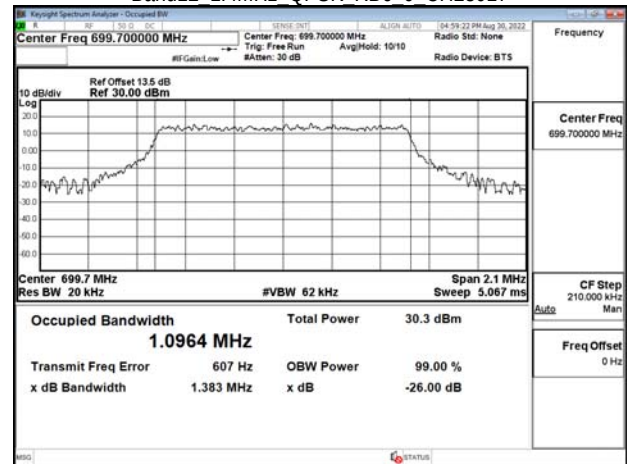
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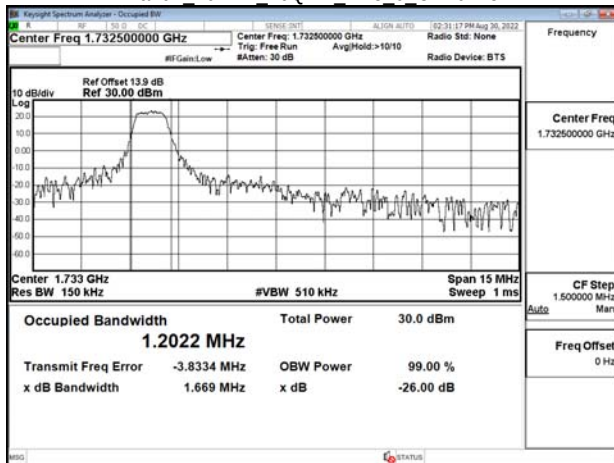
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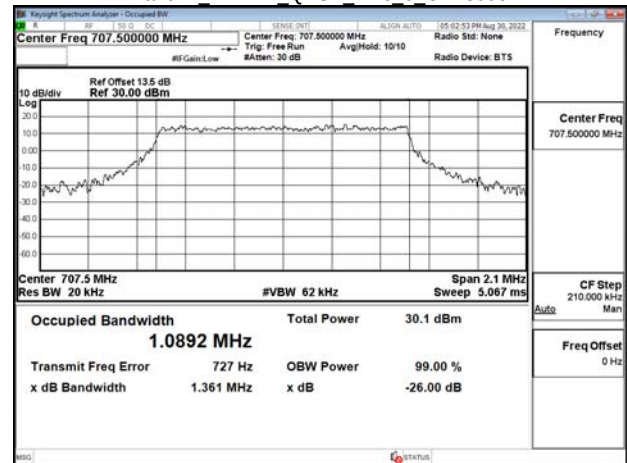
Band12 1.4MHz QPSK RB6 0 CH23017



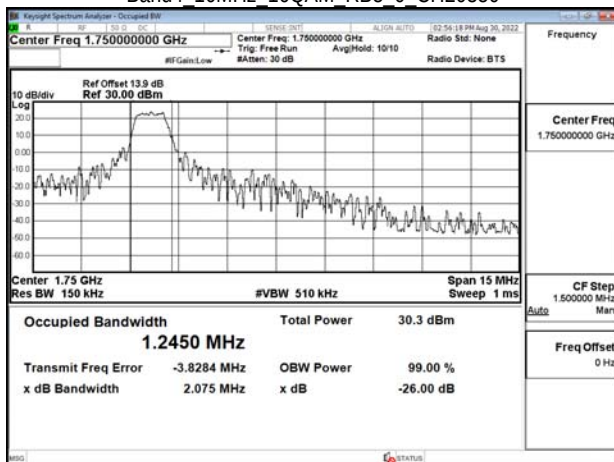
Band4 10MHz 16QAM RB5 0 CH20175



Band12 1.4MHz QPSK RB6 0 CH23095



Band4 10MHz 16QAM RB5 0 CH20350



Band12 1.4MHz QPSK RB6 0 CH23173



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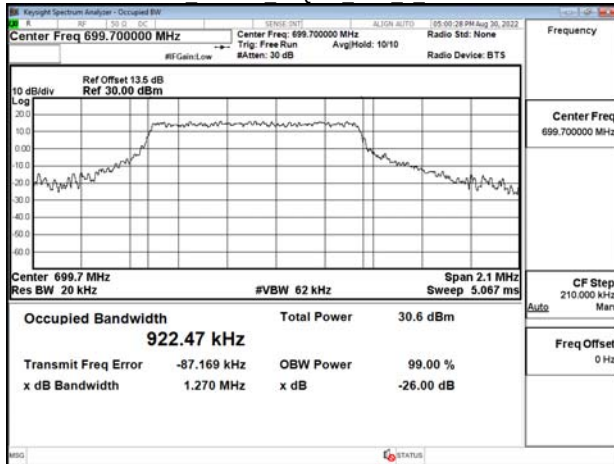
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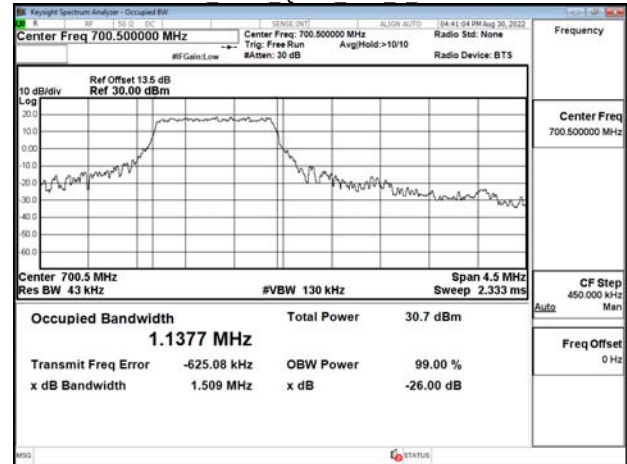
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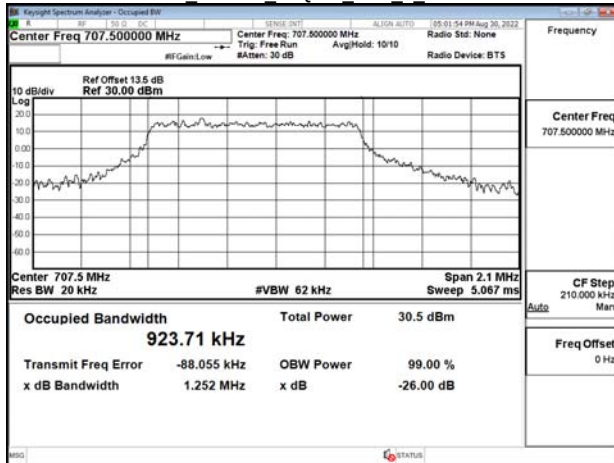
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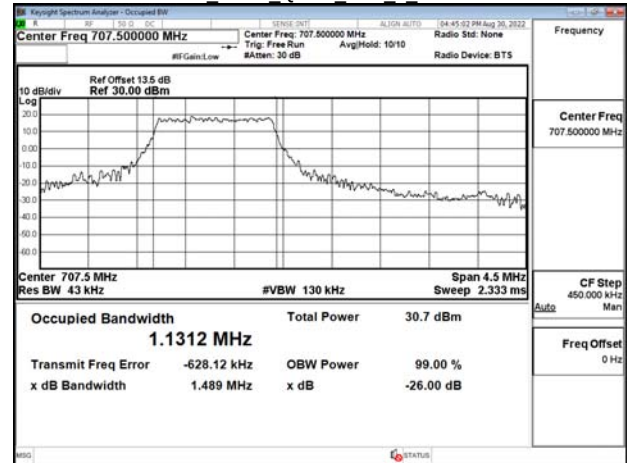
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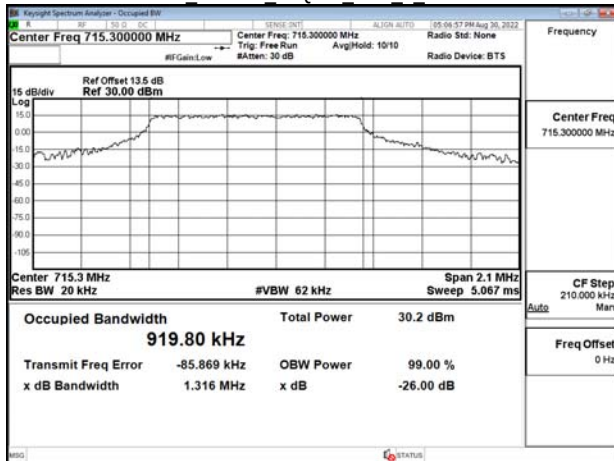
Band12 1.4MHz 16QAM RB5 0 CH23095



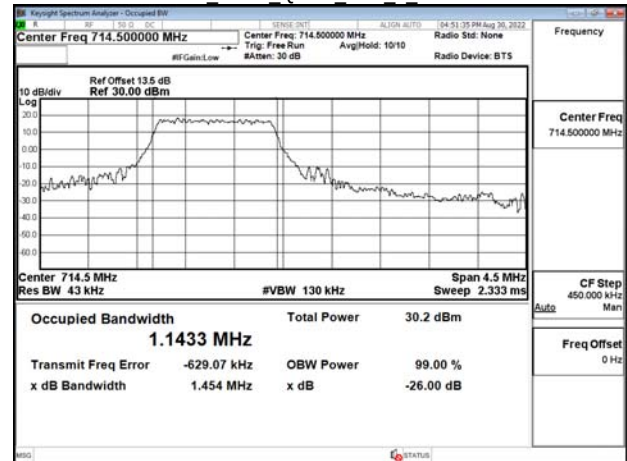
Band12 3MHz QPSK RB6 0 CH23095



Band12 1.4MHz 16QAM RB5 0 CH23173



Band12 3MHz QPSK RB6 0 CH23165



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