TEST REPORT

FCC CA_41C Test for SM-F741U
Certification

APPLICANT
SAMSUNG Electronics Co., Ltd.

REPORT NO.
HCT-RF-2404-FC037-R1

DATE OF ISSUE
May 3, 2024

Tested by
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TEST REPORT

REPORT NO.
HCT-RF-2404-FC037-R1

DATE OF ISSUE
May 03, 2024

Additional Model
SM-F741U1

Applicant	**SAMSUNG Electronics Co., Ltd.** 129, Samsung-ro, Yeongtong-gu, Suwon-si, Gyeonggi-do, 16677, Rep. of Korea
Product Name Model Name	Mobile Phone SM-F741U
Date of Test	February 22, 2024 ~ April 24, 2024
FCC ID	A3LSMF741U
Location of Test	■ Permanent Testing Lab ☐ On Site Testing (Address: 74, Seoicheon-ro 578beon-gil, Majang-myeon, Icheon-si, Gyeonggi-do, 17383 Republic of Korea)
FCC Classification:	PCS Licensed Transmitter Held to Ear (PCE)
FCC Rule Part(s):	§ 27

REVISION HISTORY

The revision history for this test report is shown in table.

Revision No.	Date of Issue	Description
0	April 26, 2024	Initial Release
1	May 03, 2024	- Revised the Sub5 Ant EIRP result.(page 100~102)

Notice

Content
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)
The results shown in this test report only apply to the sample(s), as received, provided by the applicant, unless otherwise stated. The test results have only been applied with the test methods required by the standard(s).
When confirmation of authenticity of this test report is required, please contact www.hct.co.kr
The test results in this test report are not associated with the ((KS Q) ISO/IEC 17025) accreditation by KOLAS (Korea Laboratory Accreditation Scheme) / A2LA (American Association for Laboratory Accreditation) that are under the ILAC (International Laboratory Accreditation Cooperation) Mutual Recognition Agreement (MRA).

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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:	A3LSMF741U
Application Type:	Certification
FCC Classification:	PCS Licensed Transmitter Held to Ear (PCE)
FCC Rule Part(s):	§ 27
EUT Type:	Mobile phone
Model(s):	SM-F741U
Additional Model(s)	SM-F741U1
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:	February 22, 2024 ~ April 24, 2024
Serial number:	Radiated : R3CX30HJ3RM (Main 2 Ant) R3CX30BD5WZ (Sub 5 Ant) Conducted : R3CX30HJ3JZ (Main 2 Ant) R3CX30BD59Y (Sub 5 Ant)
LTE CA :	CA 41C (Uplink)

1.1. MAXIMUM OUTPUT POWER

Main 2 Ant

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	23.06	0.202
		16QAM	22M8W7D	22.63	0.183
		64QAM	22M9W7D	20.22	0.105
		256QAM	22M9W7D	18.98	0.079
10 MHz + 15 MHz (PC2)	2501.3 - 2682.5	QPSK	23M2G7D	22.80	0.191
		16QAM	23M1W7D	22.03	0.160
		64QAM	23M2W7D	19.82	0.096
		256QAM	23M0W7D	18.33	0.068
10 MHz + 20 MHz (PC2)	2501.5 - 2680.0	QPSK	27M8G7D	22.55	0.180
		16QAM	27M7W7D	22.10	0.162
		64QAM	27M7W7D	19.81	0.096
		256QAM	27M8W7D	18.48	0.070
15 MHz + 10 MHz (PC2)	2503.5 - 2684.7	QPSK	23M1G7D	22.59	0.182
		16QAM	23M1W7D	22.02	0.159
		64QAM	23M1W7D	20.34	0.108
		256QAM	23M2W7D	18.37	0.069
15 MHz + 15 MHz (PC2)	2503.5 - 2682.5	QPSK	28M3G7D	22.77	0.189
		16QAM	28M4W7D	22.24	0.167
		64QAM	28M3W7D	20.28	0.107
		256QAM	28M4W7D	18.63	0.073
15 MHz + 20 MHz (PC2)	2503.8 - 2680.0	QPSK	32M5G7D	22.67	0.185
		16QAM	32M6W7D	22.01	0.159
		64QAM	32M7W7D	19.78	0.095
		256QAM	32M7W7D	18.30	0.068
20 MHz + 5 MHz (PC2)	2506.0 - 2686.7	QPSK	23M0G7D	22.65	0.184
		16QAM	22M9W7D	21.95	0.157
		64QAM	22M9W7D	20.86	0.122
		256QAM	22M9W7D	18.34	0.068
20 MHz + 10 MHz (PC2)	2506.0 - 2684.5	QPSK	27M7G7D	22.72	0.187
		16QAM	27M8W7D	22.05	0.160
		64QAM	27M7W7D	20.61	0.115
		256QAM	27M8W7D	18.38	0.069
20 MHz + 15 MHz (PC2)	2506.0 - 2682.2	QPSK	32M7G7D	22.97	0.198
		16QAM	32M6W7D	22.06	0.161
		64QAM	32M7W7D	20.45	0.111
		256QAM	32M6W7D	18.47	0.070
20 MHz + 20 MHz (PC2)	2506.0 - 2680.0	QPSK	37M6G7D	23.01	0.200
		16QAM	37M5W7D	22.25	0.168
		64QAM	37M6W7D	21.33	0.136
		256QAM	37M5W7D	18.64	0.073

Sub 5 Ant

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	22M8G7D	25.61	0.364
		16QAM	22M9W7D	24.57	0.286
		64QAM	22M8W7D	24.11	0.258
		256QAM	22M9W7D	21.07	0.128
10 MHz + 15 MHz (PC2)	2501.3 - 2682.5	QPSK	23M1G7D	25.21	0.332
		16QAM	23M1W7D	24.22	0.264
		64QAM	23M1W7D	23.69	0.234
		256QAM	23M2W7D	20.59	0.115
10 MHz + 20 MHz (PC2)	2501.5 - 2680.0	QPSK	27M8G7D	25.31	0.340
		16QAM	27M7W7D	24.18	0.262
		64QAM	27M8W7D	23.77	0.238
		256QAM	27M7W7D	20.72	0.118
15 MHz + 10 MHz (PC2)	2503.5 - 2684.7	QPSK	23M1G7D	25.24	0.334
		16QAM	23M2W7D	24.29	0.269
		64QAM	23M2W7D	23.83	0.242
		256QAM	23M1W7D	20.69	0.117
15 MHz + 15 MHz (PC2)	2503.5 - 2682.5	QPSK	28M4G7D	25.56	0.360
		16QAM	28M4W7D	24.44	0.278
		64QAM	28M3W7D	23.95	0.248
		256QAM	28M4W7D	20.98	0.125
15 MHz + 20 MHz (PC2)	2503.8 - 2680.0	QPSK	32M7G7D	25.17	0.329
		16QAM	32M7W7D	24.09	0.256
		64QAM	32M8W7D	23.61	0.230
		256QAM	32M7W7D	20.63	0.116
20 MHz + 5 MHz (PC2)	2506.0 - 2686.7	QPSK	22M9G7D	25.23	0.333
		16QAM	22M9W7D	24.17	0.261
		64QAM	22M9W7D	23.73	0.236
		256QAM	22M9W7D	20.59	0.115
20 MHz + 10 MHz (PC2)	2506.0 - 2684.5	QPSK	27M8G7D	25.34	0.342
		16QAM	27M8W7D	24.34	0.272
		64QAM	27M8W7D	23.90	0.245
		256QAM	27M8W7D	20.77	0.119
20 MHz + 15 MHz (PC2)	2506.0 - 2682.2	QPSK	32M7G7D	25.29	0.338
		16QAM	32M7W7D	24.32	0.270
		64QAM	32M6W7D	23.96	0.249
		256QAM	32M6W7D	20.86	0.122
20 MHz + 20 MHz (PC2)	2506.0 - 2680.0	QPSK	37M7G7D	25.44	0.350
		16QAM	37M6W7D	24.51	0.282
		64QAM	37M6W7D	24.02	0.252
		256QAM	37M4W7D	20.95	0.124

2. INTRODUCTION

2.1. DESCRIPTION OF EUT

The EUT was a Mobile Phone with GSM/GPRS/EGPRS/UMTS and LTE, Sub 6, mmWave.
It also supports IEEE 802.11 a/b/g/n/ac/ax (20/40/80/160 MHz), Bluetooth(iPA, ePA), BT LE(iPA, ePA), NFC, WPT, WIFI 6E.

2.2. MEASURING INSTRUMENT CALIBRATION

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

2.3. TEST FACILITY

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

3. DESCRIPTION OF TESTS

3.1 TEST PROCEDURE

Test Description	Test Procedure Used
Occupied Bandwidth	- KDB 971168 D01 v03r01 – Section 4.3 - ANSI C63.26-2015 – Section 5.4.4
Channel Edge	- KDB 971168 D01 v03r01 – Section 6.0 - ANSI C63.26-2015 – Section 5.7
Spurious and Harmonic Emissions at Antenna Terminal	- KDB 971168 D01 v03r01 – Section 6.0 - ANSI C63.26-2015 – Section 5.7
Conducted Output Power	- 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
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;

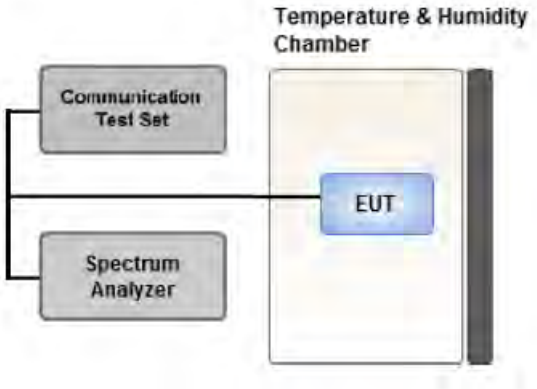
$$\text{Result}_{(dBm)} = \text{Pg}_{(dBm)} - \text{cable loss}_{(dB)} + \text{antenna gain}_{(dBi)}$$

   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)

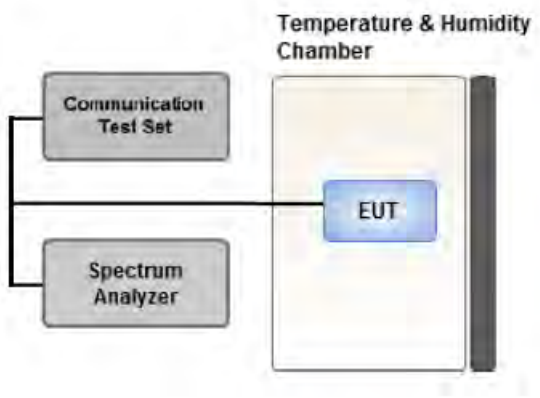
The measurement instrument must have a RBW that is greater than or equal to the OBW of the signal to be measured and a VBW ≥ 3 × RBW.

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.



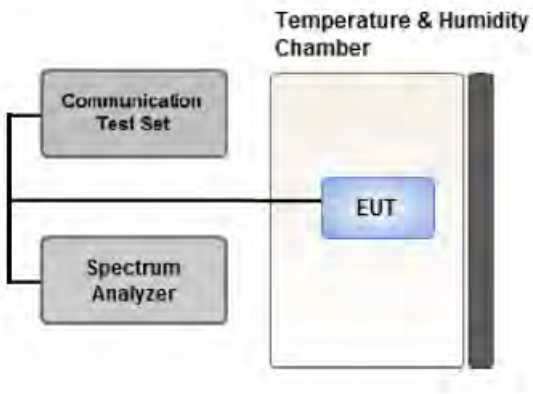
Test setup

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.

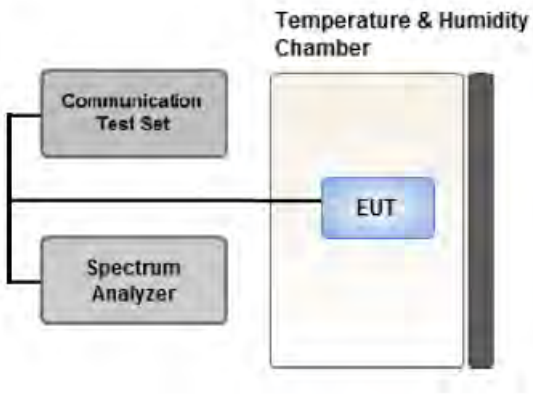
All out of band emissions are measured with a spectrum analyzer connected to the antenna terminal of the EUT while the EUT is operating at its maximum duty cycle, at maximum power, and at the appropriate frequencies.

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 = 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

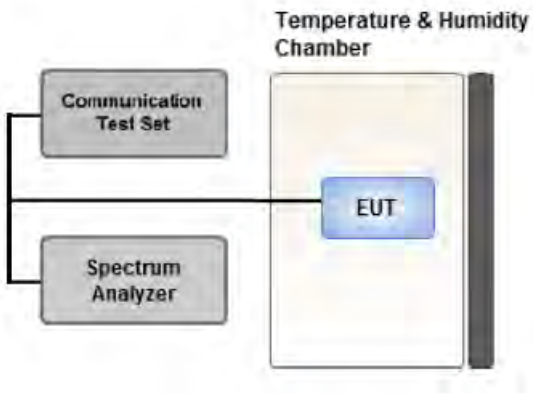
1. Start and stop frequency were set such that the band edge would be placed in the center of the plot
2. Span was set large enough so as to capture all out of band emissions near the band edge
3. RBW > 1 % of the emission bandwidth
4. VBW > 3 x RBW
5. Detector = RMS
6. Number of sweep points ≥ 2 x Span/RBW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

Test Notes

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

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.

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	12/11/2024	Annual
RF Switching System	FBSR-02B(3.3G HPF+LNA)	T&M SYSTEM	F1L2	12/11/2024	Annual
Power Splitter(DC ~ 26.5 GHz)	11667B	Hewlett Packard	5001	04/17/2025	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	02/19/2025	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	04/19/2025	Annual
ATTENUATOR(20 dB)	8493C	Hewlett Packard	17280	04/17/2025	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	03/07/2026	Biennial
Trilog Broadband Antenna	VULB9168	Schwarzbeck	895	09/16/2024	Biennial
Trilog Broadband Antenna	VULB9168	Schwarzbeck	1135	09/16/2024	Biennial
Wideband Radio Communication Tester	MT8821C	Anritsu Corp.	6262094331	11/17/2024	Annual
Wideband Radio Communication Tester	MT8820C	Anritsu Corp.	6201026545	12/11/2024	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)	1.98 (Confidence level about 95 %, k=2)
Radiated Disturbance (9 kHz ~ 30 MHz)	4.36 (Confidence level about 95 %, k=2)
Radiated Disturbance (30 MHz ~ 1 GHz)	5.70 (Confidence level about 95 %, k=2)
Radiated Disturbance (1 GHz ~ 18 GHz)	5.52 (Confidence level about 95 %, k=2)
Radiated Disturbance (18 GHz ~ 40 GHz)	5.66 (Confidence level about 95 %, k=2)
Radiated Disturbance (Above 40 GHz)	5.58 (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
Conducted Output Power	§ 2.1046	N/A	See Note1
Peak- to- Average Ratio	§ 27.50(d)(5)	< 13 dB	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(Main 2 Ant)

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 modes of operation were investigated and the worst case configuration results are reported.
Mode : Stand alone, Stand alone + External accessories (Earphone, AC adapter, etc)
Worst case : Stand alone

5. We were performed the RSE test in condition of co-location.
Mode : Stand alone, Simultaneous transmission scenarios
Worst case : Stand alone

6. All 3 channels(low/mid/high) of conducted power and radiated power were investigated and the worst case channel results are reported.

7. The EUT was tested in three modes(Open, Half-open, Closed), the worst case configuration results are reported.
Worst case: open mode.

[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	20	2506.0	39750	1	99	20	2525.8	39948	1	0
	QPSK	Mid	10	2585.9	40549	1	49	15	2597.9	40669	1	0
	QPSK	High	10	2670.5	41395	1	49	15	2682.5	41515	1	0
	QPSK	Low	20	2506.0	39750	1	0	20	2525.8	39948	1	99
	QPSK	Mid	10	2585.9	40549	1	0	15	2597.9	40669	1	74
	QPSK	High	10	2670.5	41395	1	0	15	2682.5	41515	1	74
	16QAM	Low	20	2506.0	39750	100	0	5	2517.7	39867	25	0
	QPSK	Mid	20	2583.1	40521	100	0	20	2602.9	40719	100	0
	QPSK	High	15	2667.5	41365	75	0	15	2682.5	41515	75	0
	QPSK	Low	20	2506.0	39750	100	0	20	2525.8	39948	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	20	2525.8	39948	1	0
	QPSK	Mid	5	2583.8	40528	1	24	20	2595.5	40645	1	0
	QPSK	High	20	2660.2	41292	1	99	20	2680.0	41490	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 256QAM	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

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	21.72
	10	2501.3	39703	1	49	15	2513.3	39823	1	0	24.76
	10	2501.5	39705	1	49	20	2515.9	39849	1	0	21.08
	15	2503.5	39725	1	74	10	2515.5	39845	1	0	24.69
	15	2503.5	39725	1	74	15	2518.5	39875	1	0	24.67
	15	2503.8	39728	1	74	20	2520.9	39899	1	0	24.78
	20	2506.0	39750	1	99	5	2517.7	39867	1	0	24.20
	20	2506.0	39750	1	99	10	2520.4	39894	1	0	24.13
	20	2506.0	39750	1	99	15	2523.1	39921	1	0	24.75
	20	***2506.0***	***39750***	***1***	***99***	***20***	***2525.8***	***39948***	***1***	***0***	***24.82***
Mid	5	2583.8	40528	1	24	20	2595.5	40645	1	0	24.39
	10	***2585.9***	***40549***	***1***	***49***	***15***	***2597.9***	***40669***	***1***	***0***	***24.54***
	10	2583.6	40526	1	49	20	2598.0	40670	1	0	24.40
	15	2588.1	40571	1	74	10	2600.1	40691	1	0	24.43
	15	2585.5	40545	1	74	15	2600.5	40695	1	0	24.38
	15	2583.3	40523	1	74	20	2600.4	40694	1	0	24.48
	20	2590.5	40595	1	99	5	2602.2	40712	1	0	24.30
	20	2588.1	40571	1	99	10	2602.5	40715	1	0	24.39
	20	2585.6	40546	1	99	15	2602.7	40717	1	0	24.43
	20	2583.1	40521	1	99	20	2602.9	40719	1	0	24.35
High	5	2668.3	41373	1	24	20	2680.0	41490	1	0	24.69
	10	***2670.5***	***41395***	***1***	***49***	***15***	***2682.5***	***41515***	***1***	***0***	***24.83***
	10	2665.6	41346	1	49	20	2680.0	41490	1	0	24.81
	15	2672.7	41417	1	74	10	2684.7	41537	1	0	24.63
	15	2667.5	41365	1	74	15	2682.5	41515	1	0	24.76
	15	2662.9	41319	1	74	20	2680.0	41490	1	0	24.68
	20	2675.0	41440	1	99	5	2686.7	41557	1	0	24.67
	20	2670.1	41391	1	99	10	2684.5	41535	1	0	24.69
	20	2665.1	41341	1	99	15	2682.2	41512	1	0	24.75
	20	2660.2	41292	1	99	20	2680.0	41490	1	0	24.70

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	21.62
	10	2501.3	39703	50	0	15	2513.3	39823	75	0	23.17
	10	2501.5	39705	50	0	20	2515.9	39849	100	0	21.20
	15	2503.5	39725	75	0	10	2515.5	39845	50	0	23.13
	15	2503.5	39725	75	0	15	2518.5	39875	75	0	21.16
	15	2503.8	39728	75	0	20	2520.9	39899	100	0	21.68
	20	***2506.0***	***39750***	***100***	***0***	***5***	***2517.7***	***39867***	***25***	***0***	***23.19***
	20	2506.0	39750	100	0	10	2520.4	39894	50	0	21.13
	20	2506.0	39750	100	0	15	2523.1	39921	75	0	21.63
	20	2506.0	39750	100	0	20	2525.8	39948	100	0	21.69
Mid	5	2583.8	40528	25	0	20	2595.5	40645	100	0	22.99
	10	2585.9	40549	50	0	15	2597.9	40669	75	0	22.96
	10	2583.6	40526	50	0	20	2598.0	40670	100	0	22.74
	15	2588.1	40571	75	0	10	2600.1	40691	50	0	22.91
	15	2585.5	40545	75	0	15	2600.5	40695	75	0	22.98
	15	2583.3	40523	75	0	20	2600.4	40694	100	0	22.95
	20	2590.5	40595	100	0	5	2602.2	40712	25	0	22.90
	20	2588.1	40571	100	0	10	2602.5	40715	50	0	22.95
	20	2585.6	40546	100	0	15	2602.7	40717	75	0	22.97
	20	***2583.1***	***40521***	***100***	***0***	***20***	***2602.9***	***40719***	***100***	***0***	***23.01***
High	5	2668.3	41373	25	0	20	2680.0	41490	100	0	23.22
	10	2670.5	41395	50	0	15	2682.5	41515	75	0	23.23
	10	2665.6	41346	50	0	20	2680.0	41490	100	0	23.22
	15	2672.7	41417	75	0	10	2684.7	41537	50	0	23.21
	15	***2667.5***	***41365***	***75***	***0***	***15***	***2682.5***	***41515***	***75***	***0***	***23.25***
	15	2662.9	41319	75	0	20	2680.0	41490	100	0	23.19
	20	2675.0	41440	100	0	5	2686.7	41557	25	0	23.21
	20	2670.1	41391	100	0	10	2684.5	41535	50	0	23.17
	20	2665.1	41341	100	0	15	2682.2	41512	75	0	23.22
	20	2660.2	41292	100	0	20	2680.0	41490	100	0	23.17

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	2506.0	39750	1	99	20	2525.8	39948	1	0	24.19
Mid	10	2585.9	40549	1	49	15	2597.9	40669	1	0	24.20
High	10	2670.5	41395	1	49	15	2682.5	41515	1	0	24.28
Low	20	2506.0	39750	100	0	5	2517.7	39867	25	0	24.10
Mid	20	2583.1	40521	100	0	20	2602.9	40719	100	0	22.00
High	15	2667.5	41365	75	0	15	2682.5	41515	75	0	22.20

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	2506.0	39750	1	99	20	2525.8	39948	1	0	23.76
Mid	10	2585.9	40549	1	49	15	2597.9	40669	1	0	22.59
High	10	2670.5	41395	1	49	15	2682.5	41515	1	0	22.49
Low	20	2506.0	39750	100	0	5	2517.7	39867	25	0	21.32
Mid	20	2583.1	40521	100	0	20	2602.9	40719	100	0	21.98
High	15	2667.5	41365	75	0	15	2682.5	41515	75	0	22.18

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	2506.0	39750	1	99	20	2525.8	39948	1	0	20.56
Mid	10	2585.9	40549	1	49	15	2597.9	40669	1	0	20.41
High	10	2670.5	41395	1	49	15	2682.5	41515	1	0	20.54
Low	20	2506.0	39750	100	0	5	2517.7	39867	25	0	20.21
Mid	20	2583.1	40521	100	0	20	2602.9	40719	100	0	20.04
High	15	2667.5	41365	75	0	15	2682.5	41515	75	0	20.33

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	39683	1/24	20	39800	1/0	-25.05	11.81	10.55	2.57	H	0.095	19.79
	10	39703	1/49	15	39823	1/0	-22.11	14.78	10.59	2.57	H	0.191	22.80
	10	39705	1/49	20	39849	1/0	-25.54	11.35	10.59	2.57	H	0.087	19.37
	15	39725	1/74	10	39845	1/0	-22.36	14.53	10.59	2.57	H	0.180	22.55
	15	39725	1/74	15	39875	1/0	-22.38	14.51	10.59	2.57	H	0.179	22.53
	15	39728	1/74	20	39899	1/0	-22.24	14.65	10.59	2.57	H	0.185	22.67
	20	39750	1/99	5	39867	1/0	-22.50	14.39	10.59	2.57	H	0.174	22.41
	20	39750	1/99	10	39894	1/0	-22.54	14.35	10.59	2.57	H	0.173	22.37
	20	39750	1/99	15	39921	1/0	-21.96	14.92	10.64	2.59	H	0.198	22.97
	20	***39750***	***1/99***	***20***	***39948***	***1/0***	***-21.92***	***14.96***	***10.64***	***2.59***	***H***	***0.200***	***23.01***
Mid	***5***	***40528***	***1/24***	***20***	***40645***	***1/0***	***-22.09***	***15.13***	***10.64***	***2.71***	***H***	***0.202***	***23.06***
	10	40549	1/49	15	40669	1/0	-22.70	14.52	10.64	2.71	H	0.176	22.45
	10	40526	1/49	20	40670	1/0	-22.60	14.62	10.64	2.71	H	0.180	22.55
	15	40571	1/74	10	40691	1/0	-22.48	14.63	10.64	2.68	H	0.182	22.59
	15	40545	1/74	15	40695	1/0	-22.38	14.84	10.64	2.71	H	0.189	22.77
	15	40523	1/74	20	40694	1/0	-22.77	14.45	10.64	2.71	H	0.173	22.38
	20	40595	1/99	5	40712	1/0	-22.42	14.69	10.64	2.68	H	0.184	22.65
	20	40571	1/99	10	40715	1/0	-22.35	14.76	10.64	2.68	H	0.187	22.72
	20	40546	1/99	15	40717	1/0	-22.44	14.67	10.64	2.68	H	0.183	22.63
	20	40521	1/99	20	40719	1/0	-22.32	14.90	10.64	2.71	H	0.192	22.83
High	5	41373	1/24	20	41490	1/0	-24.14	13.28	10.72	2.74	H	0.134	21.26
	10	41395	1/49	15	41515	1/0	-23.97	13.45	10.72	2.74	H	0.139	21.43
	10	41346	1/49	20	41490	1/0	-24.06	13.36	10.72	2.74	H	0.136	21.34
	15	41417	1/74	10	41537	1/0	-24.23	13.20	10.72	2.75	H	0.131	21.17
	15	41365	1/74	15	41515	1/0	-24.05	13.37	10.72	2.74	H	0.136	21.35
	15	41319	1/74	20	41490	1/0	-24.05	13.37	10.71	2.73	H	0.136	21.35
	20	41440	1/99	5	41557	1/0	-24.26	13.17	10.72	2.75	H	0.130	21.14
	20	41391	1/99	10	41535	1/0	-24.17	13.25	10.72	2.74	H	0.133	21.23
	20	41341	1/99	15	41512	1/0	-24.08	13.34	10.72	2.74	H	0.135	21.32
	20	***41292***	***1/99***	***20***	***41490***	***1/0***	***-23.96***	***13.46***	***10.71***	***2.73***	***H***	***0.139***	***21.44***

Note:

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

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
20	39750	1/99	20	39948	1/0	-22.72	14.16	10.64	2.59	H	0.166	22.21
5	40528	1/24	20	40645	1/0	-22.52	14.70	10.64	2.71	H	0.183	22.63
10	40549	1/49	15	40669	1/0	-23.12	14.10	10.64	2.71	H	0.160	22.03
10	40526	1/49	20	40670	1/0	-23.05	14.17	10.64	2.71	H	0.162	22.10
15	40571	1/74	10	40691	1/0	-23.05	14.06	10.64	2.68	H	0.159	22.02
15	40545	1/74	15	40695	1/0	-22.91	14.31	10.64	2.71	H	0.167	22.24
15	40523	1/74	20	40694	1/0	-23.14	14.08	10.64	2.71	H	0.159	22.01
20	40595	1/99	5	40712	1/0	-23.12	13.99	10.64	2.68	H	0.157	21.95
20	40571	1/99	10	40715	1/0	-23.02	14.09	10.64	2.68	H	0.160	22.05
20	40546	1/99	15	40717	1/0	-23.01	14.10	10.64	2.68	H	0.161	22.06
20	40521	1/99	20	40719	1/0	-22.90	14.32	10.64	2.71	H	0.168	22.25
20	41292	1/99	20	41490	1/0	-24.87	12.55	10.71	2.73	H	0.113	20.53

Note:

1. Modulation : 16QAM

2. Limit : < 2 Watts

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
20	39750	1/99	20	39948	1/0	-23.60	13.28	10.64	2.59	H	0.136	21.33
5	40528	1/24	20	40645	1/0	-24.93	12.29	10.64	2.71	H	0.105	20.22
10	40549	1/49	15	40669	1/0	-25.33	11.89	10.64	2.71	H	0.096	19.82
10	40526	1/49	20	40670	1/0	-25.34	11.88	10.64	2.71	H	0.096	19.81
15	40571	1/74	10	40691	1/0	-24.73	12.38	10.64	2.68	H	0.108	20.34
15	40545	1/74	15	40695	1/0	-24.87	12.35	10.64	2.71	H	0.107	20.28
15	40523	1/74	20	40694	1/0	-25.37	11.85	10.64	2.71	H	0.095	19.78
20	40595	1/99	5	40712	1/0	-24.21	12.90	10.64	2.68	H	0.122	20.86
20	40571	1/99	10	40715	1/0	-24.46	12.65	10.64	2.68	H	0.115	20.61
20	40546	1/99	15	40717	1/0	-24.62	12.49	10.64	2.68	H	0.111	20.45
20	40521	1/99	20	40719	1/0	-24.92	12.30	10.64	2.71	H	0.105	20.23
20	41292	1/99	20	41490	1/0	-26.73	10.69	10.71	2.73	H	0.074	18.67

Note:

1. Modulation : 64QAM

2. Limit : < 2 Watts

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
20	39750	1/99	20	39948	1/0	-26.42	10.46	10.64	2.59	H	0.071	18.51
5	40528	1/24	20	40645	1/0	-26.17	11.05	10.64	2.71	H	0.079	18.98
10	40549	1/49	15	40669	1/0	-26.82	10.40	10.64	2.71	H	0.068	18.33
10	40526	1/49	20	40670	1/0	-26.67	10.55	10.64	2.71	H	0.070	18.48
15	40571	1/74	10	40691	1/0	-26.70	10.41	10.64	2.68	H	0.069	18.37
15	40545	1/74	15	40695	1/0	-26.52	10.70	10.64	2.71	H	0.073	18.63
15	40523	1/74	20	40694	1/0	-26.85	10.37	10.64	2.71	H	0.068	18.30
20	40595	1/99	5	40712	1/0	-26.73	10.38	10.64	2.68	H	0.068	18.34
20	40571	1/99	10	40715	1/0	-26.69	10.42	10.64	2.68	H	0.069	18.38
20	40546	1/99	15	40717	1/0	-26.60	10.51	10.64	2.68	H	0.070	18.47
20	40521	1/99	20	40719	1/0	-26.51	10.71	10.64	2.71	H	0.073	18.64
20	41292	1/99	20	41490	1/0	-28.46	8.96	10.71	2.73	H	0.049	16.94

Note:

1. Modulation : 256QAM
2. Limit : < 2 Watts

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	39750	2506.0	1/99	20	39948	2525.8	1/0	9.4038	32.570	-75.61	-43.04
Mid	10	40549	2585.9	1/49	15	40669	2597.9	1/0	7.1750	32.570	-76.31	-43.74
High	10	41395	2670.5	1/49	15	41515	2682.5	1/0	8.0454	32.570	-76.12	-43.55
Low	20	39750	2506.0	1/0	20	39948	2525.8	1/99	3.7678	31.955	-75.64	-43.69
Mid	10	40549	2585.9	1/0	15	40669	2597.9	1/74	8.2607	32.570	-76.19	-43.62
High	10	41395	2670.5	1/0	15	41515	2682.5	1/74	8.3166	32.570	-75.39	-42.82
Low	20	39750	2506.0	100/0	5	39867	2517.7	25/0	8.2617	32.570	-76.16	-43.59
Mid	20	40521	2583.1	100/0	20	40719	2602.9	100/0	9.7014	32.570	-75.23	-42.66
High	15	41365	2667.5	75/0	15	41515	2682.5	75/0	8.3071	32.570	-75.51	-42.94
Low	20	39750	2506.0	100/0	20	39948	2525.8	100/0	9.7174	32.570	-75.75	-43.18
High	20	41292	2660.2	100/0	20	41490	2680.0	100/0	8.0150	32.570	-76.07	-43.50

Note:

1. Modulation : See Section 8.

2. Duty Cycle factor already applied on the factor.

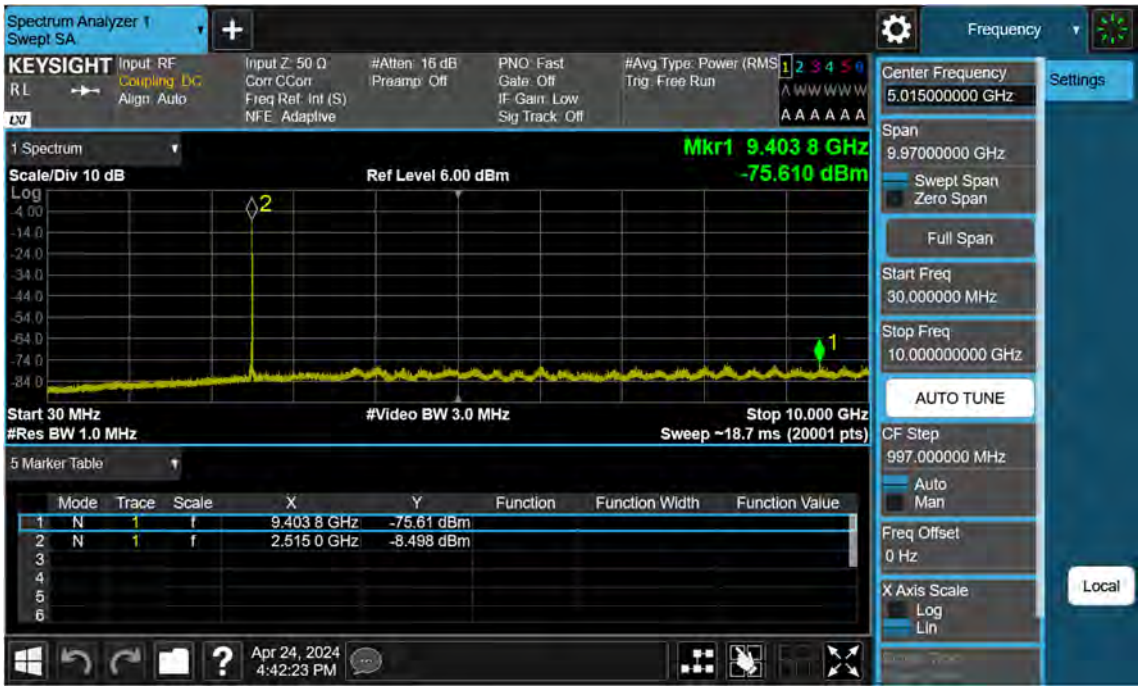
- Duty Cycle factor(dB) = 3.979
- Factor(dB) = Duty Cycle factor + Cable Loss + Ext. Attenuator + Power Splitter
- Result(dBm) = Measurement Maximum Data (dBm) + Factor

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

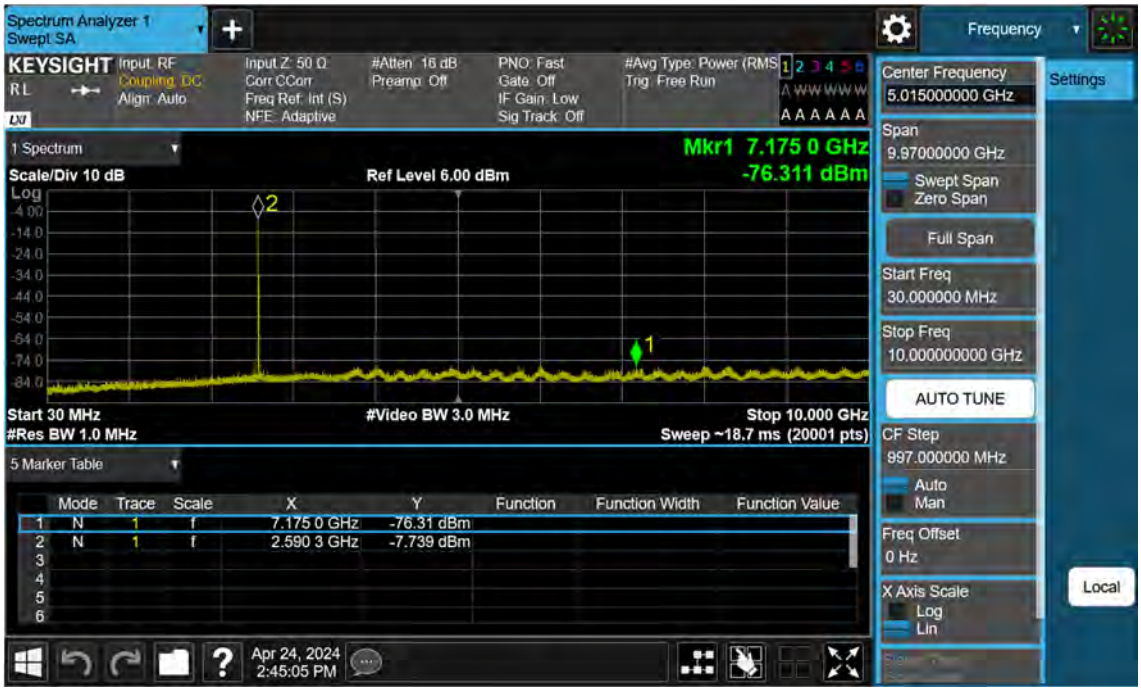
3. Limit : -25.0 dBm

Frequency Range : 30 MHz ~ 10 GHz

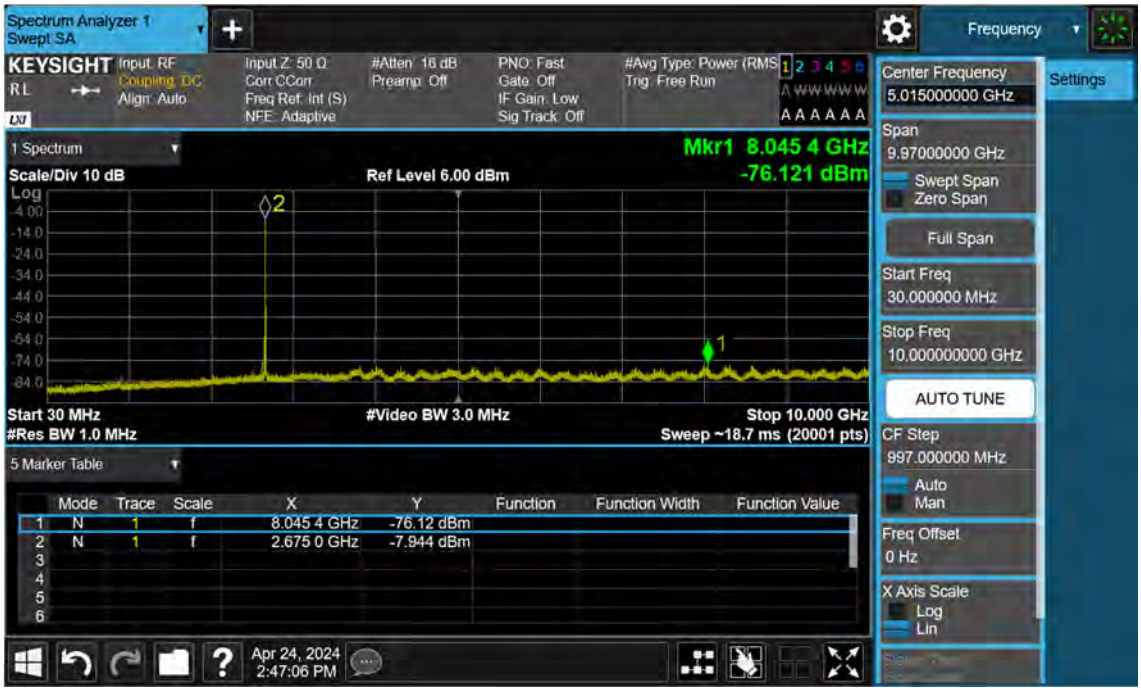
PCC 20 MHz Ch39750 RB1 Offset99 SCC 20 MHz Ch39948 RB1 Offset0



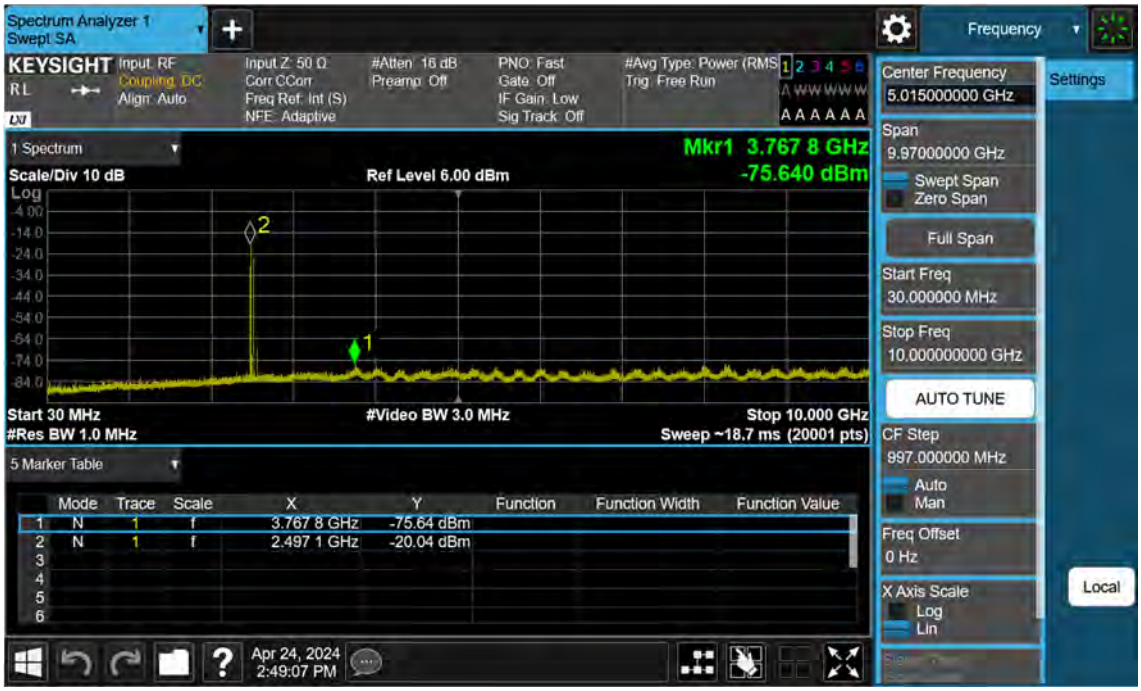
PCC 10 MHz Ch40549 RB1 Offset49 SCC 15 MHz Ch40669 RB1 Offset0



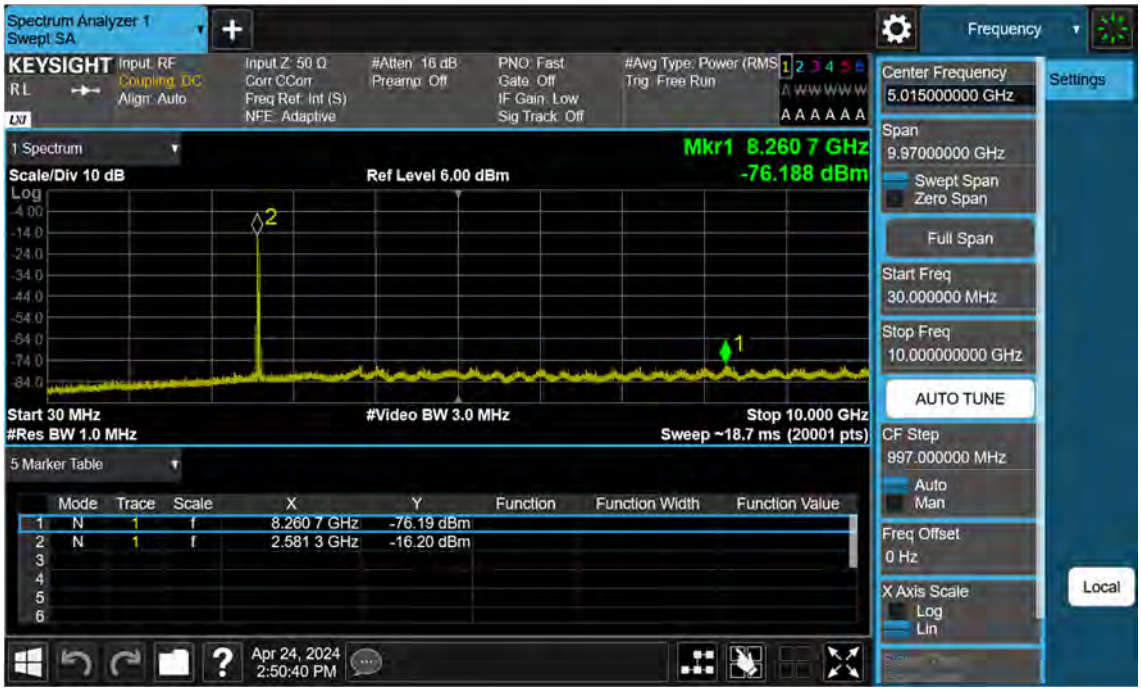
PCC 10 MHz Ch41395 RB1 Offset49 SCC 15 MHz Ch41515 RB1 Offset0



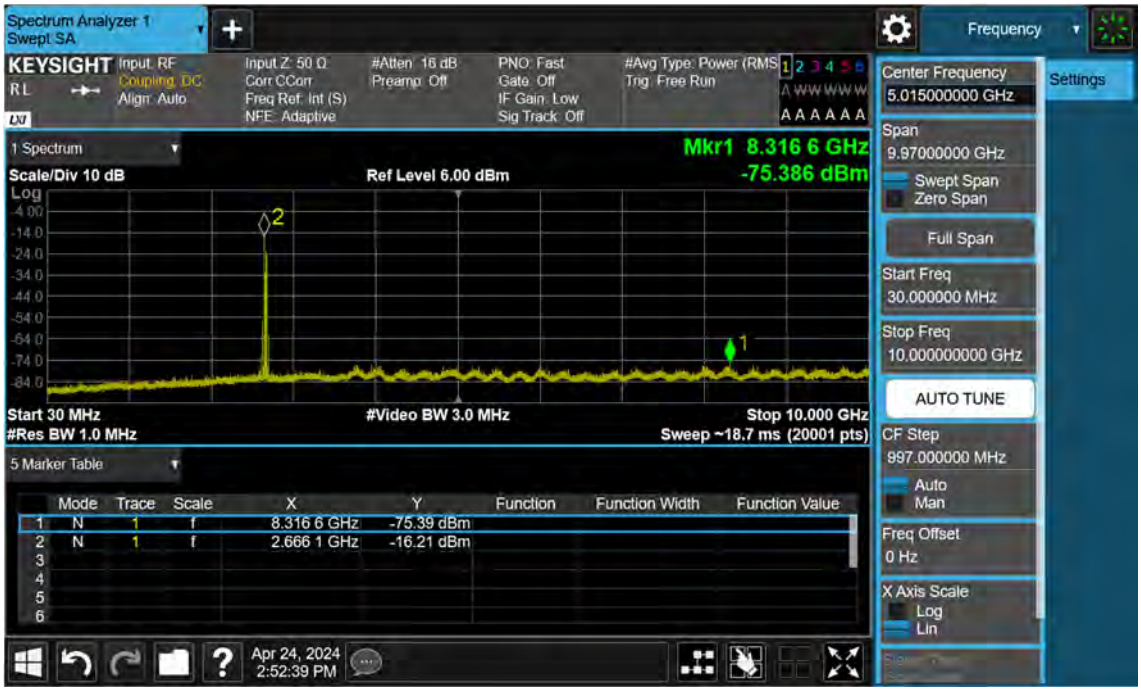
PCC 20 MHz Ch39750 RB1 Offset0 SCC 20 MHz Ch39948 RB1 Offset99



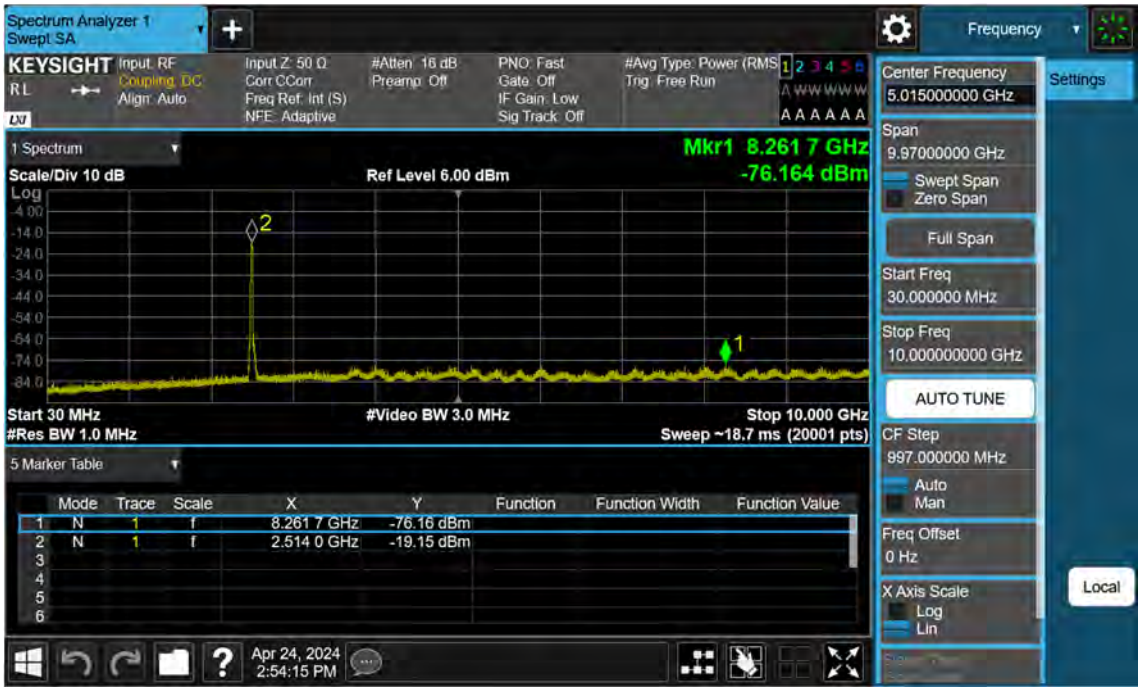
PCC 10 MHz Ch40549 RB1 Offset0 SCC 15 MHz Ch40669 RB1 Offset74



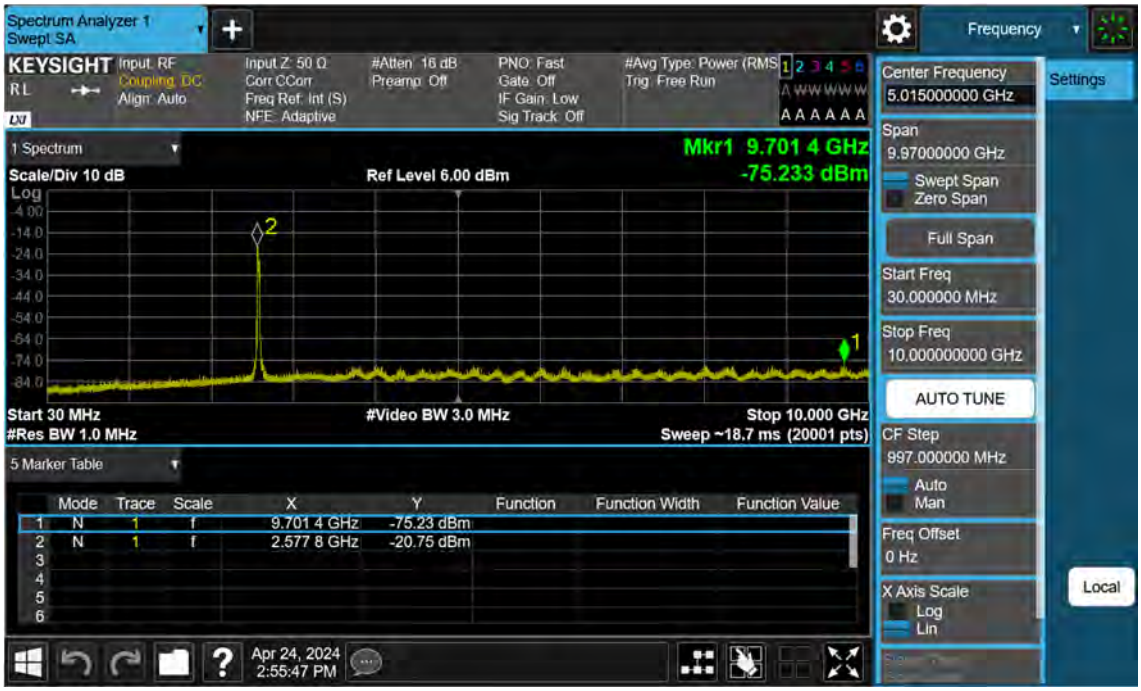
PCC 10 MHz Ch41395 RB1 Offset0 SCC 15 MHz Ch41515 RB1 Offset74



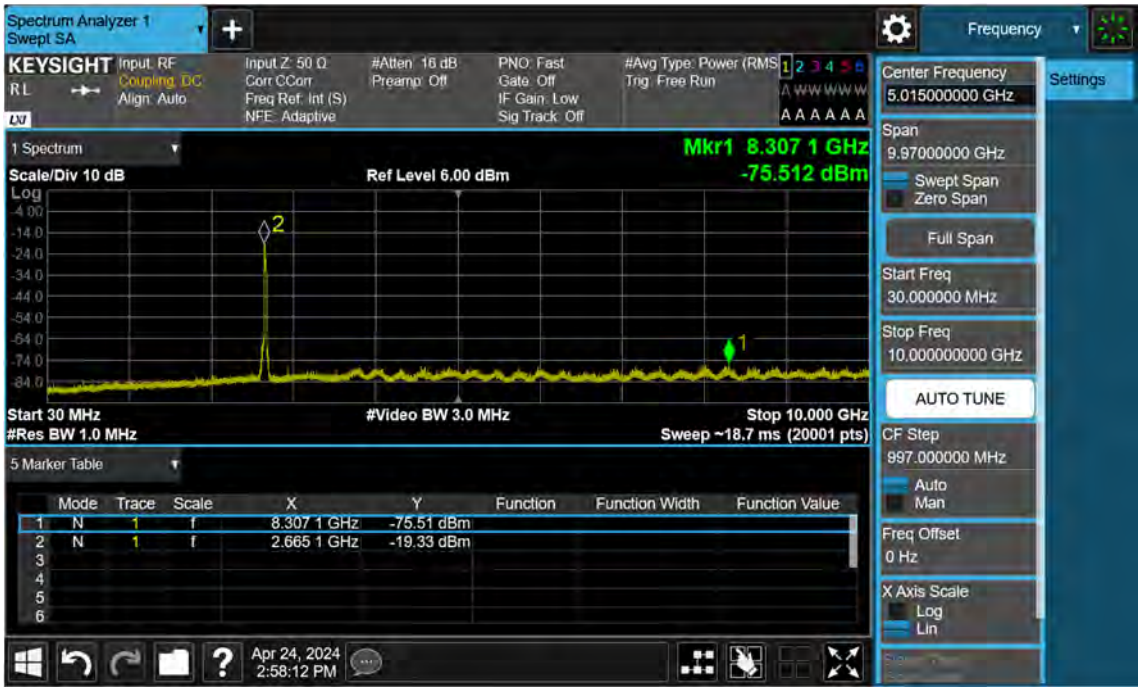
PCC 20 MHz Ch39750 RB100 Offset0 SCC 5 MHz Ch39867 RB25 Offset0



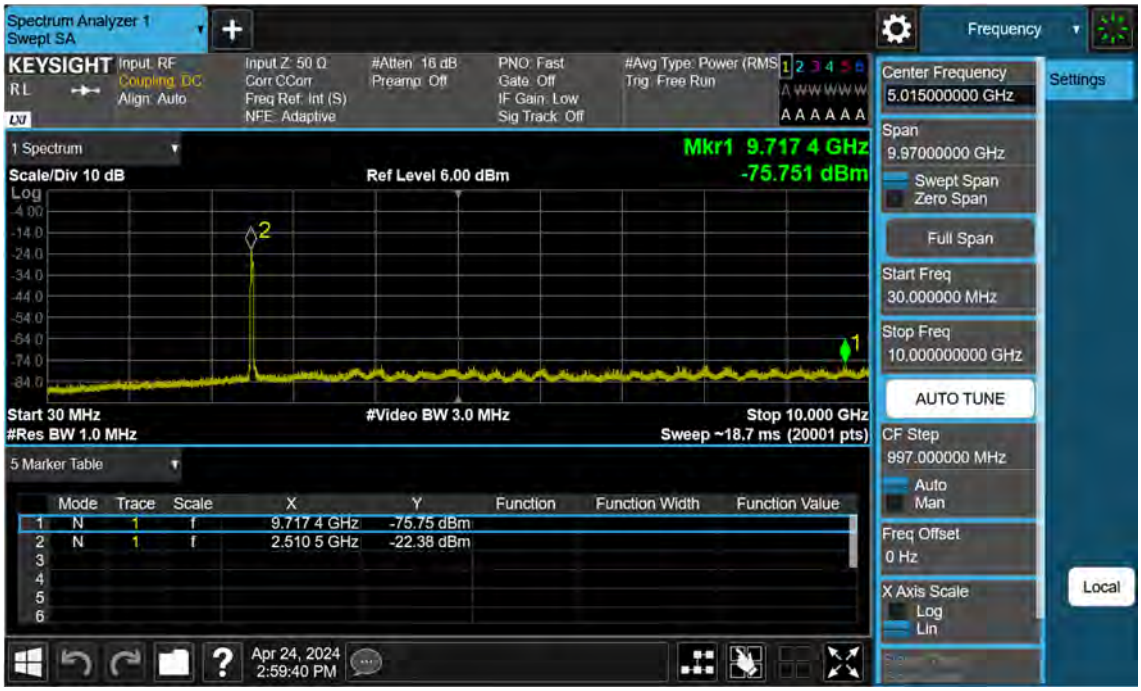
PCC 20 MHz Ch40521 RB100 Offset0 SCC 20 MHz Ch40719 RB100 Offset0



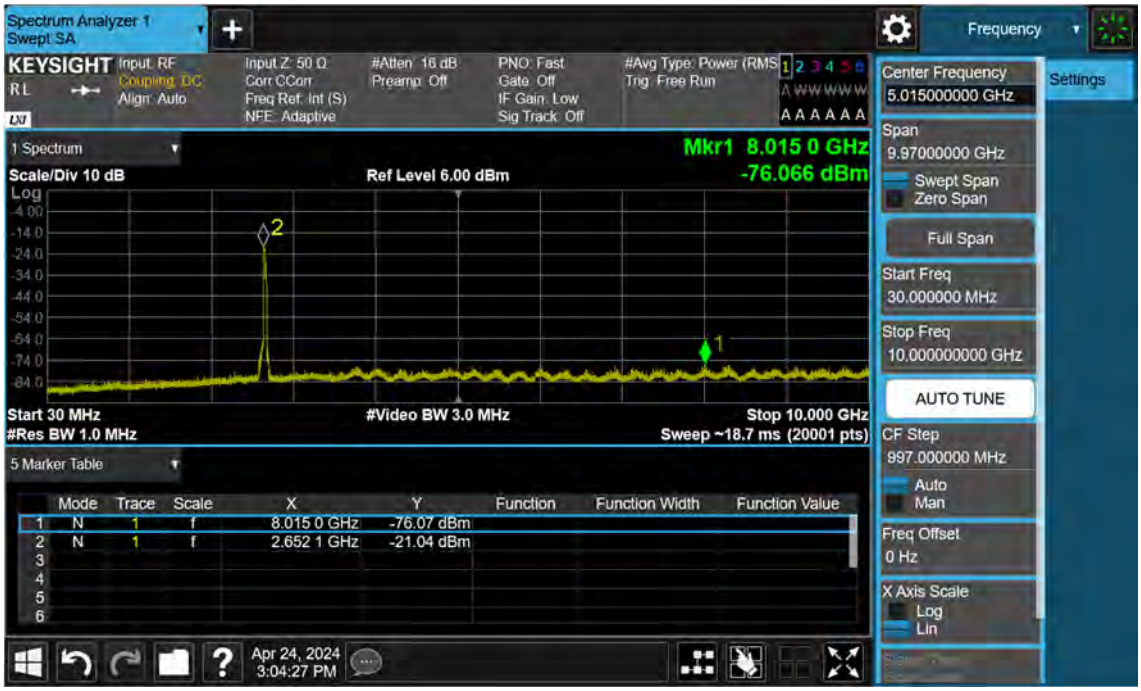
PCC 15 MHz Ch41365 RB75 Offset0 SCC 15 MHz Ch41515 RB75 Offset0



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



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



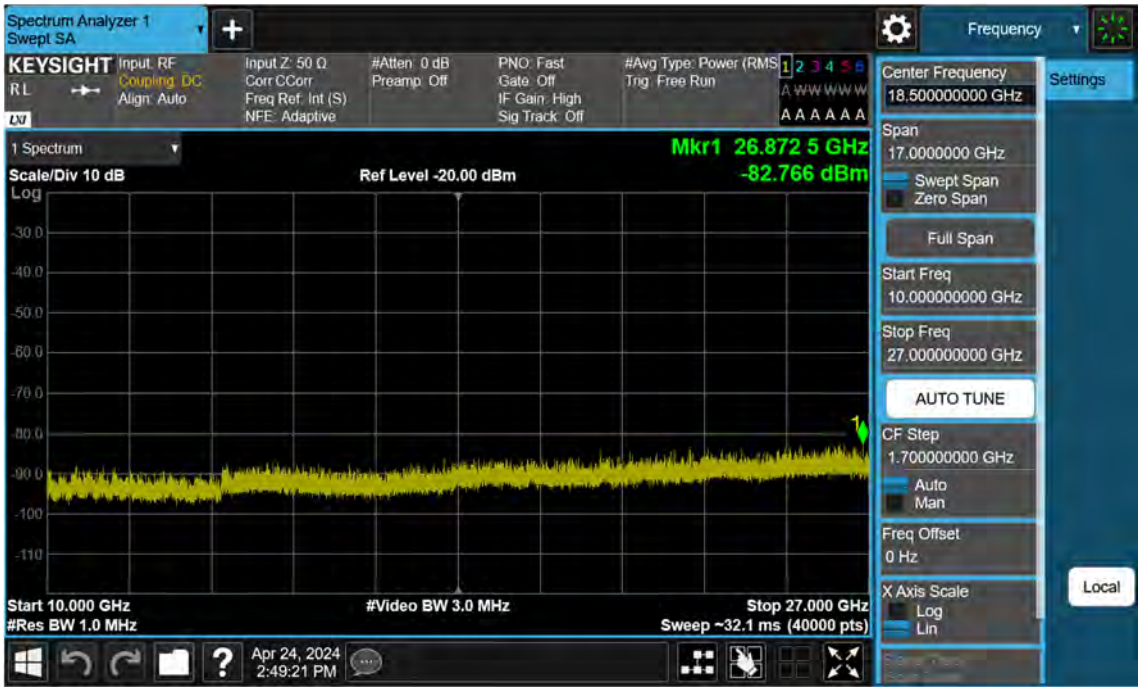
Frequency Range : 10 GHz ~ 27 GHz

PCC 20 MHz Ch39750 RB1 Offset99 SCC 20 MHz Ch39948 RB1 Offset0

PCC 10 MHz Ch40549 RB1 Offset49, SCC 15 MHz Ch40669 RB1 Offset0

PCC 10 MHz Ch41395 RB1 Offset49, SCC 15 MHz Ch41515 RB1 Offset0

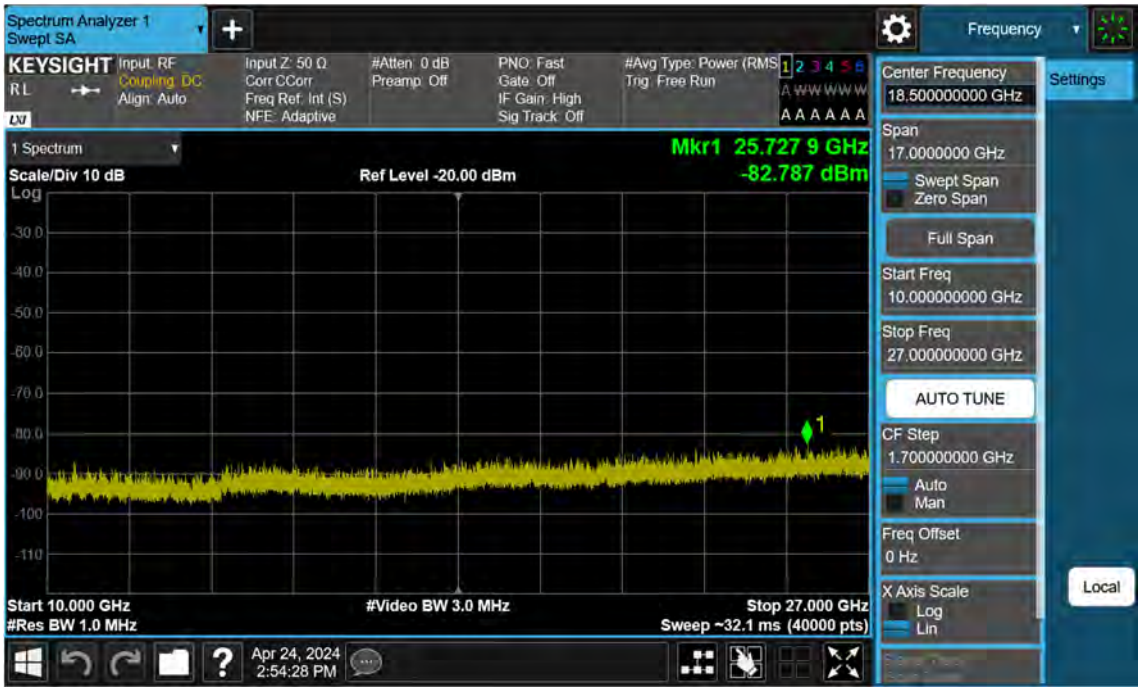
PCC 20 MHz Ch39750 RB1 Offset0 SCC 20 MHz Ch39948 RB1 Offset99



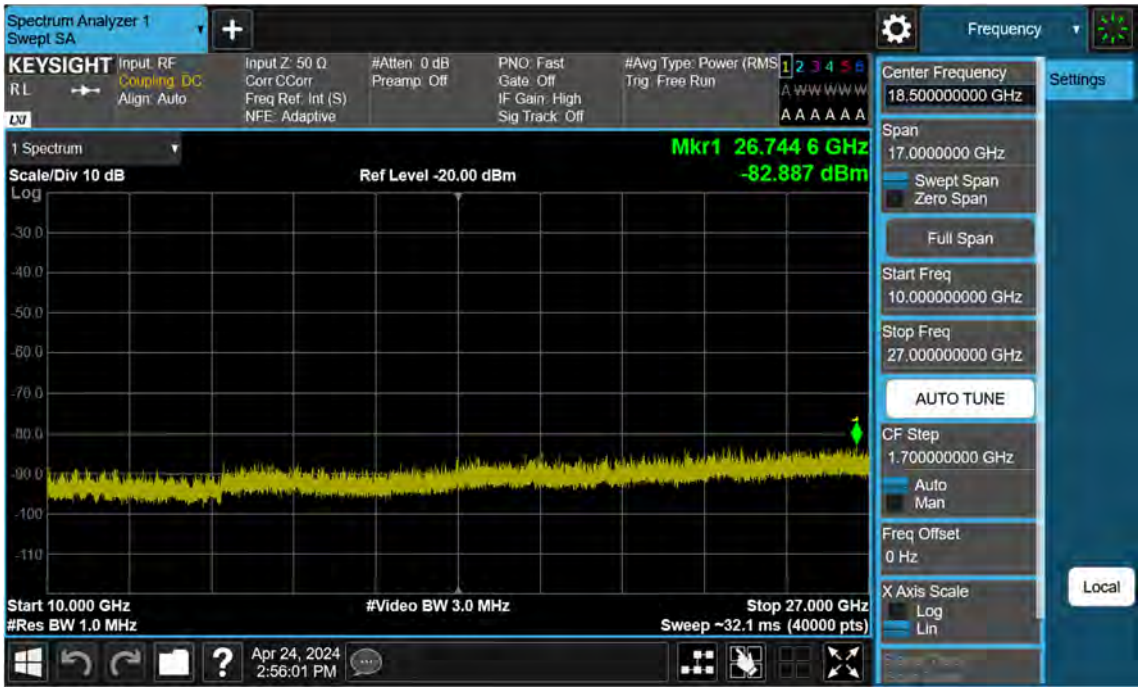
PCC 10 MHz Ch40549 RB1 Offset0, SCC 15 MHz Ch40669 RB1 Offset74

PCC 10 MHz Ch41395 RB1 Offset0, SCC 15 MHz Ch41515 RB1 Offset74

PCC 20 MHz Ch39750 RB100 Offset0, SCC 5 MHz Ch39867 RB25 Offset0



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



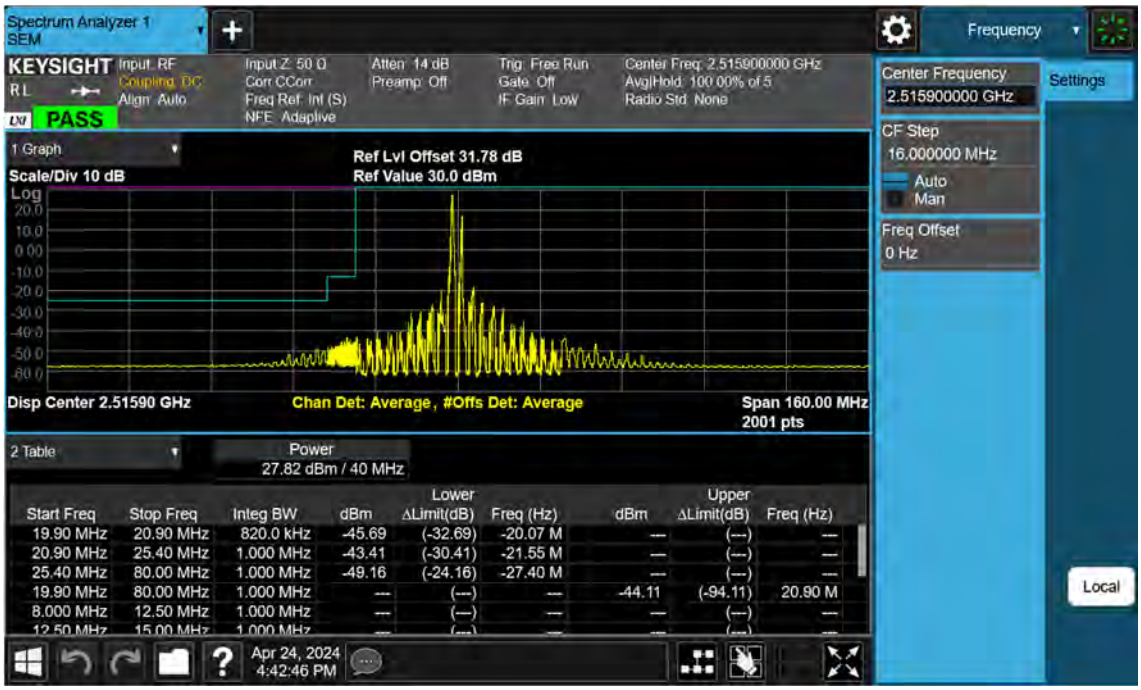
PCC 15 MHz Ch41365 RB75 Offset0, SCC 15 MHz Ch41515 RB75 Offset0

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

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

8.4 Channel Edge

PCC 20 MHz Ch39750 RB1 Offset99 SCC 20 MHz Ch39948 RB1 Offset0-1

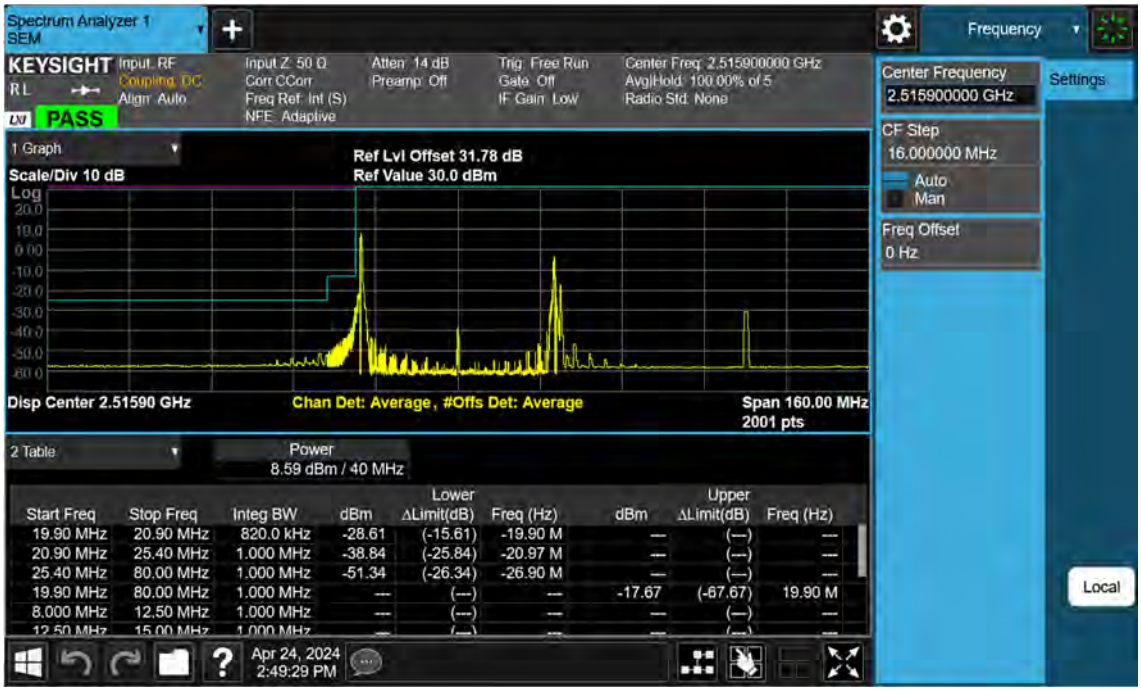


PCC 20 MHz Ch39750 RB1 Offset99 SCC 20 MHz Ch39948 RB1 Offset0-2

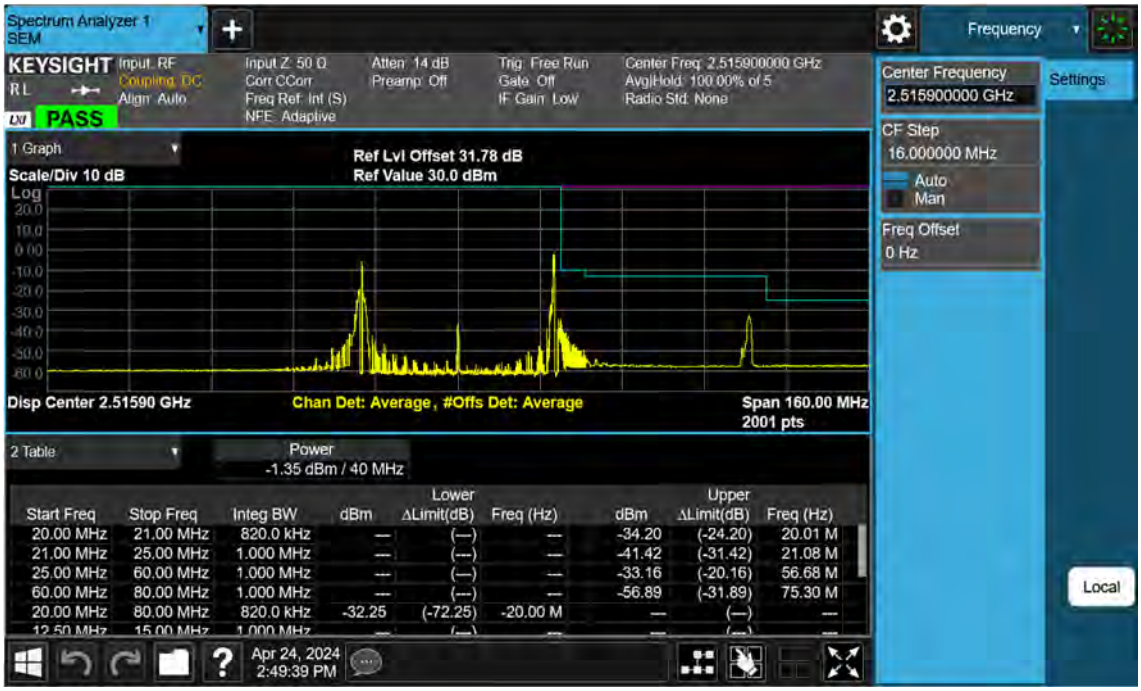
PCC 10 MHz Ch40549 RB1 Offset49, SCC 15 MHz Ch40669 RB1 Offset0

PCC 10 MHz Ch41395 RB1 Offset49, SCC 15 MHz Ch41515 RB1 Offset0

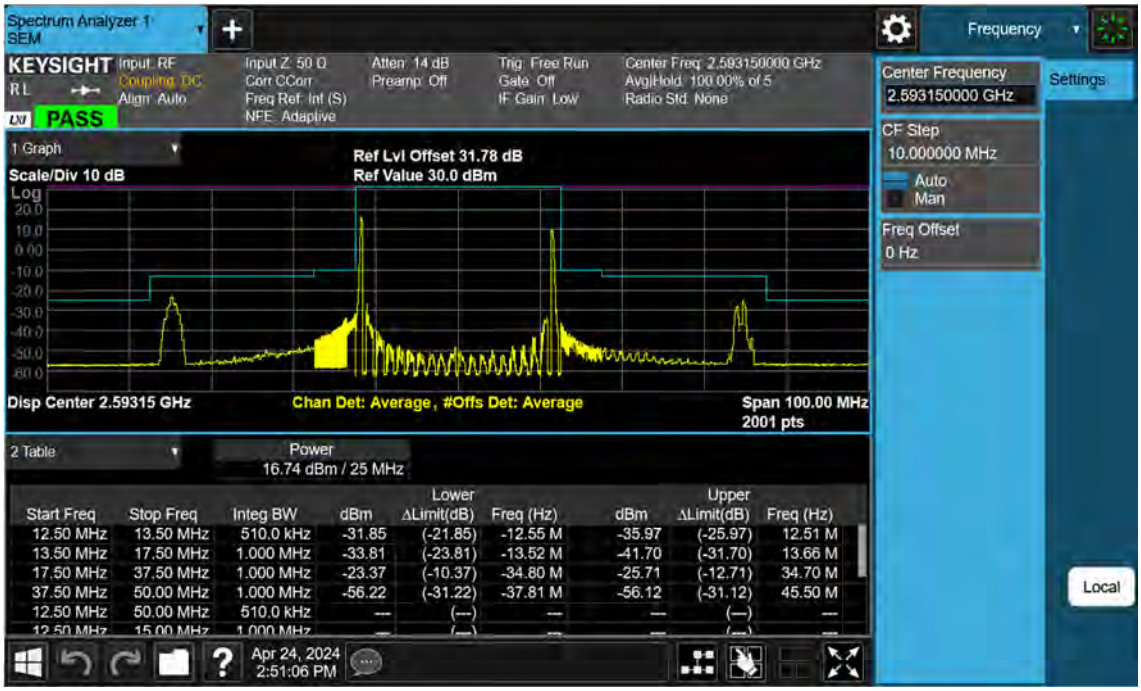
PCC 20 MHz Ch39750 RB1 Offset0 SCC 20 MHz Ch39948 RB1 Offset99-1



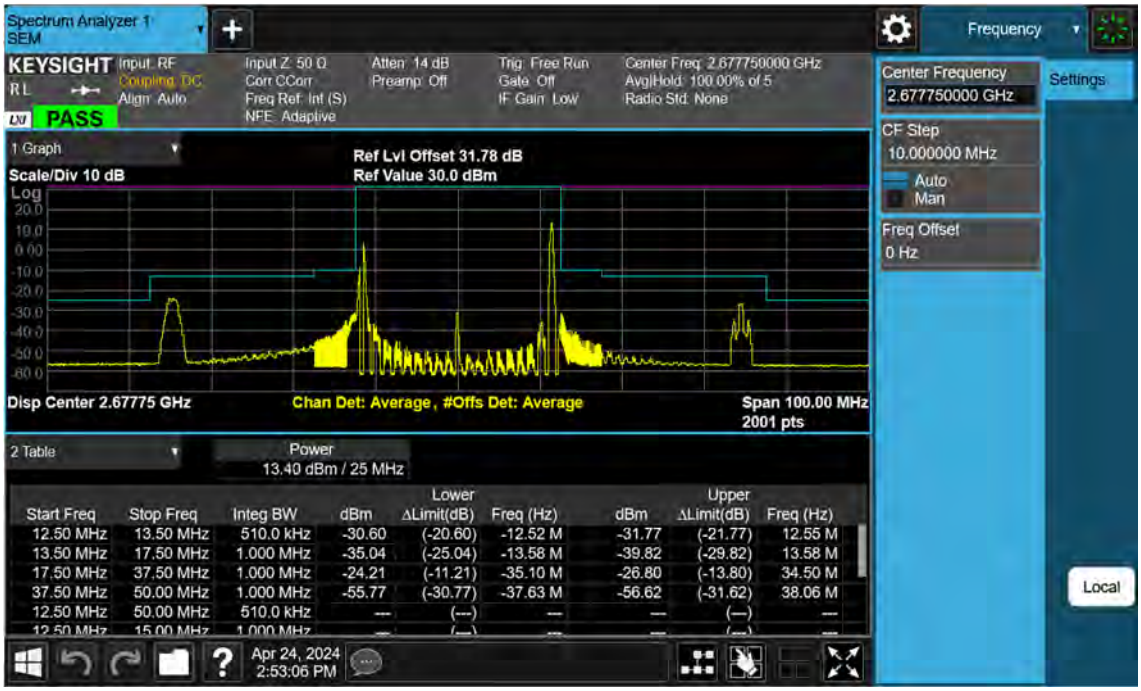
PCC 20 MHz Ch39750 RB1 Offset0 SCC 20 MHz Ch39948 RB1 Offset99-2



PCC 10 MHz Ch40549 RB1 Offset0, SCC 15 MHz Ch40669 RB1 Offset74



PCC 10 MHz Ch41395 RB1 Offset0, SCC 15 MHz Ch41515 RB1 Offset74

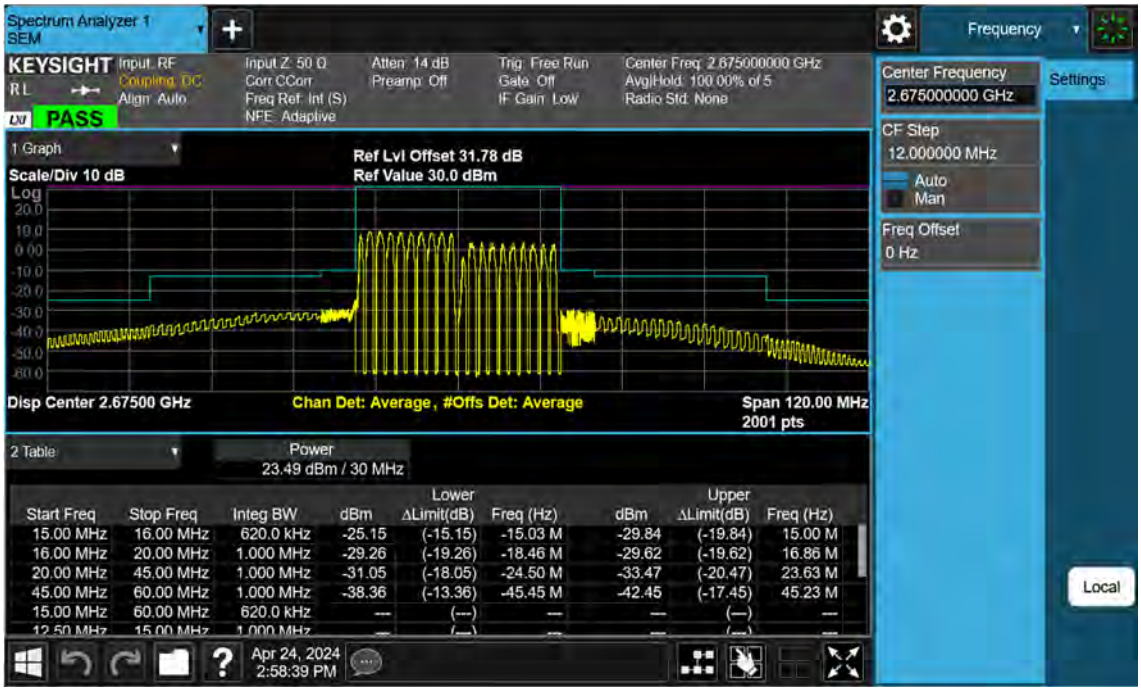


PCC 20 MHz Ch39750 RB100 Offset0, SCC 5 MHz Ch39867 RB25 Offset0-1

PCC 20 MHz Ch39750 RB100 Offset0, SCC 5 MHz Ch39867 RB25 Offset0-2

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

PCC 15 MHz Ch41365 RB75 Offset0, SCC 15 MHz Ch41515 RB75 Offset0



PCC 20 MHz Ch39750 RB100 Offset0, SCC 20 MHz Ch39948 RB100 Offset0-1

PCC 20 MHz Ch39750 RB100 Offset0, SCC 20 MHz Ch39948 RB100 Offset0-2

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

8.5 Frequency Stability / Variation Of Ambient Temperature

▣ 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 :	3.880	VDC
▣ LIMIT:	Emission must remain in band	

Voltage	Power	Temp.	PPM		Frequency Error (MHz)	
(%)	(VDC)	(℃)	PCC	SCC	PCC	SCC
100 %	3.880	+20(Ref)	-0.015	-0.025	2499.29985	2510.99989
100 %		-30	-0.022	-0.010	2499.29993	2510.99995
100 %		-20	0.001	-0.010	2499.29991	2510.99988
100 %		-10	-0.022	-0.014	2499.29996	2510.99984
100 %		0	-0.011	-0.016	2499.29991	2510.99996
100 %		10	-0.015	0.001	2499.29991	2510.99988
100 %		30	-0.005	-0.001	2499.29991	2510.99992
100 %		40	-0.008	-0.003	2499.29995	2510.99998
100 %		50	-0.009	-0.009	2499.29995	2510.99986
Batt. Endpoint	3.300	20	-0.013	0.004	2499.29992	2510.99996

▣ 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 : 3.880 VDC
▣ LIMIT: Emission must remain in band

Voltage (%)	Power (VDC)	Temp. (℃)	PPM		Frequency Error (MHz)	
			PCC	SCC	PCC	SCC
100 %	3.880	+20(Ref)	-0.015	-0.016	2501.49983	2515.89981
100 %		-30	-0.006	-0.006	2501.49988	2515.89991
100 %		-20	-0.005	-0.016	2501.49990	2515.89995
100 %		-10	-0.012	-0.001	2501.49990	2515.89990
100 %		0	0.008	-0.012	2501.49998	2515.89995
100 %		10	-0.024	0.001	2501.49981	2515.89997
100 %		30	-0.018	-0.002	2501.49981	2515.89986
100 %		40	-0.004	-0.003	2501.49992	2515.89995
100 %		50	-0.013	0.000	2501.49986	2515.89992
Batt. Endpoint	3.300	20	-0.004	-0.014	2501.49992	2515.89989

▣ 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 :	3.880	VDC
▣ LIMIT:	Emission must remain in band	

Voltage (%)	Power (VDC)	Temp. (℃)	PPM		Frequency Error (MHz)	
			PCC	SCC	PCC	SCC
100 %	3.880	+20(Ref)	-0.013	-0.002	2503.79996	2520.89991
100 %		-30	0.009	0.004	2503.79992	2520.89992
100 %		-20	-0.002	-0.019	2503.79991	2520.89985
100 %		-10	-0.008	-0.003	2503.79987	2520.89986
100 %		0	0.003	-0.013	2503.79989	2520.89986
100 %		10	-0.004	0.010	2503.79986	2520.89999
100 %		30	-0.008	-0.010	2503.79999	2520.89994
100 %		40	0.005	0.000	2503.79991	2520.89996
100 %		50	-0.009	0.009	2503.79991	2520.89995
Batt. Endpoint	3.300	20	-0.006	-0.003	2503.79987	2520.89988

- ▣ 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 : 3.880 VDC
- ▣ LIMIT: Emission must remain in band

Voltage (%)	Power (VDC)	Temp. (℃)	PPM		Frequency Error (MHz)	
			PCC	SCC	PCC	SCC
100 %	3.880	+20(Ref)	-0.011	-0.001	2505.99987	2525.79990
100 %		-30	-0.003	-0.022	2505.99995	2525.79996
100 %		-20	-0.013	-0.011	2505.99990	2525.79986
100 %		-10	-0.006	-0.003	2505.99981	2525.79991
100 %		0	-0.014	-0.005	2505.99984	2525.79986
100 %		10	-0.012	-0.009	2505.99988	2525.79985
100 %		30	-0.024	-0.016	2505.99986	2525.79995
100 %		40	0.006	-0.015	2505.99986	2525.79992
100 %		50	-0.015	-0.017	2505.99985	2525.79988
Batt. Endpoint	3.300	20	-0.007	-0.012	2505.99989	2525.79987

▣ 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 : 3.880 VDC
▣ LIMIT: Emission must remain in band

Voltage (%)	Power (VDC)	Temp. (℃)	PPM		Frequency Error (MHz)	
			PCC	SCC	PCC	SCC
100 %	3.880	+20(Ref)	-0.023	-0.006	2668.29988	2679.99986
100 %		-30	-0.017	-0.012	2668.29989	2679.99992
100 %		-20	-0.007	0.009	2668.29987	2679.99993
100 %		-10	0.001	-0.013	2668.29996	2679.99996
100 %		0	-0.016	-0.012	2668.29991	2679.99988
100 %		10	-0.020	-0.003	2668.29994	2679.99998
100 %		30	0.000	-0.011	2668.29991	2679.99991
100 %		40	0.001	-0.019	2668.29993	2679.99990
100 %		50	0.001	-0.008	2668.30000	2679.99988
Batt. Endpoint	3.300	20	-0.012	-0.001	2668.29988	2679.99994

- ▣ 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 : 3.880 VDC
- ▣ LIMIT: Emission must remain in band

Voltage (%)	Power (VDC)	Temp. (°C)	PPM		Frequency Error (MHz)	
			PCC	SCC	PCC	SCC
100 %	3.880	+20(Ref)	-0.004	-0.025	2665.59987	2679.99982
100 %		-30	-0.017	0.002	2665.59997	2679.99989
100 %		-20	-0.003	-0.004	2665.59999	2679.99984
100 %		-10	-0.014	0.003	2665.59997	2679.99994
100 %		0	-0.009	-0.025	2665.59992	2679.99988
100 %		10	-0.021	0.001	2665.59987	2679.99998
100 %		30	-0.025	-0.021	2665.59991	2679.99994
100 %		40	0.000	0.005	2665.59997	2679.99992
100 %		50	-0.030	-0.025	2665.59991	2679.99984
Batt. Endpoint	3.300	20	-0.005	-0.017	2665.59991	2679.99996

▣ 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 : 3.880 VDC
▣ LIMIT: Emission must remain in band

Voltage (%)	Power (VDC)	Temp. (℃)	PPM		Frequency Error (MHz)	
			PCC	SCC	PCC	SCC
100 %	3.880	+20(Ref)	-0.012	-0.006	2662.89988	2679.99986
100 %		-30	-0.012	-0.009	2662.89987	2679.99993
100 %		-20	-0.012	-0.006	2662.89989	2679.99985
100 %		-10	-0.005	-0.006	2662.89996	2679.99984
100 %		0	-0.004	0.005	2662.89985	2679.99989
100 %		10	-0.003	-0.016	2662.89997	2679.99992
100 %		30	-0.013	0.004	2662.89990	2679.99994
100 %		40	-0.013	-0.029	2662.89986	2679.99986
100 %		50	-0.014	-0.008	2662.89998	2679.99987
Batt. Endpoint	3.300	20	-0.012	-0.027	2662.89992	2679.99987

▣ 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 : 3.880 MHz
▣ LIMIT: Emission must remain in band

Voltage (%)	Power (VDC)	Temp. (℃)	PPM		Frequency Error (MHz)	
			PCC	SCC	PCC	SCC
100 %	3.880	+20(Ref)	0.006	-0.006	2660.19996	2679.99986
100 %		-30	0.003	-0.014	2660.19991	2679.99991
100 %		-20	-0.014	-0.005	2660.19992	2679.99994
100 %		-10	0.005	0.000	2660.19995	2679.99993
100 %		0	-0.015	-0.005	2660.19989	2679.99987
100 %		10	0.001	-0.002	2660.19987	2679.99990
100 %		30	-0.014	-0.023	2660.19989	2679.99989
100 %		40	0.002	-0.012	2660.19992	2679.99995
100 %		50	0.002	0.002	2660.19996	2679.99985
Batt. Endpoint	3.300	20	-0.003	-0.007	2660.19999	2679.99994

8.6 Radiated Spurious Emissions

- ▣ PCC Channel : 39750 (2506.0 MHz)
- ▣ PCC BW(MHz) : 20
- ▣ PCC RB/ RB Offset : 1/ 99
- ▣ SCC Channel : 39948 (2525.8 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)
5 031.80	-55.79	12.48	-65.90	3.89	H	-57.31
7 547.70	-53.58	10.92	-53.45	4.72	H	-47.25
10 063.60	-58.94	11.42	-55.20	5.46	V	-49.24

▣ 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)
5 179.30	-56.53	12.52	-64.96	3.81	H	-56.25
7 768.95	-47.78	11.42	-47.64	4.78	H	-41.00
10 358.60	-58.81	11.45	-53.30	5.56	V	-47.41

▣ PCC Channel : 41292 (2660.2 MHz)

▣ PCC BW(MHz) : 20

▣ PCC RB/ RB Offset : 1/ 99

▣ SCC Channel : 41490 (2680.0 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)
5 340.20	-55.41	13.09	-64.60	3.93	H	-55.44
8 010.30	-49.20	10.77	-47.47	4.88	H	-41.58
10 680.40	-57.01	11.34	-53.16	5.72	V	-47.54

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	40528	2583.8	QPSK	25/ 0	20	40645	2595.5	QPSK	100/ 0	22.901
10	40549	2585.9	QPSK	50/ 0	15	40669	2597.9	QPSK	75/ 0	23.166
10	40526	2583.6	QPSK	50/ 0	20	40670	2598.0	QPSK	100/ 0	27.752
15	40571	2588.1	QPSK	75/ 0	10	40691	2600.1	QPSK	50/ 0	23.146
15	40545	2585.5	QPSK	75/ 0	15	40695	2600.5	QPSK	75/ 0	28.316
15	40523	2583.3	QPSK	75/ 0	20	40694	2600.4	QPSK	100/ 0	32.505
20	40595	2590.5	QPSK	100/ 0	5	40712	2602.2	QPSK	25/ 0	22.964
20	40571	2588.1	QPSK	100/ 0	10	40715	2602.5	QPSK	50/ 0	27.740
20	40546	2585.6	QPSK	100/ 0	15	40717	2602.7	QPSK	75/ 0	32.738
20	40521	2583.1	QPSK	100/ 0	20	40719	2602.9	QPSK	100/ 0	37.612

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	22.822
10	40549	2585.9	16QAM	50/ 0	15	40669	2597.9	16QAM	75/ 0	23.137
10	40526	2583.6	16QAM	50/ 0	20	40670	2598.0	16QAM	100/ 0	27.685
15	40571	2588.1	16QAM	75/ 0	10	40691	2600.1	16QAM	50/ 0	23.134
15	40545	2585.5	16QAM	75/ 0	15	40695	2600.5	16QAM	75/ 0	28.433
15	40523	2583.3	16QAM	75/ 0	20	40694	2600.4	16QAM	100/ 0	32.612
20	40595	2590.5	16QAM	100/ 0	5	40712	2602.2	16QAM	25/ 0	22.926
20	40571	2588.1	16QAM	100/ 0	10	40715	2602.5	16QAM	50/ 0	27.791
20	40546	2585.6	16QAM	100/ 0	15	40717	2602.7	16QAM	75/ 0	32.597
20	40521	2583.1	16QAM	100/ 0	20	40719	2602.9	16QAM	100/ 0	37.511

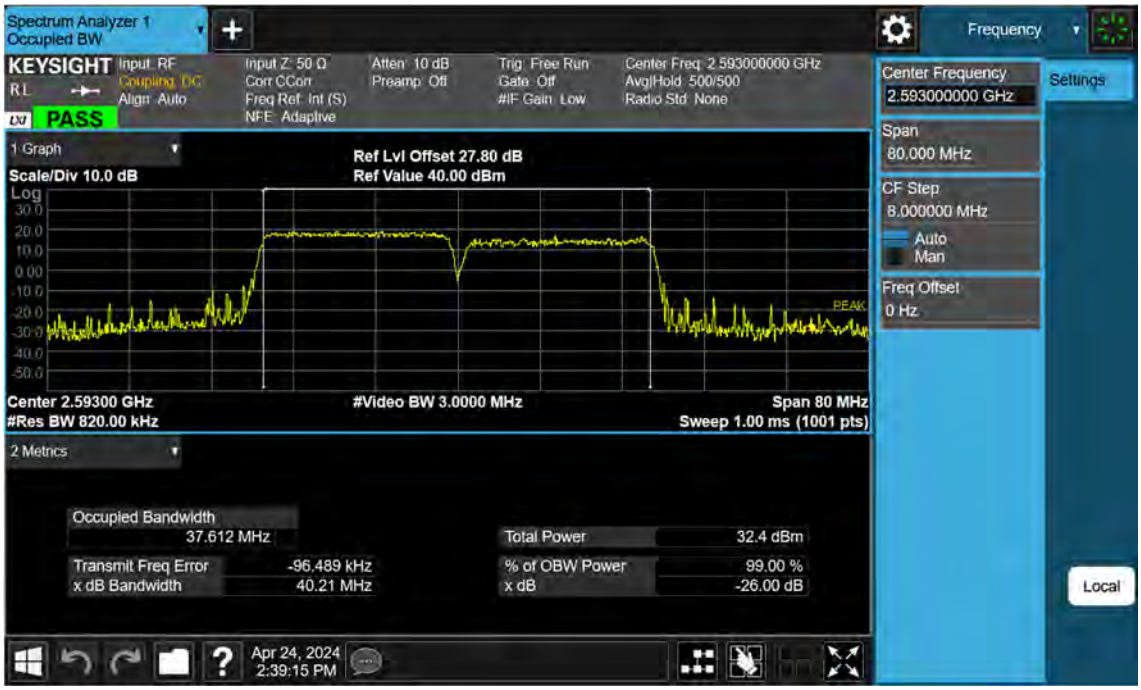
PCC					SCC					Data (MHz)
BW [MHz]	Ch	Freq [MHz]	Mod	RB/ Offset	BW [MHz]	Ch	Freq [MHz]	Mod	RB/ Offset	
5	40528	2583.8	64QAM	25/ 0	20	40645	2595.5	64QAM	100/ 0	22.889
10	40549	2585.9	64QAM	50/ 0	15	40669	2597.9	64QAM	75/ 0	23.173
10	40526	2583.6	64QAM	50/ 0	20	40670	2598.0	64QAM	100/ 0	27.681
15	40571	2588.1	64QAM	75/ 0	10	40691	2600.1	64QAM	50/ 0	23.113
15	40545	2585.5	64QAM	75/ 0	15	40695	2600.5	64QAM	75/ 0	28.339
15	40523	2583.3	64QAM	75/ 0	20	40694	2600.4	64QAM	100/ 0	32.734
20	40595	2590.5	64QAM	100/ 0	5	40712	2602.2	64QAM	25/ 0	22.897
20	40571	2588.1	64QAM	100/ 0	10	40715	2602.5	64QAM	50/ 0	27.729
20	40546	2585.6	64QAM	100/ 0	15	40717	2602.7	64QAM	75/ 0	32.698
20	40521	2583.1	64QAM	100/ 0	20	40719	2602.9	64QAM	100/ 0	37.583

PCC					SCC					Data (MHz)
BW [MHz]	Ch	Freq [MHz]	Mod	RB/ Offset	BW [MHz]	Ch	Freq [MHz]	Mod	RB/ Offset	
5	40528	2583.8	256QAM	25/ 0	20	40645	2595.5	256QAM	100/ 0	22.943
10	40549	2585.9	256QAM	50/ 0	15	40669	2597.9	256QAM	75/ 0	23.031
10	40526	2583.6	256QAM	50/ 0	20	40670	2598.0	256QAM	100/ 0	27.769
15	40571	2588.1	256QAM	75/ 0	10	40691	2600.1	256QAM	50/ 0	23.188
15	40545	2585.5	256QAM	75/ 0	15	40695	2600.5	256QAM	75/ 0	28.365
15	40523	2583.3	256QAM	75/ 0	20	40694	2600.4	256QAM	100/ 0	32.654
20	40595	2590.5	256QAM	100/ 0	5	40712	2602.2	256QAM	25/ 0	22.906
20	40571	2588.1	256QAM	100/ 0	10	40715	2602.5	256QAM	50/ 0	27.783
20	40546	2585.6	256QAM	100/ 0	15	40717	2602.7	256QAM	75/ 0	32.616
20	40521	2583.1	256QAM	100/ 0	20	40719	2602.9	256QAM	100/ 0	37.494

Note:

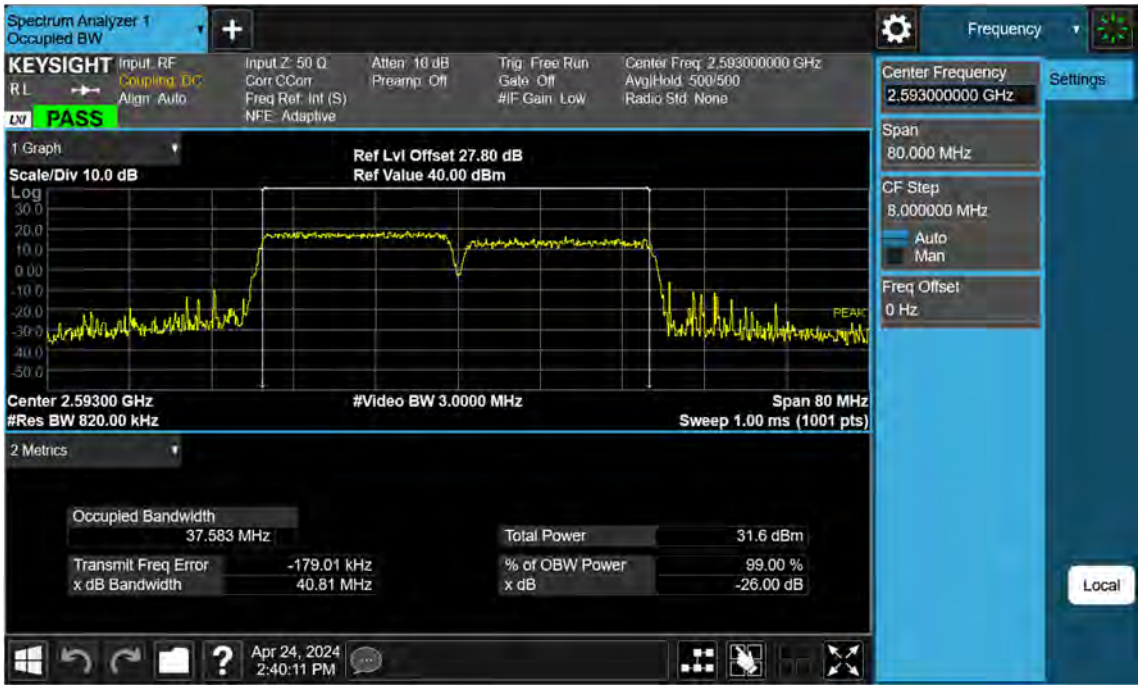
In order to simplify the report, attached plots were only Max.Bandwidth(20+20)

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)



PCC 20 MHz Ch40521 RB100 Offset0, SCC 20 MHz Ch40719 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	40528	2583.8	QPSK	25/ 0	20	40645	2595.5	QPSK	100/ 0	6.35
10	40549	2585.9	QPSK	50/ 0	15	40669	2597.9	QPSK	75/ 0	6.45
10	40526	2583.6	QPSK	50/ 0	20	40670	2598.0	QPSK	100/ 0	6.46
15	40571	2588.1	QPSK	75/ 0	10	40691	2600.1	QPSK	50/ 0	6.74
15	40545	2585.5	QPSK	75/ 0	15	40695	2600.5	QPSK	75/ 0	6.54
15	40523	2583.3	QPSK	75/ 0	20	40694	2600.4	QPSK	100/ 0	6.36
20	40595	2590.5	QPSK	100/ 0	5	40712	2602.2	QPSK	25/ 0	6.43
20	40571	2588.1	QPSK	100/ 0	10	40715	2602.5	QPSK	50/ 0	6.32
20	40546	2585.6	QPSK	100/ 0	15	40717	2602.7	QPSK	75/ 0	6.35
20	40521	2583.1	QPSK	100/ 0	20	40719	2602.9	QPSK	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	40528	2583.8	16QAM	25/ 0	20	40645	2595.5	16QAM	100/ 0	6.89
10	40549	2585.9	16QAM	50/ 0	15	40669	2597.9	16QAM	75/ 0	6.94
10	40526	2583.6	16QAM	50/ 0	20	40670	2598.0	16QAM	100/ 0	6.97
15	40571	2588.1	16QAM	75/ 0	10	40691	2600.1	16QAM	50/ 0	6.91
15	40545	2585.5	16QAM	75/ 0	15	40695	2600.5	16QAM	75/ 0	6.95
15	40523	2583.3	16QAM	75/ 0	20	40694	2600.4	16QAM	100/ 0	6.86
20	40595	2590.5	16QAM	100/ 0	5	40712	2602.2	16QAM	25/ 0	6.93
20	40571	2588.1	16QAM	100/ 0	10	40715	2602.5	16QAM	50/ 0	6.89
20	40546	2585.6	16QAM	100/ 0	15	40717	2602.7	16QAM	75/ 0	6.93
20	40521	2583.1	16QAM	100/ 0	20	40719	2602.9	16QAM	100/ 0	7.13

PCC					SCC					Data (dB)
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	6.95
10	40549	2585.9	64QAM	50/ 0	15	40669	2597.9	64QAM	75/ 0	7.06
10	40526	2583.6	64QAM	50/ 0	20	40670	2598.0	64QAM	100/ 0	7.09
15	40571	2588.1	64QAM	75/ 0	10	40691	2600.1	64QAM	50/ 0	7.05
15	40545	2585.5	64QAM	75/ 0	15	40695	2600.5	64QAM	75/ 0	7.11
15	40523	2583.3	64QAM	75/ 0	20	40694	2600.4	64QAM	100/ 0	7.11
20	40595	2590.5	64QAM	100/ 0	5	40712	2602.2	64QAM	25/ 0	7.12
20	40571	2588.1	64QAM	100/ 0	10	40715	2602.5	64QAM	50/ 0	7.10
20	40546	2585.6	64QAM	100/ 0	15	40717	2602.7	64QAM	75/ 0	7.07
20	40521	2583.1	64QAM	100/ 0	20	40719	2602.9	64QAM	100/ 0	7.25

PCC					SCC					Data (dB)
BW [MHz]	Ch	Freq [MHz]	Mod	RB/ Offset	BW [MHz]	Ch	Freq [MHz]	Mod	RB/ Offset	
5	40528	2583.8	256QAM	25/ 0	20	40645	2595.5	256QAM	100/ 0	7.11
10	40549	2585.9	256QAM	50/ 0	15	40669	2597.9	256QAM	75/ 0	7.06
10	40526	2583.6	256QAM	50/ 0	20	40670	2598.0	256QAM	100/ 0	6.96
15	40571	2588.1	256QAM	75/ 0	10	40691	2600.1	256QAM	50/ 0	7.08
15	40545	2585.5	256QAM	75/ 0	15	40695	2600.5	256QAM	75/ 0	7.11
15	40523	2583.3	256QAM	75/ 0	20	40694	2600.4	256QAM	100/ 0	7.01
20	40595	2590.5	256QAM	100/ 0	5	40712	2602.2	256QAM	25/ 0	7.06
20	40571	2588.1	256QAM	100/ 0	10	40715	2602.5	256QAM	50/ 0	7.10
20	40546	2585.6	256QAM	100/ 0	15	40717	2602.7	256QAM	75/ 0	7.05
20	40521	2583.1	256QAM	100/ 0	20	40719	2602.9	256QAM	100/ 0	7.18

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)

PCC 20 MHz Ch40521 RB100 Offset0, SCC 20 MHz Ch40719 RB100 Offset0_(256QAM)

9. TEST DATA(Sub 5 Ant)

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	35
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, Band 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 modes of operation were investigated and the worst case configuration results are reported.
   Mode : Stand alone, Stand alone + External accessories (Earphone, AC adapter, etc.)
   Worst case : Stand alone
5. We were performed the RSE test in condition of co-location.
   Mode : Stand alone, Simultaneous transmission scenarios
   Worst case : Stand alone
6. All 3 channels(low/mid/high) of conducted power and radiated power were investigated and the worst case channel results are reported.
7. The EUT was tested in three modes(Open, Half-open, Closed), the worst case configuration results are reported.
   Worst case: open mode.

[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	QPSK	Low	10	2501.3	39703	1	49	15	2513.3	39823	1	0
		Mid	10	2585.9	40549	1	49	15	2597.9	40669	1	0
		High	5	2668.3	41373	1	24	20	2680.0	41490	1	0
		Low	10	2501.3	39703	1	0	15	2513.3	39823	1	74
		Mid	10	2585.9	40549	1	0	15	2597.9	40669	1	74
		High	5	2668.3	41373	1	0	20	2680.0	41490	1	99
		Low	10	2501.3	39703	50	0	15	2513.3	39823	75	0
		Mid	15	2583.3	40523	75	0	20	2600.4	40694	100	0
		High	15	2662.9	41319	75	0	20	2680.0	41490	100	0
		Low	20	2506.0	39750	100	0	20	2525.8	39948	100	0
		Mid	20	2583.1	40521	100	0	20	2602.9	40719	100	0
		High	20	2660.2	41292	100	0	20	2680.0	41490	100	0
Radiated Spurious Emissions	QPSK	Low	20	2506.0	39750	1	99	20	2525.8	39948	1	0
		Mid	5	2583.8	40528	1	24	20	2595.5	40645	1	0
		High	15	2667.5	41365	1	74	15	2682.5	41515	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	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

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9.1 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	2499.3	39683	1	24	20	2511.0	39800	1	0	22.19
	10	***2501.3***	***39703***	***1***	***49***	***15***	***2513.3***	***39823***	***1***	***0***	***26.03***
	10	2501.5	39705	1	49	20	2515.9	39849	1	0	21.71
	15	2503.5	39725	1	74	10	2515.5	39845	1	0	25.66
	15	2503.5	39725	1	74	15	2518.5	39875	1	0	25.71
	15	2503.8	39728	1	74	20	2520.9	39899	1	0	25.68
	20	2506.0	39750	1	99	5	2517.7	39867	1	0	24.67
	20	2506.0	39750	1	99	10	2520.4	39894	1	0	24.70
	20	2506.0	39750	1	99	15	2523.1	39921	1	0	25.72
	20	2506.0	39750	1	99	20	2525.8	39948	1	0	25.62
Mid	5	2583.8	40528	1	24	20	2595.5	40645	1	0	25.50
	10	***2585.9***	***40549***	***1***	***49***	***15***	***2597.9***	***40669***	***1***	***0***	***25.51***
	10	2583.6	40526	1	49	20	2598.0	40670	1	0	25.44
	15	2588.1	40571	1	74	10	2600.1	40691	1	0	25.42
	15	2585.5	40545	1	74	15	2600.5	40695	1	0	25.47
	15	2583.3	40523	1	74	20	2600.4	40694	1	0	25.45
	20	2590.5	40595	1	99	5	2602.2	40712	1	0	25.41
	20	2588.1	40571	1	99	10	2602.5	40715	1	0	25.44
	20	2585.6	40546	1	99	15	2602.7	40717	1	0	25.47
	20	2583.1	40521	1	99	20	2602.9	40719	1	0	25.44
High	***5***	***2668.3***	***41373***	***1***	***24***	***20***	***2680.0***	***41490***	***1***	***0***	***25.40***
	10	2670.5	41395	1	49	15	2682.5	41515	1	0	25.29
	10	2665.6	41346	1	49	20	2680.0	41490	1	0	25.36
	15	2672.7	41417	1	74	10	2684.7	41537	1	0	25.30
	15	2667.5	41365	1	74	15	2682.5	41515	1	0	25.33
	15	2662.9	41319	1	74	20	2680.0	41490	1	0	25.31
	20	2675.0	41440	1	99	5	2686.7	41557	1	0	25.25
	20	2670.1	41391	1	99	10	2684.5	41535	1	0	25.26
	20	2665.1	41341	1	99	15	2682.2	41512	1	0	25.27
	20	2660.2	41292	1	99	20	2680.0	41490	1	0	25.30

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	22.36
	10	***2501.3***	***39703***	***50***	***0***	***15***	***2513.3***	***39823***	***75***	***0***	***23.88***
	10	2501.5	39705	50	0	20	2515.9	39849	100	0	21.93
	15	2503.5	39725	75	0	10	2515.5	39845	50	0	23.88
	15	2503.5	39725	75	0	15	2518.5	39875	75	0	21.91
	15	2503.8	39728	75	0	20	2520.9	39899	100	0	22.36
	20	2506.0	39750	100	0	5	2517.7	39867	25	0	23.88
	20	2506.0	39750	100	0	10	2520.4	39894	50	0	21.91
	20	2506.0	39750	100	0	15	2523.1	39921	75	0	22.39
	20	2506.0	39750	100	0	20	2525.8	39948	100	0	22.37
Mid	5	2583.8	40528	25	0	20	2595.5	40645	100	0	23.64
	10	2585.9	40549	50	0	15	2597.9	40669	75	0	23.66
	10	2583.6	40526	50	0	20	2598.0	40670	100	0	23.67
	15	2588.1	40571	75	0	10	2600.1	40691	50	0	23.65
	15	2585.5	40545	75	0	15	2600.5	40695	75	0	23.63
	15	***2583.3***	***40523***	***75***	***0***	***20***	***2600.4***	***40694***	***100***	***0***	***23.70***
	20	2590.5	40595	100	0	5	2602.2	40712	25	0	23.63
	20	2588.1	40571	100	0	10	2602.5	40715	50	0	23.66
	20	2585.6	40546	100	0	15	2602.7	40717	75	0	23.68
	20	2583.1	40521	100	0	20	2602.9	40719	100	0	23.66
High	5	2668.3	41373	25	0	20	2680.0	41490	100	0	23.60
	10	2670.5	41395	50	0	15	2682.5	41515	75	0	23.63
	10	2665.6	41346	50	0	20	2680.0	41490	100	0	23.62
	15	2672.7	41417	75	0	10	2684.7	41537	50	0	23.58
	15	2667.5	41365	75	0	15	2682.5	41515	75	0	23.61
	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	23.56
	20	2670.1	41391	100	0	10	2684.5	41535	50	0	23.63
	20	2665.1	41341	100	0	15	2682.2	41512	75	0	23.64
	20	2660.2	41292	100	0	20	2680.0	41490	100	0	23.70

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	10	2501.3	39703	1	49	15	2513.3	39823	1	0	24.86
Mid	10	2585.9	40549	1	49	15	2597.9	40669	1	0	24.72
High	5	2668.3	41373	1	24	20	2680.0	41490	1	0	24.58
Low	10	2501.3	39703	50	0	15	2513.3	39823	75	0	23.03
Mid	15	2583.3	40523	75	0	20	2600.4	40694	100	0	22.82
High	15	2662.9	41319	75	0	20	2680.0	41490	100	0	22.79

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	10	2501.3	39703	1	49	15	2513.3	39823	1	0	24.13
Mid	10	2585.9	40549	1	49	15	2597.9	40669	1	0	24.16
High	5	2668.3	41373	1	24	20	2680.0	41490	1	0	24.13
Low	10	2501.3	39703	50	0	15	2513.3	39823	75	0	22.98
Mid	15	2583.3	40523	75	0	20	2600.4	40694	100	0	22.76
High	15	2662.9	41319	75	0	20	2680.0	41490	100	0	22.75

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	10	2501.3	39703	1	49	15	2513.3	39823	1	0	21.22
Mid	10	2585.9	40549	1	49	15	2597.9	40669	1	0	21.02
High	5	2668.3	41373	1	24	20	2680.0	41490	1	0	20.99
Low	10	2501.3	39703	50	0	15	2513.3	39823	75	0	21.05
Mid	15	2583.3	40523	75	0	20	2600.4	40694	100	0	20.82
High	15	2662.9	41319	75	0	20	2680.0	41490	100	0	20.84

Note:

Modulation : 256QAM

9.2 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	39683	1/24	20	39800	1/0	-25.26	11.60	10.55	2.57	H	0.091	19.58
	10	39703	1/49	15	39823	1/0	-21.46	15.43	10.59	2.57	H	0.221	23.45
	10	39705	1/49	20	39849	1/0	-25.35	11.54	10.59	2.57	H	0.090	19.56
	15	39725	1/74	10	39845	1/0	-21.33	15.56	10.59	2.57	H	0.228	23.58
	15	39725	1/74	15	39875	1/0	-21.24	15.65	10.59	2.57	H	0.233	23.67
	15	39728	1/74	20	39899	1/0	-21.23	15.66	10.59	2.57	H	0.234	23.68
	20	39750	1/99	5	39867	1/0	-21.43	15.46	10.59	2.57	H	0.223	23.48
	20	39750	1/99	10	39894	1/0	-21.54	15.35	10.59	2.57	H	0.217	23.37
	20	39750	1/99	15	39921	1/0	-20.63	16.25	10.64	2.59	H	0.269	24.30
	20	***39750***	***1/99***	***20***	***39948***	***1/0***	***-20.54***	***16.34***	***10.64***	***2.59***	***H***	***0.274***	***24.39***
Mid	***5***	***40528***	***1/24***	***20***	***40645***	***1/0***	***-19.54***	***17.68***	***10.64***	***2.71***	***H***	***0.364***	***25.61***
	10	40549	1/49	15	40669	1/0	-19.94	17.28	10.64	2.71	H	0.332	25.21
	10	40526	1/49	20	40670	1/0	-19.84	17.38	10.64	2.71	H	0.340	25.31
	15	40571	1/74	10	40691	1/0	-19.83	17.28	10.64	2.68	H	0.334	25.24
	15	40545	1/74	15	40695	1/0	-19.59	17.63	10.64	2.71	H	0.360	25.56
	15	40523	1/74	20	40694	1/0	-19.98	17.24	10.64	2.71	H	0.329	25.17
	20	40595	1/99	5	40712	1/0	-19.84	17.27	10.64	2.68	H	0.333	25.23
	20	40571	1/99	10	40715	1/0	-19.73	17.38	10.64	2.68	H	0.342	25.34
	20	40546	1/99	15	40717	1/0	-19.78	17.33	10.64	2.68	H	0.338	25.29
	20	40521	1/99	20	40719	1/0	-19.71	17.51	10.64	2.71	H	0.350	25.44
High	5	41373	1/24	20	41490	1/0	-20.70	16.72	10.72	2.74	H	0.295	24.70
	10	41395	1/49	15	41515	1/0	-20.51	16.91	10.72	2.74	H	0.308	24.89
	10	41346	1/49	20	41490	1/0	-20.67	16.75	10.72	2.74	H	0.297	24.73
	15	41417	1/74	10	41537	1/0	-20.64	16.79	10.72	2.75	H	0.299	24.76
	15	***41365***	***1/74***	***15***	***41515***	***1/0***	***-20.43***	***16.99***	***10.72***	***2.74***	***H***	***0.314***	***24.97***
	15	41319	1/74	20	41490	1/0	-20.56	16.86	10.71	2.73	H	0.305	24.84
	20	41440	1/99	5	41557	1/0	-20.78	16.65	10.72	2.75	H	0.289	24.62
	20	41391	1/99	10	41535	1/0	-20.76	16.66	10.72	2.74	H	0.291	24.64
	20	41341	1/99	15	41512	1/0	-20.56	16.86	10.72	2.74	H	0.304	24.84
	20	41292	1/99	20	41490	1/0	-20.60	16.82	10.71	2.73	H	0.302	24.80

Note:

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

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
20	39750	1/99	20	39948	1/0	-21.60	15.28	10.64	2.59	H	0.215	23.33
5	40528	1/24	20	40645	1/0	-20.58	16.64	10.64	2.71	H	0.286	24.57
10	40549	1/49	15	40669	1/0	-20.93	16.29	10.64	2.71	H	0.264	24.22
10	40526	1/49	20	40670	1/0	-20.97	16.25	10.64	2.71	H	0.262	24.18
15	40571	1/74	10	40691	1/0	-20.78	16.33	10.64	2.68	H	0.269	24.29
15	40545	1/74	15	40695	1/0	-20.71	16.51	10.64	2.71	H	0.278	24.44
15	40523	1/74	20	40694	1/0	-21.06	16.16	10.64	2.71	H	0.256	24.09
20	40595	1/99	5	40712	1/0	-20.90	16.21	10.64	2.68	H	0.261	24.17
20	40571	1/99	10	40715	1/0	-20.73	16.38	10.64	2.68	H	0.272	24.34
20	40546	1/99	15	40717	1/0	-20.75	16.36	10.64	2.68	H	0.270	24.32
20	40521	1/99	20	40719	1/0	-20.64	16.58	10.64	2.71	H	0.282	24.51
15	41365	1/74	15	41515	1/0	-21.34	16.08	10.72	2.74	H	0.255	24.06

Note:

1. Modulation : 16QAM

2. Limit : < 2 Watts

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
20	39750	1/99	20	39948	1/0	-22.04	14.84	10.64	2.59	H	0.194	22.89
5	40528	1/24	20	40645	1/0	-21.04	16.18	10.64	2.71	H	0.258	24.11
10	40549	1/49	15	40669	1/0	-21.46	15.76	10.64	2.71	H	0.234	23.69
10	40526	1/49	20	40670	1/0	-21.38	15.84	10.64	2.71	H	0.238	23.77
15	40571	1/74	10	40691	1/0	-21.24	15.87	10.64	2.68	H	0.242	23.83
15	40545	1/74	15	40695	1/0	-21.20	16.02	10.64	2.71	H	0.248	23.95
15	40523	1/74	20	40694	1/0	-21.54	15.68	10.64	2.71	H	0.230	23.61
20	40595	1/99	5	40712	1/0	-21.34	15.77	10.64	2.68	H	0.236	23.73
20	40571	1/99	10	40715	1/0	-21.17	15.94	10.64	2.68	H	0.245	23.90
20	40546	1/99	15	40717	1/0	-21.11	16.00	10.64	2.68	H	0.249	23.96
20	40521	1/99	20	40719	1/0	-21.13	16.09	10.64	2.71	H	0.252	24.02
15	41365	1/74	15	41515	1/0	-21.90	15.52	10.72	2.74	H	0.224	23.50

Note:

1. Modulation : 64QAM

2. Limit : < 2 Watts

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
20	39750	100/0	20	39948	1/0	-25.11	11.77	10.64	2.59	H	0.096	19.82
5	40528	25/0	20	40645	1/0	-24.08	13.14	10.64	2.71	H	0.128	21.07
10	40549	50/0	15	40669	1/0	-24.56	12.66	10.64	2.71	H	0.115	20.59
10	40526	50/0	20	40670	1/0	-24.43	12.79	10.64	2.71	H	0.118	20.72
15	40571	75/0	10	40691	1/0	-24.38	12.73	10.64	2.68	H	0.117	20.69
15	40545	75/0	15	40695	1/0	-24.17	13.05	10.64	2.71	H	0.125	20.98
15	40523	75/0	20	40694	1/0	-24.52	12.70	10.64	2.71	H	0.116	20.63
20	40595	100/0	5	40712	1/0	-24.48	12.63	10.64	2.68	H	0.115	20.59
20	40571	100/0	10	40715	1/0	-24.30	12.81	10.64	2.68	H	0.119	20.77
20	40546	100/0	15	40717	1/0	-24.21	12.90	10.64	2.68	H	0.122	20.86
20	40521	100/0	20	40719	1/0	-24.20	13.02	10.64	2.71	H	0.124	20.95
15	41365	75/0	15	41515	1/0	-24.98	12.44	10.72	2.74	H	0.110	20.42

Note:

1. Modulation : 256QAM

2. Limit : < 2 Watts

9.3 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	10	39703	2501.3	1/49	15	39823	2513.3	1/0	8.0040	32.570	-77.63	-45.06
Mid	10	40549	2585.9	1/49	15	40669	2597.9	1/0	8.2896	32.570	-75.87	-43.30
High	5	41373	2668.3	1/24	20	41490	2680.0	1/0	6.0155	32.570	-75.79	-43.22
Low	10	39703	2501.3	1/0	15	39823	2513.3	1/74	8.0863	32.570	-76.20	-43.63
Mid	10	40549	2585.9	1/0	15	40669	2597.9	1/74	3.8021	31.955	-76.10	-44.15
High	5	41373	2668.3	1/0	20	41490	2680.0	1/99	8.2662	32.570	-76.35	-43.78
Low	10	39703	2501.3	50/0	15	39823	2513.3	75/0	9.1640	32.570	-75.66	-43.09
Mid	15	40523	2583.3	75/0	20	40694	2600.4	100/0	8.3315	32.570	-76.09	-43.52
High	15	41319	2662.9	75/0	20	41490	2680.0	100/0	7.9895	32.570	-76.67	-44.10
Low	20	39750	2506.0	100/0	20	39948	2525.8	100/0	4.0459	31.955	-76.03	-44.07
Mid	20	40521	2583.1	100/0	20	40719	2602.9	100/0	5.4322	32.570	-76.06	-43.49
High	20	41292	2660.2	100/0	20	41490	2680.0	100/0	7.7468	32.570	-76.16	-43.59

Note:

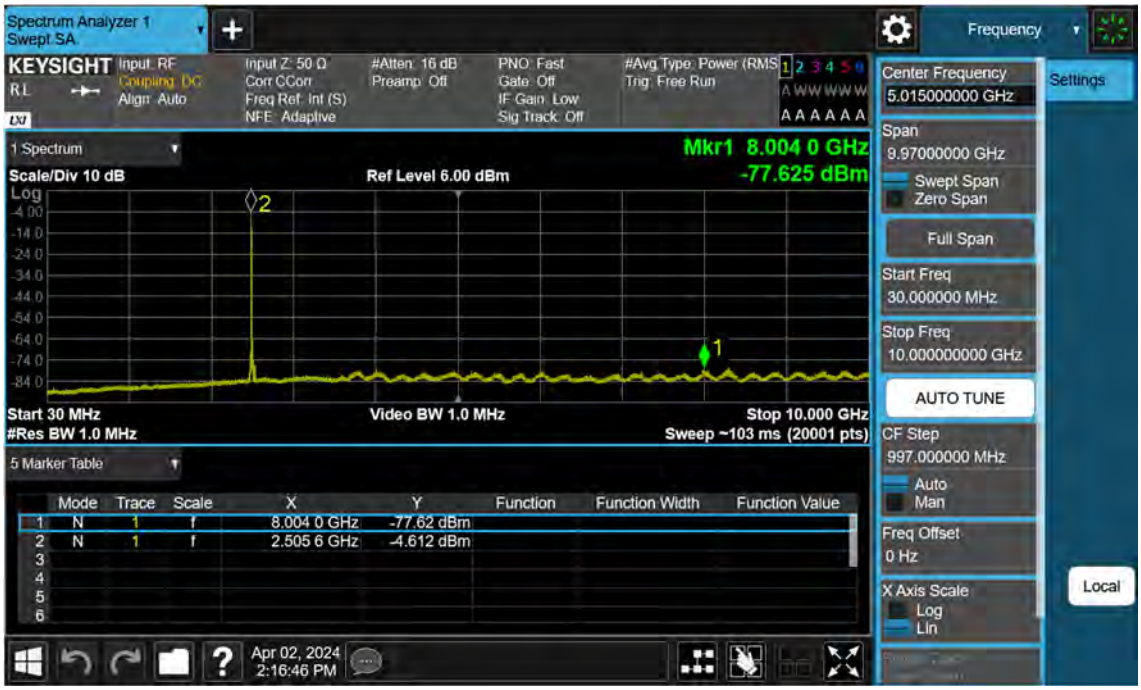
1. Modulation : QPSK
2. Factor(dB) = Cable Loss + Ext. Attenuator + Power Splitter
3. Factors for frequency :

Frequency Range (GHz)	Factor [dB]
0.03 – 1	25.270
1 – 5	27.976
5 – 10	28.591
10 – 15	29.116
15 – 20	29.489
Above 20(26.5)	30.131

4. Limit : -13.0 dBm

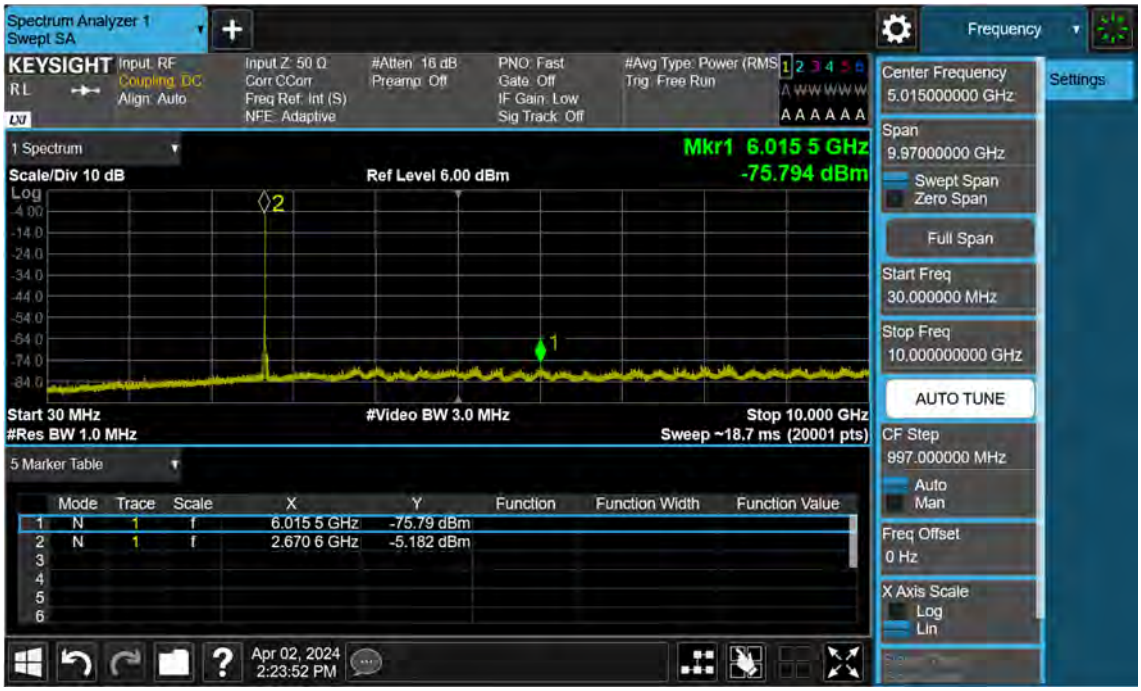
Frequency Range : 30 MHz ~ 10 GHz

PCC 10 MHz Ch39703 RB1 Offset49 SCC 15 MHz Ch39823 RB1 Offset0



PCC 10 MHz Ch40549 RB1 Offset49 SCC 15 MHz Ch40669 RB1 Offset0

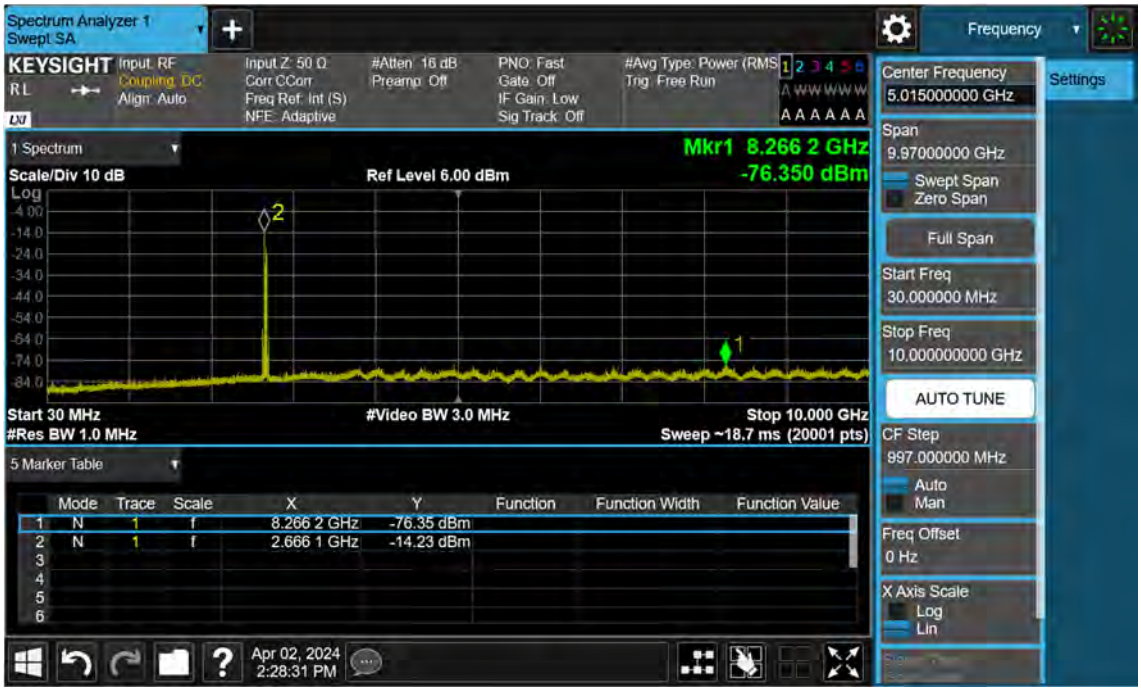
PCC 5 MHz Ch41373 RB1 Offset24 SCC 20 MHz Ch41490 RB1 Offset0



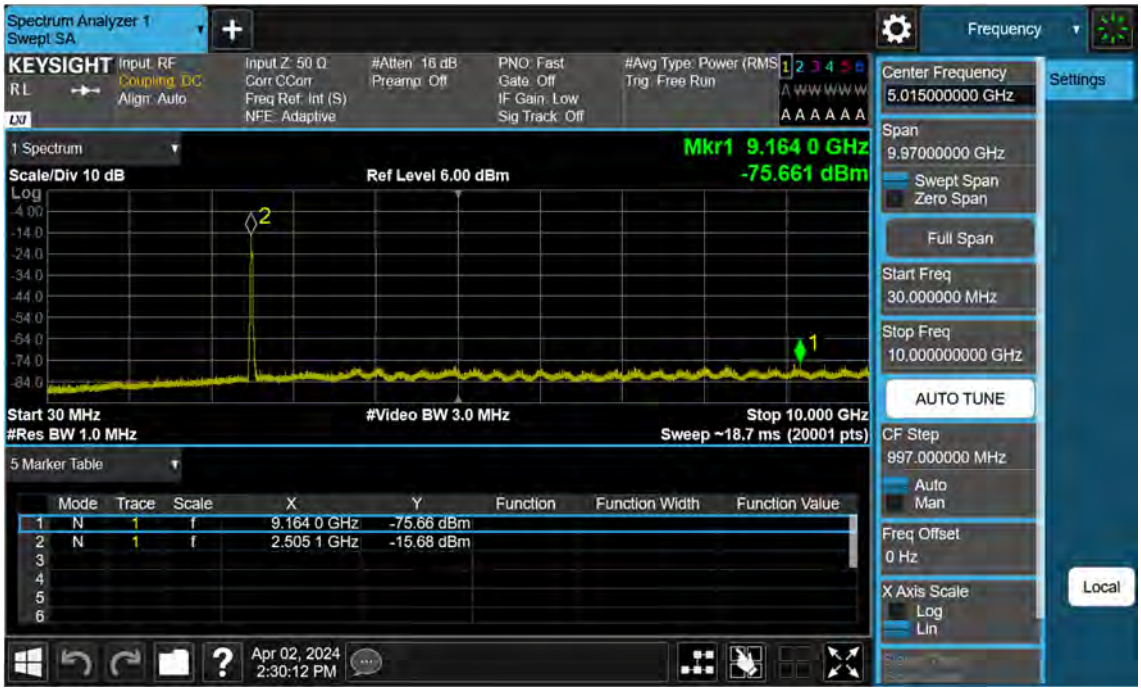
PCC 10 MHz Ch39703 RB1 Offset0 SCC 15 MHz Ch39823 RB1 Offset74

PCC 10 MHz Ch40549 RB1 Offset0 SCC 15 MHz Ch40669 RB1 Offset74

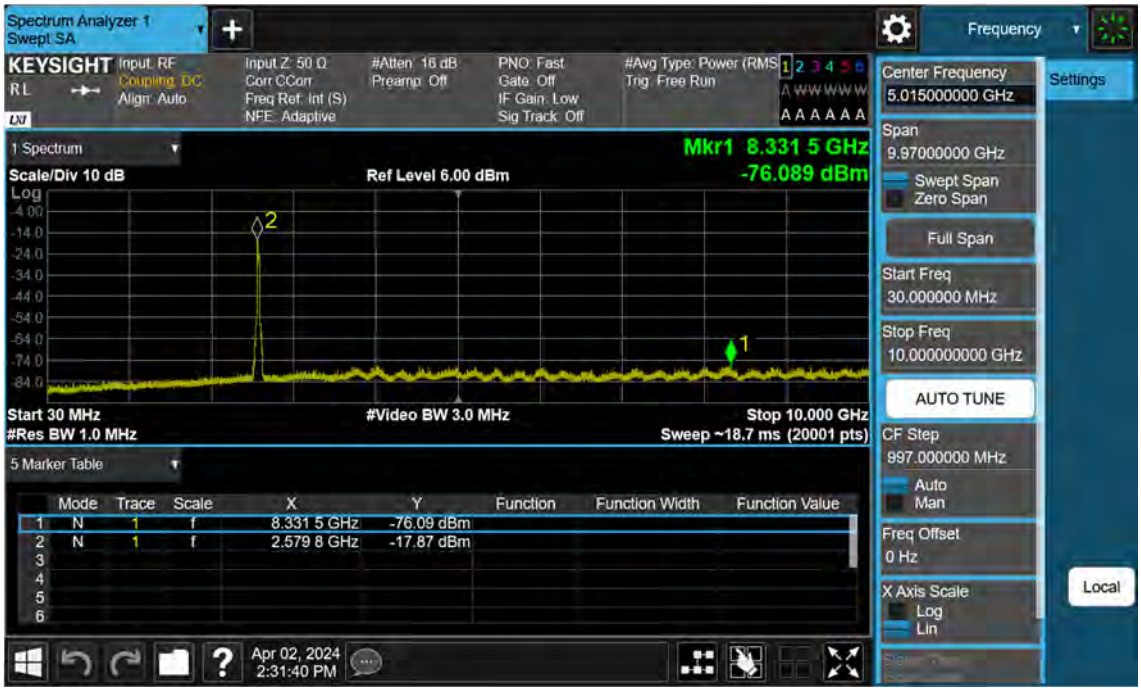
PCC 5 MHz Ch41373 RB1 Offset0 SCC 20 MHz Ch41490 RB1 Offset99



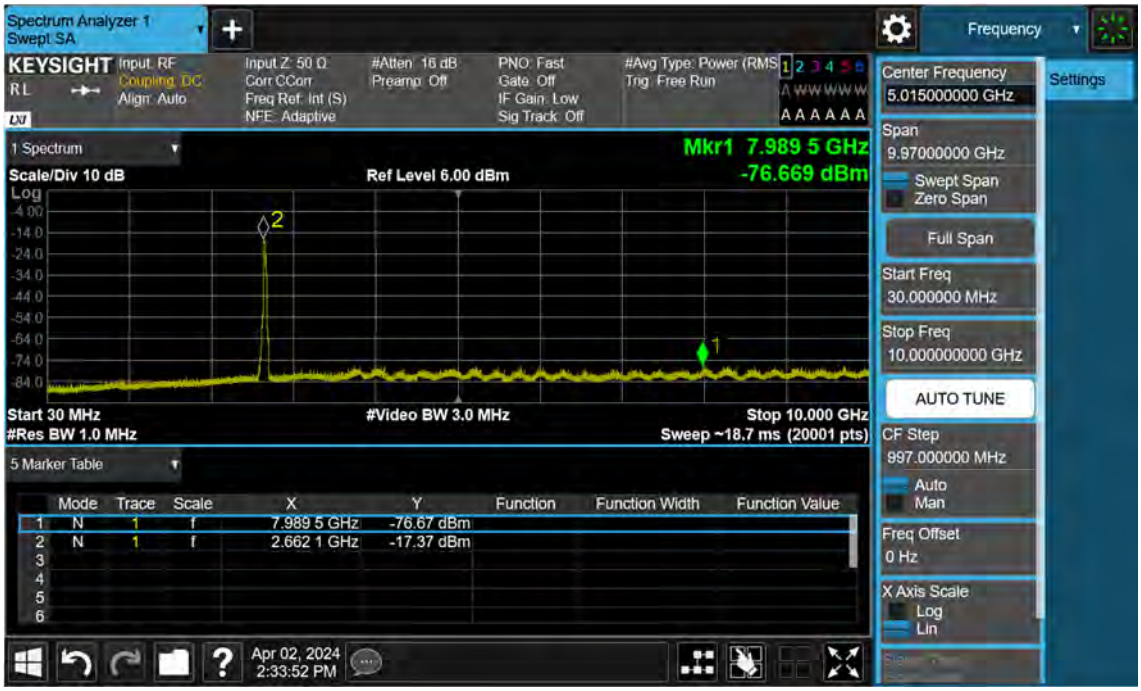
PCC 10 MHz Ch39703 RB50 Offset0 SCC 15 MHz Ch39823 RB75 Offset0



PCC 15 MHz Ch40523 RB75 Offset0 SCC 20 MHz Ch40694 RB100 Offset0

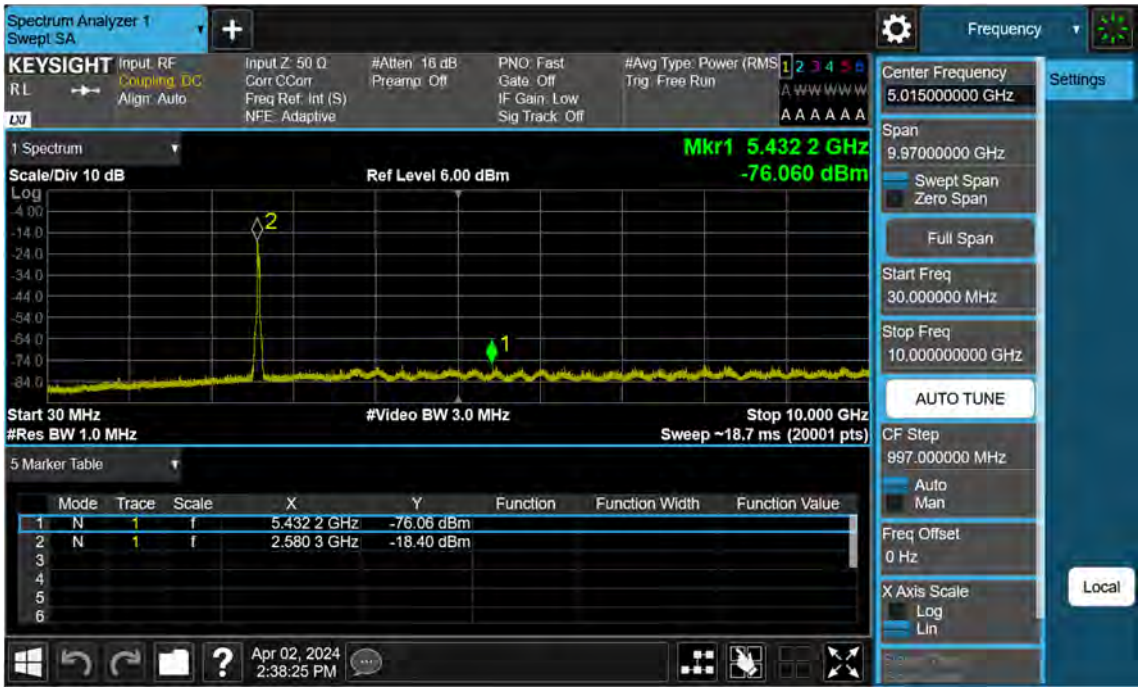


PCC 15 MHz Ch41319 RB75 Offset0 SCC 20 MHz Ch41490 RB100 Offset0

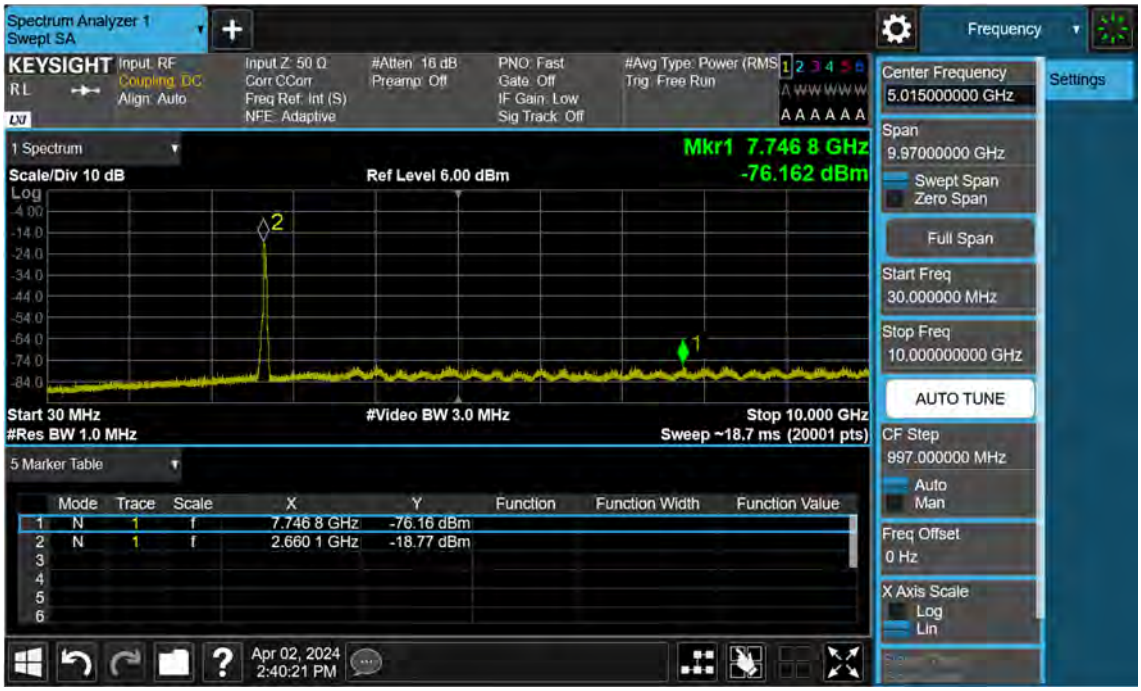


PCC 20 MHz Ch39750 RB100 Offset0 SCC 20 MHz Ch39948 RB100 Offset0

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 ~ 20 GHz

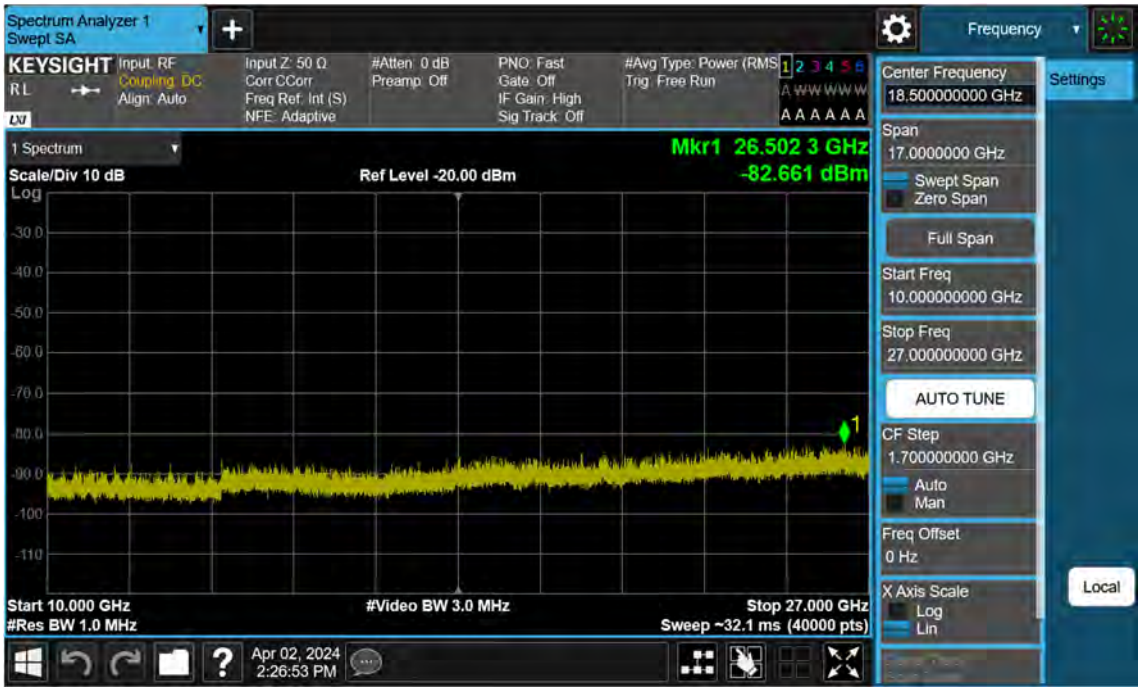
PCC 10 MHz Ch39703 RB1 Offset49, SCC 15 MHz Ch39823 RB1 Offset0

PCC 10 MHz Ch40549 RB1 Offset49, SCC 15 MHz Ch40669 RB1 Offset0

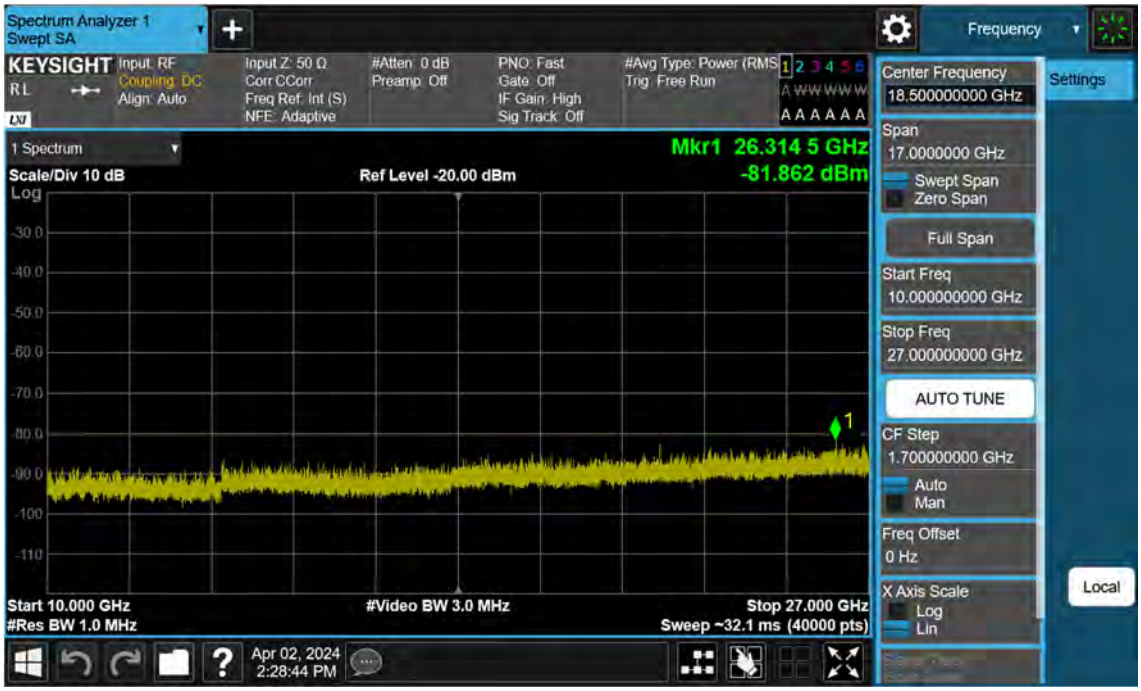
PCC 5 MHz Ch41373 RB1 Offset24, SCC 20 MHz Ch41490 RB1 Offset0

PCC 10 MHz Ch39703 RB1 Offset0, SCC 15 MHz Ch39823 RB1 Offset74

PCC 10 MHz Ch40549 RB1 Offset0, SCC 15 MHz Ch40669 RB1 Offset74

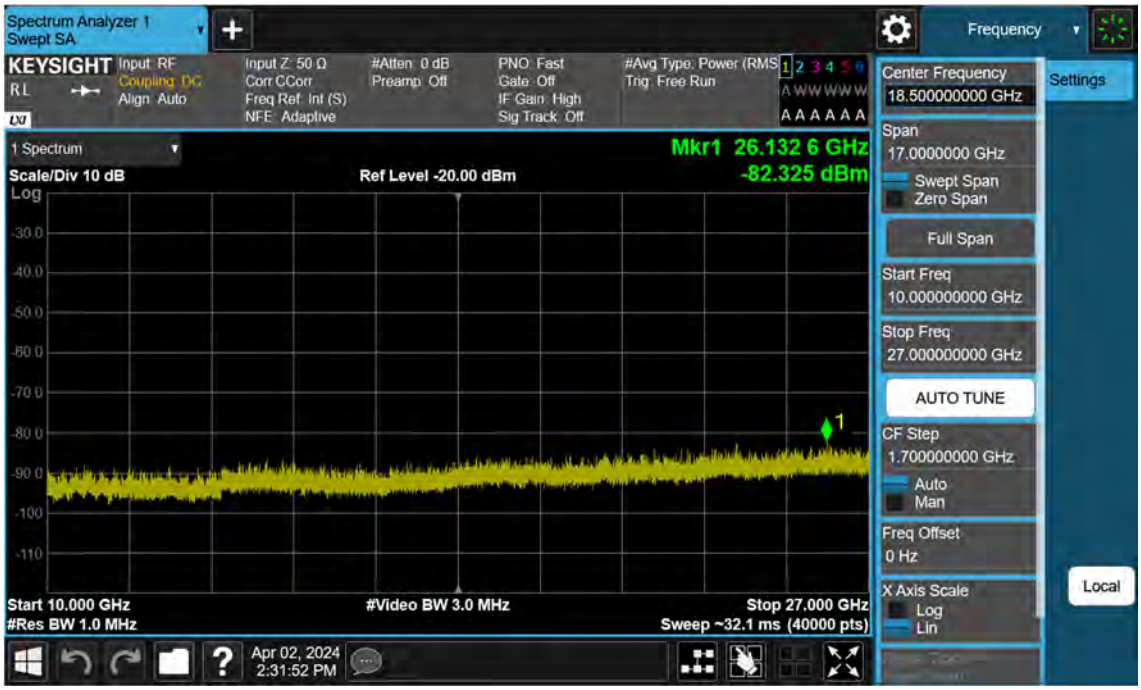


PCC 5 MHz Ch41373 RB1 Offset0, SCC 20 MHz Ch41490 RB1 Offset99

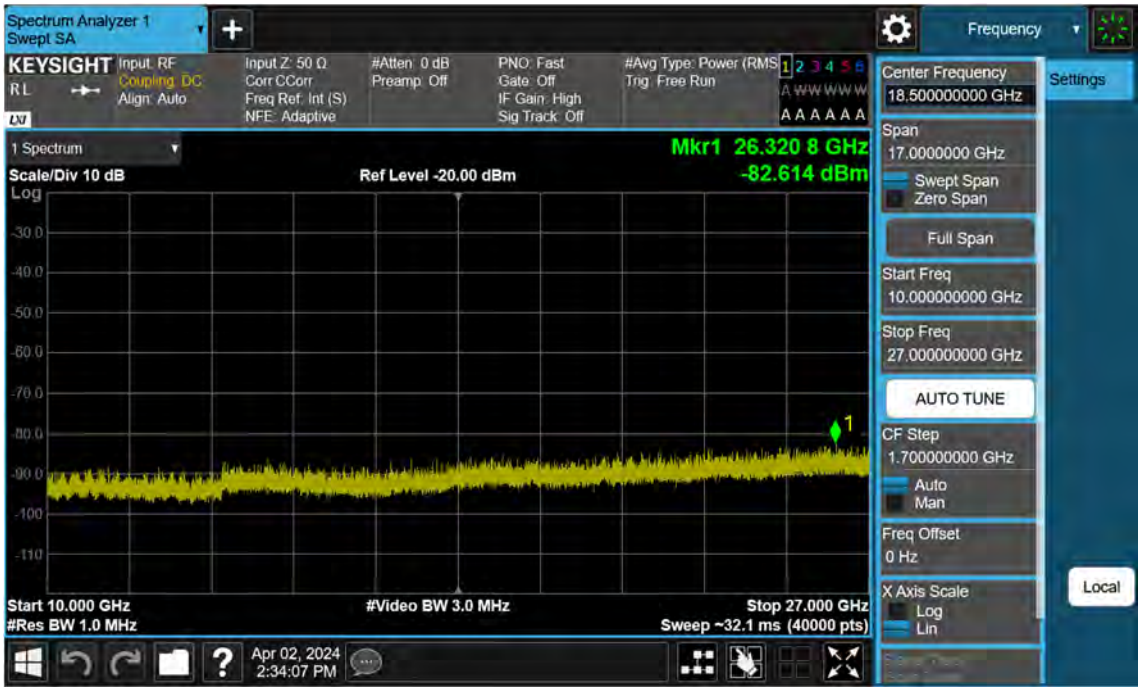


PCC 10 MHz Ch39703 RB50 Offset0, SCC 15 MHz Ch39823 RB75 Offset0

PCC 15 MHz Ch40523 RB75 Offset0, SCC 20 MHz Ch40694 RB100 Offset0

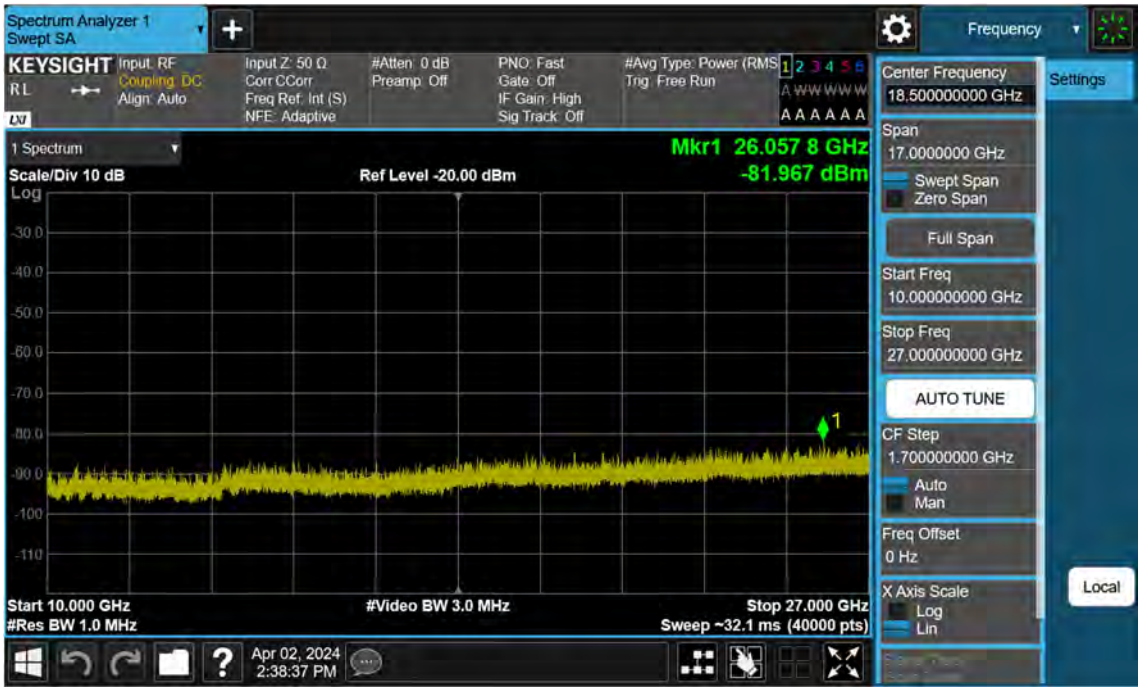


PCC 15 MHz Ch41319 RB75 Offset0, SCC 20 MHz Ch41490 RB100 Offset0

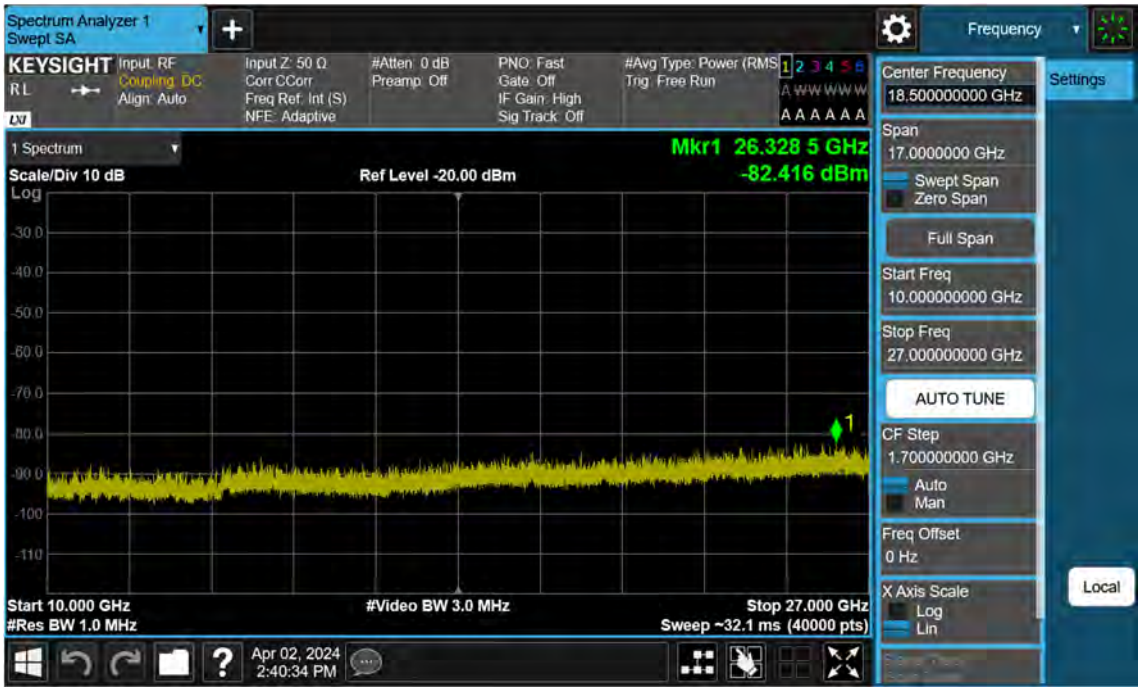


PCC 20 MHz Ch39750 RB100 Offset0, SCC 20 MHz Ch39948 RB100 Offset0

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

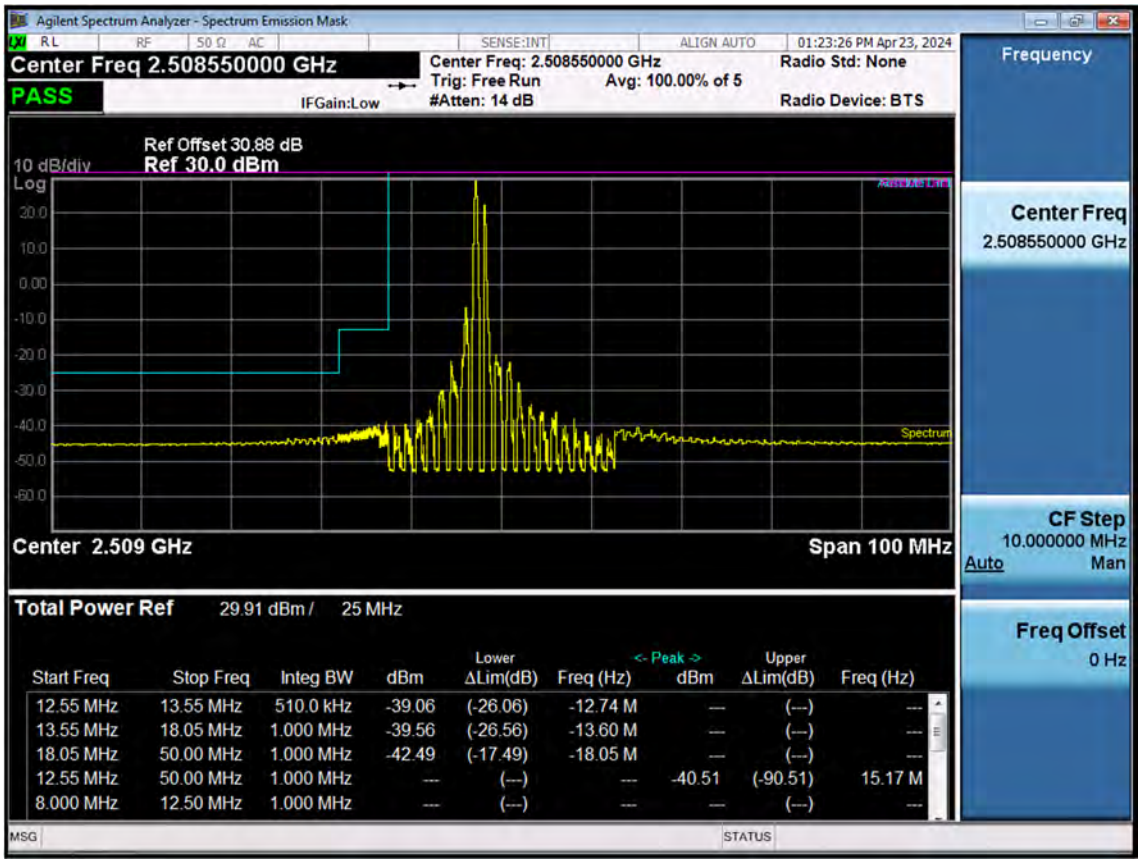


PCC 20 MHz Ch41292 RB100 Offset0, SCC 20 MHz Ch41490 RB100 Offset0

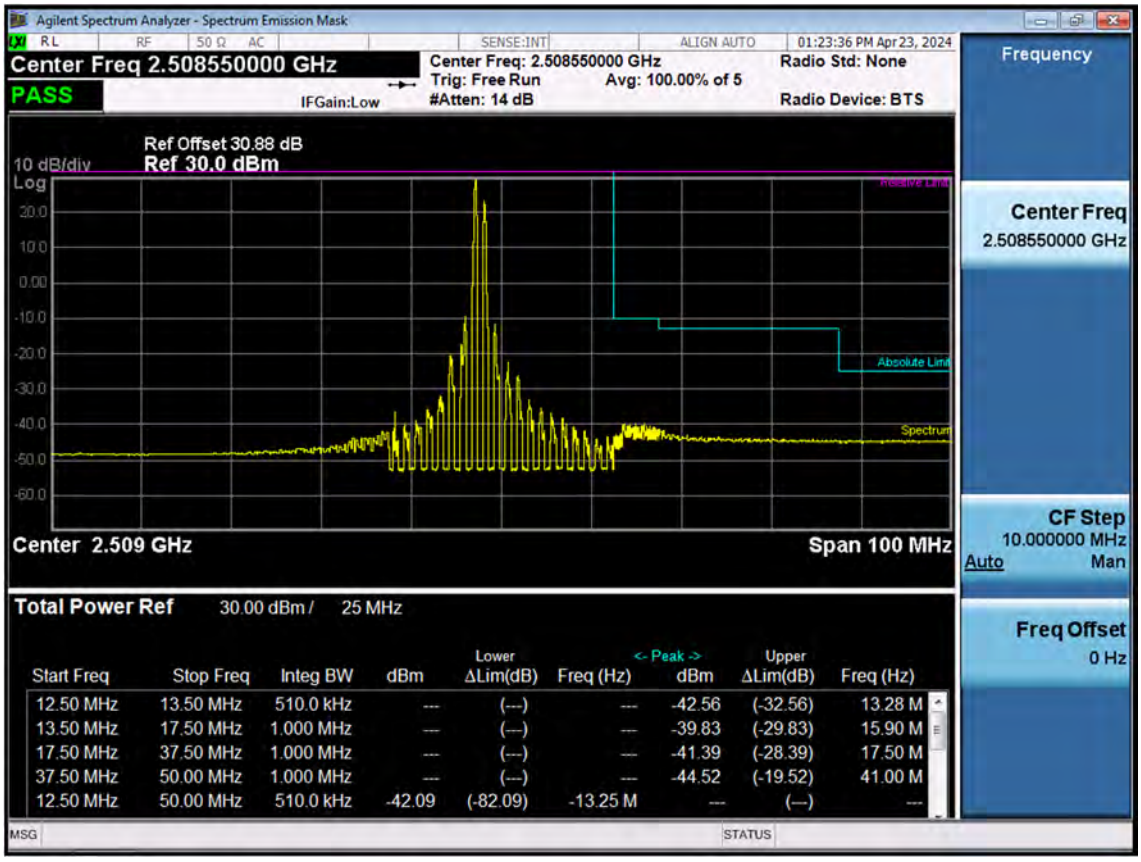


9.4 Channel Edge

PCC 10 MHz Ch39703 RB1 Offset49, SCC 15 MHz Ch39823 RB1 Offset0-1

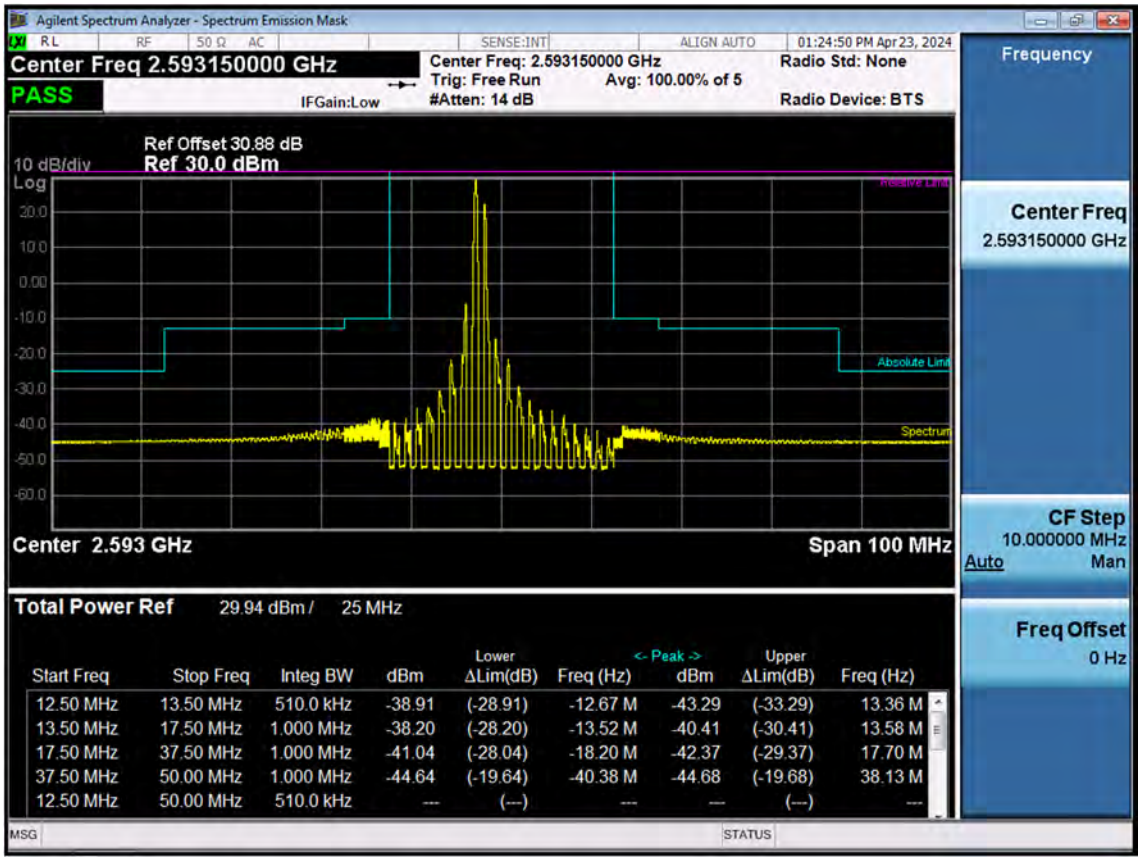


PCC 10 MHz Ch39703 RB1 Offset49, SCC 15 MHz Ch39823 RB1 Offset0-2



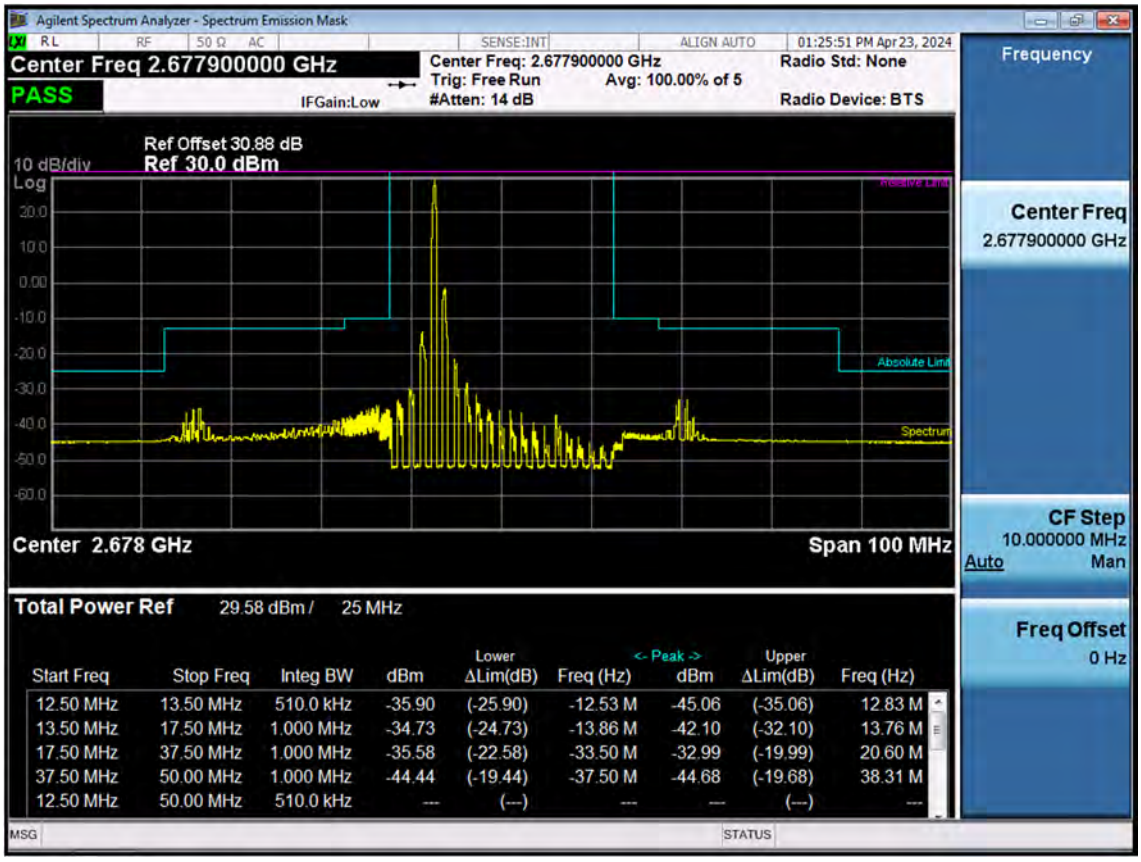
Start Freq	Stop Freq	Integ BW	dBm	Lower ΔLim(dB)	Freq (Hz)	<- Peak -> dBm	Upper ΔLim(dB)	Freq (Hz)
12.50 MHz	13.50 MHz	510.0 kHz	---	(---)	---	-42.56	(-32.56)	13.28 M
13.50 MHz	17.50 MHz	1.000 MHz	---	(---)	---	-39.83	(-29.83)	15.90 M
17.50 MHz	37.50 MHz	1.000 MHz	---	(---)	---	-41.39	(-28.39)	17.50 M
37.50 MHz	50.00 MHz	1.000 MHz	---	(---)	---	-44.52	(-19.52)	41.00 M
12.50 MHz	50.00 MHz	510.0 kHz	-42.09	(-82.09)	-13.25 M	---	(---)	---

PCC 10 MHz Ch40549 RB1 Offset49, SCC 15 MHz Ch40669 RB1 Offset0

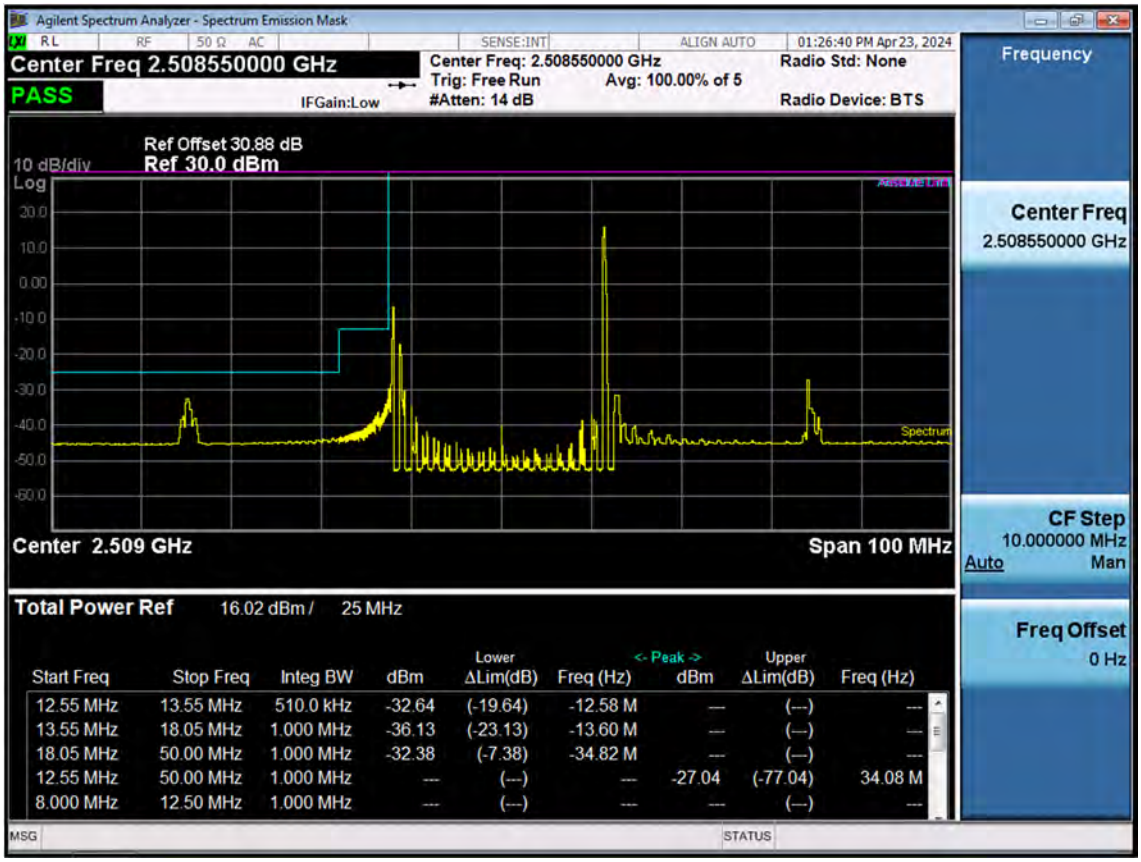


Start Freq	Stop Freq	Integ BW	dBm	Lower ΔLim(dB)	<- Peak -> Freq (Hz)	dBm	Upper ΔLim(dB)	Freq (Hz)
12.50 MHz	13.50 MHz	510.0 kHz	-38.91	(-28.91)	-12.67 M	-43.29	(-33.29)	13.36 M
13.50 MHz	17.50 MHz	1.000 MHz	-38.20	(-28.20)	-13.52 M	-40.41	(-30.41)	13.58 M
17.50 MHz	37.50 MHz	1.000 MHz	-41.04	(-28.04)	-18.20 M	-42.37	(-29.37)	17.70 M
37.50 MHz	50.00 MHz	1.000 MHz	-44.64	(-19.64)	-40.38 M	-44.68	(-19.68)	38.13 M
12.50 MHz	50.00 MHz	510.0 kHz	---	(---)	---	---	(---)	---

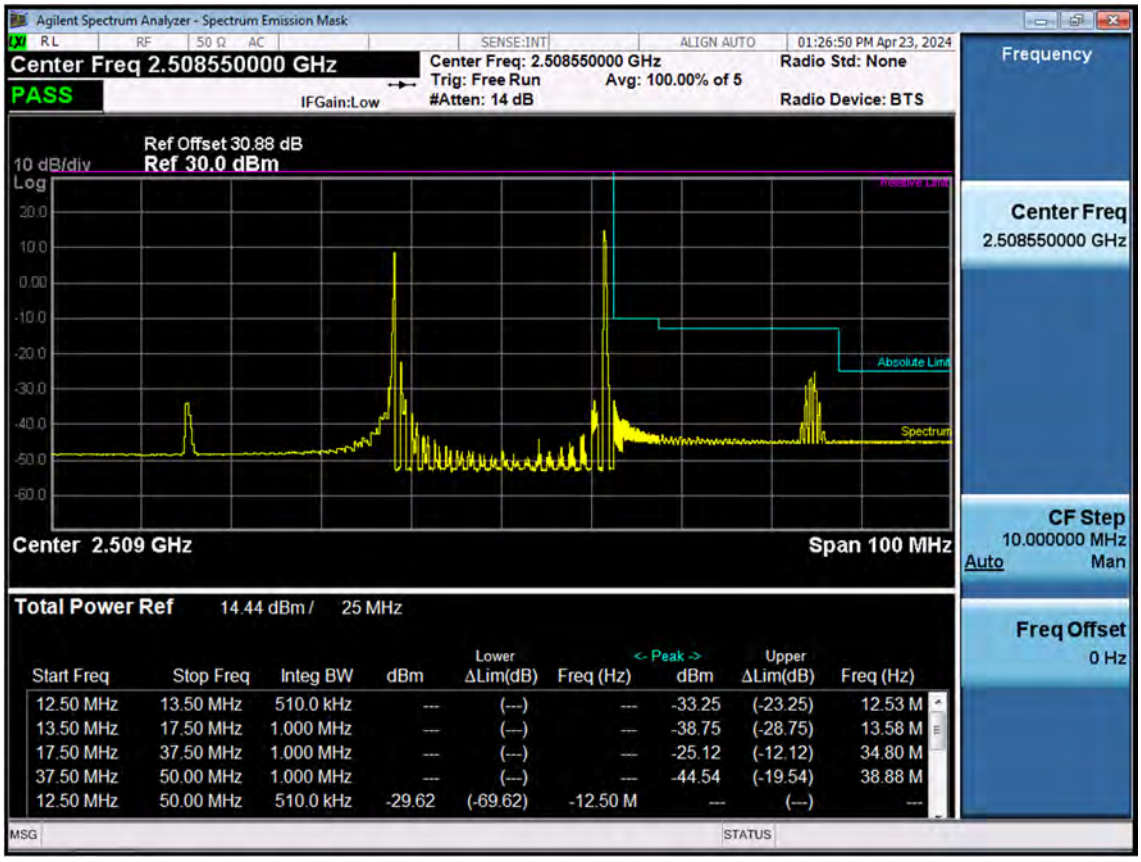
PCC 5 MHz Ch41373 RB1 Offset24, SCC 20 MHz Ch41490 RB1 Offset0



PCC 10 MHz Ch39703 RB1 Offset0, SCC 15 MHz Ch39823 RB1 Offset74-1

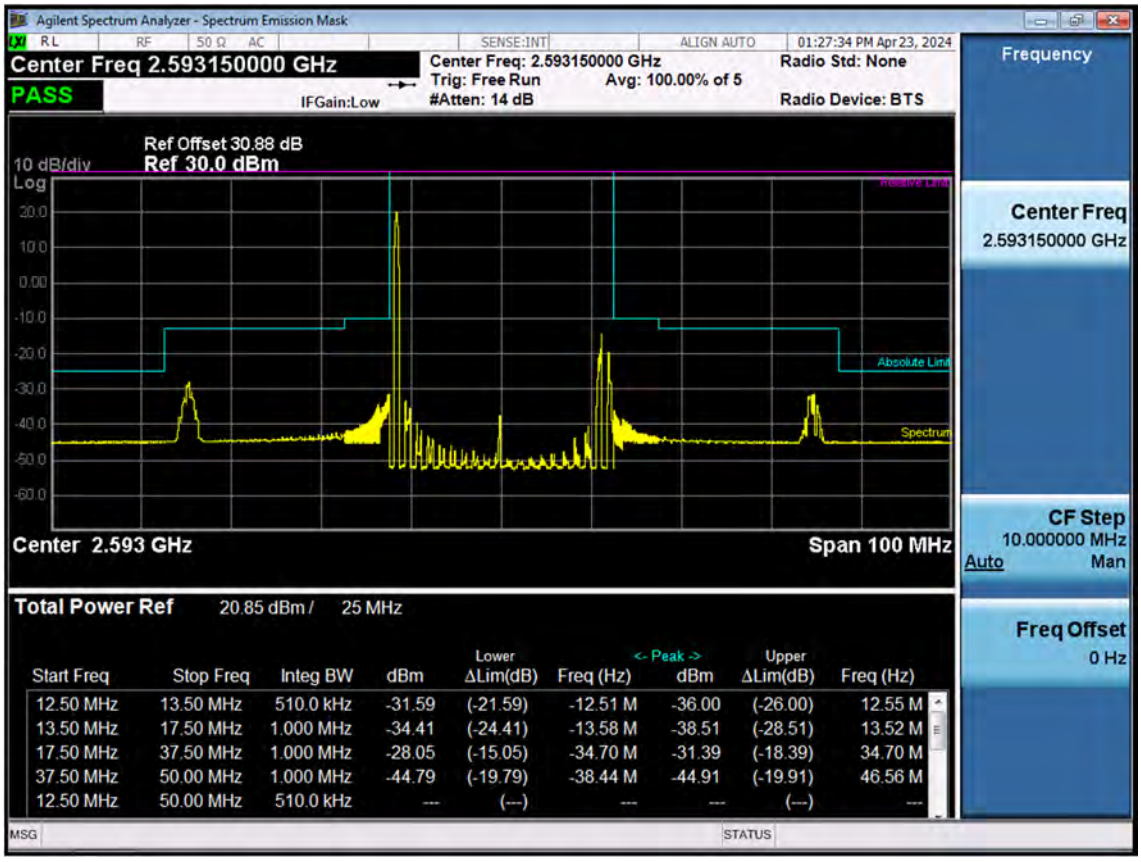


PCC 10 MHz Ch39703 RB1 Offset0, SCC 15 MHz Ch39823 RB1 Offset74-2



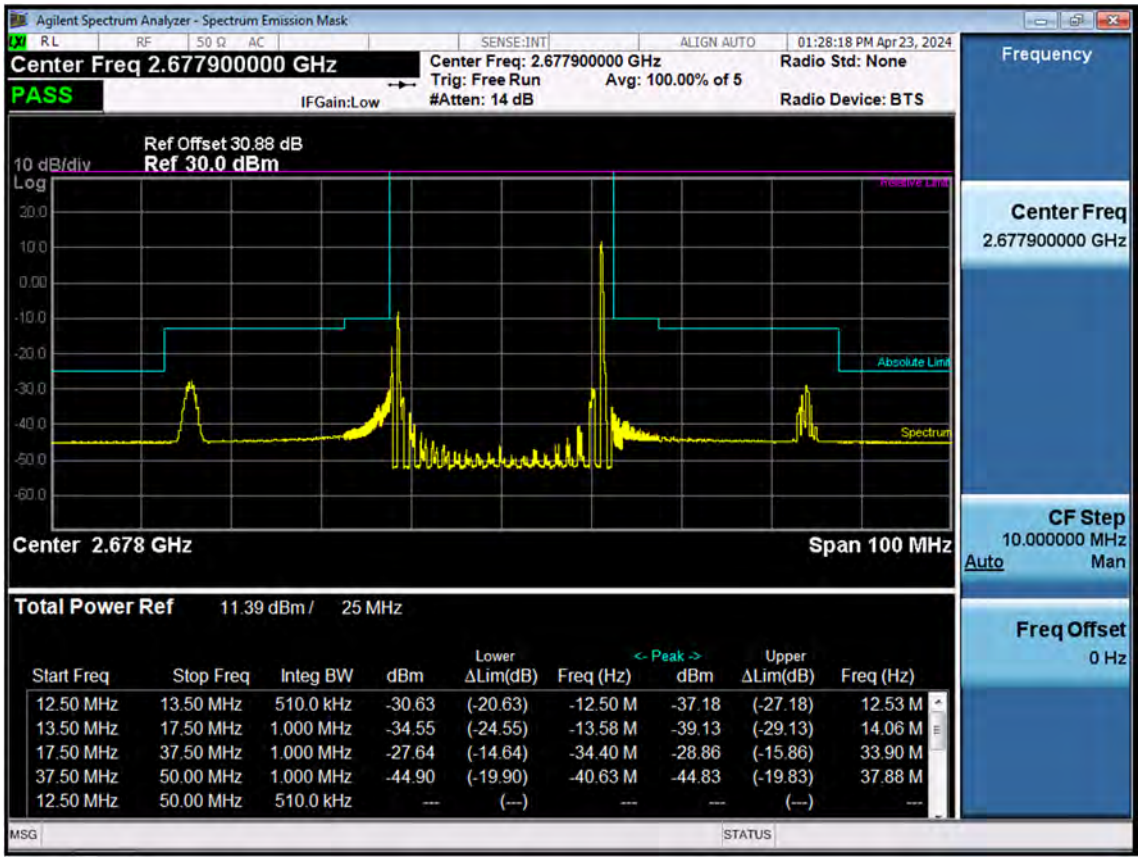
Start Freq	Stop Freq	Integ BW	dBm	Lower ΔLim(dB)	Freq (Hz)	<- Peak -> dBm	Upper ΔLim(dB)	Freq (Hz)
12.50 MHz	13.50 MHz	510.0 kHz	---	(---)	---	-33.25	(-23.25)	12.53 M
13.50 MHz	17.50 MHz	1.000 MHz	---	(---)	---	-38.75	(-28.75)	13.58 M
17.50 MHz	37.50 MHz	1.000 MHz	---	(---)	---	-25.12	(-12.12)	34.80 M
37.50 MHz	50.00 MHz	1.000 MHz	---	(---)	---	-44.54	(-19.54)	38.88 M
12.50 MHz	50.00 MHz	510.0 kHz	-29.62	(-69.62)	-12.50 M	---	(---)	---

PCC 10 MHz Ch40549 RB1 Offset0, SCC 15 MHz Ch40669 RB1 Offset74



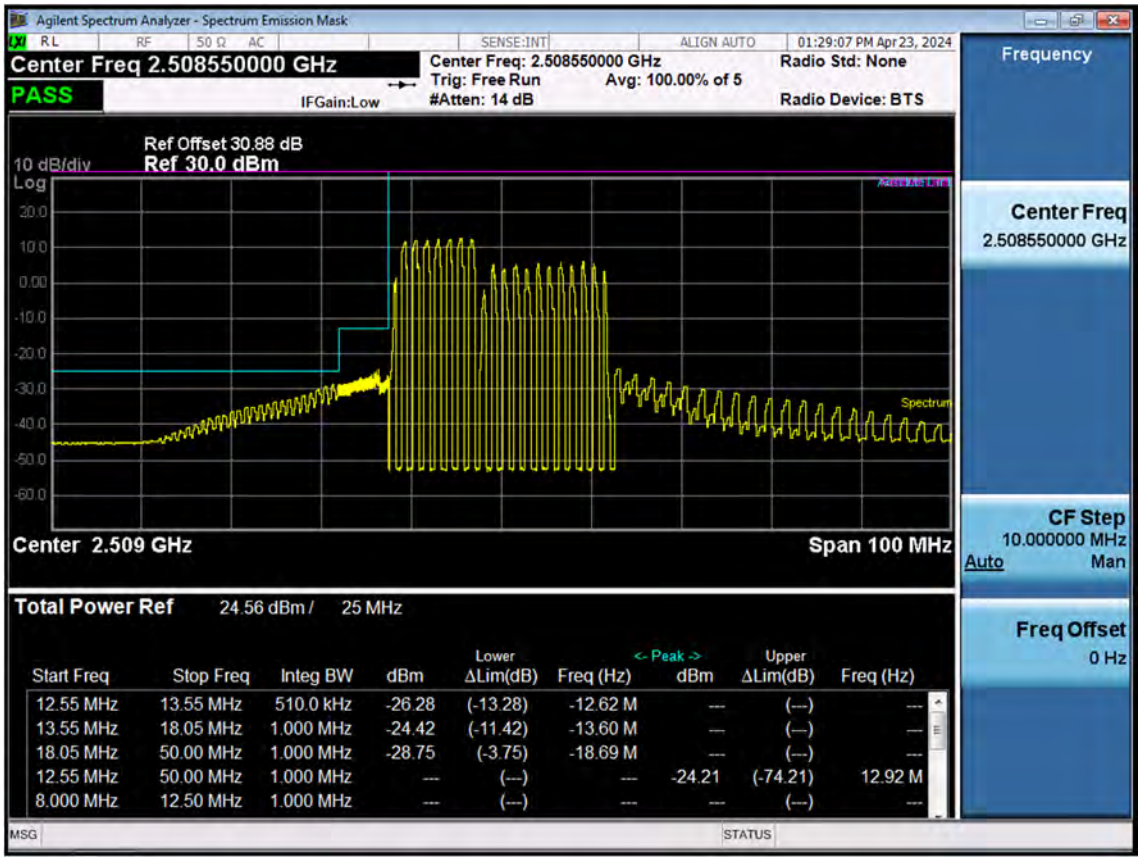
Start Freq	Stop Freq	Integ BW	dBm	Lower ΔLim(dB)	<- Peak -> Freq (Hz)	dBm	Upper ΔLim(dB)	Freq (Hz)
12.50 MHz	13.50 MHz	510.0 kHz	-31.59	(-21.59)	-12.51 M	-36.00	(-26.00)	12.55 M
13.50 MHz	17.50 MHz	1.000 MHz	-34.41	(-24.41)	-13.58 M	-38.51	(-28.51)	13.52 M
17.50 MHz	37.50 MHz	1.000 MHz	-28.05	(-15.05)	-34.70 M	-31.39	(-18.39)	34.70 M
37.50 MHz	50.00 MHz	1.000 MHz	-44.79	(-19.79)	-38.44 M	-44.91	(-19.91)	46.56 M
12.50 MHz	50.00 MHz	510.0 kHz	---	(---)	---	---	(---)	---

PCC 5 MHz Ch41373 RB1 Offset0, SCC 20 MHz Ch41490 RB1 Offset99

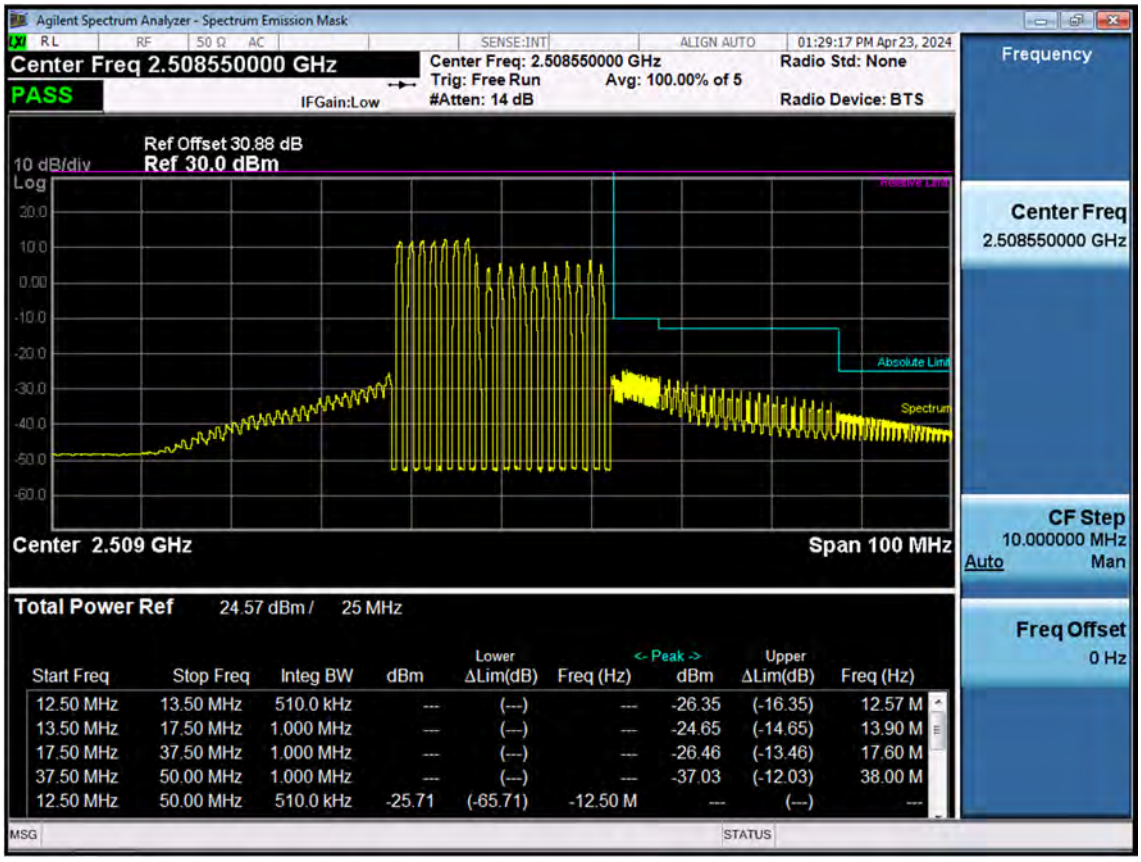


Start Freq	Stop Freq	Integ BW	dBm	Lower ΔLim(dB)	<- Peak -> Freq (Hz)	dBm	Upper ΔLim(dB)	Freq (Hz)
12.50 MHz	13.50 MHz	510.0 kHz	-30.63	(-20.63)	-12.50 M	-37.18	(-27.18)	12.53 M
13.50 MHz	17.50 MHz	1.000 MHz	-34.55	(-24.55)	-13.58 M	-39.13	(-29.13)	14.06 M
17.50 MHz	37.50 MHz	1.000 MHz	-27.64	(-14.64)	-34.40 M	-28.86	(-15.86)	33.90 M
37.50 MHz	50.00 MHz	1.000 MHz	-44.90	(-19.90)	-40.63 M	-44.83	(-19.83)	37.88 M
12.50 MHz	50.00 MHz	510.0 kHz	---	(---)	---	---	(---)	---

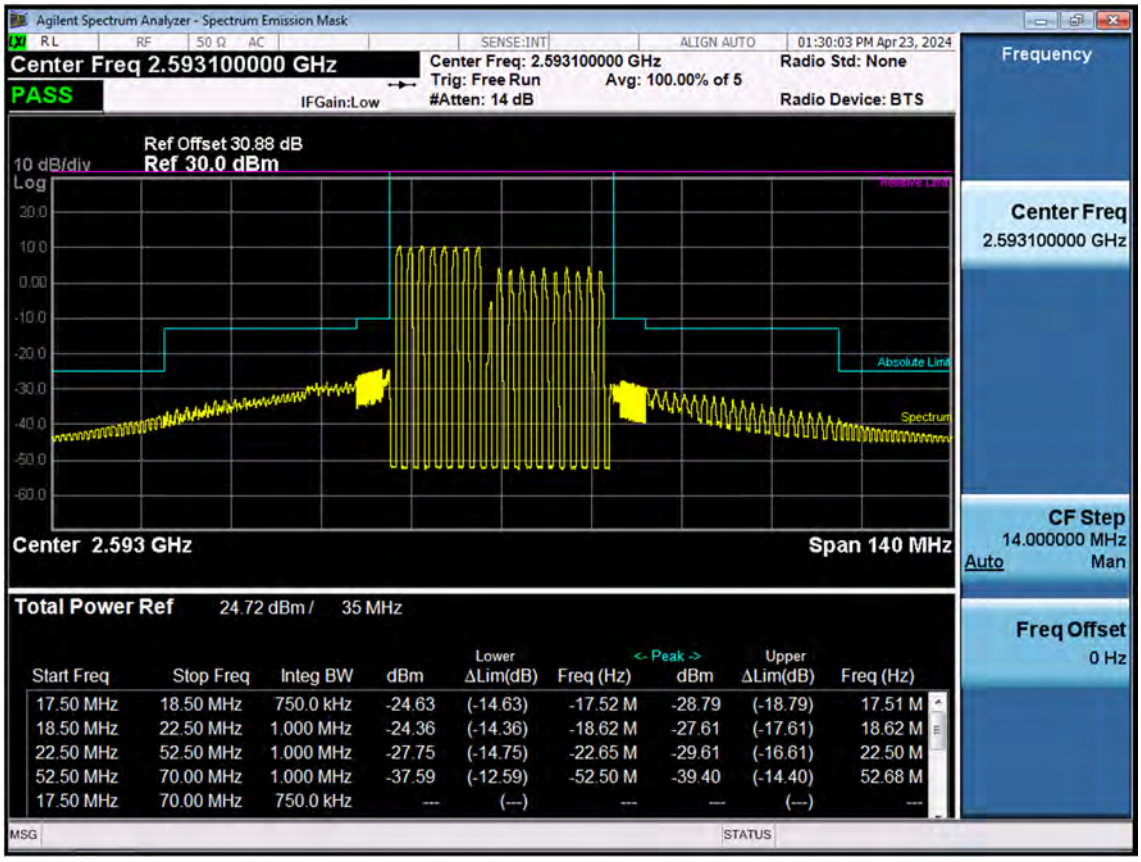
PCC 10 MHz Ch39703 RB50 Offset0, SCC 15 MHz Ch39823 RB75 Offset0-1



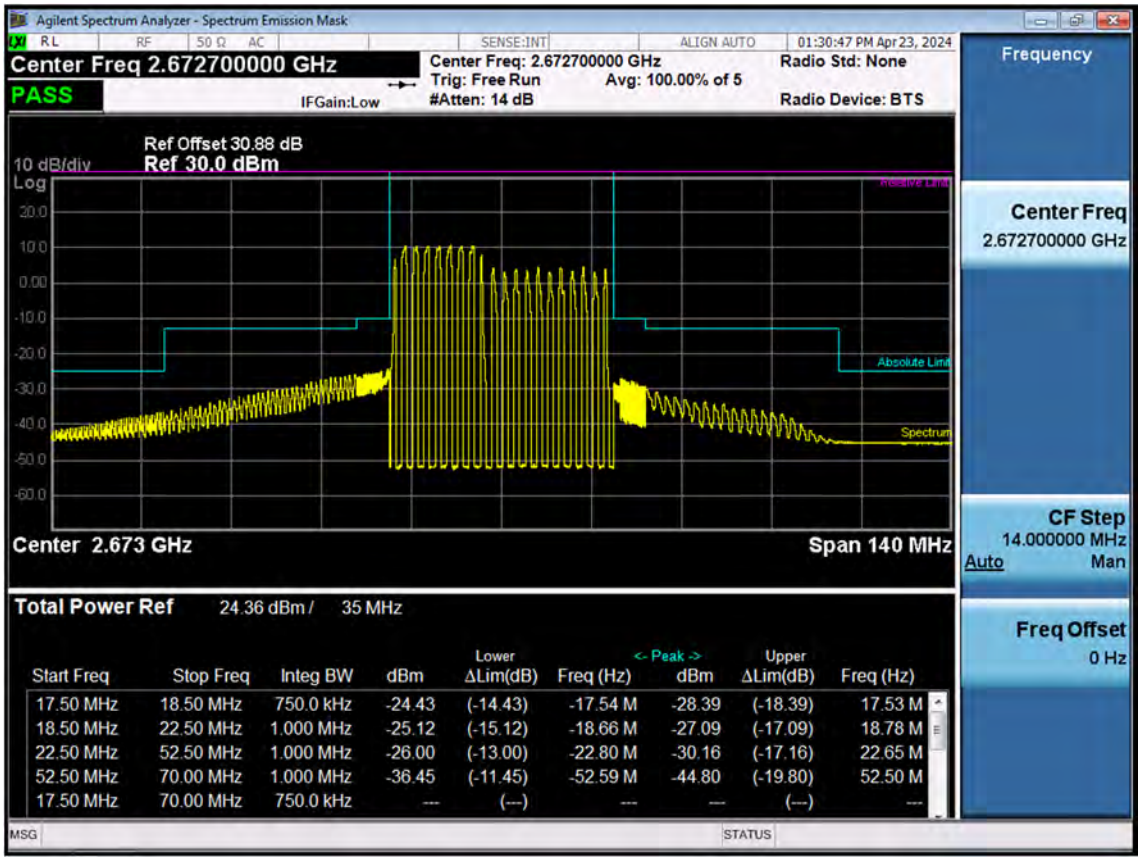
PCC 10 MHz Ch39703 RB50 Offset0, SCC 15 MHz Ch39823 RB75 Offset0-2



PCC 15 MHz Ch40523 RB75 Offset0, SCC 20 MHz Ch40694 RB100 Offset0

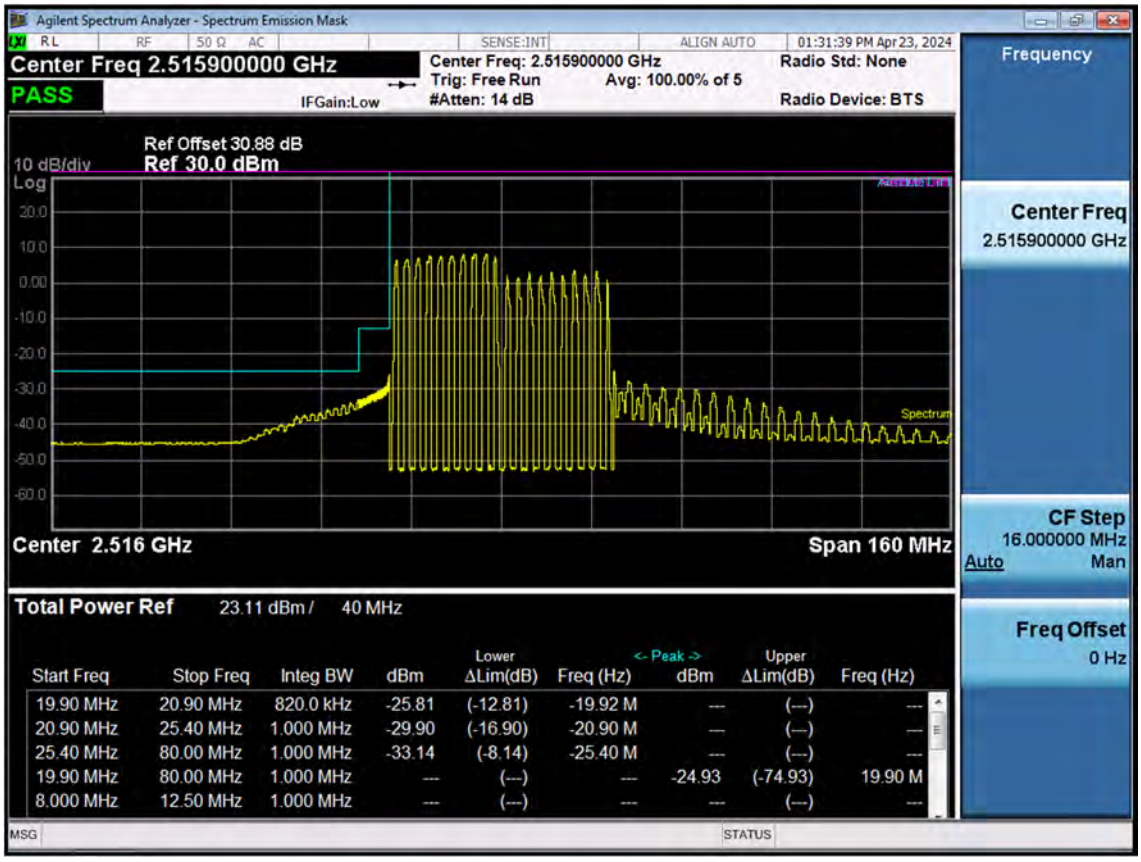


PCC 15 MHz Ch41319 RB75 Offset0, SCC 20 MHz Ch41490 RB100 Offset0

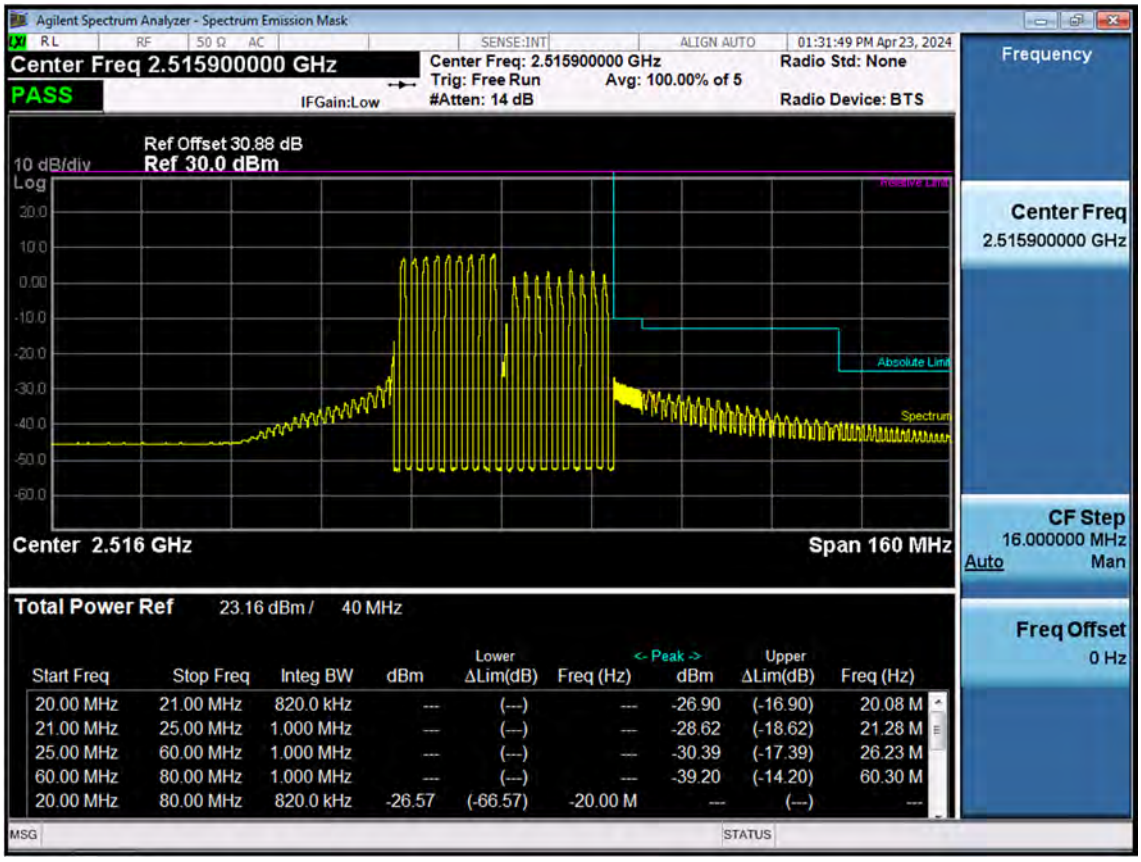


Start Freq	Stop Freq	Integ BW	dBm	Lower ΔLim(dB)	<- Peak -> Freq (Hz)	dBm	Upper ΔLim(dB)	Freq (Hz)
17.50 MHz	18.50 MHz	750.0 kHz	-24.43	(-14.43)	-17.54 M	-28.39	(-18.39)	17.53 M
18.50 MHz	22.50 MHz	1.000 MHz	-25.12	(-15.12)	-18.66 M	-27.09	(-17.09)	18.78 M
22.50 MHz	52.50 MHz	1.000 MHz	-26.00	(-13.00)	-22.80 M	-30.16	(-17.16)	22.65 M
52.50 MHz	70.00 MHz	1.000 MHz	-36.45	(-11.45)	-52.59 M	-44.80	(-19.80)	52.50 M
17.50 MHz	70.00 MHz	750.0 kHz	---	(---)	---	---	(---)	---

PCC 20 MHz Ch39750 RB100 Offset0, SCC 20 MHz Ch39948 RB100 Offset0-1

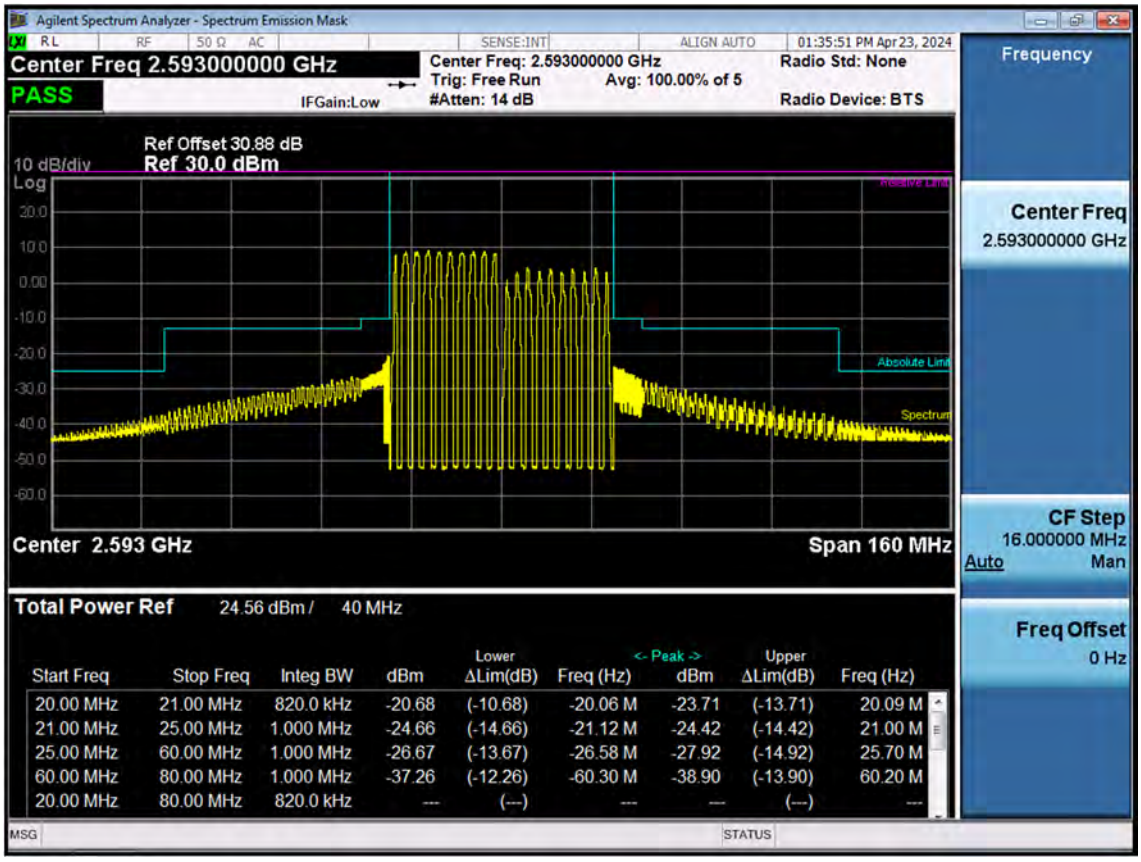


PCC 20 MHz Ch39750 RB100 Offset0, SCC 20 MHz Ch39948 RB100 Offset0-2

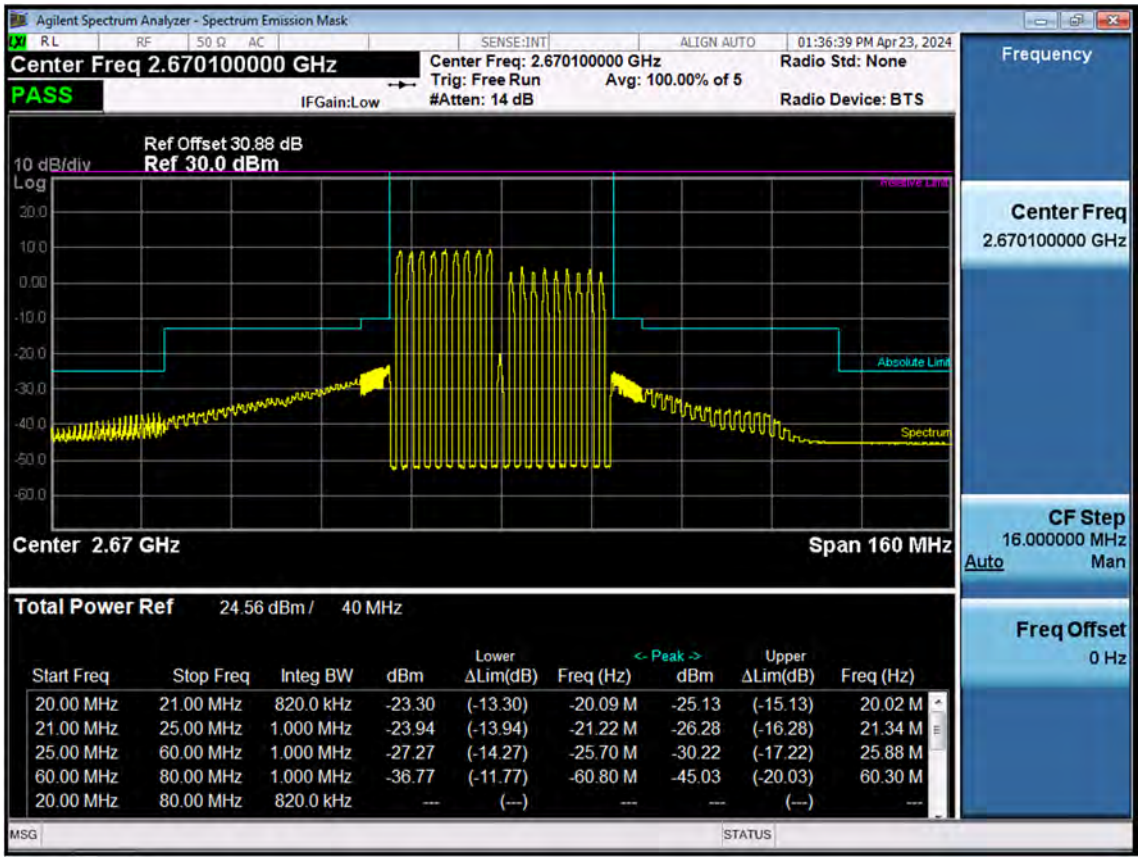


Start Freq	Stop Freq	Integ BW	dBm	Lower ΔLim(dB)	Lower Freq (Hz)	<- Peak -> dBm	Upper ΔLim(dB)	Upper Freq (Hz)
20.00 MHz	21.00 MHz	820.0 kHz	---	(---)	---	-26.90	(-16.90)	20.08 M
21.00 MHz	25.00 MHz	1.000 MHz	---	(---)	---	-28.62	(-18.62)	21.28 M
25.00 MHz	60.00 MHz	1.000 MHz	---	(---)	---	-30.39	(-17.39)	26.23 M
60.00 MHz	80.00 MHz	1.000 MHz	---	(---)	---	-39.20	(-14.20)	60.30 M
20.00 MHz	80.00 MHz	820.0 kHz	-26.57	(-66.57)	-20.00 M	---	(---)	---

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



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



9.5 Frequency Stability / Variation of Ambient Temperature

▣ 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 :	3.880	VDC
▣ LIMIT:	Emission must remain in band	

Voltage (%)	Power (VDC)	Temp. (°C)	PPM		Frequency Error (MHz)	
			PCC	SCC	PCC	SCC
100 %	3.880	+20(Ref)	-0.012	-0.021	2499.29986	2510.99987
100 %		-30	-0.021	-0.009	2499.29995	2510.99999
100 %		-20	-0.004	-0.011	2499.29992	2510.99986
100 %		-10	-0.022	-0.012	2499.29989	2510.99986
100 %		0	-0.012	-0.010	2499.29986	2510.99995
100 %		10	-0.016	-0.008	2499.29990	2510.99984
100 %		30	-0.010	0.002	2499.29995	2510.99997
100 %		40	-0.015	-0.005	2499.29998	2510.99996
100 %		50	-0.005	-0.007	2499.29994	2510.99990
Batt. Endpoint	3.300	20	-0.011	-0.002	2499.29991	2510.99991

▣ 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 : 3.880 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	-0.020	2501.49983	2515.89988
100 %		-30	-0.005	-0.006	2501.49985	2515.89991
100 %		-20	0.000	-0.019	2501.49992	2515.89989
100 %		-10	-0.012	0.001	2501.49994	2515.89996
100 %		0	0.005	-0.007	2501.49991	2515.89989
100 %		10	-0.025	0.000	2501.49983	2515.89989
100 %		30	-0.022	-0.010	2501.49986	2515.89985
100 %		40	0.003	-0.006	2501.49991	2515.89993
100 %		50	-0.014	0.000	2501.49990	2515.89991
Batt. Endpoint	3.300	20	-0.011	-0.016	2501.49995	2515.89989

▣ 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 :	3.880	VDC
▣ LIMIT:	Emission must remain in band	

Voltage (%)	Power (VDC)	Temp. (℃)	PPM		Frequency Error (MHz)	
			PCC	SCC	PCC	SCC
100 %	3.880	+20(Ref)	-0.008	-0.006	2503.79995	2520.89997
100 %		-30	0.006	0.003	2503.80000	2520.89993
100 %		-20	-0.010	-0.010	2503.79995	2520.89990
100 %		-10	-0.009	-0.005	2503.79991	2520.89990
100 %		0	0.004	-0.013	2503.79997	2520.89986
100 %		10	-0.006	0.008	2503.79986	2520.89994
100 %		30	-0.005	-0.008	2503.79996	2520.89994
100 %		40	0.003	-0.001	2503.79990	2520.89997
100 %		50	-0.008	0.004	2503.79990	2520.89995
Batt. Endpoint	3.300	20	-0.012	-0.003	2503.79986	2520.89987

- ▣ 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 : 3.880 VDC
- ▣ LIMIT: Emission must remain in band

Voltage (%)	Power (VDC)	Temp. (℃)	PPM		Frequency Error (MHz)	
			PCC	SCC	PCC	SCC
100 %	3.880	+20(Ref)	-0.010	-0.004	2505.99992	2525.79990
100 %		-30	-0.002	-0.020	2505.99996	2525.79995
100 %		-20	-0.016	-0.007	2505.99983	2525.79987
100 %		-10	-0.008	-0.003	2505.99985	2525.79997
100 %		0	-0.012	-0.009	2505.99989	2525.79990
100 %		10	-0.011	-0.010	2505.99993	2525.79983
100 %		30	-0.024	-0.020	2505.99978	2525.79991
100 %		40	0.010	-0.011	2505.99984	2525.79994
100 %		50	-0.017	-0.017	2505.99987	2525.79994
Batt. Endpoint	3.300	20	-0.004	-0.008	2505.99981	2525.79985

▣ 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 : 3.880 VDC
▣ LIMIT: Emission must remain in band

Voltage (%)	Power (VDC)	Temp. (℃)	PPM		Frequency Error (MHz)	
			PCC	SCC	PCC	SCC
100 %	3.880	+20(Ref)	-0.020	-0.010	2668.29993	2679.99984
100 %		-30	-0.016	-0.014	2668.29994	2679.99992
100 %		-20	-0.005	0.009	2668.29994	2679.99996
100 %		-10	0.003	-0.007	2668.29993	2679.99996
100 %		0	-0.015	-0.018	2668.29990	2679.99991
100 %		10	-0.022	-0.002	2668.29990	2679.99995
100 %		30	-0.005	-0.009	2668.29991	2679.99989
100 %		40	0.004	-0.027	2668.29996	2679.99991
100 %		50	-0.001	-0.005	2668.29999	2679.99987
Batt. Endpoint	3.300	20	-0.019	-0.003	2668.29980	2679.99997

▣ 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 : 3.880 VDC
▣ LIMIT: Emission must remain in band

Voltage (%)	Power (VDC)	Temp. (℃)	PPM		Frequency Error (MHz)	
			PCC	SCC	PCC	SCC
100 %	3.880	+20(Ref)	0.003	-0.020	2665.59994	2679.99986
100 %		-30	-0.017	0.001	2665.59992	2679.99991
100 %		-20	-0.001	-0.007	2665.59992	2679.99987
100 %		-10	-0.015	-0.001	2665.59993	2680.00001
100 %		0	-0.009	-0.026	2665.59989	2679.99985
100 %		10	-0.020	0.004	2665.59991	2679.99994
100 %		30	-0.027	-0.018	2665.59987	2679.99990
100 %		40	-0.001	0.008	2665.59992	2679.99992
100 %		50	-0.023	-0.026	2665.59995	2679.99982
Batt. Endpoint	3.300	20	-0.004	-0.017	2665.59990	2679.99997

▣ 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 : 3.880 VDC
▣ LIMIT: Emission must remain in band

Voltage (%)	Power (VDC)	Temp. (℃)	PPM		Frequency Error (MHz)	
			PCC	SCC	PCC	SCC
100 %	3.880	+20(Ref)	-0.014	-0.005	2662.89989	2679.99987
100 %		-30	-0.008	-0.005	2662.89985	2679.99987
100 %		-20	-0.011	-0.003	2662.89990	2679.99984
100 %		-10	-0.006	-0.010	2662.89996	2679.99982
100 %		0	-0.002	0.010	2662.89984	2679.99988
100 %		10	-0.005	-0.010	2662.89994	2679.99992
100 %		30	-0.003	0.005	2662.89986	2679.99990
100 %		40	-0.007	-0.029	2662.89983	2679.99981
100 %		50	-0.013	-0.003	2662.89990	2679.99990
Batt. Endpoint	3.300	20	-0.013	-0.025	2662.89989	2679.99992

▣ 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 : 3.880 MHz
▣ LIMIT: Emission must remain in band

Voltage (%)	Power (VDC)	Temp. (℃)	PPM		Frequency Error (MHz)	
			PCC	SCC	PCC	SCC
100 %	3.880	+20(Ref)	0.001	-0.003	2660.19996	2679.99989
100 %		-30	0.005	-0.016	2660.19991	2679.99987
100 %		-20	-0.010	-0.007	2660.19987	2679.99991
100 %		-10	0.004	-0.006	2660.19997	2679.99995
100 %		0	-0.017	-0.011	2660.19987	2679.99994
100 %		10	0.002	-0.005	2660.19986	2679.99987
100 %		30	-0.008	-0.016	2660.19994	2679.99987
100 %		40	0.004	-0.004	2660.19992	2679.99990
100 %		50	-0.001	-0.003	2660.19993	2679.99987
Batt. Endpoint	3.300	20	-0.003	-0.004	2660.19998	2679.99988

9.6 Radiated Spurious Emissions

▣ PCC Channel : 39750 (2506.0 MHz)

▣ PCC BW(MHz) : 20

▣ PCC RB/ RB Offset : 1/ 99

▣ SCC Channel : 39948 (2525.8 MHz)

▣ SCC BW(MHz) : 20

▣ SCC RB/ RB Offset : 1/ 0

▣ DISTANCE: 3 meters

▣ LIMIT: -13.0 dBm

Freq.(MHz)	Measured Level [dBm]	Ant. Gain (dBi)	Substitute Level [dBm]	C.L	Pol.	Result (dBm)
5 031.80	-53.25	12.48	-63.36	3.89	V	-54.77
7 547.70	-53.84	10.92	-53.71	4.72	H	-47.51
10 063.60	-59.85	11.42	-56.11	5.46	V	-50.15

▣ 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: 3 meters

▣ LIMIT: -13.0 dBm

Freq.(MHz)	Measured Level [dBm]	Ant. Gain (dBi)	Substitute Level [dBm]	C.L	Pol.	Result (dBm)
5 179.30	-53.68	12.52	-62.11	3.81	H	-53.40
7 768.95	-53.21	11.42	-53.07	4.78	H	-46.43
10 358.60	-60.16	11.45	-54.65	5.56	V	-48.76

▣ 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: 3 meters

▣ LIMIT: -13.0 dBm

Freq.(MHz)	Measured Level [dBm]	Ant. Gain (dBi)	Substitute Level [dBm]	C.L	Pol.	Result (dBm)
5 350.00	-54.01	13.09	-62.95	3.91	V	-53.77
8 025.00	-56.38	10.73	-54.71	4.88	H	-48.86
10 700.00	-58.56	11.45	-54.66	5.49	V	-48.70

9.7 Occupied Bandwidth

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	22.843
10	40549	2585.9	QPSK	50/ 0	15	40669	2597.9	QPSK	75/ 0	23.129
10	40526	2583.6	QPSK	50/ 0	20	40670	2598.0	QPSK	100/ 0	27.806
15	40571	2588.1	QPSK	75/ 0	10	40691	2600.1	QPSK	50/ 0	23.107
15	40545	2585.5	QPSK	75/ 0	15	40695	2600.5	QPSK	75/ 0	28.394
15	40523	2583.3	QPSK	75/ 0	20	40694	2600.4	QPSK	100/ 0	32.697
20	40595	2590.5	QPSK	100/ 0	5	40712	2602.2	QPSK	25/ 0	22.936
20	40571	2588.1	QPSK	100/ 0	10	40715	2602.5	QPSK	50/ 0	27.789
20	40546	2585.6	QPSK	100/ 0	15	40717	2602.7	QPSK	75/ 0	32.665
20	40521	2583.1	QPSK	100/ 0	20	40719	2602.9	QPSK	100/ 0	37.653

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	22.859
10	40549	2585.9	16QAM	50/ 0	15	40669	2597.9	16QAM	75/ 0	23.141
10	40526	2583.6	16QAM	50/ 0	20	40670	2598.0	16QAM	100/ 0	27.728
15	40571	2588.1	16QAM	75/ 0	10	40691	2600.1	16QAM	50/ 0	23.190
15	40545	2585.5	16QAM	75/ 0	15	40695	2600.5	16QAM	75/ 0	28.369
15	40523	2583.3	16QAM	75/ 0	20	40694	2600.4	16QAM	100/ 0	32.661
20	40595	2590.5	16QAM	100/ 0	5	40712	2602.2	16QAM	25/ 0	22.925
20	40571	2588.1	16QAM	100/ 0	10	40715	2602.5	16QAM	50/ 0	27.824
20	40546	2585.6	16QAM	100/ 0	15	40717	2602.7	16QAM	75/ 0	32.717
20	40521	2583.1	16QAM	100/ 0	20	40719	2602.9	16QAM	100/ 0	37.601

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	22.801
10	40549	2585.9	64QAM	50/ 0	15	40669	2597.9	64QAM	75/ 0	23.100
10	40526	2583.6	64QAM	50/ 0	20	40670	2598.0	64QAM	100/ 0	27.821
15	40571	2588.1	64QAM	75/ 0	10	40691	2600.1	64QAM	50/ 0	23.160
15	40545	2585.5	64QAM	75/ 0	15	40695	2600.5	64QAM	75/ 0	28.335
15	40523	2583.3	64QAM	75/ 0	20	40694	2600.4	64QAM	100/ 0	32.750
20	40595	2590.5	64QAM	100/ 0	5	40712	2602.2	64QAM	25/ 0	22.908
20	40571	2588.1	64QAM	100/ 0	10	40715	2602.5	64QAM	50/ 0	27.787
20	40546	2585.6	64QAM	100/ 0	15	40717	2602.7	64QAM	75/ 0	32.584
20	40521	2583.1	64QAM	100/ 0	20	40719	2602.9	64QAM	100/ 0	37.578

PCC					SCC					Data (MHz)
BW [MHz]	Ch	Freq [MHz]	Mod	RB/ Offset	BW [MHz]	Ch	Freq [MHz]	Mod	RB/ Offset	
5	40528	2583.8	256QAM	25/ 0	20	40645	2595.5	256QAM	100/ 0	22.847
10	40549	2585.9	256QAM	50/ 0	15	40669	2597.9	256QAM	75/ 0	23.204
10	40526	2583.6	256QAM	50/ 0	20	40670	2598.0	256QAM	100/ 0	27.718
15	40571	2588.1	256QAM	75/ 0	10	40691	2600.1	256QAM	50/ 0	23.141
15	40545	2585.5	256QAM	75/ 0	15	40695	2600.5	256QAM	75/ 0	28.347
15	40523	2583.3	256QAM	75/ 0	20	40694	2600.4	256QAM	100/ 0	32.676
20	40595	2590.5	256QAM	100/ 0	5	40712	2602.2	256QAM	25/ 0	22.886
20	40571	2588.1	256QAM	100/ 0	10	40715	2602.5	256QAM	50/ 0	27.781
20	40546	2585.6	256QAM	100/ 0	15	40717	2602.7	256QAM	75/ 0	32.639
20	40521	2583.1	256QAM	100/ 0	20	40719	2602.9	256QAM	100/ 0	37.441

Note:

In order to simplify the report, attached plots were only widest 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)

PCC 20 MHz Ch40521 RB100 Offset0, SCC 20 MHz Ch40719 RB100 Offset0_(256QAM)

9.8 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	40528	2583.8	QPSK	25/ 0	20	40645	2595.5	QPSK	100/ 0	5.28
10	40549	2585.9	QPSK	50/ 0	15	40669	2597.9	QPSK	75/ 0	5.23
10	40526	2583.6	QPSK	50/ 0	20	40670	2598.0	QPSK	100/ 0	5.18
15	40571	2588.1	QPSK	75/ 0	10	40691	2600.1	QPSK	50/ 0	5.03
15	40545	2585.5	QPSK	75/ 0	15	40695	2600.5	QPSK	75/ 0	5.25
15	40523	2583.3	QPSK	75/ 0	20	40694	2600.4	QPSK	100/ 0	5.16
20	40595	2590.5	QPSK	100/ 0	5	40712	2602.2	QPSK	25/ 0	5.28
20	40571	2588.1	QPSK	100/ 0	10	40715	2602.5	QPSK	50/ 0	5.17
20	40546	2585.6	QPSK	100/ 0	15	40717	2602.7	QPSK	75/ 0	5.17
20	40521	2583.1	QPSK	100/ 0	20	40719	2602.9	QPSK	100/ 0	5.22

PCC					SCC					Data (dB)
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	5.91
10	40549	2585.9	16QAM	50/ 0	15	40669	2597.9	16QAM	75/ 0	5.90
10	40526	2583.6	16QAM	50/ 0	20	40670	2598.0	16QAM	100/ 0	6.07
15	40571	2588.1	16QAM	75/ 0	10	40691	2600.1	16QAM	50/ 0	6.00
15	40545	2585.5	16QAM	75/ 0	15	40695	2600.5	16QAM	75/ 0	6.10
15	40523	2583.3	16QAM	75/ 0	20	40694	2600.4	16QAM	100/ 0	6.06
20	40595	2590.5	16QAM	100/ 0	5	40712	2602.2	16QAM	25/ 0	6.06
20	40571	2588.1	16QAM	100/ 0	10	40715	2602.5	16QAM	50/ 0	6.07
20	40546	2585.6	16QAM	100/ 0	15	40717	2602.7	16QAM	75/ 0	6.08
20	40521	2583.1	16QAM	100/ 0	20	40719	2602.9	16QAM	100/ 0	6.08

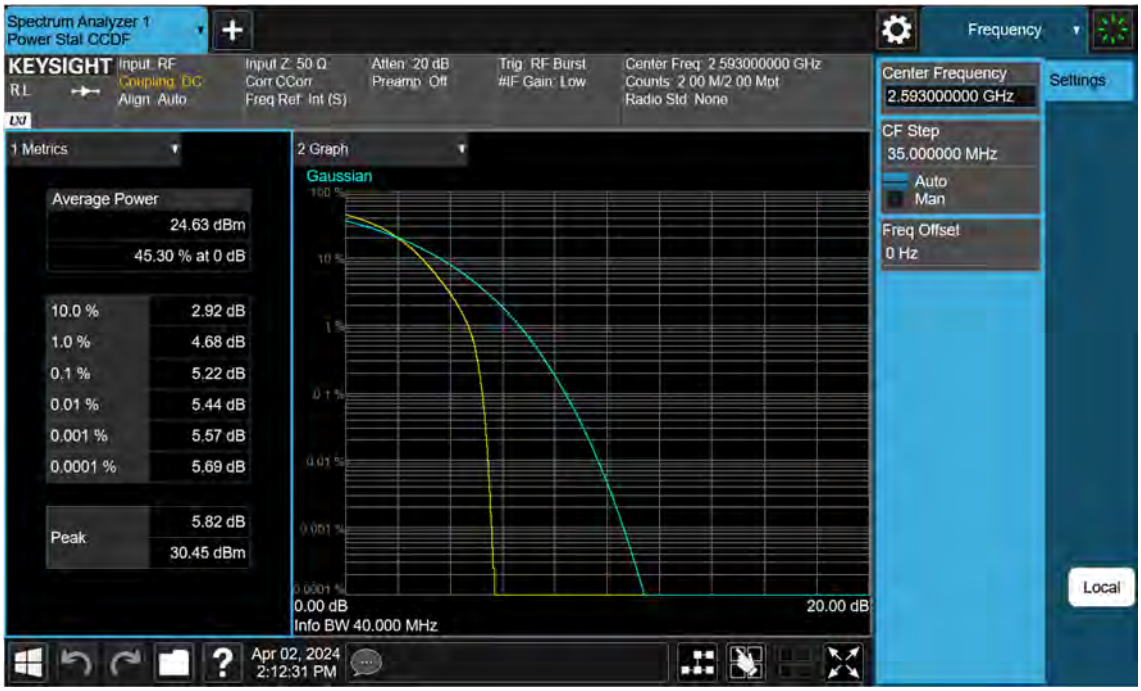
PCC					SCC					Data (dB)
BW [MHz]	Ch	Freq [MHz]	Mod	RB/ Offset	BW [MHz]	Ch	Freq [MHz]	Mod	RB/ Offset	
5	40528	2583.8	64QAM	25/ 0	20	40645	2595.5	64QAM	100/ 0	6.33
10	40549	2585.9	64QAM	50/ 0	15	40669	2597.9	64QAM	75/ 0	6.26
10	40526	2583.6	64QAM	50/ 0	20	40670	2598.0	64QAM	100/ 0	6.27
15	40571	2588.1	64QAM	75/ 0	10	40691	2600.1	64QAM	50/ 0	6.31
15	40545	2585.5	64QAM	75/ 0	15	40695	2600.5	64QAM	75/ 0	6.29
15	40523	2583.3	64QAM	75/ 0	20	40694	2600.4	64QAM	100/ 0	6.29
20	40595	2590.5	64QAM	100/ 0	5	40712	2602.2	64QAM	25/ 0	6.32
20	40571	2588.1	64QAM	100/ 0	10	40715	2602.5	64QAM	50/ 0	6.33
20	40546	2585.6	64QAM	100/ 0	15	40717	2602.7	64QAM	75/ 0	6.33
20	40521	2583.1	64QAM	100/ 0	20	40719	2602.9	64QAM	100/ 0	6.39

PCC					SCC					Data (dB)
BW [MHz]	Ch	Freq [MHz]	Mod	RB/ Offset	BW [MHz]	Ch	Freq [MHz]	Mod	RB/ Offset	
5	40528	2583.8	256QAM	25/ 0	20	40645	2595.5	256QAM	100/ 0	6.68
10	40549	2585.9	256QAM	50/ 0	15	40669	2597.9	256QAM	75/ 0	6.66
10	40526	2583.6	256QAM	50/ 0	20	40670	2598.0	256QAM	100/ 0	6.59
15	40571	2588.1	256QAM	75/ 0	10	40691	2600.1	256QAM	50/ 0	6.72
15	40545	2585.5	256QAM	75/ 0	15	40695	2600.5	256QAM	75/ 0	6.65
15	40523	2583.3	256QAM	75/ 0	20	40694	2600.4	256QAM	100/ 0	6.63
20	40595	2590.5	256QAM	100/ 0	5	40712	2602.2	256QAM	25/ 0	6.68
20	40571	2588.1	256QAM	100/ 0	10	40715	2602.5	256QAM	50/ 0	6.67
20	40546	2585.6	256QAM	100/ 0	15	40717	2602.7	256QAM	75/ 0	6.65
20	40521	2583.1	256QAM	100/ 0	20	40719	2602.9	256QAM	100/ 0	6.77

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)

PCC 20 MHz Ch40521 RB100 Offset0, SCC 20 MHz Ch40719 RB100 Offset0_(256QAM)

10. ANNEX A_ TEST SETUP PHOTO

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

No.	Description
1	HCT-RF-2404-FC037-P