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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:
February 19, 2021

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

Report No.: HCT-RF-2102-FC029-R1

FCC ID: **A3LSMA326U**

APPLICANT: **SAMSUNG Electronics Co., Ltd.**

Model(s):	SM-A326U
Additional Model(s):	SM-A326U1/DS, SM-S326DL
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	ERP	
				Max. Power (W)	Max. Power (dBm)
Sub6 n71 (5)	665.5 - 695.5	4M48G7D	PI/2 BPSK	0.051	17.12
		4M50G7D	QPSK	0.051	17.08
		4M50W7D	16QAM	0.039	15.88
		4M48W7D	64QAM	0.028	14.46
		4M48W7D	256QAM	0.019	12.82
Sub6 n71 (10)	668.0 - 693.0	8M96G7D	PI/2 BPSK	0.049	16.88
		8M97G7D	QPSK	0.047	16.70
		8M97W7D	16QAM	0.036	15.51
		8M94W7D	64QAM	0.025	14.03
		8M95W7D	256QAM	0.018	12.48
Sub6 n71 (15)	670.5 - 690.5	13M4G7D	PI/2 BPSK	0.048	16.79
		13M4G7D	QPSK	0.046	16.61
		13M4W7D	16QAM	0.035	15.49
		13M5W7D	64QAM	0.025	14.00
		13M4W7D	256QAM	0.018	12.43
Sub6 n71 (20)	673.0 - 688.0	17M8G7D	PI/2 BPSK	0.047	16.72
		17M8G7D	QPSK	0.046	16.65
		17M8W7D	16QAM	0.036	15.58
		17M9W7D	64QAM	0.024	13.88
		17M9W7D	256QAM	0.019	12.77

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 : Jae Ryang Do
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-2102-FC029	February 10, 2021	- First Approval Report
HCT-RF-2102-FC029-R1	February 19, 2021	- Revised the ERP

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:	A3LSMA326U
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-A326U
Additional Model(s):	SM-A326U1/DS, SM-S326DL
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:	665.5 MHz – 695.5 MHz (Sub6 n71(5 MHz)) 668.0 MHz – 693.0 MHz (Sub6 n71(10 MHz)) 670.5 MHz – 690.5 MHz (Sub6 n71(15 MHz)) 673.0 MHz – 688.0 MHz (Sub6 n71(20 MHz))
Date(s) of Tests:	January 04, 2021 ~ February 05, 2021
Serial number:	Radiated: R3CNC01KD7D Conducted: 4C1B22D9E41C7ECE

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 (HT20/40/80), Bluetooth, BT LE, NFC.

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
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 1MHz
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 1MHz 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;

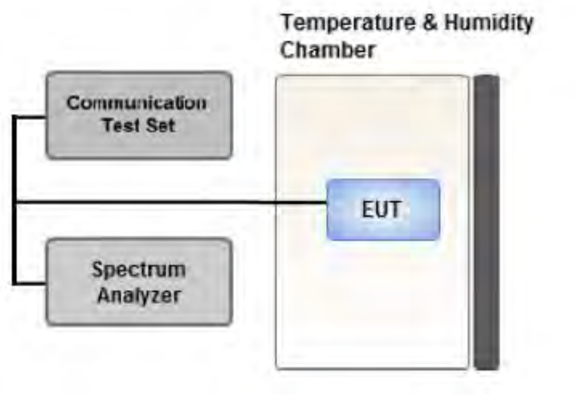
$$Result_{(dBm)} = Pg_{(dBm)} – cable\ loss_{(dB)} + antenna\ gain_{(dBi)}$$

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

   If the fundamental 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:

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

Test Settings(Peak Power)

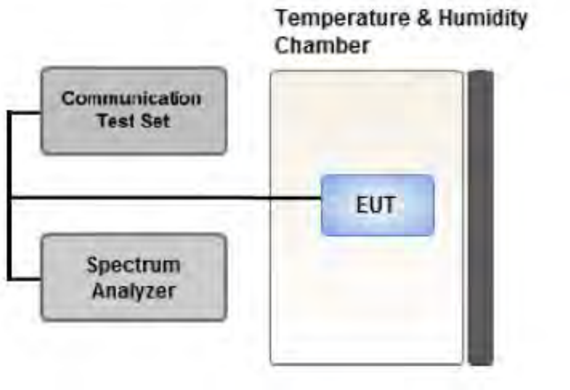
The measurement instrument must have a RBW that is greater than or equal to the OBW of the signal to be measured and a VBW ≥ 3 × RBW.

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.

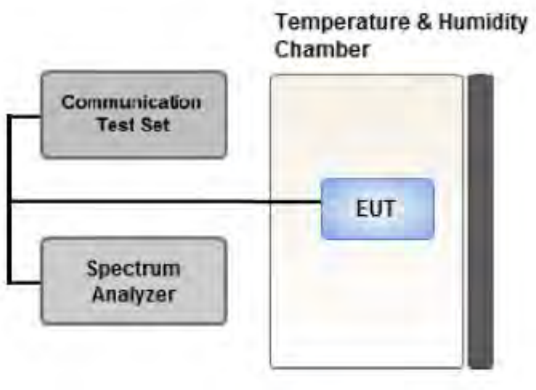
The conducted occupied bandwidth used the power splitter via EUT RF power connector between simulation base station and spectrum analyzer.

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 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.

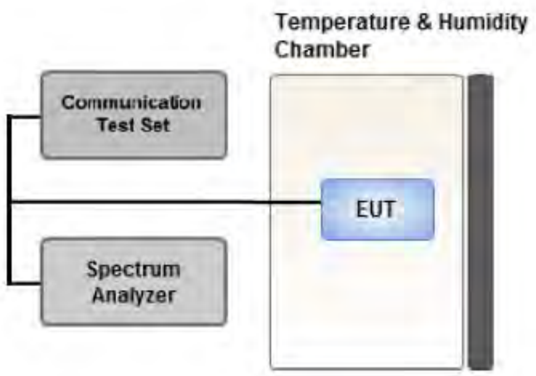
All out of band emissions are measured with a spectrum analyzer connected to the antenna terminal of the EUT while the EUT is operating at its maximum duty cycle, at maximum power, and at the appropriate frequencies.

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 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.

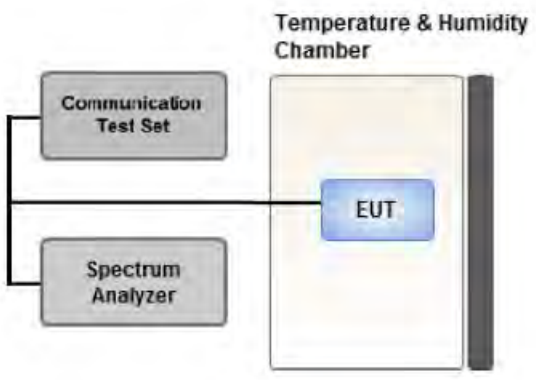
Test Settings

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.

(In the case of radiated spurious emissions, only the B.W result that confirmed the maximum radiated power was reported.)

- 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: 2A-n71A(BW 5MHz))
- All RB sizes, offsets of operation were investigated and the worst case configuration results are reported.
  Please refer to the table below.
- SM-A326U & additional models were tested and the worst case results are reported.
  (Worst case : SM-A326U)

[Worst case]

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

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.
- SM-A326U & additional models were tested and the worst case results are reported.
  (Worst case : SM-A326U)

[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	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

Manufacture	Model/ Equipment	Serial Number	Calibration Date	Calibration Interval	Calibration Due
Wainwright Instruments	WHKX10-900-1000-15000-40SS/ High Pass Filter	5	07/13/2020	Annual	07/13/2021
Wainwright Instruments	WHKX10-2700-3000-18000-40SS/ High Pass Filter	145	09/03/2020	Annual	09/03/2021
Wainwright Instruments	WHNX6-4740-6000-26500-40CC/ High Pass Filter	11	09/03/2020	Annual	09/03/2021
Hewlett Packard	11667B / Power Splitter(DC~26.5 GHz)	11275	04/27/2020	Annual	04/27/2021
CERNEX	LOW NOISE AMP (100MHz ~ 18GHz)	26822	06/04/2020	Annual	06/04/2021
CERNEX	CBL18265035 / Power Amplifier	22966	12/04/2020	Annual	12/04/2021
CERNEX	CBL26405040 / Power Amplifier	25956	03/23/2020	Annual	03/23/2021
Hewlett Packard	E3632A/DC Power Supply	MY40004427	09/16/2020	Annual	09/16/2021
Schwarzbeck	UHAP / Precision Dipole Antenna	01273	05/30/2020	Biennial	05/30/2022
Schwarzbeck	UHAP / Precision Dipole Antenna	01274	05/30/2020	Biennial	05/30/2022
ESPEC	SU-642 / Chamber	93008124	03/18/2020	Annual	03/18/2021
Schwarzbeck	BBHA 9120D/ Horn Antenna(1~18GHz)	02289	05/08/2020	Biennial	05/08/2022
Schwarzbeck	BBHA 9120D/ Horn Antenna(1~18GHz)	9120D-1299	05/10/2019	Biennial	05/10/2021
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)	101436	03/16/2020	Annual	03/16/2021
Rohde & Schwarz	FMZB1513/ Loop Antenna(9kHz~30MHz)	1513-175	05/18/2020	Biennial	05/18/2022
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
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
KEYSIGHT	E7515B / 5G Wireless Tester	MY60101126	05/28/2020	Annual	05/28/2021
Mini-Circuits	ZC4PD-K1844+ / 4-Way Divider	942907	09/14/2020	Annual	09/14/2021
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. 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
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(g)	< 43 + 10log10 (P[Watts]) at Band Edge and for all out-of-band emissions	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. Conducted tests were tested using 5G Wireless Tester.

6.2 Test Condition : Radiated Test

Test Description	FCC Part Section(s)	Test Limit	Test Result
Effective Radiated Power	§27.50(c)(10)	< 3 Watts max. ERP	PASS
Radiated Spurious and Harmonic Emissions	§2.1053, §27.53(g)	< 43 + 10log10 (P[Watts]) for all out-of band emissions	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
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 EFFECTIVE RADIATED POWER

Freq (MHz)	Mod/ Bandwidth [SCS (kHz)]	Modulation	Measured Level (dBm)	Substitute Level (dBm)	Ant. Gain(dBd)	C.L	Pol	Limit	ERP	
								W	W	dBm
665.5	Sub6 n71/ 5 MHz [15 kHz]	PI/2 BPSK	-30.23	27.25	-9.81	1.14	H	< 3.00	0.043	16.30
		QPSK	-30.30	27.18	-9.81	1.14	H		0.042	16.23
		16-QAM	-31.61	25.87	-9.81	1.14	H		0.031	14.92
		64-QAM	-33.01	24.47	-9.81	1.14	H		0.022	13.52
		256-QAM	-34.61	22.87	-9.81	1.14	H		0.016	11.92
680.5		PI/2 BPSK	-29.90	27.82	-9.78	1.16	H		0.049	16.88
		QPSK	-30.03	27.69	-9.78	1.16	H		0.047	16.75
		16-QAM	-31.21	26.51	-9.78	1.16	H		0.036	15.57
		64-QAM	-32.70	25.02	-9.78	1.16	H		0.026	14.08
		256-QAM	-34.21	23.51	-9.78	1.16	H		0.018	12.57
695.5		PI/2 BPSK	-29.51	28.04	-9.75	1.17	H		0.051	17.12
		QPSK	-29.55	28.00	-9.75	1.17	H		0.051	17.08
		16-QAM	-30.75	26.80	-9.75	1.17	H		0.039	15.88
		64-QAM	-32.17	25.38	-9.75	1.17	H		0.028	14.46
		256-QAM	-33.81	23.74	-9.75	1.17	H		0.019	12.82

Freq (MHz)	Mod/ Bandwidth [SCS (kHz)]	Modulation	Measured Level (dBm)	Substitute Level (dBm)	Ant. Gain(dBd)	C.L	Pol	Limit	ERP	
								W	W	dBm
668.0	Sub6 n71/ 10 MHz [15 kHz]	PI/2 BPSK	-30.38	27.06	-9.80	1.14	H	< 3.00	0.041	16.12
		QPSK	-30.60	26.84	-9.80	1.14	H		0.039	15.90
		16-QAM	-31.87	25.57	-9.80	1.14	H		0.029	14.63
		64-QAM	-33.35	24.09	-9.80	1.14	H		0.021	13.15
		256-QAM	-34.70	22.74	-9.80	1.14	H		0.015	11.80
680.5		PI/2 BPSK	-30.14	27.58	-9.78	1.16	H		0.046	16.64
		QPSK	-30.35	27.37	-9.78	1.16	H		0.044	16.43
		16-QAM	-31.72	26.00	-9.78	1.16	H		0.032	15.06
		64-QAM	-33.01	24.71	-9.78	1.16	H		0.024	13.77
		256-QAM	-34.60	23.12	-9.78	1.16	H		0.017	12.18
693.0		PI/2 BPSK	-29.71	27.79	-9.75	1.16	H		0.049	16.88
		QPSK	-29.89	27.61	-9.75	1.16	H		0.047	16.70
		16-QAM	-31.08	26.42	-9.75	1.16	H		0.036	15.51
		64-QAM	-32.56	24.94	-9.75	1.16	H		0.025	14.03
		256-QAM	-34.11	23.39	-9.75	1.16	H		0.018	12.48

Freq (MHz)	Mod/ Bandwidth [SCS (kHz)]	Modulation	Measured Level (dBm)	Substitute Level (dBm)	Ant. Gain(dBd)	C.L	Pol	Limit	ERP	
								W	W	dBm
670.5	Sub6 n71/ 15 MHz [15 kHz]	PI/2 BPSK	-30.28	27.30	-9.80	1.14	H	< 3.00	0.043	16.36
		QPSK	-30.35	27.23	-9.80	1.14	H		0.043	16.29
		16-QAM	-31.61	25.97	-9.80	1.14	H		0.032	15.03
		64-QAM	-33.21	24.37	-9.80	1.14	H		0.022	13.43
		256-QAM	-34.77	22.81	-9.80	1.14	H		0.015	11.87
680.5		PI/2 BPSK	-30.23	27.49	-9.78	1.16	H		0.045	16.55
		QPSK	-30.33	27.39	-9.78	1.16	H		0.044	16.45
		16-QAM	-31.45	26.27	-9.78	1.16	H		0.034	15.33
		64-QAM	-32.90	24.82	-9.78	1.16	H		0.024	13.88
		256-QAM	-34.41	23.31	-9.78	1.16	H		0.017	12.37
690.5		PI/2 BPSK	-29.91	27.71	-9.76	1.16	H		0.048	16.79
		QPSK	-30.09	27.53	-9.76	1.16	H		0.046	16.61
		16-QAM	-31.21	26.41	-9.76	1.16	H		0.035	15.49
		64-QAM	-32.70	24.92	-9.76	1.16	H		0.025	14.00
		256-QAM	-34.27	23.35	-9.76	1.16	H		0.018	12.43

Freq (MHz)	Mod/ Bandwidth [SCS (kHz)]	Modulation	Measured Level (dBm)	Substitute Level (dBm)	Ant. Gain(dBd)	C.L	Pol	Limit	ERP	
								W	W	dBm
673.0	Sub6 n71/ 20 MHz [15 kHz]	PI/2 BPSK	-30.31	27.36	-9.79	1.15	H	< 3.00	0.044	16.42
		QPSK	-30.40	27.27	-9.79	1.15	H		0.043	16.33
		16-QAM	-31.76	25.91	-9.79	1.15	H		0.031	14.97
		64-QAM	-33.09	24.58	-9.79	1.15	H		0.023	13.64
		256-QAM	-34.59	23.08	-9.79	1.15	H		0.016	12.14
680.5		PI/2 BPSK	-30.31	27.41	-9.78	1.16	H		0.044	16.47
		QPSK	-30.43	27.29	-9.78	1.16	H		0.043	16.35
		16-QAM	-31.75	25.97	-9.78	1.16	H		0.032	15.03
		64-QAM	-32.99	24.73	-9.78	1.16	H		0.024	13.79
		256-QAM	-34.71	23.01	-9.78	1.16	H		0.016	12.07
688.0		PI/2 BPSK	-30.09	27.64	-9.76	1.16	H		0.047	16.72
		QPSK	-30.16	27.57	-9.76	1.16	H		0.046	16.65
		16-QAM	-31.23	26.50	-9.76	1.16	H		0.036	15.58
		64-QAM	-32.93	24.80	-9.76	1.16	H		0.024	13.88
		256-QAM	-34.04	23.69	-9.76	1.16	H		0.019	12.77

8.2 RADIATED SPURIOUS EMISSIONS

- ▣ NR Band: N71
- ▣ LTE Band(Anchor): B2
- ▣ Bandwidth: 5 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
133100 (665.5)	1 331.00	-45.52	6.86	-54.76	1.64	H	-49.54	-13.00
	1 996.50	-56.98	9.71	-67.38	2.03	V	-59.70	-13.00
	2 662.00	-56.08	10.18	-63.98	2.37	V	-56.17	-13.00
136100 (680.5)	1 361.00	-47.69	7.20	-58.12	1.65	V	-52.57	-13.00
	2 041.50	-56.39	9.38	-66.13	2.04	V	-58.79	-13.00
	2 722.00	-57.72	10.62	-66.37	2.38	V	-58.13	-13.00
139100 (695.5)	1 391.00	-51.31	7.50	-61.78	1.68	H	-55.96	-13.00
	2 086.50	-55.02	8.88	-64.63	2.08	V	-57.82	-13.00
	2 782.00	-58.03	10.74	-66.27	2.42	H	-57.95	-13.00

Ch	Freq (MHz)	Measured Level (dBm)	Ant. Gain (dBi)	Substitute Level (dBm)	C.L	Pol	Result (dBm)	Limit (dBm)
18900 (1880.0)	3,760.00	-53.06	11.64	-58.90	2.85	V	-50.11	-13.00
	5,640.00	-57.46	12.00	-57.78	3.54	V	-49.32	-13.00
	7,520.00	-58.17	11.54	-49.94	4.12	H	-42.52	-13.00

8.3 PEAK-TO-AVERAGE RATIO

Band	Band Width	Frequency (MHz)	Modulation	Resource Block Size	Resource Block Offset	Data (dB)
Sub6 n71	5 MHz	680.5	BPSK	25	0	4.01
			QPSK			5.16
			16-QAM			5.96
			64-QAM			6.15
			256-QAM			6.44
	10 MHz		BPSK	52		4.00
			QPSK			5.09
			16-QAM			6.07
			64-QAM			6.19
			256-QAM			6.28
	15 MHz		BPSK	79		3.71
			QPSK			4.94
			16-QAM			5.73
			64-QAM			6.10
			256-QAM			6.25
	20 MHz		BPSK	106		3.63
			QPSK			4.79
			16-QAM			5.66
			64-QAM			5.90
			256-QAM			6.14

Note:

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

2. Peak- to- Average Ratio is not required. These values are reported for information only.

8.4 OCCUPIED BANDWIDTH

Band	Band Width	Frequency (MHz)	Modulation	Resource Block Size	Resource Block Offset	Data (MHz)
Sub6 n71	5 MHz	680.5	BPSK	25	0	4.4752
			QPSK			4.5021
			16-QAM			4.4995
			64-QAM			4.4771
			256-QAM			4.4764
	10 MHz		BPSK	52		8.9611
			QPSK			8.9647
			16-QAM			8.9653
			64-QAM			8.9436
			256-QAM			8.9513
	15 MHz		BPSK	79		13.423
			QPSK			13.426
			16-QAM			13.420
			64-QAM			13.465
			256-QAM			13.405
	20 MHz		BPSK	106		17.837
			QPSK			17.843
			16-QAM			17.815
			64-QAM			17.918
			256-QAM			17.917

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 n71	5	665.5	1.3271	30.981	-73.240	-42.259	-13.00
		680.5	1.7468	30.981	-76.163	-45.182	
		695.5	1.3869	30.981	-73.999	-43.018	
	10	668.0	1.3271	30.981	-73.417	-42.436	
		680.5	1.3520	30.981	-74.758	-43.777	
		693.0	1.3769	30.981	-75.645	-44.664	
	15	670.5	1.3271	30.981	-74.014	-43.033	
		680.5	1.3470	30.981	-73.195	-42.214	
		690.5	1.7463	30.981	-76.746	-45.765	
	20	673.0	1.3276	30.981	-73.414	-42.433	
		680.5	1.3426	30.981	-73.114	-42.133	
		688.0	1.3575	30.981	-76.203	-45.222	

Note:

1. Plots of the EUT's Conducted Spurious Emissions are shown Page 108 ~ 119.

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

3. Factor(dB) = Cable Loss + Attenuator + 4-Way Divider

Frequency Range (GHz)	Factor [dB]
0.03 – 1	28.493
1 – 5	30.981
5 – 10	31.591
10 – 15	32.116
15 – 20	32.489
Above 20(26.5)	33.131

8.6 BAND EDGE

- Plots of the EUT's Band Edge are shown Page 76 ~ 107.

8.7 FREQUENCY STABILITY / VARIATION OF AMBIENT TEMPERATURE

- ▣ BandWidth: 5 MHz
- ▣ Voltage(100%): 3.880 VDC
- ▣ Batt. Endpoint: 3.400 VDC
- ▣ LIMIT: Emission must remain in band

Test. Frequncy (MHz)	Voltage (%)	Temp. (℃)	Frequency (Hz)	Frequency Error (Hz)	Deviation (%)	ppm
665.5	100%	+20(Ref)	665 500 011	0.0	0.000 000	0.000
	100%	-30	665 500 023	11.4	0.000 002	0.017
	100%	-20	665 500 026	14.8	0.000 002	0.022
	100%	-10	665 500 022	11.2	0.000 002	0.017
	100%	0	665 500 021	9.8	0.000 001	0.015
	100%	+10	665 500 017	6.2	0.000 001	0.009
	100%	+30	665 500 023	12.0	0.000 002	0.018
	100%	+40	665 500 028	16.8	0.000 003	0.025
	100%	+50	665 500 017	5.7	0.000 001	0.009
	Batt. Endpoint	+20	665 500 021	9.5	0.000 001	0.014
695.5	100%	+20(Ref)	695 500 012	0.0	0.000 000	0.000
	100%	-30	695 500 020	7.6	0.000 001	0.011
	100%	-20	695 500 016	3.8	0.000 001	0.005
	100%	-10	695 500 026	13.5	0.000 002	0.019
	100%	0	695 500 024	12.0	0.000 002	0.017
	100%	+10	695 500 027	14.3	0.000 002	0.021
	100%	+30	695 500 029	16.2	0.000 002	0.023
	100%	+40	695 500 024	11.9	0.000 002	0.017
	100%	+50	695 500 026	14.1	0.000 002	0.020
	Batt. Endpoint	+20	695 500 022	9.7	0.000 001	0.014

▣ BandWidth: 10 MHz

▣ Voltage(100%): 3.880 VDC

▣ Batt. Endpoint: 3.400 VDC

▣ LIMIT: Emission must remain in band

Test. Frequncy (MHz)	Voltage (%)	Temp. (℃)	Frequency (Hz)	Frequency Error (Hz)	Deviation (%)	ppm
668.0	100%	+20(Ref)	668 000 016	0.0	0.000 000	0.000
	100%	-30	668 000 030	14.2	0.000 002	0.021
	100%	-20	668 000 022	6.5	0.000 001	0.010
	100%	-10	668 000 032	16.7	0.000 002	0.025
	100%	0	668 000 025	9.5	0.000 001	0.014
	100%	+10	668 000 031	15.0	0.000 002	0.022
	100%	+30	668 000 032	16.7	0.000 003	0.025
	100%	+40	668 000 027	11.3	0.000 002	0.017
	100%	+50	668 000 029	13.5	0.000 002	0.020
	Batt. Endpoint	+20	668 000 020	4.0	0.000 001	0.006
693.0	100%	+20(Ref)	693 000 016	0.0	0.000 000	0.000
	100%	-30	693 000 028	12.3	0.000 002	0.018
	100%	-20	693 000 028	11.5	0.000 002	0.017
	100%	-10	693 000 028	11.9	0.000 002	0.017
	100%	0	693 000 028	12.4	0.000 002	0.018
	100%	+10	693 000 028	11.5	0.000 002	0.017
	100%	+30	693 000 019	3.3	0.000 000	0.005
	100%	+40	693 000 026	10.2	0.000 001	0.015
	100%	+50	693 000 021	5.3	0.000 001	0.008
	Batt. Endpoint	+20	693 000 024	8.4	0.000 001	0.012

▣ BandWidth: 15 MHz

▣ Voltage(100%): 3.880 VDC

▣ Batt. Endpoint: 3.400 VDC

▣ LIMIT: Emission must remain in band

Test. Frequncy (MHz)	Voltage (%)	Temp. (℃)	Frequency (Hz)	Frequency Error (Hz)	Deviation (%)	ppm
670.0	100%	+20(Ref)	670 500 017	0.0	0.000 000	0.000
	100%	-30	670 500 027	10.3	0.000 002	0.015
	100%	-20	670 500 034	16.7	0.000 002	0.025
	100%	-10	670 500 031	14.1	0.000 002	0.021
	100%	0	670 500 021	3.9	0.000 001	0.006
	100%	+10	670 500 029	12.0	0.000 002	0.018
	100%	+30	670 500 028	11.7	0.000 002	0.017
	100%	+40	670 500 025	8.7	0.000 001	0.013
	100%	+50	670 500 033	15.8	0.000 002	0.024
	Batt. Endpoint	+20	670 500 024	7.6	0.000 001	0.011
690.0	100%	+20(Ref)	690 500 005	0.0	0.000 000	0.000
	100%	-30	690 500 015	10.2	0.000 001	0.015
	100%	-20	690 500 019	14.4	0.000 002	0.021
	100%	-10	690 500 017	12.4	0.000 002	0.018
	100%	0	690 500 019	14.2	0.000 002	0.021
	100%	+10	690 500 021	15.9	0.000 002	0.023
	100%	+30	690 500 018	13.2	0.000 002	0.019
	100%	+40	690 500 011	6.2	0.000 001	0.009
	100%	+50	690 500 010	5.4	0.000 001	0.008
	Batt. Endpoint	+20	690 500 020	15.6	0.000 002	0.023

▣ BandWidth: 20 MHz

▣ Voltage(100%): 3.880 VDC

▣ Batt. Endpoint: 3.400 VDC

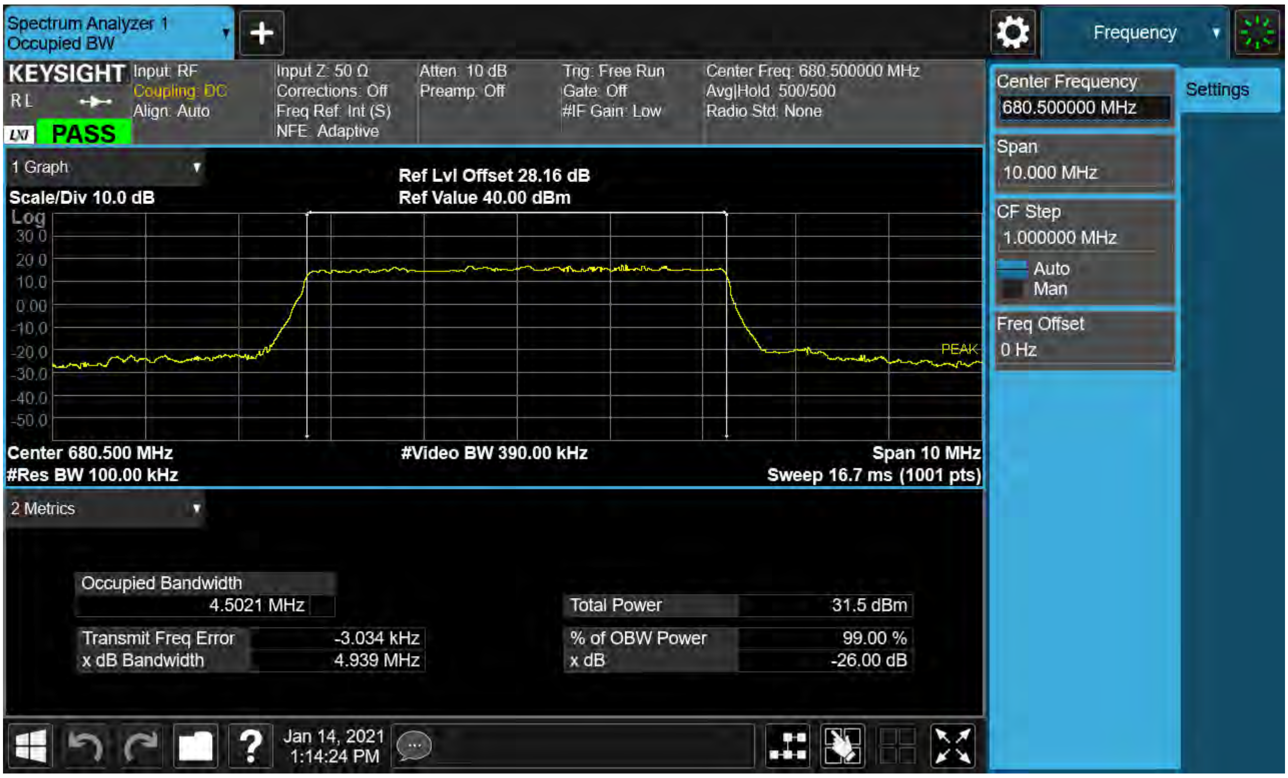
▣ LIMIT: Emission must remain in band

Test. Frequncy (MHz)	Voltage (%)	Temp. (℃)	Frequency (Hz)	Frequency Error (Hz)	Deviation (%)	ppm
673.0	100%	+20(Ref)	673 000 013	0.0	0.000 000	0.000
	100%	-30	673 000 023	9.9	0.000 001	0.015
	100%	-20	673 000 030	16.5	0.000 002	0.025
	100%	-10	673 000 019	5.8	0.000 001	0.009
	100%	0	673 000 023	9.3	0.000 001	0.014
	100%	+10	673 000 025	12.0	0.000 002	0.018
	100%	+30	673 000 020	6.3	0.000 001	0.009
	100%	+40	673 000 022	8.7	0.000 001	0.013
	100%	+50	673 000 020	6.5	0.000 001	0.010
	Batt. Endpoint	+20	673 000 025	11.6	0.000 002	0.017
688.0	100%	+20(Ref)	688 000 010	0.0	0.000 000	0.000
	100%	-30	688 000 021	10.7	0.000 002	0.015
	100%	-20	688 000 025	15.3	0.000 002	0.022
	100%	-10	688 000 015	4.9	0.000 001	0.007
	100%	0	688 000 026	16.3	0.000 002	0.024
	100%	+10	688 000 016	6.1	0.000 001	0.009
	100%	+30	688 000 019	8.9	0.000 001	0.013
	100%	+40	688 000 025	15.1	0.000 002	0.022
	100%	+50	688 000 021	11.3	0.000 002	0.016
	Batt. Endpoint	+20	688 000 015	5.3	0.000 001	0.008

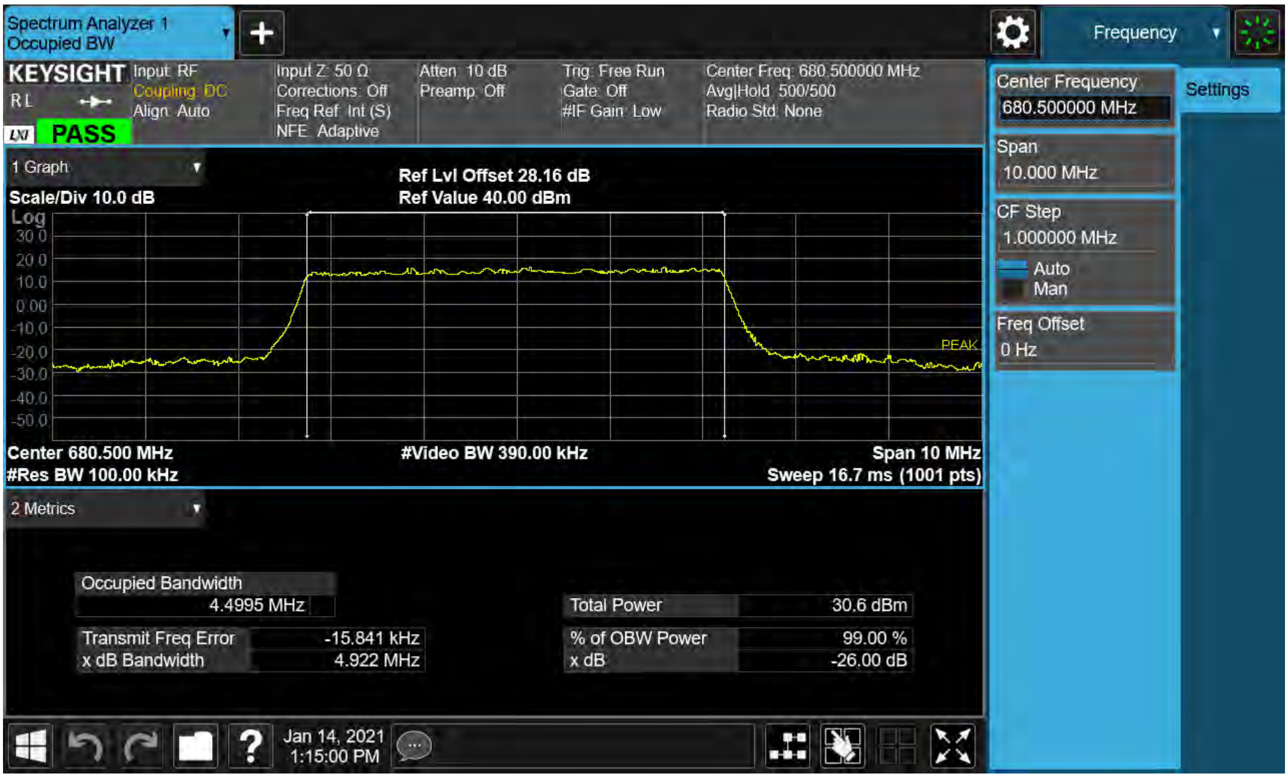
9. TEST PLOTS

Sub6 n71. Occupied Bandwidth Plot (5M BW Ch.136100 BPSK_RB25_0)

Sub6 n71. Occupied Bandwidth Plot (5M BW Ch.136100 QPSK_ RB25_0)



Sub6 n71. Occupied Bandwidth Plot (5M BW Ch.136100 16QAM_ RB25_0)



Sub6 n71. Occupied Bandwidth Plot (5M BW Ch.136100 64QAM_ RB25_0)

Sub6 n71. Occupied Bandwidth Plot (5M BW Ch.136100 256QAM_ RB25_0)

Sub6 n71. Occupied Bandwidth Plot (10M BW Ch.136100 BPSK_RB52_0)

Sub6 n71. Occupied Bandwidth Plot (10M BW Ch.136100 QPSK_ RB52_0)

Sub6 n71. Occupied Bandwidth Plot (10M BW Ch.136100 16QAM_ RB52_0)

Sub6 n71. Occupied Bandwidth Plot (10M BW Ch.136100 64QAM_ RB52_0)

Sub6 n71. Occupied Bandwidth Plot (10M BW Ch.136100 256QAM_ RB52_0)

Sub6 n71. Occupied Bandwidth Plot (15M BW Ch.136100 BPSK_ RB79_0)

Sub6 n71. Occupied Bandwidth Plot (15M BW Ch.136100 QPSK_ RB79_0)

Sub6 n71. Occupied Bandwidth Plot (15M BW Ch.136100 16QAM_ RB79_0)

Sub6 n71. Occupied Bandwidth Plot (15M BW Ch.136100 64QAM_ RB79_0)

Sub6 n71. Occupied Bandwidth Plot (15M BW Ch.136100 256QAM_ RB79_0)

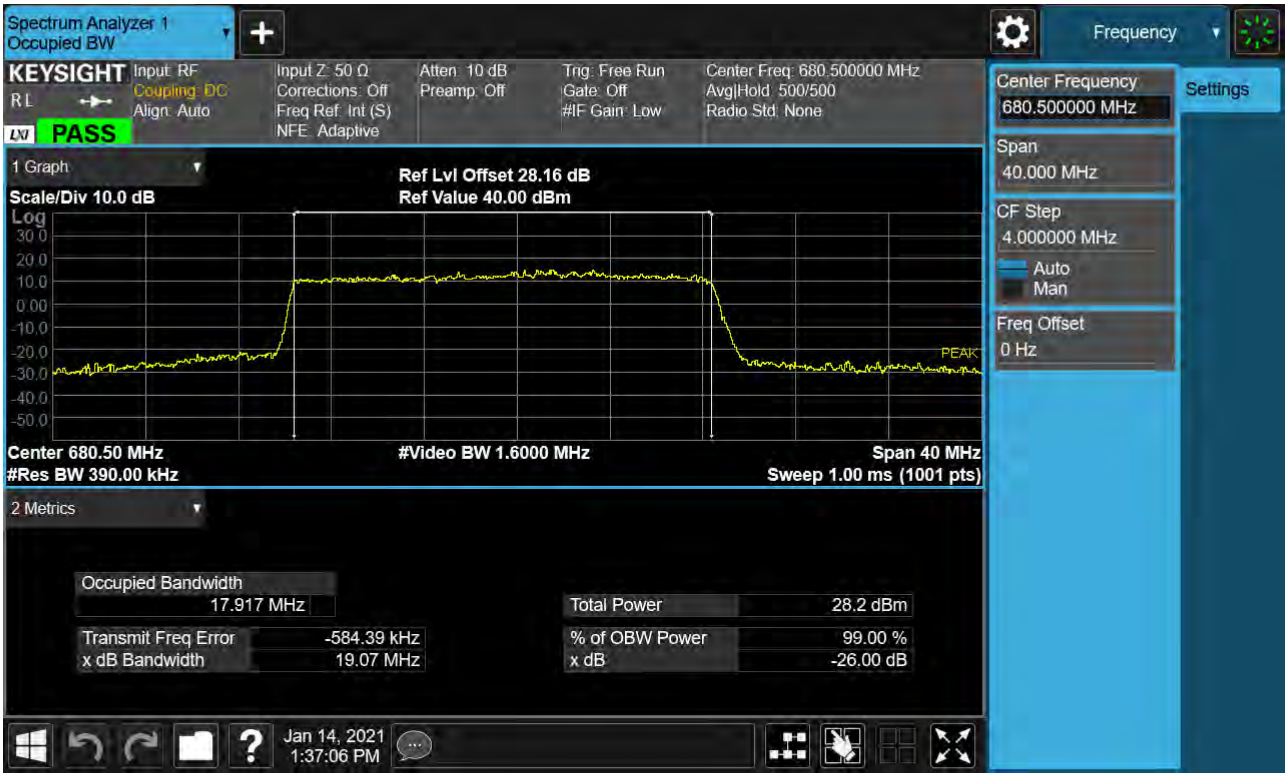
Sub6 n71. Occupied Bandwidth Plot (20M BW Ch.136100 BPSK_RB106_0)

Sub6 n71. Occupied Bandwidth Plot (20M BW Ch.136100 QPSK_ RB106_0)

Sub6 n71. Occupied Bandwidth Plot (20M BW Ch.136100 16QAM_ RB106_0)

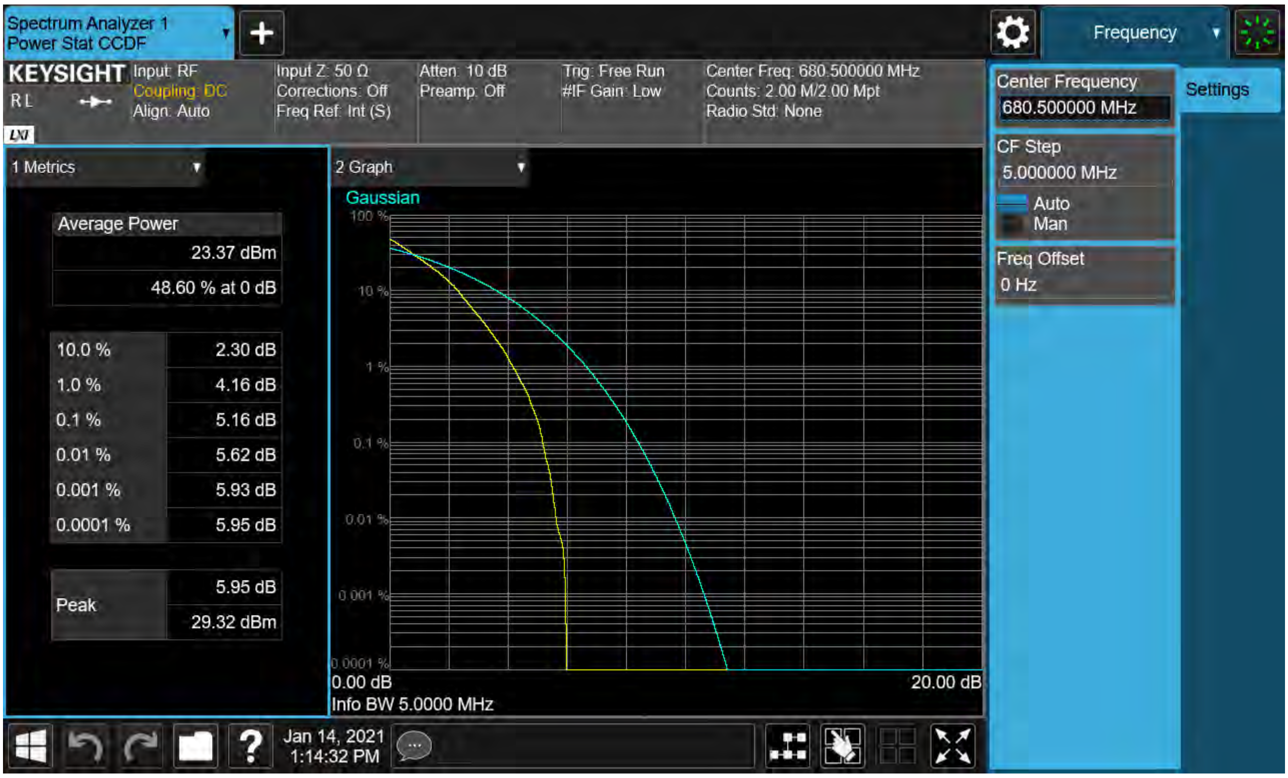
Sub6 n71. Occupied Bandwidth Plot (20M BW Ch.136100 64QAM_ RB106_0)

Sub6 n71. Occupied Bandwidth Plot (20M BW Ch.136100 256QAM_ RB106_0)

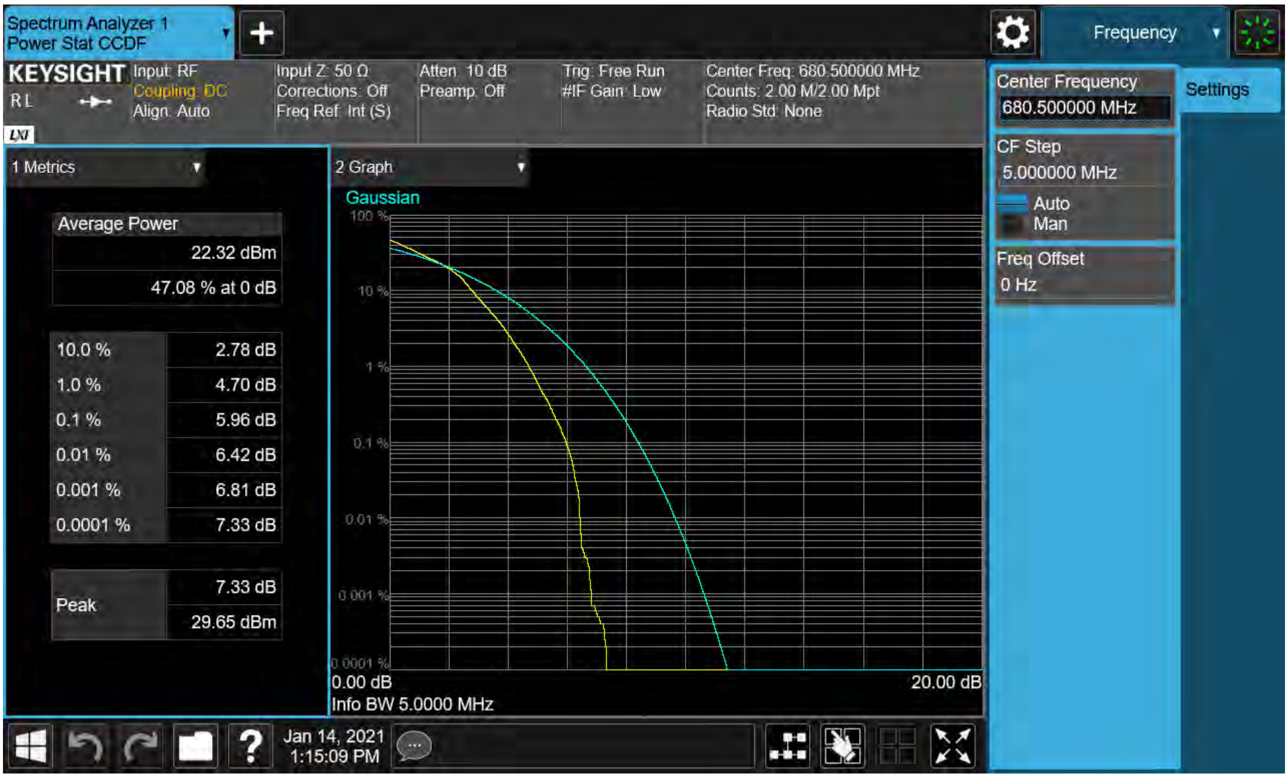


Sub6 n71. PAR Plot (5M BW_Ch.136100 _ BPSK_RB25_0)

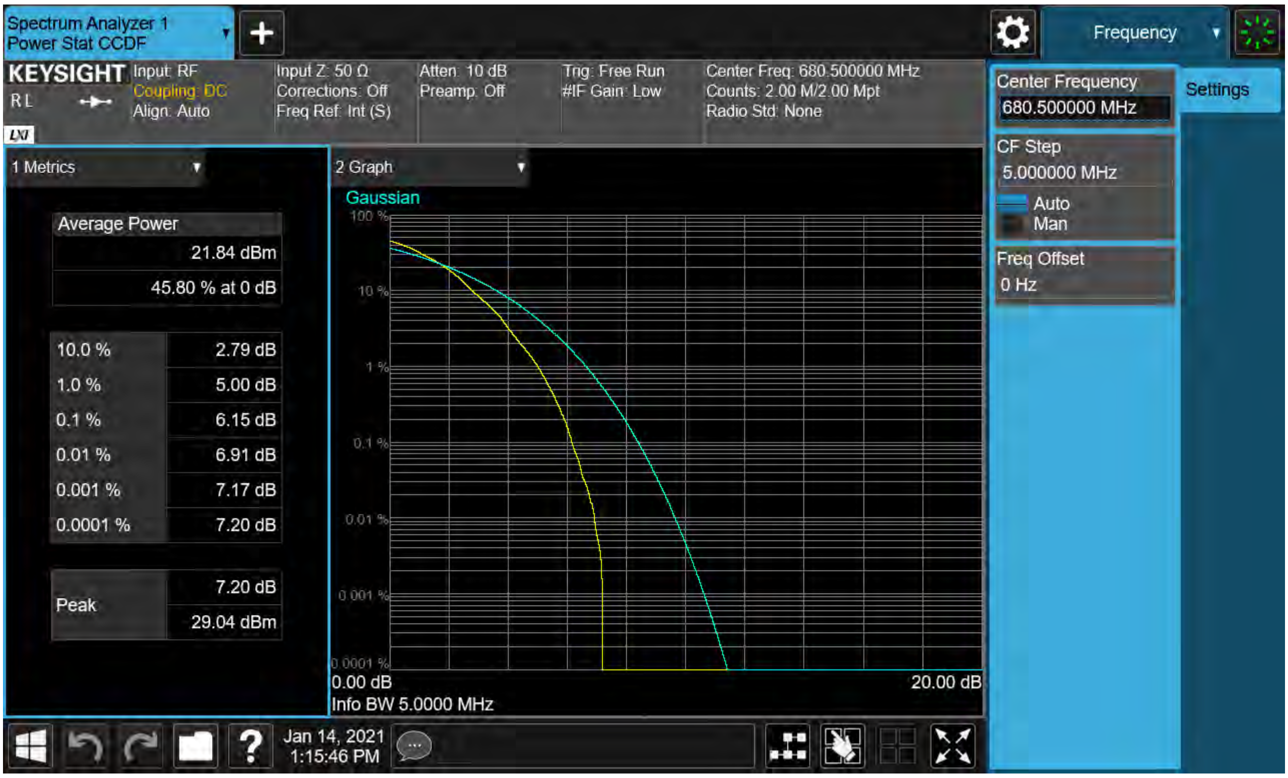
Sub6 n71. PAR Plot (5M BW_Ch.136100 _QPSK_RB25_0)



Sub6 n71. PAR Plot (5M BW_Ch.136100 _16QAM_RB25_0)

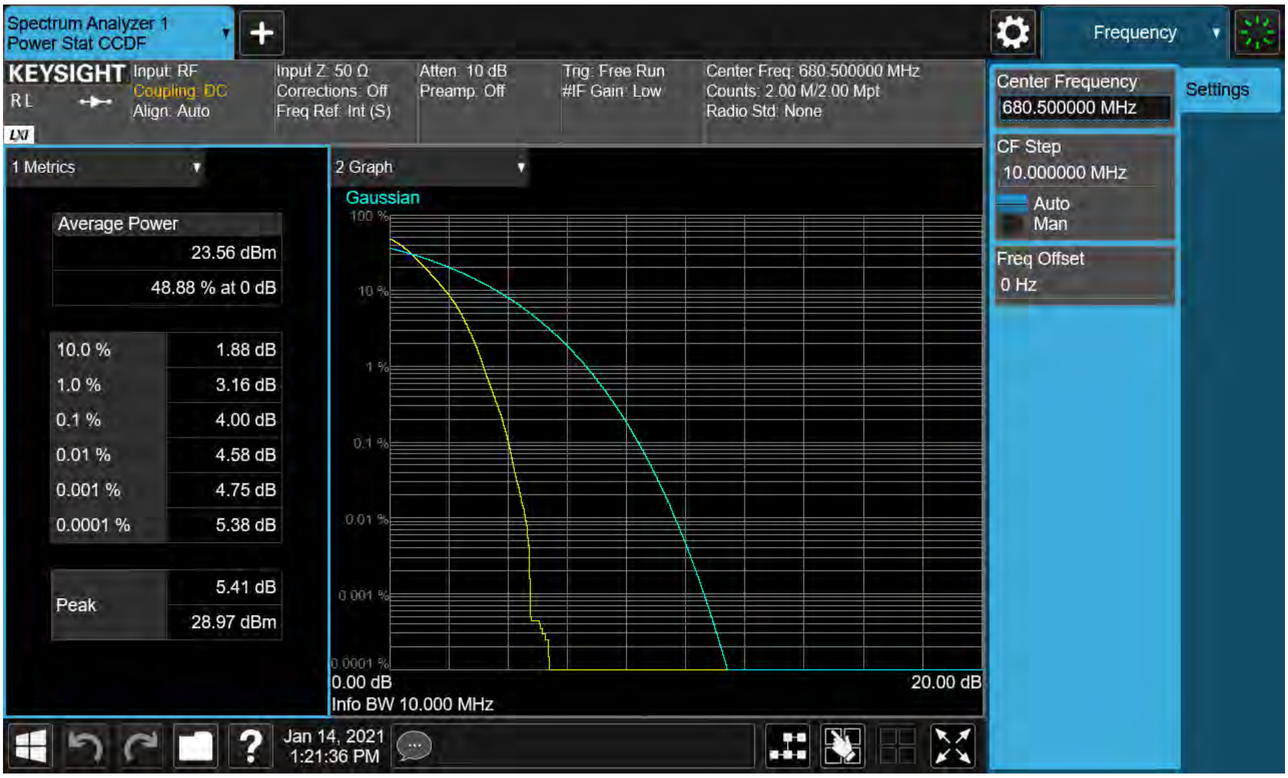


Sub6 n71. PAR Plot (5M BW_Ch.136100_64QAM_RB25_0)

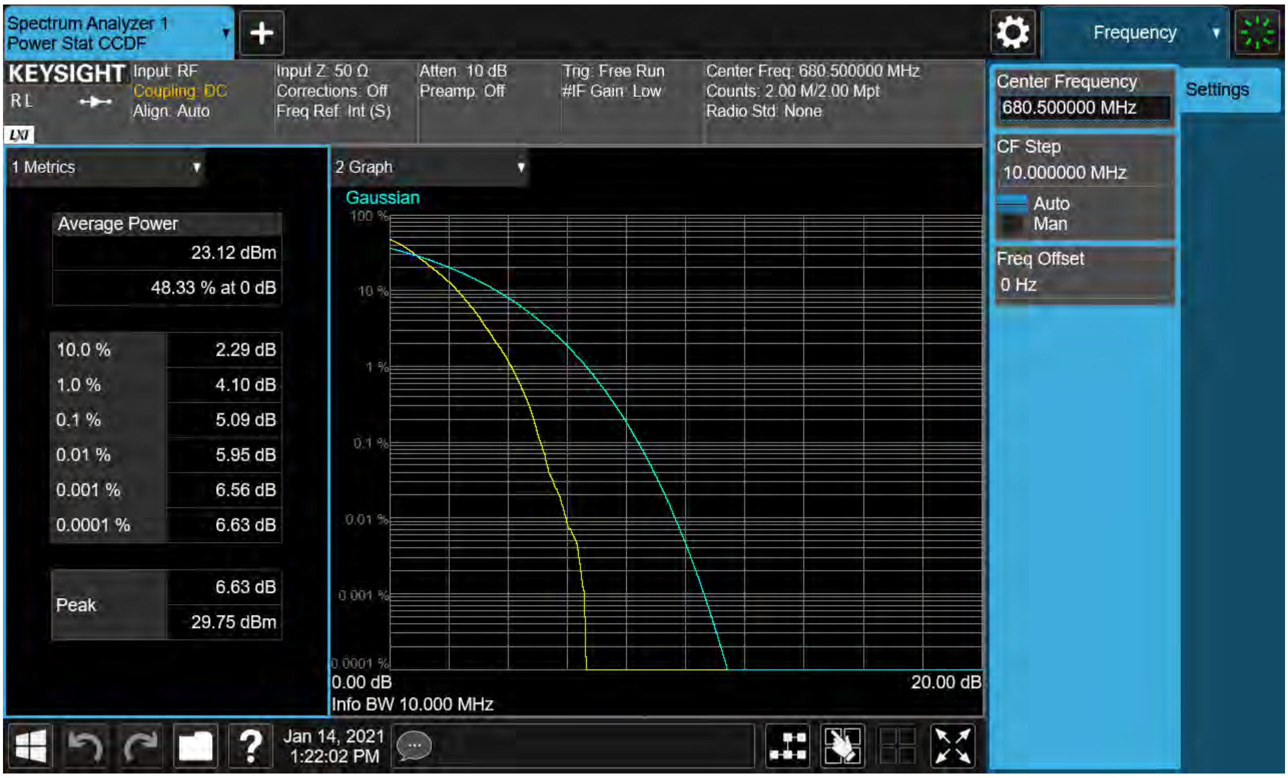


Sub6 n71. PAR Plot (5M BW_Ch.136100_256QAM_RB25_0)

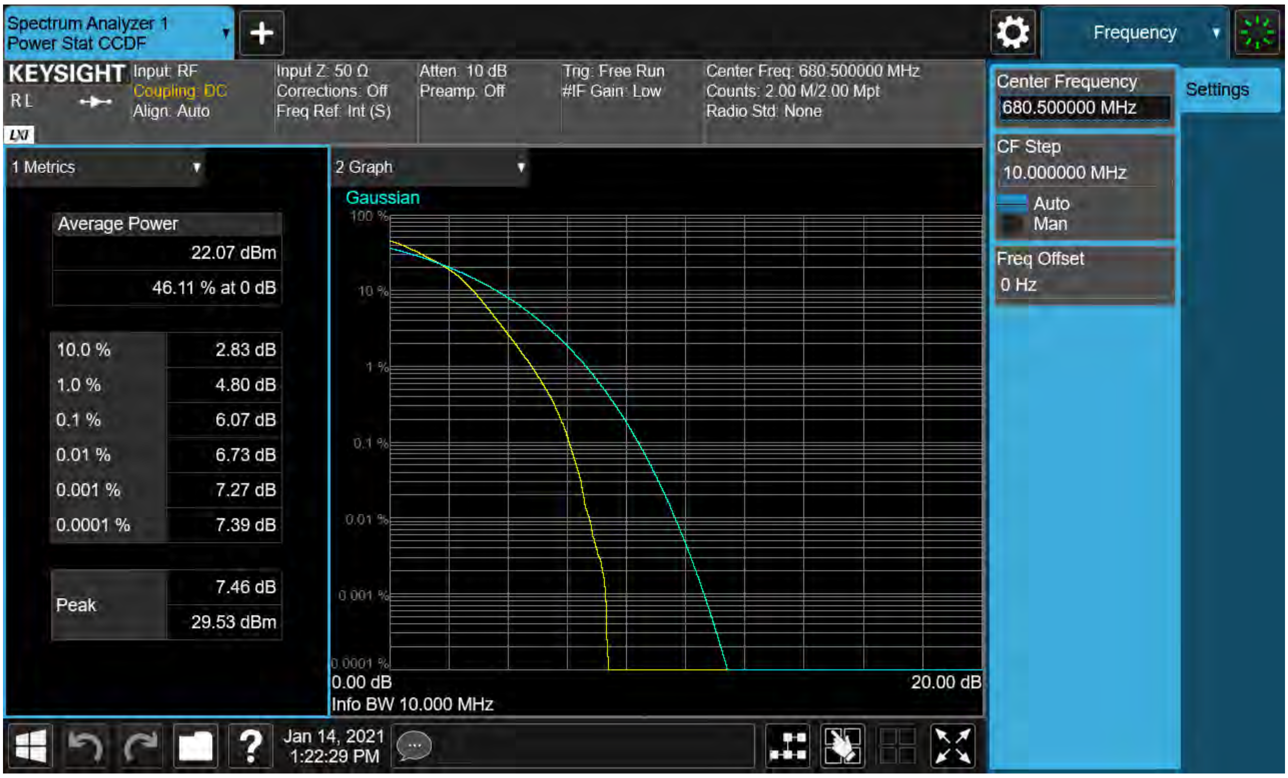
Sub6 n71. PAR Plot (10M BW_Ch.136100_ BPSK_RB52_0)



Sub6 n71. PAR Plot (10M BW_Ch.136100_QPSK_ RB52_0)



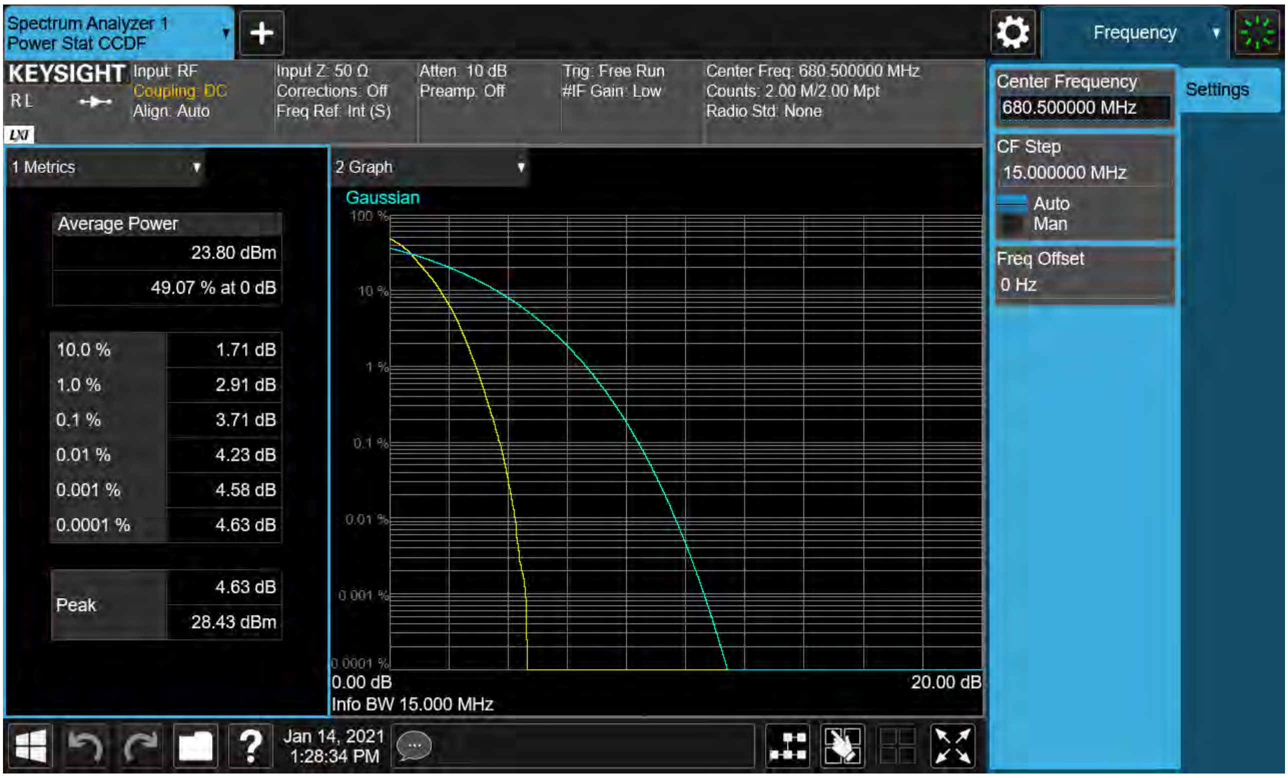
Sub6 n71. PAR Plot (10M BW_Ch.136100_16QAM_ RB52_0)



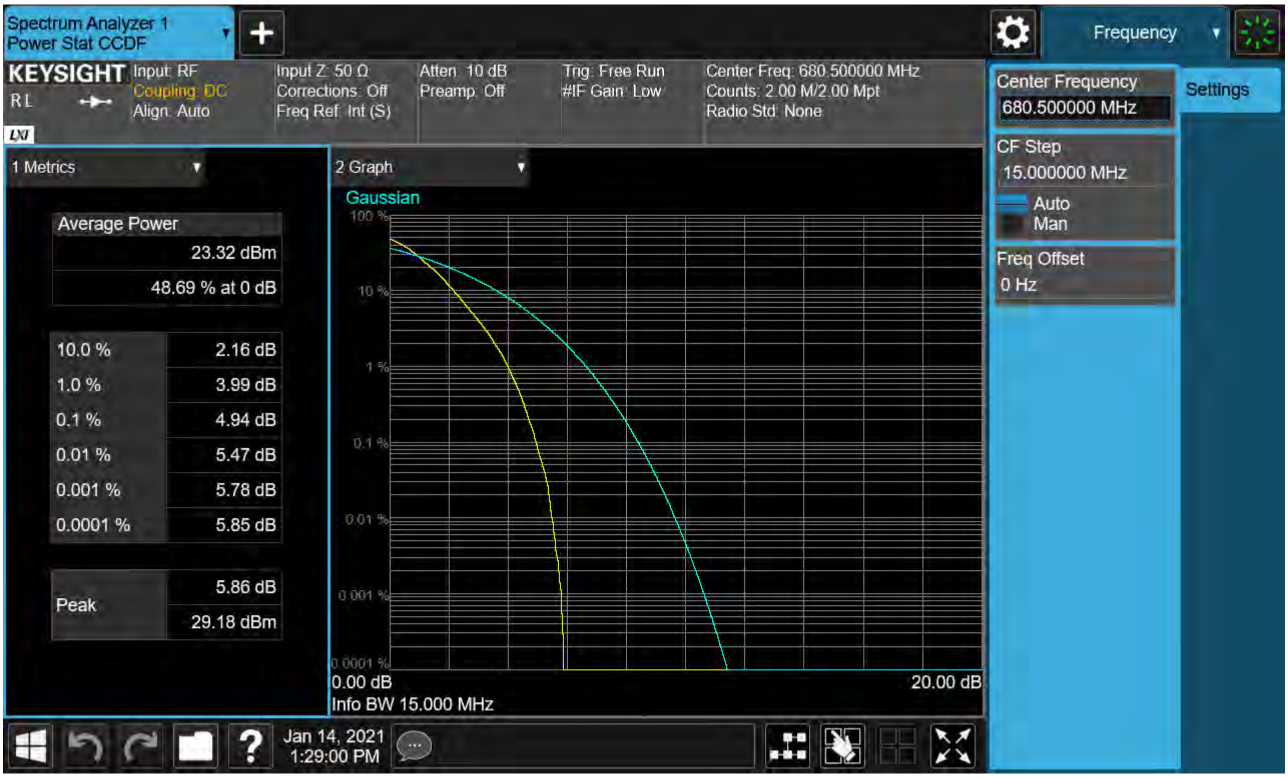
Sub6 n71. PAR Plot (10M BW_Ch.136100_64QAM_ RB52_0)

Sub6 n71. PAR Plot (10M BW_Ch.136100_256QAM_ RB52_0)

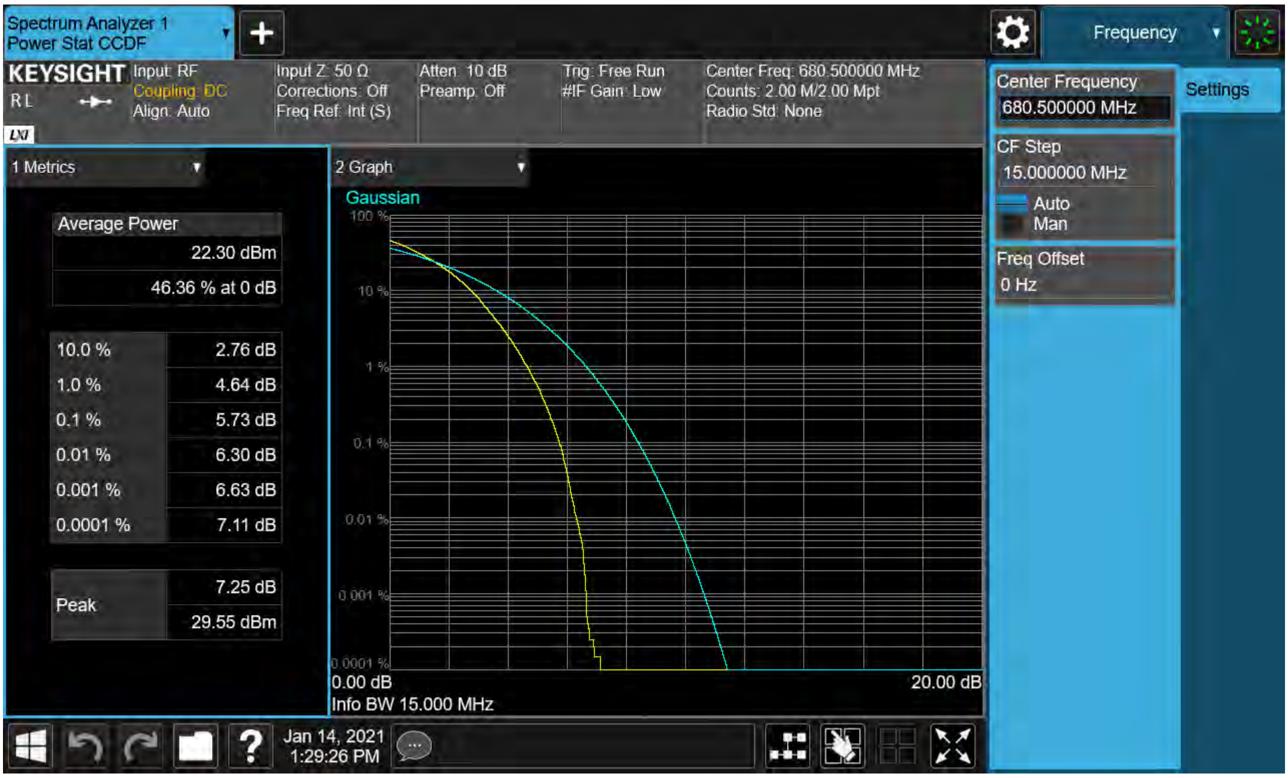
Sub6 n66. PAR Plot (15M BW_Ch.136100_ BPSK_RB79_0)



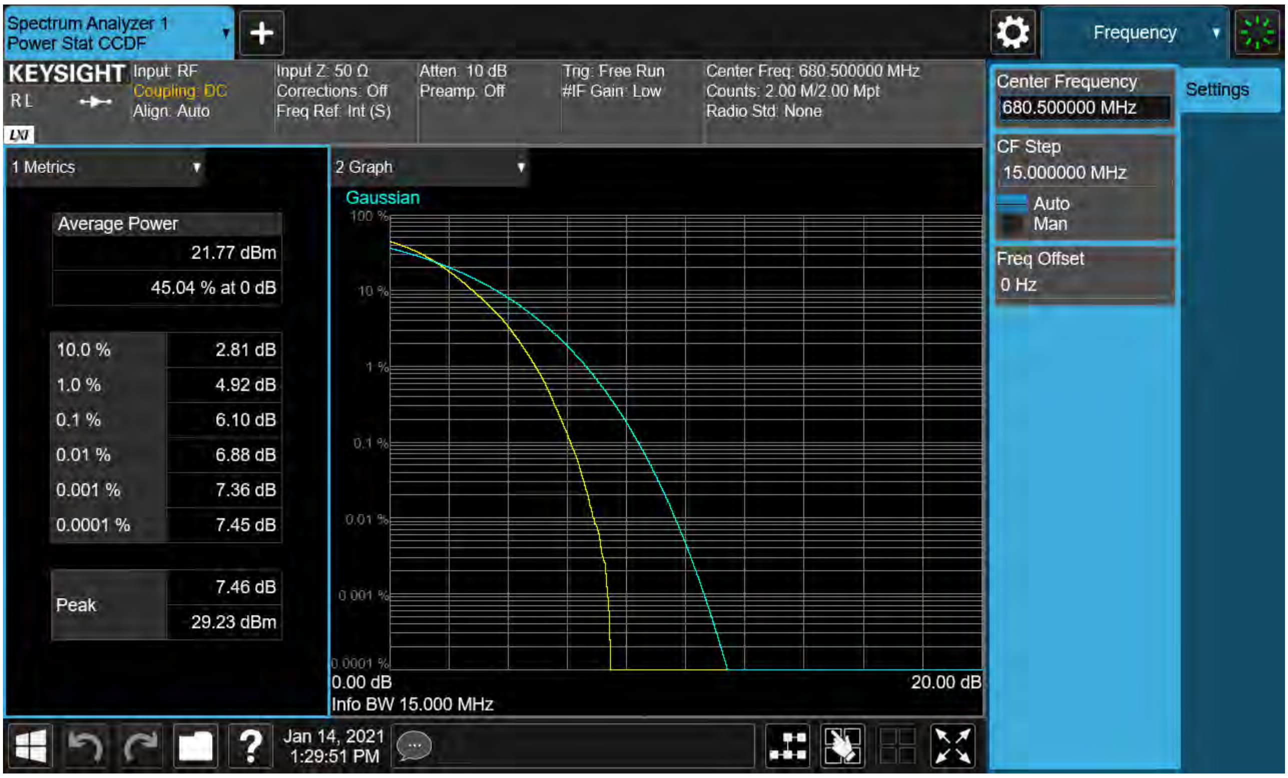
Sub6 n66. PAR Plot (15M BW_Ch.136100_QPSK_ RB79_0)



Sub6 n66. PAR Plot (15M BW_Ch.136100_16QAM_ RB79_0)

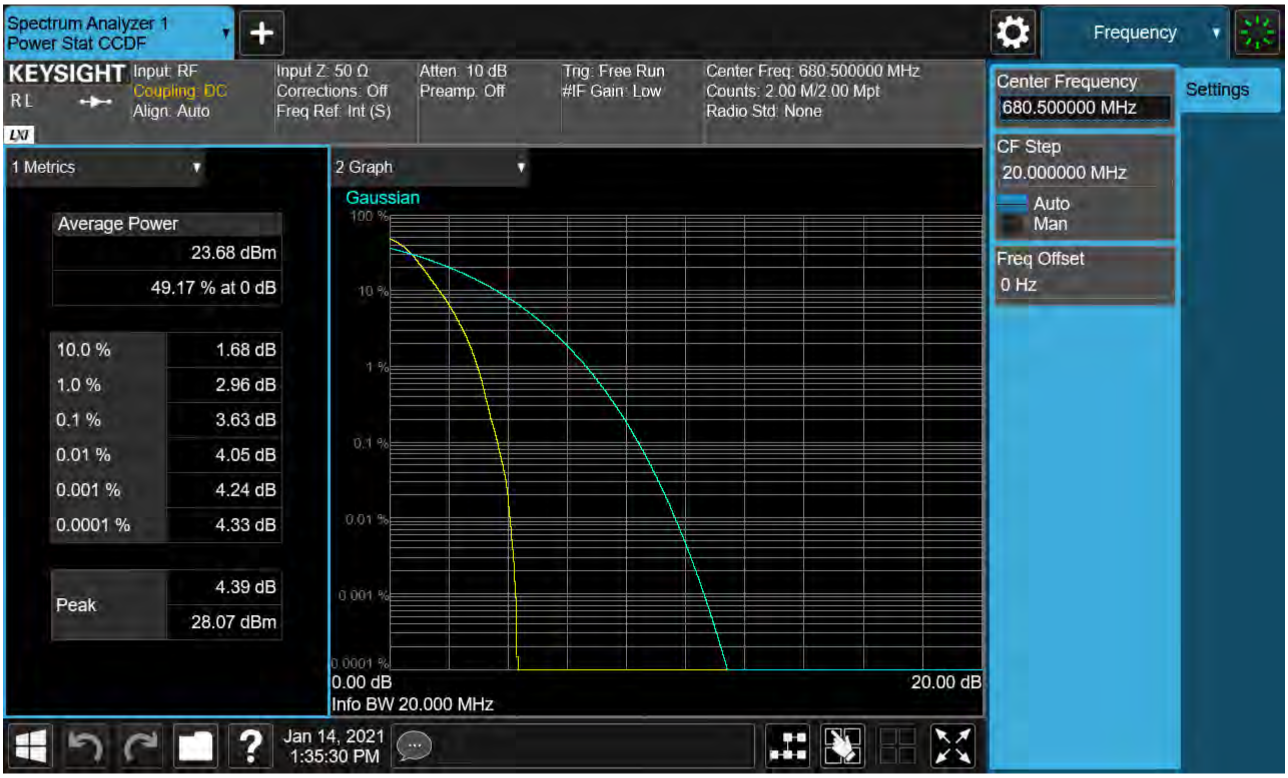


Sub6 n66. PAR Plot (15M BW_Ch.136100_64QAM_ RB79_0)

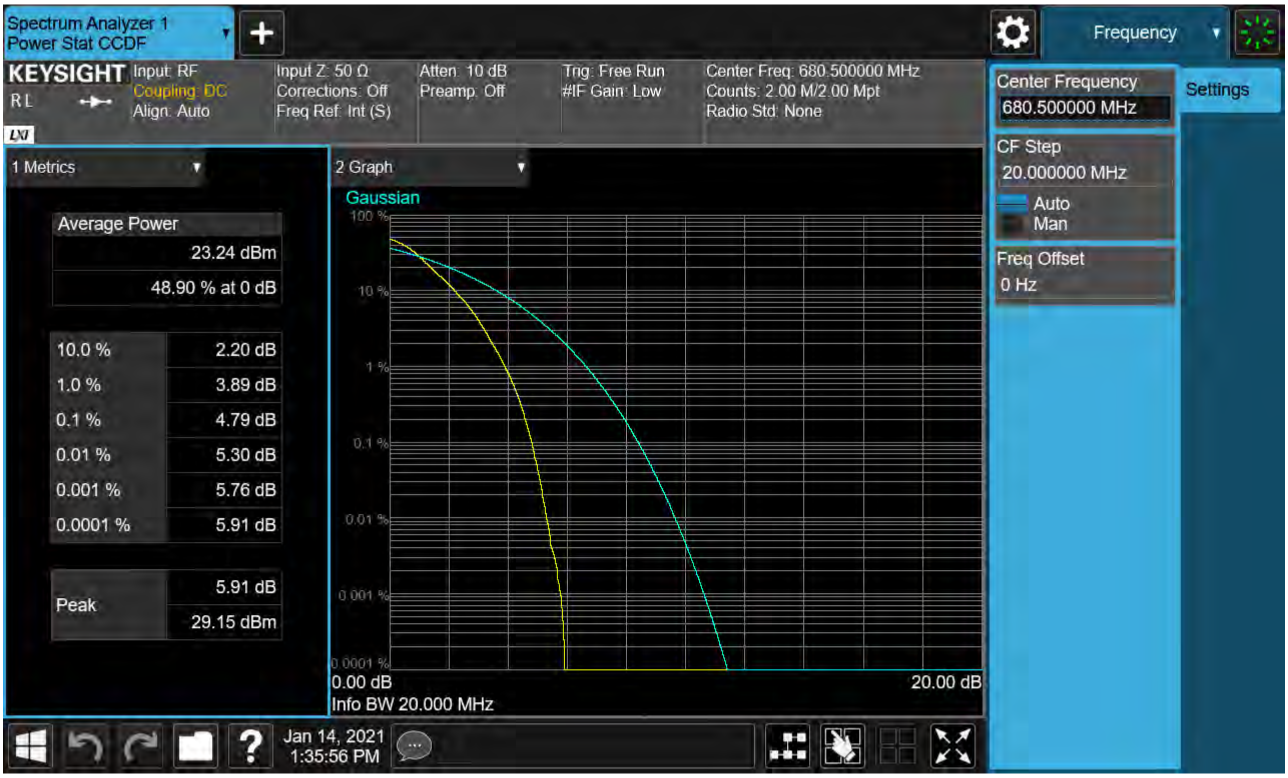


Sub6 n66. PAR Plot (15M BW_Ch.136100_256QAM_ RB79_0)

Sub6 n66. PAR Plot (20M BW_Ch.136100_ BPSK_RB106_0)



Sub6 n66. PAR Plot (20M BW_Ch.136100_QPSK_ RB106_0)



Sub6 n66. PAR Plot (20M BW_Ch.136100_16QAM_ RB106_0)

Sub6 n66. PAR Plot (20M BW_Ch.136100_64QAM_ RB106_0)

Sub6 n66. PAR Plot (20M BW_Ch.136100_256QAM_ RB106_0)

Sub6 n71. Lower Band Edge Plot (5M BW Ch.133100 BPSK_RB1_Offset 0)_1

Sub6 n71. Lower Band Edge Plot (5M BW Ch.133100 BPSK_RB1_Offset 0)_2

Sub6 n71. Lower Band Edge Plot (5M BW Ch.133100 BPSK_RB25_Offset 0)

Sub6 n71. Lower Extended Band Edge Plot (5M BW Ch.133100 BPSK_RB25_0)

Sub6 n71. Lower Band Edge Plot (10M BW Ch.133600 BPSK_RB1_Offset 0)_1

Sub6 n71. Lower Band Edge Plot (10M BW Ch.133600 BPSK_RB1_Offset 0)_2

Sub6 n71. Lower Band Edge Plot (10M BW Ch.133600 BPSK_RB52_Offset 0)

Sub6 n71. Lower Extended Band Edge Plot (10M BW Ch.133600 BPSK_RB52_0)

Sub6 n71. Lower Band Edge Plot (15M BW Ch.134100 BPSK_RB1_Offset 0)_1

Sub6 n71. Lower Band Edge Plot (15M BW Ch.134100 BPSK_RB1_Offset 0)_2

Sub6 n71. Lower Band Edge Plot (15M BW Ch.134100 BPSK_RB79_Offset 0)

Sub6 n71. Lower Extended Band Edge Plot (15M BW Ch.134100 BPSK_RB79_0)

Sub6 n71. Lower Band Edge Plot (20M BW Ch.134600 BPSK_RB1_Offset 0)_1

Sub6 n71. Lower Band Edge Plot (20M BW Ch.134600 BPSK_RB1_Offset 0)_2

Sub6 n71. Lower Band Edge Plot (20M BW Ch.134600 BPSK_RB106_Offset 0)

Sub6 n71. Lower Extended Band Edge Plot (20M BW Ch.134600 BPSK_RB106_0)

Sub6 n71. Upper Band Edge Plot (5M BW Ch.139100 BPSK_RB1_Offset 24)_1

Sub6 n71. Upper Band Edge Plot (5M BW Ch.139100 BPSK_RB1_Offset 24)_2

Sub6 n71. Upper Band Edge Plot (5M BW Ch.139100 BPSK_RB25_Offset 0)

Sub6 n71. Upper Extended Band Edge Plot (5M BW Ch.139100 BPSK_RB25_0)

Sub6 n71. Upper Band Edge Plot (10M BW Ch.138600 BPSK_RB1_Offset 51)-1

Sub6 n71. Upper Band Edge Plot (10M BW Ch.138600 BPSK_RB1_Offset 51)-2

Sub6 n71. Upper Band Edge Plot (10M BW Ch.138600 BPSK_RB52_Offset 0)

Sub6 n71. Upper Extended Band Edge Plot (10M BW Ch.138600 BPSK_RB52_0)

Sub6 n71. Upper Band Edge Plot (15M BW Ch.138100 BPSK_RB1_Offset 78)_1

Sub6 n71. Upper Band Edge Plot (15M BW Ch.138100 BPSK_RB1_Offset 78)_2

Sub6 n71. Upper Band Edge Plot (15M BW Ch.138100 BPSK_RB79_Offset 0)

Sub6 n71. Upper Extended Band Edge Plot (15M BW Ch.138100 BPSK_RB79_0)

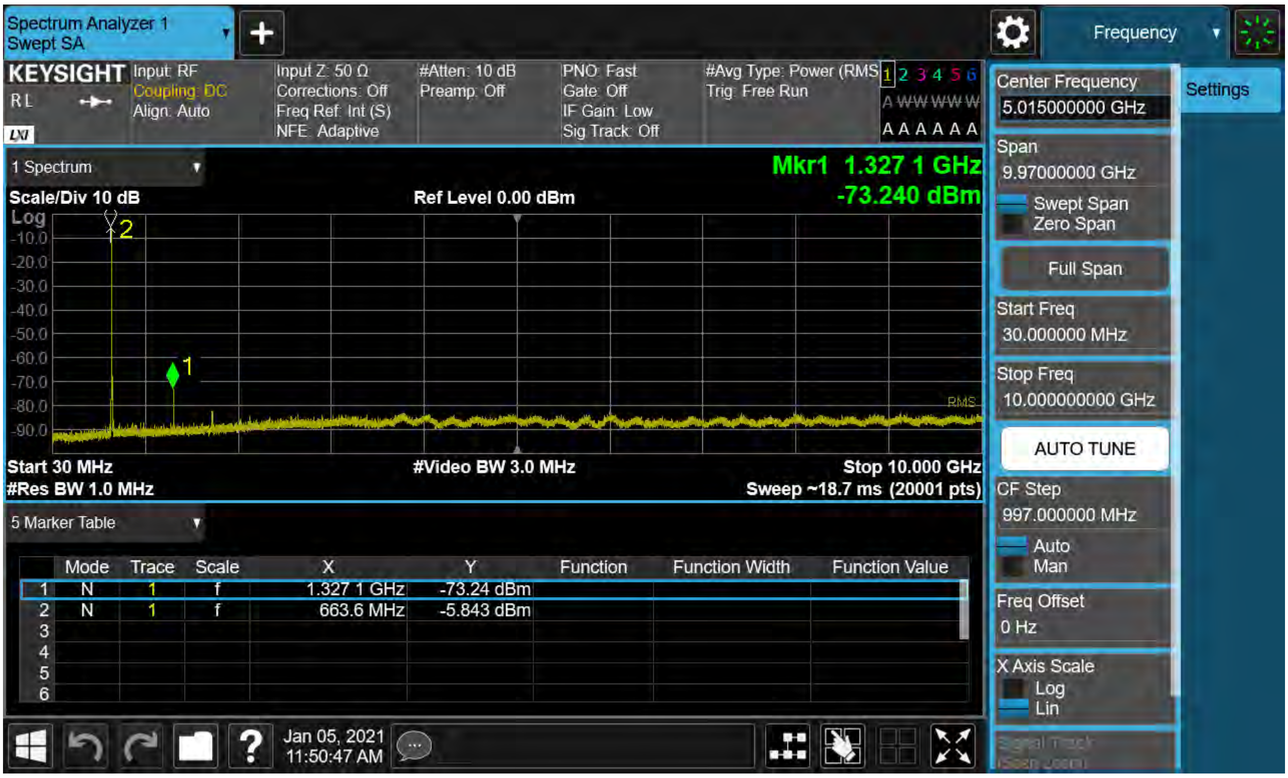
Sub6 n71. Upper Band Edge Plot (20M BW Ch.137600 BPSK_RB1_Offset 105)_1

Sub6 n71. Upper Band Edge Plot (20M BW Ch.137600 BPSK_RB1_Offset 105)_2

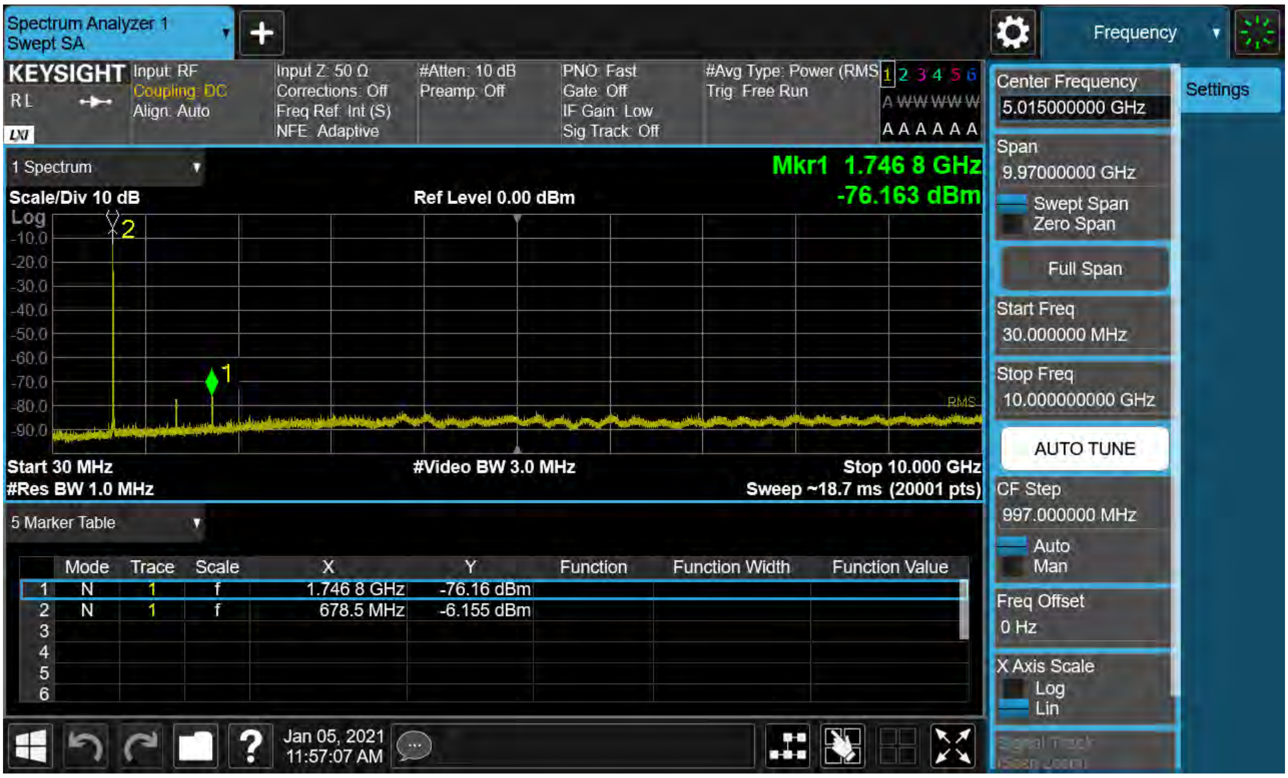
Sub6 n71. Upper Band Edge Plot (20M BW Ch.137600 BPSK_RB106_Offset 0)

Sub6 n71. Upper Extended Band Edge Plot (20M BW Ch.137600 BPSK_RB106_0)

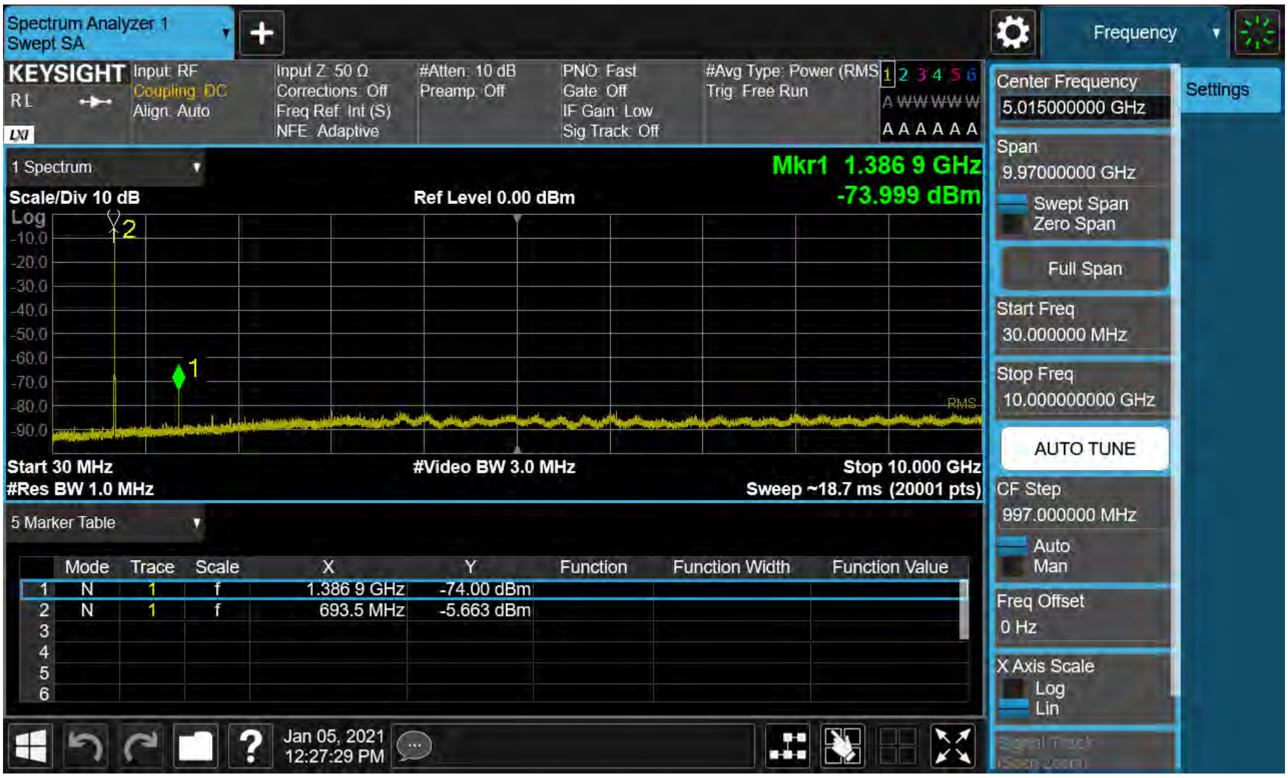
Sub6 n71. Conducted Spurious Plot _ (133100ch_5 MHz_BPSK_RB 1_1)



Sub6 n71. Conducted Spurious Plot _ (136100ch_5 MHz_BPSK_RB 1_1)

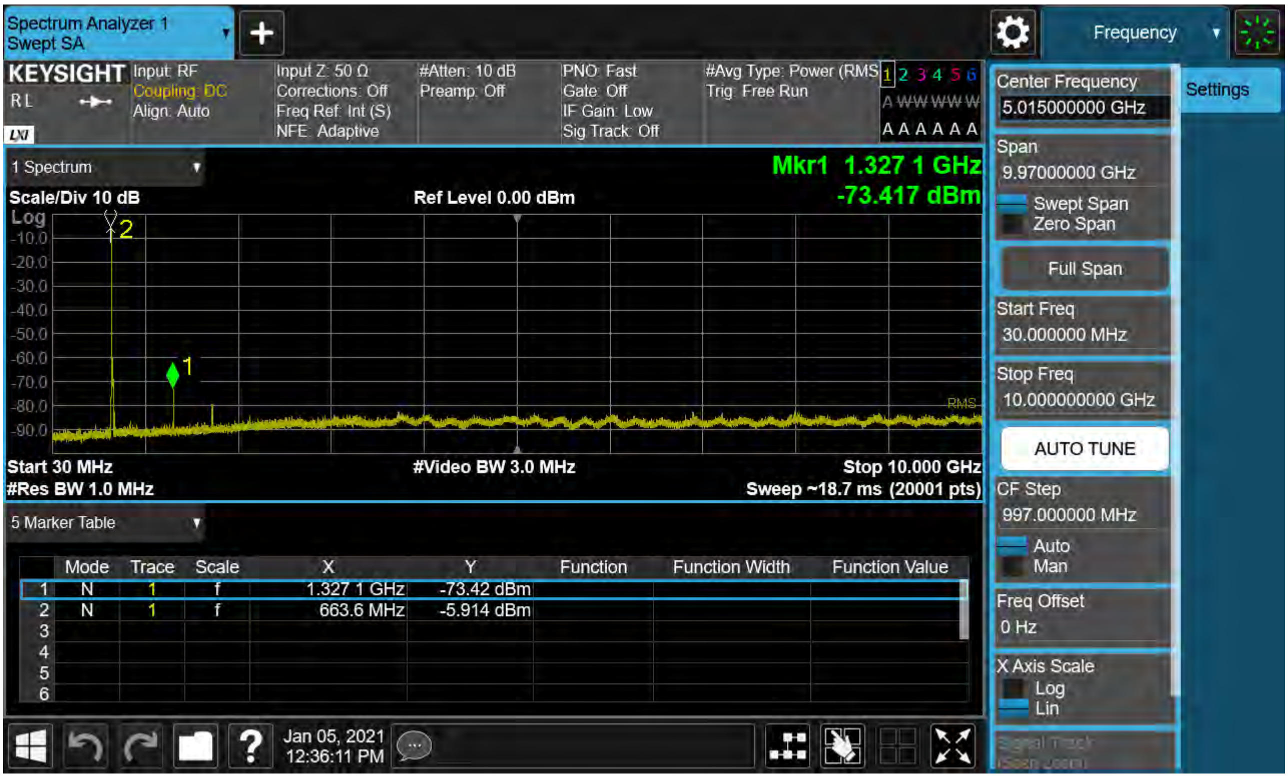


Sub6 n71. Conducted Spurious Plot _ (139100ch_5 MHz_BPSK_RB 1_1)



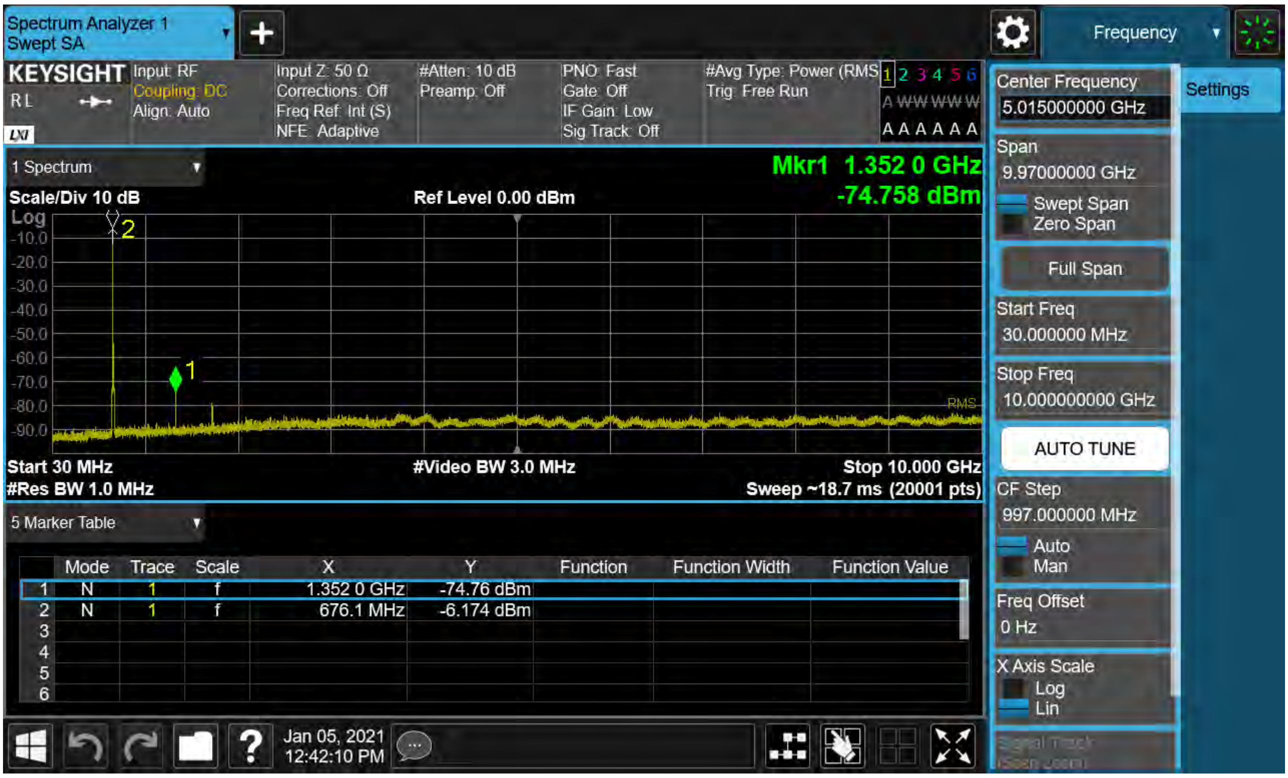
	Mode	Trace	Scale	X	Y	Function	Function Width	Function Value
1	N	1	f	1.386 9 GHz	-74.00 dBm			
2	N	1	f	693.5 MHz	-5.663 dBm			
3								
4								
5								
6								

Sub6 n71. Conducted Spurious Plot _ (133600ch_10 MHz_BPSK_RB 1_1)

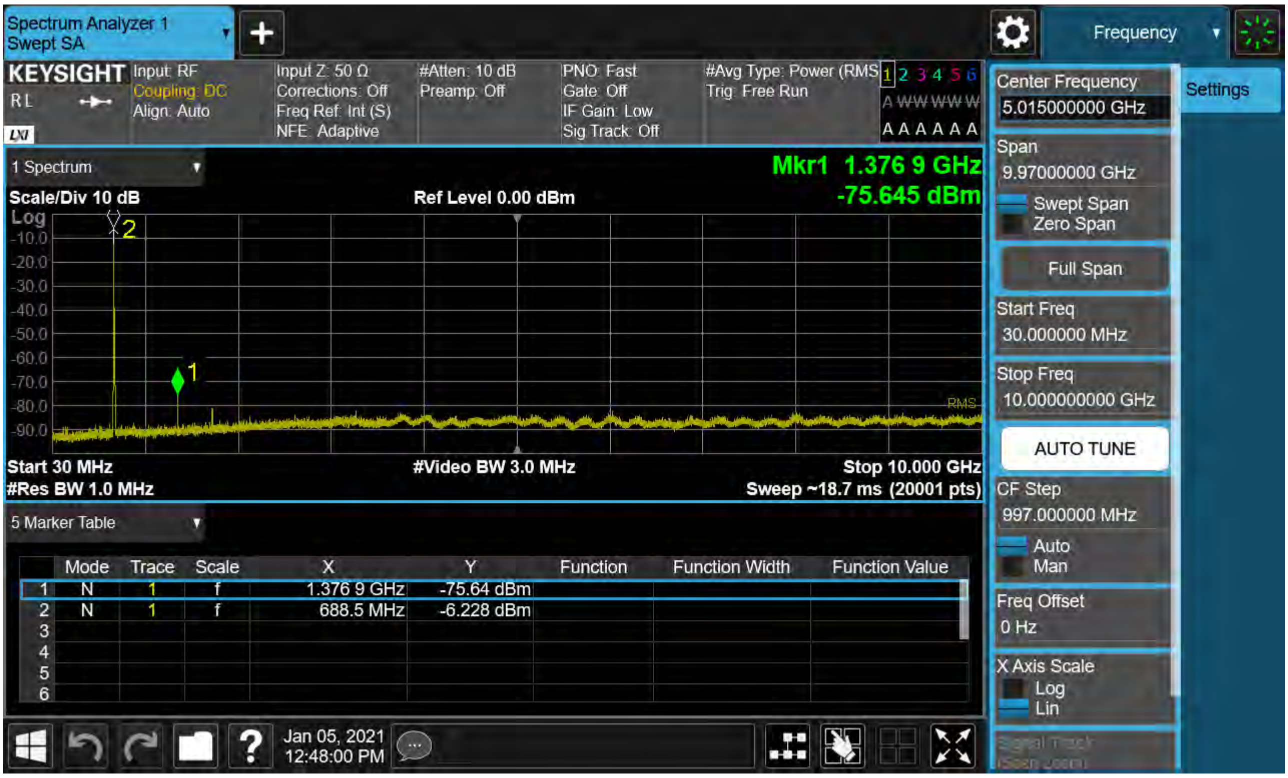


	Mode	Trace	Scale	X	Y	Function	Function Width	Function Value
1	N	1	f	1.327 1 GHz	-73.42 dBm			
2	N	1	f	663.6 MHz	-5.914 dBm			
3								
4								
5								
6								

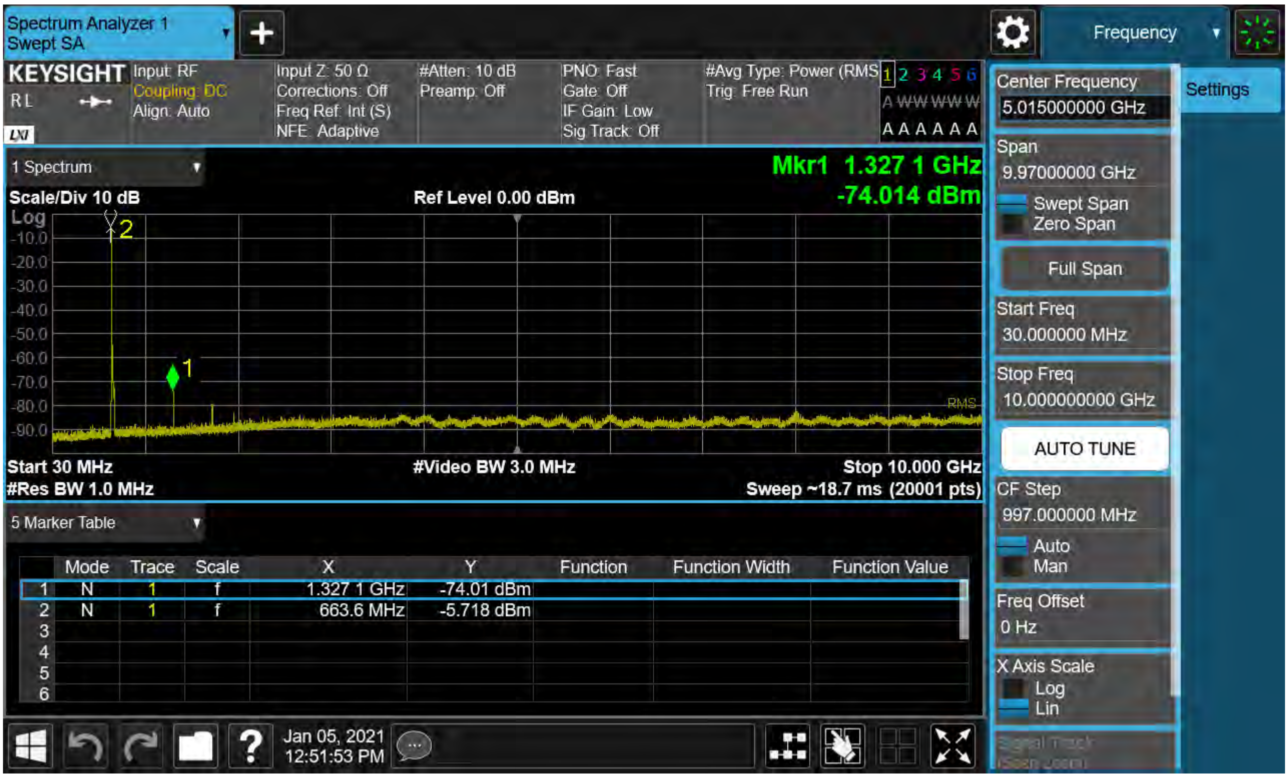
Sub6 n71. Conducted Spurious Plot _ (136100ch_10 MHz_BPSK_RB 1_1)



Sub6 n71. Conducted Spurious Plot _ (138600ch_10 MHz_BPSK_RB 1_1)

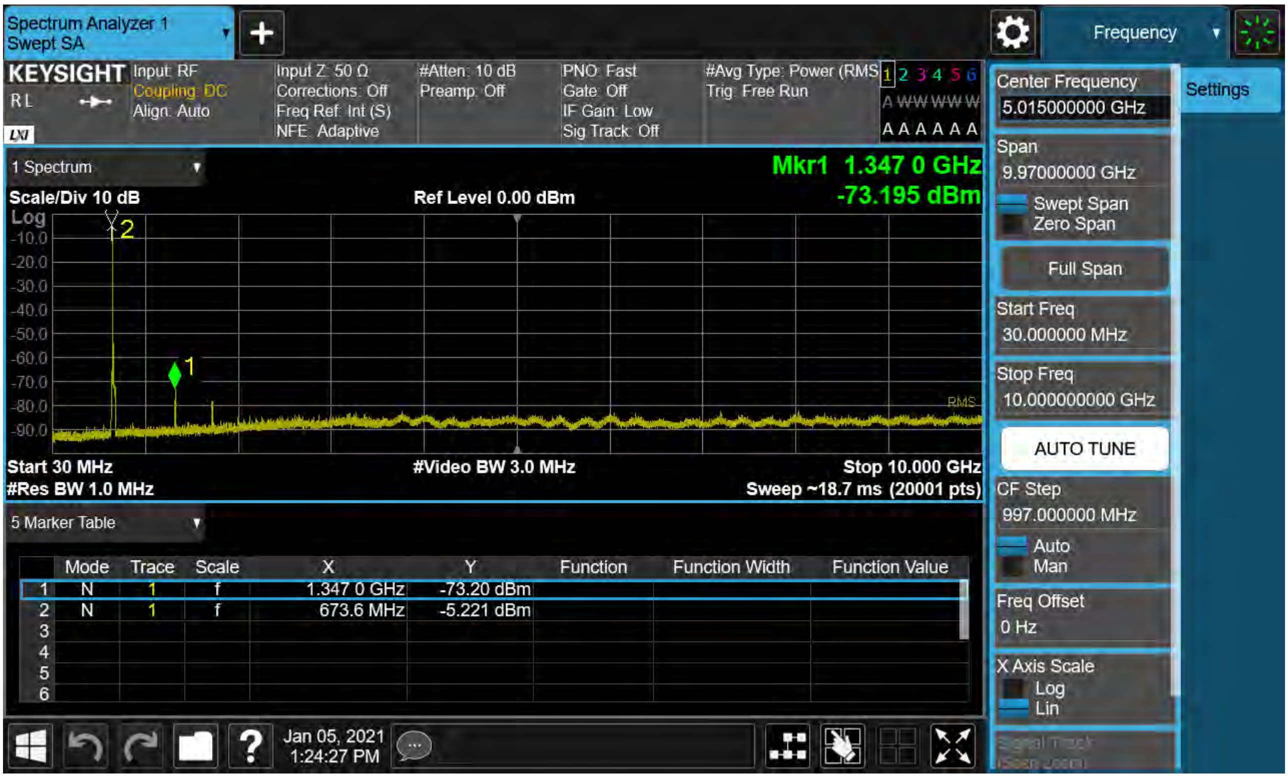


Sub6 n71. Conducted Spurious Plot _ (134100ch_15 MHz_BPSK_RB 1_1)

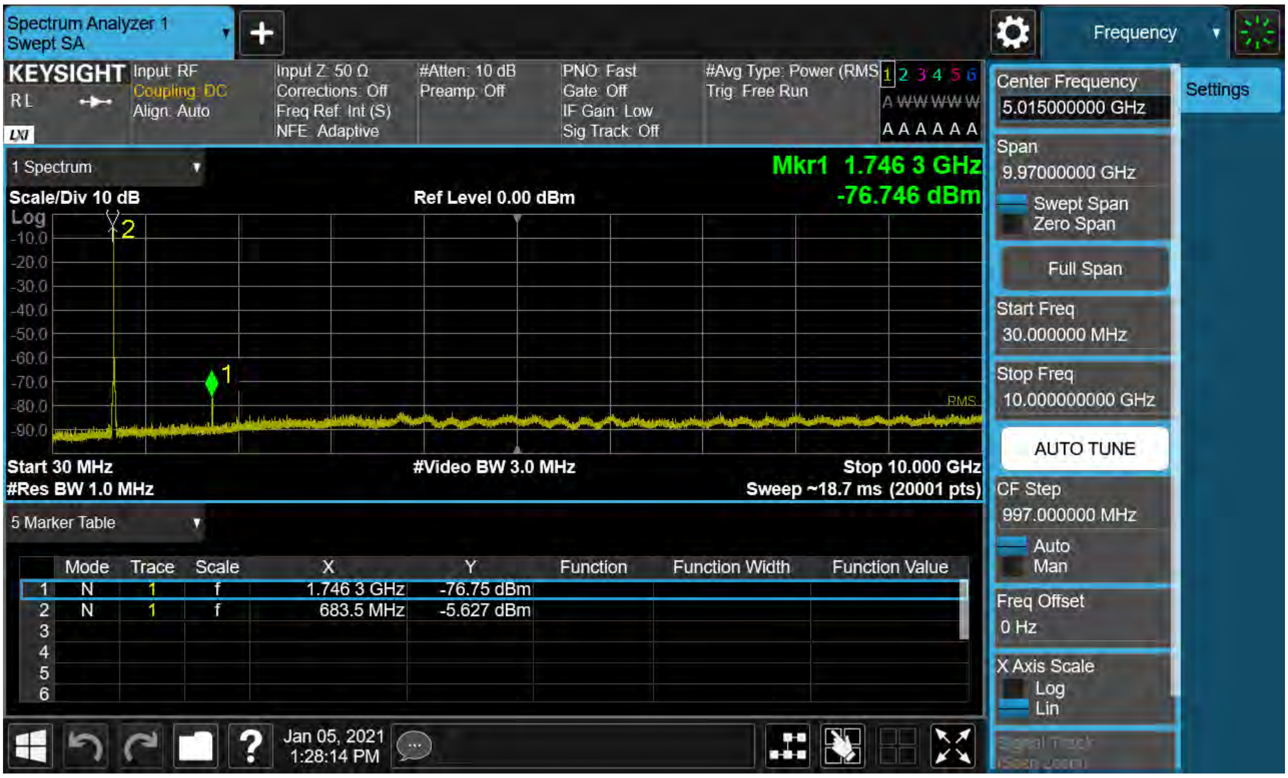


	Mode	Trace	Scale	X	Y	Function	Function Width	Function Value
1	N	1	f	1.327 1 GHz	-74.01 dBm			
2	N	1	f	663.6 MHz	-5.718 dBm			
3								
4								
5								
6								

Sub6 n71. Conducted Spurious Plot _ (136100ch_15 MHz_BPSK_RB 1_1)

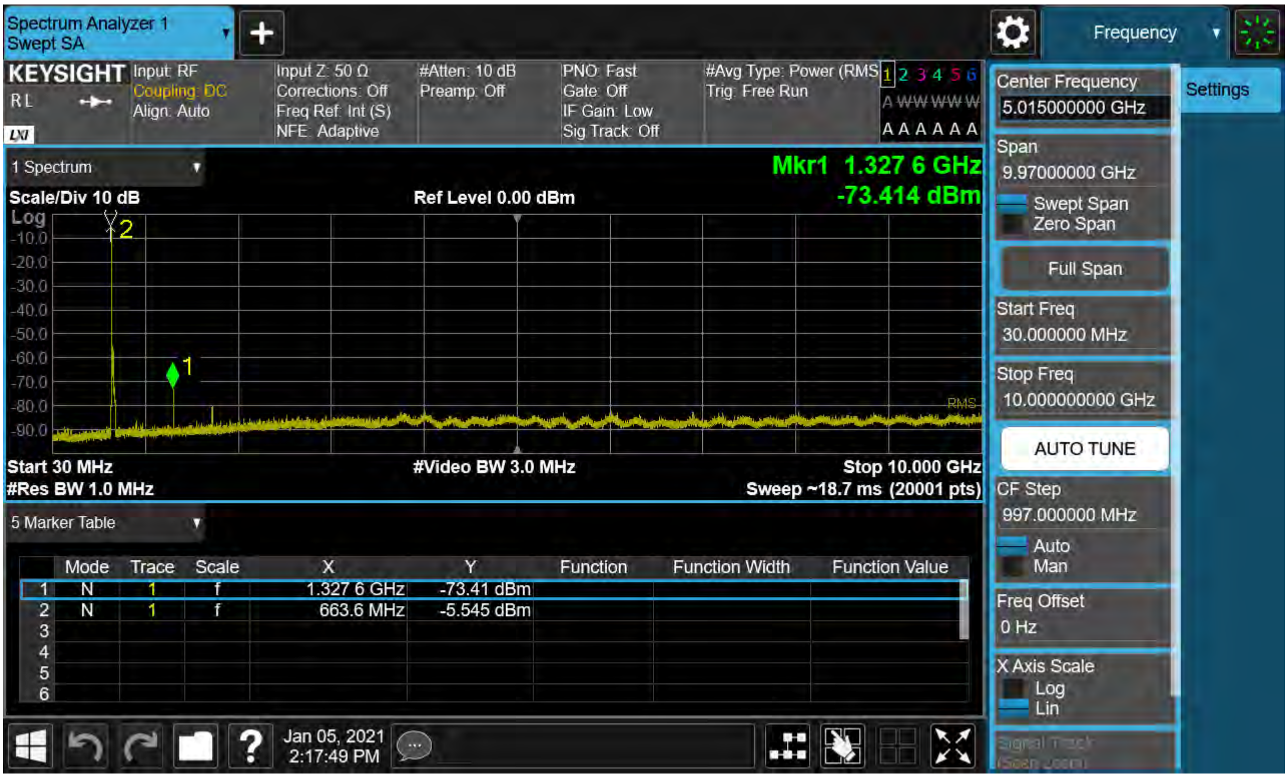


Sub6 n71. Conducted Spurious Plot _ (138100ch_15 MHz_BPSK_RB 1_1)



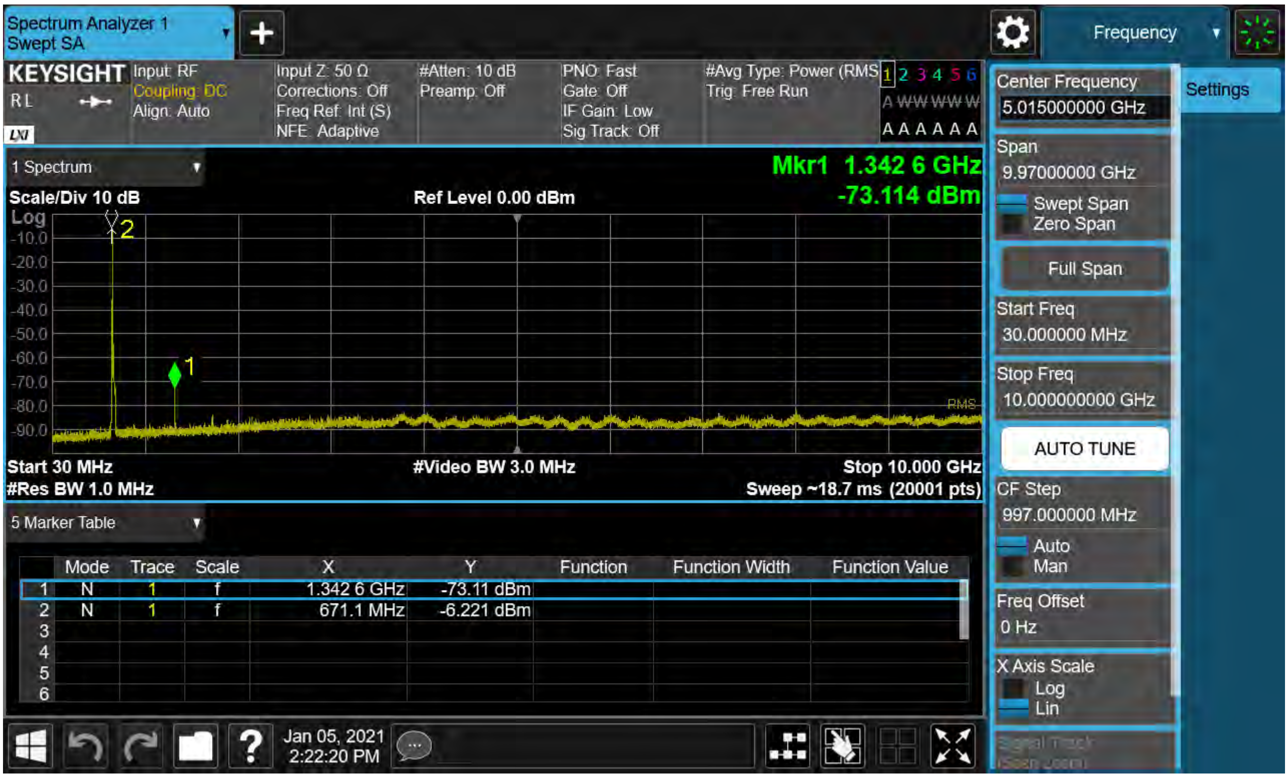
	Mode	Trace	Scale	X	Y	Function	Function Width	Function Value
1	N	1	f	1.746 3 GHz	-76.75 dBm			
2	N	1	f	683.5 MHz	-5.627 dBm			
3								
4								
5								
6								

Sub6 n71. Conducted Spurious Plot _ (134600ch_20 MHz_BPSK_RB 1_1)

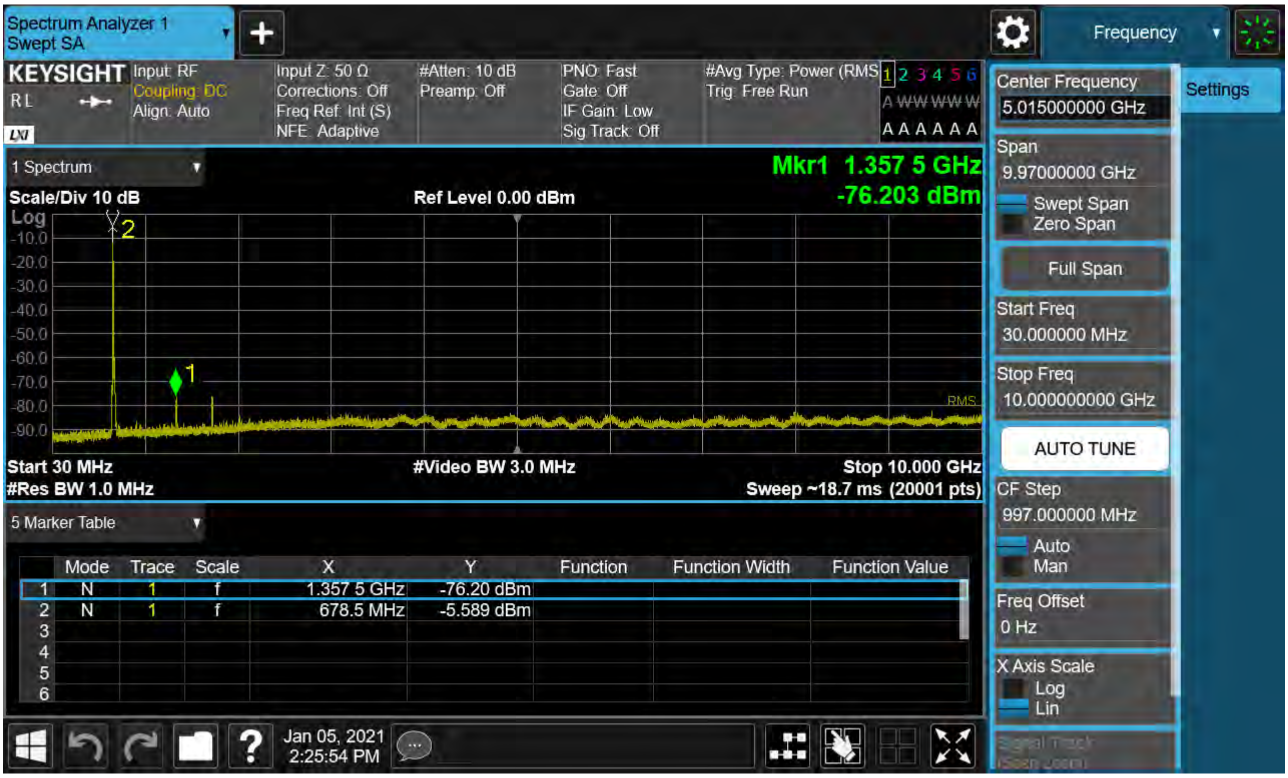


	Mode	Trace	Scale	X	Y	Function	Function Width	Function Value
1	N	1	f	1.327 6 GHz	-73.41 dBm			
2	N	1	f	663.6 MHz	-5.545 dBm			
3								
4								
5								
6								

Sub6 n71. Conducted Spurious Plot _ (136100ch_20 MHz_BPSK_RB 1_1)



Sub6 n71. Conducted Spurious Plot _ (137600ch_20 MHz_BPSK_RB 1_1)



	Mode	Trace	Scale	X	Y	Function	Function Width	Function Value
1	N	1	f	1.357 5 GHz	-76.20 dBm			
2	N	1	f	678.5 MHz	-5.589 dBm			
3								
4								
5								
6								

10. ANNEX A_ TEST SETUP PHOTO

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

No.	Description
1	HCT-RF-2102-FC029-P