

PCTEST ENGINEERING LABORATORY, INC.

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### **MEASUREMENT REPORT** FCC PART 15.247 / ISED RSS-247 WLAN 802.11b/g/n/ax OFDMA

#### **Applicant Name:**

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

Date of Testing: 12/14/2018 - 1/26/2019 **Test Site/Location:** PCTEST Lab. Columbia, MD, USA **Test Report Serial No.:** 1M1811230206-14.A3L

## FCC ID:

### A3LSMG9730

Certification

**APPLICANT:** 

## Samsung Electronics Co., Ltd.

Application Type: Model: Additional Model(s): EUT Type: Frequency Range: FCC Classification: FCC Rule Part(s): **ISED Specification:** Test Procedure(s):

SM-G9730 SM-G9738 Portable Handset 2412 - 2472MHz Digital Transmission System (DTS) Part 15 Subpart C (15.247) RSS-247 Issue 2 ANSI C63.10-2013, KDB 558074 D01 v05, KDB 662911 D01 v02r01, KDB 648474 D03 v01r04

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 558074 D01 v05. Test results reported herein relate only to the item(s) tested.

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

Randy Ortanez President



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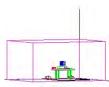


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# **MEASUREMENT REPORT**



				AN	VT1		ANT2			MIMO				
			Avg Co	nducted	Peak Co	onducted	Avg Co	nducted	Peak Co	onducted	Avg Co	nducted	Peak Co	onducted
Mode	Tones	Tx Frequency [MHz]	Max. Power (mW)	Max. Power (dBm)										
802.11ax OFDMA	26T	2412 - 2472	25.003	13.98	138.357	21.41	25.003	13.98	139.959	21.46	25.003	13.98	145.546	21.63
802.11ax OFDMA	52T	2412 - 2472	39.628	15.98	219.280	23.41	39.537	15.97	220.800	23.44	37.584	15.75	225.424	23.53
802.11ax OFDMA	106T	2412 - 2472	62.517	17.96	291.072	24.64	61.235	17.87	268.534	24.29	60.674	17.83	357.273	25.53
802.11ax OFDMA	242T	2412 - 2472	59.020	17.71	269.774	24.31	61.518	17.89	252.348	24.02	57.943	17.63	315.500	24.99

#### **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 ISED Standards (RSS).
- PCTEST facility is a registered (2451B) test laboratory with the site description on file with ISED.

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#### **PRODUCT INFORMATION** 2.0

#### 2.1 **Equipment Description**

The Equipment Under Test (EUT) is the Samsung Portable Handset FCC ID: A3LSMG9730. The test data contained in this report pertains only to the emissions due to the EUT's WLAN (DTS) transmitter.

Test Device Serial No.: 0050M, 0162M, 1236M, 0160M, 0218M, 1222M

#### 2.2 **Device Capabilities**

This device contains the following capabilities:

850/1900 GSM/GPRS/EDGE, 850/1900 WCDMA/HSPA, Multi-band LTE, 802.11b/g/n/ax WLAN, 802.11a/n/ac/ax UNII, Bluetooth (1x, EDR, LE), NFC, ANT+

Ch.	Frequency (MHz)	Ch.	Frequency (MHz)
1	2412	8	2447
2	2417	9	2452
3	2422	10	2457
4	2427	11	2462
5	2432	12	2467
6	2437	13	2472
7	2442		

### Table 2-1. Frequency/ Channel Operations

**Note:** 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 6.0 b) of ANSI C63.10-2013 and KDB 558074 D01 v05. 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	Tone	Duty Cycle
		26T	99.7
802.11ax	1	52T	99.7
DTS RU	T	106T	99.6
		242T	99.7
		26T	99.7
802.11ax	2	52T	99.7
DTS RU	2	106T	99.6
		242T	99.6
		26T	99.4
802.11ax RU		52T	99.3
DTS	MIMO	106T	99.3
		242T	99.2

### Table 2-2. Measured Duty Cycles

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The device employs MIMO technology. Below are the possible configurations.

WiFi Configurations		SISO		SDM		CDD/MIMO	
WIFI COIII	igurations	ANT1	ANT2	ANT1	ANT2	ANT1	ANT2
	11b	✓	✓	×	×	×	×
0.4011	11g	✓	✓	×	×	✓	✓
2.4GHz	11n	✓	✓	✓	✓	✓	✓
	11ax	✓	√	✓	✓	✓	✓

Table 2-3. Frequency / Channel Operations

✓ = Support ; × = NOT Support **SISO** = Single Input Single Output **SDM** = Spatial Diversity Multiplexing – MIMO function **CDD** = Cyclic Delay Diversity - 2Tx Function

This device supports simultaneous transmission operation, which allows for two SISO channels to operate independent of one another in the 2.4GHz 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 the UNII test report.

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	11	157
Operating Frequency (MHz)	2462	5785
Data Rate (Mbps)	1	6
Mode	802.11b	802.11a

Table 2-4. 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	11	157
Operating Frequency (MHz)	2462	5785
Data Rate (Mbps)	1	6
Mode	802.11b	802.11a

Table 2-5. 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	157
Operating Frequency (MHz)	2462	5785
Data Rate (Mbps)	1	6
Mode	802.11b	802.11a

Table 2-6. Config-3 (ANT1 MIMO & ANT2 MIMO)

#### 2.3 **Test Configuration**

The EUT was tested per the guidance of KDB 558074 D01 v05. ANSI C63.10-2013 was used to reference the appropriate EUT setup for radiated spurious emissions testing. See Sections 7.7 and 7.8 for radiated emissions test setups and 7.2, 7.3, 7.4, 7.5, and 7.6 for antenna port conducted emissions test setups.

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 placed 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 558074 D01 v05 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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#### ANTENNA REQUIREMENTS 4.0

### 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 connections to an external antenna. •

### **Conclusion:**

The EUT unit complies with the requirement of §15.203.

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#### **MEASUREMENT UNCERTAINTY** 5.0

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 UCISPR measurement uncertainty values specified in CISPR 16-4-2 and, thus, can be compared directly to specified limits to determine compliance.

Contribution	Expanded Uncertainty (±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

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#### **TEST EQUIPMENT CALIBRATION DATA** 6.0

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)	1/23/2018	Annual	1/23/2019	WL25-1
Agilent	N9020A	MXA Signal Analyzer	1/24/2018	Annual	1/24/2019	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
Huber + Suhner	Sucoflex 102A	40GHz Radiated Cable Set	1/23/2018	Annual	1/23/2019	251425001
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	1/24/2018	Annual	1/24/2019	100040
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

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## 7.0 TEST RESULTS

### 7.1 Summary

Company Name:	Samsung Electronics Co., Ltd.

FCC ID: <u>A3LSMG9730</u>

FCC Classification: Digital Transmission System (DTS)

FCC Part Section(s)	RSS Section(s)	Test Description	Test Limit	Test Condition	Test Result	Reference
15.247(a)(2)	RSS-247 [5.2]	6dB Bandwidth	> 500kHz		PASS	Section 7.2
15.247(b)(3)	RSS-247 [5.4]	Transmitter Output Power	< 1 Watt		PASS	Sections 7.3
15.247(e)	RSS-247 [5.2]	Transmitter Power Spectral Density	< 8dBm / 3kHz Band	CONDUCTED	PASS	Section 7.4
15.247(d)	RSS-247 [5.5]	Band Edge / Out-of-Band Emissions	≥ 20dBc			Sections 7.5, 7.6
15.205 15.209	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])	RADIATED	PASS	Sections 7.7, 7.8
15.207	RSS-Gen [8.8]	AC Conducted Emissions 150kHz – 30MHz	< FCC 15.207 limits (RSS-Gen[8.8])	LINE CONDUCTED	PASS	See WLAN Test Report

Table 7-1. Summary of Test Results

### Notes:

- 1) All modes of operation and data rates were investigated. 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 "WLAN Automation," Version 3.5.
- 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) 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.

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### 7.2 6dB Bandwidth Measurement §15.247(a.2); RSS-247 [5.2]

### **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 transmitter antenna terminal of the EUT while the EUT is operating at its maximum duty cycle, at maximum power, and at the appropriate frequencies. All data rates were investigated and the worst case configuration results are reported in this section.

#### The minimum permissible 6dB bandwidth is 500 kHz.

#### **Test Procedure Used**

ANSI C63.10-2013 – Section 11.8.2 Option 2 KDB 558074 D01 v05 – Section 8.2

#### Test Settings

- 1. The signal analyzer's automatic bandwidth measurement capability was used to perform the 6dB bandwidth measurement. The "X" dB bandwidth parameter was set to X = 6. The bandwidth measurement was not influenced by any intermediate power nulls in the fundamental emission.
- 2. RBW = 100kHz
- 3. VBW  $\geq$  3 x RBW
- 4. Detector = Peak
- 5. Trace mode = max hold
- 6. Sweep = auto couple
- 7. The trace was allowed to stabilize

#### **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

### None

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## SISO Antenna-1 6 dB Bandwidth Measurements

Frequency [MHz]	Channel No.	802.11 Mode	Tones	Data Rate [Mbps]	Measured Bandwidth [MHz]	Minimum Bandwidth [MHz]
2412	1	ax	26T	MCS0	2.689	0.500
2437	6	ax	26T	MCS0	2.712	0.500
2462	11	ax	26T	MCS0	2.690	0.500
2412	1	ax	52T	MCS0	12.91	0.500
2437	6	ax	52T	MCS0	6.65	0.500
2462	11	ax	52T	MCS0	7.61	0.500
2412	1	ax	106T	MCS0	17.12	0.500
2437	6	ax	106T	MCS0	17.19	0.500
2462	11	ax	106T	MCS0	17.16	0.500
2412	1	ax	242T	MCS0	19.03	0.500
2437	6	ax	242T	MCS0	19.06	0.500
2462	11	ax	242T	MCS0	19.18	0.500

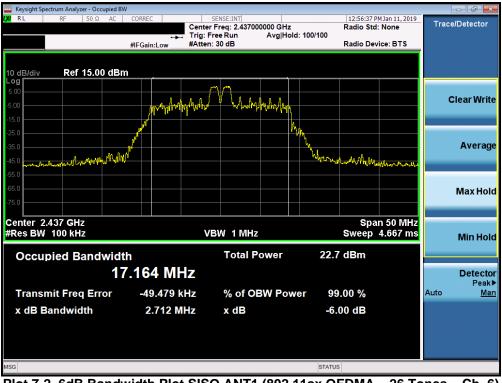
Table 7-2. Conducted Bandwidth Measurements SISO ANT1

FCC ID: A3LSMG9730		MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
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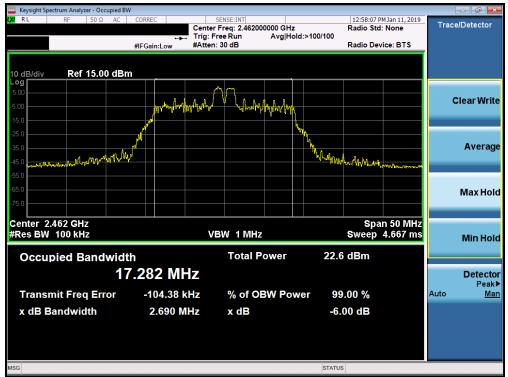
Plot 7-1. 6dB Bandwidth Plot SISO ANT1 (802.11ax OFDMA - 26 Tones - Ch. 1)



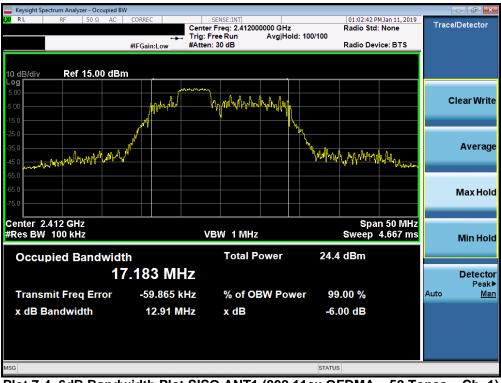
Plot 7-2. 6dB Bandwidth Plot SISO ANT1 (802.11ax OFDMA – 26 Tones – Ch. 6)

FCC ID: A3LSMG9730		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
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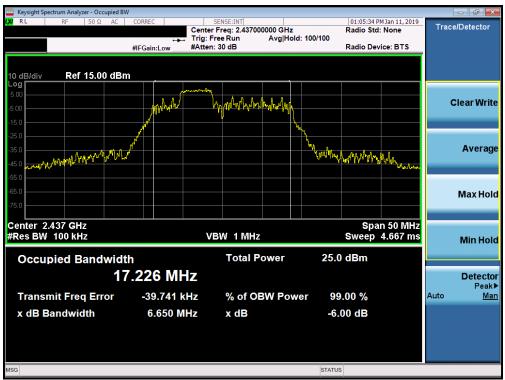
Plot 7-3. 6dB Bandwidth Plot SISO ANT1 (802.11ax OFDMA – 26 Tones – Ch. 11)



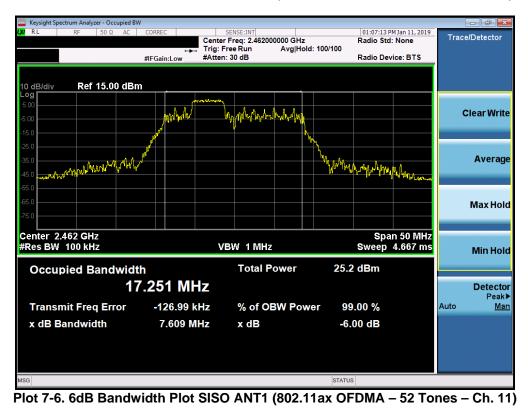
Plot 7-4. 6dB Bandwidth Plot SISO ANT1 (802.11ax OFDMA – 52 Tones – Ch. 1)

FCC ID: A3LSMG9730		MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
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Plot 7-5. 6dB Bandwidth Plot SISO ANT1 (802.11ax OFDMA – 52 Tones – Ch. 6)

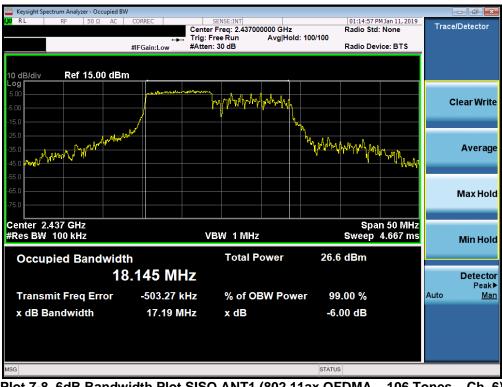


FCC ID: A3LSMG9730		MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Dogo 17 of 145
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Plot 7-7. 6dB Bandwidth Plot SISO ANT1 (802.11ax OFDMA – 106 Tones – Ch. 1)



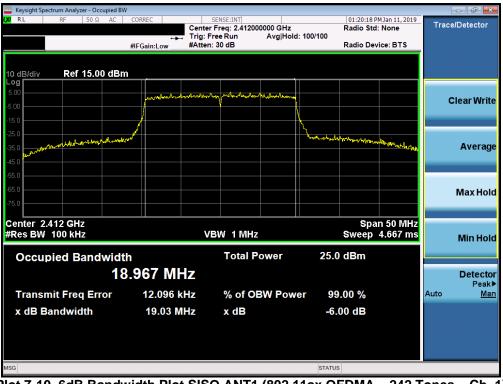
Plot 7-8. 6dB Bandwidth Plot SISO ANT1 (802.11ax OFDMA - 106 Tones - Ch. 6)

FCC ID: A3LSMG9730		MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
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Plot 7-9. 6dB Bandwidth Plot SISO ANT1 (802.11ax OFDMA - 106 Tones - Ch. 11)



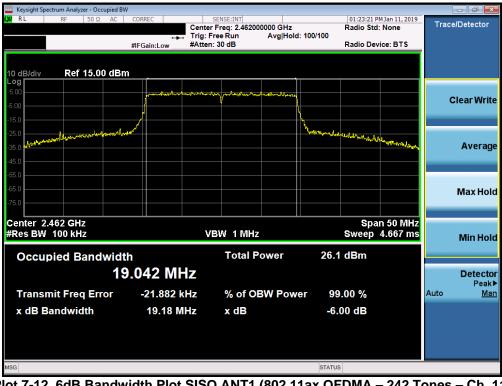
Plot 7-10. 6dB Bandwidth Plot SISO ANT1 (802.11ax OFDMA – 242 Tones – Ch. 1)

FCC ID: A3LSMG9730		MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
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Plot 7-11. 6dB Bandwidth Plot SISO ANT1 (802.11ax OFDMA – 242 Tones – Ch. 6)



Plot 7-12. 6dB Bandwidth Plot SISO ANT1 (802.11ax OFDMA – 242 Tones – Ch. 11)

FCC ID: A3LSMG9730		MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Daga 20 of 145
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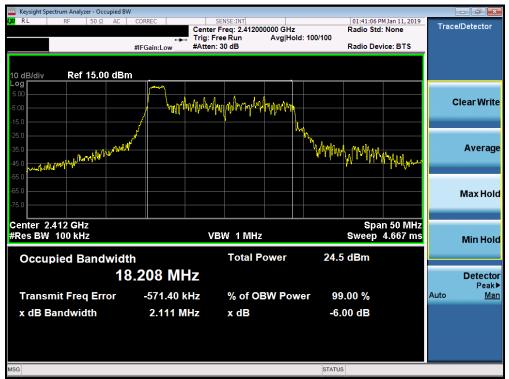
## SISO Antenna-2 6 dB Bandwidth Measurements

Frequency [MHz]	Channel No.	802.11 Mode	Tones	Data Rate [Mbps]	Measured Bandwidth [MHz]	Minimum Bandwidth [MHz]
2412	1	ax	26T	MCS0	2.111	0.500
2437	6	ax	26T	MCS0	2.154	0.500
2462	11	ax	26T	MCS0	2.082	0.500
2412	1	ax	52T	MCS0	13.81	0.500
2437	6	ax	52T	MCS0	4.14	0.500
2462	11	ax	52T	MCS0	11.68	0.500
2412	1	ax	106T	MCS0	17.19	0.500
2437	6	ax	106T	MCS0	17.19	0.500
2462	11	ax	106T	MCS0	17.17	0.500
2412	1	ax	242T	MCS0	19.08	0.500
2437	6	ax	242T	MCS0	19.05	0.500
2462	11	ax	242T	MCS0	19.00	0.500

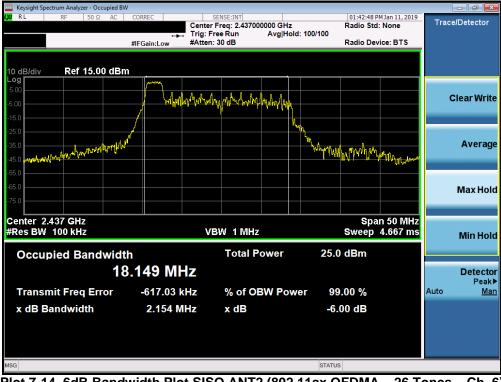
Table 7-3. Conducted Bandwidth Measurements SISO ANT2

FCC ID: A3LSMG9730		MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Dage 21 of 145
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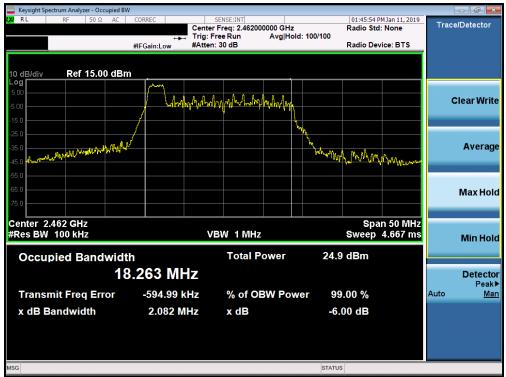
Plot 7-13. 6dB Bandwidth Plot SISO ANT2 (802.11ax OFDMA – 26 Tones – Ch. 1)



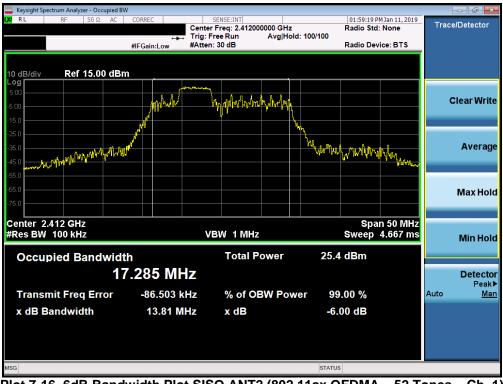
Plot 7-14. 6dB Bandwidth Plot SISO ANT2 (802.11ax OFDMA - 26 Tones - Ch. 6)

FCC ID: A3LSMG9730		MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
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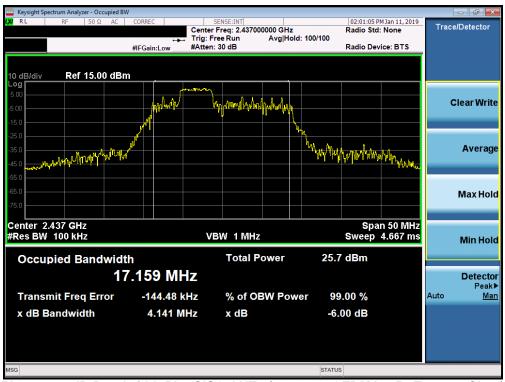
Plot 7-15. 6dB Bandwidth Plot SISO ANT2 (802.11ax OFDMA - 26 Tones - Ch. 11)



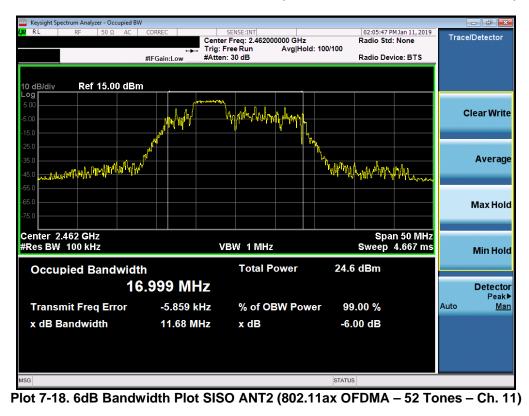
Plot 7-16. 6dB Bandwidth Plot SISO ANT2 (802.11ax OFDMA – 52 Tones – Ch. 1)

FCC ID: A3LSMG9730		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
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Plot 7-17. 6dB Bandwidth Plot SISO ANT2 (802.11ax OFDMA – 52 Tones – Ch. 6)



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Test Report S/N:	Test Dates:	EUT Type:		Daga 24 of 145	
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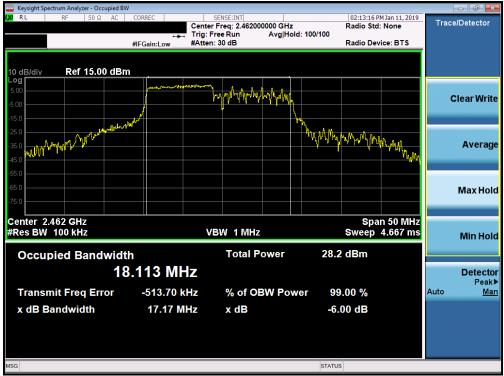
Plot 7-19. 6dB Bandwidth Plot SISO ANT2 (802.11ax OFDMA - 106 Tones - Ch. 1)



Plot 7-20. 6dB Bandwidth Plot SISO ANT2 (802.11ax OFDMA - 106 Tones - Ch. 6)

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Plot 7-21. 6dB Bandwidth Plot SISO ANT2 (802.11ax OFDMA - 106 Tones - Ch. 11)



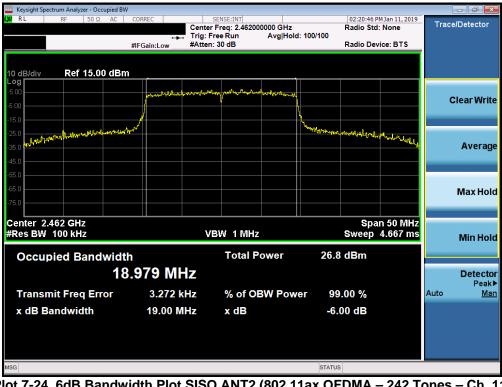
Plot 7-22. 6dB Bandwidth Plot SISO ANT2 (802.11ax OFDMA – 242 Tones – Ch. 1)

FCC ID: A3LSMG9730		MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
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Keysight Spectrum Analyzer - Occupied BV	V				
X RL RF 50Ω AC	CORREC	SENSE:INT r Freq: 2.437000000 GHz	02:18:03 P Radio Std	M Jan 11, 2019 : None	Trace/Detector
	🛶 Trig: F	Free Run Avg Hold: 1: 30 dB		AND DIE	
	#IFGain:Low #Atter	1: 30 dB	Radio Dev	/ice: BTS	
10 dB/div Ref 15.00 dBn	n				
5.00	and the second second	an och an marked when			
5.00					Clear Writ
15.0			Ale flore to a set of		
25.0 mlm mlm min min market			Muliusen fredering	Mondanny	
35.0					Averag
-45.0					
55.0					
-65.0					Max Hol
-75.0					Maxilon
Center 2.437 GHz #Res BW 100 kHz	v	'BW 1MHz		n 50 MHz 4.667 ms	
Res DW TOO KHZ	v		oweep	4.007 1115	Min Hol
Occupied Bandwidt	h	Total Power	27.8 dBm		
	0.066 MHz				Detecto
					Peak
Transmit Freq Error	-19.090 kHz	% of OBW Powe	er 99.00 %	P	Auto <u>Ma</u>
x dB Bandwidth	19.05 MHz	x dB	-6.00 dB		

Plot 7-23. 6dB Bandwidth Plot SISO ANT2 (802.11ax OFDMA - 242 Tones - Ch. 6)



Plot 7-24. 6dB Bandwidth Plot SISO ANT2 (802.11ax OFDMA - 242 Tones - Ch. 11)

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### 7.3 Output Power Measurement §15.247(b.3); RSS-247 [5.4]

### **Test Overview and Limits**

A transmitter antenna terminal of EUT is connected to the input of an RF power sensor. Measurement is made using a broadband power meter capable of making peak and average measurements while the EUT is operating at its maximum duty cycle, at maximum power, and at the appropriate frequencies.

#### The maximum permissible conducted output power is 1 Watt.

#### **Test Procedure Used**

ANSI C63.10-2013 – Section 11.9.1.3 PKPM1 Peak Power Method KDB 558074 D01 v05 – Section 8.3.1.3 PKPM1 Peak-reading Power Meter Method ANSI C63.10-2013 – Section 11.9.2.3.2 Method AVGPM-G KDB 558074 D01 v05 – Section 8.3.2.3 Measurement using a Power Meter (PM) ANSI C63.10-2013 – Section 14.2 Measure-and-Sum Technique KDB 662911 D01 v02r01 – Section E)1) Measure-and-Sum Technique

#### **Test Settings**

#### Method PKPM1 (Peak Power Measurement)

Peak 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 pulse sensor employs a VBW = 50MHz so this method was only used for signals whose DTS bandwidth was less than or equal to 50MHz.

#### Method AVGPM-G (Average Power Measurement)

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 diagrams below.



### Figure 7-2. Test Instrument & Measurement Setup for Power Meter Measurements

### Test Notes

#### None

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## Antenna-1

	Freq [MHz]	Channel	Tones	RU Index	Detector	Conducted Powers (dBm)	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	AVG	13.43	30.00	-16.57	-7.27	6.16	36.02	-29.86
				0	PEAK	20.93	30.00	-9.07	-7.27	13.66	36.02	-22.36
	2412	1	26T	4	AVG	13.98	30.00	-16.02	-7.27	6.71	36.02	-29.31
	2412	'	201	4	PEAK	21.31	30.00	-8.69	-7.27	14.04	36.02	-21.98
				8	AVG	13.82	30.00	-16.18	-7.27	6.55	36.02	-29.47
					PEAK	21.32	30.00	-8.68	-7.27	14.05	36.02	-21.97
				0	AVG	13.76	30.00	-16.24	-6.94	6.82	36.02	-29.20
				Ū	PEAK	21.13	30.00	-8.87	-6.94	14.19	36.02	-21.83
	2437 6	26T	4	AVG	13.86	30.00	-16.14	-6.94	6.92	36.02	-29.10	
	2407	0	201	7	PEAK	21.11	30.00	-8.89	-6.94	14.17	36.02	-21.85
				8	AVG	13.94	30.00	-16.06	-6.94	7.00	36.02	-29.02
N				0	PEAK	21.41	30.00	-8.59	-6.94	14.47	36.02	-21.55
2.4GHz				0	AVG	13.41	30.00	-16.59	-7.50	5.91	36.02	-30.11
Q				Ŭ	PEAK	20.68	30.00	-9.32	-7.50	13.18	36.02	-22.84
2.4	2462	11	26T	4	AVG	13.55	30.00	-16.45	-7.50	6.05	36.02	-29.97
	2402		201		PEAK	21.03	30.00	-8.97	-7.50	13.53	36.02	-22.49
				8	AVG	13.73	30.00	-16.27	-7.50	6.23	36.02	-29.79
					PEAK	20.94	30.00	-9.06	-7.50	13.44	36.02	-22.58
				0	AVG	12.70	30.00	-17.30	-7.50	5.20	36.02	-30.82
				Ŭ	PEAK	20.10	30.00	-9.90	-7.50	12.60	36.02	-23.42
	2467	12	26T	4	AVG	12.80	30.00	-17.20	-7.50	5.30	36.02	-30.72
	2.01		201		PEAK	19.88	30.00	-10.12	-7.50	12.38	36.02	-23.64
				8	AVG	12.18	30.00	-17.82	-7.50	4.68	36.02	-31.34
				-	PEAK	19.57	30.00	-10.43	-7.50	12.07	36.02	-23.95
				0	AVG	-3.87	30.00	-33.87	-7.50	-11.37	36.02	-47.39
					PEAK	3.39	30.00	-26.61	-7.50	-4.11	36.02	-40.13
	2472	13	26T	4	AVG	-3.88	30.00	-33.88	-7.50	-11.38	36.02	-47.40
					PEAK	3.61	30.00	-26.39	-7.50	-3.89	36.02	-39.91
				8	AVG	-3.87	30.00	-33.87	-7.50	-11.37	36.02	-47.39
ļ					PEAK	3.46	30.00	-26.54	-7.50	-4.04	36.02	-40.06

Table 7-4. Conducted Output Power Measurements SISO ANT1 (26 Tones)

FCC ID: A3LSMG9730		MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
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	Freq [MHz]	Channel	Tones	RU Index	Detector	Conducted Powers (dBm)	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	AVG	15.55	30.00	-14.45	-7.27	8.28	36.02	-27.74							
				37	PEAK	22.64	30.00	-7.36	-7.27	15.37	36.02	-20.65							
	2412	1	52T	38	AVG	15.98	30.00	-14.02	-7.27	8.71	36.02	-27.31							
	2412	'	521	30	PEAK	23.33	30.00	-6.67	-7.27	16.06	36.02	-19.96							
				40	AVG	15.97	30.00	-14.03	-7.27	8.70	36.02	-27.32							
					PEAK	23.29	30.00	-6.71	-7.27	16.02	36.02	-20.00							
				37	AVG	15.68	30.00	-14.32	-6.94	8.74	36.02	-27.28							
				57	PEAK	23.13	30.00	-6.87	-6.94	16.19	36.02	-19.83							
	2437	6	52T	FOT	52T	38	AVG	15.88	30.00	-14.12	-6.94	8.94	36.02	-27.08					
	2407	0		50	PEAK	23.27	30.00	-6.73	-6.94	16.33	36.02	-19.69							
				40	AVG	15.91	30.00	-14.09	-6.94	8.97	36.02	-27.05							
N				40	PEAK	23.41	30.00	-6.59	-6.94	16.47	36.02	-19.55							
2.4GHz				37	AVG	15.78	30.00	-14.22	-7.50	8.28	36.02	-27.74							
Q				57	PEAK	23.17	30.00	-6.83	-7.50	15.67	36.02	-20.35							
2.4	2462	11	52T	38	AVG	15.57	30.00	-14.43	-7.50	8.07	36.02	-27.95							
	2402		021		PEAK	23.07	30.00	-6.93	-7.50	15.57	36.02	-20.45							
				40	AVG	15.84	30.00	-14.16	-7.50	8.34	36.02	-27.68							
					PEAK	23.17	30.00	-6.83	-7.50	15.67	36.02	-20.35							
				37	AVG	13.12	30.00	-16.88	-7.50	5.62	36.02	-30.40							
				57	PEAK	20.53	30.00	-9.47	-7.50	13.03	36.02	-22.99							
	2467	12	52T	52T	52T	52T	52T	52T	52T	52T	38	AVG	13.49	30.00	-16.51	-7.50	5.99	36.02	-30.03
	2107	12	021		PEAK	21.32	30.00	-8.68	-7.50	13.82	36.02	-22.20							
				40	AVG	13.39	30.00	-16.61	-7.50	5.89	36.02	-30.13							
				-10	PEAK	20.90	30.00	-9.10	-7.50	13.40	36.02	-22.62							
				37	AVG	-2.61	30.00	-32.61	-7.50	-10.11	36.02	-46.13							
				0,	PEAK	4.98	30.00	-25.02	-7.50	-2.52	36.02	-38.54							
	2472	13	52T	38	AVG	-2.76	30.00	-32.76	-7.50	-10.26	36.02	-46.28							
	2712	10	021		PEAK	4.68	30.00	-25.32	-7.50	-2.82	36.02	-38.84							
				40	AVG	-2.81	30.00	-32.81	-7.50	-10.31	36.02	-46.33							
				70	PEAK	4.79	30.00	-25.21	-7.50	-2.71	36.02	-38.73							

Table 7-5. Conducted Output Power Measurements SISO ANT1 (52 Tones)

FCC ID: A3LSMG9730		MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager	
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	Freq [MHz]	Channel	Tones	RU Index	Detector	Conducted Powers (dBm)	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	AVG	17.64	30.00	-12.36	-7.27	10.37	36.02	-25.65
	2412	1	106T	- 55	PEAK	24.23	30.00	-5.77	-7.27	16.96	36.02	-19.06
	2712			54	AVG	17.59	30.00	-12.41	-7.27	10.32	36.02	-25.70
					PEAK	24.37	30.00	-5.63	-7.27	17.10	36.02	-18.92
				53	AVG	17.96	30.00	-12.04	-6.94	11.02	36.02	-25.00
	2437	6	106T	00	PEAK	24.61	30.00	-5.39	-6.94	17.67	36.02	-18.35
Ν	2407	Ŭ	1001	54	AVG	17.79	30.00	-12.21	-6.94	10.85	36.02	-25.17
Ï				54	PEAK	24.64	30.00	-5.36	-6.94	17.70	36.02	-18.32
2.4GHz				53	AVG	17.47	30.00	-12.53	-7.50	9.97	36.02	-26.05
2.4	2462	11	106T	00	PEAK	24.31	30.00	-5.69	-7.50	16.81	36.02	-19.21
	2402		54	54	AVG	17.51	30.00	-12.49	-7.50	10.01	36.02	-26.01
				04	PEAK	24.09	30.00	-5.91	-7.50	16.59	36.02	-19.43
				53	AVG	13.16	30.00	-16.84	-7.50	5.66	36.02	-30.36
	2467	12	106T	55	PEAK	20.60	30.00	-9.40	-7.50	13.10	36.02	-22.92
	2407	12	1001	54	AVG	13.33	30.00	-16.67	-7.50	5.83	36.02	-30.19
				54	PEAK	21.12	30.00	-8.88	-7.50	13.62	36.02	-22.40
				53	AVG	1.38	30.00	-28.62	-7.50	-6.12	36.02	-42.14
	2472	13	106T	- 53	PEAK	9.04	30.00	-20.96	-7.50	1.54	36.02	-34.48
	2712	13	1001	54	AVG	1.06	30.00	-28.94	-7.50	-6.44	36.02	-42.46
				54	PEAK	8.85	30.00	-21.15	-7.50	1.35	36.02	-34.67

Table 7-6. Conducted Output Power Measurements SISO ANT1 (106 Tones)

	Freq [MHz]	Channel	Tones	RU Index	Detector	Conducted Powers (dBm)	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]									
	2412	1			AVG	15.64	30.00	-14.36	-7.50	8.14	36.02	-27.88									
	2412	1			PEAK	22.93	30.00	-7.07	-7.50	15.43	36.02	-20.59									
	2417	2			AVG	17.98	30.00	-12.02	-7.50	10.48	36.02	-25.54									
N	2417 2			PEAK	24.02	30.00	-5.98	-7.50	16.52	36.02	-19.50										
Hz	2437	6		61	AVG	17.71	30.00	-12.29	-6.94	10.77	36.02	-25.25									
.4G	2437				PEAK	24.31	30.00	-5.69	-6.94	17.37	36.02	-18.65									
2.4	2457	10	242T		AVG	17.88	30.00	-12.12	-7.50	10.38	36.02	-25.64									
	2437			01	PEAK	24.02	30.00	-5.98	-7.50	16.52	36.02	-19.50									
	2462	11			AVG	16.87	30.00	-13.13	-7.50	9.37	36.02	-26.65									
	2402				PEAK	22.56	30.00	-7.44	-7.50	15.06	36.02	-20.96									
	2467 12													AVG	11.46	30.00	-18.54	-7.50	3.96	36.02	-32.06
	2467	12			PEAK	18.95	30.00	-11.05	-7.50	11.45	36.02	-24.57									
	2472	13			AVG	3.49	30.00	-26.51	-7.50	-4.01	36.02	-40.03									
	2712	15			PEAK	11.29	30.00	-18.71	-7.50	3.79	36.02	-32.23									

Table 7-7. Conducted Output Power Measurements SISO ANT1 (242 Tones)

FCC ID: A3LSMG9730		MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Dage 21 of 145
1M1811230206-14.A3L	12/14/2018 - 1/26/2019	Portable Handset		Page 31 of 145
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# Antenna-2

	Freq [MHz]	Channel	Tones	RU Index	Detector	Conducted Powers (dBm)	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	AVG	13.82	30.00	-16.18	-6.99	6.83	36.02	-29.19				
				0	PEAK	21.41	30.00	-8.59	-6.99	14.42	36.02	-21.60				
	2412	1	26T	4	AVG	13.51	30.00	-16.49	-6.99	6.52	36.02	-29.50				
	2412	'	201	4	PEAK	20.92	30.00	-9.08	-6.99	13.93	36.02	-22.09				
				8	AVG	13.96	30.00	-16.04	-6.99	6.97	36.02	-29.05				
				0	PEAK	21.36	30.00	-8.64	-6.99	14.37	36.02	-21.65				
				0	AVG	13.73	30.00	-16.27	-7.12	6.61	36.02	-29.41				
				0	PEAK	21.35	30.00	-8.65	-7.12	14.23	36.02	-21.79				
	2437	6	26T	4	AVG	13.85	30.00	-16.15	-7.12	6.73	36.02	-29.29				
	2437	U	201	7	PEAK	21.37	30.00	-8.63	-7.12	14.25	36.02	-21.77				
				8	AVG	13.68	30.00	-16.32	-7.12	6.56	36.02	-29.46				
2.4GHz				0	PEAK	21.41	30.00	-8.59	-7.12	14.29	36.02	-21.73				
				0	AVG	13.73	30.00	-16.27	-7.66	6.07	36.02	-29.95				
Q				U	PEAK	21.06	30.00	-8.94	-7.66	13.40	36.02	-22.62				
4	2462	11	26T	4	AVG	13.96	30.00	-16.04	-7.66	6.30	36.02	-29.72				
	2402		201	4	PEAK	21.40	30.00	-8.60	-7.66	13.74	36.02	-22.28				
				8	AVG	13.98	30.00	-16.02	-7.66	6.32	36.02	-29.70				
				0	PEAK	21.46	30.00	-8.54	-7.66	13.80	36.02	-22.22				
				0	AVG	12.97	30.00	-17.03	-7.66	5.31	36.02	-30.71				
				Ŭ	PEAK	20.45	30.00	-9.55	-7.66	12.79	36.02	-23.23				
	2467	12	26T	4	AVG	12.60	30.00	-17.40	-7.66	4.94	36.02	-31.08				
	2407	12	201	7	PEAK	20.25	30.00	-9.75	-7.66	12.59	36.02	-23.43				
				8	AVG	12.78	30.00	-17.22	-7.66	5.12	36.02	-30.90				
								Ŭ	PEAK	20.29	30.00	-9.71	-7.66	12.63	36.02	-23.39
				0	AVG	-3.63	30.00	-33.63	-7.66	-11.29	36.02	-47.31				
				0	PEAK	3.71	30.00	-26.29	-7.66	-3.95	36.02	-39.97				
	2472	13	26T	4	AVG	-4.19	30.00	-34.19	-7.66	-11.85	36.02	-47.87				
	2712	10	201	-	PEAK	3.59	30.00	-26.41	-7.66	-4.07	36.02	-40.09				
			-	8	AVG	-3.80	30.00	-33.80	-7.66	-11.46	36.02	-47.48				
				8	PEAK	3.72	30.00	-26.28	-7.66	-3.94	36.02	-39.96				

Table 7-8. Conducted Output Power Measurements SISO ANT2 (26 Tones)

FCC ID: A3LSMG9730		MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Dage 22 of 145
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	Freq [MHz]	Channel	Tones	RU Index	Detector	Conducted Powers (dBm)	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	AVG	15.91	30.00	-14.09	-6.99	8.92	36.02	-27.10			
				37	PEAK	23.13	30.00	-6.87	-6.99	16.14	36.02	-19.88			
	2412	1	52T	38	AVG	15.48	30.00	-14.52	-6.99	8.49	36.02	-27.53			
	2412	1	521	30	PEAK	22.73	30.00	-7.27	-6.99	15.74	36.02	-20.28			
				40	AVG	15.72	30.00	-14.28	-6.99	8.73	36.02	-27.29			
				40	PEAK	23.00	30.00	-7.00	-6.99	16.01	36.02	-20.01			
				37	AVG	15.65	30.00	-14.35	-7.12	8.53	36.02	-27.49			
				57	PEAK	22.96	30.00	-7.04	-7.12	15.84	36.02	-20.18			
	2437	6	52T	38	AVG	15.81	30.00	-14.19	-7.12	8.69	36.02	-27.33			
	2437	0	521	50	PEAK	23.19	30.00	-6.81	-7.12	16.07	36.02	-19.95			
				40	AVG	15.97	30.00	-14.03	-7.12	8.85	36.02	-27.17			
<b>2.4GHz</b>				40	PEAK	23.44	30.00	-6.56	-7.12	16.32	36.02	-19.70			
				37	AVG	15.87	30.00	-14.13	-7.66	8.21	36.02	-27.81			
				57	PEAK	23.03	30.00	-6.97	-7.66	15.37	36.02	-20.65			
2.4	2462	11	52T	38	AVG	15.94	30.00	-14.06	-7.66	8.28	36.02	-27.74			
	2402		521	50	PEAK	22.99	30.00	-7.01	-7.66	15.33	36.02	-20.69			
				40	AVG	15.91	30.00	-14.09	-7.66	8.25	36.02	-27.77			
				40	PEAK	22.87	30.00	-7.13	-7.66	15.21	36.02	-20.81			
				37	AVG	13.34	30.00	-16.66	-7.66	5.68	36.02	-30.34			
				57	PEAK	21.13	30.00	-8.87	-7.66	13.47	36.02	-22.55			
	2462	12	52T	38	AVG	12.55	30.00	-17.45	-7.66	4.89	36.02	-31.13			
	2102	12	021		PEAK	20.04	30.00	-9.96	-7.66	12.38	36.02	-23.64			
				40	AVG	12.79	30.00	-17.21	-7.66	5.13	36.02	-30.89			
							-10	PEAK	20.57	30.00	-9.43	-7.66	12.91	36.02	-23.11
				37	AVG	-2.80	30.00	-32.80	-7.66	-10.46	36.02	-46.48			
				0,	PEAK	4.88	30.00	-25.12	-7.66	-2.78	36.02	-38.80			
	2462	13	52T	38	AVG	-2.6	30.00	-32.60	-7.66	-10.26	36.02	-46.28			
	2702	10	521	38	PEAK	5.35	30.00	-24.65	-7.66	-2.31	36.02	-38.33			
				40	AVG	-2.91	30.00	-32.91	-7.66	-10.57	36.02	-46.59			
				10	PEAK	4.71	30.00	-25.29	-7.66	-2.95	36.02	-38.97			

Table 7-9. Conducted Output Power Measurements SISO ANT2 (52 Tones)

FCC ID: A3LSMG9730		MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Dage 22 of 145
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	Freq [MHz]	Channel	Tones	RU Index	Detector	Conducted Powers (dBm)	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	AVG	17.77	30.00	-12.23	-6.99	10.78	36.02	-25.24
	2412	1	106T	55	PEAK	24.05	30.00	-5.95	-6.99	17.06	36.02	-18.96
	2412	'	1001	54	AVG	17.50	30.00	-12.50	-6.99	10.51	36.02	-25.51
				54	PEAK	24.02	30.00	-5.98	-6.99	17.03	36.02	-18.99
				53	AVG	17.63	30.00	-12.37	-7.12	10.51	36.02	-25.51
	2437	6	106T	00	PEAK	24.29	30.00	-5.71	-7.12	17.17	36.02	-18.85
N	2407	Ŭ	1001	54	AVG	17.56	30.00	-12.44	-7.12	10.44	36.02	-25.58
Ï				01	PEAK	23.92	30.00	-6.08	-7.12	16.80	36.02	-19.22
2.4GHz				53	AVG	17.87	30.00	-12.13	-7.66	10.21	36.02	-25.81
5.	2462	11	106T		PEAK	23.83	30.00	-6.17	-7.66	16.17	36.02	-19.85
••	2.02			54	AVG	17.85	30.00	-12.15	-7.66	10.19	36.02	-25.83
				0.	PEAK	23.93	30.00	-6.07	-7.66	16.27	36.02	-19.75
				53	AVG	13.46	30.00	-16.54	-7.66	5.80	36.02	-30.22
	2467	12	106T		PEAK	21.06	30.00	-8.94	-7.66	13.40	36.02	-22.62
	2107	12	1001	54	AVG	13.35	30.00	-16.65	-7.66	5.69	36.02	-30.33
				01	PEAK	12.25	30.00	-17.75	-7.66	4.59	36.02	-31.43
				53	AVG	1.27	30.00	-28.73	-7.66	-6.39	36.02	-42.41
	2472	13	106T		PEAK	9.22	30.00	-20.78	-7.66	1.56	36.02	-34.46
	2.1.2	10	1001	54	AVG	1.15	30.00	-28.85	-7.66	-6.51	36.02	-42.53
				<u> </u>	PEAK	9.06	30.00	-20.94	-7.66	1.40	36.02	-34.62

Table 7-10. Conducted Output Power Measurements SISO ANT2 (106 Tones)

	Freq [MHz]	Channel	Tones	RU Index	Detector	Conducted Powers (dBm)	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]																						
	2412	1			AVG	15.61	30.00	-14.39	-6.99	8.62	36.02	-27.40																						
	2412	1			PEAK	22.56	30.00	-7.44	-6.99	15.57	36.02	-20.45																						
	2417	2			AVG	17.85	30.00	-12.15	-6.99	10.86	36.02	-25.16																						
N	2417	2			PEAK	24.19	30.00	-5.81	-6.99	17.20	36.02	-18.82																						
I	2437	6			AVG	17.89	30.00	-12.11	-7.12	10.77	36.02	-25.25																						
.4G	2437	0	040T	61	PEAK	24.02	30.00	-5.98	-7.12	16.90	36.02	-19.12																						
2.4	2457	10			AVG	17.60	30.00	-12.40	-7.66	9.94	36.02	-26.08																						
~	2437	10	242T	01	PEAK	23.95	30.00	-6.05	-7.66	16.29	36.02	-19.73																						
	2462	11			AVG	16.96	30.00	-13.04	-7.66	9.30	36.02	-26.72																						
	2462 11			PEAK	23.28	30.00	-6.72	-7.66	15.62	36.02	-20.40																							
	2467	12																									AVG	11.57	30.00	-18.43	-7.66	3.91	36.02	-32.11
	2407	12			PEAK	19.11	30.00	-10.89	-7.66	11.45	36.02	-24.57																						
	2472	13			AVG	3.79	30.00	-26.21	-7.66	-3.87	36.02	-39.89																						
	2472	13			PEAK	11.35	30.00	-18.65	-7.66	3.69	36.02	-32.33																						

Table 7-11. Conducted Output Power Measurements SISO ANT2 (242 Tones)

FCC ID: A3LSMG9730		MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Dogo 24 of 145
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## MIMO

	MHz]			RU Index	Detector	Cond	lucted Power [	dBm]	Conducted Power Limit	Conducted Power	Directional Ant. Gain	Max e.i.r.p. [dBm]	Max e.i.r.p. Limit [dBm]	e.i.r.p. Margin [dB]
						ANT1	ANT2	MIMO	[dBm]	Margin [dB]	[dBi]	[]		
				0	AVG	10.87	10.70	13.80	30.00	-16.20	-4.12	9.68	36.02	-26.34
				0	PEAK	18.36	18.29	21.34	30.00	-8.66	-4.12	17.22	36.02	-18.80
2	2412	1	26T	4	AVG	10.60	10.15	13.39	30.00	-16.61	-4.12	9.27	36.02	-26.75
2	2412	'	201	4	PEAK	18.12	17.80	20.97	30.00	-9.03	-4.12	16.85	36.02	-19.17
				8	AVG	10.07	10.66	13.39	30.00	-16.61	-4.12	9.27	36.02	-26.75
				0	PEAK	17.57	18.24	20.93	30.00	-9.07	-4.12	16.81	36.02	-19.21
				0	AVG	10.65	10.85	13.76	30.00	-16.24	-4.02	9.74	36.02	-26.28
				0	PEAK	18.32	18.35	21.35	30.00	-8.65	-4.02	17.33	36.02	-18.69
2	2437	6	26T	4	AVG	10.86	10.51	13.70	30.00	-16.30	-4.02	9.68	36.02	-26.34
2	2407	0	201	-	PEAK	18.27	18.00	21.15	30.00	-8.85	-4.02	17.13	36.02	-18.89
				8	AVG	10.69	9.42	13.11	30.00	-16.89	-4.02	9.09	36.02	-26.93
NL				Ŭ	PEAK	18.21	17.12	20.71	30.00	-9.29	-4.02	16.69	36.02	-19.33
2.4GHz				0	AVG	10.03	11.75	13.98	30.00	-16.02	-4.57	9.42	36.02	-26.61
Ω		11		Ŭ	PEAK	17.51	19.51	21.63	30.00	-8.37	-4.57	17.07	36.02	-18.96
	2462		26T	4	AVG	9.20	11.05	13.23	30.00	-16.77	-4.57	8.66	36.02	-27.36
					PEAK	17.70	18.56	21.16	30.00	-8.84	-4.57	16.59	36.02	-19.43
				8	AVG	10.53	10.42	13.49	30.00	-16.51	-4.57	8.92	36.02	-27.10
				Ŭ	PEAK	18.26	17.84	21.07	30.00	-8.93	-4.57	16.50	36.02	-19.52
				0	AVG	10.48	9.4	12.98	30.00	-17.02	-4.57	8.41	36.02	-27.61
				Ŭ	PEAK	17.55	16.96	20.28	30.00	-9.72	-4.57	15.71	36.02	-20.31
2	2467	12	26T	4	AVG	9.82	10.12	12.98	30.00	-17.02	-4.57	8.41	36.02	-27.61
					PEAK	17.54	17.84	20.70	30.00	-9.30	-4.57	16.13	36.02	-19.89
				8	AVG	10.21	9.08	12.69	30.00	-17.31	-4.57	8.12	36.02	-27.90
				_	PEAK	17.73	16.56	20.19	30.00	-9.81	-4.57	15.63	36.02	-20.40
	2472 13			0	AVG	-6.68	-7.39	-4.01	30.00	-34.01	-4.57	-8.58	36.02	-44.60
				-	PEAK	0.54	0.15	3.36	30.00	-26.64	-4.57	-1.21	36.02	-37.23
2		13	26T	4	AVG	-5.88	-7.44	-3.58	30.00	-33.58	-4.57	-8.15	36.02	-44.17
-		. 5	_01		PEAK	1.25	0.16	3.75	30.00	-26.25	-4.57	-0.82	36.02	-36.84
				8	AVG	-6.92	-6.52	-3.71	30.00	-33.71	-4.57	-8.27	36.02	-44.30
				Ŭ	PEAK	0.30	0.92	3.63	30.00	-26.37	-4.57	-0.94	36.02	-36.96

Table 7-12. Conducted Output Power Measurements MIMO (26 Tones)

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	Freq [MHz]	Channel	Tones	RU Index	Detector	Cond	lucted Power [	dBm]	Conducted Power Limit	Conducted Power	Directional Ant. Gain	Max e.i.r.p. [dBm]	Max e.i.r.p. Limit [dBm]	e.i.r.p. Margin [dB]	
	[]					ANT1	ANT2	MIMO	[dBm]	Margin [dB]	[dBi]	Lapud	Ennik [dBhij	margin [ab]	
				37	AVG	12.32	12.97	15.67	30.00	-14.33	-4.12	11.55	36.02	-24.47	
				51	PEAK	20.17	20.84	23.53	30.00	-6.47	-4.12	19.41	36.02	-16.61	
	2412	1	52T	38	AVG	12.58	12.44	15.52	30.00	-14.48	-4.12	11.40	36.02	-24.62	
	2412		521	50	PEAK	20.30	20.14	23.23	30.00	-6.77	-4.12	19.11	36.02	-16.91	
				40	AVG	12.26	12.37	15.33	30.00	-14.67	-4.12	11.21	36.02	-24.81	
				40	PEAK	20.01	20.07	23.05	30.00	-6.95	-4.12	18.93	36.02	-17.09	
				37	AVG	12.24	12.96	15.63	30.00	-14.37	-4.02	11.61	36.02	-24.41	
	2437			57	PEAK	19.96	20.84	23.43	30.00	-6.57	-4.02	19.41	36.02	-16.61	
		6	52T	38	AVG	11.75	12.04	14.91	30.00	-15.09	-4.02	10.89	36.02	-25.13	
		0	521	50	PEAK	19.48	18.74	22.14	30.00	-7.86	-4.02	18.12	36.02	-17.90	
				40	AVG	12.94	11.92	15.47	30.00	-14.53	-4.02	11.45	36.02	-24.57	
N				40	PEAK	20.76	19.89	23.36	30.00	-6.64	-4.02	19.34	36.02	-16.68	
2.4GHz				37	AVG	12.79	12.69	15.75	30.00	-14.25	-4.57	11.18	36.02	-24.84	
Q				57	PEAK	20.44	20.44	23.45	30.00	-6.55	-4.57	18.88	36.02	-17.14	
2.4	2462	11	52T	38	AVG	12.79	12.61	15.71	30.00	-14.29	-4.57	11.14	36.02	-24.88	
••	2402			38	PEAK	20.48	20.33	23.42	30.00	-6.58	-4.57	18.85	36.02	-17.17	
				40	AVG	12.41	12.06	15.25	30.00	-14.75	-4.57	10.68	36.02	-25.34	
				40	PEAK	20.10	19.66	22.90	30.00	-7.10	-4.57	18.33	36.02	-17.69	
				37	AVG	10.37	9.39	12.92	30.00	-17.08	-4.57	8.35	36.02	-27.67	
					01	PEAK	18.03	17.09	20.60	30.00	-9.40	-4.57	16.03	36.02	-19.99
	2467	12	52T	38	AVG	10.86	9.91	13.42	30.00	-16.58	-4.57	8.85	36.02	-27.17	
	2407	12	021		PEAK	18.49	17.59	21.07	30.00	-8.93	-4.57	16.50	36.02	-19.52	
				40	AVG	10.51	10.16	13.35	30.00	-16.65	-4.57	8.78	36.02	-27.24	
				40	PEAK	17.88	17.65	20.78	30.00	-9.22	-4.57	16.21	36.02	-19.81	
	2472			37	AVG	-6.17	-6.72	-3.43	30.00	-33.43	-4.57	-8.00	36.02	-44.02	
				0,	PEAK	2.45	1.64	5.07	30.00	-24.93	-4.57	0.50	36.02	-35.52	
		13	52T	38	AVG	-5.35	-5.72	-2.52	30.00	-32.52	-4.57	-7.09	36.02	-43.11	
		10	021		PEAK	2.02	2.04	5.04	30.00	-24.96	-4.57	0.47	36.02	-35.55	
				40	AVG	-5.8	-5.45	-2.61	30.00	-32.61	-4.57	-7.18	36.02	-43.20	
				-10	PEAK	1.61	2.38	5.02	30.00	-24.98	-4.57	0.45	36.02	-35.57	

Table 7-13. Conducted Output Power Measurements MIMO (52 Tones)

Freq	Channel	Tones	RU Index	Detector	Conducted Power [dBm]			Conducted Power Limit	Conducted Power	Directional Ant. Gain	Max e.i.r.p.	Max e.i.r.p.	e.i.r.p. Margin [dB]
[10112]					ANT1	ANT2	MIMO	[dBm]	Margin [dB]	[dBi]	[ubiii]		margin [ab]
		106T	53	AVG	14.67	14.96	17.83	30.00	-12.17	-4.12	13.71	36.02	-22.31
2412	1			PEAK	22.19	22.39	25.30	30.00	-4.70	-4.12	21.18	36.02	-14.84
2412			54	AVG	14.55	14.97	17.78	30.00	-12.22	-4.12	13.66	36.02	-22.36
				PEAK	22.21	22.54	25.39	30.00	-4.61	-4.12	21.27	36.02	-14.75
		106T	53	AVG	14.61	14.98	17.81	30.00	-12.19	-4.02	13.79	36.02	-22.23
2/37	6			PEAK	22.44	22.60	25.53	30.00	-4.47	-4.02	21.51	36.02	-14.51
2407			54	AVG	14.97	13.92	17.49	30.00	-12.51	-4.02	13.47	36.02	-22.55
				PEAK	22.61	21.57	25.13	30.00	-4.87	-4.02	21.11	36.02	-14.91
		106T	53	AVG	14.70	13.30	17.07	30.00	-12.93	-4.57	12.50	36.02	-23.52
2462	11			PEAK	22.25	21.19	24.76	30.00	-5.24	-4.57	20.19	36.02	-15.83
2402			54	AVG	13.79	14.96	17.42	30.00	-12.58	-4.57	12.86	36.02	-23.17
				PEAK	21.44	22.34	24.92	30.00	-5.08	-4.57	20.35	36.02	-15.67
		106T	53	AVG	10.12	10.6	13.38	30.00	-16.62	-4.57	8.81	36.02	-27.21
2467	12			PEAK	17.88	10.30	18.58	30.00	-11.42	-4.57	14.01	36.02	-22.01
2.101			54	AVG	10.22	10.67	13.46	30.00	-16.54	-4.57	8.89	36.02	-27.13
				PEAK	17.98	18.45	21.23	30.00	-8.77	-4.57	16.66	36.02	-19.36
		106T	53	AVG	-2.08	-1.63	1.16	30.00	-28.84	-4.57	-3.41	36.02	-39.43
2472	13			PEAK	5.63	6.31	8.99	30.00	-21.01	-4.57	4.42	36.02	-31.60
2-112	10		54	AVG	-2.04	-1.89	1.05	30.00	-28.95	-4.57	-3.52	36.02	-39.54
				PEAK	5.70	6.05	8.89	30.00	-21.11	-4.57	4.32	36.02	-31.70
	Freq         [MHz]           2412         2437           2437         2462           2462         2467           2472         2472	[MHz]         Channel           2412         1           2437         6           2462         11           2467         12	[MHz]         Channel         Tones           2412         1         106T           2437         6         106T           2462         11         106T           2462         11         106T           2462         11         106T           2467         12         106T           2472         13         106T	$\begin{array}{ c c c c c c c c } \hline \text{Channel lones RU index} \\ \hline \text{Index} \\ \hline \text{Index} \\ \hline \begin{array}{c} 2412 \\ 2412 \\ 2412 \\ 1 \\ 2412 \\ 2412 \\ 2412 \\ 2412 \\ 2412 \\ 1 \\ 1 \\ 1 \\ 1 \\ 1 \\ 1 \\ 1 \\ 1 \\ 1 \\$	$\begin{tabular}{ c c c c } \hline [MHz] & Channel & Tones & RU index & Detector \\ \hline \mbox{RU index} & Detector \\ \hline \mbox{RU index} & Detector \\ \hline \mbox{PEAK} \\ \hline$	$ \begin{array}{ c c c c c c } \hline \mbox{Channel} & Tones \\ \hline \mbox{RU index} & Detector \\ \hline \mbox{ANT1} \\ \hline \mbox{ANT} \\ \hline \mbox{ANT} \\ \hline \mbox{ANG} \\ \hline All All All All All All All All All All$	$ \begin{array}{ c c c c c c } \hline \mbox{Channel} & Tones \\ \hline \mbox{RU Index} & \hline \mbox{Detector} & \hline \mbox{ANT1} & ANT2 \\ \hline \mbox{ANG} & 14.65 & 14.97 \\ \hline \mbox{ANG} & 14.61 & 14.98 \\ \hline \mbox{ANG} & 14.61 & 14.98 \\ \hline \mbox{ANG} & 14.97 & 13.92 \\ \hline \mbox{PEAK} & 22.61 & 21.57 \\ \hline \mbox{ANG} & 14.70 & 13.30 \\ \hline \mbox{PEAK} & 22.25 & 21.19 \\ \hline \mbox{ANG} & 14.70 & 13.30 \\ \hline \mbox{PEAK} & 22.25 & 21.19 \\ \hline \mbox{ANG} & 14.70 & 13.30 \\ \hline \mbox{PEAK} & 22.44 & 22.34 \\ \hline \mbox{ANG} & 10.12 & 10.6 \\ \hline \mbox{PEAK} & 17.88 & 10.30 \\ \hline \mbox{ANG} & 10.22 & 10.67 \\ \hline \mbox{PEAK} & 17.98 & 18.45 \\ \hline \mbox{ANG} & -2.04 & -1.89 \\ \hline \mbox{PEAK} & 5.70 & 6.05 \\ \hline \mbox{ANG} & -2.04 & -1.89 \\ \hline \mbox{ANG} &$	$ \begin{array}{ c c c c c c c } \hline \mbox{Channel} & \mbox{Tones} & \mbox{RU index} & \mbox{Detector} & \mbox{ANT1} & \mbox{ANT2} & \mbox{MiMO} \\ \hline \mbox{ANT1} & \mbox{ANT2} & \mbox{ANT1} & \mbox{ANT2} & \mbox{MiMO} \\ \hline \mbox{ANT1} & \mbox{ANT2} & \mbox{ANT1} & \mbox{ANT1} & \mbox{ANT2} & \mbox{ANT1} & \mbox{ANT2} & $	$ \begin{array}{ c c c c c } \hline \mbox{Pick} Pick$	$ \begin{array}{ c c c c c c c c c c c c c c c c c c c$	$ \begin{array}{ c c c c c c c c c c c c c c c c c c c$	Freq [MHz]         Channel         Tones         RU Index         Detector         Conducted Power Lumin, ANT1         Power Lumin, IdBm]         Power Lumin, IdBm]         Power Lumin, Margin [dB]         Ant. Gain [dBi]         Margin [dBi]         Ant. Gain [dBi]         Ant. Gain [dBi]         Ant. Gain [dBi]         Ant. Gain [dBi]         Ant. Gain [dBi] <tha< td=""><td><math display="block"> \begin{array}{                                    </math></td></tha<>	$ \begin{array}{                                    $

Table 7-14. Conducted Output Power Measurements MIMO (106 Tones)

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	Freq [MHz] Channel Tones		nel Tones RU Inc	Tones	RU Index	Detector	Cond	lucted Power [	dBm]	Conducted Power Limit	Conducted Power	Directional Ant. Gain	Max e.i.r.p. [dBm]	Max e.i.r.p. Limit [dBm]	e.i.r.p. Margin [dB]												
	[					ANT1	ANT2	MIMO	[dBm]	Margin [dB]	[dBi]	Lapud	Ennie [GBrij	margin [ab]													
	2412	1			AVG	12.49	12.61	15.56	30.00	-14.44	-4.23	11.33	36.02	-24.69													
	2412				PEAK	19.96	20.03	23.01	30.00	-6.99	-4.23	18.77	36.02	-17.25													
	2417	2		+	-		AVG	14.91	14.47	17.71	30.00	-12.29	-4.23	13.47	36.02	-22.55											
N	2417	2																PEAK	22.32	21.83	25.09	30.00	-4.91	-4.23	20.86	36.02	-15.16
F	2437	6													AVG	14.83	14.39	17.63	30.00	-12.37	-4.02	13.61	36.02	-22.41			
.4G	2437	0			PEAK	22.27	21.67	24.99	30.00	-5.01	-4.02	20.97	36.02	-15.05													
5.4	2457	10	242T	61	AVG	14.75	14.50	17.64	30.00	-12.36	-4.57	13.07	36.02	-22.95													
••	2457	10	2.21	2721	01	PEAK	22.19	21.78	25.00	30.00	-5.00	-4.57	20.43	36.02	-15.59												
	2462	11	11	11	11	11	11	11	11	11	11				AVG	13.25	13.52	16.40	30.00	-13.60	-4.57	11.83	36.02	-24.19			
	2402				PEAK	20.57	21.14	23.87	30.00	-6.13	-4.57	19.31	36.02	-16.72													
	2467 12	12	12			AVG	8.49	8.73	11.62	30.00	-18.38	-4.57	7.05	36.02	-28.97												
					PEAK	16.01	16.64	19.35	30.00	-10.65	-4.57	14.78	36.02	-21.24													
	2472	13	3	13		AVG	0.9	1.04	3.98	30.00	-26.02	-4.57	-0.59	36.02	-36.61												
	2-112	10			PEAK	8.68	9.12	11.92	30.00	-18.08	-4.57	7.35	36.02	-28.67													

Table 7-15. Conducted Output Power Measurements MIMO (242 Tones)

#### Note:

Per ANSI C63.10-2013 and KDB 662911 D01 v02r01 Section E)1), 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.

#### Sample MIMO Calculation:

Assuming the average conducted output power was measured to be 14.67 dBm for Antenna-1 and 14.96 dBm for Antenna-2.

Antenna 1 + Antenna 2 = MIMO

(14.67 dBm + 14.96 dBm) = (29.31 mW + 31.33 mW) = 60.64 mW = 17.83 dBm

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#### 7.4 Power Spectral Density §15.247(e); RSS-247 [5.2]

#### **Test Overview and Limit**

The peak power density is measured with a spectrum analyzer connected to the antenna terminal of the EUT while the EUT is operating at its maximum duty cycle, at maximum power, and at the appropriate frequencies. All data rates were investigated and the worst case configuration results are reported in this section.

#### The maximum permissible power spectral density is 8 dBm in any 3 kHz band.

#### **Test Procedure Used**

ANSI C63.10-2013 – Section 11.10.2 Method PKPSD KDB 558074 D01 v05 – Section 8.4 DTS Maximum Power Spectral Density level in the fundamental emission ANSI C63.10-2013 – Section 14.3.2.2 Measure-and-Sum Technique KDB 662911 D01 v02r01 – Section E)2) Measure-and-Sum Technique

#### **Test Settings**

- 1. Analyzer was set to the center frequency of the DTS channel under investigation
- 2. Span = 1.5 times the DTS channel bandwidth
- 3. RBW = 3kHz
- 4. VBW = 1MHz
- 5. Detector = peak
- 6. Sweep time = auto couple
- 7. Trace mode = max hold
- 8. Trace was allowed to stabilize

#### Test Setup

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



Figure 7-3. Test Instrument & Measurement Setup

#### Test Notes

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

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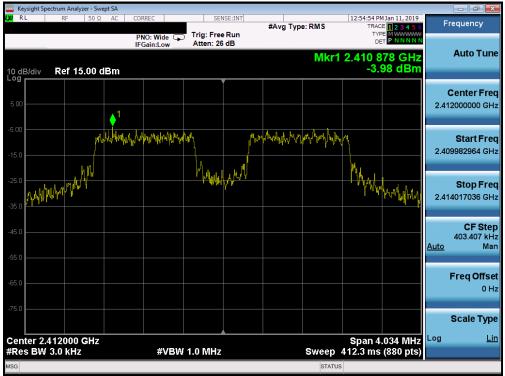
# SISO Antenna-1 Power Spectral Density Measurements

Frequency [MHz]	Channel No.	802.11 Mode	Tones	Data Rate [Mbps]	Measured Power Spectral Density [dBm]	Maximum Permissible Power Density [dBm / 3kHz]	Margin [dB]	Pass / Fail
2412	1	ax	26T	MCS0	-3.98	8.00	-11.98	Pass
2437	6	ax	26T	MCS0	-4.28	8.00	-12.28	Pass
2462	11	ax	26T	MCS0	-3.77	8.00	-11.77	Pass
2412	1	ax	52T	MCS0	-5.68	8.00	-13.68	Pass
2437	6	ax	52T	MCS0	-5.06	8.00	-13.06	Pass
2462	11	ax	52T	MCS0	-4.09	8.00	-12.09	Pass
2412	1	ax	106T	MCS0	-6.66	8.00	-14.66	Pass
2437	6	ax	106T	MCS0	-5.68	8.00	-13.68	Pass
2462	11	ax	106T	MCS0	-4.68	8.00	-12.68	Pass
2412	1	ax	242T	MCS0	-8.50	8.00	-16.50	Pass
2437	6	ax	242T	MCS0	-9.66	8.00	-17.66	Pass
2462	11	ax	242T	MCS0	-8.73	8.00	-16.73	Pass

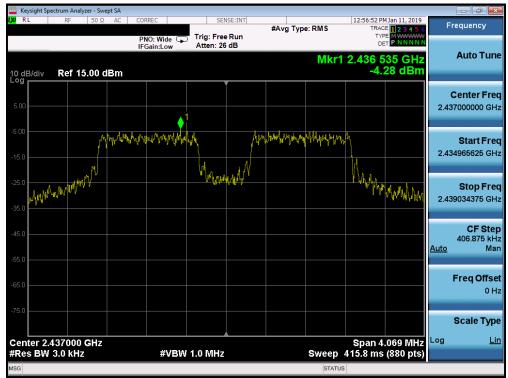
Table 7-16. Conducted Power Density Measurements SISO ANT1

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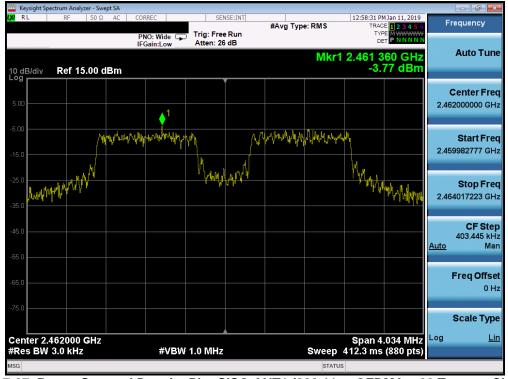
Plot 7-25. Power Spectral Density Plot SISO ANT1 (802.11ax OFDMA – 26 Tones – Ch. 1)



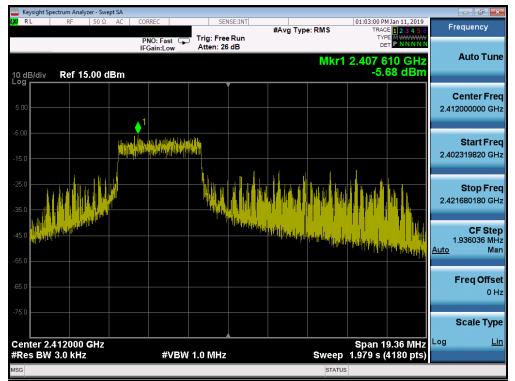
Plot 7-26. Power Spectral Density Plot SISO ANT1 (802.11ax OFDMA - 26 Tones - Ch. 6)

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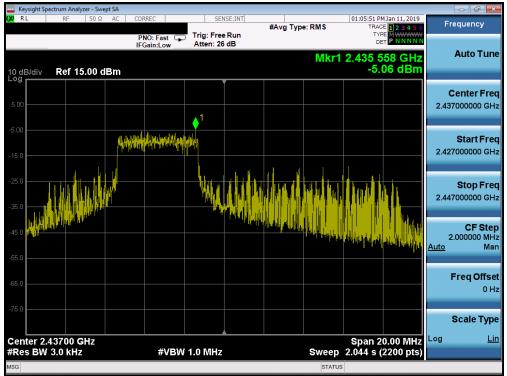
Plot 7-27. Power Spectral Density Plot SISO ANT1 (802.11ax OFDMA - 26 Tones - Ch. 11)



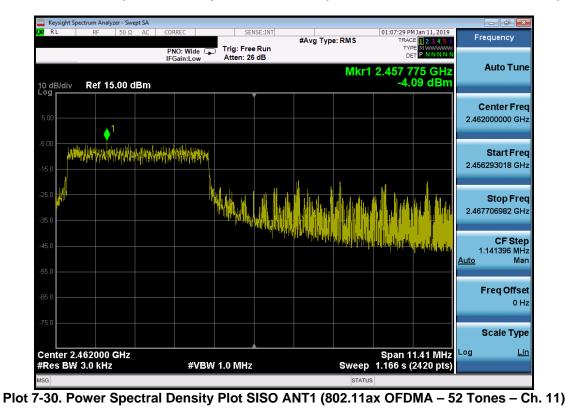
Plot 7-28. Power Spectral Density Plot SISO ANT1 (802.11ax OFDMA - 52 Tones - Ch. 1)

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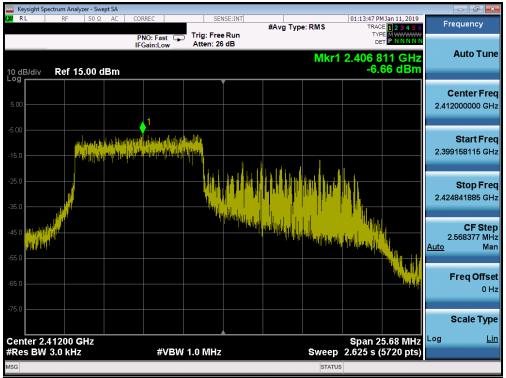


Plot 7-29. Power Spectral Density Plot SISO ANT1 (802.11ax OFDMA - 52 Tones - Ch. 6)

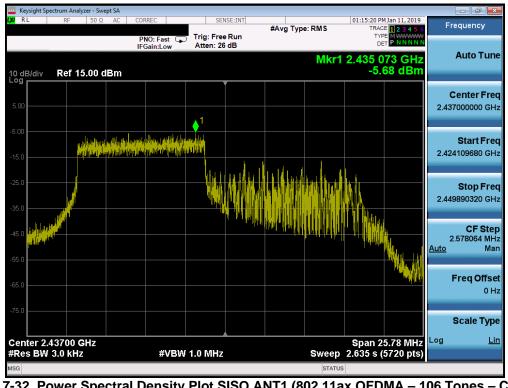


Approved by: PCTEST MEASUREMENT REPORT SAMSUNG FCC ID: A3LSMG9730 (CERTIFICATION) Quality Manager EUT Type: Test Report S/N: Test Dates: Page 42 of 145 1M1811230206-14.A3L 12/14/2018 - 1/26/2019 Portable Handset © 2019 PCTEST Engineering Laboratory, Inc. V 8.8 11/19/2018





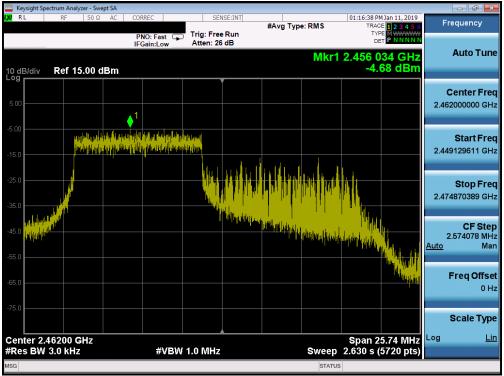
Plot 7-31. Power Spectral Density Plot SISO ANT1 (802.11ax OFDMA - 106 Tones - Ch. 1)



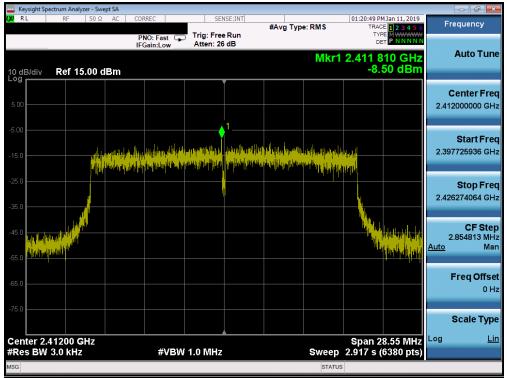
Plot 7-32. Power Spectral Density Plot SISO ANT1 (802.11ax OFDMA – 106 Tones – Ch. 6)

FCC ID: A3LSMG9730		MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
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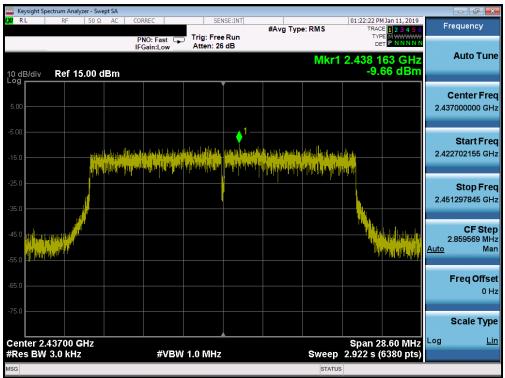
Plot 7-33. Power Spectral Density Plot SISO ANT1 (802.11ax OFDMA – 106 Tones – Ch. 11)



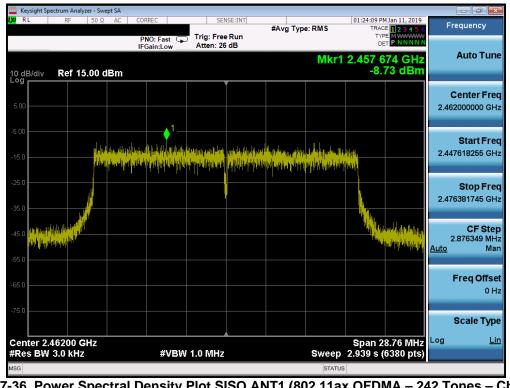
Plot 7-34. Power Spectral Density Plot SISO ANT1 (802.11ax OFDMA - 242 Tones - Ch. 1)

FCC ID: A3LSMG9730		MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
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Plot 7-35. Power Spectral Density Plot SISO ANT1 (802.11ax OFDMA – 242 Tones – Ch. 6)



Plot 7-36. Power Spectral Density Plot SISO ANT1 (802.11ax OFDMA - 242 Tones - Ch. 11)

FCC ID: A3LSMG9730		MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Dage 45 of 145
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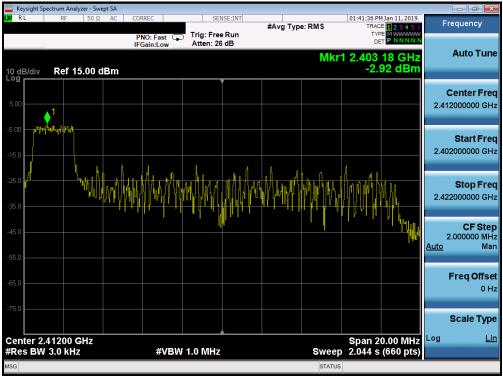
# SISO Antenna-2 Power Spectral Density Measurements

Frequency [MHz]	Channel No.	802.11 Mode	Tones	Data Rate [Mbps]	Measured Power Spectral Density [dBm]	Maximum Permissible Power Density [dBm / 3kHz]	Margin [dB]	Pass / Fail
2412	1	ax	26T	MCS0	-2.92	8.00	-10.92	Pass
2437	6	ax	26T	MCS0	-0.72	8.00	-8.72	Pass
2462	11	ax	26T	MCS0	-3.83	8.00	-11.83	Pass
2412	1	ax	52T	MCS0	-4.35	8.00	-12.35	Pass
2437	6	ax	52T	MCS0	-3.71	8.00	-11.71	Pass
2462	11	ax	52T	MCS0	-5.09	8.00	-13.09	Pass
2412	1	ax	106T	MCS0	-1.75	8.00	-9.75	Pass
2437	6	ax	106T	MCS0	-2.61	8.00	-10.61	Pass
2462	11	ax	106T	MCS0	-3.37	8.00	-11.37	Pass
2412	1	ax	242T	MCS0	-6.89	8.00	-14.89	Pass
2437	6	ax	242T	MCS0	-5.83	8.00	-13.83	Pass
2462	11	ах	242T	MCS0	-7.08	8.00	-15.08	Pass

Table 7-17. Conducted Power Density Measurements SISO ANT2

FCC ID: A3LSMG9730		MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
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Plot 7-37. Power Spectral Density Plot SISO ANT2 (802.11ax OFDMA - 26 Tones - Ch. 1)



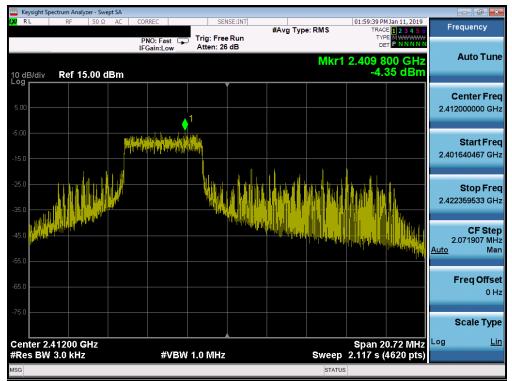
Plot 7-38. Power Spectral Density Plot SISO ANT2 (802.11ax OFDMA - 26 Tones - Ch. 6)

FCC ID: A3LSMG9730		MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
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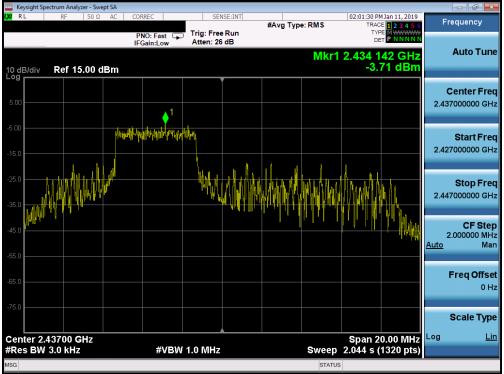
Plot 7-39. Power Spectral Density Plot SISO ANT2 (802.11ax OFDMA - 26 Tones - Ch. 11)



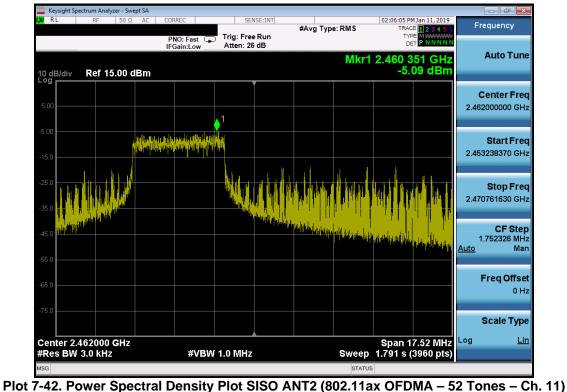
Plot 7-40. Power Spectral Density Plot SISO ANT2 (802.11ax OFDMA - 52 Tones - Ch. 1)

FCC ID: A3LSMG9730		MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
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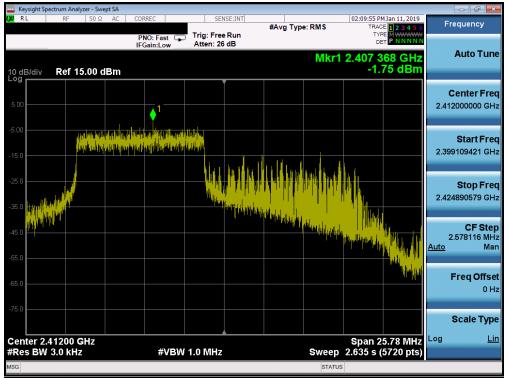
Plot 7-41. Power Spectral Density Plot SISO ANT2 (802.11ax OFDMA - 52 Tones - Ch. 6)



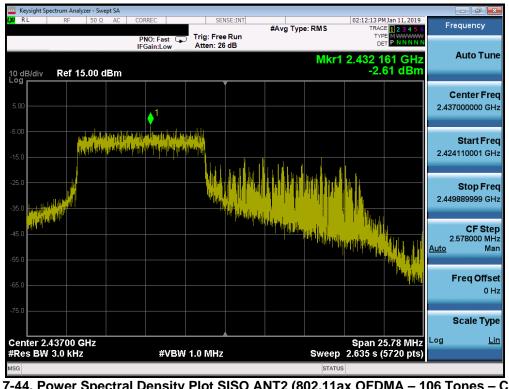
Plot 7-42. Power Spectral Density Plot SISO ANT2 (802.11ax OFDMA – 52 Tones – Cn. 11)

FCC ID: A3LSMG9730		MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
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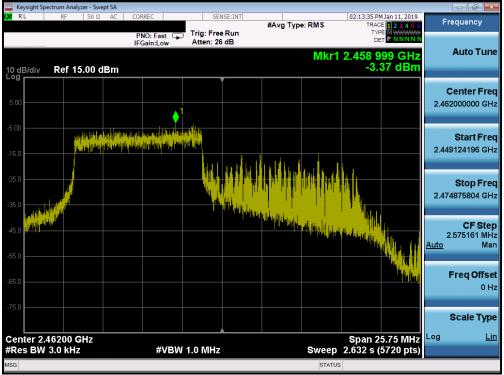
Plot 7-43. Power Spectral Density Plot SISO ANT2 (802.11ax OFDMA - 106 Tones - Ch. 1)



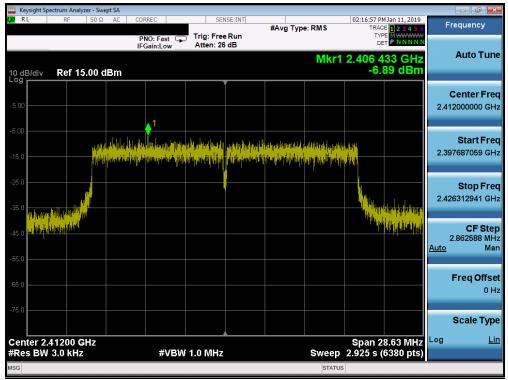
Plot 7-44. Power Spectral Density Plot SISO ANT2 (802.11ax OFDMA – 106 Tones – Ch. 6)

FCC ID: A3LSMG9730		MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
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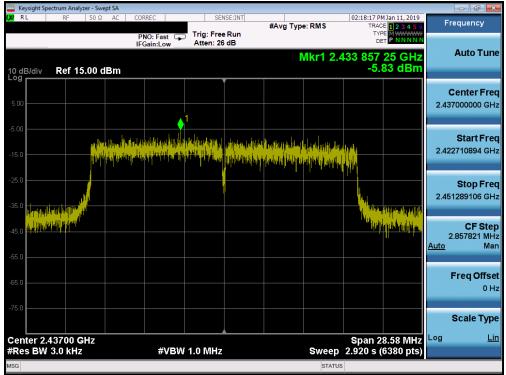
Plot 7-45. Power Spectral Density Plot SISO ANT2 (802.11ax OFDMA – 106 Tones – Ch. 11)



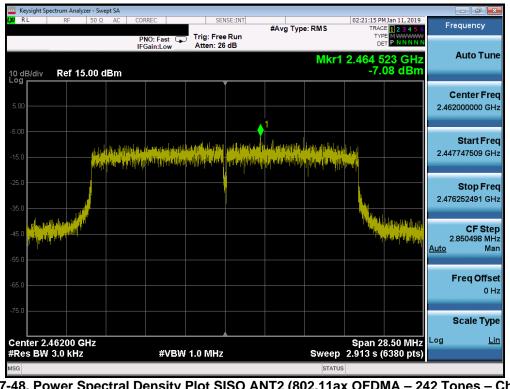
Plot 7-46. Power Spectral Density Plot SISO ANT2 (802.11ax OFDMA - 242 Tones - Ch. 1)

FCC ID: A3LSMG9730		MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Dage 51 of 145
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Plot 7-47. Power Spectral Density Plot SISO ANT2 (802.11ax OFDMA – 242 Tones – Ch. 6)



Plot 7-48. Power Spectral Density Plot SISO ANT2 (802.11ax OFDMA - 242 Tones - Ch. 11)

FCC ID: A3LSMG9730		MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
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Frequency [MHz]	Channel No.	802.11 Mode	Tones	Data Rate [Mbps]	ANT 1 Power Spectral Density [dBm]	ANT 2 Power Spectral Density [dBm]	Summed MIMO Power Spectral Density [dBm]	Maximum Permissible Power Density [dBm / 3kHz]	Margin [dB]	Pass / Fail
2412	1	ax	26T	MCS0	1.85	2.54	5.22	8.00	-2.78	Pass
2437	6	ax	26T	MCS0	0.65	2.02	4.40	8.00	-3.60	Pass
2462	11	ax	26T	MCS0	0.63	1.85	4.29	8.00	-3.71	Pass
2412	1	ax	52T	MCS0	0.01	1.29	3.71	8.00	-4.29	Pass
2437	6	ax	52T	MCS0	-0.01	0.55	3.29	8.00	-4.71	Pass
2462	11	ax	52T	MCS0	0.87	1.90	4.43	8.00	-3.57	Pass
2412	1	ax	106T	MCS0	0.29	-0.29	3.02	8.00	-4.98	Pass
2437	6	ax	106T	MCS0	-0.17	0.42	3.15	8.00	-4.85	Pass
2462	11	ax	106T	MCS0	-1.04	-0.66	2.16	8.00	-5.84	Pass
2412	1	ax	242T	MCS0	-8.55	-5.43	-3.71	8.00	-11.71	Pass
2437	6	ax	242T	MCS0	-3.24	-3.15	-0.18	8.00	-8.18	Pass
2462	11	ax	242T	MCS0	-8.37	-13.30	-7.16	8.00	-15.16	Pass

### **MIMO Power Spectral Density Measurements**

 Table 7-18.MIMO Conducted Power Density Measurements

#### Note:

Per ANSI C63.10-2013 Section 14.3.2.2 and KDB 662911 D01 v02r01 Section E)2), the power spectral density at Antenna 1 and Antenna 2 were first measured separately as shown in the section above. The measured values were then summed in linear power units then converted back to dBm.

#### Sample MIMO Calculation:

Assuming the average conducted power spectral density was measured to be 1.85 dBm for Antenna-1 and 2.54 dBm for Antenna-2.

Antenna 1 + Antenna 2 = MIMO

(1.85 dBm + 2.54 dBm) = (1.53 mW + 1.79 mW) = 3.32 mW = 5.22 dBm

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# 7.5 Conducted Emissions at the Band Edge §15.247(d); RSS-247 [5.5]

#### **Test Overview and Limit**

All out of band emissions are measured with a spectrum analyzer connected to the antenna terminal of the EUT while the EUT is operating at its maximum duty cycle, at maximum power, and at the appropriate frequencies. All data rates were investigated to determine the worst case configuration. For the following out of band conducted emissions plots at the band edge, the EUT was set to a data rate of MCS0 in 802.11ax mode as this setting produced the worst-case emissions.

The limit for out-of-band spurious emissions at the band edge is 30dB below the fundamental emission level, as determined from the in-band power measurement of the DTS channel performed in a 100kHz bandwidth per the PSD procedure (Section 7.4).

#### **Test Procedure Used**

ANSI C63.10-2013 – Section 11.11.3 KDB 558074 D01 v05 – Section 8.7.2

#### **Test Settings**

- 1. Start and stop frequency were set such that the band edge would be placed in the center of the plot
- 2. Span was set large enough so as to capture all out of band emissions near the band edge
- 3. RBW = 100kHz
- 4. VBW = 1MHz
- 5. Detector = Peak
- 6. Number of sweep points  $\geq 2 \times \text{Span/RBW}$
- 7. Trace mode = max hold
- 8. Sweep time = auto couple
- 9. The trace was allowed to stabilize

#### Test Setup

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



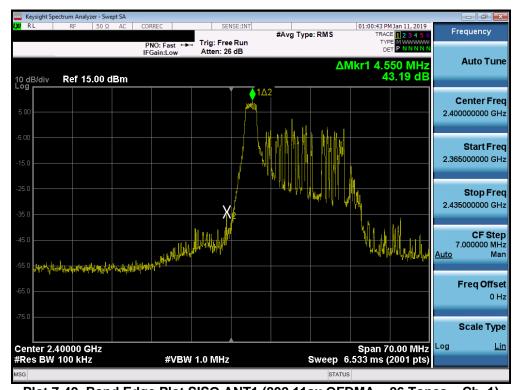
Figure 7-4. Test Instrument & Measurement Setup

#### Test Notes

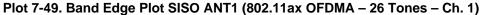
#### None

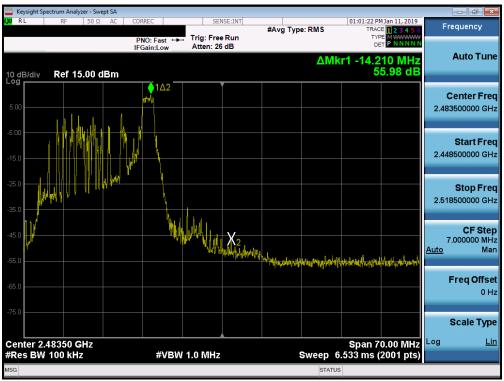
FCC ID: A3LSMG9730		MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
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## SISO Antenna-1 Conducted Emissions at the Band Edge

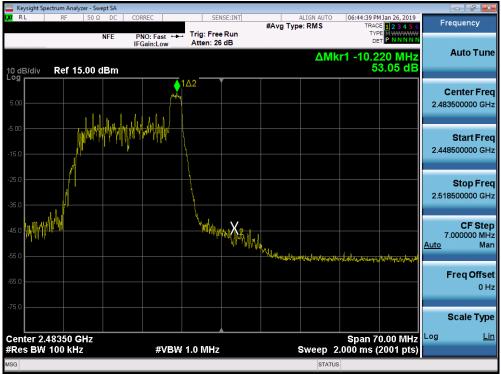


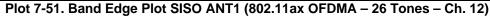


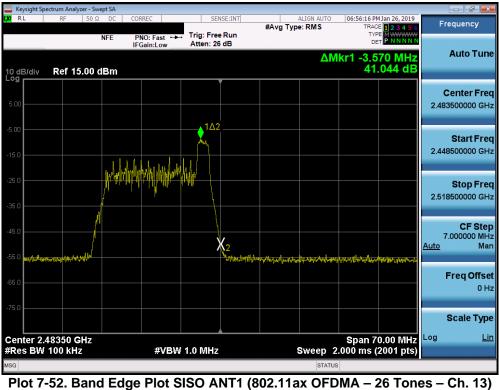
Plot 7-50. Band Edge Plot SISO ANT1 (802.11ax OFDMA – 26 Tones – Ch. 11)

FCC ID: A3LSMG9730		MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
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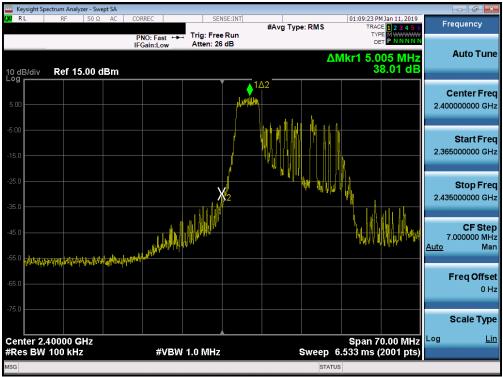


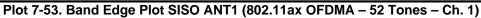


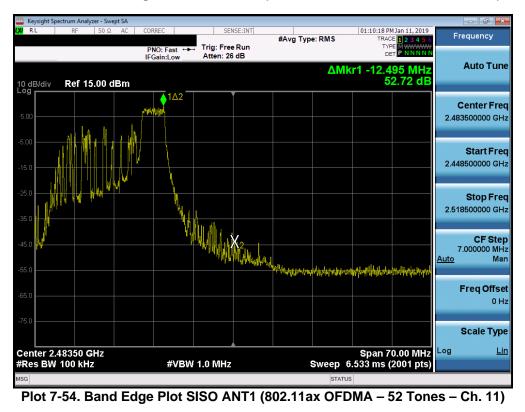


FCC ID: A3LSMG9730		MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
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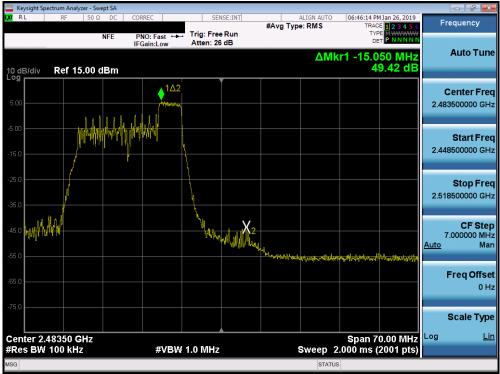




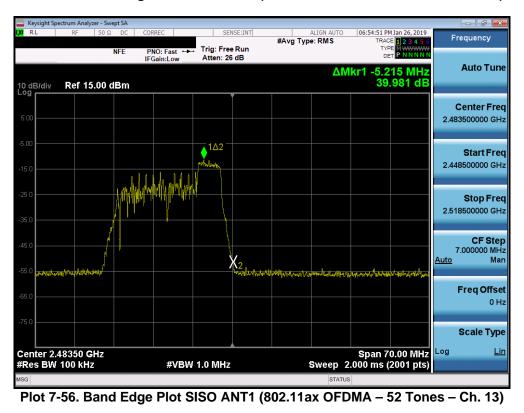


FCC ID: A3LSMG9730		MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
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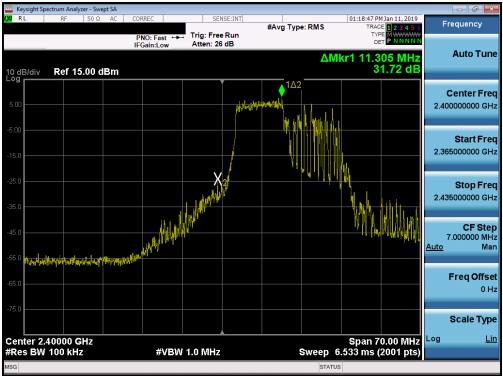


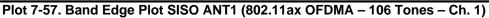
Plot 7-55. Band Edge Plot SISO ANT1 (802.11ax OFDMA - 52 Tones - Ch. 12)

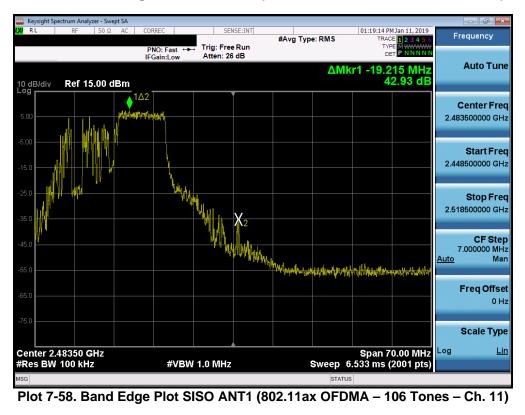


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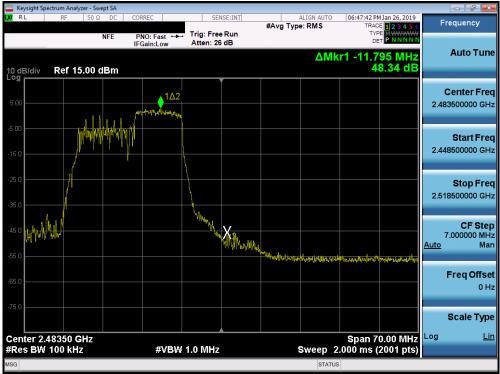


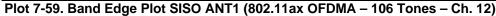


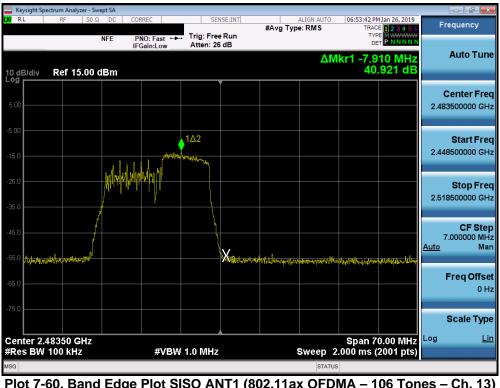


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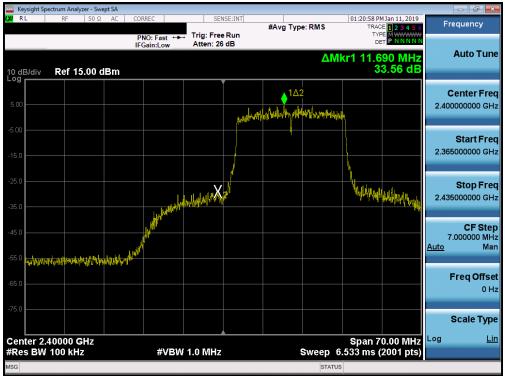


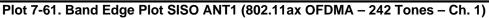


Plot 7-60. Band Edge Plot SISO ANT1 (802.11ax OFDMA - 106 Tones - Ch. 13)

FCC ID: A3LSMG9730		MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
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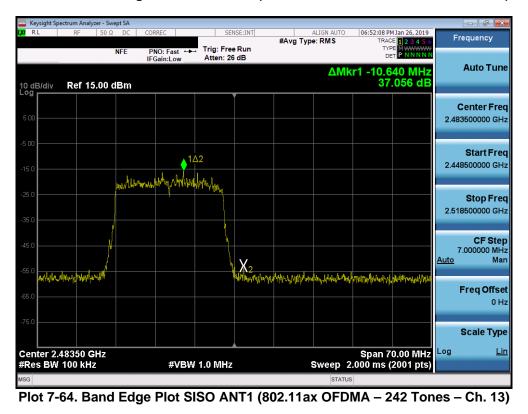


FCC ID: A3LSMG9730		MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
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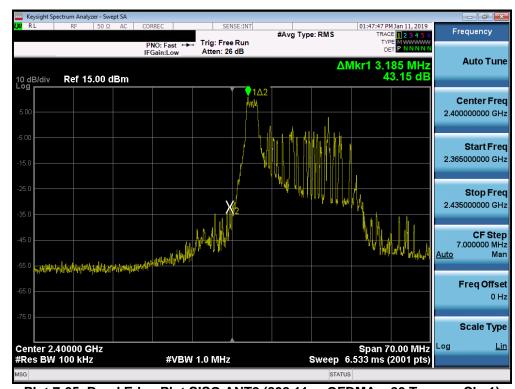
	um Analyzer - Swep								
X/ RL			IO: Fast 🔸	Trig: Free		#Avg Typ	ALIGN AUTO	06:50:02 PM Jan 26, 20 TRACE 1 2 3 4 TYPE M WWWW DET P N N N	Frequency
10 dB/div	Ref 15.00 dl		Sain:Low	Atten: 26	dB		ΔMk	r1 -15.505 MH 41.778 d	Auto Tun
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15.0									Start Fre 2.448500000 GH
25.0 35.0									Stop Fre 2.518500000 GH
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.75.0									Scale Typ
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ASG							STATUS	6	

Plot 7-63. Band Edge Plot SISO ANT1 (802.11ax OFDMA – 242 Tones – Ch. 12)

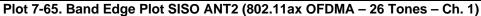


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### SISO Antenna-2 Conducted Emissions at the Band Edge



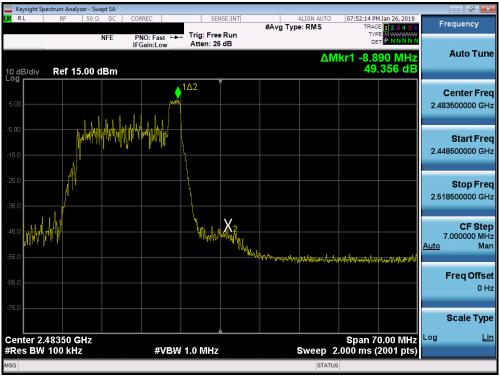


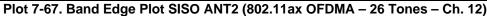
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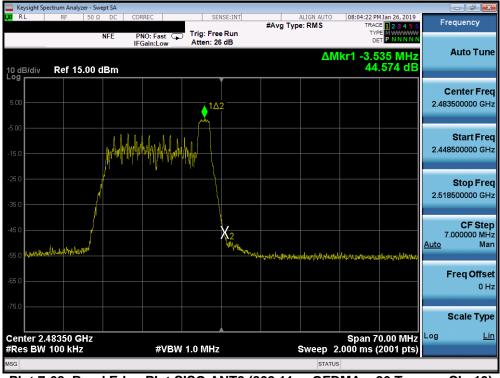
FCC ID: A3LSMG9730		MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
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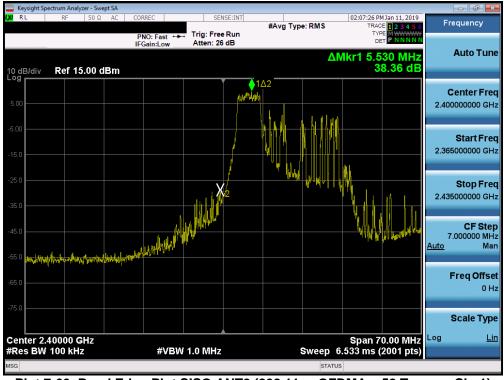


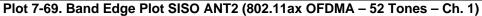


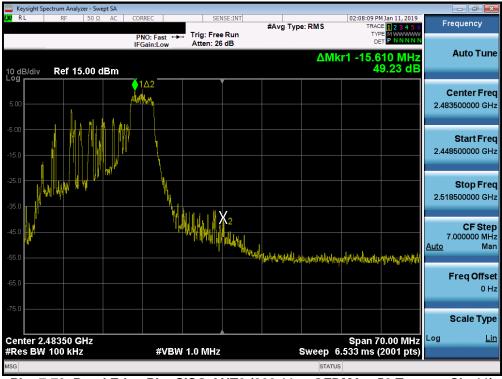
Plot 7-68. Band Edge Plot SISO ANT2 (802.11ax OFDMA – 26 Tones – Ch. 13)

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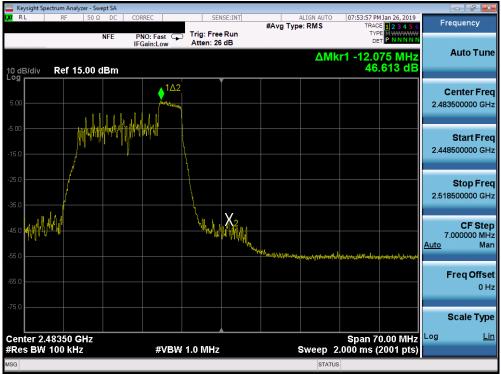


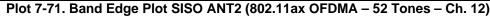


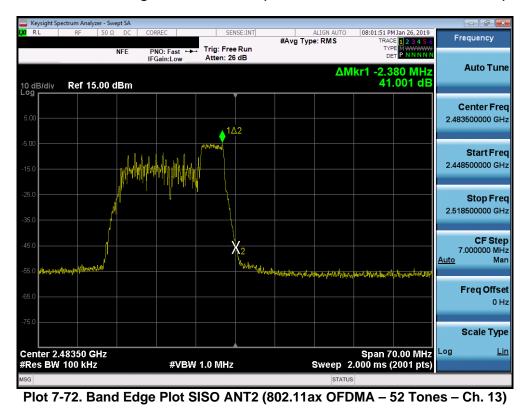
Plot 7-70. Band Edge Plot SISO ANT2 (802.11ax OFDMA - 52 Tones - Ch. 11)

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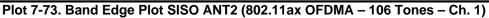


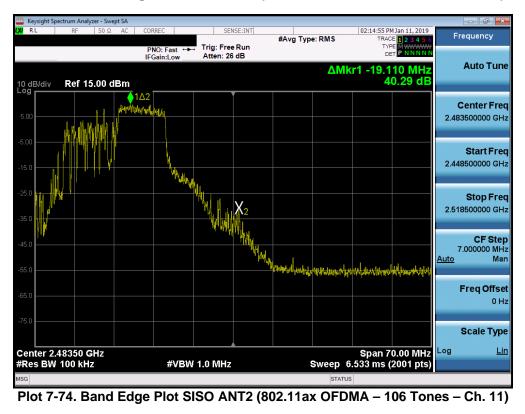


FCC ID: A3LSMG9730		MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
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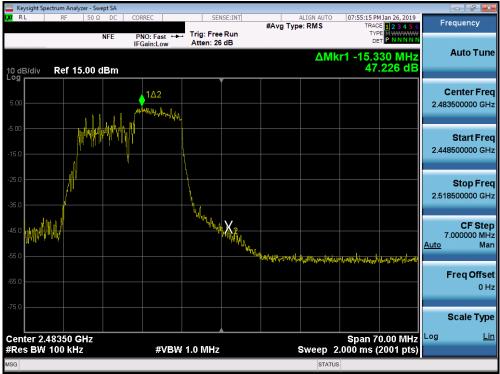


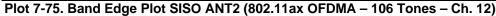


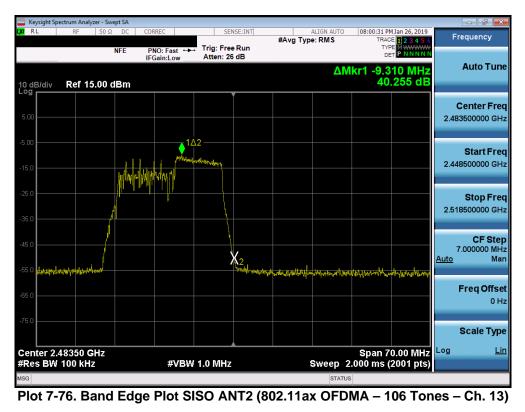


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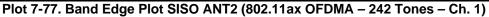


PCTEST Approved by: MEASUREMENT REPORT SAMSUNG FCC ID: A3LSMG9730 (CERTIFICATION) Quality Manager EUT Type: Test Report S/N: Test Dates: Page 68 of 145 1M1811230206-14.A3L 12/14/2018 - 1/26/2019 Portable Handset V 8.8 11/19/2018

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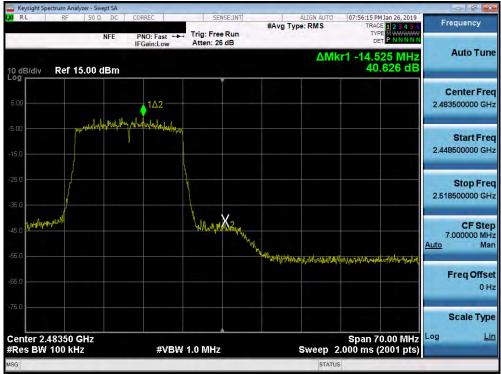




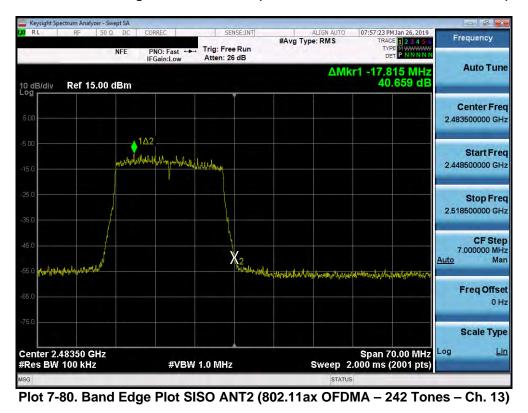


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Plot 7-79. Band Edge Plot SISO ANT2 (802.11ax OFDMA - 242 Tones - Ch. 12)



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# 7.6 Conducted Spurious Emissions §15.247(d); RSS-247 [5.5]

#### **Test Overview and Limit**

All out of band emissions are measured with a spectrum analyzer connected to the antenna terminal of the EUT while the EUT is operating at its maximum duty cycle, at maximum power, and at the appropriate frequencies. All data rates were investigated to determine the worst case configuration. For the following out of band conducted emissions plots, the EUT was set to a data rate of MCS0 in 802.11ax mode as this setting produced the worst-case emissions.

The limit for out-of-band spurious emissions at the band edge is 30dB below the fundamental emission level, as determined from the in-band power measurement of the DTS channel performed in a 100kHz bandwidth per the procedure in Section 11.1 of ANSI C63.10-2013 and KDB 558074 D01 v05.

#### Test Procedure Used

ANSI C63.10-2013 – Section 11.11.3 KDB 558074 D01 v05 – Section 8.5 ANSI C63.10-2013 – Section 14.3.3 KDB 662911 D01 v02r01 – Section E)3)b)

#### **Test Settings**

- 1. Start frequency was set to 30MHz and stop frequency was set to 25GHz (separated into two plots per channel)
- 2. RBW = 1MHz
- 3. VBW = 3MHz
- 4. Detector = Peak
- 5. Trace mode = max hold
- 6. Sweep time = auto couple
- 7. The trace was allowed to stabilize

#### Test Setup

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



Figure 7-5. Test Instrument & Measurement Setup

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#### Test Notes

- 1. RBW was set to 1MHz rather than 100kHz in order to increase the measurement speed.
- 2. The display line shown in the following plots denotes the limit at 30dB below the fundamental emission level measured in a 100kHz bandwidth. However, since the traces in the following plots are measured with a 1MHz RBW, the display line may not necessarily appear to be 30dB below the level of the fundamental in a 1MHz bandwidth.
- 3. For plots showing conducted spurious emissions near the limit, the frequencies were investigated with a reduced RBW to ensure that no emissions were present.
- 4. The conducted spurious emissions were measured to relative limits. Therefore, in accordance with ANSI C63.10-2013 and KDB 662911 D01 v02r01 Section E)3)b), it was unnecessary to show compliance through the summation of test results of the individual outputs.

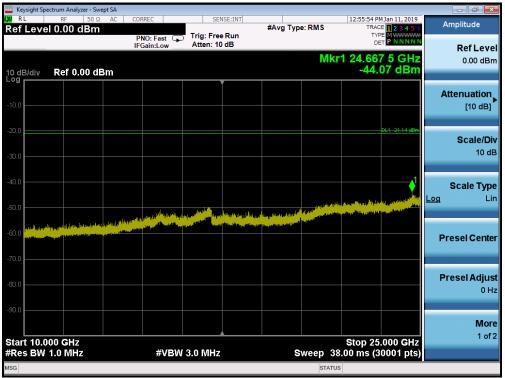
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	t 30 MH s BW 1		z		#VE	SW 3.0 MHz		s	weep 18	Stop 10 3.00 ms (3	.000 GHz 0001 pts)		1 01
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												Presel A	dju 0 H
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													10 c
5.00												Scal	
												[00	
15.0												Attenuat [36	
10 dl Log	B/div	Ref 2	i.00 dl	Bm			¥			-29.	55 dBm		
					IFGain:Low	Atten: 3	6 dB		M		60GHz	Ref L 25.00	
₹ef	Level	25.00	dBm		PNO: Fast	Trig: Fre		#Avg Typ	e:RMS	TY	DE 1 2 3 4 5 6 PE MWWWW ET P N N N N N	Amplitud	e
K/R		RF	zer - Swep 50 Ω	AC	CORREC	SE	NSE:INT			12:55:33 P	M Jan 11, 2019		

## SISO Antenna-1 Conducted Spurious Emission





Plot 7-82. Conducted Spurious Plot SISO ANT1 (802.11ax OFDMA- 26 Tones - Ch. 1)

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	ght Spectrum												- 6 론
U RL	R	= 50 Ω	AC		NO: Fast	_	SEN		#Avg Typ	e: RMS	TRAC	M Jan 11, 2019 DE <b>1 2 3 4 5</b> 6 PE M WWWWW	Frequency
0 dB/	div Re	f 25.00 (	dBm	IF	NO: Fast Gain:Low		Atten: 36			MI	(r1 9.27	8 2 GHz 92 dBm	Auto Tun
15.0													Center Fre 5.015000000 G⊦
5.00													Start Fre 30.000000 M⊦
15.0 - 25.0 -												DL1 -20.68 dBm	Stop Fre 10.000000000 G⊦
35.0 ¥5.0	androse per magan	land to a sheet of the second s	e politice e politice			nilla og	leboor <sup>lin</sup> te Altre a <sup>der</sup> t	ng palatan (ny salatan pang dinakana ang <sup>kala</sup> t	the states.	y <mark>a, harina kala dan kalan</mark> Mana kala pana kala pa	i angan sa ka ng pagan	a salan kalakta para padi Menana kalakta para para	CF Ste 997.000000 MH <u>Auto</u> Ma
55.0 —													Freq Offs 0 H
65.0													Scale Typ
	30 MHz BW 1.0	MHz			#VI	BW 3	.0 MHz		s	weep 18	Stop 10 3.00 ms (3	.000 GHz 0001 pts)	Log <u>L</u>
SG										STATU	5		

Plot 7-83. Conducted Spurious Plot SISO ANT1 (802.11ax OFDMA- 26 Tones - Ch. 6)



Plot 7-84. Conducted Spurious Plot SISO ANT1 (802.11ax OFDMA- 26 Tones - Ch. 6)

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10 dB/div         Ref           15.0	50 Ω AC	PNO: Fast C IFGain:Low		Run	#Avg Type: RMS	S TRA T Mkr1 3.16	PMJan 11, 2019 VPE IN 23 4 5 6 VPE IN ANNALY 5 6 GHz .97 dBm	Frequency Auto Tu Center Fr 5.015000000 G Start Fr 30.000000 M
Log 15.0 -5.00 -15.0 -35.0 -35.0 -35.0	25.00 dBm	IFGain:Low	Atten: 36	dB		Mkr1 3.16	5 6 GHz	Center Fr 5.01500000 G Start Fr
- 5.00 -5.00 -15.0 -25.0 -35.0								5.015000000 G Start Fr
-5.00								
25.0 35.0								
and a standing of solid light		1					DL1 -21.61 dBm	Stop Fr 10.000000000 G
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55.0								Freq Offs 0
-65.0 Start 30 MHz						Stop 1	0.000	Scale Ty
#Res BW 1.0 MI		#\/R)	W 3.0 MHz		Sweep	o 18.00 ms (	30001 pts)	

Plot 7-85. Conducted Spurious Plot SISO ANT1 (802.11ax OFDMA- 26 Tones - Ch. 11)



Plot 7-86. Conducted Spurious Plot SISO ANT1 (802.11ax OFDMA- 26 Tones - Ch. 11)

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-09       -		pectrum Analy	zer - Swept	SA									×
Instantion       Mkr1 3.156 9 GHz -29.61 dBm       Auto Turn         10 dB/div       Ref 25.00 dBm       -29.61 dBm       Center Free         150       1       1       1       1       1         150       1       1       1       1       1       1         150       1       1       1       1       1       1       1         150       1	XV RL	RF	50 Ω					#Avg Typ	e: RMS	TRA	CE 1 2 3 4 5 6	Frequency	,
150       Center Free         500       Start Start Free         500       Start Start Free         500 <td< th=""><th>10 dB/div</th><th>Ref 25</th><th>5.00 dB</th><th>1</th><th></th><th>Atten: 36</th><th>6 dB</th><th></th><th>N</th><th>lkr1 3.15</th><th>6 9 GHz</th><th>Auto T</th><th>une</th></td<>	10 dB/div	Ref 25	5.00 dB	1		Atten: 36	6 dB		N	lkr1 3.15	6 9 GHz	Auto T	une
.500       Start Free         .500       Start S													
25.0       1	-5.00												
350       350       350       997.00000 MF         450       450       450       997.00000 MF         550       450       450       450         550       550       550       550         550       550       550       550         550       550       550       550         550       550       550       550         550       550       550       550         550       550       550       550         550       550       550       550         550       550       550       550         550       550       550       550         550       550       550       550         550       550       550       550         550       550       550       550         550       550       550       550         550       550       550       550         550       550       550       550         550       550       550       550         550       550       550       550         550       550       550       550         55	-15.0				1						DL1 -21.65 dBm		
550 560 560 Start 30 MHz #Res BW 1.0 MHz #VBW 3.0 MHz Sweep 18.00 ms (30001 pts) 550 10.000 GHz Scale Typ	-35.0	a la parte da l	y Propio Desili			illen an ha hiterraria Tarrena an a		ny y NY TAONA Y NY Y NY	an a	yster til en gynel (en tel Antop Generer til som skindliken	ipedatos Arbanda Alper Alexandro Manda Alper	997.000000	
Start 30 MHz Stop 10.000 GHz #Res BW 1.0 MHz #VBW 3.0 MHz Sweep 18.00 ms (30001 pts)													
#Res BW 1.0 MHz #VBW 3.0 MHz Sweep 18.00 ms (30001 pts)	-65.0	MHz								Stop_1	0.000 GHz		'ур <u>Lii</u>
	#Res BW		z		#VB	W 3.0 MHz		S		18.00 ms (	30001 pts)		

Plot 7-87. Conducted Spurious Plot SISO ANT1 (802.11ax OFDMA - 52Tones - Ch. 1)



Plot 7-88. Conducted Spurious Plot SISO ANT1 (802.11ax OFDMA- 52 Tones - Ch. 1)

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	pectrum Analy												
X/ RL	RF	50 Ω	AC	PNO IFGai	:Fast 🕞			#Avg Typ	e: RMS	TRA	M Jan 11, 2019 CE <b>1 2 3 4 5 6</b> PE M WWWWW ET <b>P N N N N</b>	Freq	uency
I0 dB/div _og	Ref 25	.00 di	Зm						M	kr1 2.66 -28.	7 1 GHz 41 dBm	A	uto Tun
15.0													n <b>ter Fre</b> 10000 GH
5.00													tart Fre 0000 M⊦
25.0				1							DL1 -20.61 dBm	<b>S</b> 10.00000	<b>top Fre</b> 10000 GH
35.0 111100 111100	an a	artogen f sotajteli i		nan an g	telande <mark>reglande</mark> utterprog	ande ferste gjellen wit det ingenetien	and a difference of the second se		alaria (Cryper Aria) A Roch (Cryper Aria) A Roch (Cryper Aria)	hayensidiki ya Adan manifika ng matal <sup>ik</sup> ina	الد بالالان فاقتل مطلو ف	997.00 <u>Auto</u>	CF Ste 0000 M⊦ Ma
55.0												Fre	e <b>q Offs</b> 0 H
65.0 Start 30										Stop 10	.000 GHz		ale Typ <u>Li</u>
Res BW	/ 1.0 MHz	4			#VBW	3.0 MHz		S	statu		80001 pts)		

Plot 7-89. Conducted Spurious Plot SISO ANT1 (802.11ax OFDMA- 52 Tones - Ch. 6)



Plot 7-90. Conducted Spurious Plot SISO ANT1 (802.11ax OFDMA- 52 Tones - Ch. 6)

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