



**DATE: 12 December 2021**

**I.T.L. (PRODUCT TESTING) LTD.**

**FCC/IC Radio Test Report**

for

**Amimon Ltd.**

Equipment under test:

**Draco TX**

**AMN41012**

Tested by:

M. Zohar

Approved by:

D. Shidlow

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Measurement/Technical Report for

**Amimon Ltd.**

**Draco TX**

**AMN41012**

**FCC ID: VQSAMN41012**

**IC: 7680A-AMN41012**

This report concerns:      Original Grant:  
                                         Class I Permissive Change:  
                                         Class II Permissive Change: X

Equipment type:              FCC: (NII) Unlicensed National Information  
                                         Infrastructure TX  
                                         ISED: WLAN

Limits used:                    47CFR15, Part 15, Subpart E, Section 15.407  
                                         RSS 247, Issue 2, February 2017, Section 5  
                                         RSS-Gen, Issue 5, April 2018

Measurement procedures used: KDB 789033 D02 v02, ANSI C63.10:2013, and  
RSS-Gen, Issue 5, April 2018.

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# 1. General Information

## 1.1 Administrative Information

|                                |                                                                                                                           |
|--------------------------------|---------------------------------------------------------------------------------------------------------------------------|
| Manufacturer:                  | Amimon Ltd.                                                                                                               |
| Manufacturer's Address:        | 26 Zarhin St., Raanana 4366250, Israel                                                                                    |
| Manufacturer's Representative: | Gabi Nocham                                                                                                               |
| Equipment Under Test (E.U.T):  | Draco TX                                                                                                                  |
| Equipment PMN:                 | AMN41012                                                                                                                  |
| Equipment Serial No.:          | Not designated                                                                                                            |
| Equipment HVIN:                | AMN41012/AMN41012EX                                                                                                       |
| Equipment FVIN:                | 7.5.15                                                                                                                    |
| Date of Receipt of E.U.T:      | December 27, 2020                                                                                                         |
| Start of Test:                 | December 27, 2020                                                                                                         |
| End of Test:                   | April 19, 2021                                                                                                            |
| Test Laboratory Location:      | I.T.L (Product Testing) Ltd.<br>1 Bat Sheva St., Lod 7120101, Israel                                                      |
| Test Specifications:           | 47CFR15, Part 15, Subpart E, Section 15.407<br>RSS 247, Issue 2, February 2017, Section 5<br>RSS-Gen, Issue 5, April 2018 |



## **1.2 List of Accreditations**

The EMC laboratory of I.T.L. is accredited by the following bodies:

1. The American Association for Laboratory Accreditation (A2LA) (U.S.A.), Certificate No. 1152.01.
2. The Federal Communications Commission (FCC) (U.S.A.), FCC Designation No. IL1005.
3. The Israel Ministry of the Environment (Israel), Registration No. 1104/01.
4. Department of Innovation, Science and Economic Development (ISED) Canada, CAB identifier: IL1002

I.T.L. Product Testing Ltd. is accredited by the American Association for Laboratory Accreditation (A2LA) and the results shown in this test report have been determined in accordance with I.T.L.'s terms of accreditation unless stated otherwise in the report.

### 1.3 **Product Description**

The Draco system provides high-end, high performance wireless HD video connection that can operate in challenging unmanned environment.

The AMN41012 is the video source unit, which is connected to a camera to capture video signals and to transmit these signals to its companion device AMN42012, thus, creating a wireless video link.

The AMN42012 is the video display unit that receives the video information transmitted from AMN41012 unit and transfers the images to various types of computer monitors/displays. This enables the user or camera operator to monitor the video transmitted from the remote camera connected to the AMN41012.

### 1.4 **Test Methodology**

Both conducted and radiated testing were performed according to the procedures in KDB 789003 D02 v02, and ANSI C63.10: 2013, RSS-Gen, Issue 5, April 2018. Radiated testing was performed at an antenna-to-EUT distance of 3 meters.

### 1.5 **Test Facility**

Emissions tests were performed at I.T.L.'s testing facility located in Lod, Israel. I.T.L.'s EMC Laboratory is accredited by A2LA, certificate No. 1152.01, and its FCC designation number is IL1005.

### 1.6 **Measurement Uncertainty**

#### **Conducted Emission**

Conducted Emission (CISPR 11, EN 55011, CISPR 22, EN 55022, ANSI C63.4)

0.15 – 30 MHz:

Expanded Uncertainty (95% Confidence, K=2):

± 3.44 dB

#### **Radiated Emission**

Radiated Emission (CISPR 11, EN 55011, CISPR 22, EN 55022, ANSI C63.4) for open site:

30-1000MHz:

Expanded Uncertainty (95% Confidence, K=2):

± 4.96 dB

1 GHz to 6 GHz

Expanded Uncertainty (95% Confidence, K=2):

±5.19 dB

>6 GHz

Expanded Uncertainty (95% Confidence, K=2):

±5.51 dB

## 2. System Test Configuration

### 2.1 Justification

1. The E.U.T contains a UNII 3 band transceiver that is certified for FCC/IC (see FCC ID: 2AHKN-5G2, IC: 26056-5G2).
2. The customer asks to add the 3 channels 5,750 MHz, 5,790 MHz, 5,830 MHz to the existing 5,755 MHz, 5,795 MHz channels (operation bandwidth of 40MHz).
3. This report destination is to check C2PC compliance, according to the agreed test plan between ITL lab and the TCB (Timco Engineering Inc.):

| No | Country | Test & Report Required                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
|----|---------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1  | US      | UNII3<br>FCC Part 15E<br>Frequency: 5725-5850MHz<br>Added Channels: 5750MHz, 5790MHz, 5830MHz, to the existing 5755MHz, 5795MHz<br>Low channel: 5750MHz; test BW, Pout, and worst-case spurious emissions (1 config)<br>mid: 5790MHz test: Pout, PSD, BW;<br>high: 5830MHz full test<br>BW: 40MHz<br>Modulation: OFDM 64QAM<br>Ports: 2 TX chains or 4 chains<br>Uncorrelated Chains<br>Usage: Indoor and outdoor<br>Access point at UNII3<br>Power: limitation by restricted band – ~23dBm conducted<br>Antenna: 2dBi |
|    | Canada  | RSS-247, 40MHz<br>Same as US for UNII3<br>Usage: indoor and outdoor                                                                                                                                                                                                                                                                                                                                                                                                                                                    |

### 2.2 EUT Exercise Software

No special exercise software was used.

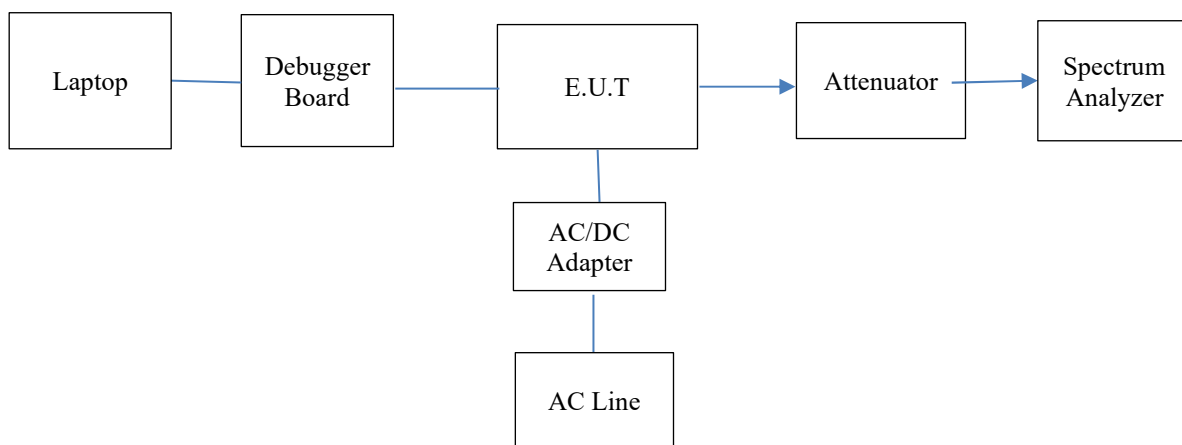
### 2.3 Special Accessories

No special accessories were used

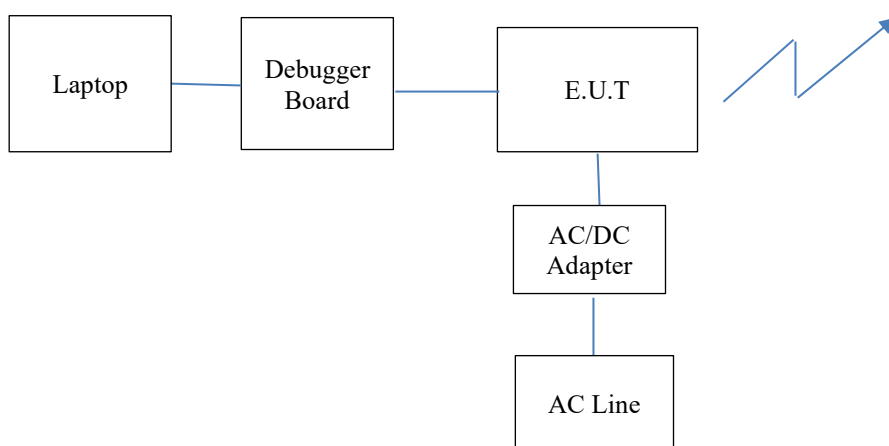
### 2.4 Equipment Modifications

No modifications were necessary to achieve compliance.

## 2.5 Configuration of Tested System



**Figure 1. Configuration of Tested System - Conducted**



**Figure 2. Configuration of Tested System - Radiated**



### **3. Conducted and Radiated Measurement Test Setup Photos**

See a separate file.

## 4. Conducted Emission from AC Mains

### 4.1 Test Specification

FCC Part 15, Subpart C, Section 15.207  
RSS Gen, Issue 5, Clause 8.8

### 4.2 Test Procedure

(Temperature (22°C)/ Humidity (56%RH))

The E.U.T operation mode and test setup are as described in Section 2 of this report. In order to minimize background noise interference, the conducted emission testing was performed inside a shielded room, with the E.U.T placed on a 0.8 meter high wooden table, 0.4 meter from the room's vertical wall. In the case of a floor-standing E.U.T., it was placed on the horizontal ground plane.

The E.U.T was powered from 115 V AC / 60 Hz via 50 Ohm / 50  $\mu$ Hn Line Impedance Stabilization Network (LISN) on the phase and neutral lines. The LISN's were grounded to the shielded room ground plane (floor), and were kept at least 0.8 meters from the nearest boundary of the E.U.T.

The center of the E.U.T.'s AC cable was folded back and forth, in order to form a bundle less than 0.40 meters and a total cable length of 1 meter.

The effect of varying the position of the cables was investigated to find the configuration that produces maximum emission.

The emission voltages at the LISN's outputs were measured using a computerized receiver, complying with CISPR 16 requirements. The specification limits are loaded to the receiver and are displayed on the receiver's spectrum display.

The E.U.T was evaluated in TX operation mode.

A frequency scan between 0.15 and 30 MHz was performed at 9 kHz I.F. band width, using peak detection.

The spectral components having the highest level on each line were measured using a quasi-peak and average detector.

### 4.3 Test Limit

| Frequency of Emission (MHz) | Conducted Limit (dB $\mu$ V) |           |
|-----------------------------|------------------------------|-----------|
|                             | Quasi-peak                   | Average   |
| 0.15-0.5                    | 66 to 56*                    | 56 to 46* |
| 0.5-5                       | 56                           | 46        |
| 5-30                        | 60                           | 50        |

\* Decreases with the logarithm of the frequency.

#### **4.4 Test Results**

JUDGEMENT: Passed by -9.37 dB

The margin between the emission levels and the specification limit is, in the worst case, -9.37 dB for the phase line at 24.018 MHz, and -9.88 dB at 24.018 MHz for the neutral line.

The EUT met the FCC Part 15, Subpart C specification requirements.

The details of the highest emissions are given in *Figure 3* to *Figure 6*.

## Conducted Emission

E.U.T Description      Draco TX  
Type                      AMN41012  
Serial Number:        Not designated

Specification:            FCC Part 15, Subpart C;  
                              RSS Gen, Issue 5, Clause 8.8  
Lead:                      Phase  
Detectors:                Peak, Quasi-peak, Average  
Power Operation        AC/DC Adapter

| EDIT PEAK LIST (Final Measurement Results) |            |            |                |  |
|--------------------------------------------|------------|------------|----------------|--|
| Trace1:                                    | CE22BQP    |            |                |  |
| Trace2:                                    | CE22BAP    |            |                |  |
| Trace3:                                    | ---        |            |                |  |
| TRACE                                      | FREQUENCY  | LEVEL dBμV | DELTA LIMIT dB |  |
| 1 Quasi Peak                               | 170 kHz    | 36.91      | -28.04         |  |
| 2 Average                                  | 230 kHz    | 14.12      | -38.32         |  |
| 1 Quasi Peak                               | 426 kHz    | 26.91      | -30.41         |  |
| 2 Average                                  | 426 kHz    | 20.87      | -26.45         |  |
| 2 Average                                  | 446 kHz    | 23.37      | -23.57         |  |
| 1 Quasi Peak                               | 450 kHz    | 29.87      | -26.99         |  |
| 2 Average                                  | 966 kHz    | 18.19      | -27.80         |  |
| 1 Quasi Peak                               | 1.122 MHz  | 22.58      | -33.41         |  |
| 1 Quasi Peak                               | 1.35 MHz   | 20.88      | -35.11         |  |
| 2 Average                                  | 1.43 MHz   | 16.99      | -29.00         |  |
| 2 Average                                  | 2.202 MHz  | 15.18      | -30.81         |  |
| 1 Quasi Peak                               | 2.97 MHz   | 19.33      | -36.66         |  |
| 1 Quasi Peak                               | 3.71 MHz   | 19.59      | -36.40         |  |
| 2 Average                                  | 3.73 MHz   | 14.95      | -31.05         |  |
| 1 Quasi Peak                               | 8.294 MHz  | 25.54      | -34.45         |  |
| 2 Average                                  | 8.434 MHz  | 19.56      | -30.43         |  |
| 1 Quasi Peak                               | 11.022 MHz | 24.30      | -35.69         |  |
| 2 Average                                  | 11.494 MHz | 19.74      | -30.25         |  |
| 1 Quasi Peak                               | 24.018 MHz | 40.50      | -19.49         |  |
| 2 Average                                  | 24.018 MHz | 40.62      | -9.37          |  |

Date: 27.DEC.2020 09:20:32

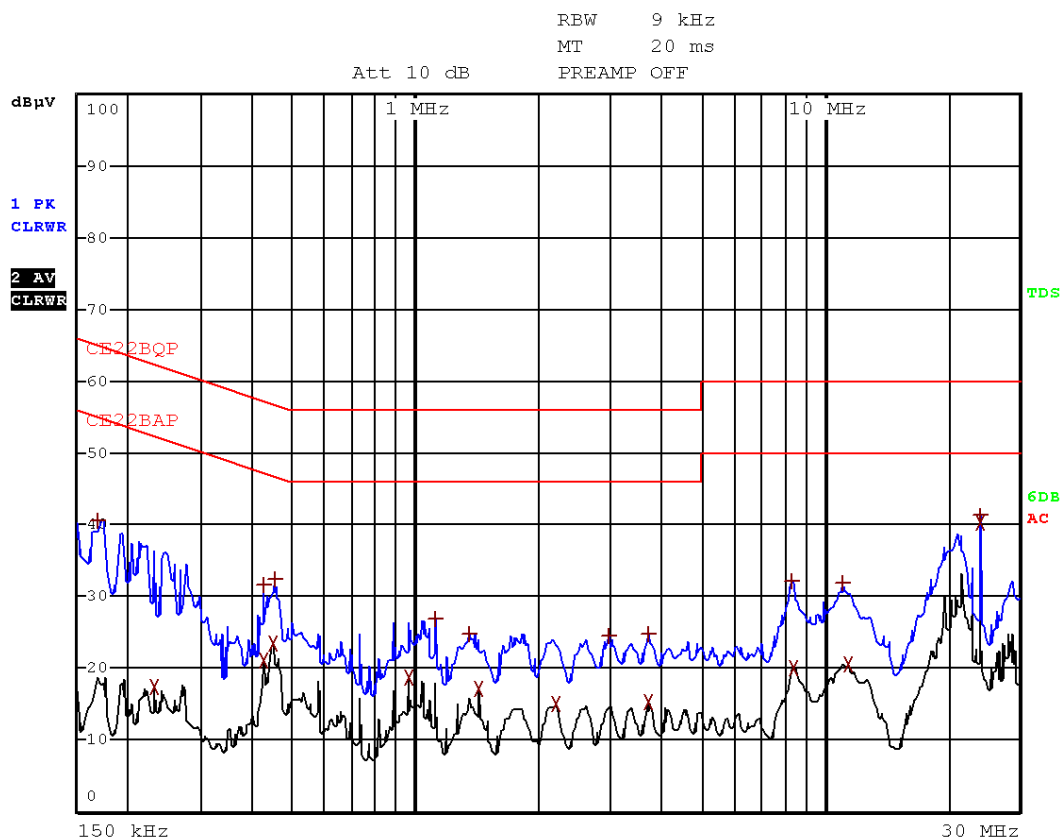
**Figure 3. Detectors: Peak, Quasi-peak, Average**

*Note: Delta Limit refers to the test results obtained minus specified requirement; thus a positive number indicates failure, and a negative result indicates that the product passes the test.*

## Conducted Emission

E.U.T Description    Draco TX  
Type                    AMN41012  
Serial Number:        Not designated

Specification:        FCC Part 15, Subpart C;  
RSS Gen, Issue 5, Clause 8.8  
Lead:                  Phase  
Detectors:            Peak, Quasi-peak, Average  
Power Operation      AC/DC Adapter



Date: 27.DEC.2020 09:18:39

Figure 4. Detectors: Peak, Quasi-peak, Average

## Conducted Emission

E.U.T Description    Draco TX  
Type                    AMN41012  
Serial Number:        Not designated

Specification:        FCC Part 15, Subpart C;  
                              RSS Gen, Issue 5, Clause 8.8  
Lead:                    Neutral  
Detectors:            Peak, Quasi-peak, Average  
Power Operation      AC/DC Adapter

| EDIT PEAK LIST (Final Measurement Results) |            |            |        |          |
|--------------------------------------------|------------|------------|--------|----------|
| Trace1:                                    | CE22BQP    |            |        |          |
| Trace2:                                    | CE22BAP    |            |        |          |
| Trace3:                                    | ---        |            |        |          |
| TRACE                                      | FREQUENCY  | LEVEL dBμV | DELTA  | LIMIT dB |
| 1 Quasi Peak                               | 150 kHz    | 37.92      | -28.07 |          |
| 2 Average                                  | 242 kHz    | 16.77      | -35.25 |          |
| 1 Quasi Peak                               | 266 kHz    | 29.31      | -31.92 |          |
| 2 Average                                  | 426 kHz    | 17.02      | -30.31 |          |
| 2 Average                                  | 450 kHz    | 22.46      | -24.41 |          |
| 1 Quasi Peak                               | 462 kHz    | 27.84      | -28.81 |          |
| 1 Quasi Peak                               | 1.034 MHz  | 19.41      | -36.58 |          |
| 2 Average                                  | 1.042 MHz  | 14.67      | -31.32 |          |
| 1 Quasi Peak                               | 1.41 MHz   | 18.82      | -37.17 |          |
| 2 Average                                  | 1.43 MHz   | 13.96      | -32.04 |          |
| 2 Average                                  | 2.626 MHz  | 13.90      | -32.09 |          |
| 1 Quasi Peak                               | 2.662 MHz  | 18.97      | -37.02 |          |
| 1 Quasi Peak                               | 4.102 MHz  | 19.28      | -36.71 |          |
| 2 Average                                  | 4.174 MHz  | 14.56      | -31.43 |          |
| 1 Quasi Peak                               | 8.326 MHz  | 26.17      | -33.82 |          |
| 2 Average                                  | 8.406 MHz  | 19.94      | -30.05 |          |
| 2 Average                                  | 11.082 MHz | 19.89      | -30.10 |          |
| 1 Quasi Peak                               | 11.194 MHz | 25.11      | -34.88 |          |
| 1 Quasi Peak                               | 24.018 MHz | 39.99      | -20.00 |          |
| 2 Average                                  | 24.018 MHz | 40.11      | -9.88  |          |

Date: 27.DEC.2020 09:42:20

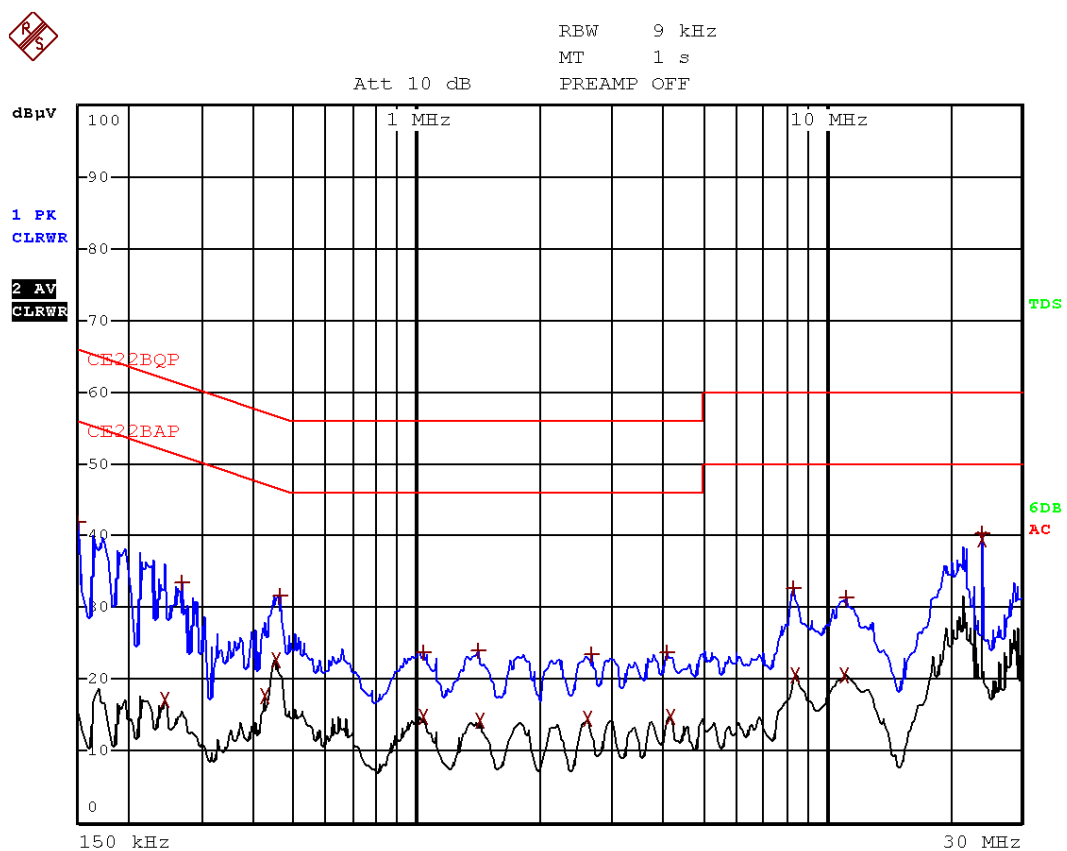
**Figure 5. Detectors: Peak, Quasi-peak, Average**

*Note: Delta Limit refers to the test results obtained minus specified requirement; thus a positive number indicates failure, and a negative result indicates that the product passes the test.*

## Conducted Emission

|                   |                |
|-------------------|----------------|
| E.U.T Description | Draco TX       |
| Type              | AMN41012       |
| Serial Number:    | Not designated |

|                 |                                                         |
|-----------------|---------------------------------------------------------|
| Specification:  | FCC Part 15, Subpart C;<br>RSS Gen, Issue 5, Clause 8.8 |
| Lead:           | Neutral                                                 |
| Detectors:      | Peak, Quasi-peak, Average                               |
| Power Operation | AC/DC Adapter                                           |



Date: 27.DEC.2020 09:31:48

### Figure 6 Detectors: Peak, Quasi-peak, Average

#### 4.5 Test Equipment Used; Conducted Emission

| Instrument          | Manufacturer    | Model        | Serial No. | Last Calibration Date | Next Calibration Due |
|---------------------|-----------------|--------------|------------|-----------------------|----------------------|
| LISN                | Fischer         | FCC-LISN-25A | 127        | October 28, 2020      | October 28, 2021     |
| Transient Limiter   | HP              | 11947A       | 3107A03042 | July 12, 2020         | July 12, 2021        |
| EMI Receiver        | Rohde & Schwarz | ESCI7        | 100724     | February 23, 2020     | February 23, 2021    |
| Cable CE Chamber 5M | Telrad          | RJ214        | -          | October 28, 2020      | October 28, 2021     |

Figure 7 Test Equipment Used

## 5. Maximum Conducted Output Power

### 5.1 Test Specification

FCC, Part 15, Subpart E, Section 407(a)(3)

RSS 247, Issue 2, Section 6.2.4

### 5.2 Test Procedure

(Temperature (20°C)/ Humidity (56%RH))

The E.U.T operation mode and test set-up are as described in Section 2 of this report. The E.U.T. antenna terminal was connected to the Spectrum Analyzer through an external attenuator and an appropriate coaxial cable (total loss=31.5 dB). Special attention was taken to prevent Spectrum Analyzer RF input overload.

Spectrum setting done according KDB 789033 d02 v01, method SA-1 instructions (section 2.b).

### 5.3 FCC and ISSED Test Limit

For the band 5.725-5.85 GHz, the maximum conducted output power over the frequency band of operation shall not exceed 1W provided the maximum antenna gain does not exceed 6 dBi. If transmitting antennas of directional gain greater than 6 dBi are used, the maximum conducted output shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

### 5.4 Test Results

| BW    | Operation Frequency | Port 1 Reading | Port 2 Reading | Total Power* | Antenna Gain | EIRP  | Limit | Margin |
|-------|---------------------|----------------|----------------|--------------|--------------|-------|-------|--------|
| (MHz) | (MHz)               | (dBm)          | (dBm)          | (dBm)        | (dBi)        | (dBm) | (dBm) | (dB)   |
| 40.0  | 5750.0              | 17.37          | 18.31          | 20.9         | 2.0          | 22.9  | 30.0  | -7.1   |
|       | 5790.0              | 18.44          | 17.92          | 21.2         | 2.0          | 23.2  | 30.0  | -6.8   |
|       | 5830.0              | 18.15          | 18.32          | 21.2         | 2.0          | 23.2  | 30.0  | -6.8   |

\*Note: total power (dBm) =  $10 \log [port1(mW) + port2(mW)]$

Figure 8 Test Results 2TX mode

| BW    | Operation Frequency | Port 1 Reading | Port 2 Reading | Port 3 Reading | Port 4 Reading | Total Power* | Antenna Gain | EIRP  | Limit | Margin |
|-------|---------------------|----------------|----------------|----------------|----------------|--------------|--------------|-------|-------|--------|
| (MHz) | (MHz)               | (dBm)          | (dBm)          | (dBm)          | (dBm)          | (dBm)        | (dBi)        | (dBm) | (dBm) | (dB)   |
| 40.0  | 5750.0              | 15.9           | 15.6           | 14.65          | 13.98          | 21.1         | 2.0          | 23.1  | 30.0  | -6.9   |
|       | 5790.0              | 16.34          | 16.0           | 14.35          | 13.54          | 21.2         | 2.0          | 23.2  | 30.0  | -6.8   |
|       | 5830.0              | 15.15          | 15.5           | 15.01          | 15.04          | 21.2         | 2.0          | 23.2  | 30.0  | -6.8   |

\*Note: total power (dBm) =  $10 \log [port1(mW) + port2(mW) + port3(mW) + port4(mW)]$

Figure 9 Test Results 4TX mode

JUDGMENT: Passed by 6.8dB

For additional information see Figure 10 to Figure 27.





## 2TX mode:

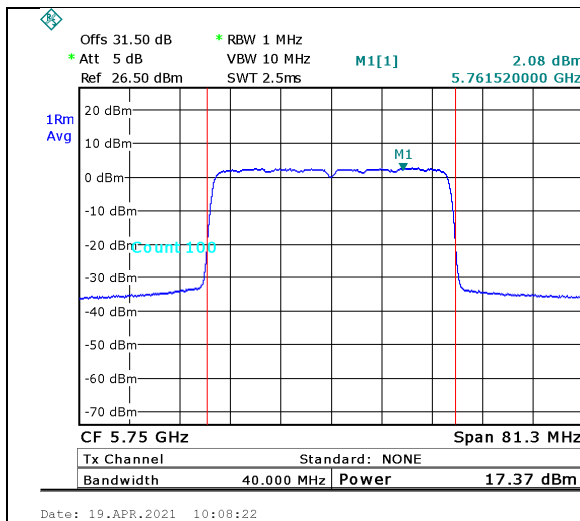


Figure 10. 5750.0MHz,40MHz BW, port1

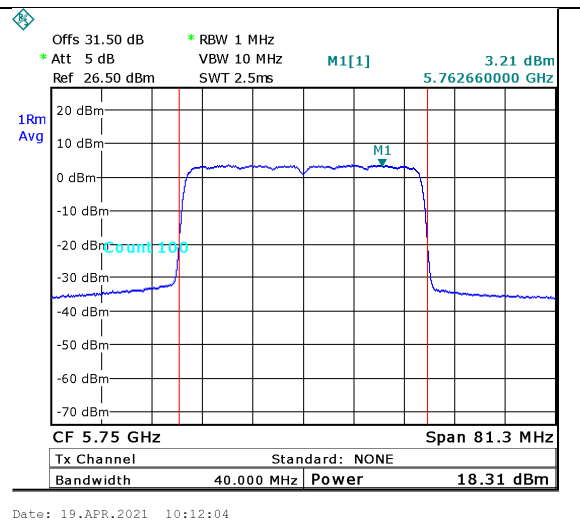


Figure 11. 5750.0MHz,40MHz BW, port2

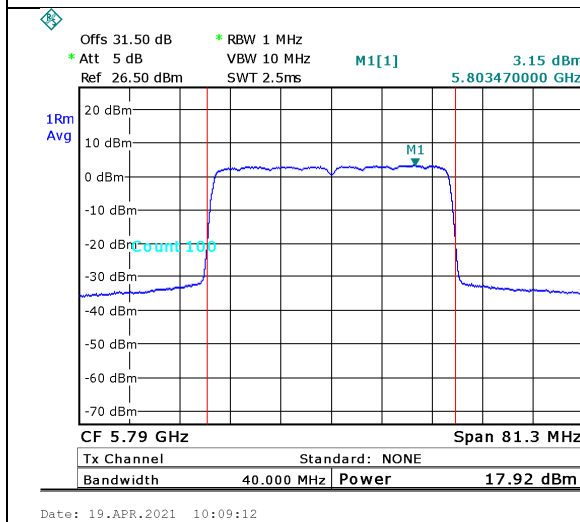


Figure 12. 5790.0MHz,40MHz BW, port1

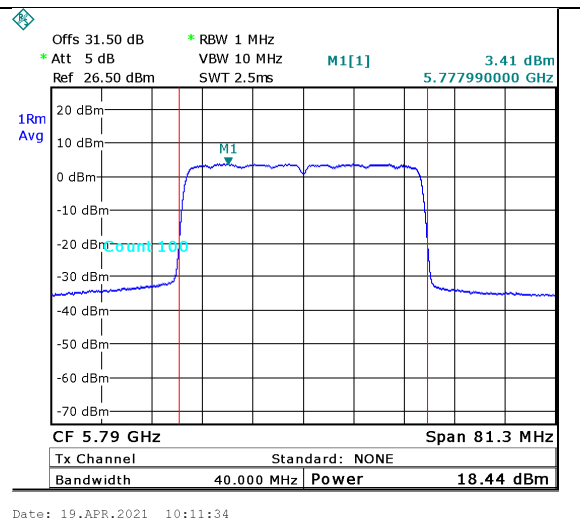


Figure 13. 5790.0MHz,40MHz BW, port2

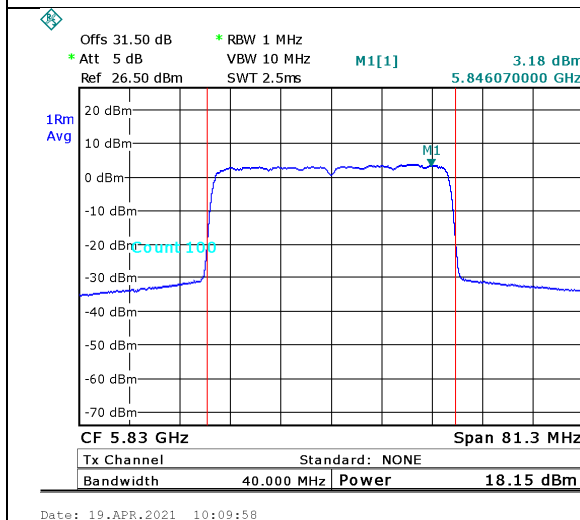


Figure 14. 5830.0MHz,40MHz BW, port1

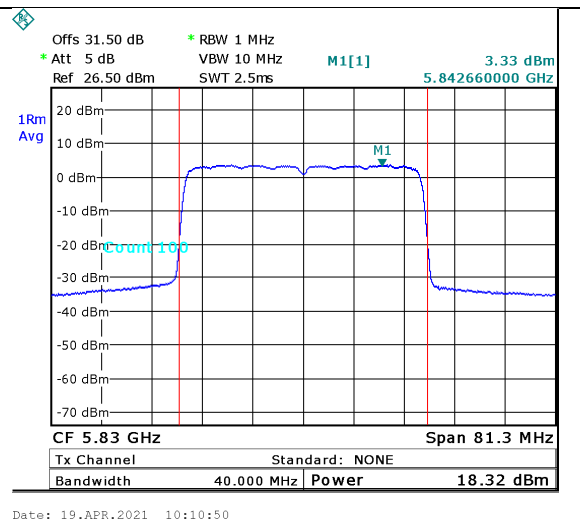


Figure 15. 5830.0MHz,40MHz BW, port2



## 4TX mode:

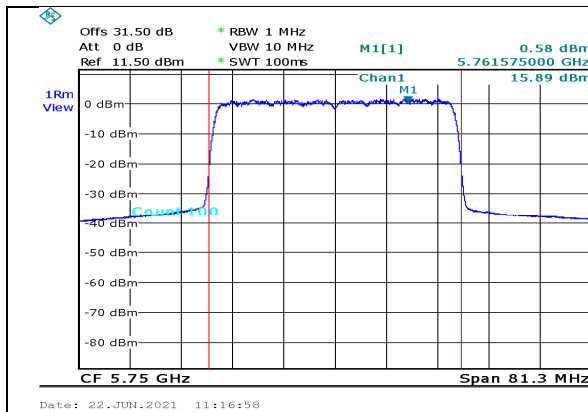


Figure 16. 5750.0MHz,40MHz BW, port1

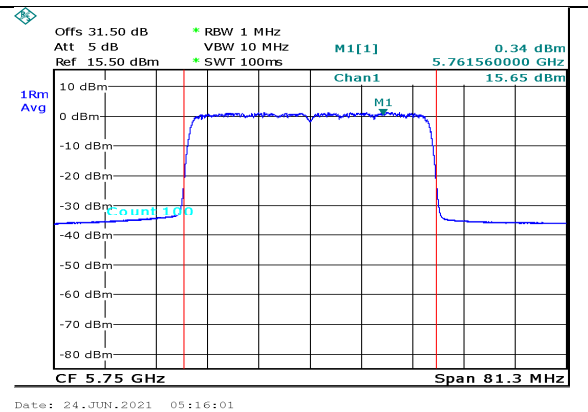


Figure 17. 5750.0MHz,40MHz BW, port2

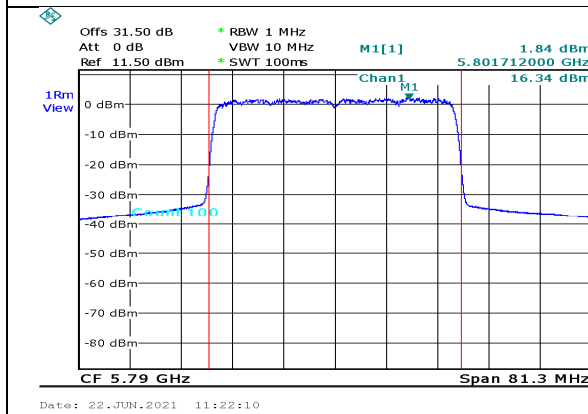


Figure 18. 5790.0MHz,40MHz BW, port1

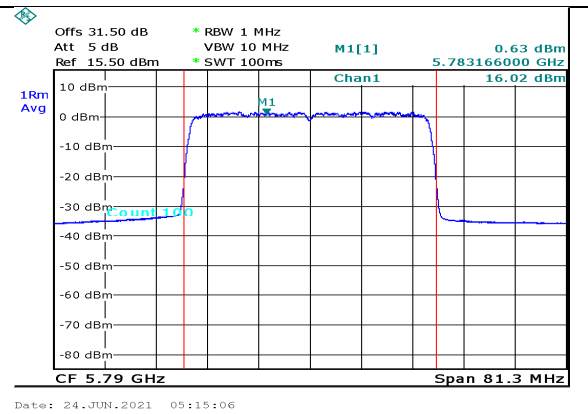


Figure 19. 5790.0MHz,40MHz BW, port2

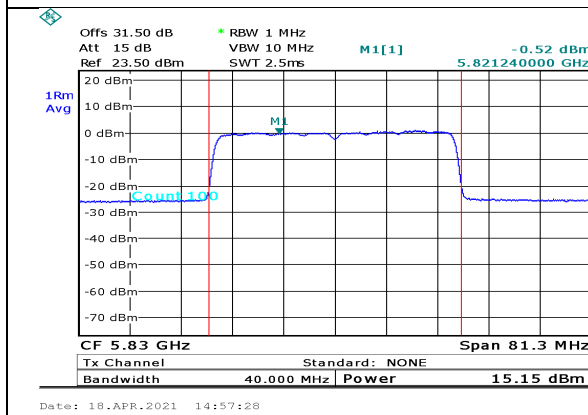


Figure 20. 5830.0MHz,40MHz BW, port1

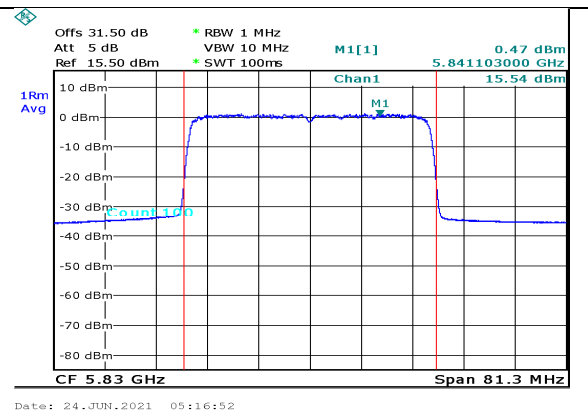


Figure 21. 5830.0MHz,40MHz BW, port2

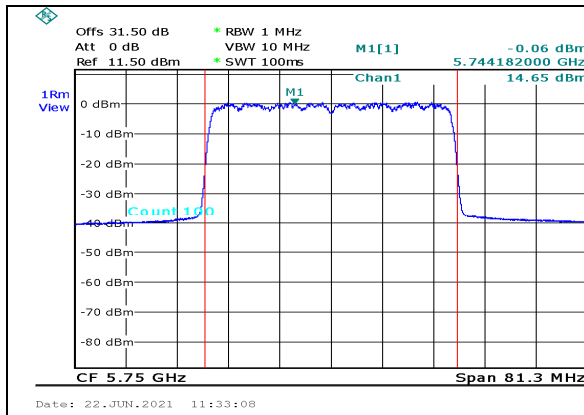


Figure 22. 5750.0MHz,40MHz BW, port3

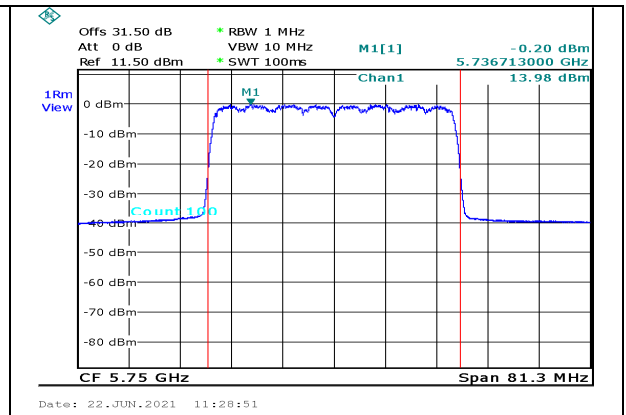


Figure 23. 5750.0MHz,40MHz BW, port4

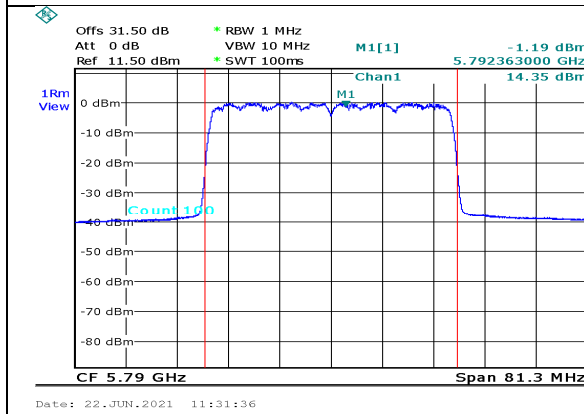


Figure 24. 5790.0MHz,40MHz BW, port3

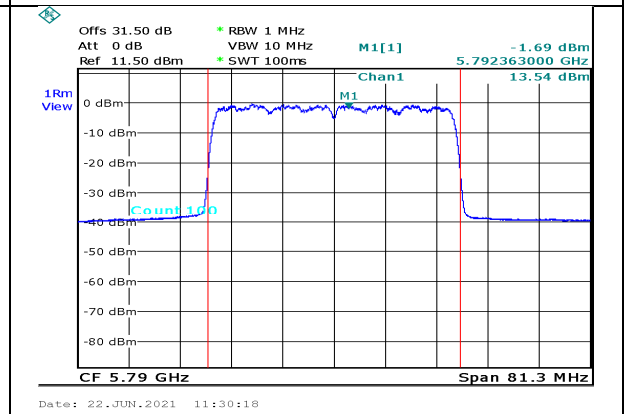


Figure 25. 5790.0MHz,40MHz BW, port4

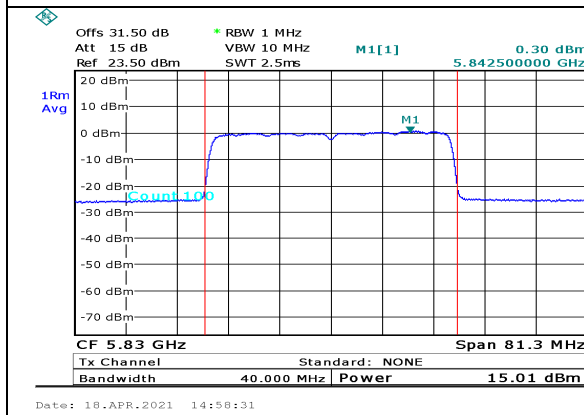


Figure 26. 5830.0MHz,40MHz BW, port3

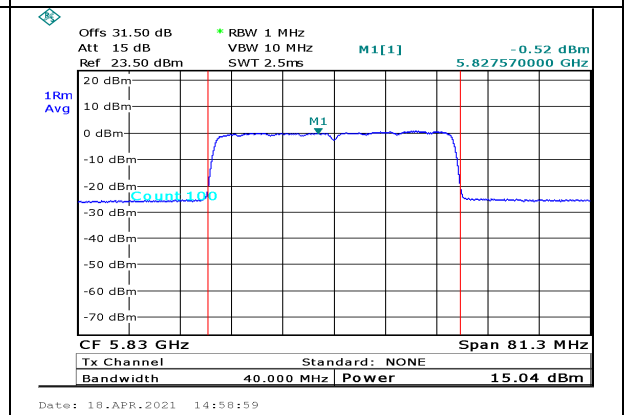


Figure 27. 5830.0MHz,40MHz BW, port4

### 5.5 Test Equipment Used; Maximum Peak Power Output

| Instrument        | Manufacturer    | Model     | Serial No. | Last Calibration Date | Next Calibration Due |
|-------------------|-----------------|-----------|------------|-----------------------|----------------------|
| Spectrum Analyzer | Rohde & Schwarz | FSL6      | 100194     | February 23, 2020     | February 23, 2021    |
| Low Loss cable    | Huber Shunner   | Sucofelex | 27504/4PEA | August 23, 2020       | August 23, 2021      |
| 30 dB attenuator  | MCL             | BW-S30W5  | 533        | August 23, 2020       | August 23, 2021      |

**Figure 28 Test Equipment Used**

## 6. Maximum Power Spectral Density (PSD)

### 6.1 Test Specification

FCC, Part 15, Subpart E, Section 407(a)(3)

RSS 247, Issue 2, Section 6.2.4

### 6.2 Test Procedure

(Temperature (22°C)/ Humidity (56%RH))

The E.U.T operation mode and test set-up are as described in Section 2 of this report. The E.U.T. antenna terminal was connected to the Spectrum Analyzer through an external attenuator and an appropriate coaxial cable (total loss= 31.5dB). Special attention was taken to prevent Spectrum Analyzer RF input overload. Spectrum setting done according KDB 789033 d02 v01 instructions (section F).

### 6.3 FCC and ISSED Test Limit

In addition, the maximum power spectral density shall not exceed 30 dBm in any 500-kHz band. If transmitting antennas of directional gain greater than 6 dBi are used, maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

### 6.4 Test Results

| BW    | Operation Frequency | PSD@RBW=1MHz   |                | Total Reading* | Limit | Margin |
|-------|---------------------|----------------|----------------|----------------|-------|--------|
|       |                     | Port 1 Reading | Port 2 Reading |                |       |        |
| (MHz) | (MHz)               | (dBm)          | (dBm)          | (dBm)          | (dBm) | (dB)   |
| 40.0  | 5750.0              | 2.1            | 3.2            | 2.6            | 30.0  | -27.4  |
|       | 5790.0              | 3.1            | 3.4            | 3.2            | 30.0  | -26.8  |
|       | 5830.0              | 3.2            | 3.3            | 3.2            | 30.0  | -26.8  |

\*Note: total reading (dBm) =  $10 \log [\text{port1(mW)} + \text{port2(mW)}]$ , total reading includes factor of conversion RBW 1MHz to 500kHz which is 3dB.

\*\*Note: RBW Conversion factor was calculated as the following equation:  $10 \log(500\text{kHz}/1\text{MHz}) = -3\text{dB}$

Figure 29 Test Results 2TX mode

| BW    | Operation Frequency | PSD@RBW=1MHz   |                |                |                | Total Reading* | Limit | Margin |
|-------|---------------------|----------------|----------------|----------------|----------------|----------------|-------|--------|
|       |                     | Port 1 Reading | Port 2 Reading | Port 3 Reading | Port 4 Reading |                |       |        |
| (MHz) | (MHz)               | (dBm)          | (dBm)          | (dBm)          | (dBm)          | (dBm)          | (mW)  | (W)    |
| 40.0  | 5750.0              | 0.6            | 0.34           | -0.06          | -0.2           | 3.2            | 30.0  | -26.8  |
|       | 5790.0              | 1.84           | 0.63           | -1.19          | -1.69          | 3.2            | 30.0  | -26.8  |
|       | 5830.0              | -0.52          | 0.47           | 0.3            | -0.52          | 3.0            | 30.0  | -27.0  |

\*Note: total reading (dBm) =  $10 \log [\text{port1(mW)} + \text{port2(mW)} + \text{port3(mW)} + \text{port4(mW)}]$  total reading includes factor of conversion RBW 1MHz to 500kHz which is 3dB

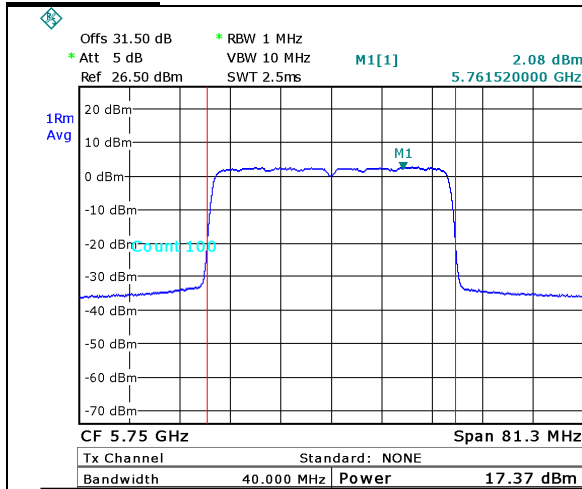
\*\*Note: RBW Conversion factor was calculated as the following equation:  $10 \log(500\text{kHz}/1\text{MHz}) = -3\text{dB}$

Figure 30 Test Results 4TX mode

JUDGMENT: Passed by 996 mW

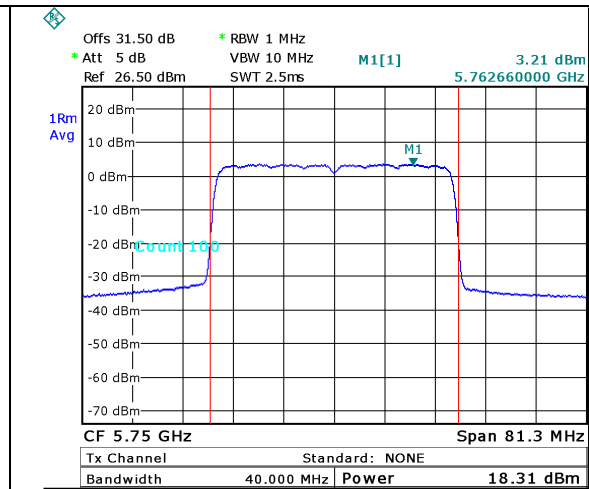
For additional information see *Figure 31* to *Figure 48*.

## 2TX mode:



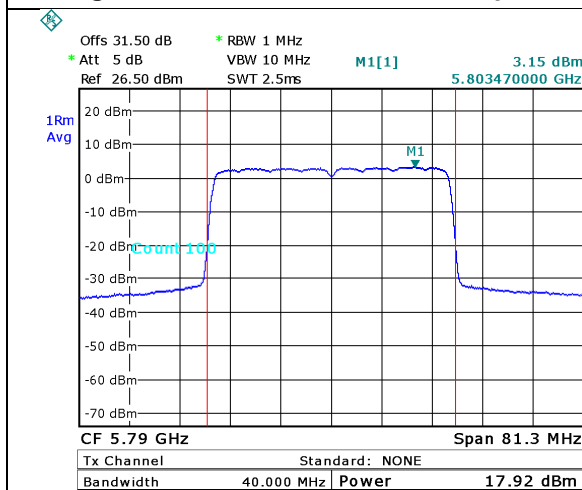
Date: 19.APR.2021 10:08:22

**Figure 31. 5750.0MHz, 40MHz BW, port1**



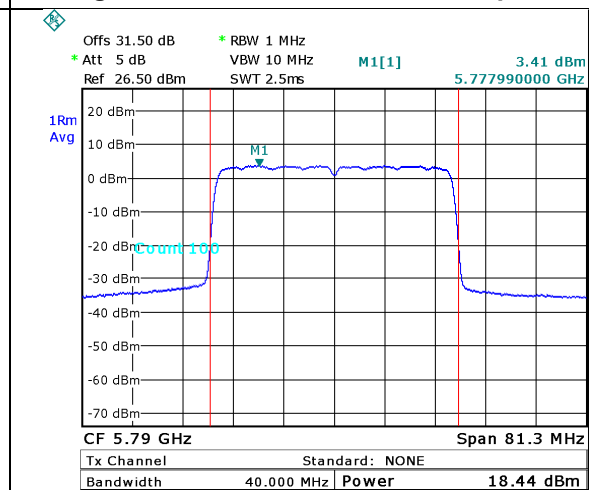
Date: 19.APR.2021 10:12:04

**Figure 32. 5750.0MHz, 40MHz BW, port2**



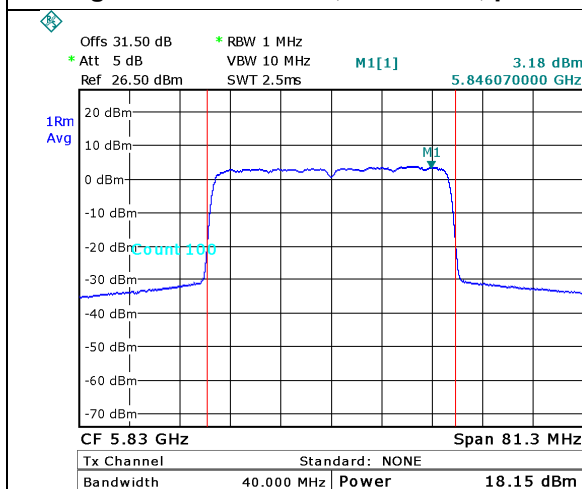
Date: 19.APR.2021 10:09:12

**Figure 33. 5790.0MHz, 40MHz BW, port1**



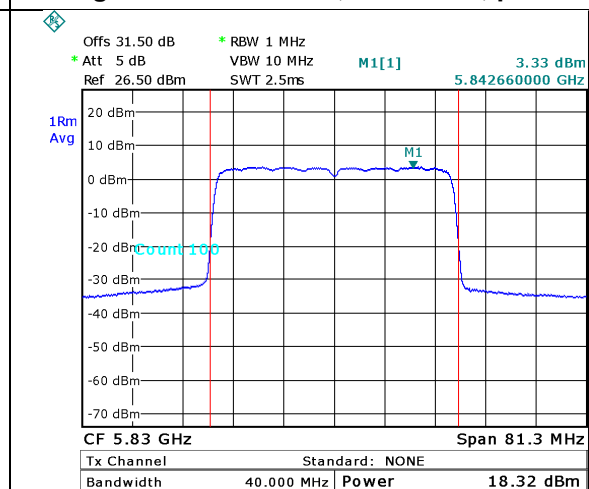
Date: 19.APR.2021 10:11:34

**Figure 34. 5790.0MHz, 40MHz BW, port2**



Date: 19.APR.2021 10:09:58

**Figure 35. 5830.0MHz, 40MHz BW, port1**



Date: 19.APR.2021 10:10:50

**Figure 36. 5830.0MHz, 40MHz BW, port2**



#### 4TX mode:

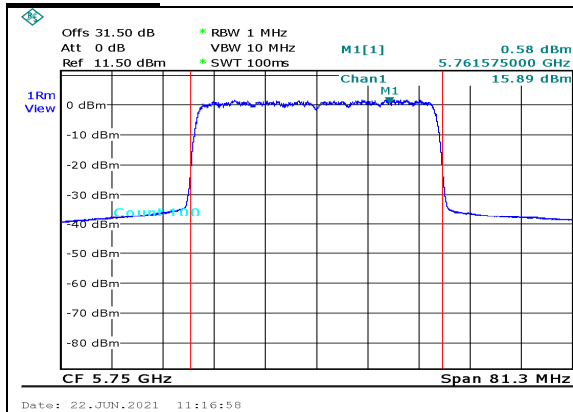


Figure 37. 5750.0MHz,40MHz BW, port1

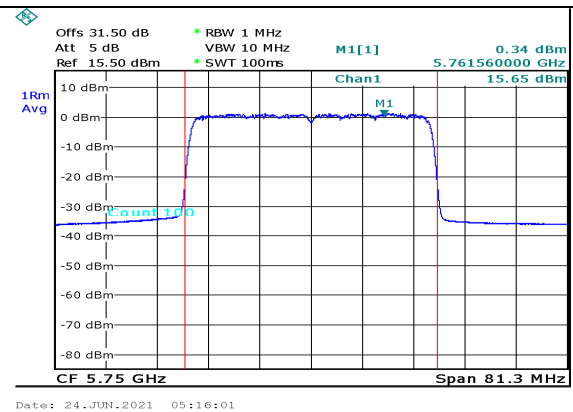


Figure 38. 5750.0MHz,40MHz BW, port2

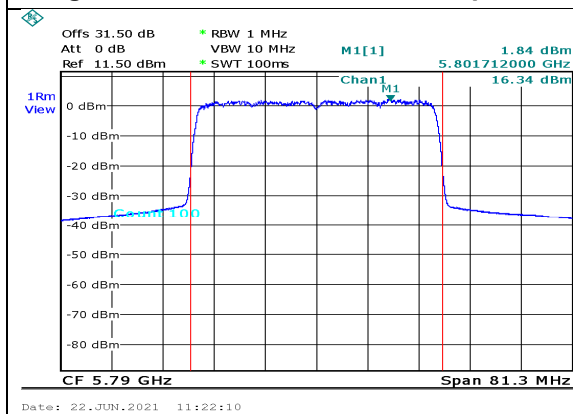


Figure 39. 5790.0MHz,40MHz BW, port1

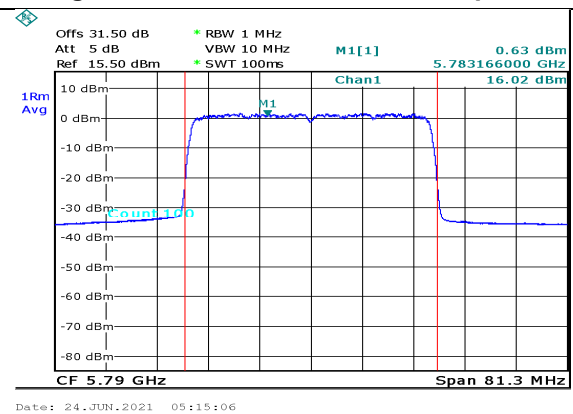


Figure 40. 5790.0MHz,40MHz BW, port2

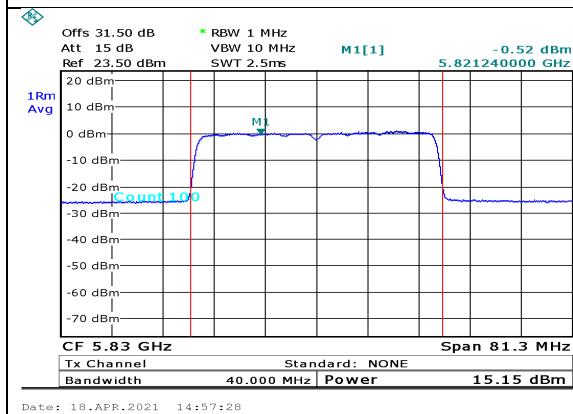


Figure 41. 5830.0MHz,40MHz BW, port1

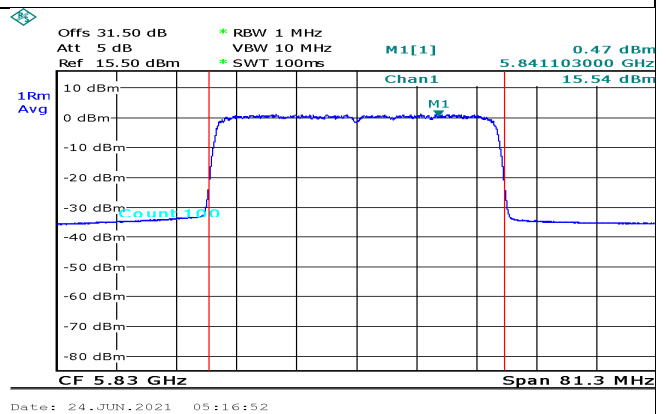


Figure 42. 5830.0MHz,40MHz BW, port2

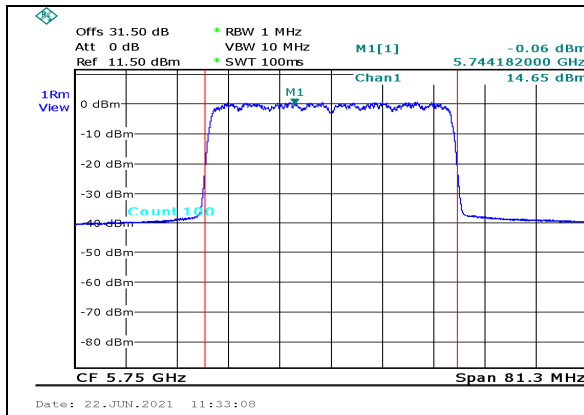


Figure 43. 5750.0MHz,40MHz BW, port3

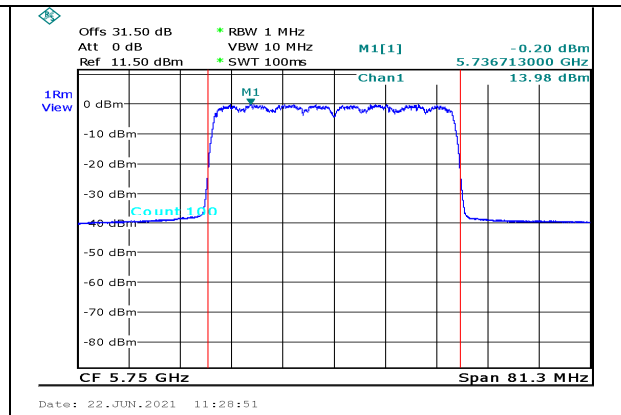


Figure 44. 5750.0MHz,40MHz BW, port4

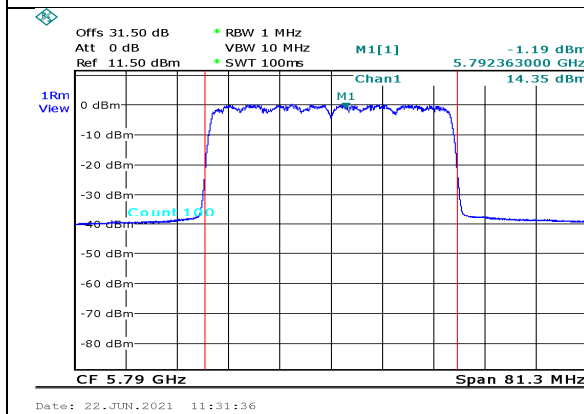


Figure 45. 5790.0MHz,40MHz BW, port3

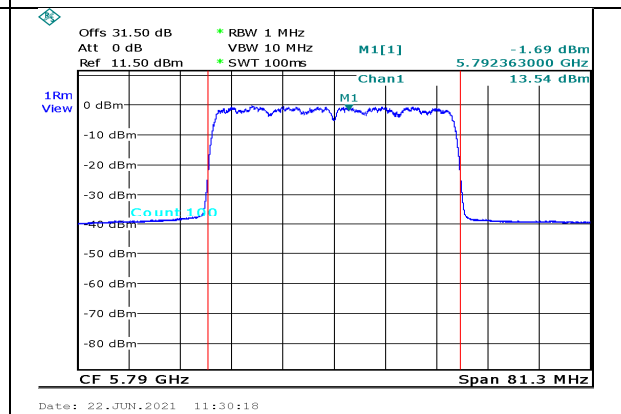


Figure 46. 5790.0MHz,40MHz BW, port4

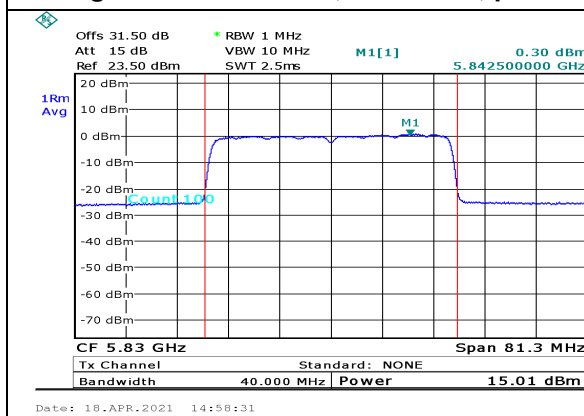


Figure 47. 5830.0MHz,40MHz BW, port3

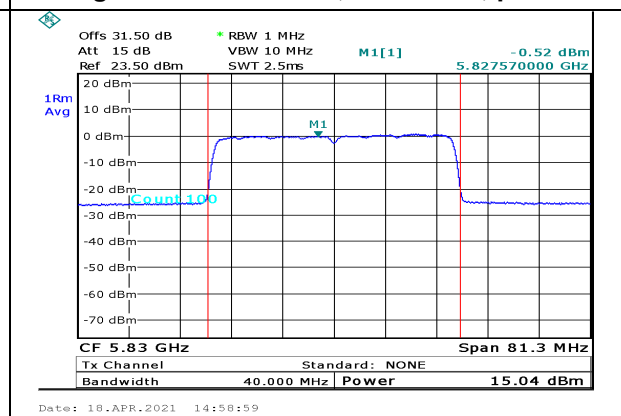


Figure 48. 5830.0MHz,40MHz BW, port4

### 6.5 Test Equipment Used; Transmitted Power Density

| Instrument        | Manufacturer    | Model     | Serial No. | Last Calibration Date | Next Calibration Due |
|-------------------|-----------------|-----------|------------|-----------------------|----------------------|
| Spectrum Analyzer | Rohde & Schwarz | FSL6      | 100194     | February 23, 2020     | February 23, 2021    |
| Low Loss cable    | Huber Shunner   | Sucofelex | 27504/4PEA | August 23, 2020       | August 23, 2021      |
| 30 dB attenuator  | MCL             | BW-S30W5  | 533        | August 23, 2020       | August 23, 2021      |

**Figure 49 Test Equipment Used**

## 7. Undesirable/Unwanted Emissions

### 7.1 Test Specification

Part 15, Subpart E, 15.407(b)

RSS 247, Issue 2, Section 6.2.4.2, RSS-Gen, Issue 5: 2018, Section 8.9

### 7.2 Test Procedure

(Temperature (22°C)/ Humidity (56%RH))

Testing was performed for both Radiated Emission for Emissions in the Non-Restricted Bands & in the Restricted Bands:

#### **For measurements between 0.009-30MHz:**

The E.U.T was tested inside the shielded room and placed on a non-metallic table, 0.8 meters above the ground. The emissions were measured at a distance of 3 meters. The readings were maximized by the turntable azimuth between 0-360°, and the antenna polarization.

The frequency range 0.009-30MHz was scanned.

#### **For measurements between 30-1000MHz:**

A preliminary measurement to characterize the E.U.T was performed inside the shielded room at a distance of 3 meters, using peak detection mode and broadband antennas. The preliminary measurements produced a list of the highest emissions. The E.U.T was then transferred to the open site and placed on a remote-controlled turntable. The E.U.T was placed on a non-metallic table, 0.8 meters above the ground. The emissions were measured at a distance of 3 meters. The readings were maximized by adjusting the antenna height between 1-4 meters, the turntable azimuth between 0-360°, and the antenna polarization. The frequency range 30-1000MHz was scanned and the list of the highest emissions was verified and updated accordingly.

#### **For measurements between 1-40GHz:**

The E.U.T was tested inside the shielded room and placed on a non-metallic table, 1.5 meters above the ground. The emissions were measured at a distance of 3 meters. The readings were maximized by the turntable azimuth between 0-360°, and the antenna polarization.

The frequency range 1.0-40.0 GHz was scanned.

Evaluation was performed for 40.0 MHz BW transmissions.

The highest radiations are described in the tables below.

### 7.3 FCC&ISED Test Limits

| Frequency ranges from band edge | EIRP limit                        | EIRP limit                         |
|---------------------------------|-----------------------------------|------------------------------------|
| (MHz)                           | (dBm/MHz)                         | (dB $\mu$ V/m/MHz@3m)              |
| $\pm 5.0$                       | 27.0 decreasing linearly to 15.6  | 122.2 decreasing linearly to 110.8 |
| $\pm 5.0 \pm 25.0$              | 15.6 decreasing linearly to 10.0  | 110.0 decreasing linearly to 105.2 |
| $\pm 25.0 \pm 75.0$             | 10.0 decreasing linearly to -27.0 | 105.2 decreasing linearly to 68.2  |
| $\pm 75.0$                      | -27.0.0                           | 68.2                               |

Figure 50 FCC and IC Non-Restricted Band Limits

| Frequency (MHz) | Field strength (microvolts/meter) | Measurement distance (meters) | Field strength (dB $\mu$ V/m) | Field strength* (dB $\mu$ V/m) @ 3m |
|-----------------|-----------------------------------|-------------------------------|-------------------------------|-------------------------------------|
| 0.009-0.490     | 2400/F(kHz)                       | 300                           | 48.5-13.8                     | 128.5-73.8                          |
| 0.490-1.705     | 24000/F(kHz)                      | 30                            | 33.8-23.0                     | 73.8-63.0                           |
| 1.705-30.0      | 30                                | 30                            | 29.5                          | 69.5                                |
| 30-88           | 100                               | 3                             | 40.0                          | 40.0                                |
| 88-216          | 150                               | 3                             | 43.5                          | 43.5                                |
| 216-960         | 200                               | 3                             | 46.0                          | 46.0                                |
| Above 960       | 500                               | 3                             | 54.0                          | 54.0                                |

\*The emission limits shown in the above table are based on measurements employing a CISPR quasi-peak detector except for the frequency bands 9-90 kHz, 110-490 kHz and above 1000 MHz. Radiated emission limits in these three bands are based on measurements employing an average detector. For average radiated emission measurements above 1000 MHz, there is also a limit corresponding to 20 dB above the indicated values in the table is specified when measuring with peak detector function.

Figure 51 FCC Restricted Band Limits

| Frequency (MHz) | Magnetic Field strength (microampere/meter) | Measurement distance (meters) | Magnetic Field strength (dB $\mu$ A/m) | Magnetic Field strength* (dB $\mu$ A/m)@3m |
|-----------------|---------------------------------------------|-------------------------------|----------------------------------------|--------------------------------------------|
| 0.009-0.490     | 6.37/F(kHz)                                 | 300                           | -3.0-(-37.7)                           | 77.0-42.2                                  |
| 0.490-1.705     | 63.7/F(kHz)                                 | 30                            | -17.7-(-28.5)                          | 22.3-11.4                                  |
| 1.705-30.0      | 0.08                                        | 30                            | -21.9                                  | 18.0                                       |
| Frequency (MHz) | Field strength (microvolts/meter)           | Measurement distance (meters) | Field strength (dB $\mu$ V/m)          | Field strength* (dB $\mu$ V/m)@3m          |
| 30-88           | 100                                         | 3                             | 40.0                                   | 40.0                                       |
| 88-216          | 150                                         | 3                             | 43.5                                   | 43.5                                       |
| 216-960         | 200                                         | 3                             | 46.0                                   | 46.0                                       |
| Above 960       | 500                                         | 3                             | 54.0                                   | 54.0                                       |

\*The emission limits shown in the above table are based on measurements employing a CISPR quasi-peak detector except for the frequency bands 9-90 kHz, 110-490 kHz and above 1000 MHz. Radiated emission limits in these three bands are based on measurements employing an average detector. For average radiated emission measurements above 1000 MHz, there is also a limit corresponding to 20 dB above the indicated values in the table is specified when measuring with peak detector function.

Figure 52 IC Restricted Band Limits

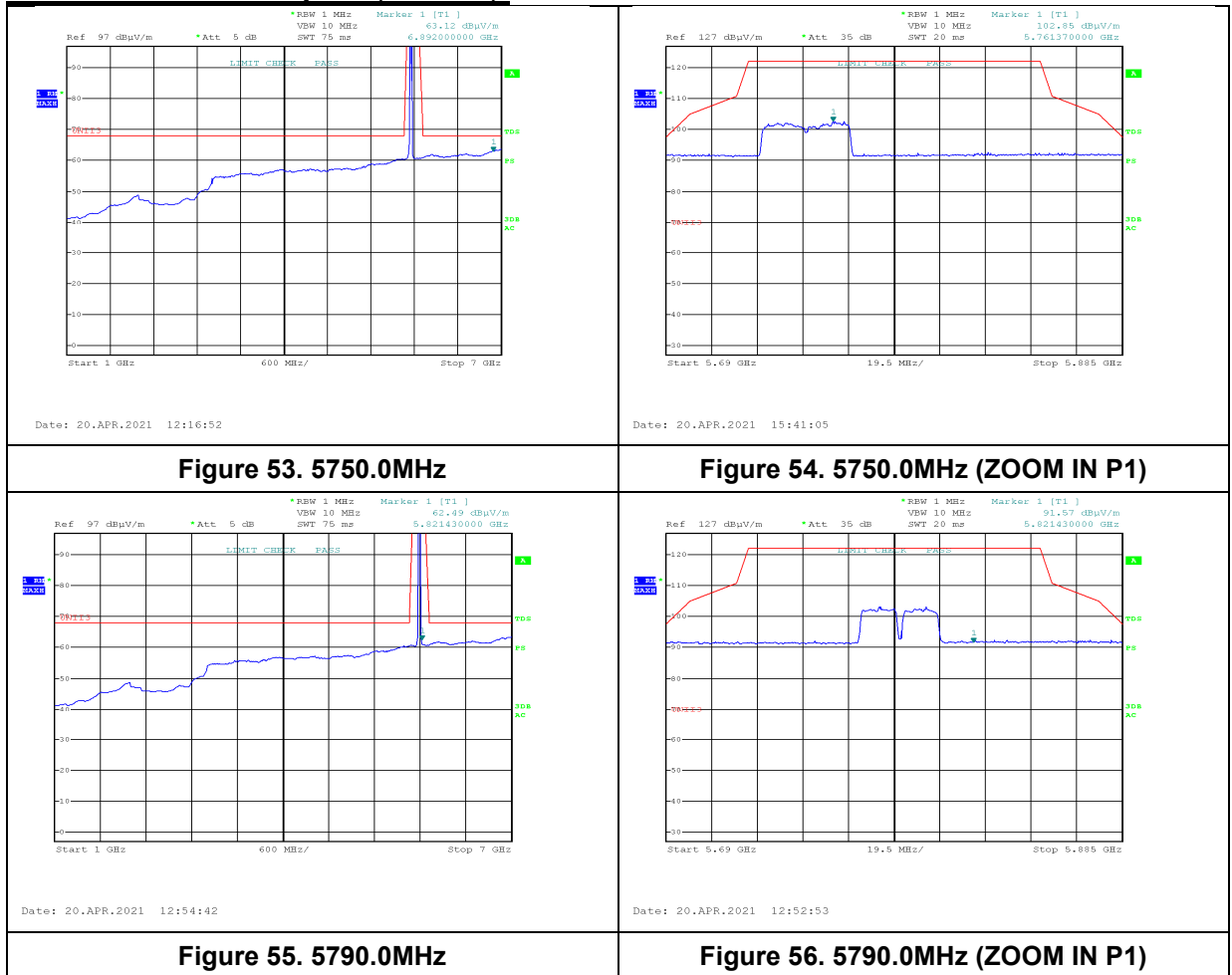
## 7.4 Test Results

JUDGEMENT: Passed

The EUT met the requirements of the Part 15, Subpart E, 15.407(b)  
RSS 247, Issue 2, Section 6.2.4.2, RSS-Gen, Issue 5: 2018, Section 8.9 specification.  
For additional information see *Figure 53* to *Figure 61*.

### 2TX mode

#### Non-Restricted Band plots (vertical):



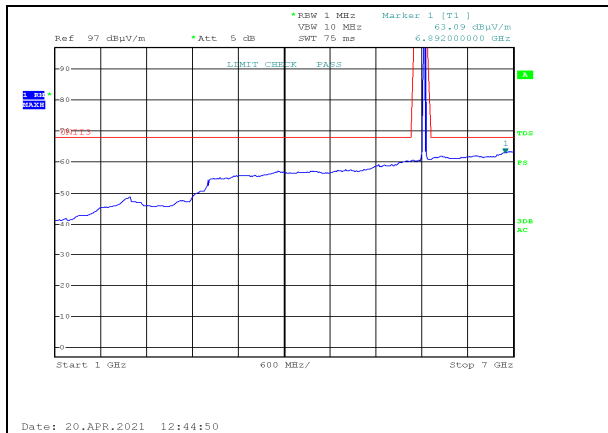


Figure 57. 5830.0MHz

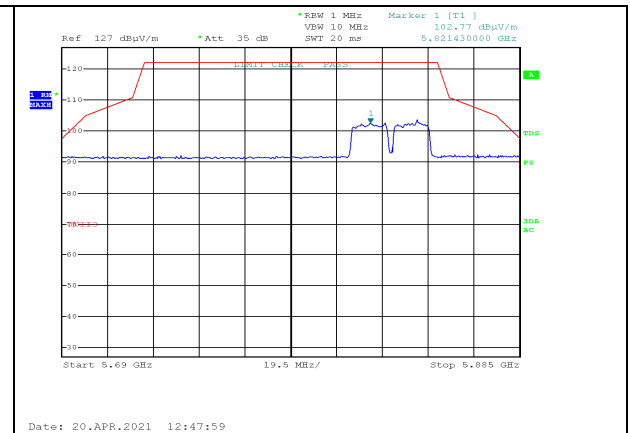


Figure 58. 5830.0MHz (ZOOM IN P1)

### Non-Restricted Band plots (horizontal):

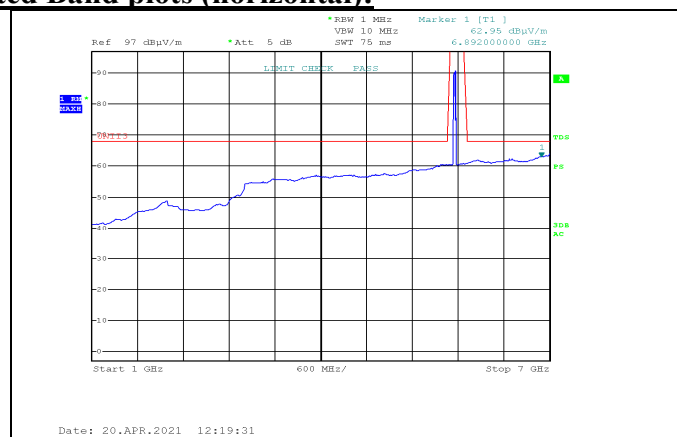


Figure 59. 5750.0MHz

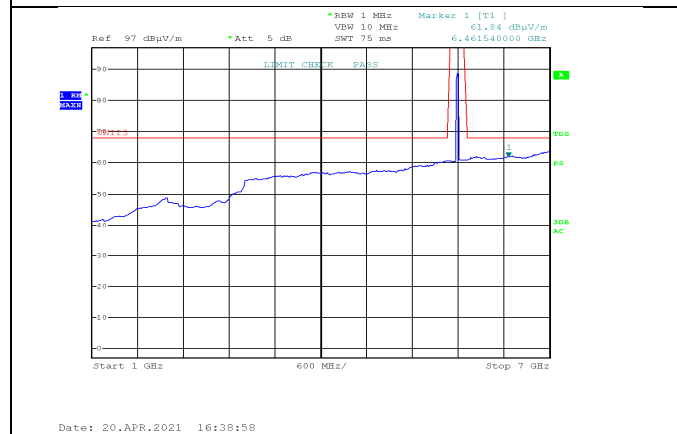
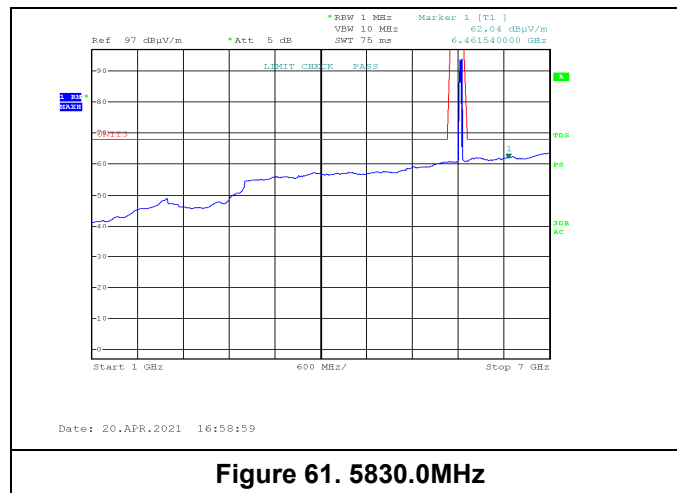


Figure 60. 5790.0MHz



## Radiated Emission

Specifications: Part 15, Subpart E, 15.407(b) RSS 247,  
Issue 2, Section 6.2.4.2; RSS-Gen, Issue 5: 2018, Section 8.9

Antenna Polarization: Horizontal/Vertical

Frequency Range: 9kHz to 40.0 GHz

Antenna Distance: 3m

Detector: Peak, Average

| Operation Frequency | Freq.                                                                                                         | Pol   | Peak Reading   | Peak Limit     | Peak Margin | Average Reading | Average Limit  | Average Margin |
|---------------------|---------------------------------------------------------------------------------------------------------------|-------|----------------|----------------|-------------|-----------------|----------------|----------------|
| (MHz)               | (MHz)                                                                                                         | (H/V) | (dB $\mu$ V/m) | (dB $\mu$ V/m) | (dB)        | (dB $\mu$ V/m)  | (dB $\mu$ V/m) | (dB)           |
| 5750.0              | No emissions detected above the spectrum analyzer noise level which have at least 10dB margin below the limit |       |                |                |             |                 |                |                |
| 5790.0              |                                                                                                               |       |                |                |             |                 |                |                |
| 5830.0              |                                                                                                               |       |                |                |             |                 |                |                |

**Figure 62. Radiated Emission Results for 40MHz BW**

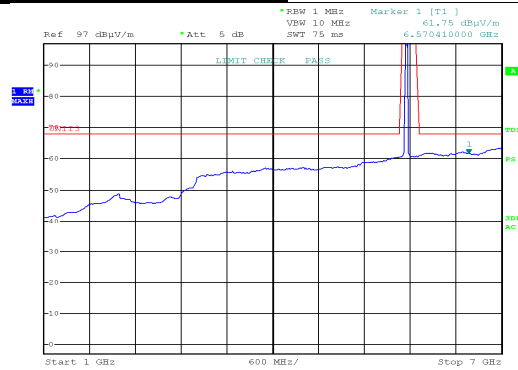
*Margin refers to the test results obtained minus specified requirement; thus a positive number indicates failure, and a negative result indicates that the product passes the test.*

*"Peak Amp" includes correction factor.*

*\* "Correction Factor" = Antenna Factor + Cable Loss- Low Noise Amplifier Gain*

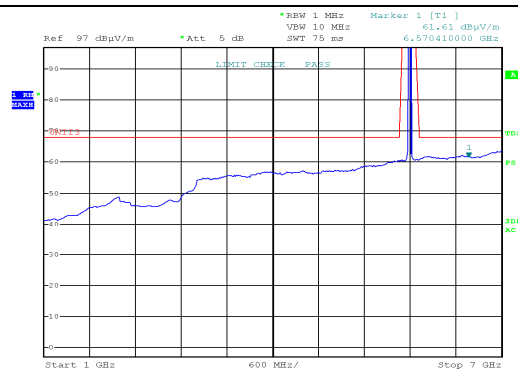
## 4TX mode

### Non-Restricted Band plots (vertical):



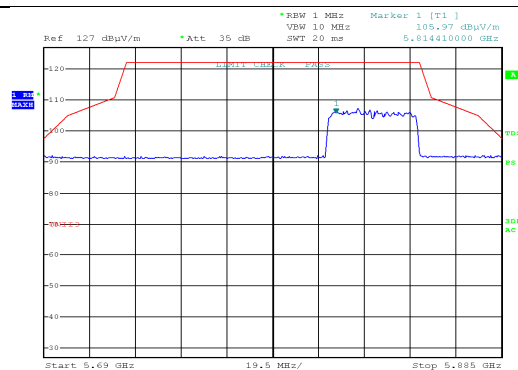
Date: 20.APR.2021 18:06:54

Figure 63. 5750.0MHz



Date: 20.APR.2021 18:01:56

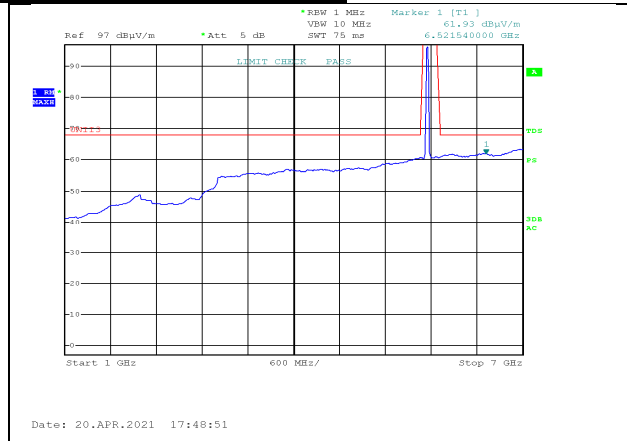
Figure 64. 5790.0MHz



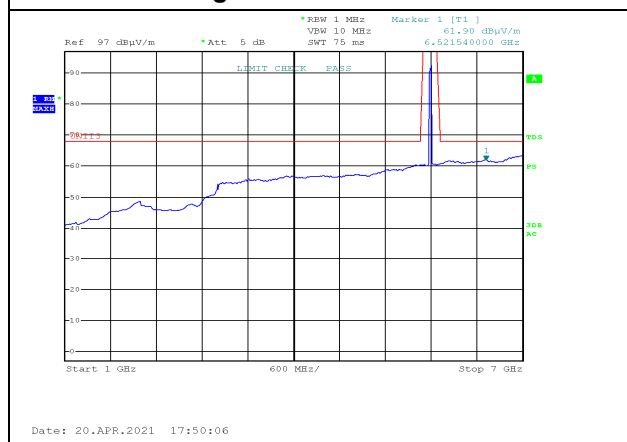
Date: 20.APR.2021 17:55:42

Figure 65. 5830.0MHz

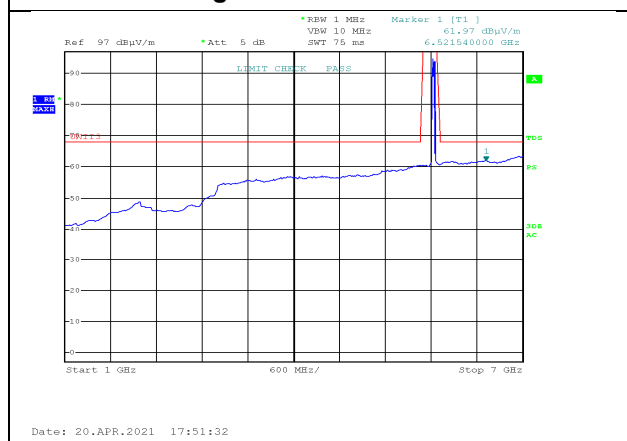
## Non-Restricted Band plots (horizontal):



**Figure 66. 5750.0MHz**



**Figure 67. 5790.0MHz**



**Figure 68. 5830.0MHz**

## Radiated Emission

Specifications: Part 15, Subpart E, 15.407(b) RSS 247,  
Issue 2, Section 6.2.4.2; RSS-Gen, Issue 5: 2018, Section 8.9

Antenna Polarization: Horizontal/Vertical

Frequency Range: 9kHz to 40.0 GHz

Antenna Distance: 3m

Detector: Peak, Average

| Operation Frequency | Freq.                                                                                                         | Pol   | Peak Reading | Peak Limit | Peak Margin | Average Reading | Average Limit | Average Margin |
|---------------------|---------------------------------------------------------------------------------------------------------------|-------|--------------|------------|-------------|-----------------|---------------|----------------|
| (MHz)               | (MHz)                                                                                                         | (H/V) | (dBμV/m)     | (dBμV/m)   | (dB)        | (dBμV/m)        | (dBμV/m)      | (dB)           |
| 5750.0              | No emissions detected above the spectrum analyzer noise level which have at least 10dB margin below the limit |       |              |            |             |                 |               |                |
| 5790.0              |                                                                                                               |       |              |            |             |                 |               |                |
| 5830.0              |                                                                                                               |       |              |            |             |                 |               |                |

**Figure 69. Radiated Emission Results for 40MHz BW**

*Margin refers to the test results obtained minus specified requirement; thus, a positive number indicates failure, and a negative result indicates that the product passes the test.*

*“Peak Amp” includes correction factor.*

*\* “Correction Factor” = Antenna Factor + Cable Loss- Low Noise Amplifier Gain*

### 7.5 Test Instrumentation Used, Undesirable Emissions

| Instrument                  | Manufacturer  | Model         | Serial No. | Last Calibration Date | Next Calibration Due |
|-----------------------------|---------------|---------------|------------|-----------------------|----------------------|
| EMI Receiver                | R&S           | ESCI7         | 100724     | February 23, 2020     | February 23, 2021    |
| EMI Receiver                | HP            | 8542E         | 3906A00276 | February 24, 2020     | February 24, 2021    |
| RF Filter Section           | HP            | 85420E        | 3705A00248 | February 24, 2020     | February 24, 2021    |
| EMC Analyzer                | HP            | 8593 EM       | 3826A00265 | February 22, 2020     | February 22, 2021    |
| Active Loop Antenna         | EMCO          | 6502          | 9506-2950  | May 03, 2020          | May 03, 2021         |
| Biconical Antenna           | EMCO          | 3110B         | 9912-3337  | April 27, 2020        | April 27, 2021       |
| Log Periodic Antenna        | EMCO          | 3146          | 9505-4081  | April 27, 2020        | April 27, 2022       |
| Horn Antenna                | ETS           | 3115          | 29845      | August 13, 2018       | August 13, 2021      |
| Horn Antenna                | ARA           | SWH-28        | 1007       | April 27, 2020        | April 27, 2022       |
| MicroWave System Amplifier  | HP            | 83006A        | 3104A00589 | August 23, 2020       | August 23, 2021      |
| RF Cable Chamber            | Commscope ORS | 0623 WBC-400  | G020132    | August 23, 2020       | August 23, 2021      |
| RF Cable Oats               | EIM           | RG214-11N(X2) | -          | August 04, 2020       | August 04, 2021      |
| Filter Band Pass 4-20 GHz   | Meuro         | MFL040120H50  | 902252     | November 02, 2020     | November 02, 2021    |
| Full Anechoic Civil Chamber | ETS           | S81           | SL 11643   | NCR                   | NCR                  |
| Antenna Mast                | ETS           | 2070-2        | 9608-1497  | NCR                   | NCR                  |
| Turntable                   | ETS           | 2087          | -          | NCR                   | NCR                  |
| Mast & Table Controller     | ETS/EMCO      | 2090          | 9608-1456  | NCR                   | NCR                  |

Figure 70 Test Equipment Used

## 8. Occupied Bandwidth

### 8.1 Test Specification

FCC, Part 2, Sub part J, Section 2.1049

RSS-Gen, Issue 5: 2014, Section 6.6

### 8.2 Test Procedure

(Temperature (22°C)/ Humidity (56%RH))

The E.U.T. operation mode and test set-up are as described in Section 2 of this report.

The E.U.T. antenna terminal was connected to the Spectrum Analyzer through an external attenuator and an appropriate coaxial cable (total loss= 31.5dB). Special attention was taken to prevent Spectrum Analyzer RF input overload.

The RBW set to the range of 1% -5% of the OBW. The span was set to 1.5-5 times of the OBW.99% occupied bandwidth function was set on.

### 8.3 Test Limit

N/A

### 8.4 Test Results

| Declared EBW | Operation Frequency | Reading |
|--------------|---------------------|---------|
| [MHz]        | (MHz)               | (MHz)   |
| 40.0         | 5750.0              | 38.0    |
| 40.0         | 5790.0              | 38.0    |
| 40.0         | 5830.0              | 38.0    |

Note: All reading were taken from the second port of the EUT

**Figure 71. Bandwidth Test Results**

JUDGEMENT: N/A

See additional information in *Figure 72 to Figure 74*.

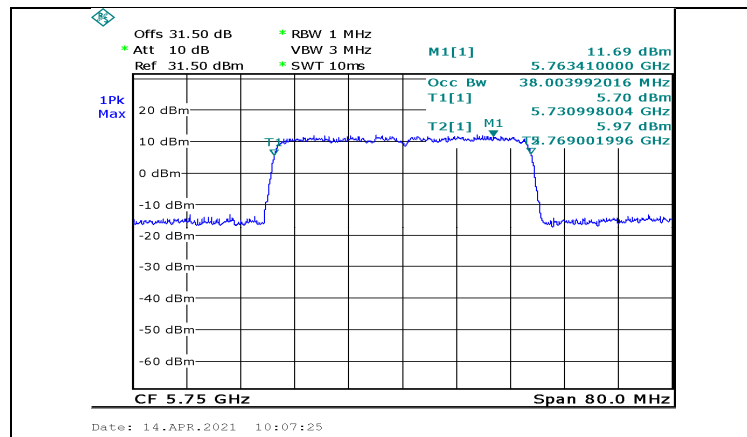


Figure 72. 5750.0 MHz

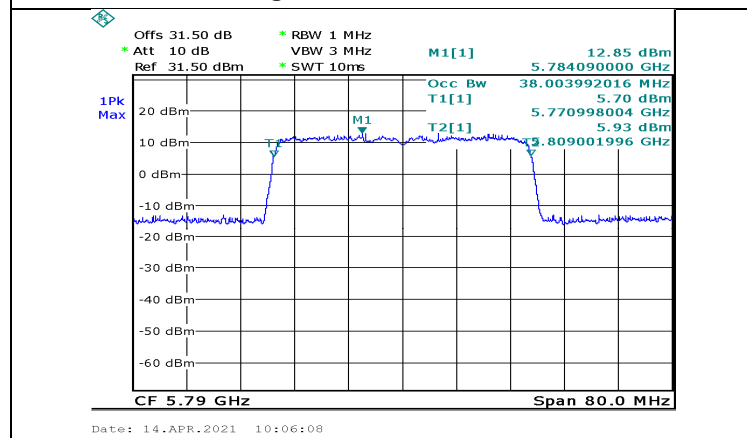


Figure 73. 5790.0 MHz

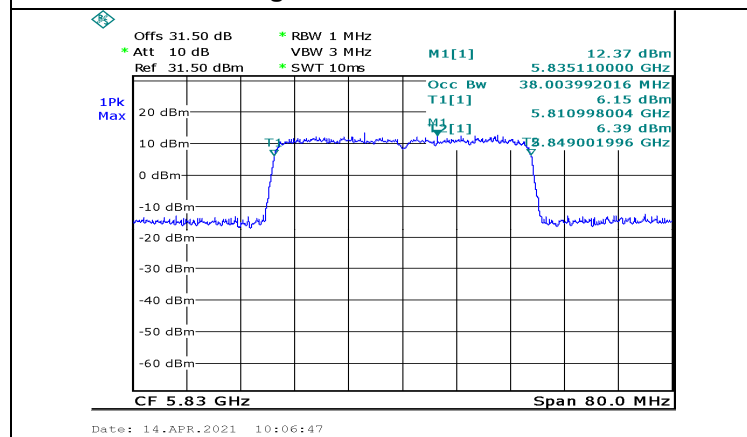


Figure 74. 5830.0 MHz

## 8.5 Test Equipment Used; Occupied Bandwidth

| Instrument        | Manufacturer    | Model     | Serial No. | Last Calibration Date | Next Calibration Due |
|-------------------|-----------------|-----------|------------|-----------------------|----------------------|
| Spectrum Analyzer | Rohde & Schwarz | FSL6      | 100194     | February 23, 2020     | February 23, 2021    |
| Low Loss cable    | Huber Shunner   | Sucofelex | 27504/4PEA | August 23, 2020       | August 23, 2021      |
| 30 dB attenuator  | MCL             | BW-S30W5  | 533        | August 23, 2020       | August 23, 2021      |

**Figure 75 Test Equipment Used**

## 9. 26dB Bandwidth

### 9.1 Test Specification

FCC, Part 2, Sub part J, Section 2.1049

RSS-Gen, Issue 5: 2014, Section 6.6

### 9.2 Test Procedure

(Temperature (22°C)/ Humidity (56%RH))

The E.U.T. operation mode and test set-up are as described in Section 2 of this report.

The E.U.T. antenna terminal was connected to the Spectrum Analyzer through an external attenuator and an appropriate coaxial cable (total loss= 22.0dB). Special attention was taken to prevent Spectrum Analyzer RF input overload.

The RBW set to the range of 1% of the EBW.

### 9.3 Test Limit

N/A

### 9.4 Test Results

| Declared EBW | Operation Frequency | Reading |
|--------------|---------------------|---------|
| [MHz]        | (MHz)               | (MHz)   |
| 40.0         | 5750.0              | 41.04   |
| 40.0         | 5790.0              | 41.2    |
| 40.0         | 5830.0              | 40.88   |

Figure 76. Bandwidth Test Results

JUDGEMENT: N/A

See additional information in *Figure 77* to *Figure 79*.

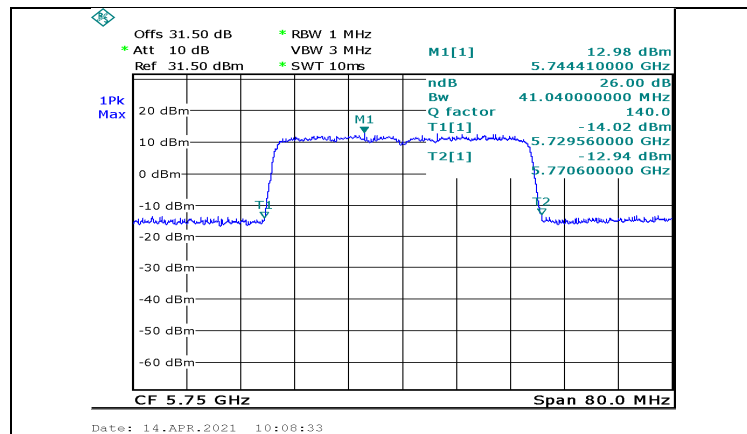


Figure 77. 5750.0 MHz

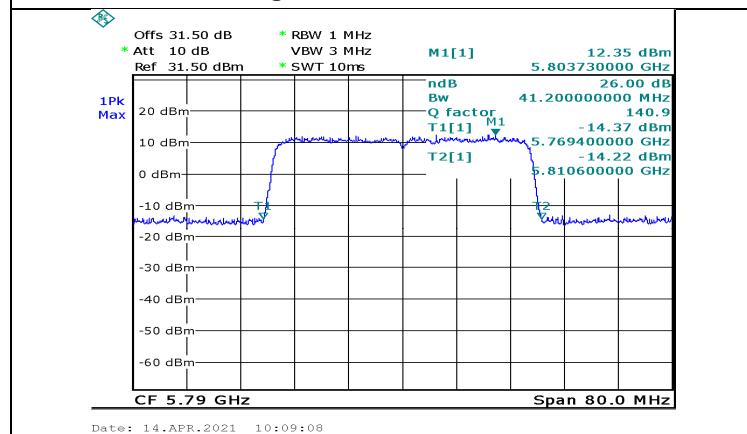


Figure 78. 5790.0 MHz

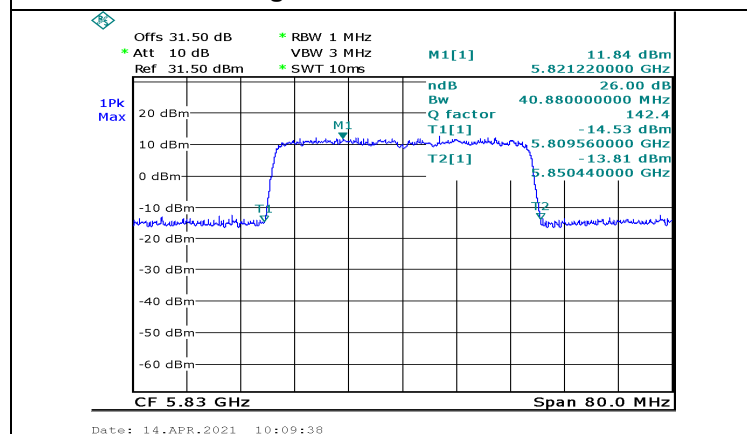


Figure 79. 5830.0 MHz

### 9.5 Test Equipment Used; 26dB Bandwidth

| Instrument        | Manufacturer    | Model     | Serial No. | Last Calibration Date | Next Calibration Due |
|-------------------|-----------------|-----------|------------|-----------------------|----------------------|
| Spectrum Analyzer | Rohde & Schwarz | FSL6      | 100194     | February 23, 2020     | February 23, 2021    |
| Low Loss cable    | Huber Shunner   | Sucofelex | 27504/4PEA | August 23, 2020       | August 23, 2021      |
| 30 dB attenuator  | MCL             | BW-S30W5  | 533        | August 23, 2020       | August 23, 2021      |

**Figure 80 Test Equipment Used**

## 10. 6 dB Minimum Bandwidth

### 10.1 Test Specification

FCC Part 15, Subpart E, Section 407(e)

RSS 247, Issue 2, Section 6.2.4

### 10.2 Test Procedure

(Temperature (22°C)/ Humidity (61%RH))

The E.U.T operation mode and test set-up are as described in Section 2 of this report.

The E.U.T. antenna terminal was connected to the Spectrum Analyzer through an external attenuator and an appropriate coaxial cable (total loss=32.0 dB). Special attention was taken to prevent Spectrum Analyzer RF input overload.

The spectrum bandwidth of the E.U.T. at the point of 6 dB below maximum peak power was measured and recorded. The RBW was set to 100 kHz.

### 10.3 Test Limit

For systems using digital modulation techniques that operate in the 5725-5850 MHz band. The minimum 6 dB bandwidth shall be at least 500 kHz.

### 10.4 Test Results

| Operation Frequency | Reading | Limit  |
|---------------------|---------|--------|
| (MHz)               | (MHz)   | (kHz)  |
| 5750.0              | 38.0    | >500.0 |
| 5790.0              | 38.0    | >500.0 |
| 5830.0              | 37.52   | >500.0 |

Figure 81 6 dB Minimum Bandwidth

JUDGEMENT: Passed

For additional information see *Figure 82 to Figure 84*.

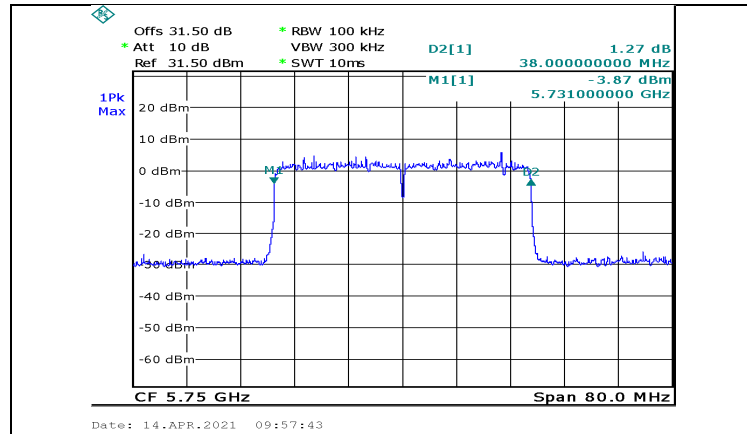


Figure 82. 5750.0 MHz

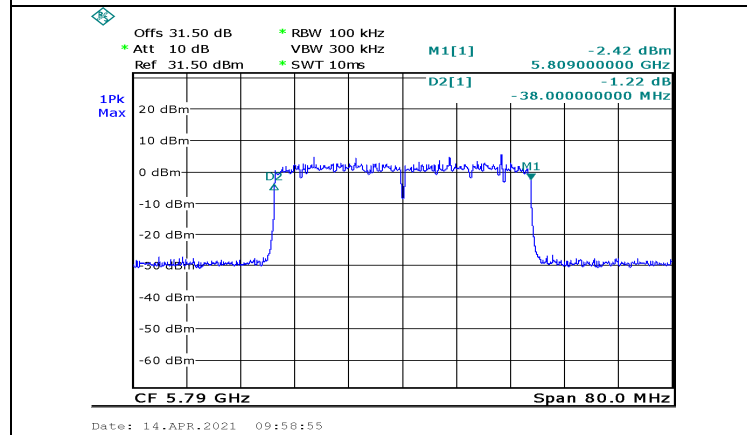


Figure 83. 5790.0 MHz

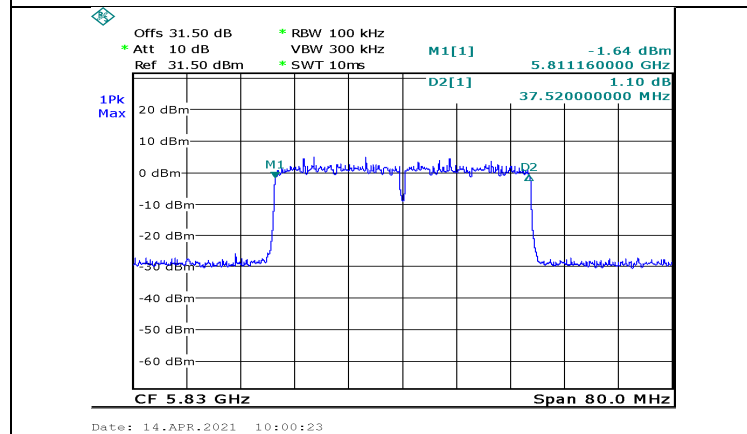


Figure 84. 5830.0 MHz

### 10.5 Test Equipment Used; 6dB Bandwidth

| Instrument        | Manufacturer    | Model     | Serial No. | Last Calibration Date | Next Calibration Due |
|-------------------|-----------------|-----------|------------|-----------------------|----------------------|
| Spectrum Analyzer | Rohde & Schwarz | FSL6      | 100194     | February 23, 2020     | February 23, 2021    |
| Low Loss cable    | Huber Shunner   | Sucofelex | 27504/4PEA | August 23, 2020       | August 23, 2021      |
| 30 dB attenuator  | MCL             | BW-S30W5  | 533        | August 23, 2020       | August 23, 2021      |

**Figure 85 Test Equipment Used**

## 11. Antenna Gain/Information

### 11.1 Test Specification

FCC, Part 15, Subpart B. section 212 (a)(iv)

### 11.2 Test Limit

The modular transmitter must comply with the antenna and transmission system requirements of §§15.203, 15.204(b) and 15.204(c). The antenna must either be permanently attached or employ a “unique” antenna coupler (at all connections between the module and the antenna, including the cable).

### 11.3 Test Results

Judgment: Passed

#### 2dBi antenna with RP-SMA connector type

| Model        | Type   | Antenna Gain | Impedance |
|--------------|--------|--------------|-----------|
| VT5-7.5G-R-1 | dipole | 2dBi         | 50Ω       |
| WSS002       | dipole | 2dBi         | 50Ω       |

## 12. APPENDIX A - CORRECTION FACTORS

### 12.1 For ITL #1911 OATS RF Cable

| Frequency<br>(MHz) | Cable Loss<br>(dB) |  | Frequency<br>(MHz) | Cable Loss<br>(dB) |
|--------------------|--------------------|--|--------------------|--------------------|
| 1.0                | 0.5                |  | 450.00             | 5.83               |
| 10.00              | 1.0                |  | 500.00             | 6.33               |
| 20.00              | 1.34               |  | 550.00             | 6.67               |
| 30.00              | 1.5                |  | 600.00             | 6.83               |
| 50.00              | 1.83               |  | 650.00             | 7.17               |
| 100.00             | 2.67               |  | 700.00             | 7.66               |
| 150.00             | 3.17               |  | 750.00             | 7.83               |
| 200.00             | 3.83               |  | 800.00             | 8.16               |
| 250.00             | 4.17               |  | 850.00             | 8.5                |
| 300.00             | 4.5                |  | 900.00             | 8.83               |
| 350.00             | 5.17               |  | 950.00             | 8.84               |
| 400.00             | 5.5                |  | 1000.00            | 9.0                |

## 12.2 For ITL #1840 Anechoic Chamber RF Cable

| Frequency (MHz) | Cable Loss (dB) |  | Frequency (MHz) | Cable Loss (dB) |
|-----------------|-----------------|--|-----------------|-----------------|
| 1000.0          | -1.4            |  | 10000.0         | -6.0            |
| 1500.0          | -1.7            |  | 10500.0         | -6.2            |
| 2000.0          | -2.0            |  | 11000.0         | -6.2            |
| 2500.0          | -2.3            |  | 11500.0         | -6.0            |
| 3000.0          | -2.6            |  | 12000.0         | -6.0            |
| 3500.0          | -2.8            |  | 12500.0         | -6.1            |
| 4000.0          | -3.1            |  | 13000.0         | -6.3            |
| 4500.0          | -3.3            |  | 13500.0         | -6.5            |
| 5000.0          | -3.6            |  | 14000.0         | -6.7            |
| 5500.0          | -3.7            |  | 14500.0         | -7.0            |
| 6000.0          | -4.0            |  | 15000.0         | -7.3            |
| 6500.0          | -4.4            |  | 15500.0         | -7.5            |
| 7000.0          | -4.7            |  | 16000.0         | -7.6            |
| 7500.0          | -4.8            |  | 16500.0         | -8.0            |
| 8000.0          | -5.0            |  | 17000.0         | -8.0            |
| 8500.0          | -5.1            |  | 17500.0         | -8.1            |
| 9000.0          | -5.6            |  | 18000.0         | -8.2            |
| 9500.0          | -5.8            |  |                 |                 |

### 12.3 For ITL # 1075 Active Loop Antenna

| Frequency<br>(MHz) | MAF<br>(dBs/m) | AF<br>(dB/m) |
|--------------------|----------------|--------------|
| 0.01               | -33.1          | 18.4         |
| 0.02               | -37.2          | 14.3         |
| 0.03               | -38.2          | 13.3         |
| 0.05               | -39.8          | 11.7         |
| 0.1                | -40.1          | 11.4         |
| 0.2                | -40.3          | 11.2         |
| 0.3                | -40.3          | 11.2         |
| 0.5                | -40.3          | 11.2         |
| 0.7                | -40.3          | 11.2         |
| 1                  | -40.1          | 11.4         |
| 2                  | -40.0          | 11.5         |
| 3                  | -40.0          | 11.5         |
| 4                  | -40.1          | 11.4         |
| 5                  | -40.2          | 11.3         |
| 6                  | -40.4          | 11.1         |
| 7                  | -40.4          | 11.1         |
| 8                  | -40.4          | 11.1         |
| 9                  | -40.5          | 11.0         |
| 10                 | -40.5          | 11.0         |
| 20                 | -41.5          | 10.0         |
| 30                 | -43.5          | 8.0          |

## 12.4 For ITL #1356 Biconical Antenna

| Frequency<br>(MHz) | AF<br>(dB/m) |
|--------------------|--------------|
| 30                 | 13.00        |
| 35                 | 10.89        |
| 40                 | 10.59        |
| 45                 | 10.63        |
| 50                 | 10.12        |
| 60                 | 9.26         |
| 70                 | 7.74         |
| 80                 | 6.63         |
| 90                 | 8.23         |
| 100                | 11.12        |
| 120                | 13.16        |
| 140                | 13.07        |
| 160                | 14.80        |
| 180                | 16.95        |
| 200                | 17.17        |



**12.5 For ITL # 1349 Log Periodic Antenna**

| Frequency<br>(MHz) | AF<br>(dB/m) |
|--------------------|--------------|
| 200                | 11.58        |
| 250                | 12.04        |
| 300                | 14.76        |
| 400                | 15.55        |
| 500                | 17.85        |
| 600                | 18.66        |
| 700                | 20.87        |
| 800                | 21.15        |
| 900                | 22.32        |
| 1000               | 24.22        |

## 12.6 For ITL # 1352 1-18 GHz Horn Antenna

| Frequency (MHz) | AF (dB/m) |  | Frequency (MHz) | AF (dB/m) |
|-----------------|-----------|--|-----------------|-----------|
| 0.75            | 25        |  | 9.5             | 38        |
| 1.0             | 23.5      |  | 10.0            | 38.5      |
| 1.5             | 26.0      |  | 10.5            | 38.5      |
| 2.0             | 29.0      |  | 11.0            | 38.5      |
| 2.5             | 27.5      |  | 11.5            | 38.5      |
| 3.0             | 30.0      |  | 12.0            | 38.0      |
| 3.5             | 31.5      |  | 12.5            | 38.5      |
| 4.0             | 32.5      |  | 13.0            | 40.0      |
| 4.5             | 32.5      |  | 13.5            | 41.0      |
| 5.0             | 33.0      |  | 14.0            | 40.0      |
| 5.5             | 35.0      |  | 14.5            | 39.0      |
| 6.0             | 36.5      |  | 15.0            | 38.0      |
| 6.5             | 36.5      |  | 15.5            | 37.5      |
| 7.0             | 37.5      |  | 16.0            | 37.5      |
| 7.5             | 37.5      |  | 16.5            | 39.0      |
| 8.0             | 37.5      |  | 17.0            | 40.0      |
| 8.5             | 38.0      |  | 17.5            | 42.0      |
| 9.0             | 37.5      |  | 18.0            | 42.5      |

## 12.7 For ITL # 1353 18-26.5 GHz Horn Antenna

### CALIBRATION DATA

3 m distance

| Frequency MHZ | Measured antenna factor dB/m |
|---------------|------------------------------|
| 18000         | 32.4                         |
| 18500         | 32.0                         |
| 19000         | 32.3                         |
| 19500         | 32.4                         |
| 20000         | 32.3                         |
| 20500         | 32.8                         |
| 21000         | 32.8                         |
| 21500         | 32.7                         |
| 22000         | 33.1                         |
| 22500         | 33.0                         |
| 23000         | 33.1                         |
| 23500         | 33.8                         |
| 24000         | 33.5                         |
| 24500         | 33.5                         |
| 25000         | 33.8                         |
| 25500         | 33.9                         |
| 26000         | 34.2                         |
| 26500         | 34.7                         |

<sup>1)</sup> The antenna factor shall be added to receiver reading in dB $\mu$ V to obtain field strength in dB $\mu$ V/m.

## 12.8 For ITL # 1777 26.5-40 GHz Horn Antenna

