

# FCC LTE REPORT

## Certification

**Applicant Name:**

SAMSUNG Electronics Co., Ltd.

**Date of Issue:**

September 08, 2020

**Location:**

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

**Address:**

129, Samsung-ro, Yeongtong-gu,  
Suwon-si, Gyeonggi-do, 16677, Rep. of Korea

**Report No.:** HCT-RF-2008-FC082-R1

**FCC ID:** A3LSMG781U

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

**According to the Evaluation report, all of the data contained herein is reused from the reference  
FCC ID : A3LSMG781V report.**

Model(s): SM-G781U  
Additional Model(s): SM-G781U1/DS, SM-G781W  
EUT Type: Mobile Phone  
FCC Classification: PCS Licensed Transmitter Held to Ear (PCE)  
FCC Rule Part(s): §27, §2

| Mode<br>(MHz)     | Tx Frequency<br>(MHz) | Emission<br>Designator | Modulation | ERP               |                     |
|-------------------|-----------------------|------------------------|------------|-------------------|---------------------|
|                   |                       |                        |            | Max. Power<br>(W) | Max. Power<br>(dBm) |
| LTE – Band13 (5)  | 779.5 – 784.5         | 4M51G7D                | QPSK       | 0.139             | 21.43               |
|                   |                       | 4M48W7D                | 16QAM      | 0.117             | 20.70               |
|                   |                       | 4M50W7D                | 64QAM      | 0.093             | 19.69               |
| LTE – Band13 (10) | 782.0                 | 8M96G7D                | QPSK       | 0.141             | 21.50               |
|                   |                       | 8M94W7D                | 16QAM      | 0.120             | 20.81               |
|                   |                       | 8M96W7D                | 64QAM      | 0.078             | 18.91               |

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)

Report No.: HCT-RF-2008-FC082-R1

---

REVIEWED BY



---

Report prepared by : Jae Ryang Do  
Engineer of Telecommunication Testing Center



---

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

This test results were applied only to the test methods required by the standard.

This laboratory is not accredited for the test results marked \*.

The above Test Report is the accredited test result by (KS Q) ISO/IEC 17025 and KOLAS(Korea Laboratory Accreditation Scheme), which signed the ILAC-MRA. (HCT Accreditation No.: KT197)

\* The report shall not be reproduced except in full(only partly) without approval of the laboratory.

## Version

| TEST REPORT NO.      | DATE               | DESCRIPTION                                                                        |
|----------------------|--------------------|------------------------------------------------------------------------------------|
| HCT-RF-2008-FC082    | August 27, 2020    | - First Approval Report                                                            |
| HCT-RF-2008-FC082-R1 | September 08, 2020 | - Revised the radiated spurious and harmonics emissions<br>FCC rule part.(Page 19) |

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

## **Table of Contents**

|                                                                 |    |
|-----------------------------------------------------------------|----|
| REVIEWED BY .....                                               | 2  |
| 1. GENERAL INFORMATION .....                                    | 5  |
| 2. INTRODUCTION.....                                            | 6  |
| 2.1. DESCRIPTION OF EUT .....                                   | 6  |
| 2.2. MEASURING INSTRUMENT CALIBRATION .....                     | 6  |
| 2.3. TEST FACILITY .....                                        | 6  |
| 3. DESCRIPTION OF TESTS .....                                   | 7  |
| 3.1 TEST PROCEDURE.....                                         | 7  |
| 3.2 RADIATED POWER .....                                        | 8  |
| 3.3 RADIATED SPURIOUS EMISSIONS .....                           | 9  |
| 3.4 OCCUPIED BANDWIDTH.....                                     | 10 |
| 3.5 SPURIOUS AND HARMONIC EMISSIONS AT ANTENNA TERMINAL .....   | 11 |
| 3.6 BAND EDGE .....                                             | 12 |
| 3.7 FREQUENCY STABILITY / VARIATION OF AMBIENT TEMPERATURE..... | 13 |
| 3.8 WORST CASE(RADIATED TEST).....                              | 14 |
| 3.9 WORST CASE(CONDUCTED TEST) .....                            | 15 |
| 4. LIST OF TEST EQUIPMENT.....                                  | 16 |
| 5. MEASUREMENT UNCERTAINTY .....                                | 18 |
| 6. SUMMARY OF TEST RESULTS .....                                | 19 |
| 7. SAMPLE CALCULATION .....                                     | 20 |
| 8. TEST DATA .....                                              | 22 |
| 8.1 EFFECTIVE RADIATED POWER .....                              | 22 |
| 8.2 RADIATED SPURIOUS EMISSIONS.....                            | 23 |
| 8.3 OCCUPIED BANDWIDTH.....                                     | 26 |
| 8.4 CONDUCTED SPURIOUS EMISSIONS .....                          | 27 |
| 8.5 BAND EDGE .....                                             | 27 |
| 8.6 FREQUENCY STABILITY / VARIATION OF AMBIENT TEMPERATURE..... | 28 |
| 9. TEST PLOTS .....                                             | 32 |
| 10. APPENDIX A_ TEST SETUP PHOTO.....                           | 55 |

# MEASUREMENT REPORT

## 1. GENERAL INFORMATION

|                             |                                                                                  |
|-----------------------------|----------------------------------------------------------------------------------|
| <b>Applicant Name:</b>      | SAMSUNG Electronics Co., Ltd.                                                    |
| <b>Address:</b>             | 129, Samsung-ro, Yeongtong-gu, Suwon-si, Gyeonggi-do, 16677, Rep. of Korea       |
| <b>FCC ID:</b>              | A3LSMG781U                                                                       |
| <b>Application Type:</b>    | Certification                                                                    |
| <b>FCC Classification:</b>  | PCS Licensed Transmitter Held to Ear (PCE)                                       |
| <b>FCC Rule Part(s):</b>    | §27, §2                                                                          |
| <b>EUT Type:</b>            | Mobile Phone                                                                     |
| <b>Model(s):</b>            | SM-G781U                                                                         |
| <b>Additional Model(s):</b> | SM-G781U1/DS, SM-G781W                                                           |
| <b>Tx Frequency:</b>        | 779.5 MHz – 784.5 MHz (LTE – Band 13 (5MHz))<br>782 MHz (LTE – Band 13 (10 MHz)) |
| <b>Date(s) of Tests:</b>    | July 06, 2020 ~ August 12, 2020                                                  |

## **2. INTRODUCTION**

### **2.1. DESCRIPTION OF EUT**

The EUT was a Mobile Phone with GSM/GPRS/EGPRS/UMTS, CDMA(BC0, 1, 10) and LTE, Sub6.

It also supports IEEE 802.11 a/b/g/n/ac/ax (HT20/40/80), Bluetooth, BT LE, NFC, WPT.

### **2.2. MEASURING INSTRUMENT CALIBRATION**

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

### **2.3. TEST FACILITY**

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

### 3. DESCRIPTION OF TESTS

#### 3.1 TEST PROCEDURE

| Test Description                                                | Test Procedure Used                                                                   |
|-----------------------------------------------------------------|---------------------------------------------------------------------------------------|
| Occupied Bandwidth                                              | - KDB 971168 D01 v03r01 – Section 4.3<br>- ANSI C63.26-2015 – Section 5.4.4           |
| Band Edge                                                       | - KDB 971168 D01 v03r01 – Section 6.0<br>- ANSI C63.26-2015 – Section 5.7             |
| Spurious and Harmonic Emissions at Antenna Terminal             | - KDB 971168 D01 v03r01 – Section 6.0<br>- ANSI C63.26-2015 – Section 5.7             |
| Conducted Output Power                                          | - N/A (See SAR Report)                                                                |
| Frequency stability                                             | - ANSI C63.26-2015 – Section 5.6                                                      |
| Effective Radiated Power/<br>Effective Isotropic Radiated Power | - KDB 971168 D01 v03r01 – Section 5.2 & 5.8<br>- ANSI/TIA-603-E-2016 – Section 2.2.17 |
| Radiated Spurious and Harmonic Emissions                        | - KDB 971168 D01 v03r01 – Section 6.2<br>- ANSI/TIA-603-E-2016 – Section 2.2.12       |

### 3.2 RADIATED POWER

#### Test Overview

Radiated tests are performed in the Fully-anechoic chamber.

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

#### Test Settings

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

#### Test Note

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

The power is calculated by the following formula;

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

Where:  $P_d$  is the dipole equivalent power and  $P_g$  is the generator output power into the substitution antenna.

3. The maximum value is calculated by adding the forward power to the calibrated source plus its appropriate gain value.

These steps are repeated with the receiving antenna in both vertical and horizontal polarization. the difference

between the gain of the horn and an isotropic antenna are taken into consideration

4. The EUT was tested in three orthogonal planes(X, Y, Z) and in all possible test configurations and positioning.
5. All measurements are performed as RMS average measurements while the EUT is operating at its maximum duty cycle, at maximum power, and at the appropriate frequencies.

### 3.3 RADIATED SPURIOUS EMISSIONS

#### Test Overview

Radiated tests are performed in the Fully-anechoic chamber.

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

#### Test Settings

1. RBW = 100kHz for emissions below 1GHz and 1MHz for emissions above 1GHz
2. VBW  $\geq 3 \times$  RBW
3. Span = 1.5 times the OBW
4. No. of sweep points  $> 2 \times$  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<sup>th</sup> harmonics from 9 kHz.

#### Test Note

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

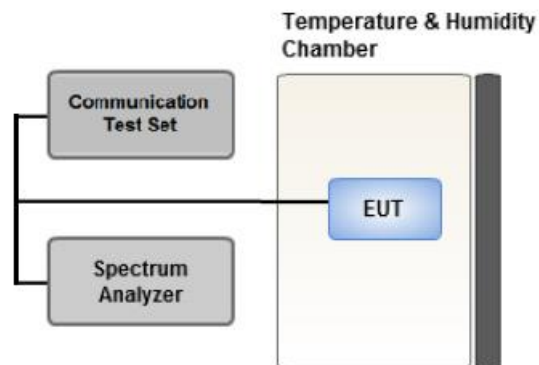
$$\text{Result}_{(\text{dBm})} = P_{\text{g}}_{(\text{dBm})} - \text{cable loss}_{(\text{dB})} + \text{antenna gain}_{(\text{dBi})}$$

Where:  $P_{\text{g}}$  is the generator output power into the substitution antenna.

If the fundamatal frequency is below 1GHz, RF output power has been converted to EIRP.

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

### 3.4 OCCUPIED BANDWIDTH.



#### Test setup

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

The EUT makes a call to the communication simulator.

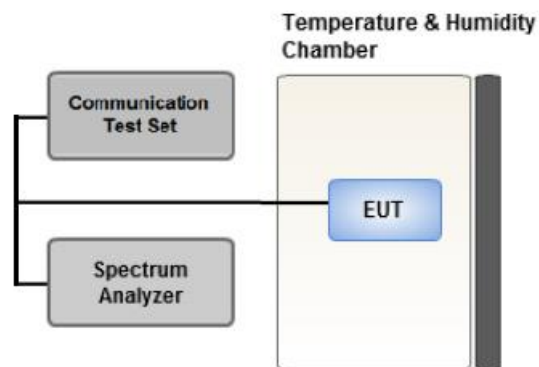
The conducted occupied bandwidth used the power splitter via EUT RF power connector between simulation base station and spectrum analyzer.

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

#### Test Settings

1. The signal analyzer's automatic bandwidth measurement capability was used to perform the 99% occupied bandwidth and the 26dB bandwidth. The bandwidth measurement was not influenced by any intermediate power nulls in the fundamental emission.
2. RBW = 1 – 5% of the expected OBW
3. VBW  $\geq 3 \times$  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

### 3.5 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.

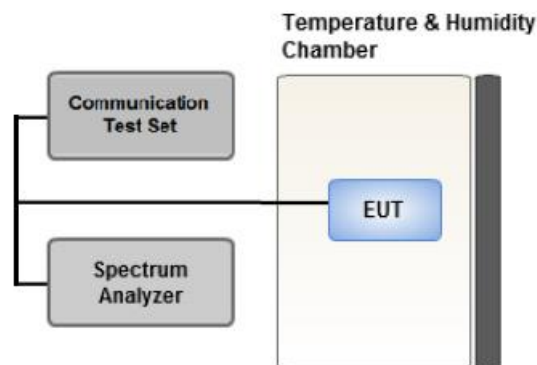
All out of band emissions are measured with a spectrum analyzer connected to the antenna terminal of the EUT while the EUT is operating at its maximum duty cycle, at maximum power, and at the appropriate frequencies.

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  $\geq$  3 MHz
3. Detector = RMS
4. Trace Mode = trace average
5. Sweep time = auto
6. Number of points in sweep  $\geq 2 \times \text{Span} / \text{RBW}$

### 3.6 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  $\geq 2 \times \text{Span/RBW}$
7. Trace mode = trace average
8. Sweep time = auto couple
9. The trace was allowed to stabilize

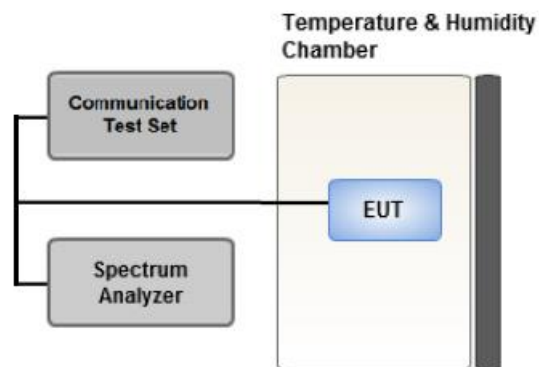
#### Test Notes

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

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

The band edge measurement used the power splitter via EUT RF power connector between simulation base station and spectrum analyzer.

### 3.7 FREQUENCY STABILITY / VARIATION OF AMBIENT TEMPERATURE



**Test setup**

#### **Test Overview**

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

The frequency stability of the transmitter is measured by:

1. Temperature:

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

2. Primary Supply Voltage:

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

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

#### **Test Settings**

1. The carrier frequency of the transmitter is measured at room temperature

(20°C to provide a reference).

2. The equipment is turned on in a "standby" condition for fifteen minutes before applying power to the transmitter.

Measurement of the carrier frequency of the transmitter is made within one minute after applying power to the transmitter.

3. Frequency measurements are made at 10°C intervals ranging from -30°C to +50°C. A period of at

least one half-hour is provided to allow stabilization of the equipment at each temperature level.

### 3.8 WORST CASE(RADIATED TEST)

- The EUT was tested in three orthogonal planes(X, Y, Z) and in all possible test configurations and positioning.
- All modes of operation were investigated and the worst case configuration results are reported.
- The worst case is reported with the EUT positioning, modulations, RB sizes and offsets, and channel bandwidth configurations shown in the test data.
- Please refer to the table below.
- SM-G781U & additional models were tested and the worst case results are reported.  
(Worst case : SM-G781U)

[ Worst case ]

| Test Description                         | Modulation               | RB size | RB offset | Axis |
|------------------------------------------|--------------------------|---------|-----------|------|
| Effective Isotropic Radiated Power       | QPSK,<br>16QAM,<br>64QAM | 1       | 0         | X    |
| Radiated Spurious and Harmonic Emissions | QPSK                     | 1       | 0         | Y    |

### 3.9 WORST CASE(CONDUCTED TEST)

- Worst case : Of all modulation, We have tested modulation of the high Conducted Output Power.

Conducted Output Power value can be confirmed on the SAR report.

-SM-G781U & additional models were tested and the worst case results are reported.

(Worst case : SM-G781U)

[ Worst case ]

| Test Description                                       | Modulation               | Bandwidth<br>(MHz) | Frequency            | RB size | RB offset |
|--------------------------------------------------------|--------------------------|--------------------|----------------------|---------|-----------|
| Occupied Bandwidth                                     | QPSK,<br>16QAM,<br>64QAM | 5, 10              | Mid                  | Full RB | 0         |
| Band Edge                                              | QPSK                     | 5                  | Low                  | 1       | 0         |
|                                                        |                          |                    | High                 | 1       | 24        |
|                                                        |                          | 10                 | Low                  | 1       | 0         |
|                                                        |                          |                    | High                 | 1       | 49        |
|                                                        |                          | 5, 10              | Low,<br>High         | Full RB | 0         |
| Spurious and Harmonic Emissions at<br>Antenna Terminal | QPSK                     | 5, 10              | Low,<br>Mid,<br>High | 1       | 0         |

#### 4. LIST OF TEST EQUIPMENT

| Manufacture           | Model/ Equipment                                     | Serial Number | Calibration Date | Calibration Interval | Calibration Due |
|-----------------------|------------------------------------------------------|---------------|------------------|----------------------|-----------------|
| T&M SYSTEM            | FBSR-02B(WHK1.2/15G-10EF)/H.P.F                      | -             | 03/09/2020       | Annual               | 03/09/2021      |
| T&M SYSTEM            | FBSR-02B(WHK3.3/18G-10EF)/H.P.F                      | -             | 03/09/2020       | Annual               | 03/09/2021      |
| WAINWRIGHT INSTRUMENT | WHNX6.0/26.5G-6SS/H.P.F                              | 1             | 03/19/2020       | Annual               | 03/19/2021      |
| Hewlett Packard       | 11667B / Power Splitter(DC~26.5 GHz)                 | 11275         | 04/27/2020       | Annual               | 04/27/2021      |
| Hewlett Packard       | E3632A/DC Power Supply                               | MY4004427     | 09/27/2019       | Annual               | 09/27/2020      |
| Schwarzbeck           | UHAP/ Dipole Antenna                                 | 557           | 03/29/2019       | Biennial             | 03/29/2021      |
| Schwarzbeck           | UHAP/ Dipole Antenna                                 | 558           | 03/29/2019       | Biennial             | 03/29/2021      |
| ESPEC                 | SU-642 / Chamber                                     | 93008124      | 03/18/2020       | Annual               | 03/18/2021      |
| Schwarzbeck           | BBHA 9120D/ Horn Antenna(1~18GHz)                    | 147           | 08/29/2019       | Biennial             | 08/29/2021      |
| Schwarzbeck           | BBHA 9120D/ Horn Antenna(1~18GHz)                    | 9120D-1298    | 09/25/2019       | Biennial             | 09/25/2021      |
| Schwarzbeck           | BBHA 9170/ Horn Antenna(15~40GHz)                    | BBHA9170342   | 04/29/2019       | Biennial             | 04/29/2021      |
| Schwarzbeck           | BBHA 9170/ Horn Antenna(15~40GHz)                    | BBHA9170124   | 02/11/2020       | Biennial             | 02/11/2022      |
| Agilent               | N9020A/Signal Analyzer(10Hz~26.5GHz)                 | MY51110063    | 04/27/2020       | Annual               | 04/27/2021      |
| Hewlett Packard       | 8493C/ATTENUATOR(20dB)                               | 17280         | 06/04/2020       | Annual               | 06/04/2021      |
| REOHDE & SCHWARZ      | FSV40/Spectrum Analyzer(10Hz~40GHz)                  | 100931        | 10/14/2019       | Annual               | 10/14/2020      |
| Agilent               | 8960 (E5515C)/ Base Station                          | MY48360800    | 08/27/2019       | Annual               | 08/27/2020      |
| Schwarzbeck           | FMZB1513/ Loop Antenna(9kHz~30MHz)                   | 1513-175      | 04/26/2019       | Biennial             | 04/26/2021      |
| Schwarzbeck           | VULB9160/ Bilog Antenna                              | 3150          | 03/12/2019       | Biennial             | 03/12/2021      |
| Schwarzbeck           | VULB9160/ Hybrid Antenna                             | 760           | 03/22/2019       | Biennial             | 03/22/2021      |
| Anritsu Corp.         | MT8821C/Wideband Radio Communication Tester          | 6262116770    | 07/22/2020       | Annual               | 07/22/2021      |
| Anritsu Corp.         | MT8820C/Wideband Radio Communication Tester          | 6201026545    | 01/22/2020       | Annual               | 01/22/2021      |
| REOHDE & SCHWARZ      | SMB100A/ SIGNAL GENERATOR (100kHz~40GHz)             | 177633        | 07/13/2020       | Annual               | 07/13/2021      |
| KEYSIGHT              | E7515B / 5G Wireless Tester                          | MY58300756    | 01/07/2020       | Annual               | 01/07/2021      |
| KEYSIGHT              | N9030B / Signal Analyzer(5Hz~40.0GHz)                | MY55480167    | 06/04/2020       | Annual               | 06/04/2021      |
| Mini-Circuits         | ZC4PD-K1844+ / 4-Way Divider                         | 942907        | 09/05/2019       | Annual               | 09/05/2020      |
| HCT CO., LTD.,        | FCC LTE Mobile Conducted RF Automation Test Software | -             | -                | -                    | -               |

Note:

1. Equipment listed above that has a calibration due date during the testing period, the testing is completed before equipment expiration date.
2. 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  $U_{\text{CISPR}}$  measurement uncertainty values specified in CISPR 16-4-2 and, thus, can be compared directly to specified limits to determine compliance.

| Parameter                                | Expanded Uncertainty ( $\pm$ dB) |
|------------------------------------------|----------------------------------|
| Conducted Disturbance (150 kHz ~ 30 MHz) | 1.82                             |
| Radiated Disturbance (9 kHz ~ 30 MHz)    | 3.40                             |
| Radiated Disturbance (30 MHz ~ 1 GHz)    | 4.80                             |
| Radiated Disturbance (1 GHz ~ 18 GHz)    | 5.70                             |
| Radiated Disturbance (18 GHz ~ 40 GHz)   | 5.05                             |

## 6. SUMMARY OF TEST RESULTS

### 6.1 Test Condition : Conducted Test

| Test Description                                                 | FCC Part Section(s)   | Test Limit                                                                            | Test Result                |
|------------------------------------------------------------------|-----------------------|---------------------------------------------------------------------------------------|----------------------------|
| Occupied Bandwidth                                               | §2.1049               | N/A                                                                                   | PASS                       |
| Band Edge / Spurious and Harmonic Emissions at Antenna Terminal. | §2.1051,<br>§27.53(c) | $< 43 + 10\log_{10} (P[\text{Watts}])$ at Band Edge and for all out-of-band emissions | PASS                       |
| On all frequencies between 763-775 MHz and 793-805 MHz.          | §27.53(c)(4)          | $< 65 + 10\log_{10} (P[\text{Watts}])$                                                | PASS<br><b>(See Note3)</b> |
| Conducted Output Power                                           | §2.1046               | N/A                                                                                   | <b>See Note1</b>           |
| Frequency stability / variation of ambient temperature           | §2.1055,<br>§ 27.54   | Emission must remain in band                                                          | PASS                       |

#### Note:

1. See SAR Report
2. The same samples were used for SAR and EMC
3. Since it was not possible to set the resolution bandwidth to 6.25 kHz with the available equipment, a bandwidth of 10 kHz was used instead to show compliance.

### 6.2 Test Condition : Radiated Test

| Test Description                                  | FCC Part Section(s)   | Test Limit                                                                   | Test Result |
|---------------------------------------------------|-----------------------|------------------------------------------------------------------------------|-------------|
| Effective Radiated Power                          | §27.50(b)(10)         | $< 3$ Watts max. ERP                                                         | PASS        |
| Radiated Spurious and Harmonic Emissions          | §2.1053,<br>§27.53(c) | $< 43 + 10\log_{10} (P[\text{Watts}])$ for all out-of band emissions         | PASS        |
| Undesirable Emissions in the 1559 – 1610 MHz band | §2.1053, 27.53(f)     | $< -70\text{dBW/MHz}$ EIRP (wideband)<br>$< -80\text{dBW}$ EIRP (narrowband) | PASS        |

## 7. SAMPLE CALCULATION

### 7.1 ERP Sample Calculation

| Ch./ Freq. |            | Measured<br>Level(dBm) | Substitute<br>Level(dBm) | Ant. Gain<br>(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 |

$$\text{ERP} = \text{Substitute LEVEL(dBm)} + \text{Ant. Gain} - \text{CL(Cable Loss)}$$

- 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<br>Level(dBm) | Substitute<br>Level(dBm) | Ant. Gain<br>(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 |

$$\text{EIRP} = \text{Substitute LEVEL(dBm)} + \text{Ant. Gain} - \text{CL(Cable Loss)}$$

- 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

### 8.1 EFFECTIVE RADIATED POWER

| Freq<br>(MHz) | Mod<br>(Bandwidth) | Modulation | Measured<br>Level (dBm) | Substitute<br>Level (dBm) | Ant.<br>Gain(dBd) | C.L  | Pol | Limit  | ERP   |       |
|---------------|--------------------|------------|-------------------------|---------------------------|-------------------|------|-----|--------|-------|-------|
|               |                    |            |                         |                           |                   |      |     | W      | W     | dBm   |
| 779.5         | LTE B13<br>(5 MHz) | QPSK       | -29.28                  | 32.72                     | -10.08            | 1.36 | H   | < 3.00 | 0.134 | 21.28 |
|               |                    | 16-QAM     | -30.01                  | 31.99                     | -10.08            | 1.36 | H   |        | 0.114 | 20.55 |
|               |                    | 64-QAM     | -31.97                  | 30.03                     | -10.08            | 1.36 | H   |        | 0.072 | 18.59 |
| 782.0         |                    | QPSK       | -29.41                  | 32.79                     | -10.09            | 1.36 | H   |        | 0.136 | 21.34 |
|               |                    | 16-QAM     | -30.06                  | 32.14                     | -10.09            | 1.36 | H   |        | 0.117 | 20.69 |
|               |                    | 64-QAM     | -31.09                  | 31.11                     | -10.09            | 1.36 | H   |        | 0.092 | 19.66 |
| 784.5         |                    | QPSK       | -29.44                  | 32.88                     | -10.10            | 1.36 | H   |        | 0.139 | 21.43 |
|               |                    | 16-QAM     | -30.17                  | 32.15                     | -10.10            | 1.36 | H   |        | 0.117 | 20.70 |
|               |                    | 64-QAM     | -31.18                  | 31.14                     | -10.10            | 1.36 | H   |        | 0.093 | 19.69 |

| Freq<br>(MHz) | Mod<br>(Bandwidth)  | Modulation | Measured<br>Level (dBm) | Substitute<br>Level (dBm) | Ant.<br>Gain(dBd) | C.L  | Pol | Limit  | ERP   |       |
|---------------|---------------------|------------|-------------------------|---------------------------|-------------------|------|-----|--------|-------|-------|
|               |                     |            |                         |                           |                   |      |     | W      | W     | dBm   |
| 782.0         | LTE B13<br>(10 MHz) | QPSK       | -29.25                  | 32.95                     | -10.09            | 1.36 | H   | < 3.00 | 0.141 | 21.50 |
|               |                     | 16-QAM     | -29.94                  | 32.26                     | -10.09            | 1.36 | H   |        | 0.120 | 20.81 |
|               |                     | 64-QAM     | -31.84                  | 30.36                     | -10.09            | 1.36 | H   |        | 0.078 | 18.91 |

## 8.2 RADIATED SPURIOUS EMISSIONS

MODE: LTE B13  
 MODULATION SIGNAL: 5 MHz QPSK  
 DISTANCE: 3 meters

| Ch               | Freq (MHz) | Measured Level (dBm) | Ant. Gain (dBi) | Substitute Level (dBm) | C.L  | Pol | Result (dBm) | Limit  |
|------------------|------------|----------------------|-----------------|------------------------|------|-----|--------------|--------|
| 23205<br>(779.5) | 1,559.0    | -56.06               | 8.93            | -62.91                 | 1.94 | V   | -55.92       | -13.00 |
|                  | 2,338.5    | -49.47               | 9.83            | -51.69                 | 2.41 | H   | -44.27       | -13.00 |
|                  | 3,118.0    | -51.83               | 11.15           | -52.06                 | 2.82 | H   | -43.73       | -13.00 |
| 23230<br>(782.0) | 1,564.0    | -55.85               | 8.99            | -62.86                 | 1.94 | V   | -55.81       | -13.00 |
|                  | 2,346.0    | -49.22               | 9.87            | -51.37                 | 2.41 | H   | -43.92       | -13.00 |
|                  | 3,128.0    | -51.96               | 11.15           | -52.41                 | 2.81 | V   | -44.07       | -13.00 |
| 23255<br>(784.5) | 1,569.0    | -55.67               | 9.05            | -62.85                 | 1.94 | V   | -55.74       | -13.00 |
|                  | 2,353.5    | -49.19               | 9.94            | -51.32                 | 2.41 | V   | -43.79       | -13.00 |
|                  | 3,138.0    | -52.00               | 11.18           | -51.98                 | 2.82 | H   | -43.62       | -13.00 |

☐ MODE: LTE B13  
☐ MODULATION SIGNAL: 10 MHz QPSK  
☐ DISTANCE: 3 meters

| Ch               | Freq (MHz) | Measured Level (dBm) | Ant. Gain (dBi) | Substitute Level (dBm) | C.L  | Pol | Result (dBm) | Limit  |
|------------------|------------|----------------------|-----------------|------------------------|------|-----|--------------|--------|
| 23230<br>(782.0) | 1,564.0    | -55.56               | 8.99            | -62.57                 | 1.94 | V   | -55.52       | -13.00 |
|                  | 2,346.0    | -49.04               | 9.87            | -51.19                 | 2.41 | H   | -43.74       | -13.00 |
|                  | 3,128.0    | -51.82               | 11.15           | -52.27                 | 2.81 | H   | -43.93       | -13.00 |

**1559 MHz ~ 1610 MHz BAND**

- ▣ OPERATING FREQUENCY: 779.5 MHz, 782.0 MHz, 784.5 MHz
- ▣ MEASURED OUTPUT POWER: 5 MHz QPSK
- ▣ DISTANCE: 3 meters
- ▣ WIDEBAND EMISSION LIMIT: -80 dBW/ MHz (= -50 dBm/ MHz)

| Operating Frequency (MHz) | Measured Frequency (MHz) | EMISSION TYPE | Measured Level (dBm) | Ant. Gain (dBi) | Substitute Level (dBm) | C.L  | Pol | Result (dBm) | Margin (dB) |
|---------------------------|--------------------------|---------------|----------------------|-----------------|------------------------|------|-----|--------------|-------------|
| 779.5                     | 1603.52                  | Narrow Band   | -64.05               | 9.32            | -72.78                 | 1.98 | H   | -65.44       | 15.44       |
| 782.0                     | 1601.88                  |               | -63.99               | 9.30            | -72.70                 | 1.98 | H   | -65.38       | 15.38       |
| 784.5                     | 1605.34                  |               | -63.89               | 9.35            | -72.73                 | 1.99 | H   | -65.37       | 15.37       |

Note:

The lower narrowband limit was applied because the spurious emission was not found.

- ▣ OPERATING FREQUENCY: 782.0 MHz
- ▣ MEASURED OUTPUT POWER: 10 MHz QPSK
- ▣ DISTANCE: 3 meters
- ▣ WIDEBAND EMISSION LIMIT: -80 dBW/ MHz (= -50 dBm/ MHz)

| Operating Frequency (MHz) | Measured Frequency (MHz) | EMISSION TYPE | Measured Level (dBm) | Ant. Gain (dBi) | Substitute Level (dBm) | C.L  | Pol | Result (dBm) | Margin (dB) |
|---------------------------|--------------------------|---------------|----------------------|-----------------|------------------------|------|-----|--------------|-------------|
| 782.0                     | 1607.21                  | Narrow Band   | -63.59               | 9.35            | -72.53                 | 1.99 | H   | -65.17       | 15.17       |

Note:

The lower narrowband limit was applied because the spurious emission was not found.

### 8.3 OCCUPIED BANDWIDTH

| Band | Band Width | Frequency (MHz) | Modulation | Resource Block Size | Resource Block Offset | Data ( MHz ) |
|------|------------|-----------------|------------|---------------------|-----------------------|--------------|
| 13   | 5 MHz      | 782.0           | QPSK       | 25                  | 0                     | 4.5075       |
|      |            |                 | 16-QAM     | 25                  | 0                     | 4.4838       |
|      |            |                 | 64-QAM     | 25                  | 0                     | 4.5009       |
|      | 10 MHz     |                 | QPSK       | 50                  | 0                     | 8.9594       |
|      |            |                 | 16-QAM     | 50                  | 0                     | 8.9431       |
|      |            |                 | 64-QAM     | 50                  | 0                     | 8.9625       |

**Note:**

1. Plots of the EUT's Occupied Bandwidth are shown Page 33 ~ 38.

## 8.4 CONDUCTED SPURIOUS EMISSIONS

| Band | Band Width (MHz) | Frequency (MHz) | Frequency of Maximum Harmonic (GHz) | Factor (dB) | Measurement Maximum Data (dBm) | Result (dBm) | Limit (dBm) |
|------|------------------|-----------------|-------------------------------------|-------------|--------------------------------|--------------|-------------|
| 13   | 5                | 779.5           | 3.7034                              | 27.976      | -67.061                        | -39.085      | -13.00      |
|      |                  | 782.0           | 3.7179                              | 27.976      | -67.514                        | -39.538      |             |
|      |                  | 784.5           | 3.7099                              | 27.976      | -67.235                        | -39.259      |             |
|      | 10               | 782.0           | 3.6955                              | 27.976      | -67.193                        | -39.217      |             |

### Note:

1. Plots of the EUT's Conducted Spurious Emissions are shown Page 51 ~ 54.
2. Conducted Spurious Emissions was Tested QPSK Modulation, Resource Block Size 1 and Resource Block Offset 0
3. Result (dBm) = Measurement Maximum Data (dBm) + Factor (dB)
4. Factor(dB) = Cable Loss + Attenuator + Power Splitter

| 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              | 30.131      |

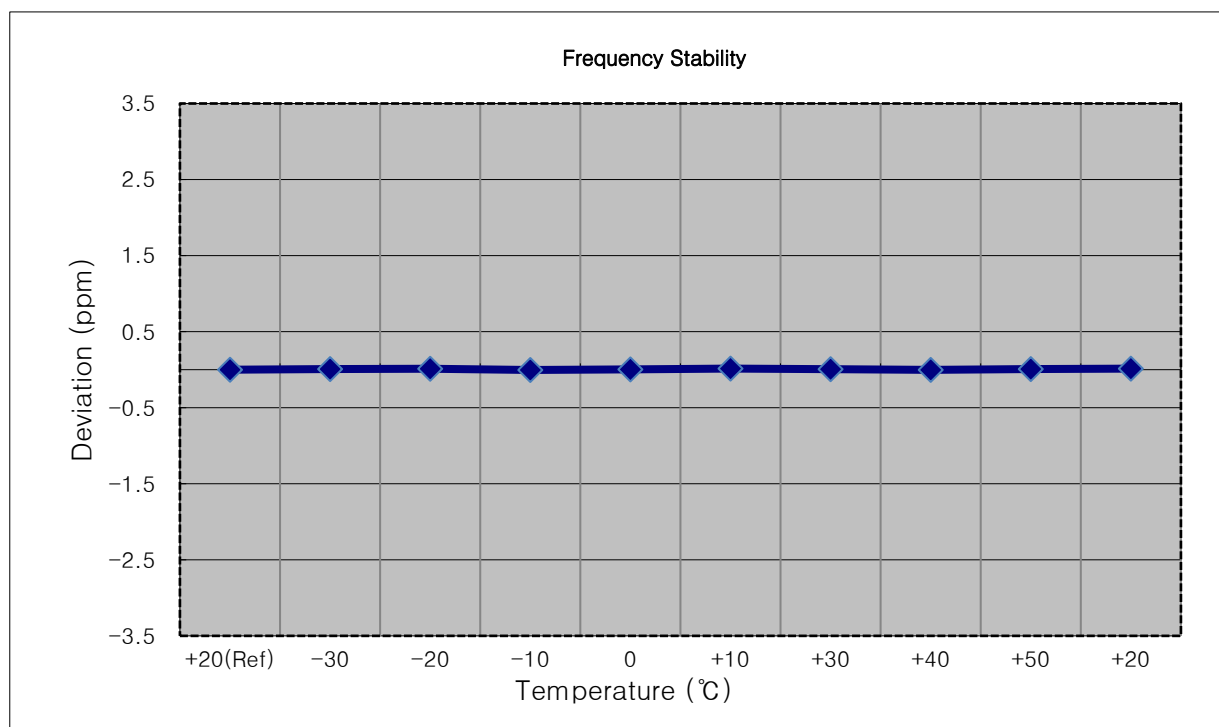
## 8.5 BAND EDGE

- Plots of the EUT's Band Edge are shown Page 39 ~ 50.

## 8.6 FREQUENCY STABILITY / VARIATION OF AMBIENT TEMPERATURE

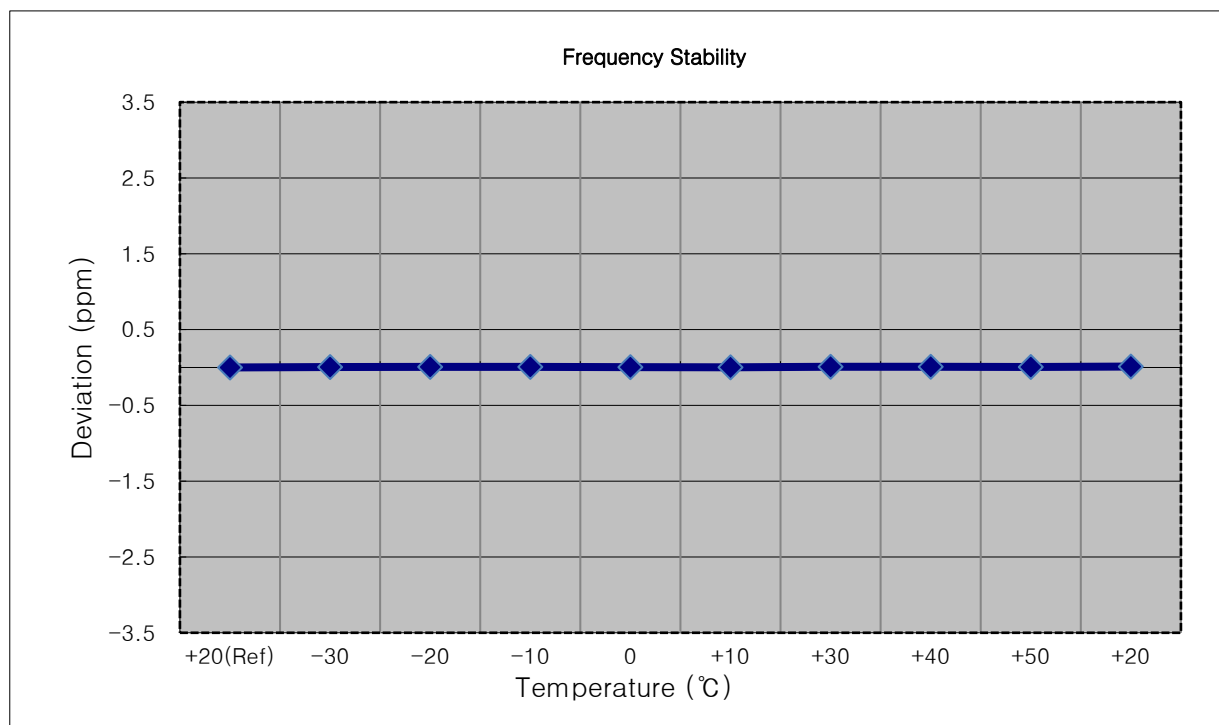
- MODE: LTE 13
- OPERATING FREQUENCY: 779,500,000 Hz
- CHANNEL: 23205 (5 MHz)
- REFERENCE VOLTAGE: 3.85 VDC
- DEVIATION LIMIT: Emission must remain in band

| Voltage (%)    | Power (VDC) | Temp. (°C) | Frequency (Hz) | Frequency Error (Hz) | Deviation (%) | ppm     |
|----------------|-------------|------------|----------------|----------------------|---------------|---------|
| 100%           | 3.850       | +20(Ref)   | 779 500 010    | 0.00                 | 0.000 000     | 0.0000  |
| 100%           |             | -30        | 779 500 016    | 6.10                 | 0.000 001     | 0.0078  |
| 100%           |             | -20        | 779 500 019    | 9.50                 | 0.000 001     | 0.0122  |
| 100%           |             | -10        | 779 500 007    | -2.70                | 0.000 000     | -0.0035 |
| 100%           |             | 0          | 779 500 013    | 2.90                 | 0.000 000     | 0.0037  |
| 100%           |             | +10        | 779 500 021    | 11.00                | 0.000 001     | 0.0141  |
| 100%           |             | +30        | 779 500 015    | 5.50                 | 0.000 001     | 0.0071  |
| 100%           |             | +40        | 779 500 008    | -2.00                | 0.000 000     | -0.0026 |
| 100%           |             | +50        | 779 500 016    | 6.10                 | 0.000 001     | 0.0078  |
| Batt. Endpoint | 3.400       | +20        | 779 500 020    | 10.60                | 0.000 001     | 0.0136  |



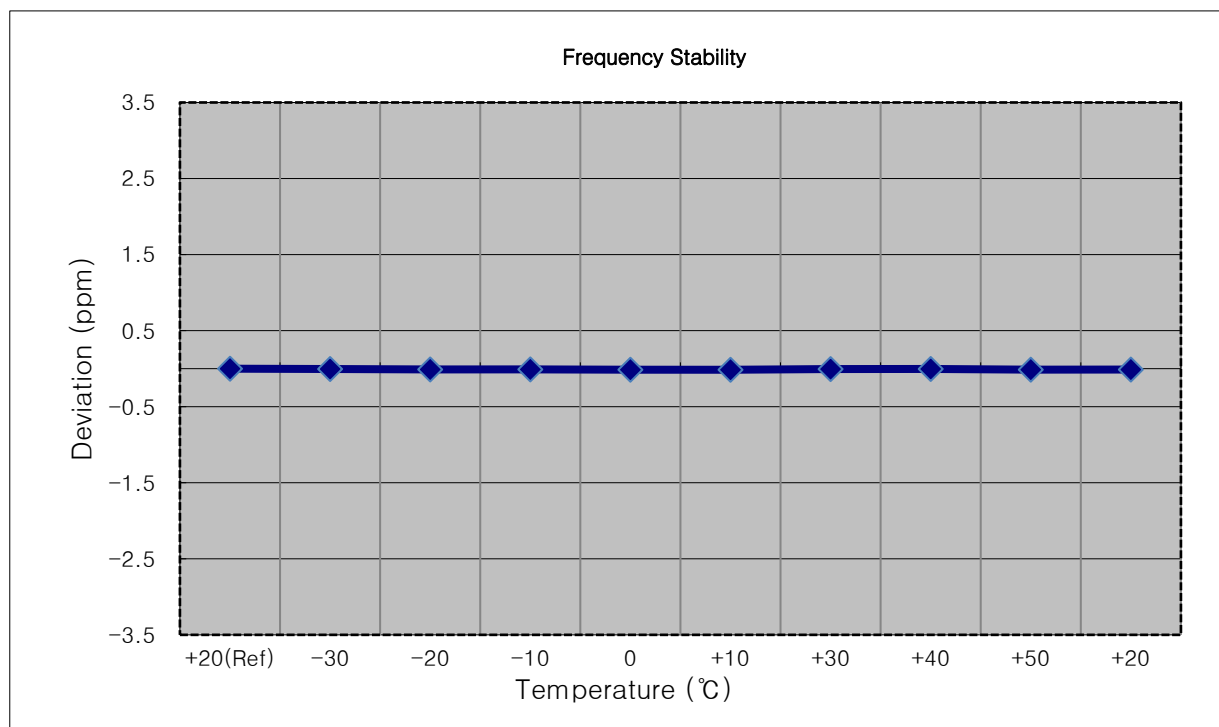
- ☐ MODE: LTE 13  
☐ OPERATING FREQUENCY: 782,000,000 Hz  
☐ CHANNEL: 23230 (5 MHz)  
☐ REFERENCE VOLTAGE: 3.85 VDC  
☐ DEVIATION LIMIT: Emission must remain in band

| Voltage (%)    | Power (VDC) | Temp. (°C) | Frequency (Hz) | Frequency Error (Hz) | Deviation (%) | ppm    |
|----------------|-------------|------------|----------------|----------------------|---------------|--------|
| 100%           | 3.850       | +20(Ref)   | 782 000 003    | 0.00                 | 0.000 000     | 0.0000 |
| 100%           |             | -30        | 782 000 007    | 4.50                 | 0.000 001     | 0.0058 |
| 100%           |             | -20        | 782 000 009    | 6.20                 | 0.000 001     | 0.0079 |
| 100%           |             | -10        | 782 000 009    | 6.00                 | 0.000 001     | 0.0077 |
| 100%           |             | 0          | 782 000 006    | 3.50                 | 0.000 000     | 0.0045 |
| 100%           |             | +10        | 782 000 005    | 1.90                 | 0.000 000     | 0.0024 |
| 100%           |             | +30        | 782 000 010    | 7.40                 | 0.000 001     | 0.0095 |
| 100%           |             | +40        | 782 000 010    | 7.10                 | 0.000 001     | 0.0091 |
| 100%           |             | +50        | 782 000 008    | 5.10                 | 0.000 001     | 0.0065 |
| Batt. Endpoint | 3.400       | +20        | 782 000 012    | 9.60                 | 0.000 001     | 0.0123 |



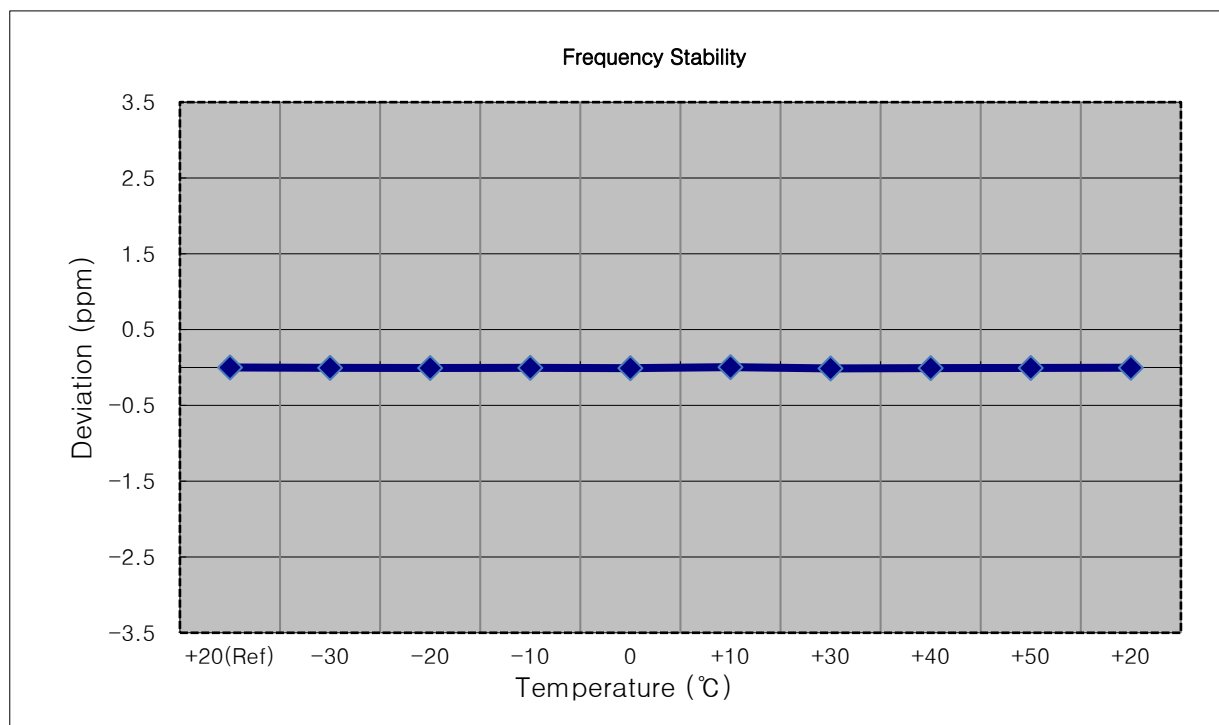
- ☐ MODE: LTE 13  
☐ OPERATING FREQUENCY: 784,500,000 Hz  
☐ CHANNEL: 23255 (5 MHz)  
☐ REFERENCE VOLTAGE: 3.85 VDC  
☐ DEVIATION LIMIT: Emission must remain in band

| Voltage (%)    | Power (VDC) | Temp. (°C) | Frequency (Hz) | Frequency Error (Hz) | Deviation (%) | ppm     |
|----------------|-------------|------------|----------------|----------------------|---------------|---------|
| 100%           | 3.850       | +20(Ref)   | 784 500 008    | 0.00                 | 0.000 000     | 0.0000  |
| 100%           |             | -30        | 784 500 004    | -3.80                | 0.000 000     | -0.0048 |
| 100%           |             | -20        | 784 500 001    | -7.70                | -0.000 001    | -0.0098 |
| 100%           |             | -10        | 784 500 001    | -7.50                | -0.000 001    | -0.0096 |
| 100%           |             | 0          | 784 499 998    | -10.60               | -0.000 001    | -0.0135 |
| 100%           |             | +10        | 784 499 997    | -11.50               | -0.000 001    | -0.0147 |
| 100%           |             | +30        | 784 500 004    | -3.90                | 0.000 000     | -0.0050 |
| 100%           |             | +40        | 784 500 005    | -2.80                | 0.000 000     | -0.0036 |
| 100%           |             | +50        | 784 499 998    | -10.40               | -0.000 001    | -0.0133 |
| Batt. Endpoint | 3.400       | +20        | 784 499 999    | -9.30                | -0.000 001    | -0.0119 |



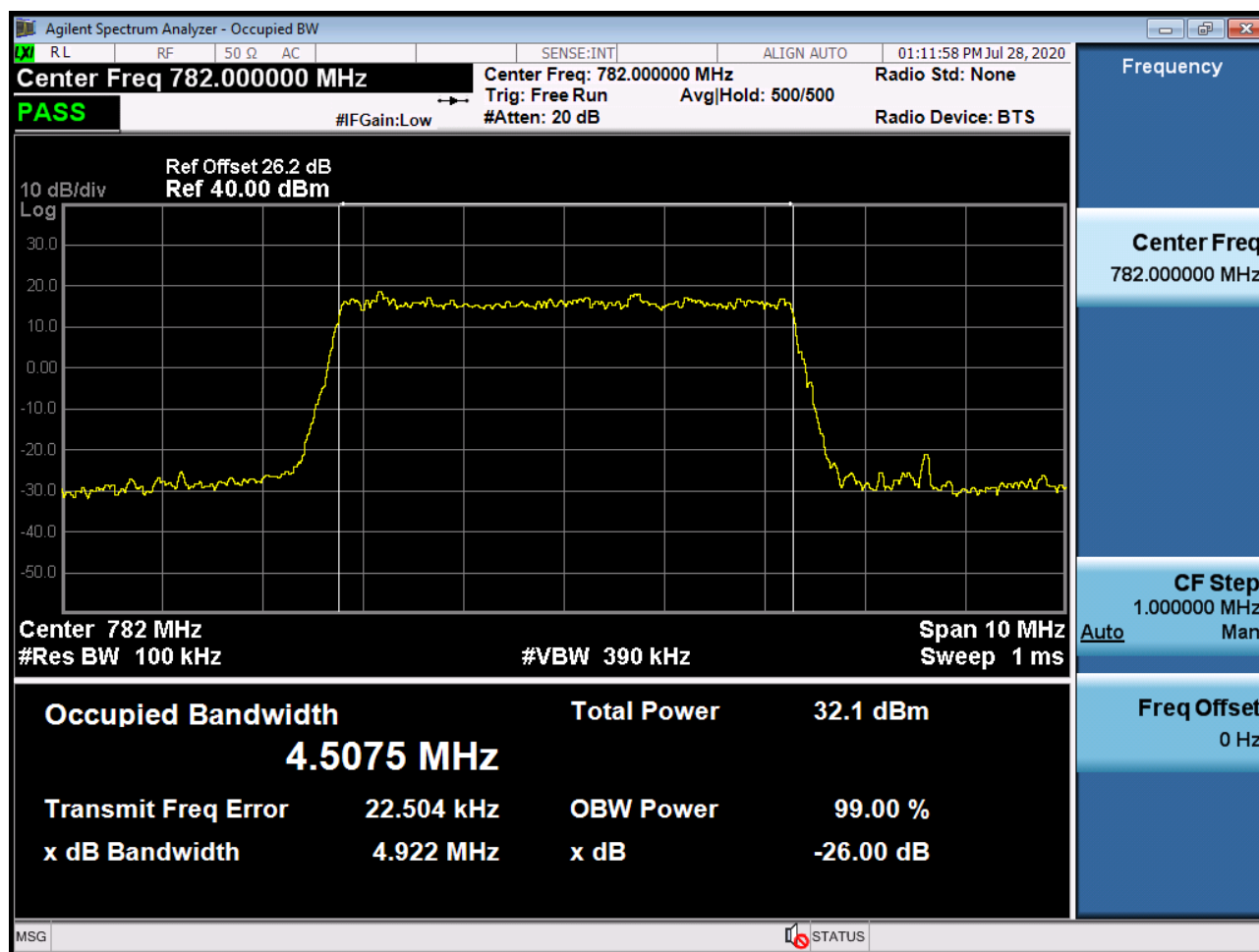
- ☐ MODE: LTE 13  
☐ OPERATING FREQUENCY: 782,000,000 Hz  
☐ CHANNEL: 23230 (10 MHz)  
☐ REFERENCE VOLTAGE: 3.85 VDC  
☐ DEVIATION LIMIT: Emission must remain in band

| Voltage (%)    | Power (VDC) | Temp. (°C) | Frequency (Hz) | Frequency Error (Hz) | Deviation (%) | ppm     |
|----------------|-------------|------------|----------------|----------------------|---------------|---------|
| 100%           | 3.850       | +20(Ref)   | 781 999 998    | 0.00                 | 0.000 000     | 0.0000  |
| 100%           |             | -30        | 781 999 995    | -3.40                | 0.000 000     | -0.0043 |
| 100%           |             | -20        | 781 999 993    | -5.40                | -0.000 001    | -0.0069 |
| 100%           |             | -10        | 781 999 994    | -3.70                | 0.000 000     | -0.0047 |
| 100%           |             | 0          | 781 999 991    | -7.10                | -0.000 001    | -0.0091 |
| 100%           |             | +10        | 782 000 002    | 3.60                 | 0.000 000     | 0.0046  |
| 100%           |             | +30        | 781 999 988    | -9.70                | -0.000 001    | -0.0124 |
| 100%           |             | +40        | 781 999 991    | -6.60                | -0.000 001    | -0.0084 |
| 100%           |             | +50        | 781 999 993    | -4.90                | -0.000 001    | -0.0063 |
| Batt. Endpoint | 3.400       | +20        | 781 999 995    | -2.60                | 0.000 000     | -0.0033 |

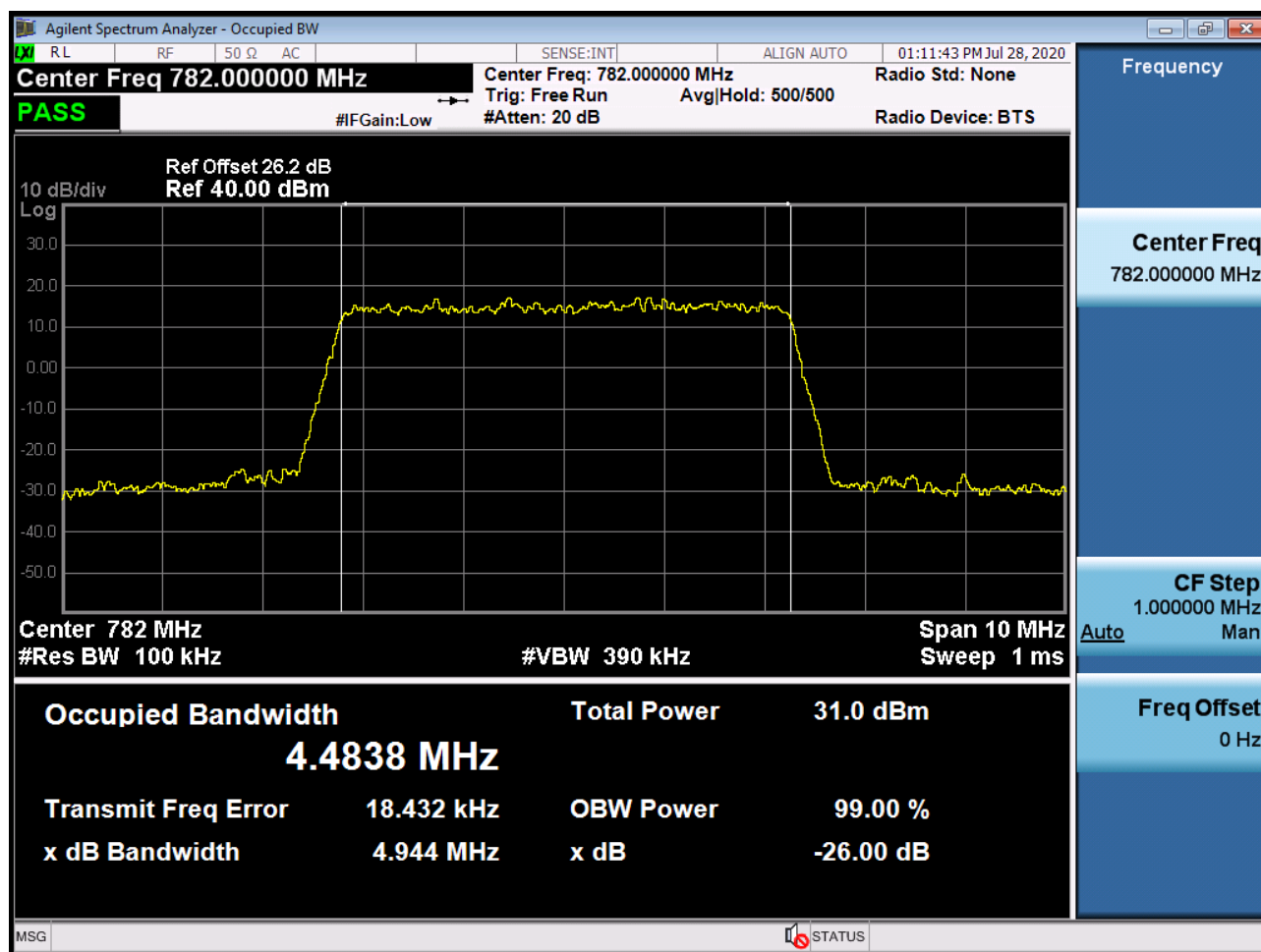


## 9. TEST PLOTS

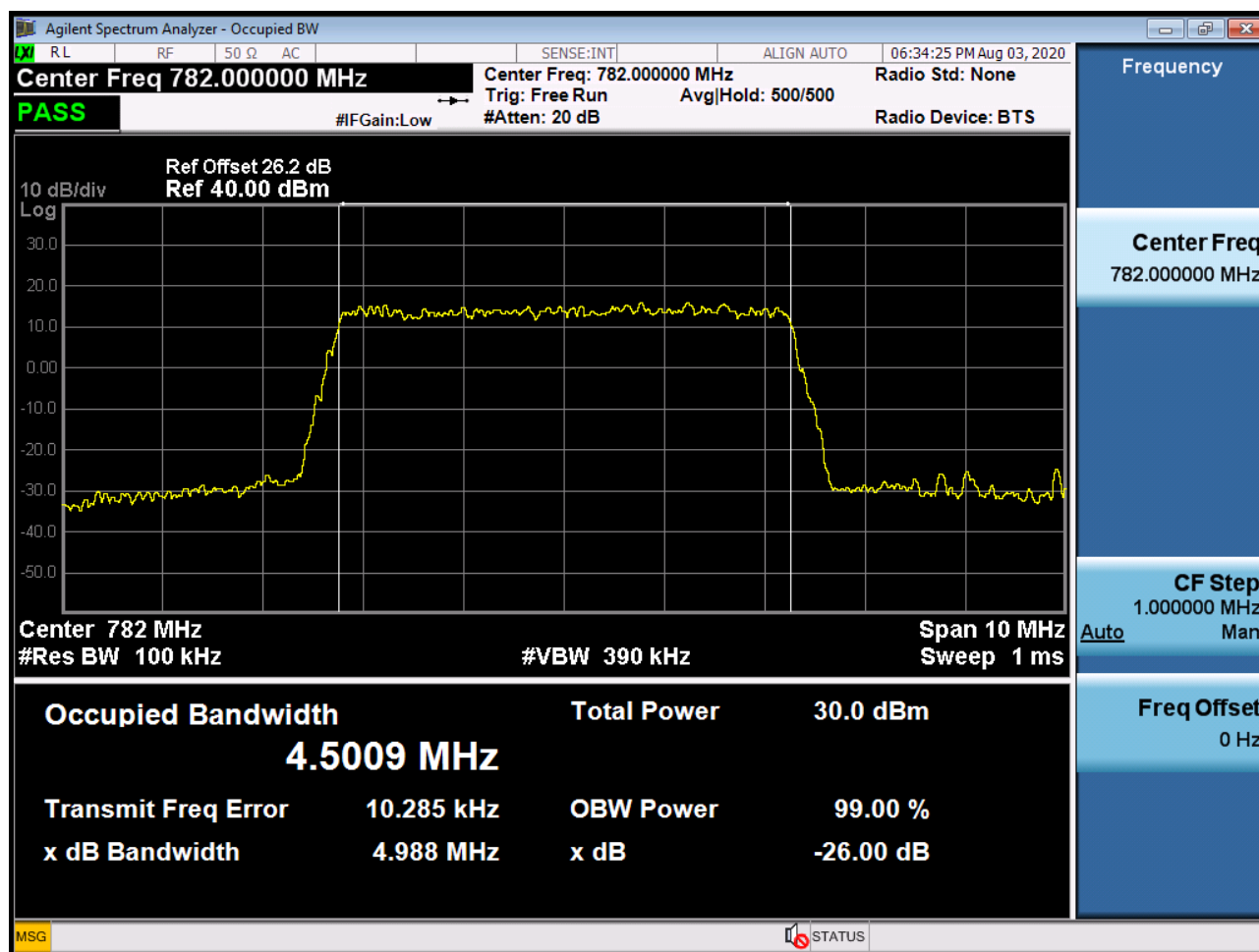
BAND 13. Occupied Bandwidth Plot (Ch.23230 QPSK RB 25) 5 MHz



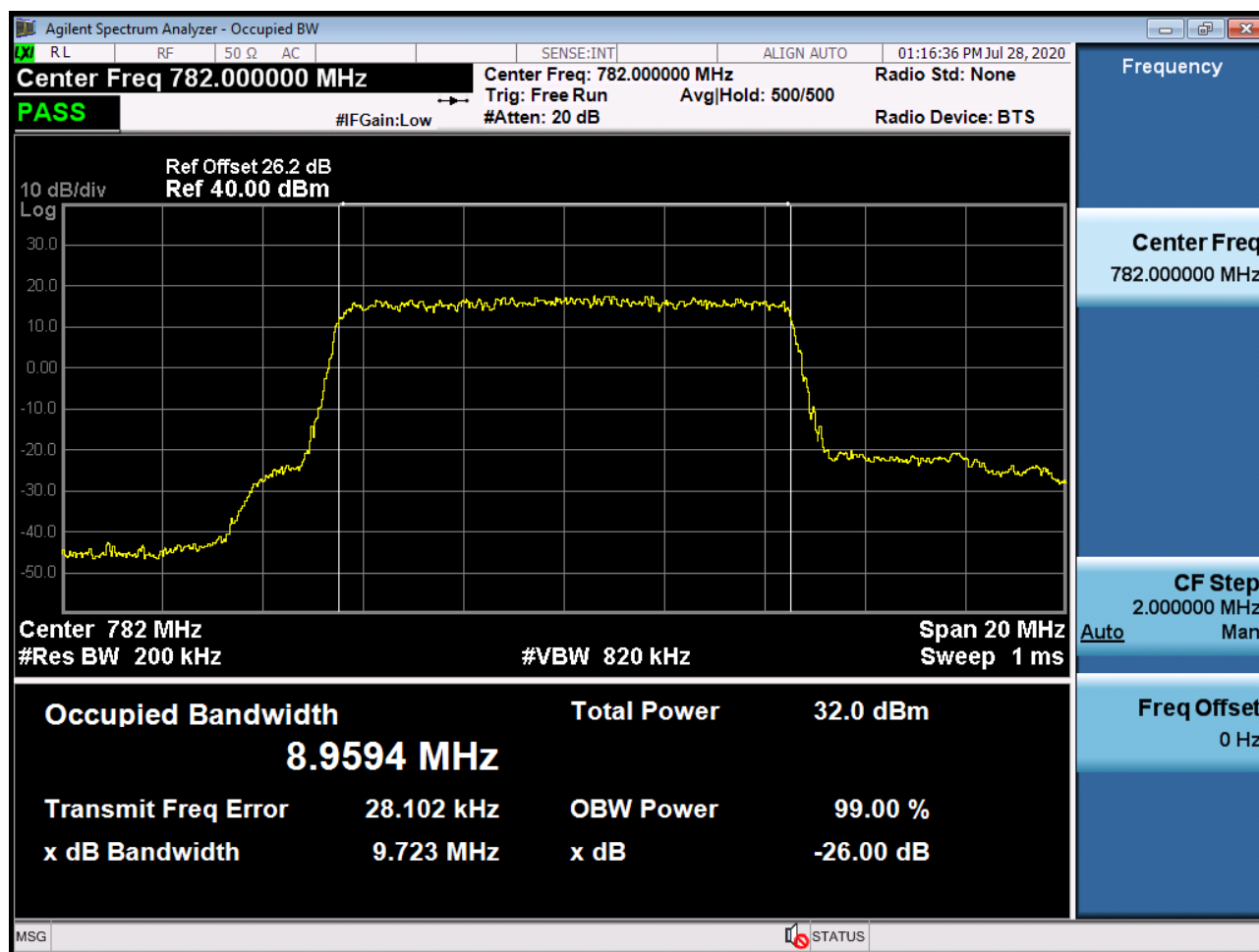
BAND 13. Occupied Bandwidth Plot (Ch.23230 16-QAM RB 25) 5 MHz



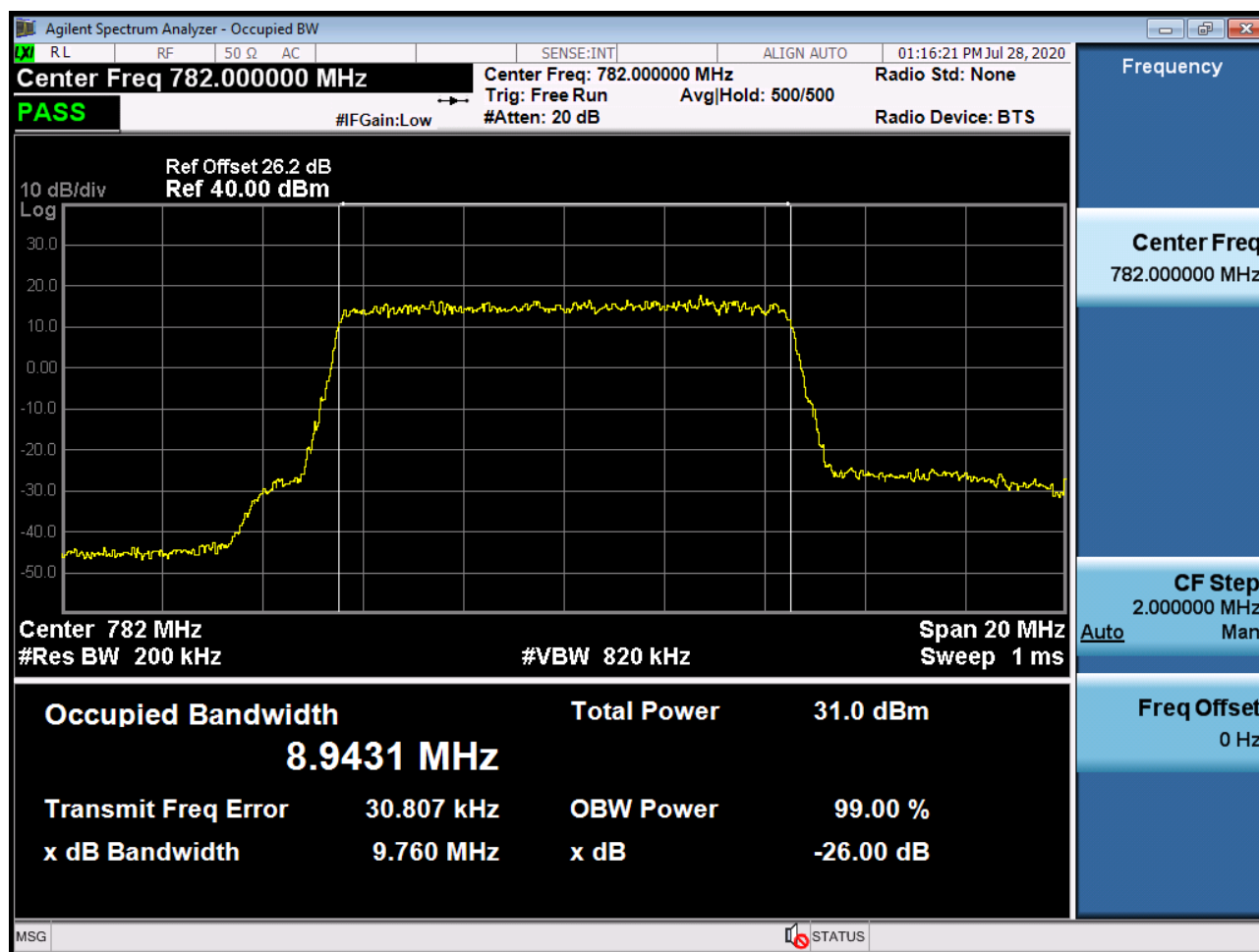
BAND 13. Occupied Bandwidth Plot (Ch.23230 64-QAM RB 25) 5 MHz



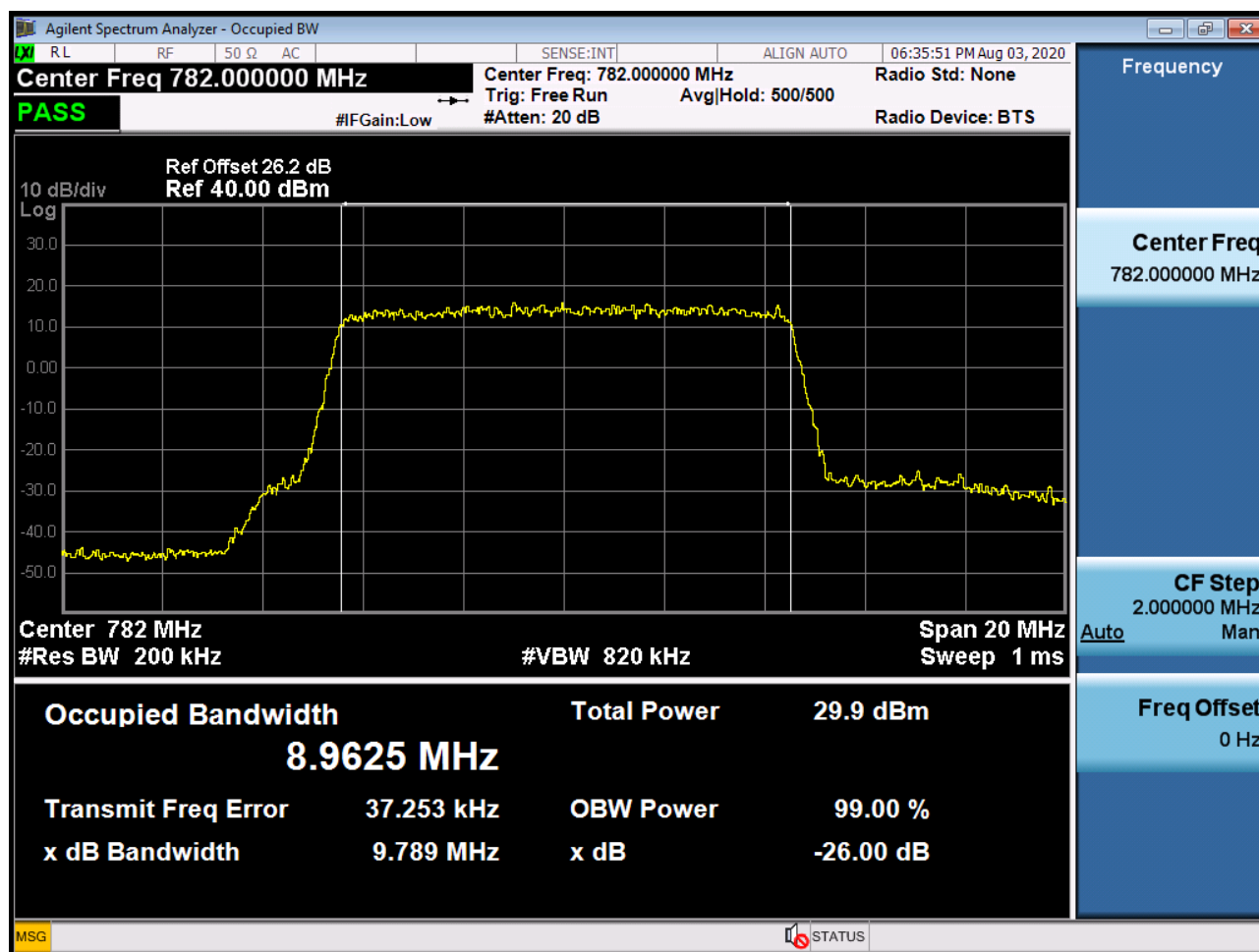
BAND 13. Occupied Bandwidth Plot (Ch.23230 QPSK RB 50) 10 MHz



BAND 13. Occupied Bandwidth Plot (Ch.23230 16-QAM RB 50) 10 MHz



BAND 13. Occupied Bandwidth Plot (Ch.23230 64-QAM RB 50) 10 MHz



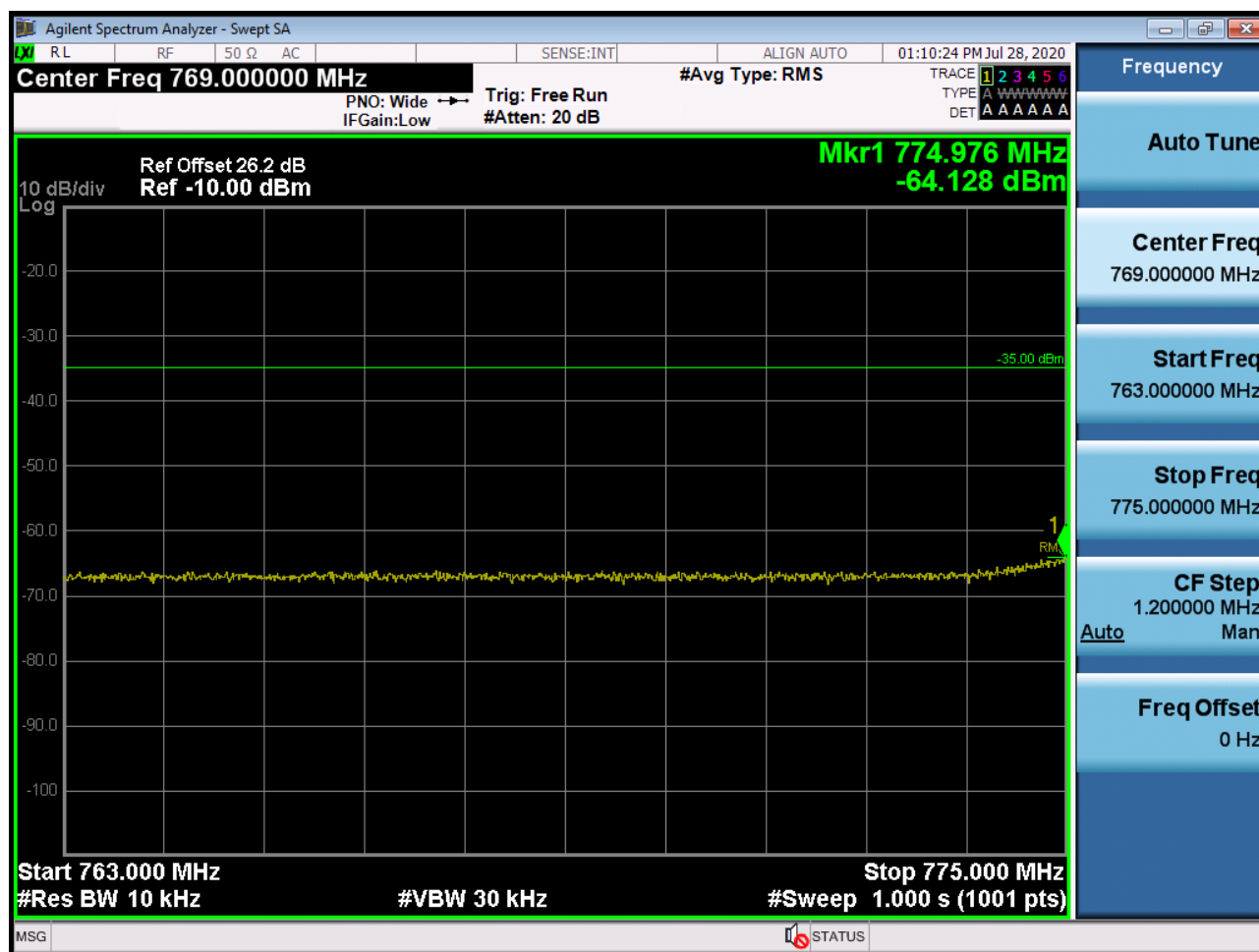
Band 13 Lower Band Edge Plot (5M BW Ch.23205 QPSK\_RB1 OFFSET\_0)



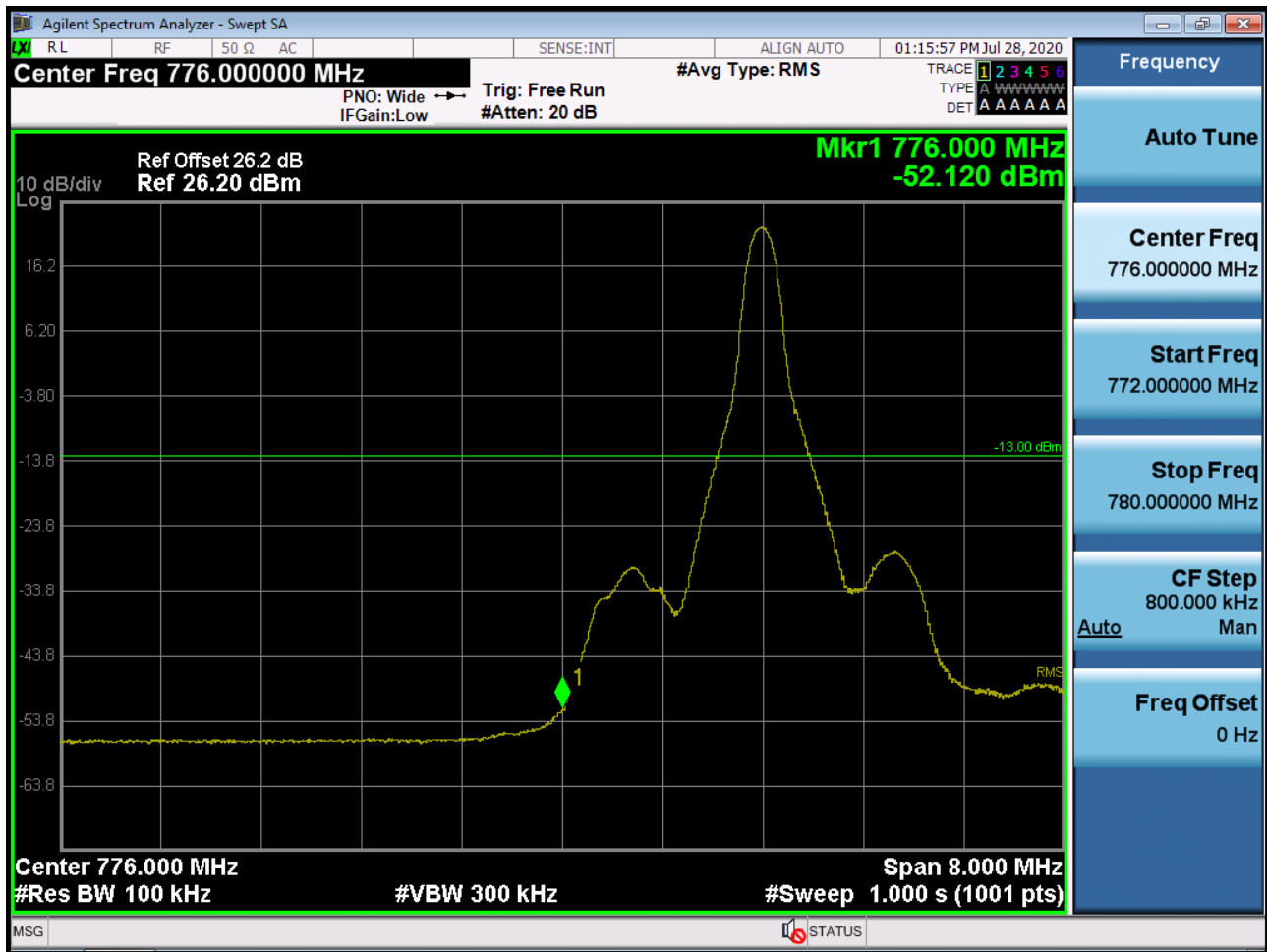
Band 13 Lower Band Edge Plot (5M BW Ch.23205 QPSK\_RB\_25)



Band 13 Lower Emission Mask (763 MHz ~ 775 MHz) Plot (5M BW Ch.23205 QPSK\_RB25\_0)



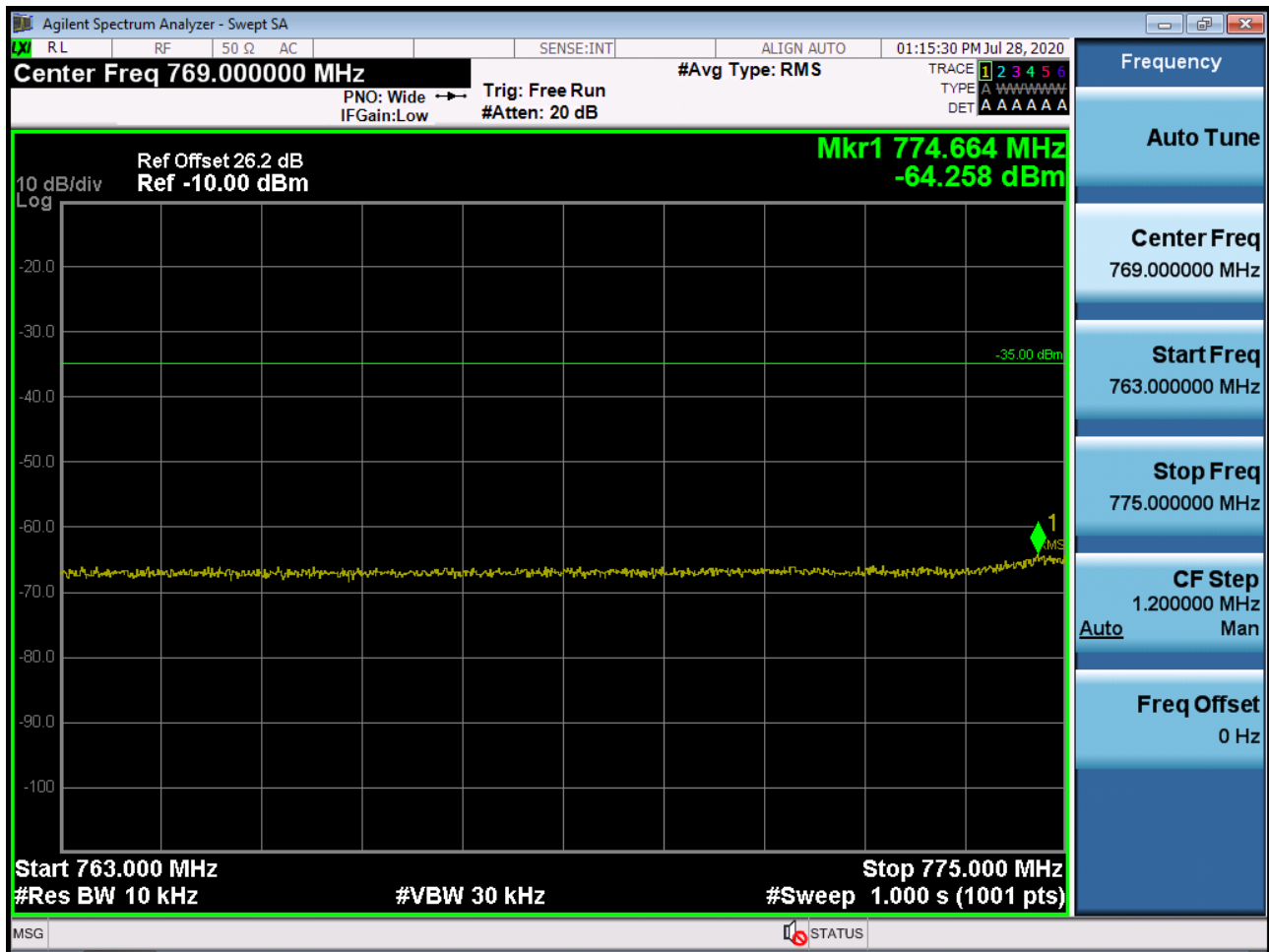
Band 13 Lower Band Edge Plot (10M BW Ch.23230 QPSK\_RB1 OFFSET\_0)



BAND 13. Lower Band Edge Plot (10M BW Ch.23230 QPSK RB\_50)



Band 13 Lower Emission Mask (763 MHz ~ 775 MHz) Plot (10M BW Ch.23230 QPSK\_RB50\_0)



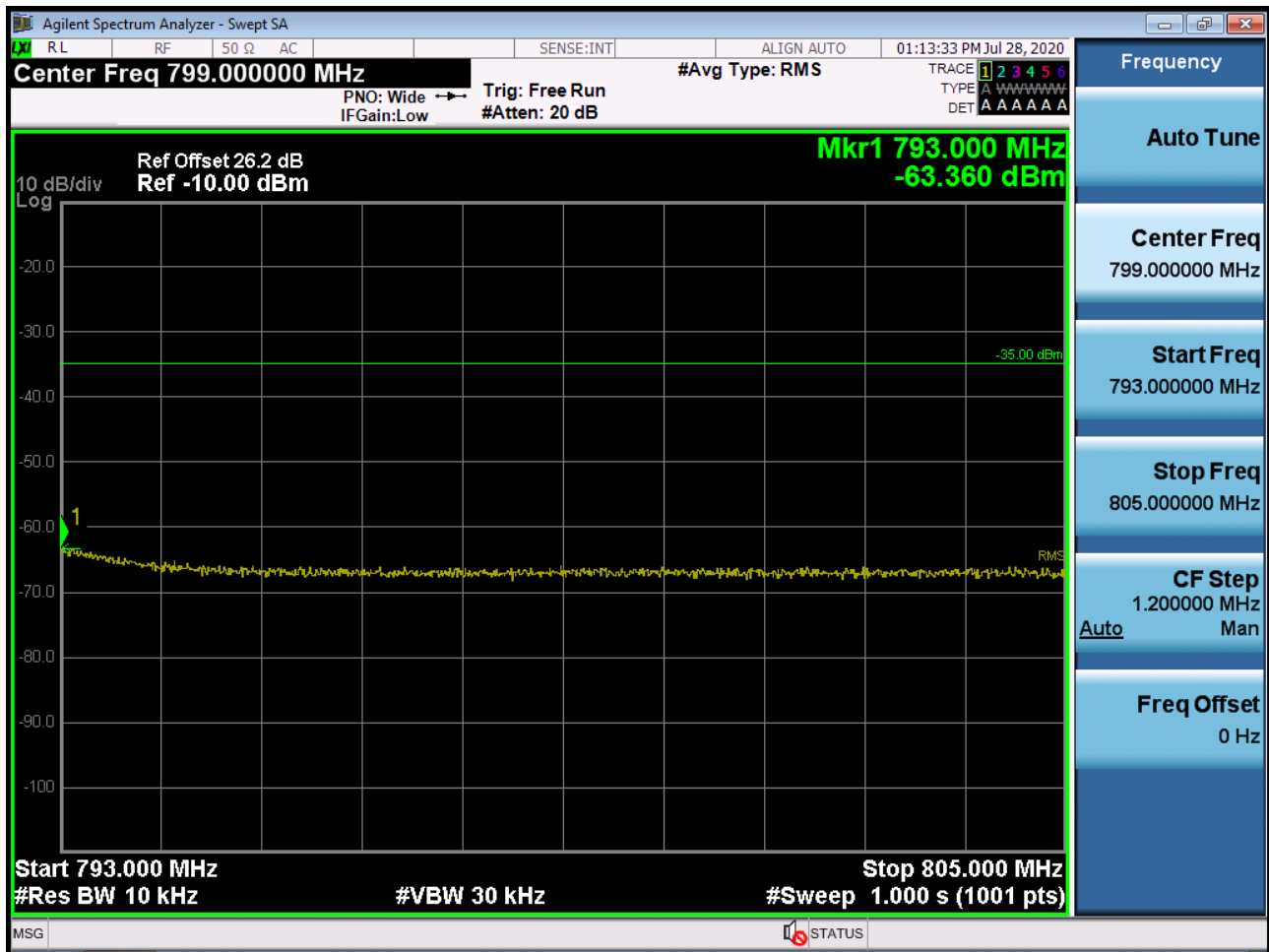
Band 13 Upper Band Edge Plot (5M BW Ch.23255 QPSK\_RB1\_Offset 24)



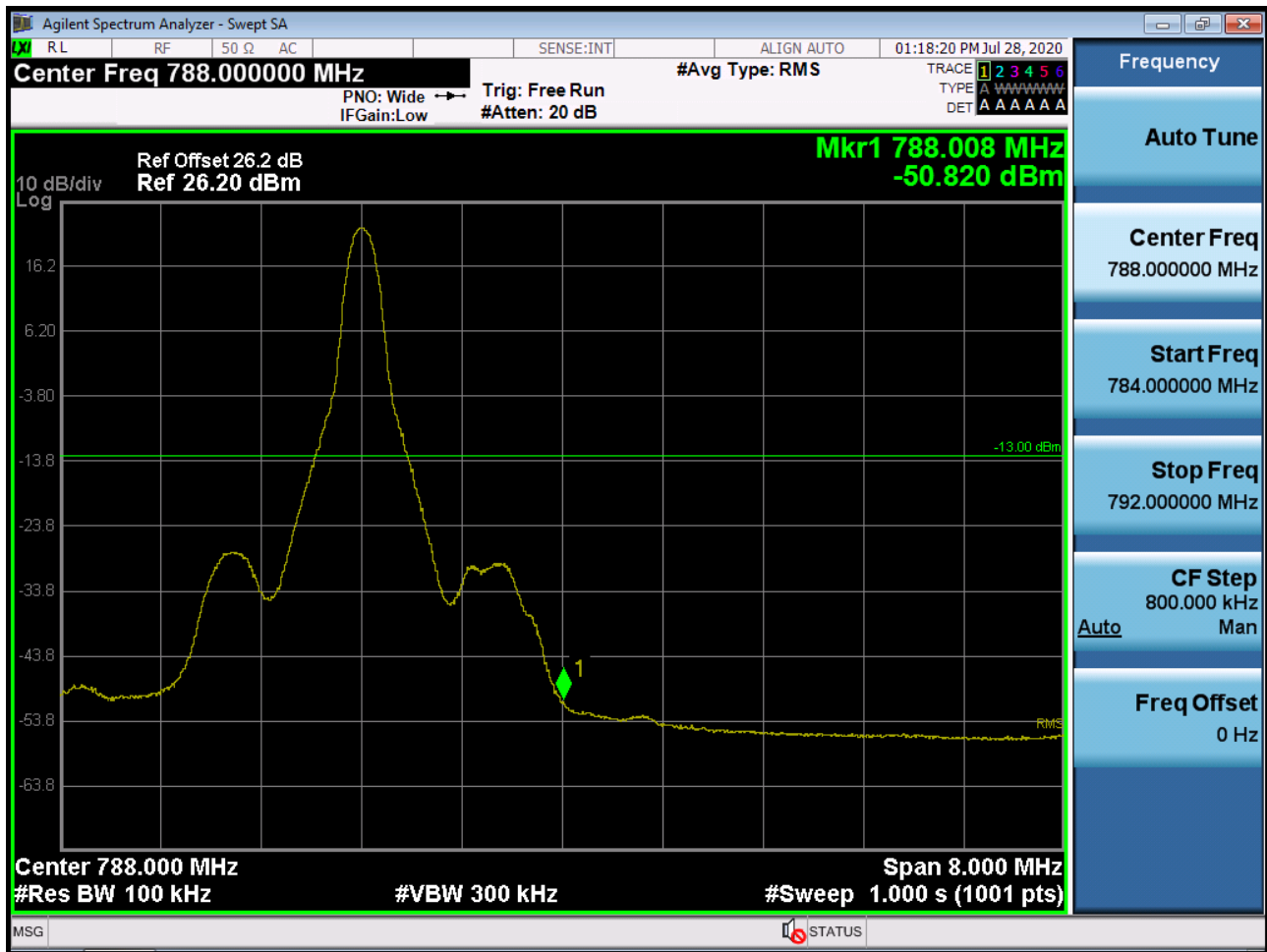
Band 13 Upper Band Edge Plot (5M BW Ch.23255 QPSK\_RB\_25)



Band 13 Upper Emission Mask (793 MHz ~805 MHz) Plot (5M BW Ch.23255 QPSK\_RB25\_0)



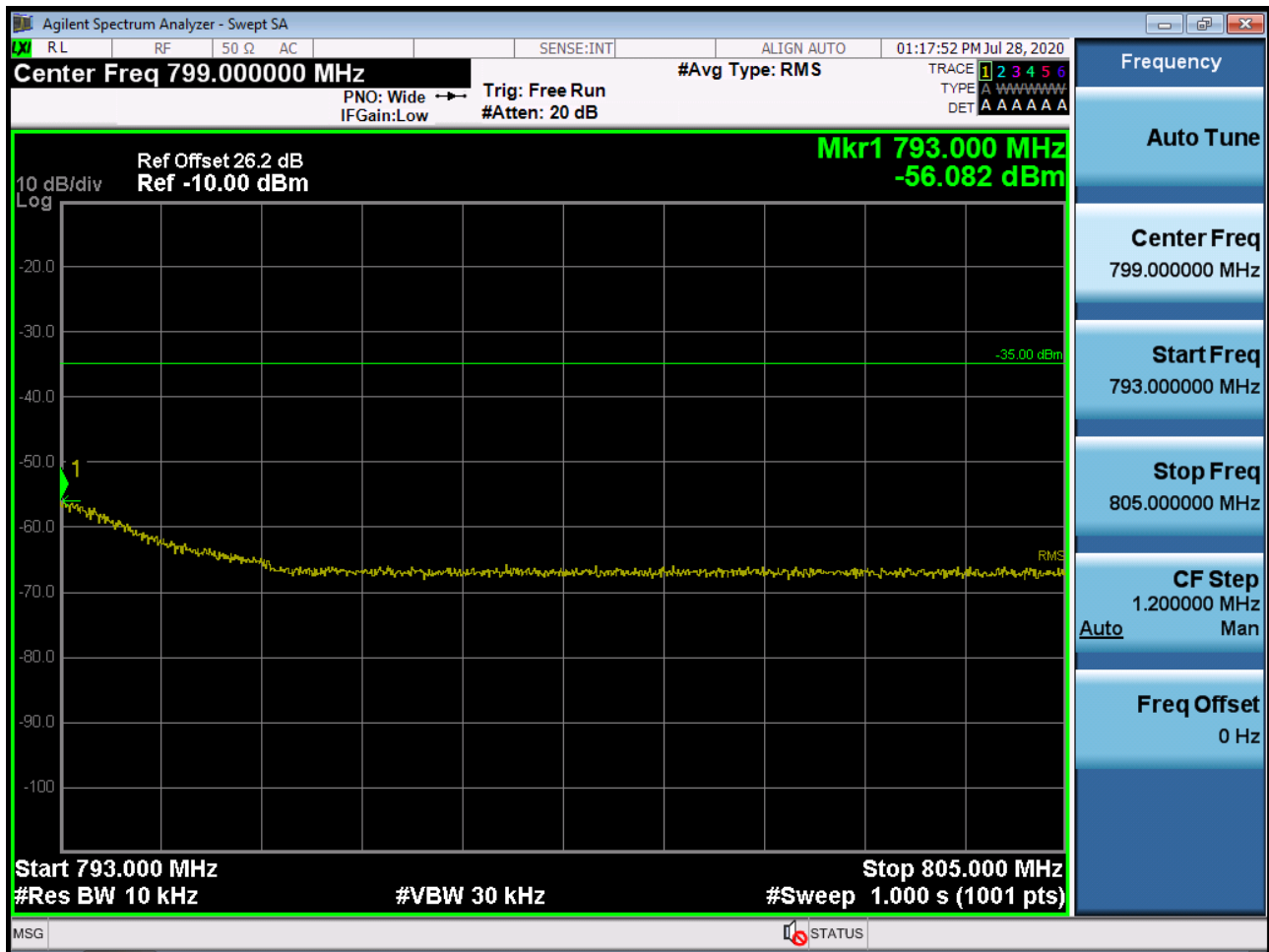
Band 13 Upper Band Edge Plot (10M BW Ch.23230 QPSK\_RB1\_Offset\_49)



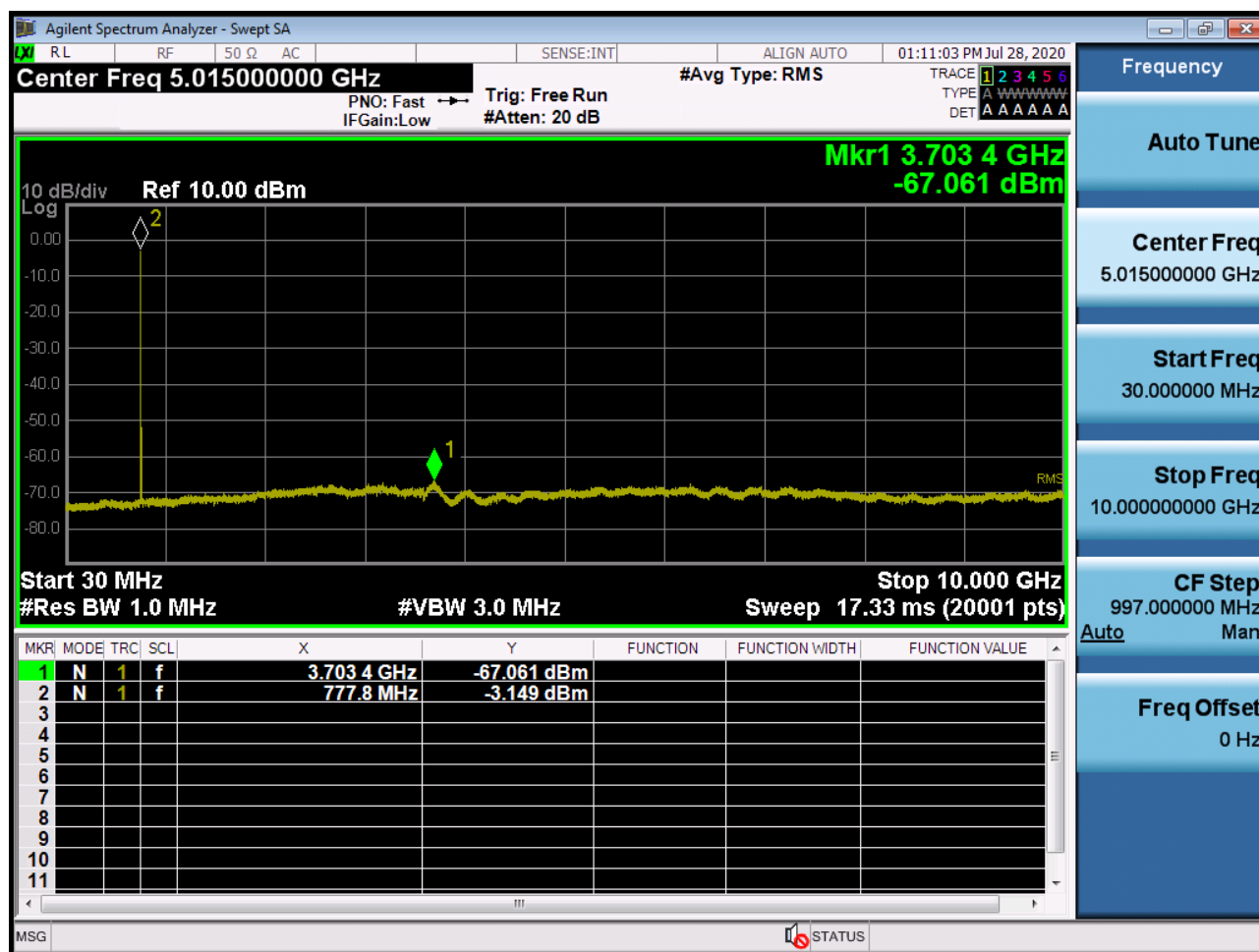
Band 13 Upper Band Edge Plot (10M BW Ch.23230 QPSK\_ QPSK\_RB\_50)



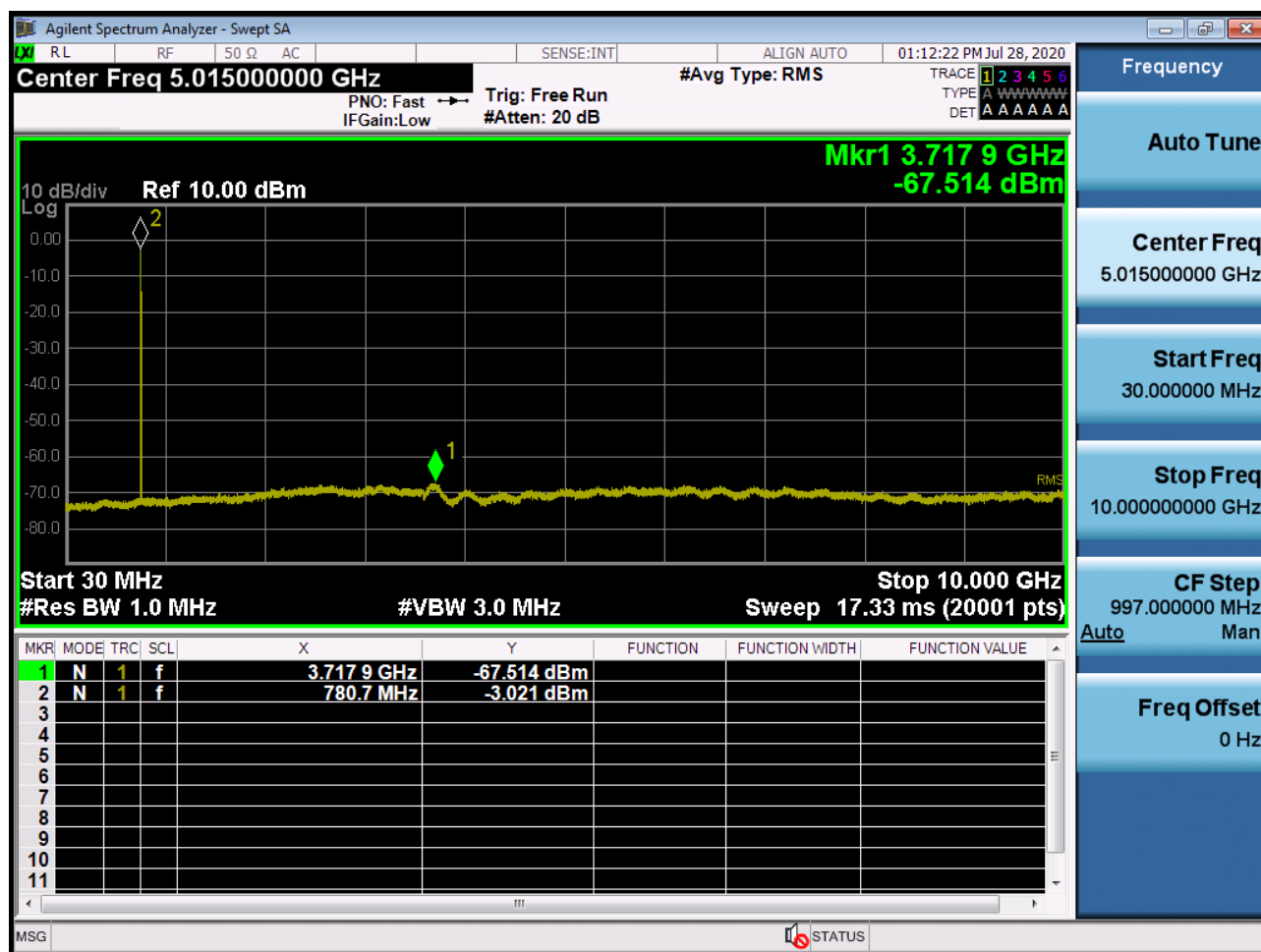
Band 13 Upper Emission Mask (793 MHz ~805 MHz) Plot (10M BW Ch.23230 QPSK\_RB50\_0)



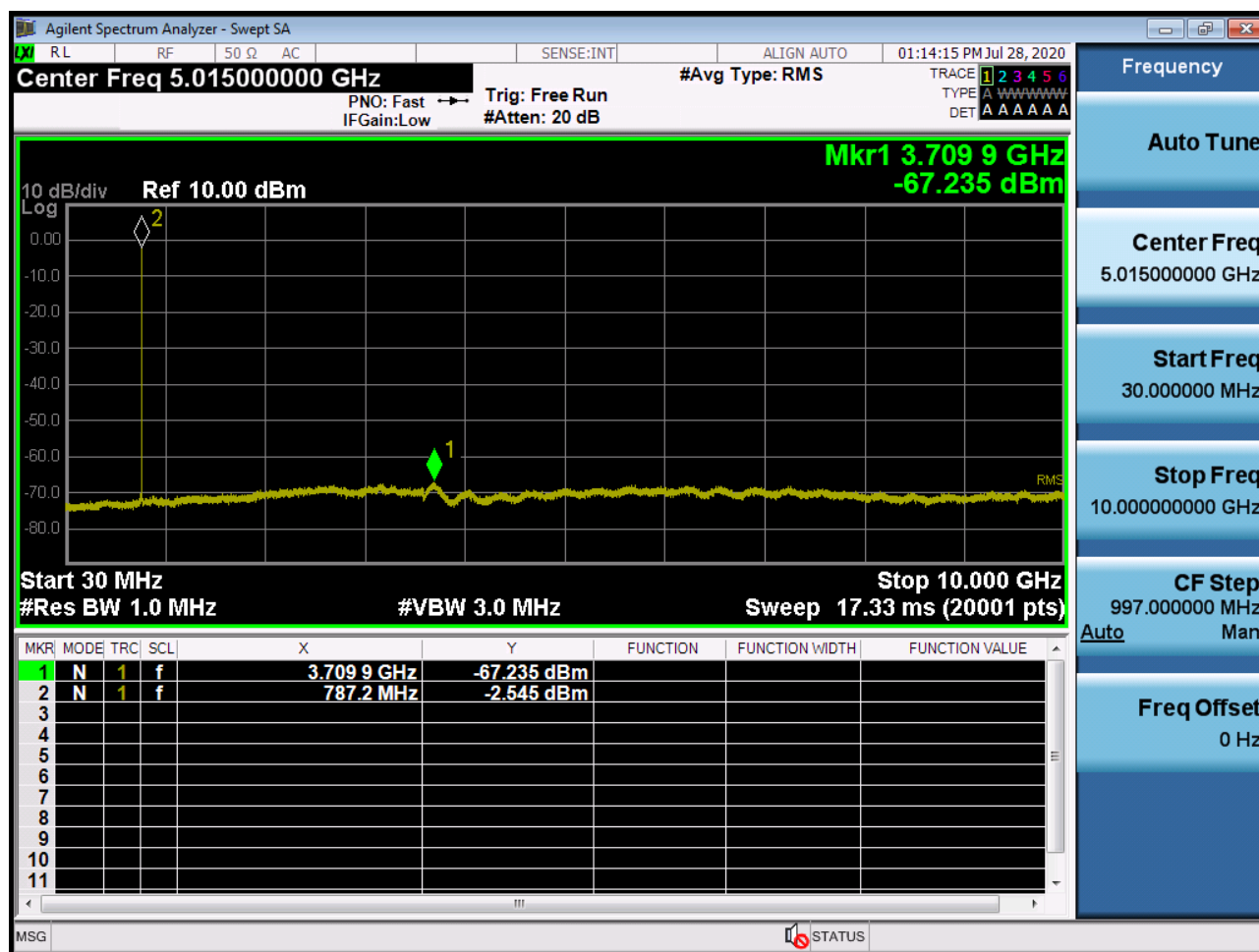
BAND 13. Conducted Spurious Plot (23205ch\_5MHz\_QPSK\_RB 1\_0)



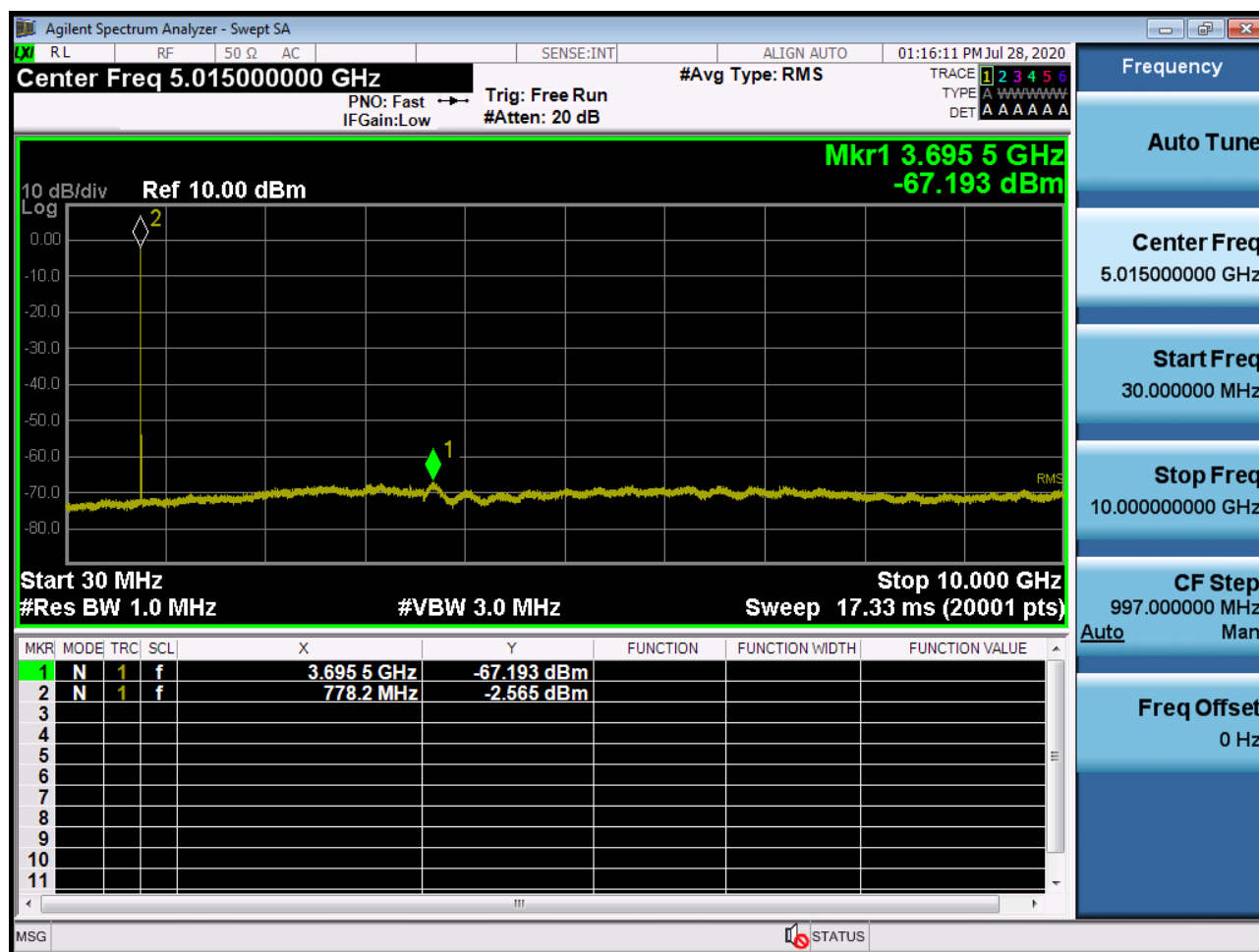
BAND 13. Conducted Spurious Plot (23230ch\_5MHz\_QPSK\_RB 1\_0)



BAND 13. Conducted Spurious Plot (23255ch\_5MHz\_QPSK\_ RB 1\_0)



BAND 13. Conducted Spurious Plot (Ch.23230 10 MHz QPSK RB 1, Offset 0)



## 10. APPENDIX A\_ TEST SETUP PHOTO

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

| No. | Description         |
|-----|---------------------|
| 1   | HCT-RF-2008-FC082-P |