74, Seoicheon-ro 578beon-gil, Majang-myeon, Icheon-si, Gyeonggi-do, 17383, Rep. of KOREA
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FCC Sub6 REPORT

Certification

Applicant Name:
SAMSUNG Electronics Co., Ltd.

Address:
129, Samsung-ro, Yeongtong-gu,
Suwon-si, Gyeonggi-do, 16677, Rep. of Korea

Date of Issue:
November 04, 2020

Location:
HCT CO., LTD.,
74, Seoicheon-ro 578beon-gil, Majang-myeon,
Icheon-si, Gyeonggi-do, 17383, Rep. of KOREA

Report No.: HCT-RF-2011-FC015

FCC ID:	**A3LSMG991U**
APPLICANT:	**SAMSUNG Electronics Co., Ltd.**

Model(s):	SM-G991U
Additional Model(s):	SM-G991U1
EUT Type:	Mobile Phone
FCC Classification:	PCS Licensed Transmitter Held to Ear (PCE)
FCC Rule Part(s):	§27, §2

Mode (MHz)	Tx Frequency (MHz)	Emission Designator	Modulation	EIRP	
				Max. Power (W)	Max. Power (dBm)
Sub6 n41 (20)	2506.020 – 2679.990	18M0G7D	PI/2 BPSK	0.146	21.63
		18M0G7D	QPSK	0.144	21.58
		17M9W7D	16QAM	0.112	20.49
		17M9W7D	64QAM	0.084	19.23
		17M9W7D	256QAM	0.057	17.54
Sub6 n41 (30)	2511.000 – 2674.980	26M8G7D	PI/2 BPSK	0.124	20.92
		27M0G7D	QPSK	0.121	20.82
		26M8W7D	16QAM	0.094	19.73
		26M8W7D	64QAM	0.071	18.51
		26M8W7D	256QAM	0.051	17.07
Sub6 n41 (40)	2516.010 – 2670.000	35M7G7D	PI/2 BPSK	0.098	19.93
		35M7G7D	QPSK	0.095	19.77
		35M7W7D	16QAM	0.070	18.48
		35M8W7D	64QAM	0.056	17.45
		35M7W7D	256QAM	0.038	15.84
Sub6 n41 (50)	2521.020 – 2664.990	45M6G7D	PI/2 BPSK	0.110	20.40
		45M8G7D	QPSK	0.108	20.35
		45M6W7D	16QAM	0.079	18.98
		45M8W7D	64QAM	0.060	17.75
		45M7W7D	256QAM	0.039	15.93
Sub6 n41 (60)	2526.000 – 2659.980	57M8G7D	PI/2 BPSK	0.109	20.37
		57M6G7D	QPSK	0.107	20.28
		57M8W7D	16QAM	0.080	19.02
		57M9W7D	64QAM	0.057	17.59
		57M8W7D	256QAM	0.038	15.81
Sub6 n41 (80)	2536.020 – 2649.990	76M9G7D	PI/2 BPSK	0.107	20.31
		76M8G7D	QPSK	0.106	20.25
		76M9W7D	16QAM	0.079	18.98
		77M0W7D	64QAM	0.056	17.45
		76M9W7D	256QAM	0.036	15.58
Sub6 n41 (90)	2541.000 – 2644.980	86M7G7D	PI/2 BPSK	0.111	20.44
		86M8G7D	QPSK	0.108	20.35
		86M7W7D	16QAM	0.088	19.47
		86M7W7D	64QAM	0.060	17.79
		86M4W7D	256QAM	0.037	15.71
Sub6 n41 (100)	2546.010 – 2640.000	96M2G7D	PI/2 BPSK	0.112	20.49
		96M3G7D	QPSK	0.111	20.46
		96M2W7D	16QAM	0.089	19.48
		96M0W7D	64QAM	0.060	17.81
		96M0W7D	256QAM	0.038	15.79

The measurements shown in this report were made in accordance with the procedures specified in CFR47 section §2.947. I assume full responsibility for the accuracy and completeness of these measurements, and for the qualifications of all persons taking them.
HCT CO., LTD. Certifies that no party to this application has subject to a denial of Federal benefits that includes FCC benefits pursuant to section 5301 of the Anti-Drug Abuse Act of 1998,21 U.S. C.853(a)

REVIEWED BY

Report prepared by : Se Wook Park
Engineer of Telecommunication Testing Center

Report approved by : Jong Seok Lee
Manager of Telecommunication Testing Center

This test results were applied only to the test methods required by the standard.

This laboratory is not accredited for the test results marked *.
The above Test Report is the accredited test result by (KS Q) ISO/IEC 17025 and KOLAS(Korea Laboratory Accreditation Scheme), which signed the ILAC-MRA. (HCT Accreditation No.: KT197)

Version

TEST REPORT NO.	DATE	DESCRIPTION
HCT-RF-2011-FC015	November 04, 2020	- First Approval Report

The result shown in this test report refer only to the sample(s) tested unless otherwise stated.

Table of Contents

MEASUREMENT REPORT

1. GENERAL INFORMATION

Applicant Name:	SAMSUNG Electronics Co., Ltd.
Address:	129, Samsung-ro, Yeongtong-gu, Suwon-si, Gyeonggi-do, 16677, Rep. of Korea
FCC ID:	A3LSMG991U
Application Type:	Certification
FCC Classification:	PCS Licensed Transmitter Held to Ear (PCE)
FCC Rule Part(s):	§27, §2
EUT Type:	Mobile Phone
Model(s):	SM-G991U
Additional Model(s):	SM-G991U1
SCS(kHz):	30
Bandwidth(MHz):	20, 30, 40, 50, 60, 80, 90, 100
Waveform:	CP-OFDM, DFT-S-OFDM
Modulation:	DFT-S-OFDM: PI/2 BPSK, QPSK, 16QAM, 64QAM, 256QAM CP-OFDM: QPSK, 16QAM, 64QAM, 256QAM
Tx Frequency(SCS 30kHz):	2506.020 – 2679.990 : 20 MHz 2511.000 – 2674.980 : 30 MHz 2516.010 – 2670.000 : 40 MHz 2521.020 – 2664.990 : 50 MHz 2526.000 – 2659.980 : 60 MHz 2536.020 – 2649.990 : 80 MHz 2541.000 – 2644.980 : 90 MHz 2546.010 – 2640.000 : 100 MHz
Date(s) of Tests:	September 30, 2020 ~ November 04, 2020

2. INTRODUCTION

2.1. DESCRIPTION OF EUT

The EUT was a Mobile Phone with GSM/GPRS/EGPRS/UMTS, CDMA(BC0, 1, 10) and LTE, Sub6.

It also supports IEEE 802.11 a/b/g/n/ac/ax (HT20/40/80), Bluetooth, BT LE, NFC, WPT, mmWave(n260/261).

2.2. MEASURING INSTRUMENT CALIBRATION

The measuring equipment, which was utilized in performing the tests documented herein, has been calibrated in accordance with the manufacturer's recommendations for utilizing calibration equipment, which is traceable to recognized national standards.

2.3. TEST FACILITY

The Fully-anechoic chamber and conducted measurement facility used to collect the radiated data are located at the **74, Seoicheon-ro 578beon-gil, Majang-myeon, Icheon-si, Gyeonggi-do, 17383, Rep. of KOREA.**

3. DESCRIPTION OF TESTS

3.1 TEST PROCEDURE

Test Description	Test Procedure Used
Occupied Bandwidth	- KDB 971168 D01 v03r01 – Section 4.3 - ANSI C63.26-2015 – Section 5.4.4
Channel Edge	- KDB 971168 D01 v03r01 – Section 6.0 - ANSI C63.26-2015 – Section 5.7
Spurious and Harmonic Emissions at Antenna Terminal	- KDB 971168 D01 v03r01 – Section 6.0 - ANSI C63.26-2015 – Section 5.7
Conducted Output Power	- N/A (See SAR Report)
Peak- to- Average Ratio	- KDB 971168 D01 v03r01 – Section 5.7 - ANSI C63.26-2015 – Section 5.2.3.4 - ANSI C63.26-2015 – Section 5.2.6(only GSM)
Frequency stability	- ANSI C63.26-2015 – Section 5.6
Effective Radiated Power/ Effective Isotropic Radiated Power	- KDB 971168 D01 v03r01 – Section 5.2 & 5.8 - ANSI/TIA-603-E-2016 – Section 2.2.17
Radiated Spurious and Harmonic Emissions	- KDB 971168 D01 v03r01 – Section 6.2 - ANSI/TIA-603-E-2016 – Section 2.2.12

3.2 RADIATED POWER

Test Overview

Radiated tests are performed in the Fully-anechoic chamber.

The equipment under test is placed on a non-conductive table 3-meters away from the receive antenna in accordance with ANSI/TIA-603-E-2016 Clause 2.2.17.

Test Settings

1. Radiated power measurements are performed using the signal analyzer's "channel power" measurement capability for signals with continuous operation.
2. RBW = 1 – 5% of the expected OBW, not to exceed NormalHz
3. VBW ≥ 3 x RBW
4. Span = 1.5 times the OBW
5. No. of sweep points > 2 x span / RBW
6. Detector = RMS
7. Trigger is set to "free run" for signals with continuous operation with the sweep times set to "auto".
8. The integration bandwidth was roughly set equal to the measured OBW of the signal for signals with continuous operation.
9. Trace mode = trace averaging (RMS) over 100 sweeps
10. The trace was allowed to stabilize

Test Note

1. The turntable is rotated through 360 degrees, and the receiving antenna scans in order to determine the level of the maximized emission.
2. A half wave dipole is then substituted in place of the EUT. For emissions above 1GHz, a horn antenna is substituted in place of the EUT. The substitute antenna is driven by a signal generator and the previously recorded signal was duplicated.

   The power is calculated by the following formula;

   $$P_{d(dBm)} = Pg_{(dBm)} - \text{cable loss}_{(dB)} + \text{antenna gain}_{(dB)}$$

   Where: P_d is the dipole equivalent power and P_g is the generator output power into the substitution antenna.
3. The maximum value is calculated by adding the forward power to the calibrated source plus its appropriate gain value. These steps are repeated with the receiving antenna in both vertical and horizontal polarization. the difference between the gain of the horn and an isotropic antenna are taken into consideration
4. The EUT was tested in three orthogonal planes(X, Y, Z) and in all possible test configurations and positioning.
5. All measurements are performed as RMS average measurements while the EUT is operating at its maximum duty cycle, at maximum power, and at the appropriate frequencies.

3.3 RADIATED SPURIOUS EMISSIONS

Test Overview

Radiated tests are performed in the Fully-anechoic chamber.

Radiated Spurious Emission Measurements at 3 meters by Substitution Method according to ANSI/TIA-603-E-2016.

Test Settings

1. RBW = 100kHz for emissions below 1GHz and NormalHz for emissions above 1GHz
2. VBW ≥ 3 x RBW
3. Span = 1.5 times the OBW
4. No. of sweep points > 2 x span / RBW
5. Detector = Peak
6. Trace mode = Max Hold
7. The trace was allowed to stabilize
8. Test channel : Low/ Middle/ High
9. Frequency range : We are performed all frequency to 10^{th} harmonics from 9 kHz.

Test Note

1. Measurements value show only up to 3 maximum emissions noted, or would be lesser if no specific emissions from the EUT are recorded (ie: margin > 20 dB from the applicable limit) and considered that's already beyond the background noise floor.
2. The EUT was tested in three orthogonal planes(X, Y, Z) and in all possible test configurations and positioning. The worst case emissions are reported with the EUT positioning, modulations, RB sizes and offsets, and channel bandwidth configurations shown in the test data
3. For spurious emissions above 1GHz, a horn antenna is substituted in place of the EUT. The substitute antenna is driven by a signal generator and the previously recorded signal was duplicated.
   The spurious emissions is calculated by the following formula;

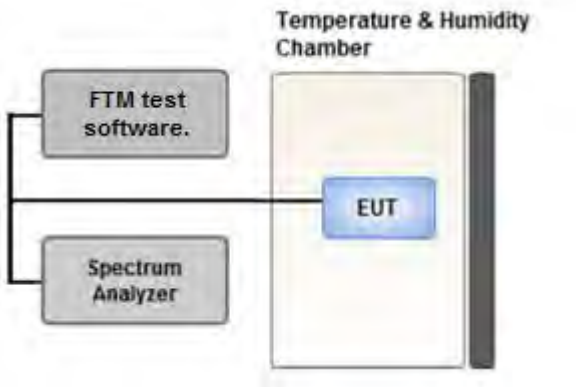
$$Result_{(dBm)} = Pg_{(dBm)} - \text{cable loss}_{(dB)} + \text{antenna gain}_{(dBi)}$$

   Where: $P_g$is the generator output power into the substitution antenna.

   If the fundalmatal frequency is below 1GHz, RF output power has been converted to EIRP.

$$EIRP_{(dBm)} = ERP_{(dBm)} + 2.15$$

3.4 PEAK- TO- AVERAGE RATIO



Test setup

① CCDF Procedure for PAPR

Test Settings

1. Set resolution/measurement bandwidth ≥ signal's occupied bandwidth;
2. Set the number of counts to a value that stabilizes the measured CCDF curve;
3. Set the measurement interval as follows:
   .- for continuous transmissions, set to 1 ms,
   .- or burst transmissions, employ an external trigger that is synchronized with the EUT burst timing sequence, or use the internal burst trigger with a trigger level that allows the burst to stabilize and set the measurement interval to a time that is less than or equal to the burst duration.
4. Record the maximum PAPR level associated with a probability of 0.1%.

② Alternate Procedure for PAPR

Use one of the procedures presented in 5.2(ANSI C63.26-2015) to measure the total peak power and record as P_{Pk}.

Use one of the applicable procedures presented 5.2(ANSI C63.26-2015) to measure the total average power and record as P_{Avg}. Determine the P.A.R. from:

$$P.A.R_{(dB)} = P_{Pk\ (dBm)} - P_{Avg\ (dBm)}\ (P_{Avg} = \text{Average Power + Duty cycle Factor})$$

Test Settings(Peak Power)

The measurement instrument must have a RBW that is greater than or equal to the OBW of the signal to be measured and a VBW ≥ 3 × RBW.

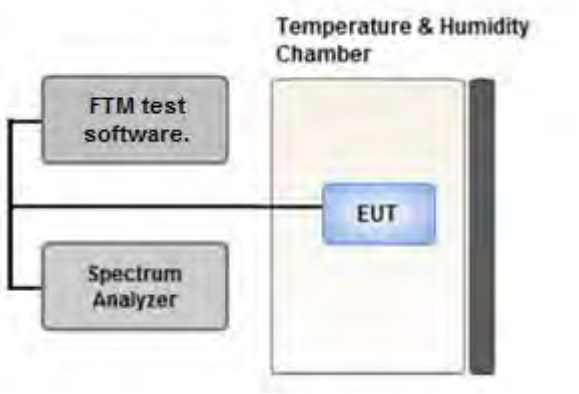
1. Set the RBW ≥ OBW.
2. Set VBW ≥ 3 × RBW.
3. Set span ≥ 2 × OBW.
4. Sweep time ≥ 10 × (number of points in sweep) × (transmission symbol period).
5. Detector = peak.
6. Trace mode = max hold.
7. Allow trace to fully stabilize.
8. Use the peak marker function to determine the peak amplitude level.

Test Settings(Average Power)

1. Set span to 2 × to 3 × the OBW.
2. Set RBW ≥ OBW.
3. Set VBW ≥ 3 × RBW.
4. Set number of measurement points in sweep ≥ 2 × span / RBW.
5. Sweep time:

   Set ≥ [10 × (number of points in sweep) × (transmission period)] for single sweep (automation-compatible) measurement. The transmission period is the (on + off) time.
6. Detector = power averaging (rms).
7. Set sweep trigger to “free run.”
8. Trace average at least 100 traces in power averaging (rms) mode if sweep is set to auto-couple. (To accurately determine the average power over the on and off period of the transmitter, it can be necessary to increase the number of traces to be averaged above 100 or, if using a manually configured sweep time, increase the sweep time.)
9. Use the peak marker function to determine the maximum amplitude level.
10. Add [10 log (1/duty cycle)] to the measured maximum power level to compute the average power during continuous transmission. For example, add [10 log (1/0.25)] = 6 dB if the duty cycle is a constant 25%.

3.5 OCCUPIED BANDWIDTH.



Test setup

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 EUT makes a call to the communication simulator.

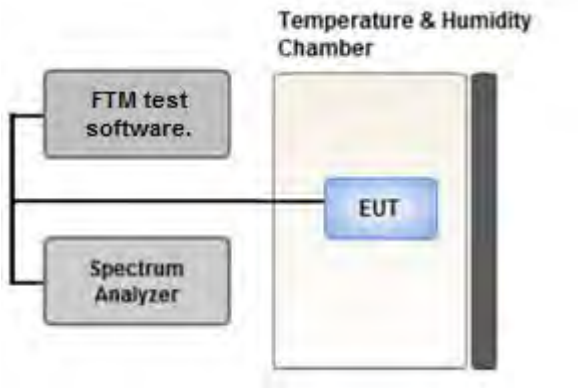
The conducted occupied bandwidth used the power splitter via EUT RF power connector between simulation base station and spectrum analyzer.

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

Test Settings

1. The signal analyzer's automatic bandwidth measurement capability was used to perform the 99% occupied bandwidth and the 26dB bandwidth. The bandwidth measurement was not influenced by any intermediate power nulls in the fundamental emission.
2. RBW = 1 – 5% of the expected OBW
3. VBW ≥ 3 x RBW
4. Detector = Peak
5. Trace mode = max hold
6. Sweep = auto couple
7. The trace was allowed to stabilize
8. If necessary, steps 2 – 7 were repeated after changing the RBW such that it would be within 1 – 5% of the 99% occupied bandwidth observed in Step 7

3.6 SPURIOUS AND HARMONIC EMISSIONS AT ANTENNA TERMINAL



Test setup

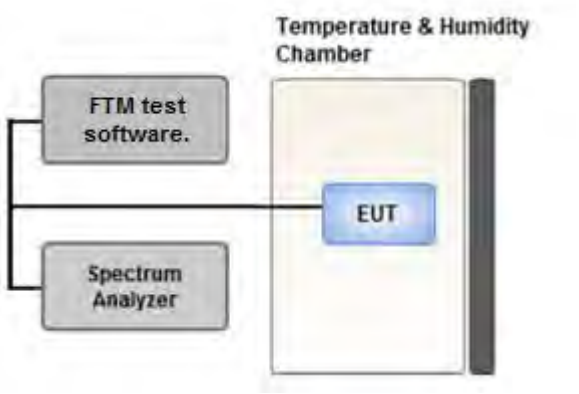
Test Overview

The level of the carrier and the various conducted spurious and harmonic frequencies is measured by means of a calibrated spectrum analyzer. The spectrum is scanned from the lowest frequency generated in the equipment up to a frequency including its 10th harmonic. All out of band emissions are measured with a spectrum analyzer connected to the antenna terminal of the EUT while the EUT is operating at its maximum duty cycle, at maximum power, and at the appropriate frequencies. All data rates were investigated to determine the worst case configuration. All modes of operation were investigated and the worst case configuration results are reported in this section.

Test Settings

1. RBW = 1 MHz
2. VBW ≥ 3 MHz
3. Detector = RMS
4. Trace Mode = trace average
5. Sweep time = auto
6. Number of points in sweep ≥ 2 x Span / RBW

3.7 CHANNEL EDGE



Test setup

Test Overview

All out of band emissions are measured with a spectrum analyzer connected to the antenna terminal of the EUT while the EUT is operating at its maximum power and at the appropriate frequencies. All data rates were investigated to determine the worst case configuration. All modes of operation were investigated and the worst case configuration results are reported in this section.

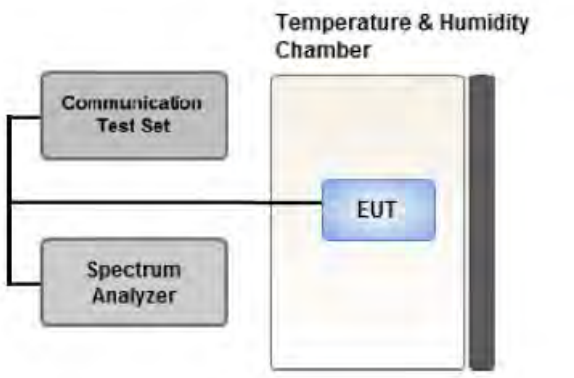
Test Settings

1. Start and stop frequency were set such that the band edge would be placed in the center of the plot
2. Span was set large enough so as to capture all out of band emissions near the band edge
3. Within 1MHz of the channel edge the RBW should be 2% of EBW, then 1 MHz after that.
4. VBW > 3 x RBW
5. Detector = RMS
6. Number of sweep points ≥ 2 x Span/RBW
7. Trace mode = trace average
8. Sweep time = auto couple
9. The trace was allowed to stabilize

Test Notes

1. The attenuation factor shall be not less than 40 + 10 log (P) dB on all frequencies between the channel edge and 5 megahertz from the channel edge,
2. 43 + 10 log (P) dB on all frequencies between 5 megahertz and X megahertz from the channel edge.
3. 55 + 10 log (P) dB on all frequencies more than X megahertz from the channel edge.
4. The attenuation factor shall not be less that 43 + 10 log (P) dB on all frequencies between 2490.5 MHz and 2496 MHz.
5. 55 + 10 log (P) dB at or below 2490.5 MHz.
6. X is the greater of 6MHz or the actual emission bandwidth
7. The band edge measurement used the power splitter via EUT RF power connector between simulation base station and spectrum analyzer

3.8 FREQUENCY STABILITY / VARIATION OF AMBIENT TEMPERATURE



Test setup

Test Overview

Frequency stability testing is performed in accordance with the guidelines of ANSI C63.26-2015.

The frequency stability of the transmitter is measured by:

1. Temperature:

   The temperature is varied from -30°C to +50°C in 10°C increments using an environmental chamber.

2. Primary Supply Voltage:

   .- Unless otherwise specified, vary primary supply voltage from 85% to 115% of the nominal value for other than hand carried battery equipment.

   .- For hand carried, battery powered equipment, reduce the primary ac or dc supply voltage to the battery operating end point, which shall be specified by the manufacturer.

Test Settings

1. The carrier frequency of the transmitter is measured at room temperature (20°C to provide a reference).
2. The equipment is turned on in a “standby” condition for fifteen minutes before applying power to the transmitter. Measurement of the carrier frequency of the transmitter is made within one minute after applying power to the transmitter.
3. Frequency measurements are made at 10°C intervals ranging from -30°C to +50°C. A period of at least one half-hour is provided to allow stabilization of the equipment at each temperature level.

3.9 WORST CASE(RADIATED TEST)

- Waveform : All Waveform of operation were investigated and the worst case configuration results are reported.
  (Worst case: DFT-S-OFDM)
- The EUT was tested in three orthogonal planes(X, Y, Z) and in all possible test configurations and positioning.
- All modes of operation were investigated and the worst case configuration results are reported.
- EN-DC mode: SA(Power Class2), NSA(Power Class3)
- Radiated tests are measured stand alone & ENDC and the worst case configuration results are reported.
  (Worst case: Stand alone(PC2), 41A-n41A(PC3))
- All RB sizes, offsets of operation were investigated and the worst case configuration results are reported.
  Please refer to the table below.
- SM-G991U & additional models were tested and the worst case results are reported.

(Worst case : SM-G991U)

[Worst case]

Test Description	Modulation	RB size	RB offset	Axis
Effective Isotropic Radiated Power	PI/2 BPSK, QPSK, 16QAM, 64QAM, 256QAM	1	1	X
Radiated Spurious and Harmonic Emissions	PI/2 BPSK	1	1	Z

3.10 WORST CASE(CONDUCTED TEST)

- Waveform : All Waveform of operation were investigated and the worst case configuration results are reported.
  (Worst case: DFT-S-OFDM)
- Modulation : All Modulation of operation were investigated and the worst case configuration results are reported.
  (Worst case: PI/2 BPSK)
- All RB sizes, offsets of operation were investigated and the worst case configuration results are reported.
  Please refer to the table below.
- All power calss of operation were investigated and the worst case configuration results are reported.
  (Worst case : Power Class2)
- SM-G991U & additional models were tested and the worst case results are reported.
  (Worst case : SM-G991U)

[Worst case]

Test Description	Modulation	Bandwidth (MHz)	Frequency	RB size	RB offset
Occupied Bandwidth, Peak-To-Average Ratio	PI/2 BPSK, QPSK, 16QAM, 64QAM, 256QAM	20, 30, 40, 50, 60, 80, 90, 100	Mid	Full RB	0
Channel Edge	PI/2 BPSK	20	Low	1	0
			High	1	50
		30	Low	1	0
			High	1	77
		40	Low	1	0
			High	1	105
		50	Low	1	0
			High	1	132
		60	Low	1	0
			High	1	161
		80	Low	1	0
			High	1	216
		90	Low	1	0
			High	1	244
		100	Low	1	0
			High	1	272
		20, 30, 40, 50, 60, 80, 90, 100	Low, Mid High	Full RB	0
Spurious and Harmonic Emissions at Antenna Terminal	PI/2 BPSK	20, 30, 40, 50, 60, 80, 90, 100	Low, Mid, High	1	1

4. LIST OF TEST EQUIPMENT

Manufacture	Model/ Equipment	Serial Number	Calibration Date	Calibration Interval	Calibration Due
T&M SYSTEM	FBSR-02B(WHK1.2/15G-10EF)/H.P.F	-	03/09/2020	Annual	03/09/2021
T&M SYSTEM	FBSR-02B(WHK3.3/18G-10EF)/H.P.F	-	03/09/2020	Annual	03/09/2021
Hewlett Packard	11667B / Power Splitter(DC~26.5 GHz)	11275	04/27/2020	Annual	04/27/2021
Hewlett Packard	E3632A/DC Power Supply	MY40004427	09/16/2020	Annual	09/16/2021
Schwarzbeck	UHAP/ Dipole Antenna	557	03/29/2019	Biennial	03/29/2021
Schwarzbeck	UHAP/ Dipole Antenna	558	03/29/2019	Biennial	03/29/2021
ESPEC	SU-642 / Chamber	93008124	03/18/2020	Annual	03/18/2021
Schwarzbeck	BBHA 9120D/ Horn Antenna(1~18GHz)	147	08/29/2019	Biennial	08/29/2021
Schwarzbeck	BBHA 9120D/ Horn Antenna(1~18GHz)	9120D-1298	09/25/2019	Biennial	09/25/2021
Schwarzbeck	BBHA 9170/ Horn Antenna(15~40GHz)	BBHA9170342	04/29/2019	Biennial	04/29/2021
Schwarzbeck	BBHA 9170/ Horn Antenna(15~40GHz)	BBHA9170124	02/11/2020	Biennial	02/11/2022
Agilent	N9020A/Signal Analyzer(10Hz~26.5GHz)	MY51110063	04/27/2020	Annual	04/27/2021
Hewlett Packard	8493C/ATTENUATOR(20dB)	17280	06/04/2020	Annual	06/04/2021
REOHDE & SCHWARZ	FSV40/Spectrum Analyzer(10Hz~40GHz)	100931	10/14/2020	Annual	10/14/2021
Agilent	8960 (E5515C)/ Base Station	MY48360800	08/26/2020	Annual	08/26/2021
Schwarzbeck	FMZB1513/ Loop Antenna(9kHz~30MHz)	1513-175	04/26/2019	Biennial	04/26/2021
Schwarzbeck	VULB9160/ Bilog Antenna	3150	03/12/2019	Biennial	03/12/2021
Schwarzbeck	VULB9160/ Hybrid Antenna	760	03/22/2019	Biennial	03/22/2021
Anritsu Corp.	MT8821C/Wideband Radio Communication Tester	6262116770	07/22/2020	Annual	07/22/2021
Anritsu Corp.	MT8820C/Wideband Radio Communication Tester	6201026545	01/22/2020	Annual	01/22/2021
REOHDE & SCHWARZ	SMB100A/ SIGNAL GENERATOR (100kHz~40GHz)	177633	07/13/2020	Annual	07/13/2021
KEYSIGHT	N9030B / Signal Analyzer(5Hz~40.0GHz)	MY55480167	06/04/2020	Annual	06/04/2021
HCT CO., LTD.,	FCC LTE Mobile Conducted RF Automation Test Software	-	-	-	-

Note:

1. Equipment listed above that has a calibration due date during the testing period, the testing is completed before equipment expiration date.
2. Especially, all antenna for measurement is calibrated in accordance with the requirements of C63.5 (Version : 2017).
3. Model : FSV40/Spectrum
   - Use date of equipment : September 23, 2020 ~ October 12, 2020, October 15, 2020 ~ November 04, 2020.

5. MEASUREMENT UNCERTAINTY

The measurement uncertainties shown below were calculated in accordance with the requirements of ANSI C63.4:2014. All measurement uncertainty values are shown with a coverage factor of k = 2 to indicate a 95 % level of confidence. The measurement data shown herein meets or exceeds the U_{CISPR} measurement uncertainty values specified in CISPR 16-4-2 and, thus, can be compared directly to specified limits to determine compliance.

Parameter	Expanded Uncertainty (±dB)
Conducted Disturbance (150 kHz ~ 30 MHz)	1.82
Radiated Disturbance (9 kHz ~ 30 MHz)	3.40
Radiated Disturbance (30 MHz ~ 1 GHz)	4.80
Radiated Disturbance (1 GHz ~ 18 GHz)	5.70
Radiated Disturbance (18 GHz ~ 40 GHz)	5.05

6. SUMMARY OF TEST RESULTS

6.1 Test Condition : Conducted Test

Test Description	FCC Part Section(s)	Test Limit	Test Result
Occupied Bandwidth	§2.1049	N/A	PASS
Band Edge / Spurious and Harmonic Emissions at Antenna Terminal.	§2.1051, §27.53(m)(4)	■ < 40 + 10log10 (P[Watts]) at Channel edges ■ < 43 + 10log10 (P[Watts]) between 5 and X MHz from Channel edges ■ < 55 + 10log10 (P[Watts]) beyond X MHz beyond from Channel edges ■ < 43 + 10 log (P) dB on all frequencies between 2490.5 MHz and 2496 MHz	PASS
Conducted Output Power	§2.1046	N/A	See Note1
Frequency stability / variation of ambient temperature	§2.1055, §27.54	Emission must remain in band	PASS

Note:

1. See SAR Report
2. The same samples were used for SAR and EMC
3. All conducted tests except frequency stability were tested using FTM test software.
   (Frequency stability was tested using 5G Wireless Tester.)

6.2 Test Condition : Radiated Test

Test Description	FCC Part Section(s)	Test Limit	Test Result
Equivalent Isotropic Radiated Power	§27.50(h)(2)	< 2 Watts max. EIRP	PASS
Radiated Spurious and Harmonic Emissions	§2.1053, §27.53(m)(4)	< 55 + 10log10 (P[Watts])	PASS

Note:

1. Radiateded tests were tested using FTM test software.

7. SAMPLE CALCULATION

7.1 ERP Sample Calculation

Ch./ Freq.		Measured Level(dBm)	Substitute Level(dBm)	Ant. Gain (dBd)	C.L	Pol.	ERP	
channel	Freq.(MHz)						W	dBm
128	824.20	-21.37	38.40	-10.61	0.95	H	0.483	26.84

ERP = Substitute LEVEL(dBm) + Ant. Gain – CL(Cable Loss)

1) The EUT mounted on a non-conductive turntable is 2.5 meter above test site ground level.

2) During the test , the turn table is rotated until the maximum signal is found.

3) Record the field strength meter's level.

4) Replace the EUT with dipole/Horn antenna that is connected to a calibrated signal generator.

5) Increase the signal generator output till the field strength meter's level is equal to the item (3).

6) The signal generator output level with Ant. Gain and cable loss are the rating of effective radiated power.

7.2 EIRP Sample Calculation

Ch./ Freq.		Measured Level(dBm)	Substitute Level(dBm)	Ant. Gain (dBi)	C.L	Pol.	EIRP	
channel	Freq.(MHz)						W	dBm
518598	2593.0	-15.75	18.45	9.90	1.76	H	0.456	26.59

EIRP = Substitute LEVEL(dBm) + Ant. Gain – CL(Cable Loss)

1) The EUT mounted on a non-conductive turntable is 2.5 meter above test site ground level.

2) During the test , the turn table is rotated until the maximum signal is found.

3) Record the field strength meter's level.

4) Replace the EUT with dipole/Horn antenna that is connected to a calibrated signal generator.

5) Increase the signal generator output till the field strength meter's level is equal to the item (3).

6) The signal generator output level with Ant. Gain and cable loss are the rating of equivalent isotropic radiated power.

7.3. Emission Designator

GSM Emission Designator

Emission Designator = 249KGXW
GSM BW = 249 kHz
G = Phase Modulation
X = Cases not otherwise covered
W = Combination (Audio/Data)

EDGE Emission Designator

Emission Designator = 249KG7W
GSM BW = 249 kHz
G = Phase Modulation
7 = Quantized/Digital Info
W = Combination (Audio/Data)

WCDMA Emission Designator

Emission Designator = 4M17F9W
WCDMA BW = 4.17 MHz
F = Frequency Modulation
9 = Composite Digital Info
W = Combination (Audio/Data)

QPSK Modulation

Emission Designator = 4M48G7D
LTE BW = 4.48 MHz
G = Phase Modulation
7 = Quantized/Digital Info
D = Data transmission; telemetry; telecommand

QAM Modulation

Emission Designator = 4M48W7D
LTE BW = 4.48 MHz
W = Amplitude/Angle Modulated
7 = Quantized/Digital Info
D = Data transmission; telemetry; telecommand

8. TEST DATA

8.1 EQUIVALENT ISOTROPIC RADIATED POWER

Freq (MHz)	Mod/ Bandwidth [SCS (kHz)]	Modulation	Measured Level (dBm)	Substitute Level (dBm)	Ant. Gain(dBi)	C.L	Pol	Limit	EIRP	
								W	W	dBm
2506.020	Sub6 41/ 20 MHz [30 kHz]	PI/2 BPSK	-24.16	10.86	10.24	2.30	H	< 2.00	0.076	18.80
		QPSK	-24.25	10.77	10.24	2.30	H		0.074	18.71
		16-QAM	-25.42	9.60	10.24	2.30	H		0.057	17.54
		64-QAM	-26.12	8.90	10.24	2.30	H		0.048	16.84
		256-QAM	-27.81	7.21	10.24	2.30	H		0.033	15.15
2510.010		PI/2 BPSK	-23.67	11.34	10.28	2.30	H		0.086	19.32
		QPSK	-23.75	11.26	10.28	2.30	H		0.084	19.24
		16-QAM	-24.98	10.03	10.28	2.30	H		0.063	18.01
		64-QAM	-25.48	9.53	10.28	2.30	H		0.056	17.51
		256-QAM	-27.21	7.80	10.28	2.30	H		0.038	15.78
2592.990		PI/2 BPSK	-23.45	11.89	10.42	2.33	H		0.099	19.98
		QPSK	-23.59	11.75	10.42	2.33	H		0.096	19.84
		16-QAM	-24.75	10.59	10.42	2.33	H		0.074	18.68
		64-QAM	-25.64	9.69	10.42	2.33	H		0.060	17.79
		256-QAM	-27.33	8.01	10.42	2.33	H		0.041	16.10
2679.990		PI/2 BPSK	-21.60	13.69	10.34	2.40	H		0.146	21.63
		QPSK	-21.65	13.64	10.34	2.40	H		0.144	21.58
		16-QAM	-22.74	12.55	10.34	2.40	H		0.112	20.49
		64-QAM	-24.00	11.29	10.34	2.40	H		0.084	19.23
		256-QAM	-25.69	9.60	10.34	2.40	H		0.057	17.54

Freq (MHz)	Mod/ Bandwidth [SCS (kHz)]	Modulation	Measured Level (dBm)	Substitute Level (dBm)	Ant. Gain(dBi)	C.L	Pol	Limit	EIRP	
								W	W	dBm
2511.000	Sub6 41/ 30 MHz [30 kHz]	PI/2 BPSK	-23.45	11.56	10.28	2.30	H	< 2.00	0.090	19.54
		QPSK	-23.61	11.41	10.24	2.30	H		0.086	19.35
		16-QAM	-24.77	10.25	10.24	2.30	H		0.066	18.19
		64-QAM	-26.24	8.78	10.24	2.30	H		0.047	16.72
		256-QAM	-27.85	7.17	10.24	2.30	H		0.032	15.11
2515.000		PI/2 BPSK	-22.89	11.63	10.32	2.30	H		0.092	19.65
		QPSK	-22.96	11.56	10.32	2.30	H		0.091	19.58
		16-QAM	-24.26	10.26	10.32	2.30	H		0.067	18.28
		64-QAM	-25.35	9.17	10.32	2.30	H		0.052	17.19
		256-QAM	-27.23	7.29	10.32	2.30	H		0.034	15.31
2592.990		PI/2 BPSK	-23.71	11.58	10.44	2.33	H		0.093	19.69
		QPSK	-23.69	11.65	10.42	2.33	H		0.094	19.74
		16-QAM	-24.95	10.39	10.42	2.33	H		0.070	18.48
		64-QAM	-26.18	9.16	10.42	2.33	H		0.053	17.25
		256-QAM	-27.62	7.72	10.42	2.33	H		0.038	15.81
2674.980		PI/2 BPSK	-22.31	13.01	10.30	2.39	H		0.124	20.92
		QPSK	-22.36	12.88	10.34	2.40	H		0.121	20.82
		16-QAM	-23.45	11.79	10.34	2.40	H		0.094	19.73
		64-QAM	-24.67	10.57	10.34	2.40	H		0.071	18.51
		256-QAM	-26.11	9.13	10.34	2.40	H		0.051	17.07

Freq (MHz)	Mod/ Bandwidth [SCS (kHz)]	Modulation	Measured Level (dBm)	Substitute Level (dBm)	Ant. Gain(dBi)	C.L	Pol	Limit	EIRP	
								W	W	dBm
2516.010	Sub6 41/ 40 MHz [30 kHz]	PI/2 BPSK	-23.71	11.23	10.32	2.30	H	< 2.00	0.084	19.25
		QPSK	-23.75	11.19	10.32	2.30	H		0.083	19.21
		16-QAM	-24.97	9.97	10.32	2.30	H		0.063	17.99
		64-QAM	-26.15	8.79	10.32	2.30	H		0.048	16.81
		256-QAM	-27.71	7.23	10.32	2.30	H		0.033	15.25
2520.000		PI/2 BPSK	-23.16	11.87	10.36	2.30	H		0.098	19.93
		QPSK	-23.32	11.71	10.36	2.30	H		0.095	19.77
		16-QAM	-24.61	10.42	10.36	2.30	H		0.070	18.48
		64-QAM	-25.64	9.39	10.36	2.30	H		0.056	17.45
		256-QAM	-27.25	7.78	10.36	2.30	H		0.038	15.84
2592.990		PI/2 BPSK	-24.76	10.58	10.42	2.33	H		0.074	18.67
		QPSK	-24.72	10.62	10.42	2.33	H		0.074	18.71
		16-QAM	-25.91	9.43	10.42	2.33	H		0.056	17.52
		64-QAM	-27.41	7.93	10.42	2.33	H		0.040	16.02
		256-QAM	-29.01	6.33	10.42	2.33	H		0.028	14.42
2670.000		PI/2 BPSK	-23.98	11.42	10.26	2.37	H		0.085	19.31
		QPSK	-23.95	11.45	10.26	2.37	H		0.086	19.34
		16-QAM	-25.21	10.19	10.26	2.37	H		0.064	18.08
		64-QAM	-26.24	9.16	10.26	2.37	H		0.051	17.05
		256-QAM	-27.81	7.59	10.26	2.37	H		0.035	15.48

Freq (MHz)	Mod/ Bandwidth [SCS (kHz)]	Modulation	Measured Level (dBm)	Substitute Level (dBm)	Ant. Gain(dBi)	C.L	Pol	Limit	EIRP	
								W	W	dBm
2521.020	Sub6 41/ 50 MHz [30 kHz]	PI/2 BPSK	-23.35	11.68	10.36	2.30	H	< 2.00	0.094	19.74
		QPSK	-23.39	11.64	10.36	2.30	H		0.093	19.70
		16-QAM	-24.74	10.29	10.36	2.30	H		0.068	18.35
		64-QAM	-25.97	9.06	10.36	2.30	H		0.051	17.12
		256-QAM	-27.75	7.28	10.36	2.30	H		0.034	15.34
2525.010		PI/2 BPSK	-22.69	12.30	10.40	2.30	H		0.110	20.40
		QPSK	-22.74	12.25	10.40	2.30	H		0.108	20.35
		16-QAM	-24.11	10.88	10.40	2.30	H		0.079	18.98
		64-QAM	-25.34	9.65	10.40	2.30	H		0.060	17.75
		256-QAM	-27.16	7.83	10.40	2.30	H		0.039	15.93
2592.990		PI/2 BPSK	-24.23	11.11	10.42	2.33	H		0.083	19.20
		QPSK	-24.25	11.09	10.42	2.33	H		0.083	19.18
		16-QAM	-25.57	9.77	10.42	2.33	H		0.061	17.86
		64-QAM	-26.54	8.80	10.42	2.33	H		0.049	16.89
		256-QAM	-27.95	7.39	10.42	2.33	H		0.035	15.48
2664.990		PI/2 BPSK	-24.00	11.42	10.22	2.37	H		0.084	19.27
		QPSK	-24.02	11.40	10.22	2.37	H		0.084	19.25
		16-QAM	-25.33	10.09	10.22	2.37	H		0.062	17.94
		64-QAM	-26.31	9.11	10.22	2.37	H		0.050	16.96
		256-QAM	-28.02	7.40	10.22	2.37	H		0.033	15.25

Freq (MHz)	Mod/ Bandwidth [SCS (kHz)]	Modulation	Measured Level (dBm)	Substitute Level (dBm)	Ant. Gain(dBi)	C.L	Pol	Limit	EIRP	
								W	W	dBm
2526.000	Sub6 41/ 60 MHz [30 kHz]	PI/2 BPSK	-23.45	11.54	10.40	2.30	H	< 2.00	0.092	19.64
		QPSK	-23.51	11.48	10.40	2.30	H		0.091	19.58
		16-QAM	-24.83	10.16	10.40	2.30	H		0.067	18.26
		64-QAM	-26.07	8.92	10.40	2.30	H		0.050	17.02
		256-QAM	-27.87	7.12	10.40	2.30	H		0.033	15.22
2530.020		PI/2 BPSK	-22.73	12.23	10.44	2.30	H		0.109	20.37
		QPSK	-22.82	12.14	10.44	2.30	H		0.107	20.28
		16-QAM	-24.08	10.88	10.44	2.30	H		0.080	19.02
		64-QAM	-25.51	9.45	10.44	2.30	H		0.057	17.59
		256-QAM	-27.29	7.67	10.44	2.30	H		0.038	15.81
2592.990		PI/2 BPSK	-24.64	10.70	10.42	2.33	H		0.076	18.79
		QPSK	-24.67	10.67	10.42	2.33	H		0.075	18.76
		16-QAM	-25.92	9.42	10.42	2.33	H		0.056	17.51
		64-QAM	-26.91	8.43	10.42	2.33	H		0.045	16.52
		256-QAM	-28.45	6.89	10.42	2.33	H		0.031	14.98
2659.980		PI/2 BPSK	-24.19	11.24	10.18	2.37	H		0.080	19.05
		QPSK	-24.27	11.16	10.18	2.37	H		0.079	18.97
		16-QAM	-25.45	9.98	10.18	2.37	H		0.060	17.79
		64-QAM	-26.51	8.92	10.18	2.37	H		0.047	16.73
		256-QAM	-28.33	7.10	10.18	2.37	H		0.031	14.91

Freq (MHz)	Mod/ Bandwidth [SCS (kHz)]	Modulation	Measured Level (dBm)	Substitute Level (dBm)	Ant. Gain(dBi)	C.L	Pol	Limit	EIRP	
								W	W	dBm
2536.020	Sub6 41/ 80 MHz [30 kHz]	PI/2 BPSK	-22.79	12.14	10.48	2.31	H	< 2.00	0.107	20.31
		QPSK	-22.85	12.08	10.48	2.31	H		0.106	20.25
		16-QAM	-24.12	10.81	10.48	2.31	H		0.079	18.98
		64-QAM	-25.65	9.28	10.48	2.31	H		0.056	17.45
		256-QAM	-27.52	7.41	10.48	2.31	H		0.036	15.58
2540.010		PI/2 BPSK	-22.85	12.04	10.52	2.31	H		0.106	20.25
		QPSK	-22.93	11.96	10.52	2.31	H		0.104	20.17
		16-QAM	-24.17	10.72	10.52	2.31	H		0.078	18.93
		64-QAM	-25.74	9.15	10.52	2.31	H		0.054	17.36
		256-QAM	-27.56	7.33	10.52	2.31	H		0.036	15.54
2592.990		PI/2 BPSK	-23.76	11.58	10.42	2.33	H		0.093	19.67
		QPSK	-23.83	11.51	10.42	2.33	H		0.091	19.60
		16-QAM	-25.12	10.22	10.42	2.33	H		0.068	18.31
		64-QAM	-26.67	8.66	10.42	2.33	H		0.047	16.76
		256-QAM	-28.45	6.89	10.42	2.33	H		0.031	14.98
2649.990		PI/2 BPSK	-23.80	11.54	10.10	2.34	H		0.085	19.30
		QPSK	-23.85	11.49	10.10	2.34	H		0.084	19.25
		16-QAM	-25.05	10.29	10.10	2.34	H		0.064	18.05
		64-QAM	-26.59	8.75	10.10	2.34	H		0.045	16.51
		256-QAM	-28.41	6.93	10.10	2.34	H		0.029	14.69

Freq (MHz)	Mod/ Bandwidth [SCS (kHz)]	Modulation	Measured Level (dBm)	Substitute Level (dBm)	Ant. Gain(dBi)	C.L	Pol	Limit	EIRP	
								W	W	dBm
2541.000	Sub6 41/ 90 MHz [30 kHz]	PI/2 BPSK	-23.41	11.48	10.52	2.31	H	< 2.00	0.093	19.69
		QPSK	-23.46	11.43	10.52	2.31	H		0.092	19.64
		16-QAM	-24.72	10.17	10.52	2.31	H		0.069	18.38
		64-QAM	-26.31	8.58	10.52	2.31	H		0.048	16.79
		256-QAM	-28.15	6.74	10.52	2.31	H		0.031	14.95
2545.020		PI/2 BPSK	-22.78	12.19	10.56	2.31	H		0.111	20.44
		QPSK	-22.87	12.10	10.56	2.31	H		0.108	20.35
		16-QAM	-23.75	11.22	10.56	2.31	H		0.088	19.47
		64-QAM	-25.43	9.54	10.56	2.31	H		0.060	17.79
		256-QAM	-27.51	7.46	10.56	2.31	H		0.037	15.71
2592.990		PI/2 BPSK	-23.99	11.35	10.42	2.33	H		0.088	19.44
		QPSK	-24.02	11.32	10.42	2.33	H		0.087	19.41
		16-QAM	-25.26	10.08	10.42	2.33	H		0.066	18.17
		64-QAM	-26.85	8.48	10.42	2.33	H		0.045	16.58
		256-QAM	-28.64	6.70	10.42	2.33	H		0.030	14.79
2644.980		PI/2 BPSK	-22.94	12.46	10.13	2.33	H		0.106	20.26
		QPSK	-23.00	12.40	10.13	2.33	H		0.105	20.20
		16-QAM	-24.22	11.18	10.13	2.33	H		0.079	18.98
		64-QAM	-25.78	9.62	10.13	2.33	H		0.055	17.42
		256-QAM	-27.51	7.89	10.13	2.33	H		0.037	15.69

Freq (MHz)	Mod/ Bandwidth [SCS (kHz)]	Modulation	Measured Level (dBm)	Substitute Level (dBm)	Ant. Gain(dBi)	C.L	Pol	Limit	EIRP	
								W	W	dBm
2546.010	Sub6 41/ 100 MHz [30 kHz]	PI/2 BPSK	-23.42	11.55	10.56	2.31	H	< 2.00	0.095	19.80
		QPSK	-23.41	11.56	10.56	2.31	H		0.096	19.81
		16-QAM	-24.76	10.21	10.56	2.31	H		0.070	18.46
		64-QAM	-26.31	8.66	10.56	2.31	H		0.049	16.91
		256-QAM	-28.17	6.80	10.56	2.31	H		0.032	15.05
2550.000		PI/2 BPSK	-22.84	12.20	10.60	2.31	H		0.112	20.49
		QPSK	-22.87	12.17	10.60	2.31	H		0.111	20.46
		16-QAM	-23.85	11.19	10.60	2.31	H		0.089	19.48
		64-QAM	-25.52	9.52	10.60	2.31	H		0.060	17.81
		256-QAM	-27.54	7.50	10.60	2.31	H		0.038	15.79
2592.990		PI/2 BPSK	-23.81	11.53	10.42	2.33	H		0.092	19.62
		QPSK	-23.85	11.49	10.42	2.33	H		0.091	19.58
		16-QAM	-25.15	10.19	10.42	2.33	H		0.067	18.28
		64-QAM	-26.71	8.62	10.42	2.33	H		0.047	16.72
		256-QAM	-28.51	6.83	10.42	2.33	H		0.031	14.92
2640.000		PI/2 BPSK	-22.83	12.63	10.16	2.33	H		0.111	20.46
		QPSK	-22.85	12.61	10.16	2.33	H		0.111	20.44
		16-QAM	-24.09	11.37	10.16	2.33	H		0.083	19.20
		64-QAM	-25.72	9.74	10.16	2.33	H		0.057	17.57
		256-QAM	-27.51	7.95	10.16	2.33	H		0.038	15.78

All ENDC of operation were investigated and the worst case configuration results are reported.

(Worst case: 41A(20MHz)-n41A(20MHz)(Power Class3))

LTE B41 Freq (MHz)	N41 Freq (MHz)	N41 Modulation	Measured Level (dBm)	Substitute Level (dBm)	Ant. Gain(dBi)	C.L	Pol	Limit	EIRP	
								W	W	dBm
2506.0 (QPSK)	2506.02	PI/2 BPSK	-24.57	10.45	10.24	2.30	H	< 2.00	0.069	18.39
		QPSK	-24.70	10.32	10.24	2.30	H		0.067	18.26
		16-QAM	-25.52	9.50	10.24	2.30	H		0.055	17.44
		64-QAM	-27.51	7.51	10.24	2.30	H		0.035	15.45
		256-QAM	-29.36	5.66	10.24	2.30	H		0.023	13.60
2593.0 (QPSK)	2592.99	PI/2 BPSK	-24.52	10.82	10.42	2.33	H	< 2.00	0.078	18.91
		QPSK	-24.61	10.73	10.42	2.33	H		0.076	18.82
		16-QAM	-25.45	9.89	10.42	2.33	H		0.063	17.98
		64-QAM	-27.41	7.93	10.42	2.33	H		0.040	16.02
		256-QAM	-29.15	6.19	10.42	2.33	H		0.027	14.28
2680.0 (QPSK)	2579.99	PI/2 BPSK	-24.19	11.10	10.34	2.40	H	< 2.00	0.080	19.04
		QPSK	-24.35	10.94	10.34	2.40	H		0.077	18.88
		16-QAM	-25.15	10.14	10.34	2.40	H		0.064	18.08
		64-QAM	-27.06	8.23	10.34	2.40	H		0.041	16.17
		256-QAM	-28.84	6.45	10.34	2.40	H		0.027	14.39

8.2 RADIATED SPURIOUS EMISSIONS

▣ NR Band: N41 (Power Class2)

▣ ENDC Mode: SA

▣ Bandwidth: 20 MHz

▣ Modulation: PI/2 BPSK

▣ Distance: 1 meters

▣ SCS: 30 kHz

Ch	Freq (MHz)	Measured Level (dBm)	Ant. Gain (dBi)	Substitute Level (dBm)	C.L	Pol	Result (dBm)	Limit (dBm)	Detector
501204 (2506.020)	5 012.04	-39.62	10.91	-42.53	3.28	H	-34.90	-25.00	PK
	7 518.06	-42.67	11.52	-35.79	4.12	H	-28.39	-25.00	PK
	10 024.08	-55.89	11.77	-47.53	4.75	H	-40.51	-25.00	PK
502002 (2510.010)	5 020.02	-39.65	10.94	-41.92	3.29	V	-34.27	-25.00	PK
	7 530.03	-44.18	11.56	-37.12	4.15	H	-29.71	-25.00	PK
	10 040.04	-58.20	11.72	-49.21	4.85	H	-42.34	-25.00	PK
518598 (2592.990)	5 185.98	-37.92	11.47	-40.00	3.39	H	-31.92	-25.00	PK
	7 778.97	-43.77	11.28	-36.77	4.21	V	-29.70	-25.00	AV
	10 371.96	-57.78	11.80	-47.95	4.95	H	-41.10	-25.00	PK
	12 964.95	-56.95	12.70	-46.91	5.41	V	-39.62	-25.00	PK
535998 (2679.990)	5 359.98	-39.98	11.83	-42.43	3.45	V	-34.05	-25.00	PK
	8 039.97	-44.05	11.30	-36.76	4.31	H	-29.77	-25.00	AV
	10 719.96	-57.75	11.70	-46.90	4.94	V	-40.14	-25.00	PK

▣ NR Band: N41 (Power Class2)

▣ ENDC Mode: SA

▣ Bandwidth: 30 MHz

▣ Modulation: PI/2 BPSK

▣ Distance: 1 meters

▣ SCS: 30 kHz

Ch	Freq (MHz)	Measured Level (dBm)	Ant. Gain (dBi)	Substitute Level (dBm)	C.L	Pol	Result (dBm)	Limit (dBm)	Detector
502200 (2511.000)	5 022.00	-38.08	10.94	-40.35	3.29	H	-32.70	-25.00	PK
	7 533.00	-43.04	11.56	-35.98	4.15	V	-28.57	-25.00	PK
	10 044.00	-62.45	11.71	-53.74	4.87	V	-46.90	-25.00	PK
	12 555.00	-58.13	12.90	-48.70	5.35	V	-41.15	-25.00	PK
503000 (2515.000)	5 030.00	-40.05	10.96	-42.30	3.33	V	-34.67	-25.00	PK
	7 545.00	-44.81	11.59	-37.75	4.17	H	-30.33	-25.00	AV
	10 060.00	-58.15	11.68	-49.73	4.89	H	-42.94	-25.00	PK
518598 (2592.990)	5 185.98	-42.14	11.47	-44.22	3.39	H	-36.13	-25.00	PK
	7 778.97	-46.68	11.28	-39.68	4.21	V	-32.61	-25.00	AV
	10 371.96	-62.07	11.80	-52.24	4.95	V	-45.39	-25.00	PK
	12 964.95	-54.00	12.70	-43.95	5.42	V	-36.67	-25.00	PK
534996 (2674.980)	5 349.96	-41.79	11.80	-44.08	3.44	H	-35.72	-25.00	PK
	8 024.94	-45.16	11.25	-38.10	4.30	H	-31.14	-25.00	AV
	10 699.92	-62.40	11.70	-51.32	4.98	H	-44.60	-25.00	PK

▣ NR Band: N41 (Power Class2)

▣ ENDC Mode: SA

▣ Bandwidth: 40 MHz

▣ Modulation: PI/2 BPSK

▣ Distance: 1 meters

▣ SCS: 30 kHz

Ch	Freq (MHz)	Measured Level (dBm)	Ant. Gain (dBi)	Substitute Level (dBm)	C.L	Pol	Result (dBm)	Limit (dBm)	Detector
503202 (2516.010)	5 032.02	-40.66	10.96	-42.77	3.33	V	-35.14	-25.00	PK
	7 548.03	-43.45	11.58	-36.38	4.17	V	-28.97	-25.00	PK
	10 064.04	-63.28	11.67	-55.05	4.89	H	-48.27	-25.00	PK
504000 (2520.000)	5 040.00	-39.91	10.98	-41.91	3.34	V	-34.27	-25.00	PK
	7 560.00	-43.90	11.60	-37.13	4.16	V	-29.69	-25.00	PK
	10 080.00	-57.96	11.64	-49.77	4.85	H	-42.98	-25.00	PK
518598 (2592.990)	5 185.98	-42.04	11.47	-44.12	3.39	V	-36.04	-25.00	PK
	7 778.97	-43.11	11.28	-36.11	4.21	H	-29.04	-25.00	AV
	10 371.96	-62.10	11.80	-52.27	4.95	H	-45.42	-25.00	PK
534000 (2670.000)	5 340.00	-43.63	11.78	-46.08	3.43	H	-37.73	-25.00	PK
	8 010.00	-43.21	11.22	-36.02	4.26	V	-29.06	-25.00	PK
	10 680.00	-62.21	11.70	-51.48	5.02	H	-44.80	-25.00	PK

▣ NR Band: N41 (Power Class2)

▣ ENDC Mode: SA

▣ Bandwidth: 50 MHz

▣ Modulation: PI/2 BPSK

▣ Distance: 1 meters

▣ SCS: 30 kHz

Ch	Freq (MHz)	Measured Level (dBm)	Ant. Gain (dBi)	Substitute Level (dBm)	C.L	Pol	Result (dBm)	Limit (dBm)	Detector
504204 (2521.020)	5 042.04	-39.70	10.98	-41.70	3.34	V	-34.06	-25.00	PK
	7 563.06	-44.57	11.60	-37.95	4.16	V	-30.51	-25.00	PK
	10 084.08	-62.93	11.63	-54.60	4.83	V	-47.80	-25.00	PK
	12 605.10	-56.50	12.90	-46.87	5.50	V	-39.47	-25.00	PK
505002 (2525.010)	5 050.02	-39.05	11.00	-41.21	3.34	V	-33.55	-25.00	PK
	7 575.03	-44.26	11.60	-37.78	4.14	V	-30.32	-25.00	PK
	10 100.04	-57.64	11.60	-48.72	4.80	H	-41.92	-25.00	PK
	12 625.05	-53.41	12.90	-44.25	5.45	V	-36.80	-25.00	PK
518598 (2592.990)	5 185.98	-43.15	11.47	-45.23	3.39	H	-37.15	-25.00	PK
	7 778.97	-43.14	11.28	-36.14	4.21	H	-29.07	-25.00	AV
	10 371.96	-61.54	11.80	-51.71	4.95	H	-44.86	-25.00	PK
532998 (2664.990)	5 329.98	-45.15	11.76	-47.53	3.42	V	-39.19	-25.00	PK
	7 994.97	-43.67	11.19	-36.51	4.23	H	-29.55	-25.00	AV
	10 659.96	-62.83	11.70	-52.30	5.04	V	-45.64	-25.00	PK

▣ NR Band: N41 (Power Class2)

▣ ENDC Mode: SA

▣ Bandwidth: 60 MHz

▣ Modulation: PI/2 BPSK

▣ Distance: 1 meters

▣ SCS: 30 kHz

Ch	Freq (MHz)	Measured Level (dBm)	Ant. Gain (dBi)	Substitute Level (dBm)	C.L	Pol	Result (dBm)	Limit (dBm)	Detector
505200 (2526.000)	5 052.00	-39.58	11.00	-41.74	3.34	H	-34.08	-25.00	PK
	7 578.00	-45.60	11.60	-39.10	4.13	V	-31.63	-25.00	PK
	10 104.00	-62.86	11.60	-54.03	4.79	H	-47.22	-25.00	PK
506004 (2530.020)	5 060.04	-40.41	11.04	-42.61	3.34	H	-34.91	-25.00	PK
	7 590.06	-44.00	11.60	-37.16	4.14	V	-29.70	-25.00	AV
	10 120.08	-57.25	11.60	-48.89	4.77	H	-42.06	-25.00	PK
	12 650.10	-57.25	12.90	-47.51	5.40	V	-40.01	-25.00	PK
518598 (2592.990)	5 185.98	-40.36	11.47	-42.44	3.39	V	-34.36	-25.00	PK
	7 778.97	-43.12	11.28	-36.12	4.21	H	-29.05	-25.00	AV
	10 371.96	-62.68	11.80	-52.85	4.95	V	-46.00	-25.00	PK
531996 (2659.980)	5 319.96	-45.24	11.74	-48.13	3.41	V	-39.80	-25.00	PK
	7 979.94	-44.96	11.16	-37.57	4.23	H	-30.64	-25.00	AV
	10 639.92	-62.39	11.70	-51.97	4.96	V	-45.23	-25.00	PK

▣ NR Band: N41 (Power Class2)

▣ ENDC Mode: SA

▣ Bandwidth: 80 MHz

▣ Modulation: PI/2 BPSK

▣ Distance: 1 meters

▣ SCS: 30 kHz

Ch	Freq (MHz)	Measured Level (dBm)	Ant. Gain (dBi)	Substitute Level (dBm)	C.L	Pol	Result (dBm)	Limit (dBm)	Detector
507204 (2536.020)	5 072.04	-41.32	11.08	-43.59	3.34	V	-35.85	-25.00	PK
	7 608.06	-45.58	11.60	-38.62	4.14	V	-31.16	-25.00	AV
	10 144.08	-63.38	11.60	-54.58	4.85	V	-47.83	-25.00	PK
508002 (2540.010)	5 080.02	-40.65	11.12	-42.94	3.34	V	-35.16	-25.00	PK
	7 620.03	-43.84	11.60	-37.01	4.15	V	-29.56	-25.00	AV
	10 160.04	-62.24	11.60	-53.49	4.91	H	-46.80	-25.00	PK
	12 700.05	-57.92	12.70	-48.17	5.48	V	-40.95	-25.00	PK
518598 (2592.990)	5 185.98	-41.37	11.47	-43.45	3.39	H	-35.37	-25.00	PK
	7 778.97	-43.98	11.28	-36.98	4.21	H	-29.91	-25.00	AV
	10 371.96	-62.91	11.80	-53.08	4.95	V	-46.23	-25.00	PK
529998 (2649.990)	5 299.98	-41.59	11.70	-44.47	3.41	V	-36.18	-25.00	PK
	7 949.97	-42.86	11.10	-36.02	4.29	H	-29.21	-25.00	AV
	10 599.96	-58.04	11.70	-47.18	4.89	H	-40.37	-25.00	PK

▣ NR Band: N41 (Power Class2)

▣ ENDC Mode: SA

▣ Bandwidth: 90 MHz

▣ Modulation: PI/2 BPSK

▣ Distance: 1 meters

▣ SCS: 30 kHz

Ch	Freq (MHz)	Measured Level (dBm)	Ant. Gain (dBi)	Substitute Level (dBm)	C.L	Pol	Result (dBm)	Limit (dBm)	Detector
508200 (2541.000)	5 082.00	-40.31	11.12	-42.60	3.34	H	-34.82	-25.00	PK
	7 623.00	-46.70	11.60	-40.01	4.16	V	-32.57	-25.00	PK
	10 164.00	-63.86	11.60	-55.07	4.91	V	-48.38	-25.00	PK
509004 (2545.020)	5 090.04	-38.94	11.16	-41.09	3.33	V	-33.26	-25.00	PK
	7 635.06	-42.32	11.60	-35.82	4.18	V	-28.40	-25.00	PK
	10 180.08	-63.24	11.60	-54.49	4.88	H	-47.77	-25.00	PK
	12 725.10	-56.79	12.65	-46.65	5.38	V	-39.38	-25.00	PK
518598 (2592.990)	5 185.98	-40.05	11.47	-42.13	3.39	V	-34.05	-25.00	PK
	7 778.97	-44.59	11.28	-37.59	4.21	V	-30.52	-25.00	PK
	10 371.96	-63.58	11.80	-53.75	4.95	H	-46.90	-25.00	PK
528996 (2644.980)	5 289.96	-40.79	11.68	-43.31	3.40	V	-35.03	-25.00	PK
	7 934.94	-42.58	11.07	-35.44	4.27	H	-28.64	-25.00	AV
	10 579.92	-63.42	11.70	-53.05	4.98	V	-46.33	-25.00	PK
	13 224.90	-54.93	12.90	-44.35	5.54	V	-36.99	-25.00	PK

▣ NR Band: N41 (Power Class2)

▣ ENDC Mode: SA

▣ Bandwidth: 100 MHz

▣ Modulation: PI/2 BPSK

▣ Distance: 1 meters

▣ SCS: 30 kHz

Ch	Freq (MHz)	Measured Level (dBm)	Ant. Gain (dBi)	Substitute Level (dBm)	C.L	Pol	Result (dBm)	Limit (dBm)	Detector
509202 (2546.010)	5 092.02	-41.06	11.16	-43.21	3.33	V	-35.38	-25.00	PK
	7 638.03	-42.49	11.60	-36.04	4.19	H	-28.63	-25.00	PK
	10 184.04	-63.47	11.60	-54.60	4.86	V	-47.86	-25.00	PK
510000 (2555.000)	5 100.00	-38.15	11.20	-39.83	3.33	H	-31.96	-25.00	PK
	7 650.00	-43.63	11.60	-37.22	4.20	V	-29.82	-25.00	PK
	10 200.00	-57.23	11.60	-48.73	4.81	H	-41.94	-25.00	PK
518598 (2592.990)	5 185.98	-39.89	11.47	-41.97	3.39	V	-33.89	-25.00	PK
	7 778.97	-46.12	11.28	-39.12	4.21	H	-32.05	-25.00	AV
	10 371.96	-62.64	11.80	-52.81	4.95	H	-45.96	-25.00	PK
528000 (2640.000)	5 280.00	-39.43	11.66	-42.10	3.41	V	-33.85	-25.00	PK
	7 920.00	-42.33	11.04	-34.82	4.26	H	-28.04	-25.00	AV
	10 560.00	-62.95	11.70	-52.57	5.00	H	-45.87	-25.00	PK
	13 200.00	-57.10	12.90	-46.86	5.60	V	-39.56	-25.00	PK

All ENDC of operation were investigated and the worst case configuration results are reported.

(Worst case: 41A(20MHz)-n41A(100MHz)(Power Class3))

- ▣ NR Band: N41
- ▣ LTE Band(Anchor): B41
- ▣ NR Bandwidth: 100 MHz
- ▣ LTE Bandwidth: 20 MHz
- ▣ Modulation: PI/2 BPSK
- ▣ Distance: 1 meters
- ▣ SCS: 30 kHz

ENDC-Mode: 41A-n41A (Power Class3)

Ch	Freq (MHz)	Measured Level (dBm)	Ant. Gain (dBi)	Substitute Level (dBm)	C.L	Pol	Result (dBm)	Limit (dBm)	Detector
528000 (2640.0)	5,280.00	-40.80	11.66	-43.05	3.41	H	-34.80	-25.00	PK
	7,920.00	-46.47	11.04	-39.18	4.26	V	-32.40	-25.00	AV
	10,560.00	-62.39	11.70	-52.41	5.00	V	-45.71	-25.00	PK

8.3 PEAK-TO-AVERAGE RATIO

Band	Band Width	Frequency (MHz)	Modulation	Resource Block Size	Resource Block Offset	Data (dB)
Sub6 n41	20 MHz	2592.990	BPSK	50	0	3.74
			QPSK			4.46
			16-QAM			5.45
			64-QAM			5.93
			256-QAM			6.32
	30 MHz		BPSK	100		3.87
			QPSK			4.49
			16-QAM			5.50
			64-QAM			6.03
			256-QAM			6.52
	40 MHz		BPSK	128		3.75
			QPSK			4.34
			16-QAM			5.40
			64-QAM			5.80
			256-QAM			6.55
	50 MHz		BPSK	100		3.81
			QPSK			4.33
			16-QAM			5.29
			64-QAM			5.76
			256-QAM			6.56
	60 MHz		BPSK	162		3.82
			QPSK			4.49
			16-QAM			5.44
			64-QAM			5.83
			256-QAM			6.48
	80 MHz		BPSK	216		3.75
			QPSK			4.35
			16-QAM			5.37
			64-QAM			5.88
			256-QAM			6.53
	90 MHz		BPSK	243		3.77
			QPSK			4.32
			16-QAM			5.36
			64-QAM			5.82
			256-QAM			6.58
	100 MHz		BPSK	270		4.54
			QPSK			5.03
			16-QAM			6.00
			64-QAM			6.05
			256-QAM			6.56

Note:

1. Plots of the EUT's Peak- to- Average Ratio are shown Page 100 ~ 139.

8.4 OCCUPIED BANDWIDTH

Band	Band Width	Frequency (MHz)	Modulation	Resource Block Size	Resource Block Offset	Data (MHz)
Sub6 n41	20 MHz	2592.990	BPSK	50	0	17.945
			QPSK			17.951
			16-QAM			17.883
			64-QAM			17.915
			256-QAM			17.871
	30 MHz		BPSK	100		26.809
			QPSK			26.951
			16-QAM			26.839
			64-QAM			26.761
			256-QAM			26.819
	40 MHz		BPSK	128		35.694
			QPSK			35.680
			16-QAM			35.705
			64-QAM			35.823
			256-QAM			35.731
	50 MHz		BPSK	100		45.616
			QPSK			45.759
			16-QAM			45.557
			64-QAM			45.813
			256-QAM			45.740
	60 MHz		BPSK	162		57.756
			QPSK			57.643
			16-QAM			57.839
			64-QAM			57.854
			256-QAM			57.751
	80 MHz		BPSK	216		76.943
			QPSK			76.752
			16-QAM			76.889
			64-QAM			77.030
			256-QAM			76.936
	90 MHz		BPSK	243		86.703
			QPSK			86.751
			16-QAM			86.686
			64-QAM			86.694
			256-QAM			86.438
	100 MHz		BPSK	270		96.145
			QPSK			96.313
			16-QAM			96.158
			64-QAM			95.982
			256-QAM			95.979

Note:

1. Plots of the EUT's Occupied Bandwidth are shown Page 60 ~ 99.

8.5 CONDUCTED SPURIOUS EMISSIONS

Band	Band Width (MHz)	Frequency (MHz)	Frequency of Maximum Harmonic (GHz)	Factor (dB)	Measurement Maximum Data (dBm)	Result (dBm)	Limit (dBm)
Sub6 n41	20	2506.020	6.0489	28.611	-71.939	-43.328	-25.00
		2510.010	3.8645	27.996	-65.854	-37.858	
		2592.990	6.0160	28.611	-71.388	-42.777	
		2679.990	8.0254	28.611	-72.328	-43.717	
	30	2511.000	3.8425	27.996	-65.599	-37.603	
		2515.000	3.8370	27.996	-65.296	-37.300	
		2592.990	3.7797	27.996	-65.642	-37.646	
		2674.980	3.8999	27.996	-65.810	-37.814	
	40	2516.010	5.7219	28.611	-72.610	-43.999	
		2520.000	3.8385	27.996	-65.623	-37.627	
		2592.990	2.8066	27.996	-72.650	-44.654	
		2670.000	9.1177	28.611	-72.247	-43.636	
	50	2521.020	6.0444	28.611	-71.440	-42.829	
		2525.010	3.8774	27.996	-65.604	-37.608	
		2592.990	8.0359	28.611	-72.183	-43.572	
		2664.990	8.0130	28.611	-71.272	-42.661	
	60	2526.000	3.7847	27.996	-72.659	-44.663	
		2530.020	3.8560	27.996	-65.020	-37.024	
		2592.990	3.2947	27.996	-72.725	-44.729	
		2659.980	3.1212	27.996	-72.920	-44.924	
	80	2536.020	7.9995	28.611	-72.064	-43.453	
		2540.010	3.8321	27.996	-65.688	-37.692	
		2592.990	8.0324	28.611	-70.979	-42.368	
		2649.990	4.0260	27.996	-71.906	-43.910	
	90	2541.000	3.7563	27.996	-71.679	-43.683	
		2545.020	3.8665	27.996	-65.630	-37.634	
		2592.990	3.1476	27.996	-72.367	-44.371	
		2644.980	8.0040	28.611	-72.397	-43.786	
	100	2546.010	3.8709	27.996	-65.626	-37.630	
		2550.000	3.8565	27.996	-65.275	-37.279	
		2592.990	3.8390	27.996	-65.552	-37.556	
		2640.000	3.8625	27.996	-65.558	-37.562	

Note:

1. Plots of the EUT's Conducted Spurious Emissions are shown Page 233 ~ 296.

2. Duty Cycle factor already applied on the factor.

- Duty Cycle Factor(dB) = 6.02

- Factor(dB) = Duty Cycle factor + Cable Loss + Ext. Attenuator

- Result(dBm) = Reading + Factor

3. Factor(dB)

Frequency Range (GHz)	Factor [dB]
0.03 – 1	25.290
1 – 5	27.996
5 – 10	28.611
10 – 15	29.136
15 – 20	29.509
20 – 26.5	30.151
26.5 – 37.0	25.290

8.6 CHANNEL EDGE

BW (MHz)	Frequency (MHz)	Mod	RB (Size/ Offset)	2 495 MHz ~ 2 496 MHz	C.E ~ (C.E +NormalHz)	2 490.5 MHz ~ 2 495 MHz	(C.E + 1 MHz) ~ (C.E + 5 MHz)	Below 2 490.5 MHz	(C.E + 5 MHz) ~ (C.E + X MHz)	Above (C.E + X MHz)
				Lower	Upper	Lower	Upper	Lower	Upper	Upper
20	2506.020	BPSK	Full RB	-24.83	-29.50	-26.59	-27.56	-34.46	-34.22	-38.31
30	2511.000	BPSK	Full RB	-29.71	-29.22	-30.60	-28.42	-33.10	-30.53	-36.58
40	2520.000	BPSK	Full RB	-27.98	-29.73	-30.58	-31.00	-35.10	-34.22	-35.09
50	2525.010	BPSK	Full RB	-25.48	-28.85	-29.27	-28.80	-31.55	-33.70	-36.47
60	2530.020	BPSK	Full RB	-17.29	-18.69	-29.64	-30.54	-28.43	-29.43	-32.45
80	2540.010	BPSK	Full RB	-24.08	-26.69	-22.90	-26.94	-26.03	-27.81	-35.95
90	2545.020	BPSK	Full RB	-20.83	-26.35	-23.76	-26.10	-26.19	-27.22	-35.79
100	2550.000	BPSK	Full RB	-24.55	-32.08	-24.55	-30.48	-26.01	-27.97	-38.08
Limit				-13.0	-10.0	-13.0	-10.0	-25.0	-13.0	-25.0

Band Width	Frequency (MHz)	Modulation	Resource Block Size	Resoure Block Offset	C.E ~ (C.E ± NormalHz)		(C.E ± 1 MHz) ~ (C.E ± 5 MHz)	
					Lower	Upper	Lower	Upper
20 MHz	2592.990	BPSK	Full RB	0	-24.69	-32.42	-27.15	-30.02
	2679.990	BPSK	Full RB	0	-24.67	-32.23	-26.21	-29.16
30 MHz	2592.990	BPSK	Full RB	0	-29.34	-31.41	-31.40	-31.62
	2674.980	BPSK	Full RB	0	-29.46	-30.78	-31.63	-27.71
40 MHz	2592.990	BPSK	Full RB	0	-29.68	-34.55	-33.26	-35.40
	2670.000	BPSK	Full RB	0	-29.86	-33.37	-30.52	-33.18
50 MHz	2592.990	BPSK	Full RB	0	-28.54	-35.36	-35.25	-35.18
	2664.990	BPSK	Full RB	0	-27.44	-30.67	-32.10	-31.18
60 MHz	2592.990	BPSK	Full RB	0	-17.73	-20.01	-27.41	-30.18
	2659.980	BPSK	Full RB	0	-17.79	-18.32	-28.64	-27.31
80 MHz	2592.990	BPSK	Full RB	0	-25.04	-32.10	-29.91	-32.07
	2649.990	BPSK	Full RB	0	-21.92	-26.96	-21.95	-27.22
90 MHz	2592.990	BPSK	Full RB	0	-22.13	-31.49	-29.31	-30.84
	2644.980	BPSK	Full RB	0	-19.80	-26.84	-22.30	-26.61
100 MHz	2592.990	BPSK	Full RB	0	-26.23	-32.03	-30.06	-32.46
	2640.000	BPSK	Full RB	0	-23.01	-29.16	-25.99	-28.64
Limit					-10.0		-10.0	

Band Width	Frequency (MHz)	Modulation	Resource Block Size	Resoure Block Offset	(C.E ± 5 MHz) ~ (C.E ± X MHz)		Above (C.E ± X MHz)	
					Lower	Upper	Lower	Upper
20 MHz	2592.990	BPSK	Full RB	0	-30.36	-32.63	-35.73	-40.12
	2679.990	BPSK	Full RB	0	-30.66	-30.84	-38.68	-40.14
30 MHz	2592.990	BPSK	Full RB	0	-32.85	-35.69	-36.61	-39.44
	2674.980	BPSK	Full RB	0	-33.13	-31.73	-37.76	-40.72
40 MHz	2592.990	BPSK	Full RB	0	-33.05	-32.85	-38.56	-37.86
	2670.000	BPSK	Full RB	0	-33.26	-33.56	-36.27	-43.33
50 MHz	2592.990	BPSK	Full RB	0	-32.56	-34.50	-34.50	-37.56
	2664.990	BPSK	Full RB	0	-30.31	-32.82	-35.21	-55.08
60 MHz	2592.990	BPSK	Full RB	0	-27.92	-30.65	-32.87	-33.67
	2659.980	BPSK	Full RB	0	-29.66	-29.74	-33.61	-55.39
80 MHz	2592.990	BPSK	Full RB	0	-29.01	-31.05	-55.32	-41.44
	2649.990	BPSK	Full RB	0	-24.06	-28.15	-35.05	-55.43
90 MHz	2592.990	BPSK	Full RB	0	-28.09	-33.30	-56.00	-42.90
	2644.980	BPSK	Full RB	0	-24.16	-29.49	-33.09	-55.37
100 MHz	2592.990	BPSK	Full RB	0	-29.06	-31.86	-43.90	-43.76
	2640.000	BPSK	Full RB	0	-24.99	-29.23	-37.28	-43.84
Limit					-13.0		-25.0	

Band Width	Frequency (MHz)	Modulation	Resource Block Size	Resoure Block Offset	C.E ~ (C.E - 1MHz)		(C.E - 1 MHz) ~ 2 496 MHz	
					Lower	Upper	Lower	Upper
20 MHz	2510.010	BPSK	Full RB	0	-25.39	-29.88	-28.52	-27.06
30 MHz	2515.000	BPSK	Full RB	0	-27.88	-29.43	-29.66	-28.25
40 MHz	2520.000	BPSK	Full RB	0	-23.77	-27.00	-28.46	-30.23
50 MHz	2525.010	BPSK	Full RB	0	-26.03	-30.13	-30.13	-28.53
60 MHz	2530.020	BPSK	Full RB	0	-23.96	-23.70	-28.33	-29.05
80 MHz	2540.010	BPSK	Full RB	0	-22.85	-27.34	-22.84	-27.43
90 MHz	2545.020	BPSK	Full RB	0	-24.70	-29.83	-26.99	-30.26
100 MHz	2550.000	BPSK	Full RB	0	-23.66	-32.24	-26.06	-29.96
Limit					-10.0		-10.0	

Band Width	Frequency (MHz)	Modulation	Resource Block Size	Resoure Block Offset	2 490.5 MHz ~ 2 496 MHz		Below 2 490.5 MHz	
					Lower	Upper	Lower	Upper
20 MHz	2510.010	BPSK	Full RB	0	-32.10	-35.33	-32.10	-38.11
30 MHz	2515.000	BPSK	Full RB	0	-30.34	-30.02	-35.36	-37.46
40 MHz	2520.000	BPSK	Full RB	0	-33.76	-33.13	-35.59	-33.26
50 MHz	2525.010	BPSK	Full RB	0	-29.86	-30.18	-35.84	-34.11
60 MHz	2530.020	BPSK	Full RB	0	-28.90	-27.32	-28.31	-31.96
80 MHz	2540.010	BPSK	Full RB	0	-24.26	-27.24	-26.53	-35.32
90 MHz	2545.020	BPSK	Full RB	0	-27.79	-28.15	-29.40	-36.93
100 MHz	2550.000	BPSK	Full RB	0	-24.36	-27.63	-26.24	-37.51
Limit					-13.0		-25.0	

Note:

1. C.E = Channel Edge
2. X = X is the greater of 6MHz or the actual emission bandwidth
3. X = 6MHz(5MHz Bandwidth), 10MHz(10MHz Bandwidth), 15MHz(15MHz Bandwidth), 20MHz(20MHz Bandwidth), 40MHz(40MHz Bandwidth), 50MHz(50MHz Bandwidth), 60MHz(60MHz Bandwidth), 80MHz(80MHz Bandwidth), 90MHz(90MHz Bandwidth), 100MHz(100MHz Bandwidth)
4. RB = Resource Block
5. Plots of the EUT's Channel Edge are shown Page 140 ~ 232. (1RB & Full RB)
6. Duty Cycle factor already applied on the offset.
   - Duty Cycle Factor(dB) = 6.02
   - Offset(dB) = Duty Cycle factor + Cable Loss + Ext. Attenuator

8.7 FREQUENCY STABILITY / VARIATION OF AMBIENT TEMPERATURE

▣ BandWidth: 20 MHz

▣ Voltage(100%): 3.880 VDC

▣ Batt. Endpoint: 3.650 VDC

▣ LIMIT: Emission must remain in band

Test. Frequncy (MHz)	Voltage (%)	Temp. (℃)	Frequency (Hz)	Frequency Error (Hz)	Deviation (%)	ppm
2506.020	100%	+20(Ref)	2506 020 010	0.0	0.000 000	0.000
	100%	-30	2506 020 018	8.9	0.000 000	0.004
	100%	-20	2506 020 025	15.2	0.000 001	0.006
	100%	-10	2506 020 017	7.9	0.000 000	0.003
	100%	0	2506 020 022	12.0	0.000 000	0.005
	100%	+10	2506 020 018	8.5	0.000 000	0.003
	100%	+30	2506 020 018	8.2	0.000 000	0.003
	100%	+40	2506 020 026	16.7	0.000 001	0.007
	100%	+50	2506 020 015	5.9	0.000 000	0.002
	Batt. Endpoint	+20	2506 020 024	14.0	0.000 001	0.006
2510.010	100%	+20(Ref)	2510 010 004	0.0	0.000 000	0.000
	100%	-30	2510 010 009	4.7	0.000 000	0.002
	100%	-20	2510 010 008	3.6	0.000 000	0.001
	100%	-10	2510 010 008	3.7	0.000 000	0.001
	100%	0	2510 010 011	7.0	0.000 000	0.003
	100%	+10	2510 010 015	11.4	0.000 000	0.005
	100%	+30	2510 010 019	14.7	0.000 001	0.006
	100%	+40	2510 010 013	8.9	0.000 000	0.004
	100%	+50	2510 010 018	14.0	0.000 001	0.006
	Batt. Endpoint	+20	2510 010 017	13.3	0.000 001	0.005
2679.990	100%	+20(Ref)	2679 990 012	0.0	0.000 000	0.000
	100%	-30	2679 990 024	12.0	0.000 000	0.004
	100%	-20	2679 990 019	6.5	0.000 000	0.002
	100%	-10	2679 990 018	5.8	0.000 000	0.002
	100%	0	2679 990 026	14.2	0.000 001	0.005
	100%	+10	2679 990 026	14.5	0.000 001	0.005
	100%	+30	2679 990 020	7.6	0.000 000	0.003
	100%	+40	2679 990 022	10.3	0.000 000	0.004
	100%	+50	2679 990 016	4.4	0.000 000	0.002
	Batt. Endpoint	+20	2679 990 021	8.7	0.000 000	0.003

▣ BandWidth: 30 MHz

▣ Voltage(100%): 3.880 VDC

▣ Batt. Endpoint: 3.650 VDC

▣ LIMIT: Emission must remain in band

Test. Frequncy (MHz)	Voltage (%)	Temp. (℃)	Frequency (Hz)	Frequency Error (Hz)	Deviation (%)	ppm
2511.000	100%	+20(Ref)	2511 000 009	0.0	0.000 000	0.000
	100%	-30	2511 000 021	12.3	0.000 000	0.005
	100%	-20	2511 000 024	15.2	0.000 001	0.006
	100%	-10	2511 000 017	8.4	0.000 000	0.003
	100%	0	2511 000 016	6.8	0.000 000	0.003
	100%	+10	2511 000 016	6.8	0.000 000	0.003
	100%	+30	2511 000 025	16.3	0.000 001	0.007
	100%	+40	2511 000 018	9.3	0.000 000	0.004
	100%	+50	2511 000 014	5.1	0.000 000	0.002
	Batt. Endpoint	+20	2511 000 017	8.3	0.000 000	0.003
2515.000	100%	+20(Ref)	2515 000 004	0.0	0.000 000	0.000
	100%	-30	2515 000 017	13.2	0.000 001	0.005
	100%	-20	2515 000 007	3.7	0.000 000	0.001
	100%	-10	2515 000 008	4.3	0.000 000	0.002
	100%	0	2515 000 011	7.5	0.000 000	0.003
	100%	+10	2515 000 021	17.0	0.000 001	0.007
	100%	+30	2515 000 008	4.5	0.000 000	0.002
	100%	+40	2515 000 009	5.5	0.000 000	0.002
	100%	+50	2515 000 018	14.0	0.000 001	0.006
	Batt. Endpoint	+20	2515 000 007	3.1	0.000 000	0.001
2674.980	100%	+20(Ref)	2674 980 009	0.0	0.000 000	0.000
	100%	-30	2674 980 018	8.6	0.000 000	0.003
	100%	-20	2674 980 021	11.8	0.000 000	0.004
	100%	-10	2674 980 020	11.0	0.000 000	0.004
	100%	0	2674 980 016	6.6	0.000 000	0.002
	100%	+10	2674 980 025	16.1	0.000 001	0.006
	100%	+30	2674 980 018	9.2	0.000 000	0.003
	100%	+40	2674 980 020	10.7	0.000 000	0.004
	100%	+50	2674 980 013	4.3	0.000 000	0.002
	Batt. Endpoint	+20	2674 980 014	5.3	0.000 000	0.002

▣ BandWidth: 40 MHz

▣ Voltage(100%): 3.880 VDC

▣ Batt. Endpoint: 3.650 VDC

▣ LIMIT: Emission must remain in band

Test. Frequncy (MHz)	Voltage (%)	Temp. (℃)	Frequency (Hz)	Frequency Error (Hz)	Deviation (%)	ppm
2516.010	100%	+20(Ref)	2516 010 006	0.0	0.000 000	0.000
	100%	-30	2516 010 015	8.5	0.000 000	0.003
	100%	-20	2516 010 023	16.9	0.000 001	0.007
	100%	-10	2516 010 016	9.4	0.000 000	0.004
	100%	0	2516 010 011	5.2	0.000 000	0.002
	100%	+10	2516 010 018	12.2	0.000 000	0.005
	100%	+30	2516 010 011	5.0	0.000 000	0.002
	100%	+40	2516 010 022	15.6	0.000 001	0.006
	100%	+50	2516 010 022	15.9	0.000 001	0.006
	Batt. Endpoint	+20	2516 010 018	11.5	0.000 000	0.005
2520.000	100%	+20(Ref)	2520 000 017	0.0	0.000 000	0.000
	100%	-30	2520 000 029	12.0	0.000 000	0.005
	100%	-20	2520 000 027	10.2	0.000 000	0.004
	100%	-10	2520 000 030	13.0	0.000 001	0.005
	100%	0	2520 000 028	10.9	0.000 000	0.004
	100%	+10	2520 000 028	10.8	0.000 000	0.004
	100%	+30	2520 000 030	13.0	0.000 001	0.005
	100%	+40	2520 000 033	16.5	0.000 001	0.007
	100%	+50	2520 000 023	5.7	0.000 000	0.002
	Batt. Endpoint	+20	2520 000 030	12.7	0.000 001	0.005
2670.000	100%	+20(Ref)	2670 000 003	0.0	0.000 000	0.000
	100%	-30	2670 000 018	14.9	0.000 001	0.006
	100%	-20	2670 000 011	8.4	0.000 000	0.003
	100%	-10	2670 000 013	10.0	0.000 000	0.004
	100%	0	2670 000 016	13.4	0.000 001	0.005
	100%	+10	2670 000 014	11.1	0.000 000	0.004
	100%	+30	2670 000 019	16.3	0.000 001	0.006
	100%	+40	2670 000 006	3.4	0.000 000	0.001
	100%	+50	2670 000 008	4.6	0.000 000	0.002
	Batt. Endpoint	+20	2670 000 016	13.4	0.000 001	0.005

▣ BandWidth: 50 MHz

▣ Voltage(100%): 3.880 VDC

▣ Batt. Endpoint: 3.650 VDC

▣ LIMIT: Emission must remain in band

Test. Frequncy (MHz)	Voltage (%)	Temp. (℃)	Frequency (Hz)	Frequency Error (Hz)	Deviation (%)	ppm
2521.020	100%	+20(Ref)	2521 020 006	0.0	0.000 000	0.000
	100%	-30	2521 020 012	5.6	0.000 000	0.002
	100%	-20	2521 020 013	6.8	0.000 000	0.003
	100%	-10	2521 020 023	16.7	0.000 001	0.007
	100%	0	2521 020 017	10.8	0.000 000	0.004
	100%	+10	2521 020 014	8.2	0.000 000	0.003
	100%	+30	2521 020 021	14.7	0.000 001	0.006
	100%	+40	2521 020 015	9.5	0.000 000	0.004
	100%	+50	2521 020 022	15.7	0.000 001	0.006
	Batt. Endpoint	+20	2521 020 010	3.8	0.000 000	0.001
2525.010	100%	+20(Ref)	2525 010 013	0.0	0.000 000	0.000
	100%	-30	2525 010 019	5.6	0.000 000	0.002
	100%	-20	2525 010 018	4.7	0.000 000	0.002
	100%	-10	2525 010 028	15.0	0.000 001	0.006
	100%	0	2525 010 017	4.1	0.000 000	0.002
	100%	+10	2525 010 023	9.8	0.000 000	0.004
	100%	+30	2525 010 025	11.4	0.000 000	0.005
	100%	+40	2525 010 019	5.9	0.000 000	0.002
	100%	+50	2525 010 018	5.1	0.000 000	0.002
	Batt. Endpoint	+20	2525 010 025	11.8	0.000 000	0.005
2664.990	100%	+20(Ref)	2664 990 007	0.0	0.000 000	0.000
	100%	-30	2664 990 017	9.8	0.000 000	0.004
	100%	-20	2664 990 015	7.3	0.000 000	0.003
	100%	-10	2664 990 021	13.9	0.000 001	0.005
	100%	0	2664 990 016	8.2	0.000 000	0.003
	100%	+10	2664 990 020	12.5	0.000 000	0.005
	100%	+30	2664 990 020	12.2	0.000 000	0.005
	100%	+40	2664 990 024	17.0	0.000 001	0.006
	100%	+50	2664 990 021	13.2	0.000 000	0.005
	Batt. Endpoint	+20	2664 990 024	16.7	0.000 001	0.006

▣ BandWidth: 60 MHz

▣ Voltage(100%): 3.880 VDC

▣ Batt. Endpoint: 3.650 VDC

▣ LIMIT: Emission must remain in band

Test. Frequncy (MHz)	Voltage (%)	Temp. (℃)	Frequency (Hz)	Frequency Error (Hz)	Deviation (%)	ppm
2526.000	100%	+20(Ref)	2526 000 005	0.0	0.000 000	0.000
	100%	-30	2526 000 015	9.7	0.000 000	0.004
	100%	-20	2526 000 014	9.0	0.000 000	0.004
	100%	-10	2526 000 021	15.9	0.000 001	0.006
	100%	0	2526 000 021	15.6	0.000 001	0.006
	100%	+10	2526 000 017	11.3	0.000 000	0.004
	100%	+30	2526 000 011	5.4	0.000 000	0.002
	100%	+40	2526 000 013	7.7	0.000 000	0.003
	100%	+50	2526 000 008	3.1	0.000 000	0.001
	Batt. Endpoint	+20	2526 000 015	9.4	0.000 000	0.004
2530.020	100%	+20(Ref)	2530 020 016	0.0	0.000 000	0.000
	100%	-30	2530 020 025	9.5	0.000 000	0.004
	100%	-20	2530 020 024	8.5	0.000 000	0.003
	100%	-10	2530 020 032	16.2	0.000 001	0.006
	100%	0	2530 020 028	12.5	0.000 000	0.005
	100%	+10	2530 020 027	10.9	0.000 000	0.004
	100%	+30	2530 020 022	6.5	0.000 000	0.003
	100%	+40	2530 020 029	13.6	0.000 001	0.005
	100%	+50	2530 020 024	7.8	0.000 000	0.003
	Batt. Endpoint	+20	2530 020 025	8.8	0.000 000	0.003
2659.980	100%	+20(Ref)	2659 980 009	0.0	0.000 000	0.000
	100%	-30	2659 980 012	3.9	0.000 000	0.001
	100%	-20	2659 980 025	16.3	0.000 001	0.006
	100%	-10	2659 980 014	5.1	0.000 000	0.002
	100%	0	2659 980 025	16.4	0.000 001	0.006
	100%	+10	2659 980 023	14.3	0.000 001	0.005
	100%	+30	2659 980 017	8.6	0.000 000	0.003
	100%	+40	2659 980 024	15.8	0.000 001	0.006
	100%	+50	2659 980 024	15.6	0.000 001	0.006
	Batt. Endpoint	+20	2659 980 020	11.8	0.000 000	0.004

▣ BandWidth: 80 MHz

▣ Voltage(100%): 3.880 VDC

▣ Batt. Endpoint: 3.650 VDC

▣ LIMIT: Emission must remain in band

Test. Frequncy (MHz)	Voltage (%)	Temp. (℃)	Frequency (Hz)	Frequency Error (Hz)	Deviation (%)	ppm
2536.020	100%	+20(Ref)	2536 020 003	0.0	0.000 000	0.000
	100%	-30	2536 020 015	12.1	0.000 000	0.005
	100%	-20	2536 020 011	7.5	0.000 000	0.003
	100%	-10	2536 020 011	7.2	0.000 000	0.003
	100%	0	2536 020 018	15.2	0.000 001	0.006
	100%	+10	2536 020 015	11.3	0.000 000	0.004
	100%	+30	2536 020 017	13.4	0.000 001	0.005
	100%	+40	2536 020 020	17.0	0.000 001	0.007
	100%	+50	2536 020 015	11.9	0.000 000	0.005
	Batt. Endpoint	+20	2536 020 013	9.9	0.000 000	0.004
2540.010	100%	+20(Ref)	2540 010 015	0.0	0.000 000	0.000
	100%	-30	2540 010 030	15.3	0.000 001	0.006
	100%	-20	2540 010 026	11.6	0.000 000	0.005
	100%	-10	2540 010 031	16.1	0.000 001	0.006
	100%	0	2540 010 025	10.5	0.000 000	0.004
	100%	+10	2540 010 019	3.9	0.000 000	0.002
	100%	+30	2540 010 031	15.8	0.000 001	0.006
	100%	+40	2540 010 021	6.4	0.000 000	0.003
	100%	+50	2540 010 024	9.7	0.000 000	0.004
	Batt. Endpoint	+20	2540 010 018	3.3	0.000 000	0.001
2649.990	100%	+20(Ref)	2649 990 003	0.0	0.000 000	0.000
	100%	-30	2649 990 013	10.1	0.000 000	0.004
	100%	-20	2649 990 013	9.3	0.000 000	0.004
	100%	-10	2649 990 007	3.9	0.000 000	0.001
	100%	0	2649 990 009	5.7	0.000 000	0.002
	100%	+10	2649 990 013	9.8	0.000 000	0.004
	100%	+30	2649 990 012	8.9	0.000 000	0.003
	100%	+40	2649 990 009	6.1	0.000 000	0.002
	100%	+50	2649 990 011	7.6	0.000 000	0.003
	Batt. Endpoint	+20	2649 990 019	15.7	0.000 001	0.006

▣ BandWidth: 90 MHz

▣ Voltage(100%): 3.880 VDC

▣ Batt. Endpoint: 3.650 VDC

▣ LIMIT: Emission must remain in band

Test. Frequncy (MHz)	Voltage (%)	Temp. (℃)	Frequency (Hz)	Frequency Error (Hz)	Deviation (%)	ppm
2541.000	100%	+20(Ref)	2541 000 013	0.0	0.000 000	0.000
	100%	-30	2541 000 027	13.9	0.000 001	0.005
	100%	-20	2541 000 025	12.8	0.000 001	0.005
	100%	-10	2541 000 019	6.8	0.000 000	0.003
	100%	0	2541 000 019	5.9	0.000 000	0.002
	100%	+10	2541 000 016	3.5	0.000 000	0.001
	100%	+30	2541 000 022	9.2	0.000 000	0.004
	100%	+40	2541 000 025	12.2	0.000 000	0.005
	100%	+50	2541 000 029	16.1	0.000 001	0.006
	Batt. Endpoint	+20	2541 000 017	4.2	0.000 000	0.002
2545.020	100%	+20(Ref)	2545 020 008	0.0	0.000 000	0.000
	100%	-30	2545 020 011	3.4	0.000 000	0.001
	100%	-20	2545 020 014	6.1	0.000 000	0.002
	100%	-10	2545 020 022	13.9	0.000 001	0.005
	100%	0	2545 020 015	7.2	0.000 000	0.003
	100%	+10	2545 020 024	16.4	0.000 001	0.006
	100%	+30	2545 020 016	8.6	0.000 000	0.003
	100%	+40	2545 020 011	3.0	0.000 000	0.001
	100%	+50	2545 020 018	10.2	0.000 000	0.004
	Batt. Endpoint	+20	2545 020 015	6.9	0.000 000	0.003
2644.980	100%	+20(Ref)	2644 980 016	0.0	0.000 000	0.000
	100%	-30	2644 980 023	6.5	0.000 000	0.002
	100%	-20	2644 980 028	11.8	0.000 000	0.004
	100%	-10	2644 980 022	5.7	0.000 000	0.002
	100%	0	2644 980 022	5.6	0.000 000	0.002
	100%	+10	2644 980 025	8.3	0.000 000	0.003
	100%	+30	2644 980 021	4.4	0.000 000	0.002
	100%	+40	2644 980 020	3.8	0.000 000	0.001
	100%	+50	2644 980 023	6.5	0.000 000	0.002
	Batt. Endpoint	+20	2644 980 029	13.1	0.000 000	0.005

▣ BandWidth: 100 MHz

▣ Voltage(100%): 3.880 VDC

▣ Batt. Endpoint: 3.650 VDC

▣ LIMIT: Emission must remain in band

Test. Frequncy (MHz)	Voltage (%)	Temp. (℃)	Frequency (Hz)	Frequency Error (Hz)	Deviation (%)	ppm
2546.010	100%	+20(Ref)	2546 010 010	0.0	0.000 000	0.000
	100%	-30	2546 010 020	9.8	0.000 000	0.004
	100%	-20	2546 010 016	6.4	0.000 000	0.003
	100%	-10	2546 010 015	5.5	0.000 000	0.002
	100%	0	2546 010 025	15.5	0.000 001	0.006
	100%	+10	2546 010 017	7.1	0.000 000	0.003
	100%	+30	2546 010 023	13.0	0.000 001	0.005
	100%	+40	2546 010 017	7.5	0.000 000	0.003
	100%	+50	2546 010 014	4.6	0.000 000	0.002
	Batt. Endpoint	+20	2546 010 021	10.9	0.000 000	0.004
2550.000	100%	+20(Ref)	2550 000 014	0.0	0.000 000	0.000
	100%	-30	2550 000 020	6.2	0.000 000	0.002
	100%	-20	2550 000 020	5.7	0.000 000	0.002
	100%	-10	2550 000 022	7.9	0.000 000	0.003
	100%	0	2550 000 026	11.8	0.000 000	0.005
	100%	+10	2550 000 022	8.3	0.000 000	0.003
	100%	+30	2550 000 022	7.9	0.000 000	0.003
	100%	+40	2550 000 022	7.7	0.000 000	0.003
	100%	+50	2550 000 022	8.4	0.000 000	0.003
	Batt. Endpoint	+20	2550 000 026	11.9	0.000 000	0.005
2640.000	100%	+20(Ref)	2640 000 006	0.0	0.000 000	0.000
	100%	-30	2640 000 016	10.5	0.000 000	0.004
	100%	-20	2640 000 020	14.5	0.000 001	0.005
	100%	-10	2640 000 015	9.3	0.000 000	0.004
	100%	0	2640 000 014	8.6	0.000 000	0.003
	100%	+10	2640 000 019	13.6	0.000 001	0.005
	100%	+30	2640 000 016	9.9	0.000 000	0.004
	100%	+40	2640 000 010	4.5	0.000 000	0.002
	100%	+50	2640 000 016	10.3	0.000 000	0.004
	Batt. Endpoint	+20	2640 000 021	15.2	0.000 001	0.006

9. TEST PLOTS

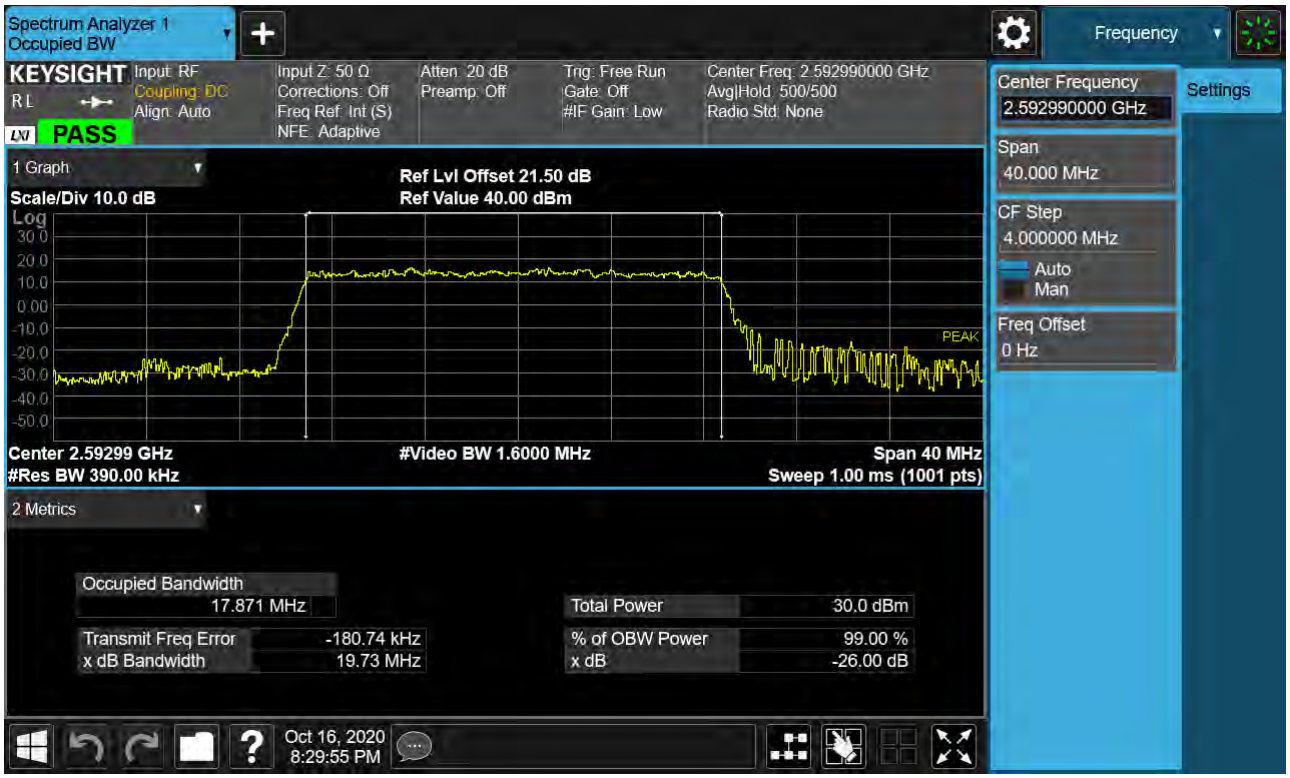
Sub6 n41. Occupied Bandwidth Plot (20 MHz Ch.518598 BPSK)

Sub6 n41. Occupied Bandwidth Plot (20 MHz Ch.518598 QPSK)

Sub6 n41. Occupied Bandwidth Plot (20 MHz Ch.518598 16-QAM)

Sub6 n41. Occupied Bandwidth Plot (20 MHz Ch.518598 64-QAM)

Sub6 n41. Occupied Bandwidth Plot (20 MHz Ch.518598 256-QAM)



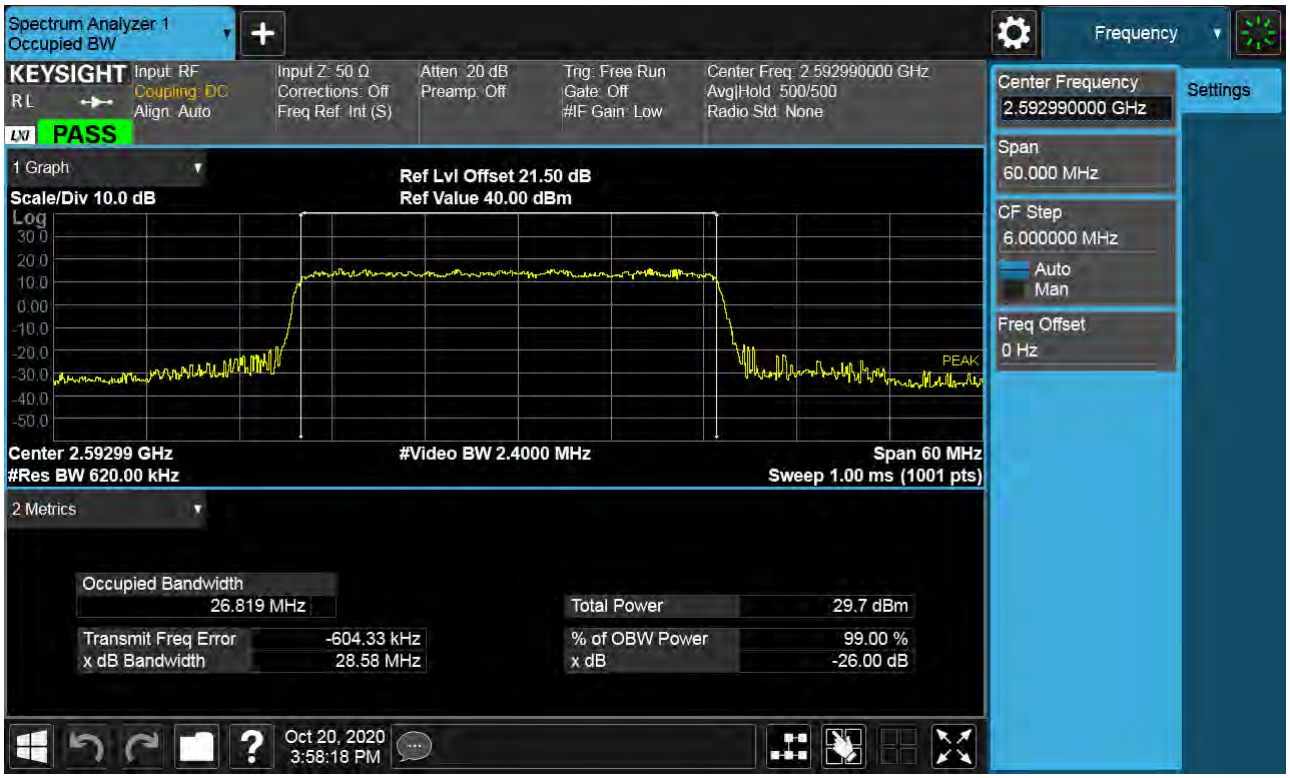
Sub6 n41. Occupied Bandwidth Plot (30 MHz Ch.518598 BPSK)

Sub6 n41. Occupied Bandwidth Plot (30 MHz Ch.518598 QPSK)

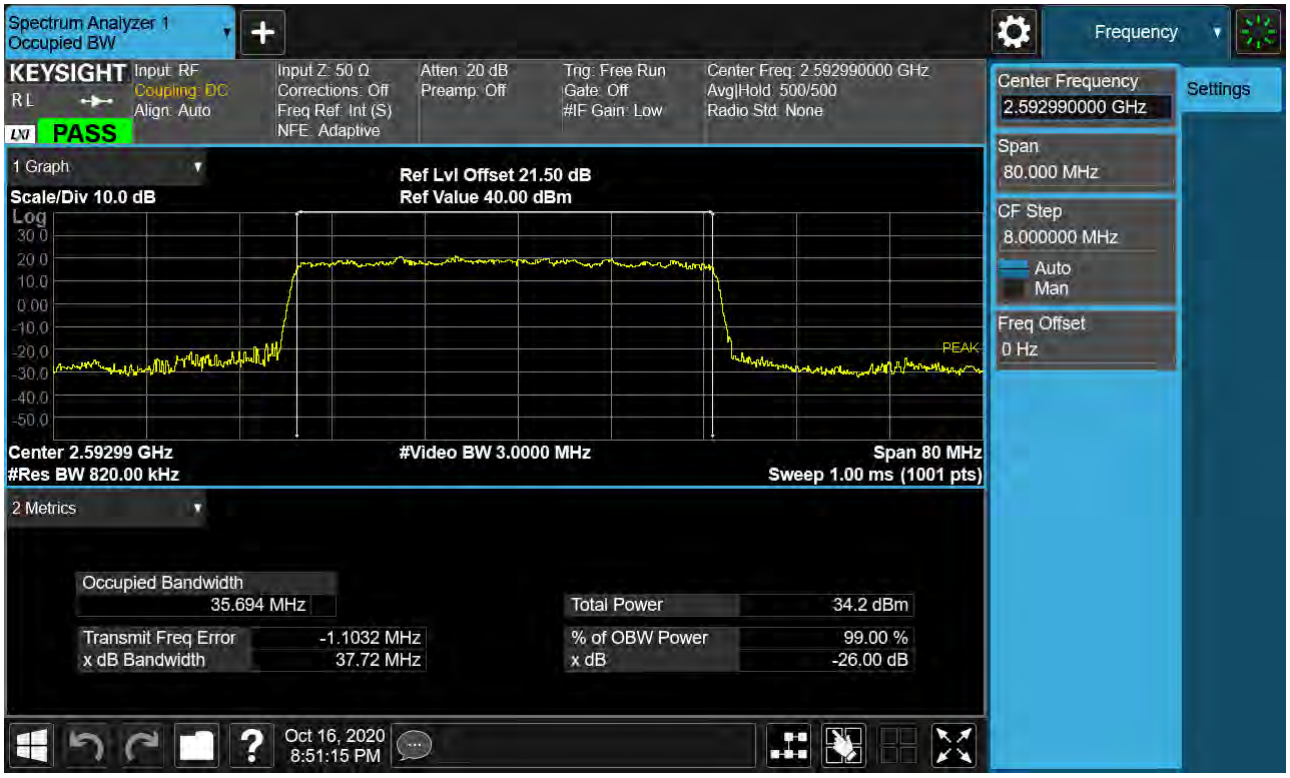
Sub6 n41. Occupied Bandwidth Plot (30 MHz Ch.518598 16-QAM)

Sub6 n41. Occupied Bandwidth Plot (30 MHz Ch.518598 64-QAM)

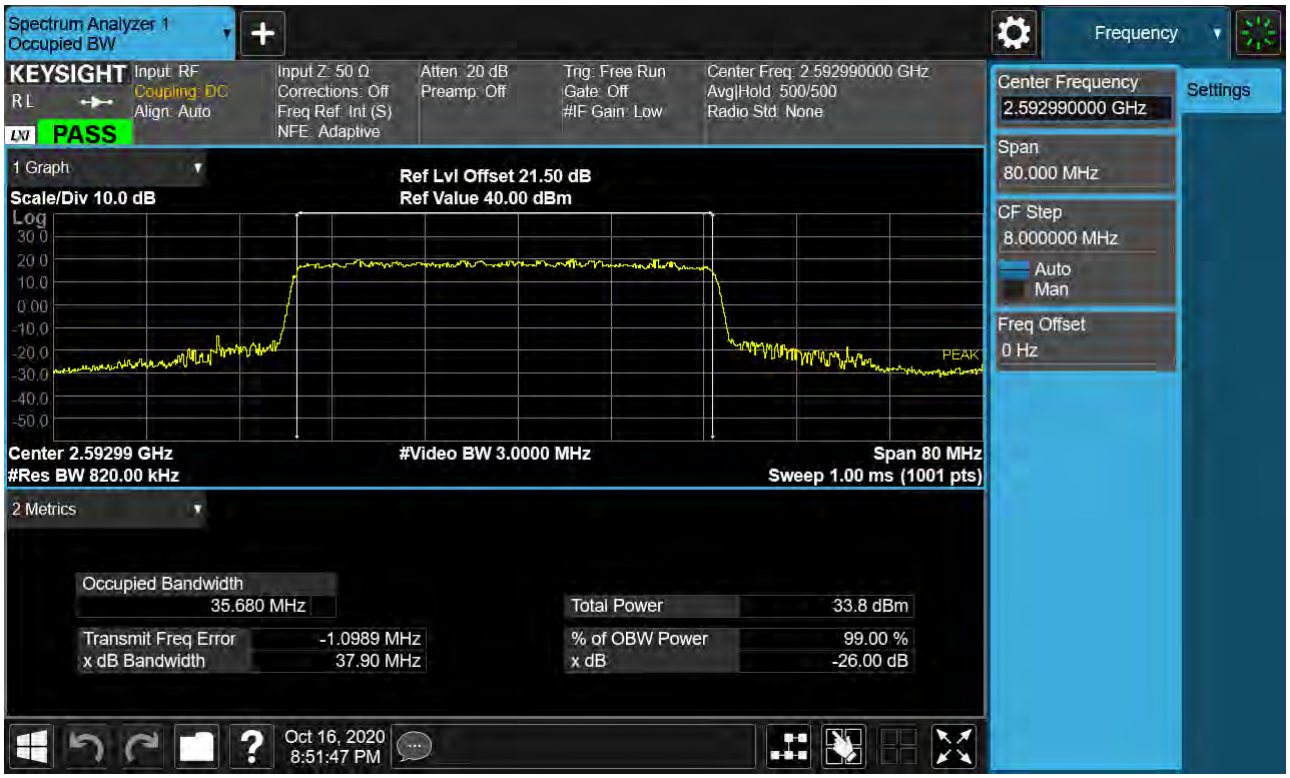
Sub6 n41. Occupied Bandwidth Plot (30 MHz Ch.518598 256-QAM)



Sub6 n41. Occupied Bandwidth Plot (40 MHz Ch.518598 BPSK)



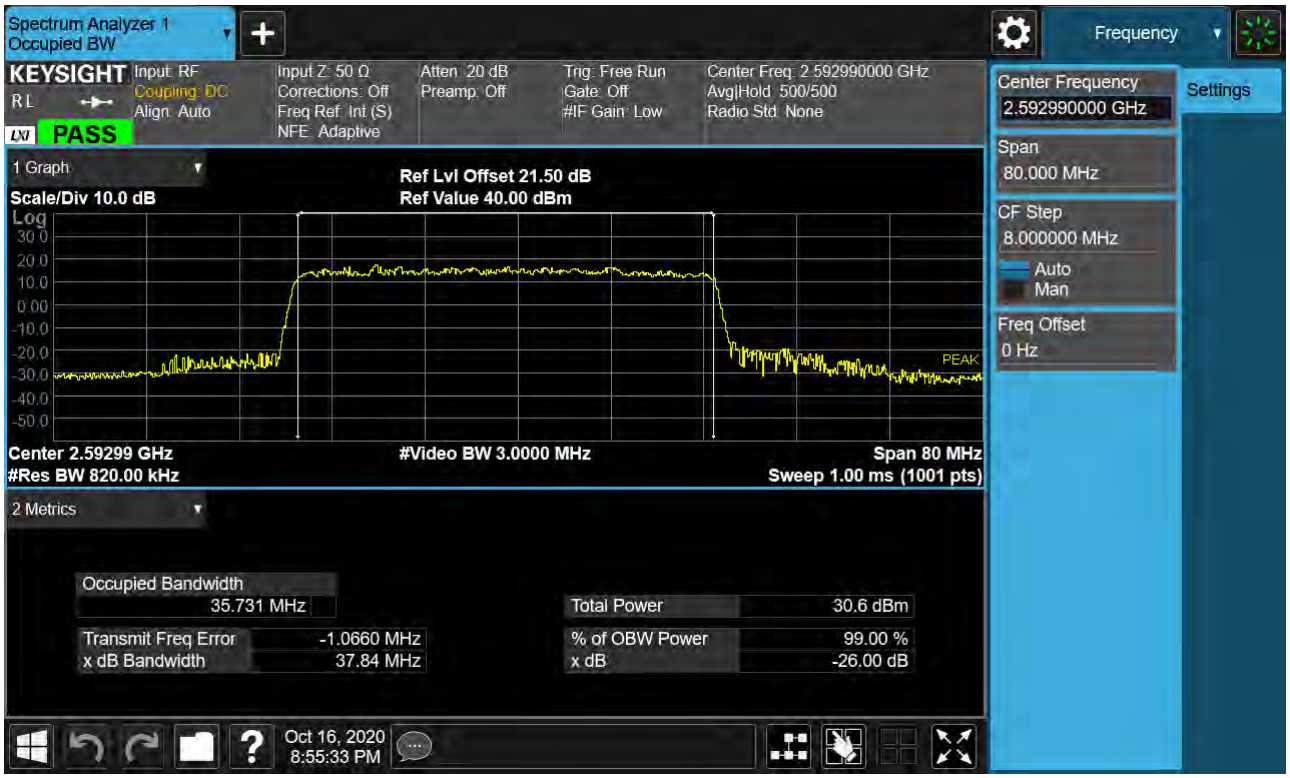
Sub6 n41. Occupied Bandwidth Plot (40 MHz Ch.518598 QPSK)



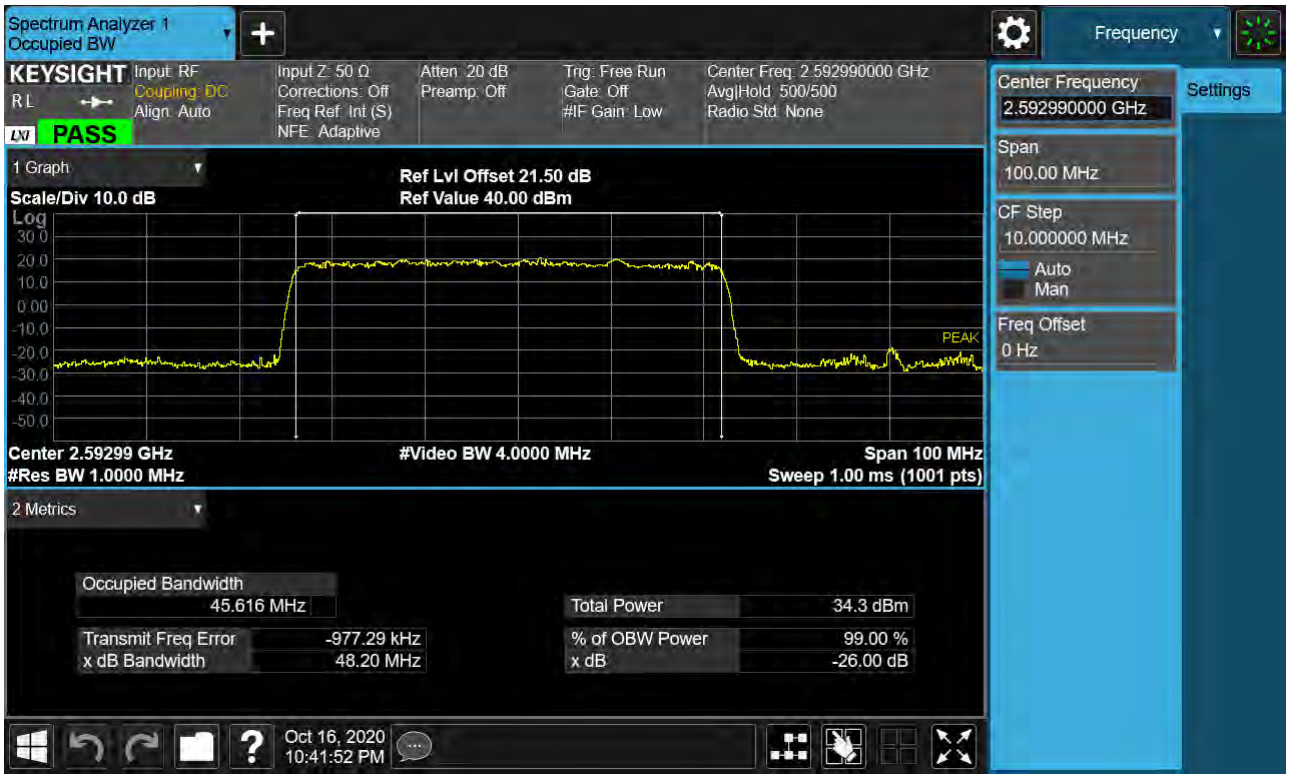
Sub6 n41. Occupied Bandwidth Plot (40 MHz Ch.518598 16-QAM)

Sub6 n41. Occupied Bandwidth Plot (40 MHz Ch.518598 64-QAM)

Sub6 n41. Occupied Bandwidth Plot (40 MHz Ch.518598 256-QAM)

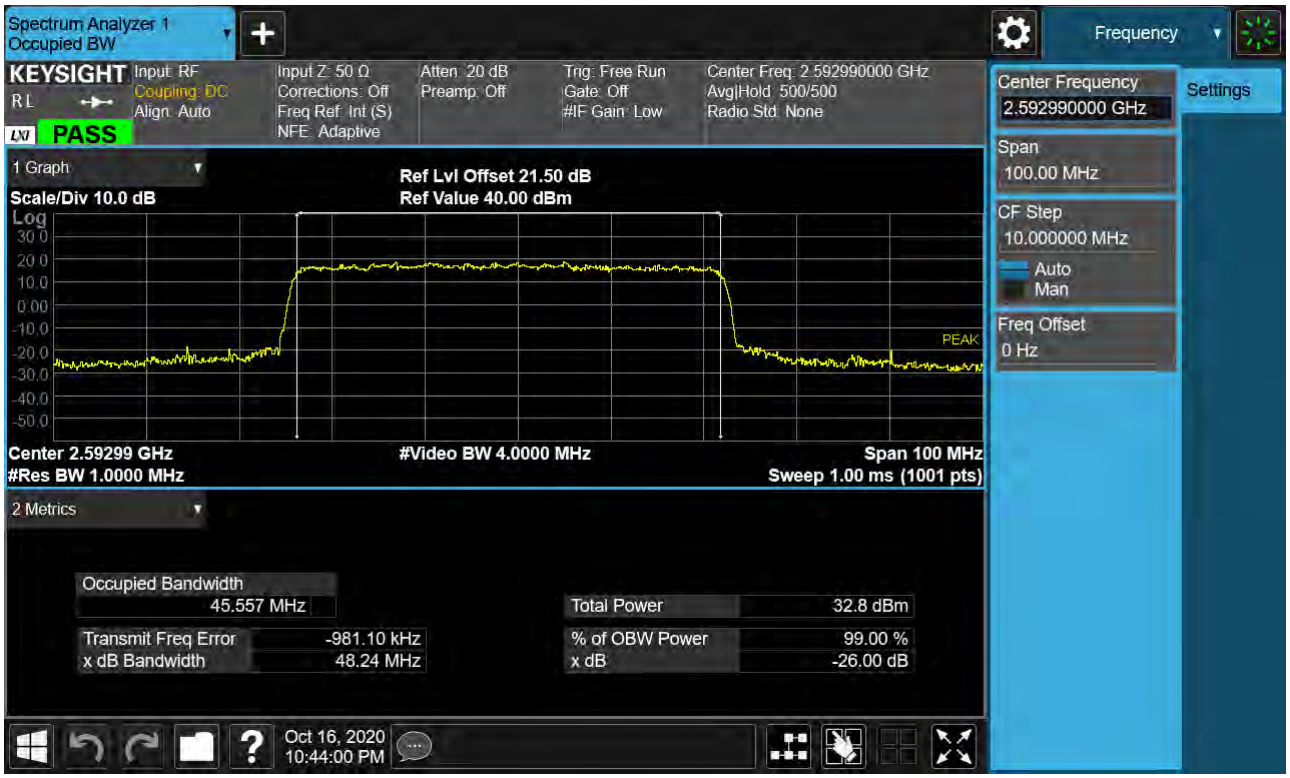


Sub6 n41. Occupied Bandwidth Plot (50 MHz Ch.518598 BPSK)



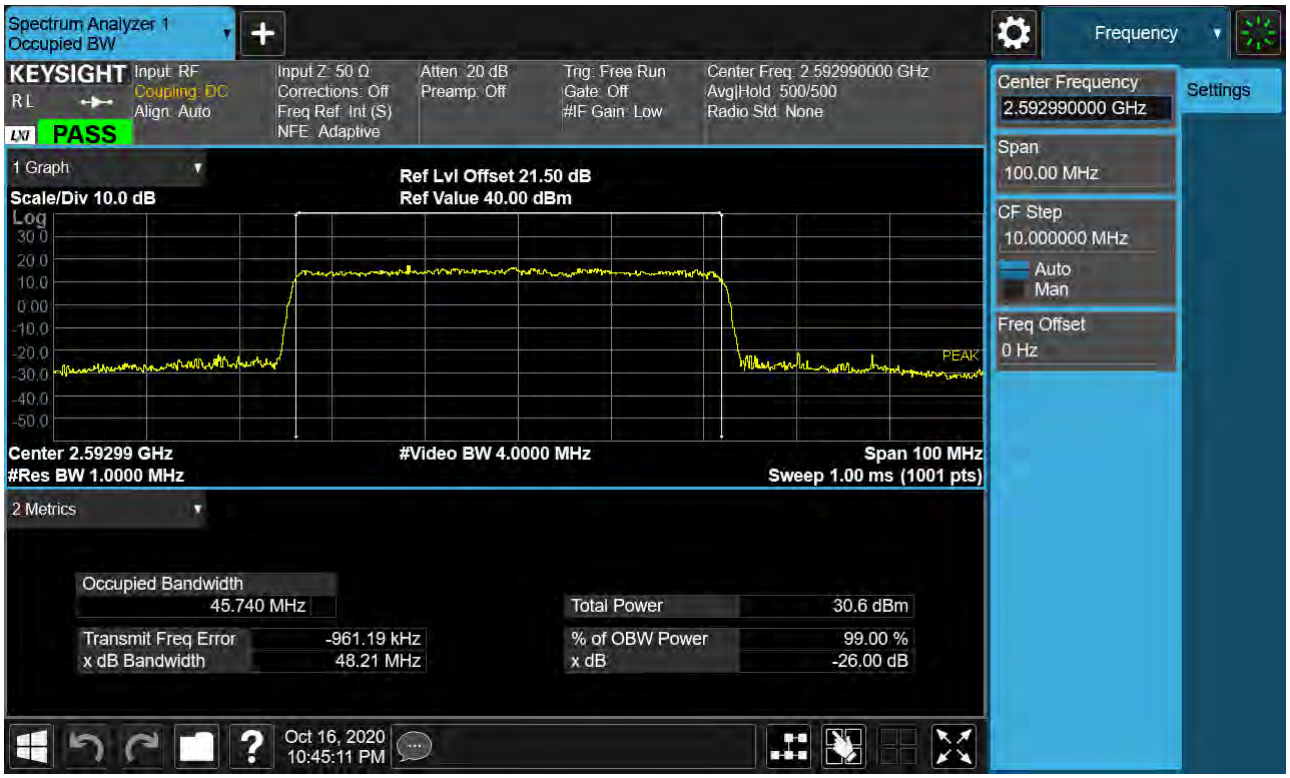
Sub6 n41. Occupied Bandwidth Plot (50 MHz Ch.518598 QPSK)

Sub6 n41. Occupied Bandwidth Plot (50 MHz Ch.518598 16-QAM)



Sub6 n41. Occupied Bandwidth Plot (50 MHz Ch.518598 64-QAM)

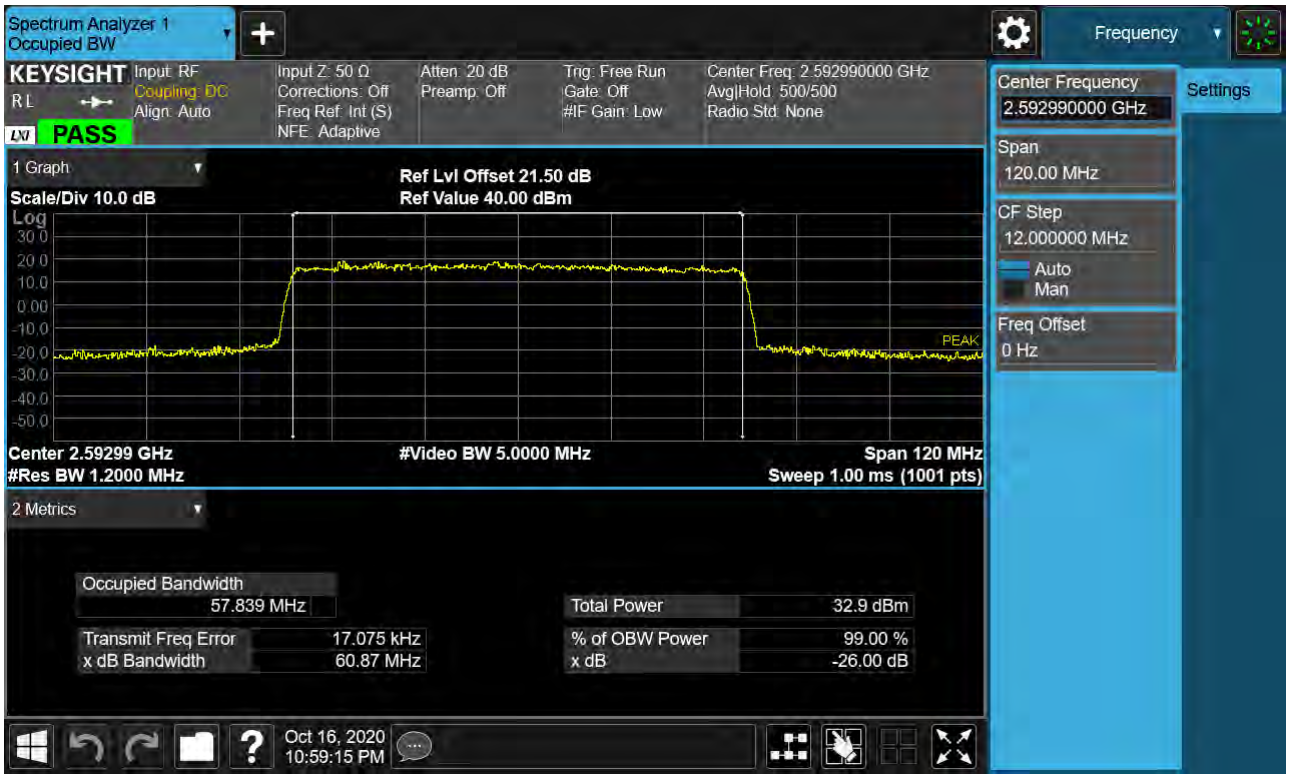
Sub6 n41. Occupied Bandwidth Plot (50 MHz Ch.518598 256-QAM)



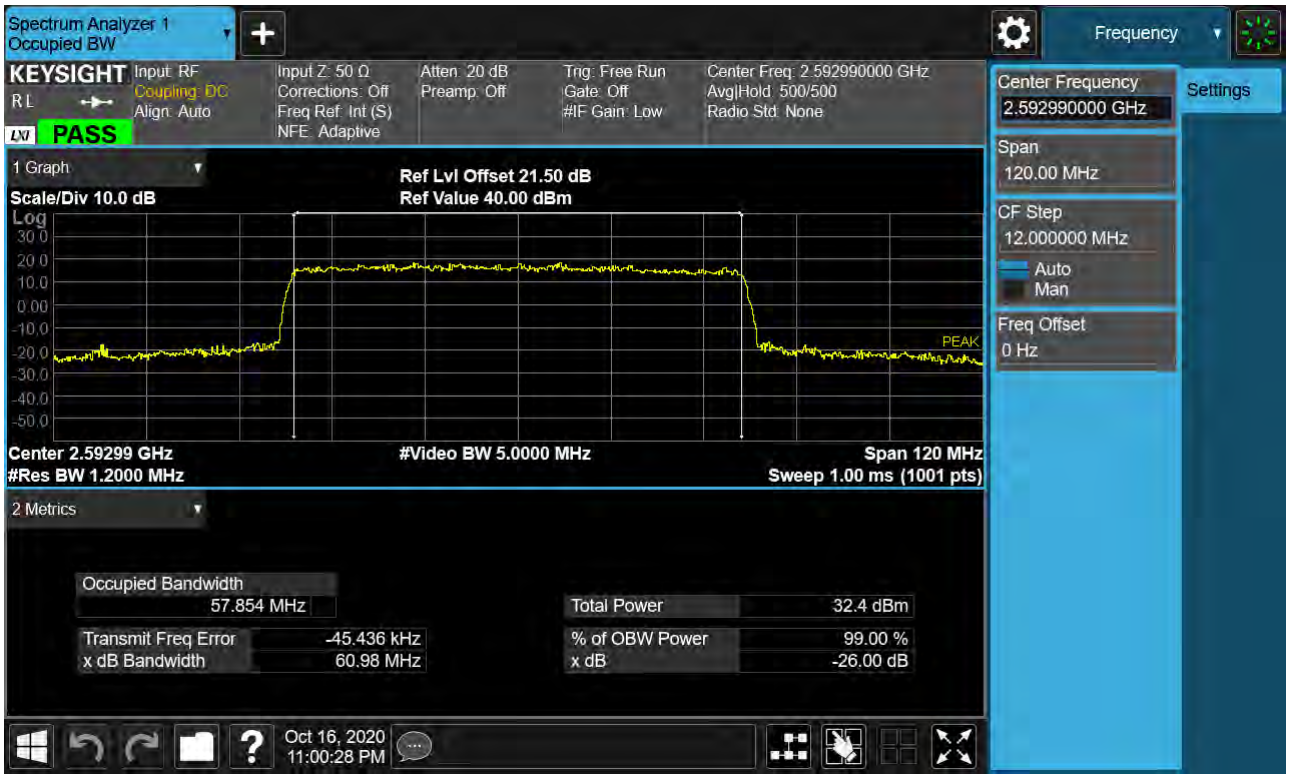
Sub6 n41. Occupied Bandwidth Plot (60 MHz Ch.518598 BPSK)

Sub6 n41. Occupied Bandwidth Plot (60 MHz Ch.518598 QPSK)

Sub6 n41. Occupied Bandwidth Plot (60 MHz Ch.518598 16-QAM)



Sub6 n41. Occupied Bandwidth Plot (60 MHz Ch.518598 64-QAM)



Sub6 n41. Occupied Bandwidth Plot (60 MHz Ch.518598 256-QAM)

Sub6 n41. Occupied Bandwidth Plot (80 MHz Ch.518598 BPSK)

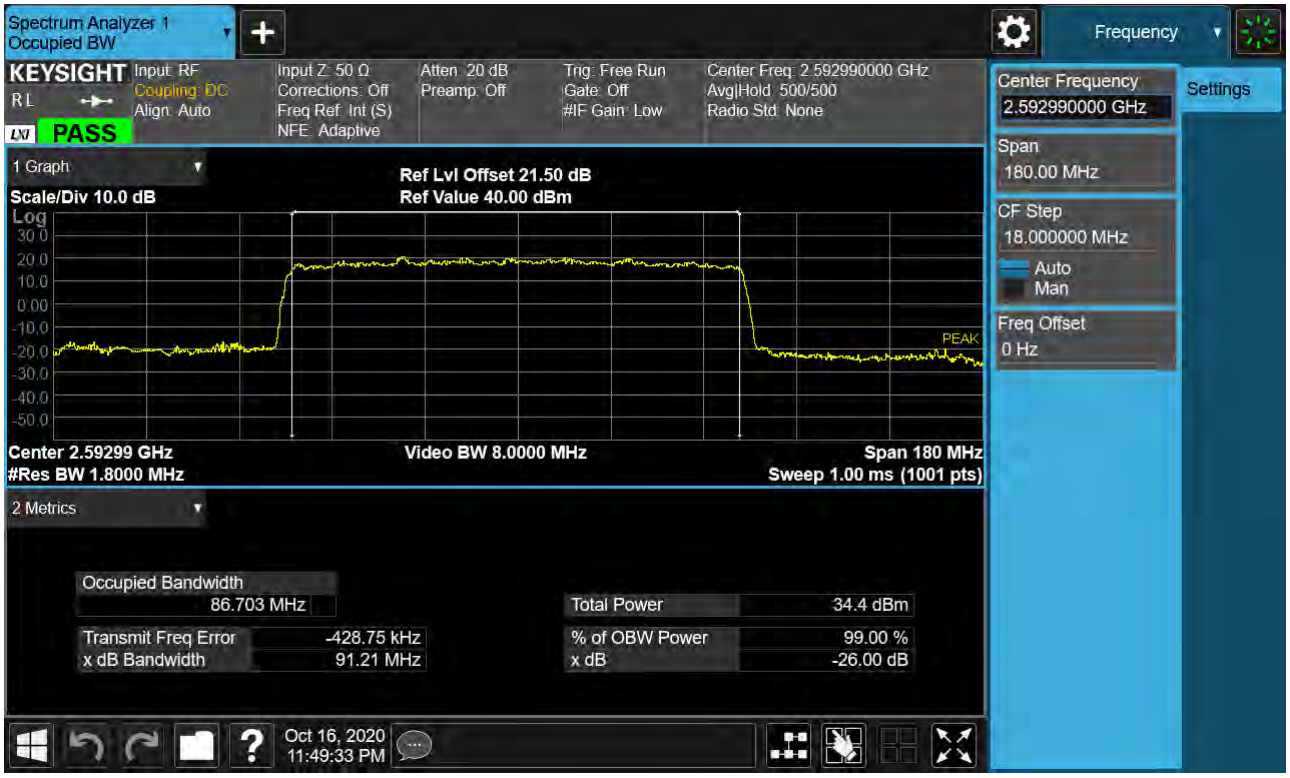
Sub6 n41. Occupied Bandwidth Plot (80 MHz Ch.518598 QPSK)

Sub6 n41. Occupied Bandwidth Plot (80 MHz Ch.518598 16-QAM)

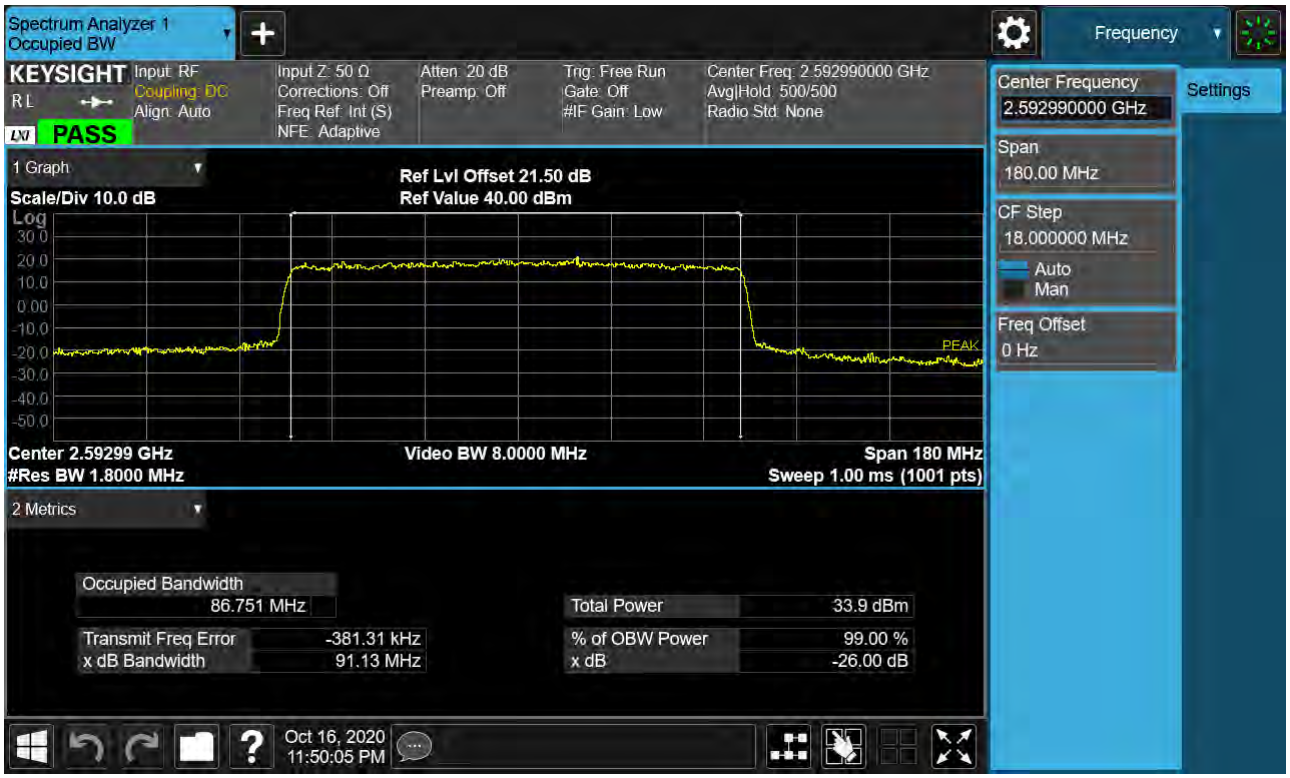
Sub6 n41. Occupied Bandwidth Plot (80 MHz Ch.518598 64-QAM)

Sub6 n41. Occupied Bandwidth Plot (80 MHz Ch.518598 256-QAM)

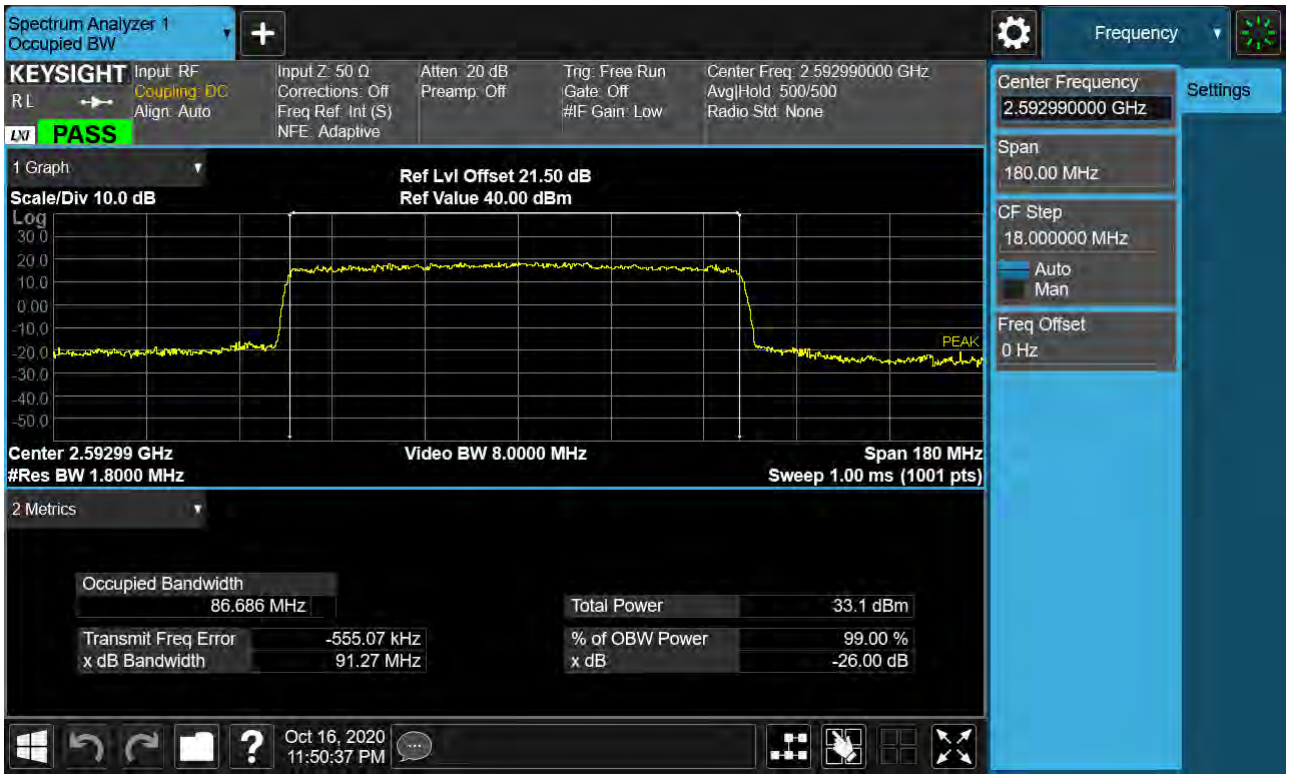
Sub6 n41. Occupied Bandwidth Plot (90 MHz Ch.518598 BPSK)



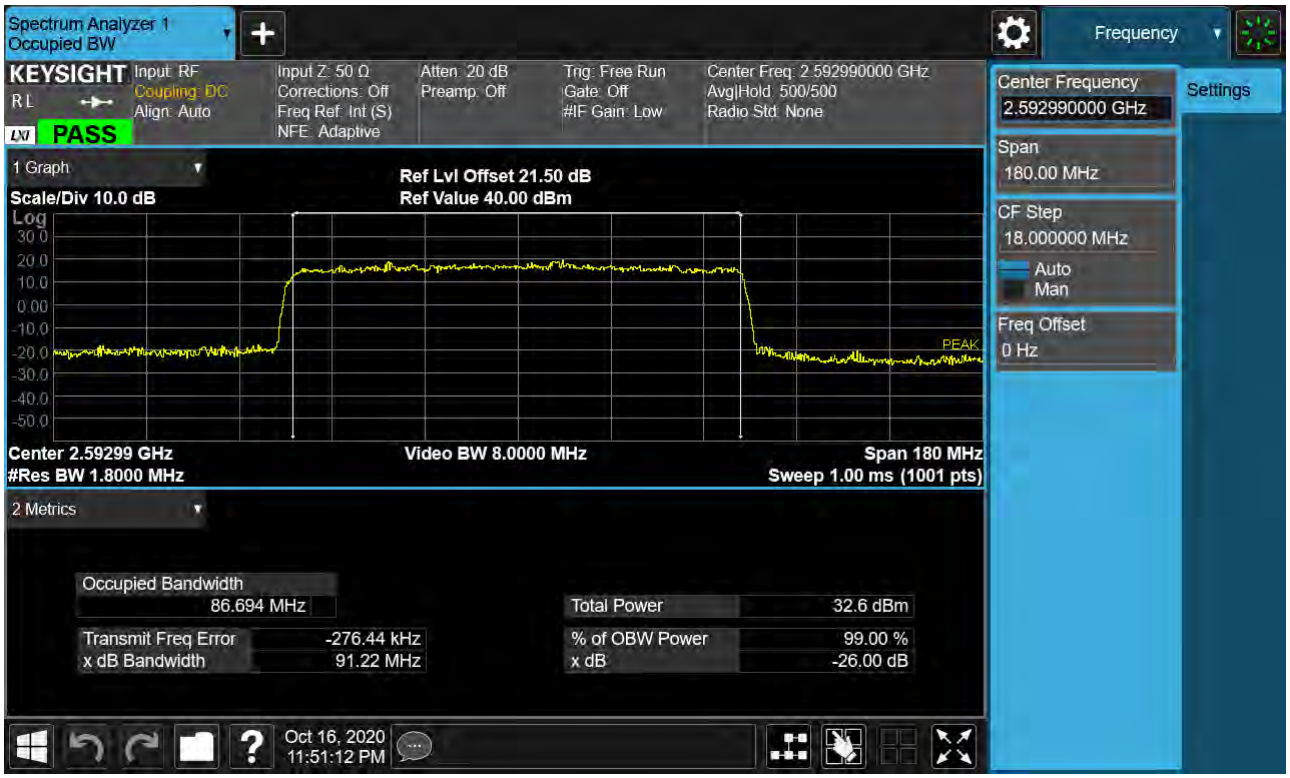
Sub6 n41. Occupied Bandwidth Plot (90 MHz Ch.518598 QPSK)



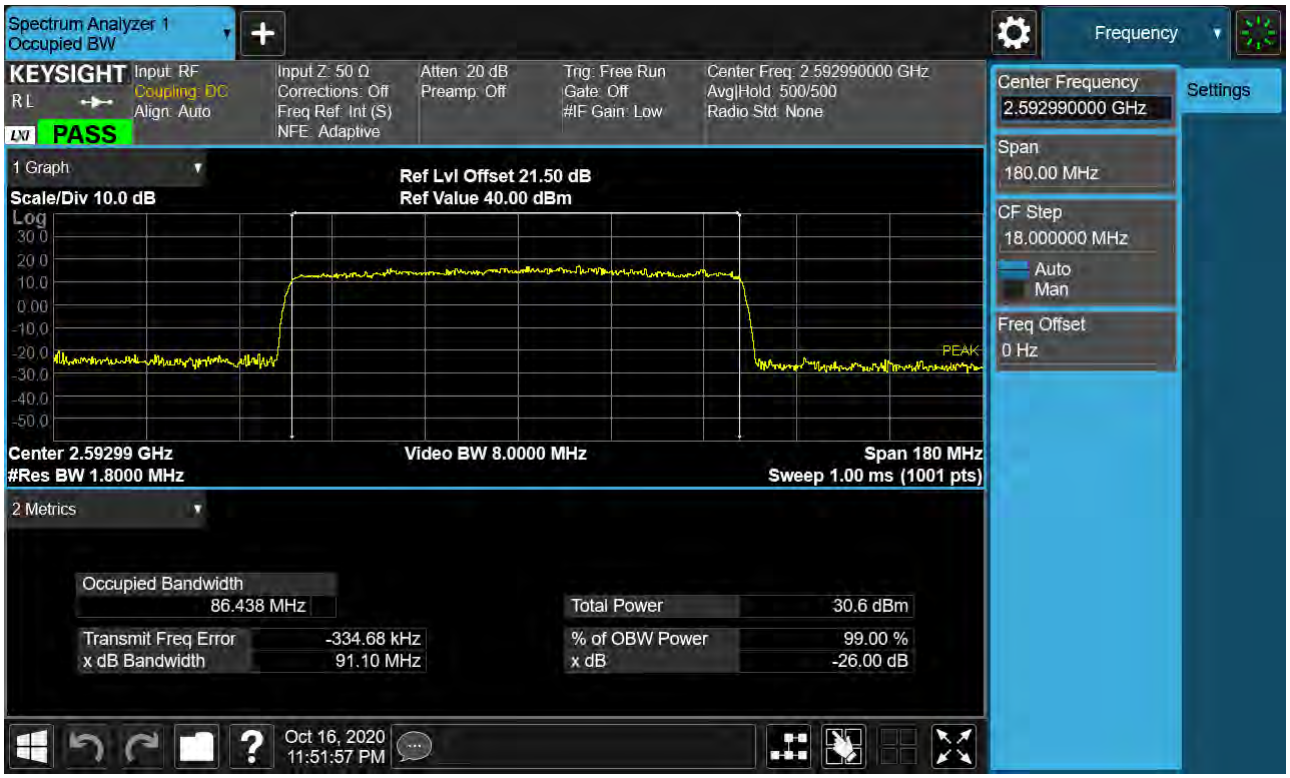
Sub6 n41. Occupied Bandwidth Plot (90 MHz Ch.518598 16-QAM)



Sub6 n41. Occupied Bandwidth Plot (90 MHz Ch.518598 64-QAM)



Sub6 n41. Occupied Bandwidth Plot (90 MHz Ch.518598 256-QAM)



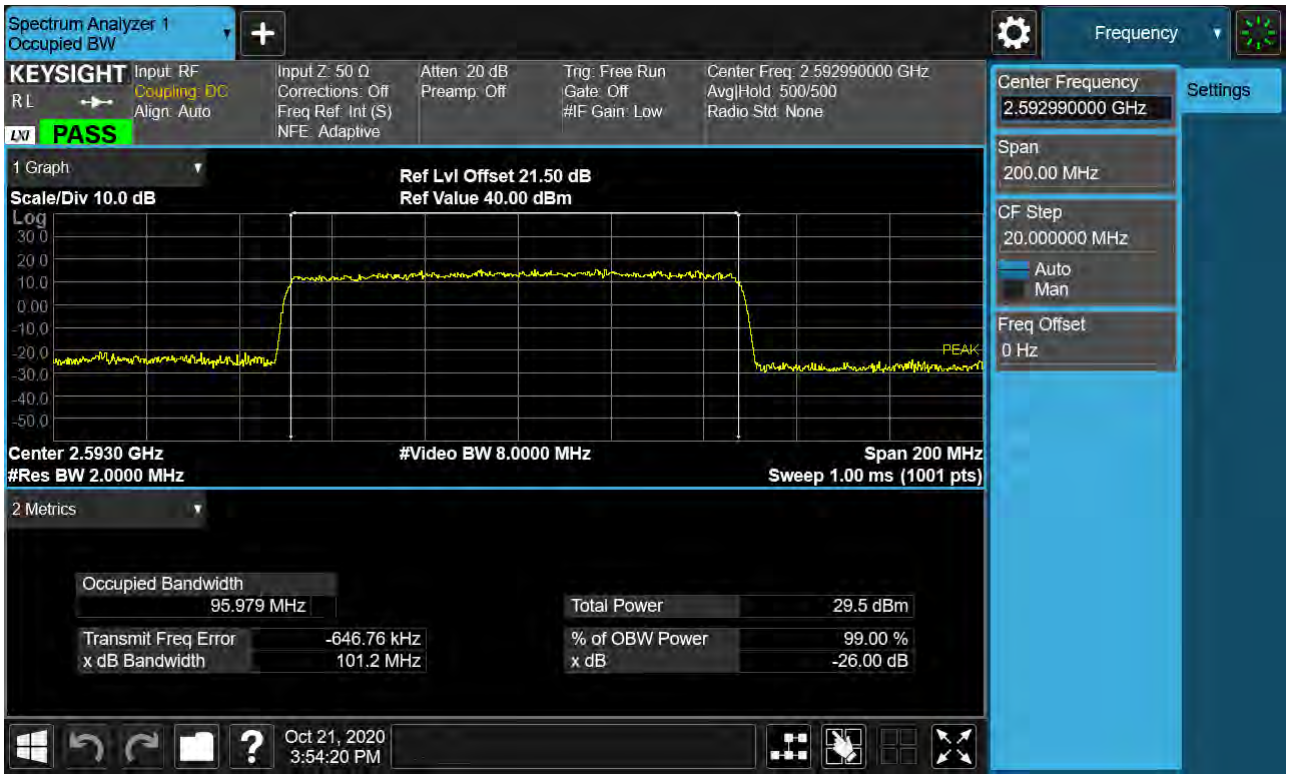
Sub6 n41. Occupied Bandwidth Plot (100 MHz Ch.518598 BPSK)

Sub6 n41. Occupied Bandwidth Plot (100 MHz Ch.518598 QPSK)

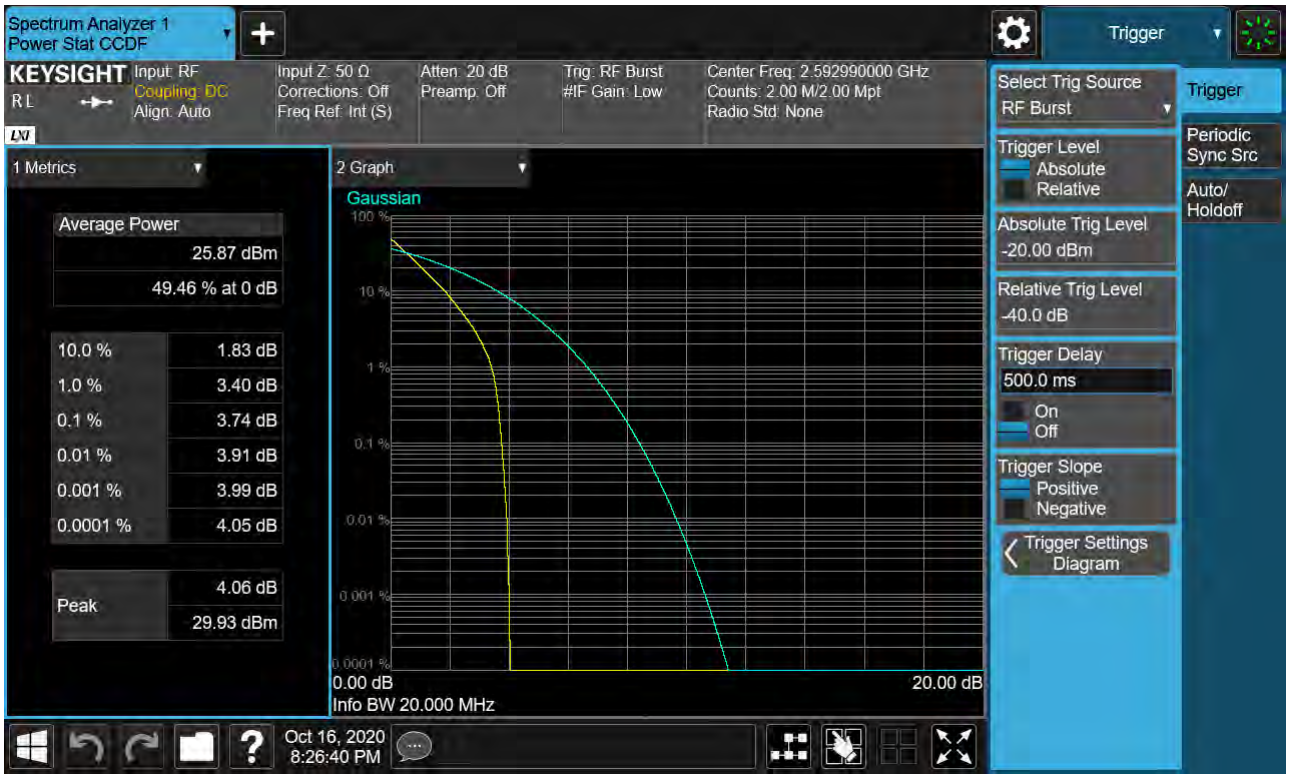
Sub6 n41. Occupied Bandwidth Plot (100 MHz Ch.518598 16-QAM)

Sub6 n41. Occupied Bandwidth Plot (100 MHz Ch.518598 64-QAM)

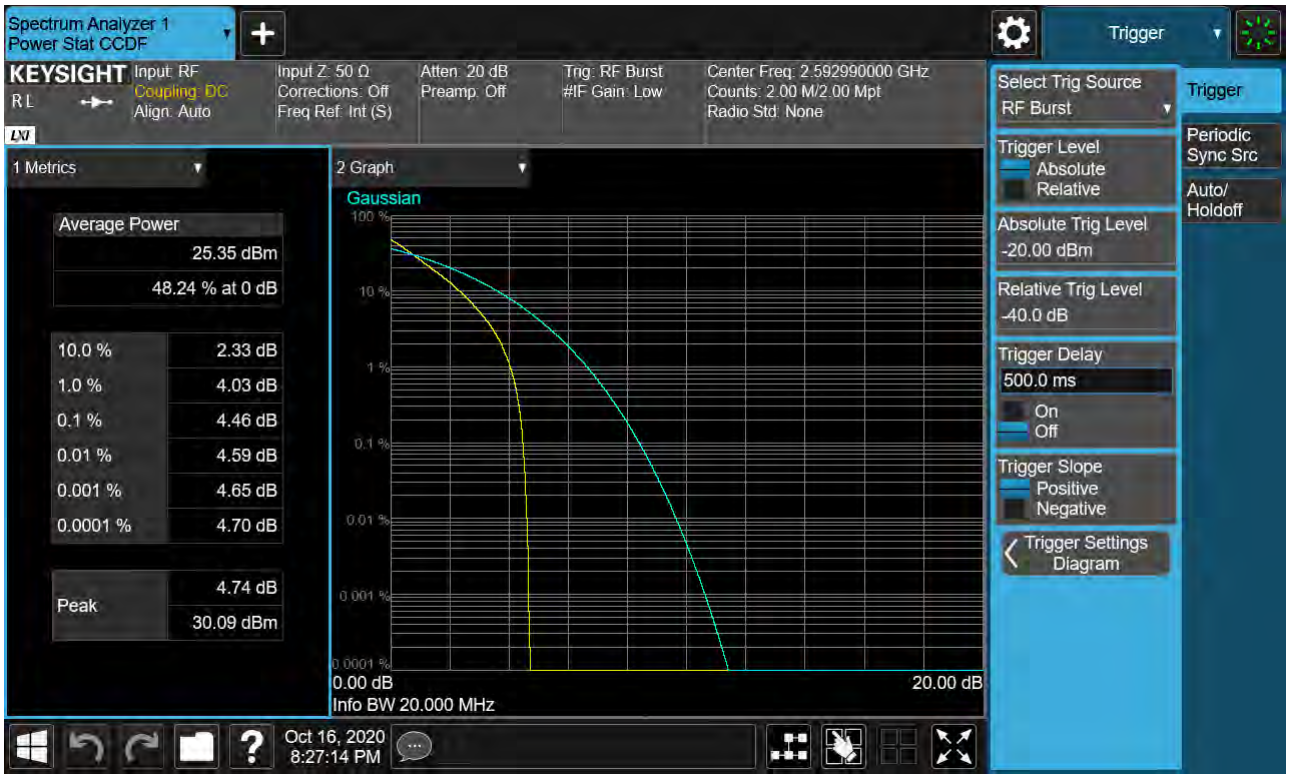
Sub6 n41. Occupied Bandwidth Plot (100 MHz Ch.518598 256-QAM)



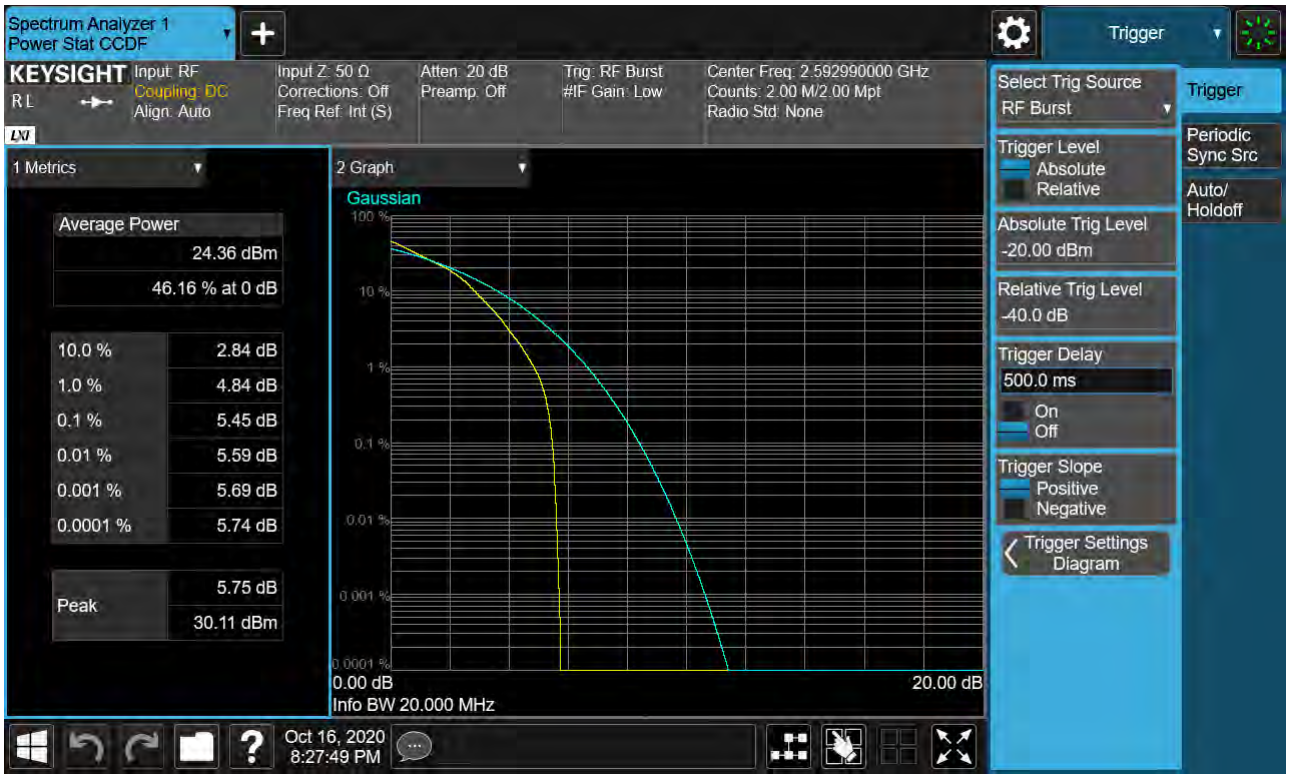
Sub6 n41. PAR Plot (20M BW_Ch.518598_BPSK)



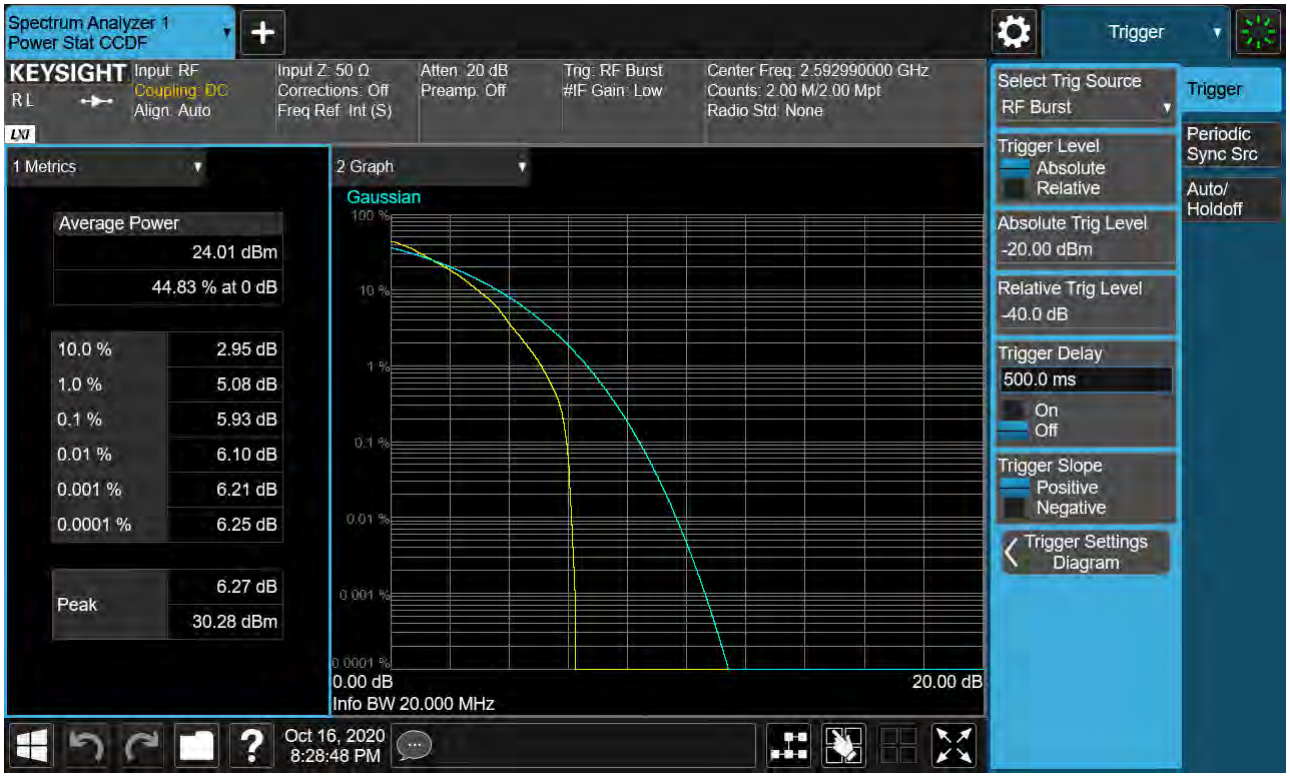
Sub6 n41. PAR Plot (20M BW_Ch.518598_QPSK)



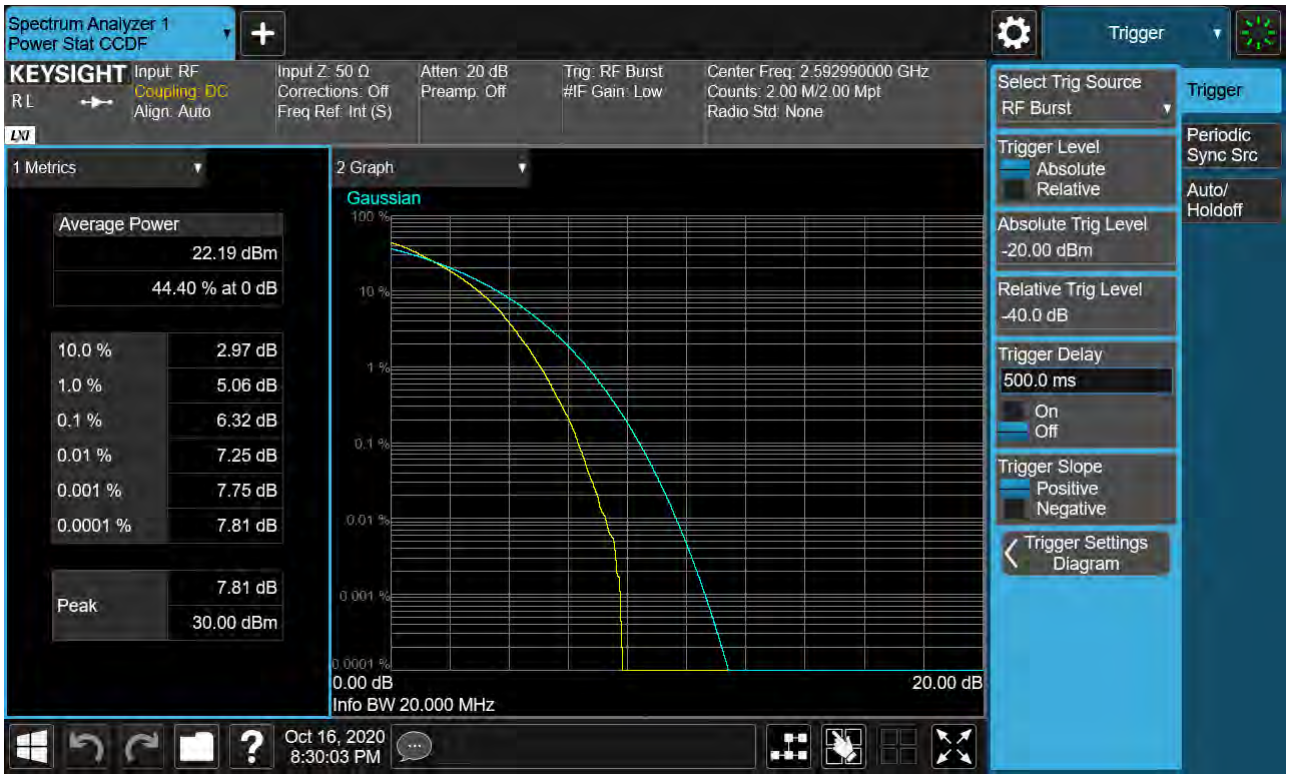
Sub6 n41. PAR Plot (20M BW_Ch.518598_16QAM)



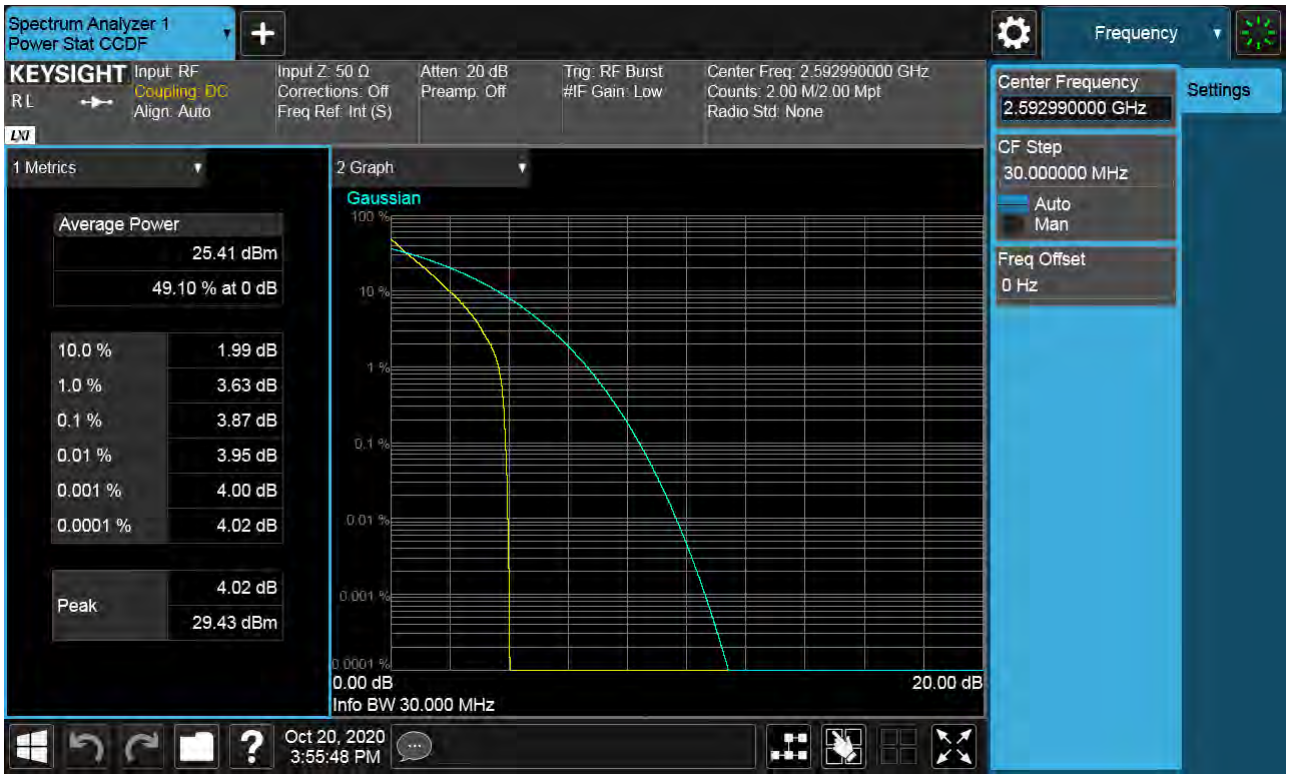
Sub6 n41. PAR Plot (20M BW_Ch.518598_64QAM)



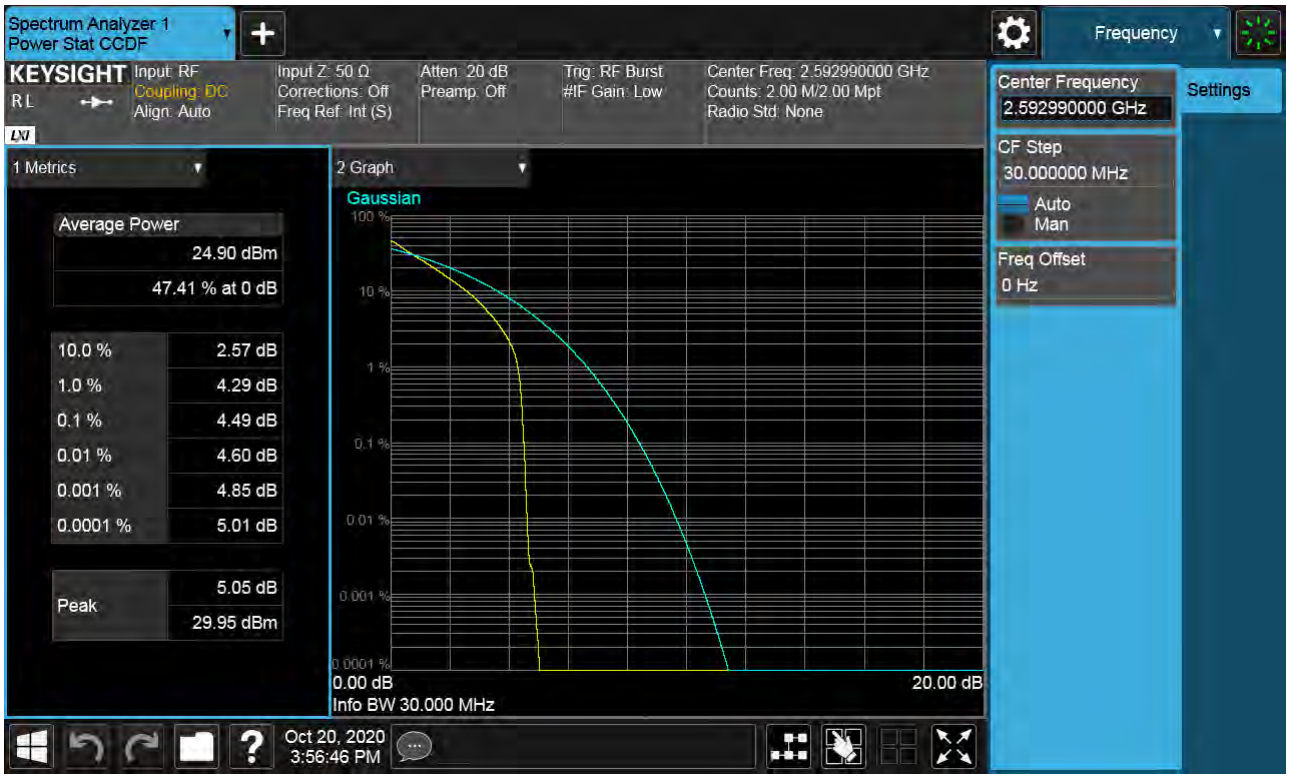
Sub6 n41. PAR Plot (20M BW_Ch.518598_256QAM)



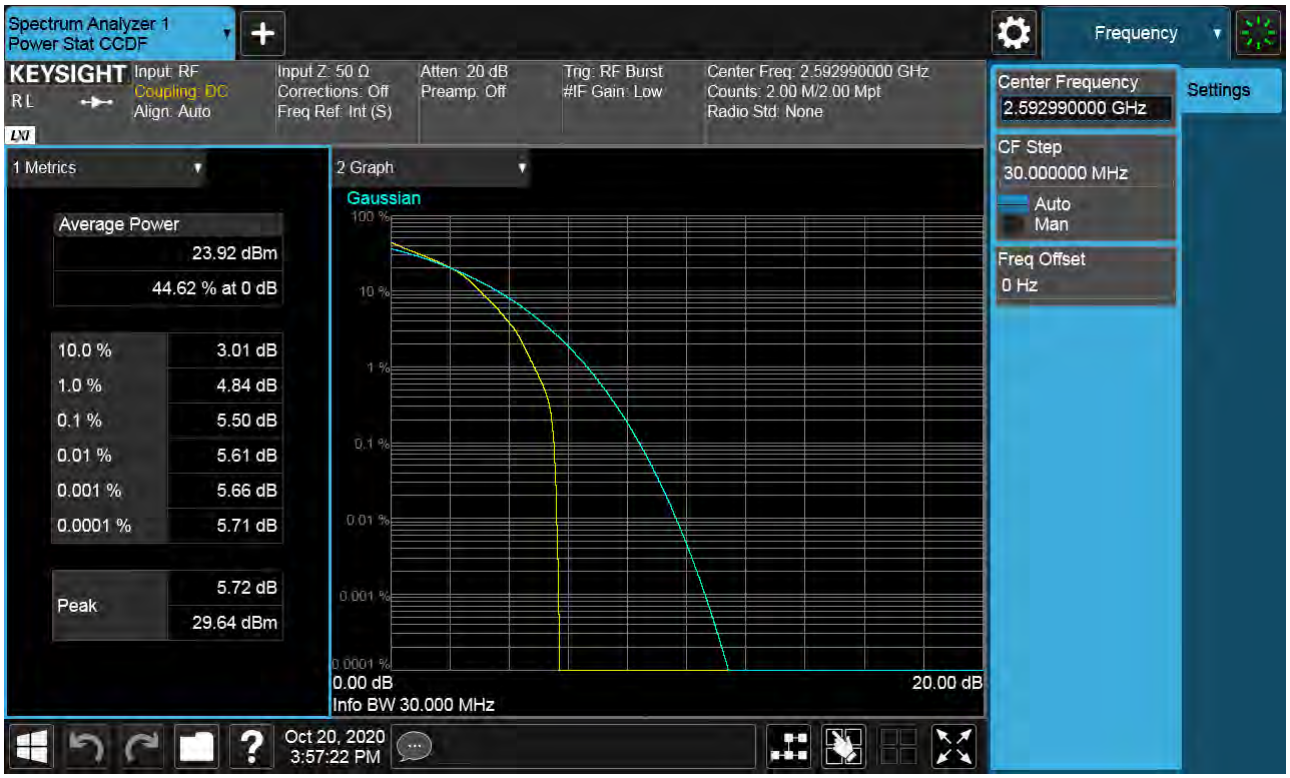
Sub6 n41. PAR Plot (30M BW_Ch.518598_BPSK)



Sub6 n41. PAR Plot (30M BW_Ch.518598_QPSK)



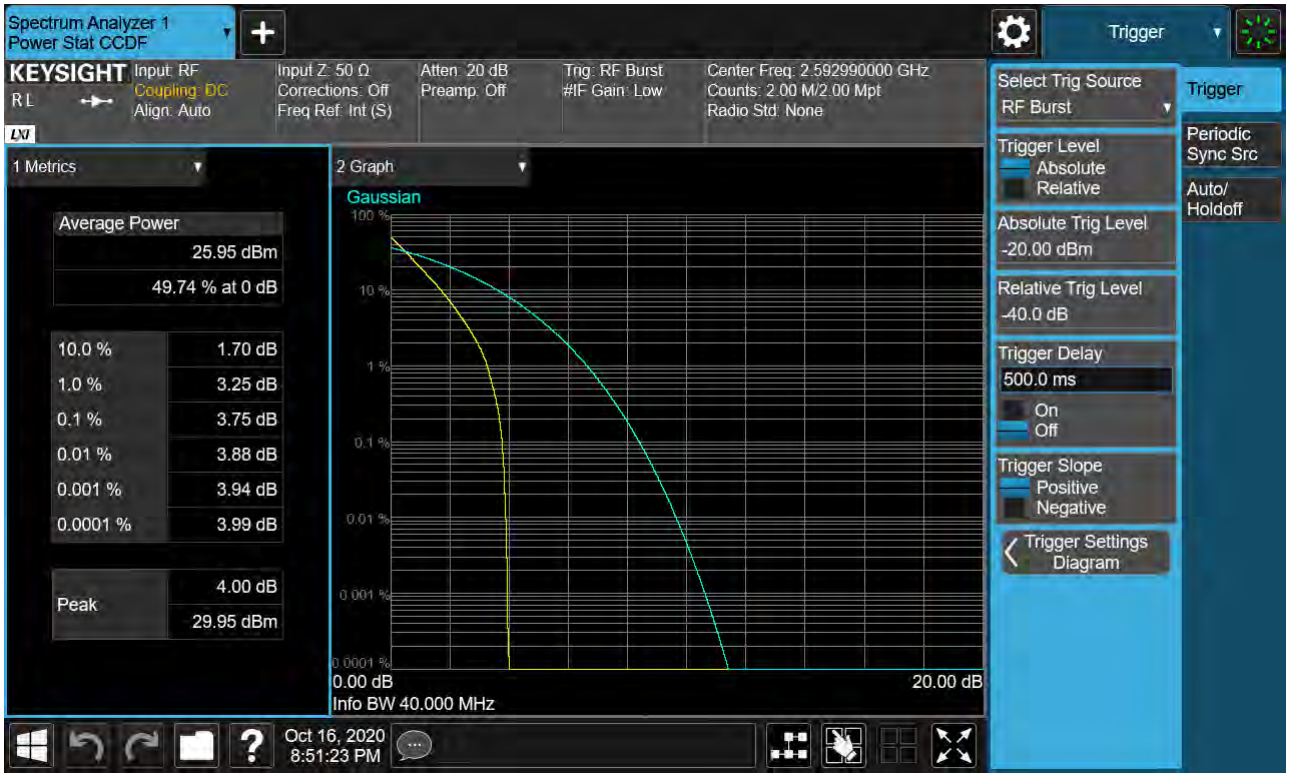
Sub6 n41. PAR Plot (30M BW_Ch.518598_16QAM)



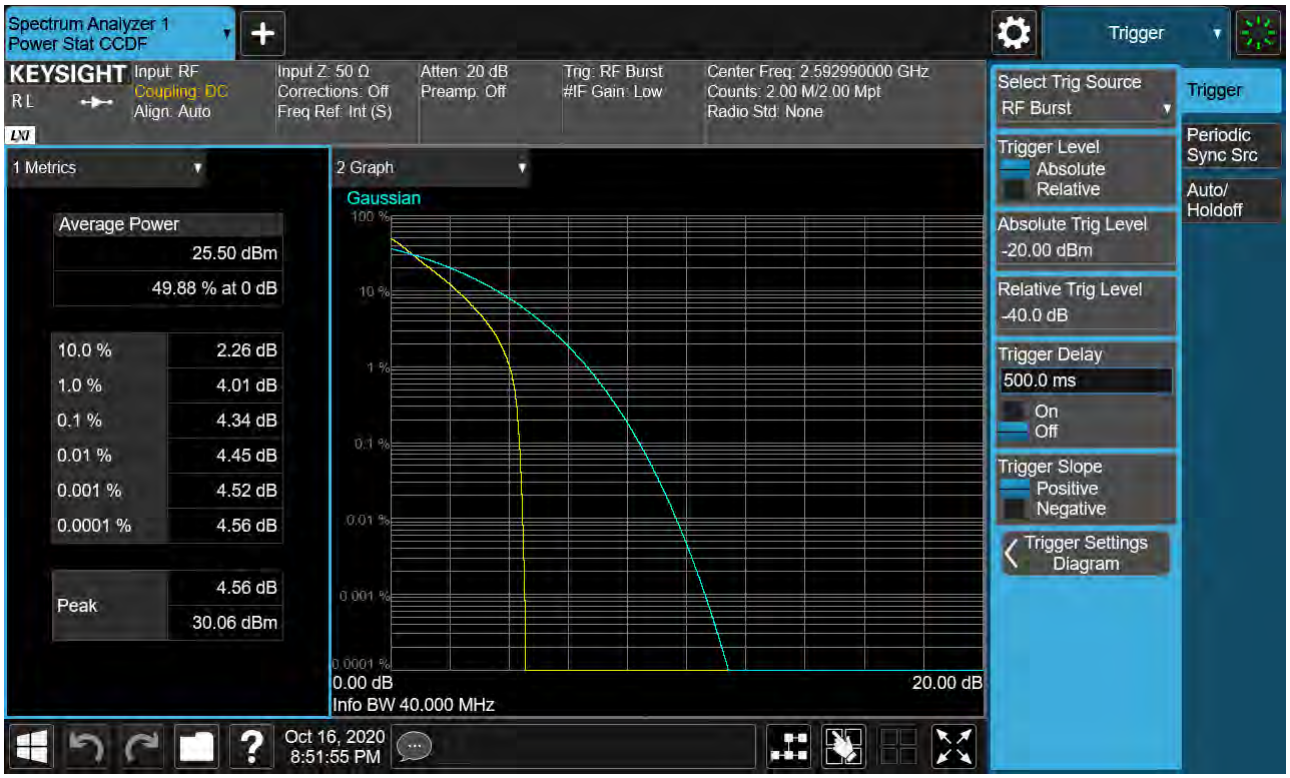
Sub6 n41. PAR Plot (30M BW_Ch.518598_64QAM)

Sub6 n41. PAR Plot (30M BW_Ch.518598_256QAM)

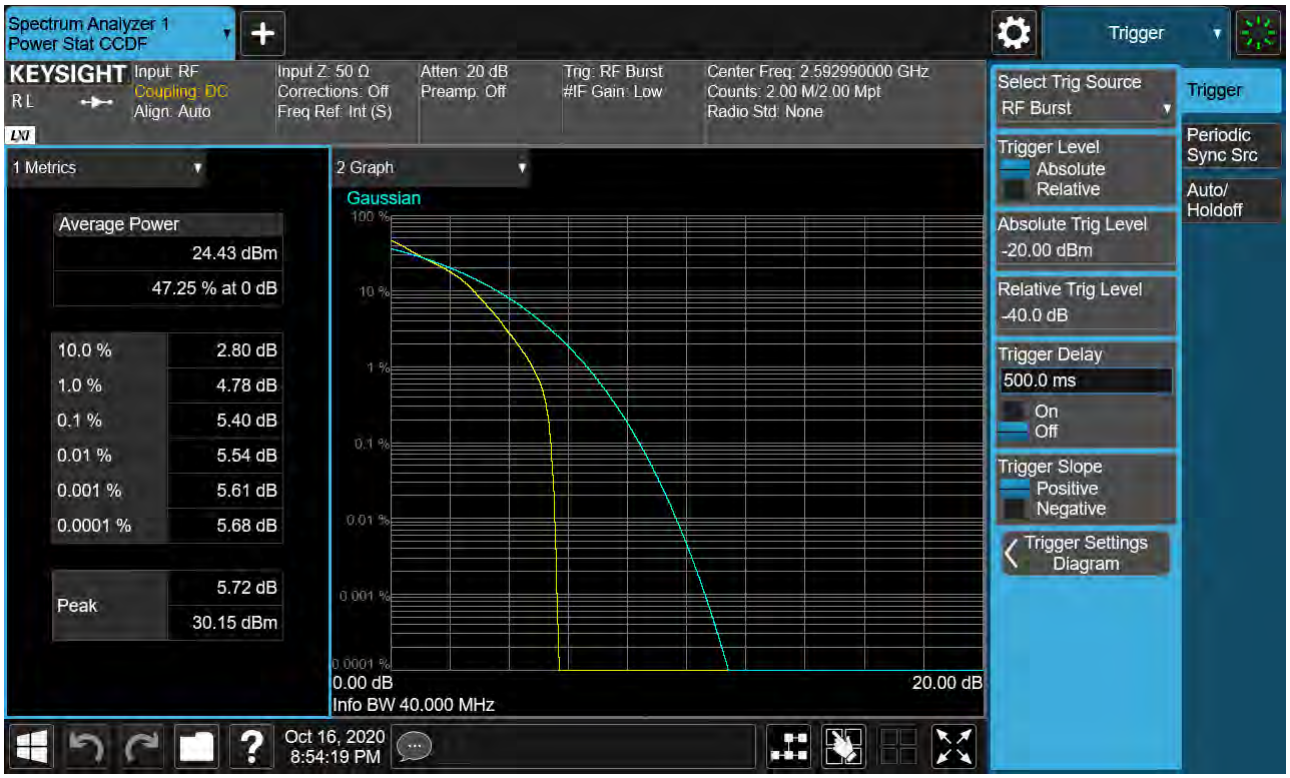
Sub6 n41. PAR Plot (40M BW_Ch.518598_BPSK)



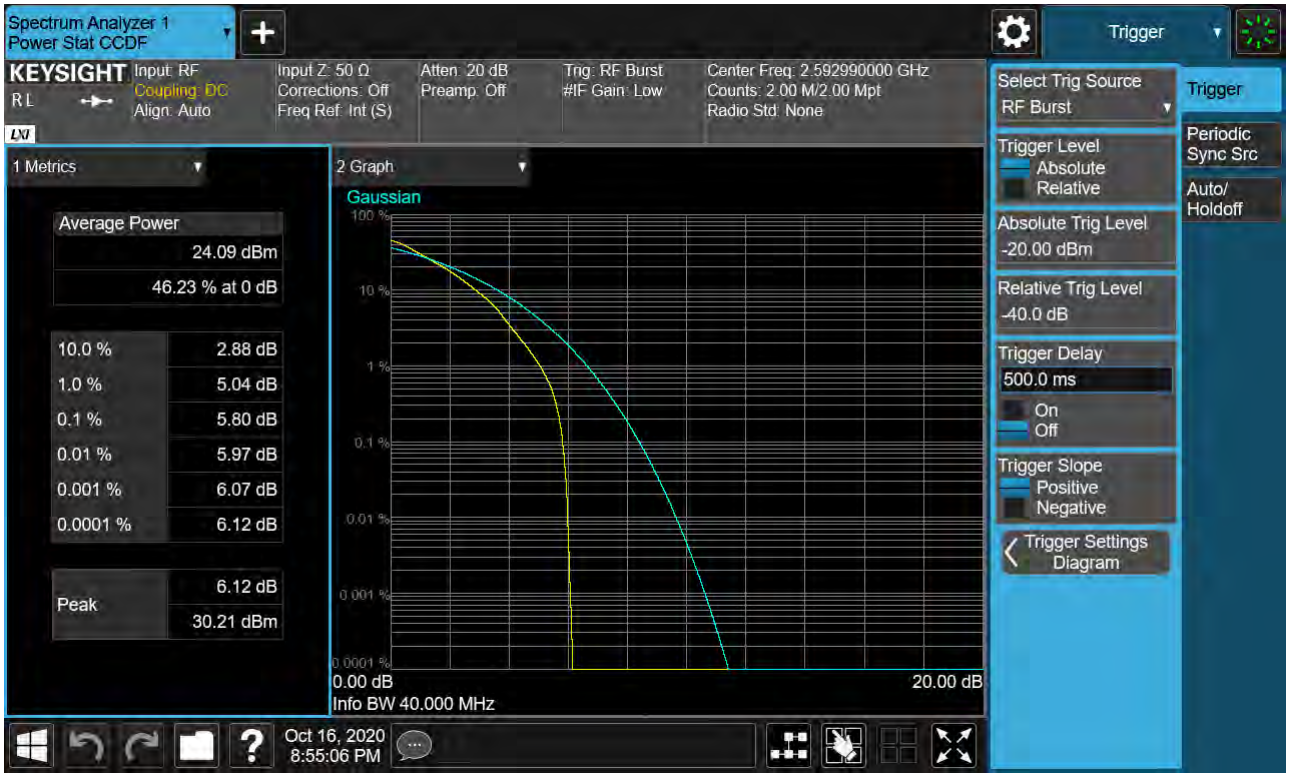
Sub6 n41. PAR Plot (40M BW_Ch.518598_QPSK)



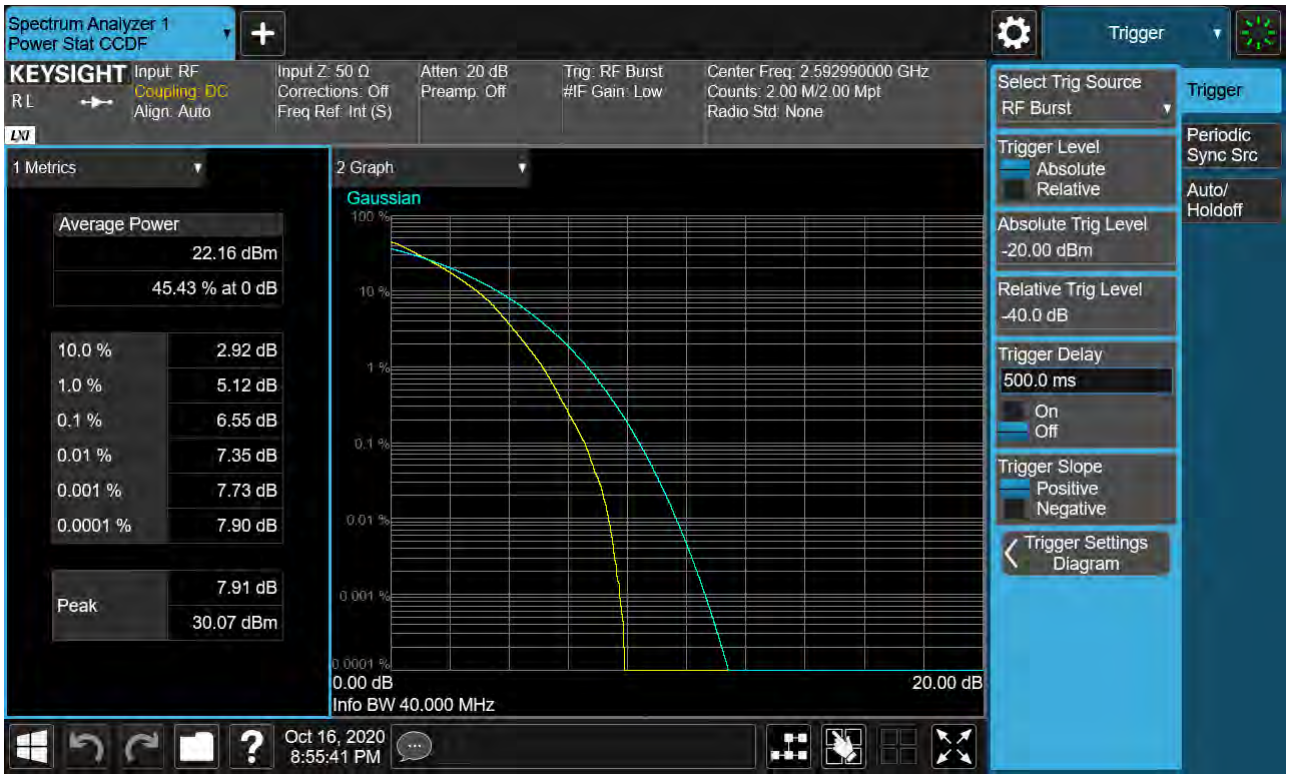
Sub6 n41. PAR Plot (40M BW_Ch.518598_16QAM)



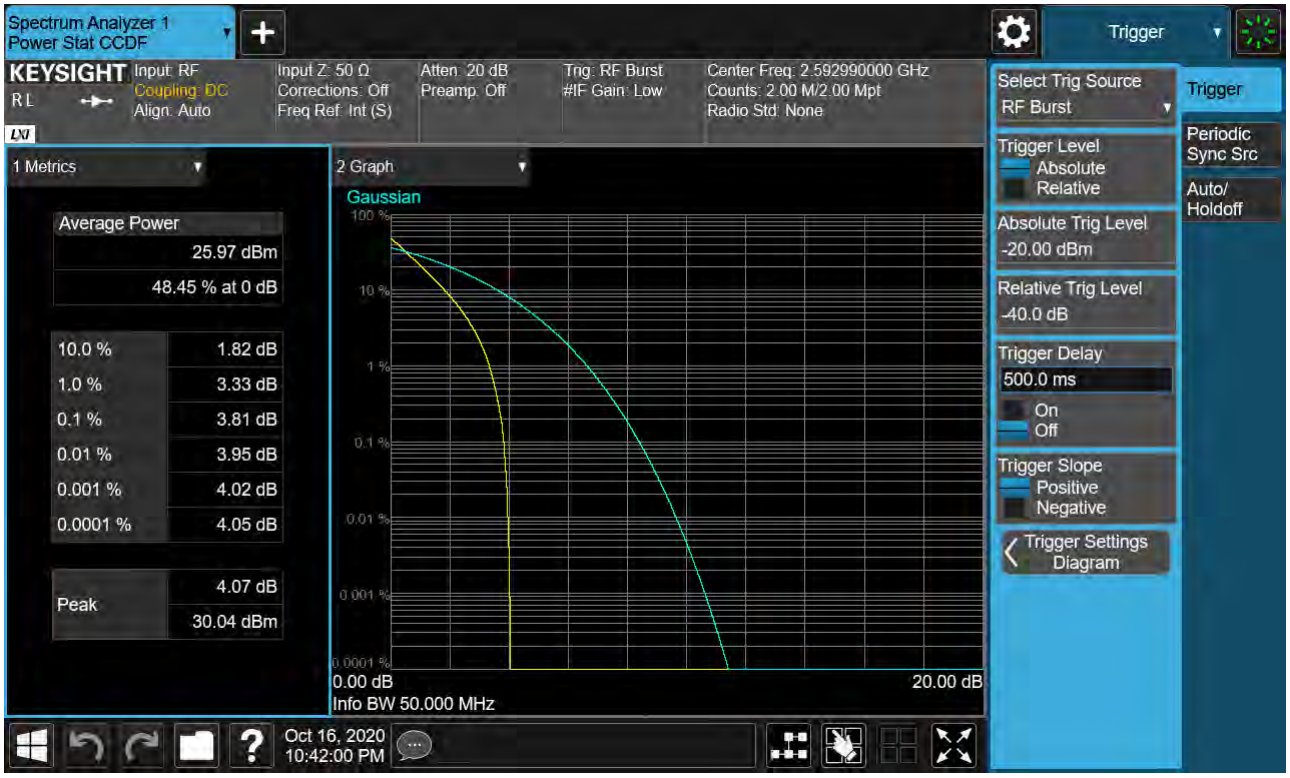
Sub6 n41. PAR Plot (40M BW_Ch.518598_64QAM)



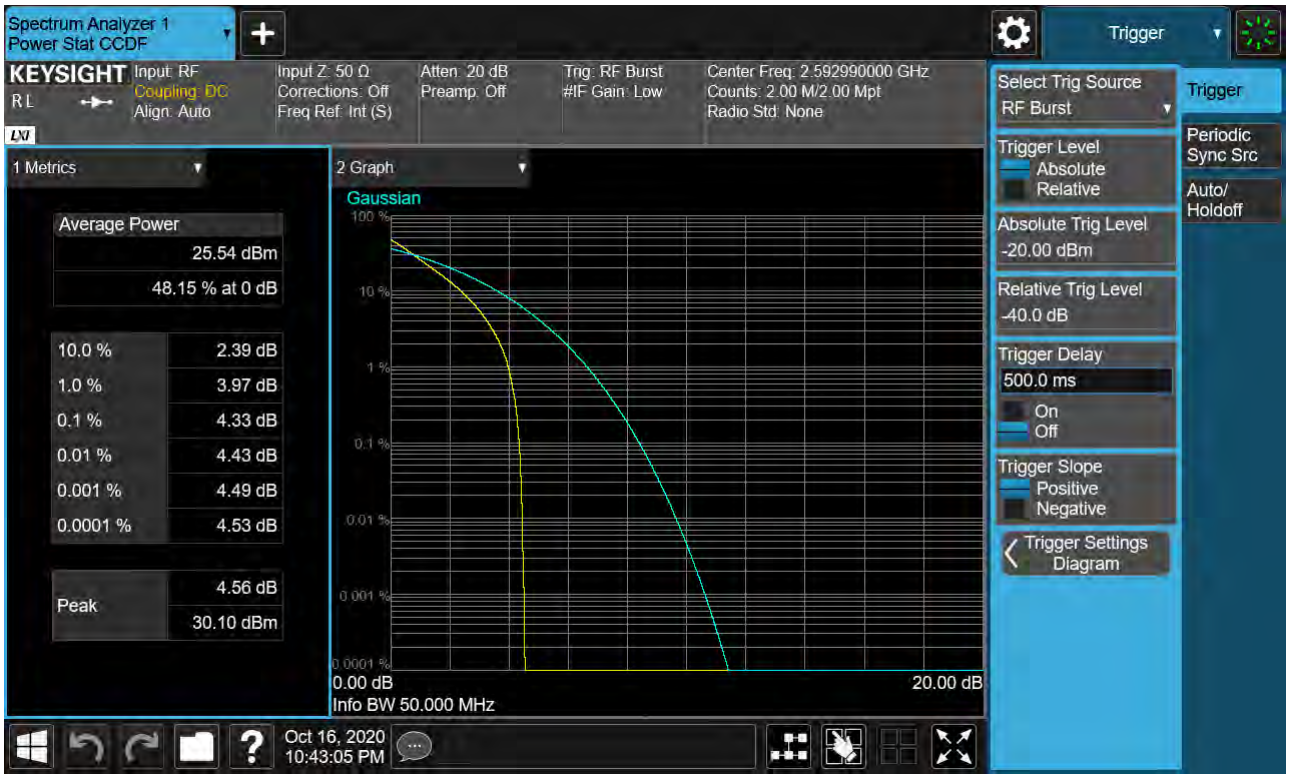
Sub6 n41. PAR Plot (40M BW_Ch.518598_256QAM)



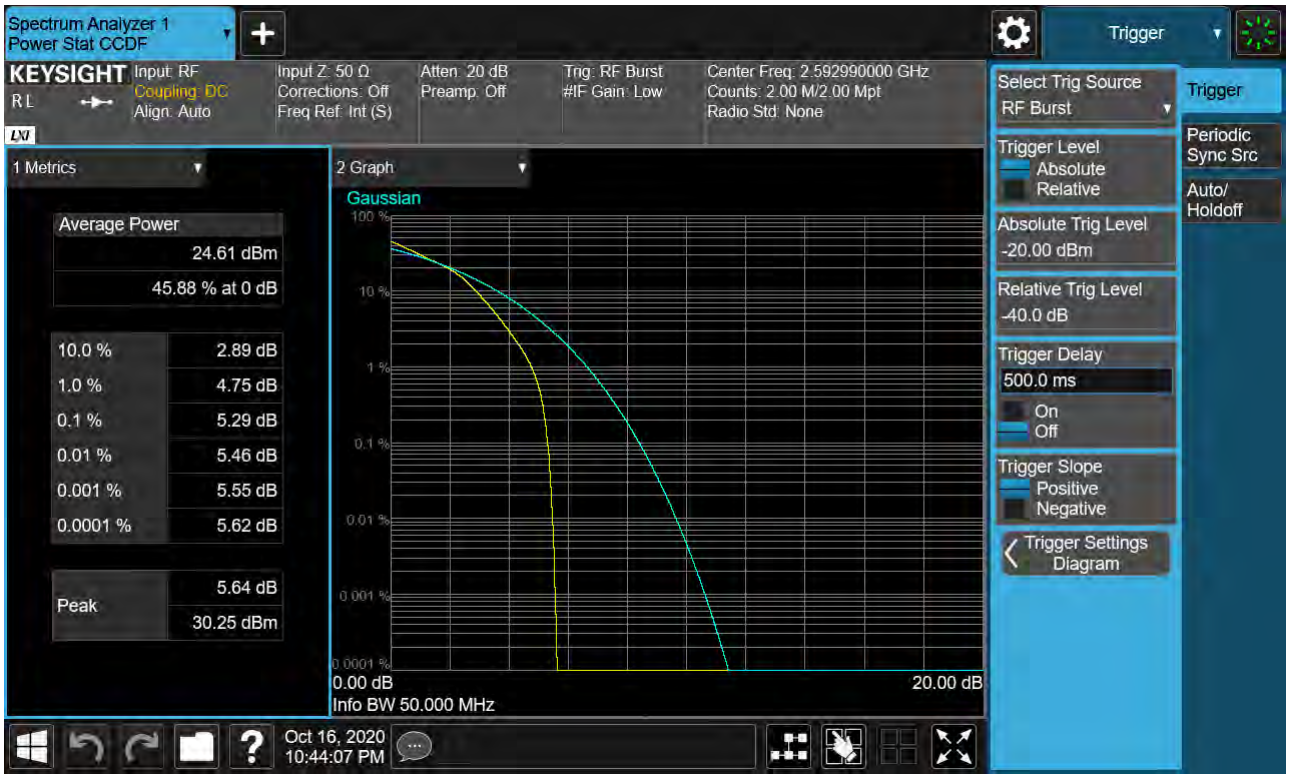
Sub6 n41. PAR Plot (50M BW_Ch.518598_BPSK)



Sub6 n41. PAR Plot (50M BW_Ch.518598_QPSK)



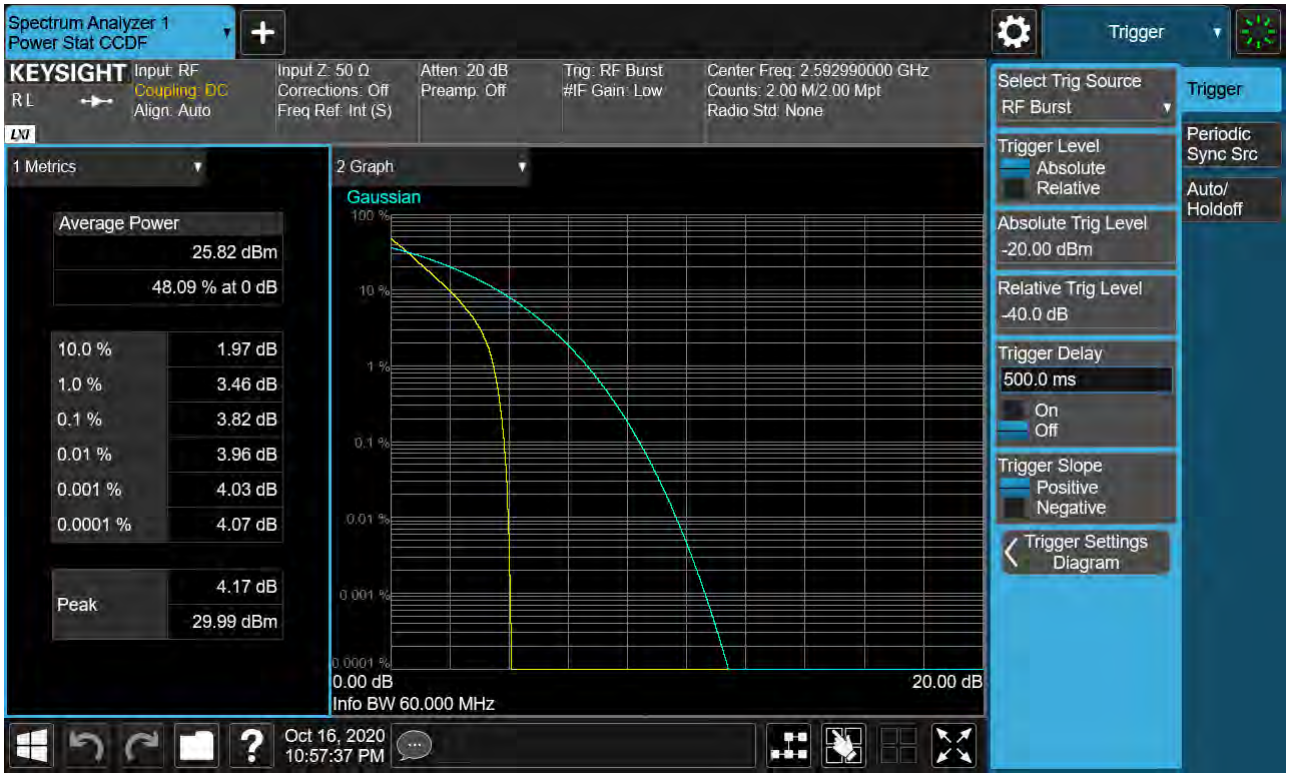
Sub6 n41. PAR Plot (50M BW_Ch.518598_16QAM)



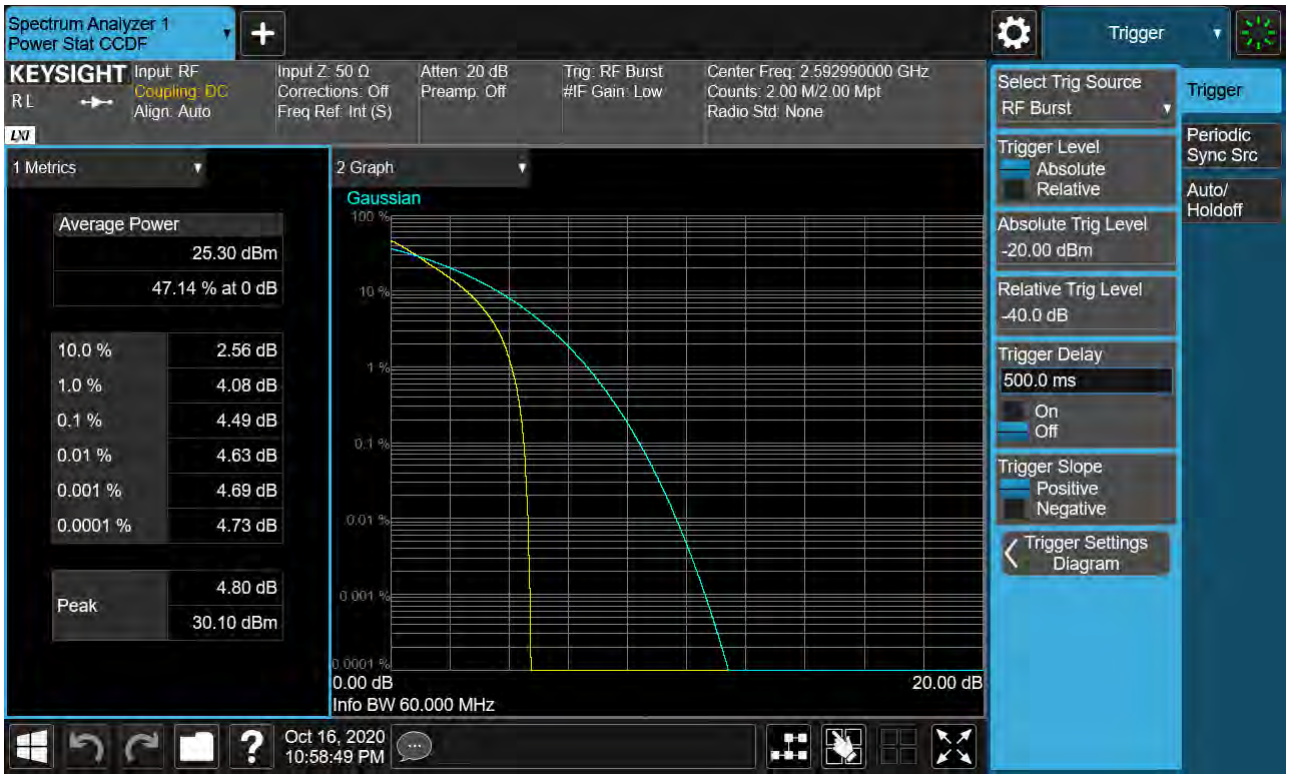
Sub6 n41. PAR Plot (50M BW_Ch.518598_64QAM)

Sub6 n41. PAR Plot (50M BW_Ch.518598_256QAM)

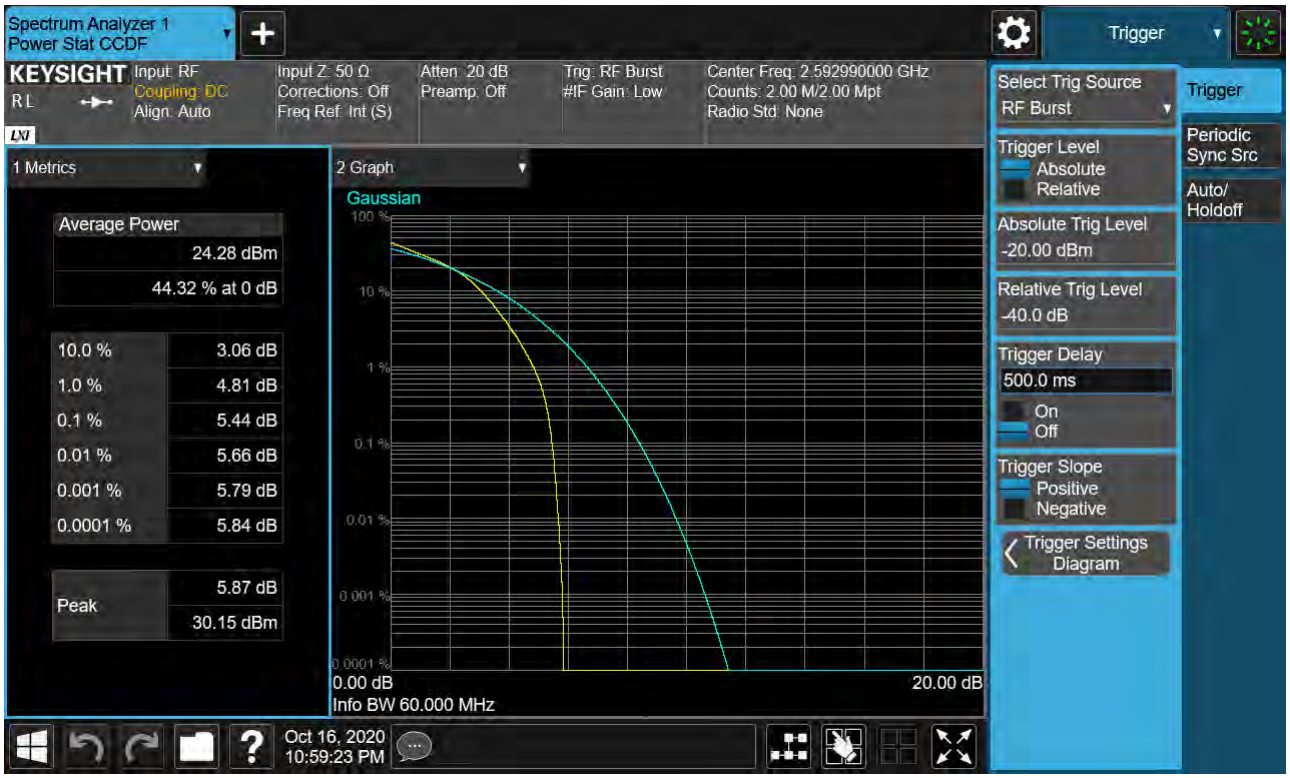
Sub6 n41. PAR Plot (60M BW_Ch.518598_BPSK)



Sub6 n41. PAR Plot (60M BW_Ch.518598_QPSK)



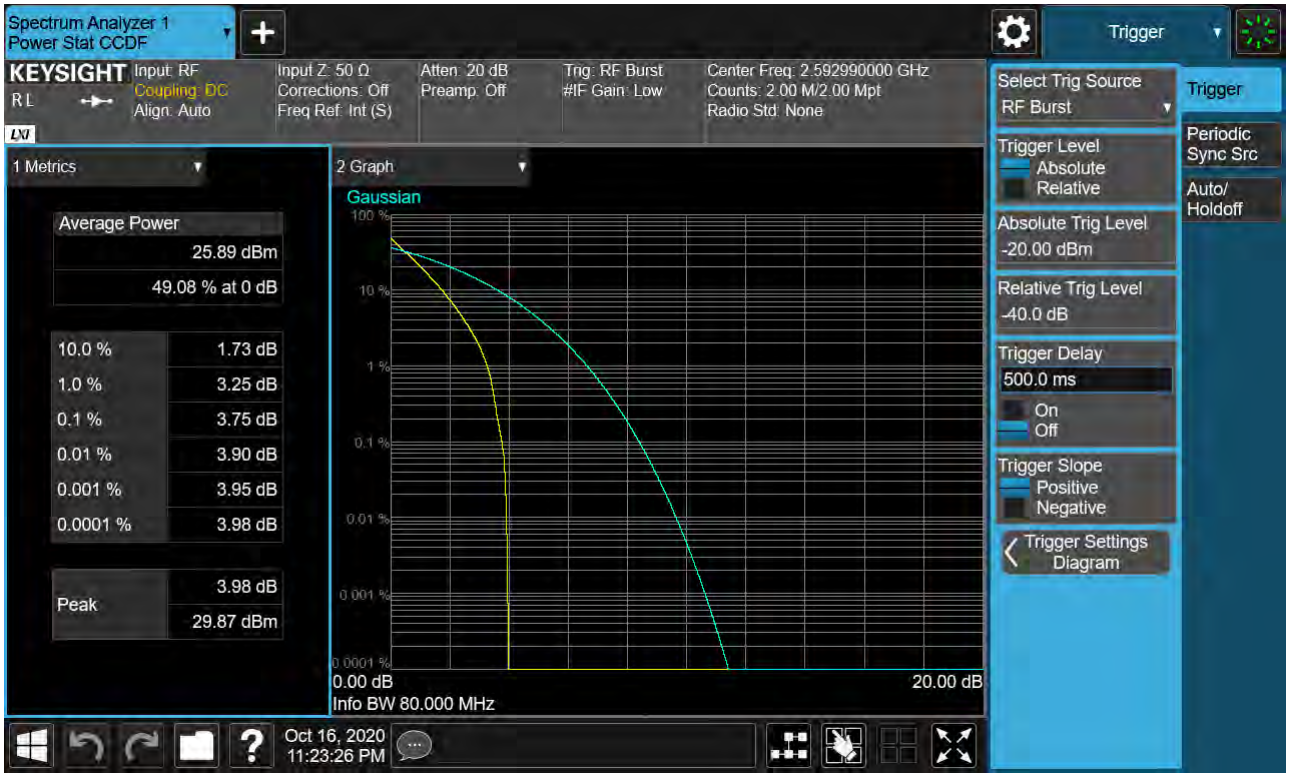
Sub6 n41. PAR Plot (60M BW_Ch.518598_16QAM)



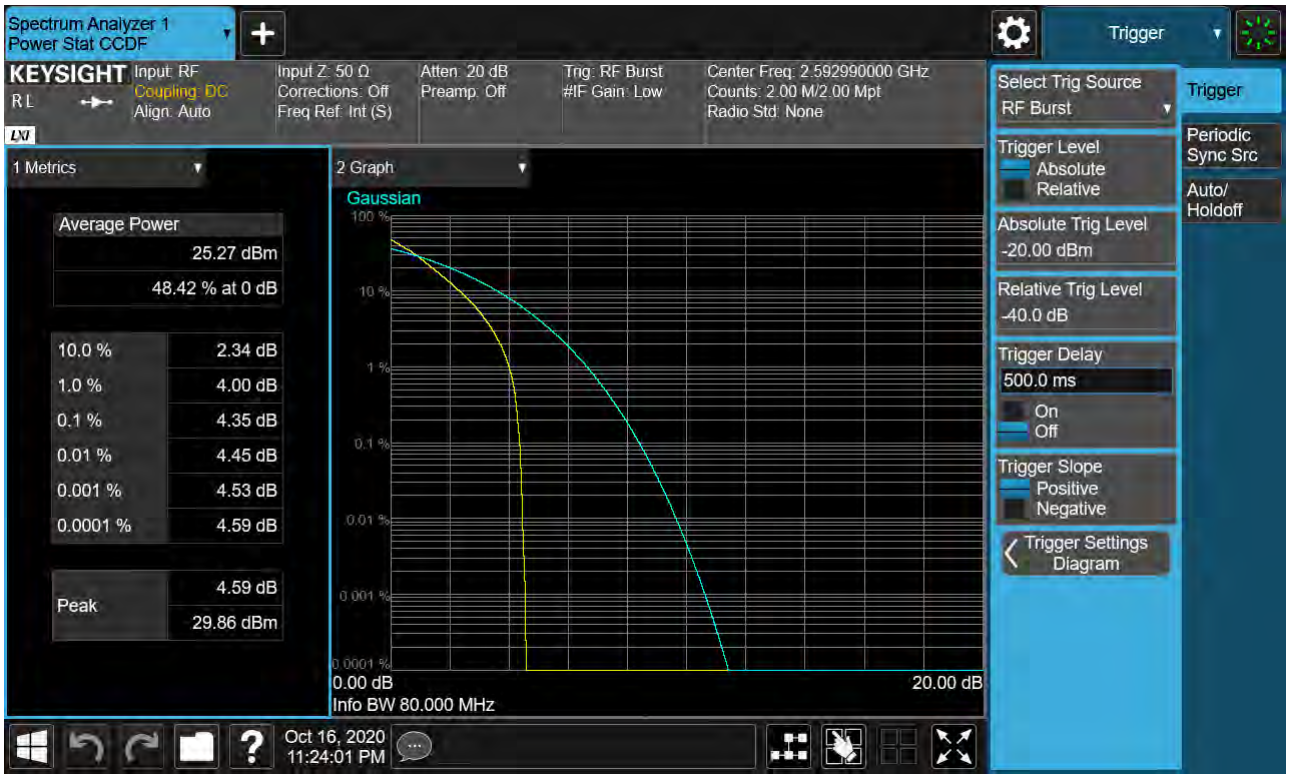
Sub6 n41. PAR Plot (60M BW_Ch.518598_64QAM)

Sub6 n41. PAR Plot (60M BW_Ch.518598_256QAM)

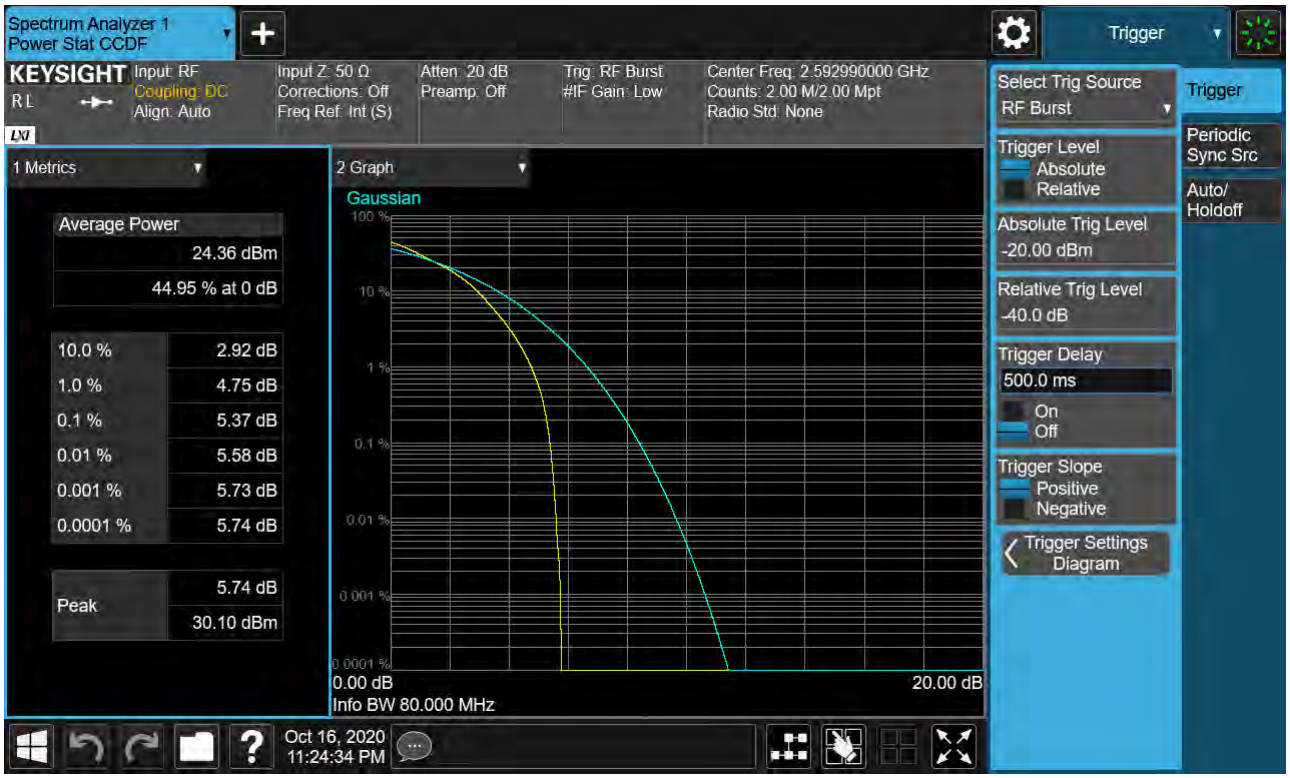
Sub6 n41. PAR Plot (80M BW_Ch.518598_BPSK)



Sub6 n41. PAR Plot (80M BW_Ch.518598_QPSK)



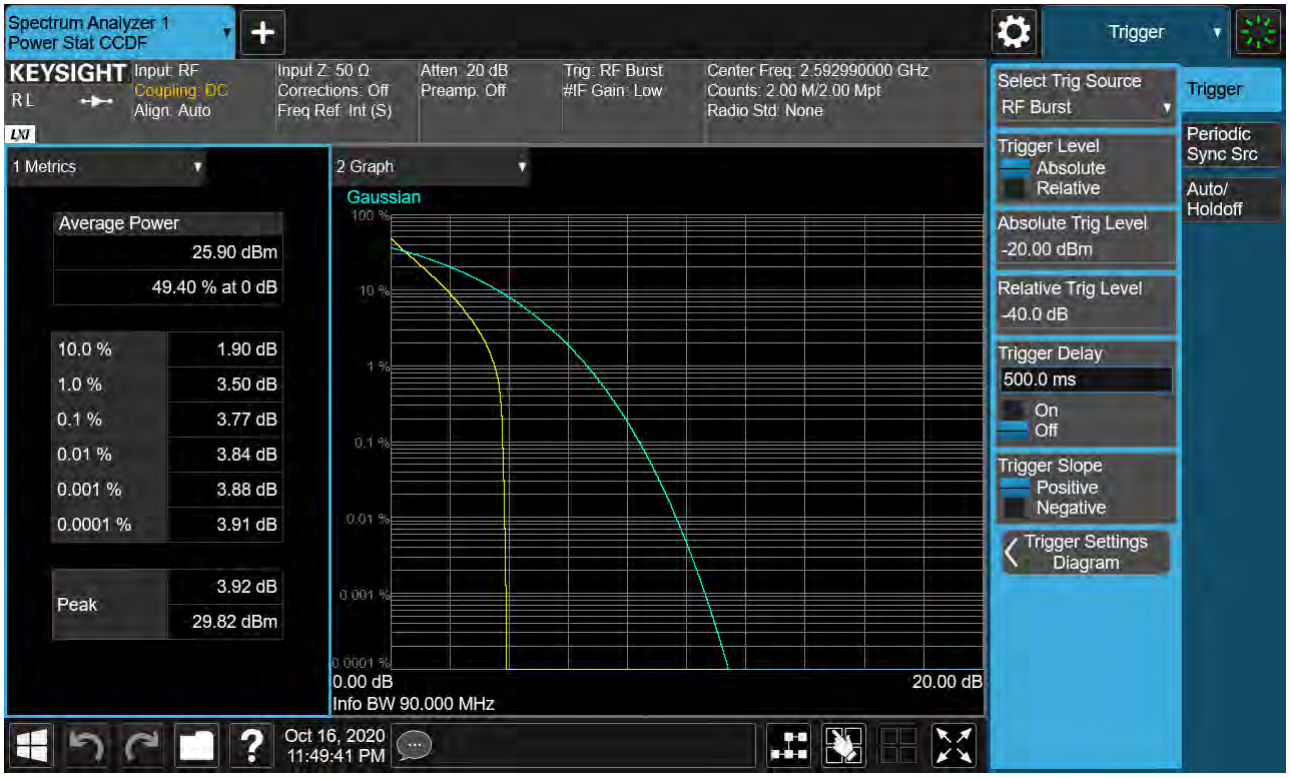
Sub6 n41. PAR Plot (80M BW_Ch.518598_16QAM)



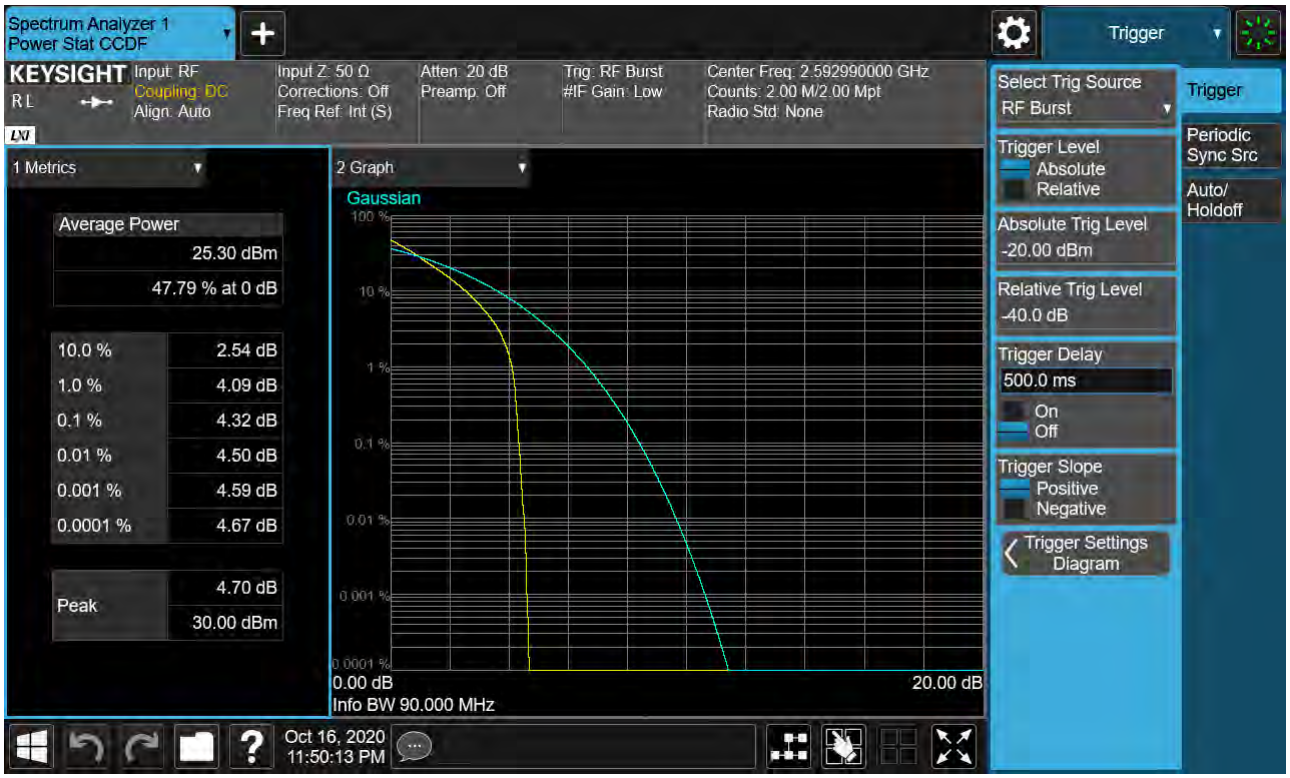
Sub6 n41. PAR Plot (80M BW_Ch.518598_64QAM)

Sub6 n41. PAR Plot (80M BW_Ch.518598_256QAM)

Sub6 n41. PAR Plot (90M BW_Ch.518598_BPSK)



Sub6 n41. PAR Plot (90M BW_Ch.518598_QPSK)

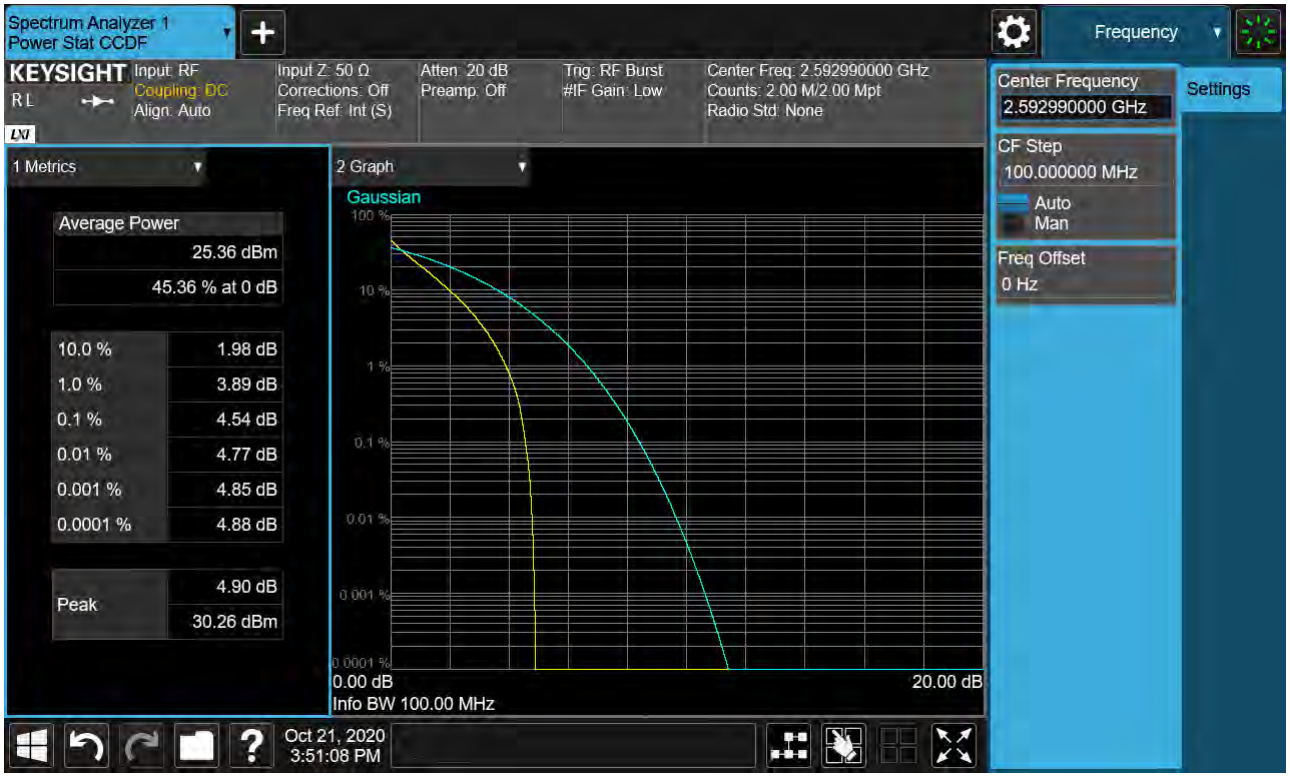


Sub6 n41. PAR Plot (90M BW_Ch.518598_16QAM)

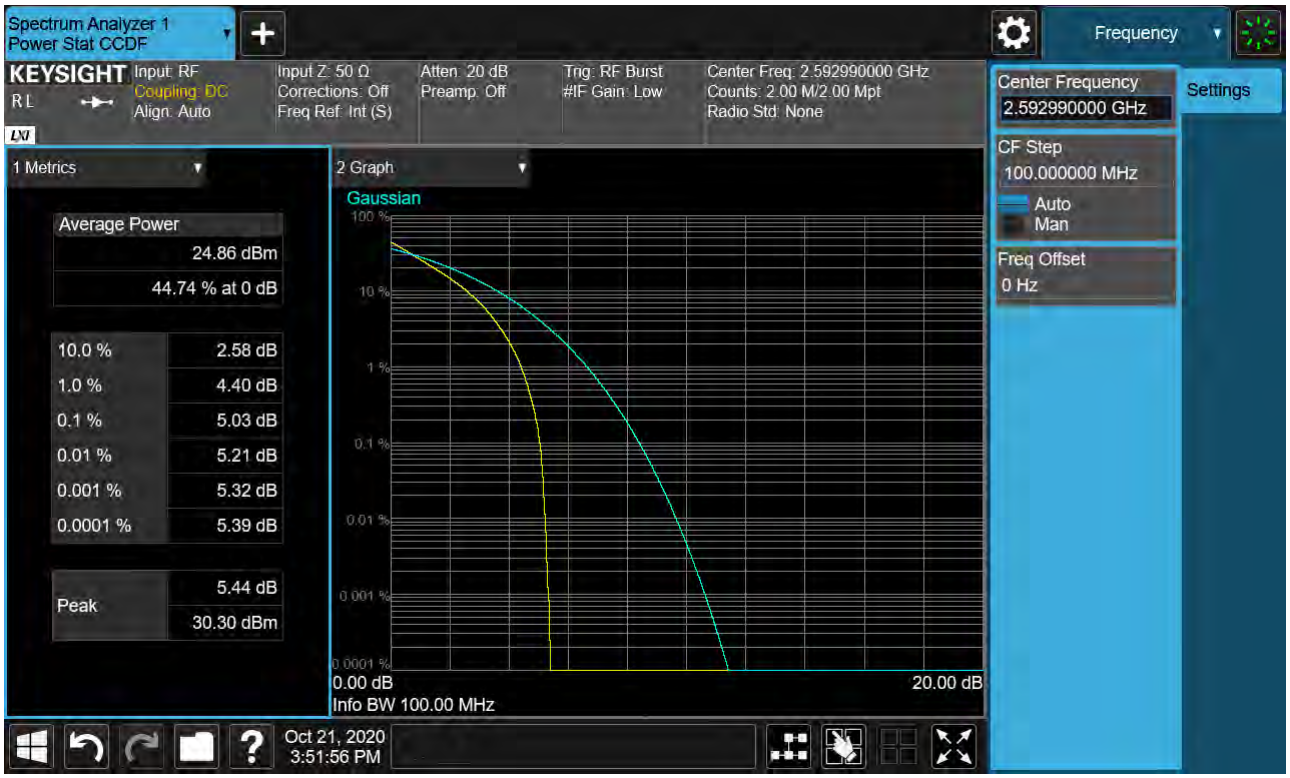
Sub6 n41. PAR Plot (90M BW_Ch.518598_64QAM)

Sub6 n41. PAR Plot (90M BW_Ch.518598_256QAM)

Sub6 n41. PAR Plot (100M BW_Ch.518598_BPSK)



Sub6 n41. PAR Plot (100M BW_Ch.518598_QPSK)

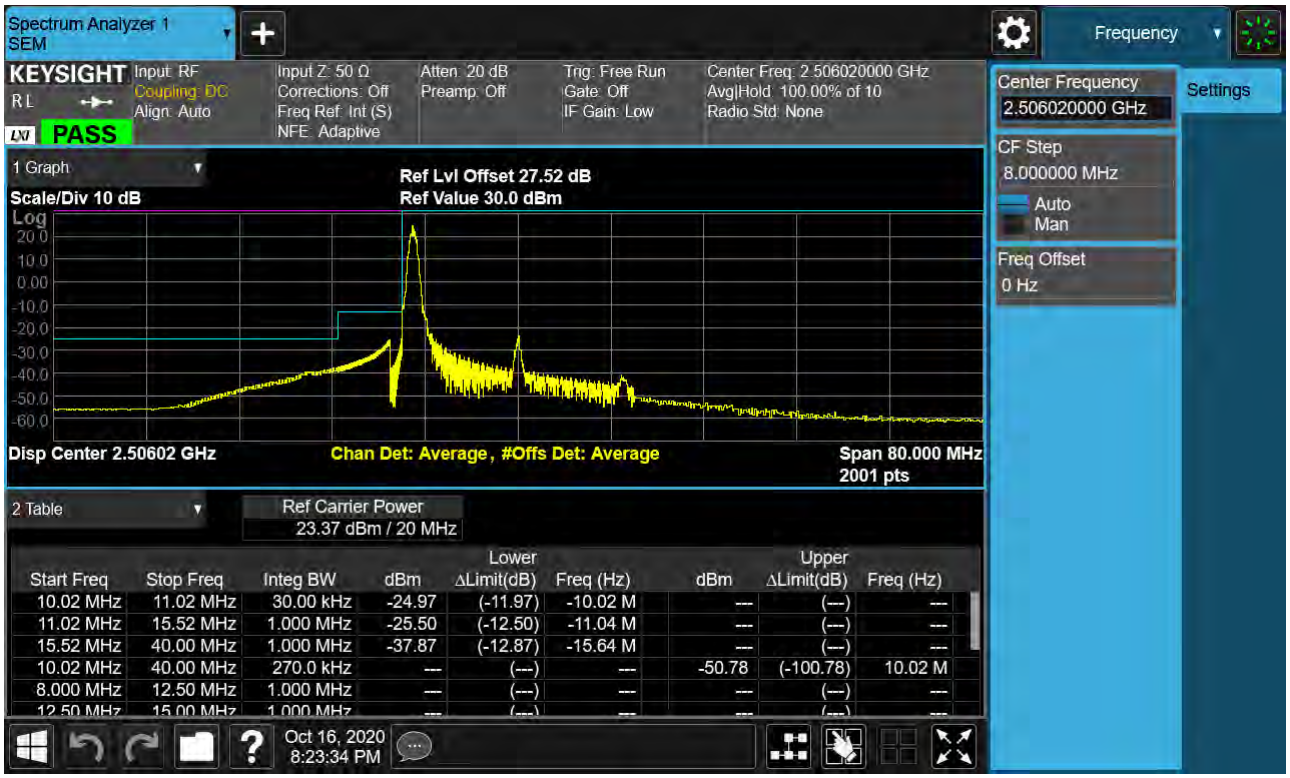


Sub6 n41. PAR Plot (100M BW_Ch.518598_16QAM)

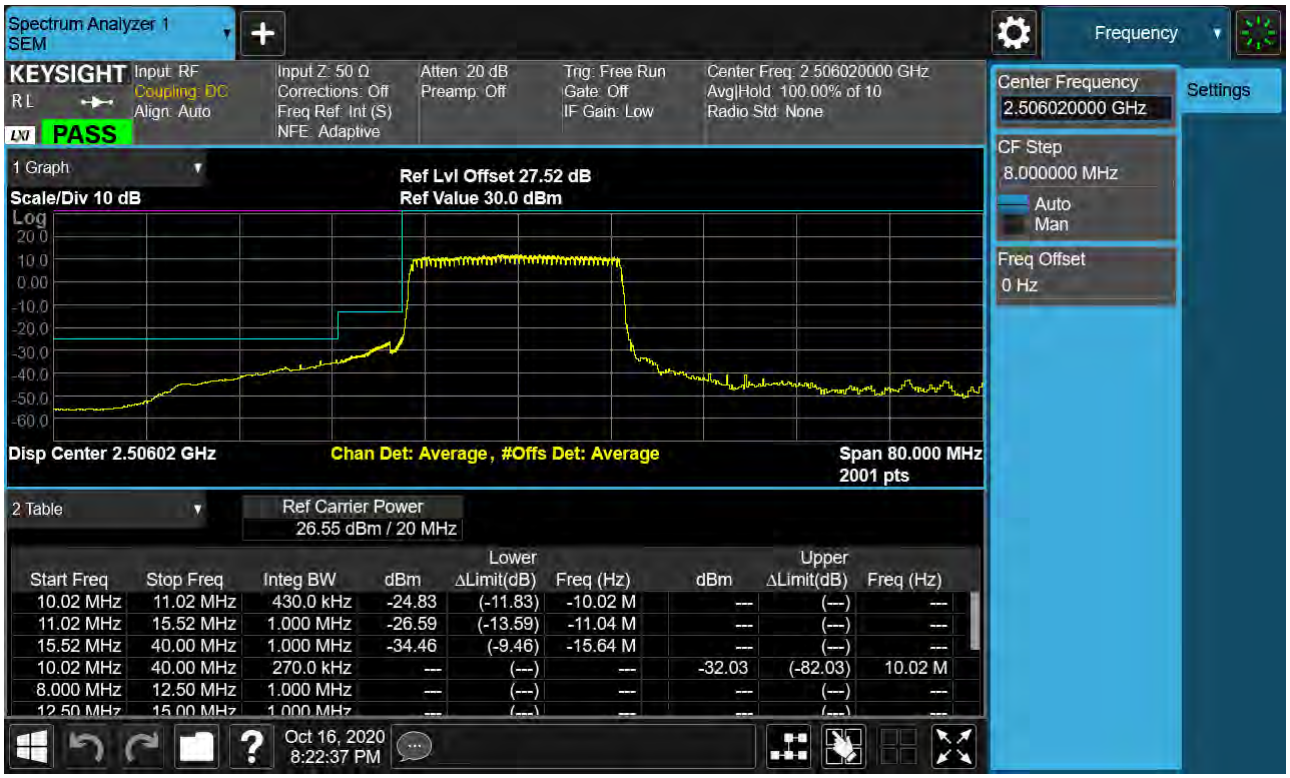
Sub6 n41. PAR Plot (100M BW_Ch.518598_64QAM)

Sub6 n41. PAR Plot (100M BW_Ch.518598_256QAM)

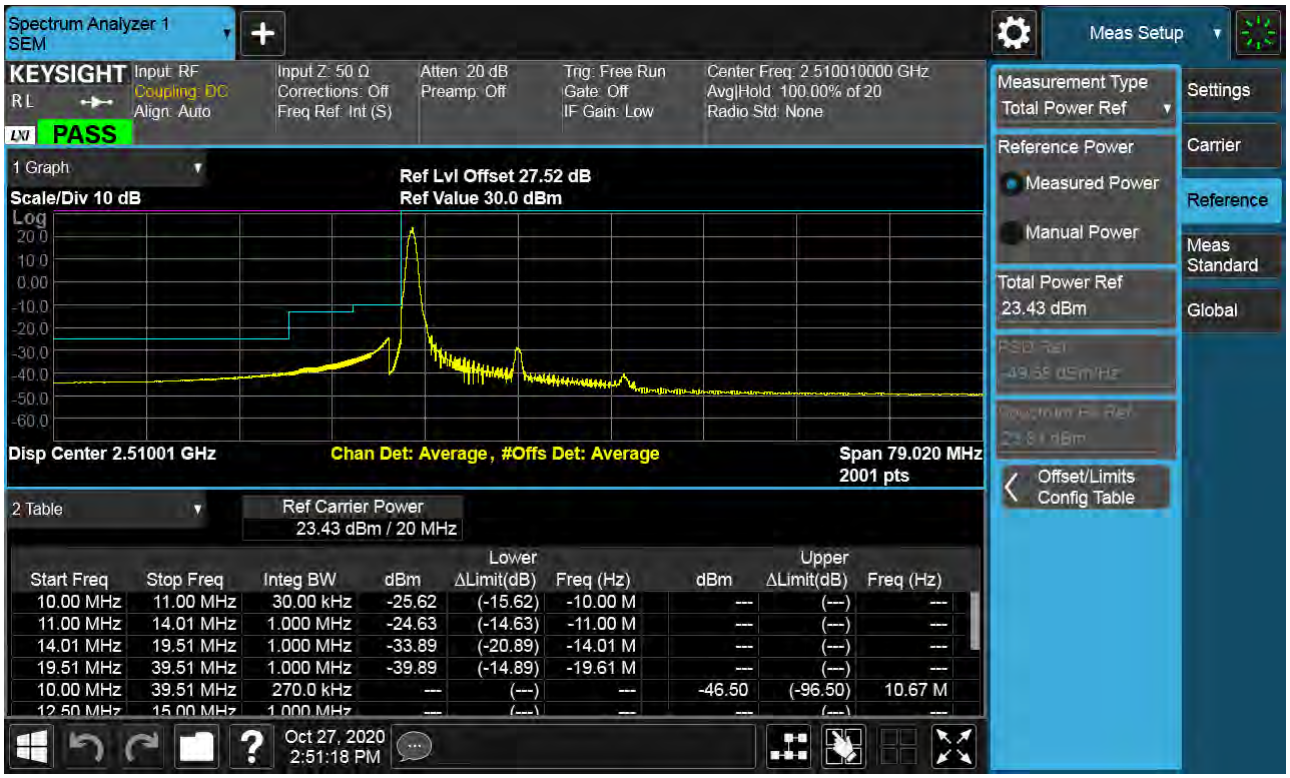
Sub6 n41. Low Channel Edge Plot (20 MHz Ch.501204 BPSK RB 1)-1



Sub6 n41. Low Channel Edge Plot (20 MHz Ch.501204 BPSK)-1

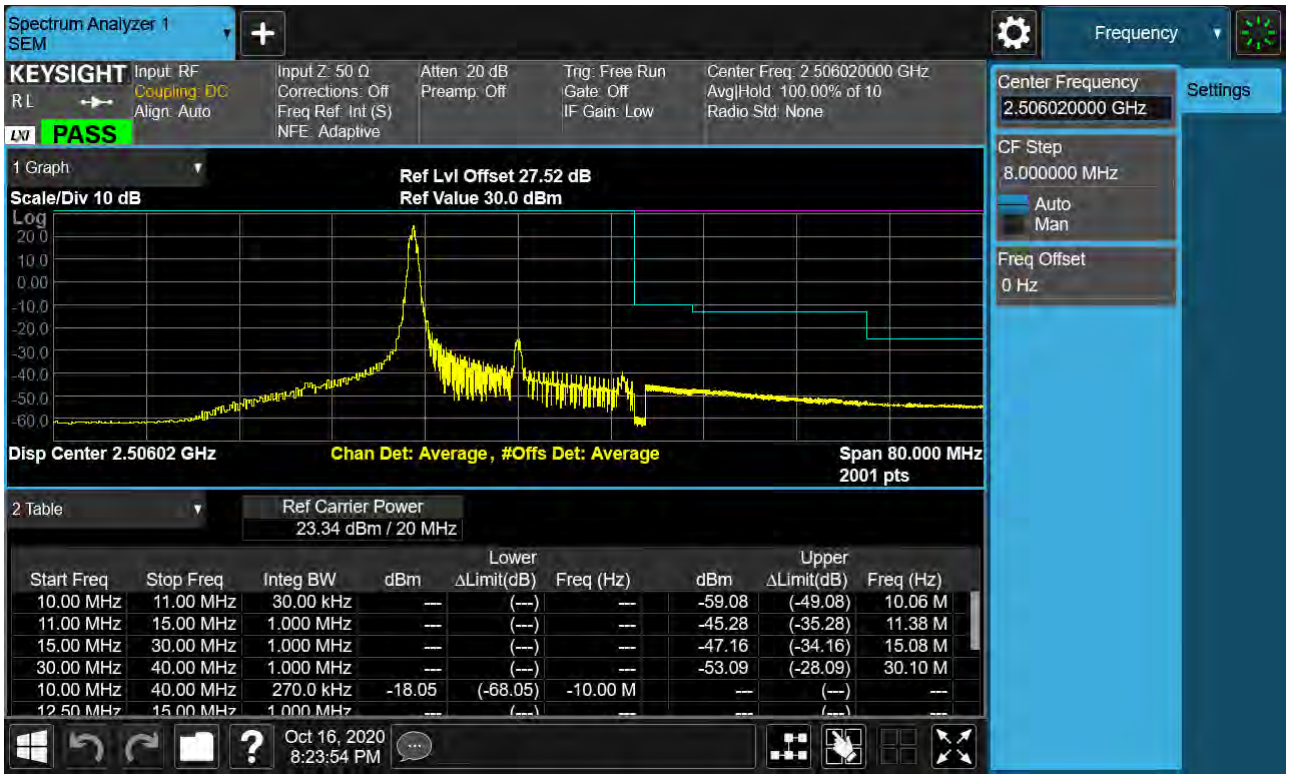


Sub6 n41. Low Channel Edge Plot (20 MHz Ch.502002 BPSK RB 1)-1

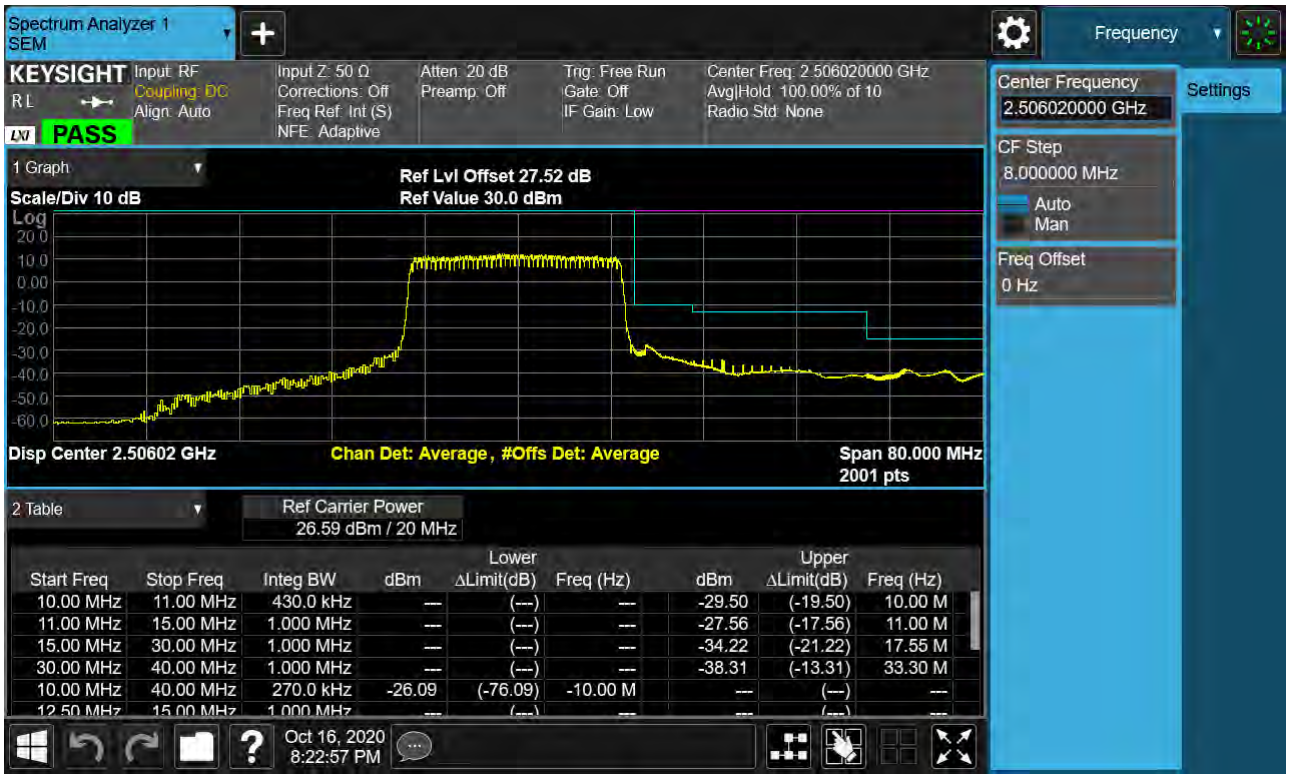


Sub6 n41. Low Channel Edge Plot (20 MHz Ch. 502002 BPSK)-1

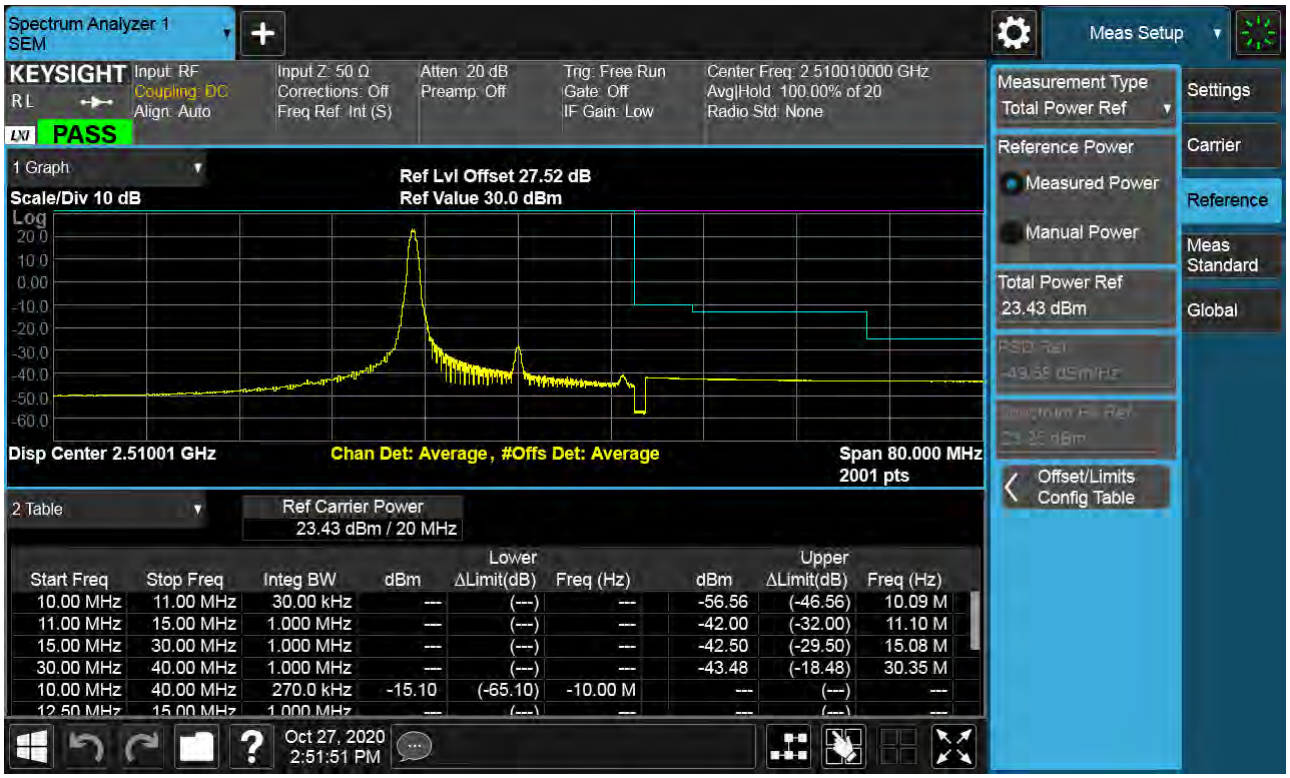
Sub6 n41. Low Channel Edge Plot (20 MHz Ch.501204 BPSK_RB1)-2



Sub6 n41. Low Channel Edge Plot (20 MHz Ch.501204 BPSK)-2



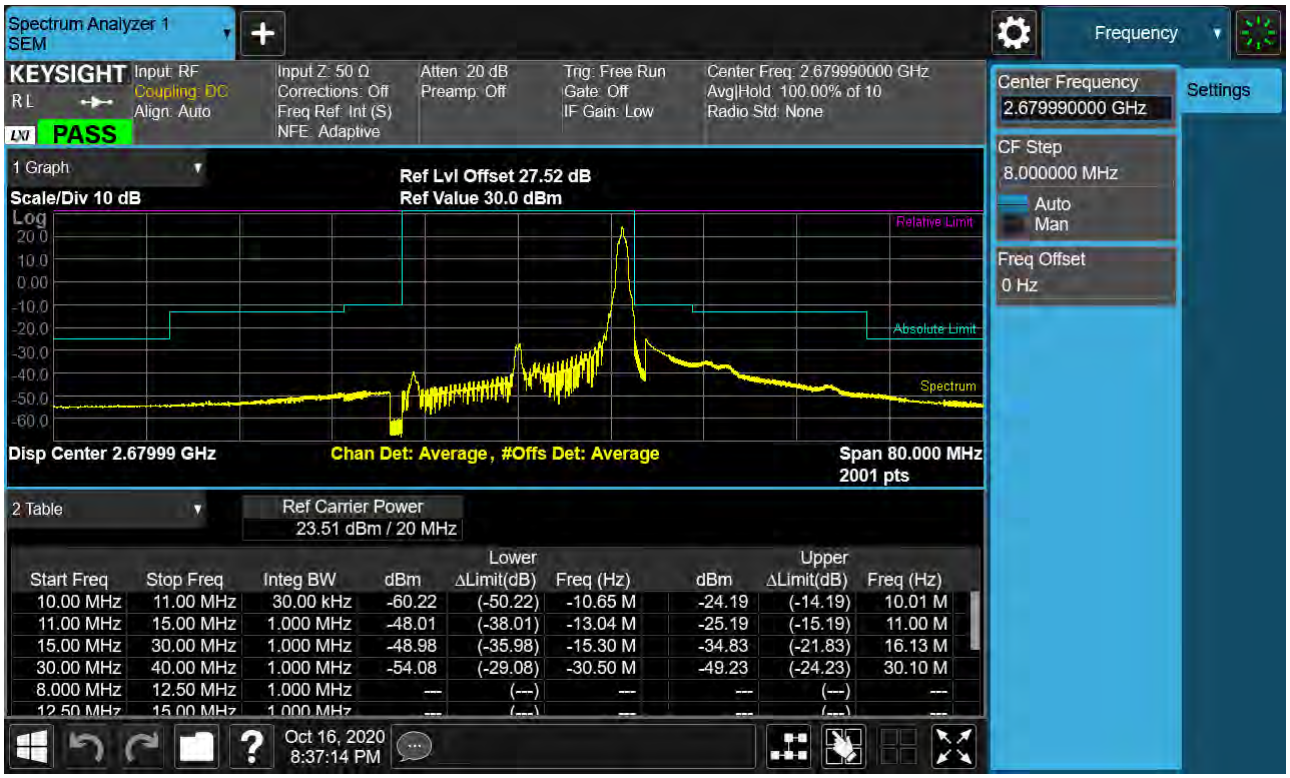
Sub6 n41. Low Channel Edge Plot (20 MHz Ch.502002 BPSK_RB1)-2



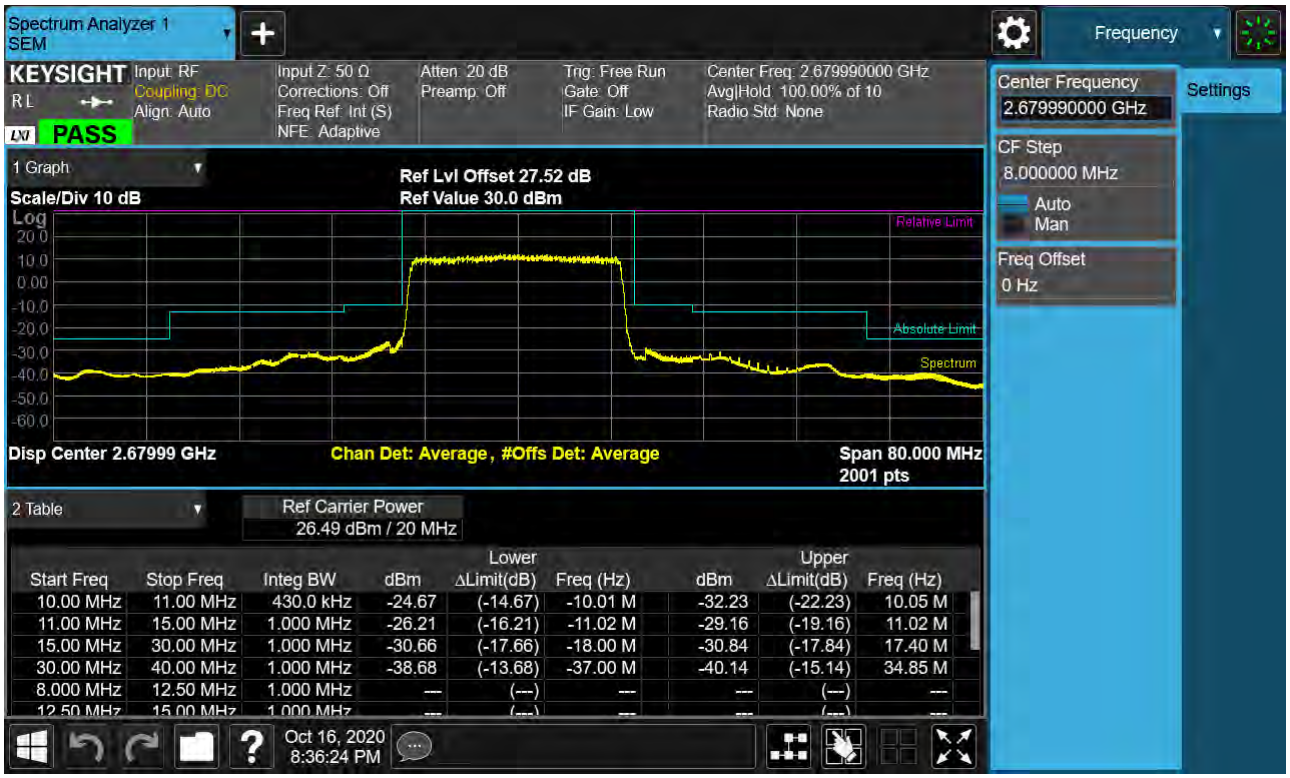
Sub6 n41. Low Channel Edge Plot (20 MHz Ch.502002 BPSK)-2

Sub6 n41. Mid Channel Edge Plot (20 MHz Ch.518598 BPSK)

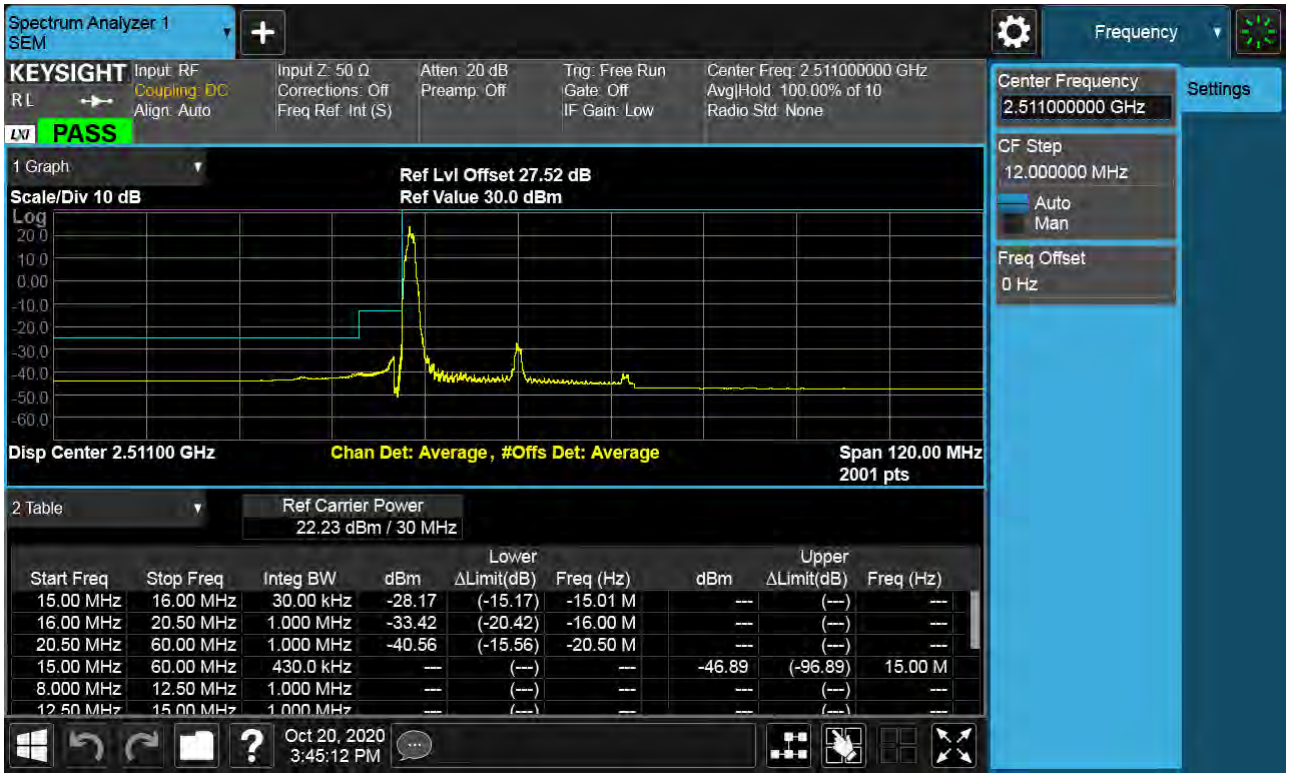
Sub6 n41. High Channel Edge Plot (20 MHz Ch.535998 BPSK RB 1)



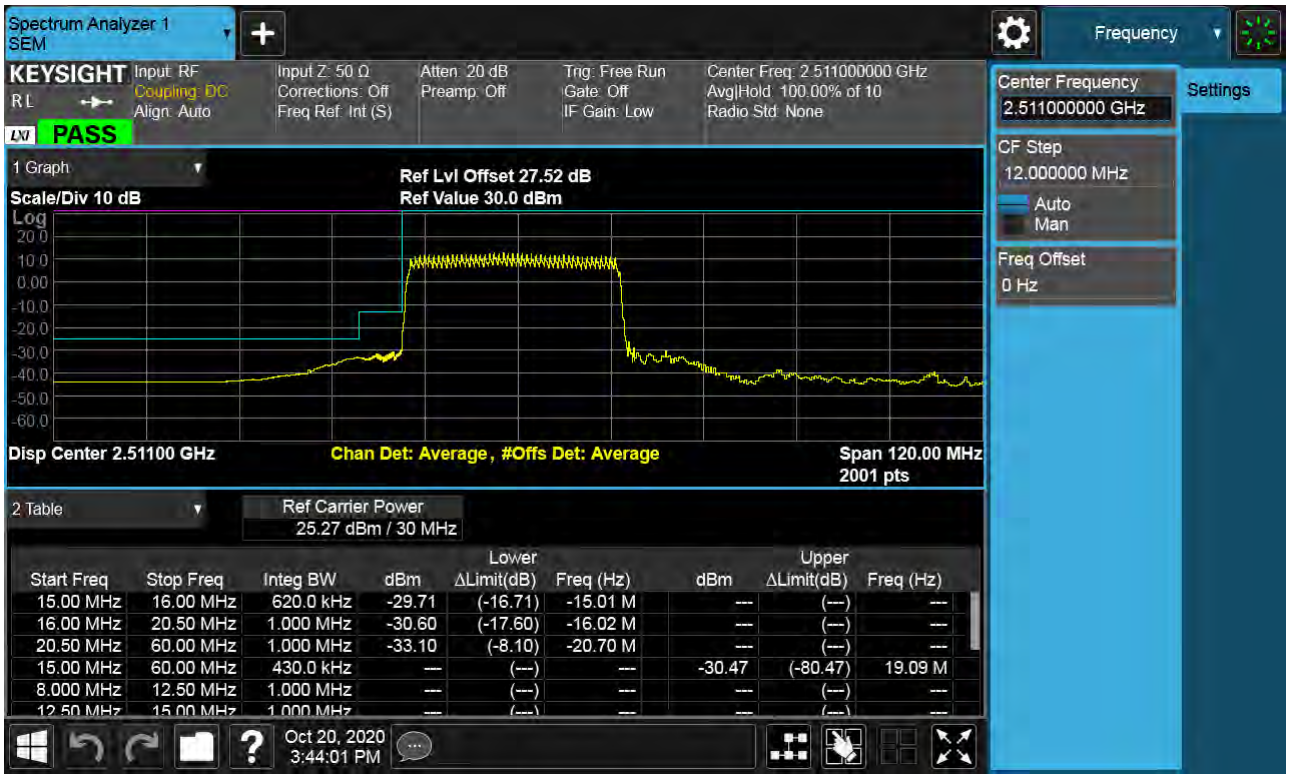
Sub6 n41. High Channel Edge Plot (20 MHz Ch.535998 BPSK)



Sub6 n41. Low Channel Edge Plot (30 MHz Ch.502200 BPSK RB 1)-1



Sub6 n41. Low Channel Edge Plot (30 MHz Ch.502200 BPSK)-1



Sub6 n41. Low Channel Edge Plot (30 MHz Ch.503000 BPSK RB 1)-1