

# Wireless Test Report- 376463-1R1TRFWL

**376463-1R1TRFWL**

Date of issue: April 8, 2019

Applicant:

**Blinq Wireless, Inc**

Product:

**Base station**

Model:

**FW-300i**

FCC ID:

**ROR00000006**

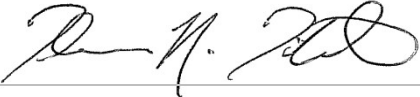
Specifications:

◆ **FCC 47 CFR Part 96**

Citizens Broadband Radio Service

## Test location

|                        |                                                                        |                                                                                     |                                                                                                                |                                                                                          |
|------------------------|------------------------------------------------------------------------|-------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------|
| Company name           | Nemko Canada Inc.                                                      |                                                                                     |                                                                                                                |                                                                                          |
| Facilities             | Ottawa site:<br>303 River Road<br>Ottawa, Ontario<br>Canada<br>K1V 1H2 | Montréal site:<br>292 Labrosse Avenue<br>Pointe-Claire, Québec<br>Canada<br>H9R 5L8 | Cambridge site:<br><b>1-130 Saltsman Drive</b><br><b>Cambridge, Ontario</b><br><b>Canada</b><br><b>N3E 0B2</b> | Almonte site:<br>1500 Peter Robinson Road<br>West Carleton, Ontario<br>Canada<br>K0A 1L0 |
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|                        |                                                                        |                                                                                     |                                                                                                                |                                                                                          |
| Test site registration | <b>Organization</b>                                                    | <b>Recognition numbers and location</b>                                             |                                                                                                                |                                                                                          |
|                        | FCC/ISED                                                               | CA2040 (Ottawa/Almonte); CA2041 (Montreal); <b>CA0101 (Cambridge)</b>               |                                                                                                                |                                                                                          |
| Website                | <a href="http://www.nemko.com">www.nemko.com</a>                       |                                                                                     |                                                                                                                |                                                                                          |

|                       |                                                                                     |
|-----------------------|-------------------------------------------------------------------------------------|
| Tested by             | Fahar Abdul Sukkoor                                                                 |
| Reviewed by           | Tom Tidwell, Director, Nemko Direct for Telecom                                     |
| Date                  | April 30, 2020                                                                      |
| Signature of reviewer |  |

## Limits of responsibility

Note that the results contained in this report relate only to the items tested and were obtained in the period between the date of initial receipt of samples and the date of issue of the report.

This test report has been completed in accordance with the requirements of ISO/IEC 17025. All results contain in this report are within Nemko Canada's ISO/IEC 17025 accreditation.

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## Section 1. Report summary

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### 1.1 Applicant and manufacturer

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|                 |                             |
|-----------------|-----------------------------|
| Company name    | Bling Wireless, Inc.        |
| Address         | 140 Renfrew Drive Suite 205 |
| City            | Markham                     |
| Province/State  | ON                          |
| Postal/Zip code | L3R 6B3                     |
| Country         | Canada                      |

### 1.2 Test specifications

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|                    |                                  |
|--------------------|----------------------------------|
| FCC 47 CFR Part 96 | Citizens Broadband Radio Service |
|--------------------|----------------------------------|

### 1.3 Test method

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|                                               |                                                                                                         |
|-----------------------------------------------|---------------------------------------------------------------------------------------------------------|
| ANSI C63.26-2015                              | American National Standard for Compliance Testing of Transmitters Used in Licensed Radio Services       |
| 940660 D01 Part 96 CBRS Eqpt v01              | Certification and test procedures for citizens broadband radio service devices authorized under Part 96 |
| 662911 D01 Multiple Transmitter Output v02r01 | Emissions Testing of Transmitters with Multiple Outputs in the Same Band                                |

### 1.4 Statement of compliance

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In the configuration tested, the EUT was found compliant.

Testing was completed against all relevant requirements of the test standard. Results obtained indicate that the product under test complies in full with the requirements tested. The test results relate only to the items tested.

See "Summary of test results" for full details.

### 1.5 Exclusions

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This test report covers only general requirements of Part 96. For SAS and functionality please refer to the WINNF test report.

### 1.6 Test report revision history

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| Revision # | Details of changes made to test report                                 |
|------------|------------------------------------------------------------------------|
| TRF        | Original report issued                                                 |
| R1TRF      | Power settings table modified and changes to section 8.1 has been made |

## Section 2. Summary of test results

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### 2.1 FCC Part 96 test results

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| Part          | Test description                          | Verdict |
|---------------|-------------------------------------------|---------|
| \$96.41(e)(3) | Emission and occupied bandwidth           | Pass    |
| \$96.41(b)    | Power limits                              | Pass    |
| \$96.41(e)(1) | 3.5 GHz Emissions and Interference Limits | Pass    |
| \$96.41(e)(2) | Additional protection levels              | Pass    |
| \$96.41(g)    | The peak-to-average power ratio (PAPR)    | Pass    |
| \$2.1055      | Frequency stability                       | Pass    |

Notes: None

## Section 3. Equipment under test (EUT) details

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### 3.1 Sample information

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|                        |               |
|------------------------|---------------|
| Receipt date           | July 15, 2019 |
| Nemko sample ID number | 1             |

### 3.2 EUT information

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|                 |              |
|-----------------|--------------|
| Product name    | Base station |
| Model           | FW-300i      |
| Serial number   | A180831015   |
| Revision number | N/A          |

### 3.3 Technical information

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|                           |                                                       |
|---------------------------|-------------------------------------------------------|
| Operating band            | 3550–3700 MHz                                         |
| Operating frequencies     | 3550–3700 MHz                                         |
| Modulation type           | OFDM using QPSK and 64 QAM modulations                |
| Channel bandwidth         | 10 MHz, 20 MHz, 30 MHz, 40 MHz, 60 MHz                |
| Occupied bandwidth (99 %) | 8.948 MHz, 17.89 MHz, 28.65 MHz, 37.74 MHz, 57.52 MHz |
| Emission designator       | W7D                                                   |
| Power requirements        | 48 V <sub>DC</sub> via 120Vac power adaptor           |
| MIMO type                 | 2 × 2 with completely uncorrelated type of signal     |
| Antenna information       | BLiNQ Antenna, Cross-polarized, 17 dBi gain           |

### 3.4 Product description and theory of operation

The BLINQ FW-300i system is a tri-sector and tri-carrier Long-Term Evolution (LTE) Evolved Node B (eNB) with the capability to operate in the following bands: 42, 43, 46 and 48 (Citizens Broadband Radio Service (CBRS)). With a distinctive feature set and integration level, the FW-300i brings an ideal solution to an “install anywhere” micro-base transceiver station (micro-BTS) that fully serves private networks, fixed wireless access and mobility use cases.

### 3.5 EUT exercise details

The EUT was controlled from laptop via Ethernet using Tera term. Link

Power settings:

| Carrier Configuration |                  | 1CC   |       | 2CC           |               | 3CC           |               |
|-----------------------|------------------|-------|-------|---------------|---------------|---------------|---------------|
| BW (MHz)              |                  | 10    | 20    | 10(*)         | 20(*)         | 10(*)         | 20(*)         |
| Aggregated BW (MHz)   |                  | 10    | 20    | 20            | 40            | 30            | 60            |
| FW300i HP - Sector 0  | Power set per BW | 30dBm | 30dBm | Not available | Not available | Not available | Not available |
|                       | Power per 10MHz  | 30dBm | 27dBm |               |               |               |               |
| FW300i HP - Sector 1  | Power set per BW | 30dBm | 33dBm | 30dBm         | 30dBm         | 29dBm         | 29dBm(**)     |
|                       | Power per 10MHz  | 30dBm | 30dBm | 30dBm         | 27dBm         | 29dBm         | 26dBm         |
| FW300i HP - Sector 2  | Power set per BW | 30dBm | 30dBm | Not available | Not available | Not available | Not available |
|                       | Power per 10MHz  | 30dBm | 27dBm |               |               |               |               |

(\*) Transmit bandwidth per single carrier.

(\*\*) For 3CC operation mode, the transmit power setting per carrier is 29dBm as long as the individual 20MHz carriers are operating within the 3575MHz – 3675MHz operational band. In order to operate on the Low or the High 20MHz Channels, meaning using the central carrier frequency at 3565MHz or 3685MHz, the transmit power per that special carrier should be set at maximum 26dBm / 20MHz (equivalent with 23dBm / 10MHz).

3.6 EUT setup diagram

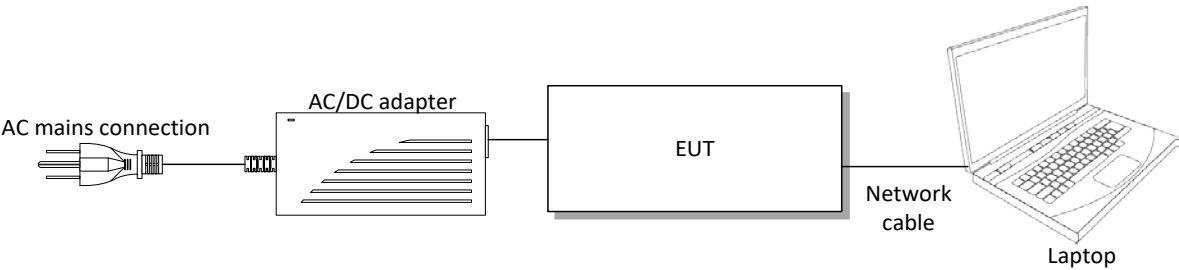


Figure 3.6-1: Setup diagram

3.7 EUT sub assemblies

Table 3.7-1: EUT support equipment

| Description   | Brand name    | Model/Part number | Serial number |
|---------------|---------------|-------------------|---------------|
| Power adaptor | Mean Well     | HLG-240H-48       | HB81K11319    |
| laptop        | Dell Latitude | E6440             | FA002914      |

## Section 4. Engineering considerations

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### 4.1 Modifications incorporated in the EUT

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There were no modifications performed to the EUT during this assessment.

### 4.2 Technical judgment

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None

### 4.3 Deviations from laboratory tests procedures

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No deviations were made from laboratory procedures.

## Section 5. Test conditions

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### 5.1 Atmospheric conditions

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|                   |               |
|-------------------|---------------|
| Temperature       | 15–30 °C      |
| Relative humidity | 20–75 %       |
| Air pressure      | 860–1060 mbar |

When it is impracticable to carry out tests under these conditions, a note to this effect stating the ambient temperature and relative humidity during the tests shall be recorded and stated.

### 5.2 Power supply range

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The normal test voltage for equipment to be connected to the mains shall be the nominal mains voltage. For the purpose of the present document, the nominal voltage shall be the declared voltage, or any of the declared voltages  $\pm 5\%$ , for which the equipment was designed.

## Section 6. Measurement uncertainty

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### 6.1 Uncertainty of measurement

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Measurement uncertainty budgets for the tests are detailed below. Measurement uncertainty calculations assume a coverage factor of  $K = 2$  with 95% certainty.

| Test name                     | Measurement uncertainty, dB |
|-------------------------------|-----------------------------|
| All antenna port measurements | 0.55                        |
| Conducted spurious emissions  | 1.13                        |
| Radiated spurious emissions   | 3.78                        |

## Section 7. Test equipment

### 7.1 Test equipment list

*Table 7.1-1: Equipment list*

| Equipment                    | Manufacturer       | Model no. | Asset no. | Cal cycle | Next cal.  |
|------------------------------|--------------------|-----------|-----------|-----------|------------|
| 3 m EMI test chamber         | TDK                | SAC-3     | FA003012  | 1 year    | Aug 22/19  |
| Flush mount turntable        | SUNAR              | FM2022    | FA003006  | —         | NCR        |
| Controller                   | SUNAR              | SC110V    | FA002976  | —         | NCR        |
| Antenna mast                 | SUNAR              | TLT2      | FA003007  | —         | NCR        |
| Receiver/spectrum analyzer   | Rohde & Schwarz    | ESR26     | FA002969  | 1 year    | June 4/20  |
| Spectrum analyzer            | Rohde & Schwarz    | FSW43     | FA002971  | 1 year    | June 21/20 |
| Power sensor                 | Rohde & Schwarz    | NRP-6A    | FA002963  | 1 year    | June 20/20 |
| Temperature chamber          | Espec              | EPX-4H    | FA003033  | 1 year    | Sept 18/19 |
| Radiated Emissions cable set | Huber + Suhner Inc | —         | FA003047  | —         | NCR        |
| Radiated Emissions cable set | Huber + Suhner Inc | —         | FA003044  | —         | NCR        |
| Preamp (1–18 GHz)            | ETS-Lindgren       | 124334    | FA002956  | 1 year    | Sep 18/19  |
| Bilog antenna (20–2000 MHz)  | Sun AR             | JB1       | FA003009  | 1 year    | Sep 6/19   |
| Horn antenna (1–18 GHz)      | Electro-Metrics    | 3115      | FA000649  | 1 year    | Nov 28/19  |

Note: NCR - no calibration required

## Section 8. Testing data

### 8.1 FCC 96.41(b) Output power and PSD

#### 8.1.1 Definitions and limits

Unless otherwise specified in this section, the maximum effective isotropic radiated power (EIRP) and maximum Power Spectral Density (PSD) of any CBSD and End User Device must comply with the limits shown in the following table below

**Table 8.1-1: Output power and PSD limits**

| Device          | Maximum EIRP, dBm/10 MHz | Maximum PSD, dBm/MHz |
|-----------------|--------------------------|----------------------|
| End User Device | 23                       | N/A                  |
| Category A CBSD | 30                       | 20                   |
| Category B CBSD | 47                       | 37                   |

#### 8.1.2 Test summary

Test date July 23, 2019

#### 8.1.3 Observations, settings and special notes

**Based on the maximum RF power listed in this report, considerations pertaining to the maximum allowed EIRP and antenna type should be considered for each installation. As per manufacturer declaration: EUT doesn't transmit more than one channel bandwidth simultaneously.**

The test was performed using RMS detector of the spectrum analyzer with RBW of 1 MHz and VBW of 10 MHz and 10 MHz RBW and 30 MHz VBW.

Total transmission power measurement results (in dBm units), provided below in the first 4 tables, are for the information purposes only. These values don't have limit in the section §96.41, since all the limits in the standard are expressed in dBm/10 MHz or dBm/MHz units. The measurement was performed using RMS power meter.

Test results are taken with QPSK modulation as considering worst case scenario.

#### 8.1.4 Test data

**Table 8.1-2: Maximum total channel transmission power and EIRP result for 1CC sector 0 MIMO operation of CBRS Category B**

| Frequency, MHz | Bandwidth, MHz | Ch 0/1 | Tx power, dBm | Antenna gain, dBi | EIRP, dBm |
|----------------|----------------|--------|---------------|-------------------|-----------|
| 3555           | 10(low)        | 0      | 28.21         | 17                | 45.21     |
|                |                | 1      | 27.62         | 17                | 44.62     |
| 3625           | 10(mid)        | 0      | 28.15         | 17                | 45.15     |
|                |                | 1      | 27.70         | 17                | 44.70     |
| 3695           | 10(high)       | 0      | 28.37         | 17                | 45.37     |
|                |                | 1      | 28.18         | 17                | 45.18     |
| 3560           | 20(low)        | 0      | 28.50         | 17                | 45.5      |
|                |                | 1      | 28.19         | 17                | 45.19     |
| 3625           | 20(mid)        | 0      | 28.60         | 17                | 45.60     |
|                |                | 1      | 28.51         | 17                | 45.51     |
| 3690           | 20(high)       | 0      | 28.97         | 17                | 45.97     |
|                |                | 1      | 28.85         | 17                | 45.85     |

**Table 8.1-3:** Maximum total channel transmission power and EIRP result for 1CC sector 1 MIMO operation of CBRS Category B

| Frequency, MHz | Bandwidth, MHz | Ch 0/1 | Tx power, dBm | Antenna gain, dBi | EIRP, dBm |
|----------------|----------------|--------|---------------|-------------------|-----------|
| 3555           | 10(low)        | 0      | 27.74         | 17                | 44.74     |
|                |                | 1      | 27.95         | 17                | 44.95     |
| 3625           | 10(mid)        | 0      | 28.66         | 17                | 45.66     |
|                |                | 1      | 28.83         | 17                | 45.83     |
| 3695           | 10(high)       | 0      | 28.30         | 17                | 45.30     |
|                |                | 1      | 27.23         | 17                | 44.23     |
| 3560           | 20(low)        | 0      | 31.28         | 17                | 48.28     |
|                |                | 1      | 32.24         | 17                | 49.24     |
| 3625           | 20(mid)        | 0      | 32.04         | 17                | 49.04     |
|                |                | 1      | 31.93         | 17                | 48.93     |
| 3690           | 20(high)       | 0      | 31.80         | 17                | 48.80     |
|                |                | 1      | 30.96         | 17                | 47.96     |

**Table 8.1-4:** Maximum total channel transmission power and EIRP result for 1CC sector 2 MIMO operation of CBRS Category B

| Frequency, MHz | Bandwidth, MHz | Ch 0/1 | Tx power, dBm | Antenna gain, dBi | EIRP, dBm |
|----------------|----------------|--------|---------------|-------------------|-----------|
| 3555           | 10(low)        | 0      | 28.26         | 17                | 45.26     |
|                |                | 1      | 28.09         | 17                | 45.09     |
| 3625           | 10(mid)        | 0      | 27.85         | 17                | 44.85     |
|                |                | 1      | 27.89         | 17                | 44.89     |
| 3695           | 10(high)       | 0      | 28.42         | 17                | 45.42     |
|                |                | 1      | 28.32         | 17                | 45.32     |
| 3560           | 20(low)        | 0      | 29.03         | 17                | 46.03     |
|                |                | 1      | 28.98         | 17                | 45.98     |
| 3625           | 20(mid)        | 0      | 28.44         | 17                | 45.44     |
|                |                | 1      | 28.53         | 17                | 45.53     |
| 3690           | 20(high)       | 0      | 28.98         | 17                | 45.98     |
|                |                | 1      | 28.87         | 17                | 45.87     |

**Table 8.1-5:** Maximum total channel transmission power and EIRP result for 2CC sector 1 MIMO operation of CBRS Category B

| Frequency, MHz | Bandwidth, MHz | Ch 0/1 | Tx power, dBm | Antenna gain, dBi | EIRP, dBm |
|----------------|----------------|--------|---------------|-------------------|-----------|
| 3560           | 20(low)        | 0      | 30.22         | 17                | 47.22     |
|                |                | 1      | 31.25         | 17                | 48.25     |
| 3630           | 20(mid)        | 0      | 30.55         | 17                | 47.55     |
|                |                | 1      | 30.76         | 17                | 47.76     |
| 3690           | 20(high)       | 0      | 30.64         | 17                | 47.64     |
|                |                | 1      | 29.61         | 17                | 46.61     |
| 3570           | 40(low)        | 0      | 29.87         | 17                | 46.87     |
|                |                | 1      | 31.62         | 17                | 48.62     |
| 3625           | 40(mid)        | 0      | 29.86         | 17                | 46.86     |
|                |                | 1      | 31.62         | 17                | 48.62     |
| 3680           | 40(high)       | 0      | 30.57         | 17                | 47.57     |
|                |                | 1      | 30.34         | 17                | 47.34     |

**Table 8.1-6:** Maximum total channel transmission power and EIRP result for 3CC sector 1 MIMO operation of CBRS Category B

| Frequency, MHz | Bandwidth, MHz | Ch 0/1 | Tx power, dBm | Antenna gain, dBi | EIRP, dBm |
|----------------|----------------|--------|---------------|-------------------|-----------|
| 3575           | 30(low)        | 0      | 30.37         | 17                | 47.37     |
|                |                | 1      | 30.71         | 17                | 47.71     |
| 3625           | 30(mid)        | 0      | 30.89         | 17                | 47.89     |
|                |                | 1      | 30.79         | 17                | 47.79     |
| 3675           | 30(high)       | 0      | 31.24         | 17                | 48.24     |
|                |                | 1      | 30.75         | 17                | 47.75     |
| 3585           | 60(low)        | 0      | 30.45         | 17                | 47.45     |
|                |                | 1      | 30.95         | 17                | 47.95     |
| 3625           | 60(mid)        | 0      | 31.34         | 17                | 48.34     |
|                |                | 1      | 31.45         | 17                | 48.45     |
| 3665           | 60(high)       | 0      | 31.41         | 17                | 48.41     |
|                |                | 1      | 31.03         | 17                | 48.03     |
| 3590           | 60(low)        | 0      | 31.01         | 17                | 48.01     |
|                |                | 1      | 31.68         | 17                | 48.68     |
| 3650           | 60(high)       | 0      | 31.63         | 17                | 48.63     |
|                |                | 1      | 31.44         | 17                | 48.44     |

**Table 8.1-7:** EIRP in 10 MHz measurement result for 1CC sector 0 MIMO operation of CBRS Category B

| Frequency, MHz | Bandwidth, MHz | Ch 0/1 | Output power, dBm/10 MHz | Antenna gain, dBi | EIRP, dBm / 10 MHz | Limit, , dBm / 10 MHz | Margin, dB |
|----------------|----------------|--------|--------------------------|-------------------|--------------------|-----------------------|------------|
| 3555           | 10(low)        | 0      | 27.31                    | 17                | 44.31              | 47                    | 2.69       |
|                |                | 1      | 27.08                    | 17                | 44.08              | 47                    | 2.92       |
| 3625           | 10(mid)        | 0      | 27.77                    | 17                | 44.77              | 47                    | 2.23       |
|                |                | 1      | 27.05                    | 17                | 44.05              | 47                    | 2.95       |
| 3695           | 10(high)       | 0      | 28.01                    | 17                | 45.01              | 47                    | 1.99       |
|                |                | 1      | 27.74                    | 17                | 44.74              | 47                    | 2.26       |
| 3560           | 20(low)        | 0      | 26.14                    | 17                | 43.14              | 47                    | 3.86       |
|                |                | 1      | 26.04                    | 17                | 43.04              | 47                    | 3.96       |
| 3625           | 20(mid)        | 0      | 26.50                    | 17                | 43.5               | 47                    | 3.50       |
|                |                | 1      | 26.41                    | 17                | 43.41              | 47                    | 3.59       |
| 3690           | 20(high)       | 0      | 26.59                    | 17                | 43.59              | 47                    | 3.41       |
|                |                | 1      | 26.79                    | 17                | 43.79              | 47                    | 3.21       |

**Table 8.1-8:** EIRP in 10 MHz measurement result for 1CC sector 1 MIMO operation of CBRS Category B

| Frequency, MHz | Bandwidth, MHz | Ch 0/1 | Output power, dBm/10 MHz | Antenna gain, dBi | EIRP, dBm / 10 MHz | Limit, , dBm / 10 MHz | Margin, dB |
|----------------|----------------|--------|--------------------------|-------------------|--------------------|-----------------------|------------|
| 3555           | 10(low)        | 0      | 26.90                    | 17                | 43.90              | 47                    | 3.1        |
|                |                | 1      | 27.95                    | 17                | 44.95              | 47                    | 2.05       |
| 3625           | 10(mid)        | 0      | 28.02                    | 17                | 45.02              | 47                    | 1.98       |
|                |                | 1      | 28.24                    | 17                | 45.24              | 47                    | 1.76       |
| 3695           | 10(high)       | 0      | 27.91                    | 17                | 44.91              | 47                    | 2.09       |
|                |                | 1      | 26.78                    | 17                | 43.78              | 47                    | 3.22       |
| 3560           | 20(low)        | 0      | 29.09                    | 17                | 46.09              | 47                    | 0.91       |
|                |                | 1      | 29.77                    | 17                | 46.77              | 47                    | 0.23       |
| 3625           | 20(mid)        | 0      | 29.75                    | 17                | 46.75              | 47                    | 0.25       |
|                |                | 1      | 29.76                    | 17                | 46.76              | 47                    | 0.24       |
| 3690           | 20(high)       | 0      | 29.46                    | 17                | 46.46              | 47                    | 0.54       |
|                |                | 1      | 28.75                    | 17                | 45.75              | 47                    | 1.25       |

**Table 8.1-9:** EIRP in 10 MHz measurement result for 1CC sector 2 MIMO operation of CBRS Category B

| Frequency, MHz | Bandwidth, MHz | Ch 0/1 | Output power, dBm/10 MHz | Antenna gain, dBi | EIRP, dBm / 10 MHz | Limit, , dBm / 10 MHz | Margin, dB |
|----------------|----------------|--------|--------------------------|-------------------|--------------------|-----------------------|------------|
| 3555           | 10(low)        | 0      | 27.77                    | 17                | 44.77              | 47                    | 2.23       |
|                |                | 1      | 27.51                    | 17                | 44.51              | 47                    | 2.49       |
| 3625           | 10(mid)        | 0      | 27.21                    | 17                | 44.21              | 47                    | 2.79       |
|                |                | 1      | 27.44                    | 17                | 44.44              | 47                    | 2.56       |
| 3695           | 10(high)       | 0      | 27.80                    | 17                | 44.80              | 47                    | 2.20       |
|                |                | 1      | 27.99                    | 17                | 44.99              | 47                    | 2.01       |
| 3560           | 20(low)        | 0      | 26.74                    | 17                | 43.74              | 47                    | 3.26       |
|                |                | 1      | 26.87                    | 17                | 43.87              | 47                    | 3.13       |
| 3625           | 20(mid)        | 0      | 26.46                    | 17                | 43.46              | 47                    | 3.54       |
|                |                | 1      | 26.47                    | 17                | 43.47              | 47                    | 3.53       |
| 3690           | 20(high)       | 0      | 26.25                    | 17                | 43.25              | 47                    | 3.75       |
|                |                | 1      | 26.55                    | 17                | 43.55              | 47                    | 3.45       |

**Table 8.1-10:** EIRP in 10 MHz measurement result for 2CC sector 1 MIMO operation of CBRS Category B

| Frequency, MHz | Bandwidth, MHz | Ch 0/1 | Output power, dBm/10 MHz | Antenna gain, dBi | EIRP, dBm / 10 MHz | Limit, , dBm / 10 MHz | Margin, dB |
|----------------|----------------|--------|--------------------------|-------------------|--------------------|-----------------------|------------|
| 3560           | 10(low)        | 0      | 28.09                    | 17                | 45.09              | 47                    | 1.91       |
|                |                | 1      | 28.97                    | 17                | 45.97              | 47                    | 1.03       |
| 3630           | 10(mid)        | 0      | 27.92                    | 17                | 44.92              | 47                    | 2.08       |
|                |                | 1      | 28.14                    | 17                | 45.14              | 47                    | 1.86       |
| 3690           | 10(high)       | 0      | 28.19                    | 17                | 45.19              | 47                    | 1.81       |
|                |                | 1      | 27.26                    | 17                | 44.26              | 47                    | 2.74       |
| 3560           | 20(low)        | 0      | 29.03                    | 17                | 46.03              | 47                    | 0.97       |
|                |                | 1      | 28.98                    | 17                | 45.98              | 47                    | 1.02       |
| 3625           | 20(mid)        | 0      | 28.44                    | 17                | 45.44              | 47                    | 1.56       |
|                |                | 1      | 28.53                    | 17                | 45.53              | 47                    | 1.47       |
| 3690           | 20(high)       | 0      | 28.98                    | 17                | 45.98              | 47                    | 1.02       |
|                |                | 1      | 28.87                    | 17                | 45.87              | 47                    | 1.13       |

**Table 8.1-11:** EIRP in 10 MHz measurement result for 3CC sector 1 MIMO operation of CBRS Category B

| Frequency, MHz | Bandwidth, MHz | Ch 0/1 | Output power, dBm/10 MHz | Antenna gain, dBi | EIRP, dBm / 10 MHz | Limit, , dBm / 10 MHz | Margin, dB |
|----------------|----------------|--------|--------------------------|-------------------|--------------------|-----------------------|------------|
| 3575           | 30(low)        | 0      | 27.54                    | 17                | 44.54              | 47                    | 2.46       |
|                |                | 1      | 27.96                    | 17                | 44.96              | 47                    | 2.04       |
| 3625           | 30(mid)        | 0      | 27.86                    | 17                | 44.86              | 47                    | 2.14       |
|                |                | 1      | 27.85                    | 17                | 44.85              | 47                    | 2.15       |
| 3675           | 30(high)       | 0      | 28.25                    | 17                | 45.25              | 47                    | 1.75       |
|                |                | 1      | 27.67                    | 17                | 44.67              | 47                    | 2.33       |
| 3585           | 60(low)        | 0      | 25.90                    | 17                | 42.90              | 47                    | 4.10       |
|                |                | 1      | 26.79                    | 17                | 43.79              | 47                    | 3.21       |
| 3625           | 60(mid)        | 0      | 26.14                    | 17                | 43.14              | 47                    | 3.86       |
|                |                | 1      | 26.93                    | 17                | 43.93              | 47                    | 3.07       |
| 3665           | 60(high)       | 0      | 24.79                    | 17                | 41.79              | 47                    | 5.21       |
|                |                | 1      | 25.87                    | 17                | 42.87              | 47                    | 4.13       |
| 3590           | 60(low)        | 0      | 25.34                    | 17                | 42.34              | 47                    | 4.66       |
|                |                | 1      | 26.30                    | 17                | 43.3               | 47                    | 3.70       |
| 3650           | 60(high)       | 0      | 25.20                    | 17                | 42.20              | 47                    | 4.8        |
|                |                | 1      | 26.21                    | 17                | 43.21              | 47                    | 3.79       |

**Table 8.1-12:** PSD in 1 MHz measurement result for 1CC sector 0 CBSD Category B

| Frequency, MHz | Bandwidth, MHz | Ch 0/1 | PSD , dBm/MHz | Antenna gain, dBi | PSD with antenna gain dBm/MHz | PSD Limit, dBm/MHz | Margin, dB |
|----------------|----------------|--------|---------------|-------------------|-------------------------------|--------------------|------------|
| 3555           | 10(low)        | 0      | 18.86         | 17                | 35.86                         | 37                 | 1.14       |
|                |                | 1      | 18.34         | 17                | 35.34                         | 37                 | 1.66       |
| 3625           | 10(mid)        | 0      | 19.22         | 17                | 36.22                         | 37                 | 0.78       |
|                |                | 1      | 19.74         | 17                | 36.74                         | 37                 | 0.26       |
| 3695           | 10(high)       | 0      | 19.86         | 17                | 36.86                         | 37                 | 0.14       |
|                |                | 1      | 19.27         | 17                | 36.27                         | 37                 | 0.73       |
| 3560           | 20(low)        | 0      | 15.89         | 17                | 32.89                         | 37                 | 4.11       |
|                |                | 1      | 15.88         | 17                | 32.88                         | 37                 | 4.12       |
| 3625           | 20(mid)        | 0      | 16.39         | 17                | 33.39                         | 37                 | 3.61       |
|                |                | 1      | 16.35         | 17                | 33.35                         | 37                 | 3.65       |
| 3690           | 20(high)       | 0      | 16.36         | 17                | 33.36                         | 37                 | 3.64       |
|                |                | 1      | 16.32         | 17                | 33.32                         | 37                 | 3.68       |

**Table 8.1-13:** PSD in 1 MHz measurement result for 1CC sector 1 CBSD Category B

| Frequency, MHz | Bandwidth, MHz | Ch 0/1 | PSD , dBm/MHz | Antenna gain, dBi | PSD with antenna gain dBm/MHz | PSD Limit, dBm/MHz | Margin, dB |
|----------------|----------------|--------|---------------|-------------------|-------------------------------|--------------------|------------|
| 3555           | 10(low)        | 0      | 19.22         | 17                | 36.22                         | 37                 | 0.78       |
|                |                | 1      | 19.74         | 17                | 36.74                         | 37                 | 0.26       |
| 3625           | 10(mid)        | 0      | 19.17         | 17                | 36.17                         | 37                 | 0.83       |
|                |                | 1      | 19.34         | 17                | 36.34                         | 37                 | 0.66       |
| 3695           | 10(high)       | 0      | 18.75         | 17                | 35.75                         | 37                 | 1.25       |
|                |                | 1      | 19.37         | 17                | 36.37                         | 37                 | 0.63       |
| 3560           | 20(low)        | 0      | 19.47         | 17                | 36.47                         | 37                 | 0.53       |
|                |                | 1      | 19.94         | 17                | 36.94                         | 37                 | 0.06       |
| 3625           | 20(mid)        | 0      | 19.91         | 17                | 36.91                         | 37                 | 0.09       |
|                |                | 1      | 19.48         | 17                | 36.48                         | 37                 | 0.52       |
| 3690           | 20(high)       | 0      | 19.74         | 17                | 36.74                         | 37                 | 0.26       |
|                |                | 1      | 19.29         | 17                | 36.29                         | 37                 | 0.71       |

**Table 8.1-14:** PSD in 1 MHz measurement result for 1CC sector 2 CBSD Category B

| Frequency, MHz | Bandwidth, MHz | Ch 0/1 | PSD , dBm/MHz | Antenna gain, dBi | PSD with antenna gain dBm/MHz | PSD Limit, dBm/MHz | Margin, dB |
|----------------|----------------|--------|---------------|-------------------|-------------------------------|--------------------|------------|
| 3555           | 10(low)        | 0      | 19.86         | 17                | 36.86                         | 37                 | 0.14       |
|                |                | 1      | 19.27         | 17                | 36.27                         | 37                 | 0.73       |
| 3625           | 10(mid)        | 0      | 18.75         | 17                | 35.75                         | 37                 | 1.25       |
|                |                | 1      | 19.37         | 17                | 36.37                         | 37                 | 0.63       |
| 3695           | 10(high)       | 0      | 19.65         | 17                | 36.65                         | 37                 | 0.35       |
|                |                | 1      | 18.27         | 17                | 35.27                         | 37                 | 1.73       |
| 3560           | 20(low)        | 0      | 16.85         | 17                | 33.85                         | 37                 | 3.15       |
|                |                | 1      | 16.42         | 17                | 33.42                         | 37                 | 3.58       |
| 3625           | 20(mid)        | 0      | 16.63         | 17                | 33.63                         | 37                 | 3.37       |
|                |                | 1      | 16.72         | 17                | 33.72                         | 37                 | 3.28       |
| 3690           | 20(high)       | 0      | 16.94         | 17                | 33.94                         | 37                 | 3.06       |
|                |                | 1      | 16.38         | 17                | 33.38                         | 37                 | 3.62       |

**Table 8.1-15:** PSD in 1 MHz measurement result for 2CC sector 1 CBSD Category B

| Frequency, MHz | Bandwidth, MHz | Ch 0/1 | PSD , dBm/MHz | Antenna gain, dBi | PSD with antenna gain<br>dBm/MHz | PSD Limit, dBm/MHz | Margin, dB |
|----------------|----------------|--------|---------------|-------------------|----------------------------------|--------------------|------------|
| 3560           | 10(low)        | 0      | 19.42         | 17                | 36.42                            | 47                 | 0.58       |
|                |                | 1      | 19.57         | 17                | 36.57                            | 47                 | 0.43       |
| 3630           | 10(mid)        | 0      | 19.13         | 17                | 36.13                            | 47                 | 0.87       |
|                |                | 1      | 18.85         | 17                | 35.85                            | 47                 | 1.15       |
| 3690           | 10(high)       | 0      | 19.08         | 17                | 36.08                            | 47                 | 0.92       |
|                |                | 1      | 18.76         | 17                | 35.76                            | 47                 | 1.24       |
| 3560           | 20(low)        | 0      | 14.91         | 17                | 31.91                            | 47                 | 5.09       |
|                |                | 1      | 17.27         | 17                | 34.27                            | 47                 | 2.73       |
| 3625           | 20(mid)        | 0      | 14.95         | 17                | 31.95                            | 47                 | 5.05       |
|                |                | 1      | 17.73         | 17                | 34.73                            | 47                 | 2.27       |
| 3690           | 20(high)       | 0      | 16.22         | 17                | 33.22                            | 47                 | 3.78       |
|                |                | 1      | 15.62         | 17                | 32.62                            | 47                 | 4.38       |

**Table 8.1-16:** PSD in 1 MHz measurement result for 3CC sector 1 CBSD Category B

| Frequency, MHz | Bandwidth, MHz | Ch 0/1 | PSD , dBm/MHz | Antenna gain, dBi | PSD with antenna gain<br>dBm/MHz | PSD Limit, dBm/MHz | Margin, dB |
|----------------|----------------|--------|---------------|-------------------|----------------------------------|--------------------|------------|
| 3575           | 30(low)        | 0      | 18.65         | 17                | 35.65                            | 47                 | 1.35       |
|                |                | 1      | 19.02         | 17                | 36.02                            | 47                 | 0.98       |
| 3625           | 30(mid)        | 0      | 19.03         | 17                | 36.03                            | 47                 | 0.97       |
|                |                | 1      | 18.93         | 17                | 35.93                            | 47                 | 1.07       |
| 3675           | 30(high)       | 0      | 19.41         | 17                | 36.41                            | 47                 | 0.59       |
|                |                | 1      | 18.93         | 17                | 35.93                            | 47                 | 1.07       |
| 3585           | 60(low)        | 0      | 14.90         | 17                | 31.90                            | 47                 | 5.10       |
|                |                | 1      | 16.93         | 17                | 33.93                            | 47                 | 3.07       |
| 3625           | 60(mid)        | 0      | 14.12         | 17                | 31.12                            | 47                 | 5.88       |
|                |                | 1      | 16.65         | 17                | 33.65                            | 47                 | 3.35       |
| 3665           | 60(high)       | 0      | 15.69         | 17                | 32.69                            | 47                 | 4.31       |
|                |                | 1      | 15.70         | 17                | 32.70                            | 47                 | 4.30       |
| 3590           | 60(low)        | 0      | 15.88         | 17                | 32.88                            | 47                 | 4.12       |
|                |                | 1      | 16.59         | 17                | 33.59                            | 47                 | 3.41       |
| 3650           | 60(high)       | 0      | 15.73         | 17                | 32.73                            | 47                 | 4.27       |
|                |                | 1      | 16.44         | 17                | 33.44                            | 47                 | 3.56       |

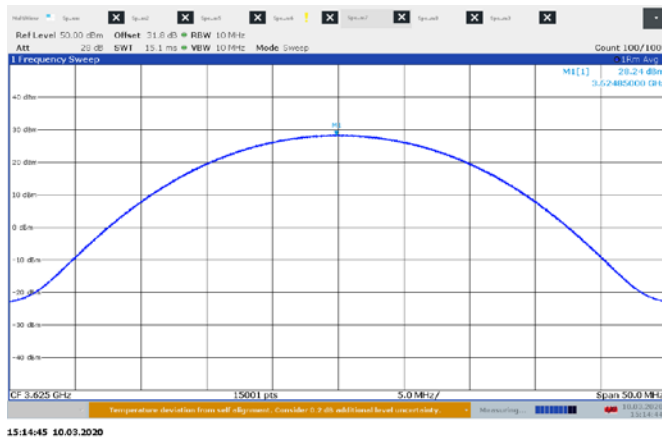


Figure 8.1-1: Output power sample plot, 1cc 10 MHz channel

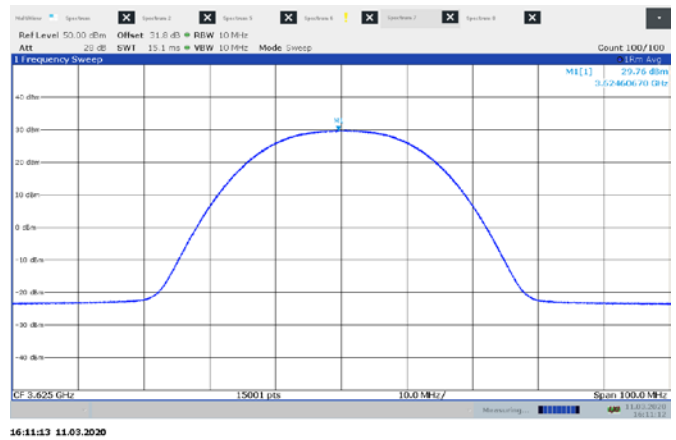


Figure 8.1-2: Output power sample plot 1cc, 20 MHz channel

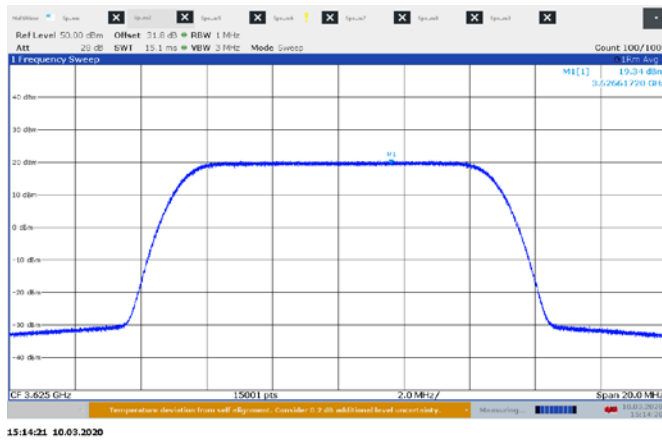


Figure 8.1-3: Power spectral density sample plot, 1cc 10 MHz channel

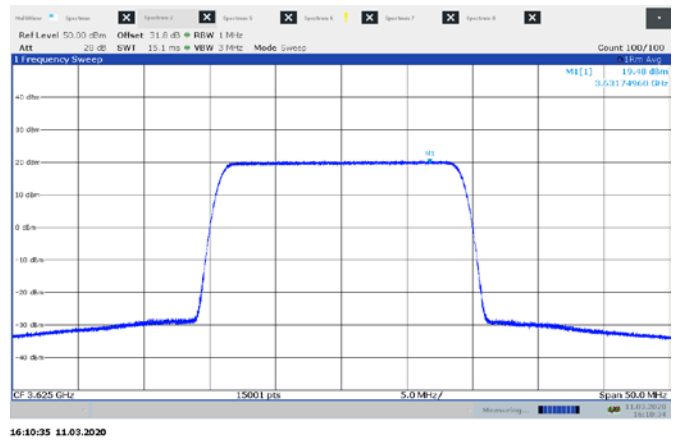


Figure 8.1-4: Power spectral density sample plot 1cc, 20 MHz channel

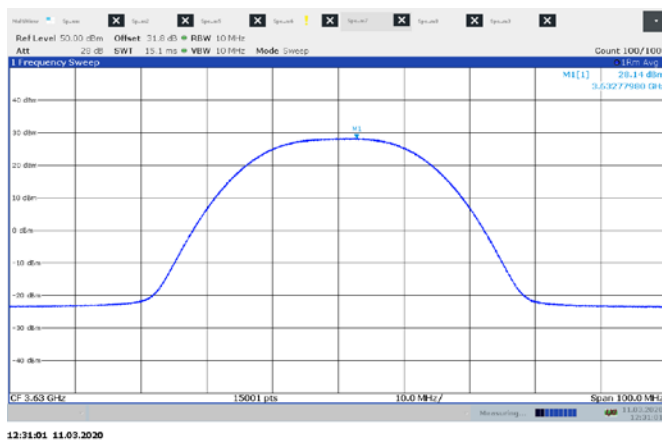


Figure 8.1-5: Output power sample plot, 2cc 10 MHz channel

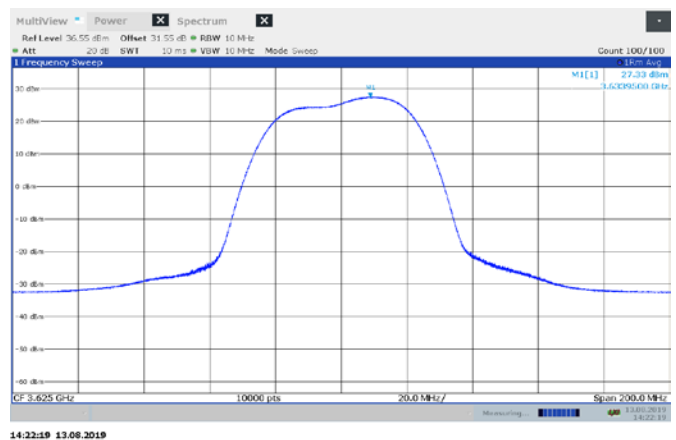


Figure 8.1-6: Output power sample plot 2cc, 20 MHz channel

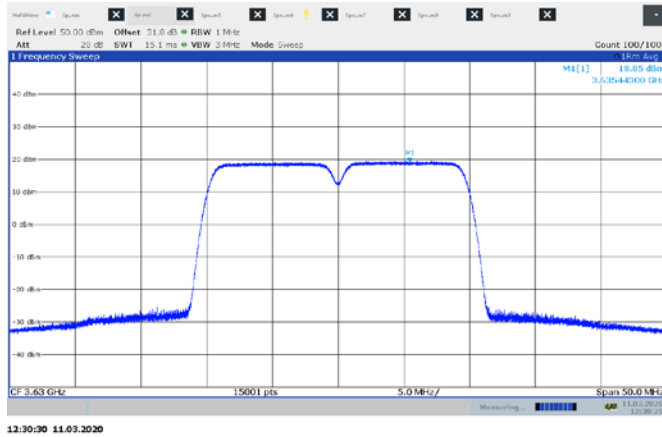


Figure 8.1-7: Power spectral density sample plot, 2cc 10 MHz channel

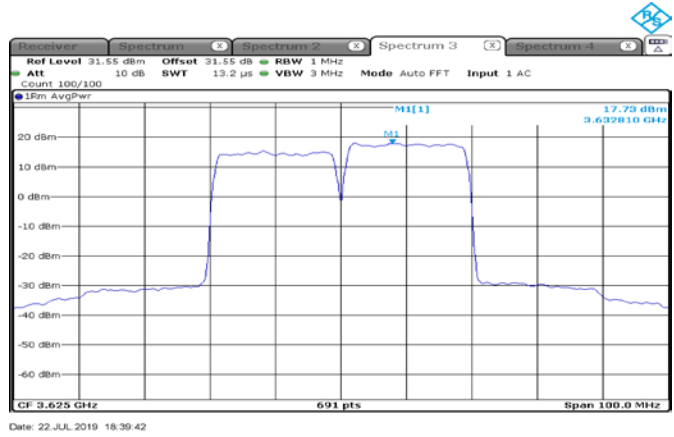


Figure 8.1-8: Power spectral density sample plot, 2cc, 20 MHz channel

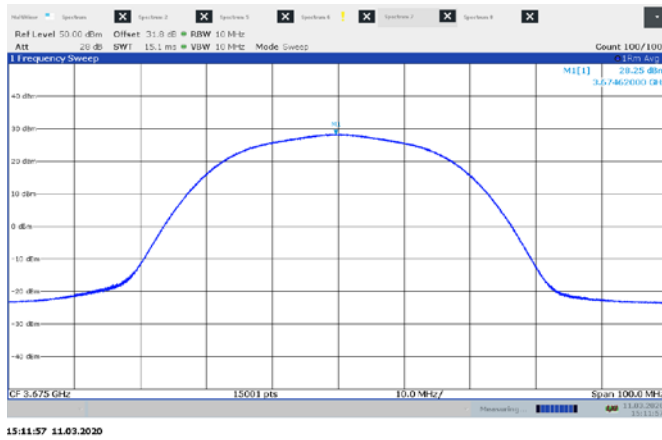


Figure 8.1-9: Output power sample plot, 3cc 10 MHz channel

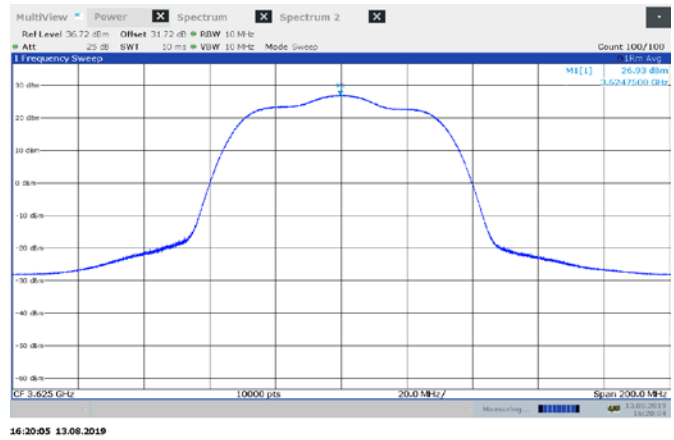


Figure 8.1-10: Output power sample plot, 3cc, 20 MHz channel

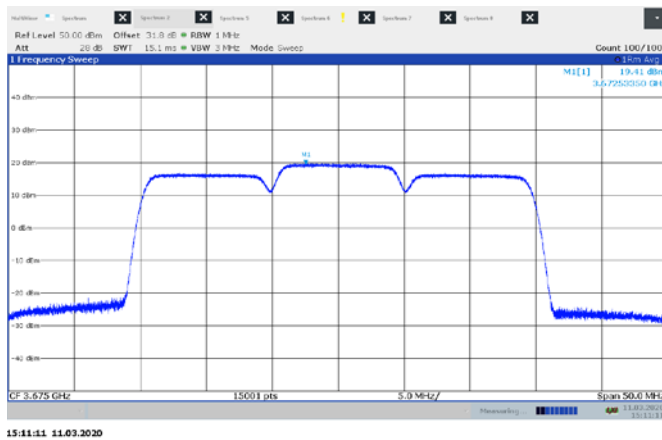


Figure 8.1-11: Power spectral density sample plot, 3cc 10 MHz channel

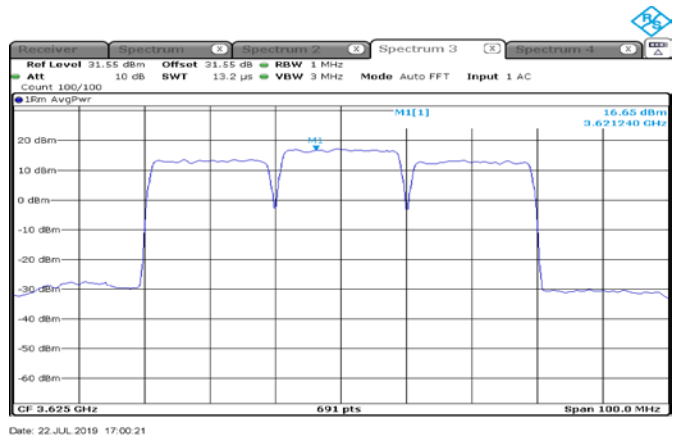


Figure 8.1-12: Power spectral density sample plot, 3cc, 20 MHz channel

## 8.2 FCC 96.41(g) The peak-to-average power ratio (PAPR)

### 8.2.1 Definitions and limits

The peak-to-average power ratio (PAPR) of any CBSD transmitter output power must not exceed 13 dB. PAPR measurements should be made using either an instrument with complementary cumulative distribution function (CCDF) capabilities or another Commission approved procedure. The measurement must be performed using a signal corresponding to the highest PAPR expected during periods of continuous transmission.

### 8.2.2 Test summary

Test date July 23, 2019

### 8.2.3 Observations, settings and special notes

The test was performed using spectrum analyzer signal statistics' Complimentary Cumulative Distribution Function

### 8.2.4 Test data

**Table 8.2-1: PAPR measurement results sector 0**

| Channel BW, MHz | No. of carriers | Antenna port | Frequency, MHz | CCDF at 0.1%, dB | Limit, dB | Margin, dB |
|-----------------|-----------------|--------------|----------------|------------------|-----------|------------|
| 10(low)         | 1               | 0            | 3555           | 8.16             | 13        | 4.84       |
| 10(mid)         | 1               | 0            | 3625           | 8.16             | 13        | 4.84       |
| 10(high)        | 1               | 0            | 3695           | 8.16             | 13        | 4.84       |
| 10(low)         | 1               | 1            | 3555           | 8.20             | 13        | 4.80       |
| 10(mid)         | 1               | 1            | 3625           | 8.10             | 13        | 4.90       |
| 10(high)        | 1               | 1            | 3695           | 8.14             | 13        | 4.86       |
| 20(low)         | 1               | 0            | 3560           | 8.38             | 13        | 4.62       |
| 20(mid)         | 1               | 0            | 3625           | 8.36             | 13        | 4.64       |
| 20(high)        | 1               | 0            | 3690           | 8.41             | 13        | 4.59       |
| 20(low)         | 1               | 1            | 3560           | 8.34             | 13        | 4.66       |
| 20(mid)         | 1               | 1            | 3625           | 8.40             | 13        | 4.6        |
| 20(high)        | 1               | 1            | 3690           | 8.32             | 13        | 4.68       |

**Table 8.2-2: PAPR measurement results sector 1**

| Channel BW, MHz | No. of carriers | Antenna port | Frequency, MHz | CCDF at 0.1%, dB | Limit, dB | Margin, dB |
|-----------------|-----------------|--------------|----------------|------------------|-----------|------------|
| 10(low)         | 1               | 0            | 3555           | 8.16             | 13        | 4.84       |
| 10(mid)         | 1               | 0            | 3625           | 8.18             | 13        | 4.82       |
| 10(high)        | 1               | 0            | 3695           | 8.22             | 13        | 4.78       |
| 10(low)         | 1               | 1            | 3555           | 8.22             | 13        | 4.78       |
| 10(mid)         | 1               | 1            | 3625           | 8.22             | 13        | 4.78       |
| 10(high)        | 1               | 1            | 3695           | 8.24             | 13        | 4.76       |
| 20(low)         | 1               | 0            | 3560           | 8.34             | 13        | 4.66       |
| 20(mid)         | 1               | 0            | 3625           | 8.34             | 13        | 4.66       |
| 20(high)        | 1               | 0            | 3690           | 8.40             | 13        | 4.60       |
| 20(low)         | 1               | 1            | 3560           | 8.38             | 13        | 4.62       |
| 20(mid)         | 1               | 1            | 3625           | 8.36             | 13        | 4.64       |
| 20(high)        | 1               | 1            | 3690           | 8.40             | 13        | 4.60       |
| 20(low)         | 2               | 0            | 3560           | 8.62             | 13        | 4.38       |
| 20(mid)         | 2               | 0            | 3630           | 8.62             | 13        | 4.38       |
| 20(high)        | 2               | 0            | 3690           | 8.80             | 13        | 4.20       |
| 20(low)         | 2               | 1            | 3560           | 8.82             | 13        | 4.18       |
| 20(mid)         | 2               | 1            | 3630           | 8.76             | 13        | 4.24       |
| 20(high)        | 2               | 1            | 3690           | 8.82             | 13        | 4.18       |
| 40(low)         | 2               | 0            | 3570           | 8.38             | 13        | 4.62       |
| 40(mid)         | 2               | 0            | 3625           | 8.46             | 13        | 4.54       |
| 40(high)        | 2               | 0            | 3680           | 8.40             | 13        | 4.60       |
| 40(low)         | 2               | 1            | 3570           | 8.32             | 13        | 4.68       |
| 40(mid)         | 2               | 1            | 3625           | 8.38             | 13        | 4.62       |
| 40(high)        | 2               | 1            | 3680           | 8.38             | 13        | 4.62       |
| 30(low)         | 3               | 0            | 3575           | 8.10             | 13        | 4.90       |
| 30(mid)         | 3               | 0            | 3625           | 8.06             | 13        | 4.94       |
| 30(high)        | 3               | 0            | 3675           | 8.14             | 13        | 4.86       |
| 30(low)         | 3               | 1            | 3575           | 8.08             | 13        | 4.92       |
| 30(mid)         | 3               | 1            | 3625           | 8.14             | 13        | 4.86       |
| 30(high)        | 3               | 1            | 3675           | 8.20             | 13        | 4.80       |
| 60(low)         | 3               | 0            | 3585           | 8.40             | 13        | 4.60       |
| 60(mid)         | 3               | 0            | 3625           | 8.40             | 13        | 4.60       |
| 60(high)        | 3               | 0            | 3665           | 8.32             | 13        | 4.68       |
| 60(low)         | 3               | 1            | 3585           | 8.32             | 13        | 4.68       |
| 60(mid)         | 3               | 1            | 3625           | 8.23             | 13        | 4.77       |
| 60(high)        | 3               | 1            | 3665           | 8.17             | 13        | 4.83       |
| 60(low)         | 3               | 0            | 3590           | 7.97             | 13        | 5.03       |
| 60(high)        | 3               | 0            | 3650           | 7.97             | 13        | 5.03       |
| 60(low)         | 3               | 1            | 3590           | 7.83             | 13        | 5.17       |
| 60(high)        | 3               | 1            | 3650           | 7.86             | 13        | 5.14       |

**Table 8.2-3: PAPR measurement results sector 2**

| Channel BW, MHz | No. of carriers | Antenna port | Frequency, MHz | CCDF at 0.1%, dB | Limit, dB | Margin, dB |
|-----------------|-----------------|--------------|----------------|------------------|-----------|------------|
| 10(low)         | 1               | 0            | 3555           | 8.14             | 13        | 4.86       |
| 10(mid)         | 1               | 0            | 3625           | 8.18             | 13        | 4.82       |
| 10(high)        | 1               | 0            | 3695           | 8.22             | 13        | 4.78       |
| 10(low)         | 1               | 1            | 3555           | 8.18             | 13        | 4.82       |
| 10(mid)         | 1               | 1            | 3625           | 8.14             | 13        | 4.86       |
| 10(high)        | 1               | 1            | 3695           | 8.14             | 13        | 4.86       |
| 20(low)         | 1               | 0            | 3560           | 8.30             | 13        | 4.70       |
| 20(mid)         | 1               | 0            | 3625           | 8.38             | 13        | 4.62       |
| 20(high)        | 1               | 0            | 3690           | 8.36             | 13        | 4.64       |
| 20(low)         | 1               | 1            | 3560           | 8.32             | 13        | 4.68       |
| 20(mid)         | 1               | 1            | 3625           | 8.38             | 13        | 4.62       |
| 20(high)        | 1               | 1            | 3690           | 8.36             | 13        | 4.64       |



Figure 8.2-1: CCDF sample plot, 1cc 10 MHz channel

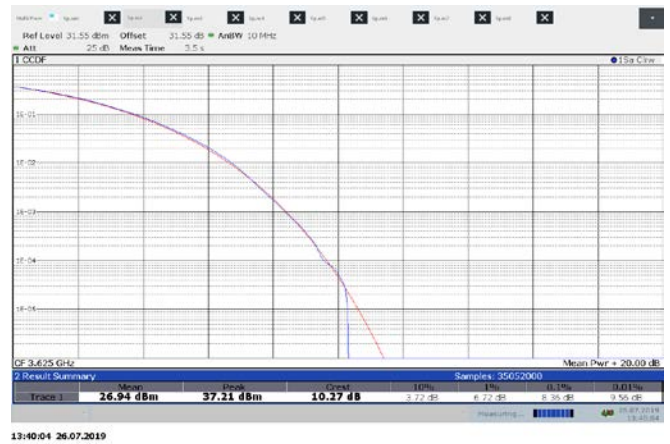


Figure 8.2-2: CCDF sample plot, 1cc 20 MHz channel



Figure 8.2-3: CCDF sample plot, 2cc 10 MHz channel

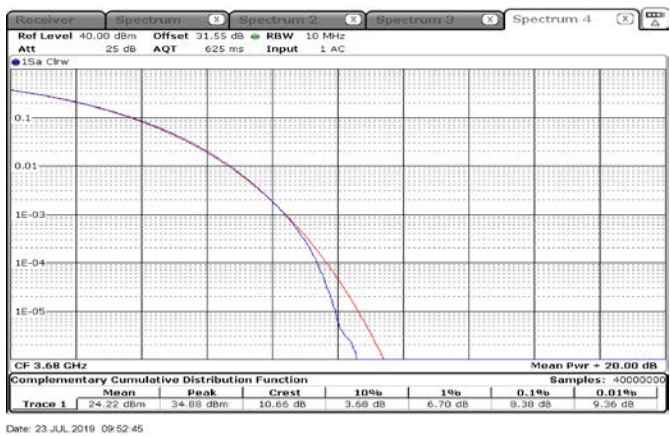


Figure 8.2-4: CCDF sample plot, 2cc 20 MHz channel



Figure 8.2-5: CCDF sample plot, 3cc 10 MHz channel

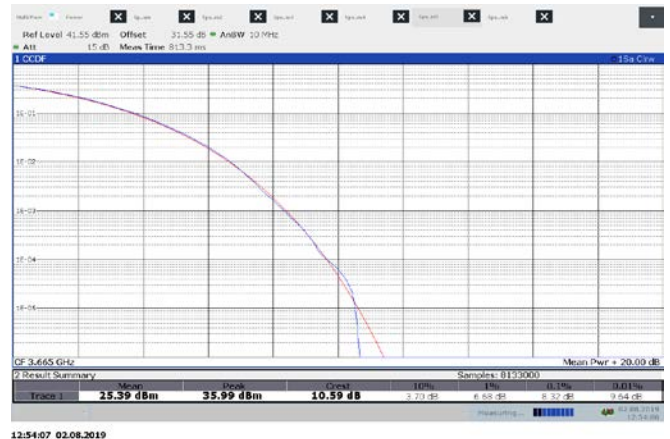


Figure 8.2-6: CCDF sample plot, 3cc 20 MHz channel

## 8.3 FCC 96.41(e)(3) Emission bandwidth and occupied bandwidth

### 8.3.1 Definitions and limits

The emission bandwidth is defined as the width of the signal between two points, one below the carrier center frequency and one above the carrier center frequency, outside of which all emissions are attenuated at least 26 dB below the transmitter power.

FCC 2.1049 The occupied bandwidth, that is the frequency bandwidth such that, below its lower and above its upper frequency limits, the mean powers radiated are each equal to 0.5 percent of the total mean power radiated by a given emission.

### 8.3.2 Test summary

Test date August 23, 2019

### 8.3.3 Observations, settings and special notes

Spectrum analyser settings for OBW measurements:

|                      |          |
|----------------------|----------|
| Resolution bandwidth | 100 kHz  |
| Video bandwidth      | 300 kHz  |
| Detector mode        | Peak     |
| Trace mode           | Max Hold |

### 8.3.4 Test data

**Table 8.3-1:** Occupied bandwidth measurement results for sector 0

| Bandwidth, MHz | No of carriers | Antenna port | Frequency, MHz | 99% OBW, MHz | 26 dB BW, MHz |
|----------------|----------------|--------------|----------------|--------------|---------------|
| 10(low)        | 1              | 0            | 3555           | 8.97         | 9.78          |
| 10(mid)        | 1              | 0            | 3625           | 8.97         | 9.78          |
| 10(high)       | 1              | 0            | 3695           | 8.97         | 9.78          |
| 10(low)        | 1              | 1            | 3555           | 8.94         | 9.78          |
| 10(mid)        | 1              | 1            | 3625           | 8.97         | 9.78          |
| 10(high)       | 1              | 1            | 3695           | 8.97         | 9.78          |
| 20(low)        | 1              | 0            | 3560           | 17.86        | 19.38         |
| 20(mid)        | 1              | 0            | 3625           | 17.85        | 19.38         |
| 20(high)       | 1              | 0            | 3690           | 17.89        | 19.45         |
| 20(low)        | 1              | 1            | 3560           | 17.85        | 19.38         |
| 20(mid)        | 1              | 1            | 3625           | 17.86        | 18.55         |
| 20(high)       | 1              | 1            | 3690           | 17.85        | 19.38         |

**Table 8.3-2: Occupied bandwidth measurement results for sector 1**

| Bandwidth, MHz | No of carriers | Antenna, Port | Frequency, MHz | 99% OBW, MHz | 26 dB BW, MHz |
|----------------|----------------|---------------|----------------|--------------|---------------|
| 10(low)        | 1              | 0             | 3555           | 8.97         | 9.75          |
| 10(mid)        | 1              | 0             | 3625           | 8.97         | 9.78          |
| 10(high)       | 1              | 0             | 3695           | 8.97         | 9.81          |
| 10(low)        | 1              | 1             | 3555           | 8.94         | 9.81          |
| 10(mid)        | 1              | 1             | 3625           | 8.97         | 9.78          |
| 10(high)       | 1              | 1             | 3695           | 8.97         | 9.78          |
| 20(low)        | 1              | 0             | 3560           | 17.89        | 19.36         |
| 20(mid)        | 1              | 0             | 3625           | 17.89        | 19.27         |
| 20(high)       | 1              | 0             | 3690           | 17.89        | 19.28         |
| 20(low)        | 1              | 1             | 3560           | 17.89        | 19.28         |
| 20(mid)        | 1              | 1             | 3625           | 17.89        | 19.36         |
| 20(high)       | 1              | 1             | 3690           | 17.89        | 19.36         |
| 20(low)        | 2              | 0             | 3560           | 18.74        | 20.04         |
| 20(mid)        | 2              | 0             | 3630           | 18.89        | 19.97         |
| 20(high)       | 2              | 0             | 3690           | 18.89        | 19.97         |
| 20(low)        | 2              | 1             | 3560           | 18.88        | 19.90         |
| 20(mid)        | 2              | 1             | 3630           | 18.89        | 19.97         |
| 20(high)       | 2              | 1             | 3690           | 18.89        | 19.97         |
| 40(low)        | 2              | 0             | 3570           | 37.59        | 39.96         |
| 40(mid)        | 2              | 0             | 3625           | 37.60        | 38.70         |
| 40(high)       | 2              | 0             | 3680           | 37.61        | 39.96         |
| 40(low)        | 2              | 1             | 3570           | 37.62        | 39.36         |
| 40(mid)        | 2              | 1             | 3625           | 37.77        | 39.51         |
| 40(high)       | 2              | 1             | 3680           | 37.63        | 39.51         |
| 30(low)        | 3              | 0             | 3575           | 28.58        | 30.10         |
| 30(mid)        | 3              | 0             | 3625           | 28.65        | 30.02         |
| 30(high)       | 3              | 0             | 3675           | 28.65        | 30.02         |
| 30(low)        | 3              | 1             | 3575           | 28.58        | 30.10         |
| 30(mid)        | 3              | 1             | 3625           | 28.65        | 30.03         |
| 30(high)       | 3              | 1             | 3675           | 28.58        | 30.03         |
| 60(low)        | 3              | 0             | 3585           | 57.17        | 59.94         |
| 60(mid)        | 3              | 0             | 3625           | 57.23        | 59.94         |
| 60(high)       | 3              | 0             | 3665           | 57.22        | 60.14         |
| 60(low)        | 3              | 1             | 3585           | 57.13        | 59.39         |
| 60(mid)        | 3              | 1             | 3625           | 57.31        | 59.39         |
| 60(high)       | 3              | 1             | 3665           | 56.96        | 62.00         |
| 60(low)        | 3              | 0             | 3590           | 57.01        | 59.91         |
| 60(high)       | 3              | 0             | 3650           | 57.60        | 59.91         |
| 60(low)        | 3              | 1             | 3590           | 57.16        | 59.91         |
| 60(high)       | 3              | 1             | 3650           | 57.16        | 59.91         |

**Table 8.3-3: Occupied bandwidth measurement results for sector 2**

| Bandwidth, MHz | No of carriers | Antenna port | Frequency, MHz | 99% OBW, MHz | 26 dB BW, MHz |
|----------------|----------------|--------------|----------------|--------------|---------------|
| 10(low)        | 1              | 0            | 3555           | 8.97         | 9.78          |
| 10(mid)        | 1              | 0            | 3625           | 8.97         | 9.75          |
| 10(high)       | 1              | 0            | 3695           | 8.97         | 9.67          |
| 10(low)        | 1              | 1            | 3555           | 8.97         | 9.84          |
| 10(mid)        | 1              | 1            | 3625           | 8.97         | 9.78          |
| 10(high)       | 1              | 1            | 3695           | 8.97         | 9.78          |
| 20(low)        | 1              | 0            | 3560           | 17.86        | 19.43         |
| 20(mid)        | 1              | 0            | 3625           | 17.86        | 19.38         |
| 20(high)       | 1              | 0            | 3690           | 17.87        | 18.96         |
| 20(low)        | 1              | 1            | 3560           | 17.86        | 19.43         |
| 20(mid)        | 1              | 1            | 3625           | 17.86        | 19.33         |
| 20(high)       | 1              | 1            | 3690           | 17.87        | 19.32         |

**Section 8**  
**Test name**  
**Specification**

Testing data  
 96.41(e)(3) Emission bandwidth and occupied bandwidth  
 FCC Part 96 and FCC Part 2

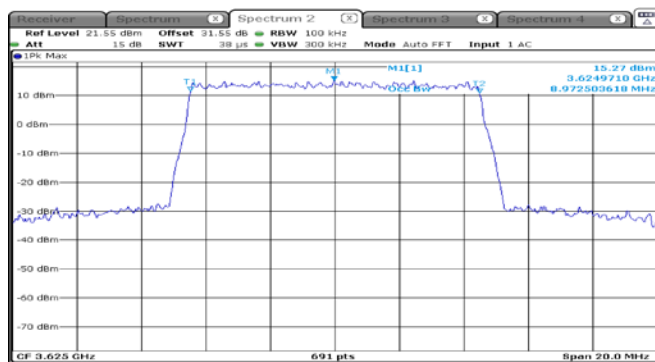


Figure 8.3-1: Occupied bandwidth sample plot for 1 CC 10 MHz channel

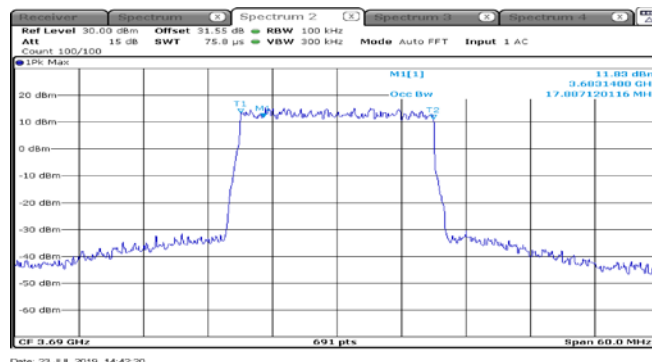


Figure 8.3-2: Occupied bandwidth sample plot for 1CC 20 MHz channel

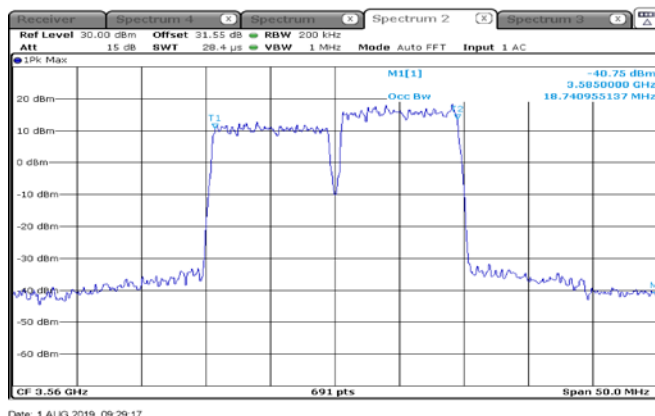


Figure 8.3-3: Occupied bandwidth sample plot for 2 CC 10 MHz channel

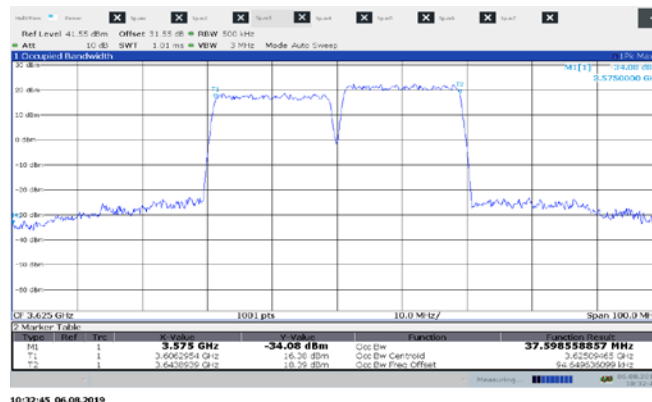


Figure 8.3-4: Occupied bandwidth sample plot for 2CC 20 MHz channel

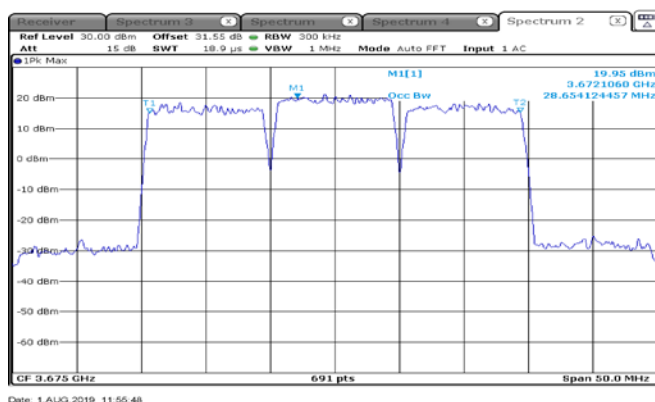


Figure 8.3-5: Occupied bandwidth sample plot for 3 CC 10 MHz channel

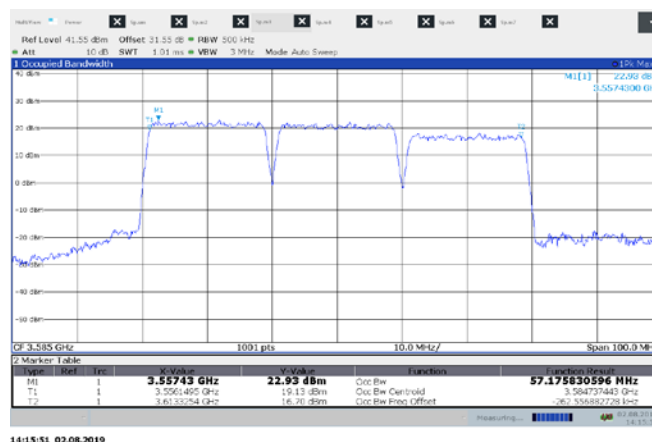
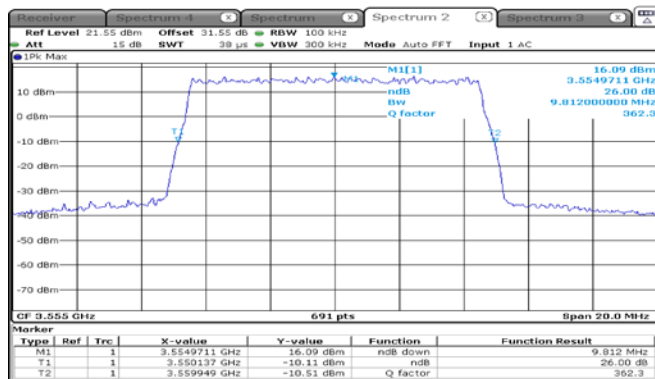


Figure 8.3-6: Occupied bandwidth sample plot for 3 CC 20 MHz channel

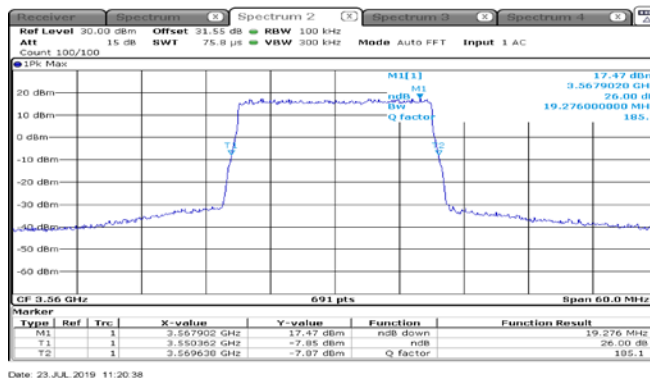
**Section 8**  
**Test name**  
**Specification**

Testing data  
96.41(e)(3) Emission bandwidth and occupied bandwidth  
FCC Part 96 and FCC Part 2



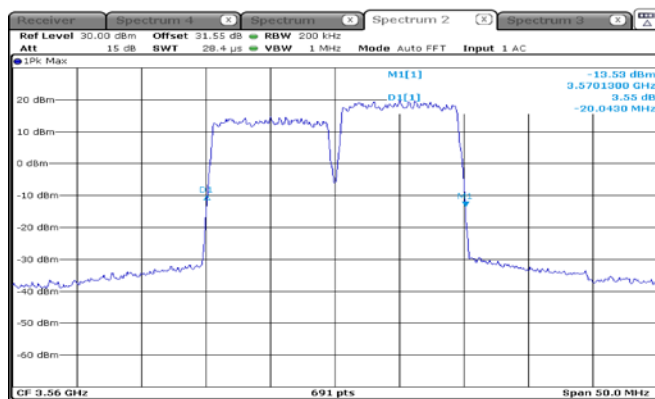
Date: 31 JUL 2019 07:15:04

Figure 8.3-7: 26 dB bandwidth sample plot for 1 CC 10 MHz channel



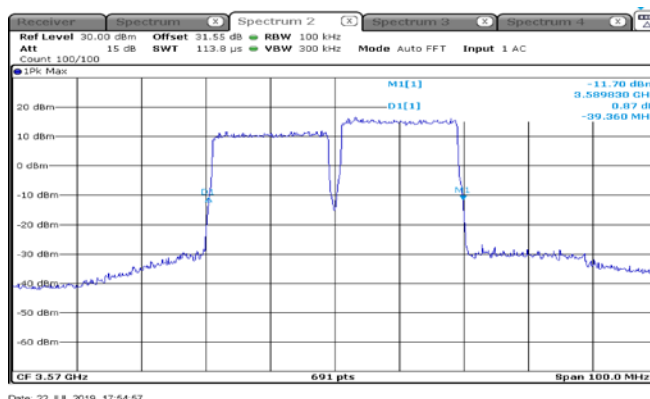
Date: 23 JUL 2019 11:20:38

Figure 8.3-8: 26 dB bandwidth sample plot for 1CC 20 MHz channel



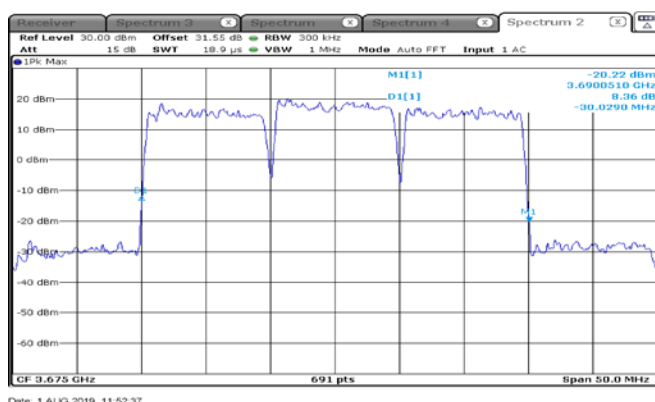
Date: 1 AUG 2019 09:30:30

Figure 8.3-9: 26 dB bandwidth sample plot for 2 CC 10 MHz channel



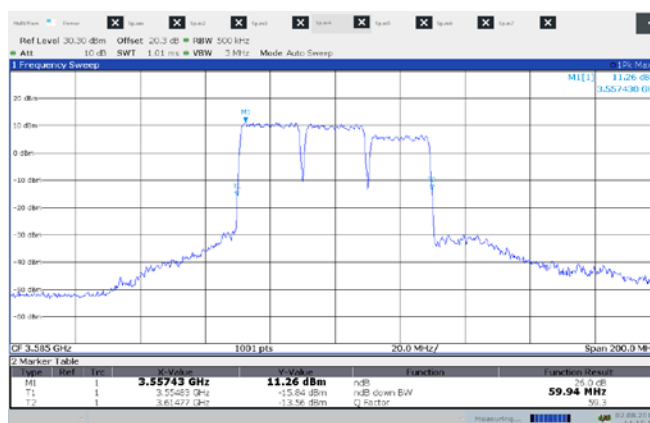
Date: 22 JUL 2019 17:54:57

Figure 8.3-10: 26 dB bandwidth sample plot for 2CC 20 MHz channel



Date: 1 AUG 2019 11:52:37

Figure 8.3-11: 26 dB bandwidth sample plot for 3 CC 10 MHz channel



14:15:18 02.08.2019

Figure 8.3-12: 26 dB bandwidth sample plot for 3 CC 20 MHz channel

## 8.4 FCC 96.41(e)(1) 3.5 GHz emissions and interference limits

### 8.4.1 Definitions and limits

General protection levels. Except as otherwise specified in paragraph (e)(2) of this section, for channel and frequency assignments made by the SAS to CBSDs, the conducted power of any emission outside the fundamental emission (whether in or outside of the authorized band) shall not exceed -13 dBm/MHz within 0–10 MHz above the upper SAS-assigned channel edge and within 0–10 MHz below the lower SAS-assigned channel edge. At all frequencies greater than 10 MHz above the upper SAS assigned channel edge and less than 10 MHz below the lower SAS assigned channel edge, the conducted power of any emission shall not exceed -25 dBm/MHz. The upper and lower SAS assigned channel edges are the upper and lower limits of any channel assigned to a CBSD by an SAS, or in the case of multiple contiguous channels, the upper and lower limits of the combined contiguous channels.

(3) Measurement procedure. (i) Compliance with this provision is based on the use of measurement instrumentation employing a resolution bandwidth of 1 MHz or greater. However, in the 1 MHz bands immediately outside and adjacent to the licensee's authorized frequency channel, a resolution bandwidth of no less than one percent of the fundamental emission bandwidth may be employed. A narrower resolution bandwidth is permitted in all cases to improve measurement accuracy provided the measured power is integrated over the full reference bandwidth (i.e., 1 MHz or 1 percent of emission bandwidth, as specified). The emission bandwidth is defined as the width of the signal between two points, one below the carrier center frequency and one above the carrier center frequency, outside of which all emissions are attenuated at least 26 dB below the transmitter power.

### 8.4.2 Test summary

|           |               |
|-----------|---------------|
| Test date | July 31, 2019 |
|-----------|---------------|

### 8.4.3 Observations, settings and special notes

This test was performed at the antenna ports and radiated with both antennas terminated with 50 Ohm load.

EUT was transmitting from both antenna connectors at the maximum power settings.

Emission results for both QPSK and 64 QAM modulation are shown in table below

Spectrum analyser settings for measurements within 1 MHz from the SAS assigned channel edges:

|                      |                           |
|----------------------|---------------------------|
| Resolution bandwidth | 1 % of occupied Bandwidth |
| Video bandwidth      | 3 × RBW                   |
| Detector mode        | RMS                       |
| Trace mode           | Power averaging           |

Spectrum analyser settings for measurements outside 1 MHz from the SAS assigned channel edges:

|                      |                 |
|----------------------|-----------------|
| Resolution bandwidth | 1 MHz           |
| Video bandwidth      | 3 MHz           |
| Detector mode        | RMS             |
| Trace mode           | Power averaging |

#### 8.4.4 Test data

**Table 8.4-1:** Emission mask measurements for sector o QPSK modulation

| Antenna port | No of carriers | Channel & Bandwidth,MHz | Offset from the SAS assigned channel edges, MHz | Frequency of max emission, MHz | Emission level, dBm | Limit <sup>1</sup> , dBm | Margin, dB |
|--------------|----------------|-------------------------|-------------------------------------------------|--------------------------------|---------------------|--------------------------|------------|
| 0            | 1              | 10(low)                 | >10                                             | 3540                           | -41.12              | -28.00                   | 13.12      |
| 1            | 1              | 10(low)                 | >10                                             | 3540                           | -40.98              | -28.00                   | 12.98      |
| 0            | 1              | 10(low)                 | 0-1                                             | 3550                           | -32.04              | -16.00                   | 16.04      |
| 1            | 1              | 10(low)                 | 0-1                                             | 3550                           | -32.95              | -16.00                   | 16.95      |
| 0            | 1              | 10(low)                 | 0-1                                             | 3560                           | -32.72              | -16.00                   | 16.72      |
| 1            | 1              | 10(low)                 | 0-1                                             | 3560                           | -31.57              | -16.00                   | 15.57      |
| 0            | 1              | 10(low)                 | >10                                             | 3570                           | -39.04              | -28.00                   | 11.04      |
| 1            | 1              | 10(low)                 | >10                                             | 3570                           | -39.38              | -28.00                   | 11.38      |
| 0            | 1              | 10(mid)                 | >10                                             | 3610                           | -38.30              | -28.00                   | 10.30      |
| 1            | 1              | 10(mid)                 | >10                                             | 3610                           | -39.25              | -28.00                   | 11.25      |
| 0            | 1              | 10(mid)                 | 0-1                                             | 3620                           | -31.63              | -16.00                   | 15.63      |
| 1            | 1              | 10(mid)                 | 0-1                                             | 3620                           | -34.62              | -16.00                   | 18.62      |
| 0            | 1              | 10(mid)                 | 0-1                                             | 3630                           | -30.13              | -16.00                   | 14.13      |
| 1            | 1              | 10(mid)                 | 0-1                                             | 3630                           | -32.33              | -16.00                   | 16.33      |
| 0            | 1              | 10(mid)                 | >10                                             | 3640                           | -38.43              | -28.00                   | 10.43      |
| 1            | 1              | 10(mid)                 | >10                                             | 3640                           | -40.04              | -28.00                   | 12.04      |
| 0            | 1              | 10(high)                | >10                                             | 3680                           | -38.03              | -28.00                   | 10.03      |
| 1            | 1              | 10(high)                | >10                                             | 3680                           | -39.02              | -28.00                   | 11.02      |
| 0            | 1              | 10(high)                | 0-1                                             | 3690                           | -31.57              | -16.00                   | 15.57      |
| 1            | 1              | 10(high)                | 0-1                                             | 3690                           | -31.64              | -16.00                   | 15.64      |
| 0            | 1              | 10(high)                | 0-1                                             | 3700                           | -32.39              | -16.00                   | 16.39      |
| 1            | 1              | 10(high)                | 0-1                                             | 3700                           | -33.05              | -16.00                   | 17.05      |
| 0            | 1              | 10(high)                | >10                                             | 3710                           | -40.17              | -28.00                   | 12.17      |
| 1            | 1              | 10(high)                | >10                                             | 3710                           | -40.33              | -28.00                   | 12.33      |
| 0            | 1              | 20(low)                 | >10                                             | 3540                           | -32.66              | -28.00                   | 4.66       |
| 1            | 1              | 20(low)                 | >10                                             | 3540                           | -33.15              | -28.00                   | 5.15       |
| 0            | 1              | 20(low)                 | 0-1                                             | 3550                           | -38.68              | -16.00                   | 22.68      |
| 1            | 1              | 20(low)                 | 0-1                                             | 3550                           | -38.19              | -16.00                   | 22.19      |
| 0            | 1              | 20(low)                 | 0-1                                             | 3570                           | -37.39              | -16.00                   | 21.39      |
| 1            | 1              | 20(low)                 | 0-1                                             | 3570                           | -37.79              | -16.00                   | 21.79      |
| 0            | 1              | 20(low)                 | >10                                             | 3580                           | -29.64              | -28.00                   | 1.64       |
| 1            | 1              | 20(low)                 | >10                                             | 3580                           | -28.99              | -28.00                   | 0.99       |
| 0            | 1              | 20(mid)                 | >10                                             | 3605                           | -31.30              | -28.00                   | 3.30       |
| 1            | 1              | 20(mid)                 | >10                                             | 3605                           | -30.33              | -28.00                   | 2.33       |
| 0            | 1              | 20(mid)                 | 0-1                                             | 3615                           | -38.29              | -16.00                   | 22.29      |
| 1            | 1              | 20(mid)                 | 0-1                                             | 3615                           | -37.80              | -16.00                   | 21.80      |
| 0            | 1              | 20(mid)                 | 0-1                                             | 3635                           | -37.86              | -16.00                   | 21.86      |
| 1            | 1              | 20(mid)                 | 0-1                                             | 3635                           | -37.91              | -16.00                   | 21.91      |
| 0            | 1              | 20(mid)                 | >10                                             | 3645                           | -29.44              | -28.00                   | 1.44       |
| 1            | 1              | 20(mid)                 | >10                                             | 3645                           | -30.03              | -28.00                   | 2.03       |
| 0            | 1              | 20(high)                | >10                                             | 3670                           | -28.89              | -28.00                   | 0.89       |
| 1            | 1              | 20(high)                | >10                                             | 3670                           | -28.12              | -28.00                   | 0.12       |
| 0            | 1              | 20(high)                | 0-1                                             | 3680                           | -34.83              | -16.00                   | 18.83      |
| 1            | 1              | 20(high)                | 0-1                                             | 3680                           | -34.83              | -16.00                   | 18.83      |
| 0            | 1              | 20(high)                | 0-1                                             | 3700                           | -35.28              | -16.00                   | 19.28      |
| 1            | 1              | 20(high)                | 0-1                                             | 3700                           | -36.45              | -16.00                   | 20.45      |
| 0            | 1              | 20(high)                | >10                                             | 3710                           | -28.93              | -28.00                   | 0.93       |
| 1            | 1              | 20(high)                | >10                                             | 3710                           | -30.26              | -28.00                   | 2.26       |

Note: <sup>1</sup>Margin of SISO operation. For MIMO 2x2 operation 3 dB is subtracted from the limit in the table above.

**Table 8.4-2:** Emission mask measurements for sector 1 QPSK modulation 1CC results

| Antenna port | No of carriers | Channel & Bandwidth,MHz | Offset from the SAS assigned channel edges, MHz | Frequency of max emission, MHz | Emission level, dBm | Limit <sup>1</sup> , dBm | Margin, dB |
|--------------|----------------|-------------------------|-------------------------------------------------|--------------------------------|---------------------|--------------------------|------------|
| 0            | 1              | 10(low)                 | >10                                             | 3540                           | -47.81              | -28.00                   | 19.81      |
| 1            | 1              | 10(low)                 | >10                                             | 3540                           | -45.18              | -28.00                   | 17.18      |
| 0            | 1              | 10(low)                 | 0-1                                             | 3550                           | -34.74              | -16.00                   | 18.74      |
| 1            | 1              | 10(low)                 | 0-1                                             | 3550                           | -34.62              | -16.00                   | 18.62      |
| 0            | 1              | 10(low)                 | 0-1                                             | 3560                           | -33.89              | -16.00                   | 17.89      |
| 1            | 1              | 10(low)                 | 0-1                                             | 3560                           | -30.87              | -16.00                   | 14.87      |
| 0            | 1              | 10(low)                 | >10                                             | 3570                           | -45.91              | -28.00                   | 17.91      |
| 1            | 1              | 10(low)                 | >10                                             | 3570                           | -43.31              | -28.00                   | 15.31      |
| 0            | 1              | 10(mid)                 | >10                                             | 3610                           | -46.66              | -28.00                   | 18.66      |
| 1            | 1              | 10(mid)                 | >10                                             | 3610                           | -43.83              | -28.00                   | 15.83      |
| 0            | 1              | 10(mid)                 | 0-1                                             | 3620                           | -34.05              | -16.00                   | 18.05      |
| 1            | 1              | 10(mid)                 | 0-1                                             | 3620                           | -32.70              | -16.00                   | 16.70      |
| 0            | 1              | 10(mid)                 | 0-1                                             | 3630                           | -32.88              | -16.00                   | 16.88      |
| 1            | 1              | 10(mid)                 | 0-1                                             | 3630                           | -28.64              | -16.00                   | 12.64      |
| 0            | 1              | 10(mid)                 | >10                                             | 3640                           | -46.48              | -28.00                   | 18.48      |
| 1            | 1              | 10(mid)                 | >10                                             | 3640                           | -43.20              | -28.00                   | 15.20      |
| 0            | 1              | 10(high)                | >10                                             | 3680                           | -43.83              | -28.00                   | 15.83      |
| 1            | 1              | 10(high)                | >10                                             | 3680                           | -43.78              | -28.00                   | 15.78      |
| 0            | 1              | 10(high)                | 0-1                                             | 3690                           | -29.60              | -16.00                   | 13.60      |
| 1            | 1              | 10(high)                | 0-1                                             | 3690                           | -30.34              | -16.00                   | 14.34      |
| 0            | 1              | 10(high)                | 0-1                                             | 3700                           | -25.82              | -16.00                   | 9.82       |
| 1            | 1              | 10(high)                | 0-1                                             | 3700                           | -28.87              | -16.00                   | 12.87      |
| 0            | 1              | 10(high)                | >10                                             | 3710                           | -44.62              | -28.00                   | 16.62      |
| 1            | 1              | 10(high)                | >10                                             | 3710                           | -45.27              | -28.00                   | 17.27      |
| 0            | 1              | 20(low)                 | >10                                             | 3540                           | -36.68              | -28.00                   | 8.68       |
| 1            | 1              | 20(low)                 | >10                                             | 3540                           | -39.33              | -28.00                   | 11.33      |
| 0            | 1              | 20(low)                 | 0-1                                             | 3550                           | -24.96              | -16.00                   | 8.96       |
| 1            | 1              | 20(low)                 | 0-1                                             | 3550                           | -37.68              | -16.00                   | 21.68      |
| 0            | 1              | 20(low)                 | 0-1                                             | 3570                           | -38.16              | -16.00                   | 22.16      |
| 1            | 1              | 20(low)                 | 0-1                                             | 3570                           | -38.39              | -16.00                   | 22.39      |
| 0            | 1              | 20(low)                 | >10                                             | 3580                           | -38.75              | -28.00                   | 10.75      |
| 1            | 1              | 20(low)                 | >10                                             | 3580                           | -39.71              | -28.00                   | 11.71      |
| 0            | 1              | 20(mid)                 | >10                                             | 3605                           | -47.31              | -28.00                   | 19.31      |
| 1            | 1              | 20(mid)                 | >10                                             | 3605                           | -32.00              | -28.00                   | 4.00       |
| 0            | 1              | 20(mid)                 | 0-1                                             | 3615                           | -39.82              | -16.00                   | 23.82      |
| 1            | 1              | 20(mid)                 | 0-1                                             | 3615                           | -35.56              | -16.00                   | 19.56      |
| 0            | 1              | 20(mid)                 | 0-1                                             | 3635                           | -40.43              | -16.00                   | 24.43      |
| 1            | 1              | 20(mid)                 | 0-1                                             | 3635                           | -40.43              | -16.00                   | 24.43      |
| 0            | 1              | 20(mid)                 | >10                                             | 3645                           | -41.89              | -28.00                   | 13.89      |
| 1            | 1              | 20(mid)                 | >10                                             | 3645                           | -39.86              | -28.00                   | 11.86      |
| 0            | 1              | 20(high)                | >10                                             | 3670                           | -33.72              | -28.00                   | 5.72       |
| 1            | 1              | 20(high)                | >10                                             | 3670                           | -34.05              | -28.00                   | 6.05       |
| 0            | 1              | 20(high)                | 0-1                                             | 3680                           | -23.75              | -16.00                   | 7.75       |
| 1            | 1              | 20(high)                | 0-1                                             | 3680                           | -28.03              | -16.00                   | 12.03      |
| 0            | 1              | 20(high)                | 0-1                                             | 3700                           | -39.21              | -16.00                   | 23.21      |
| 1            | 1              | 20(high)                | 0-1                                             | 3700                           | -40.26              | -16.00                   | 24.26      |
| 0            | 1              | 20(high)                | >10                                             | 3710                           | -40.70              | -28.00                   | 12.70      |
| 1            | 1              | 20(high)                | >10                                             | 3710                           | -44.33              | -28.00                   | 16.33      |

Note: <sup>1</sup>Margin of SISO operation. For MIMO 2x2 operation 3 dB is subtracted from the limit in the table above

**Table 8.4-3:** Emission mask measurements for sector 1 QPSK modulation 2CC results

| Antenna port | No of carriers | Channel & Bandwidth,MHz | Offset from the SAS assigned channel edges, MHz | Frequency of max emission, MHz | Emission level, dBm | Limit <sup>1</sup> , dBm | Margin, dB |
|--------------|----------------|-------------------------|-------------------------------------------------|--------------------------------|---------------------|--------------------------|------------|
| 0            | 2              | 20(low)                 | >10                                             | 3540                           | -44.60              | -28.00                   | 16.60      |
| 1            | 2              | 20(low)                 | >10                                             | 3540                           | -43.77              | -28.00                   | 15.77      |
| 0            | 2              | 20(low)                 | 0-1                                             | 3550                           | -35.15              | -16.00                   | 19.15      |
| 1            | 2              | 20(low)                 | 0-1                                             | 3550                           | -31.85              | -16.00                   | 15.85      |
| 0            | 2              | 20(low)                 | 0-1                                             | 3570                           | -24.65              | -16.00                   | 8.65       |
| 1            | 2              | 20(low)                 | 0-1                                             | 3570                           | -24.69              | -16.00                   | 8.69       |
| 0            | 2              | 20(low)                 | >10                                             | 3580                           | -41.41              | -28.00                   | 13.41      |
| 1            | 2              | 20(low)                 | >10                                             | 3580                           | -39.94              | -28.00                   | 11.94      |
| 0            | 2              | 20(mid)                 | >10                                             | 3610                           | -42.77              | -28.00                   | 14.77      |
| 1            | 2              | 20(mid)                 | >10                                             | 3610                           | -37.63              | -28.00                   | 9.63       |
| 0            | 2              | 20(mid)                 | 0-1                                             | 3620                           | -30.79              | -16.00                   | 14.79      |
| 1            | 2              | 20(mid)                 | 0-1                                             | 3620                           | -33.76              | -16.00                   | 17.76      |
| 0            | 2              | 20(mid)                 | 0-1                                             | 3640                           | -25.82              | -16.00                   | 9.82       |
| 1            | 2              | 20(mid)                 | 0-1                                             | 3640                           | -27.65              | -16.00                   | 11.65      |
| 0            | 2              | 20(mid)                 | >10                                             | 3650                           | -41.94              | -28.00                   | 13.94      |
| 1            | 2              | 20(mid)                 | >10                                             | 3650                           | -36.92              | -28.00                   | 8.92       |
| 0            | 2              | 20(high)                | >10                                             | 3670                           | -38.13              | -28.00                   | 10.13      |
| 1            | 2              | 20(high)                | >10                                             | 3670                           | -39.74              | -28.00                   | 11.74      |
| 0            | 2              | 20(high)                | 0-1                                             | 3680                           | -31.78              | -16.00                   | 15.78      |
| 1            | 2              | 20(high)                | 0-1                                             | 3680                           | -31.86              | -16.00                   | 15.86      |
| 0            | 2              | 20(high)                | 0-1                                             | 3700                           | -28.71              | -16.00                   | 12.71      |
| 1            | 2              | 20(high)                | 0-1                                             | 3700                           | -28.42              | -16.00                   | 12.42      |
| 0            | 2              | 20(high)                | >10                                             | 3710                           | -36.67              | -28.00                   | 8.67       |
| 1            | 2              | 20(high)                | >10                                             | 3710                           | -38.91              | -28.00                   | 10.91      |
| 0            | 2              | 40(low)                 | >10                                             | 3540                           | -40.20              | -28.00                   | 12.20      |
| 1            | 2              | 40(low)                 | >10                                             | 3540                           | -31.04              | -28.00                   | 3.04       |
| 0            | 2              | 40(low)                 | 0-1                                             | 3550                           | -34.25              | -16.00                   | 18.25      |
| 1            | 2              | 40(low)                 | 0-1                                             | 3550                           | -27.31              | -16.00                   | 11.31      |
| 0            | 2              | 40(low)                 | 0-1                                             | 3590                           | -26.86              | -16.00                   | 10.86      |
| 1            | 2              | 40(low)                 | 0-1                                             | 3590                           | -28.37              | -16.00                   | 12.37      |
| 0            | 2              | 40(low)                 | >10                                             | 3600                           | -36.45              | -28.00                   | 8.45       |
| 1            | 2              | 40(low)                 | >10                                             | 3600                           | -30.15              | -28.00                   | 2.15       |
| 0            | 2              | 40(mid)                 | >10                                             | 3595                           | -35.72              | -28.00                   | 7.72       |
| 1            | 2              | 40(mid)                 | >10                                             | 3595                           | -32.13              | -28.00                   | 4.13       |
| 0            | 2              | 40(mid)                 | 0-1                                             | 3605                           | -28.93              | -16.00                   | 12.93      |
| 1            | 2              | 40(mid)                 | 0-1                                             | 3605                           | -39.92              | -16.00                   | 23.92      |
| 0            | 2              | 40(mid)                 | 0-1                                             | 3645                           | -26.83              | -16.00                   | 10.83      |
| 1            | 2              | 40(mid)                 | 0-1                                             | 3645                           | -39.81              | -16.00                   | 23.81      |
| 0            | 2              | 40(mid)                 | >10                                             | 3655                           | -32.23              | -28.00                   | 4.23       |
| 1            | 2              | 40(mid)                 | >10                                             | 3655                           | -30.07              | -28.00                   | 2.07       |
| 0            | 2              | 40(high)                | >10                                             | 3650                           | -32.39              | -28.00                   | 4.39       |
| 1            | 2              | 40(high)                | >10                                             | 3650                           | -28.97              | -28.00                   | 0.97       |
| 0            | 2              | 40(high)                | 0-1                                             | 3660                           | -28.90              | -16.00                   | 12.90      |
| 1            | 2              | 40(high)                | 0-1                                             | 3660                           | -39.23              | -16.00                   | 23.23      |
| 0            | 2              | 40(high)                | 0-1                                             | 3700                           | -28.84              | -16.00                   | 12.84      |
| 1            | 2              | 40(high)                | 0-1                                             | 3700                           | -40.79              | -16.00                   | 24.79      |
| 0            | 2              | 40(high)                | >10                                             | 3710                           | -31.04              | -28.00                   | 3.04       |
| 1            | 2              | 40(high)                | >10                                             | 3710                           | -30.46              | -28.00                   | 2.46       |

Note: <sup>1</sup>Margin of SISO operation. For MIMO 2x2 operation 3 dB is subtracted from the limit in the table above

**Table 8.4-4:** Emission mask measurements for sector 1 QPSK modulation 3CC results

| Antenna port | No of carriers | Channel & Bandwidth,MHz | Offset from the SAS assigned channel edges, MHz | Frequency of max emission, MHz | Emission level, dBm | Limit <sup>1</sup> , dBm | Margin, dB |
|--------------|----------------|-------------------------|-------------------------------------------------|--------------------------------|---------------------|--------------------------|------------|
| 0            | 3              | 30(low)                 | >10                                             | 3550                           | -31.40              | -28.00                   | 3.40       |
| 1            | 3              | 30(low)                 | >10                                             | 3550                           | -32.67              | -28.00                   | 4.67       |
| 0            | 3              | 30(low)                 | 0-1                                             | 3560                           | -23.76              | -16.00                   | 7.76       |
| 1            | 3              | 30(low)                 | 0-1                                             | 3560                           | -24.40              | -16.00                   | 8.40       |
| 0            | 3              | 30(low)                 | 0-1                                             | 3590                           | -27.99              | -16.00                   | 11.99      |
| 1            | 3              | 30(low)                 | 0-1                                             | 3590                           | -25.56              | -16.00                   | 9.56       |
| 0            | 3              | 30(low)                 | >10                                             | 3600                           | -33.70              | -28.00                   | 5.70       |
| 1            | 3              | 30(low)                 | >10                                             | 3600                           | -34.19              | -28.00                   | 6.19       |
| 0            | 3              | 30(mid)                 | >10                                             | 3600                           | -39.84              | -28.00                   | 11.84      |
| 1            | 3              | 30(mid)                 | >10                                             | 3600                           | -37.89              | -28.00                   | 9.89       |
| 0            | 3              | 30(mid)                 | 0-1                                             | 3610                           | -28.17              | -16.00                   | 12.17      |
| 1            | 3              | 30(mid)                 | 0-1                                             | 3610                           | -26.83              | -16.00                   | 10.83      |
| 0            | 3              | 30(mid)                 | 0-1                                             | 3640                           | -24.31              | -16.00                   | 8.31       |
| 1            | 3              | 30(mid)                 | 0-1                                             | 3640                           | -24.09              | -16.00                   | 8.09       |
| 0            | 3              | 30(mid)                 | >10                                             | 3650                           | -37.53              | -28.00                   | 9.53       |
| 1            | 3              | 30(mid)                 | >10                                             | 3650                           | -37.69              | -28.00                   | 9.69       |
| 0            | 3              | 30(high)                | >10                                             | 3650                           | -33.11              | -28.00                   | 5.11       |
| 1            | 3              | 30(high)                | >10                                             | 3650                           | -35.29              | -28.00                   | 7.29       |
| 0            | 3              | 30(high)                | 0-1                                             | 3660                           | -27.71              | -16.00                   | 11.71      |
| 1            | 3              | 30(high)                | 0-1                                             | 3660                           | -26.42              | -16.00                   | 10.42      |
| 0            | 3              | 30(high)                | 0-1                                             | 3690                           | -23.86              | -16.00                   | 7.86       |
| 1            | 3              | 30(high)                | 0-1                                             | 3690                           | -22.67              | -16.00                   | 6.67       |
| 0            | 3              | 30(high)                | >10                                             | 3700                           | -33.44              | -28.00                   | 5.44       |
| 1            | 3              | 30(high)                | >10                                             | 3700                           | -35.16              | -28.00                   | 7.16       |
| 0            | 3              | 60(low)                 | >10                                             | 3545                           | -32.88              | -28.00                   | 4.88       |
| 1            | 3              | 60(low)                 | >10                                             | 3545                           | -32.68              | -28.00                   | 4.68       |
| 0            | 3              | 60(low)                 | 0-1                                             | 3555                           | -29.06              | -16.00                   | 13.06      |
| 1            | 3              | 60(low)                 | 0-1                                             | 3555                           | -41.20              | -16.00                   | 25.20      |
| 0            | 3              | 60(low)                 | 0-1                                             | 3615                           | -29.61              | -16.00                   | 13.61      |
| 1            | 3              | 60(low)                 | 0-1                                             | 3615                           | -41.93              | -16.00                   | 25.93      |
| 0            | 3              | 60(low)                 | >10                                             | 3625                           | -31.85              | -28.00                   | 3.85       |
| 1            | 3              | 60(low)                 | >10                                             | 3625                           | -31.25              | -28.00                   | 3.25       |
| 0            | 3              | 60(mid)                 | >10                                             | 3585                           | -29.56              | -28.00                   | 1.56       |
| 1            | 3              | 60(mid)                 | >10                                             | 3585                           | -28.98              | -28.00                   | 0.98       |
| 0            | 3              | 60(mid)                 | 0-1                                             | 3595                           | -28.81              | -16.00                   | 12.81      |
| 1            | 3              | 60(mid)                 | 0-1                                             | 3595                           | -40.53              | -16.00                   | 24.53      |
| 0            | 3              | 60(mid)                 | 0-1                                             | 3655                           | -29.74              | -16.00                   | 13.74      |
| 1            | 3              | 60(mid)                 | 0-1                                             | 3655                           | -42.77              | -16.00                   | 26.77      |
| 0            | 3              | 60(mid)                 | >10                                             | 3665                           | -33.43              | -28.00                   | 5.43       |
| 1            | 3              | 60(mid)                 | >10                                             | 3665                           | -31.70              | -28.00                   | 3.70       |
| 0            | 3              | 60(high)                | >10                                             | 3625                           | -31.27              | -28.00                   | 3.27       |
| 1            | 3              | 60(high)                | >10                                             | 3625                           | -28.35              | -28.00                   | 0.35       |
| 0            | 3              | 60(high)                | 0-1                                             | 3635                           | -27.30              | -16.00                   | 11.30      |
| 1            | 3              | 60(high)                | 0-1                                             | 3635                           | -24.37              | -16.00                   | 8.37       |
| 0            | 3              | 60(high)                | 0-1                                             | 3695                           | -32.89              | -16.00                   | 16.89      |
| 1            | 3              | 60(high)                | 0-1                                             | 3695                           | -45.11              | -16.00                   | 29.11      |
| 0            | 3              | 60(high)                | >10                                             | 3705                           | -31.04              | -28.00                   | 3.04       |
| 1            | 3              | 60(high)                | >10                                             | 3705                           | -30.08              | -28.00                   | 2.08       |

Note: <sup>1</sup>Margin of SISO operation. For MIMO 2x2 operation 3 dB is subtracted from the limit in the table above

**Table 8.4-5:** Emission mask measurements for sector 1 QPSK modulation 3CC additional frequency results

| Antenna port | No of carriers | Channel & Bandwidth,MHz | Offset from the SAS assigned channel edges, MHz | Frequency of max emission, MHz | Emission level, dBm | Limit <sup>1</sup> , dBm | Margin, dB |
|--------------|----------------|-------------------------|-------------------------------------------------|--------------------------------|---------------------|--------------------------|------------|
| 0            | 3              | 60(low)                 | >10                                             | 3560                           | -28.55              | -28.00                   | 0.55       |
| 1            | 3              | 60(low)                 | >10                                             | 3560                           | -28.25              | -28.00                   | 0.25       |
| 0            | 3              | 60(low)                 | 0-1                                             | 3570                           | -27.38              | -16.00                   | 11.38      |
| 1            | 3              | 60(low)                 | 0-1                                             | 3570                           | -26.11              | -16.00                   | 10.11      |
| 0            | 3              | 60(low)                 | 0-1                                             | 3630                           | -25.46              | -16.00                   | 9.46       |
| 1            | 3              | 60(low)                 | 0-1                                             | 3630                           | -26.52              | -16.00                   | 10.52      |
| 0            | 3              | 60(low)                 | >10                                             | 3640                           | -29.90              | -28.00                   | 1.90       |
| 1            | 3              | 60(low)                 | >10                                             | 3640                           | -29.05              | -28.00                   | 1.05       |
| 0            | 3              | 60(high)                | >10                                             | 3610                           | -28.25              | -28.00                   | 0.25       |
| 1            | 3              | 60(high)                | >10                                             | 3610                           | -29.23              | -28.00                   | 1.23       |
| 0            | 3              | 60(high)                | 0-1                                             | 3620                           | -26.72              | -16.00                   | 10.72      |
| 1            | 3              | 60(high)                | 0-1                                             | 3620                           | -25.83              | -16.00                   | 9.83       |
| 0            | 3              | 60(high)                | 0-1                                             | 3680                           | -24.57              | -16.00                   | 8.57       |
| 1            | 3              | 60(high)                | 0-1                                             | 3680                           | -27.74              | -16.00                   | 11.74      |
| 0            | 3              | 60(high)                | >10                                             | 3690                           | -28.10              | -28.00                   | 0.10       |
| 1            | 3              | 60(high)                | >10                                             | 3690                           | -29.15              | -28.00                   | 1.15       |

Note: <sup>1</sup>Margin of SISO operation. For MIMO 2x2 operation 3 dB is subtracted from the limit in the table above

**Table 8.4-6:** Emission mask measurements for sector 2 QPSK modulation 1CC results

| Antenna port | No of carriers | Channel & Bandwidth,MHz | Offset from the SAS assigned channel edges, MHz | Frequency of max emission, MHz | Emission level, dBm | Limit <sup>1</sup> , dBm | Margin, dB |
|--------------|----------------|-------------------------|-------------------------------------------------|--------------------------------|---------------------|--------------------------|------------|
| 0            | 1              | 10(low)                 | >10                                             | 3540                           | -41.67              | -28.00                   | 13.67      |
| 1            | 1              | 10(low)                 | >10                                             | 3540                           | -40.06              | -28.00                   | 12.06      |
| 0            | 1              | 10(low)                 | 0-1                                             | 3550                           | -31.18              | -16.00                   | 15.18      |
| 1            | 1              | 10(low)                 | 0-1                                             | 3550                           | -31.58              | -16.00                   | 15.58      |
| 0            | 1              | 10(low)                 | 0-1                                             | 3560                           | -31.84              | -16.00                   | 15.84      |
| 1            | 1              | 10(low)                 | 0-1                                             | 3560                           | -30.44              | -16.00                   | 14.44      |
| 0            | 1              | 10(low)                 | >10                                             | 3570                           | -38.42              | -28.00                   | 10.42      |
| 1            | 1              | 10(low)                 | >10                                             | 3570                           | -37.81              | -28.00                   | 9.81       |
| 0            | 1              | 10(mid)                 | >10                                             | 3610                           | -39.21              | -28.00                   | 11.21      |
| 1            | 1              | 10(mid)                 | >10                                             | 3610                           | -36.67              | -28.00                   | 8.67       |
| 0            | 1              | 10(mid)                 | 0-1                                             | 3620                           | -31.71              | -16.00                   | 15.71      |
| 1            | 1              | 10(mid)                 | 0-1                                             | 3620                           | -31.05              | -16.00                   | 15.05      |
| 0            | 1              | 10(mid)                 | 0-1                                             | 3630                           | -30.62              | -16.00                   | 14.62      |
| 1            | 1              | 10(mid)                 | 0-1                                             | 3630                           | -30.71              | -16.00                   | 14.71      |
| 0            | 1              | 10(mid)                 | >10                                             | 3640                           | -39.58              | -28.00                   | 11.58      |
| 1            | 1              | 10(mid)                 | >10                                             | 3640                           | -36.89              | -28.00                   | 8.89       |
| 0            | 1              | 10(high)                | >10                                             | 3680                           | -39.21              | -28.00                   | 11.21      |
| 1            | 1              | 10(high)                | >10                                             | 3680                           | -36.56              | -28.00                   | 8.56       |
| 0            | 1              | 10(high)                | 0-1                                             | 3690                           | -26.99              | -16.00                   | 10.99      |
| 1            | 1              | 10(high)                | 0-1                                             | 3690                           | -32.53              | -16.00                   | 16.53      |
| 0            | 1              | 10(high)                | 0-1                                             | 3700                           | -25.82              | -16.00                   | 9.82       |
| 1            | 1              | 10(high)                | 0-1                                             | 3700                           | -32.54              | -16.00                   | 16.54      |
| 0            | 1              | 10(high)                | >10                                             | 3710                           | -38.61              | -28.00                   | 10.61      |
| 1            | 1              | 10(high)                | >10                                             | 3710                           | -40.23              | -28.00                   | 12.23      |
| 0            | 1              | 20(low)                 | >10                                             | 3540                           | -31.21              | -28.00                   | 3.21       |
| 1            | 1              | 20(low)                 | >10                                             | 3540                           | -30.58              | -28.00                   | 2.58       |
| 0            | 1              | 20(low)                 | 0-1                                             | 3550                           | -35.97              | -16.00                   | 19.97      |
| 1            | 1              | 20(low)                 | 0-1                                             | 3550                           | -35.56              | -16.00                   | 19.56      |
| 0            | 1              | 20(low)                 | 0-1                                             | 3570                           | -35.48              | -16.00                   | 19.48      |
| 1            | 1              | 20(low)                 | 0-1                                             | 3570                           | -35.78              | -16.00                   | 19.78      |
| 0            | 1              | 20(low)                 | >10                                             | 3580                           | -28.42              | -28.00                   | 0.42       |
| 1            | 1              | 20(low)                 | >10                                             | 3580                           | -28.51              | -28.00                   | 0.51       |
| 0            | 1              | 20(mid)                 | >10                                             | 3605                           | -31.19              | -28.00                   | 3.19       |
| 1            | 1              | 20(mid)                 | >10                                             | 3605                           | -31.22              | -28.00                   | 3.22       |
| 0            | 1              | 20(mid)                 | 0-1                                             | 3615                           | -37.83              | -16.00                   | 21.83      |
| 1            | 1              | 20(mid)                 | 0-1                                             | 3615                           | -37.90              | -16.00                   | 21.90      |
| 0            | 1              | 20(mid)                 | 0-1                                             | 3635                           | -37.79              | -16.00                   | 21.79      |
| 1            | 1              | 20(mid)                 | 0-1                                             | 3635                           | -37.11              | -16.00                   | 21.11      |
| 0            | 1              | 20(mid)                 | >10                                             | 3645                           | -28.91              | -28.00                   | 0.91       |
| 1            | 1              | 20(mid)                 | >10                                             | 3645                           | -30.23              | -28.00                   | 2.23       |
| 0            | 1              | 20(high)                | >10                                             | 3670                           | -30.81              | -28.00                   | 2.81       |
| 1            | 1              | 20(high)                | >10                                             | 3670                           | -28.12              | -28.00                   | 0.12       |
| 0            | 1              | 20(high)                | 0-1                                             | 3680                           | -25.68              | -16.00                   | 9.68       |
| 1            | 1              | 20(high)                | 0-1                                             | 3680                           | -26.88              | -16.00                   | 10.88      |
| 0            | 1              | 20(high)                | 0-1                                             | 3700                           | -28.70              | -16.00                   | 12.70      |
| 1            | 1              | 20(high)                | 0-1                                             | 3700                           | -27.03              | -16.00                   | 11.03      |
| 0            | 1              | 20(high)                | >10                                             | 3710                           | -29.37              | -28.00                   | 1.37       |
| 1            | 1              | 20(high)                | >10                                             | 3710                           | -29.25              | -28.00                   | 1.25       |

Note: <sup>1</sup>Margin of SISO operation. For MIMO 2x2 operation 3 dB is subtracted from the limit in the table above.

**Table 8.4-7:** Emission mask measurements for sector 1 64 QAM modulation 1CC results

| Antenna port | No of carriers | Channel & Bandwidth,MHz | Offset from the SAS assigned channel edges, MHz | Frequency of max emission, MHz | Emission level, dBm | Limit <sup>1</sup> , dBm | Margin, dB |
|--------------|----------------|-------------------------|-------------------------------------------------|--------------------------------|---------------------|--------------------------|------------|
| 0            | 1              | 10(low)                 | >10                                             | 3540                           | -45.03              | -28.00                   | 17.03      |
| 1            | 1              | 10(low)                 | >10                                             | 3540                           | -44.53              | -28.00                   | 16.53      |
| 0            | 1              | 10(low)                 | 0-1                                             | 3550                           | -29.09              | -16.00                   | 13.09      |
| 1            | 1              | 10(low)                 | 0-1                                             | 3550                           | -27.98              | -16.00                   | 11.98      |
| 0            | 1              | 10(low)                 | 0-1                                             | 3560                           | -34.08              | -16.00                   | 18.08      |
| 1            | 1              | 10(low)                 | 0-1                                             | 3560                           | -30.35              | -16.00                   | 14.35      |
| 0            | 1              | 10(low)                 | >10                                             | 3570                           | -43.92              | -28.00                   | 15.92      |
| 1            | 1              | 10(low)                 | >10                                             | 3570                           | -43.47              | -28.00                   | 15.47      |
| 0            | 1              | 10(mid)                 | >10                                             | 3610                           | -43.36              | -28.00                   | 15.36      |
| 1            | 1              | 10(mid)                 | >10                                             | 3610                           | -43.40              | -28.00                   | 15.4       |
| 0            | 1              | 10(mid)                 | 0-1                                             | 3620                           | -28.42              | -16.00                   | 12.42      |
| 1            | 1              | 10(mid)                 | 0-1                                             | 3620                           | -28.15              | -16.00                   | 12.15      |
| 0            | 1              | 10(mid)                 | 0-1                                             | 3630                           | -32.60              | -16.00                   | 16.6       |
| 1            | 1              | 10(mid)                 | 0-1                                             | 3630                           | -31.33              | -16.00                   | 15.33      |
| 0            | 1              | 10(mid)                 | >10                                             | 3640                           | -44.12              | -28.00                   | 16.12      |
| 1            | 1              | 10(mid)                 | >10                                             | 3640                           | -43.20              | -28.00                   | 15.2       |
| 0            | 1              | 10(high)                | >10                                             | 3680                           | -43.69              | -28.00                   | 15.69      |
| 1            | 1              | 10(high)                | >10                                             | 3680                           | -44.19              | -28.00                   | 16.19      |
| 0            | 1              | 10(high)                | 0-1                                             | 3690                           | -26.55              | -16.00                   | 10.55      |
| 1            | 1              | 10(high)                | 0-1                                             | 3690                           | -27.34              | -16.00                   | 11.34      |
| 0            | 1              | 10(high)                | 0-1                                             | 3700                           | -33.92              | -16.00                   | 17.92      |
| 1            | 1              | 10(high)                | 0-1                                             | 3700                           | -34.88              | -16.00                   | 18.88      |
| 0            | 1              | 10(high)                | >10                                             | 3710                           | -44.87              | -28.00                   | 16.87      |
| 1            | 1              | 10(high)                | >10                                             | 3710                           | -45.36              | -28.00                   | 17.36      |
| 0            | 1              | 20(low)                 | >10                                             | 3540                           | -39.03              | -28.00                   | 11.03      |
| 1            | 1              | 20(low)                 | >10                                             | 3540                           | -38.73              | -28.00                   | 10.73      |
| 0            | 1              | 20(low)                 | 0-1                                             | 3550                           | -31.83              | -16.00                   | 15.83      |
| 1            | 1              | 20(low)                 | 0-1                                             | 3550                           | -33.91              | -16.00                   | 17.91      |
| 0            | 1              | 20(low)                 | 0-1                                             | 3570                           | -33.43              | -16.00                   | 17.43      |
| 1            | 1              | 20(low)                 | 0-1                                             | 3570                           | -29.83              | -16.00                   | 13.83      |
| 0            | 1              | 20(low)                 | >10                                             | 3580                           | -39.71              | -28.00                   | 11.71      |
| 1            | 1              | 20(low)                 | >10                                             | 3580                           | -38.36              | -28.00                   | 10.36      |
| 0            | 1              | 20(mid)                 | >10                                             | 3605                           | -36.07              | -28.00                   | 8.07       |
| 1            | 1              | 20(mid)                 | >10                                             | 3605                           | -36.01              | -28.00                   | 8.01       |
| 0            | 1              | 20(mid)                 | 0-1                                             | 3615                           | -31.70              | -16.00                   | 15.7       |
| 1            | 1              | 20(mid)                 | 0-1                                             | 3615                           | -29.39              | -16.00                   | 13.39      |
| 0            | 1              | 20(mid)                 | 0-1                                             | 3635                           | -32.09              | -16.00                   | 16.09      |
| 1            | 1              | 20(mid)                 | 0-1                                             | 3635                           | -30.68              | -16.00                   | 14.68      |
| 0            | 1              | 20(mid)                 | >10                                             | 3645                           | -38.18              | -28.00                   | 10.18      |
| 1            | 1              | 20(mid)                 | >10                                             | 3645                           | -37.68              | -28.00                   | 9.68       |
| 0            | 1              | 20(high)                | >10                                             | 3670                           | -34.39              | -28.00                   | 6.39       |
| 1            | 1              | 20(high)                | >10                                             | 3670                           | -35.23              | -28.00                   | 7.23       |
| 0            | 1              | 20(high)                | 0-1                                             | 3680                           | -29.09              | -16.00                   | 13.09      |
| 1            | 1              | 20(high)                | 0-1                                             | 3680                           | -29.54              | -16.00                   | 13.54      |
| 0            | 1              | 20(high)                | 0-1                                             | 3700                           | -31.42              | -16.00                   | 15.42      |
| 1            | 1              | 20(high)                | 0-1                                             | 3700                           | -31.28              | -16.00                   | 15.28      |
| 0            | 1              | 20(high)                | >10                                             | 3710                           | -37.67              | -28.00                   | 9.67       |
| 1            | 1              | 20(high)                | >10                                             | 3710                           | -38.29              | -28.00                   | 10.29      |

Note: <sup>1</sup>Margin of SISO operation. For MIMO 2x2 operation 3 dB is subtracted from the limit in the table above. For this modulation results are shown only sector1 since other sector results are repetitive and further investigated to be well within limits..

**Table 8.4-8:** Emission mask measurements for sector 1 64 QAM modulation 2CC results

| Antenna port | No of carriers | Channel & Bandwidth,MHz | Offset from the SAS assigned channel edges, MHz | Frequency of max emission, MHz | Emission level, dBm | Limit <sup>1</sup> , dBm | Margin, dB |
|--------------|----------------|-------------------------|-------------------------------------------------|--------------------------------|---------------------|--------------------------|------------|
| 0            | 2              | 20(low)                 | >10                                             | 3540                           | -46.88              | -28.00                   | 18.88      |
| 1            | 2              | 20(low)                 | >10                                             | 3540                           | -42.97              | -28.00                   | 14.97      |
| 0            | 2              | 20(low)                 | 0-1                                             | 3550                           | -30.20              | -16.00                   | 14.2       |
| 1            | 2              | 20(low)                 | 0-1                                             | 3550                           | -30.81              | -16.00                   | 14.81      |
| 0            | 2              | 20(low)                 | 0-1                                             | 3570                           | -30.48              | -16.00                   | 14.48      |
| 1            | 2              | 20(low)                 | 0-1                                             | 3570                           | -27.69              | -16.00                   | 11.69      |
| 0            | 2              | 20(low)                 | >10                                             | 3580                           | -41.58              | -28.00                   | 13.58      |
| 1            | 2              | 20(low)                 | >10                                             | 3580                           | -39.20              | -28.00                   | 11.2       |
| 0            | 2              | 20(mid)                 | >10                                             | 3610                           | -41.60              | -28.00                   | 13.6       |
| 1            | 2              | 20(mid)                 | >10                                             | 3610                           | -40.25              | -28.00                   | 12.25      |
| 0            | 2              | 20(mid)                 | 0-1                                             | 3620                           | -28.67              | -16.00                   | 12.67      |
| 1            | 2              | 20(mid)                 | 0-1                                             | 3620                           | -27.53              | -16.00                   | 11.53      |
| 0            | 2              | 20(mid)                 | 0-1                                             | 3640                           | -29.94              | -16.00                   | 13.94      |
| 1            | 2              | 20(mid)                 | 0-1                                             | 3640                           | -29.54              | -16.00                   | 13.54      |
| 0            | 2              | 20(mid)                 | >10                                             | 3650                           | -39.01              | -28.00                   | 11.01      |
| 1            | 2              | 20(mid)                 | >10                                             | 3650                           | -38.27              | -28.00                   | 10.27      |
| 0            | 2              | 20(high)                | >10                                             | 3670                           | -40.33              | -28.00                   | 12.33      |
| 1            | 2              | 20(high)                | >10                                             | 3670                           | -40.21              | -28.00                   | 12.21      |
| 0            | 2              | 20(high)                | 0-1                                             | 3680                           | -31.35              | -16.00                   | 15.35      |
| 1            | 2              | 20(high)                | 0-1                                             | 3680                           | -32.10              | -16.00                   | 16.10      |
| 0            | 2              | 20(high)                | 0-1                                             | 3700                           | -30.43              | -16.00                   | 14.43      |
| 1            | 2              | 20(high)                | 0-1                                             | 3700                           | -31.15              | -16.00                   | 15.15      |
| 0            | 2              | 20(high)                | >10                                             | 3710                           | -38.26              | -28.00                   | 10.26      |
| 1            | 2              | 20(high)                | >10                                             | 3710                           | -39.02              | -28.00                   | 11.02      |
| 0            | 2              | 40(low)                 | >10                                             | 3540                           | -36.00              | -28.00                   | 8.00       |
| 1            | 2              | 40(low)                 | >10                                             | 3540                           | -34.46              | -28.00                   | 6.46       |
| 0            | 2              | 40(low)                 | 0-1                                             | 3550                           | -28.62              | -16.00                   | 12.62      |
| 1            | 2              | 40(low)                 | 0-1                                             | 3550                           | -25.82              | -16.00                   | 9.82       |
| 0            | 2              | 40(low)                 | 0-1                                             | 3590                           | -27.44              | -16.00                   | 11.44      |
| 1            | 2              | 40(low)                 | 0-1                                             | 3590                           | -23.27              | -16.00                   | 7.27       |
| 0            | 2              | 40(low)                 | >10                                             | 3600                           | -35.26              | -28.00                   | 7.26       |
| 1            | 2              | 40(low)                 | >10                                             | 3600                           | -29.04              | -28.00                   | 1.04       |
| 0            | 2              | 40(mid)                 | >10                                             | 3595                           | -31.27              | -28.00                   | 3.27       |
| 1            | 2              | 40(mid)                 | >10                                             | 3595                           | -30.25              | -28.00                   | 2.25       |
| 0            | 2              | 40(mid)                 | 0-1                                             | 3605                           | -27.76              | -16.00                   | 11.76      |
| 1            | 2              | 40(mid)                 | 0-1                                             | 3605                           | -27.79              | -16.00                   | 11.79      |
| 0            | 2              | 40(mid)                 | 0-1                                             | 3645                           | -26.19              | -16.00                   | 10.19      |
| 1            | 2              | 40(mid)                 | 0-1                                             | 3645                           | -25.88              | -16.00                   | 9.88       |
| 0            | 2              | 40(mid)                 | >10                                             | 3655                           | -30.18              | -28.00                   | 2.18       |
| 1            | 2              | 40(mid)                 | >10                                             | 3655                           | -28.56              | -28.00                   | 0.56       |
| 0            | 2              | 40(high)                | >10                                             | 3650                           | -29.02              | -28.00                   | 1.02       |
| 1            | 2              | 40(high)                | >10                                             | 3650                           | -29.00              | -28.00                   | 1.00       |
| 0            | 2              | 40(high)                | 0-1                                             | 3660                           | -26.82              | -16.00                   | 10.82      |
| 1            | 2              | 40(high)                | 0-1                                             | 3660                           | -25.62              | -16.00                   | 9.62       |
| 0            | 2              | 40(high)                | 0-1                                             | 3700                           | -23.48              | -16.00                   | 7.48       |
| 1            | 2              | 40(high)                | 0-1                                             | 3700                           | -26.40              | -16.00                   | 10.4       |
| 0            | 2              | 40(high)                | >10                                             | 3710                           | -30.23              | -28.00                   | 2.23       |
| 1            | 2              | 40(high)                | >10                                             | 3710                           | -30.69              | -28.00                   | 2.69       |

Note: <sup>1</sup>Margin of SISO operation. For MIMO 2x2 operation 3 dB is subtracted from the limit in the table above

**Table 8.4-9:** Emission mask measurements for sector 1 64 QAM modulation 3CC results

| Antenna port | No of carriers | Channel & Bandwidth,MHz | Offset from the SAS assigned channel edges, MHz | Frequency of max emission, MHz | Emission level, dBm | Limit <sup>1</sup> , dBm | Margin, dB |
|--------------|----------------|-------------------------|-------------------------------------------------|--------------------------------|---------------------|--------------------------|------------|
| 0            | 3              | 30(low)                 | >10                                             | 3550                           | -35.28              | -28.00                   | 7.28       |
| 1            | 3              | 30(low)                 | >10                                             | 3550                           | -38.17              | -28.00                   | 10.17      |
| 0            | 3              | 30(low)                 | 0-1                                             | 3560                           | -26.49              | -16.00                   | 10.49      |
| 1            | 3              | 30(low)                 | 0-1                                             | 3560                           | -28.07              | -16.00                   | 12.07      |
| 0            | 3              | 30(low)                 | 0-1                                             | 3590                           | -36.90              | -16.00                   | 20.9       |
| 1            | 3              | 30(low)                 | 0-1                                             | 3590                           | -36.20              | -16.00                   | 20.2       |
| 0            | 3              | 30(low)                 | >10                                             | 3600                           | -39.22              | -28.00                   | 11.22      |
| 1            | 3              | 30(low)                 | >10                                             | 3600                           | -37.36              | -28.00                   | 9.36       |
| 0            | 3              | 30(mid)                 | >10                                             | 3600                           | -35.42              | -28.00                   | 7.42       |
| 1            | 3              | 30(mid)                 | >10                                             | 3600                           | -34.44              | -28.00                   | 6.44       |
| 0            | 3              | 30(mid)                 | 0-1                                             | 3610                           | -28.24              | -16.00                   | 12.24      |
| 1            | 3              | 30(mid)                 | 0-1                                             | 3610                           | -29.00              | -16.00                   | 13         |
| 0            | 3              | 30(mid)                 | 0-1                                             | 3640                           | -33.78              | -16.00                   | 17.78      |
| 1            | 3              | 30(mid)                 | 0-1                                             | 3640                           | -35.40              | -16.00                   | 19.4       |
| 0            | 3              | 30(mid)                 | >10                                             | 3650                           | -37.56              | -28.00                   | 9.56       |
| 1            | 3              | 30(mid)                 | >10                                             | 3650                           | -33.36              | -28.00                   | 5.36       |
| 0            | 3              | 30(high)                | >10                                             | 3650                           | -37.46              | -28.00                   | 9.46       |
| 1            | 3              | 30(high)                | >10                                             | 3650                           | -35.50              | -28.00                   | 7.50       |
| 0            | 3              | 30(high)                | 0-1                                             | 3660                           | -29.44              | -16.00                   | 13.44      |
| 1            | 3              | 30(high)                | 0-1                                             | 3660                           | -26.58              | -16.00                   | 10.58      |
| 0            | 3              | 30(high)                | 0-1                                             | 3690                           | -35.23              | -16.00                   | 19.23      |
| 1            | 3              | 30(high)                | 0-1                                             | 3690                           | -35.15              | -16.00                   | 19.15      |
| 0            | 3              | 30(high)                | >10                                             | 3700                           | -36.79              | -28.00                   | 8.79       |
| 1            | 3              | 30(high)                | >10                                             | 3700                           | -35.31              | -28.00                   | 7.31       |
| 0            | 3              | 60(low)                 | >10                                             | 3545                           | -30.01              | -28.00                   | 2.01       |
| 1            | 3              | 60(low)                 | >10                                             | 3545                           | -33.08              | -28.00                   | 5.08       |
| 0            | 3              | 60(low)                 | 0-1                                             | 3555                           | -29.60              | -16.00                   | 13.6       |
| 1            | 3              | 60(low)                 | 0-1                                             | 3555                           | -31.68              | -16.00                   | 15.68      |
| 0            | 3              | 60(low)                 | 0-1                                             | 3615                           | -29.94              | -16.00                   | 13.94      |
| 1            | 3              | 60(low)                 | 0-1                                             | 3615                           | -29.48              | -16.00                   | 13.48      |
| 0            | 3              | 60(low)                 | >10                                             | 3625                           | -32.39              | -28.00                   | 4.39       |
| 1            | 3              | 60(low)                 | >10                                             | 3625                           | -30.18              | -28.00                   | 2.18       |
| 0            | 3              | 60(mid)                 | >10                                             | 3585                           | -28.56              | -28.00                   | 0.56       |
| 1            | 3              | 60(mid)                 | >10                                             | 3585                           | -28.59              | -28.00                   | 0.59       |
| 0            | 3              | 60(mid)                 | 0-1                                             | 3595                           | -28.93              | -16.00                   | 12.93      |
| 1            | 3              | 60(mid)                 | 0-1                                             | 3595                           | -28.91              | -16.00                   | 12.91      |
| 0            | 3              | 60(mid)                 | 0-1                                             | 3655                           | -26.11              | -16.00                   | 10.11      |
| 1            | 3              | 60(mid)                 | 0-1                                             | 3655                           | -26.25              | -16.00                   | 10.25      |
| 0            | 3              | 60(mid)                 | >10                                             | 3665                           | -29.91              | -28.00                   | 1.91       |
| 1            | 3              | 60(mid)                 | >10                                             | 3665                           | -30.82              | -28.00                   | 2.82       |
| 0            | 3              | 60(high)                | >10                                             | 3625                           | -29.98              | -28.00                   | 1.98       |
| 1            | 3              | 60(high)                | >10                                             | 3625                           | -28.71              | -28.00                   | 0.71       |
| 0            | 3              | 60(high)                | 0-1                                             | 3635                           | -28.25              | -16.00                   | 12.25      |
| 1            | 3              | 60(high)                | 0-1                                             | 3635                           | -26.78              | -16.00                   | 10.78      |
| 0            | 3              | 60(high)                | 0-1                                             | 3695                           | -30.33              | -16.00                   | 14.33      |
| 1            | 3              | 60(high)                | 0-1                                             | 3695                           | -31.73              | -16.00                   | 15.73      |
| 0            | 3              | 60(high)                | >10                                             | 3705                           | -31.95              | -28.00                   | 3.95       |
| 1            | 3              | 60(high)                | >10                                             | 3705                           | -32.24              | -28.00                   | 4.24       |

Note: <sup>1</sup>Margin of SISO operation. For MIMO 2x2 operation 3 dB is subtracted from the limit in the table above

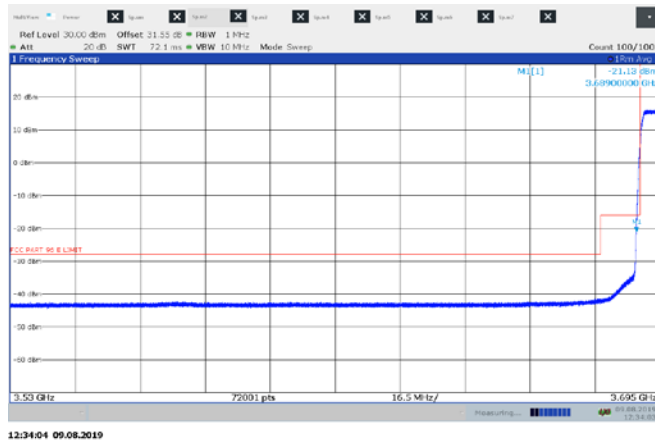
**Table 8.4-10:** Emission mask measurements for sector 1 3CC 64 QAM modulation additional frequency results

| Antenna port | No of carriers | Channel & Bandwidth,MHz | Offset from the SAS assigned channel edges, MHz | Frequency of max emission, MHz | Emission level, dBm | Limit <sup>1</sup> , dBm | Margin, dB |
|--------------|----------------|-------------------------|-------------------------------------------------|--------------------------------|---------------------|--------------------------|------------|
| 0            | 3              | 60(low)                 | >10                                             | 3560                           | -29.13              | -28.00                   | 1.13       |
| 1            | 3              | 60(low)                 | >10                                             | 3560                           | -28.67              | -28.00                   | 0.67       |
| 0            | 3              | 60(low)                 | 0-1                                             | 3570                           | -31.83              | -16.00                   | 15.83      |
| 1            | 3              | 60(low)                 | 0-1                                             | 3570                           | -28.88              | -16.00                   | 12.88      |
| 0            | 3              | 60(low)                 | 0-1                                             | 3630                           | -29.60              | -16.00                   | 13.6       |
| 1            | 3              | 60(low)                 | 0-1                                             | 3630                           | -27.08              | -16.00                   | 11.08      |
| 0            | 3              | 60(low)                 | >10                                             | 3640                           | -31.33              | -28.00                   | 3.33       |
| 1            | 3              | 60(low)                 | >10                                             | 3640                           | -29.63              | -28.00                   | 1.63       |
| 0            | 3              | 60(high)                | >10                                             | 3610                           | -28.10              | -28.00                   | 0.10       |
| 1            | 3              | 60(high)                | >10                                             | 3610                           | -28.13              | -28.00                   | 0.13       |
| 0            | 3              | 60(high)                | 0-1                                             | 3620                           | -25.27              | -16.00                   | 9.27       |
| 1            | 3              | 60(high)                | 0-1                                             | 3620                           | -24.99              | -16.00                   | 8.99       |
| 0            | 3              | 60(high)                | 0-1                                             | 3680                           | -27.18              | -16.00                   | 11.18      |
| 1            | 3              | 60(high)                | 0-1                                             | 3680                           | -26.64              | -16.00                   | 10.64      |
| 0            | 3              | 60(high)                | >10                                             | 3690                           | -28.91              | -28.00                   | 0.91       |
| 1            | 3              | 60(high)                | >10                                             | 3690                           | -28.79              | -28.00                   | 0.79       |

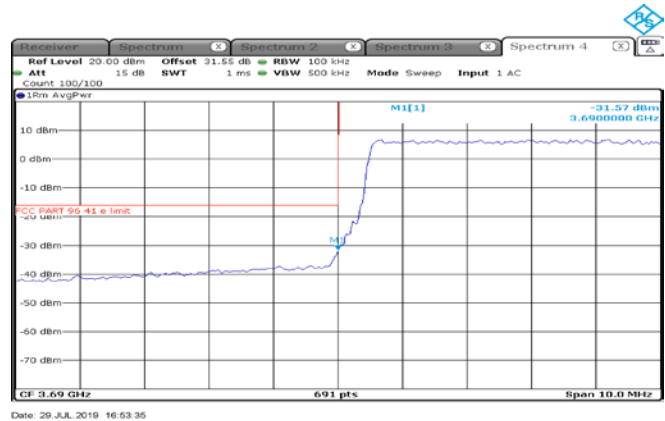
Note: <sup>1</sup>Margin of SISO operation. For MIMO 2x2 operation 3 dB is subtracted from the limit in the table above

**Section 8**  
**Test name**  
**Specification**

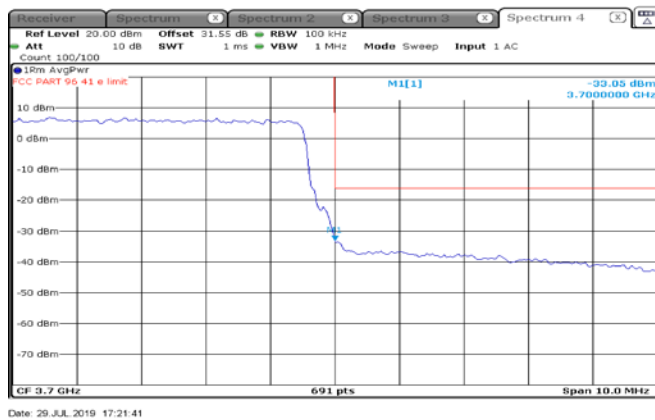
Testing data  
 FCC 96.41(e)(1) 3.5 GHz emissions and interference limits  
 FCC Part 96, FCC Part 2.1051 and FCC Part 2.1053



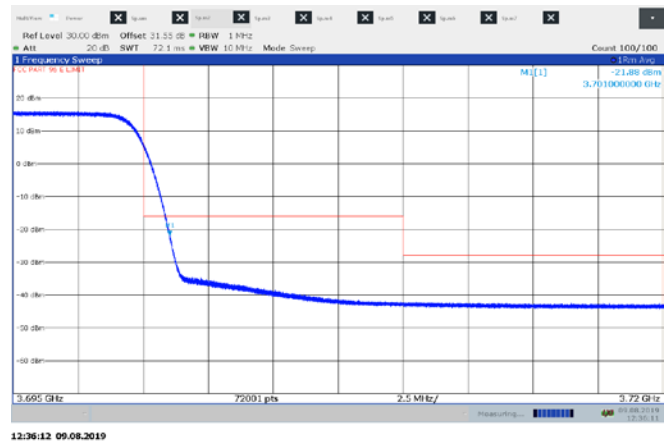
**Figure 8.4-1:** Emission measurement outside 10 MHz and within 1-10 MHz low end from the SAS assigned channel edge, sample plot for 1CC 10 MHz channel



**Figure 8.4-2:** Emission measurement within 0-1 MHz low end from the SAS assigned channel edge, sample plot for 1CC 10 MHz channel



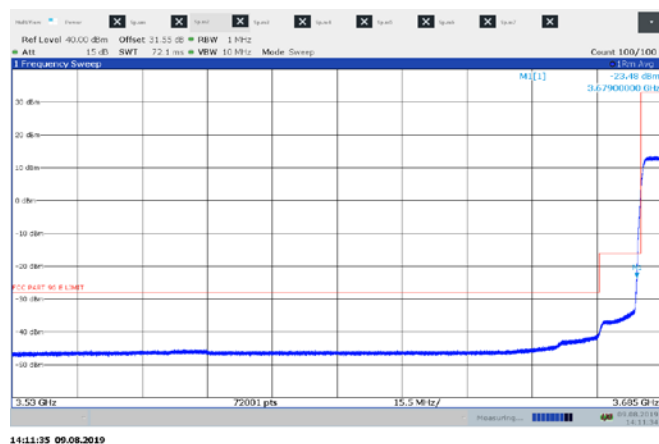
**Figure 8.4-3:** Emission measurement within 0-1 MHz high end from the SAS assigned channel edge, sample plot for 1CC 10 MHz channel



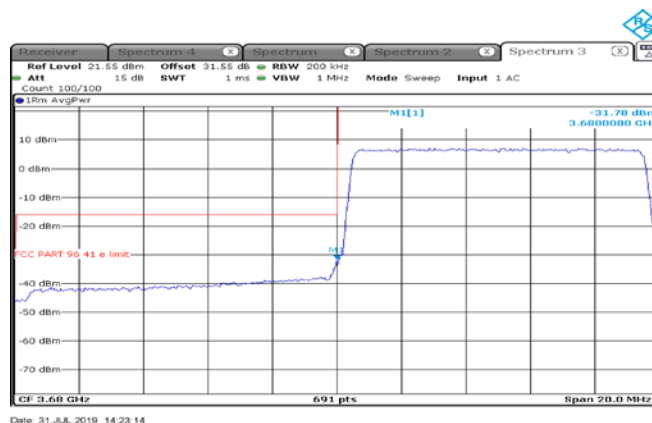
**Figure 8.4-4:** Emission measurement within 1-10 MHz and outside 10 MHz high end from the SAS assigned channel edge, sample plot for 1CC 10 MHz channel

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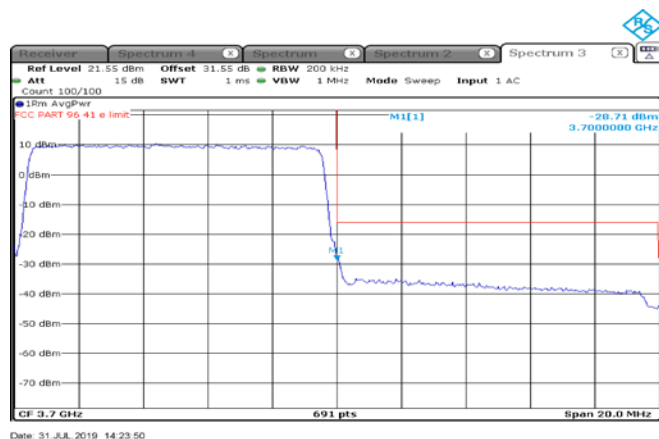
Testing data  
 FCC 96.41(e)(1) 3.5 GHz emissions and interference limits  
 FCC Part 96, FCC Part 2.1051 and FCC Part 2.1053



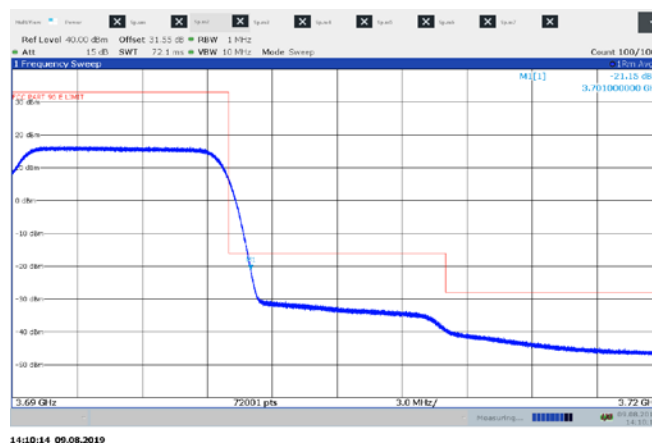
**Figure 8.4-5:** Emission measurement outside 10 MHz and within 1-10 MHz low end from the SAS assigned channel edge, sample plot for 2CC 10 MHz channel



**Figure 8.4-6:** Emission measurement within 0-1 MHz low end from the SAS assigned channel edge, sample plot for 2CC 10 MHz channel



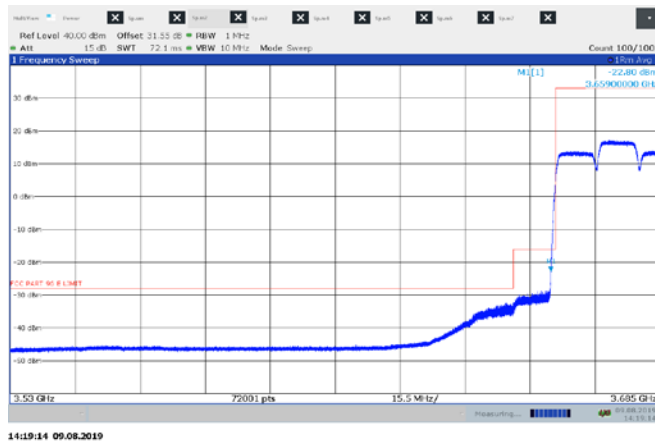
**Figure 8.4-7:** Emission measurement within 0-1 MHz high end from the SAS assigned channel edge, sample plot for 2CC 10 MHz channel



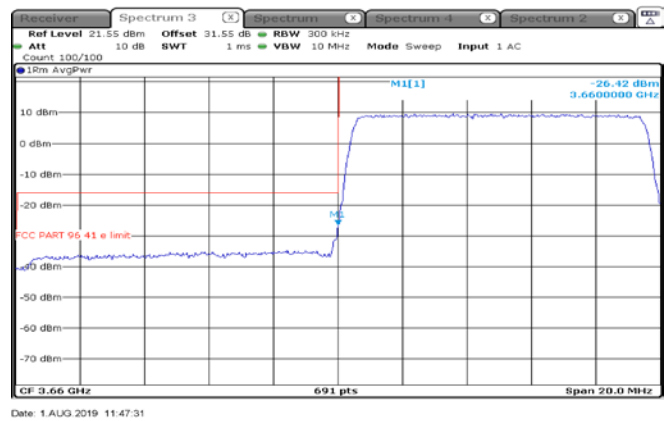
**Figure 8.4-8:** Emission measurement within 1-10 MHz and outside 10 MHz high end from the SAS assigned channel edge, sample plot for 2CC 10 MHz channel

**Section 8**  
**Test name**  
**Specification**

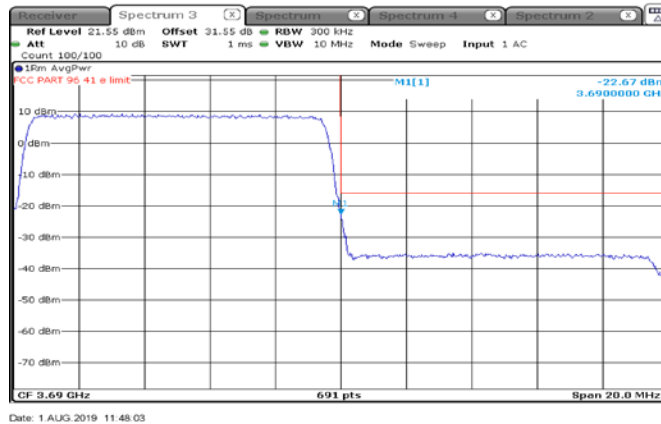
Testing data  
 FCC 96.41(e)(1) 3.5 GHz emissions and interference limits  
 FCC Part 96, FCC Part 2.1051 and FCC Part 2.1053



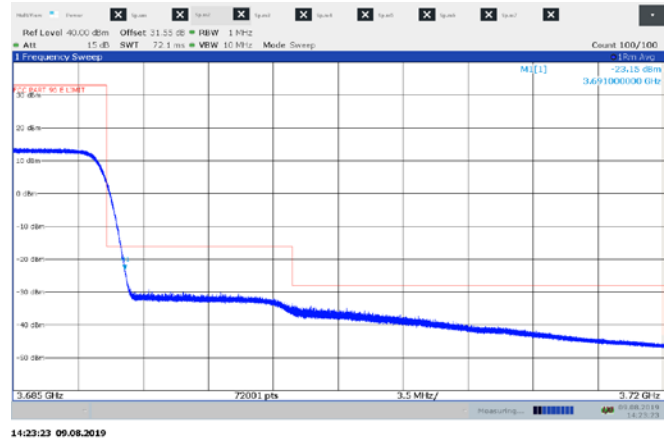
**Figure 8.4-9:** Emission measurement outside 10 MHz and within 1-10 MHz low end from the SAS assigned channel edge, sample plot for 3CC 10 MHz channel



**Figure 8.4-10:** Emission measurement within 0-1 MHz low end from the SAS assigned channel edge, sample plot for 3CC 10 MHz channel



**Figure 8.4-11:** Emission measurement within 0-1 MHz high end from the SAS assigned channel edge, sample plot for 3CC 10 MHz channel



**Figure 8.4-12:** Emission measurement within 1-10 Mhz and outside 10 MHz high end from the SAS assigned channel edge, sample plot for 3CC 10 MHz channel

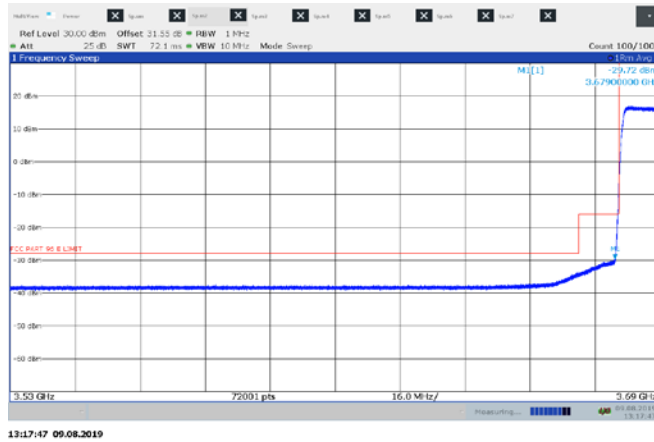


Figure 8.4-13: Emission measurement outside 10 MHz and within 1-10 MHz low end from the SAS assigned channel edge, sample plot for 1CC 20 MHz channel

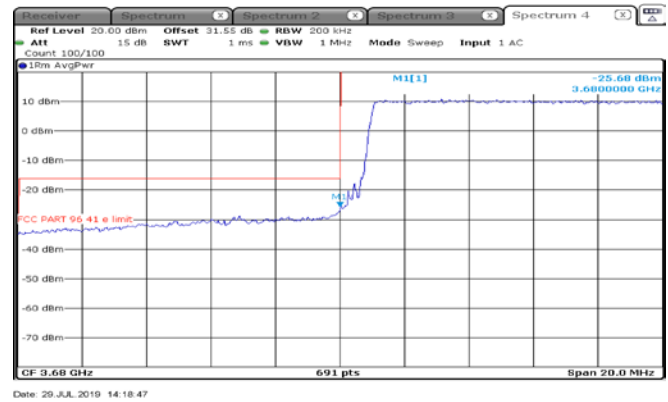


Figure 8.4-14: Emission measurement within 0-1 MHz low end from the SAS assigned channel edge, sample plot for 1CC 20 MHz channel

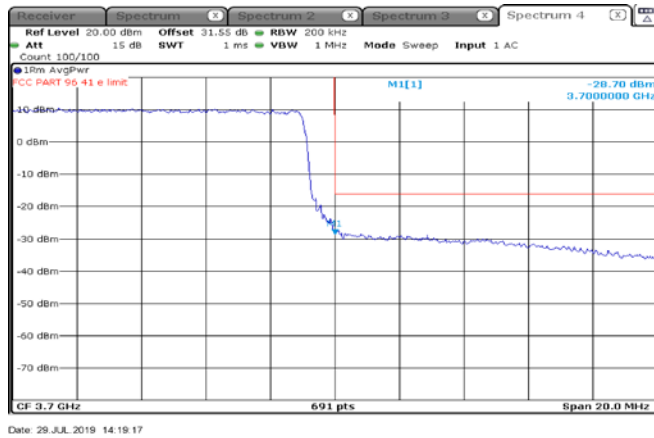


Figure 8.4-15: Emission measurement within 0-1 MHz high end from the SAS assigned channel edge, sample plot for 1CC 20 MHz channel

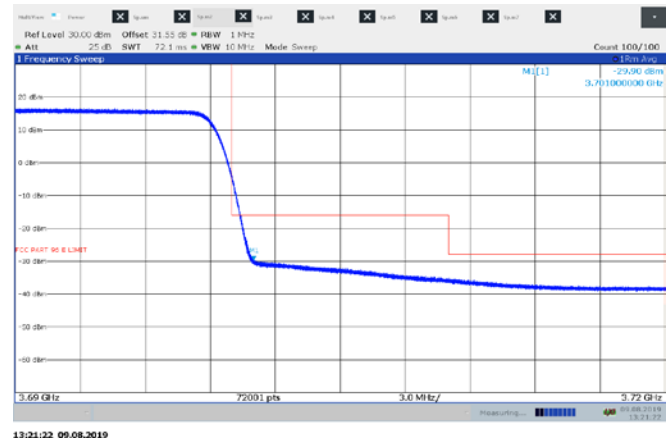
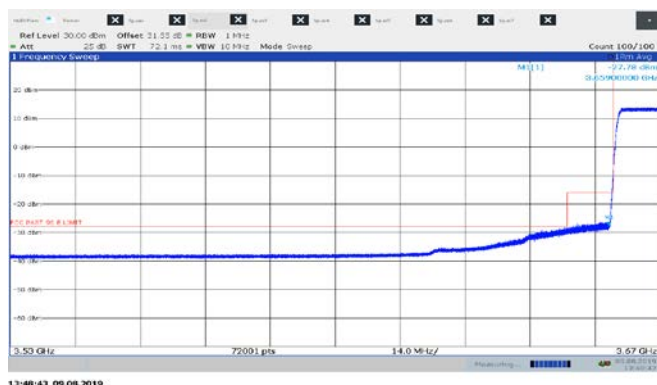


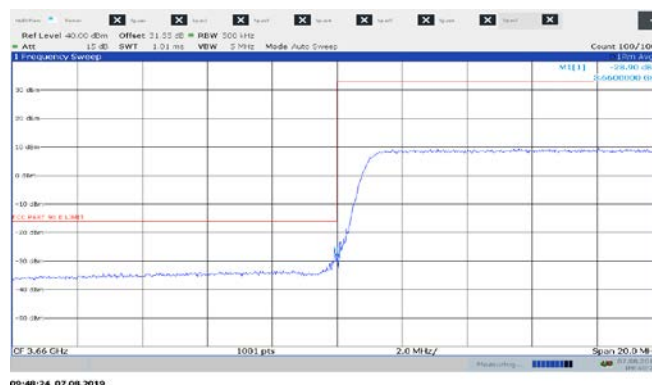
Figure 8.4-16: Emission measurement within 1-10 MHz and outside 10 MHz high end from the SAS assigned channel edge, sample plot for 1CC 20 MHz channel

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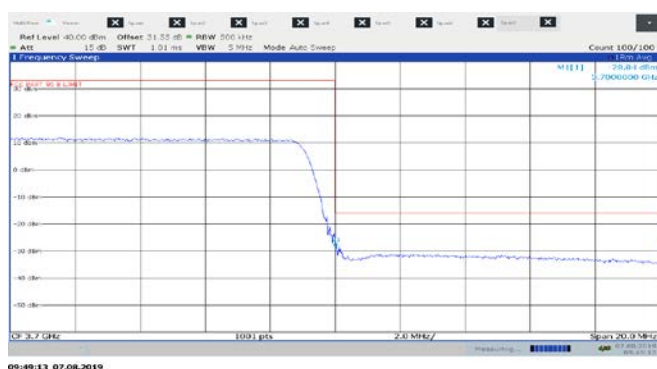
Testing data  
FCC 96.41(e)(1) 3.5 GHz emissions and interference limits  
FCC Part 96, FCC Part 2.1051 and FCC Part 2.1053



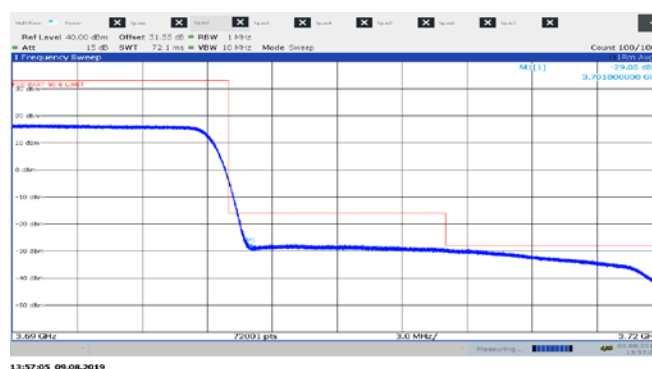
**Figure 8.4-17:** Emission measurement outside 10 MHz and within 1-10 MHz low end from the SAS assigned channel edge, sample plot for 2CC 20 MHz channel



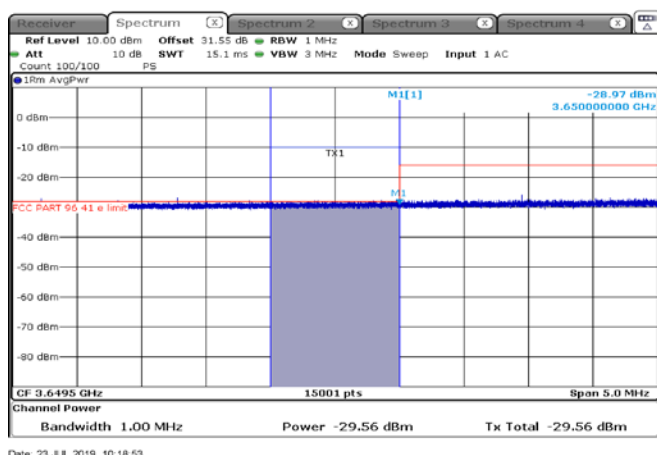
**Figure 8.4-18:** Emission measurement within 0-1 MHz low end from the SAS assigned channel edge, sample plot for 2CC 20 MHz channel



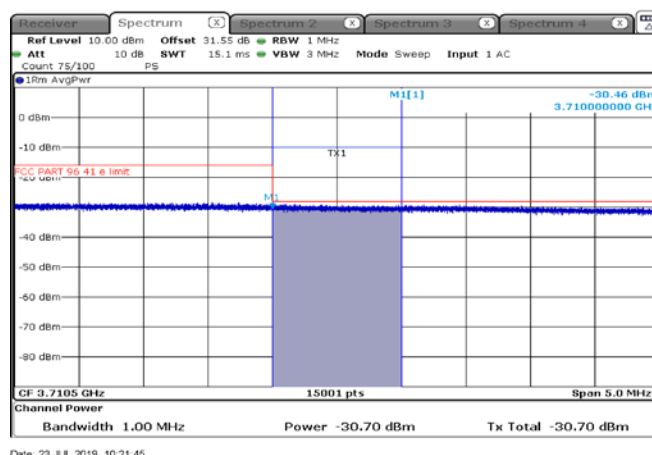
**Figure 8.4-19:** Emission measurement within 0-1 MHz high end from the SAS assigned channel edge, sample plot for 2CC 20 MHz channel



**Figure 8.4-20:** Emission measurement within 1-10 MHz and outside 10 MHz high end from the SAS assigned channel edge, sample plot for 2CC 20 MHz channel



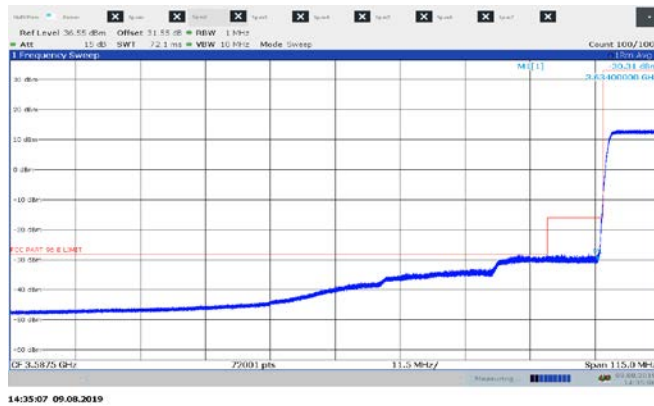
**Figure 8.4-21:** Emission measurement outside 10 MHz measurement low end from the SAS assigned channel edge, sample plot for 2CC 20 MHz channel



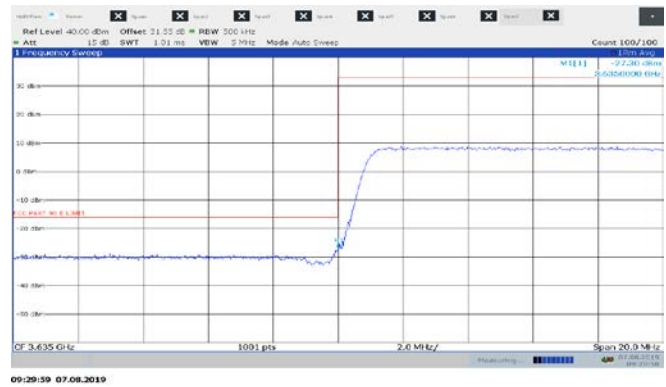
**Figure 8.4-22:** Emission measurement outside 10 MHz high end from the SAS assigned channel edge, sample plot for 2CC 20 MHz channel

**Section 8**  
**Test name**  
**Specification**

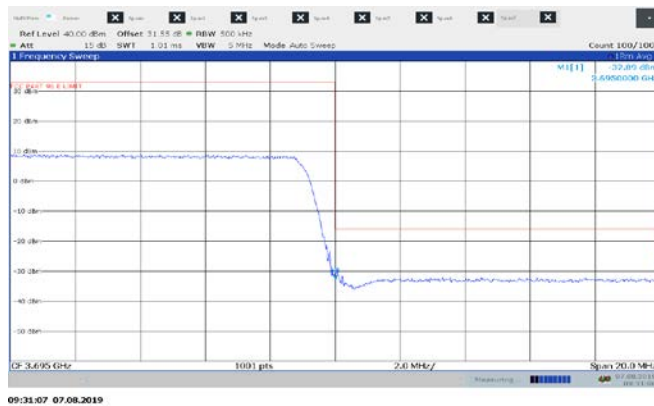
Testing data  
FCC 96.41(e)(1) 3.5 GHz emissions and interference limits  
FCC Part 96, FCC Part 2.1051 and FCC Part 2.1053



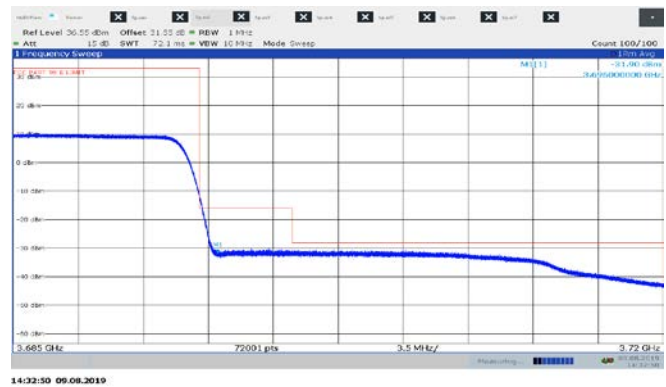
**Figure 8.4-23:** Emission measurement outside 10 MHz and within 1-10 MHz low end from the SAS assigned channel edge, sample plot for 3CC 20 MHz channel



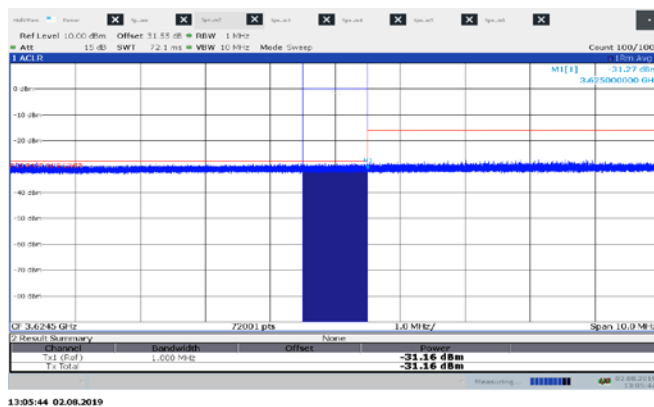
**Figure 8.4-24:** Emission measurement within 0-1 MHz low end from the SAS assigned channel edge, sample plot for 3CC 20 MHz channel



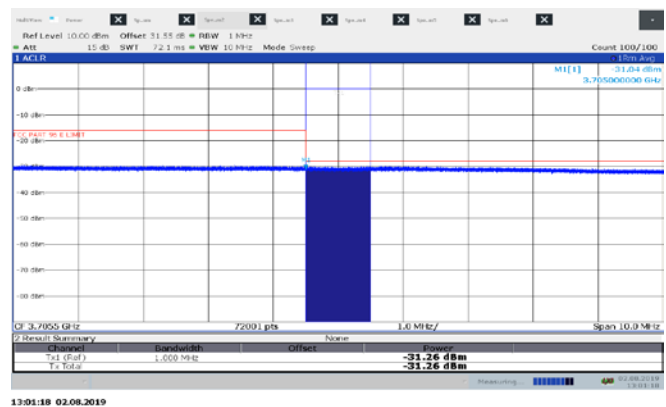
**Figure 8.4-25:** Emission measurement within 0-1 MHz high end from the SAS assigned channel edge, sample plot for 3CC 20 MHz channel



**Figure 8.4-26:** Emission measurement within 1-10 MHz and outside 10 MHz high end from the SAS assigned channel edge, sample plot for 3CC 20 MHz channel



**Figure 8.4-27:** Emission measurement outside 10 MHz measurement low end from the SAS assigned channel edge, sample plot for 3CC 20 MHz channel



**Figure 8.4-28:** Band edge measurement outside 10 MHz high end from the SAS assigned channel edge, sample plot for 3CC 20 MHz channel

## 8.5 FCC 96.41(e)(2) Additional protection levels

### 8.5.1 Definitions and limits

The conducted power of any emissions below 3530 MHz or above 3720 MHz shall not exceed -40dBm/MHz.

### 8.5.2 Test summary

Test date July 30, 2019

### 8.5.3 Observations, settings and special notes

The testing was performed conducted on each antenna port as well as radiated with both ports operating simultaneously in MIMO mode and terminated with 50 Ohm loads. Spurious emissions were tested from 30 MHz to the 10<sup>th</sup> harmonic. Only critical plots provided in test data below. Spectrum analyser settings:

|                         |                                                           |
|-------------------------|-----------------------------------------------------------|
| Resolution bandwidth    | 100 kHz (below 1 GHz) 1 MHz (conducted)                   |
| Video bandwidth         | 3 × RBW                                                   |
| Detector and trace mode | RMS Power averaging (conducted), Peak Max-hold (radiated) |

### 8.5.4 Test data

**Table 8.5-1:** Additional emission measurements at 3530 and 3720 MHz sector o QPSK modulation 1CC results

| Antenna port | No of carriers | Channel BW, MHz | Frequency of max emission, MHz | Emission level, dBm/MHz | Limit <sup>1</sup> , dBm/MHz | Margin, dB |
|--------------|----------------|-----------------|--------------------------------|-------------------------|------------------------------|------------|
| 0            | 1              | 10(low)         | 3530                           | -53.74                  | -43                          | 10.74      |
| 1            | 1              | 10(low)         | 3530                           | -50.55                  | -43                          | 7.55       |
| 0            | 1              | 10(low)         | 3720                           | -55.91                  | -43                          | 12.91      |
| 1            | 1              | 10(low)         | 3720                           | -51.29                  | -43                          | 8.29       |
| 0            | 1              | 10(mid)         | 3530                           | -46.34                  | -43                          | 3.34       |
| 1            | 1              | 10(mid)         | 3530                           | -51.17                  | -43                          | 8.17       |
| 0            | 1              | 10(mid)         | 3720                           | -45.70                  | -43                          | 2.70       |
| 1            | 1              | 10(mid)         | 3720                           | -51.08                  | -43                          | 8.08       |
| 0            | 1              | 10(high)        | 3530                           | -46.33                  | -43                          | 3.33       |
| 1            | 1              | 10(high)        | 3530                           | -46.61                  | -43                          | 3.61       |
| 0            | 1              | 10(high)        | 3720                           | -45.68                  | -43                          | 2.68       |
| 1            | 1              | 10(high)        | 3720                           | -45.75                  | -43                          | 2.75       |
| 0            | 1              | 20(low)         | 3530                           | -45.05                  | -43                          | 2.05       |
| 1            | 1              | 20(low)         | 3530                           | -44.97                  | -43                          | 1.97       |
| 0            | 1              | 20(low)         | 3720                           | -48.65                  | -43                          | 5.65       |
| 1            | 1              | 20(low)         | 3720                           | -48.60                  | -43                          | 5.60       |
| 0            | 1              | 20(mid)         | 3530                           | -48.53                  | -43                          | 5.53       |
| 1            | 1              | 20(mid)         | 3530                           | -48.53                  | -43                          | 5.53       |
| 0            | 1              | 20(mid)         | 3720                           | -48.60                  | -43                          | 5.60       |
| 1            | 1              | 20(mid)         | 3720                           | -48.61                  | -43                          | 5.61       |
| 0            | 1              | 20(high)        | 3530                           | -48.45                  | -43                          | 5.45       |
| 1            | 1              | 20(high)        | 3530                           | -48.51                  | -43                          | 5.51       |
| 0            | 1              | 20(high)        | 3720                           | -44.91                  | -43                          | 1.91       |
| 1            | 1              | 20(high)        | 3720                           | -45.50                  | -43                          | 2.50       |

Note: <sup>1</sup>Margin of SISO operation. For MIMO 2×2 operation 3 dB is subtracted from the limit in the table above.

**Table 8.5-2:** Additional emission measurements at 3530 and 3720 MHz sector 1 QPSK modulation 1CC results

| Antenna port | No of carriers | Channel BW, MHz | Frequency of max emission, MHz | Emission level, dBm/MHz | Limit <sup>1</sup> , dBm/MHz | Margin, dB |
|--------------|----------------|-----------------|--------------------------------|-------------------------|------------------------------|------------|
| 0            | 1              | 10(low)         | 3530                           | -51.38                  | -43                          | 8.38       |
| 1            | 1              | 10(low)         | 3530                           | -46.33                  | -43                          | 3.33       |
| 0            | 1              | 10(low)         | 3720                           | -51.27                  | -43                          | 8.27       |
| 1            | 1              | 10(low)         | 3720                           | -46.21                  | -43                          | 3.21       |
| 0            | 1              | 10(mid)         | 3530                           | -51.42                  | -43                          | 8.42       |
| 1            | 1              | 10(mid)         | 3530                           | -46.52                  | -43                          | 3.52       |
| 0            | 1              | 10(mid)         | 3720                           | -50.93                  | -43                          | 7.93       |
| 1            | 1              | 10(mid)         | 3720                           | -46.43                  | -43                          | 3.43       |
| 0            | 1              | 10(high)        | 3530                           | -46.48                  | -43                          | 3.48       |
| 1            | 1              | 10(high)        | 3530                           | -46.43                  | -43                          | 3.43       |
| 0            | 1              | 10(high)        | 3720                           | -45.82                  | -43                          | 2.82       |
| 1            | 1              | 10(high)        | 3720                           | -46.32                  | -43                          | 3.32       |
| 0            | 1              | 20(low)         | 3530                           | -53.69                  | -43                          | 10.69      |
| 1            | 1              | 20(low)         | 3530                           | -50.12                  | -43                          | 7.12       |
| 0            | 1              | 20(low)         | 3720                           | -50.77                  | -43                          | 7.77       |
| 1            | 1              | 20(low)         | 3720                           | -51.20                  | -43                          | 8.20       |
| 0            | 1              | 20(mid)         | 3530                           | -66.30                  | -43                          | 23.30      |
| 1            | 1              | 20(mid)         | 3530                           | -53.59                  | -43                          | 10.59      |
| 0            | 1              | 20(mid)         | 3720                           | -55.67                  | -43                          | 12.67      |
| 1            | 1              | 20(mid)         | 3720                           | -55.86                  | -43                          | 12.86      |
| 0            | 1              | 20(high)        | 3530                           | -59.98                  | -43                          | 16.98      |
| 1            | 1              | 20(high)        | 3530                           | -59.56                  | -43                          | 16.56      |
| 0            | 1              | 20(high)        | 3720                           | -55.03                  | -43                          | 12.03      |
| 1            | 1              | 20(high)        | 3720                           | -56.74                  | -43                          | 13.74      |

Note: <sup>1</sup>Margin of SISO operation. For MIMO 2x2 operation 3 dB is subtracted from the limit in the table above.

**Table 8.5-3:** Additional emission measurements at 3530 and 3720 MHz sector 1 QPSK modulation 2CC results

| Antenna port | No of carriers | Channel BW, MHz | Frequency of max emission, MHz | Emission level, dBm/MHz | Limit <sup>1</sup> , dBm/MHz | Margin, dB |
|--------------|----------------|-----------------|--------------------------------|-------------------------|------------------------------|------------|
| 0            | 2              | 20(low)         | 3530                           | -46.50                  | -43                          | 3.50       |
| 1            | 2              | 20(low)         | 3530                           | -46.17                  | -43                          | 3.17       |
| 0            | 2              | 20(low)         | 3720                           | -46.16                  | -43                          | 3.16       |
| 1            | 2              | 20(low)         | 3720                           | -45.92                  | -43                          | 2.92       |
| 0            | 2              | 20(mid)         | 3530                           | -51.24                  | -43                          | 8.24       |
| 1            | 2              | 20(mid)         | 3530                           | -46.17                  | -43                          | 3.17       |
| 0            | 2              | 20(mid)         | 3720                           | -55.93                  | -43                          | 12.93      |
| 1            | 2              | 20(mid)         | 3720                           | -51.12                  | -43                          | 8.12       |
| 0            | 2              | 20(high)        | 3530                           | -46.14                  | -43                          | 3.14       |
| 1            | 2              | 20(high)        | 3530                           | -46.21                  | -43                          | 3.21       |
| 0            | 2              | 20(high)        | 3720                           | -45.55                  | -43                          | 2.55       |
| 1            | 2              | 20(high)        | 3720                           | -46.11                  | -43                          | 3.11       |
| 0            | 2              | 40(low)         | 3530                           | -53.88                  | -43                          | 10.88      |
| 1            | 2              | 40(low)         | 3530                           | -44.91                  | -43                          | 1.91       |
| 0            | 2              | 40(low)         | 3720                           | -58.20                  | -43                          | 15.20      |
| 1            | 2              | 40(low)         | 3720                           | -54.47                  | -43                          | 11.47      |
| 0            | 2              | 40(mid)         | 3530                           | -48.70                  | -43                          | 5.70       |
| 1            | 2              | 40(mid)         | 3530                           | -55.99                  | -43                          | 12.99      |
| 0            | 2              | 40(mid)         | 3720                           | -53.52                  | -43                          | 10.52      |
| 1            | 2              | 40(mid)         | 3720                           | -45.70                  | -43                          | 2.70       |
| 0            | 2              | 40(high)        | 3530                           | -48.50                  | -43                          | 5.50       |
| 1            | 2              | 40(high)        | 3530                           | -50.42                  | -43                          | 7.42       |
| 0            | 2              | 40(high)        | 3720                           | -44.69                  | -43                          | 1.69       |
| 1            | 2              | 40(high)        | 3720                           | -43.53                  | -43                          | 0.53       |

Note: <sup>1</sup>Margin of SISO operation. For MIMO 2x2 operation 3 dB is subtracted from the limit in the table above.

**Table 8.5-4:** Additional emission measurements at 3530 and 3720 MHz sector 1 QPSK modulation 3CC results

| Antenna port | No of carriers | Channel BW, MHz     | Frequency of max emission, MHz | Emission level, dBm/MHz | Limit <sup>1</sup> , dBm/MHz | Margin, dB |
|--------------|----------------|---------------------|--------------------------------|-------------------------|------------------------------|------------|
| 0            | 3              | 30(low)             | 3530                           | -52.64                  | -43                          | 9.64       |
| 1            | 3              | 30(low)             | 3530                           | -50.71                  | -43                          | 7.71       |
| 0            | 3              | 30(low)             | 3720                           | -55.90                  | -43                          | 12.90      |
| 1            | 3              | 30(low)             | 3720                           | -51.17                  | -43                          | 8.17       |
| 0            | 3              | 30(mid)             | 3530                           | -51.16                  | -43                          | 8.16       |
| 1            | 3              | 30(mid)             | 3530                           | -51.13                  | -43                          | 8.13       |
| 0            | 3              | 30(mid)             | 3720                           | -51.22                  | -43                          | 8.22       |
| 1            | 3              | 30(mid)             | 3720                           | -51.01                  | -43                          | 8.01       |
| 0            | 3              | 30(high)            | 3530                           | -46.72                  | -43                          | 3.72       |
| 1            | 3              | 30(high)            | 3530                           | -46.44                  | -43                          | 3.44       |
| 0            | 3              | 30(high)            | 3720                           | -54.21                  | -43                          | 11.21      |
| 1            | 3              | 30(high)            | 3720                           | -45.73                  | -43                          | 2.73       |
| 0            | 3              | 60(low)             | 3530                           | -44.37                  | -43                          | 1.37       |
| 1            | 3              | 60(low)             | 3530                           | -43.32                  | -43                          | 0.32       |
| 0            | 3              | 60(low)             | 3720                           | -48.62                  | -43                          | 5.62       |
| 1            | 3              | 60(low)             | 3720                           | -50.96                  | -43                          | 7.96       |
| 0            | 3              | 60(mid)             | 3530                           | -48.56                  | -43                          | 5.56       |
| 1            | 3              | 60(mid)             | 3530                           | -49.97                  | -43                          | 6.97       |
| 0            | 3              | 60(mid)             | 3720                           | -48.56                  | -43                          | 5.56       |
| 1            | 3              | 60(mid)             | 3720                           | -50.16                  | -43                          | 7.16       |
| 0            | 3              | 60(high)            | 3530                           | -48.63                  | -43                          | 5.63       |
| 1            | 3              | 60(high)            | 3530                           | -51.02                  | -43                          | 8.02       |
| 0            | 3              | 60(high)            | 3720                           | -44.81                  | -43                          | 1.81       |
| 1            | 3              | 60(high)            | 3720                           | -43.65                  | -43                          | 0.65       |
| 0            | 3              | 60(low) additional  | 3530                           | -50.11                  | -43                          | 7.11       |
| 1            | 3              | 60(low) additional  | 3530                           | -45.04                  | -43                          | 2.04       |
| 0            | 3              | 60(low) additional  | 3720                           | -51.43                  | -43                          | 8.43       |
| 1            | 3              | 60(low) additional  | 3720                           | -46.13                  | -43                          | 3.13       |
| 0            | 3              | 60(high) additional | 3530                           | -51.37                  | -43                          | 8.37       |
| 1            | 3              | 60(high) additional | 3530                           | -45.97                  | -43                          | 2.97       |
| 0            | 3              | 60(high) additional | 3720                           | -47.22                  | -43                          | 4.22       |
| 1            | 3              | 60(high) additional | 3720                           | -45.54                  | -43                          | 2.54       |

Note: <sup>1</sup>Margin of SISO operation. For MIMO 2x2 operation 3 dB is subtracted from the limit in the table above.

**Table 8.5-5:** Additional emission measurements at 3530 and 3720 MHz sector 2 QPSK modulation 1CC results

| Antenna port | No of carriers | Channel BW, MHz | Frequency of max emission, MHz | Emission level, dBm/MHz | Limit <sup>1</sup> , dBm/MHz | Margin, dB |
|--------------|----------------|-----------------|--------------------------------|-------------------------|------------------------------|------------|
| 0            | 1              | 10(low)         | 3530                           | -50.23                  | -43                          | 7.23       |
| 1            | 1              | 10(low)         | 3530                           | -50.25                  | -43                          | 7.25       |
| 0            | 1              | 10(low)         | 3720                           | -51.29                  | -43                          | 8.29       |
| 1            | 1              | 10(low)         | 3720                           | -50.79                  | -43                          | 7.79       |
| 0            | 1              | 10(mid)         | 3530                           | -46.36                  | -43                          | 3.36       |
| 1            | 1              | 10(mid)         | 3530                           | -51.11                  | -43                          | 8.11       |
| 0            | 1              | 10(mid)         | 3720                           | -45.78                  | -43                          | 2.78       |
| 1            | 1              | 10(mid)         | 3720                           | -51.15                  | -43                          | 8.15       |
| 0            | 1              | 10(high)        | 3530                           | -48.98                  | -43                          | 5.98       |
| 1            | 1              | 10(high)        | 3530                           | -50.92                  | -43                          | 7.92       |
| 0            | 1              | 10(high)        | 3720                           | -50.04                  | -43                          | 7.04       |
| 1            | 1              | 10(high)        | 3720                           | -49.78                  | -43                          | 6.78       |
| 0            | 1              | 20(low)         | 3530                           | -44.14                  | -43                          | 1.14       |
| 1            | 1              | 20(low)         | 3530                           | -44.66                  | -43                          | 1.66       |
| 0            | 1              | 20(low)         | 3720                           | -50.56                  | -43                          | 7.56       |
| 1            | 1              | 20(low)         | 3720                           | -48.61                  | -43                          | 5.61       |
| 0            | 1              | 20(mid)         | 3530                           | -48.55                  | -43                          | 5.55       |
| 1            | 1              | 20(mid)         | 3530                           | -43.64                  | -43                          | 0.64       |
| 0            | 1              | 20(mid)         | 3720                           | -48.61                  | -43                          | 5.61       |
| 1            | 1              | 20(mid)         | 3720                           | -43.65                  | -43                          | 0.65       |
| 0            | 1              | 20(high)        | 3530                           | -49.58                  | -43                          | 6.58       |
| 1            | 1              | 20(high)        | 3530                           | -46.29                  | -43                          | 3.29       |
| 0            | 1              | 20(high)        | 3720                           | -45.08                  | -43                          | 2.08       |
| 1            | 1              | 20(high)        | 3720                           | -44.81                  | -43                          | 1.81       |

Note: <sup>1</sup>Margin of SISO operation. For MIMO 2x2 operation 3 dB is subtracted from the limit in the table above.

**Table 8.5-6: Additional emission measurements at 3530 and 3720 MHz sector 1 64 QAM modulation 1CC results**

| Antenna port | No of carriers | Channel BW, MHz | Frequency of max emission, MHz | Emission level, dBm/MHz | Limit <sup>1</sup> , dBm/MHz | Margin, dB |
|--------------|----------------|-----------------|--------------------------------|-------------------------|------------------------------|------------|
| 0            | 1              | 10(low)         | 3530                           | -46.93                  | -43                          | 3.93       |
| 1            | 1              | 10(low)         | 3530                           | -46.69                  | -43                          | 3.69       |
| 0            | 1              | 10(low)         | 3720                           | -46.45                  | -43                          | 3.45       |
| 1            | 1              | 10(low)         | 3720                           | -46.62                  | -43                          | 3.62       |
| 0            | 1              | 10(mid)         | 3530                           | -47.06                  | -43                          | 4.06       |
| 1            | 1              | 10(mid)         | 3530                           | -46.91                  | -43                          | 3.91       |
| 0            | 1              | 10(mid)         | 3720                           | -46.79                  | -43                          | 3.79       |
| 1            | 1              | 10(mid)         | 3720                           | -46.65                  | -43                          | 3.65       |
| 0            | 1              | 10(high)        | 3530                           | -46.80                  | -43                          | 3.8        |
| 1            | 1              | 10(high)        | 3530                           | -46.21                  | -43                          | 3.21       |
| 0            | 1              | 10(high)        | 3720                           | -46.66                  | -43                          | 3.66       |
| 1            | 1              | 10(high)        | 3720                           | -46.40                  | -43                          | 3.40       |
| 0            | 1              | 20(low)         | 3530                           | -46.37                  | -43                          | 3.37       |
| 1            | 1              | 20(low)         | 3530                           | -46.02                  | -43                          | 3.02       |
| 0            | 1              | 20(low)         | 3720                           | -47.07                  | -43                          | 4.07       |
| 1            | 1              | 20(low)         | 3720                           | -46.98                  | -43                          | 3.98       |
| 0            | 1              | 20(mid)         | 3530                           | -46.87                  | -43                          | 3.87       |
| 1            | 1              | 20(mid)         | 3530                           | -46.67                  | -43                          | 3.67       |
| 0            | 1              | 20(mid)         | 3720                           | -46.43                  | -43                          | 3.43       |
| 1            | 1              | 20(mid)         | 3720                           | -46.90                  | -43                          | 3.90       |
| 0            | 1              | 20(high)        | 3530                           | -47.01                  | -43                          | 4.01       |
| 1            | 1              | 20(high)        | 3530                           | -47.03                  | -43                          | 4.03       |
| 0            | 1              | 20(high)        | 3720                           | -46.46                  | -43                          | 3.46       |
| 1            | 1              | 20(high)        | 3720                           | -46.63                  | -43                          | 3.63       |

Note: <sup>1</sup>Margin of SISO operation. For MIMO 2x2 operation 3 dB is subtracted from the limit in the table above. . For this modulation results for sector 1 is only shown since other sector results are repetitive and further investigated to be well within limits

**Table 8.5-7: Additional emission measurements at 3530 and 3720 MHz sector 1 64 QAM modulation 2CC results**

| Antenna port | No of carriers | Channel BW, MHz | Frequency of max emission, MHz | Emission level, dBm/MHz | Limit <sup>1</sup> , dBm/MHz | Margin, dB |
|--------------|----------------|-----------------|--------------------------------|-------------------------|------------------------------|------------|
| 0            | 2              | 20(low)         | 3530                           | -46.68                  | -43                          | 3.68       |
| 1            | 2              | 20(low)         | 3530                           | -46.77                  | -43                          | 3.77       |
| 0            | 2              | 20(low)         | 3720                           | -46.70                  | -43                          | 3.70       |
| 1            | 2              | 20(low)         | 3720                           | -46.22                  | -43                          | 3.22       |
| 0            | 2              | 20(mid)         | 3530                           | -46.25                  | -43                          | 3.25       |
| 1            | 2              | 20(mid)         | 3530                           | -46.89                  | -43                          | 3.89       |
| 0            | 2              | 20(mid)         | 3720                           | -46.96                  | -43                          | 3.96       |
| 1            | 2              | 20(mid)         | 3720                           | -46.60                  | -43                          | 3.60       |
| 0            | 2              | 20(high)        | 3530                           | -46.73                  | -43                          | 3.73       |
| 1            | 2              | 20(high)        | 3530                           | -46.92                  | -43                          | 3.92       |
| 0            | 2              | 20(high)        | 3720                           | -46.33                  | -43                          | 3.33       |
| 1            | 2              | 20(high)        | 3720                           | -46.17                  | -43                          | 3.17       |
| 0            | 2              | 40(low)         | 3530                           | -46.98                  | -43                          | 3.98       |
| 1            | 2              | 40(low)         | 3530                           | -45.90                  | -43                          | 2.90       |
| 0            | 2              | 40(low)         | 3720                           | -48.50                  | -43                          | 5.50       |
| 1            | 2              | 40(low)         | 3720                           | -48.49                  | -43                          | 5.49       |
| 0            | 2              | 40(mid)         | 3530                           | -48.47                  | -43                          | 5.47       |
| 1            | 2              | 40(mid)         | 3530                           | -48.46                  | -43                          | 5.46       |
| 0            | 2              | 40(mid)         | 3720                           | -48.45                  | -43                          | 5.45       |
| 1            | 2              | 40(mid)         | 3720                           | -48.43                  | -43                          | 5.43       |
| 0            | 2              | 40(high)        | 3530                           | -48.48                  | -43                          | 5.48       |
| 1            | 2              | 40(high)        | 3530                           | -48.48                  | -43                          | 5.48       |
| 0            | 2              | 40(high)        | 3720                           | -43.39                  | -43                          | 0.39       |
| 1            | 2              | 40(high)        | 3720                           | -43.46                  | -43                          | 0.46       |

Note: <sup>1</sup>Margin of SISO operation. For MIMO 2x2 operation 3 dB is subtracted from the limit in the table above.

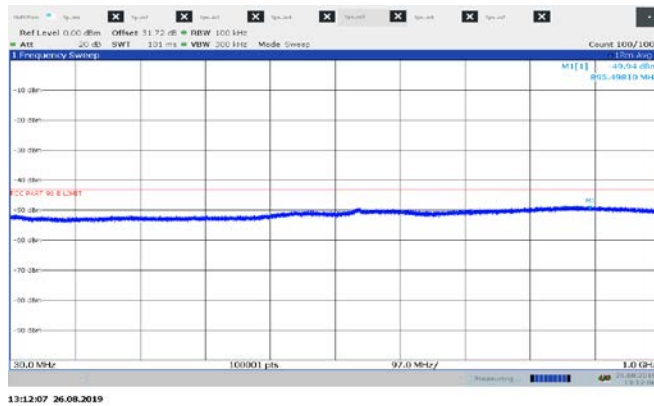
**Table 8.5-8:** Additional emission measurements at 3530 and 3720 MHz sector 1 64 QAM modulation 3CC results

| Antenna port | No of carriers | Channel BW, MHz     | Frequency of max emission, MHz | Emission level, dBm/MHz | Limit <sup>1</sup> , dBm/MHz | Margin, dB |
|--------------|----------------|---------------------|--------------------------------|-------------------------|------------------------------|------------|
| 0            | 3              | 30(low)             | 3530                           | -46.26                  | -43                          | 3.26       |
| 1            | 3              | 30(low)             | 3530                           | -46.39                  | -43                          | 3.39       |
| 0            | 3              | 30(low)             | 3720                           | -46.74                  | -43                          | 3.74       |
| 1            | 3              | 30(low)             | 3720                           | -46.62                  | -43                          | 3.62       |
| 0            | 3              | 30(mid)             | 3530                           | -46.95                  | -43                          | 3.95       |
| 1            | 3              | 30(mid)             | 3530                           | -46.93                  | -43                          | 3.93       |
| 0            | 3              | 30(mid)             | 3720                           | -47.10                  | -43                          | 4.10       |
| 1            | 3              | 30(mid)             | 3720                           | -46.39                  | -43                          | 3.39       |
| 0            | 3              | 30(high)            | 3530                           | -46.53                  | -43                          | 3.53       |
| 1            | 3              | 30(high)            | 3530                           | -46.52                  | -43                          | 3.52       |
| 0            | 3              | 30(high)            | 3720                           | -46.85                  | -43                          | 3.85       |
| 1            | 3              | 30(high)            | 3720                           | -46.30                  | -43                          | 3.30       |
| 0            | 3              | 60(low)             | 3530                           | -43.02                  | -43                          | 0.02       |
| 1            | 3              | 60(low)             | 3530                           | -44.13                  | -43                          | 1.13       |
| 0            | 3              | 60(low)             | 3720                           | -48.54                  | -43                          | 5.54       |
| 1            | 3              | 60(low)             | 3720                           | -48.47                  | -43                          | 5.47       |
| 0            | 3              | 60(mid)             | 3530                           | -48.24                  | -43                          | 5.24       |
| 1            | 3              | 60(mid)             | 3530                           | -48.29                  | -43                          | 5.29       |
| 0            | 3              | 60(mid)             | 3720                           | -48.20                  | -43                          | 5.20       |
| 1            | 3              | 60(mid)             | 3720                           | -48.14                  | -43                          | 5.14       |
| 0            | 3              | 60(high)            | 3530                           | -48.50                  | -43                          | 5.50       |
| 1            | 3              | 60(high)            | 3530                           | -48.50                  | -43                          | 5.50       |
| 0            | 3              | 60(high)            | 3720                           | -43.48                  | -43                          | 0.48       |
| 1            | 3              | 60(high)            | 3720                           | -43.52                  | -43                          | 0.52       |
| 0            | 3              | 60(low) additional  | 3530                           | -47.13                  | -43                          | 4.13       |
| 1            | 3              | 60(low) additional  | 3530                           | -47.14                  | -43                          | 4.14       |
| 0            | 3              | 60(low) additional  | 3720                           | -48.51                  | -43                          | 5.51       |
| 1            | 3              | 60(low) additional  | 3720                           | -48.44                  | -43                          | 5.44       |
| 0            | 3              | 60(high) additional | 3530                           | -48.42                  | -43                          | 5.42       |
| 1            | 3              | 60(high) additional | 3530                           | -48.24                  | -43                          | 5.24       |
| 0            | 3              | 60(high) additional | 3720                           | -44.48                  | -43                          | 1.48       |
| 1            | 3              | 60(high) additional | 3720                           | -44.97                  | -43                          | 1.97       |

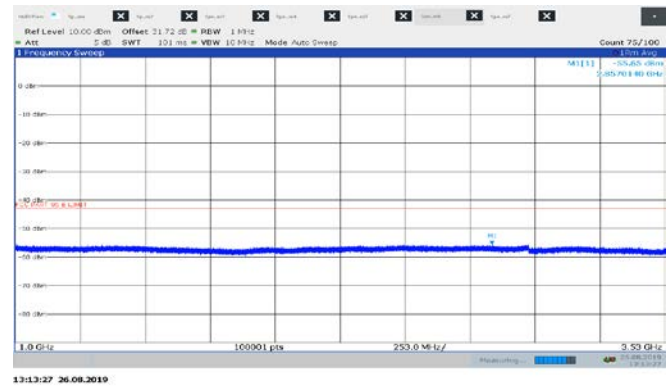
Note: <sup>1</sup>Margin of SISO operation. For MIMO 2x2 operation 3 dB is subtracted from the limit in the table above.

**Section 8**  
**Test name**  
**Specification**

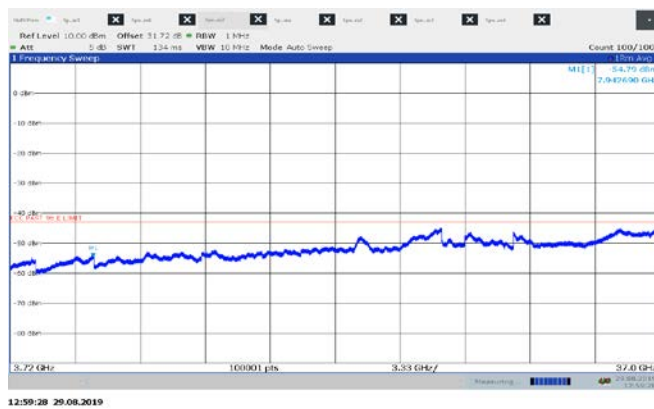
Testing data  
FCC 96.41(e)(2) Additional protection levels  
FCC Part 96, FCC Part 2.1051 and FCC Part 2.1053



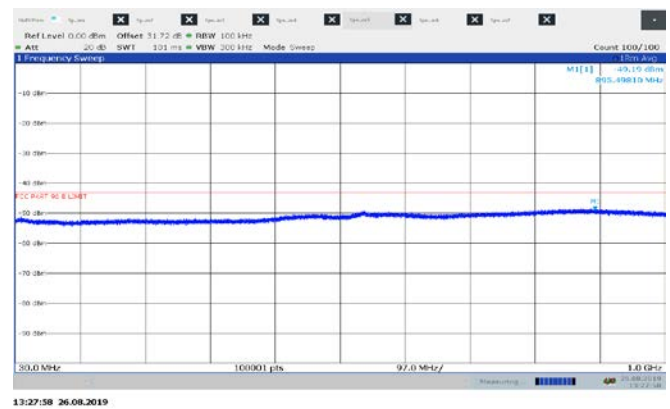
**Figure 8.5-1:** Conducted spurious emissions for 1CC 10 MHz channel sample plot 30 MHz – 1GHz



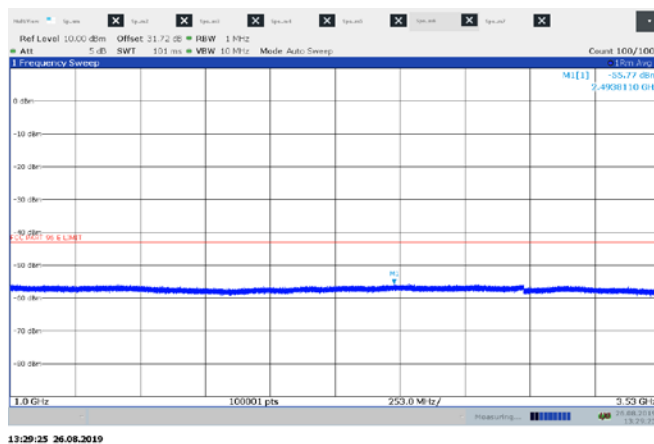
**Figure 8.5-2:** Conducted spurious emissions for 1CC 10 MHz channel sample plot 1 GHz – 3.53 GHz



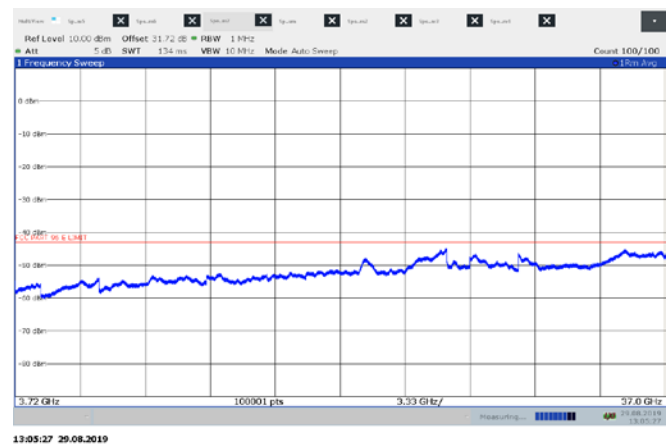
**Figure 8.5-3:** Conducted spurious emissions for 1CC 10 MHz channel sample plot 3.72 GHz – 37 GHz



**Figure 8.5-4:** Conducted spurious emissions for 2CC 10 MHz channel sample plot 30 MHz – 1GHz



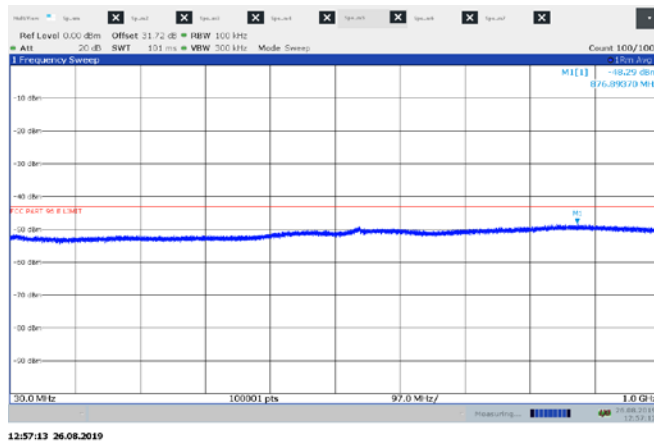
**Figure 8.5-5:** Conducted spurious emissions for 2CC 10 MHz channel sample plot 1 GHz – 3.53 GHz



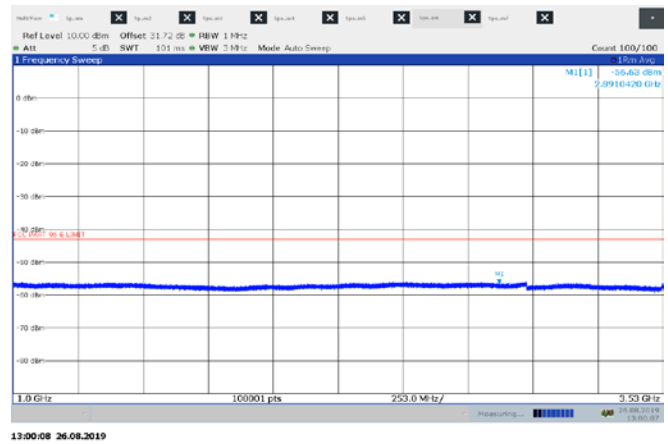
**Figure 8.5-6:** Conducted spurious emissions for 2CC 10 MHz channel sample plot 3.72 GHz – 37 GHz

**Section 8**  
**Test name**  
**Specification**

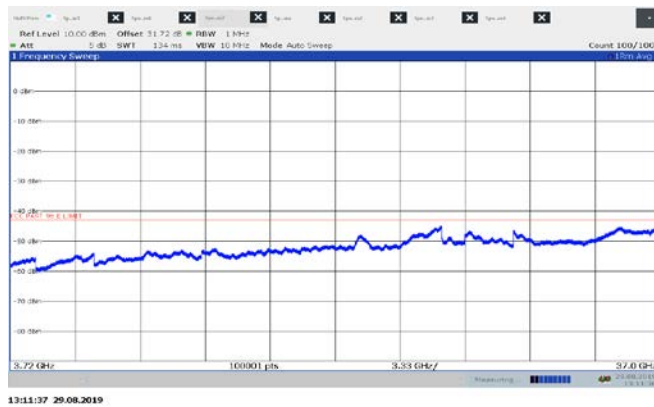
Testing data  
FCC 96.41(e)(2) Additional protection levels  
FCC Part 96, FCC Part 2.1051 and FCC Part 2.1053



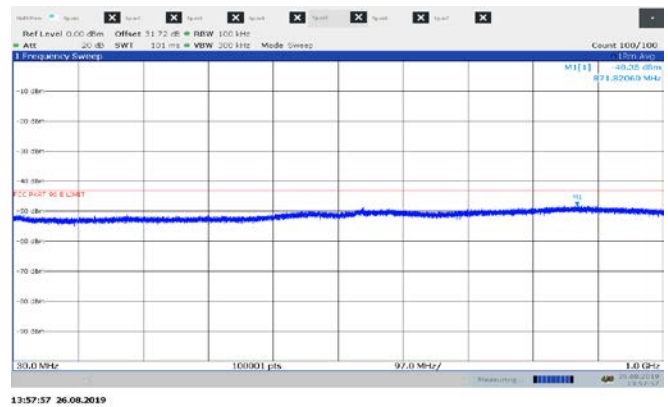
**Figure 8.5-7:** Conducted spurious emissions for 3CC 10 MHz channel sample plot 30 MHz – 1GHz



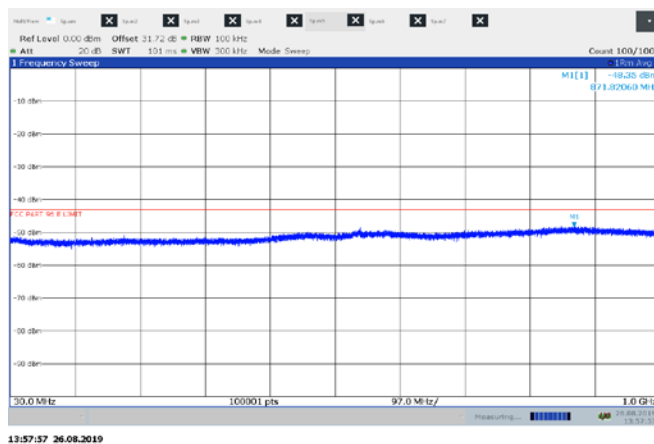
**Figure 8.5-8:** Conducted spurious emissions for 3CC 10 MHz channel sample plot 1 GHz – 3.53 GHz



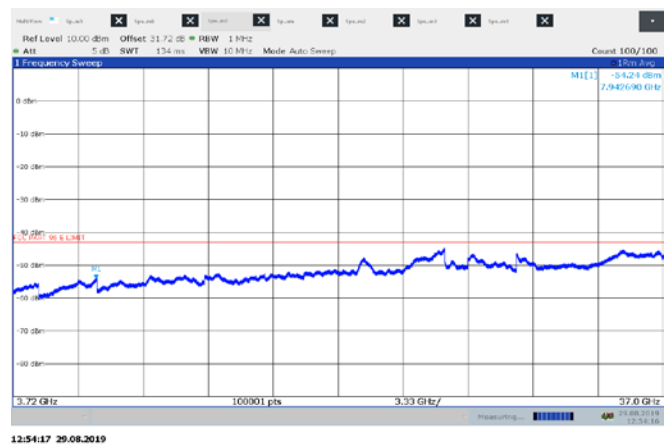
**Figure 8.5-9:** Conducted spurious emissions for 3CC 10 MHz channel sample plot 3.72 GHz – 37 GHz



**Figure 8.5-10:** Conducted spurious emissions for 1CC 20 MHz channel sample plot 30 MHz – 1GHz



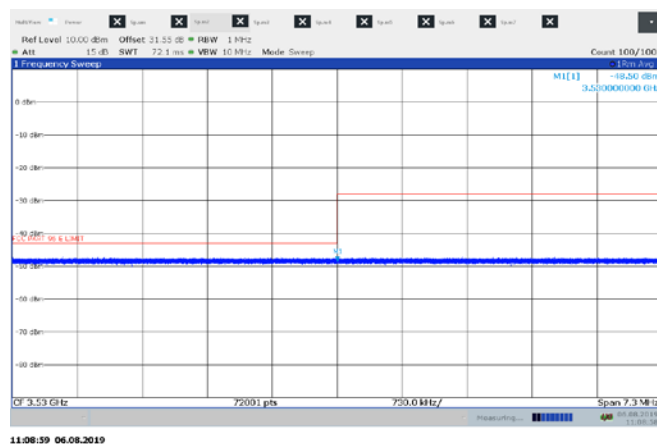
**Figure 8.5-11:** Conducted spurious emissions for 1CC 20 MHz channel sample plot 1 GHz – 3.53 GHz



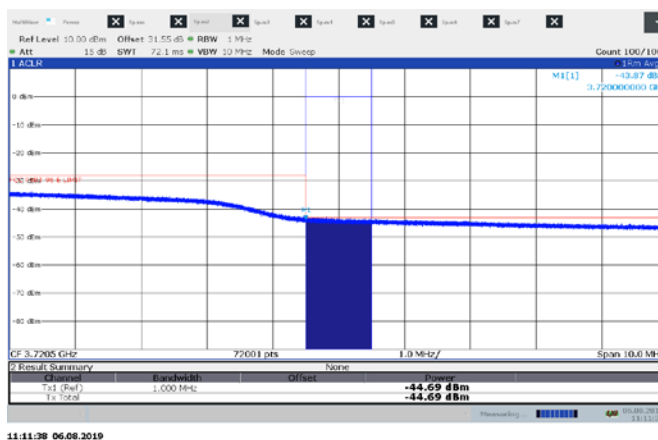
**Figure 8.5-12:** Conducted spurious emissions for 1CC 20 MHz channel sample plot 3.72 GHz – 37 GHz

**Section 8**  
**Test name**  
**Specification**

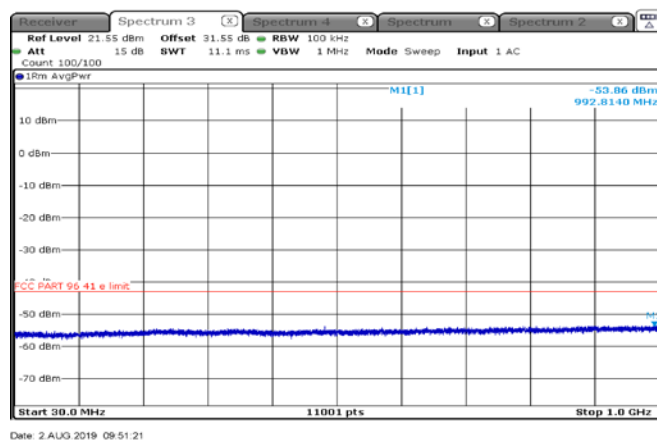
Testing data  
FCC 96.41(e)(2) Additional protection levels  
FCC Part 96, FCC Part 2.1051 and FCC Part 2.1053



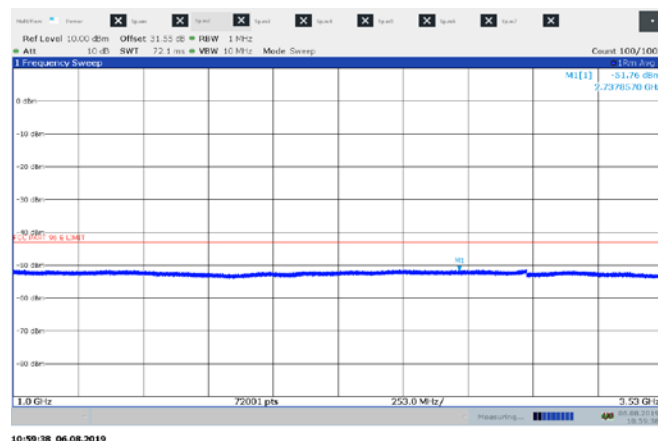
**Figure 8.5-13:** Emission measurement at 3530 MHz for 2CC 20 MHz sample plot



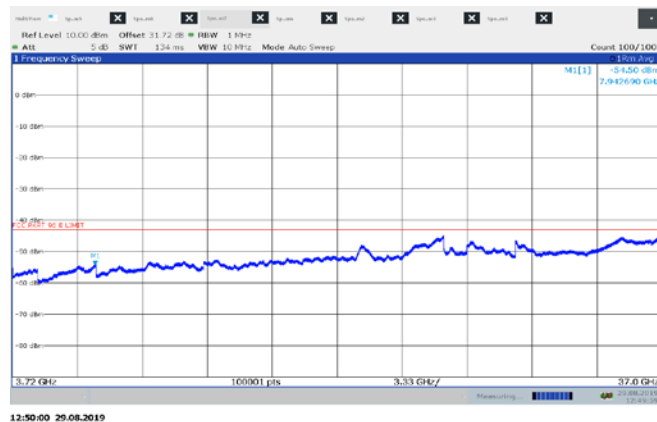
**Figure 8.5-14:** Emission measurement at 3720 MHz for 2CC 20 MHz sample plot



**Figure 8.5-15:** Conducted spurious emissions for 2CC 20 MHz channel sample plot 30 MHz – 1GHz



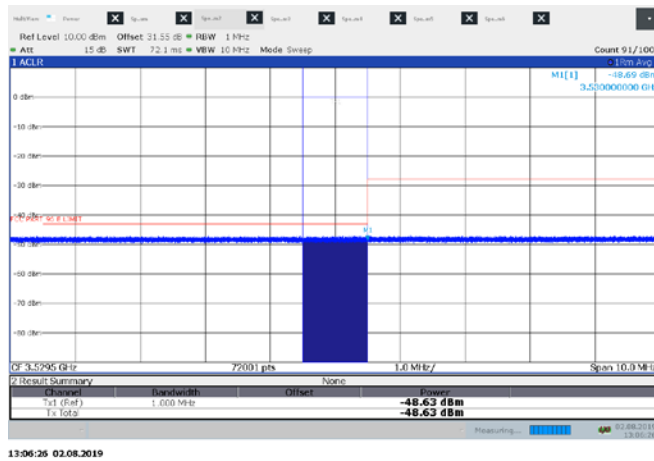
**Figure 8.5-16:** Conducted spurious emissions for 2CC 20 MHz channel sample plot 1 GHz – 3.53 GHz



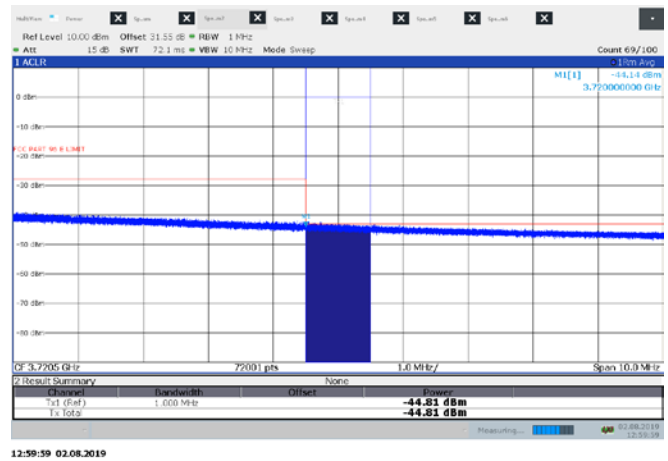
**Figure 8.5-17:** Conducted spurious emissions for 2CC 20 MHz channel sample plot 3.72 GHz – 37 GHz

**Section 8**  
**Test name**  
**Specification**

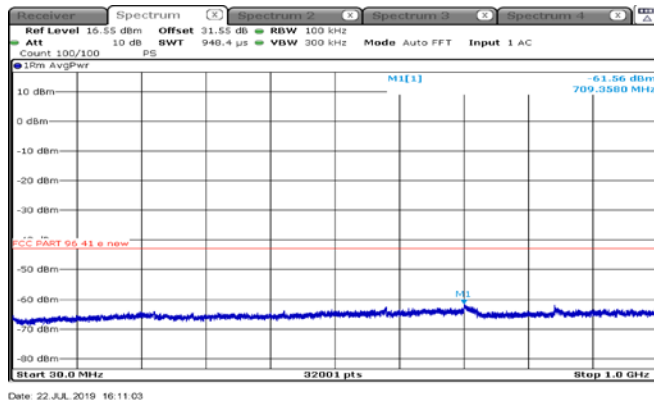
Testing data  
FCC 96.41(e)(2) Additional protection levels  
FCC Part 96, FCC Part 2.1051 and FCC Part 2.1053



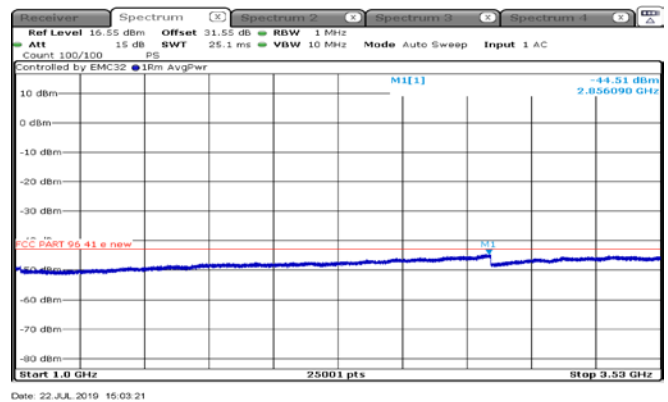
**Figure 8.5-18:** Emission measurement at 3530 MHz for 3CC 20 MHz sample plot



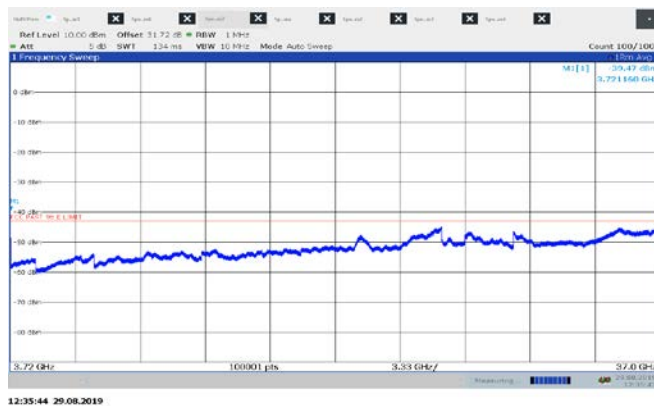
**Figure 8.5-19:** Emission measurement at 3720 MHz for 3CC 20 MHz sample plot



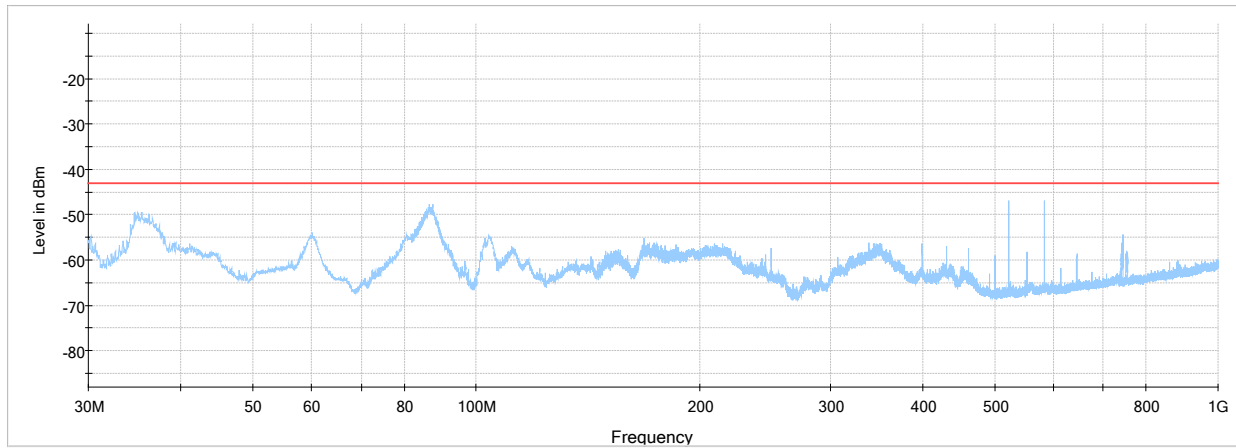
**Figure 8.5-20:** Conducted spurious emissions for 3CC 20 MHz channel sample plot 30 MHz – 1 GHz



**Figure 8.5-21:** Conducted spurious emissions for 3CC 20 MHz channel sample plot 1 GHz – 3.53 GHz



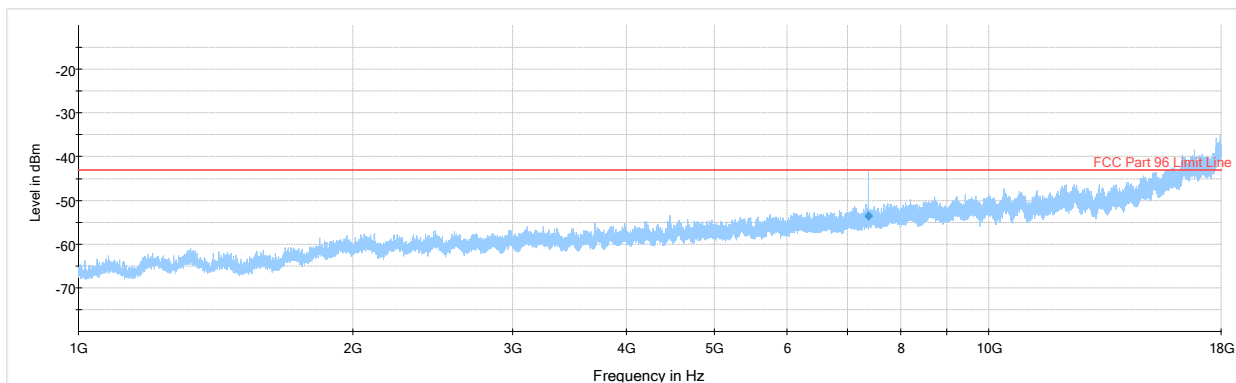
**Figure 8.5-22:** Conducted spurious emissions for 3CC 20 MHz channel sample plot 3.72 GHz – 37 GHz



NEX-376463 Cabinet Spurious 30 MHz - 1 GHz sector 1

— Preview Result 1-PK+  
— FCC Part 96 Limit Line

**Figure 8.5-1:** Cabinet spurious emissions sample plot (30 to 1000 MHz)



NEX-376463 Cabinet Spurious 1 - 18 GHz sector 1

— Preview Result 1-PK+  
— FCC Part 96 Limit Line  
◆ Final\_Result PK+

**Figure 8.5-2:** Cabinet spurious emissions sample plot (1 to 18 GHz)

On the plots above in the frequency range above 17.5 GHz the noise floor of the measuring equipment exceeded the limit. Further technical investigation led to conclusion that there are no spurious emissions and harmonics within this frequency range

**Table 8.5-9: Conducted spurious emission measurement results QPSK modulation results**

| Antenna port | sector | No of carriers | Channel BW, MHz | Frequency of max emission, MHz | Emission level, dBm/MHz | Limit <sup>1</sup> , dBm/MHz | Margin, dB |
|--------------|--------|----------------|-----------------|--------------------------------|-------------------------|------------------------------|------------|
| 0            | 0      | 1              | 10(low)         | 3491                           | -46.37                  | -43                          | 3.37       |
| 1            | 0      | 1              | 10(low)         | 16333                          | -48.27                  | -43                          | 5.27       |
| 0            | 2      | 1              | 10(low)         | 16313                          | -48.44                  | -43                          | 5.44       |
| 1            | 2      | 1              | 10(low)         | 16333                          | -48.37                  | -43                          | 5.37       |
| 1            | 0      | 1              | 10(mid)         | 16333                          | -48.39                  | -43                          | 5.39       |
| 1            | 1      | 1              | 10(mid)         | 3238                           | -46.45                  | -43                          | 3.45       |
| 1            | 2      | 1              | 10(mid)         | 16333                          | -48.39                  | -43                          | 5.39       |
| 0            | 0      | 1              | 10(high)        | 16333                          | -48.38                  | -43                          | 5.38       |
| 1            | 1      | 1              | 10(high)        | 16333                          | -48.35                  | -43                          | 5.35       |
| 0            | 0      | 1              | 20(low)         | 14175                          | -48.03                  | -43                          | 5.03       |
| 1            | 2      | 1              | 20(low)         | 14148                          | -48.01                  | -43                          | 5.01       |
| 1            | 1      | 1              | 20(mid)         | 16349                          | -47.78                  | -43                          | 4.78       |
| 0            | 1      | 2              | 40(mid)         | 14188                          | -46.94                  | -43                          | 3.94       |
| 0            | 1      | 3              | 60(mid)         | 14194                          | -47.66                  | -43                          | 4.66       |
| 1            | 1      | 3              | 60(high)        | 2856                           | -44.51                  | -43                          | 1.51       |

Note: <sup>1</sup>Margin of SISO operation. For MIMO 2x2 operation 3 dB is subtracted from the limit in the table above.

**Table 8.5-10: Conducted spurious emission measurement results 64 QAM modulation results**

| Antenna port | sector | No of carriers | Channel BW, MHz | Frequency of max emission, MHz | Emission level, dBm/MHz | Limit <sup>1</sup> , dBm/MHz | Margin, dB |
|--------------|--------|----------------|-----------------|--------------------------------|-------------------------|------------------------------|------------|
| 0            | 1      | 1              | 10(low)         | 14014                          | -53.44                  | -43                          | 10.44      |
| 0            | 1      | 1              | 10(mid)         | 2479                           | -55.98                  | -43                          | 12.98      |
| 0            | 1      | 1              | 10(mid)         | 14191                          | -52.74                  | -43                          | 9.74       |
| 1            | 1      | 1              | 10(high)        | 15898                          | -53.31                  | -43                          | 10.31      |
| 0            | 1      | 2              | 20(low)         | 14033                          | -53.09                  | -43                          | 10.09      |
| 0            | 1      | 2              | 40(mid)         | 874.5                          | -49.35                  | -43                          | 6.35       |
| 0            | 1      | 3              | 60(low)         | 898.4                          | -48.77                  | -43                          | 5.77       |

Note: <sup>1</sup>Margin of SISO operation. For MIMO 2x2 operation 3 dB is subtracted from the limit in the table above.

## 8.6 FCC 2.1055 Frequency stability

### 8.6.1 Definitions and limits

- (a) The frequency stability shall be measured with variation of ambient temperature as follows:  
(1) From -30°C to +50°C for all equipment except that specified in paragraphs (a)(2) and (3) of this section  
(b) Frequency measurements shall be made at the extremes of the specified temperature range and at intervals of not more than 10° C through the range.  
(d) The frequency stability shall be measured with variation of primary supply voltage as follows:  
(1) Vary primary supply voltage from 85 to 115 percent of the nominal value for other than hand carried battery equipment.

### 8.6.2 Test summary

Test date: August 22, 2019

### 8.6.3 Observations, settings and special notes

Spectrum analyser settings:

|                      |                               |
|----------------------|-------------------------------|
| Resolution bandwidth | ≥ 1 % of emission bandwidth   |
| Video bandwidth      | ≥ 3 × RBW                     |
| Frequency span       | Wider than emission bandwidth |
| Detector mode        | Peak                          |

### 8.6.4 Test data

**Table 8.6-1: Frequency drift measurement results**

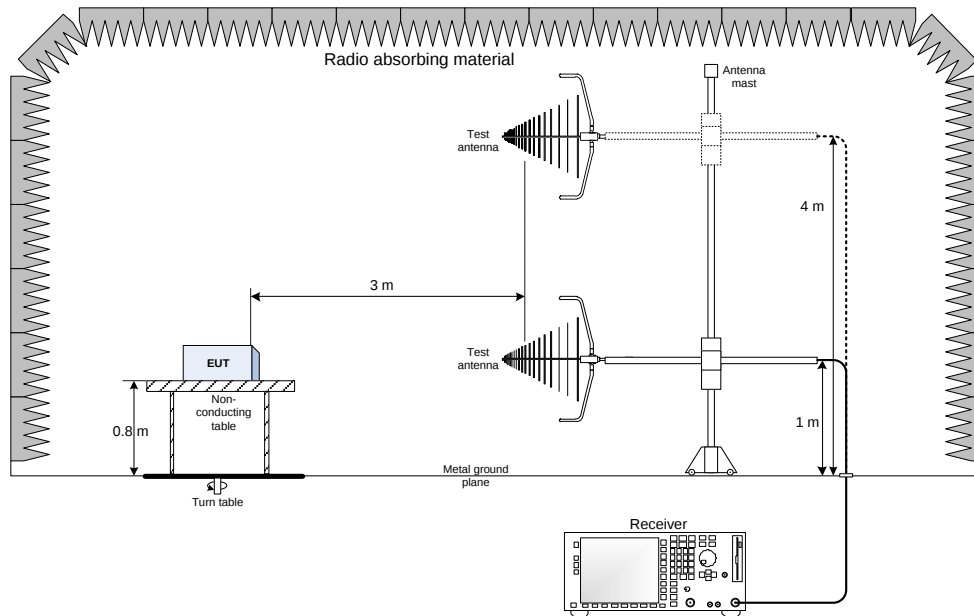
| Test conditions | Frequency, Hz | Offset, ppm |
|-----------------|---------------|-------------|
| +50 °C, Nominal | 3624956537    | -0.14       |
| +40 °C, Nominal | 3624957029    | -0.01       |
| +30 °C, Nominal | 3624957056    | 0.00        |
| +20 °C, +15 %   | 3624957704    | 0.18        |
| +20 °C, Nominal | 3624957061    | Reference   |
| +20 °C, -15 %   | 3624957456    | 0.11        |
| +10 °C, Nominal | 3624959224    | 0.60        |
| 0 °C, Nominal   | 3624964476    | 2.05        |
| -10 °C, Nominal | 3624964201    | 1.97        |
| -20 °C, Nominal | 3624965323    | 2.28        |
| -30 °C, Nominal | 3624964276    | 1.99        |

Note: Offset was calculated as per the following formula:

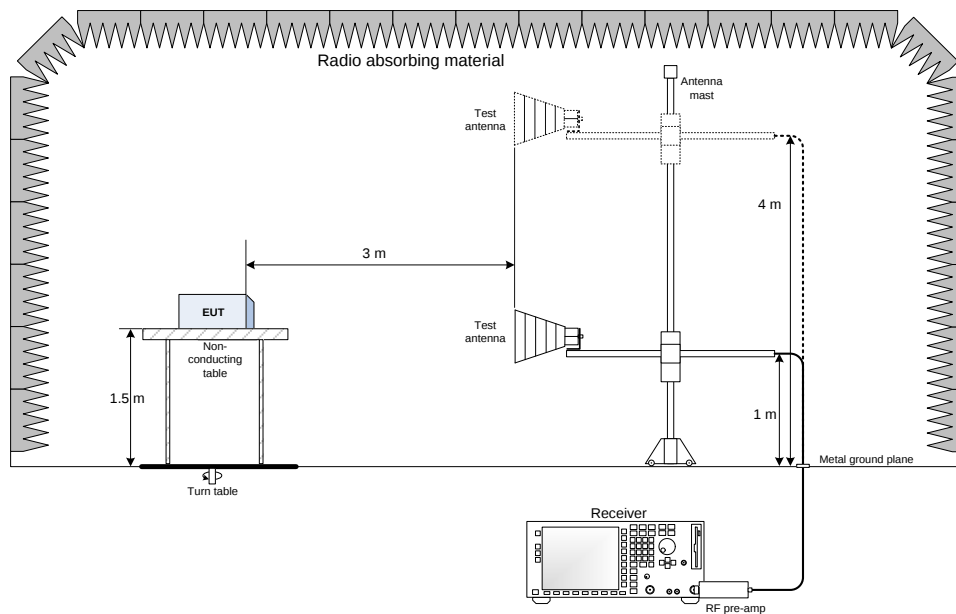
$$\frac{F_{\text{Measured}} - F_{\text{reference}}}{F_{\text{reference}}} \times 1 \cdot 10^6$$

## Section 9. Block diagrams of test set-ups

### 9.1 Radiated emissions set-up for frequencies below 1 GHz



### 9.2 Radiated emissions set-up for frequencies above 1 GHz



### 9.3 Conducted emissions set-up

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