

PCTEST

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PART 27 C2PC TEST REPORT

Applicant Name:

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

Date of Testing:

02/02/2022 – 02/28/2022 **Test Report Issue Date:** 02/28/2022 **Test Site/Location:** PCTEST Lab. Columbia, MD, USA **Test Report Serial No.:** 1M2202030011-03.A3L

FCC ID:

Applicant Name:

A3LSMS908E

Samsung Electronics Co., Ltd.

Application Type: Model: Additional Model(s): EUT Type: FCC Classification: FCC Rule Part: Test Procedure(s):

Class II Permissive Change: Original Grant Date: Class II Permissive Change SM-S908E/DS SM-S908E Portable Handset PCS Licensed Transmitter Held to Ear (PCE) 27 ANSI C63.26-2015, ANSI/TIA-603-E-2016, KDB 971168 D01 v03r01, KDB 648474 D03 v01r04 Please see FCC Documentation 01/07/2022

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

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

Randy Ortanez President



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				EIRP		
Mode Ba	Bandwidth Modulation		Tx Frequency Range [MHz]	Max. Power [W]	Max. Power [dBm]	Emission Designator
		π/2 BPSK	2546.0 - 2640.0	0.163	22.13	96M9G7D
	100 MHz	QPSK	2546.0 - 2640.0	0.145	21.60	97M8G7D
		16QAM	2546.0 - 2640.0	0.126	21.01	97M8W7D
		π/2 BPSK	2541.0 - 2645.0	0.172	22.36	86M9G7D
	90 MHz	QPSK	2541.0 - 2645.0	0.149	21.72	87M7G7D
		16QAM	2541.0 - 2645.0	0.131	21.16	87M6W7D
	80 MHz	π/2 BPSK	2536.0 - 2650.0	0.167	22.23	77M2G7D
		QPSK	2536.0 - 2650.0	0.135	21.30	77M5G7D
		16QAM	2536.0 - 2650.0	0.111	20.44	77M4W7D
	60 MHz	π/2 BPSK	2526.0 - 2660.0	0.145	21.61	58M0G7D
		QPSK	2526.0 - 2660.0	0.144	21.60	58M1G7D
NR Band n41		16QAM	2526.0 - 2660.0	0.124	20.92	58M1W7D
INR Danu 14 I	50 MHz	π/2 BPSK	2521.0 - 2665.0	0.164	22.15	45M9G7D
		QPSK	2521.0 - 2665.0	0.139	21.42	47M8G7D
		16QAM	2521.0 - 2665.0	0.113	20.52	47M8W7D
		π/2 BPSK	2516.0 - 2670.0	0.175	22.44	36M1G7D
	40 MHz	QPSK	2516.0 - 2670.0	0.140	21.47	38M0G7D
		16QAM	2516.0 - 2670.0	0.116	20.65	38M0W7D
		π/2 BPSK	2511.0 - 2675.0	0.155	21.91	27M0G7D
	30 MHz	QPSK	2511.0 - 2675.0	0.143	21.54	28M0G7D
		16QAM	2511.0 - 2675.0	0.125	20.97	28M0W7D
		π/2 BPSK	2506.0 - 2680.0	0.167	22.22	18M0G7D
	20 MHz	QPSK	2506.0 - 2680.0	0.148	21.70	18M4G7D
		16QAM	2506.0 - 2680.0	0.113	20.52	18M4W7D

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 17025-2017 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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2.0 PRODUCT INFORMATION

2.1 Equipment Description

The Equipment Under Test (EUT) is the **Samsung Portable Handset FCC ID** : **A3LSMS908E**. The test data contained in this report pertains only to the emissions due to the EUT's licensed transmitters that operate under the provisions of Part 27.

Test Device Serial No.: 6044M, 0090V, 0105V, 6048M

2.2 Device Capabilities

This device contains the following capabilities:

850/1900 GSM/GPRS/EDGE, 850/1700/1900 WCDMA/HSPA, Multi-band LTE, 5G NR (FR1), 802.11b/g/n/ax WLAN, 802.11a/n/ac/ax UNII (5GHz), Bluetooth (1x, EDR, LE), NFC, Wireless Power Transfer, Ultra Wideband

The device has 1 Tx antenna for n41 data (Ant J) and 3 Rx antennas (Ant B, D, E). With SRS operations, all 4 antennas can transmit the SRS signal to check for the channel quality of n41. The antennas cannot simultaneously transmit. Only the single TX/RX antenna is used for Data transmission.

2.3 Test Configuration

The EUT was tested per the guidance of ANSI/TIA-603-E-2016 and KDB 971168 D01 v03r01. See Section 3.4 of this test report for a description of the radiated and antenna port conducted emissions tests.

This device supports wireless charging capability and, thus, is subject to the test requirements of KDB 648474 D03 v01r04. Additional radiated spurious emission measurements were performed with the EUT lying flat 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 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 "Land Mobile FM or PM – Communications Equipment – Measurements and Performance Standards" (ANSI/TIA-603-E-2016) and "Measurement Guidance for Certification of Licensed Digital Transmitters" (KDB 971168 D01 v03r01) were used in the measurement of the EUT.

Deviation from Measurement Procedure.....None

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3.2 Radiated Power and Radiated Spurious 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. For measurements below 1GHz, the absorbers are removed. A raised turntable is used for radiated measurement. The turn table is a continuously rotatable, remote-controlled, metallic turntable and 2 meters (6.56 ft.) in diameter. The turn table is flush with the raised floor of the chamber in order to maintain its function as a ground plane. An 80cm tall test table made of Styrodur is placed on top of the turn table. A Styrodur pedestal is placed on top of the test table to bring the total table height to 1.5m.

The equipment under test was transmitting while connected to its integral antenna and is placed on a turntable 3 meters from the receive antenna. The receive antenna height is adjusted between 1 and 4 meter height, the turntable is rotated through 360 degrees, and the EUT is manipulated through all orthogonal planes representative of its typical use to achieve the highest reading on the receive spectrum analyzer.

For radiated power measurements, substitution method is used per the guidance of ANSI/TIA-603-E-2016. A halfwave dipole is substituted in place of the EUT. For emissions above 1GHz, a horn antenna is substituted in place of the EUT. The substitute antenna is driven by a signal generator with the level of the signal generator being adjusted to obtain the same receive spectrum analyzer level previously recorded from the spurious emission from the EUT. The power of the emission is calculated using the following formula:

P_{d [dBm]} = P_{g [dBm]} – cable loss [dB] + antenna gain [dBd/dBi];

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

For radiated spurious emissions measurements and calculations, conversion method is used per the formulas in KDB 971168 Section 5.8.4. Field Strength (EIRP) is calculated using the following formulas:

 $E_{[dB\muV/m]}$ = Measured amplitude level_[dBm] + 107 + Cable Loss_[dB] + Antenna Factor_[dB/m] And EIRP_[dBm] = $E_{[dB\muV/m]}$ + 20logD – 104.8; where D is the measurement distance in meters.

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 414788 D01 v01r01.

Radiated power and radiated spurious emission levels are investigated with the receive antenna horizontally and vertically polarized per ANSI/TIA-603-E-2016.

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4.0 MEASUREMENT UNCERTAINTY

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

Contribution	Expanded Uncertainty (±dB)
Conducted Bench Top Measurements	1.13
Radiated Disturbance (<1GHz)	4.98
Radiated Disturbance (>1GHz)	5.07
Radiated Disturbance (>18GHz)	5.09

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5.0 TEST EQUIPMENT CALIBRATION DATA

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

Manufacturer	Model	Description	Cal Date	Cal Interval	Cal Due	Serial Number
-	AP2	EMC Cable and Switch System	3/4/2021	Annual	3/4/2022	AP2
-	AP1	EMC Cable and Switch System	3/9/2021	Annual	3/9/2022	AP1
-	ETS	EMC Cable and Switch System	3/4/2021	Annual	3/4/2022	ETS
-	LTx3	LIcensed Transmitter Cable Set	2/26/2021	Annual	2/26/2022	LTx3
-	LTx4	Licensed Transmitter Cable Set	3/12/2021	Annual	3/12/2022	LTx4
Emco	3115	Horn Antenna (1-18GHz)	6/18/2020	Biennial	6/18/2022	9704-5182
Espec	ESX-2CA	Environmental Chamber	8/27/2020	Annual	8/27/2022	17620
ETS Lindgren	3117	1-18 GHz DRG Horn (Medium)	4/20/2021	Biennial	4/20/2023	00125518
ETS Lindgren	3164-08	Quad Ridge Horn Antenna	3/12/2020	Biennial	3/12/2022	128337
ETS Lindgren	3816/2NM	LISN	7/9/2020	Biennial	7/9/2022	00114451
Mini-Circuits	SSG-4000HP	Synthesized Signal Generator		N/A		11208010032
Mini-Circuits	SSG-4000HP	Synthesized Signal Generator		N/A		11403100002
Sunol	JB5	Bi-Log Antenna (30M - 5GHz)	7/27/2020	Biennial	7/27/2022	A051107
Sunol	JB6	LB6 Antenna	11/13/2020	Biennial	11/13/2022	A082816
Keysight Technologies	N9038A	MXE EMI Receiver	1/21/2022	Annual	1/21/2023	MY51210133
Rohde & Schwarz	ESU26	EMI Test Receiver (26.5GHz)	8/3/2021	Annual	8/3/2022	100342

Table 5-1. Test Equipment

Notes:

- 1. For equipment listed above that has a calibration date or calibration due date that falls within the test date range, care was taken to ensure that this equipment was used after the calibration date and before the calibration due date.
- 2. Equipment with a calibration date of "N/A" shown in this list was not used to make direct calibrated measurements.

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6.0 SAMPLE CALCULATIONS

QPSK Modulation

Emission Designator = 8M62G7D

LTE BW = 8.62 MHz G = Phase Modulation 7 = Quantized/Digital Info D = Data transmission, telemetry, telecommand

QAM Modulation

Emission Designator = 8M45W7D LTE BW = 8.45 MHz W = Amplitude/Angle Modulated 7 = Quantized/Digital Info D = Data transmission, telemetry, telecommand

Spurious Radiated Emission

Example: Spurious emission at 3700.40 MHz

The receive spectrum analyzer reading at 3 meters with the EUT on the turntable was -81.0 dBm. The gain of the substituted antenna is 8.1 dBi. The signal generator connected to the substituted antenna terminals is adjusted to produce a reading of -81.0 dBm on the spectrum analyzer. The loss of the cable between the signal generator and the terminals of the substituted antenna is 2.0 dB at 3700.40 MHz. So 6.1 dB is added to the signal generator reading of -30.9 dBm yielding -24.80 dBm. The fundamental EIRP was 25.50 dBm so this harmonic was 25.50 dBm -(-24.80) = 50.3 dBc.

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7.0 TEST RESULTS

7.1 Summary

Company Name:	Samsung Electronics Co., Ltd.
FCC ID:	A3LSMS908E
FCC Classification:	PCS Licensed Transmitter Held to Ear (PCE)
Mode(s):	LTE/NR

Test Condition	Test Description	FCC Part Section(s)	Test Limit	Test Result	Reference
	Transmitter Conducted Output Power*	2.1046(a), 2.1046(c)	N/A	PASS	Section 7.2
CONDUCTED	Occupied Bandwidth	2.1049(h)	N/A	PASS	Section 7.3
CONDI	Conducted Band Edge / Spurious Emissions	2.1051, 27.53(m)(4)	Undesirable emissions must meet the limits detailed in 27.53(m)(4)	PASS	Sections 7.4, 7.5
	Frequency Stability	2.1055, 27.54	Fundamental emissions stay within authorized frequency block	PASS	Section 7.8
RADIATED	Equivalent Isotropic Radiated Power	27.50(h)(2)	≤ 2 Watts max. EIRP	PASS	Section 7.6
RADI	Radiated Spurious Emissions	2.1053, 27.53(m)	Undesirable emissions must meet the limits detailed in 27.53(m)	PASS	Section 7.7

* The only transmitter output conducted powers included in this report are those where the Pmax value, per the tune-up document, is higher than any of the DSI power levels. For the remaining conducted power measurements, see the **RF Exposure Report**.

Table 7-1. Summary of Test Results (FCC)

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 were all taken with a correction table loaded into the analyzer. The correction table was used to account for the losses of the cables, directional couplers, and attenuators used as part of the system to maintain a link between the call box and the EUT 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, attenuators, and couplers.
- 4) All conducted emissions measurements are performed with automated test software to capture the corresponding plots necessary to show compliance. The measurement software utilized is PCTEST EMC Software Tool v1.1.

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7.2 Conducted Power Output Data §2.1046

Test Overview

The EUT is set up to transmit at maximum power. All power levels 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. All modes of operation were investigated and the worst case configuration results are reported in this section.

Test Procedure Used

KDB 971168 D01 v03r01 - Section 6.0

Test Settings

- 1. Span = $2 \times OBW$ to $3 \times OBW$
- 2. RBW = 1% to 5% of the OBW
- 3. Number of measurement points in sweep \geq 2 x span / RBW
- 4. Sweep = auto-couple (less than transmission burst duration)
- 5. Detector = RMS (power)
- 6. Trigger was set to enable power measurements only on full power bursts
- 7. Trace was allowed to stabilize
- 8. Spectrum analyzer's "Channel Power" function was used to compute the power by integrating the spectrum across the OBW of the signal

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:

- 1. Conducted power measurements were evaluated for the two contiguous channels using various combinations of RB size, RB offset, modulation, and channel bandwidth. Channel bandwidth data is shown in the tables below based only on the channel bandwidths that were supported in this device.
- 2. All other conducted power measurements are contained in the RF exposure report for this filing.

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Bandwidth	Modulation	Channel	Frequency [MHz]	RB Size/Offset	Conducted Power [dBm]
		509202	2546.0	1 / 204	23.61
100 MHz	π/2 BPSK	518598	2593.0	1 / 204	23.86
		528000	2640.0	1 / 204	24.10
	QPSK	509202	2546.0	1 / 204	23.73
10		518598	2593.0	1 / 204	23.98
		528000	2640.0	1 / 204	24.17
	16-QAM	518598	2593.0	1 / 204	23.41
		508200	2541.0	1 / 183	24.01
N	π/2 BPSK	518592	2593.0	1 / 183	24.09
Ĥ	-	529002	2645.0	1 / 122	23.92
90 MHz	0001/	508200	2541.0	1 / 183	23.72
	QPSK	518592	2593.0	1 / 183	24.10
	40.0414	529002	2645.0	1 / 122	24.35
	16-QAM	518592	2593.0	1 / 183	23.56
		507204	2536.0	1 / 162	23.81
N	π/2 BPSK	518598	2593.0	1 / 162	23.96
Ë		529998	2650.0	1 / 162	24.29
80 MHz	0001/	507204	2536.0	1 / 162	23.56
80	QPSK	518598	2593.0	1 / 162	23.68
	10 0014	529998	2650.0	1 / 162 1 / 162	24.09
	16-QAM	518598 505200	2593.0		22.84
60 MHz	π/2 BPSK	518598	2526.0 2593.0	1 / 121 1 / 121	23.10
	T/2 BPSK	531996	2660.0		23.34 23.77
	QPSK	505200	2526.0	1 / 121 1 / 121	23.62
		-	2526.0		
		518598 531996	2660.0	1 / 121	23.98
	16-QAM	518598	2593.0	1 / 121 1 / 121	24.42 23.32
	10-02-101	504204	2521.0	1/99	23.73
	π/2 BPSK	518598	2593.0	1/99	23.87
N		532998	2665.0	1 / 99	24.20
50 MHz	QPSK	504204	2521.0	1 / 99	23.67
20		518598	2593.0	1 / 99	23.80
		532998	2665.0	1 / 99	24.01
	16-QAM	518598	2593.0	1 / 99	22.92
		503202	2516.0	1 / 26	23.98
	π/2 BPSK	518598	2593.0	1 / 26	24.17
우		534000	2670.0	1 / 26	24.37
ž		503202	2516.0	1 / 26	23.80
40	QPSK	518598	2593.0	1 / 26	23.85
		534000	2670.0	1 / 26	24.29
	16-QAM	518598	2593.0	1 / 26	23.05
		502203	2511.0	1 / 39	23.35
	π/2 BPSK	518598	2593.0	1 / 39	23.64
Ŧ		534999	2675.0	1 / 39	24.39
30 MHz		502203	2511.0	1 / 39	23.79
30	QPSK	518598	2593.0	1 / 39	23.92
		534999	2675.0	1 / 39	24.40
	16-QAM	518598	2593.0	1 / 39	23.37
		501204	2506.0	1 / 25	23.30
	π/2 BPSK	518598	2593.0	1 / 13	23.95
Hz		535998	2680.0	1 / 13	24.45
20 MHz		501204	2506.0	1 / 25	23.69
20	QPSK	518598	2593.0	1 / 13	24.08
		535998	2680.0	1 / 13	24.32
	16-QAM	518598	2593.0	1 / 13	22.92

Table 7-1. Conducted Power Output Data (n41 – ANT J)

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Bandwidth	Modulation	Channel	Frequency [MHz]	RB Size/Offset	Conducted Power [dBm]
		509202	2546.0	1 / 136	22.23
	π/2 BPSK	518598	2593.0	1 / 204	22.33
MHz		528000	2640.0	1 / 204	22.36
0		509202	2546.0	1 / 136	22.27
	QPSK	518598	2593.0	1 / 204	22.37
		528000	2640.0	1 / 204	22.36
	16-QAM	518598	2593.0	1 / 204	21.50

Table 7-2. Conducted Power Output Data (n41 SRS2 – ANT B)

	Bandwidth	Modulation	Channel	Frequency [MHz]	RB Size/Offset	Conducted Power [dBm]
			510000	2550.0	1 / 68	18.97
	100 MHz	π/2 BPSK	518598	2593.0	1 / 68	18.40
			528000	2640.0	1 / 68	17.82
			510000	2550.0	1 / 68	18.99
		QPSK	518598	2593.0	1 / 68	18.68
			528000	2640.0	1 / 68	18.13
		16-QAM	510000	2550.0	1 / 68	18.04

Table 7-3. Conducted Power Output Data (n41 SRS3 – ANT E)

Bandwidth	Modulation	Channel	Frequency [MHz]	RB Size/Offset	Conducted Power [dBm]
		510000	2550.0	1 / 204	20.97
100 MHz	π/2 BPSK	518598	2593.0	1 / 204	21.00
		528000	2640.0	1 / 204	Power [dBm] 20.97
	QPSK	510000	2550.0	1 / 204	21.32
		518598	2593.0	1 / 204	21.34
		528000	2640.0	1 / 204	21.44
	16-QAM	518598	2593.0	1 / 204	20.19

Table 7-4. Conducted Power Output Data (n41 SRS4 – ANT D)

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7.3 Occupied Bandwidth

Test Overview

The occupied bandwidth, that is the frequency bandwidth such that, below its lower and above its upper frequency limits, the mean powers radiated are each equal to 0.5 percent of the total mean power radiated by a given emission shall be measured. All modes of operation were investigated and the worst case configuration results are reported in this section.

Test Procedure Used

KDB 971168 D01 v03r01 - Section 4.2

Test Settings

- 1. The signal analyzer's automatic bandwidth measurement capability was used to perform the 99% occupied bandwidth and the 26dB bandwidth. The bandwidth measurement was not influenced by any intermediate power nulls in the fundamental emission.
- 2. RBW = 1 5% of the expected OBW
- 3. VBW \ge 3 x RBW
- 4. Detector = Peak
- 5. Trace mode = max hold
- 6. Sweep = auto couple
- 7. The trace was allowed to stabilize
- 8. If necessary, steps 2 7 were repeated after changing the RBW such that it would be within
 - 1-5% of the 99% occupied bandwidth observed in Step 7

Test Setup

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



Figure 7-2. Test Instrument & Measurement Setup

Test Notes

None.

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Plot 7-5. Occupied Bandwidth Plot (NR Band n41 - 100MHz π/2 BPSK - Full RB - AntJ)



Plot 7-6. Occupied Bandwidth Plot (NR Band n41 - 100MHz QPSK - Full RB - AntJ)

FCC ID: A3LSMS908E		PART 27 MEASUREMENT REPORT CLASS II PERMISSIVE CHANGE	SAMSUNG	Approved by: Technical Manager
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Eysight Spectrum Analyzer - Occupied BW				
XX RL RF 50 Ω DC CORREC	SENSE:INT Center Freg: 2.593000000 GH		M Feb 17, 2022	Trace/Detector
	Trig: Free Run Avg H	old: 100/100		
#IFGain:Low	#Atten: 20 dB	Radio Dev	vice: BTS	
10 dB/div Ref 40.00 dBm		_		
Log 30.0				
20.0				Clear Write
10.0 mm.e	and the second and th	~		
0.00				Average
-10.0				Average
-20.0		" Wood the way all the approved by	mar A.	
-30.0			and second second	
-40.0				Max Hold
-50.0				
Center 2.5930 GHz		Span 3	250.0 MHz	
Res BW 2.4 MHz	#VBW 8 MHz	Swe	eep 1 ms	Min Hold
			<u> </u>	MILLHOID
Occupied Bandwidth	Total Power	29.8 dBm		
97.758 M	H7			Detector
				Peak▶
Transmit Freq Error -124.48	kHz % of OBW Po	wer 99.00 %		Auto <u>Man</u>
x dB Bandwidth 103.3 I	MHz xdB	-26.00 dB		
MSG		STATUS		

Plot 7-7. Occupied Bandwidth Plot (NR Band n41 - 100MHz 16-QAM - Full RB - AntJ)



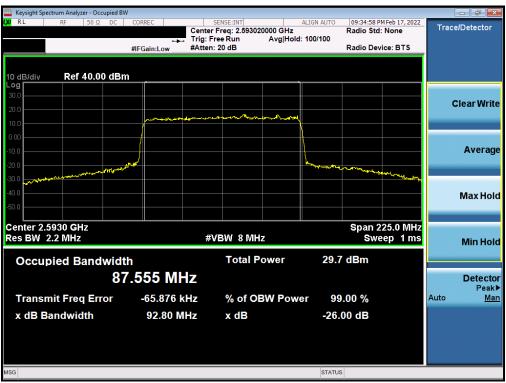
Plot 7-8. Occupied Bandwidth Plot (NR Band n41 - 90MHz π/2 BPSK - Full RB - AntJ)

FCC ID: A3LSMS908E	PCTEST Proud to be part of @ element	PART 27 MEASUREMENT REPORT CLASS II PERMISSIVE CHANGE	Approved by: Technical Manager
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🔤 Keysight Spectrum Analyzer - Occupied	BW					
<mark>(XI</mark> RL RF 50Ω DC	CORREC	SENSE:INT	ALIGN AUTO	09:35:09 PM Feb Radio Std: Nor		Trace/Detector
	Laper Tr	ig: Free Run	Avg Hold: 100/100			
	#IFGain:Low #A	tten: 20 dB		Radio Device: I	BTS	
10 dB/div Ref 40.00 dE	3m					
Log 30.0						
20.0						Clear Write
10.0	monsola	ware and the second second	~~~~~			
0.00						
-10.0			ł			Average
-20.0						Average
an automation in			a state of the sta	man the other	~m	
-30.0						
-40.0						Max Hold
-50.0						
Center 2.5930 GHz		I		Span 225.0	0 MHz	
Res BW 2.2 MHz		#VBW 8 MHz	2	Sweep		Min Hold
						inititiona
Occupied Bandwic		Total Po	ower 30.1	l dBm		
8	7.661 MHz					Detector
Tranomit Frag Error	-111.15 kHz	% of OB	W Power 99	9.00 %		Peak► Auto Man
Transmit Freq Error					í l	
x dB Bandwidth	92.98 MHz	x dB	-26.	00 dB		
MSG			STATUS	S		

Plot 7-9. Occupied Bandwidth Plot (NR Band n41 - 90MHz QPSK - Full RB - AntJ)



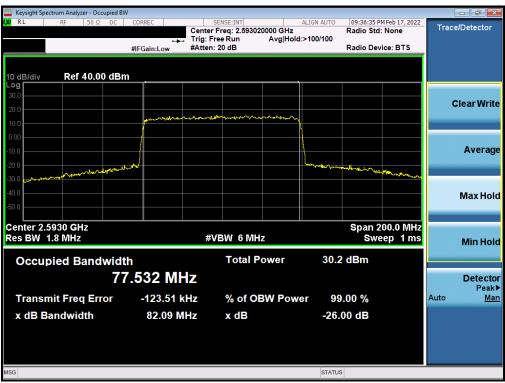
Plot 7-10. Occupied Bandwidth Plot (NR Band n41 - 90MHz 16-QAM - Full RB - AntJ)

FCC ID: A3LSMS908E	PCTEST. Proud to be part of @element	PART 27 MEASUREMENT REPORT CLASS II PERMISSIVE CHANGE	Approved by: Technical Manager
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Keysight Spectrum Analyzer - Occupied B	W					
<mark>(X</mark> RL RF 50Ω DC	CORREC	SENSE:INT Center Freg: 2.59302	ALIGN AUTO	09:36:11 PM Radio Std: 1		Trace/Detector
	- -	Trig: Free Run	Avg Hold: 100/100			
	#IFGain:Low	#Atten: 20 dB		Radio Devid	e: BTS	
10 dB/div Ref 40.00 dBr	n					
Log 30.0						
20.0						Clear Write
	how	mannen	homen			
10.0						
0.00						•
-10.0						Average
-20.0	hand					
-30.0				- marine	- Maria	
-40.0						Max Hold
-50.0						
				0	0-0 B4U	
Center 2.5930 GHz Res BW 1.8 MHz		#VBW 6 MH:	7		0.0 MHz ep 1 ms	
		#VDVV 014111	2	James	sp Tins	Min Hold
Occupied Bandwid	th	Total P	ower 31.	9 dBm		
	7.170 MH	_				Detecto
		2				Detector Peak
Transmit Freq Error	-68.796 kH	z % of OE	SW Power 99	9.00 %		Auto <u>Mar</u>
x dB Bandwidth	81.52 MF	lz xdB	-26	.00 dB		
	0 113/2-101			.00 08		
MSG			STATU	IS		

Plot 7-11. Occupied Bandwidth Plot (NR Band n41 - 80MHz π/2 BPSK - Full RB - AntJ)



Plot 7-12. Occupied Bandwidth Plot (NR Band n41 - 80MHz QPSK - Full RB - AntJ)

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Keysight Spectrum Analyzer - Occupied BV	V						
LXI RL RF 50Ω DC	CORREC	SENSE:INT Center Freg: 2.59302	ALIGN AUT	09:36:41 P Radio Std	M Feb 17, 2022	Trace	/Detector
	- -	Trig: Free Run	Avg Hold:>100/100				
	#IFGain:Low	#Atten: 20 dB		Radio Dev	ice: BTS		
10 dB/div Ref 40.00 dBn	n						
Log 30.0							
20.0						С	lear Write
10.0	manner	when and the second second	man with the second			_	
0.00							
							Average
-10.0							Average
-20.0	w ^{rev}			www. www.	The transfer the		
-30.0 Vincentrantinger 40.00					- 19 M		
-40.0							Max Hold
-50.0							
Center 2.5930 GHz				Span 2	00.0 MHz		
Res BW 1.8 MHz		#VBW 6 MH	Z		ep 1 ms		Min Hold
							Millinoid
Occupied Bandwidt	h	Total P	ower 29	.9 dBm			
77	7.410 MH	Z					Detector
							Peak►
Transmit Freq Error	-94.952 kl	HZ % of OI	BW Power	99.00 %		Auto	Man
x dB Bandwidth	82.16 MI	Hz xdB	-2	6.00 dB			
MSG			STA	TUS			

Plot 7-13. Occupied Bandwidth Plot (NR Band n41 - 80MHz 16-QAM - Full RB - AntJ)



Plot 7-14. Occupied Bandwidth Plot (NR Band n41 - 60MHz π/2 BPSK - Full RB - AntJ)

FCC ID: A3LSMS908E	Poul to be part of @ element	PART 27 MEASUREMENT REPORT CLASS II PERMISSIVE CHANGE	Approved by: Technical Manager	
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Keysight Spectrum Analyzer - Occupied BW				
IXI RL RF 50 Ω DC CORREC	SENSE:INT Center Freg: 2.593020000 GHz	ALIGN AUTO 09:37:26 Radio Sto	PM Feb 17, 2022	Trace/Detector
	Trig: Free Run Avg Hold	: 100/100		
#IFGain:Low	#Atten: 20 dB	Radio De	vice: BTS	
10 dB/div Ref 40.00 dBm				
Log 30.0				
20.0				Clear Write
	and the south and the second			
10.0				
				A.v.o.v.o.v.o.
-10.0		1		Average
-20.0 -30.0 ministration		hand have the work	Walsh war	
-30.0				
-40.0				Max Hold
-50.0				
Center 2.59302 GHz			150.0 MHz	
Res BW 1.5 MHz	#VBW 5 MHz		eep 1 ms	Min Hala
			cob	Min Hold
Occupied Bandwidth	Total Power	30.0 dBm		
58.074 MI	7			Detector
	12-			Peak►
Transmit Freq Error -41.554	(Hz % of OBW Pow	er 99.00 %		Auto <u>Man</u>
x dB Bandwidth 61.87 N	IHz x dB	-26.00 dB		
MSG		STATUS		

Plot 7-15. Occupied Bandwidth Plot (NR Band n41 - 60MHz QPSK - Full RB - AntJ)



Plot 7-16. Occupied Bandwidth Plot (NR Band n41 - 60MHz 16-QAM - Full RB - AntJ)

FCC ID: A3LSMS908E	Poud to be part of @ element	PART 27 MEASUREMENT REPORT CLASS II PERMISSIVE CHANGE	Approved by: Technical Manager	
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Keysight Spectrum Analyzer -	Occupied BW	V				
RL RF 5	DΩ DC	CORREC ↔	SENSE:INT Center Freq: 2.59302 Trig: Free Run #Atten: 30 dB	ALIGN AUTO 0000 GHz Avg Hold: 100/100	09:39:40 PM Feb 17, 2022 Radio Std: None Radio Device: BTS	Trace/Detector
. og 30.0	0.00 dBn					Clear Writ
20.0						Averag
0.0						Max Ho
enter 2.59302 GHz es BW 1.2 MHz Occupied Bar		h	#VBW 4 MH: Total P		Span 125.0 MHz Sweep 1 ms 2 dBm	Min Ho
	45	5.850 M	Hz			Detect Peal
Transmit Freq B x dB Bandwidth		-883.86 49.06 M			0.00 % 00 dB	Auto <u>M</u> i
G				STATU	3	

Plot 7-17. Occupied Bandwidth Plot (NR Band n41 - 50MHz π/2 BPSK - Full RB - AntJ)



Plot 7-18. Occupied Bandwidth Plot (NR Band n41 - 50MHz QPSK - Full RB - AntJ)

FCC ID: A3LSMS908E	PCTEST Proud to be part of @ element	PART 27 MEASUREMENT REPORT CLASS II PERMISSIVE CHANGE	Approved by: Technical Manager	
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🔤 Keysight Spectrum Analyzer - Occup	•						×
LXI R L RF 50 Ω	DC CORREC	SENSE:INT Center Freg: 2.59302	ALIGN AUTO	09:40:13 PM Feb Radio Std: No		Trace/Detecto	or
	#IEGain:Low		Avg Hold: 100/100	Radio Device:			
	#IFGain:Low	#Atten: 30 ab		Raulo Device.			
10 dB/div Ref 40.00	dBm						
Log 30.0							
20.0						Clear W	rite
10.0	monte	₩₽₽₽₽₽₽₽₽₽₽₽₽₽₽₽₽₽₽₽₽₽₽₽₽₽₽₽₽₽₽₽₽₽₽₽₽	landary				
0.00							
-10.0						Avera	age
-20.0	~ market		- Marine	when the second			
-30.0 - Marine Marine					- and and and a		
-40.0						MaxH	lold
-50.0							
Center 2.59302 GHz				Span 125.	0.MHz		
Res BW 1.2 MHz		#VBW 4 MH:	2	Sweep	1 ms	Min H	blo
		Total P	20.0	dBm			
Occupied Bandw			ower 29.9	abm			
	47.762 MH	Z				Detec	ctor ak ▶
Transmit Freq Erro	or 36.789 kl	Hz % of OE	3W Power 99	.00 %			Man
x dB Bandwidth	50.81 MI	Hz xdB	-26.	00 dB			
MSG			STATUS	3			

Plot 7-19. Occupied Bandwidth Plot (NR Band n41 - 50MHz 16-QAM - Full RB - AntJ)



Plot 7-20. Occupied Bandwidth Plot (NR Band n41 - 40MHz π/2 BPSK - Full RB - AntJ)

FCC ID: A3LSMS908E	PCTEST Proud to be part of @ element	PART 27 MEASUREMENT REPORT CLASS II PERMISSIVE CHANGE	Approved by: Technical Manager	
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🔤 Keysight Spectrum Analyzer - Occupied B							
LXI RL RF 50Ω DC	CORREC	SENSE:INT Center Freq: 2.59302	ALIGN AUTO	09:41:13 PM Feb Radio Std: Nor		Trace/D	etector
	•••	Trig: Free Run	Avg Hold: 100/100				
	#IFGain:Low	#Atten: 30 dB		Radio Device:	BTS		
10 dB/div Ref 40.00 dBi	m						
30.0							
20.0						Cle	ar Write
10.0	mennen	man marine and a man	money				
0.00	ļ i						
-10.0							Average
							Average
-20.0	- 47			mash and water	when		
-30.0							
-40.0						N	lax Hold
-50.0							
Center 2.59302 GHz				Span 100.	0 MHz		
Res BW 910 kHz		#VBW 3 MH:	Z	Sweep	1 ms	Ν	/lin Hold
							intriord
Occupied Bandwid	th	Total P	ower 30.3	dBm			
3	7.997 MH	Z				[Detector
							Peak▶
Transmit Freq Error	-64.138 kH	Iz % of OE	3W Power 99	.00 %		Auto	Man
x dB Bandwidth	40.92 MF	lz xdB	-26.	00 dB			
MSG			STATUS	3			

Plot 7-21. Occupied Bandwidth Plot (NR Band n41 - 40MHz QPSK - Full RB - AntJ)



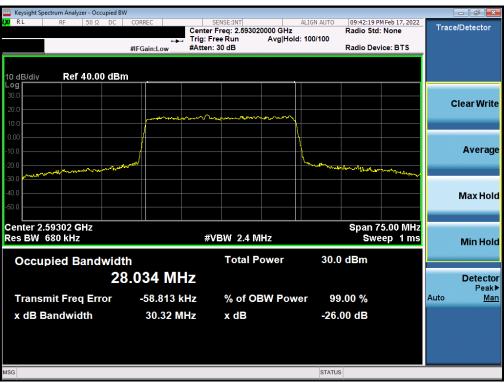
Plot 7-22. Occupied Bandwidth Plot (NR Band n41 - 40MHz 16-QAM - Full RB - AntJ)

FCC ID: A3LSMS908E	Poud to be part of @ element	PART 27 MEASUREMENT REPORT CLASS II PERMISSIVE CHANGE	Approved by: Technical Manager	
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Keysight Spectrum Analyzer - Oc						
α RL RF 50 Ω		RREC	SENSE:INT Center Freq: 2.593020 Trig: Free Run #Atten: 30 dB	ALIGN AUTO 0000 GHz Avg Hold: 100/100	09:42:00 PM Feb 17, 2022 Radio Std: None Radio Device: BTS	Trace/Detector
10 dB/div Ref 40.0	0 dBm					Clear Writ
20.0			······			Averag
20.0 30.0 40.0 50.0						Max Hol
Center 2.59302 GHz Les BW 680 kHz	width		#VBW 2.4 M		Span 75.00 MHz Sweep 1 ms 3 dBm	Min Hol
	27.0	04 MI	łz			Detecto Peak
Transmit Freq Er x dB Bandwidth	ror	-518.80 k 29.32 M			0.00 % 00 dB	Auto <u>Ma</u>
G				STATU	5	

Plot 7-23. Occupied Bandwidth Plot (NR Band n41 - 30MHz π/2 BPSK - Full RB - AntJ)



Plot 7-24. Occupied Bandwidth Plot (NR Band n41 - 30MHz QPSK - Full RB - AntJ)

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🔤 Keysight Spectrum Analyzer - Occupi					- 6 -
<mark>(X)</mark> RL RF 50Ω [SENSE:INT ter Freg: 2.593020000 GHz	ALIGN AUTO 09:42:27 Radio St	PM Feb 17, 2022	Trace/Detector
	+++ Trig	j: Free Run Avg Holo	d: 100/100		
	#IFGain:Low #Att	ten: 30 dB	Radio De	evice: BTS	
10 dB/div Ref 40.00 c	dBm				
Log 30.0					
20.0					Clear Write
	mon	Marina Marina and and and and and and and and and a			
10.0					
0.00			}		•
-10.0			tu,		Average
-20.0	Agricognical and a second and a		"Much on the set of the	1 marter allow	
-30.0 -30.0				Weiter Levin	
-40.0					Max Hold
-50.0					
Center 2.59302 GHz			Enon	75 00 MILI-	
Res BW 680 kHz		#VBW 2.4 MHz		75.00 MHz reep 1 ms	
				aob 1 mo	Min Hold
Occupied Bandw	idth	Total Power	29.8 dBm		
	27.955 MHz				Detector
					Peak►
Transmit Freq Error	-43.510 kHz	% of OBW Pow	ver 99.00 %		Auto <u>Man</u>
x dB Bandwidth	30.21 MHz	x dB	-26.00 dB		
			Lotoo al		
MSG			STATUS		

Plot 7-25. Occupied Bandwidth Plot (NR Band n41 - 30MHz 16-QAM - Full RB - AntJ)



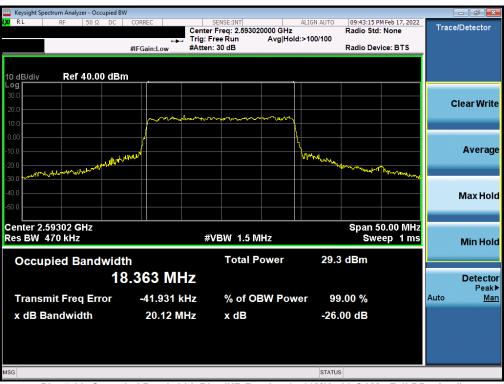
Plot 7-26. Occupied Bandwidth Plot (NR Band n41 - 20MHz π/2 BPSK - Full RB - AntJ)

FCC ID: A3LSMS908E	PCTEST Proud to be part of @ element	PART 27 MEASUREMENT REPORT CLASS II PERMISSIVE CHANGE	Approved by: Technical Manager	
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🔤 Keysight Spectrum Analyzer - Occupied B	W						
KI RE 50Ω DC	CORREC	SENSE:INT er Freg: 2.5930200	ALIGN AUTO	09:43:29 PM		Trace/Dete	ctor
	Trig:	Free Run /	Avg Hold: 100/100	Radio Stu. I	vone		
	#IFGain:Low #Atte	en: 30 dB		Radio Devic	e: BTS		
10 dB/div Ref 40.00 dBr	m						
Log 30.0							
						Clear	Write
20.0	and a start and a start and a start a st	er and a state of the state of	man				
10.0							
0.00			<u>\</u>				
-10.0	السليم		- mun			Ave	erage
-20.0			mar and a second state of the second state of	war and a start	o		
-30.0					Colone		
-40.0						Max	Hold
-50.0						IVIAX	
Center 2.59302 GHz				Span 50			
Res BW 470 kHz		#VBW 1.5 MH:	Z	Swee	ep 1 ms	Min	Hold
Occurried Denducid		Total Pov	vor 20.7	dBm			
Occupied Bandwid		Total Tot	25.1	ubm			
1	8.358 MHz						ector
Transmit Freq Error	-41.207 kHz	% of OBV	V Power 99	.00 %		Auto	Peak▶ <u>Man</u>
x dB Bandwidth	20.97 MHz	x dB	26.0	00 dB			
	20.97 11112	хuв	-20.0	JU UB			
MSG			STATUS				

Plot 7-27. Occupied Bandwidth Plot (NR Band n41 - 20MHz QPSK - Full RB - AntJ)



Plot 7-28. Occupied Bandwidth Plot (NR Band n41 - 20MHz 16-QAM - Full RB - AntJ)

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7.4 Spurious and Harmonic Emissions at Antenna Terminal

Test Overview

The level of the carrier and the various conducted spurious and harmonic frequencies is measured by means of a calibrated spectrum analyzer. The spectrum is scanned from the lowest frequency generated in the equipment up to a frequency including its 10th harmonic. 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 maximum power, and at the appropriate frequencies. All data rates were investigated to determine the worst case configuration. All modes of operation were investigated and the worst case configuration results are reported in this section.

The minimum permissible attenuation level of any spurious emission is $43 + 10 \log_{10}(P_{[Watts]})$, where P is the transmitter power in Watts.

For Band 41, the minimum permissible attenuation level of any spurious emission is 55 + 10log₁₀(*P*_[Watts]).

Test Procedure Used

KDB 971168 D01 v03r01 - Section 6.0

Test Settings

- 1. Start frequency was set to 30MHz and stop frequency was set to 10GHz (separated into at least two plots per channel)
- 2. Detector = RMS
- 3. Trace mode = trace average for continuous emissions, max hold for pulse emissions
- 4. Sweep time = auto couple
- 5. The trace was allowed to stabilize
- 6. Please see test notes below for RBW and VBW settings

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

- 1. Per Part 27, RSS-195 and RSS-199, compliance with the applicable limits is based on the use of measurement instrumentation employing a resolution bandwidth 100 kHz or greater for measurements below 1GHz. However, in the 1 MHz bands immediately outside and adjacent to the frequency block a resolution bandwidth of at least one percent of the emission bandwidth of the fundamental emission of the transmitter may be employed. The emission bandwidth is defined as the width of the signal between two points, one below the carrier center frequency and one above the carrier center frequency, outside of which all emission are attenuated at least 26 dB below the transmitter power.
- 2. For NR operation, all subcarrier spacings (SCS) and transmission schemes (e.g. CP-OFDM and DFT-s-OFDM) were investigated to determine the worst case configuration. All modes of operation were investigated and the worst case configuration results are reported in this section.

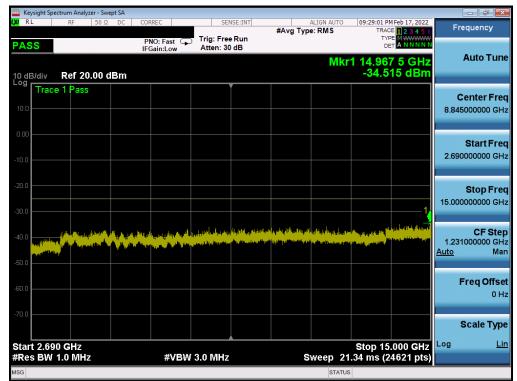
FCC ID: A3LSMS908E		PART 27 MEASUREMENT REPORT CLASS II PERMISSIVE CHANGE	SAMSUNG	Approved by: Technical Manager
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NR Band n41 – AntJ

	Spectrum Analy											_	
<mark>0</mark> RL	RF	50 Ω	DC	CORREC		SEN	ISE:INT	#Avg Typ	ALIGN AUTO		M Feb 17, 2022	F	requency
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)30 GHz									Stop 2	.470 GHz	Log	
¢Res BV	N 1.0 MHz	Z		#\	/BW :	3.0 MHz			Sweep 3	.260 ms	4891 pts)		
ISG									STATUS	3			

Plot 7-29. Conducted Spurious Plot (NR Band n41 - 100MHz QPSK - RB Size 1, RB Offset 0 - Low Channel AntJ)



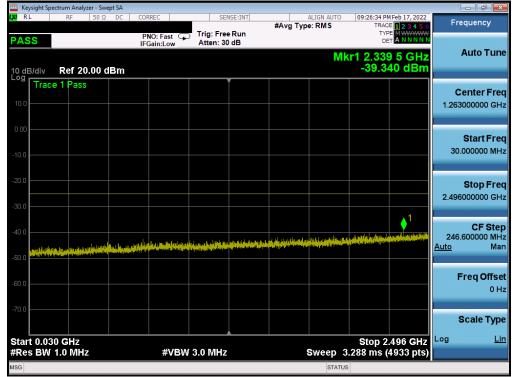
Plot 7-30. Conducted Spurious Plot (NR Band n41 - 100MHz QPSK - RB Size 1, RB Offset 0 - Low Channel AntJ)

FCC ID: A3LSMS908E	PCTEST Proad to be part of @ element	PART 27 MEASUREMENT REPORT CLASS II PERMISSIVE CHANGE	SAMSUNG	Approved by: Technical Manager
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	ht Spectrum Anal											- 6
🗶 RL	RF	50 Ω	DC C	DRREC		ISE:INT	#Avg Ty	ALIGN AUT	TRA	PM Feb 17, 2022 CE 1 2 3 4 5 6	Fre	quency
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	5.000 GHz 3W 1.0 MH			#VBW	3.0 MHz		\$	Sweep	20.80 ms (2	.000 0112	LUg	5
ISG									TUS			

Plot 7-31. Conducted Spurious Plot (NR Band n41 - 100MHz QPSK - RB Size 1, RB Offset 0 - Low Channel AntJ)



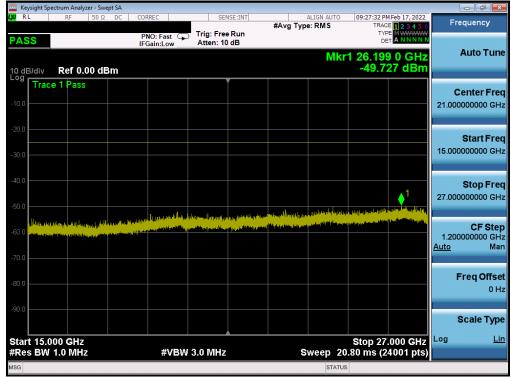
Plot 7-32. Conducted Spurious Plot (NR Band n41 - 100MHz QPSK - RB Size 1, RB Offset 0 - Mid Channel AntJ)

FCC ID: A3LSMS908E	PCTEST Proud to be point of Solement	PART 27 MEASUREMENT REPORT CLASS II PERMISSIVE CHANGE	SAMSUNG	Approved by: Technical Manager
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Keysight S RL	Spectrum Analy: RF			CORREC	0.00	ICT.INT			00.27.00 0	M Feb 17 2022	l	
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ISG								STAT	us			

Plot 7-33. Conducted Spurious Plot (NR Band n41 - 100MHz QPSK - RB Size 1, RB Offset 0 - Mid Channel AntJ)



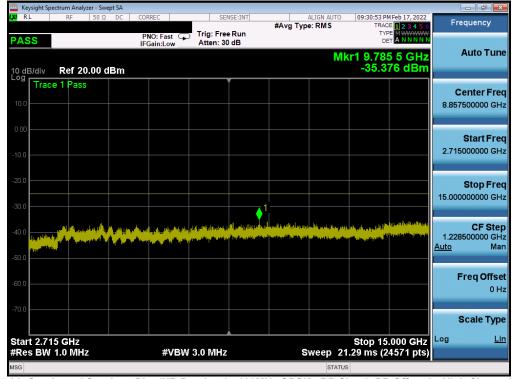
Plot 7-34. Conducted Spurious Plot (NR Band n41 - 100MHz QPSK - RB Size 1, RB Offset 0 - Mid Channel AntJ)

FCC ID: A3LSMS908E		PART 27 MEASUREMENT REPORT CLASS II PERMISSIVE CHANGE	Approved by: Technical Manager
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RL	ectrum Analy RF	2er - 3we		CORREC	0.00	ISE:INT		ALIGN AUTO	00.20.24 0	4 Feb 17, 2022		
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Plot 7-35. Conducted Spurious Plot (NR Band n41 - 100MHz QPSK - RB Size 1, RB Offset 0 - High Channel AntJ)



Plot 7-36. Conducted Spurious Plot (NR Band n41 - 100MHz QPSK - RB Size 1, RB Offset 0 - High Channel AntJ)

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	pectrum Analy											_	
L <mark>XI</mark> RL	RF	50 Ω	DC	CORREC		SEI	ISE:INT	#Avg Ty	ALIGN AUTO		M Feb 17, 2022	Fr	equency
PASS				PNO: F IFGain:l	ast 🖵 Low	Trig: Free Atten: 10				TYI DI			
10 dB/div	Ref 0.	00 dBi	m						Mk	r1 26.28 -49.4	5 5 GHz 82 dBm		Auto Tune
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Plot 7-37. Conducted Spurious Plot (NR Band n41 - 100MHz QPSK - RB Size 1, RB Offset 0 - High Channel AntJ)

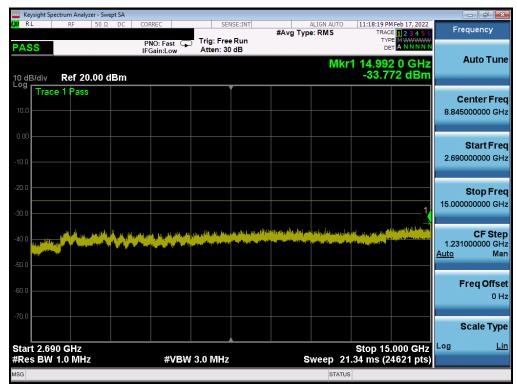
FCC ID: A3LSMS908E	Proud to be post of @ element	PART 27 MEASUREMENT REPORT CLASS II PERMISSIVE CHANGE	Approved by: Technical Manager
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NR Band n41 SRS2 – AntB

	Spectrum Analy								
XI RL	RF	50 Ω D0	CORREC	SENSE:IN	#Avg Typ	ALIGN AUTO	11:17:30 PM Feb 17, 20 TRACE 1 2 3 4	Fre	quency
PASS			PNO: Fast G	Trig: Free Run Atten: 30 dB	1		DET A N N N	I N	
						M	(r1 2.470 0 GF	Z	Auto Tui
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)30 GHz V 1.0 MHz		#\/D\	V 3.0 MHz		Swoon-9	Stop 2.470 GH 3.260 ms (4891 pt		
SG SG	V T.U MIHZ		#VBI	V 5.0 WIHZ		Sweep 3		57	

Plot 7-38. Conducted Spurious Plot (NR Band n41 - 100MHz QPSK - RB Size 1, RB Offset 0 - Low Channel AntB)



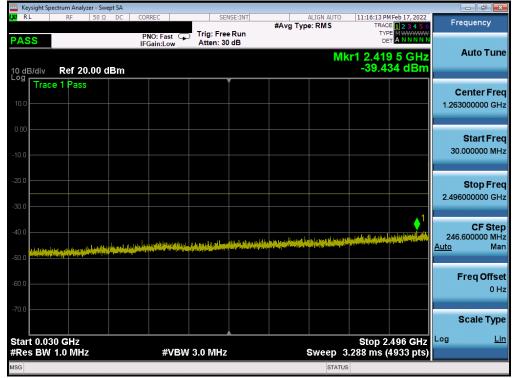
Plot 7-39. Conducted Spurious Plot (NR Band n41 - 100MHz QPSK - RB Size 1, RB Offset 0 - Low Channel AntB)

FCC ID: A3LSMS908E	PCTEST Proud to be part of @ element	PART 27 MEASUREMENT REPORT CLASS II PERMISSIVE CHANGE	Approved by: Technical Manager
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	t Spectrum Ana											
<mark>()</mark> RL	RF	50 Ω	DC	CORREC	SEI	ISE:INT	#Avg Typ	ALIGN AUTO	TRA	M Feb 17, 2022 CE 1 2 3 4 5 6	Fre	equency
PASS				PNO: Fast G	Trig: Free Atten: 10				TY D	PE MWWWWW ET ANNNNN		
0 dB/di	v Ref ().00 dE	m					MI	kr1 26.25 -49.1	5 5 GHz 62 dBm		Auto Tur
-og Tr	ace 1 Pas	S										enter Fr
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20.0												
											15 000	Start Fr 000000 G
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SG								STAT	TUS			

Plot 7-40. Conducted Spurious Plot (NR Band n41 - 100MHz QPSK - RB Size 1, RB Offset 0 - Low Channel AntB)



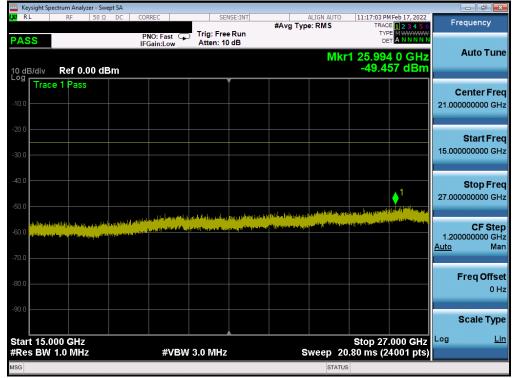
Plot 7-41. Conducted Spurious Plot (NR Band n41 - 100MHz QPSK - RB Size 1, RB Offset 0 - Mid Channel AntB)

FCC ID: A3LSMS908E	PCTEST Proud to be part of @ element	PART 27 MEASUREMENT REPORT CLASS II PERMISSIVE CHANGE	Approved by: Technical Manager
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	it Spectrum A											5 X
K <mark>I</mark> RL	RF	<u>50 Ω</u>	DC	CORREC		ISE:INT	#Avg Typ	ALIGN AUTO	TRA	M Feb 17, 2022 CE 1 2 3 4 5 6	Frequen	су
PASS				PNO: Fast IFGain:Low	Trig: Free Atten: 30			M	kr1 9.49		Auto	Tu
0 dB/di		20.00 d	IBm						-35.4	58 dBm		
10.0	race 1 Pa	ass									Cente 8.84500000	
1.00											Star 2.69000000	
20.0											Stop 15.00000000	
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SG								STATU		nozi proj		

Plot 7-42. Conducted Spurious Plot (NR Band n41 - 100MHz QPSK - RB Size 1, RB Offset 0 - Mid Channel AntB)



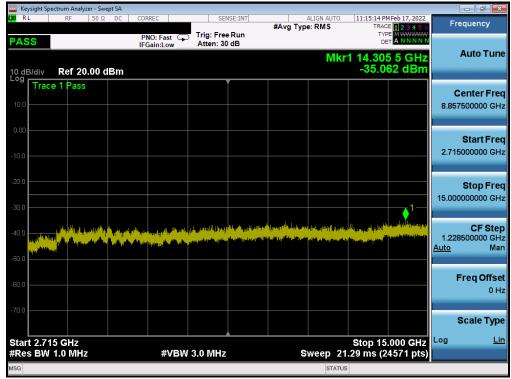
Plot 7-43. Conducted Spurious Plot (NR Band n41 - 100MHz QPSK - RB Size 1, RB Offset 0 - Mid Channel AntB)

FCC ID: A3LSMS908E	Proud to be part of @ element	PART 27 MEASUREMENT REPORT CLASS II PERMISSIVE CHANGE	SAMSUNG	Approved by: Technical Manager
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	Spectrum Analy											
X/RL	RF	50 Ω	DC	CORREC		NSE:INT	#Avg Typ	ALIGN AUTO	TRA	CE 12 3 4 5 6	Fn	equency
PASS				PNO: Fast C IFGain:Low	Trig: Fre Atten: 3			Μ	kr1 2.33			Auto Tun
10 dB/div Log	Ref 20	0.00 d	Bm						-38.5	56 dBm		
10.0	ace 1 Pass											Center Fre
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20.0											2.496	Stop Fr 5000000 G
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'0.0 <u> </u>												Scale Ty
	030 GHz W 1.0 MH:	z		#VB	W 3.0 MHz			Sweep	Stop 2 3.288 ms	2.496 GHz (4933 pts)	Log	ļ
SG								STAT				

Plot 7-44. Conducted Spurious Plot (NR Band n41 - 100MHz QPSK - RB Size 1, RB Offset 0 - High Channel AntB)



Plot 7-45. Conducted Spurious Plot (NR Band n41 - 100MHz QPSK - RB Size 1, RB Offset 0 - High Channel AntB)

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	Spectrum Analy	zer - Swe	pt SA										J X
🗶 RL	RF	50 Ω	DC	CORREC		SEN	ISE:INT	#Ava Ty	ALIGN AU (pe: RMS)	TF	B PM Feb 17, 2022	Frequen	су
PASS				PNO: Fas IFGain:Lo		Trig: Free Atten: 10					DET ANNNN		
				IFGain:Lo	w	Atten. To	чв		R.		00 5 GHz	Auto	Tune
10 dB/div	Ref 0.	00 dB	m						IV	-48.	782 dBm		
Log Tra	ice 1 Pass	;											
10.0												Center	
-10.0												21.0000000	00 GH:
-20.0													
-20.0												Star	tFree
-30.0												15.0000000	00 GH
-40.0												Stor	Free
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-60.0 -60. 0	فيعاقفهم واراحطا الما	ر. الأسلى ويويا	لأد الأقمرية)	a na ann an Anna an An Anna an Anna an	ىلى <u>ت مىلالىكە بە</u>	and the second second						1.20000000	
												<u>Auto</u>	Mai
-70.0													
-80.0												Freq	Offse
-00.0													οн
-90.0													
												Scale	Туре
	000 011-											Log	Lir
	.000 GHz V 1.0 MH:			#	VBW 3	.0 MHz			Sween	20 80 ms	27.000 GHz (24001 pts)	209	<u></u>
MSG						ac 1011/2				ATUS	(E-roor pts)		
		_							51				

Plot 7-46. Conducted Spurious Plot (NR Band n41 - 100MHz QPSK - RB Size 1, RB Offset 0 - High Channel AntB)

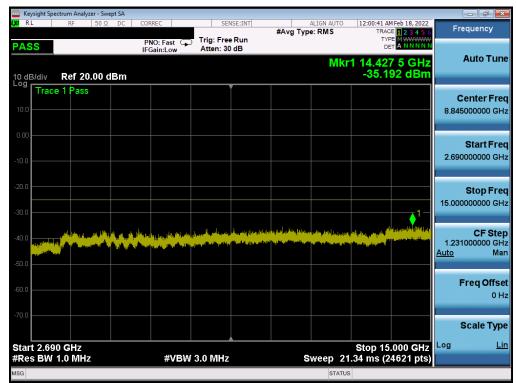
FCC ID: A3LSMS908E		PART 27 MEASUREMENT REPORT CLASS II PERMISSIVE CHANGE	N G	Approved by: Technical Manager
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NR Band n41 SRS3- AntE

	pectrum Analyz								
XI RL	RF	50Ω DC	CORREC	SENSE:INT	#Avg Typ	ALIGN AUTO e: RMS	12:00:16 AM Feb TRACE		Frequency
PASS			PNO: Fast G	Trig: Free Run Atten: 30 dB					
10 dB/div	Ref 20	.00 dBm				M	r1 2.466 5 -39.151	GHz dBm	Auto Tur
Tra	ce 1 Pass			Ĭ					Center Fr
10.0									1.250000000 G
0.00									
0.00									Start Fr
-10.0									30.000000 M
20.0									
20.0									Stop Fr 2.470000000 G
30.0									
40.0									CF St
أر وينظر رام ال	ولمحرز وجانيم وبالمزاورين	A State of the second		in an	and the line of the second s				244.000000 M Auto N
50.0 (11-11-1	interin an air a nair mainte								
-60.0									Freq Offs
									0
70.0									Scale Ty
	00.011						0 4 0 - 1 -7		Log
Start 0.0 #Res BV	30 GHz / 1.0 MHz		#VBV	V 3.0 MHz		Sweep 3	Stop 2.470 260 ms (489		
ISG						STATUS			

Plot 7-47. Conducted Spurious Plot (NR Band n41 - 100MHz QPSK - RB Size 1, RB Offset 0 - Low Channel AntE)



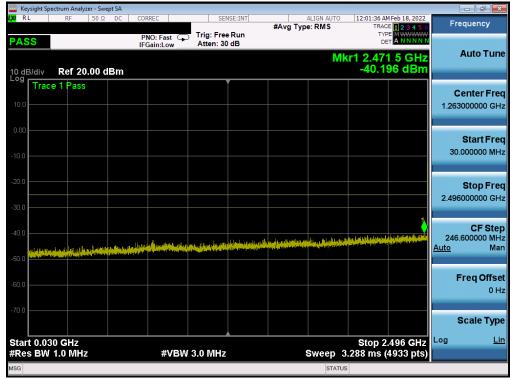
Plot 7-48. Conducted Spurious Plot (NR Band n41 - 100MHz QPSK - RB Size 1, RB Offset 0 - Low Channel AntE)

FCC ID: A3LSMS908E	PCTEST [*] Prod to be part of @ element	PART 27 MEASUREMENT REPORT CLASS II PERMISSIVE CHANGE	Approved by: Technical Manager
Test Report S/N:	Test Dates:	EUT Type:	Page 39 of 85
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	Spectrum Anal											
RL	RF	50 Ω	DC	CORREC	SE	NSE:INT	#Ava Tv	ALIGN AUT		M Feb 18, 2022	Fr	equency
PASS				PNO: Fast	Trig: Fre			period	TY	PE M WWWWWW ET A N N N N N		
A33				IFGain:Low	Atten: 10) dB						Auto Tur
								M	kr1 26.37	3 5 GHZ		Auto Tu
0 dB/div			m						-50.1	30 dBm		
Tra	ace 1 Pass	S				Ĭ						Center Fr
10.0												0000000 G
											21.00	000000 G
20.0												
												Start Fr
30.0											15.00	0000000 G
40.0												
40.0										. 1		Stop Fr
50.0										│ ♦'	27.00	0000000 G
30.0					L. 14400	al.,	a shalada da ka	فيعقد اللاريل وال	alling program in the	in the second		
50.0	وراما والخريات أعاوس	Manda	and the start	And the Association of the	and the second secon	and the second secon	and Mitchild antibale person	and the second second	فأرفز بالاربية فالتعريد النعرية إلامياه	And the second s		CF St
a hite ter	م قد الم حض الأقاد الله	Bernen an state and	idia attiite									0000000 G
70.0											<u>Auto</u>	M
· U.U												
30.0												Freq Offs
50.0												0
30.0												
90.0												Scale Ty
												could by
tart 15	.000 GHz								Stop 27	.000 GHz	Log	<u> </u>
Res B	W 1.0 MH	z		#VB\	N 3.0 MHz			Sweep	20.80 ms (2	24001 pts)		
SG								STA	TUS			

Plot 7-49. Conducted Spurious Plot (NR Band n41 - 100MHz QPSK - RB Size 1, RB Offset 0 - Low Channel AntE)



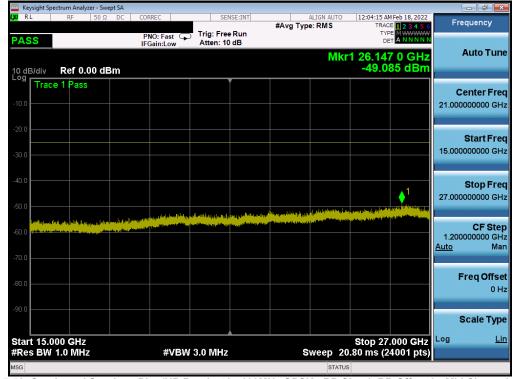
Plot 7-50. Conducted Spurious Plot (NR Band n41 - 100MHz QPSK - RB Size 1, RB Offset 0 - Mid Channel AntE)

FCC ID: A3LSMS908E	PCTEST. Proud to be part of @ element	PART 27 MEASUREMENT REPORT CLASS II PERMISSIVE CHANGE	Approved by: Technical Manager
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	t Spectrum Analy											
XI RL	RF	50 Ω	DC	CORREC	SE	NSE:INT	#Avg Typ	ALIGN AUTO		M Feb 18, 2022	Fre	equency
PASS				PNO: Fast IFGain:Low	Trig: Fre Atten: 30		• •		TY			
10 dB/div	Ref 20).00 di	Bm					M	r1 14.31 -34.8	0 5 GHz 66 dBm		Auto Tur
- ^{og} Tr	ace 1 Pass	;				Ĭ					-	enter Fre
10.0												6000000 GI
0.00												Start Fr
10.0											2.690	000000 G
20.0												Stop Fr
30.0										4	15.000	000000 G
30.0												
40.0		and a	all all a	territe approximation for the			na og vingen skyrden. Status	de la propertie de la composition Notation de la composition de la composi		an an Marian an Anna Marian. An a Marian an Anna Marian	1 231	CF St 000000 G
a second			The second s	and the second							Auto	M
50.0												
50.0											F	req Offs
												0
70.0												Deele Tre
												Scale Ty
	690 GHz								Stop 15	5.000 GHz	Log	ļ
	W 1.0 MH	Z		#VBW	/ 3.0 MHz		8		21.34 ms (2	24621 pts)		
SG								STAT	US			

Plot 7-51. Conducted Spurious Plot (NR Band n41 - 100MHz QPSK - RB Size 1, RB Offset 0 - Mid Channel AntE)



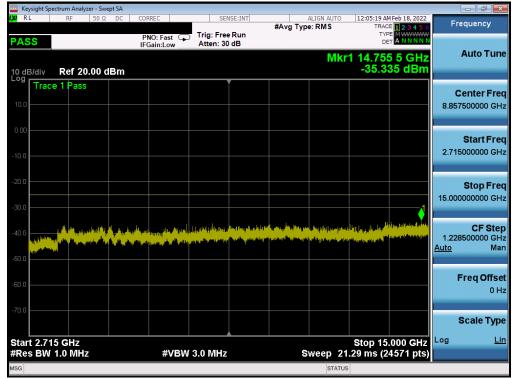
Plot 7-52. Conducted Spurious Plot (NR Band n41 - 100MHz QPSK - RB Size 1, RB Offset 0 - Mid Channel AntE)

FCC ID: A3LSMS908E		PART 27 MEASUREMENT REPORT CLASS II PERMISSIVE CHANGE	Approved by: Technical Manager
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	Spectrum Analy											
XU <mark>RL</mark>	RF	50 Ω	DC	CORREC		NSE:INT	#Avg Typ	ALIGN AUTO	TRA	AM Feb 18, 2022 CE 1 2 3 4 5 6	Fr	equency
PASS	Ref 20).00 dl	Bm	PNO: Fast (IFGain:Low	Trig: Fre Atten: 3			M	lkr1 2.41	10 GHz 53 dBm		Auto Tur
-og Tra	ace 1 Pass											Center Fre
0.00											30	Start Fre .000000 Mi
20.0											2.490	Stop Fr 5000000 G
40.0	kaded over and com	, Ni de sin due		ورجد أمسا فعنامين المقلومين	fel is his state of the	land the factor of the					246 <u>Auto</u>	CF Sto .600000 M M
60.0											1	F req Off s 0
	030 GHz								Stop 2	2.496 GHz	Log	Scale Ty
Res Bl	N 1.0 MH	Z		#VB	W 3.0 MHz			Sweep		(4933 pts)		

Plot 7-53. Conducted Spurious Plot (NR Band n41 - 100MHz QPSK - RB Size 1, RB Offset 0 - High Channel AntE)



Plot 7-54. Conducted Spurious Plot (NR Band n41 - 100MHz QPSK - RB Size 1, RB Offset 0 - High Channel AntE)

FCC ID: A3LSMS908E	PCTEST Proud to be part of @ element	PART 27 MEASUREMENT REPORT CLASS II PERMISSIVE CHANGE	SAMSUNG	Approved by: Technical Manager
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	pectrum Analyz	zer - Swep	ot SA										
X/RL	RF	50 Ω	DC	CORREC		SEI	ISE:INT	#Avg Ty	ALIGN AUT	TR	AM Feb 18, 2022	Fn	equency
PASS				PNO: Fain:L	ast 🖵	Trig: Free Atten: 10				т	YPE MWWWWW DET ANNNNN		
				IFGami	JOW	Atten: Te	uD		М	kr1 26.33	34 5 GHz		Auto Tune
10 dB/div	Ref 0.0	00 dB	m							-49.	798 dBm		
Log Trac	e 1 Pass					,						-	enter Fred
-10.0													0000000 GH
-20.0													Start Free
-30.0												15.000	0000000 GH
-30.0													
-40.0													Stop Free
											1	27.000	0000000 GH
-50.0					ا الله ال		L Internet of		a day and provides	Dengel kalenstan milagi seritar	ald mental a production of		
-60.0	all shall some as	and a state	daharik	n (na se institut	annan anns Anns anns a	i an in ditensi fi ang si sa	and the second secon	a il literature de la companya de la	and sold all the second se	أدفار ورفاعين ببادر منعرية	بالاحطائة الأخاذ بار		CF Step
		and a state	a in the second seco									1.200 Auto	000000 GH Ma
-70.0												<u>rture</u>	
												F	Freq Offse
-80.0													он
-90.0													
												:	Scale Type
Start 15.0	000 GHz									Stop 2	7.000 GHz	Log	Lir
#Res BW				\$	#VBW	3.0 MHz			Sweep	20.80 ms (24001 pts)	-	
MSG									STA	ATUS			

Plot 7-55. Conducted Spurious Plot (NR Band n41 - 100MHz QPSK - RB Size 1, RB Offset 0 - High Channel AntE)

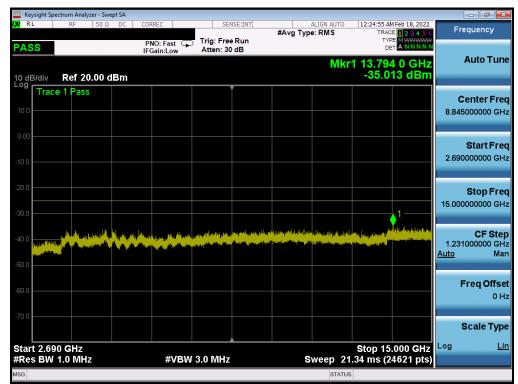
FCC ID: A3LSMS908E	Poud to be part of @ element	PART 27 MEASUREMENT REPORT CLASS II PERMISSIVE CHANGE	SAMSUNG	Approved by: Technical Manager
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NR Band n41 SRS4– AntD

Keysight Spectrum Analyzer - Si					
🗶 RL RF 50 !		SENSE:INT	#Avg Type: RMS	12:24:22 AM Feb 18, 2022 TRACE 1 2 3 4 5 6 TYPE MWWWWW	Frequency
PASS 10 dB/div Ref 20.00	PNO: Fast IFGain:Low	Atten: 30 dB	Mk	r1 2.407 6 GHz -39.531 dBm	Auto Tun
10.0					Center Fre 1.250000000 GH
-10.0					Start Fre 30.000000 M⊦
-20.0					Stop Fre 2.470000000 GF
-40.0	and to a law of the first provide the state of the state	hynnystaal allystaan statebilla sed ladyd	la pi, il in alla a instrum la danta Parta la instrumenta		CF Ste 244.000000 MI <u>Auto</u> M
60.0					Freq Offs 0
-70.0 Start 0.030 GHz #Res BW 1.0 MHz	#VBW	3.0 MHz	Sweep_3	Stop 2.470 GHz .260 ms (4891 pts)	Scale Tyj Log <u>L</u>
MSG			STATUS		

Plot 7-56. Conducted Spurious Plot (NR Band n41 - 100MHz QPSK - RB Size 1, RB Offset 0 - Low Channel AntD)



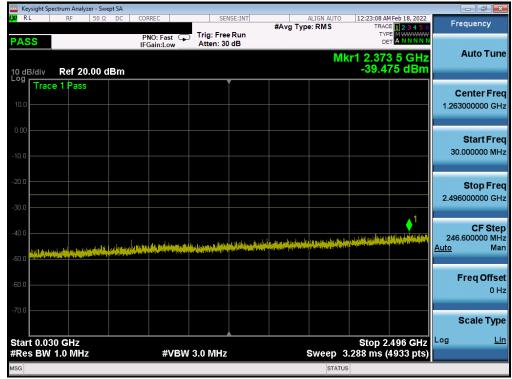
Plot 7-57. Conducted Spurious Plot (NR Band n41 - 100MHz QPSK - RB Size 1, RB Offset 0 - Low Channel AntD)

FCC ID: A3LSMS908E	PCTEST Proad to be port of @ element	PART 27 MEASUREMENT REPORT CLASS II PERMISSIVE CHANGE	SAMSUNG	Approved by: Technical Manager
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	Spectrum Analy											
<mark>u</mark> RL	RF	50 Ω	DC	CORREC	SE	NSE:INT	#Ava Tv	ALIGN AUT		M Feb 18, 2022 CE 1 2 3 4 5 6	Fr	equency
PASS				PNO: Fast	Trig: Fre			pe. remo	TY			
A33				IFGain:Low	Atten: 1) dB						Auto Tur
								M	kr1 26.29	8 0 GHZ		Auto Tui
0 dB/div			m						-48.9	63 dBm		
Tra	ace 1 Pass	S				Ĭ						enter Fr
10.0												0000000 GI
											21.00	000000 G
20.0												
20.0												Start Fr
30.0											15.00	000000 G
00.0												
40.0												
40.0										<u>1</u>		Stop Fr
50.0											27.00	0000000 G
				والانتقاد والمردية والمراجع	a se de la companya d	بهر محتد عليها و	In Part Universions,	a property filled and the	example (publication) process	and the state of t		
<mark>Кађуа</mark> 60.0	al and the second states of th	op del passo	al a Hadler	Constitution and the second	and the second second				Contractor Andrewson	a mentikit ili kula, sis		CF St
SOLO VELEN	a second and the second se	Walk of the	and a second									0000000 G
70.0											<u>Auto</u>	N
/0.0												
												Freq Offs
30.0												0
90.0												
90.0												Scale Ty
												o cure i y
Start 15	5.000 GHz								Stop 27	.000 GHz	Log	<u> </u>
	W 1.0 MH			#VB	W 3.0 MHz			Sweep	20.80 ms (2	24001 pts)		
SG								STA	TUS			

Plot 7-58. Conducted Spurious Plot (NR Band n41 - 100MHz QPSK - RB Size 1, RB Offset 0 - Low Channel AntD)



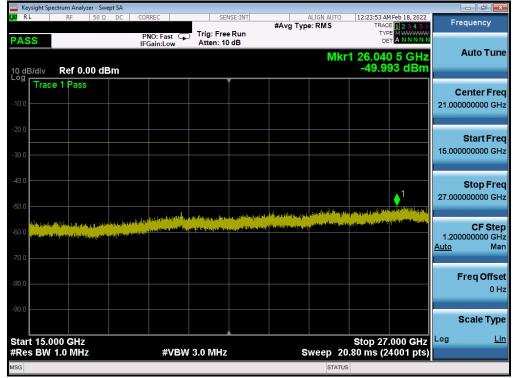
Plot 7-59. Conducted Spurious Plot (NR Band n41 - 100MHz QPSK - RB Size 1, RB Offset 0 - Mid Channel AntD)

FCC ID: A3LSMS908E	Proud to be part of @ element	PART 27 MEASUREMENT REPORT CLASS II PERMISSIVE CHANGE	Approved by: Technical Manager
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	Spectrum Analy		•									
<mark>(</mark> RL	RF	50 Ω	DC	CORREC	SE	NSE:INT	#Avg Typ	ALIGN AUTO		M Feb 18, 2022 CE 1 2 3 4 5 6	Fr	equency
				PNO: Fast	Trig: Fre	Run	#Avg iy	Je. RIVIS	TY			
PASS				IFGain:Low	Atten: 30				C	ET A N N N N N		
								ML	r1 10 34	2 5 GHz		Auto Tur
									-34 0	13 dBm		
0 dB/div	Ref 20	υ.υυ α	вm						-04.0			
🍈 🛛 Tra	ace 1 Pass	s				Ĩ						
												Center Fr
10.0										+	8.84	5000000 G
0.00												
												Start Fr
10.0											2.69	0000000 G
10.0												
20.0												Stop Fr
									_		15.00	0000000 G
30.0							+ <u> </u>			<u> </u>	10.00	
							🔶 "					
	a da da con		ورباند ساريكار	يلير فقريهان براريه والأربي	وأطرار خنام وطنور يرارز	distantia (period by all printing to	1 and a stimution	In the state of the	a dharada a san san san san san san san san san		CF St
40.0	Here and			Sector of the Sector	ى. ئەمەلىرەر ھىيىس	All Manager and All	a humphilipping the	ويتقر بالتقدر أ	المعدية بسوريط علم	المتأثبين ألاأتهما	1.23	1000000 G
de setting	and the second		1.6.1	1. W M							<u>Auto</u>	N
50.0												
50.0												Freq Offs
												0
70.0												
												Scale Ty
											Log	
	690 GHz								Stop 1:			
Res B	N 1.0 MH	Z		#VBW	/ 3.0 MHz		\$	sweep 2	21.34 ms (2	24621 pts)		
SG								STAT	us			

Plot 7-60. Conducted Spurious Plot (NR Band n41 - 100MHz QPSK - RB Size 1, RB Offset 0 - Mid Channel AntD)



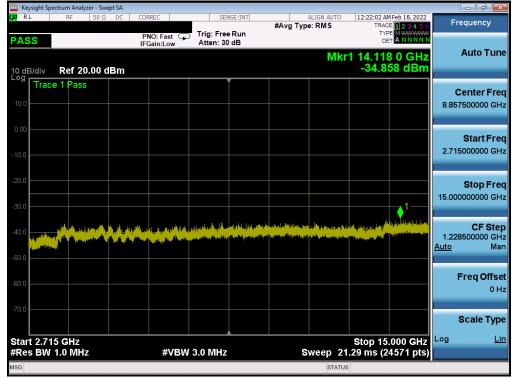
Plot 7-61. Conducted Spurious Plot (NR Band n41 - 100MHz QPSK - RB Size 1, RB Offset 0 - Mid Channel AntD)

FCC ID: A3LSMS908E	Proud to be part of @ element	PART 27 MEASUREMENT REPORT CLASS II PERMISSIVE CHANGE	Approved by: Technical Manager
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	ght Spectrum												
<mark>0</mark> RL	R	F I	50 Ω	DC	CORREC		SENSE:INT	#Avg Ty	ALIGN AUTO De: RMS		M Feb 18, 2022	Fr	equency
PASS	S				PNO: Fast IFGain:Low	Trig: Fi Atten:	ree Run 30 dB			TYI DI			Auto Tur
0 dB/	div Re	ef 20.0)0 dl	Bm					М	kr1 2.42 -39.0	2 0 GHz 77 dBm		Auto Tur
^{- og} [Trace 1 I	Pass					Ĭ					0	Center Fre
10.0													3000000 GI
0.00													Start Fr
												30	.000000 M
10.0													
20.0													Oton En
												2 /0	Stop Fr 5000000 G
30.0												2.43	
											↓ 1		CF St
\$0.0							هرين التراجيكي	والمراجع والمراجع والمراجع	وأربق الترقان والقانور ومالك	kan din watika		246	.600000 M
50.0	liste weiterste					handlig ship light if the	and a state of the state of the	and a second	a ter Bendar solari bili bili b			<u>Auto</u>	M
.0.0													
50.0													Freq Offs
													0
70.0													
													Scale Ty
	0.030 G									Stop 2	.496 GHz	Log	l
Res	BW 1.0	MHz			#VI	3W 3.0 MH	Z		Sweep	3.288 ms (4933 pts)		
SG									STAT	US			

Plot 7-62. Conducted Spurious Plot (NR Band n41 - 100MHz QPSK - RB Size 1, RB Offset 0 - High Channel AntD)



Plot 7-63. Conducted Spurious Plot (NR Band n41 - 100MHz QPSK - RB Size 1, RB Offset 0 - High Channel AntD)

FCC ID: A3LSMS908E	PCTEST Proud to be port of @ element	PART 27 MEASUREMENT REPORT CLASS II PERMISSIVE CHANGE	SAMSUNG	Approved by: Technical Manager
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	pectrum Analy	zer - Swep	t SA										
X/RL	RF	50 Ω	DC	CORREC		SEI	SE:INT	#Avg Ty	ALIGN AUT		AM Feb 18, 2022	Fr	equency
PASS				PNO: Fa		Trig: Free Atten: 10				T			
				IFGain:L	ow	Atten. It			M	kr1 26.14			Auto Tune
10 dB/div	Ref 0.	00 dBi	m							-49.7	62 dBm		
Log Tra	ce 1 Pass											-	enter Fred
-10.0													0000000 GHz
												21.000	
-20.0													
													Start Fred
-30.0												15.000	000000 GHz
-40.0													Stop Free
50.0											♦ ¹	27.000	0000000 GHz
-50.0				المالير بريان		na katana daga k	ut, and then it to be		and the property of	Higgs age Coord Supples And	and the second se		
-60.0	all See physical Action and	that the states of the	o Alterativeli Alterativeli	an a	and the second second	and the second states of the	المعادية فأشتر وعال	and a state of the second s	and an other designed as	أتحقد فالغنا			CF Step
		Highes Minister										1.200 Auto	0000000 GH: Mar
-70.0												<u>/(uto</u>	ma
-80.0												ľ	Freq Offset
													0112
-90.0													
													Scale Type
	000 GHz									Stop 2	7.000 GHz	Log	Lin
#Res BV	1.0 MH	Z		#	VBW	3.0 MHz			Sweep	20.80 ms (24001 pts)		
MSG									STA	TUS			

Plot 7-64. Conducted Spurious Plot (NR Band n41 - 100MHz QPSK - RB Size 1, RB Offset 0 - High Channel AntD)

FCC ID: A3LSMS908E	PCTEST. Proud to be part of @ element	PART 27 MEASUREMENT REPORT CLASS II PERMISSIVE CHANGE	Approved by: Technical Manager
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7.5 Band Edge Emissions at Antenna Terminal

Test Overview

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 maximum power, and at the appropriate frequencies. All data rates were investigated to determine the worst case configuration. All modes of operation were investigated and the worst case configuration results are reported in this section.

The minimum permissible attenuation level for Band 41 is as noted in the Test Notes on the following page.

Test Procedure Used

KDB 971168 D01 v03r01 - Section 6.0

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 > 1% of the emission bandwidth
- 4. VBW > 3 x RBW
- 5. Detector = RMS
- 6. Number of sweep points $\geq 2 \times \text{Span/RBW}$
- 7. Trace mode = trace average for continuous emissions, max hold for pulse emissions
- 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

FCC ID: A3LSMS908E	Proud to be part of @ element	PART 27 MEASUREMENT REPORT CLASS II PERMISSIVE CHANGE	SAMSUNG	Approved by: Technical Manager
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- Per 27.53(m) for operations in the BRS/EBS bands, the attenuation factor shall be not less than 40 + 10 log (P) dB on all frequencies between the channel edge and 5 megahertz from the channel edge, 43 + 10 log (P) dB on all frequencies between 5 megahertz and X megahertz from the channel edge, and 55 + 10 log (P) dB on all frequencies more than X megahertz from the channel edge, where X is the greater of 6 megahertz or the actual emission bandwidth. In addition, the attenuation factor shall not be less that 43 + 10 log (P) dB on all frequencies between 2490.5 MHz and 2496 MHz and 55 + 10 log (P) dB at or below 2490.5 MHz.
- 2. For NR operation, all subcarrier spacings (SCS) and transmission schemes (e.g. CP-OFDM and DFT-s-OFDM) were investigated to determine the worst case configuration. All modes of operation were investigated and the worst case configuration results are reported in this section.

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PASS		RF 50Ω I	DC CORREC	Trig:	SENSE:INT r Freq: 2.546000000 Free Run n: 32 dB	ALIGN AUTO	09:49:09 Pl Radio Std: Radio Dev		Frequency
10 dB/	/div	Ref 30.00 (dBm						
_ og 20.0 10.0									Center Fre 2.546000000 GH
0.00 -									
-20.0 -								and a second second	
-50.0		ngmmmmmmmmmm							
Start	2.371 (GHz					Stop 2	.621 GHz	CF Ste 525.200000 Mi
					1				Auto Ma
Spur	Range	Start Freq	Stop Freq	RBW	Frequency	Amplitude	∆ Limit		<u>Auto</u>
Spur 1	Range	2.3710 GHz	2.4905 GHz	1.000 MHz	2.489495798 GHz	-38.13 dBm	△ Limit -13.13 dB	;	
1 2	1 2	2.3710 GHz 2.4905 GHz	2.4905 GHz 2.4950 GHz	1.000 MHz 1.000 MHz	2.489495798 GHz 2.494910000 GHz	-38.13 dBm -36.19 dBm	-13.13 dB -23.19 dB	3	
3	1 2 3	2.3710 GHz 2.4905 GHz 2.4950 GHz	2.4905 GHz 2.4950 GHz 2.4960 GHz	1.000 MHz 1.000 MHz 1.000 MHz	2.489495798 GHz 2.494910000 GHz 2.496000000 GHz	-38.13 dBm -36.19 dBm -29.22 dBm	-13.13 dB -23.19 dB -16.22 dB	3	Freq Offs
Spur 1 2 3 4	1 2	2.3710 GHz 2.4905 GHz	2.4905 GHz 2.4950 GHz	1.000 MHz 1.000 MHz 1.000 MHz	2.489495798 GHz 2.494910000 GHz	-38.13 dBm -36.19 dBm -29.22 dBm	-13.13 dB -23.19 dB	3	
1 2 3	1 2 3	2.3710 GHz 2.4905 GHz 2.4950 GHz	2.4905 GHz 2.4950 GHz 2.4960 GHz	1.000 MHz 1.000 MHz 1.000 MHz	2.489495798 GHz 2.494910000 GHz 2.496000000 GHz	-38.13 dBm -36.19 dBm -29.22 dBm	-13.13 dB -23.19 dB -16.22 dB	3	Freq Offs

Plot 7-65. Lower ACP Plot (NR Band n41 - 100MHz CP-OFDM-QPSK - Full RB - AntJ)

Keysig		m Analyzer - Spur RF 50 Ω		ons CORREC		SENSE:INT		ALIGN AUT) 09:52:05 F	PM Feb 17, 2022		
PASS	Ga	ite: LO		IFGain:Low	+++ Trig:	er Freq: 2.64000 Free Run n: 32 dB	0000 G	θHz	Radio Std		Frequ	ency
10 dB/d	div	Ref 30.00	dBm									
- og 20.0											Cen 2.64000	ter Fre 0000 GH
0.00				<u> </u>	n							
20.0]										
40.0	and the second						~~~~~	~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~				
60.0	2.565	GHz							Stop 2	2.815 GHz		CF Ste
												0000 MF Ma
Spur		Start Freq		p Freq	RBW	Frequency		Amplitude	∆ Limit		Auto	inic
	1	2.5650 GHz		00 GHz		2.607670683			-22.69 dl			
2	2	2.6900 GHz		10 GHz		2.690000000			-19.11 dE		Fre	q Offs
3	3	2.6910 GHz		50 GHz		2.691000000			-23.22 dE			0H
1 5	4	2.6950 GHz		00 GHz		2.695000000			-21.61 dE			
	0	2.7900 GHz	2.31	50 GHz	1.000 MHz	2.793000000	GHZ -	50.93 dBm	-25.93 df			
SG								STA	TUS			

Plot 7-66. Upper ACP Plot (NR Band n41 - 100MHz CP-OFDM-QPSK - Full RB - AntJ)

FCC ID: A3LSMS908E		PART 27 MEASUREMENT REPORT CLASS II PERMISSIVE CHANGE	SAMSUNG	Approved by: Technical Manager
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			ous Emissio									
K <mark>I</mark> RL	6-1	kF 50 Ω	DC C	ORREC		SENSE:INT ter Freq: 2.5410 : Free Run	00000 GH	ALIGN AUTO	09:59:37 P Radio Std	M Feb 17, 2022 : None	Frequ	ency
PASS	Gat	le: LO		FGain:L	-	en: 32 dB			Radio Dev	vice: BTS		
10 d <u>B/d</u>	liv	Ref 30.00	dBm									
-og 20.0											0	ion Eng
10.0												ter Fre
											2.541000	000 GF
0.00												
10.0												
20.0												
-30.0												
40.0					~~~	name of the second						
-50.0					and a start of the							
-60.0												
	2.396 Q	GHz							Stop 2	.596 GHz		
Start 2			Stor	Freq	RBW	Frequency		mplitude		.596 GHz	(525.200 <u>Auto</u>	000 MH
Start 2	Range			o Freq 05 GHz	RBW	Frequency		mplitude	Stop 2		525.200	000 MH
Start 2	Range 1	Start Freq	2.49		1.000 MH		GHz -3	9.15 dBm	∆ Limit	3	525.200 <u>Auto</u>	Ма
Start 2 Spur 1 2 2 3 3	Range 1 2 3	Start Freq 2.3960 GHz 2.4905 GHz 2.4950 GHz	2.490 2.495 2.496	05 GHz 50 GHz 60 GHz	1.000 MHz 1.000 MHz 910.0 kHz	z 2.49050000 z 2.494550000 2.496000000	GHz -39 GHz -36 GHz -36 GHz -36	9.15 dBm 5.94 dBm 1.00 dBm	∆ Limit -14.15 dE -23.94 dE -18.00 dE	3 3 3	525.200 <u>Auto</u>	0000 M⊢ Ma
Start 2 Spur 1 2 3 3	Range 1 2	Start Freq 2.3960 GHz 2.4905 GHz	2.490 2.495 2.496	05 GHz 50 GHz	1.000 MHz 1.000 MHz 910.0 kHz	z 2.49050000 z 2.494550000	GHz -39 GHz -36 GHz -36 GHz -36	9.15 dBm 5.94 dBm 1.00 dBm	∆ Limit -14.15 dE -23.94 dE	3 3 3	525.200 <u>Auto</u>	000 Mi M q Offs
Start 2	Range 1 2 3	Start Freq 2.3960 GHz 2.4905 GHz 2.4950 GHz	2.490 2.495 2.496	05 GHz 50 GHz 60 GHz	1.000 MHz 1.000 MHz 910.0 kHz	z 2.49050000 z 2.494550000 2.496000000	GHz -39 GHz -36 GHz -36 GHz -36	9.15 dBm 5.94 dBm 1.00 dBm	∆ Limit -14.15 dE -23.94 dE -18.00 dE	3 3 3	525.200 <u>Auto</u>	000 MH Ma
Start 2 Spur 1 2 3 3	Range 1 2 3	Start Freq 2.3960 GHz 2.4905 GHz 2.4950 GHz	2.490 2.495 2.496	05 GHz 50 GHz 60 GHz	1.000 MHz 1.000 MHz 910.0 kHz	z 2.49050000 z 2.494550000 2.496000000	GHz -39 GHz -36 GHz -36 GHz -36	9.15 dBm 5.94 dBm 1.00 dBm	∆ Limit -14.15 dE -23.94 dE -18.00 dE	3 3 3	525.200 <u>Auto</u>	000 MH Ma
Start 2 Spur 1 2 2 3 3	Range 1 2 3	Start Freq 2.3960 GHz 2.4905 GHz 2.4950 GHz	2.490 2.495 2.496	05 GHz 50 GHz 60 GHz	1.000 MHz 1.000 MHz 910.0 kHz	z 2.49050000 z 2.494550000 2.496000000	GHz -39 GHz -36 GHz -36 GHz -36	9.15 dBm 5.94 dBm 1.00 dBm	∆ Limit -14.15 dE -23.94 dE -18.00 dE	3 3 3	525.200 <u>Auto</u>	0000 MH Ma
Start 2	Range 1 2 3	Start Freq 2.3960 GHz 2.4905 GHz 2.4950 GHz	2.490 2.495 2.496	05 GHz 50 GHz 60 GHz	1.000 MHz 1.000 MHz 910.0 kHz	z 2.49050000 z 2.494550000 2.496000000	GHz -39 GHz -36 GHz -36 GHz -36	9.15 dBm 5.94 dBm 1.00 dBm	∆ Limit -14.15 dE -23.94 dE -18.00 dE	3 3 3	525.200 <u>Auto</u>	0000 MH Ma

Plot 7-67. Lower ACP Plot (NR Band n41 - 90MHz CP-OFDM-QPSK - Full RB - AntJ)



Plot 7-68. Upper ACP Plot (NR Band n41 - 90MHz CP-OFDM-QPSK - Full RB - AntJ)

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Keys	ight Spectrur	n Analyz RF	er - Spur 50 Ω		issions CORI	250			051	or mut		_				DU 5 1 4 3			
AS		κ⊧ te: LO	50 Ω	DC			•••	Trig:	r Fre		0000		ALIGN AUTO	R	adio St	PM Feb 17, d: None		Fre	quency
- 43	<u> </u>				IFG	ain:Lov	N	#Atte	n: 32	dB				Ra	adio De	evice: BT	s		
0 dB ₋og [/div	Ref	30.00	dBn	n														
20.0 10.0																			enter Fre 990000 G⊦
0.00 10.0 -										ſ 				~~~~	~~	}			
20.0 30.0 -																			
40.0 -																			
-50.0 <mark>-</mark> -60.0 -	T					~													
Start	2.396 (GHz													Stop	2.596 Q	Hz	525.	CF Ste 200000 MH
Spur	Range	Star	t Freq	S	top F	req	RB	W	Fre	equency		Ampli	itude	4	Limit			<u>Auto</u>	Ma
1	1	2.396	60 GHz	2.	4905	GHz	1.00	00 MHz	2.4	90500000 (GHz	-38.29	dBm	-1	13.29 d	В			
2	2)5 GHz		4950	GHz				95000000 (23.01 d			F	reg Offs
3	3		50 GHz		4960					96000000 (23.11 d				01
1	4	2.496	60 GHz	2.	5960	GHz	1.00	00 MHz	2.5	60321608 (GHz	3.440	dBm	-2	21.56 d	В			0 1
G		_		_	_		_	_					STAT	US	_				

Plot 7-69. Lower ACP Plot (NR Band n41 - 80MHz CP-OFDM-QPSK - Full RB - AntJ)



Plot 7-70. Upper ACP Plot (NR Band n41 - 80MHz CP-OFDM-QPSK - Full RB - AntJ)

FCC ID: A3LSMS908E	PCTEST Proud to be port of @ element	PART 27 MEASUREMENT REPORT CLASS II PERMISSIVE CHANGE	AMSUNG	Approved by: Technical Manager
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	Freque		Radio Std: I Radio Devic			NSE:INT reg: 2.5260000	Canta		ORREC		zer - Spuriou 50 Ω [RF	F	RL
					000 GH2	e Run		w _	Gain:Lo	I		te: LO	S Gat	AS
										dBm	30.00	Ref	/div	0 dB .og F
nter Fre	Cente 2.5260000													20.0 10.0
).00 10.0
		Construction and the second												20.0 30.0
							a di sa di	Marken and					ur left for the ball	10.0 50.0
CF Ste	6	571 GHz	Stop 2.									GHz	2.421 (io.o - itart
	525.2000		1 4 1 1	4	1.0			Inc	F	0.0	at Passa	0.0	Denne	0
														spur
														,
eq Offs	Freq									_				
01			-19.83 dB							_			4	
0	525.2000 <u>Auto</u>		Δ Limit -10.66 dB -20.72 dB -20.65 dB	dBm dBm	Hz -35.6 Hz -33.7 Hz -33.6	requency 490500000 G 495000000 G 495976667 G 543500000 G	10 MHz 10 MHz 10 kHz	1.00 620	Freq 5 GHz 0 GHz 0 GHz 0 GHz	2.490 2.495 2.496	rt Freq 10 GHz 105 GHz 150 GHz 160 GHz	Star 2.421 2.490 2.495	Range Range 2 3	Spur

Plot 7-71. Lower ACP Plot (NR Band n41 - 60MHz CP-OFDM-QPSK - Full RB - AntJ)



Plot 7-72. Upper ACP Plot (NR Band n41 - 60MHz CP-OFDM-QPSK - Full RB - AntJ)

FCC ID: A3LSMS908E	PCTEST Proud to be part of @ element	PART 27 MEASUREMENT REPORT CLASS II PERMISSIVE CHANGE	SAMSUNG	Approved by: Technical Manager
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X/RL		n Analyzer - Spurio RF 50 Ω		s RREC		SENSE:INT		ALIGN AUTO	10:20:33	PM Feb 17, 2022		
PAS	S Gat	te: LO	IF	Gain:Lov	+++ Trig:	r Freq: 2.52100 Free Run n: 32 dB	0000 GHz		Radio Ste Radio De	d: None vice: BTS	Frequ	ency
10 dB Log F	3/div	Ref 30.00	dBm	1								·
20.0 10.0											Cent 2.521000	t er Fre 1000 GH
0.00 10.0 -												
20.0 - 30.0 - 40.0 -						~~				Warman Multiger Contraction		
50.0 - 60.0 -			<u> </u>									
L Start	2.434 (GHz							Stop :	2.559 GHz	(525.200	CF Ste 000 M⊦
	Range	Start Freq	Stop	Frea	RBW	Frequency	Am	plitude	∆ Limit		<u>Auto</u>	Ma
Spur						2.490500000			-10.55 d	B		
Spur	1	2.4335 GHz	2.4905	o GHZ					-10.55 u			
Spur 1 2		2.4335 GHz 2.4905 GHz	2.4905			2.494550000			-20.74 d		Ero	
1	1) GHz	1.000 MHz		GHz -33.	74 dBm		В	Free	q Offs
	1 2	2.4905 GHz	2.4950) GHz) GHz	1.000 MHz 560.0 kHz	2.494550000	GHz -33. GHz -35.	74 dBm 55 dBm	-20.74 d	B B	Free	
2	1 2 3	2.4905 GHz 2.4950 GHz	2.4950 2.4960) GHz) GHz	1.000 MHz 560.0 kHz	2.494550000 2.495960000	GHz -33. GHz -35.	74 dBm 55 dBm	-20.74 d -22.55 d	B B	Free	q Offs 0 I

Plot 7-73. Lower ACP Plot (NR Band n41 - 50MHz CP-OFDM-QPSK - Full RB - AntJ)



Plot 7-74. Upper ACP Plot (NR Band n41 - 50MHz CP-OFDM-QPSK - Full RB - AntJ)

FCC ID: A3LSMS908E	Proud to be part of @ element	PART 27 MEASUREMENT REPORT CLASS II PERMISSIVE CHANGE	SAMSUNG	Approved by: Technical Manager
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📕 Keysi 🗶 R L	ight Spectrun	n <mark>Analyz</mark> RF	er - Spur 50 Ω	ious Em		RREC			CEN	ISE:INT			ALIGN AUT	0	10.20-	40 DM	1Feb 17, 2022	_	
		te: LO	50.32	DC	COI		- -→	, Trig:	er Fr Free	eq: 2.51598 Run	0000	GHz	ALIGN ADT		Radio			F	requency
PASS					IFG	Gain:Lo	w	#Atte	n: 32	2 dB					Radio I	Devi	ce: BTS		
10 d <u>B</u> /	div	Ref	30.00	dBr	n														
- °g 20.0																			.
																			Center Fre
10.0																		2.51	5980000 GH
0.00												<u> </u>							
10.0																			
20.0																			
30.0																			
40.0									~~.	ſ						~~			
50.0					مسمحى														
	~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~																		
60.0																			
Start	2.446 0	SHz													Sto	p 2.	546 GHz		05.04
																		525	CF Ste 5.200000 MH
Spur	Range	Star	t Freg	8	Stop F	Freq	R	BW	Fr	equency		Ampl	itude		ΔLim	it		<u>Auto</u>	Ma
1	1	2.446	60 GHz	2.	4905	GHz	1.0	000 MHz	2.4	89610000	GHz	-35.14	dBm		-10.14	dB			
2	2		)5 GHz		4950					93425000					-20.54				Freq Offs
3	3		50 GHz		4960					96000000					-23.10				0 H
4	4	2.496	60 GHz	2.	5460	GHz	43	0.0 kHz	2.5	30199134	GHz	3.172	dBm		-21.83	dB			01
		_	_	_	_	_	_	_							-				
G													STA	TUS					

Plot 7-75. Lower ACP Plot (NR Band n41 - 40MHz CP-OFDM-QPSK - Full RB - AntJ)



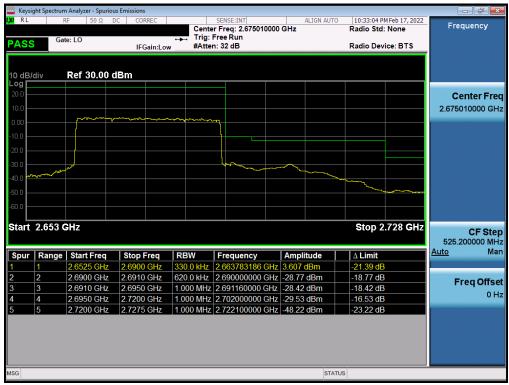
Plot 7-76. Upper ACP Plot (NR Band n41 - 40MHz CP-OFDM-QPSK - Full RB - AntJ)

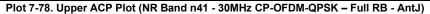
FCC ID: A3LSMS908E	PCTEST. Proud to be part of @element	PART 27 MEASUREMENT REPORT CLASS II PERMISSIVE CHANGE	SAMSUNG	Approved by: Technical Manager
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	10-21-22 DM	ALIGN AUTO	art.			DRREC		lyzer - Spuriou 50 Ω [	nt Spectrum RF	Keys R L
SENSE:INT         ALIGN AUTO         10:31:23 PM Feb 17, 2022         Frequency           Center Freq: 2.51100000 GHz         Radio Std: None         Frequency           →         Trig: Free Run         Frequency         Frequency		ALIGN AUTO	2.511000000 G	nter		JRREC			Gate	
Low #Atten: 32 dB Radio Device: BTS	Radio Devi			tten:	w #Atte	Gain:Low	IF	<u> </u>	Gate	AS
							dBm	f 30.00 d	iv	0 dB og <b>[</b>
Center F										20.0
2.511000000										10.0
	q									1.00
										0.0
										0.0
										0.0
	•									10.0
								ممسمه		0.0 L
										0.0
Stop 2.534 GHz CF St	Stop 2.							2	2.459 G	tart
525.20000 M										
		114 1	ency		RBW	Fred	Stop	art Freq	Range	Spur
						1 log				
z 1.000 MHz 2.490500000 GHz -31.76 dBm -6.761 dB	-6.761 dB	6 dBm	00000 GHz -	Hz 2	1.000 MHz	5 GHz	2.490	585 GHz		
RBW         Prequency         Amplitude         A Linit           z         1.000 MHz         2.490500000 GHz         -31.76 dBm         -6.761 dB           z         1.000 MHz         2.494820000 GHz         -30.73 dBm         -17.73 dB         Freq Off	-6.761 dB -17.73 dB	' <mark>6 dBm</mark> '3 dBm	00000 GHz - 20000 GHz -	Hz 2 Hz 2	1.000 MHz	5 GHz 0 GHz	2.490 2.495	905 GHz	2	
RBW         Prequency         Amplitude         A Limit           z         1.000 MHz         2.49050000 GHz         31.76 dBm         -6.761 dB           z         1.000 MHz         2.49482000 GHz         -30.73 dBm         -17.73 dB           z         330.0 kHz         2.495720000 GHz         -35.19 dBm         -22.19 dB         Freq Off	-6.761 dB -17.73 dB -22.19 dB	<mark>'6 dBm</mark> '3 dBm 9 dBm	00000 GHz - 20000 GHz - 20000 GHz -	Hz 2 Hz 2 Iz 2	1.000 MHz 1.000 MHz 330.0 kHz	5 GHz 0 GHz 0 GHz	2.490		2 : 3 :	

Plot 7-77. Lower ACP Plot (NR Band n41 - 30MHz CP-OFDM-QPSK - Full RB - AntJ)





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🚾 Keysi 🗶 R L	ight Spectrun		r - Spuri 50 Ω	ous Emi	issions CORF	DEC			CEN	SE:INT			ALIGN AUT	0	10.25.5	50 DM	1Feb 17, 2022	_	
PASS		te:LO	20.22	DC				Trig:	r Fre Free	q: 2.5059 Run	90000	GHz	ALIGN AUT	Radio Std: None Frequ Radio Device: BTS			equency		
-433						ain:Lov	N	#Atte	n: 32	dB					Radio I	Devi	ce: BTS		
i0 dB/ ₋og <b>Г</b>	div	Ref 3	30.00	dBn	n														
20.0																			Center Fre 5990000 G⊢
0.00											~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~	~~~ <u>~</u> ~~	and a second	~~~	~	ł		2.000	5550000 011
10.0									=							Ļ			
20.0 - 30.0 -										ļ									
40.0 -				****		~		~	تمد								m vvr		
-50.0 💻		~~~~~																	
-60.0																			
Start	2.471 (	SHZ													Stop	o 2.	521 GHz		CF Ste .200000 MH
Spur	Range	Start	Freq	S	top F	req	RB	W	Fre	quency		Ampl	itude		∆ Lim	it		<u>Auto</u>	Ma
	1	2.471			4905					38355000					-7.266				
2	2	2.490			4950					9500000					-16.77				Freq Offs
3	3	2.495			4960					9600000					-19.66				0 -
4	4	2.496	0 GHz	2.	5210	GHz	240	.0 kHz	2.50	9768116	6 GHz	3.734	dBm		-21.27	dB			01
SG													STA	TUS					

Plot 7-79. Lower ACP Plot (NR Band n41 - 20MHz CP-OFDM-QPSK - Full RB - AntJ)



Plot 7-80. Upper ACP Plot (NR Band n41 - 20MHz CP-OFDM-QPSK - Full RB - AntJ)

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## NR Band n41 SRS2 – AntB

Keysight S																	<b>.</b>
KU RL	R	F	50 Ω	DC	CO	RREC		Cent		NSE:INT reg: 2.546000	000		ALIGN AUTO		5 PM Feb 17, 2022 td: None	Freque	ncy
	Gat	e: LO					•			e Run		5112		Raulo 3	tu. None		
PASS	out				IF	Gain:L	wo	#Att	en: 3	2 dB				Radio D	evice: BTS		
10 dB/div		Ref 3	10 OO	dB	m												
20.0																Cent	er Fre
10.0																2.546000	000 GH
0.00															_		
10.0															ļ		
20.0																	
30.0																	
40.0								_	ليهيدوهما								
50.0								- And -									
60.0			-7		******												
·6U.U																	
Start 2.3	71 G	Hz												Stop	2.621 GHz		
																244.000	F Ste
Spur   Ra	ange	Start	Freq		Stop	Freq		RBW	Fi	requency		Ampli	tude	∆ Limi	t	<u>Auto</u>	Ma
1 1		2.371	0 GHz	2	.490	5 GHz	: 1	.000 MH	z 2.4	486985294 (	GHz	-38.37	dBm	-13.37	dB		
2 2		2.490	5 GHz	2	.495(	0 GHz	: 1	.000 MH	z 2.4	195000000 0	GHz	-38.52	dBm	-25.52	dB	Free	Offs
3 3		2.495				0 GHz			_	496000000				-17.36		1100	013
4 4		2.496	0 GHz	2	.621(	0 GHz	. 1	.000 MH	z 2.5	592887550 (	GHz	1.275	dBm	-23.72	dB		0 1
SG	_		_	_		_					_		STATU	s			

Plot 7-81. Lower ACP Plot (NR Band n41 - 100MHz CP-OFDM-QPSK - Full RB - AntB)

Keysigl	F	n Analyzer - Spurio F 50 Ω re: LO	DC CORREC	Trig:	SENSE:INT r Freq: 2.6400000 Free Run n: 32 dB	ALIGN AUTO	Radio Std: None	Frequency
10 dB/d		Ref 30.00	IFGain:L	ow_#Atte	n: 32 aB		Radio Device: BTS	
-og								
10.0								Center Fre 2.640000000 GH
0.00		/- ···			~			
20.0								
30.0								
40.0	لىمىيەتىم مەمامىي					~~		
50.0 <u> </u>						**	~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~	
Start :	2.565 C	Hz					Stop 2.815 GHz	CF Ste 244.000000 MH
Spur	Range	Start Freq	Stop Freq	RBW	Frequency	Amplitude	∆ Limit	<u>Auto</u> Ma
	1	2.5650 GHz	2.6900 GHz	1.000 MHz	2.604658635 GH	lz 0.678 dBm	-24.32 dB	
	2	2.6900 GHz	2.6910 GHz		2.690000000 GH		-21.16 dB	Freq Offse
	3	2.6910 GHz	2.6950 GHz		2.695000000 GH		-25.03 dB	0 H
	4	2.6950 GHz	2.7900 GHz		2.695000000 GH		-22.19 dB	011
5	5	2.7900 GHz	2.8150 GHz	1.000 MHz	2.804750000 GH	iz -50.86 dBm	-25.86 dB	
5G	_					STAT	TUS	

Plot 7-82. Upper ACP Plot (NR Band n41 - 100MHz CP-OFDM-QPSK - Full RB - AntB)

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## NR Band n41 SRS3 – AntE

RL	im Analyzer - Spurio RF 50 Ω	DC CORREC		SENSE:INT	ALIGN AUTO		4 Feb 17, 2022	Frequen	5 ×
ASS	ate: LO	IFGain:	Trig:	er Freq: 2.546000 Free Run m: 32 dB	0000 GHz	Radio Std: Radio Devi		Frequen	cy
0 dB/div	Ref 30.00	dBm							
0.0								Center 2.54600000	
0.00 0.0 0.0						~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~			
0.0							and the second		
0.0		~~_L~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~							
tart 2.371	GHz					Stop 2.	.621 GHz	CF 25.00000	F Ste 00 M⊦
Spur   Range	Start Freq	Stop Freq	RBW	Frequency	Amplitude	∆ Limit		Auto	Ma
1	2.3710 GHz	2.4905 GH	z 1.000 MHz	2.489997899	GHz -43.20 dBm	-18.20 dB			
2	2.4905 GHz	2.4950 GH	z 1.000 MHz	2.490500000	GHz -43.17 dBm	-30.17 dB		Ereat	Offe
3	2.4950 GHz	2.4960 GH	z 1.000 MHz	2.496000000	GHz -34.50 dBm	-21.50 dB		rieqv	015
4	2.4960 GHz	2.6210 GH	z 1.000 MHz	2.546702811	GHz -2.990 dBm	-27.99 dB			UF
1 2 3	2.3710 GHz 2.4905 GHz 2.4950 GHz	2.4905 GH 2.4950 GH 2.4960 GH	z 1.000 MHz z 1.000 MHz z 1.000 MHz	2.489997899 ( 2.490500000 ( 2.496000000 (	GHz         -43.20 dBm           GHz         -43.17 dBm           GHz         -34.50 dBm	Δ Limit -18.20 dB -30.17 dB -21.50 dB			0

Plot 7-83. Lower ACP Plot (NR Band n41 - 100MHz CP-OFDM-QPSK - Full RB - AntE)



Plot 7-84. Upper ACP Plot (NR Band n41 - 100MHz CP-OFDM-QPSK - Full RB - AntE)

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## NR Band n41 SRS4 – AntD

	Spectrum																
I <mark>XI</mark> RL	R	F	50 Ω	DC	CO	RREC		Cent		NSE:INT req: 2.546000	000 G		ALIGN AUTO		AM Feb 18, 2022	F	requency
_	Gat	e: LO						Trig:	Fre	e Run	000 0	5112		Radio 3	u. None		
PASS					IF	Gain:L	.ow	#Atte	n: 3	2 dB				Radio D	evice: BTS		
10 dB/div	v	Ref :	30.00	dB	m												
Log																	
20.0																	Center Free
10.0																2.54	6000000 GH
0.00											~~~~				-		
-10.0																	
-20.0																	
-30.0																	
-40.0								منعم	نيم.^						man and		
								1									
-50.0	,	·		~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~	daahood	t	Janago	~~^									
-60.0																	
Start 2	371 6	<u>د ال</u>							_					Ston	2.621 GHz		
Start Z	.3710	2112												Stop	2.021 962		CF Step 5.000000 MH
Spur   F	Range	Ohard	Freq		04	Freg		RBW		requency		Ampli		∆ Limit		Auto	Mar Mar
3pur   r			0 GHz			5 GHz				188993697 G				-9.352			
2 2			5 GHz			0 GHz				494055000 G				-21.96			
3 3			0 GHz			0 GHz				496000000 G				-18.72			Freq Offse
4 4		2.496	0 GHz	: 2	.6210	) GHz	. 1	.000 MHz	2.5	591381526 G	Hz -	0.155	dBm	-25.16	dΒ		0 H:
MSG													STATU	3			
	-		-			-			-							2 1 10	

Plot 7-85. Lower ACP Plot (NR Band n41 - 100MHz CP-OFDM-QPSK - Full RB - AntD)



Plot 7-86. Upper ACP Plot (NR Band n41 - 100MHz CP-OFDM-QPSK - Full RB - AntD)

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## 7.6 Radiated Power (EIRP)

#### Test Overview

Equivalent Isotropic Radiated Power (EIRP) measurements are performed using the substitution method described in ANSI/TIA-603-E-2016 with the EUT transmitting into an integral antenna. Measurements on signals operating below 1GHz are performed using vertically and horizontally polarized tuned dipole antennas. Measurements on signals operating above 1GHz are performed using vertically and horizontally polarized broadband horn antennas. All measurements are performed as RMS average measurements while the EUT is operating at maximum power, and at the appropriate frequencies.

#### **Test Procedures Used**

KDB 971168 D01 v03r01 - Section 5.2.1

ANSI/TIA-603-E-2016 - Section 2.2.17

#### Test Settings

- Radiated power measurements are performed using the signal analyzer's "channel power" measurement capability for signals with continuous operation. For signals with burst transmission, the signal analyzer's "time domain power" measurement capability is used
- 2. RBW = 1 5% of the expected OBW, not to exceed 1MHz
- 3. VBW  $\ge$  3 x RBW
- 4. Span = 1.5 times the OBW
- 5. No. of sweep points > 2 x span / RBW
- 6. Detector = RMS
- 7. Trigger is set to "free run" for signals with continuous operation with the sweep times set to "auto". Trigger is set to enable triggering only on full power bursts with the sweep time set less than or equal to the transmission burst duration
- 8. The integration bandwidth was roughly set equal to the measured OBW of the signal for signals with continuous operation. For signals with burst transmission, the "gating" function was enabled to ensure that measurements are performed during times in which the transmitter is operating at its maximum power
- 9. Trace mode = trace averaging (RMS) over 100 sweeps
- 10. The trace was allowed to stabilize

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

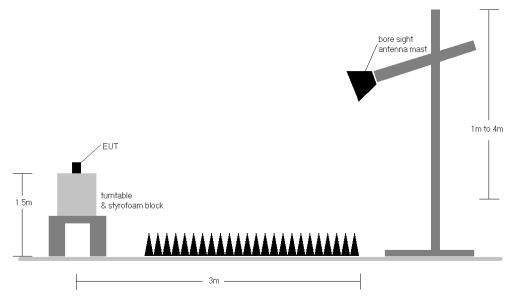


Figure 7-5. Radiated Test Setup >1GHz

#### Test Notes

- 1) The EUT was tested in three orthogonal planes and in all possible test configurations and positioning. The worst case emissions are reported with the EUT positioning, modulations, RB sizes and offsets, and channel bandwidth configurations shown in the tables below.
- 2) This unit was tested with its standard battery.
- 3) For NR operation, all subcarrier spacings (SCS) and transmission schemes (e.g. CP-OFDM and DFT-s-OFDM) were investigated to determine the worst case configuration. All modes of operation were investigated and the worst case configuration results are reported in this section.

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Bandwidth	Mod.	Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Ant. Gain [dBi]	RB Size/Offset	Substitute Level [dBm]	EIRP [dBm]	EIRP [Watts]	EIRP Limit [dBm]	Margin [dB]
	π/2 BPSK	2546.0	V	108	25	9.40	1 / 136	11.56	20.96	0.125	33.01	-12.05
~	π/2 BPSK	2593.0	V	118	26	9.46	1 / 136	12.67	22.13	0.163	33.01	-10.88
100 MHz	π/2 BPSK	2640.0	V	114	26	9.50	1 / 68	11.59	21.09	0.129	33.01	-11.92
N O	QPSK	2546.0	V	108	25	9.40	1 / 136	10.84	20.24	0.106	33.01	-12.77
10(	QPSK	2593.0	V	118	26	9.46	1 / 136	12.14	21.60	0.145	33.01	-11.41
	QPSK	2640.0	V	114	26	9.50	1 / 68	10.89	20.39	0.109	33.01	-12.62
	16-QAM	2593.0	V	118	26	9.46	1 / 136	11.55	21.01	0.126	33.01	-12.00
	π/2 BPSK	2541.0	V	108	25	9.46	1 / 183	11.90	21.36	0.137	33.01	-11.65
	π/2 BPSK	2593.0	V	118	26	9.46	1 / 183	12.90	22.36	0.172	33.01	-10.65
Hz	π/2 BPSK	2645.0	V	114	26	9.51	1 / 122	11.40	20.91	0.123	33.01	-12.10
90 MHz	QPSK	2541.0	V	108	25	9.46	1 / 183	10.77	20.23	0.105	33.01	-12.78
6	QPSK	2593.0	V	118	26	9.46	1 / 183	12.26	21.72	0.149	33.01	-11.29
	QPSK	2645.0	V	114	26	9.51	1 / 122	11.06	20.57	0.114	33.01	-12.44
	16-QAM	2593.0	V	118	26	9.46	1 / 183	11.69	21.16	0.131	33.01	-11.85
	π/2 BPSK	2536.0	V	108	25	9.49	1 / 162	11.67	21.16	0.131	33.01	-11.85
	π/2 BPSK	2593.0	V	118	26	9.46	1 / 162	12.77	22.23	0.167	33.01	-10.78
80 MHz	π/2 BPSK	2650.0	V	114	26	9.52	1 / 162	11.76	21.27	0.134	33.01	-11.74
×	QPSK	2536.0	V	108	25	9.49	1 / 162	10.57	20.06	0.101	33.01	-12.95
80	QPSK	2593.0	V	118	26	9.46	1 / 162	11.84	21.30	0.135	33.01	-11.71
	QPSK	2650.0	V	114	26	9.52	1 / 162	10.79	20.31	0.107	33.01	-12.70
	16-QAM	2593.0	V	118	26	9.46	1 / 162	10.97	20.44	0.111	33.01	-12.57
	π/2 BPSK	2526.0	V	108	25	9.52	1 / 121	10.93	20.45	0.111	33.01	-12.56
	π/2 BPSK	2593.0	V	118	26	9.46	1 / 121	12.15	21.61	0.145	33.01	-11.40
60 MHz	π/2 BPSK	2660.0	V	114	26	9.50	1 / 121	11.26	20.76	0.119	33.01	-12.25
N N N	QPSK	2526.0	V	108	25	9.52	1 / 121	10.61	20.12	0.103	33.01	-12.89
60	QPSK	2593.0	V	118	26	9.46	1 / 121	12.14	21.60	0.144	33.01	-11.41
	QPSK	2660.0	V	114	26	9.50	1 / 121	11.14	20.64	0.116	33.01	-12.37
	16-QAM	2593.0	V	118	26	9.46	1 / 121	11.46	20.92	0.124	33.01	-12.09
	π/2 BPSK	2521.0	V	108	25	9.51	1 / 99	11.57	21.08	0.128	33.01	-11.93
	π/2 BPSK	2593.0	V	118	26	9.46	1 / 99	12.68	22.15	0.164	33.01	-10.86
Hz	π/2 BPSK	2665.0	V	114	26	9.51	1 / 99	11.68	21.19	0.131	33.01	-11.82
50 MHz	QPSK	2521.0	V	108	25	9.51	1 / 99	10.66	20.17	0.104	33.01	-12.84
50	QPSK	2593.0	V	118	26	9.46	1 / 99	11.96	21.42	0.139	33.01	-11.59
	QPSK	2665.0	V	114	26	9.51	1 / 99	10.72	20.23	0.105	33.01	-12.78
	16-QAM	2593.0	V	118	26	9.46	1 / 99	11.06	20.52	0.113	33.01	-12.49
	Π/2 BPSK	2516.0	V	108	25	9.52	1 / 26	11.81	21.33	0.136	33.01	-11.68
	π/2 BPSK	2593.0	V	118	26	9.46	1 / 26	12.98	22.44	0.175	33.01	-10.57
40 MHz	π/2 BPSK	2670.0	V	114	26	9.52	1 / 26	11.84	21.36	0.137	33.01	-11.65
×	QPSK	2516.0	V	108	25	9.52	1 / 26	10.78	20.30	0.107	33.01	-12.71
40	QPSK	2593.0	V	118	26	9.46	1 / 26	12.01	21.47	0.140	33.01	-11.54
	QPSK	2670.0	V	114	26	9.52	1 / 26	10.99	20.51	0.113	33.01	-12.50
	16-QAM	2593.0	V	118	26	9.46	1 / 26	11.18	20.65	0.116	33.01	-12.36
	π/2 BPSK	2511.0	V	108	25	9.54	1 / 39	11.16	20.70	0.118	33.01	-12.31
	π/2 BPSK	2593.0	V	118	26	9.46	1 / 39	12.45	21.91	0.155	33.01	-11.10
30 MHz	π/2 BPSK	2675.0	V	114	26	9.52	1 / 39	11.87	21.38	0.137	33.01	-11.63
Ē	QPSK	2511.0	V	108	25	9.54	1 / 39	10.76	20.30	0.107	33.01	-12.71
30	QPSK	2593.0	V	118	26	9.46	1 / 39	12.08	21.54	0.143	33.01	-11.47
	QPSK	2675.0	V	114	26	9.52	1 / 39	11.11	20.62	0.115	33.01	-12.39
	16-QAM	2593.0	V	118	26	9.46	1 / 39	11.50	20.97	0.125	33.01	-12.04
	π/2 BPSK	2506.0	V	108	25	9.54	1 / 25	11.10	20.65	0.116	33.01	-12.36
	π/2 BPSK	2593.0	V	118	26	9.46	1 / 13	12.76	22.22	0.167	33.01	-10.79
20 MHz	π/2 BPSK	2680.0	V	114	26	9.51	1 / 13	11.93	21.44	0.139	33.01	-11.57
Ξ	QPSK	2506.0	V	108	25	9.54	1 / 25	10.65	20.19	0.105	33.01	-12.82
20	QPSK	2593.0	V	118	26	9.46	1 / 13	12.24	21.70	0.148	33.01	-11.31
	QPSK	2680.0	V	114	26	9.51	1 / 13	11.03	20.54	0.113	33.01	-12.47
	16-QAM	2593.0	V	118	26	9.46	1 / 13	11.06	20.52	0.113	33.01	-12.49
	QPSK (CP-OFDM)	2593.0	V	118	25	9.46	1 / 136	11.00	20.46	0.111	33.01	-12.55
100 MHz	QPSK (Opposite Pol.)	2593.0	Н	143	43	9.46	1 / 136	11.62	21.08	0.128	33.01	-11.93
	QPSK (WCP)	2593.0	V	148	332	9.46	1 / 136	8.82	18.28	0.067	33.01	-14.73

Table 7-2. EIRP Data (NR Band n41 – AntJ)

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Bandwidth	Mod.	Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Ant. Gain [dBi]	RB Size/Offset	Substitute Level [dBm]	EIRP [dBm]	EIRP [Watts]	EIRP Limit [dBm]	Margin [dB]
	π/2 BPSK	2546.0	Н	136	139	9.38	1 / 204	9.40	18.78	0.075	33.01	-14.23
	π/2 BPSK	2593.0	Н	139	140	9.49	1 / 204	11.54	21.03	0.127	33.01	-11.98
MHz	π/2 BPSK	2640.0	Н	143	135	9.89	1 / 136	9.81	19.70	0.093	33.01	-13.31
	QPSK	2546.0	Н	136	139	9.38	1 / 204	8.81	18.19	0.066	33.01	-14.82
100	QPSK	2593.0	Н	139	140	9.49	1 / 204	10.94	20.43	0.110	33.01	-12.58
	QPSK	2640.0	Н	143	135	9.89	1 / 136	9.14	19.03	0.080	33.01	-13.98
	16-QAM	2593.0	Н	139	140	9.49	1 / 204	10.07	19.56	0.090	33.01	-13.45
	QPSK (CP-OFDM)	2593.0	Н	138	146	9.38	1 / 136	9.43	18.81	0.076	33.01	-14.20
100 MHz	QPSK (Opposite Pol.)	2593.0	V	142	279	9.38	1 / 136	8.45	17.83	0.061	33.01	-15.18
	QPSK (WCP)	2593.0	Н	140	156	9.38	1 / 136	10.08	19.46	0.088	33.01	-13.55

#### Table 7-3. EIRP Data (NR Band n41 SRS2 - AntB)

Bandwidth	Mod.	Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Ant. Gain [dBi]	RB Size/Offset	Substitute Level [dBm]	EIRP [dBm]	EIRP [Watts]	EIRP Limit [dBm]	Margin [dB]
	π/2 BPSK	2550.0	Н	148	226	9.38	1 / 136	5.20	14.58	0.029	33.01	-18.43
	π/2 BPSK	2593.0	Н	150	227	9.49	1 / 204	3.99	13.48	0.022	33.01	-19.53
MHz	π/2 BPSK	2640.0	Н	143	227	9.89	1 / 68	4.42	14.31	0.027	33.01	-18.70
	QPSK	2550.0	Н	148	226	9.38	1 / 136	5.22	14.60	0.029	33.01	-18.41
100	QPSK	2593.0	Н	150	227	9.49	1 / 204	4.09	13.58	0.023	33.01	-19.43
	QPSK	2640.0	Н	143	227	<mark>9.8</mark> 9	1 / 68	4.45	14.34	0.027	33.01	-18.67
	16-QAM	2550.0	Н	148	226	9.38	1 / 136	4.47	13.85	0.024	33.01	-19.16
	QPSK (CP-OFDM)	2546.0	Н	147	225	9.38	1 / 68	4.48	13.86	0.024	33.01	-19.15
100 MHz	QPSK (Opposite Pol.)	2546.0	V	103	276	9.38	1 / 136	5.14	14.52	0.028	33.01	-18.49
	QPSK (WCP)	2546.0	Н	108	172	9.38	1 / 136	3.60	12.98	0.020	33.01	-20.03

Table 7-4. EIRP Data (NR Band n41 SRS3 - AntE)

Bandwidth	Mod.	Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Ant. Gain [dBi]	RB Size/Offset	Substitute Level [dBm]	EIRP [dBm]	EIRP [Watts]	EIRP Limit [dBm]	Margin [dB]
	π/2 BPSK	2550.0	V	121	308	9.40	1 / 136	3.81	13.21	0.021	33.01	-19.80
	π/2 BPSK	2593.0	V	121	352	9.46	1 / 136	5.73	15.19	0.033	33.01	-17.82
MHz	π/2 BPSK	2640.0	V	150	352	9.50	1 / 68	4.58	14.08	0.026	33.01	-18.93
	QPSK	2550.0	V	121	308	9.40	1 / 136	3.21	12.61	0.018	33.01	-20.40
100	QPSK	2593.0	V	121	352	9.46	1 / 136	5.05	14.51	0.028	33.01	-18.50
-	QPSK	2640.0	V	150	352	9.50	1 / 68	3.96	13.46	0.022	33.01	-19.55
	16-QAM	2593.0	V	121	352	9.46	1 / 136	4.43	13.89	0.025	33.01	-19.12
	QPSK (CP-OFDM)	2593.0	V	119	353	9.40	1 / 136	3.81	13.21	0.021	33.01	-19.80
100 MHz	QPSK (Opposite Pol.)	2593.0	Н	172	190	9.40	1 / 136	4.16	13.56	0.023	33.01	-19.45
	QPSK (WCP)	2593.0	V	175	324	9.40	1 / 136	1.11	10.51	0.011	33.01	-22.50

Table 7-5. EIRP Data (NR Band n41 SRS4 - AntD)

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## 7.7 Radiated Spurious Emissions Measurements

#### **Test Overview**

Radiated spurious emissions measurements are performed using the field strength conversion method described in KDB 971168 with the EUT transmitting into an integral antenna. Measurements on signals operating below 1GHz are performed using horizontally and vertically polarized tuned dipole antennas. Measurements on signals operating above 1GHz are performed using vertically and horizontally polarized broadband horn antennas. All measurements are performed as RMS measurements while the EUT is operating at maximum power, and at the appropriate frequencies.

#### **Test Procedures Used**

KDB 971168 D01 v03r01 - Section 5.8

#### **Test Settings**

- 1. RBW = 100kHz for emissions below 1GHz and 1MHz for emissions above 1GHz
- 2. VBW  $\geq$  3 x RBW
- 3. Span = 1.5 times the OBW
- 4. No. of sweep points > 2 x span / RBW
- 5. Detector = RMS
- 6. Trace mode = Average (Max Hold for pulsed emissions)
- 7. The trace was allowed to stabilize

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

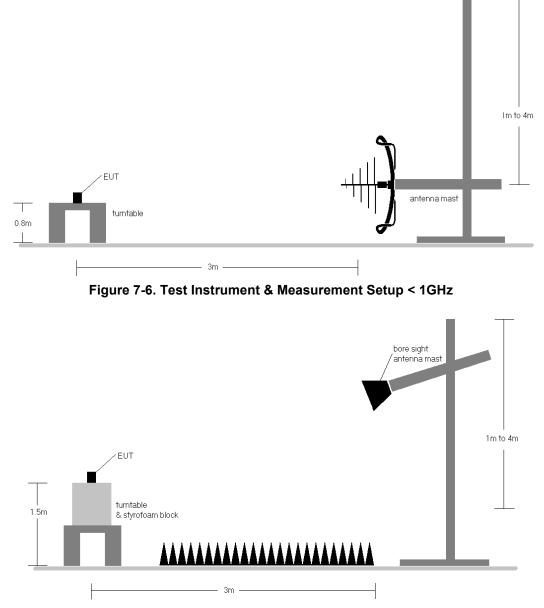


Figure 7-7. Test Instrument & Measurement Setup >1 GHz

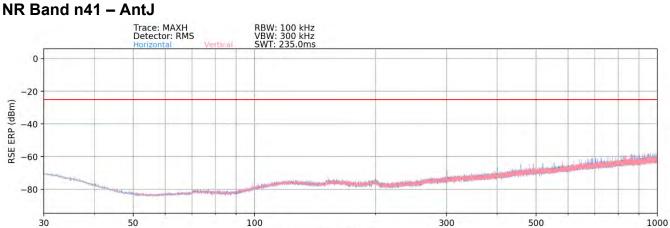
FCC ID: A3LSMS908E		PART 27 MEASUREMENT REPORT CLASS II PERMISSIVE CHANGE	NG	Approved by: Technical Manager
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- Field strengths are calculated using the Measurement quantity conversions in KDB 971168 Section 5.8.4.
   a) E(dBµV/m) = Measured amplitude level (dBm) + 107 + Cable Loss (dB) + Antenna Factor (dB/m)
   b) EIRP (dBm) = E(dBµV/m) + 20logD 104.8; where D is the measurement distance in meters.
- 2) The EUT was tested in three orthogonal planes and in all possible test configurations and positioning. The worst case emissions are reported with the EUT positioning, modulations, RB sizes and offsets, and channel bandwidth configurations shown in the tables below.
- 3) This unit was tested with its standard battery.
- 4) The spectrum is measured from 9kHz to the 10th harmonic of the fundamental frequency of the transmitter. The worst-case emissions are reported.
- 5) Emissions below 18GHz were measured at a 3 meter test distance while emissions above 18GHz were measured at a 1 meter test distance with the application of a distance correction factor.
- 6) The "-" shown in the following RSE tables are used to denote a noise floor measurement.
- 7) For NR operation, all subcarrier spacings (SCS) and transmission schemes (e.g. CP-OFDM and DFT-s-OFDM) were investigated to determine the worst case configuration. All modes of operation were investigated and the worst case configuration results are reported in this section.
- 8) Spurious emissions shown in this section are measured while operating in EN-DC mode with Sub 6GHz NR carrier as well as an LTE carrier (anchor). Spurious emissions from the NR carrier device, is subject to the rules under which the NR carrier operates. Spurious emission caused by the LTE carrier must meet the requirements of the rules under which the LTE carrier operates.

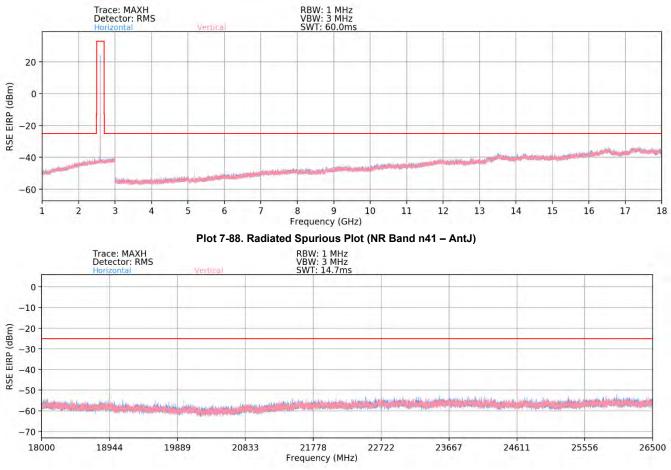
FCC ID: A3LSMS908E	Proud to be part of @ element	PART 27 MEASUREMENT REPORT CLASS II PERMISSIVE CHANGE	Approved by: Technical Manager
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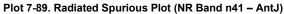












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100
2546.0
1 / 136
Stand Alone

Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Analyzer Level [dBm]	AFCL [dB/m]	Field Strength [dBµV/m]	EIRP Spurious Emission Level [dBm]	Limit [dBm]	Margin [dB]
5092.00	Н	128	59	-71.42	9.98	45.56	-49.70	-25.00	-24.70
7638.00	Н	-	-	-74.80	16.41	48.61	-46.65	-25.00	-21.65
10184.00	Н	-	-	-76.18	21.26	52.08	-43.18	-25.00	-18.18
12730.00	н	-	-	-77.36	23.85	53.49	-41.77	-25.00	-16.77

Table 7-6. Radiated Spurious Data (NR Band n41 – Low Channel – AntJ)

Bandwidth (MHz):	100
Frequency (MHz):	2593.0
RB / Offset:	1 / 136
Mode:	Stand Alone

Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Analyzer Level [dBm]	AFCL [dB/m]	Field Strength [dBµV/m]	EIRP Spurious Emission Level [dBm]	Limit [dBm]	Margin [dB]
5186.00	Н	113	59	-63.87	10.21	53.34	-41.91	-25.00	-16.91
7779.00	Н	-	-	-74.56	16.37	48.81	-46.44	-25.00	-21.44
10372.00	Н	-	-	-75.73	20.21	51.48	-43.78	-25.00	-18.78
12965.00	Н	-	-	-76.91	24.68	54.77	-40.49	-25.00	-15.49

Table 7-7. Radiated Spurious Data (NR Band n41 – Mid Channel – AntJ)

Bandwidth (MHz):	100
Frequency (MHz):	2640.0
RB / Offset:	1 / 136
Mode:	Stand Alone

Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Analyzer Level [dBm]	AFCL [dB/m]	Field Strength [dBµV/m]	EIRP Spurious Emission Level [dBm]	Limit [dBm]	Margin [dB]
5280.00	Н	126	52	-58.55	10.54	58.99	-36.27	-25.00	-11.27
7920.00	н	135	293	-66.84	16.37	56.53	-38.73	-25.00	-13.73
10560.00	н	104	343	-73.67	20.37	53.70	-41.56	-25.00	-16.56
13200.00	Н	-	-	-76.37	25.41	56.04	-39.22	-25.00	-14.22
15840.00	Н	-	-	-77.10	28.63	58.53	-36.72	-25.00	-11.72

Table 7-8. Radiated Spurious Data (NR Band n41 – High Channel – AntJ)

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Case:	w/ Wireless Charging Pad
Bandwidth (MHz):	100
Frequency (MHz):	2640.0
RB / Offset:	1 / 136
Mode:	WCP

Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Analyzer Level [dBm]	AFCL [dB/m]	Field Strength [dBµV/m]	EIRP Spurious Emission Level [dBm]	Limit [dBm]	Margin [dB]
5280.00	Н	163	344	-60.75	10.54	56.79	-38.47	-25.00	-13.47
7920.00	Н	113	297	-67.10	16.37	56.27	-38.99	-25.00	-13.99
10560.00	Н	-	-	-75.33	20.37	52.04	-43.22	-25.00	-18.22
13200.00	Н	-	-	-76.40	25.41	56.01	-39.25	-25.00	-14.25
15840.00	Н	-	-	-77.65	28.63	57.98	-37.27	-25.00	-12.27

Table 7-9. Radiated Spurious Data with WCP (NR Band n41 - AntJ)

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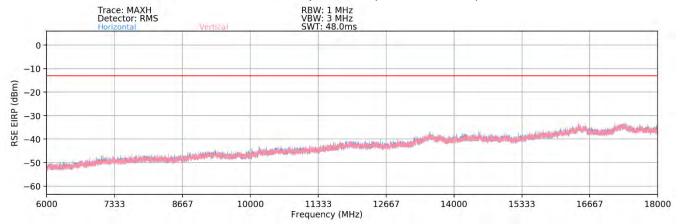


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## 

Plot 7-90. Radiated Spurious Plot (NR Band n41 – B12)

Frequency (MHz)





Case:	n41 + LTE Band 12
Bandwidth (MHz):	100 & 10
Frequency (MHz):	2593 & 707.5
RB / Offset:	1 / 136 & 1 / 25
Mode:	EN-DC
Anchor Band:	LTE Band 12

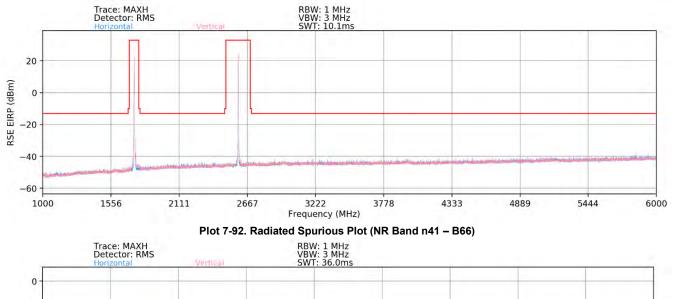
Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Analyzer Level [dBm]	AFCL [dB/m]	Field Strength [dBµV/m]	EIRP Spurious Emission Level [dBm]	Limit [dBm]	Margin [dB]
1178.00	V	-	-	-77.61	6.79	36.18	-59.07	-25.00	-34.07
3063.50	V	-	-	-79.82	15.79	42.97	-52.29	-25.00	-27.29
4478.50	V	-	-	-80.63	10.57	36.94	-58.32	-25.00	-33.32
6364.00	V	-	-	-81.88	13.13	38.25	-57.01	-25.00	-32.01
8249.50	V	-	-	-83.08	17.68	41.60	-53.66	-25.00	-28.66

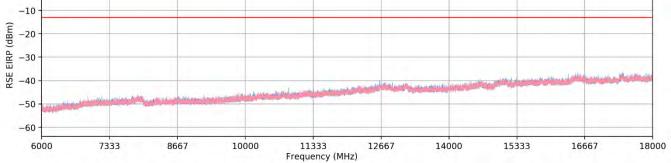
Table 7-10. Radiated Spurious Data (NR Band n41 – B12)

FCC ID: A3LSMS908E	Proud to be part of @ element	PART 27 MEASUREMENT REPORT CLASS II PERMISSIVE CHANGE	Approved by: Technical Manager		
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## NR Band n41 – B66







Case:	n41 + LTE Band 66
Bandwidth (MHz):	100 & 20
Frequency (MHz):	2593 & 1745
RB / Offset:	1 / 136 & 1 / 50
Mode:	EN-DC
Anchor Band:	66

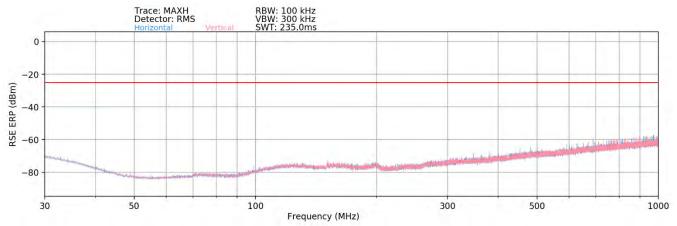
Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Analyzer Level [dBm]	AFCL [dB/m]	Field Strength [dBµV/m]	EIRP Spurious Emission Level [dBm]	Limit [dBm]	Margin [dB]
2980.90	V	-	-	-77.80	13.79	42.99	-52.27	-25.00	-27.27
3129.70	Н	-	-	-77.65	14.11	43.46	-51.79	-25.00	-26.79
3441.00	Н	-	-	-78.30	14.58	43.28	-51.97	-25.00	-26.97
3982.40	Н	-	-	-78.42	15.54	44.12	-51.13	-25.00	-26.13
4289.00	Н	-	-	-78.41	15.70	44.29	-50.97	-25.00	-25.97
5137.00	Н	-	-	-79.33	17.28	44.95	-50.31	-25.00	-25.31

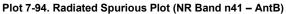
Table 7-11. Radiated Spurious Data (NR Band n41 – B66)

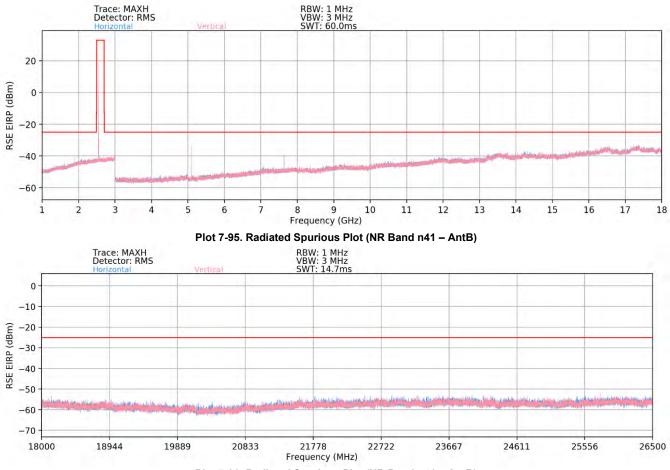
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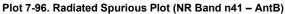


## NR Band n41 SRS2 – AntB









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Bandwidth (MHz):	100
Frequency (MHz):	2546.0
RB / Offset:	1 / 136
Mode:	Standalone

Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Analyzer Level [dBm]	AFCL [dB/m]	Field Strength [dBµV/m]	EIRP Spurious Emission Level [dBm]	Limit [dBm]	Margin [dB]
5092.0	V	120	9	-52.86	9.98	64.12	-31.14	-25.00	-6.14
7638.0	V	101	26	-61.67	16.41	61.74	-33.52	-25.00	-8.52
10184.0	V	117	7	-76.09	21.26	52.17	-43.09	-25.00	-18.09
12730.0	V	-	-	-77.31	23.85	53.54	-41.72	-25.00	-16.72
15276.0	V	-	-	-77.91	28.07	57.16	-38.09	-25.00	-13.09

Table 7-12. Radiated Spurious Data (NR Band n41 – Low Channel – AntB)

Bandwidth (MHz):	100
Frequency (MHz):	2593.0
RB / Offset:	1 / 136
Mode:	Standalone

Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Analyzer Level [dBm]	AFCL [dB/m]	Field Strength [dBµV/m]	EIRP Spurious Emission Level [dBm]	Limit [dBm]	Margin [dB]
5186.0	V	101	345	-61.49	10.21	55.72	-39.53	-25.00	-14.53
7779.0	V	298	28	-74.43	16.37	48.94	-46.31	-25.00	-21.31
10372.0	V	-	-	-76.01	20.21	51.20	-44.06	-25.00	-19.06
12965.0	V	-	-	-76.39	24.68	55.29	-39.97	-25.00	-14.97
15558.0	V	-	-	-76.92	28.60	58.68	-36.58	-25.00	-11.58

Table 7-13. Radiated Spurious Data (NR Band n41 – Mid Channel – AntB)

Bandwidth (MHz):	100
Frequency (MHz):	2640.0
RB / Offset:	1 / 136
Mode:	Standalone

Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Analyzer Level [dBm]	AFCL [dB/m]	Field Strength [dBµV/m]	EIRP Spurious Emission Level [dBm]	Limit [dBm]	Margin [dB]
5280.0	V	112	3	-58.72	10.54	58.82	-36.44	-25.00	-11.44
7920.0	V	116	41	-69.02	16.37	54.35	-40.91	-25.00	-15.91
10560.0	V	131	25	-75.52	20.37	51.85	-43.41	-25.00	-18.41
13200.0	V	-	-	-76.42	25.41	55.99	-39.27	-25.00	-14.27
15840.0	V	-	-	-76.80	28.63	58.83	-36.42	-25.00	-11.42

Table 7-14. Radiated Spurious Data (NR Band n41 – High Channel – AntB)

FCC ID: A3LSMS908E	PCTEST Proud to be part of @ element	PART 27 MEASUREMENT REPORT CLASS II PERMISSIVE CHANGE		Approved by: Technical Manager
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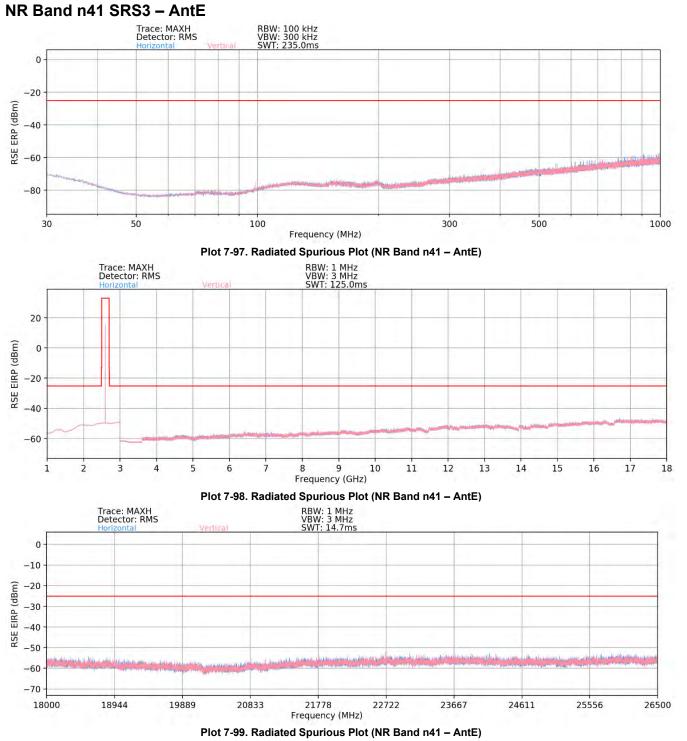
Case:	w/ Wireless Charging Pad
Bandwidth (MHz):	100
Frequency (MHz):	2546.0
RB / Offset:	1 / 136
Mode:	WCP

Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Analyzer Level [dBm]	AFCL [dB/m]	Field Strength [dBµV/m]	EIRP Spurious Emission Level [dBm]	Limit [dBm]	Margin [dB]
5092.0	V	101	359	-57.32	9.98	59.66	-35.60	-25.00	-10.60
7638.0	V	254	21	-62.29	16.41	61.12	-34.14	-25.00	-9.14
10184.0	V	-	-	-76.56	21.26	51.70	-43.56	-25.00	-18.56
12730.0	V	-	-	-76.93	23.85	53.92	-41.34	-25.00	-16.34
15276.0	V	-	-	-77.50	28.07	57.57	-37.68	-25.00	-12.68

Table 7-15. Radiated Spurious Data with WCP (NR Band n41 - AntB)

FCC ID: A3LSMS908E	Proud to be part of @element	PART 27 MEASUREMENT REPORT CLASS II PERMISSIVE CHANGE	SAMSUNG	Approved by: Technical Manager	
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Bandwidth (MHz):	100
Frequency (MHz):	2546.0
RB / Offset:	1 / 136
Mode:	Stand-Alone

Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Analyzer Level [dBm]	AFCL [dB/m]	Field Strength [dBµV/m]	EIRP Spurious Emission Level [dBm]	Limit [dBm]	Margin [dB]
5092.00	V	278	355	-69.03	4.45	42.42	-52.83	-25.00	-27.83
7638.00	V	-	-	-76.25	7.84	38.59	-56.66	-25.00	-31.66
10184.00	V	-	-	-77.35	11.03	40.68	-54.58	-25.00	-29.58
12730.00	V	-	-	-77.66	14.48	43.82	-51.44	-25.00	-26.44

Table 7-16. Radiated Spurious Data (NR Band n41 – Low Channel – AntE)

Bandwidth (MHz):	100	
Frequency (MHz):	2593.0	
RB / Offset:	1 / 136	
Mode:	Stand-Alone	

Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Analyzer Level [dBm]	AFCL [dB/m]	Field Strength [dBµV/m]	EIRP Spurious Emission Level [dBm]	Limit [dBm]	Margin [dB]
5186.00	V	127	340	-68.70	4.91	43.21	-52.05	-25.00	-27.05
7779.00	V	-	-	-75.75	7.30	38.55	-56.71	-25.00	-31.71
10372.00	V	-	-	-76.46	11.04	41.58	-53.68	-25.00	-28.68
12965.00	V	-	-	-77.44	14.49	44.05	-51.21	-25.00	-26.21

Table 7-17. Radiated Spurious Data (NR Band n41 – Mid Channel – AntE)

Bandwidth (MHz):	100
Frequency (MHz):	2640.0
RB / Offset:	1 / 136
Mode:	Stand-Alone

Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Analyzer Level [dBm]	AFCL [dB/m]	Field Strength [dBµV/m]	EIRP Spurious Emission Level [dBm]	Limit [dBm]	Margin [dB]
5280.00	V	313	16	-66.35	4.66	45.31	-49.95	-25.00	-24.95
7920.00	V	-	-	-76.60	8.30	38.70	-56.56	-25.00	-31.56
10560.00	V	-	-	-78.02	11.56	40.54	-54.72	-25.00	-29.72
13200.00	V	-	-	-77.55	14.06	43.51	-51.74	-25.00	-26.74

Table 7-18. Radiated Spurious Data (NR Band n41 – High Channel – AntE)

FCC ID: A3LSMS908E		PART 27 MEASUREMENT REPORT CLASS II PERMISSIVE CHANGE	<b>Approved by:</b> Technical Manager
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Case:	w/ Wireless Charging Pad
Bandwidth (MHz):	100
Frequency (MHz):	2640.0
RB / Offset:	1 / 136
Mode:	SA

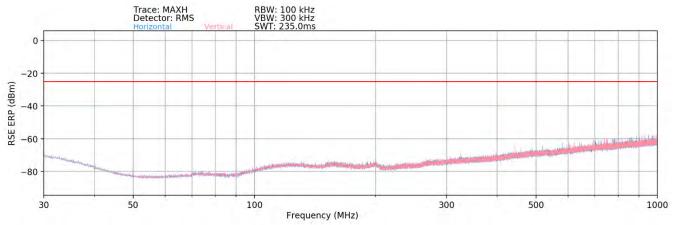
Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Analyzer Level [dBm]	AFCL [dB/m]	Field Strength [dBµV/m]	EIRP Spurious Emission Level [dBm]	Limit [dBm]	Margin [dB]
5280.00	V	117	352	-67.22	4.66	44.44	-50.82	-25.00	-25.82
7920.00	V	141	9	-75.22	8.30	40.08	-55.18	-25.00	-30.18
10560.00	V	-	-	-77.94	11.56	40.62	-54.64	-25.00	-29.64
13200.00	V	-	-	-77.39	14.06	43.67	-51.58	-25.00	-26.58
15840.00	V	-	-	-78.25	17.07	45.82	-49.44	-25.00	-24.44

Table 7-19. Radiated Spurious Data with WCP (NR Band n41 - AntE)

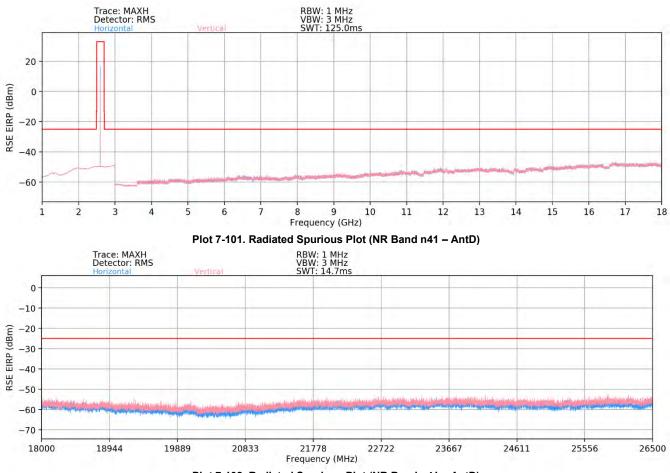
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## NR Band n41 SRS4 – AntD









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Bandwidth (MHz):	100
Frequency (MHz):	2546.0
RB / Offset:	1 / 136
Mode:	Stand-Alone

Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Analyzer Level [dBm]	AFCL [dB/m]	Field Strength [dBµV/m]	EIRP Spurious Emission Level [dBm]	Limit [dBm]	Margin [dB]
5092.00	Н	191	26	-70.92	4.48	40.56	-54.70	-25.00	-29.70
7638.00	Н	144	296	-70.37	7.81	44.44	-50.81	-25.00	-25.81
10184.00	Н	136	309	-74.21	11.10	43.89	-51.36	-25.00	-26.36
12730.00	Н	152	332	-74.39	14.20	46.81	-48.45	-25.00	-23.45
15276.00	Н	-	-	-77.88	15.92	45.04	-50.22	-25.00	-25.22
17822.00	Н	-	-	-78.38	18.75	47.37	-47.89	-25.00	-22.89
20368.00	Н	-	-	-58.67	2.10	50.43	-54.37	-25.00	-29.37
22914.00	Н	-	-	-59.53	2.96	50.43	-54.37	-25.00	-29.37

Table 7-20. Radiated Spurious Data (NR Band n41 – Low Channel – AntD)

Bandwidth (MHz):	100
Frequency (MHz):	2593.0
RB / Offset:	1 / 136
Mode:	Stand-Alone

Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Analyzer Level [dBm]	AFCL [dB/m]	Field Strength [dBµV/m]	EIRP Spurious Emission Level [dBm]	Limit [dBm]	Margin [dB]
5186.00	Н	164	33	-70.59	4.91	41.32	-53.94	-25.00	-28.94
7779.00	Н	286	298	-71.75	7.30	42.55	-52.71	-25.00	-27.71
10372.00	Н	-	-	-77.25	11.04	40.79	-54.47	-25.00	-29.47
12965.00	Н	196	334	-73.96	14.49	47.53	-47.73	-25.00	-22.73
15558.00	Н	-	-	-77.05	15.73	45.68	-49.58	-25.00	-24.58
18151.00	Н	-	-	-57.88	1.18	50.30	-54.50	-25.00	-29.50
20744.00	Н	150	364	-54.39	2.73	55.33	-49.47	-25.00	-24.47
23337.00	Н	-	-	-59.81	2.88	50.08	-54.72	-25.00	-29.72

Table 7-21. Radiated Spurious Data (NR Band n41 – Mid Channel – AntD)

Bandwidth (MHz):	100
Frequency (MHz):	2640.0
RB / Offset:	1 / 136
Mode:	Stand-Alone

Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Analyzer Level [dBm]	AFCL [dB/m]	Field Strength [dBµV/m]	EIRP Spurious Emission Level [dBm]	Limit [dBm]	Margin [dB]
5280.00	Н	156	40	-68.59	4.66	43.07	-52.19	-25.00	-27.19
7920.00	Н	139	301	-75.36	8.30	39.94	-55.32	-25.00	-30.32
10560.00	Н	212	359	-74.63	11.56	43.93	-51.33	-25.00	-26.33
13200.00	Н	119	327	-71.40	14.06	49.66	-45.59	-25.00	-20.59
15840.00	Н	-	-	-78.10	17.07	45.97	-49.29	-25.00	-24.29
18480.00	Н	-	-	-58.22	1.13	49.91	-54.89	-25.00	-29.89
21120.00	Н	-	-	-58.47	2.78	51.31	-53.49	-25.00	-28.49
23760.00	Н	-	-	-59.59	3.03	50.44	-54.36	-25.00	-29.36

Table 7-22. Radiated Spurious Data (NR Band n41 – High Channel – AntD)

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Case:	w/ Wireless Charging Pad
Bandwidth (MHz):	100
Frequency (MHz):	2640.0
RB / Offset:	1 / 136
Mode:	SA

Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Analyzer Level [dBm]	AFCL [dB/m]	Field Strength [dBµV/m]	EIRP Spurious Emission Level [dBm]	Limit [dBm]	Margin [dB]
5280.00	Н	124	68	-71.31	4.66	40.35	-54.91	-25.00	-29.91
7920.00	н	-	-	-76.44	8.30	38.86	-56.40	-25.00	-31.40
10560.00	н	-	-	-77.50	11.56	41.06	-54.20	-25.00	-29.20
13200.00	Н	125	38	-74.98	14.06	46.08	-49.17	-25.00	-24.17
15840.00	Н	-	-	-78.16	17.07	45.91	-49.35	-25.00	-24.35

Table 7-23. Radiated Spurious Data with WCP (NR Band n41 - AntD)

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# 7.8 Frequency Stability / Temperature Variation

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

Frequency stability testing is performed in accordance with the guidelines of ANSI/TIA-603-E-2016. The frequency stability of the transmitter is measured by:

- a.) **Temperature:** The temperature is varied from -30°C to +50°C in 10°C increments using an environmental chamber.
- b.) **Primary Supply Voltage:** The primary supply voltage is varied from 85% to 115% of the nominal value for non hand-carried battery and AC powered equipment. For hand-carried, battery-powered equipment, primary supply voltage is reduced to the battery operating end point which shall be specified by the manufacturer.

#### Test Procedure Used

ANSI/TIA-603-E-2016

#### Test Settings

- 1. The carrier frequency of the transmitter is measured at room temperature (20°C to provide a reference).
- 2. The equipment is turned on in a "standby" condition for fifteen minutes before applying power to the transmitter. Measurement of the carrier frequency of the transmitter is made within one minute after applying power to the transmitter.
- 3. Frequency measurements are made at 10°C intervals ranging from -30°C to +50°C. A period of at least one half-hour is provided to allow stabilization of the equipment at each temperature level.

#### Test Setup

The EUT was connected via an RF cable to a spectrum analyzer with the EUT placed inside an environmental chamber.

#### Test Notes

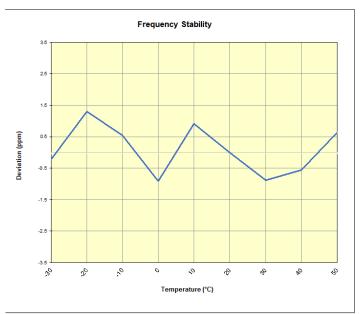
None

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NR Band n41							
	Operating F	requency (Hz):	2,593,000,000				
	Ref. Voltage (VDC):		4.38		_		
					-		
Voltage (%)	Power (VDC)	Temp (°C)	Frequency (Hz)	Freq. Dev. (Hz)	Deviation (%)		
		- 30	2,592,969,242	-578	-0.0000223		
		- 20	2,592,973,210	3,390	0.0001307		
		- 10	2,592,971,243	1,423	0.0000549		
		0	2,592,967,452	-2,368	-0.0000913		
100 %	4.38	+ 10	2,592,972,170	2,350	0.0000906		
		+ 20 (Ref)	2,592,969,820	0	0.0000000		
		+ 30	2,592,967,544	-2,276	-0.0000878		
		+ 40	2,592,968,373	-1,447	-0.0000558		
		+ 50	2,592,971,470	1,650	0.0000636		
Battery Endpoint	3.80	+ 20	2,592,970,331	511	0.0000197		

Table 7-24. NR Band n41 Frequency Stability Data



Plot 7-103. NR Band n41 Frequency Stability Chart

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# 8.0 CONCLUSION

The data collected relate only to the item(s) tested and show that the Samsung **Portable Handset FCC ID : A3LSMS908E** complies with all the requirements of Part 27 of the FCC rules.

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