



## MEASUREMENT REPORT

### FCC Part 30 5G mmWave

**Applicant Name:**

Samsung Electronics Co., Ltd.  
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Yeongtong-gu, Suwon-si  
Gyeonggi-do, 16677, Korea

**Date of Testing:**

02/18/2020 – 03/06/2020

**Test Site/Location:**

PCTEST, Columbia, MD, USA

**Test Report Serial No.:**

8K20012201-01.A3L

**FCC ID:**

**A3LAT1K02-A00**

**APPLICANT:**

**Samsung Electronics Co., Ltd.**

**Model:**

AT1K02-A00

**Application Type:**

Certification

**EUT Type:**

AU(AT1K02)

**FCC Classification:**

Part 30 Fixed Transmitter (5GB)

**Test Procedure(s):**

ANSI C63.26-2015, KDB 971168 D01 v03r01

This equipment has been shown to be capable of compliance with the applicable technical standards as indicated in the measurement report and was tested in accordance with the measurement procedures specified in §2.947. Test results reported herein relate only to the item(s) tested.

I attest to the accuracy of data. All measurements reported herein were performed by me or were made under my supervision and are correct to the best of my knowledge and belief. I assume full responsibility for the completeness of these measurements and vouch for the qualifications of all persons taking them.



Randy Ortanez  
President

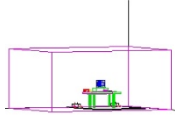


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|----------------------------------------------|-------------------------------------------------------------------------------------|-----------------------------------------------|---------------------------------------------------------------------------------------|----------------------------------------|
| <b>FCC ID:</b> A3LAT1K02-A00                 |  | <b>MEASUREMENT REPORT<br/>(CERTIFICATION)</b> |  | <b>Approved by:</b><br>Quality Manager |
| <b>Test Report S/N:</b><br>8K19110701-01.A3L | <b>Test Dates:</b><br>02/18/2020-03/06/2020                                         | <b>EUT Type:</b><br>5G Access Unit            |                                                                                       | Page 1 of 356                          |

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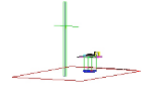
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| <b>FCC ID:</b> A3LAT1K02-A00                 | <br><small>Proud to be part of element</small> | <b>MEASUREMENT REPORT<br/>(CERTIFICATION)</b> |  | <b>Approved by:</b><br>Quality Manager |
| <b>Test Report S/N:</b><br>8K19110701-01.A3L | <b>Test Dates:</b><br>02/18/2020-03/06/2020                                                                                       | <b>EUT Type:</b><br>5G Access Unit            |                                                                                       | Page 2 of 356                          |



# MEASUREMENT REPORT

## FCC Part 30



| Bandwidth (MHz) | Mode     | FCC Rule Part | Antenna | Tx Frequency (MHz) | EIRP Density          |                         | Emission Designator | Modulation |
|-----------------|----------|---------------|---------|--------------------|-----------------------|-------------------------|---------------------|------------|
|                 |          |               |         |                    | Max. Power (W/100MHz) | Max. Power (dBm/100MHz) |                     |            |
| 50              | TDD(1CC) | 30            | A       | 37000 - 40000      | 91.840                | 49.63                   | 46M2G7D             | QPSK       |
|                 | TDD(1CC) | 30            | A       | 37000 - 40000      | 90.580                | 49.57                   | 46M2W7D             | 16QAM      |
|                 | TDD(1CC) | 30            | A       | 37000 - 40000      | 89.543                | 49.52                   | 46M2W7D             | 64QAM      |
| 100             | TDD(1CC) | 30            | A       | 37000 - 40000      | 98.401                | 49.93                   | 94M6G7D             | QPSK       |
|                 | TDD(1CC) | 30            | A       | 37000 - 40000      | 98.401                | 49.93                   | 94M7W7D             | 16QAM      |
|                 | TDD(1CC) | 30            | A       | 37000 - 40000      | 95.719                | 49.81                   | 94M7W7D             | 64QAM      |
| 50              | TDD(8CC) | 30            | A       | 37000 - 40000      | 89.749                | 49.53                   | 393MG7D             | QPSK       |
|                 | TDD(8CC) | 30            | A       | 37000 - 40000      | 89.131                | 49.50                   | 393MW7D             | 16QAM      |
|                 | TDD(8CC) | 30            | A       | 37000 - 40000      | 89.749                | 49.53                   | 393MW7D             | 64QAM      |
| 100             | TDD(8CC) | 30            | A       | 37000 - 40000      | 33.963                | 45.31                   | 788MG7D             | QPSK       |
|                 | TDD(8CC) | 30            | A       | 37000 - 40000      | 33.963                | 45.31                   | 787MW7D             | 16QAM      |
|                 | TDD(8CC) | 30            | A       | 37000 - 40000      | 34.041                | 45.32                   | 787MW7D             | 64QAM      |
| 50              | TDD(1CC) | 30            | B       | 37000 - 40000      | 107.159               | 50.30                   | 46M4G7D             | QPSK       |
|                 | TDD(1CC) | 30            | B       | 37000 - 40000      | 106.667               | 50.28                   | 46M3W7D             | 16QAM      |
|                 | TDD(1CC) | 30            | B       | 37000 - 40000      | 106.913               | 50.29                   | 46M3W7D             | 64QAM      |
| 100             | TDD(1CC) | 30            | B       | 37000 - 40000      | 102.329               | 50.10                   | 94M6G7D             | QPSK       |
|                 | TDD(1CC) | 30            | B       | 37000 - 40000      | 105.682               | 50.24                   | 94M7W7D             | 16QAM      |
|                 | TDD(1CC) | 30            | B       | 37000 - 40000      | 106.170               | 50.26                   | 94M6W7D             | 64QAM      |
| 50              | TDD(8CC) | 30            | B       | 37000 - 40000      | 86.105                | 49.35                   | 393MG7D             | QPSK       |
|                 | TDD(8CC) | 30            | B       | 37000 - 40000      | 86.702                | 49.38                   | 393MW7D             | 16QAM      |
|                 | TDD(8CC) | 30            | B       | 37000 - 40000      | 86.304                | 49.36                   | 393MW7D             | 64QAM      |
| 100             | TDD(8CC) | 30            | B       | 37000 - 40000      | 45.290                | 46.56                   | 787MG7D             | QPSK       |
|                 | TDD(8CC) | 30            | B       | 37000 - 40000      | 44.566                | 46.49                   | 788MW7D             | 16QAM      |
|                 | TDD(8CC) | 30            | B       | 37000 - 40000      | 44.463                | 46.48                   | 787MW7D             | 64QAM      |
| 50              | TDD(1CC) | 30            | C       | 37000 - 40000      | 79.256                | 48.99                   | 46M2G7D             | QPSK       |
|                 | TDD(1CC) | 30            | C       | 37000 - 40000      | 79.438                | 49.00                   | 46M2W7D             | 16QAM      |
|                 | TDD(1CC) | 30            | C       | 37000 - 40000      | 79.438                | 49.00                   | 46M2W7D             | 64QAM      |
| 100             | TDD(1CC) | 30            | C       | 37000 - 40000      | 94.406                | 49.75                   | 94M7G7D             | QPSK       |
|                 | TDD(1CC) | 30            | C       | 37000 - 40000      | 97.949                | 49.91                   | 94M6W7D             | 16QAM      |
|                 | TDD(1CC) | 30            | C       | 37000 - 40000      | 97.949                | 49.91                   | 94M6W7D             | 64QAM      |
| 50              | TDD(8CC) | 30            | C       | 37000 - 40000      | 75.341                | 48.77                   | 393MG7D             | QPSK       |
|                 | TDD(8CC) | 30            | C       | 37000 - 40000      | 74.995                | 48.75                   | 393MW7D             | 16QAM      |
|                 | TDD(8CC) | 30            | C       | 37000 - 40000      | 75.167                | 48.76                   | 393MW7D             | 64QAM      |
| 100             | TDD(8CC) | 30            | C       | 37000 - 40000      | 42.756                | 46.31                   | 787MG7D             | QPSK       |
|                 | TDD(8CC) | 30            | C       | 37000 - 40000      | 41.020                | 46.13                   | 788MW7D             | 16QAM      |
|                 | TDD(8CC) | 30            | C       | 37000 - 40000      | 40.926                | 46.12                   | 788MW7D             | 64QAM      |
| 50              | TDD(1CC) | 30            | D       | 37000 - 40000      | 94.630                | 49.76                   | 46M2G7D             | QPSK       |
|                 | TDD(1CC) | 30            | D       | 37000 - 40000      | 94.195                | 49.74                   | 46M2W7D             | 16QAM      |
|                 | TDD(1CC) | 30            | D       | 37000 - 40000      | 94.413                | 49.75                   | 46M2W7D             | 64QAM      |
| 100             | TDD(1CC) | 30            | D       | 37000 - 40000      | 92.683                | 49.67                   | 94M6G7D             | QPSK       |
|                 | TDD(1CC) | 30            | D       | 37000 - 40000      | 92.470                | 49.66                   | 94M6W7D             | 16QAM      |
|                 | TDD(1CC) | 30            | D       | 37000 - 40000      | 92.683                | 49.67                   | 94M6W7D             | 64QAM      |
| 50              | TDD(8CC) | 30            | D       | 37000 - 40000      | 73.456                | 48.66                   | 393MG7D             | QPSK       |
|                 | TDD(8CC) | 30            | D       | 37000 - 40000      | 72.449                | 48.60                   | 393MW7D             | 16QAM      |
|                 | TDD(8CC) | 30            | D       | 37000 - 40000      | 75.514                | 48.78                   | 392MW7D             | 64QAM      |
| 100             | TDD(8CC) | 30            | D       | 37000 - 40000      | 47.424                | 46.76                   | 787MG7D             | QPSK       |
|                 | TDD(8CC) | 30            | D       | 37000 - 40000      | 47.098                | 46.73                   | 788MW7D             | 16QAM      |
|                 | TDD(8CC) | 30            | D       | 37000 - 40000      | 46.666                | 46.69                   | 788MW7D             | 64QAM      |

### EUT Overview for Antenna A, B, C, and D

|                                       |                                                                                                                            |                                       |                                                                                       |                                 |
|---------------------------------------|----------------------------------------------------------------------------------------------------------------------------|---------------------------------------|---------------------------------------------------------------------------------------|---------------------------------|
| FCC ID: A3LAT1K02-A00                 |  PCTEST®<br>Proud to be part of element | MEASUREMENT REPORT<br>(CERTIFICATION) |  | Approved by:<br>Quality Manager |
| Test Report S/N:<br>8K19110701-01.A3L | Test Dates:<br>02/18/2020-03/06/2020                                                                                       | EUT Type:<br>5G Access Unit           |                                                                                       | Page 3 of 356                   |

| Bandwidth (MHz) | Mode     | FCC Rule Part | Antenna | Tx Frequency (MHz) | EIRP Density          |                         | Emission Designator | Modulation |
|-----------------|----------|---------------|---------|--------------------|-----------------------|-------------------------|---------------------|------------|
|                 |          |               |         |                    | Max. Power (W/100MHz) | Max. Power (dBm/100MHz) |                     |            |
| 50              | TDD(1CC) | 30            | A+C     | 37000 - 40000      | 342.190               | 55.34                   | 46M4G7D             | QPSK       |
|                 | TDD(1CC) | 30            | A+C     | 37000 - 40000      | 340.036               | 55.32                   | 46M3W7D             | 16QAM      |
|                 | TDD(1CC) | 30            | A+C     | 37000 - 40000      | 337.962               | 55.29                   | 46M3W7D             | 64QAM      |
| 100             | TDD(1CC) | 30            | A+C     | 37000 - 40000      | 192.807               | 52.85                   | 94M6G7D             | QPSK       |
|                 | TDD(1CC) | 30            | A+C     | 37000 - 40000      | 196.350               | 52.93                   | 94M7W7D             | 16QAM      |
|                 | TDD(1CC) | 30            | A+C     | 37000 - 40000      | 193.668               | 52.87                   | 94M7W7D             | 64QAM      |
| 50              | TDD(8CC) | 30            | A+C     | 37000 - 40000      | 330.180               | 55.19                   | 393MG7D             | QPSK       |
|                 | TDD(8CC) | 30            | A+C     | 37000 - 40000      | 328.252               | 55.16                   | 393MW7D             | 16QAM      |
|                 | TDD(8CC) | 30            | A+C     | 37000 - 40000      | 329.833               | 55.18                   | 393MW7D             | 64QAM      |
| 100             | TDD(8CC) | 30            | A+C     | 37000 - 40000      | 76.719                | 48.85                   | 788MG7D             | QPSK       |
|                 | TDD(8CC) | 30            | A+C     | 37000 - 40000      | 74.983                | 48.75                   | 788MW7D             | 16QAM      |
|                 | TDD(8CC) | 30            | A+C     | 37000 - 40000      | 74.967                | 48.75                   | 787MW7D             | 64QAM      |
| 50              | TDD(1CC) | 30            | B+D     | 37000 - 40000      | 403.579               | 56.06                   | 46M4G7D             | QPSK       |
|                 | TDD(1CC) | 30            | B+D     | 37000 - 40000      | 401.725               | 56.04                   | 46M3W7D             | 16QAM      |
|                 | TDD(1CC) | 30            | B+D     | 37000 - 40000      | 402.651               | 56.05                   | 46M3W7D             | 64QAM      |
| 100             | TDD(1CC) | 30            | B+D     | 37000 - 40000      | 195.012               | 52.90                   | 94M7G7D             | QPSK       |
|                 | TDD(1CC) | 30            | B+D     | 37000 - 40000      | 198.152               | 52.97                   | 94M7W7D             | 16QAM      |
|                 | TDD(1CC) | 30            | B+D     | 37000 - 40000      | 198.853               | 52.99                   | 94M6W7D             | 64QAM      |
| 50              | TDD(8CC) | 30            | B+D     | 37000 - 40000      | 319.124               | 55.04                   | 393MG7D             | QPSK       |
|                 | TDD(8CC) | 30            | B+D     | 37000 - 40000      | 318.302               | 55.03                   | 393MW7D             | 16QAM      |
|                 | TDD(8CC) | 30            | B+D     | 37000 - 40000      | 323.637               | 55.10                   | 393MW7D             | 64QAM      |
| 100             | TDD(8CC) | 30            | B+D     | 37000 - 40000      | 92.714                | 49.67                   | 787MG7D             | QPSK       |
|                 | TDD(8CC) | 30            | B+D     | 37000 - 40000      | 91.663                | 49.62                   | 788MW7D             | 16QAM      |
|                 | TDD(8CC) | 30            | B+D     | 37000 - 40000      | 91.129                | 49.60                   | 788MW7D             | 64QAM      |

### EUT Overview for Antenna A + C and B + D

#### Notes:

The highest EIRP density values are reported from 8CC continuous and non-continuous configurations.

|                                              |                                                                                                                                                                                                              |                                               |                                                                                       |                                        |
|----------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------|---------------------------------------------------------------------------------------|----------------------------------------|
| FCC ID: A3LAT1K02-A00                        |  <b>PCTEST</b><br>Proud to be part of  | <b>MEASUREMENT REPORT<br/>(CERTIFICATION)</b> |  | <b>Approved by:</b><br>Quality Manager |
| <b>Test Report S/N:</b><br>8K19110701-01.A3L | <b>Test Dates:</b><br>02/18/2020-03/06/2020                                                                                                                                                                  | <b>EUT Type:</b><br>5G Access Unit            |                                                                                       | Page 4 of 356                          |

## 1.0 INTRODUCTION

### 1.1 Scope

Measurement and determination of electromagnetic emissions (EMC) of radio frequency devices including intentional and/or unintentional radiators for compliance with the technical rules and regulations of the Federal Communications Commission and the Innovation, Science and Economic Development Canada.

### 1.2 PCTEST Test Location

These measurement tests were conducted at the PCTEST facility located at 7185 Oakland Mills Road, Columbia, MD 21046. The measurement facility is compliant with the test site requirements specified in ANSI C63.4-2014.

### 1.3 Test Facility / Accreditations

**Measurements were performed at PCTEST located in Columbia, MD 21046, U.S.A.**

- PCTEST is an ISO 17025-2005 accredited test facility under the American Association for Laboratory Accreditation (A2LA) with Certificate number 2041.01 for Specific Absorption Rate (SAR), Hearing Aid Compatibility (HAC) testing, where applicable, and Electromagnetic Compatibility (EMC) testing for FCC and Innovation, Science, and Economic Development Canada rules.
- PCTEST TCB is a Telecommunication Certification Body (TCB) accredited to ISO/IEC 17065-2012 by A2LA (Certificate number 2041.03) in all scopes of FCC Rules and ISSED Standards (RSS).
- PCTEST facility is a registered (2451B) test laboratory with the site description on file with ISSED.

|                                              |                                                                                                                                                                                                |                                               |                                                                                       |                                        |
|----------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------|---------------------------------------------------------------------------------------|----------------------------------------|
| <b>FCC ID:</b> A3LAT1K02-A00                 | <br>Proud to be part of  | <b>MEASUREMENT REPORT<br/>(CERTIFICATION)</b> |  | <b>Approved by:</b><br>Quality Manager |
| <b>Test Report S/N:</b><br>8K19110701-01.A3L | <b>Test Dates:</b><br>02/18/2020-03/06/2020                                                                                                                                                    | <b>EUT Type:</b><br>5G Access Unit            |                                                                                       | Page 5 of 356                          |

## 2.0 PRODUCT INFORMATION

### 2.1 Equipment Description

The Equipment Under Test (EUT) is the **Samsung 5G Access Unit FCC ID: A3LAT1K02-A00**. The test data contained in this report pertains only to the emissions due to the EUT's 5G mmWave function.

The EUT operates as a 4X4 MIMO system that consists of four antenna arrays (denoted herein as "Antenna A", "Antenna B", "Antenna C" and "Antenna D". Each of the four antenna arrays has 256 antenna elements for a total of 1024 antenna elements. Of the 4 antenna arrays, Antenna A and Antenna C have the same polarization (135 degrees from horizontal) and Antenna B and Antenna D have the same polarization (45 degrees from horizontal). Beamforming is used with Antenna A and Antenna C and it is also used with Antenna B and Antenna D. Signal correlation is possible between the outputs of all four antenna arrays.

This unit is powered by a nominal AC voltage source.

See Section 3.2 for the antenna polarization of the 5G Access Unit and the measurement antenna.

**Test Device Serial No.:** EP96-05557A

### 2.2 Device Capabilities

This device contains the following capabilities:

TDD of mmWave

### 2.3 Test Configuration

The EUT was tested per the guidance of ANSI C63.26-2015 and KDB 971168 D01 v03. See Section 7.0 of this test report for a description of the radiated tests.

|                                       |                                                                                                                    |                                       |                                                                                       |                                 |
|---------------------------------------|--------------------------------------------------------------------------------------------------------------------|---------------------------------------|---------------------------------------------------------------------------------------|---------------------------------|
| FCC ID: A3LAT1K02-A00                 | <br>Proud to be part of element | MEASUREMENT REPORT<br>(CERTIFICATION) |  | Approved by:<br>Quality Manager |
| Test Report S/N:<br>8K19110701-01.A3L | Test Dates:<br>02/18/2020-03/06/2020                                                                               | EUT Type:<br>5G Access Unit           |                                                                                       | Page 6 of 356                   |

| BW    | Configuration      | Channel | CC  | Frequency(MHz) |
|-------|--------------------|---------|-----|----------------|
| 50MHz | 1CC                | Low     | CC0 | 37024.98       |
|       |                    | Mid     | CC0 | 38499.96       |
|       |                    | High    | CC0 | 39975.00       |
|       | 8CC contiguous     | Low     | CC0 | 37025.04       |
|       |                    |         | CC1 | 37075.08       |
|       |                    |         | CC2 | 37125.12       |
|       |                    |         | CC3 | 37175.16       |
|       |                    |         | CC4 | 37225.20       |
|       |                    |         | CC5 | 37275.24       |
|       |                    |         | CC6 | 37325.28       |
|       |                    |         | CC7 | 37375.32       |
|       |                    | Mid     | CC0 | 38325.00       |
|       |                    |         | CC1 | 38375.04       |
|       |                    |         | CC2 | 38425.08       |
|       |                    |         | CC3 | 38475.12       |
|       |                    |         | CC4 | 38525.16       |
|       |                    |         | CC5 | 38575.20       |
|       |                    |         | CC6 | 38625.24       |
|       |                    |         | CC7 | 38675.28       |
|       |                    | High    | CC0 | 39624.72       |
|       |                    |         | CC1 | 39674.76       |
|       |                    |         | CC2 | 39724.80       |
|       |                    |         | CC3 | 39774.84       |
|       |                    |         | CC4 | 39824.88       |
|       |                    |         | CC5 | 39874.92       |
|       |                    |         | CC6 | 39924.96       |
|       |                    |         | CC7 | 39975.00       |
|       | 8CC non-contiguous | Low     | CC0 | 37025.04       |
|       |                    |         | CC1 | 37217.88       |
|       |                    |         | CC2 | 37410.72       |
|       |                    |         | CC3 | 37603.56       |
|       |                    |         | CC4 | 37796.40       |
|       |                    |         | CC5 | 37989.24       |
|       |                    |         | CC6 | 38182.08       |
|       |                    |         | CC7 | 38374.92       |
|       |                    | Mid     | CC0 | 37824.96       |
|       |                    |         | CC1 | 38017.80       |
|       |                    |         | CC2 | 38210.64       |
|       |                    |         | CC3 | 38403.48       |
|       |                    |         | CC4 | 38596.32       |
|       |                    |         | CC5 | 38789.16       |
|       |                    |         | CC6 | 38982.00       |
|       |                    |         | CC7 | 39174.84       |
|       |                    | High    | CC0 | 38625.12       |
|       |                    |         | CC1 | 38817.96       |
|       |                    |         | CC2 | 39010.80       |
|       |                    |         | CC3 | 39203.64       |
|       |                    |         | CC4 | 39396.48       |
|       |                    |         | CC5 | 39589.32       |
|       |                    |         | CC6 | 39782.16       |
|       |                    |         | CC7 | 39975.00       |

**Table 2-1. Declared of EUT configuration Frequency list for 50MHz BW Mode**

|                                              |                                                                                                                                                                                                |                                               |                                                                                       |                                        |
|----------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------|---------------------------------------------------------------------------------------|----------------------------------------|
| <b>FCC ID:</b> A3LAT1K02-A00                 | <br>Proud to be part of  | <b>MEASUREMENT REPORT<br/>(CERTIFICATION)</b> |  | <b>Approved by:</b><br>Quality Manager |
| <b>Test Report S/N:</b><br>8K19110701-01.A3L | <b>Test Dates:</b><br>02/18/2020-03/06/2020                                                                                                                                                    | <b>EUT Type:</b><br>5G Access Unit            | Page 7 of 356                                                                         |                                        |

| BW     | Configuration         | Channel | CC  | Frequency(MHz) |
|--------|-----------------------|---------|-----|----------------|
| 100MHz | 1CC                   | Low     | CC0 | 37050.00       |
|        |                       | Mid     | CC0 | 38499.96       |
|        |                       | High    | CC0 | 39949.98       |
|        | 8CC<br>contiguous     | Low     | CC0 | 37050.00       |
|        |                       |         | CC1 | 37150.02       |
|        |                       |         | CC2 | 37250.04       |
|        |                       |         | CC3 | 37350.06       |
|        |                       |         | CC4 | 37450.08       |
|        |                       |         | CC5 | 37550.10       |
|        |                       |         | CC6 | 37650.12       |
|        |                       |         | CC7 | 37750.14       |
|        |                       | Mid     | CC0 | 38150.04       |
|        |                       |         | CC1 | 38250.06       |
|        |                       |         | CC2 | 38350.08       |
|        |                       |         | CC3 | 38450.10       |
|        |                       |         | CC4 | 38550.12       |
|        |                       |         | CC5 | 38650.14       |
|        |                       |         | CC6 | 38750.16       |
|        |                       |         | CC7 | 38850.18       |
|        |                       | High    | CC0 | 39249.84       |
|        |                       |         | CC1 | 39349.86       |
|        |                       |         | CC2 | 39449.88       |
|        |                       |         | CC3 | 39549.90       |
|        |                       |         | CC4 | 39649.92       |
|        |                       |         | CC5 | 39749.94       |
|        |                       |         | CC6 | 39849.96       |
|        |                       |         | CC7 | 39949.98       |
|        | 8CC<br>non-contiguous | Low     | CC0 | 37050.00       |
|        |                       |         | CC1 | 37235.70       |
|        |                       |         | CC2 | 37421.40       |
|        |                       |         | CC3 | 37607.10       |
|        |                       |         | CC4 | 37792.80       |
|        |                       |         | CC5 | 37978.50       |
|        |                       |         | CC6 | 38164.26       |
|        |                       |         | CC7 | 38349.96       |
|        |                       | Mid     | CC0 | 37849.98       |
|        |                       |         | CC1 | 38035.68       |
|        |                       |         | CC2 | 38221.38       |
|        |                       |         | CC3 | 38407.08       |
|        |                       |         | CC4 | 38592.78       |
|        |                       |         | CC5 | 38778.48       |
|        |                       |         | CC6 | 38964.24       |
|        |                       |         | CC7 | 39149.94       |
|        |                       | High    | CC0 | 38650.02       |
|        |                       |         | CC1 | 38835.72       |
|        |                       |         | CC2 | 39021.42       |
|        |                       |         | CC3 | 39207.12       |
|        |                       |         | CC4 | 39392.82       |
|        |                       |         | CC5 | 39578.52       |
|        |                       |         | CC6 | 39764.28       |
|        |                       |         | CC7 | 39949.98       |

**Table 2-2. Declared of EUT configuration Frequency list for 100MHz BW Mode**

|                                       |                                                                                                                                        |                                       |                                                                                       |                                 |
|---------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------|---------------------------------------------------------------------------------------|---------------------------------|
| FCC ID: A3LAT1K02-A00                 |  PCTEST <sup>®</sup><br>Proud to be part of element | MEASUREMENT REPORT<br>(CERTIFICATION) |  | Approved by:<br>Quality Manager |
| Test Report S/N:<br>8K19110701-01.A3L | Test Dates:<br>02/18/2020-03/06/2020                                                                                                   | EUT Type:<br>5G Access Unit           |                                                                                       | Page 8 of 356                   |

## 2.4 EMI Suppression Device(s)/Modifications

No EMI suppression device(s) were added and no modifications were made during testing.

|                                       |                                                                                                                    |                                       |                                                                                       |                                 |
|---------------------------------------|--------------------------------------------------------------------------------------------------------------------|---------------------------------------|---------------------------------------------------------------------------------------|---------------------------------|
| FCC ID: A3LAT1K02-A00                 | <br>Proud to be part of element | MEASUREMENT REPORT<br>(CERTIFICATION) |  | Approved by:<br>Quality Manager |
| Test Report S/N:<br>8K19110701-01.A3L | Test Dates:<br>02/18/2020-03/06/2020                                                                               | EUT Type:<br>5G Access Unit           |                                                                                       | Page 9 of 356                   |

## 3.0 DESCRIPTION OF TESTS

### 3.1 Measurement Procedure

The measurement procedures described in the document titled “American National Standard for Compliance Testing of Transmitter Used in Licensed Radio Service” (ANSI C63.26-2015) and “Measurement Guidance for Certification of Licensed Digital Transmitters” (KDB 971168 D01 v03) were used in the measurement of the EUT.

### 3.2 Radiated Power and Radiated Spurious Emissions

§30.202, §30.203, §30.404, §30.405

The radiated test facilities consisted of an indoor 3 meter semi-anechoic chamber used for Final measurement and exploratory measurements, when necessary. The measurement area is contained within the semi-anechoic chamber which is shielded from any ambient interference. The test site inside the chamber is a 6m x 5.2m elliptical, obstruction-free area in accordance with Figure 5.7 of Clause 5 in ANSI C63.4-2014. Absorbers are arranged on the floor between the turn table and the antenna mast in such a way so as to maximize the reduction of reflections for measurements above 1GHz. For measurements below 1GHz, the absorbers are removed. A raised turntable is used for radiated measurement. The turn table is a continuously rotatable, remote-controlled, metallic turntable and 2 meters (6.56 ft.) in diameter. The turn table is flush with the raised floor of the chamber in order to maintain its function as a ground plane. An 80cm tall test table made of Styrodur is placed on top of the turn table. A Styrodur pedestal is placed on top of the test table to bring the total table height to 1.5m.

The equipment under test was transmitting while connected to its integral antenna and is placed on a DUT tripod. The EUT is manipulated through all orthogonal planes representative of its typical use to achieve the highest reading on the receive spectrum analyzer. The receive measurement antenna is in the far field of the EUT per formula  $(2 \cdot D^2) / \text{wavelength}$ . For spurious emissions, the far field distances used for testing were as follows:

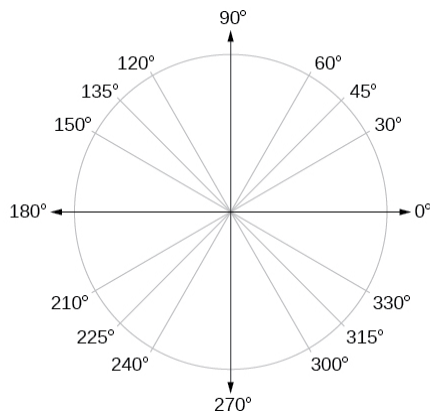
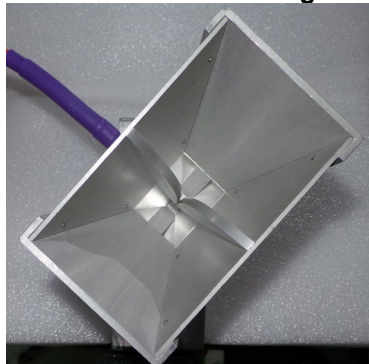
| <u>Frequency Range (GHz)</u> | <u>Wavelength (cm)</u> | <u>Far Field Distance (m)</u> | <u>Measurements Distance (m)</u> |
|------------------------------|------------------------|-------------------------------|----------------------------------|
| 18 – 40                      | 0.749                  | 2.61                          | 2.61                             |
| 40 – 60                      | 0.500                  | 1.39                          | 2.61                             |
| 60 – 90                      | 0.333                  | 0.91                          | 2.61                             |
| 90 – 140                     | 0.214                  | 0.58                          | 2.61                             |
| 140 – 220                    | 0.150                  | 0.39                          | 2.61                             |

**Table 3-1. Far-Field Distance per Frequency Range**

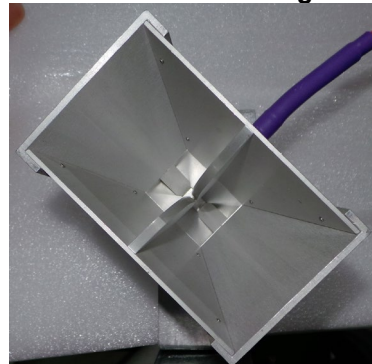
Radiated power levels are investigated with the receive antenna horizontally and vertically polarized. Additionally, the receive antenna was rotated on various angles to investigate worst case emissions on each EUT antenna array. The EUT antenna array polarization and horn antennas angle are denoted as follows:

|                                              |                                                                                     |                                               |                                                                                       |                                        |
|----------------------------------------------|-------------------------------------------------------------------------------------|-----------------------------------------------|---------------------------------------------------------------------------------------|----------------------------------------|
| <b>FCC ID:</b> A3LAT1K02-A00                 |  | <b>MEASUREMENT REPORT<br/>(CERTIFICATION)</b> |  | <b>Approved by:</b><br>Quality Manager |
| <b>Test Report S/N:</b><br>8K19110701-01.A3L | <b>Test Dates:</b><br>02/18/2020-03/06/2020                                         | <b>EUT Type:</b><br>5G Access Unit            |                                                                                       | Page 10 of 356                         |

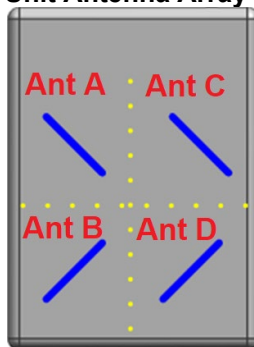
**Horn antenna at 135 degrees**



**Horn antenna at 45 degrees**



### 5G Access Unit Antenna Array Polarization



The maximized power level is recorded using the spectrum analyzer “Channel Power” function with the integration band set to the emissions’ occupied bandwidth.

### Effective Isotropic Radiated Power Sample Calculation

The measured e.i.r.p is converted to E-field in V/m. Then the distance correction is applied before converted back to calculated e.i.r.p.

**Field Strength [dBμV/m]** = Measured Value [dBm] + AFCL [dB/m] + 107

$$= -5.28 \text{ dBm} + (47.07 \text{ dB/m} + 11.33 \text{ dB}) + 107 = 160.12 \text{ dBuV/m}$$

$$= 10^{(160.12/20)/1000000} = 101.39 \text{ V/m}$$

**e.i.r.p. [dBm]**

$$= 10 * \log((E\text{-Field} * D_m)^2/30) + 30 \text{ dB}$$

$$= 10 * \log((101.39 \text{ V/m} * 2.61 \text{ m})^2/30) + 30 \text{ dB}$$

**= 63.68 dBm e.i.r.p.**

|                                              |                                              |                                               |                |                                        |
|----------------------------------------------|----------------------------------------------|-----------------------------------------------|----------------|----------------------------------------|
| <b>FCC ID:</b> A3LAT1K02-A00                 | <b>PCTEST</b><br>Proud to be part of element | <b>MEASUREMENT REPORT<br/>(CERTIFICATION)</b> | <b>SAMSUNG</b> | <b>Approved by:</b><br>Quality Manager |
| <b>Test Report S/N:</b><br>8K19110701-01.A3L | <b>Test Dates:</b><br>02/18/2020-03/06/2020  | <b>EUT Type:</b><br>5G Access Unit            |                | Page 11 of 356                         |

## Sample MIMO e.i.r.p. Calculation:

The e.i.r.p at Antenna A, Antenna B, Antenna C and Antenna D were first measured individually. The measured values were then summed in linear power units then converted back to dBm for the co-polarized antennas.

Conversion to linear value  $= 10^{(e.i.r.p/10)} = 10^{(54.07/10)} = 255270\text{mW}$

MIMO e.i.r.p.  $= e.i.r.p.A + e.i.r.p.c$   
 $= 208369\text{mW} + 198076\text{mW}$   
 $= 10 \cdot \log(406445\text{mW})$   
 $= 56.09\text{dBm}$

|                                       |                                                                                                                            |                                       |                                                                                       |                                 |
|---------------------------------------|----------------------------------------------------------------------------------------------------------------------------|---------------------------------------|---------------------------------------------------------------------------------------|---------------------------------|
| FCC ID: A3LAT1K02-A00                 |  PCTEST®<br>Proud to be part of element | MEASUREMENT REPORT<br>(CERTIFICATION) |  | Approved by:<br>Quality Manager |
| Test Report S/N:<br>8K19110701-01.A3L | Test Dates:<br>02/18/2020-03/06/2020                                                                                       | EUT Type:<br>5G Access Unit           |                                                                                       | Page 12 of 356                  |

## 4.0 MEASUREMENT UNCERTAINTY

The measurement uncertainties shown below were calculated in accordance with the requirements of ANSI C63.4-2014. All measurement uncertainty values are shown with a coverage factor of  $k = 2$  to indicate a 95% level of confidence. The measurement uncertainty shown below meets or exceeds the  $U_{\text{CISPR}}$  measurement uncertainty values specified in CISPR 16-4-2 and, thus, can be compared directly to specified limits to determine compliance.

| Contribution                     | Expanded Uncertainty ( $\pm$ dB) |
|----------------------------------|----------------------------------|
| Conducted Bench Top Measurements | 1.13                             |
| Radiated Disturbance (<1GHz)     | 4.98                             |
| Radiated Disturbance (>1GHz)     | 5.07                             |
| Radiated Disturbance (>18GHz)    | 5.09                             |

|                                       |                                                                                                                                   |                                       |                                                                                       |                                 |
|---------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------|---------------------------------------|---------------------------------------------------------------------------------------|---------------------------------|
| FCC ID: A3LAT1K02-A00                 | <br><small>Proud to be part of element</small> | MEASUREMENT REPORT<br>(CERTIFICATION) |  | Approved by:<br>Quality Manager |
| Test Report S/N:<br>8K19110701-01.A3L | Test Dates:<br>02/18/2020-03/06/2020                                                                                              | EUT Type:<br>5G Access Unit           |                                                                                       | Page 13 of 356                  |

## 5.0 TEST EQUIPMENT CALIBRATION DATA

Test Equipment Calibration is traceable to the National Institute of Standards and Technology (NIST). Measurements antennas used during testing were calibrated in accordance to the requirements of ANSI C63.5-2017.

| Manufacturer          | Model      | Description                              | Cal Date   | Cal Interval | Cal Due    | Serial Number |
|-----------------------|------------|------------------------------------------|------------|--------------|------------|---------------|
| Agilent               | N9030A     | PXA Signal Analyzer (44GHz)              | 6/12/2019  | Annual       | 6/12/2020  | MY52350166    |
| Agilent               | N9030A     | 50GHz PXA Signal Analyzer                | 11/22/2019 | Annual       | 11/22/2020 | US51350301    |
| COM-Power             | AL-130R    | Active Loop Antenna                      | 8/22/2019  | Annual       | 8/22/2020  | 121085        |
| COM-Power             | PAM-103    | Pre-Amplifier (1-1000MHz)                | 5/10/2019  | Annual       | 5/10/2020  | 441112        |
| Emco                  | 3115       | Horn Antenna (1-18GHz)                   | 3/28/2018  | Biennial     | 3/28/2020  | 9704-5182     |
| Espec                 | ESX-CA     | Environmental Chamber                    | 6/13/2019  | Annual       | 6/13/2020  | 17620         |
| ETS-Lindgren          | 3116C      | DRG Horn Antenna                         | 3/11/2019  | Annual       | 3/11/2020  | 218893        |
| Keysight Technologies | N9030A     | 3Hz-44GHz PXA Signal Analyzer            | 5/2/2019   | Annual       | 5/2/2020   | MY49430494    |
| OML Inc.              | M05RH      | WR-05 Horn Antenna, 24dBi, 140 to 200GHz | 10/31/2019 | Annual       | 10/31/2020 | 18073001      |
| OML Inc.              | M08RH      | WR-08 Horn Antenna, 24dBi, 90 to 140GHz  | 7/30/2018  | Biennial     | 7/30/2020  | 18073001      |
| OML Inc.              | M12RH      | WR-12 Horn Antenna, 24dBi, 60 to 90GHz   | 10/31/2019 | Annual       | 10/31/2020 | 18073001      |
| OML Inc.              | M19RH      | WR-19 Horn Antenna, 24dBi, 40 to 60GHz   | 10/31/2019 | Annual       | 10/31/2020 | 18073001      |
| Rohde & Schwarz       | 180-442-KF | Horn (Small)                             | 8/21/2018  | Biennial     | 8/21/2020  | U157403-01    |
| Rohde & Schwarz       | ESU26      | EMI Test Receiver (26.5GHz)              | 6/5/2019   | Annual       | 6/5/2020   | 100342        |
| Rohde & Schwarz       | ESW44      | EMI Test Receiver 2Hz to 44GHz           | 10/16/2019 | Annual       | 10/16/2020 | 101716        |
| Rohde & Schwarz       | FSW67      | Signal / Spectrum Analyzer               | 5/6/2019   | Annual       | 5/6/2020   | 103200        |
| Rohde & Schwarz       | SFUNIT-Rx  | Shielded Filter Unit                     | 7/8/2019   | Annual       | 7/8/2020   | 102133        |
| Sunol                 | JB5        | Bi-Log Antenna (30M - 5GHz)              | 4/19/2018  | Biennial     | 4/19/2020  | A051107       |
| Virginia Diodes Inc.  | SAX252     | SAX Module (60 - 90GHz)                  | 9/30/2019  | Annual       | 9/30/2020  | SAX252        |
| Virginia Diodes Inc.  | SAX253     | SAX Module (90 - 140GHz)                 | 9/30/2019  | Annual       | 9/30/2020  | SAX253        |
| Virginia Diodes Inc.  | SAX254     | SAX Module (140 - 220GHz)                | 9/30/2019  | Annual       | 9/30/2020  | SAX254        |
| Virginia Diodes Inc.  | SAX411     | SAX Module (40 - 60GHz)                  | 10/2/2019  | Annual       | 10/2/2020  | SAX411        |

**Table 5-1. Test Equipment**

### Notes:

- For equipment listed above that has a calibration date or calibration due date that falls within the test date range, care was taken to ensure that this equipment was used after the calibration date and before the calibration due date.

|                                       |                                                                                                                                  |                                                                                       |                                 |
|---------------------------------------|----------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------|---------------------------------|
| FCC ID: A3LAT1K02-A00                 |  <b>MEASUREMENT REPORT</b><br>(CERTIFICATION) |  | Approved by:<br>Quality Manager |
| Test Report S/N:<br>8K19110701-01.A3L | Test Dates:<br>02/18/2020-03/06/2020                                                                                             | EUT Type:<br>5G Access Unit                                                           | Page 14 of 356                  |

## 6.0 SAMPLE CALCULATIONS

### Emission Designator

#### QPSK Modulation

**Emission Designator = 800MG7D**

BW = 800 MHz

G = Phase Modulation

7 = Quantized/Digital Info

D = Data transmission, telemetry, telecommand

#### QAM Modulation

**Emission Designator = 802MW7D**

BW = 802 MHz

W = Amplitude/Angle Modulated

7 = Quantized/Digital Info

D = Data transmission, telemetry, telecommand

|                                              |                                                                                                                                   |                                               |                                                                                       |                                        |
|----------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------|---------------------------------------------------------------------------------------|----------------------------------------|
| <b>FCC ID:</b> A3LAT1K02-A00                 | <br><small>Proud to be part of element</small> | <b>MEASUREMENT REPORT<br/>(CERTIFICATION)</b> |  | <b>Approved by:</b><br>Quality Manager |
| <b>Test Report S/N:</b><br>8K19110701-01.A3L | <b>Test Dates:</b><br>02/18/2020-03/06/2020                                                                                       | <b>EUT Type:</b><br>5G Access Unit            | Page 15 of 356                                                                        |                                        |

## 7.0 TEST RESULTS

### 7.1 Summary

Company Name: Samsung Electronics Co., Ltd.  
FCC ID: A3LAT1K02-A00  
FCC Classification: Part 30 Fixed Transmitter (5GB)  
Mode(s): TDD

| FCC Part Section(s) | Test Description                       | Test Limit                                                                                         | Test Condition | Test Result | Reference   |
|---------------------|----------------------------------------|----------------------------------------------------------------------------------------------------|----------------|-------------|-------------|
| 2.1049              | Occupied Bandwidth                     | N/A                                                                                                | RADIATED       | PASS        | Section 7.2 |
| 30.202              | EIRP Density                           | EIRP Density of 75dBm/100MHz                                                                       |                | PASS        | Section 7.3 |
| 2.1046              | RF Output Power                        | N/A                                                                                                |                | PASS        | Section 7.4 |
| 2.1051<br>30.203    | Out-of-Band Spurious Emissions         | -13dBm/MHz                                                                                         |                | PASS        | Section 7.5 |
| 2.1051<br>30.203    | Out-of-Band Emissions at the Band Edge | -13dBm/MHz for all out-of-band emissions, -5dBm/MHz from the band edge up to 10% of the channel BW |                | PASS        | Section 7.6 |
| 2.1055              | Frequency Stability                    | Fundamental emissions stay within authorized frequency block                                       |                | PASS        | Section 7.7 |

**Table 7-1. Summary of Radiated Test Results**

#### Notes:

- 1) All modes of operation and modulations were investigated. The test results shown in the following sections represent the worst case emissions.
- 2) Per 2.1057(a)(3), spurious emissions were investigated up to 200GHz.
- 3) All radiated emission measurements at the band edge are converted to an equivalent conductive power by subtracting the known antenna gain from the EIRP measured at each frequency of interest. These emissions are compared to the 30.203 spurious emission limits as conductive power levels.
- 4) The radiated RF output power and all out-of-band emissions in the spurious domain are evaluated to the EIRP limits.
- 5) The fundamental band consists of 1 – 8 component carriers, referred as “CC” in this report. Lowest frequency CC is CC0 and highest frequency CC is CC7.
- 6) In the following tables, the term “CCs Active” refers to which component carrier is transmitting for a particular test.
- 7) CCs active 0, 4, 7 = 1 Components Carriers Active, 0-7 = 8 Component Carriers Active. 0-7(NC) = 8 Non-contiguous Component Carriers Active. Each component carrier’s bandwidth is either of 50MHz or 100MHz.

|                                       |                                                                                                                                                                                                              |                                       |                                                                                       |                                 |
|---------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------|---------------------------------------------------------------------------------------|---------------------------------|
| FCC ID: A3LAT1K02-A00                 |  <b>PCTEST</b><br>Proud to be part of  | MEASUREMENT REPORT<br>(CERTIFICATION) |  | Approved by:<br>Quality Manager |
| Test Report S/N:<br>8K19110701-01.A3L | Test Dates:<br>02/18/2020-03/06/2020                                                                                                                                                                         | EUT Type:<br>5G Access Unit           |                                                                                       | Page 16 of 356                  |

## 7.2 Occupied Bandwidth

**\$2.1049**

### Test Overview

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 shall be measured. All modes of operation were investigated and the worst case configuration results are reported in this section.

### Test Procedure Used

ANSI C63.25-2015 Section 5.4.3

### Test Settings

1. The signal analyzer's automatic bandwidth measurement capability was used to perform the 99% occupied bandwidth. The bandwidth measurement was not influenced by any intermediate power nulls in the fundamental emission.
2. RBW = 1 – 5% of the expected OBW
3. VBW  $\geq 3 \times$  RBW
4. Detector = Peak
5. Trace mode = max hold
6. Sweep = auto couple
7. The trace was allowed to stabilize
8. If necessary, steps 2 – 7 were repeated after changing the RBW such that it would be within 1 – 5% of the 99% occupied bandwidth observed in Step 7

### Test Notes

None.

|                                       |                                                                                                                                   |                                       |                                                                                       |                                 |
|---------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------|---------------------------------------|---------------------------------------------------------------------------------------|---------------------------------|
| FCC ID: A3LAT1K02-A00                 | <br><small>Proud to be part of element</small> | MEASUREMENT REPORT<br>(CERTIFICATION) |  | Approved by:<br>Quality Manager |
| Test Report S/N:<br>8K19110701-01.A3L | Test Dates:<br>02/18/2020-03/06/2020                                                                                              | EUT Type:<br>5G Access Unit           |                                                                                       | Page 17 of 356                  |

## 7.2.1 Antenna A Occupied Bandwidth

| Bandwidth<br>[MHz] | Antenna | Chan. | CCs<br>active | Modulation | OBW<br>[MHz] |
|--------------------|---------|-------|---------------|------------|--------------|
| 50                 | A       | Mid   | 4             | QPSK       | 46.24        |
|                    |         | Mid   | 4             | 16QAM      | 46.18        |
|                    |         | Mid   | 4             | 64QAM      | 46.23        |
| 100                |         | Mid   | 4             | QPSK       | 94.60        |
|                    |         | Mid   | 4             | 16QAM      | 94.70        |
|                    |         | Mid   | 4             | 64QAM      | 94.65        |
| 50                 |         | Mid   | 0-7           | QPSK       | 393.23       |
|                    |         | Mid   | 0-7           | 16QAM      | 393.23       |
|                    |         | Mid   | 0-7           | 64QAM      | 393.23       |
| 100                |         | Mid   | 0-7           | QPSK       | 788.01       |
|                    |         | Mid   | 0-7           | 16QAM      | 787.56       |
|                    |         | Mid   | 0-7           | 64QAM      | 787.87       |

Table 7-2. Antenna A Occupied Bandwidth Summary Data

### ACLRRResults

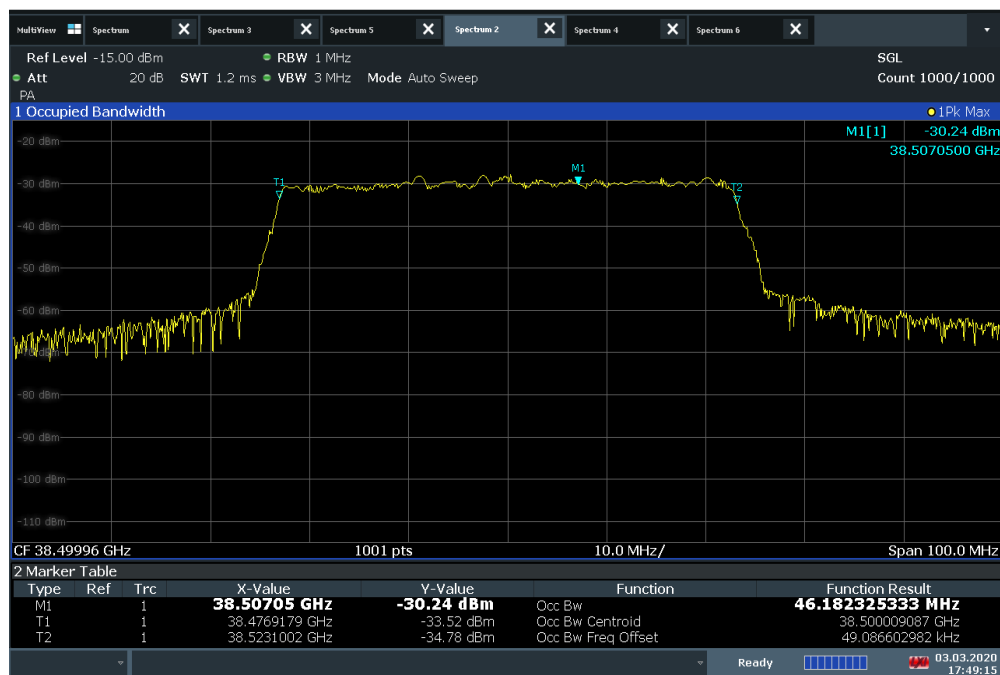


17:48:24 03.03.2020

Plot 7-1. Occupied Bandwidth Plot (50MHz BW 1CC QPSK Mid Channel)

|                                       |                                              |                                       |                |                                 |
|---------------------------------------|----------------------------------------------|---------------------------------------|----------------|---------------------------------|
| FCC ID: A3LAT1K02-A00                 | <b>PCTEST</b><br>Proud to be part of element | MEASUREMENT REPORT<br>(CERTIFICATION) | <b>SAMSUNG</b> | Approved by:<br>Quality Manager |
| Test Report S/N:<br>8K19110701-01.A3L | Test Dates:<br>02/18/2020-03/06/2020         | EUT Type:<br>5G Access Unit           |                | Page 18 of 356                  |

#### ACLRRResults



17:49:16 03.03.2020

**Plot 7-2. Occupied Bandwidth Plot (50MHz BW 1CC 16QAM Mid Channel)**

#### ACLRRResults

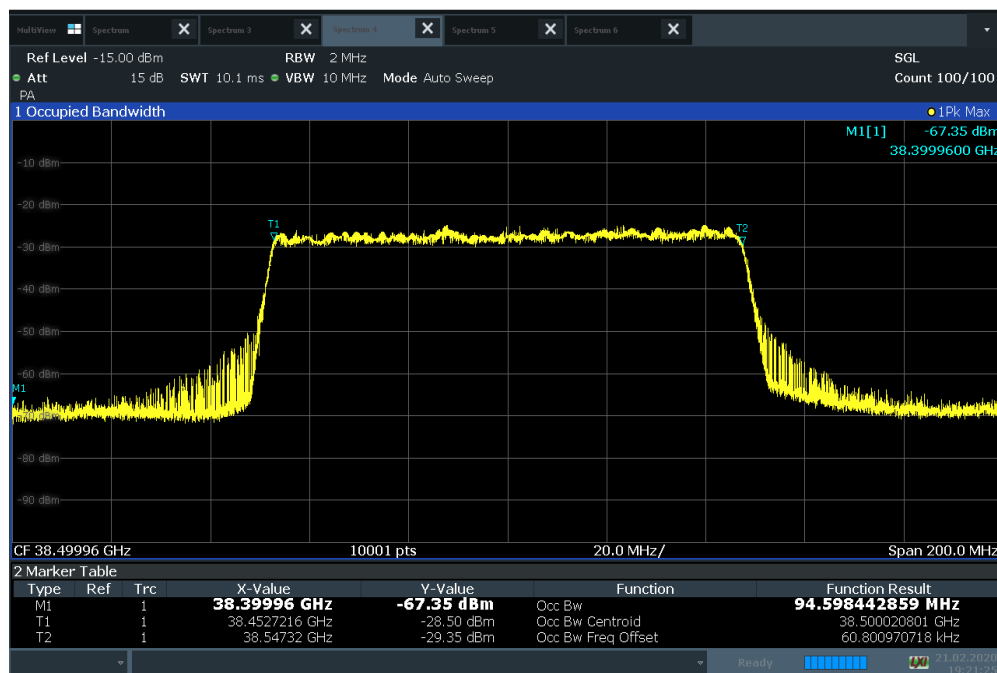


17:49:48 03.03.2020

**Plot 7-3. Occupied Bandwidth Plot (50MHz BW 1CC 64QAM Mid Channel)**

|                                       |                                              |                                       |                |                                 |
|---------------------------------------|----------------------------------------------|---------------------------------------|----------------|---------------------------------|
| FCC ID: A3LAT1K02-A00                 | <b>PCTEST</b><br>Proud to be part of element | MEASUREMENT REPORT<br>(CERTIFICATION) | <b>SAMSUNG</b> | Approved by:<br>Quality Manager |
| Test Report S/N:<br>8K19110701-01.A3L | Test Dates:<br>02/18/2020-03/06/2020         | EUT Type:<br>5G Access Unit           |                | Page 19 of 356                  |

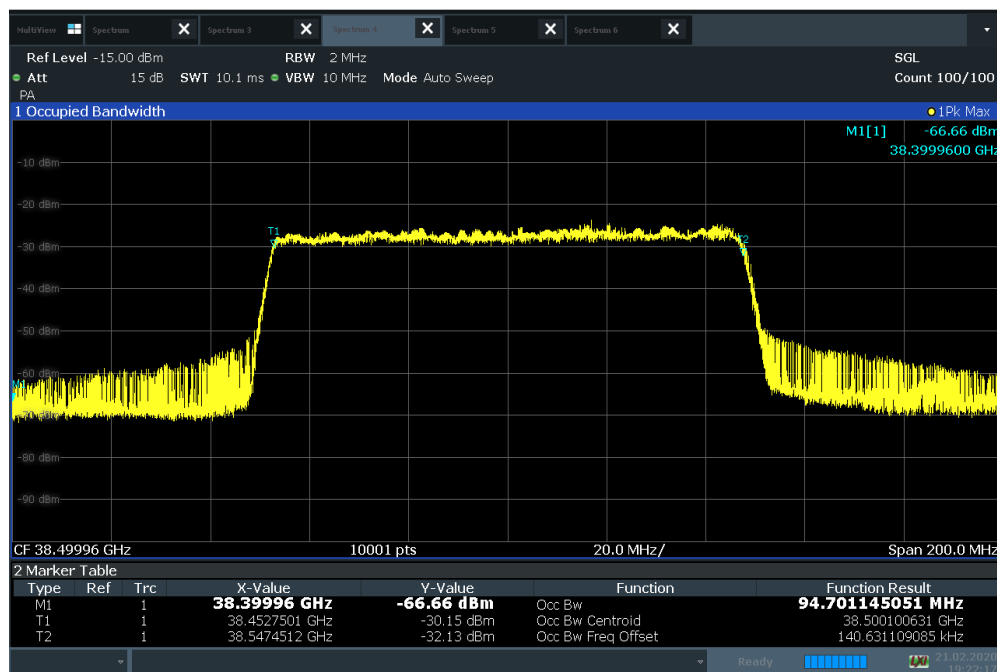
#### ACLRResults



19:21:26 21.02.2020

**Plot 7-4. Occupied Bandwidth Plot (100MHz BW 1CC QPSK Mid Channel)**

#### ACLRResults

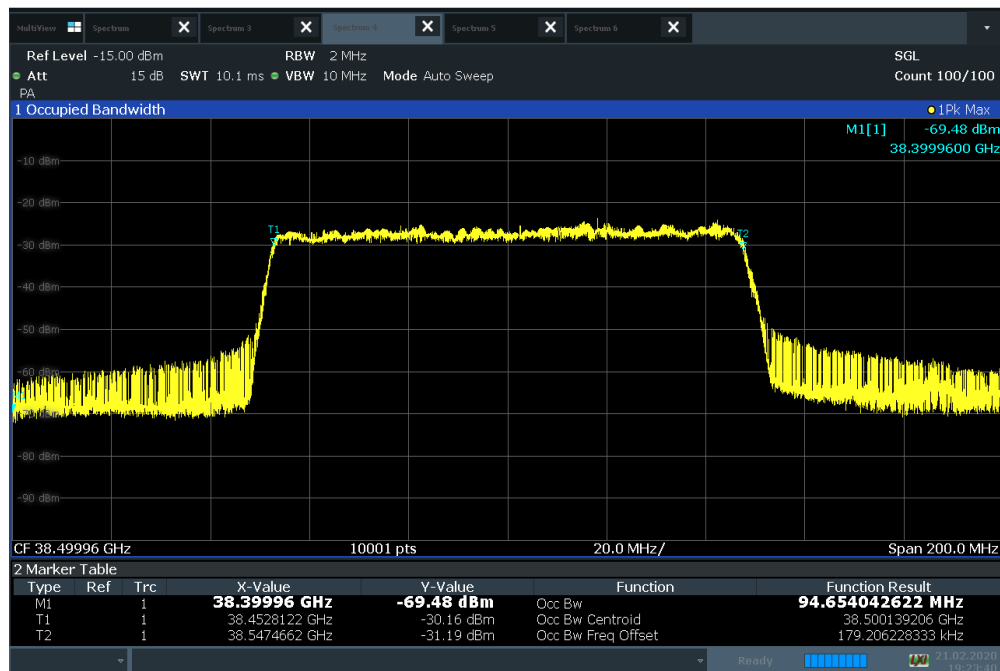


19:22:18 21.02.2020

**Plot 7-5. Occupied Bandwidth Plot (100MHz BW 1CC 16QAM Mid Channel)**

|                                       |                                              |                                       |                |                                 |
|---------------------------------------|----------------------------------------------|---------------------------------------|----------------|---------------------------------|
| FCC ID: A3LAT1K02-A00                 | <b>PCTEST</b><br>Proud to be part of element | MEASUREMENT REPORT<br>(CERTIFICATION) | <b>SAMSUNG</b> | Approved by:<br>Quality Manager |
| Test Report S/N:<br>8K19110701-01.A3L | Test Dates:<br>02/18/2020-03/06/2020         | EUT Type:<br>5G Access Unit           |                | Page 20 of 356                  |

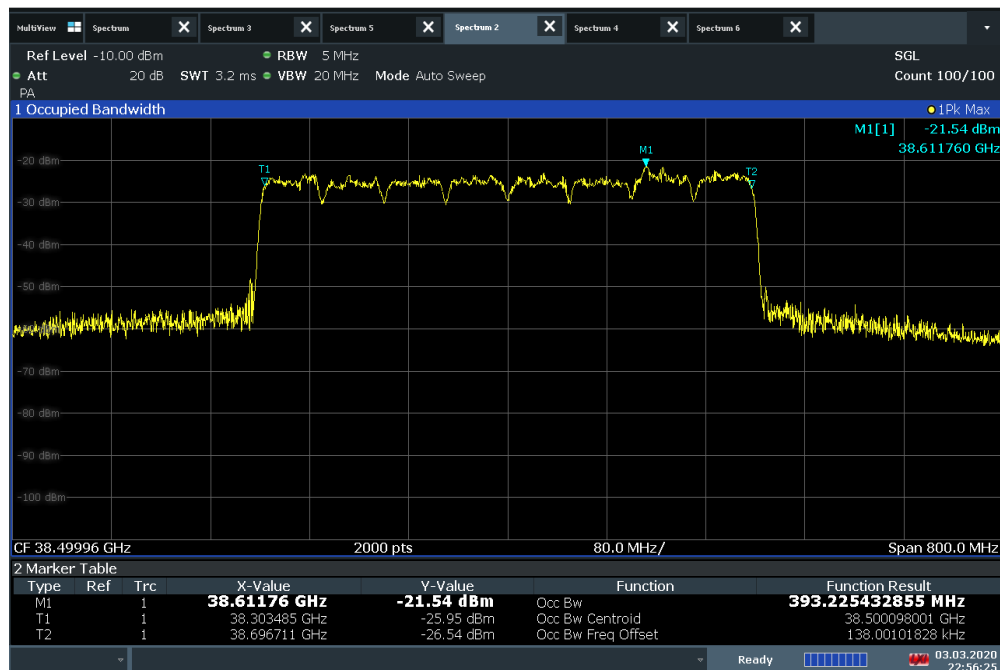
#### ACLRResults



19:23:40 21.02.2020

**Plot 7-6. Occupied Bandwidth Plot (100MHz BW 1CC 64QAM Mid Channel)**

#### ACLRResults

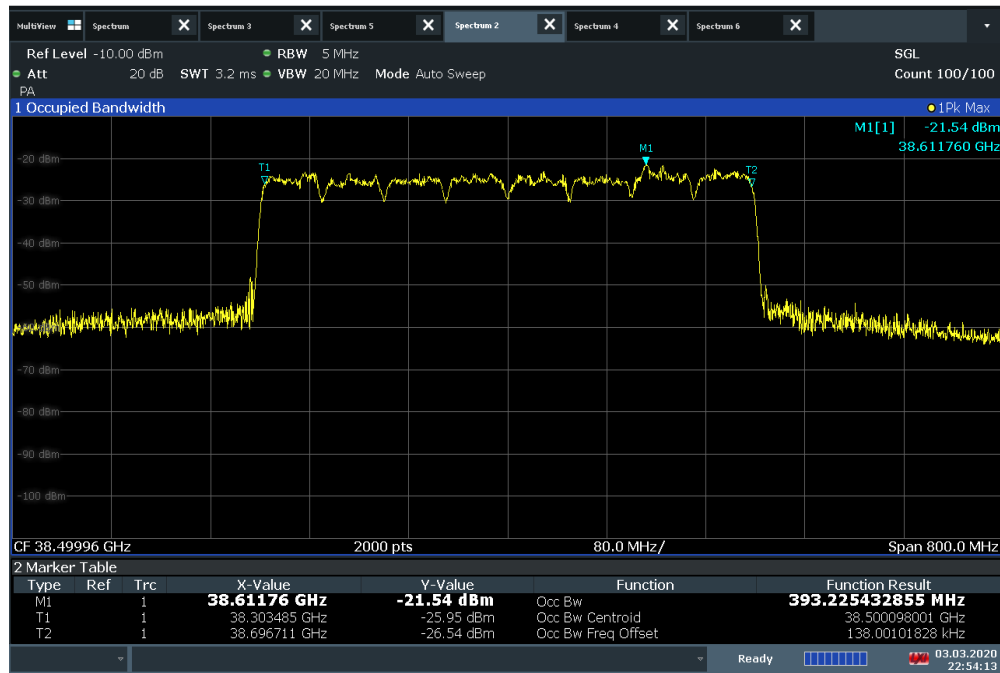


22:56:25 03.03.2020

**Plot 7-7. Occupied Bandwidth Plot (50MHz BW 8CC QPSK Mid Channel)**

|                                       |                                              |                                       |                |                                 |
|---------------------------------------|----------------------------------------------|---------------------------------------|----------------|---------------------------------|
| FCC ID: A3LAT1K02-A00                 | <b>PCTEST</b><br>Proud to be part of element | MEASUREMENT REPORT<br>(CERTIFICATION) | <b>SAMSUNG</b> | Approved by:<br>Quality Manager |
| Test Report S/N:<br>8K19110701-01.A3L | Test Dates:<br>02/18/2020-03/06/2020         | EUT Type:<br>5G Access Unit           |                | Page 21 of 356                  |

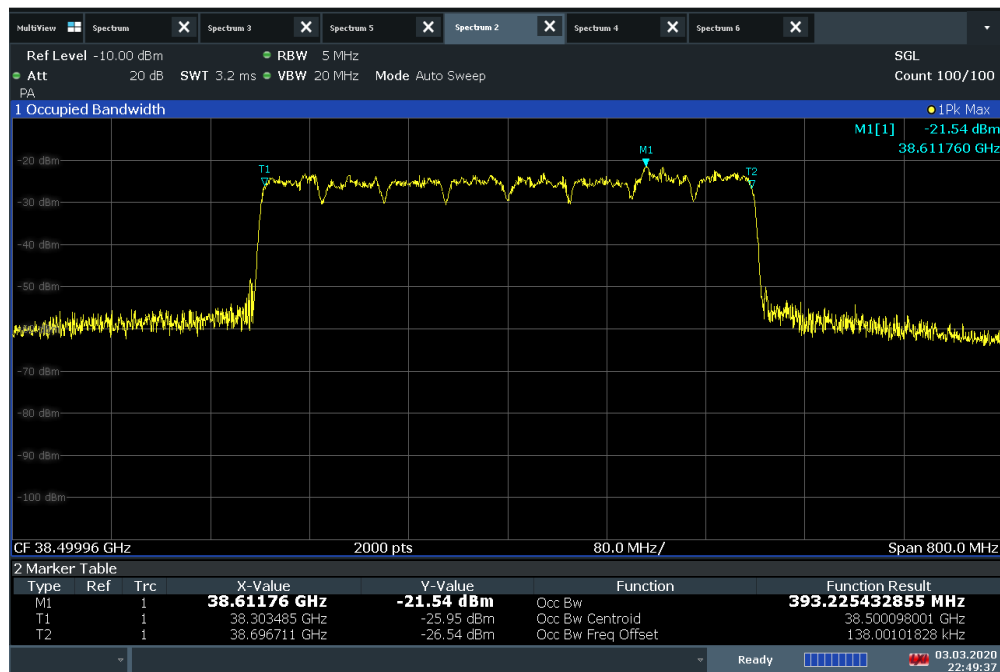
#### ACLRResults



22:54:13 03.03.2020

**Plot 7-8. Occupied Bandwidth Plot (50MHz BW 8CC 16QAM Mid Channel)**

#### ACLRResults

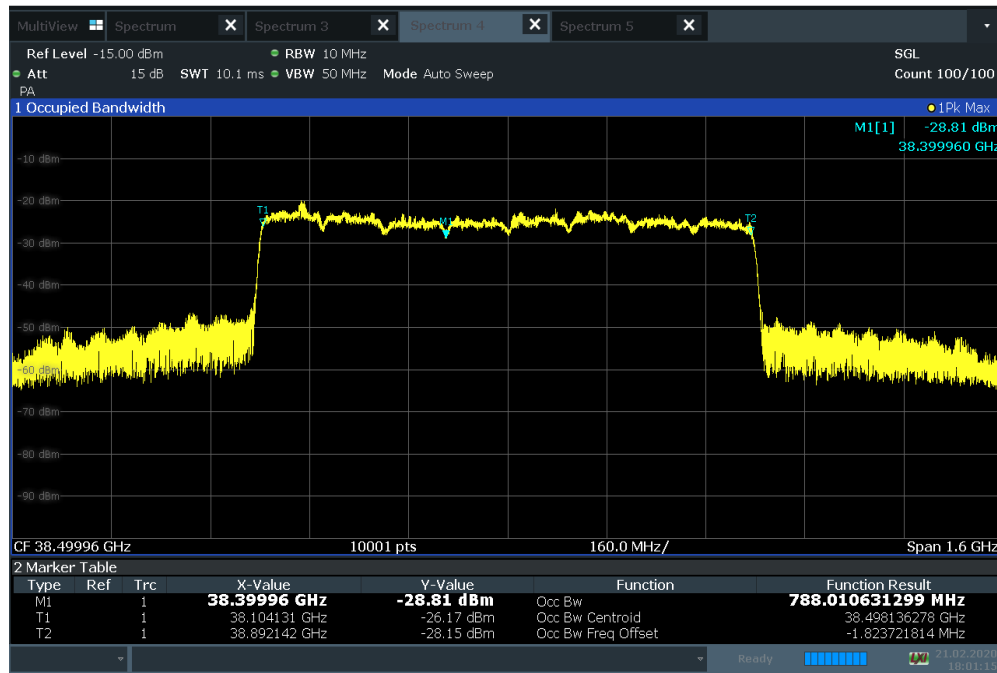


22:49:38 03.03.2020

**Plot 7-9. Occupied Bandwidth Plot (50MHz BW 8CC 64QAM Mid Channel)**

|                                       |                                              |                                       |                |                                 |
|---------------------------------------|----------------------------------------------|---------------------------------------|----------------|---------------------------------|
| FCC ID: A3LAT1K02-A00                 | <b>PCTEST</b><br>Proud to be part of element | MEASUREMENT REPORT<br>(CERTIFICATION) | <b>SAMSUNG</b> | Approved by:<br>Quality Manager |
| Test Report S/N:<br>8K19110701-01.A3L | Test Dates:<br>02/18/2020-03/06/2020         | EUT Type:<br>5G Access Unit           |                | Page 22 of 356                  |

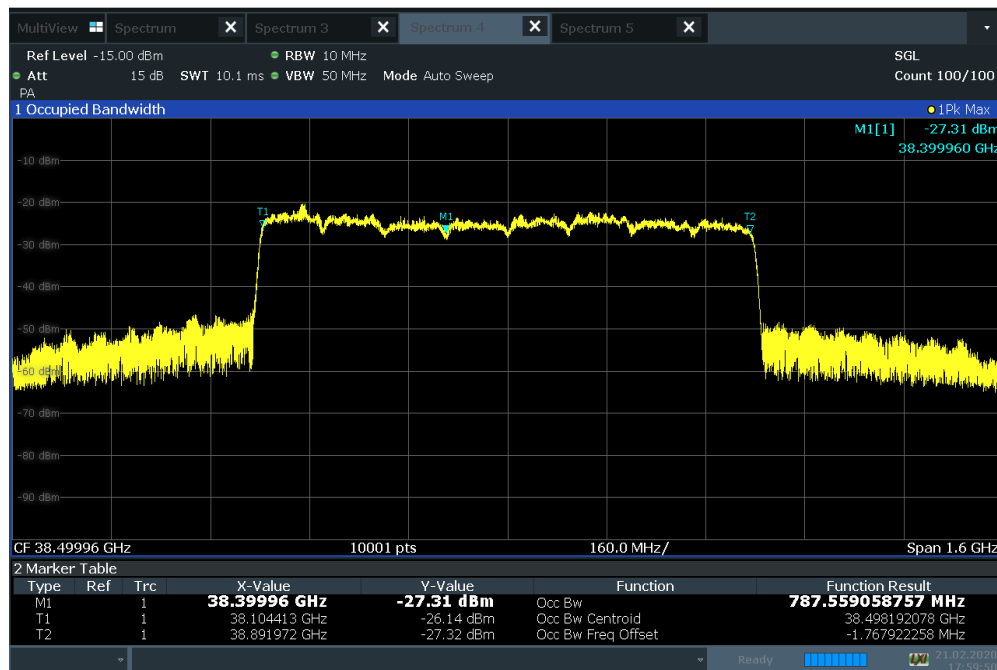
#### ACLRResults



18:01:15 21.02.2020

Plot 7-10. Occupied Bandwidth Plot (100MHz BW 8CC QPSK Mid Channel)

#### ACLRResults

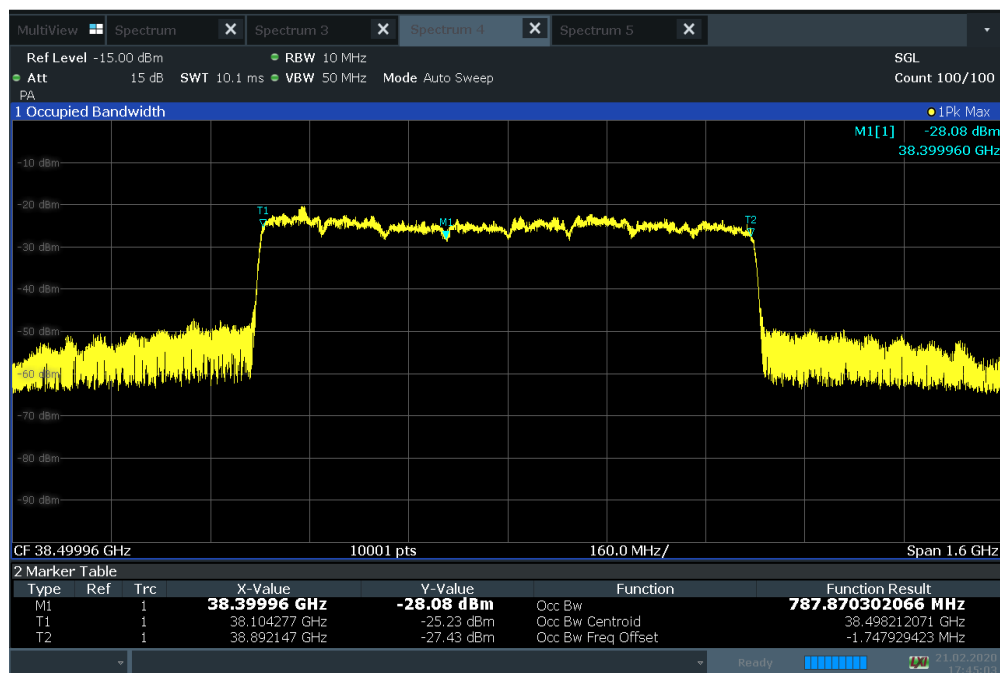


17:59:51 21.02.2020

Plot 7-11. Occupied Bandwidth Plot (100MHz BW 8CC 16QAM Mid Channel)

|                                       |                                              |                                       |                |                                 |
|---------------------------------------|----------------------------------------------|---------------------------------------|----------------|---------------------------------|
| FCC ID: A3LAT1K02-A00                 | <b>PCTEST</b><br>Proud to be part of element | MEASUREMENT REPORT<br>(CERTIFICATION) | <b>SAMSUNG</b> | Approved by:<br>Quality Manager |
| Test Report S/N:<br>8K19110701-01.A3L | Test Dates:<br>02/18/2020-03/06/2020         | EUT Type:<br>5G Access Unit           |                | Page 23 of 356                  |

ACLRResults



17:45:04 21.02.2020

Plot 7-12. Occupied Bandwidth Plot (100MHz BW 8CC 64QAM Mid Channel)

|                                       |                                              |                                       |                |                                 |
|---------------------------------------|----------------------------------------------|---------------------------------------|----------------|---------------------------------|
| FCC ID: A3LAT1K02-A00                 | <b>PCTEST</b><br>Proud to be part of element | MEASUREMENT REPORT<br>(CERTIFICATION) | <b>SAMSUNG</b> | Approved by:<br>Quality Manager |
| Test Report S/N:<br>8K19110701-01.A3L | Test Dates:<br>02/18/2020-03/06/2020         | EUT Type:<br>5G Access Unit           |                | Page 24 of 356                  |

## 7.2.2 Antenna B Occupied Bandwidth

| Bandwidth<br>[MHz] | Antenna | Chan. | CCs<br>active | Modulation | OBW<br>[MHz] |
|--------------------|---------|-------|---------------|------------|--------------|
| 50                 | B       | Mid   | 4             | QPSK       | 46.39        |
|                    |         | Mid   | 4             | 16QAM      | 46.29        |
|                    |         | Mid   | 4             | 64QAM      | 46.33        |
| 100                |         | Mid   | 4             | QPSK       | 94.63        |
|                    |         | Mid   | 4             | 16QAM      | 94.67        |
|                    |         | Mid   | 4             | 64QAM      | 94.63        |
| 50                 |         | Mid   | 0-7           | QPSK       | 393.01       |
|                    |         | Mid   | 0-7           | 16QAM      | 393.03       |
|                    |         | Mid   | 0-7           | 64QAM      | 393.09       |
| 100                |         | Mid   | 0-7           | QPSK       | 787.85       |
|                    |         | Mid   | 0-7           | 16QAM      | 788.35       |
|                    |         | Mid   | 0-7           | 64QAM      | 787.66       |

Table 7-3. Antenna B Occupied Bandwidth Summary Data

### ACLR Results

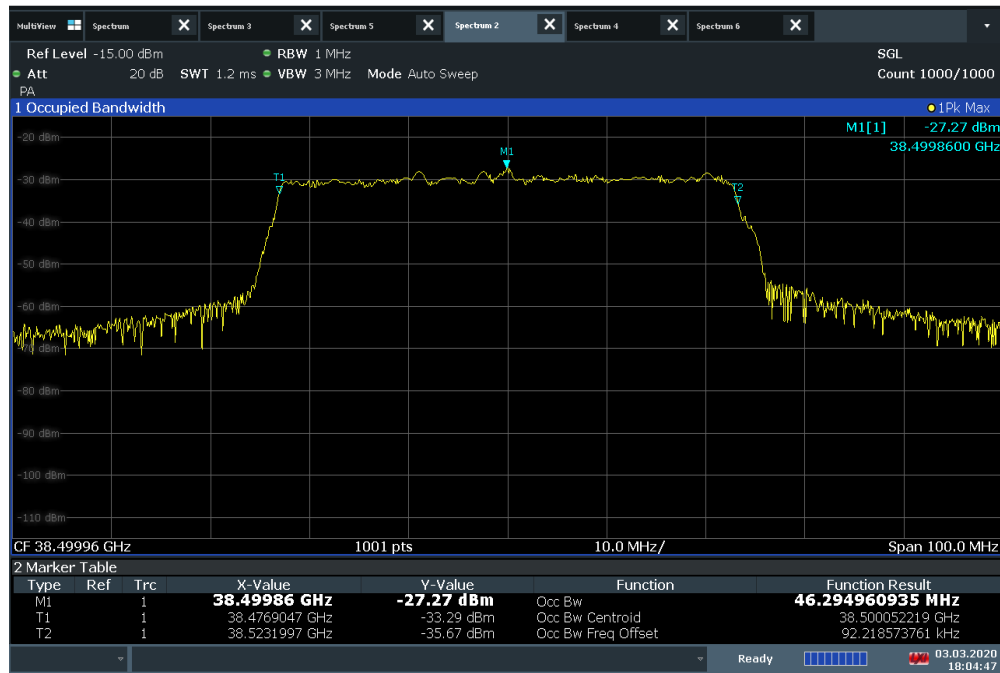


18:03:10 03.03.2020

Plot 7-13. Occupied Bandwidth Plot (50MHz BW 1CC QPSK Mid Channel)

|                                       |                                              |                                       |                |                                 |
|---------------------------------------|----------------------------------------------|---------------------------------------|----------------|---------------------------------|
| FCC ID: A3LAT1K02-A00                 | <b>PCTEST</b><br>Proud to be part of element | MEASUREMENT REPORT<br>(CERTIFICATION) | <b>SAMSUNG</b> | Approved by:<br>Quality Manager |
| Test Report S/N:<br>8K19110701-01.A3L | Test Dates:<br>02/18/2020-03/06/2020         | EUT Type:<br>5G Access Unit           |                | Page 25 of 356                  |

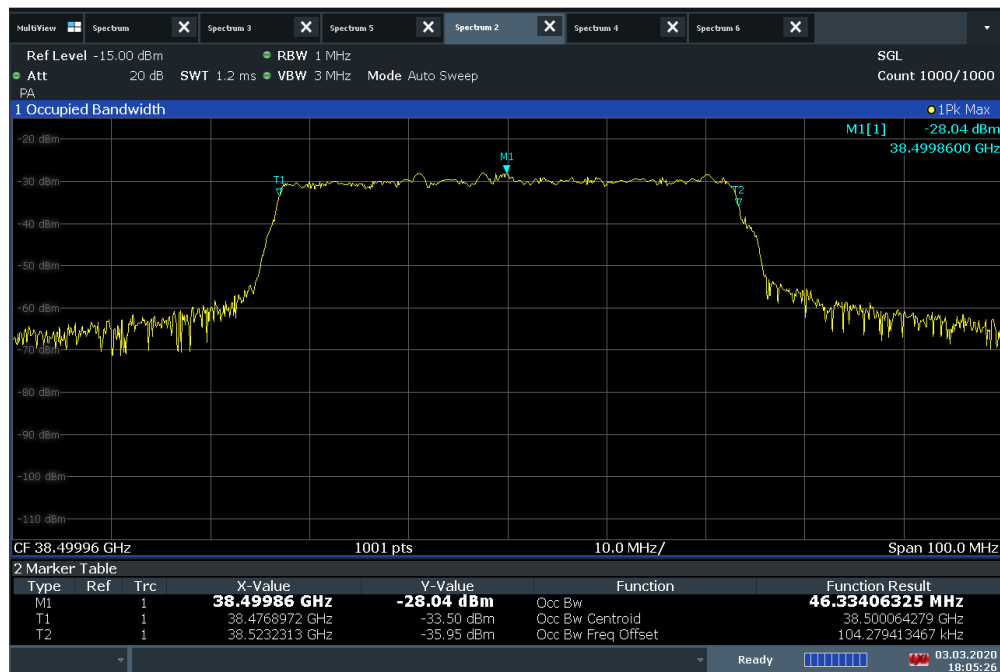
#### ACLRResults



18:04:48 03.03.2020

**Plot 7-14. Occupied Bandwidth Plot (50MHz BW 1CC 16QAM Mid Channel)**

#### ACLRResults



18:05:26 03.03.2020

**Plot 7-15. Occupied Bandwidth Plot (50MHz BW 1CC 64QAM Mid Channel)**

|                                       |                                              |                                       |                |                                 |
|---------------------------------------|----------------------------------------------|---------------------------------------|----------------|---------------------------------|
| FCC ID: A3LAT1K02-A00                 | <b>PCTEST</b><br>Proud to be part of element | MEASUREMENT REPORT<br>(CERTIFICATION) | <b>SAMSUNG</b> | Approved by:<br>Quality Manager |
| Test Report S/N:<br>8K19110701-01.A3L | Test Dates:<br>02/18/2020-03/06/2020         | EUT Type:<br>5G Access Unit           |                | Page 26 of 356                  |

ACLRResults



21:37:23 20.02.2020

Plot 7-16. Occupied Bandwidth Plot (100MHz BW 1CC QPSK Mid Channel)

ACLRResults



21:36:47 20.02.2020

Plot 7-17. Occupied Bandwidth Plot (100MHz BW 1CC 16QAM Mid Channel)

|                                       |                                              |                                       |                |                                 |
|---------------------------------------|----------------------------------------------|---------------------------------------|----------------|---------------------------------|
| FCC ID: A3LAT1K02-A00                 | <b>PCTEST</b><br>Proud to be part of element | MEASUREMENT REPORT<br>(CERTIFICATION) | <b>SAMSUNG</b> | Approved by:<br>Quality Manager |
| Test Report S/N:<br>8K19110701-01.A3L | Test Dates:<br>02/18/2020-03/06/2020         | EUT Type:<br>5G Access Unit           |                | Page 27 of 356                  |

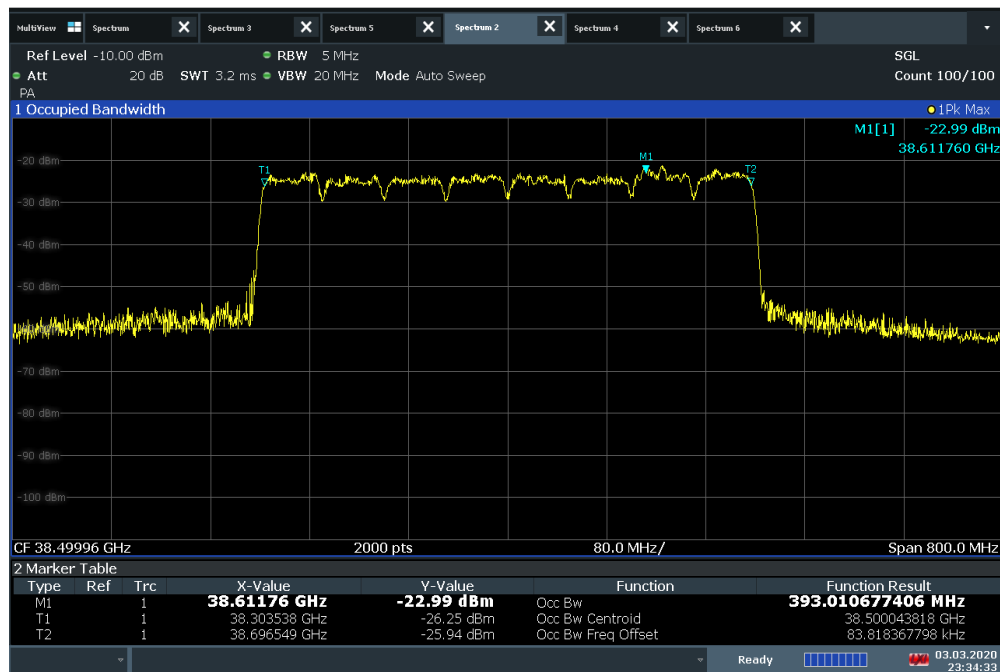
ACLRRResults



21:24:59 20.02.2020

Plot 7-18. Occupied Bandwidth Plot (100MHz BW 1CC 64QAM Mid Channel)

ACLRRResults



23:34:34 03.03.2020

Plot 7-19. Occupied Bandwidth Plot (50MHz BW 8CC QPSK Mid Channel)

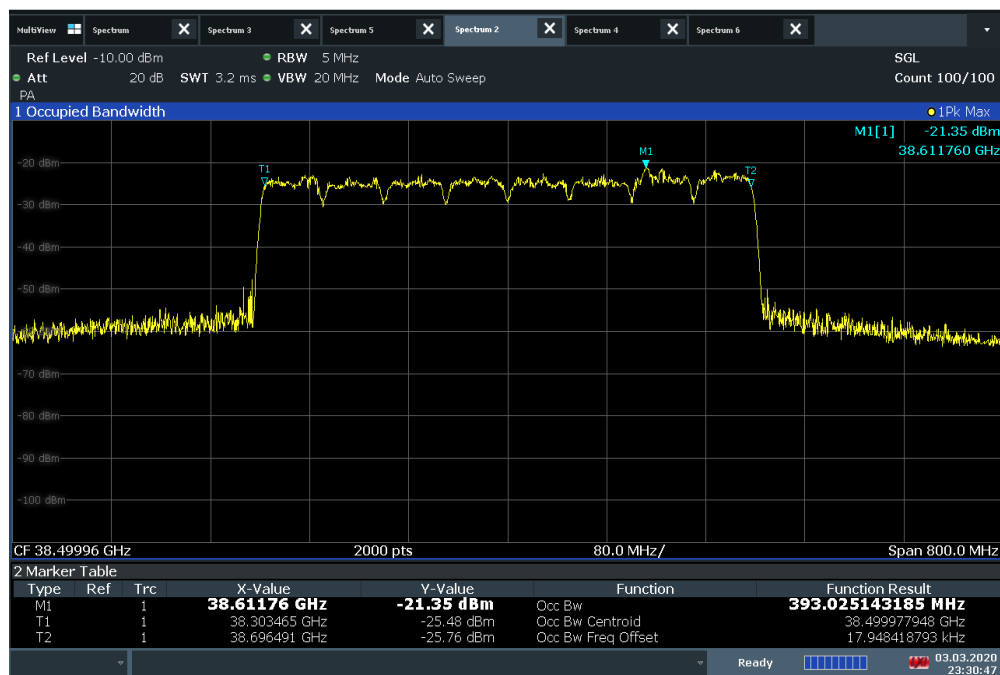
|                                       |                                              |                                       |                |                                 |
|---------------------------------------|----------------------------------------------|---------------------------------------|----------------|---------------------------------|
| FCC ID: A3LAT1K02-A00                 | <b>PCTEST</b><br>Proud to be part of element | MEASUREMENT REPORT<br>(CERTIFICATION) | <b>SAMSUNG</b> | Approved by:<br>Quality Manager |
| Test Report S/N:<br>8K19110701-01.A3L | Test Dates:<br>02/18/2020-03/06/2020         | EUT Type:<br>5G Access Unit           |                | Page 28 of 356                  |

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V9.0 02/01/2019

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#### ACLRResults



23:30:48 03.03.2020

Plot 7-20. Occupied Bandwidth Plot (50MHz BW 8CC 16QAM Mid Channel)

#### ACLRResults



23:29:34 03.03.2020

Plot 7-21. Occupied Bandwidth Plot (50MHz BW 8CC 64QAM Mid Channel)

|                                       |                                              |                                       |                |                                 |
|---------------------------------------|----------------------------------------------|---------------------------------------|----------------|---------------------------------|
| FCC ID: A3LAT1K02-A00                 | <b>PCTEST</b><br>Proud to be part of element | MEASUREMENT REPORT<br>(CERTIFICATION) | <b>SAMSUNG</b> | Approved by:<br>Quality Manager |
| Test Report S/N:<br>8K19110701-01.A3L | Test Dates:<br>02/18/2020-03/06/2020         | EUT Type:<br>5G Access Unit           |                | Page 29 of 356                  |

ACLRResults



23:12:47 20.02.2020

Plot 7-22. Occupied Bandwidth Plot (100MHz BW 8CC QPSK Mid Channel)

ACLRResults



23:11:37 20.02.2020

Plot 7-23. Occupied Bandwidth Plot (100MHz BW 8CC 16QAM Mid Channel)

|                                       |                                              |                                       |                |                                 |
|---------------------------------------|----------------------------------------------|---------------------------------------|----------------|---------------------------------|
| FCC ID: A3LAT1K02-A00                 | <b>PCTEST</b><br>Proud to be part of element | MEASUREMENT REPORT<br>(CERTIFICATION) | <b>SAMSUNG</b> | Approved by:<br>Quality Manager |
| Test Report S/N:<br>8K19110701-01.A3L | Test Dates:<br>02/18/2020-03/06/2020         | EUT Type:<br>5G Access Unit           |                | Page 30 of 356                  |

ACLRResults



23:08:09 20.02.2020

Plot 7-24. Occupied Bandwidth Plot (8CC 64QAM Mid Channel 100MHz BW)

|                                       |                                              |                                       |                |                                 |
|---------------------------------------|----------------------------------------------|---------------------------------------|----------------|---------------------------------|
| FCC ID: A3LAT1K02-A00                 | <b>PCTEST</b><br>Proud to be part of element | MEASUREMENT REPORT<br>(CERTIFICATION) | <b>SAMSUNG</b> | Approved by:<br>Quality Manager |
| Test Report S/N:<br>8K19110701-01.A3L | Test Dates:<br>02/18/2020-03/06/2020         | EUT Type:<br>5G Access Unit           |                | Page 31 of 356                  |

## 7.2.3 Antenna C Occupied Bandwidth

| Bandwidth<br>[MHz] | Antenna | Chan. | CCs<br>active | Modulation | OBW<br>[MHz] |
|--------------------|---------|-------|---------------|------------|--------------|
| 50                 | C       | Mid   | 4             | QPSK       | 46.16        |
|                    |         | Mid   | 4             | 16QAM      | 46.17        |
|                    |         | Mid   | 4             | 64QAM      | 46.15        |
| 100                |         | Mid   | 4             | QPSK       | 94.68        |
|                    |         | Mid   | 4             | 16QAM      | 94.64        |
|                    |         | Mid   | 4             | 64QAM      | 94.65        |
| 50                 |         | Mid   | 0-7           | QPSK       | 393.32       |
|                    |         | Mid   | 0-7           | 16QAM      | 393.39       |
|                    |         | Mid   | 0-7           | 64QAM      | 393.06       |
| 100                |         | Mid   | 0-7           | QPSK       | 787.65       |
|                    |         | Mid   | 0-7           | 16QAM      | 788.21       |
|                    |         | Mid   | 0-7           | 64QAM      | 788.72       |

Table 7-4. Antenna C Occupied Bandwidth Summary Data

### ACLR Results

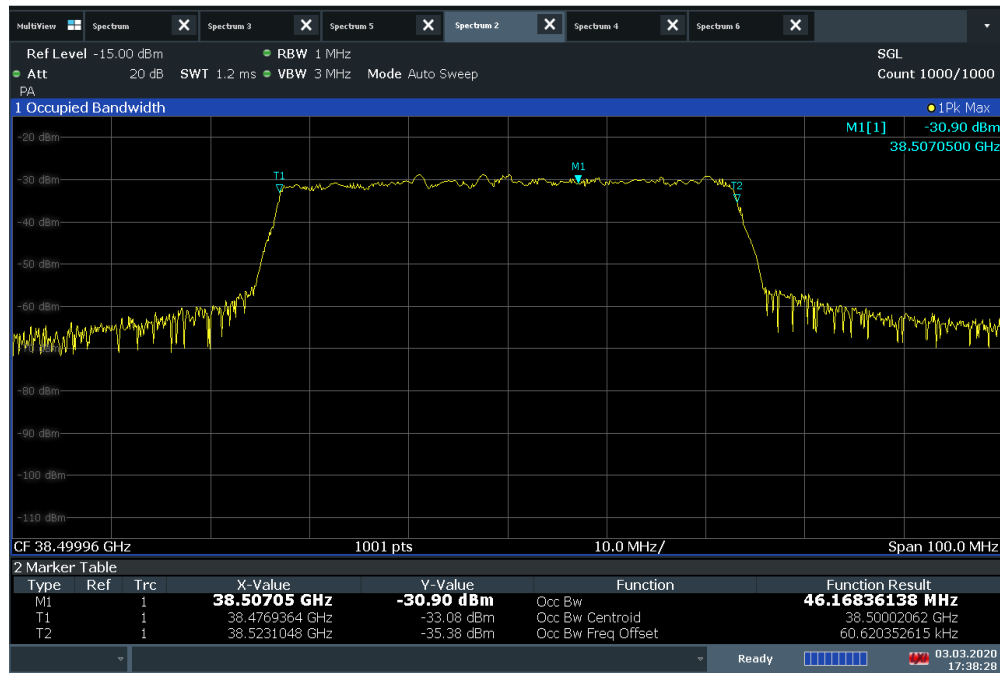


17:36:24 03.03.2020

Plot 7-25. Occupied Bandwidth Plot (50MHz BW 1CC QPSK Mid Channel)

|                                       |                                              |                                       |                |                                 |
|---------------------------------------|----------------------------------------------|---------------------------------------|----------------|---------------------------------|
| FCC ID: A3LAT1K02-A00                 | <b>PCTEST</b><br>Proud to be part of element | MEASUREMENT REPORT<br>(CERTIFICATION) | <b>SAMSUNG</b> | Approved by:<br>Quality Manager |
| Test Report S/N:<br>8K19110701-01.A3L | Test Dates:<br>02/18/2020-03/06/2020         | EUT Type:<br>5G Access Unit           |                | Page 32 of 356                  |

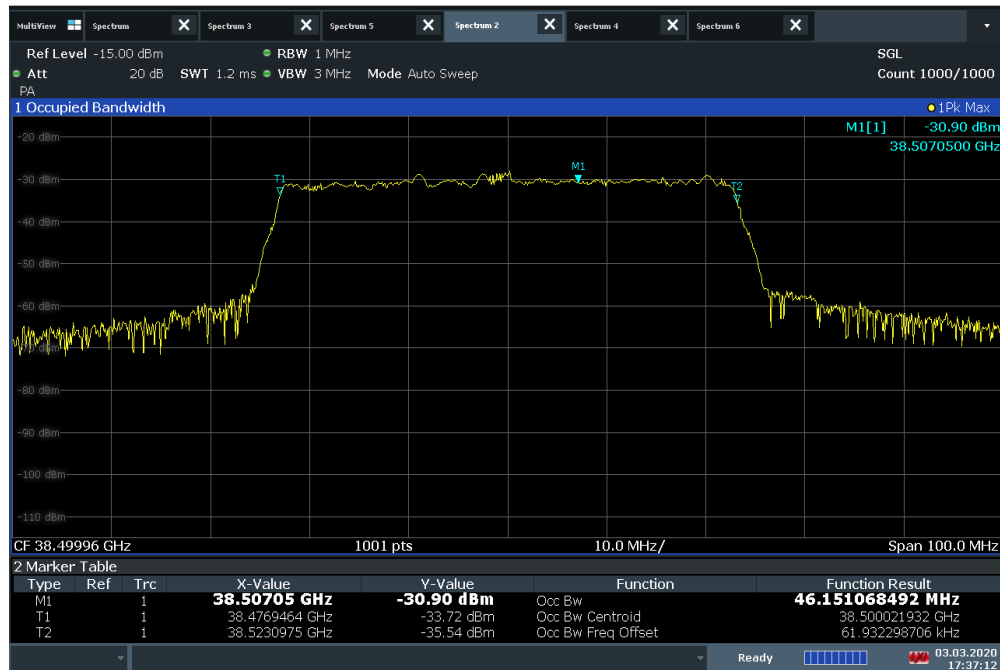
#### ACLRRResults



17:38:29 03.03.2020

**Plot 7-26. Occupied Bandwidth Plot (50MHz BW 1CC 16QAM Mid Channel)**

#### ACLRRResults

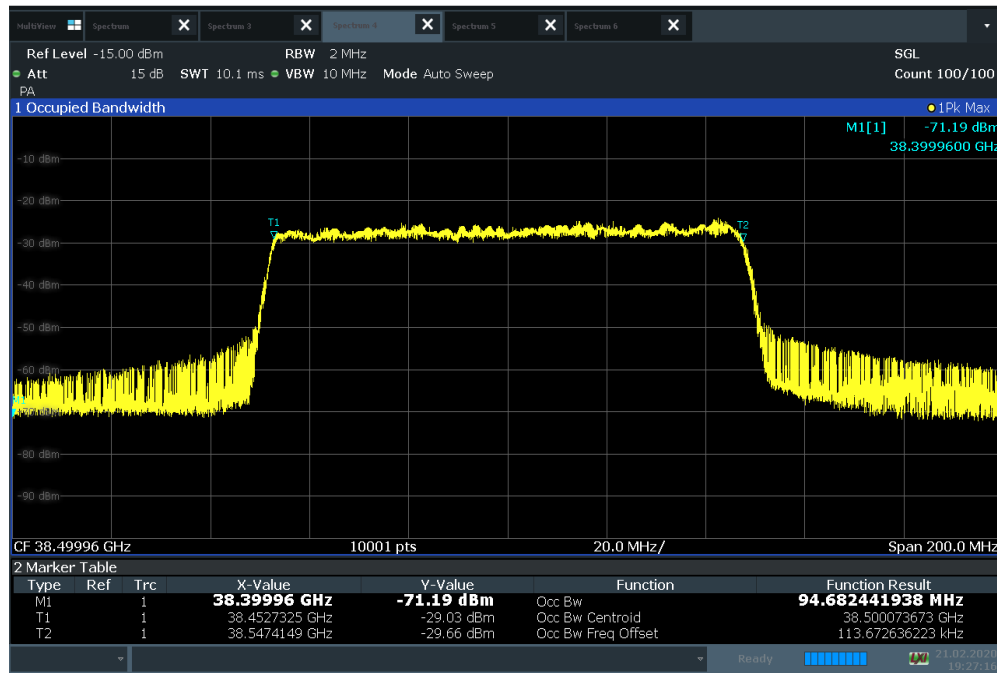


17:37:13 03.03.2020

**Plot 7-27. Occupied Bandwidth Plot (50MHz BW 1CC 64QAM Mid Channel)**

|                                       |                                              |                                       |                |                                 |
|---------------------------------------|----------------------------------------------|---------------------------------------|----------------|---------------------------------|
| FCC ID: A3LAT1K02-A00                 | <b>PCTEST</b><br>Proud to be part of element | MEASUREMENT REPORT<br>(CERTIFICATION) | <b>SAMSUNG</b> | Approved by:<br>Quality Manager |
| Test Report S/N:<br>8K19110701-01.A3L | Test Dates:<br>02/18/2020-03/06/2020         | EUT Type:<br>5G Access Unit           |                | Page 33 of 356                  |

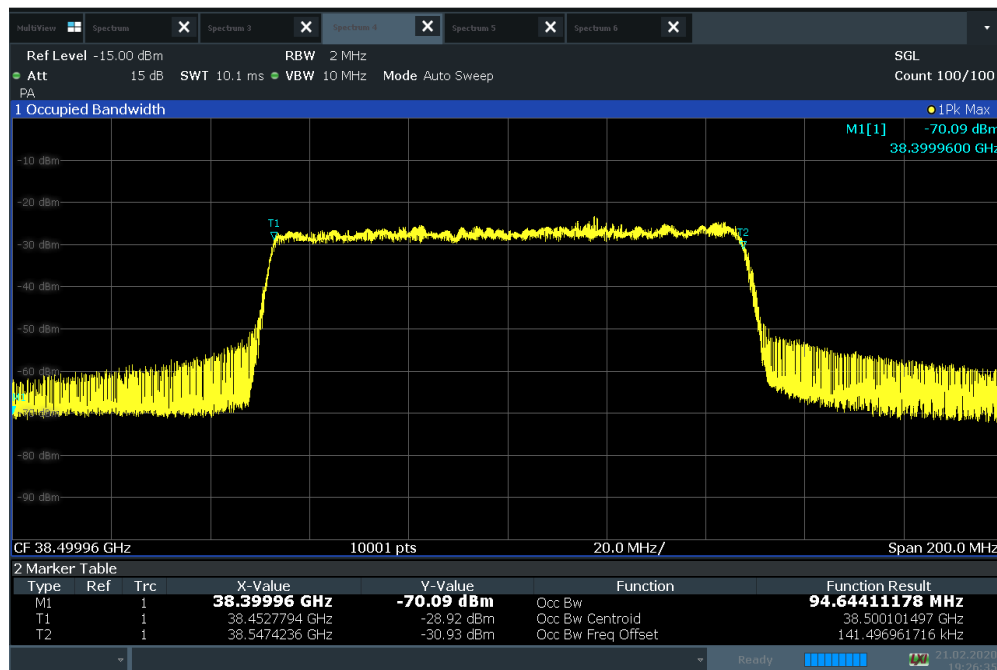
ACLRResults



19:27:17 21.02.2020

Plot 7-28. Occupied Bandwidth Plot (100MHz BW 1CC QPSK Mid Channel)

ACLRResults

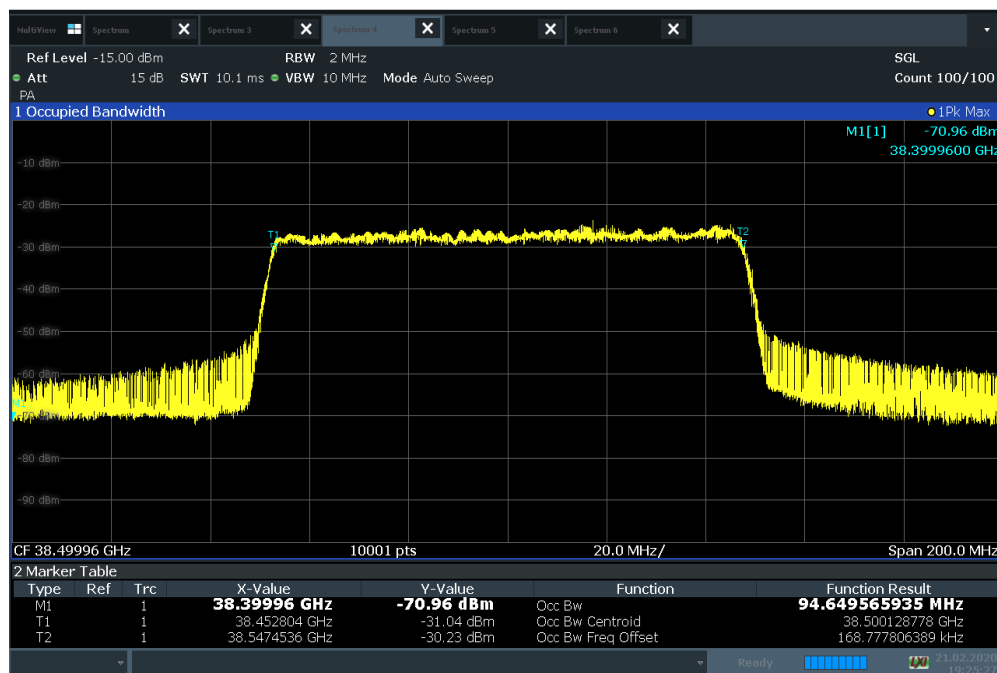


19:26:35 21.02.2020

Plot 7-29. Occupied Bandwidth Plot (100MHz BW 1CC 16QAM Mid Channel)

|                                       |                                              |                                       |                |                                 |
|---------------------------------------|----------------------------------------------|---------------------------------------|----------------|---------------------------------|
| FCC ID: A3LAT1K02-A00                 | <b>PCTEST</b><br>Proud to be part of element | MEASUREMENT REPORT<br>(CERTIFICATION) | <b>SAMSUNG</b> | Approved by:<br>Quality Manager |
| Test Report S/N:<br>8K19110701-01.A3L | Test Dates:<br>02/18/2020-03/06/2020         | EUT Type:<br>5G Access Unit           |                | Page 34 of 356                  |

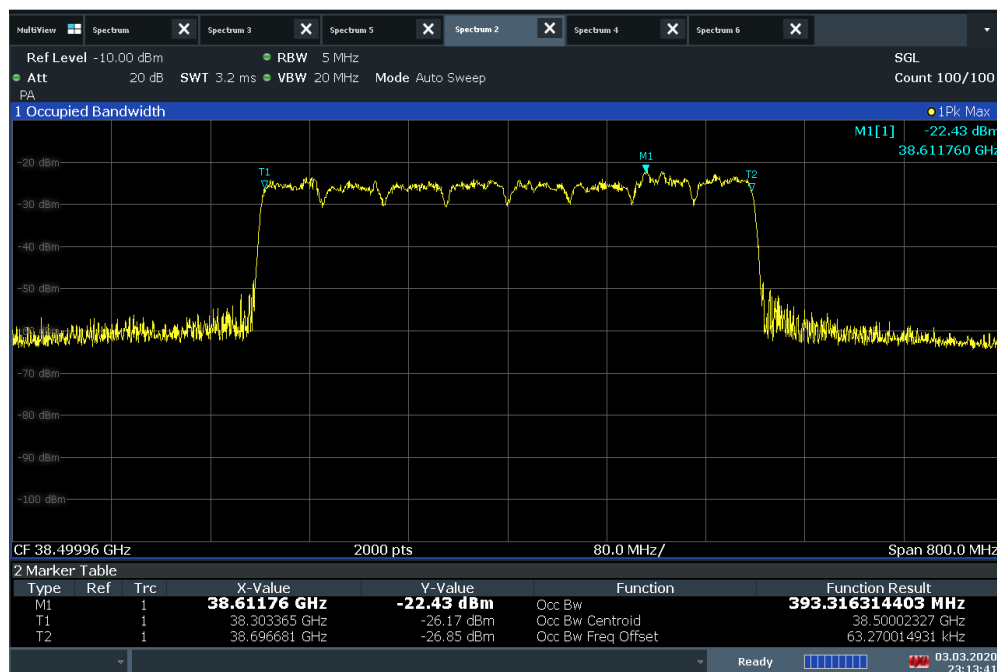
#### ACLRResults



19:25:27 21.02.2020

**Plot 7-30. Occupied Bandwidth Plot (100MHz BW 1CC 64QAM Mid Channel)**

#### ACLRResults

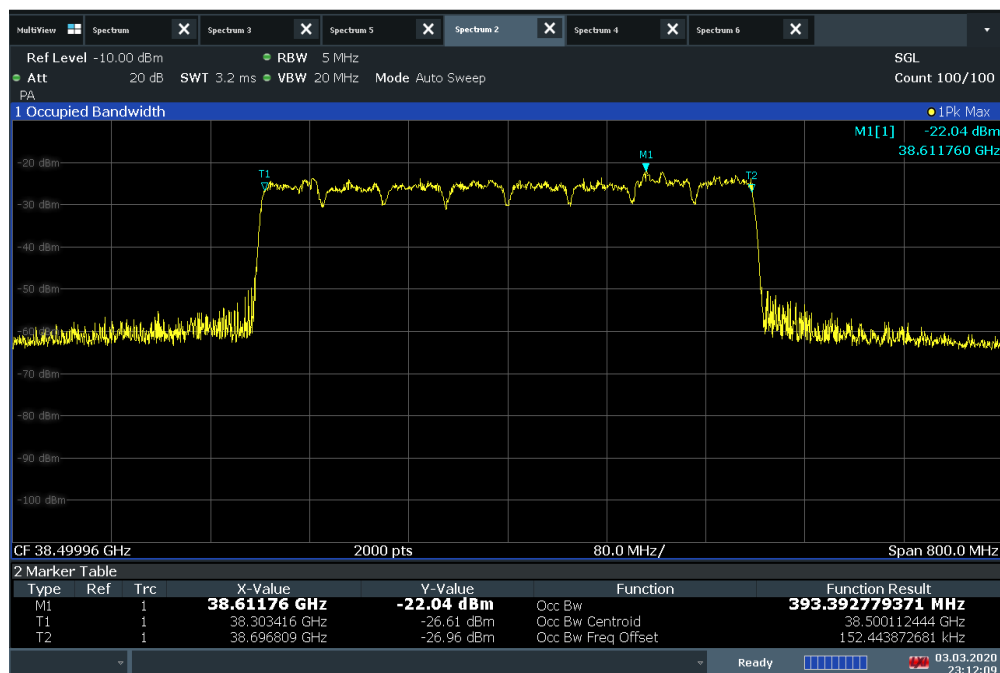


23:13:42 03.03.2020

**Plot 7-31. Occupied Bandwidth Plot (50MHz BW 8CC QPSK Mid Channel)**

|                                       |                                              |                                       |                |                                 |
|---------------------------------------|----------------------------------------------|---------------------------------------|----------------|---------------------------------|
| FCC ID: A3LAT1K02-A00                 | <b>PCTEST</b><br>Proud to be part of element | MEASUREMENT REPORT<br>(CERTIFICATION) | <b>SAMSUNG</b> | Approved by:<br>Quality Manager |
| Test Report S/N:<br>8K19110701-01.A3L | Test Dates:<br>02/18/2020-03/06/2020         | EUT Type:<br>5G Access Unit           |                | Page 35 of 356                  |

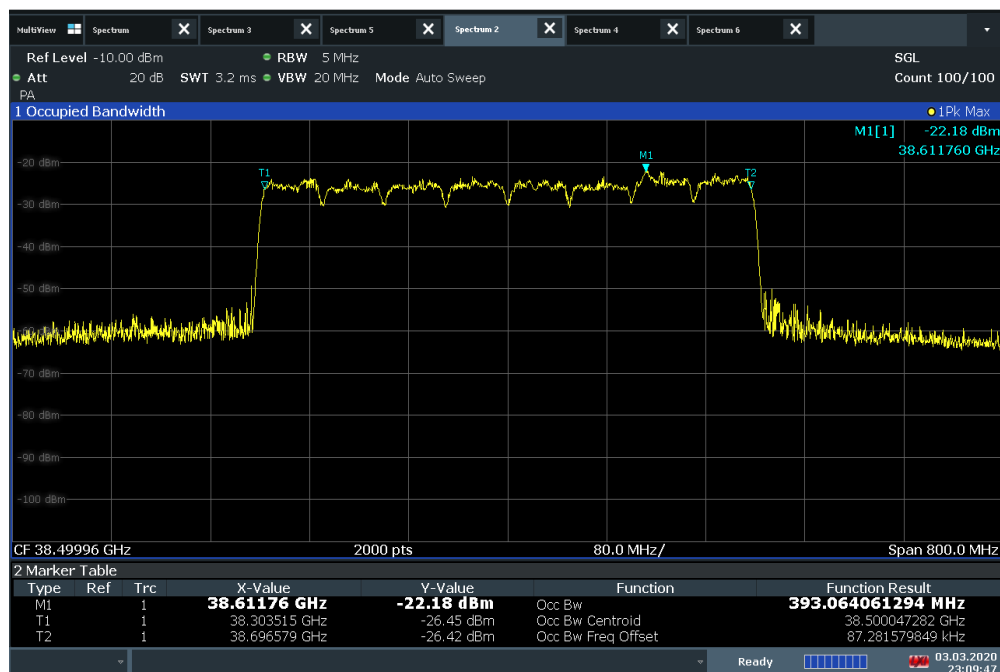
#### ACLRResults



23:12:09 03.03.2020

Plot 7-32. Occupied Bandwidth Plot (50MHz BW 8CC 16QAM Mid Channel)

#### ACLRResults



23:09:47 03.03.2020

Plot 7-33. Occupied Bandwidth Plot (50MHz BW 8CC 64QAM Mid Channel)

|                                       |                                              |                                       |                |                                 |
|---------------------------------------|----------------------------------------------|---------------------------------------|----------------|---------------------------------|
| FCC ID: A3LAT1K02-A00                 | <b>PCTEST</b><br>Proud to be part of element | MEASUREMENT REPORT<br>(CERTIFICATION) | <b>SAMSUNG</b> | Approved by:<br>Quality Manager |
| Test Report S/N:<br>8K19110701-01.A3L | Test Dates:<br>02/18/2020-03/06/2020         | EUT Type:<br>5G Access Unit           |                | Page 36 of 356                  |

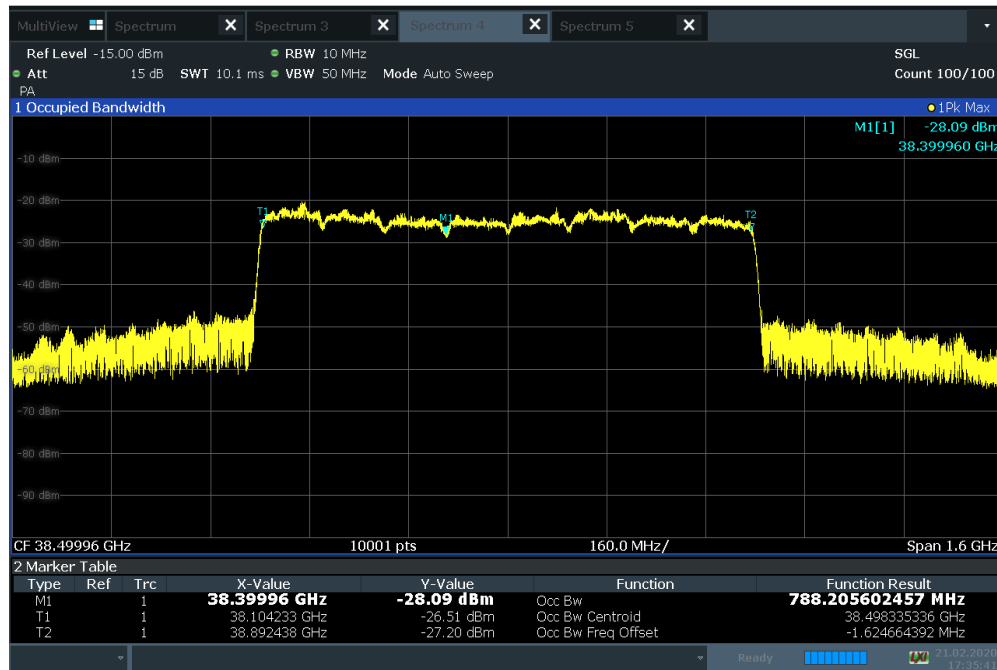
ACLRResults



17:32:17 21.02.2020

Plot 7-34. Occupied Bandwidth Plot (100MHz BW 8CC QPSK Mid Channel)

ACLRResults

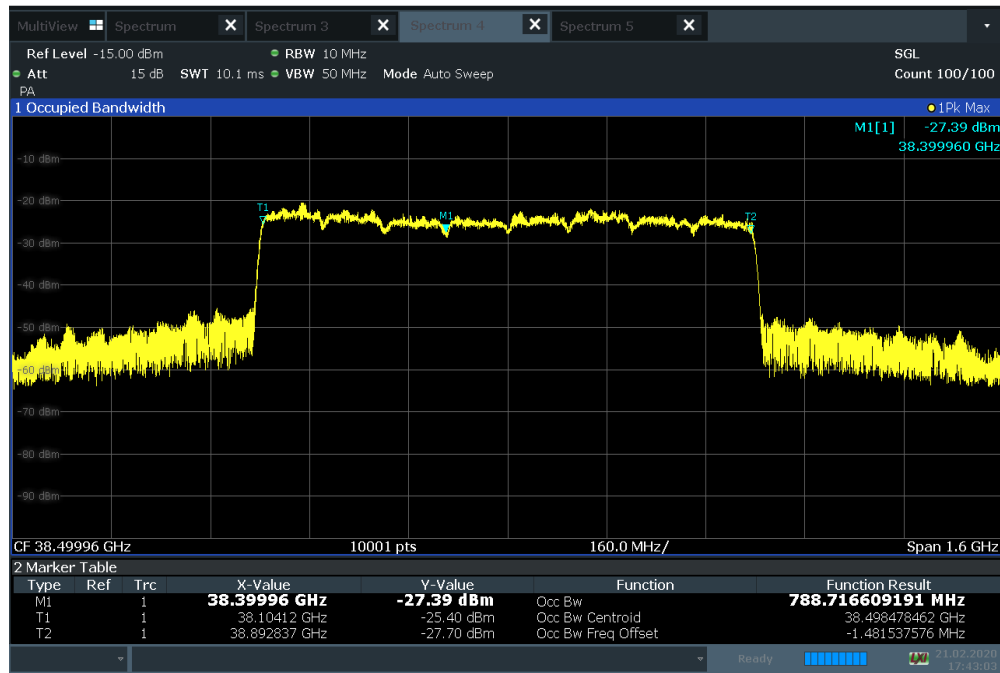


17:35:41 21.02.2020

Plot 7-35. Occupied Bandwidth Plot (100MHz BW 8CC 16QAM Mid Channel)

|                                       |                                              |                                       |                |                                 |
|---------------------------------------|----------------------------------------------|---------------------------------------|----------------|---------------------------------|
| FCC ID: A3LAT1K02-A00                 | <b>PCTEST</b><br>Proud to be part of element | MEASUREMENT REPORT<br>(CERTIFICATION) | <b>SAMSUNG</b> | Approved by:<br>Quality Manager |
| Test Report S/N:<br>8K19110701-01.A3L | Test Dates:<br>02/18/2020-03/06/2020         | EUT Type:<br>5G Access Unit           |                | Page 37 of 356                  |

ACLR Results



17:43:03 21.02.2020

Plot 7-36. Occupied Bandwidth Plot (100MHz BW 8CC 64QAM Mid Channel)

|                                       |                                              |                                       |                |                                 |
|---------------------------------------|----------------------------------------------|---------------------------------------|----------------|---------------------------------|
| FCC ID: A3LAT1K02-A00                 | <b>PCTEST</b><br>Proud to be part of element | MEASUREMENT REPORT<br>(CERTIFICATION) | <b>SAMSUNG</b> | Approved by:<br>Quality Manager |
| Test Report S/N:<br>8K19110701-01.A3L | Test Dates:<br>02/18/2020-03/06/2020         | EUT Type:<br>5G Access Unit           |                | Page 38 of 356                  |

## 7.2.4 Antenna D Occupied Bandwidth

| Bandwidth<br>[MHz] | Antenna | Chan. | CCs<br>active | Modulation | OBW<br>[MHz] |
|--------------------|---------|-------|---------------|------------|--------------|
| 50                 | D       | Mid   | 4             | QPSK       | 46.25        |
|                    |         | Mid   | 4             | 16QAM      | 46.20        |
|                    |         | Mid   | 4             | 64QAM      | 46.20        |
| 100                |         | Mid   | 4             | QPSK       | 94.57        |
|                    |         | Mid   | 4             | 16QAM      | 94.60        |
|                    |         | Mid   | 4             | 64QAM      | 94.63        |
| 50                 |         | Mid   | 0-7           | QPSK       | 393.04       |
|                    |         | Mid   | 0-7           | 16QAM      | 393.08       |
|                    |         | Mid   | 0-7           | 64QAM      | 392.93       |
| 100                |         | Mid   | 0-7           | QPSK       | 787.41       |
|                    |         | Mid   | 0-7           | 16QAM      | 788.19       |
|                    |         | Mid   | 0-7           | 64QAM      | 788.30       |

Table 7-5. Antenna D Occupied Bandwidth Summary Data

### ACLR Results

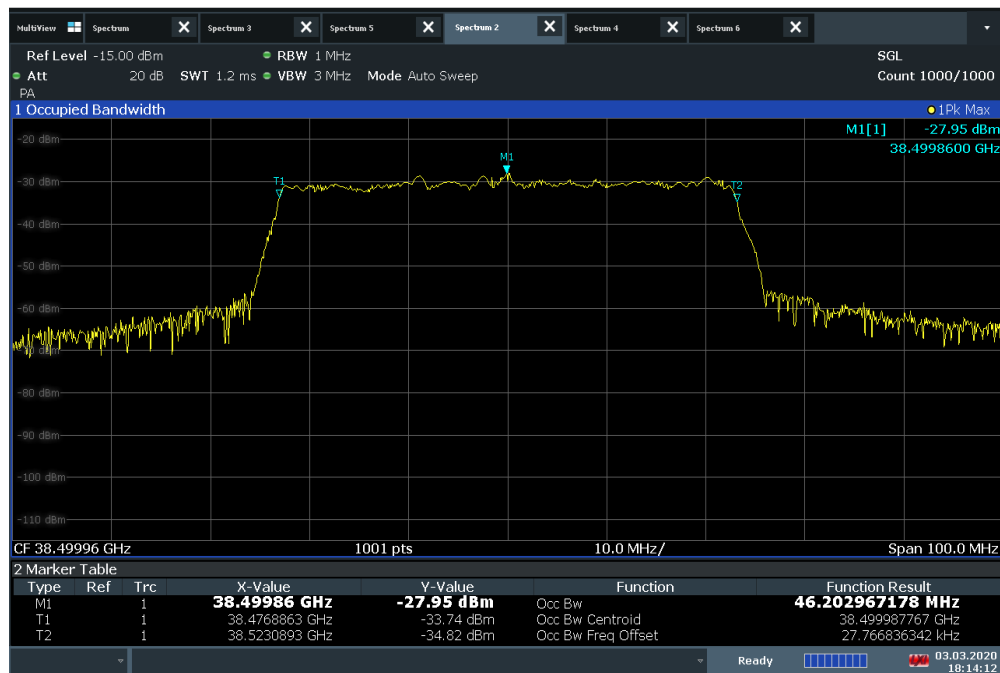


18:15:07 03.03.2020

Plot 7-37. Occupied Bandwidth Plot (50MHz BW 1CC QPSK Mid Channel)

|                                       |                                              |                                       |                |                                 |
|---------------------------------------|----------------------------------------------|---------------------------------------|----------------|---------------------------------|
| FCC ID: A3LAT1K02-A00                 | <b>PCTEST</b><br>Proud to be part of element | MEASUREMENT REPORT<br>(CERTIFICATION) | <b>SAMSUNG</b> | Approved by:<br>Quality Manager |
| Test Report S/N:<br>8K19110701-01.A3L | Test Dates:<br>02/18/2020-03/06/2020         | EUT Type:<br>5G Access Unit           |                | Page 39 of 356                  |

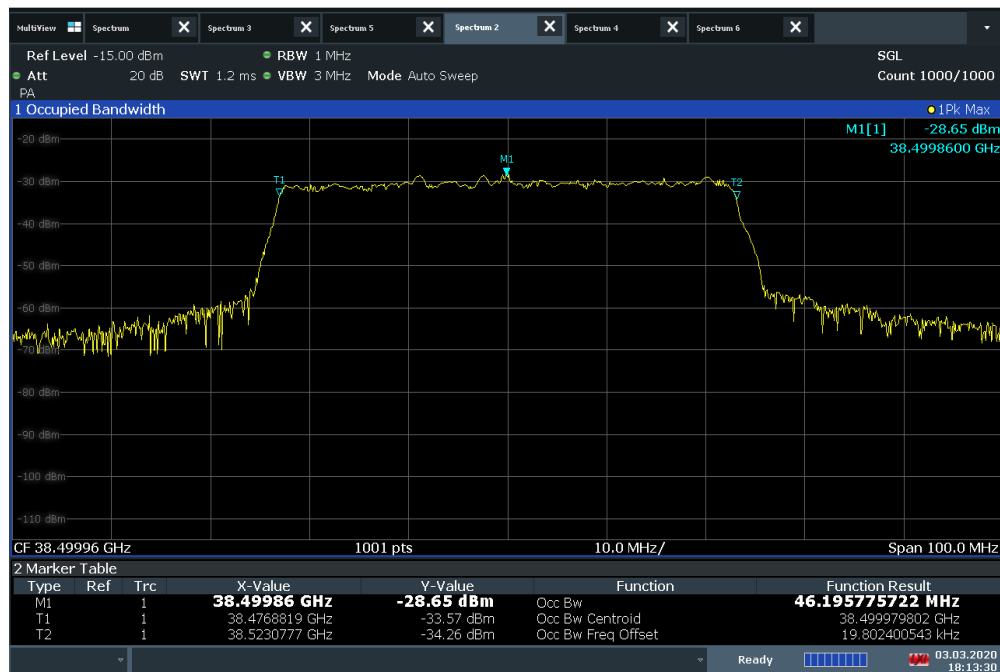
#### ACLRResults



18:14:13 03.03.2020

**Plot 7-38. Occupied Bandwidth Plot (50MHz BW 1CC 16QAM Mid Channel)**

#### ACLRResults

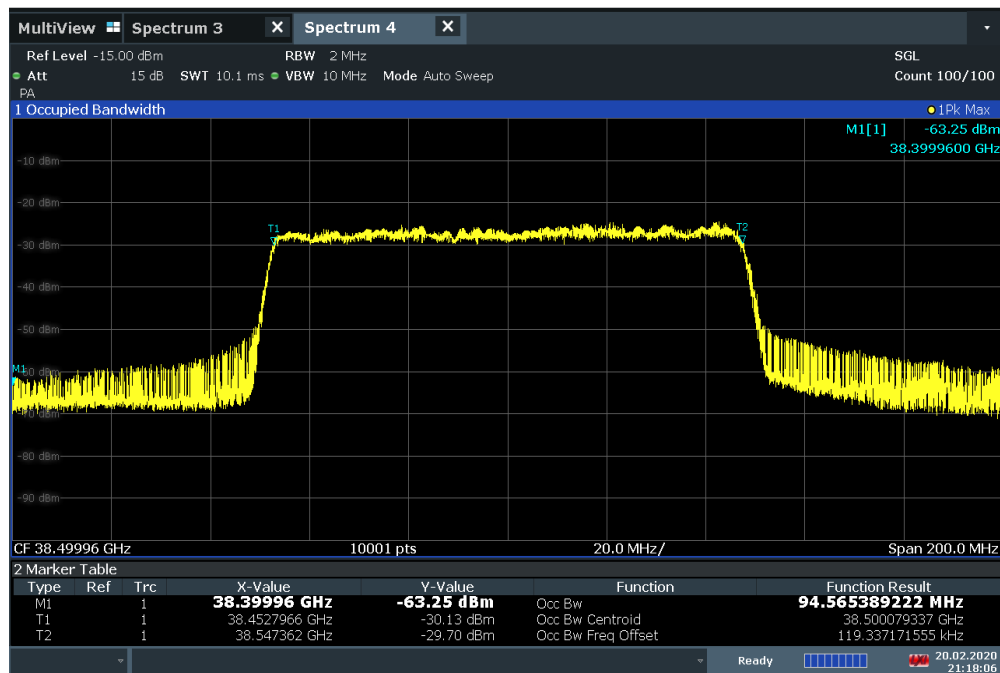


18:13:30 03.03.2020

**Plot 7-39. Occupied Bandwidth Plot (50MHz BW 1CC 64QAM Mid Channel)**

|                                       |                                              |                                       |                |                                 |
|---------------------------------------|----------------------------------------------|---------------------------------------|----------------|---------------------------------|
| FCC ID: A3LAT1K02-A00                 | <b>PCTEST</b><br>Proud to be part of element | MEASUREMENT REPORT<br>(CERTIFICATION) | <b>SAMSUNG</b> | Approved by:<br>Quality Manager |
| Test Report S/N:<br>8K19110701-01.A3L | Test Dates:<br>02/18/2020-03/06/2020         | EUT Type:<br>5G Access Unit           |                | Page 40 of 356                  |

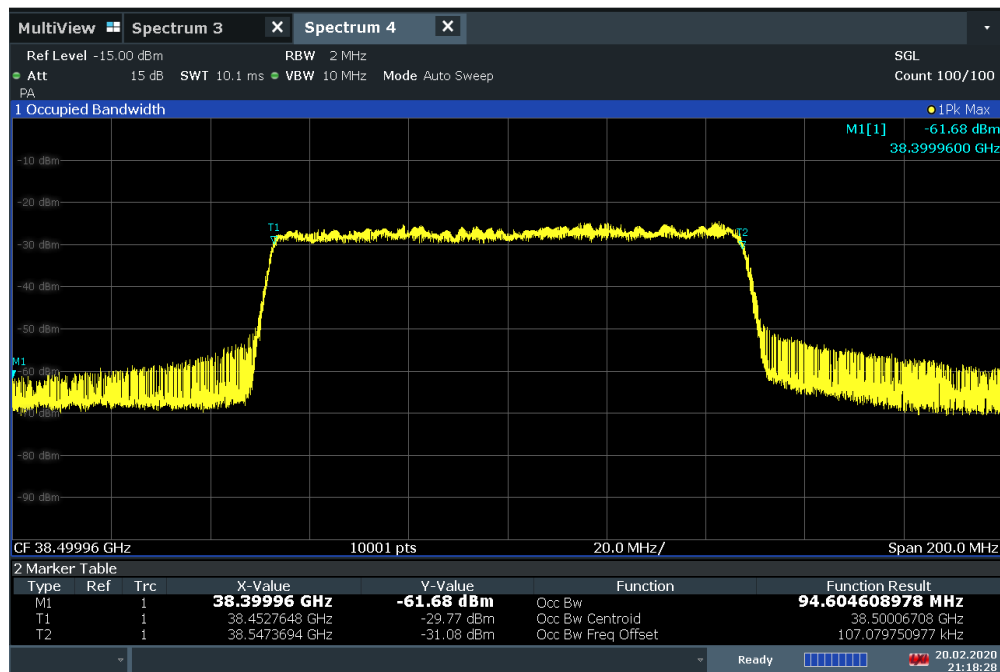
#### ACLRResults



21:18:06 20.02.2020

Plot 7-40. Occupied Bandwidth Plot (100MHz BW 1CC QPSK Mid Channel)

#### ACLRResults

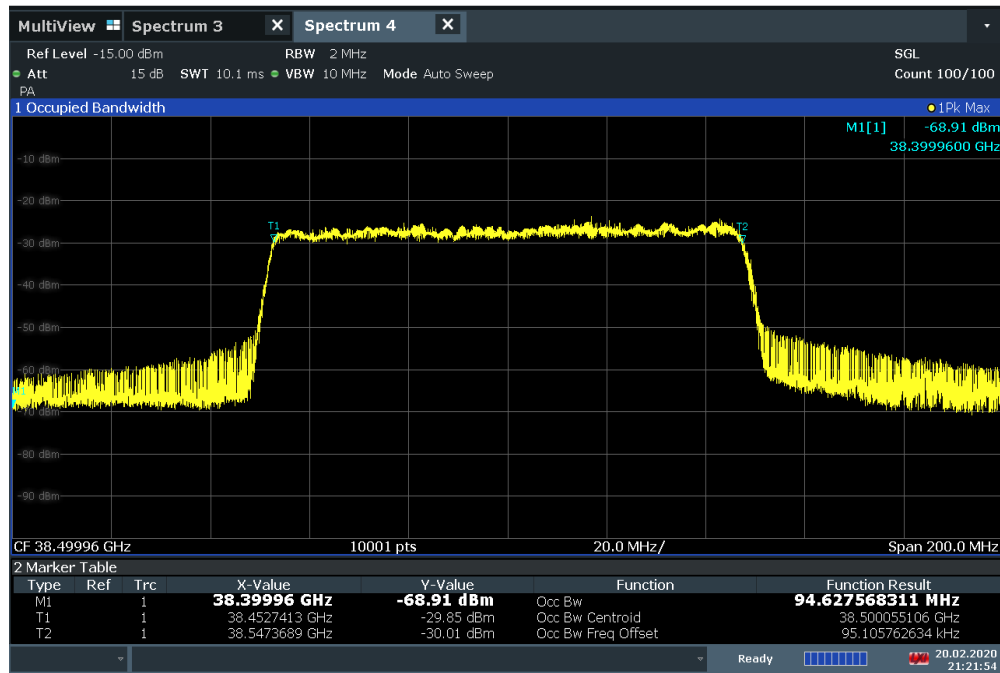


21:18:28 20.02.2020

Plot 7-41. Occupied Bandwidth Plot (100MHz BW 1CC 16QAM Mid Channel)

|                                       |                                              |                                       |                |                                 |
|---------------------------------------|----------------------------------------------|---------------------------------------|----------------|---------------------------------|
| FCC ID: A3LAT1K02-A00                 | <b>PCTEST</b><br>Proud to be part of element | MEASUREMENT REPORT<br>(CERTIFICATION) | <b>SAMSUNG</b> | Approved by:<br>Quality Manager |
| Test Report S/N:<br>8K19110701-01.A3L | Test Dates:<br>02/18/2020-03/06/2020         | EUT Type:<br>5G Access Unit           |                | Page 41 of 356                  |

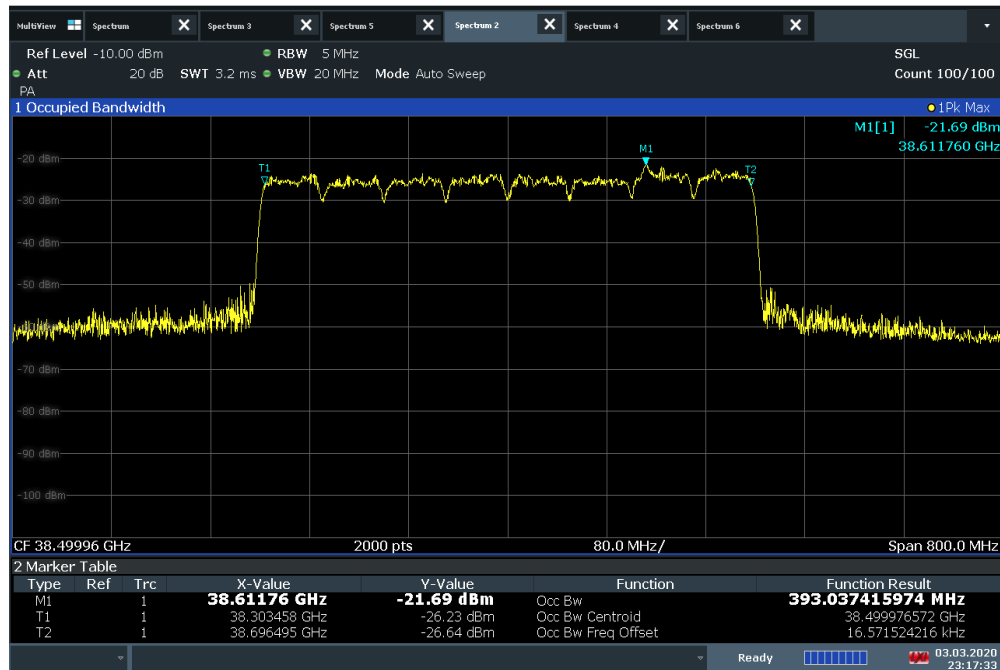
ACLRRResults



21:21:54 20.02.2020

Plot 7-42. Occupied Bandwidth Plot (100MHz BW 1CC 64QAM Mid Channel)

ACLRRResults

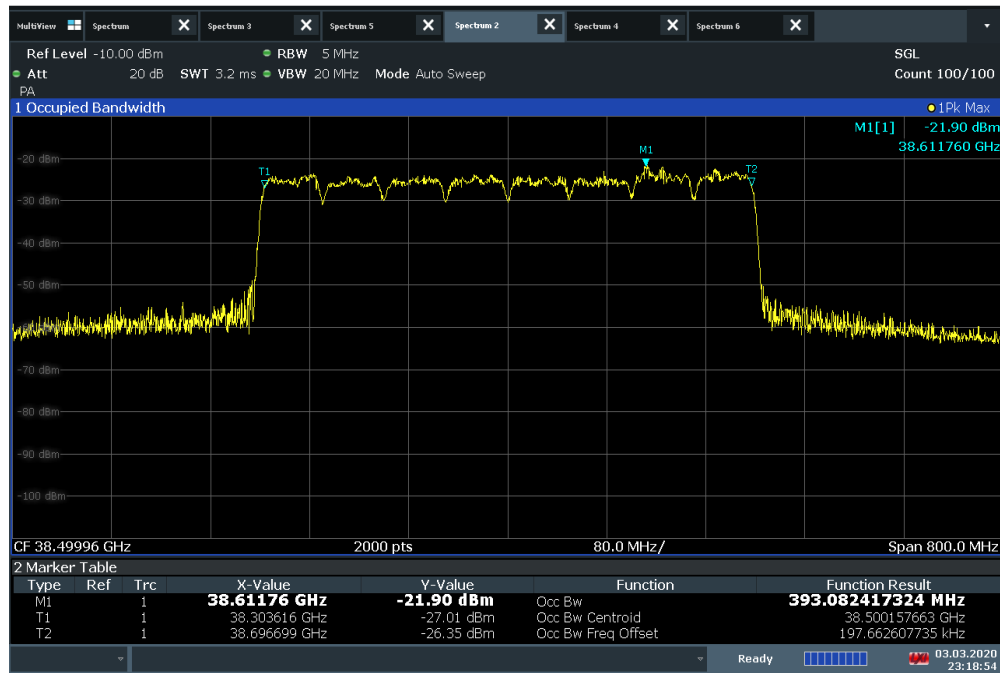


23:17:33 03.03.2020

Plot 7-43. Occupied Bandwidth Plot (50MHz BW 8CC QPSK Mid Channel)

|                                       |                                              |                                       |                |                                 |
|---------------------------------------|----------------------------------------------|---------------------------------------|----------------|---------------------------------|
| FCC ID: A3LAT1K02-A00                 | <b>PCTEST</b><br>Proud to be part of element | MEASUREMENT REPORT<br>(CERTIFICATION) | <b>SAMSUNG</b> | Approved by:<br>Quality Manager |
| Test Report S/N:<br>8K19110701-01.A3L | Test Dates:<br>02/18/2020-03/06/2020         | EUT Type:<br>5G Access Unit           |                | Page 42 of 356                  |

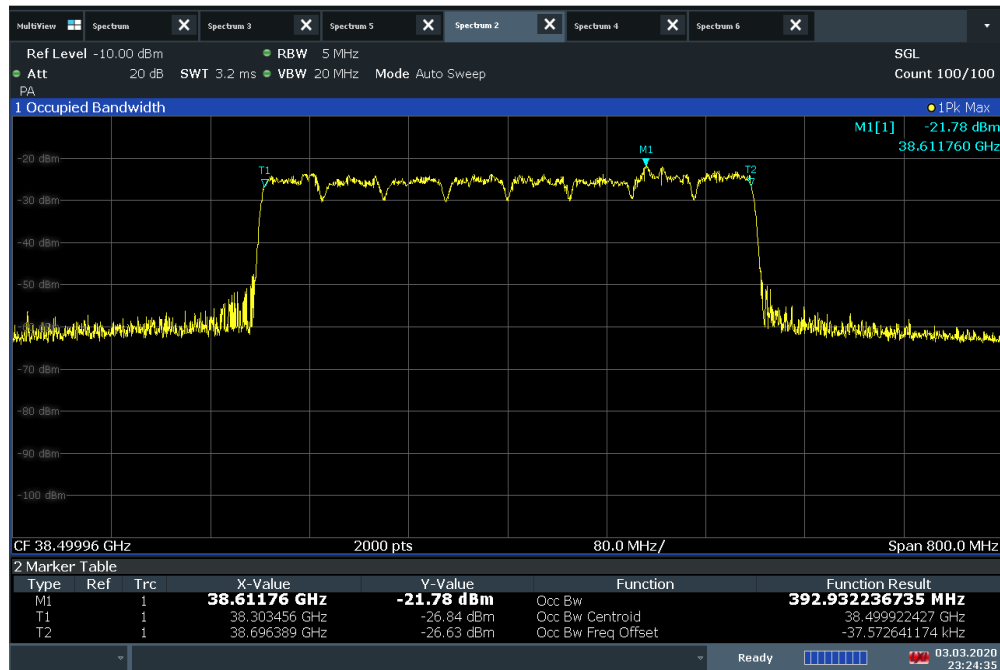
#### ACLRResults



23:18:54 03.03.2020

Plot 7-44. Occupied Bandwidth Plot (50MHz BW 8CC 16QAM Mid Channel)

#### ACLRResults



23:24:35 03.03.2020

Plot 7-45. Occupied Bandwidth Plot (50MHz BW 8CC 64QAM Mid Channel)

|                                       |                                              |                                       |                |                                 |
|---------------------------------------|----------------------------------------------|---------------------------------------|----------------|---------------------------------|
| FCC ID: A3LAT1K02-A00                 | <b>PCTEST</b><br>Proud to be part of element | MEASUREMENT REPORT<br>(CERTIFICATION) | <b>SAMSUNG</b> | Approved by:<br>Quality Manager |
| Test Report S/N:<br>8K19110701-01.A3L | Test Dates:<br>02/18/2020-03/06/2020         | EUT Type:<br>5G Access Unit           |                | Page 43 of 356                  |

#### ACLRResults



11:14:23 05.03.2020

**Plot 7-46. Occupied Bandwidth Plot (100MHz BW 8CC QPSK Mid Channel)**

#### ACLRResults



23:06:48 20.02.2020

**Plot 7-47. Occupied Bandwidth Plot (100MHz BW 8CC 16QAM Mid Channel)**

|                                       |                                              |                                       |                |                                 |
|---------------------------------------|----------------------------------------------|---------------------------------------|----------------|---------------------------------|
| FCC ID: A3LAT1K02-A00                 | <b>PCTEST</b><br>Proud to be part of element | MEASUREMENT REPORT<br>(CERTIFICATION) | <b>SAMSUNG</b> | Approved by:<br>Quality Manager |
| Test Report S/N:<br>8K19110701-01.A3L | Test Dates:<br>02/18/2020-03/06/2020         | EUT Type:<br>5G Access Unit           |                | Page 44 of 356                  |

ACLRResults



23:06:48 20.02.2020

Plot 7-48. Occupied Bandwidth Plot (100MHz BW 8CC 64QAM Mid Channel)

|                                       |                                              |                                       |                |                                 |
|---------------------------------------|----------------------------------------------|---------------------------------------|----------------|---------------------------------|
| FCC ID: A3LAT1K02-A00                 | <b>PCTEST</b><br>Proud to be part of element | MEASUREMENT REPORT<br>(CERTIFICATION) | <b>SAMSUNG</b> | Approved by:<br>Quality Manager |
| Test Report S/N:<br>8K19110701-01.A3L | Test Dates:<br>02/18/2020-03/06/2020         | EUT Type:<br>5G Access Unit           |                | Page 45 of 356                  |

## 7.3 Equivalent Isotropic Radiated Power (EIRP) Density

**§2.1046 §30.202**

### **Test Overview**

Equivalent Isotropic Radiated Power (EIRP) measurements are performed using broadband horn antennas. All measurements are performed as RMS average measurements while the EUT is operating at its maximum duty cycle, at maximum power, and at the appropriate frequencies.

***The average power of the sum of all antenna elements is limited to an equivalent isotopically radiated power (EIRP) density of +75dBm/100 MHz.***

### **Test Procedures Used**

ANSI C63.26-2015 Section 5.2.4.4.1  
ANSI C63.26-2015 Section 6.4

### **Test Settings**

1. Radiated power measurements are performed using the signal analyzer's "channel power" measurement capability for signals with continuous operation.
2. RBW = 1 – 5% of the expected OBW
3. VBW  $\geq 3 \times$  RBW
4. Span = 2x to 3x the OBW
5. No. of sweep points  $\geq 2 \times$  span / RBW
6. Detector = RMS
7. The integration bandwidth was roughly set equal to the measured (EIRP) Density of the signal for signals with continuous operation. For signals with burst transmission, the "gating" function was enabled to ensure that measurements are performed during times in which the transmitter is operating at its maximum power
8. Trace mode = trace averaging (RMS) over 100 sweeps
9. The trace was allowed to stabilize

|                                       |                                                                                                                    |                                       |                                                                                       |                                 |
|---------------------------------------|--------------------------------------------------------------------------------------------------------------------|---------------------------------------|---------------------------------------------------------------------------------------|---------------------------------|
| FCC ID: A3LAT1K02-A00                 | <br>Proud to be part of element | MEASUREMENT REPORT<br>(CERTIFICATION) |  | Approved by:<br>Quality Manager |
| Test Report S/N:<br>8K19110701-01.A3L | Test Dates:<br>02/18/2020-03/06/2020                                                                               | EUT Type:<br>5G Access Unit           |                                                                                       | Page 46 of 356                  |

## Test Notes

- 1) The EUT was tested while positioned upright and mounted on a mast at 1.5m height. The worst case emissions are reported with the EUT in this fixed position and with the modulations and active component carriers shown in the tables below.
- 2) The EIRP measurements of the co-polarized antenna arrays (Antenna A/C and Antenna B/D) were added together to address MIMO concerns referenced in ANSI C36.26-2015 Section 6.4.
- 3) Elements within the same antenna array are correlated to produce beamforming array gain.
- 4) Measurements were taken in the far field of the mmWave signal based on the formula:  $R \geq 2D^2/\text{wavelength}$ .
- 5) The test case with 1 CC and 8 CC active, was selected for the worst case emission testing as it created the highest EIRP within 50MHz and 100MHz bandwidth.
- 6) Per the guidance of ANSI/TIA-603-E-2016, a half-wave dipole is then substituted in place of the EUT. For emissions above 1GHz, a horn antenna is substituted in place of the EUT. The substitute antenna is driven by a signal generator with the level of the signal generator being adjusted to obtain the same receive spectrum analyzer level previously recorded from the spurious emission from the EUT. The power of the emission is calculated using the following formula:

$$P_d [\text{dBm}] = P_g [\text{dBm}] - \text{cable loss} [\text{dB}] + \text{antenna gain} [\text{dBd/dBi}]$$

Where,  $P_d$  is the dipole equivalent power,  $P_g$  is the generator output into the substitution antenna, and the antenna gain is the gain of the substitute antenna used relative to either a half-wave dipole (dBd) or an isotropic source (dBi). The substitute level is equal to  $P_g [\text{dBm}] - \text{cable loss} [\text{dB}]$ .

- 7) The average EIRP reported below is calculate per formula specified in d) of ANSI C63.26-2015 Section 5.2.7:

$\text{EIRP (dBm)} = E (\text{dBuV/m}) + 20\log(D) - 104.8$ ; where D is the measurement distance (in the far field region) in m.

For this section, all EIRP density measurements were performed at a distance of 2.61m, so, the effective correction is:

$$\text{EIRP (dBm)} = E (\text{dBuV/m}) - 96.46\text{dB}$$

$$= \text{Analyzer Level (dBm)} + \text{AFCL (dB/m)} + 107 \text{ dB} - 96.46 \text{ dB}$$

$$= \text{Analyzer Level (dBm)} + \text{AFCL (dB/m)} + 10.53$$

\*AFCL (dB/m) contains measurement antenna factor(dB/m) and cable loss(dB) as below:

| Freq [GHz] | Antenna Factor [dB/m] | Cable loss [dB] | AFCL [dB] |
|------------|-----------------------|-----------------|-----------|
| 37.05      | 48.54                 | 8.68            | 57.22     |
| 38.50      | 48.8                  | 8.37            | 57.17     |
| 39.95      | 49.15                 | 9.80            | 58.95     |

**Table 7-6. Adopted AFCL value in the calculation**

|                                              |                                                                                                                                  |                                               |                                                                                       |                                        |
|----------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------|---------------------------------------------------------------------------------------|----------------------------------------|
| FCC ID: A3LAT1K02-A00                        |  <b>PCTEST</b><br>Proud to be part of element | <b>MEASUREMENT REPORT<br/>(CERTIFICATION)</b> |  | <b>Approved by:</b><br>Quality Manager |
| <b>Test Report S/N:</b><br>8K19110701-01.A3L | <b>Test Dates:</b><br>02/18/2020-03/06/2020                                                                                      | <b>EUT Type:</b><br>5G Access Unit            |                                                                                       | Page 47 of 356                         |

- 8) For channel bandwidths less than 100 MHz BW the EIRP must be reduced proportionally and lineally based on the bandwidth relative to 100 MHz according to §30.202 Power limits.

For 50MHz BW operation RBW scaling factor,  
Scaling Factor (dB) =  $10\log(BW_1/BW_2)$   
=  $10 * \log(100/50)$   
= 3.01 dB

- 9) The angle of the horn antenna was rotated to maximize and find the worst case emissions. Worst case EIRP is reported below.

|                                       |                                                                                                                    |                                       |                                                                                       |                                 |
|---------------------------------------|--------------------------------------------------------------------------------------------------------------------|---------------------------------------|---------------------------------------------------------------------------------------|---------------------------------|
| FCC ID: A3LAT1K02-A00                 | <br>Proud to be part of element | MEASUREMENT REPORT<br>(CERTIFICATION) |  | Approved by:<br>Quality Manager |
| Test Report S/N:<br>8K19110701-01.A3L | Test Dates:<br>02/18/2020-03/06/2020                                                                               | EUT Type:<br>5G Access Unit           |                                                                                       | Page 48 of 356                  |

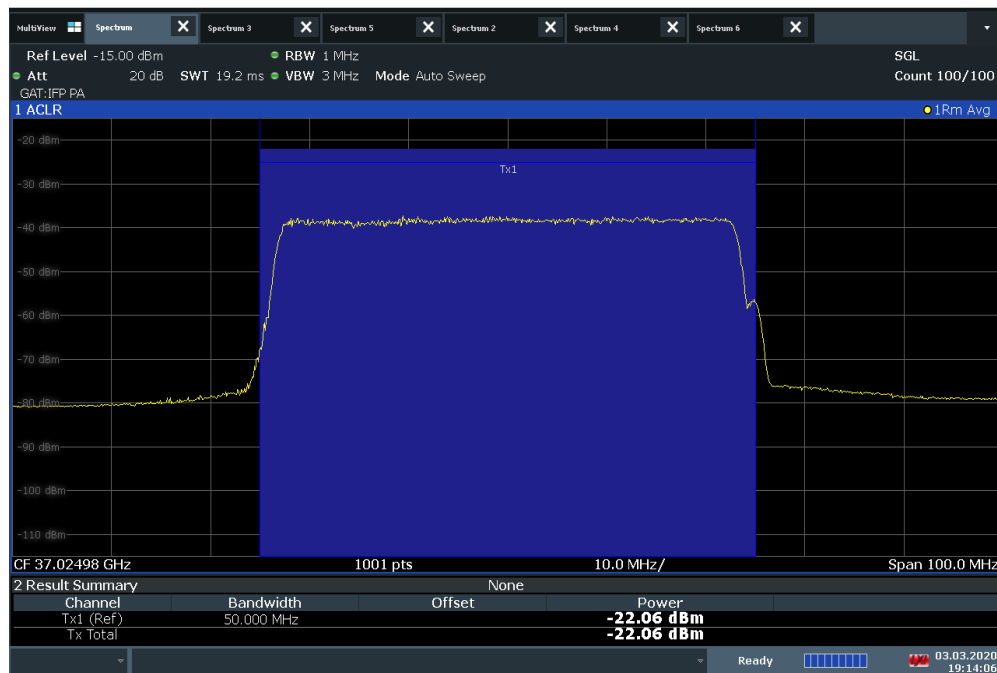
### 7.3.1 Antenna A EIRP Density

| Antenna | Bandwidth | Channel | CCs active | Modulation | Horn Angle | Horn Height | Turntable Azimuth | Analyzer Level | AFCL   | Average e.i.r.p. PSD | PSD Limit    | Margin |
|---------|-----------|---------|------------|------------|------------|-------------|-------------------|----------------|--------|----------------------|--------------|--------|
|         | [MHz]     |         |            |            | [degrees]  | [cm]        | [degrees]         | [dBm]          | [dB/m] | [dBm/100MHz]         | [dBm/100MHz] | [dB]   |
| A       | 50        | Low     | 0          | QPSK       | 135.0      | 155         | 7                 | -22.06         | 57.22  | 48.70                | 75.00        | -29.31 |
|         |           | Low     | 0          | 16QAM      | 135.0      | 155         | 7                 | -22.02         | 57.22  | 48.74                | 75.00        | -29.27 |
|         |           | Low     | 0          | 64QAM      | 135.0      | 155         | 7                 | -22.03         | 57.22  | 48.73                | 75.00        | -29.28 |
|         | 100       | Low     | 0          | QPSK       | 135.0      | 155         | 7                 | -18.81         | 57.22  | 48.94                | 75.00        | -26.06 |
|         |           | Low     | 0          | 16QAM      | 135.0      | 155         | 7                 | -18.86         | 57.22  | 48.89                | 75.00        | -26.11 |
|         |           | Low     | 0          | 64QAM      | 135.0      | 155         | 7                 | -18.89         | 57.22  | 48.86                | 75.00        | -26.14 |
|         | 50        | Mid     | 4          | QPSK       | 135.0      | 155         | 7                 | -22.01         | 57.17  | 48.70                | 75.00        | -29.31 |
|         |           | Mid     | 4          | 16QAM      | 135.0      | 155         | 7                 | -22.00         | 57.17  | 48.71                | 75.00        | -29.30 |
|         |           | Mid     | 4          | 64QAM      | 135.0      | 155         | 7                 | -21.99         | 57.17  | 48.72                | 75.00        | -29.29 |
|         | 100       | Mid     | 4          | QPSK       | 135.0      | 155         | 7                 | -19.30         | 57.17  | 48.40                | 75.00        | -26.60 |
|         |           | Mid     | 4          | 16QAM      | 135.0      | 155         | 7                 | -19.24         | 57.17  | 48.46                | 75.00        | -26.54 |
|         |           | Mid     | 4          | 64QAM      | 135.0      | 155         | 7                 | -19.21         | 57.17  | 48.49                | 75.00        | -26.51 |
|         | 50        | High    | 7          | QPSK       | 135.0      | 155         | 7                 | -22.86         | 58.95  | 49.63                | 75.00        | -28.38 |
|         |           | High    | 7          | 16QAM      | 135.0      | 155         | 7                 | -22.92         | 58.95  | 49.57                | 75.00        | -28.44 |
|         |           | High    | 7          | 64QAM      | 135.0      | 155         | 7                 | -22.97         | 58.95  | 49.52                | 75.00        | -28.49 |
|         | 100       | High    | 7          | QPSK       | 135.0      | 155         | 7                 | -19.55         | 58.95  | 49.93                | 75.00        | -25.07 |
|         |           | High    | 7          | 16QAM      | 135.0      | 155         | 7                 | -19.55         | 58.95  | 49.93                | 75.00        | -25.07 |
|         |           | High    | 7          | 64QAM      | 135.0      | 155         | 7                 | -19.67         | 58.95  | 49.81                | 75.00        | -25.19 |
|         | 50        | Low     | 0-7        | QPSK       | 135.0      | 155         | 7                 | -24.49         | 57.22  | 46.27                | 75.00        | -31.74 |
|         |           | Low     | 0-7        | 16QAM      | 135.0      | 155         | 7                 | -24.37         | 57.22  | 46.39                | 75.00        | -31.62 |
|         |           | Low     | 0-7        | 64QAM      | 135.0      | 155         | 7                 | -24.38         | 57.22  | 46.38                | 75.00        | -31.63 |
|         | 100       | Low     | 0-7        | QPSK       | 135.0      | 155         | 7                 | -24.51         | 57.22  | 43.24                | 75.00        | -31.76 |
|         |           | Low     | 0-7        | 16QAM      | 135.0      | 155         | 7                 | -24.49         | 57.22  | 43.26                | 75.00        | -31.74 |
|         |           | Low     | 0-7        | 64QAM      | 135.0      | 155         | 7                 | -24.47         | 57.22  | 43.28                | 75.00        | -31.72 |
|         | 50        | Mid     | 0-7        | QPSK       | 135.0      | 155         | 7                 | -23.93         | 57.17  | 46.78                | 75.00        | -31.23 |
|         |           | Mid     | 0-7        | 16QAM      | 135.0      | 155         | 7                 | -23.93         | 57.17  | 46.78                | 75.00        | -31.23 |
|         |           | Mid     | 0-7        | 64QAM      | 135.0      | 155         | 7                 | -23.95         | 57.17  | 46.76                | 75.00        | -31.25 |
|         | 100       | Mid     | 0-7        | QPSK       | 135.0      | 155         | 7                 | -23.46         | 57.17  | 44.24                | 75.00        | -30.76 |
|         |           | Mid     | 0-7        | 16QAM      | 135.0      | 155         | 7                 | -23.51         | 57.17  | 44.19                | 75.00        | -30.81 |
|         |           | Mid     | 0-7        | 64QAM      | 135.0      | 155         | 7                 | -23.55         | 57.17  | 44.15                | 75.00        | -30.85 |
|         | 50        | High    | 0-7        | QPSK       | 135.0      | 155         | 7                 | -24.56         | 58.95  | 47.93                | 75.00        | -30.08 |
|         |           | High    | 0-7        | 16QAM      | 135.0      | 155         | 7                 | -24.56         | 58.95  | 47.93                | 75.00        | -30.08 |
|         |           | High    | 0-7        | 64QAM      | 135.0      | 155         | 7                 | -24.60         | 58.95  | 47.89                | 75.00        | -30.12 |
|         | 100       | High    | 0-7        | QPSK       | 135.0      | 155         | 7                 | -24.30         | 58.95  | 45.18                | 75.00        | -29.82 |
|         |           | High    | 0-7        | 16QAM      | 135.0      | 155         | 7                 | -24.33         | 58.95  | 45.15                | 75.00        | -29.85 |
|         |           | High    | 0-7        | 64QAM      | 135.0      | 155         | 7                 | -24.36         | 58.95  | 45.12                | 75.00        | -29.88 |
|         | 50        | Low     | 0-7(NC)    | QPSK       | 135.0      | 155         | 7                 | -23.15         | 57.22  | 47.61                | 75.00        | -30.40 |
|         |           | Low     | 0-7(NC)    | 16QAM      | 135.0      | 155         | 7                 | -23.11         | 57.22  | 47.65                | 75.00        | -30.36 |
|         |           | Low     | 0-7(NC)    | 64QAM      | 135.0      | 155         | 7                 | -23.10         | 57.22  | 47.66                | 75.00        | -30.35 |
|         | 100       | Low     | 0-7(NC)    | QPSK       | 135.0      | 155         | 7                 | -24.19         | 57.22  | 43.56                | 75.00        | -31.44 |
|         |           | Low     | 0-7(NC)    | 16QAM      | 135.0      | 155         | 7                 | -24.32         | 57.22  | 43.43                | 75.00        | -31.57 |
|         |           | Low     | 0-7(NC)    | 64QAM      | 135.0      | 155         | 7                 | -24.33         | 57.22  | 43.42                | 75.00        | -31.58 |
|         | 50        | Mid     | 0-7(NC)    | QPSK       | 135.0      | 155         | 7                 | -23.51         | 57.17  | 47.20                | 75.00        | -30.81 |
|         |           | Mid     | 0-7(NC)    | 16QAM      | 135.0      | 155         | 7                 | -23.49         | 57.17  | 47.22                | 75.00        | -30.79 |
|         |           | Mid     | 0-7(NC)    | 64QAM      | 135.0      | 155         | 7                 | -23.44         | 57.17  | 47.27                | 75.00        | -30.74 |
|         | 100       | Mid     | 0-7(NC)    | QPSK       | 135.0      | 155         | 7                 | -24.41         | 57.17  | 43.29                | 75.00        | -31.71 |
|         |           | Mid     | 0-7(NC)    | 16QAM      | 135.0      | 155         | 7                 | -24.42         | 57.17  | 43.28                | 75.00        | -31.72 |
|         |           | Mid     | 0-7(NC)    | 64QAM      | 135.0      | 155         | 7                 | -24.31         | 57.17  | 43.39                | 75.00        | -31.61 |
|         | 50        | High    | 0-7(NC)    | QPSK       | 135.0      | 155         | 7                 | -22.96         | 58.95  | 49.53                | 75.00        | -28.48 |
|         |           | High    | 0-7(NC)    | 16QAM      | 135.0      | 155         | 7                 | -22.99         | 58.95  | 49.50                | 75.00        | -28.51 |
|         |           | High    | 0-7(NC)    | 64QAM      | 135.0      | 155         | 7                 | -22.96         | 58.95  | 49.53                | 75.00        | -28.48 |
|         | 100       | High    | 0-7(NC)    | QPSK       | 135.0      | 155         | 7                 | -24.17         | 58.95  | 45.31                | 75.00        | -29.69 |
|         |           | High    | 0-7(NC)    | 16QAM      | 135.0      | 155         | 7                 | -24.17         | 58.95  | 45.31                | 75.00        | -29.69 |
|         |           | High    | 0-7(NC)    | 64QAM      | 135.0      | 155         | 7                 | -24.16         | 58.95  | 45.32                | 75.00        | -29.68 |

Table 7-7. Antenna A Power Density Summary Data

|                                       |                                                                                                                                                                                                                         |                             |                                 |
|---------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------|---------------------------------|
| FCC ID: A3LAT1K02-A00                 |  <b>MEASUREMENT REPORT<br/>(CERTIFICATION)</b>  |                             | Approved by:<br>Quality Manager |
| Test Report S/N:<br>8K19110701-01.A3L | Test Dates:<br>02/18/2020-03/06/2020                                                                                                                                                                                    | EUT Type:<br>5G Access Unit | Page 49 of 356                  |

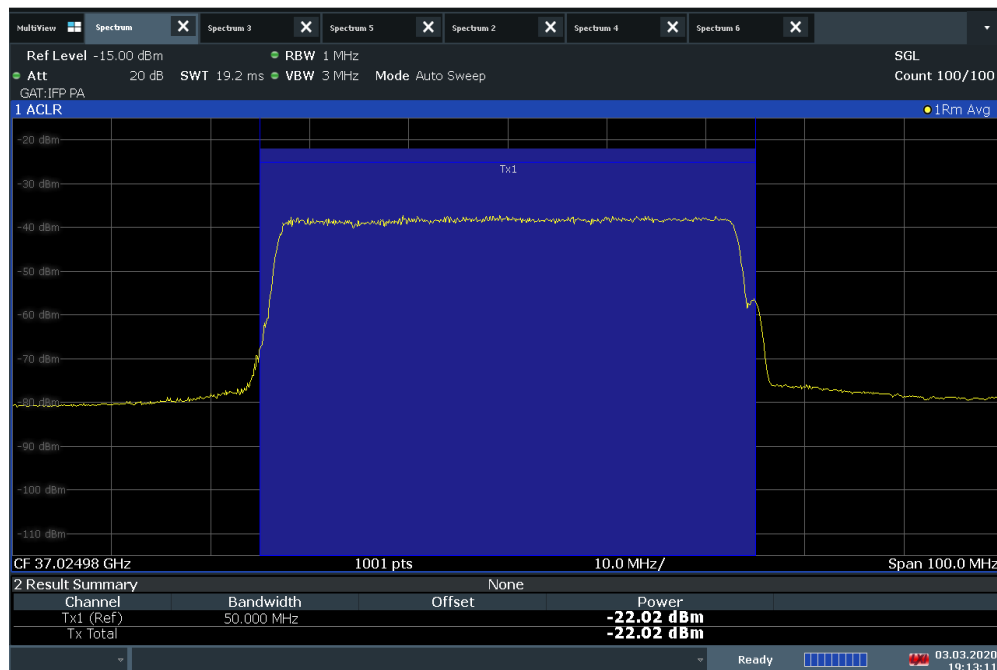
#### ACLRRResults



19:14:07 03.03.2020

**Plot 7-49. Antenna A EIRP Density Plot (50MHz BW 1CC QPSK Low Channel)**

#### ACLRRResults

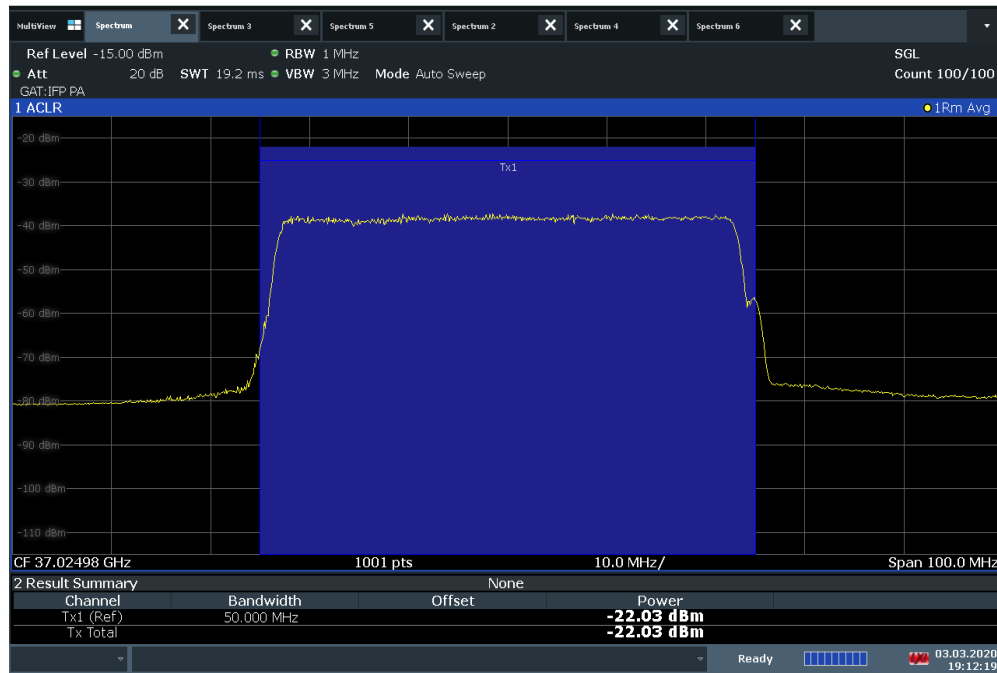


19:13:12 03.03.2020

**Plot 7-50. Antenna A EIRP Density Plot (50MHz BW 1CC 16QAM Low Channel)**

|                                       |                                                                                                                                                                                                |                                       |                                                                                       |                                 |
|---------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------|---------------------------------------------------------------------------------------|---------------------------------|
| FCC ID: A3LAT1K02-A00                 | <br>Proud to be part of  | MEASUREMENT REPORT<br>(CERTIFICATION) |  | Approved by:<br>Quality Manager |
| Test Report S/N:<br>8K19110701-01.A3L | Test Dates:<br>02/18/2020-03/06/2020                                                                                                                                                           | EUT Type:<br>5G Access Unit           |                                                                                       | Page 50 of 356                  |

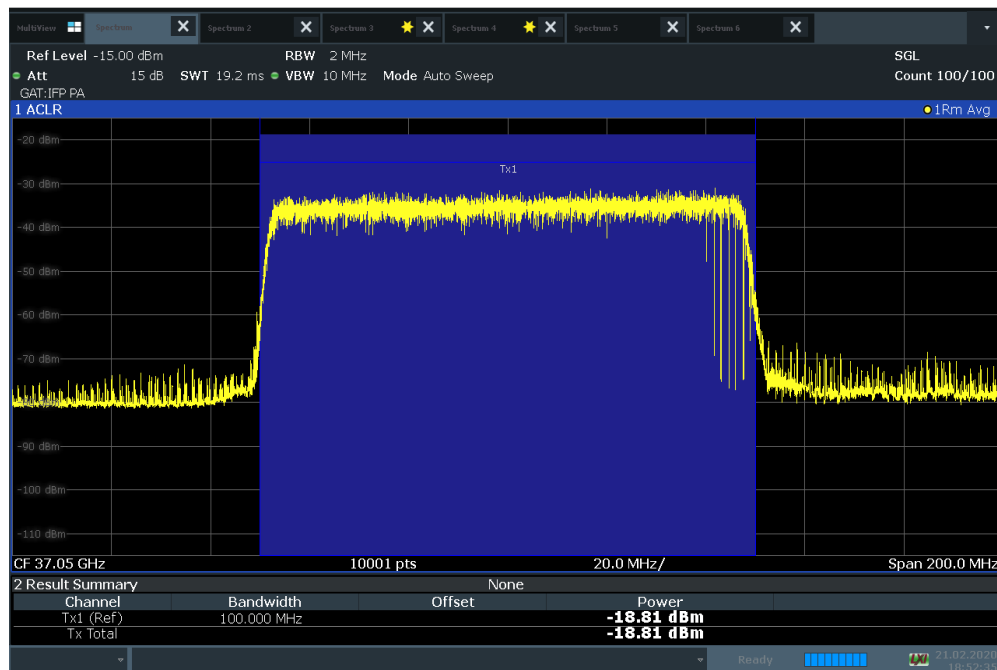
#### ACLRResults



19:12:20 03.03.2020

**Plot 7-51. Antenna A EIRP Density Plot (50MHz BW 1CC 64QAM Low Channel)**

#### ACLRResults

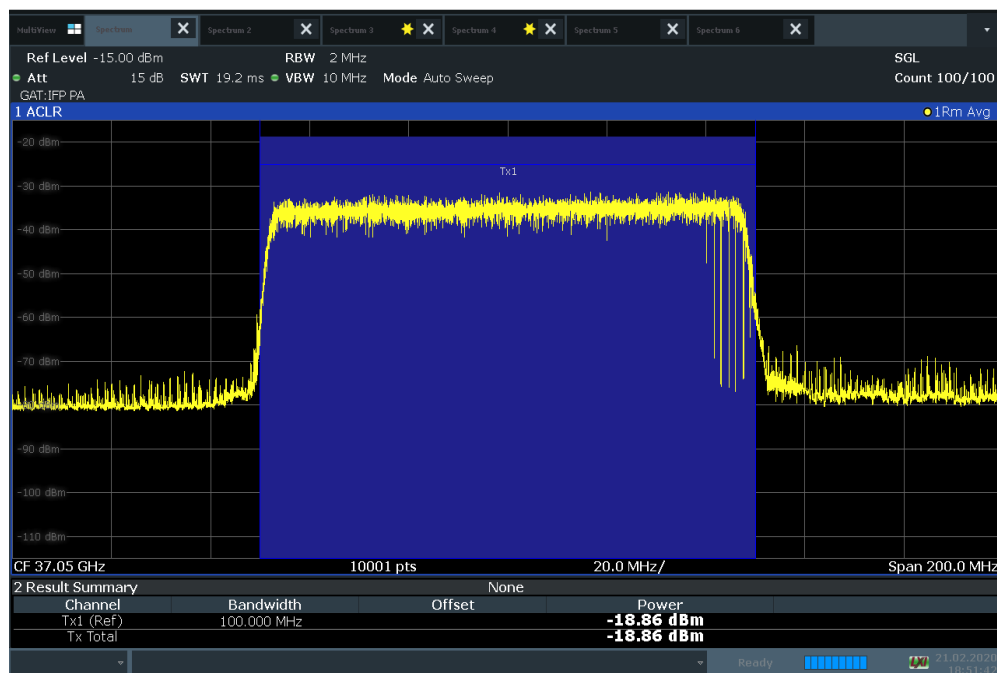


18:52:36 21.02.2020

**Plot 7-52. Antenna A EIRP Density Plot (100MHz BW 1CC QPSK Low Channel)**

|                                       |                                              |                                               |                |                                 |
|---------------------------------------|----------------------------------------------|-----------------------------------------------|----------------|---------------------------------|
| FCC ID: A3LAT1K02-A00                 | <b>PCTEST</b><br>Proud to be part of element | <b>MEASUREMENT REPORT<br/>(CERTIFICATION)</b> | <b>SAMSUNG</b> | Approved by:<br>Quality Manager |
| Test Report S/N:<br>8K19110701-01.A3L | Test Dates:<br>02/18/2020-03/06/2020         | EUT Type:<br>5G Access Unit                   |                | Page 51 of 356                  |

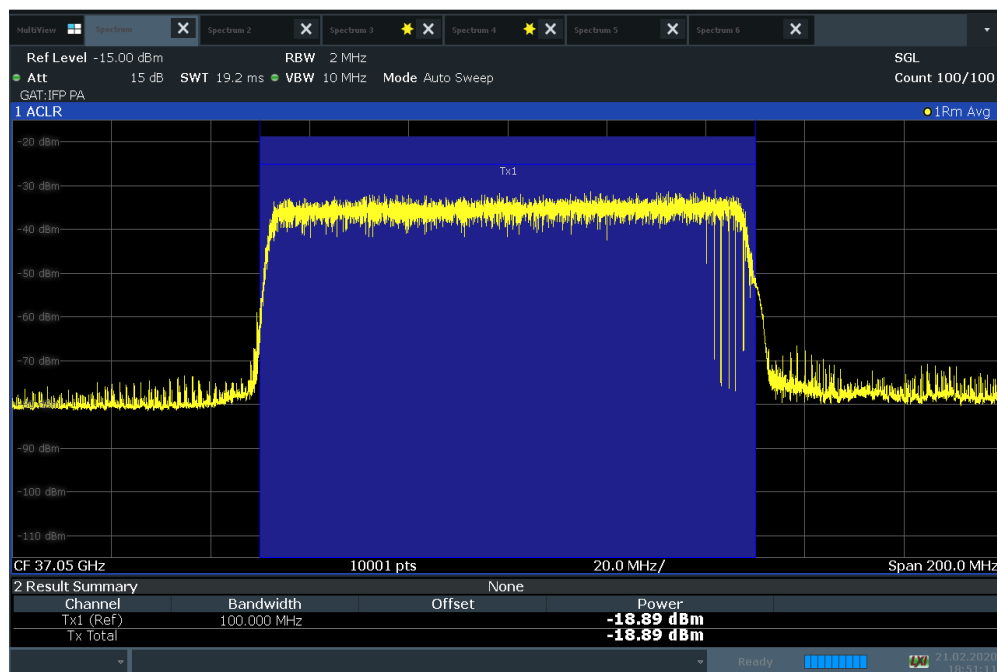
#### ACLRResults



18:51:42 21.02.2020

**Plot 7-53. Antenna A EIRP Density Plot (100MHz BW 1CC 16QAM Low Channel)**

#### ACLRResults

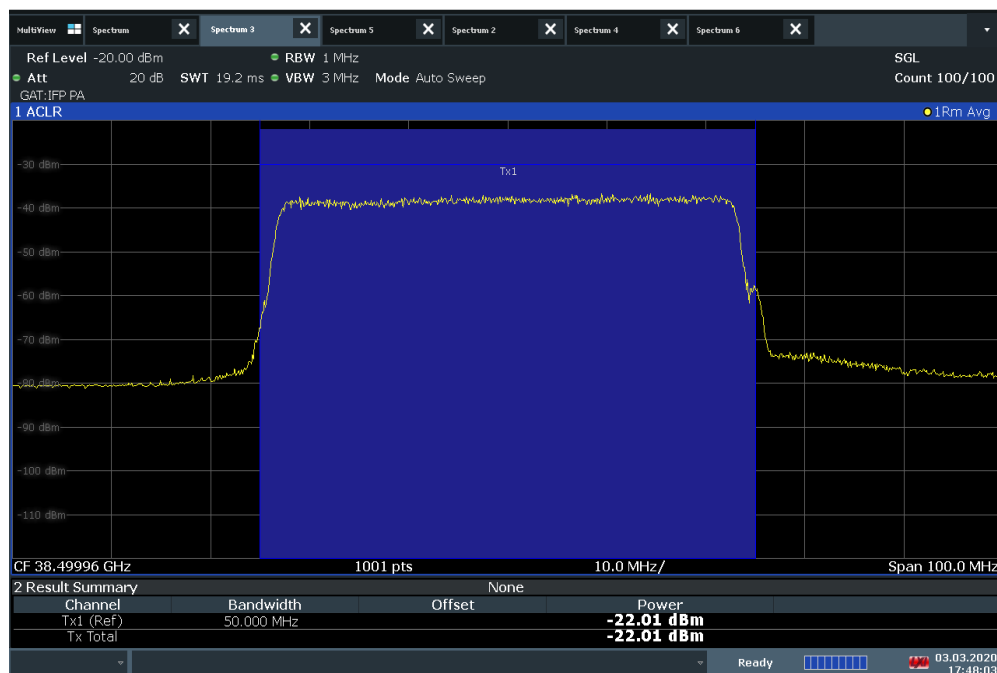


18:51:12 21.02.2020

**Plot 7-54. Antenna A EIRP Density Plot (100MHz BW 1CC 64QAM Low Channel)**

|                                       |                                              |                                       |                |                                 |
|---------------------------------------|----------------------------------------------|---------------------------------------|----------------|---------------------------------|
| FCC ID: A3LAT1K02-A00                 | <b>PCTEST</b><br>Proud to be part of element | MEASUREMENT REPORT<br>(CERTIFICATION) | <b>SAMSUNG</b> | Approved by:<br>Quality Manager |
| Test Report S/N:<br>8K19110701-01.A3L | Test Dates:<br>02/18/2020-03/06/2020         | EUT Type:<br>5G Access Unit           |                | Page 52 of 356                  |

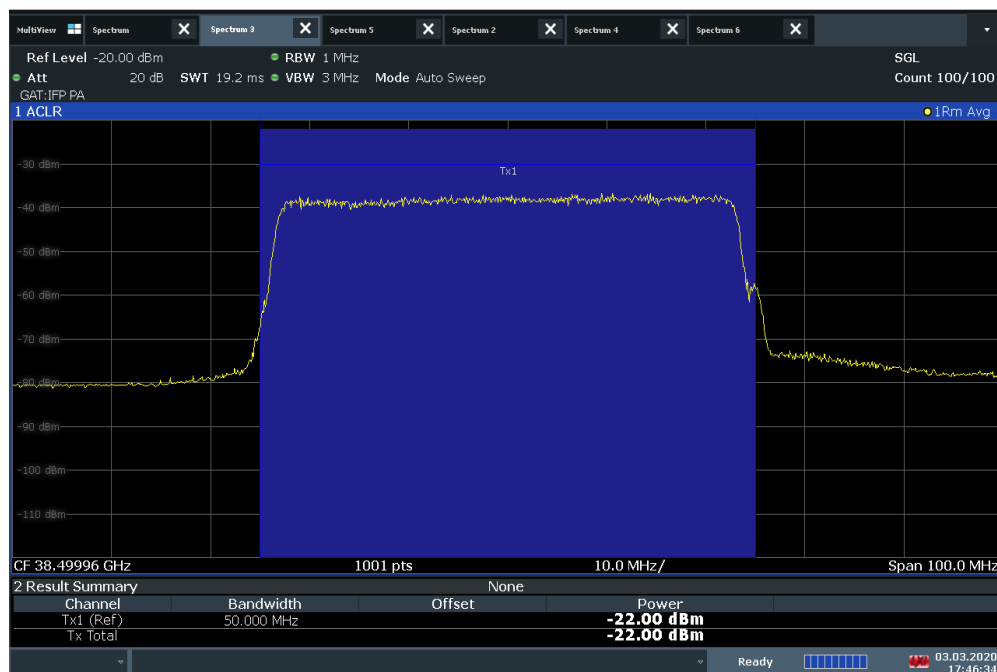
#### ACLRRResults



17:48:03 03.03.2020

**Plot 7-55. Antenna A EIRP Density Plot (50MHz BW 1CC QPSK Mid Channel)**

#### ACLRRResults

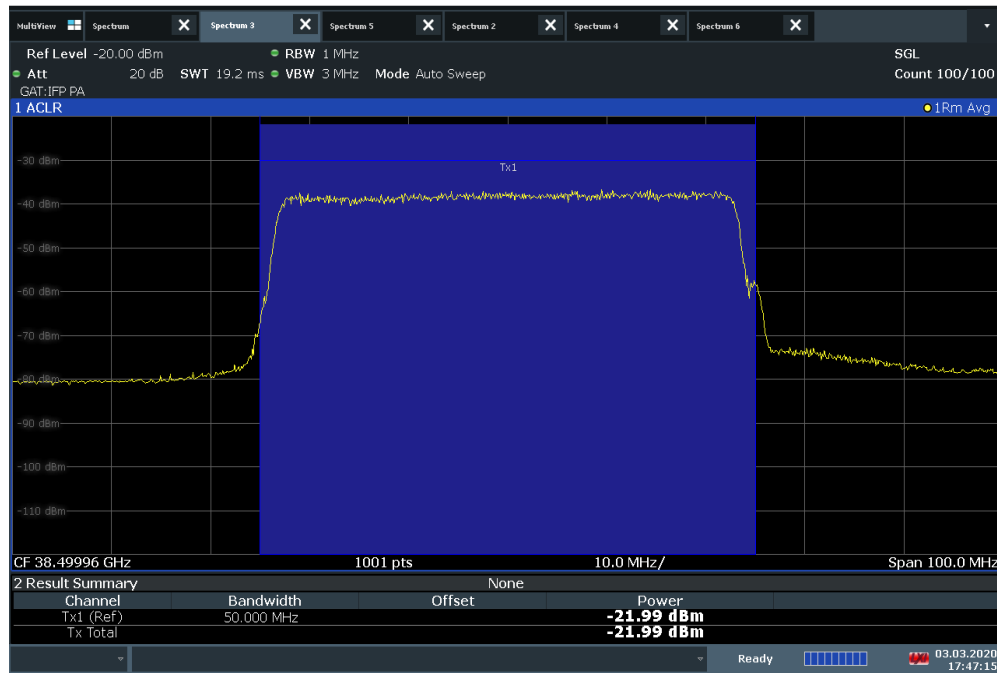


17:46:34 03.03.2020

**Plot 7-56. Antenna A EIRP Density Plot (50MHz BW 1CC 16QAM Mid Channel)**

|                                       |                                              |                                       |                |                                 |
|---------------------------------------|----------------------------------------------|---------------------------------------|----------------|---------------------------------|
| FCC ID: A3LAT1K02-A00                 | <b>PCTEST</b><br>Proud to be part of element | MEASUREMENT REPORT<br>(CERTIFICATION) | <b>SAMSUNG</b> | Approved by:<br>Quality Manager |
| Test Report S/N:<br>8K19110701-01.A3L | Test Dates:<br>02/18/2020-03/06/2020         | EUT Type:<br>5G Access Unit           |                | Page 53 of 356                  |

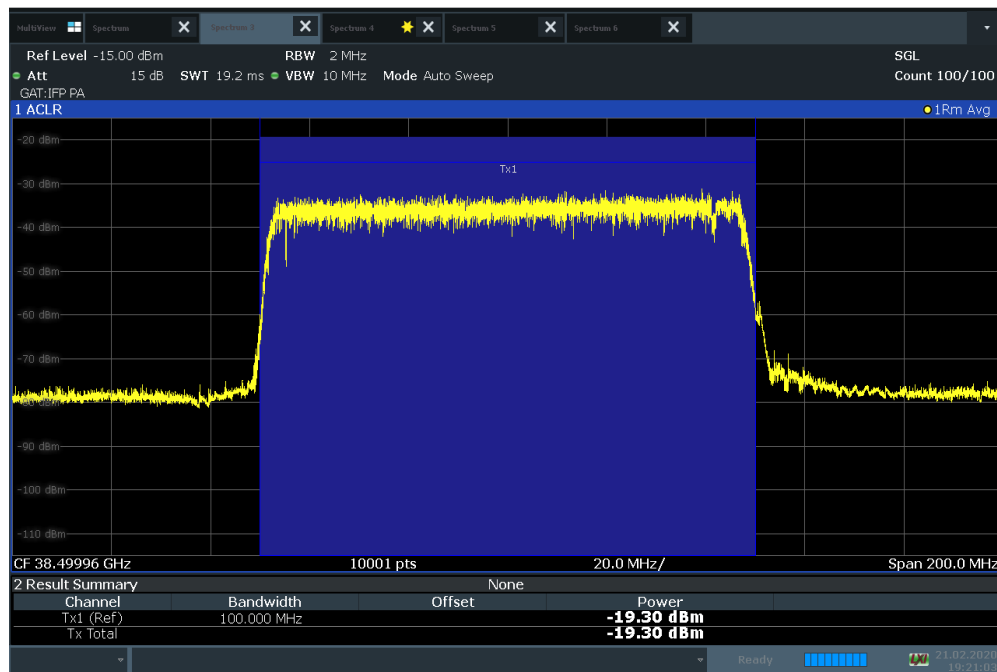
#### ACLRRResults



17:47:16 03.03.2020

**Plot 7-57. Antenna A EIRP Density Plot (50MHz BW 1CC 64QAM Mid Channel)**

#### ACLRRResults



19:21:03 21.02.2020

**Plot 7-58. Antenna A EIRP Density Plot (100MHz BW 1CC QPSK Mid Channel)**

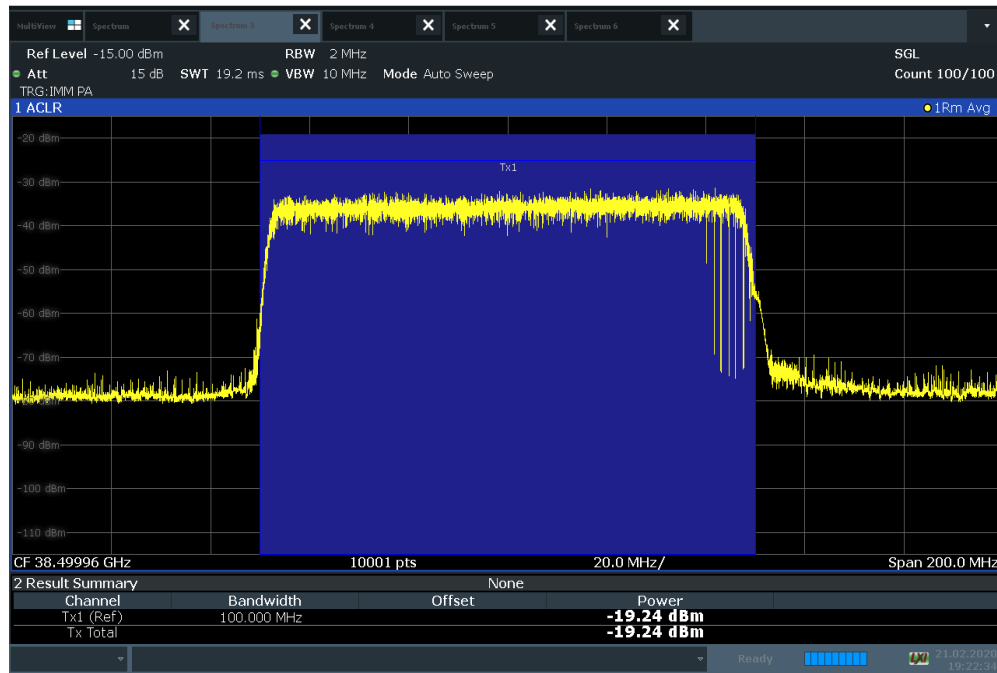
|                                       |                                              |                                       |                |                                 |
|---------------------------------------|----------------------------------------------|---------------------------------------|----------------|---------------------------------|
| FCC ID: A3LAT1K02-A00                 | <b>PCTEST</b><br>Proud to be part of element | MEASUREMENT REPORT<br>(CERTIFICATION) | <b>SAMSUNG</b> | Approved by:<br>Quality Manager |
| Test Report S/N:<br>8K19110701-01.A3L | Test Dates:<br>02/18/2020-03/06/2020         | EUT Type:<br>5G Access Unit           |                | Page 54 of 356                  |

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V9.0 02/01/2019

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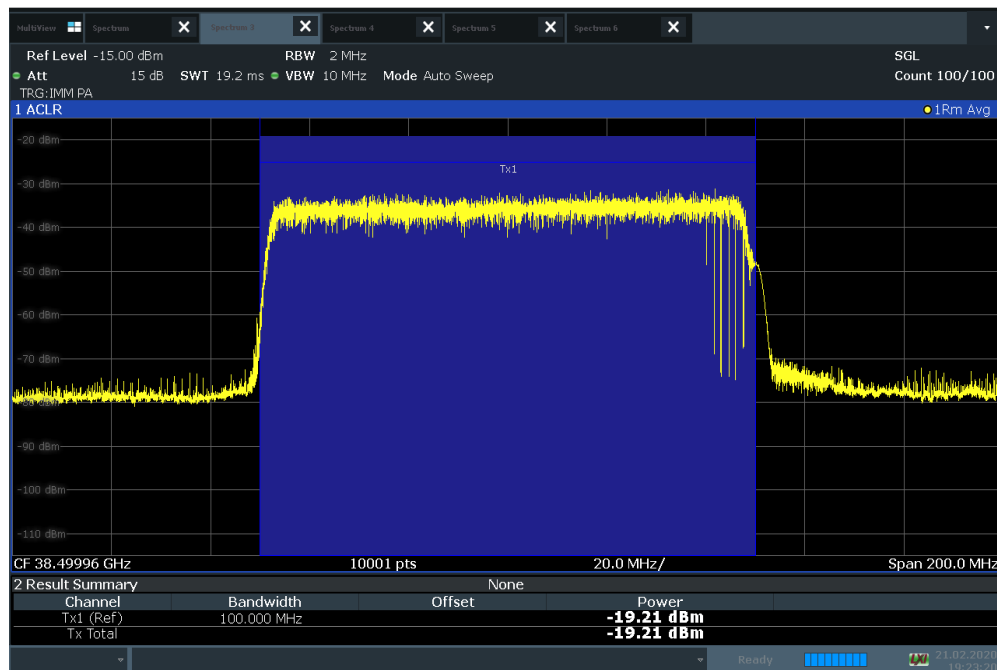
**ACLRRResults**



19:22:34 21.02.2020

**Plot 7-59. Antenna A EIRP Density Plot (100MHz BW 1CC 16QAM Mid Channel)**

**ACLRRResults**

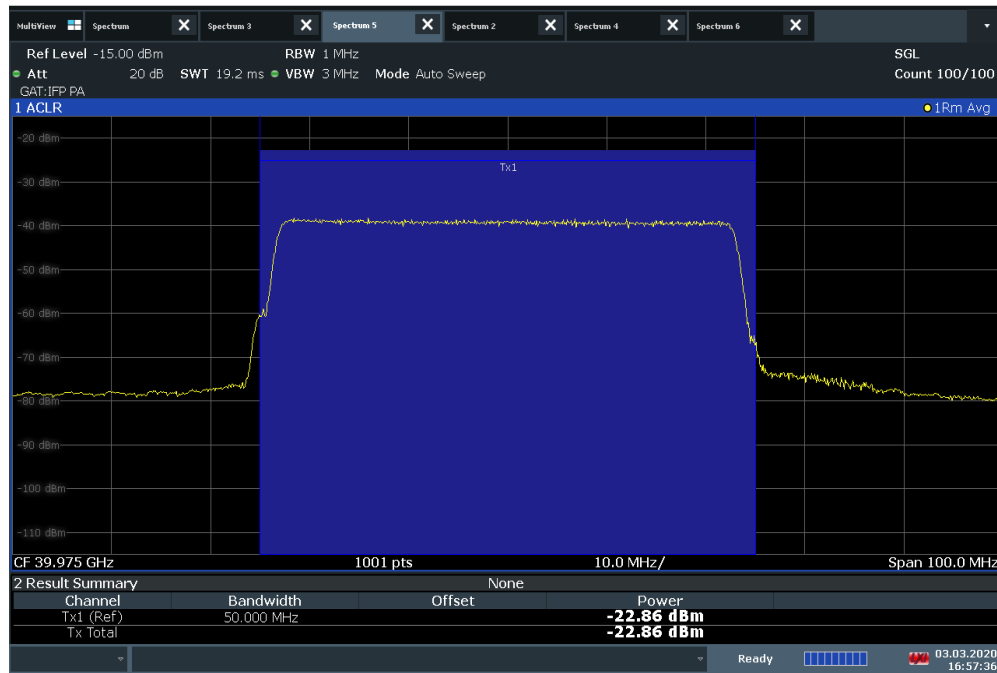


19:23:20 21.02.2020

**Plot 7-60. Antenna A EIRP Density Plot (100MHz BW 1CC 64QAM Mid Channel)**

|                                       |                                              |                                               |                |                                 |
|---------------------------------------|----------------------------------------------|-----------------------------------------------|----------------|---------------------------------|
| FCC ID: A3LAT1K02-A00                 | <b>PCTEST</b><br>Proud to be part of element | <b>MEASUREMENT REPORT<br/>(CERTIFICATION)</b> | <b>SAMSUNG</b> | Approved by:<br>Quality Manager |
| Test Report S/N:<br>8K19110701-01.A3L | Test Dates:<br>02/18/2020-03/06/2020         | EUT Type:<br>5G Access Unit                   |                | Page 55 of 356                  |

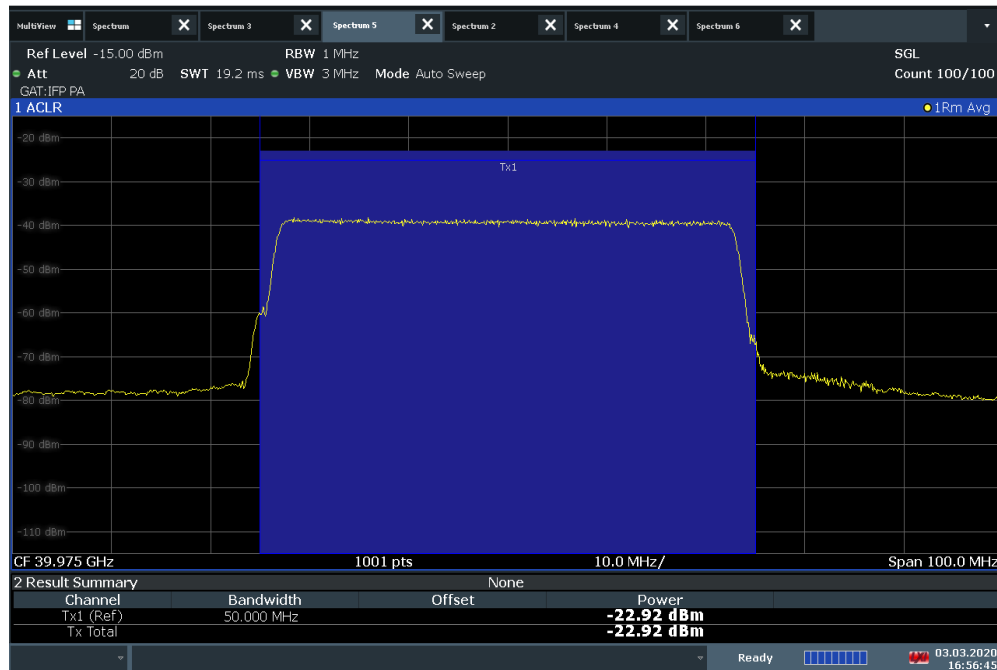
#### ACLRResults



16:57:37 03.03.2020

**Plot 7-61. Antenna A EIRP Density Plot (50MHz BW 1CC QPSK High Channel)**

#### ACLRResults

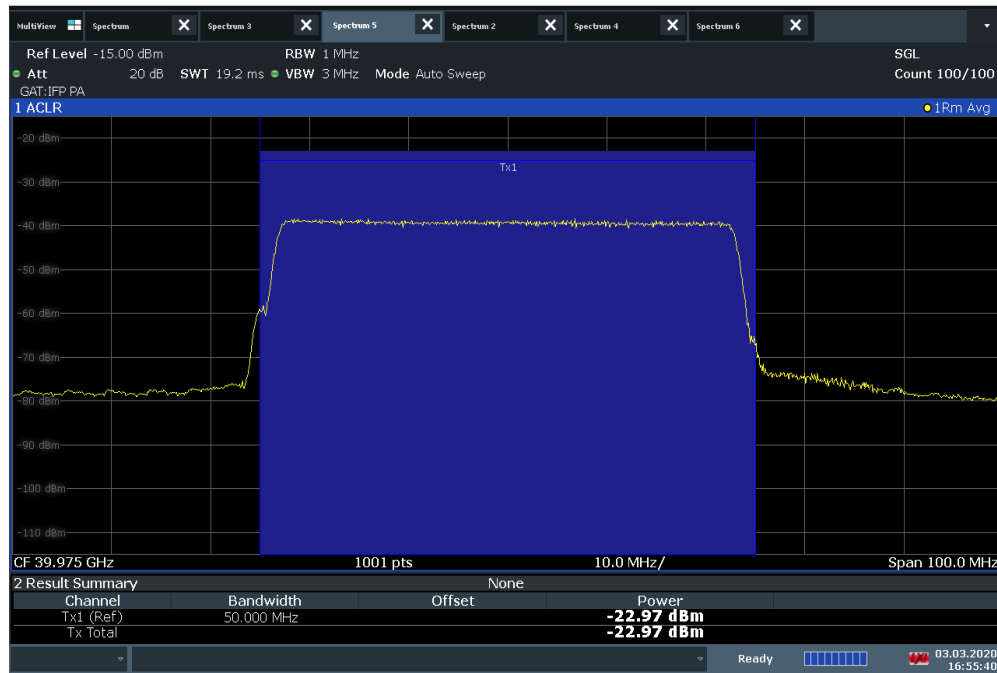


16:56:45 03.03.2020

**Plot 7-62. Antenna A EIRP Density Plot (50MHz BW 1CC 16QAM High Channel)**

|                                       |                                              |                                       |                |                                 |
|---------------------------------------|----------------------------------------------|---------------------------------------|----------------|---------------------------------|
| FCC ID: A3LAT1K02-A00                 | <b>PCTEST</b><br>Proud to be part of element | MEASUREMENT REPORT<br>(CERTIFICATION) | <b>SAMSUNG</b> | Approved by:<br>Quality Manager |
| Test Report S/N:<br>8K19110701-01.A3L | Test Dates:<br>02/18/2020-03/06/2020         | EUT Type:<br>5G Access Unit           |                | Page 56 of 356                  |

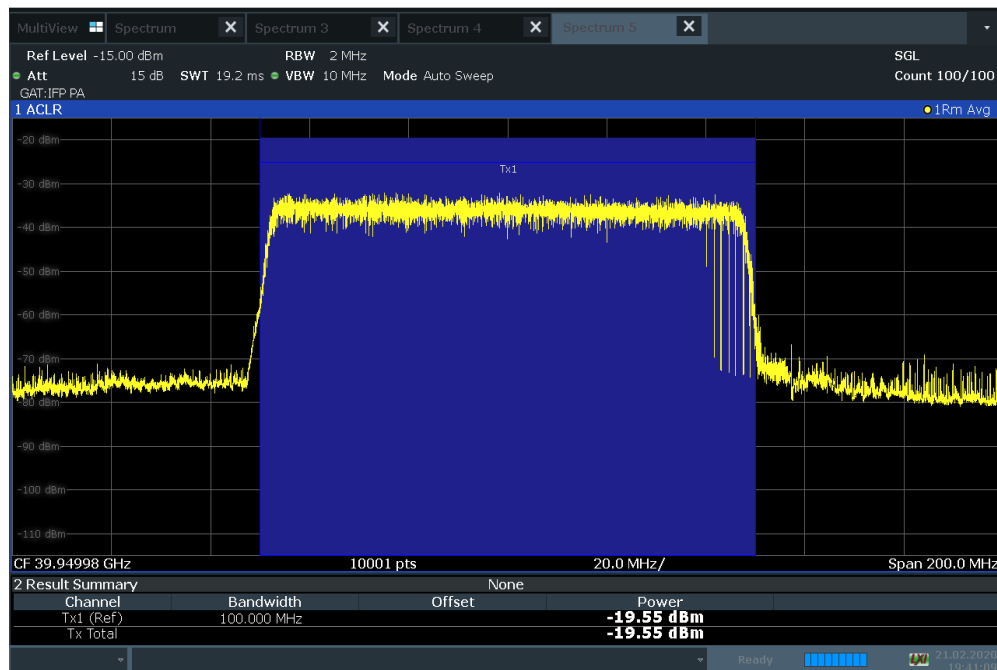
#### ACLRRResults



16:55:40 03.03.2020

**Plot 7-63. Antenna A EIRP Density Plot (50MHz BW 1CC 64QAM High Channel)**

#### ACLRRResults

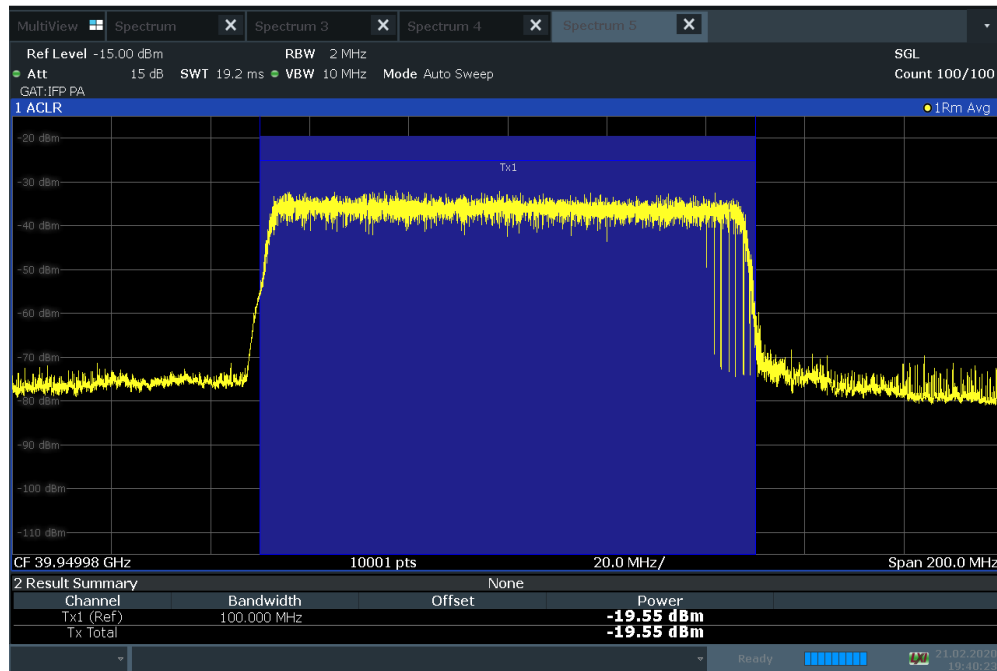


19:41:09 21.02.2020

**Plot 7-64. Antenna A EIRP Density Plot (100MHz BW 1CC QPSK High Channel)**

|                                       |                                              |                                       |                |                                 |
|---------------------------------------|----------------------------------------------|---------------------------------------|----------------|---------------------------------|
| FCC ID: A3LAT1K02-A00                 | <b>PCTEST</b><br>Proud to be part of element | MEASUREMENT REPORT<br>(CERTIFICATION) | <b>SAMSUNG</b> | Approved by:<br>Quality Manager |
| Test Report S/N:<br>8K19110701-01.A3L | Test Dates:<br>02/18/2020-03/06/2020         | EUT Type:<br>5G Access Unit           |                | Page 57 of 356                  |

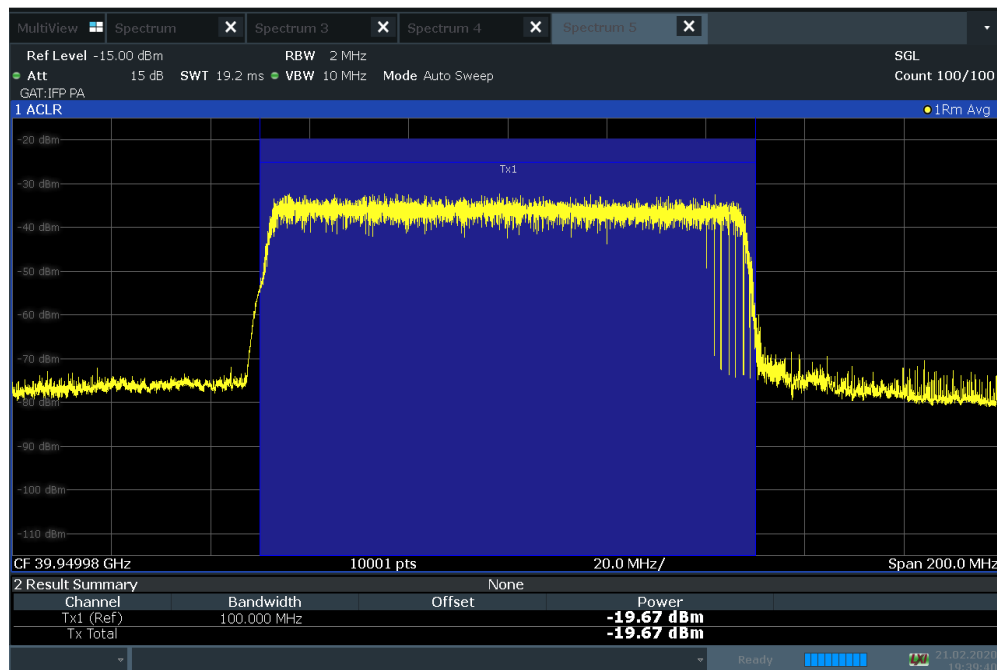
ACLRResults



19:40:24 21.02.2020

Plot 7-65. Antenna A EIRP Density Plot (100MHz BW 1CC 16QAM High Channel)

ACLRResults

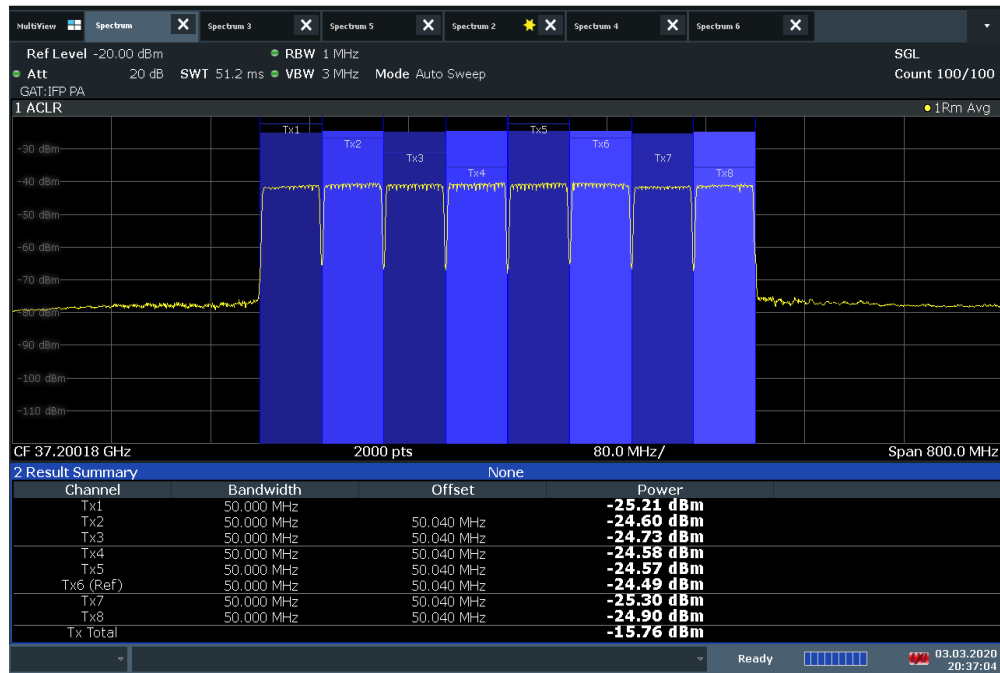


19:39:41 21.02.2020

Plot 7-66. Antenna A EIRP Density Plot (100MHz BW 1CC 64QAM High Channel)

|                                       |                                              |                                       |                |                                 |
|---------------------------------------|----------------------------------------------|---------------------------------------|----------------|---------------------------------|
| FCC ID: A3LAT1K02-A00                 | <b>PCTEST</b><br>Proud to be part of element | MEASUREMENT REPORT<br>(CERTIFICATION) | <b>SAMSUNG</b> | Approved by:<br>Quality Manager |
| Test Report S/N:<br>8K19110701-01.A3L | Test Dates:<br>02/18/2020-03/06/2020         | EUT Type:<br>5G Access Unit           |                | Page 58 of 356                  |

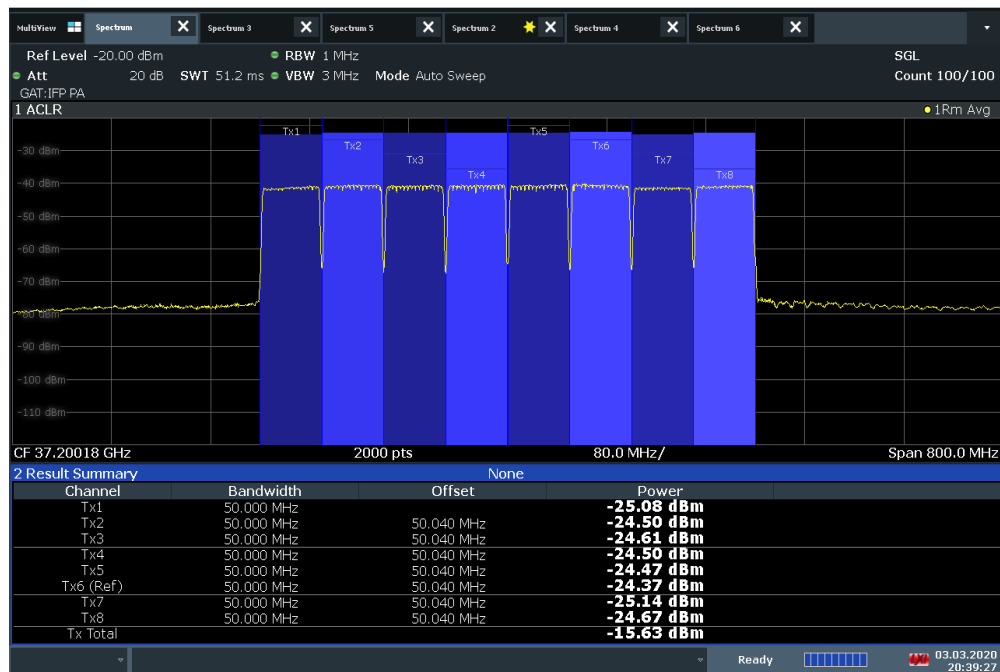
#### ACLRRResults



20:37:04 03.03.2020

**Plot 7-67. Antenna A EIRP Density Plot (50MHz BW 8CC QPSK Low Channel)**

#### ACLRRResults

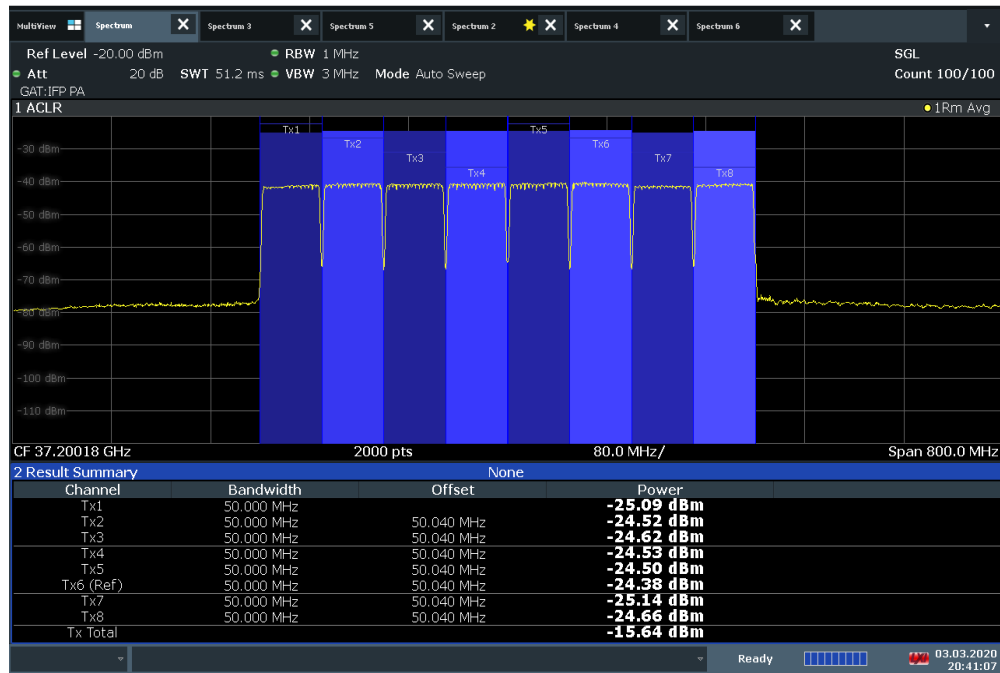


20:39:28 03.03.2020

**Plot 7-68. Antenna A EIRP Density Plot (50MHz BW 8CC 16QAM Low Channel)**

|                                       |                                              |                                       |                |                                 |
|---------------------------------------|----------------------------------------------|---------------------------------------|----------------|---------------------------------|
| FCC ID: A3LAT1K02-A00                 | <b>PCTEST</b><br>Proud to be part of element | MEASUREMENT REPORT<br>(CERTIFICATION) | <b>SAMSUNG</b> | Approved by:<br>Quality Manager |
| Test Report S/N:<br>8K19110701-01.A3L | Test Dates:<br>02/18/2020-03/06/2020         | EUT Type:<br>5G Access Unit           |                | Page 59 of 356                  |

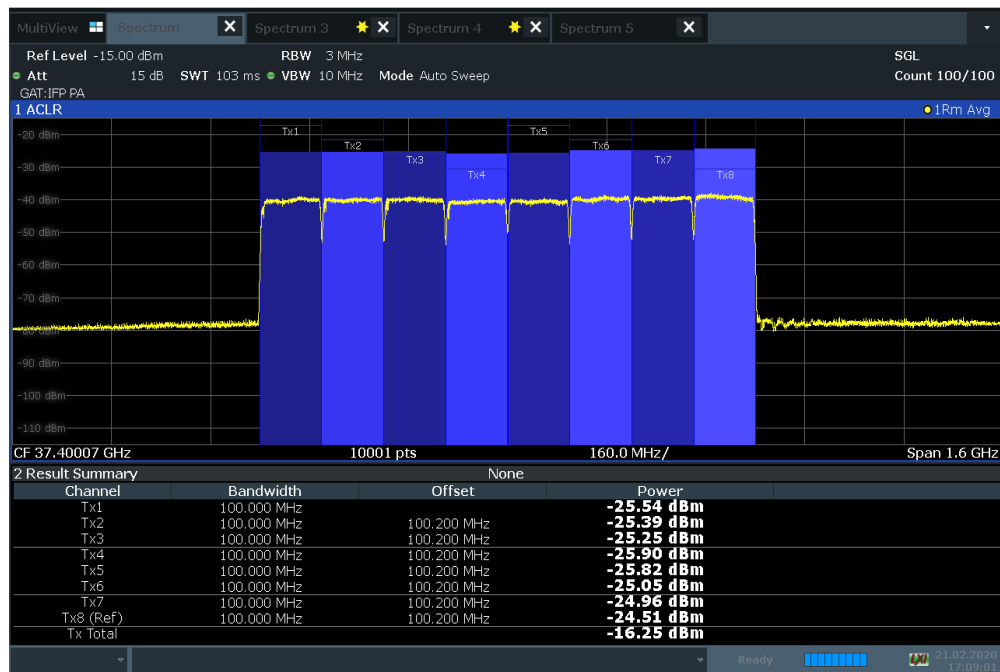
#### ACLRResults



20:41:08 03.03.2020

**Plot 7-69. Antenna A EIRP Density Plot (50MHz BW 8CC 64QAM Low Channel)**

#### ACLRResults

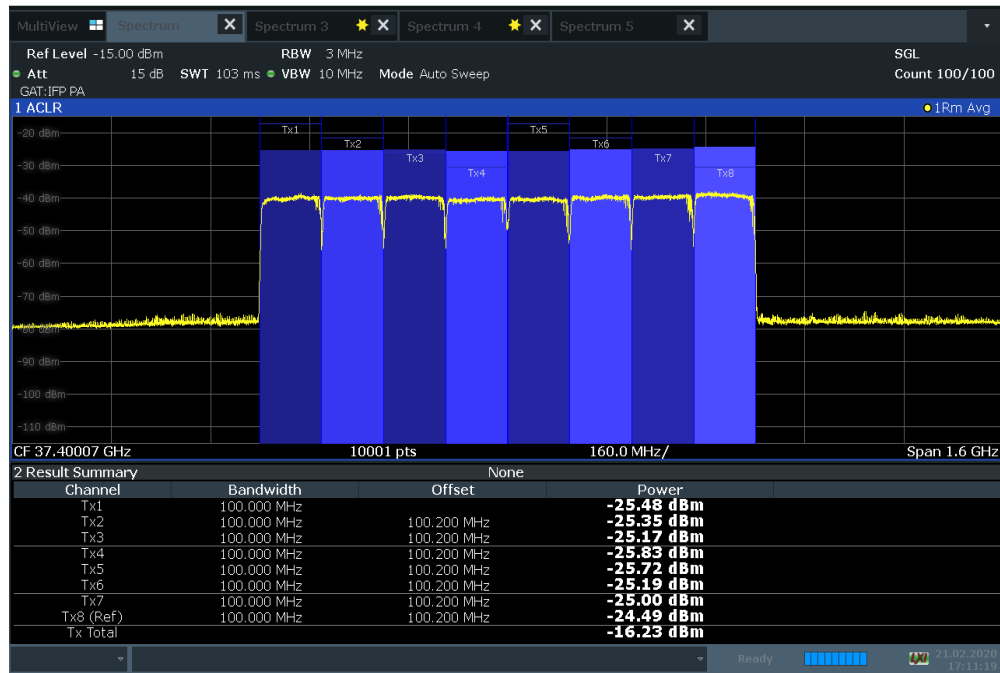


17:09:01 21.02.2020

**Plot 7-70. Antenna A EIRP Density Plot (100MHz BW 8CC QPSK Low Channel)**

|                                       |                                              |                                       |                |                                 |
|---------------------------------------|----------------------------------------------|---------------------------------------|----------------|---------------------------------|
| FCC ID: A3LAT1K02-A00                 | <b>PCTEST</b><br>Proud to be part of element | MEASUREMENT REPORT<br>(CERTIFICATION) | <b>SAMSUNG</b> | Approved by:<br>Quality Manager |
| Test Report S/N:<br>8K19110701-01.A3L | Test Dates:<br>02/18/2020-03/06/2020         | EUT Type:<br>5G Access Unit           |                | Page 60 of 356                  |

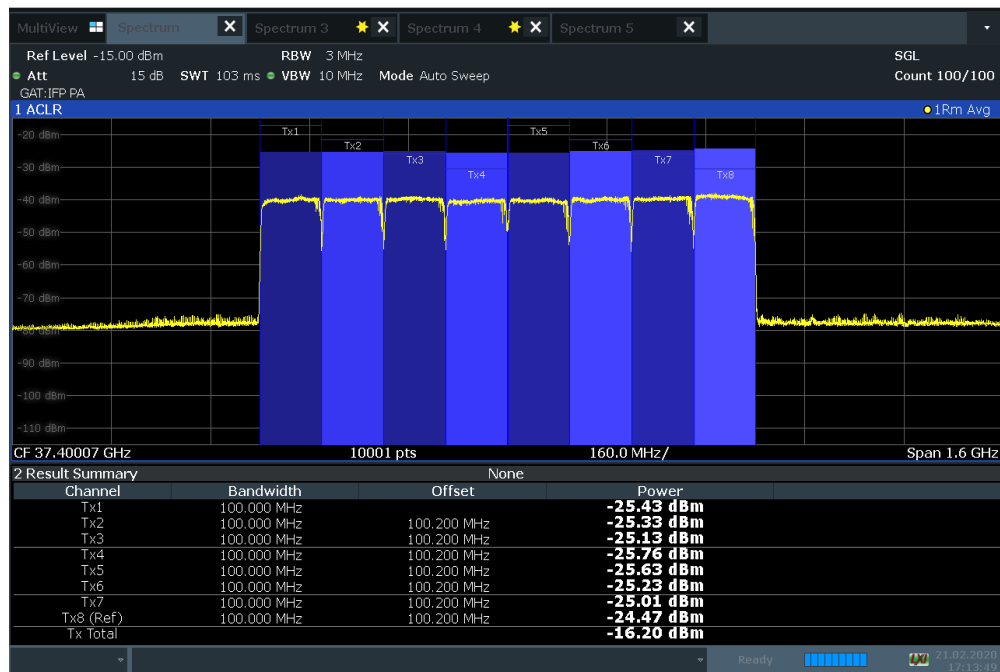
#### ACLRRResults



17:11:20 21.02.2020

**Plot 7-71. Antenna A EIRP Density Plot (100MHz BW 8CC 16QAM Low Channel)**

#### ACLRRResults

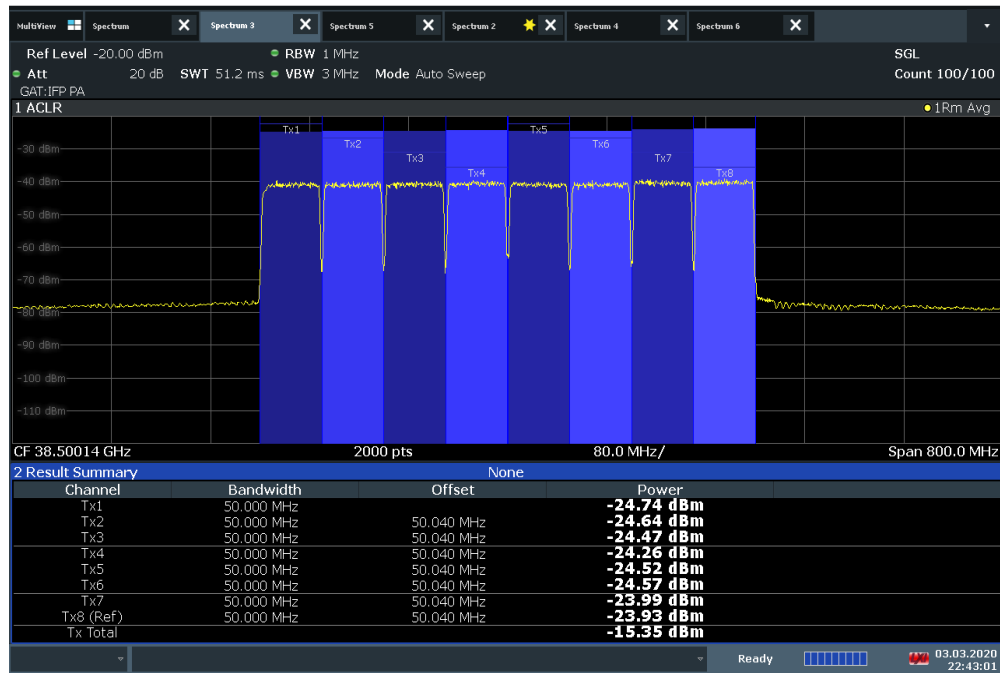


17:13:49 21.02.2020

**Plot 7-72. Antenna A EIRP Density Plot (100MHz BW 8CC 64QAM Low Channel)**

|                                       |                                              |                                       |                |                                 |
|---------------------------------------|----------------------------------------------|---------------------------------------|----------------|---------------------------------|
| FCC ID: A3LAT1K02-A00                 | <b>PCTEST</b><br>Proud to be part of element | MEASUREMENT REPORT<br>(CERTIFICATION) | <b>SAMSUNG</b> | Approved by:<br>Quality Manager |
| Test Report S/N:<br>8K19110701-01.A3L | Test Dates:<br>02/18/2020-03/06/2020         | EUT Type:<br>5G Access Unit           |                | Page 61 of 356                  |

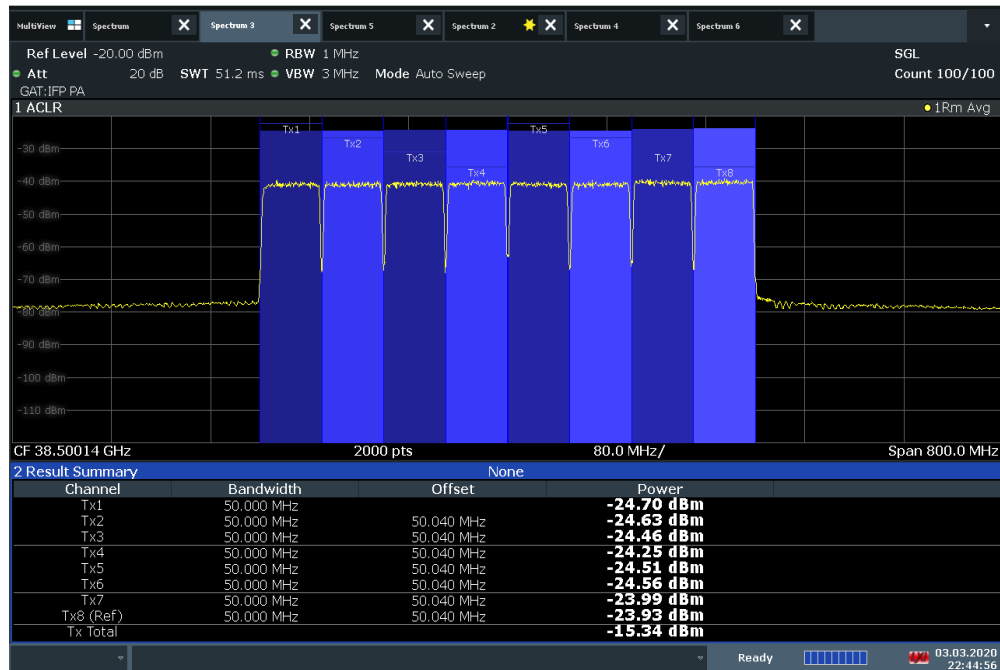
#### ACLRResults



22:43:02 03.03.2020

**Plot 7-73. Antenna A EIRP Density Plot (50MHz BW 8CC QPSK Mid Channel)**

#### ACLRResults

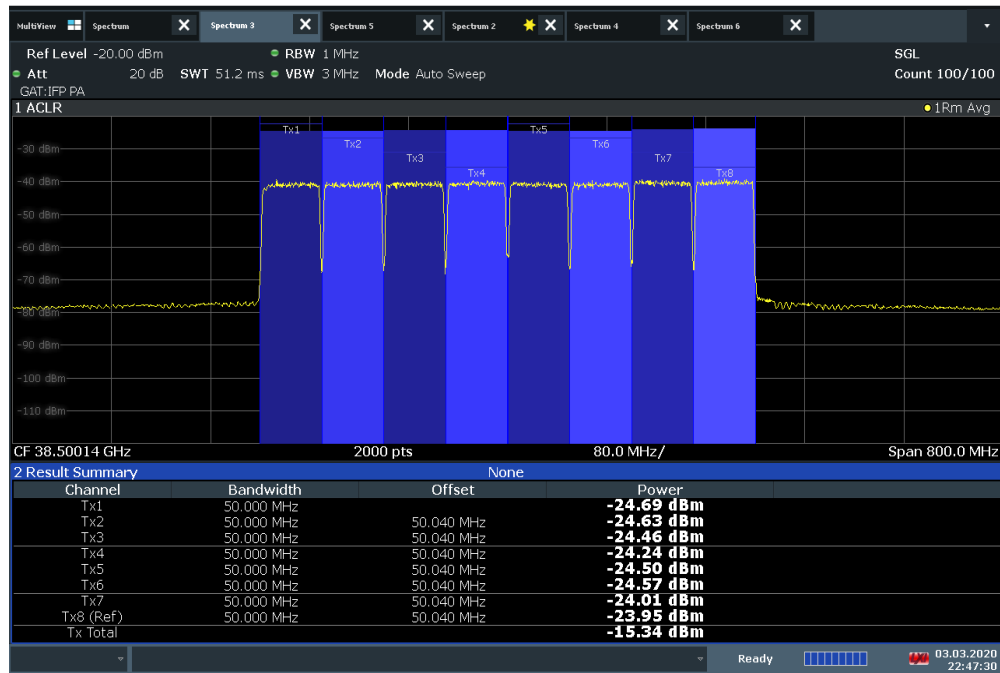


22:44:57 03.03.2020

**Plot 7-74. Antenna A EIRP Density Plot (50MHz BW 8CC 16QAM Mid Channel)**

|                                       |                                              |                                       |                |                                 |
|---------------------------------------|----------------------------------------------|---------------------------------------|----------------|---------------------------------|
| FCC ID: A3LAT1K02-A00                 | <b>PCTEST</b><br>Proud to be part of element | MEASUREMENT REPORT<br>(CERTIFICATION) | <b>SAMSUNG</b> | Approved by:<br>Quality Manager |
| Test Report S/N:<br>8K19110701-01.A3L | Test Dates:<br>02/18/2020-03/06/2020         | EUT Type:<br>5G Access Unit           |                | Page 62 of 356                  |

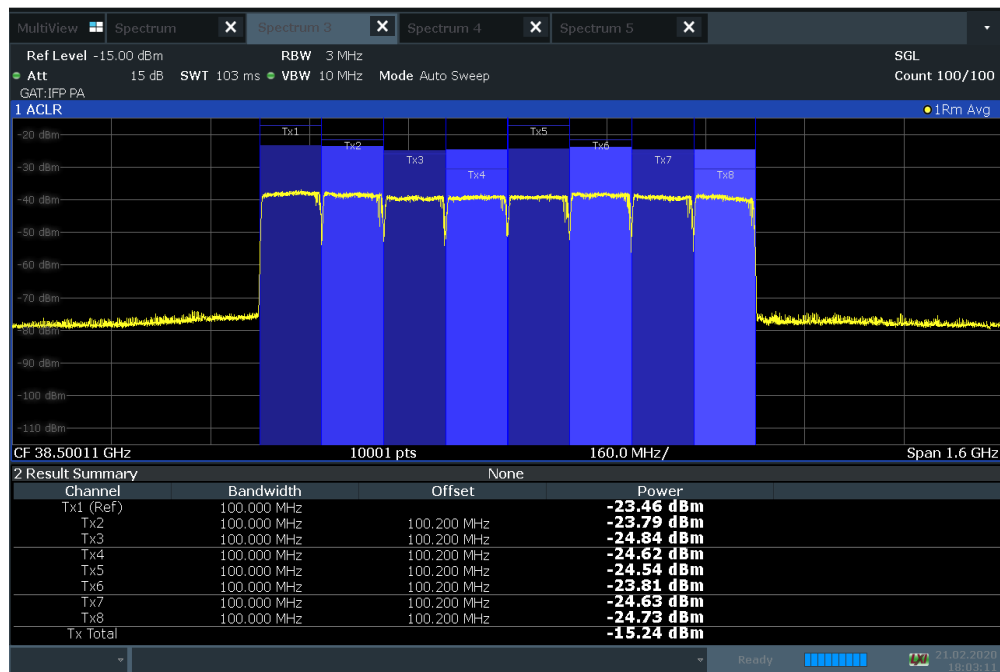
#### ACLRRResults



22:47:31 03.03.2020

**Plot 7-75. Antenna A EIRP Density Plot (50MHz BW 8CC 64QAM Mid Channel)**

#### ACLRRResults



18:03:12 21.02.2020

**Plot 7-76. Antenna A EIRP Density Plot (100MHz BW 8CC QPSK Mid Channel)**

|                                       |                                              |                                       |                |                                 |
|---------------------------------------|----------------------------------------------|---------------------------------------|----------------|---------------------------------|
| FCC ID: A3LAT1K02-A00                 | <b>PCTEST</b><br>Proud to be part of element | MEASUREMENT REPORT<br>(CERTIFICATION) | <b>SAMSUNG</b> | Approved by:<br>Quality Manager |
| Test Report S/N:<br>8K19110701-01.A3L | Test Dates:<br>02/18/2020-03/06/2020         | EUT Type:<br>5G Access Unit           |                | Page 63 of 356                  |