



# PCTEST ENGINEERING LABORATORY, INC.

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## MEASUREMENT REPORT FCC PART 15.407 UNII 802.11ax OFDMA

**Applicant Name:**

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

**Date of Testing:**

01/22- 04/05/2019

**Test Site/Location:**

PCTEST Lab. Columbia, MD, USA

**Test Report Serial No.:**

1M1902200029-08.A3L

**FCC ID:**

**A3LSMF907N**

**APPLICANT:**

**Samsung Electronics Co., Ltd.**

**Application Type:**

Certification

**Model:**

SM-F907N

**Additional Model(s):**

SM-F907N

**EUT Type:**

Portable Handset

**Frequency Range:**

5180 – 5825MHz

**FCC Classification:**

Unlicensed National Information Infrastructure (UNII)

**FCC Rule Part(s):**

Part 15 Subpart E (15.407)

**Test Procedure(s):**

ANSI C63.10-2013, KDB 789033 D02 v02r01,  
KDB 648474 D03 v01r04, KDB 662911 D01 v02r01

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 ANSI C63.10-2013 and KDB 789033 D02 v02r01. 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



|                                                |                                                                                     |                                               |                                                                                       |                                        |
|------------------------------------------------|-------------------------------------------------------------------------------------|-----------------------------------------------|---------------------------------------------------------------------------------------|----------------------------------------|
| <b>FCC ID:</b> A3LSMF907N                      |  | <b>MEASUREMENT REPORT<br/>(CERTIFICATION)</b> |  | <b>Approved by:</b><br>Quality Manager |
| <b>Test Report S/N:</b><br>1M1902200029-08.A3L | <b>Test Dates:</b><br>01/22- 04/05/2019                                             | <b>EUT Type:</b><br>Portable Handset          |                                                                                       | Page 1 of 330                          |

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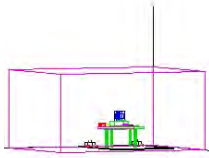
V 9.0 02/01/2019

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## MEASUREMENT REPORT



| UNII Band | Channel Bandwidth (MHz) | Tx Frequency (MHz) | ANT1            |                  | ANT2            |                  | MIMO            |                  |
|-----------|-------------------------|--------------------|-----------------|------------------|-----------------|------------------|-----------------|------------------|
|           |                         |                    | Max. Power (mW) | Max. Power (dBm) | Max. Power (mW) | Max. Power (dBm) | Max. Power (mW) | Max. Power (dBm) |
| 1         | 20                      | 5180 - 5240        | 39.355          | 15.95            | 38.726          | 15.88            | 37.120          | 15.70            |
| 2A        |                         | 5260 - 5320        | 39.628          | 15.98            | 38.726          | 15.88            | 39.708          | 15.99            |
| 2C        |                         | 5500 - 5720        | 39.628          | 15.98            | 39.719          | 15.99            | 38.931          | 15.90            |
| 3         |                         | 5745 - 5825        | 38.815          | 15.89            | 39.719          | 15.99            | 39.759          | 15.99            |
| 1         | 40                      | 5190 - 5230        | 25.061          | 13.99            | 24.774          | 13.94            | 23.776          | 13.76            |
| 2A        |                         | 5270 - 5310        | 24.946          | 13.97            | 24.099          | 13.82            | 25.063          | 13.99            |
| 2C        |                         | 5510 - 5710        | 25.061          | 13.99            | 25.061          | 13.99            | 25.067          | 13.99            |
| 3         |                         | 5755 - 5795        | 25.003          | 13.98            | 25.061          | 13.99            | 24.785          | 13.94            |
| 1         | 80                      | 5210               | 19.907          | 12.99            | 19.907          | 12.99            | 19.828          | 12.97            |
| 2A        |                         | 5290               | 19.679          | 12.94            | 19.861          | 12.98            | 19.886          | 12.99            |
| 2C        |                         | 5530 - 5690        | 19.907          | 12.99            | 19.907          | 12.99            | 19.764          | 12.96            |
| 3         |                         | 5775               | 19.907          | 12.99            | 19.907          | 12.99            | 19.862          | 12.98            |

### EUT Overview

|                                                |                                                                                                                               |                                      |                                                                                       |                                        |
|------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------|--------------------------------------|---------------------------------------------------------------------------------------|----------------------------------------|
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## 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 Engineering Laboratory, Inc. 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 Engineering Lab 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.

|                                                |                                                                                     |                                               |                                                                                       |                                        |
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## 2.0 PRODUCT INFORMATION

### 2.1 Equipment Description

The Equipment Under Test (EUT) is the **Samsung Portable Handset FCC ID: A3LSMF907N**. The test data contained in this report pertains only to the emissions due to the EUT's UNII transmitter.

**Test Device Serial No.:** 1101M, 1108M, 1105M, 1099M, 2166M, 2219M

### 2.2 Device Capabilities

This device contains the following capabilities:

850/1900 GSM/GPRS/EDGE, 850/1700/1900 WCDMA, 802.11b/g/n/ax WLAN, 802.11a/n/ac/ax UNII, Bluetooth (1x, EDR, LE), NFC, ANT+, Wireless Power Transfer

| Band 1 |                 | Band 2A |                 | Band 2C |                 | Band 3 |                 |
|--------|-----------------|---------|-----------------|---------|-----------------|--------|-----------------|
| Ch.    | Frequency (MHz) | Ch.     | Frequency (MHz) | Ch.     | Frequency (MHz) | Ch.    | Frequency (MHz) |
| 36     | 5180            | 52      | 5260            | 100     | 5500            | 149    | 5745            |
| :      | :               | :       | :               | :       | :               | :      | :               |
| 42     | 5210            | 56      | 5280            | 120     | 5600            | 157    | 5785            |
| :      | :               | :       | :               | :       | :               | :      | :               |
| 48     | 5240            | 64      | 5320            | 144     | 5720            | 165    | 5825            |

**Table 2-1. 802.11a / 802.11n / 802.11ac / 802.11ax (20MHz) Frequency / Channel Operations**

| Band 1 |                 | Band 2A |                 | Band 2C |                 | Band 3 |                 |
|--------|-----------------|---------|-----------------|---------|-----------------|--------|-----------------|
| Ch.    | Frequency (MHz) | Ch.     | Frequency (MHz) | Ch.     | Frequency (MHz) | Ch.    | Frequency (MHz) |
| 38     | 5190            | 54      | 5270            | 102     | 5510            | 151    | 5755            |
| :      | :               | :       | :               | :       | :               | :      | :               |
| 46     | 5230            | 62      | 5310            | 118     | 5590            | 159    | 5795            |
|        |                 |         |                 | :       | :               |        |                 |
|        |                 |         |                 | 142     | 5710            |        |                 |

**Table 2-2. 802.11n / 802.11ac / 802.11ax (40MHz BW) Frequency / Channel Operations**

| Band 1 |                 | Band 2A |                 | Band 2C |                 | Band 3 |                 |
|--------|-----------------|---------|-----------------|---------|-----------------|--------|-----------------|
| Ch.    | Frequency (MHz) | Ch.     | Frequency (MHz) | Ch.     | Frequency (MHz) | Ch.    | Frequency (MHz) |
| 42     | 5210            | 58      | 5290            | 106     | 5530            | 155    | 5775            |
|        |                 |         |                 | :       | :               |        |                 |
|        |                 |         |                 | 138     | 5690            |        |                 |

**Table 2-3. 802.11ac / 802.11ax (80MHz BW) Frequency / Channel Operations**

|                                                |                                                                                     |                                               |  |                                                                                       |                                        |
|------------------------------------------------|-------------------------------------------------------------------------------------|-----------------------------------------------|--|---------------------------------------------------------------------------------------|----------------------------------------|
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# Notes:

- 5GHz NII operation is possible in 20MHz, and 40MHz, and 80MHz channel bandwidths. The maximum achievable duty cycles for all modes were determined based on measurements performed on a spectrum analyzer in zero-span mode with RBW = 8MHz, VBW = 50MHz, and detector = peak per the guidance of Section B)2)b) of ANSI C63.10-2013 and KDB 789033 D02 v02r01. The RBW and VBW were both greater than 50/T, where T is the minimum transmission duration, and the number of sweep points across T was greater than 100. The duty cycles are as follows:

| Mode               | Antenna  | Bandwidth<br>[MHz] | Tone | Duty Cycle |
|--------------------|----------|--------------------|------|------------|
| 802.11ax<br>NII RU | 1        | 20                 | 26T  | 99.4       |
|                    |          |                    | 52T  | 99.6       |
|                    |          |                    | 106T | 99.2       |
|                    |          |                    | 242T | 99.1       |
| 802.11ax<br>NII RU | 2        | 20                 | 26T  | 99.1       |
|                    |          |                    | 52T  | 99.4       |
|                    |          |                    | 106T | 99.7       |
|                    |          |                    | 242T | 99.8       |
| 802.11ax RU<br>NII | MIMO SDM | 20                 | 26T  | 99.7       |
|                    |          |                    | 52T  | 99.3       |
|                    |          |                    | 106T | 99.2       |
|                    |          |                    | 242T | 99.1       |
| 802.11ax<br>NII RU | 1        | 40                 | 26T  | 99.4       |
|                    |          |                    | 52T  | 99.6       |
|                    |          |                    | 106T | 99.2       |
|                    |          |                    | 242T | 99.1       |
| 802.11ax<br>NII RU | 2        | 40                 | 26T  | 99.1       |
|                    |          |                    | 52T  | 99.5       |
|                    |          |                    | 106T | 99.7       |
|                    |          |                    | 242T | 99.2       |
| 802.11ax RU<br>NII | MIMO SDM | 40                 | 26T  | 99.1       |
|                    |          |                    | 52T  | 99.1       |
|                    |          |                    | 106T | 99.6       |
|                    |          |                    | 242T | 99.3       |
| 802.11ax<br>NII RU | 1        | 80                 | 26T  | 99.1       |
|                    |          |                    | 52T  | 99.1       |
|                    |          |                    | 106T | 99.4       |
|                    |          |                    | 242T | 99.6       |
| 802.11ax<br>NII RU | 2        | 80                 | 26T  | 99.0       |
|                    |          |                    | 52T  | 99.1       |
|                    |          |                    | 106T | 99.6       |
|                    |          |                    | 242T | 99.2       |
| 802.11ax RU<br>NII | MIMO SDM | 80                 | 26T  | 99.1       |
|                    |          |                    | 52T  | 99.1       |
|                    |          |                    | 106T | 99.4       |
|                    |          |                    | 242T | 99.6       |

Table 2-4. Measured Duty Cycles

|                                         |                                                                                                                                                                                                                         |                               |                                 |
|-----------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------|---------------------------------|
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2. The device employs MIMO technology. Below are the possible configurations.

| WiFi Configurations |                   | SISO |      | SDM  |      | CDD/MIMO |      |
|---------------------|-------------------|------|------|------|------|----------|------|
|                     |                   | ANT1 | ANT2 | ANT1 | ANT2 | ANT1     | ANT2 |
| 5GHz                | 11a               | ✓    | ✓    | ✗    | ✗    | ✓        | ✓    |
|                     | 11n/ac/ax (20MHz) | ✓    | ✓    | ✓    | ✓    | ✓        | ✓    |
|                     | 11n/ac/ax (40MHz) | ✓    | ✓    | ✓    | ✓    | ✓        | ✓    |
|                     | 11ac/ax (80MHz)   | ✓    | ✓    | ✓    | ✓    | ✓        | ✓    |

**Table 2-5. Frequency / Channel Operations**

✓ = Support ; ✗ = NOT Support

**SISO** = Single Input Single Output

**SDM** = Spatial Diversity Multiplexing – MIMO function

**CDD** = Cyclic Delay Diversity - 2Tx Function

3. This device supports simultaneous transmission operation, which allows for two SISO channels to operate independent of one another in the 2.4GHz (WLAN & BT) and 5GHz bands simultaneously on each antenna. The following tables show the worst case configurations determined during testing. The data for these configurations is contained in this test report. The BT + 5GHz case is not considered as worst case since the BT power is lower than the 2.4GHz WLAN power.

**Configuration 1:** ANT1 transmitting in 2.4GHz mode and ANT2 in 5GHz mode

| Description               | 2.4 GHz Emission | 5 GHz Emission |
|---------------------------|------------------|----------------|
| Antenna                   | 1                | 2              |
| Channel                   | 6                | 48             |
| Operating Frequency (MHz) | 2437             | 5240           |
| Data Rate (Mbps)          | 1                | 6              |
| Mode                      | 802.11b          | 802.11a        |

**Table 2-6. Config-1 (ANT1 2.4GHz & ANT2 5GHz)**

**Configuration 2:** ANT1 transmitting in 5GHz mode and ANT2 in 2.4GHz mode

| Description               | 2.4 GHz Emission | 5 GHz Emission |
|---------------------------|------------------|----------------|
| Antenna                   | 2                | 1              |
| Channel                   | 6                | 120            |
| Operating Frequency (MHz) | 2437             | 5600           |
| Data Rate (Mbps)          | 1                | 6              |
| Mode                      | 802.11b          | 802.11a        |

**Table 2-7. Config-2 (ANT1 5GHz & ANT2 2.4GHz)**

|                                         |                                                                                     |                                       |                                                                                       |                                 |
|-----------------------------------------|-------------------------------------------------------------------------------------|---------------------------------------|---------------------------------------------------------------------------------------|---------------------------------|
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### Configuration 3: ANT1 and ANT2 both transmitting in 2.4GHz and 5GHz modes simultaneously

| Description               | 2.4 GHz Emission | 5 GHz Emission |
|---------------------------|------------------|----------------|
| Antenna                   | 1, 2             | 1, 2           |
| Channel                   | 11               | 165            |
| Operating Frequency (MHz) | 2462             | 5825           |
| Data Rate (Mbps)          | 6                | 6              |
| Mode                      | 802.11g          | 802.11a        |

Table 2-8. Config-3 (ANT1 MIMO & ANT2 MIMO)

## 2.3 Test Configuration

The EUT was tested per the guidance of KDB 789033 D02 v02r01. ANSI C63.10-2013 was used to reference the appropriate EUT setup for radiated spurious emissions testing.

This device supports two configurations: one is with screen open and one is with screen closed. Both configurations are tested, and the worst case radiated emissions data is shown in this report.

This device supports wireless charging capability and, thus, is subject to the test requirements of KDB 648474 D03 v01r04. Additional radiated spurious emission measurements were performed with the EUT lying on an authorized wireless charging pad (WCP) Model: EP-N5100 while operating under normal conditions in a simulated call or data transmission configuration. The worst case radiated emissions data is shown in this report.

## 2.4 EMI Suppression Device(s)/Modifications

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

|                                         |                                                                                     |                                       |                                                                                       |                                 |
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## 3.0 DESCRIPTION OF TESTS

### 3.1 Evaluation Procedure

The measurement procedures described in the American National Standard of Procedures for Compliance Testing of Unlicensed Wireless Devices (ANSI C63.10-2013) and the guidance provided in KDB 789033 D02 v02r01 were used in the measurement of the EUT.

Deviation from measurement procedure.....None

### 3.2 Radiated Emissions

The radiated test facilities consisted of an indoor 3 meter semi-anechoic chamber used for final measurements 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. An 80cm tall test table made of Styrodur is placed on top of the turn table. For measurements above 1GHz, an additional Styrodur pedestal is placed on top of the test table to bring the total table height to 1.5m.

For all measurements, the spectrum was scanned through all EUT azimuths and from 1 to 4 meter receive antenna height using a broadband antenna from 30MHz up to the upper frequency shown in 15.33 depending on the highest frequency generated or used in the device or on which the device operates or tunes. For frequencies above 1GHz, linearly polarized double ridge horn antennas were used. For frequencies below 30MHz, a calibrated loop antenna was used. When exploratory measurements were necessary, they were performed at 1 meter test distance inside the semi-anechoic chamber using broadband antennas, broadband amplifiers, and spectrum analyzers to determine the frequencies and modes producing the maximum emissions. Sufficient time for the EUT, support equipment, and test equipment was allowed in order for them to warm up to their normal operating condition. The test set-up was placed on top of the 1 x 1.5 meter table. The EUT, support equipment, and interconnecting cables were arranged and manipulated to maximize each emission. Appropriate precaution was taken to ensure that all emissions from the EUT were maximized and investigated. The system configuration, mode of operation, turntable azimuth, and receive antenna height was noted for each frequency found.

Final measurements were made in the semi-anechoic chamber using calibrated, linearly polarized broadband and horn antennas. The test setup was configured to the setup that produced the worst case emissions. The spectrum analyzer was set to investigate all frequencies required for testing to compare the highest radiated disturbances with respect to the specified limits. The turntable containing the EUT was rotated through 360 degrees and the height of the receive antenna was varied 1 to 4 meters and stopped at the azimuth and height producing the maximum emission. Each emission was maximized by changing the orientation of the EUT through three orthogonal planes and changing the polarity of the receive antenna, whichever produced the worst-case emissions.

All radiated measurements are performed in a chamber that meets the site requirements per ANSI C63.4-2014. Additionally, radiated emissions below 30MHz are also validated on an Open Area Test Site to assert correlation with the chamber measurements per the requirements of KDB 474788 D01.

### 3.3 Environmental Conditions

The temperature is controlled within range of 15°C to 35°C. The relative humidity is controlled within range of 10% to 75%. The atmospheric pressure is monitored within the range 86-106kPa (860-1060mbar).

|                                         |                                                                                     |                                       |                                                                                       |                                 |
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## 4.0 ANTENNA REQUIREMENTS

### Excerpt from §15.203 of the FCC Rules/Regulations:

“An intentional radiator antenna shall be designed to ensure that no antenna other than that furnished by the responsible party can be used with the device. The use of a permanently attached antenna or of an antenna that uses a unique coupling to the intentional radiator shall be considered sufficient to comply with the provisions of this section.”

- The antennas of the EUT are **permanently attached**.
- There are no provisions for connection to an external antenna.

### Conclusion:

The EUT complies with the requirement of §15.203.

|                                         |                                                                                     |                                       |                                                                                       |                                 |
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## 5.0 MEASUREMENT UNCERTAINTY

The measurement uncertainties shown below were calculated in accordance with the requirements of ANSI C63.10-2013. 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                             |
| Line Conducted Disturbance       | 3.09                             |
| Radiated Disturbance (<1GHz)     | 4.98                             |
| Radiated Disturbance (>1GHz)     | 5.07                             |
| Radiated Disturbance (>18GHz)    | 5.09                             |

|                                         |                                                                                     |                                       |                                                                                       |                                 |
|-----------------------------------------|-------------------------------------------------------------------------------------|---------------------------------------|---------------------------------------------------------------------------------------|---------------------------------|
| FCC ID: A3LSMF907N                      |  | MEASUREMENT REPORT<br>(CERTIFICATION) |  | Approved by:<br>Quality Manager |
| Test Report S/N:<br>1M1902200029-08.A3L | Test Dates:<br>01/22- 04/05/2019                                                    | EUT Type:<br>Portable Handset         |                                                                                       | Page 11 of 330                  |

## 6.0 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 |
|-----------------|---------------|--------------------------------------|------------|--------------|------------|---------------|
| -               | WL25-1        | Conducted Cable Set (25GHz)          | 10/31/2018 | Annual       | 10/31/2019 | WL25-1        |
| Agilent         | N9020A        | MXA Signal Analyzer                  | 1/24/2018  | Annual       | 4/24/2019  | US46470561    |
| Agilent         | N9030A        | PXA Signal Analyzer (44GHz)          | 5/25/2018  | Annual       | 5/25/2019  | MY52350166    |
| Anritsu         | MA2411B       | Pulse Power Sensor                   | 10/30/2018 | Annual       | 10/30/2019 | 846215        |
| Anritsu         | ML2495A       | Power Meter                          | 10/21/2018 | Annual       | 10/21/2019 | 941001        |
| Com-Power       | AL-130        | 9kHz - 30MHz Loop Antenna            | 10/10/2017 | Biennial     | 10/10/2019 | 121034        |
| COM-Power       | PAM-103       | Pre-Amplifier (1-1000MHz)            | 9/17/2018  | Annual       | 9/17/2019  | 441119        |
| Emco            | 3115          | Horn Antenna (1-18GHz)               | 3/28/2018  | Biennial     | 3/28/2020  | 9704-5182     |
| Emco            | 3116          | Horn Antenna (18 - 40GHz)            | 6/7/2018   | Triennial    | 6/7/2021   | 9203-2178     |
| ETS Lindgren    | 3117          | 1-18 GHz DRG Horn (Medium)           | 2/14/2019  | Biennial     | 2/14/2021  | 125518        |
| ETS-Lindgren    | 3816/2NM      | Line Impedance Stabilization Network | 6/18/2018  | Biennial     | 6/18/2020  | 114451        |
| Huber + Suhner  | Sucoflex 102A | 40GHz Radiated Cable Set             | 8/23/2018  | Annual       | 8/23/2019  | 251425001     |
| Pasternack      | NMLC-2        | Line Conducted Emissions Cable (NM)  | 8/23/2018  | Annual       | 8/23/2019  | NMLC-2        |
| Rohde & Schwarz | ESU26         | EMI Test Receiver (26.5GHz)          | 5/21/2018  | Annual       | 5/21/2019  | 100342        |
| Rohde & Schwarz | ESU40         | EMI Test Receiver (40GHz)            | 8/9/2018   | Annual       | 8/9/2019   | 100348        |
| Rohde & Schwarz | SFUNIT-Rx     | Shielded Filter Unit                 | 6/18/2018  | Annual       | 6/18/2019  | 102134        |
| Rohde & Schwarz | SFUNIT-Rx     | Shielded Filter Unit                 | 6/25/2018  | Annual       | 6/25/2019  | 102133        |
| Rohde & Schwarz | TS-PR26       | 18-26.5 GHz Pre-Amplifier            | 9/19/2018  | Annual       | 9/19/2019  | 100040        |
| Rohde & Schwarz | TS-PR40       | 26.5-40 GHz Pre-Amplifier            | 9/19/2018  | Annual       | 9/19/2019  | 100037        |
| Seekonk         | NC-100        | Torque Wrench                        | 5/4/2018   | Annual       | 5/4/2020   | 022216        |
| Sunol           | DRH-118       | Horn Antenna (1-18GHz)               | 8/11/2017  | Biennial     | 8/11/2019  | A050307       |
| Sunol           | JB5           | Bi-Log Antenna (30M - 5GHz)          | 4/19/2018  | Biennial     | 4/19/2020  | A051107       |

**Table 6-1. Annual Test Equipment Calibration Schedule**

### Note:

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: A3LSMF907N                      |  <b>MEASUREMENT REPORT<br/>(CERTIFICATION)</b>  |                               | Approved by:<br>Quality Manager |
| Test Report S/N:<br>1M1902200029-08.A3L | Test Dates:<br>01/22- 04/05/2019                                                                                                                                                                                        | EUT Type:<br>Portable Handset | Page 12 of 330                  |

## 7.0 TEST RESULTS

### 7.1 Summary

Company Name: Samsung Electronics Co., Ltd.  
 FCC ID: A3LSMF907N  
 FCC Classification: Unlicensed National Information Infrastructure (UNII)

| FCC Part Section(s)                | RSS Section(s) | Test Description                                                              | Test Limit                                                                                     | Test Condition | Test Result | Reference           |
|------------------------------------|----------------|-------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------|----------------|-------------|---------------------|
| N/A                                | RSS-Gen [6.7]  | 26dB Bandwidth                                                                | N/A                                                                                            | CONDUCTED      | PASS        | Section 7.2         |
| 15.407(e)                          | RSS-Gen [6.7]  | 6dB Bandwidth                                                                 | >500kHz(5725-5850MHz)                                                                          |                | PASS        | Section 7.3         |
| 15.407 (a.1.iv), (a.2), (a.3)      | RSS-247 [6.2]  | Maximum Conducted Output Power                                                | Maximum conducted powers must meet the limits detailed in 15.407 (a) (RSS-247 [6.2])           |                | PASS        | Section 7.4         |
| 15.407 (a.1.iv), (a.2), (a.3)      | RSS-247 [6.2]  | Maximum Power Spectral Density                                                | Maximum power spectral density must meet the limits detailed in 15.407 (a) (RSS-247 [6.2])     |                | PASS        | Section 7.5         |
| 15.407(h)                          | RSS-247 [6.3]  | Dynamic Frequency Selection                                                   | See DFS Test Report                                                                            |                | PASS        | See DFS Test Report |
| 15.407(b.1), (2), (3), (4)         | RSS-247 [6.2]  | Undesirable Emissions                                                         | Undesirable emissions must meet the limits detailed in 15.407(b) (RSS-247 [6.2])               | RADIATED       | PASS        | Section 7.6         |
| 15.205, 15.407(b.1), (4), (5), (6) | RSS-Gen [8.9]  | General Field Strength Limits (Restricted Bands and Radiated Emission Limits) | Emissions in restricted bands must meet the radiated limits detailed in 15.209 (RSS-Gen [8.9]) |                | PASS        | Section 7.6, 7.7    |

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

#### Notes:

- 1) All channels, modes, and modulations/data rates were investigated among all UNII bands. The test results shown in the following sections represent the worst case emissions.
- 2) The analyzer plots shown in this section were all taken with a correction table loaded into the analyzer. The correction table was used to account for the losses of the cables and attenuators used as part of the system to connect the EUT to the analyzer at all frequencies of interest.
- 3) All antenna port conducted emissions testing was performed on a test bench with the antenna port of the EUT connected to the spectrum analyzer through calibrated cables and attenuators.
- 4) For conducted spurious emissions, automated test software was used to measure emissions and capture the corresponding plots necessary to show compliance. The measurement software utilized is PCTEST "UNII Automation," Version 4.6.
- 5) For radiated band edge, automated test software was used to measure emissions and capture the corresponding plots necessary to show compliance. The measurement software utilized is PCTEST "Chamber Automation," Version 0.2.16.
- 6) Per RSS-247 Section 6.2.3, transmission on channels which overlap the 5600-5650 MHz is prohibited. This device operates under these frequencies only under the control of a certified master device and does not support active scanning on these channels. This device does not transmit any beacons or initiate any transmissions in UNII Bands 2A or 2C.

|                                         |                                                                                     |                                       |                                                                                       |                                 |
|-----------------------------------------|-------------------------------------------------------------------------------------|---------------------------------------|---------------------------------------------------------------------------------------|---------------------------------|
| FCC ID: A3LSMF907N                      |  | MEASUREMENT REPORT<br>(CERTIFICATION) |  | Approved by:<br>Quality Manager |
| Test Report S/N:<br>1M1902200029-08.A3L | Test Dates:<br>01/22- 04/05/2019                                                    | EUT Type:<br>Portable Handset         |                                                                                       | Page 13 of 330                  |

- 7) 802.11ax OFDMA testing was performed for all signal tone configurations as specified by the 802.11ax standard. Worst case results are determined and reported per the guidance provided at the October 2018 TCB Workshop.
- 8) Only one RU index could be selected at a time so no contiguous or non-contiguous RU's were considered for testing.

|                                                |                                                                                     |                                               |                                                                                       |                                        |
|------------------------------------------------|-------------------------------------------------------------------------------------|-----------------------------------------------|---------------------------------------------------------------------------------------|----------------------------------------|
| <b>FCC ID:</b> A3LSMF907N                      |  | <b>MEASUREMENT REPORT<br/>(CERTIFICATION)</b> |  | <b>Approved by:</b><br>Quality Manager |
| <b>Test Report S/N:</b><br>1M1902200029-08.A3L | <b>Test Dates:</b><br>01/22- 04/05/2019                                             | <b>EUT Type:</b><br>Portable Handset          | Page 14 of 330                                                                        |                                        |

## 7.2 26dB Bandwidth Measurement – 802.11ax OFDMA

RSS-Gen [6.2]

### Test Overview and Limit

The bandwidth at 26dB down from the highest in-band spectral density is measured with a spectrum analyzer connected to the antenna terminal while the EUT is operating at its maximum duty cycle, at its maximum power control level, as defined in ANSI C63.10-2013 and KDB 789033 D02 v02r01, and at the appropriate frequencies. The spectrum analyzer's bandwidth measurement function is configured to measure the 26dB bandwidth.

*The 26dB bandwidth is used to determine the conducted power limits.*

### Test Procedure Used

ANSI C63.10-2013 – Section 12.4

KDB 789033 D02 v02r01 – Section C

### Test Settings

1. The signal analyzers' automatic bandwidth measurement capability was used to perform the 26dB bandwidth measurement. The "X" dB bandwidth parameter was set to  $X = 26$ . The automatic bandwidth measurement function also has the capability of simultaneously measuring the 99% occupied bandwidth. The bandwidth measurement was not influenced by any intermediate power nulls in the fundamental emission.
2. RBW = approximately 1% of the emission bandwidth
3.  $VBW \geq 3 \times RBW$
4. Detector = Peak
5. Trace mode = max hold

### Test Setup

The EUT and measurement equipment were set up as shown in the diagram below.



**Figure 7-1. Test Instrument & Measurement Setup**

### Test Notes

The 26dB Bandwidth measurement for each channel was measured with the RU index showing the highest conducted power.

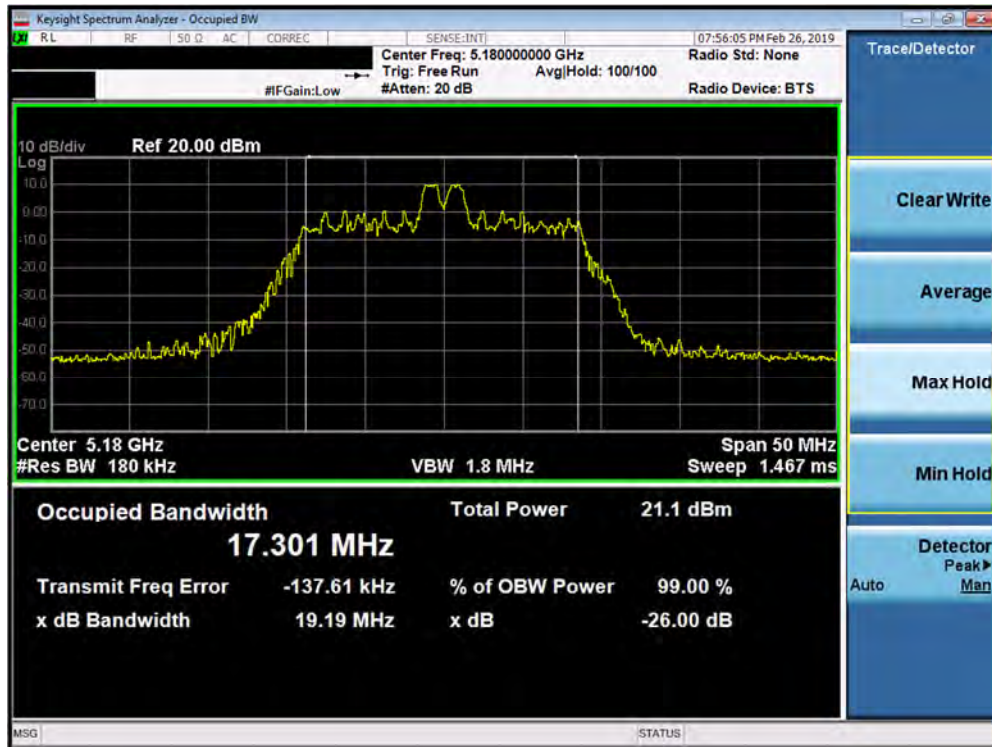
|                                         |                                               |                                               |                |                                 |
|-----------------------------------------|-----------------------------------------------|-----------------------------------------------|----------------|---------------------------------|
| FCC ID: A3LSMF907N                      | <b>PCTEST</b><br>ENGINEERING LABORATORY, INC. | <b>MEASUREMENT REPORT<br/>(CERTIFICATION)</b> | <b>SAMSUNG</b> | Approved by:<br>Quality Manager |
| Test Report S/N:<br>1M1902200029-08.A3L | Test Dates:<br>01/22- 04/05/2019              | EUT Type:<br>Portable Handset                 |                | Page 15 of 330                  |

## SISO Antenna-1 26 dB Bandwidth Measurements (26 Tones)

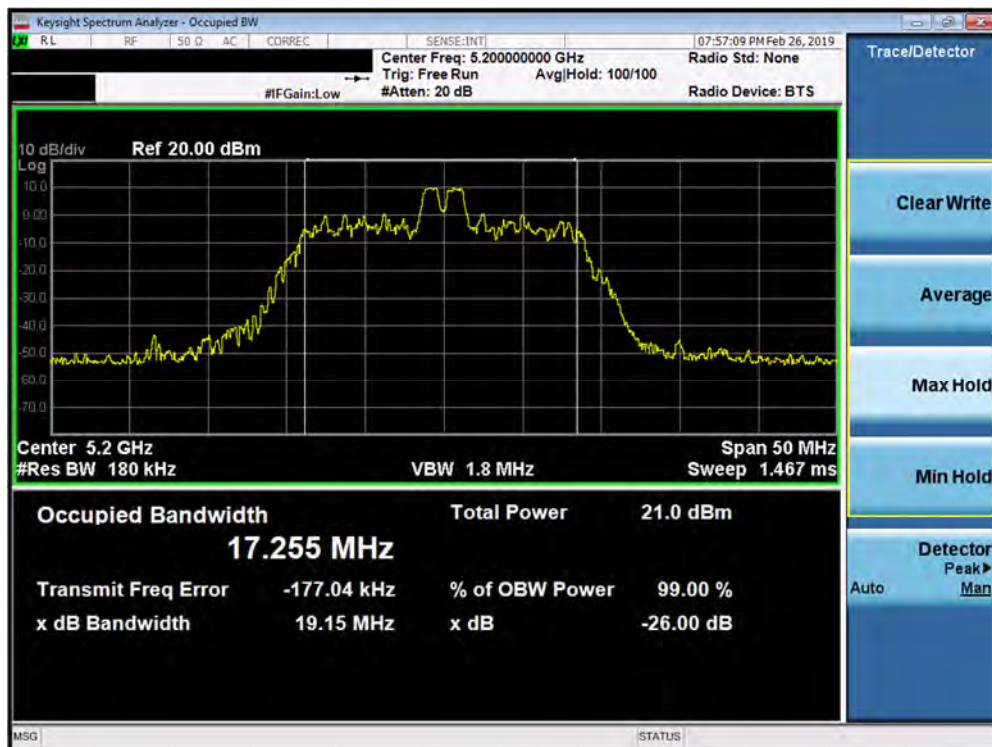
|         | Frequency [MHz] | Channel No. | 802.11 Mode | Tones | Data Rate [Mbps] | Measured 26dB Bandwidth [MHz] |
|---------|-----------------|-------------|-------------|-------|------------------|-------------------------------|
| Band 1  | 5180            | 36          | ax (20MHz)  | 26T   | MCS0             | 19.19                         |
|         | 5200            | 40          | ax (20MHz)  | 26T   | MCS0             | 19.15                         |
|         | 5240            | 48          | ax (20MHz)  | 26T   | MCS0             | 19.88                         |
|         | 5190            | 38          | ax (40MHz)  | 26T   | MCS0             | 22.47                         |
|         | 5230            | 46          | ax (40MHz)  | 26T   | MCS0             | 22.18                         |
|         | 5210            | 42          | ax (80MHz)  | 26T   | MCS0             | 20.35                         |
| Band 2A | 5260            | 52          | ax (20MHz)  | 26T   | MCS0             | 18.84                         |
|         | 5280            | 56          | ax (20MHz)  | 26T   | MCS0             | 19.90                         |
|         | 5320            | 64          | ax (20MHz)  | 26T   | MCS0             | 19.82                         |
|         | 5270            | 54          | ax (40MHz)  | 26T   | MCS0             | 19.47                         |
|         | 5310            | 62          | ax (40MHz)  | 26T   | MCS0             | 19.34                         |
|         | 5290            | 58          | ax (80MHz)  | 26T   | MCS0             | 21.12                         |
| Band 2C | 5500            | 100         | ax (20MHz)  | 26T   | MCS0             | 20.43                         |
|         | 5600            | 120         | ax (20MHz)  | 26T   | MCS0             | 20.67                         |
|         | 5720            | 144         | ax (20MHz)  | 26T   | MCS0             | 20.55                         |
|         | 5510            | 102         | ax (40MHz)  | 26T   | MCS0             | 19.16                         |
|         | 5590            | 118         | ax (40MHz)  | 26T   | MCS0             | 18.86                         |
|         | 5710            | 142         | ax (40MHz)  | 26T   | MCS0             | 19.21                         |
|         | 5530            | 106         | ax (80MHz)  | 26T   | MCS0             | 19.22                         |
|         | 5610            | 122         | ax (80MHz)  | 26T   | MCS0             | 19.35                         |
|         | 5690            | 138         | ax (80MHz)  | 26T   | MCS0             | 19.12                         |

**Table 7-2. Conducted Bandwidth Measurements SISO ANT1 (26 Tones)**

|                                         |                                                                                                                                   |                               |                                                                                       |                                 |
|-----------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------|-------------------------------|---------------------------------------------------------------------------------------|---------------------------------|
| FCC ID: A3LSMF907N                      |  <b>MEASUREMENT REPORT<br/>(CERTIFICATION)</b> |                               |  | Approved by:<br>Quality Manager |
| Test Report S/N:<br>1M1902200029-08.A3L | Test Dates:<br>01/22- 04/05/2019                                                                                                  | EUT Type:<br>Portable Handset |                                                                                       | Page 16 of 330                  |

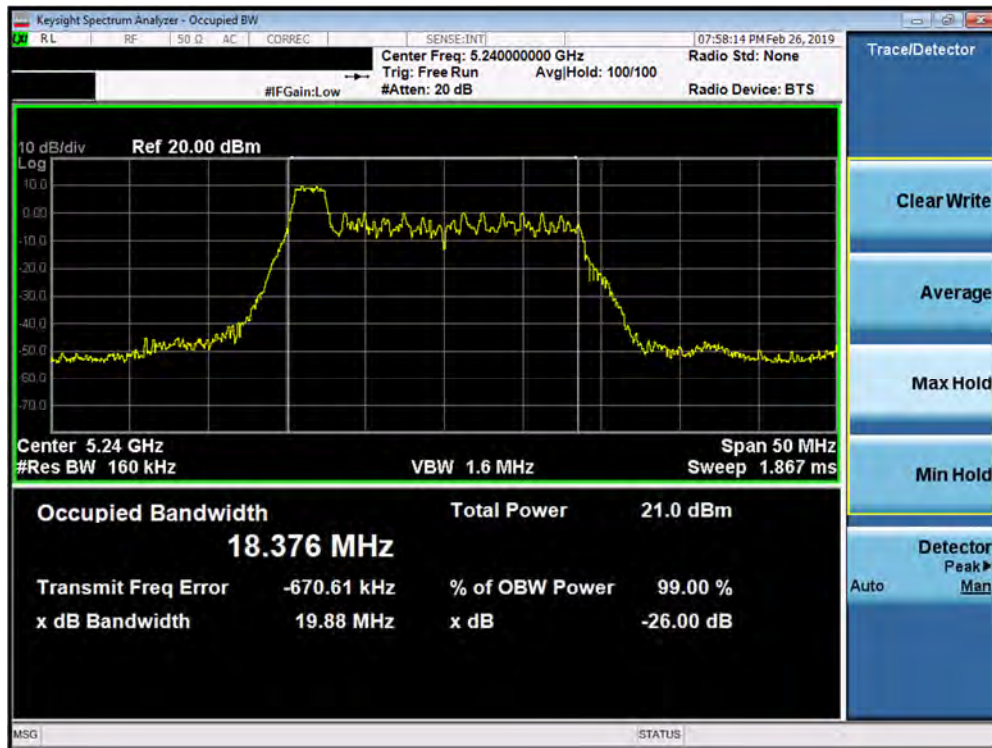


Plot 7-1. 26dB Bandwidth Plot SISO ANT1 (20MHz BW 802.11ax – 26 Tones (UNII Band 1) – Ch. 36)

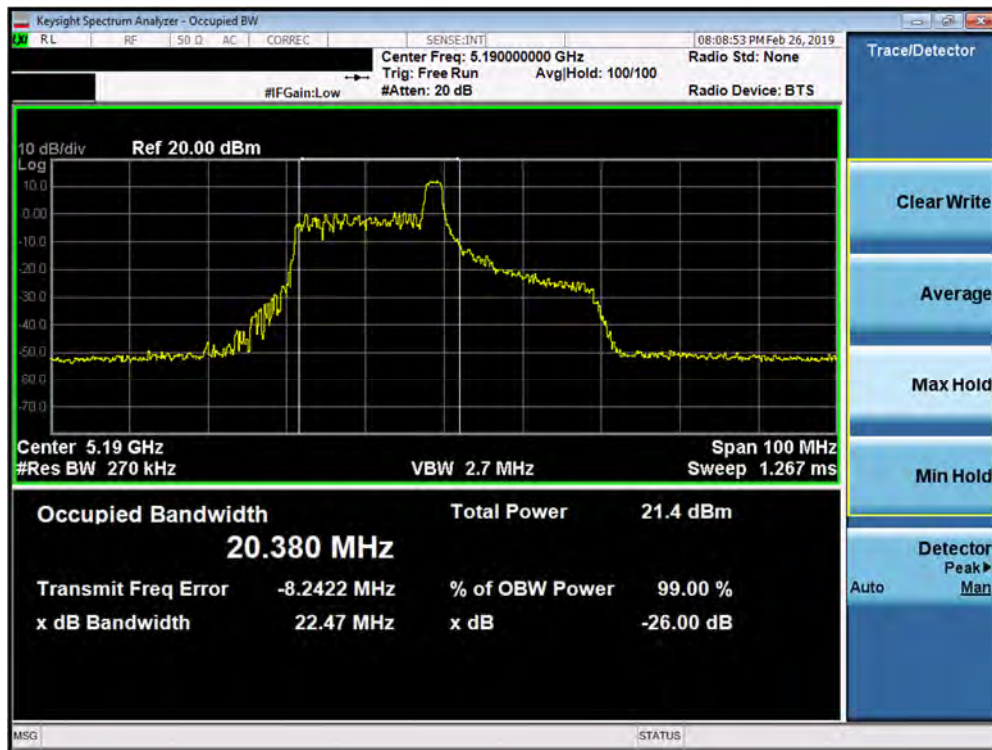


Plot 7-2. 26dB Bandwidth Plot SISO ANT1 (20MHz BW 802.11ax – 26 Tones (UNII Band 1) – Ch. 40)

|                                         |                                               |                                       |                |                                 |
|-----------------------------------------|-----------------------------------------------|---------------------------------------|----------------|---------------------------------|
| FCC ID: A3LSMF907N                      | <b>PCTEST</b><br>ENGINEERING LABORATORY, INC. | MEASUREMENT REPORT<br>(CERTIFICATION) | <b>SAMSUNG</b> | Approved by:<br>Quality Manager |
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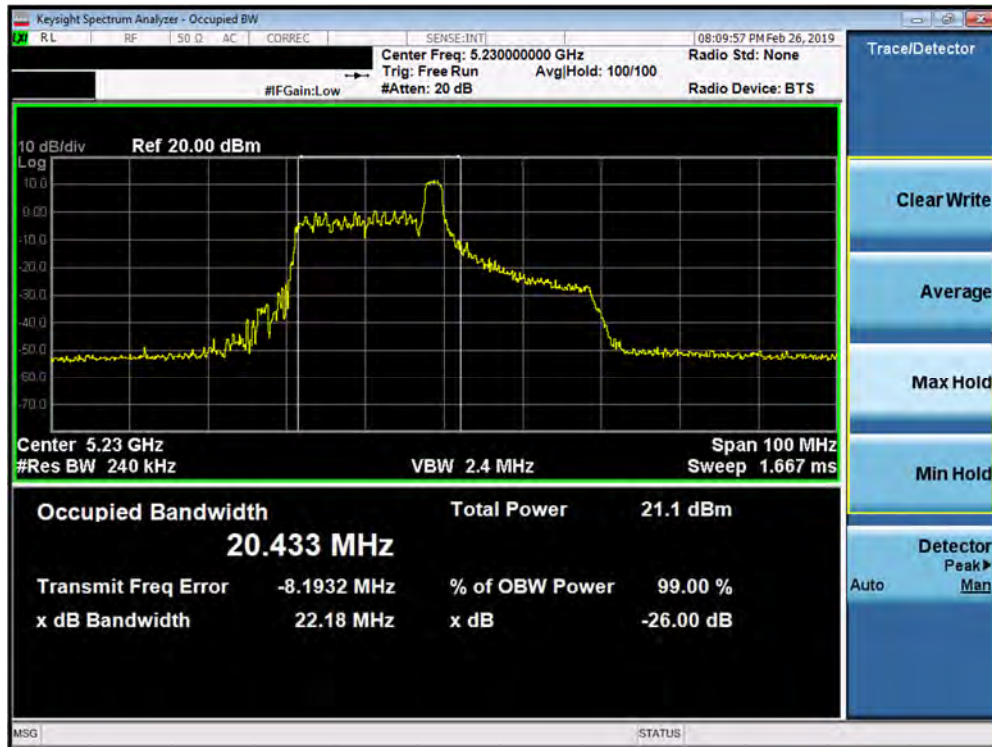


Plot 7-3. 26dB Bandwidth Plot SISO ANT1 (20MHz BW 802.11ax – 26 Tones (UNII Band 1) – Ch. 48)

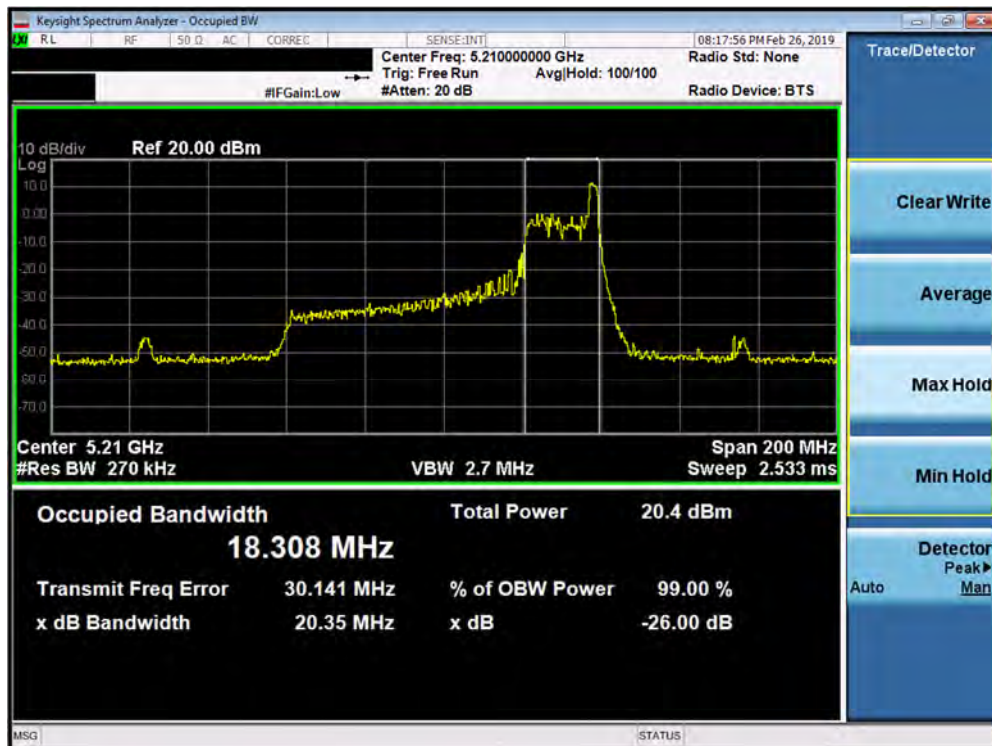


Plot 7-4. 26dB Bandwidth Plot SISO ANT1 (40MHz BW 802.11ax – 26 Tones (UNII Band 1) – Ch. 38)

|                                         |                                              |                               |  |                                 |
|-----------------------------------------|----------------------------------------------|-------------------------------|--|---------------------------------|
| FCC ID: A3LSMF907N                      | <b>MEASUREMENT REPORT</b><br>(CERTIFICATION) |                               |  | Approved by:<br>Quality Manager |
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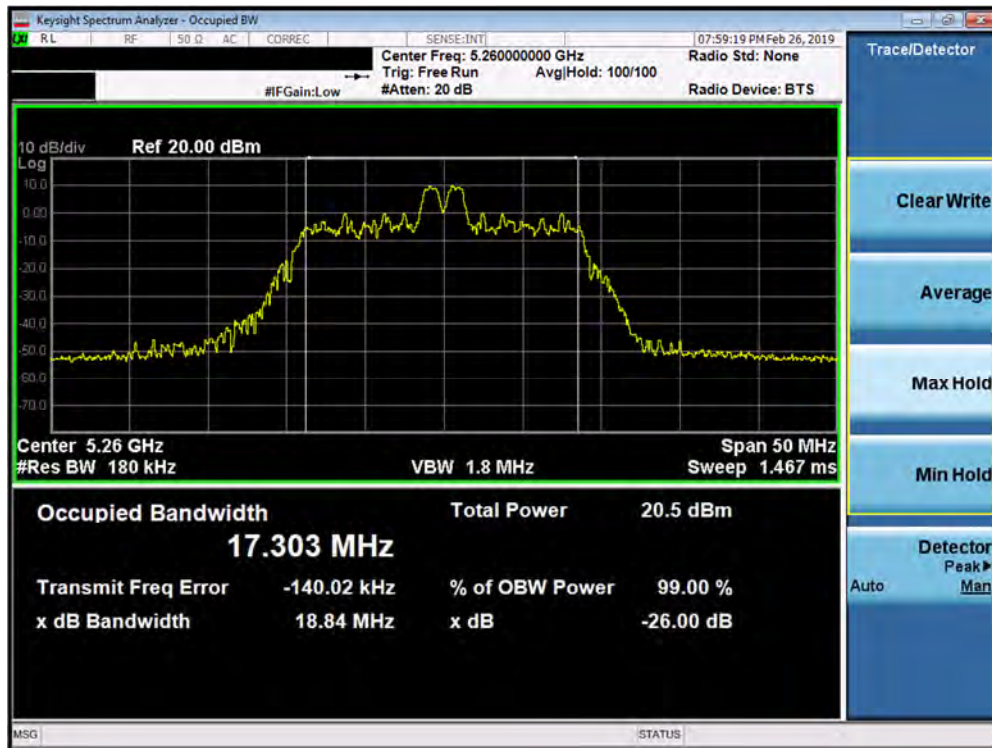


Plot 7-5. 26dB Bandwidth Plot SISO ANT1 (40MHz BW 802.11ax – 26 Tones (UNII Band 1) – Ch. 46)

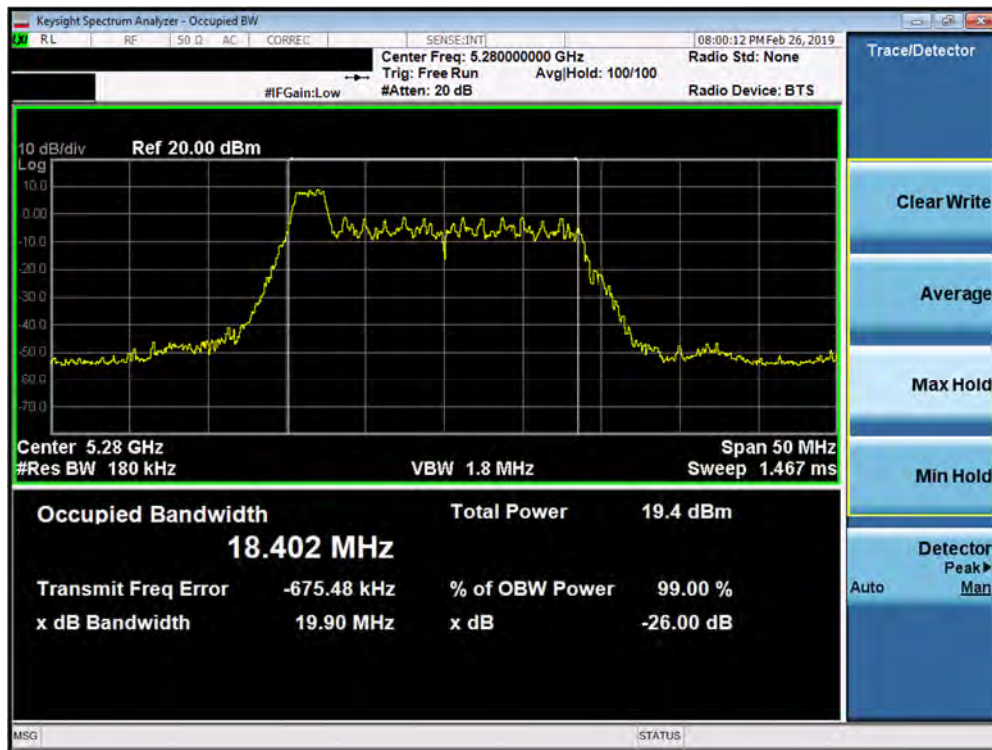


Plot 7-6. 26dB Bandwidth Plot SISO ANT1 (80MHz BW 802.11ax – 26 Tones (UNII Band 1) – Ch. 42)

|                                         |                                               |                               |  |                                 |
|-----------------------------------------|-----------------------------------------------|-------------------------------|--|---------------------------------|
| FCC ID: A3LSMF907N                      | <b>MEASUREMENT REPORT<br/>(CERTIFICATION)</b> |                               |  | Approved by:<br>Quality Manager |
| Test Report S/N:<br>1M1902200029-08.A3L | Test Dates:<br>01/22- 04/05/2019              | EUT Type:<br>Portable Handset |  | Page 19 of 330                  |

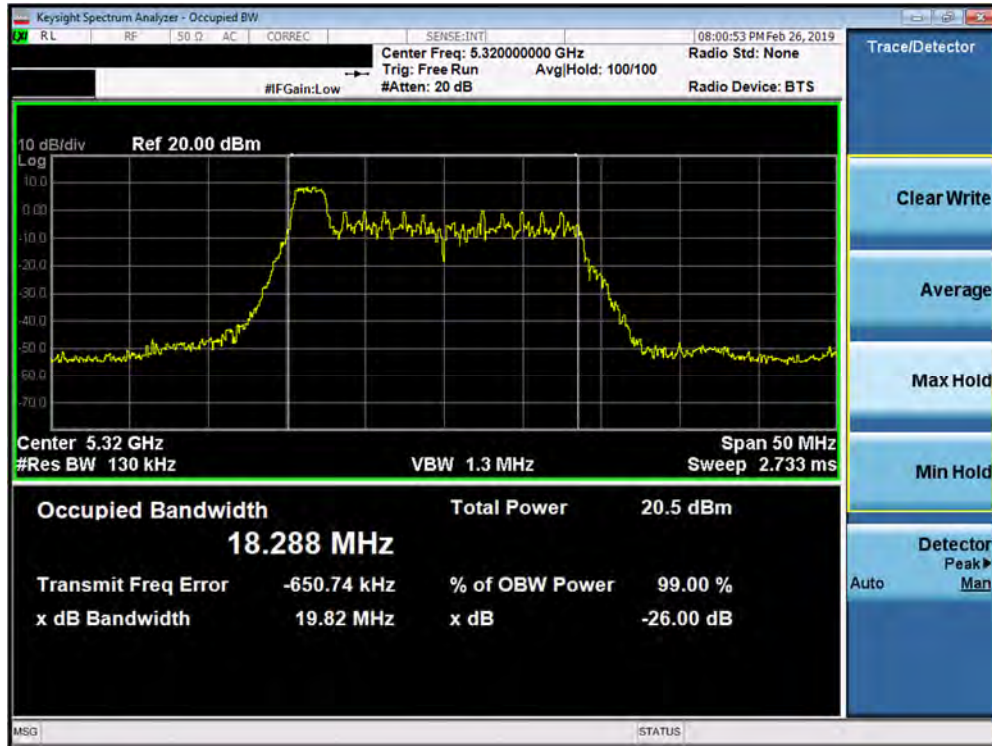


Plot 7-7. 26dB Bandwidth Plot SISO ANT1 (20MHz BW 802.11ax – 26 Tones (UNII Band 2A) – Ch. 52)



Plot 7-8. 26dB Bandwidth Plot SISO ANT1 (20MHz BW 802.11ax – 26 Tones (UNII Band 2A) – Ch. 56)

|                                         |                                               |                                       |                |                                 |
|-----------------------------------------|-----------------------------------------------|---------------------------------------|----------------|---------------------------------|
| FCC ID: A3LSMF907N                      | <b>PCTEST</b><br>ENGINEERING LABORATORY, INC. | MEASUREMENT REPORT<br>(CERTIFICATION) | <b>SAMSUNG</b> | Approved by:<br>Quality Manager |
| Test Report S/N:<br>1M1902200029-08.A3L | Test Dates:<br>01/22- 04/05/2019              | EUT Type:<br>Portable Handset         |                | Page 20 of 330                  |

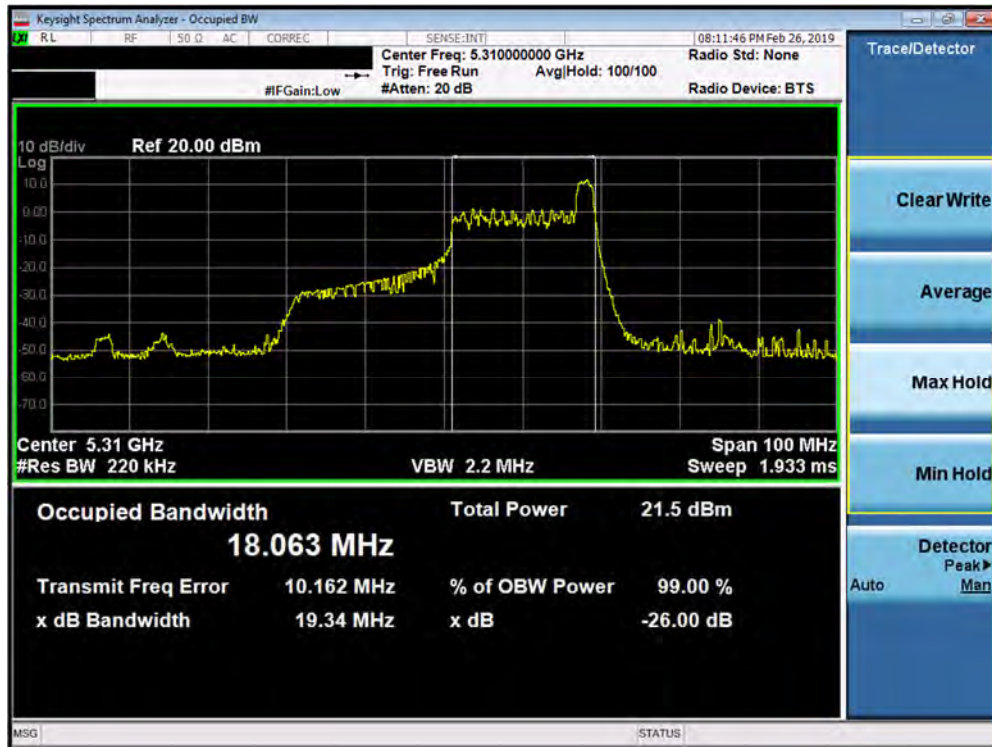


Plot 7-9. 26dB Bandwidth Plot SISO ANT1 (20MHz BW 802.11ax – 26 Tones (UNII Band 2A) – Ch. 64)

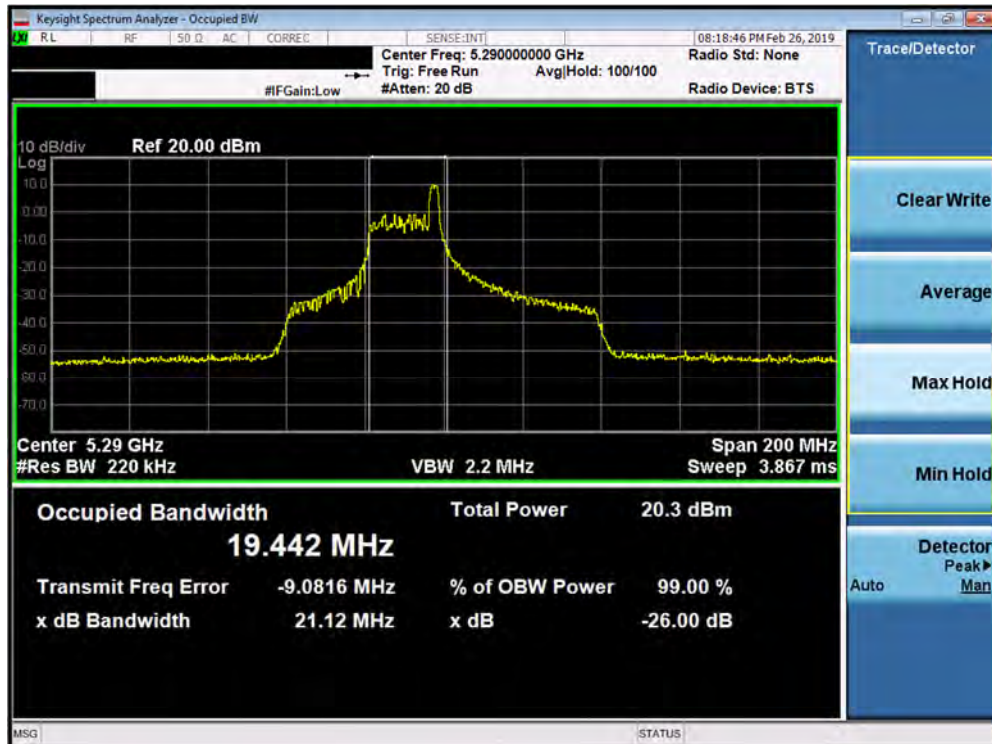


Plot 7-10. 26dB Bandwidth Plot SISO ANT1 (40MHz BW 802.11ax – 26 Tones (UNII Band 2A) – Ch. 54)

|                                         |                                               |                                       |                |                                 |
|-----------------------------------------|-----------------------------------------------|---------------------------------------|----------------|---------------------------------|
| FCC ID: A3LSMF907N                      | <b>PCTEST</b><br>ENGINEERING LABORATORY, INC. | MEASUREMENT REPORT<br>(CERTIFICATION) | <b>SAMSUNG</b> | Approved by:<br>Quality Manager |
| Test Report S/N:<br>1M1902200029-08.A3L | Test Dates:<br>01/22- 04/05/2019              | EUT Type:<br>Portable Handset         |                | Page 21 of 330                  |

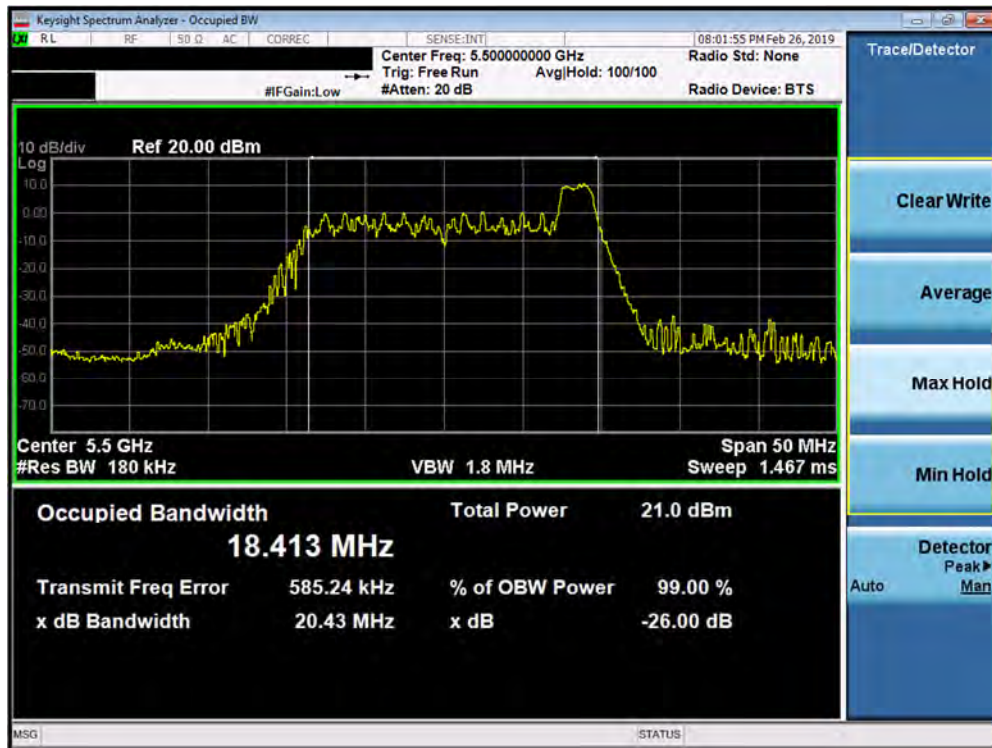


Plot 7-11. 26dB Bandwidth Plot SISO ANT1 (40MHz BW 802.11ax – 26 Tones (UNII Band 2A) – Ch. 62)

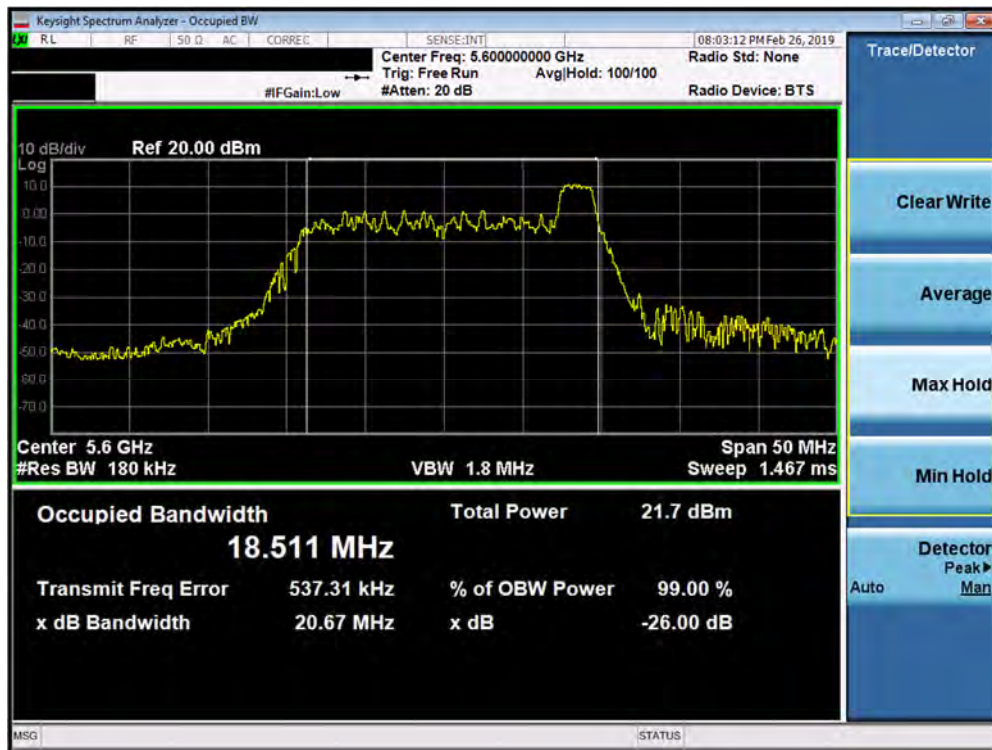


Plot 7-12. 26dB Bandwidth Plot SISO ANT1 (80MHz BW 802.11ax – 26 Tones (UNII Band 2A) – Ch. 58)

|                                         |                                               |                                       |                |                                 |
|-----------------------------------------|-----------------------------------------------|---------------------------------------|----------------|---------------------------------|
| FCC ID: A3LSMF907N                      | <b>PCTEST</b><br>ENGINEERING LABORATORY, INC. | MEASUREMENT REPORT<br>(CERTIFICATION) | <b>SAMSUNG</b> | Approved by:<br>Quality Manager |
| Test Report S/N:<br>1M1902200029-08.A3L | Test Dates:<br>01/22- 04/05/2019              | EUT Type:<br>Portable Handset         |                | Page 22 of 330                  |

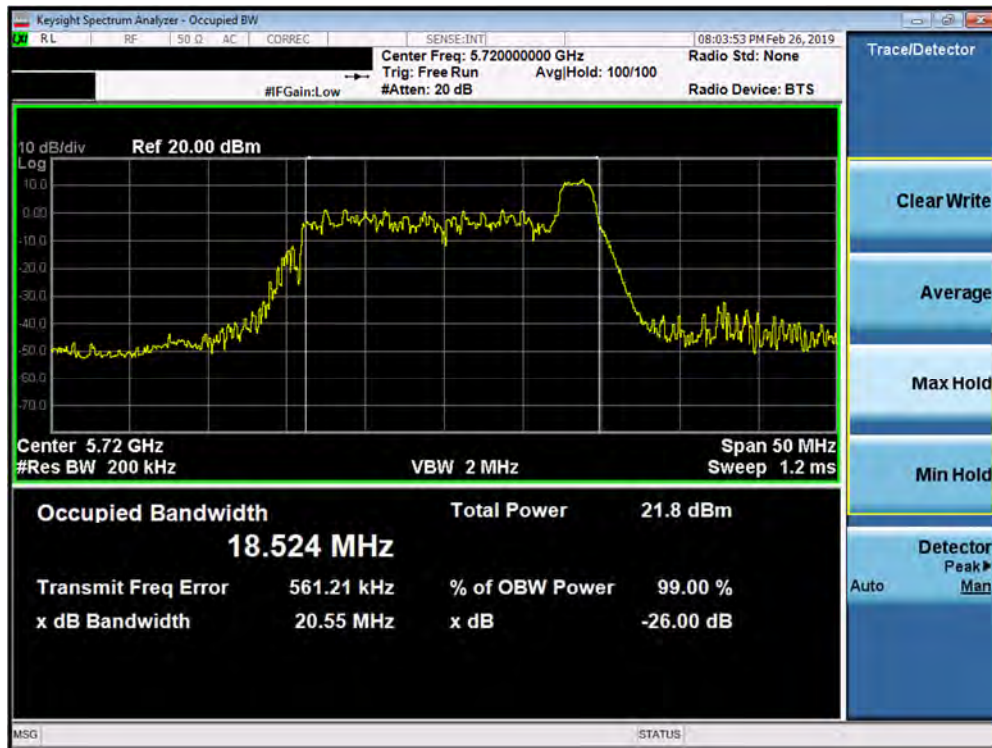


Plot 7-13. 26dB Bandwidth Plot SISO ANT1 (20MHz BW 802.11ax – 26 Tones (UNII Band 2C) – Ch. 100)

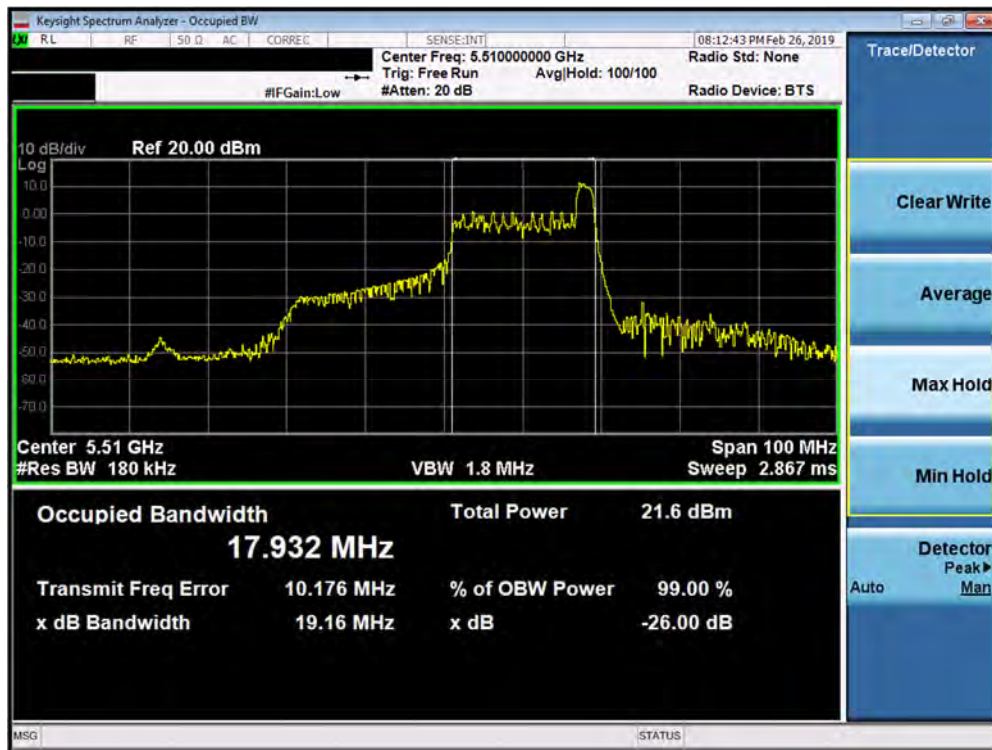


Plot 7-14. 26dB Bandwidth Plot SISO ANT1 (20MHz BW 802.11ax – 26 Tones (UNII Band 2C) – Ch. 120)

|                                         |                                               |                                       |                |                                 |
|-----------------------------------------|-----------------------------------------------|---------------------------------------|----------------|---------------------------------|
| FCC ID: A3LSMF907N                      | <b>PCTEST</b><br>ENGINEERING LABORATORY, INC. | MEASUREMENT REPORT<br>(CERTIFICATION) | <b>SAMSUNG</b> | Approved by:<br>Quality Manager |
| Test Report S/N:<br>1M1902200029-08.A3L | Test Dates:<br>01/22- 04/05/2019              | EUT Type:<br>Portable Handset         |                | Page 23 of 330                  |

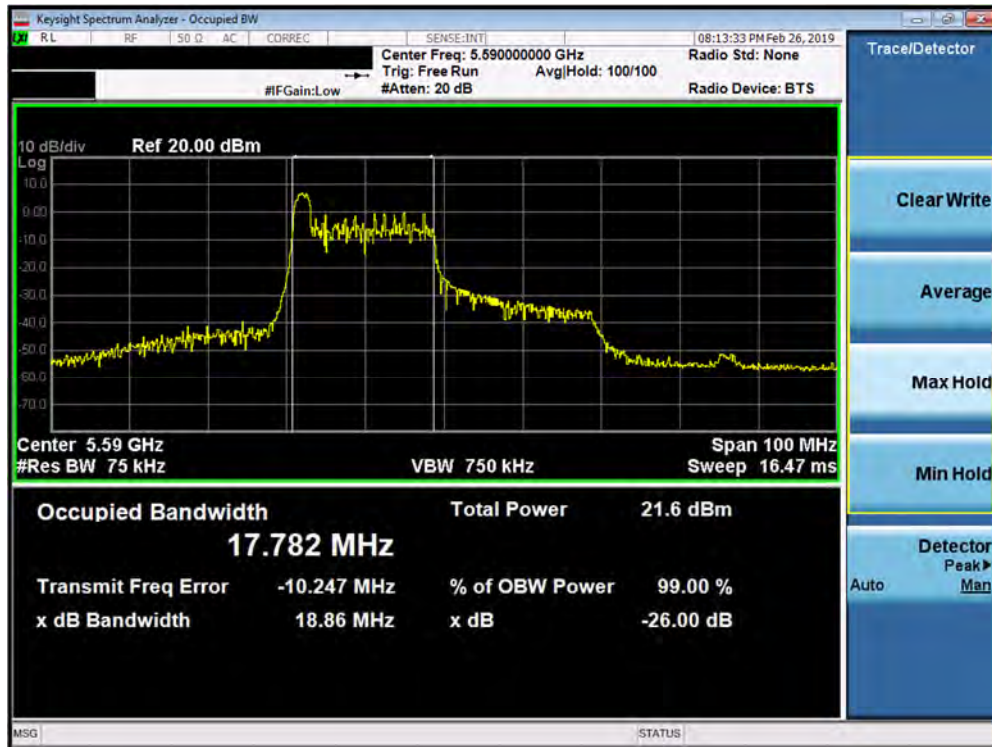


Plot 7-15. 26dB Bandwidth Plot SISO ANT1 (20MHz BW 802.11ax – 26 Tones (UNII Band 2C) – Ch. 144)

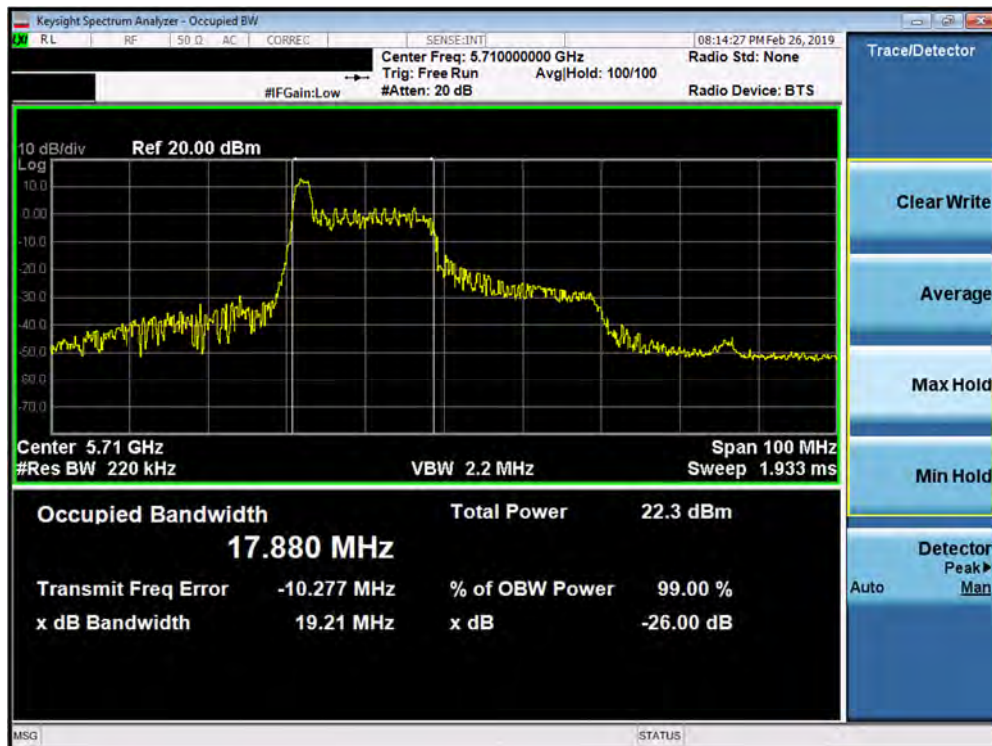


Plot 7-16. 26dB Bandwidth Plot SISO ANT1 (40MHz BW 802.11ax – 26 Tones (UNII Band 2C) – Ch. 102)

|                                         |                                               |                                       |                |                                 |
|-----------------------------------------|-----------------------------------------------|---------------------------------------|----------------|---------------------------------|
| FCC ID: A3LSMF907N                      | <b>PCTEST</b><br>ENGINEERING LABORATORY, INC. | MEASUREMENT REPORT<br>(CERTIFICATION) | <b>SAMSUNG</b> | Approved by:<br>Quality Manager |
| Test Report S/N:<br>1M1902200029-08.A3L | Test Dates:<br>01/22- 04/05/2019              | EUT Type:<br>Portable Handset         |                | Page 24 of 330                  |

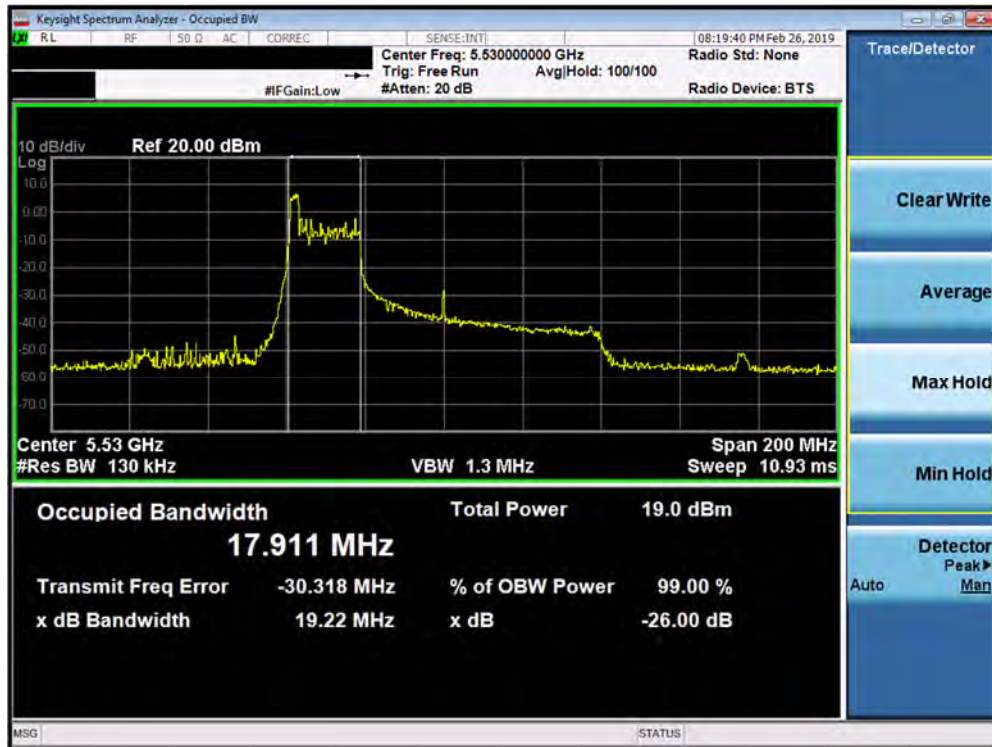


Plot 7-17. 26dB Bandwidth Plot SISO ANT1 (40MHz BW 802.11ax – 26 Tones (UNII Band 2C) – Ch. 118)



Plot 7-18. 26dB Bandwidth Plot SISO ANT1 (40MHz BW 802.11ax – 26 Tones (UNII Band 2C) – Ch. 142)

|                                         |                                              |                               |  |                                 |
|-----------------------------------------|----------------------------------------------|-------------------------------|--|---------------------------------|
| FCC ID: A3LSMF907N                      | <b>MEASUREMENT REPORT</b><br>(CERTIFICATION) |                               |  | Approved by:<br>Quality Manager |
| Test Report S/N:<br>1M1902200029-08.A3L | Test Dates:<br>01/22- 04/05/2019             | EUT Type:<br>Portable Handset |  | Page 25 of 330                  |



Plot 7-19. 26dB Bandwidth Plot SISO ANT1 (80MHz BW 802.11ax – 26 Tones (UNII Band 2C) – Ch. 106)



Plot 7-20. 26dB Bandwidth Plot SISO ANT1 (80MHz BW 802.11ax – 26 Tones (UNII Band 2C) – Ch. 122)

|                                         |                                               |                                       |                |                                 |
|-----------------------------------------|-----------------------------------------------|---------------------------------------|----------------|---------------------------------|
| FCC ID: A3LSMF907N                      | <b>PCTEST</b><br>ENGINEERING LABORATORY, INC. | MEASUREMENT REPORT<br>(CERTIFICATION) | <b>SAMSUNG</b> | Approved by:<br>Quality Manager |
| Test Report S/N:<br>1M1902200029-08.A3L | Test Dates:<br>01/22- 04/05/2019              | EUT Type:<br>Portable Handset         |                | Page 26 of 330                  |



**Plot 7-21. 26dB Bandwidth Plot SISO ANT1 (80MHz BW 802.11ax – 26 Tones (UNII Band 2C) – Ch. 138)**

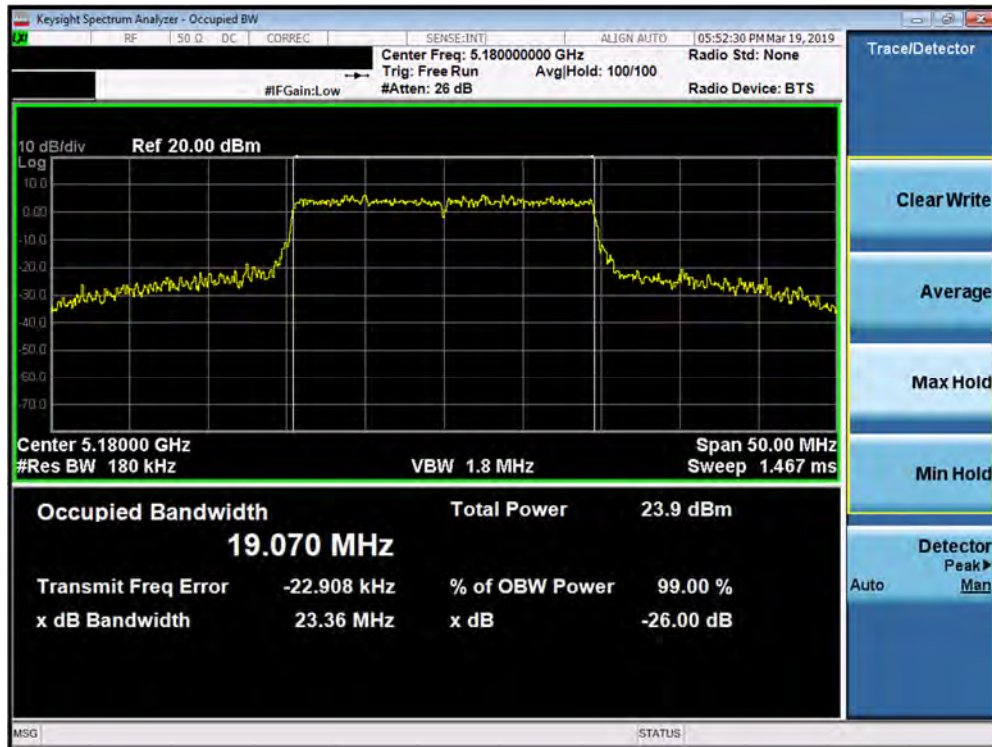
|                                                |                                                                                                                                                                                                                         |                                      |                                        |
|------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------|----------------------------------------|
| FCC ID: A3LSMF907N                             |  <b>MEASUREMENT REPORT<br/>(CERTIFICATION)</b>  |                                      | <b>Approved by:</b><br>Quality Manager |
| <b>Test Report S/N:</b><br>1M1902200029-08.A3L | <b>Test Dates:</b><br>01/22- 04/05/2019                                                                                                                                                                                 | <b>EUT Type:</b><br>Portable Handset | Page 27 of 330                         |

## SISO Antenna-1 26 dB Bandwidth Measurements (Full Tones)

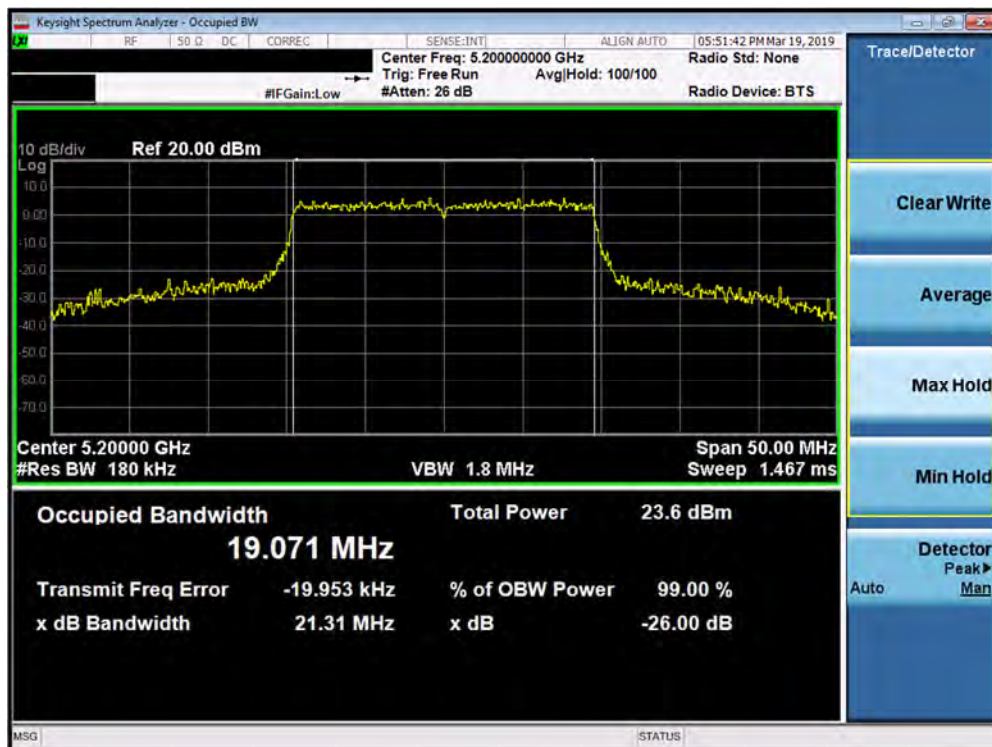
|         | Frequency [MHz] | Channel No. | 802.11 Mode | Tones | Data Rate [Mbps] | Measured 26dB Bandwidth [MHz] |
|---------|-----------------|-------------|-------------|-------|------------------|-------------------------------|
| Band 1  | 5180            | 36          | ax (20MHz)  | 242T  | MCS0             | 23.36                         |
|         | 5200            | 40          | ax (20MHz)  | 242T  | MCS0             | 21.31                         |
|         | 5240            | 48          | ax (20MHz)  | 242T  | MCS0             | 21.55                         |
|         | 5190            | 38          | ax (40MHz)  | 484T  | MCS0             | 40.11                         |
|         | 5230            | 46          | ax (40MHz)  | 484T  | MCS0             | 40.03                         |
|         | 5210            | 42          | ax (80MHz)  | 996T  | MCS0             | 80.67                         |
| Band 2A | 5260            | 52          | ax (20MHz)  | 242T  | MCS0             | 26.03                         |
|         | 5280            | 56          | ax (20MHz)  | 242T  | MCS0             | 22.50                         |
|         | 5320            | 64          | ax (20MHz)  | 242T  | MCS0             | 21.81                         |
|         | 5270            | 54          | ax (40MHz)  | 484T  | MCS0             | 39.65                         |
|         | 5310            | 62          | ax (40MHz)  | 484T  | MCS0             | 40.28                         |
|         | 5290            | 58          | ax (80MHz)  | 996T  | MCS0             | 80.89                         |
| Band 2C | 5500            | 100         | ax (20MHz)  | 242T  | MCS0             | 25.02                         |
|         | 5600            | 120         | ax (20MHz)  | 242T  | MCS0             | 36.20                         |
|         | 5720            | 144         | ax (20MHz)  | 242T  | MCS0             | 32.61                         |
|         | 5510            | 102         | ax (40MHz)  | 484T  | MCS0             | 39.87                         |
|         | 5590            | 118         | ax (40MHz)  | 484T  | MCS0             | 40.36                         |
|         | 5710            | 142         | ax (40MHz)  | 484T  | MCS0             | 39.99                         |
|         | 5530            | 106         | ax (80MHz)  | 996T  | MCS0             | 81.02                         |
|         | 5610            | 122         | ax (80MHz)  | 996T  | MCS0             | 80.95                         |
|         | 5690            | 138         | ax (80MHz)  | 996T  | MCS0             | 81.76                         |

**Table 7-3. Conducted Bandwidth Measurements SISO ANT1 (Full Tones)**

|                                         |                                                                                     |                                       |                                                                                       |                                 |
|-----------------------------------------|-------------------------------------------------------------------------------------|---------------------------------------|---------------------------------------------------------------------------------------|---------------------------------|
| FCC ID: A3LSMF907N                      |  | MEASUREMENT REPORT<br>(CERTIFICATION) |  | Approved by:<br>Quality Manager |
| Test Report S/N:<br>1M1902200029-08.A3L | Test Dates:<br>01/22- 04/05/2019                                                    | EUT Type:<br>Portable Handset         |                                                                                       | Page 28 of 330                  |

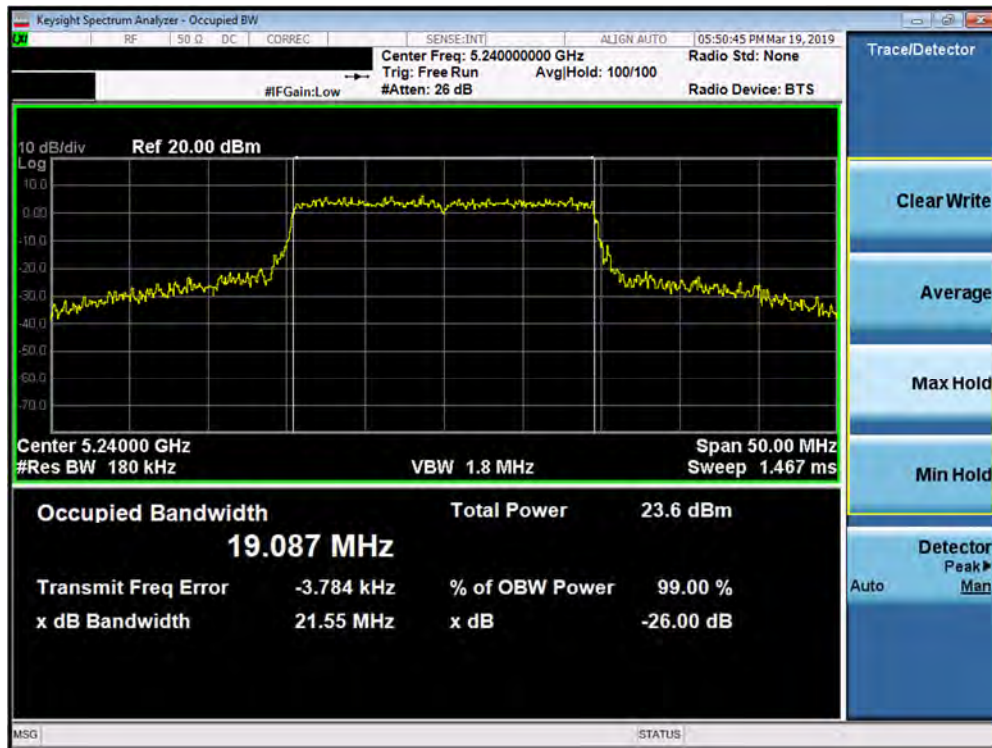


Plot 7-22. 26dB Bandwidth Plot SISO ANT1 (20MHz BW 802.11ax – 242 Tones (UNII Band 1) – Ch. 36)



Plot 7-23. 26dB Bandwidth Plot SISO ANT1 (20MHz BW 802.11ax – 242 Tones (UNII Band 1) – Ch. 40)

|                                         |                                               |                               |  |                                 |
|-----------------------------------------|-----------------------------------------------|-------------------------------|--|---------------------------------|
| FCC ID: A3LSMF907N                      | <b>MEASUREMENT REPORT<br/>(CERTIFICATION)</b> |                               |  | Approved by:<br>Quality Manager |
| Test Report S/N:<br>1M1902200029-08.A3L | Test Dates:<br>01/22- 04/05/2019              | EUT Type:<br>Portable Handset |  | Page 29 of 330                  |

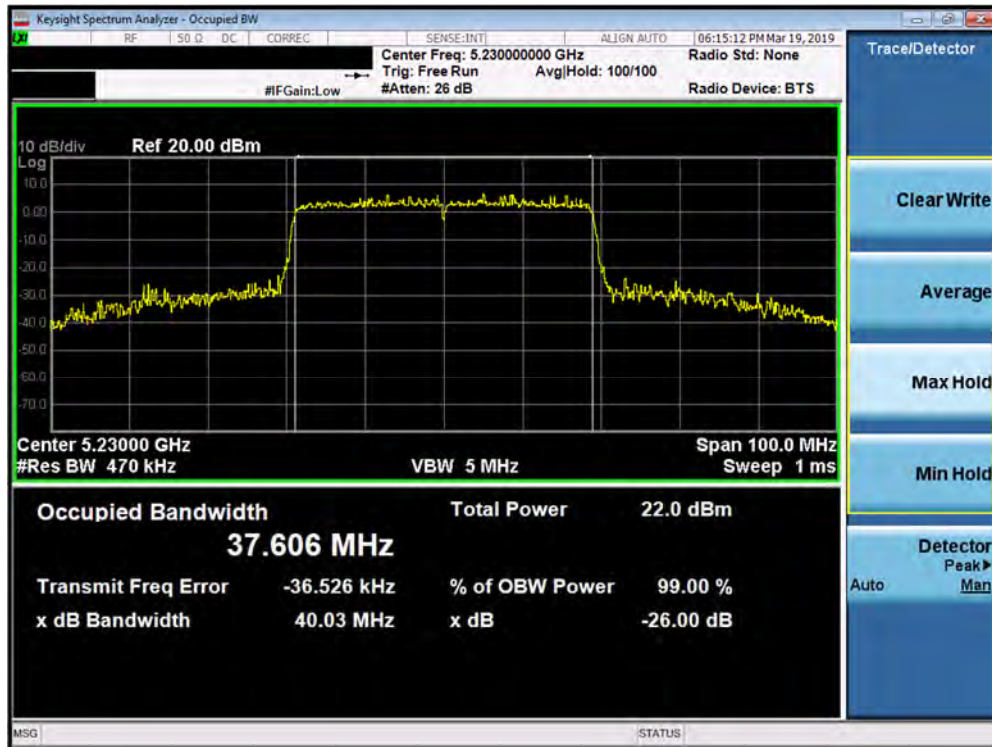


Plot 7-24. 26dB Bandwidth Plot SISO ANT1 (20MHz BW 802.11ax – 242 Tones (UNII Band 1) – Ch. 48)



Plot 7-25. 26dB Bandwidth Plot SISO ANT1 (40MHz BW 802.11ax – 484 Tones (UNII Band 1) – Ch. 38)

|                                         |                                               |                                       |                |                                 |
|-----------------------------------------|-----------------------------------------------|---------------------------------------|----------------|---------------------------------|
| FCC ID: A3LSMF907N                      | <b>PCTEST</b><br>ENGINEERING LABORATORY, INC. | MEASUREMENT REPORT<br>(CERTIFICATION) | <b>SAMSUNG</b> | Approved by:<br>Quality Manager |
| Test Report S/N:<br>1M1902200029-08.A3L | Test Dates:<br>01/22- 04/05/2019              | EUT Type:<br>Portable Handset         |                | Page 30 of 330                  |

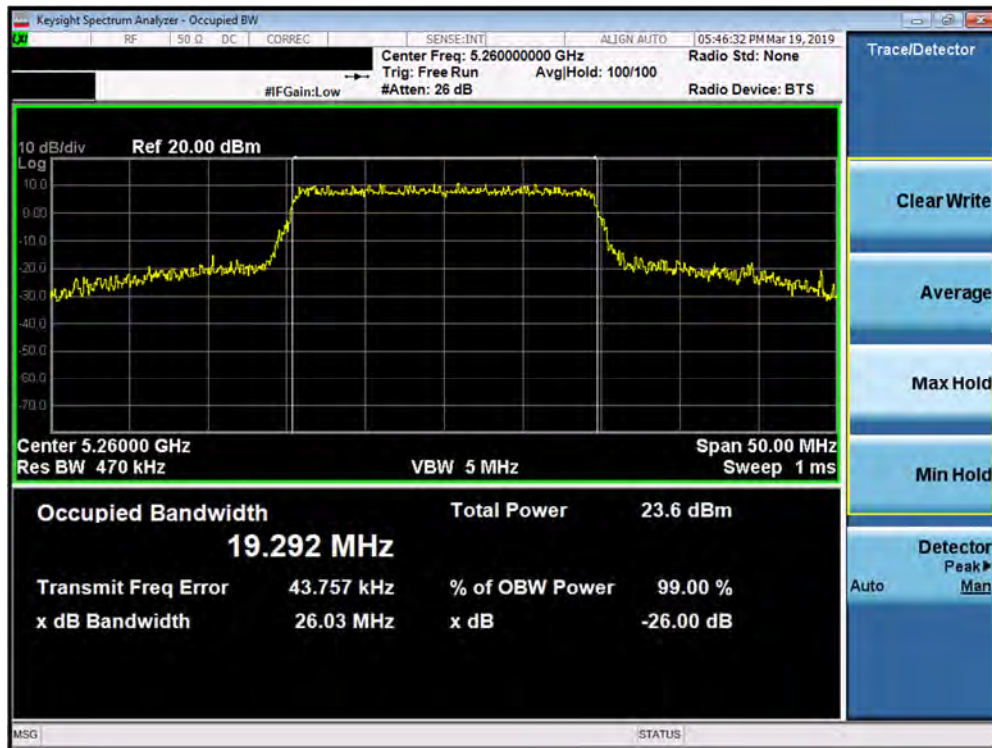


Plot 7-26. 26dB Bandwidth Plot SISO ANT1 (40MHz BW 802.11ax – 484 Tones (UNII Band 1) – Ch. 46)

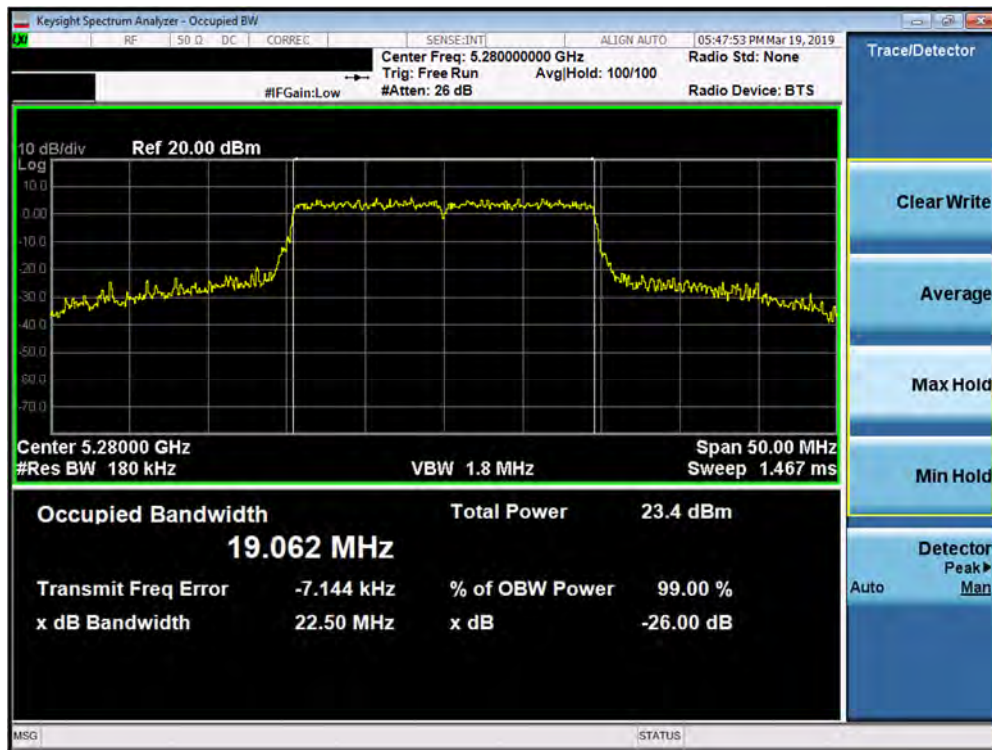


Plot 7-27. 26dB Bandwidth Plot SISO ANT1 (80MHz BW 802.11ax – 996 Tones (UNII Band 1) – Ch. 42)

|                                         |                                               |                                       |                |                                 |
|-----------------------------------------|-----------------------------------------------|---------------------------------------|----------------|---------------------------------|
| FCC ID: A3LSMF907N                      | <b>PCTEST</b><br>ENGINEERING LABORATORY, INC. | MEASUREMENT REPORT<br>(CERTIFICATION) | <b>SAMSUNG</b> | Approved by:<br>Quality Manager |
| Test Report S/N:<br>1M1902200029-08.A3L | Test Dates:<br>01/22- 04/05/2019              | EUT Type:<br>Portable Handset         |                | Page 31 of 330                  |

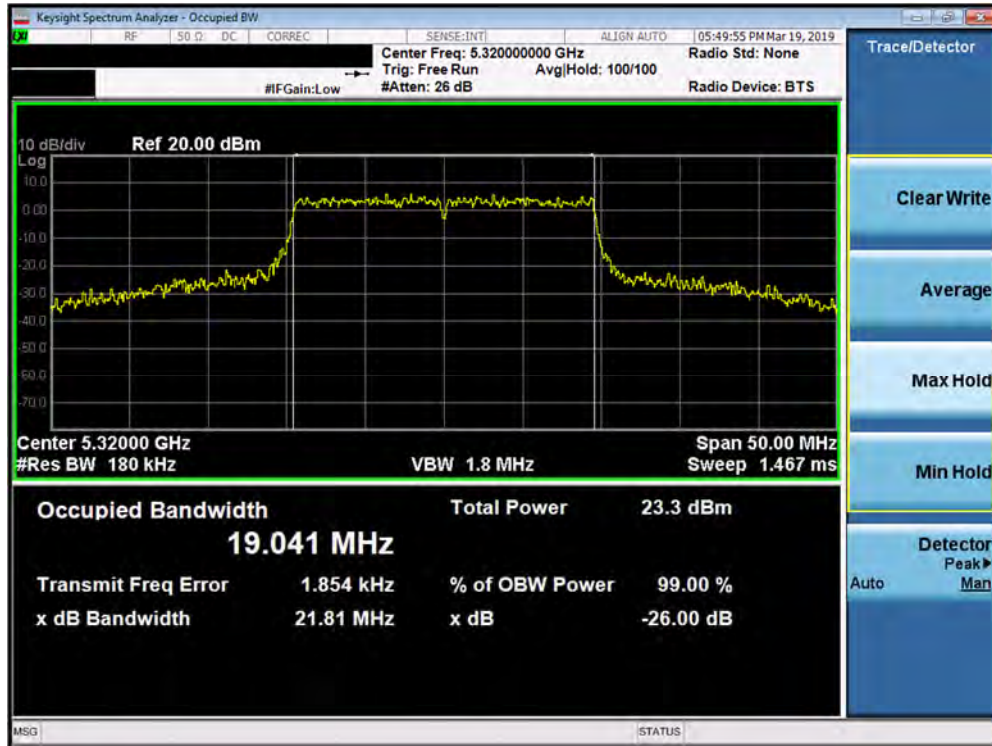


Plot 7-28. 26dB Bandwidth Plot SISO ANT1 (20MHz BW 802.11ax – 242 Tones (UNII Band 2A) – Ch. 52)

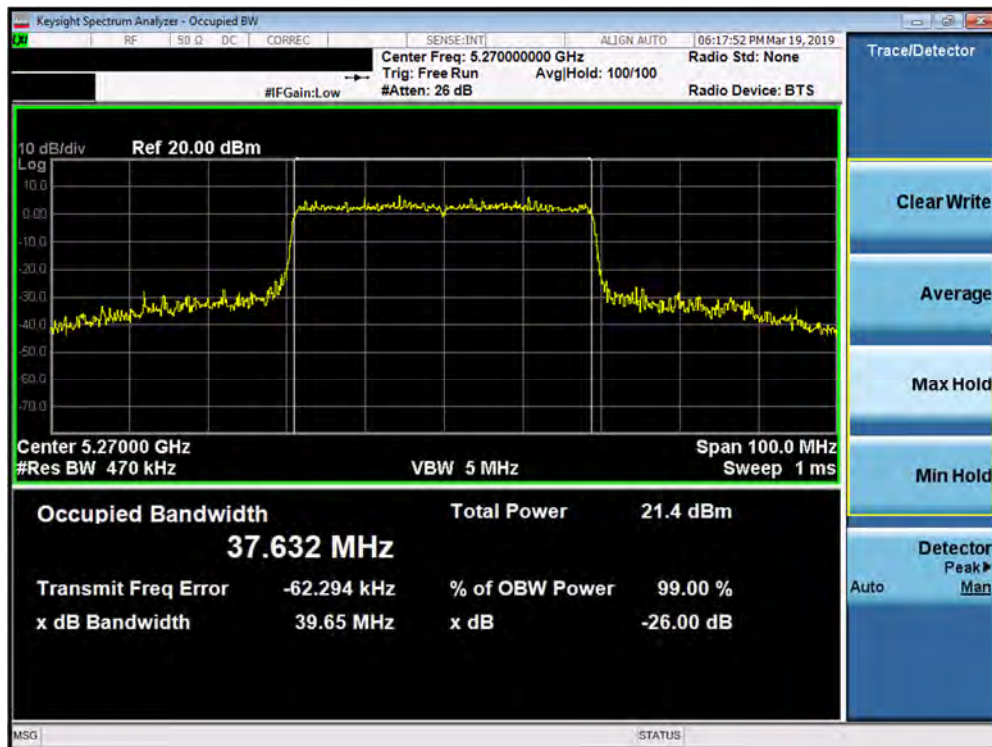


Plot 7-29. 26dB Bandwidth Plot SISO ANT1 (20MHz BW 802.11ax – 242 Tones (UNII Band 2A) – Ch. 56)

|                                         |                                              |                               |  |                                 |
|-----------------------------------------|----------------------------------------------|-------------------------------|--|---------------------------------|
| FCC ID: A3LSMF907N                      | <b>MEASUREMENT REPORT</b><br>(CERTIFICATION) |                               |  | Approved by:<br>Quality Manager |
| Test Report S/N:<br>1M1902200029-08.A3L | Test Dates:<br>01/22- 04/05/2019             | EUT Type:<br>Portable Handset |  | Page 32 of 330                  |

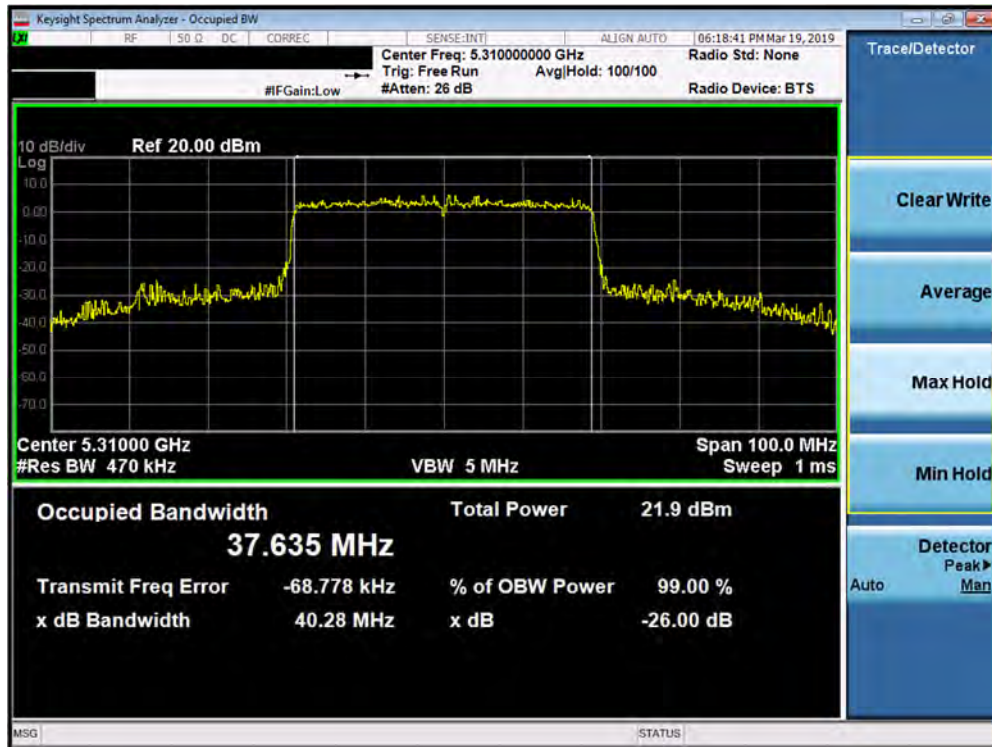


Plot 7-30. 26dB Bandwidth Plot SISO ANT1 (20MHz BW 802.11ax – 242 Tones (UNII Band 2A) – Ch. 64)



Plot 7-31. 26dB Bandwidth Plot SISO ANT1 (40MHz BW 802.11ax – 484 Tones (UNII Band 2A) – Ch. 54)

|                                         |                                              |                               |  |                                 |
|-----------------------------------------|----------------------------------------------|-------------------------------|--|---------------------------------|
| FCC ID: A3LSMF907N                      | <b>MEASUREMENT REPORT</b><br>(CERTIFICATION) |                               |  | Approved by:<br>Quality Manager |
| Test Report S/N:<br>1M1902200029-08.A3L | Test Dates:<br>01/22- 04/05/2019             | EUT Type:<br>Portable Handset |  | Page 33 of 330                  |

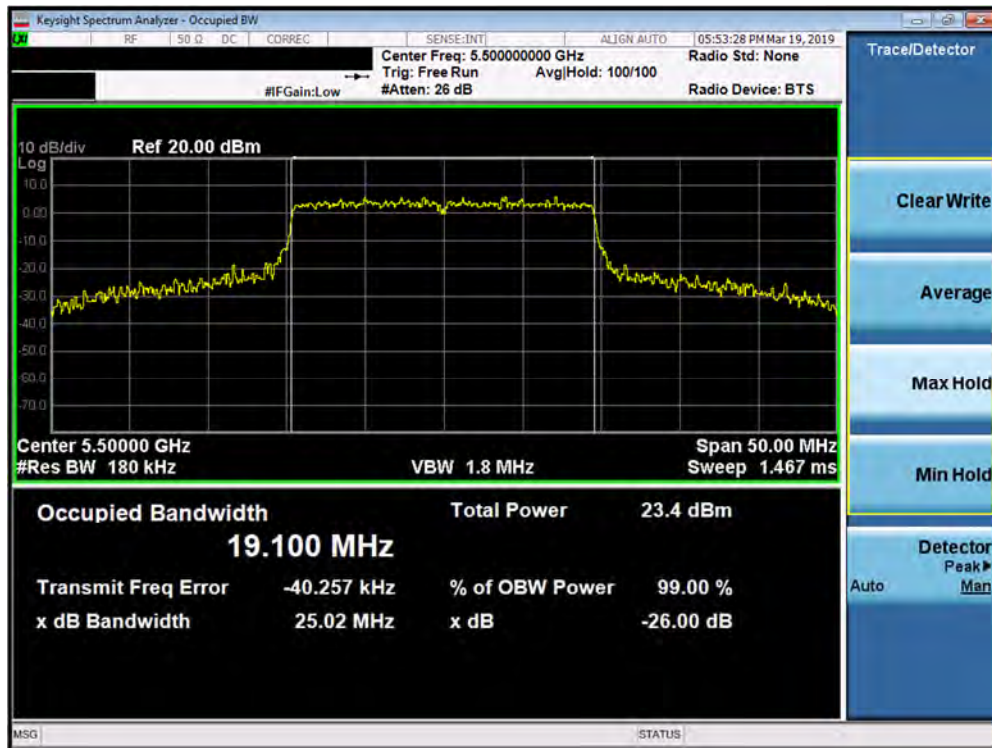


Plot 7-32. 26dB Bandwidth Plot SISO ANT1 (40MHz BW 802.11ax – 484 Tones (UNII Band 2A) – Ch. 62)

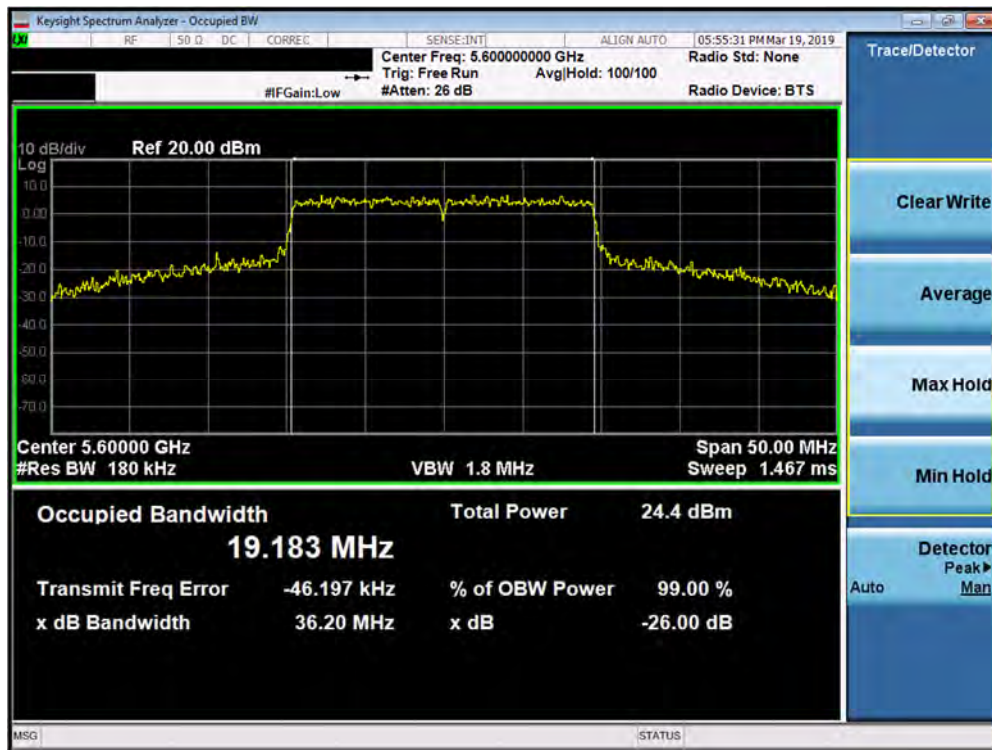


Plot 7-33. 26dB Bandwidth Plot SISO ANT1 (80MHz BW 802.11ax – 996 Tones (UNII Band 2A) – Ch. 58)

|                                         |                                              |                               |  |                                 |
|-----------------------------------------|----------------------------------------------|-------------------------------|--|---------------------------------|
| FCC ID: A3LSMF907N                      | <b>MEASUREMENT REPORT</b><br>(CERTIFICATION) |                               |  | Approved by:<br>Quality Manager |
| Test Report S/N:<br>1M1902200029-08.A3L | Test Dates:<br>01/22- 04/05/2019             | EUT Type:<br>Portable Handset |  | Page 34 of 330                  |

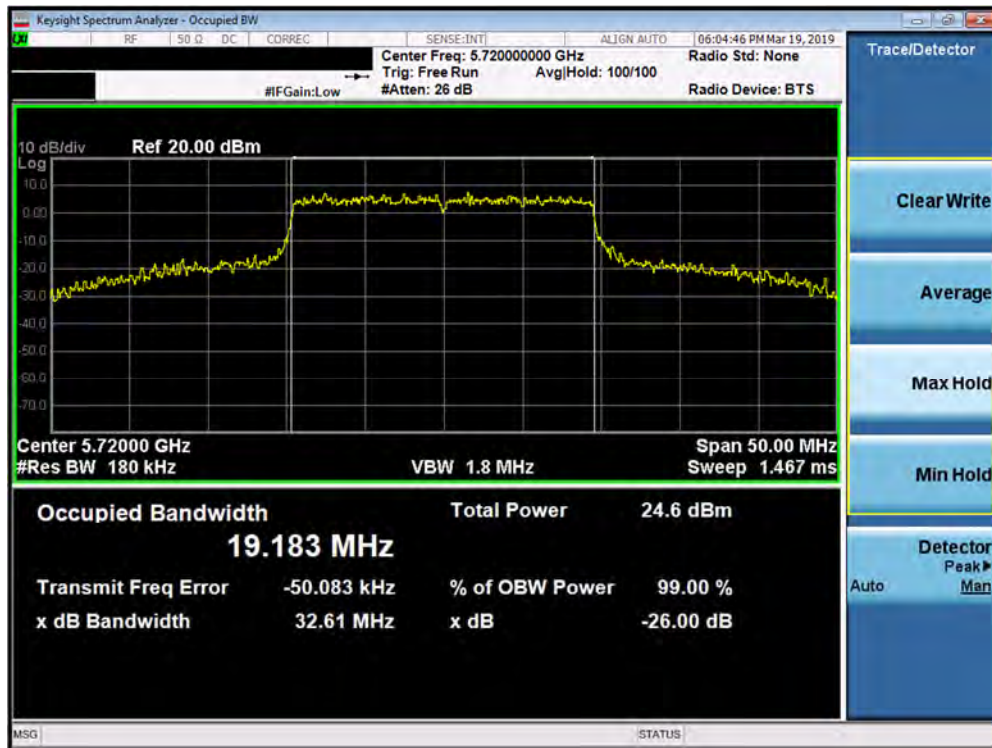


Plot 7-34. 26dB Bandwidth Plot SISO ANT1 (20MHz BW 802.11ax – 242 Tones (UNII Band 2C) – Ch. 100)



Plot 7-35. 26dB Bandwidth Plot SISO ANT1 (20MHz BW 802.11ax – 242 Tones (UNII Band 2C) – Ch. 120)

|                                         |                                               |                                       |                |                                 |
|-----------------------------------------|-----------------------------------------------|---------------------------------------|----------------|---------------------------------|
| FCC ID: A3LSMF907N                      | <b>PCTEST</b><br>ENGINEERING LABORATORY, INC. | MEASUREMENT REPORT<br>(CERTIFICATION) | <b>SAMSUNG</b> | Approved by:<br>Quality Manager |
| Test Report S/N:<br>1M1902200029-08.A3L | Test Dates:<br>01/22- 04/05/2019              | EUT Type:<br>Portable Handset         |                | Page 35 of 330                  |

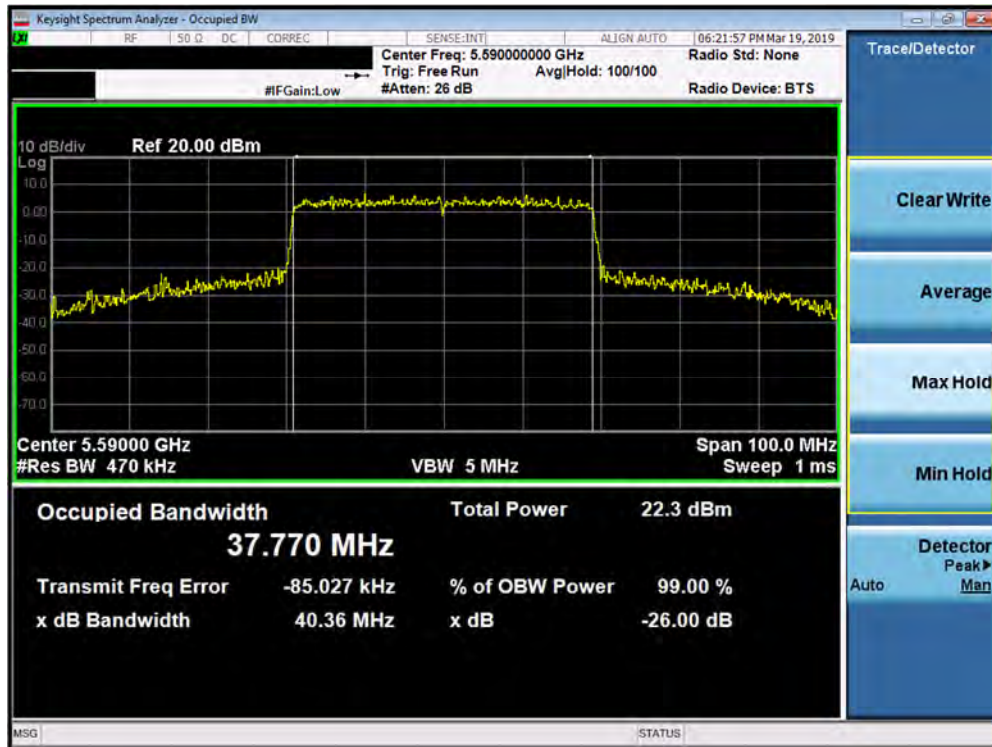


Plot 7-36. 26dB Bandwidth Plot SISO ANT1 (20MHz BW 802.11ax – 242 Tones (UNII Band 2C) – Ch. 144)

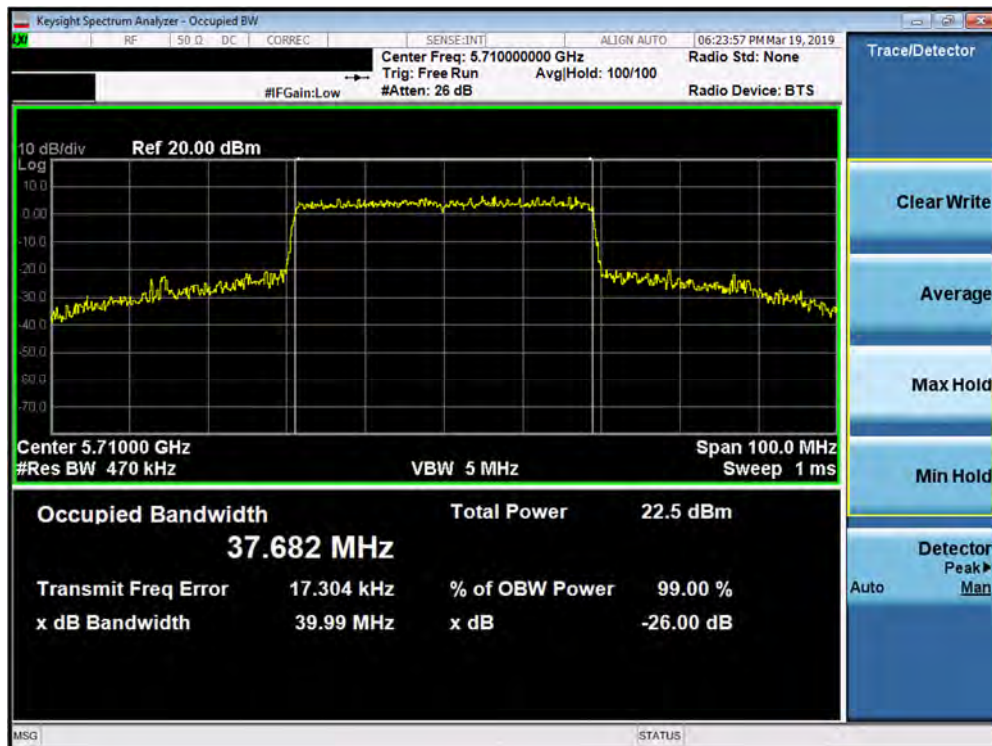


Plot 7-37. 26dB Bandwidth Plot SISO ANT1 (40MHz BW 802.11ax – 484 Tones (UNII Band 2C) – Ch. 102)

|                                         |                                               |                                       |                |                                 |
|-----------------------------------------|-----------------------------------------------|---------------------------------------|----------------|---------------------------------|
| FCC ID: A3LSMF907N                      | <b>PCTEST</b><br>ENGINEERING LABORATORY, INC. | MEASUREMENT REPORT<br>(CERTIFICATION) | <b>SAMSUNG</b> | Approved by:<br>Quality Manager |
| Test Report S/N:<br>1M1902200029-08.A3L | Test Dates:<br>01/22- 04/05/2019              | EUT Type:<br>Portable Handset         |                | Page 36 of 330                  |

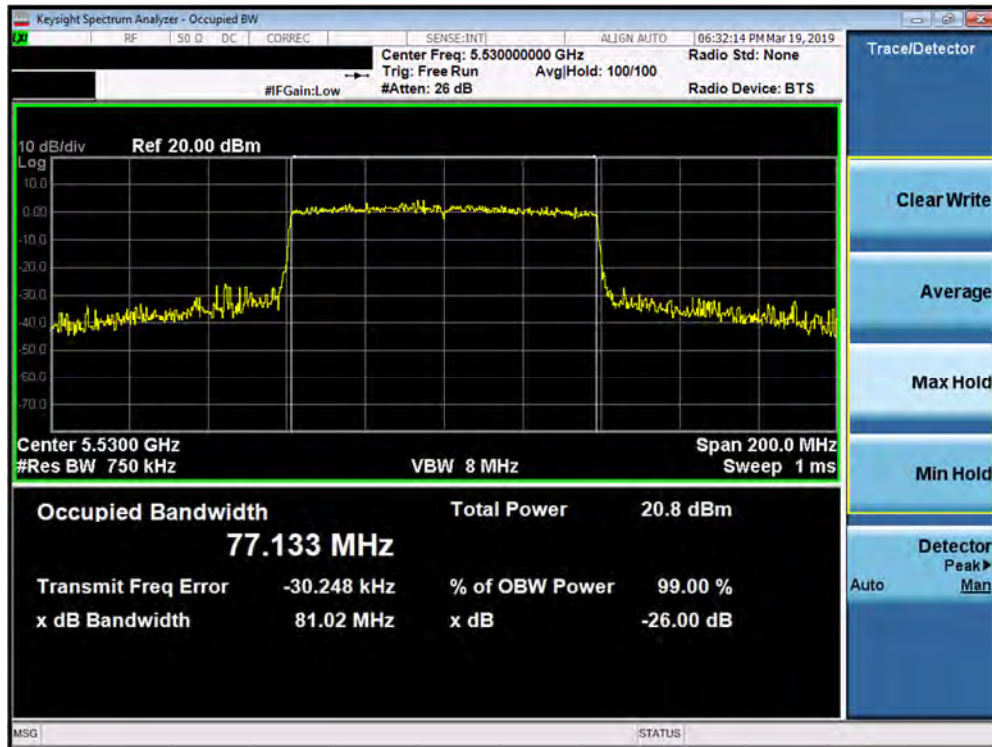


Plot 7-38. 26dB Bandwidth Plot SISO ANT1 (40MHz BW 802.11ax – 484 Tones (UNII Band 2C) – Ch. 118)

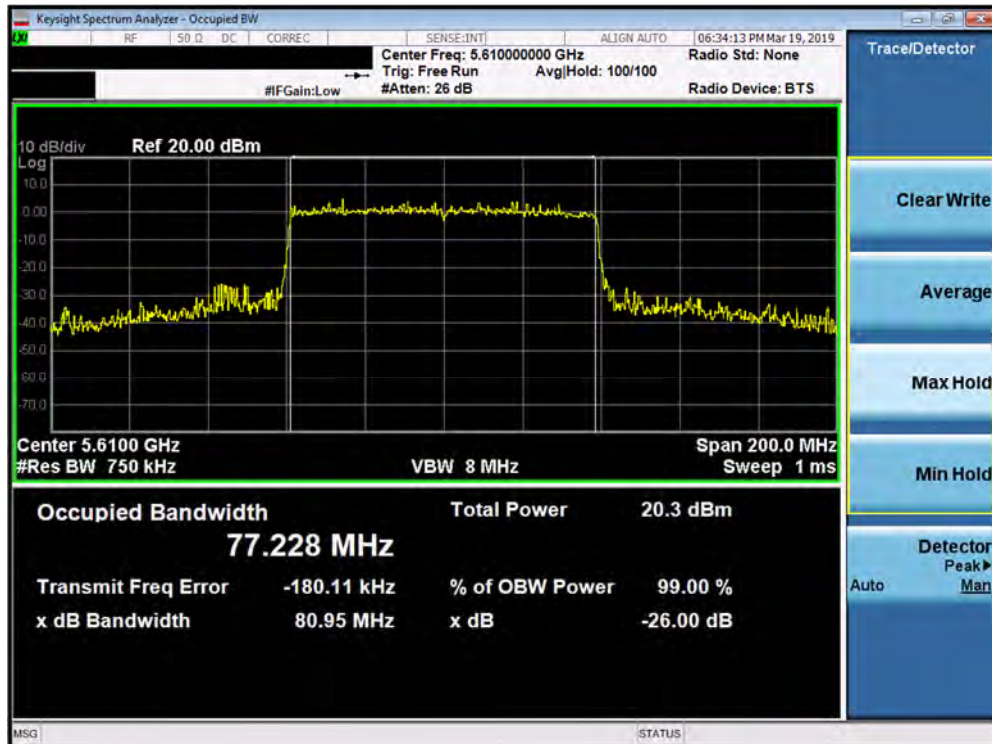


Plot 7-39. 26dB Bandwidth Plot SISO ANT1 (40MHz BW 802.11ax – 484 Tones (UNII Band 2C) – Ch. 142)

|                                         |                                               |                                       |                |                                 |
|-----------------------------------------|-----------------------------------------------|---------------------------------------|----------------|---------------------------------|
| FCC ID: A3LSMF907N                      | <b>PCTEST</b><br>ENGINEERING LABORATORY, INC. | MEASUREMENT REPORT<br>(CERTIFICATION) | <b>SAMSUNG</b> | Approved by:<br>Quality Manager |
| Test Report S/N:<br>1M1902200029-08.A3L | Test Dates:<br>01/22- 04/05/2019              | EUT Type:<br>Portable Handset         |                | Page 37 of 330                  |

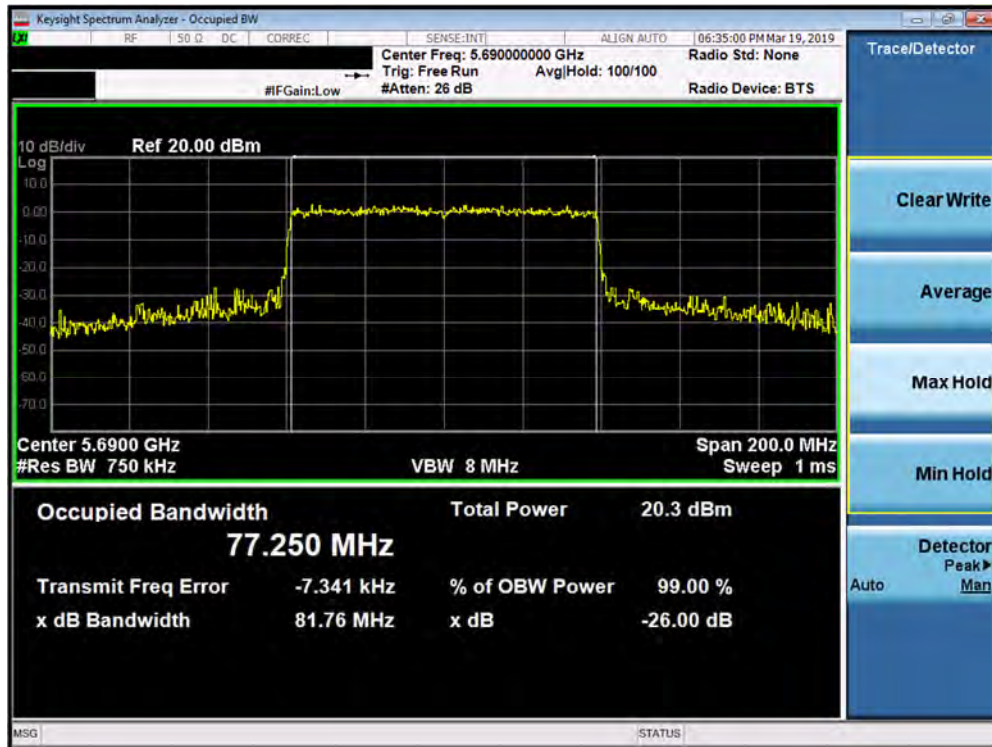


Plot 7-40. 26dB Bandwidth Plot SISO ANT1 (80MHz BW 802.11ax – 996 Tones (UNII Band 2C) – Ch. 106)



Plot 7-41. 26dB Bandwidth Plot SISO ANT1 (80MHz BW 802.11ax – 996 Tones (UNII Band 2C) – Ch. 122)

|                                         |                                               |                                       |                |                                 |
|-----------------------------------------|-----------------------------------------------|---------------------------------------|----------------|---------------------------------|
| FCC ID: A3LSMF907N                      | <b>PCTEST</b><br>ENGINEERING LABORATORY, INC. | MEASUREMENT REPORT<br>(CERTIFICATION) | <b>SAMSUNG</b> | Approved by:<br>Quality Manager |
| Test Report S/N:<br>1M1902200029-08.A3L | Test Dates:<br>01/22- 04/05/2019              | EUT Type:<br>Portable Handset         |                | Page 38 of 330                  |



Plot 7-42. 26dB Bandwidth Plot SISO ANT1 (80MHz BW 802.11ax – 996 Tones (UNII Band 2C) – Ch. 138)

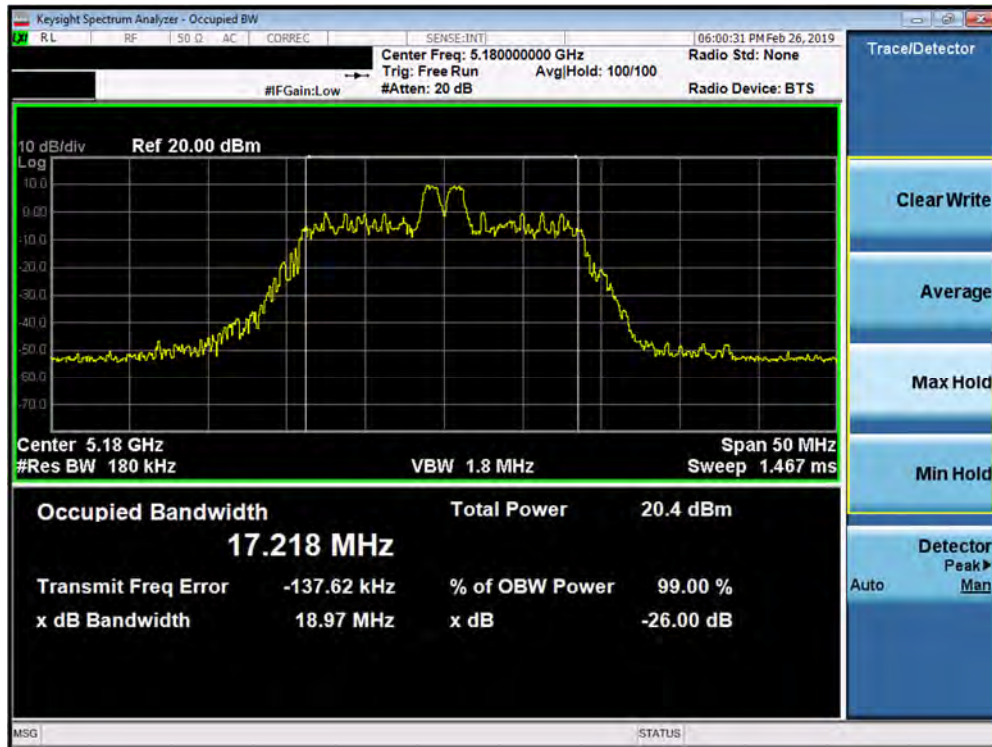
|                                         |                                               |                                       |                |                                 |
|-----------------------------------------|-----------------------------------------------|---------------------------------------|----------------|---------------------------------|
| FCC ID: A3LSMF907N                      | <b>PCTEST</b><br>ENGINEERING LABORATORY, INC. | MEASUREMENT REPORT<br>(CERTIFICATION) | <b>SAMSUNG</b> | Approved by:<br>Quality Manager |
| Test Report S/N:<br>1M1902200029-08.A3L | Test Dates:<br>01/22- 04/05/2019              | EUT Type:<br>Portable Handset         |                | Page 39 of 330                  |

## SISO Antenna-2 26dB Bandwidth Measurements (26 Tones)

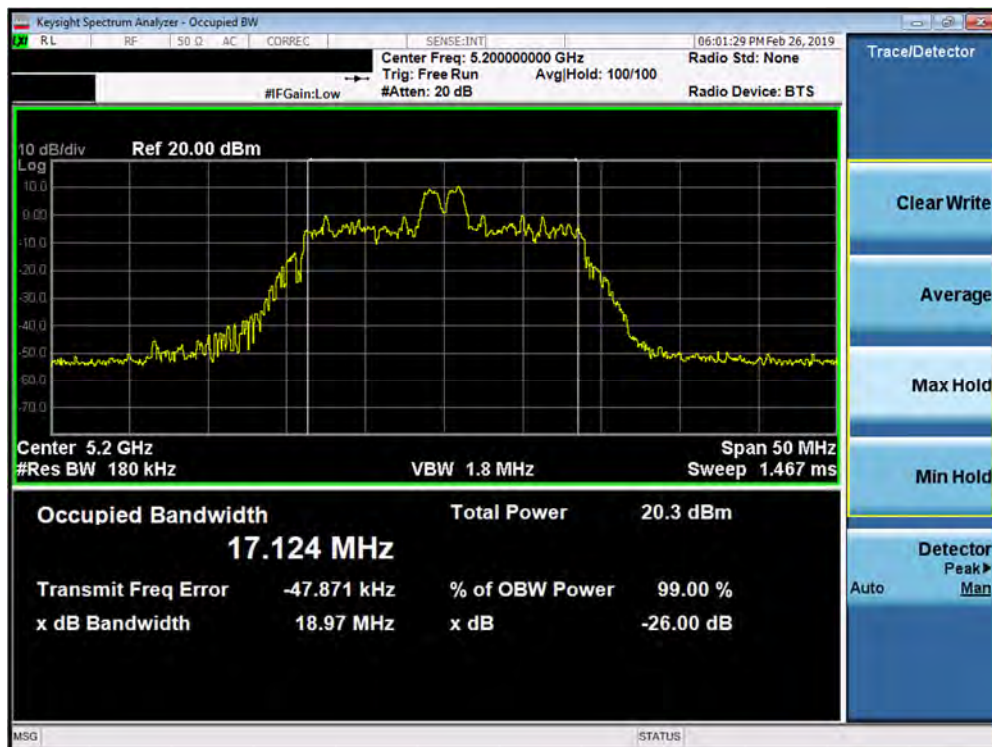
|         | Frequency [MHz] | Channel No. | 802.11 Mode | Tones | Data Rate [Mbps] | Measured 26dB Bandwidth [MHz] |
|---------|-----------------|-------------|-------------|-------|------------------|-------------------------------|
| Band 1  | 5180            | 36          | ax (20MHz)  | 26T   | MCS0             | 18.97                         |
|         | 5200            | 40          | ax (20MHz)  | 26T   | MCS0             | 18.97                         |
|         | 5240            | 48          | ax (20MHz)  | 26T   | MCS0             | 19.03                         |
|         | 5190            | 38          | ax (40MHz)  | 26T   | MCS0             | 19.32                         |
|         | 5230            | 46          | ax (40MHz)  | 26T   | MCS0             | 21.38                         |
|         | 5210            | 42          | ax (80MHz)  | 26T   | MCS0             | 19.52                         |
| Band 2A | 5260            | 52          | ax (20MHz)  | 26T   | MCS0             | 19.85                         |
|         | 5280            | 56          | ax (20MHz)  | 26T   | MCS0             | 19.76                         |
|         | 5320            | 64          | ax (20MHz)  | 26T   | MCS0             | 18.75                         |
|         | 5270            | 54          | ax (40MHz)  | 26T   | MCS0             | 20.13                         |
|         | 5310            | 62          | ax (40MHz)  | 26T   | MCS0             | 20.13                         |
|         | 5290            | 58          | ax (80MHz)  | 26T   | MCS0             | 22.20                         |
| Band 2C | 5500            | 100         | ax (20MHz)  | 26T   | MCS0             | 19.04                         |
|         | 5600            | 120         | ax (20MHz)  | 26T   | MCS0             | 18.69                         |
|         | 5720            | 144         | ax (20MHz)  | 26T   | MCS0             | 19.80                         |
|         | 5510            | 102         | ax (40MHz)  | 26T   | MCS0             | 19.40                         |
|         | 5590            | 118         | ax (40MHz)  | 26T   | MCS0             | 19.14                         |
|         | 5710            | 142         | ax (40MHz)  | 26T   | MCS0             | 22.95                         |
|         | 5530            | 106         | ax (80MHz)  | 26T   | MCS0             | 20.51                         |
|         | 5610            | 122         | ax (80MHz)  | 26T   | MCS0             | 18.69                         |
|         | 5690            | 138         | ax (80MHz)  | 26T   | MCS0             | 21.97                         |

**Table 7-4. Conducted Bandwidth Measurements SISO ANT2 (26 Tones)**

|                                         |                                                                                                                                                                                                                     |                               |                                 |
|-----------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------|---------------------------------|
| FCC ID: A3LSMF907N                      |  <b>MEASUREMENT REPORT (CERTIFICATION)</b>  |                               | Approved by:<br>Quality Manager |
| Test Report S/N:<br>1M1902200029-08.A3L | Test Dates:<br>01/22- 04/05/2019                                                                                                                                                                                    | EUT Type:<br>Portable Handset | Page 40 of 330                  |

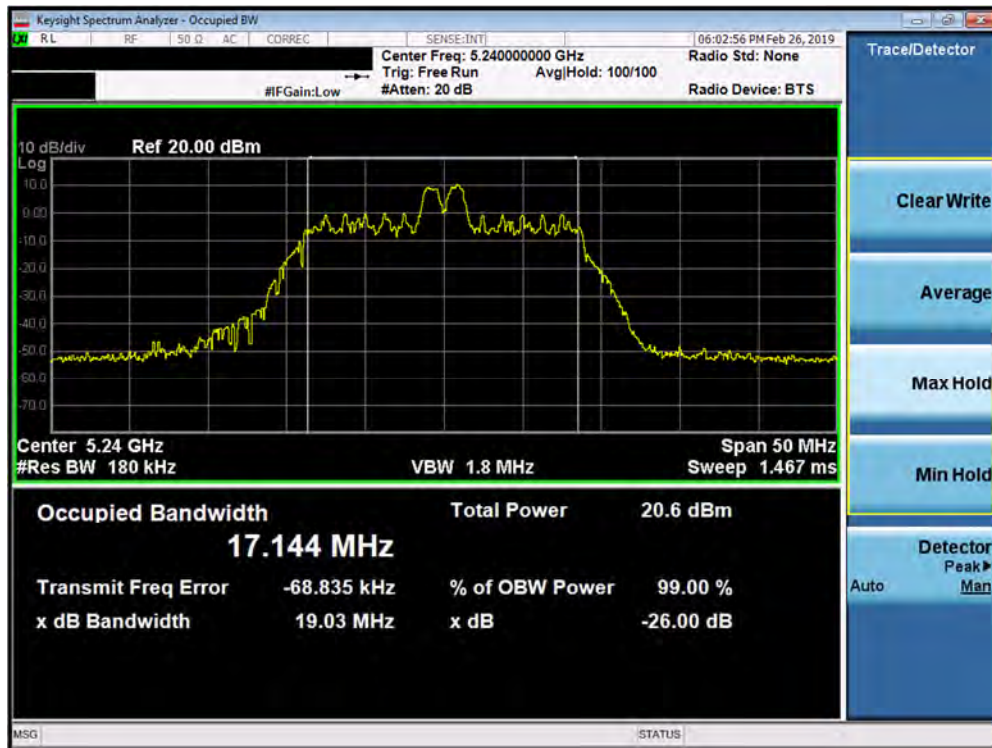


Plot 7-43. 26dB Bandwidth Plot SISO ANT2 (20MHz BW 802.11ax – 26 Tones (UNII Band 1) – Ch. 36)

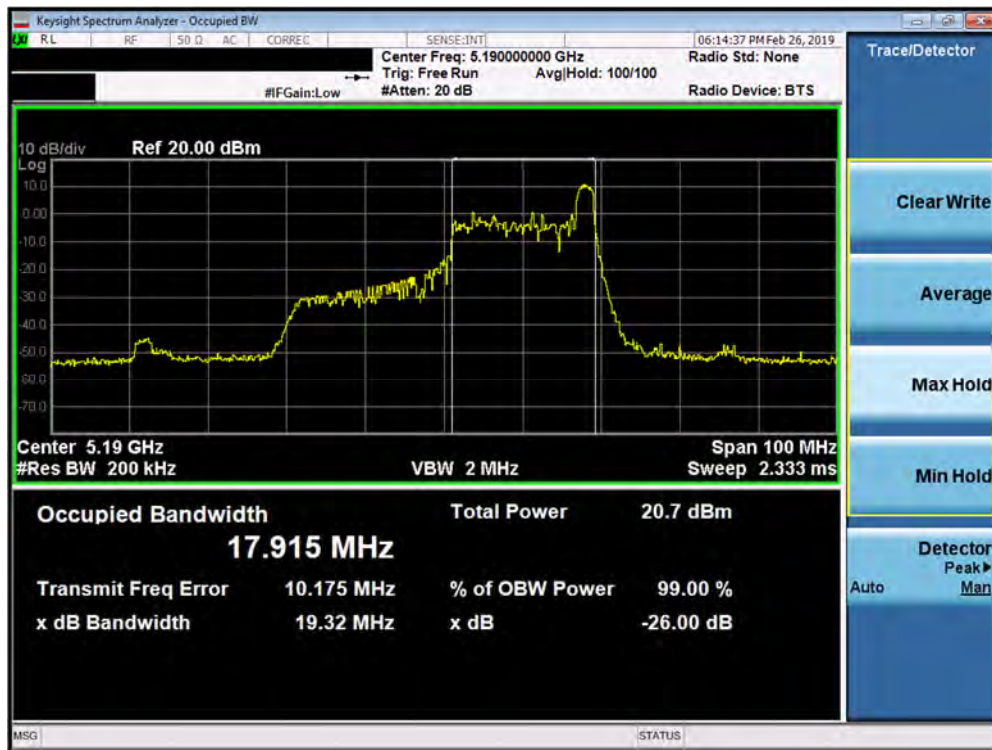


Plot 7-44. 26dB Bandwidth Plot SISO ANT2 (20MHz BW 802.11ax – 26 Tones (UNII Band 1) – Ch. 40)

|                                         |                                              |                               |  |                                 |
|-----------------------------------------|----------------------------------------------|-------------------------------|--|---------------------------------|
| FCC ID: A3LSMF907N                      | <b>MEASUREMENT REPORT</b><br>(CERTIFICATION) |                               |  | Approved by:<br>Quality Manager |
| Test Report S/N:<br>1M1902200029-08.A3L | Test Dates:<br>01/22- 04/05/2019             | EUT Type:<br>Portable Handset |  | Page 41 of 330                  |

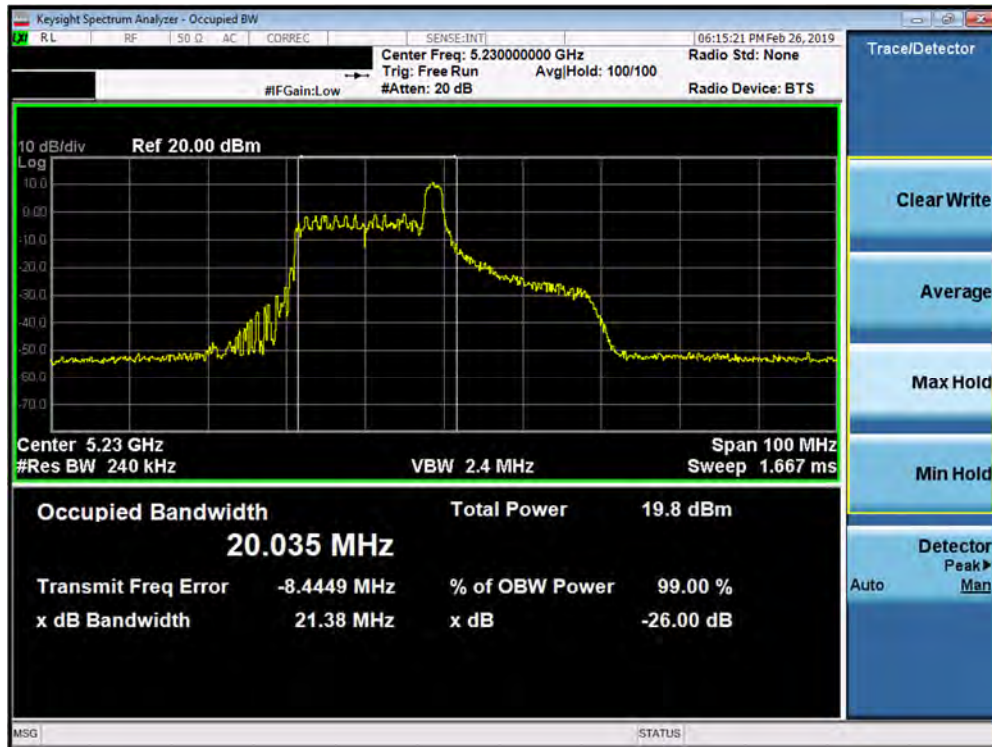


Plot 7-45. 26dB Bandwidth Plot SISO ANT2 (20MHz BW 802.11ax – 26 Tones (UNII Band 1) – Ch. 48)

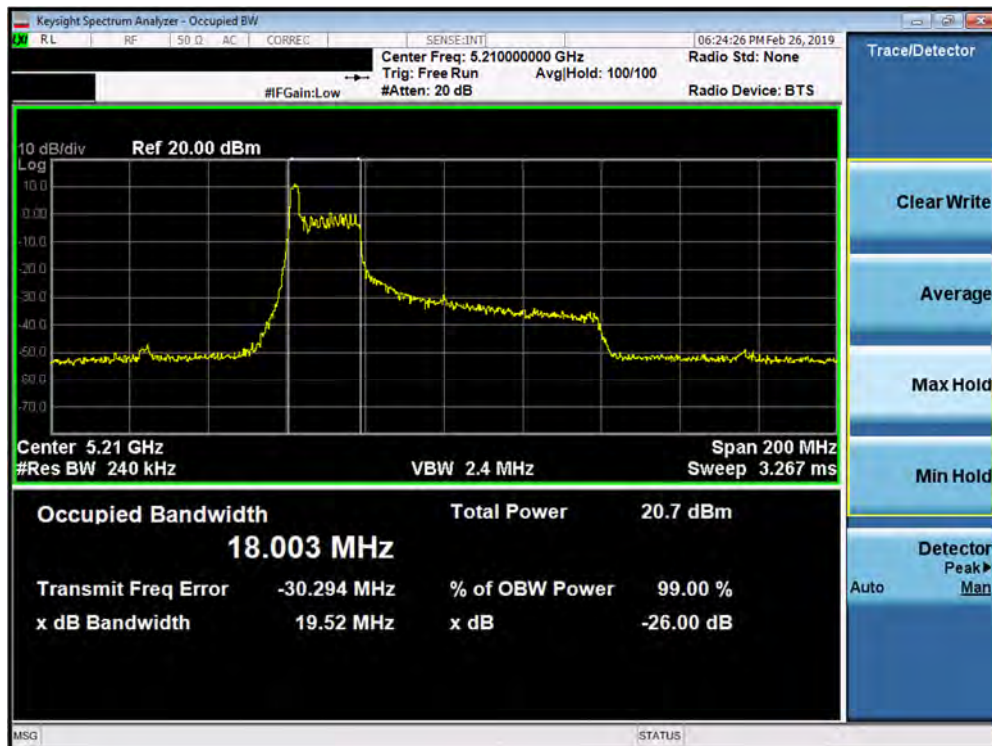


Plot 7-46. 26dB Bandwidth Plot SISO ANT2 (40MHz BW 802.11ax – 26 Tones (UNII Band 1) – Ch. 38)

|                                         |                                               |                                       |                |                                 |
|-----------------------------------------|-----------------------------------------------|---------------------------------------|----------------|---------------------------------|
| FCC ID: A3LSMF907N                      | <b>PCTEST</b><br>ENGINEERING LABORATORY, INC. | MEASUREMENT REPORT<br>(CERTIFICATION) | <b>SAMSUNG</b> | Approved by:<br>Quality Manager |
| Test Report S/N:<br>1M1902200029-08.A3L | Test Dates:<br>01/22- 04/05/2019              | EUT Type:<br>Portable Handset         |                | Page 42 of 330                  |

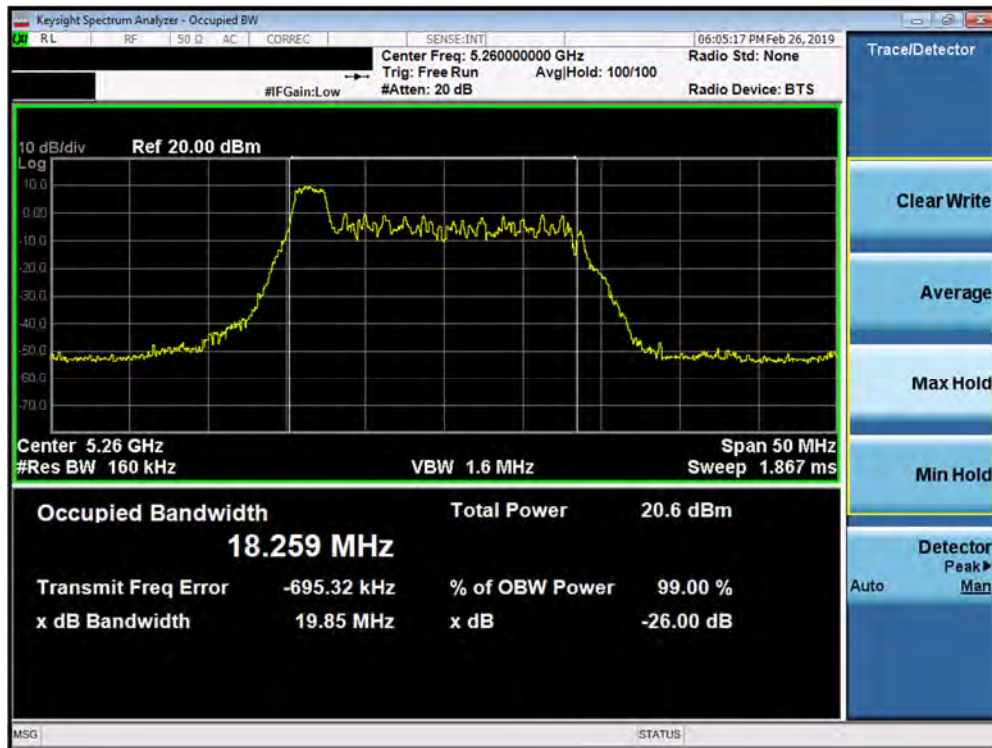


Plot 7-47. 26dB Bandwidth Plot SISO ANT2 (40MHz BW 802.11ax – 26 Tones (UNII Band 1) – Ch. 46)

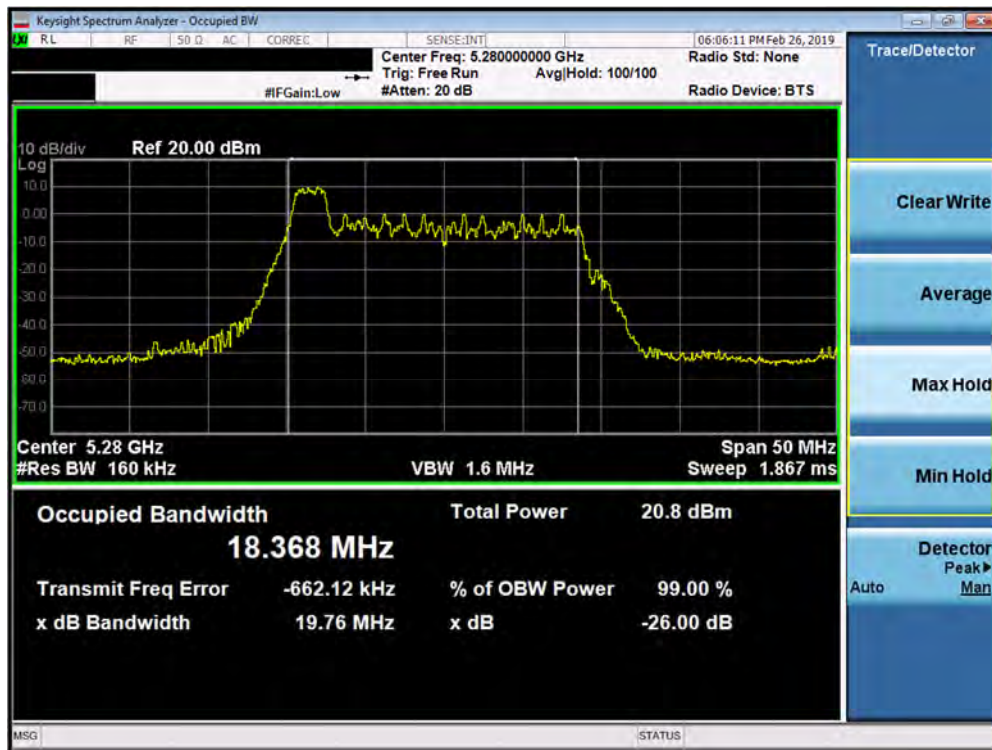


Plot 7-48. 26dB Bandwidth Plot SISO ANT2 (80MHz BW 802.11ax – 26 Tones (UNII Band 1) – Ch. 42)

|                                         |                                               |                                       |                |                                 |
|-----------------------------------------|-----------------------------------------------|---------------------------------------|----------------|---------------------------------|
| FCC ID: A3LSMF907N                      | <b>PCTEST</b><br>ENGINEERING LABORATORY, INC. | MEASUREMENT REPORT<br>(CERTIFICATION) | <b>SAMSUNG</b> | Approved by:<br>Quality Manager |
| Test Report S/N:<br>1M1902200029-08.A3L | Test Dates:<br>01/22- 04/05/2019              | EUT Type:<br>Portable Handset         |                | Page 43 of 330                  |

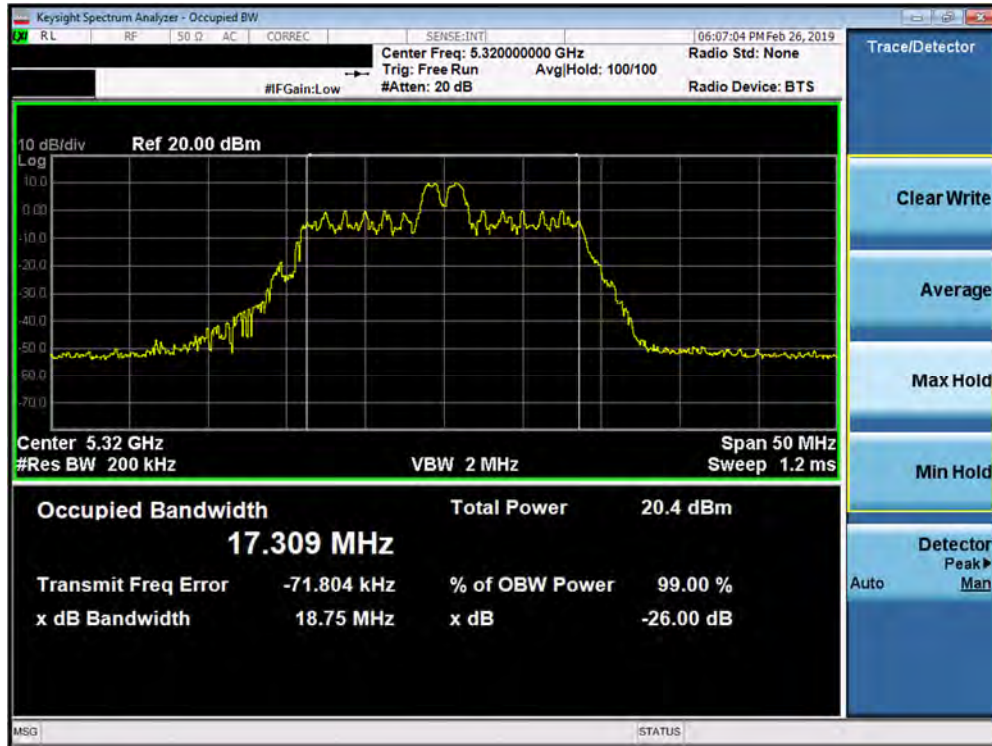


Plot 7-49. 26dB Bandwidth Plot SISO ANT2 (20 MHz BW 802.11ax – 26 Tones (UNII Band 2A) – Ch. 52)

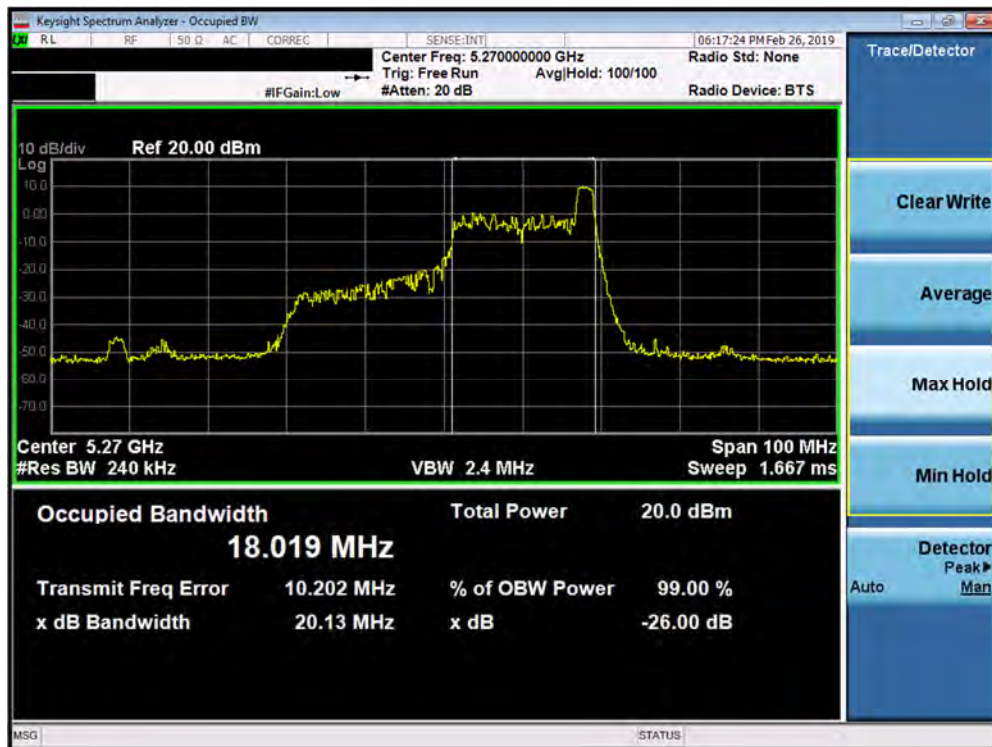


Plot 7-50. 26dB Bandwidth Plot SISO ANT2 (20 MHz BW 802.11ax – 26 Tones (UNII Band 2A) – Ch. 56)

|                                         |                                               |                               |  |                                 |
|-----------------------------------------|-----------------------------------------------|-------------------------------|--|---------------------------------|
| FCC ID: A3LSMF907N                      | <b>MEASUREMENT REPORT<br/>(CERTIFICATION)</b> |                               |  | Approved by:<br>Quality Manager |
| Test Report S/N:<br>1M1902200029-08.A3L | Test Dates:<br>01/22- 04/05/2019              | EUT Type:<br>Portable Handset |  | Page 44 of 330                  |

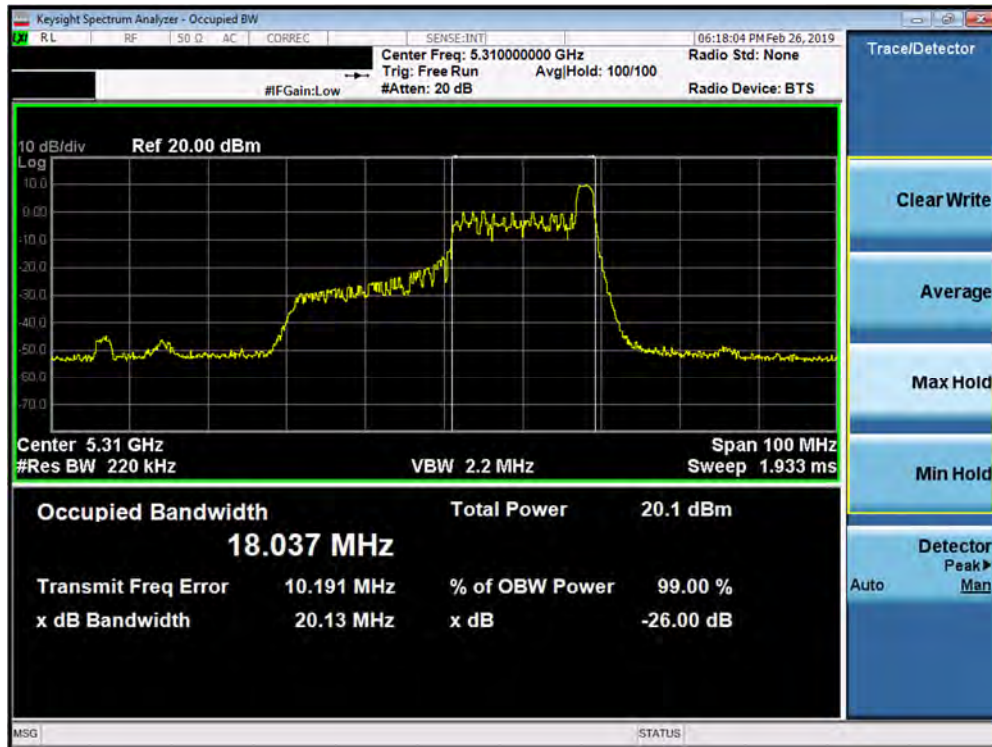


Plot 7-51. 26dB Bandwidth Plot SISO ANT2 (20 MHz BW 802.11ax – 26 Tones (UNII Band 2A) – Ch. 64)



Plot 7-52. 26dB Bandwidth Plot SISO ANT2 (40MHz BW 802.11ax – 26 Tones (UNII Band 2A) – Ch. 54)

|                                         |                                              |                               |  |                                 |
|-----------------------------------------|----------------------------------------------|-------------------------------|--|---------------------------------|
| FCC ID: A3LSMF907N                      | <b>MEASUREMENT REPORT</b><br>(CERTIFICATION) |                               |  | Approved by:<br>Quality Manager |
| Test Report S/N:<br>1M1902200029-08.A3L | Test Dates:<br>01/22- 04/05/2019             | EUT Type:<br>Portable Handset |  | Page 45 of 330                  |

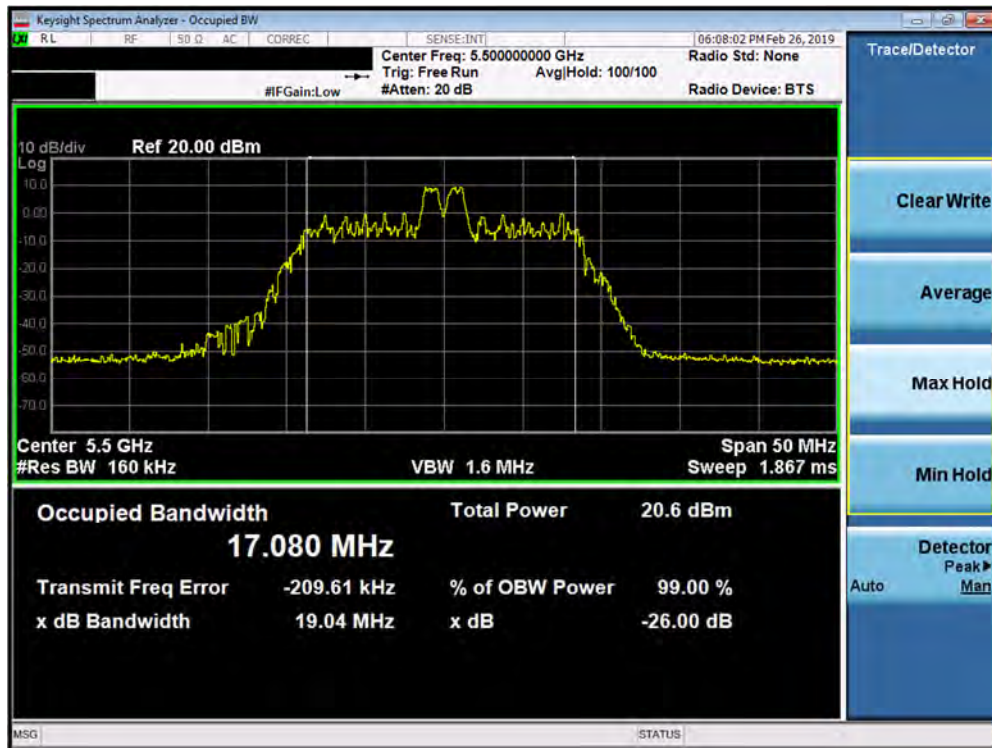


Plot 7-53. 26dB Bandwidth Plot SISO ANT2 (40MHz BW 802.11ax – 26 Tones (UNII Band 2A) – Ch. 62)

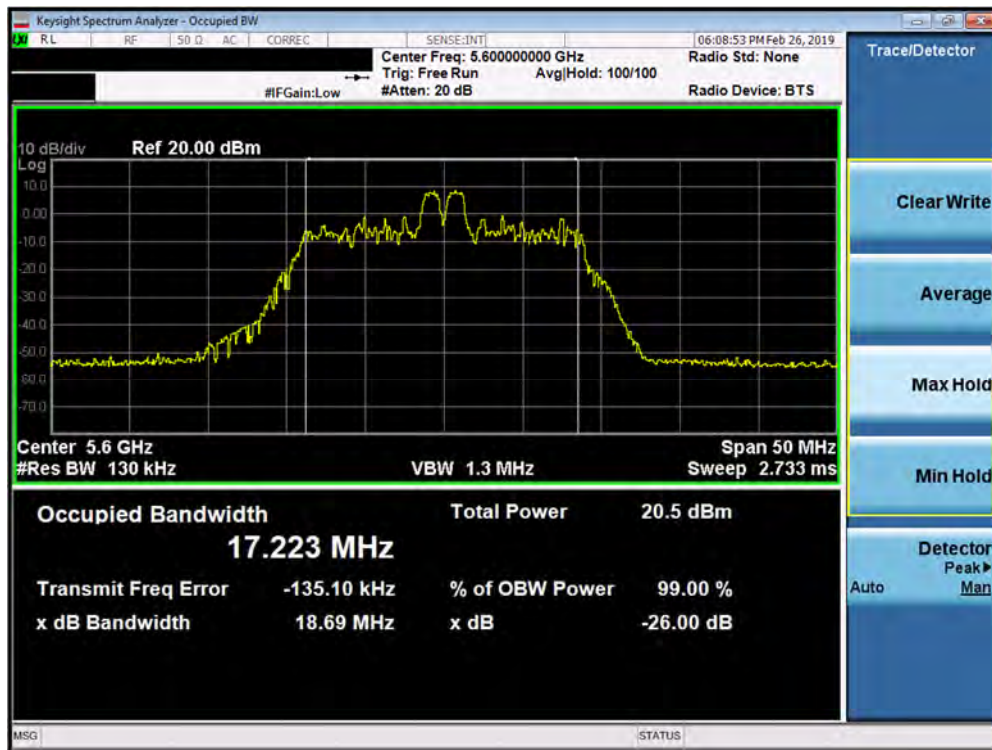


Plot 7-54. 26dB Bandwidth Plot SISO ANT2 (80MHz BW 802.11ax – 26 Tones (UNII Band 2A) – Ch. 58)

|                                         |                                               |                                       |                |                                 |
|-----------------------------------------|-----------------------------------------------|---------------------------------------|----------------|---------------------------------|
| FCC ID: A3LSMF907N                      | <b>PCTEST</b><br>ENGINEERING LABORATORY, INC. | MEASUREMENT REPORT<br>(CERTIFICATION) | <b>SAMSUNG</b> | Approved by:<br>Quality Manager |
| Test Report S/N:<br>1M1902200029-08.A3L | Test Dates:<br>01/22- 04/05/2019              | EUT Type:<br>Portable Handset         |                | Page 46 of 330                  |

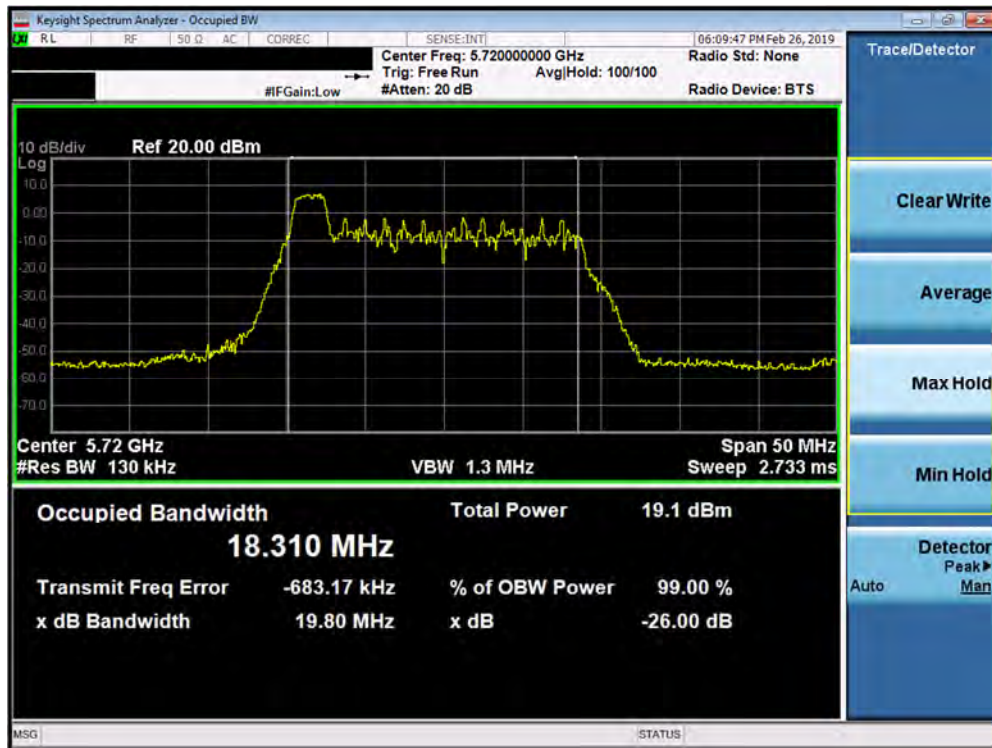


Plot 7-55. 26dB Bandwidth Plot SISO ANT2 (20MHz BW 802.11ax – 26 Tones (UNII Band 2C) – Ch. 100)

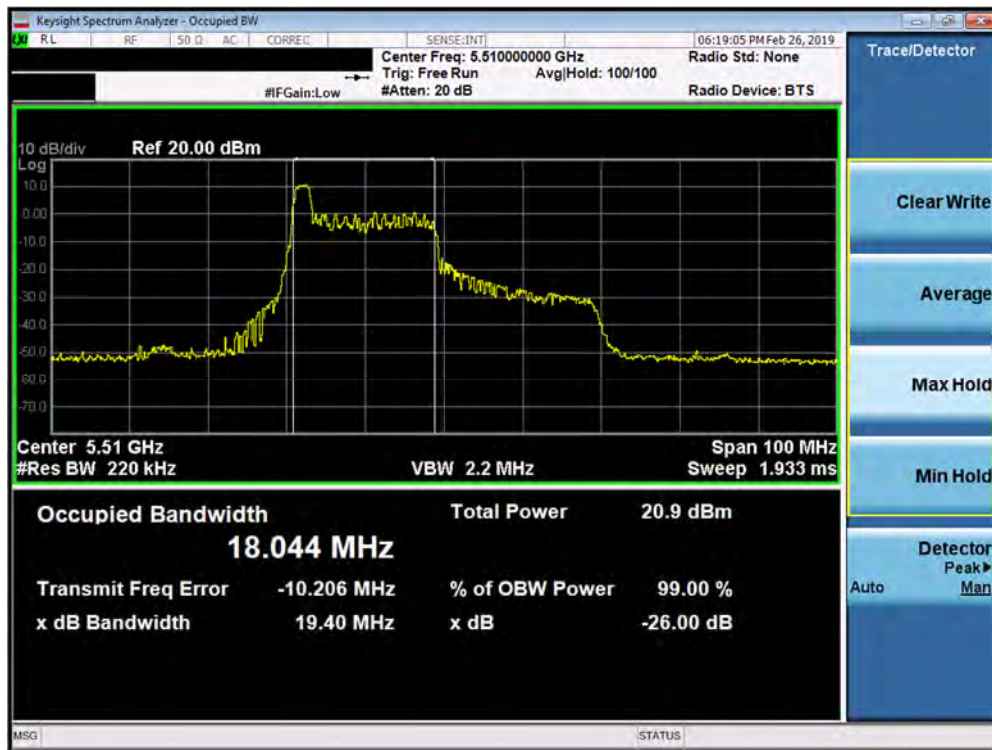


Plot 7-56. 26dB Bandwidth Plot SISO ANT2 (20MHz BW 802.11ax – 26 Tones (UNII Band 2C) – Ch. 120)

|                                         |                                               |                                       |                |                                 |
|-----------------------------------------|-----------------------------------------------|---------------------------------------|----------------|---------------------------------|
| FCC ID: A3LSMF907N                      | <b>PCTEST</b><br>ENGINEERING LABORATORY, INC. | MEASUREMENT REPORT<br>(CERTIFICATION) | <b>SAMSUNG</b> | Approved by:<br>Quality Manager |
| Test Report S/N:<br>1M1902200029-08.A3L | Test Dates:<br>01/22- 04/05/2019              | EUT Type:<br>Portable Handset         |                | Page 47 of 330                  |

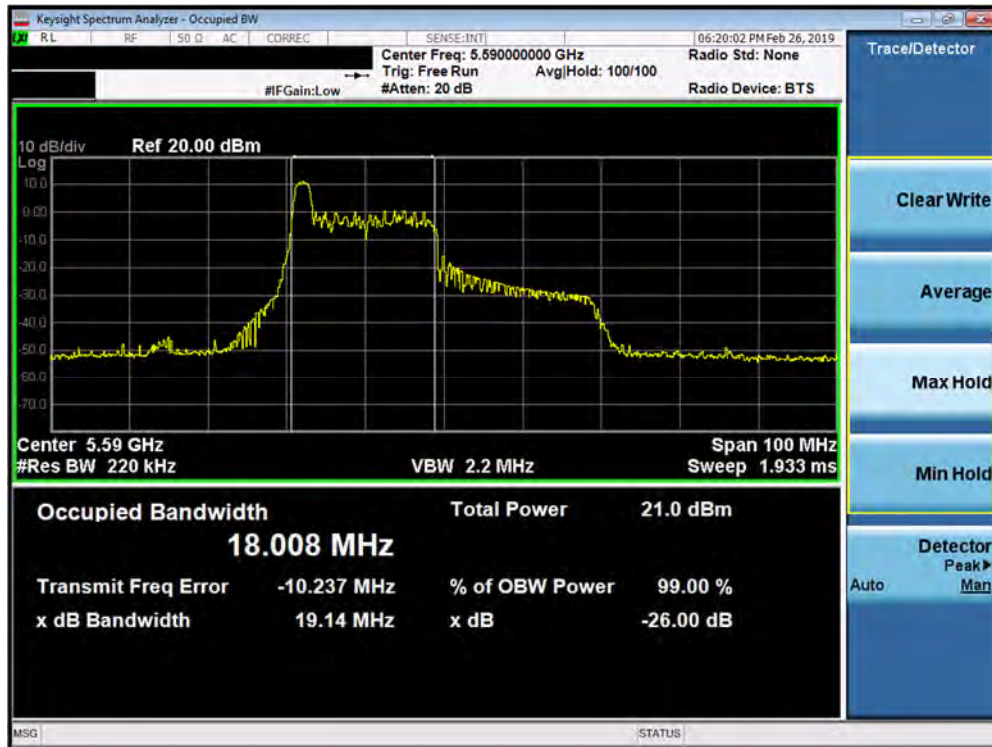


Plot 7-57. 26dB Bandwidth Plot SISO ANT2 (20MHz BW 802.11ax – 26 Tones (UNII Band 2C) – Ch. 144)



Plot 7-58. 26dB Bandwidth Plot SISO ANT2 (40MHz BW 802.11ax – 26 Tones (UNII Band 2C) – Ch. 102)

|                                         |                                              |                               |  |                                 |
|-----------------------------------------|----------------------------------------------|-------------------------------|--|---------------------------------|
| FCC ID: A3LSMF907N                      | <b>MEASUREMENT REPORT</b><br>(CERTIFICATION) |                               |  | Approved by:<br>Quality Manager |
| Test Report S/N:<br>1M1902200029-08.A3L | Test Dates:<br>01/22- 04/05/2019             | EUT Type:<br>Portable Handset |  | Page 48 of 330                  |

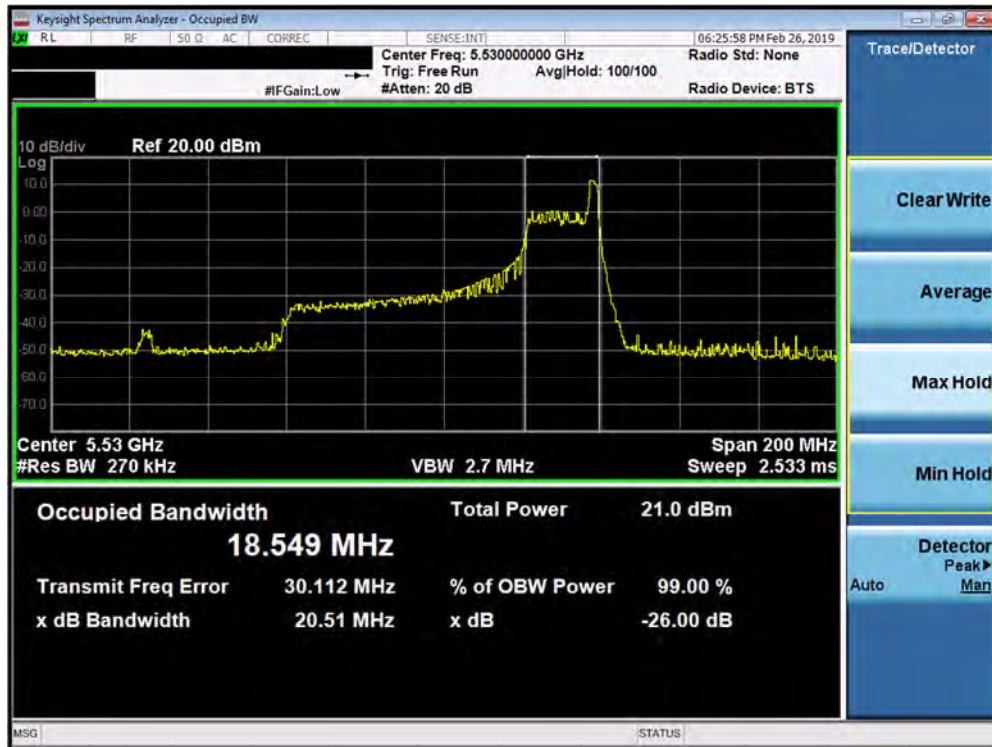


Plot 7-59. 26dB Bandwidth Plot SISO ANT2 (40MHz BW 802.11ax – 26 Tones (UNII Band 2C) – Ch. 118)



Plot 7-60. 26dB Bandwidth Plot SISO ANT2 (40MHz BW 802.11ax – 26 Tones (UNII Band 2C) – Ch. 142)

|                                         |                                              |                               |  |                                 |
|-----------------------------------------|----------------------------------------------|-------------------------------|--|---------------------------------|
| FCC ID: A3LSMF907N                      | <b>MEASUREMENT REPORT</b><br>(CERTIFICATION) |                               |  | Approved by:<br>Quality Manager |
| Test Report S/N:<br>1M1902200029-08.A3L | Test Dates:<br>01/22- 04/05/2019             | EUT Type:<br>Portable Handset |  | Page 49 of 330                  |

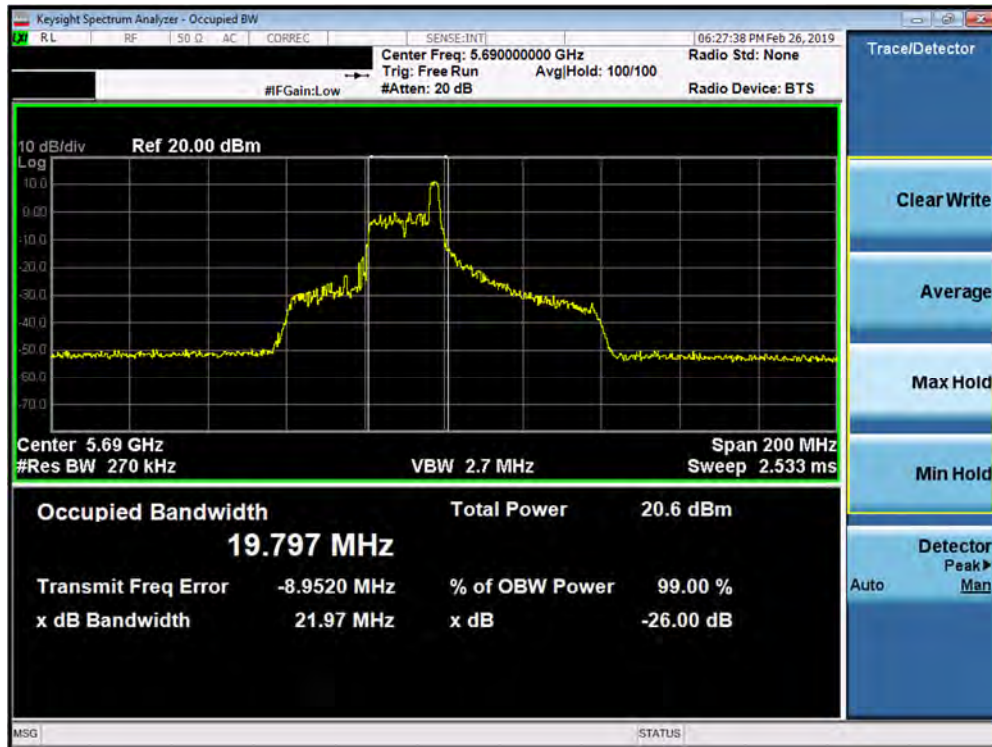


Plot 7-61. 26dB Bandwidth Plot SISO ANT2 (80MHz BW 802.11ax – 26 Tones (UNII Band 2C) – Ch. 106)



Plot 7-62. 26dB Bandwidth Plot SISO ANT2 (80MHz BW 802.11ax – 26 Tones (UNII Band 2C) – Ch. 122)

|                                         |                                              |                               |  |                                 |
|-----------------------------------------|----------------------------------------------|-------------------------------|--|---------------------------------|
| FCC ID: A3LSMF907N                      | <b>MEASUREMENT REPORT</b><br>(CERTIFICATION) |                               |  | Approved by:<br>Quality Manager |
| Test Report S/N:<br>1M1902200029-08.A3L | Test Dates:<br>01/22- 04/05/2019             | EUT Type:<br>Portable Handset |  | Page 50 of 330                  |



Plot 7-63. 26dB Bandwidth Plot SISO ANT2 (80MHz BW 802.11ax – 26 Tones (UNII Band 2C) – Ch. 138)

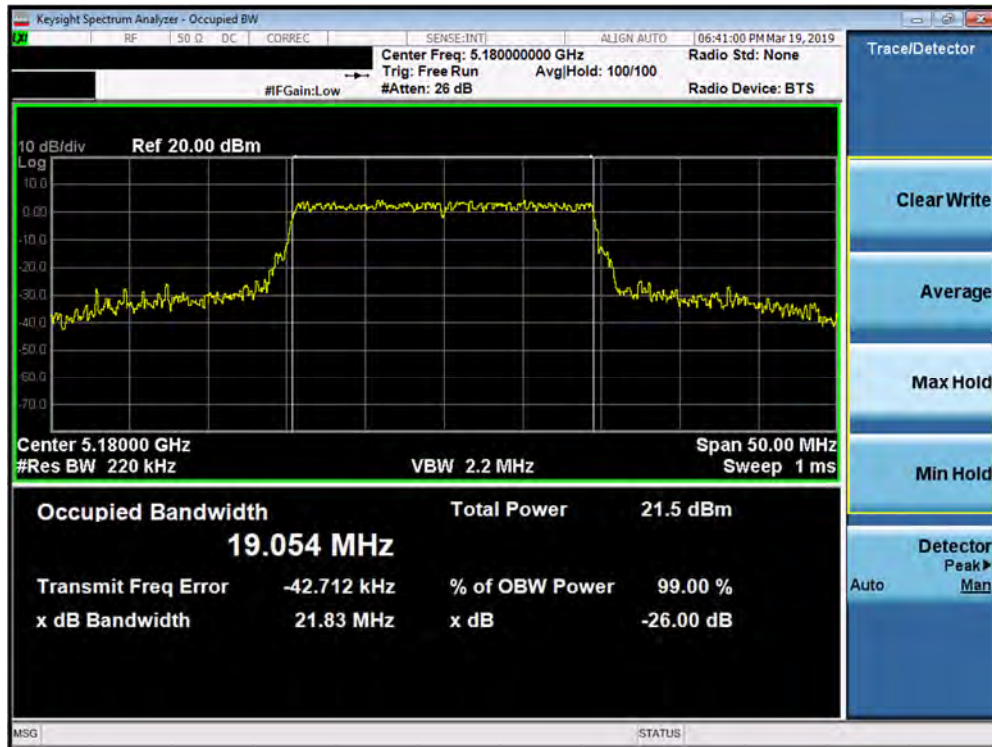
|                                         |                                               |                                       |                |                                 |
|-----------------------------------------|-----------------------------------------------|---------------------------------------|----------------|---------------------------------|
| FCC ID: A3LSMF907N                      | <b>PCTEST</b><br>ENGINEERING LABORATORY, INC. | MEASUREMENT REPORT<br>(CERTIFICATION) | <b>SAMSUNG</b> | Approved by:<br>Quality Manager |
| Test Report S/N:<br>1M1902200029-08.A3L | Test Dates:<br>01/22- 04/05/2019              | EUT Type:<br>Portable Handset         |                | Page 51 of 330                  |

## SISO Antenna-2 26dB Bandwidth Measurements (Full Tones)

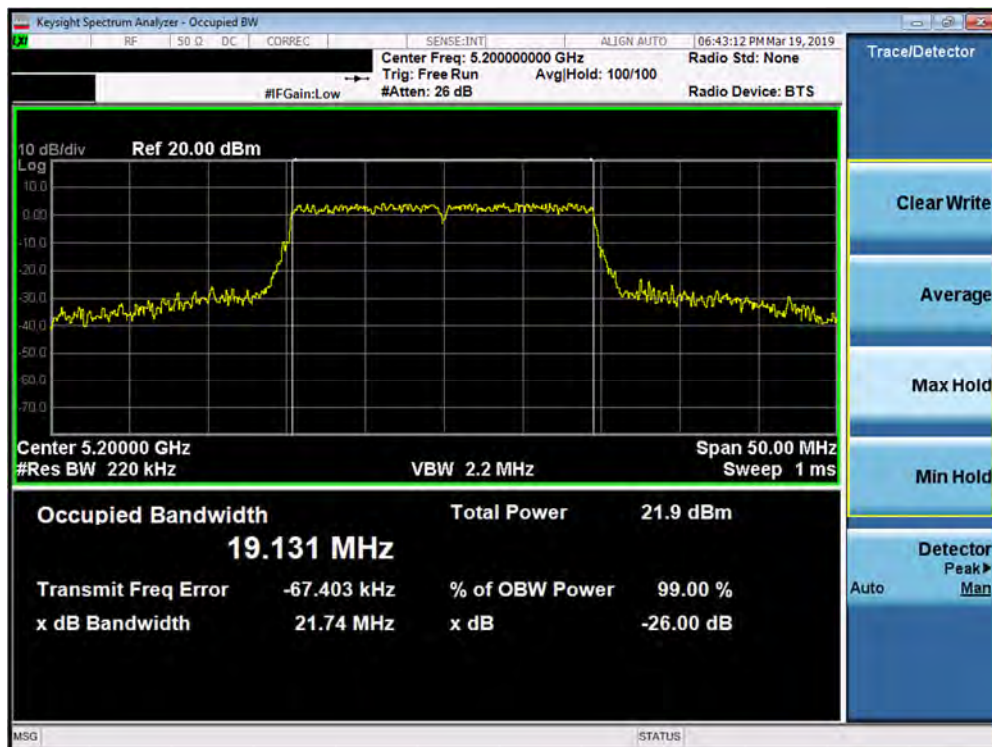
|         | Frequency [MHz] | Channel No. | 802.11 Mode | Tones | Data Rate [Mbps] | Measured 26dB Bandwidth [MHz] |
|---------|-----------------|-------------|-------------|-------|------------------|-------------------------------|
| Band 1  | 5180            | 36          | ax (20MHz)  | 242T  | MCS0             | 21.83                         |
|         | 5200            | 40          | ax (20MHz)  | 242T  | MCS0             | 21.74                         |
|         | 5240            | 48          | ax (20MHz)  | 242T  | MCS0             | 21.30                         |
|         | 5190            | 38          | ax (40MHz)  | 484T  | MCS0             | 40.04                         |
|         | 5230            | 46          | ax (40MHz)  | 484T  | MCS0             | 39.98                         |
|         | 5210            | 42          | ax (80MHz)  | 996T  | MCS0             | 80.99                         |
| Band 2A | 5260            | 52          | ax (20MHz)  | 242T  | MCS0             | 21.35                         |
|         | 5280            | 56          | ax (20MHz)  | 242T  | MCS0             | 21.54                         |
|         | 5320            | 64          | ax (20MHz)  | 242T  | MCS0             | 21.28                         |
|         | 5270            | 54          | ax (40MHz)  | 484T  | MCS0             | 39.87                         |
|         | 5310            | 62          | ax (40MHz)  | 484T  | MCS0             | 39.93                         |
|         | 5290            | 58          | ax (80MHz)  | 996T  | MCS0             | 81.32                         |
| Band 2C | 5500            | 100         | ax (20MHz)  | 242T  | MCS0             | 21.32                         |
|         | 5600            | 120         | ax (20MHz)  | 242T  | MCS0             | 21.21                         |
|         | 5720            | 144         | ax (20MHz)  | 242T  | MCS0             | 21.31                         |
|         | 5510            | 102         | ax (40MHz)  | 484T  | MCS0             | 39.96                         |
|         | 5590            | 118         | ax (40MHz)  | 484T  | MCS0             | 39.94                         |
|         | 5710            | 142         | ax (40MHz)  | 484T  | MCS0             | 40.21                         |
|         | 5530            | 106         | ax (80MHz)  | 996T  | MCS0             | 80.85                         |
|         | 5610            | 122         | ax (80MHz)  | 996T  | MCS0             | 80.81                         |
|         | 5690            | 138         | ax (80MHz)  | 996T  | MCS0             | 81.07                         |

**Table 7-5. Conducted Bandwidth Measurements SISO ANT2 (Full Tones)**

|                                         |                                                                                     |                                       |                                                                                       |                                 |
|-----------------------------------------|-------------------------------------------------------------------------------------|---------------------------------------|---------------------------------------------------------------------------------------|---------------------------------|
| FCC ID: A3LSMF907N                      |  | MEASUREMENT REPORT<br>(CERTIFICATION) |  | Approved by:<br>Quality Manager |
| Test Report S/N:<br>1M1902200029-08.A3L | Test Dates:<br>01/22- 04/05/2019                                                    | EUT Type:<br>Portable Handset         |                                                                                       | Page 52 of 330                  |

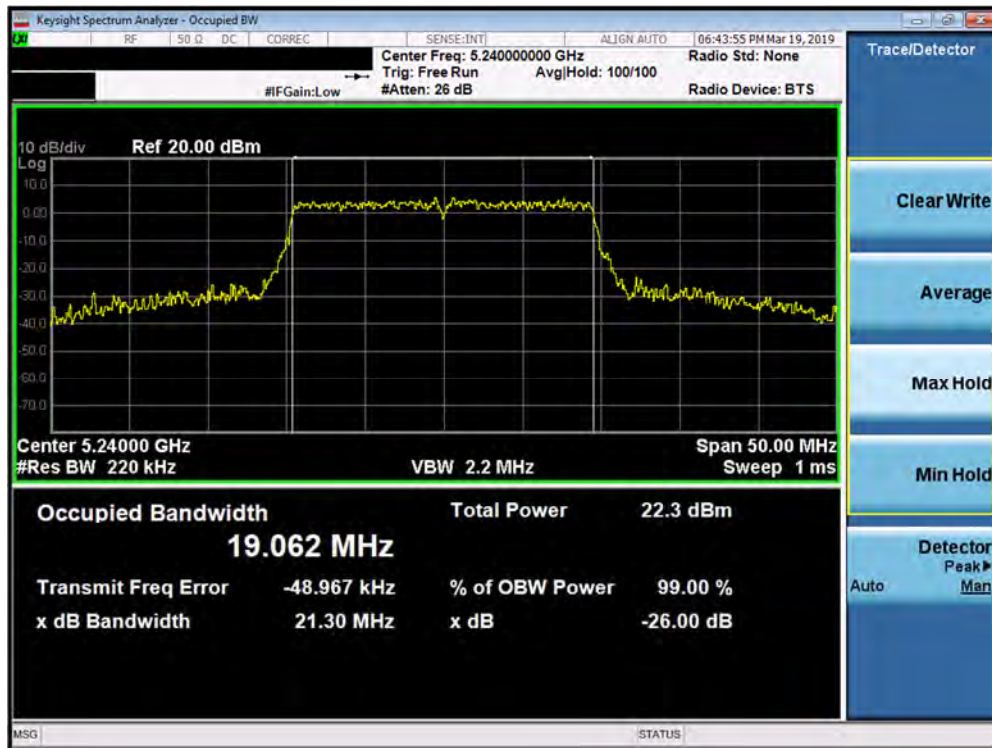


Plot 7-64. 26dB Bandwidth Plot SISO ANT2 (20MHz BW 802.11ax – 242 Tones (UNII Band 1) – Ch. 36)

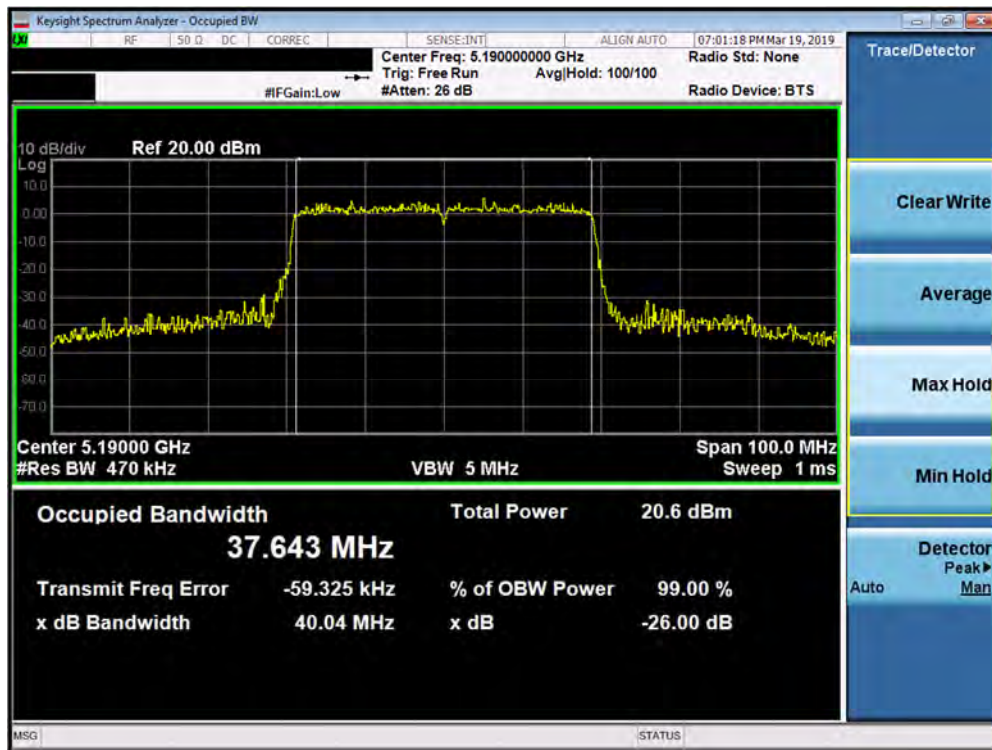


Plot 7-65. 26dB Bandwidth Plot SISO ANT2 (20MHz BW 802.11ax – 242 Tones (UNII Band 1) – Ch. 40)

|                                         |                                              |                               |  |                                 |
|-----------------------------------------|----------------------------------------------|-------------------------------|--|---------------------------------|
| FCC ID: A3LSMF907N                      | <b>MEASUREMENT REPORT</b><br>(CERTIFICATION) |                               |  | Approved by:<br>Quality Manager |
| Test Report S/N:<br>1M1902200029-08.A3L | Test Dates:<br>01/22- 04/05/2019             | EUT Type:<br>Portable Handset |  | Page 53 of 330                  |

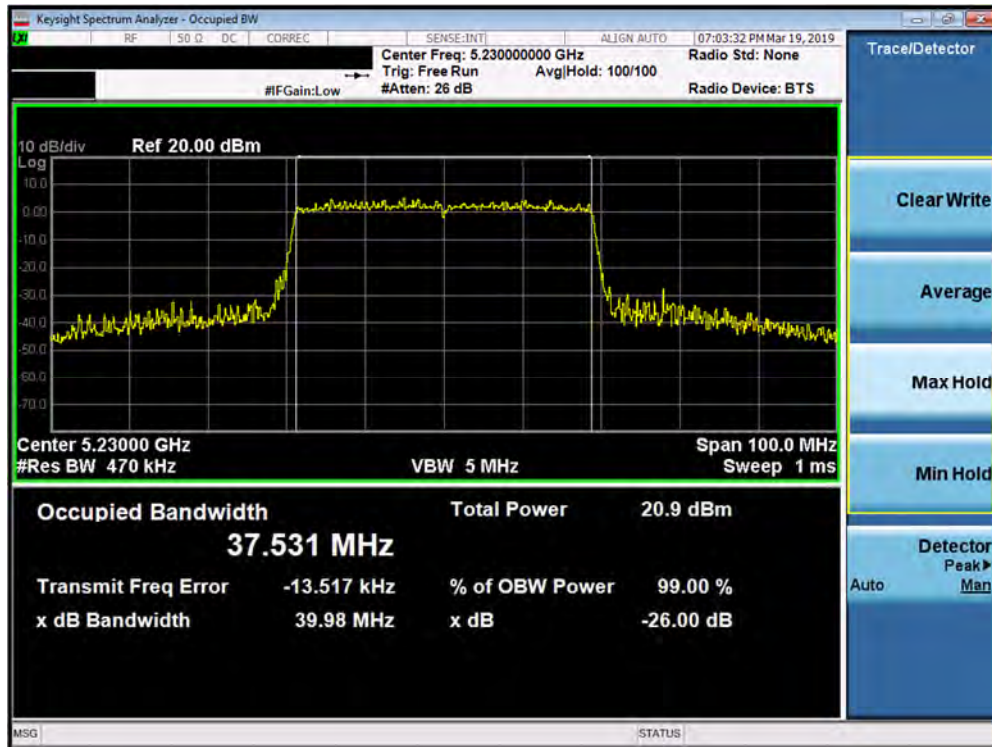


Plot 7-66. 26dB Bandwidth Plot SISO ANT2 (20MHz BW 802.11ax – 242 Tones (UNII Band 1) – Ch. 48)

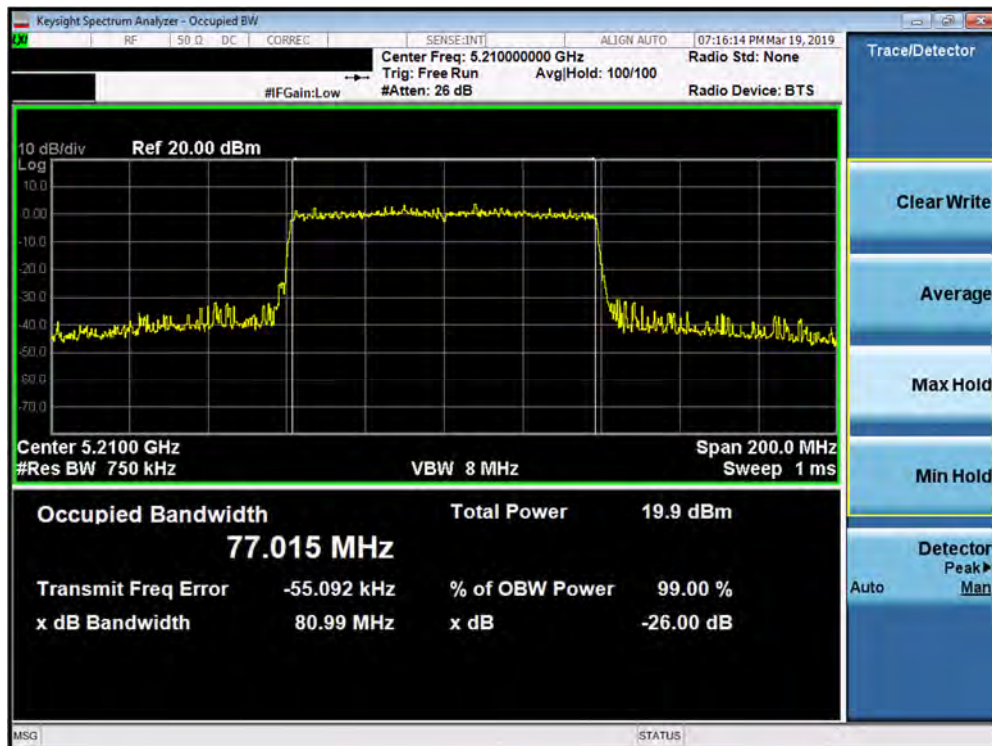


Plot 7-67. 26dB Bandwidth Plot SISO ANT2 (40MHz BW 802.11ax – 484 Tones (UNII Band 1) – Ch. 38)

|                                         |                                               |                                       |                |                                 |
|-----------------------------------------|-----------------------------------------------|---------------------------------------|----------------|---------------------------------|
| FCC ID: A3LSMF907N                      | <b>PCTEST</b><br>ENGINEERING LABORATORY, INC. | MEASUREMENT REPORT<br>(CERTIFICATION) | <b>SAMSUNG</b> | Approved by:<br>Quality Manager |
| Test Report S/N:<br>1M1902200029-08.A3L | Test Dates:<br>01/22- 04/05/2019              | EUT Type:<br>Portable Handset         |                | Page 54 of 330                  |

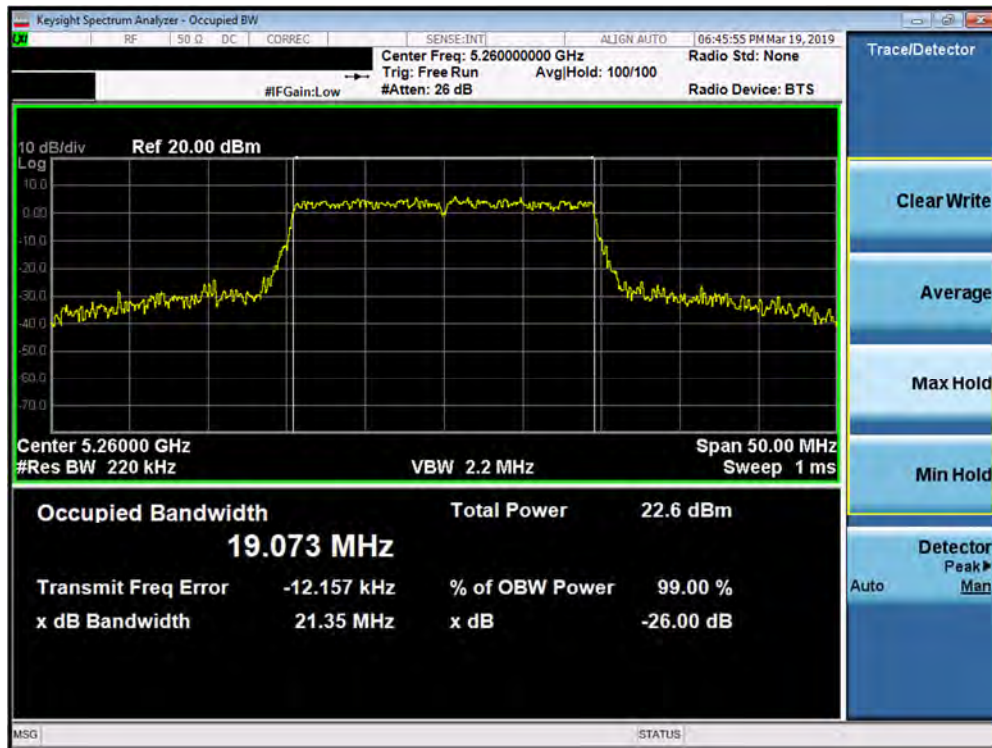


Plot 7-68. 26dB Bandwidth Plot SISO ANT2 (40MHz BW 802.11ax – 484 Tones (UNII Band 1) – Ch. 46)

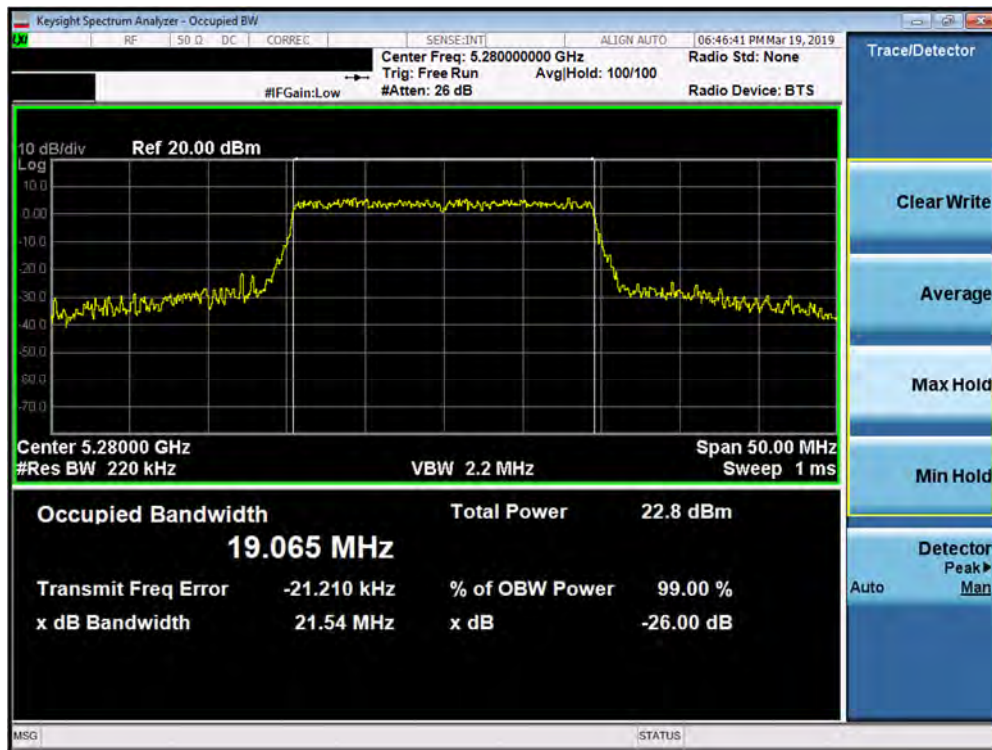


Plot 7-69. 26dB Bandwidth Plot SISO ANT2 (80MHz BW 802.11ax – 996 Tones (UNII Band 1) – Ch. 42)

|                                         |                                               |                                       |                |                                 |
|-----------------------------------------|-----------------------------------------------|---------------------------------------|----------------|---------------------------------|
| FCC ID: A3LSMF907N                      | <b>PCTEST</b><br>ENGINEERING LABORATORY, INC. | MEASUREMENT REPORT<br>(CERTIFICATION) | <b>SAMSUNG</b> | Approved by:<br>Quality Manager |
| Test Report S/N:<br>1M1902200029-08.A3L | Test Dates:<br>01/22- 04/05/2019              | EUT Type:<br>Portable Handset         |                | Page 55 of 330                  |

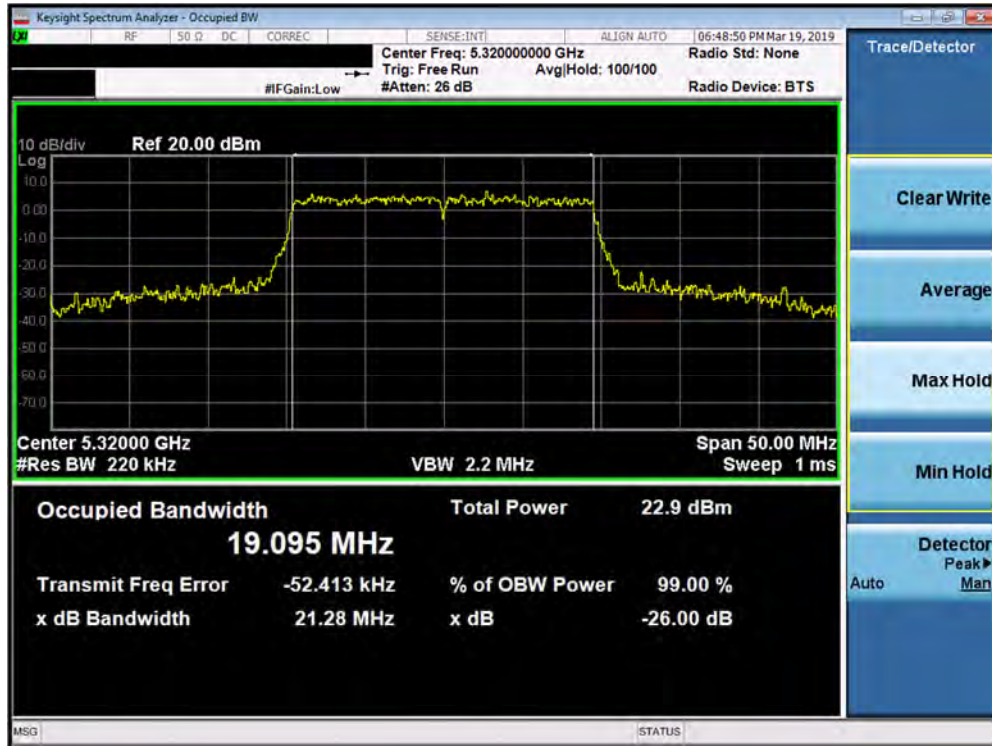


Plot 7-70. 26dB Bandwidth Plot SISO ANT2 (20 MHz BW 802.11ax – 242 Tones (UNII Band 2A) – Ch. 52)

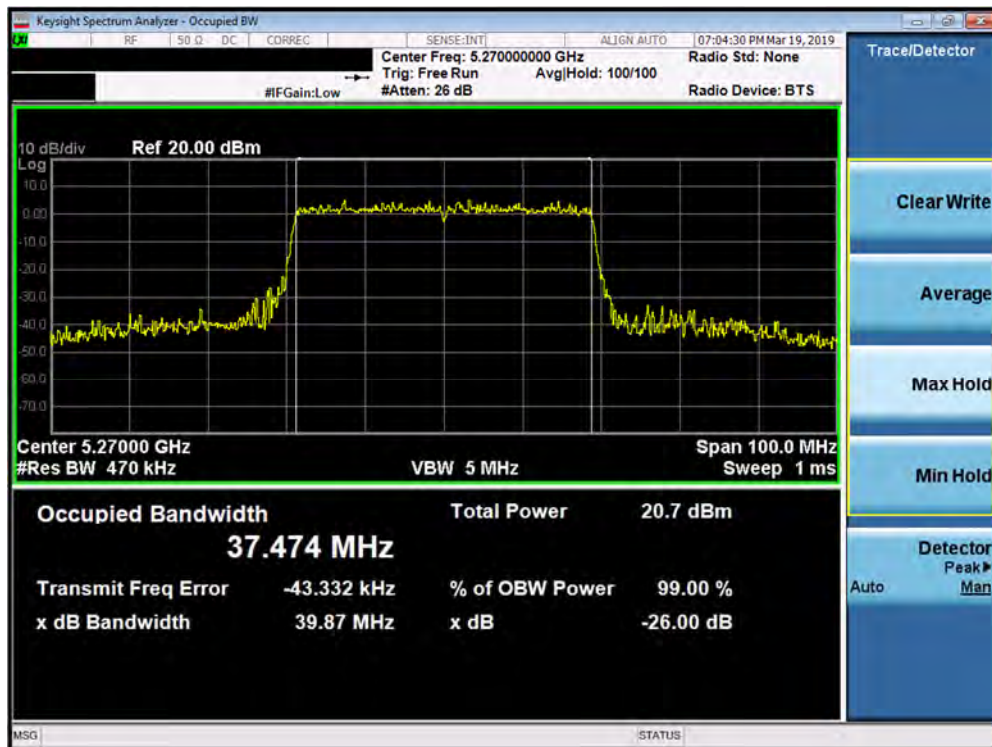


Plot 7-71. 26dB Bandwidth Plot SISO ANT2 (20 MHz BW 802.11ax – 242 Tones (UNII Band 2A) – Ch. 56)

|                                         |                                               |                                       |                |                                 |
|-----------------------------------------|-----------------------------------------------|---------------------------------------|----------------|---------------------------------|
| FCC ID: A3LSMF907N                      | <b>PCTEST</b><br>ENGINEERING LABORATORY, INC. | MEASUREMENT REPORT<br>(CERTIFICATION) | <b>SAMSUNG</b> | Approved by:<br>Quality Manager |
| Test Report S/N:<br>1M1902200029-08.A3L | Test Dates:<br>01/22- 04/05/2019              | EUT Type:<br>Portable Handset         |                | Page 56 of 330                  |

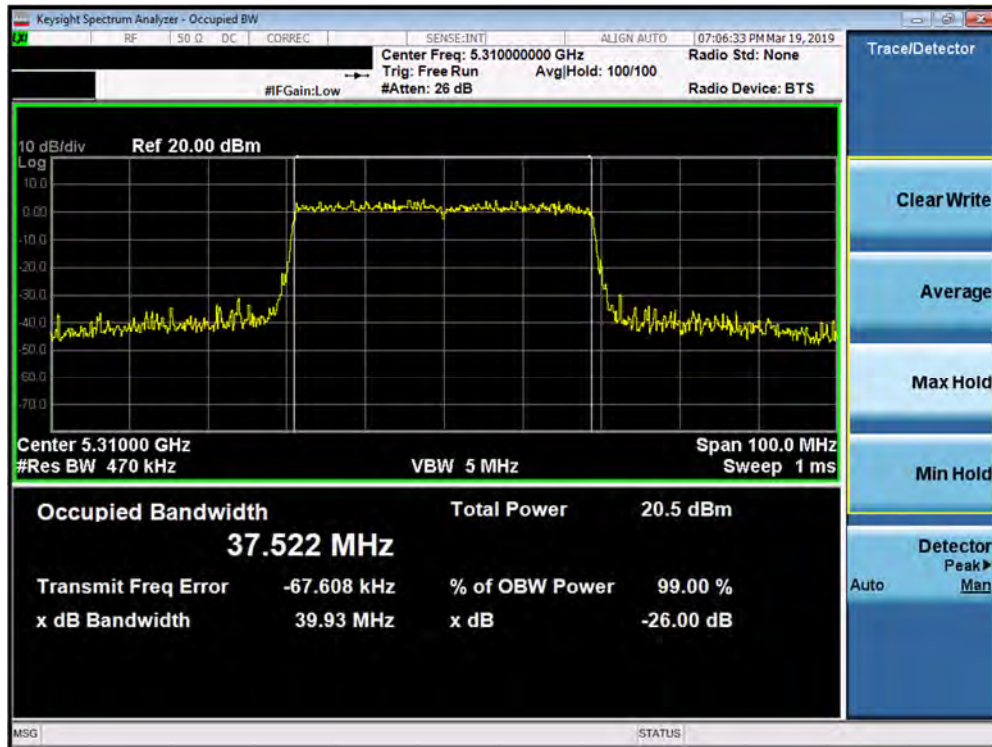


Plot 7-72. 26dB Bandwidth Plot SISO ANT2 (20 MHz BW 802.11ax – 242 Tones (UNII Band 2A) – Ch. 64)

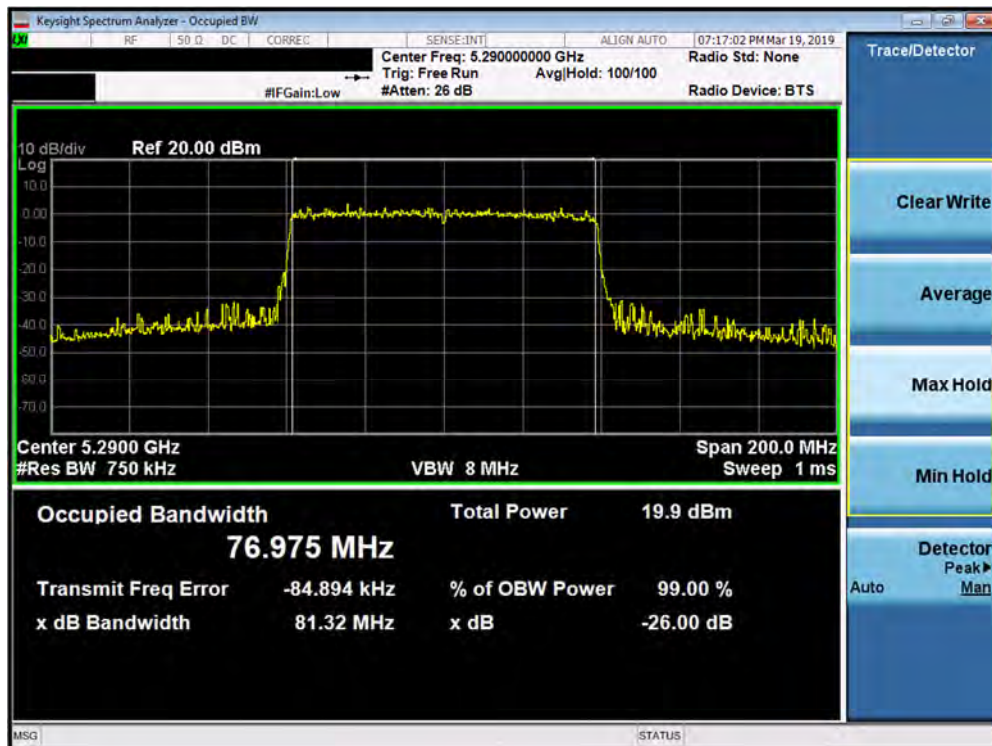


Plot 7-73. 26dB Bandwidth Plot SISO ANT2 (40MHz BW 802.11ax – 484 Tones (UNII Band 2A) – Ch. 54)

|                                         |                                               |                                       |                |                                 |
|-----------------------------------------|-----------------------------------------------|---------------------------------------|----------------|---------------------------------|
| FCC ID: A3LSMF907N                      | <b>PCTEST</b><br>ENGINEERING LABORATORY, INC. | MEASUREMENT REPORT<br>(CERTIFICATION) | <b>SAMSUNG</b> | Approved by:<br>Quality Manager |
| Test Report S/N:<br>1M1902200029-08.A3L | Test Dates:<br>01/22- 04/05/2019              | EUT Type:<br>Portable Handset         |                | Page 57 of 330                  |

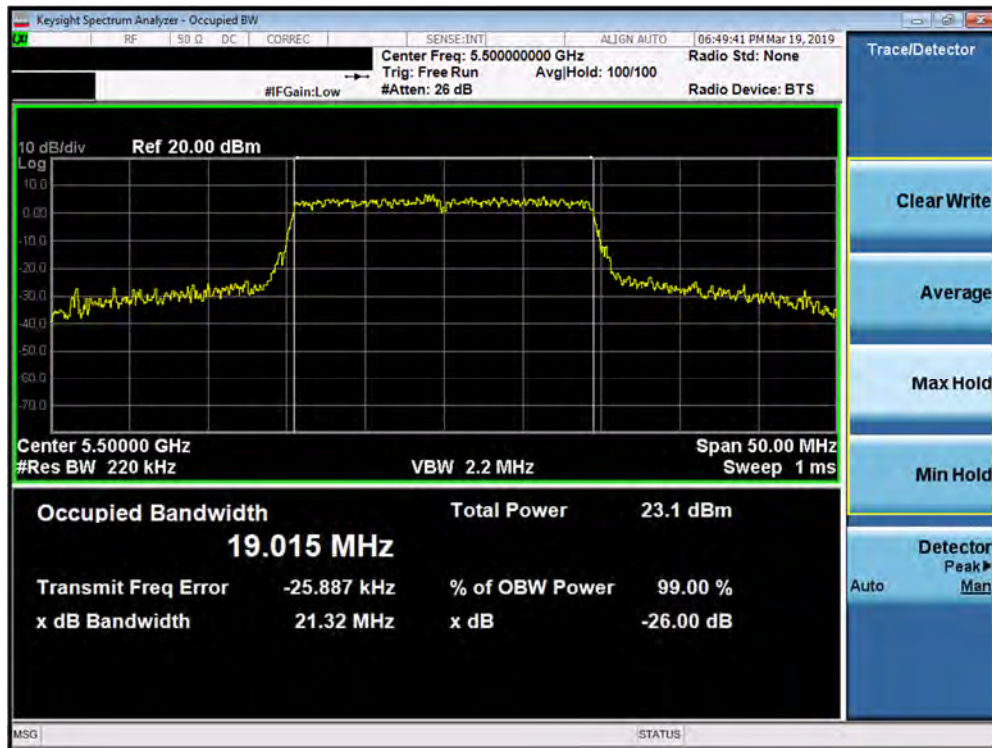


Plot 7-74. 26dB Bandwidth Plot SISO ANT2 (40MHz BW 802.11ax – 484 Tones (UNII Band 2A) – Ch. 62)

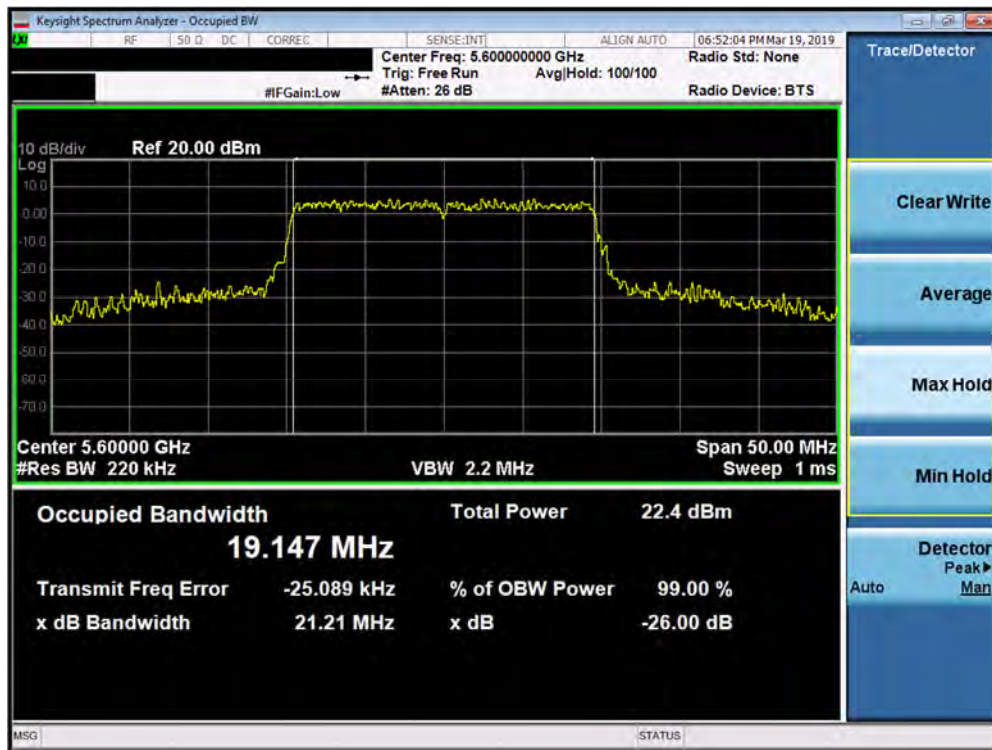


Plot 7-75. 26dB Bandwidth Plot SISO ANT2 (80MHz BW 802.11ax – 996 Tones (UNII Band 2A) – Ch. 58)

|                                         |                                               |                                       |                |                                 |
|-----------------------------------------|-----------------------------------------------|---------------------------------------|----------------|---------------------------------|
| FCC ID: A3LSMF907N                      | <b>PCTEST</b><br>ENGINEERING LABORATORY, INC. | MEASUREMENT REPORT<br>(CERTIFICATION) | <b>SAMSUNG</b> | Approved by:<br>Quality Manager |
| Test Report S/N:<br>1M1902200029-08.A3L | Test Dates:<br>01/22- 04/05/2019              | EUT Type:<br>Portable Handset         |                | Page 58 of 330                  |

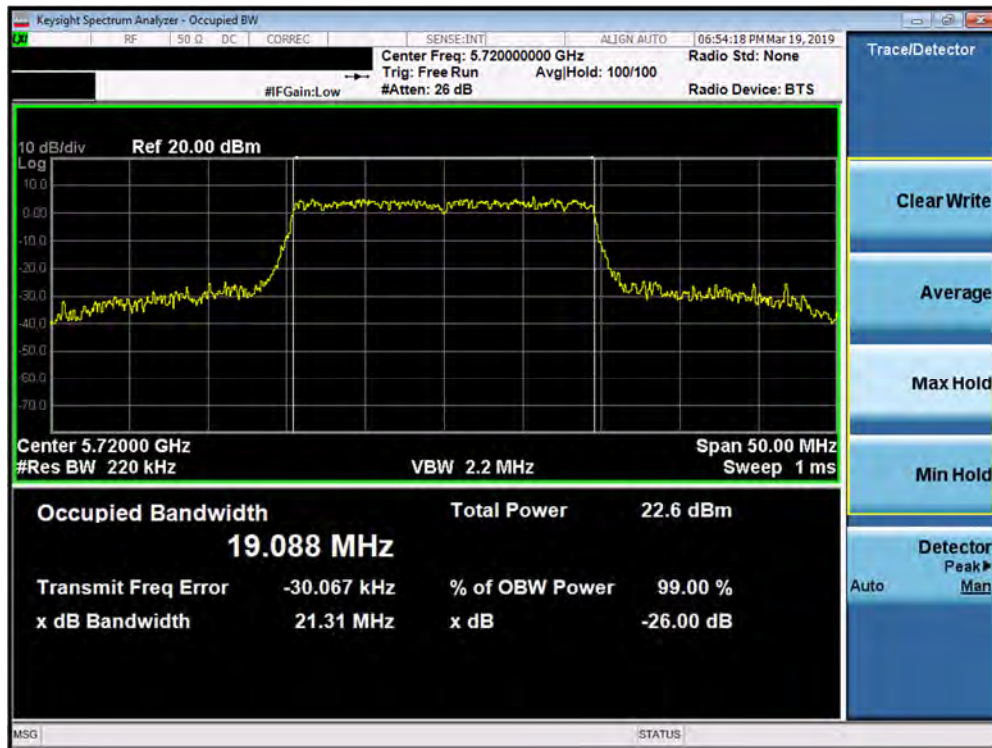


Plot 7-76. 26dB Bandwidth Plot SISO ANT2 (20MHz BW 802.11ax – 242 Tones (UNII Band 2C) – Ch. 100)



Plot 7-77. 26dB Bandwidth Plot SISO ANT2 (20MHz BW 802.11ax – 242 Tones (UNII Band 2C) – Ch. 120)

|                                         |                                               |                                       |                |                                 |
|-----------------------------------------|-----------------------------------------------|---------------------------------------|----------------|---------------------------------|
| FCC ID: A3LSMF907N                      | <b>PCTEST</b><br>ENGINEERING LABORATORY, INC. | MEASUREMENT REPORT<br>(CERTIFICATION) | <b>SAMSUNG</b> | Approved by:<br>Quality Manager |
| Test Report S/N:<br>1M1902200029-08.A3L | Test Dates:<br>01/22- 04/05/2019              | EUT Type:<br>Portable Handset         |                | Page 59 of 330                  |

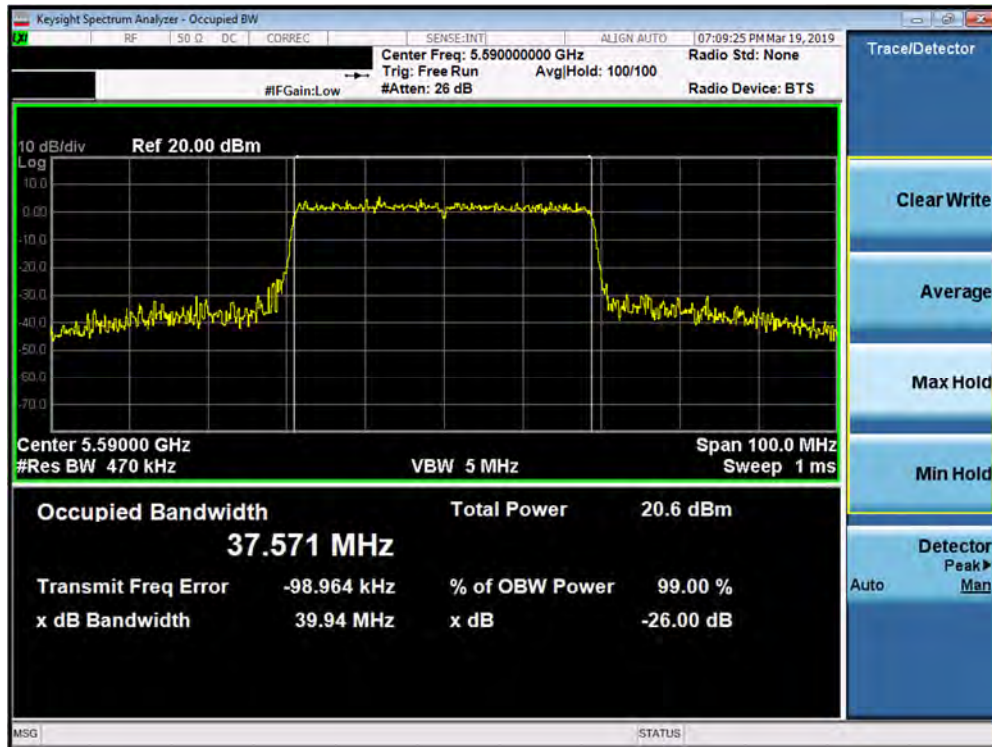


Plot 7-78. 26dB Bandwidth Plot SISO ANT2 (20MHz BW 802.11ax – 242 Tones (UNII Band 2C) – Ch. 144)

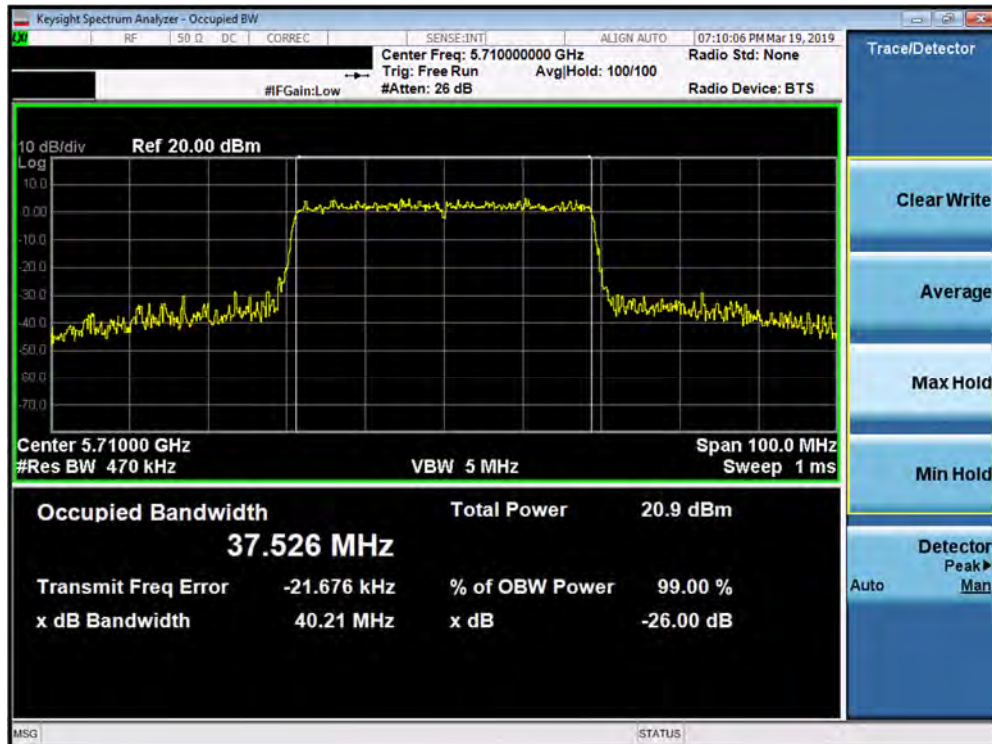


Plot 7-79. 26dB Bandwidth Plot SISO ANT2 (40MHz BW 802.11ax – 26 Tones (UNII Band 2C) – Ch. 102)

|                                         |                                               |                                       |                |                                 |
|-----------------------------------------|-----------------------------------------------|---------------------------------------|----------------|---------------------------------|
| FCC ID: A3LSMF907N                      | <b>PCTEST</b><br>ENGINEERING LABORATORY, INC. | MEASUREMENT REPORT<br>(CERTIFICATION) | <b>SAMSUNG</b> | Approved by:<br>Quality Manager |
| Test Report S/N:<br>1M1902200029-08.A3L | Test Dates:<br>01/22- 04/05/2019              | EUT Type:<br>Portable Handset         |                | Page 60 of 330                  |

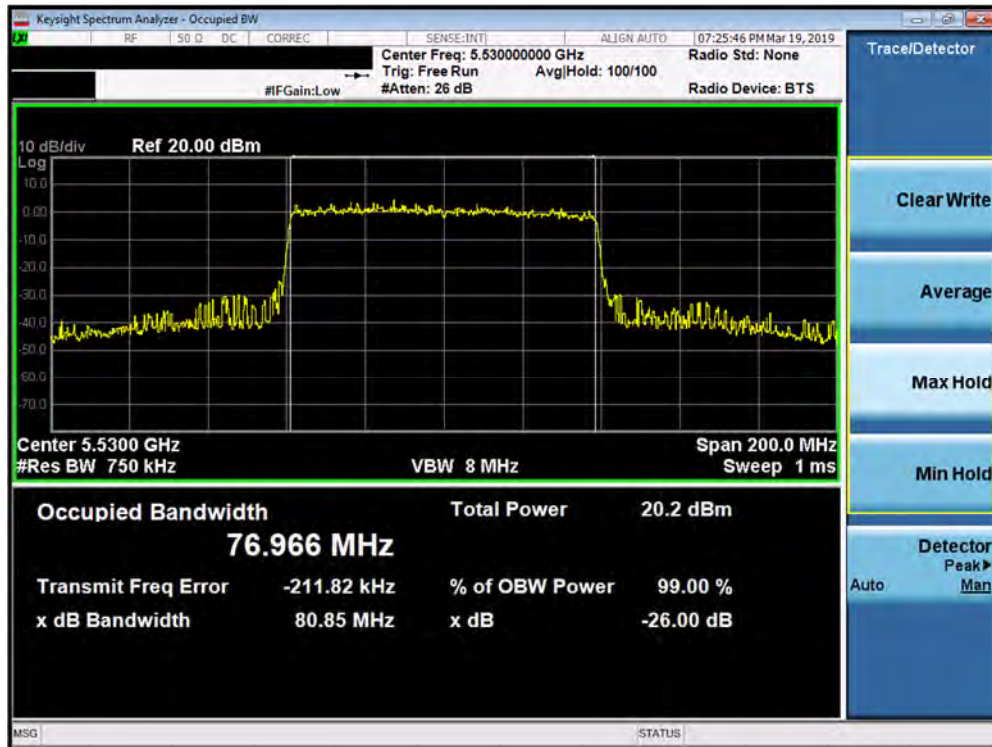


Plot 7-80. 26dB Bandwidth Plot SISO ANT2 (40MHz BW 802.11ax – 484 Tones (UNII Band 2C) – Ch. 118)

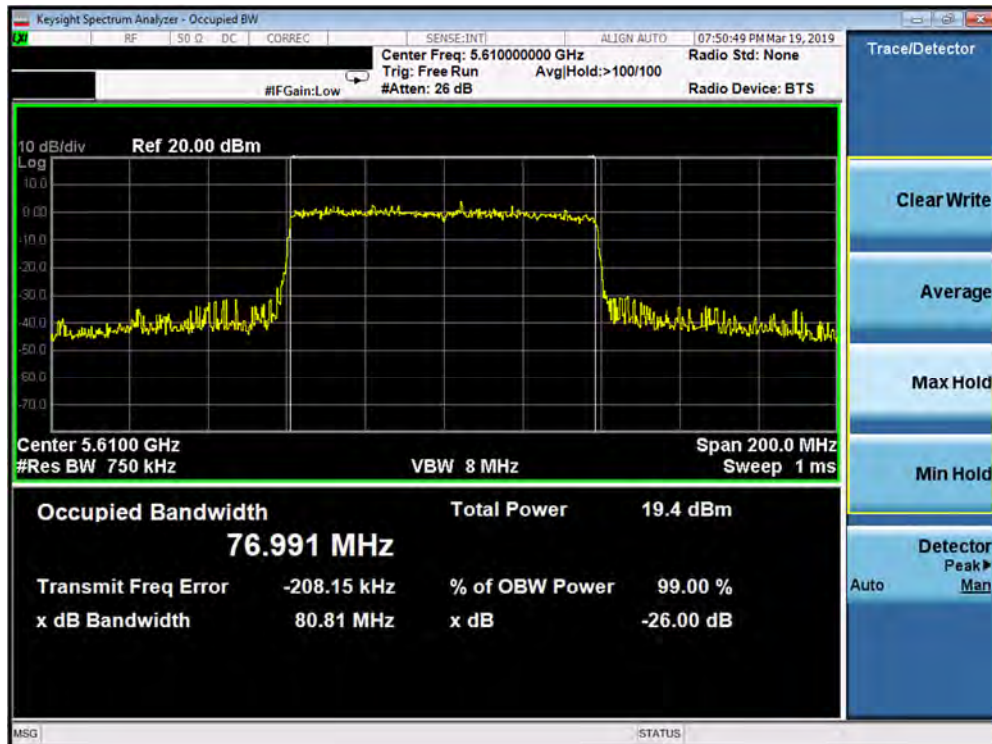


Plot 7-81. 26dB Bandwidth Plot SISO ANT2 (40MHz BW 802.11ax – 484 Tones (UNII Band 2C) – Ch. 142)

|                                         |                                              |                               |  |                                 |
|-----------------------------------------|----------------------------------------------|-------------------------------|--|---------------------------------|
| FCC ID: A3LSMF907N                      | <b>MEASUREMENT REPORT</b><br>(CERTIFICATION) |                               |  | Approved by:<br>Quality Manager |
| Test Report S/N:<br>1M1902200029-08.A3L | Test Dates:<br>01/22- 04/05/2019             | EUT Type:<br>Portable Handset |  | Page 61 of 330                  |



Plot 7-82. 26dB Bandwidth Plot SISO ANT2 (80MHz BW 802.11ax – 996 Tones (UNII Band 2C) – Ch. 106)



Plot 7-83. 26dB Bandwidth Plot SISO ANT2 (80MHz BW 802.11ax – 996 Tones (UNII Band 2C) – Ch. 122)

|                                         |                                               |                                       |                |                                 |
|-----------------------------------------|-----------------------------------------------|---------------------------------------|----------------|---------------------------------|
| FCC ID: A3LSMF907N                      | <b>PCTEST</b><br>ENGINEERING LABORATORY, INC. | MEASUREMENT REPORT<br>(CERTIFICATION) | <b>SAMSUNG</b> | Approved by:<br>Quality Manager |
| Test Report S/N:<br>1M1902200029-08.A3L | Test Dates:<br>01/22- 04/05/2019              | EUT Type:<br>Portable Handset         |                | Page 62 of 330                  |



Plot 7-84. 26dB Bandwidth Plot SISO ANT2 (80MHz BW 802.11ax – 996 Tones (UNII Band 2C) – Ch. 138)

|                                         |                                               |                                       |                |                                 |
|-----------------------------------------|-----------------------------------------------|---------------------------------------|----------------|---------------------------------|
| FCC ID: A3LSMF907N                      | <b>PCTEST</b><br>ENGINEERING LABORATORY, INC. | MEASUREMENT REPORT<br>(CERTIFICATION) | <b>SAMSUNG</b> | Approved by:<br>Quality Manager |
| Test Report S/N:<br>1M1902200029-08.A3L | Test Dates:<br>01/22- 04/05/2019              | EUT Type:<br>Portable Handset         |                | Page 63 of 330                  |

### 7.3 6dB Bandwidth Measurement – 802.11ax OFDMA §15.407 (e); RSS-Gen [6.7]

#### Test Overview and Limit

The bandwidth at 6dB down from the highest in-band spectral density is measured with a spectrum analyzer connected to the antenna terminal while the EUT is operating at its maximum duty cycle, at its maximum power control level, as defined in ANSI C63.10-2013 and KDB 789033 D02 v02r01, and at the appropriate frequencies. The spectrum analyzer's bandwidth measurement function is configured to measure the 6dB bandwidth.

***In the 5.725 – 5.850GHz band, the 6dB bandwidth must be  $\geq 500$  kHz.***

#### Test Procedure Used

ANSI C63.10-2013 – Section 6.9.2  
KDB 789033 D02 v02r01 – Section C

#### Test Settings

1. The signal analyzers' automatic bandwidth measurement capability was used to perform the 6dB bandwidth measurement. The "X" dB bandwidth parameter was set to  $X = 6$ . The automatic bandwidth measurement function also has the capability of simultaneously measuring the 99% occupied bandwidth. The bandwidth measurement was not influenced by any intermediate power nulls in the fundamental emission.
2. RBW = 100 kHz
3. VBW  $\geq 3 \times$  RBW
4. Detector = Peak
5. Trace mode = max hold
6. Sweep = auto couple

#### Test Setup

The EUT and measurement equipment were set up as shown in the diagram below.



**Figure 7-2. Test Instrument & Measurement Setup**

#### Test Notes

The 6dB Bandwidth measurement for each channel was measured with the RU index showing the highest conducted power.

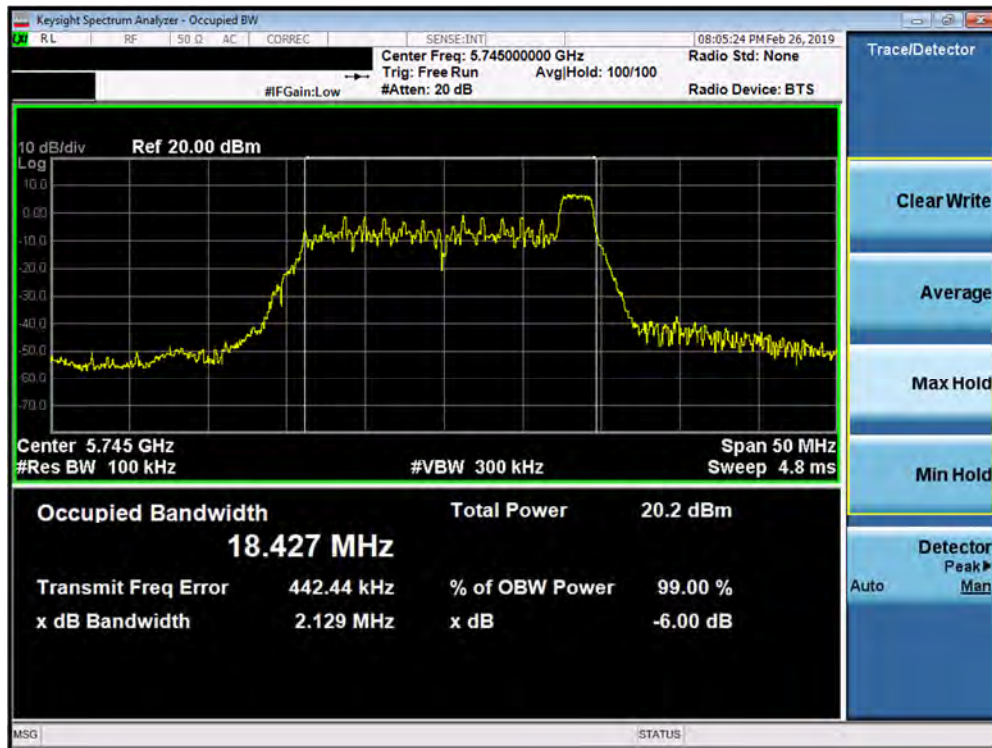
|                                         |                                                                                                                                                                                                                         |                               |                                 |
|-----------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------|---------------------------------|
| FCC ID: A3LSMF907N                      |  <b>MEASUREMENT REPORT<br/>(CERTIFICATION)</b>  |                               | Approved by:<br>Quality Manager |
| Test Report S/N:<br>1M1902200029-08.A3L | Test Dates:<br>01/22- 04/05/2019                                                                                                                                                                                        | EUT Type:<br>Portable Handset | Page 64 of 330                  |

## SISO Antenna-1 6 dB Bandwidth Measurements (26 Tones)

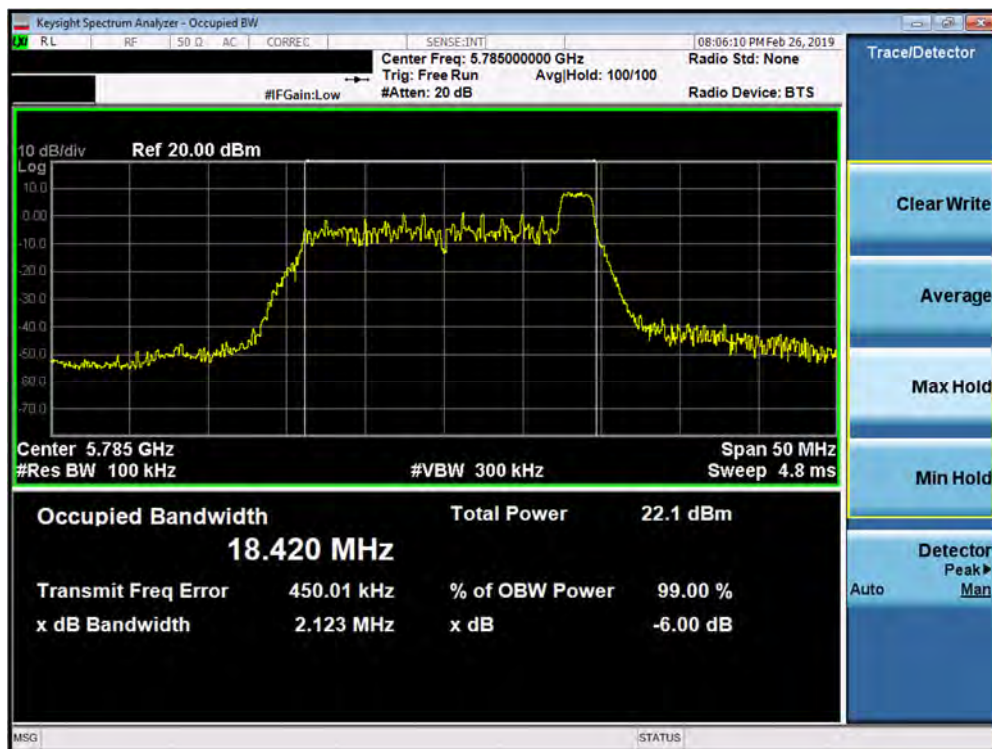
|               | Frequency [MHz] | Channel No. | 802.11 Mode | Tones | Data Rate [Mbps] | Measured 6dB Bandwidth [MHz] |
|---------------|-----------------|-------------|-------------|-------|------------------|------------------------------|
| <b>Band 3</b> | 5745            | 149         | ax (20MHz)  | 26T   | MCS0             | 2.13                         |
|               | 5785            | 157         | ax (20MHz)  | 26T   | MCS0             | 2.12                         |
|               | 5825            | 165         | ax (20MHz)  | 26T   | MCS0             | 2.16                         |
|               | 5755            | 151         | ax (40MHz)  | 26T   | MCS0             | 2.11                         |
|               | 5795            | 159         | ax (40MHz)  | 26T   | MCS0             | 2.12                         |
|               | 5775            | 155         | ax (80MHz)  | 26T   | MCS0             | 2.28                         |

**Table 7-6. Conducted Bandwidth Measurements SISO ANT1 (26 Tones)**

|                                                |                                                                                     |                                               |                                                                                       |                                        |
|------------------------------------------------|-------------------------------------------------------------------------------------|-----------------------------------------------|---------------------------------------------------------------------------------------|----------------------------------------|
| <b>FCC ID:</b> A3LSMF907N                      |  | <b>MEASUREMENT REPORT<br/>(CERTIFICATION)</b> |  | <b>Approved by:</b><br>Quality Manager |
| <b>Test Report S/N:</b><br>1M1902200029-08.A3L | <b>Test Dates:</b><br>01/22- 04/05/2019                                             | <b>EUT Type:</b><br>Portable Handset          |                                                                                       | Page 65 of 330                         |

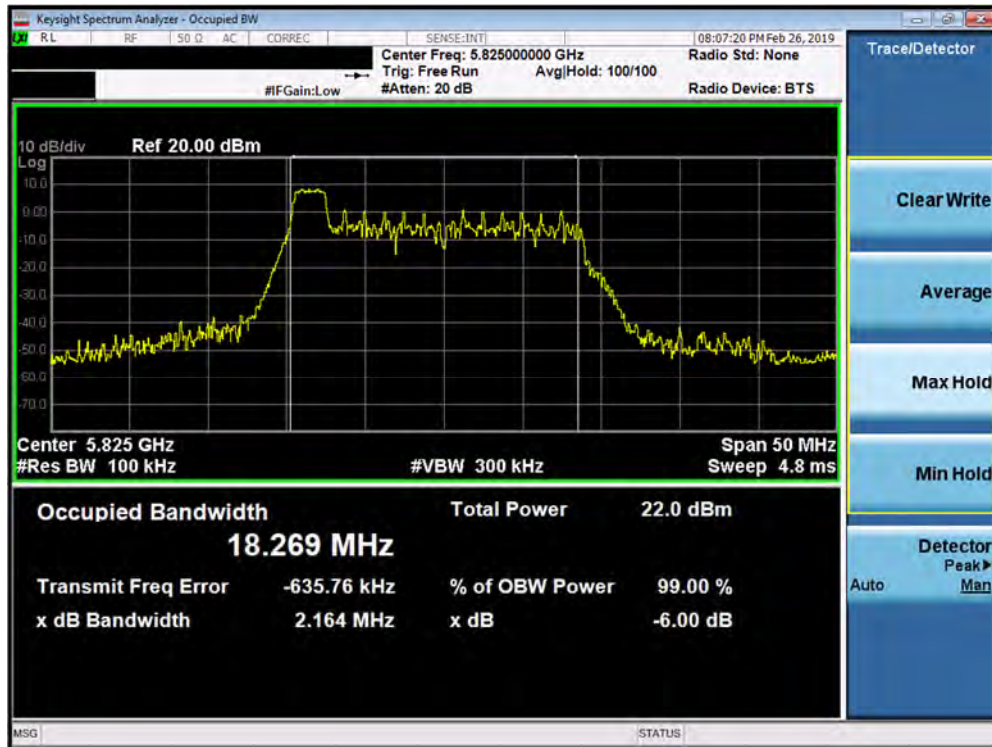


Plot 7-85. 6dB Bandwidth Plot SISO ANT1 (20MHz BW 802.11ax – 26 Tones (UNII Band 3) – Ch. 149)

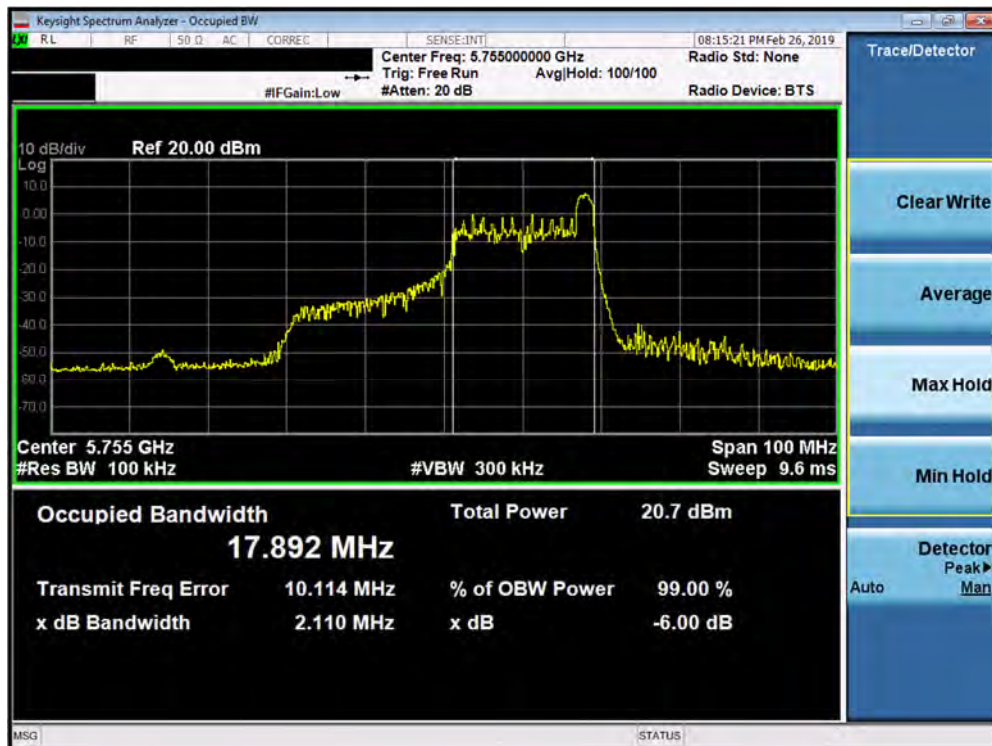


Plot 7-86. 6dB Bandwidth Plot SISO ANT1 (20MHz BW 802.11ax – 26 Tones (UNII Band 3) – Ch. 157)

|                                         |                                              |                               |                |                                 |
|-----------------------------------------|----------------------------------------------|-------------------------------|----------------|---------------------------------|
| FCC ID: A3LSMF907N                      | <b>MEASUREMENT REPORT</b><br>(CERTIFICATION) |                               |                | Approved by:<br>Quality Manager |
| Test Report S/N:<br>1M1902200029-08.A3L | Test Dates:<br>01/22- 04/05/2019             | EUT Type:<br>Portable Handset | Page 66 of 330 |                                 |

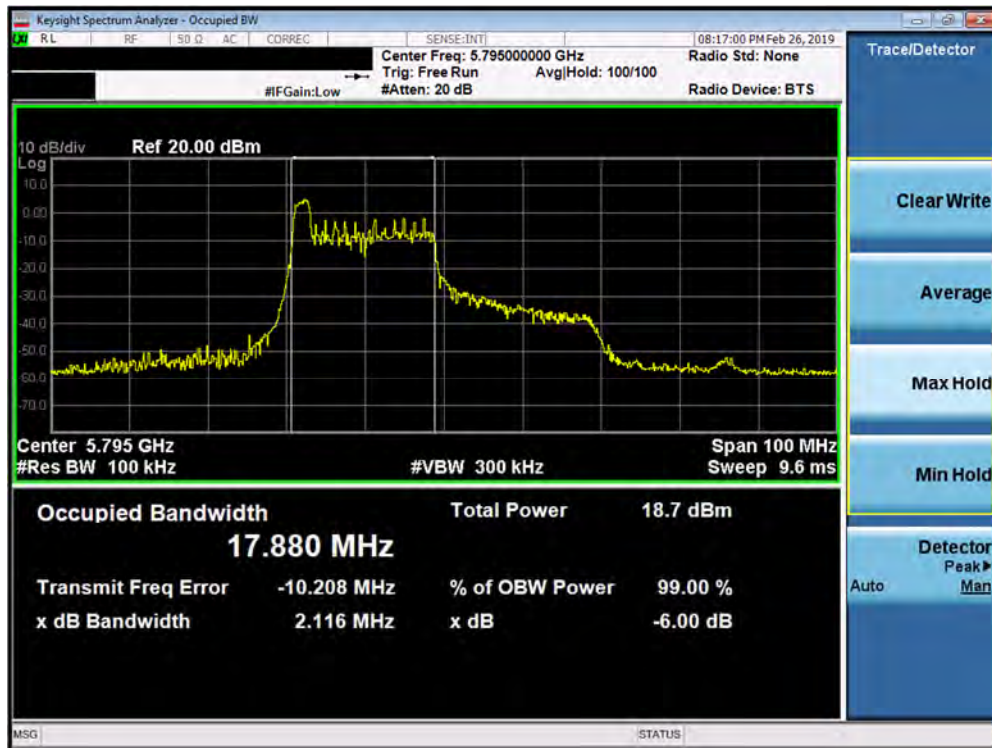


Plot 7-87. 6dB Bandwidth Plot SISO ANT1 (20MHz BW 802.11ax – 26 Tones (UNII Band 3) – Ch. 165)

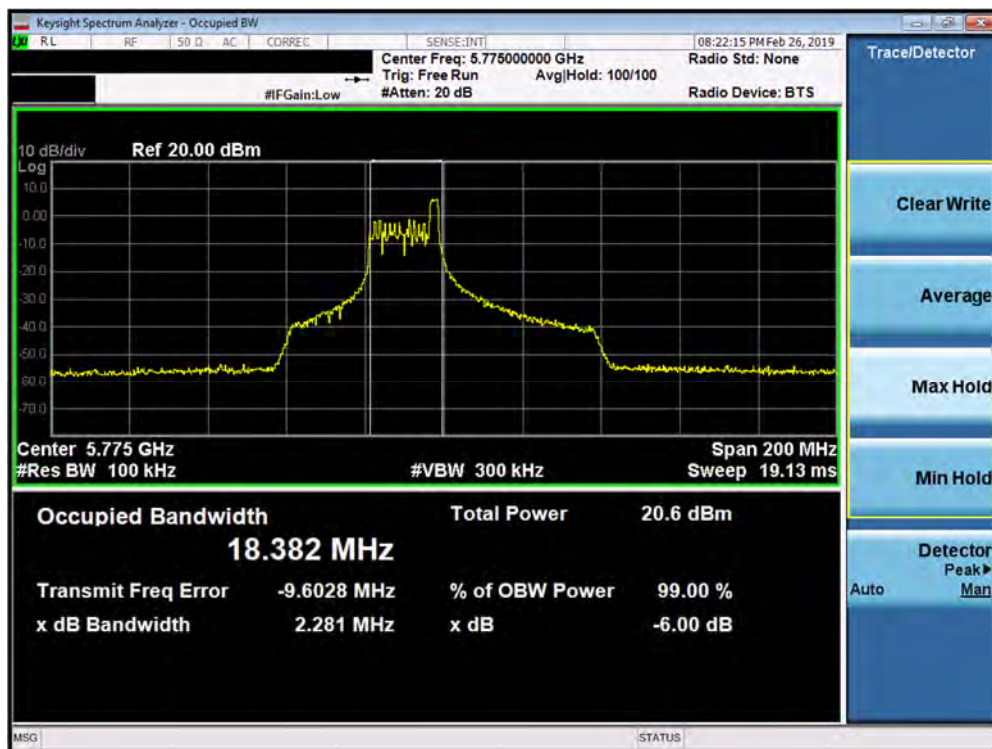


Plot 7-88. 6dB Bandwidth Plot SISO ANT1 (40MHz BW 802.11ax – 26 Tones (UNII Band 3) – Ch. 151)

|                                         |                                              |                               |  |                                 |
|-----------------------------------------|----------------------------------------------|-------------------------------|--|---------------------------------|
| FCC ID: A3LSMF907N                      | <b>MEASUREMENT REPORT</b><br>(CERTIFICATION) |                               |  | Approved by:<br>Quality Manager |
| Test Report S/N:<br>1M1902200029-08.A3L | Test Dates:<br>01/22- 04/05/2019             | EUT Type:<br>Portable Handset |  | Page 67 of 330                  |



Plot 7-89. 6dB Bandwidth Plot SISO ANT1 (40MHz BW 802.11ax – 26 Tones (UNII Band 3) – Ch. 159)



Plot 7-90. 6dB Bandwidth Plot SISO ANT1 (80MHz BW 802.11ax – 26 Tones (UNII Band 3) – Ch. 155)

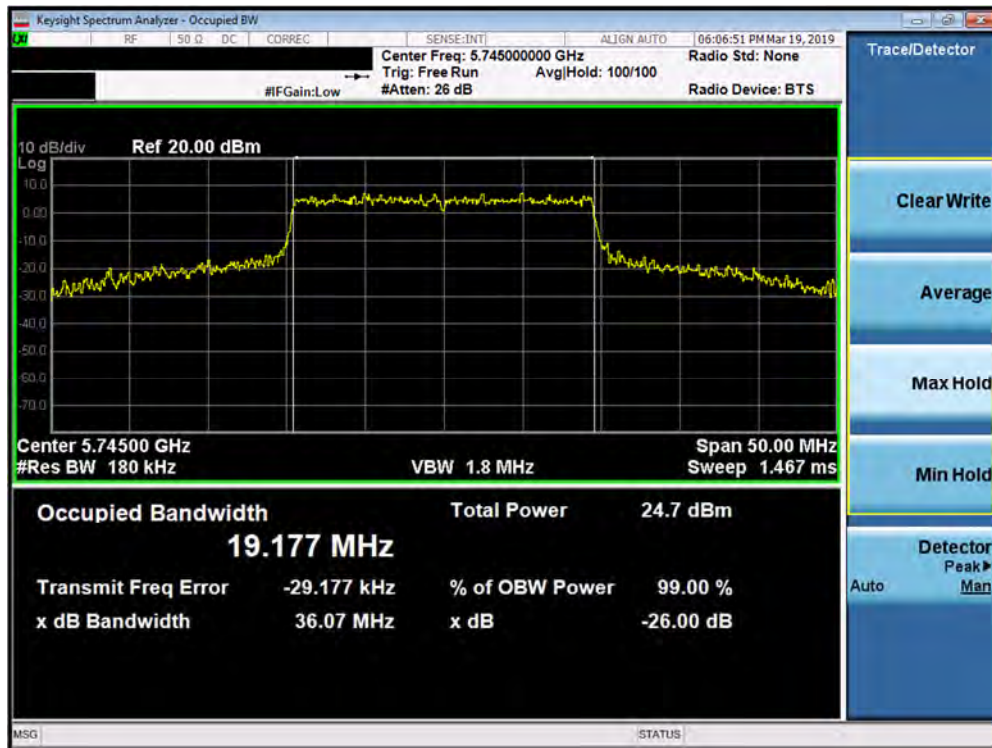
|                                         |                                               |                                       |                |                                 |
|-----------------------------------------|-----------------------------------------------|---------------------------------------|----------------|---------------------------------|
| FCC ID: A3LSMF907N                      | <b>PCTEST</b><br>ENGINEERING LABORATORY, INC. | MEASUREMENT REPORT<br>(CERTIFICATION) | <b>SAMSUNG</b> | Approved by:<br>Quality Manager |
| Test Report S/N:<br>1M1902200029-08.A3L | Test Dates:<br>01/22- 04/05/2019              | EUT Type:<br>Portable Handset         |                | Page 68 of 330                  |

## SISO Antenna-1 6 dB Bandwidth Measurements (Full Tones)

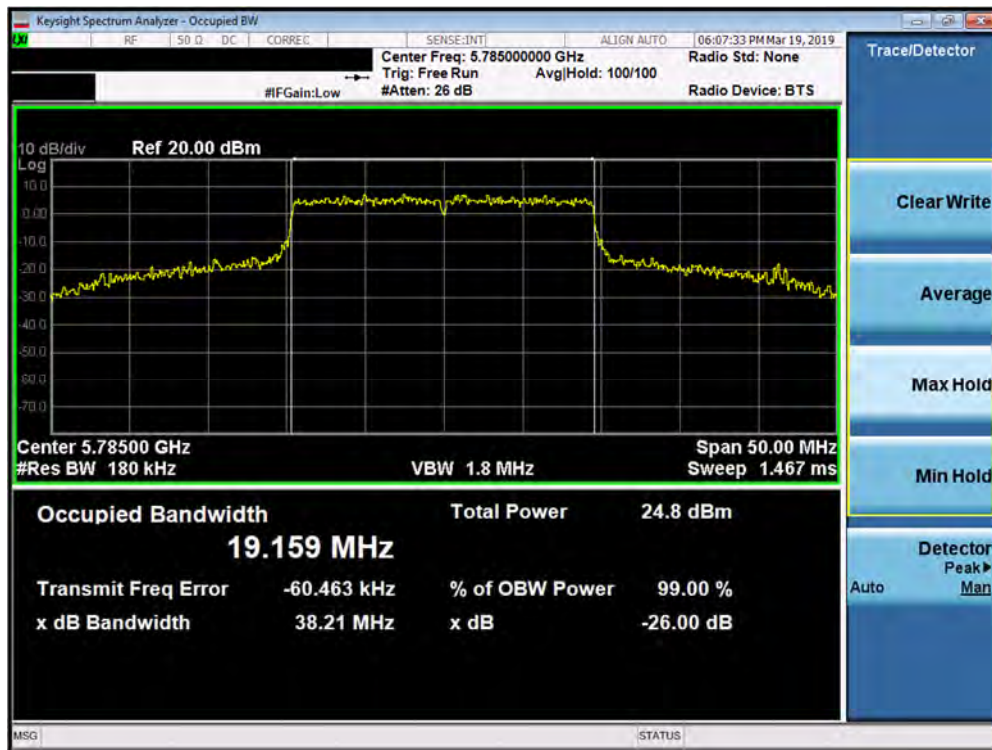
|        | Frequency [MHz] | Channel No. | 802.11 Mode | Tones | Data Rate [Mbps] | Measured 6dB Bandwidth [MHz] |
|--------|-----------------|-------------|-------------|-------|------------------|------------------------------|
| Band 3 | 5745            | 149         | ax (20MHz)  | 242T  | MCS0             | 36.07                        |
|        | 5785            | 157         | ax (20MHz)  | 242T  | MCS0             | 38.21                        |
|        | 5825            | 165         | ax (20MHz)  | 242T  | MCS0             | 35.07                        |
|        | 5755            | 151         | ax (40MHz)  | 242T  | MCS0             | 39.92                        |
|        | 5795            | 159         | ax (40MHz)  | 242T  | MCS0             | 39.75                        |
|        | 5775            | 155         | ax (80MHz)  | 242T  | MCS0             | 80.90                        |

**Table 7-7. Conducted Bandwidth Measurements SISO ANT1 (Full Tones)**

|                                         |                                                                                                                                                                                                                     |                               |                                 |
|-----------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------|---------------------------------|
| FCC ID: A3LSMF907N                      |  <b>MEASUREMENT REPORT (CERTIFICATION)</b>  |                               | Approved by:<br>Quality Manager |
| Test Report S/N:<br>1M1902200029-08.A3L | Test Dates:<br>01/22- 04/05/2019                                                                                                                                                                                    | EUT Type:<br>Portable Handset | Page 69 of 330                  |

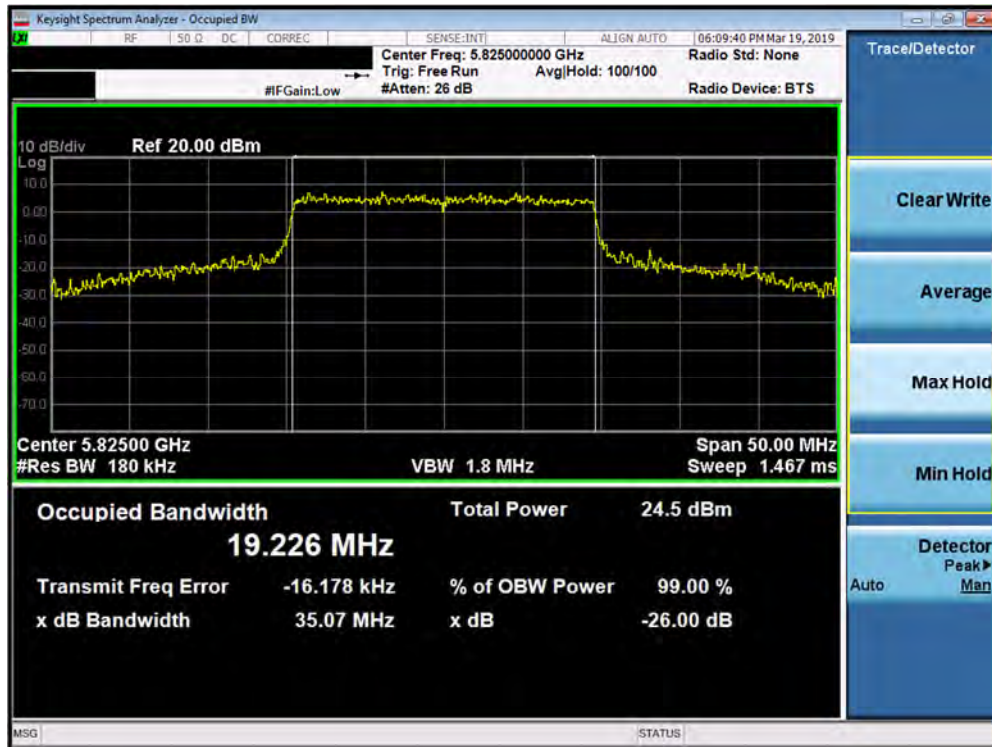


Plot 7-91. 6dB Bandwidth Plot SISO ANT1 (20MHz BW 802.11ax – 242 Tones (UNII Band 3) – Ch. 149)

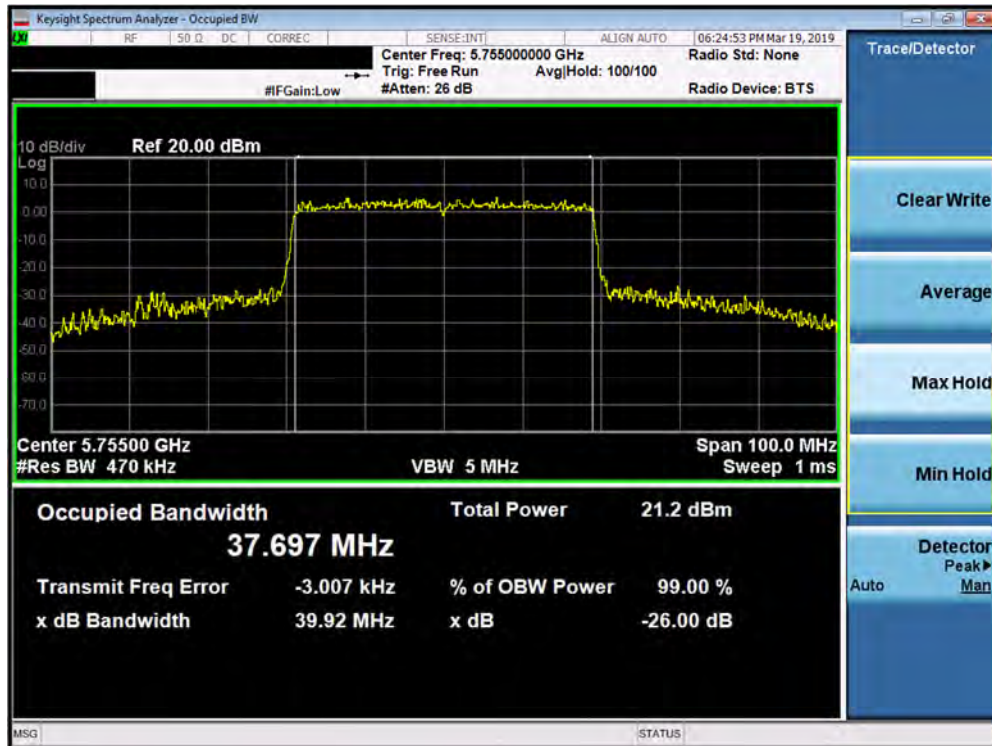


Plot 7-92. 6dB Bandwidth Plot SISO ANT1 (20MHz BW 802.11ax – 242 Tones (UNII Band 3) – Ch. 157)

|                                         |                                              |                               |  |                                 |
|-----------------------------------------|----------------------------------------------|-------------------------------|--|---------------------------------|
| FCC ID: A3LSMF907N                      | <b>MEASUREMENT REPORT</b><br>(CERTIFICATION) |                               |  | Approved by:<br>Quality Manager |
| Test Report S/N:<br>1M1902200029-08.A3L | Test Dates:<br>01/22- 04/05/2019             | EUT Type:<br>Portable Handset |  | Page 70 of 330                  |

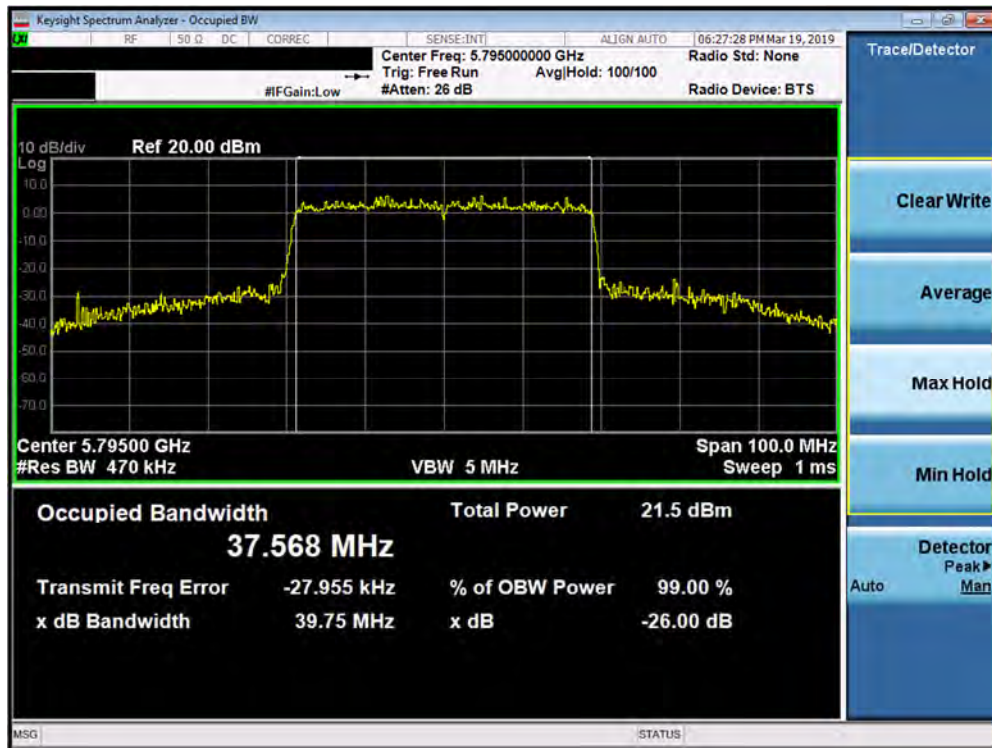


Plot 7-93. 6dB Bandwidth Plot SISO ANT1 (20MHz BW 802.11ax – 242 Tones (UNII Band 3) – Ch. 165)

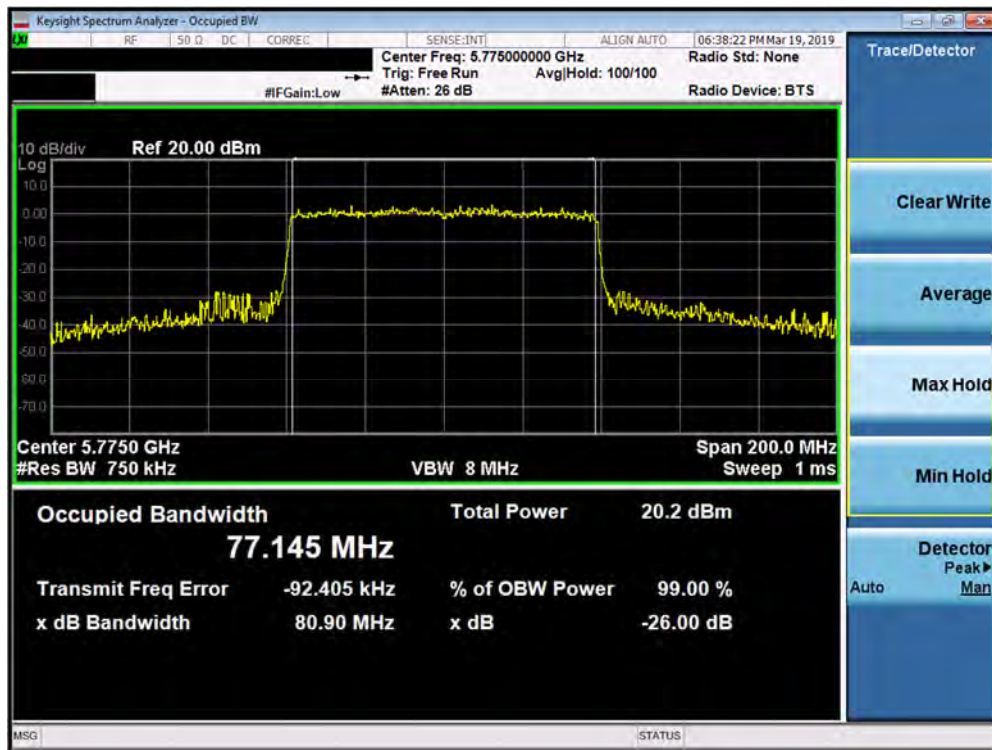


Plot 7-94. 6dB Bandwidth Plot SISO ANT1 (40MHz BW 802.11ax – 484 Tones (UNII Band 3) – Ch. 151)

|                                         |                                               |                                       |                |                                 |
|-----------------------------------------|-----------------------------------------------|---------------------------------------|----------------|---------------------------------|
| FCC ID: A3LSMF907N                      | <b>PCTEST</b><br>ENGINEERING LABORATORY, INC. | MEASUREMENT REPORT<br>(CERTIFICATION) | <b>SAMSUNG</b> | Approved by:<br>Quality Manager |
| Test Report S/N:<br>1M1902200029-08.A3L | Test Dates:<br>01/22- 04/05/2019              | EUT Type:<br>Portable Handset         |                | Page 71 of 330                  |



Plot 7-95. 6dB Bandwidth Plot SISO ANT1 (40MHz BW 802.11ax – 484 Tones (UNII Band 3) – Ch. 159)



Plot 7-96. 6dB Bandwidth Plot SISO ANT1 (80MHz BW 802.11ax – 996 Tones (UNII Band 3) – Ch. 155)

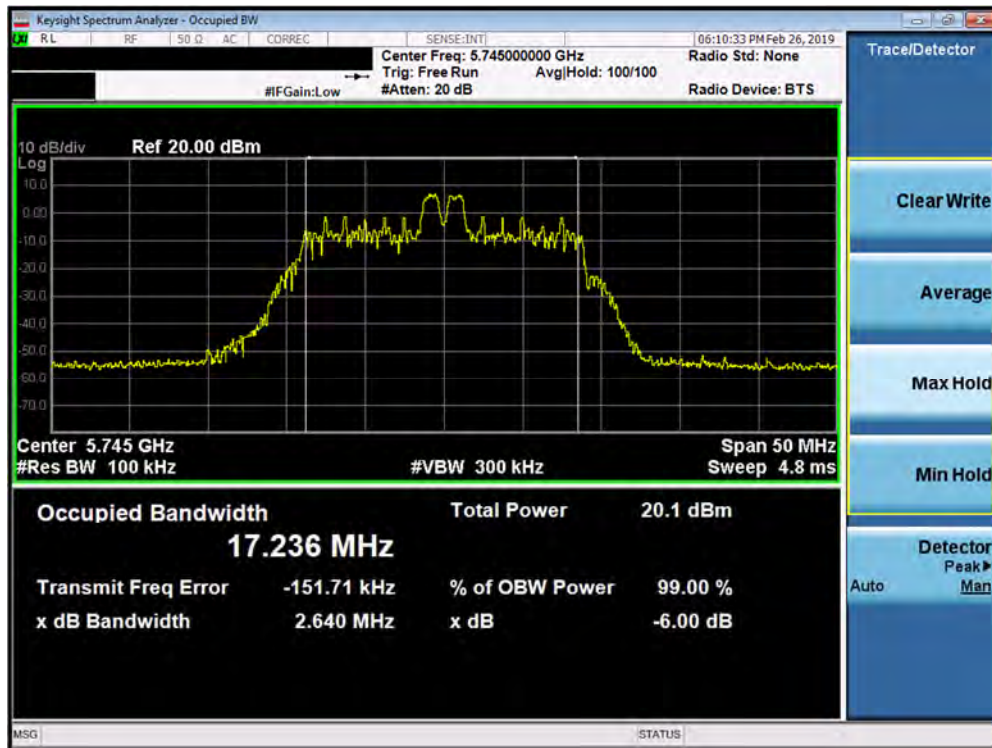
|                                         |                                               |                                       |                |                                 |
|-----------------------------------------|-----------------------------------------------|---------------------------------------|----------------|---------------------------------|
| FCC ID: A3LSMF907N                      | <b>PCTEST</b><br>ENGINEERING LABORATORY, INC. | MEASUREMENT REPORT<br>(CERTIFICATION) | <b>SAMSUNG</b> | Approved by:<br>Quality Manager |
| Test Report S/N:<br>1M1902200029-08.A3L | Test Dates:<br>01/22- 04/05/2019              | EUT Type:<br>Portable Handset         |                | Page 72 of 330                  |

## SISO Antenna-2 6dB Bandwidth Measurements (26 Tones)

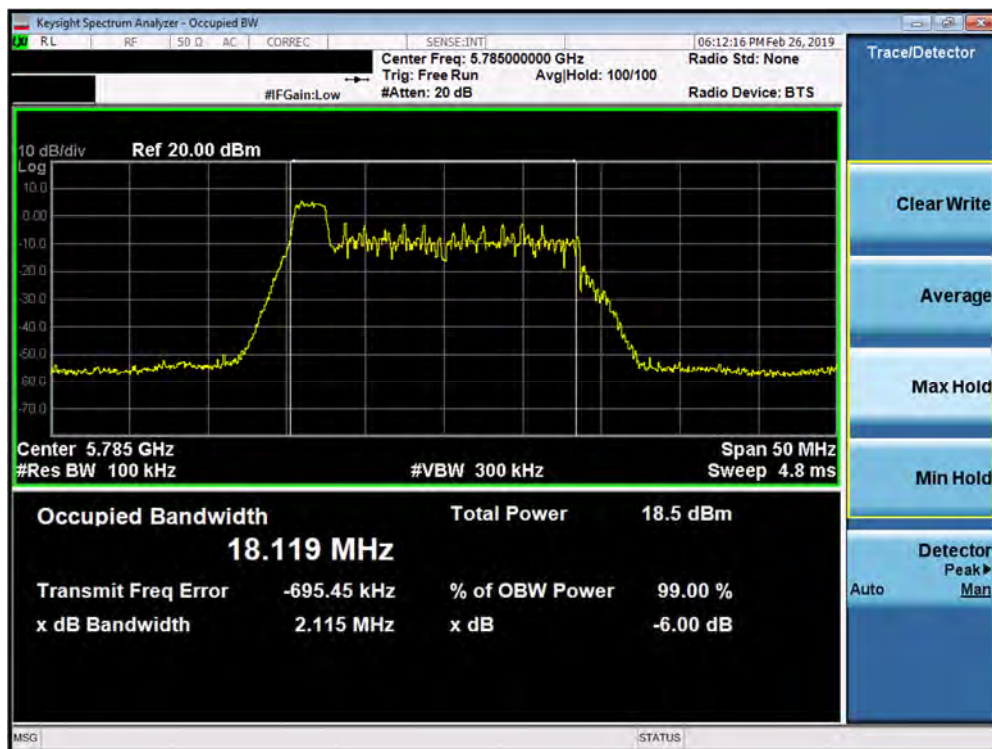
|        | Frequency [MHz] | Channel No. | 802.11 Mode | Tones | Data Rate [Mbps] | Measured 6dB Bandwidth [MHz] |
|--------|-----------------|-------------|-------------|-------|------------------|------------------------------|
| Band 3 | 5745            | 149         | ax (20MHz)  | 26T   | MCS0             | 2.64                         |
|        | 5785            | 157         | ax (20MHz)  | 26T   | MCS0             | 2.12                         |
|        | 5825            | 165         | ax (20MHz)  | 26T   | MCS0             | 2.11                         |
|        | 5755            | 151         | ax (40MHz)  | 26T   | MCS0             | 2.17                         |
|        | 5795            | 159         | ax (40MHz)  | 26T   | MCS0             | 2.13                         |
|        | 5775            | 155         | ax (80MHz)  | 26T   | MCS0             | 2.29                         |

**Table 7-8. Conducted Bandwidth Measurements SISO ANT2 (26 Tones)**

|                                         |                                                                                                                                                                                                                     |                               |                                 |
|-----------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------|---------------------------------|
| FCC ID: A3LSMF907N                      |  <b>MEASUREMENT REPORT (CERTIFICATION)</b>  |                               | Approved by:<br>Quality Manager |
| Test Report S/N:<br>1M1902200029-08.A3L | Test Dates:<br>01/22- 04/05/2019                                                                                                                                                                                    | EUT Type:<br>Portable Handset | Page 73 of 330                  |

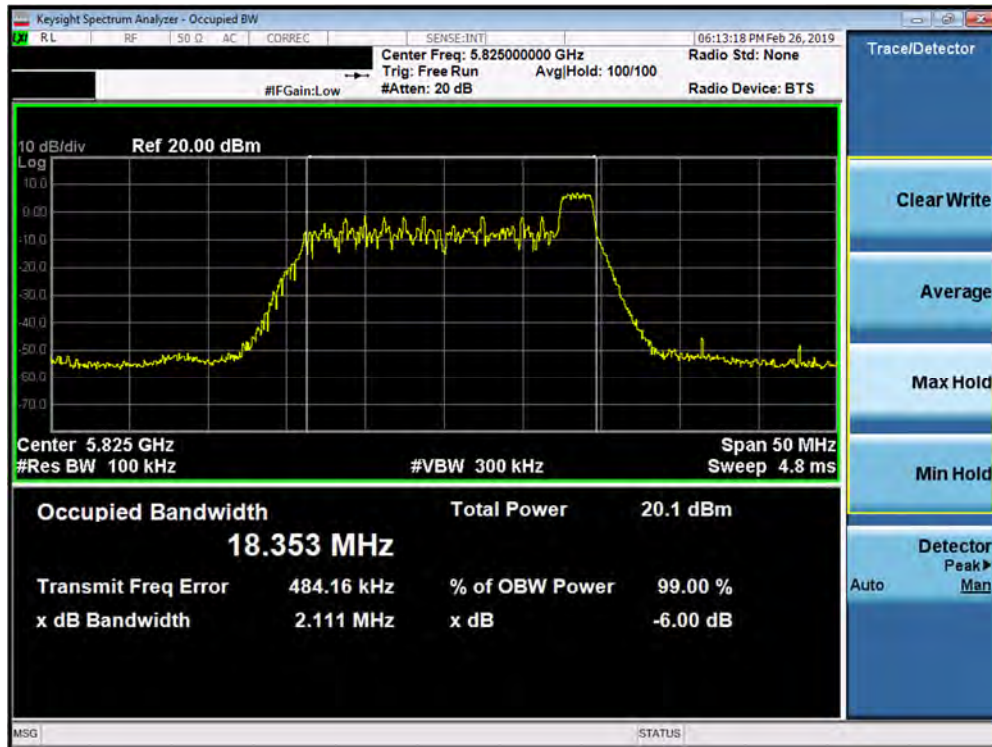


Plot 7-97. 6dB Bandwidth Plot SISO ANT2 (20MHz BW 802.11ax – 26 Tones (UNII Band 3) – Ch. 149)



Plot 7-98. 6dB Bandwidth Plot SISO ANT2 (20MHz BW 802.11ax – 26 Tones (UNII Band 3) – Ch. 157)

|                                         |                                              |                               |  |                                 |
|-----------------------------------------|----------------------------------------------|-------------------------------|--|---------------------------------|
| FCC ID: A3LSMF907N                      | <b>MEASUREMENT REPORT</b><br>(CERTIFICATION) |                               |  | Approved by:<br>Quality Manager |
| Test Report S/N:<br>1M1902200029-08.A3L | Test Dates:<br>01/22- 04/05/2019             | EUT Type:<br>Portable Handset |  | Page 74 of 330                  |

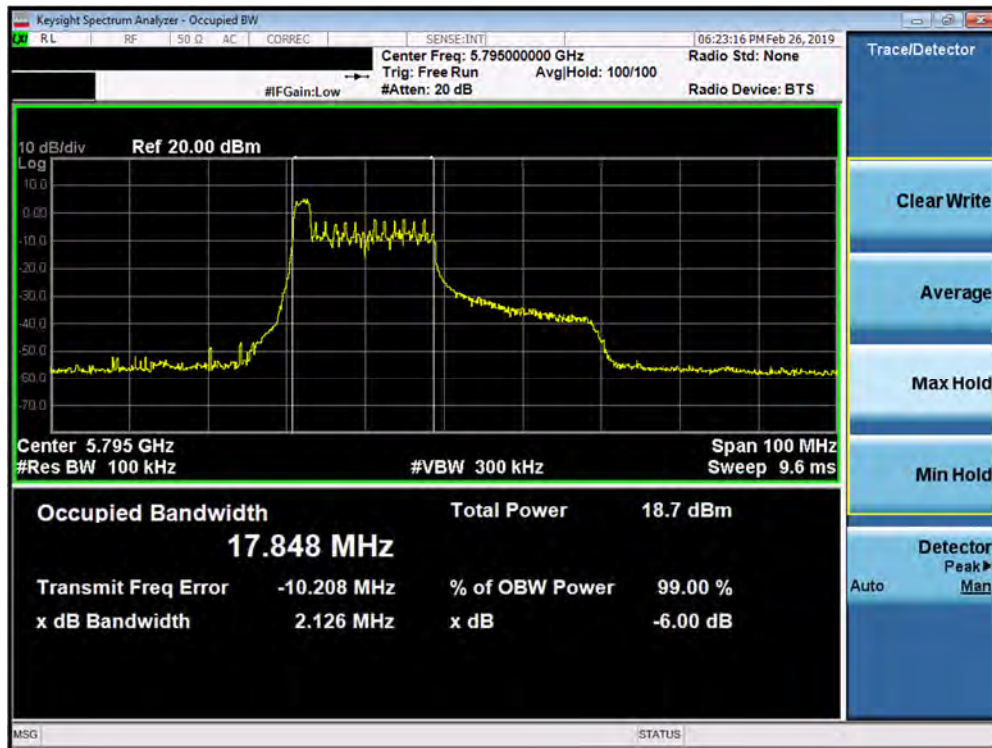


Plot 7-99. 6dB Bandwidth Plot SISO ANT2 (20MHz BW 802.11ax – 26 Tones (UNII Band 3) – Ch. 165)

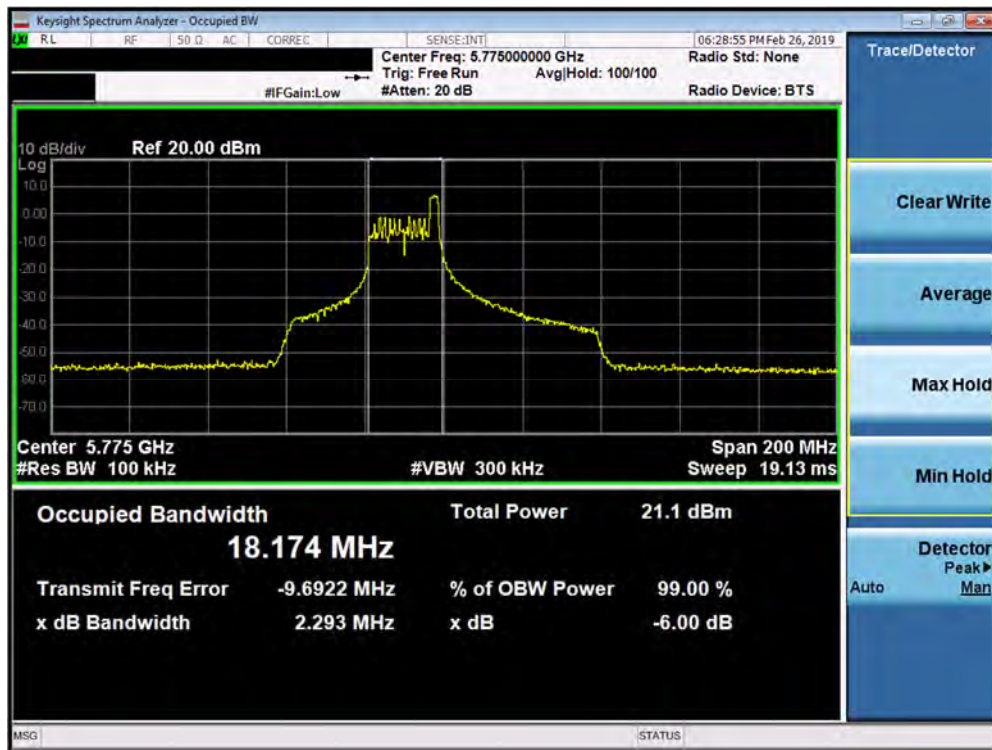


Plot 7-100. 6dB Bandwidth Plot SISO ANT2 (40MHz BW 802.11ax – 26 Tones (UNII Band 3) – Ch. 151)

|                                         |                                               |                                       |                |                                 |
|-----------------------------------------|-----------------------------------------------|---------------------------------------|----------------|---------------------------------|
| FCC ID: A3LSMF907N                      | <b>PCTEST</b><br>ENGINEERING LABORATORY, INC. | MEASUREMENT REPORT<br>(CERTIFICATION) | <b>SAMSUNG</b> | Approved by:<br>Quality Manager |
| Test Report S/N:<br>1M1902200029-08.A3L | Test Dates:<br>01/22- 04/05/2019              | EUT Type:<br>Portable Handset         |                | Page 75 of 330                  |



Plot 7-101. 6dB Bandwidth Plot SISO ANT2 (40MHz BW 802.11ax – 26 Tones (UNII Band 3) – Ch. 159)



Plot 7-102. 6dB Bandwidth Plot SISO ANT2 (80MHz BW 802.11ax – 26 Tones (UNII Band 3) – Ch. 155)

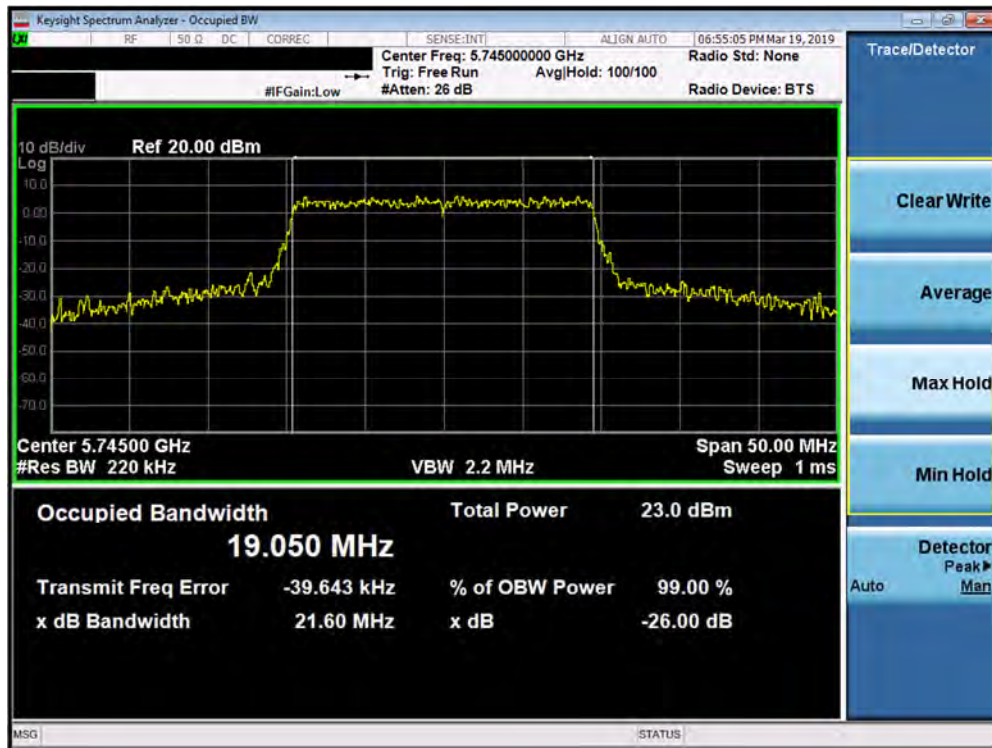
|                                         |                                               |                                       |                |                                 |
|-----------------------------------------|-----------------------------------------------|---------------------------------------|----------------|---------------------------------|
| FCC ID: A3LSMF907N                      | <b>PCTEST</b><br>ENGINEERING LABORATORY, INC. | MEASUREMENT REPORT<br>(CERTIFICATION) | <b>SAMSUNG</b> | Approved by:<br>Quality Manager |
| Test Report S/N:<br>1M1902200029-08.A3L | Test Dates:<br>01/22- 04/05/2019              | EUT Type:<br>Portable Handset         |                | Page 76 of 330                  |

## SISO Antenna-2 6dB Bandwidth Measurements (Full Tones)

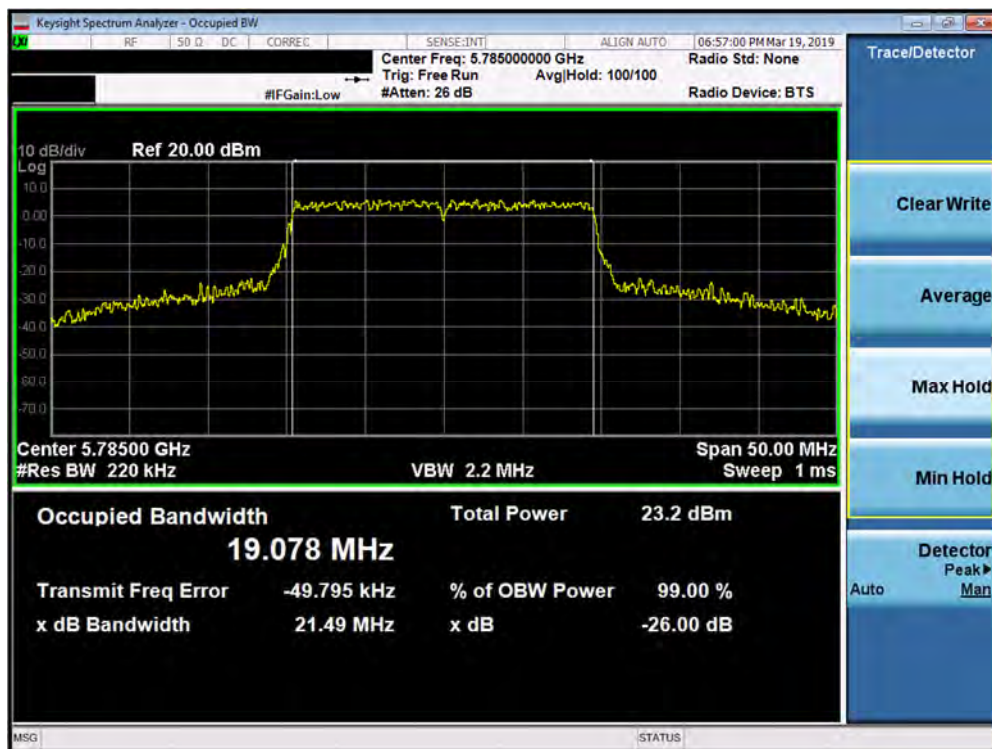
|        | Frequency [MHz] | Channel No. | 802.11 Mode | Tones | Data Rate [Mbps] | Measured 6dB Bandwidth [MHz] |
|--------|-----------------|-------------|-------------|-------|------------------|------------------------------|
| Band 3 | 5745            | 149         | ax (20MHz)  | 242T  | MCS0             | 21.60                        |
|        | 5785            | 157         | ax (20MHz)  | 242T  | MCS0             | 21.49                        |
|        | 5825            | 165         | ax (20MHz)  | 242T  | MCS0             | 21.39                        |
|        | 5755            | 151         | ax (40MHz)  | 242T  | MCS0             | 39.99                        |
|        | 5795            | 159         | ax (40MHz)  | 242T  | MCS0             | 39.78                        |
|        | 5775            | 155         | ax (80MHz)  | 242T  | MCS0             | 81.00                        |

Table 7-9. Conducted Bandwidth Measurements SISO ANT2 (Full Tones)

|                                         |                                                                                                                                                                                                                     |                               |                                 |
|-----------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------|---------------------------------|
| FCC ID: A3LSMF907N                      |  <b>MEASUREMENT REPORT (CERTIFICATION)</b>  |                               | Approved by:<br>Quality Manager |
| Test Report S/N:<br>1M1902200029-08.A3L | Test Dates:<br>01/22- 04/05/2019                                                                                                                                                                                    | EUT Type:<br>Portable Handset | Page 77 of 330                  |

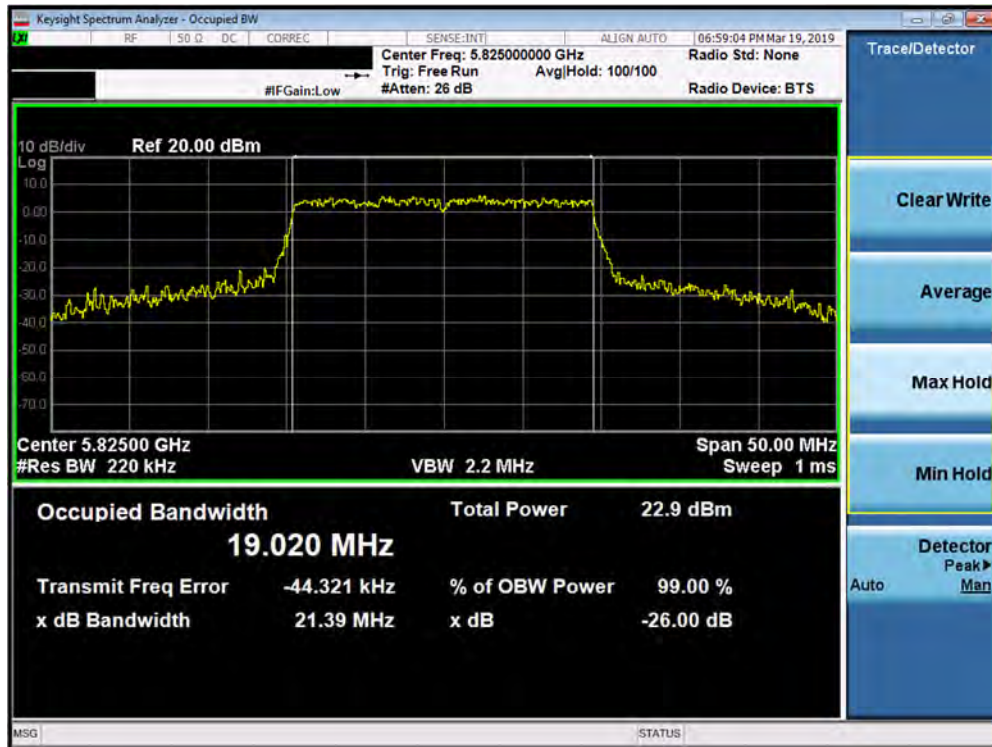


Plot 7-103. 6dB Bandwidth Plot SISO ANT2 (20MHz BW 802.11ax – 242 Tones (UNII Band 3) – Ch. 149)



Plot 7-104. 6dB Bandwidth Plot SISO ANT2 (20MHz BW 802.11ax – 242 Tones (UNII Band 3) – Ch. 157)

|                                         |                                               |                                       |                |                                 |
|-----------------------------------------|-----------------------------------------------|---------------------------------------|----------------|---------------------------------|
| FCC ID: A3LSMF907N                      | <b>PCTEST</b><br>ENGINEERING LABORATORY, INC. | MEASUREMENT REPORT<br>(CERTIFICATION) | <b>SAMSUNG</b> | Approved by:<br>Quality Manager |
| Test Report S/N:<br>1M1902200029-08.A3L | Test Dates:<br>01/22- 04/05/2019              | EUT Type:<br>Portable Handset         |                | Page 78 of 330                  |

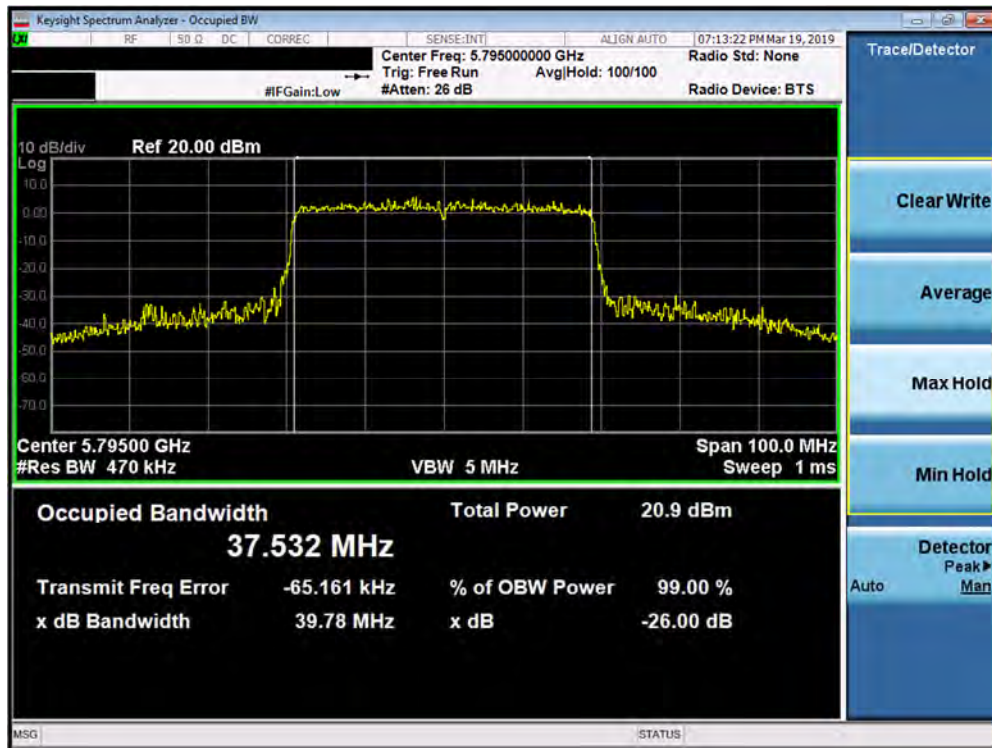


Plot 7-105. 6dB Bandwidth Plot SISO ANT2 (20MHz BW 802.11ax – 242 Tones (UNII Band 3) – Ch. 165)

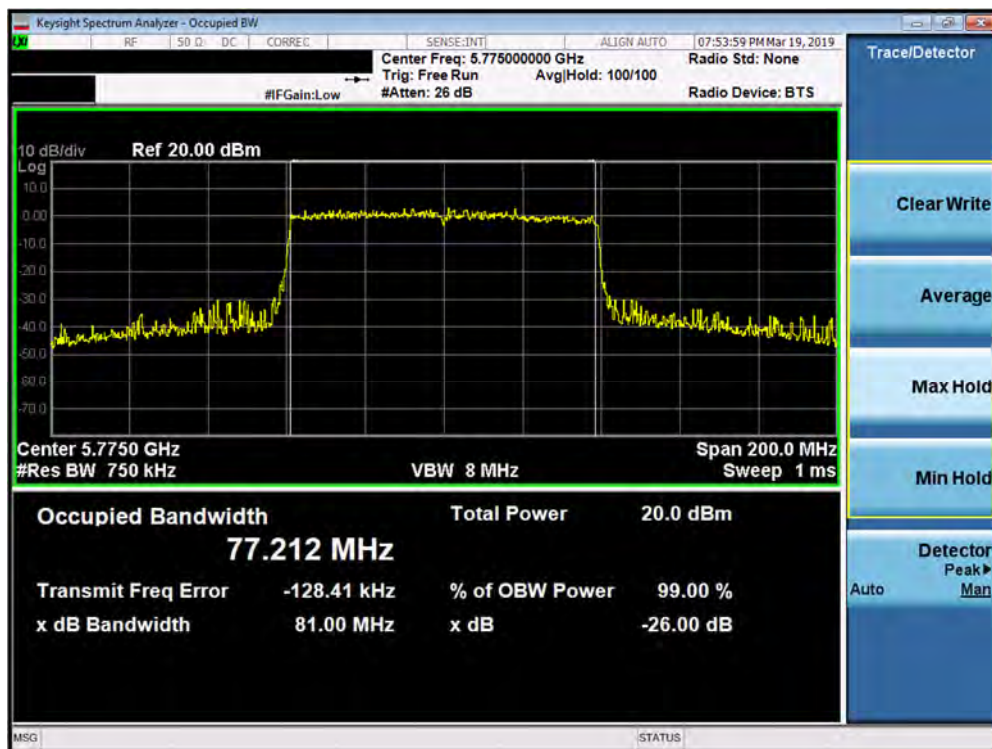


Plot 7-106. 6dB Bandwidth Plot SISO ANT2 (40MHz BW 802.11ax – 484 Tones (UNII Band 3) – Ch. 151)

|                                         |                                               |                                       |                |                                 |
|-----------------------------------------|-----------------------------------------------|---------------------------------------|----------------|---------------------------------|
| FCC ID: A3LSMF907N                      | <b>PCTEST</b><br>ENGINEERING LABORATORY, INC. | MEASUREMENT REPORT<br>(CERTIFICATION) | <b>SAMSUNG</b> | Approved by:<br>Quality Manager |
| Test Report S/N:<br>1M1902200029-08.A3L | Test Dates:<br>01/22- 04/05/2019              | EUT Type:<br>Portable Handset         |                | Page 79 of 330                  |



Plot 7-107. 6dB Bandwidth Plot SISO ANT2 (40MHz BW 802.11ax – 484 Tones (UNII Band 3) – Ch. 159)



Plot 7-108. 6dB Bandwidth Plot SISO ANT2 (80MHz BW 802.11ax – 996 Tones (UNII Band 3) – Ch. 155)

|                                         |                                               |                                       |                |                                 |
|-----------------------------------------|-----------------------------------------------|---------------------------------------|----------------|---------------------------------|
| FCC ID: A3LSMF907N                      | <b>PCTEST</b><br>ENGINEERING LABORATORY, INC. | MEASUREMENT REPORT<br>(CERTIFICATION) | <b>SAMSUNG</b> | Approved by:<br>Quality Manager |
| Test Report S/N:<br>1M1902200029-08.A3L | Test Dates:<br>01/22- 04/05/2019              | EUT Type:<br>Portable Handset         |                | Page 80 of 330                  |

## 7.4 UNII Output Power Measurement – 802.11ax OFDMA

§15.407(a.1.iv) §15.407(a.2) §15.407(a.3); RSS-247 [6.2]

### Test Overview and Limits

A transmitter antenna terminal of the EUT is connected to the input of an RF pulse power sensor. Measurement is made using a broadband average power meter while the EUT is operating at its maximum duty cycle, at its maximum power control level, as defined in ANSI C63.10-2013 and KDB 789033 D02 v02r01, and at the appropriate frequencies.

***In the 5.15 – 5.25GHz band, the maximum permissible conducted output power is 250mW (23.98dBm). The maximum e.i.r.p. shall not exceed the lesser of 200 mW (23.01dBm) or  $10 + 10 \log_{10}(18.97) = 22.78 \text{ dBm}$ .***

***In the 5.25 – 5.35GHz band, the maximum permissible conducted output power is the lesser of 250mW (23.98dBm) or  $11 \text{ dBm} + 10\log_{10}(26\text{dB BW}) = 11 \text{ dBm} + 10\log_{10}(21.29) = 24.28\text{dBm}$ . The maximum e.i.r.p. shall not exceed the lesser of 1.0 W (30dBm) or  $17 + 10 \log_{10}(18.84) = 29.75 \text{ dBm}$ .***

***In the 5.47 – 5.725GHz band, the maximum permissible conducted output power is the lesser of 250mW (23.98dBm) or  $11 \text{ dBm} + 10\log_{10}(26\text{dB BW}) = 11 \text{ dBm} + 10\log_{10}(21.56) = 24.34\text{dBm}$ . The maximum e.i.r.p. shall not exceed the lesser of 1.0 W (30dBm) or  $17 + 10 \log_{10}(18.69) = 29.72 \text{ dBm}$ .***

***In the 5.725 – 5.850GHz band, the maximum permissible conducted output power is 1W (30dBm). The maximum e.i.r.p. is 36 dBm.***

### Test Procedure Used

ANSI C63.10-2013 – Section 12.3.3.2 Method PM-G  
KDB 789033 D02 v02r01 – Section E)3)b) Method PM-G  
ANSI C63.10-2013 – Section 14.2 Measure-and-Sum Technique  
KDB 662911 v02r01 – Section E)1) Measure-and-Sum Technique

### Test Settings

Average power measurements were performed only when the EUT was transmitting at its maximum power control level using a broadband power meter with a pulse sensor. The power meter implemented triggering and gating capabilities which were set up such that power measurements were recorded only during the ON time of the transmitter. The trace was averaged over 100 traces to obtain the final measured average power.

### Test Setup

The EUT and measurement equipment were set up as shown in the diagram below.



**Figure 7-3. Test Instrument & Measurement Setup**

|                                         |                                               |                                       |                |                                 |
|-----------------------------------------|-----------------------------------------------|---------------------------------------|----------------|---------------------------------|
| FCC ID: A3LSMF907N                      | <b>PCTEST</b><br>ENGINEERING LABORATORY, INC. | MEASUREMENT REPORT<br>(CERTIFICATION) | <b>SAMSUNG</b> | Approved by:<br>Quality Manager |
| Test Report S/N:<br>1M1902200029-08.A3L | Test Dates:<br>01/22- 04/05/2019              | EUT Type:<br>Portable Handset         |                | Page 81 of 330                  |

## SISO Antenna-1 Conducted Output Power Measurements (26 Tones)

| 5GHz (20MHz Bandwidth) | Freq [MHz] | Channel | Detector | Tones | RU Index |       |       | Conducted Power Limit [dBm] | Conducted Power Margin [dB] | Ant. Gain [dBi] | Max e.i.r.p. [dBm] | Max e.i.r.p. Limit [dBm] | e.i.r.p. Margin [dB] |
|------------------------|------------|---------|----------|-------|----------|-------|-------|-----------------------------|-----------------------------|-----------------|--------------------|--------------------------|----------------------|
|                        |            |         |          |       | 0        | 4     | 8     |                             |                             |                 |                    |                          |                      |
|                        | 5180       | 36      | AVG      | 26T   | 10.81    | 10.99 | 10.91 | 23.98                       | -12.99                      | -5.50           | 5.49               | 22.78                    | -17.29               |
|                        | 5200       | 40      | AVG      | 26T   | 10.91    | 10.98 | 10.93 | 23.98                       | -13.00                      | -5.50           | 5.48               | 22.78                    | -17.30               |
|                        | 5240       | 48      | AVG      | 26T   | 10.97    | 10.83 | 10.95 | 23.98                       | -13.01                      | -5.50           | 5.47               | 22.78                    | -17.31               |
|                        | 5260       | 52      | AVG      | 26T   | 10.76    | 10.97 | 10.74 | 23.75                       | -12.78                      | -5.50           | 5.47               | 29.75                    | -24.28               |
|                        | 5280       | 56      | AVG      | 26T   | 10.83    | 10.57 | 10.76 | 23.75                       | -12.92                      | -5.50           | 5.33               | 29.75                    | -24.42               |
|                        | 5320       | 64      | AVG      | 26T   | 10.99    | 10.67 | 10.91 | 23.75                       | -12.76                      | -5.50           | 5.49               | 29.75                    | -24.26               |
|                        | 5500       | 100     | AVG      | 26T   | 10.72    | 10.80 | 10.97 | 23.72                       | -12.75                      | -6.75           | 4.22               | 29.72                    | -25.50               |
|                        | 5600       | 120     | AVG      | 26T   | 10.86    | 10.89 | 10.98 | 23.72                       | -12.74                      | -6.75           | 4.23               | 29.72                    | -25.49               |
|                        | 5720       | 144     | AVG      | 26T   | 10.75    | 10.90 | 10.98 | 23.72                       | -12.74                      | -6.75           | 4.23               | 29.72                    | -25.49               |
|                        | 5745       | 149     | AVG      | 26T   | 10.81    | 10.77 | 10.98 | 30.00                       | -19.02                      | -6.75           | 4.23               | -                        | -                    |
|                        | 5785       | 157     | AVG      | 26T   | 10.56    | 10.94 | 10.99 | 30.00                       | -19.01                      | -6.75           | 4.24               | -                        | -                    |
|                        | 5825       | 165     | AVG      | 26T   | 10.98    | 10.74 | 10.97 | 30.00                       | -19.02                      | -7.01           | 3.97               | -                        | -                    |

Table 7-10. SISO ANT1 20MHz BW (UNII) Maximum Conducted Output Power (26 Tones)

| 5GHz (40MHz Bandwidth) | Freq [MHz] | Channel | Detector | Tones | RU Index |       |       | Conducted Power Limit [dBm] | Conducted Power Margin [dB] | Ant. Gain [dBi] | Max e.i.r.p. [dBm] | Max e.i.r.p. Limit [dBm] | e.i.r.p. Margin [dB] |
|------------------------|------------|---------|----------|-------|----------|-------|-------|-----------------------------|-----------------------------|-----------------|--------------------|--------------------------|----------------------|
|                        |            |         |          |       | 0        | 8     | 17    |                             |                             |                 |                    |                          |                      |
|                        | 5190       | 38      | AVG      | 26T   | 10.77    | 10.93 | 10.81 | 23.98                       | -13.05                      | -5.50           | 5.43               | 22.78                    | -17.35               |
|                        | 5230       | 46      | AVG      | 26T   | 10.81    | 10.99 | 10.90 | 23.98                       | -12.99                      | -5.50           | 5.49               | 22.78                    | -17.29               |
|                        | 5270       | 54      | AVG      | 26T   | 10.62    | 10.61 | 10.55 | 23.75                       | -13.13                      | -5.50           | 5.12               | 29.75                    | -24.63               |
|                        | 5310       | 62      | AVG      | 26T   | 10.71    | 10.75 | 10.97 | 23.75                       | -12.78                      | -5.50           | 5.47               | 29.75                    | -24.28               |
|                        | 5510       | 102     | AVG      | 26T   | 10.97    | 10.91 | 10.98 | 23.72                       | -12.74                      | -6.75           | 4.23               | 29.72                    | -25.49               |
|                        | 5590       | 118     | AVG      | 26T   | 10.95    | 10.89 | 10.92 | 23.72                       | -12.77                      | -6.75           | 4.20               | 29.72                    | -25.52               |
|                        | 5710       | 142     | AVG      | 26T   | 10.99    | 10.64 | 10.98 | 23.72                       | -12.73                      | -6.75           | 4.24               | 29.72                    | -25.48               |
|                        | 5755       | 151     | AVG      | 26T   | 10.80    | 10.60 | 10.85 | 30.00                       | -19.15                      | -6.75           | 4.10               | -                        | -                    |
|                        | 5795       | 159     | AVG      | 26T   | 10.65    | 10.65 | 10.66 | 30.00                       | -19.34                      | -6.75           | 3.91               | -                        | -                    |

Table 7-11. SISO ANT1 40MHz BW (UNII) Maximum Conducted Output Power (26 Tones)

| 5GHz (80MHz Bandwidth) | Freq [MHz] | Channel | Detector | Tones | RU Index |       |       | Conducted Power Limit [dBm] | Conducted Power Margin [dB] | Ant. Gain [dBi] | Max e.i.r.p. [dBm] | Max e.i.r.p. Limit [dBm] | e.i.r.p. Margin [dB] |
|------------------------|------------|---------|----------|-------|----------|-------|-------|-----------------------------|-----------------------------|-----------------|--------------------|--------------------------|----------------------|
|                        |            |         |          |       | 0        | 18    | 36    |                             |                             |                 |                    |                          |                      |
|                        | 5210       | 42      | AVG      | 26T   | 10.87    | 10.83 | 10.91 | 23.98                       | -13.07                      | -5.50           | 5.41               | 22.78                    | -17.37               |
|                        | 5290       | 58      | AVG      | 26T   | 10.51    | 10.99 | 10.98 | 23.75                       | -12.76                      | -5.50           | 5.49               | 29.75                    | -24.26               |
|                        | 5530       | 106     | AVG      | 26T   | 10.75    | 10.72 | 10.56 | 23.72                       | -12.97                      | -6.75           | 4.00               | 29.72                    | -25.72               |
|                        | 5610       | 122     | AVG      | 26T   | 10.97    | 10.75 | 10.60 | 23.72                       | -12.75                      | -6.75           | 4.22               | 29.72                    | -25.50               |
|                        | 5690       | 138     | AVG      | 26T   | 10.98    | 10.96 | 10.52 | 23.72                       | -12.74                      | -6.75           | 4.23               | 29.72                    | -25.49               |
|                        | 5775       | 155     | AVG      | 26T   | 10.90    | 10.94 | 10.80 | 30.00                       | -19.06                      | -6.75           | 4.19               | -                        | -                    |

Table 7-12. SISO ANT1 80MHz BW (UNII) Maximum Conducted Output Power (26 Tones)

|                                         |                                                                                                                                                                                                                     |                               |                                 |
|-----------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------|---------------------------------|
| FCC ID: A3LSMF907N                      |  <b>MEASUREMENT REPORT (CERTIFICATION)</b>  |                               | Approved by:<br>Quality Manager |
| Test Report S/N:<br>1M1902200029-08.A3L | Test Dates:<br>01/22- 04/05/2019                                                                                                                                                                                    | EUT Type:<br>Portable Handset | Page 82 of 330                  |

## SISO Antenna-1 Conducted Output Power Measurements (52 Tones)

| 5GHz (20MHz Bandwidth) | Freq [MHz] | Channel | Detector | Tones | RU Index |       |       | Conducted Power Limit [dBm] | Conducted Power Margin [dB] | Ant. Gain [dBi] | Max e.i.r.p. [dBm] | Max e.i.r.p. Limit [dBm] | e.i.r.p. Margin [dB] |
|------------------------|------------|---------|----------|-------|----------|-------|-------|-----------------------------|-----------------------------|-----------------|--------------------|--------------------------|----------------------|
|                        |            |         |          |       | 37       | 39    | 40    |                             |                             |                 |                    |                          |                      |
|                        | 5180       | 36      | AVG      | 52T   | 12.90    | 12.61 | 12.98 | 23.98                       | -11.00                      | -5.50           | 7.48               | 22.78                    | -15.30               |
|                        | 5200       | 40      | AVG      | 52T   | 12.98    | 12.73 | 12.99 | 23.98                       | -10.99                      | -5.50           | 7.49               | 22.78                    | -15.29               |
|                        | 5240       | 48      | AVG      | 52T   | 12.76    | 12.93 | 12.79 | 23.98                       | -11.05                      | -5.50           | 7.43               | 22.78                    | -15.35               |
|                        | 5260       | 52      | AVG      | 52T   | 12.75    | 12.92 | 12.79 | 23.75                       | -10.83                      | -5.50           | 7.42               | 29.75                    | -22.33               |
|                        | 5280       | 56      | AVG      | 52T   | 12.87    | 12.96 | 12.90 | 23.75                       | -10.79                      | -5.50           | 7.46               | 29.75                    | -22.29               |
|                        | 5320       | 64      | AVG      | 52T   | 12.93    | 12.98 | 12.89 | 23.75                       | -10.77                      | -5.50           | 7.48               | 29.75                    | -22.27               |
|                        | 5500       | 100     | AVG      | 52T   | 12.89    | 12.72 | 12.77 | 23.72                       | -10.83                      | -6.75           | 6.14               | 29.72                    | -23.58               |
|                        | 5600       | 120     | AVG      | 52T   | 12.99    | 12.63 | 12.95 | 23.72                       | -10.73                      | -6.75           | 6.24               | 29.72                    | -23.48               |
|                        | 5720       | 144     | AVG      | 52T   | 12.97    | 12.74 | 12.95 | 23.72                       | -10.75                      | -6.75           | 6.22               | 29.72                    | -23.50               |
|                        | 5745       | 149     | AVG      | 52T   | 12.81    | 12.87 | 12.92 | 30.00                       | -17.08                      | -6.75           | 6.17               | -                        | -                    |
|                        | 5785       | 157     | AVG      | 52T   | 12.74    | 12.92 | 12.98 | 30.00                       | -17.02                      | -6.75           | 6.23               | -                        | -                    |
|                        | 5825       | 165     | AVG      | 52T   | 12.95    | 12.98 | 12.87 | 30.00                       | -17.02                      | -7.01           | 5.97               | -                        | -                    |

Table 7-13. SISO ANT1 20MHz BW (UNII) Maximum Conducted Output Power (52 Tones)

| 5GHz (40MHz Bandwidth) | Freq [MHz] | Channel | Detector | Tones | RU Index |       |       | Conducted Power Limit [dBm] | Conducted Power Margin [dB] | Ant. Gain [dBi] | Max e.i.r.p. [dBm] | Max e.i.r.p. Limit [dBm] | e.i.r.p. Margin [dB] |
|------------------------|------------|---------|----------|-------|----------|-------|-------|-----------------------------|-----------------------------|-----------------|--------------------|--------------------------|----------------------|
|                        |            |         |          |       | 37       | 40    | 44    |                             |                             |                 |                    |                          |                      |
|                        | 5190       | 38      | AVG      | 52T   | 11.98    | 11.93 | 11.99 | 23.98                       | -11.99                      | -5.50           | 6.49               | 22.78                    | -16.29               |
|                        | 5230       | 46      | AVG      | 52T   | 11.66    | 11.97 | 11.68 | 23.98                       | -12.01                      | -5.50           | 6.47               | 22.78                    | -16.31               |
|                        | 5270       | 54      | AVG      | 52T   | 11.86    | 11.65 | 11.74 | 23.75                       | -11.89                      | -5.50           | 6.36               | 29.75                    | -23.39               |
|                        | 5310       | 62      | AVG      | 52T   | 11.83    | 11.77 | 11.72 | 23.75                       | -11.92                      | -5.50           | 6.33               | 29.75                    | -23.42               |
|                        | 5510       | 102     | AVG      | 52T   | 11.72    | 11.98 | 11.65 | 23.72                       | -11.74                      | -6.75           | 5.23               | 29.72                    | -24.49               |
|                        | 5590       | 118     | AVG      | 52T   | 11.71    | 11.94 | 11.98 | 23.72                       | -11.74                      | -6.75           | 5.23               | 29.72                    | -24.49               |
|                        | 5710       | 142     | AVG      | 52T   | 11.81    | 11.61 | 11.76 | 23.72                       | -11.91                      | -6.75           | 5.06               | 29.72                    | -24.66               |
|                        | 5755       | 151     | AVG      | 52T   | 11.98    | 11.80 | 11.90 | 30.00                       | -18.02                      | -6.75           | 5.23               | -                        | -                    |
|                        | 5795       | 159     | AVG      | 52T   | 11.50    | 11.67 | 11.99 | 30.00                       | -18.01                      | -6.75           | 5.24               | -                        | -                    |

Table 7-14. SISO ANT1 40MHz BW (UNII) Maximum Conducted Output Power (52 Tones)

| 5GHz (80MHz Bandwidth) | Freq [MHz] | Channel | Detector | Tones | RU Index |       |       | Conducted Power Limit [dBm] | Conducted Power Margin [dB] | Ant. Gain [dBi] | Max e.i.r.p. [dBm] | Max e.i.r.p. Limit [dBm] | e.i.r.p. Margin [dB] |
|------------------------|------------|---------|----------|-------|----------|-------|-------|-----------------------------|-----------------------------|-----------------|--------------------|--------------------------|----------------------|
|                        |            |         |          |       | 37       | 44    | 52    |                             |                             |                 |                    |                          |                      |
|                        | 5210       | 42      | AVG      | 52T   | 10.97    | 10.98 | 10.60 | 23.98                       | -13.00                      | -5.50           | 5.48               | 22.78                    | -17.30               |
|                        | 5290       | 58      | AVG      | 52T   | 10.45    | 10.94 | 10.98 | 23.75                       | -12.77                      | -5.50           | 5.48               | 29.75                    | -24.27               |
|                        | 5530       | 106     | AVG      | 52T   | 10.72    | 10.79 | 10.76 | 23.72                       | -12.93                      | -6.75           | 4.04               | 29.72                    | -25.68               |
|                        | 5610       | 122     | AVG      | 52T   | 10.70    | 10.77 | 10.99 | 23.72                       | -12.73                      | -6.75           | 4.24               | 29.72                    | -25.48               |
|                        | 5690       | 138     | AVG      | 52T   | 10.75    | 10.99 | 10.83 | 23.72                       | -12.73                      | -6.75           | 4.24               | 29.72                    | -25.48               |
|                        | 5775       | 155     | AVG      | 52T   | 10.98    | 10.95 | 10.92 | 30.00                       | -19.02                      | -6.75           | 4.23               | -                        | -                    |

Table 7-15. SISO ANT1 80MHz BW (UNII) Maximum Conducted Output Power (52 Tones)

|                                         |                                                                                                                                                                                                                     |                               |                                 |
|-----------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------|---------------------------------|
| FCC ID: A3LSMF907N                      |  <b>MEASUREMENT REPORT (CERTIFICATION)</b>  |                               | Approved by:<br>Quality Manager |
| Test Report S/N:<br>1M1902200029-08.A3L | Test Dates:<br>01/22- 04/05/2019                                                                                                                                                                                    | EUT Type:<br>Portable Handset | Page 83 of 330                  |

## SISO Antenna-1 Conducted Output Power Measurements (106 Tones)

| 5GHz (20MHz Bandwidth) | Freq [MHz] | Channel | Detector | Tones | RU Index |       | Conducted Power Limit [dBm] | Conducted Power Margin [dB] | Ant. Gain [dBi] | Max e.i.r.p. [dBm] | Max e.i.r.p. Limit [dBm] | e.i.r.p. Margin [dB] |
|------------------------|------------|---------|----------|-------|----------|-------|-----------------------------|-----------------------------|-----------------|--------------------|--------------------------|----------------------|
|                        |            |         |          |       | 53       | 54    |                             |                             |                 |                    |                          |                      |
|                        |            |         |          |       |          |       |                             |                             |                 |                    |                          |                      |
|                        | 5180       | 36      | AVG      | 106T  | 14.60    | 14.67 | 23.98                       | -9.31                       | -5.50           | 9.17               | 22.78                    | -13.61               |
|                        | 5200       | 40      | AVG      | 106T  | 14.67    | 14.70 | 23.98                       | -9.28                       | -5.50           | 9.20               | 22.78                    | -13.58               |
|                        | 5240       | 48      | AVG      | 106T  | 14.77    | 14.80 | 23.98                       | -9.18                       | -5.50           | 9.30               | 22.78                    | -13.48               |
|                        | 5260       | 52      | AVG      | 106T  | 14.76    | 14.78 | 23.75                       | -8.97                       | -5.50           | 9.28               | 29.75                    | -20.47               |
|                        | 5280       | 56      | AVG      | 106T  | 14.84    | 14.79 | 23.75                       | -8.91                       | -5.50           | 9.34               | 29.75                    | -20.41               |
|                        | 5320       | 64      | AVG      | 106T  | 14.93    | 14.79 | 23.75                       | -8.82                       | -5.50           | 9.43               | 29.75                    | -20.32               |
|                        | 5500       | 100     | AVG      | 106T  | 14.97    | 14.88 | 23.72                       | -8.75                       | -6.75           | 8.22               | 29.72                    | -21.50               |
|                        | 5600       | 120     | AVG      | 106T  | 14.86    | 14.78 | 23.72                       | -8.86                       | -6.75           | 8.11               | 29.72                    | -21.61               |
|                        | 5720       | 144     | AVG      | 106T  | 14.84    | 14.73 | 23.72                       | -8.88                       | -6.75           | 8.09               | 29.72                    | -21.63               |
|                        | 5745       | 149     | AVG      | 106T  | 14.69    | 14.98 | 30.00                       | -15.02                      | -6.75           | 8.23               | -                        | -                    |
|                        | 5785       | 157     | AVG      | 106T  | 14.94    | 14.97 | 30.00                       | -15.03                      | -6.75           | 8.22               | -                        | -                    |
|                        | 5825       | 165     | AVG      | 106T  | 14.89    | 14.86 | 30.00                       | -15.11                      | -7.01           | 7.88               | -                        | -                    |

Table 7-16. SISO ANT1 20MHz BW (UNII) Maximum Conducted Output Power (106 Tones)

| 5GHz (40MHz Bandwidth) | Freq [MHz] | Channel | Detector | Tones | RU Index |       |       | Conducted Power Limit [dBm] | Conducted Power Margin [dB] | Ant. Gain [dBi] | Max e.i.r.p. [dBm] | Max e.i.r.p. Limit [dBm] | e.i.r.p. Margin [dB] |
|------------------------|------------|---------|----------|-------|----------|-------|-------|-----------------------------|-----------------------------|-----------------|--------------------|--------------------------|----------------------|
|                        |            |         |          |       | 53       | 54    | 56    |                             |                             |                 |                    |                          |                      |
|                        |            |         |          |       |          |       |       |                             |                             |                 |                    |                          |                      |
|                        | 5190       | 38      | AVG      | 106T  | 12.89    | 12.95 | 12.84 | 23.98                       | -11.03                      | -5.50           | 7.45               | 22.78                    | -15.33               |
|                        | 5230       | 46      | AVG      | 106T  | 12.99    | 12.56 | 12.96 | 23.98                       | -10.99                      | -5.50           | 7.49               | 22.78                    | -15.29               |
|                        | 5270       | 54      | AVG      | 106T  | 12.59    | 12.63 | 12.98 | 23.75                       | -10.77                      | -5.50           | 7.48               | 29.75                    | -22.27               |
|                        | 5310       | 62      | AVG      | 106T  | 12.98    | 12.67 | 12.96 | 23.75                       | -10.77                      | -5.50           | 7.48               | 29.75                    | -22.27               |
|                        | 5510       | 102     | AVG      | 106T  | 12.74    | 12.88 | 12.76 | 23.72                       | -10.84                      | -6.75           | 6.13               | 29.72                    | -23.59               |
|                        | 5590       | 118     | AVG      | 106T  | 12.91    | 12.80 | 12.86 | 23.72                       | -10.81                      | -6.75           | 6.16               | 29.72                    | -23.56               |
|                        | 5710       | 142     | AVG      | 106T  | 12.96    | 12.98 | 12.95 | 23.72                       | -10.74                      | -6.75           | 6.23               | 29.72                    | -23.49               |
|                        | 5755       | 151     | AVG      | 106T  | 12.80    | 12.72 | 12.75 | 30.00                       | -17.20                      | -6.75           | 6.05               | -                        | -                    |
|                        | 5795       | 159     | AVG      | 106T  | 12.70    | 12.62 | 12.93 | 30.00                       | -17.07                      | -6.75           | 6.18               | -                        | -                    |

Table 7-17. SISO ANT1 40MHz BW (UNII) Maximum Conducted Output Power (106 Tones)

| 5GHz (80MHz Bandwidth) | Freq [MHz] | Channel | Detector | Tones | RU Index |       |       | Conducted Power Limit [dBm] | Conducted Power Margin [dB] | Ant. Gain [dBi] | Max e.i.r.p. [dBm] | Max e.i.r.p. Limit [dBm] | e.i.r.p. Margin [dB] |
|------------------------|------------|---------|----------|-------|----------|-------|-------|-----------------------------|-----------------------------|-----------------|--------------------|--------------------------|----------------------|
|                        |            |         |          |       | 53       | 56    | 60    |                             |                             |                 |                    |                          |                      |
|                        |            |         |          |       |          |       |       |                             |                             |                 |                    |                          |                      |
|                        | 5210       | 42      | AVG      | 106T  | 11.76    | 11.96 | 11.82 | 23.98                       | -12.02                      | -5.50           | 6.46               | 22.78                    | -16.32               |
|                        | 5290       | 58      | AVG      | 106T  | 11.63    | 11.95 | 11.65 | 23.75                       | -11.80                      | -5.50           | 6.45               | 29.75                    | -23.30               |
|                        | 5530       | 106     | AVG      | 106T  | 11.72    | 11.77 | 11.80 | 23.72                       | -11.92                      | -6.75           | 5.05               | 29.72                    | -24.67               |
|                        | 5610       | 122     | AVG      | 106T  | 11.70    | 11.85 | 11.60 | 23.72                       | -11.87                      | -6.75           | 5.10               | 29.72                    | -24.62               |
|                        | 5690       | 138     | AVG      | 106T  | 11.80    | 11.99 | 11.98 | 23.72                       | -11.73                      | -6.75           | 5.24               | 29.72                    | -24.48               |
|                        | 5775       | 155     | AVG      | 106T  | 11.70    | 11.99 | 11.57 | 30.00                       | -18.01                      | -6.75           | 5.24               | -                        | -                    |

Table 7-18. SISO ANT1 80MHz BW (UNII) Maximum Conducted Output Power (106 Tones)

|                                         |                                                                                                                                                                                                                     |                               |                                 |
|-----------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------|---------------------------------|
| FCC ID: A3LSMF907N                      |  <b>MEASUREMENT REPORT (CERTIFICATION)</b>  |                               | Approved by:<br>Quality Manager |
| Test Report S/N:<br>1M1902200029-08.A3L | Test Dates:<br>01/22- 04/05/2019                                                                                                                                                                                    | EUT Type:<br>Portable Handset | Page 84 of 330                  |

## SISO Antenna-1 Conducted Output Power Measurements (242 Tones)

| 5GHz (20MHz Bandwidth) | Freq [MHz] | Channel | Detector | Tones | RU Index | Conducted Power Limit [dBm] | Conducted Power Margin [dB] | Ant. Gain [dBi] | Max e.i.r.p. [dBm] | Max e.i.r.p. Limit [dBm] | e.i.r.p. Margin [dB] |
|------------------------|------------|---------|----------|-------|----------|-----------------------------|-----------------------------|-----------------|--------------------|--------------------------|----------------------|
|                        |            |         |          |       | 61       |                             |                             |                 |                    |                          |                      |
|                        | 5180       | 36      | AVG      | 242T  | 15.95    | 23.98                       | -8.03                       | -5.50           | 10.45              | 22.78                    | -12.33               |
|                        | 5200       | 40      | AVG      | 242T  | 15.65    | 23.98                       | -8.33                       | -5.50           | 10.15              | 22.78                    | -12.63               |
|                        | 5240       | 48      | AVG      | 242T  | 15.75    | 23.98                       | -8.23                       | -5.50           | 10.25              | 22.78                    | -12.53               |
|                        | 5260       | 52      | AVG      | 242T  | 15.98    | 23.75                       | -7.77                       | -5.50           | 10.48              | 29.75                    | -19.27               |
|                        | 5280       | 56      | AVG      | 242T  | 15.67    | 23.75                       | -8.08                       | -5.50           | 10.17              | 29.75                    | -19.58               |
|                        | 5320       | 64      | AVG      | 242T  | 15.65    | 23.75                       | -8.10                       | -5.50           | 10.15              | 29.75                    | -19.60               |
|                        | 5500       | 100     | AVG      | 242T  | 15.67    | 23.72                       | -8.05                       | -6.75           | 8.92               | 29.72                    | -20.80               |
|                        | 5600       | 120     | AVG      | 242T  | 15.98    | 23.72                       | -7.74                       | -6.75           | 9.23               | 29.72                    | -20.49               |
|                        | 5720       | 144     | AVG      | 242T  | 15.98    | 23.72                       | -7.74                       | -6.75           | 9.23               | 29.72                    | -20.49               |
|                        | 5745       | 149     | AVG      | 242T  | 15.89    | 30.00                       | -14.11                      | -6.75           | 9.14               | -                        | -                    |
|                        | 5785       | 157     | AVG      | 242T  | 15.87    | 30.00                       | -14.13                      | -6.75           | 9.12               | -                        | -                    |
|                        | 5825       | 165     | AVG      | 242T  | 15.64    | 30.00                       | -14.36                      | -7.01           | 8.63               | -                        | -                    |

Table 7-19. SISO ANT1 20MHz BW (UNII) Maximum Conducted Output Power (242 Tones)

| 5GHz (40MHz Bandwidth) | Freq [MHz] | Channel | Detector | Tones | RU Index |       | Conducted Power Limit [dBm] | Conducted Power Margin [dB] | Ant. Gain [dBi] | Max e.i.r.p. [dBm] | Max e.i.r.p. Limit [dBm] | e.i.r.p. Margin [dB] |
|------------------------|------------|---------|----------|-------|----------|-------|-----------------------------|-----------------------------|-----------------|--------------------|--------------------------|----------------------|
|                        |            |         |          |       | 61       | 62    |                             |                             |                 |                    |                          |                      |
|                        | 5190       | 38      | AVG      | 242T  | 13.95    | 13.99 | 23.98                       | -9.99                       | -5.50           | 8.49               | 22.78                    | -14.29               |
|                        | 5230       | 46      | AVG      | 242T  | 13.75    | 13.66 | 23.98                       | -10.23                      | -5.50           | 8.25               | 22.78                    | -14.53               |
|                        | 5270       | 54      | AVG      | 242T  | 13.76    | 13.65 | 23.75                       | -9.99                       | -5.50           | 8.26               | 29.75                    | -21.49               |
|                        | 5310       | 62      | AVG      | 242T  | 13.81    | 13.70 | 23.75                       | -9.94                       | -5.50           | 8.31               | 29.75                    | -21.44               |
|                        | 5510       | 102     | AVG      | 242T  | 13.97    | 13.94 | 23.72                       | -9.75                       | -6.75           | 7.22               | 29.72                    | -22.50               |
|                        | 5590       | 118     | AVG      | 242T  | 13.98    | 13.97 | 23.72                       | -9.74                       | -6.75           | 7.23               | 29.72                    | -22.49               |
|                        | 5710       | 142     | AVG      | 242T  | 13.98    | 13.99 | 23.72                       | -9.73                       | -6.75           | 7.24               | 29.72                    | -22.48               |
|                        | 5755       | 151     | AVG      | 242T  | 13.81    | 13.91 | 30.00                       | -16.09                      | -6.75           | 7.16               | -                        | -                    |
|                        | 5795       | 159     | AVG      | 242T  | 13.98    | 13.61 | 30.00                       | -16.02                      | -6.75           | 7.23               | -                        | -                    |

Table 7-20. SISO ANT1 40MHz BW (UNII) Maximum Conducted Output Power (242 Tones)

| 5GHz (80MHz Bandwidth) | Freq [MHz] | Channel | Detector | Tones | RU Index |       |       | Conducted Power Limit [dBm] | Conducted Power Margin [dB] | Ant. Gain [dBi] | Max e.i.r.p. [dBm] | Max e.i.r.p. Limit [dBm] | e.i.r.p. Margin [dB] |
|------------------------|------------|---------|----------|-------|----------|-------|-------|-----------------------------|-----------------------------|-----------------|--------------------|--------------------------|----------------------|
|                        |            |         |          |       | 61       | 62    | 64    |                             |                             |                 |                    |                          |                      |
|                        | 5210       | 42      | AVG      | 242T  | 12.93    | 12.99 | 12.98 | 23.98                       | -10.99                      | -5.50           | 7.49               | 22.78                    | -15.29               |
|                        | 5290       | 58      | AVG      | 242T  | 12.94    | 12.54 | 12.92 | 23.75                       | -10.81                      | -5.50           | 7.44               | 29.75                    | -22.31               |
|                        | 5530       | 106     | AVG      | 242T  | 12.72    | 12.88 | 12.99 | 23.72                       | -10.73                      | -6.75           | 6.24               | 29.72                    | -23.48               |
|                        | 5610       | 122     | AVG      | 242T  | 12.81    | 12.95 | 12.91 | 23.72                       | -10.77                      | -6.75           | 6.20               | 29.72                    | -23.52               |
|                        | 5690       | 138     | AVG      | 242T  | 12.99    | 12.98 | 12.71 | 23.72                       | -10.73                      | -6.75           | 6.24               | 29.72                    | -23.48               |
|                        | 5775       | 155     | AVG      | 242T  | 12.94    | 12.91 | 12.87 | 30.00                       | -17.06                      | -6.75           | 6.19               | -                        | -                    |

Table 7-21. SISO ANT1 80MHz BW (UNII) Maximum Conducted Output Power (242 Tones)

|                                         |                                                                                                                                                                                                                     |                               |                                 |
|-----------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------|---------------------------------|
| FCC ID: A3LSMF907N                      |  <b>MEASUREMENT REPORT (CERTIFICATION)</b>  |                               | Approved by:<br>Quality Manager |
| Test Report S/N:<br>1M1902200029-08.A3L | Test Dates:<br>01/22- 04/05/2019                                                                                                                                                                                    | EUT Type:<br>Portable Handset | Page 85 of 330                  |

## SISO Antenna-1 Conducted Output Power Measurements (484 Tones)

| 5GHz (40MHz Bandwidth) | Freq [MHz] | Channel | Detector | Tones | RU Index | Conducted Power Limit [dBm] | Conducted Power Margin [dB] | Ant. Gain [dBi] | Max e.i.r.p. [dBm] | Max e.i.r.p. Limit [dBm] | e.i.r.p. Margin [dB] |
|------------------------|------------|---------|----------|-------|----------|-----------------------------|-----------------------------|-----------------|--------------------|--------------------------|----------------------|
|                        |            |         |          |       | 65       |                             |                             |                 |                    |                          |                      |
|                        | 5190       | 38      | AVG      | 484T  | 13.93    | 23.98                       | -10.05                      | -5.50           | 8.43               | 22.78                    | -14.35               |
|                        | 5230       | 46      | AVG      | 484T  | 13.98    | 23.98                       | -10.00                      | -5.50           | 8.48               | 22.78                    | -14.30               |
|                        | 5270       | 54      | AVG      | 484T  | 13.55    | 23.75                       | -10.20                      | -5.50           | 8.05               | 29.75                    | -21.70               |
|                        | 5310       | 62      | AVG      | 484T  | 13.97    | 23.75                       | -9.78                       | -5.50           | 8.47               | 29.75                    | -21.28               |
|                        | 5510       | 102     | AVG      | 484T  | 13.83    | 23.72                       | -9.89                       | -6.75           | 7.08               | 29.72                    | -22.64               |
|                        | 5590       | 118     | AVG      | 484T  | 13.74    | 23.72                       | -9.98                       | -6.75           | 6.99               | 29.72                    | -22.73               |
|                        | 5710       | 142     | AVG      | 484T  | 13.92    | 23.72                       | -9.80                       | -6.75           | 7.17               | 29.72                    | -22.55               |
|                        | 5755       | 151     | AVG      | 484T  | 13.60    | 30.00                       | -16.40                      | -6.75           | 6.85               | -                        | -                    |
|                        | 5795       | 159     | AVG      | 484T  | 13.89    | 30.00                       | -16.11                      | -6.75           | 7.14               | -                        | -                    |

Table 7-22. SISO ANT1 40MHz BW (UNII) Maximum Conducted Output Power (484 Tones)

| 5GHz (80MHz Bandwidth) | Freq [MHz] | Channel | Detector | Tones | RU Index |       | Conducted Power Limit [dBm] | Conducted Power Margin [dB] | Ant. Gain [dBi] | Max e.i.r.p. [dBm] | Max e.i.r.p. Limit [dBm] | e.i.r.p. Margin [dB] |
|------------------------|------------|---------|----------|-------|----------|-------|-----------------------------|-----------------------------|-----------------|--------------------|--------------------------|----------------------|
|                        |            |         |          |       | 65       | 66    |                             |                             |                 |                    |                          |                      |
|                        | 5210       | 42      | AVG      | 484T  | 12.70    | 12.90 | 23.98                       | -11.08                      | -5.50           | 7.40               | 22.78                    | -15.38               |
|                        | 5290       | 58      | AVG      | 484T  | 12.72    | 12.86 | 23.75                       | -10.89                      | -5.50           | 7.36               | 29.75                    | -22.39               |
|                        | 5530       | 106     | AVG      | 484T  | 12.95    | 12.92 | 23.72                       | -10.77                      | -6.75           | 6.20               | 29.72                    | -23.52               |
|                        | 5610       | 122     | AVG      | 484T  | 12.72    | 12.75 | 23.72                       | -10.97                      | -6.75           | 6.00               | 29.72                    | -23.72               |
|                        | 5690       | 138     | AVG      | 484T  | 12.80    | 12.93 | 23.72                       | -10.79                      | -6.75           | 6.18               | 29.72                    | -23.54               |
|                        | 5775       | 155     | AVG      | 484T  | 12.98    | 12.99 | 30.00                       | -17.01                      | -6.75           | 6.24               | -                        | -                    |

Table 7-23. SISO ANT1 80MHz BW (UNII) Maximum Conducted Output Power (484 Tones)

|                                         |                                                                                     |                               |                                    |                                                                                       |                                 |
|-----------------------------------------|-------------------------------------------------------------------------------------|-------------------------------|------------------------------------|---------------------------------------------------------------------------------------|---------------------------------|
| FCC ID: A3LSMF907N                      |  |                               | MEASUREMENT REPORT (CERTIFICATION) |  | Approved by:<br>Quality Manager |
| Test Report S/N:<br>1M1902200029-08.A3L | Test Dates:<br>01/22- 04/05/2019                                                    | EUT Type:<br>Portable Handset |                                    |                                                                                       | Page 86 of 330                  |

## SISO Antenna-1 Conducted Output Power Measurements (996 Tones)

| 5GHz (80MHz Bandwidth) | Freq [MHz] | Channel | Detector | Tones | RU Index | Conducted Power Limit [dBm] | Conducted Power Margin [dB] | Ant. Gain [dBi] | Max e.i.r.p. [dBm] | Max e.i.r.p. Limit [dBm] | e.i.r.p. Margin [dB] |
|------------------------|------------|---------|----------|-------|----------|-----------------------------|-----------------------------|-----------------|--------------------|--------------------------|----------------------|
|                        |            |         |          |       | 67       |                             |                             |                 |                    |                          |                      |
|                        | 5210       | 42      | AVG      | 996T  | 12.89    | 23.98                       | -11.09                      | -5.50           | 7.39               | 22.78                    | -15.39               |
|                        | 5290       | 58      | AVG      | 996T  | 12.79    | 23.75                       | -10.96                      | -5.50           | 7.29               | 29.75                    | -22.46               |
|                        | 5530       | 106     | AVG      | 996T  | 12.98    | 23.72                       | -10.74                      | -6.75           | 6.23               | 29.72                    | -23.49               |
|                        | 5610       | 122     | AVG      | 996T  | 12.83    | 23.72                       | -10.89                      | -6.75           | 6.08               | 29.72                    | -23.64               |
|                        | 5690       | 138     | AVG      | 996T  | 12.92    | 23.72                       | -10.80                      | -6.75           | 6.17               | 29.72                    | -23.55               |
|                        | 5775       | 155     | AVG      | 996T  | 12.50    | 30.00                       | -17.50                      | -6.75           | 5.75               | -                        | -                    |

Table 7-24. SISO ANT1 80MHz BW (UNII) Maximum Conducted Output Power (996 Tones)

|                                         |                                                                                                                                                                                                                     |                               |                                 |
|-----------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------|---------------------------------|
| FCC ID: A3LSMF907N                      |  <b>MEASUREMENT REPORT (CERTIFICATION)</b>  |                               | Approved by:<br>Quality Manager |
| Test Report S/N:<br>1M1902200029-08.A3L | Test Dates:<br>01/22- 04/05/2019                                                                                                                                                                                    | EUT Type:<br>Portable Handset | Page 87 of 330                  |

## SISO Antenna-2 Conducted Output Power Measurements (26 Tones)

| 5GHz (20MHz Bandwidth) | Freq [MHz] | Channel | Detector | Tones | RU Index |       |       | Conducted Power Limit [dBm] | Conducted Power Margin [dB] | Ant. Gain [dBi] | Max e.i.r.p. [dBm] | Max e.i.r.p. Limit [dBm] | e.i.r.p. Margin [dB] |
|------------------------|------------|---------|----------|-------|----------|-------|-------|-----------------------------|-----------------------------|-----------------|--------------------|--------------------------|----------------------|
|                        |            |         |          |       | 0        | 4     | 8     |                             |                             |                 |                    |                          |                      |
|                        |            |         |          |       |          |       |       |                             |                             |                 |                    |                          |                      |
|                        | 5180       | 36      | AVG      | 26T   | 10.84    | 10.95 | 10.63 | 23.98                       | -13.03                      | -6.05           | 4.90               | 22.78                    | -17.88               |
|                        | 5200       | 40      | AVG      | 26T   | 10.77    | 10.98 | 10.70 | 23.98                       | -13.00                      | -6.05           | 4.93               | 22.78                    | -17.85               |
|                        | 5240       | 48      | AVG      | 26T   | 10.85    | 10.99 | 10.80 | 23.98                       | -12.99                      | -6.05           | 4.94               | 22.78                    | -17.84               |
|                        | 5260       | 52      | AVG      | 26T   | 10.99    | 10.76 | 10.91 | 23.75                       | -12.76                      | -6.05           | 4.94               | 29.75                    | -24.81               |
|                        | 5280       | 56      | AVG      | 26T   | 10.99    | 10.78 | 10.91 | 23.75                       | -12.76                      | -6.05           | 4.94               | 29.75                    | -24.81               |
|                        | 5320       | 64      | AVG      | 26T   | 10.81    | 10.96 | 10.79 | 23.75                       | -12.79                      | -6.05           | 4.91               | 29.75                    | -24.84               |
|                        | 5500       | 100     | AVG      | 26T   | 10.94    | 10.98 | 10.66 | 23.72                       | -12.74                      | -7.34           | 3.64               | 29.72                    | -26.08               |
|                        | 5600       | 120     | AVG      | 26T   | 10.89    | 10.99 | 10.53 | 23.72                       | -12.73                      | -7.34           | 3.65               | 29.72                    | -26.07               |
|                        | 5720       | 144     | AVG      | 26T   | 10.99    | 10.44 | 10.75 | 23.72                       | -12.73                      | -7.34           | 3.65               | 29.72                    | -26.07               |
|                        | 5745       | 149     | AVG      | 26T   | 10.97    | 10.99 | 10.96 | 30.00                       | -19.01                      | -7.34           | 3.65               | -                        | -                    |
|                        | 5785       | 157     | AVG      | 26T   | 10.89    | 10.68 | 10.75 | 30.00                       | -19.11                      | -7.34           | 3.55               | -                        | -                    |
|                        | 5825       | 165     | AVG      | 26T   | 10.78    | 10.51 | 10.82 | 30.00                       | -19.18                      | -6.02           | 4.80               | -                        | -                    |

Table 7-25. SISO ANT2 20MHz BW (UNII) Maximum Conducted Output Power (26 Tones)

| 5GHz (40MHz Bandwidth) | Freq [MHz] | Channel | Detector | Tones | RU Index |       |       | Conducted Power Limit [dBm] | Conducted Power Margin [dB] | Ant. Gain [dBi] | Max e.i.r.p. [dBm] | Max e.i.r.p. Limit [dBm] | e.i.r.p. Margin [dB] |
|------------------------|------------|---------|----------|-------|----------|-------|-------|-----------------------------|-----------------------------|-----------------|--------------------|--------------------------|----------------------|
|                        |            |         |          |       | 0        | 8     | 17    |                             |                             |                 |                    |                          |                      |
|                        |            |         |          |       |          |       |       |                             |                             |                 |                    |                          |                      |
|                        | 5190       | 38      | AVG      | 26T   | 10.72    | 10.80 | 10.99 | 23.98                       | -12.99                      | -6.05           | 4.94               | 22.78                    | -17.84               |
|                        | 5230       | 46      | AVG      | 26T   | 10.79    | 10.83 | 10.70 | 23.98                       | -13.15                      | -6.05           | 4.78               | 22.78                    | -18.00               |
|                        | 5270       | 54      | AVG      | 26T   | 10.98    | 10.95 | 10.99 | 23.75                       | -12.76                      | -6.05           | 4.94               | 29.75                    | -24.81               |
|                        | 5310       | 62      | AVG      | 26T   | 10.65    | 10.96 | 10.96 | 23.75                       | -12.79                      | -6.05           | 4.91               | 29.75                    | -24.84               |
|                        | 5510       | 102     | AVG      | 26T   | 10.98    | 10.61 | 10.87 | 23.72                       | -12.74                      | -7.34           | 3.64               | 29.72                    | -26.08               |
|                        | 5590       | 118     | AVG      | 26T   | 10.96    | 10.67 | 10.83 | 23.72                       | -12.76                      | -7.34           | 3.62               | 29.72                    | -26.10               |
|                        | 5710       | 142     | AVG      | 26T   | 10.80    | 10.99 | 10.96 | 23.72                       | -12.73                      | -7.34           | 3.65               | 29.72                    | -26.07               |
|                        | 5755       | 151     | AVG      | 26T   | 10.88    | 10.99 | 10.81 | 30.00                       | -19.01                      | -7.34           | 3.65               | -                        | -                    |
|                        | 5795       | 159     | AVG      | 26T   | 10.80    | 10.55 | 10.69 | 30.00                       | -19.20                      | -7.34           | 3.46               | -                        | -                    |

Table 7-26. SISO ANT2 40MHz BW (UNII) Maximum Conducted Output Power (26 Tones)

| 5GHz (80MHz Bandwidth) | Freq [MHz] | Channel | Detector | Tones | RU Index |       |       | Conducted Power Limit [dBm] | Conducted Power Margin [dB] | Ant. Gain [dBi] | Max e.i.r.p. [dBm] | Max e.i.r.p. Limit [dBm] | e.i.r.p. Margin [dB] |
|------------------------|------------|---------|----------|-------|----------|-------|-------|-----------------------------|-----------------------------|-----------------|--------------------|--------------------------|----------------------|
|                        |            |         |          |       | 0        | 18    | 36    |                             |                             |                 |                    |                          |                      |
|                        |            |         |          |       |          |       |       |                             |                             |                 |                    |                          |                      |
|                        | 5210       | 42      | AVG      | 26T   | 10.81    | 10.65 | 10.66 | 23.98                       | -13.17                      | -6.05           | 4.76               | 22.78                    | -18.02               |
|                        | 5290       | 58      | AVG      | 26T   | 10.91    | 10.96 | 10.91 | 23.75                       | -12.79                      | -6.05           | 4.91               | 29.75                    | -24.84               |
|                        | 5530       | 106     | AVG      | 26T   | 10.92    | 10.63 | 10.96 | 23.72                       | -12.76                      | -7.34           | 3.62               | 29.72                    | -26.10               |
|                        | 5610       | 122     | AVG      | 26T   | 10.99    | 10.81 | 10.73 | 23.72                       | -12.73                      | -7.34           | 3.65               | 29.72                    | -26.07               |
|                        | 5690       | 138     | AVG      | 26T   | 10.85    | 10.89 | 10.82 | 23.72                       | -12.83                      | -7.34           | 3.55               | 29.72                    | -26.17               |
|                        | 5775       | 155     | AVG      | 26T   | 10.78    | 10.97 | 10.71 | 30.00                       | -19.03                      | -7.34           | 3.63               | -                        | -                    |

Table 7-27. SISO ANT2 80MHz BW (UNII) Maximum Conducted Output Power (26 Tones)

|                                         |                                                                                                                                                                                                                     |                               |                                 |
|-----------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------|---------------------------------|
| FCC ID: A3LSMF907N                      |  <b>MEASUREMENT REPORT (CERTIFICATION)</b>  |                               | Approved by:<br>Quality Manager |
| Test Report S/N:<br>1M1902200029-08.A3L | Test Dates:<br>01/22- 04/05/2019                                                                                                                                                                                    | EUT Type:<br>Portable Handset | Page 88 of 330                  |

## SISO Antenna-2 Conducted Output Power Measurements (52 Tones)

| 5GHz (20MHz Bandwidth) | Freq [MHz] | Channel | Detector | Tones | RU Index |       |       | Conducted Power Limit [dBm] | Conducted Power Margin [dB] | Ant. Gain [dBi] | Max e.i.r.p. [dBm] | Max e.i.r.p. Limit [dBm] | e.i.r.p. Margin [dB] |
|------------------------|------------|---------|----------|-------|----------|-------|-------|-----------------------------|-----------------------------|-----------------|--------------------|--------------------------|----------------------|
|                        |            |         |          |       | 37       | 39    | 40    |                             |                             |                 |                    |                          |                      |
|                        |            |         |          |       |          |       |       |                             |                             |                 |                    |                          |                      |
|                        | 5180       | 36      | AVG      | 52T   | 12.85    | 12.99 | 12.75 | 23.98                       | -10.99                      | -6.05           | 6.94               | 22.78                    | -15.84               |
|                        | 5200       | 40      | AVG      | 52T   | 12.81    | 12.99 | 12.82 | 23.98                       | -10.99                      | -6.05           | 6.94               | 22.78                    | -15.84               |
|                        | 5240       | 48      | AVG      | 52T   | 12.90    | 12.93 | 12.72 | 23.98                       | -11.05                      | -6.05           | 6.88               | 22.78                    | -15.90               |
|                        | 5260       | 52      | AVG      | 52T   | 12.97    | 12.72 | 12.50 | 23.75                       | -10.78                      | -6.05           | 6.92               | 29.75                    | -22.83               |
|                        | 5280       | 56      | AVG      | 52T   | 12.99    | 12.74 | 12.98 | 23.75                       | -10.76                      | -6.05           | 6.94               | 29.75                    | -22.81               |
|                        | 5320       | 64      | AVG      | 52T   | 12.85    | 12.92 | 12.71 | 23.75                       | -10.83                      | -6.05           | 6.87               | 29.75                    | -22.88               |
|                        | 5500       | 100     | AVG      | 52T   | 12.96    | 12.62 | 12.67 | 23.72                       | -10.76                      | -7.34           | 5.62               | 29.72                    | -24.10               |
|                        | 5600       | 120     | AVG      | 52T   | 12.99    | 12.55 | 12.63 | 23.72                       | -10.73                      | -7.34           | 5.65               | 29.72                    | -24.07               |
|                        | 5720       | 144     | AVG      | 52T   | 12.99    | 12.98 | 12.81 | 23.72                       | -10.73                      | -7.34           | 5.65               | 29.72                    | -24.07               |
|                        | 5745       | 149     | AVG      | 52T   | 12.54    | 12.75 | 12.91 | 30.00                       | -17.09                      | -7.34           | 5.57               | -                        | -                    |
|                        | 5785       | 157     | AVG      | 52T   | 12.76    | 12.91 | 12.55 | 30.00                       | -17.09                      | -7.34           | 5.57               | -                        | -                    |
|                        | 5825       | 165     | AVG      | 52T   | 12.73    | 12.91 | 12.63 | 30.00                       | -17.09                      | -6.02           | 6.89               | -                        | -                    |

Table 7-28. SISO ANT2 20MHz BW (UNII) Maximum Conducted Output Power (52 Tones)

| 5GHz (40MHz Bandwidth) | Freq [MHz] | Channel | Detector | Tones | RU Index |       |       | Conducted Power Limit [dBm] | Conducted Power Margin [dB] | Ant. Gain [dBi] | Max e.i.r.p. [dBm] | Max e.i.r.p. Limit [dBm] | e.i.r.p. Margin [dB] |
|------------------------|------------|---------|----------|-------|----------|-------|-------|-----------------------------|-----------------------------|-----------------|--------------------|--------------------------|----------------------|
|                        |            |         |          |       | 37       | 40    | 44    |                             |                             |                 |                    |                          |                      |
|                        |            |         |          |       |          |       |       |                             |                             |                 |                    |                          |                      |
|                        | 5190       | 38      | AVG      | 52T   | 11.99    | 11.98 | 11.92 | 23.98                       | -11.99                      | -6.05           | 5.94               | 22.78                    | -16.84               |
|                        | 5230       | 46      | AVG      | 52T   | 11.90    | 11.78 | 11.96 | 23.98                       | -12.02                      | -6.05           | 5.91               | 22.78                    | -16.87               |
|                        | 5270       | 54      | AVG      | 52T   | 11.60    | 11.98 | 11.62 | 23.75                       | -11.77                      | -6.05           | 5.93               | 29.75                    | -23.82               |
|                        | 5310       | 62      | AVG      | 52T   | 11.86    | 11.98 | 11.62 | 23.75                       | -11.77                      | -6.05           | 5.93               | 29.75                    | -23.82               |
|                        | 5510       | 102     | AVG      | 52T   | 11.50    | 11.74 | 11.54 | 23.72                       | -11.98                      | -7.34           | 4.40               | 29.72                    | -25.32               |
|                        | 5590       | 118     | AVG      | 52T   | 11.75    | 11.84 | 11.60 | 23.72                       | -11.88                      | -7.34           | 4.50               | 29.72                    | -25.22               |
|                        | 5710       | 142     | AVG      | 52T   | 11.86    | 11.99 | 11.72 | 23.72                       | -11.73                      | -7.34           | 4.65               | 29.72                    | -25.07               |
|                        | 5755       | 151     | AVG      | 52T   | 11.96    | 11.73 | 11.85 | 30.00                       | -18.04                      | -7.34           | 4.62               | -                        | -                    |
|                        | 5795       | 159     | AVG      | 52T   | 11.99    | 11.72 | 11.96 | 30.00                       | -18.01                      | -7.34           | 4.65               | -                        | -                    |

Table 7-29. SISO ANT2 40MHz BW (UNII) Maximum Conducted Output Power (52 Tones)

| 5GHz (80MHz Bandwidth) | Freq [MHz] | Channel | Detector | Tones | RU Index |       |       | Conducted Power Limit [dBm] | Conducted Power Margin [dB] | Ant. Gain [dBi] | Max e.i.r.p. [dBm] | Max e.i.r.p. Limit [dBm] | e.i.r.p. Margin [dB] |
|------------------------|------------|---------|----------|-------|----------|-------|-------|-----------------------------|-----------------------------|-----------------|--------------------|--------------------------|----------------------|
|                        |            |         |          |       | 37       | 44    | 52    |                             |                             |                 |                    |                          |                      |
|                        |            |         |          |       |          |       |       |                             |                             |                 |                    |                          |                      |
|                        | 5210       | 42      | AVG      | 52T   | 10.99    | 10.75 | 10.87 | 23.98                       | -12.99                      | -6.05           | 4.94               | 22.78                    | -17.84               |
|                        | 5290       | 58      | AVG      | 52T   | 10.65    | 10.98 | 10.67 | 23.75                       | -12.77                      | -6.05           | 4.93               | 29.75                    | -24.82               |
|                        | 5530       | 106     | AVG      | 52T   | 10.60    | 10.87 | 10.62 | 23.72                       | -12.85                      | -7.34           | 3.53               | 29.72                    | -26.19               |
|                        | 5610       | 122     | AVG      | 52T   | 10.85    | 10.90 | 10.99 | 23.72                       | -12.73                      | -7.34           | 3.65               | 29.72                    | -26.07               |
|                        | 5690       | 138     | AVG      | 52T   | 10.95    | 10.99 | 10.57 | 23.72                       | -12.73                      | -7.34           | 3.65               | 29.72                    | -26.07               |
|                        | 5775       | 155     | AVG      | 52T   | 10.90    | 10.66 | 10.73 | 30.00                       | -19.10                      | -7.34           | 3.56               | -                        | -                    |

Table 7-30. SISO ANT2 80MHz BW (UNII) Maximum Conducted Output Power (52 Tones)

|                                         |                                                                                                                                                                                                                     |                               |                                 |
|-----------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------|---------------------------------|
| FCC ID: A3LSMF907N                      |  <b>MEASUREMENT REPORT (CERTIFICATION)</b>  |                               | Approved by:<br>Quality Manager |
| Test Report S/N:<br>1M1902200029-08.A3L | Test Dates:<br>01/22- 04/05/2019                                                                                                                                                                                    | EUT Type:<br>Portable Handset | Page 89 of 330                  |

## SISO Antenna-2 Conducted Output Power Measurements (106 Tones)

| 5GHz (20MHz Bandwidth) | Freq [MHz] | Channel | Detector | Tones | RU Index |       | Conducted Power Limit [dBm] | Conducted Power Margin [dB] | Ant. Gain [dBi] | Max e.i.r.p. [dBm] | Max e.i.r.p. Limit [dBm] | e.i.r.p. Margin [dB] |
|------------------------|------------|---------|----------|-------|----------|-------|-----------------------------|-----------------------------|-----------------|--------------------|--------------------------|----------------------|
|                        |            |         |          |       | 53       | 54    |                             |                             |                 |                    |                          |                      |
|                        |            |         |          |       |          |       |                             |                             |                 |                    |                          |                      |
|                        | 5180       | 36      | AVG      | 106T  | 14.82    | 14.73 | 23.98                       | -9.16                       | -6.05           | 8.77               | 22.78                    | -14.01               |
|                        | 5200       | 40      | AVG      | 106T  | 14.87    | 14.79 | 23.98                       | -9.11                       | -6.05           | 8.82               | 22.78                    | -13.96               |
|                        | 5240       | 48      | AVG      | 106T  | 14.80    | 14.73 | 23.98                       | -9.18                       | -6.05           | 8.75               | 22.78                    | -14.03               |
|                        | 5260       | 52      | AVG      | 106T  | 14.61    | 14.46 | 23.75                       | -9.14                       | -6.05           | 8.56               | 29.75                    | -21.19               |
|                        | 5280       | 56      | AVG      | 106T  | 14.97    | 14.98 | 23.75                       | -8.77                       | -6.05           | 8.93               | 29.75                    | -20.82               |
|                        | 5320       | 64      | AVG      | 106T  | 14.83    | 14.82 | 23.75                       | -8.92                       | -6.05           | 8.78               | 29.75                    | -20.97               |
|                        | 5500       | 100     | AVG      | 106T  | 14.96    | 14.87 | 23.72                       | -8.76                       | -7.34           | 7.62               | 29.72                    | -22.10               |
|                        | 5600       | 120     | AVG      | 106T  | 14.93    | 14.75 | 23.72                       | -8.79                       | -7.34           | 7.59               | 29.72                    | -22.13               |
|                        | 5720       | 144     | AVG      | 106T  | 14.97    | 14.80 | 23.72                       | -8.75                       | -7.34           | 7.63               | 29.72                    | -22.09               |
|                        | 5745       | 149     | AVG      | 106T  | 14.99    | 14.91 | 30.00                       | -15.01                      | -7.34           | 7.65               | -                        | -                    |
|                        | 5785       | 157     | AVG      | 106T  | 14.93    | 14.99 | 30.00                       | -15.01                      | -7.34           | 7.65               | -                        | -                    |
|                        | 5825       | 165     | AVG      | 106T  | 14.99    | 14.99 | 30.00                       | -15.01                      | -6.02           | 8.97               | -                        | -                    |

Table 7-31. SISO ANT2 20MHz BW (UNII) Maximum Conducted Output Power (106 Tones)

| 5GHz (40MHz Bandwidth) | Freq [MHz] | Channel | Detector | Tones | RU Index |       |       | Conducted Power Limit [dBm] | Conducted Power Margin [dB] | Ant. Gain [dBi] | Max e.i.r.p. [dBm] | Max e.i.r.p. Limit [dBm] | e.i.r.p. Margin [dB] |
|------------------------|------------|---------|----------|-------|----------|-------|-------|-----------------------------|-----------------------------|-----------------|--------------------|--------------------------|----------------------|
|                        |            |         |          |       | 53       | 54    | 56    |                             |                             |                 |                    |                          |                      |
|                        |            |         |          |       |          |       |       |                             |                             |                 |                    |                          |                      |
|                        | 5190       | 38      | AVG      | 106T  | 12.75    | 12.86 | 12.76 | 23.98                       | -11.12                      | -6.05           | 6.81               | 22.78                    | -15.97               |
|                        | 5230       | 46      | AVG      | 106T  | 12.78    | 12.80 | 12.67 | 23.98                       | -11.18                      | -6.05           | 6.75               | 22.78                    | -16.03               |
|                        | 5270       | 54      | AVG      | 106T  | 12.98    | 12.97 | 12.93 | 23.75                       | -10.77                      | -6.05           | 6.93               | 29.75                    | -22.82               |
|                        | 5310       | 62      | AVG      | 106T  | 12.50    | 12.99 | 12.97 | 23.75                       | -10.76                      | -6.05           | 6.94               | 29.75                    | -22.81               |
|                        | 5510       | 102     | AVG      | 106T  | 12.89    | 12.80 | 12.99 | 23.72                       | -10.73                      | -7.34           | 5.65               | 29.72                    | -24.07               |
|                        | 5590       | 118     | AVG      | 106T  | 12.99    | 12.88 | 12.98 | 23.72                       | -10.73                      | -7.34           | 5.65               | 29.72                    | -24.07               |
|                        | 5710       | 142     | AVG      | 106T  | 12.67    | 12.98 | 12.98 | 23.72                       | -10.74                      | -7.34           | 5.64               | 29.72                    | -24.08               |
|                        | 5755       | 151     | AVG      | 106T  | 12.98    | 12.99 | 12.87 | 30.00                       | -17.01                      | -7.34           | 5.65               | -                        | -                    |
|                        | 5795       | 159     | AVG      | 106T  | 12.73    | 12.99 | 12.71 | 30.00                       | -17.01                      | -7.34           | 5.65               | -                        | -                    |

Table 7-32. SISO ANT2 40MHz BW (UNII) Maximum Conducted Output Power (106 Tones)

| 5GHz (80MHz Bandwidth) | Freq [MHz] | Channel | Detector | Tones | RU Index |       |       | Conducted Power Limit [dBm] | Conducted Power Margin [dB] | Ant. Gain [dBi] | Max e.i.r.p. [dBm] | Max e.i.r.p. Limit [dBm] | e.i.r.p. Margin [dB] |
|------------------------|------------|---------|----------|-------|----------|-------|-------|-----------------------------|-----------------------------|-----------------|--------------------|--------------------------|----------------------|
|                        |            |         |          |       | 53       | 56    | 60    |                             |                             |                 |                    |                          |                      |
|                        |            |         |          |       |          |       |       |                             |                             |                 |                    |                          |                      |
|                        | 5210       | 42      | AVG      | 106T  | 11.71    | 11.91 | 11.46 | 23.98                       | -12.07                      | -6.05           | 5.86               | 22.78                    | -16.92               |
|                        | 5290       | 58      | AVG      | 106T  | 11.71    | 11.99 | 11.70 | 23.75                       | -11.76                      | -6.05           | 5.94               | 29.75                    | -23.81               |
|                        | 5530       | 106     | AVG      | 106T  | 11.67    | 11.94 | 11.72 | 23.72                       | -11.78                      | -7.34           | 4.60               | 29.72                    | -25.12               |
|                        | 5610       | 122     | AVG      | 106T  | 11.78    | 11.99 | 11.78 | 23.72                       | -11.73                      | -7.34           | 4.65               | 29.72                    | -25.07               |
|                        | 5690       | 138     | AVG      | 106T  | 11.99    | 11.97 | 11.71 | 23.72                       | -11.73                      | -7.34           | 4.65               | 29.72                    | -25.07               |
|                        | 5775       | 155     | AVG      | 106T  | 11.94    | 11.70 | 11.91 | 30.00                       | -18.06                      | -7.34           | 4.60               | -                        | -                    |

Table 7-33. SISO ANT2 80MHz BW (UNII) Maximum Conducted Output Power (106 Tones)

|                                         |                                                                                                                                                                                                                     |                               |                                 |
|-----------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------|---------------------------------|
| FCC ID: A3LSMF907N                      |  <b>MEASUREMENT REPORT (CERTIFICATION)</b>  |                               | Approved by:<br>Quality Manager |
| Test Report S/N:<br>1M1902200029-08.A3L | Test Dates:<br>01/22- 04/05/2019                                                                                                                                                                                    | EUT Type:<br>Portable Handset | Page 90 of 330                  |

## SISO Antenna-2 Conducted Output Power Measurements (242 Tones)

| 5GHz (20MHz Bandwidth) | Freq [MHz] | Channel | Detector | Tones | RU Index | Conducted Power Limit [dBm] | Conducted Power Margin [dB] | Ant. Gain [dBi] | Max e.i.r.p. [dBm] | Max e.i.r.p. Limit [dBm] | e.i.r.p. Margin [dB] |
|------------------------|------------|---------|----------|-------|----------|-----------------------------|-----------------------------|-----------------|--------------------|--------------------------|----------------------|
|                        |            |         |          |       | 61       |                             |                             |                 |                    |                          |                      |
|                        | 5180       | 36      | AVG      | 242T  | 15.85    | 23.98                       | -8.13                       | -6.05           | 9.80               | 22.78                    | -12.98               |
|                        | 5200       | 40      | AVG      | 242T  | 15.88    | 23.98                       | -8.10                       | -6.05           | 9.83               | 22.78                    | -12.95               |
|                        | 5240       | 48      | AVG      | 242T  | 15.83    | 23.98                       | -8.15                       | -6.05           | 9.78               | 22.78                    | -13.00               |
|                        | 5260       | 52      | AVG      | 242T  | 15.52    | 23.75                       | -8.23                       | -6.05           | 9.47               | 29.75                    | -20.28               |
|                        | 5280       | 56      | AVG      | 242T  | 15.62    | 23.75                       | -8.13                       | -6.05           | 9.57               | 29.75                    | -20.18               |
|                        | 5320       | 64      | AVG      | 242T  | 15.88    | 23.75                       | -7.87                       | -6.05           | 9.83               | 29.75                    | -19.92               |
|                        | 5500       | 100     | AVG      | 242T  | 15.99    | 23.72                       | -7.73                       | -7.34           | 8.65               | 29.72                    | -21.07               |
|                        | 5600       | 120     | AVG      | 242T  | 15.94    | 23.72                       | -7.78                       | -7.34           | 8.60               | 29.72                    | -21.12               |
|                        | 5720       | 144     | AVG      | 242T  | 15.85    | 23.72                       | -7.87                       | -7.34           | 8.51               | 29.72                    | -21.21               |
|                        | 5745       | 149     | AVG      | 242T  | 15.99    | 30.00                       | -14.01                      | -7.34           | 8.65               | -                        | -                    |
|                        | 5785       | 157     | AVG      | 242T  | 15.99    | 30.00                       | -14.01                      | -7.34           | 8.65               | -                        | -                    |
|                        | 5825       | 165     | AVG      | 242T  | 15.97    | 30.00                       | -14.03                      | -6.02           | 9.95               | -                        | -                    |

Table 7-34. SISO ANT2 20MHz BW (UNII) Maximum Conducted Output Power (242 Tones)

| 5GHz (40MHz Bandwidth) | Freq [MHz] | Channel | Detector | Tones | RU Index |       | Conducted Power Limit [dBm] | Conducted Power Margin [dB] | Ant. Gain [dBi] | Max e.i.r.p. [dBm] | Max e.i.r.p. Limit [dBm] | e.i.r.p. Margin [dB] |
|------------------------|------------|---------|----------|-------|----------|-------|-----------------------------|-----------------------------|-----------------|--------------------|--------------------------|----------------------|
|                        |            |         |          |       | 61       | 62    |                             |                             |                 |                    |                          |                      |
|                        | 5190       | 38      | AVG      | 242T  | 13.94    | 13.62 | 23.98                       | -10.04                      | -6.05           | 7.89               | 22.78                    | -14.89               |
|                        | 5230       | 46      | AVG      | 242T  | 13.90    | 13.84 | 23.98                       | -10.08                      | -6.05           | 7.85               | 22.78                    | -14.93               |
|                        | 5270       | 54      | AVG      | 242T  | 13.72    | 13.70 | 23.75                       | -10.03                      | -6.05           | 7.67               | 29.75                    | -22.08               |
|                        | 5310       | 62      | AVG      | 242T  | 13.82    | 13.66 | 23.75                       | -9.93                       | -6.05           | 7.77               | 29.75                    | -21.98               |
|                        | 5510       | 102     | AVG      | 242T  | 13.99    | 13.68 | 23.72                       | -9.73                       | -7.34           | 6.65               | 29.72                    | -23.07               |
|                        | 5590       | 118     | AVG      | 242T  | 13.62    | 13.73 | 23.72                       | -9.99                       | -7.34           | 6.39               | 29.72                    | -23.33               |
|                        | 5710       | 142     | AVG      | 242T  | 13.87    | 13.82 | 23.72                       | -9.85                       | -7.34           | 6.53               | 29.72                    | -23.19               |
|                        | 5755       | 151     | AVG      | 242T  | 13.87    | 13.99 | 30.00                       | -16.01                      | -7.34           | 6.65               | -                        | -                    |
|                        | 5795       | 159     | AVG      | 242T  | 13.67    | 13.78 | 30.00                       | -16.22                      | -7.34           | 6.44               | -                        | -                    |

Table 7-35. SISO ANT2 40MHz BW (UNII) Maximum Conducted Output Power (242 Tones)

| 5GHz (80MHz Bandwidth) | Freq [MHz] | Channel | Detector | Tones | RU Index |       |       | Conducted Power Limit [dBm] | Conducted Power Margin [dB] | Ant. Gain [dBi] | Max e.i.r.p. [dBm] | Max e.i.r.p. Limit [dBm] | e.i.r.p. Margin [dB] |
|------------------------|------------|---------|----------|-------|----------|-------|-------|-----------------------------|-----------------------------|-----------------|--------------------|--------------------------|----------------------|
|                        |            |         |          |       | 61       | 62    | 64    |                             |                             |                 |                    |                          |                      |
|                        | 5210       | 42      | AVG      | 242T  | 12.93    | 12.99 | 12.91 | 23.98                       | -10.99                      | -6.05           | 6.94               | 22.78                    | -15.84               |
|                        | 5290       | 58      | AVG      | 242T  | 12.95    | 12.79 | 12.67 | 23.75                       | -10.80                      | -6.05           | 6.90               | 29.75                    | -22.85               |
|                        | 5530       | 106     | AVG      | 242T  | 12.99    | 12.98 | 12.63 | 23.72                       | -10.73                      | -7.34           | 5.65               | 29.72                    | -24.07               |
|                        | 5610       | 122     | AVG      | 242T  | 12.99    | 12.62 | 12.52 | 23.72                       | -10.73                      | -7.34           | 5.65               | 29.72                    | -24.07               |
|                        | 5690       | 138     | AVG      | 242T  | 12.79    | 12.72 | 12.61 | 23.72                       | -10.93                      | -7.34           | 5.45               | 29.72                    | -24.27               |
|                        | 5775       | 155     | AVG      | 242T  | 12.99    | 12.99 | 12.82 | 30.00                       | -17.01                      | -7.34           | 5.65               | -                        | -                    |

Table 7-36. SISO ANT2 80MHz BW (UNII) Maximum Conducted Output Power (242 Tones)

|                                         |                                                                                                                                                                                                                     |                               |                                 |
|-----------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------|---------------------------------|
| FCC ID: A3LSMF907N                      |  <b>MEASUREMENT REPORT (CERTIFICATION)</b>  |                               | Approved by:<br>Quality Manager |
| Test Report S/N:<br>1M1902200029-08.A3L | Test Dates:<br>01/22- 04/05/2019                                                                                                                                                                                    | EUT Type:<br>Portable Handset | Page 91 of 330                  |

## SISO Antenna-2 Conducted Output Power Measurements (484 Tones)

| 5GHz (40MHz Bandwidth) | Freq [MHz] | Channel | Detector | Tones | RU Index | Conducted Power Limit [dBm] | Conducted Power Margin [dB] | Ant. Gain [dBi] | Max e.i.r.p. [dBm] | Max e.i.r.p. Limit [dBm] | e.i.r.p. Margin [dB] |
|------------------------|------------|---------|----------|-------|----------|-----------------------------|-----------------------------|-----------------|--------------------|--------------------------|----------------------|
|                        |            |         |          |       | 65       |                             |                             |                 |                    |                          |                      |
|                        | 5190       | 38      | AVG      | 484T  | 13.85    | 23.98                       | -10.13                      | -6.05           | 7.80               | 22.78                    | -14.98               |
|                        | 5230       | 46      | AVG      | 484T  | 13.92    | 23.98                       | -10.06                      | -6.05           | 7.87               | 22.78                    | -14.91               |
|                        | 5270       | 54      | AVG      | 484T  | 13.68    | 23.75                       | -10.07                      | -6.05           | 7.63               | 29.75                    | -22.12               |
|                        | 5310       | 62      | AVG      | 484T  | 13.72    | 23.75                       | -10.03                      | -6.05           | 7.67               | 29.75                    | -22.08               |
|                        | 5510       | 102     | AVG      | 484T  | 13.95    | 23.72                       | -9.77                       | -7.34           | 6.61               | 29.72                    | -23.11               |
|                        | 5590       | 118     | AVG      | 484T  | 13.99    | 23.72                       | -9.73                       | -7.34           | 6.65               | 29.72                    | -23.07               |
|                        | 5710       | 142     | AVG      | 484T  | 13.70    | 23.72                       | -10.02                      | -7.34           | 6.36               | 29.72                    | -23.36               |
|                        | 5755       | 151     | AVG      | 484T  | 13.99    | 30.00                       | -16.01                      | -7.34           | 6.65               | -                        | -                    |
|                        | 5795       | 159     | AVG      | 484T  | 13.99    | 30.00                       | -16.01                      | -7.34           | 6.65               | -                        | -                    |

Table 7-37. SISO ANT2 40MHz BW (UNII) Maximum Conducted Output Power (484 Tones)

| 5GHz (80MHz Bandwidth) | Freq [MHz] | Channel | Detector | Tones | RU Index |       | Conducted Power Limit [dBm] | Conducted Power Margin [dB] | Ant. Gain [dBi] | Max e.i.r.p. [dBm] | Max e.i.r.p. Limit [dBm] | e.i.r.p. Margin [dB] |
|------------------------|------------|---------|----------|-------|----------|-------|-----------------------------|-----------------------------|-----------------|--------------------|--------------------------|----------------------|
|                        |            |         |          |       | 65       | 66    |                             |                             |                 |                    |                          |                      |
|                        | 5210       | 42      | AVG      | 484T  | 12.73    | 12.87 | 23.98                       | -11.11                      | -6.05           | 6.82               | 22.78                    | -15.96               |
|                        | 5290       | 58      | AVG      | 484T  | 12.91    | 12.98 | 23.75                       | -10.77                      | -6.05           | 6.93               | 29.75                    | -22.82               |
|                        | 5530       | 106     | AVG      | 484T  | 12.80    | 12.98 | 23.72                       | -10.74                      | -7.34           | 5.64               | 29.72                    | -24.08               |
|                        | 5610       | 122     | AVG      | 484T  | 12.95    | 12.99 | 23.72                       | -10.73                      | -7.34           | 5.65               | 29.72                    | -24.07               |
|                        | 5690       | 138     | AVG      | 484T  | 12.93    | 12.99 | 23.72                       | -10.73                      | -7.34           | 5.65               | 29.72                    | -24.07               |
|                        | 5775       | 155     | AVG      | 484T  | 12.99    | 12.66 | 30.00                       | -17.01                      | -7.34           | 5.65               | -                        | -                    |

Table 7-38. SISO ANT2 80MHz BW (UNII) Maximum Conducted Output Power (484 Tones)

|                                         |                                                                                                                                                                                                                     |                               |                                 |
|-----------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------|---------------------------------|
| FCC ID: A3LSMF907N                      |  <b>MEASUREMENT REPORT (CERTIFICATION)</b>  |                               | Approved by:<br>Quality Manager |
| Test Report S/N:<br>1M1902200029-08.A3L | Test Dates:<br>01/22- 04/05/2019                                                                                                                                                                                    | EUT Type:<br>Portable Handset | Page 92 of 330                  |

## SISO Antenna-2 Conducted Output Power Measurements (996 Tones)

| 5GHz (80MHz Bandwidth) | Freq [MHz] | Channel | Detector | Tones | RU Index | Conducted Power Limit [dBm] | Conducted Power Margin [dB] | Ant. Gain [dBi] | Max e.i.r.p. [dBm] | Max e.i.r.p. Limit [dBm] | e.i.r.p. Margin [dB] |
|------------------------|------------|---------|----------|-------|----------|-----------------------------|-----------------------------|-----------------|--------------------|--------------------------|----------------------|
|                        |            |         |          |       | 67       |                             |                             |                 |                    |                          |                      |
|                        | 5210       | 42      | AVG      | 996T  | 12.71    | 23.98                       | -11.27                      | -6.05           | 6.66               | 22.78                    | -16.12               |
|                        | 5290       | 58      | AVG      | 996T  | 12.53    | 23.75                       | -11.22                      | -6.05           | 6.48               | 29.75                    | -23.27               |
|                        | 5530       | 106     | AVG      | 996T  | 12.93    | 23.72                       | -10.79                      | -7.34           | 5.59               | 29.72                    | -24.13               |
|                        | 5610       | 122     | AVG      | 996T  | 12.93    | 23.72                       | -10.79                      | -7.34           | 5.59               | 29.72                    | -24.13               |
|                        | 5690       | 138     | AVG      | 996T  | 12.97    | 23.72                       | -10.75                      | -7.34           | 5.63               | 29.72                    | -24.09               |
|                        | 5775       | 155     | AVG      | 996T  | 12.99    | 30.00                       | -17.01                      | -7.34           | 5.65               | -                        | -                    |

**Table 7-39. SISO ANT2 80MHz BW (UNII) Maximum Conducted Output Power (996 Tones)**

|                                         |                                                                                                                                                                                                                     |                               |                                 |
|-----------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------|---------------------------------|
| FCC ID: A3LSMF907N                      |  <b>MEASUREMENT REPORT (CERTIFICATION)</b>  |                               | Approved by:<br>Quality Manager |
| Test Report S/N:<br>1M1902200029-08.A3L | Test Dates:<br>01/22- 04/05/2019                                                                                                                                                                                    | EUT Type:<br>Portable Handset | Page 93 of 330                  |

## MIMO Maximum Conducted Output Power Measurements (26 Tones)

| 5GHz (20MHz Bandwidth) | Freq [MHz] | Channel | Detector | Tones | RU Index |       |       |      |       |       |      |       |       | Conducted Power Limit [dBm] | Conducted Power Margin [dB] | Directional Ant. Gain [dBi] | Max e.i.r.p. [dBm] | Max e.i.r.p. Limit [dBm] | e.i.r.p. Margin [dB] |
|------------------------|------------|---------|----------|-------|----------|-------|-------|------|-------|-------|------|-------|-------|-----------------------------|-----------------------------|-----------------------------|--------------------|--------------------------|----------------------|
|                        |            |         |          |       | 0        |       |       | 4    |       |       | 8    |       |       |                             |                             |                             |                    |                          |                      |
|                        |            |         |          |       | ANT1     | ANT2  | MIMO  | ANT1 | ANT2  | MIMO  | ANT1 | ANT2  | MIMO  |                             |                             |                             |                    |                          |                      |
|                        | 5180       | 36      | AVG      | 26T   | 7.78     | 8.18  | 10.99 | 7.55 | 7.81  | 10.69 | 7.42 | 7.62  | 10.53 | 23.98                       | -12.99                      | -2.89                       | 8.11               | 22.78                    | -14.67               |
| 5200                   | 40         | AVG     | 26T      | 7.55  | 7.87     | 10.72 | 7.62  | 7.87 | 10.76 | 7.57  | 7.62 | 10.61 | 23.98 | -13.22                      | -2.89                       | 7.87                        | 22.78              | -14.91                   |                      |
| 5240                   | 48         | AVG     | 26T      | 7.26  | 7.88     | 10.59 | 7.61  | 7.77 | 10.70 | 7.31  | 7.72 | 10.53 | 23.98 | -13.28                      | -2.89                       | 7.82                        | 22.78              | -14.96                   |                      |
| 5260                   | 52         | AVG     | 26T      | 7.67  | 8.01     | 10.85 | 7.50  | 7.63 | 10.58 | 7.69  | 7.95 | 10.83 | 23.75 | -12.90                      | -2.89                       | 7.97                        | 29.75              | -21.78                   |                      |
| 5280                   | 56         | AVG     | 26T      | 7.88  | 7.94     | 10.92 | 7.70  | 7.66 | 10.69 | 7.90  | 7.89 | 10.91 | 23.75 | -12.83                      | -2.89                       | 8.04                        | 29.75              | -21.71                   |                      |
| 5320                   | 64         | AVG     | 26T      | 7.75  | 7.89     | 10.83 | 7.66  | 7.62 | 10.65 | 7.90  | 7.88 | 10.90 | 23.75 | -12.85                      | -2.89                       | 8.01                        | 29.75              | -21.74                   |                      |
| 5500                   | 100        | AVG     | 26T      | 7.33  | 8.55     | 10.99 | 7.04  | 8.18 | 10.66 | 7.19  | 8.38 | 10.84 | 23.72 | -12.73                      | -3.52                       | 7.47                        | 29.72              | -22.25                   |                      |
| 5600                   | 120        | AVG     | 26T      | 7.20  | 8.58     | 10.95 | 6.85  | 8.23 | 10.60 | 7.05  | 8.27 | 10.71 | 23.72 | -12.77                      | -3.52                       | 7.43                        | 29.72              | -22.29                   |                      |
| 5720                   | 144        | AVG     | 26T      | 7.15  | 8.68     | 10.99 | 6.77  | 8.51 | 10.74 | 6.95  | 8.50 | 10.80 | 23.72 | -12.73                      | -3.52                       | 7.47                        | 29.72              | -22.25                   |                      |
| 5745                   | 149        | AVG     | 26T      | 6.05  | 9.11     | 10.85 | 6.15  | 9.20 | 10.95 | 5.79  | 8.75 | 10.53 | 30.00 | -19.05                      | -3.52                       | 7.43                        | -                  | -                        |                      |
| 5785                   | 157        | AVG     | 26T      | 6.05  | 9.04     | 10.81 | 6.19  | 9.14 | 10.92 | 5.77  | 8.76 | 10.53 | 30.00 | -19.08                      | -3.52                       | 7.40                        | -                  | -                        |                      |
| 5825                   | 165        | AVG     | 26T      | 5.93  | 8.85     | 10.64 | 6.30  | 9.16 | 10.97 | 6.35  | 9.16 | 10.99 | 30.00 | -19.01                      | -3.25                       | 7.74                        | -                  | -                        |                      |

Table 7-40. MIMO 20MHz BW (UNII) Maximum Conducted Output Power (26 Tones)

| 5GHz (40MHz Bandwidth) | Freq [MHz] | Channel | Detector | Tones | RU Index |       |      |      |       |      |      |       |       | Conducted Power Limit [dBm] | Conducted Power Margin [dB] | Directional Ant. Gain [dBi] | Max e.i.r.p. [dBm] | Max e.i.r.p. Limit [dBm] | e.i.r.p. Margin [dB] |
|------------------------|------------|---------|----------|-------|----------|-------|------|------|-------|------|------|-------|-------|-----------------------------|-----------------------------|-----------------------------|--------------------|--------------------------|----------------------|
|                        |            |         |          |       | 0        |       |      | 8    |       |      | 17   |       |       |                             |                             |                             |                    |                          |                      |
|                        |            |         |          |       | ANT1     | ANT2  | MIMO | ANT1 | ANT2  | MIMO | ANT1 | ANT2  | MIMO  |                             |                             |                             |                    |                          |                      |
| 5190                   | 38         | AVG     | 26T      | 7.71  | 8.21     | 10.98 | 7.79 | 8.17 | 10.99 | 7.20 | 7.81 | 10.53 | 23.98 | -12.99                      | -2.89                       | 8.11                        | 22.78              | -14.67                   |                      |
| 5230                   | 46         | AVG     | 26T      | 7.68  | 8.16     | 10.94 | 7.81 | 7.92 | 10.88 | 7.74 | 8.21 | 10.99 | 23.98 | -12.99                      | -2.89                       | 8.11                        | 22.78              | -14.67                   |                      |
| 5270                   | 54         | AVG     | 26T      | 7.77  | 7.67     | 10.73 | 7.76 | 7.58 | 10.68 | 7.61 | 7.70 | 10.67 | 23.75 | -13.02                      | -2.89                       | 7.85                        | 29.75              | -21.90                   |                      |
| 5310                   | 62         | AVG     | 26T      | 7.50  | 8.00     | 10.77 | 7.45 | 7.86 | 10.67 | 7.32 | 7.70 | 10.52 | 23.75 | -12.98                      | -2.89                       | 7.88                        | 29.75              | -21.87                   |                      |
| 5610                   | 102        | AVG     | 26T      | 6.83  | 8.44     | 10.72 | 6.92 | 8.18 | 10.61 | 6.81 | 8.23 | 10.59 | 23.72 | -13.00                      | -3.52                       | 7.20                        | 29.72              | -22.52                   |                      |
| 5690                   | 118        | AVG     | 26T      | 6.71  | 8.39     | 10.64 | 7.23 | 8.61 | 10.98 | 6.67 | 8.36 | 10.61 | 23.72 | -12.74                      | -3.52                       | 7.46                        | 29.72              | -22.26                   |                      |
| 5710                   | 142        | AVG     | 26T      | 6.85  | 8.47     | 10.75 | 6.72 | 8.31 | 10.60 | 6.75 | 8.26 | 10.58 | 23.72 | -12.97                      | -3.52                       | 7.23                        | 29.72              | -22.49                   |                      |
| 5755                   | 151        | AVG     | 26T      | 5.96  | 8.77     | 10.60 | 6.39 | 9.08 | 10.95 | 5.72 | 8.73 | 10.49 | 30.00 | -19.05                      | -3.52                       | 7.43                        | -                  | -                        |                      |
| 5795                   | 159        | AVG     | 26T      | 5.90  | 8.99     | 10.72 | 6.80 | 9.92 | 11.64 | 6.00 | 8.84 | 10.66 | 30.00 | -18.36                      | -3.52                       | 8.12                        | -                  | -                        |                      |

Table 7-41. MIMO 40MHz BW (UNII) Maximum Conducted Output Power (26 Tones)

| 5GHz (80MHz Bandwidth) | Freq [MHz] | Channel | Detector | Tones | RU Index |      |       |      |      |       |      |      |       | Conducted Power Limit [dBm] | Conducted Power Margin [dB] | Directional Ant. Gain [dBi] | Max e.i.r.p. [dBm] | Max e.i.r.p. Limit [dBm] | e.i.r.p. Margin [dB] |
|------------------------|------------|---------|----------|-------|----------|------|-------|------|------|-------|------|------|-------|-----------------------------|-----------------------------|-----------------------------|--------------------|--------------------------|----------------------|
|                        |            |         |          |       | 0        |      |       | 18   |      |       | 36   |      |       |                             |                             |                             |                    |                          |                      |
|                        |            |         |          |       | ANT1     | ANT2 | MIMO  | ANT1 | ANT2 | MIMO  | ANT1 | ANT2 | MIMO  |                             |                             |                             |                    |                          |                      |
|                        |            |         |          |       | ANT1     | ANT2 | MIMO  | ANT1 | ANT2 | MIMO  | ANT1 | ANT2 | MIMO  |                             |                             |                             |                    |                          |                      |
|                        | 5210       | 42      | AVG      | 26T   | 7.72     | 8.21 | 10.98 | 7.25 | 7.86 | 10.58 | 7.62 | 8.21 | 10.94 | 23.98                       | -13.00                      | -2.89                       | 8.10               | 22.78                    | -14.68               |
|                        | 5290       | 58      | AVG      | 26T   | 7.62     | 7.55 | 10.60 | 7.66 | 7.76 | 10.72 | 7.58 | 7.63 | 10.62 | 23.75                       | -13.03                      | -2.89                       | 7.84               | 29.75                    | -21.91               |
|                        | 5530       | 106     | AVG      | 26T   | 7.30     | 8.20 | 10.78 | 7.00 | 8.42 | 10.78 | 6.75 | 8.15 | 10.52 | 23.72                       | -12.94                      | -3.52                       | 7.26               | 29.72                    | -22.46               |
|                        | 5610       | 122     | AVG      | 26T   | 6.76     | 8.22 | 10.56 | 6.85 | 8.25 | 10.62 | 6.75 | 8.19 | 10.54 | 23.72                       | -13.10                      | -3.52                       | 7.10               | 29.72                    | -22.62               |
|                        | 5690       | 138     | AVG      | 26T   | 7.00     | 8.30 | 10.71 | 6.92 | 8.42 | 10.74 | 6.76 | 8.25 | 10.58 | 23.72                       | -12.98                      | -3.52                       | 7.22               | 29.72                    | -22.50               |
|                        | 5775       | 155     | AVG      | 26T   | 5.95     | 8.80 | 10.62 | 6.00 | 9.03 | 10.78 | 6.07 | 8.79 | 10.65 | 30.00                       | -19.22                      | -3.52                       | 7.26               | -                        | -                    |

Table 7-42. MIMO 80MHz BW (UNII) Maximum Conducted Output Power (26 Tones)

|                                         |                                                                                                                               |                               |                                                                                       |                                 |
|-----------------------------------------|-------------------------------------------------------------------------------------------------------------------------------|-------------------------------|---------------------------------------------------------------------------------------|---------------------------------|
| FCC ID: A3LSMF907N                      |  <b>MEASUREMENT REPORT (CERTIFICATION)</b> |                               |  | Approved by:<br>Quality Manager |
| Test Report S/N:<br>1M1902200029-08.A3L | Test Dates:<br>01/22- 04/05/2019                                                                                              | EUT Type:<br>Portable Handset | Page 94 of 330                                                                        |                                 |

## MIMO Conducted Output Power Measurements (52 Tones)

| 5GHz (20MHz Bandwidth) | Freq [MHz] | Channel | Detector | Tones | RU Index |       |       |       |       |       |       |       |       | Conducted Power Limit [dBm] | Conducted Power Margin [dB] | Directional Ant. Gain [dBi] | Max e.i.r.p. [dBm] | Max e.i.r.p. Limit [dBm] | e.i.r.p. Margin [dB] |
|------------------------|------------|---------|----------|-------|----------|-------|-------|-------|-------|-------|-------|-------|-------|-----------------------------|-----------------------------|-----------------------------|--------------------|--------------------------|----------------------|
|                        |            |         |          |       | 37       |       |       | 39    |       |       | 40    |       |       |                             |                             |                             |                    |                          |                      |
|                        |            |         |          |       | ANT1     | ANT2  | MIMO  | ANT1  | ANT2  | MIMO  | ANT1  | ANT2  | MIMO  |                             |                             |                             |                    |                          |                      |
|                        | 5180       | 36      | AVG      | 52T   | 9.55     | 9.67  | 12.62 | 9.56  | 9.85  | 12.72 | 9.50  | 9.67  | 12.60 | 23.98                       | -11.26                      | -2.89                       | 9.83               | 22.78                    | -12.95               |
| 5200                   | 40         | AVG     | 52T      | 9.37  | 9.76     | 12.58 | 9.55  | 9.94  | 12.76 | 9.40  | 9.64  | 12.53 | 23.98 | -11.22                      | -2.89                       | 9.87                        | 22.78              | -12.91                   |                      |
| 5240                   | 48         | AVG     | 52T      | 9.30  | 9.92     | 12.63 | 9.47  | 9.97  | 12.74 | 9.44  | 9.84  | 12.65 | 23.98 | -11.24                      | -2.89                       | 9.85                        | 22.78              | -12.93                   |                      |
| 5260                   | 52         | AVG     | 52T      | 9.90  | 10.05    | 12.99 | 9.50  | 9.60  | 12.56 | 9.95  | 9.98  | 12.98 | 23.75 | -10.76                      | -2.89                       | 10.10                       | 29.75              | -19.65                   |                      |
| 5280                   | 56         | AVG     | 52T      | 9.90  | 10.05    | 12.99 | 9.59  | 9.75  | 12.68 | 9.99  | 9.99  | 12.50 | 23.75 | -10.76                      | -2.89                       | 10.10                       | 29.75              | -19.65                   |                      |
| 5320                   | 64         | AVG     | 52T      | 9.99  | 9.97     | 12.99 | 9.48  | 9.62  | 12.56 | 9.33  | 9.61  | 12.48 | 23.75 | -10.76                      | -2.89                       | 10.10                       | 29.75              | -19.65                   |                      |
| 5500                   | 100        | AVG     | 52T      | 8.81  | 10.13    | 12.53 | 8.65  | 10.23 | 12.52 | 8.77  | 10.45 | 12.70 | 23.72 | -11.02                      | -3.52                       | 9.18                        | 29.72              | -20.54                   |                      |
| 5600                   | 120        | AVG     | 52T      | 9.04  | 10.64    | 12.92 | 8.60  | 10.22 | 12.50 | 8.92  | 10.42 | 12.74 | 23.72 | -10.80                      | -3.52                       | 9.40                        | 29.72              | -20.32                   |                      |
| 5720                   | 144        | AVG     | 52T      | 8.98  | 10.80    | 12.99 | 8.57  | 10.53 | 12.67 | 9.10  | 10.55 | 12.90 | 23.72 | -10.73                      | -3.52                       | 9.47                        | 29.72              | -20.25                   |                      |
| 5745                   | 149        | AVG     | 52T      | 8.01  | 11.08    | 12.82 | 8.10  | 11.13 | 12.88 | 8.22  | 11.23 | 12.99 | 30.00 | -17.01                      | -3.52                       | 9.47                        | -                  | -                        |                      |
| 5785                   | 157        | AVG     | 52T      | 7.99  | 11.03    | 12.78 | 8.20  | 11.09 | 12.89 | 8.15  | 11.27 | 12.99 | 30.00 | -17.01                      | -3.52                       | 9.47                        | -                  | -                        |                      |
| 5825                   | 165        | AVG     | 52T      | 7.82  | 10.83    | 12.59 | 8.07  | 11.09 | 12.85 | 7.80  | 10.73 | 12.52 | 30.00 | -17.15                      | -3.25                       | 9.60                        | -                  | -                        |                      |

Table 7-43. MIMO 20MHz BW (UNII) Maximum Conducted Output Power (52 Tones)

| 5GHz (40MHz Bandwidth) | Freq [MHz] | Channel | Detector | Tones | RU Index |       |      |       |       |      |       |       |       | Conducted Power Limit [dBm] | Conducted Power Margin [dB] | Directional Ant. Gain [dBi] | Max e.i.r.p. [dBm] | Max e.i.r.p. Limit [dBm] | e.i.r.p. Margin [dB] |
|------------------------|------------|---------|----------|-------|----------|-------|------|-------|-------|------|-------|-------|-------|-----------------------------|-----------------------------|-----------------------------|--------------------|--------------------------|----------------------|
|                        |            |         |          |       | 37       |       |      | 40    |       |      | 44    |       |       |                             |                             |                             |                    |                          |                      |
|                        |            |         |          |       | ANT1     | ANT2  | MIMO | ANT1  | ANT2  | MIMO | ANT1  | ANT2  | MIMO  |                             |                             |                             |                    |                          |                      |
| 5190                   | 38         | AVG     | 52T      | 8.45  | 8.93     | 11.71 | 8.35 | 8.80  | 11.59 | 8.47 | 8.97  | 11.74 | 23.98 | -12.24                      | -2.89                       | 8.85                        | 22.78              | -13.93                   |                      |
| 5230                   | 46         | AVG     | 52T      | 8.51  | 8.74     | 11.64 | 8.36 | 8.57  | 11.48 | 8.55 | 8.99  | 11.79 | 23.98 | -12.19                      | -2.89                       | 8.90                        | 22.78              | -13.88                   |                      |
| 5270                   | 54         | AVG     | 52T      | 8.97  | 8.99     | 11.99 | 8.77 | 8.66  | 11.73 | 8.87 | 8.92  | 11.91 | 23.75 | -11.76                      | -2.89                       | 9.10                        | 29.75              | -20.65                   |                      |
| 5310                   | 62         | AVG     | 52T      | 8.71  | 9.16     | 11.95 | 8.41 | 8.81  | 11.62 | 8.71 | 9.02  | 11.88 | 23.75 | -11.80                      | -2.89                       | 9.07                        | 29.75              | -20.68                   |                      |
| 5610                   | 102        | AVG     | 52T      | 8.07  | 9.73     | 11.99 | 8.10 | 9.58  | 11.91 | 7.72 | 9.68  | 11.82 | 23.72 | -11.73                      | -3.52                       | 8.47                        | 29.72              | -21.25                   |                      |
| 5690                   | 118        | AVG     | 52T      | 7.93  | 9.66     | 11.89 | 8.01 | 9.73  | 11.96 | 7.79 | 9.73  | 11.88 | 23.72 | -11.76                      | -3.52                       | 8.44                        | 29.72              | -21.28                   |                      |
| 5710                   | 142        | AVG     | 52T      | 8.03  | 9.76     | 11.99 | 7.83 | 9.23  | 11.60 | 7.95 | 9.69  | 11.92 | 23.72 | -11.73                      | -3.52                       | 8.47                        | 29.72              | -21.25                   |                      |
| 5755                   | 151        | AVG     | 52T      | 7.01  | 9.93     | 11.72 | 7.31 | 10.14 | 11.96 | 7.01 | 9.85  | 11.67 | 30.00 | -18.04                      | -3.52                       | 8.44                        | -                  | -                        |                      |
| 5795                   | 159        | AVG     | 52T      | 7.07  | 10.15    | 11.89 | 6.82 | 9.91  | 11.64 | 7.11 | 10.05 | 11.83 | 30.00 | -18.11                      | -3.52                       | 8.37                        | -                  | -                        |                      |

Table 7-44. MIMO 40MHz BW (UNII) Maximum Conducted Output Power (52 Tones)

| 5GHz (80MHz Bandwidth) | Freq [MHz] | Channel | Detector | Tones | RU Index |       |       |      |       |       |      |       |       | Conducted Power Limit [dBm] | Conducted Power Margin [dB] | Directional Ant. Gain [dBi] | Max e.i.r.p. [dBm] | Max e.i.r.p. Limit [dBm] | e.i.r.p. Margin [dB] |
|------------------------|------------|---------|----------|-------|----------|-------|-------|------|-------|-------|------|-------|-------|-----------------------------|-----------------------------|-----------------------------|--------------------|--------------------------|----------------------|
|                        |            |         |          |       | 37       |       |       | 44   |       |       | 52   |       |       |                             |                             |                             |                    |                          |                      |
|                        |            |         |          |       | ANT1     | ANT2  | MIMO  | ANT1 | ANT2  | MIMO  | ANT1 | ANT2  | MIMO  |                             |                             |                             |                    |                          |                      |
|                        | 5210       | 42      | AVG      | 52T   | 7.41     | 7.72  | 10.58 | 7.71 | 8.12  | 10.93 | 7.37 | 7.75  | 10.57 | 23.98                       | -13.05                      | -2.89                       | 8.04               | 22.78                    | -14.74               |
| 5290                   | 58         | AVG     | 52T      | 7.78  | 7.63     | 10.72 | 7.75  | 7.64 | 10.71 | 7.60  | 7.72 | 10.67 | 23.75 | -13.03                      | -2.89                       | 7.83                        | 29.75              | -21.92                   |                      |
| 5530                   | 106        | AVG     | 52T      | 7.40  | 8.45     | 10.97 | 7.70  | 8.25 | 10.99 | 6.92  | 8.50 | 10.79 | 23.72 | -12.73                      | -3.52                       | 7.47                        | 29.72              | -22.25                   |                      |
| 5610                   | 122        | AVG     | 52T      | 6.95  | 8.47     | 10.79 | 6.78  | 8.33 | 10.63 | 6.88  | 8.42 | 10.73 | 23.72 | -12.93                      | -3.52                       | 7.27                        | 29.72              | -22.45                   |                      |
| 5690                   | 138        | AVG     | 52T      | 7.17  | 8.43     | 10.86 | 7.31  | 8.52 | 10.97 | 6.95  | 8.45 | 10.77 | 23.72 | -12.75                      | -3.52                       | 7.45                        | 29.72              | -22.27                   |                      |
| 5775                   | 155        | AVG     | 52T      | 6.10  | 8.90     | 10.73 | 5.88  | 8.57 | 10.44 | 6.08  | 8.86 | 10.70 | 30.00 | -19.27                      | -3.52                       | 7.21                        | -                  | -                        |                      |

Table 7-45. MIMO 80MHz BW (UNII) Maximum Conducted Output Power (52 Tones)

|                                         |                                                                                                                               |                               |                                                                                       |                                 |
|-----------------------------------------|-------------------------------------------------------------------------------------------------------------------------------|-------------------------------|---------------------------------------------------------------------------------------|---------------------------------|
| FCC ID: A3LSMF907N                      |  <b>MEASUREMENT REPORT (CERTIFICATION)</b> |                               |  | Approved by:<br>Quality Manager |
| Test Report S/N:<br>1M1902200029-08.A3L | Test Dates:<br>01/22- 04/05/2019                                                                                              | EUT Type:<br>Portable Handset |                                                                                       | Page 95 of 330                  |

## MIMO Conducted Output Power Measurements (106 Tones)

| 5GHz (20MHz Bandwidth) | Freq [MHz] | Channel | Detector | Tones | RU Index |       |       |       |       |       | Conducted Power Limit [dBm] | Conducted Power Margin [dB] | Directional Ant. Gain | Max e.i.r.p. [dBm] | Max e.i.r.p. Limit [dBm] | e.i.r.p. Margin [dB] |
|------------------------|------------|---------|----------|-------|----------|-------|-------|-------|-------|-------|-----------------------------|-----------------------------|-----------------------|--------------------|--------------------------|----------------------|
|                        |            |         |          |       | 53       |       |       | 54    |       |       |                             |                             |                       |                    |                          |                      |
|                        |            |         |          |       | ANT1     | 52    | MIMO  | ANT1  | 54    | MIMO  |                             |                             |                       |                    |                          |                      |
|                        | 5180       | 36      | AVG      | 106T  | 11.37    | 11.77 | 14.58 | 11.52 | 11.84 | 14.69 | 23.98                       | -9.29                       | -2.89                 | 11.81              | 22.78                    | -10.97               |
|                        | 5200       | 40      | AVG      | 106T  | 11.31    | 12.04 | 14.70 | 11.40 | 11.98 | 14.71 | 23.98                       | -9.27                       | -2.89                 | 11.82              | 22.78                    | -10.96               |
|                        | 5240       | 48      | AVG      | 106T  | 11.33    | 12.15 | 14.77 | 11.35 | 12.06 | 14.73 | 23.98                       | -9.21                       | -2.89                 | 11.88              | 22.78                    | -10.90               |
|                        | 5260       | 52      | AVG      | 106T  | 11.75    | 12.17 | 14.98 | 11.32 | 11.64 | 14.49 | 23.75                       | -8.77                       | -2.89                 | 12.09              | 29.75                    | -17.66               |
|                        | 5280       | 56      | AVG      | 106T  | 11.52    | 11.77 | 14.66 | 11.55 | 11.79 | 14.68 | 23.75                       | -9.07                       | -2.89                 | 11.80              | 29.75                    | -17.95               |
|                        | 5320       | 64      | AVG      | 106T  | 11.40    | 11.72 | 14.57 | 11.23 | 11.75 | 14.51 | 23.75                       | -9.18                       | -2.89                 | 11.69              | 29.75                    | -18.06               |
|                        | 5500       | 100     | AVG      | 106T  | 11.05    | 12.72 | 14.98 | 10.91 | 12.69 | 14.90 | 23.72                       | -8.74                       | -3.52                 | 11.46              | 29.72                    | -18.26               |
| 5600                   | 120        | AVG     | 106T     | 10.81 | 12.68    | 14.86 | 10.82 | 12.55 | 14.78 | 23.72 | -8.86                       | -3.52                       | 11.34                 | 29.72              | -18.38                   |                      |
| 5720                   | 144        | AVG     | 106T     | 10.51 | 12.42    | 14.58 | 10.91 | 12.77 | 14.95 | 23.72 | -8.77                       | -3.52                       | 11.43                 | 29.72              | -18.29                   |                      |
| 5745                   | 149        | AVG     | 106T     | 9.94  | 12.93    | 14.70 | 10.35 | 13.15 | 14.98 | 30.00 | -15.02                      | -3.52                       | 11.46                 | -                  | -                        |                      |
| 5785                   | 157        | AVG     | 106T     | 9.88  | 12.84    | 14.62 | 10.34 | 13.17 | 14.99 | 30.00 | -15.01                      | -3.52                       | 11.47                 | -                  | -                        |                      |
| 5825                   | 165        | AVG     | 106T     | 10.20 | 13.10    | 14.90 | 10.36 | 13.02 | 14.90 | 30.00 | -15.10                      | -3.25                       | 11.65                 | -                  | -                        |                      |

Table 7-46. MIMO 20MHz BW (UNII) Maximum Conducted Output Power (106 Tones)

| 5GHz (40MHz Bandwidth) | Freq [MHz] | Channel | Detector | Tones | RU Index |       |      |       |       |      |       |       |       | Conducted Power Limit [dBm] | Conducted Power Margin [dB] | Directional Ant. Gain [dBi] | Max e.i.r.p. [dBm] | Max e.i.r.p. Limit [dBm] | e.i.r.p. Margin [dB] |
|------------------------|------------|---------|----------|-------|----------|-------|------|-------|-------|------|-------|-------|-------|-----------------------------|-----------------------------|-----------------------------|--------------------|--------------------------|----------------------|
|                        |            |         |          |       | 53       |       |      | 54    |       |      | 56    |       |       |                             |                             |                             |                    |                          |                      |
|                        |            |         |          |       | ANT1     | ANT2  | MIMO | ANT1  | ANT2  | MIMO | ANT1  | ANT2  | MIMO  |                             |                             |                             |                    |                          |                      |
| 5190                   | 38         | AVG     | 106T     | 9.73  | 10.21    | 12.99 | 9.82 | 10.13 | 12.99 | 9.25 | 9.75  | 12.52 | 23.98 | -10.99                      | -2.89                       | 10.10                       | 22.78              | -12.68                   |                      |
| 5230                   | 46         | AVG     | 106T     | 9.70  | 10.20    | 12.97 | 9.90 | 9.97  | 12.95 | 9.63 | 10.25 | 12.96 | 23.98 | -11.01                      | -2.89                       | 10.08                       | 22.78              | -12.70                   |                      |
| 5270                   | 54         | AVG     | 106T     | 9.87  | 9.90     | 12.90 | 9.76 | 9.72  | 12.75 | 9.61 | 9.80  | 12.72 | 23.75 | -10.85                      | -2.89                       | 10.01                       | 29.75              | -19.74                   |                      |
| 5310                   | 62         | AVG     | 106T     | 9.61  | 10.03    | 12.84 | 9.63 | 9.84  | 12.75 | 9.46 | 9.76  | 12.62 | 23.75 | -10.91                      | -2.89                       | 9.95                        | 29.75              | -19.80                   |                      |
| 5510                   | 102        | AVG     | 106T     | 8.78  | 10.41    | 12.68 | 8.76 | 10.27 | 12.59 | 9.00 | 10.49 | 12.82 | 23.72 | -10.90                      | -3.52                       | 9.30                        | 29.72              | -20.42                   |                      |
| 5590                   | 118        | AVG     | 106T     | 8.75  | 10.39    | 12.66 | 9.12 | 10.70 | 12.99 | 8.65 | 10.50 | 12.68 | 23.72 | -10.73                      | -3.52                       | 9.47                        | 29.72              | -20.25                   |                      |
| 5710                   | 142        | AVG     | 106T     | 8.95  | 10.46    | 12.78 | 8.76 | 10.38 | 12.66 | 8.85 | 10.36 | 12.68 | 23.72 | -10.94                      | -3.52                       | 9.26                        | 29.72              | -20.46                   |                      |
| 5755                   | 151        | AVG     | 106T     | 8.22  | 11.06    | 12.88 | 8.28 | 11.09 | 12.92 | 8.25 | 11.20 | 12.98 | 30.00 | -17.02                      | -3.52                       | 9.46                        | -                  | -                        |                      |
| 5795                   | 159        | AVG     | 106T     | 7.80  | 11.03    | 12.72 | 8.21 | 11.19 | 12.96 | 7.89 | 10.88 | 12.65 | 30.00 | -17.04                      | -3.52                       | 9.44                        | -                  | -                        |                      |

Table 7-47. MIMO 40MHz BW (UNII) Maximum Conducted Output Power (106 Tones)

| 5GHz (80MHz Bandwidth) | Freq [MHz] | Channel | Detector | Tones | RU Index |      |       |      |       |       |      |       |       | Conducted Power Limit [dBm] | Conducted Power Margin [dB] | Directional Ant. Gain [dBi] | Max e.i.r.p. [dBm] | Max e.i.r.p. Limit [dBm] | e.i.r.p. Margin [dB] |
|------------------------|------------|---------|----------|-------|----------|------|-------|------|-------|-------|------|-------|-------|-----------------------------|-----------------------------|-----------------------------|--------------------|--------------------------|----------------------|
|                        |            |         |          |       | 53       |      |       | 56   |       |       | 60   |       |       |                             |                             |                             |                    |                          |                      |
|                        |            |         |          |       | ANT1     | ANT2 | MIMO  | ANT1 | ANT2  | MIMO  | ANT1 | ANT2  | MIMO  |                             |                             |                             |                    |                          |                      |
|                        | 5210       | 42      | AVG      | 106T  | 8.70     | 8.87 | 11.80 | 8.35 | 8.86  | 11.62 | 8.55 | 9.09  | 11.84 | 23.98                       | -12.14                      | -2.89                       | 8.95               | 22.78                    | -13.83               |
|                        | 5290       | 58      | AVG      | 106T  | 8.50     | 8.72 | 11.62 | 8.80 | 8.92  | 11.87 | 8.85 | 9.05  | 11.96 | 23.75                       | -11.79                      | -2.89                       | 9.08               | 29.75                    | -20.67               |
|                        | 5530       | 106     | AVG      | 106T  | 8.06     | 9.20 | 11.68 | 8.08 | 9.45  | 11.83 | 8.05 | 9.68  | 11.95 | 23.72                       | -11.77                      | -3.52                       | 8.43               | 29.72                    | -21.29               |
|                        | 5610       | 122     | AVG      | 106T  | 8.05     | 9.70 | 11.96 | 7.83 | 9.35  | 11.67 | 8.04 | 9.70  | 11.96 | 23.72                       | -11.76                      | -3.52                       | 8.44               | 29.72                    | -21.28               |
|                        | 5690       | 138     | AVG      | 106T  | 7.80     | 9.23 | 11.58 | 7.95 | 9.35  | 11.72 | 8.10 | 9.63  | 11.94 | 23.72                       | -11.78                      | -3.52                       | 8.42               | 29.72                    | -21.30               |
|                        | 5775       | 155     | AVG      | 106T  | 7.08     | 9.99 | 11.78 | 7.40 | 10.14 | 11.99 | 7.29 | 10.00 | 11.86 | 30.00                       | -18.01                      | -3.52                       | 8.47               | -                        | -                    |

Table 7-48. MIMO 80MHz BW (UNII) Maximum Conducted Output Power (106 Tones)

|                                         |                                                                                                                               |                               |                                                                                       |                                 |
|-----------------------------------------|-------------------------------------------------------------------------------------------------------------------------------|-------------------------------|---------------------------------------------------------------------------------------|---------------------------------|
| FCC ID: A3LSMF907N                      |  <b>MEASUREMENT REPORT (CERTIFICATION)</b> |                               |  | Approved by:<br>Quality Manager |
| Test Report S/N:<br>1M1902200029-08.A3L | Test Dates:<br>01/22- 04/05/2019                                                                                              | EUT Type:<br>Portable Handset | Page 96 of 330                                                                        |                                 |

## MIMO Conducted Output Power Measurements (242 Tones)

| 5GHz (20MHz Bandwidth) | Freq [MHz] | Channel | Detector | Tones | RU Index |       |       | Conducted Power Limit [dBm] | Conducted Power Margin [dB] | Directional Ant. Gain [dBi] | Max e.i.r.p. [dBm] | Max e.i.r.p. Limit [dBm] | e.i.r.p. Margin [dB] |
|------------------------|------------|---------|----------|-------|----------|-------|-------|-----------------------------|-----------------------------|-----------------------------|--------------------|--------------------------|----------------------|
|                        |            |         |          | 61    |          |       |       |                             |                             |                             |                    |                          |                      |
|                        |            |         |          | ANT1  | ANT2     | MIMO  |       |                             |                             |                             |                    |                          |                      |
|                        | 5180       | 36      | AVG      | 242T  | 12.35    | 12.93 | 15.66 | 23.98                       | -8.32                       | -2.89                       | 12.77              | 22.78                    | -10.01               |
|                        | 5200       | 40      | AVG      | 242T  | 12.41    | 12.86 | 15.65 | 23.98                       | -8.33                       | -2.89                       | 12.77              | 22.78                    | -10.01               |
|                        | 5240       | 48      | AVG      | 242T  | 12.30    | 13.04 | 15.70 | 23.98                       | -8.28                       | -2.89                       | 12.81              | 22.78                    | -9.97                |
|                        | 5260       | 52      | AVG      | 242T  | 12.80    | 13.15 | 15.99 | 23.75                       | -7.76                       | -2.89                       | 13.10              | 29.75                    | -16.65               |
|                        | 5280       | 56      | AVG      | 242T  | 12.32    | 12.73 | 15.54 | 23.75                       | -8.21                       | -2.89                       | 12.65              | 29.75                    | -17.10               |
|                        | 5320       | 64      | AVG      | 242T  | 12.36    | 12.67 | 15.53 | 23.75                       | -8.22                       | -2.89                       | 12.64              | 29.75                    | -17.11               |
|                        | 5500       | 100     | AVG      | 242T  | 11.96    | 13.66 | 15.90 | 23.72                       | -7.82                       | -3.52                       | 12.38              | 29.72                    | -17.34               |
| 5600                   | 120        | AVG     | 242T     | 11.73 | 13.69    | 15.83 | 23.72 | -7.89                       | -3.52                       | 12.31                       | 29.72              | -17.41                   |                      |
| 5720                   | 144        | AVG     | 242T     | 11.75 | 13.72    | 15.86 | 23.72 | -7.86                       | -3.52                       | 12.34                       | 29.72              | -17.38                   |                      |
| 5745                   | 149        | AVG     | 242T     | 11.23 | 14.23    | 15.99 | 30.00 | -14.01                      | -3.52                       | 12.47                       | -                  | -                        |                      |
| 5785                   | 157        | AVG     | 242T     | 10.83 | 13.71    | 15.51 | 30.00 | -14.49                      | -3.52                       | 11.99                       | -                  | -                        |                      |
| 5825                   | 165        | AVG     | 242T     | 11.21 | 14.13    | 15.92 | 30.00 | -14.08                      | -3.25                       | 12.67                       | -                  | -                        |                      |

Table 7-49. MIMO 20MHz BW (UNII) Maximum Conducted Output Power (242 Tones)

| 5GHz (40MHz Bandwidth) | Freq [MHz] | Channel | Detector | Tones | RU Index |       |       |       |       |       | Conducted Power Limit [dBm] | Conducted Power Margin [dB] | Directional Ant. Gain [dBi] | Max e.i.r.p. [dBm] | Max e.i.r.p. Limit [dBm] | e.i.r.p. Margin [dB] |
|------------------------|------------|---------|----------|-------|----------|-------|-------|-------|-------|-------|-----------------------------|-----------------------------|-----------------------------|--------------------|--------------------------|----------------------|
|                        |            |         |          |       | 61       |       |       | 62    |       |       |                             |                             |                             |                    |                          |                      |
|                        |            |         |          |       | ANT1     | ANT2  | MIMO  | ANT1  | ANT2  | MIMO  |                             |                             |                             |                    |                          |                      |
|                        | 5190       | 38      | AVG      | 242T  | 10.65    | 10.85 | 13.76 | 10.31 | 11.04 | 13.70 | 23.98                       | -10.22                      | -2.89                       | 10.88              | 22.78                    | -11.90               |
|                        | 5230       | 46      | AVG      | 242T  | 10.55    | 10.83 | 13.70 | 10.44 | 11.04 | 13.76 | 23.98                       | -10.22                      | -2.89                       | 10.88              | 22.78                    | -11.90               |
|                        | 5270       | 54      | AVG      | 242T  | 10.97    | 10.99 | 13.99 | 10.72 | 11.18 | 13.97 | 23.75                       | -9.76                       | -2.89                       | 11.10              | 29.75                    | -18.65               |
|                        | 5310       | 62      | AVG      | 242T  | 10.20    | 10.68 | 13.46 | 10.20 | 10.71 | 13.47 | 23.75                       | -10.28                      | -2.89                       | 10.59              | 29.75                    | -19.16               |
|                        | 5510       | 102     | AVG      | 242T  | 9.66     | 11.25 | 13.54 | 9.81  | 11.37 | 13.67 | 23.72                       | -10.05                      | -3.52                       | 10.15              | 29.72                    | -19.57               |
|                        | 5590       | 118     | AVG      | 242T  | 9.76     | 11.61 | 13.79 | 9.76  | 11.80 | 13.91 | 23.72                       | -9.81                       | -3.52                       | 10.39              | 29.72                    | -19.33               |
|                        | 5710       | 142     | AVG      | 242T  | 9.84     | 11.66 | 13.85 | 9.97  | 11.80 | 13.99 | 23.72                       | -9.73                       | -3.52                       | 10.47              | 29.72                    | -19.25               |
|                        | 5755       | 151     | AVG      | 242T  | 9.05     | 11.77 | 13.63 | 9.05  | 11.86 | 13.69 | 30.00                       | -16.31                      | -3.52                       | 10.17              | -                        | -                    |
|                        | 5795       | 159     | AVG      | 242T  | 9.21     | 12.16 | 13.94 | 8.97  | 11.90 | 13.69 | 30.00                       | -16.06                      | -3.52                       | 10.42              | -                        | -                    |

Table 7-50. MIMO 40MHz BW (UNII) Maximum Conducted Output Power (242 Tones)

| 5GHz (80MHz Bandwidth) | Freq [MHz] | Channel | Detector | Tones | RU Index |       |      |       |       |      |       |       |       | Conducted Power Limit [dBm] | Conducted Power Margin [dB] | Directional Ant. Gain [dBi] | Max e.i.r.p. [dBm] | Max e.i.r.p. Limit [dBm] | e.i.r.p. Margin [dB] |
|------------------------|------------|---------|----------|-------|----------|-------|------|-------|-------|------|-------|-------|-------|-----------------------------|-----------------------------|-----------------------------|--------------------|--------------------------|----------------------|
|                        |            |         |          |       | 61       |       |      | 62    |       |      | 64    |       |       |                             |                             |                             |                    |                          |                      |
|                        |            |         |          |       | ANT1     | ANT2  | MIMO | ANT1  | ANT2  | MIMO | ANT1  | ANT2  | MIMO  |                             |                             |                             |                    |                          |                      |
| 5210                   | 42         | AVG     | 242T     | 9.48  | 9.58     | 12.54 | 9.61 | 10.09 | 12.87 | 9.40 | 9.82  | 12.63 | 23.98 | -11.11                      | -2.89                       | 9.98                        | 22.78              | -12.80                   |                      |
| 5290                   | 58         | AVG     | 242T     | 9.84  | 9.85     | 12.86 | 9.95 | 10.00 | 12.99 | 9.81 | 9.92  | 12.88 | 23.75 | -10.76                      | -2.89                       | 10.10                       | 29.75              | -19.65                   |                      |
| 5530                   | 106        | AVG     | 242T     | 9.25  | 10.40    | 12.87 | 9.25 | 10.55 | 12.96 | 9.05 | 10.62 | 12.92 | 23.72 | -10.76                      | -3.52                       | 9.44                        | 29.72              | -20.28                   |                      |
| 5610                   | 122        | AVG     | 242T     | 9.01  | 10.31    | 12.72 | 8.95 | 10.60 | 12.86 | 9.07 | 10.66 | 12.95 | 23.72 | -10.77                      | -3.52                       | 9.43                        | 29.72              | -20.29                   |                      |
| 5690                   | 138        | AVG     | 242T     | 9.01  | 10.35    | 12.74 | 9.07 | 10.47 | 12.84 | 9.04 | 10.53 | 12.86 | 23.72 | -10.86                      | -3.52                       | 9.34                        | 29.72              | -20.38                   |                      |
| 5775                   | 155        | AVG     | 242T     | 8.42  | 11.11    | 12.98 | 8.17 | 10.88 | 12.74 | 7.99 | 10.83 | 12.65 | 30.00 | -17.02                      | -3.52                       | 9.46                        | -                  | -                        |                      |

Table 7-51. MIMO 80MHz BW (UNII) Maximum Conducted Output Power (242 Tones)

|                                         |                                                                                     |                               |                                       |                                                                                       |                                 |
|-----------------------------------------|-------------------------------------------------------------------------------------|-------------------------------|---------------------------------------|---------------------------------------------------------------------------------------|---------------------------------|
| FCC ID: A3LSMF907N                      |  |                               | MEASUREMENT REPORT<br>(CERTIFICATION) |  | Approved by:<br>Quality Manager |
| Test Report S/N:<br>1M1902200029-08.A3L | Test Dates:<br>01/22- 04/05/2019                                                    | EUT Type:<br>Portable Handset |                                       | Page 97 of 330                                                                        |                                 |

## MIMO Conducted Output Power Measurements (484 Tones)

| 5GHz (40MHz Bandwidth) | Freq [MHz] | Channel | Detector | Tones | RU Index |       |       | Conducted Power Limit [dBm] | Conducted Power Margin [dB] | Directional Ant. Gain [dBi] | Max e.i.r.p. [dBm] | Max e.i.r.p. Limit [dBm] | e.i.r.p. Margin [dB] |
|------------------------|------------|---------|----------|-------|----------|-------|-------|-----------------------------|-----------------------------|-----------------------------|--------------------|--------------------------|----------------------|
|                        |            |         |          |       | 65       |       |       |                             |                             |                             |                    |                          |                      |
|                        |            |         |          |       | ANT1     | ANT2  | MIMO  |                             |                             |                             |                    |                          |                      |
|                        | 5190       | 38      | AVG      | 484T  | 10.32    | 10.72 | 13.53 | 23.98                       | -10.45                      | -2.89                       | 10.65              | 22.78                    | -12.13               |
|                        | 5230       | 46      | AVG      | 484T  | 10.25    | 10.72 | 13.50 | 23.98                       | -10.48                      | -2.89                       | 10.62              | 22.78                    | -12.16               |
|                        | 5270       | 54      | AVG      | 484T  | 10.47    | 10.82 | 13.66 | 23.75                       | -10.09                      | -2.89                       | 10.77              | 29.75                    | -18.98               |
|                        | 5310       | 62      | AVG      | 484T  | 10.24    | 10.92 | 13.60 | 23.75                       | -10.15                      | -2.89                       | 10.72              | 29.75                    | -19.03               |
|                        | 5510       | 102     | AVG      | 484T  | 8.93     | 10.42 | 12.75 | 23.72                       | -10.97                      | -3.52                       | 9.23               | 29.72                    | -20.49               |
|                        | 5590       | 118     | AVG      | 484T  | 9.76     | 11.39 | 13.66 | 23.72                       | -10.06                      | -3.52                       | 10.14              | 29.72                    | -19.58               |
|                        | 5710       | 142     | AVG      | 484T  | 9.79     | 11.43 | 13.70 | 23.72                       | -10.02                      | -3.52                       | 10.18              | 29.72                    | -19.54               |
| 5755                   | 151        | AVG     | 484T     | 9.05  | 12.12    | 13.86 | 30.00 | -16.14                      | -3.52                       | 10.34                       | -                  | -                        |                      |
| 5795                   | 159        | AVG     | 484T     | 9.05  | 12.24    | 13.94 | 30.00 | -16.06                      | -3.52                       | 10.42                       | -                  | -                        |                      |

Table 7-52. MIMO 40MHz BW (UNII) Maximum Conducted Output Power (484 Tones)

| 5GHz (80MHz Bandwidth) | Freq [MHz] | Channel | Detector | Tones | RU Index |       |       |       |       |       | Conducted Power Limit [dBm] | Conducted Power Margin [dB] | Directional Ant. Gain [dBi] | Max e.i.r.p. [dBm] | Max e.i.r.p. Limit [dBm] | e.i.r.p. Margin [dB] |
|------------------------|------------|---------|----------|-------|----------|-------|-------|-------|-------|-------|-----------------------------|-----------------------------|-----------------------------|--------------------|--------------------------|----------------------|
|                        |            |         |          |       | 65       |       |       | 66    |       |       |                             |                             |                             |                    |                          |                      |
|                        |            |         |          |       | ANT1     | ANT2  | MIMO  | ANT1  | ANT2  | MIMO  |                             |                             |                             |                    |                          |                      |
|                        | 5210       | 42      | AVG      | 484T  | 9.69     | 10.10 | 12.91 | 9.62  | 10.28 | 12.97 | 23.98                       | -11.01                      | -2.89                       | 10.09              | 22.78                    | -12.69               |
| 5290                   | 58         | AVG     | 484T     | 9.56  | 9.58     | 12.58 | 9.45  | 9.78  | 12.63 | 23.75 | -11.12                      | -2.89                       | 9.74                        | 29.75              | -20.01                   |                      |
| 5530                   | 106        | AVG     | 484T     | 9.03  | 10.21    | 12.67 | 8.75  | 10.48 | 12.71 | 23.72 | -11.01                      | -3.52                       | 9.19                        | 29.72              | -20.53                   |                      |
| 5610                   | 122        | AVG     | 484T     | 8.70  | 10.22    | 12.54 | 8.62  | 10.35 | 12.58 | 23.72 | -11.14                      | -3.52                       | 9.06                        | 29.72              | -20.66                   |                      |
| 5690                   | 138        | AVG     | 484T     | 8.70  | 10.31    | 12.59 | 8.77  | 10.40 | 12.67 | 23.72 | -11.05                      | -3.52                       | 9.15                        | 29.72              | -20.57                   |                      |
| 5775                   | 155        | AVG     | 484T     | 8.10  | 11.08    | 12.85 | 8.37  | 11.07 | 12.94 | 30.00 | -17.06                      | -3.52                       | 9.42                        | -                  | -                        |                      |

Table 7-53. MIMO 80MHz BW (UNII) Maximum Conducted Output Power (484 Tones)

|                                         |                                                                                                                                                                                                                     |                               |                                 |
|-----------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------|---------------------------------|
| FCC ID: A3LSMF907N                      |  <b>MEASUREMENT REPORT (CERTIFICATION)</b>  |                               | Approved by:<br>Quality Manager |
| Test Report S/N:<br>1M1902200029-08.A3L | Test Dates:<br>01/22- 04/05/2019                                                                                                                                                                                    | EUT Type:<br>Portable Handset | Page 98 of 330                  |

## MIMO Conducted Output Power Measurements (996 Tones)

| 5GHz (80MHz Bandwidth) | Freq [MHz] | Channel | Detector | Tones | RU Index |       |       | Conducted Power Limit [dBm] | Conducted Power Margin [dB] | Directional Ant. Gain [dBi] | Max e.i.r.p. [dBm] | Max e.i.r.p. Limit [dBm] | e.i.r.p. Margin [dB] |
|------------------------|------------|---------|----------|-------|----------|-------|-------|-----------------------------|-----------------------------|-----------------------------|--------------------|--------------------------|----------------------|
|                        |            |         |          |       | 67       |       |       |                             |                             |                             |                    |                          |                      |
|                        |            |         |          |       | ANT1     | ANT2  | MIMO  |                             |                             |                             |                    |                          |                      |
|                        | 5210       | 42      | AVG      | 996T  | 9.70     | 9.87  | 12.80 | 23.98                       | -11.18                      | -2.89                       | 9.91               | 22.78                    | -12.87               |
|                        | 5290       | 58      | AVG      | 996T  | 10.07    | 9.84  | 12.97 | 23.75                       | -10.78                      | -2.89                       | 10.08              | 29.75                    | -19.67               |
|                        | 5530       | 106     | AVG      | 996T  | 8.84     | 10.79 | 12.93 | 23.72                       | -10.79                      | -3.52                       | 9.41               | 29.72                    | -20.31               |
|                        | 5610       | 122     | AVG      | 996T  | 8.71     | 10.80 | 12.89 | 23.72                       | -10.83                      | -3.52                       | 9.37               | 29.72                    | -20.35               |
|                        | 5690       | 138     | AVG      | 996T  | 8.75     | 10.81 | 12.91 | 23.72                       | -10.81                      | -3.52                       | 9.39               | 29.72                    | -20.33               |
|                        | 5775       | 155     | AVG      | 996T  | 7.80     | 11.05 | 12.73 | 30.00                       | -17.27                      | -3.52                       | 9.21               | -                        | -                    |

Table 7-54. MIMO 80MHz BW (UNII) Maximum Conducted Output Power (996 Tones)

|                                         |                                                                                                                                                                                                                     |                               |                                 |
|-----------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------|---------------------------------|
| FCC ID: A3LSMF907N                      |  <b>MEASUREMENT REPORT (CERTIFICATION)</b>  |                               | Approved by:<br>Quality Manager |
| Test Report S/N:<br>1M1902200029-08.A3L | Test Dates:<br>01/22- 04/05/2019                                                                                                                                                                                    | EUT Type:<br>Portable Handset | Page 99 of 330                  |

**Note:**

Per ANSI C63.10-2013 and KDB 662911 v02r01 Section E1), the conducted powers at Antenna 1 and Antenna 2 were first measured separately during MIMO transmission as shown in the section above. The measured values were then summed in linear power units then converted back to dBm.

Per ANSI C63.10-2013 Section 14.4.3, the directional gain is calculated using the following formula, where  $G_N$  is the gain of the nth antenna and  $N_{ANT}$ , the total number of antennas used.

$$\text{Directional gain} = 10 \log[(10^{G_1/20} + 10^{G_2/20} + \dots + 10^{G_N/20})^2 / N_{ANT}] \text{ dBi}$$

**Sample Directional Gain Calculation:**

Assuming the antenna gain is -5.50 dBi for Antenna-1 and -6.05 dBi for Antenna-2.

$$\begin{aligned} \text{Directional gain} &= 10 \log[(10^{G_1/20} + 10^{G_2/20} + \dots + 10^{G_N/20})^2 / N_{ANT}] \text{ dBi} \\ &= 10 \log[(10^{-5.50/20} + 10^{-6.05/20} / 2] \text{ dBi} \\ &= (-2.89) \text{ dBi} \end{aligned}$$

**Sample MIMO Calculation:**

Assuming the average conducted output power was measured to be 8.13 dBm for Antenna-1 and 7.48 dBm for Antenna-2.

$$\text{Antenna 1} + \text{Antenna 2} = \text{MIMO}$$

$$(8.13 \text{ dBm} + 7.48 \text{ dBm}) = (6.50 \text{ mW} + 5.60 \text{ mW}) = 12.10 \text{ mW} = 10.83 \text{ dBm}$$

**Sample e.i.r.p. Calculation:**

Assuming the average MIMO conducted power was calculated to be 10.83 dBm with directional gain of -2.89 dBi.

$$\text{e.i.r.p. (dBm)} = \text{Conducted Power (dBm)} + \text{Ant gain (dBi)}$$

$$10.83 \text{ dBm} + (-2.89) \text{ dBi} = 7.94 \text{ dBm}$$

|                                         |                                                                                     |                                       |                                                                                       |                                 |
|-----------------------------------------|-------------------------------------------------------------------------------------|---------------------------------------|---------------------------------------------------------------------------------------|---------------------------------|
| FCC ID: A3LSMF907N                      |  | MEASUREMENT REPORT<br>(CERTIFICATION) |  | Approved by:<br>Quality Manager |
| Test Report S/N:<br>1M1902200029-08.A3L | Test Dates:<br>01/22- 04/05/2019                                                    | EUT Type:<br>Portable Handset         |                                                                                       | Page 100 of 330                 |

## 7.5 Maximum Power Spectral Density – 802.11ax OFDMA

§15.407(a.1.iv) §15.407(a.2) §15.407(a.3); RSS-247 [6.2]

### Test Overview and Limit

The spectrum analyzer was connected to the antenna terminal while the EUT was operating at its maximum duty cycle, at its maximum power control level, as defined in ANSI C63.10-2013 and KDB 789033 D02 v02r01, and at the appropriate frequencies. Method SA-1, as defined in ANSI C63.10-2013 and KDB 789033 D02 v02r01, was used to measure the power spectral density.

***In the 5.15 – 5.25GHz, 5.25 – 5.35GHz, 5.47 – 5.725GHz bands, the maximum permissible power spectral density is 11dBm/MHz.***

***In the 5.725 – 5.850GHz band, the maximum permissible power spectral density is 30dBm/500kHz.***

### Test Procedure Used

ANSI C63.10-2013 – Section 12.3.2.2

KDB 789033 D02 v02r01 – Section F

ANSI C63.10-2013 – Section 14.3.2.2 Measure-and-Sum Technique

KDB 662911 v02r01 – Section E)2) Measure-and-Sum Technique

### Test Settings

1. Analyzer was set to the center frequency of the UNII channel under investigation
2. Span was set to encompass the entire emission bandwidth of the signal
3. RBW = 1MHz
4. VBW = 3MHz
5. Number of sweep points  $\geq 2 \times (\text{span/RBW})$
6. Sweep time = auto
7. Detector = power averaging (RMS)
8. Trigger was set to free run for all modes
9. Trace was averaged over 100 sweeps
10. The peak search function of the spectrum analyzer was used to find the peak of the spectrum.

### Test Setup

The EUT and measurement equipment were set up as shown in the diagram below.



**Figure 7-4. Test Instrument & Measurement Setup**

### Test Notes

The power spectral density for each channel was measured with the RU index showing the highest conducted power

|                                         |                                                                                     |                                       |                                                                                       |                                 |
|-----------------------------------------|-------------------------------------------------------------------------------------|---------------------------------------|---------------------------------------------------------------------------------------|---------------------------------|
| FCC ID: A3LSMF907N                      |  | MEASUREMENT REPORT<br>(CERTIFICATION) |  | Approved by:<br>Quality Manager |
| Test Report S/N:<br>1M1902200029-08.A3L | Test Dates:<br>01/22- 04/05/2019                                                    | EUT Type:<br>Portable Handset         |                                                                                       | Page 101 of 330                 |

## SISO Antenna-1 Power Spectral Density Measurements (26 Tones)

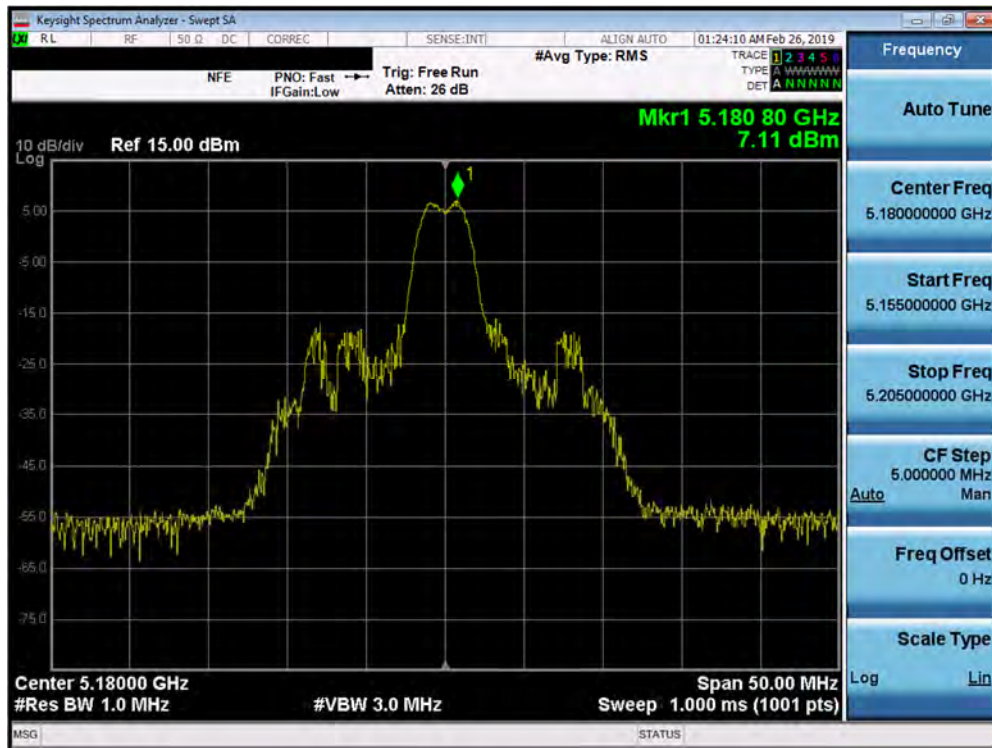
|         | Frequency [MHz] | Channel No. | 802.11 Mode | Tones | Data Rate [Mbps] | Measured Power Density [dBm] | Max Power Density [dBm/MHz] | Margin [dB] |
|---------|-----------------|-------------|-------------|-------|------------------|------------------------------|-----------------------------|-------------|
| Band 1  | 5180            | 36          | ax (20MHz)  | 26T   | MCS0             | 7.11                         | 11.0                        | -3.89       |
|         | 5200            | 40          | ax (20MHz)  | 26T   | MCS0             | 6.96                         | 11.0                        | -4.04       |
|         | 5240            | 48          | ax (20MHz)  | 26T   | MCS0             | 8.07                         | 11.0                        | -2.93       |
|         | 5190            | 38          | ax (40MHz)  | 26T   | MCS0             | 8.39                         | 11.0                        | -2.61       |
|         | 5230            | 46          | ax (40MHz)  | 26T   | MCS0             | 8.65                         | 11.0                        | -2.35       |
|         | 5210            | 42          | ax (80MHz)  | 26T   | MCS0             | 7.59                         | 11.0                        | -3.41       |
| Band 2A | 5260            | 52          | ax (20MHz)  | 26T   | MCS0             | 7.07                         | 11.0                        | -3.93       |
|         | 5280            | 56          | ax (20MHz)  | 26T   | MCS0             | 7.82                         | 11.0                        | -3.18       |
|         | 5320            | 64          | ax (20MHz)  | 26T   | MCS0             | 8.14                         | 11.0                        | -2.86       |
|         | 5270            | 54          | ax (40MHz)  | 26T   | MCS0             | 8.11                         | 11.0                        | -2.89       |
|         | 5310            | 62          | ax (40MHz)  | 26T   | MCS0             | 8.23                         | 11.0                        | -2.77       |
|         | 5290            | 58          | ax (80MHz)  | 26T   | MCS0             | 7.28                         | 11.0                        | -3.72       |
| Band 2C | 5500            | 100         | ax (20MHz)  | 26T   | MCS0             | 8.29                         | 11.0                        | -2.71       |
|         | 5600            | 120         | ax (20MHz)  | 26T   | MCS0             | 7.98                         | 11.0                        | -3.02       |
|         | 5720            | 144         | ax (20MHz)  | 26T   | MCS0             | 9.05                         | 11.0                        | -1.95       |
|         | 5510            | 102         | ax (40MHz)  | 26T   | MCS0             | 9.47                         | 11.0                        | -1.53       |
|         | 5590            | 118         | ax (40MHz)  | 26T   | MCS0             | 8.66                         | 11.0                        | -2.34       |
|         | 5710            | 142         | ax (40MHz)  | 26T   | MCS0             | 8.83                         | 11.0                        | -2.17       |
|         | 5530            | 106         | ax (80MHz)  | 26T   | MCS0             | 6.72                         | 11.0                        | -4.28       |
|         | 5610            | 122         | ax (80MHz)  | 26T   | MCS0             | 7.17                         | 11.0                        | -3.83       |
|         | 5690            | 138         | ax (80MHz)  | 26T   | MCS0             | 4.81                         | 11.0                        | -6.19       |

Table 7-55. Bands 1, 2A, 2C Conducted Power Spectral Density Measurements SISO ANT1 (26 Tones)

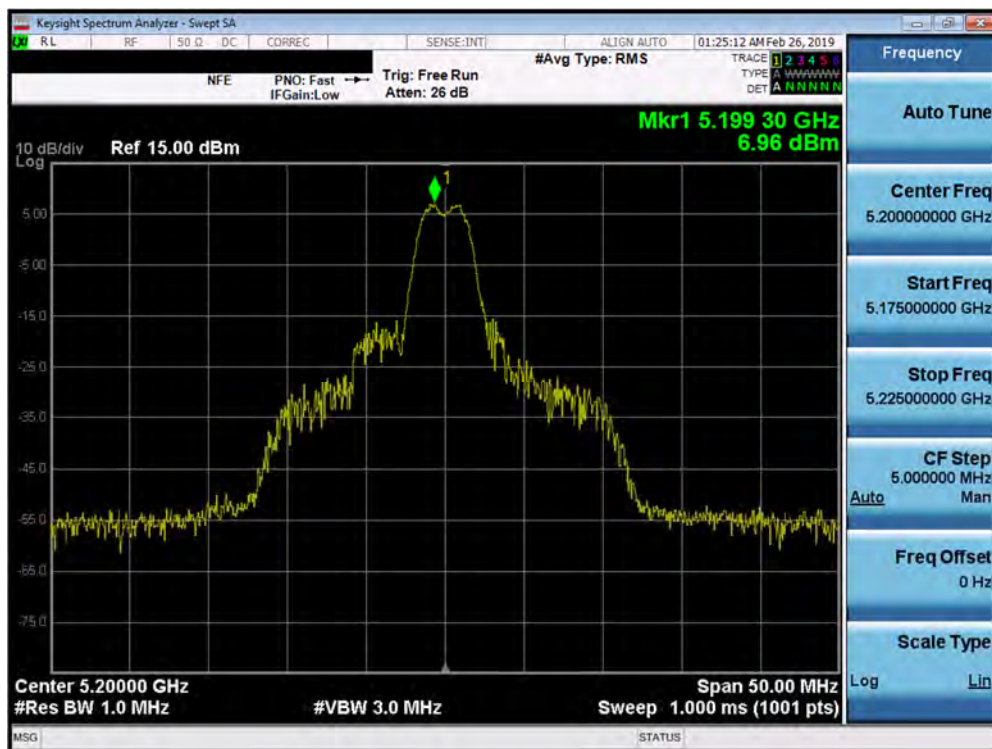
|        | Frequency [MHz] | Channel No. | 802.11 Mode | Tones | Data Rate [Mbps] | Measured Power Density [dBm] | Antenna Gain [dBi] | e.i.r.p. Power Density [dBm/MHz] | ISED Max e.i.r.p. Power Density [dBm/MHz] | Margin [dB] |
|--------|-----------------|-------------|-------------|-------|------------------|------------------------------|--------------------|----------------------------------|-------------------------------------------|-------------|
| Band 1 | 5180            | 36          | ax (20MHz)  | 26T   | MCS0             | 7.11                         | -5.50              | 1.61                             | 10.0                                      | -8.39       |
|        | 5200            | 40          | ax (20MHz)  | 26T   | MCS0             | 6.96                         | -5.50              | 1.46                             | 10.0                                      | -8.54       |
|        | 5240            | 48          | ax (20MHz)  | 26T   | MCS0             | 8.07                         | -5.50              | 2.57                             | 10.0                                      | -7.43       |
|        | 5190            | 38          | ax (40MHz)  | 26T   | MCS0             | 8.39                         | -5.50              | 2.89                             | 10.0                                      | -7.11       |
|        | 5230            | 46          | ax (40MHz)  | 26T   | MCS0             | 8.65                         | -5.50              | 3.15                             | 10.0                                      | -6.85       |
|        | 5210            | 42          | ax (80MHz)  | 26T   | MCS0             | 7.59                         | -5.50              | 2.09                             | 10.0                                      | -7.91       |

Table 7-56. Band 1 e.i.r.p. Conducted Power Spectral Density Measurements (ISED 26 Tones)

|                                         |                                                                                                                                                                                                                     |                               |                                 |
|-----------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------|---------------------------------|
| FCC ID: A3LSMF907N                      |  <b>MEASUREMENT REPORT (CERTIFICATION)</b>  |                               | Approved by:<br>Quality Manager |
| Test Report S/N:<br>1M1902200029-08.A3L | Test Dates:<br>01/22- 04/05/2019                                                                                                                                                                                    | EUT Type:<br>Portable Handset | Page 102 of 330                 |



Plot 7-109. Power Spectral Density Plot SISO ANT1 (20MHz BW 802.11ax – 26 Tones (UNII Band 1) – Ch. 36)

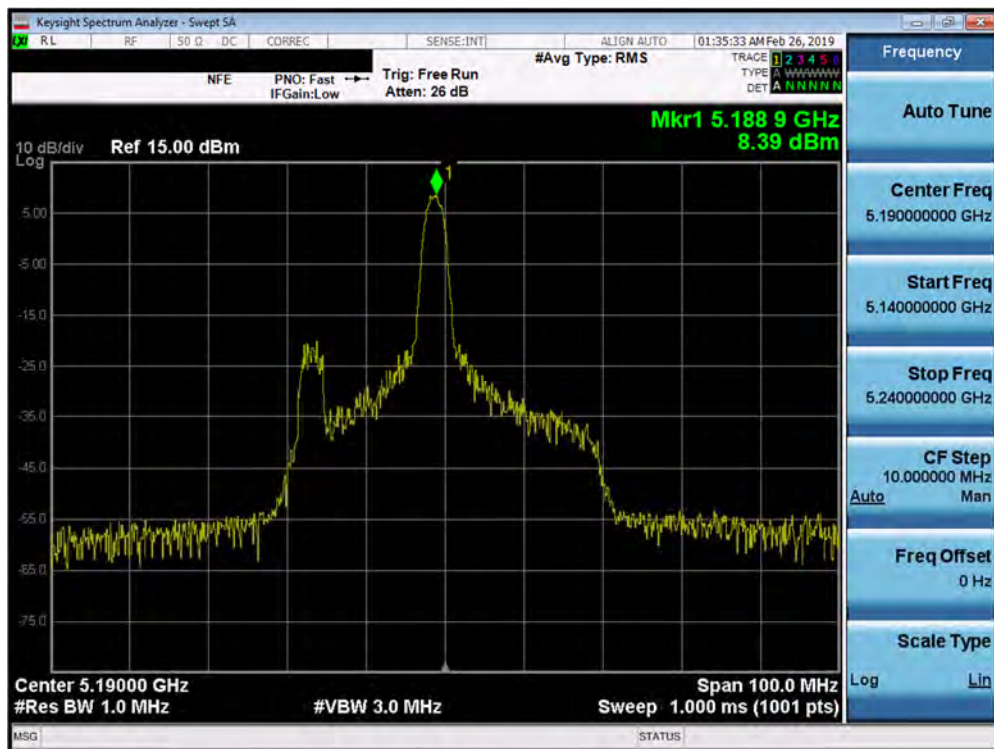


Plot 7-110. Power Spectral Density Plot SISO ANT1 (20MHz BW 802.11ax – 26 Tones (UNII Band 1) – Ch. 40)

|                                         |                                               |                                       |                |                                 |
|-----------------------------------------|-----------------------------------------------|---------------------------------------|----------------|---------------------------------|
| FCC ID: A3LSMF907N                      | <b>PCTEST</b><br>ENGINEERING LABORATORY, INC. | MEASUREMENT REPORT<br>(CERTIFICATION) | <b>SAMSUNG</b> | Approved by:<br>Quality Manager |
| Test Report S/N:<br>1M1902200029-08.A3L | Test Dates:<br>01/22- 04/05/2019              | EUT Type:<br>Portable Handset         |                | Page 103 of 330                 |

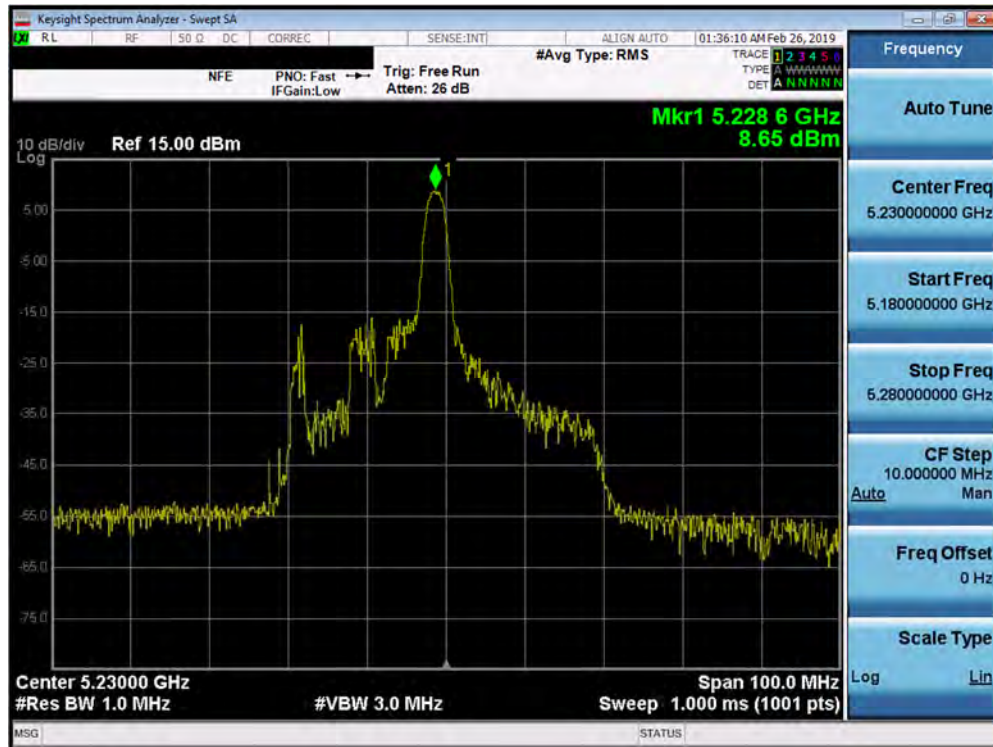


Plot 7-111. Power Spectral Density Plot SISO ANT1 (20MHz BW 802.11ax – 26 Tones (UNII Band 1) – Ch. 48)

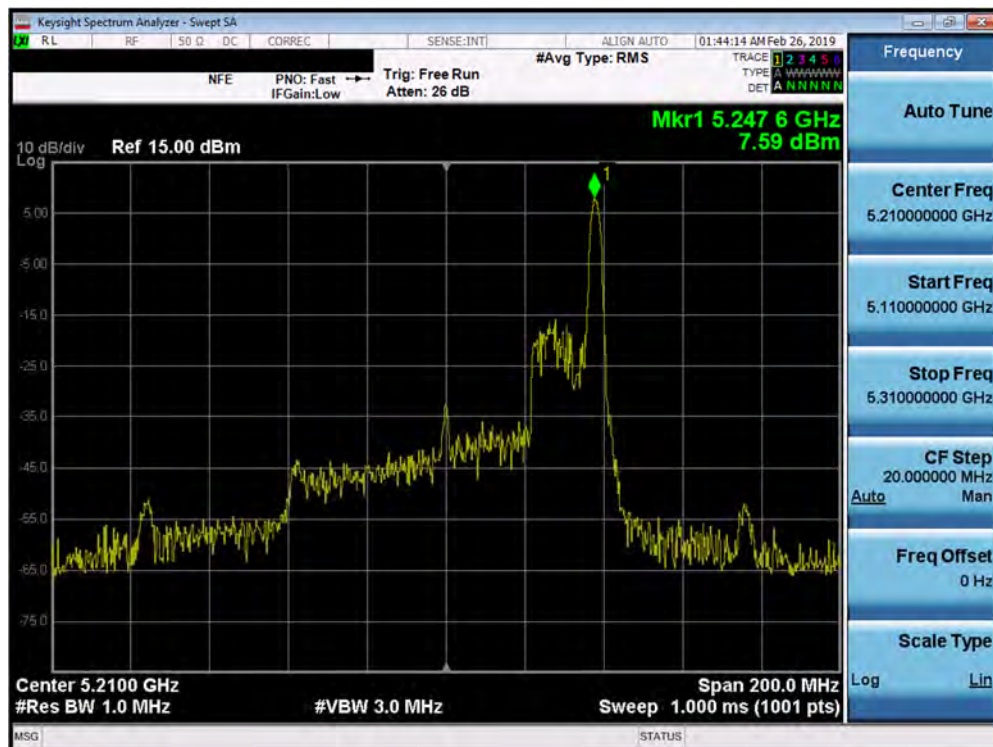


Plot 7-112. Power Spectral Density Plot SISO ANT1 (40MHz BW 802.11ax – 26 Tones (UNII Band 1) – Ch. 38)

|                                         |                                               |                                       |                |                                 |
|-----------------------------------------|-----------------------------------------------|---------------------------------------|----------------|---------------------------------|
| FCC ID: A3LSMF907N                      | <b>PCTEST</b><br>ENGINEERING LABORATORY, INC. | MEASUREMENT REPORT<br>(CERTIFICATION) | <b>SAMSUNG</b> | Approved by:<br>Quality Manager |
| Test Report S/N:<br>1M1902200029-08.A3L | Test Dates:<br>01/22- 04/05/2019              | EUT Type:<br>Portable Handset         |                | Page 104 of 330                 |

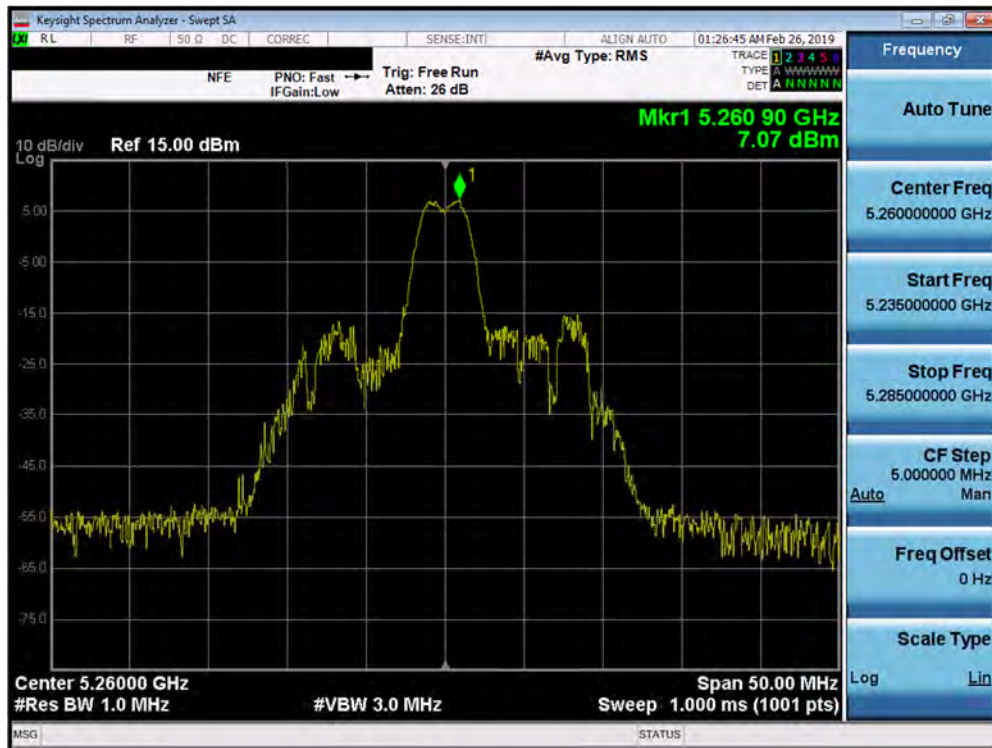


**Plot 7-113. Power Spectral Density Plot SISO ANT1 (40MHz BW 802.11ax – 26 Tones (UNII Band 1) – Ch. 46)**

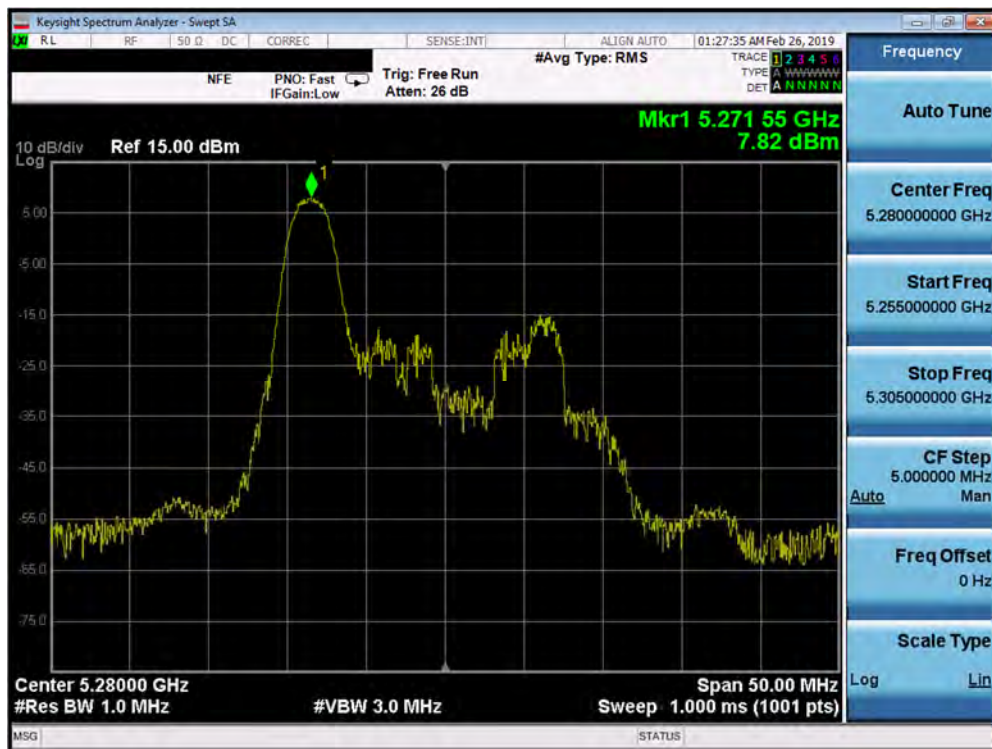


**Plot 7-114. Power Spectral Density Plot SISO ANT1 (80MHz BW 802.11ax – 26 Tones (UNII Band 1) – Ch. 42)**

|                                                |                                                                                                                                                                                                                         |                                      |                                        |
|------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------|----------------------------------------|
| FCC ID: A3LSMF907N                             |  <b>MEASUREMENT REPORT<br/>(CERTIFICATION)</b>  |                                      | <b>Approved by:</b><br>Quality Manager |
| <b>Test Report S/N:</b><br>1M1902200029-08.A3L | <b>Test Dates:</b><br>01/22- 04/05/2019                                                                                                                                                                                 | <b>EUT Type:</b><br>Portable Handset | Page 105 of 330                        |



Plot 7-115. Power Spectral Density Plot SISO ANT1 (20MHz BW 802.11ax – 26 Tones (UNII Band 2A) – Ch. 52)

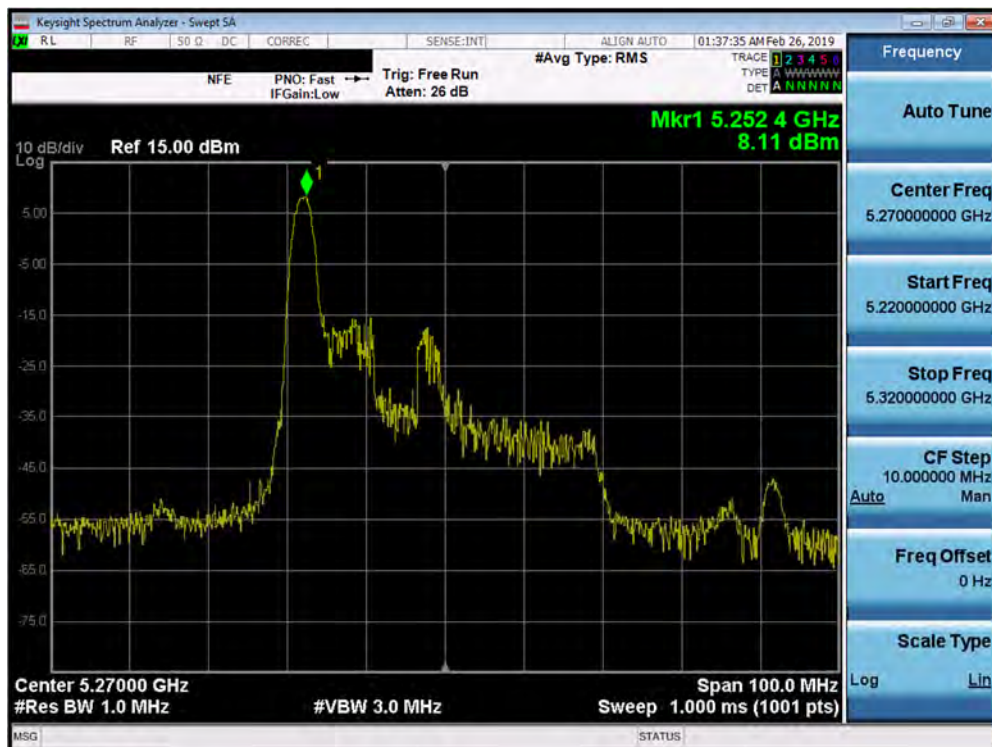


Plot 7-116. Power Spectral Density Plot SISO ANT1 (20MHz BW 802.11ax – 26 Tones (UNII Band 2A) – Ch. 56)

|                                         |                                               |                                       |                |                                 |
|-----------------------------------------|-----------------------------------------------|---------------------------------------|----------------|---------------------------------|
| FCC ID: A3LSMF907N                      | <b>PCTEST</b><br>ENGINEERING LABORATORY, INC. | MEASUREMENT REPORT<br>(CERTIFICATION) | <b>SAMSUNG</b> | Approved by:<br>Quality Manager |
| Test Report S/N:<br>1M1902200029-08.A3L | Test Dates:<br>01/22- 04/05/2019              | EUT Type:<br>Portable Handset         |                | Page 106 of 330                 |

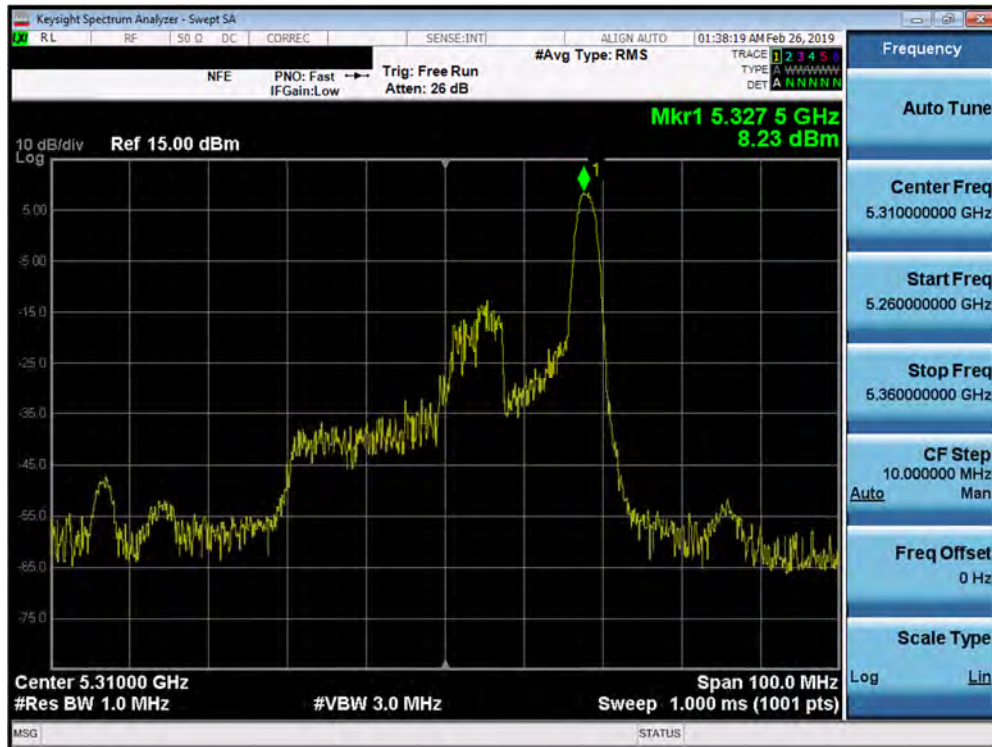


Plot 7-117. Power Spectral Density Plot SISO ANT1 (20MHz BW 802.11ax – 26 Tones (UNII Band 2A) – Ch. 64)

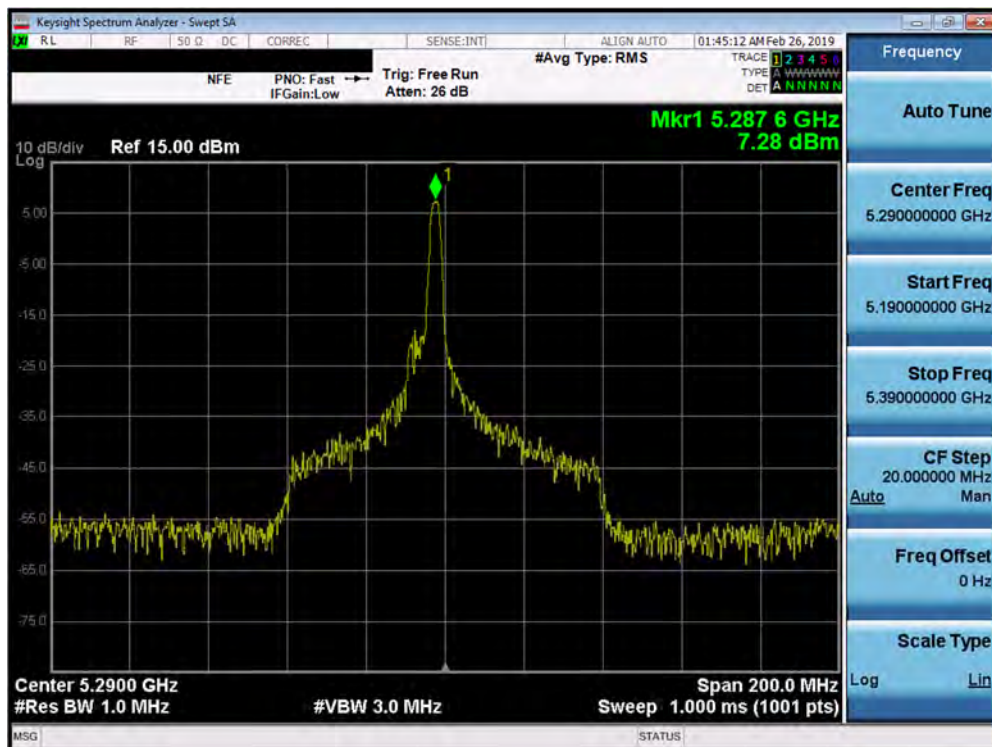


Plot 7-118. Power Spectral Density Plot SISO ANT1 (40MHz BW 802.11ax – 26 Tones (UNII Band 2A) – Ch. 54)

|                                         |                                              |                               |  |                                 |
|-----------------------------------------|----------------------------------------------|-------------------------------|--|---------------------------------|
| FCC ID: A3LSMF907N                      | <b>MEASUREMENT REPORT</b><br>(CERTIFICATION) |                               |  | Approved by:<br>Quality Manager |
| Test Report S/N:<br>1M1902200029-08.A3L | Test Dates:<br>01/22- 04/05/2019             | EUT Type:<br>Portable Handset |  | Page 107 of 330                 |



Plot 7-119. Power Spectral Density Plot SISO ANT1 (40MHz BW 802.11ax – 26 Tones (UNII Band 2A) – Ch. 62)

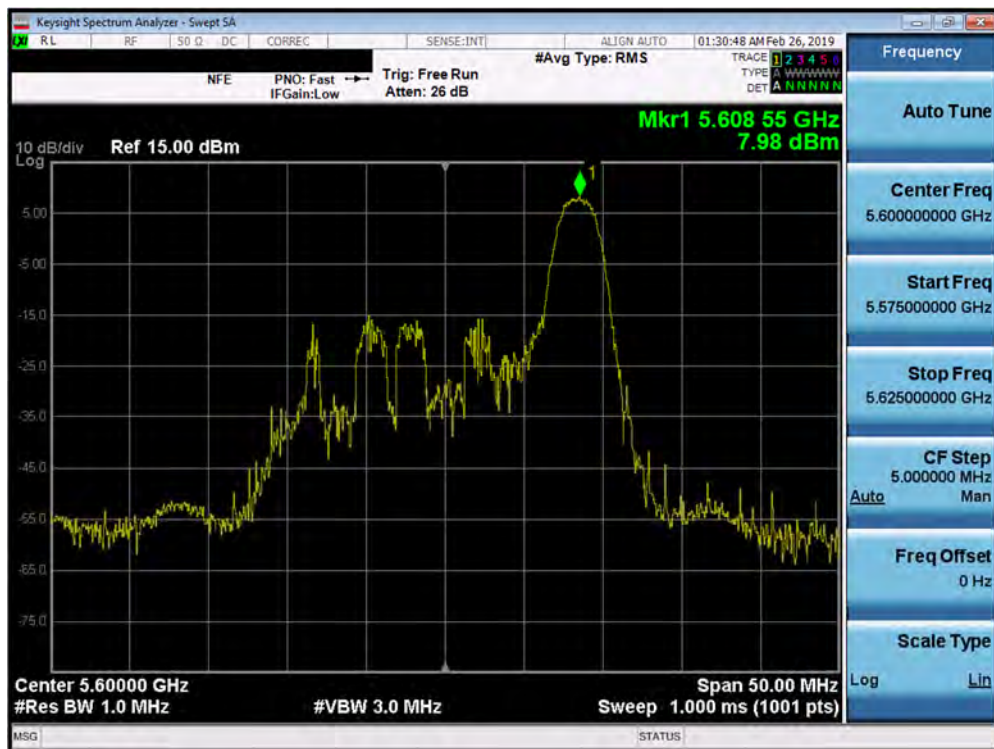


Plot 7-120. Power Spectral Density Plot SISO ANT1 (80MHz BW 802.11ax – 26 Tones (UNII Band 2A) – Ch. 58)

|                                         |                                               |                                       |                |                                 |
|-----------------------------------------|-----------------------------------------------|---------------------------------------|----------------|---------------------------------|
| FCC ID: A3LSMF907N                      | <b>PCTEST</b><br>ENGINEERING LABORATORY, INC. | MEASUREMENT REPORT<br>(CERTIFICATION) | <b>SAMSUNG</b> | Approved by:<br>Quality Manager |
| Test Report S/N:<br>1M1902200029-08.A3L | Test Dates:<br>01/22- 04/05/2019              | EUT Type:<br>Portable Handset         |                | Page 108 of 330                 |



**Plot 7-121. Power Spectral Density Plot SISO ANT1 (20MHz BW 802.11ax – 26 Tones (UNII Band 2C) – Ch. 100)**



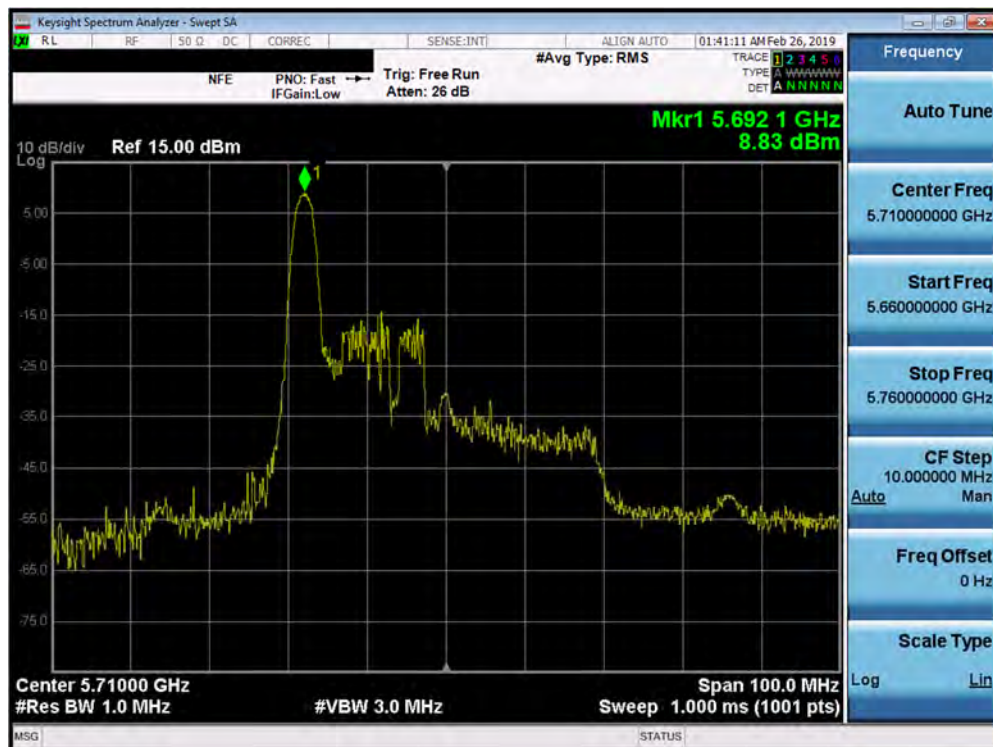
**Plot 7-122. Power Spectral Density Plot SISO ANT1 (20MHz BW 802.11ax – 26 Tones (UNII Band 2C) – Ch. 120)**

|                                                |                                                                                                                                                                                                                         |                                      |                                        |
|------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------|----------------------------------------|
| FCC ID: A3LSMF907N                             |  <b>MEASUREMENT REPORT<br/>(CERTIFICATION)</b>  |                                      | <b>Approved by:</b><br>Quality Manager |
| <b>Test Report S/N:</b><br>1M1902200029-08.A3L | <b>Test Dates:</b><br>01/22- 04/05/2019                                                                                                                                                                                 | <b>EUT Type:</b><br>Portable Handset | Page 109 of 330                        |



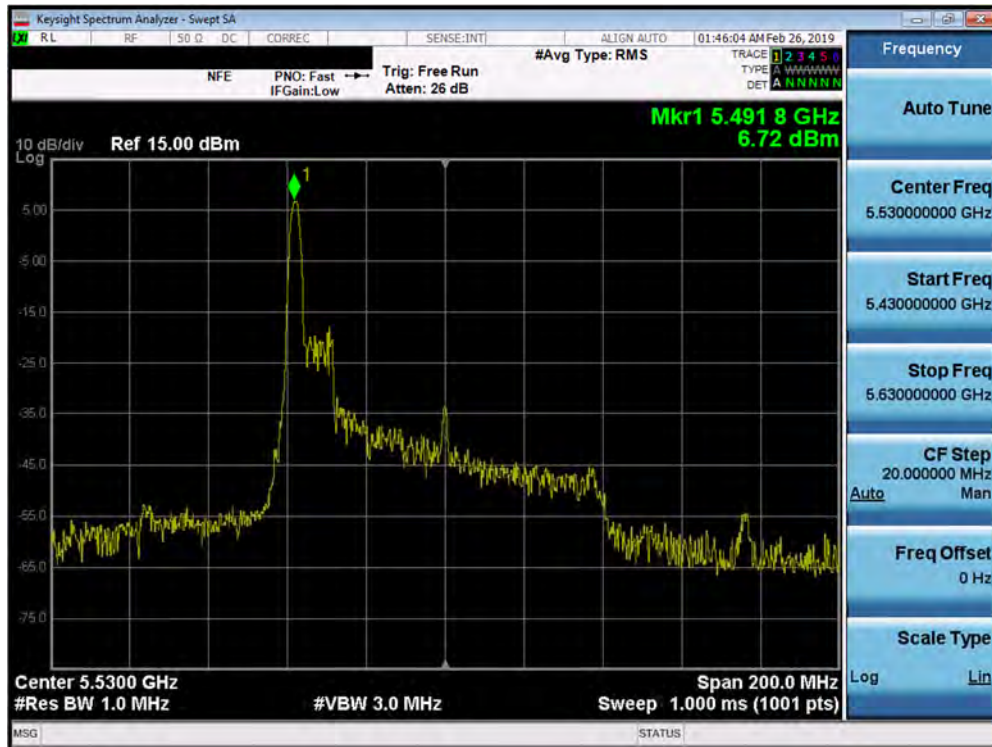


**Plot 7-125. Power Spectral Density Plot SISO ANT1 (40MHz BW 802.11ax – 26 Tones (UNII Band 2C) – Ch. 118)**

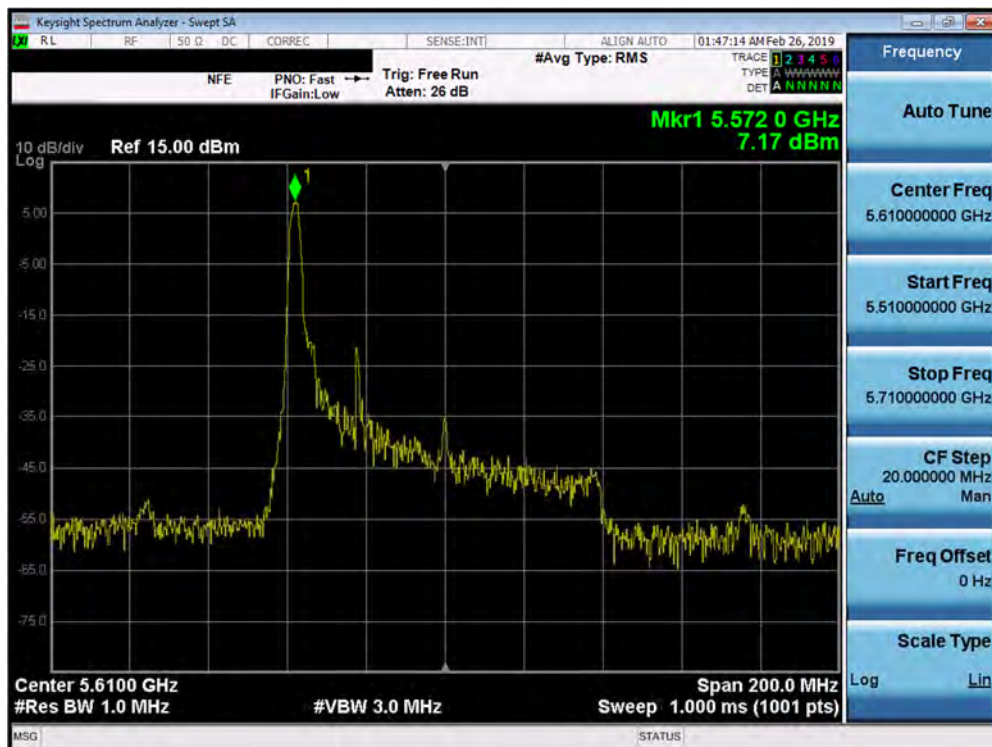


**Plot 7-126. Power Spectral Density Plot SISO ANT1 (40MHz BW 802.11ax – 26 Tones (UNII Band 2C) – Ch. 142)**

|                                                |                                                                                                                                                                                                                         |                                      |                                        |
|------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------|----------------------------------------|
| FCC ID: A3LSMF907N                             |  <b>MEASUREMENT REPORT<br/>(CERTIFICATION)</b>  |                                      | <b>Approved by:</b><br>Quality Manager |
| <b>Test Report S/N:</b><br>1M1902200029-08.A3L | <b>Test Dates:</b><br>01/22- 04/05/2019                                                                                                                                                                                 | <b>EUT Type:</b><br>Portable Handset | Page 111 of 330                        |

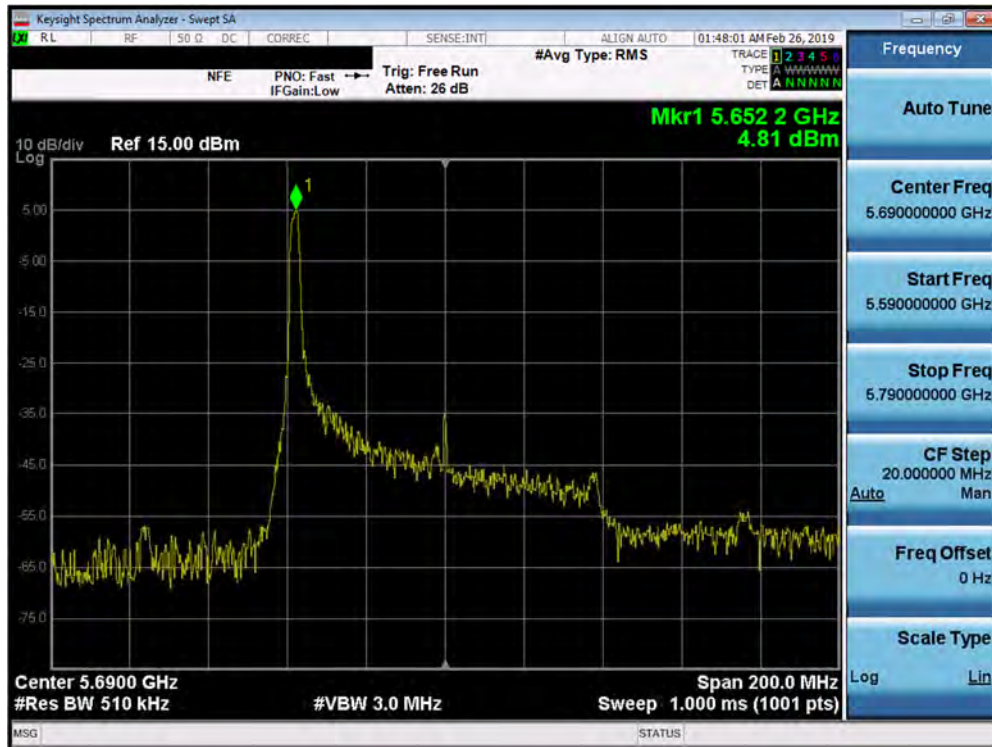


Plot 7-127. Power Spectral Density Plot SISO ANT1 (80MHz BW 802.11ax – 26 Tones (UNII Band 2C) – Ch. 106)



Plot 7-128. Power Spectral Density Plot SISO ANT1 (80MHz BW 802.11ax – 26 Tones (UNII Band 2C) – Ch. 122)

|                                         |                                               |                                       |                |                                 |
|-----------------------------------------|-----------------------------------------------|---------------------------------------|----------------|---------------------------------|
| FCC ID: A3LSMF907N                      | <b>PCTEST</b><br>ENGINEERING LABORATORY, INC. | MEASUREMENT REPORT<br>(CERTIFICATION) | <b>SAMSUNG</b> | Approved by:<br>Quality Manager |
| Test Report S/N:<br>1M1902200029-08.A3L | Test Dates:<br>01/22- 04/05/2019              | EUT Type:<br>Portable Handset         |                | Page 112 of 330                 |



Plot 7-129. Power Spectral Density Plot SISO ANT1 (80MHz BW 802.11ax – 26 Tones (UNII Band 2C) – Ch. 138)

|                                         |                                               |                                       |                |                                 |
|-----------------------------------------|-----------------------------------------------|---------------------------------------|----------------|---------------------------------|
| FCC ID: A3LSMF907N                      | <b>PCTEST</b><br>ENGINEERING LABORATORY, INC. | MEASUREMENT REPORT<br>(CERTIFICATION) | <b>SAMSUNG</b> | Approved by:<br>Quality Manager |
| Test Report S/N:<br>1M1902200029-08.A3L | Test Dates:<br>01/22- 04/05/2019              | EUT Type:<br>Portable Handset         |                | Page 113 of 330                 |

|        | Frequency [MHz] | Channel No. | 802.11 Mode | Tones | Data Rate [Mbps] | Measured Power Density [dBm] | Max Permissible Power Density [dBm/500kHz] | Margin [dB] |
|--------|-----------------|-------------|-------------|-------|------------------|------------------------------|--------------------------------------------|-------------|
| Band 3 | 5745            | 149         | ax (20MHz)  | 26T   | MCS0             | 6.51                         | 30.00                                      | -23.49      |
|        | 5785            | 157         | ax (20MHz)  | 26T   | MCS0             | 6.98                         | 30.00                                      | -23.02      |
|        | 5825            | 165         | ax (20MHz)  | 26T   | MCS0             | 6.50                         | 30.00                                      | -23.50      |
|        | 5755            | 151         | ax (40MHz)  | 26T   | MCS0             | 6.44                         | 30.00                                      | -23.56      |
|        | 5795            | 159         | ax (40MHz)  | 26T   | MCS0             | 5.82                         | 30.00                                      | -24.18      |
|        | 5775            | 155         | ax (80MHz)  | 26T   | MCS0             | 8.41                         | 30.00                                      | -21.59      |

**Table 7-57. Band 3 Conducted Power Spectral Density Measurements SISO ANT1 (26 Tones)**

|                                         |                                                                                                                                                                                                                     |                               |                                 |
|-----------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------|---------------------------------|
| FCC ID: A3LSMF907N                      |  <b>MEASUREMENT REPORT (CERTIFICATION)</b>  |                               | Approved by:<br>Quality Manager |
| Test Report S/N:<br>1M1902200029-08.A3L | Test Dates:<br>01/22- 04/05/2019                                                                                                                                                                                    | EUT Type:<br>Portable Handset | Page 114 of 330                 |