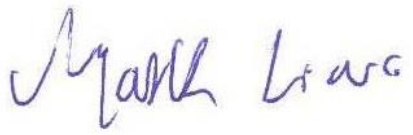
FCC TEST REPORT

Applicant	:	LEOTEK Electronics Corp.
Address	:	1955 Lundy Ave, San Jose, CA 95131 San Jose, California, United States
Equipment	:	Smart Node Control
Model No.	:	SN-NB10
Trade Name	:	Leotek
FCC ID.	:	2BAJFSN-NB10

I HEREBY CERTIFY THAT:

The sample was received on Mar. 06, 2023 and the testing was completed on Aug. 09, 2023 at Cerpass Technology Corp. The test result refers exclusively to the test presented test model / sample. Without written approval of Cerpass Technology Corp., the test report shall not be reproduced except in full.

Approved by:



Mark Liao / Supervisor

Laboratory Accreditation:

Cerpass Technology Corporation Test Laboratory

Testing Laboratory
1439

CONTENTS

History of this test report

Report No.	Issued Date	Description
22030345-TRFCC03	Aug. 18, 2023	Original

1. Summary of Test Procedure and Test Results

FCC 47 CFR PART 27

ANSI C63.26: 2015

KDB 971168 Power Meas License Digital Systems

For Band IV (1710MHz ~ 1755MHz)

FCC Rules	Test items	Measured	Result
2.1046 / 27.50 (d)(4)	Equivalent Isotropically Radiated Poiwer	Meet the requirement of limit	PASS
2.1053 / 27.53 (h)	Radiated Emissions	Meet the requirement of limit	PASS
2.1051 / 27.53 (h)	Conducted Emissions	Meet the requirement of limit	PASS
27.53 (h)	Band Edge Measurement	Meet the requirement of limit	PASS
2.1049 / 27.53 (h)	Occupied Bandwidth	Meet the requirement of limit	PASS
27.50 (d)(5)	Peak to Average Ratio	Meet the requirement of limit	PASS
2.1055 / 27.54	Frequency Stability	Meet the requirement of limit	PASS

For Band 12 (699MHz ~ 716MHz)

FCC Rules	Test items	Measured	Result
2.1046 / 27.50 (c)(10)	Effective Radiated Poiwer	Meet the requirement of limit	PASS
2.1053 / 27.53 (g)	Radiated Emissions	Meet the requirement of limit	PASS
2.1051 / 27.53 (g)	Conducted Emissions	Meet the requirement of limit	PASS
27.53 (g)	Band Edge	Meet the requirement of limit	PASS
2.1049 / 27.53 (g)	Occupied Bandwidth	Meet the requirement of limit	PASS
2.1055 / 27.54	Frequency Stability	Meet the requirement of limit	PASS
27.50 (d)(5)	Peak to Average Ratio	Meet the requirement of limit	PASS

For Band 13 (777 MHz ~ 787MHz)

FCC Rules	Test items	Measured	Result
27.50	Effective Radiated Poiwer	Meet the requirement of limit	PASS
2.1055 27.54	Frequency Stability	Meet the requirement of limit	PASS
2.1049	Emission Bandwidth & Occupied Bandwidth	Meet the requirement of limit	PASS
27.50	Peak to average ratio	Meet the requirement of limit	PASS
27.53	Band Edge	Meet the requirement of limit	PASS
2.1051 27.53	Conducted Spurious Emissions	Meet the requirement of limit	PASS
2.1053 27.53	Radiated Spurious Emissions	Meet the requirement of limit	PASS

*The lab has reduced the uncertainty risk factor from test equipment, environment and staff technicians which according to the standard on contract. Therefore, the test result will only be determined by standard requirement, measurement uncertainty evaluation is not considered.
*This EUT has been also tested and compiled with the requirement of FCC Part 15, Subpart B, recorded in a separate test report(22030345-TEFV01).

2. Test Configuration of Equipment under Test

2.1. Feature of Equipment under Test

Band	B2, B4, B5, B12, B13, B26
Antenna Type	PIFA
Antenna Gain	LTE Band 2: 2.29dBi LTE Band 4: 2.31dBi LTE Band 5: -1.15dBi LTE Band 12: -0.62dBi LTE Band 13: -1.4dBi LTE Band 26(Part 22): -1.15dBi LTE Band 26(Part 90): -1.51dBi

Note: For more details, please refer to the User's manual of the EUT.

2.2. Carrier Frequency of Channels

Cat M1

Band	UL Frequency (MHz)	Modulation
LTE Band 4	1710.7 ~ 1754.3	QPSK, 16QAM
LTE Band 12	699.7~715.3	QPSK, 16QAM
LTE Band 13	779.5~784.5	QPSK, 16QAM

NB-IoT

Band	UL Frequency (MHz)	Modulation
LTE Band 4	1710.2~1754.8	BPSK, QPSK
LTE Band 12	699.2~715.8	BPSK, QPSK
LTE Band 13	777.2~786.8	BPSK, QPSK

2.3. Test Mode and Test Software

a. During testing, the interface cables and equipment positions were varied according to ANSI C63.4.
b. The following test modes were performed for the test:

Radiated Emissions and RF Conducted	
Test Mode 1	Cat M1
Test Mode 2	NB-IoT

2.4. General Information of Test

Test Site	**Cerpass Technology Corporation Test Laboratory** Address: No.10, Ln. 2, Lianfu St., Luzhu Dist., Taoyuan City 33848, Taiwan (R.O.C.) Tel: +886-3-3226-888 Fax: +886-3-3226-881	
	FCC	TW1439, TW1079
	IC	4934E-1, 4934E-2
Frequency Range Investigated:	Radiation: from 30 MHz to 20,000MHz	
Test Distance:	The test distance of radiated emission from antenna to EUT is 3 M.	

Cat M1

Test Item	Test Site	Test period	Environmental Conditions	Tested By
RF Conducted	RFCON01-NK	2203/04/29~ 2023/08/07	22.8~26.5°C / 39~50%	Dian Chen
Radiated Emissions	3M02-NK	2023/06/02~ 2023/06/14	23~25°C / 30~32%	Leon Huang

NB-IoT

Test Item	Test Site	Test period	Environmental Conditions	Tested By
RF Conducted	RFCON01-NK	2023/05/18~ 2023/08/09	23.2~25.5°C / 39~54%	Dian Chen
Radiated Emissions	3M02-NK	2023/06/02	23°C / 32%	Leon Huang

2.5. Measurement Uncertainty

ISO/IEC 17025 requires that an estimate of the measurement uncertainties associated with the emissions test results be included in the report. The measurement uncertainties given below are based on a 95% confidence level (based on a coverage factor (k=2).

Test date before 2023/05/03

Measurement Item	Uncertainty
Equivalent Isotropically Radiated Power (Radiated)	±5.5dB
Conducted Spurious Emission	±2.0dB
Output Power(Conducted)	±1.07dB
Frequency Error	±0.17KHz
Occupied Channel Bandwidth	±4.4%
26dB Bandwidth	±4.4%
Peak to average ratio	±2.0dB
Temperature	±1.3°C
Humidity	±2.7%
Voltages(DC)	±4mV/V

Test date after 2023/05/03

Measurement Item	Uncertainty
Equivalent Isotropically Radiated Power (Radiated)	±5.6dB
Conducted Spurious Emission	±2.2dB
Output Power(Conducted)	±1.07dB
Frequency Error	±0.22KHz
Occupied Channel Bandwidth	±4.4%
26dB Bandwidth	±4.4%
Peak to average ratio	±2.0dB
Temperature	±1.4°C
Humidity	±2.8%
Voltages(DC)	±2mV/V

3. Test Equipment and Ancillaries Used for Tests

Test Item	Radiated Emissions (Cat M1)				
Test Site	Semi Anechoic Room(3M02-NK)				
Instrument	Manufacturer	Model No	Serial No	Calibration Date	Valid Date
Bilog Antenna	Schwarzbeck	VULB9168	275	2022/11/18	2023/11/17
Active Loop Antenna	Schwarzbeck	FMZB 1513	414	2023/02/03	2024/02/02
Horn Antenna	EMCO	3115	31589	2023/03/23	2024/03/22
Horn Antenna	EMCO	3116	31970	2023/03/03	2024/03/02
EMI Receiver	ROHDE & SCHWARZ	ESCI	101423	2022/07/05	2023/07/04
Spectrum Analyzer	ROHDE & SCHWARZ	FSV 40-N	102151	2022/08/19	2023/08/18
Preamplifier	Agilent	8449B	3008A01954	2023/03/08	2024/03/07
Preamplifier	EMC INSTRUMENTS	EMC184045	980065	2022/11/11	2023/11/10
Preamplifier	EM Electronics corp.	EM330	60659	2023/03/10	2024/03/09
Cable-4m(9k-3G)	EMEC	RG-223	18274M	2022/07/27	2023/07/26
Cable-3in1 (30M-1G)	HARBOUR INDUSTRIES	LL142	CCE1315	2023/02/25	2024/02/24
Cable-0.5m (1G-40G)	HUBER SUHNER	SUCOFLEX 104	805443/4	2023/03/07	2024/03/06
Cable-3m (1G-40G)	HUBER SUHNER	SUCOFLEX 104	805796/4	2023/03/07	2024/03/06
Cable-8m (1G-26.5G)	WOKEN	WCBA-WCA203SM	CCE1374	2023/03/07	2024/03/06
Cable-0.5m (30M-40G)	HUBER SUHNER	SUCOFLEX 102	28420/2	2023/03/07	2024/03/06
Cable-3m (30M-40G)	HUBER SUHNER	SUCOFLEX 102	MY2608/2	2023/03/07	2024/03/06
Cable-0.5m (1G-40G)	Rapidtek	40GHZ 50CM	38MS-38MS50314	2023/03/07	2024/03/06
Cable-3m (1G-40G)	Rapidtek	40GHZ 300CM	38MS-38MS300314	2023/03/07	2024/03/06
E3	AUDIX	v8.2014-8-6	RK-000529	NA	NA
Radio Comnunication Analyzer	Anritsu	MT8821C	6261830569	2023/03/12	2024/03/11

Test Item	RF Conducted (Cat M1)				
Test Site	RFCON01-NK				
Instrument	Manufacturer	Model No	Serial No	Calibration Date	Valid Date
CAX Signal Analyzer	KEYSIGHT	N9000B	MY57100339	2022/11/29	2023/11/28
Radio Comnunication Analyzer	Anritsu	MT8821C	6261830569	2023/03/12	2024/03/11
TEMP & HUMI CHAMBER	T-MACHINE	TMJ-9712	T-12-040111	2022/08/15	2023/08/14

Test Item	Radiated Emissions (NB-IoT)				
Test Site	Semi Anechoic Room(3M02-NK)				
Instrument	Manufacturer	Model No	Serial No	Calibration Date	Valid Date
Bilog Antenna	Schwarzbeck	VULB9168	275	2022/11/18	2023/11/17
Active Loop Antenna	Schwarzbeck	FMZB 1513	414	2023/02/03	2024/02/02
Horn Antenna	EMCO	3115	31589	2023/03/23	2024/03/22
Horn Antenna	EMCO	3116	31970	2023/03/03	2024/03/02
EMI Receiver	ROHDE & SCHWARZ	ESCI	101423	2022/07/05	2023/07/04
Spectrum Analyzer	ROHDE & SCHWARZ	FSV 40-N	102151	2022/08/19	2023/08/18
Preamplifier	Agilent	8449B	3008A01954	2023/03/08	2024/03/07
Preamplifier	EMC INSTRUMENTS	EMC184045	980065	2022/11/11	2023/11/10
Preamplifier	EM Electronics corp.	EM330	60659	2023/03/10	2024/03/09
Cable-4m(9k-3G)	EMEC	RG-223	18274M	2022/07/27	2023/07/26
Cable-3in1 (30M-1G)	HARBOUR INDUSTRIES	LL142	CCE1315	2023/02/25	2024/02/24
Cable-0.5m (1G-40G)	HUBER SUHNER	SUCOFLEX 104	805443/4	2023/03/07	2024/03/06
Cable-3m (1G-40G)	HUBER SUHNER	SUCOFLEX 104	805796/4	2023/03/07	2024/03/06
Cable-8m (1G-26.5G)	WOKEN	WCBA-WCA203SM	CCE1374	2023/03/07	2024/03/06
Cable-0.5m (30M-40G)	HUBER SUHNER	SUCOFLEX 102	28420/2	2023/03/07	2024/03/06
Cable-3m (30M-40G)	HUBER SUHNER	SUCOFLEX 102	MY2608/2	2023/03/07	2024/03/06
Cable-0.5m (1G-40G)	Rapidtek	40GHZ 50CM	38MS-38MS50314	2023/03/07	2024/03/06
Cable-3m (1G-40G)	Rapidtek	40GHZ 300CM	38MS-38MS300314	2023/03/07	2024/03/06
E3	AUDIX	v8.2014-8-6	RK-000529	NA	NA
Radio Comnunication Analyzer	Anritsu	MT8821C	6261830569	2023/03/12	2024/03/11

Test Item	RF Conducted (NB-IoT)				
Test Site	RFCON01-NK				
Instrument	Manufacturer	Model No	Serial No	Calibration Date	Valid Date
CAX Signal Analyzer	KEYSIGHT	N9000B	MY57100339	2022/11/29	2023/11/28
Radio Comnunication Analyzer	Anritsu	MT8821C	6261830569	2023/03/12	2024/03/11
TEMP & HUMI CHAMBER	T-MACHINE	TMJ-9712	T-12-040111	2022/08/15	2023/08/14

4. RF Output Power Test

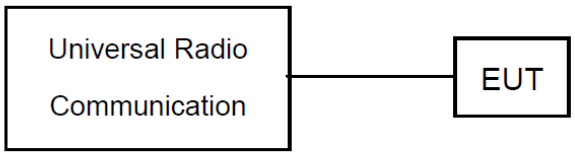
4.1 Test Limit

N/A

4.2 Test Procedures

1. The EUT was set up for the maximum power with simulator.
2. Set the EUT to transmit under low, middle and high channel and record the power level shown on simulator.

4.3 Test Setup



4.4 Test Result and Data

Cat M1

LTE Band 4

BW (MHz)	Opration Channel/ Frequency(MHz)	Index	RB size	RB offset	Conducted Power (dBm)	
					Moduration	
					QPSK	16QAM
1.4	19957/1710.7	0	1	0	19.24	18.44
		0	6	0	16.98	17.02
	20175/1732.5	0	1	0	19.21	18
		0	6	0	17.08	17.1
	20393/1754.3	0	1	5	19.19	18.66
		0	6	0	17.16	17.24

BW (MHz)	Opration Channel/ Frequency(MHz)	Index	RB size	RB offset	Conducted Power (dBm)	
					Moduration	
					QPSK	16QAM
3	19965/1711.5	0	1	0	19.21	18.37
		0	3	0	18.06	17.39
	20175/1732.5	0	1	0	19.12	18.35
		0	3	0	18.09	17.48
	20385/1753.5	1	1	5	19.3	18.26
		1	3	0	18.37	17.5

BW (MHz)	Opration Channel/ Frequency(MHz)	Index	RB size	RB offset	Conducted Power (dBm)	
					Moduration	
					QPSK	16QAM
5	19975/1712.5	0	1	0	18.65	18.89
		0	6	0	17.68	17.72
	20175/1732.5	0	1	0	18.82	18.94
		0	6	0	17.91	17.65
	20375/1752.5	3	1	5	18.78	19.08
		3	6	0	17.94	17.94

Cat M1

LTE Band 4

BW (MHz)	Opration Channel/ Frequency(MHz)	Index	RB size	RB offset	Conducted Power (dBm)	
					Moduration	
					QPSK	16QAM
10	20000/1715	0	1	0	18.54	18.97
		0	5	0	18.86	18.89
	20175/1732.5	0	1	0	18.85	18.93
		0	5	0	18.91	19.04
	20350/1750	7	1	5	18.79	19.08
		7	5	1	18.96	19.01

BW (MHz)	Opration Channel/ Frequency(MHz)	Index	RB size	RB offset	Conducted Power (dBm)	
					Moduration	
					QPSK	16QAM
15	20025/1717.5	0	1	0	18.64	19
		0	6	0	18.84	18.59
	20175/1732.5	0	1	0	18.85	18.86
		0	6	0	18.61	18.69
	20325/1747.5	11	1	5	18.67	18.91
		11	6	0	18.86	18.84

BW (MHz)	Opration Channel/ Frequency(MHz)	Index	RB size	RB offset	Conducted Power (dBm)	
					Moduration	
					QPSK	16QAM
20	20050/1720	0	1	0	18.69	18.92
		0	6	0	18.78	18.65
	20175/1732.5	0	1	0	18.66	18.95
		0	6	0	18.91	18.65
	20300/1745	15	1	5	18.6	18.98
		15	6	0	18.79	18.72

Cat M1
LTE Band 12

BW (MHz)	Opration Channel/ Frequency(MHz)	Index	RB size	RB offset	Conducted Power (dBm) Moduration	
					QPSK	16QAM
1.4	23017/699.7	0	1	0	18.87	18.22
		0	6	0	16.86	16.92
	23095/707.5	0	1	0	19.25	18.16
		0	6	0	17.02	17.09
	23173/715.3	0	1	5	19.13	18.04
		0	6	0	17.02	16.98

BW (MHz)	Opration Channel/ Frequency(MHz)	Index	RB size	RB offset	Conducted Power (dBm) Opration Channel/Frequency(MHz)	
					QPSK	16QAM
3	23025/700.5	0	1	0	18.92	18.14
		0	6	0	16.95	17.01
	23095/707.5	0	1	0	19.23	18.24
		0	6	0	17.12	17.16
	23165/714.5	1	1	5	18.95	18.42
		1	6	0	17.02	16.99

BW (MHz)	Opration Channel/ Frequency(MHz)	Index	RB size	RB offset	Conducted Power (dBm) Opration Channel/Frequency(MHz)	
					QPSK	16QAM
5	23035/701.5	3	1	0	18.63	19.01
		0	6	0	18.1	18
	23095/707.5	0	1	0	18.87	19
		0	6	0	18.12	18.06
	23155/713.5	0	1	5	18.99	19.03
		3	6	0	18.19	18.17

Cat M1

LTE Band 12

BW (MHz)	Opration Channel/ Frequency(MHz)	Index	RB size	RB offset	Conducted Power (dBm) Opration Channel/Frequency(MHz)	
					QPSK	16QAM
10	23060/704	3	1	0	18.96	18.8
		0	5	0	19.16	19.01
	23095/707.5	0	1	0	19.05	18.96
		0	5	0	19.09	18.99
	23130/711	4	1	5	18.92	19.04
		7	5	1	19.02	19.14

LTE Band 13

BW (MHz)	Opration Channel/ Frequency(MHz)	Index	RB size	RB offset	Conducted Power (dBm) Moduration	
					QPSK	16QAM
5	23205/779.5	0	1	0	19.11	19.36
		0	6	0	18.25	18.4
	23230/782	0	1	0	19.02	19.14
		0	6	0	18.17	18.3
	23255/784.5	3	1	5	19.07	18.95
		3	6	0	18.12	18.27

BW (MHz)	Opration Channel/ Frequency(MHz)	Index	RB size	RB offset	Conducted Power (dBm) Opration Channel/Frequency(MHz)	
					QPSK	16QAM
10	23230/782	0	1	0	19.12	19.18
		0	5	0	18.96	19.37

Note: All conducted measurements are based on a RMS detector.

NB-IoT
LTE Band 4

Modulation	Sub-carrier spacing (KHz)	Opration Channel/ Frequency(MHz)	Nltones	Conducted Power (dBm)
BPSK	3.75	19952/1710.2	1@0	19.49
			1@47	19.24
	15		1@0	19.40
			1@11	19.33
QPSK	3.75		1@0	19.69
			1@47	19.47
	15		1@0	19.29
			1@11	19.39
	15		12@0	17.35
BPSK	3.75	20175/1732.5	1@0	20.34
			1@47	20.02
	15		1@0	20.45
			1@11	20.32
QPSK	3.75		1@0	20.51
			1@47	20.48
	15		1@0	20.33
			1@11	20.25
	15		12@0	18.33
BPSK	3.75	20398/1754.8	1@0	20.06
			1@47	19.72
	15		1@0	19.89
			1@11	19.81
QPSK	3.75		1@0	20.24
			1@47	20.04
	15		1@0	20.00
			1@11	19.92
	15		12@0	17.95

NB-IoT

LTE Band 12

Modulation	Sub-carrier spacing (KHz)	Opration Channel/ Frequency(MHz)	Nltones	Conducted Power (dBm)
BPSK	3.75	23012/699.2	1@0	18.25
			1@47	17.92
	15		1@0	18.15
			1@11	18.07
QPSK	3.75		1@0	18.23
			1@47	18.20
	15		1@0	17.96
			1@11	17.99
	15		12@0	15.88
BPSK	3.75	23095/707.5	1@0	18.80
			1@47	18.65
	15		1@0	18.73
			1@11	18.65
QPSK	3.75		1@0	18.84
			1@47	18.81
	15		1@0	18.73
			1@11	18.66
	15		12@0	16.69
BPSK	3.75	23178/715.8	1@0	18.26
			1@47	18.21
	15		1@0	18.31
			1@11	18.22
QPSK	3.75		1@0	18.34
			1@47	18.22
	15		1@0	18.30
			1@11	18.22
	15		12@0	16.27

NB-IoT

LTE Band 13

Modulation	Sub-carrier spacing (KHz)	Opration Channel/ Frequency(MHz)	Nltones	Conducted Power (dBm)
BPSK	3.75	23182/777.2	1@0	18.55
			1@47	18.37
	15		1@0	18.58
			1@11	18.49
QPSK	3.75		1@0	18.50
			1@47	18.51
	15		1@0	18.40
			1@11	18.53
	15		12@0	16.75
BPSK	3.75	23230/782	1@0	18.86
			1@47	18.73
	15		1@0	18.88
			1@11	18.79
QPSK	3.75		1@0	18.93
			1@47	18.80
	15		1@0	18.70
			1@11	18.68
	15		12@0	17.02
BPSK	3.75	23278/786.8	1@0	18.48
			1@47	18.36
	15		1@0	18.43
			1@11	18.29
QPSK	3.75		1@0	18.53
			1@47	18.50
	15		1@0	18.42
			1@11	18.39
	15		12@0	16.39

5. Effective Radiated Power / Equivalent Isotropic Radiated Power Test

5.1. Test Limit

For FCC Part 27.50(d)(4):Fixed, mobile, and portable (hand-held) stations operating in the 1710–1755 MHz band and mobile and portable stations operating in the 1695–1710 MHz and 1755–1780 MHz bands are limited to 1 watt EIRP.
For FCC Part 27.50(c)(9):Control and mobile stations in the 698–746 MHz band are limited to 30 watts ERP.
For FCC Part 27.50(b)(9):Control stations and mobile stations transmitting in the 746–757 MHz, 776–788 MHz, and 805–806 MHz bands and fixed stations transmitting in the 787–788 MHz and 805–806 MHz bands are limited to 30 watts ERP.

5.2. Test Procedures

For Conducted power measurement:

1. The EUT links up with simulator and is set to maximum output power level at low / middel / high channel.
2. Measure the output power of low / middle / high channel of the EUT.

For ERP measurement:

ERP can be calculated by below formula from ANSI C63.26.

1. EIRP = PT + GT - LC

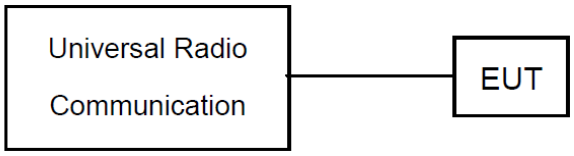
   PT= transmitter output power, in dBm.

   GT= gain of the transmitting antenna, in dBi (EIRP).

   LC= signal attenuation in the connecting cable between the transmitter and antenna, in dB.

2. ERP = EIRP – 2.15 dB.

5.3. Test Setup



5.4. Test Result and Data

Cat M1

LTE Band4 1.4M QPSK

Channel	Frequency (MHz)	RB size	Conducted Power (dBm)	Gain (dBi)	E.I.R.P. (dBm)	E.I.R.P. (W)	Limit (E.I.R.P.) (dBm)	Margin (dB)
19957	1710.7	1	19.24	2.31	21.55	0.14	30.00	-8.45
		Full	16.98	2.31	19.29	0.08	30.00	-10.71
20175	1732.5	1	19.21	2.31	21.52	0.14	30.00	-8.48
		Full	17.08	2.31	19.39	0.09	30.00	-10.61
20393	1754.3	1	19.19	2.31	21.50	0.14	30.00	-8.50
		Full	17.16	2.31	19.47	0.09	30.00	-10.53

LTE Band4 1.4M 16QAM

Channel	Frequency (MHz)	RB size	Conducted Power (dBm)	Gain (dBi)	E.I.R.P. (dBm)	E.I.R.P. (W)	Limit (E.I.R.P.) (dBm)	Margin (dB)
19957	1710.7	1	18.44	2.31	20.75	0.12	30.00	-9.25
		Full	17.02	2.31	19.33	0.09	30.00	-10.67
20175	1732.5	1	18	2.31	20.31	0.11	30.00	-9.69
		Full	17.1	2.31	19.41	0.09	30.00	-10.59
20393	1754.3	1	18.66	2.31	20.97	0.13	30.00	-9.03
		Full	17.24	2.31	19.55	0.09	30.00	-10.45

LTE Band4 3M QPSK

Channel	Frequency (MHz)	RB size	Conducted Power (dBm)	Gain (dBi)	E.I.R.P. (dBm)	E.I.R.P. (W)	Limit (E.I.R.P.) (dBm)	Margin (dB)
19965	1711.5	1	19.21	2.31	21.52	0.14	30.00	-8.48
		Full	18.06	2.31	20.37	0.11	30.00	-9.63
20175	1732.5	1	19.12	2.31	21.43	0.14	30.00	-8.57
		Full	18.09	2.31	20.40	0.11	30.00	-9.60
20385	1753.5	1	19.3	2.31	21.61	0.14	30.00	-8.39
		Full	18.37	2.31	20.68	0.12	30.00	-9.32

Cat M1

LTE Band4 3M 16QAM

Channel	Frequency (MHz)	RB size	Conducted Power (dBm)	Gain (dBi)	E.I.R.P. (dBm)	E.I.R.P. (W)	Limit (E.I.R.P.) (dBm)	Margin (dB)
19965	1711.5	1	18.37	2.31	20.68	0.12	30.00	-9.32
		Full	17.39	2.31	19.70	0.09	30.00	-10.30
20175	1732.5	1	18.35	2.31	20.66	0.12	30.00	-9.34
		Full	17.48	2.31	19.79	0.10	30.00	-10.21
20385	1753.5	1	18.26	2.31	20.57	0.11	30.00	-9.43
		Full	17.5	2.31	19.81	0.10	30.00	-10.19

LTE Band4 5M QPSK

Channel	Frequency (MHz)	RB size	Conducted Power (dBm)	Gain (dBi)	E.I.R.P. (dBm)	E.I.R.P. (W)	Limit (E.I.R.P.) (dBm)	Margin (dB)
19975	1712.5	1	18.65	2.31	20.96	0.12	30.00	-9.04
		Full	17.68	2.31	19.99	0.10	30.00	-10.01
20175	1732.5	1	18.82	2.31	21.13	0.13	30.00	-8.87
		Full	17.91	2.31	20.22	0.11	30.00	-9.78
20375	1752.5	1	18.78	2.31	21.09	0.13	30.00	-8.91
		Full	17.94	2.31	20.25	0.11	30.00	-9.75

LTE Band4 5M 16QAM

Channel	Frequency (MHz)	RB size	Conducted Power (dBm)	Gain (dBi)	E.I.R.P. (dBm)	E.I.R.P. (W)	Limit (E.I.R.P.) (dBm)	Margin (dB)
19975	1712.5	1	18.89	2.31	21.20	0.13	30.00	-8.80
		Full	17.72	2.31	20.03	0.10	30.00	-9.97
20175	1732.5	1	18.94	2.31	21.25	0.13	30.00	-8.75
		Full	17.65	2.31	19.96	0.10	30.00	-10.04
20375	1752.5	1	19.08	2.31	21.39	0.14	30.00	-8.61
		Full	17.94	2.31	20.25	0.11	30.00	-9.75

Cat M1

LTE Band4 10M QPSK

Channel	Frequency (MHz)	RB size	Conducted Power (dBm)	Gain (dBi)	E.I.R.P. (dBm)	E.I.R.P. (W)	Limit (E.I.R.P.) (dBm)	Margin (dB)
20000	1715	1	18.54	2.31	20.85	0.12	30.00	-9.15
		Full	18.86	2.31	21.17	0.13	30.00	-8.83
20175	1732.5	1	18.85	2.31	21.16	0.13	30.00	-8.84
		Full	18.91	2.31	21.22	0.13	30.00	-8.78
20350	1750	1	18.79	2.31	21.10	0.13	30.00	-8.90
		Full	18.96	2.31	21.27	0.13	30.00	-8.73

LTE Band4 10M 16QAM

Channel	Frequency (MHz)	RB size	Conducted Power (dBm)	Gain (dBi)	E.I.R.P. (dBm)	E.I.R.P. (W)	Limit (E.I.R.P.) (dBm)	Margin (dB)
20000	1715	1	18.97	2.31	21.28	0.13	30.00	-8.72
		Full	18.89	2.31	21.20	0.13	30.00	-8.80
20175	1732.5	1	18.93	2.31	21.24	0.13	30.00	-8.76
		Full	19.04	2.31	21.35	0.14	30.00	-8.65
20350	1750	1	19.08	2.31	21.39	0.14	30.00	-8.61
		Full	19.01	2.31	21.32	0.14	30.00	-8.68

LTE Band4 15M QPSK

Channel	Frequency (MHz)	RB size	Conducted Power (dBm)	Gain (dBi)	E.I.R.P. (dBm)	E.I.R.P. (W)	Limit (E.I.R.P.) (dBm)	Margin (dB)
20025	1717.5	1	18.64	2.31	20.95	0.12	30.00	-9.05
		Full	18.84	2.31	21.15	0.13	30.00	-8.85
20175	1732.5	1	18.85	2.31	21.16	0.13	30.00	-8.84
		Full	18.61	2.31	20.92	0.12	30.00	-9.08
20325	1747.5	1	18.67	2.31	20.98	0.13	30.00	-9.02
		Full	18.86	2.31	21.17	0.13	30.00	-8.83

Cat M1

LTE Band4 15M 16QAM

Channel	Frequency (MHz)	RB size	Conducted Power (dBm)	Gain (dBi)	E.I.R.P. (dBm)	E.I.R.P. (W)	Limit (E.I.R.P.) (dBm)	Margin (dB)
20025	1717.5	1	19	2.31	21.31	0.14	30.00	-8.69
		Full	18.59	2.31	20.90	0.12	30.00	-9.10
20175	1732.5	1	18.86	2.31	21.17	0.13	30.00	-8.83
		Full	18.69	2.31	21.00	0.13	30.00	-9.00
20325	1747.5	1	18.91	2.31	21.22	0.13	30.00	-8.78
		Full	18.84	2.31	21.15	0.13	30.00	-8.85

LTE Band4 20M QPSK

Channel	Frequency (MHz)	RB size	Conducted Power (dBm)	Gain (dBi)	E.I.R.P. (dBm)	E.I.R.P. (W)	Limit (E.I.R.P.) (dBm)	Margin (dB)
20050	1720	1	18.69	2.31	21.00	0.13	30.00	-9.00
		Full	18.78	2.31	21.09	0.13	30.00	-8.91
20175	1732.5	1	18.66	2.31	20.97	0.13	30.00	-9.03
		Full	18.91	2.31	21.22	0.13	30.00	-8.78
20300	1745	1	18.6	2.31	20.91	0.12	30.00	-9.09
		Full	18.79	2.31	21.10	0.13	30.00	-8.90

LTE Band4 20M 16QAM

Channel	Frequency (MHz)	RB size	Conducted Power (dBm)	Gain (dBi)	E.I.R.P. (dBm)	E.I.R.P. (W)	Limit (E.I.R.P.) (dBm)	Margin (dB)
20050	1720	1	18.92	2.31	21.23	0.13	30.00	-8.77
		Full	18.65	2.31	20.96	0.12	30.00	-9.04
20175	1732.5	1	18.95	2.31	21.26	0.13	30.00	-8.74
		Full	18.65	2.31	20.96	0.12	30.00	-9.04
20300	1745	1	18.98	2.31	21.29	0.13	30.00	-8.71
		Full	18.72	2.31	21.03	0.13	30.00	-8.97

Cat M1

LTE Band12 1.4M QPSK

Channel	Frequency (MHz)	RB size	Conducted Power (dBm)	Gain (dBi)	E.R.P. (dBm)	E.R.P. (W)	Limit (E.R.P.) (dBm)	Margin (dB)
23017	699.7	1	18.87	-0.62	16.10	0.04	44.77	-28.67
		Full	16.86	-0.62	14.09	0.03	44.77	-30.68
23095	707.5	1	19.25	-0.62	16.48	0.04	44.77	-28.29
		Full	17.02	-0.62	14.25	0.03	44.77	-30.52
23173	715.3	1	19.13	-0.62	16.36	0.04	44.77	-28.41
		Full	17.02	-0.62	14.25	0.03	44.77	-30.52

LTE Band12 1.4M 16QAM

Channel	Frequency (MHz)	RB size	Conducted Power (dBm)	Gain (dBi)	E.R.P. (dBm)	E.R.P. (W)	Limit (E.R.P.) (dBm)	Margin (dB)
23017	699.7	1	18.22	-0.62	15.45	0.04	44.77	-29.32
		Full	16.92	-0.62	14.15	0.03	44.77	-30.62
23095	707.5	1	18.16	-0.62	15.39	0.03	44.77	-29.38
		Full	17.09	-0.62	14.32	0.03	44.77	-30.45
23173	715.3	1	18.04	-0.62	15.27	0.03	44.77	-29.50
		Full	16.98	-0.62	14.21	0.03	44.77	-30.56

LTE Band12 3M QPSK

Channel	Frequency (MHz)	RB size	Conducted Power (dBm)	Gain (dBi)	E.R.P. (dBm)	E.R.P. (W)	Limit (E.R.P.) (dBm)	Margin (dB)
23025	700.5	1	18.92	-0.62	16.15	0.04	44.77	-28.62
		Full	16.95	-0.62	14.18	0.03	44.77	-30.59
23095	707.5	1	19.23	-0.62	16.46	0.04	44.77	-28.31
		Full	17.12	-0.62	14.35	0.03	44.77	-30.42
23165	714.5	1	18.95	-0.62	16.18	0.04	44.77	-28.59
		Full	17.02	-0.62	14.25	0.03	44.77	-30.52

Cat M1

LTE Band12 3M 16QAM

Channel	Frequency (MHz)	RB size	Conducted Power (dBm)	Gain (dBi)	E.R.P. (dBm)	E.R.P. (W)	Limit (E.R.P.) (dBm)	Margin (dB)
23025	700.5	1	18.14	-0.62	15.37	0.03	44.77	-29.40
		Full	17.01	-0.62	14.24	0.03	44.77	-30.53
23095	707.5	1	18.24	-0.62	15.47	0.04	44.77	-29.30
		Full	17.16	-0.62	14.39	0.03	44.77	-30.38
23165	714.5	1	18.42	-0.62	15.65	0.04	44.77	-29.12
		Full	16.99	-0.62	14.22	0.03	44.77	-30.55

LTE Band12 5M QPSK

Channel	Frequency (MHz)	RB size	Conducted Power (dBm)	Gain (dBi)	E.R.P. (dBm)	E.R.P. (W)	Limit (E.R.P.) (dBm)	Margin (dB)
23035	701.5	1	18.63	-0.62	15.86	0.04	44.77	-28.91
		Full	18.1	-0.62	15.33	0.03	44.77	-29.44
23095	707.5	1	18.87	-0.62	16.10	0.04	44.77	-28.67
		Full	18.12	-0.62	15.35	0.03	44.77	-29.42
23155	713.5	1	18.99	-0.62	16.22	0.04	44.77	-28.55
		Full	18.19	-0.62	15.42	0.03	44.77	-29.35

LTE Band12 5M 16QAM

Channel	Frequency (MHz)	RB size	Conducted Power (dBm)	Gain (dBi)	E.R.P. (dBm)	E.R.P. (W)	Limit (E.R.P.) (dBm)	Margin (dB)
23035	701.5	1	19.01	-0.62	16.24	0.04	44.77	-28.53
		Full	18	-0.62	15.23	0.03	44.77	-29.54
23095	707.5	1	19	-0.62	16.23	0.04	44.77	-28.54
		Full	18.06	-0.62	15.29	0.03	44.77	-29.48
23155	713.5	1	19.03	-0.62	16.26	0.04	44.77	-28.51
		Full	18.17	-0.62	15.40	0.03	44.77	-29.37

Cat M1

LTE Band12 10M QPSK

Channel	Frequency (MHz)	RB size	Conducted Power (dBm)	Gain (dBi)	E.R.P. (dBm)	E.R.P. (W)	Limit (E.R.P.) (dBm)	Margin (dB)
23060	704	1	18.96	-0.62	16.19	0.04	44.77	-28.58
		Full	19.16	-0.62	16.39	0.04	44.77	-28.38
23095	707.5	1	19.05	-0.62	16.28	0.04	44.77	-28.49
		Full	19.09	-0.62	16.32	0.04	44.77	-28.45
23130	711	1	18.92	-0.62	16.15	0.04	44.77	-28.62
		Full	19.02	-0.62	16.25	0.04	44.77	-28.52

LTE Band12 10M 16QAM

Channel	Frequency (MHz)	RB size	Conducted Power (dBm)	Gain (dBi)	E.R.P. (dBm)	E.R.P. (W)	Limit (E.R.P.) (dBm)	Margin (dB)
23035	701.5	1	18.8	-0.62	16.03	0.04	44.77	-28.74
		Full	19.01	-0.62	16.24	0.04	44.77	-28.53
23095	707.5	1	18.96	-0.62	16.19	0.04	44.77	-28.58
		Full	18.99	-0.62	16.22	0.04	44.77	-28.55
23155	713.5	1	19.04	-0.62	16.27	0.04	44.77	-28.50
		Full	19.14	-0.62	16.37	0.04	44.77	-28.40

Cat M1

LTE Band13 5M QPSK

Channel	Frequency (MHz)	RB size	Conducted Power (dBm)	Gain (dBi)	E.R.P. (dBm)	E.R.P. (W)	Limit (E.R.P.) (dBm)	Margin (dB)
23205	779.5	1	19.11	-1.4	15.56	0.04	44.77	-29.21
		Full	18.25	-1.4	14.70	0.03	44.77	-30.07
23230	782	1	19.02	-1.4	15.47	0.04	44.77	-29.30
		Full	18.17	-1.4	14.62	0.03	44.77	-30.15
23255	784.5	1	19.07	-1.4	15.52	0.04	44.77	-29.25
		Full	18.12	-1.4	14.57	0.03	44.77	-30.20

LTE Band13 5M 16QAM

Channel	Frequency (MHz)	RB size	Conducted Power (dBm)	Gain (dBi)	E.R.P. (dBm)	E.R.P. (W)	Limit (E.R.P.) (dBm)	Margin (dB)
23205	779.5	1	19.36	-1.4	15.81	0.04	44.77	-28.96
		Full	18.4	-1.4	14.85	0.03	44.77	-29.92
23230	782	1	19.14	-1.4	15.59	0.04	44.77	-29.18
		Full	18.3	-1.4	14.75	0.03	44.77	-30.02
23255	784.5	1	18.95	-1.4	15.40	0.03	44.77	-29.37
		Full	18.27	-1.4	14.72	0.03	44.77	-30.05

LTE Band13 10M QPSK

Channel	Frequency (MHz)	RB size	Conducted Power (dBm)	Gain (dBi)	E.R.P. (dBm)	E.R.P. (W)	Limit (E.R.P.) (dBm)	Margin (dB)
23230	782	1	19.12	-1.4	15.57	0.04	44.77	-29.20
		Full	18.96	-1.4	15.41	0.03	44.77	-29.36

LTE Band13 10M 16QAM

Channel	Frequency (MHz)	RB size	Conducted Power (dBm)	Gain (dBi)	E.R.P. (dBm)	E.R.P. (W)	Limit (E.R.P.) (dBm)	Margin (dB)
23230	782	1	19.18	-1.4	15.63	0.04	44.77	-29.14
		Full	19.37	-1.4	15.82	0.04	44.77	-28.95

NB-IoT

LTE Band4

Channel	Frequency (MHz)	Modulation	Sub-carrier spacing (KHz)	NItones	Conducted Power (dBm)	Gain (dBi)	E.R.P. (dBm)	E.R.P. (W)	Limit (E.R.P.) (dBm)	Margin (dB)
19952	1710.2	BPSK	3.75	1@0	19.49	2.31	21.80	0.15	30.00	-8.20
		QPSK	3.75	1@0	19.69	2.31	22.00	0.16	30.00	-8.00
		BPSK	15	1@0	19.4	2.31	21.71	0.15	30.00	-8.29
		QPSK	15	1@0	19.29	2.31	21.60	0.14	30.00	-8.40
20175	1732.5	BPSK	3.75	1@0	20.34	2.31	22.65	0.18	30.00	-7.35
		QPSK	3.75	1@0	20.51	2.31	22.82	0.19	30.00	-7.18
		BPSK	15	1@0	20.45	2.31	22.76	0.19	30.00	-7.24
		QPSK	15	1@0	20.33	2.31	22.64	0.18	30.00	-7.36
20398	1754.8	BPSK	3.75	1@0	20.06	2.31	22.37	0.17	30.00	-7.63
		QPSK	3.75	1@0	20.24	2.31	22.55	0.18	30.00	-7.45
		BPSK	15	1@0	19.89	2.31	22.20	0.17	30.00	-7.80
		QPSK	15	1@0	20	2.31	22.31	0.17	30.00	-7.69

LTE Band12

Channel	Frequency (MHz)	Modulation	Sub-carrier spacing (KHz)	NItones	Conducted Power (dBm)	Gain (dBi)	E.R.P. (dBm)	E.R.P. (W)	Limit (E.R.P.) (dBm)	Margin (dB)
23012	699.2	BPSK	3.75	1@0	18.25	-0.62	15.48	0.04	44.77	-29.29
		QPSK	3.75	1@0	18.23	-0.62	15.46	0.04	44.77	-29.31
		BPSK	15	1@0	18.15	-0.62	15.38	0.03	44.77	-29.39
		QPSK	15	1@0	17.96	-0.62	15.19	0.03	44.77	-29.58
23095	707.5	BPSK	3.75	1@0	18.8	-0.62	16.03	0.04	44.77	-28.74
		QPSK	3.75	1@0	18.84	-0.62	16.07	0.04	44.77	-28.70
		BPSK	15	1@0	18.73	-0.62	15.96	0.04	44.77	-28.81
		QPSK	15	1@0	18.73	-0.62	15.96	0.04	44.77	-28.81
23178	715.8	BPSK	3.75	1@0	18.26	-0.62	15.49	0.04	44.77	-29.28
		QPSK	3.75	1@0	18.34	-0.62	15.57	0.04	44.77	-29.20
		BPSK	15	1@0	18.31	-0.62	15.54	0.04	44.77	-29.23
		QPSK	15	1@0	18.3	-0.62	15.53	0.04	44.77	-29.24

NB-IoT
LTE Band13

Channel	Frequency (MHz)	Modulation	Sub-carrier spacing (KHz)	Nltones	Conducted Power (dBm)	Gain (dBi)	E.R.P. (dBm)	E.R.P. (W)	Limit (E.R.P.) (dBm)	Margin (dB)
23182	777.2	BPSK	3.75	1@0	18.55	-1.4	15.00	0.03	44.77	-29.77
		QPSK	3.75	1@0	18.5	-1.4	14.95	0.03	44.77	-29.82
		BPSK	15	1@0	18.58	-1.4	15.03	0.03	44.77	-29.74
		QPSK	15	1@0	18.4	-1.4	14.85	0.03	44.77	-29.92
23230	782	BPSK	3.75	1@0	18.86	-1.4	15.31	0.03	44.77	-29.46
		QPSK	3.75	1@0	18.93	-1.4	15.38	0.03	44.77	-29.39
		BPSK	15	1@0	18.88	-1.4	15.33	0.03	44.77	-29.44
		QPSK	15	1@0	18.7	-1.4	15.15	0.03	44.77	-29.62
23278	786.8	BPSK	3.75	1@0	18.48	-1.4	14.93	0.03	44.77	-29.84
		QPSK	3.75	1@0	18.53	-1.4	14.98	0.03	44.77	-29.79
		BPSK	15	1@0	18.43	-1.4	14.88	0.03	44.77	-29.89
		QPSK	15	1@0	18.42	-1.4	14.87	0.03	44.77	-29.90

6. Emission Bandwidth & Occupied Bandwidth Test

6.1. Test Limit

The width of a frequency band such that, below the lower and above the upper frequency limits, the mean powers emitted are each equal to a specified percentage 0.5 %of the total mean power of a given emission.

The emission bandwidth is defined as the width of the signal between two points, located at the 2 sides of the carrier frequency, outside of which all emissions are attenuated at least 26 dB below the transmitter power.

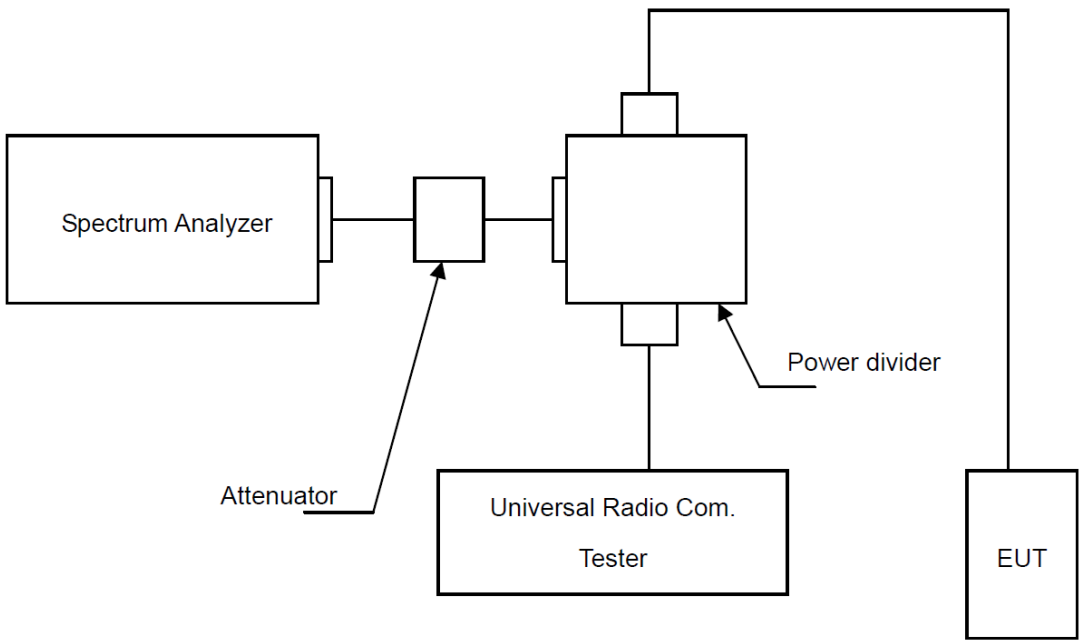
6.2. Test Procedures

a. The EUT makes a phone call to the communication simulator. The power was measured with Spectrum Analyzer.

b. The conducted occupied bandwidth used the power splitter via EUT RF power connector between simulation base station and spectrum analyzer.

c. The communication simulator station system controlled a EUT to export maximum output power under transmission mode and specific channel frequency. Use OBW measurement function of Spectrum analyzer to measure 99 % occupied bandwidth.

6.3. Test Setup



6.4. Test Result and Data

Cat M1

LTE Band4

Moduration type	RB	Bandwidth (MHz)	Channel No.	Frequency (MHz)	-26dBc Occupied Bandwidth (MHz)	99% Occupied Bandwidth (MHz)
QPSK	100%	1.4	20175	1732.5	1.3180	1.1153
		3	20175	1732.5	1.3360	1.1314
		5	20175	1732.5	1.3110	1.1110
		10	20175	1732.5	1.4470	1.1170
		15	20175	1732.5	1.3400	1.1183
		20	20175	1732.5	1.3560	1.1291
16QAM	100%	1.4	20175	1732.5	1.1880	0.9493
		3	20175	1732.5	1.2060	0.9633
		5	20175	1732.5	1.1780	0.9643
		10	20175	1732.5	1.1700	0.9695
		15	20175	1732.5	1.1690	0.9647
		20	20175	1732.5	1.2140	0.9788

LTE Band12

Moduration type	RB	Bandwidth (MHz)	Channel No.	Frequency (MHz)	-26dBc Occupied Bandwidth (MHz)	99% Occupied Bandwidth (MHz)
QPSK	100%	1.4	23095	707.5	1.3240	1.1209
		3	23095	707.5	1.3310	1.1311
		5	23095	707.5	1.3160	1.1139
		10	23095	707.5	1.3910	1.1169
16QAM	100%	1.4	23095	707.5	1.1500	0.9473
		3	23095	707.5	1.1620	0.9589
		5	23095	707.5	1.1860	0.9600
		10	23095	707.5	1.1590	0.9690

Cat M1

LTE Band13

Moduration type	RB	Bandwidth (MHz)	Channel No.	Frequency (MHz)	-26dBc Occupied Bandwidth (MHz)	99% Occupied Bandwidth (MHz)
QPSK	100%	5	23230	782	1.3130	1.1123
		10	23230	782	1.3340	1.1150
16QAM	100%	5	23230	782	1.1850	0.9599
		10	23230	782	1.1840	0.9653

NB-IoT

LTE Band4

Moduration type	Sub-carrier spacing (KHz)	Nltones	Channel No.	Frequency (MHz)	-26dBc Occupied Bandwidth (KHz)	99% Occupied Bandwidth (KHz)
QPSK	3.75	1@0	19952	1710.2	42.53	70.377
QPSK	15	1@0	19952	1710.2	116.50	120.440
QPSK	15	12@0	19952	1710.2	251.10	184.350
BPSK	3.75	1@0	19952	1710.2	40.81	60.697
BPSK	15	1@0	19952	1710.2	103.80	119.200
QPSK	3.75	1@0	20175	1732.5	39.94	67.813
QPSK	15	1@0	20175	1732.5	128.90	118.080
QPSK	15	12@0	20175	1732.5	246.10	190.950
BPSK	3.75	1@0	20175	1732.5	41.52	62.251
BPSK	15	1@0	20175	1732.5	116.80	127.910
QPSK	3.75	1@0	20398	1754.8	40.15	68.145
QPSK	15	1@0	20398	1754.8	116.60	119.390
QPSK	15	12@0	20398	1754.8	252.20	184.600
BPSK	3.75	1@0	20398	1754.8	41.65	62.446
BPSK	15	1@0	20398	1754.8	104.40	120.710

NB-IoT

LTE Band12

Moduration type	Sub-carrier spacing (KHz)	Nltones	Channel No.	Frequency (MHz)	-26dBc Occupied Bandwidth (KHz)	99% Occupied Bandwidth (KHz)
QPSK	3.75	1@0	23012	699.2	39.57	67.242
QPSK	15	1@0	23012	699.2	132.40	136.660
QPSK	15	12@0	23012	699.2	240.40	184.500
BPSK	3.75	1@0	23012	699.2	41.66	57.688
BPSK	15	1@0	23012	699.2	113.50	122.540
QPSK	3.75	1@0	23095	707.5	39.89	67.171
QPSK	15	1@0	23095	707.5	129.30	130.560
QPSK	15	12@0	23095	707.5	251.60	189.880
BPSK	3.75	1@0	23095	707.5	41.60	59.073
BPSK	15	1@0	23095	707.5	104.50	117.000
QPSK	3.75	1@0	23178	715.8	42.80	68.218
QPSK	15	1@0	23178	715.8	115.40	121.720
QPSK	15	12@0	23178	715.8	240.60	184.090
BPSK	3.75	1@0	23178	715.8	41.41	57.443
BPSK	15	1@0	23178	715.8	117.20	124.960

NB-IoT

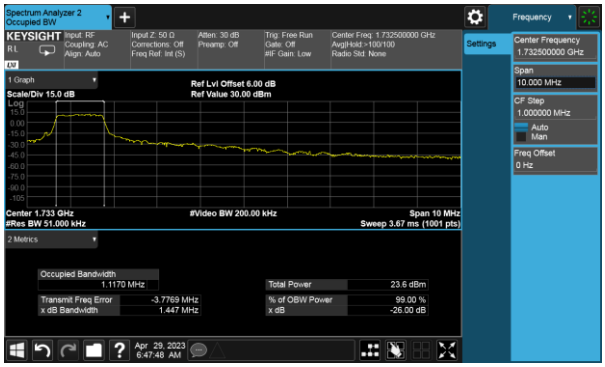
LTE Band13

Moduration type	Sub-carrier spacing (KHz)	Nltones	Channel No.	Frequency (MHz)	-26dBc Occupied Bandwidth (KHz)	99% Occupied Bandwidth (KHz)
QPSK	3.75	1@0	23182	777.2	39.62	64.263
QPSK	15	1@0	23182	777.2	106.30	121.950
QPSK	15	12@0	23182	777.2	252.50	183.950
BPSK	3.75	1@0	23182	777.2	41.41	57.022
BPSK	15	1@0	23182	777.2	143.50	134.290
QPSK	3.75	1@0	23230	782	40.18	66.279
QPSK	15	1@0	23230	782	118.10	130.520
QPSK	15	12@0	23230	782	252.20	187.480
BPSK	3.75	1@0	23230	782	41.07	57.448
BPSK	15	1@0	23230	782	105.70	120.740
QPSK	3.75	1@0	23278	786.8	117.40	126.930
QPSK	15	1@0	23278	786.8	42.31	67.157
QPSK	15	12@0	23278	786.8	240.00	183.720
BPSK	3.75	1@0	23278	786.8	41.67	57.870
BPSK	15	1@0	23278	786.8	104.80	119.650

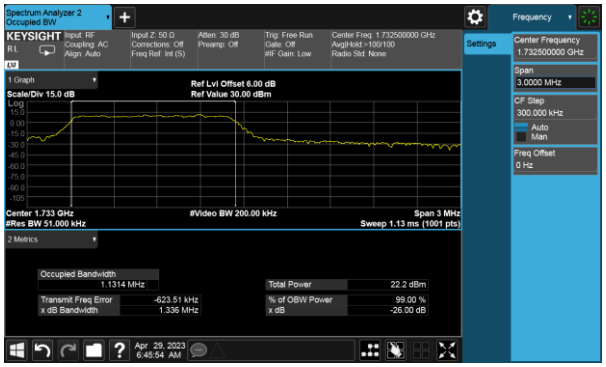
Cat M1

LTE Band 4 QPSK 1.4MHz, CH 20175

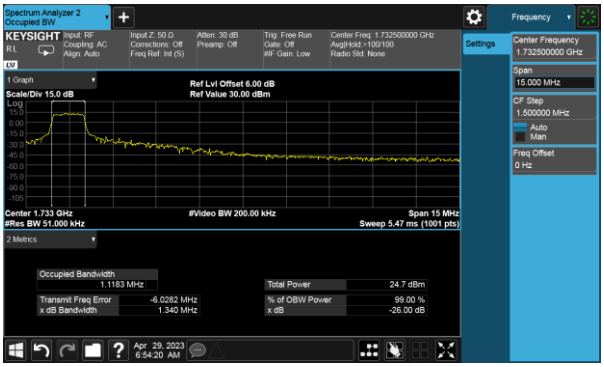
LTE Band 4 QPSK 10MHz, CH 20175



LTE Band 4 QPSK 3MHz, CH 20175

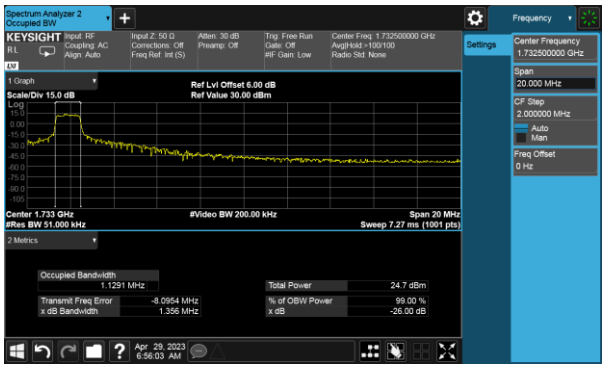


LTE Band 4 QPSK 15MHz, CH 20175



LTE Band 4 QPSK 5MHz, CH 20175

LTE Band 4 QPSK 20MHz, CH 20175



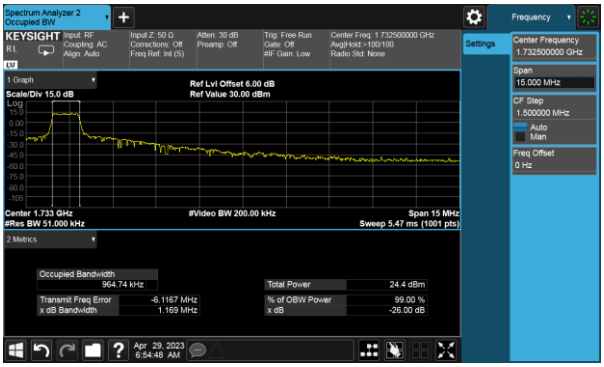
Cat M1

LTE Band 4 16QAM 1.4MHz, CH 20175

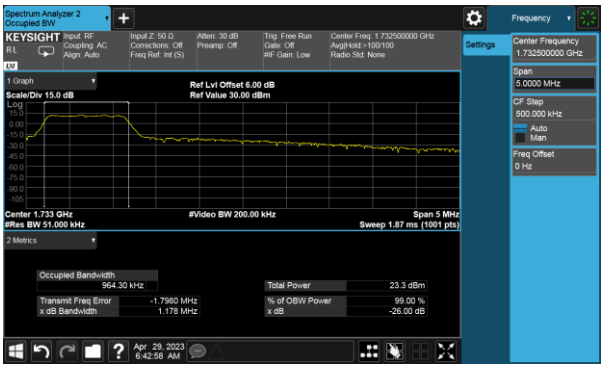
LTE Band 4 16QAM 10MHz, CH 20175

LTE Band 4 16QAM 3MHz, CH 20175

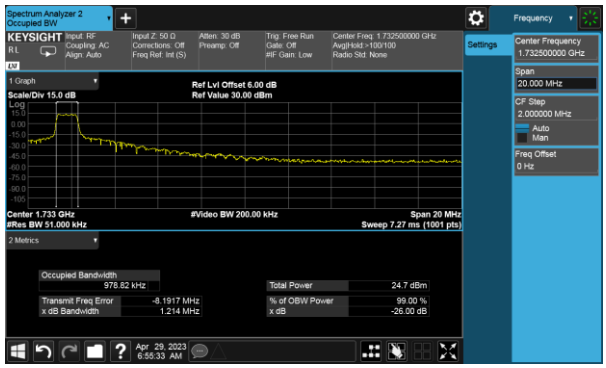
LTE Band 4 16QAM 15MHz, CH 20175



LTE Band 4 16QAM 5MHz, CH 20175



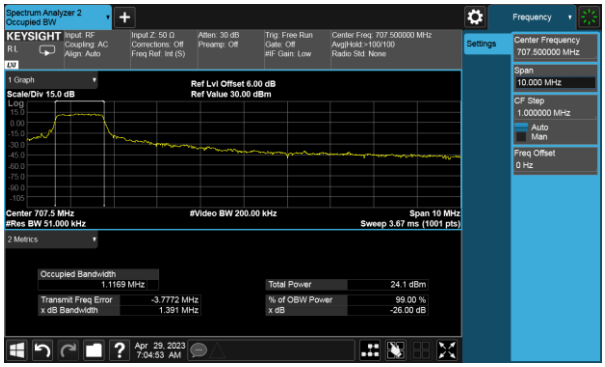
LTE Band 4 16QAM 20MHz, CH 20175



Cat M1

LTE Band 12 QPSK 1.4MHz, CH 23095

LTE Band 12 QPSK 10MHz, CH 23095



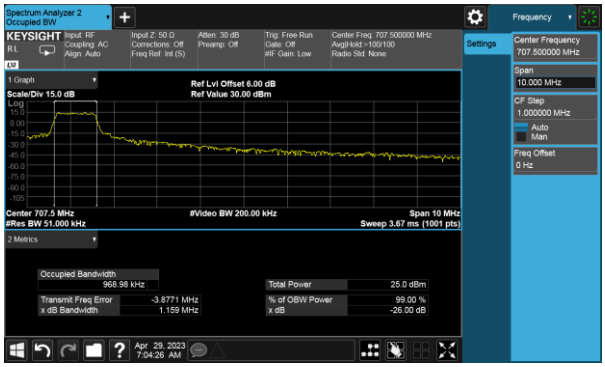
LTE Band 12 QPSK 3MHz, CH 23095

LTE Band 12 QPSK 5MHz, CH 23095

Cat M1

LTE Band 12 16QAM 1.4MHz, CH 23095

LTE Band 26 16QAM 10MHz, CH 23095



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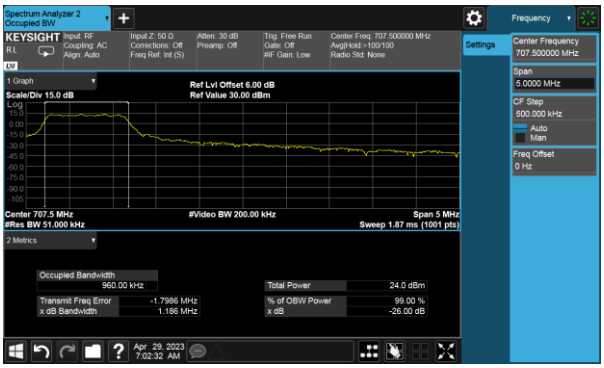
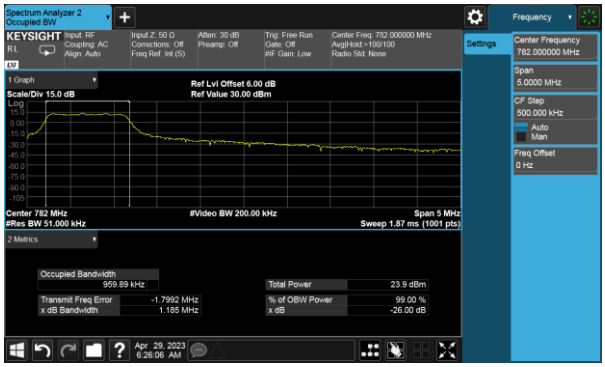
LTE Band 12 16QAM 5MHz, CH 23095



Cat M1

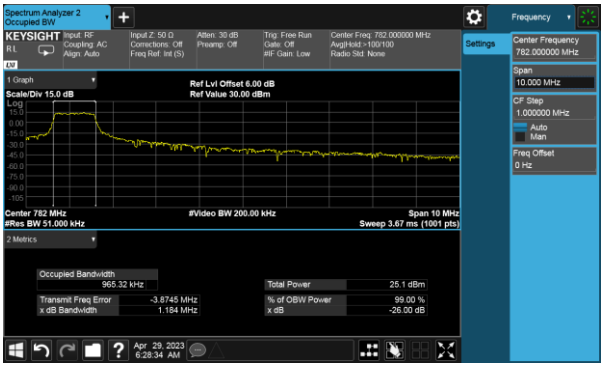
LTE Band 13 QPSK 5MHz, CH 23230

LTE Band 13 16QAM 5MHz, CH 23230



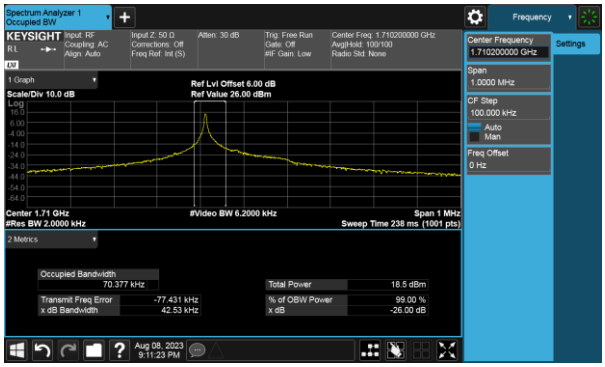
LTE Band 13 QPSK 10MHz, CH 23230

LTE Band 13 16QAM 10MHz, CH 23230

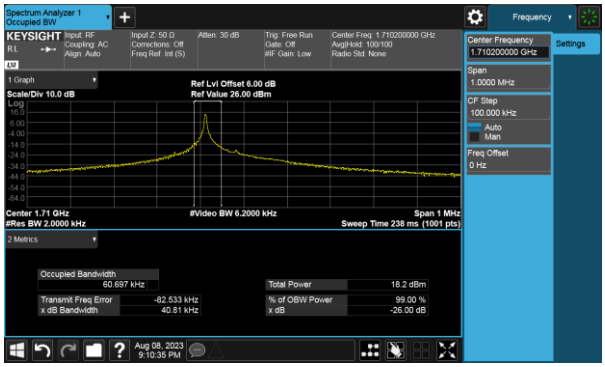


NB-IoT

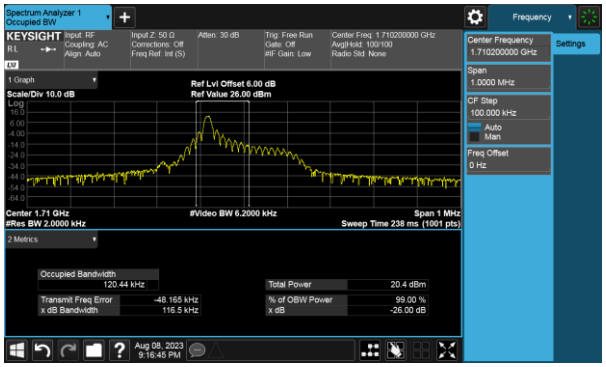
LTE Band 4 QPSK 3.75KHz 1@0 CH 19952



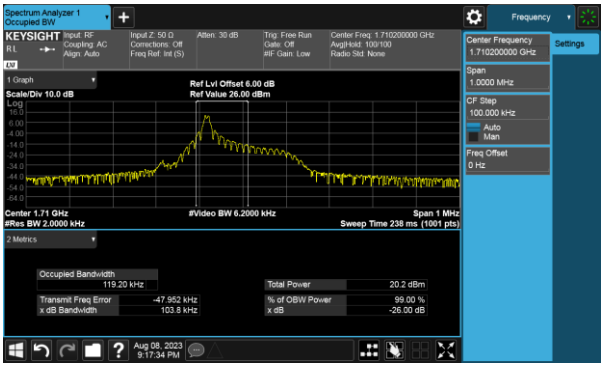
LTE Band 4 BPSK 3.75KHz 1@0 CH 19952



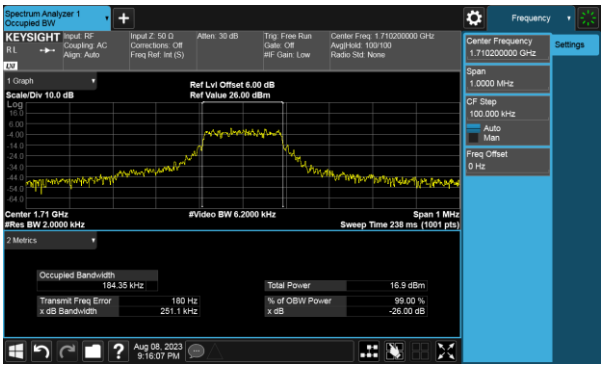
LTE Band 4 QPSK 15KHz 1@0 CH 19952



LTE Band 4 BPSK 15KHz 1@0 CH 19952

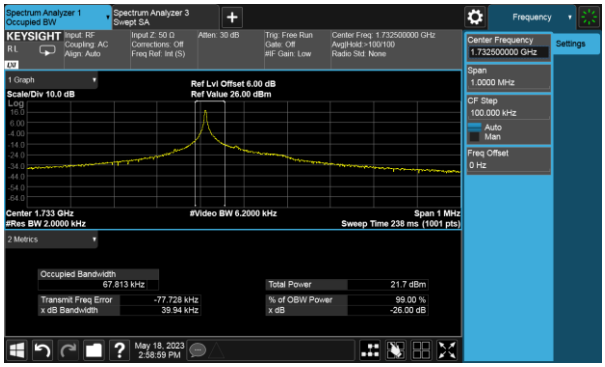


LTE Band 4 QPSK 15KHz 12@0 CH 19952

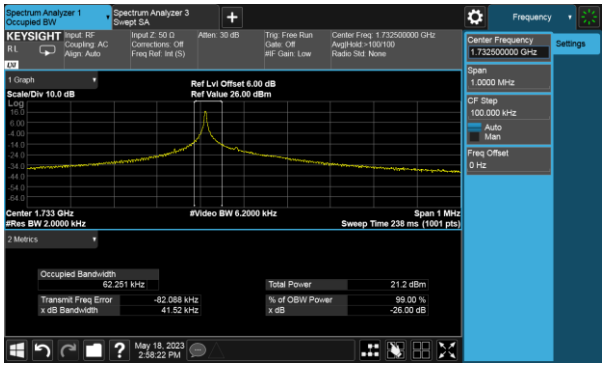


NB-IoT

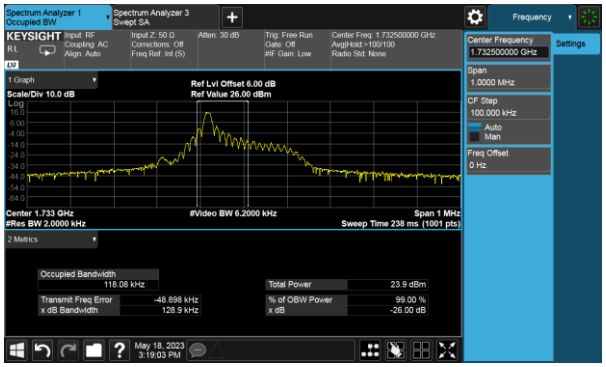
LTE Band 4 QPSK 3.75KHz 1@0 CH 20175



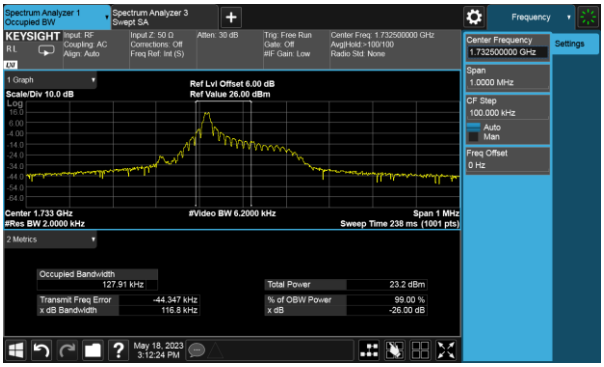
LTE Band 4 BPSK 3.75KHz 1@0 CH 20175



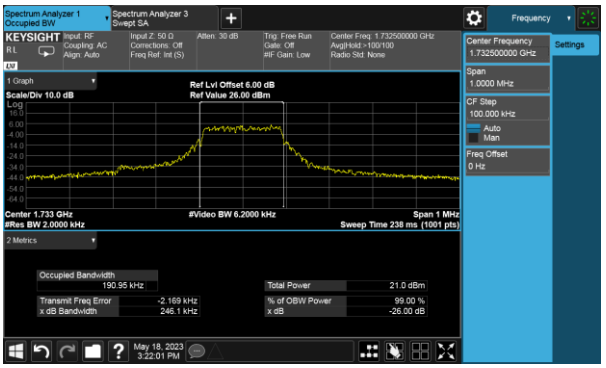
LTE Band 4 QPSK 15KHz 1@0 CH 20175



LTE Band 4 BPSK 15KHz 1@0 CH 20175

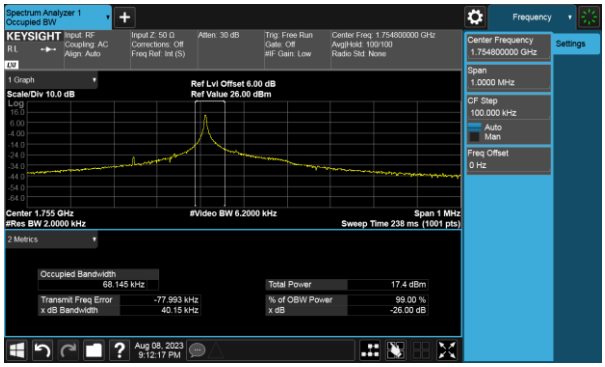


LTE Band 4 QPSK 15KHz 12@0 CH 20175

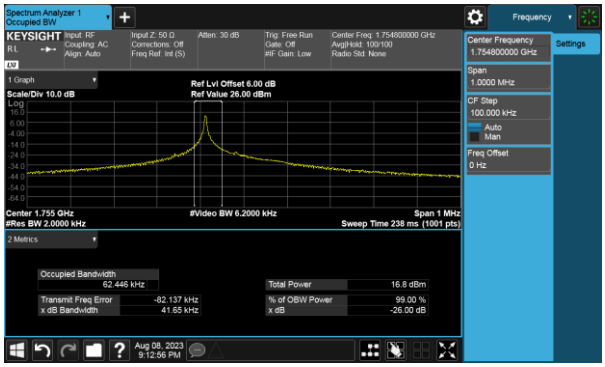


NB-IoT

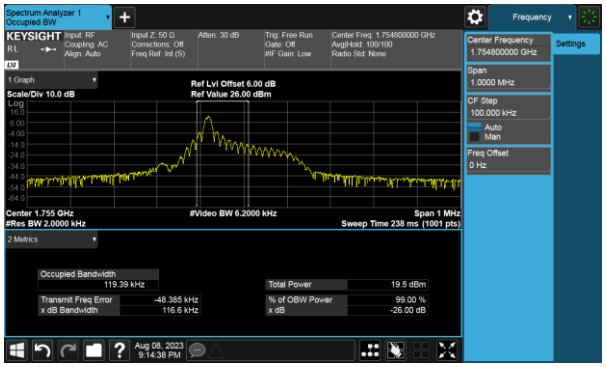
LTE Band 4 QPSK 3.75KHz 1@0 CH 20398



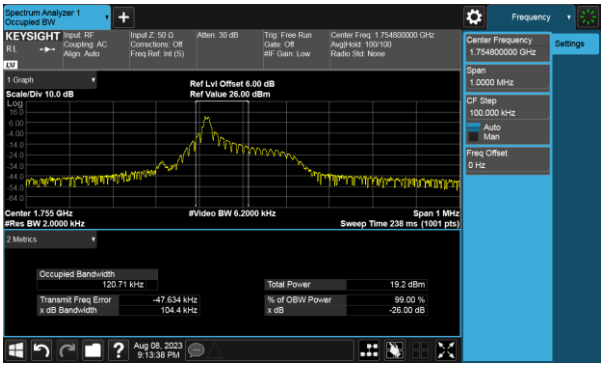
LTE Band 4 BPSK 3.75KHz 1@0 CH 20398



LTE Band 4 QPSK 15KHz 1@0 CH 20398



LTE Band 4 BPSK 15KHz 1@0 CH 20398



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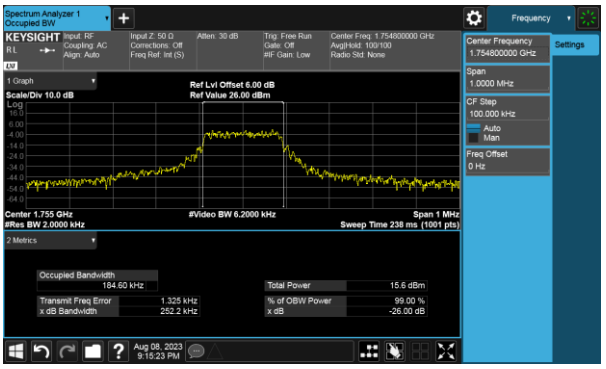
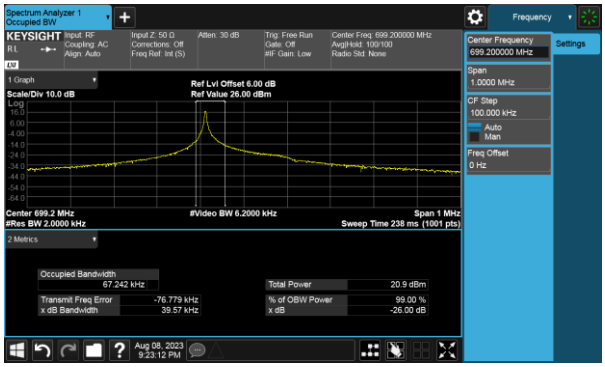
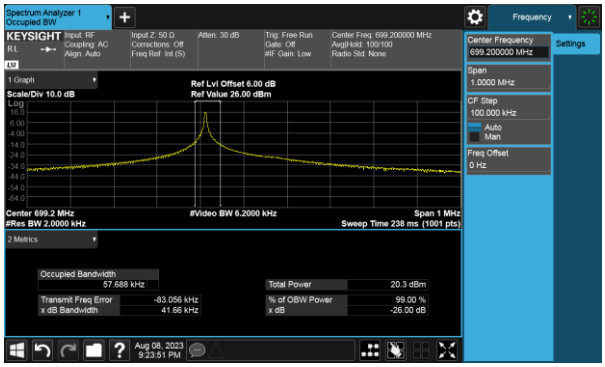


NB-IoT

LTE Band 12 QPSK 3.75KHz 1@0 CH 23012



LTE Band 12 BPSK 3.75KHz 1@0 CH 23012



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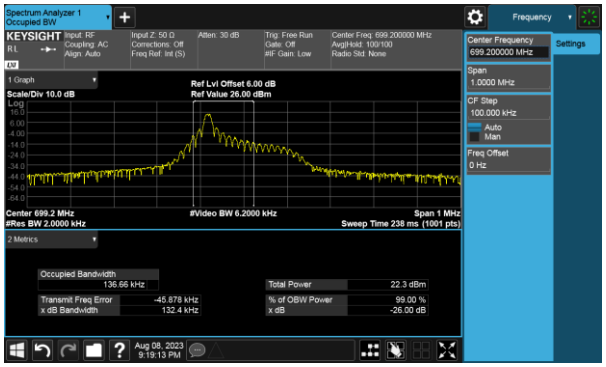
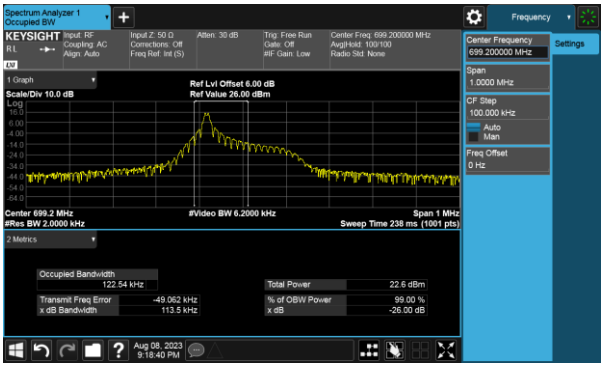
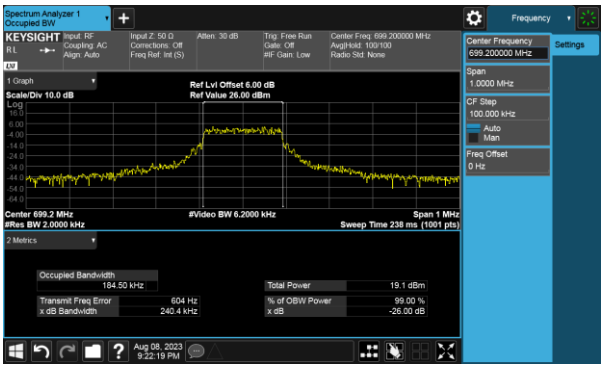


LTE Band 12 BPSK 15KHz 1@0 CH 23012

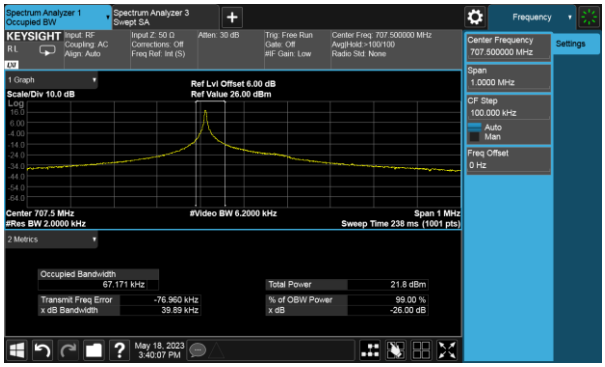


LTE Band 12 QPSK 15KHz 12@0 CH 23012

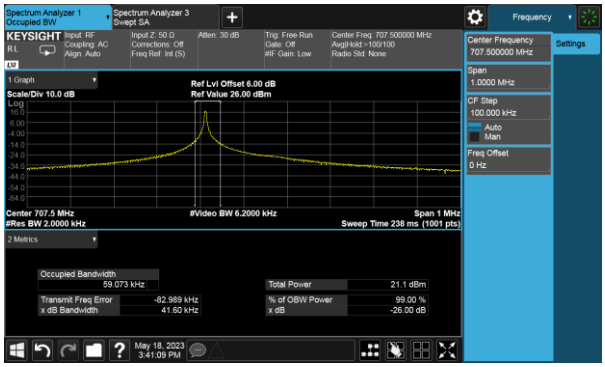


NB-IoT

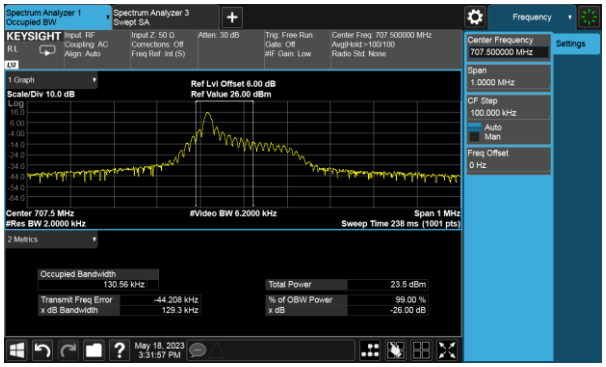
LTE Band 12 QPSK 3.75KHz 1@0 CH 23095



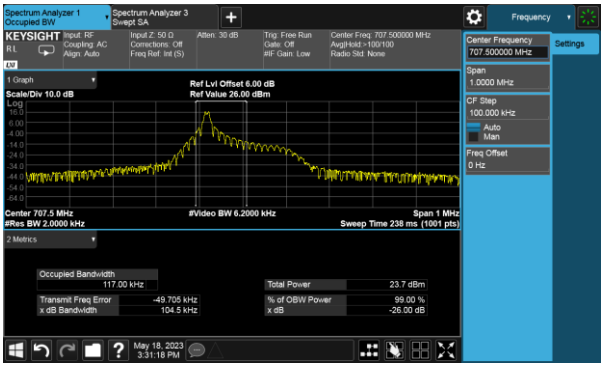
LTE Band 12 BPSK 3.75KHz 1@0 CH 23095



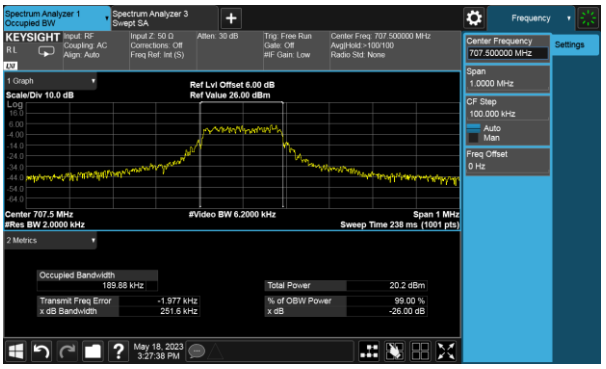
LTE Band 12 QPSK 15KHz 1@0 CH 23095



LTE Band 12 BPSK 15KHz 1@0 CH 23095



LTE Band 12 QPSK 15KHz 12@0 CH 23095



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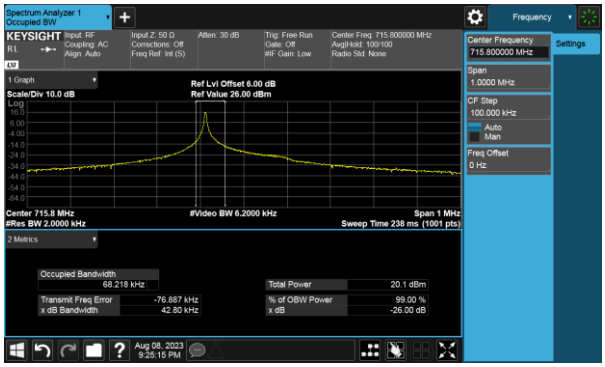
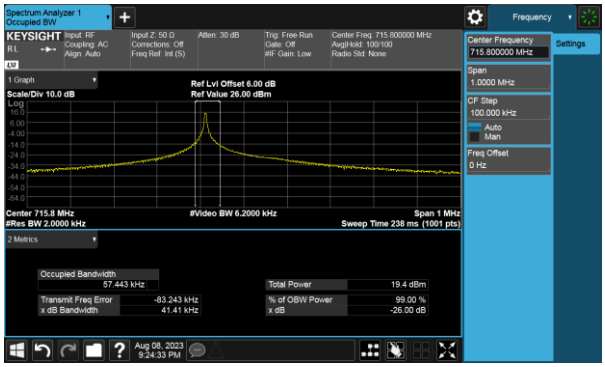
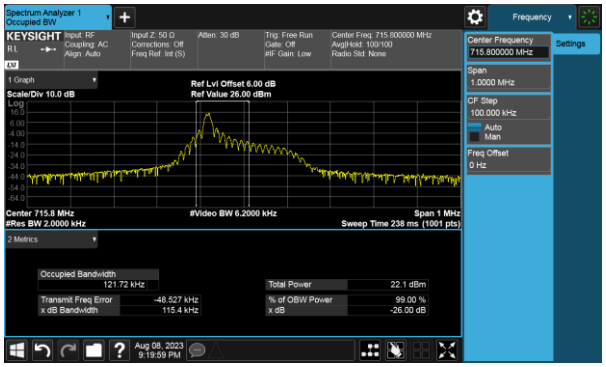
LTE Band 12 QPSK 3.75KHz 1@0 CH 23178



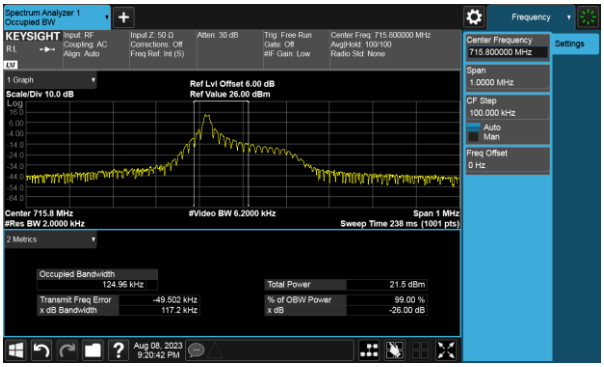
LTE Band 12 BPSK 3.75KHz 1@0 CH 23178



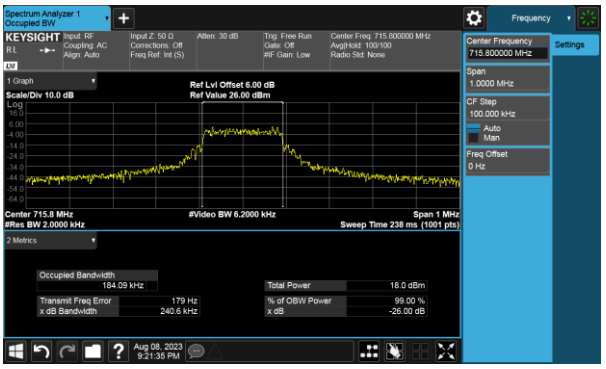
LTE Band 12 QPSK 15KHz 1@0 CH 23178



LTE Band 12 BPSK 15KHz 1@0 CH 23178



LTE Band 12 QPSK 15KHz 12@0 CH 23178



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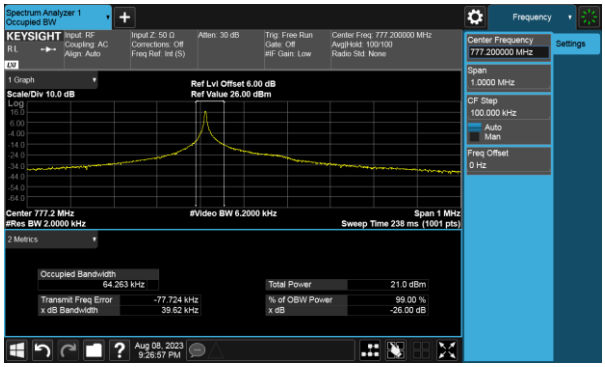
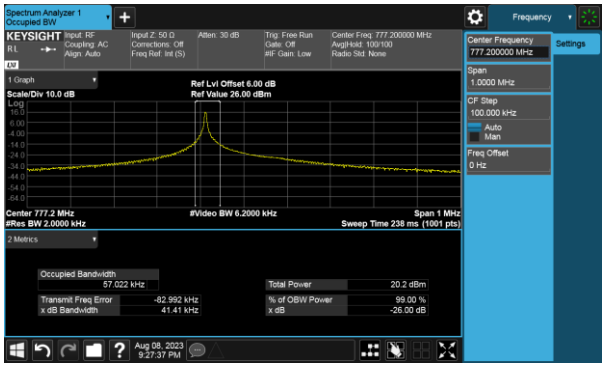
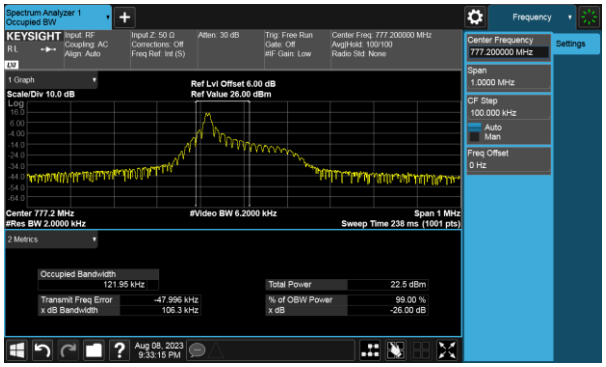
LTE Band 13 QPSK 3.75KHz 1@0 CH 23182



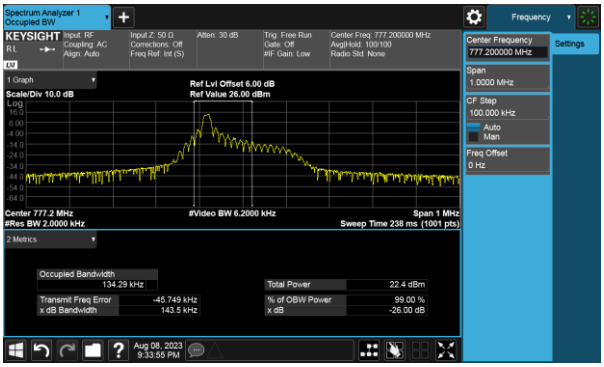
LTE Band 13 BPSK 3.75KHz 1@0 CH 23182



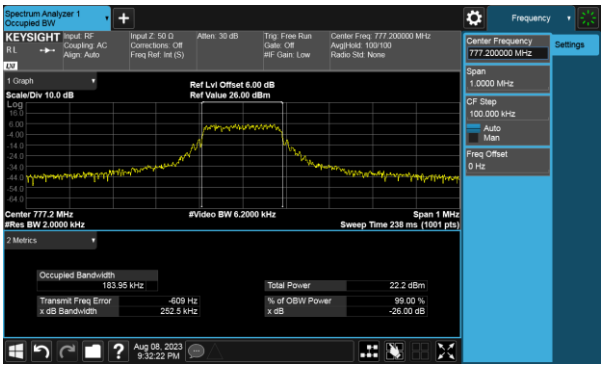
LTE Band 13 QPSK 15KHz 1@0 CH 23182



LTE Band 13 BPSK 15KHz 1@0 CH 23182



LTE Band 13 QPSK 15KHz 12@0 CH 23182



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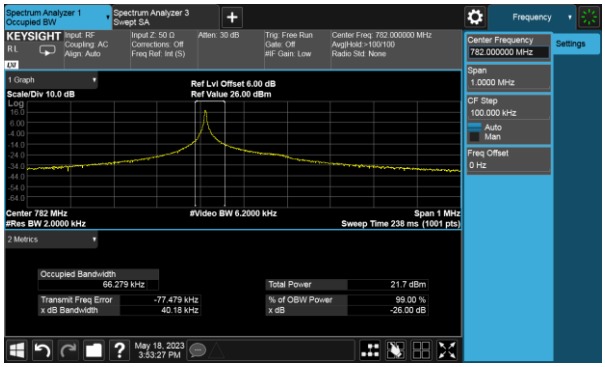
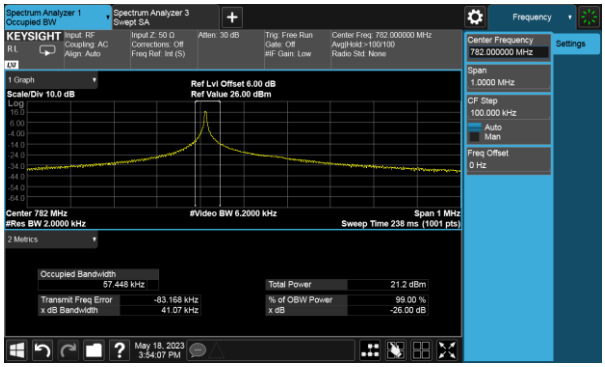
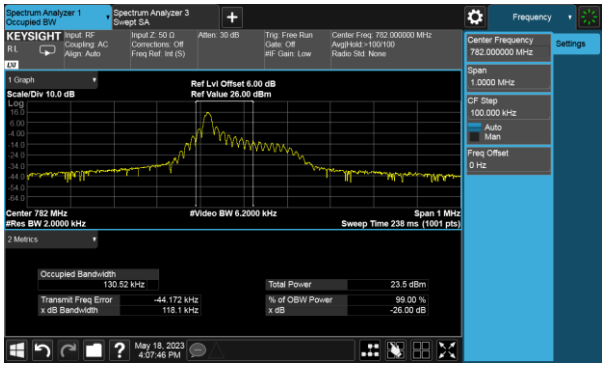
LTE Band 13 QPSK 3.75KHz 1@0 CH 23230



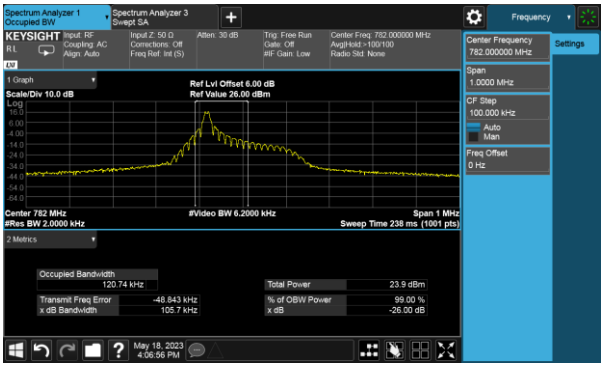
LTE Band 13 BPSK 3.75KHz 1@0 CH 23230



LTE Band 13 QPSK 15KHz 1@0 CH 23230



LTE Band 13 BPSK 15KHz 1@0 CH 23230



LTE Band 13 QPSK 15KHz 12@0 CH 23230

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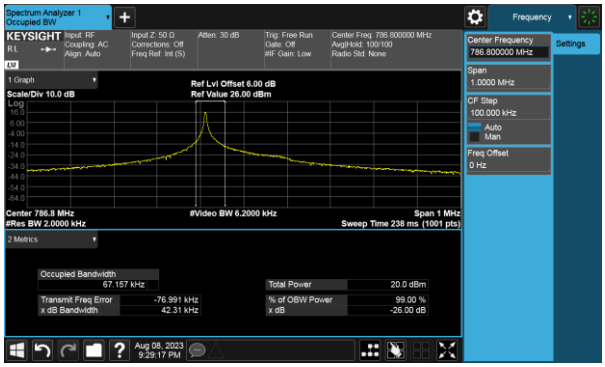
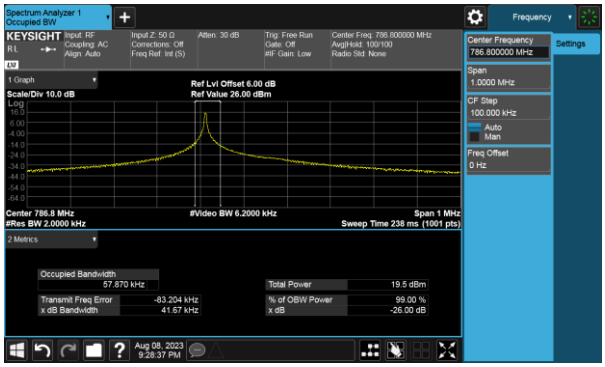
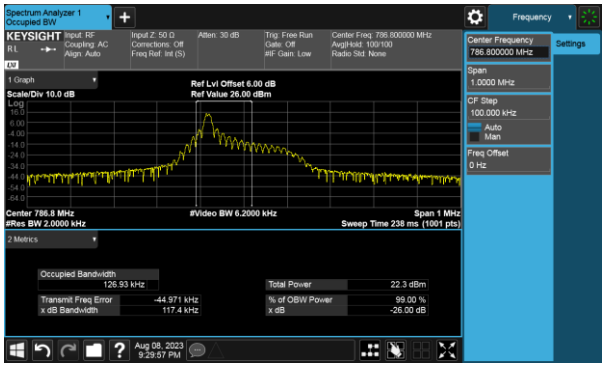
LTE Band 13 QPSK 3.75KHz 1@0 CH 23278



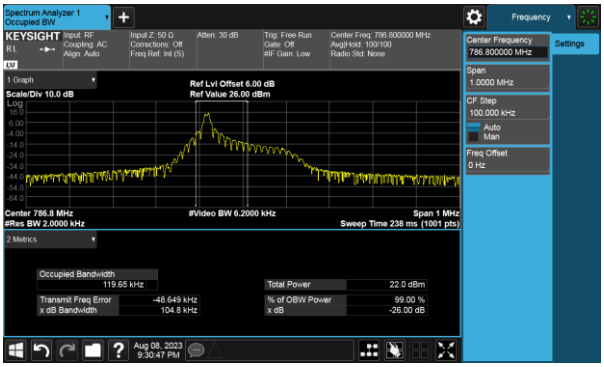
LTE Band 13 BPSK 3.75KHz 1@0 CH 23278



LTE Band 13 QPSK 15KHz 1@0 CH 23278



LTE Band 13 BPSK 15KHz 1@0 CH 23278



LTE Band 13 QPSK 15KHz 12@0 CH 23278