



Engineering Solutions & Electromagnetic Compatibility Services

**FCC & IC Certification Report**

**Harris Corporation  
221 Jefferson Ridge Parkway  
Lynchburg, VA 24501**

**MASTR V 700 MHz Base Station Transceiver  
FCC ID: OWDTR-0159-E  
IC: 3636B-0159**

**April 2, 2018**

| Standards Referenced for this Report |                                                                                                   |
|--------------------------------------|---------------------------------------------------------------------------------------------------|
| Part 2: 2017                         | Frequency Allocations and Radio Treaty Matters; General Rules and Regulations                     |
| Part 90: 2017                        | Private Land Mobile Radio Services                                                                |
| RSS-119 Issue 12 2015                | Land Mobile and Fixed Equipment Operating in the Frequency Range 27.41-960 MHz                    |
| RSS-Gen Issue 4 2014                 | General Requirements for Compliance of Radio Apparatus                                            |
| ANSI C63.26-2015                     | American National Standard for Compliance Testing of Transmitters Used in Licensed Radio Services |

| Frequency Range (MHz)               | Rated Conducted Output Power (W) | Frequency Tolerance (ppm) | Transmit Mode   | Emission Designator |
|-------------------------------------|----------------------------------|---------------------------|-----------------|---------------------|
| 769 – 775 (FCC)<br>768 – 776 (ISED) | 100                              | 0.04                      | C4FM Data/Voice | 8K00F1D/E           |
| 769 – 775 (FCC)<br>768 – 776 (ISED) | 100                              | 0.04                      | WCQPSK          | 9K70D1W             |
| 769 – 775 (FCC)<br>768 – 776 (ISED) | 100                              | 0.04                      | HDQPSK          | 9K80D7W             |

**Report Prepared By: Daniel W. Baltzell**

**Document Number: 2017263TNF**

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*These tests are accredited and meet the requirements of ISO/IEC 17025 as verified by ANAB.  
Refer to certificate and scope of accreditation AT-1445.*

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## 1 Test Result Summary

| Test                                            | FCC Reference                     | IC Reference                 | Result   |
|-------------------------------------------------|-----------------------------------|------------------------------|----------|
| RF Power Output                                 | 2.1046(a), Part 90.205(a), 90.635 | RSS-119 4.1<br>RSS-Gen 6.12  | Complies |
| Spurious Emissions at Antenna Terminals         | 2.1051, 90.210                    | RSS-Gen 6.13                 | Complies |
| Field Strength of Spurious Radiation            | 2.1053(a), 90.210                 | RSS-Gen 6.13                 | Complies |
| Occupied Bandwidth/Emission Masks               | 2.1049(c)(1), 90.543(a)           | RSS-119 5.8.9<br>RSS-Gen 6.6 | Complies |
| Frequency Stability vs. Temperature and Voltage | 2.1055, 90.539                    | RSS-119 5.3<br>RSS-Gen 6.11  | Complies |

Note: As this is a combined FCC and ISSED test report, there is test data between 768 – 769 MHz and 775 – 776 MHz, for frequencies that are only authorized for use in Canada; that is, any test data in the aforementioned frequency ranges is not applicable for the FCC, nor authorized for use in the United States.

## 2 General Information

The following Certification Report is prepared on behalf of Harris Corporation in accordance with the Federal Communications Commission and I rules and regulations. The Equipment Under Test (EUT) was the MASTR V Base Station Transceiver; FCC ID: OWDTR-0159-E, IC: 3636B-0159.

All measurements contained in this application were conducted in accordance with the applicable sections of FCC Rules and Regulations CFR 47 Parts 2 and 90 and Industry Canada RSS-119 and RSS-Gen. Calibration checks are performed regularly on the instruments, and all accessories including high pass filter, coaxial attenuator, preamplifier and cables.

### 2.1 Test Facility

The open area test site and conducted measurement facility used to collect the radiated data is located on the parking lot of Rhein Tech Laboratories, Inc., 360 Herndon Parkway, Suite 1400, Herndon, Virginia 20170. This site has been fully described in a report submitted to, and approved by, the Federal Communications Commission to perform AC line conducted and radiated emissions testing.

### 2.2 Related Submittal(s)/Grant(s)

This is a new FCC and IC certification application. There are 2 models as indicated in Table 2-1.

### 2.3 Grant Notes

The output power is continuously variable from the value listed in this entry to 5%-10% of the value listed. Output power is conducted. The antenna(s) used for this transmitter must be fixed-mounted on outdoor permanent structures. RF exposure compliance at the time of licensing, as required by the responsible FCC Bureau(s) including antenna co-location requirements if §1.1307(b)(3).

## 2.4 Tested System Details

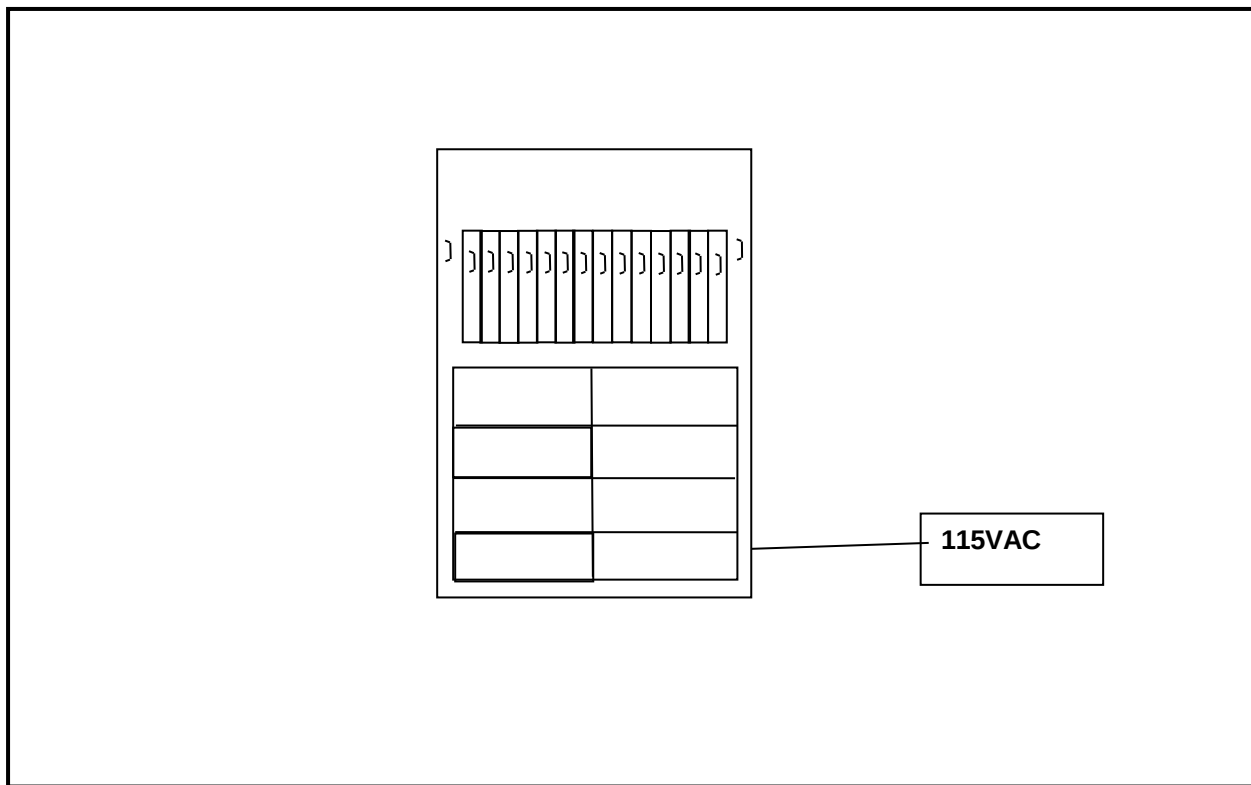
The test sample was received on February 22, 2018. Listed below are the identifiers and descriptions of all equipment, cables, and internal devices used with the EUT for this test, as applicable.

The device was programmed for multiple modes of operation and modulation types.

**Table 2-1: Equipment Under Test (EUT)**

| Part                                | Manufacturer       | Model        | FCC ID       | RTL Bar Code |
|-------------------------------------|--------------------|--------------|--------------|--------------|
| MASTR V Base Station, P25T, 700 MHz | Harris Corporation | MASV-700M1-A | OWDTR-0159-E | 22517        |
| MASTR V Base Station, P25C, 700 MHz | Harris Corporation | SV-7CXMV-A   | OWDTR-0159-E | 22517        |

**Figure 2-1: Configuration of Tested System**



### 3 FCC Part 2.1033(C)(8): Voltages and Currents through the Final Amplifying Stage

48V / 7000mA

### 4 FCC Part 2.1046(a): RF Power Output: Conducted; Part 90.205(k); Part 90.541(a) Power and Antenna Height Limits; Part 90.635 Limitations on Power and Antenna Height; RSS-119 5.4 and RSS-Gen 6.12: Transmitter Output Power; RSS-119 4.1: Transmitter Output Power

#### 4.1 Test Procedure

ANSI 63.26, section 5.2

The EUT was connected to a coaxial attenuator having a 50  $\Omega$  load impedance.

Manufacturer's rated power: 100 W

#### 4.2 Test Data

Table 4-1: RF Conducted Output Power – Measured

| Frequency (MHz) | Power (dBm) | Power (W) |
|-----------------|-------------|-----------|
| 768.00625       | 50.0        | 100.0     |
| 771.00625       | 50.0        | 100.0     |
| 773.50625       | 50.0        | 100.0     |
| 775.99375       | 50.0        | 100.2     |

Measurement uncertainties shown for these tests are expanded uncertainties expressed at the 95% confidence level using a coverage factor K=2. Measurement uncertainty:  $\pm 0.5$  dB

Notes: Data presented is for analog mode. All other modes were investigated and found to have equivalent power within measurement tolerances.

Table 4-2: Test Equipment Used for Testing RF Power Output – Conducted

| RTL Asset # | Manufacturer          | Model            | Part Type                            | Serial Number | Calibration Due Date |
|-------------|-----------------------|------------------|--------------------------------------|---------------|----------------------|
| 901583      | Agilent Technologies  | N9010A           | EXA Signal Analyzer (10 Hz-26.5 GHz) | MY51250846    | 4/21/18              |
| 901291      | Pasternack            | PE7031-20        | 300W Attenuator, DC - 1 GHz, 20 dB   | NA            | 8/24/18              |
| 900948      | Weinschel Corporation | 47-10-43         | Attenuator DC-18 GHz 10 dB 50W       | BH1487        | 9/1/18               |
| 901235      | IW Microwave Products | KPS-1503-360-KPS | High Frequency RF Cables             | 36"           | 8/21/18              |

#### Test Personnel:

Daniel W. Baltzell  
EMC Test Engineer



Signature

February 23, 2018  
Date of Test

## **5 FCC Part 2.1051: Spurious Emissions at Antenna Terminals; Part 90.210: Emission Limitations; RSS-Gen 6.13: Transmitter Unwanted Emissions**

### **5.1 Test Procedure**

ANSI 63.26, section 5.2

The transmitter is terminated with a 50  $\Omega$  load and interfaced with a spectrum analyzer.

Device with digital modulation: Modulated to its maximum extent using a pseudo-random data sequence.

### **5.2 Test Data**

Frequency range of measurement per Part 2.1057: 9 kHz to  $10 \times F_c$

Limits:  $50 + 10 \text{ LOG } P(W)$  narrowband limit

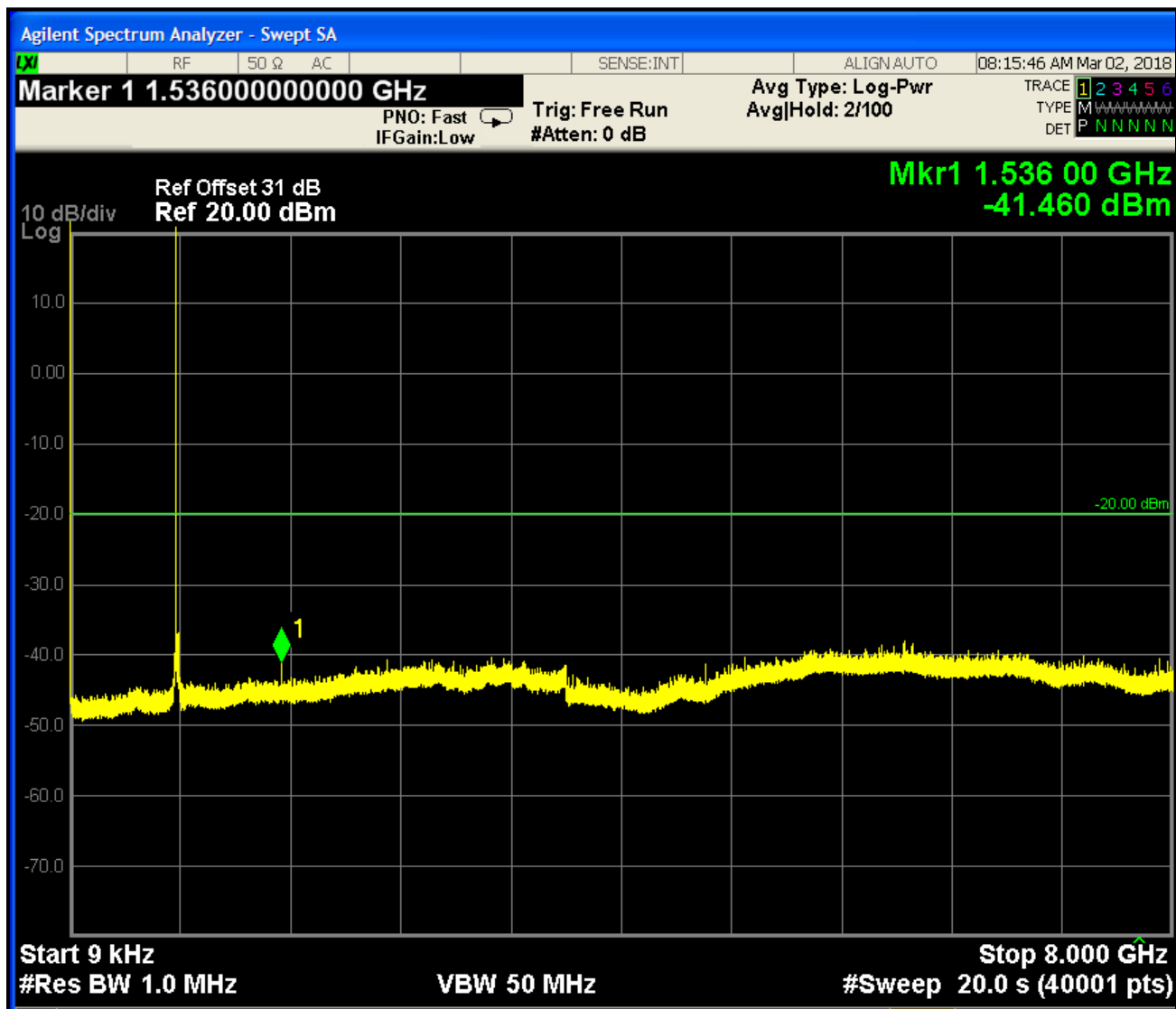
The following frequencies (in MHz) were investigated: 768.00625, 771.00625, 773.50625, and 775.99375

All modes and powers were investigated; high power is presented as worst case.

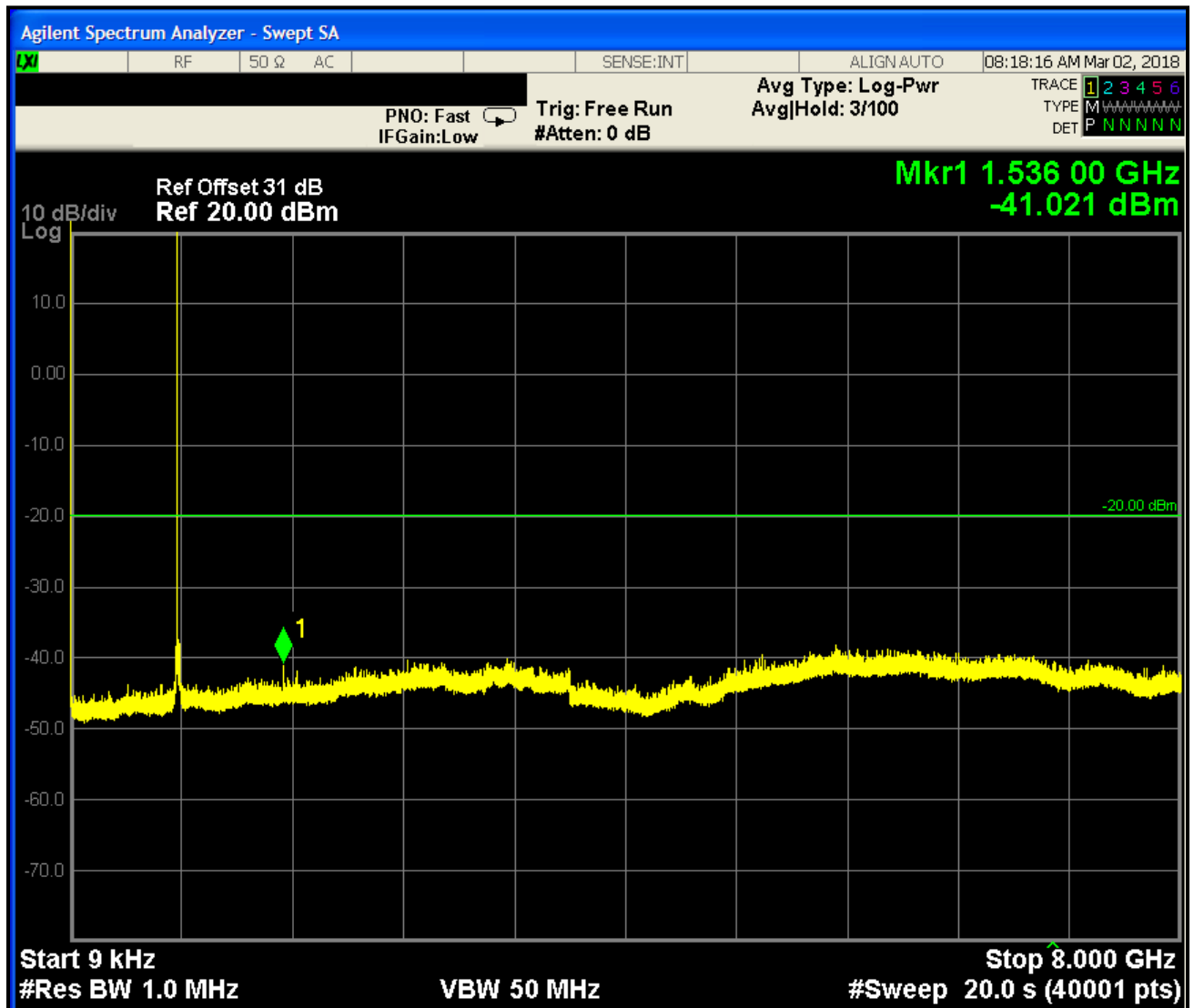
Plot 5-1: Conducted Antenna Spurious Emissions – 768.00625 MHz; C4FM



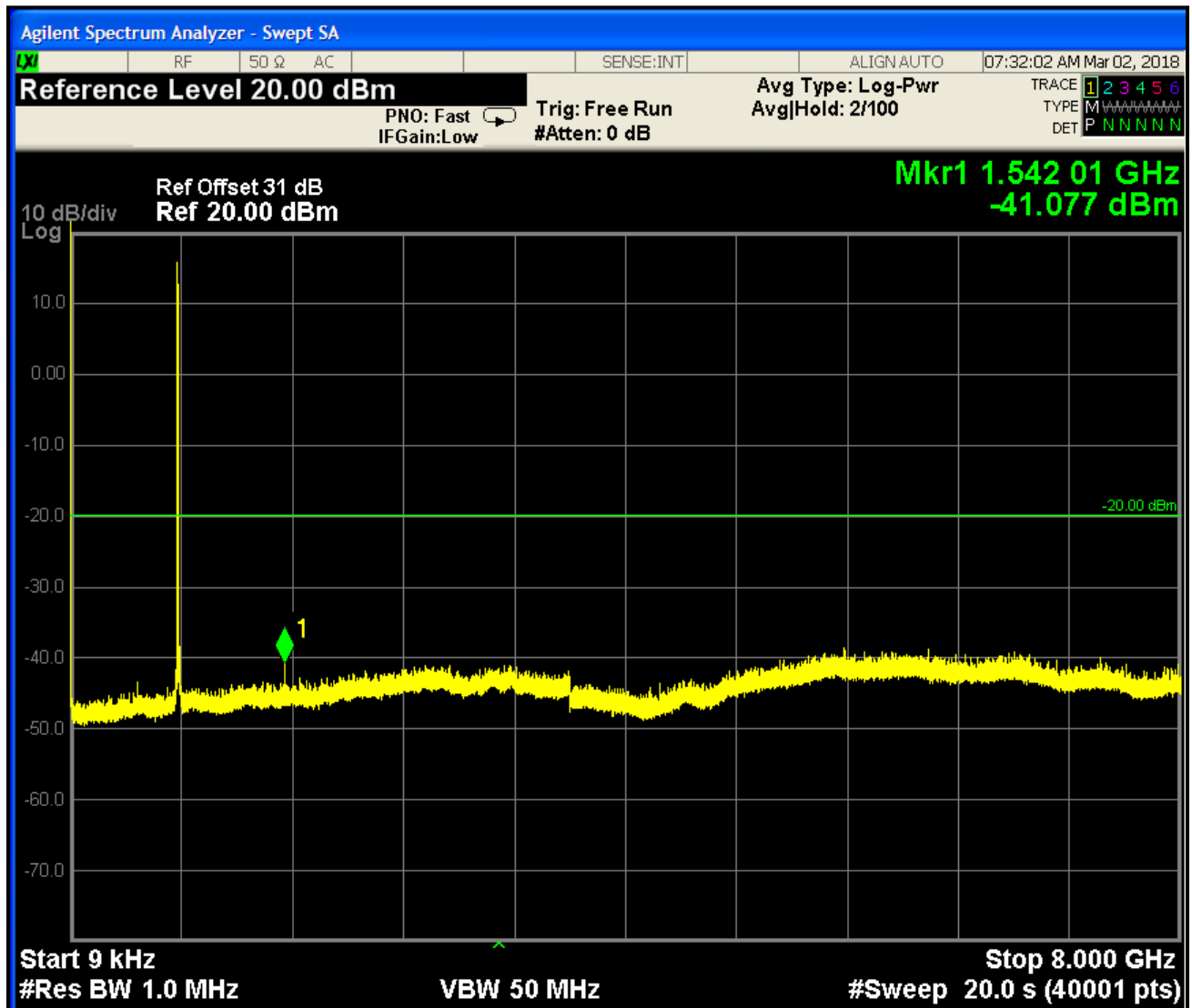
Plot 5-2: Conducted Antenna Spurious Emissions – 768.00625 MHz; WCQPSK



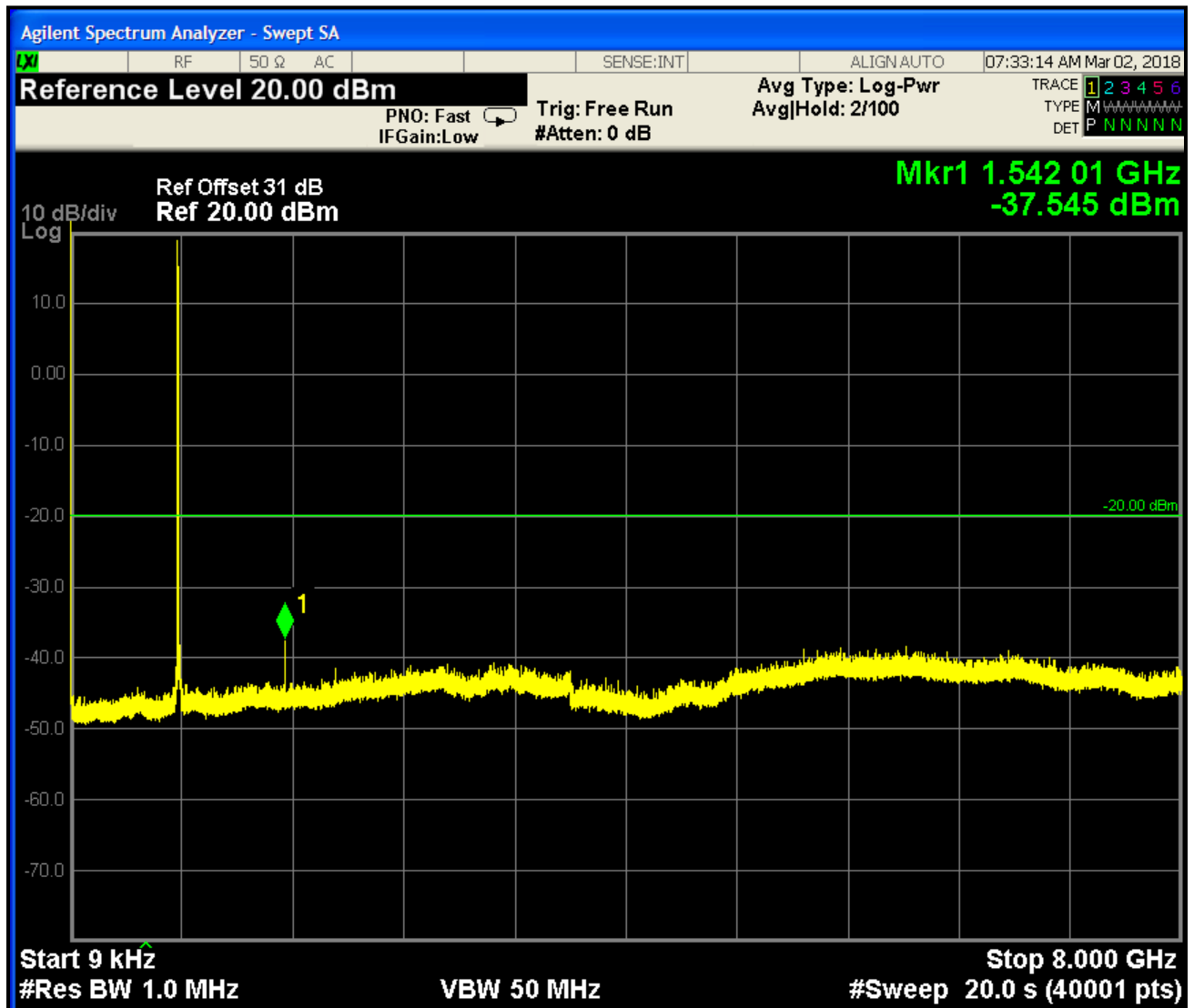
Plot 5-3: Conducted Antenna Spurious Emissions – 768.00625 MHz; HDQPSK



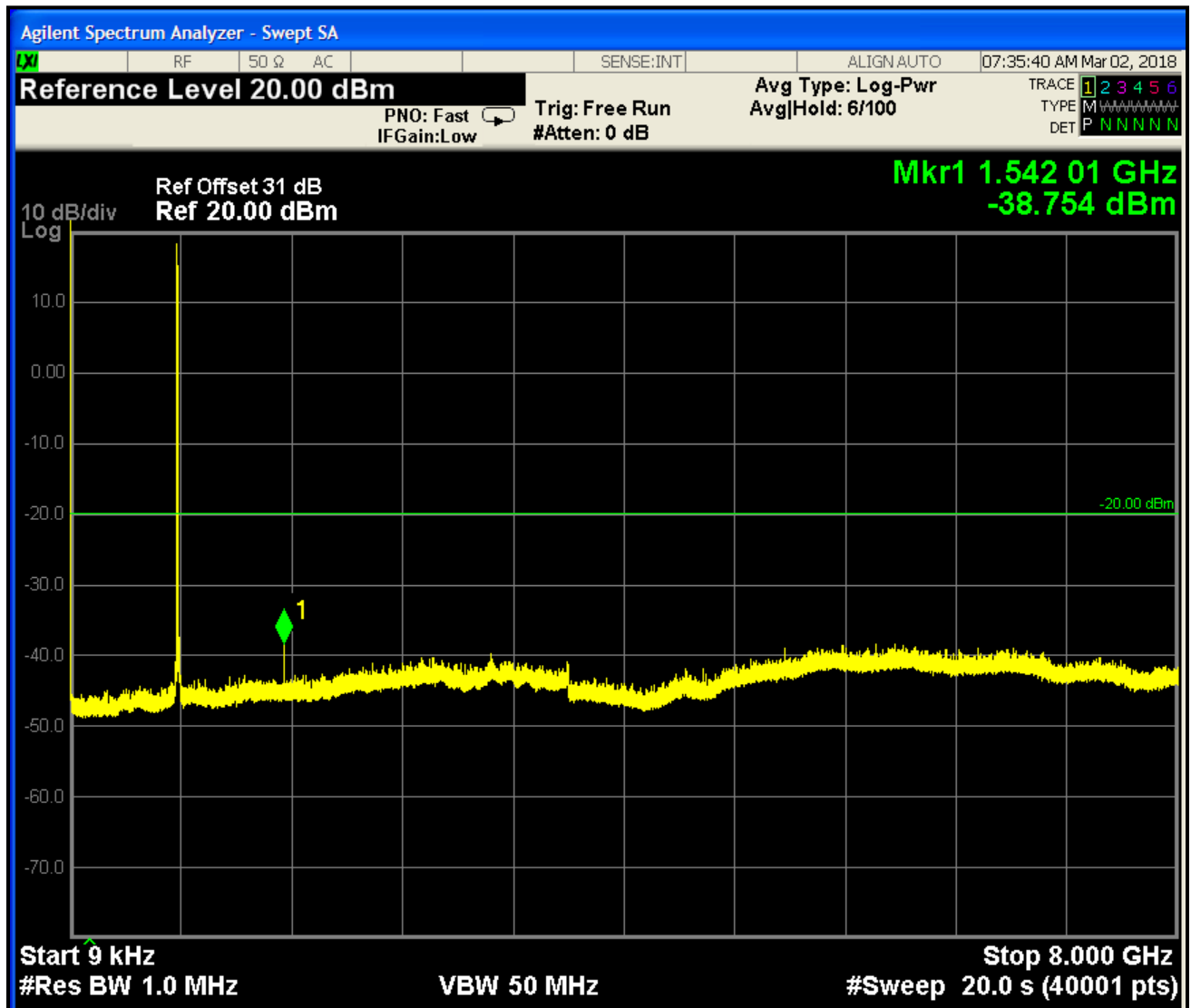
Plot 5-4: Conducted Antenna Spurious Emissions – 771.00625 MHz; C4FM



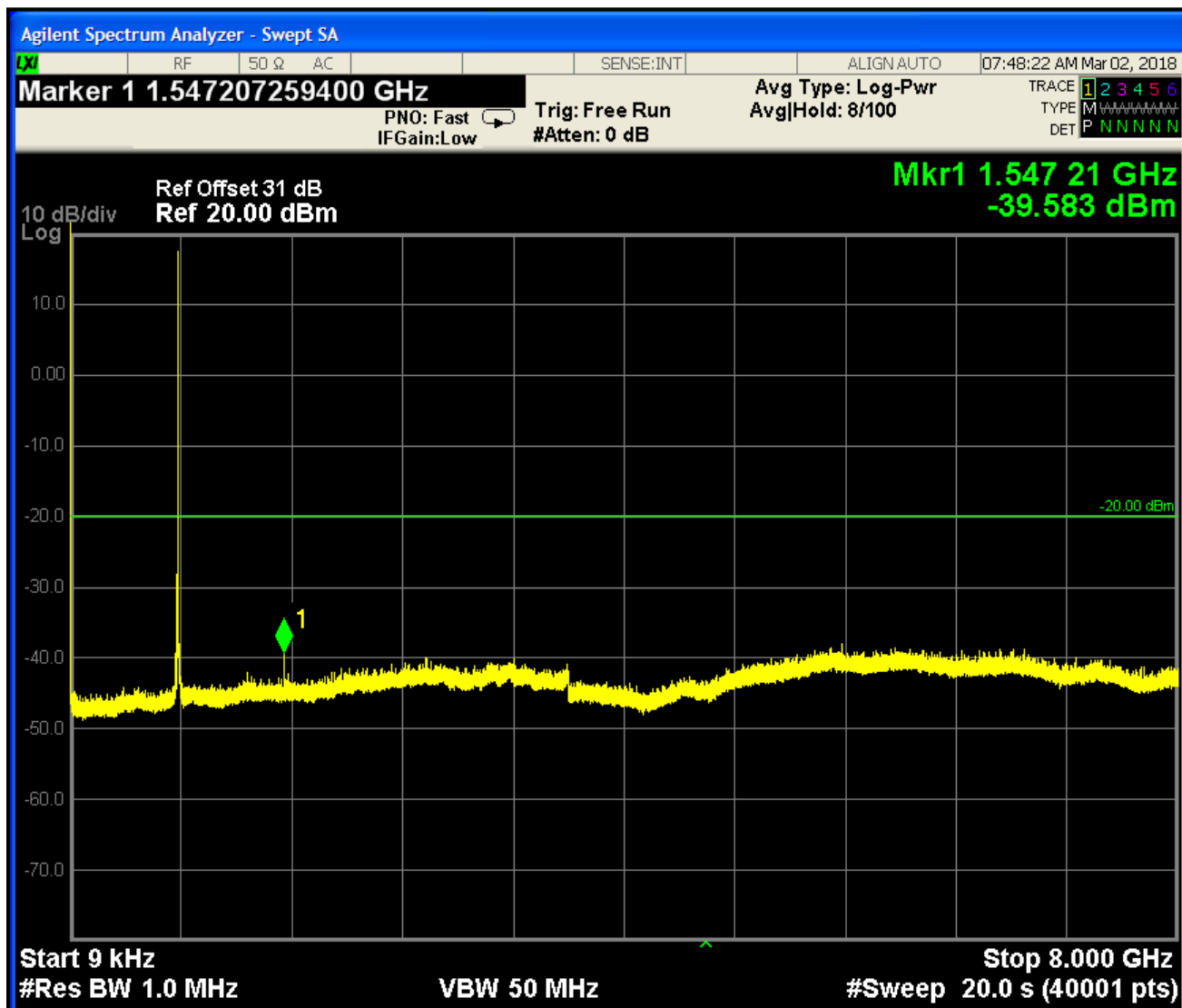
Plot 5-5: Conducted Antenna Spurious Emissions – 771.00625 MHz; WCQPSK



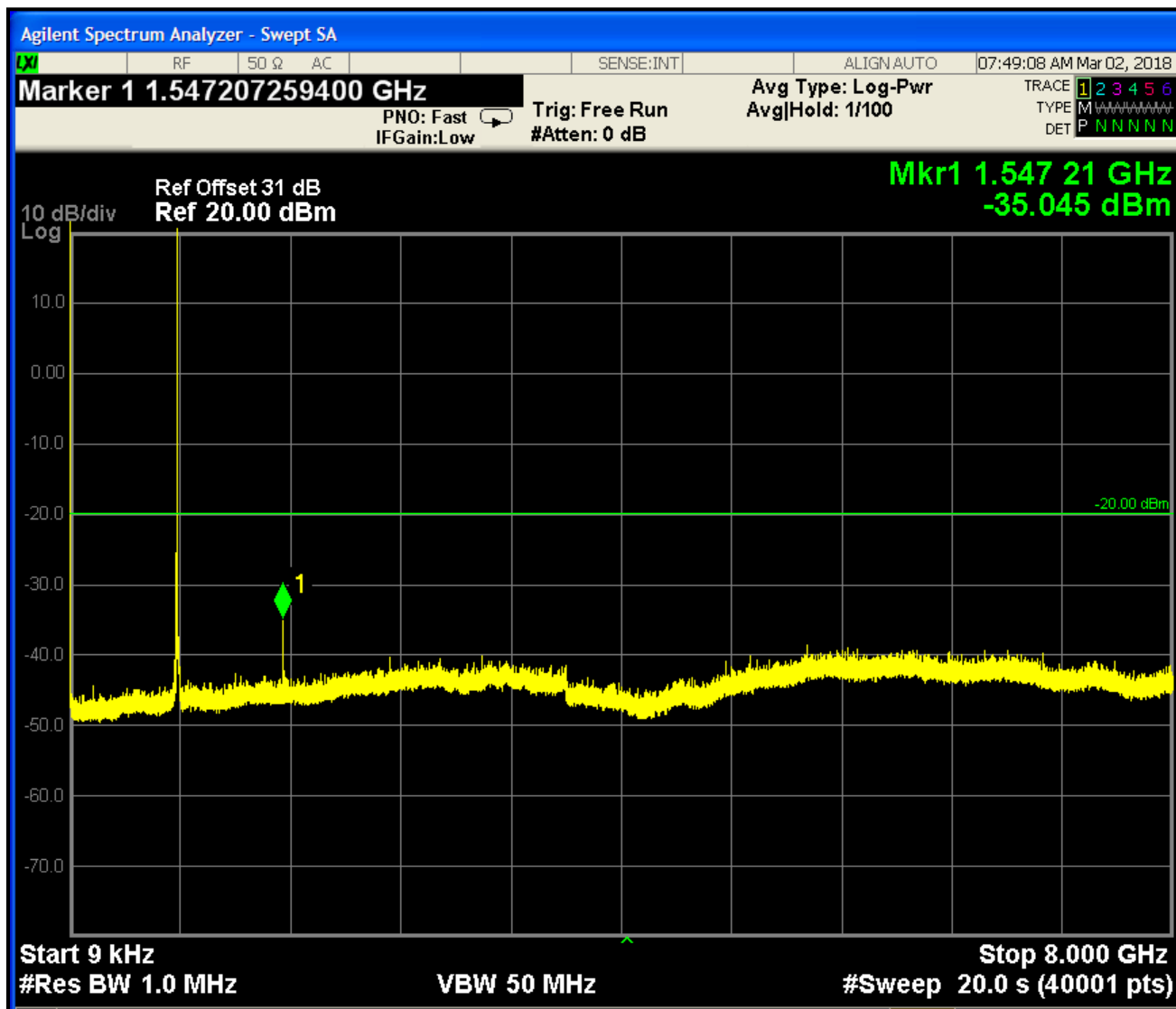
Plot 5-6: Conducted Antenna Spurious Emissions – 771.00625 MHz; HDQPSK



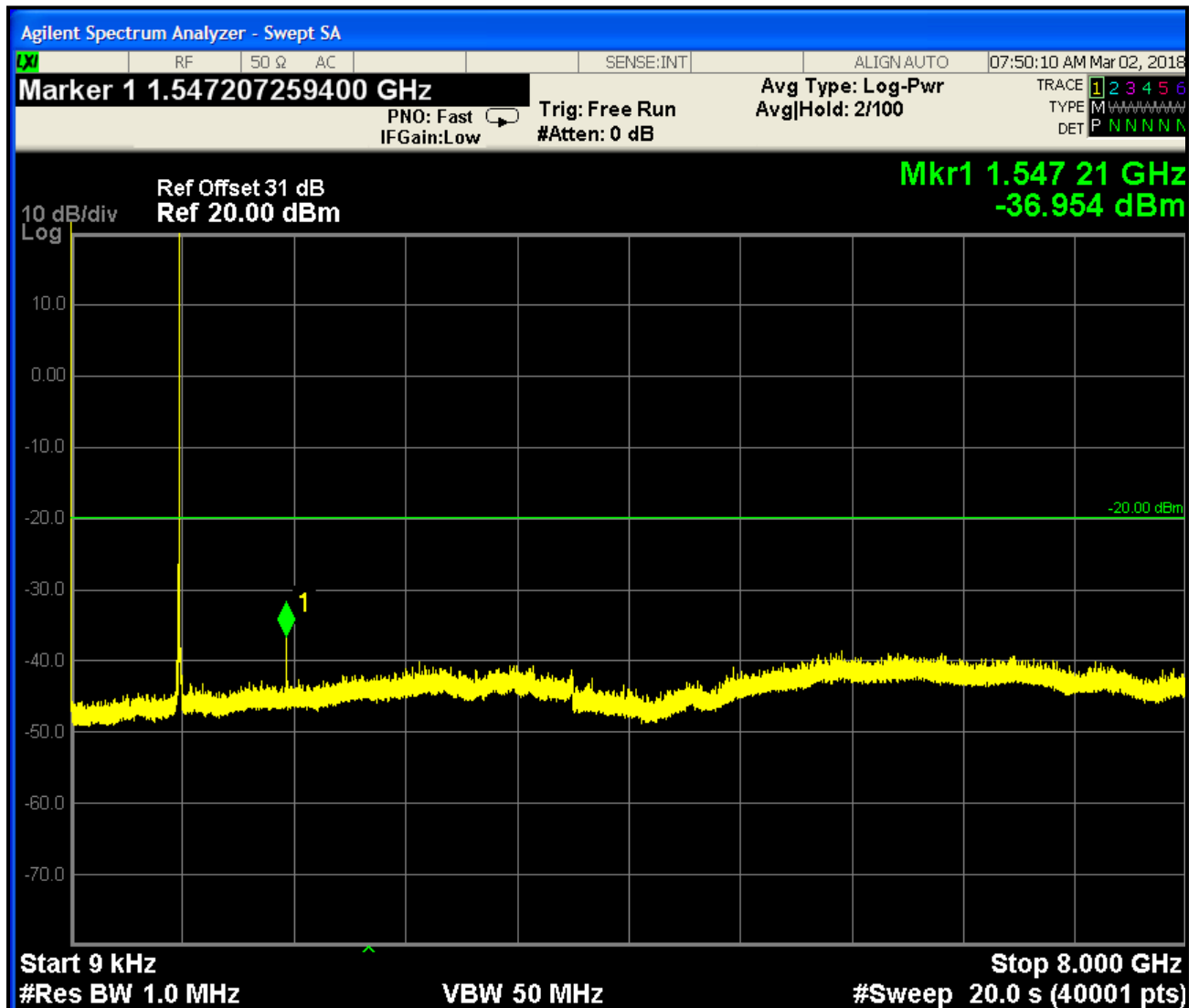
Plot 5-7: Conducted Antenna Spurious Emissions – 773.50625 MHz; C4FM



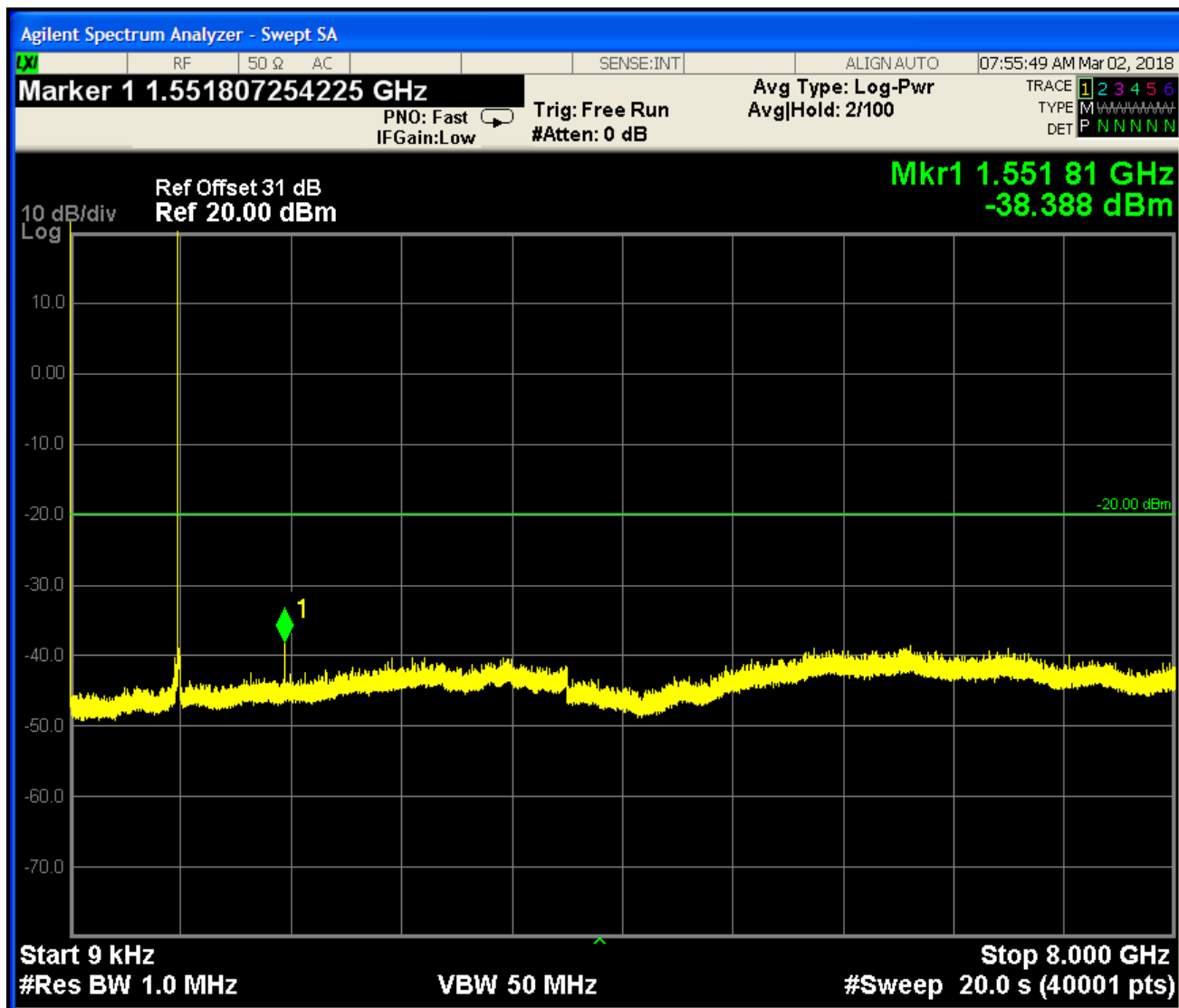
Plot 5-8: Conducted Antenna Spurious Emissions – 773.50625 MHz; WCQPSK



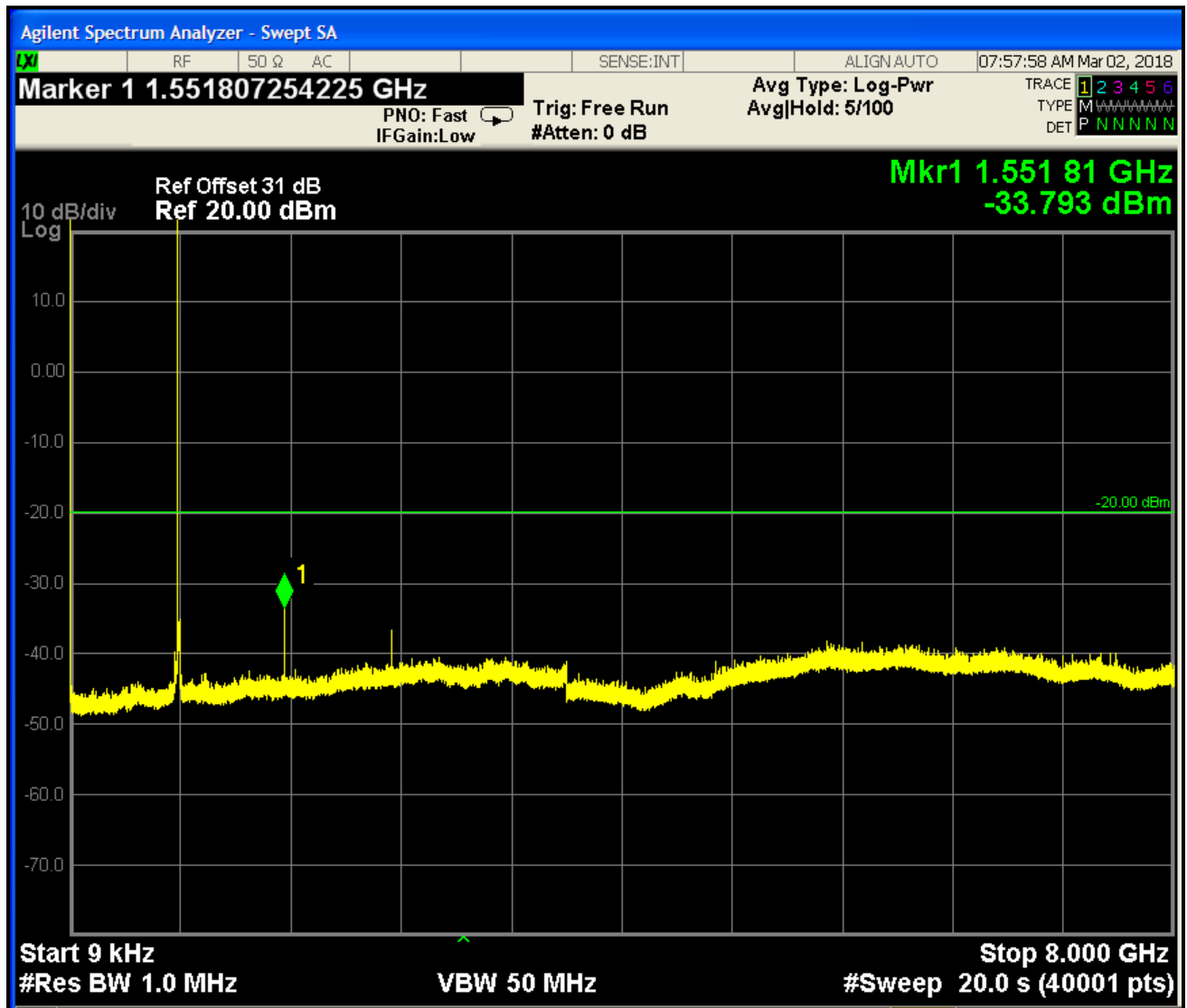
Plot 5-9: Conducted Antenna Spurious Emissions – 773.50625 MHz; HDQPSK



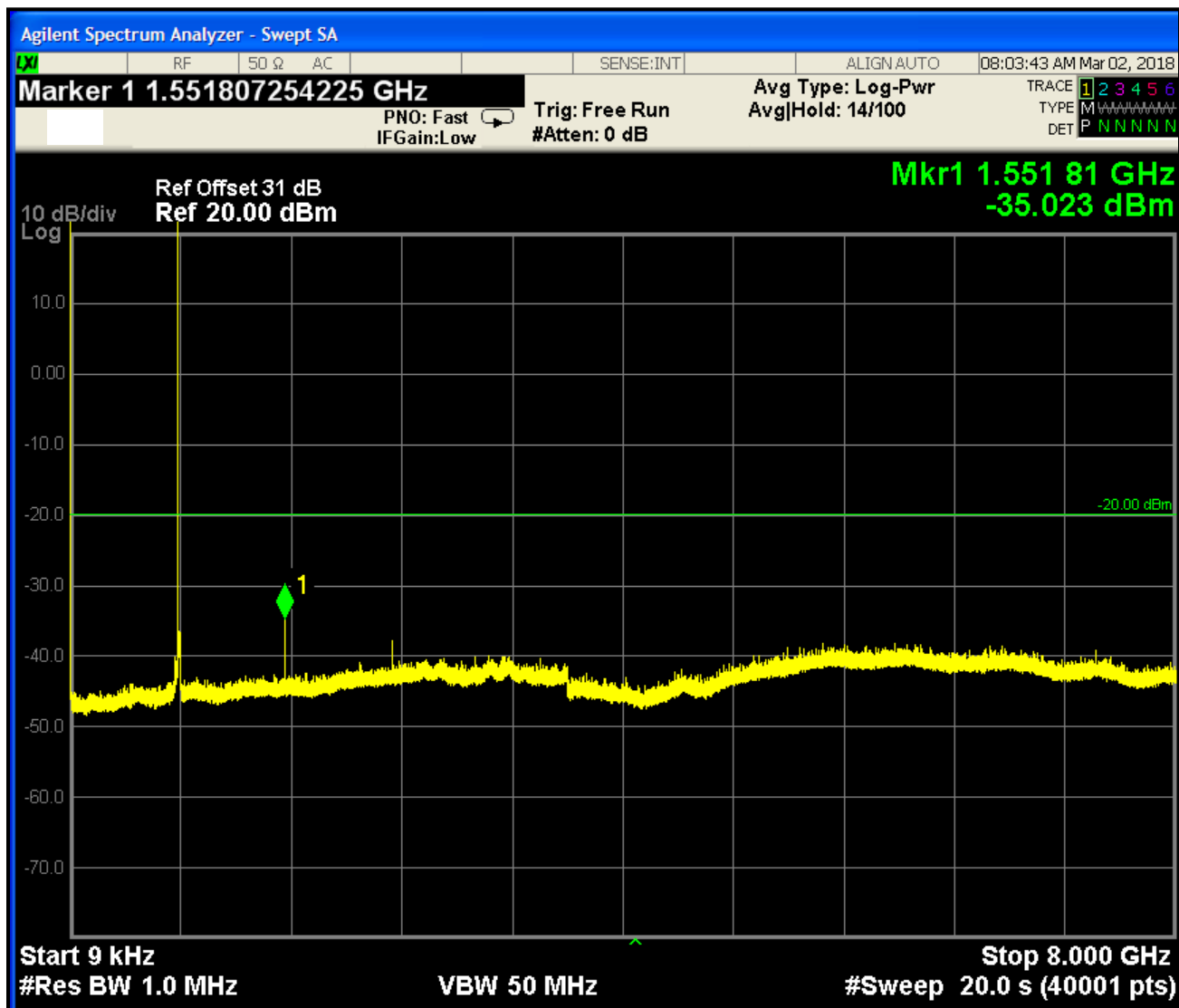
Plot 5-10: Conducted Antenna Spurious Emissions – 775.99375 MHz; C4FM



Plot 5-11: Conducted Antenna Spurious Emissions – 775.99375 MHz; WCQPSK



Plot 5-12: Conducted Antenna Spurious Emissions – 775.99375 MHz; HDQPSK



Measurement uncertainties shown for these tests are expanded uncertainties expressed at the 95% confidence level using a coverage factor K=2. Measurement uncertainty:  $\pm 0.5$  dB

**Table 5-1: Test Equipment Used for Testing Antenna Port Spurious Emissions**

| RTL Asset # | Manufacturer          | Model         | Part Type                            | Serial Number | Calibration Due Date |
|-------------|-----------------------|---------------|--------------------------------------|---------------|----------------------|
| 901583      | Agilent Technologies  | N9010A        | EXA Signal Analyzer (10 Hz-26.5 GHz) | MY51250846    | 4/21/18              |
| 901291      | Pasternack            | PE7031-20     | 300W Attenuator, DC - 1 GHz, 20 dB   | NA            | 8/24/18              |
| 900948      | Weinschel Corporation | 47-10-43      | Attenuator DC-18 GHz 10 dB 50W       | BH1487        | 9/1/18               |
| 901132      | Par Electronics       | 806-902 (25W) | UHF Notch Filter                     | N/A           | 8/21/18              |
| 901590      | Sucoflex              | 104           | 6.5' SMA Cable                       | 145883/4      | 8/18/18              |
| 901591      | Sucoflex              | 104           | 6.5' SMA Cable                       | 145880/4      | 8/18/18              |

**Test Personnel:**

|                                         |                                                                                                |                               |
|-----------------------------------------|------------------------------------------------------------------------------------------------|-------------------------------|
| Daniel W. Baltzell<br>EMC Test Engineer | <br>Signature | March 2, 2018<br>Date of Test |
|-----------------------------------------|------------------------------------------------------------------------------------------------|-------------------------------|

## 6 FCC Part 90.543(a): Emission Limitations: ACP Requirements; RSS-119 5.8.9.1 Adjacent Channel Power (ACP)

Although we permit individual base transmitters to radiate a maximum ACP of 85 dBc in the paired receive band, licensees deploying these transmitters may not exceed an ACP of -100 dBc in the paired receive band when measured at either the transmitting antenna input port or the output of the transmitter combining network. Consequently, licensees deploying these transmitters may need to use external filters to comply with the more restrictive ACP limit.

Effective October 23, 2007, transmitters designed to operate in the 769–775 MHz and 799–805 MHz frequency bands must meet the emission limitations in paragraphs (a) through (d) of this section. Transmitters operating in the 763–768 MHz and 793–798 MHz bands must meet the emission limitations in (e) of this section.

### 6.1 Test Procedure

ANSI C63.26-2015, Section 6.5.2.4: Adjacent Channel Power

Device with digital modulation: Modulated to its maximum extent using a pseudo-random data sequence.

For a Base Station transmitter designed to operate with a 12.5 kHz channel bandwidth, the ACP shall be in accordance with the values in the following table:

| Offset from Center Frequency (kHz) | Measurement Bandwidth (kHz) | Maximum ACP Relative (dBc) |
|------------------------------------|-----------------------------|----------------------------|
| (+/-)9.375                         | 6.25                        | -40                        |
| (+/-)15.625                        | 6.25                        | -60                        |
| (+/-)21.875                        | 6.25                        | -60                        |
| (+/-)37.5                          | 25                          | -60                        |
| (+/-)62.5                          | 25                          | -65                        |
| (+/-)87.5                          | 25                          | -65                        |
| (+/-)150                           | 100                         | -65                        |
| (+/-)250                           | 100                         | -65                        |
| (+/-)350                           | 100                         | -65                        |
| >400 kHz to 12 MHz                 | 30(s)                       | -80                        |
| 12 MHz to paired receive band      | 30(s)                       | -80                        |
| In the paired receive band         | 30(s)                       | -85                        |

### FCC Rules and Regulations - 90.543(b)

Setting Reference Level - 90.543(b)(1): Using a spectrum analyzer capable of ACP measurements, set the measurement bandwidth to the channel size. Set the frequency offset of the measurement to zero and adjust the center frequency of the spectrum analyzer to give the power level in the measurement bandwidth. Record this power as the reference power level.

Measuring the power level at the frequency offset <600 kHz - §90.543(b)(2): Using a spectrum analyzer capable of adjacent channel power (ACP) measurements, set the measurement bandwidth as shown in the table. Measure ACP in dBm. These measurements are made at maximum power. Calculate the coupled power by subtracting the measurements made in this step from the reference power level. The absolute ACP values must be less than the values given in the table for each condition.

Measuring the power level at the frequency offset >600 kHz - §90.543(b)(3): Set the spectrum analyzer to 30 kHz resolution bandwidth, 1 MHz video bandwidth and sample detection mode. Sweep +/-6 MHz from the carrier frequency. Set the reference level to the RMS value of the transmitter power and note the power. The response at frequencies >600 kHz must be less than the values listed in the table.

## 6.2 Test Data

**Table 6-1: Adjacent Channel Power – 768.00625 MHz; C4FM**

| Offset from Center Frequency (kHz) | Measurement BW (kHz) | Max ACP (dBc) | Measured ACP (dBc) |
|------------------------------------|----------------------|---------------|--------------------|
| (+/-)9.375                         | 6.25                 | -40           | -46.2              |
| (+/-)15.625                        | 6.25                 | -60           | -72.2              |
| (+/-)21.875                        | 6.25                 | -60           | -77.8              |
| (+/-)37.5                          | 25                   | -60           | -73.9              |
| (+/-)62.5                          | 25                   | -65           | -80.9              |
| (+/-)87.5                          | 25                   | -65           | -77.4              |
| (+/-)150                           | 100                  | -65           | -71.5              |
| (+/-)250                           | 100                  | -65           | -78.3              |
| (+/-)350                           | 100                  | -65           | -83.0              |
| >400 to 12 MHz                     | 30(s)                | -80           | -81.8              |
| 12 MHz to receive band             | 30(s)                | -80           | -88.6              |
| In receive band                    | 30(s)                | -100          | -102.8             |

**Table 6-2: Adjacent Channel Power - 771.00625 MHz; C4FM**

| Offset from Center Frequency (kHz) | Measurement BW (kHz) | Max ACP (dBc) | Measured ACP (dBc) |
|------------------------------------|----------------------|---------------|--------------------|
| (+/-)9.375                         | 6.25                 | -40           | -42.6              |
| (+/-)15.625                        | 6.25                 | -60           | -77.5              |
| (+/-)21.875                        | 6.25                 | -60           | -72.1              |
| (+/-)37.5                          | 25                   | -60           | -71.9              |
| (+/-)62.5                          | 25                   | -65           | -73.1              |
| (+/-)87.5                          | 25                   | -65           | -77.4              |
| (+/-)150                           | 100                  | -65           | -72.9              |
| (+/-)250                           | 100                  | -65           | -80.5              |
| (+/-)350                           | 100                  | -65           | -83.8              |
| >400 to 12 MHz                     | 30(s)                | -80           | -83.6              |
| 12 MHz to receive band             | 30(s)                | -80           | -91.6              |
| In receive band                    | 30(s)                | -100          | -103.0             |

**Table 6-3: Adjacent Channel Power - 773.50625 MHz; C4FM**

| Offset from Center Frequency (kHz) | Measurement BW (kHz) | Max ACP (dBc) | Measured ACP (dBc) |
|------------------------------------|----------------------|---------------|--------------------|
| (+/-)9.375                         | 6.25                 | -40           | -41.8              |
| (+/-)15.625                        | 6.25                 | -60           | -73.5              |
| (+/-)21.875                        | 6.25                 | -60           | -76.0              |
| (+/-)37.5                          | 25                   | -60           | -70.6              |
| (+/-)62.5                          | 25                   | -65           | -76.1              |
| (+/-)87.5                          | 25                   | -65           | -78.7              |
| (+/-)150                           | 100                  | -65           | -78.5              |
| (+/-)250                           | 100                  | -65           | -80.2              |
| (+/-)350                           | 100                  | -65           | -82.1              |
| >400 to 12 MHz                     | 30(s)                | -80           | -83.7              |
| 12 MHz to receive band             | 30(s)                | -80           | -85.4              |
| In receive band                    | 30(s)                | -100          | -102.1             |

**Table 6-4: Adjacent Channel Power - 775.99375 MHz; C4FM**

| Offset from Center Frequency (kHz) | Measurement BW (kHz) | Max ACP (dBc) | Measured ACP (dBc) |
|------------------------------------|----------------------|---------------|--------------------|
| (+/-)9.375                         | 6.25                 | -40           | -42.3              |
| (+/-)15.625                        | 6.25                 | -60           | -72.8              |
| (+/-)21.875                        | 6.25                 | -60           | -75.1              |
| (+/-)37.5                          | 25                   | -60           | -76.8              |
| (+/-)62.5                          | 25                   | -65           | -77.4              |
| (+/-)87.5                          | 25                   | -65           | -75.0              |
| (+/-)150                           | 100                  | -65           | -75.2              |
| (+/-)250                           | 100                  | -65           | -74.6              |
| (+/-)350                           | 100                  | -65           | -79.1              |
| >400 to 12 MHz                     | 30(s)                | -80           | -80.3              |
| 12 MHz to receive band             | 30(s)                | -80           | -86.1              |
| In receive band                    | 30(s)                | -100          | -101.8             |

**Table 6-5: Adjacent Channel Power - 768.00625 MHz; WCQPSK**

| Offset from Center Frequency (kHz) | Measurement BW (kHz) | Max ACP (dBc) | Measured ACP (dBc) |
|------------------------------------|----------------------|---------------|--------------------|
| (+/-)9.375                         | 6.25                 | -40           | -45.8              |
| (+/-)15.625                        | 6.25                 | -60           | -71.0              |
| (+/-)21.875                        | 6.25                 | -60           | -74.0              |
| (+/-)37.5                          | 25                   | -60           | -76.0              |
| (+/-)62.5                          | 25                   | -65           | -74.1              |
| (+/-)87.5                          | 25                   | -65           | -75.5              |
| (+/-)150                           | 100                  | -65           | -77.2              |
| (+/-)250                           | 100                  | -65           | -78.6              |
| (+/-)350                           | 100                  | -65           | -78.4              |
| >400 to 12 MHz                     | 30(s)                | -80           | -80.9              |
| 12 MHz to receive band             | 30(s)                | -80           | -88.3              |
| In receive band                    | 30(s)                | -100          | -102.9             |

**Table 6-6: Adjacent Channel Power - 771.00625 MHz; WCQPSK**

| Offset from Center Frequency (kHz) | Measurement BW (kHz) | Max ACP (dBc) | Measured ACP (dBc) |
|------------------------------------|----------------------|---------------|--------------------|
| (+/-)9.375                         | 6.25                 | -40           | -44.0              |
| (+/-)15.625                        | 6.25                 | -60           | -73.5              |
| (+/-)21.875                        | 6.25                 | -60           | -75.3              |
| (+/-)37.5                          | 25                   | -60           | -71.6              |
| (+/-)62.5                          | 25                   | -65           | -81.6              |
| (+/-)87.5                          | 25                   | -65           | -73.6              |
| (+/-)150                           | 100                  | -65           | -77.6              |
| (+/-)250                           | 100                  | -65           | -76.7              |
| (+/-)350                           | 100                  | -65           | -80.0              |
| >400 to 12 MHz                     | 30(s)                | -80           | -84.5              |
| 12 MHz to receive band             | 30(s)                | -80           | -91.0              |
| In receive band                    | 30(s)                | -100          | -102.1             |

**Table 6-7: Adjacent Channel Power - 773.50625 MHz; WCQPSK**

| Offset from Center Frequency (kHz) | Measurement BW (kHz) | Max ACP (dBc) | Measured ACP (dBc) |
|------------------------------------|----------------------|---------------|--------------------|
| (+/-)9.375                         | 6.25                 | -40           | -42.7              |
| (+/-)15.625                        | 6.25                 | -60           | -73.3              |
| (+/-)21.875                        | 6.25                 | -60           | -72.1              |
| (+/-)37.5                          | 25                   | -60           | -69.2              |
| (+/-)62.5                          | 25                   | -65           | -73.9              |
| (+/-)87.5                          | 25                   | -65           | -78.8              |
| (+/-)150                           | 100                  | -65           | -72.0              |
| (+/-)250                           | 100                  | -65           | -80.0              |
| (+/-)350                           | 100                  | -65           | -82.8              |
| >400 to 12 MHz                     | 30(s)                | -80           | -85.3              |
| 12 MHz to receive band             | 30(s)                | -80           | -83.7              |
| In receive band                    | 30(s)                | -100          | -102.1             |

**Table 6-8: Adjacent Channel Power - 775.99375 MHz; WCQPSK**

| Offset from Center Frequency (kHz) | Measurement BW (kHz) | Max ACP (dBc) | Measured ACP (dBc) |
|------------------------------------|----------------------|---------------|--------------------|
| (+/-)9.375                         | 6.25                 | -40           | -43.3              |
| (+/-)15.625                        | 6.25                 | -60           | -71.5              |
| (+/-)21.875                        | 6.25                 | -60           | -73.5              |
| (+/-)37.5                          | 25                   | -60           | -69.7              |
| (+/-)62.5                          | 25                   | -65           | -72.3              |
| (+/-)87.5                          | 25                   | -65           | -81.6              |
| (+/-)150                           | 100                  | -65           | -78.4              |
| (+/-)250                           | 100                  | -65           | -79.5              |
| (+/-)350                           | 100                  | -65           | -77.4              |
| >400 to 12 MHz                     | 30(s)                | -80           | -81.2              |
| 12 MHz to receive band             | 30(s)                | -80           | -84.6              |
| In receive band                    | 30(s)                | -100          | -101.7             |

**Table 6-9: Adjacent Channel Power - 768.00625 MHz; HDQPSK**

| Offset from Center Frequency (kHz) | Measurement BW (kHz) | Max ACP (dBc) | Measured ACP (dBc) |
|------------------------------------|----------------------|---------------|--------------------|
| (+/-)9.375                         | 6.25                 | -40           | -44.6              |
| (+/-)15.625                        | 6.25                 | -60           | -71.0              |
| (+/-)21.875                        | 6.25                 | -60           | -76.0              |
| (+/-)37.5                          | 25                   | -60           | -70.0              |
| (+/-)62.5                          | 25                   | -65           | -76.0              |
| (+/-)87.5                          | 25                   | -65           | -77.9              |
| (+/-)150                           | 100                  | -65           | -75.9              |
| (+/-)250                           | 100                  | -65           | -81.2              |
| (+/-)350                           | 100                  | -65           | -82.1              |
| >400 to 12 MHz                     | 30(s)                | -80           | -80.9              |
| 12 MHz to receive band             | 30(s)                | -80           | -88.3              |
| In receive band                    | 30(s)                | -100          | -103.0             |

**Table 6-10: Adjacent Channel Power - 771.00625 MHz; HDQPSK**

| Offset from Center Frequency (kHz) | Measurement BW (kHz) | Max ACP (dBc) | Measured ACP (dBc) |
|------------------------------------|----------------------|---------------|--------------------|
| (+/-)9.375                         | 6.25                 | -40           | -43.9              |
| (+/-)15.625                        | 6.25                 | -60           | -74.7              |
| (+/-)21.875                        | 6.25                 | -60           | -76.7              |
| (+/-)37.5                          | 25                   | -60           | -70.6              |
| (+/-)62.5                          | 25                   | -65           | -72.9              |
| (+/-)87.5                          | 25                   | -65           | -76.4              |
| (+/-)150                           | 100                  | -65           | -77.4              |
| (+/-)250                           | 100                  | -65           | -82.1              |
| (+/-)350                           | 100                  | -65           | -79.9              |
| >400 to 12 MHz                     | 30(s)                | -80           | -83.7              |
| 12 MHz to receive band             | 30(s)                | -80           | -91.3              |
| In receive band                    | 30(s)                | -100          | -102.3             |

**Table 6-11: Adjacent Channel Power - 773.50625 MHz; HDQPSK**

| Offset from Center Frequency (kHz) | Measurement BW (kHz) | Max ACP (dBc) | Measured ACP (dBc) |
|------------------------------------|----------------------|---------------|--------------------|
| (+/-)9.375                         | 6.25                 | -40           | -42.8              |
| (+/-)15.625                        | 6.25                 | -60           | -72.3              |
| (+/-)21.875                        | 6.25                 | -60           | -74.2              |
| (+/-)37.5                          | 25                   | -60           | -69.3              |
| (+/-)62.5                          | 25                   | -65           | -70.7              |
| (+/-)87.5                          | 25                   | -65           | -80.2              |
| (+/-)150                           | 100                  | -65           | -74.9              |
| (+/-)250                           | 100                  | -65           | -81.5              |
| (+/-)350                           | 100                  | -65           | -78.9              |
| >400 to 12 MHz                     | 30(s)                | -80           | -85.0              |
| 12 MHz to receive band             | 30(s)                | -80           | -84.3              |
| In receive band                    | 30(s)                | -100          | -102.0             |

**Table 6-12: Adjacent Channel Power - 775.99375 MHz; HDQPSK**

| Offset from Center Frequency (kHz) | Measurement BW (kHz) | Max ACP (dBc) | Measured ACP (dBc) |
|------------------------------------|----------------------|---------------|--------------------|
| (+/-)9.375                         | 6.25                 | -40           | -45.4              |
| (+/-)15.625                        | 6.25                 | -60           | -72.0              |
| (+/-)21.875                        | 6.25                 | -60           | -75.3              |
| (+/-)37.5                          | 25                   | -60           | -71.7              |
| (+/-)62.5                          | 25                   | -65           | -76.2              |
| (+/-)87.5                          | 25                   | -65           | -78.4              |
| (+/-)150                           | 100                  | -65           | -73.0              |
| (+/-)250                           | 100                  | -65           | -72.3              |
| (+/-)350                           | 100                  | -65           | -76.0              |
| >400 to 12 MHz                     | 30(s)                | -80           | -80.8              |
| 12 MHz to receive band             | 30(s)                | -80           | -84.1              |
| In receive band                    | 30(s)                | -100          | -101.5             |

Measurement uncertainties shown for these tests are expanded uncertainties expressed at the 95% confidence level using a coverage factor k=2. Measurement uncertainty: -2 dB/+2 dB.

**Table 6-13: Test Equipment Used for Testing ACP Requirements**

| RTL Asset # | Manufacturer          | Model     | Part Type                            | Serial Number | Calibration Due Date |
|-------------|-----------------------|-----------|--------------------------------------|---------------|----------------------|
| 901583      | Agilent Technologies  | N9010A    | EXA Signal Analyzer (10 Hz-26.5 GHz) | MY51250846    | 4/21/18              |
| 901139      | Weinschel Corporation | 48-20-34  | Attenuator DC-18 GHz 20 dB 100W      | BK5859        | 3/30/18              |
| 901291      | Pasternack            | PE7031-20 | 300W Attenuator, DC 1 GHz, 20 dB     | NA            | 8/24/18              |

**Test Personnel:**

|                   |                                                                                    |                            |
|-------------------|------------------------------------------------------------------------------------|----------------------------|
| Daniel Baltzell   |  | February 28, April 2, 2018 |
| EMC Test Engineer | Signature                                                                          | Dates of Tests             |

## 7 FCC Part 2.1053(a): Field Strength of Spurious Radiation; RSS-Gen 6.13: Transmitter Unwanted Emissions

### 7.1 Test Procedure

ANSI 63.26, section 5.5.

The device uses digital modulation modulated to its maximum extent using a pseudo-random data sequence.

The spurious emissions levels were measured, and the device under test was replaced by a substitution antenna connected to a signal generator. This signal generator level was then corrected by subtracting the cable loss from the substitution antenna to the signal generator, and the gain of the antenna (dBi) was added to achieve the EIRP level, then converted from the corrected signal generator level (dBm) to dBc, and compared to the limit.

### 7.2 Test Data

**Table 7-1: Field Strength of Spurious Radiation – 768.00625 MHz**

**Conducted Power 50 dBm; 100 W; Limit=50+10LogP=70 dBc**

| Frequency (MHz) | Spectrum Analyzer Level (dBuV) | Signal Generator Level (dBm) | Cable Loss to Transmit Antenna (dB) | Substitution Antenna Gain (dBi) | Corrected Signal Generator Level (dBc) | Margin (dB) |
|-----------------|--------------------------------|------------------------------|-------------------------------------|---------------------------------|----------------------------------------|-------------|
| 1536.013        | 40.9                           | -31.9                        | 0.4                                 | 6.5                             | 75.7                                   | -5.7        |
| 2304.019        | 16.8                           | -59.9                        | 0.5                                 | 7.3                             | 103.0                                  | -33.0       |
| 3072.025        | 26.6                           | -48.7                        | 0.7                                 | 7.2                             | 92.2                                   | -22.2       |
| 3840.031        | 8.1                            | -66.7                        | 0.8                                 | 7.0                             | 110.6                                  | -40.6       |
| 4608.038        | 9.6                            | -62.1                        | 0.9                                 | 8.9                             | 104.2                                  | -34.2       |
| 5376.044        | -18.2                          | -90.1                        | 1.0                                 | 8.5                             | 132.6                                  | -62.6       |
| 6144.050        | -18.4                          | -89.1                        | 1.2                                 | 9.2                             | 131.0                                  | -61.0       |
| 6912.056        | -11.9                          | -81.8                        | 1.3                                 | 9.5                             | 123.6                                  | -53.6       |
| 7680.063        | -15.1                          | -84.4                        | 1.4                                 | 9.2                             | 126.5                                  | -56.5       |

**Table 7-2: Field Strength of Spurious Radiation – 771.00625 MHz**

**Conducted Power 50 dBm; 100 W; Limit=50+10LogP=70 dBc**

| Frequency (MHz) | Spectrum Analyzer Level (dBuV) | Signal Generator Level (dBm) | Cable Loss to Transmit Antenna (dB) | Substitution Antenna Gain (dBi) | Corrected Signal Generator Level (dBc) | Margin (dB) |
|-----------------|--------------------------------|------------------------------|-------------------------------------|---------------------------------|----------------------------------------|-------------|
| 1542.013        | 40.4                           | -32.4                        | 0.4                                 | 6.6                             | 76.2                                   | -6.2        |
| 2313.019        | 23.9                           | -54.8                        | 0.5                                 | 7.3                             | 98.0                                   | -28.0       |
| 3084.025        | 21.7                           | -53.6                        | 0.7                                 | 7.1                             | 97.2                                   | -27.2       |
| 3855.031        | -5.8                           | -79.5                        | 0.8                                 | 7.0                             | 123.4                                  | -53.4       |
| 4626.038        | -11.9                          | -83.6                        | 0.9                                 | 8.9                             | 125.6                                  | -55.6       |
| 10794.088       | -21.1                          | -93.0                        | 1.0                                 | 8.5                             | 135.5                                  | -65.5       |
| 6168.050        | -18.6                          | -89.6                        | 1.2                                 | 9.1                             | 131.7                                  | -61.7       |
| 6939.056        | -21.3                          | -91.4                        | 1.3                                 | 9.5                             | 133.2                                  | -63.2       |
| 7710.063        | -20.7                          | -90.0                        | 1.4                                 | 9.3                             | 132.1                                  | -62.1       |

**Table 7-3: Field Strength of Spurious Radiation – 773.50625 MHz**

**Conducted Power 50 dBm; 100 W; Limit=50+10LogP=70 dBc**

| Frequency (MHz) | Spectrum Analyzer Level (dBuV) | Signal Generator Level (dBm) | Cable Loss to Transmit Antenna (dB) | Substitution Antenna Gain (dBi) | Corrected Signal Generator Level (dBc) | Margin (dB) |
|-----------------|--------------------------------|------------------------------|-------------------------------------|---------------------------------|----------------------------------------|-------------|
| 1547.013        | 40.2                           | -32.6                        | 0.4                                 | 6.6                             | 76.4                                   | -6.4        |
| 2320.519        | 23.2                           | -55.5                        | 0.5                                 | 7.3                             | 98.7                                   | -28.7       |
| 3094.025        | 23.4                           | -51.8                        | 0.7                                 | 7.1                             | 95.4                                   | -25.4       |
| 3867.531        | -1.9                           | -76.6                        | 0.8                                 | 7.0                             | 120.5                                  | -50.5       |
| 4641.038        | -4.3                           | -76.0                        | 0.9                                 | 8.9                             | 118.0                                  | -48.0       |
| 5414.544        | -19.9                          | -91.8                        | 1.0                                 | 8.5                             | 134.4                                  | -64.4       |
| 6188.050        | -22.1                          | -92.8                        | 1.2                                 | 9.1                             | 134.9                                  | -64.9       |
| 6961.556        | -19.8                          | -89.7                        | 1.3                                 | 9.5                             | 131.4                                  | -61.4       |
| 7735.063        | -19.0                          | -88.4                        | 1.4                                 | 9.3                             | 130.5                                  | -60.5       |

**Table 7-4: Field Strength of Spurious Radiation – 775.99375 MHz**

**Conducted Power 50 dBm; 100 W; Limit=50+10LogP=70 dBc**

| Frequency (MHz) | Spectrum Analyzer Level (dBuV) | Signal Generator Level (dBm) | Cable Loss to Transmit Antenna (dB) | Substitution Antenna Gain (dBi) | Corrected Signal Generator Level (dBc) | Margin (dB) |
|-----------------|--------------------------------|------------------------------|-------------------------------------|---------------------------------|----------------------------------------|-------------|
| 1551.988        | 45.6                           | -27.3                        | 0.4                                 | 6.6                             | 71.1                                   | -1.1        |
| 2327.981        | 25.3                           | -53.3                        | 0.5                                 | 7.3                             | 96.6                                   | -26.6       |
| 3103.975        | 19.7                           | -55.5                        | 0.7                                 | 7.1                             | 99.1                                   | -29.1       |
| 3879.969        | -0.7                           | -75.4                        | 0.8                                 | 7.0                             | 119.3                                  | -49.3       |
| 4655.963        | -3.1                           | -74.8                        | 0.9                                 | 8.9                             | 116.8                                  | -46.8       |
| 5431.956        | -18.7                          | -90.5                        | 1.1                                 | 8.5                             | 133.0                                  | -63.0       |
| 6207.950        | -15.4                          | -86.0                        | 1.2                                 | 9.1                             | 128.1                                  | -58.1       |
| 6983.944        | -10.8                          | -80.6                        | 1.3                                 | 9.5                             | 122.3                                  | -52.3       |
| 7759.938        | -9.2                           | -78.6                        | 1.4                                 | 9.3                             | 120.7                                  | -50.7       |

**Table 7-5: Field Strength of Spurious Radiation in the 1559-1610 Band, FCC 90.543(f), RSS-119 5.8.9.2**

| Frequency (MHz) | Spectrum Analyzer Level (dBuV) | Site Correction Factor (dB/m) | Corrected Spectrum Analyzer (dBuV/m) | Converted Level (dBW/MHz) | Limit (dBW) | Margin (dB) |
|-----------------|--------------------------------|-------------------------------|--------------------------------------|---------------------------|-------------|-------------|
| 1559.989        | 14.6                           | -10.5                         | 4.1                                  | -121.1                    | -80.0       | -41.1       |
| 1559.991        | 22.3                           | -10.5                         | 11.8                                 | -113.4                    | -80.0       | -33.4       |
| 1560.001        | 19.5                           | -10.5                         | 9.0                                  | -116.2                    | -80.0       | -36.2       |
| 1562.464        | 31.4                           | -10.5                         | 20.9                                 | -104.3                    | -80.0       | -24.3       |
| 1562.467        | 27.8                           | -10.5                         | 17.3                                 | -107.9                    | -80.0       | -27.9       |
| 1562.482        | 28.5                           | -10.5                         | 18.0                                 | -107.2                    | -80.0       | -27.2       |
| 1562.485        | 24.8                           | -10.5                         | 14.3                                 | -110.9                    | -80.0       | -30.9       |
| 1562.489        | 38.2                           | -10.5                         | 27.7                                 | -97.5                     | -80.0       | -17.5       |
| 1562.491        | 38.7                           | -10.5                         | 28.2                                 | -97.0                     | -80.0       | -17.0       |
| 1562.491        | 27.2                           | -10.5                         | 16.7                                 | -108.5                    | -80.0       | -28.5       |
| 1562.497        | 30.2                           | -10.5                         | 19.7                                 | -105.5                    | -80.0       | -25.5       |
| 1566.625        | 20.2                           | -10.4                         | 9.8                                  | -115.5                    | -80.0       | -35.5       |
| 1566.653        | 28.5                           | -10.4                         | 18.1                                 | -107.2                    | -80.0       | -27.2       |
| 1566.662        | 15.3                           | -10.4                         | 4.9                                  | -120.4                    | -80.0       | -40.4       |

Measurement uncertainties shown for these tests are expanded uncertainties expressed at the 95% confidence level using a coverage factor K=2. Measurement uncertainty: ±4.6 dB

**Table 7-6: Test Equipment Used for Testing Field Strength of Spurious Radiation**

| RTL Asset # | Manufacturer            | Model             | Part Type                              | Serial Number | Calibration Due Date |
|-------------|-------------------------|-------------------|----------------------------------------|---------------|----------------------|
| 900878      | Rhein Tech Laboratories | AM3-1197-0005     | 3 meter antenna mast, polarizing       | OATS1         | N/A                  |
| 901592      | Insulated Wire Inc.     | KPS-1503-3600-KPR | SMK RF Cables 20'                      | NA            | 8/18/18              |
| 901593      | Insulated Wire Inc.     | KPS-1503-360-KPR  | SMK RF Cables 36"                      | NA            | 8/18/18              |
| 901242      | Rhein Tech Laboratories | WRT-000-0003      | Wood rotating table                    | N/A           | N/A                  |
| 900791      | Chase                   | CBL6111B          | Bilog Antenna (30 MHz–2000 MHz)        | N/A           | 6/11/18              |
| 900321      | EMCO                    | 3161-03           | Horn Antenna (4.0-8.2 GHz)             | 9508-1020     | 4/9/18               |
| 900323      | EMCO                    | 3160-07           | Horn Antenna (8.2-12.4 GHz)            | 9605-1054     | 4/9/18               |
| 900772      | EMCO                    | 3161-02           | Horn Antenna (2-4 GHz)                 | 9804-1044     | 4/9/18               |
| 901592      | Rohde & Schwarz         | 1167.0000.02      | Signal Generator                       | 101903        | 3/20/18              |
| 901583      | Agilent Technologies    | N9010A            | EXA Signal Analyzer (10 Hz-26.5 GHz)   | MY51250846    | 4/21/18              |
| 901128      | Par Electronics         | 806-902 (25W)     | UHF Notch Filter                       | N/A           | 8/21/18              |
| 900814      | Electro-Metrics         | EM-6961 (RGA-60)  | Double Ridged Guide Antenna (1-18 GHz) | 2310          | 2/4/19               |
| 900932      | Hewlett Packard         | 8449B OPT H02     | Preamplifier (1-26.5 GHz)              | 3008A00505    | 8/18/18              |
| 901235      | IW Microwave Products   | KPS-1503-360-KPS  | High Frequency RF Cables               | 36"           | 8/21/18              |

**Test Personnel:**

Daniel W. Baltzell  
Test Engineer



Signature

March 2-5, 2018  
Dates of Test

## **8 FCC Part 2.1055: Frequency Stability; Part 90.539: Frequency Stability; RSS-119 5.3 and RSS-Gen 6.11: Transmitter Frequency Stability**

### **8.1 Test Procedure**

ANSI 63.26, section 5.6.

The carrier frequency stability is the ability of the transmitter to maintain an assigned carrier frequency.

The EUT was evaluated over the temperature range -30°C to +55°C. The temperature was initially set to -30°C and a 1-hour period was observed for stabilization of the EUT. The frequency stability was measured within one minute after application of primary power to the transmitter. The temperature was raised at intervals of 10 degrees centigrade through the range. A ½-hour period was observed to stabilize the EUT at each measurement step and the frequency stability was measured within one minute after application of primary power to the transmitter. Additionally, the supply voltage to the EUT was varied +/-15% nominal input voltage.

**Part 90.539: Base stations within 769–775 MHz and 799–805 MHz – 100 ppb**

**RSS-119: Base stations within 768-776 MHz and 798-806 MHz Narrowband – 0.1 ppm**

Transmitters designed to operate in 769–775 MHz and 799–805 MHz frequency bands must meet the frequency stability requirements in this section.

(a) Mobile, portable and control transmitters must normally use automatic frequency control (AFC) to lock onto the base station signal.

(b) The frequency stability of base transmitters operating in the narrowband segment must be 100 parts per billion or better.

(c) The frequency stability of mobile, portable, and control transmitters operating in the narrowband segment must be 400 parts per billion or better when AFC is locked to the base station. When AFC is not locked to the base station, the frequency stability must be at least 1.0 ppm for 6.25 kHz, 1.5 ppm for 12.5 kHz (2 channel aggregate), and 2.5 ppm for 25 kHz (4 channel aggregate).

(d) The frequency stability of base transmitters operating in the wideband segment must be 1 part per million or better.

(e) The frequency stability of mobile, portable and control transmitters operating in the wideband segment must be 1.25 parts per million or better when AFC is locked to a base station, and 5 parts per million or better when AFC is not locked.

## 8.2 Test Data

### 8.2.1 Temperature Frequency Stability

**Table 8-1: Temperature Frequency Stability – 768.00625 MHz**

| Temperature (°C) | Measured Frequency (MHz) | ppm   |
|------------------|--------------------------|-------|
| -30              | 768.006261               | 0.01  |
| -20              | 768.006262               | 0.02  |
| -10              | 768.006273               | 0.03  |
| 0                | 768.006269               | 0.02  |
| 10               | 768.006253               | 0.00  |
| 20 (reference)   | 768.006250               | 0.00  |
| 30               | 768.006240               | -0.01 |
| 40               | 768.006232               | -0.02 |
| 50               | 768.006230               | -0.03 |
| 55               | 768.006228               | -0.03 |
| 60               | 768.006224               | -0.03 |

**Table 8-2: Temperature Frequency Stability – 775.99375 MHz**

| Temperature (°C) | Measured Frequency (MHz) | ppm   |
|------------------|--------------------------|-------|
| -30              | 775.993760               | 0.01  |
| -20              | 775.993760               | 0.01  |
| -10              | 775.993771               | 0.03  |
| 0                | 775.993769               | 0.02  |
| 10               | 775.993750               | 0.00  |
| 20 (reference)   | 775.993750               | 0.00  |
| 30               | 775.993739               | -0.01 |
| 40               | 775.993731               | -0.02 |
| 50               | 775.993728               | -0.03 |
| 55               | 775.993726               | -0.03 |
| 60               | 775.993722               | -0.04 |

### 8.2.2 Frequency Stability/Voltage Variation

**Table 8-3: Frequency Stability/Voltage Variation – 768.00625 MHz**

| Voltage (VAC)   | Measured Frequency (MHz) | ppm  |
|-----------------|--------------------------|------|
| 97.75           | 768.006250               | 0.00 |
| 115 (reference) | 768.006250               | 0.00 |
| 132.25          | 768.006252               | 0.00 |

**Table 8-4: Frequency Stability/Voltage Variation – 775.99375 MHz**

| Voltage (VAC)   | Measured Frequency (MHz) | ppm  |
|-----------------|--------------------------|------|
| 97.75           | 775.993750               | 0.00 |
| 115 (reference) | 775.993750               | 0.00 |
| 132.25          | 775.993750               | 0.00 |

**Table 8-5: Temperature Frequency Stability – 771.00625 MHz**

| Temperature (°C) | Measured Frequency (MHz) | ppb    |
|------------------|--------------------------|--------|
| -30              | 771.006258               | 10.52  |
| -20              | 771.006254               | 5.45   |
| -10              | 771.006253               | 4.18   |
| 0                | 771.006267               | 21.95  |
| 10               | 771.006260               | 12.70  |
| 20 (reference)   | 771.006250               | 0.00   |
| 30               | 771.006248               | -2.54  |
| 40               | 771.006232               | -22.96 |
| 50               | 771.006227               | -30.32 |
| 55               | 771.006224               | -34.02 |
| 60               | 771.006221               | -37.70 |

**Table 8-6: Temperature Frequency Stability – 773.50625 MHz**

| Temperature (°C) | Measured Frequency (MHz) | ppb    |
|------------------|--------------------------|--------|
| -30              | 773.506259               | 11.75  |
| -20              | 773.506256               | 7.95   |
| -10              | 773.506254               | 5.43   |
| 0                | 773.506268               | 22.78  |
| 10               | 773.506262               | 15.19  |
| 20 (reference)   | 773.506250               | 0.00   |
| 30               | 773.506248               | -2.52  |
| 40               | 773.506234               | -20.35 |
| 50               | 773.506229               | -27.69 |
| 55               | 773.506226               | -31.38 |
| 60               | 773.506220               | -38.67 |

### 8.2.3 Frequency Stability/Voltage Variation

**Table 8-7: Frequency Stability/Voltage Variation – 771.00625 MHz**

| Voltage (VAC)   | Measured Frequency (MHz) | ppb  |
|-----------------|--------------------------|------|
| 97.75           | 771.006250               | 0.00 |
| 115 (reference) | 771.006250               | 0.00 |
| 132.25          | 771.006250               | 0.00 |

**Table 8-8: Frequency Stability/Voltage Variation – 773.50625 MHz**

| Voltage (VAC)   | Measured Frequency (MHz) | ppb  |
|-----------------|--------------------------|------|
| 97.75           | 773.506252               | 2.53 |
| 115 (reference) | 773.506250               | 0.00 |
| 132.25          | 773.506252               | 2.53 |

**Results: The EUT is compliant.**

Measurement uncertainties shown for these tests are expanded uncertainties expressed at the 95% confidence level using a coverage factor K=2. Measurement uncertainty:  $\pm 0.5$  Hz

**Table 8-9: Test Equipment Used for Testing Frequency Stability**

| RTL Asset # | Manufacturer            | Model            | Part Type                          | Serial Number | Calibration Due Date |
|-------------|-------------------------|------------------|------------------------------------|---------------|----------------------|
| 901350      | Meterman                | 33XR             | Multimeter                         | 040402802     | 4/26/19              |
| 901672      | Rohde & Schwarz         | FSEM30           | Spectrum Analyzer                  | FSEM30        | 4/17/19              |
| 900946      | Tenney Engineering, Inc | TH65             | Temperature Chamber with Humidity  | 11380         | 3/26/18              |
| 901291      | Pasternack              | PE7031-20        | 300W Attenuator, DC - 1 GHz, 20 dB | NA            | 8/24/18              |
| 900948      | Weinschel Corporation   | 47-10-43         | Attenuator DC-18 GHz 10 dB 50W     | BH1487        | 9/1/18               |
| 901235      | IW Microwave Products   | KPS-1503-360-KPS | High Frequency RF Cables           | 36"           | 8/21/18              |
| 9015        | IW Microwave Products   | KPS-1503-360-KPS | High Frequency RF Cables           | 36"           | 8/18/18              |

**Test Personnel:**

|                                                                                                                                |           |                                       |
|--------------------------------------------------------------------------------------------------------------------------------|-----------|---------------------------------------|
| <br>Daniel W. Baltzell<br>EMC Test Engineer | Signature | February 26-27, 2018<br>Dates of Test |
|--------------------------------------------------------------------------------------------------------------------------------|-----------|---------------------------------------|

## 9 FCC Part 2.202: Necessary Bandwidth and Emission Bandwidth

### P25 Phase 1 (C4FM)

Calculation:

Data rate in bps (R) = 9600

Peak deviation of carrier (D) = 1800

$B_n = [9600/\log_2(4) + 2 (1800) (0.89)] = 8.0 \text{ kHz}$

Emission designator: 8K00F1D, 8K00F1E

### P25 Linear Simulcast (WCQPSK)

Calculation:

Data rate in bps (R) = 9600

Peak deviation of carrier (D) = 1800

$B_n = [9600/\log_2(4) + 2 (1800) (1.362)] = 9.7 \text{ kHz}$

Emission designator: 9K70D1W

### P25 Phase 2 (HDQPSK)

Calculation:

Data rate in bps (R) = 12000

Peak deviation of carrier (D) = 2250

$B_n = [12000/\log_2(4) + 2 (2250) (0.841)] = 9.8 \text{ kHz}$

Emission designator: 9K80D7W

## 10 Conclusion

The data in this measurement report shows that the Harris Corporation MASTR V 700 MHz Base Station, FCC ID: OWDTR-0159-E, IC: 3636B-0159, complies with the applicable requirements of FCC Parts 2 and 90 of the FCC Rules and IC RSS-119 and RSS-Gen.