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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 20, 2021

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

Report No.: HCT-RF-2110-FC019

FCC ID:	**A3LSMA136U**
APPLICANT:	**SAMSUNG Electronics Co., Ltd.**

Model(s):	SM-A136U
Additional Model(s):	SM-A136U1, SM-S136DL
EUT Type:	Mobile Phone
FCC Classification:	PCS Licensed Transmitter Held to Ear (PCE)
FCC Rule Part(s):	§27, §2

Mode (PCC+SCC)	Tx Frequency (MHz)	Modulation	Emission Designator	EIRP	
				Max. Power (dBm)	Max. Power (W)
5 MHz + 20 MHz (PC2)	2499.3 - 2680.0	QPSK	22M9G7D	22.43	0.175
		16QAM	22M7W7D	21.63	0.146
		64QAM	22M8W7D	19.58	0.091
10 MHz + 15 MHz (PC2)	2501.3 - 2682.5	QPSK	23M1G7D	22.73	0.188
		16QAM	23M1W7D	21.76	0.150
		64QAM	23M0W7D	19.83	0.096
10 MHz + 20 MHz (PC2)	2501.5 - 2680.0	QPSK	27M8G7D	22.91	0.196
		16QAM	27M7W7D	22.02	0.159
		64QAM	27M7W7D	19.86	0.097
15 MHz + 10 MHz (PC2)	2503.5 - 2684.7	QPSK	23M0G7D	23.07	0.203
		16QAM	23M1W7D	22.15	0.164
		64QAM	23M1W7D	20.02	0.101
15 MHz + 15 MHz (PC2)	2503.5 - 2682.5	QPSK	28M3G7D	22.87	0.194
		16QAM	28M3W7D	21.88	0.154
		64QAM	28M3W7D	19.98	0.100
15 MHz + 20 MHz (PC2)	2503.8 - 2680.0	QPSK	32M6G7D	22.77	0.189
		16QAM	32M6W7D	21.66	0.147
		64QAM	32M6W7D	19.80	0.096
20 MHz + 5 MHz (PC2)	2506.0 - 2686.7	QPSK	23M0G7D	23.27	0.213
		16QAM	22M9W7D	22.17	0.165
		64QAM	22M9W7D	19.78	0.095
20 MHz + 10 MHz (PC2)	2506.0 - 2684.5	QPSK	27M8G7D	22.83	0.192
		16QAM	27M8W7D	21.86	0.154
		64QAM	27M7W7D	19.50	0.089
20 MHz + 15 MHz (PC2)	2506.0 - 2682.2	QPSK	32M6G7D	22.69	0.186
		16QAM	32M6W7D	21.78	0.151
		64QAM	32M6W7D	19.69	0.093
20 MHz + 20 MHz (PC2)	2506.0 - 2680.0	QPSK	37M6G7D	22.44	0.176
		16QAM	37M5W7D	22.12	0.163
		64QAM	37M5W7D	19.60	0.091

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

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-2110-FC019	October 20, 2021	- First Approval Report

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

Table of Contents

MEASUREMENT REPORT

1. GENERAL INFORMATION

Applicant Name:	SAMSUNG Electronics Co., Ltd.
Address:	129, Samsung-ro, Yeongtong-gu, Suwon-si, Gyeonggi-do, 16677, Rep. of Korea
FCC ID:	A3LSMA136U
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-A136U
Additional Model(s):	SM-A136U1, SM-S136DL
Tx Frequency:	2499.3 - 2680.0: 5 MHz+20 MHz 2501.3 - 2682.5: 10 MHz+15 MHz 2501.5 - 2680.0: 10 MHz+20 MHz 2503.5 - 2684.7: 15 MHz+10 MHz 2503.5 - 2682.5: 15 MHz+15 MHz 2503.8 - 2680.0: 15 MHz+20 MHz 2506.0 - 2686.7: 20 MHz+5 MHz 2506.0 - 2684.5: 20 MHz+10 MHz 2506.0 - 2682.2: 20 MHz+15 MHz 2506.0 - 2680.0: 20 MHz+20 MHz
Date(s) of Tests:	August 30, 2021 ~ October 13, 2021
Serial number:	Radiated: 420015e6dca788ff Conducted: R3CR80ADD6H
LTE CA :	CA 41C(Uplink)

2. INTRODUCTION

2.1. DESCRIPTION OF EUT

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

It also supports IEEE 802.11 a/b/g/n/ac (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
Channel Edge	- KDB 971168 D01 v03r01 – Section 6.0 - ANSI C63.26-2015 – Section 5.7
Spurious and Harmonic Emissions at Antenna Terminal	- KDB 971168 D01 v03r01 – Section 6.0 - ANSI C63.26-2015 – Section 5.7
Peak- to- Average Ratio	- KDB 971168 D01 v03r01 – Section 5.7 - ANSI C63.26-2015 – Section 5.2.3.4 - ANSI C63.26-2015 – Section 5.2.6(only GSM)
Frequency stability	- ANSI C63.26-2015 – Section 5.6
Effective Radiated Power/ Effective Isotropic Radiated Power	- KDB 971168 D01 v03r01 – Section 5.2 & 5.8 - ANSI/TIA-603-E-2016 – Section 2.2.17
Radiated Spurious and Harmonic Emissions	- KDB 971168 D01 v03r01 – Section 6.2 - ANSI/TIA-603-E-2016 – Section 2.2.12

3.2 RADIATED POWER

Test Overview

Radiated tests are performed in the Fully-anechoic chamber.

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

Test Settings

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

Test Note

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

   The power is calculated by the following formula;

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

   Where: P_{d} is the dipole equivalent power and P_{g} is the generator output power into the substitution antenna.

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

3.3 RADIATED SPURIOUS EMISSIONS

Test Overview

Radiated tests are performed in the Fully-anechoic chamber.

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

Test Settings

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

Test Note

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

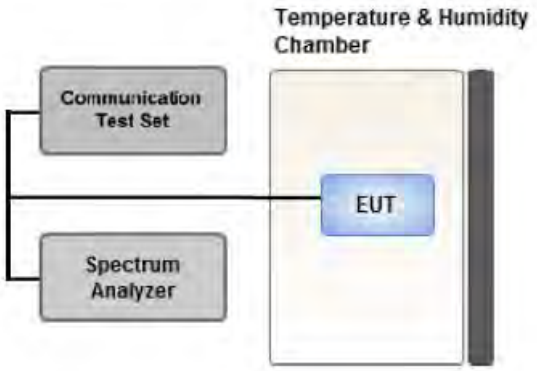
$$\text{Result}_{(dBm)} = \text{Pg}_{(dBm)} - \text{cable loss}_{(dB)} + \text{antenna gain}_{(dBi)}$$

   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.

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

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:

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

Test Settings(Peak Power)

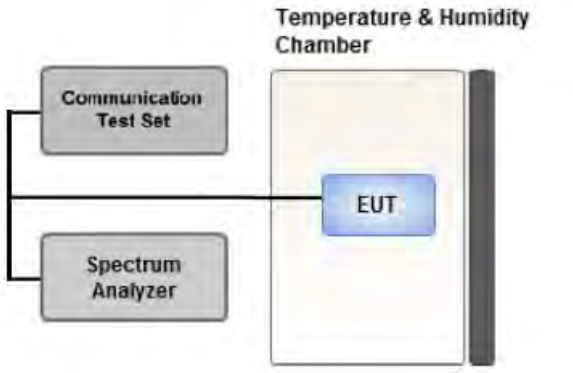
The measurement instrument must have a RBW that is greater than or equal to the OBW of the signal to be measured and a VBW ≥ 3 × RBW.

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

Test Settings(Average Power)

1. Set span to 2 × to 3 × the OBW.
2. Set RBW ≥ OBW.
3. Set VBW ≥ 3 × RBW.
4. Set number of measurement points in sweep ≥ 2 × span / RBW.
5. Sweep time:
   Set ≥ [10 × (number of points in sweep) × (transmission period)] for single sweep (automation-compatible) measurement. The transmission period is the (on + off) time.
6. Detector = power averaging (rms).
7. Set sweep trigger to “free run.”
8. Trace average at least 100 traces in power averaging (rms) mode if sweep is set to auto-couple. (To accurately determine the average power over the on and off period of the transmitter, it can be necessary to increase the number of traces to be averaged above 100 or, if using a manually configured sweep time, increase the sweep time.)
9. Use the peak marker function to determine the maximum amplitude level.
10. Add [10 log (1/duty cycle)] to the measured maximum power level to compute the average power during continuous transmission. For example, add [10 log (1/0.25)] = 6 dB if the duty cycle is a constant 25 %.

3.5 OCCUPIED BANDWIDTH.



Test setup

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

The EUT makes a call to the communication simulator.

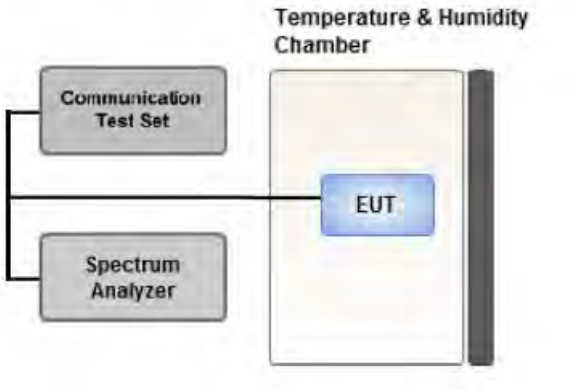
The conducted occupied bandwidth used the power splitter via EUT RF power connector between simulation base station and spectrum analyzer.

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

Test Settings

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

3.6 SPURIOUS AND HARMONIC EMISSIONS AT ANTENNA TERMINAL



Test setup

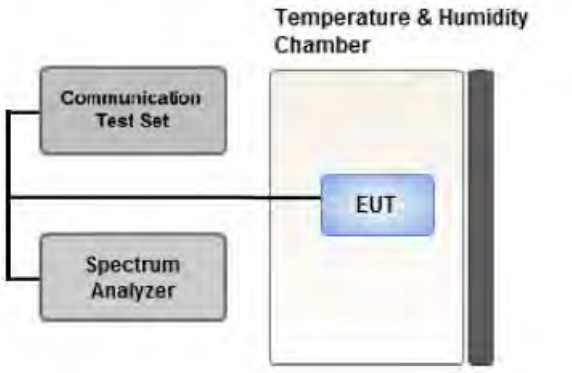
Test Overview

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

Test Settings

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

3.7 CHANNEL EDGE



Test setup

Test Overview

All out of band emissions are measured with a spectrum analyzer connected to the antenna terminal of the EUT while the EUT is operating at its maximum 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.

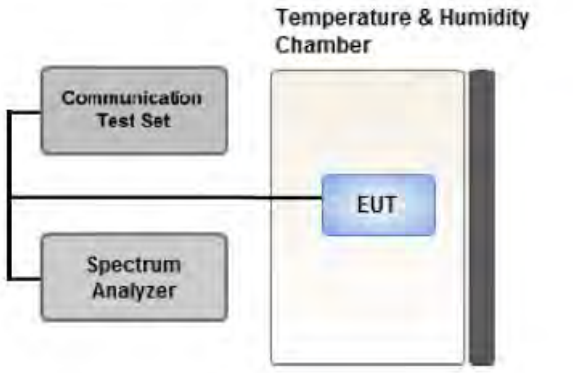
Test Settings

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. Within 1 MHz of the channel edge the RBW should be 2 % of EBW, then 1 MHz after that.
4. VBW > 3 x RBW
5. Detector = RMS
6. Number of sweep points ≥ 2 x Span/RBW
7. Trace mode = trace average
8. Sweep time = auto couple
9. The trace was allowed to stabilize

Test Notes

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

3.8 FREQUENCY STABILITY / VARIATION OF AMBIENT TEMPERATURE



Test setup

Test Overview

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

The frequency stability of the transmitter is measured by:

1. Temperature:

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

2. Primary Supply Voltage:

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

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

Test Settings

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

4. LIST OF TEST EQUIPMENT

Equipment	Model	Manufacturer	Serial No.	Due to Calibration	Calibration Interval
H.P.F	FBSR-02B(WHK1.2/15 G-10EF)	T&M SYSTEM	-	03/02/2022	Annual
H.P.F	FBSR-02B(WHK3.3/18 G-10EF)	T&M SYSTEM	-	03/02/2022	Annual
Power Splitter(DC ~ 26.5 GHz)	11667B	Hewlett Packard	11275	04/07/2022	Annual
DC Power Supply	E3632A	Agilent	MY40010147	06/28/2022	Annual
Dipole Antenna	UHAP	Schwarzbeck	557	04/05/2023	Biennial
Dipole Antenna	UHAP	Schwarzbeck	558	04/05/2023	Biennial
Chamber	SU-642	ESPEC	93008124	03/15/2022	Annual
Horn Antenna(1 ~ 18 GHz)	BBHA 9120D	Schwarzbeck	147	08/30/2022	Biennial
Horn Antenna(1 ~ 18 GHz)	BBHA 9120D	Schwarzbeck	9120D-1298	09/15/2023	Biennial
Horn Antenna(15 ~ 40 GHz)	BBHA 9170	Schwarzbeck	BBHA9170342	10/13/2022	Biennial
Horn Antenna(15 ~ 40 GHz)	BBHA 9170	Schwarzbeck	BBHA9170124	02/11/2022	Biennial
Signal Analyzer(10 Hz ~ 26.5 GHz)	N9020A	Agilent	MY50200093	11/17/2021	Annual
ATTENUATOR(20 dB)	8493C	Hewlett Packard	17280	06/01/2022	Annual
Spectrum Analyzer(10 Hz ~ 40 GHz)	FSV40	REOHDE & SCHWARZ	100931	09/29/2022	Annual
Base Station	8960 (E5515C)	Agilent	MY48360800	08/18/2022	Annual
Loop Antenna(9 kHz ~ 30 MHz)	FMZB1513	Schwarzbeck	1513-333	03/19/2022	Biennial
Bilog Antenna	VULB9160	Schwarzbeck	3150	03/03/2023	Biennial
Hybrid Antenna	VULB9168	Schwarzbeck	760	02/22/2023	Biennial
Wideband Radio Communication Tester	MT8821C	Anritsu Corp.	6262116770	07/12/2022	Annual
Wideband Radio Communication Tester	MT8820C	Anritsu Corp.	6201026545	01/07/2022	Annual
SIGNAL GENERATOR (100 kHz ~ 40 GHz)	SMB100A	REOHDE & SCHWARZ	177633	07/05/2022	Annual
Signal Analyzer(5 Hz ~ 40.0 GHz)	N9030B	KEYSIGHT	MY55480167	06/02/2022	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)	1.82 (Confidence level about 95 %, k=2)
Radiated Disturbance (9 kHz ~ 30 MHz)	3.40 (Confidence level about 95 %, k=2)
Radiated Disturbance (30 MHz ~ 1 GHz)	4.80 (Confidence level about 95 %, k=2)
Radiated Disturbance (1 GHz ~ 18 GHz)	5.70 (Confidence level about 95 %, k=2)
Radiated Disturbance (18 GHz ~ 40 GHz)	5.05 (Confidence level about 95 %, k=2)

6. SUMMARY OF TEST RESULTS

6.1 Test Condition : Conducted Test

Test Description	FCC Part Section(s)	Test Limit	Test Result
Occupied Bandwidth	§2.1049	N/A	PASS
Band Edge / Spurious and Harmonic Emissions at Antenna Terminal.	§2.1051, §27.53(m)(4)	■ < 40 + 10log10 (P[Watts]) at Channel edges ■ < 43 + 10log10 (P[Watts]) between 5 and X MHz from Channel edges ■ < 55 + 10log10 (P[Watts]) beyond X MHz beyond from Channel edges ■ < 43 + 10 log (P) dB on all frequencies between 2490.5 MHz and 2496 MHz	PASS
Frequency stability / variation of ambient temperature	§2.1055, §27.54	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	§27.50(h)(2)	< 2 Watts max. EIRP	PASS
Radiated Spurious and Harmonic Emissions	§2.1053, §27.53(m)(4)	< 55 + 10log10 (P[Watts])	PASS

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	15	25
10	20	30
15	10	25
15	15	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, Channel Edge)
: 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.
4. All power classes were tested, and the results were reported for the worst case PC2.

[Worst case_PC2]

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/ Channel Edge	QPSK	Low	15	2503.5	39725	1	74	15	2518.5	39875	1	0
	QPSK	Mid	15	2585.5	40545	1	74	15	2600.5	40695	1	0
	QPSK	High	15	2667.5	41365	1	74	15	2682.5	41515	1	0
	QPSK	Low	15	2503.5	39725	1	0	15	2518.5	39875	1	74
	QPSK	Mid	15	2585.5	40545	1	0	15	2600.5	40695	1	74
	QPSK	High	15	2667.5	41365	1	0	15	2682.5	41515	1	74
	QPSK	Low	15	2503.5	39725	75	0	10	2515.5	39845	50	0
	QPSK	Mid	15	2588.1	40571	75	0	10	2600.1	40691	50	0
	QPSK	High	15	2672.7	41417	75	0	10	2684.7	41537	50	0
	QPSK	Low	20	2506.0	39750	100	0	20	2525.8	39948	100	0
	QPSK	Mid	20	2583.1	40521	100	0	20	2602.9	40719	100	0
	QPSK	High	20	2660.2	41292	100	0	20	2680.0	41490	100	0
Radiated Spurious Emissions	QPSK	Low	20	2506.0	39750	1	99	10	2520.4	39894	1	0
	QPSK	Mid	5	2583.8	40528	1	24	20	2595.5	40645	1	0
	QPSK	High	15	2667.5	41365	1	74	15	2682.5	41515	1	0

[Worst case_PC2]

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	Mid	5	2583.8	40528	25	0	20	2595.5	40645	100	0
			10	2585.9	40549	50	0	15	2597.9	40669	75	0
			10	2583.6	40526	50	0	20	2598.0	40670	100	0
			15	2588.1	40571	75	0	10	2600.1	40691	50	0
			15	2585.5	40545	75	0	15	2600.5	40695	75	0
			15	2583.3	40523	75	0	20	2600.4	40694	100	0
			20	2590.5	40595	100	0	5	2602.2	40712	25	0
			20	2588.1	40571	100	0	10	2602.5	40715	50	0
			20	2585.6	40546	100	0	15	2602.7	40717	75	0
			20	2583.1	40521	100	0	20	2602.9	40719	100	0
Frequency stability	QPSK	Low	5	2499.3	39683	25	0	20	2511.0	39800	100	0
			10	2501.5	39705	50	0	20	2515.9	39849	100	0
			15	2503.8	39728	75	0	20	2520.9	39899	100	0
			20	2506.0	39750	100	0	20	2525.8	39948	100	0
		High	5	2668.3	41373	25	0	20	2680.0	41490	100	0
			10	2665.6	41346	50	0	20	2680.0	41490	100	0
			15	2662.9	41319	75	0	20	2680.0	41490	100	0
			20	2660.2	41292	100	0	20	2680.0	41490	100	0

8.1 Conducted Power

8.1.1 PC2

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	2499.3	39683	1	24	20	2511.0	39800	1	0	24.61
	10	2501.3	39703	1	49	15	2513.3	39823	1	0	25.29
	10	2501.5	39705	1	49	20	2515.9	39849	1	0	24.72
	15	2503.5	39725	1	74	10	2515.5	39845	1	0	25.47
	15	***2503.5***	***39725***	***1***	***74***	***15***	***2518.5***	***39875***	***1***	***0***	***25.61***
	15	2503.8	39728	1	74	20	2520.9	39899	1	0	25.55
	20	2506.0	39750	1	99	5	2517.7	39867	1	0	24.93
	20	2506.0	39750	1	99	10	2520.4	39894	1	0	24.91
	20	2506.0	39750	1	99	15	2523.1	39921	1	0	25.60
	20	2506.0	39750	1	99	20	2525.8	39948	1	0	25.57
Mid	5	2583.8	40528	1	24	20	2595.5	40645	1	0	25.85
	10	2585.9	40549	1	49	15	2597.9	40669	1	0	25.96
	10	2583.6	40526	1	49	20	2598.0	40670	1	0	25.89
	15	2588.1	40571	1	74	10	2600.1	40691	1	0	25.94
	15	***2585.5***	***40545***	***1***	***74***	***15***	***2600.5***	***40695***	***1***	***0***	***26.11***
	15	2583.3	40523	1	74	20	2600.4	40694	1	0	26.06
	20	2590.5	40595	1	99	5	2602.2	40712	1	0	25.71
	20	2588.1	40571	1	99	10	2602.5	40715	1	0	25.78
	20	2585.6	40546	1	99	15	2602.7	40717	1	0	25.88
	20	2583.1	40521	1	99	20	2602.9	40719	1	0	25.91
High	5	2668.3	41373	1	24	20	2680.0	41490	1	0	24.96
	10	2670.5	41395	1	49	15	2682.5	41515	1	0	24.98
	10	2665.6	41346	1	49	20	2680.0	41490	1	0	24.93
	15	2672.7	41417	1	74	10	2684.7	41537	1	0	25.07
	15	***2667.5***	***41365***	***1***	***74***	***15***	***2682.5***	***41515***	***1***	***0***	***25.13***
	15	2662.9	41319	1	74	20	2680.0	41490	1	0	25.08
	20	2675.0	41440	1	99	5	2686.7	41557	1	0	24.91
	20	2670.1	41391	1	99	10	2684.5	41535	1	0	24.92
	20	2665.1	41341	1	99	15	2682.2	41512	1	0	24.91
	20	2660.2	41292	1	99	20	2680.0	41490	1	0	24.97

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	2499.3	39683	25	0	20	2511.0	39800	100	0	23.55
	10	2501.3	39703	50	0	15	2513.3	39823	75	0	23.94
	10	2501.5	39705	50	0	20	2515.9	39849	100	0	23.51
	15	***2503.5***	***39725***	***75***	***0***	***10***	***2515.5***	***39845***	***50***	***0***	***24.19***
	15	2503.5	39725	75	0	15	2518.5	39875	75	0	23.72
	15	2503.8	39728	75	0	20	2520.9	39899	100	0	23.98
	20	2506.0	39750	100	0	5	2517.7	39867	25	0	23.97
	20	2506.0	39750	100	0	10	2520.4	39894	50	0	23.79
	20	2506.0	39750	100	0	15	2523.1	39921	75	0	23.89
	20	2506.0	39750	100	0	20	2525.8	39948	100	0	23.85
Mid	5	2583.8	40528	25	0	20	2595.5	40645	100	0	24.14
	10	2585.9	40549	50	0	15	2597.9	40669	75	0	24.18
	10	2583.6	40526	50	0	20	2598.0	40670	100	0	24.13
	15	***2588.1***	***40571***	***75***	***0***	***10***	***2600.1***	***40691***	***50***	***0***	***24.25***
	15	2585.5	40545	75	0	15	2600.5	40695	75	0	24.21
	15	2583.3	40523	75	0	20	2600.4	40694	100	0	24.18
	20	2590.5	40595	100	0	5	2602.2	40712	25	0	24.16
	20	2588.1	40571	100	0	10	2602.5	40715	50	0	24.19
	20	2585.6	40546	100	0	15	2602.7	40717	75	0	24.18
	20	2583.1	40521	100	0	20	2602.9	40719	100	0	24.13
High	5	2668.3	41373	25	0	20	2680.0	41490	100	0	23.71
	10	2670.5	41395	50	0	15	2682.5	41515	75	0	23.77
	10	2665.6	41346	50	0	20	2680.0	41490	100	0	23.71
	15	***2672.7***	***41417***	***75***	***0***	***10***	***2684.7***	***41537***	***50***	***0***	***23.85***
	15	2667.5	41365	75	0	15	2682.5	41515	75	0	23.80
	15	2662.9	41319	75	0	20	2680.0	41490	100	0	23.71
	20	2675.0	41440	100	0	5	2686.7	41557	25	0	23.82
	20	2670.1	41391	100	0	10	2684.5	41535	50	0	23.78
	20	2665.1	41341	100	0	15	2682.2	41512	75	0	23.71
	20	2660.2	41292	100	0	20	2680.0	41490	100	0	23.72

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	15	2503.5	39725	1	74	15	2518.5	39875	1	0	24.87
Mid	15	2585.5	40545	1	74	15	2600.5	40695	1	0	25.12
High	15	2667.5	41365	1	74	15	2682.5	41515	1	0	24.16
Low	15	2503.5	39725	75	0	10	2515.5	39845	50	0	22.96
Mid	15	2588.1	40571	75	0	10	2600.1	40691	50	0	23.26
High	15	2672.7	41417	75	0	10	2684.7	41537	50	0	22.91

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	15	2503.5	39725	1	74	15	2518.5	39875	1	0	23.14
Mid	15	2585.5	40545	1	74	15	2600.5	40695	1	0	23.32
High	15	2667.5	41365	1	74	15	2682.5	41515	1	0	22.92
Low	15	2503.5	39725	75	0	10	2515.5	39845	50	0	22.95
Mid	15	2588.1	40571	75	0	10	2600.1	40691	50	0	23.25
High	15	2672.7	41417	75	0	10	2684.7	41537	50	0	22.36

Note:

Modulation : 64QAM

8.2 Equivalent Isotropic Radiated Power

8.2.1 PC2

	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
Low	5	39683	25/0	20	39800	100/0	-19.32	17.64	10.70	2.50	H	0.384	25.84
	10	39703	50/0	15	39823	75/0	-19.22	17.80	10.70	2.50	H	0.398	26.00
	10	39705	50/0	20	39849	100/0	-19.35	17.67	10.70	2.50	H	0.386	25.87
	15	39725	75/0	10	39845	50/0	-19.29	17.73	10.70	2.50	H	0.392	25.93
	15	39725	75/0	15	39875	75/0	-19.32	17.70	10.70	2.50	H	0.389	25.90
	15	39728	75/0	20	39899	100/0	-19.27	17.75	10.70	2.50	H	0.393	25.95
	20	39750	100/0	5	39867	25/0	-19.20	17.82	10.70	2.50	H	0.400	26.02
	20	***39750***	***100/0***	***10***	***39894***	***50/0***	***-19.01***	***18.01***	***10.70***	***2.50***	***H***	***0.418***	***26.21***
	20	39750	100/0	15	39921	75/0	-19.10	17.93	10.70	2.50	H	0.410	26.13
	20	39750	100/0	20	39948	100/0	-19.05	17.98	10.70	2.50	H	0.415	26.18
Mid	***5***	***40528***	***25/0***	***20***	***40645***	***100/0***	***-19.62***	***17.70***	***10.62***	***2.53***	***H***	***0.379***	***25.79***
	10	40549	50/0	15	40669	75/0	-19.85	17.47	10.62	2.53	H	0.360	25.56
	10	40526	50/0	20	40670	100/0	-19.78	17.54	10.62	2.53	H	0.366	25.63
	15	40571	75/0	10	40691	50/0	-19.61	17.63	10.61	2.54	H	0.371	25.70
	15	40545	75/0	15	40695	75/0	-19.77	17.55	10.62	2.53	H	0.366	25.64
	15	40523	75/0	20	40694	100/0	-19.73	17.59	10.62	2.53	H	0.370	25.68
	20	40595	100/0	5	40712	25/0	-20.46	16.78	10.61	2.54	H	0.305	24.85
	20	40571	100/0	10	40715	50/0	-20.15	17.09	10.61	2.54	H	0.328	25.16
	20	40546	100/0	15	40717	75/0	-19.80	17.44	10.61	2.54	H	0.355	25.51
	20	40521	100/0	20	40719	100/0	-20.17	17.15	10.62	2.53	H	0.334	25.24
High	5	41373	25/0	20	41490	100/0	-22.41	15.11	10.75	2.57	H	0.213	23.29
	10	41395	50/0	15	41515	75/0	-22.12	15.40	10.75	2.57	H	0.228	23.58
	10	41346	50/0	20	41490	100/0	-22.29	15.05	10.74	2.57	H	0.210	23.22
	15	41417	75/0	10	41537	50/0	-22.42	15.27	10.76	2.57	H	0.222	23.46
	15	***41365***	***75/0***	***15***	***41515***	***75/0***	***-21.96***	***15.56***	***10.75***	***2.57***	***H***	***0.237***	***23.74***
	15	41319	75/0	20	41490	100/0	-22.30	15.04	10.74	2.57	H	0.209	23.21
	20	41440	100/0	5	41557	25/0	-22.37	15.32	10.76	2.57	H	0.224	23.51
	20	41391	100/0	10	41535	50/0	-22.64	15.05	10.76	2.57	H	0.211	23.24
	20	41341	100/0	15	41512	75/0	-21.94	15.40	10.74	2.57	H	0.228	23.57
	20	41292	100/0	20	41490	100/0	-22.22	15.12	10.74	2.57	H	0.213	23.29

Note:

1. Modulation : QPSK
2. Limit : < 2 Watts

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
5	39683	25/0	20	39800	100/0	-20.89	16.07	10.70	2.50	H	0.267	24.27
10	39703	50/0	15	39823	75/0	-20.61	16.41	10.70	2.50	H	0.289	24.61
10	39705	50/0	20	39849	100/0	-20.75	16.27	10.70	2.50	H	0.280	24.47
15	39725	75/0	10	39845	50/0	-20.53	16.49	10.70	2.50	H	0.294	24.69
15	39725	75/0	15	39875	75/0	-20.86	16.16	10.70	2.50	H	0.273	24.36
15	39728	75/0	20	39899	100/0	-20.58	16.44	10.70	2.50	H	0.291	24.64
20	39750	100/0	5	39867	25/0	-20.30	16.72	10.70	2.50	H	0.310	24.92
20	39750	100/0	10	39894	50/0	-20.30	16.72	10.70	2.50	H	0.310	24.92
20	39750	100/0	15	39921	75/0	-20.10	16.93	10.70	2.50	H	0.326	25.13
20	39750	100/0	20	39948	100/0	-20.44	16.59	10.70	2.50	H	0.301	24.79
5	40528	25/0	20	40645	100/0	-20.85	16.47	10.62	2.53	H	0.286	24.56
15	41365	75/0	15	41515	75/0	-23.08	14.44	10.75	2.57	H	0.183	22.62

Note:

1. Modulation : 16QAM

2. Limit : < 2 Watts

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
5	39683	25/0	20	39800	100/0	-22.39	14.57	10.70	2.50	H	0.189	22.77
10	39703	50/0	15	39823	75/0	-22.15	14.87	10.70	2.50	H	0.203	23.07
10	39705	50/0	20	39849	100/0	-22.34	14.68	10.70	2.50	H	0.194	22.88
15	39725	75/0	10	39845	50/0	-22.13	14.89	10.70	2.50	H	0.204	23.09
15	39725	75/0	15	39875	75/0	-22.33	14.69	10.70	2.50	H	0.194	22.89
15	39728	75/0	20	39899	100/0	-22.14	14.88	10.70	2.50	H	0.203	23.08
20	39750	100/0	5	39867	25/0	-22.04	14.98	10.70	2.50	H	0.208	23.18
20	39750	100/0	10	39894	50/0	-21.67	15.35	10.70	2.50	H	0.226	23.55
20	39750	100/0	15	39921	75/0	-21.57	15.46	10.70	2.50	H	0.232	23.66
20	39750	100/0	20	39948	100/0	-21.77	15.26	10.70	2.50	H	0.222	23.46
5	40528	25/0	20	40645	100/0	-22.34	14.98	10.62	2.53	H	0.203	23.07
15	41365	75/0	15	41515	75/0	-24.36	13.16	10.75	2.57	H	0.136	21.34

Note:

1. Modulation : 64QAM

2. Limit : < 2 Watts

8.3 Conducted Spurious Emissions

8.3.1 PC2

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	15	39725	2503.5	1/74	15	39875	2518.5	1/0	8.8918	34.794	-73.78	-38.98
Mid	15	40545	2585.5	1/74	15	40695	2600.5	1/0	9.9546	34.794	-74.25	-39.46
High	15	41365	2667.5	1/74	15	41515	2682.5	1/0	8.8564	34.794	-70.32	-35.52
Low	15	39725	2503.5	1/0	15	39875	2518.5	1/74	4.0335	34.179	-73.92	-39.74
Mid	15	40545	2585.5	1/0	15	40695	2600.5	1/74	7.9751	34.794	-74.04	-39.24
High	15	41365	2667.5	1/0	15	41515	2682.5	1/74	4.0045	34.179	-74.11	-39.93
Low	15	39725	2503.5	75/0	10	39845	2515.5	50/0	9.1087	34.794	-74.50	-39.70
Mid	15	40571	2588.1	75/0	10	40691	2600.1	50/0	7.9821	34.794	-74.33	-39.54
High	15	41417	2672.7	75/0	10	41537	2684.7	50/0	4.0514	34.179	-73.93	-39.75
Low	20	39750	2506.0	100/0	20	39948	2525.8	100/0	4.9268	34.179	-74.83	-40.65
Mid	20	40521	2583.1	100/0	20	40719	2602.9	100/0	9.6595	34.794	-73.84	-39.04
High	20	41292	2660.2	100/0	20	41490	2680.0	100/0	8.0075	34.794	-74.07	-39.27

Note:

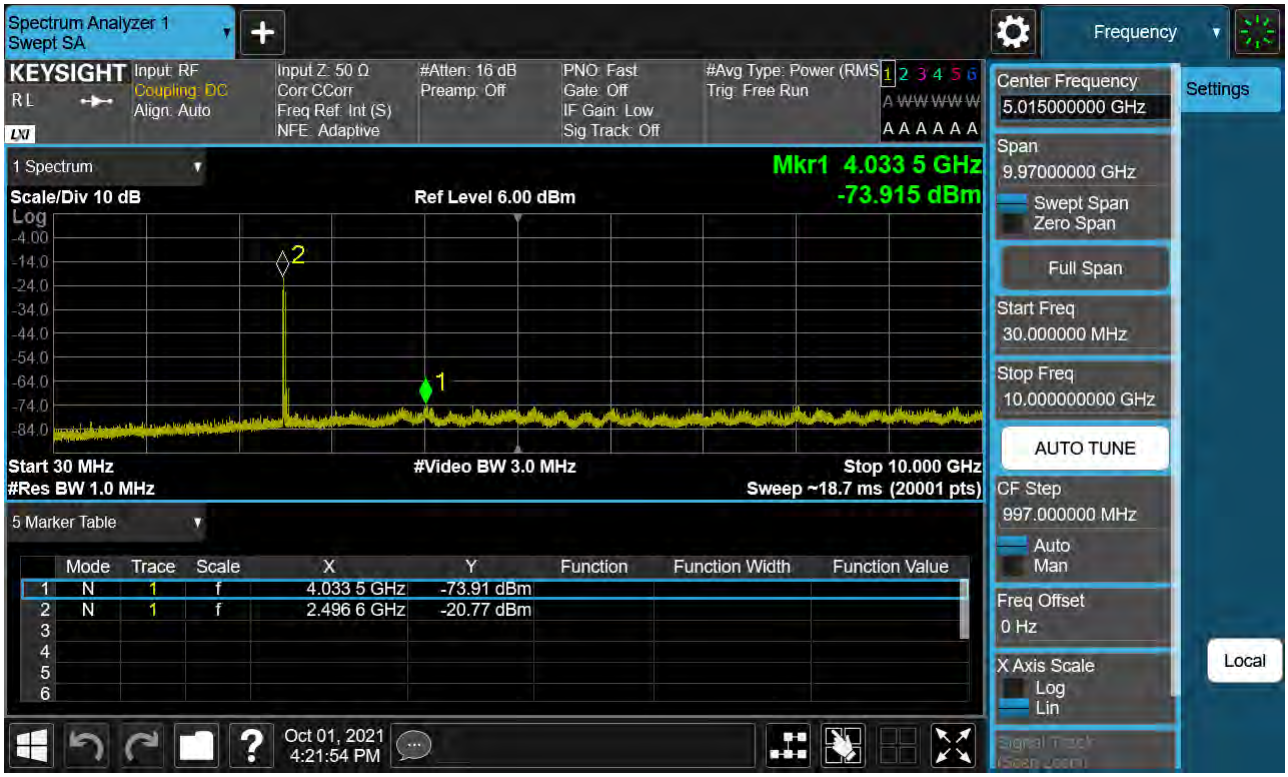
1. Modulation : QPSK
2. Duty Cycle factor already applied on the factor.
   - Duty Cycle factor(dB) = 3.979
   - Factor(dB) = Duty Cycle factor + Cable Loss + Ext. Attenuator + Power Splitter
   - Result(dBm) = Reading + Factor
3. Factors for frequency :

Frequency Range (GHz)	Factor [dB]
0.03 – 1	31.473
1 – 5	34.179
5 – 10	34.794
10 – 15	35.319
15 – 20	35.692
Above 20(26.5)	36.334

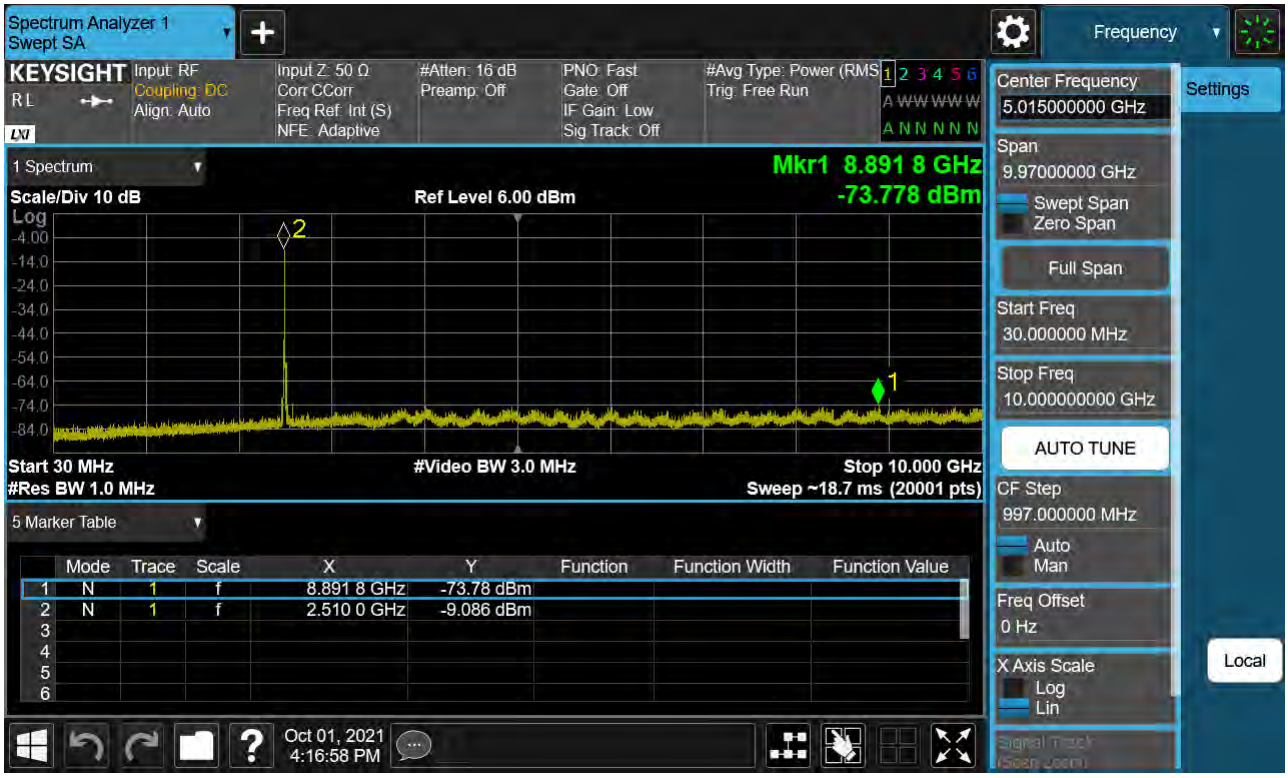
4. Limit : -25.0 dBm

Frequency Range : 30 MHz ~ 10 GHz

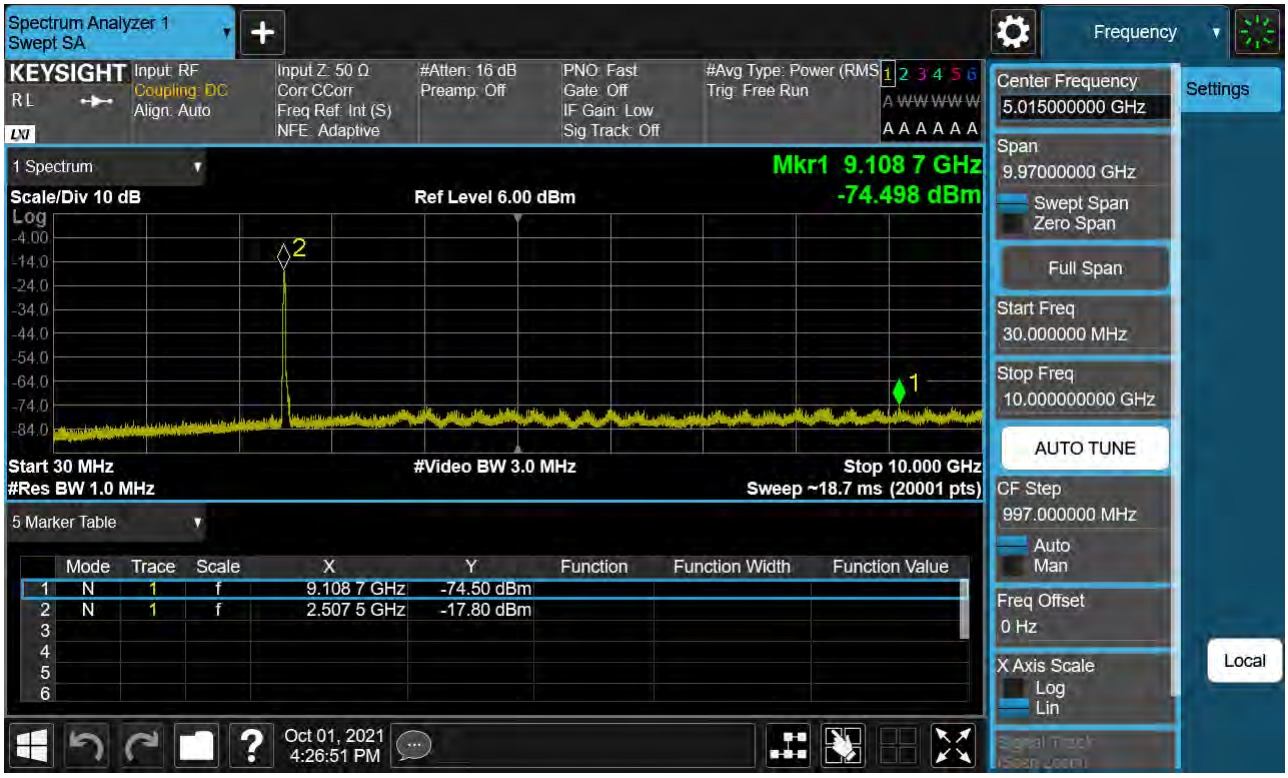
PCC 15 MHz Ch39725 RB1 Offset0 SCC 15 MHz Ch39875 RB1 Offset74



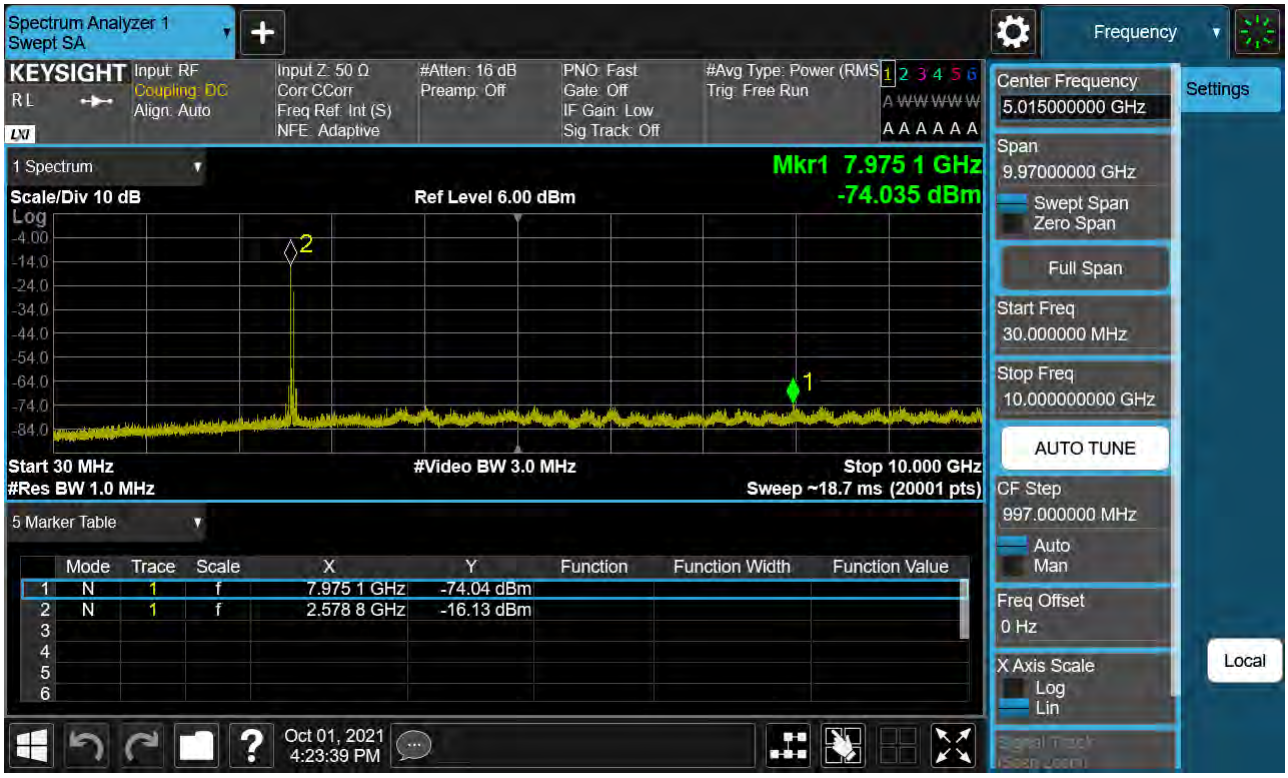
PCC 15 MHz Ch39725 RB1 Offset74 SCC 15 MHz Ch39875 RB1 Offset0



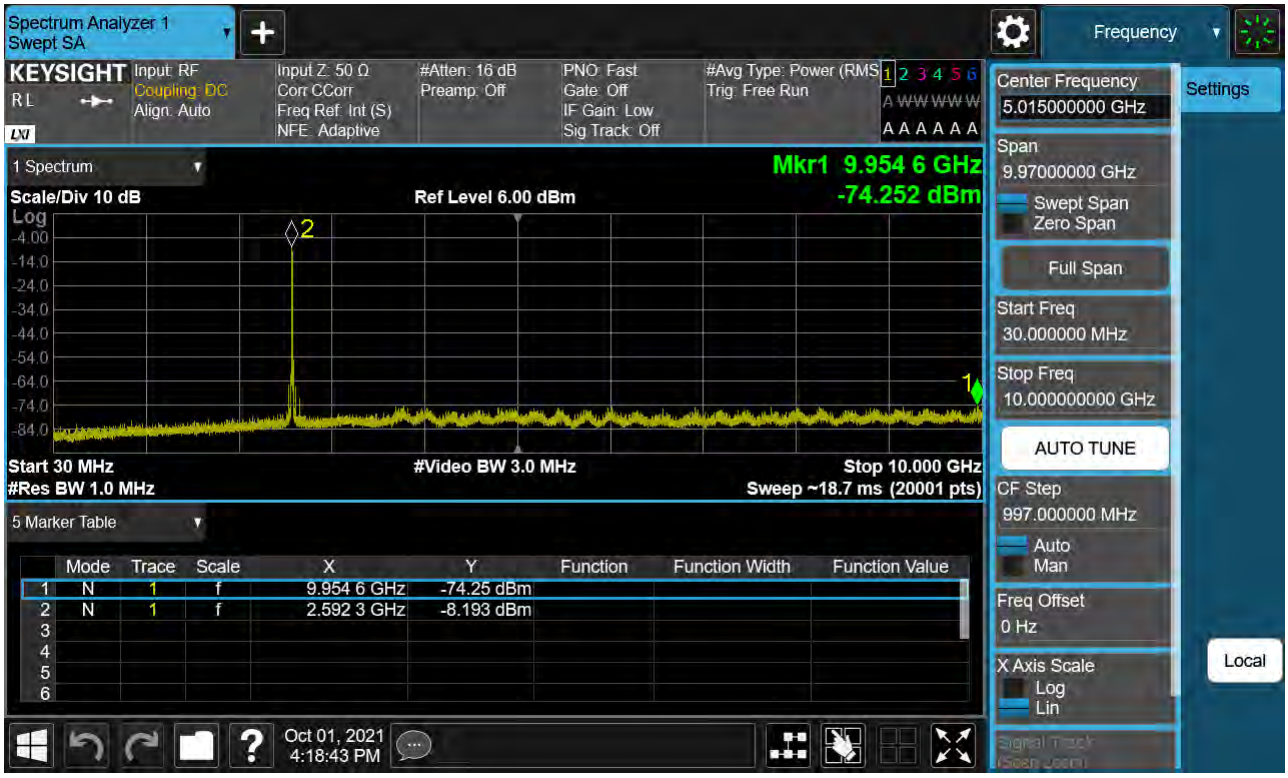
PCC 15 MHz Ch39725 RB75 Offset0 SCC 10 MHz Ch39845 RB50 Offset0



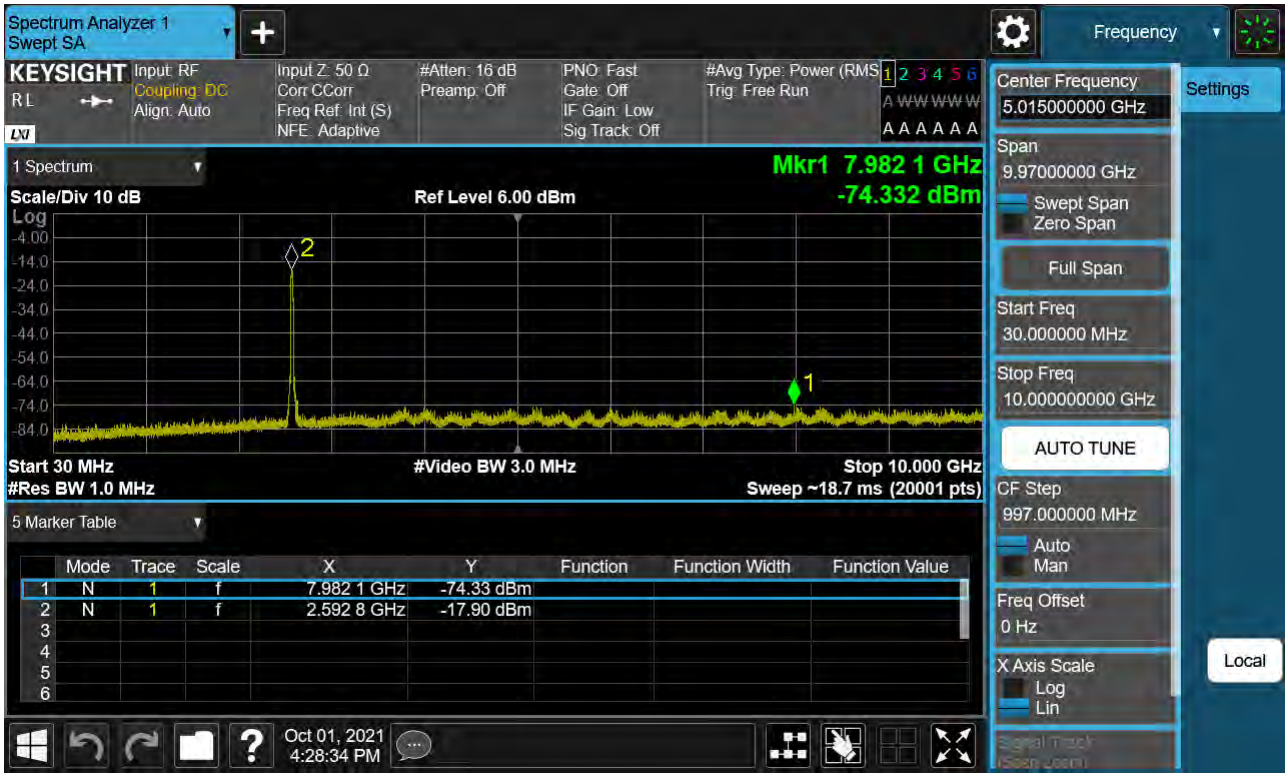
PCC 15 MHz Ch40545 RB1 Offset0 SCC 15 MHz Ch40695 RB1 Offset74



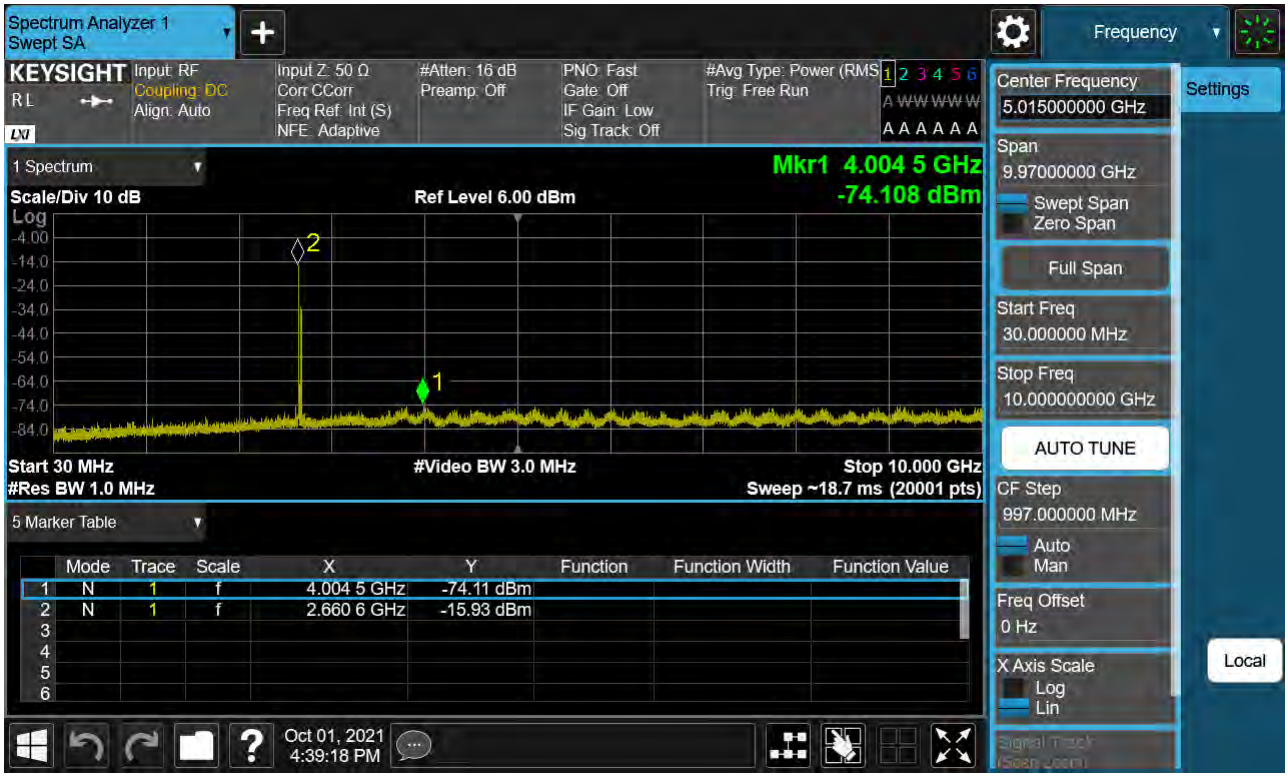
PCC 15 MHz Ch40545 RB1 Offset74 SCC 15 MHz Ch40695 RB1 Offset0



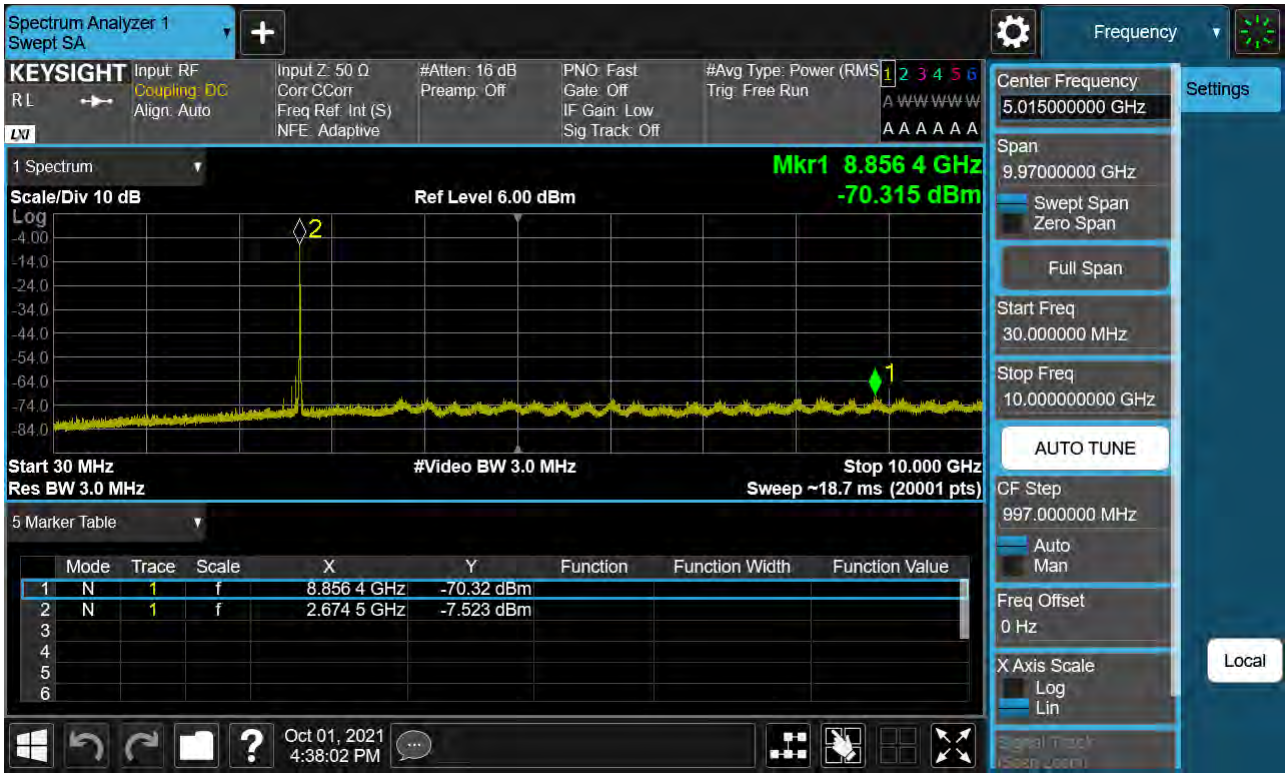
PCC 15 MHz Ch40571 RB75 Offset0 SCC 10 MHz Ch40691 RB50 Offset0



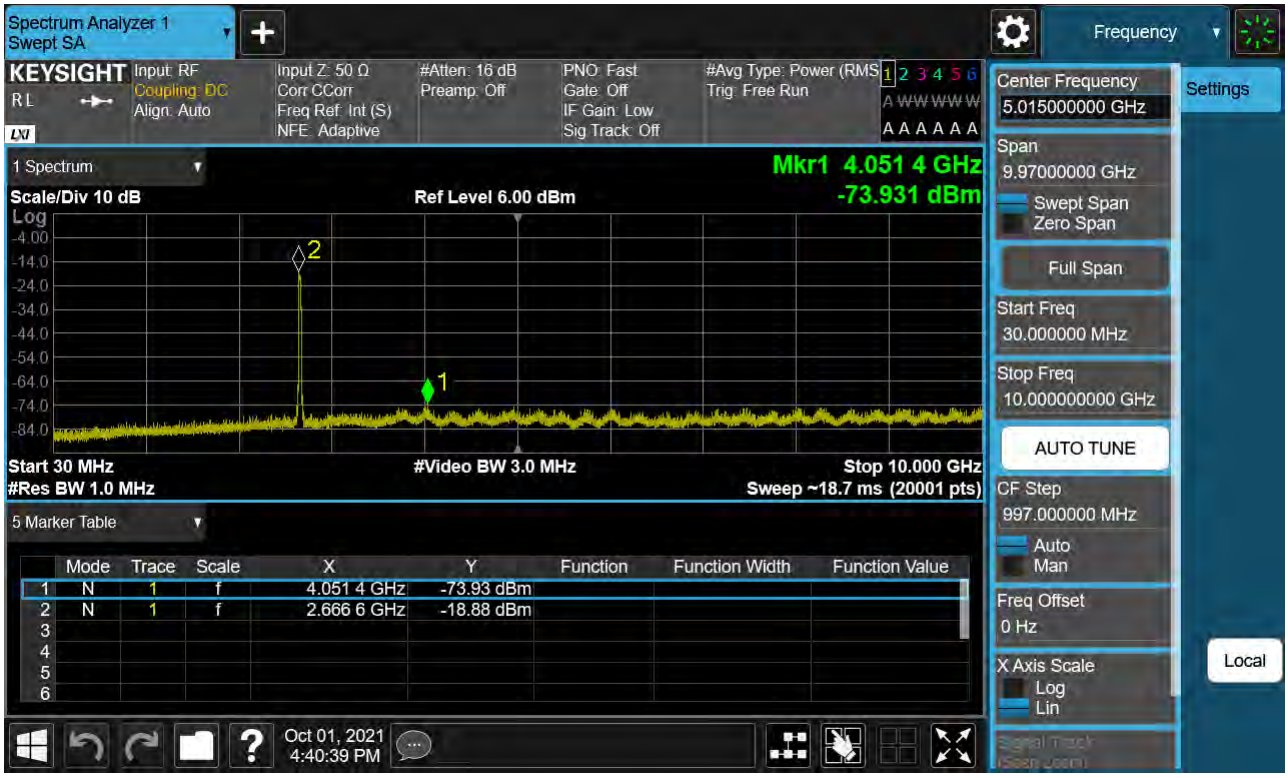
PCC 15 MHz Ch41365 RB1 Offset0 SCC 15 MHz Ch41515 RB1 Offset74



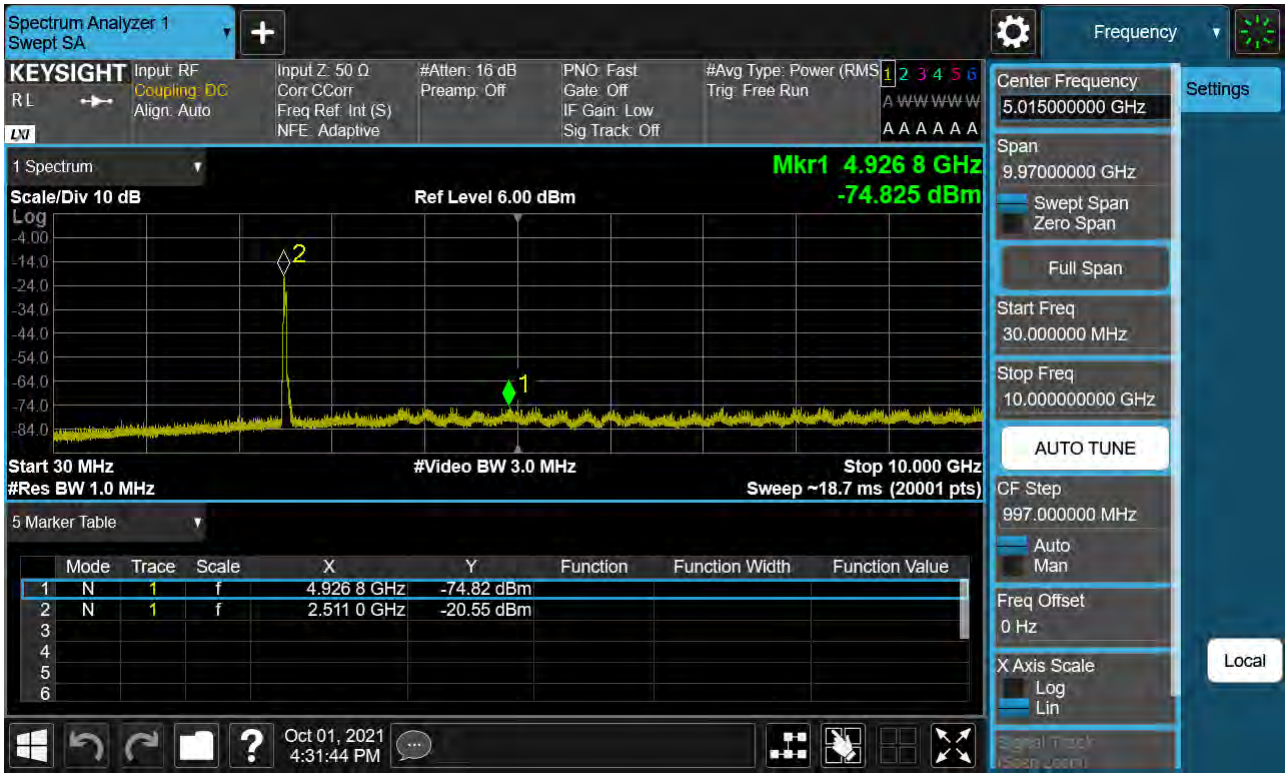
PCC 15 MHz Ch41365 RB1 Offset74 SCC 15 MHz Ch41515 RB1 Offset0



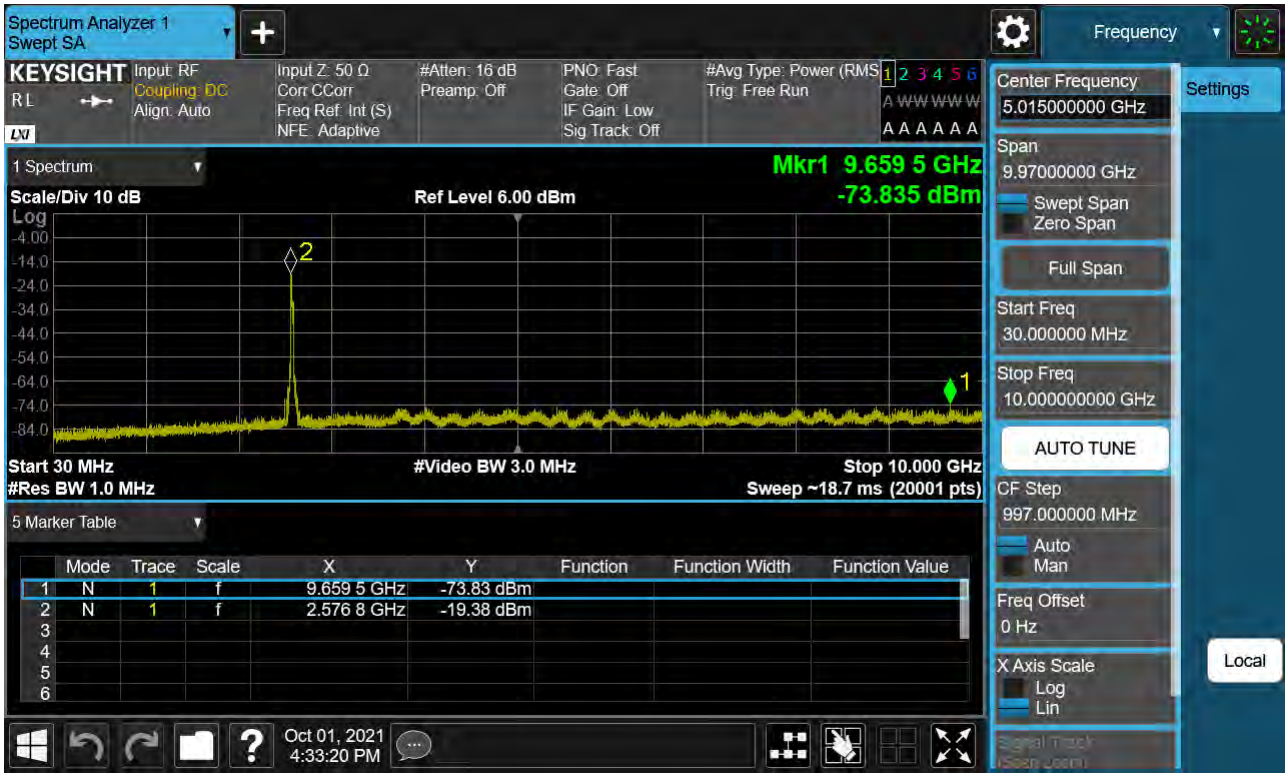
PCC 15 MHz Ch41417 RB75 Offset0 SCC 10 MHz Ch41537 RB0 Offset0



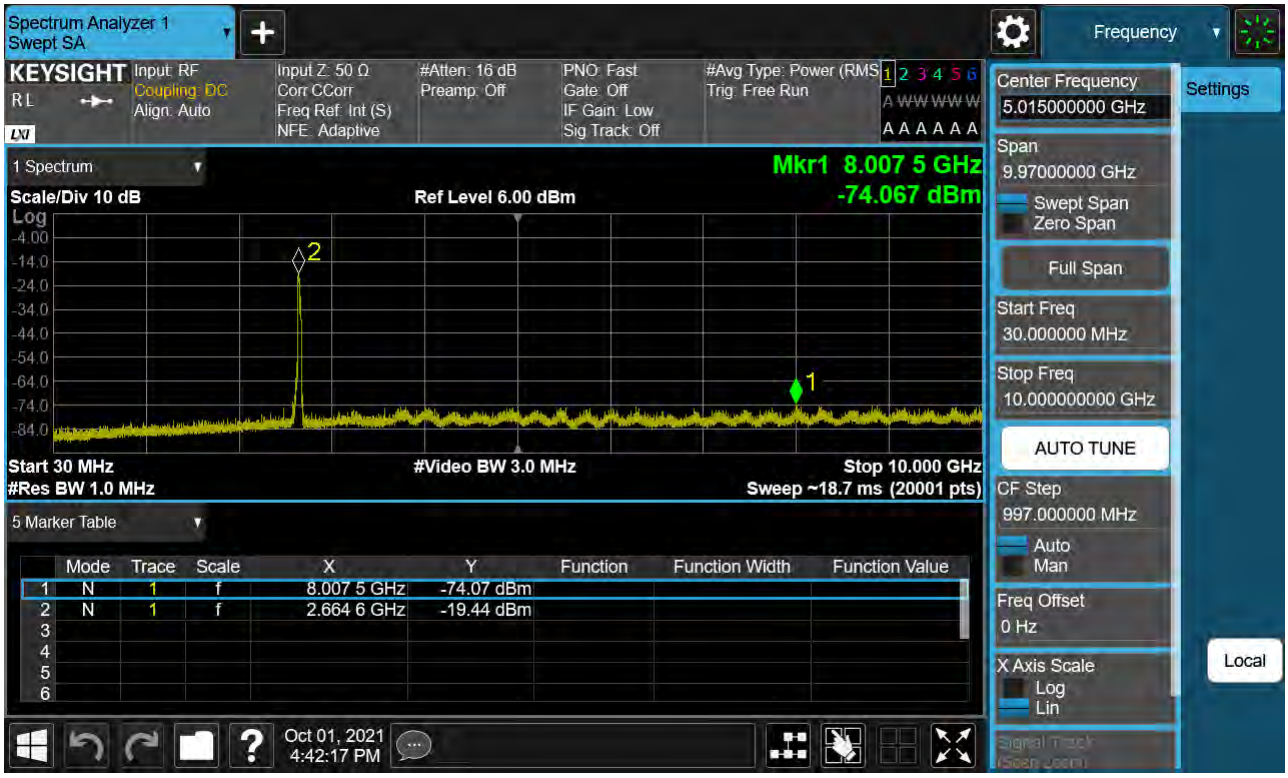
PCC 20 MHz Ch39750 RB100 Offset0 SCC 20 MHz Ch39948 RB100 Offset0



PCC 20 MHz Ch40521 RB100 Offset0 SCC 20 MHz Ch40719 RB100 Offset0

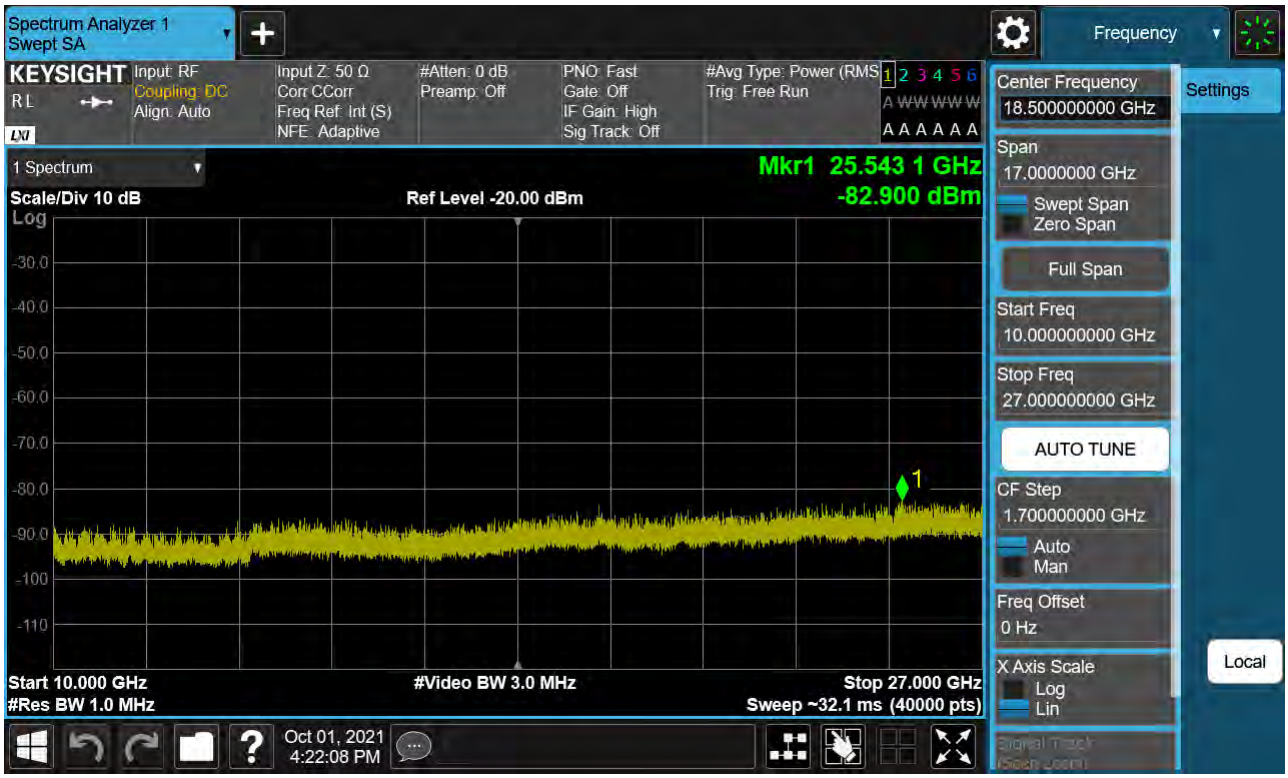


PCC 20 MHz Ch41292 RB100 Offset0 SCC 20 MHz Ch41490 RB100 Offset0

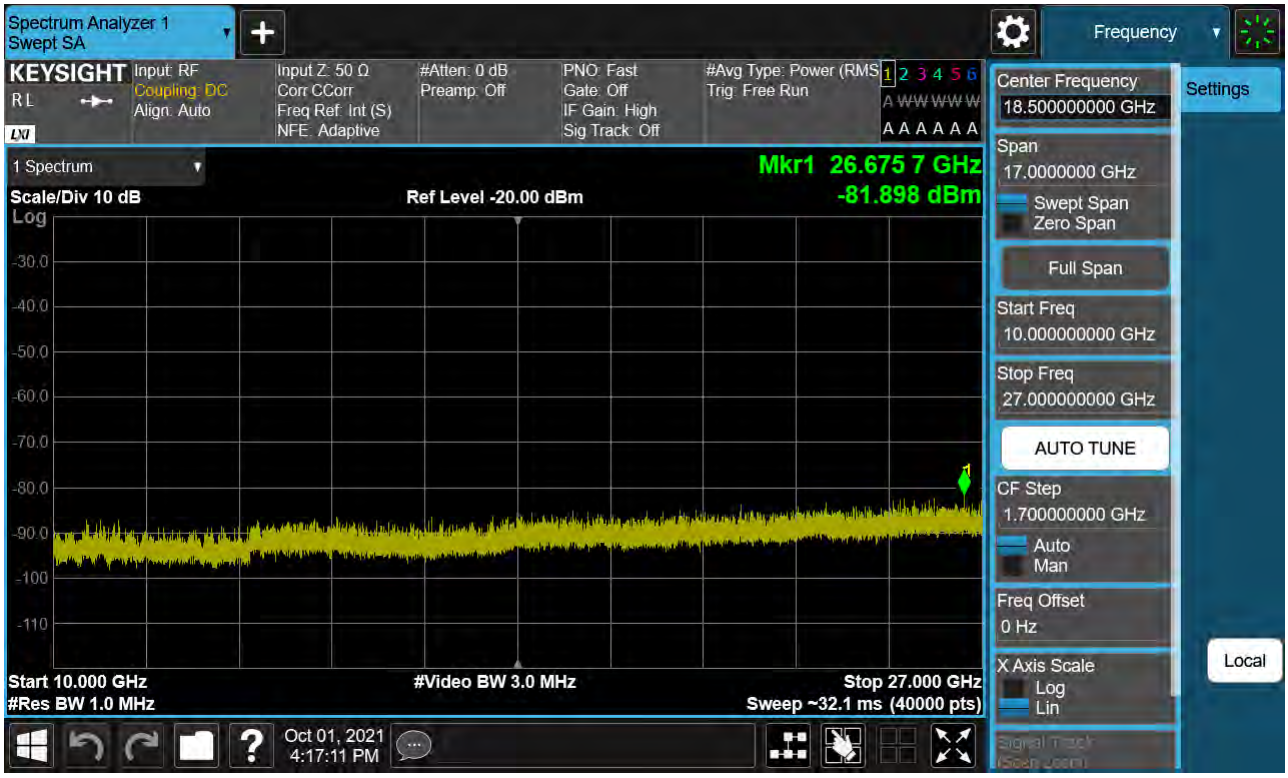


Frequency Range : 10 GHz ~ 27.0 GHz

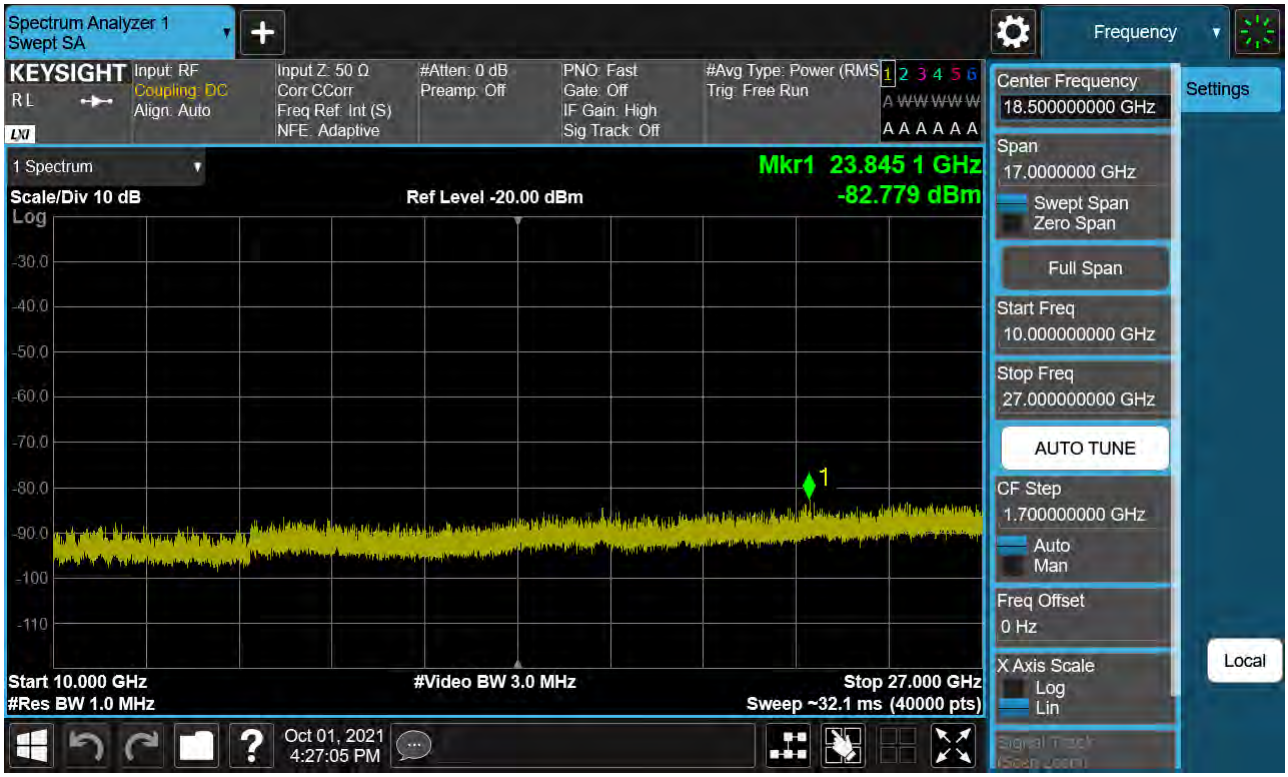
PCC 15 MHz Ch39725 RB1 Offset0, SCC 15 MHz Ch39875 RB1 Offset74



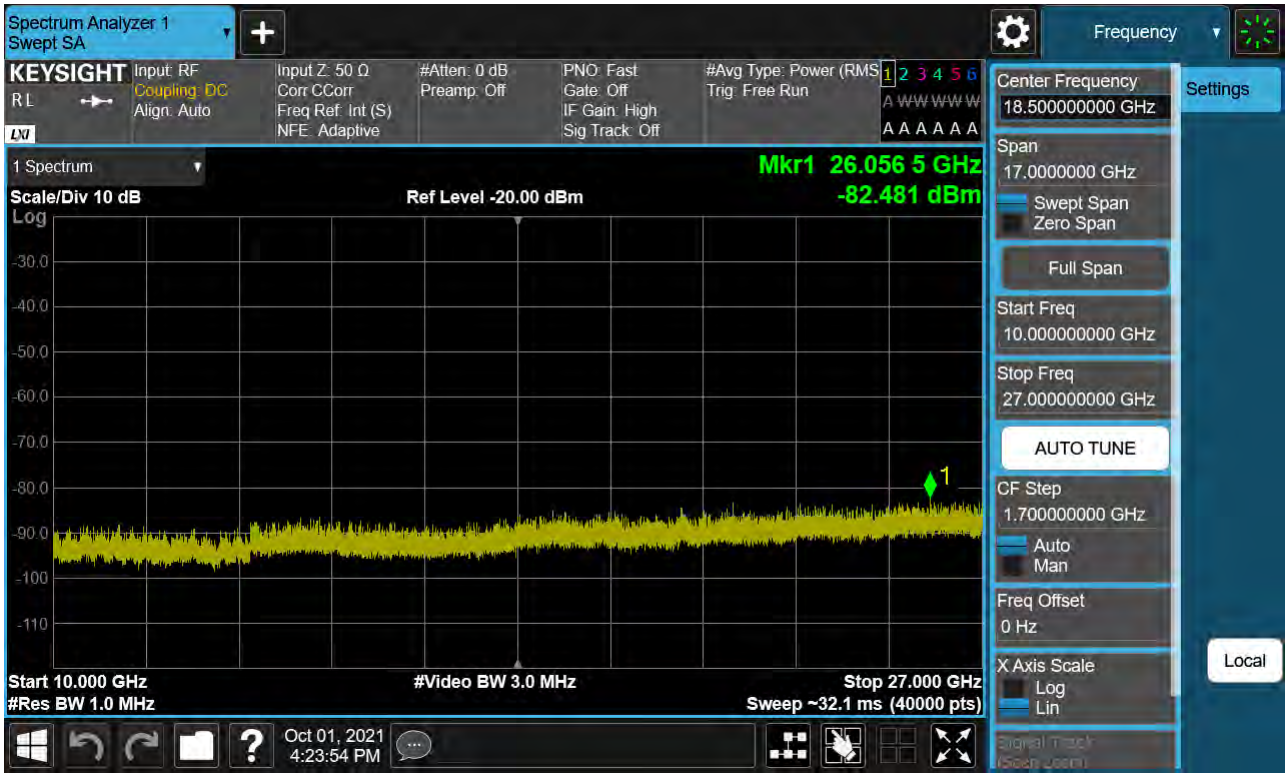
PCC 15 MHz Ch39725 RB1 Offset74, SCC 15 MHz Ch39875 RB1 Offset0



PCC 15 MHz Ch39725 RB75 Offset0, SCC 10 MHz Ch39845 RB50 Offset0

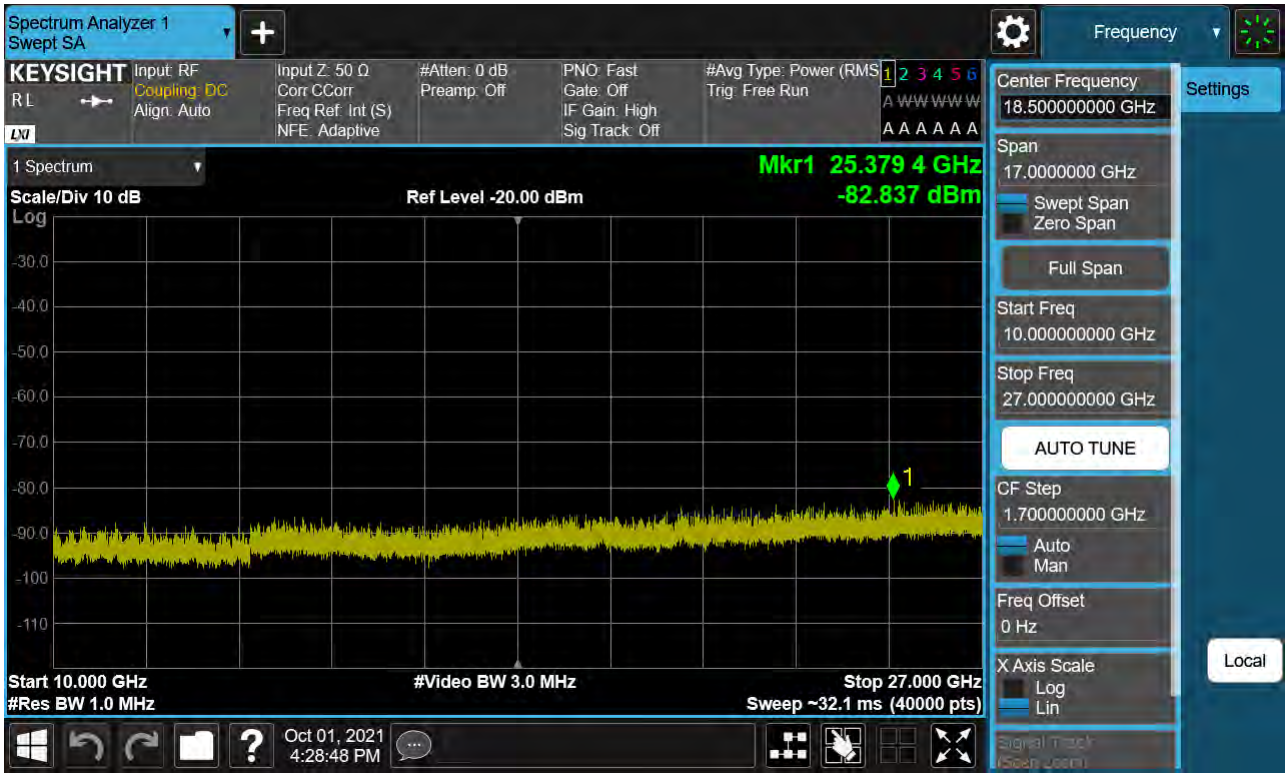


PCC 15 MHz Ch40545 RB1 Offset0, SCC 15 MHz Ch40695 RB1 Offset74



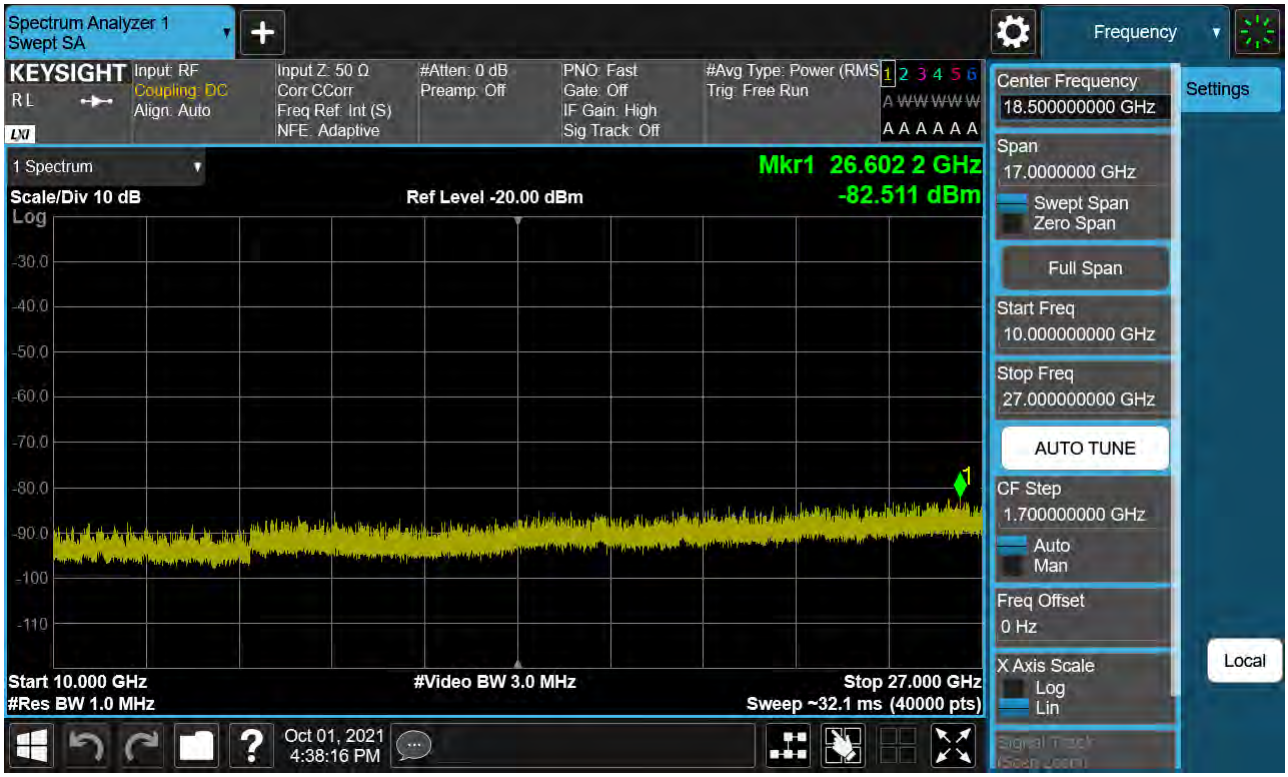
PCC 15 MHz Ch40545 RB1 Offset74, SCC 15 MHz Ch40695 RB1 Offset0

PCC 15 MHz Ch40571 RB75 Offset0, SCC 10 MHz Ch40691 RB50 Offset0



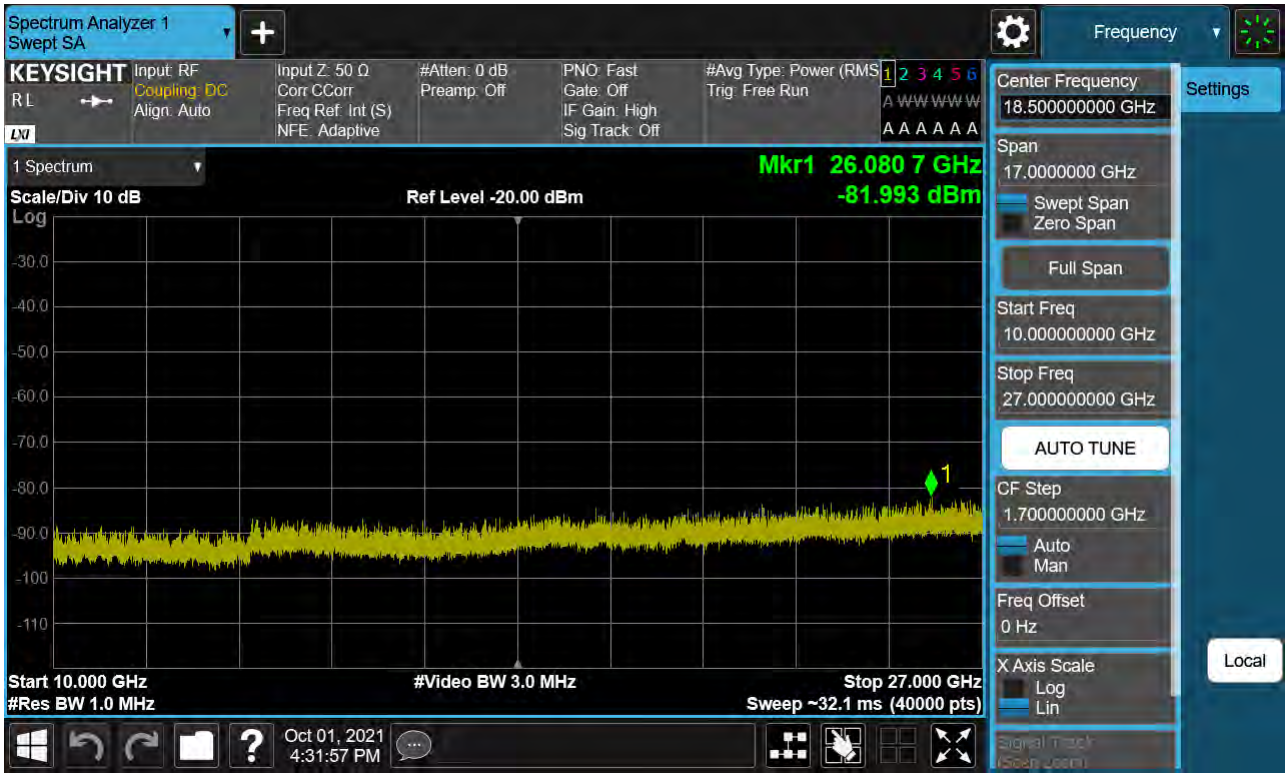
PCC 15 MHz Ch41365 RB1 Offset0, SCC 15 MHz Ch41515 RB1 Offset74

PCC 15 MHz Ch41365 RB1 Offset74, SCC 15 MHz Ch41515 RB1 Offset0

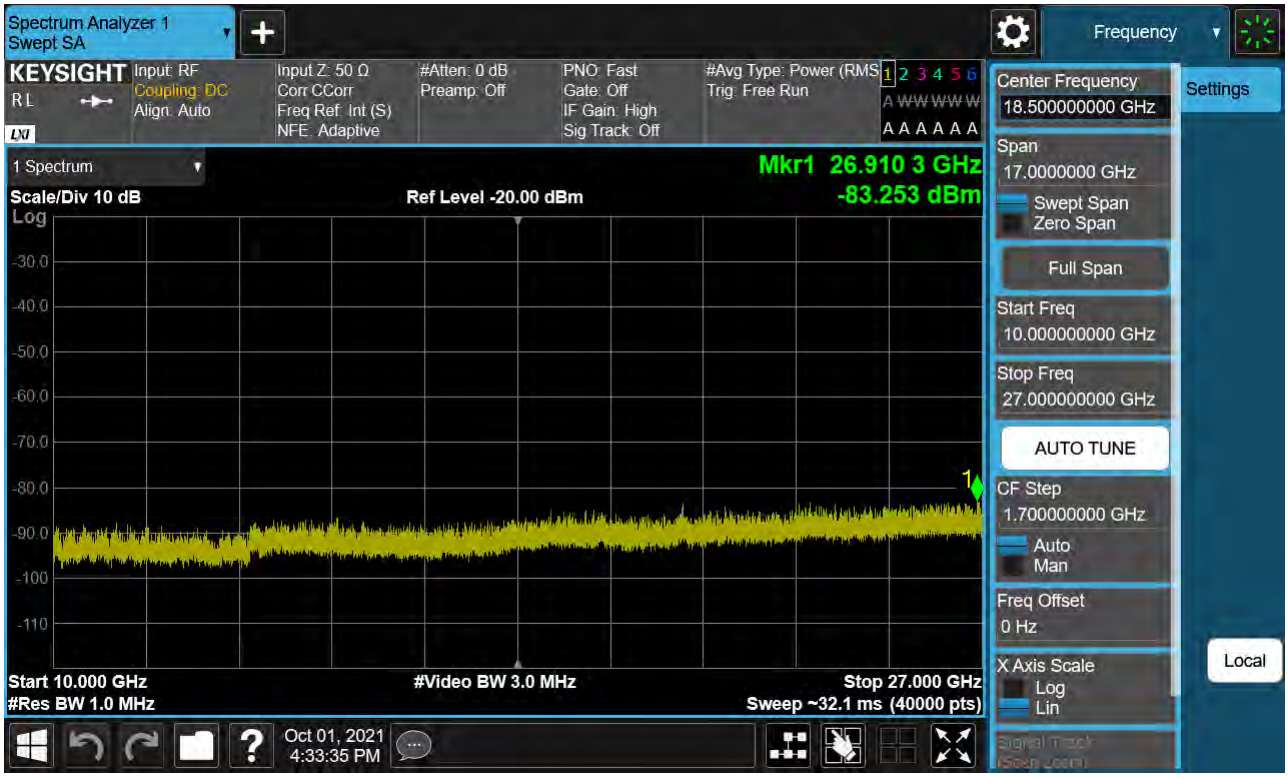


PCC 15 MHz Ch41417 RB75 Offset0, SCC 10 MHz Ch41537 RB50 Offset0

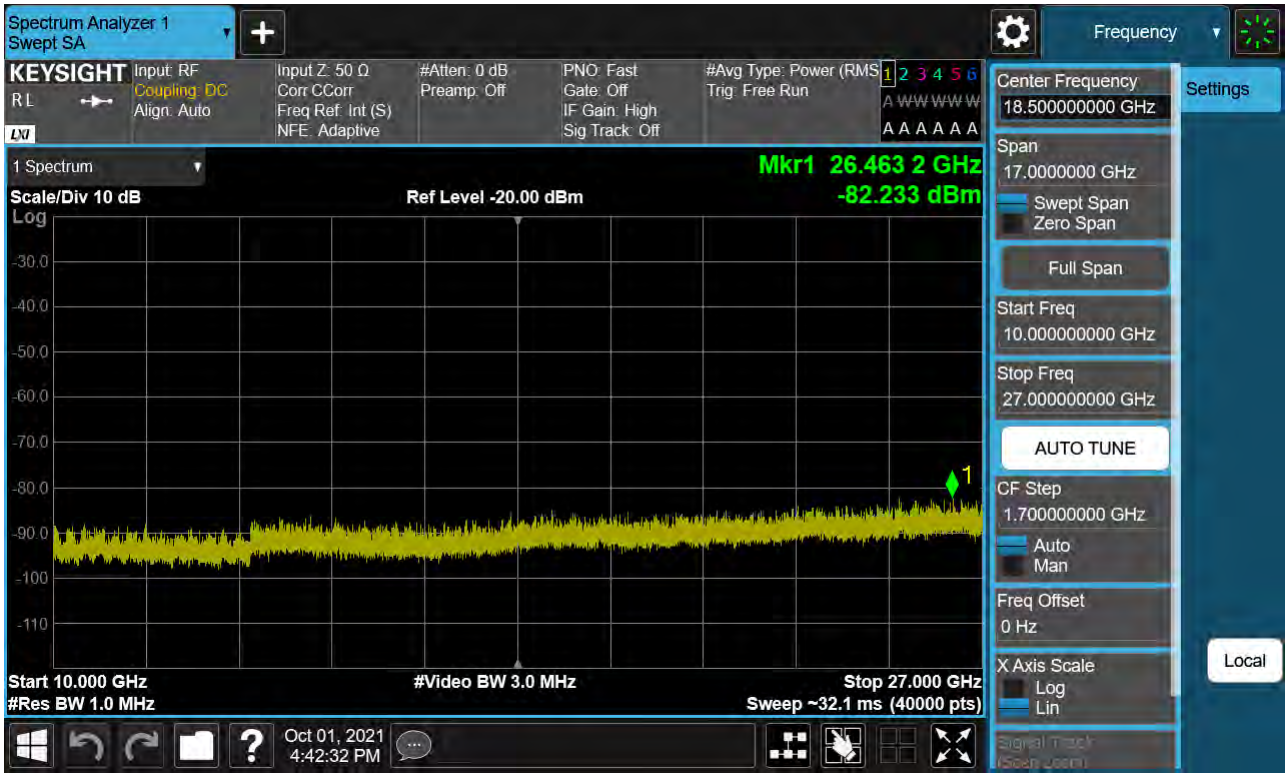
PCC 20 MHz Ch39750 RB100 Offset0, SCC 20 MHz Ch39948 RB100 Offset0



PCC 20 MHz Ch40521 RB100 Offset0, SCC 20 MHz Ch40719 RB100 Offset0



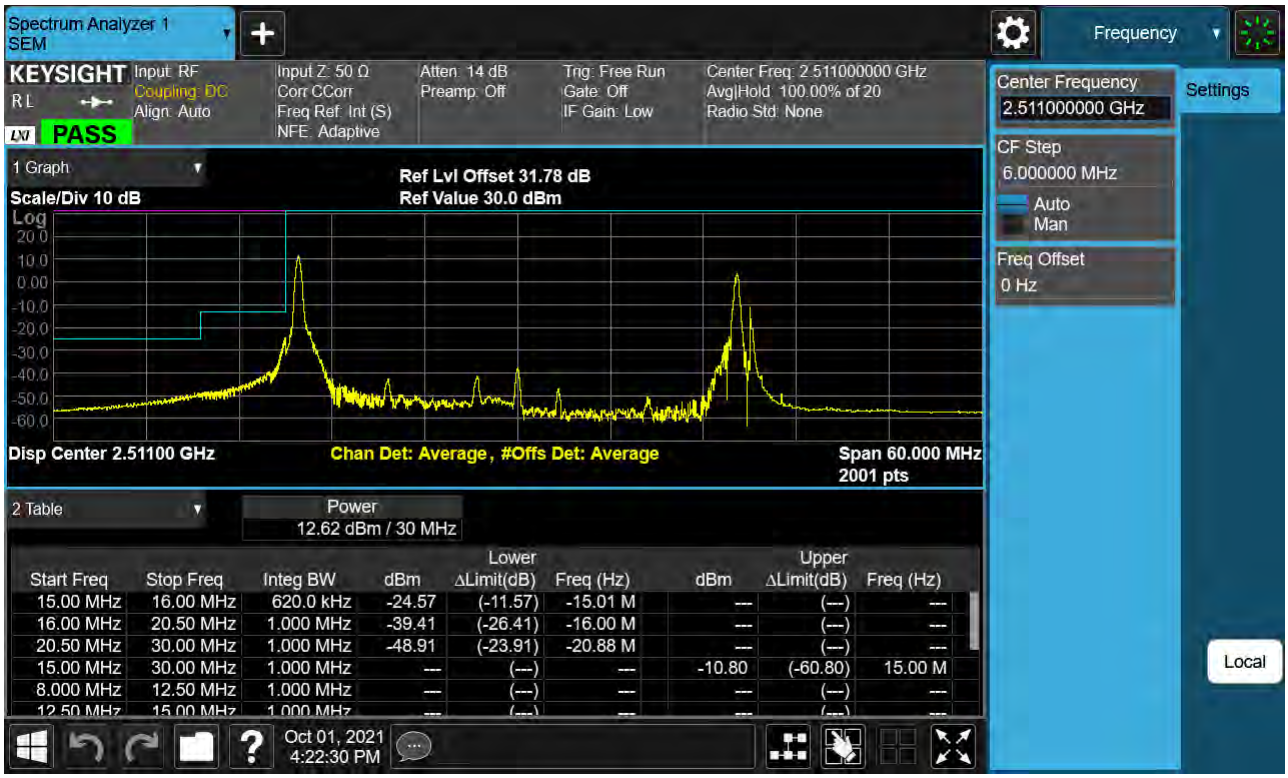
PCC 20 MHz Ch41292 RB100 Offset0, SCC 20 MHz Ch41490 RB100 Offset0



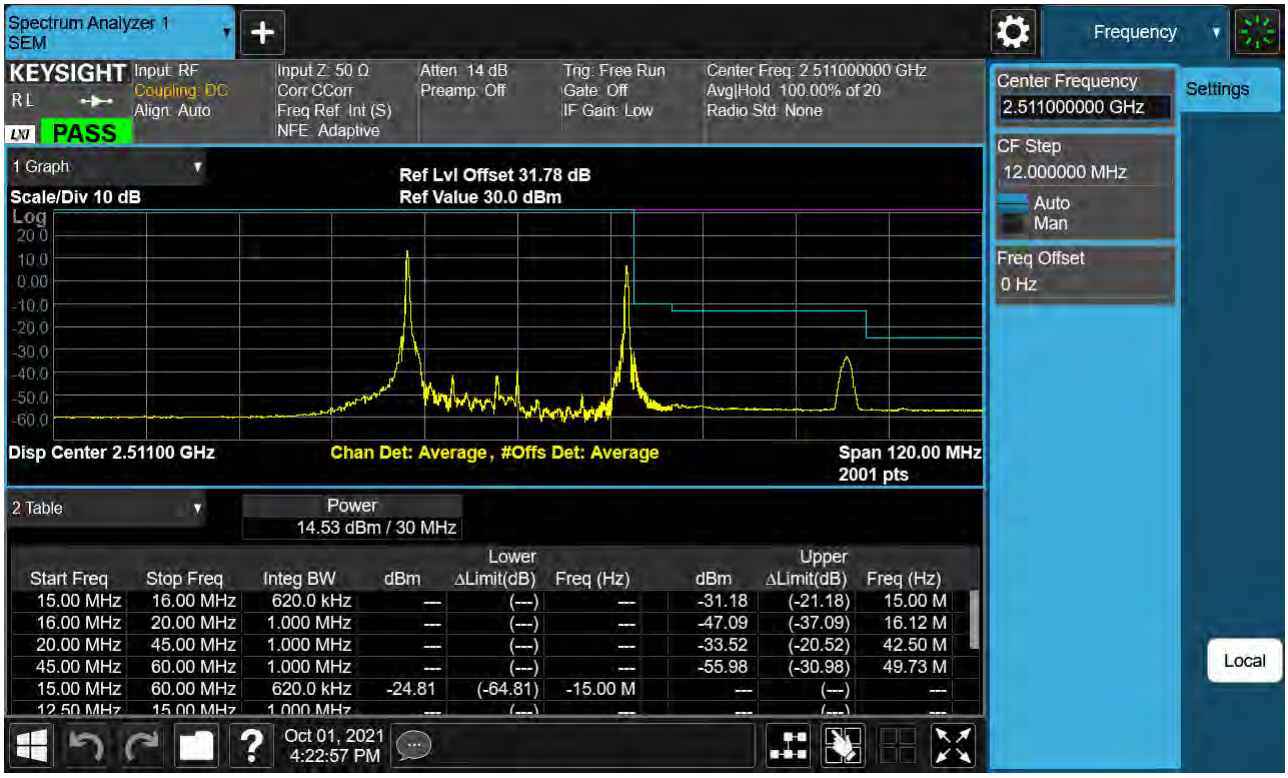
8.4 Channel Edge

8.4.1 PC2

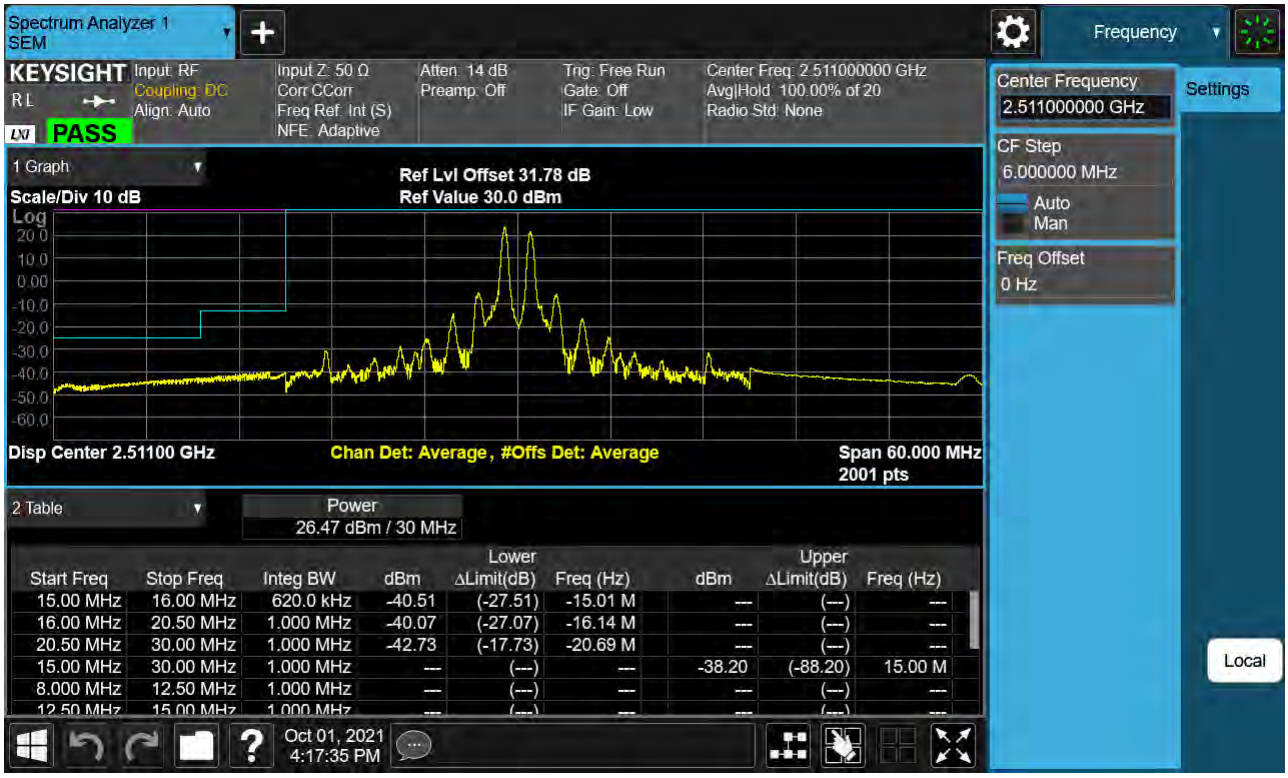
PCC 15 MHz Ch39725 RB1 Offset0, SCC 15 MHz Ch39875 RB1 Offset74-1



PCC 15 MHz Ch39725 RB1 Offset0, SCC 15 MHz Ch39875 RB1 Offset74-2

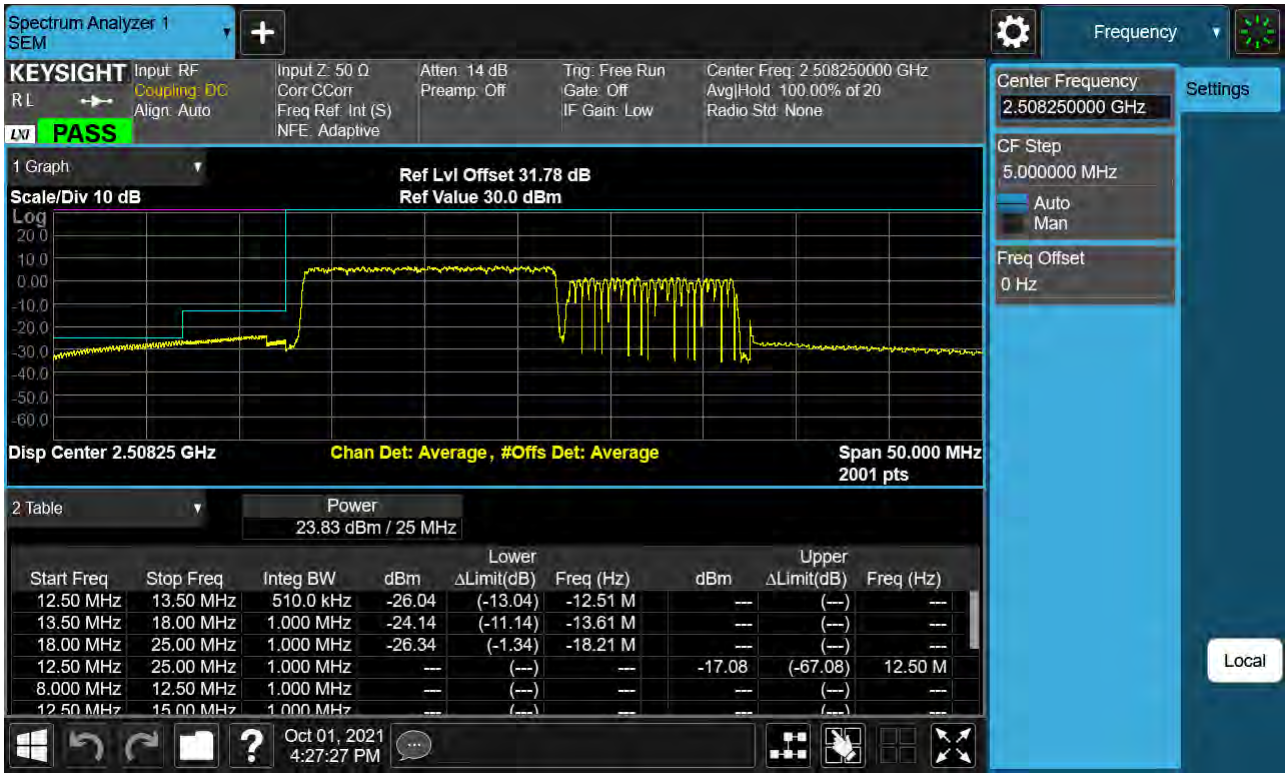


PCC 15 MHz Ch39725 RB1 Offset74, SCC 15 MHz Ch39875 RB1 Offset0-1



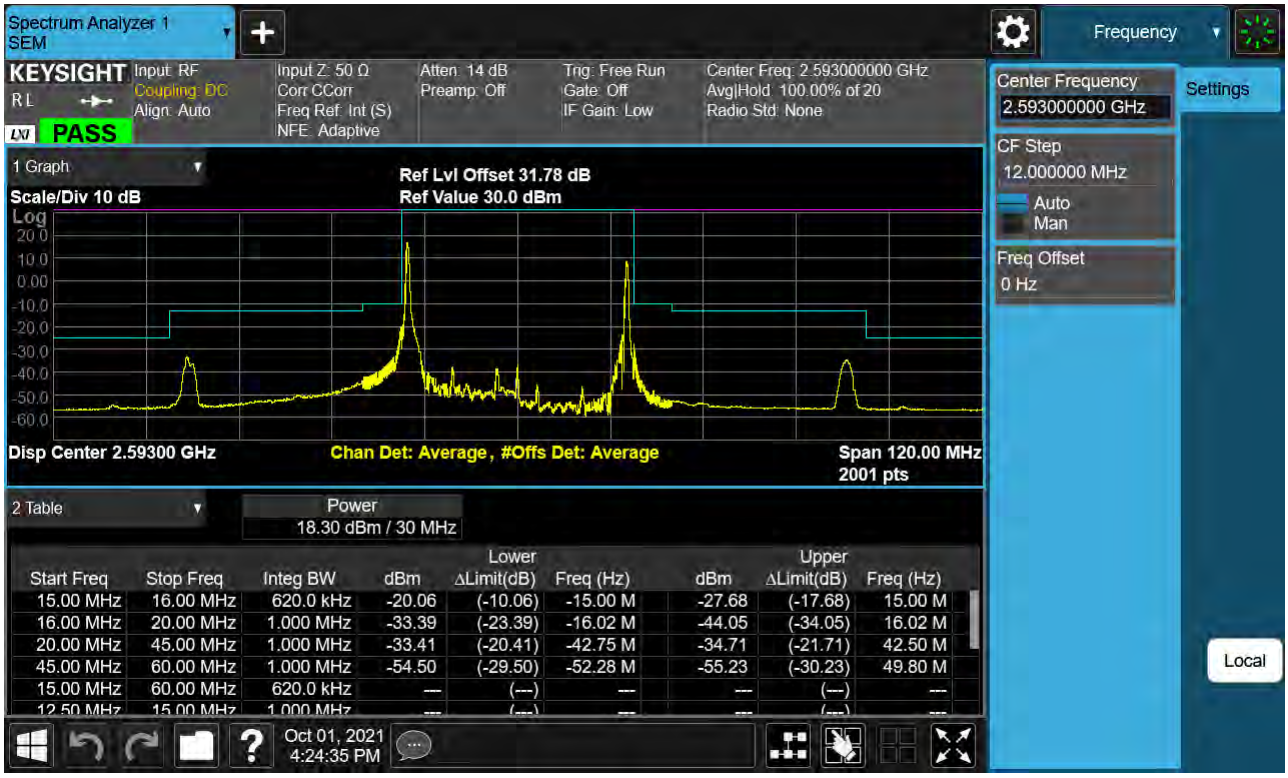
PCC 15 MHz Ch39725 RB1 Offset74, SCC 15 MHz Ch39875 RB1 Offset0-2

PCC 15 MHz Ch39725 RB75 Offset0, SCC 10 MHz Ch39845 RB50 Offset0-1



PCC 15 MHz Ch39725 RB75 Offset0, SCC 10 MHz Ch39845 RB50 Offset0-2

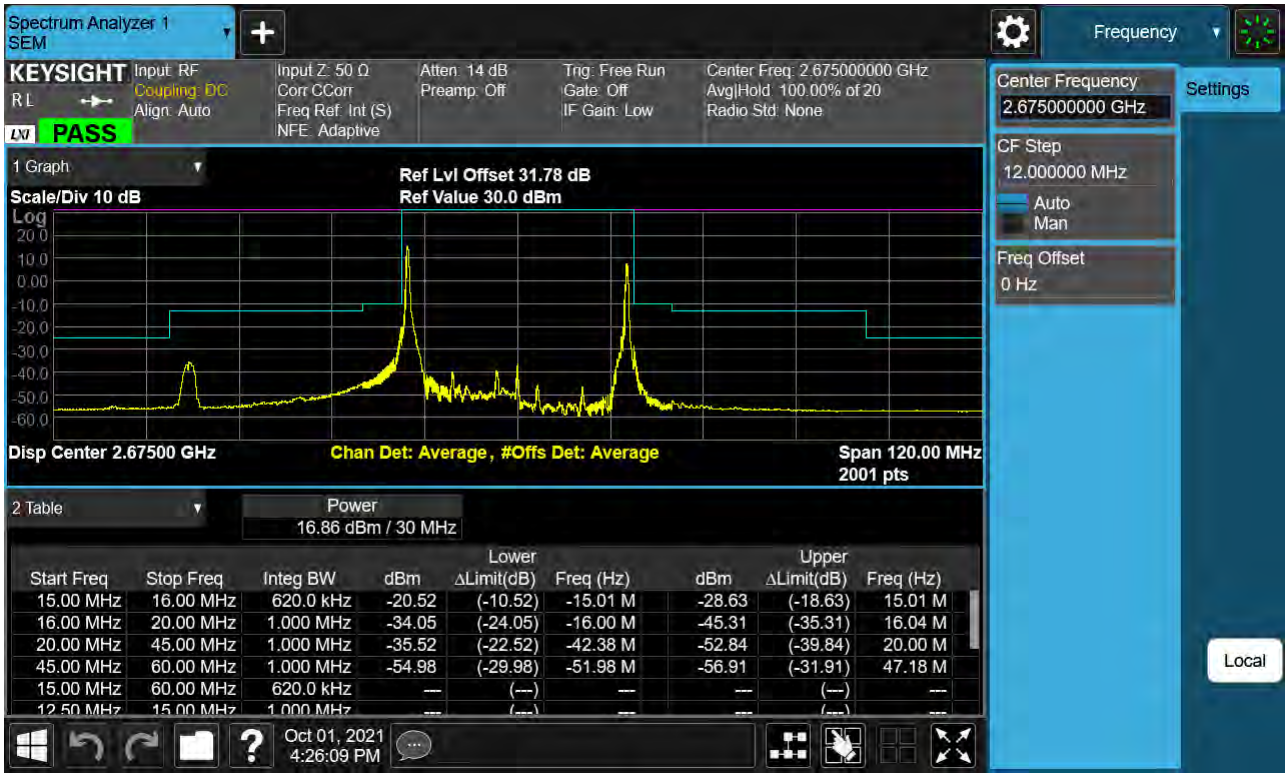
PCC 15 MHz Ch40545 RB1 Offset0, SCC 15 MHz Ch40695 RB1 Offset74



PCC 15 MHz Ch40545 RB1 Offset74, SCC 15 MHz Ch40695 RB1 Offset0

PCC 15 MHz Ch40571 RB75 Offset0, SCC 10 MHz Ch40691 RB50 Offset0

PCC 15 MHz Ch41365 RB1 Offset0, SCC 15 MHz Ch41515 RB1 Offset74



PCC 15 MHz Ch41365 RB1 Offset74, SCC 15 MHz Ch41515 RB1 Offset0

PCC 15 MHz Ch41417 RB75 Offset0, SCC 10 MHz Ch41537 RB50 Offset0

PCC 20 MHz Ch39750 RB100 Offset0, SCC 20 MHz Ch39948 RB100 Offset0

PCC 20 MHz Ch40521 RB100 Offset0, SCC 20 MHz Ch40719 RB100 Offset0

PCC 20 MHz Ch41292 RB100 Offset0, SCC 20 MHz Ch41490 RB100 Offset0

8.5 Frequency Stability / Variation Of Ambient Temperature

8.5.1 PC2

▣ PCC Channel:	39683	
▣ PCC Frequency:	2499.3	MHz
▣ PCC BandWidth:	5	MHz
▣ SCC Channel:	39800	
▣ SCC Frequency:	2511.0	MHz
▣ SCC BandWidth:	20	MHz
▣ Voltage :	3.850	VDC
▣ LIMIT:	Emission must remain in band	

Voltage (%)	Power (VDC)	Temp. (℃)	PPM		Frequency Error (MHz)	
			PCC	SCC	PCC	SCC
100 %	3.850	+20(Ref)	0.025	-0.028	2499.30006	2510.99993
100 %		-30	0.020	0.017	2499.30005	2511.00004
100 %		-20	-0.018	-0.027	2499.29996	2510.99993
100 %		-10	0.018	0.016	2499.30005	2511.00004
100 %		0	0.027	0.029	2499.30007	2511.00007
100 %		10	0.033	-0.022	2499.30008	2510.99994
100 %		30	0.017	0.028	2499.30004	2511.00007
100 %		40	0.030	-0.028	2499.30007	2510.99993
100 %		50	0.035	-0.026	2499.30009	2510.99994
Batt. Endpoint	3.400	20	0.030	-0.020	2499.30007	2510.99995

▣ PCC Channel: 39705
▣ PCC Frequency: 2501.5 MHz
▣ PCC BandWidth: 10 MHz
▣ SCC Channel: 39849
▣ SCC Frequency: 2515.9 MHz
▣ SCC BandWidth: 20 MHz
▣ Voltage : 3.850 VDC
▣ LIMIT: Emission must remain in band

Voltage (%)	Power (VDC)	Temp. (℃)	PPM		Frequency Error (MHz)	
			PCC	SCC	PCC	SCC
100 %	3.850	+20(Ref)	-0.030	-0.017	2501.49992	2515.89996
100 %		-30	0.031	-0.034	2501.50008	2515.89991
100 %		-20	0.016	0.015	2501.50004	2515.90004
100 %		-10	-0.017	0.018	2501.49996	2515.90005
100 %		0	-0.030	0.020	2501.49992	2515.90005
100 %		10	0.025	0.033	2501.50006	2515.90008
100 %		30	-0.035	0.031	2501.49991	2515.90008
100 %		40	-0.017	-0.034	2501.49996	2515.89991
100 %		50	0.021	0.025	2501.50005	2515.90006
Batt. Endpoint	3.400	20	-0.031	0.029	2501.49992	2515.90007

▣ PCC Channel: 39728
▣ PCC Frequency: 2503.8 MHz
▣ PCC BandWidth: 15 MHz
▣ SCC Channel: 39899
▣ SCC Frequency: 2520.9 MHz
▣ SCC BandWidth: 20 MHz
▣ Voltage : 3.850 VDC
▣ LIMIT: Emission must remain in band

Voltage (%)	Power (VDC)	Temp. (℃)	PPM		Frequency Error (MHz)	
			PCC	SCC	PCC	SCC
100 %	3.850	+20(Ref)	0.030	0.034	2503.80007	2520.90009
100 %		-30	-0.018	-0.029	2503.79995	2520.89993
100 %		-20	-0.017	-0.022	2503.79996	2520.89994
100 %		-10	0.025	0.033	2503.80006	2520.90008
100 %		0	0.021	0.015	2503.80005	2520.90004
100 %		10	0.015	0.030	2503.80004	2520.90008
100 %		30	0.019	0.019	2503.80005	2520.90005
100 %		40	0.022	-0.033	2503.80006	2520.89992
100 %		50	0.016	0.025	2503.80004	2520.90006
Batt. Endpoint	3.400	20	-0.030	0.029	2503.79992	2520.90007

▣ PCC Channel: 39750
▣ PCC Frequency: 2506.0 MHz
▣ PCC BandWidth: 20 MHz
▣ SCC Channel: 39948
▣ SCC Frequency: 2525.8 MHz
▣ SCC BandWidth: 20 MHz
▣ Voltage : 3.850 VDC
▣ LIMIT: Emission must remain in band

Voltage (%)	Power (VDC)	Temp. (℃)	PPM		Frequency Error (MHz)	
			PCC	SCC	PCC	SCC
100 %	3.850	+20(Ref)	-0.019	-0.034	2505.99995	2525.79991
100 %		-30	0.022	0.016	2506.00005	2525.80004
100 %		-20	0.018	-0.018	2506.00004	2525.79996
100 %		-10	0.032	-0.029	2506.00008	2525.79993
100 %		0	0.025	0.031	2506.00006	2525.80008
100 %		10	0.015	0.031	2506.00004	2525.80008
100 %		30	0.032	-0.033	2506.00008	2525.79992
100 %		40	0.033	-0.023	2506.00008	2525.79994
100 %		50	-0.024	-0.028	2505.99994	2525.79993
Batt. Endpoint	3.400	20	-0.024	-0.026	2505.99994	2525.79993

▣ PCC Channel: 41373
▣ PCC Frequency: 2668.3 MHz
▣ PCC BandWidth: 5 MHz
▣ SCC Channel: 41490
▣ SCC Frequency: 2680.0 MHz
▣ SCC BandWidth: 20 MHz
▣ Voltage : 3.850 VDC
▣ LIMIT: Emission must remain in band

Voltage (%)	Power (VDC)	Temp. (℃)	PPM		Frequency Error (MHz)	
			PCC	SCC	PCC	SCC
100 %	3.850	+20(Ref)	0.026	0.034	2668.30007	2680.00009
100 %		-30	-0.027	0.025	2668.29993	2680.00007
100 %		-20	-0.019	-0.034	2668.29995	2679.99991
100 %		-10	-0.020	-0.031	2668.29995	2679.99992
100 %		0	0.019	0.023	2668.30005	2680.00006
100 %		10	-0.030	0.022	2668.29992	2680.00006
100 %		30	0.017	-0.025	2668.30005	2679.99993
100 %		40	0.018	-0.017	2668.30005	2679.99995
100 %		50	0.031	0.035	2668.30008	2680.00009
Batt. Endpoint	3.400	20	0.028	-0.016	2668.30007	2679.99996

▣ PCC Channel: 41346
▣ PCC Frequency: 2665.6 MHz
▣ PCC BandWidth: 10 MHz
▣ SCC Channel: 41490
▣ SCC Frequency: 2680.0 MHz
▣ SCC BandWidth: 20 MHz
▣ Voltage : 3.850 VDC
▣ LIMIT: Emission must remain in band

Voltage (%)	Power (VDC)	Temp. (℃)	PPM		Frequency Error (MHz)	
			PCC	SCC	PCC	SCC
100 %	3.850	+20(Ref)	-0.024	0.015	2665.59994	2680.00004
100 %		-30	0.032	-0.020	2665.60008	2679.99995
100 %		-20	0.016	0.026	2665.60004	2680.00007
100 %		-10	0.022	0.026	2665.60006	2680.00007
100 %		0	0.021	-0.028	2665.60005	2679.99992
100 %		10	0.018	0.020	2665.60005	2680.00005
100 %		30	0.027	0.016	2665.60007	2680.00004
100 %		40	0.021	0.030	2665.60006	2680.00008
100 %		50	0.017	0.016	2665.60005	2680.00004
Batt. Endpoint	3.400	20	0.034	0.016	2665.60009	2680.00004

▣ PCC Channel: 41319
▣ PCC Frequency: 2662.9 MHz
▣ PCC BandWidth: 15 MHz
▣ SCC Channel: 41490
▣ SCC Frequency: 2680.0 MHz
▣ SCC BandWidth: 20 MHz
▣ Voltage : 3.850 VDC
▣ LIMIT: Emission must remain in band

Voltage (%)	Power (VDC)	Temp. (℃)	PPM		Frequency Error (MHz)	
			PCC	SCC	PCC	SCC
100 %	3.850	+20(Ref)	-0.028	0.021	2662.89993	2680.00006
100 %		-30	0.029	0.028	2662.90008	2680.00008
100 %		-20	-0.015	-0.022	2662.89996	2679.99994
100 %		-10	-0.034	0.027	2662.89991	2680.00007
100 %		0	0.024	0.021	2662.90006	2680.00006
100 %		10	0.033	0.017	2662.90009	2680.00004
100 %		30	0.030	0.023	2662.90008	2680.00006
100 %		40	0.035	0.025	2662.90009	2680.00007
100 %		50	0.033	0.029	2662.90009	2680.00008
Batt. Endpoint	3.400	20	-0.020	0.015	2662.89995	2680.00004

▣ PCC Channel: 41292
▣ PCC Frequency: 2660.2 MHz
▣ PCC BandWidth: 20 MHz
▣ SCC Channel: 41490
▣ SCC Frequency: 2680.0 MHz
▣ SCC BandWidth: 20 MHz
▣ Voltage : 3.850 MHz
▣ LIMIT: Emission must remain in band

Voltage (%)	Power (VDC)	Temp. (℃)	PPM		Frequency Error (MHz)	
			PCC	SCC	PCC	SCC
100 %	3.850	+20(Ref)	0.022	0.020	2660.20006	2680.00005
100 %		-30	0.023	-0.023	2660.20006	2679.99994
100 %		-20	-0.025	0.024	2660.19993	2680.00006
100 %		-10	0.026	0.030	2660.20007	2680.00008
100 %		0	-0.031	-0.031	2660.19992	2679.99992
100 %		10	0.020	-0.029	2660.20005	2679.99992
100 %		30	0.033	-0.028	2660.20009	2679.99993
100 %		40	0.029	0.031	2660.20008	2680.00008
100 %		50	-0.024	0.017	2660.19994	2680.00005
Batt. Endpoint	3.400	20	0.018	0.030	2660.20005	2680.00008

8.6 Radiated Spurious Emissions

8.6.1 PC2

▣ PCC Channel : 39750 (2506.0 MHz)

▣ PCC BW(MHz) : 20

▣ PCC RB/ RB Offset : 1/ 99

▣ SCC Channel : 39894 (2520.4 MHz)

▣ SCC BW(MHz) : 10

▣ SCC RB/ RB Offset : 1/ 0

▣ DISTANCE: 1 meters

▣ LIMIT: -25.0 dBm

Freq.(MHz)	Measured Level [dBm]	Ant. Gain (dBi)	Substitute Level [dBm]	C.L	Pol.	Result (dBm)
5 012.00	-42.27	12.58	-52.02	3.59	V	-43.03
7 518.00	-44.74	10.84	-45.30	4.46	V	-38.92
10 024.00	-44.48	11.25	-40.09	5.28	V	-34.12

▣ PCC Channel : 40528 (2583.8 MHz)

▣ PCC BW(MHz) : 5

▣ PCC RB/ RB Offset : 1/ 24

▣ SCC Channel : 40645 (2595.5 MHz)

▣ SCC BW(MHz) : 20

▣ SCC RB/ RB Offset : 1/ 0

▣ DISTANCE: 1 meters

▣ LIMIT: -25.0 dBm

Freq.(MHz)	Measured Level [dBm]	Ant. Gain (dBi)	Substitute Level [dBm]	C.L	Pol.	Result (dBm)
5 167.60	-44.06	12.38	-52.01	3.67	H	-43.30
7 751.40	-44.67	11.40	-45.65	4.50	H	-38.75
10 335.20	-44.28	11.43	-39.15	5.38	V	-33.10
12 919.00	-53.36	12.80	-46.78	6.11	H	-40.09

▣ PCC Channel : 41365 (2667.5 MHz)

▣ PCC BW(MHz) : 15

▣ PCC RB/ RB Offset : 1/ 74

▣ SCC Channel : 41515 (2682.5 MHz)

▣ SCC BW(MHz) : 15

▣ SCC RB/ RB Offset : 1/ 0

▣ DISTANCE: 1 meters

▣ LIMIT: -25.0 dBm

Freq.(MHz)	Measured Level [dBm]	Ant. Gain (dBi)	Substitute Level [dBm]	C.L	Pol.	Result (dBm)
5 335.00	-47.07	13.00	-56.88	3.74	H	-47.61
8 002.50	-49.16	10.90	-47.69	4.60	H	-41.39
10 670.00	-48.77	11.24	-44.16	5.54	V	-38.46
13 337.50	-55.23	12.72	-47.51	6.15	V	-40.94

8.7 Occupied Bandwidth

8.7.1 PC2

PCC					SCC					Data (MHz)
BW [MHz]	Ch	Freq [MHz]	Mod	RB/ Offset	BW [MHz]	Ch	Freq [MHz]	Mod	RB/ Offset	
5	40528	2583.8	QPSK	25/ 0	20	40645	2595.5	QPSK	100/ 0	22.845
10	40549	2585.9	QPSK	50/ 0	15	40669	2597.9	QPSK	75/ 0	23.107
10	40526	2583.6	QPSK	50/ 0	20	40670	2598.0	QPSK	100/ 0	27.749
15	40571	2588.1	QPSK	75/ 0	10	40691	2600.1	QPSK	50/ 0	23.043
15	40545	2585.5	QPSK	75/ 0	15	40695	2600.5	QPSK	75/ 0	28.267
15	40523	2583.3	QPSK	75/ 0	20	40694	2600.4	QPSK	100/ 0	32.552
20	40595	2590.5	QPSK	100/ 0	5	40712	2602.2	QPSK	25/ 0	22.957
20	40571	2588.1	QPSK	100/ 0	10	40715	2602.5	QPSK	50/ 0	27.785
20	40546	2585.6	QPSK	100/ 0	15	40717	2602.7	QPSK	75/ 0	32.578
20	40521	2583.1	QPSK	100/ 0	20	40719	2602.9	QPSK	100/ 0	37.577

PCC					SCC					Data (MHz)
BW [MHz]	Ch	Freq [MHz]	Mod	RB/ Offset	BW [MHz]	Ch	Freq [MHz]	Mod	RB/ Offset	
5	40528	2583.8	16QAM	25/ 0	20	40645	2595.5	16QAM	100/ 0	22.716
10	40549	2585.9	16QAM	50/ 0	15	40669	2597.9	16QAM	75/ 0	23.075
10	40526	2583.6	16QAM	50/ 0	20	40670	2598.0	16QAM	100/ 0	27.649
15	40571	2588.1	16QAM	75/ 0	10	40691	2600.1	16QAM	50/ 0	23.113
15	40545	2585.5	16QAM	75/ 0	15	40695	2600.5	16QAM	75/ 0	28.341
15	40523	2583.3	16QAM	75/ 0	20	40694	2600.4	16QAM	100/ 0	32.610
20	40595	2590.5	16QAM	100/ 0	5	40712	2602.2	16QAM	25/ 0	22.853
20	40571	2588.1	16QAM	100/ 0	10	40715	2602.5	16QAM	50/ 0	27.780
20	40546	2585.6	16QAM	100/ 0	15	40717	2602.7	16QAM	75/ 0	32.555
20	40521	2583.1	16QAM	100/ 0	20	40719	2602.9	16QAM	100/ 0	37.477

PCC					SCC					Data (MHz)
BW [MHz]	Ch	Freq [MHz]	Mod	RB/ Offset	BW [MHz]	Ch	Freq [MHz]	Mod	RB/ Offset	
5	40528	2583.8	64QAM	25/ 0	20	40645	2595.5	64QAM	100/ 0	22.796
10	40549	2585.9	64QAM	50/ 0	15	40669	2597.9	64QAM	75/ 0	22.987
10	40526	2583.6	64QAM	50/ 0	20	40670	2598.0	64QAM	100/ 0	27.709
15	40571	2588.1	64QAM	75/ 0	10	40691	2600.1	64QAM	50/ 0	23.046
15	40545	2585.5	64QAM	75/ 0	15	40695	2600.5	64QAM	75/ 0	28.325
15	40523	2583.3	64QAM	75/ 0	20	40694	2600.4	64QAM	100/ 0	32.615
20	40595	2590.5	64QAM	100/ 0	5	40712	2602.2	64QAM	25/ 0	22.865
20	40571	2588.1	64QAM	100/ 0	10	40715	2602.5	64QAM	50/ 0	27.680
20	40546	2585.6	64QAM	100/ 0	15	40717	2602.7	64QAM	75/ 0	32.547
20	40521	2583.1	64QAM	100/ 0	20	40719	2602.9	64QAM	100/ 0	37.512

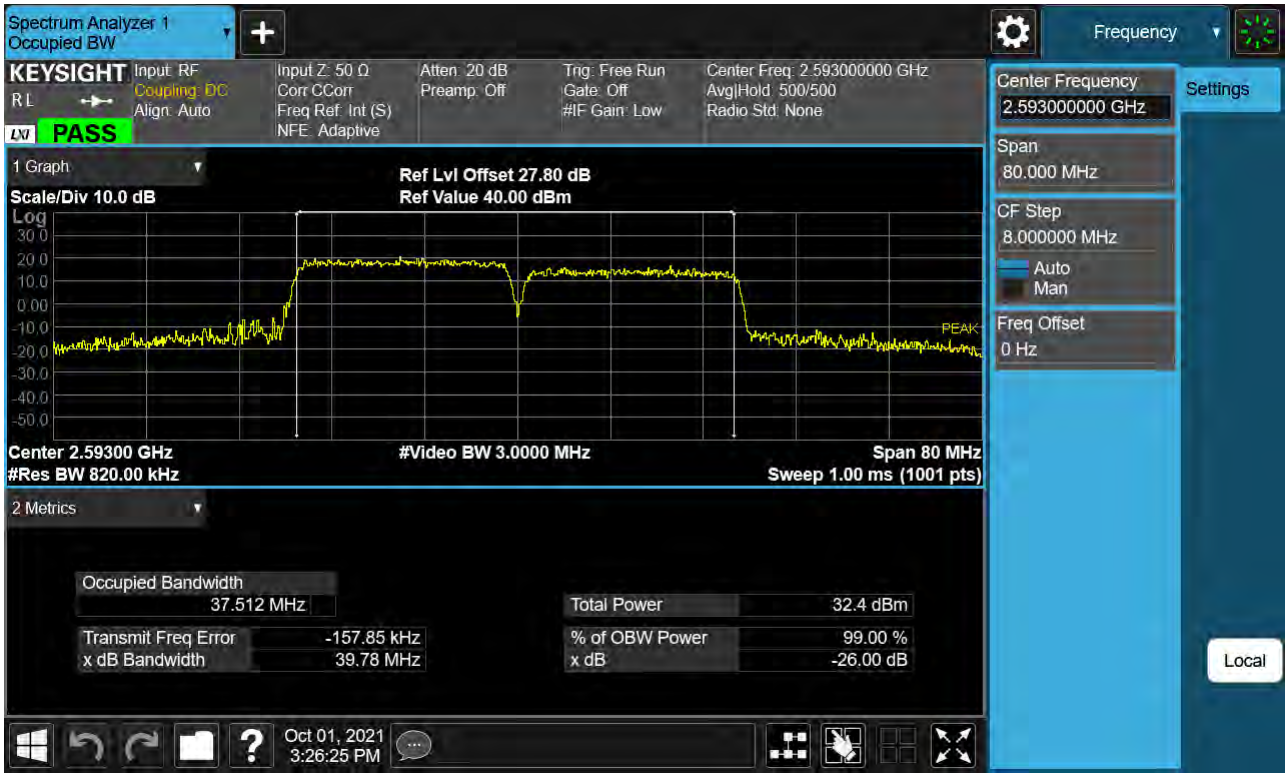
Note:

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

PCC 20 MHz Ch40521 RB100 Offset0, SCC 20 MHz Ch40719 RB100 Offset0_(QPSK)

PCC 20 MHz Ch40521 RB100 Offset0, SCC 20 MHz Ch40719 RB100 Offset0_(16QAM)

PCC 20 MHz Ch40521 RB100 Offset0, SCC 20 MHz Ch40719 RB100 Offset0_(64QAM)



8.8 Peak- to- Average Ratio

8.8.1 PC2

PCC					SCC					Data (dBm)
BW [MHz]	Ch	Freq [MHz]	Mod	RB/ Offset	BW [MHz]	Ch	Freq [MHz]	Mod	RB/ Offset	
5	40528	2583.8	QPSK	25/ 0	20	40645	2595.5	QPSK	100/ 0	5.77
10	40549	2585.9	QPSK	50/ 0	15	40669	2597.9	QPSK	75/ 0	5.70
10	40526	2583.6	QPSK	50/ 0	20	40670	2598.0	QPSK	100/ 0	5.62
15	40571	2588.1	QPSK	75/ 0	10	40691	2600.1	QPSK	50/ 0	5.30
15	40545	2585.5	QPSK	75/ 0	15	40695	2600.5	QPSK	75/ 0	6.36
15	40523	2583.3	QPSK	75/ 0	20	40694	2600.4	QPSK	100/ 0	5.69
20	40595	2590.5	QPSK	100/ 0	5	40712	2602.2	QPSK	25/ 0	5.78
20	40571	2588.1	QPSK	100/ 0	10	40715	2602.5	QPSK	50/ 0	5.64
20	40546	2585.6	QPSK	100/ 0	15	40717	2602.7	QPSK	75/ 0	5.66
20	40521	2583.1	QPSK	100/ 0	20	40719	2602.9	QPSK	100/ 0	6.46

PCC					SCC					Data (dBm)
BW [MHz]	Ch	Freq [MHz]	Mod	RB/ Offset	BW [MHz]	Ch	Freq [MHz]	Mod	RB/ Offset	
5	40528	2583.8	16QAM	25/ 0	20	40645	2595.5	16QAM	100/ 0	6.48
10	40549	2585.9	16QAM	50/ 0	15	40669	2597.9	16QAM	75/ 0	6.44
10	40526	2583.6	16QAM	50/ 0	20	40670	2598.0	16QAM	100/ 0	6.42
15	40571	2588.1	16QAM	75/ 0	10	40691	2600.1	16QAM	50/ 0	6.47
15	40545	2585.5	16QAM	75/ 0	15	40695	2600.5	16QAM	75/ 0	7.06
15	40523	2583.3	16QAM	75/ 0	20	40694	2600.4	16QAM	100/ 0	6.35
20	40595	2590.5	16QAM	100/ 0	5	40712	2602.2	16QAM	25/ 0	6.50
20	40571	2588.1	16QAM	100/ 0	10	40715	2602.5	16QAM	50/ 0	6.42
20	40546	2585.6	16QAM	100/ 0	15	40717	2602.7	16QAM	75/ 0	6.44
20	40521	2583.1	16QAM	100/ 0	20	40719	2602.9	16QAM	100/ 0	7.17

PCC					SCC					Data (dBm)
BW [MHz]	Ch	Freq [MHz]	Mod	RB/ Offset	BW [MHz]	Ch	Freq [MHz]	Mod	RB/ Offset	
5	40528	2583.8	64QAM	25/ 0	20	40645	2595.5	64QAM	100/ 0	6.49
10	40549	2585.9	64QAM	50/ 0	15	40669	2597.9	64QAM	75/ 0	6.48
10	40526	2583.6	64QAM	50/ 0	20	40670	2598.0	64QAM	100/ 0	6.47
15	40571	2588.1	64QAM	75/ 0	10	40691	2600.1	64QAM	50/ 0	6.45
15	40545	2585.5	64QAM	75/ 0	15	40695	2600.5	64QAM	75/ 0	7.24
15	40523	2583.3	64QAM	75/ 0	20	40694	2600.4	64QAM	100/ 0	6.51
20	40595	2590.5	64QAM	100/ 0	5	40712	2602.2	64QAM	25/ 0	6.62
20	40571	2588.1	64QAM	100/ 0	10	40715	2602.5	64QAM	50/ 0	6.47
20	40546	2585.6	64QAM	100/ 0	15	40717	2602.7	64QAM	75/ 0	6.48
20	40521	2583.1	64QAM	100/ 0	20	40719	2602.9	64QAM	100/ 0	7.28

Note:

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

PCC 20 MHz Ch40521 RB100 Offset0, SCC 20 MHz Ch40719 RB100 Offset0_(QPSK)

PCC 20 MHz Ch40521 RB100 Offset0, SCC 20 MHz Ch40719 RB100 Offset0_(16QAM)

PCC 20 MHz Ch40521 RB100 Offset0, SCC 20 MHz Ch40719 RB100 Offset0_(64QAM)

9. ANNEX A_ TEST SETUP PHOTO

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

No.	Description
1	HCT-RF-2110-FC019-P