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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:
January 05, 2022

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

Report No.: HCT-RF-2201-FC032

FCC ID:	**A3LSMA536V**
APPLICANT:	**SAMSUNG Electronics Co., Ltd.**

Model(s):	SM-A536V
EUT Type:	Mobile phone
FCC Classification:	PCS Licensed Transmitter Held to Ear (PCE)
FCC Rule Part(s):	§24, §2

Mode (MHz)	Tx Frequency (MHz)	Emission Designator	Modulation	EIRP	
				Max. Power (W)	Max. Power (dBm)
Sub6 n2 (5)	1852.5 - 1907.5	4M52G7D	PI/2 BPSK	0.095	19.78
		4M54G7D	QPSK	0.090	19.56
		4M52W7D	16QAM	0.077	18.84
		4M49W7D	64QAM	0.060	17.78
		4M55W7D	256QAM	0.037	15.73
Sub6 n2 (10)	1855.0 - 1905.0	8M99G7D	PI/2 BPSK	0.110	20.40
		8M99G7D	QPSK	0.104	20.15
		9M05W7D	16QAM	0.086	19.37
		8M98W7D	64QAM	0.064	18.06
		8M99W7D	256QAM	0.040	16.04
Sub6 n2 (15)	1857.5 - 1902.5	13M4G7D	PI/2 BPSK	0.114	20.55
		13M4G7D	QPSK	0.111	20.44
		13M4W7D	16QAM	0.092	19.62
		13M5W7D	64QAM	0.065	18.14
		13M4W7D	256QAM	0.040	16.02
Sub6 n2 (20)	1860.0 - 1900.0	17M8G7D	PI/2 BPSK	0.095	19.80
		17M9G7D	QPSK	0.095	19.77
		17M8W7D	16QAM	0.077	18.89
		17M9W7D	64QAM	0.061	17.82
		17M8W7D	256QAM	0.040	15.97

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 : Jung Ki Lim
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)

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Version

TEST REPORT NO.	DATE	DESCRIPTION
HCT-RF-2201-FC032	January 05, 2022	- First Approval Report

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

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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:	A3LSMA536V
Application Type:	Certification
FCC Classification:	PCS Licensed Transmitter Held to Ear (PCE)
FCC Rule Part(s):	§24, §2
EUT Type:	Mobile phone
Model(s):	SM-A536V
SCS(kHz):	15
Bandwidth(MHz):	5, 10, 15, 20
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:	1852.5 MHz – 1907.5 MHz (Sub6 n2(5 MHz)) 1855.0 MHz – 1905.0 MHz (Sub6 n2(10 MHz)) 1857.5 MHz – 1902.5 MHz (Sub6 n2(15 MHz)) 1860.0 MHz – 1900.0 MHz (Sub6 n2(20 MHz))
Date(s) of Tests:	November 29, 2021 ~ January 03, 2022
Serial number:	Radiated: R3CRA0Y6K5E Conducted: 594d1d5d23257ece

2. INTRODUCTION

2.1. DESCRIPTION OF EUT

The EUT was a Mobile Phone with GSM/GPRS/EGPRS/UMTS and LTE, Sub6.

It also supports IEEE 802.11 a/b/g/n/ac (20/40/80), Bluetooth, BT LE, NFC, 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
Band 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 1 MHz
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 1 GHz, 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 = 100 kHz for emissions below 1 GHz and 1 MHz for emissions above 1 GHz
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 1 GHz, 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;

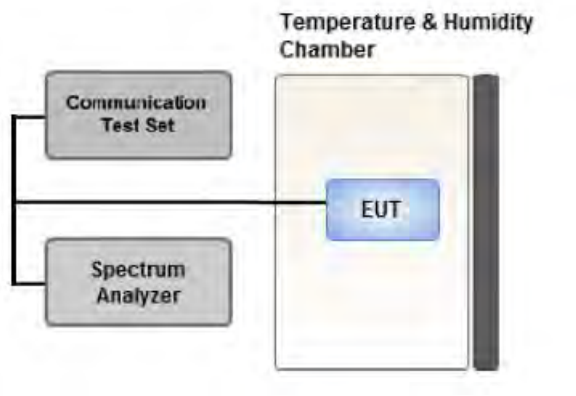
   $$Result_{(dBm)} = Pg_{(dBm)} - cable\ loss_{(dB)} + antenna\ gain_{(dBi)}$$

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

   If the fundamental frequency is below 1 GHz, 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:

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

Test Settings(Peak Power)

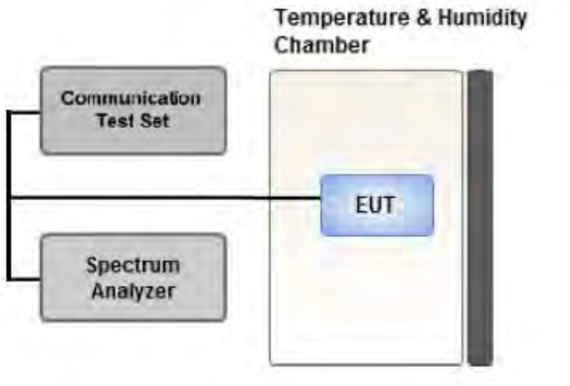
The measurement instrument must have a RBW that is greater than or equal to the OBW of the signal to be measured and a VBW ≥ 3 × RBW.

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.

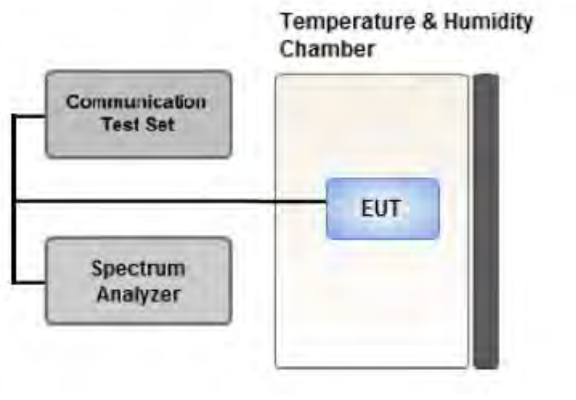
The conducted occupied bandwidth used the power splitter via EUT RF power connector between simulation base station and spectrum analyzer.

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 26 dB 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

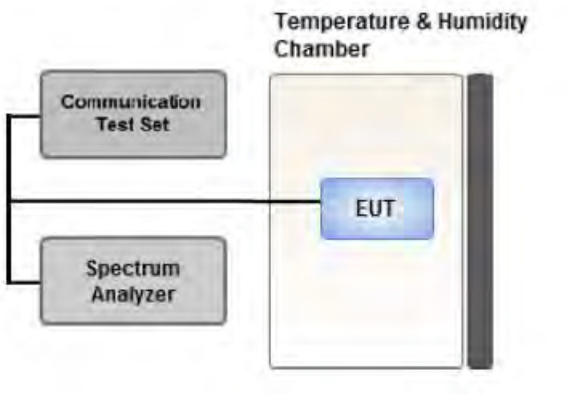
Test Overview

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 = Average
5. Sweep time = auto
6. Number of points in sweep ≥ 2 x Span / RBW

3.7 BAND 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 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. 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. RBW > 1 % of the emission bandwidth
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

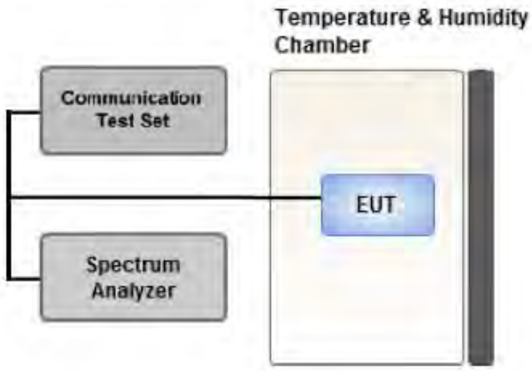
According to FCC 22.917, 24.238, 27.53 specified that power of any emission outside of The authorized operating frequency ranges must be attenuated below the transmitting power (P) by a factor of at least 43 + 10 log(P) dB.

In the 1 MHz bands immediately outside and adjacent to the frequency block a resolution bandwidth of at least one percent of the emission bandwidth of the fundamental emission of the transmitter may be employed.

All measurements were done at 2 channels(low and high operational frequency range.

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.
  Mode: NSA,SA
  Worst case: NSA (5A-n2A)
  Mode : Stand alone, Stand alone + External accessories (Earphone, AC adapter, etc)
  Worst case : Stand alone
- We were performed the RSE test in condition of co-location. There has no significant emission raised.
  Mode : WWAN + WLAN 5 GHz + BT (Worst case : Stand alone)
- Radiated Spurious emissions are measured while operating in EN-DC mode with Sub 6 NR carrier as well as an LTE carrier (anchor).
  All EN-DC mode of operation were investigated and the worst case configuration results are reported.
  (Worst case: 5A-n2A (BW 10 MHz))
- All RB sizes, offsets of operation were investigated and the worst case configuration results are reported.
  Please refer to the table below.
- In the case of radiated spurious emissions, all bandwidth of operation were investigated and the worst case bandwidth results are reported.
  (Worst case : 15 MHz)

[Worst case]

Test Description	Modulation	RB size	RB offset	Axis
Effective Isotropic Radiated Power	PI/2 BPSK, QPSK, 16QAM, 64QAM, 256QAM	See Section 8.1		Z
Radiated Spurious Emissions	PI/2 BPSK	1	39	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 modes of operation were investigated and the worst case configuration results are reported.
  Mode: NSA,SA
  Worst case: NSA (5A-n2A)
- All RB sizes, offsets of operation were investigated and the worst case configuration results are reported.
  Please refer to the table below.

[Worst case]

Test Description	Modulation	Bandwidth (MHz)	Frequency	RB size	RB offset
Occupied Bandwidth	PI/2 BPSK, QPSK, 16QAM, 64QAM, 256QAM	5, 10, 15, 20	Mid	Full RB	0
Peak-To-Average Ratio	PI/2 BPSK, QPSK, 16QAM, 64QAM, 256QAM	5, 10, 15, 20	Mid	Full RB	0
Band Edge	PI/2 BPSK	5	Low	1	0
			High	1	24
		10	Low	1	0
			High	1	51
		15	Low	1	0
			High	1	78
		20	Low	1	0
			High	1	105
		5, 10, 15, 20	Low, High	Full RB	0
Spurious and Harmonic Emissions at Antenna Terminal	PI/2 BPSK	5, 10, 15, 20	Low, Mid, High	1	1

4. LIST OF TEST EQUIPMENT

Equipment	Model	Manufacture	Serial No.	Due to Calibration	Calibration Interval
Precision Dipole Antenna	UHAP	Schwarzbeck	01273	05/30/2022	Biennial
Precision Dipole Antenna	UHAP	Schwarzbeck	01274	05/30/2022	Biennial
Horn Antenna(1~18GHz)	BBHA 9120D	Schwarzbeck	02289	05/08/2022	Biennial
Horn Antenna(1~18GHz)	BBHA 9120D	Schwarzbeck	9120D-1299	05/04/2022	Biennial
Horn Antenna(15~40GHz)	BBHA 9170	Schwarzbeck	BBHA9170342	10/13/2022	Biennial
Horn Antenna(15~40GHz)	BBHA 9170	Schwarzbeck	BBHA9170124	02/11/2022	Biennial
Loop Antenna(9kHz~30 MHz)	FMZB1513	Rohde & Schwarz	1513-175	05/18/2022	Biennial
Bilog Antenna	VULB9160	Schwarzbeck	3150	03/03/2023	Biennial
Hybrid Antenna	VULB9160	Schwarzbeck	760	02/22/2023	Biennial
High Pass Filter	WHKX10-900-1000-15000-40SS	Wainwright Instruments	15	06/15/2022	Annual
High Pass Filter	WHKX10-2700-3000-18000-40SS	Wainwright Instruments	145	06/15/2022	Annual
High Pass Filter	WHNX6-4740-6000-26500-40CC	Wainwright Instruments	11	06/15/2022	Annual
LOW NOISE AMP (100 MHz ~ 18GHz)	CBLU1183540B-01	CERNEX	26822	06/15/2022	Annual
Power Amplifier	CBL18265035	CERNEX	22966	12/02/2022	Annual
Power Amplifier	CBL26405040	CERNEX	25956	03/23/2022	Annual
DC Power Supply	E3632A	Hewlett Packard	MY40004427	09/15/2022	Annual
Power Splitter(DC~26.5 GHz)	11667B	Hewlett Packard	11275	04/07/2022	Annual
Chamber	SU-642	ESPEC	93008124	03/15/2022	Annual
Signal Analyzer(10Hz~26.5GHz)	N9020A	Agilent	MY51110063	04/22/2022	Annual
ATTENUATOR(20dB)	8493C	Hewlett Packard	17280	06/01/2022	Annual
Spectrum Analyzer(10Hz~40GHz)	FSV40	REOHDE & SCHWARZ	101436	03/02/2022	Annual
Base Station	8960 (E5515C)	Agilent	MY48360800	08/18/2022	Annual
Wideband Radio Communication Tester	MT8821C	Anritsu Corp.	6262287700	05/25/2022	Annual
Wideband Radio Communication Tester	MT8000A	Anritsu Corp.	6262302511	05/26/2022	Annual
SIGNAL GENERATOR (100kHz~40GHz)	SMB100A	REOHDE & SCHWARZ	177633	07/05/2022	Annual
Signal Analyzer(5Hz~40.0GHz)	N9030B	KEYSIGHT	MY55480167	06/02/2022	Annual
4-Way Divider	ZC4PD-K1844+	Mini-Circuits	942907	09/27/2022	Annua
FCC LTE Mobile Conducted RF Automation Test Software	-	HCT CO., LTD.,	-	-	-

Note:

1. Equipment listed above that has a calibration due date during the testing period, the testing is completed before equipment expiration date.
2. Espectially, all antenna for measurement is calibrated in accordance with the requirements of C63.5 (Version : 2017).

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 (Confidence level about 95 %, *k*=2)
Radiated Disturbance (9 kHz ~ 30 MHz)	3.40 (Confidence level about 95 %, *k*=2)
Radiated Disturbance (30 MHz ~ 1 GHz)	4.80 (Confidence level about 95 %, *k*=2)
Radiated Disturbance (1 GHz ~ 18 GHz)	5.70 (Confidence level about 95 %, *k*=2)
Radiated Disturbance (18 GHz ~ 40 GHz)	5.05 (Confidence level about 95 %, *k*=2)

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, §24.238(a)	< 43 + 10log10 (P[Watts]) at Band Edge and for all out-of-band emissions	PASS
Conducted Output Power	§2.1046	N/A	**See Note1**
Peak- to- Average Ratio	§24.232(d)	< 13 dB	PASS
Frequency stability / variation of ambient temperature	§24.235	Emission must remain in band	PASS

Note:

1. See SAR Report
2. All conducted tests were 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	§24.232(c)	< 2 Watts max. EIRP	PASS
Radiated Spurious and Harmonic Emissions	§2.1053, §24.238(a)	< 43 + 10log10 (P[Watts]) for all out-of band emissions	PASS

Note:

1. Radiateded tests were tested using 5G Wireless Tester.

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
20175	1,732.50	-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)

PSK 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		RB	
								W	W	dBm	Size	Offset
1852.5	Sub6 n2/ 5 MHz [15 kHz]	PI/2 BPSK	-21.89	11.83	10.10	2.15	V	< 2.00	0.095	19.78	1	12
		QPSK	-22.11	11.61	10.10	2.15	V		0.090	19.56		
		16-QAM	-22.83	10.89	10.10	2.15	V		0.077	18.84		
		64-QAM	-24.00	9.72	10.10	2.15	V		0.059	17.67		
		256-QAM	-26.11	7.61	10.10	2.15	V		0.036	15.56		
1880.0		PI/2 BPSK	-21.27	11.92	9.98	2.25	V		0.092	19.65	1	12
		QPSK	-21.50	11.69	9.98	2.25	V		0.087	19.42		
		16-QAM	-22.23	10.96	9.98	2.25	V		0.074	18.69		
		64-QAM	-23.60	9.59	9.98	2.25	V		0.054	17.32		
		256-QAM	-25.70	7.49	9.98	2.25	V		0.033	15.22		
1907.5		PI/2 BPSK	-21.83	11.96	9.88	2.17	V		0.093	19.67	1	1
		QPSK	-22.06	11.73	9.88	2.17	V		0.088	19.44		
		16-QAM	-22.76	11.03	9.88	2.17	V		0.075	18.74		
		64-QAM	-23.72	10.07	9.88	2.17	V		0.060	17.78		
		256-QAM	-25.77	8.02	9.88	2.17	V		0.037	15.73		

Freq (MHz)	Mod/ Bandwidth [SCS (kHz)]	Modulation	Measured Level (dBm)	Substitute Level (dBm)	Ant. Gain(dBi)	C.L	Pol	Limit	EIRP		RB	
								W	W	dBm	Size	Offset
1855.0	Sub6 n2/ 10 MHz [15 kHz]	PI/2 BPSK	-22.23	11.18	10.08	2.17	V	< 2.00	0.081	19.09	1	26
		QPSK	-22.40	11.01	10.08	2.17	V		0.078	18.92		
		16-QAM	-23.23	10.18	10.08	2.17	V		0.064	18.09		
		64-QAM	-24.25	9.16	10.08	2.17	V		0.051	17.07		
		256-QAM	-26.30	7.11	10.08	2.17	V		0.032	15.02		
1880.0		PI/2 BPSK	-21.37	11.82	9.98	2.25	V		0.090	19.55	1	26
		QPSK	-21.48	11.71	9.98	2.25	V		0.088	19.44		
		16-QAM	-22.25	10.94	9.98	2.25	V		0.074	18.67		
		64-QAM	-23.66	9.53	9.98	2.25	V		0.053	17.26		
		256-QAM	-25.65	7.54	9.98	2.25	V		0.034	15.27		
1905.0		PI/2 BPSK	-21.02	12.70	9.89	2.19	V		0.110	20.40	1	1
		QPSK	-21.27	12.45	9.89	2.19	V		0.104	20.15		
		16-QAM	-22.05	11.67	9.89	2.19	V		0.086	19.37		
		64-QAM	-23.36	10.36	9.89	2.19	V		0.064	18.06		
		256-QAM	-25.38	8.34	9.89	2.19	V		0.040	16.04		

Freq (MHz)	Mod/ Bandwidth [SCS (kHz)]	Modulation	Measured Level (dBm)	Substitute Level (dBm)	Ant. Gain(dBi)	C.L	Pol	Limit	EIRP		RB	
								W	W	dBm	Size	Offset
1857.5	Sub6 n2/ 15 MHz [15 kHz]	PI/2 BPSK	-22.48	10.77	10.06	2.17	V	< 2.00	0.074	18.66	1	39
		QPSK	-22.77	10.48	10.06	2.17	V		0.069	18.37		
		16-QAM	-23.43	9.82	10.06	2.17	V		0.059	17.71		
		64-QAM	-24.37	8.88	10.06	2.17	V		0.048	16.77		
		256-QAM	-26.18	7.07	10.06	2.17	V		0.031	14.96		
1880.0		PI/2 BPSK	-21.02	12.17	9.98	2.25	V		0.098	19.90	1	39
		QPSK	-21.26	11.93	9.98	2.25	V		0.093	19.66		
		16-QAM	-22.08	11.11	9.98	2.25	V		0.077	18.84		
		64-QAM	-23.57	9.62	9.98	2.25	V		0.054	17.35		
		256-QAM	-25.72	7.47	9.98	2.25	V		0.033	15.20		
1902.5		PI/2 BPSK	-20.79	12.85	9.90	2.20	V		0.114	20.55	1	39
		QPSK	-20.90	12.74	9.90	2.20	V		0.111	20.44		
		16-QAM	-21.72	11.92	9.90	2.20	V		0.092	19.62		
		64-QAM	-23.20	10.44	9.90	2.20	V		0.065	18.14		
		256-QAM	-25.32	8.32	9.90	2.20	V		0.040	16.02		

Freq (MHz)	Mod/ Bandwidth [SCS (kHz)]	Modulation	Measured Level (dBm)	Substitute Level (dBm)	Ant. Gain(dBi)	C.L	Pol	Limit	EIRP		RB	
								W	W	dBm	Size	Offset
1860.0	Sub6 n2/ 20 MHz [15 kHz]	PI/2 BPSK	-22.72	10.37	10.06	2.19	V	< 2.00	0.067	18.24	1	1
		QPSK	-22.89	10.20	10.06	2.19	V		0.064	18.07		
		16-QAM	-23.60	9.49	10.06	2.19	V		0.055	17.36		
		64-QAM	-24.75	8.34	10.06	2.19	V		0.042	16.21		
		256-QAM	-26.35	6.74	10.06	2.19	V		0.029	14.61		
1880.0		PI/2 BPSK	-21.12	12.07	9.98	2.25	V		0.095	19.80	1	53
		QPSK	-21.15	12.04	9.98	2.25	V		0.095	19.77		
		16-QAM	-22.07	11.12	9.98	2.25	V		0.077	18.85		
		64-QAM	-23.61	9.58	9.98	2.25	V		0.054	17.31		
		256-QAM	-25.58	7.61	9.98	2.25	V		0.034	15.34		
1900.0		PI/2 BPSK	-21.78	11.86	9.90	2.20	V		0.090	19.56	1	53
		QPSK	-21.79	11.85	9.90	2.20	V		0.090	19.55		
		16-QAM	-22.45	11.19	9.90	2.20	V		0.077	18.89		
		64-QAM	-23.52	10.12	9.90	2.20	V		0.061	17.82		
		256-QAM	-25.37	8.27	9.90	2.20	V		0.040	15.97		

8.2 RADIATED SPURIOUS EMISSIONS

- NR Band: N2
- LTE Band(Anchor): B5
- Bandwidth: 15 MHz
- Modulation: PI/2 BPSK
- Distance: 3 meters
- SCS: 15 kHz

Ch	Freq (MHz)	Measured Level (dBm)	Ant. Gain (dBi)	Substitute Level (dBm)	C.L	Pol	Result (dBm)	Limit (dBm)
371500 (1857.5)	3 715.00	-57.33	11.70	-57.65	3.18	H	-49.12	-13.00
	5 572.50	-60.18	12.06	-54.50	3.95	H	-46.39	-13.00
	7 430.00	-64.96	11.32	-50.64	4.46	V	-43.78	-13.00
376000 (1880.0)	3 760.00	-55.96	11.64	-56.19	3.16	H	-47.71	-13.00
	5 640.00	-58.34	12.00	-52.16	3.93	V	-44.09	-13.00
	7 520.00	-64.23	11.54	-49.78	4.51	H	-42.75	-13.00
380500 (1902.5)	3 805.00	-55.14	11.38	-55.57	3.18	H	-47.36	-13.00
	5 707.50	-56.60	11.78	-50.77	4.00	H	-42.99	-13.00
	7 610.00	-63.10	11.60	-49.19	4.54	H	-42.13	-13.00

Ch	Freq (MHz)	Measured Level (dBm)	Ant. Gain (dBi)	Substitute Level (dBm)	C.L	Pol	Result (dBm)	Limit (dBm)
20525 (836.5)	1673.00	-61.28	9.52	-70.93	2.03	V	-63.44	-13.00
	2509.50	-62.33	10.28	-67.31	2.51	V	-59.54	-13.00
	3346.00	-62.54	11.28	-65.32	2.99	V	-57.03	-13.00

8.3 PEAK-TO-AVERAGE RATIO

Band	Band Width	Frequency (MHz)	Modulation	Resource Block Size	Resource Block Offset	Data (dB)
Sub6 n2	5 MHz	1880.0	BPSK	25	0	3.77
			QPSK			4.80
			16-QAM			5.55
			64-QAM			5.87
			256-QAM			6.39
	10 MHz		BPSK	50		4.19
			QPSK			4.85
			16-QAM			5.66
			64-QAM			5.85
			256-QAM			6.44
	15 MHz		BPSK	75		3.80
			QPSK			4.85
			16-QAM			5.61
			64-QAM			5.89
			256-QAM			6.36
	20 MHz		BPSK	100		3.77
			QPSK			4.83
			16-QAM			5.63
			64-QAM			5.88
			256-QAM			6.39

Note:

1. Plots of the EUT's Peak- to- Average Ratio are shown Page 56 ~ 75.

8.4 OCCUPIED BANDWIDTH

Band	Band Width	Frequency (MHz)	Modulation	Resource Block Size	Resource Block Offset	Data (MHz)
Sub6 n2	5 MHz	1880.0	BPSK	25	0	4.5148
			QPSK			4.5357
			16-QAM			4.5177
			64-QAM			4.4894
			256-QAM			4.5519
	10 MHz		BPSK	50		8.9932
			QPSK			8.9929
			16-QAM			9.0466
			64-QAM			8.9803
			256-QAM			8.9849
	15 MHz		BPSK	75		13.441
			QPSK			13.425
			16-QAM			13.421
			64-QAM			13.450
			256-QAM			13.410
	20 MHz		BPSK	100		17.837
			QPSK			17.855
			16-QAM			17.824
			64-QAM			17.876
			256-QAM			17.841

Note:

1. Plots of the EUT's Occupied Bandwidth are shown Page 36 ~ 55.

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 n2	5	1852.5	0.8356	27.494	-74.819	-47.325	-13.00
		1880.0	7.5125	30.815	-79.750	-48.935	
		1907.5	0.8346	27.494	-77.620	-50.126	
	10	1855.0	7.4023	30.815	-77.749	-46.934	
		1880.0	7.5025	30.815	-77.869	-47.054	
		1905.0	0.8371	27.494	-78.978	-51.484	
	15	1857.5	7.4028	30.815	-77.618	-46.803	
		1880.0	7.4925	30.815	-76.953	-46.138	
		1902.5	0.8336	27.494	-76.426	-48.932	
	20	1860.0	7.4028	30.815	-76.178	-45.363	
		1880.0	0.8336	27.494	-75.023	-47.529	
		1900.0	0.8356	27.494	-72.694	-45.200	

Note:

1. Plots of the EUT's Conducted Spurious Emissions are shown Page 100 ~ 123.

2. Result (dBm) = Measurement Maximum Data (dBm) + Factor (dB)

3. Factor(dB) = Cable Loss + Attenuator + Power Splitter

Frequency Range (GHz)	Factor [dB]
0.03 – 1	27.494
1 – 5	30.200
5 – 10	30.815
10 – 15	31.340
15 – 20	31.713
Above 20	32.355

8.6 BAND EDGE

- Plots of the EUT's Band Edge are shown Page 76 ~ 99.

8.7 FREQUENCY STABILITY / VARIATION OF AMBIENT TEMPERATURE

- BandWidth: 5 MHz
- Voltage(100 %): 4.200 VDC
- Batt. Endpoint: 3.400 VDC
- LIMIT: Emission must remain in band

Test. Frequncy (MHz)	Voltage (%)	Temp. (℃)	Frequency (Hz)	Frequency Error (Hz)	Deviation (%)	ppm
1852.5	100 %	+20(Ref)	1852 500 008	0.0	0.000 000	0.000
	100 %	-30	1852 500 019	10.5	0.000 001	0.006
	100 %	-20	1852 500 023	14.4	0.000 001	0.008
	100 %	-10	1852 500 020	12.1	0.000 001	0.007
	100 %	0	1852 500 022	14.0	0.000 001	0.008
	100 %	+10	1852 500 013	4.5	0.000 000	0.002
	100 %	+30	1852 500 019	11.2	0.000 001	0.006
	100 %	+40	1852 500 017	8.4	0.000 000	0.005
	100 %	+50	1852 500 012	4.2	0.000 000	0.002
	Batt. Endpoint	+20	1852 500 022	13.3	0.000 001	0.007
1907.5	100 %	+20(Ref)	1907 500 016	0.0	0.000 000	0.000
	100 %	-30	1907 500 021	4.7	0.000 000	0.002
	100 %	-20	1907 500 031	15.2	0.000 001	0.008
	100 %	-10	1907 500 024	7.5	0.000 000	0.004
	100 %	0	1907 500 028	11.9	0.000 001	0.006
	100 %	+10	1907 500 031	14.4	0.000 001	0.008
	100 %	+30	1907 500 020	3.5	0.000 000	0.002
	100 %	+40	1907 500 023	7.3	0.000 000	0.004
	100 %	+50	1907 500 026	9.5	0.000 000	0.005
	Batt. Endpoint	+20	1907 500 022	5.5	0.000 000	0.003

▣ BandWidth: 10 MHz

▣ Voltage(100 %): 4.200 VDC

▣ Batt. Endpoint: 3.400 VDC

▣ LIMIT: Emission must remain in band

Test. Frequncy (MHz)	Voltage (%)	Temp. (℃)	Frequency (Hz)	Frequency Error (Hz)	Deviation (%)	ppm
1855.0	100 %	+20(Ref)	1855 000 012	0.0	0.000 000	0.000
	100 %	-30	1855 000 021	9.1	0.000 000	0.005
	100 %	-20	1855 000 028	16.2	0.000 001	0.009
	100 %	-10	1855 000 016	3.7	0.000 000	0.002
	100 %	0	1855 000 024	12.2	0.000 001	0.007
	100 %	+10	1855 000 028	16.1	0.000 001	0.009
	100 %	+30	1855 000 022	10.0	0.000 001	0.005
	100 %	+40	1855 000 016	3.8	0.000 000	0.002
	100 %	+50	1855 000 027	14.5	0.000 001	0.008
	Batt. Endpoint	+20	1855 000 018	6.2	0.000 000	0.003
1905.0	100 %	+20(Ref)	1905 000 009	0.0	0.000 000	0.000
	100 %	-30	1905 000 016	6.3	0.000 000	0.003
	100 %	-20	1905 000 021	11.7	0.000 001	0.006
	100 %	-10	1905 000 018	9.1	0.000 000	0.005
	100 %	0	1905 000 014	4.8	0.000 000	0.003
	100 %	+10	1905 000 025	16.0	0.000 001	0.008
	100 %	+30	1905 000 021	11.3	0.000 001	0.006
	100 %	+40	1905 000 025	15.2	0.000 001	0.008
	100 %	+50	1905 000 018	8.7	0.000 000	0.005
	Batt. Endpoint	+20	1905 000 020	10.5	0.000 001	0.005

▣ BandWidth: 15 MHz

▣ Voltage(100 %): 4.200 VDC

▣ Batt. Endpoint: 3.400 VDC

▣ LIMIT: Emission must remain in band

Test. Frequncy (MHz)	Voltage (%)	Temp. (℃)	Frequency (Hz)	Frequency Error (Hz)	Deviation (%)	ppm
1857.5	100 %	+20(Ref)	1857 500 015	0.0	0.000 000	0.000
	100 %	-30	1857 500 029	14.4	0.000 001	0.008
	100 %	-20	1857 500 021	6.1	0.000 000	0.003
	100 %	-10	1857 500 024	9.4	0.000 001	0.005
	100 %	0	1857 500 019	4.0	0.000 000	0.002
	100 %	+10	1857 500 026	11.9	0.000 001	0.006
	100 %	+30	1857 500 018	3.9	0.000 000	0.002
	100 %	+40	1857 500 030	15.5	0.000 001	0.008
	100 %	+50	1857 500 021	6.4	0.000 000	0.003
	Batt. Endpoint	+20	1857 500 027	12.9	0.000 001	0.007
1902.5	100 %	+20(Ref)	1902 500 005	0.0	0.000 000	0.000
	100 %	-30	1902 500 018	12.9	0.000 001	0.007
	100 %	-20	1902 500 017	11.5	0.000 001	0.006
	100 %	-10	1902 500 009	3.6	0.000 000	0.002
	100 %	0	1902 500 013	7.9	0.000 000	0.004
	100 %	+10	1902 500 010	4.6	0.000 000	0.002
	100 %	+30	1902 500 017	12.3	0.000 001	0.006
	100 %	+40	1902 500 011	5.7	0.000 000	0.003
	100 %	+50	1902 500 013	8.0	0.000 000	0.004
	Batt. Endpoint	+20	1902 500 014	8.5	0.000 000	0.004

▣ BandWidth: 20 MHz

▣ Voltage(100 %): 4.200 VDC

▣ Batt. Endpoint: 3.400 VDC

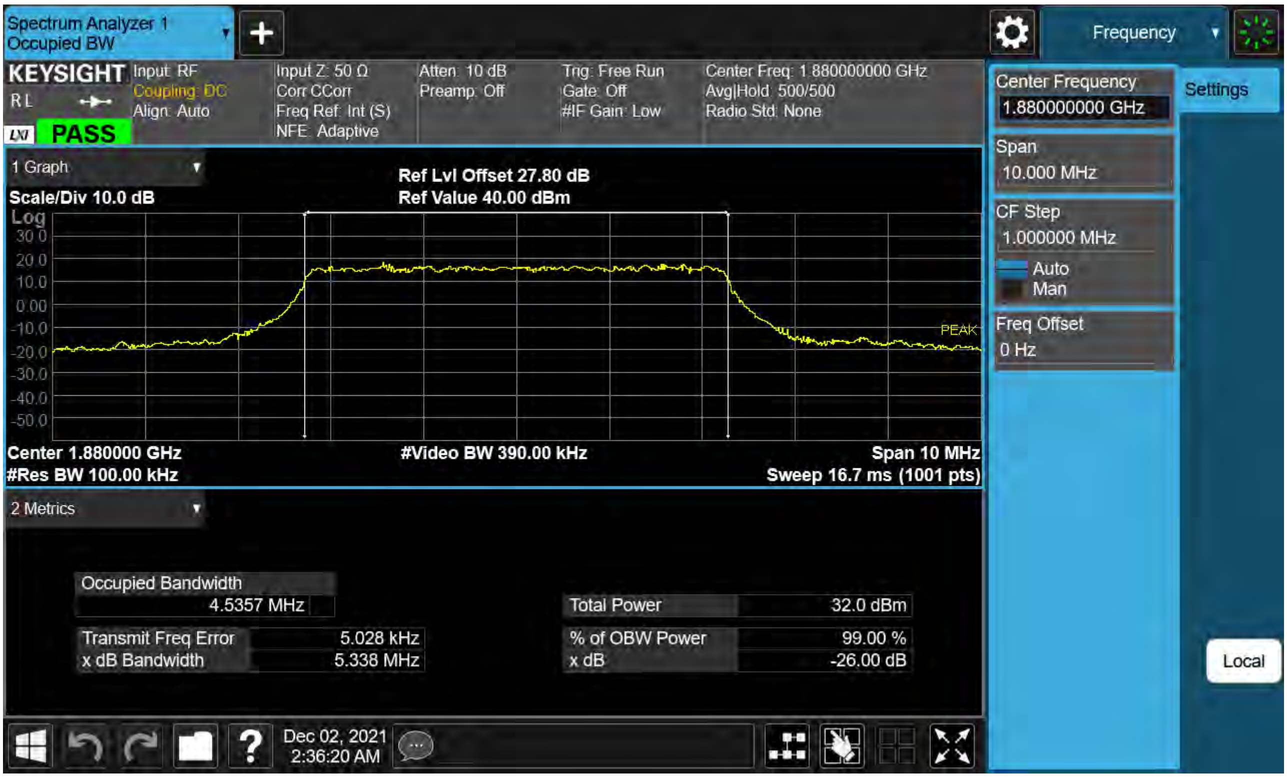
▣ LIMIT: Emission must remain in band

Test. Frequncy (MHz)	Voltage (%)	Temp. (℃)	Frequency (Hz)	Frequency Error (Hz)	Deviation (%)	ppm
1860.0	100 %	+20(Ref)	1860 000 016	0.0	0.000 000	0.000
	100 %	-30	1860 000 023	7.5	0.000 000	0.004
	100 %	-20	1860 000 024	8.4	0.000 000	0.005
	100 %	-10	1860 000 023	7.4	0.000 000	0.004
	100 %	0	1860 000 023	7.4	0.000 000	0.004
	100 %	+10	1860 000 032	16.2	0.000 001	0.009
	100 %	+30	1860 000 030	14.2	0.000 001	0.008
	100 %	+40	1860 000 026	10.7	0.000 001	0.006
	100 %	+50	1860 000 020	4.4	0.000 000	0.002
	Batt. Endpoint	+20	1860 000 023	7.3	0.000 000	0.004
1900.0	100 %	+20(Ref)	1900 000 015	0.0	0.000 000	0.000
	100 %	-30	1900 000 029	13.6	0.000 001	0.007
	100 %	-20	1900 000 022	7.1	0.000 000	0.004
	100 %	-10	1900 000 030	14.8	0.000 001	0.008
	100 %	0	1900 000 022	7.1	0.000 000	0.004
	100 %	+10	1900 000 026	10.8	0.000 001	0.006
	100 %	+30	1900 000 028	12.6	0.000 001	0.007
	100 %	+40	1900 000 028	12.8	0.000 001	0.007
	100 %	+50	1900 000 023	7.9	0.000 000	0.004
	Batt. Endpoint	+20	1900 000 020	4.4	0.000 000	0.002

9. TEST PLOTS

Sub6 n2. Occupied Bandwidth Plot (5 M BW Ch.376000 BPSK RB 25_0)

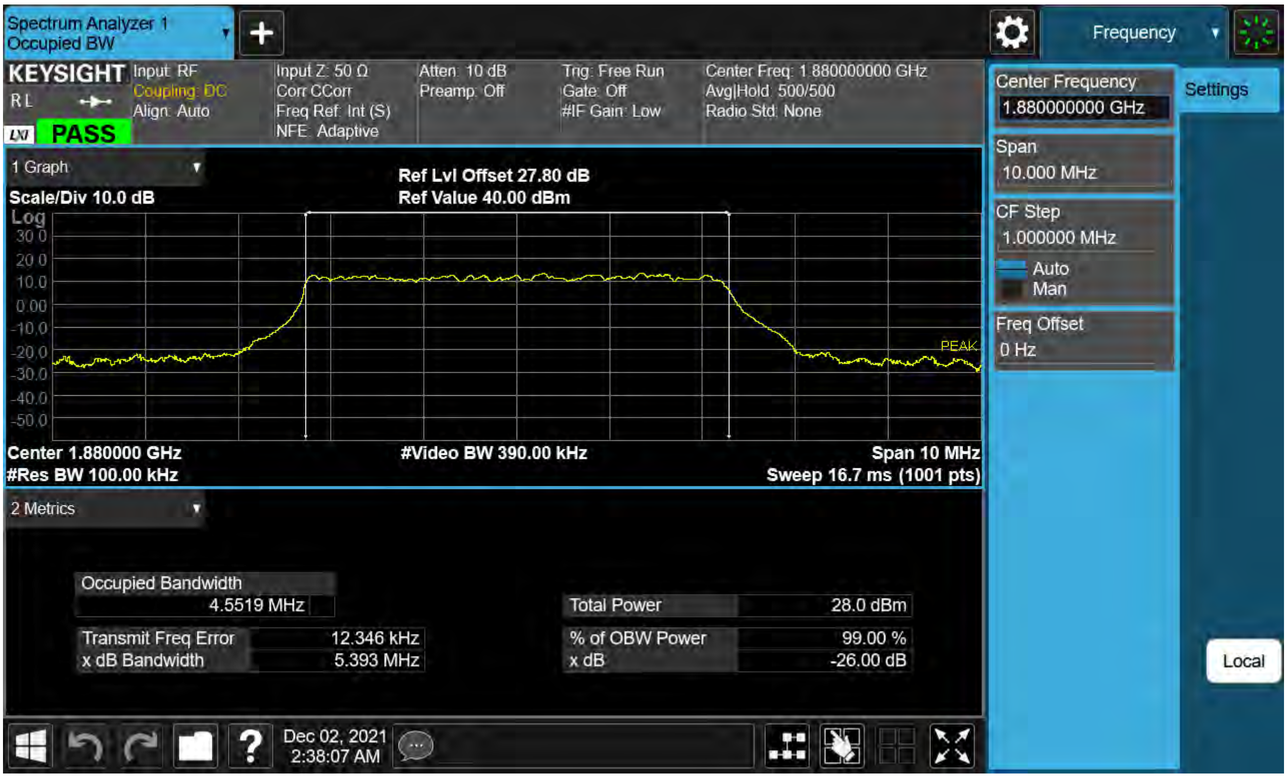
Sub6 n2. Occupied Bandwidth Plot (5 M BW Ch.376000 QPSK RB 25_0)



Sub6 n2. Occupied Bandwidth Plot (5 M BW Ch.376000 16QAM RB 25_0)

Sub6 n2. Occupied Bandwidth Plot (5 M BW Ch.376000 64QAM RB 25_0)

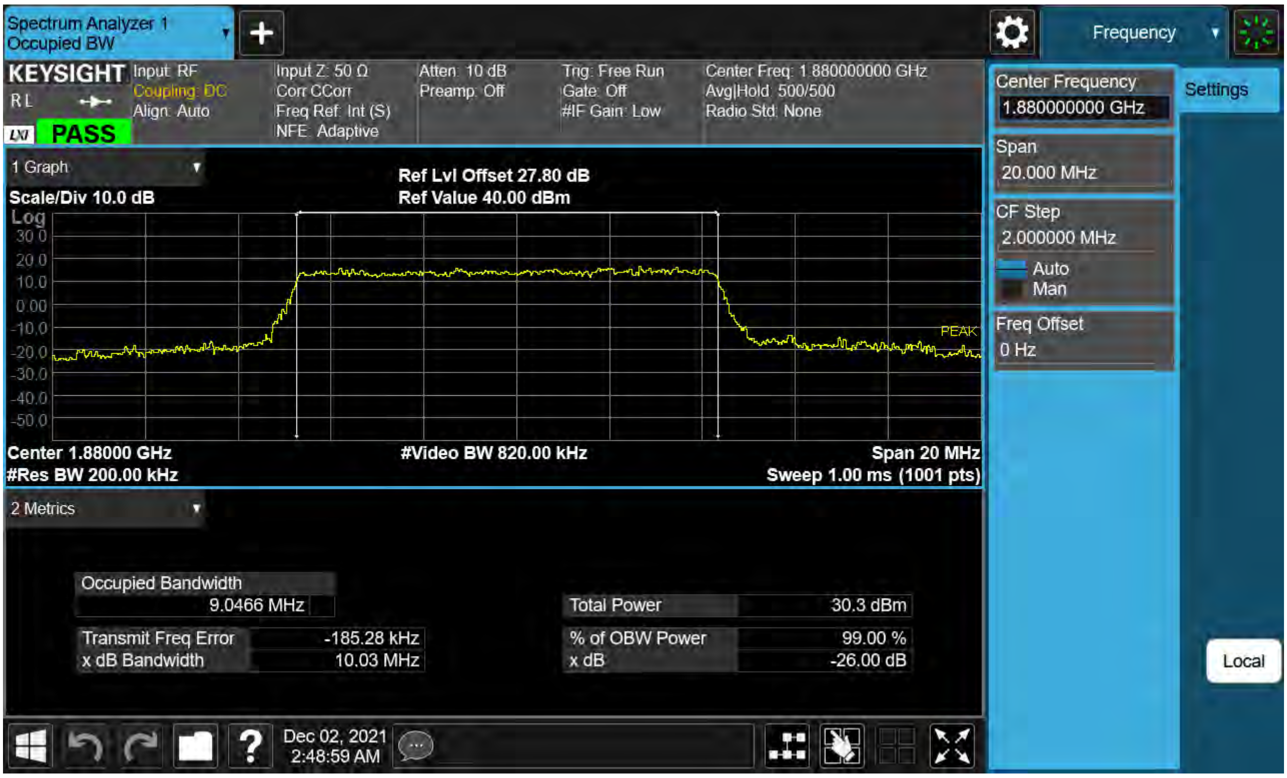
Sub6 n2. Occupied Bandwidth Plot (5 M BW Ch.376000 256QAM RB 25_0)



Sub6 n2. Occupied Bandwidth Plot (10 M BW Ch.376000 BPSK RB 50_0)

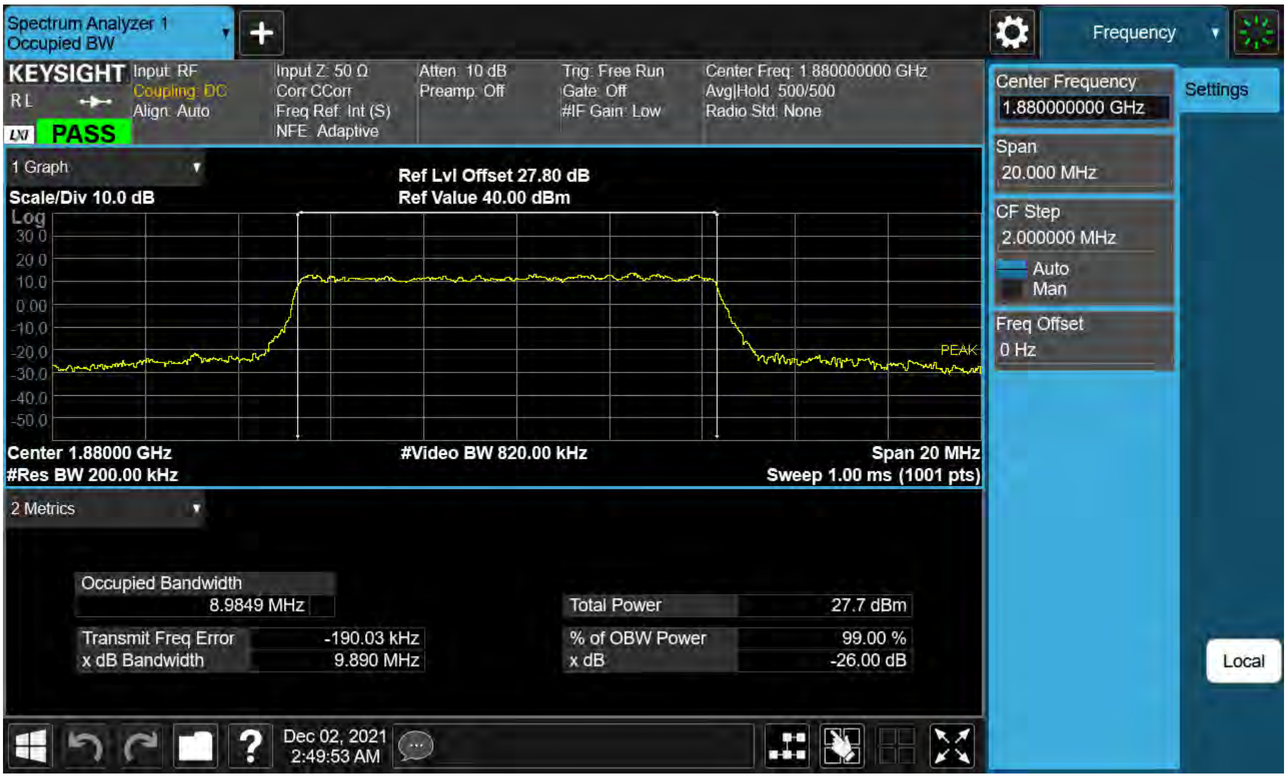
Sub6 n2. Occupied Bandwidth Plot (10 M BW Ch.376000 QPSK RB 50_0)

Sub6 n2. Occupied Bandwidth Plot (10 M BW Ch.376000 16QAM RB 50_0)



Sub6 n2. Occupied Bandwidth Plot (10 M BW Ch.376000 64QAM RB 50_0)

Sub6 n2. Occupied Bandwidth Plot (10 M BW Ch.376000 256QAM RB 50_0)



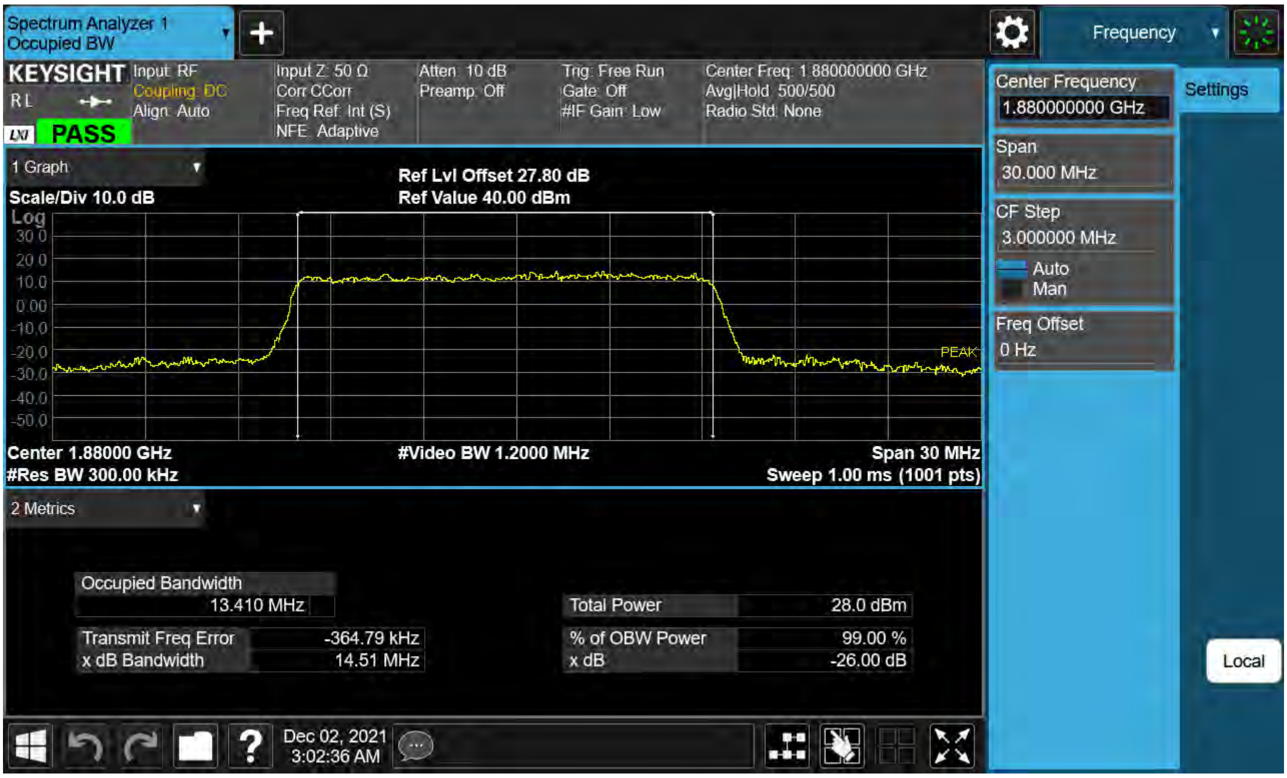
Sub6 n2. Occupied Bandwidth Plot (15 M BW Ch.376000 BPSK RB 75_0)

Sub6 n2. Occupied Bandwidth Plot (15 M BW Ch.376000 QPSK RB 75_0)

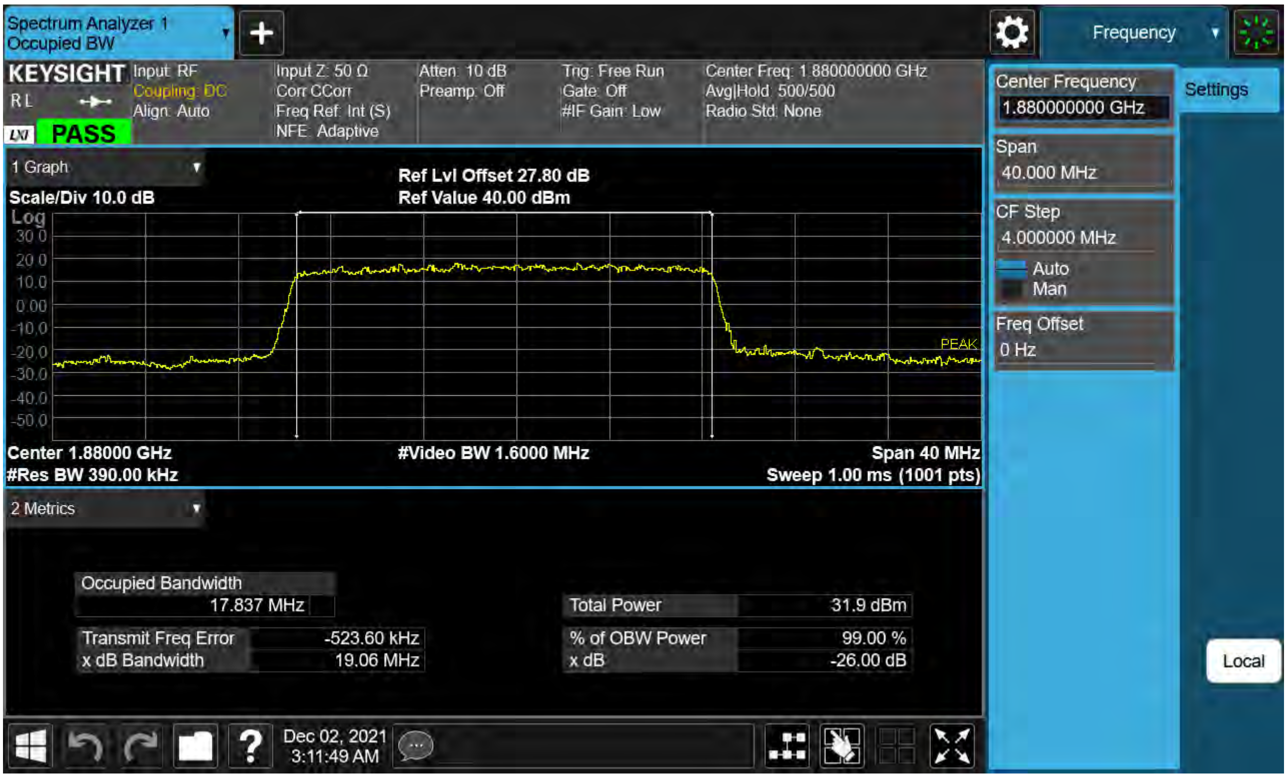
Sub6 n2. Occupied Bandwidth Plot (15 M BW Ch.376000 16QAM RB 75_0)

Sub6 n2. Occupied Bandwidth Plot (15 M BW Ch.376000 64QAM RB 75_0)

Sub6 n2. Occupied Bandwidth Plot (15 M BW Ch.376000 256QAM RB 75_0)



Sub6 n2. Occupied Bandwidth Plot (20 M BW Ch.376000 BPSK RB 100_0)



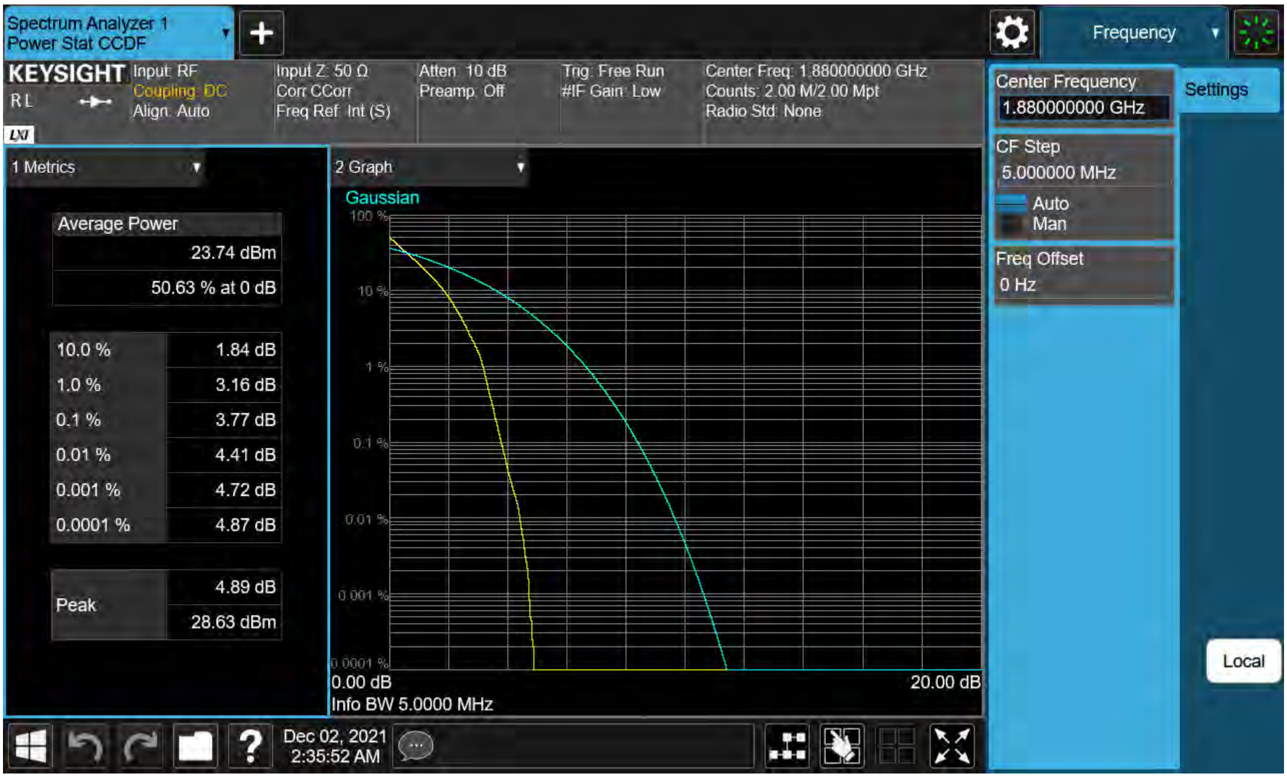
Sub6 n2. Occupied Bandwidth Plot (20 M BW Ch.376000 QPSK RB 100_0)

Sub6 n2. Occupied Bandwidth Plot (20 M BW Ch.376000 16QAM RB 100_0)

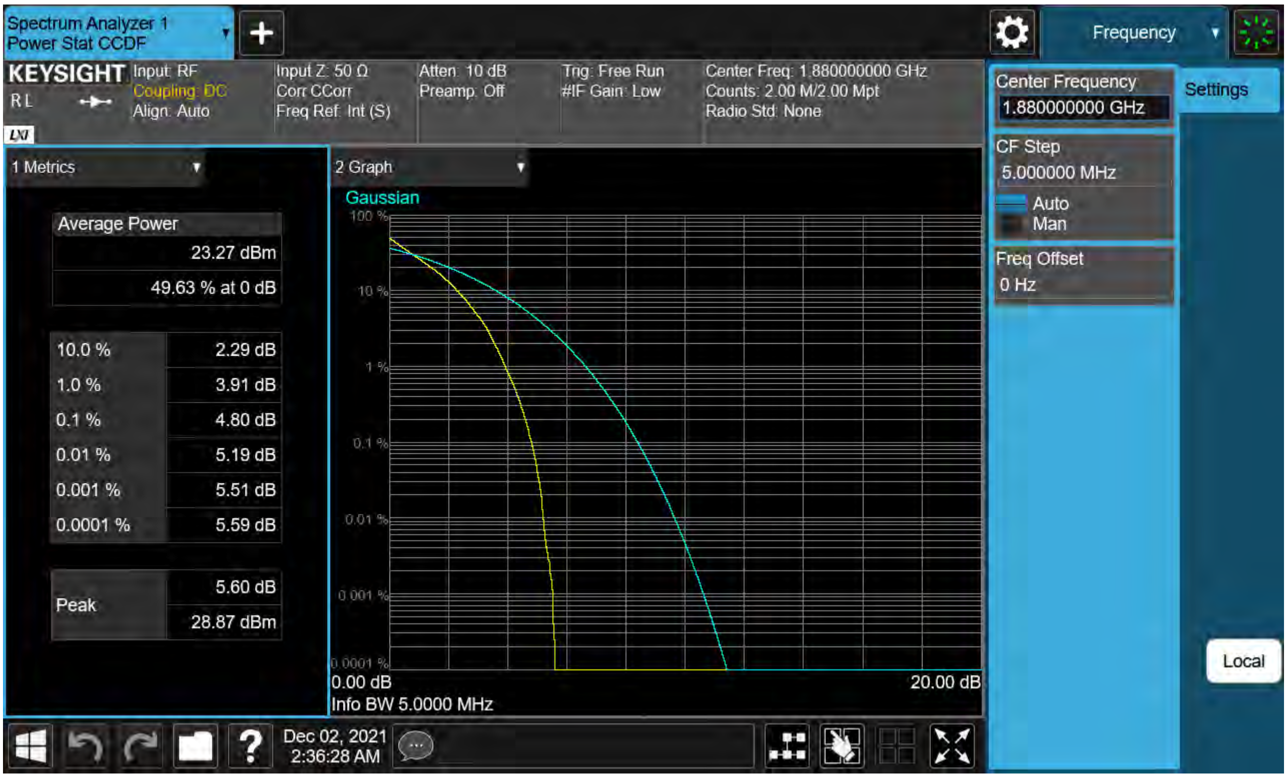
Sub6 n2. Occupied Bandwidth Plot (20 M BW Ch.376000 64QAM RB 100_0)

Sub6 n2. Occupied Bandwidth Plot (20 M BW Ch.376000 256QAM RB 100_0)

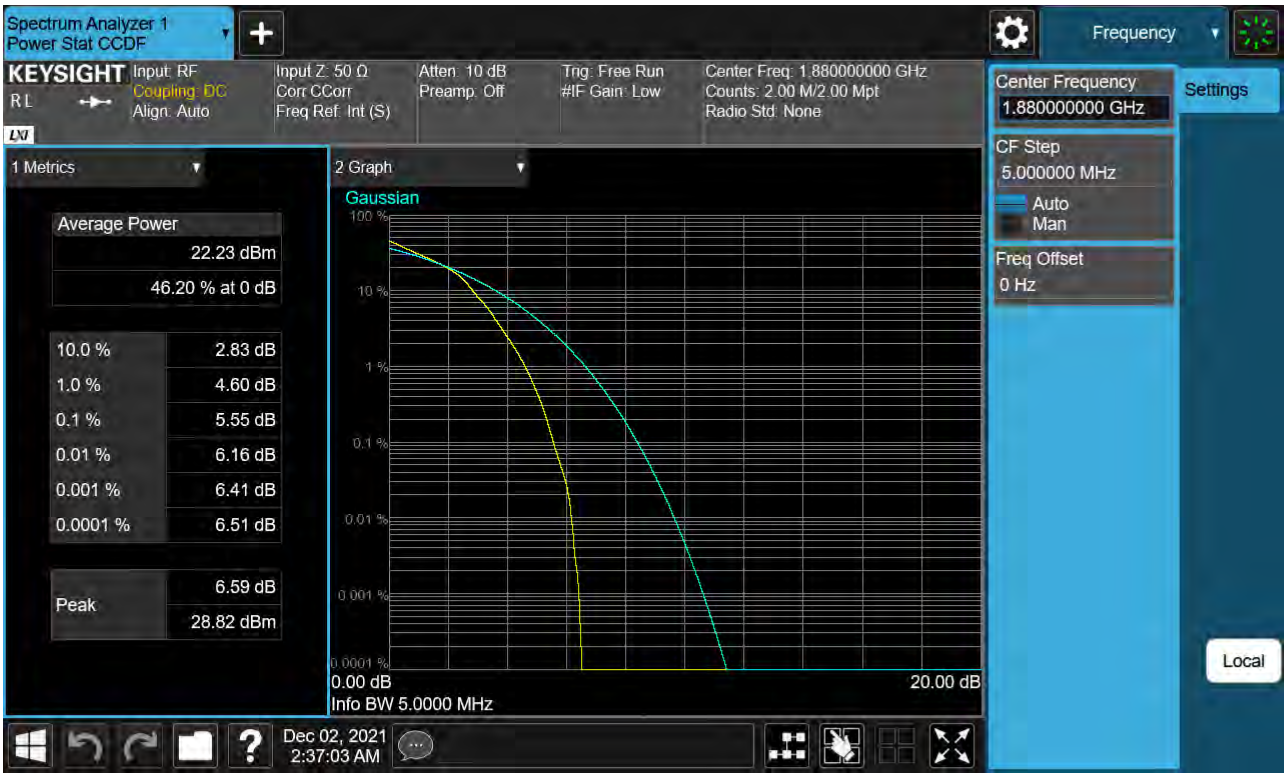
Sub6 n2. PAR Plot (5 M BW Ch.376000 BPSK RB 25_0)



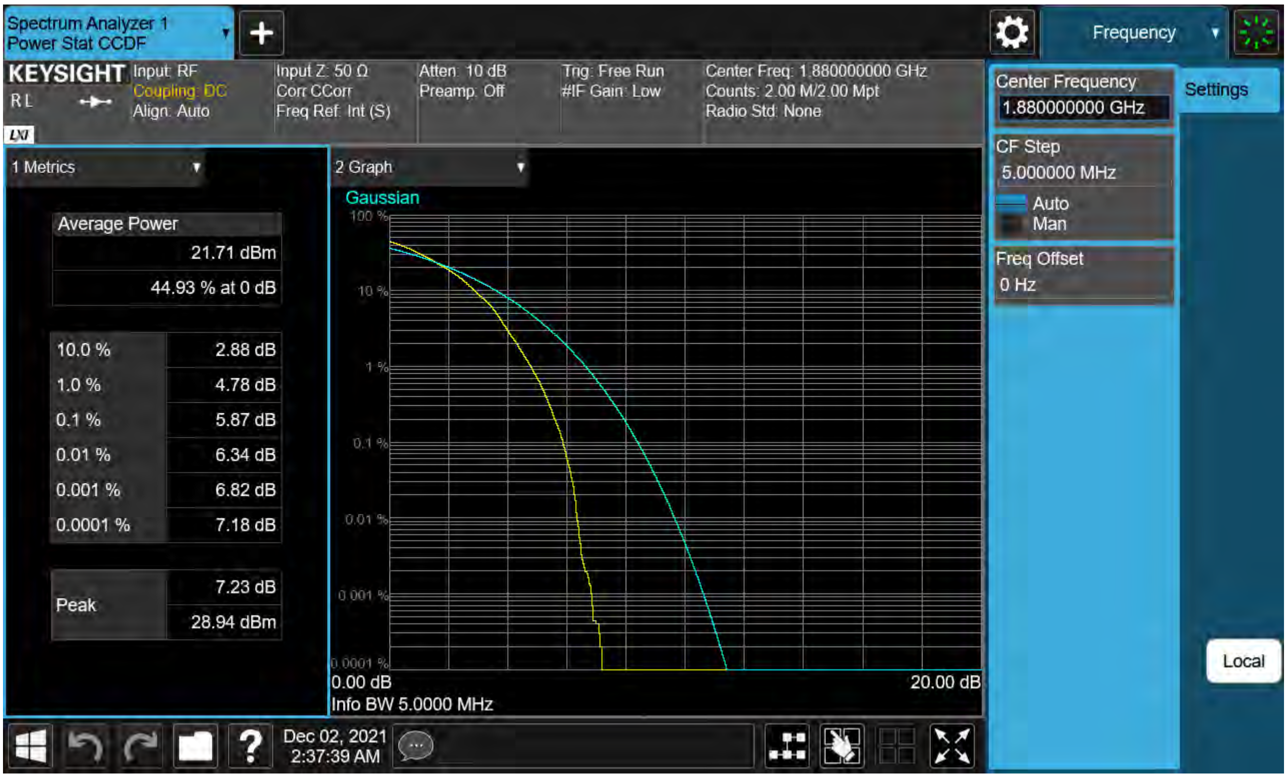
Sub6 n2. PAR Plot (5 M BW Ch.376000 QPSK RB 25_0)



Sub6 n2. PAR Plot (5 M BW Ch.376000 16QAM RB 25_0)



Sub6 n2. PAR Plot (5 M BW Ch.376000 64QAM RB 25_0)



Sub6 n2. PAR Plot (5 M BW Ch.376000 256QAM RB 25_0)

Sub6 n2. PAR Plot (10 M BW Ch.376000 BPSK RB 50_0)

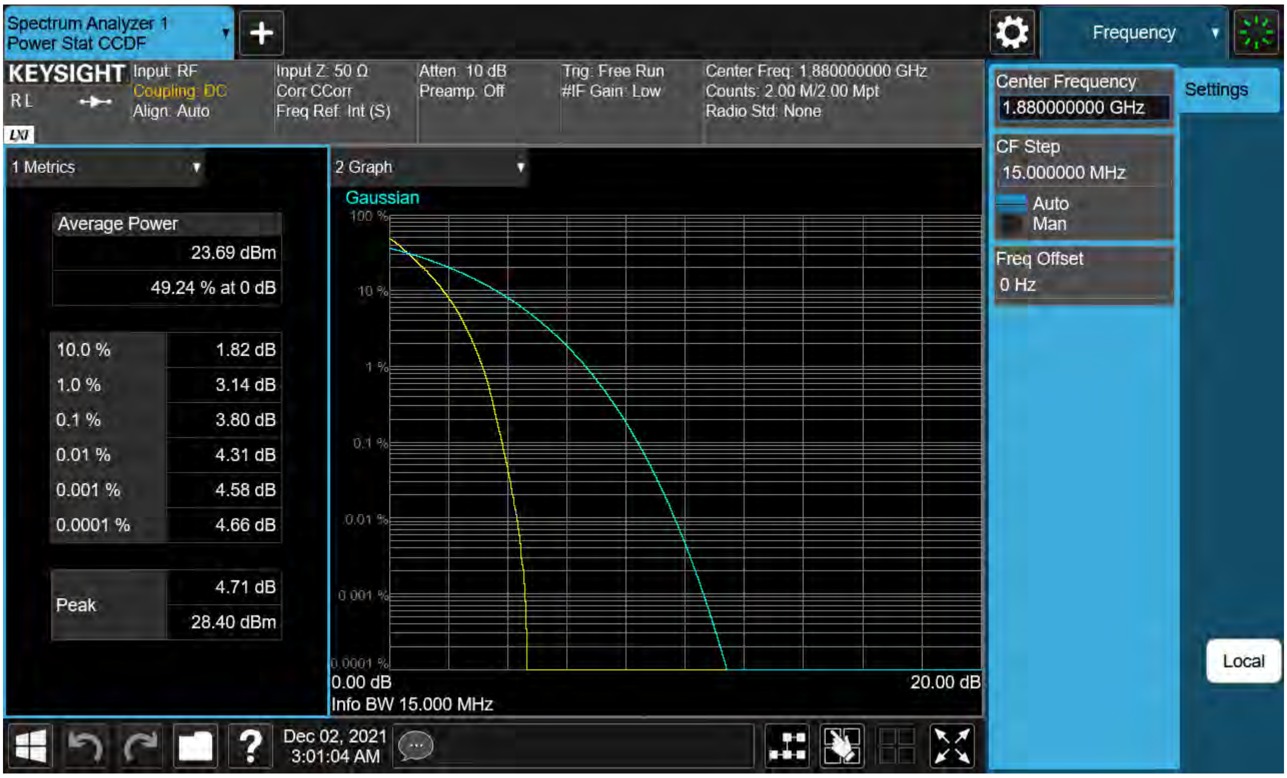
Sub6 n2. PAR Plot (10 M BW Ch.376000 QPSK RB 50_0)

Sub6 n2. PAR Plot (10 M BW Ch.376000 16QAM RB 50_0)

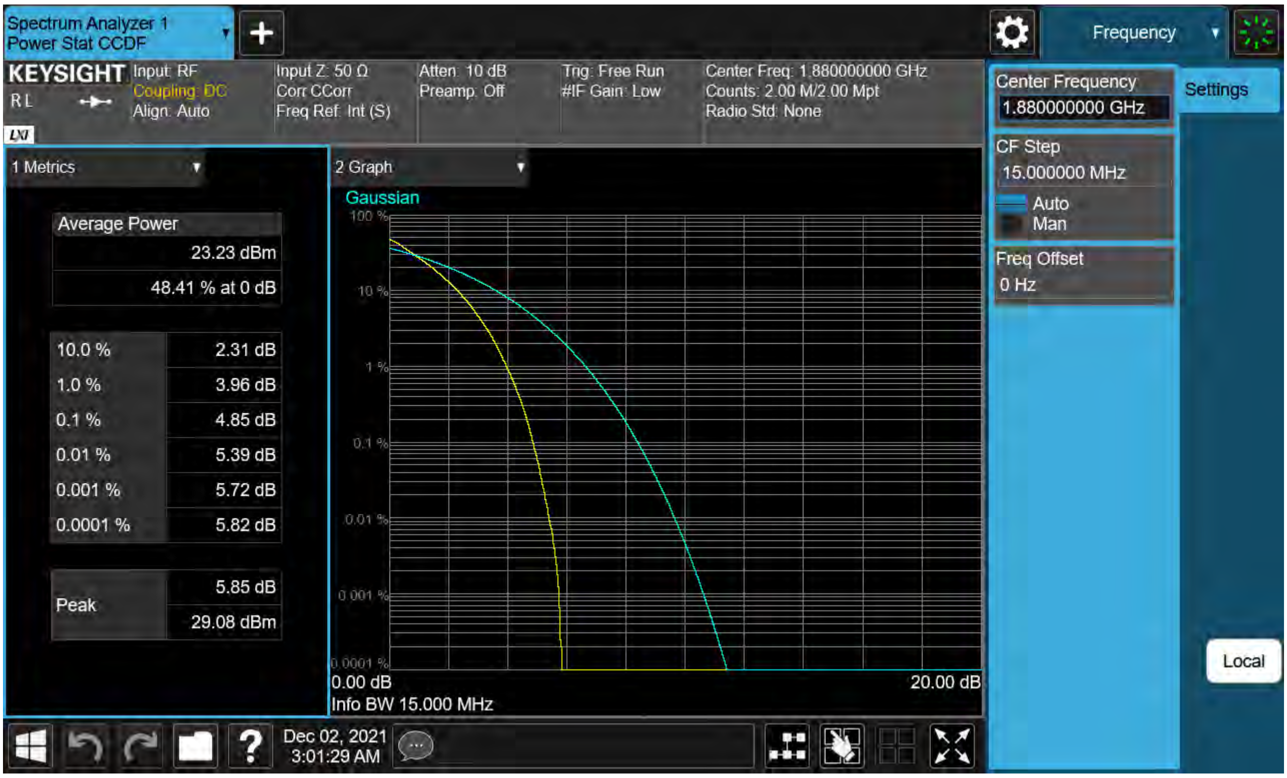
Sub6 n2. PAR Plot (10 M BW Ch.376000 64QAM RB 50_0)

Sub6 n2. PAR Plot (10 M BW Ch.376000 256QAM RB 50_0)

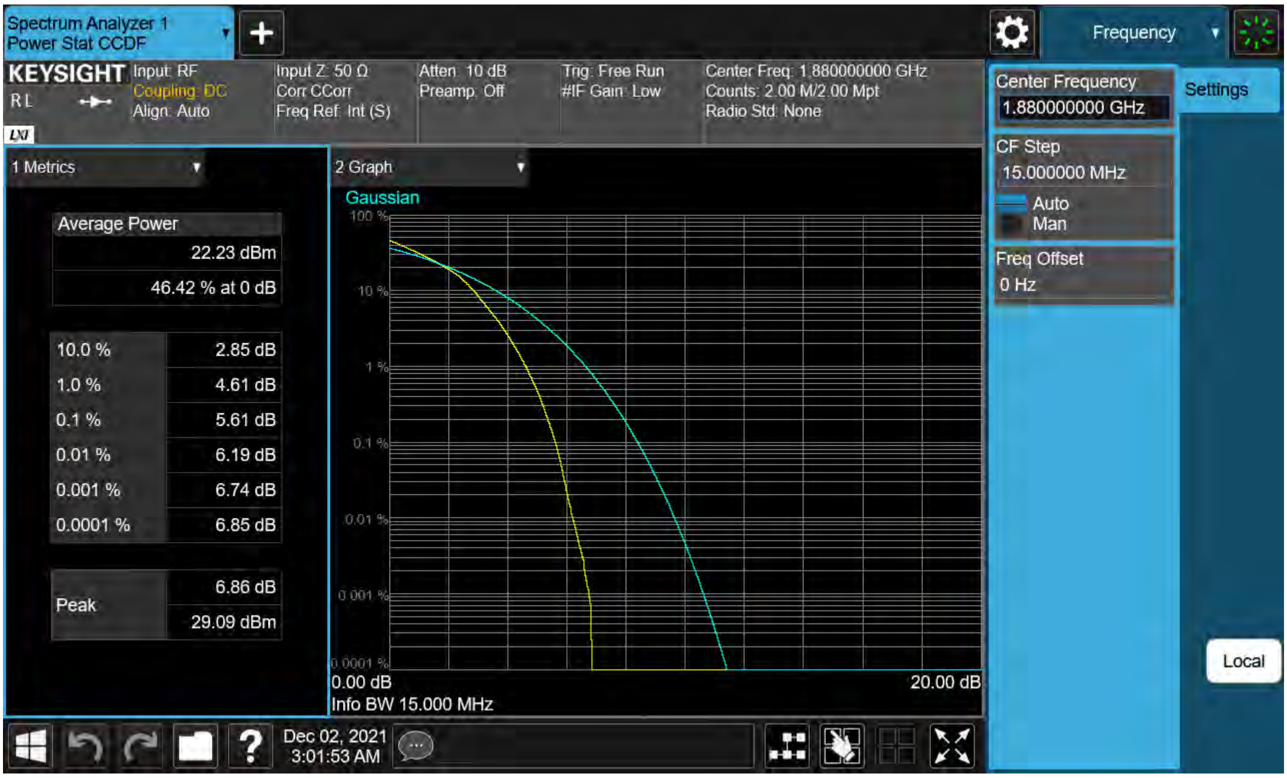
Sub6 n2. PAR Plot (15 M BW Ch.376000 BPSK RB 75_0)



Sub6 n2. PAR Plot (15 M BW Ch.376000 QPSK RB 75_0)



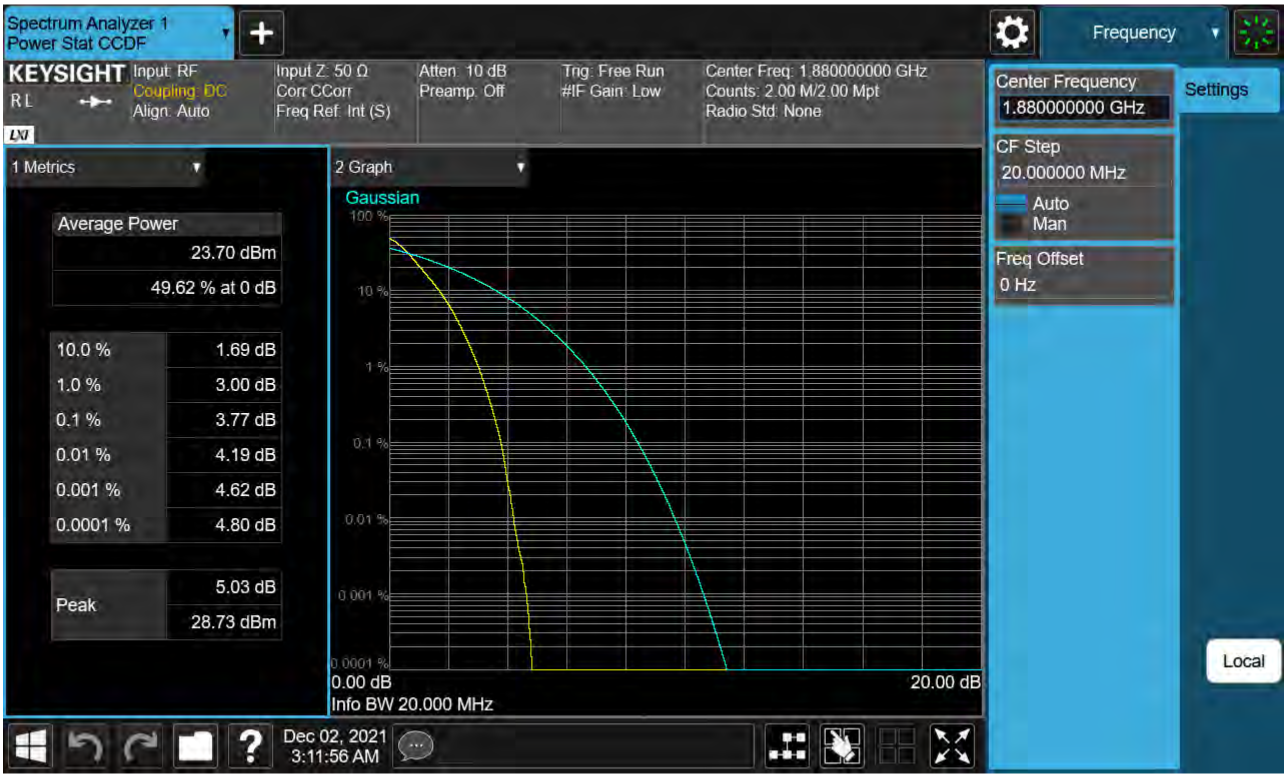
Sub6 n2. PAR Plot (15 M BW Ch.376000 16QAM RB 75_0)



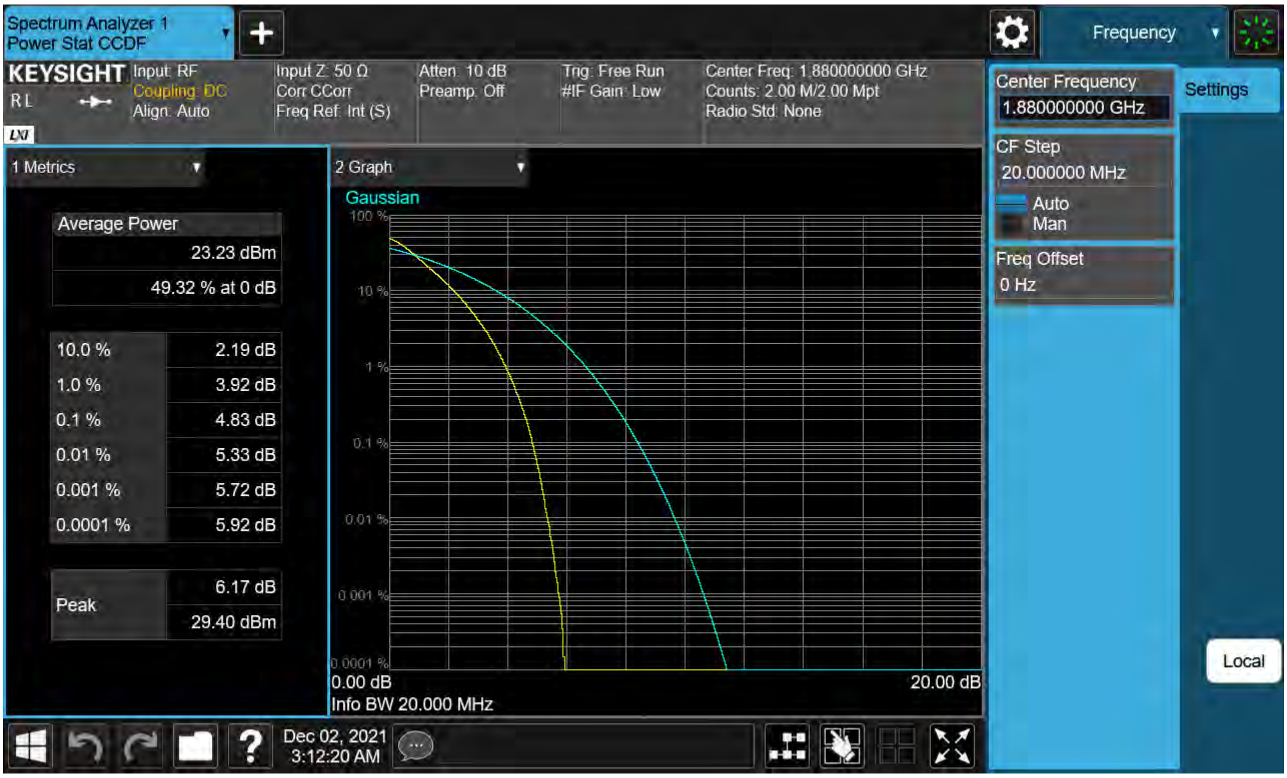
Sub6 n2. PAR Plot (15 M BW Ch.376000 64QAM RB 75_0)

Sub6 n2. PAR Plot (15 M BW Ch.376000 256QAM RB 75_0)

Sub6 n2. PAR Plot (20 M BW Ch.376000 BPSK RB 100_0)



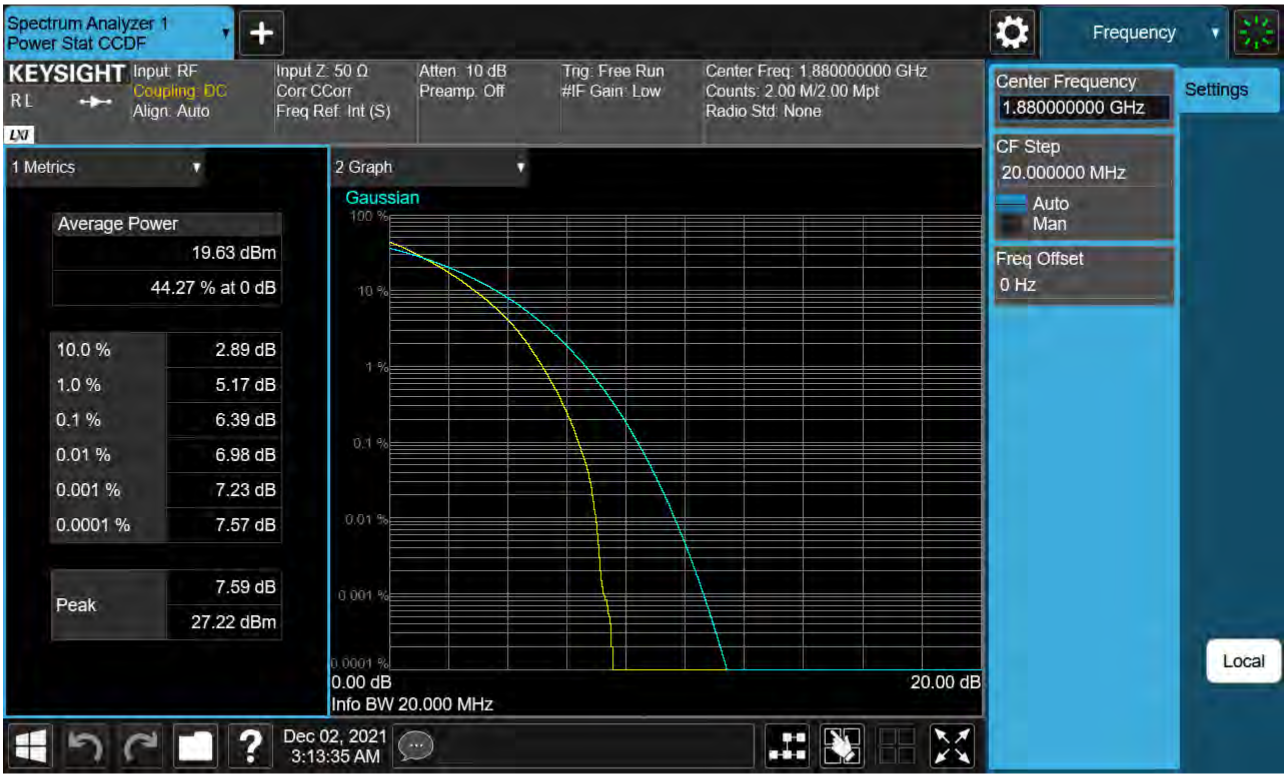
Sub6 n2. PAR Plot (20 M BW Ch.376000 QPSK RB 100_0)



Sub6 n2. PAR Plot (20 M BW Ch.376000 16QAM RB 100_0)

Sub6 n2. PAR Plot (20 M BW Ch.376000 64QAM RB 100_0)

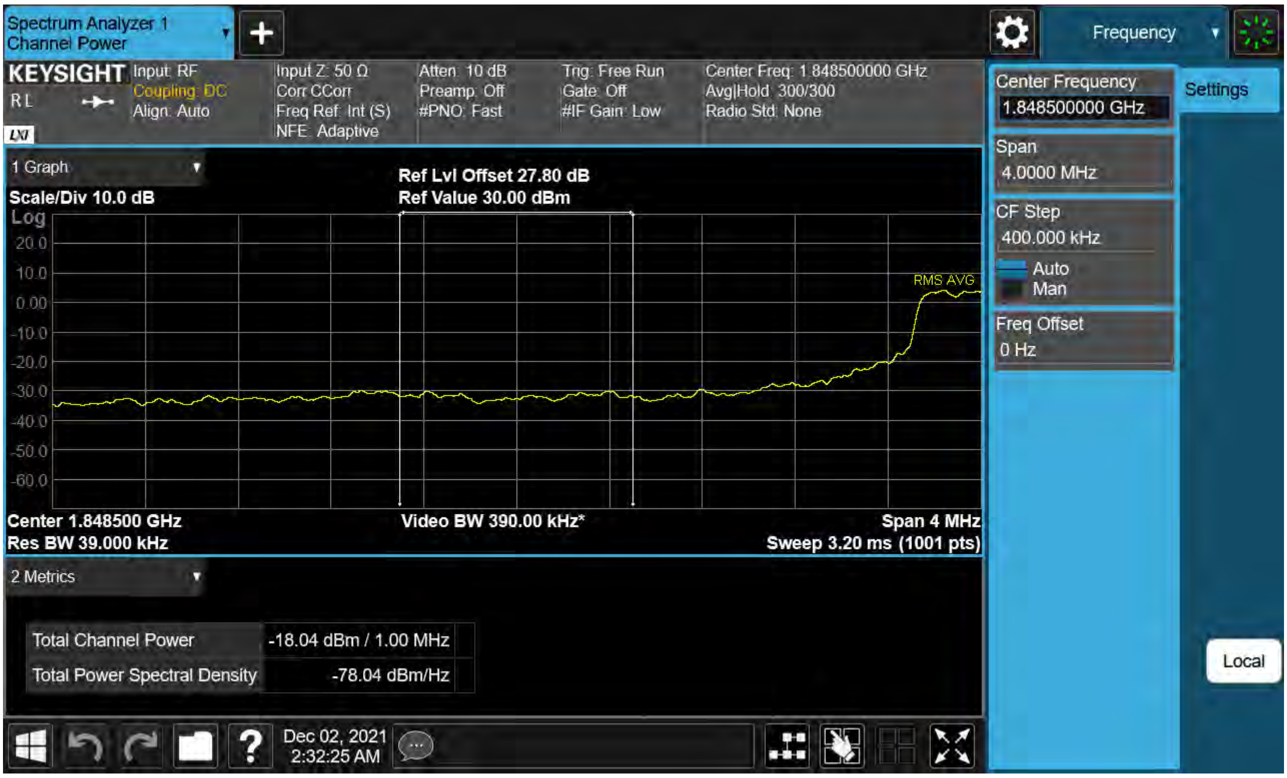
Sub6 n2. PAR Plot (20 M BW Ch.376000 256QAM RB 100_0)



Sub6 n2. Lower Band Edge Plot (5 M BW Ch.370500 BPSK_RB1_Offset 0) -1

Sub6 n2. Lower Band Edge Plot (5 M BW Ch.370500 BPSK_RB25_Offset 0) -2

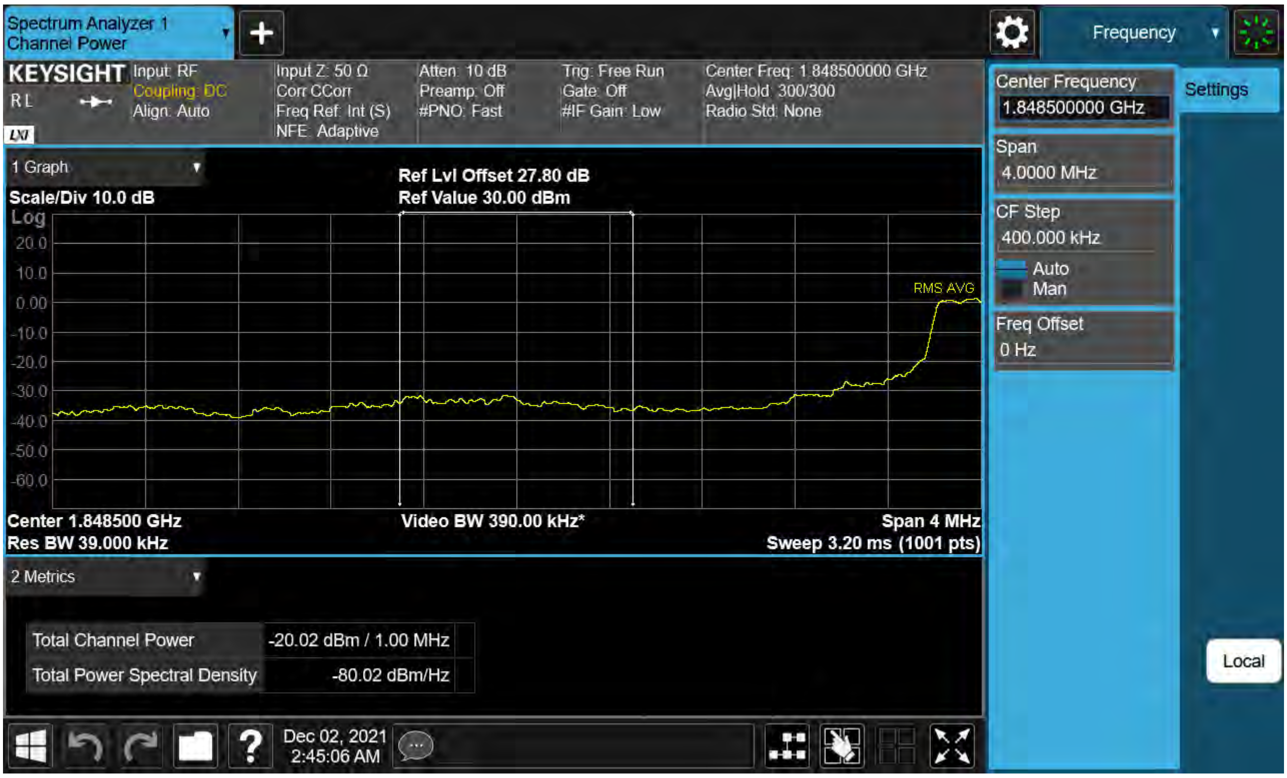
Sub6 n2. Lower Extended Band Edge Plot (5 M BW Ch.370500 BPSK_RB25_0) -3



Sub6 n2. Lower Band Edge Plot (10 M BW Ch.371000 BPSK_RB1_Offset 0) -1

Sub6 n2. Lower Band Edge Plot (10 M BW Ch.371000 BPSK_RB50_Offset 0) -2

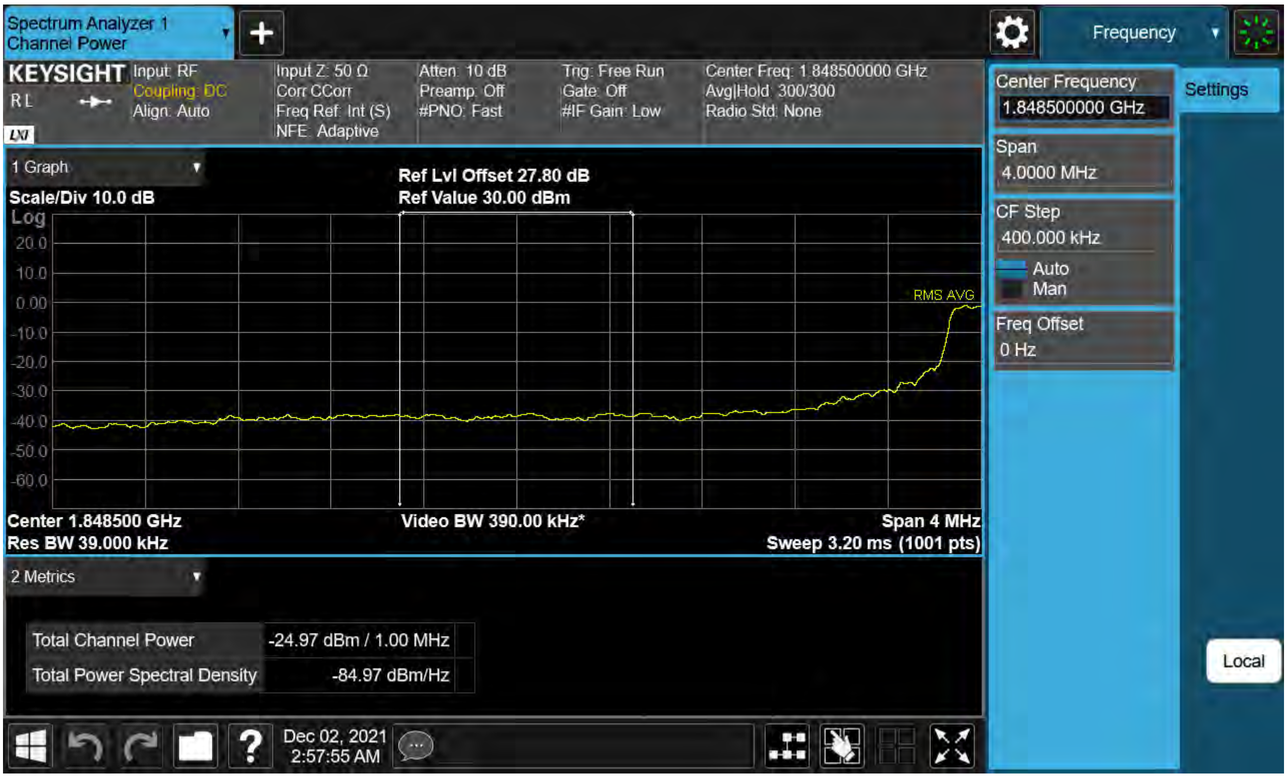
Sub6 n2. Lower Extended Band Edge Plot (10 M BW Ch.371000 BPSK_RB50_0) -3



Sub6 n2. Lower Band Edge Plot (15 M BW Ch.371500 BPSK_RB1_Offset 0) -1

Sub6 n2. Lower Band Edge Plot (15 M BW Ch.371500 BPSK_RB75_Offset 0) -2

Sub6 n2. Lower Extended Band Edge Plot (15 M BW Ch.371500 BPSK_RB75_0) -3



Sub6 n2. Lower Band Edge Plot (20 M BW Ch.372000 BPSK_RB1_Offset 0) -1

Sub6 n2. Lower Band Edge Plot (20 M BW Ch.372000 BPSK_RB100_Offset 0) -2

Sub6 n2. Lower Extended Band Edge Plot (20 M BW Ch.372000 BPSK_RB100_0) -3

Sub6 n2. Upper Band Edge Plot (5 M BW Ch.381500 BPSK_RB1_Offset 24) -1

Sub6 n2. Upper Band Edge Plot (5 M BW Ch.381500 BPSK_RB25_Offset 0) -2

Sub6 n2. Upper Extended Band Edge Plot (5 M BW Ch.381500 BPSK_RB25_0) -3

Sub6 n2. Upper Band Edge Plot (10 M BW Ch.381000 BPSK_RB1_Offset 51) -1

Sub6 n2. Upper Band Edge Plot (10 M BW Ch.381000 BPSK_RB50_Offset 0) -2

Sub6 n2. Upper Extended Band Edge Plot (10 M BW Ch.381000 BPSK_RB50_0) -3

Sub6 n2. Upper Band Edge Plot (15 M BW Ch.380500 BPSK_RB1_Offset 78) -1

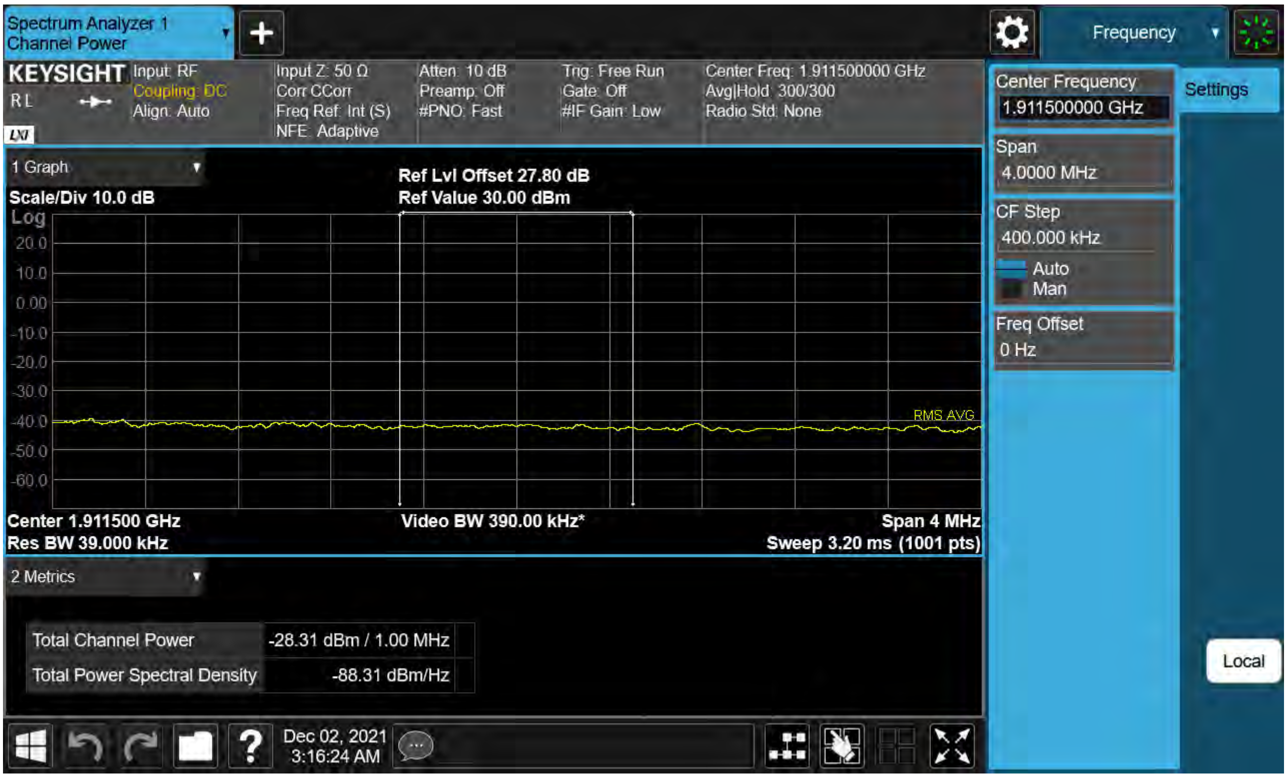
Sub6 n2. Upper Band Edge Plot (15 M BW Ch.380500 BPSK_RB75_Offset 0) -2

Sub6 n2. Upper Extended Band Edge Plot (15 M BW Ch.380500 BPSK_RB75_0) -3

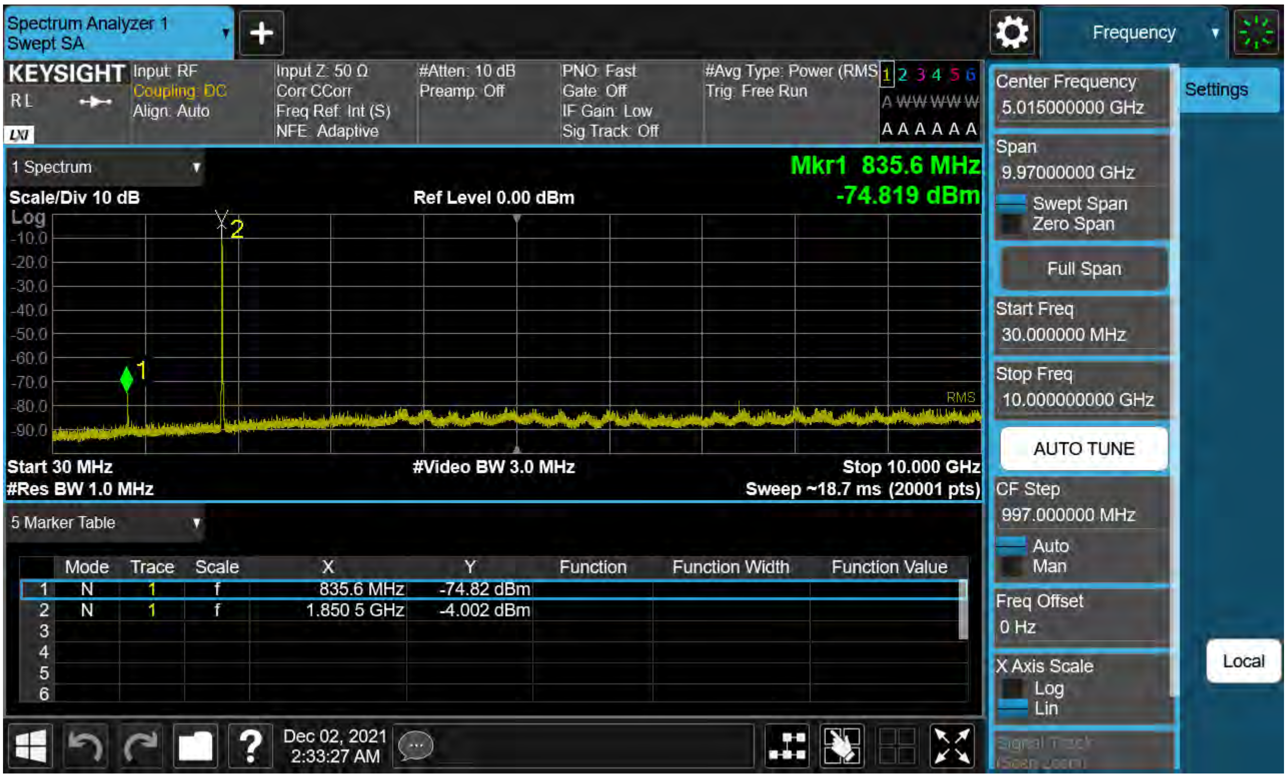
Sub6 n2. Upper Band Edge Plot (20 M BW Ch.380000 BPSK_RB1_Offset 105) -1

Sub6 n2. Upper Band Edge Plot (20 M BW Ch.380000 BPSK_RB100_Offset 0) -2

Sub6 n2. Upper Extended Band Edge Plot (20 M BW Ch.380000 BPSK _RB100_0) -3

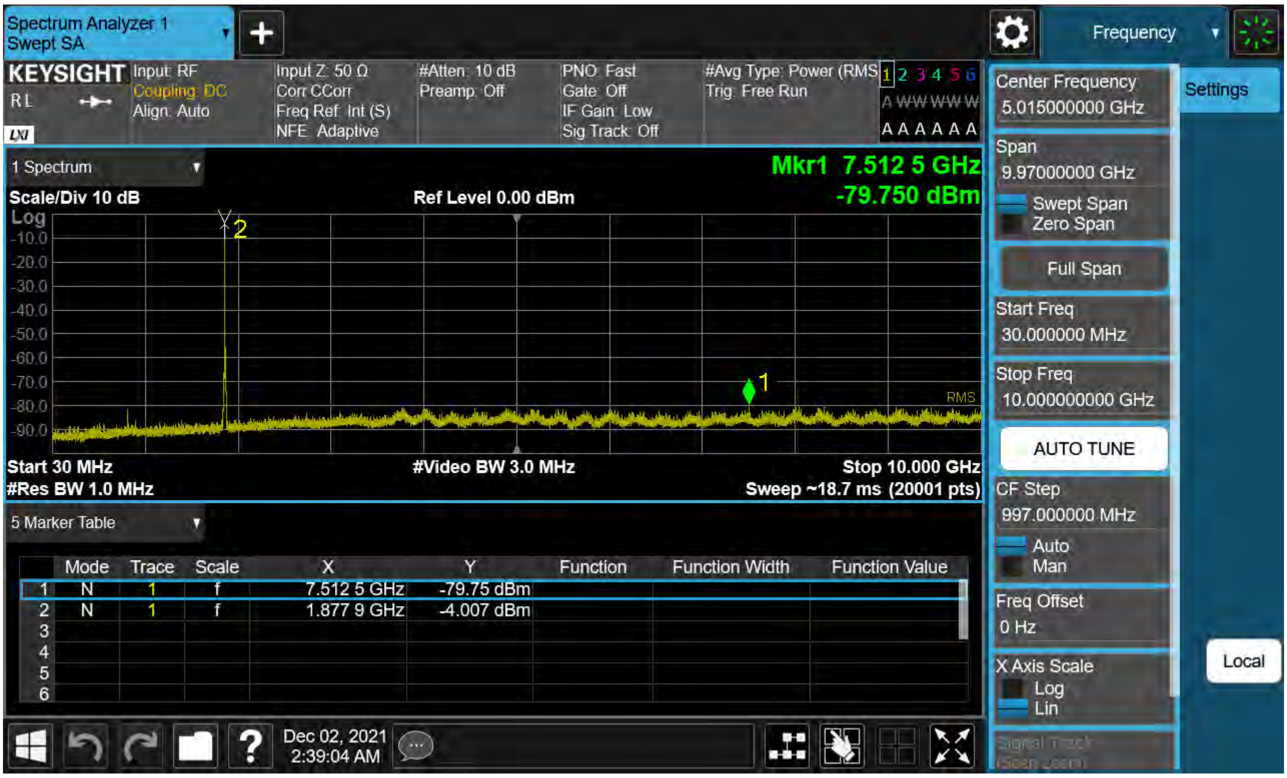


Sub6 n2. Conducted Spurious_1 (370500ch_5 MHz_BPSK_RB 1_1)



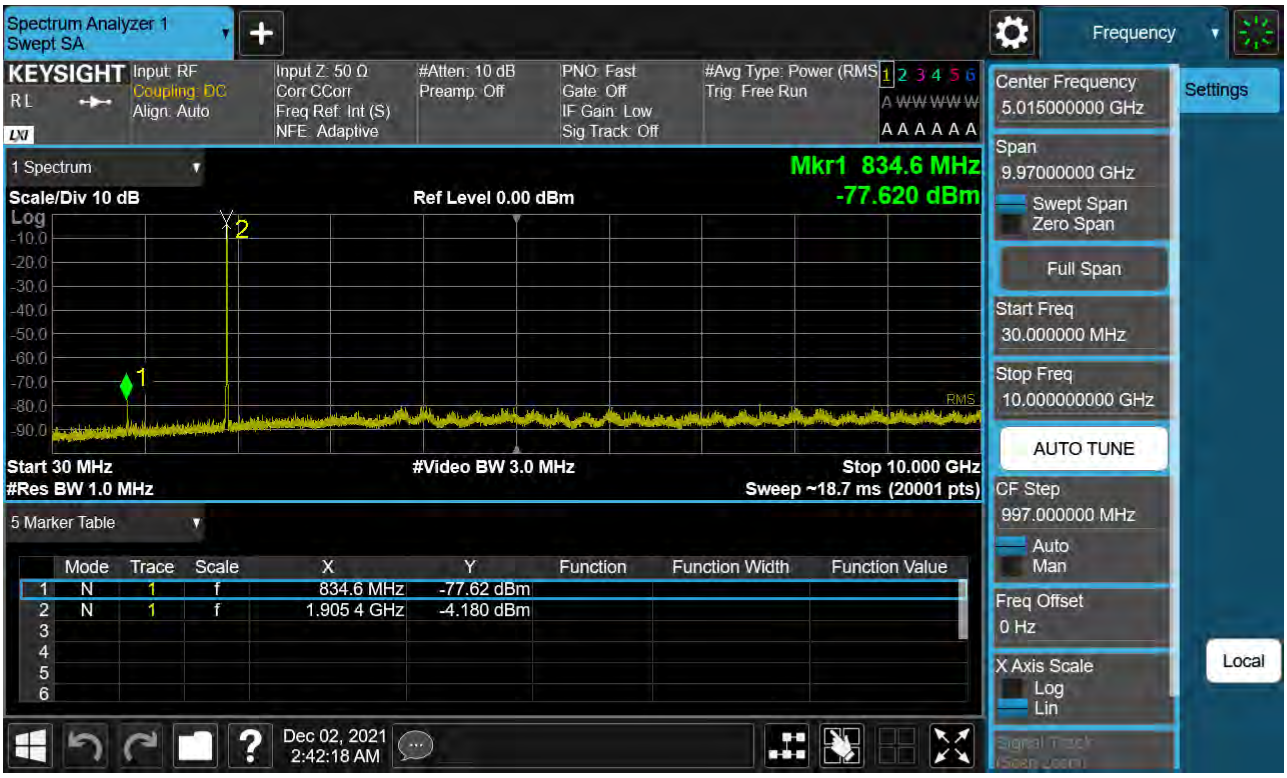
Sub6 n2. Conducted Spurious_2 (370500ch_5 MHz_BPSK_RB 1_1)

Sub6 n2. Conducted Spurious_1 (376000ch_5 MHz_BPSK_RB 1_1)



Sub6 n2. Conducted Spurious_2 (376000ch_5 MHz_ BPSK_RB 1_1)

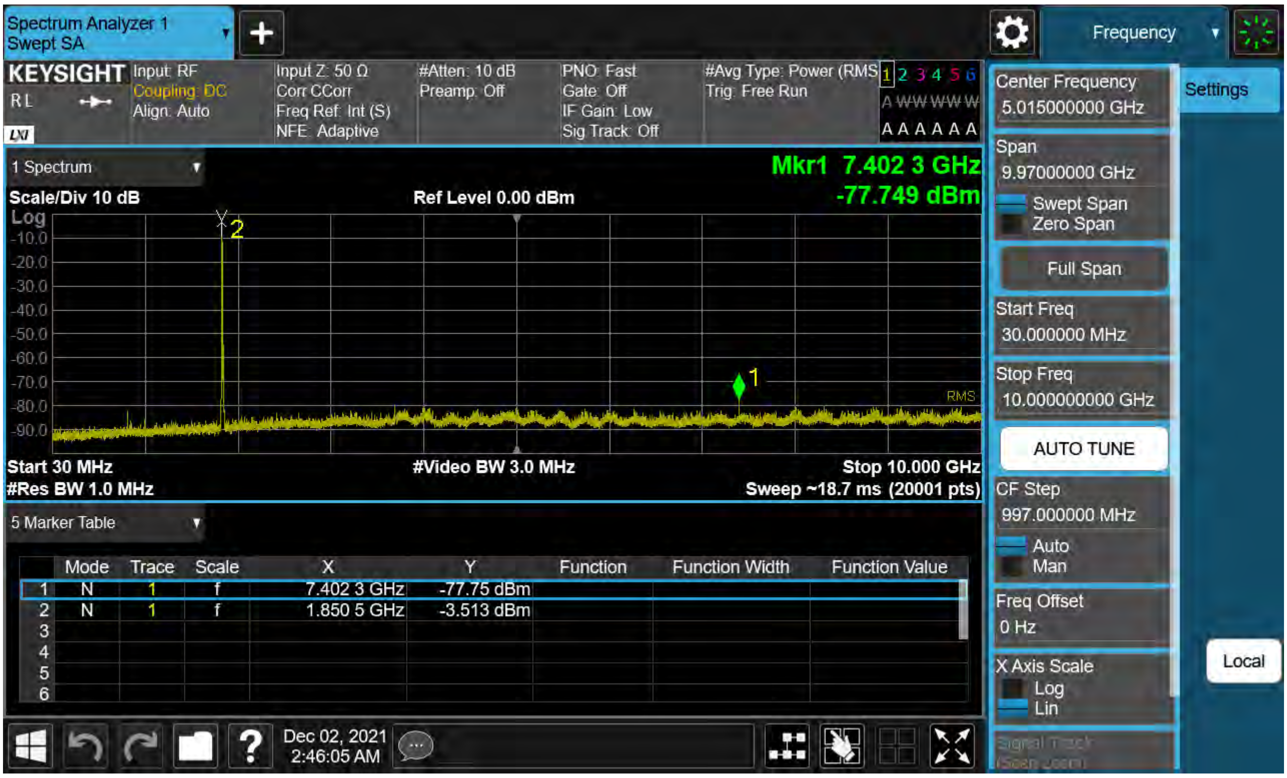
Sub6 n2. Conducted Spurious_1 (381500ch_5 MHz_ BPSK_RB 1_1)



	Mode	Trace	Scale	X	Y	Function	Function Width	Function Value
1	N	1	f	834.6 MHz	-77.62 dBm			
2	N	1	f	1.905 4 GHz	-4.180 dBm			
3								
4								
5								
6								

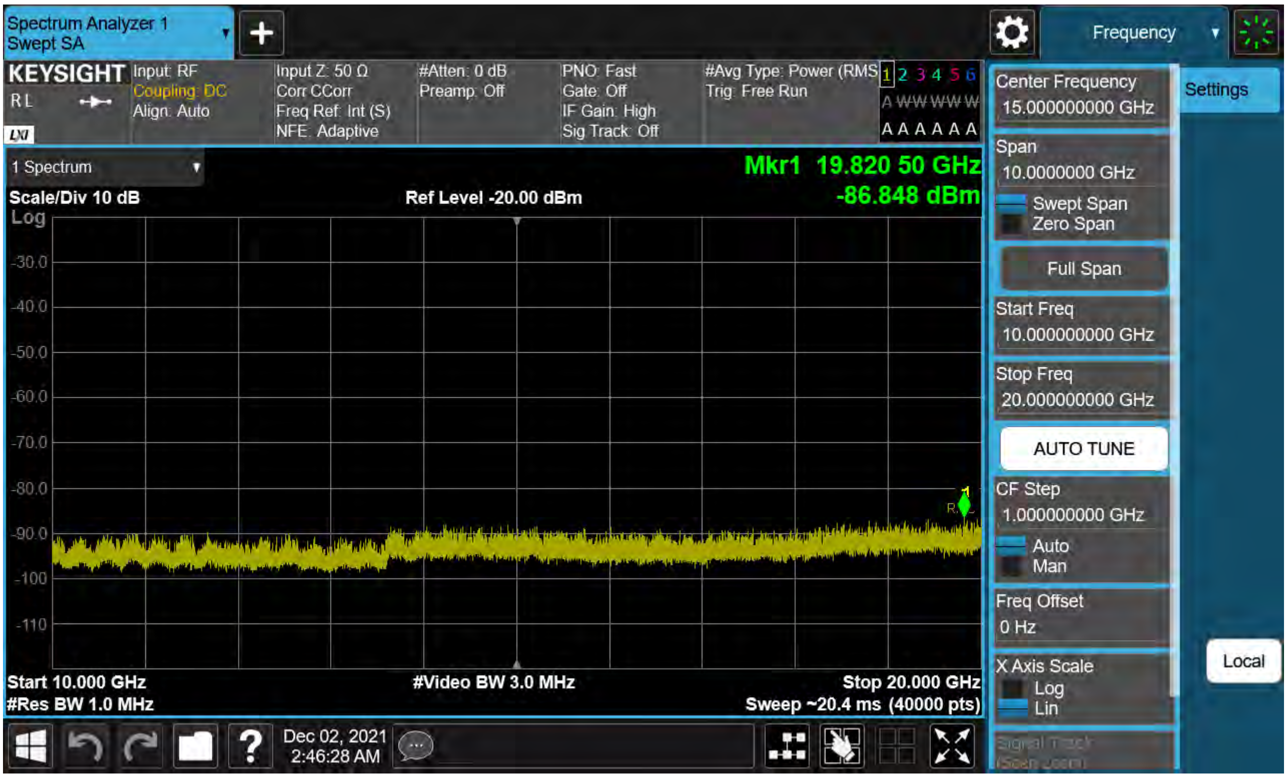
Sub6 n2. Conducted Spurious_2 (381500ch_5 MHz_ BPSK_RB 1_1)

Sub6 n2. Conducted Spurious_1 (371000ch_10 MHz_ BPSK _RB 1_1)

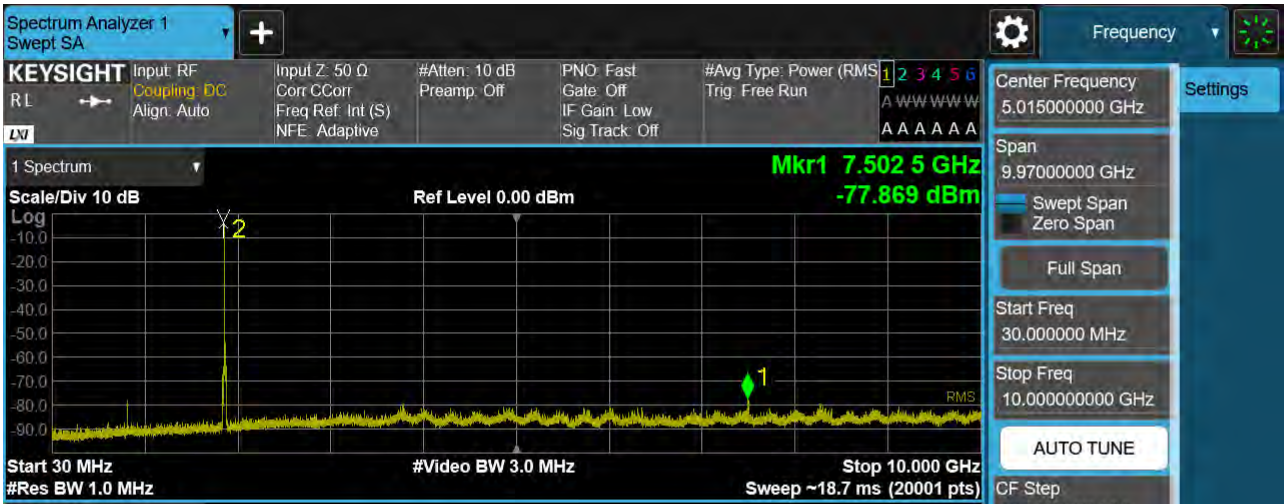


	Mode	Trace	Scale	X	Y	Function	Function Width	Function Value
1	N	1	f	7.402 3 GHz	-77.75 dBm			
2	N	1	f	1.850 5 GHz	-3.513 dBm			
3								
4								
5								
6								

Sub6 n2. Conducted Spurious_2 (371000ch_10 MHz_ BPSK_RB 1_1)



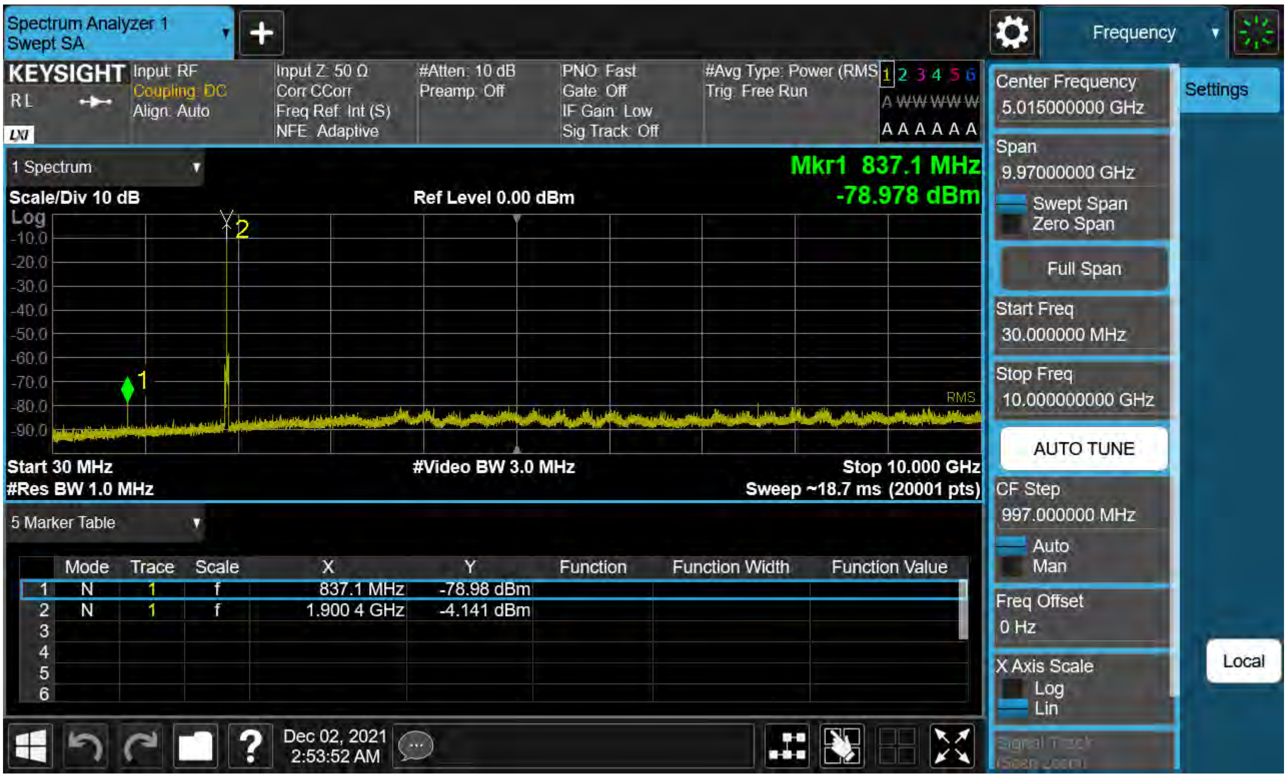
Sub6 n2. Conducted Spurious_1 (376000ch_10 MHz_ BPSK_RB 1_1)



	Mode	Trace	Scale	X	Y	Function	Function Width	Function Value
1	N	1	f	7.502 5 GHz	-77.87 dBm			
2	N	1	f	1.875 4 GHz	-4.000 dBm			
3								
4								
5								
6								

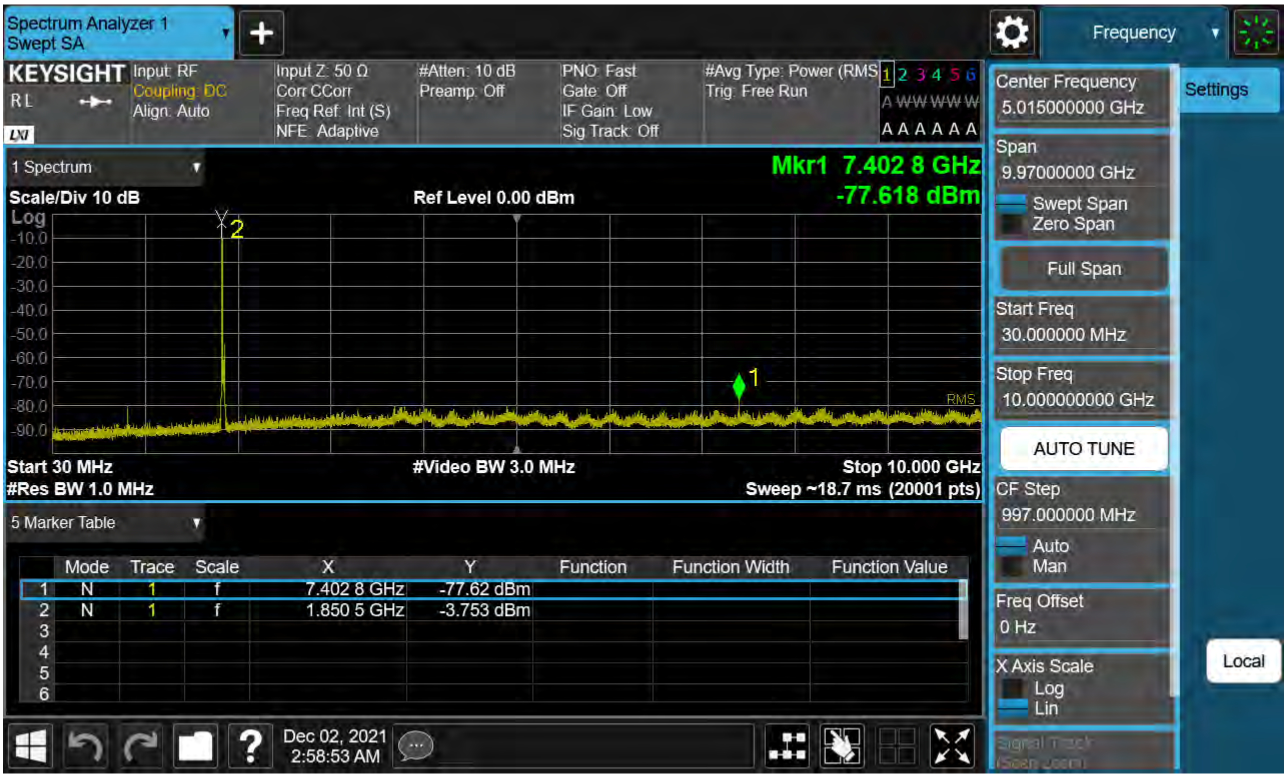
Sub6 n2. Conducted Spurious_2 (376000ch_10 MHz_ BPSK_RB 1_1)

Sub6 n2. Conducted Spurious_1 (381000ch_10 MHz_ BPSK_RB 1_1)



Sub6 n2. Conducted Spurious_2 (381000ch_10 MHz_ BPSK_RB 1_1)

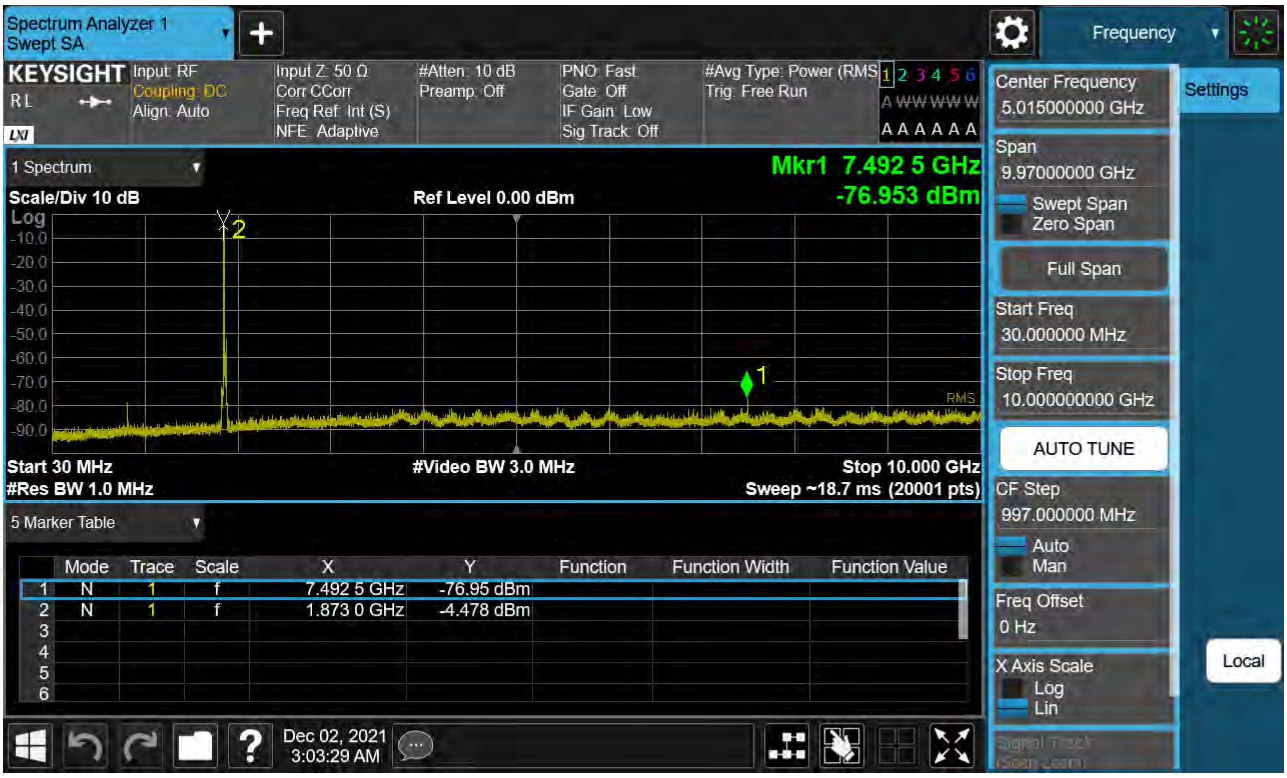
Sub6 n2. Conducted Spurious_1 (371500ch_15 MHz_ BPSK_RB 1_1)



	Mode	Trace	Scale	X	Y	Function	Function Width	Function Value
1	N	1	f	7.402 8 GHz	-77.62 dBm			
2	N	1	f	1.850 5 GHz	-3.753 dBm			
3								
4								
5								
6								

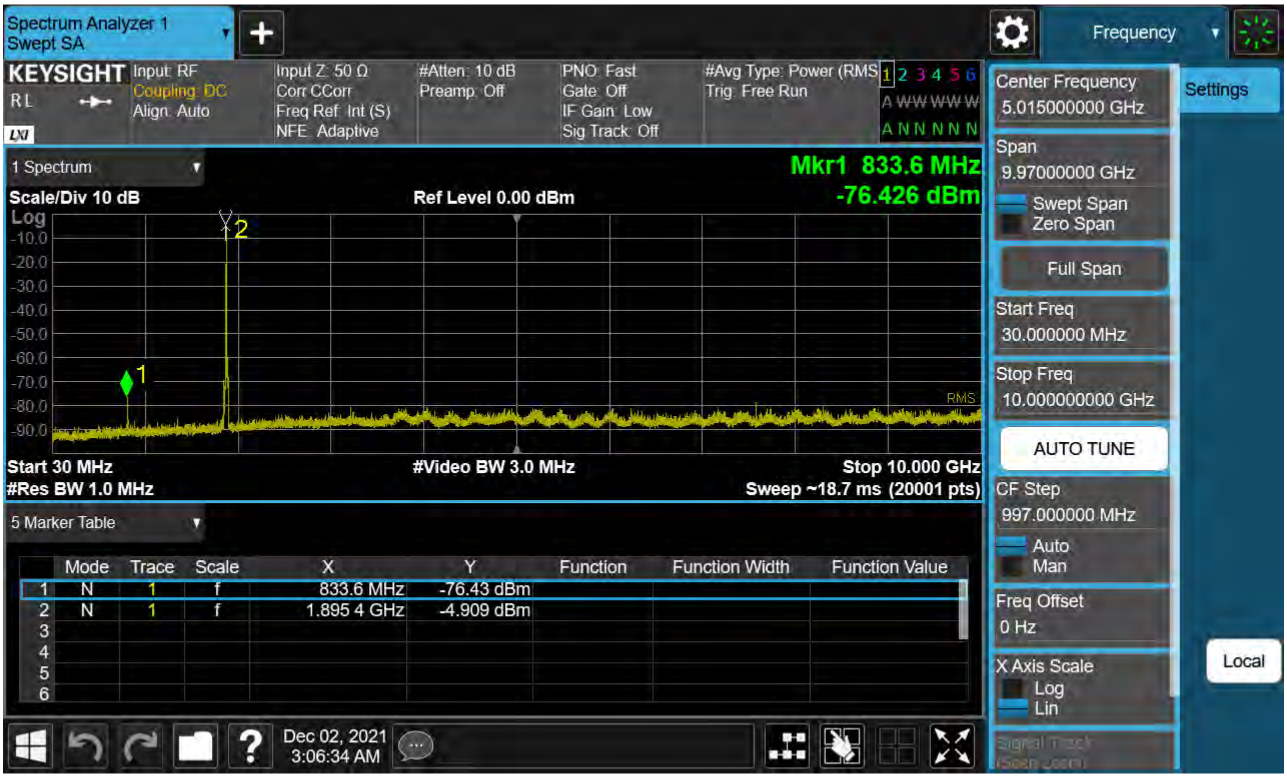
Sub6 n2. Conducted Spurious_2 (371500ch_15 MHz_ BPSK_RB 1_1)

Sub6 n2. Conducted Spurious_1 (376000ch_15 MHz_ BPSK_RB 1_1)



Sub6 n2. Conducted Spurious_2 (376000ch_15 MHz_ BPSK_RB 1_1)

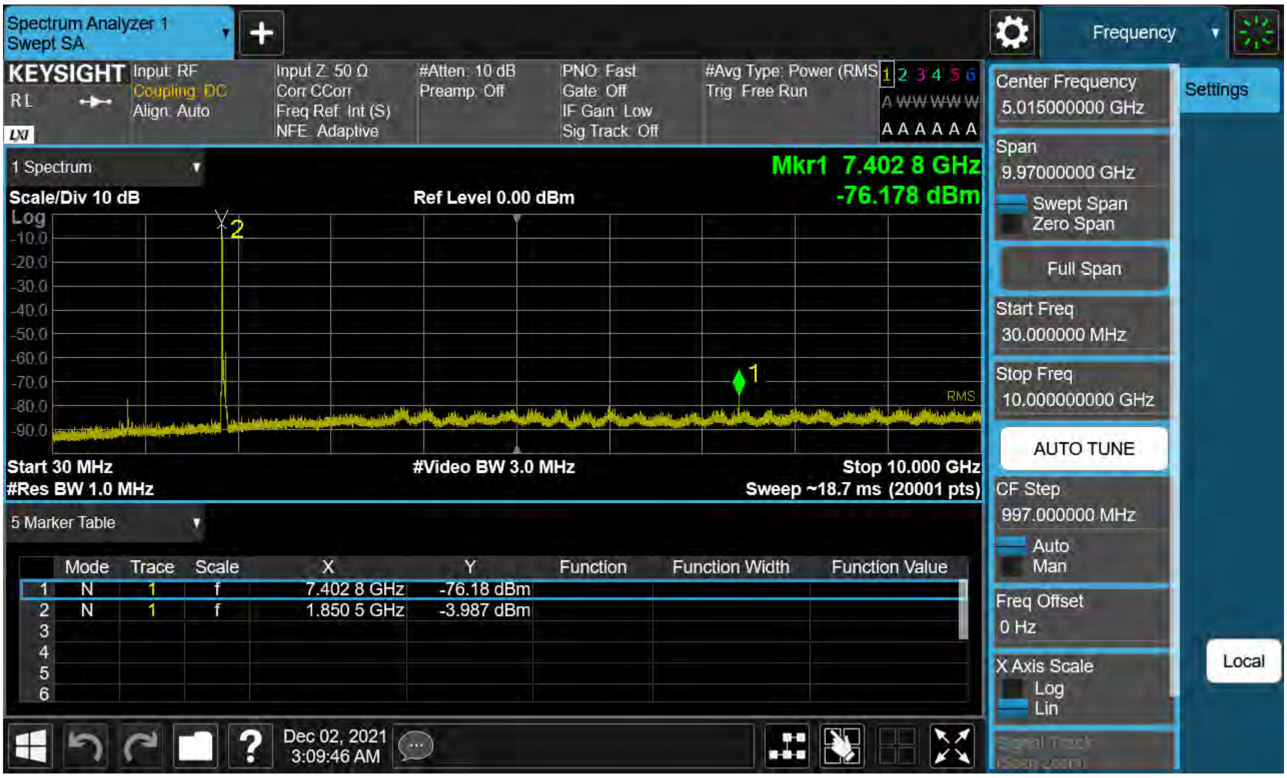
Sub6 n2. Conducted Spurious_1 (380500ch_15 MHz_ BPSK_RB 1_1)



	Mode	Trace	Scale	X	Y	Function	Function Width	Function Value
1	N	1	f	833.6 MHz	-76.43 dBm			
2	N	1	f	1.895 4 GHz	-4.909 dBm			
3								
4								
5								
6								

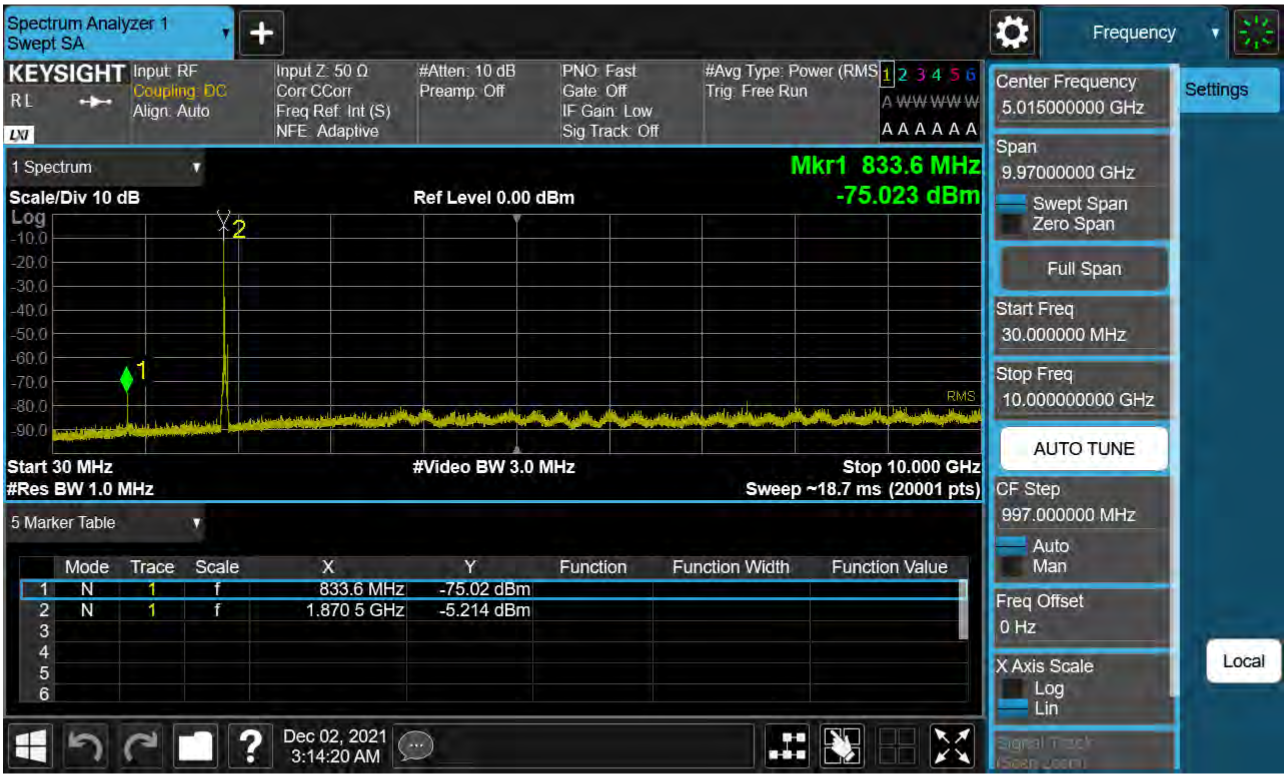
Sub6 n2. Conducted Spurious_2 (380500ch_15 MHz_ BPSK_RB 1_1)

Sub6 n2. Conducted Spurious_1 (372000ch_20 MHz_ BPSK_RB 1_1)



Sub6 n2. Conducted Spurious_2 (372000ch_20 MHz_ BPSK_RB 1_1)

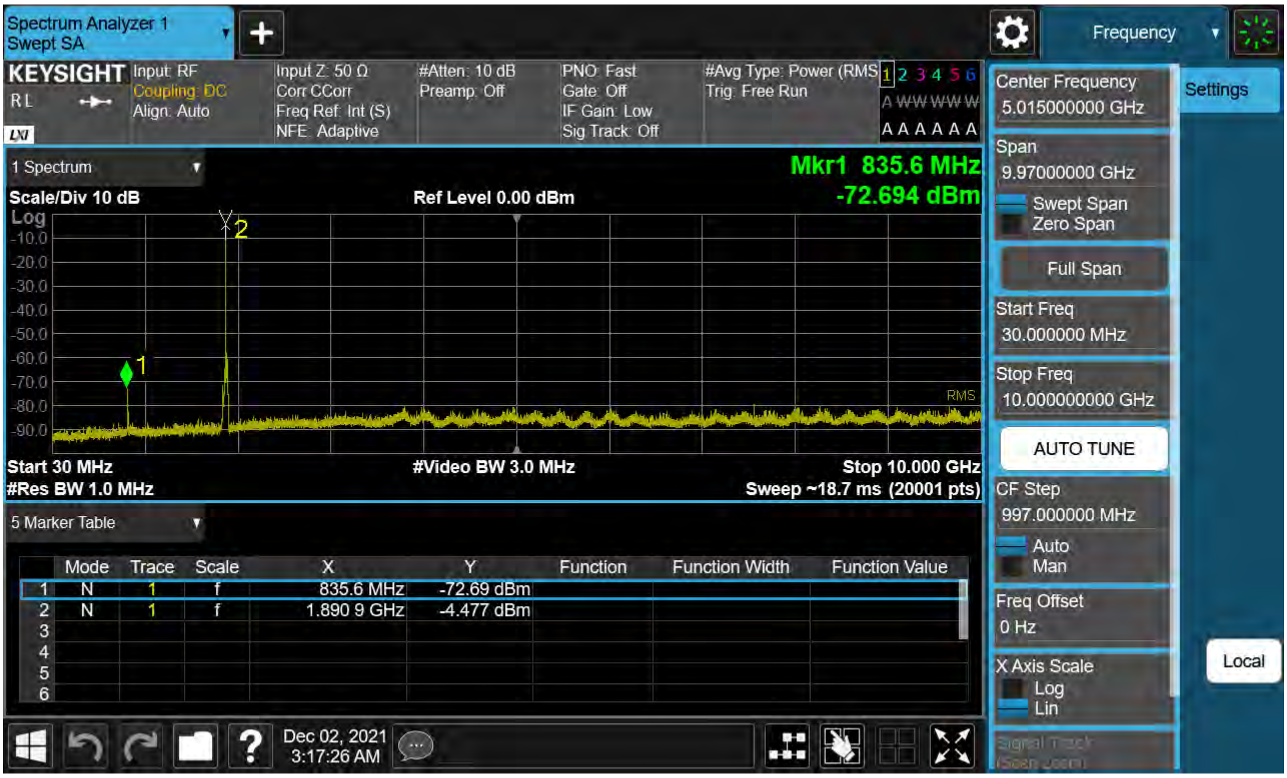
Sub6 n2. Conducted Spurious_1 (376000ch_20 MHz_ BPSK_RB 1_1)



	Mode	Trace	Scale	X	Y	Function	Function Width	Function Value
1	N	1	f	833.6 MHz	-75.02 dBm			
2	N	1	f	1.870 5 GHz	-5.214 dBm			
3								
4								
5								
6								

Sub6 n2. Conducted Spurious_2 (376000ch_20 MHz_ BPSK_RB 1_1)

Sub6 n2. Conducted Spurious_1 (380000ch_20 MHz_ BPSK_RB 1_1)



Sub6 n2. Conducted Spurious_2 (380000ch_20 MHz_BPSK_RB 1_1)

10. APPENDIX A_ TEST SETUP PHOTO

Please refer to test setup photo file no. as follows;

No.	Description
1	HCT-RF-2201-FC032-P