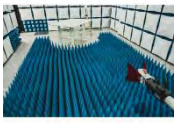
PCTEST
7185 Oakland Mills Road, Columbia, MD 21046 USA
Tel. 410.290.6652 / Fax 410.290.6654
http://www.pctest.com



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:	**A3LSMS908E**
Applicant Name:	**Samsung Electronics Co., Ltd.**

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

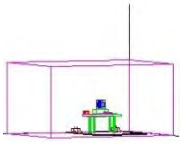
This equipment has been shown to be capable of compliance with the applicable technical standards as indicated in the measurement report and was tested in accordance with the measurement procedures specified in §2.947. Test results reported herein relate only to the item(s) tested.

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

ACCREDITED
CERT #2041.01

TABLE OF CONTENTS



PART 27 MEASUREMENT REPORT

Mode	Bandwidth	Modulation	Tx Frequency Range [MHz]	EIRP		Emission Designator
				Max. Power [W]	Max. Power [dBm]	
NR Band n41	100 MHz	π/2 BPSK	2546.0 - 2640.0	0.163	22.13	96M9G7D
		QPSK	2546.0 - 2640.0	0.145	21.60	97M8G7D
		16QAM	2546.0 - 2640.0	0.126	21.01	97M8W7D
	90 MHz	π/2 BPSK	2541.0 - 2645.0	0.172	22.36	86M9G7D
		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
		16QAM	2526.0 - 2660.0	0.124	20.92	58M1W7D
	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
	40 MHz	π/2 BPSK	2516.0 - 2670.0	0.175	22.44	36M1G7D
		QPSK	2516.0 - 2670.0	0.140	21.47	38M0G7D
		16QAM	2516.0 - 2670.0	0.116	20.65	38M0W7D
	30 MHz	π/2 BPSK	2511.0 - 2675.0	0.155	21.91	27M0G7D
		QPSK	2511.0 - 2675.0	0.143	21.54	28M0G7D
		16QAM	2511.0 - 2675.0	0.125	20.97	28M0W7D
	20 MHz	π/2 BPSK	2506.0 - 2680.0	0.167	22.22	18M0G7D
		QPSK	2506.0 - 2680.0	0.148	21.70	18M4G7D
		16QAM	2506.0 - 2680.0	0.113	20.52	18M4W7D

EUT Overview

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.

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.

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

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 half-wave 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:

$$P_{d\ [dBm]} = P_{g\ [dBm]} - \text{cable loss}_{\ [dB]} + \text{antenna gain}_{\ [dBd/dBi]};$$

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:

$$E_{[dB\mu V/m]} = \text{Measured amplitude level}_{[dBm]} + 107 + \text{Cable Loss}_{[dB]} + \text{Antenna Factor}_{[dB/m]}$$

And

$$EIRP_{[dBm]} = E_{[dB\mu V/m]} + 20\log D - 104.8;$$ 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.

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

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.

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.

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
CONDUCTED	Transmitter Conducted Output Power*	2.1046(a), 2.1046(c)	N/A	PASS	Section 7.2
	Occupied Bandwidth	2.1049(h)	N/A	PASS	Section 7.3
	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
	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.

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 x OBW to 3 x OBW
2. RBW = 1% to 5% of the OBW
3. Number of measurement points in sweep ≥ 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.

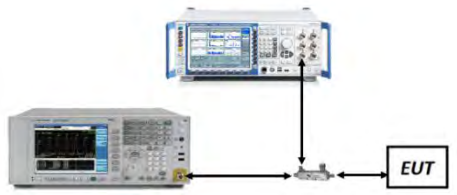


Figure 7-1. Test Instrument & Measurement Setup

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.

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

Bandwidth	Modulation	Channel	Frequency [MHz]	RB Size/Offset	Conducted Power [dBm]
100 MHz	π/2 BPSK	509202	2546.0	1 / 136	22.23
		518598	2593.0	1 / 204	22.33
		528000	2640.0	1 / 204	22.36
	QPSK	509202	2546.0	1 / 136	22.27
		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]
100 MHz	π/2 BPSK	510000	2550.0	1 / 68	18.97
		518598	2593.0	1 / 68	18.40
		528000	2640.0	1 / 68	17.82
	QPSK	510000	2550.0	1 / 68	18.99
		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]
100 MHz	π/2 BPSK	510000	2550.0	1 / 204	20.97
		518598	2593.0	1 / 204	21.00
		528000	2640.0	1 / 204	21.23
	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)

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 ≥ 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

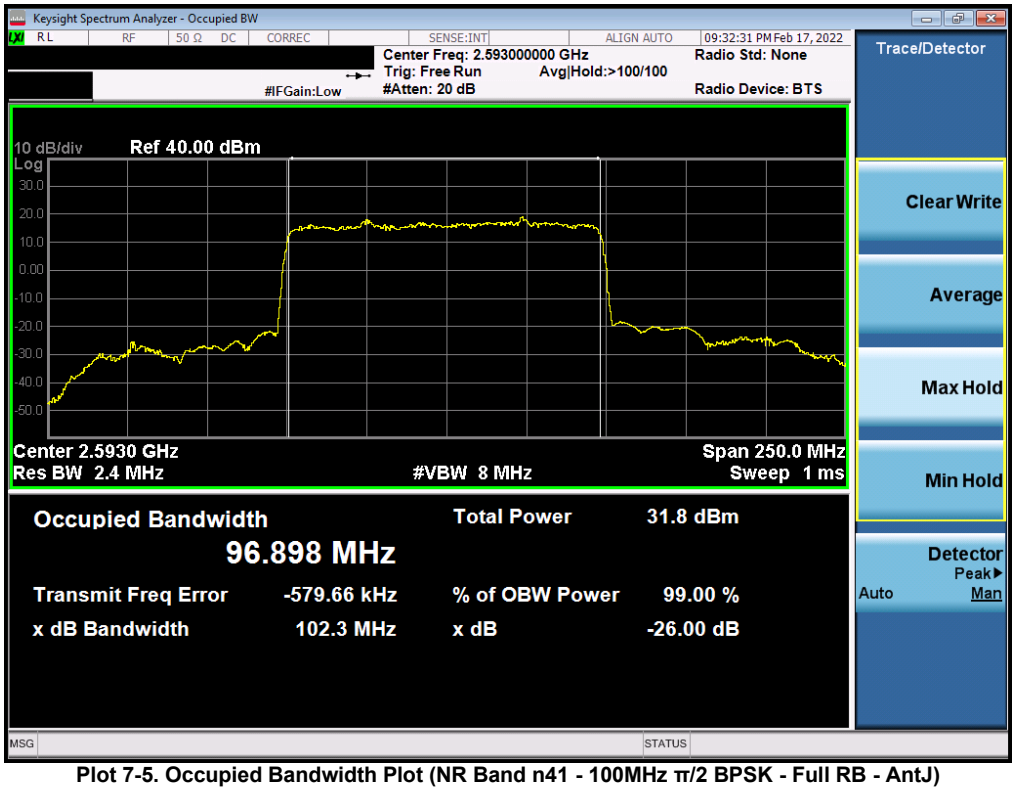
The EUT and measurement equipment were set up as shown in the diagram below.

Figure 7-2. Test Instrument & Measurement Setup

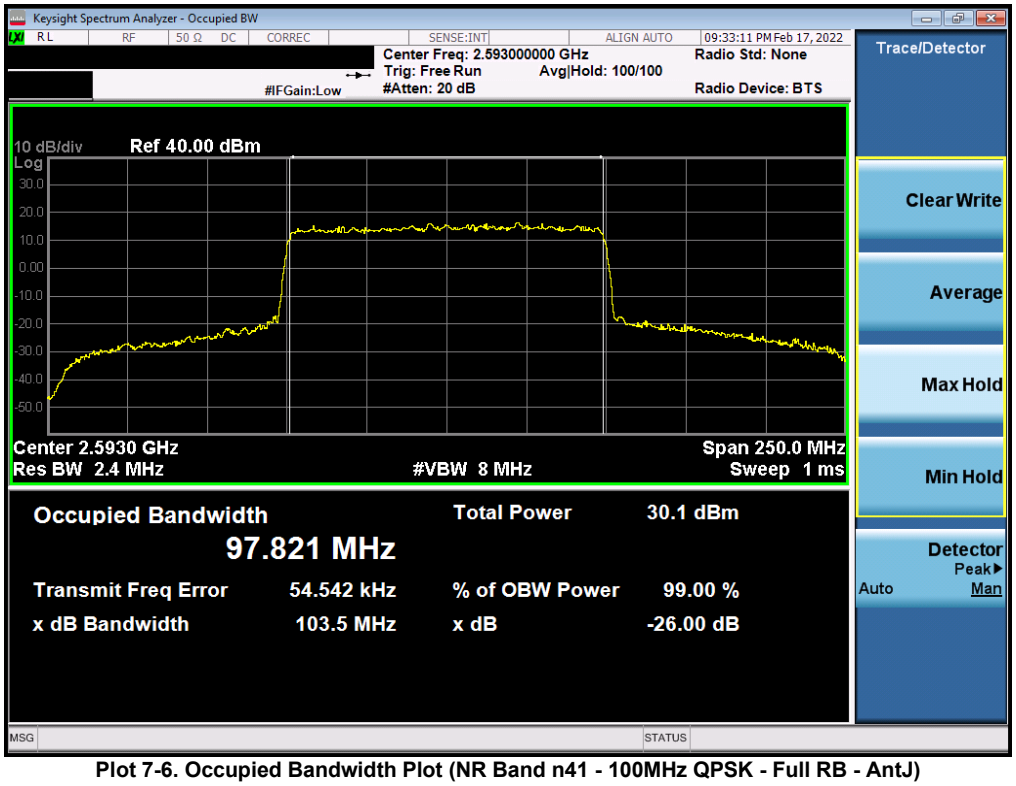
Test Notes

None.

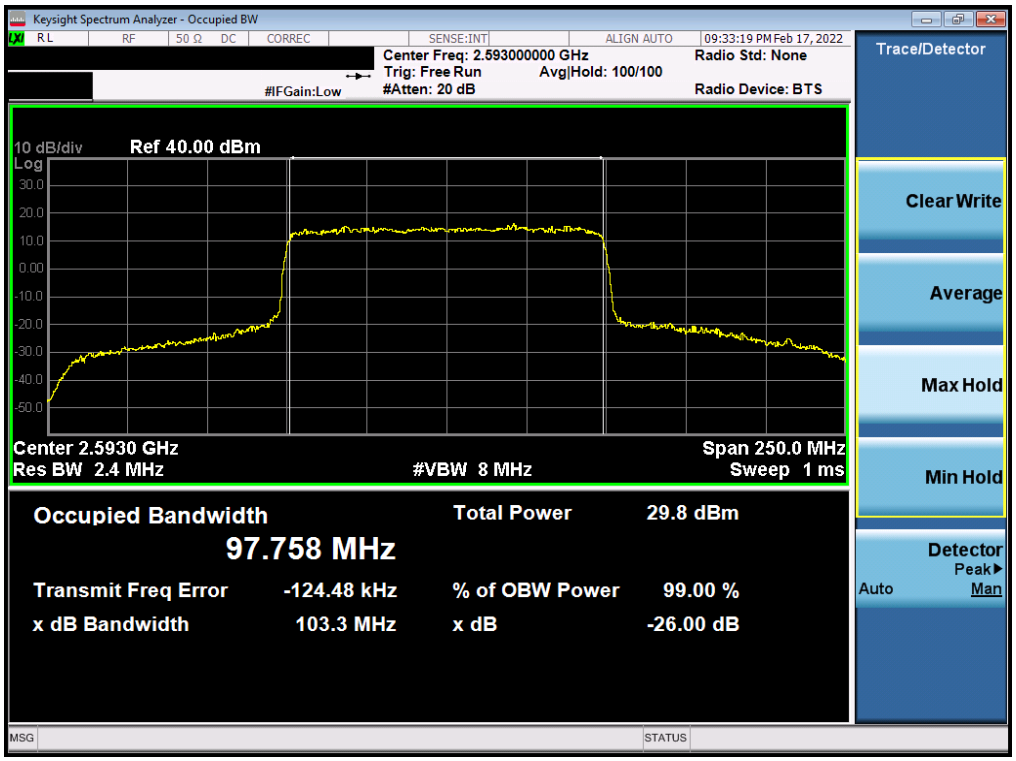
NR Band n41 – AntJ



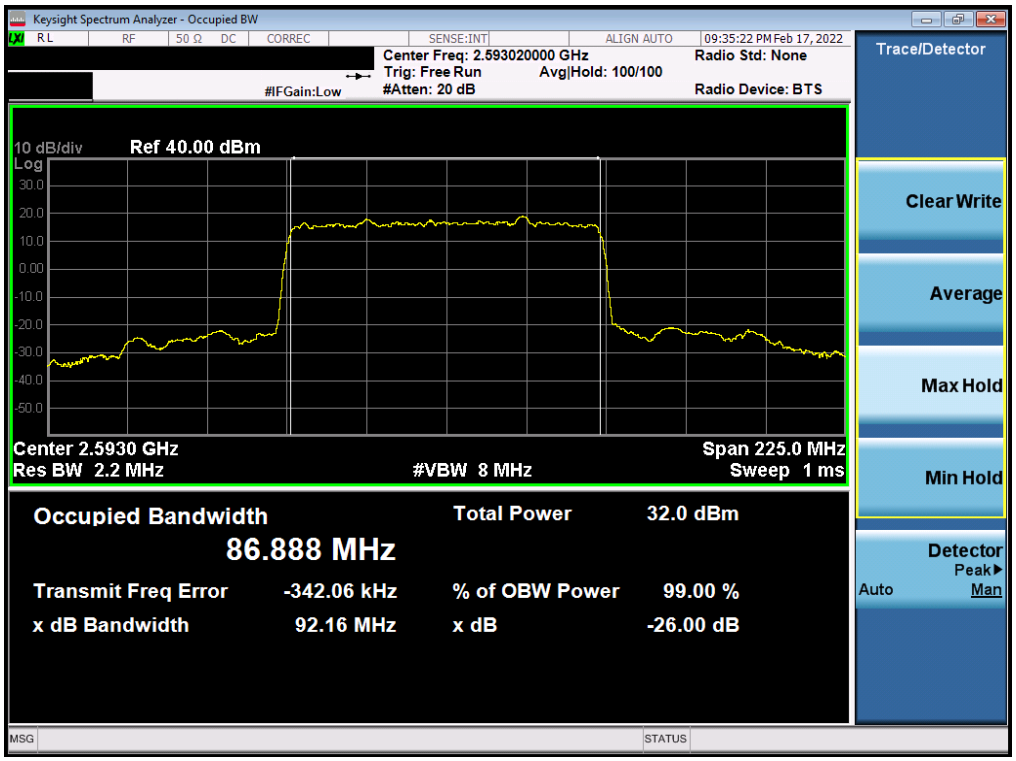
Plot 7-5. Occupied Bandwidth Plot (NR Band n41 - 100MHz π/2 BPSK - Full RB - AntJ)



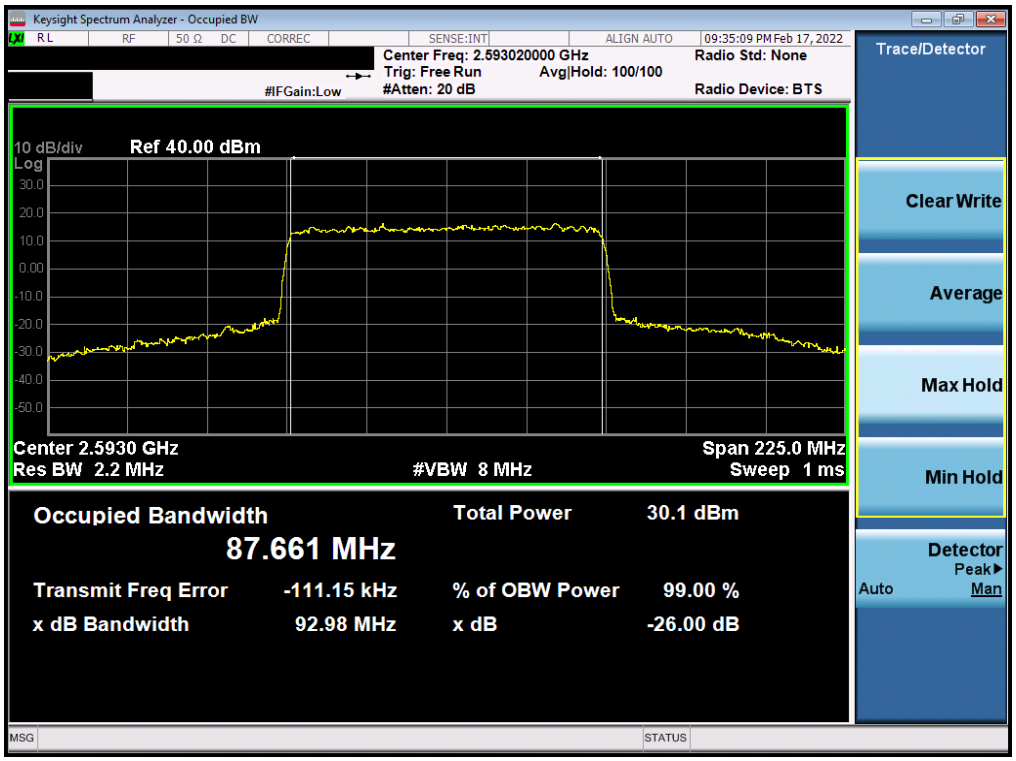
Plot 7-6. Occupied Bandwidth Plot (NR Band n41 - 100MHz QPSK - Full RB - AntJ)



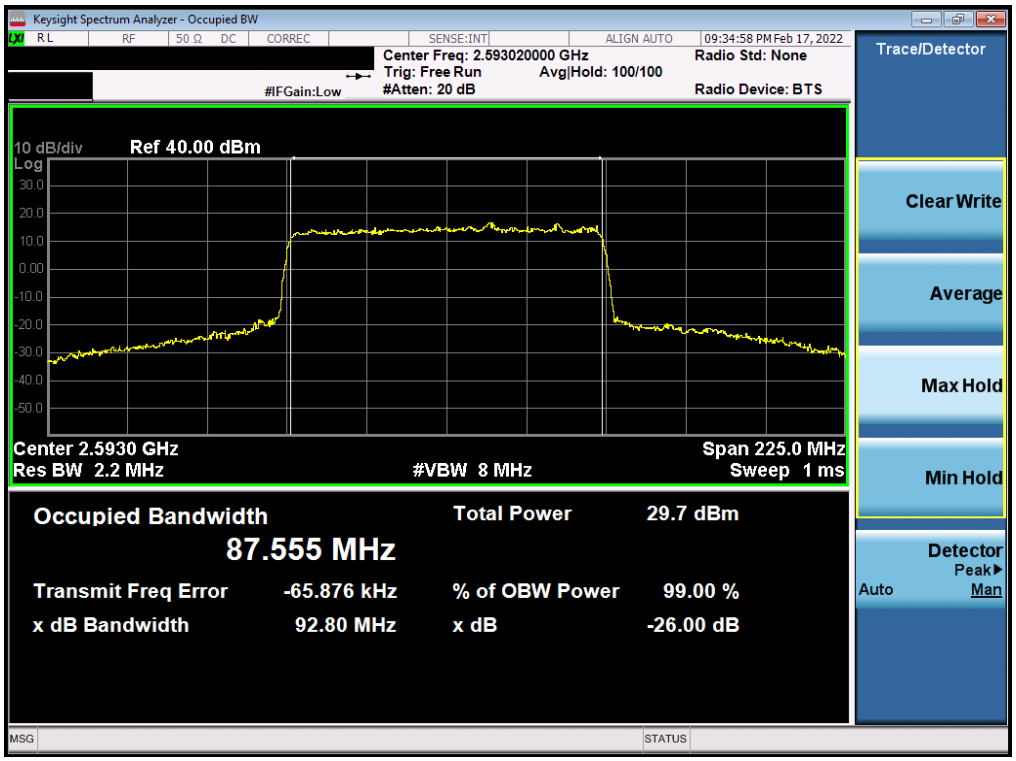
Plot 7-7. Occupied Bandwidth Plot (NR Band n41 - 100MHz 16-QAM - Full RB - AntJ)



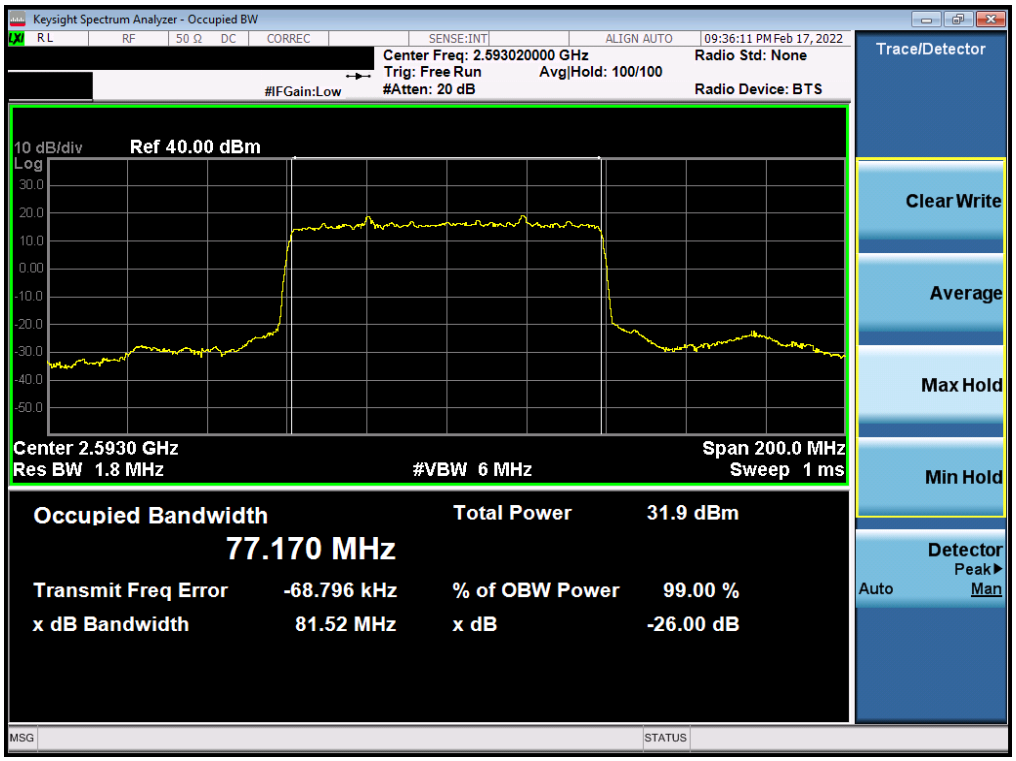
Plot 7-8. Occupied Bandwidth Plot (NR Band n41 - 90MHz π/2 BPSK - Full RB - AntJ)



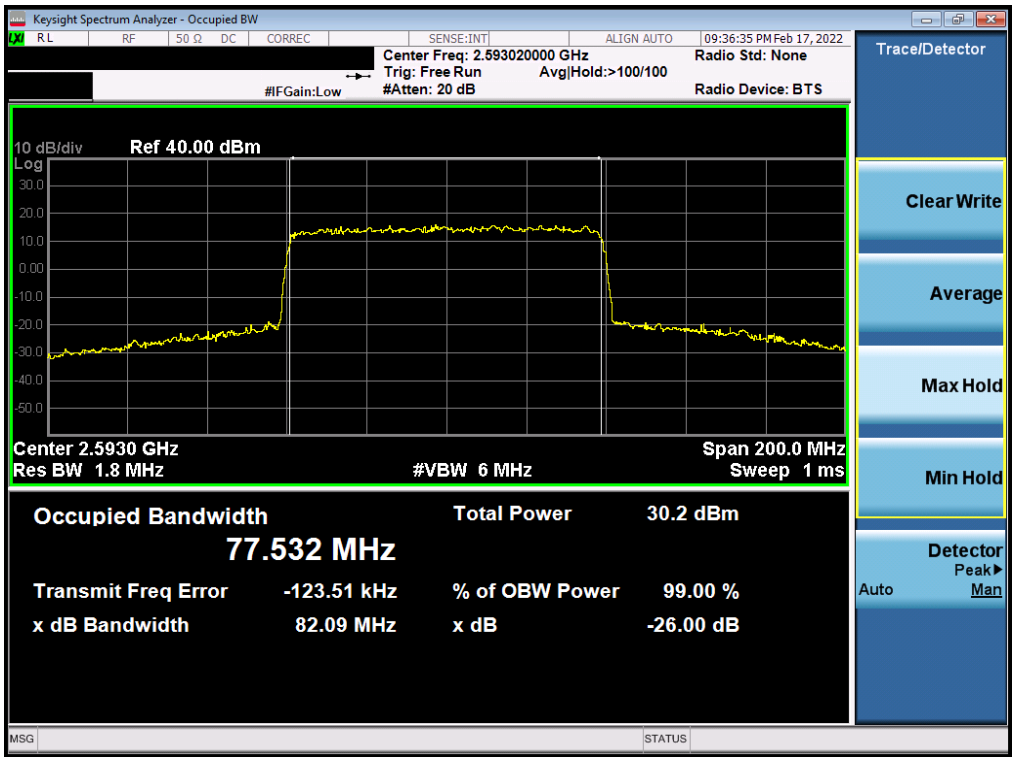
Plot 7-9. Occupied Bandwidth Plot (NR Band n41 - 90MHz QPSK - Full RB - AntJ)



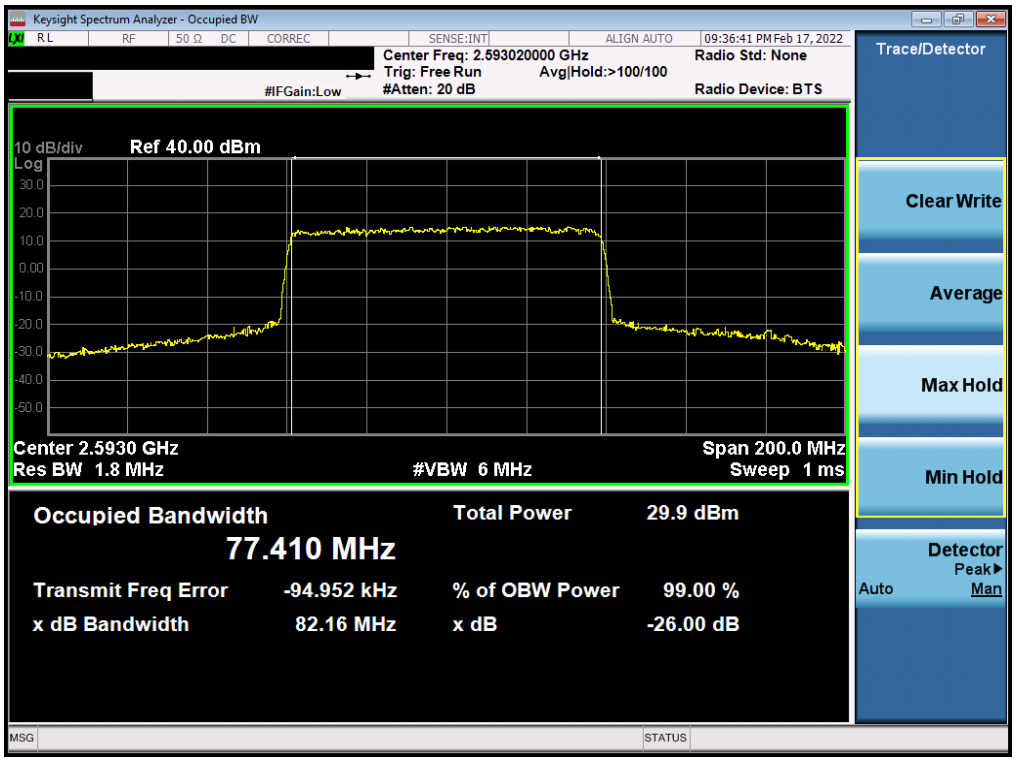
Plot 7-10. Occupied Bandwidth Plot (NR Band n41 - 90MHz 16-QAM - Full RB - AntJ)



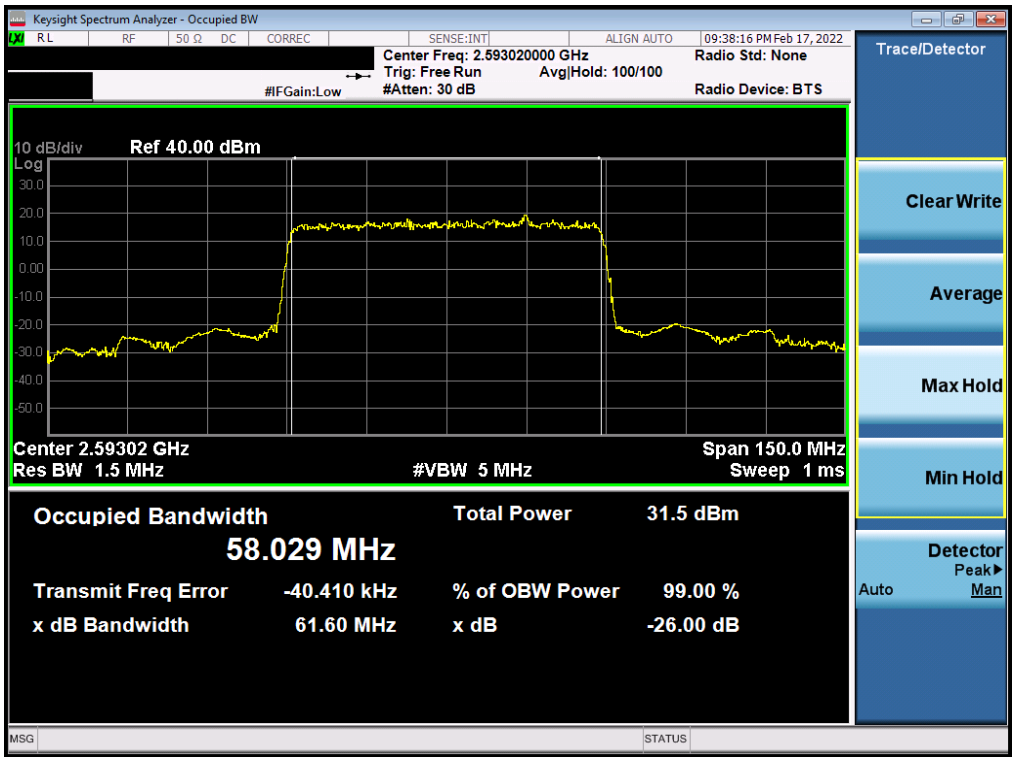
Plot 7-11. Occupied Bandwidth Plot (NR Band n41 - 80MHz π/2 BPSK - Full RB - AntJ)



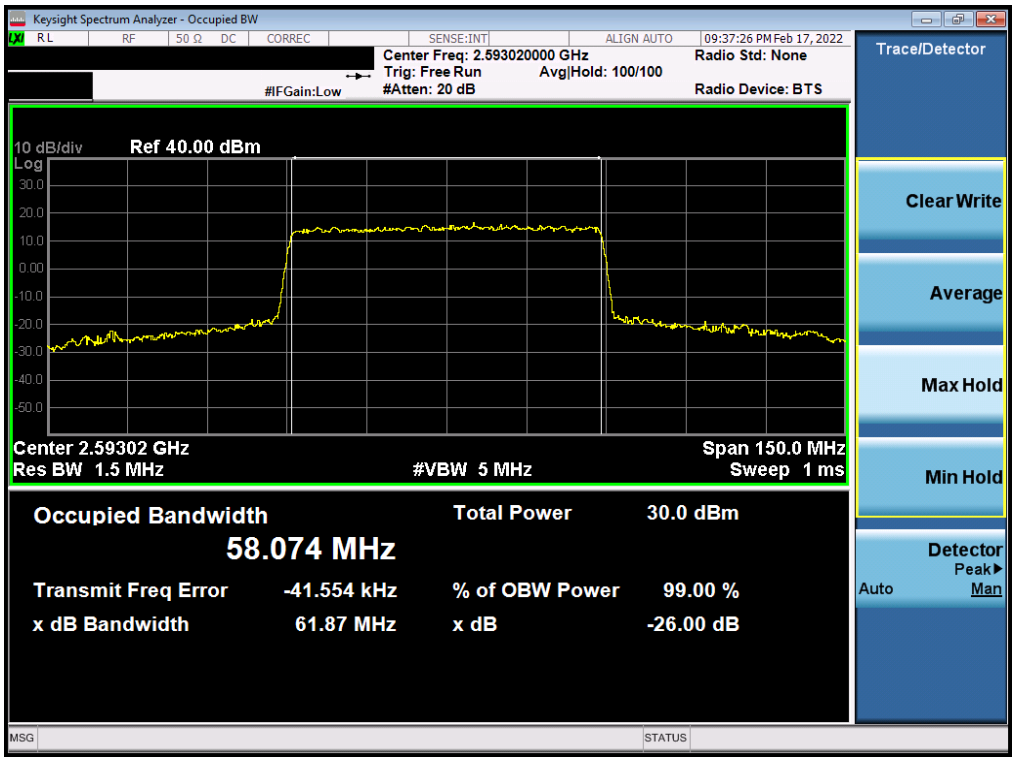
Plot 7-12. Occupied Bandwidth Plot (NR Band n41 - 80MHz QPSK - Full RB - AntJ)



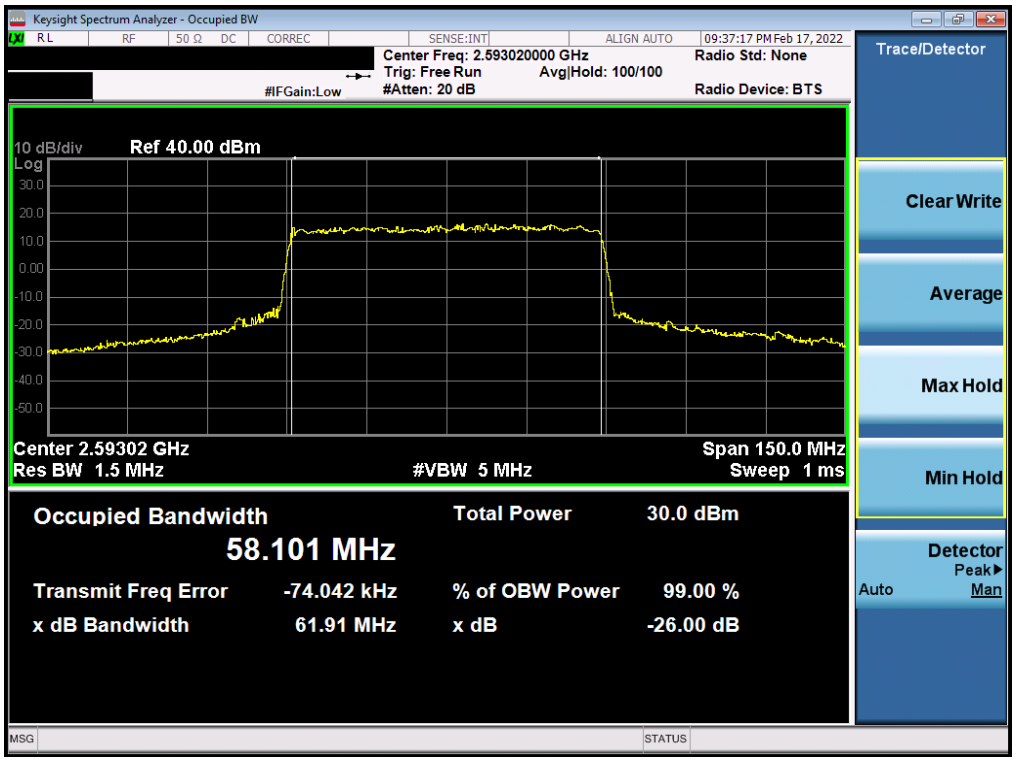
Plot 7-13. Occupied Bandwidth Plot (NR Band n41 - 80MHz 16-QAM - Full RB - AntJ)



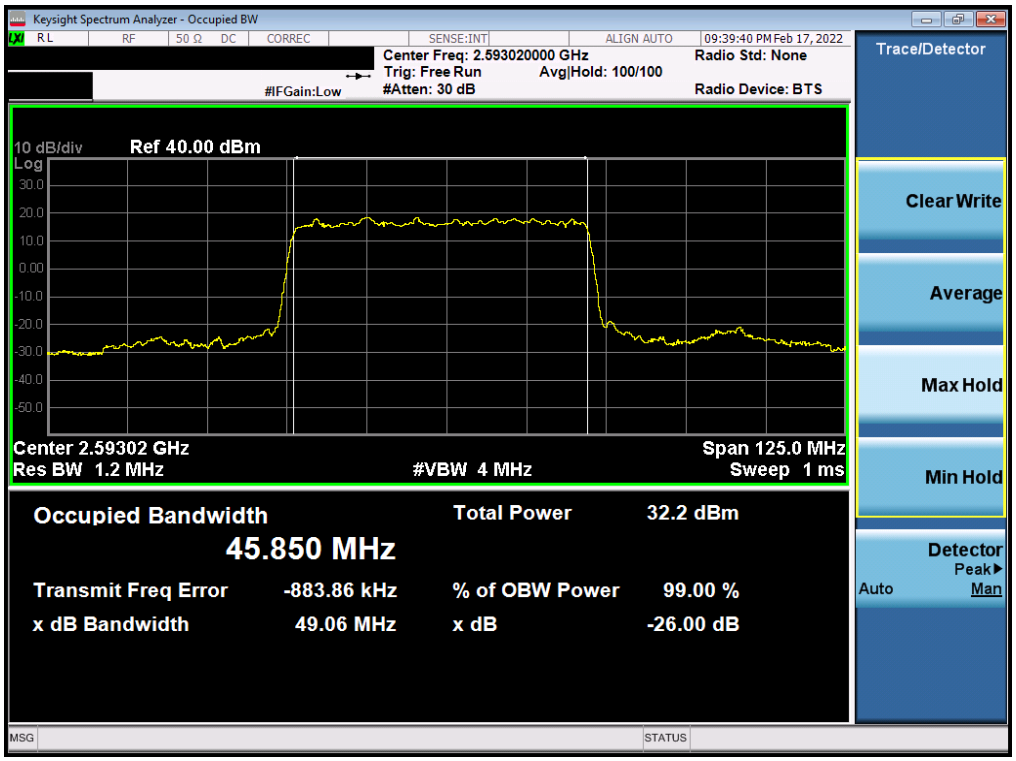
Plot 7-14. Occupied Bandwidth Plot (NR Band n41 - 60MHz π/2 BPSK - Full RB - AntJ)



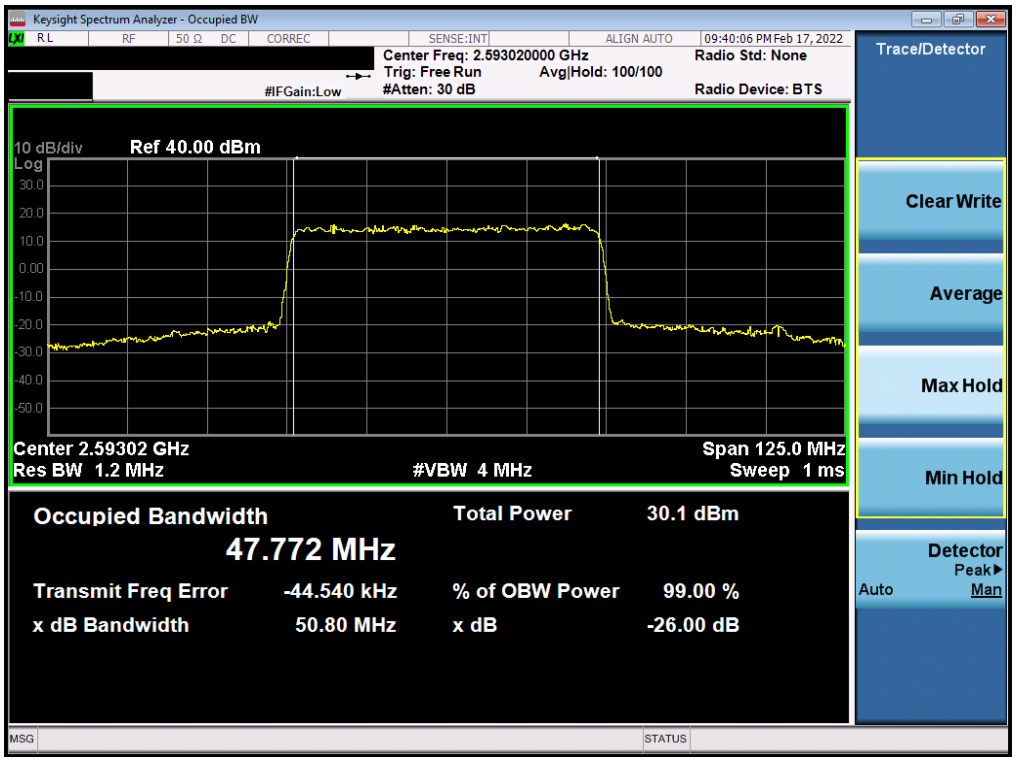
Plot 7-15. Occupied Bandwidth Plot (NR Band n41 - 60MHz QPSK - Full RB - AntJ)



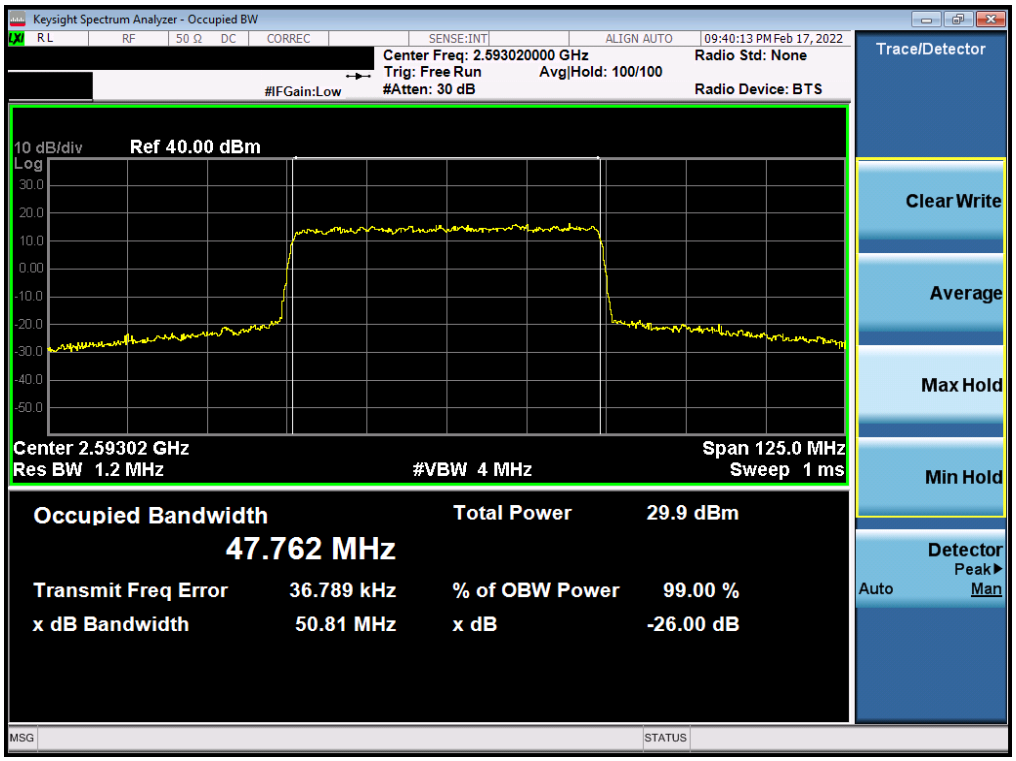
Plot 7-16. Occupied Bandwidth Plot (NR Band n41 - 60MHz 16-QAM - Full RB - AntJ)



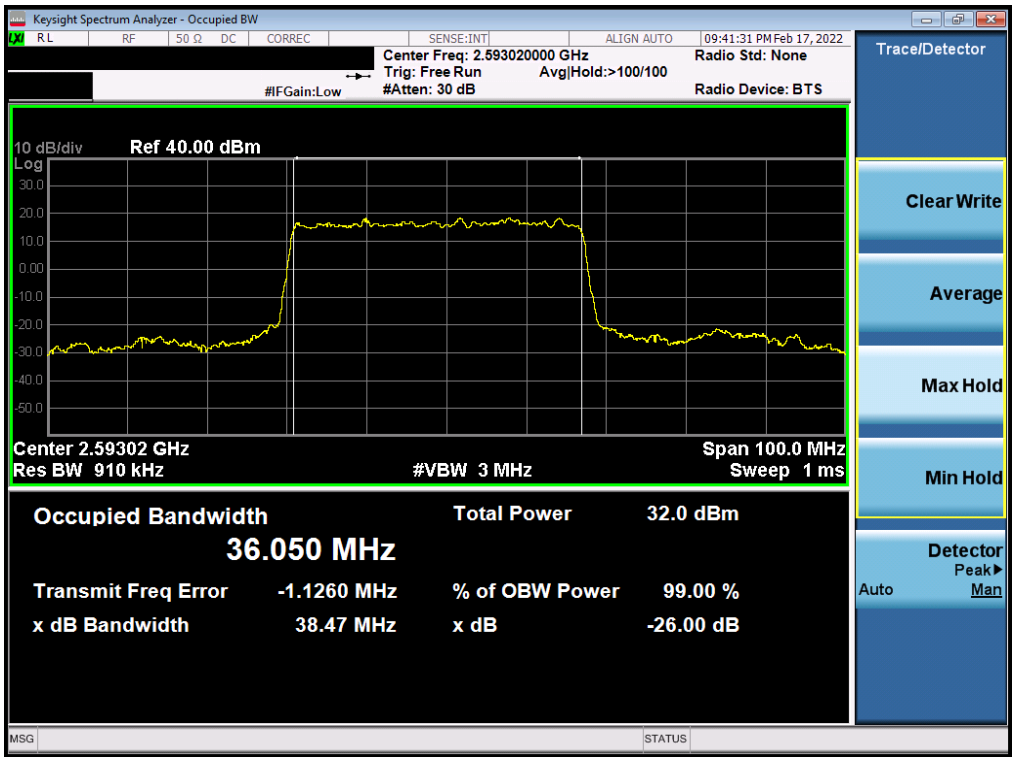
Plot 7-17. Occupied Bandwidth Plot (NR Band n41 - 50MHz π/2 BPSK - Full RB - AntJ)



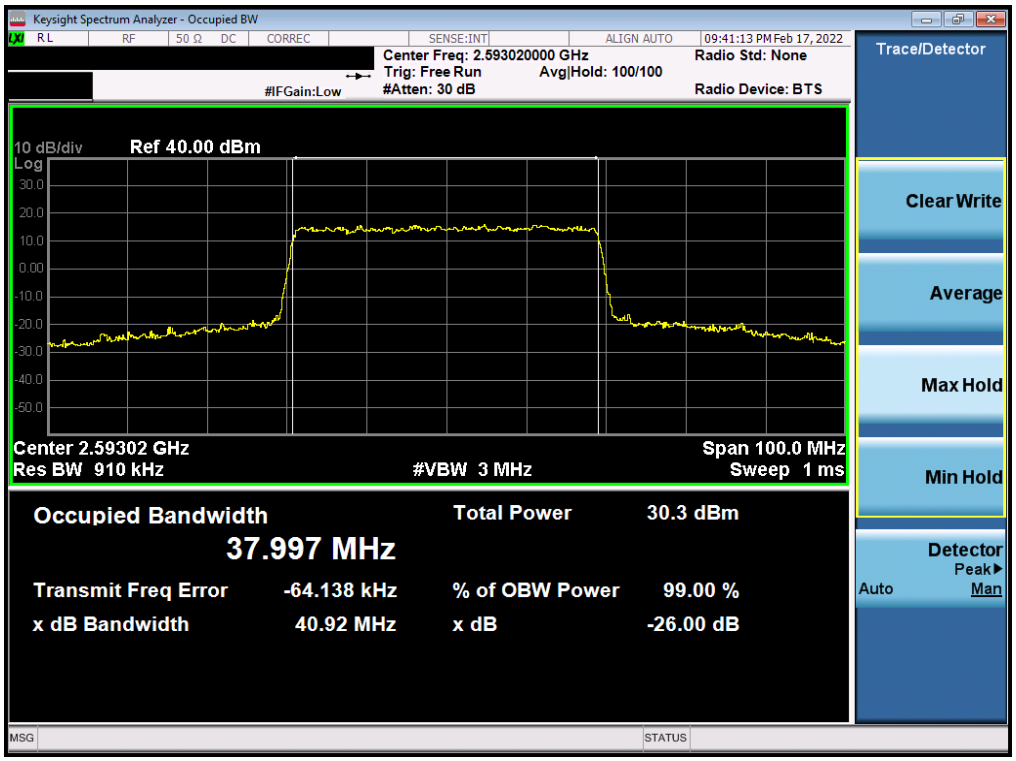
Plot 7-18. Occupied Bandwidth Plot (NR Band n41 - 50MHz QPSK - Full RB - AntJ)



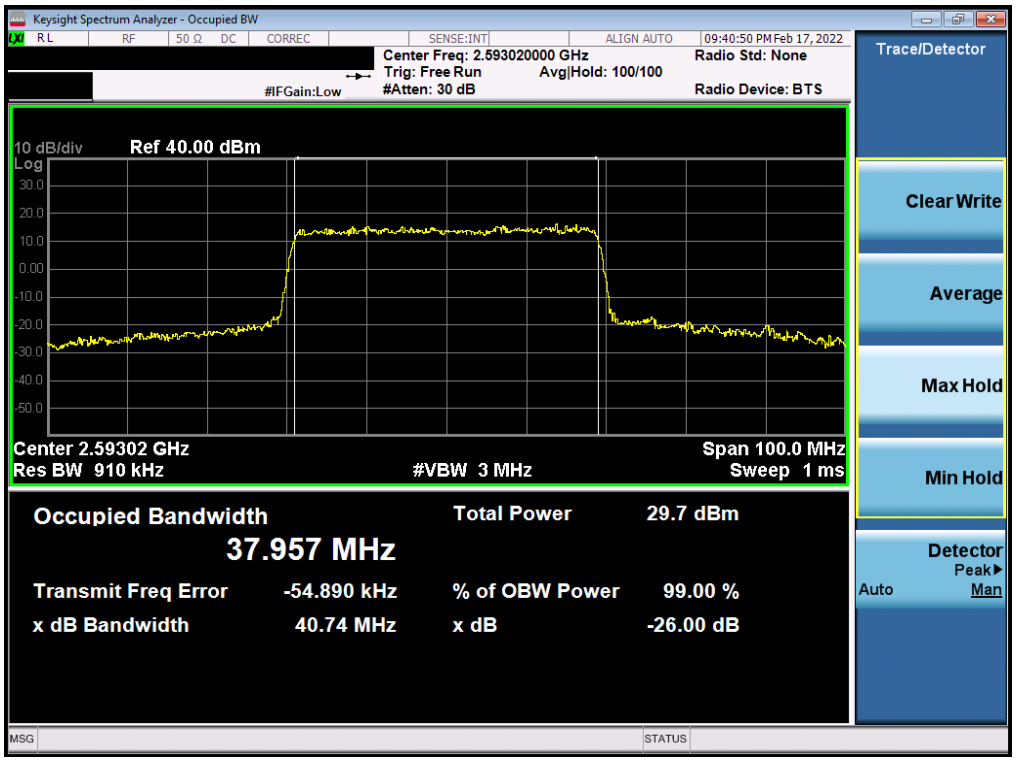
Plot 7-19. Occupied Bandwidth Plot (NR Band n41 - 50MHz 16-QAM - Full RB - AntJ)



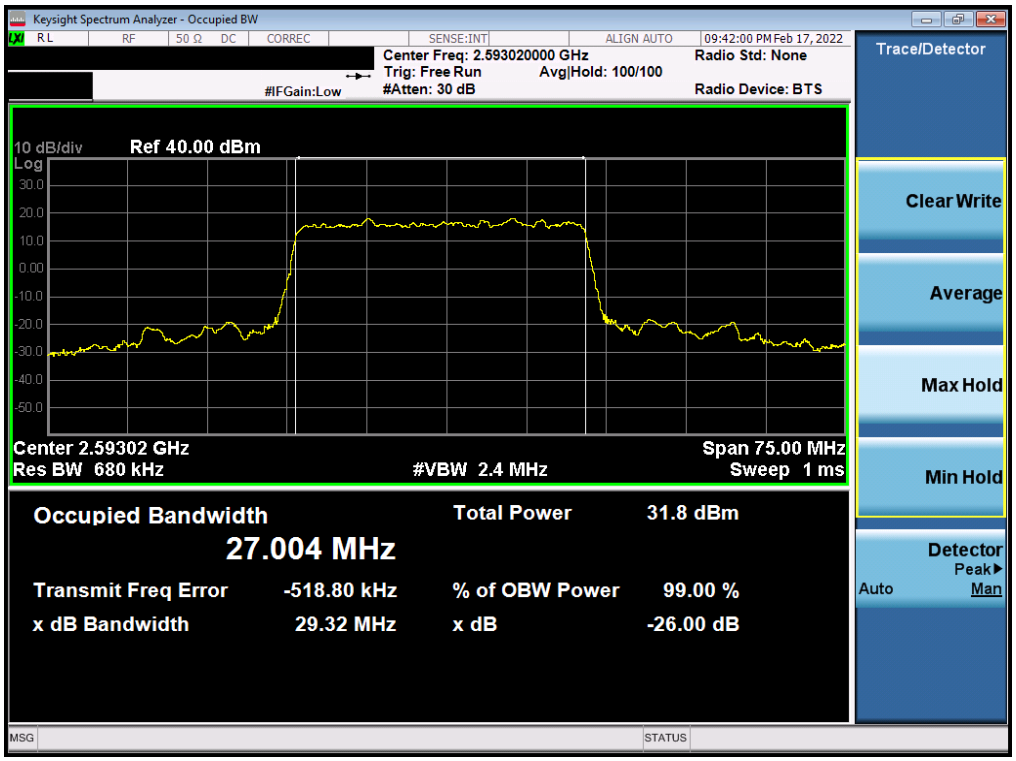
Plot 7-20. Occupied Bandwidth Plot (NR Band n41 - 40MHz π/2 BPSK - Full RB - AntJ)



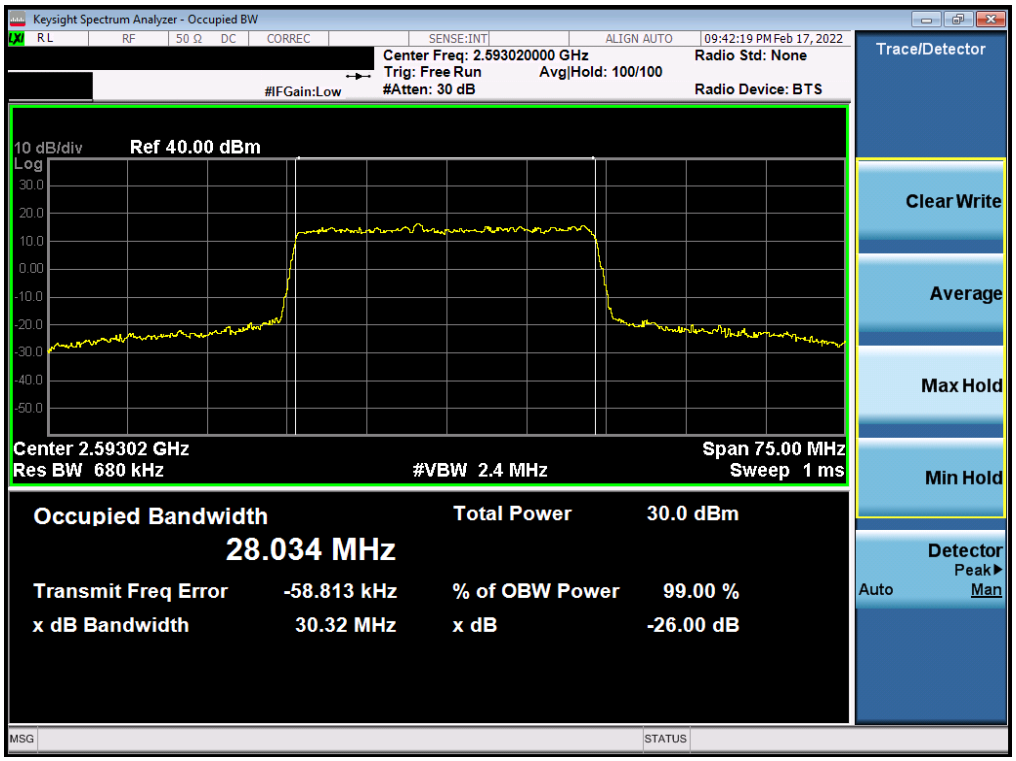
Plot 7-21. Occupied Bandwidth Plot (NR Band n41 - 40MHz QPSK - Full RB - AntJ)



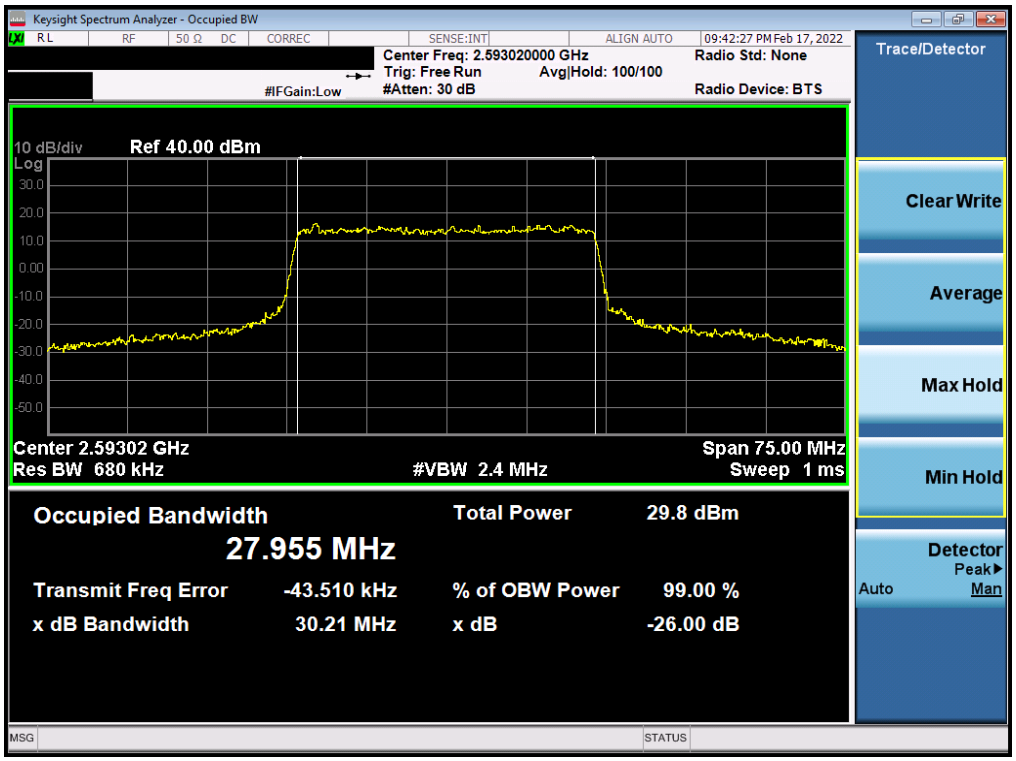
Plot 7-22. Occupied Bandwidth Plot (NR Band n41 - 40MHz 16-QAM - Full RB - AntJ)



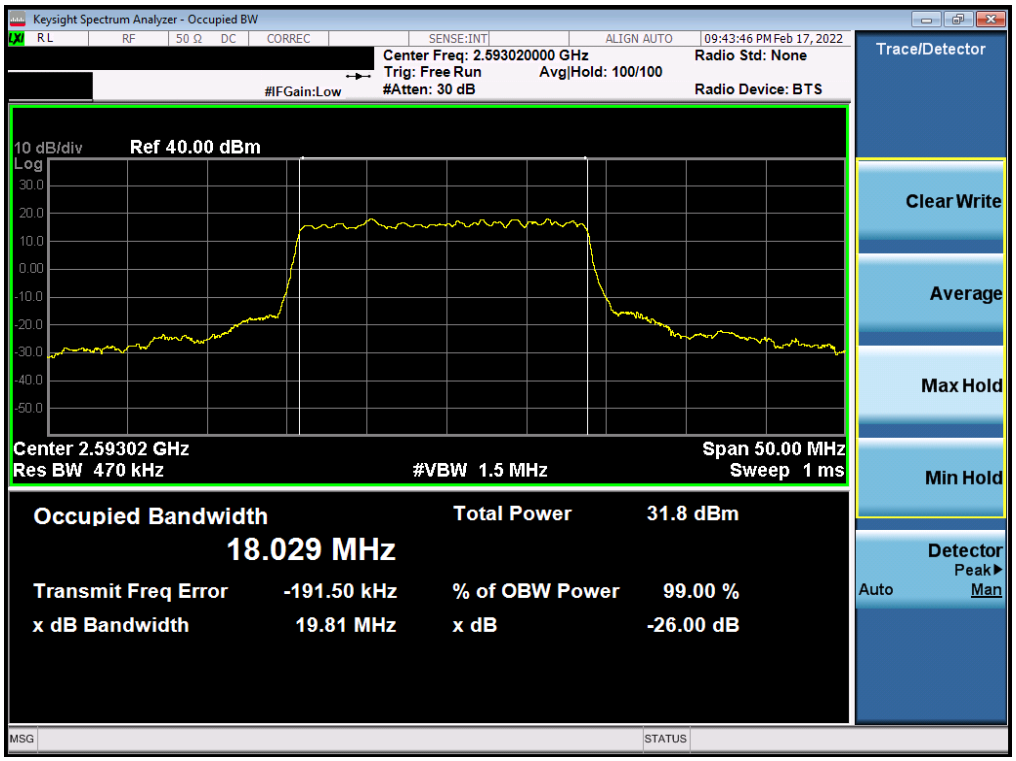
Plot 7-23. Occupied Bandwidth Plot (NR Band n41 - 30MHz π/2 BPSK - Full RB - AntJ)



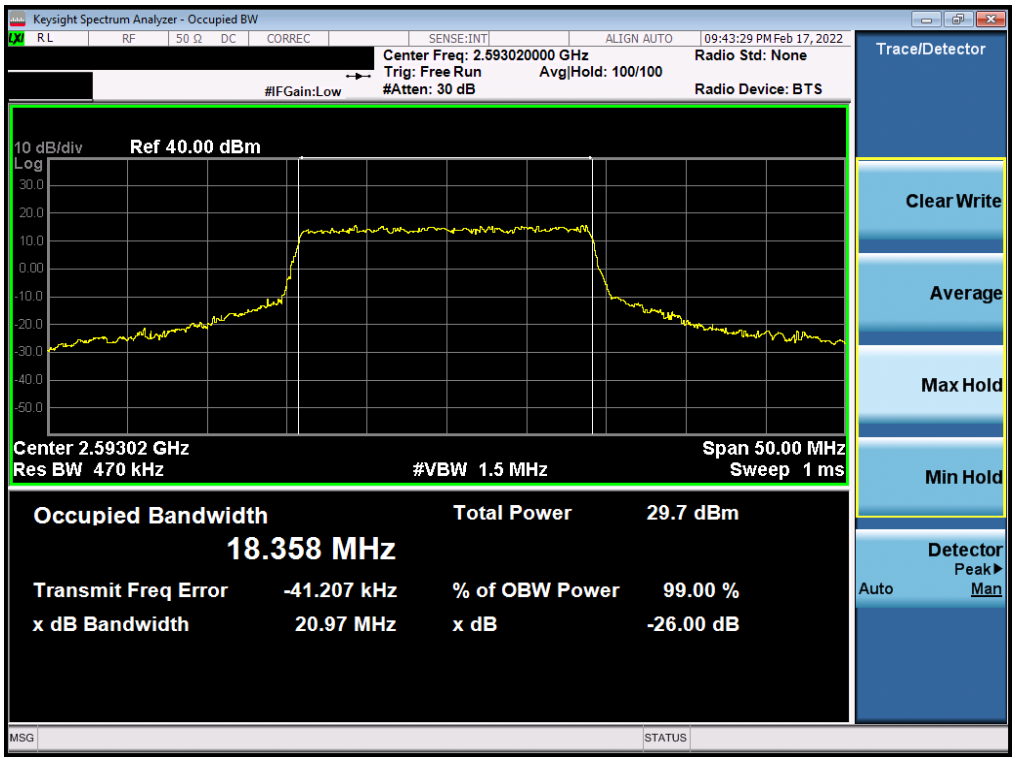
Plot 7-24. Occupied Bandwidth Plot (NR Band n41 - 30MHz QPSK - Full RB - AntJ)



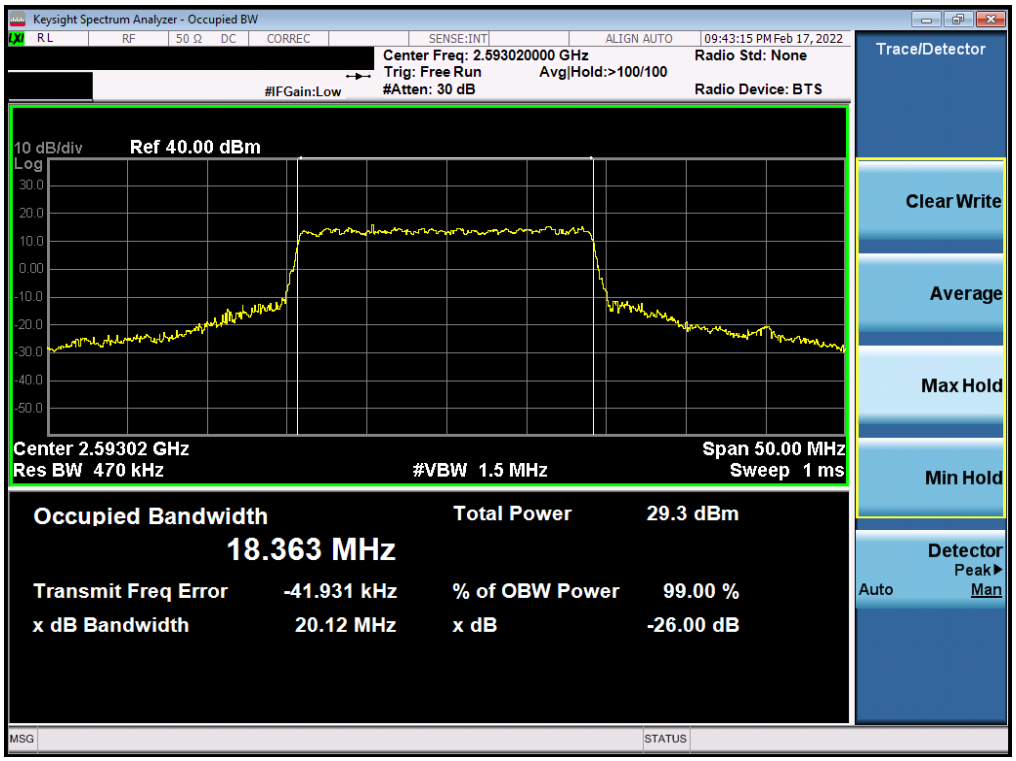
Plot 7-25. Occupied Bandwidth Plot (NR Band n41 - 30MHz 16-QAM - Full RB - AntJ)



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



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)

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 + 10$log_{10}(P_{[Watts]})$.

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.

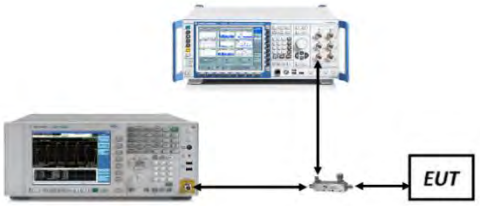


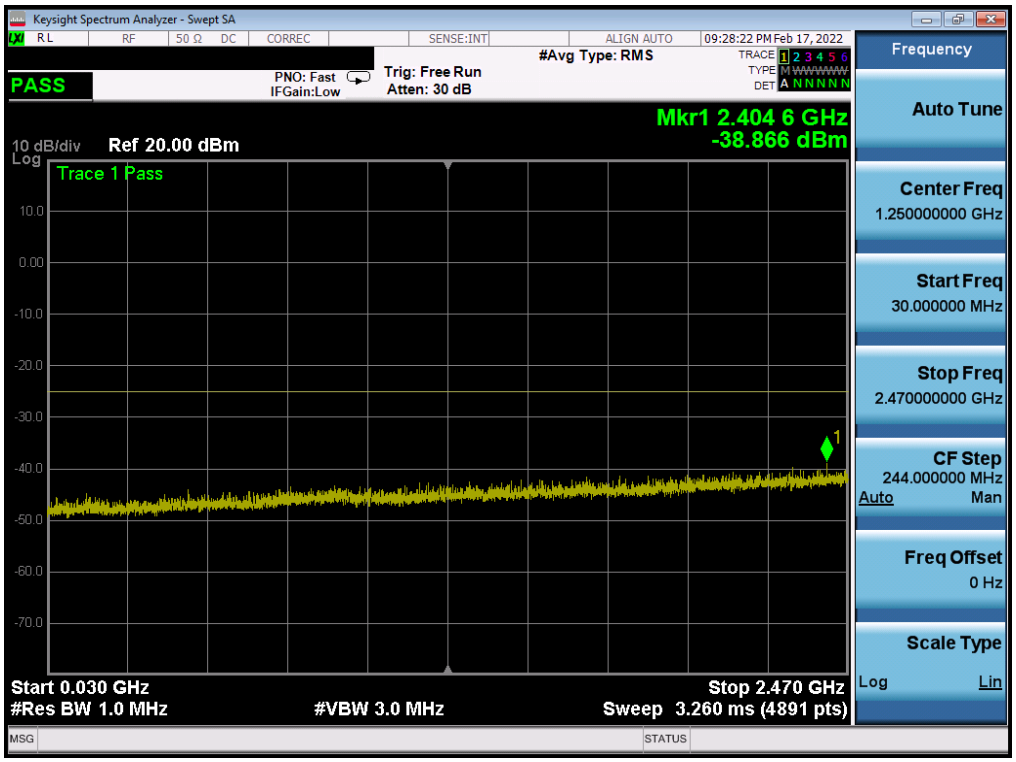
Figure 7-3. Test Instrument & Measurement Setup

Test Notes

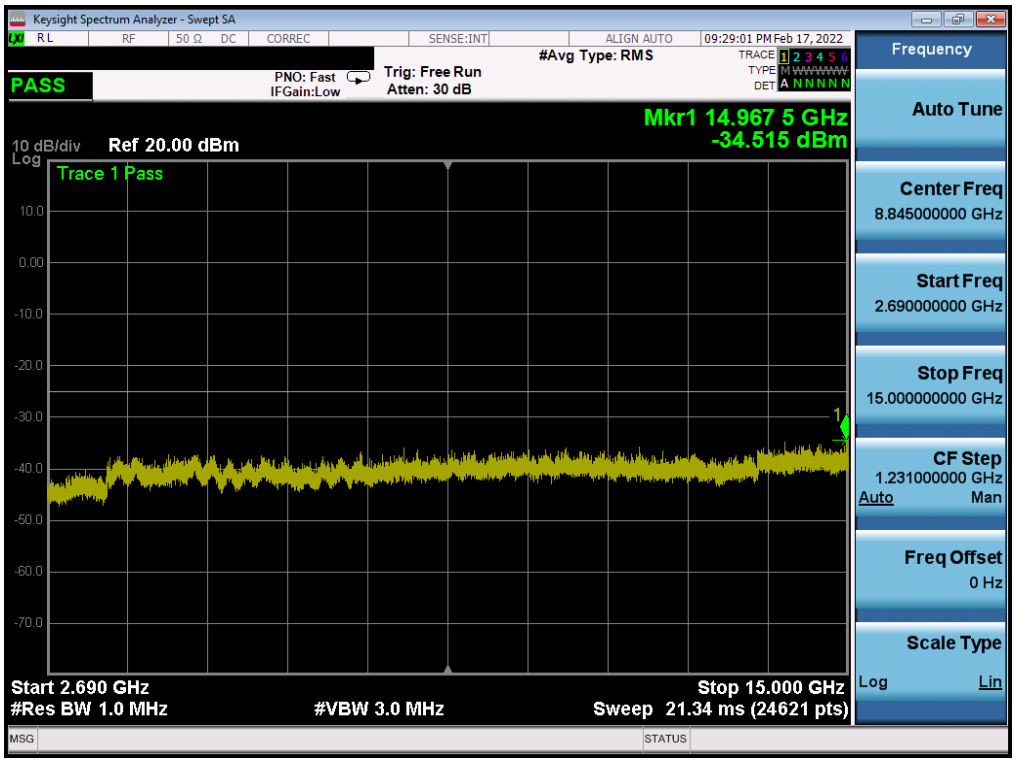
1. Per Part 27, RSS-195 and RSS-199, compliance with the applicable limits is based on the use of measurement instrumentation employing a resolution bandwidth 100 kHz or greater for measurements below 1GHz. However, in the 1 MHz bands immediately outside and adjacent to the frequency block a resolution 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.

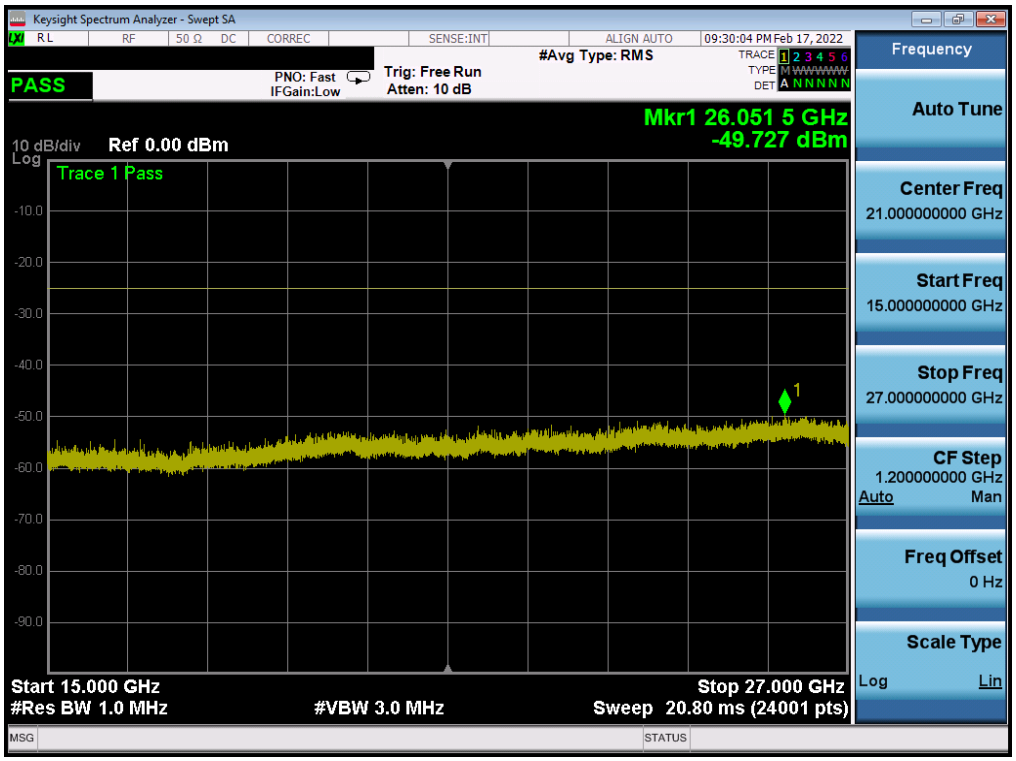
NR Band n41 – AntJ



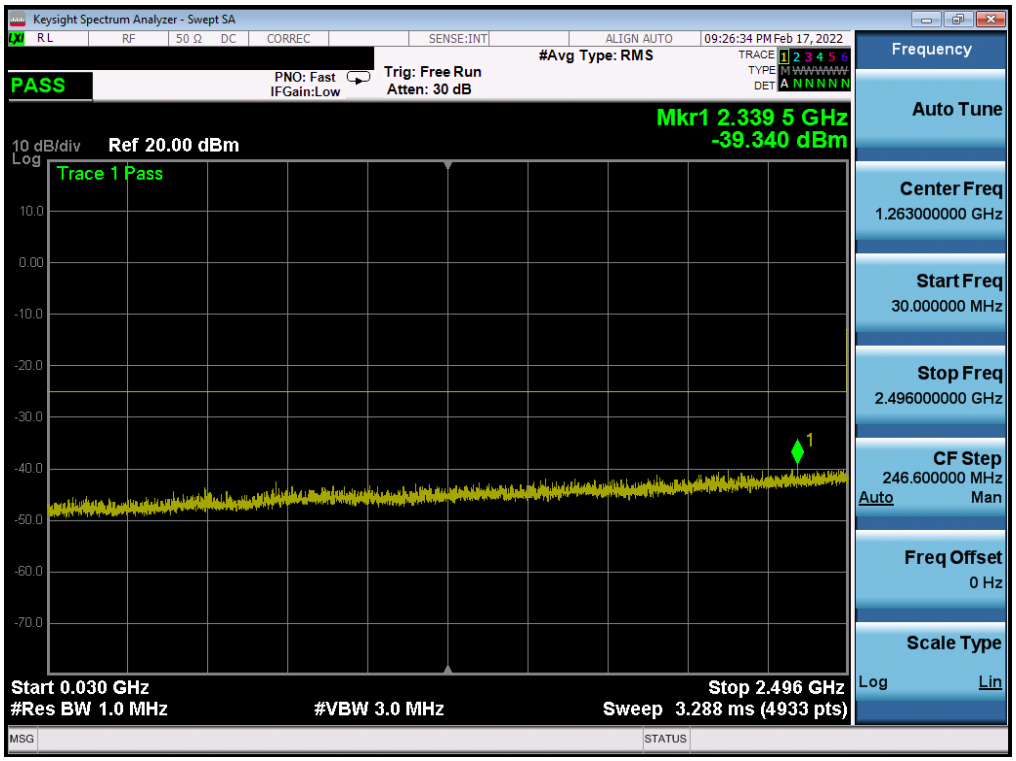
Plot 7-29. Conducted Spurious Plot (NR Band n41 - 100MHz QPSK - RB Size 1, RB Offset 0 - Low Channel AntJ)



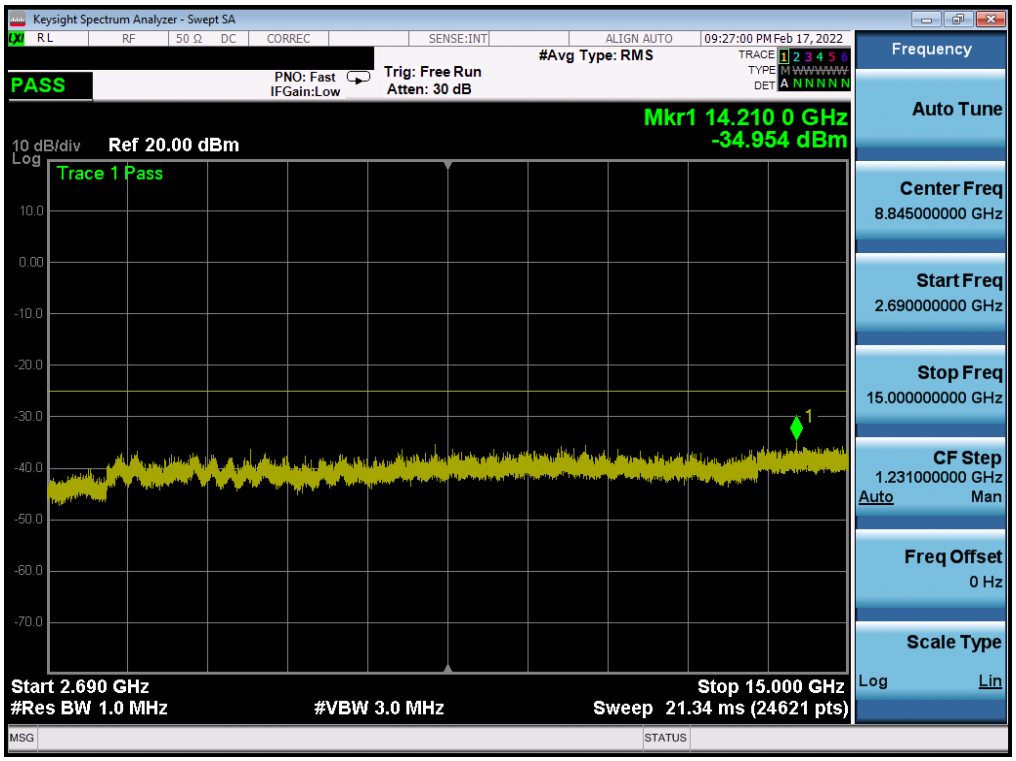
Plot 7-30. Conducted Spurious Plot (NR Band n41 - 100MHz QPSK - RB Size 1, RB Offset 0 - Low Channel AntJ)



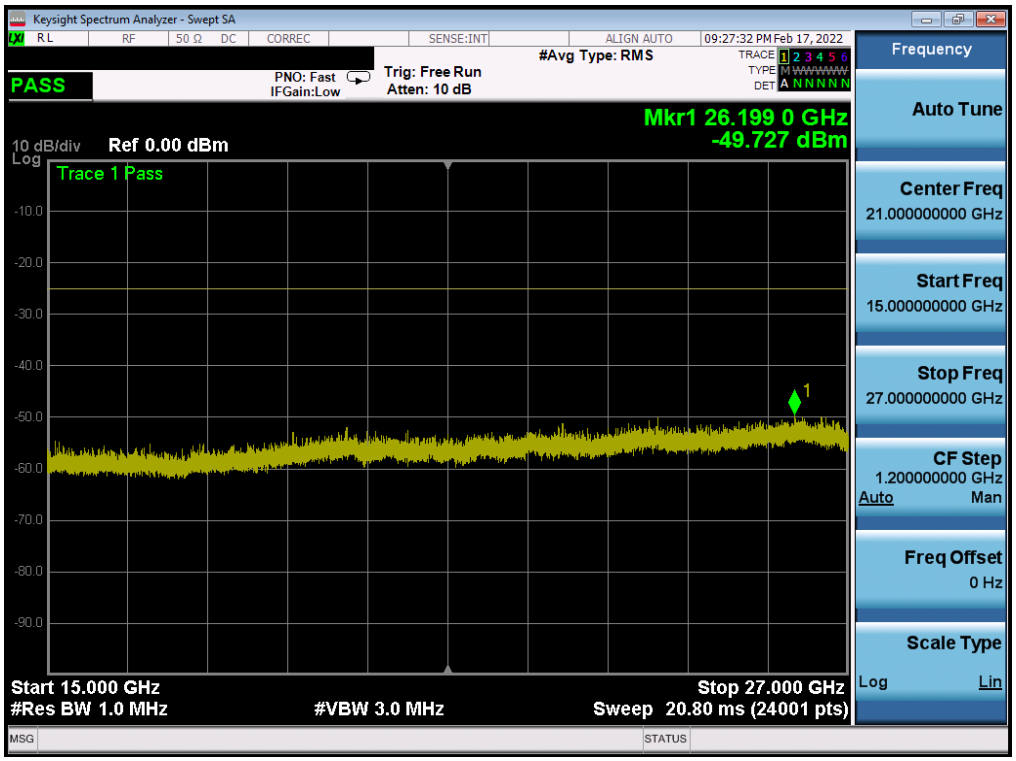
Plot 7-31. Conducted Spurious Plot (NR Band n41 - 100MHz QPSK - RB Size 1, RB Offset 0 - Low Channel AntJ)



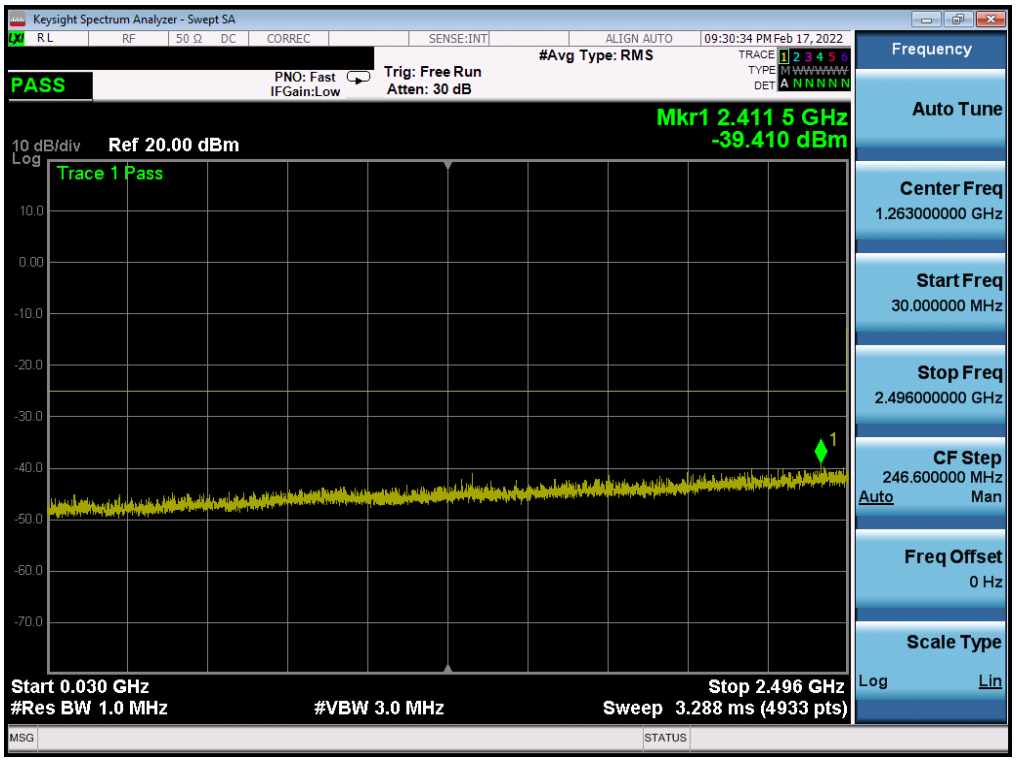
Plot 7-32. Conducted Spurious Plot (NR Band n41 - 100MHz QPSK - RB Size 1, RB Offset 0 - Mid Channel AntJ)



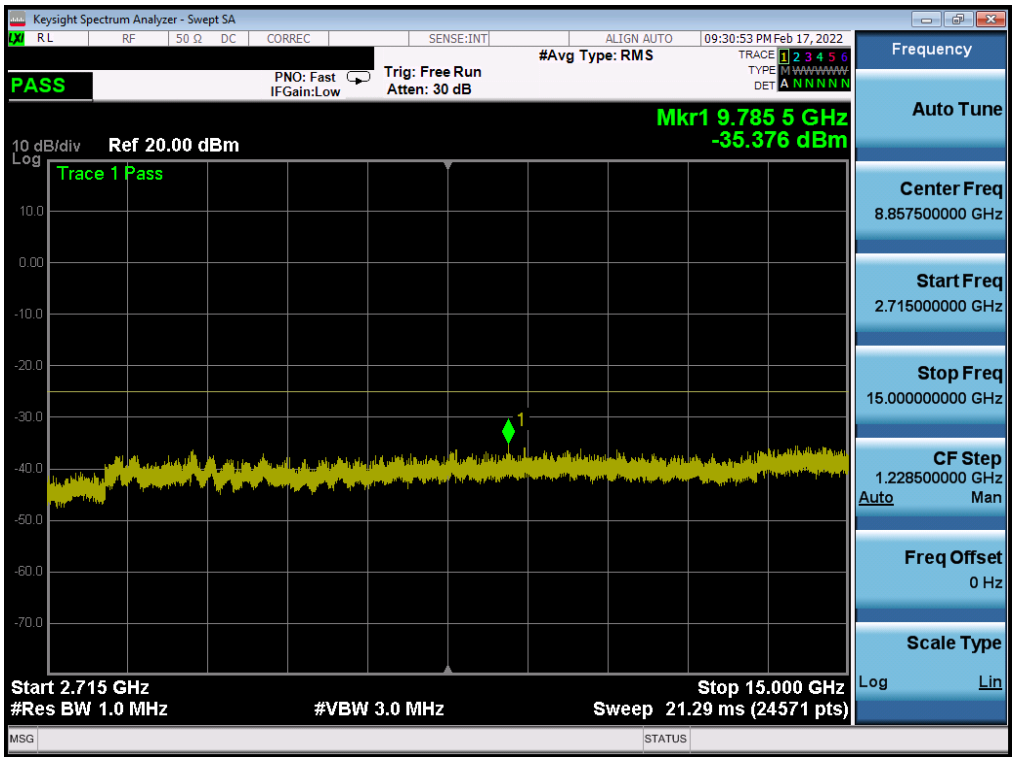
Plot 7-33. Conducted Spurious Plot (NR Band n41 - 100MHz QPSK - RB Size 1, RB Offset 0 - Mid Channel AntJ)



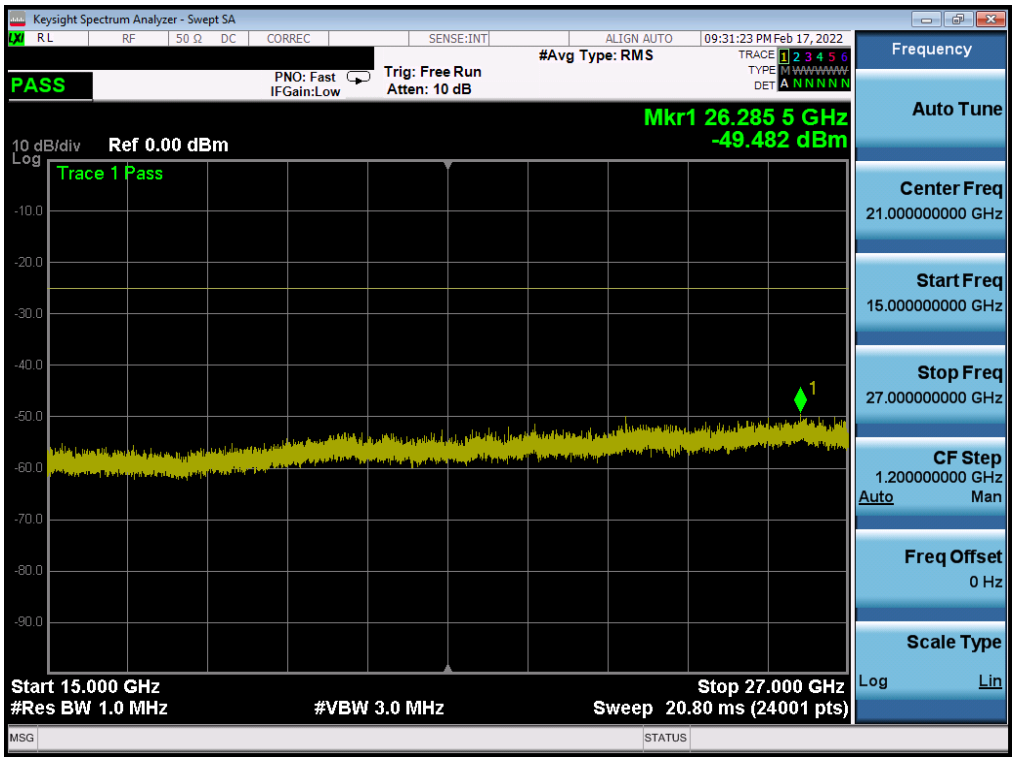
Plot 7-34. Conducted Spurious Plot (NR Band n41 - 100MHz QPSK - RB Size 1, RB Offset 0 - Mid Channel AntJ)



Plot 7-35. Conducted Spurious Plot (NR Band n41 - 100MHz QPSK - RB Size 1, RB Offset 0 - High Channel AntJ)

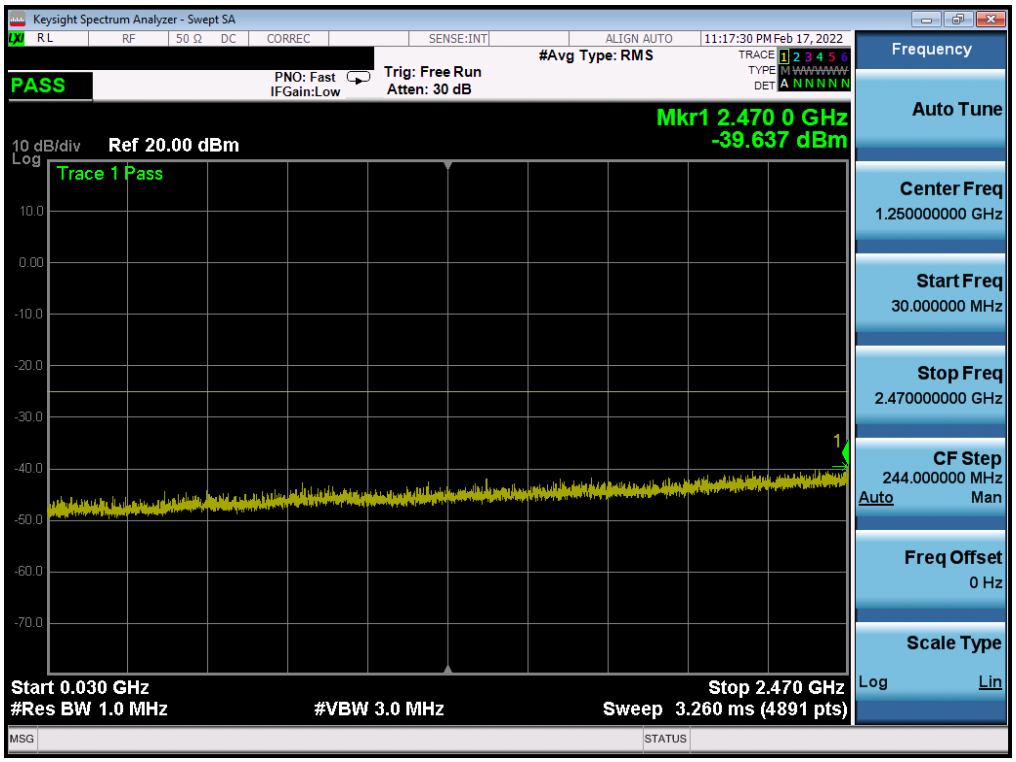


Plot 7-36. Conducted Spurious Plot (NR Band n41 - 100MHz QPSK - RB Size 1, RB Offset 0 - High Channel AntJ)

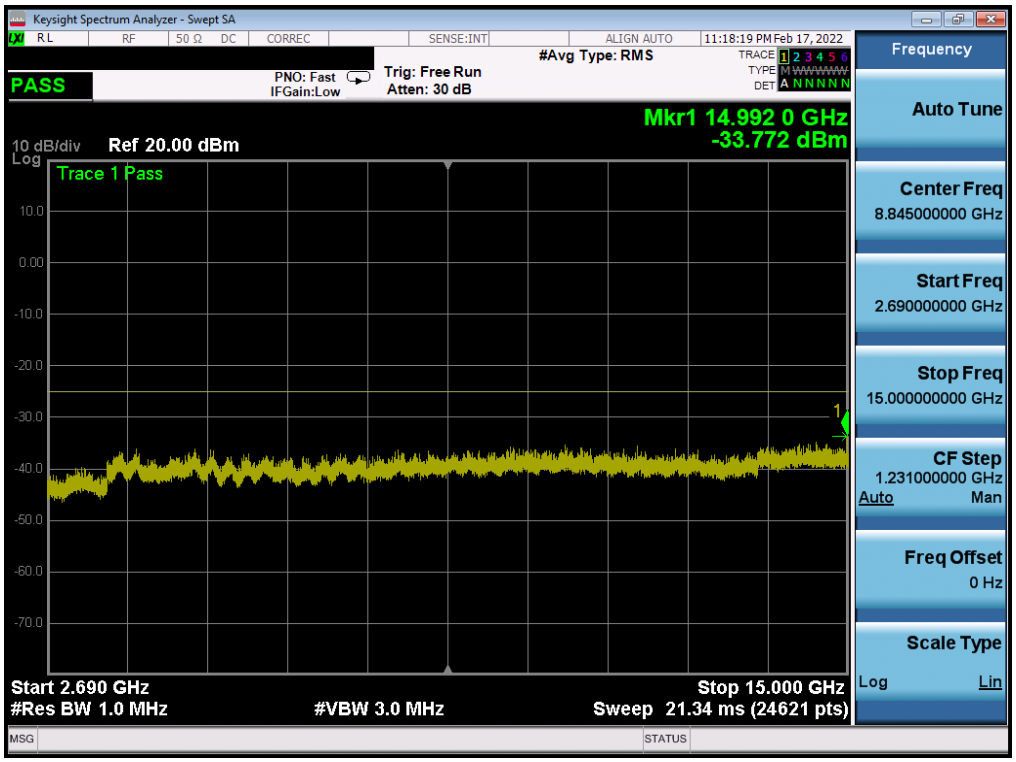


Plot 7-37. Conducted Spurious Plot (NR Band n41 - 100MHz QPSK - RB Size 1, RB Offset 0 - High Channel AntJ)

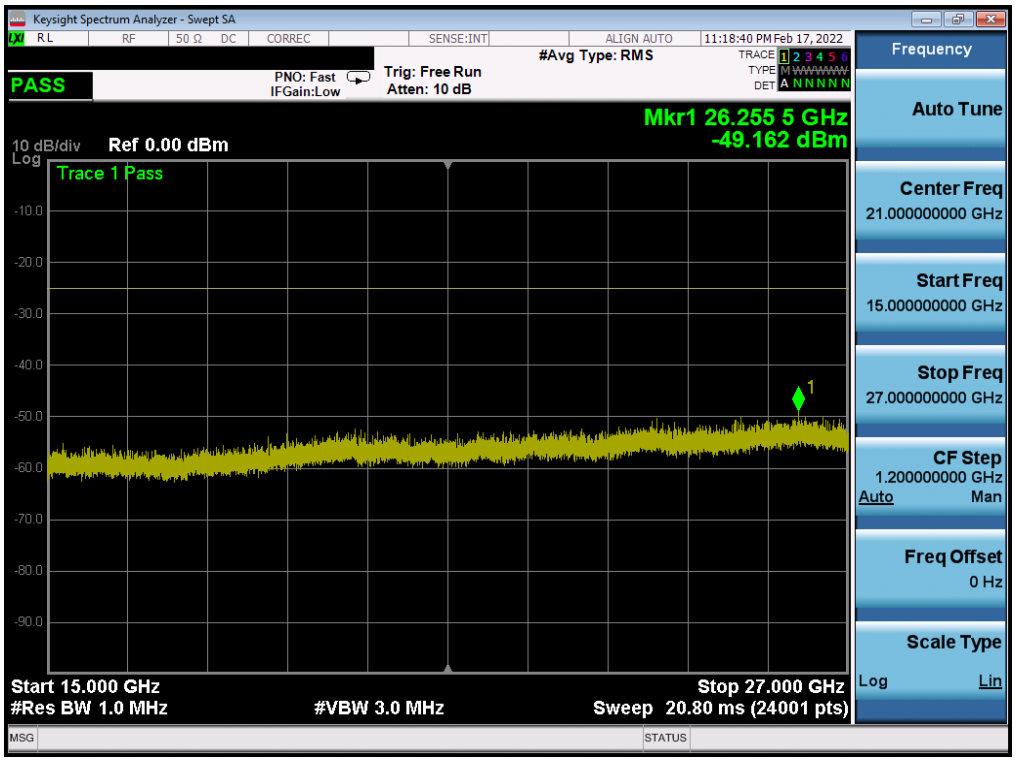
NR Band n41 SRS2 – AntB



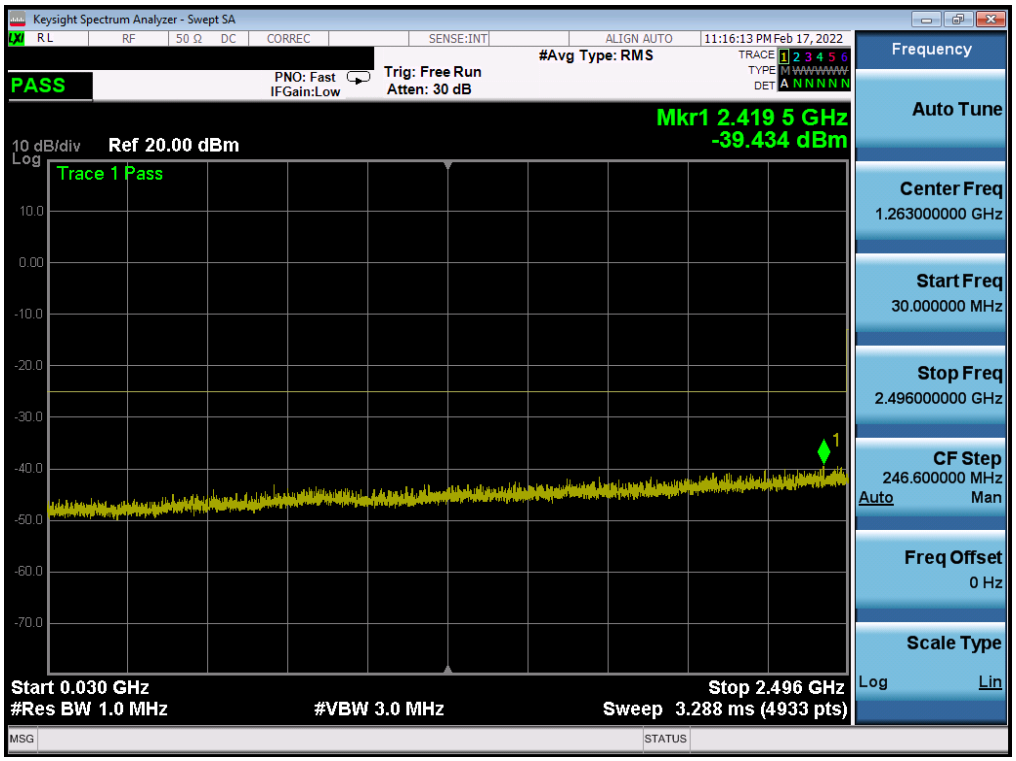
Plot 7-38. Conducted Spurious Plot (NR Band n41 - 100MHz QPSK - RB Size 1, RB Offset 0 - Low Channel AntB)



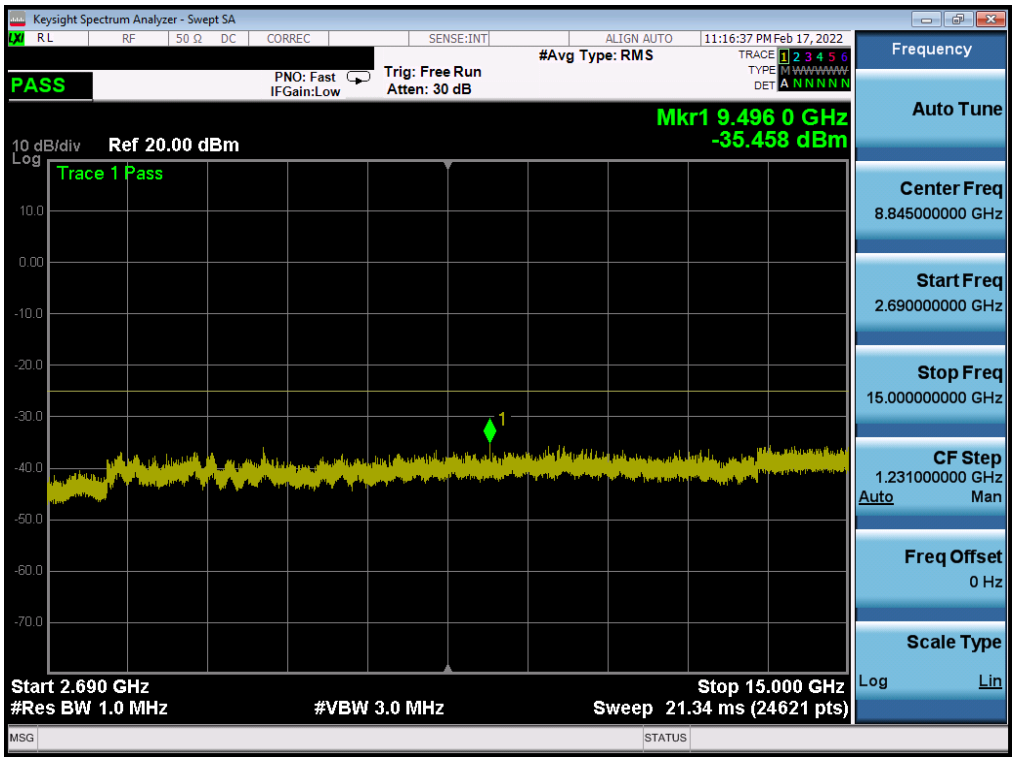
Plot 7-39. Conducted Spurious Plot (NR Band n41 - 100MHz QPSK - RB Size 1, RB Offset 0 - Low Channel AntB)



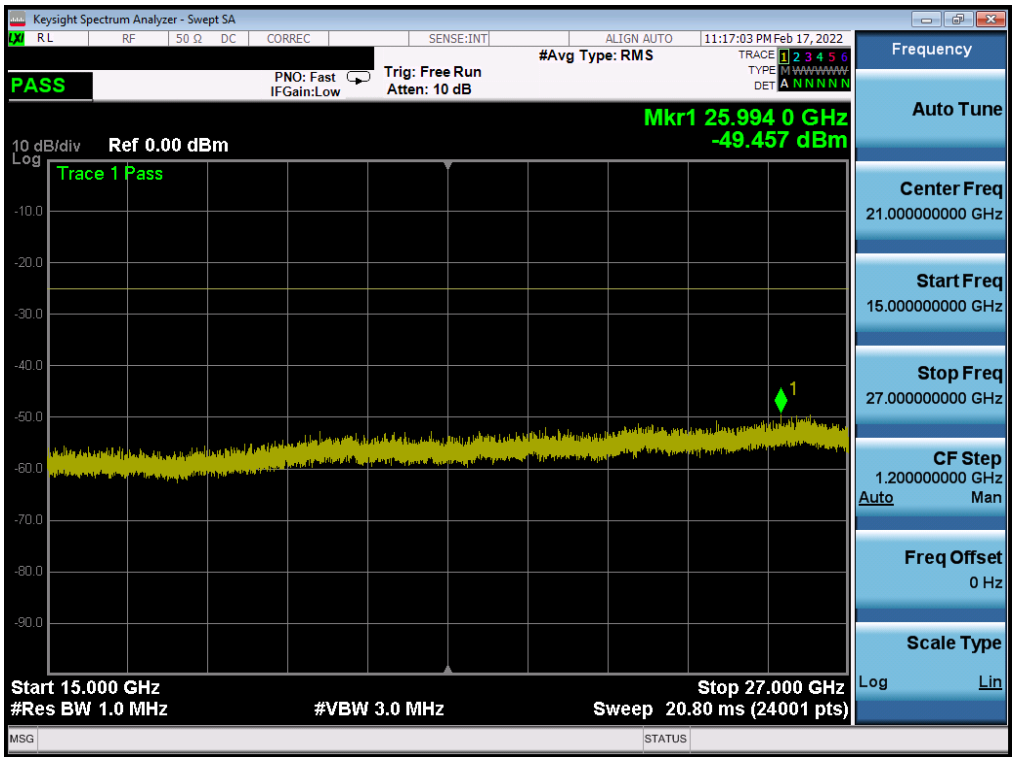
Plot 7-40. Conducted Spurious Plot (NR Band n41 - 100MHz QPSK - RB Size 1, RB Offset 0 - Low Channel AntB)



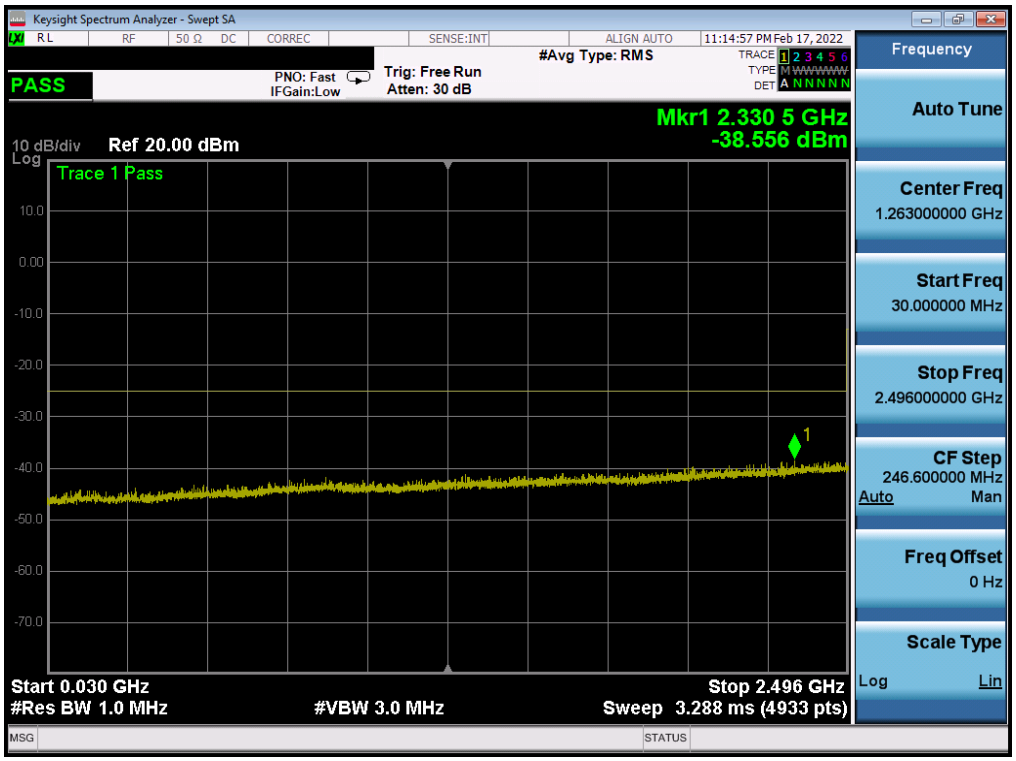
Plot 7-41. Conducted Spurious Plot (NR Band n41 - 100MHz QPSK - RB Size 1, RB Offset 0 - Mid Channel AntB)



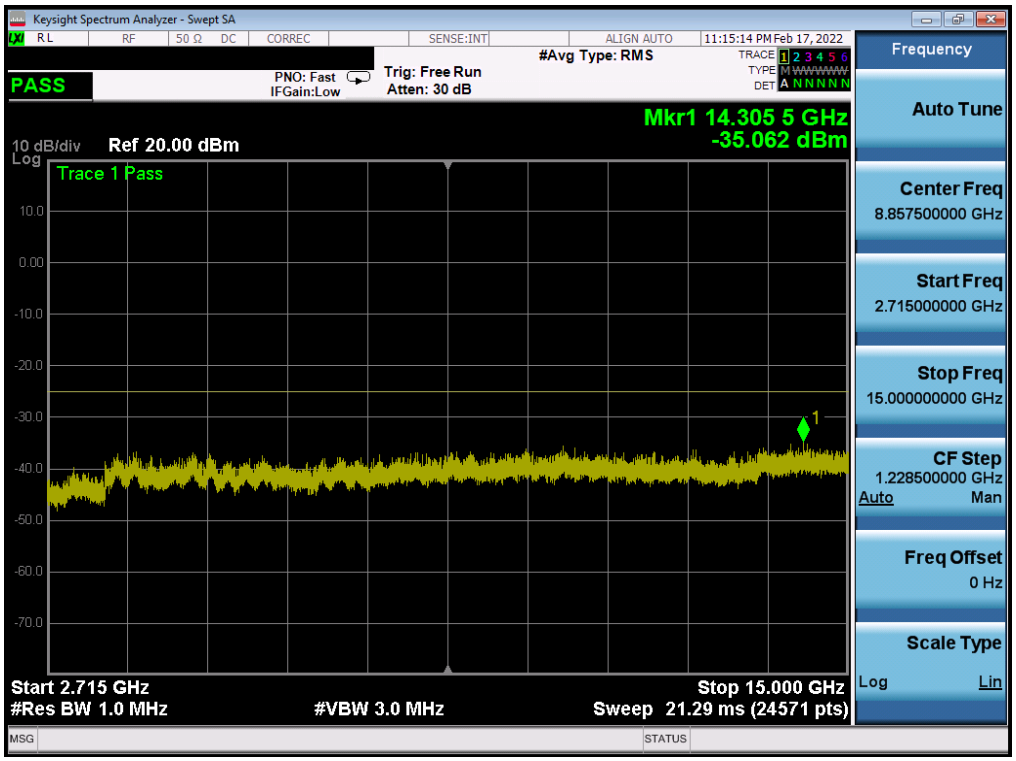
Plot 7-42. Conducted Spurious Plot (NR Band n41 - 100MHz QPSK - RB Size 1, RB Offset 0 - Mid Channel AntB)



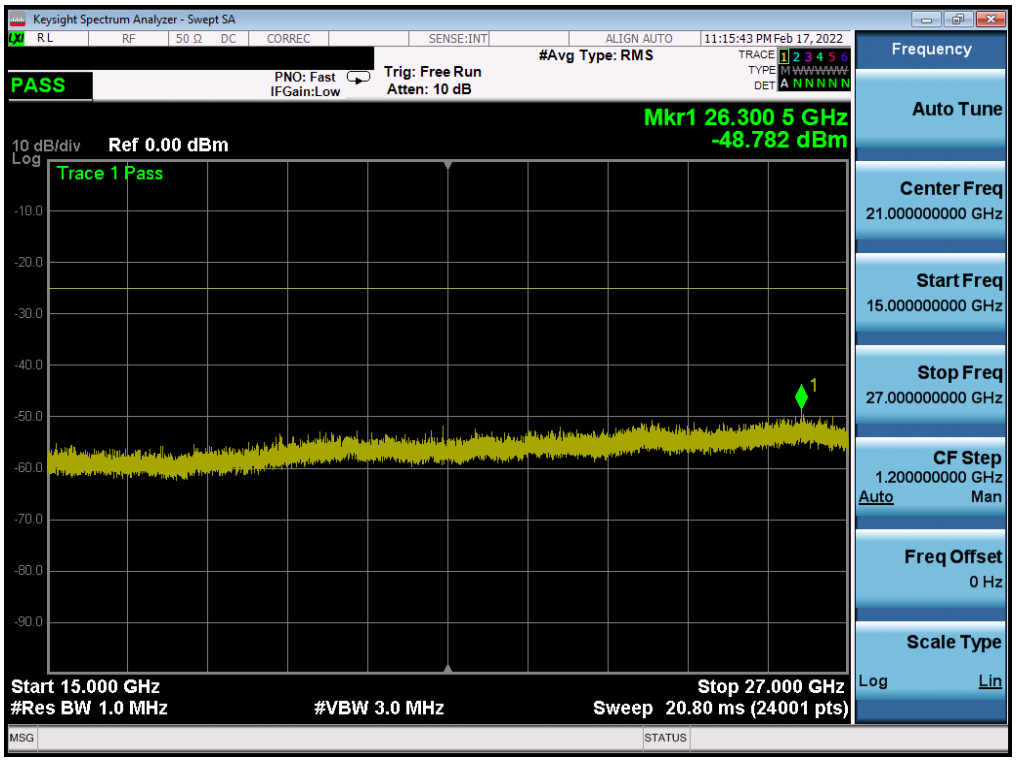
Plot 7-43. Conducted Spurious Plot (NR Band n41 - 100MHz QPSK - RB Size 1, RB Offset 0 - Mid Channel AntB)



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

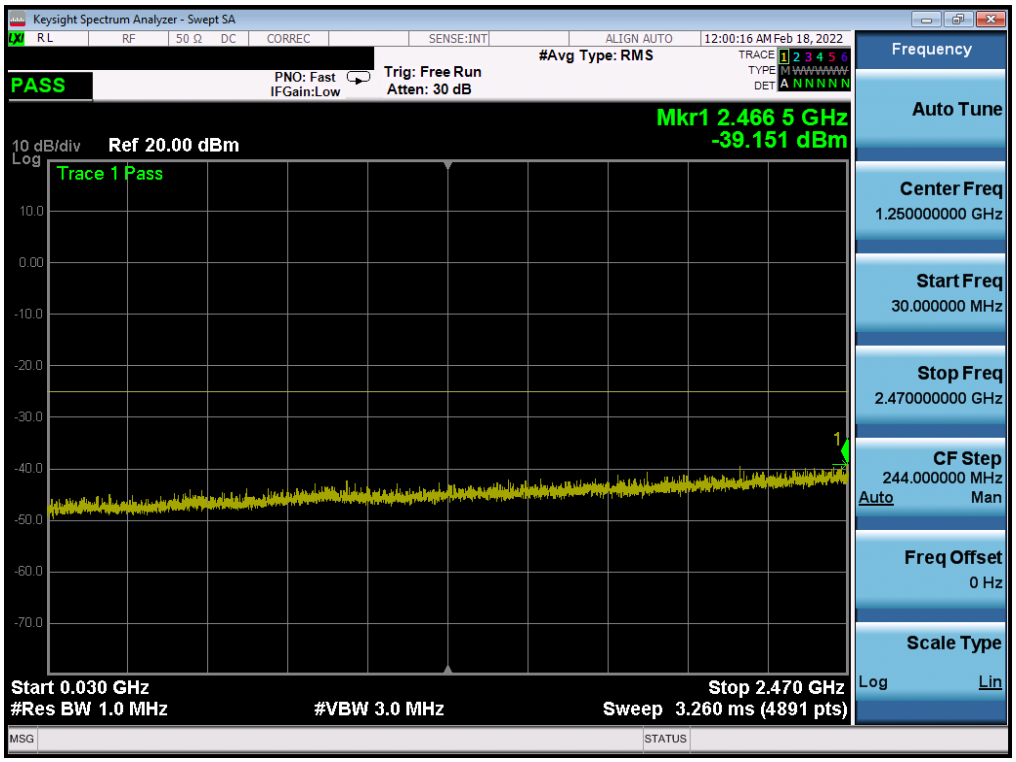


Plot 7-45. Conducted Spurious Plot (NR Band n41 - 100MHz QPSK - RB Size 1, RB Offset 0 - High Channel AntB)

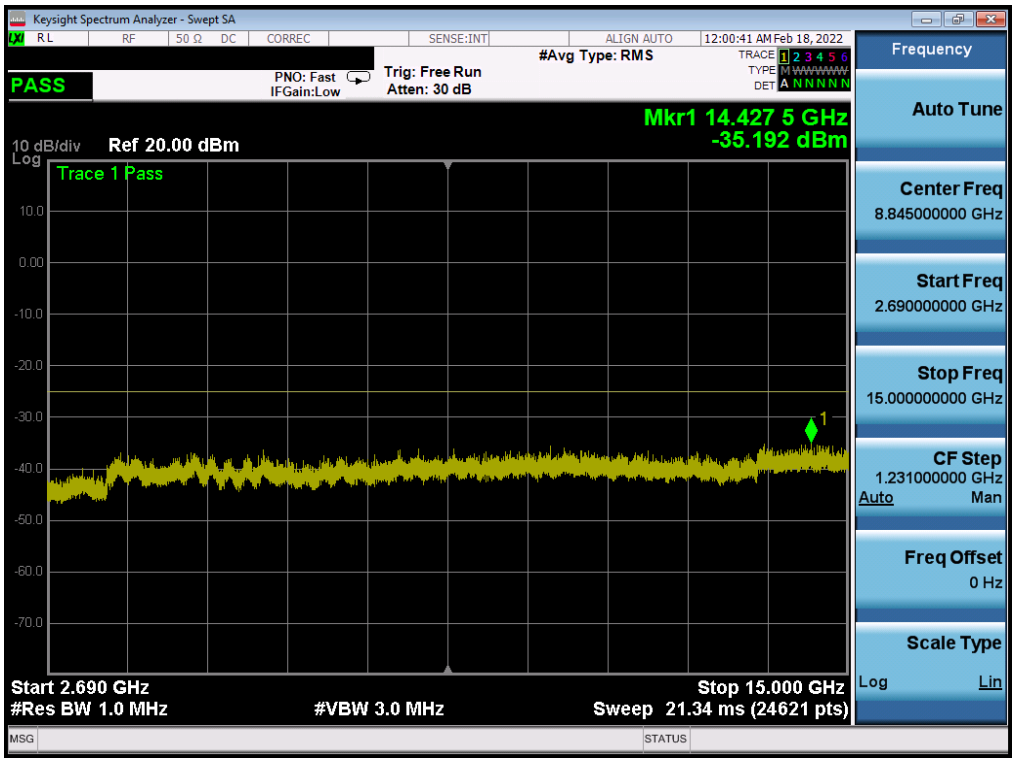


Plot 7-46. Conducted Spurious Plot (NR Band n41 - 100MHz QPSK - RB Size 1, RB Offset 0 - High Channel AntB)

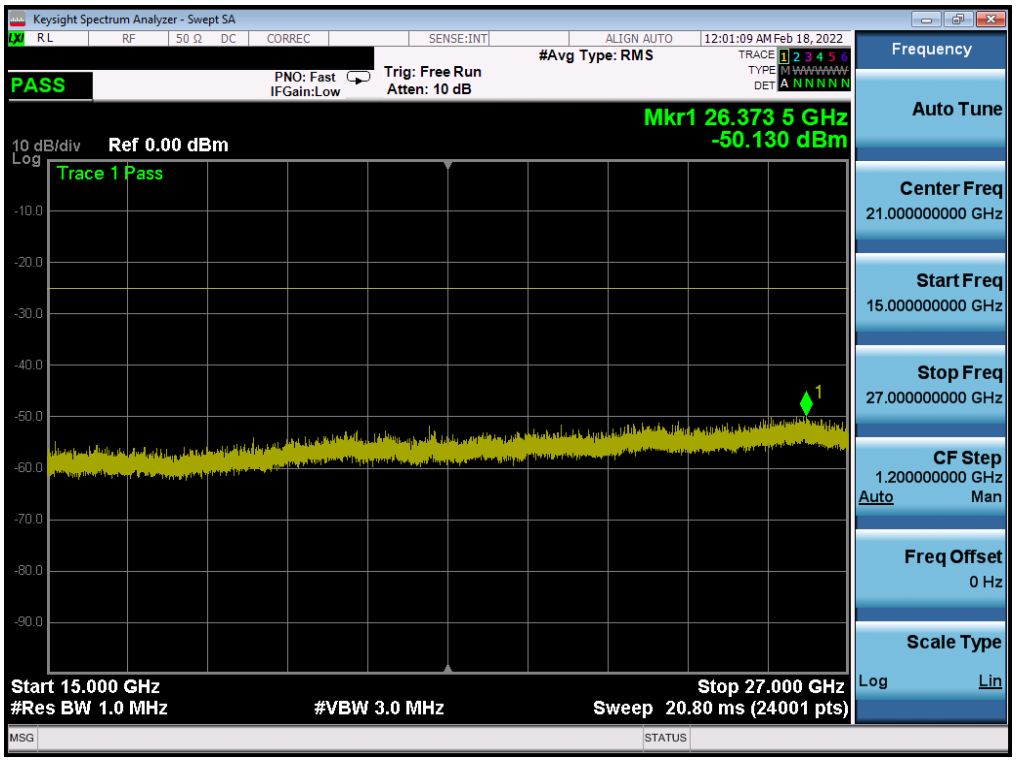
NR Band n41 SRS3– AntE



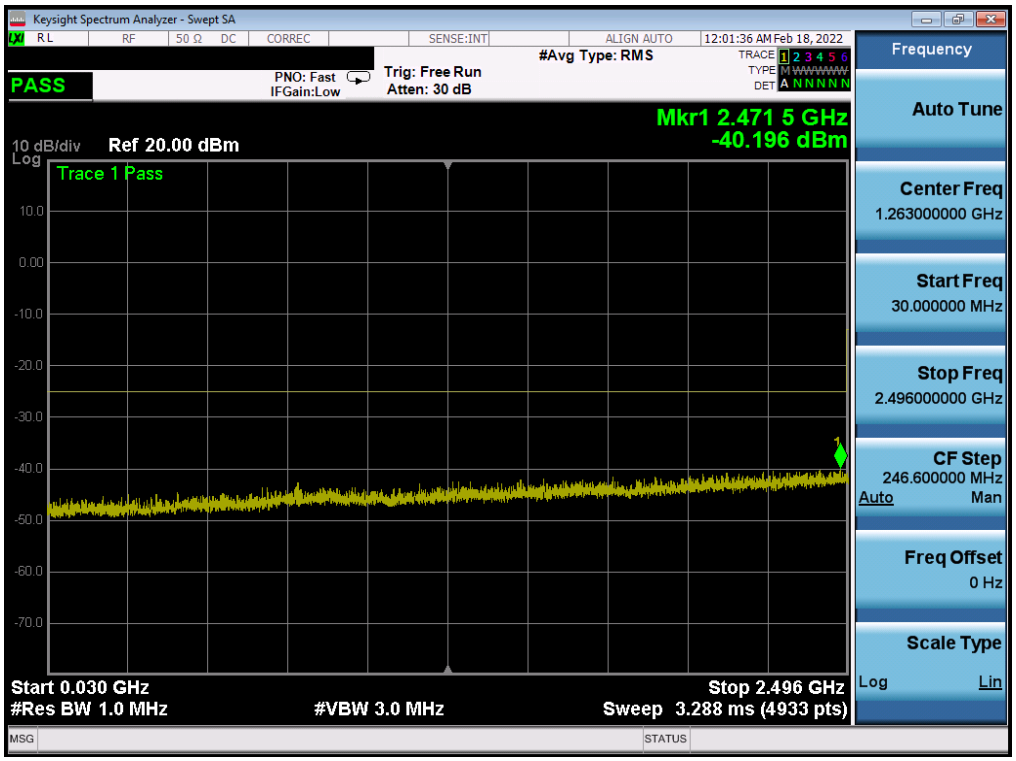
Plot 7-47. Conducted Spurious Plot (NR Band n41 - 100MHz QPSK - RB Size 1, RB Offset 0 - Low Channel AntE)



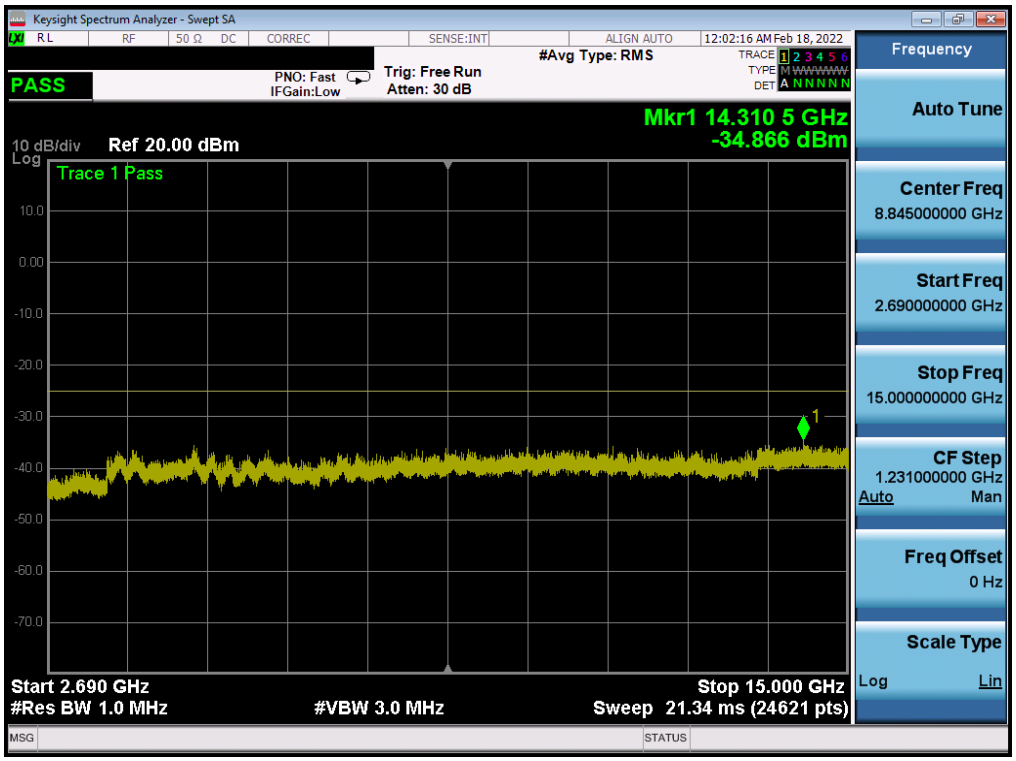
Plot 7-48. Conducted Spurious Plot (NR Band n41 - 100MHz QPSK - RB Size 1, RB Offset 0 - Low Channel AntE)



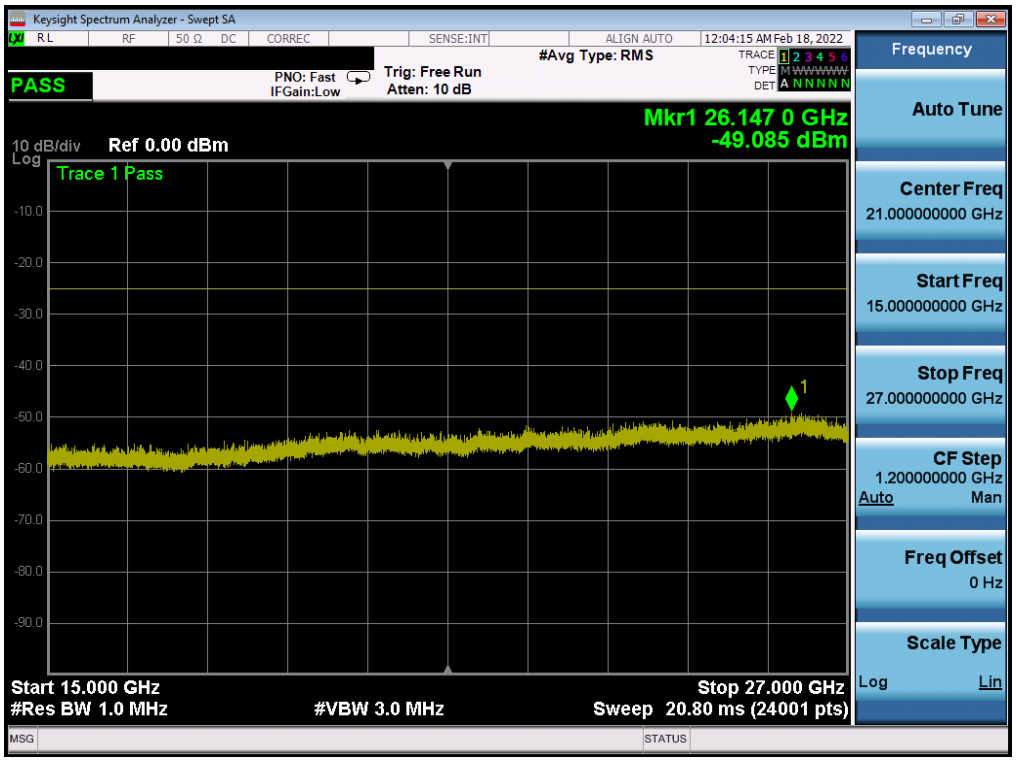
Plot 7-49. Conducted Spurious Plot (NR Band n41 - 100MHz QPSK - RB Size 1, RB Offset 0 - Low Channel AntE)



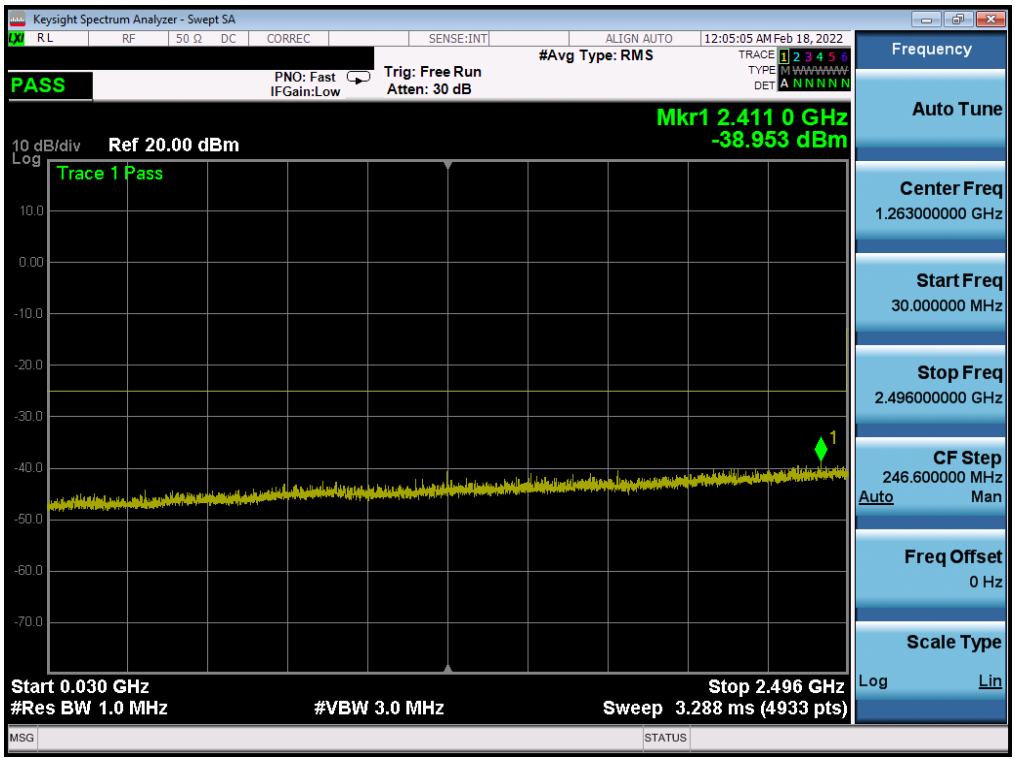
Plot 7-50. Conducted Spurious Plot (NR Band n41 - 100MHz QPSK - RB Size 1, RB Offset 0 - Mid Channel AntE)



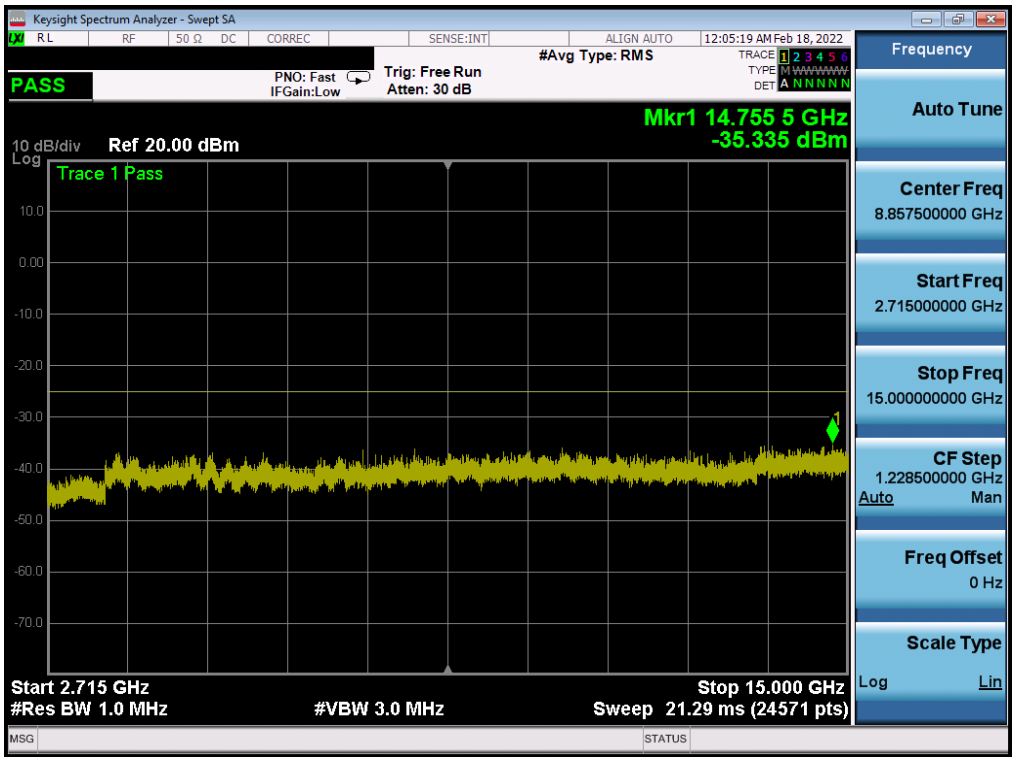
Plot 7-51. Conducted Spurious Plot (NR Band n41 - 100MHz QPSK - RB Size 1, RB Offset 0 - Mid Channel AntE)



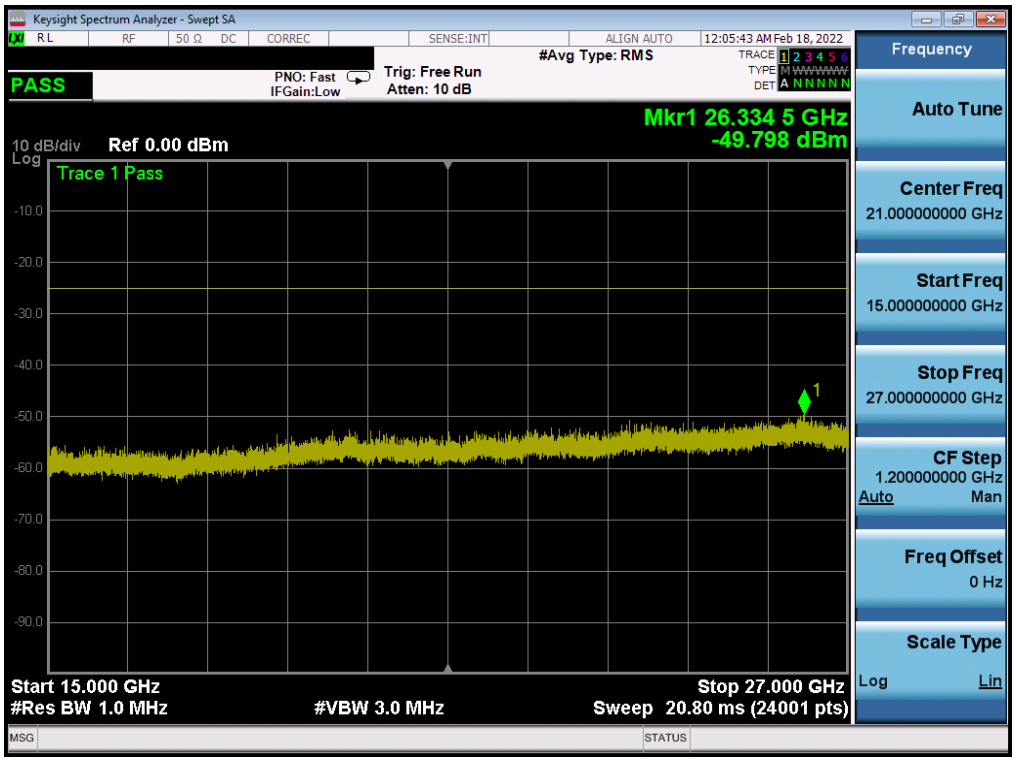
Plot 7-52. Conducted Spurious Plot (NR Band n41 - 100MHz QPSK - RB Size 1, RB Offset 0 - Mid Channel AntE)



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

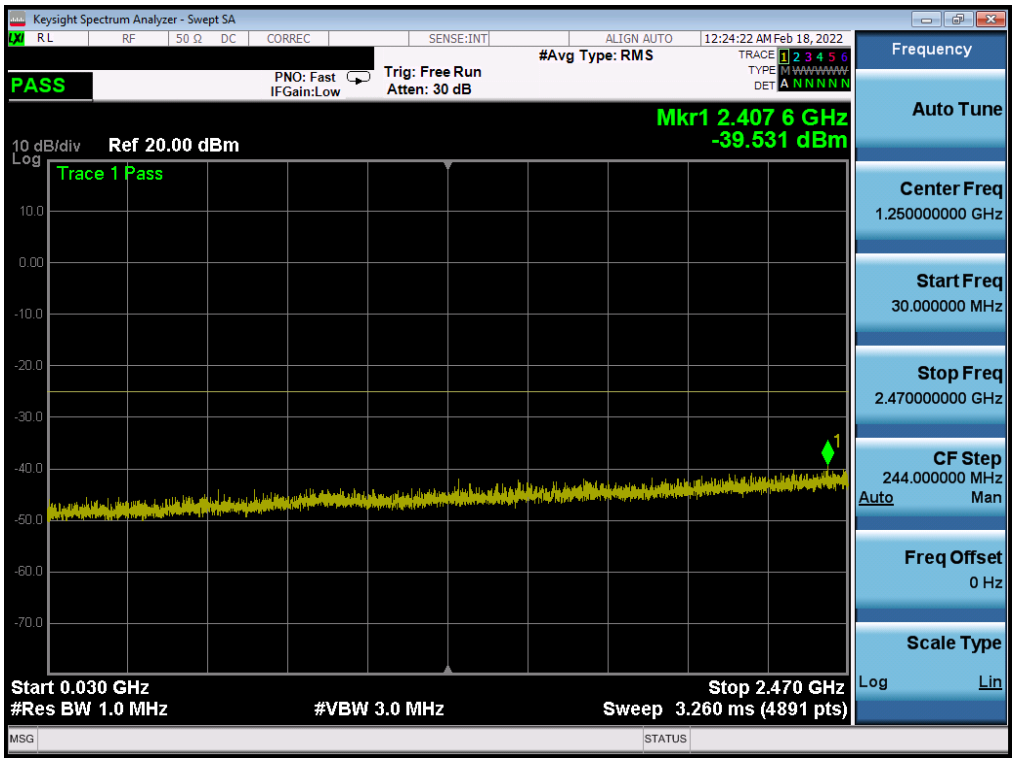


Plot 7-54. Conducted Spurious Plot (NR Band n41 - 100MHz QPSK - RB Size 1, RB Offset 0 - High Channel AntE)

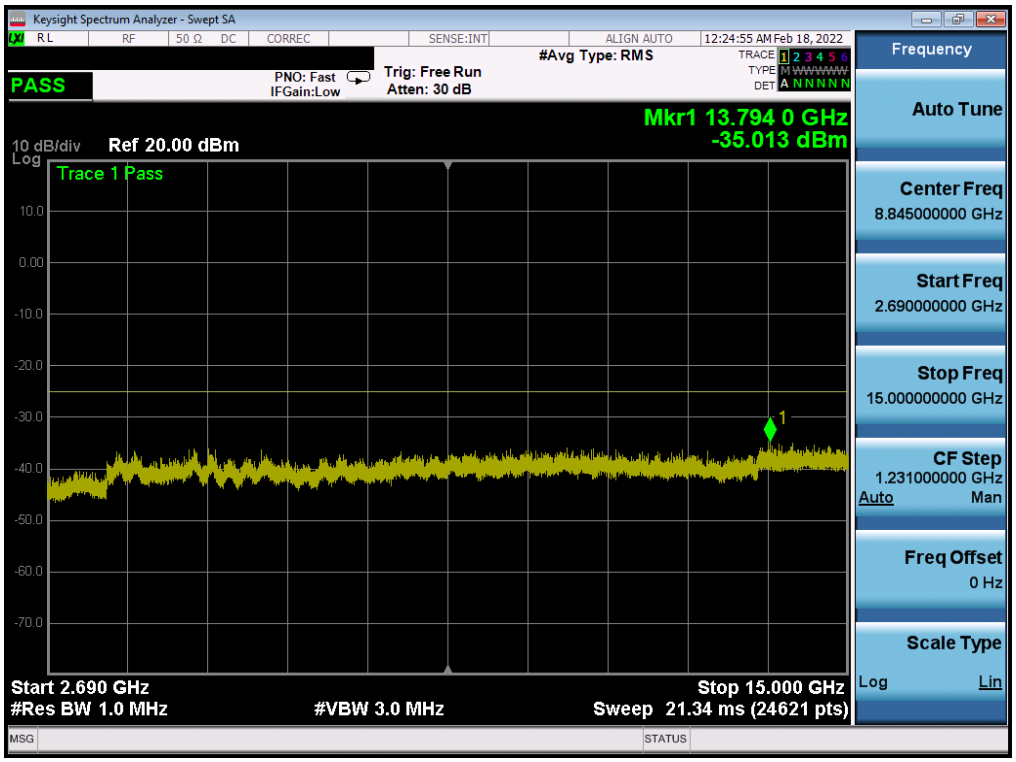


Plot 7-55. Conducted Spurious Plot (NR Band n41 - 100MHz QPSK - RB Size 1, RB Offset 0 - High Channel AntE)

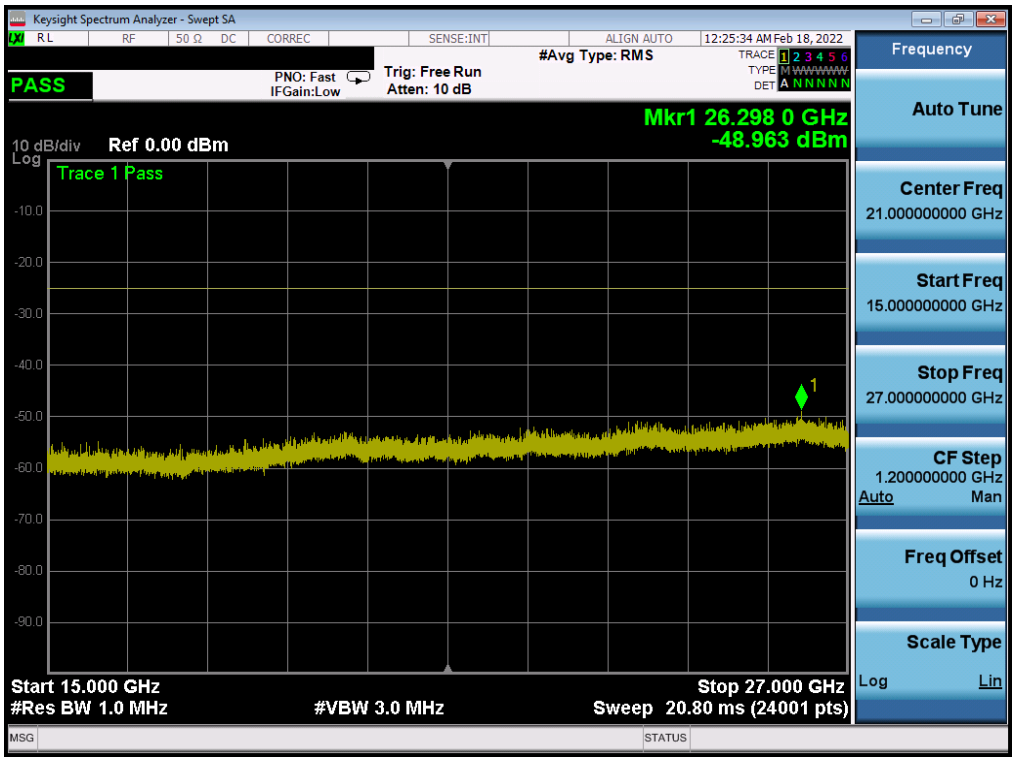
NR Band n41 SRS4– AntD



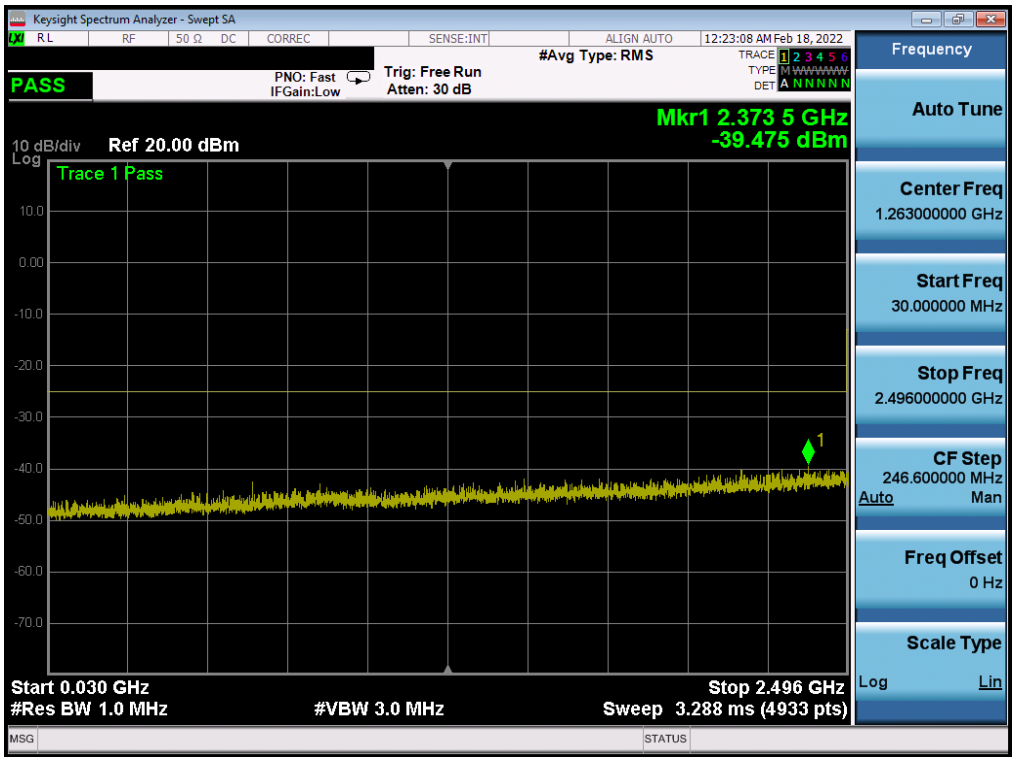
Plot 7-56. Conducted Spurious Plot (NR Band n41 - 100MHz QPSK - RB Size 1, RB Offset 0 - Low Channel AntD)



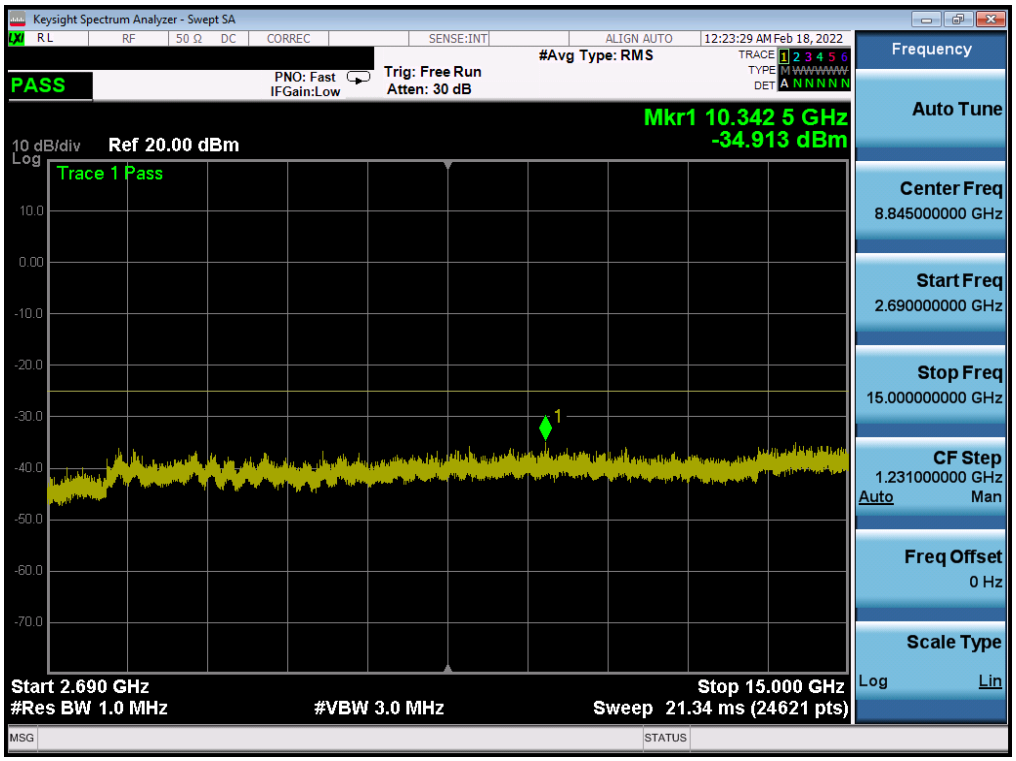
Plot 7-57. Conducted Spurious Plot (NR Band n41 - 100MHz QPSK - RB Size 1, RB Offset 0 - Low Channel AntD)



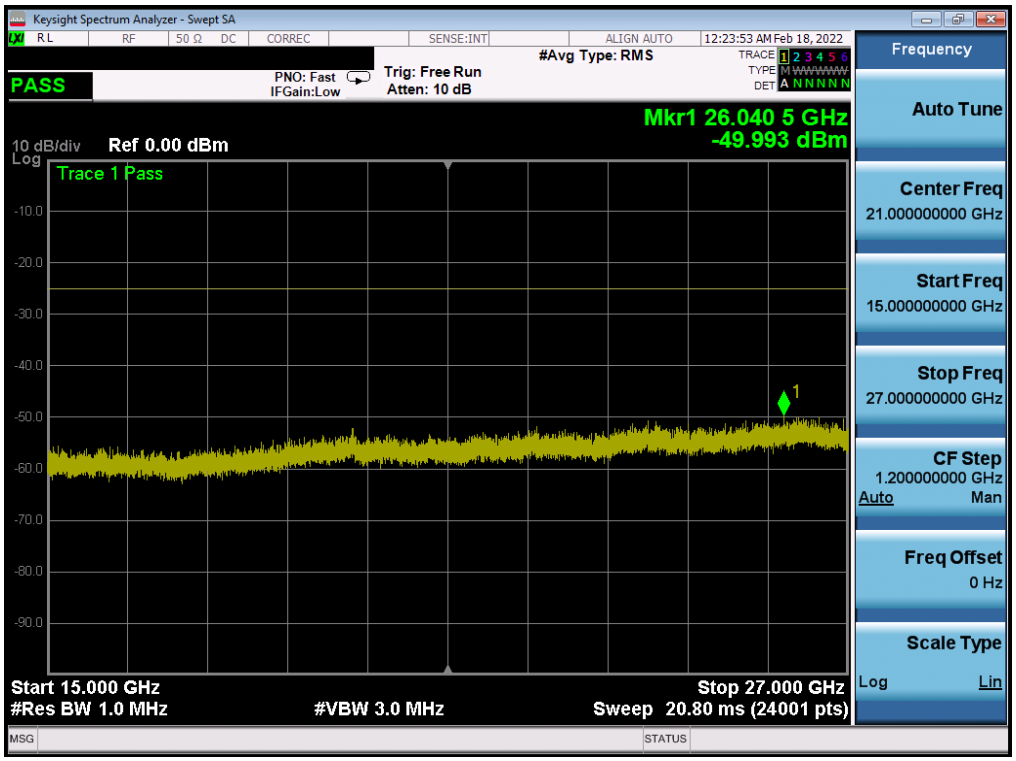
Plot 7-58. Conducted Spurious Plot (NR Band n41 - 100MHz QPSK - RB Size 1, RB Offset 0 - Low Channel AntD)



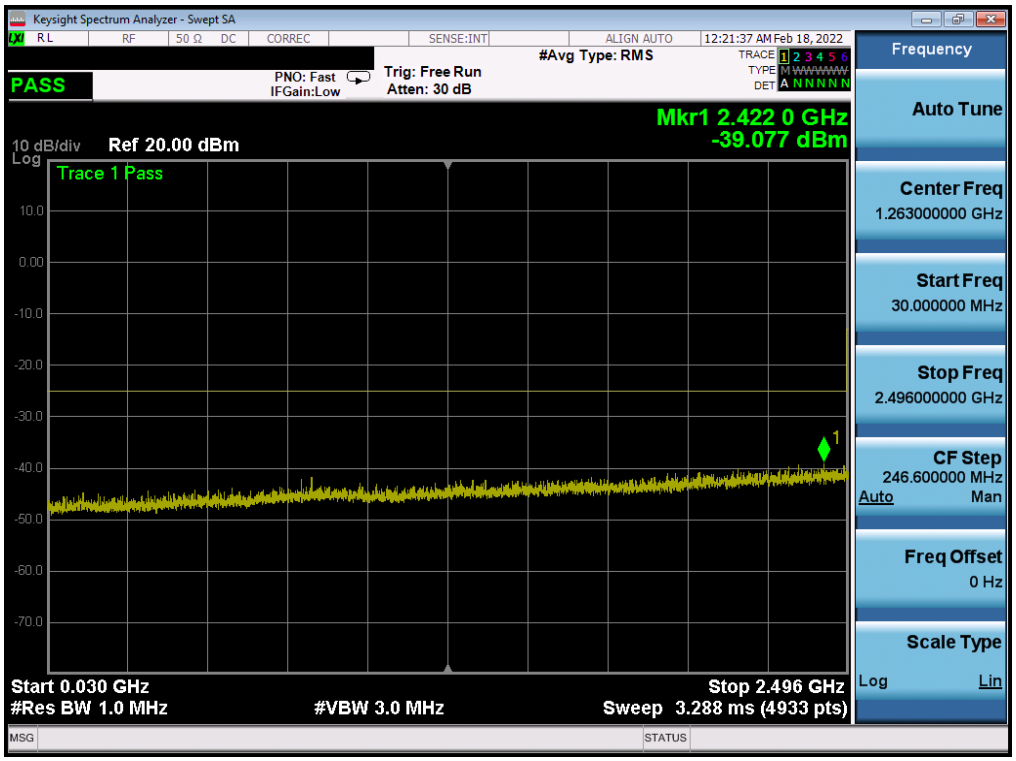
Plot 7-59. Conducted Spurious Plot (NR Band n41 - 100MHz QPSK - RB Size 1, RB Offset 0 - Mid Channel AntD)



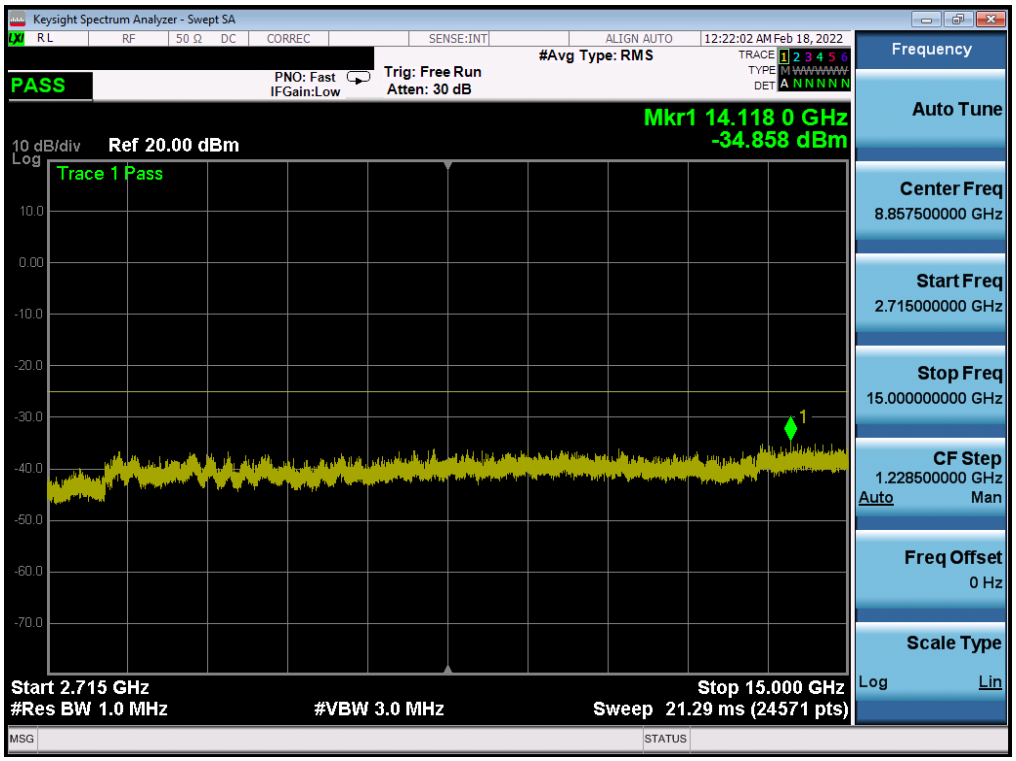
Plot 7-60. Conducted Spurious Plot (NR Band n41 - 100MHz QPSK - RB Size 1, RB Offset 0 - Mid Channel AntD)



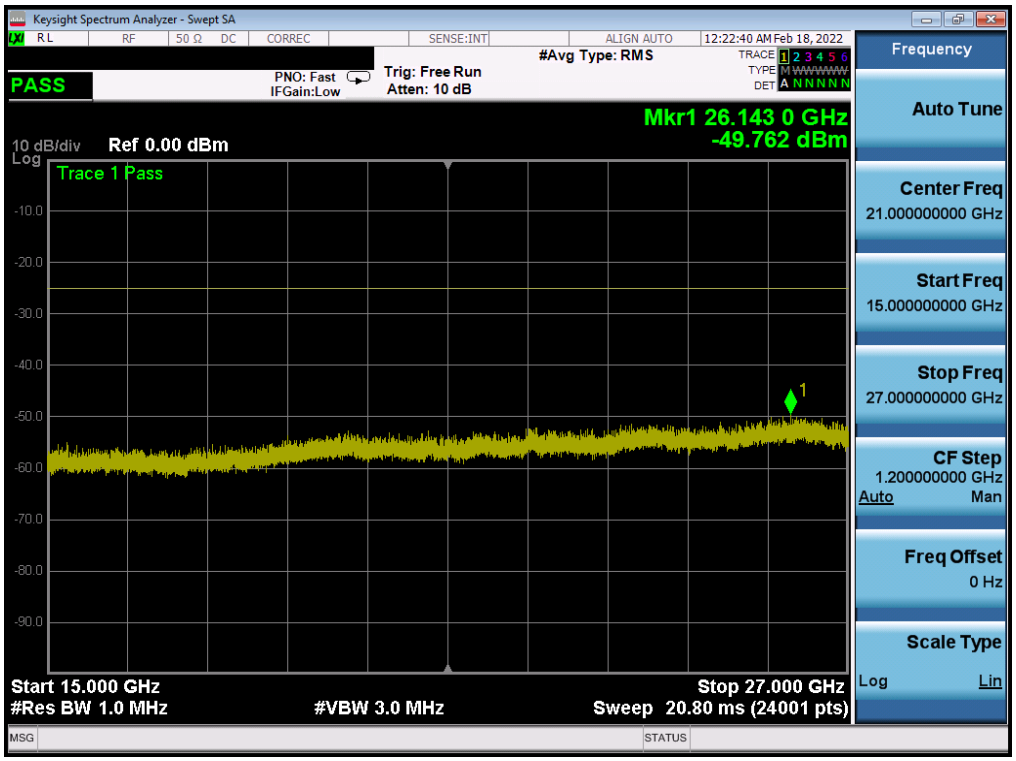
Plot 7-61. Conducted Spurious Plot (NR Band n41 - 100MHz QPSK - RB Size 1, RB Offset 0 - Mid Channel AntD)



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)



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

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 ≥ 2 x 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.

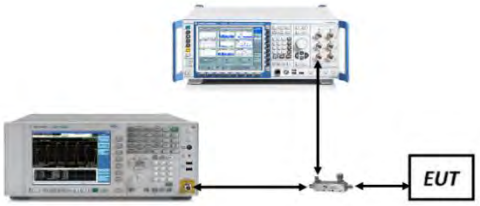


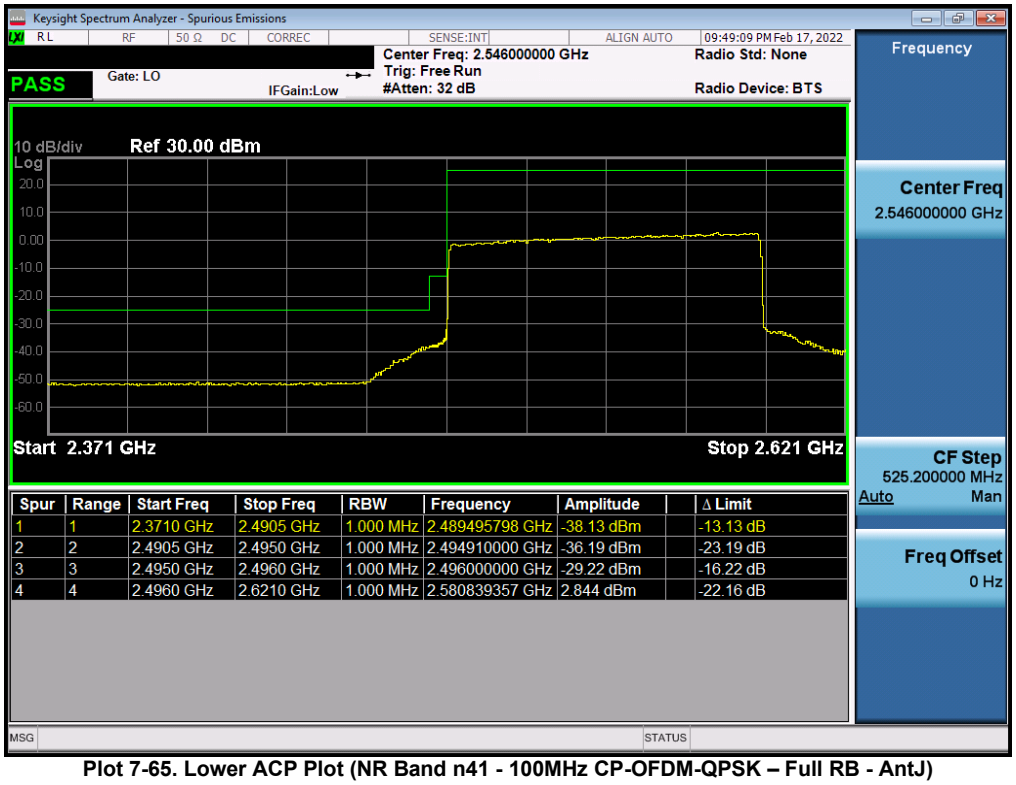
Figure 7-4. Test Instrument & Measurement Setup

Test Notes

1. 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.

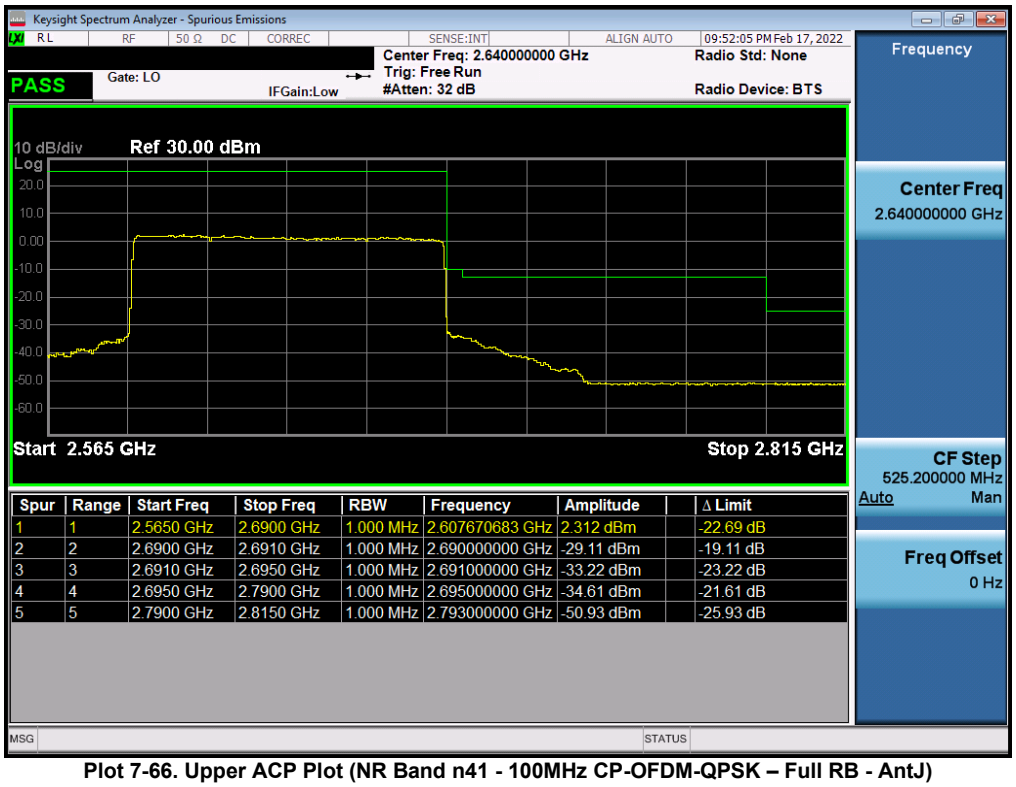
2. For NR operation, all subcarrier spacings (SCS) and transmission schemes (e.g. CP-OFDM and DFT-s-OFDM) were investigated to determine the worst case configuration. All modes of operation were investigated and the worst case configuration results are reported in this section.

NR Band n41 – AntJ



Spur	Range	Start Freq	Stop Freq	RBW	Frequency	Amplitude	Δ Limit
1	1	2.3710 GHz	2.4905 GHz	1.000 MHz	2.489495798 GHz	-38.13 dBm	-13.13 dB
2	2	2.4905 GHz	2.4950 GHz	1.000 MHz	2.494910000 GHz	-36.19 dBm	-23.19 dB
3	3	2.4950 GHz	2.4960 GHz	1.000 MHz	2.496000000 GHz	-29.22 dBm	-16.22 dB
4	4	2.4960 GHz	2.6210 GHz	1.000 MHz	2.580839357 GHz	2.844 dBm	-22.16 dB

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

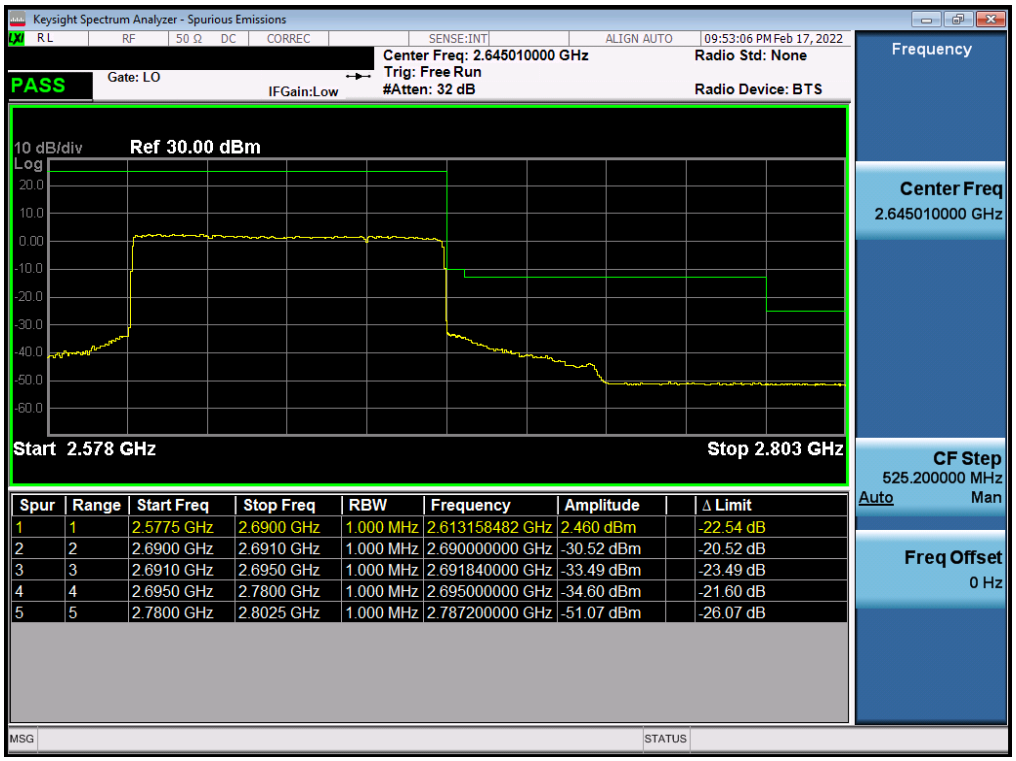


Spur	Range	Start Freq	Stop Freq	RBW	Frequency	Amplitude	Δ Limit
1	1	2.5650 GHz	2.6900 GHz	1.000 MHz	2.607670683 GHz	2.312 dBm	-22.69 dB
2	2	2.6900 GHz	2.6910 GHz	1.000 MHz	2.690000000 GHz	-29.11 dBm	-19.11 dB
3	3	2.6910 GHz	2.6950 GHz	1.000 MHz	2.691000000 GHz	-33.22 dBm	-23.22 dB
4	4	2.6950 GHz	2.7900 GHz	1.000 MHz	2.695000000 GHz	-34.61 dBm	-21.61 dB
5	5	2.7900 GHz	2.8150 GHz	1.000 MHz	2.793000000 GHz	-50.93 dBm	-25.93 dB

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

Spur	Range	Start Freq	Stop Freq	RBW	Frequency	Amplitude	Δ Limit
1	1	2.3960 GHz	2.4905 GHz	1.000 MHz	2.490500000 GHz	-39.15 dBm	-14.15 dB
2	2	2.4905 GHz	2.4950 GHz	1.000 MHz	2.494550000 GHz	-36.94 dBm	-23.94 dB
3	3	2.4950 GHz	2.4960 GHz	910.0 kHz	2.496000000 GHz	-31.00 dBm	-18.00 dB
4	4	2.4960 GHz	2.5960 GHz	1.000 MHz	2.582934673 GHz	2.883 dBm	-22.12 dB

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

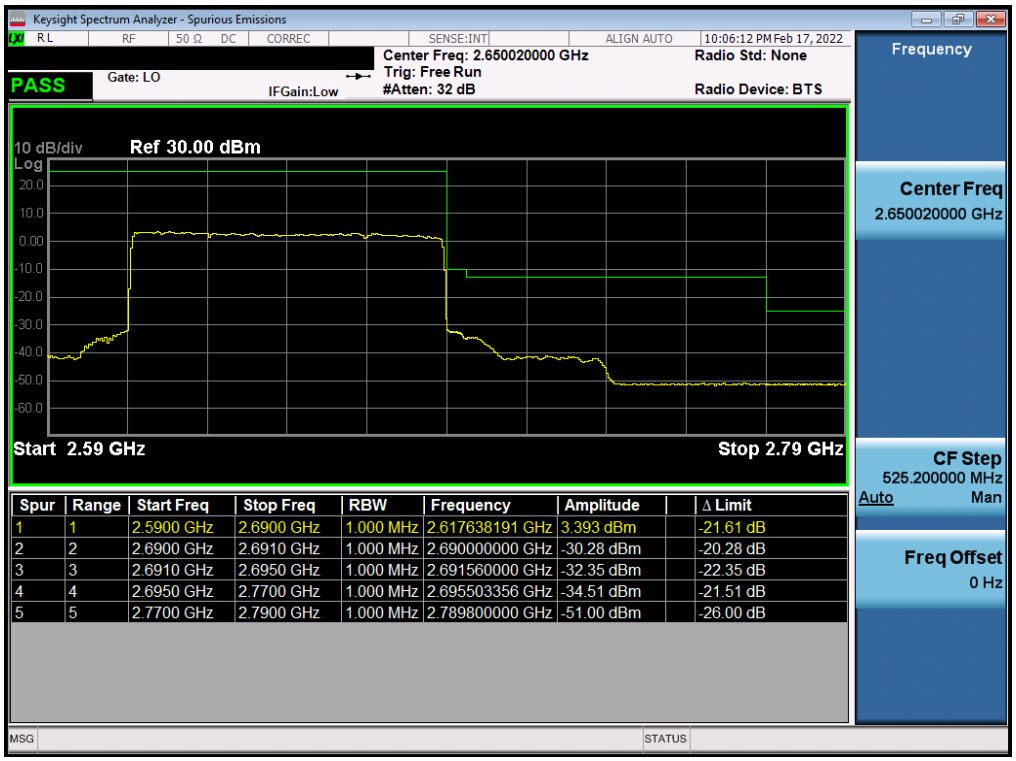


Spur	Range	Start Freq	Stop Freq	RBW	Frequency	Amplitude	Δ Limit
1	1	2.5775 GHz	2.6900 GHz	1.000 MHz	2.613158482 GHz	2.460 dBm	-22.54 dB
2	2	2.6900 GHz	2.6910 GHz	1.000 MHz	2.690000000 GHz	-30.52 dBm	-20.52 dB
3	3	2.6910 GHz	2.6950 GHz	1.000 MHz	2.691840000 GHz	-33.49 dBm	-23.49 dB
4	4	2.6950 GHz	2.7800 GHz	1.000 MHz	2.695000000 GHz	-34.60 dBm	-21.60 dB
5	5	2.7800 GHz	2.8025 GHz	1.000 MHz	2.787200000 GHz	-51.07 dBm	-26.07 dB

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

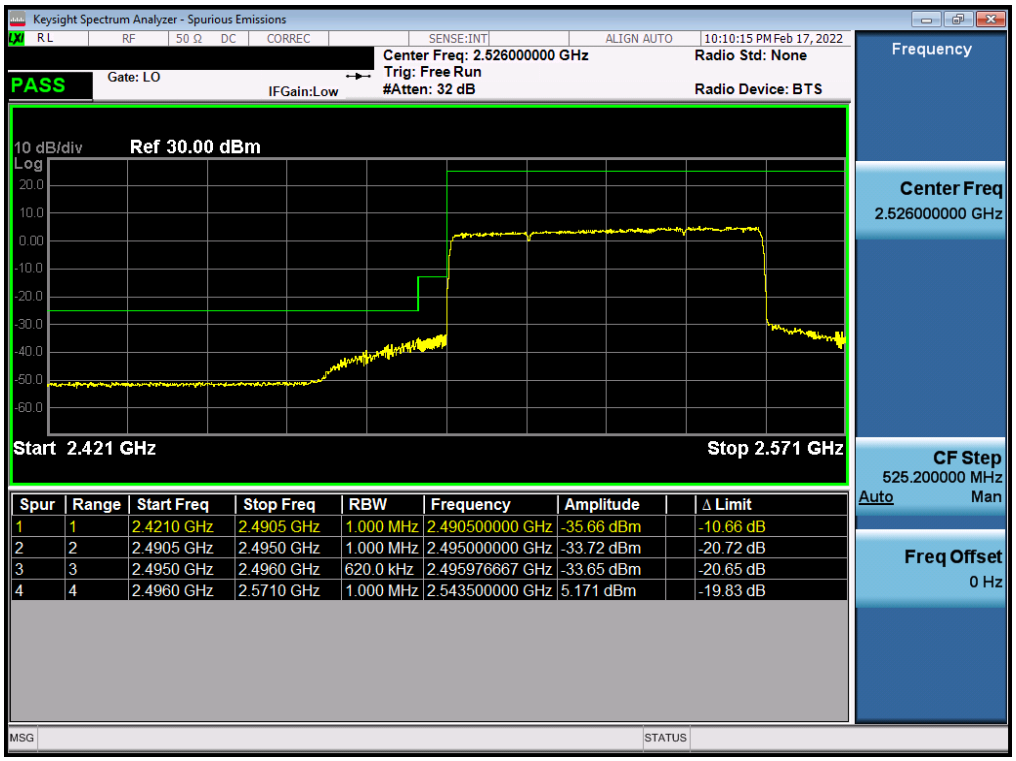
Spur	Range	Start Freq	Stop Freq	RBW	Frequency	Amplitude	Δ Limit
1	1	2.3960 GHz	2.4905 GHz	1.000 MHz	2.490500000 GHz	-38.29 dBm	-13.29 dB
2	2	2.4905 GHz	2.4950 GHz	1.000 MHz	2.495000000 GHz	-36.01 dBm	-23.01 dB
3	3	2.4950 GHz	2.4960 GHz	820.0 kHz	2.496000000 GHz	-36.11 dBm	-23.11 dB
4	4	2.4960 GHz	2.5960 GHz	1.000 MHz	2.560321608 GHz	3.440 dBm	-21.56 dB

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



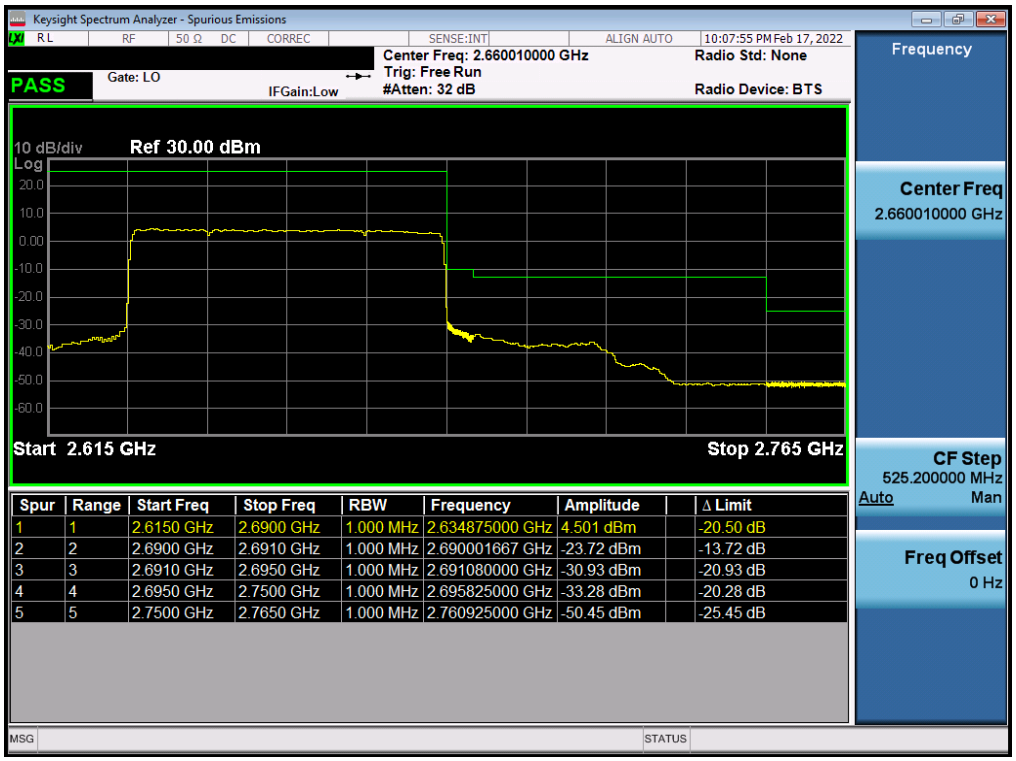
Spur	Range	Start Freq	Stop Freq	RBW	Frequency	Amplitude	Δ Limit
1	1	2.5900 GHz	2.6900 GHz	1.000 MHz	2.617638191 GHz	3.393 dBm	-21.61 dB
2	2	2.6900 GHz	2.6910 GHz	1.000 MHz	2.690000000 GHz	-30.28 dBm	-20.28 dB
3	3	2.6910 GHz	2.6950 GHz	1.000 MHz	2.691560000 GHz	-32.35 dBm	-22.35 dB
4	4	2.6950 GHz	2.7700 GHz	1.000 MHz	2.695503356 GHz	-34.51 dBm	-21.51 dB
5	5	2.7700 GHz	2.7900 GHz	1.000 MHz	2.789800000 GHz	-51.00 dBm	-26.00 dB

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



Spur	Range	Start Freq	Stop Freq	RBW	Frequency	Amplitude	Δ Limit
1	1	2.4210 GHz	2.4905 GHz	1.000 MHz	2.490500000 GHz	-35.66 dBm	-10.66 dB
2	2	2.4905 GHz	2.4950 GHz	1.000 MHz	2.495000000 GHz	-33.72 dBm	-20.72 dB
3	3	2.4950 GHz	2.4960 GHz	620.0 kHz	2.495976667 GHz	-33.65 dBm	-20.65 dB
4	4	2.4960 GHz	2.5710 GHz	1.000 MHz	2.543500000 GHz	5.171 dBm	-19.83 dB

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

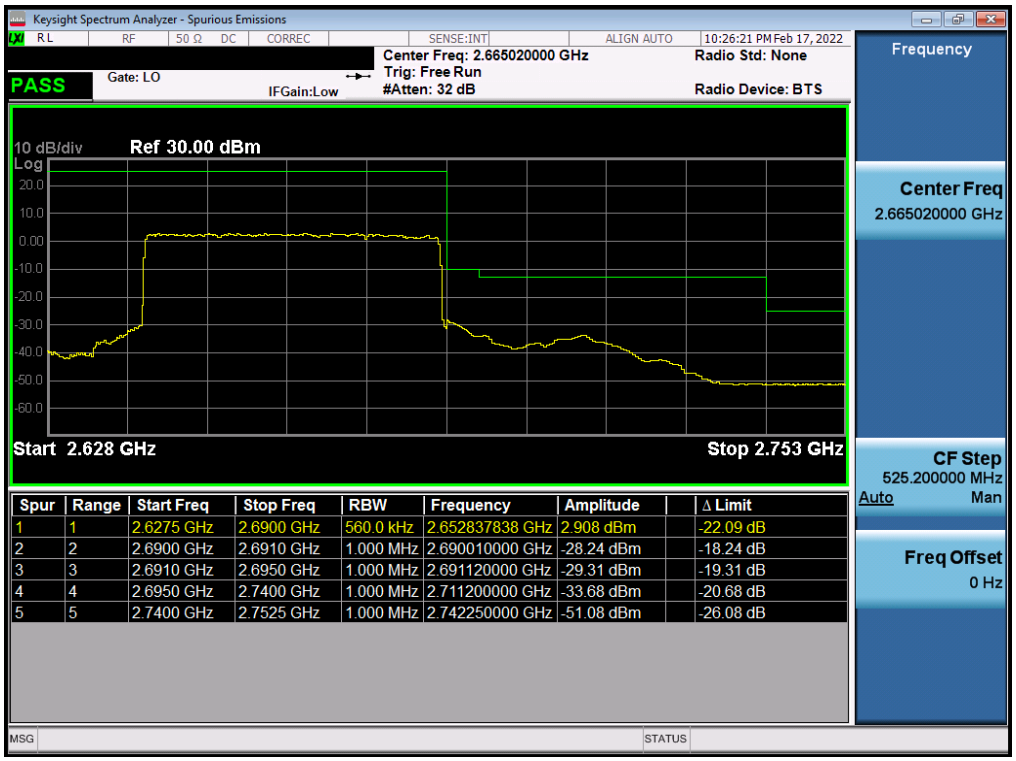


Spur	Range	Start Freq	Stop Freq	RBW	Frequency	Amplitude	Δ Limit
1	1	2.6150 GHz	2.6900 GHz	1.000 MHz	2.634875000 GHz	4.501 dBm	-20.50 dB
2	2	2.6900 GHz	2.6910 GHz	1.000 MHz	2.690001667 GHz	-23.72 dBm	-13.72 dB
3	3	2.6910 GHz	2.6950 GHz	1.000 MHz	2.691080000 GHz	-30.93 dBm	-20.93 dB
4	4	2.6950 GHz	2.7500 GHz	1.000 MHz	2.695825000 GHz	-33.28 dBm	-20.28 dB
5	5	2.7500 GHz	2.7650 GHz	1.000 MHz	2.760925000 GHz	-50.45 dBm	-25.45 dB

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

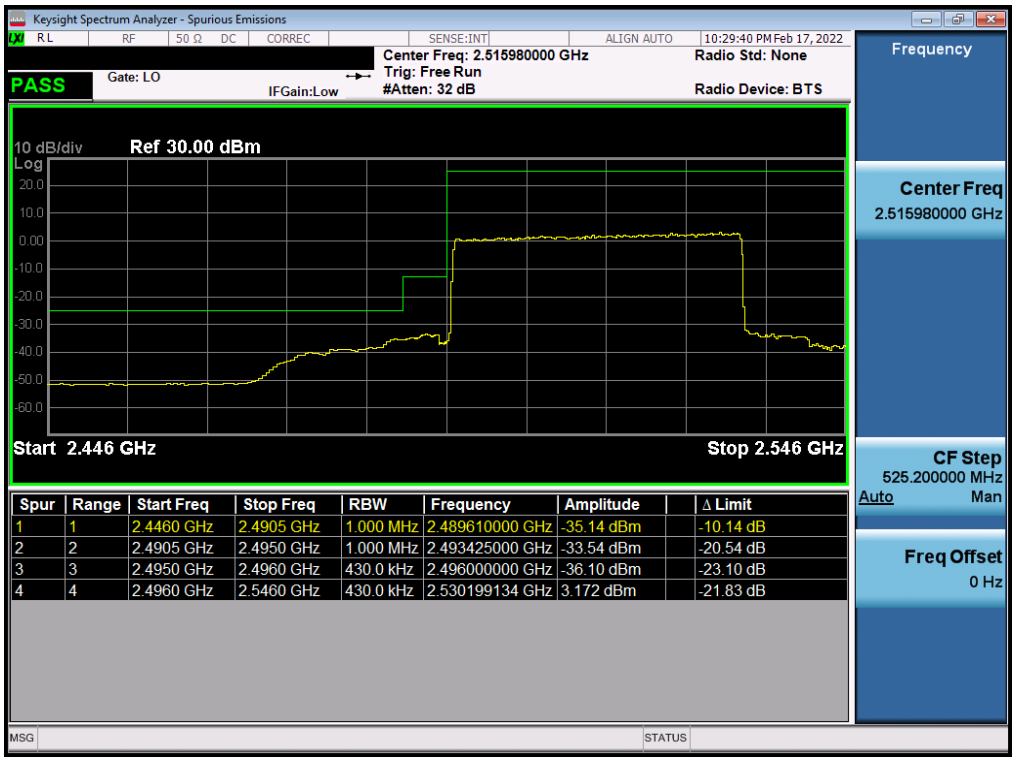
Spur	Range	Start Freq	Stop Freq	RBW	Frequency	Amplitude	Δ Limit
1	1	2.4335 GHz	2.4905 GHz	1.000 MHz	2.490500000 GHz	-35.55 dBm	-10.55 dB
2	2	2.4905 GHz	2.4950 GHz	1.000 MHz	2.494550000 GHz	-33.74 dBm	-20.74 dB
3	3	2.4950 GHz	2.4960 GHz	560.0 kHz	2.495960000 GHz	-35.55 dBm	-22.55 dB
4	4	2.4960 GHz	2.5585 GHz	560.0 kHz	2.539918919 GHz	2.735 dBm	-22.27 dB

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



Spur	Range	Start Freq	Stop Freq	RBW	Frequency	Amplitude	Δ Limit
1	1	2.6275 GHz	2.6900 GHz	560.0 kHz	2.652837838 GHz	2.908 dBm	-22.09 dB
2	2	2.6900 GHz	2.6910 GHz	1.000 MHz	2.690010000 GHz	-28.24 dBm	-18.24 dB
3	3	2.6910 GHz	2.6950 GHz	1.000 MHz	2.691120000 GHz	-29.31 dBm	-19.31 dB
4	4	2.6950 GHz	2.7400 GHz	1.000 MHz	2.711200000 GHz	-33.68 dBm	-20.68 dB
5	5	2.7400 GHz	2.7525 GHz	1.000 MHz	2.742250000 GHz	-51.08 dBm	-26.08 dB

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



Spur	Range	Start Freq	Stop Freq	RBW	Frequency	Amplitude	Δ Limit
1	1	2.4460 GHz	2.4905 GHz	1.000 MHz	2.489610000 GHz	-35.14 dBm	-10.14 dB
2	2	2.4905 GHz	2.4950 GHz	1.000 MHz	2.493425000 GHz	-33.54 dBm	-20.54 dB
3	3	2.4950 GHz	2.4960 GHz	430.0 kHz	2.496000000 GHz	-36.10 dBm	-23.10 dB
4	4	2.4960 GHz	2.5460 GHz	430.0 kHz	2.530199134 GHz	3.172 dBm	-21.83 dB

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

Spur	Range	Start Freq	Stop Freq	RBW	Frequency	Amplitude	Δ Limit
1	1	2.6400 GHz	2.6900 GHz	430.0 kHz	2.662294372 GHz	2.912 dBm	-22.09 dB
2	2	2.6900 GHz	2.6910 GHz	820.0 kHz	2.690020000 GHz	-31.27 dBm	-21.27 dB
3	3	2.6910 GHz	2.6950 GHz	1.000 MHz	2.692880000 GHz	-30.74 dBm	-20.74 dB
4	4	2.6950 GHz	2.7300 GHz	1.000 MHz	2.695000000 GHz	-32.22 dBm	-19.22 dB
5	5	2.7300 GHz	2.7400 GHz	1.000 MHz	2.730000000 GHz	-49.93 dBm	-24.93 dB

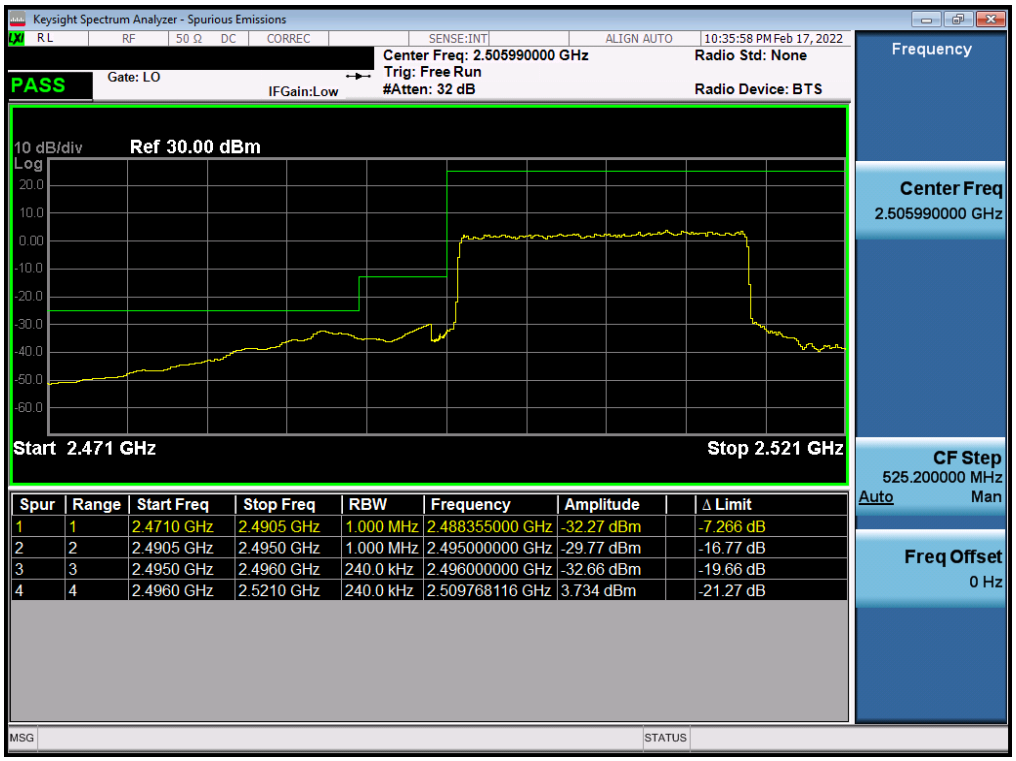
Plot 7-76. Upper ACP Plot (NR Band n41 - 40MHz CP-OFDM-QPSK – Full RB - AntJ)

Spur	Range	Start Freq	Stop Freq	RBW	Frequency	Amplitude	Δ Limit
1	1	2.4585 GHz	2.4905 GHz	1.000 MHz	2.490500000 GHz	-31.76 dBm	-6.761 dB
2	2	2.4905 GHz	2.4950 GHz	1.000 MHz	2.494820000 GHz	-30.73 dBm	-17.73 dB
3	3	2.4950 GHz	2.4960 GHz	330.0 kHz	2.495720000 GHz	-35.19 dBm	-22.19 dB
4	4	2.4960 GHz	2.5335 GHz	330.0 kHz	2.520889381 GHz	2.887 dBm	-22.11 dB

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

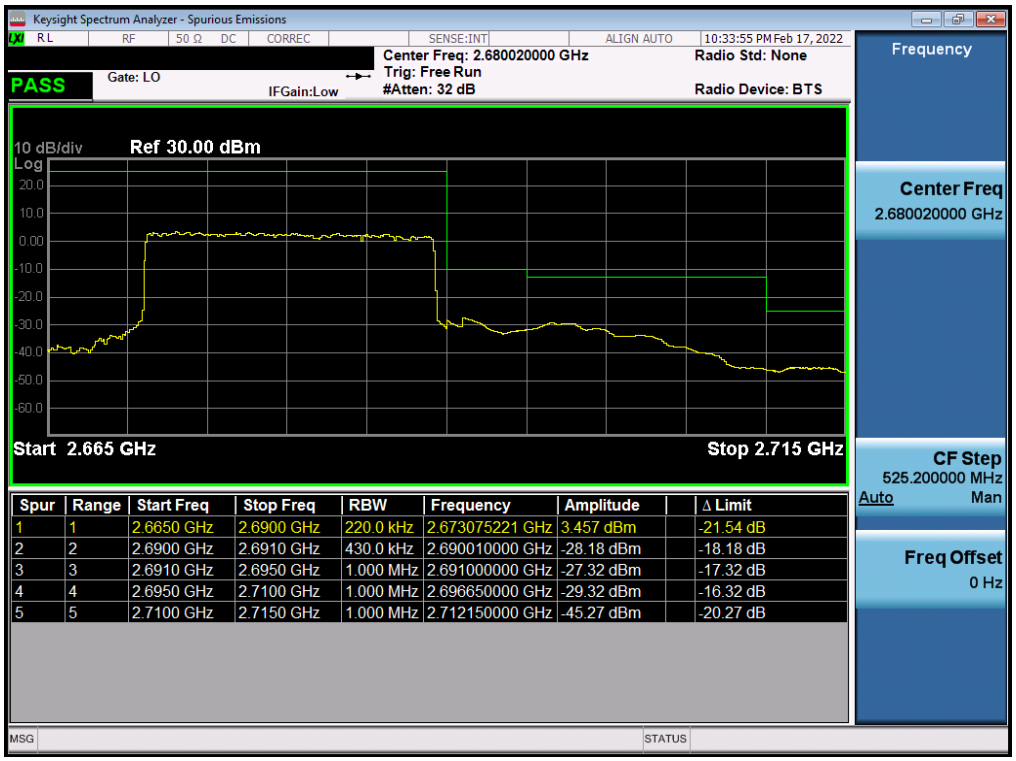
Spur	Range	Start Freq	Stop Freq	RBW	Frequency	Amplitude	Δ Limit
1	1	2.6525 GHz	2.6900 GHz	330.0 kHz	2.663783186 GHz	3.607 dBm	-21.39 dB
2	2	2.6900 GHz	2.6910 GHz	620.0 kHz	2.690000000 GHz	-28.77 dBm	-18.77 dB
3	3	2.6910 GHz	2.6950 GHz	1.000 MHz	2.691160000 GHz	-28.42 dBm	-18.42 dB
4	4	2.6950 GHz	2.7200 GHz	1.000 MHz	2.702000000 GHz	-29.53 dBm	-16.53 dB
5	5	2.7200 GHz	2.7275 GHz	1.000 MHz	2.722100000 GHz	-48.22 dBm	-23.22 dB

Plot 7-78. Upper ACP Plot (NR Band n41 - 30MHz CP-OFDM-QPSK – Full RB - AntJ)



Spur	Range	Start Freq	Stop Freq	RBW	Frequency	Amplitude	Δ Limit
1	1	2.4710 GHz	2.4905 GHz	1.000 MHz	2.488355000 GHz	-32.27 dBm	-7.266 dB
2	2	2.4905 GHz	2.4950 GHz	1.000 MHz	2.495000000 GHz	-29.77 dBm	-16.77 dB
3	3	2.4950 GHz	2.4960 GHz	240.0 kHz	2.496000000 GHz	-32.66 dBm	-19.66 dB
4	4	2.4960 GHz	2.5210 GHz	240.0 kHz	2.509768116 GHz	3.734 dBm	-21.27 dB

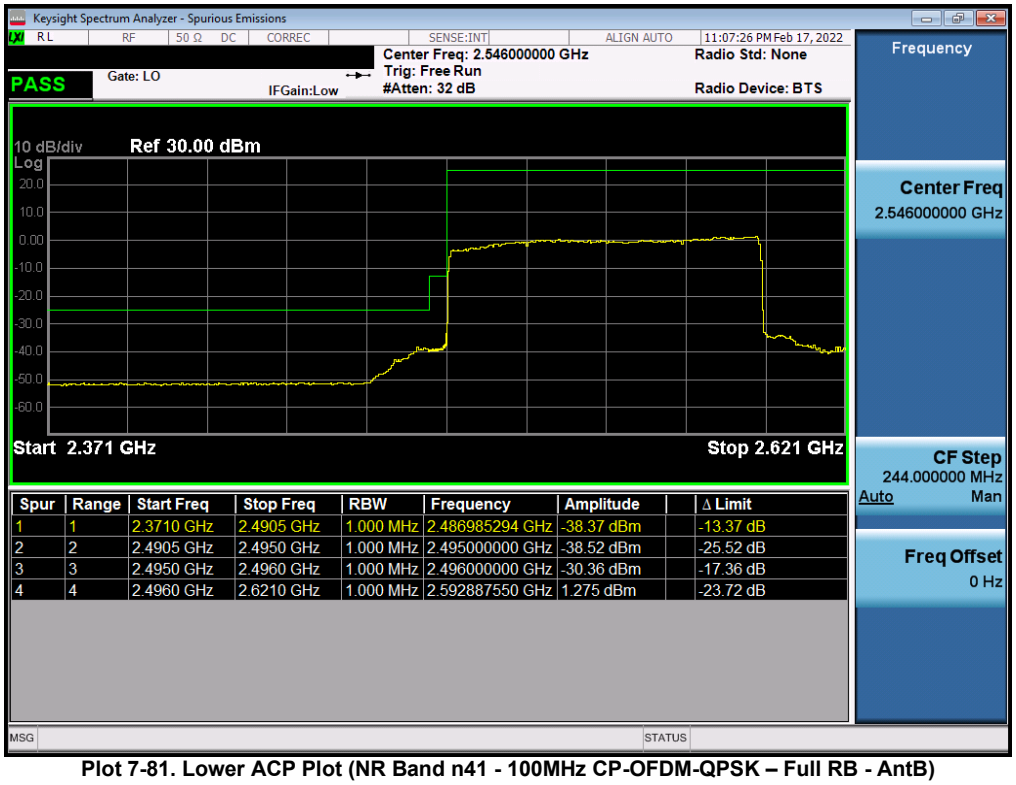
Plot 7-79. Lower ACP Plot (NR Band n41 - 20MHz CP-OFDM-QPSK – Full RB - AntJ)



Spur	Range	Start Freq	Stop Freq	RBW	Frequency	Amplitude	Δ Limit
1	1	2.6650 GHz	2.6900 GHz	220.0 kHz	2.673075221 GHz	3.457 dBm	-21.54 dB
2	2	2.6900 GHz	2.6910 GHz	430.0 kHz	2.690010000 GHz	-28.18 dBm	-18.18 dB
3	3	2.6910 GHz	2.6950 GHz	1.000 MHz	2.691000000 GHz	-27.32 dBm	-17.32 dB
4	4	2.6950 GHz	2.7100 GHz	1.000 MHz	2.696650000 GHz	-29.32 dBm	-16.32 dB
5	5	2.7100 GHz	2.7150 GHz	1.000 MHz	2.712150000 GHz	-45.27 dBm	-20.27 dB

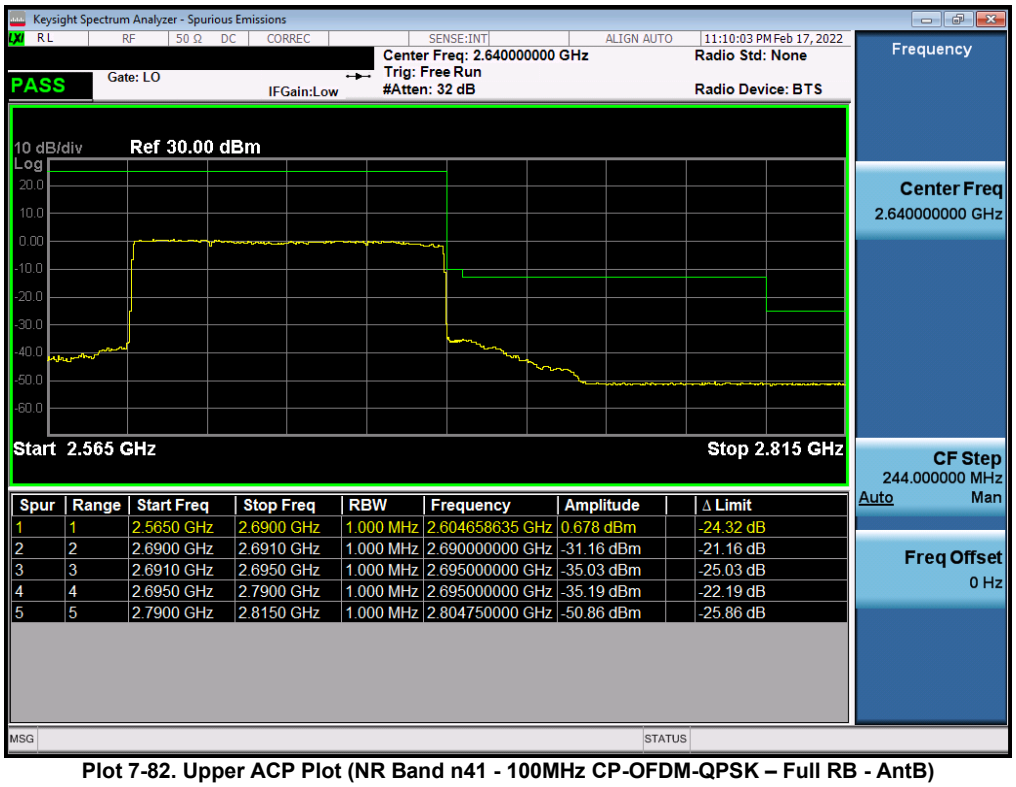
Plot 7-80. Upper ACP Plot (NR Band n41 - 20MHz CP-OFDM-QPSK – Full RB - AntJ)

NR Band n41 SRS2 – AntB



Spur	Range	Start Freq	Stop Freq	RBW	Frequency	Amplitude	Δ Limit
1	1	2.3710 GHz	2.4905 GHz	1.000 MHz	2.486985294 GHz	-38.37 dBm	-13.37 dB
2	2	2.4905 GHz	2.4950 GHz	1.000 MHz	2.495000000 GHz	-38.52 dBm	-25.52 dB
3	3	2.4950 GHz	2.4960 GHz	1.000 MHz	2.496000000 GHz	-30.36 dBm	-17.36 dB
4	4	2.4960 GHz	2.6210 GHz	1.000 MHz	2.592887550 GHz	1.275 dBm	-23.72 dB

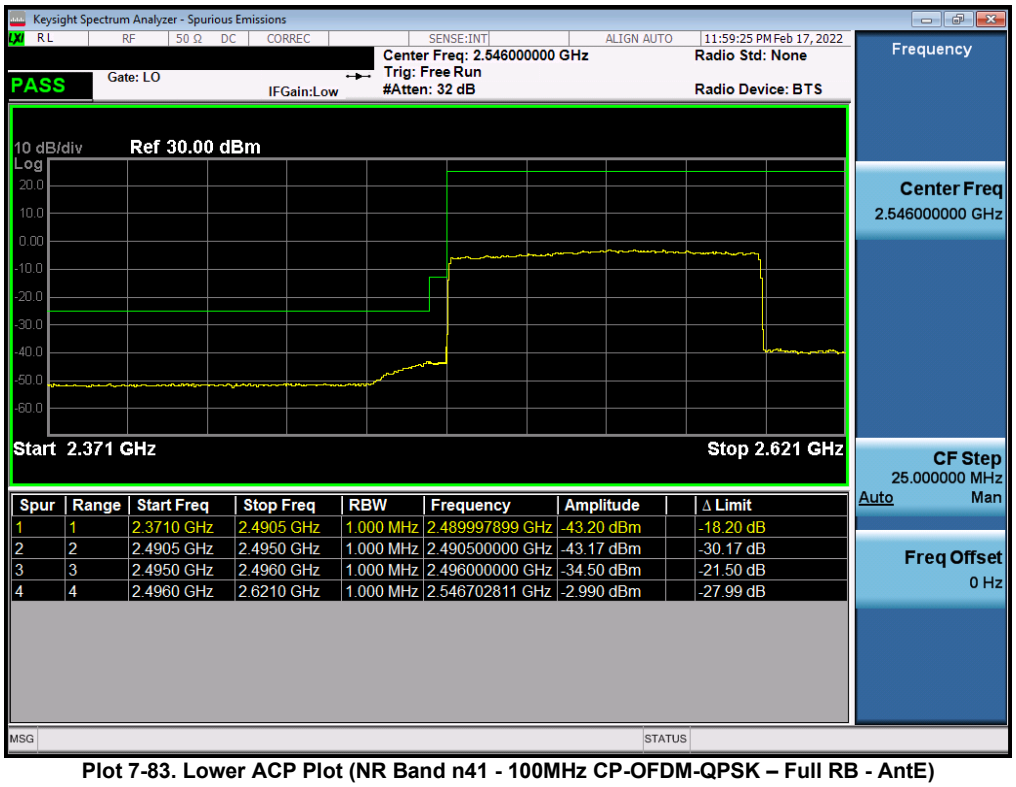
Plot 7-81. Lower ACP Plot (NR Band n41 - 100MHz CP-OFDM-QPSK – Full RB - AntB)



Spur	Range	Start Freq	Stop Freq	RBW	Frequency	Amplitude	Δ Limit
1	1	2.5650 GHz	2.6900 GHz	1.000 MHz	2.604658635 GHz	0.678 dBm	-24.32 dB
2	2	2.6900 GHz	2.6910 GHz	1.000 MHz	2.690000000 GHz	-31.16 dBm	-21.16 dB
3	3	2.6910 GHz	2.6950 GHz	1.000 MHz	2.695000000 GHz	-35.03 dBm	-25.03 dB
4	4	2.6950 GHz	2.7900 GHz	1.000 MHz	2.695000000 GHz	-35.19 dBm	-22.19 dB
5	5	2.7900 GHz	2.8150 GHz	1.000 MHz	2.804750000 GHz	-50.86 dBm	-25.86 dB

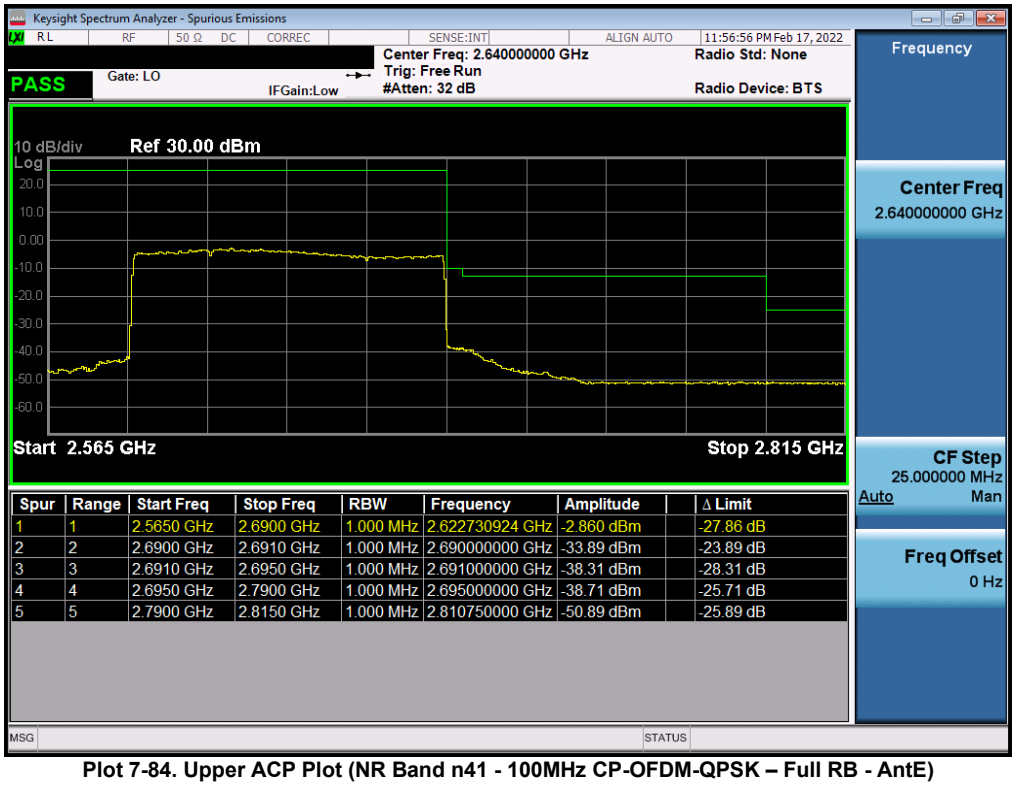
Plot 7-82. Upper ACP Plot (NR Band n41 - 100MHz CP-OFDM-QPSK – Full RB - AntB)

NR Band n41 SRS3 – AntE



Spur	Range	Start Freq	Stop Freq	RBW	Frequency	Amplitude	Δ Limit
1	1	2.3710 GHz	2.4905 GHz	1.000 MHz	2.489997899 GHz	-43.20 dBm	-18.20 dB
2	2	2.4905 GHz	2.4950 GHz	1.000 MHz	2.490500000 GHz	-43.17 dBm	-30.17 dB
3	3	2.4950 GHz	2.4960 GHz	1.000 MHz	2.496000000 GHz	-34.50 dBm	-21.50 dB
4	4	2.4960 GHz	2.6210 GHz	1.000 MHz	2.546702811 GHz	-2.990 dBm	-27.99 dB

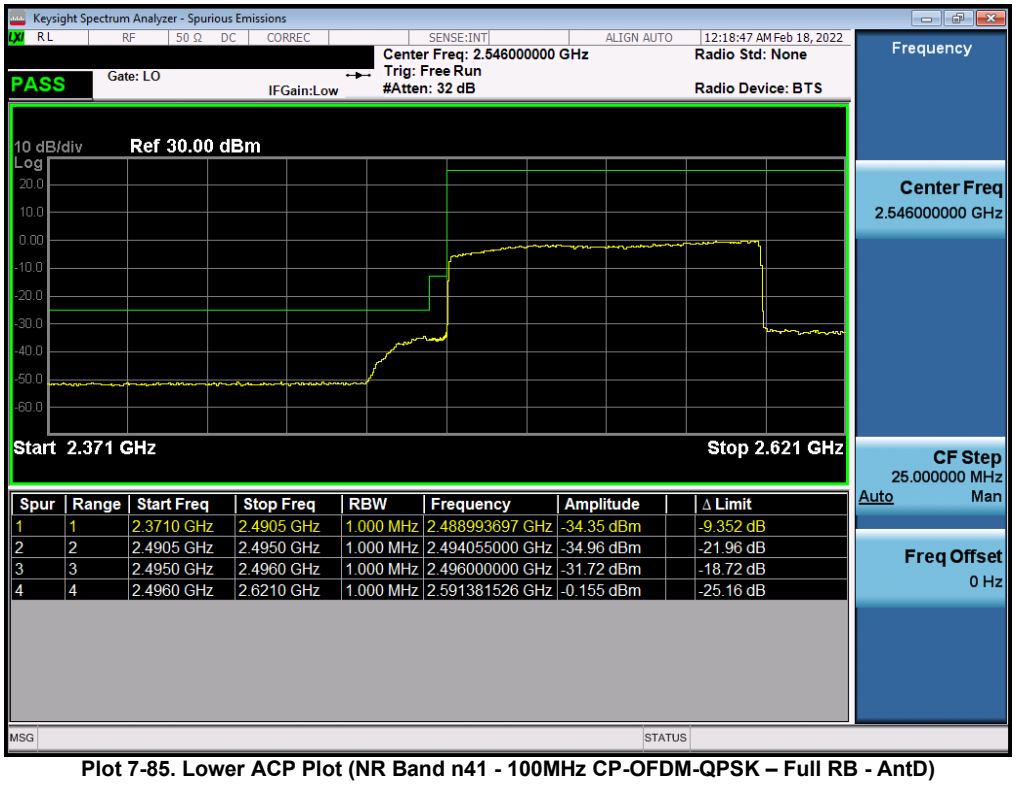
Plot 7-83. Lower ACP Plot (NR Band n41 - 100MHz CP-OFDM-QPSK – Full RB - AntE)



Spur	Range	Start Freq	Stop Freq	RBW	Frequency	Amplitude	Δ Limit
1	1	2.5650 GHz	2.6900 GHz	1.000 MHz	2.622730924 GHz	-2.860 dBm	-27.86 dB
2	2	2.6900 GHz	2.6910 GHz	1.000 MHz	2.690000000 GHz	-33.89 dBm	-23.89 dB
3	3	2.6910 GHz	2.6950 GHz	1.000 MHz	2.691000000 GHz	-38.31 dBm	-28.31 dB
4	4	2.6950 GHz	2.7900 GHz	1.000 MHz	2.695000000 GHz	-38.71 dBm	-25.71 dB
5	5	2.7900 GHz	2.8150 GHz	1.000 MHz	2.810750000 GHz	-50.89 dBm	-25.89 dB

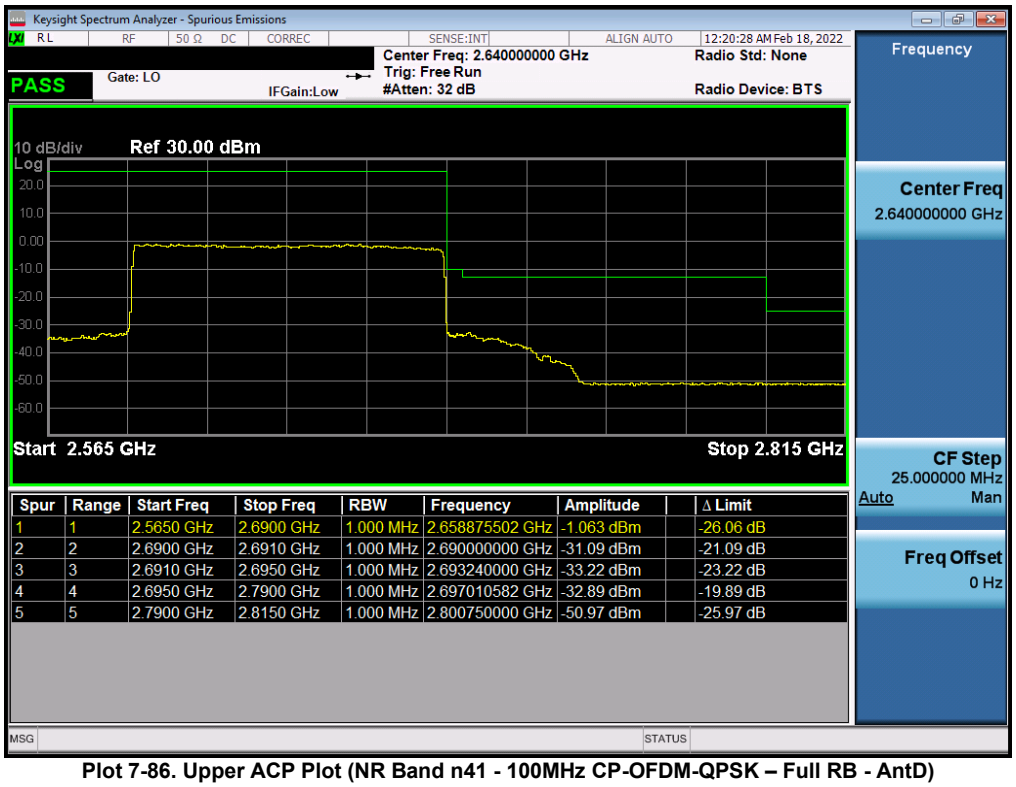
Plot 7-84. Upper ACP Plot (NR Band n41 - 100MHz CP-OFDM-QPSK – Full RB - AntE)

NR Band n41 SRS4 – AntD



Spur	Range	Start Freq	Stop Freq	RBW	Frequency	Amplitude	Δ Limit
1	1	2.3710 GHz	2.4905 GHz	1.000 MHz	2.488993697 GHz	-34.35 dBm	-9.352 dB
2	2	2.4905 GHz	2.4950 GHz	1.000 MHz	2.494055000 GHz	-34.96 dBm	-21.96 dB
3	3	2.4950 GHz	2.4960 GHz	1.000 MHz	2.496000000 GHz	-31.72 dBm	-18.72 dB
4	4	2.4960 GHz	2.6210 GHz	1.000 MHz	2.591381526 GHz	-0.155 dBm	-25.16 dB

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



Spur	Range	Start Freq	Stop Freq	RBW	Frequency	Amplitude	Δ Limit
1	1	2.5650 GHz	2.6900 GHz	1.000 MHz	2.658875502 GHz	-1.063 dBm	-26.06 dB
2	2	2.6900 GHz	2.6910 GHz	1.000 MHz	2.690000000 GHz	-31.09 dBm	-21.09 dB
3	3	2.6910 GHz	2.6950 GHz	1.000 MHz	2.693240000 GHz	-33.22 dBm	-23.22 dB
4	4	2.6950 GHz	2.7900 GHz	1.000 MHz	2.697010582 GHz	-32.89 dBm	-19.89 dB
5	5	2.7900 GHz	2.8150 GHz	1.000 MHz	2.800750000 GHz	-50.97 dBm	-25.97 dB

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

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

1. 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 ≥ 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

Test Setup

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

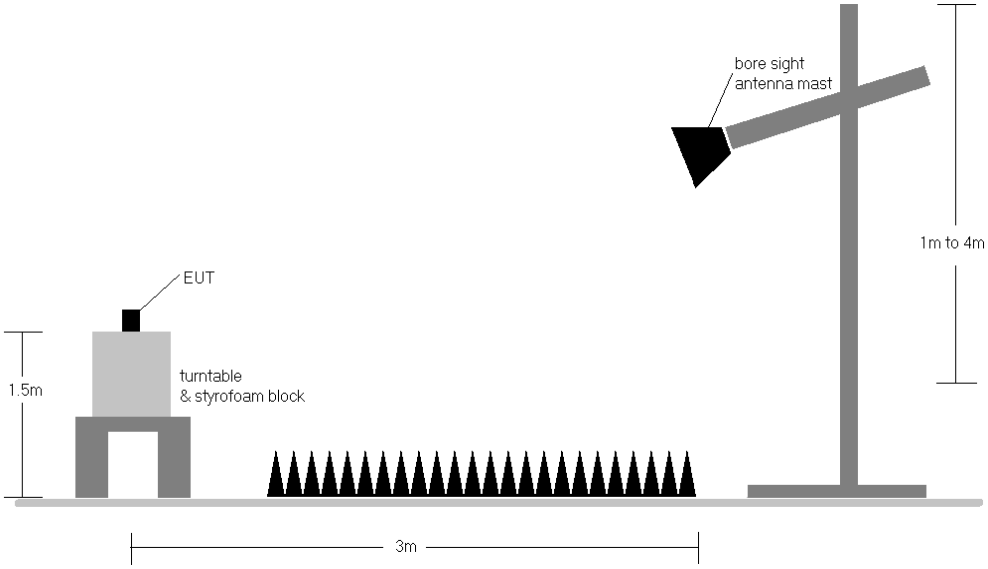


Figure 7-5. Radiated Test Setup >1GHz

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.

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]
100 MHz	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
	π/2 BPSK	2640.0	V	114	26	9.50	1 / 68	11.59	21.09	0.129	33.01	-11.92
	QPSK	2546.0	V	108	25	9.40	1 / 136	10.84	20.24	0.106	33.01	-12.77
	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
90 MHz	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
	π/2 BPSK	2645.0	V	114	26	9.51	1 / 122	11.40	20.91	0.123	33.01	-12.10
	QPSK	2541.0	V	108	25	9.46	1 / 183	10.77	20.23	0.105	33.01	-12.78
	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
80 MHz	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
	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
	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
60 MHz	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
	π/2 BPSK	2660.0	V	114	26	9.50	1 / 121	11.26	20.76	0.119	33.01	-12.25
	QPSK	2526.0	V	108	25	9.52	1 / 121	10.61	20.12	0.103	33.01	-12.89
	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
50 MHz	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
	π/2 BPSK	2665.0	V	114	26	9.51	1 / 99	11.68	21.19	0.131	33.01	-11.82
	QPSK	2521.0	V	108	25	9.51	1 / 99	10.66	20.17	0.104	33.01	-12.84
	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
40 MHz	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
	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
	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
30 MHz	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
	π/2 BPSK	2675.0	V	114	26	9.52	1 / 39	11.87	21.38	0.137	33.01	-11.63
	QPSK	2511.0	V	108	25	9.54	1 / 39	10.76	20.30	0.107	33.01	-12.71
	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
20 MHz	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
	π/2 BPSK	2680.0	V	114	26	9.51	1 / 13	11.93	21.44	0.139	33.01	-11.57
	QPSK	2506.0	V	108	25	9.54	1 / 25	10.65	20.19	0.105	33.01	-12.82
	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
100 MHz	QPSK (CP-OFDM)	2593.0	V	118	25	9.46	1 / 136	11.00	20.46	0.111	33.01	-12.55
	QPSK (Opposite Pol.)	2593.0	H	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)

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]
100 MHz	π/2 BPSK	2546.0	H	136	139	9.38	1 / 204	9.40	18.78	0.075	33.01	-14.23
	π/2 BPSK	2593.0	H	139	140	9.49	1 / 204	11.54	**21.03**	0.127	33.01	-11.98
	π/2 BPSK	2640.0	H	143	135	9.89	1 / 136	9.81	19.70	0.093	33.01	-13.31
	QPSK	2546.0	H	136	139	9.38	1 / 204	8.81	18.19	0.066	33.01	-14.82
	QPSK	2593.0	H	139	140	9.49	1 / 204	10.94	20.43	0.110	33.01	-12.58
	QPSK	2640.0	H	143	135	9.89	1 / 136	9.14	19.03	0.080	33.01	-13.98
	16-QAM	2593.0	H	139	140	9.49	1 / 204	10.07	19.56	0.090	33.01	-13.45
100 MHz	QPSK (CP-OFDM)	2593.0	H	138	146	9.38	1 / 136	9.43	18.81	0.076	33.01	-14.20
	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	H	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]
100 MHz	π/2 BPSK	2550.0	H	148	226	9.38	1 / 136	5.20	14.58	0.029	33.01	-18.43
	π/2 BPSK	2593.0	H	150	227	9.49	1 / 204	3.99	13.48	0.022	33.01	-19.53
	π/2 BPSK	2640.0	H	143	227	9.89	1 / 68	4.42	14.31	0.027	33.01	-18.70
	QPSK	2550.0	H	148	226	9.38	1 / 136	5.22	**14.60**	0.029	33.01	-18.41
	QPSK	2593.0	H	150	227	9.49	1 / 204	4.09	13.58	0.023	33.01	-19.43
	QPSK	2640.0	H	143	227	9.89	1 / 68	4.45	14.34	0.027	33.01	-18.67
	16-QAM	2550.0	H	148	226	9.38	1 / 136	4.47	13.85	0.024	33.01	-19.16
100 MHz	QPSK (CP-OFDM)	2546.0	H	147	225	9.38	1 / 68	4.48	13.86	0.024	33.01	-19.15
	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	H	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]
100 MHz	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
	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
	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
100 MHz	QPSK (CP-OFDM)	2593.0	V	119	353	9.40	1 / 136	3.81	13.21	0.021	33.01	-19.80
	QPSK (Opposite Pol.)	2593.0	H	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)

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 ≥ 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

Test Setup

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

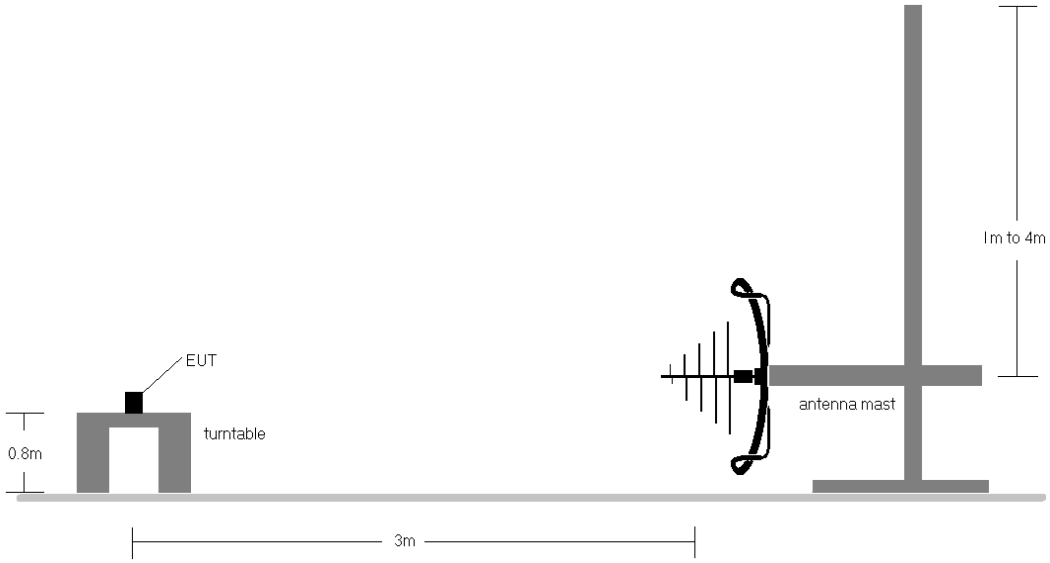


Figure 7-6. Test Instrument & Measurement Setup < 1GHz

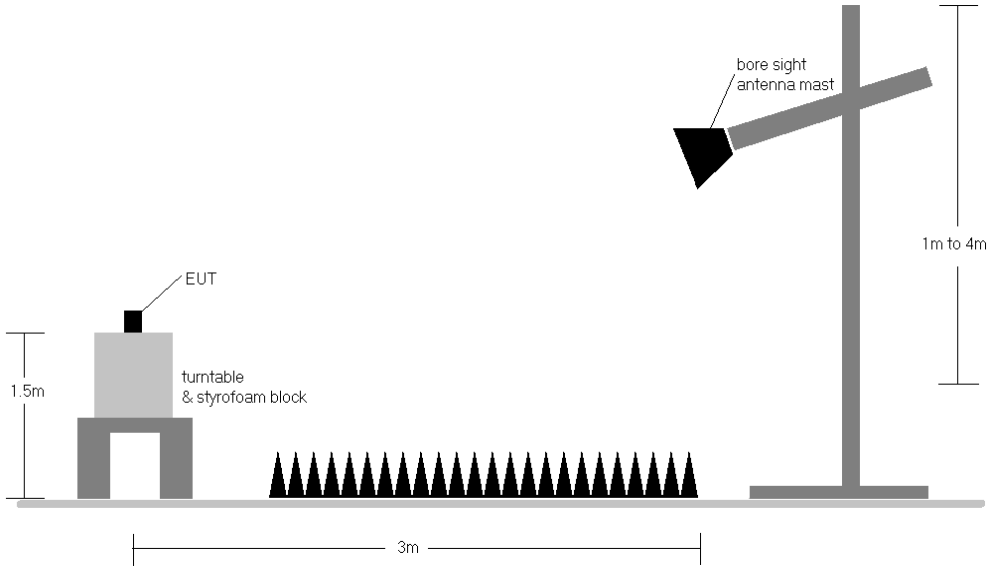


Figure 7-7. Test Instrument & Measurement Setup >1 GHz

Test Notes

1) 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.

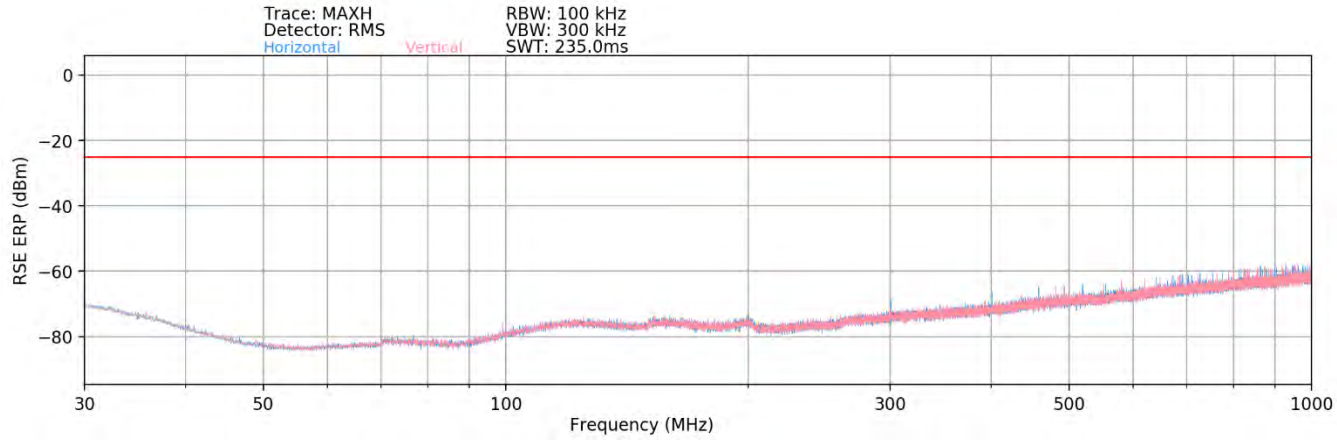
5) Emissions below 18GHz were measured at a 3 meter test distance while emissions above 18GHz were measured at a 1 meter test distance with the application of a distance correction factor.

6) The "-" shown in the following RSE tables are used to denote a noise floor measurement.

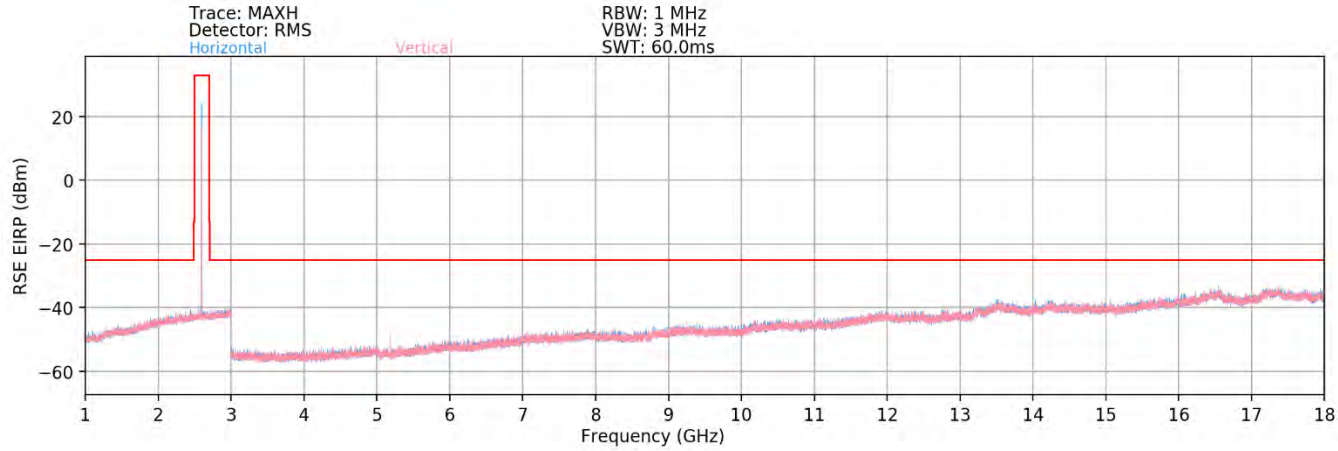
7) For NR operation, all subcarrier spacings (SCS) and transmission schemes (e.g. CP-OFDM and DFT-s-OFDM) were investigated to determine the worst case configuration. All modes of operation were investigated and the worst case configuration results are reported in this section.

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.

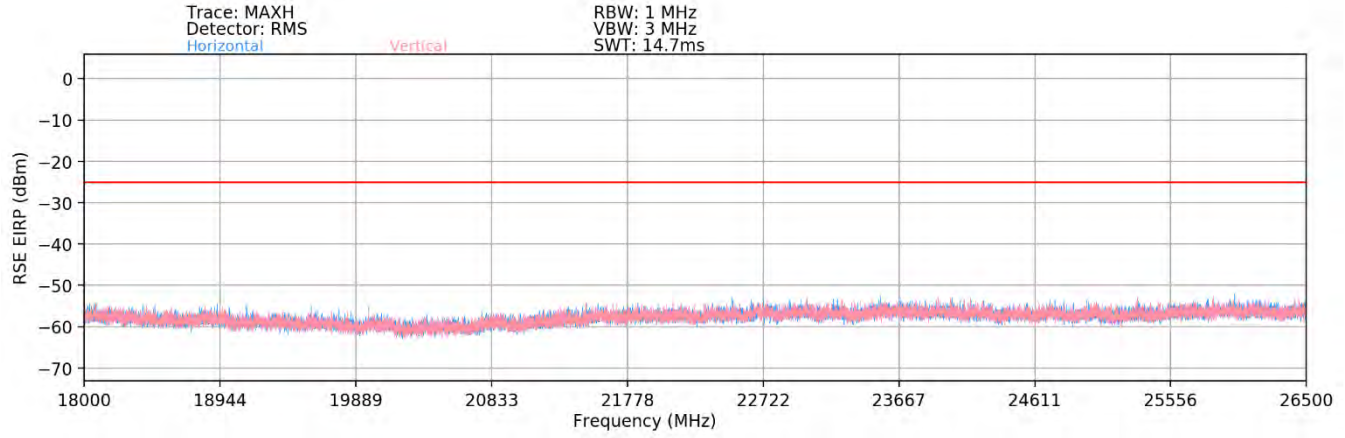
NR Band n41 – AntJ



Plot 7-87. Radiated Spurious Plot (NR Band n41 – AntJ)



Plot 7-88. Radiated Spurious Plot (NR Band n41 – AntJ)



Plot 7-89. Radiated Spurious Plot (NR Band n41 – AntJ)

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	H	128	59	-71.42	9.98	45.56	-49.70	-25.00	-24.70
7638.00	H	-	-	-74.80	16.41	48.61	-46.65	-25.00	-21.65
10184.00	H	-	-	-76.18	21.26	52.08	-43.18	-25.00	-18.18
12730.00	H	-	-	-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	H	113	59	-63.87	10.21	53.34	-41.91	-25.00	-16.91
7779.00	H	-	-	-74.56	16.37	48.81	-46.44	-25.00	-21.44
10372.00	H	-	-	-75.73	20.21	51.48	-43.78	-25.00	-18.78
12965.00	H	-	-	-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	H	126	52	-58.55	10.54	58.99	-36.27	-25.00	-11.27
7920.00	H	135	293	-66.84	16.37	56.53	-38.73	-25.00	-13.73
10560.00	H	104	343	-73.67	20.37	53.70	-41.56	-25.00	-16.56
13200.00	H	-	-	-76.37	25.41	56.04	-39.22	-25.00	-14.22
15840.00	H	-	-	-77.10	28.63	58.53	-36.72	-25.00	-11.72

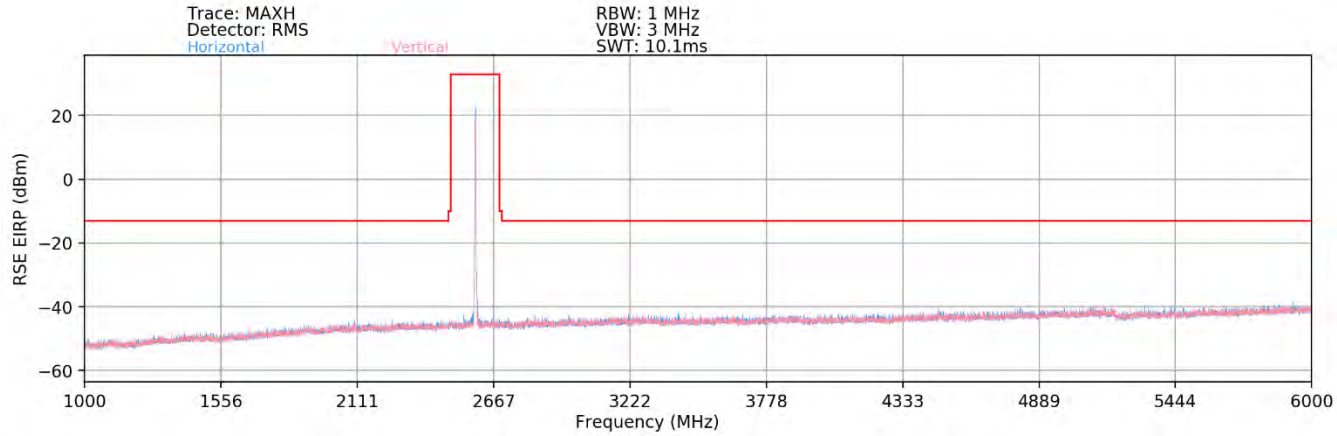
Table 7-8. Radiated Spurious Data (NR Band n41 – High Channel – AntJ)

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

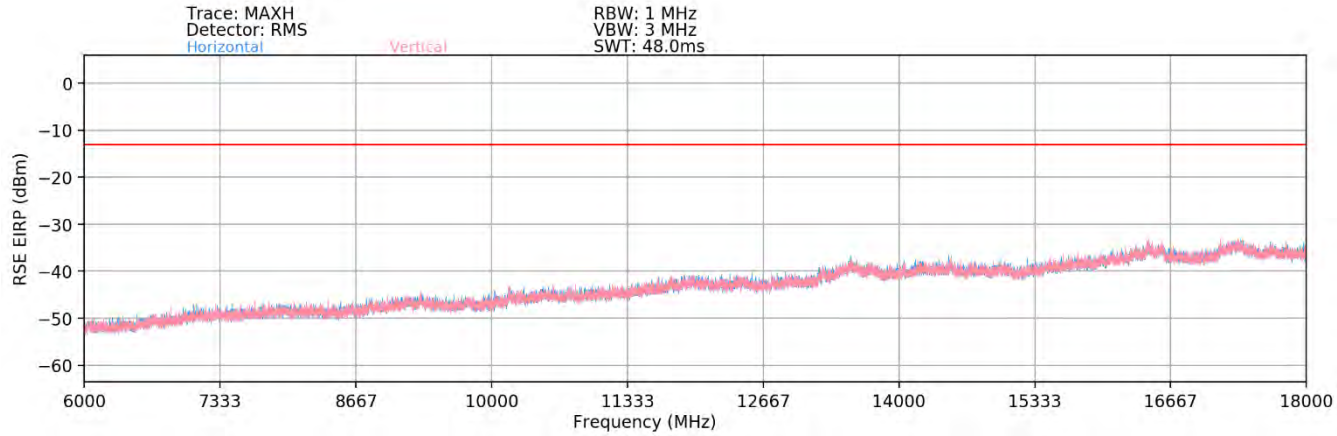
Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Analyzer Level [dBm]	AFCL [dB/m]	Field Strength [dBµV/m]	EIRP Spurious Emission Level [dBm]	Limit [dBm]	Margin [dB]
5280.00	H	163	344	-60.75	10.54	56.79	-38.47	-25.00	-13.47
7920.00	H	113	297	-67.10	16.37	56.27	-38.99	-25.00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

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

NR Band n41 – B12



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



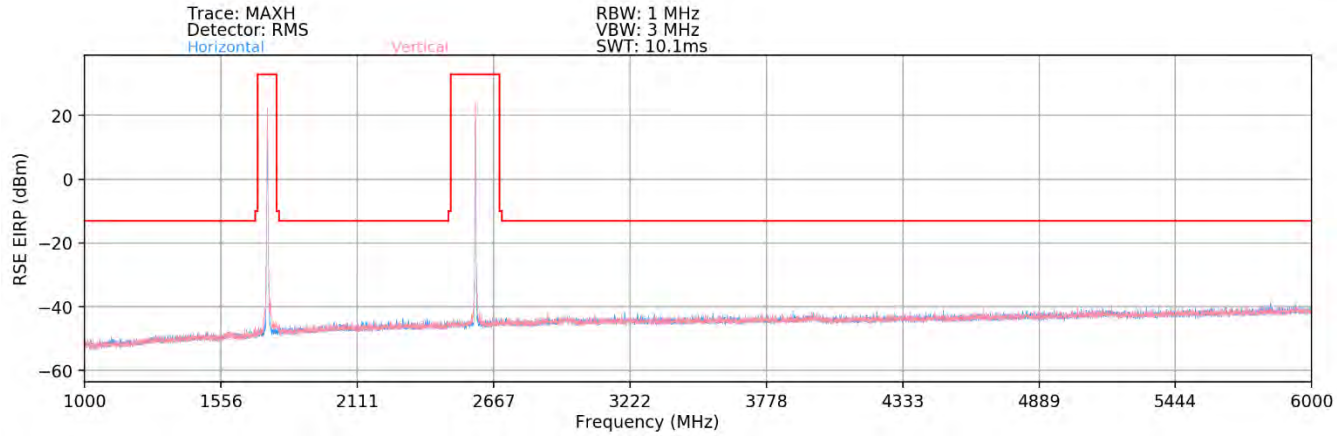
Plot 7-91. Radiated Spurious Plot (NR Band n41 – B12)

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

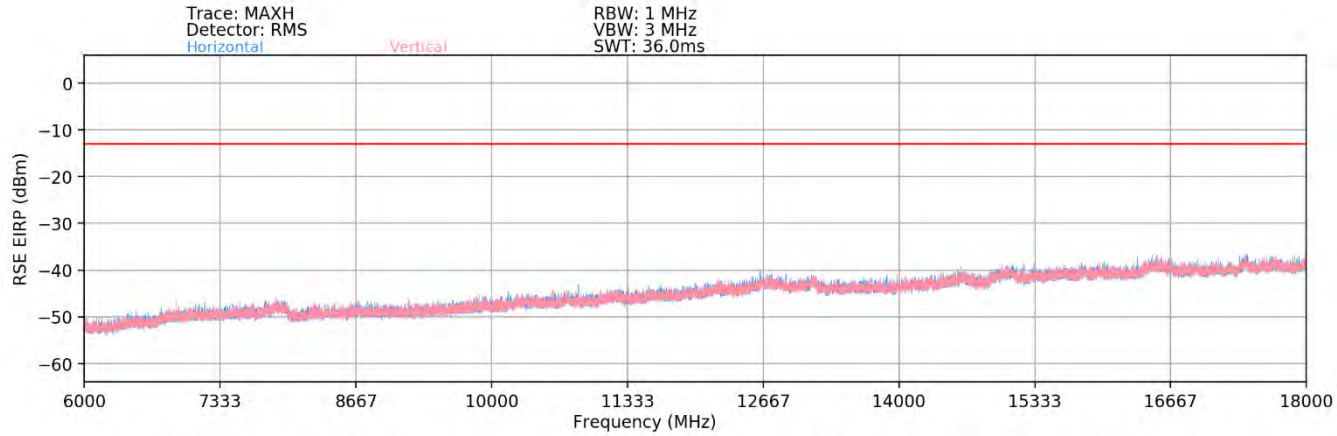
Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Analyzer Level [dBm]	AFCL [dB/m]	Field Strength [dBµV/m]	EIRP Spurious Emission Level [dBm]	Limit [dBm]	Margin [dB]
1178.00	V	-	-	-77.61	6.79	36.18	-59.07	-25.00	-34.07
3063.50	V	-	-	-79.82	15.79	42.97	-52.29	-25.00	-27.29
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)

NR Band n41 – B66



Plot 7-92. Radiated Spurious Plot (NR Band n41 – B66)



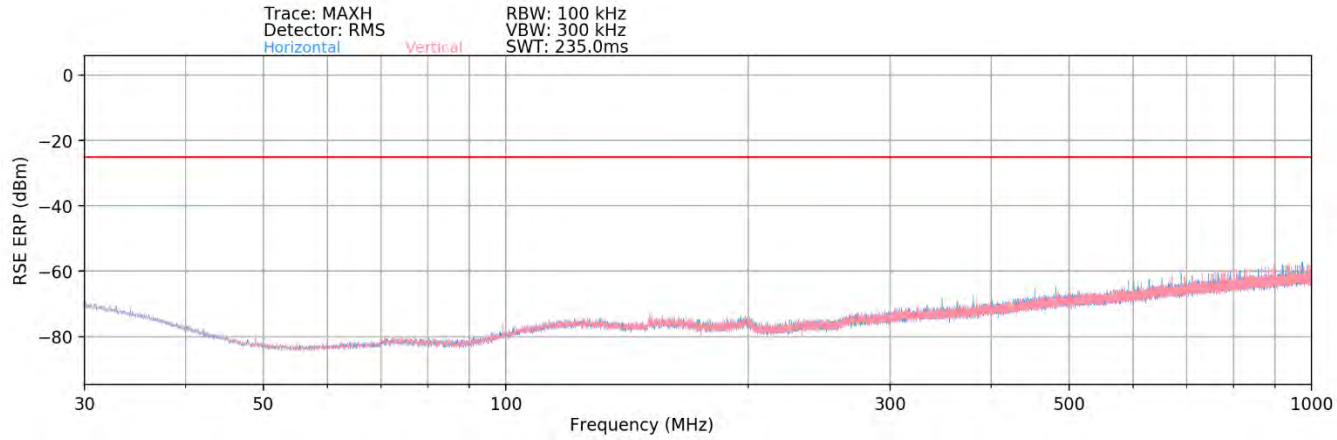
Plot 7-93. Radiated Spurious Plot (NR Band n41 – B66)

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

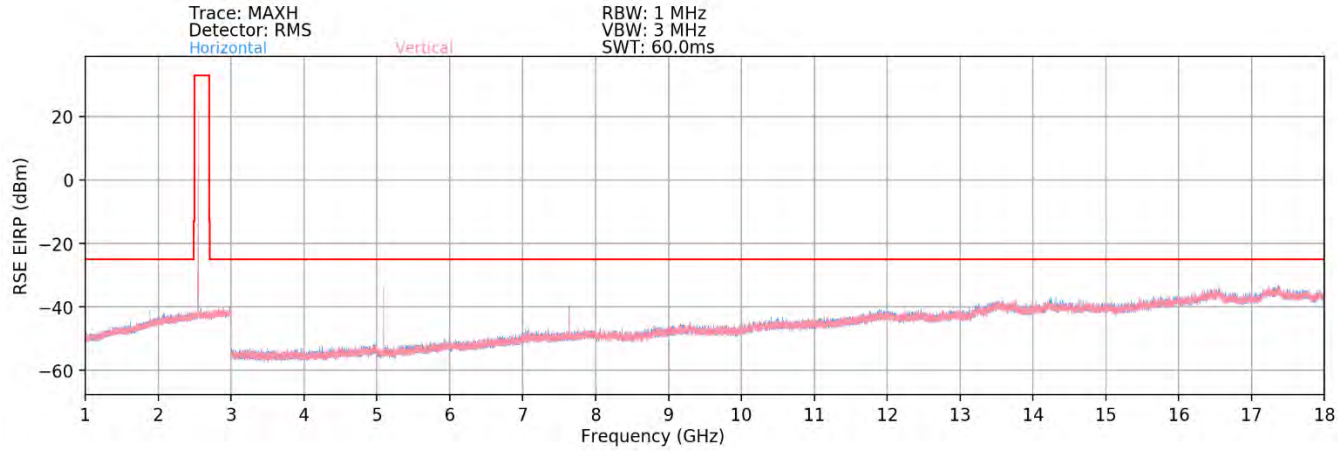
Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Analyzer Level [dBm]	AFCL [dB/m]	Field Strength [dBµV/m]	EIRP Spurious Emission Level [dBm]	Limit [dBm]	Margin [dB]
2980.90	V	-	-	-77.80	13.79	42.99	-52.27	-25.00	-27.27
3129.70	H	-	-	-77.65	14.11	43.46	-51.79	-25.00	-26.79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

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

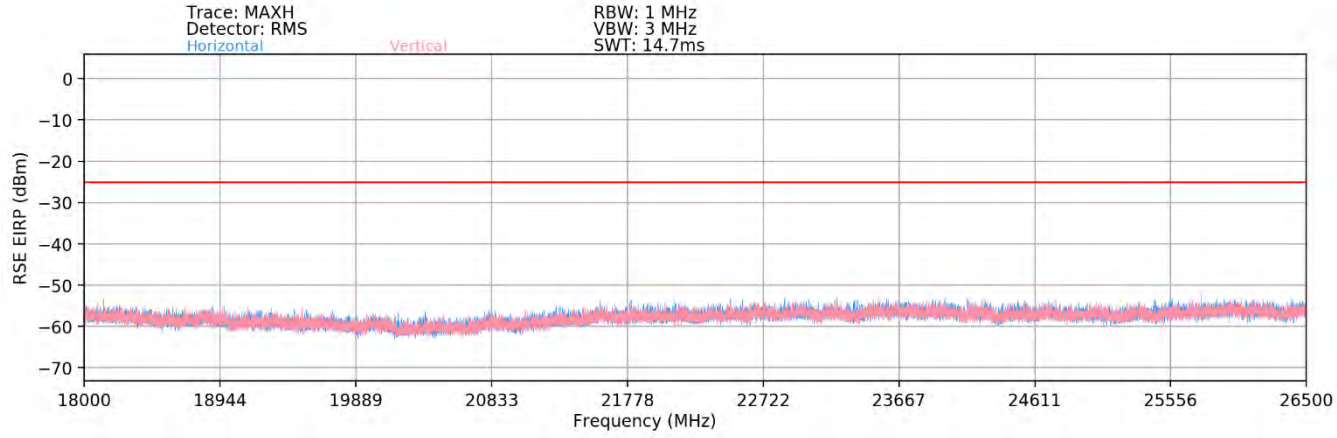
NR Band n41 SRS2 – AntB



Plot 7-94. Radiated Spurious Plot (NR Band n41 – AntB)



Plot 7-95. Radiated Spurious Plot (NR Band n41 – AntB)



Plot 7-96. Radiated Spurious Plot (NR Band n41 – AntB)

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

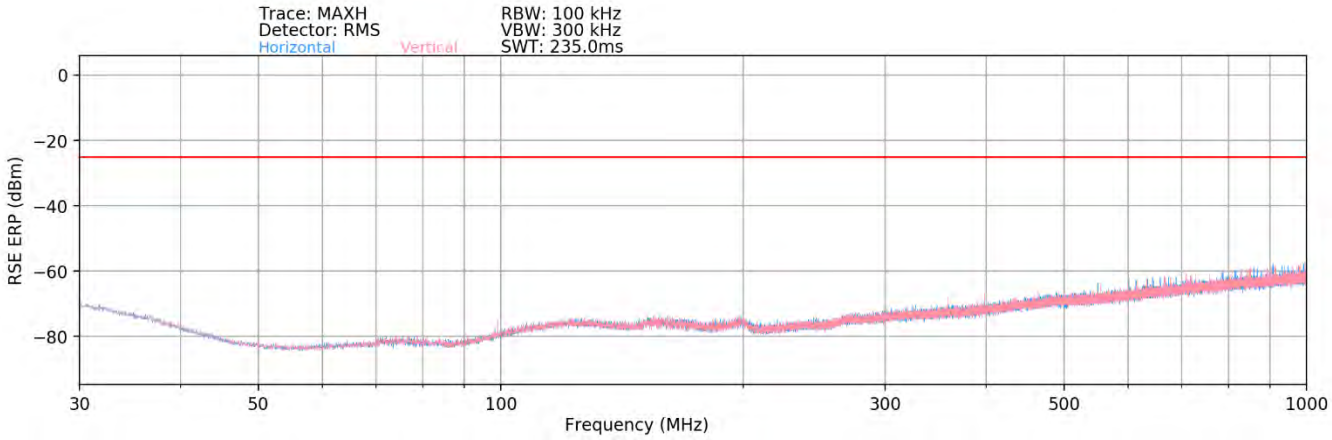
Table 7-14. Radiated Spurious Data (NR Band n41 – High Channel – AntB)

Case:	w/ Wireless Charging Pad
Bandwidth (MHz):	100
Frequency (MHz):	2546.0
RB / Offset:	1 / 136
Mode:	WCP

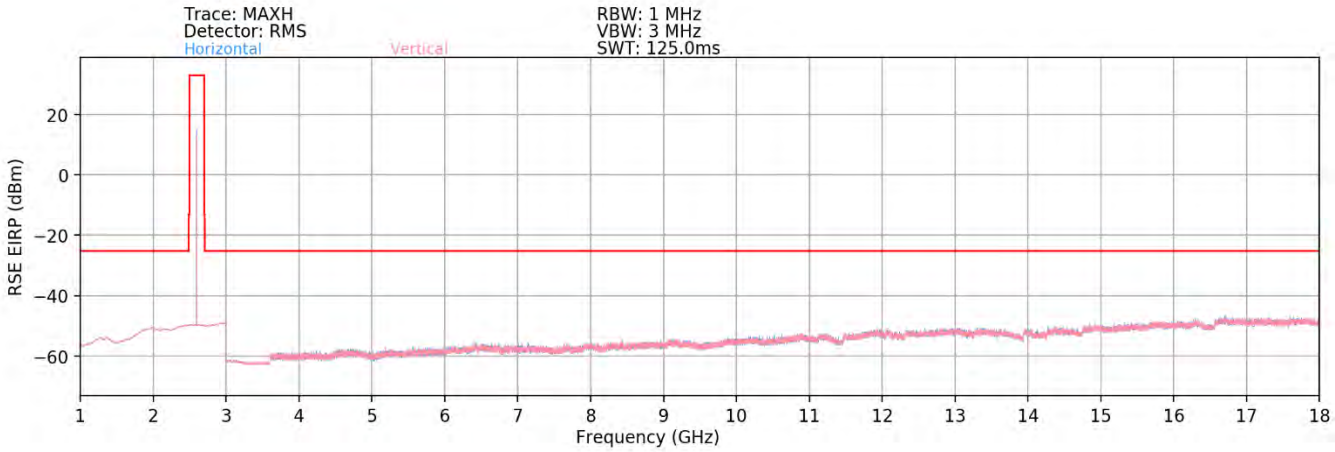
Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Analyzer Level [dBm]	AFCL [dB/m]	Field Strength [dBµV/m]	EIRP Spurious Emission Level [dBm]	Limit [dBm]	Margin [dB]
5092.0	V	101	359	-57.32	9.98	59.66	-35.60	-25.00	-10.60
7638.0	V	254	21	-62.29	16.41	61.12	-34.14	-25.00	-9.14
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)

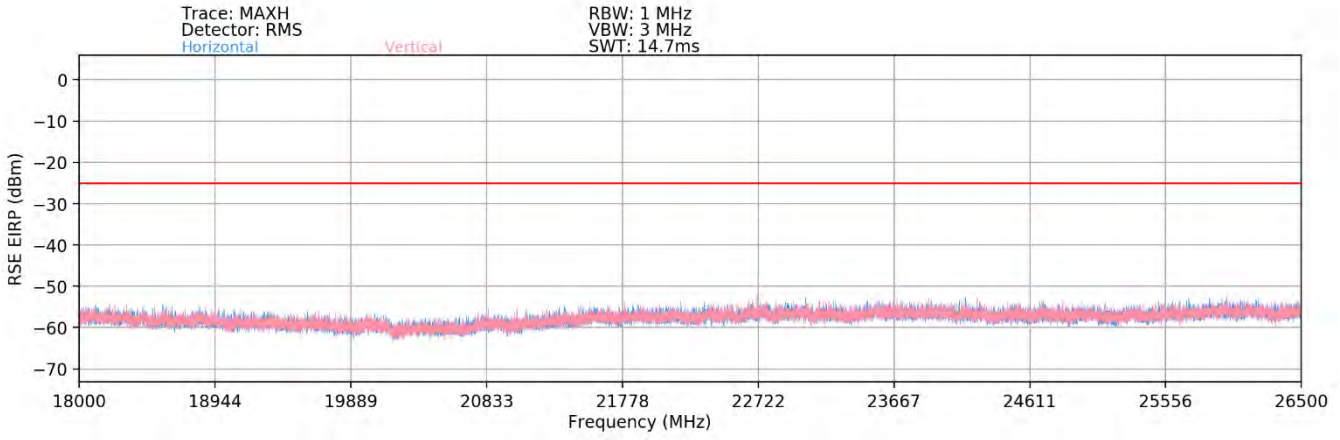
NR Band n41 SRS3 – AntE



Plot 7-97. Radiated Spurious Plot (NR Band n41 – AntE)



Plot 7-98. Radiated Spurious Plot (NR Band n41 – AntE)



Plot 7-99. Radiated Spurious Plot (NR Band n41 – AntE)

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

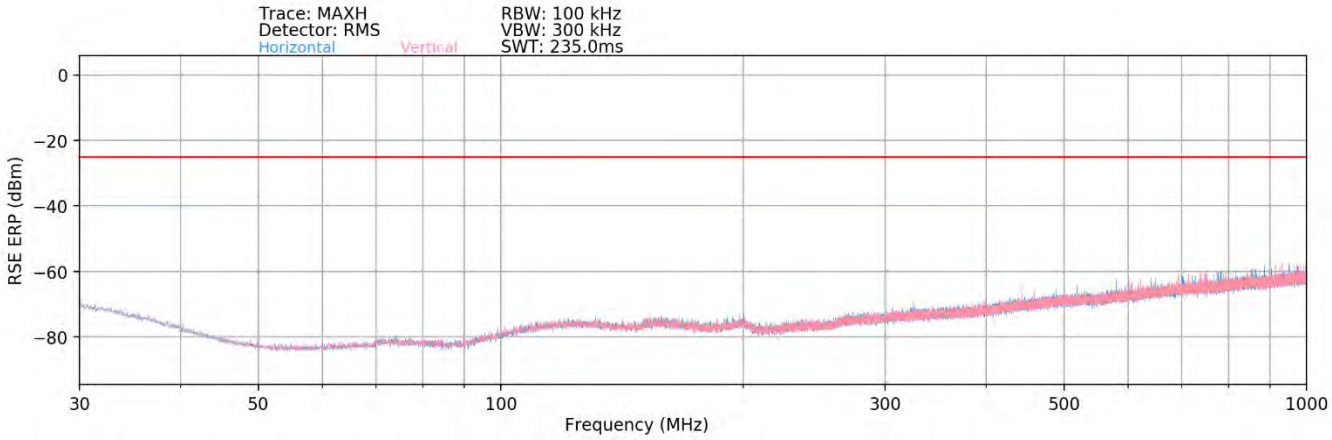
Table 7-18. Radiated Spurious Data (NR Band n41 – High Channel – AntE)

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

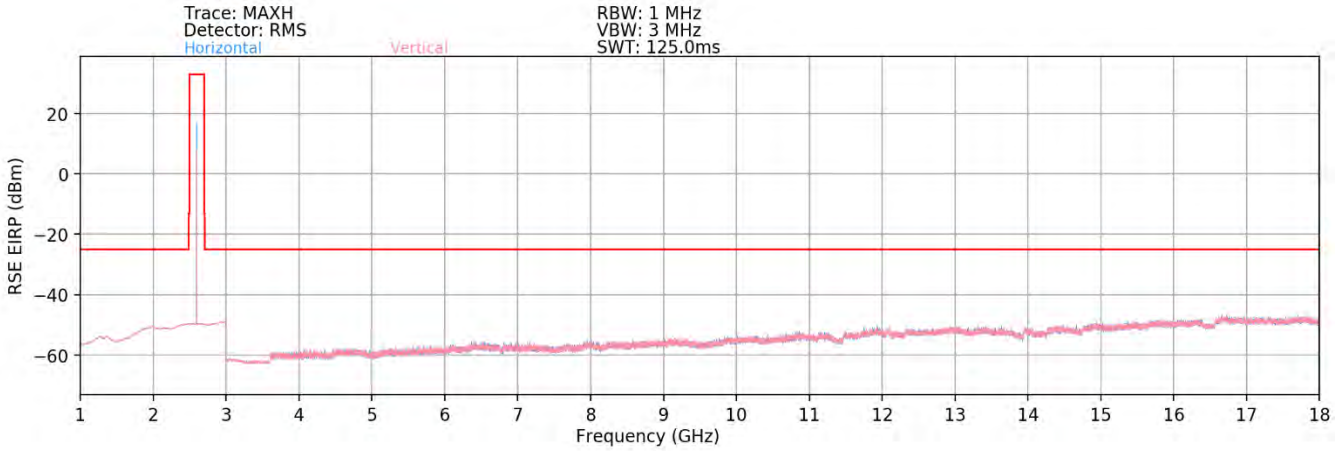
Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Analyzer Level [dBm]	AFCL [dB/m]	Field Strength [dBµV/m]	EIRP Spurious Emission Level [dBm]	Limit [dBm]	Margin [dB]
5280.00	V	117	352	-67.22	4.66	44.44	-50.82	-25.00	-25.82
7920.00	V	141	9	-75.22	8.30	40.08	-55.18	-25.00	-30.18
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)

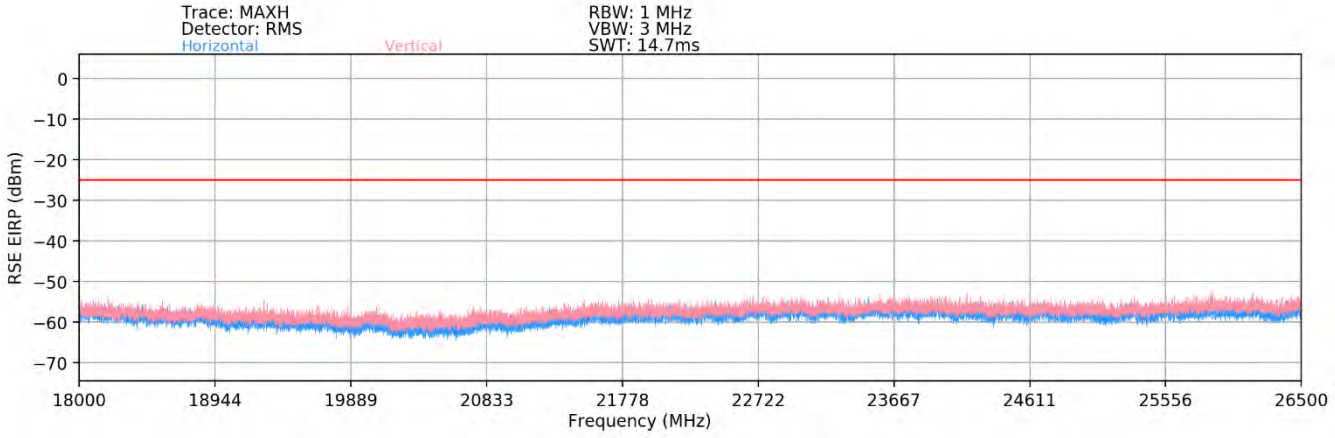
NR Band n41 SRS4 – AntD



Plot 7-100. Radiated Spurious Plot (NR Band n41 – AntD)



Plot 7-101. Radiated Spurious Plot (NR Band n41 – AntD)



Plot 7-102. Radiated Spurious Plot (NR Band n41 – AntD)

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	H	191	26	-70.92	4.48	40.56	-54.70	-25.00	-29.70
7638.00	H	144	296	-70.37	7.81	44.44	-50.81	-25.00	-25.81
10184.00	H	136	309	-74.21	11.10	43.89	-51.36	-25.00	-26.36
12730.00	H	152	332	-74.39	14.20	46.81	-48.45	-25.00	-23.45
15276.00	H	-	-	-77.88	15.92	45.04	-50.22	-25.00	-25.22
17822.00	H	-	-	-78.38	18.75	47.37	-47.89	-25.00	-22.89
20368.00	H	-	-	-58.67	2.10	50.43	-54.37	-25.00	-29.37
22914.00	H	-	-	-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	H	164	33	-70.59	4.91	41.32	-53.94	-25.00	-28.94
7779.00	H	286	298	-71.75	7.30	42.55	-52.71	-25.00	-27.71
10372.00	H	-	-	-77.25	11.04	40.79	-54.47	-25.00	-29.47
12965.00	H	196	334	-73.96	14.49	47.53	-47.73	-25.00	-22.73
15558.00	H	-	-	-77.05	15.73	45.68	-49.58	-25.00	-24.58
18151.00	H	-	-	-57.88	1.18	50.30	-54.50	-25.00	-29.50
20744.00	H	150	364	-54.39	2.73	55.33	-49.47	-25.00	-24.47
23337.00	H	-	-	-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	H	156	40	-68.59	4.66	43.07	-52.19	-25.00	-27.19
7920.00	H	139	301	-75.36	8.30	39.94	-55.32	-25.00	-30.32
10560.00	H	212	359	-74.63	11.56	43.93	-51.33	-25.00	-26.33
13200.00	H	119	327	-71.40	14.06	49.66	-45.59	-25.00	-20.59
15840.00	H	-	-	-78.10	17.07	45.97	-49.29	-25.00	-24.29
18480.00	H	-	-	-58.22	1.13	49.91	-54.89	-25.00	-29.89
21120.00	H	-	-	-58.47	2.78	51.31	-53.49	-25.00	-28.49
23760.00	H	-	-	-59.59	3.03	50.44	-54.36	-25.00	-29.36

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

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	H	124	68	-71.31	4.66	40.35	-54.91	-25.00	-29.91
7920.00	H	-	-	-76.44	8.30	38.86	-56.40	-25.00	-31.40
10560.00	H	-	-	-77.50	11.56	41.06	-54.20	-25.00	-29.20
13200.00	H	125	38	-74.98	14.06	46.08	-49.17	-25.00	-24.17
15840.00	H	-	-	-78.16	17.07	45.91	-49.35	-25.00	-24.35

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

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.

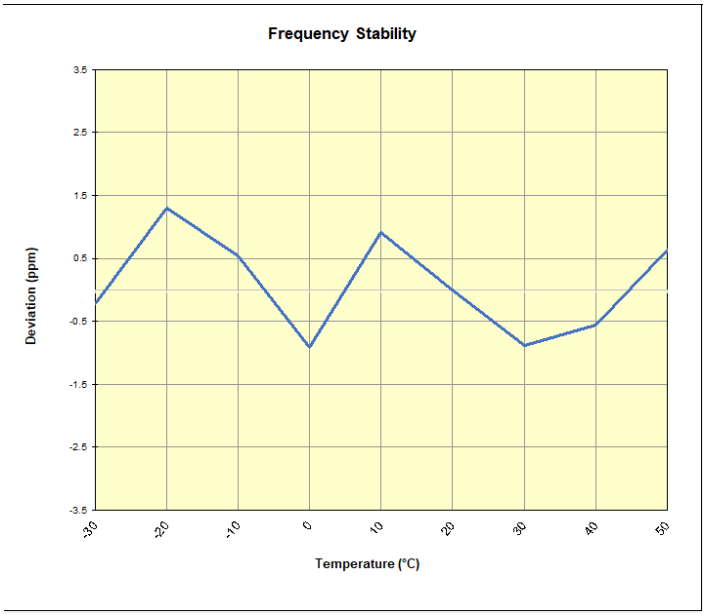
Test Notes

None

NR Band n41	
Operating Frequency (Hz):	2,593,000,000
Ref. Voltage (VDC):	4.38

Voltage (%)	Power (VDC)	Temp (°C)	Frequency (Hz)	Freq. Dev. (Hz)	Deviation (%)
100 %	4.38	- 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
		+ 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

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.