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FCC Carrier Aggregation 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:
October 16, 2023

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

Report No.: HCT-RF-2310-FC033

FCC ID:	**A3LSMS926U**
APPLICANT:	**SAMSUNG Electronics Co., Ltd.**

Model(s):	SM-S926U
Additional Model(s):	SM-S926U1
EUT Type:	Mobile phone
FCC Classification:	Citizens Band End User Devices (CBE)
FCC Rule Part(s):	§96

Mode (PCC+SCC)	Tx Frequency (MHz)	Modulation	Emission Designator	EIRP	
				Max. Power (dBm)	Max. Power (W)
5 MHz+20 MHz	3553.3 - 3690.0	QPSK	22M7G7D	17.48	0.056
		16QAM	22M7W7D	18.12	0.065
		64QAM	22M7W7D	17.69	0.059
		256QAM	22M7W7D	15.16	0.033
10 MHz+20 MHz	3555.5 - 3690.0	QPSK	26M3G7D	18.03	0.064
		16QAM	27M7W7D	18.32	0.068
		64QAM	27M7W7D	17.95	0.062
		256QAM	27M6W7D	15.06	0.032
15 MHz+20 MHz	3557.8 - 3690.0	QPSK	32M5G7D	18.17	0.066
		16QAM	32M7W7D	18.61	0.073
		64QAM	32M6W7D	17.73	0.059
		256QAM	32M6W7D	14.71	0.030
20 MHz+5 MHz	3560.0 - 3696.7	QPSK	23M0G7D	17.32	0.054
		16QAM	23M0W7D	17.95	0.062
		64QAM	22M8W7D	17.97	0.063
		256QAM	22M8W7D	14.96	0.031
20 MHz+10 MHz	3560.0 - 3694.5	QPSK	27M7G7D	17.71	0.059
		16QAM	27M6W7D	18.28	0.067
		64QAM	27M5W7D	17.66	0.058
		256QAM	27M7W7D	14.84	0.030
20 MHz+15 MHz	3560.0 - 3692.2	QPSK	32M6G7D	18.39	0.069
		16QAM	32M6W7D	18.86	0.077
		64QAM	32M5W7D	18.30	0.068
		256QAM	32M5W7D	14.80	0.030
20 MHz+20 MHz	3560.0 - 3690.0	QPSK	37M5G7D	18.35	0.068
		16QAM	37M5W7D	18.84	0.077
		64QAM	37M7W7D	17.97	0.063
		256QAM	37M4W7D	15.48	0.035

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 Mun Do
Engineer of Telecommunication Testing Center

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

The result shown in this test report refer only to the sample(s) tested unless otherwise stated.
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-2310-FC033	October 16, 2023	- First Approval Report

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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:	A3LSMS926U
Application Type:	Certification
FCC Classification:	Citizens Band End User Devices (CBE)
FCC Rule Part(s):	§96
EUT Type:	Mobile phone
Model(s):	SM-S926U
Additional Model(s):	SM-S926U1
Tx Frequency:	3553.3 - 3690.0: 5 MHz+20 MHz 3555.5 - 3690.0: 10 MHz+20 MHz 3557.8 - 3690.0: 15 MHz+20 MHz 3560.0 - 3696.7: 20 MHz+5 MHz 3560.0 - 3694.5: 20 MHz+10 MHz 3560.0 - 3692.2: 20 MHz+15 MHz 3560.0 - 3690.0: 20 MHz+20 MHz
Date(s) of Tests:	September 05, 2023 ~ October 11, 2023
Serial number:	Radiated: R3CW90B4EEV Conducted: 741c314dee0f7ece
LTE CA :	CA 48C (Uplink)

2. INTRODUCTION

2.1. DESCRIPTION OF EUT

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

It also supports IEEE 802.11 a/b/g/n/ac/ax (20/40/80/160 MHz), WIFI 6E, Bluetooth, BT LE, NFC, UWB, WPT.

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 - KDB 940660 D01 v01
Channel Edge/ ACLR	- KDB 971168 D01 v03r01 – Section 6.0 - ANSI C63.26-2015 – Section 5.7 - KDB 940660 D01 v01
Spurious and Harmonic Emissions at Antenna Terminal	- KDB 971168 D01 v03r01 – Section 6.0 - ANSI C63.26-2015 – Section 5.7 - KDB 940660 D01 v01
Conducted Output Power	- KDB 971168 D01 v03r01 - Section 5.2.4 - ANSI C63.26-2015 - Section 5.2.1 & 5.2.4.2
Peak- to- Average Ratio	- KDB 971168 D01 v03r01 – Section 5.7 - ANSI C63.26-2015 – Section 5.2.3.4 - KDB 940660 D01 v01
Frequency stability	- ANSI C63.26-2015 – Section 5.6 - KDB 940660 D01 v01
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 - KDB 940660 D01 v01
Radiated Spurious and Harmonic Emissions	- KDB 971168 D01 v03r01 – Section 6.2 - ANSI/TIA-603-E-2016 – Section 2.2.12 - KDB 940660 D01 v01

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;

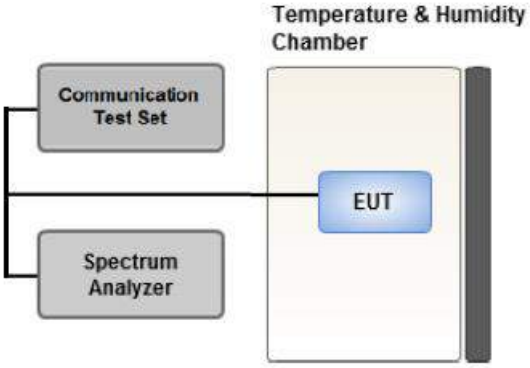
$$\text{Result}_{(dBm)} = \text{Pg}_{(dBm)} - \text{cable loss}_{(dB)} + \text{antenna gain}_{(dBi)}$$

   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.

$$\text{EIRP}_{(dBm)} = \text{ERP}_{(dBm)} + 2.15\ dB$$

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 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:

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

Test Settings(Peak Power)

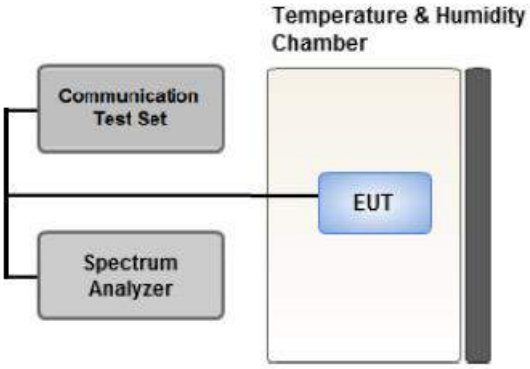
The measurement instrument must have a RBW that is greater than or equal to the OBW of the signal to be measured and a VBW ≥ 3 × RBW.

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.

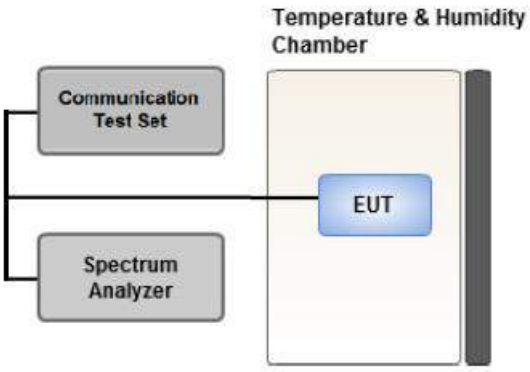
The conducted occupied bandwidth used the power splitter via EUT RF power connector between simulation base station and spectrum analyzer.

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

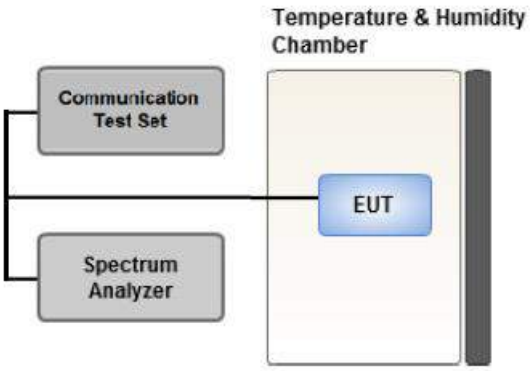
Test Overview

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 = 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

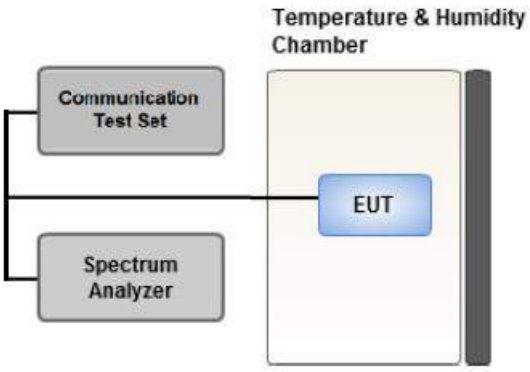
According to FCC 22.917, 24.238, 27.53 specified that power of any emission outside of The authorized operating frequency ranges must be attenuated below the transmitting power (P) by a factor of at least 43 + 10 log(P) dB. In the 1 MHz bands immediately outside and adjacent to the frequency block a 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.

Where Margin < 1 dB the emission level is either corrected by 10 log(1 MHz/ RB) or the emission is integrated over a 1 MHz bandwidth to determine the final result. When using the integration method the integration window is either centered on the emission or, for emissions at the band edge, centered by an offset of 500 kHz from the block edge so that the integration window is the 1 MHz adjacent to the block edge.

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:

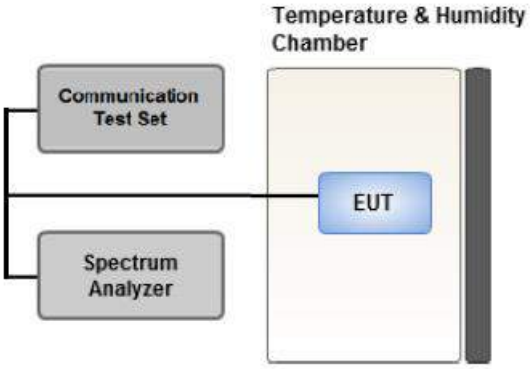
   .- Unless otherwise specified, vary primary supply voltage from 85 % to 115 % of the nominal value for other than hand carried battery equipment.

   .- 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 Adjacent Channel Leakage Ratio



Test setup

Test Settings

1. Use ACP measurement function of Spectrum analyzer to measure adjacent channel leakage ratio
2. Integ BW = Assigned channel bandwidth
5. Detector = RMS
6. Number of sweep points ≥ 2 x Span/RBW
7. Trace mode = trace average
8. Sweep time = 1 s
9. The trace was allowed to stabilize

Test Notes

the Adjacent Channel Leakage Ratio for End User Devices shall be at least 30 dB.

4. LIST OF TEST EQUIPMENT

Equipment	Model	Manufacturer	Serial No.	Due to Calibration	Calibration Interval
RF Switching System	FBSR-02B(1.2G HPF+LNA)	T&M SYSTEM	F1L1	01/19/2024	Annual
RF Switching System	FBSR-02B(3.3G HPF+LNA)	T&M SYSTEM	F1L2	01/19/2024	Annual
Power Splitter(DC ~ 26.5 GHz)	11667B	Hewlett Packard	5001	04/19/2024	Annual
DC Power Supply	E3632A	Agilent	MY40010147	06/23/2024	Annual
Dipole Antenna	UHAP	Schwarzbeck	557	03/09/2025	Biennial
Dipole Antenna	UHAP	Schwarzbeck	558	03/09/2025	Biennial
Chamber	SU-642	ESPEC	93008124	02/22/2024	Annual
Horn Antenna(1 ~ 18 GHz)	BBHA 9120D	Schwarzbeck	147	08/17/2025	Biennial
Horn Antenna(1 ~ 18 GHz)	BBHA 9120D	Schwarzbeck	9120D-1298	09/11/2025	Biennial
Horn Antenna(15 ~ 40 GHz)	BBHA 9170	Schwarzbeck	BBHA9170342	09/29/2024	Biennial
Horn Antenna(15 ~ 40 GHz)	BBHA 9170	Schwarzbeck	BBHA9170124	03/28/2025	Biennial
Signal Analyzer(10 Hz ~ 26.5 GHz)	N9020A	Agilent	MY52090906	04/20/2024	Annual
ATTENUATOR(20 dB)	8493C	Hewlett Packard	17280	04/19/2024	Annual
Spectrum Analyzer(10 Hz ~ 40 GHz)	FSV40	REOHDE & SCHWARZ	100931	08/17/2024	Annual
Base Station	8960 (E5515C)	Agilent	MY48360800	08/10/2024	Annual
Loop Antenna(9 kHz ~ 30 MHz)	FMZB1513	Schwarzbeck	1513-333	03/17/2024	Biennial
Trilog Broadband Antenna	VULB9168	Schwarzbeck	895	08/16/2024	Biennial
Trilog Broadband Antenna	VULB9168	Schwarzbeck	1135	03/21/2024	Biennial
Wideband Radio Communication Tester	MT8821C	Anritsu Corp.	6262094331	12/01/2023	Annual
Wideband Radio Communication Tester	MT8820C	Anritsu Corp.	6201026545	01/05/2024	Annual
SIGNAL GENERATOR (100 kHz ~ 40 GHz)	SMB100A	REOHDE & SCHWARZ	177633	06/22/2024	Annual
Signal Analyzer(5 Hz ~ 40.0 GHz)	N9030B	KEYSIGHT	MY55480167	05/24/2024	Annual
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. Especially, 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)	1.90 (Confidence level about 95 %, k=2)
Radiated Disturbance (9 kHz ~ 30 MHz)	4.14 (Confidence level about 95 %, k=2)
Radiated Disturbance (30 MHz ~ 1 GHz)	5.16 (Confidence level about 95 %, k=2)
Radiated Disturbance (1 GHz ~ 18 GHz)	5.57 (Confidence level about 95 %, k=2)
Radiated Disturbance (18 GHz ~ 40 GHz)	5.76 (Confidence level about 95 %, k=2)
Radiated Disturbance (Above 40 GHz)	5.52 (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, §96.41(e)	■ -13 dBm/Mhz at frequencies within 0-10 MHz of channel edge ■ -25 dBm/MHz at frequencies greater than 10 MHz above and below channel edge ■ -40 dBm/MHz at frequencies below 3530 MHz and above 3720 MHz	PASS
Adjacent Channel Leakage Ratio	§96.41(e)	At least 30 dB.	PASS
Conducted Output Power	§2.1046	N/A	PASS
Frequency stability / variation of ambient temperature	§2.1055,	Emission must remain in band	PASS

6.2 Test Condition: Radiated Test

Test Description	FCC Part Section(s)	Test Limit	Test Result
Equivalent Isotropic Radiated Power	§96.41(b)	23 dBm/10 MHz	PASS
Radiated Spurious and Harmonic Emissions	§2.1053, §96.41(e)	-40 dBm/MHz	PASS

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)

QPSK Modulation

Emission Designator = 4M48G7D

LTE BW = 4.48 MHz

G = Phase Modulation

7 = Quantized/Digital Info

D = Data transmission; telemetry; telecommand

QAM Modulation

Emission Designator = 4M48W7D

LTE BW = 4.48 MHz

W = Amplitude/Angle Modulated

7 = Quantized/Digital Info

D = Data transmission; telemetry; telecommand

8. TEST DATA

Test Overview

The EUT is set up to transmit two contiguous LTE channels. The power level of both carriers 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 Note

1. All tests were evaluated for the two contiguous channels using various combinations of RB size, RB offset, modulation, and channel bandwidth.
2. Channel bandwidth is shown in the tables below based only on the channel bandwidths that were supported in this device.

Channel Bandwidth (PCC)	Channel Bandwidth (SCC)	Maximum aggregated bandwidth (MHz)
5	20	25
10	20	30
15	20	35
20	5	25
20	10	30
20	15	35
20	20	40

3. All modes of operation were investigated and the worst case configuration results are reported in this section.

Please refer to the table below.

- Worst case(Conducted Spurious Emissions, BandEdge)

: We have selected higher of the Conduction Output Power.

- Worst case(Radiated Spurious Emissions) : We have selected higher of the EIRP.

- Worst case(OBW, PAR, Frequency stability)

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

[Worst case]

Test Description	Mod	Operating frequency	PCC					SCC				
			BW (MHz)	Freq. (MHz)	Ch.	RB	RB Offset	BW (MHz)	Freq. (MHz)	Ch.	RB	RB Offset
Conducted Spurious Emissions/ Band Edge	16QAM	Low	20	3560.0	55340	1	99	20	3579.8	55538	1	0
		Mid	15	3615.3	55893	1	74	20	3632.4	56064	1	0
		High	20	3670.2	56442	1	99	20	3690.0	56640	1	0
		Low	20	3560.0	55340	1	0	20	3579.8	55538	1	99
		Mid	15	3615.3	55893	1	0	20	3632.4	56064	1	99
		High	20	3670.2	56442	1	0	20	3690.0	56640	1	99
		Low	10	3555.5	55295	50	0	20	3569.9	55439	100	0
		Mid	20	3622.5	55965	100	0	5	3634.2	56082	25	0
		High	15	3672.9	56469	75	0	20	3690.0	56640	100	0
		Low	20	3560.0	55340	100	0	20	3579.8	55538	100	0
		Mid	20	3615.1	55891	100	0	20	3634.9	56089	100	0
		High	20	3670.2	56442	100	0	20	3690.0	56640	100	0
Radiated Spurious Emissions	16QAM	Low	20	3560.0	55340	1	99	20	3579.8	55538	1	0
		Mid	20	3617.6	55916	1	99	15	3634.7	56087	1	0
		High	20	3670.2	56442	1	99	20	3690.0	56640	1	0

[Worst case]

Test Description	Mod	Operating frequency	PCC					SCC				
			BW (MHz)	Freq. (MHz)	Ch.	RB	RB Offset	BW (MHz)	Freq. (MHz)	Ch.	RB	RB Offset
OBW, PAR	QPSK, 16QAM 64QAM 256QAM	Mid	5	3615.8	55898	25	0	20	3627.5	56015	100	0
			10	3615.6	55896	50	0	20	3630.0	56040	100	0
			15	3615.3	55893	75	0	20	3632.4	56064	100	0
			20	3622.5	55965	100	0	5	3634.2	56082	25	0
			20	3620.1	55941	100	0	10	3634.5	56085	50	0
			20	3617.6	55916	100	0	15	3634.7	56087	75	0
			20	3615.1	55891	100	0	20	3634.9	56089	100	0
Frequency stability	16QAM	Low	5	3553.3	55273	25	0	20	3565.0	55390	100	0
			10	3555.5	55295	50	0	20	3569.9	55439	100	0
			15	3557.8	55318	75	0	20	3574.9	55489	50	0
			20	3560.0	55340	100	0	20	3579.8	55538	100	0
		High	5	3678.3	56523	25	0	20	3690.0	56640	100	0
			10	3675.6	56496	50	0	20	3690.0	56640	100	0
			15	3672.9	56469	75	0	20	3690.0	56640	50	0
			20	3670.2	56442	100	0	20	3690.0	56640	100	0

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8.1 Conducted Power

Operating frequency	PCC					SCC					Conducted. Power [dBm]
	Bandwidth [MHz]	Freq. (MHz)	Channel	RB	RB Offset	Bandwidth [MHz]	Freq. (MHz)	Channel	RB	RB Offset	
Low	5	3553.3	55273	1	24	20	3565.0	55390	1	0	17.18
	10	3555.5	55295	1	49	20	3569.9	55439	1	0	16.56
	15	3557.8	55318	1	74	20	3574.9	55489	1	0	16.50
	20	3560.0	55340	1	99	5	3571.7	55457	1	0	17.47
	20	3560.0	55340	1	99	10	3574.4	55484	1	0	16.43
	20	3560.0	55340	1	99	15	3577.1	55511	1	0	16.45
	20	***3560.0***	***55340***	***1***	***99***	***20***	***3579.8***	***55538***	***1***	***0***	***17.79***
Mid	5	3615.8	55898	1	24	20	3627.5	56015	1	0	20.64
	10	3615.6	55896	1	49	20	3630.0	56040	1	0	21.03
	15	***3615.3***	***55893***	***1***	***74***	***20***	***3632.4***	***56064***	***1***	***0***	***21.48***
	20	3622.5	55965	1	99	5	3634.2	56082	1	0	20.55
	20	3620.1	55941	1	99	10	3634.5	56085	1	0	20.99
	20	3617.6	55916	1	99	15	3634.7	56087	1	0	21.38
	20	3615.1	55891	1	99	20	3634.9	56089	1	0	21.40
High	5	3678.3	56523	1	24	20	3690.0	56640	1	0	16.83
	10	3675.6	56496	1	49	20	3690.0	56640	1	0	16.27
	15	3672.9	56469	1	74	20	3690.0	56640	1	0	16.14
	20	3685.0	56590	1	99	5	3696.7	56707	1	0	17.19
	20	3680.1	56541	1	99	10	3694.5	56685	1	0	16.10
	20	3675.1	56491	1	99	15	3692.2	56662	1	0	16.15
	20	***3670.2***	***56442***	***1***	***99***	***20***	***3690.0***	***56640***	***1***	***0***	***17.66***

Note:

Modulation : QPSK(1RB)

Operating frequency	PCC					SCC					Conducted. Power [dBm]
	Bandwidth [MHz]	Freq. (MHz)	Channel	RB	RB Offset	Bandwidth [MHz]	Freq. (MHz)	Channel	RB	RB Offset	
Low	5	3553.3	55273	25	0	20	3565.0	55390	100	0	10.90
	10	***3555.5***	***55295***	***50***	***0***	***20***	***3569.9***	***55439***	***100***	***0***	***11.91***
	15	3557.8	55318	75	0	20	3574.9	55489	100	0	11.85
	20	3560.0	55340	100	0	5	3571.7	55457	25	0	10.78
	20	3560.0	55340	100	0	10	3574.4	55484	50	0	11.82
	20	3560.0	55340	100	0	15	3577.1	55511	75	0	11.81
	20	3560.0	55340	100	0	20	3579.8	55538	100	0	11.82
Mid	5	3615.8	55898	25	0	20	3627.5	56015	100	0	18.76
	10	3615.6	55896	50	0	20	3630.0	56040	100	0	18.34
	15	3615.3	55893	75	0	20	3632.4	56064	100	0	18.32
	20	***3622.5***	***55965***	***100***	***0***	***5***	***3634.2***	***56082***	***25***	***0***	***18.80***
	20	3620.1	55941	100	0	10	3634.5	56085	50	0	18.31
	20	3617.6	55916	100	0	15	3634.7	56087	75	0	18.28
	20	3615.1	55891	100	0	20	3634.9	56089	100	0	18.35
High	5	3678.3	56523	25	0	20	3690.0	56640	100	0	10.41
	10	3675.6	56496	50	0	20	3690.0	56640	100	0	11.50
	15	***3672.9***	***56469***	***75***	***0***	***20***	***3690.0***	***56640***	***100***	***0***	***11.51***
	20	3685.0	56590	100	0	5	3696.7	56707	25	0	10.37
	20	3680.1	56541	100	0	10	3694.5	56685	50	0	11.43
	20	3675.1	56491	100	0	15	3692.2	56662	75	0	11.48
	20	3670.2	56442	100	0	20	3690.0	56640	100	0	11.48

Note:

Modulation : QPSK(Full RB)

Operating frequency	PCC					SCC					Conducted. Power [dBm]
	Bandwidth [MHz]	Freq. (MHz)	Channel	RB	RB Offset	Bandwidth [MHz]	Freq. (MHz)	Channel	RB	RB Offset	
Low	20	3560.0	55340	1	99	20	3579.8	55538	1	0	18.38
Mid	15	3615.3	55893	1	74	20	3632.4	56064	1	0	22.05
High	20	3670.2	56442	1	99	20	3690.0	56640	1	0	18.31
Low	10	3555.5	55295	50	0	20	3569.9	55439	100	0	11.90
Mid	20	3622.5	55965	100	0	5	3634.2	56082	25	0	18.88
High	15	3672.9	56469	75	0	20	3690.0	56640	100	0	11.58

Note:

Modulation : 16QAM

Operating frequency	PCC					SCC					Conducted. Power [dBm]
	Bandwidth [MHz]	Freq. (MHz)	Channel	RB	RB Offset	Bandwidth [MHz]	Freq. (MHz)	Channel	RB	RB Offset	
Low	20	3560.0	55340	1	99	20	3579.8	55538	1	0	18.35
Mid	15	3615.3	55893	1	74	20	3632.4	56064	1	0	21.18
High	20	3670.2	56442	1	99	20	3690.0	56640	1	0	18.12
Low	20	3560.0	55340	100	0	10	3574.4	55484	50	0	11.85
Mid	20	3622.5	55965	100	0	5	3634.2	56082	25	0	18.85
High	20	3680.1	56541	100	0	10	3694.5	56685	50	0	11.51

Note:

Modulation : 64QAM

Operating frequency	PCC					SCC					Conducted. Power [dBm]
	Bandwidth [MHz]	Freq. (MHz)	Channel	RB	RB Offset	Bandwidth [MHz]	Freq. (MHz)	Channel	RB	RB Offset	
Low	20	3560.0	55340	1	99	20	3579.8	55538	1	0	17.75
Mid	15	3615.3	55893	1	74	20	3632.4	56064	1	0	18.06
High	20	3670.2	56442	1	99	20	3690.0	56640	1	0	17.52
Low	20	3560.0	55340	100	0	10	3574.4	55484	50	0	11.82
Mid	20	3622.5	55965	100	0	5	3634.2	56082	25	0	17.82
High	20	3680.1	56541	100	0	10	3694.5	56685	50	0	11.50

Note:

Modulation : 256QAM

8.2 Equivalent Isotropic Radiated Power

	PCC			SCC			Measured Level (dBm)	Substitute Level (dBm)	Ant. Gain (dBi)	C.L	Pol.	E.I.R.P	
	BW [MHz]	Channel	RB/ Offset	BW [MHz]	Channel	RB/ Offset						W	dBm
Low	5	55273	1/24	20	55390	1/0	-35.75	2.61	12.34	3.24	H	0.015	11.71
	10	55295	1/49	20	55439	1/0	-35.45	2.91	12.34	3.24	H	0.016	12.01
	15	55318	1/74	20	55489	1/0	-35.46	2.87	12.34	3.22	H	0.016	11.99
	20	55340	1/99	5	55457	1/0	-34.24	4.09	12.34	3.22	H	0.021	13.21
	20	55340	1/99	10	55484	1/0	-35.11	3.18	12.34	3.19	H	0.017	12.33
	20	55340	1/99	15	55511	1/0	-35.45	2.84	12.34	3.19	H	0.016	11.99
	20	55340	1/99	20	55538	1/0	-33.77	4.52	12.34	3.19	H	0.023	13.67
Mid	5	55898	1/24	20	56015	1/0	-30.24	8.37	12.32	3.21	H	0.056	17.48
	10	55896	1/49	20	56040	1/0	-29.69	8.92	12.32	3.21	H	0.064	18.03
	15	55893	1/74	20	56064	1/0	-29.49	9.07	12.32	3.22	H	0.066	18.17
	20	55965	1/99	5	56082	1/0	-30.29	8.23	12.31	3.22	H	0.054	17.32
	20	55941	1/99	10	56085	1/0	-29.90	8.62	12.31	3.22	H	0.059	17.71
	20	55916	1/99	15	56087	1/0	-29.27	9.29	12.32	3.22	H	0.069	18.39
	20	55891	1/99	20	56089	1/0	-29.31	9.25	12.32	3.22	H	0.068	18.35
High	5	56523	1/24	20	56640	1/0	-33.27	5.73	12.29	3.16	H	0.031	14.86
	10	56496	1/49	20	56640	1/0	-33.98	4.91	12.29	3.18	H	0.025	14.02
	15	56469	1/74	20	56640	1/0	-34.15	4.74	12.29	3.18	H	0.024	13.85
	20	56590	1/99	5	56707	1/0	-32.89	6.22	12.29	3.13	H	0.034	15.38
	20	56541	1/99	10	56685	1/0	-33.71	5.40	12.29	3.13	H	0.029	14.56
	20	56491	1/99	15	56662	1/0	-33.89	5.11	12.29	3.16	H	0.027	14.24
	20	56442	1/99	20	56640	1/0	-32.56	6.33	12.29	3.18	H	0.035	15.44

Note:

1. Modulation : QPSK
2. Limit : < 23 dBm

PCC			SCC			Measured	Substitute	Ant.	C.L	Pol.	E.I.R.P	
BW [MHz]	Channel	RB/ Offset	BW [MHz]	Channel	RB/ Offset	Level (dBm)	Level (dBm)	Gain (dBi)			W	dBm
20	55340	1/99	20	55538	1/0	-33.47	4.82	12.34	3.19	H	0.025	13.97
5	55898	1/24	20	56015	1/0	-29.60	9.01	12.32	3.21	H	0.065	18.12
10	55896	1/49	20	56040	1/0	-29.40	9.21	12.32	3.21	H	0.068	18.32
15	55893	1/74	20	56064	1/0	-29.05	9.51	12.32	3.22	H	0.073	18.61
20	55965	1/99	5	56082	1/0	-29.66	8.86	12.31	3.22	H	0.062	17.95
20	55941	1/99	10	56085	1/0	-29.33	9.19	12.31	3.22	H	0.067	18.28
20	55916	1/99	15	56087	1/0	-28.80	9.76	12.32	3.22	H	0.077	18.86
20	55891	1/99	20	56089	1/0	-28.82	9.74	12.32	3.22	H	0.077	18.84
20	56442	1/99	20	56640	1/0	-31.80	7.09	12.29	3.18	H	0.042	16.20

Note:

1. Modulation : 16QAM

2. Limit : < 23 dBm

PCC			SCC			Measured	Substitute	Ant.	C.L	Pol.	E.I.R.P	
BW [MHz]	Channel	RB/ Offset	BW [MHz]	Channel	RB/ Offset	Level (dBm)	Level (dBm)	Gain (dBi)			W	dBm
20	55340	1/99	20	55538	1/0	-33.56	4.73	12.34	3.19	H	0.024	13.88
5	55898	1/24	20	56015	1/0	-30.03	8.58	12.32	3.21	H	0.059	17.69
10	55896	1/49	20	56040	1/0	-29.77	8.84	12.32	3.21	H	0.062	17.95
15	55893	1/74	20	56064	1/0	-29.93	8.63	12.32	3.22	H	0.059	17.73
20	55965	1/99	5	56082	1/0	-29.64	8.88	12.31	3.22	H	0.063	17.97
20	55941	1/99	10	56085	1/0	-29.95	8.57	12.31	3.22	H	0.058	17.66
20	55916	1/99	15	56087	1/0	-29.36	9.20	12.32	3.22	H	0.068	18.30
20	55891	1/99	20	56089	1/0	-29.69	8.87	12.32	3.22	H	0.063	17.97
20	56442	1/99	20	56640	1/0	-32.20	6.69	12.29	3.18	H	0.038	15.80

Note:

1. Modulation : 64QAM

2. Limit : < 23 dBm

PCC			SCC			Measured	Substitute	Ant.			E.I.R.P	
BW [MHz]	Channel	RB/ Offset	BW [MHz]	Channel	RB/ Offset	Level (dBm)	Level (dBm)	Gain (dBi)	C.L	Pol.	W	dBm
20	55340	1/99	20	55538	1/0	-34.05	4.24	12.34	3.19	H	0.022	13.39
5	55898	1/24	20	56015	1/0	-32.56	6.05	12.32	3.21	H	0.033	15.16
10	55896	1/49	20	56040	1/0	-32.66	5.95	12.32	3.21	H	0.032	15.06
15	55893	1/74	20	56064	1/0	-32.95	5.61	12.32	3.22	H	0.030	14.71
20	55965	1/99	5	56082	1/0	-32.65	5.87	12.31	3.22	H	0.031	14.96
20	55941	1/99	10	56085	1/0	-32.77	5.75	12.31	3.22	H	0.030	14.84
20	55916	1/99	15	56087	1/0	-32.86	5.70	12.32	3.22	H	0.030	14.80
20	55891	1/99	20	56089	1/0	-32.85	5.71	12.32	3.22	H	0.030	14.81
20	56442	1/99	20	56640	1/0	-32.52	6.37	12.29	3.18	H	0.035	15.48

Note:

1. Modulation : 256QAM

2. Limit : < 23 dBm

8.3 Conducted Spurious Emissions

Operating frequency	PCC				SCC				Measurement Maximum Frequency (GHz)	Factor (dB)	Measurement Maximum Data (dBm)	Result (dBm)
	BW [MHz]	Ch.	Freq. (MHz)	RB/ Offset	BW [MHz]	Ch.	Freq. (MHz)	RB/ Offset				
Low	20	55340	3560.0	1/99	20	55538	3579.8	1/0	9.7587	32.570	-77.89	-45.32
Mid	15	55893	3615.3	1/74	20	56064	3632.4	1/0	9.7812	32.570	-78.00	-45.43
High	20	56442	3670.2	1/99	20	56640	3690.0	1/0	9.7762	32.570	-78.93	-46.36
Low	20	55340	3560.0	1/0	20	55538	3579.8	1/99	9.7478	32.570	-77.67	-45.10
Mid	15	55893	3615.3	1/0	20	56064	3632.4	1/99	4.0280	31.955	-79.05	-47.10
High	20	56442	3670.2	1/0	20	56640	3690.0	1/99	9.7622	32.570	-79.04	-46.47
Low	10	55295	3555.5	50/0	20	55439	3569.9	100/0	3.8071	31.955	-79.16	-47.21
Mid	20	55965	3622.5	100/0	5	56082	3634.2	100/0	9.7443	32.570	-77.06	-44.49
High	15	56469	3672.9	75/0	20	56640	3690.0	100/0	9.7293	32.570	-76.74	-44.17
Low	20	55340	3560.0	100/0	20	55538	3579.8	100/0	3.8036	31.955	-76.88	-44.92
Mid	20	55891	3615.1	100/0	20	56089	3634.9	100/0	9.7747	32.570	-76.77	-44.20
High	20	56442	3670.2	100/0	20	56640	3690.0	100/0	3.8400	31.955	-77.14	-45.18

Note:

1. Modulation : 16QAM

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

3. Duty Cycle factor already applied on the factor.

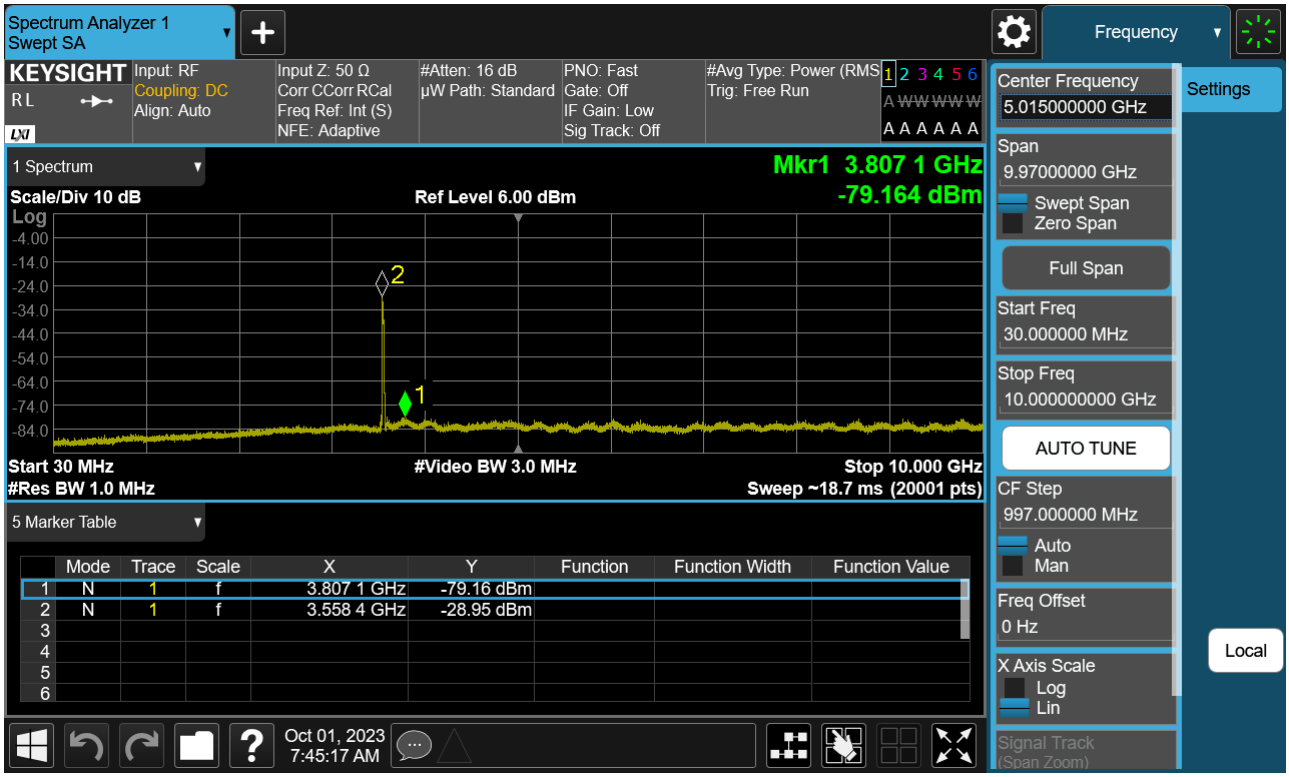
- Duty Cycle factor(dB) = 3.979
- Factor(dB) = Duty Cycle factor + Cable Loss + Ext. Attenuator + Power Splitter
- Result(dBm) = Measurement Maximum Data (dBm) + Factor

Frequency Range (GHz)	Factor [dB]
0.03 – 1	29.249
1 – 5	31.955
5 – 10	32.570
10 – 15	33.095
15 – 20	33.468
Above 20	34.110

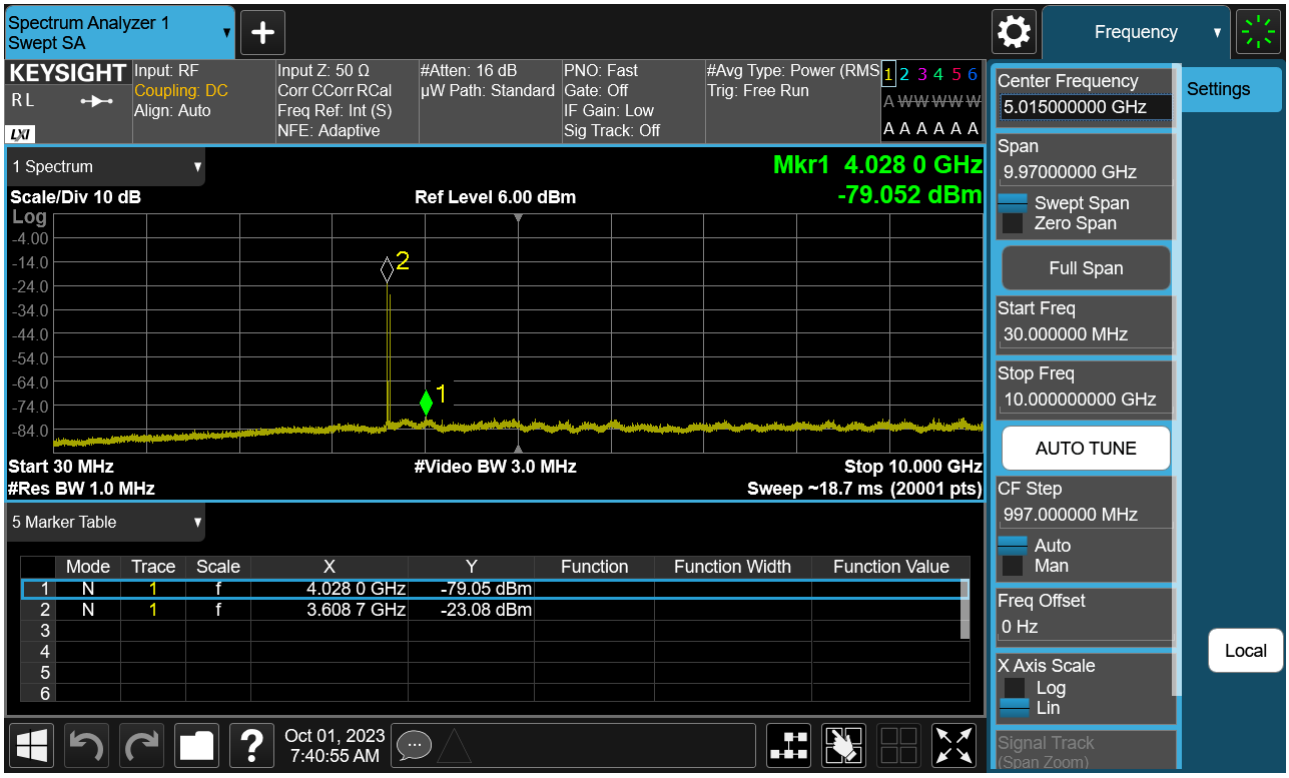
4. Limit : -40.0 dBm

Frequency Range : 30 MHz ~ 10 GHz

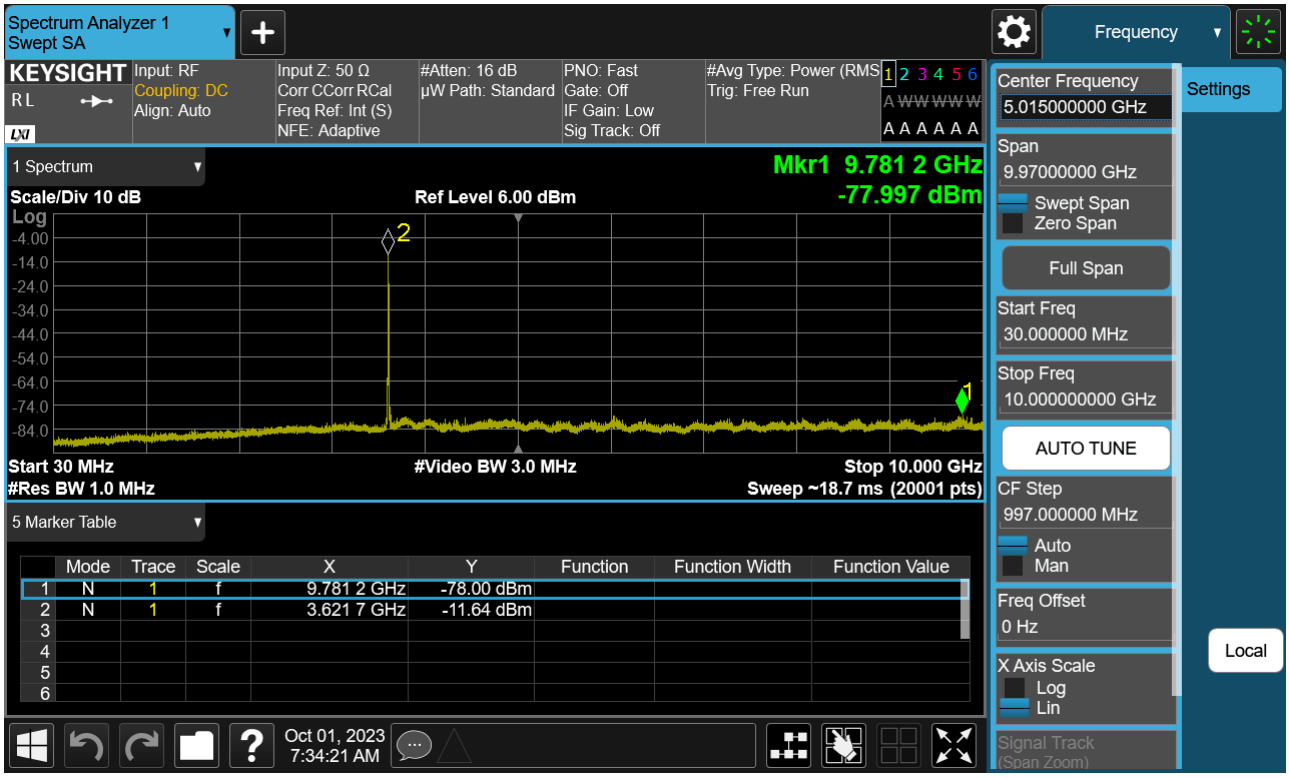
PCC 10 MHz Ch55295 RB50 Offset0 SCC 20 MHz Ch55439 RB100 Offset0



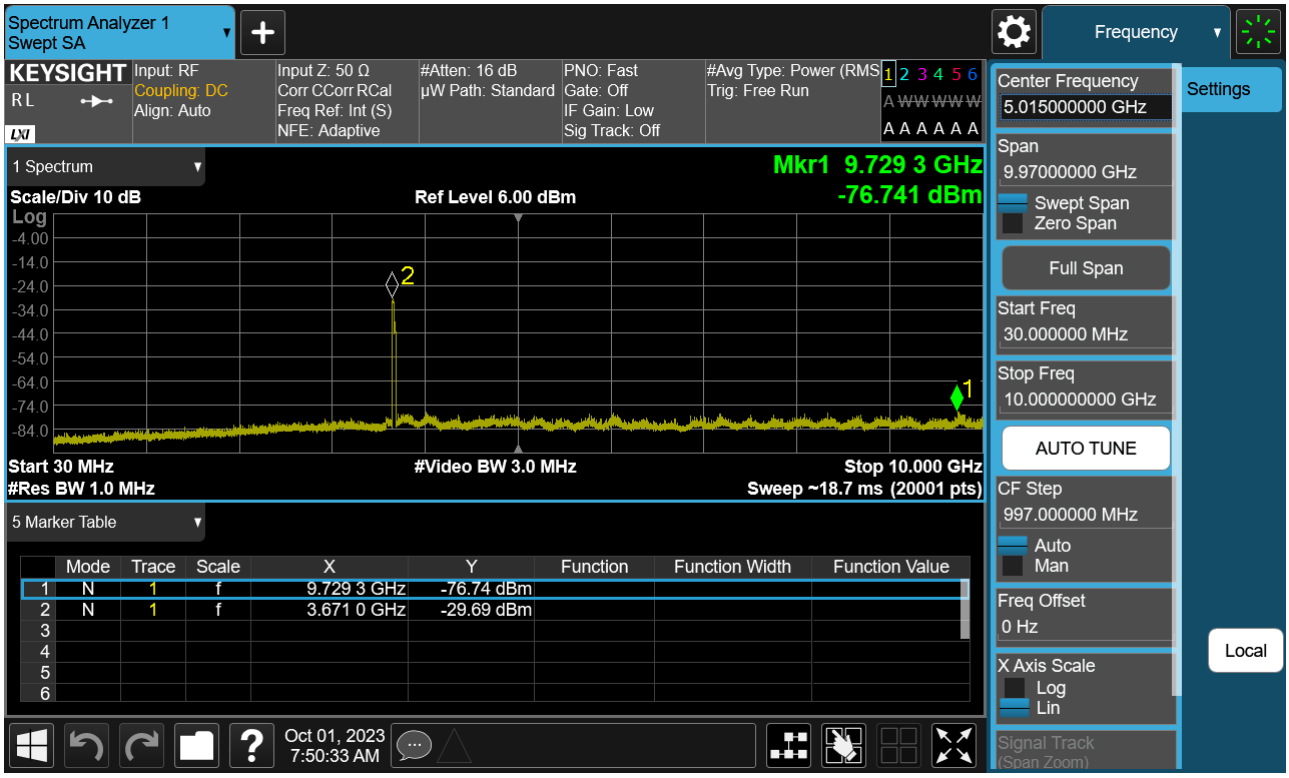
PCC 15 MHz Ch55893 RB1 Offset0 SCC 20 MHz Ch56064 RB1 Offset99



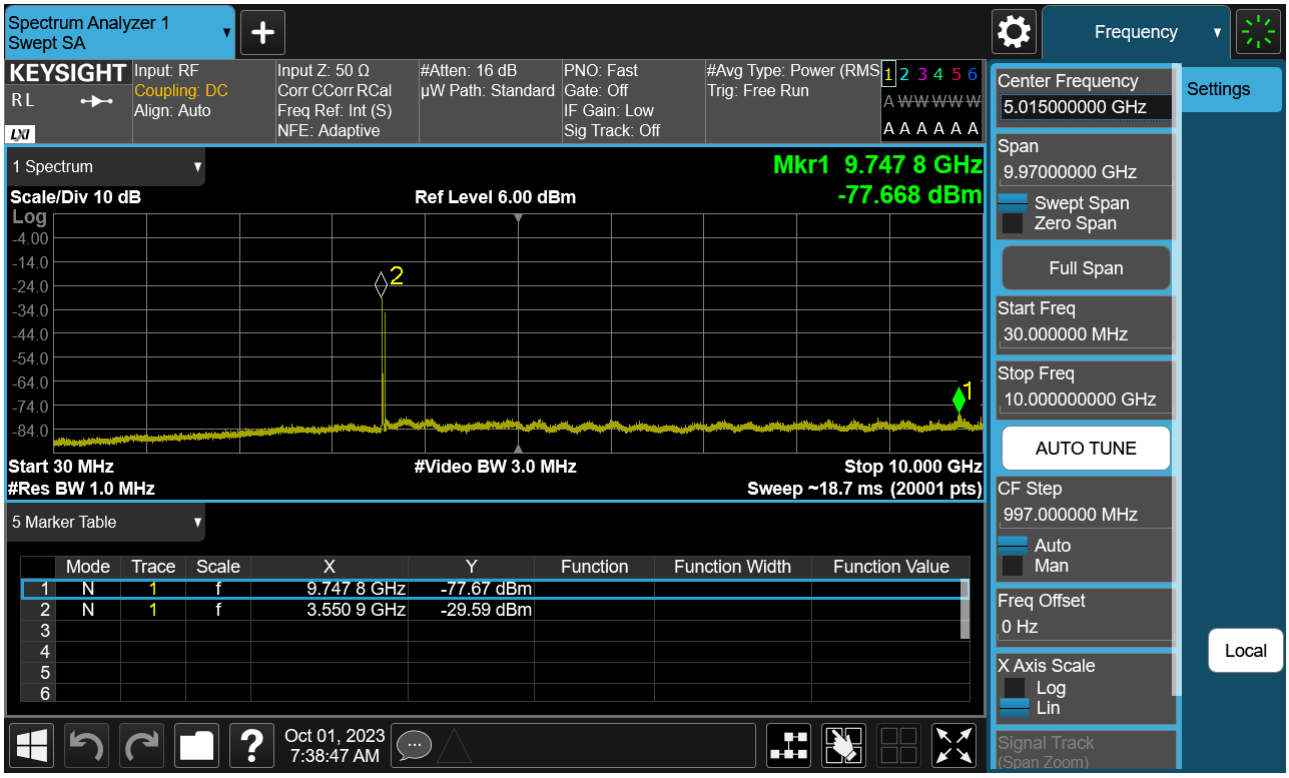
PCC 15 MHz Ch55893 RB1 Offset74 SCC 20 MHz Ch56064 RB1 Offset0



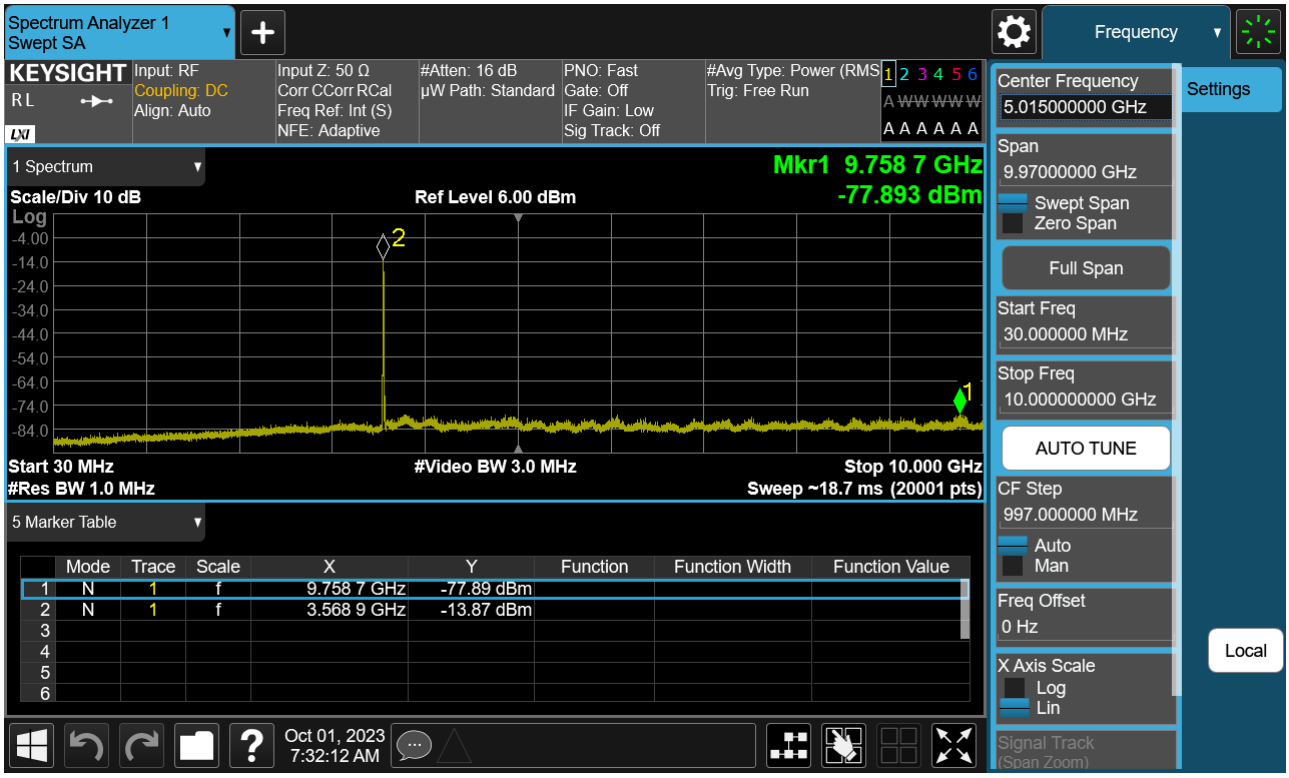
PCC 15 MHz Ch56469 RB75 Offset0 SCC 20 MHz Ch56640 RB100 Offset0



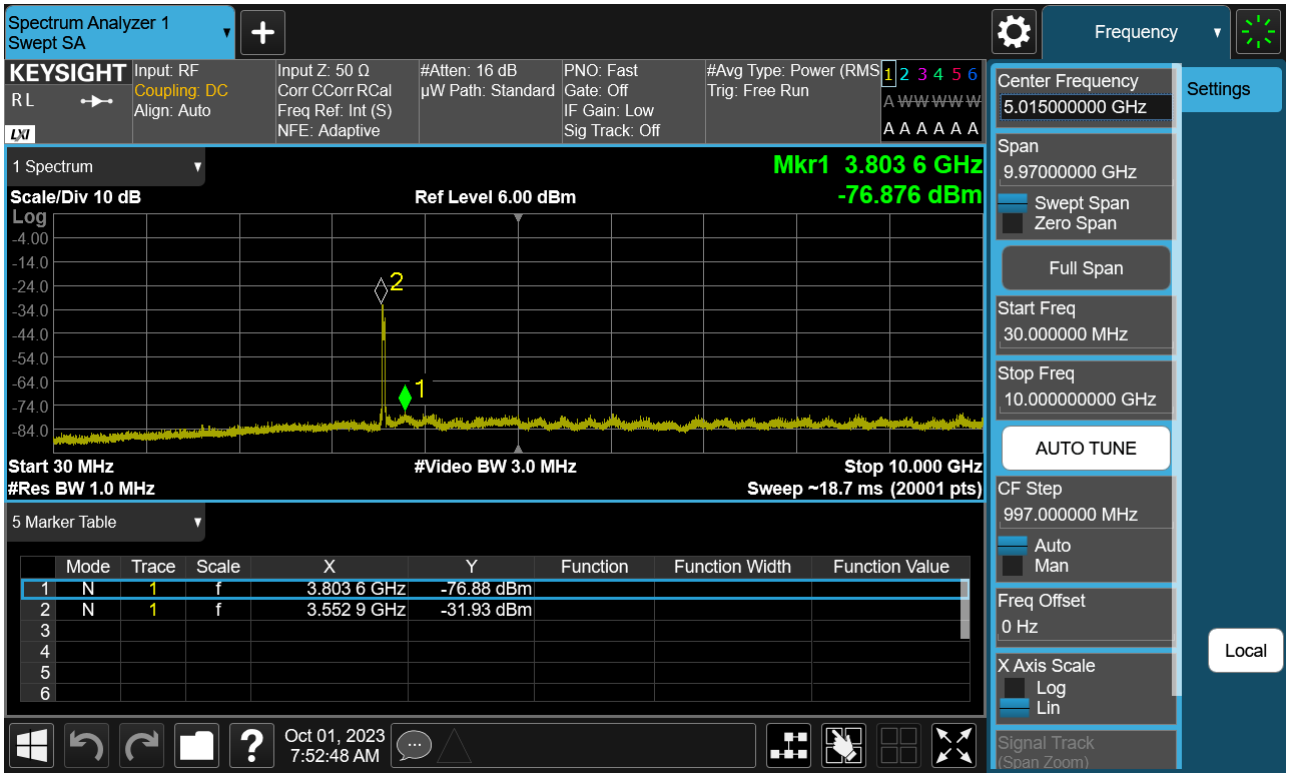
PCC 20 MHz Ch55340 RB1 Offset0 SCC 20 MHz Ch55538 RB1 Offset99



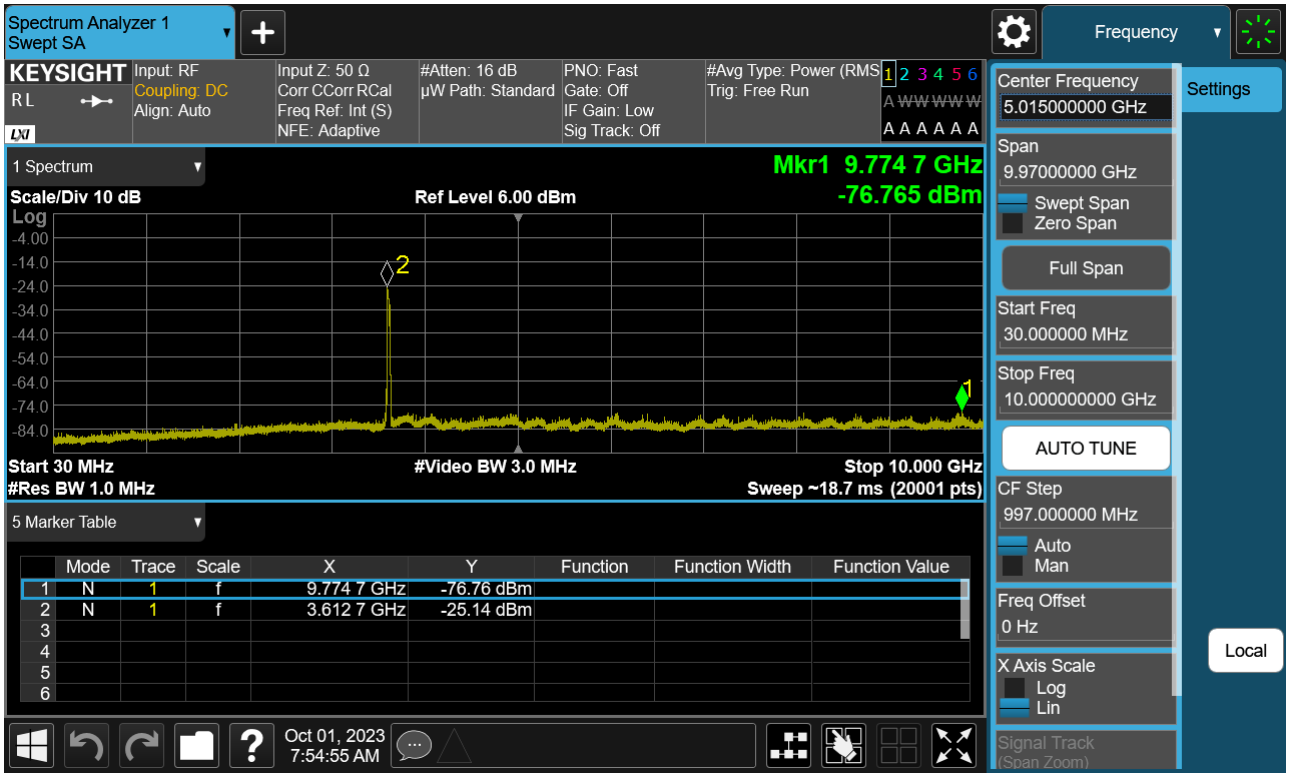
PCC 20 MHz Ch55340 RB1 Offset99 SCC 20 MHz Ch55538 RB1 Offset0



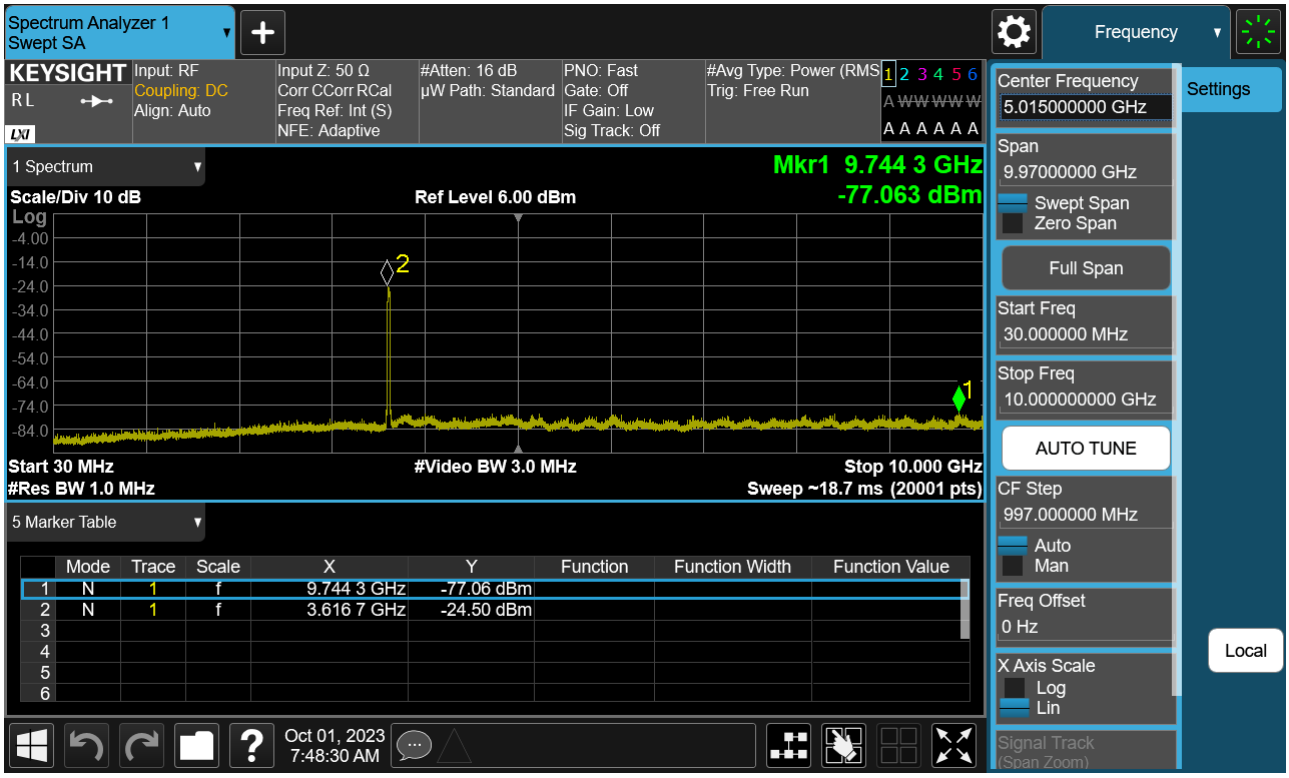
PCC 20 MHz Ch55340 RB100 Offset0 SCC 20 MHz Ch55538 RB100 Offset0



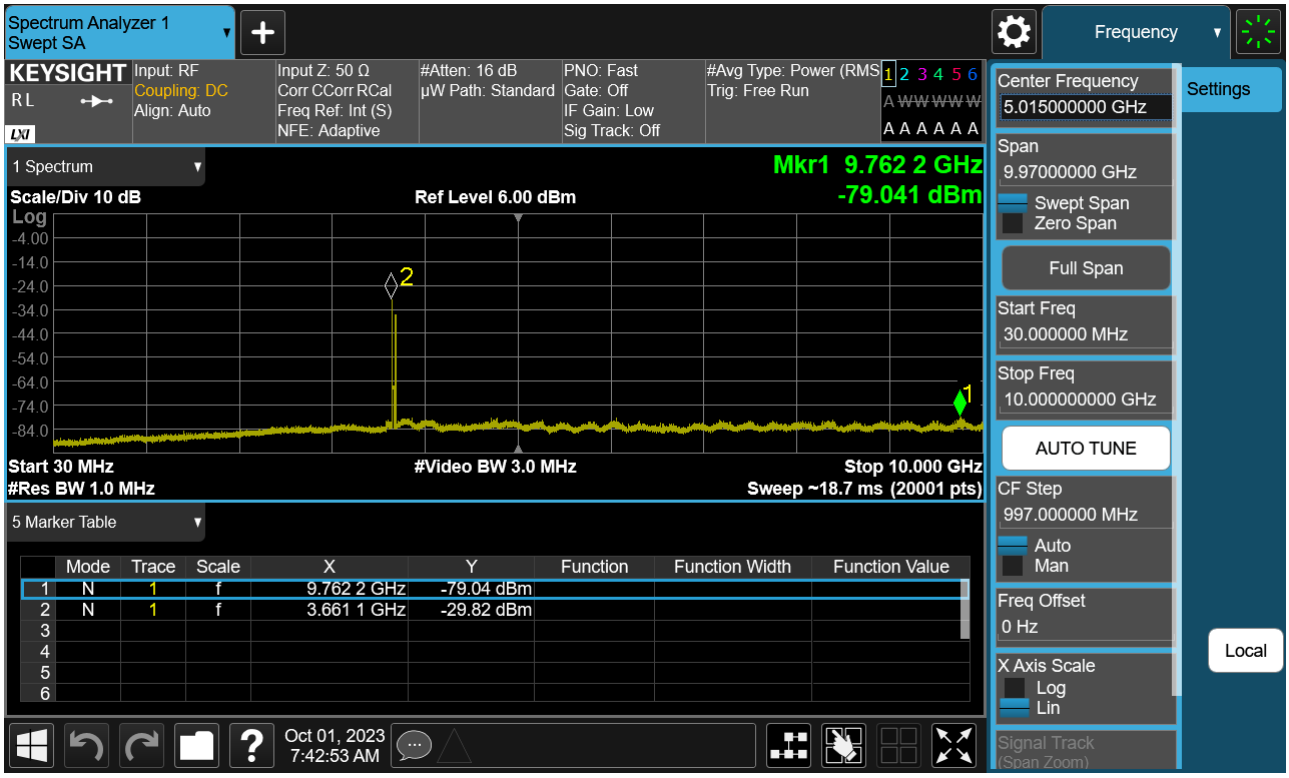
PCC 20 MHz Ch55891 RB100 Offset0 SCC 20 MHz Ch56089 RB100 Offset0



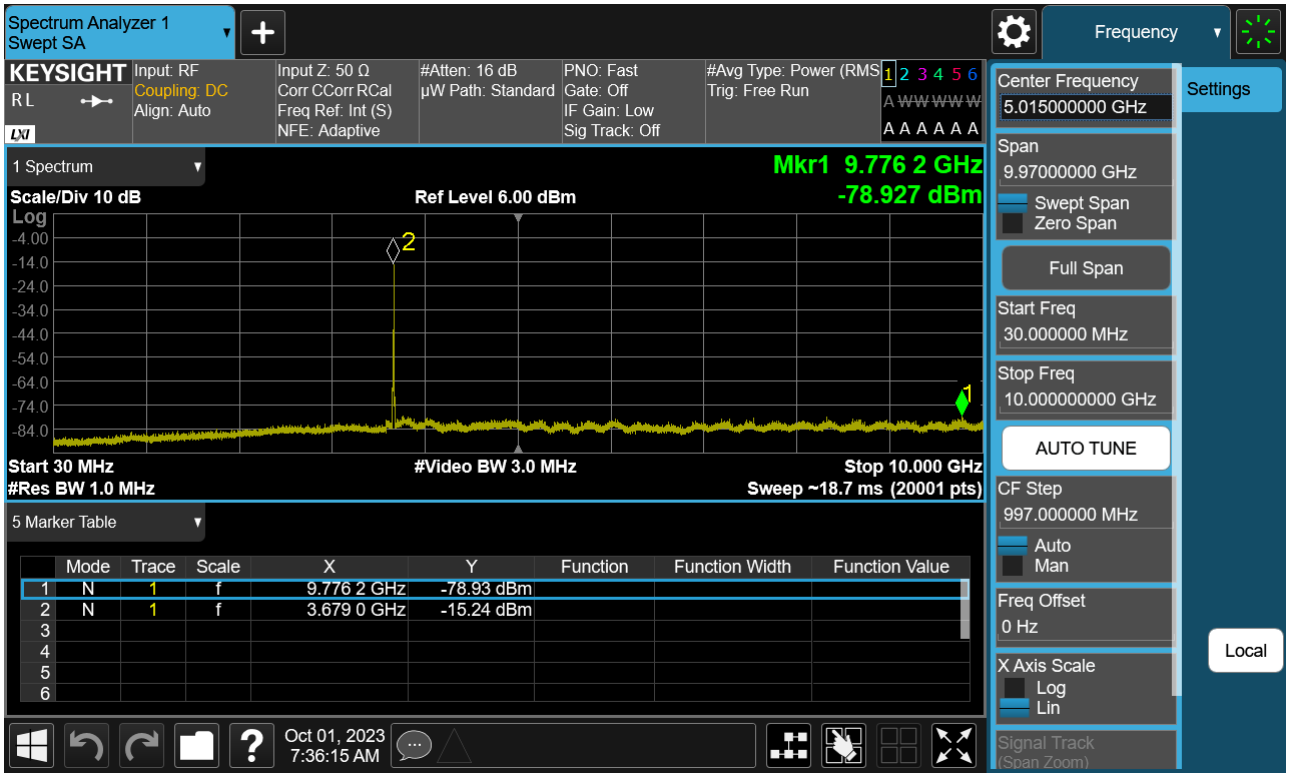
PCC 20 MHz Ch55965 RB100 Offset0 SCC 5 MHz Ch56082 RB25 Offset0



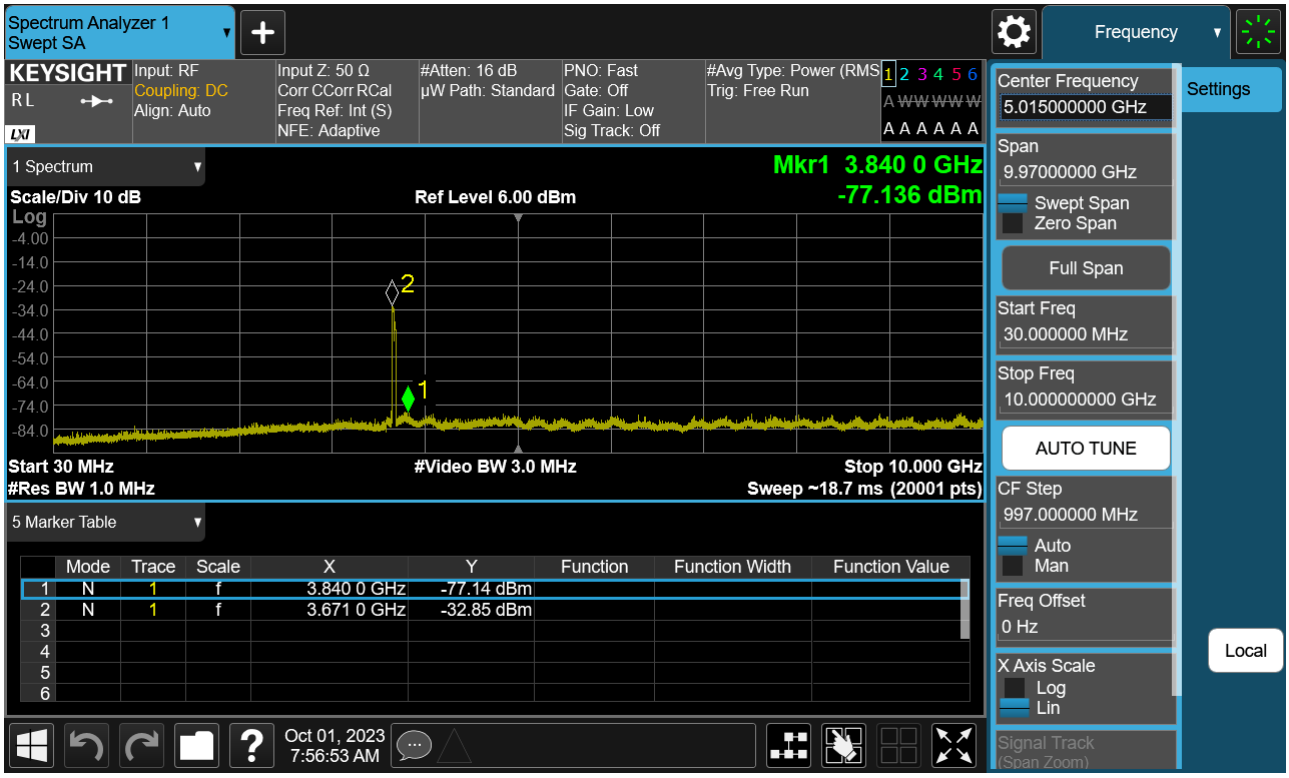
PCC 20 MHz Ch56442 RB1 Offset0 SCC 20 MHz Ch56640 RB1 Offset99



PCC 20 MHz Ch56442 RB1 Offset99 SCC 20 MHz Ch56640 RB1 Offset0

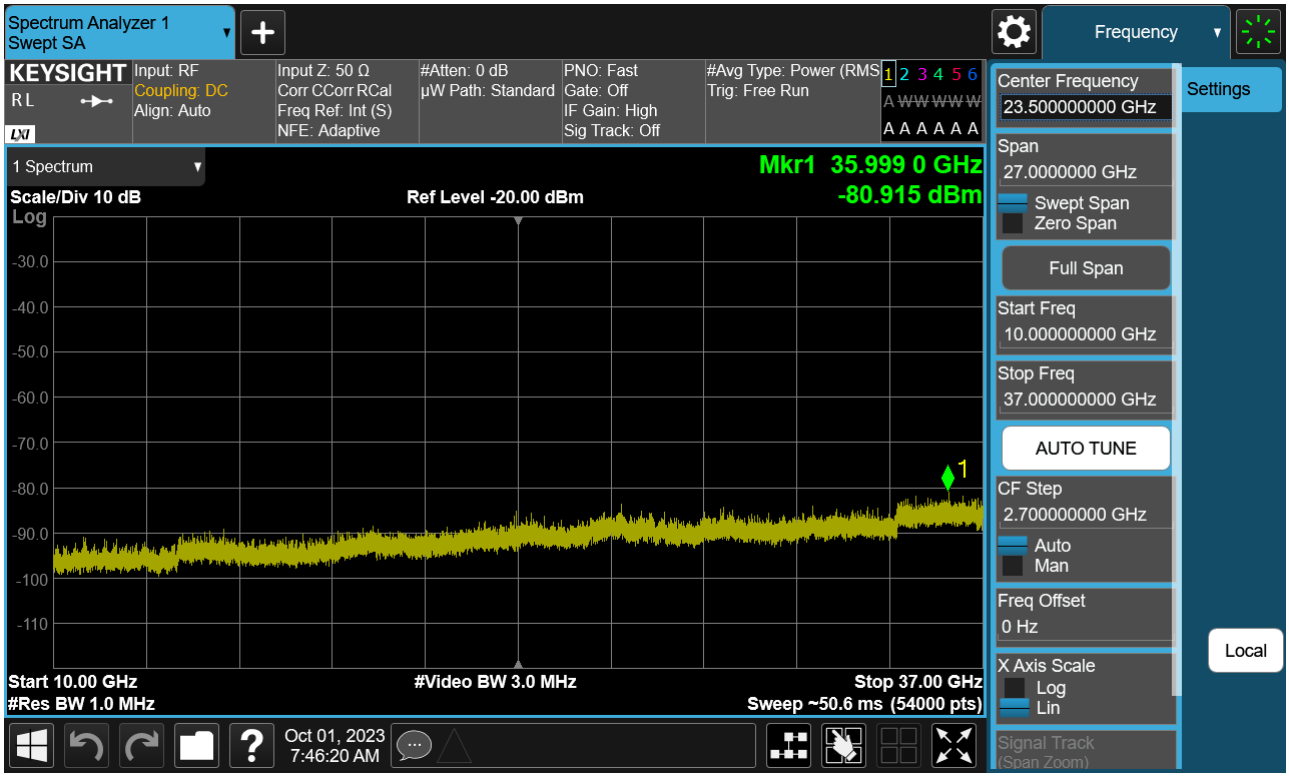


PCC 20 MHz Ch56442 RB100 Offset0 SCC 20 MHz Ch56640 RB100 Offset0

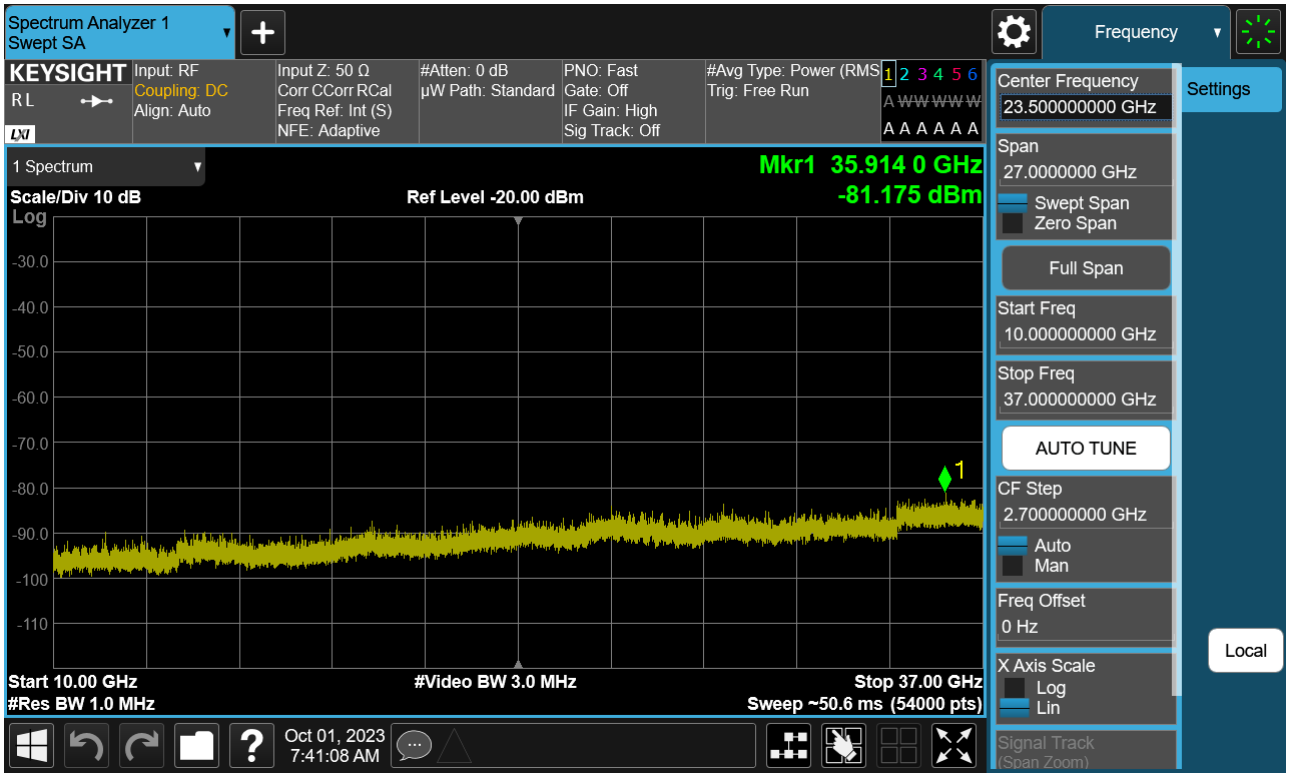


Frequency Range : 10 GHz ~ 37 GHz

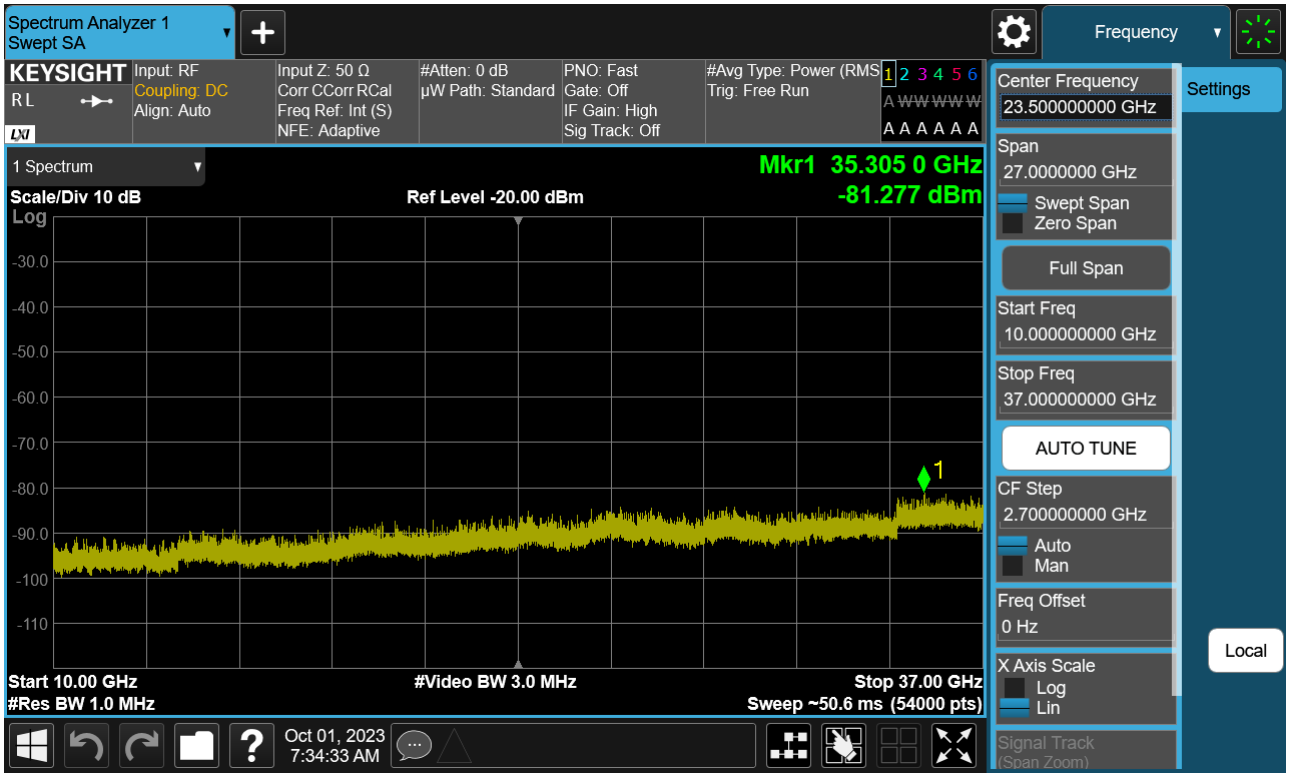
PCC 10 MHz Ch55295 RB50 Offset0, SCC 20 MHz Ch55439 RB100 Offset0



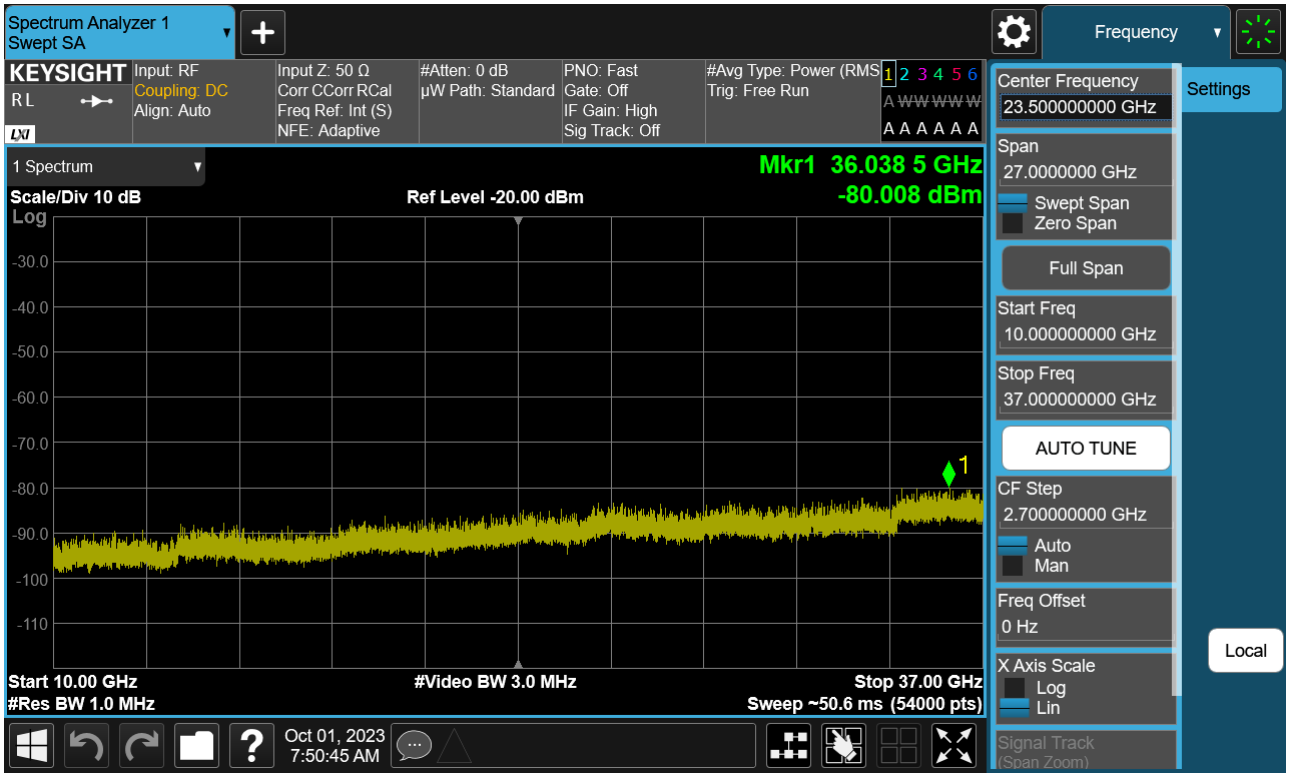
PCC 15 MHz Ch55893 RB1 Offset0, SCC 20 MHz Ch56064 RB1 Offset99



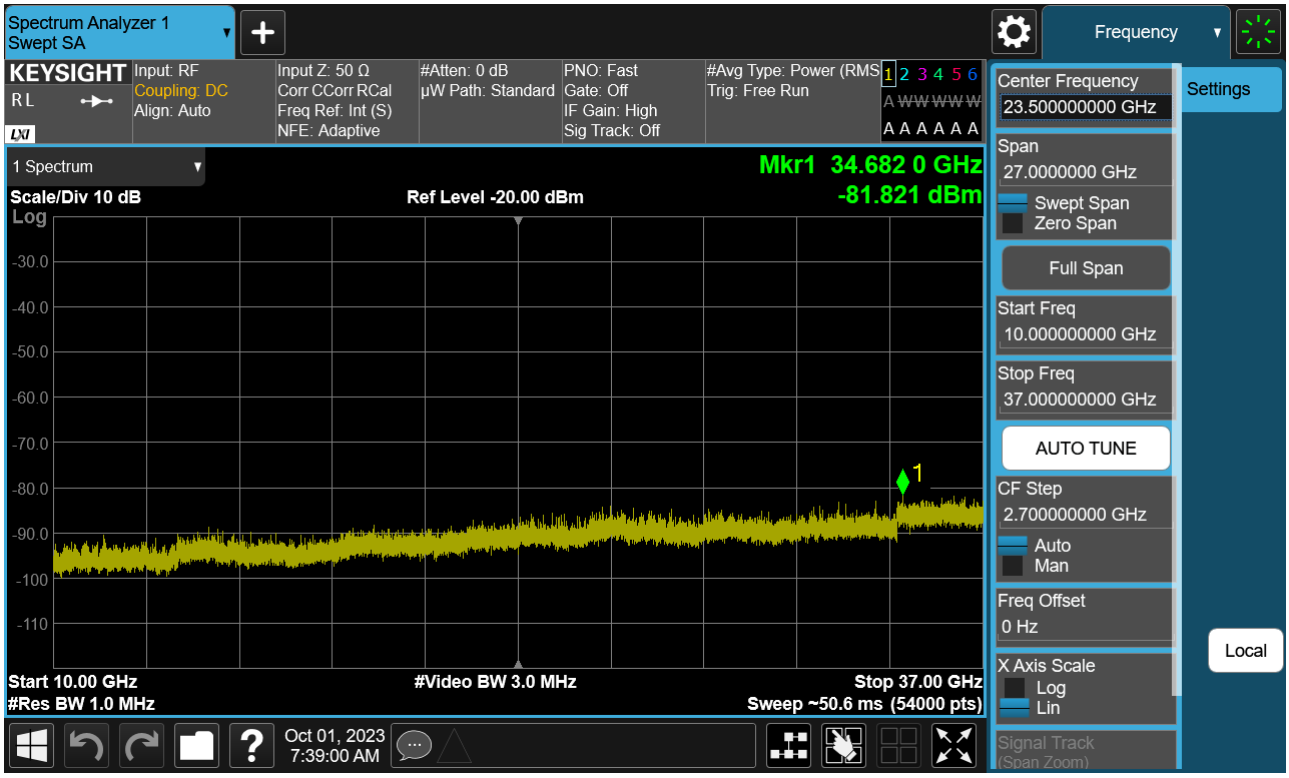
PCC 15 MHz Ch55893 RB1 Offset74, SCC 20 MHz Ch56064 RB1 Offset0



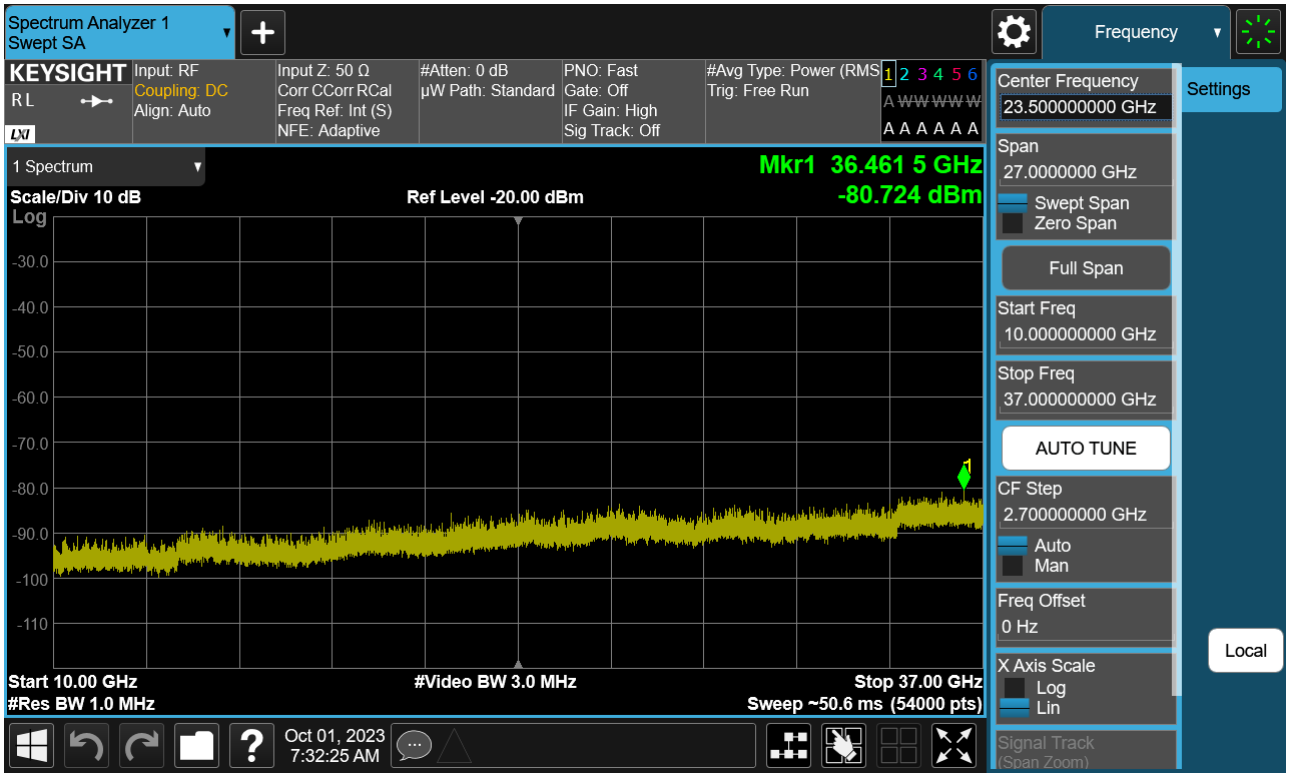
PCC 15 MHz Ch56469 RB75 Offset0, SCC 20 MHz Ch56640 RB100 Offset0



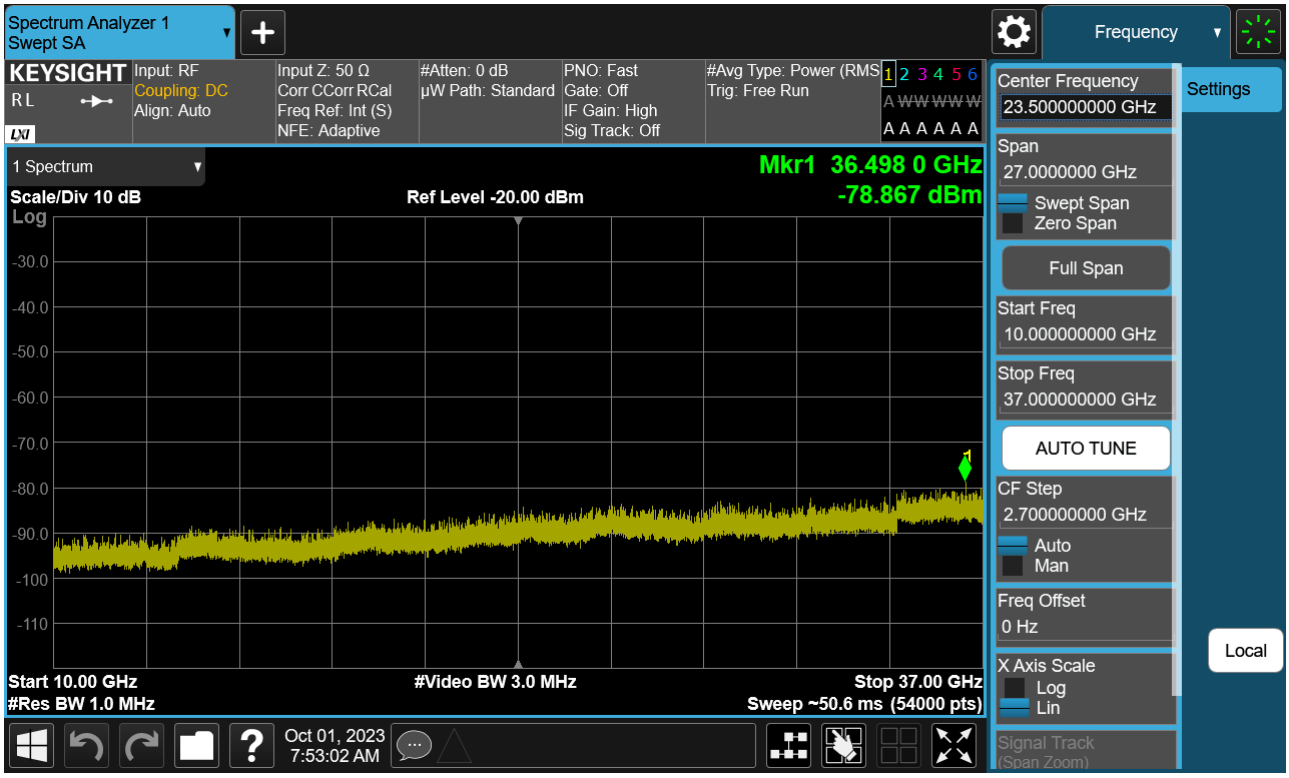
PCC 20 MHz Ch55340 RB1 Offset0, SCC 20 MHz Ch55538 RB1 Offset99



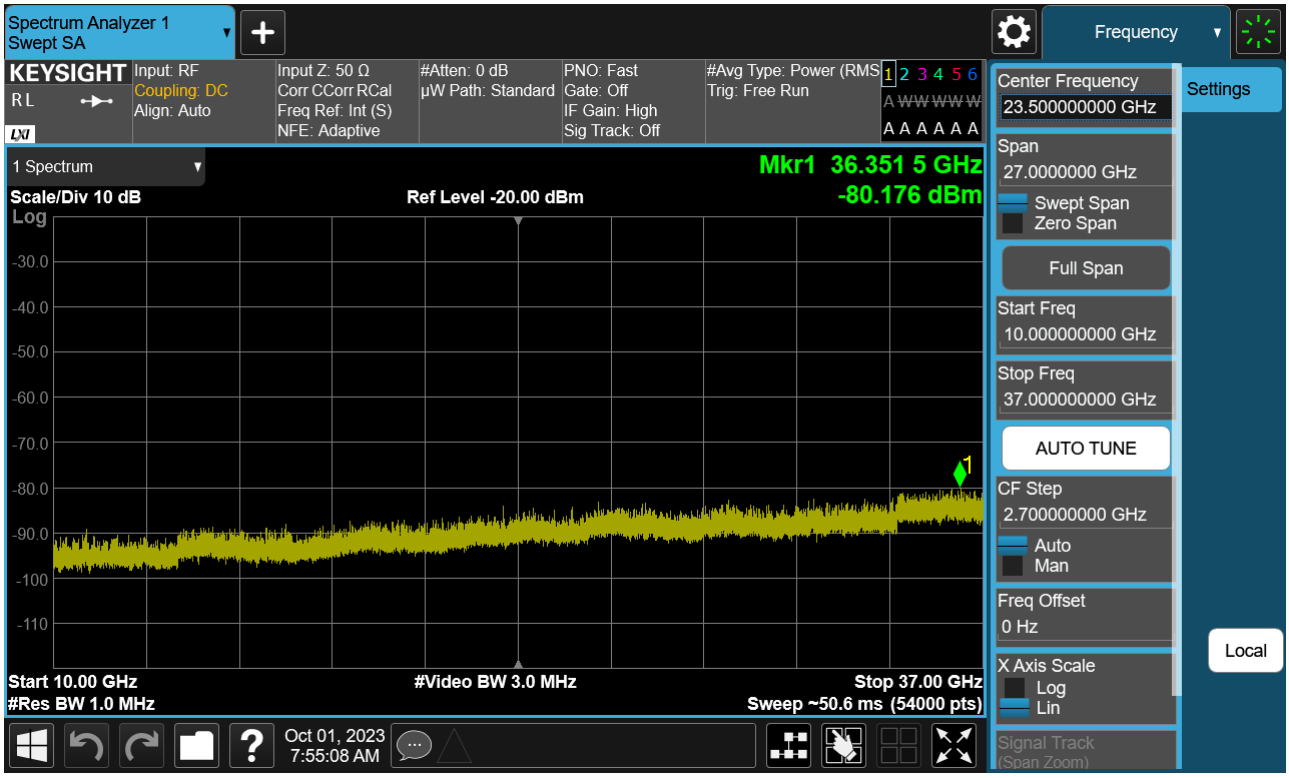
PCC 20 MHz Ch55340 RB1 Offset99, SCC 20 MHz Ch55538 RB1 Offset0



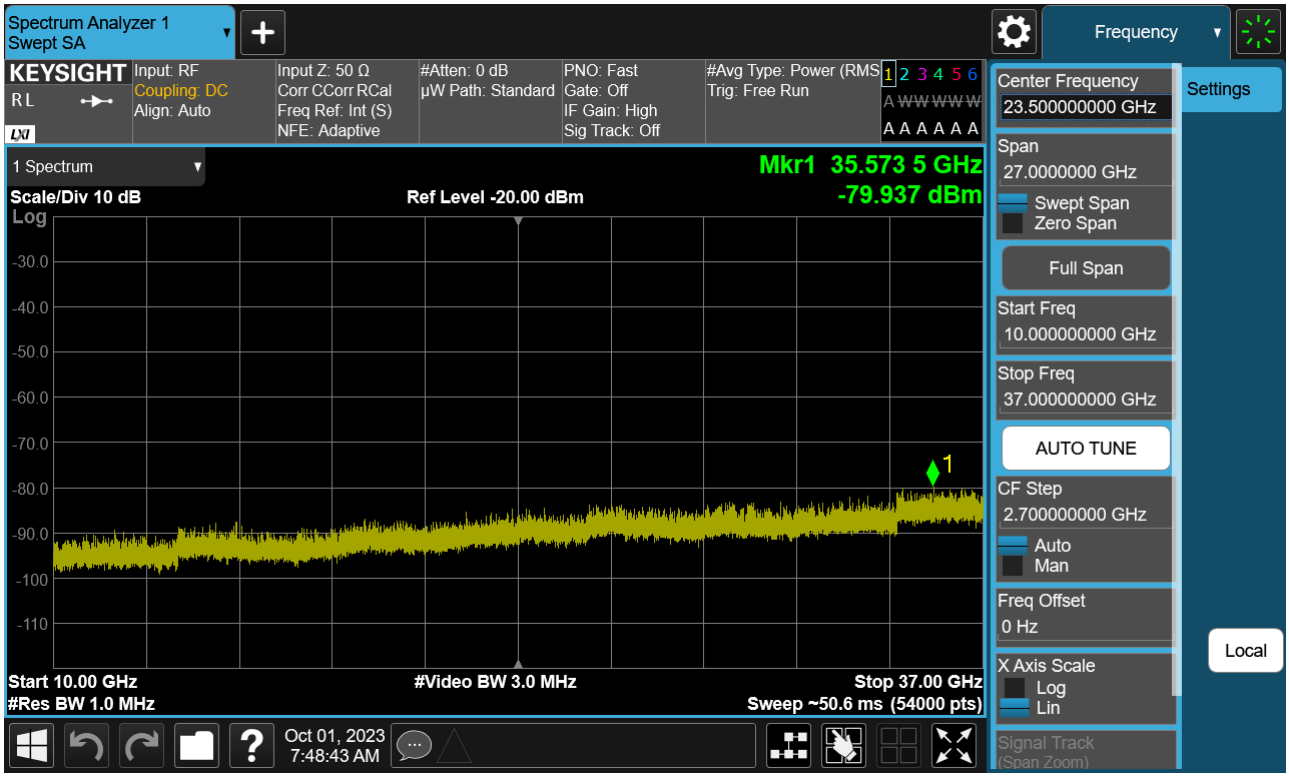
PCC 20 MHz Ch55340 RB100 Offset0, SCC 20 MHz Ch55538 RB100 Offset0



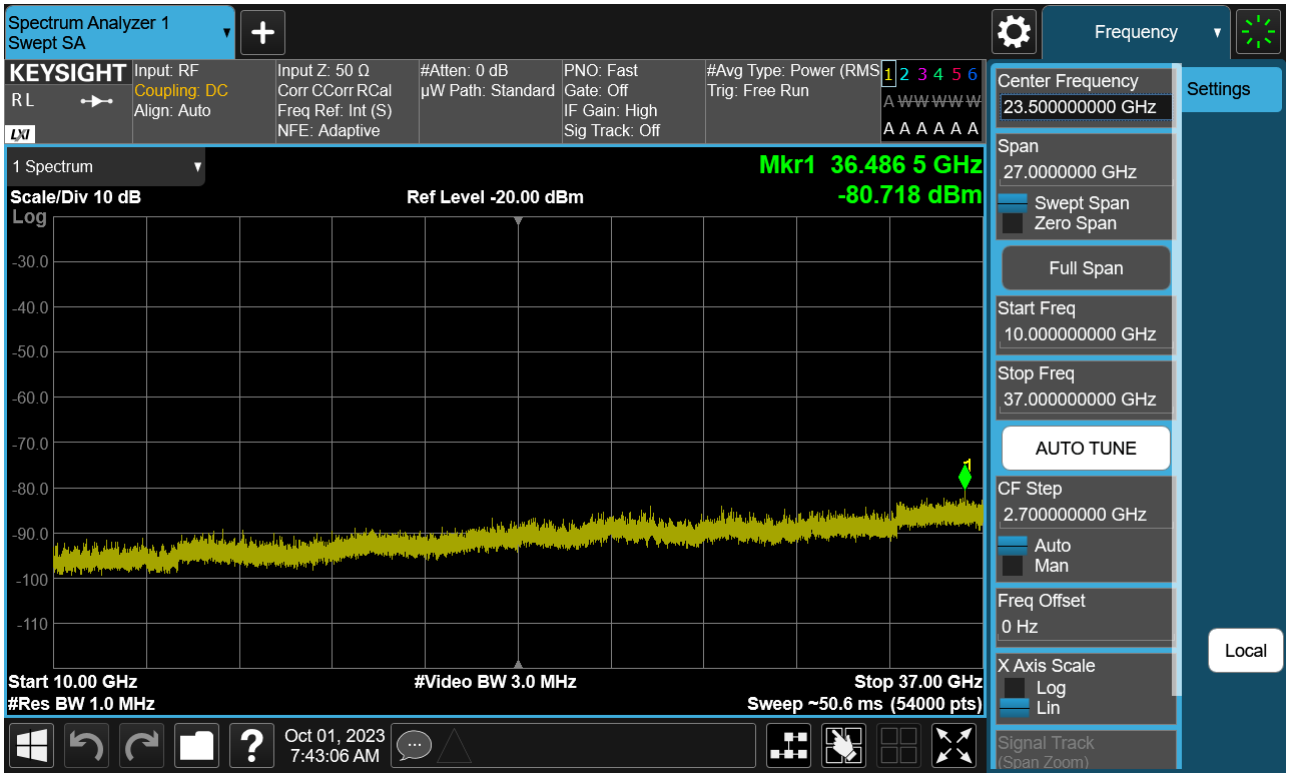
PCC 20 MHz Ch55891 RB100 Offset0, SCC 20 MHz Ch56089 RB100 Offset0



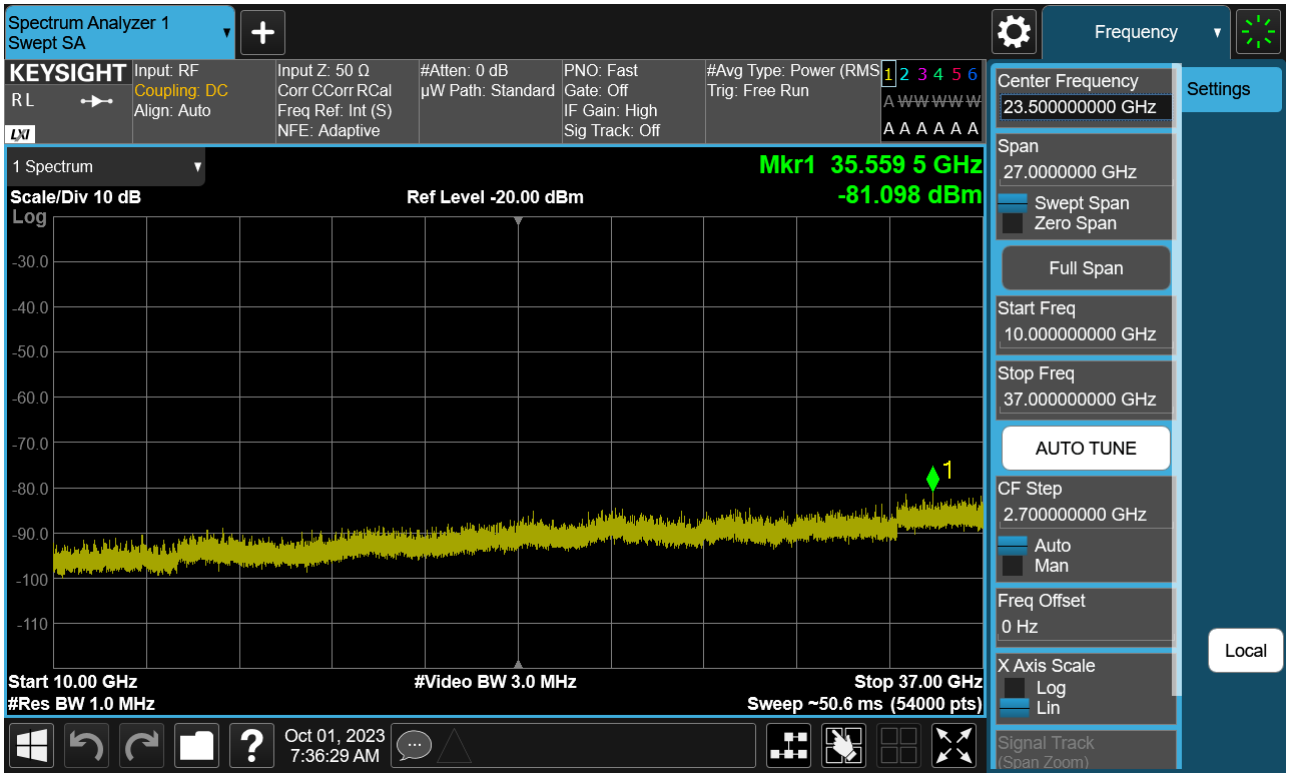
PCC 20 MHz Ch55965 RB100 Offset0, SCC 5 MHz Ch56082 RB25 Offset0



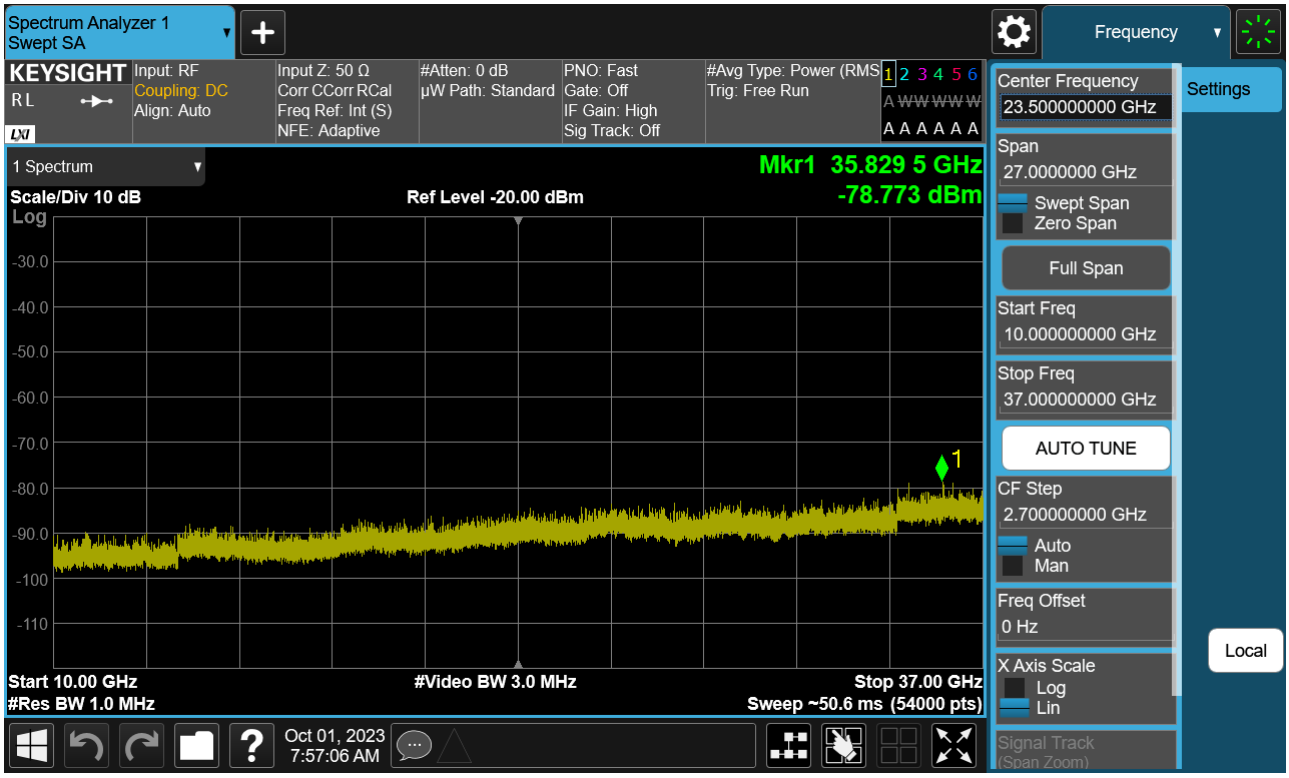
PCC 20 MHz Ch56442 RB1 Offset0, SCC 20 MHz Ch56640 RB1 Offset99



PCC 20 MHz Ch56442 RB1 Offset99, SCC 20 MHz Ch56640 RB1 Offset0

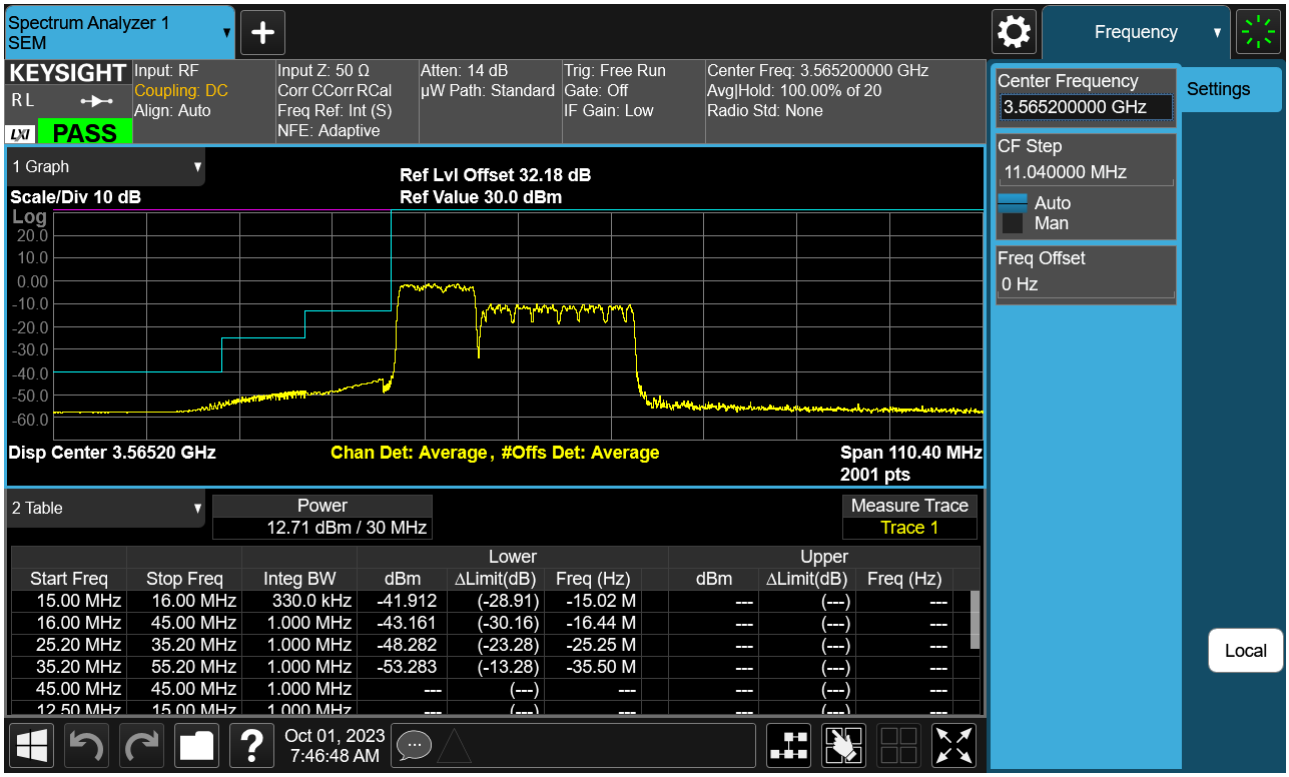


PCC 20 MHz Ch56442 RB100 Offset0, SCC 20 MHz Ch56640 RB100 Offset0

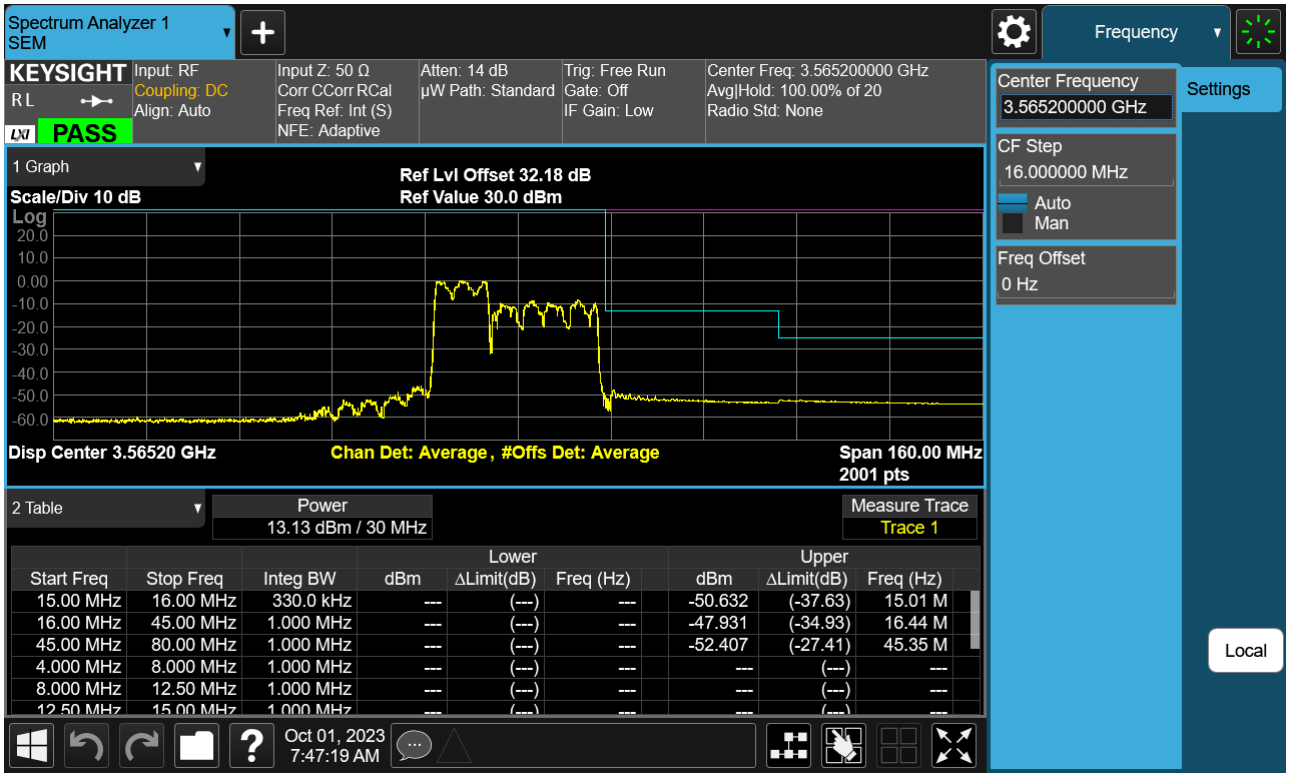


8.4 Channel Edge

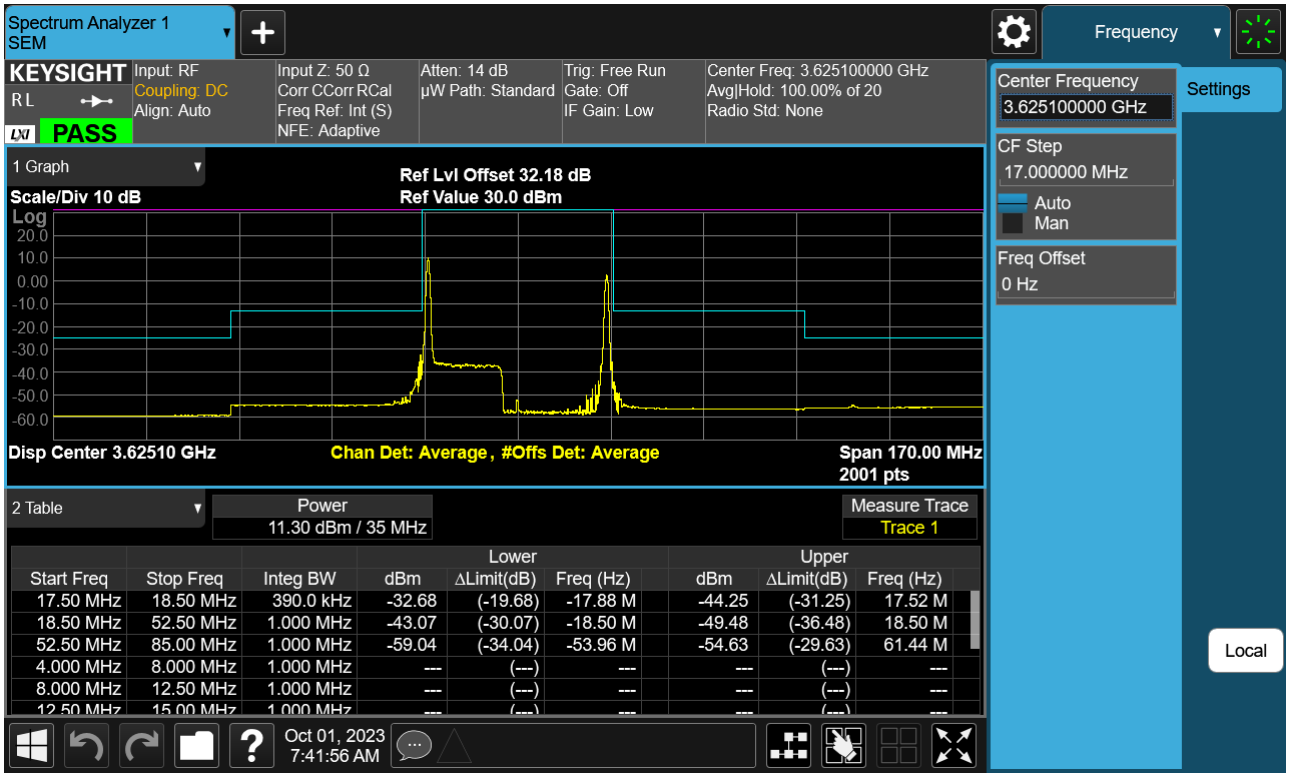
PCC 10 MHz Ch55295 RB50 Offset0, SCC 20 MHz Ch55439 RB100 Offset0-1



PCC 10 MHz Ch55295 RB50 Offset0, SCC 20 MHz Ch55439 RB100 Offset0-2

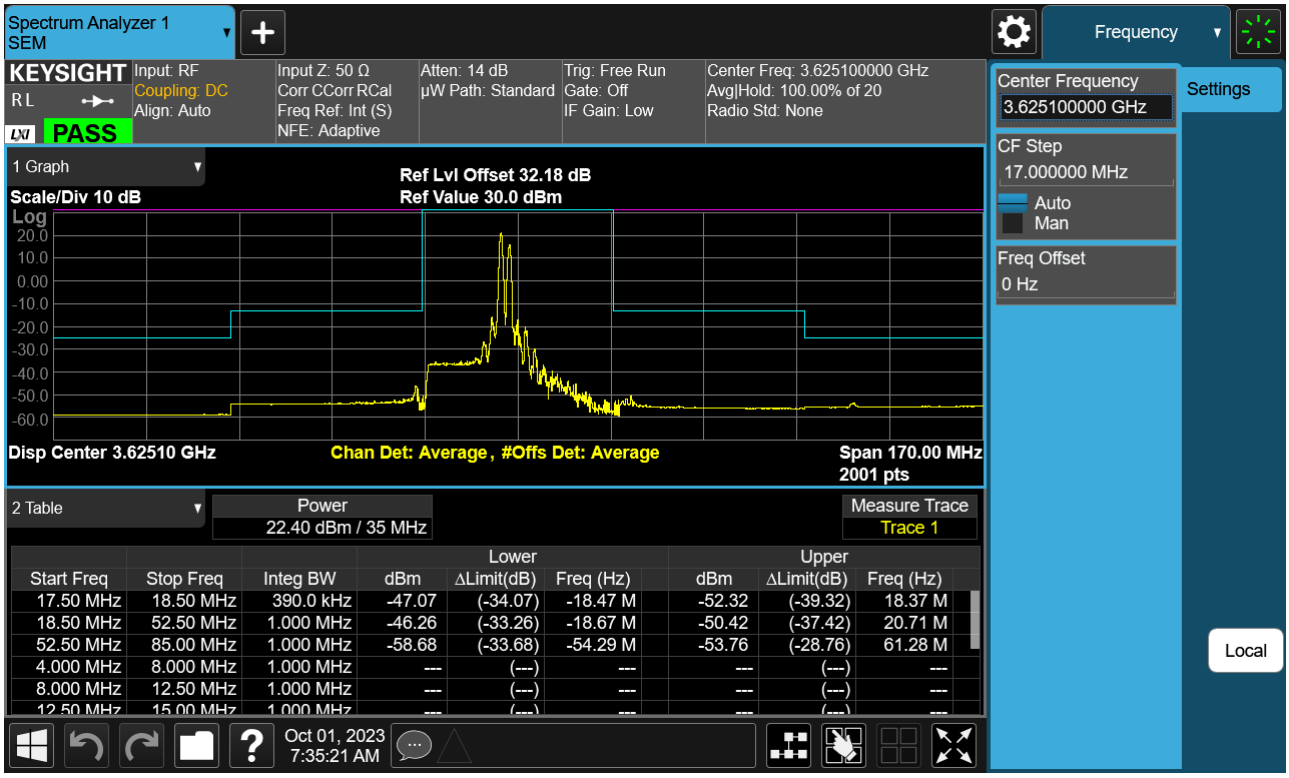


PCC 15 MHz Ch55893 RB1 Offset0, SCC 20 MHz Ch56064 RB1 Offset99

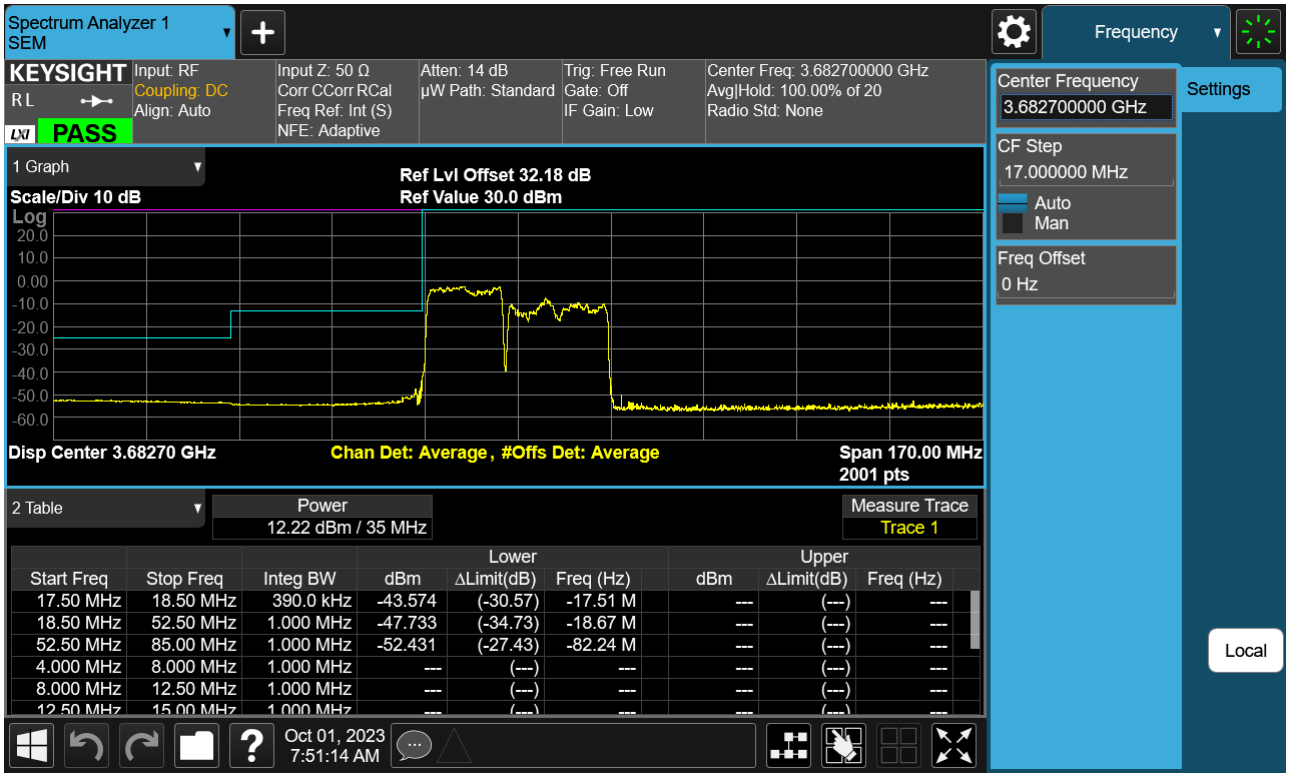


			Lower			Upper		
Start Freq	Stop Freq	Integ BW	dBm	ΔLimit(dB)	Freq (Hz)	dBm	ΔLimit(dB)	Freq (Hz)
17.50 MHz	18.50 MHz	390.0 kHz	-32.68	(-19.68)	-17.88 M	-44.25	(-31.25)	17.52 M
18.50 MHz	52.50 MHz	1.000 MHz	-43.07	(-30.07)	-18.50 M	-49.48	(-36.48)	18.50 M
52.50 MHz	85.00 MHz	1.000 MHz	-59.04	(-34.04)	-53.96 M	-54.63	(-29.63)	61.44 M
4.000 MHz	8.000 MHz	1.000 MHz	---	(---)	---	---	(---)	---
8.000 MHz	12.50 MHz	1.000 MHz	---	(---)	---	---	(---)	---
12.50 MHz	15.00 MHz	1.000 MHz	---	(---)	---	---	(---)	---

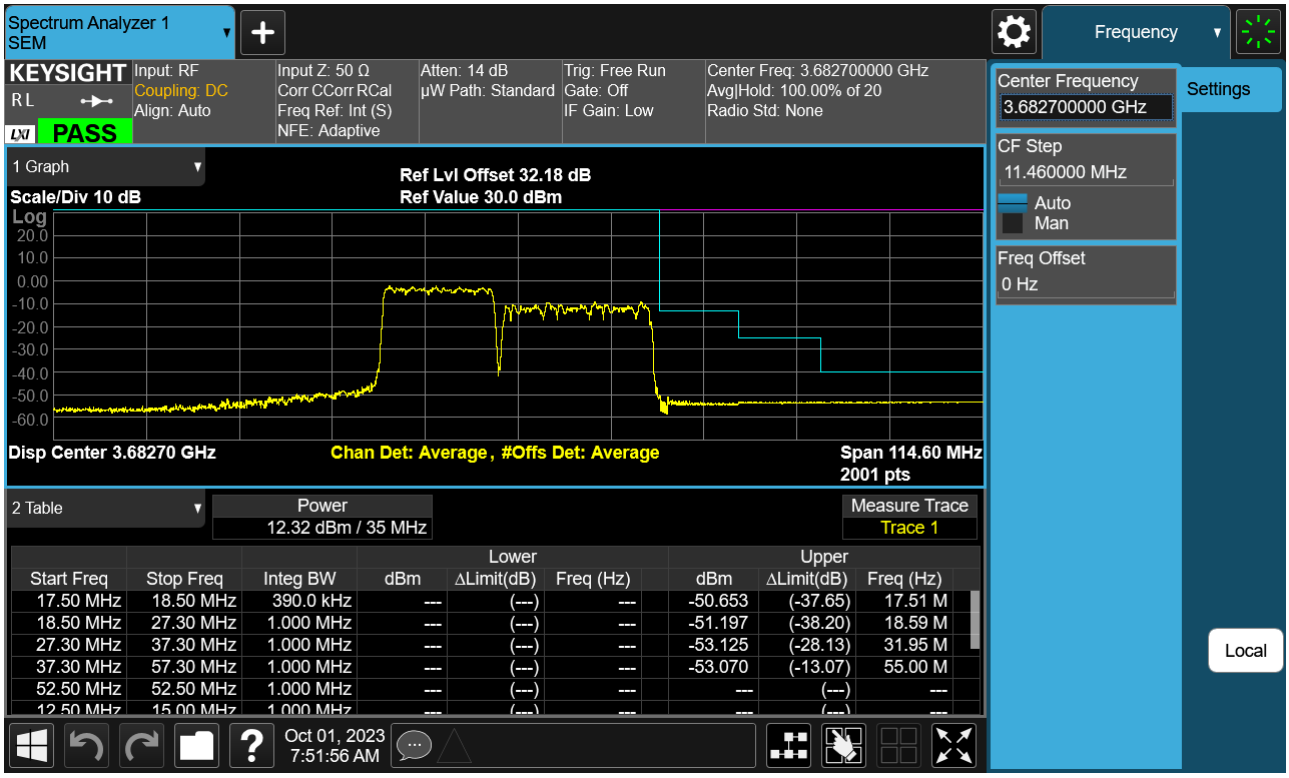
PCC 15 MHz Ch55893 RB1 Offset74, SCC 20 MHz Ch56064 RB1 Offset0



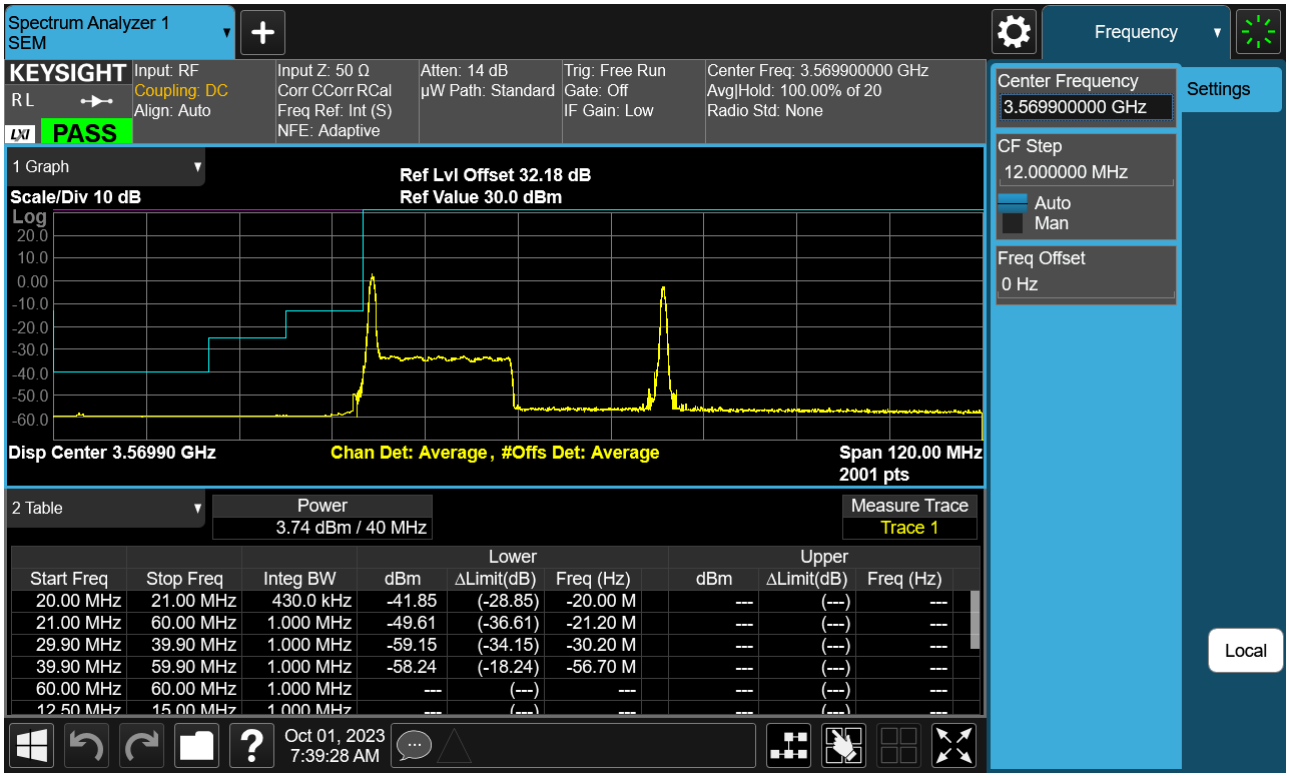
PCC 15 MHz Ch56469 RB75 Offset0, SCC 20 MHz Ch56640 RB100 Offset0-1



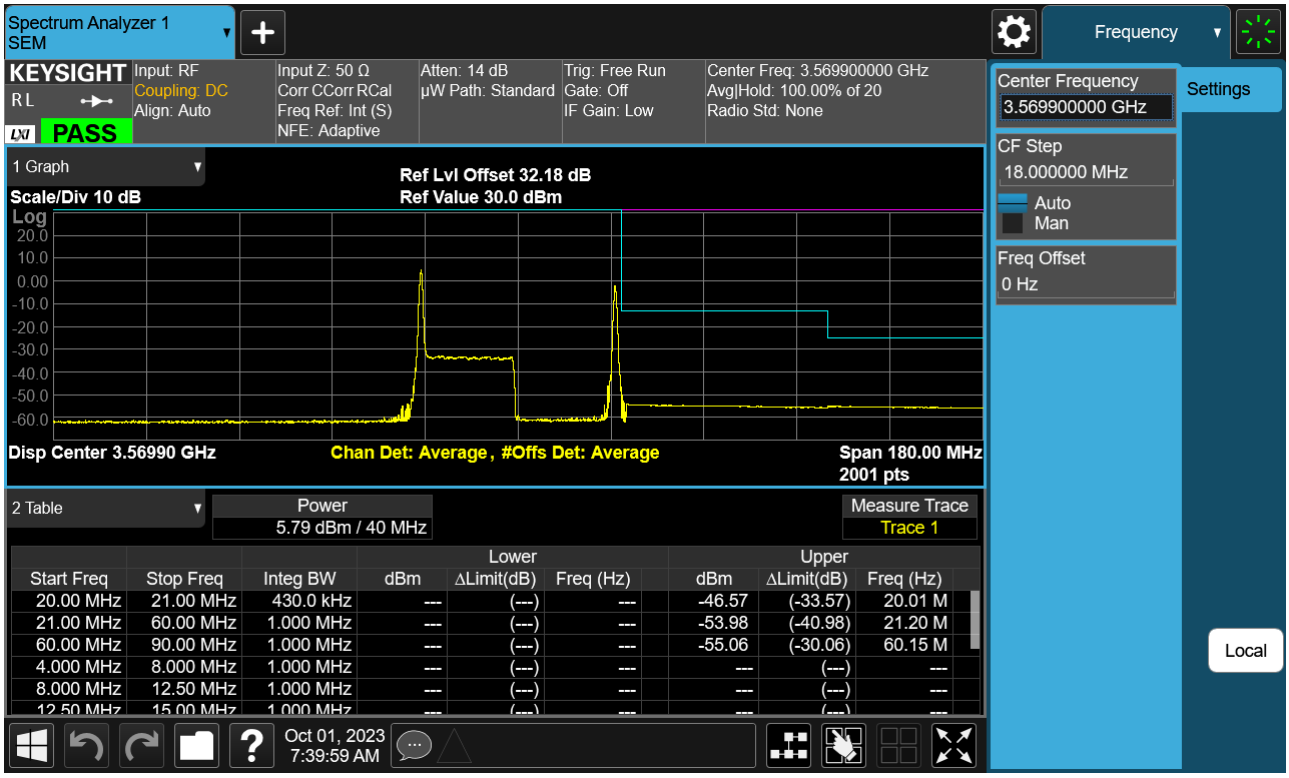
PCC 15 MHz Ch56469 RB75 Offset0, SCC 20 MHz Ch56640 RB100 Offset0-2



PCC 20 MHz Ch55340 RB1 Offset0, SCC 20 MHz Ch55538 RB1 Offset99-1

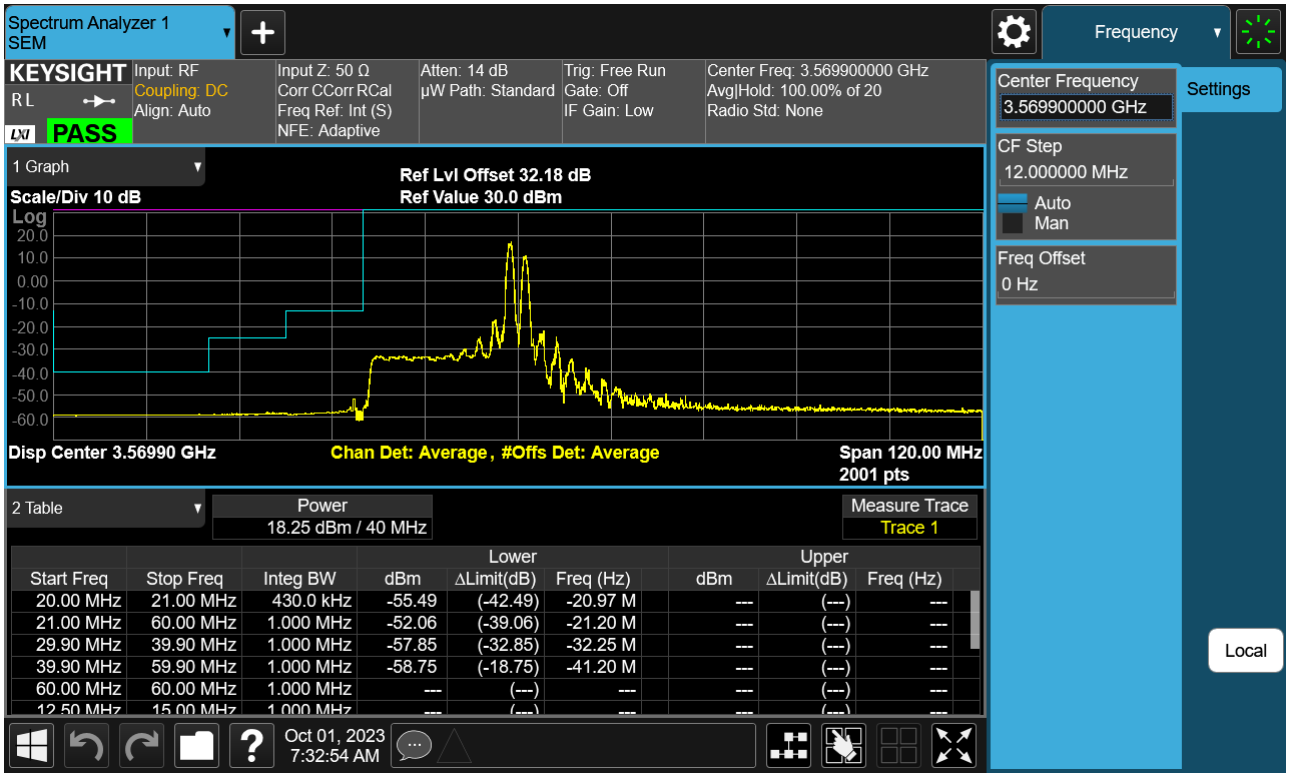


PCC 20 MHz Ch55340 RB1 Offset0, SCC 20 MHz Ch55538 RB1 Offset99-2

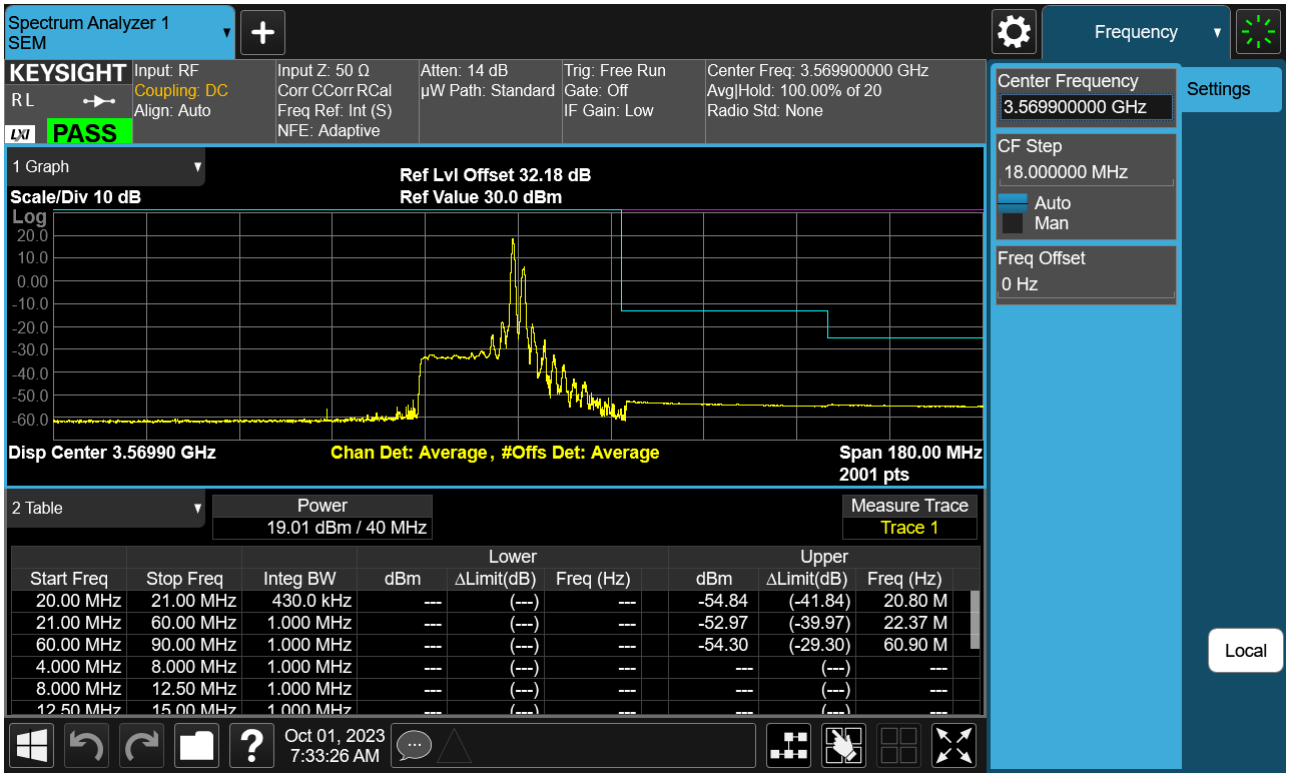


			Lower			Upper		
Start Freq	Stop Freq	Integ BW	dBm	ΔLimit(dB)	Freq (Hz)	dBm	ΔLimit(dB)	Freq (Hz)
20.00 MHz	21.00 MHz	430.0 kHz	---	(---)	---	-46.57	(-33.57)	20.01 M
21.00 MHz	60.00 MHz	1.000 MHz	---	(---)	---	-53.98	(-40.98)	21.20 M
60.00 MHz	90.00 MHz	1.000 MHz	---	(---)	---	-55.06	(-30.06)	60.15 M
4.000 MHz	8.000 MHz	1.000 MHz	---	(---)	---	---	(---)	---
8.000 MHz	12.50 MHz	1.000 MHz	---	(---)	---	---	(---)	---
12.50 MHz	15.00 MHz	1.000 MHz	---	(---)	---	---	(---)	---

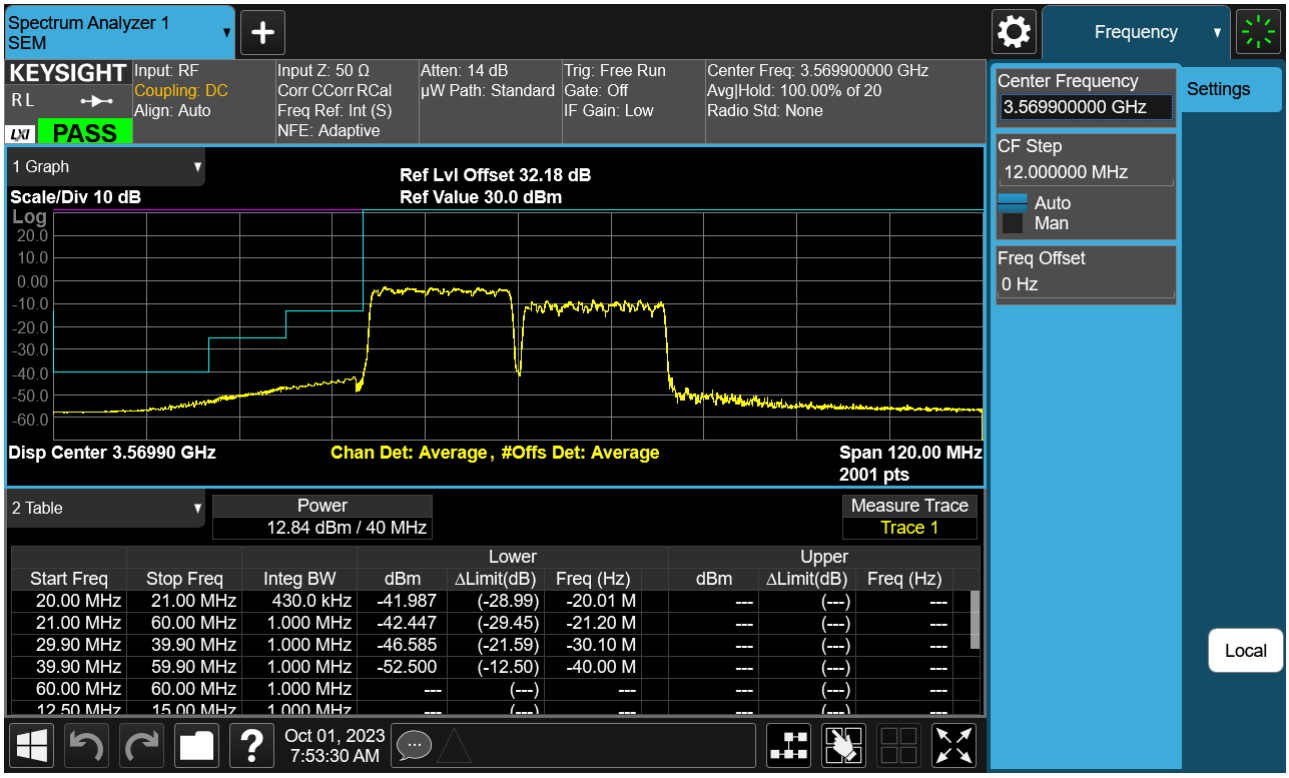
PCC 20 MHz Ch55340 RB1 Offset99, SCC 20 MHz Ch55538 RB1 Offset0-1



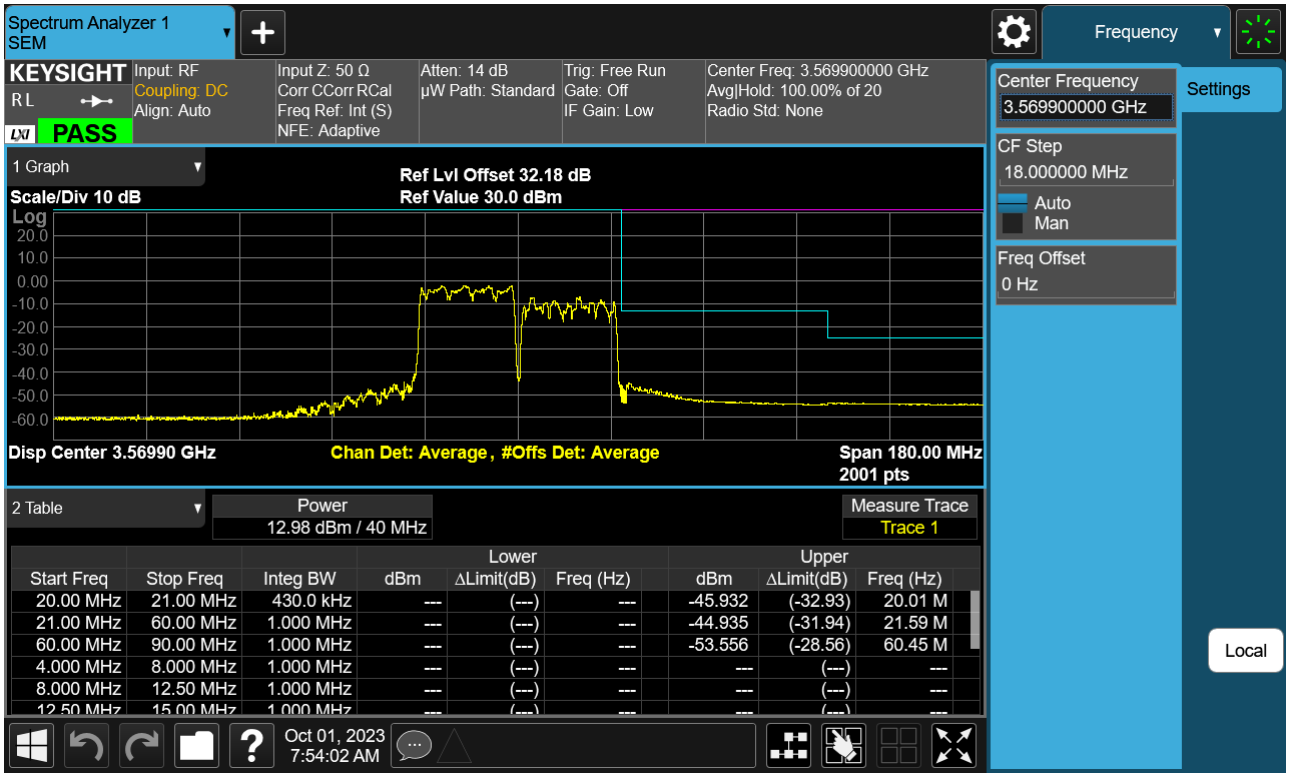
PCC 20 MHz Ch55340 RB1 Offset99, SCC 20 MHz Ch55538 RB1 Offset0-2



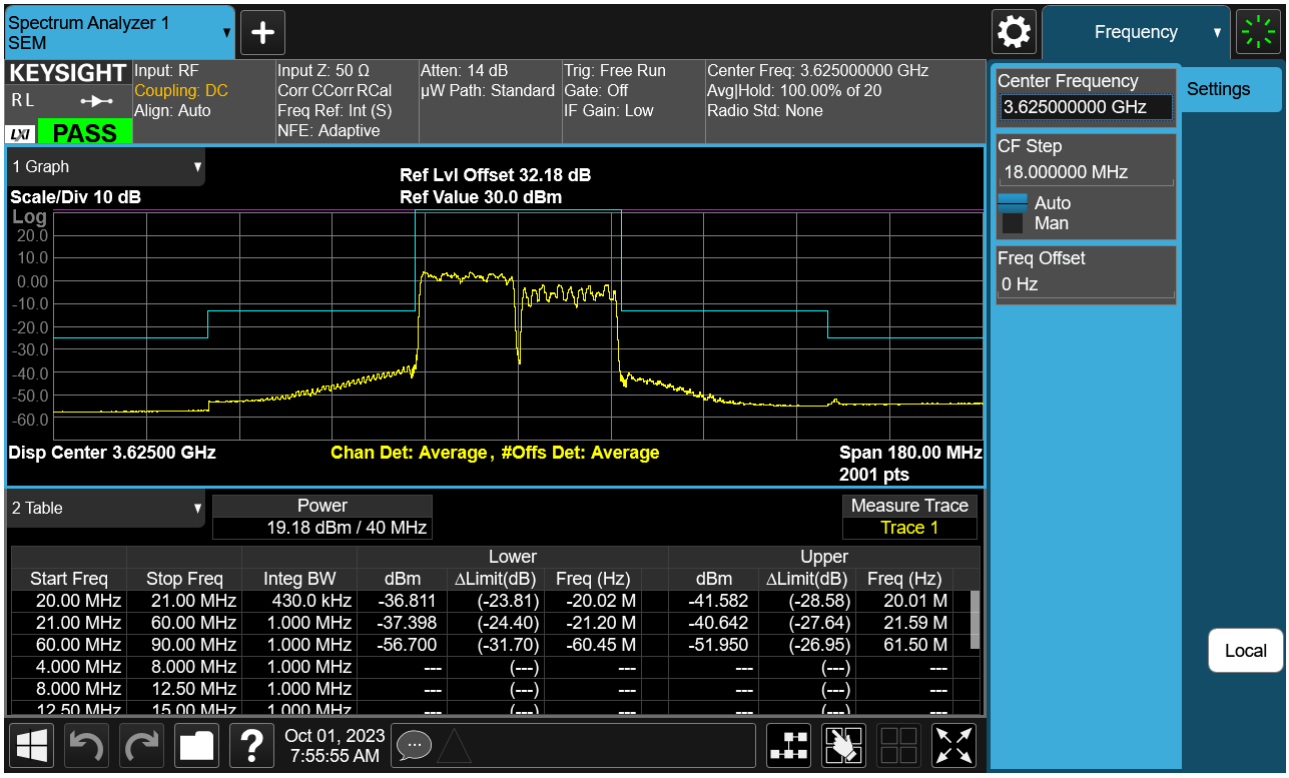
PCC 20 MHz Ch55340 RB100 Offset0, SCC 20 MHz Ch55538 RB100 Offset0-1



PCC 20 MHz Ch55340 RB100 Offset0, SCC 20 MHz Ch55538 RB100 Offset0-2

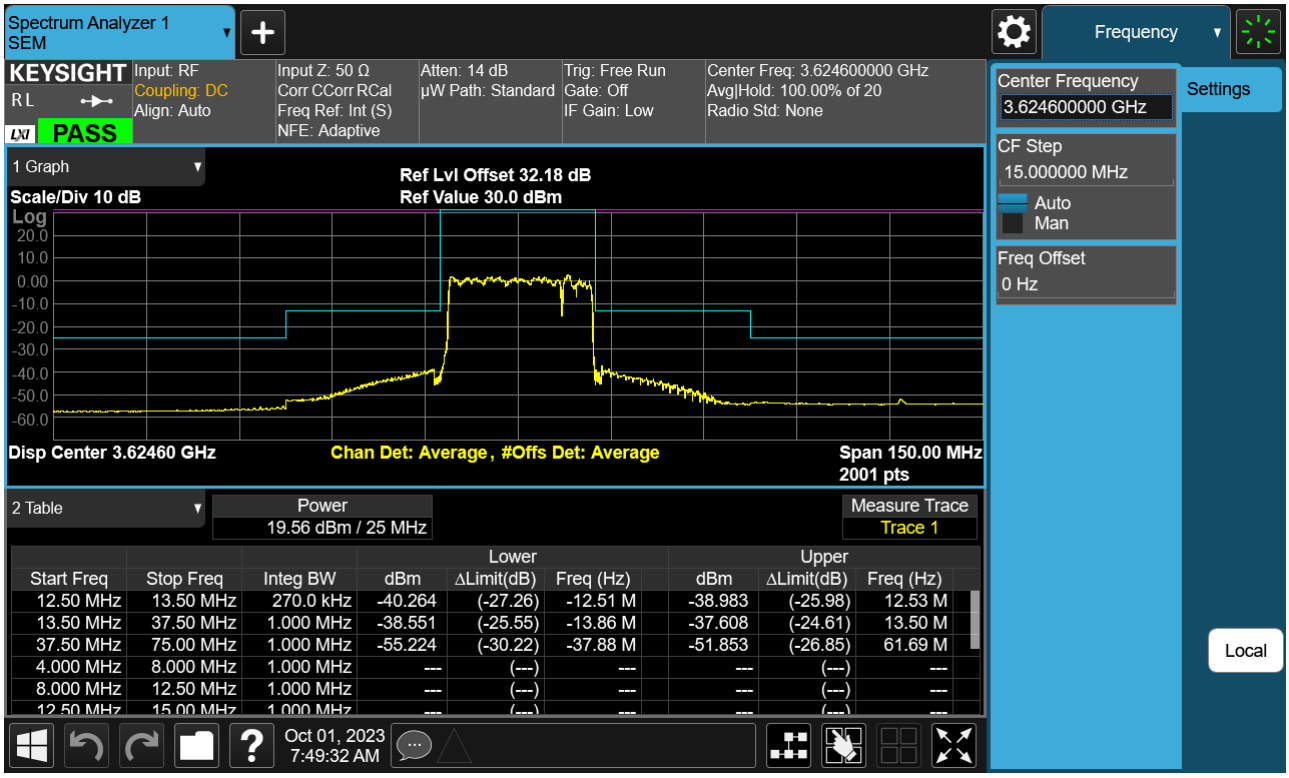


PCC 20 MHz Ch55891 RB100 Offset0, SCC 20 MHz Ch56089 RB100 Offset0

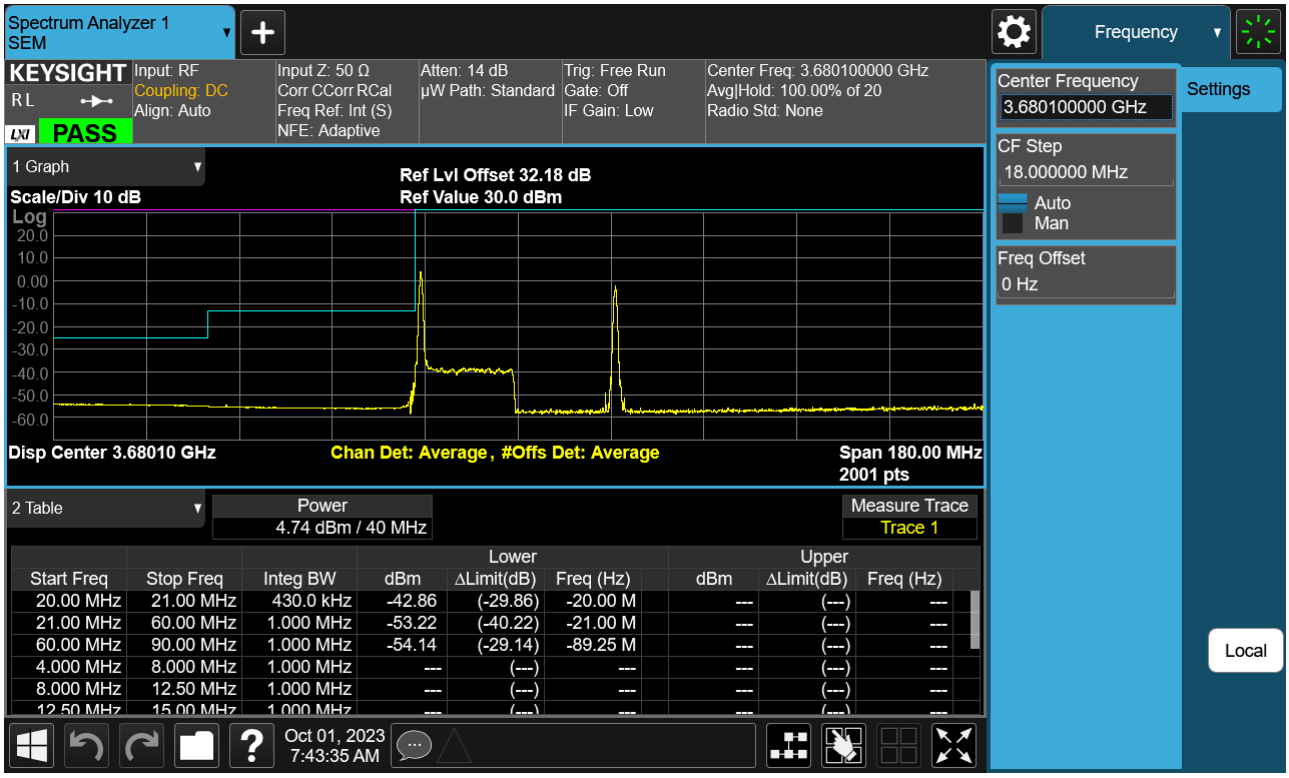


			Lower			Upper		
Start Freq	Stop Freq	Integ BW	dBm	ΔLimit(dB)	Freq (Hz)	dBm	ΔLimit(dB)	Freq (Hz)
20.00 MHz	21.00 MHz	430.0 kHz	-36.811	(-23.81)	-20.02 M	-41.582	(-28.58)	20.01 M
21.00 MHz	60.00 MHz	1.000 MHz	-37.398	(-24.40)	-21.20 M	-40.642	(-27.64)	21.59 M
60.00 MHz	90.00 MHz	1.000 MHz	-56.700	(-31.70)	-60.45 M	-51.950	(-26.95)	61.50 M
4.000 MHz	8.000 MHz	1.000 MHz	---	(---)	---	---	(---)	---
8.000 MHz	12.50 MHz	1.000 MHz	---	(---)	---	---	(---)	---
12.50 MHz	15.00 MHz	1.000 MHz	---	(---)	---	---	(---)	---

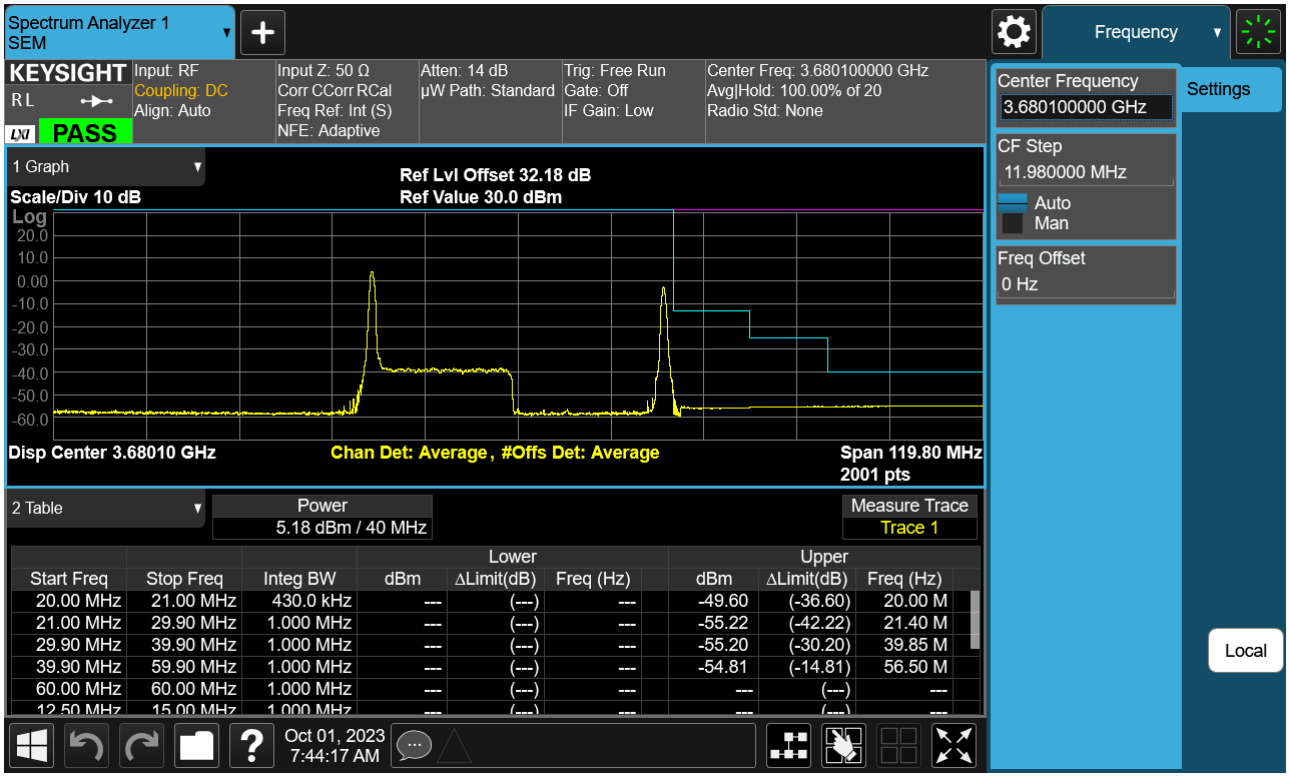
PCC 20 MHz Ch55965 RB100 Offset0, SCC 5 MHz Ch56082 RB25 Offset0



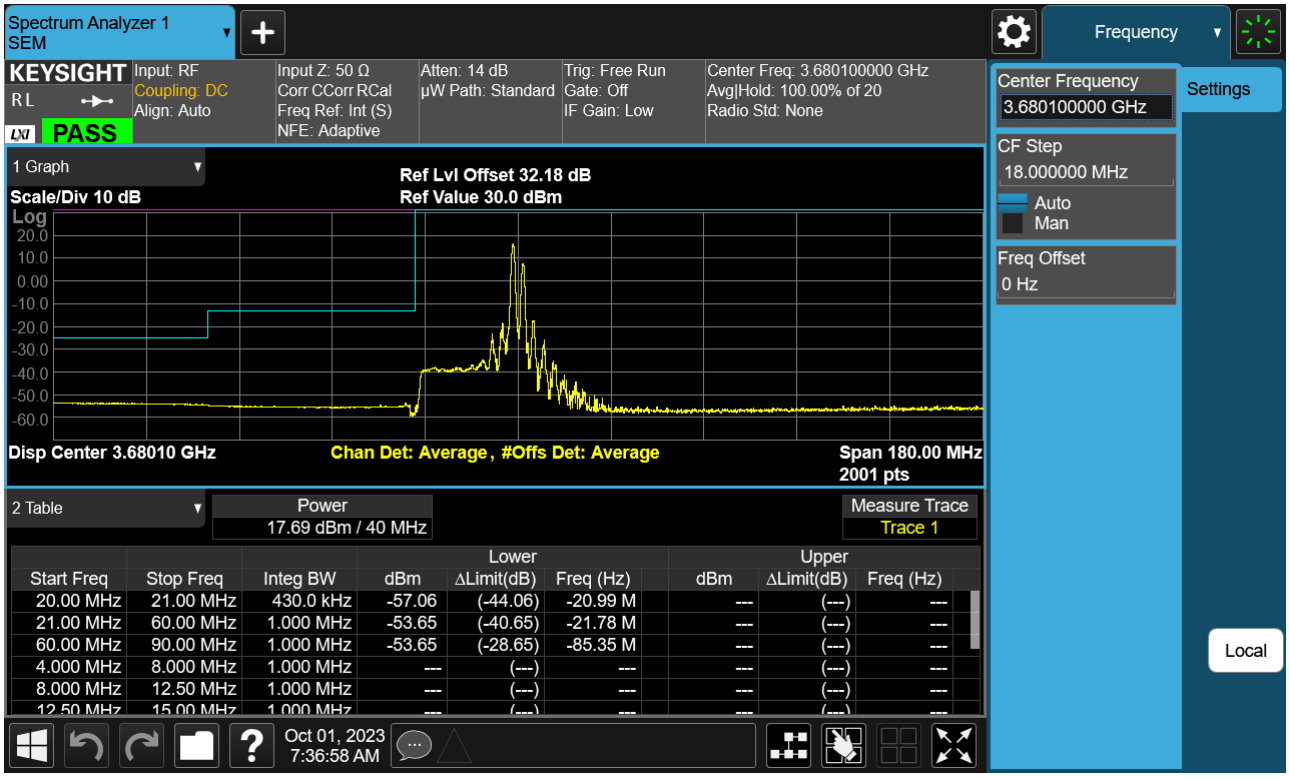
PCC 20 MHz Ch56442 RB1 Offset0, SCC 20 MHz Ch56640 RB1 Offset99-1



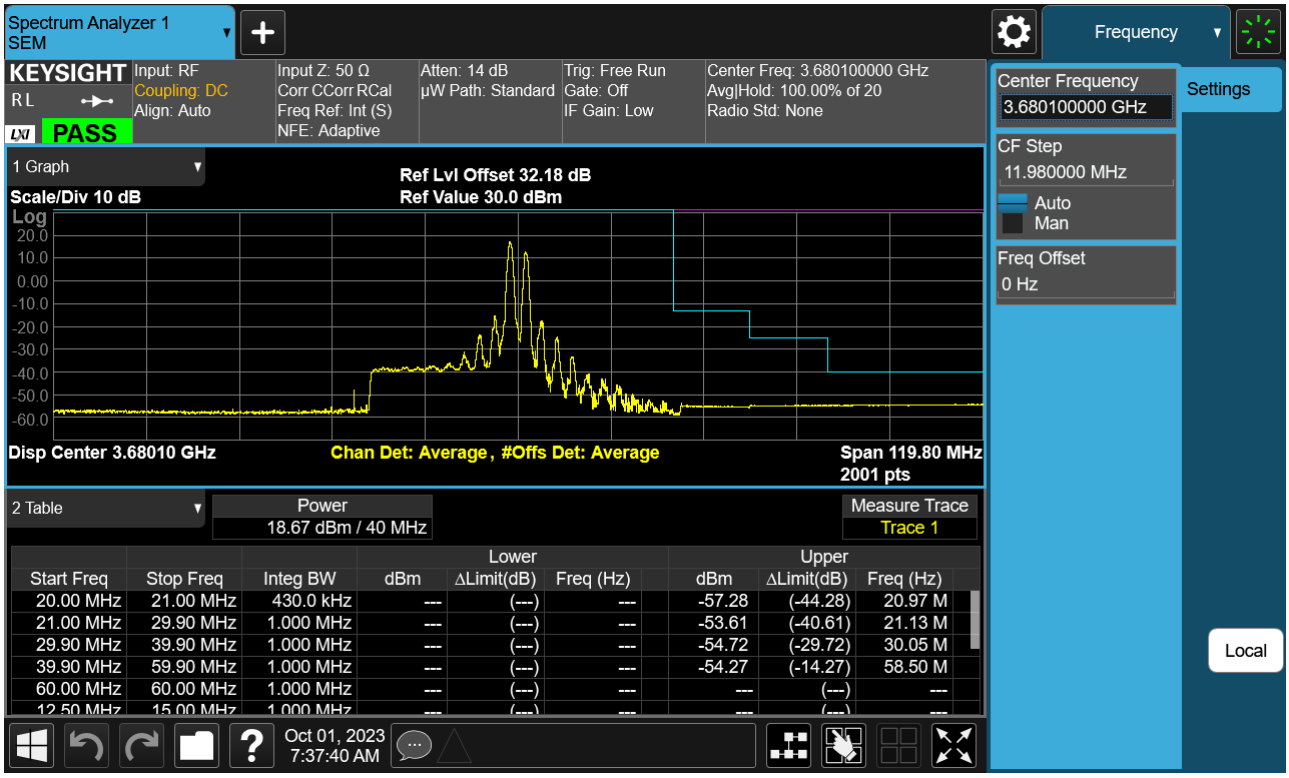
PCC 20 MHz Ch56442 RB1 Offset0, SCC 20 MHz Ch56640 RB1 Offset99-2



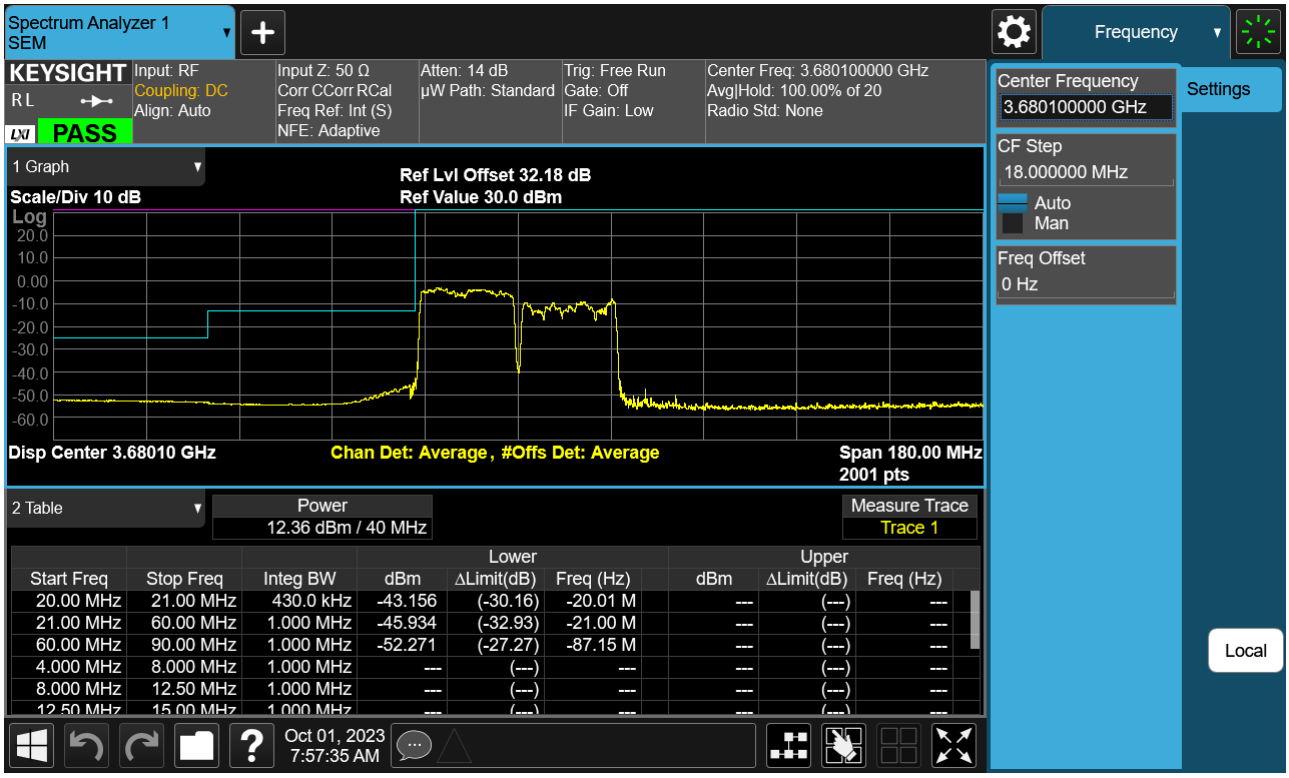
PCC 20 MHz Ch56442 RB1 Offset99, SCC 20 MHz Ch56640 RB1 Offset0-1



PCC 20 MHz Ch56442 RB1 Offset99, SCC 20 MHz Ch56640 RB1 Offset0-2

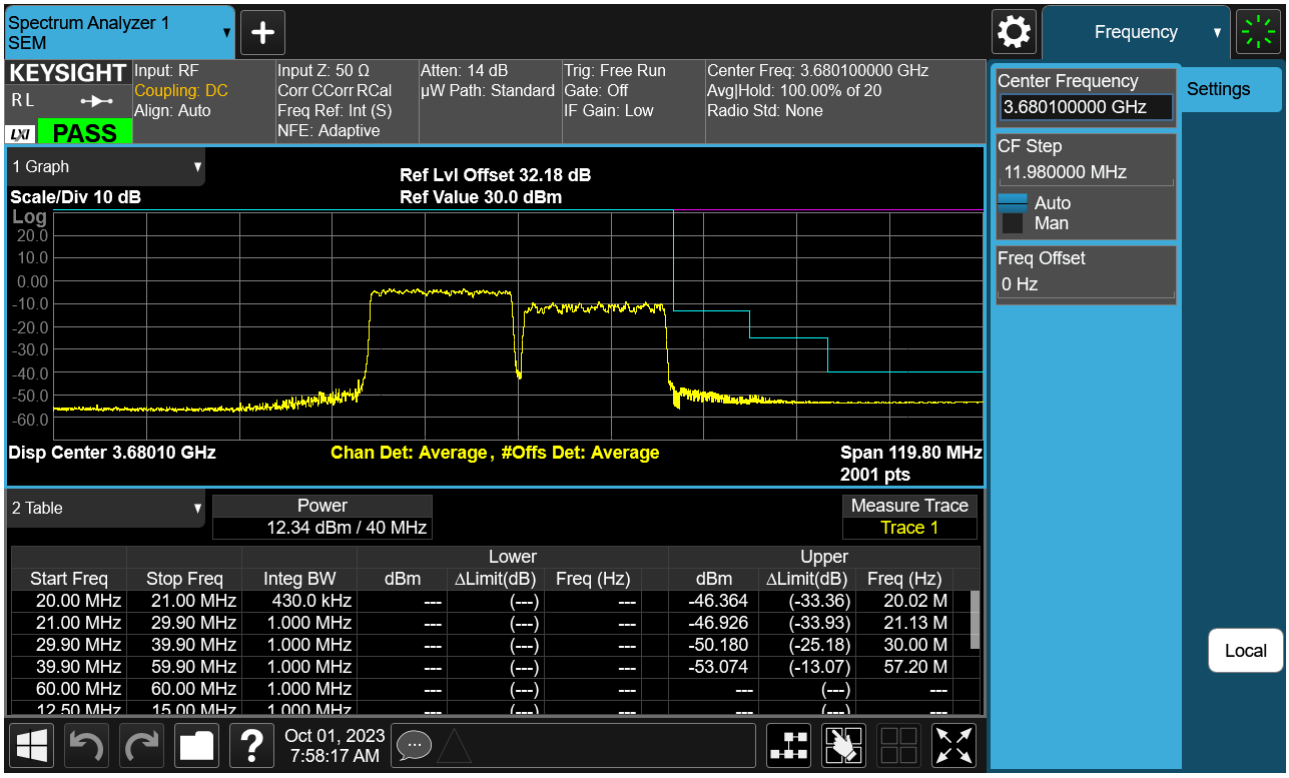


PCC 20 MHz Ch56442 RB100 Offset0, SCC 20 MHz Ch56640 RB100 Offset0-1



			Lower			Upper		
Start Freq	Stop Freq	Integ BW	dBm	ΔLimit(dB)	Freq (Hz)	dBm	ΔLimit(dB)	Freq (Hz)
20.00 MHz	21.00 MHz	430.0 kHz	-43.156	(-30.16)	-20.01 M	---	(---)	---
21.00 MHz	60.00 MHz	1.000 MHz	-45.934	(-32.93)	-21.00 M	---	(---)	---
60.00 MHz	90.00 MHz	1.000 MHz	-52.271	(-27.27)	-87.15 M	---	(---)	---
4.000 MHz	8.000 MHz	1.000 MHz	---	(---)	---	---	(---)	---
8.000 MHz	12.50 MHz	1.000 MHz	---	(---)	---	---	(---)	---
12.50 MHz	15.00 MHz	1.000 MHz	---	(---)	---	---	(---)	---

PCC 20 MHz Ch56442 RB100 Offset0, SCC 20 MHz Ch56640 RB100 Offset0-2



8.5 Frequency Stability / Variation Of Ambient Temperature

▣ PCC Channel:	55273	
▣ PCC Frequency:	3553.3	MHz
▣ PCC BandWidth:	5	MHz
▣ SCC Channel:	55390	
▣ SCC Frequency:	3565.0	MHz
▣ SCC BandWidth:	20	MHz
▣ Voltage :	3.880	VDC
▣ LIMIT:	Emission must remain in band	

Voltage (%)	Power (VDC)	Temp. (℃)	PPM		Frequency Error (MHz)	
			PCC	SCC	PCC	SCC
100 %	3.880	+20(Ref)	0.030	-0.031	3553.30008	3564.99985
100 %		-30	0.031	-0.031	3553.30003	3564.99984
100 %		-20	0.025	0.020	3553.30011	3565.00004
100 %		-10	-0.040	0.028	3553.29986	3565.00005
100 %		0	0.032	0.034	3553.30009	3565.00006
100 %		10	0.026	0.022	3553.30009	3565.00005
100 %		30	0.019	0.030	3553.30007	3565.00012
100 %		40	-0.036	0.032	3553.29984	3565.00011
100 %		50	-0.048	0.029	3553.29980	3565.00003
Batt. Endpoint	3.300	20	0.030	-0.037	3553.30009	3564.99982

▣ PCC Channel: 55295
▣ PCC Frequency: 3555.5 MHz
▣ PCC BandWidth: 10 MHz
▣ SCC Channel: 55439
▣ SCC Frequency: 3569.9 MHz
▣ SCC BandWidth: 20 MHz
▣ Voltage : 3.880 VDC
▣ LIMIT: Emission must remain in band

Voltage (%)	Power (VDC)	Temp. (℃)	PPM		Frequency Error (MHz)	
			PCC	SCC	PCC	SCC
100 %	3.880	+20(Ref)	0.041	0.034	3555.50014	3569.90010
100 %		-30	0.027	0.023	3555.50009	3569.90004
100 %		-20	0.036	0.038	3555.50014	3569.90013
100 %		-10	-0.051	-0.047	3555.49977	3569.89976
100 %		0	0.033	0.022	3555.50003	3569.90004
100 %		10	0.025	0.021	3555.50000	3569.90000
100 %		30	-0.043	0.026	3555.49978	3569.90006
100 %		40	0.035	0.015	3555.50013	3569.89999
100 %		50	0.037	-0.044	3555.50008	3569.89984
Batt. Endpoint	3.300	20	0.025	0.032	3555.50004	3569.90008

▣ PCC Channel: 55318
▣ PCC Frequency: 3557.8 MHz
▣ PCC BandWidth: 15 MHz
▣ SCC Channel: 55489
▣ SCC Frequency: 3574.9 MHz
▣ SCC BandWidth: 20 MHz
▣ Voltage : 3.880 VDC
▣ LIMIT: Emission must remain in band

Voltage (%)	Power (VDC)	Temp. (℃)	PPM		Frequency Error (MHz)	
			PCC	SCC	PCC	SCC
100 %	3.880	+20(Ref)	0.022	0.031	3557.80006	3574.90005
100 %		-30	0.029	0.042	3557.80004	3574.90011
100 %		-20	0.038	-0.034	3557.80004	3574.89984
100 %		-10	-0.043	-0.031	3557.79979	3574.89988
100 %		0	0.035	-0.041	3557.80013	3574.89984
100 %		10	0.025	-0.039	3557.80002	3574.89985
100 %		30	0.037	0.031	3557.80006	3574.90011
100 %		40	0.020	0.034	3557.80000	3574.90012
100 %		50	-0.039	0.029	3557.79982	3574.90007
Batt. Endpoint	3.300	20	0.017	0.029	3557.80006	3574.90005

▣ PCC Channel: 55340
▣ PCC Frequency: 3560.0 MHz
▣ PCC BandWidth: 20 MHz
▣ SCC Channel: 55538
▣ SCC Frequency: 3579.8 MHz
▣ SCC BandWidth: 20 MHz
▣ Voltage : 3.880 VDC
▣ LIMIT: Emission must remain in band

Voltage (%)	Power (VDC)	Temp. (℃)	PPM		Frequency Error (MHz)	
			PCC	SCC	PCC	SCC
100 %	3.880	+20(Ref)	-0.051	0.030	3559.99981	3579.80008
100 %		-30	-0.039	0.021	3559.99979	3579.80004
100 %		-20	0.020	0.016	3560.00001	3579.80003
100 %		-10	-0.041	0.023	3559.99978	3579.80006
100 %		0	0.039	-0.034	3560.00014	3579.79987
100 %		10	0.025	0.024	3560.00005	3579.80002
100 %		30	0.040	-0.038	3560.00009	3579.79985
100 %		40	0.031	-0.045	3560.00010	3579.79983
100 %		50	0.036	0.031	3560.00004	3579.80008
Batt. Endpoint	3.300	20	0.040	0.034	3560.00011	3579.80004

▣ PCC Channel: 56523
▣ PCC Frequency: 3678.3 MHz
▣ PCC BandWidth: 5 MHz
▣ SCC Channel: 56640
▣ SCC Frequency: 3690.0 MHz
▣ SCC BandWidth: 20 MHz
▣ Voltage : 3.880 VDC
▣ LIMIT: Emission must remain in band

Voltage (%)	Power (VDC)	Temp. (℃)	PPM		Frequency Error (MHz)	
			PCC	SCC	PCC	SCC
100 %	3.880	+20(Ref)	-0.039	0.036	3678.29986	3690.00015
100 %		-30	0.025	0.022	3678.30010	3690.00002
100 %		-20	-0.031	0.028	3678.29987	3690.00011
100 %		-10	0.034	-0.045	3678.30008	3689.99979
100 %		0	0.033	-0.031	3678.30009	3689.99988
100 %		10	0.031	0.018	3678.30009	3690.00005
100 %		30	0.028	-0.039	3678.30006	3689.99981
100 %		40	0.028	-0.041	3678.30007	3689.99984
100 %		50	0.029	0.025	3678.30003	3690.00006
Batt. Endpoint	3.300	20	0.041	0.024	3678.30016	3690.00004

▣ PCC Channel: 56496
▣ PCC Frequency: 3675.6 MHz
▣ PCC BandWidth: 10 MHz
▣ SCC Channel: 56640
▣ SCC Frequency: 3690.0 MHz
▣ SCC BandWidth: 20 MHz
▣ Voltage : 3.880 VDC
▣ LIMIT: Emission must remain in band

Voltage (%)	Power (VDC)	Temp. (℃)	PPM		Frequency Error (MHz)	
			PCC	SCC	PCC	SCC
100 %	3.880	+20(Ref)	0.036	0.024	3675.60014	3690.00000
100 %		-30	0.036	0.021	3675.60006	3690.00003
100 %		-20	0.024	-0.032	3675.60006	3689.99985
100 %		-10	0.031	0.036	3675.60009	3690.00006
100 %		0	0.016	-0.038	3675.60003	3689.99979
100 %		10	0.026	0.037	3675.60012	3690.00009
100 %		30	-0.043	0.031	3675.59985	3690.00009
100 %		40	0.038	0.036	3675.60009	3690.00012
100 %		50	-0.031	0.021	3675.59986	3690.00006
Batt. Endpoint	3.300	20	0.032	0.024	3675.60009	3690.00004

▣ PCC Channel: 56469

▣ PCC Frequency: 3672.9 MHz

▣ PCC BandWidth: 15 MHz

▣ SCC Channel: 56640

▣ SCC Frequency: 3690.0 MHz

▣ SCC BandWidth: 20 MHz

▣ Voltage : 3.880 VDC

▣ LIMIT: Emission must remain in band

Voltage (%)	Power (VDC)	Temp. (℃)	PPM		Frequency Error (MHz)	
			PCC	SCC	PCC	SCC
100 %	3.880	+20(Ref)	0.027	-0.040	3672.90001	3689.99984
100 %		-30	-0.045	0.034	3672.89976	3690.00006
100 %		-20	-0.037	-0.036	3672.89986	3689.99982
100 %		-10	0.029	-0.026	3672.90005	3689.99986
100 %		0	0.023	0.024	3672.90006	3690.00006
100 %		10	0.027	-0.037	3672.90008	3689.99986
100 %		30	0.029	0.032	3672.90004	3690.00008
100 %		40	0.042	0.026	3672.90015	3690.00010
100 %		50	0.015	0.016	3672.90004	3690.00006
Batt. Endpoint	3.300	20	0.034	0.033	3672.90009	3690.00006

▣ PCC Channel: 56442

▣ PCC Frequency: 3670.2 MHz

▣ PCC BandWidth: 20 MHz

▣ SCC Channel: 56640

▣ SCC Frequency: 3690.0 MHz

▣ SCC BandWidth: 20 MHz

▣ Voltage : 3.880 MHz

▣ LIMIT: Emission must remain in band

Voltage (%)	Power (VDC)	Temp. (℃)	PPM		Frequency Error (MHz)	
			PCC	SCC	PCC	SCC
100 %	3.880	+20(Ref)	0.034	-0.037	3670.20011	3689.99986
100 %		-30	0.018	0.020	3670.20008	3690.00000
100 %		-20	0.028	0.035	3670.20007	3690.00008
100 %		-10	0.032	0.042	3670.20005	3690.00014
100 %		0	0.032	-0.043	3670.20010	3689.99984
100 %		10	0.033	0.030	3670.20010	3690.00008
100 %		30	-0.036	0.027	3670.19982	3690.00012
100 %		40	-0.037	0.014	3670.19986	3690.00004
100 %		50	-0.034	0.029	3670.19982	3690.00002
Batt. Endpoint	3.300	20	-0.032	0.018	3670.19988	3690.00003

8.6 Radiated Spurious Emissions

▣ PCC Channel : 55340 (3560.0 MHz)

▣ PCC BW(MHz) : 20

▣ PCC RB/ RB Offset : 1/ 99

▣ SCC Channel : 55538 (3579.8 MHz)

▣ SCC BW(MHz) : 20

▣ SCC RB/ RB Offset : 1/ 0

▣ DISTANCE: 1 meters

▣ LIMIT: -40.0 dBm

Freq.(MHz)	Measured Level [dBm]	Ant. Gain (dBi)	Substitute Level [dBm]	C.L	Pol.	Result (dBm)
7 139.80	-59.31	10.79	-60.67	4.59	H	-54.47
10 709.70	-59.72	11.34	-55.43	5.82	H	-49.91
14 279.60	-61.05	11.74	-49.99	6.79	H	-45.04

▣ PCC Channel : 55916 (3617.6 MHz)

▣ PCC BW(MHz) : 20

▣ PCC RB/ RB Offset : 1/ 99

▣ SCC Channel : 56087 (3634.7 MHz)

▣ SCC BW(MHz) : 15

▣ SCC RB/ RB Offset : 1/ 0

▣ DISTANCE: 1 meters

▣ LIMIT: -40.0 dBm

Freq.(MHz)	Measured Level [dBm]	Ant. Gain (dBi)	Substitute Level [dBm]	C.L	Pol.	Result (dBm)
7 252.30	-59.58	10.74	-61.51	4.64	V	-55.41
10 878.45	-60.23	11.03	-53.15	5.75	V	-47.87
14 504.60	-61.11	11.45	-49.92	6.81	H	-45.28

▣ PCC Channel : 56442 (3670.2 MHz)

▣ PCC BW(MHz) : 20

▣ PCC RB/ RB Offset : 1/ 99

▣ SCC Channel : 56640 (3690.0 MHz)

▣ SCC BW(MHz) : 20

▣ SCC RB/ RB Offset : 1/ 0

▣ DISTANCE: 1 meters

▣ LIMIT: -40.0 dBm

Freq.(MHz)	Measured Level [dBm]	Ant. Gain (dBi)	Substitute Level [dBm]	C.L	Pol.	Result (dBm)
7 360.20	-59.13	10.83	-60.07	4.65	H	-53.89
11 040.30	-60.08	10.97	-54.92	5.78	V	-49.73
14 720.40	-60.37	11.30	-49.19	6.96	H	-44.85

8.7 Occupied Bandwidth

PCC					SCC					Data (MHz)
BW [MHz]	Ch	Freq [MHz]	Mod	RB/ Offset	BW [MHz]	Ch	Freq [MHz]	Mod	RB/ Offset	
5	55898	3615.8	QPSK	25/ 0	20	56015	3627.5	QPSK	100/ 0	22.723
10	55896	3615.6	QPSK	50/ 0	20	56040	3630.0	QPSK	100/ 0	27.309
15	55893	3615.3	QPSK	75/ 0	20	56064	3632.4	QPSK	100/ 0	32.457
20	55965	3622.5	QPSK	100/ 0	5	56082	3634.2	QPSK	25/ 0	22.951
20	55941	3620.1	QPSK	100/ 0	10	56085	3634.5	QPSK	50/ 0	27.659
20	55916	3617.6	QPSK	100/ 0	15	56087	3634.7	QPSK	75/ 0	32.608
20	55891	3615.1	QPSK	100/ 0	20	56089	3634.9	QPSK	100/ 0	37.459

PCC					SCC					Data (MHz)
BW [MHz]	Ch	Freq [MHz]	Mod	RB/ Offset	BW [MHz]	Ch	Freq [MHz]	Mod	RB/ Offset	
5	55898	3615.8	16QAM	25/ 0	20	56015	3627.5	16QAM	100/ 0	22.717
10	55896	3615.6	16QAM	50/ 0	20	56040	3630.0	16QAM	100/ 0	27.699
15	55893	3615.3	16QAM	75/ 0	20	56064	3632.4	16QAM	100/ 0	32.722
20	55965	3622.5	16QAM	100/ 0	5	56082	3634.2	16QAM	25/ 0	22.994
20	55941	3620.1	16QAM	100/ 0	10	56085	3634.5	16QAM	50/ 0	27.568
20	55916	3617.6	16QAM	100/ 0	15	56087	3634.7	16QAM	75/ 0	32.649
20	55891	3615.1	16QAM	100/ 0	20	56089	3634.9	16QAM	100/ 0	37.457

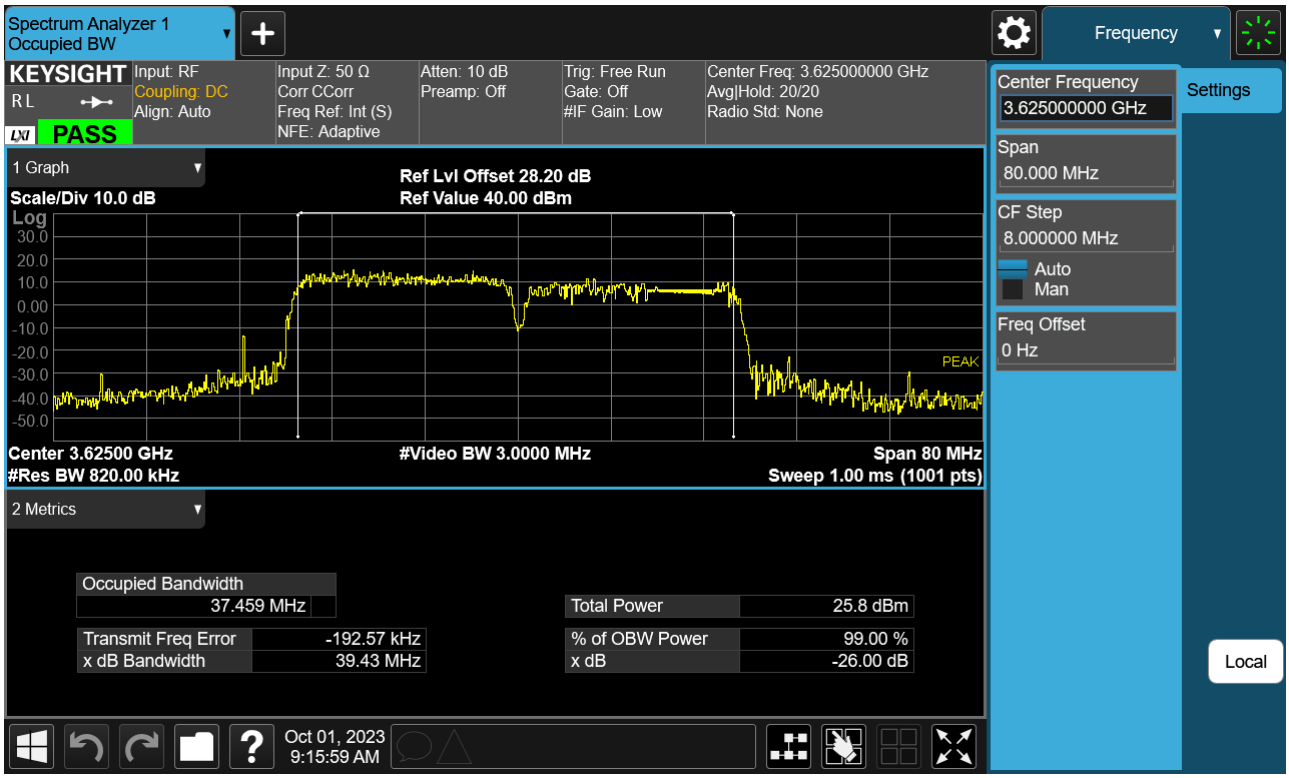
PCC					SCC					Data (MHz)
BW [MHz]	Ch	Freq [MHz]	Mod	RB/ Offset	BW [MHz]	Ch	Freq [MHz]	Mod	RB/ Offset	
5	55898	3615.8	64QAM	25/ 0	20	56015	3627.5	64QAM	100/ 0	22.710
10	55896	3615.6	64QAM	50/ 0	20	56040	3630.0	64QAM	100/ 0	27.716
15	55893	3615.3	64QAM	75/ 0	20	56064	3632.4	64QAM	100/ 0	32.612
20	55965	3622.5	64QAM	100/ 0	5	56082	3634.2	64QAM	25/ 0	22.763
20	55941	3620.1	64QAM	100/ 0	10	56085	3634.5	64QAM	50/ 0	27.516
20	55916	3617.6	64QAM	100/ 0	15	56087	3634.7	64QAM	75/ 0	32.458
20	55891	3615.1	64QAM	100/ 0	20	56089	3634.9	64QAM	100/ 0	37.659

PCC					SCC					Data (MHz)
BW [MHz]	Ch	Freq [MHz]	Mod	RB/ Offset	BW [MHz]	Ch	Freq [MHz]	Mod	RB/ Offset	
5	55898	3615.8	256QAM	25/ 0	20	56015	3627.5	256QAM	100/ 0	22.708
10	55896	3615.6	256QAM	50/ 0	20	56040	3630.0	256QAM	100/ 0	27.588
15	55893	3615.3	256QAM	75/ 0	20	56064	3632.4	256QAM	100/ 0	32.616
20	55965	3622.5	256QAM	100/ 0	5	56082	3634.2	256QAM	25/ 0	22.833
20	55941	3620.1	256QAM	100/ 0	10	56085	3634.5	256QAM	50/ 0	27.653
20	55916	3617.6	256QAM	100/ 0	15	56087	3634.7	256QAM	75/ 0	32.545
20	55891	3615.1	256QAM	100/ 0	20	56089	3634.9	256QAM	100/ 0	37.403

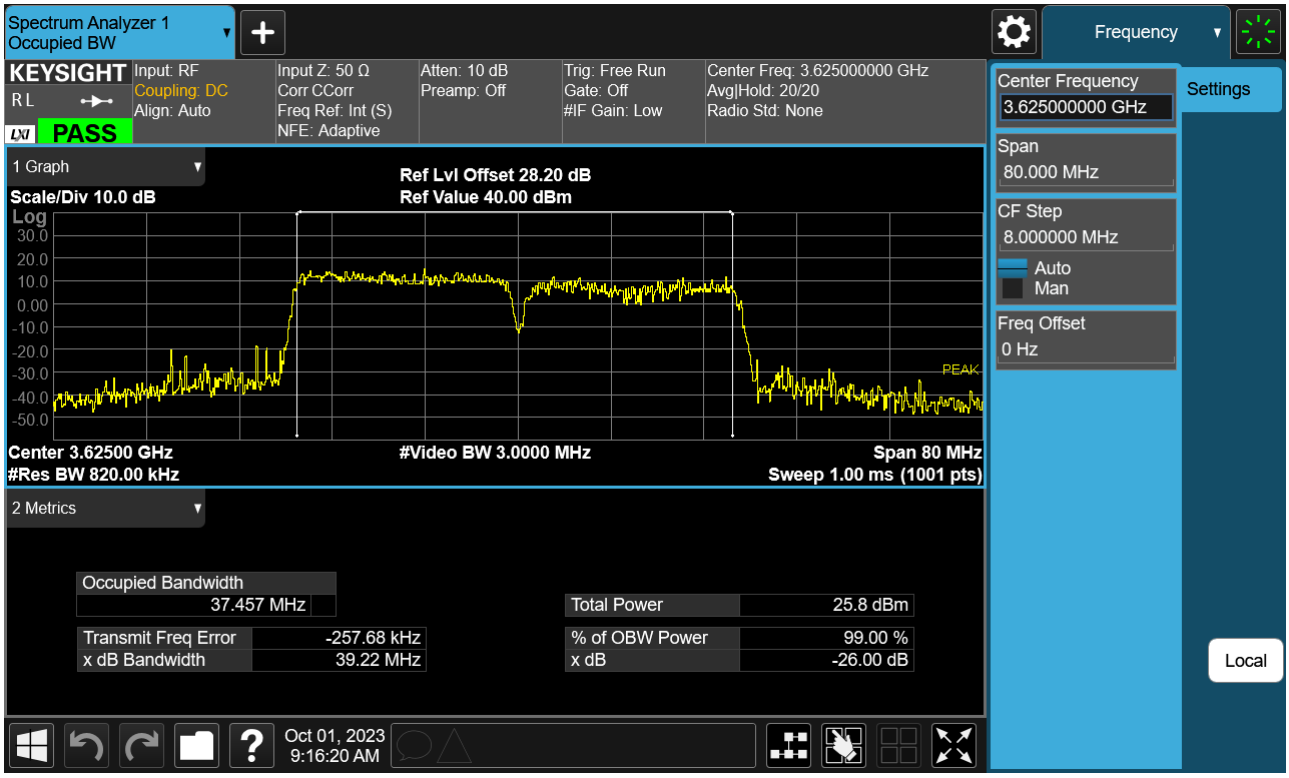
Note:

In order to simplify the report, attached plots were only Max.Bandwidth(20+20)

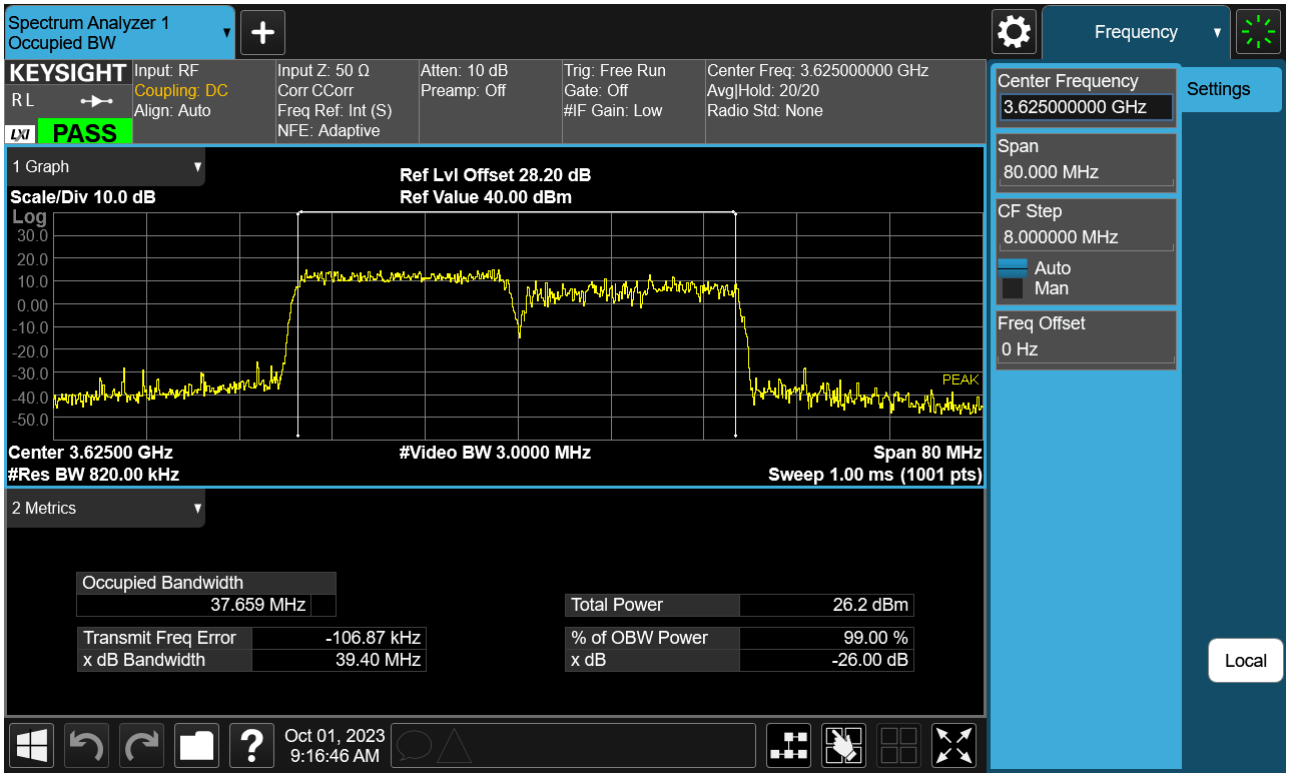
PCC 20 MHz Ch55891 RB100 Offset0, SCC 20 MHz Ch56089 RB100 Offset0_(QPSK)



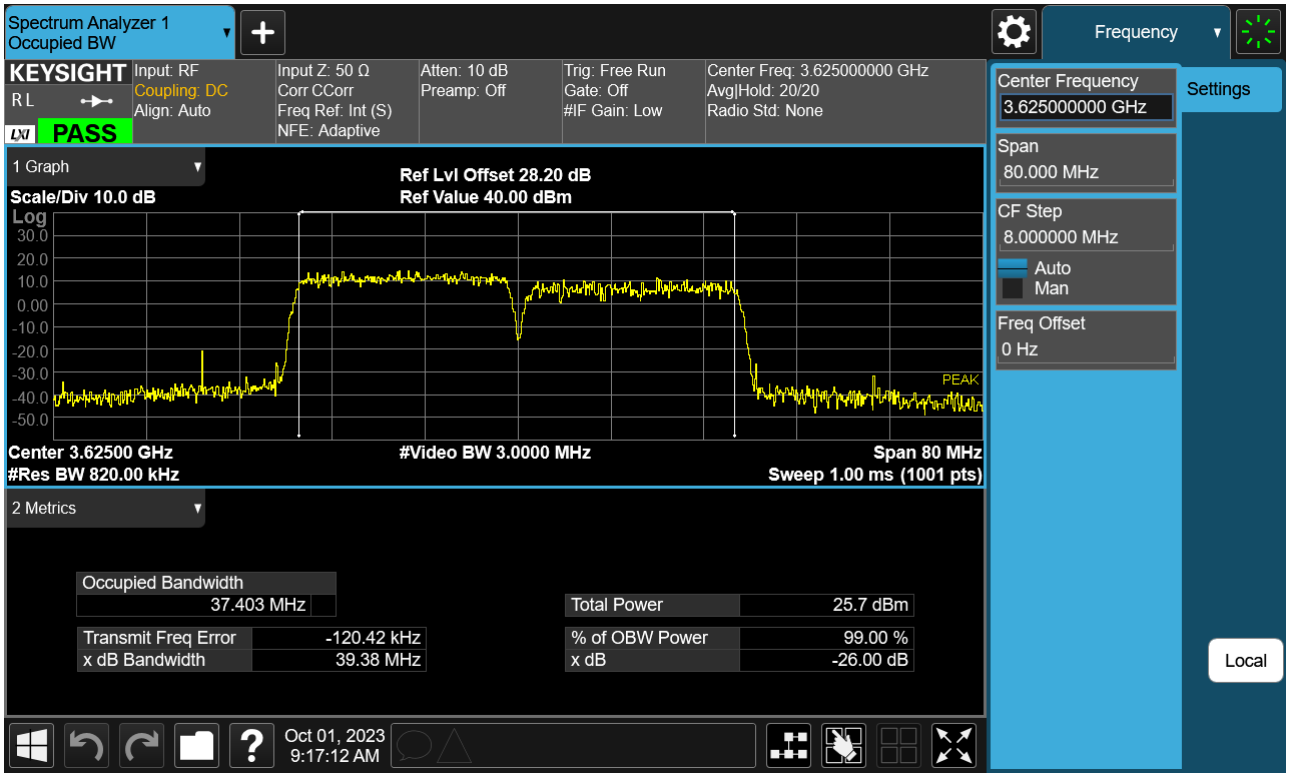
PCC 20 MHz Ch55891 RB100 Offset0, SCC 20 MHz Ch56089 RB100 Offset0_(16QAM)



PCC 20 MHz Ch55891 RB100 Offset0, SCC 20 MHz Ch56089 RB100 Offset0_(64QAM)



PCC 20 MHz Ch55891 RB100 Offset0, SCC 20 MHz Ch56089 RB100 Offset0_(256QAM)



8.8 Peak- to- Average Ratio

PCC					SCC					Data (dB)
BW [MHz]	Ch	Freq [MHz]	Mod	RB/ Offset	BW [MHz]	Ch	Freq [MHz]	Mod	RB/ Offset	
5	55898	3615.8	QPSK	25/ 0	20	56015	3627.5	QPSK	100/ 0	5.90
10	55896	3615.6	QPSK	50/ 0	20	56040	3630.0	QPSK	100/ 0	5.89
15	55893	3615.3	QPSK	75/ 0	20	56064	3632.4	QPSK	100/ 0	5.87
20	55965	3622.5	QPSK	100/ 0	5	56082	3634.2	QPSK	25/ 0	5.84
20	55941	3620.1	QPSK	100/ 0	10	56085	3634.5	QPSK	50/ 0	5.92
20	55916	3617.6	QPSK	100 0	15	56087	3634.7	QPSK	75/ 0	5.94
20	55891	3615.1	QPSK	100/ 0	20	56089	3634.9	QPSK	100/ 0	5.89

PCC					SCC					Data (dB)
BW [MHz]	Ch	Freq [MHz]	Mod	RB/ Offset	BW [MHz]	Ch	Freq [MHz]	Mod	RB/ Offset	
5	55898	3615.8	16QAM	25/ 0	20	56015	3627.5	16QAM	100/ 0	6.94
10	55896	3615.6	16QAM	50/ 0	20	56040	3630.0	16QAM	100/ 0	6.90
15	55893	3615.3	16QAM	75/ 0	20	56064	3632.4	16QAM	100/ 0	6.83
20	55965	3622.5	16QAM	100/ 0	5	56082	3634.2	16QAM	25/ 0	6.85
20	55941	3620.1	16QAM	100/ 0	10	56085	3634.5	16QAM	50/ 0	6.84
20	55916	3617.6	16QAM	100/ 0	15	56087	3634.7	16QAM	75/ 0	6.84
20	55891	3615.1	16QAM	100/ 0	20	56089	3634.9	16QAM	100/ 0	6.78

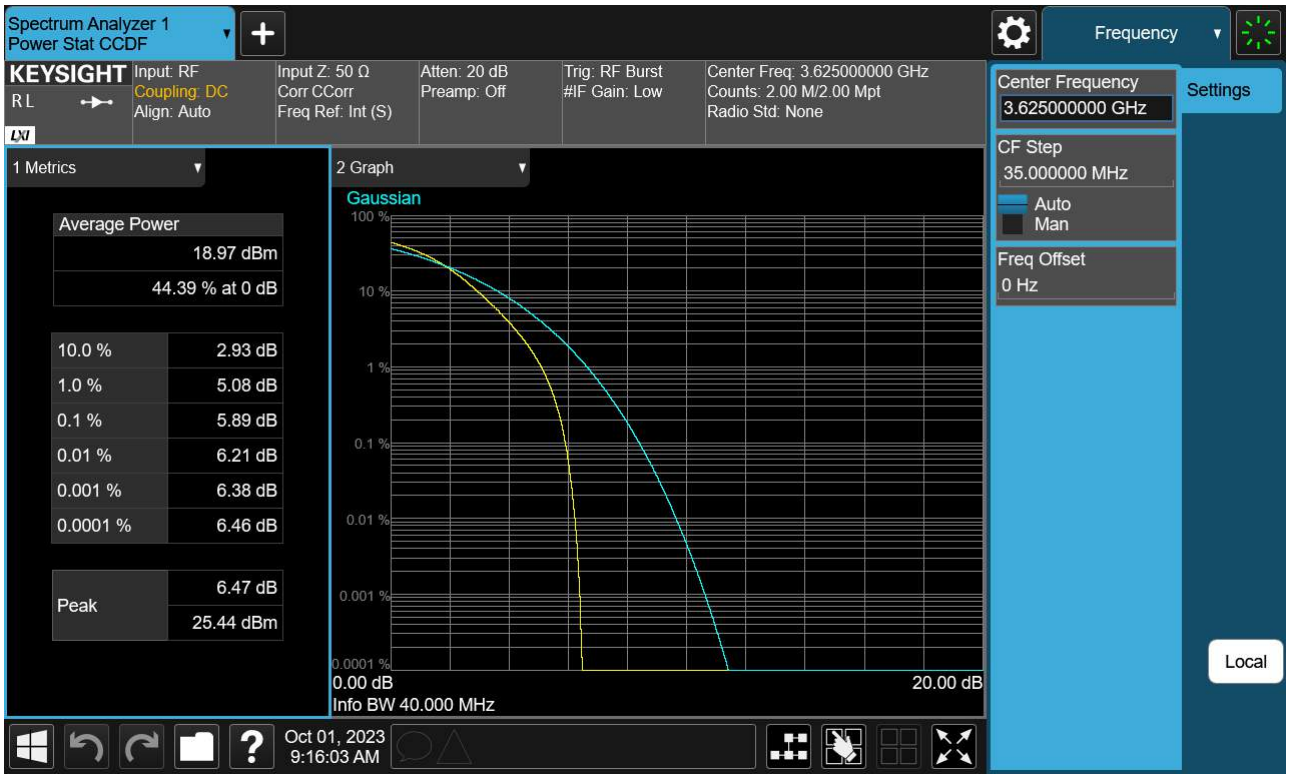
PCC					SCC					Data (dB)
BW [MHz]	Ch	Freq [MHz]	Mod	RB/ Offset	BW [MHz]	Ch	Freq [MHz]	Mod	RB/ Offset	
5	55898	3615.8	64QAM	25/ 0	20	56015	3627.5	64QAM	100/ 0	7.01
10	55896	3615.6	64QAM	50/ 0	20	56040	3630.0	64QAM	100/ 0	6.98
15	55893	3615.3	64QAM	75/ 0	20	56064	3632.4	64QAM	100/ 0	6.97
20	55965	3622.5	64QAM	100/ 0	5	56082	3634.2	64QAM	25/ 0	6.95
20	55941	3620.1	64QAM	100/ 0	10	56085	3634.5	64QAM	50/ 0	6.97
20	55916	3617.6	64QAM	100/ 0	15	56087	3634.7	64QAM	75/ 0	6.95
20	55891	3615.1	64QAM	100/ 0	20	56089	3634.9	64QAM	100/ 0	7.06

PCC					SCC					Data (dB)
BW [MHz]	Ch	Freq [MHz]	Mod	RB/ Offset	BW [MHz]	Ch	Freq [MHz]	Mod	RB/ Offset	
5	55898	3615.8	256QAM	25/ 0	20	56015	3627.5	256QAM	100/ 0	7.45
10	55896	3615.6	256QAM	50/ 0	20	56040	3630.0	256QAM	100/ 0	7.12
15	55893	3615.3	256QAM	75/ 0	20	56064	3632.4	256QAM	100/ 0	7.08
20	55965	3622.5	256QAM	100/ 0	5	56082	3634.2	256QAM	25/ 0	7.10
20	55941	3620.1	256QAM	100/ 0	10	56085	3634.5	256QAM	50/ 0	7.11
20	55916	3617.6	256QAM	100/ 0	15	56087	3634.7	256QAM	75/ 0	7.14
20	55891	3615.1	256QAM	100/ 0	20	56089	3634.9	256QAM	100/ 0	7.18

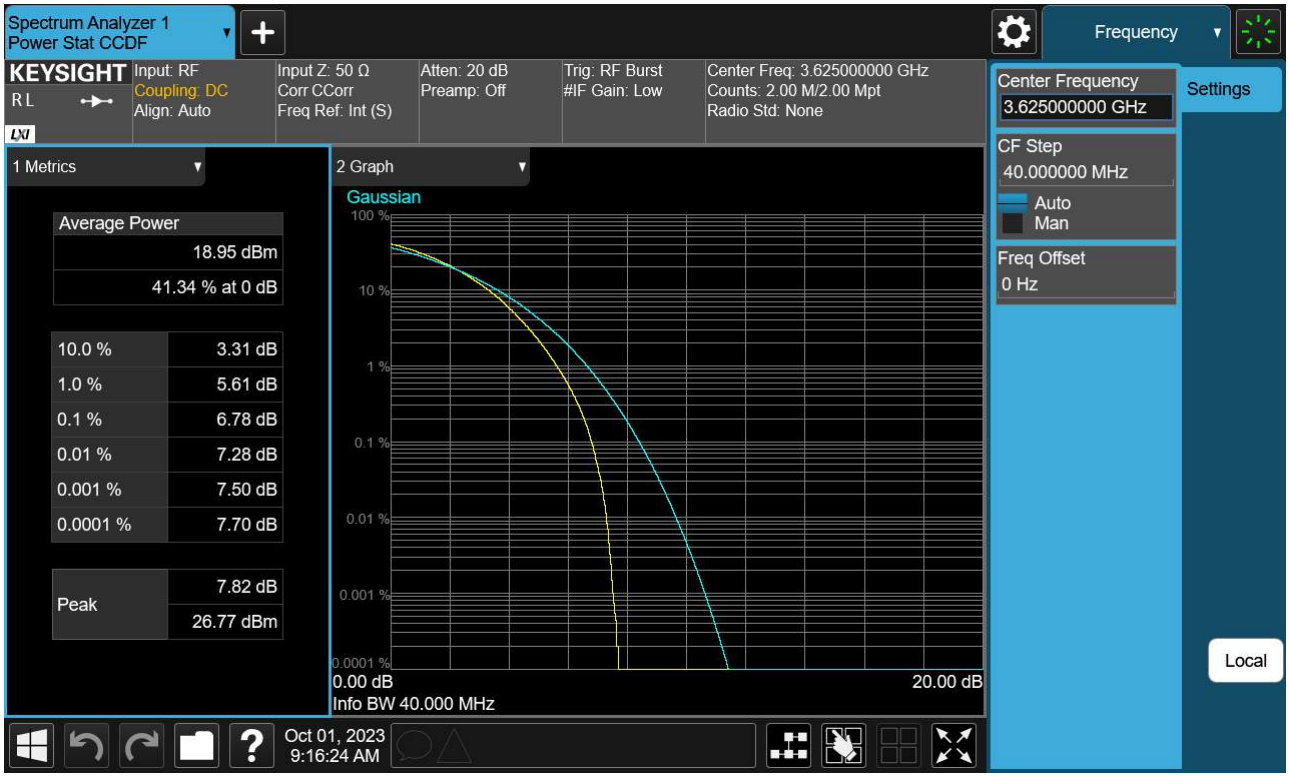
Note:

In order to simplify the report, attached plots were only Max.Bandwidth(20+20)

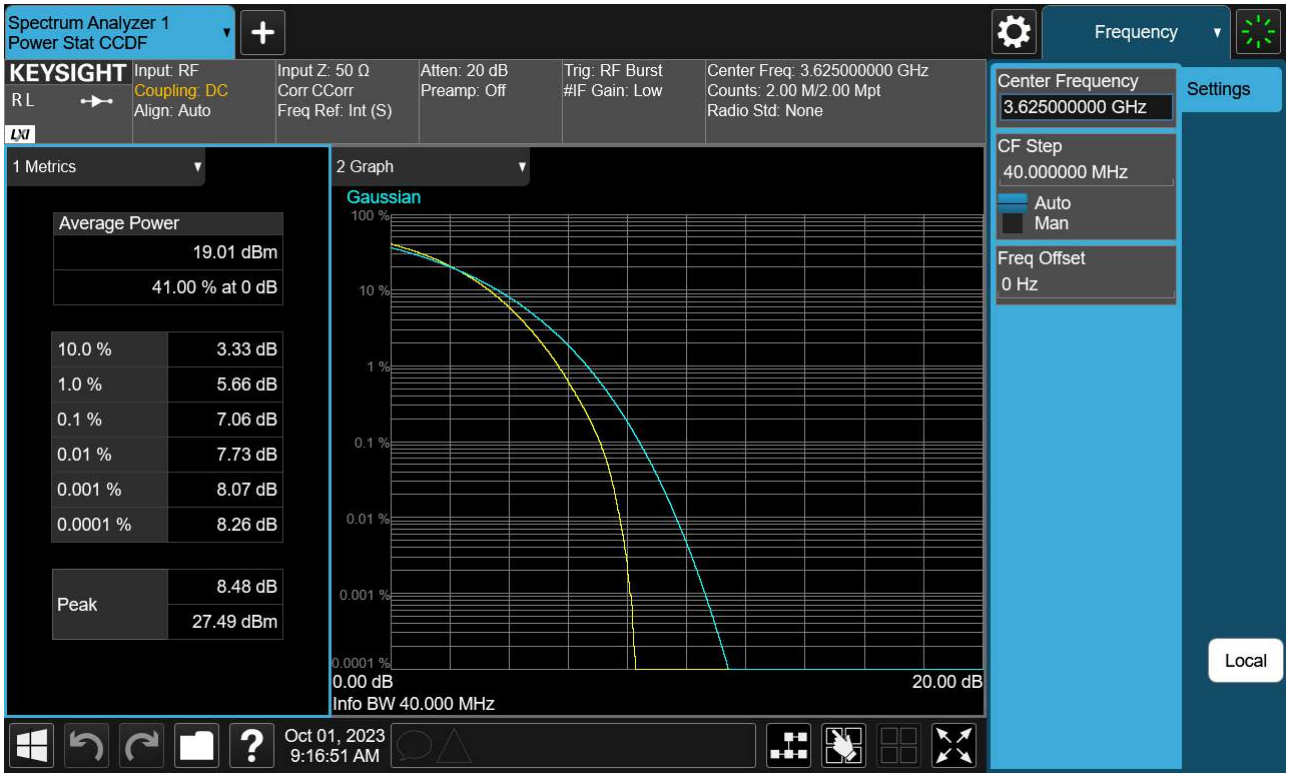
PCC 20 MHz Ch55891 RB100 Offset0, SCC 20 MHz Ch56089 RB100 Offset0_(QPSK)



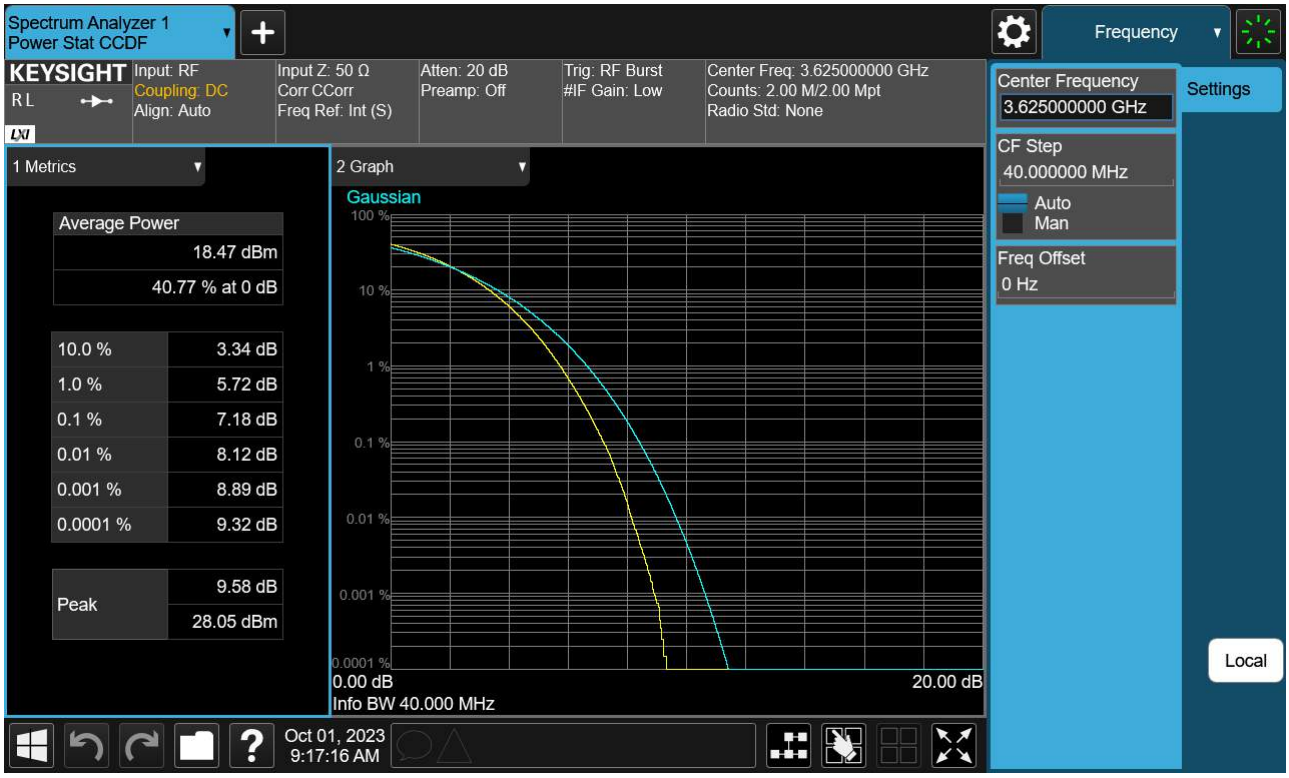
PCC 20 MHz Ch55891 RB100 Offset0, SCC 20 MHz Ch56089 RB100 Offset0_(16QAM)



PCC 20 MHz Ch55891 RB100 Offset0, SCC 20 MHz Ch56089 RB100 Offset0_(64QAM)



PCC 20 MHz Ch55891 RB100 Offset0, SCC 20 MHz Ch56089 RB100 Offset0_(256QAM)



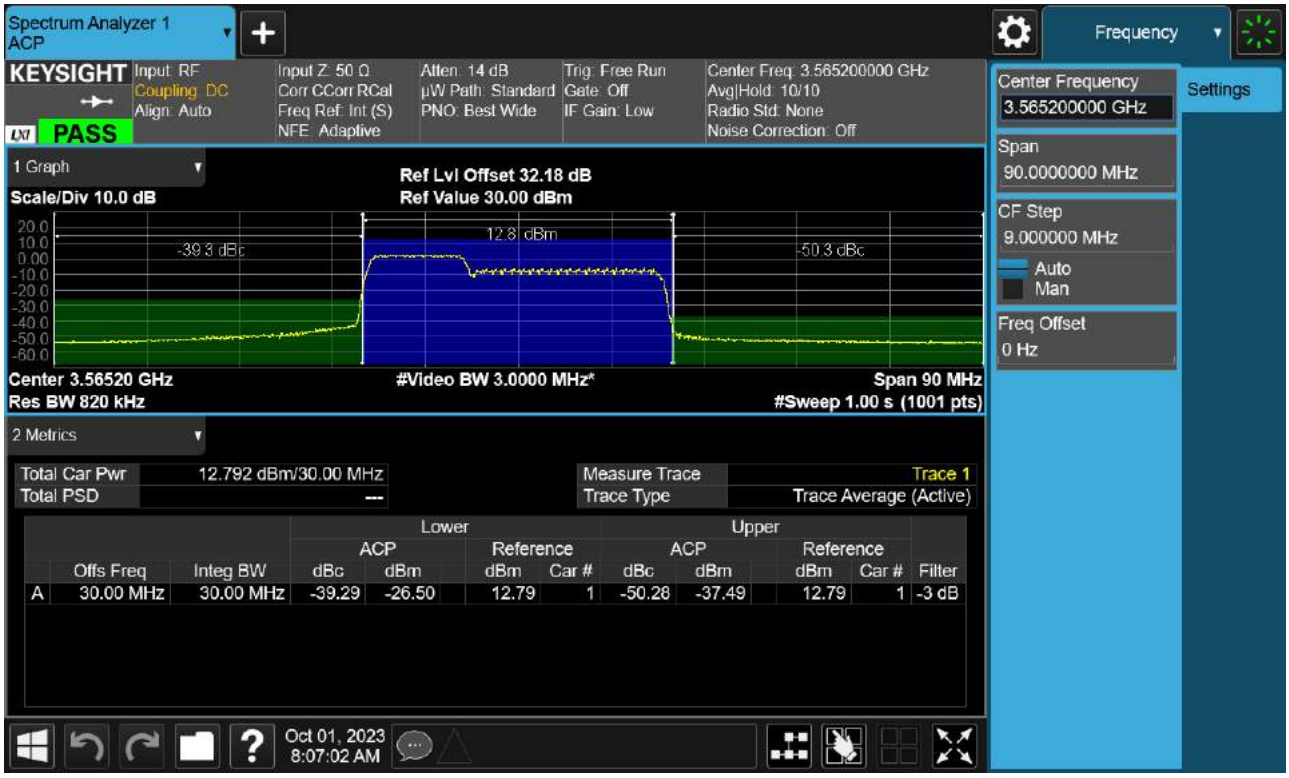
8.9 Adjacent Channel Leakage Ratio(ACLR)

Operating frequency	PCC				SCC				Adjacent Channel Leakage Ratio(dB)	
	BW [MHz]	Ch.	Freq. (MHz)	RB/ Offset	BW [MHz]	Ch.	Freq. (MHz)	RB/ Offset	Lower Side	Upper Side
Low	10	55295	3555.5	50/0	20	55439	3569.9	100/0	39.29	50.28
Mid	20	55656	3622.5	100/0	5	56082	3634.2	25/0	49.52	41.61
High	15	56469	3672.9	75/0	20	56640	3690.0	100/0	39.72	49.60
Low	20	55340	3560.0	100/0	20	55538	3579.8	100/0	40.87	45.64
Mid	20	55891	3615.1	100/0	20	56089	3634.9	100/0	40.04	44.95
High	20	56442	3670.2	100/0	20	56640	3690.0	100/0	42.18	46.15
Limit (dB)									ACLR > 30 dB	ACLR > 30 dB

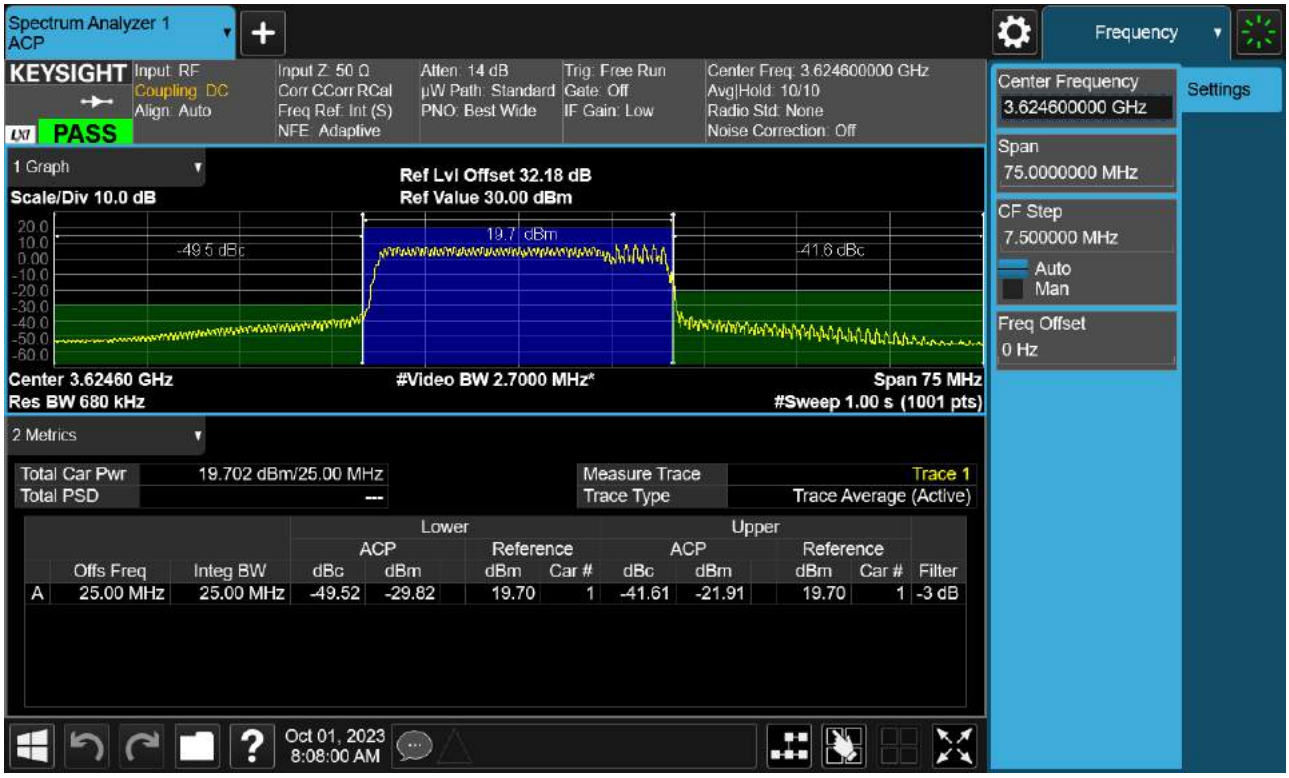
Note:

1. Duty Cycle factor already applied on the factor.
 - Duty Cycle factor(dB) = 3.979
 - Factor(dB) = Duty Cycle factor + Cable Loss + Ext. Attenuator + Power Splitter

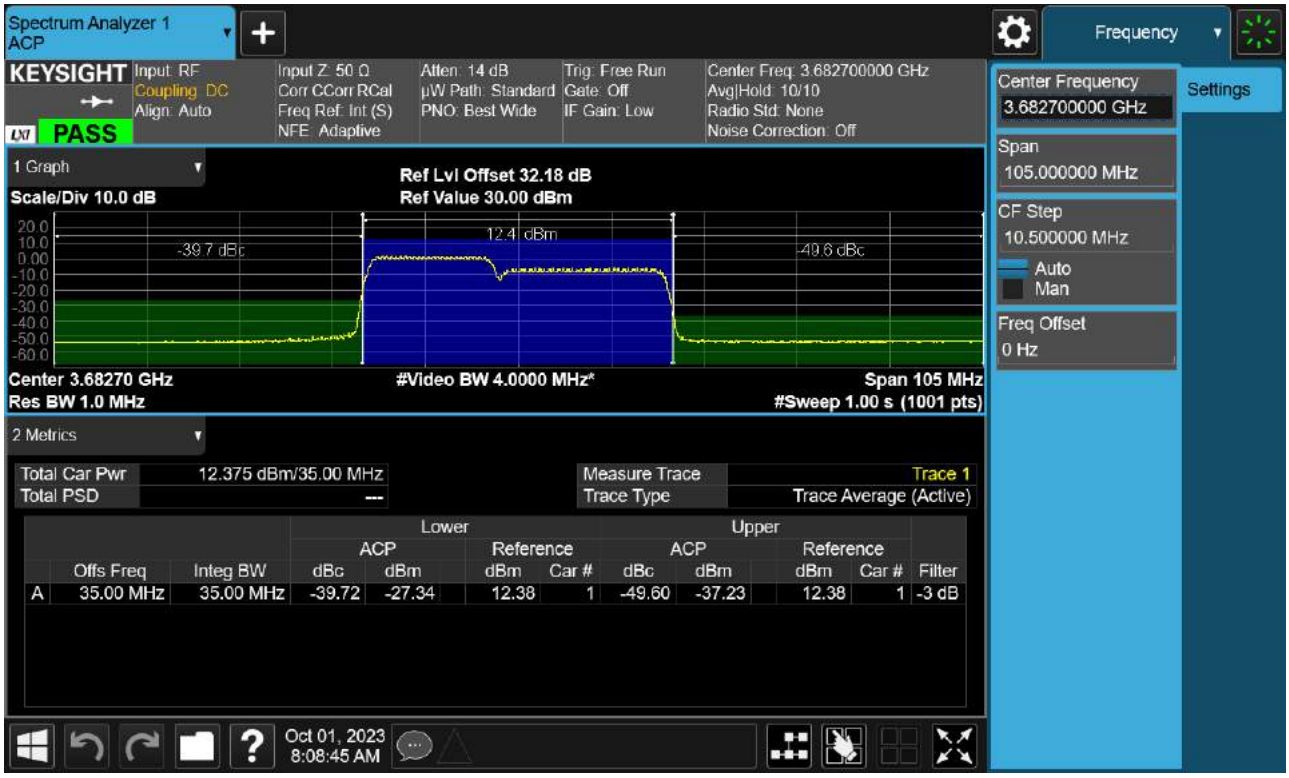
PCC 10 MHz Ch55295 RB50 Offset0, SCC 20 MHz Ch55439 RB100 Offset0



PCC 20 MHz Ch55965 RB100 Offset0, SCC 5 MHz Ch56082 RB25 Offset0

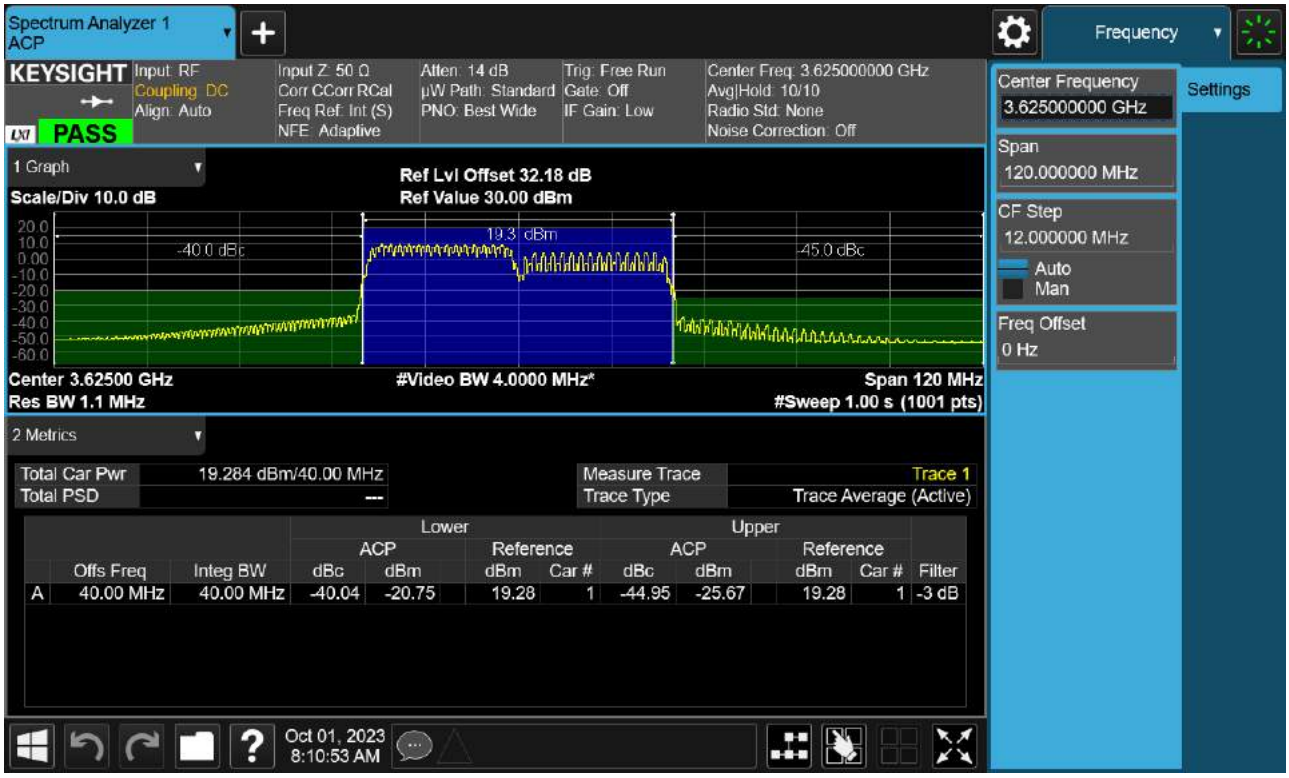


PCC 15 MHz Ch56469 RB75 Offset0, SCC 20 MHz Ch56640 RB100 Offset0

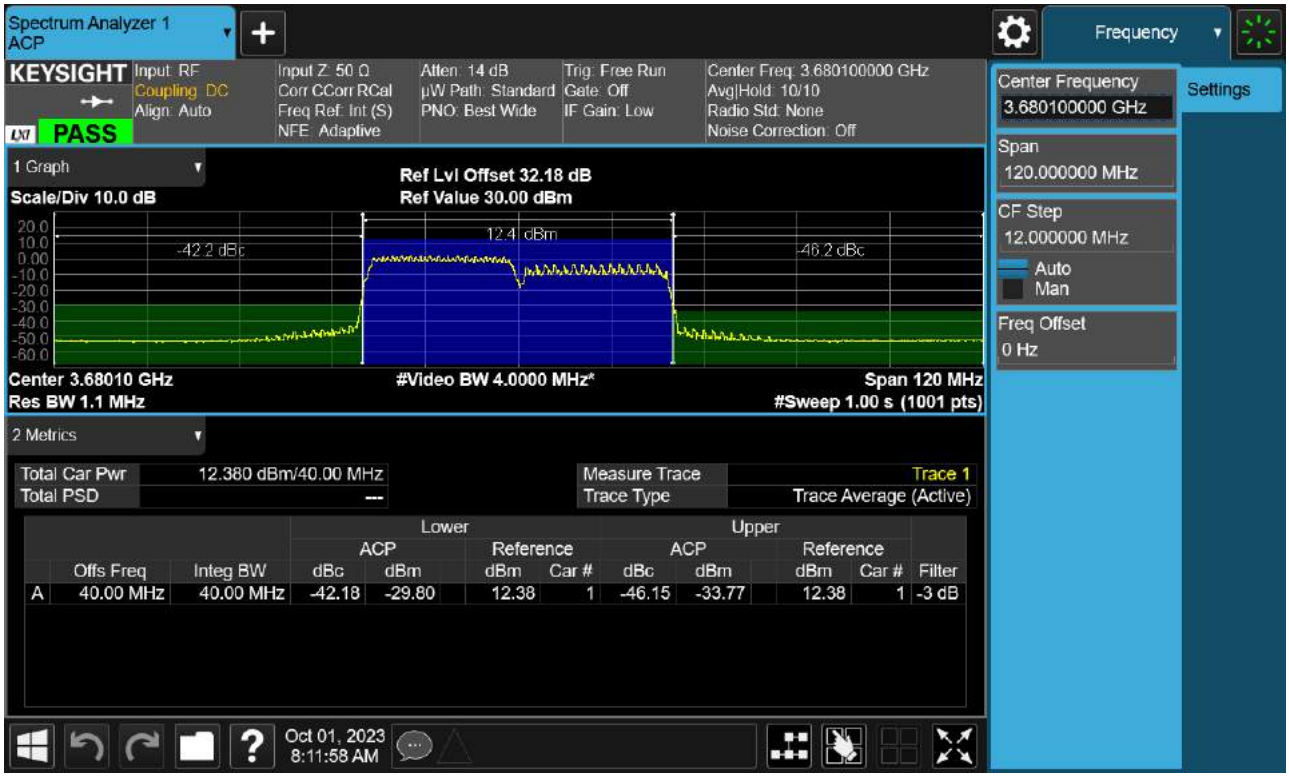


PCC 20 MHz Ch55340 RB100 Offset0, SCC 20 MHz Ch55538 RB100 Offset0

PCC 20 MHz Ch55891 RB100 Offset0, SCC 20 MHz Ch56089 RB100 Offset0



PCC 20 MHz Ch56442 RB100 Offset0, SCC 20 MHz Ch56640 RB100 Offset0



9. ANNEX A_ TEST SETUP PHOTO

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

No.	Description
1	HCT-RF-2310-FC033-P