

PART 24 MEASUREMENT REPORT

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

Date of Testing:
 9/14/2021 - 11/16/2021
Test Report Issue Date:
 12/02/2021
Test Site/Location:
 PCTEST Lab. Columbia, MD, USA
Test Report Serial No.:
 1M2109090102-03.A3L

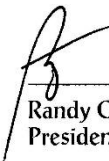
FCC ID:	A3LSMS908U
Applicant Name:	Samsung Electronics Co., Ltd.

Application Type: Certification
Model: SM-S908U
Additional Model(s): SM-S908U1
EUT Type: Portable Handset
FCC Classification: PCS Licensed Transmitter Held to Ear (PCE)
FCC Rule Part: 24
Test Procedure(s): ANSI C63.26-2015, ANSI/TIA-603-E-2016, KDB 971168 D01 v03r01, KDB 648474 D03 v01r04

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

Note: This revised Test Report (S/N: 1M2109090102-03-R1.A3L) supersedes and replaces the previously issued test report on the same subject device for the same type of testing as indicated. Please discard or destroy the previously issued test report(s) and dispose of it accordingly.

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







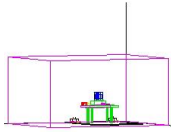
FCC ID: A3LSMS908U	 PART 24 MEASUREMENT REPORT 	Approved by: Technical Manager
Test Report S/N: 1M2109090102-03-R1.A3L	Test Dates: 9/14/2021 - 11/16/2021	EUT Type: Portable Handset
		Page 1 of 146

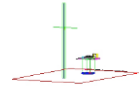
TABLE OF CONTENTS

1.0	INTRODUCTION	5
1.1	Scope	5
1.2	PCTEST Test Location.....	5
1.3	Test Facility / Accreditations.....	5
2.0	PRODUCT INFORMATION.....	6
2.1	Equipment Description	6
2.2	Device Capabilities.....	6
2.3	Test Configuration	6
2.4	EMI Suppression Device(s)/Modifications	6
2.5	Software and Firmware	6
3.0	DESCRIPTION OF TESTS	7
3.1	Evaluation Procedure	7
3.2	Radiated Power and Radiated Spurious Emissions	7
4.0	MEASUREMENT UNCERTAINTY	8
5.0	TEST EQUIPMENT CALIBRATION DATA	9
6.0	SAMPLE CALCULATIONS	10
7.0	TEST RESULTS	12
7.1	Summary	12
7.2	Conducted Power Output Data	13
7.3	Occupied Bandwidth	17
7.4	Spurious and Harmonic Emissions at Antenna Terminal	37
7.5	Band Edge Emissions at Antenna Terminal	58
7.6	Peak-Average Ratio	98
7.7	Radiated Power (ERP/EIRP).....	118
7.8	Radiated Spurious Emissions Measurements.....	123
7.9	Frequency Stability / Temperature Variation	141
8.0	CONCLUSION.....	146

FCC ID: A3LSMS908U	 <small>Proud to be part of element</small>	PART 24 MEASUREMENT REPORT		Approved by: Technical Manager
Test Report S/N: 1M2109090102-03-R1.A3L	Test Dates: 9/14/2021 - 11/16/2021	EUT Type: Portable Handset		Page 2 of 146





PART 24 MEASUREMENT REPORT





Mode	Bandwidth	Modulation	Tx Frequency Range [MHz]	EIRP		Emission Designator	
				Max. Power [W]	Max. Power [dBm]		
LTE Band 25/2	20 MHz	QPSK	1860 - 1905	0.238	23.76	18M0G7D	
		16QAM	1860 - 1905	0.199	22.98	18M1W7D	
	15 MHz	QPSK	1857.5 - 1907.5	0.234	23.69	13M6G7D	
		16QAM	1857.5 - 1907.5	0.197	22.96	13M6W7D	
	10 MHz	QPSK	1855 - 1910	0.259	24.13	9M05G7D	
		16QAM	1855 - 1910	0.213	23.29	9M07W7D	
	5 MHz	QPSK	1852.5 - 1912.5	0.266	24.24	4M55G7D	
		16QAM	1852.5 - 1912.5	0.213	23.28	4M54W7D	
	3 MHz	QPSK	1851.5 - 1913.5	0.254	24.05	2M72G7D	
		16QAM	1851.5 - 1913.5	0.203	23.08	2M72W7D	
	1.4 MHz	QPSK	1850.7 - 1914.3	0.245	23.89	1M11G7D	
		16QAM	1850.7 - 1914.3	0.212	23.27	1M11W7D	
NR Band n25 ANT A	40 MHz	$\pi/2$ BPSK	1870 - 1895	0.172	22.34	38M8G7D	
		QPSK	1870 - 1895	0.160	22.03	38M9G7D	
		16QAM	1870 - 1895	0.132	21.20	38M7W7D	
	30 MHz	$\pi/2$ BPSK	1865 - 1900	0.172	22.37	28M9G7D	
		QPSK	1865 - 1900	0.169	22.29	28M7G7D	
		16QAM	1865 - 1900	0.132	21.21	28M7W7D	
	25 MHz	$\pi/2$ BPSK	1862.5 - 1902.5	0.188	22.74	23M1G7D	
		QPSK	1862.5 - 1902.5	0.177	22.48	23M9G7D	
		16QAM	1862.5 - 1902.5	0.137	21.37	23M9W7D	
	NR Band n25/2 ANT A	20 MHz	$\pi/2$ BPSK	1860 - 1905	0.167	22.23	18M0G7D
			QPSK	1860 - 1905	0.165	22.18	19M0G7D
			16QAM	1860 - 1905	0.133	21.22	19M0W7D
15 MHz		$\pi/2$ BPSK	1857.5 - 1907.5	0.174	22.41	13M5G7D	
		QPSK	1857.5 - 1907.5	0.166	22.20	14M1G7D	
		16QAM	1857.5 - 1907.5	0.134	21.26	14M0W7D	
10 MHz		$\pi/2$ BPSK	1855 - 1910	0.171	22.33	9M04G7D	
		QPSK	1855 - 1910	0.166	22.20	9M38G7D	
		16QAM	1855 - 1910	0.137	21.35	9M33W7D	
5 MHz		$\pi/2$ BPSK	1852.5 - 1912.5	0.173	22.38	4M50G7D	
		QPSK	1852.5 - 1912.5	0.166	22.19	4M51G7D	
		16QAM	1852.5 - 1912.5	0.130	21.13	4M51W7D	
NR Band n25 ANT J	40 MHz	$\pi/2$ BPSK	1870 - 1895	0.310	24.91	38M8G7D	
		QPSK	1870 - 1895	0.321	25.06	38M9G7D	
		16QAM	1870 - 1895	0.242	23.83	38M7W7D	
	30 MHz	$\pi/2$ BPSK	1865 - 1900	0.297	24.73	28M9G7D	
		QPSK	1865 - 1900	0.316	24.99	28M7G7D	
		16QAM	1865 - 1900	0.253	24.03	28M7W7D	
	25 MHz	$\pi/2$ BPSK	1862.5 - 1902.5	0.276	24.41	23M1G7D	
		QPSK	1862.5 - 1902.5	0.280	24.48	23M9G7D	
		16QAM	1862.5 - 1902.5	0.220	23.42	23M9W7D	
	NR Band n25/2 ANT J	20 MHz	$\pi/2$ BPSK	1860 - 1905	0.266	24.25	18M0G7D
			QPSK	1860 - 1905	0.265	24.23	19M0G7D
			16QAM	1860 - 1905	0.201	23.04	19M0W7D
15 MHz		$\pi/2$ BPSK	1857.5 - 1907.5	0.269	24.29	13M5G7D	
		QPSK	1857.5 - 1907.5	0.293	24.67	14M1G7D	
		16QAM	1857.5 - 1907.5	0.216	23.34	14M0W7D	
10 MHz		$\pi/2$ BPSK	1855 - 1910	0.268	24.28	9M04G7D	
		QPSK	1855 - 1910	0.272	24.34	9M38G7D	
		16QAM	1855 - 1910	0.213	23.28	9M33W7D	
5 MHz		$\pi/2$ BPSK	1852.5 - 1912.5	0.251	23.99	4M50G7D	
		QPSK	1852.5 - 1912.5	0.262	24.18	4M51G7D	
		16QAM	1852.5 - 1912.5	0.193	22.86	4M51W7D	

EUT Overview

FCC ID: A3LSMS908U	 PART 24 MEASUREMENT REPORT		Approved by: Technical Manager
Test Report S/N: 1M2109090102-03-R1.A3L	Test Dates: 9/14/2021 - 11/16/2021	EUT Type: Portable Handset	Page 3 of 146

Mode	Modulation	Tx Frequency Range [MHz]	EIRP		Emission Designator
			Max. Power [W]	Max. Power [dBm]	
GSM/GPRS	GMSK	1850.2 - 1909.8	0.765	28.83	243KGXW
EDGE	8-PSK	1850.2 - 1909.8	0.245	23.88	241KG7W
WCDMA	Spread Spectrum	1852.4 - 1907.6	0.277	24.42	4M16F9W

EUT Overview

FCC ID: A3LSMS908U	 PCTEST Proud to be part of element	PART 24 MEASUREMENT REPORT		Approved by: Technical Manager
Test Report S/N: 1M2109090102-03-R1.A3L	Test Dates: 9/14/2021 - 11/16/2021	EUT Type: Portable Handset		Page 4 of 146

1.0 INTRODUCTION

1.1 Scope

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



1.2 PCTEST Test Location

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

1.3 Test Facility / Accreditations

Measurements were performed at PCTEST 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.

FCC ID: A3LSMS908U	 PCTEST Proud to be part of element	PART 24 MEASUREMENT REPORT		Approved by: Technical Manager
Test Report S/N: 1M2109090102-03-R1.A3L	Test Dates: 9/14/2021 - 11/16/2021	EUT Type: Portable Handset		Page 5 of 146

2.0 PRODUCT INFORMATION

2.1 Equipment Description

The Equipment Under Test (EUT) is the **Samsung Portable Handset FCC ID:A3LSMS908U**. 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 24.

Test Device Serial No.: 1261M, 1167M, 0323M, 0341M, 1125M, 1158M, 1128M, 0283M, 0584M,

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 and FR2), 802.11b/g/n/ax WLAN, 802.11a/n/ac/ax UNII (5 and 6GHz), Bluetooth (1x, EDR, LE), NFC, UWB, Wireless Power Transfer

This device uses a tuner circuit that dynamically updates the antenna impedance parameters to optimize antenna performance for certain bands and modes of operation. The tuner for this device was set to simulate a "free space" condition where the transmit antenna is matched to the medium into which it is transmitting and, thus, the power is at its maximum level.

LTE Band 25 (1850 - 1915 MHz) overlaps the entire frequency range of LTE Band 2 (1850 - 1910 MHz). Therefore, test data provided in this report covers Band 2 as well as Band 25.

NR Band n25 (1850 - 1915 MHz) overlaps the entire frequency range of NR Band n2 (1850 - 1910 MHz). Therefore, test data provided in this report covers n2 as well as n25 for the operating BWs that overlap between the 2 bands.

This EUT supports 2 antennas (Antenna A and Antenna J) for n2/n25 operations. This report includes conducted and radiated data from both antennas to ensure compliance.

2.3 Test Configuration

The EUT was tested per the guidance of ANSI/TIA-603-E-2016 and KDB 971168 D01 v03r01. See Section 7.0 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.

2.5 Software and Firmware

The test was conducted with software/firmware version S908USQU0AUJK installed on the EUT.

FCC ID: A3LSMS908U	 PCTEST Proud to be part of element	PART 24 MEASUREMENT REPORT		Approved by: Technical Manager
Test Report S/N: 1M2109090102-03-R1.A3L	Test Dates: 9/14/2021 - 11/16/2021	EUT Type: Portable Handset	Page 6 of 146	

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 $P_g [dBm] - \text{cable loss} [dB]$.

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

$$\text{EIRP}_{[dBm]} = E_{[dB\mu V/m]} + 20\log D - 104.8; \text{ where } D \text{ is the measurement distance in meters.}$$

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.



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

FCC ID: A3LSMS908U		PART 24 MEASUREMENT REPORT		Approved by: Technical Manager
Test Report S/N: 1M2109090102-03-R1.A3L	Test Dates: 9/14/2021 - 11/16/2021	EUT Type: Portable Handset	Page 7 of 146	

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 (\pm dB)
Conducted Bench Top Measurements	1.13
Radiated Disturbance (<1GHz)	4.98
Radiated Disturbance (>1GHz)	5.07
Radiated Disturbance (>18GHz)	5.09

FCC ID: A3LSMS908U	 PCTEST Proud to be part of element	PART 24 MEASUREMENT REPORT		Approved by: Technical Manager
Test Report S/N: 1M2109090102-03-R1.A3L	Test Dates: 9/14/2021 - 11/16/2021	EUT Type: Portable Handset		Page 8 of 146

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
-	LTx2	Licensed Transmitter Cable Set	3/12/2021	Annual	3/12/2022	LTx2
-	LTx5	Licensed Transmitter Cable Set	3/3/2021	Annual	3/3/2022	LTx5
Agilent	E5515C	Wireless Communications Test Set	N/A			GB45360985
Agilent	N9030A	50GHz PXA Signal Analyzer	1/20/2021	Annual	1/20/2022	US51350301
Anritsu	MT8820C	Radio Communication Analyzer	N/A			6201300731
Anritsu	MT8821C	Radio Communication Analyzer	N/A			6201381794
Com-Power	AL-130R	Active Loop Antenna	10/29/2020	Biennial	10/29/2022	10160045
Emco	3115	Horn Antenna (1-18GHz)	6/18/2020	Biennial	6/18/2022	9704-5182
Emco	3116	Horn Antenna (18 - 40GHz)	7/20/2021	Biennial	7/20/2023	9203-2178
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
Keysight Technologies	N9030A	3Hz-44GHz PXA Signal Analyzer	7/21/2021	Annual	7/21/2022	MY49430494
Agilent	N9030A	50GHz PXA Signal Analyzer	1/20/2021	Annual	1/20/2022	US51350301
Keysight Technologies	N9038A	MXE EMI Receiver	8/11/2020	Annual	12/11/2021	MY51210133
Mini-Circuits	SSG-4000HP	Synthesized Signal Generator	N/A			11208010032
Rohde & Schwarz	CMW500	Radio Communication Tester	N/A			100976
Rohde & Schwarz	CMW500	Radio Communication Tester	N/A			112347
Rohde & Schwarz	ESU26	EMI Test Receiver (26.5GHz)	8/3/2021	Annual	8/3/2022	100342
Rohde & Schwarz	ESU40	EMI Test Receiver (40GHz)	5/25/2021	Annual	5/25/2022	100348
Rohde & Schwarz	FSW67	Signal / Spectrum Analyzer	8/25/2021	Annual	8/25/2022	103200
Sunol	JB6	LB6 Antenna	11/13/2020	Biennial	11/13/2022	A082816

Table 5-1. Test Equipment

Notes:

Equipment with a calibration date of "N/A" shown in this list was not used to make direct calibrated measurements.

FCC ID: A3LSMS908U	 PCTEST Proud to be part of element	PART 24 MEASUREMENT REPORT		Approved by: Technical Manager
Test Report S/N: 1M2109090102-03-R1.A3L	Test Dates: 9/14/2021 - 11/16/2021	EUT Type: Portable Handset	Page 9 of 146	

6.0 SAMPLE CALCULATIONS

GSM Emission Designator

Emission Designator = 250KGXW

GSM BW = 250 kHz

G = Phase Modulation

X = Cases not otherwise covered

W = Combination (Audio/Data)

EDGE Emission Designator

Emission Designator = 250KG7W

EDGE BW = 250 kHz

G = Phase Modulation

7 = Quantized/Digital Info

W = Combination (Audio/Data)

WCDMA Emission Designator

Emission Designator = 4M16F9W

WCDMA BW = 4.16 MHz

F = Frequency Modulation

9 = Composite Digital Info

W = Combination (Audio/Data)

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

FCC ID: A3LSMS908U	 PCTEST Proud to be part of element	PART 24 MEASUREMENT REPORT		Approved by: Technical Manager
Test Report S/N: 1M2109090102-03-R1.A3L	Test Dates: 9/14/2021 - 11/16/2021	EUT Type: Portable Handset		Page 10 of 146

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.

FCC ID: A3LSMS908U	 PCTEST Proud to be part of element	PART 24 MEASUREMENT REPORT		Approved by: Technical Manager
Test Report S/N: 1M2109090102-03-R1.A3L	Test Dates: 9/14/2021 - 11/16/2021	EUT Type: Portable Handset		Page 11 of 146

7.0 TEST RESULTS

7.1 Summary



Company Name: Samsung Electronics Co., Ltd.
 FCC ID: A3LSMS908U
 FCC Classification: PCS Licensed Transmitter Held to Ear (PCE)
 Mode(s): GSM/GPRS/EDGE/WCDMA/LTE/NR

Test Condition	Test Description	FCC Part Section(s)	Test Limit	Test Result	Reference
CONDUCTED	Occupied Bandwidth	2.1049	N/A	PASS	Section 7.2
	Conducted Band Edge / Spurious Emissions	2.1051, 24.238(b)	> 43 + 10log ₁₀ (P[Watts]) at Band Edge and for all out-of-band emissions	PASS	Sections 7.3, 7.4
	Transmitter Conducted Output Power	2.1046	N/A	PASS	See RF Exposure Report
	Frequency Stability	2.1055, 24.235	Fundamental emissions stay within authorized frequency block	PASS	Section 7.8
RADIATED	Equivalent Isotropic Radiated Power	24.232(c)	< 2 Watts max. EIRP	PASS	Section 7.6
	Radiated Spurious Emissions	2.1053, 24.238(b)	> 43 + 10 log ₁₀ (P[Watts]) for all out-of-band emissions	PASS	Section 7.7

Table 7-1. Summary of Test Results

Notes:

- 1) All modes of operation and data rates were investigated. The test results shown in the following sections represent the worst case emissions.
- 2) The analyzer plots 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 v1.0.

FCC ID: A3LSMS908U	 PCTEST Proud to be part of element	PART 24 MEASUREMENT REPORT		Approved by: Technical Manager
Test Report S/N: 1M2109090102-03-R1.A3L	Test Dates: 9/14/2021 - 11/16/2021	EUT Type: Portable Handset	Page 12 of 146	

7.2 Conducted Power Output Data

§2.1046

Test Overview

The EUT is set up to transmit at maximum power for LTE. 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.

A-MPR is implemented in this device per the A-MPR specification in 3GPP TS 36.101. The conducted powers are shown herein to cover the different A-MPR levels specified in the standard. Measurement equipment was set up with triggering/gating on the spectrum analyzer such that powers were measured only during the on-time of the signal.

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 $\geq 2 \times \text{span} / \text{RBW}$
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.

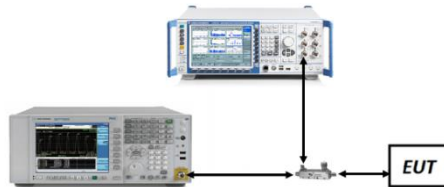


Figure 7-1. Test Instrument & Measurement Setup



FCC ID: A3LSMS908U	PCTEST Proud to be part of element	PART 24 MEASUREMENT REPORT	SAMSUNG	Approved by: Technical Manager
Test Report S/N: 1M2109090102-03-R1.A3L	Test Dates: 9/14/2021 - 11/16/2021	EUT Type: Portable Handset		Page 13 of 146

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. Conducted power measurements are also evaluated for simultaneous transmission of two NR FR1 carriers operating in different bands (interband NR FR1 ULCA). The powers were investigated while both bands are operating at their widest supported channel bandwidth.

3. All other conducted power measurements are contained in the RF exposure report for this filing.

FCC ID: A3LSMS908U	 PART 24 MEASUREMENT REPORT 		Approved by: Technical Manager
Test Report S/N: 1M2109090102-03-R1.A3L	Test Dates: 9/14/2021 - 11/16/2021	EUT Type: Portable Handset	Page 14 of 146



Bandwidth	Modulation	Channel	Frequency [MHz]	RB Size/Offset	Conducted Power [dBm]
40 MHz	π/2 BPSK	374000	1870.0	1 / 54	24.49
		376500	1882.5	1 / 161	24.47
		379000	1895.0	1 / 54	23.88
	QPSK	374000	1870.0	1 / 54	24.32
		376500	1882.5	1 / 161	24.13
		379000	1895.0	1 / 54	23.84
16-QAM	374000	1870.0	1 / 54	23.35	
30 MHz	π/2 BPSK	372000	1865.0	1 / 40	24.30
		376500	1882.5	1 / 80	24.21
		381000	1900.0	1 / 80	24.44
	QPSK	372000	1865.0	1 / 40	24.24
		376500	1882.5	1 / 80	24.18
		381000	1900.0	1 / 80	24.30
16-QAM	372000	1865.0	1 / 40	23.55	
25 MHz	π/2 BPSK	372000	1862.5	1 / 33	23.98
		376500	1882.5	1 / 99	23.81
		381000	1902.5	1 / 99	24.10
	QPSK	372000	1862.5	1 / 33	23.73
		376500	1882.5	1 / 99	23.13
		381000	1902.5	1 / 99	23.45
16-QAM	372000	1862.5	1 / 33	22.93	
20 MHz	π/2 BPSK	372000	1860.0	1 / 79	23.82
		376500	1882.5	1 / 79	23.67
		381000	1905.0	1 / 79	23.81
	QPSK	372000	1860.0	1 / 79	23.48
		376500	1882.5	1 / 79	23.39
		381000	1905.0	1 / 79	23.75
16-QAM	372000	1860.0	1 / 79	22.55	
15 MHz	π/2 BPSK	371500	1857.5	1 / 58	23.86
		376500	1882.5	1 / 20	23.61
		381500	1907.5	1 / 39	23.96
	QPSK	371500	1857.5	1 / 58	23.93
16-QAM	371500	1857.5	1 / 58	22.86	
10 MHz	π/2 BPSK	371000	1855.0	1 / 38	23.85
		376500	1882.5	1 / 38	23.58
		382000	1910.0	1 / 26	23.93
	QPSK	371000	1855.0	1 / 38	23.59
		376500	1882.5	1 / 38	23.38
		382000	1910.0	1 / 26	23.77
16-QAM	371000	1855.0	1 / 38	22.80	
5 MHz	π/2 BPSK	370500	1852.5	1 / 6	23.56
		376500	1882.5	1 / 18	23.60
		382500	1912.5	1 / 6	23.76
	QPSK	370500	1852.5	1 / 6	23.43
		376500	1882.5	1 / 18	23.42
		382500	1912.5	1 / 6	23.49
16-QAM	370500	1852.5	1 / 6	22.38	

Table 7-1. Conducted Power Output Data (n25/2 – ANT J)

FCC ID: A3LSMS908U	 PCTEST Proud to be part of element	PART 24 MEASUREMENT REPORT		Approved by: Technical Manager
Test Report S/N: 1M2109090102-03-R1.A3L	Test Dates: 9/14/2021 - 11/16/2021	EUT Type: Portable Handset		Page 15 of 146

PCC							SCC							PCC Conducted Power [dBm]	SCC Conducted Power [dBm]	Inter-Band ULCA Total Tx. Power (dBm)
PCC Band	PCC Bandwidth [MHz]	PCC Channel	PCC Frequency (MHz)	PCC (UL) channel	Mod.	PCC UL RB#/Offset	SCC Band	SCC Channel	SCC Frequency (MHz)	SCC Bandwidth [MHz]	SCC (UL) channel	Mod.	SCC UL RB#/Offset			
n25	40	374000	1870.0	Low	$\pi/2$ BPSK	1 / 162	n41	509202	2546.0	100	Low	$\pi/2$ BPSK	1 / 205	19.75	20.55	23.18
					QPSK	216 / 0						QPSK	270 / 0	19.61	20.35	23.01
					QPSK	1 / 54						QPSK	1 / 68	19.58	20.44	23.04
					QPSK	1 / 108						QPSK	1 / 137	19.61	20.60	23.14
					QPSK	1 / 162						QPSK	1 / 205	19.72	20.64	23.21
					16Q	1 / 162						16Q	1 / 205	19.92	20.82	23.40
		376500	1882.5	Mid	$\pi/2$ BPSK	1 / 54		518598	2593.0		Mid	$\pi/2$ BPSK	1 / 68	19.64	20.99	23.38
					QPSK	216 / 0						QPSK	270 / 0	19.65	20.51	23.11
					QPSK	1 / 54						QPSK	1 / 68	19.60	21.02	23.38
					QPSK	1 / 108						QPSK	1 / 137	19.62	20.52	23.10
					QPSK	1 / 162						QPSK	1 / 205	19.71	20.33	23.04
					16Q	1 / 54						16Q	1 / 68	19.89	21.26	23.64
	379000	1895.0	High	$\pi/2$ BPSK	1 / 162	528000	2640.0	High	$\pi/2$ BPSK	1 / 205	20.04	20.56	23.32			
				QPSK	216 / 0				QPSK	270 / 0	20.06	20.30	23.19			
				QPSK	1 / 54				QPSK	1 / 68	20.06	20.55	23.32			
				QPSK	1 / 108				QPSK	1 / 137	20.08	20.41	23.26			
				QPSK	1 / 162				QPSK	1 / 205	20.17	20.38	23.29			
				16Q	1 / 162				16Q	1 / 205	20.18	20.72	23.47			

Table 7-2. Max Conducted Output Power (NR Bands n25 - n41)

FCC ID: A3LSMS908U	 PCTEST Proud to be part of element	PART 24 MEASUREMENT REPORT		Approved by: Technical Manager
Test Report S/N: 1M2109090102-03-R1.A3L	Test Dates: 9/14/2021 - 11/16/2021	EUT Type: Portable Handset	Page 16 of 146	

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 $\geq 3 \times$ RBW
4. Detector = Peak
5. Trace mode = max hold
6. Sweep = auto couple
7. The trace was allowed to stabilize
8. If necessary, steps 2 – 7 were repeated after changing the RBW such that it would be within 1 – 5% of the 99% occupied bandwidth observed in Step 7

Test Setup

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

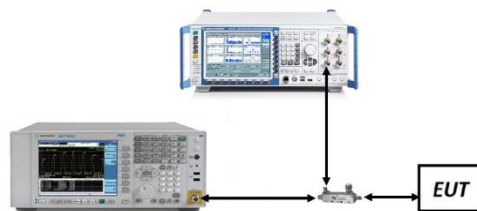




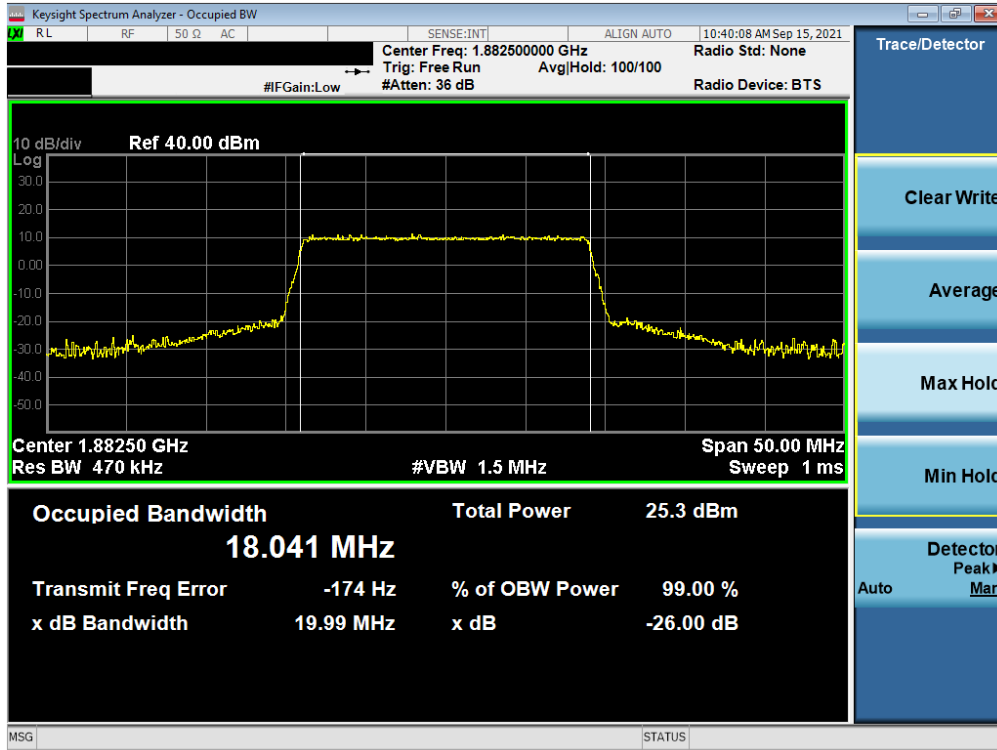
Figure 7-2. Test Instrument & Measurement Setup

Test Notes

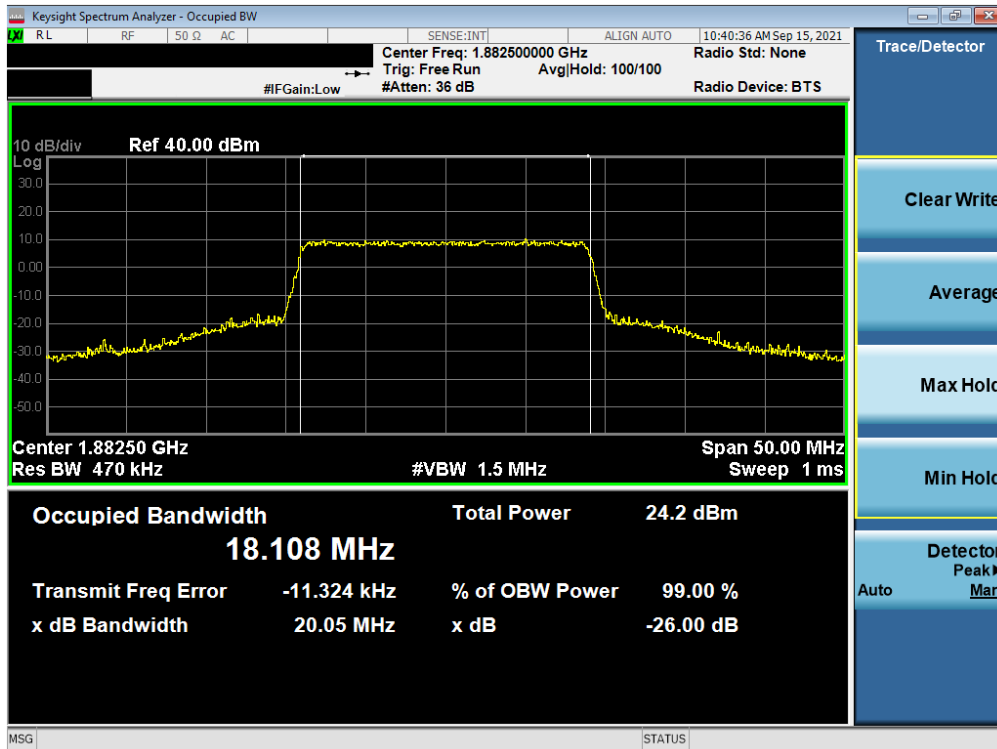
None.

FCC ID: A3LSMS908U	 PCTEST Proud to be part of element	PART 24 MEASUREMENT REPORT		Approved by: Technical Manager
Test Report S/N: 1M2109090102-03-R1.A3L	Test Dates: 9/14/2021 - 11/16/2021	EUT Type: Portable Handset		Page 17 of 146

LTE Band 25/2

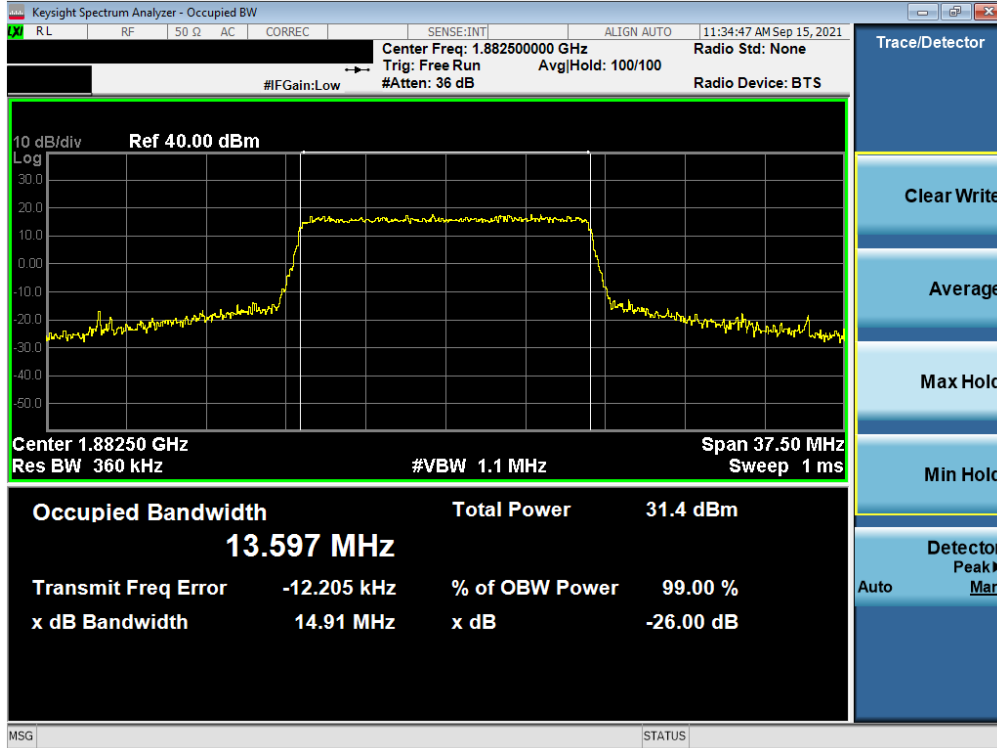


Plot 7-2. Occupied Bandwidth Plot (LTE Band 25/2 - 20MHz QPSK - Full RB)

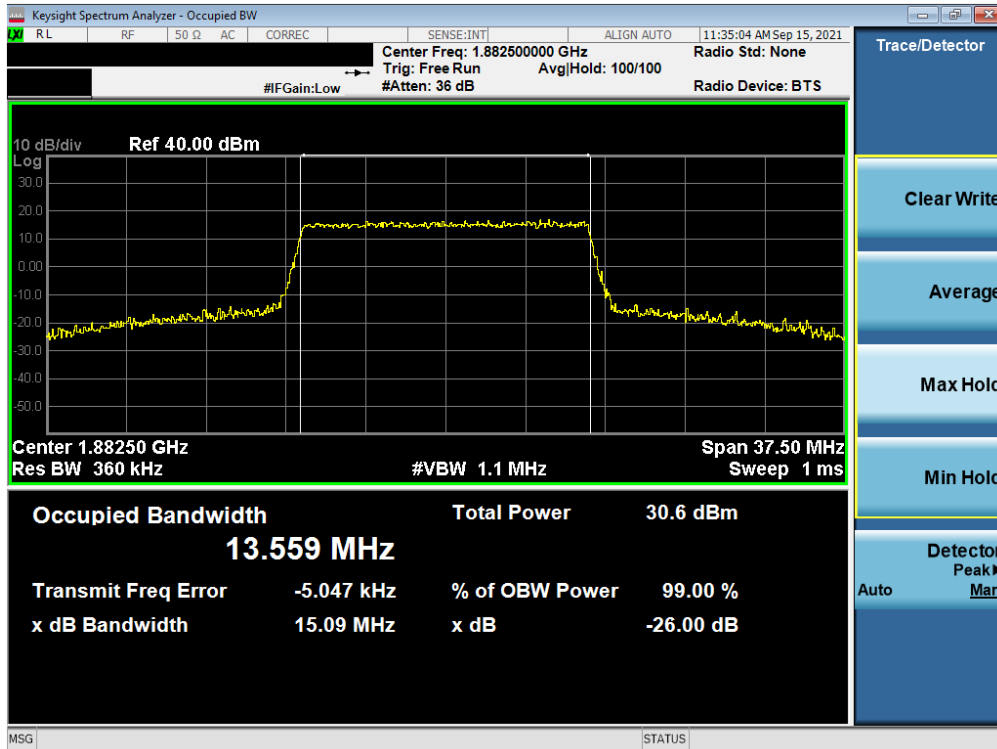


Plot 7-3. Occupied Bandwidth Plot (LTE Band 25/2 - 20MHz 16-QAM - Full RB)

FCC ID: A3LSMS908U	PCTEST Proud to be part of element	PART 24 MEASUREMENT REPORT	SAMSUNG	Approved by: Technical Manager
Test Report S/N: 1M2109090102-03-R1.A3L	Test Dates: 9/14/2021 - 11/16/2021	EUT Type: Portable Handset		Page 18 of 146



Plot 7-4. Occupied Bandwidth Plot (LTE Band 25/2 - 15MHz QPSK - Full RB)

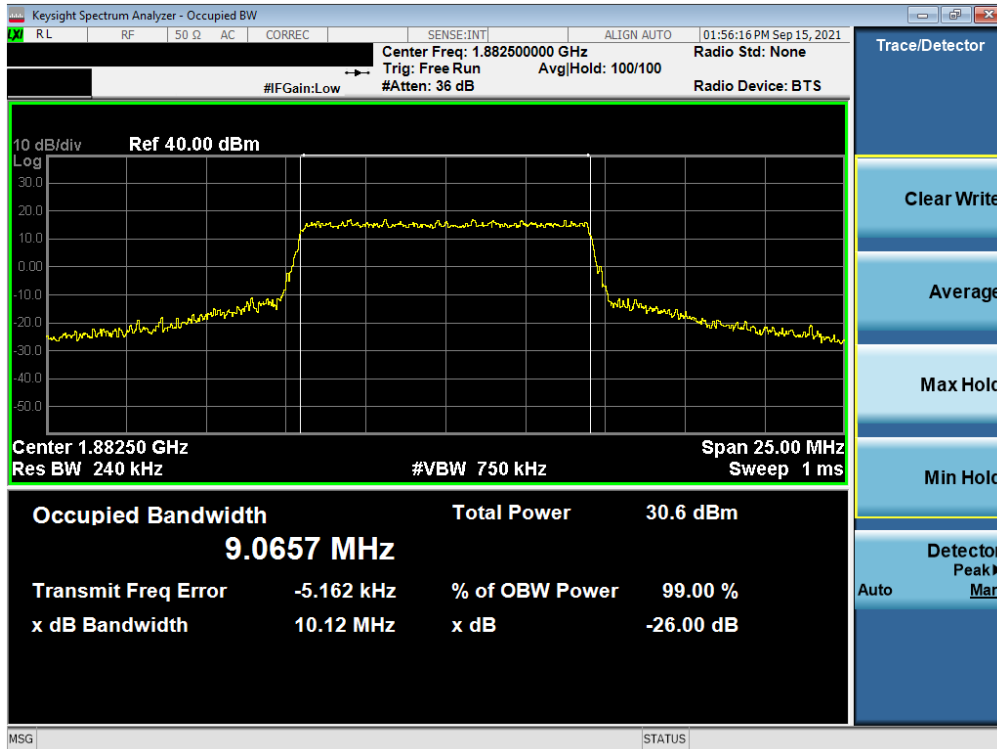


Plot 7-5. Occupied Bandwidth Plot (LTE Band 25/2 - 15MHz 16-QAM - Full RB)

FCC ID: A3LSMS908U	PCTEST Proud to be part of element	PART 24 MEASUREMENT REPORT	SAMSUNG	Approved by: Technical Manager
Test Report S/N: 1M2109090102-03-R1.A3L	Test Dates: 9/14/2021 - 11/16/2021	EUT Type: Portable Handset		Page 19 of 146

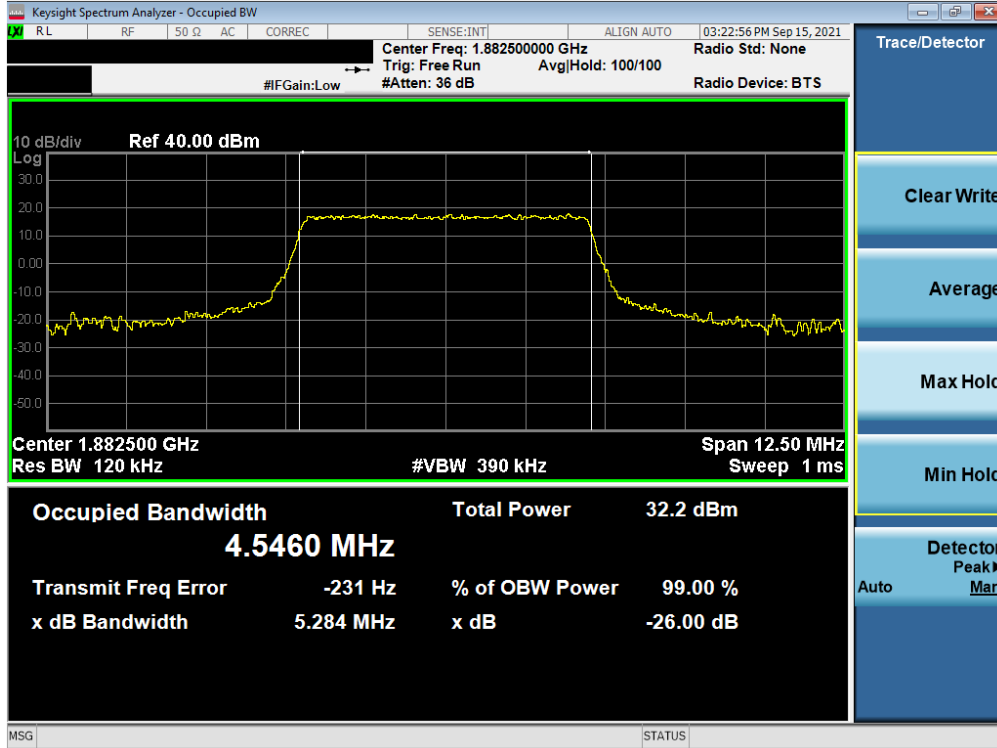


Plot 7-6. Occupied Bandwidth Plot (LTE Band 25/2 - 10MHz QPSK - Full RB)

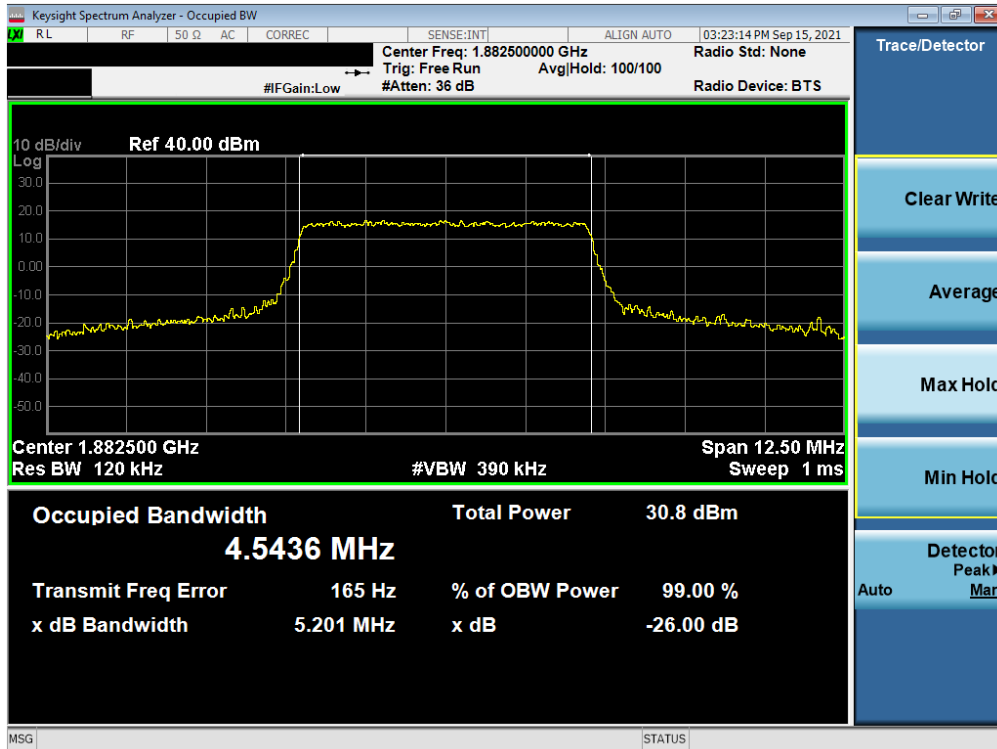


Plot 7-7. Occupied Bandwidth Plot (LTE Band 25/2 - 10MHz 16-QAM - Full RB)

FCC ID: A3LSMS908U	PCTEST Proud to be part of element	PART 24 MEASUREMENT REPORT	SAMSUNG	Approved by: Technical Manager
Test Report S/N: 1M2109090102-03-R1.A3L	Test Dates: 9/14/2021 - 11/16/2021	EUT Type: Portable Handset		Page 20 of 146



Plot 7-8. Occupied Bandwidth Plot (LTE Band 25/2 - 5MHz QPSK - Full RB)

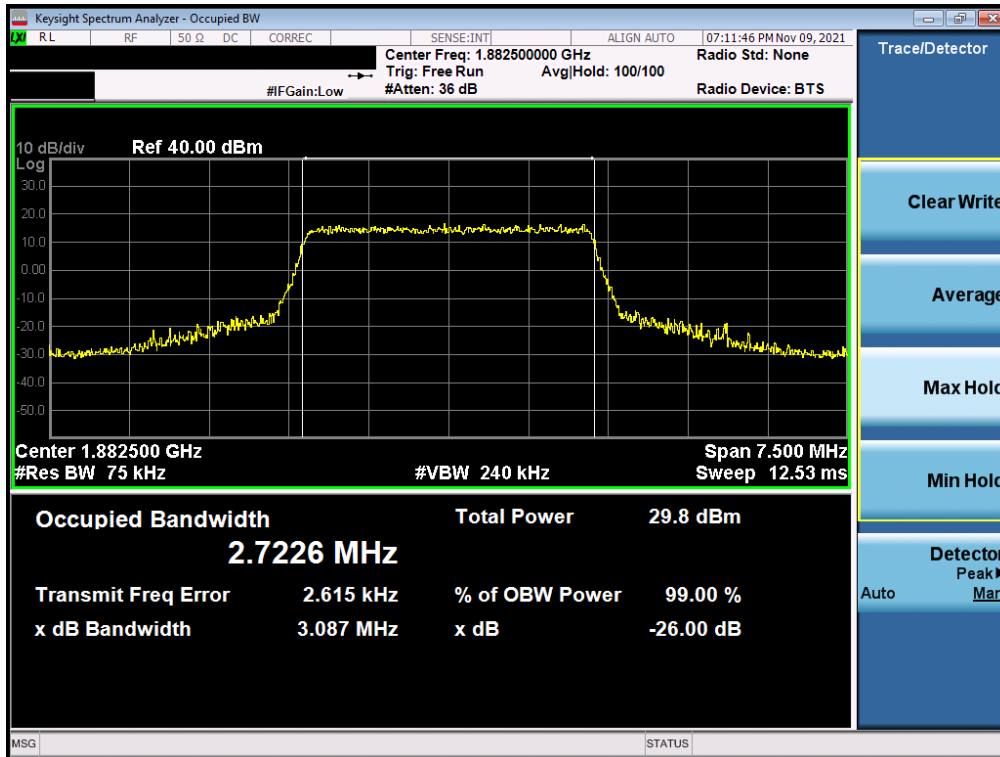


Plot 7-9. Occupied Bandwidth Plot (LTE Band 25/2 - 5MHz 16-QAM - Full RB)

FCC ID: A3LSMS908U	PCTEST Proud to be part of element	PART 24 MEASUREMENT REPORT	SAMSUNG	Approved by: Technical Manager
Test Report S/N: 1M2109090102-03-R1.A3L	Test Dates: 9/14/2021 - 11/16/2021	EUT Type: Portable Handset		Page 21 of 146

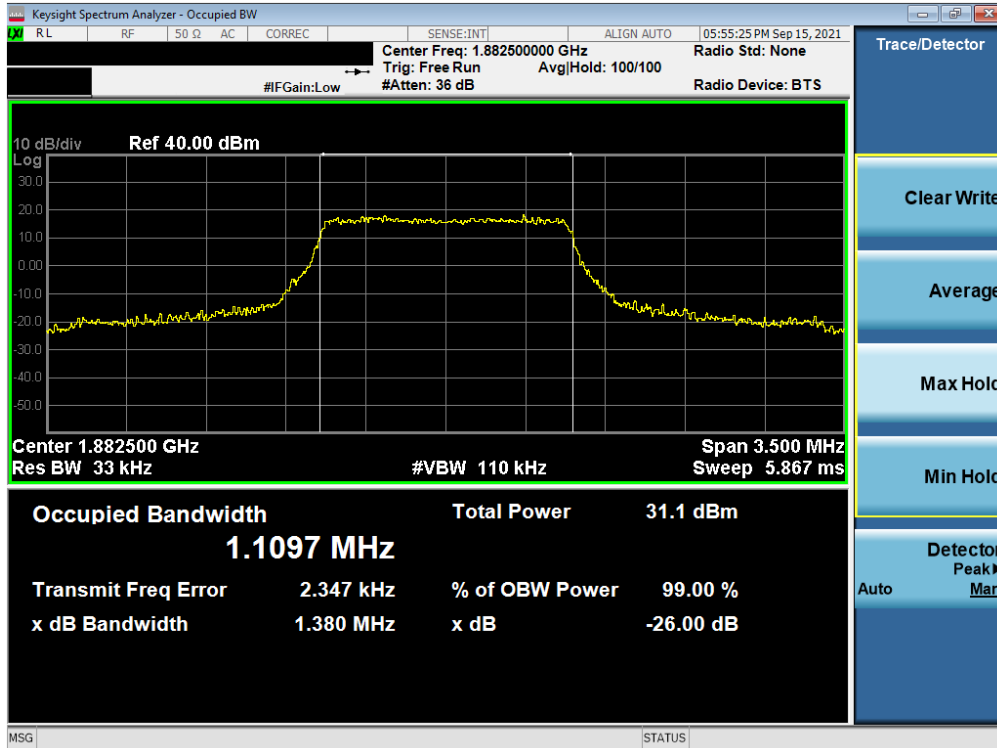


Plot 7-10. Occupied Bandwidth Plot (LTE Band 25/2 - 3MHz QPSK - Full RB)

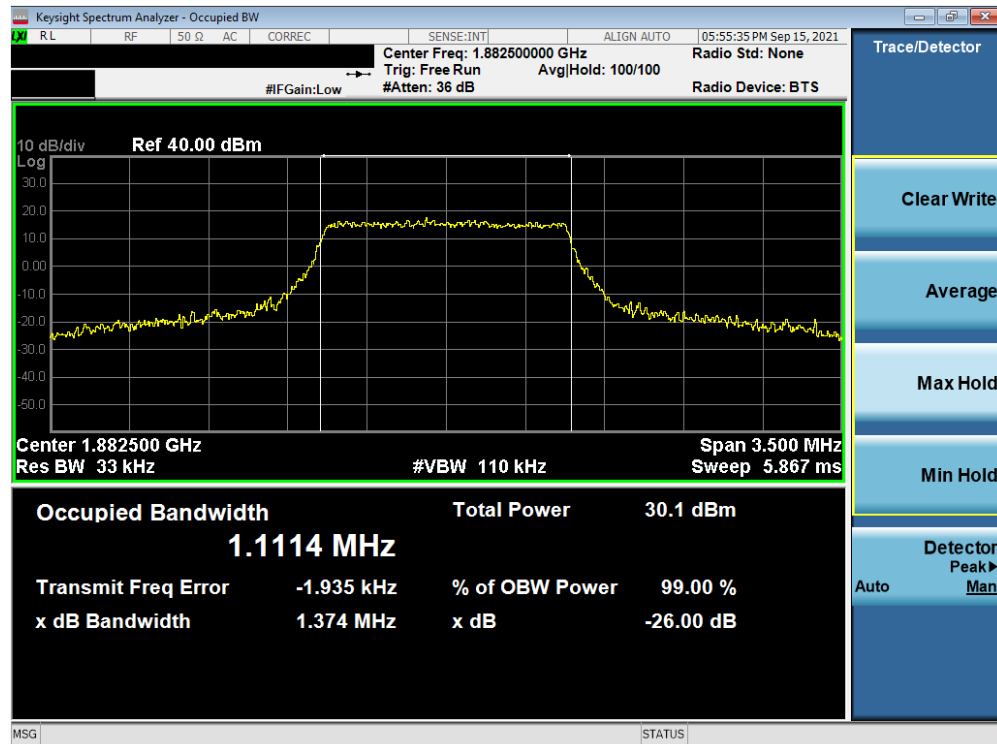


Plot 7-11. Occupied Bandwidth Plot (LTE Band 25/2 - 3MHz 16-QAM - Full RB)

FCC ID: A3LSMS908U	PCTEST Proud to be part of element	PART 24 MEASUREMENT REPORT	SAMSUNG	Approved by: Technical Manager
Test Report S/N: 1M2109090102-03-R1.A3L	Test Dates: 9/14/2021 - 11/16/2021	EUT Type: Portable Handset		Page 22 of 146



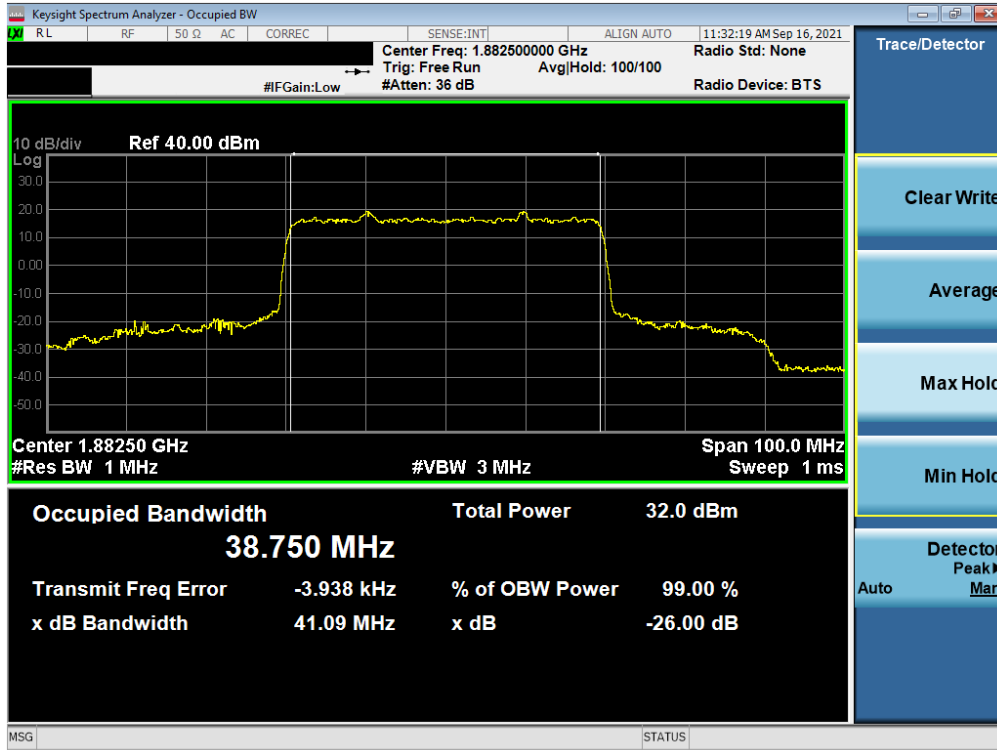
Plot 7-12. Occupied Bandwidth Plot (LTE Band 25/2 - 1.4MHz QPSK - Full RB)



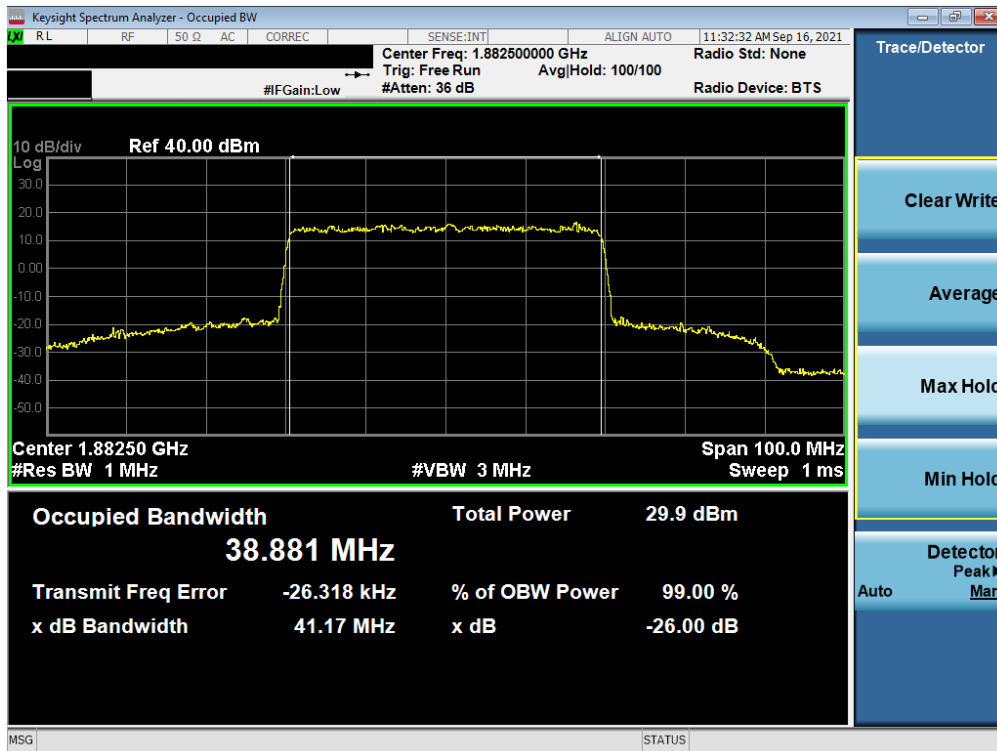
Plot 7-13. Occupied Bandwidth Plot (LTE Band 25/2 - 1.4MHz 16-QAM - Full RB)

FCC ID: A3LSMS908U	PCTEST Proud to be part of element	PART 24 MEASUREMENT REPORT	SAMSUNG	Approved by: Technical Manager
Test Report S/N: 1M2109090102-03-R1.A3L	Test Dates: 9/14/2021 - 11/16/2021	EUT Type: Portable Handset		Page 23 of 146

NR Band n25/2

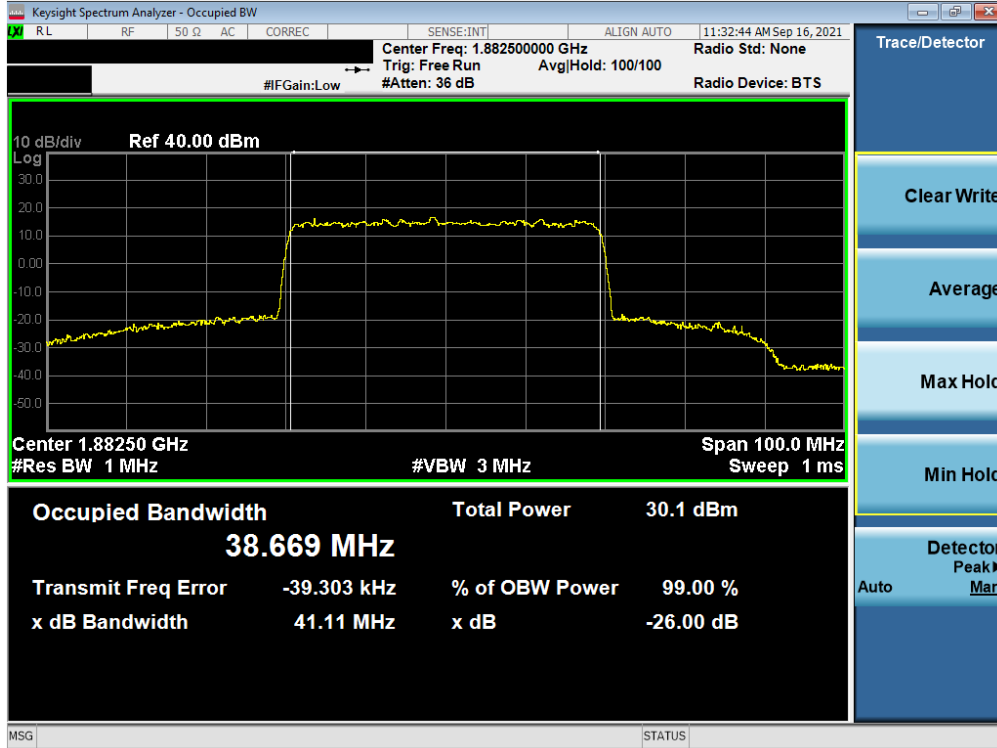


Plot 7-14. Occupied Bandwidth Plot (NR Band n25/2 - 40.0MHz DFT-s-OFDM BPSK - Full RB)

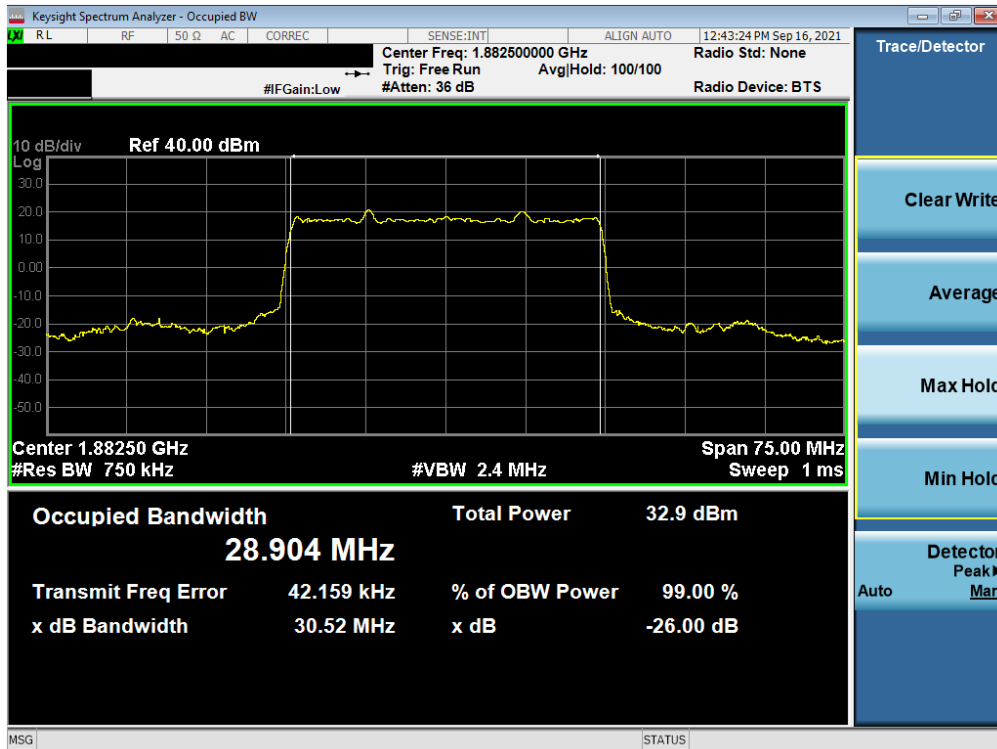


Plot 7-15. Occupied Bandwidth Plot (NR Band n25/2 - 40.0MHz CP-OFDM QPSK - Full RB)

FCC ID: A3LSMS908U	PCTEST Proud to be part of element	PART 24 MEASUREMENT REPORT	SAMSUNG	Approved by: Technical Manager
Test Report S/N: 1M2109090102-03-R1.A3L	Test Dates: 9/14/2021 - 11/16/2021	EUT Type: Portable Handset		Page 24 of 146

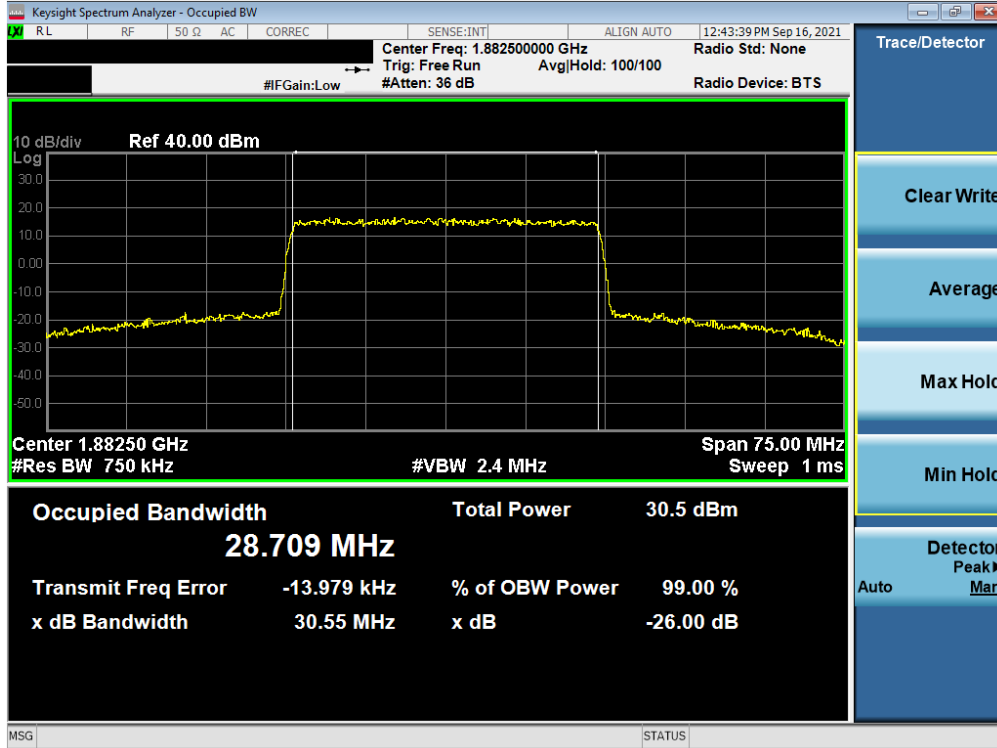


Plot 7-16. Occupied Bandwidth Plot (NR Band n25/2 - 40.0MHz CP-OFDM 16QAM - Full RB)

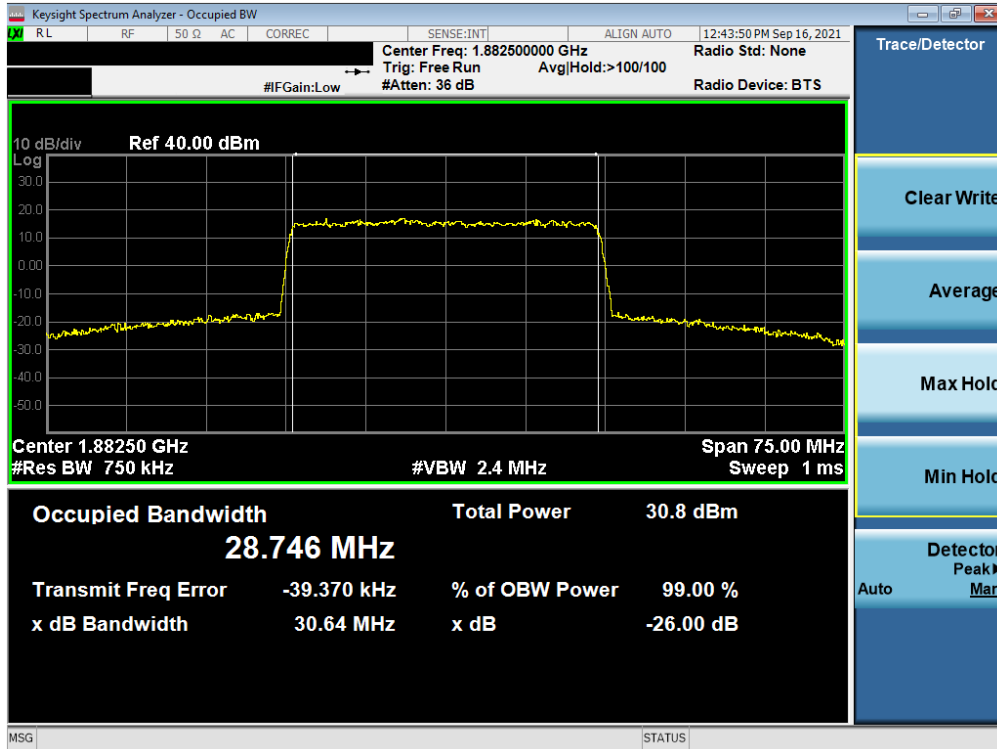


Plot 7-17. Occupied Bandwidth Plot (NR Band n25/2 - 30.0MHz DFT-s-OFDM BPSK - Full RB)

FCC ID: A3LSMS908U	PCTEST Proud to be part of element	PART 24 MEASUREMENT REPORT	SAMSUNG	Approved by: Technical Manager
Test Report S/N: 1M2109090102-03-R1.A3L	Test Dates: 9/14/2021 - 11/16/2021	EUT Type: Portable Handset		Page 25 of 146

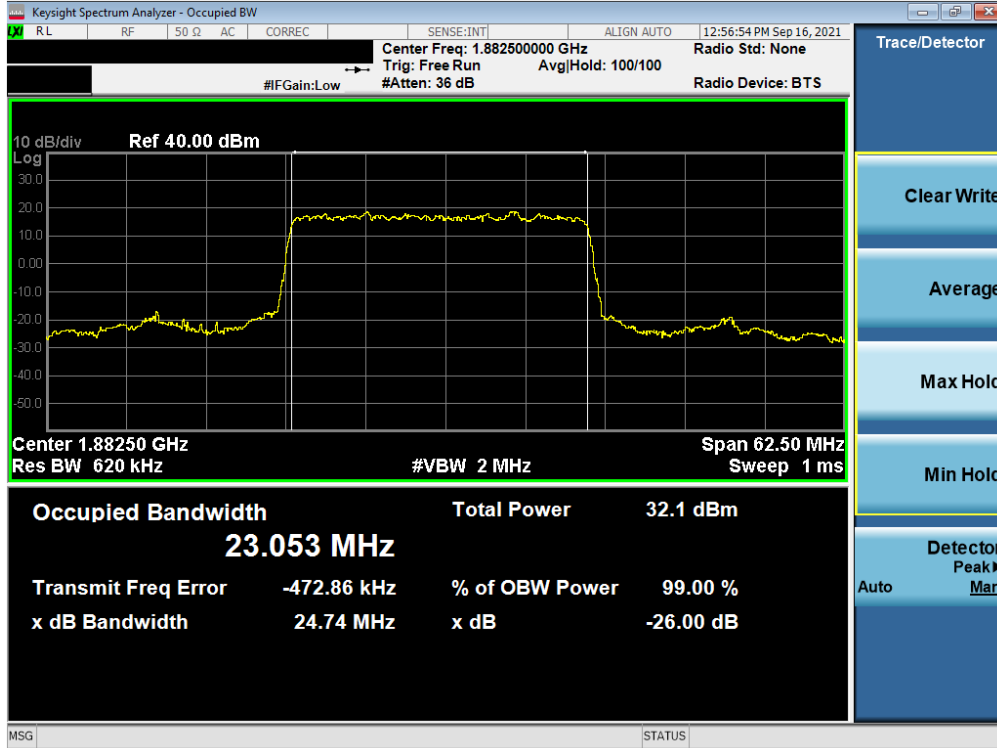


Plot 7-18. Occupied Bandwidth Plot (NR Band n25/2 - 30.0MHz CP-OFDM QPSK - Full RB)

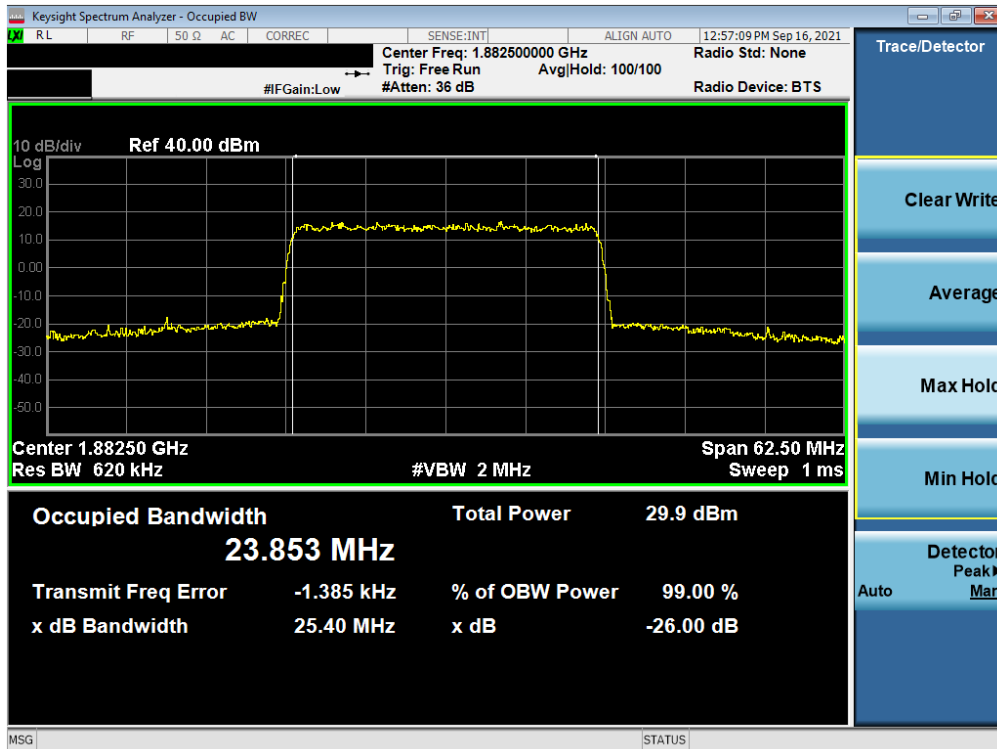


Plot 7-19. Occupied Bandwidth Plot (NR Band n25/2 - 30.0MHz CP-OFDM 16QAM - Full RB)

FCC ID: A3LSMS908U	PCTEST Proud to be part of element	PART 24 MEASUREMENT REPORT	SAMSUNG	Approved by: Technical Manager
Test Report S/N: 1M2109090102-03-R1.A3L	Test Dates: 9/14/2021 - 11/16/2021	EUT Type: Portable Handset		Page 26 of 146

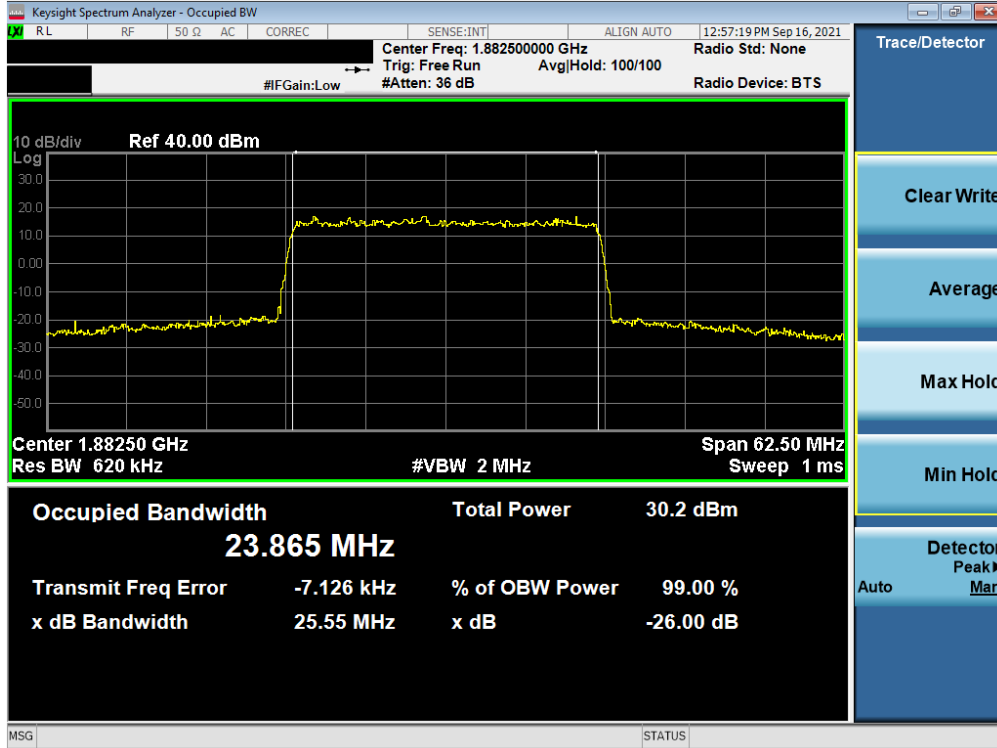


Plot 7-20. Occupied Bandwidth Plot (NR Band n25/2 - 25.0MHz DFT-s-OFDM BPSK - Full RB)

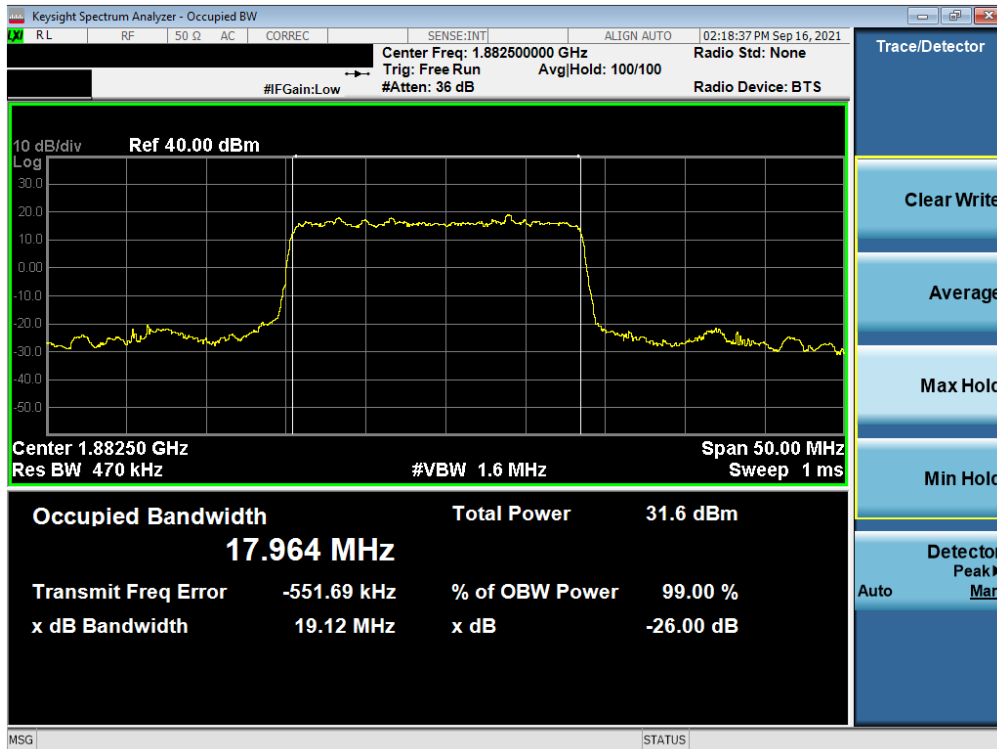


Plot 7-21. Occupied Bandwidth Plot (NR Band n25/2 - 25.0MHz CP-OFDM QPSK - Full RB)

FCC ID: A3LSMS908U	PCTEST Proud to be part of element	PART 24 MEASUREMENT REPORT	SAMSUNG	Approved by: Technical Manager
Test Report S/N: 1M2109090102-03-R1.A3L	Test Dates: 9/14/2021 - 11/16/2021	EUT Type: Portable Handset		Page 27 of 146

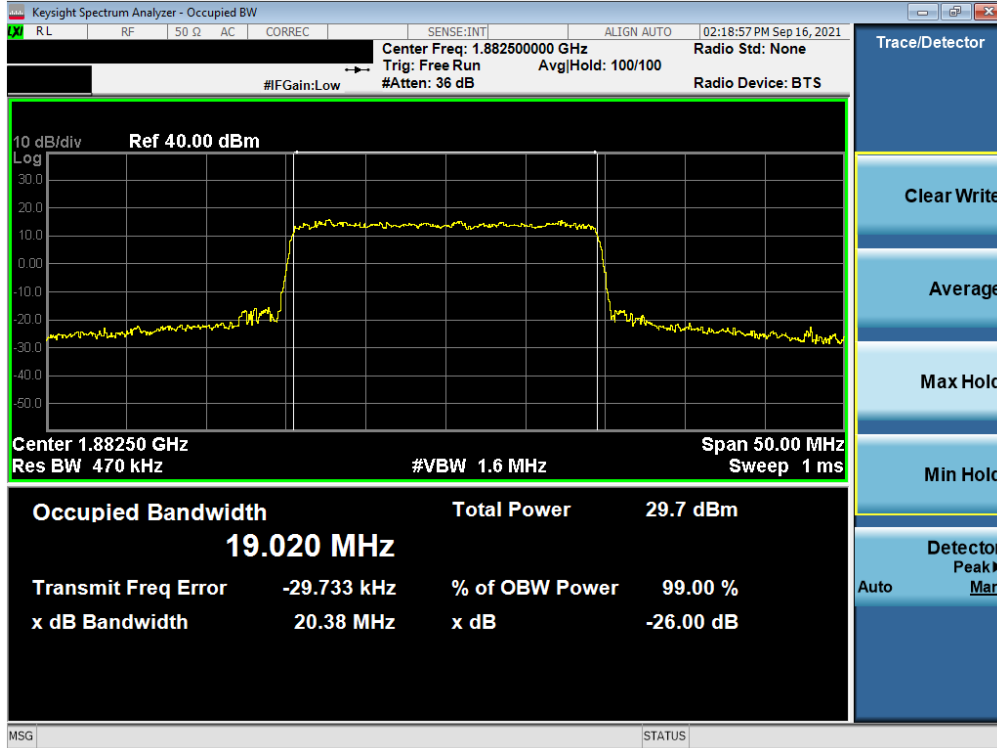


Plot 7-22. Occupied Bandwidth Plot (NR Band n25/2 - 25.0MHz CP-OFDM 16QAM - Full RB)

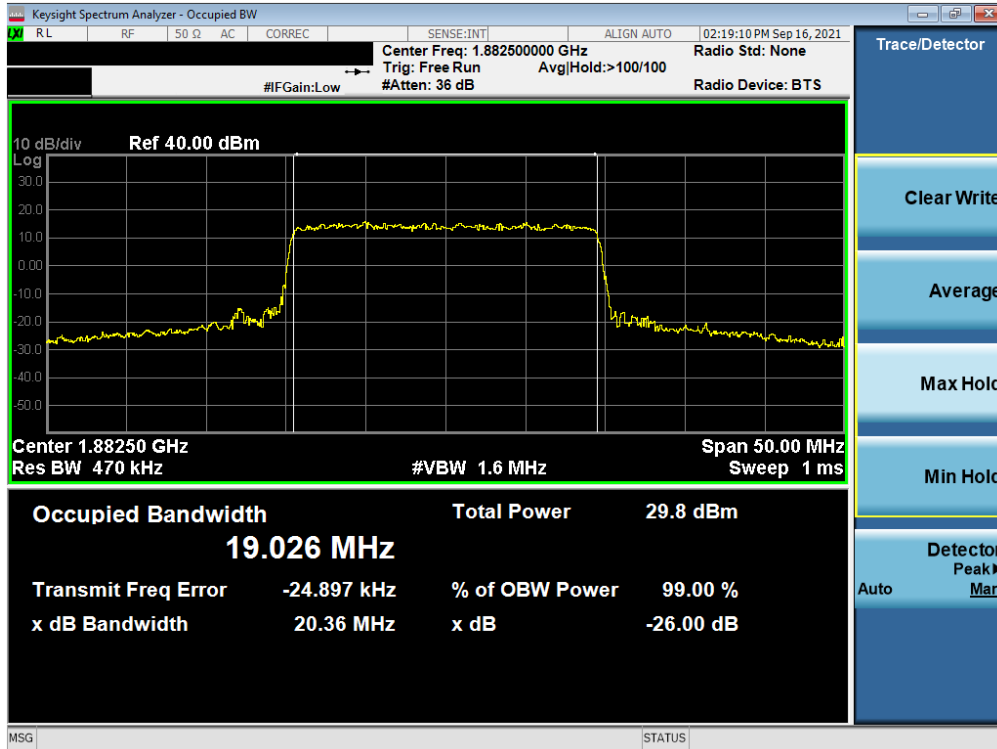


Plot 7-23. Occupied Bandwidth Plot (NR Band n25/2 - 20.0MHz DFT-s-OFDM BPSK - Full RB)

FCC ID: A3LSMS908U	PCTEST Proud to be part of element	PART 24 MEASUREMENT REPORT	SAMSUNG	Approved by: Technical Manager
Test Report S/N: 1M2109090102-03-R1.A3L	Test Dates: 9/14/2021 - 11/16/2021	EUT Type: Portable Handset		Page 28 of 146

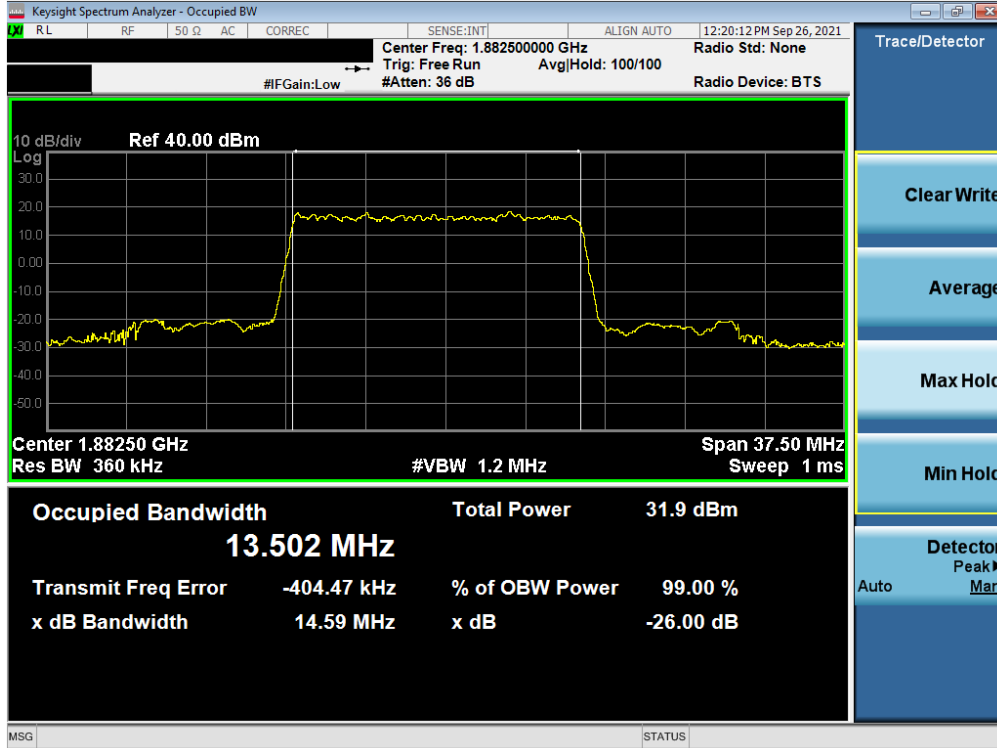


Plot 7-24. Occupied Bandwidth Plot (NR Band n25/2 - 20.0MHz CP-OFDM QPSK - Full RB)



Plot 7-25. Occupied Bandwidth Plot (NR Band n25/2 - 20.0MHz CP-OFDM 16QAM - Full RB)

FCC ID: A3LSMS908U	PCTEST Proud to be part of element	PART 24 MEASUREMENT REPORT	SAMSUNG	Approved by: Technical Manager
Test Report S/N: 1M2109090102-03-R1.A3L	Test Dates: 9/14/2021 - 11/16/2021	EUT Type: Portable Handset		Page 29 of 146

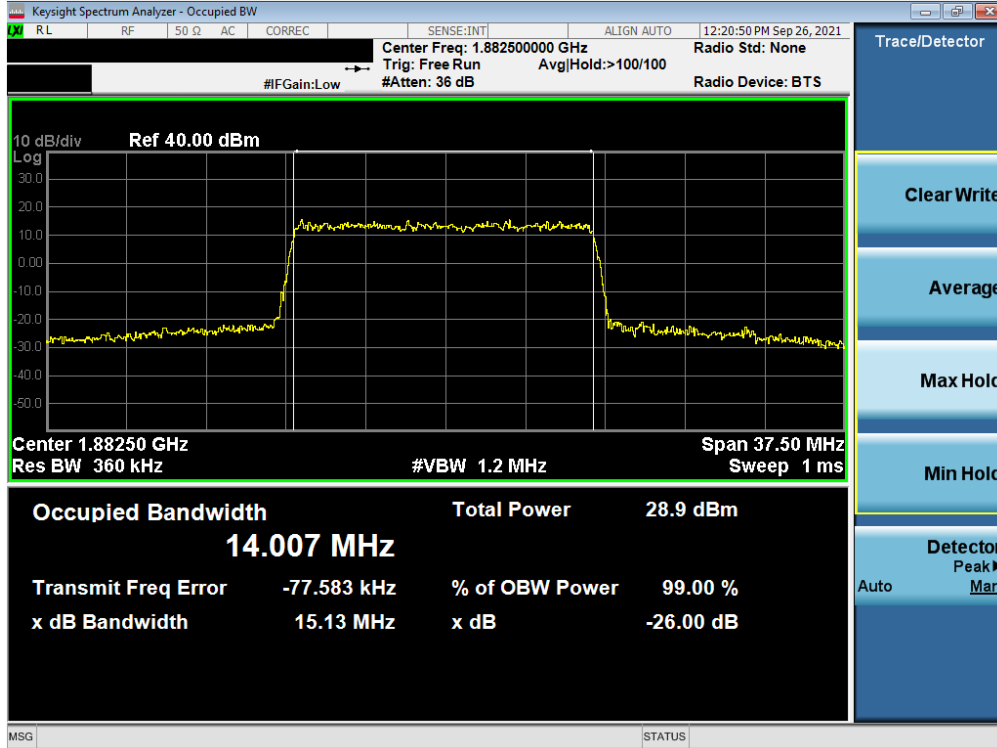


Plot 7-26. Occupied Bandwidth Plot (NR Band n25/2 - 15.0MHz DFT-s-OFDM BPSK - Full RB)

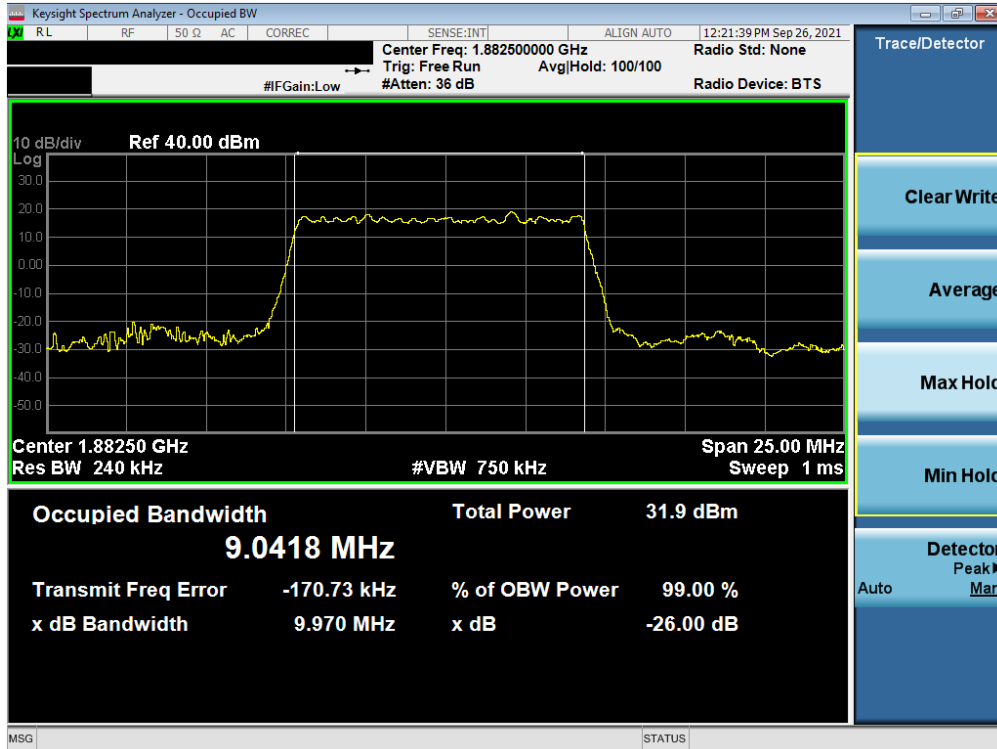


Plot 7-27. Occupied Bandwidth Plot (NR Band n25/2 - 15.0MHz CP-OFDM QPSK - Full RB)

FCC ID: A3LSMS908U	PCTEST Proud to be part of element	PART 24 MEASUREMENT REPORT	SAMSUNG	Approved by: Technical Manager
Test Report S/N: 1M2109090102-03-R1.A3L	Test Dates: 9/14/2021 - 11/16/2021	EUT Type: Portable Handset		Page 30 of 146

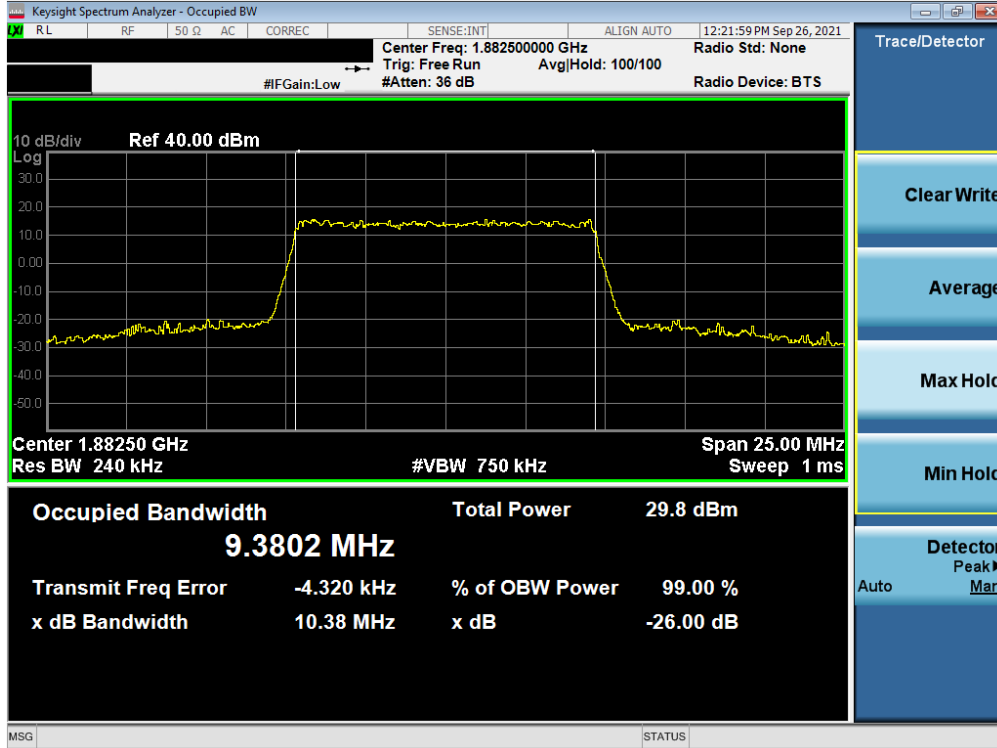


Plot 7-28. Occupied Bandwidth Plot (NR Band n25/2 - 15.0MHz CP-OFDM 16QAM - Full RB)

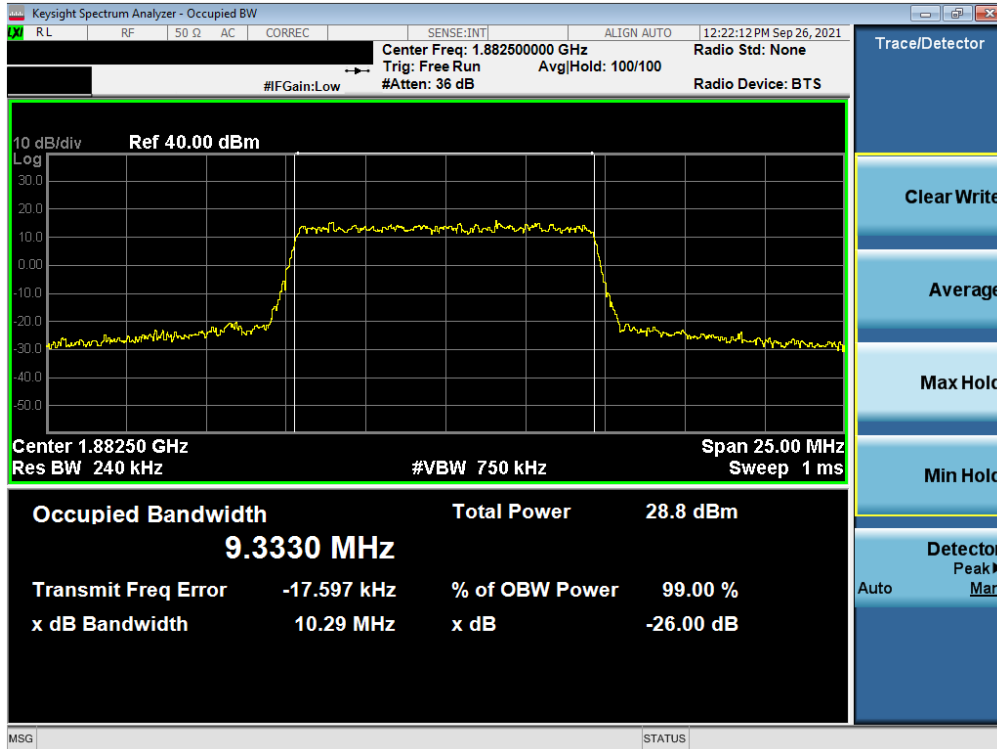


Plot 7-29. Occupied Bandwidth Plot (NR Band n25/2 - 10.0MHz DFT-s-OFDM BPSK - Full RB)

FCC ID: A3LSMS908U	PCTEST Proud to be part of element	PART 24 MEASUREMENT REPORT	SAMSUNG	Approved by: Technical Manager
Test Report S/N: 1M2109090102-03-R1.A3L	Test Dates: 9/14/2021 - 11/16/2021	EUT Type: Portable Handset		Page 31 of 146

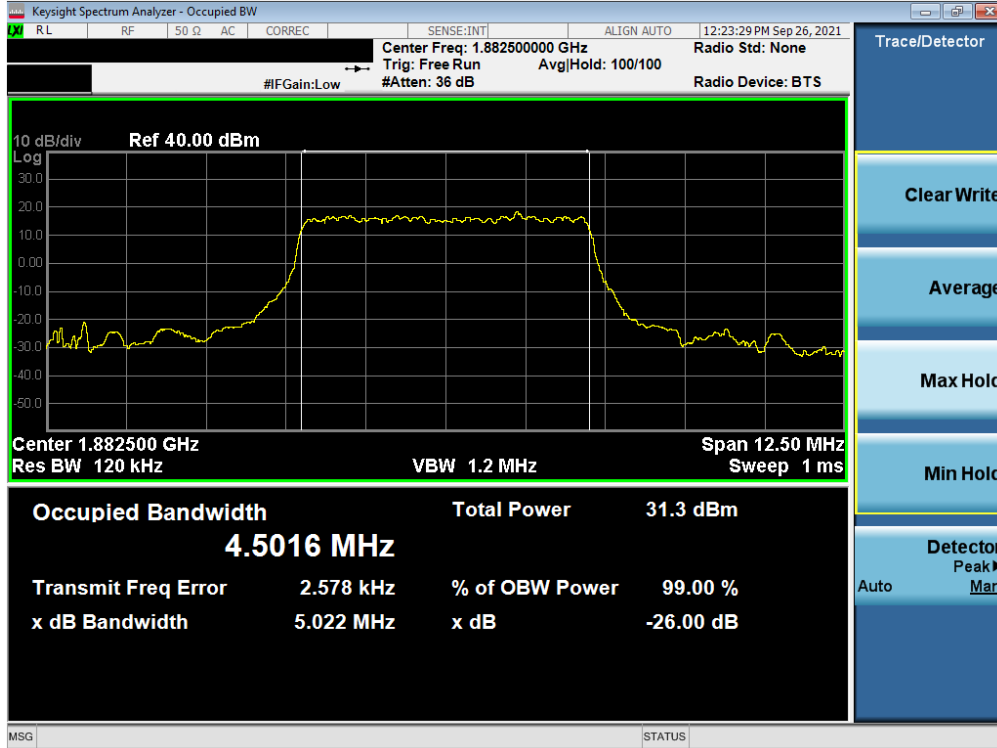


Plot 7-30. Occupied Bandwidth Plot (NR Band n25/2 - 10.0MHz CP-OFDM QPSK - Full RB)

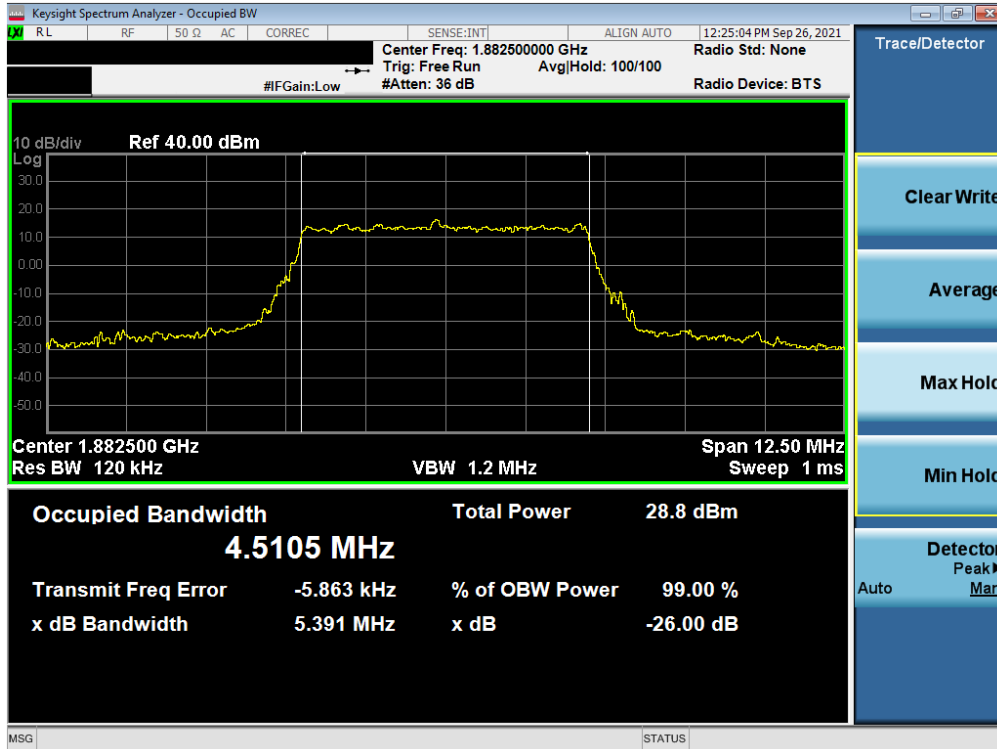


Plot 7-31. Occupied Bandwidth Plot (NR Band n25/2 - 10.0MHz CP-OFDM 16QAM - Full RB)

FCC ID: A3LSMS908U	PCTEST Proud to be part of element	PART 24 MEASUREMENT REPORT	SAMSUNG	Approved by: Technical Manager
Test Report S/N: 1M2109090102-03-R1.A3L	Test Dates: 9/14/2021 - 11/16/2021	EUT Type: Portable Handset		Page 32 of 146

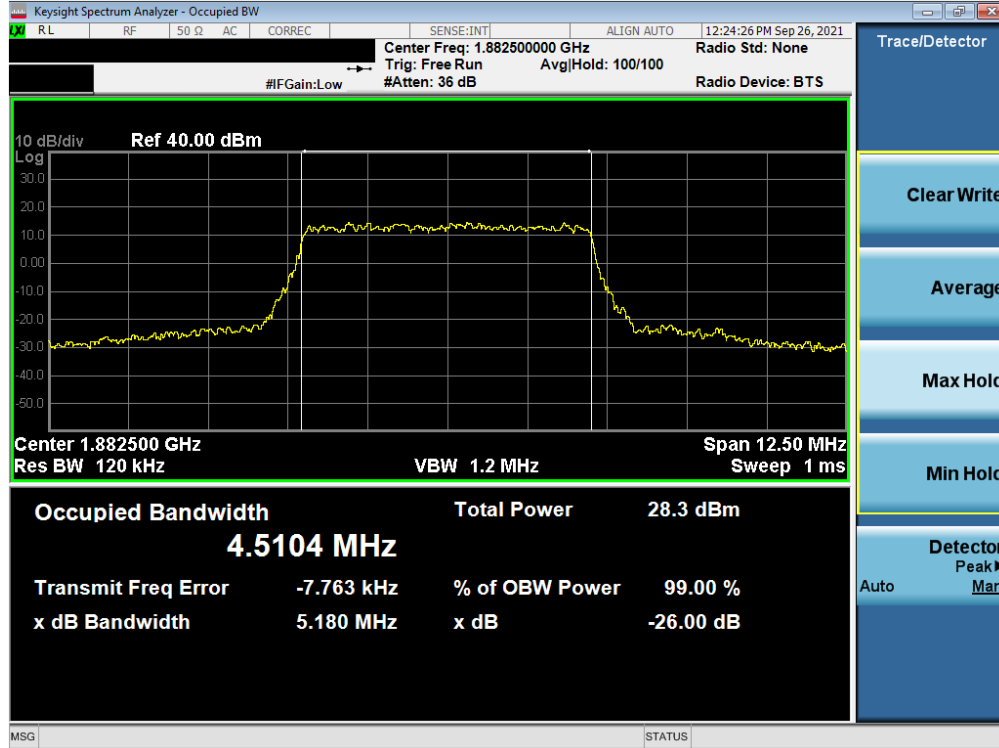


Plot 7-32. Occupied Bandwidth Plot (NR Band n25/2 - 5.0MHz DFT-s-OFDM BPSK - Full RB)



Plot 7-33. Occupied Bandwidth Plot (NR Band n25/2 - 5.0MHz CP-OFDM QPSK - Full RB)

FCC ID: A3LSMS908U	PCTEST Proud to be part of element	PART 24 MEASUREMENT REPORT	SAMSUNG	Approved by: Technical Manager
Test Report S/N: 1M2109090102-03-R1.A3L	Test Dates: 9/14/2021 - 11/16/2021	EUT Type: Portable Handset		Page 33 of 146



Plot 7-34. Occupied Bandwidth Plot (NR Band n25/2 - 5.0MHz CP-OFDM 16QAM - Full RB)

FCC ID: A3LSMS908U	PCTEST Proud to be part of element	PART 24 MEASUREMENT REPORT	SAMSUNG	Approved by: Technical Manager
Test Report S/N: 1M2109090102-03-R1.A3L	Test Dates: 9/14/2021 - 11/16/2021	EUT Type: Portable Handset		Page 34 of 146

GSM/GPRS PCS



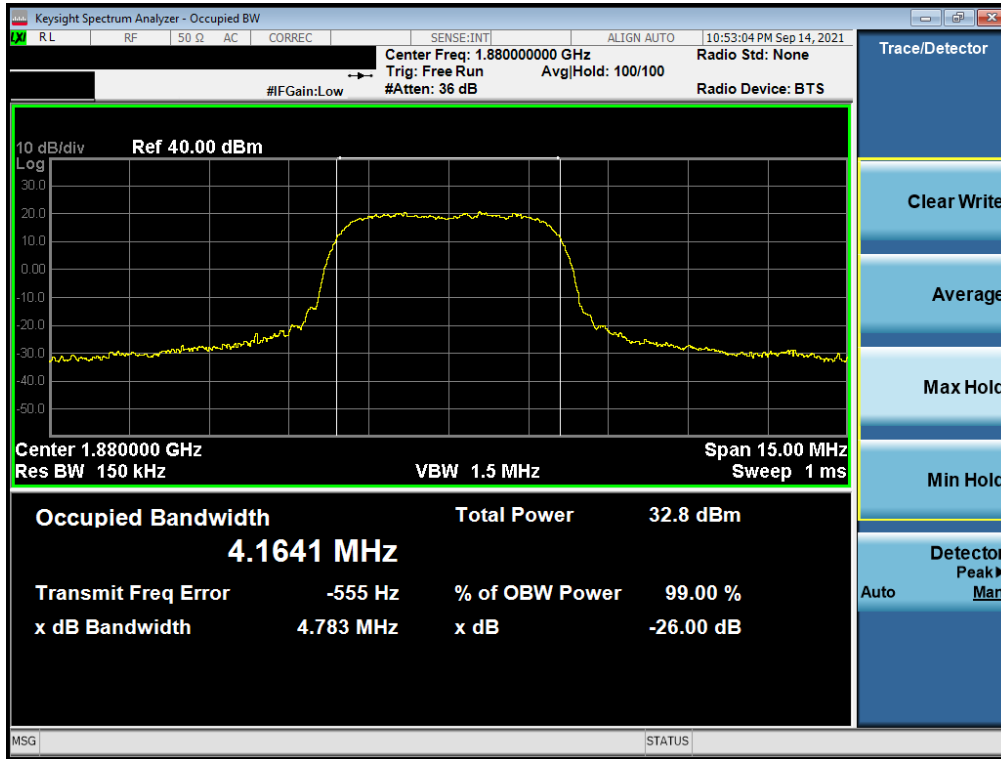
Plot 7-35. Occupied Bandwidth Plot (GPRS, Ch. 661)



Plot 7-36. Occupied Bandwidth Plot (EDGE, Ch. 661)

FCC ID: A3LSMS908U	PCTEST Proud to be part of element	PART 24 MEASUREMENT REPORT	SAMSUNG	Approved by: Technical Manager
Test Report S/N: 1M2109090102-03-R1.A3L	Test Dates: 9/14/2021 - 11/16/2021	EUT Type: Portable Handset		Page 35 of 146

WCDMA PCS



Plot 7-37. Occupied Bandwidth Plot (WCDMA, Ch. 9400)

FCC ID: A3LSMS908U	PCTEST Proud to be part of element	PART 24 MEASUREMENT REPORT	SAMSUNG	Approved by: Technical Manager
Test Report S/N: 1M2109090102-03-R1.A3L	Test Dates: 9/14/2021 - 11/16/2021	EUT Type: Portable Handset		Page 36 of 146

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.

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 20GHz (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.

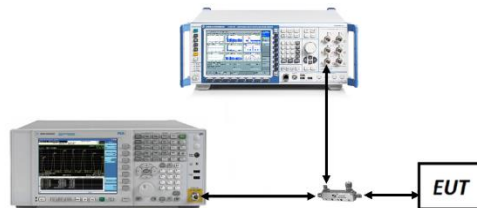




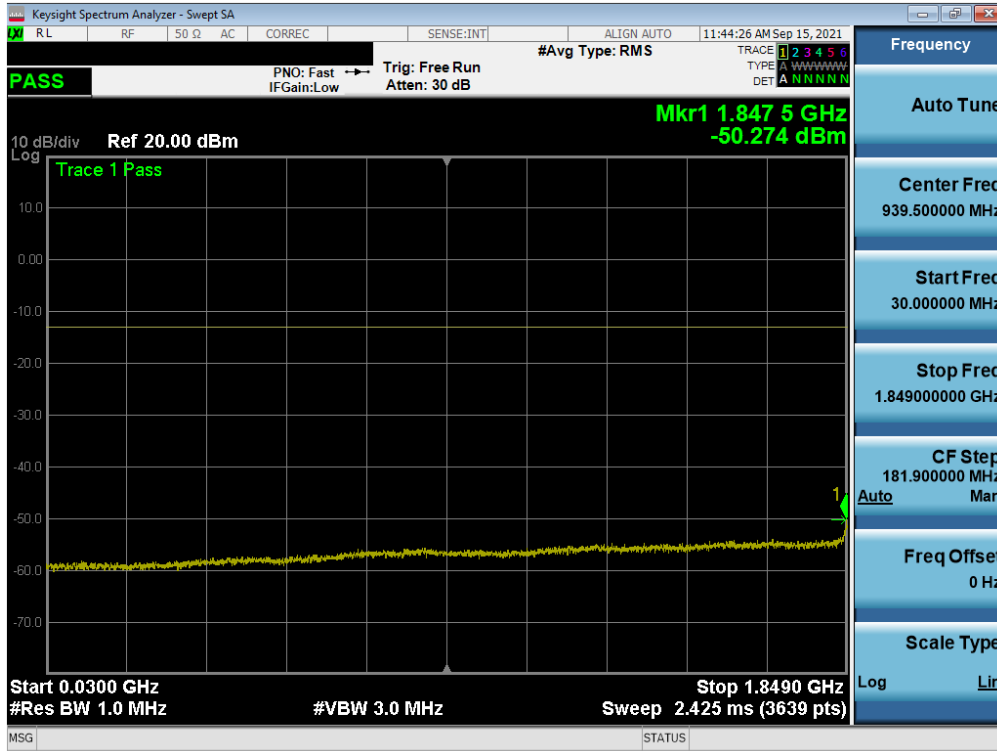
Figure 7-3. Test Instrument & Measurement Setup

Test Notes

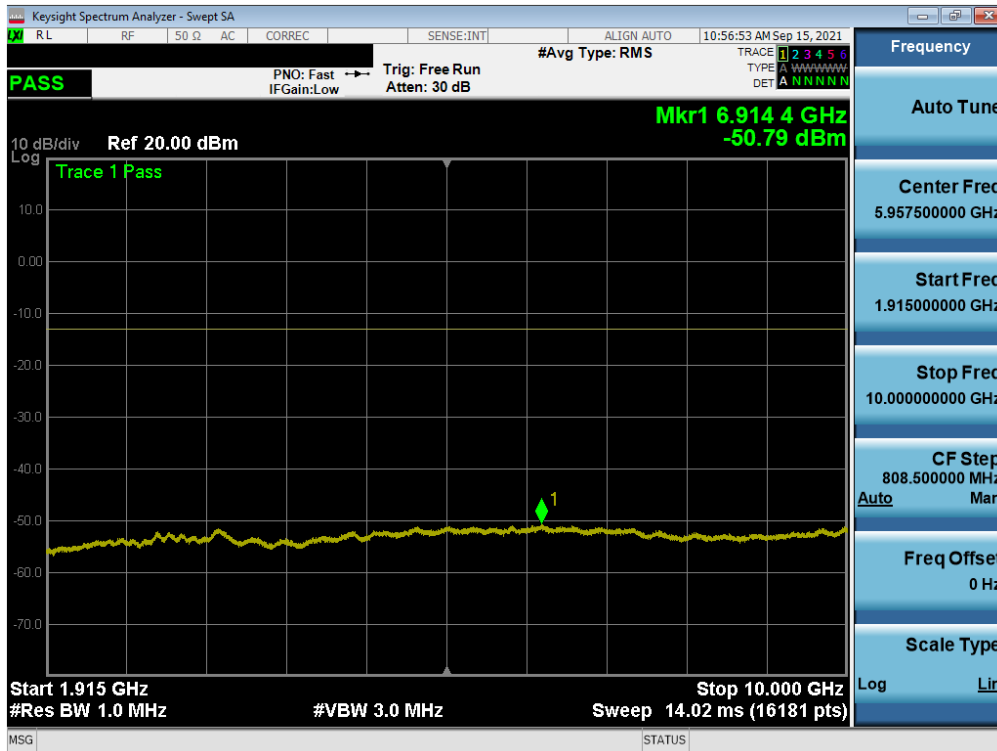
1. Per Part 24 and RSS-133, compliance with the applicable limits is based on the use of measurement instrumentation employing a resolution bandwidth 100 kHz or greater for measurements below 1GHz. However, in the 1 MHz bands immediately outside and adjacent to the frequency block a resolution bandwidth of at least one percent of the emission bandwidth of the fundamental emission of the transmitter may be employed. The emission bandwidth is defined as the width of the signal between two points, one below the carrier center frequency and one above the carrier center frequency, outside of which all emission are attenuated at least 26 dB below the transmitter power.
2. For NR operation, all subcarrier spacings (SCS) and transmission schemes (e.g. CP-OFDM and DFT-s-OFDM) were investigated to determine the worst case configuration. All modes of operation were investigated and the worst case configuration results are reported in this section.

FCC ID: A3LSMS908U	 PCTEST Proud to be part of element	PART 24 MEASUREMENT REPORT		Approved by: Technical Manager
Test Report S/N: 1M2109090102-03-R1.A3L	Test Dates: 9/14/2021 - 11/16/2021	EUT Type: Portable Handset		Page 37 of 146

LTE Band 25/2



Plot 7-38. Conducted Spurious Plot (LTE Band 25/2 - 20MHz QPSK - 1RB - Low Channel)

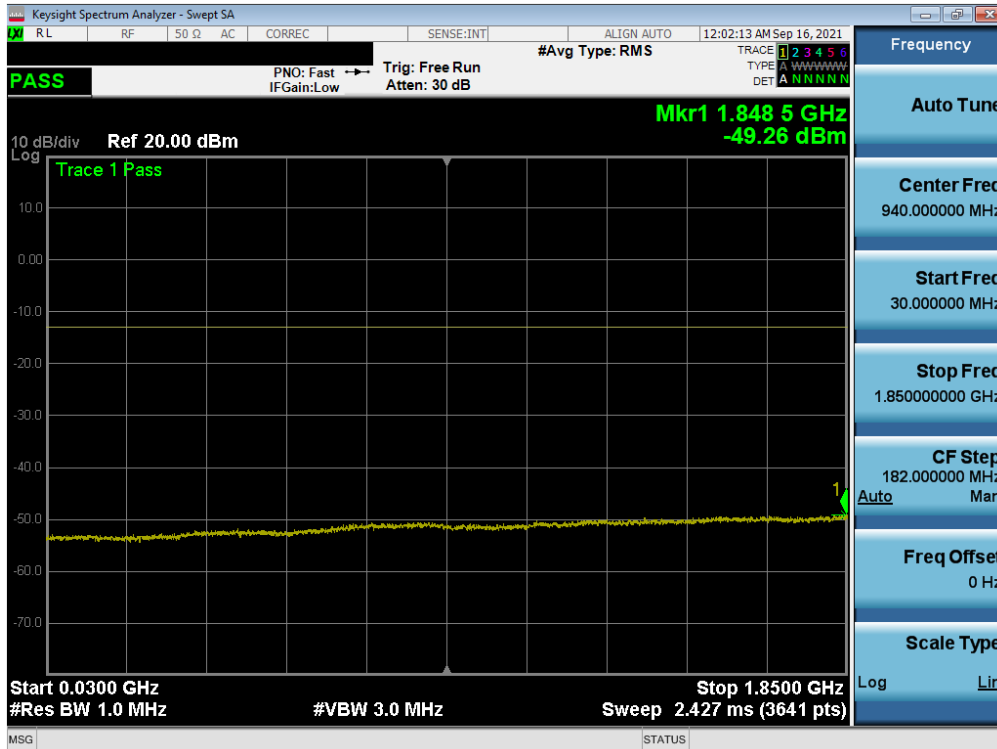


Plot 7-39. Conducted Spurious Plot (LTE Band 25/2 - 20MHz QPSK - 1RB - Low Channel)

FCC ID: A3LSMS908U	PCTEST Proud to be part of element	PART 24 MEASUREMENT REPORT		Approved by: Technical Manager
Test Report S/N: 1M2109090102-03-R1.A3L	Test Dates: 9/14/2021 - 11/16/2021	EUT Type: Portable Handset		Page 38 of 146

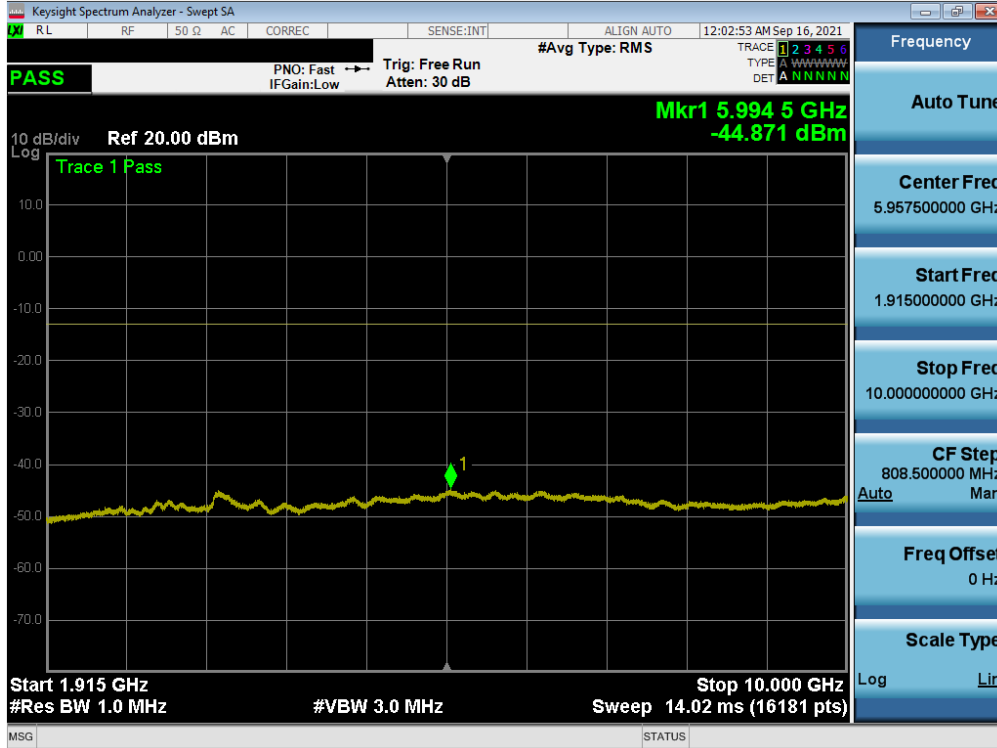


Plot 7-40. Conducted Spurious Plot (LTE Band 25/2 - 20MHz QPSK - 1RB - Low Channel)

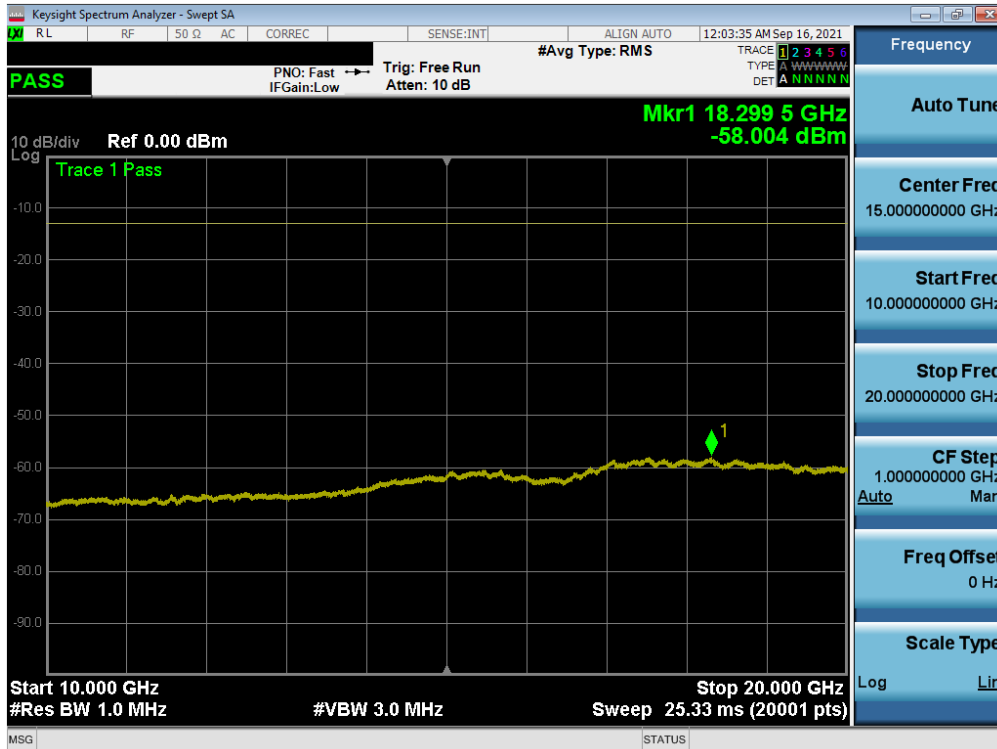


Plot 7-41. Conducted Spurious Plot (LTE Band 25/2 - 20MHz QPSK - 1RB - Mid Channel)

FCC ID: A3LSMS908U	PCTEST Proud to be part of element	PART 24 MEASUREMENT REPORT		Approved by: Technical Manager
Test Report S/N: 1M2109090102-03-R1.A3L	Test Dates: 9/14/2021 - 11/16/2021	EUT Type: Portable Handset		Page 39 of 146

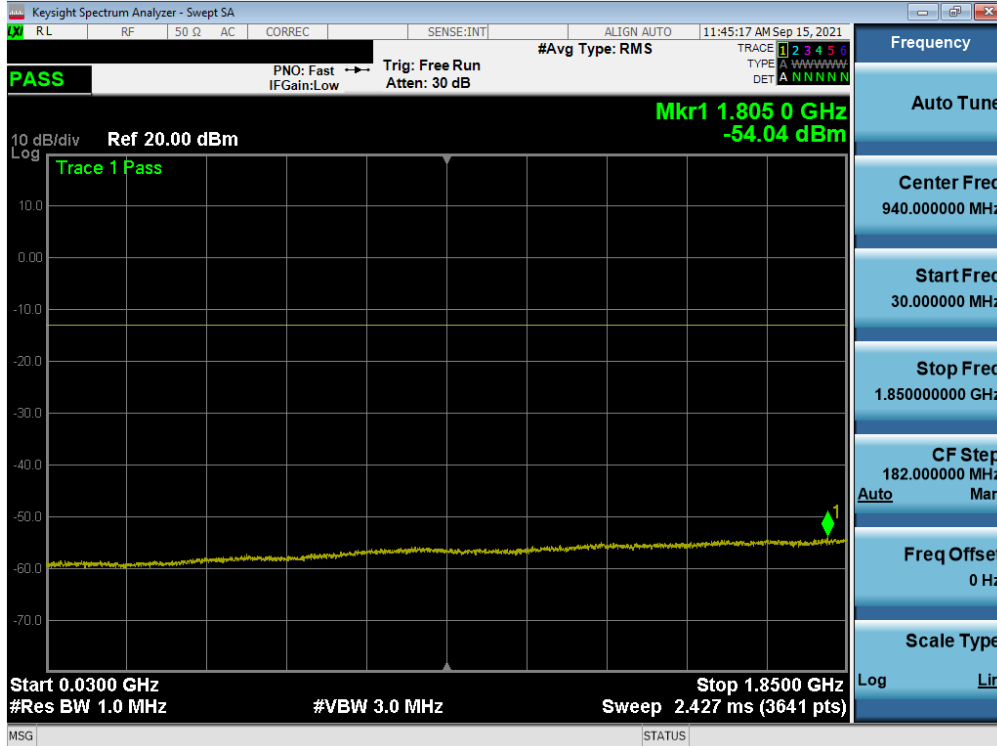


Plot 7-42. Conducted Spurious Plot (LTE Band 25/2 - 20MHz QPSK - 1RB - Mid Channel)

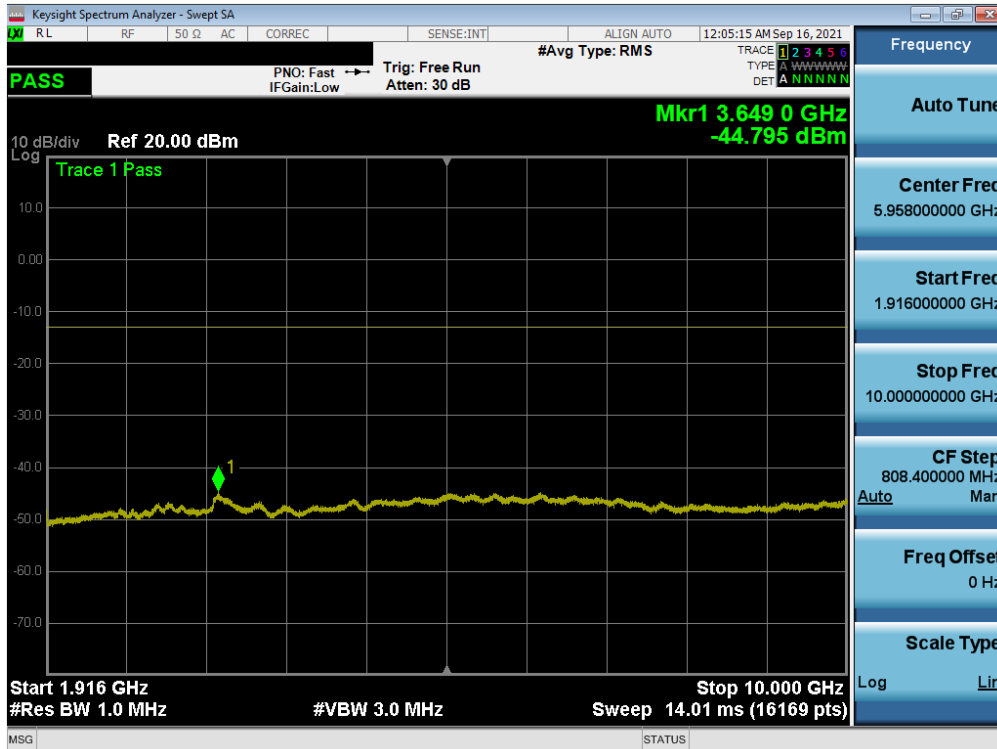


Plot 7-43. Conducted Spurious Plot (LTE Band 25/2 - 20MHz QPSK - 1RB - Mid Channel)

FCC ID: A3LSMS908U	PCTEST Proud to be part of element	PART 24 MEASUREMENT REPORT	SAMSUNG	Approved by: Technical Manager
Test Report S/N: 1M2109090102-03-R1.A3L	Test Dates: 9/14/2021 - 11/16/2021	EUT Type: Portable Handset		Page 40 of 146

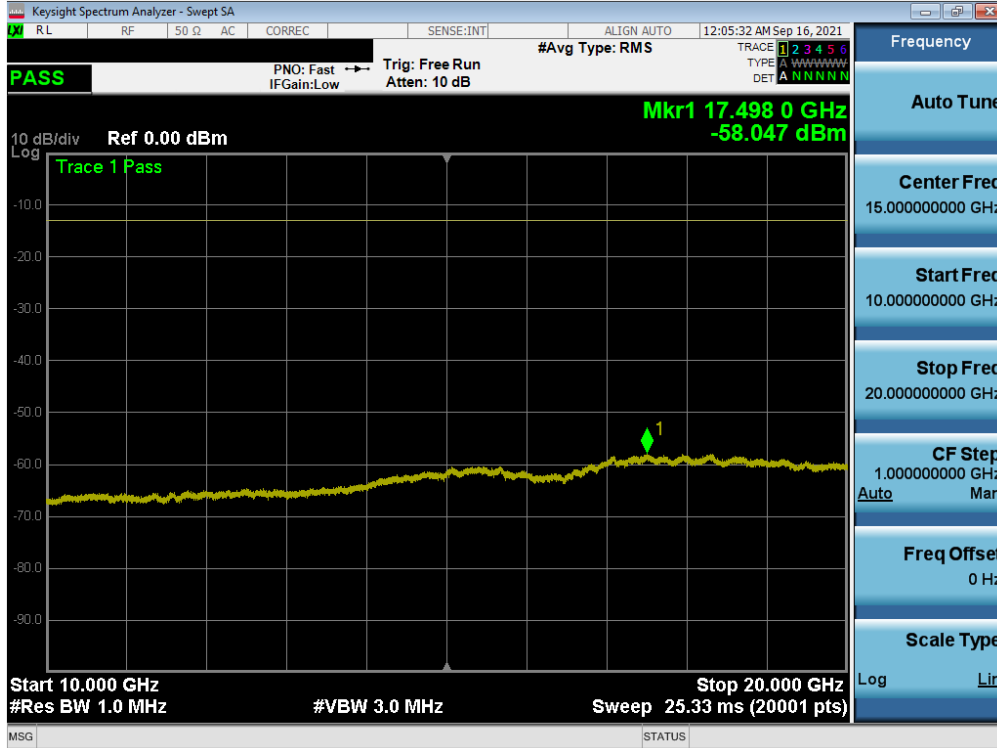


Plot 7-44. Conducted Spurious Plot (LTE Band 25/2 - 20MHz QPSK - 1RB - High Channel)



Plot 7-45. Conducted Spurious Plot (LTE Band 25/2 - 20MHz QPSK - 1RB - High Channel)

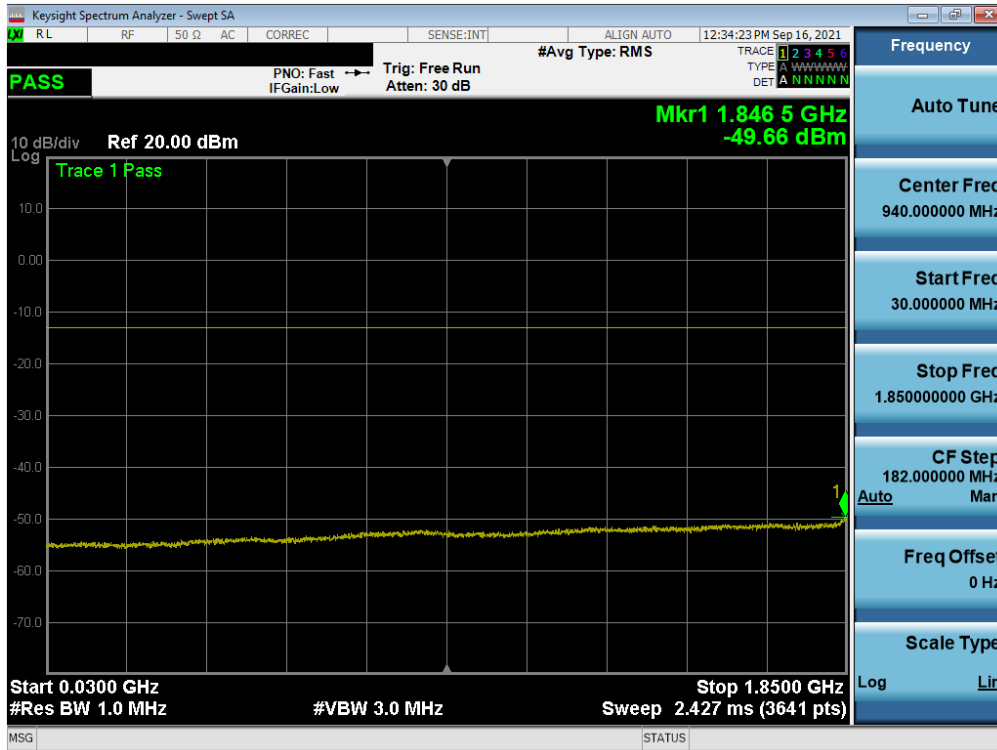
FCC ID: A3LSMS908U	PCTEST Proud to be part of element	PART 24 MEASUREMENT REPORT		Approved by: Technical Manager
Test Report S/N: 1M2109090102-03-R1.A3L	Test Dates: 9/14/2021 - 11/16/2021	EUT Type: Portable Handset		Page 41 of 146



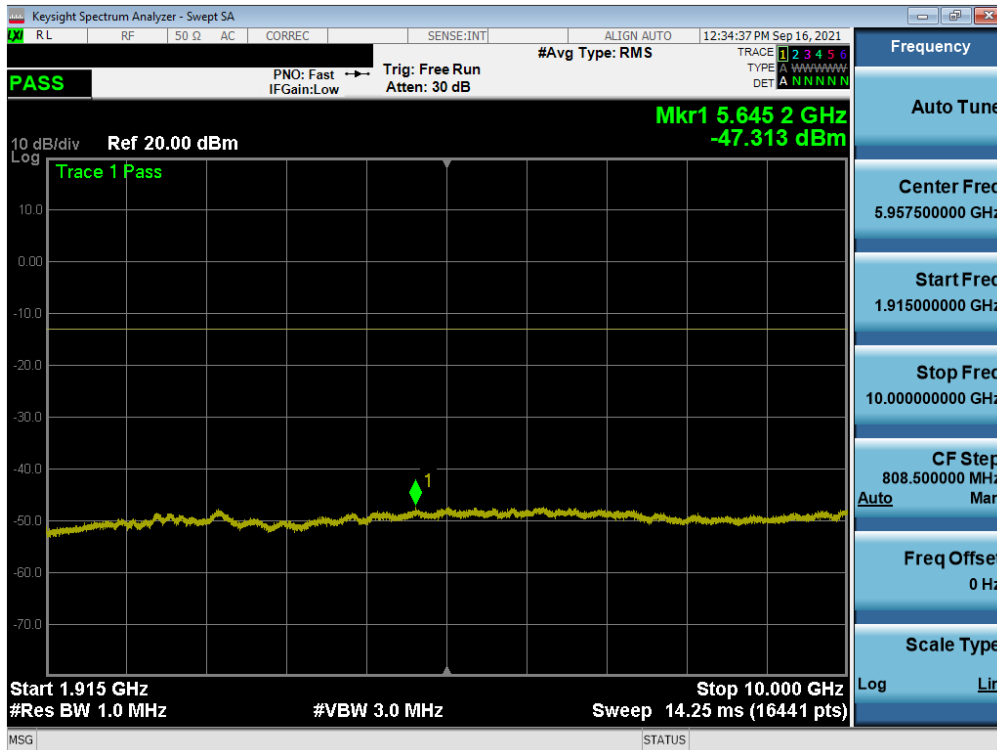
Plot 7-46. Conducted Spurious Plot (LTE Band 25/2 - 20MHz QPSK - 1RB - High Channel)

FCC ID: A3LSMS908U	PCTEST Proud to be part of element	PART 24 MEASUREMENT REPORT		Approved by: Technical Manager
Test Report S/N: 1M2109090102-03-R1.A3L	Test Dates: 9/14/2021 - 11/16/2021	EUT Type: Portable Handset		Page 42 of 146

NR Band n25/2

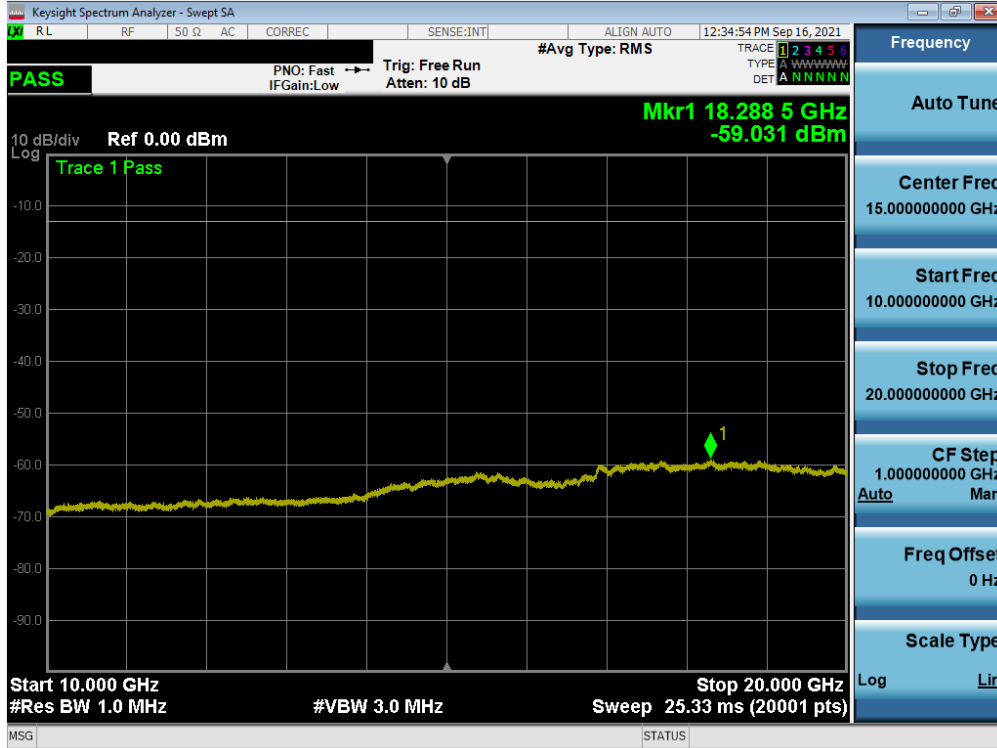


Plot 7-47. Conducted Spurious Plot (NR Band n25/2 -40.0MHz - 1RB - Low Channel)

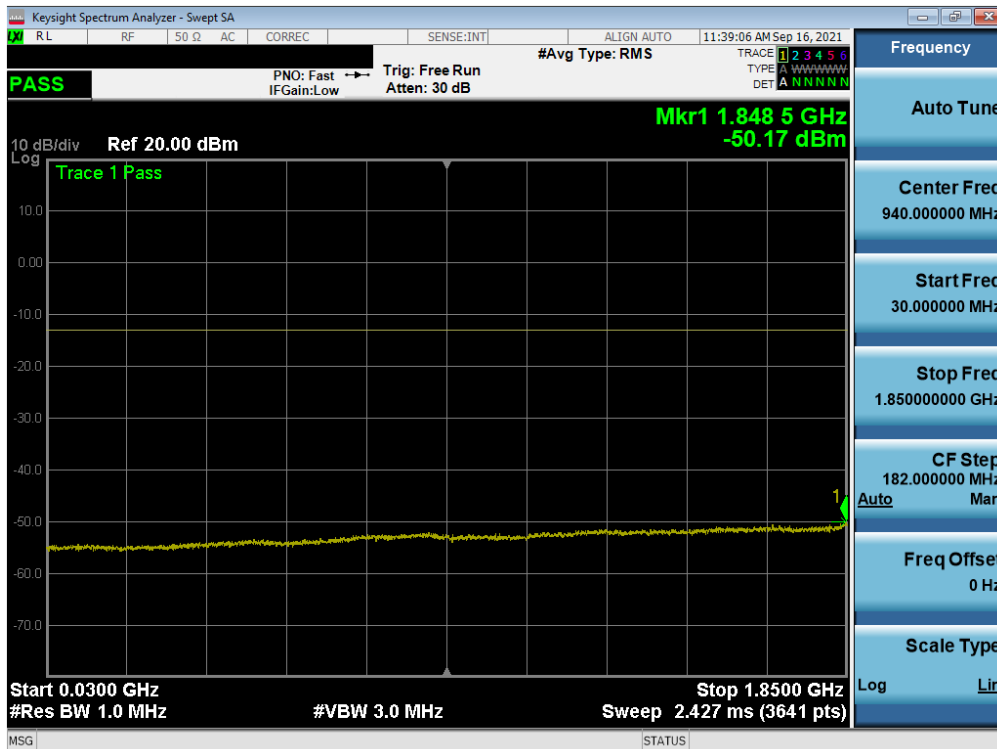


Plot 7-48. Conducted Spurious Plot (NR Band n25/2 - 40.0MHz - 1RB - Low Channel)

FCC ID: A3LSMS908U	PCTEST Proud to be part of element	PART 24 MEASUREMENT REPORT	SAMSUNG	Approved by: Technical Manager
Test Report S/N: 1M2109090102-03-R1.A3L	Test Dates: 9/14/2021 - 11/16/2021	EUT Type: Portable Handset		Page 43 of 146

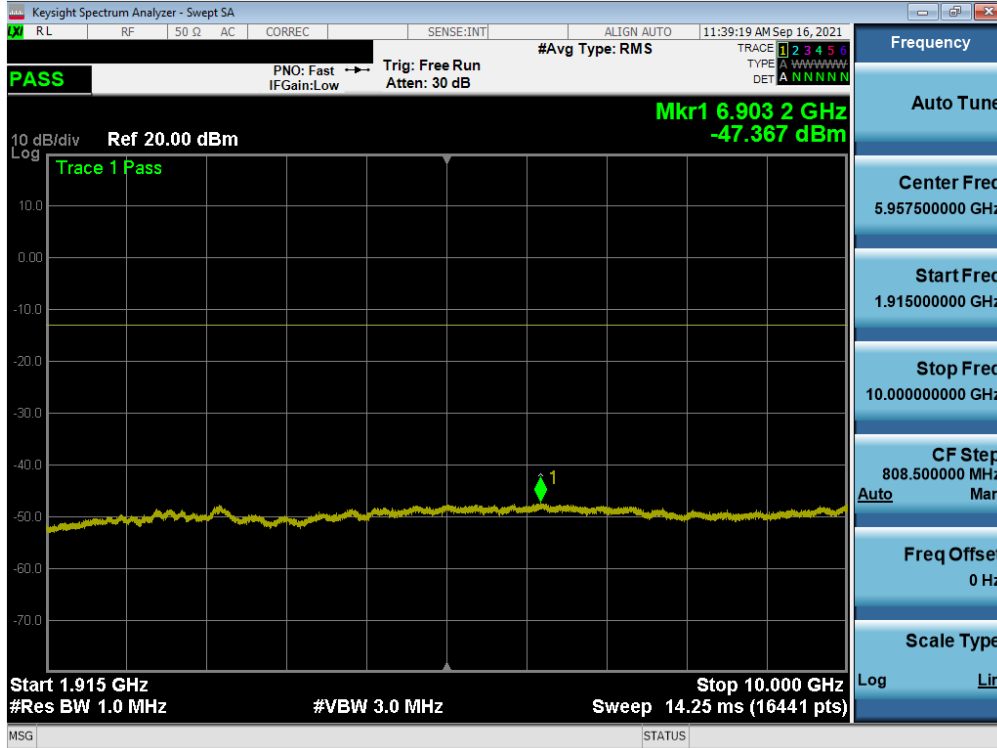


Plot 7-49. Conducted Spurious Plot (NR Band n25/2 - 40.0MHz - 1RB - Low Channel)

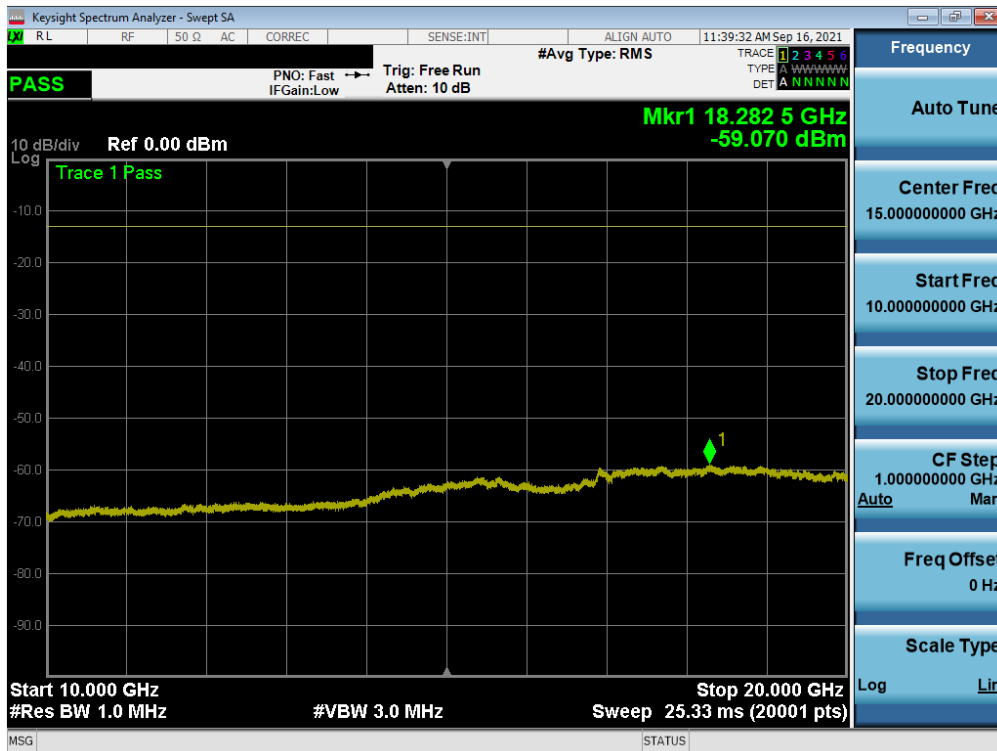


Plot 7-50. Conducted Spurious Plot (NR Band n25/2 - 40.0MHz - 1RB - Mid Channel)

FCC ID: A3LSMS908U	PCTEST Proud to be part of element	PART 24 MEASUREMENT REPORT		Approved by: Technical Manager
Test Report S/N: 1M2109090102-03-R1.A3L	Test Dates: 9/14/2021 - 11/16/2021	EUT Type: Portable Handset		Page 44 of 146

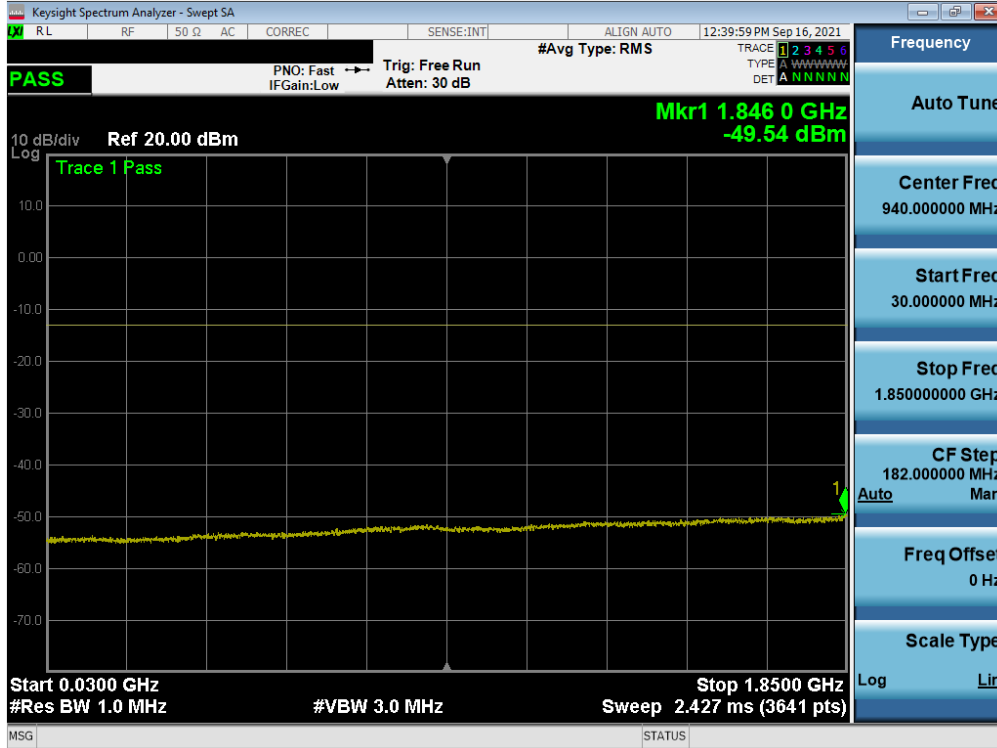


Plot 7-51. Conducted Spurious Plot (NR Band n25/2 - 40.0MHz - 1RB - Mid Channel)

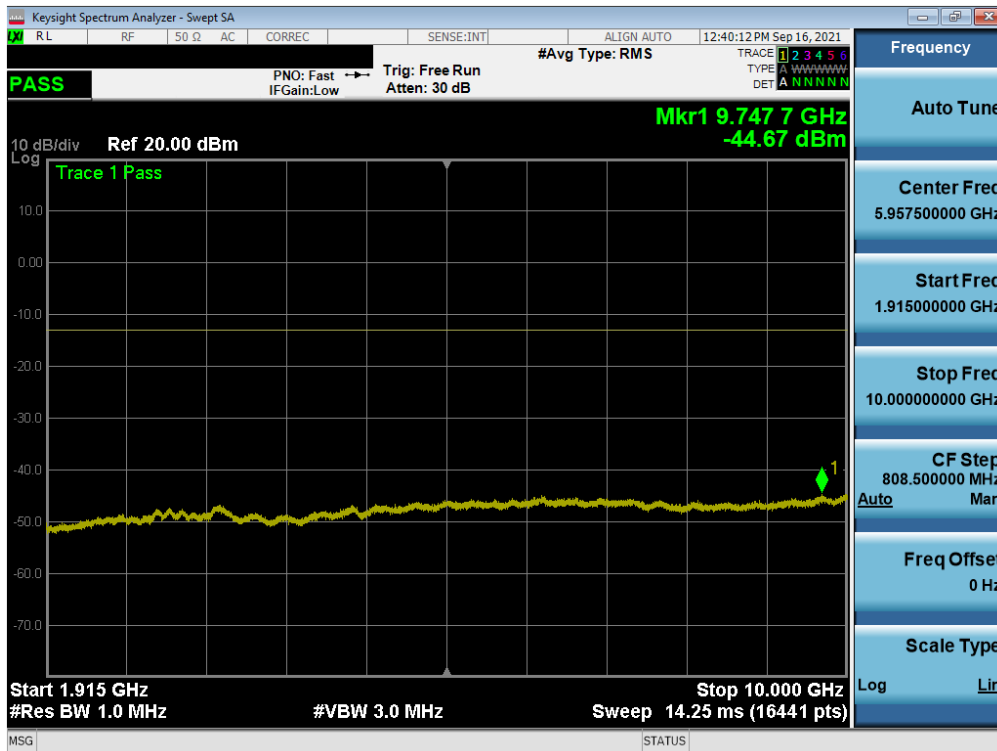


Plot 7-52. Conducted Spurious Plot (NR Band n25/2 - 40.0MHz - 1RB - Mid Channel)

FCC ID: A3LSMS908U	PCTEST Proud to be part of element	PART 24 MEASUREMENT REPORT		Approved by: Technical Manager
Test Report S/N: 1M2109090102-03-R1.A3L	Test Dates: 9/14/2021 - 11/16/2021	EUT Type: Portable Handset		Page 45 of 146

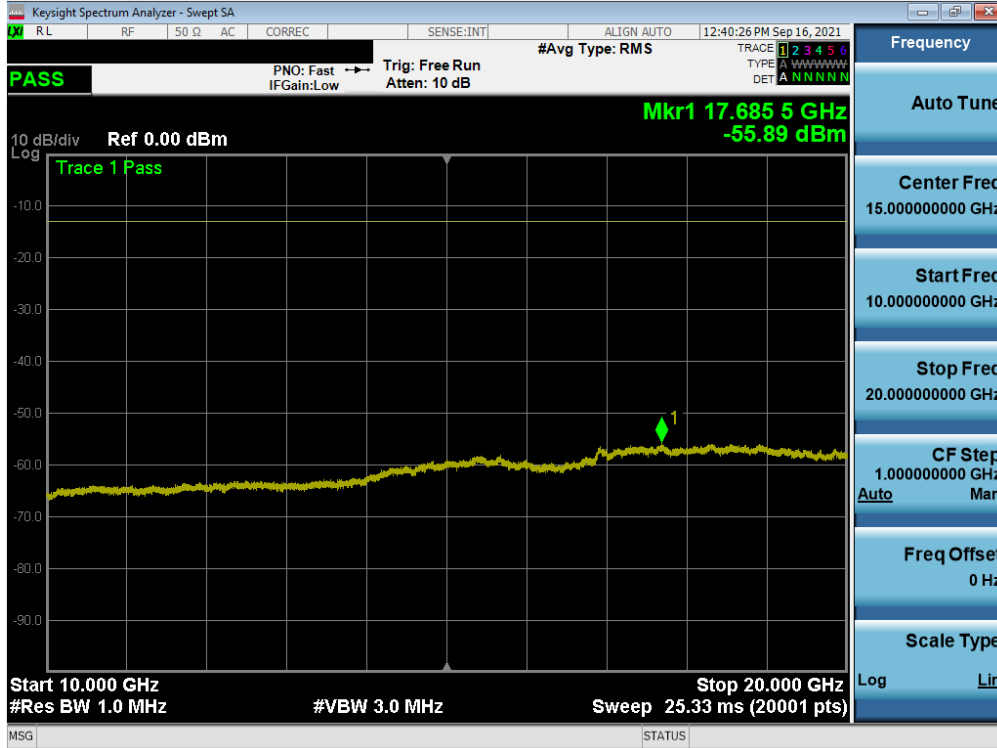


Plot 7-53. Conducted Spurious Plot (NR Band n25/2 - 40.0MHz - 1RB - High Channel)



Plot 7-54. Conducted Spurious Plot (NR Band n25/2 - 40.0MHz - 1RB - High Channel)

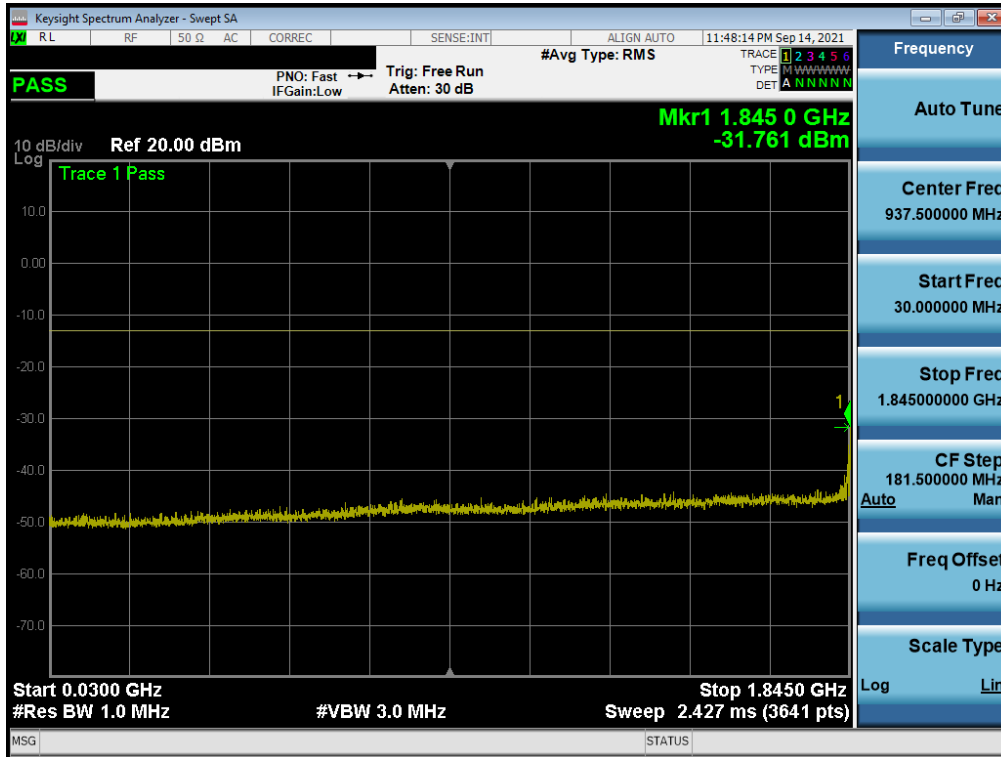
FCC ID: A3LSMS908U	PCTEST Proud to be part of element	PART 24 MEASUREMENT REPORT	SAMSUNG	Approved by: Technical Manager
Test Report S/N: 1M2109090102-03-R1.A3L	Test Dates: 9/14/2021 - 11/16/2021	EUT Type: Portable Handset		Page 46 of 146



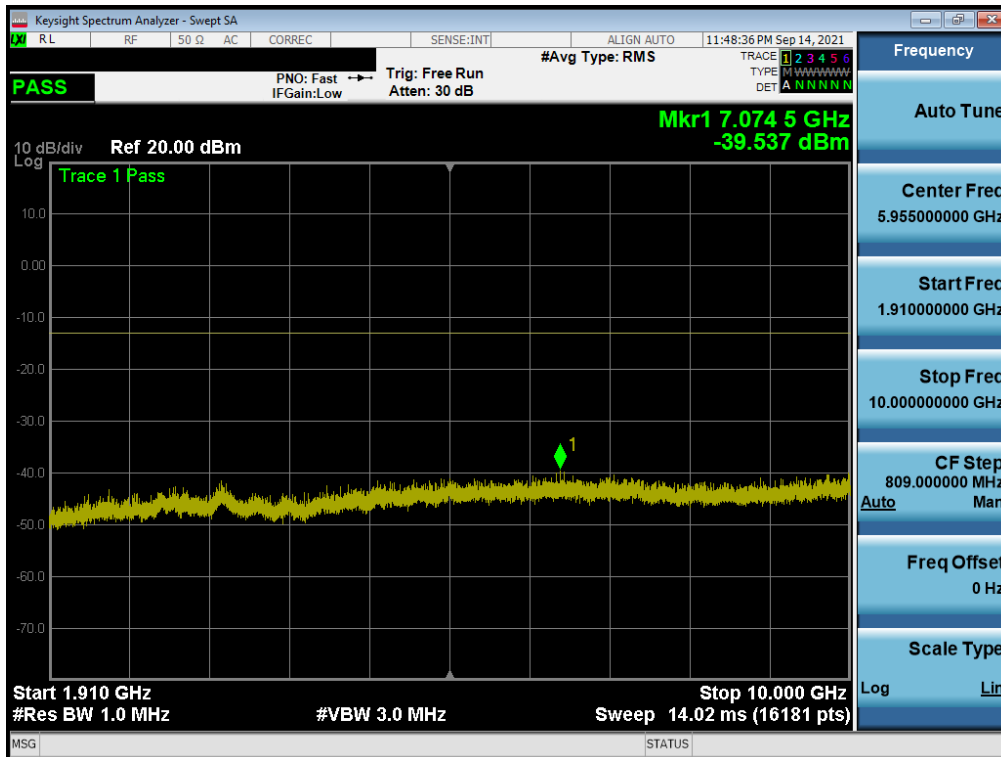
Plot 7-55. Conducted Spurious Plot (NR Band n25/2 - 40.0MHz - 1RB - High Channel)

FCC ID: A3LSMS908U	PCTEST Proud to be part of element	PART 24 MEASUREMENT REPORT		Approved by: Technical Manager
Test Report S/N: 1M2109090102-03-R1.A3L	Test Dates: 9/14/2021 - 11/16/2021	EUT Type: Portable Handset		Page 47 of 146

GSM/GPRS PCS

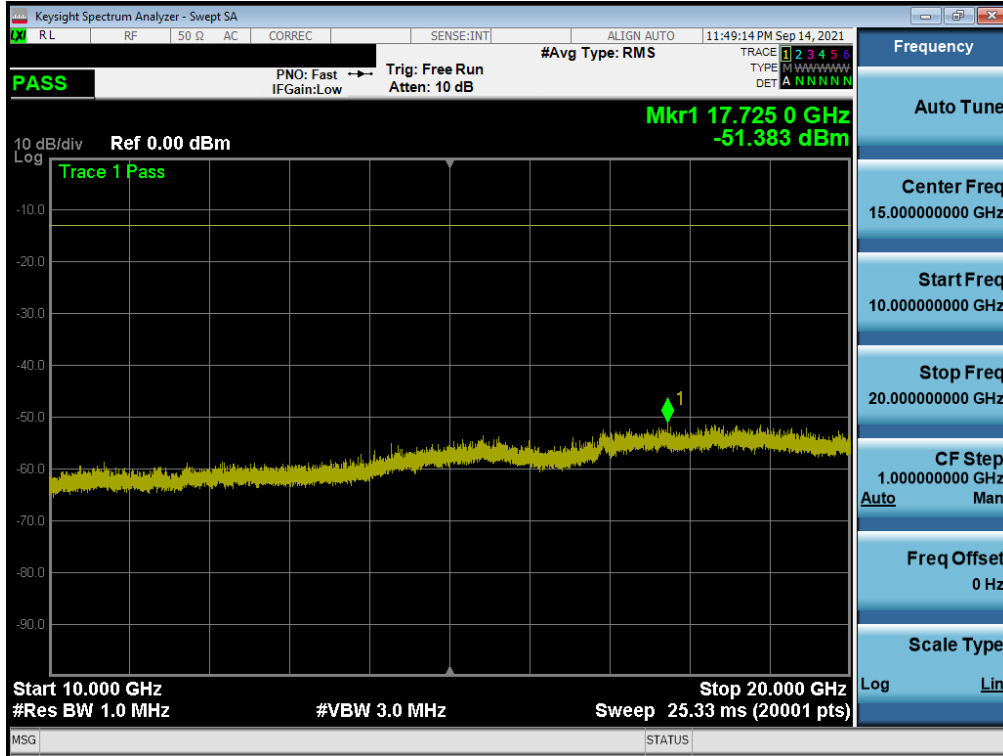


Plot 7-56. Conducted Spurious Plot (GPRS Ch. 512)

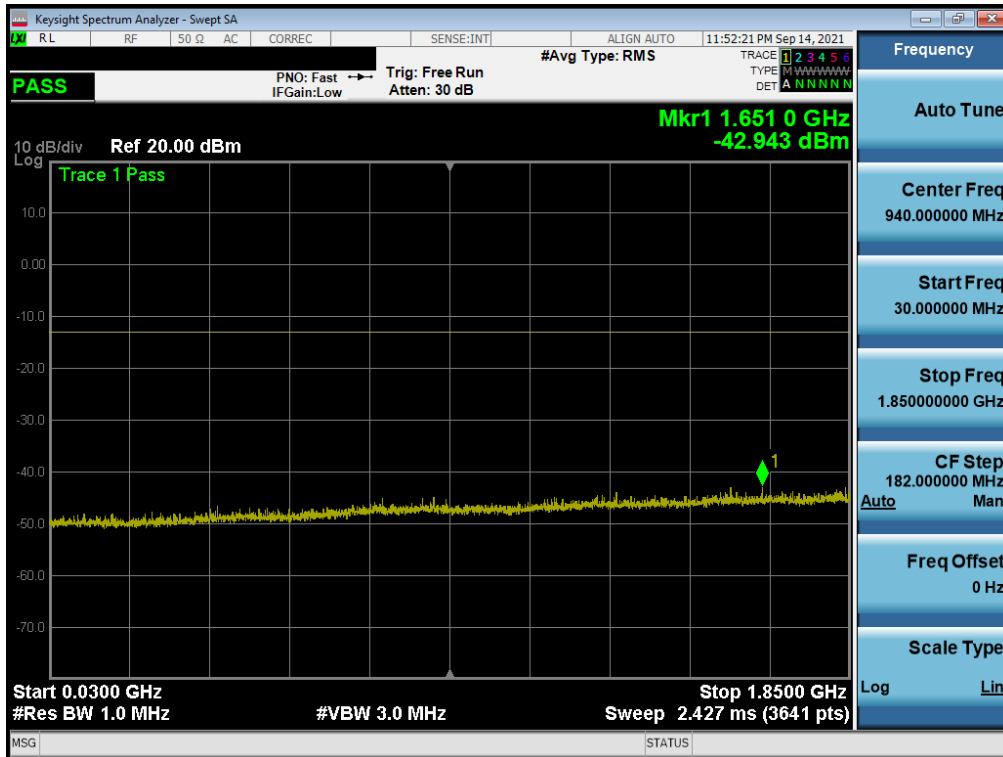


Plot 7-57. Conducted Spurious Plot (GPRS Ch. 512)

FCC ID: A3LSMS908U	PCTEST Proud to be part of element	PART 24 MEASUREMENT REPORT	SAMSUNG	Approved by: Technical Manager
Test Report S/N: 1M2109090102-03-R1.A3L	Test Dates: 9/14/2021 - 11/16/2021	EUT Type: Portable Handset		Page 48 of 146

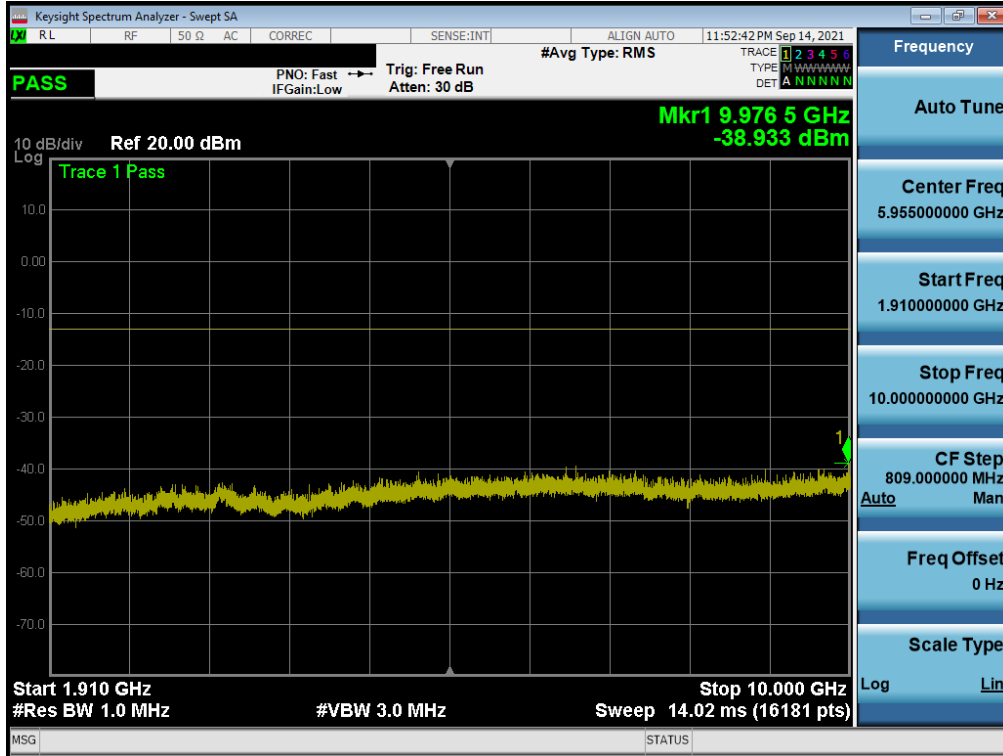


Plot 7-58. Conducted Spurious Plot (GPRS Ch. 512)

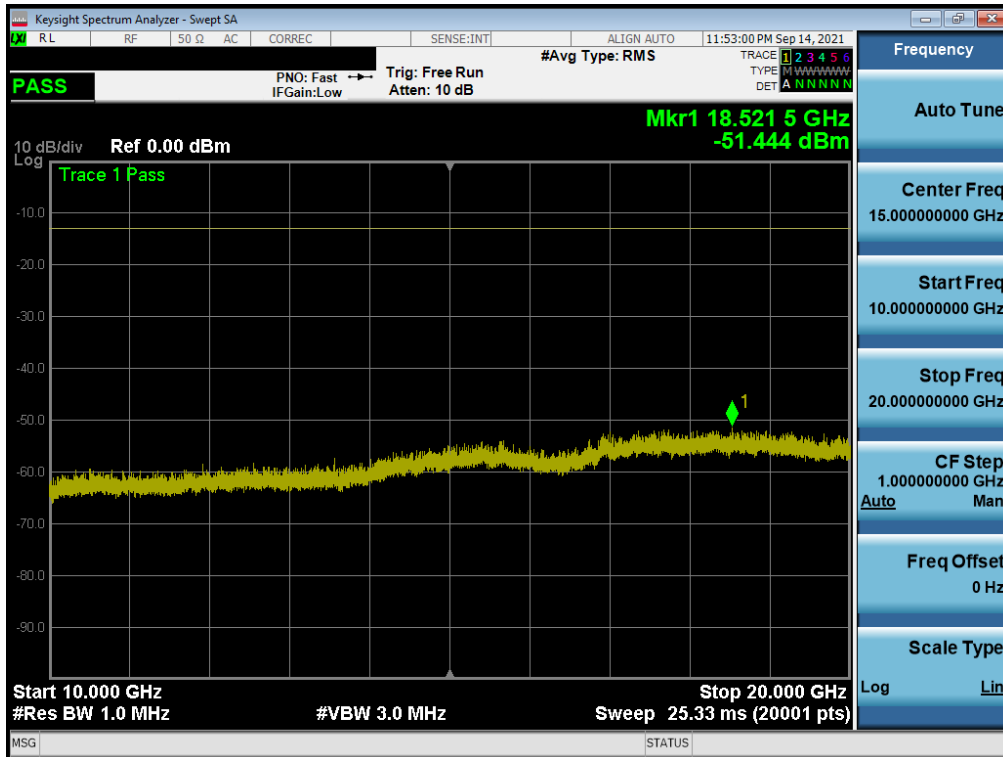


Plot 7-59. Conducted Spurious Plot (GPRS Ch. 661)

FCC ID: A3LSMS908U	PCTEST Proud to be part of element	PART 24 MEASUREMENT REPORT		Approved by: Technical Manager
Test Report S/N: 1M2109090102-03-R1.A3L	Test Dates: 9/14/2021 - 11/16/2021	EUT Type: Portable Handset		Page 49 of 146

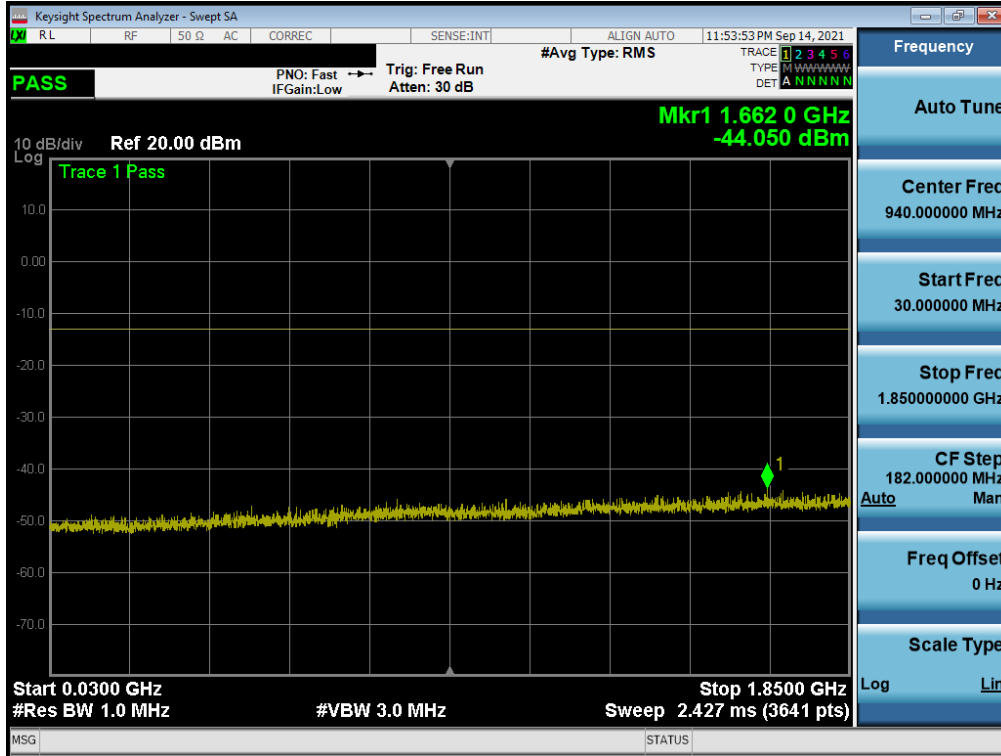


Plot 7-60. Conducted Spurious Plot (GPRS Ch. 661)

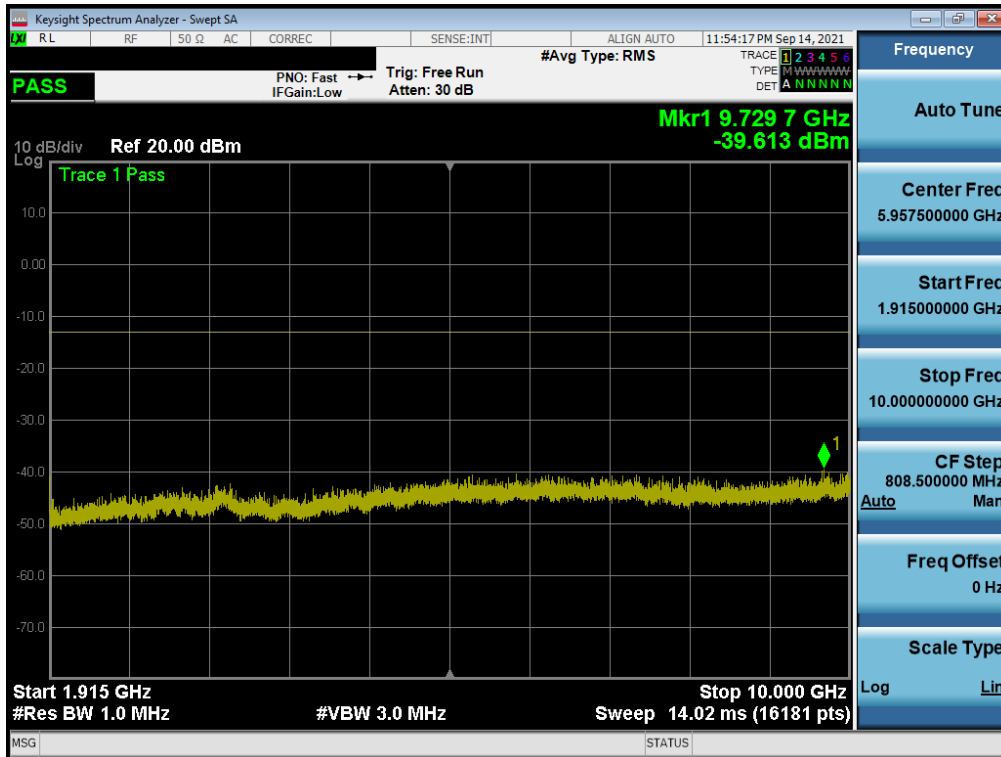


Plot 7-61. Conducted Spurious Plot (GPRS Ch. 661)

FCC ID: A3LSMS908U	PCTEST Proud to be part of element	PART 24 MEASUREMENT REPORT		Approved by: Technical Manager
Test Report S/N: 1M2109090102-03-R1.A3L	Test Dates: 9/14/2021 - 11/16/2021	EUT Type: Portable Handset		Page 50 of 146

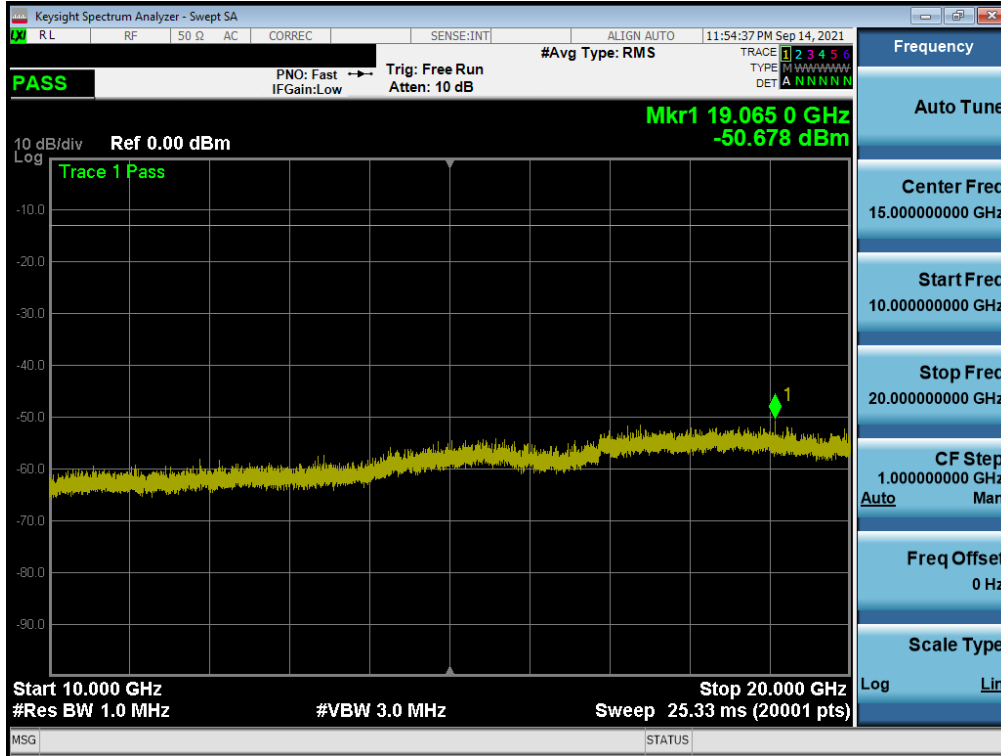


Plot 7-62. Conducted Spurious Plot (GPRS Ch. 810)



Plot 7-63. Conducted Spurious Plot (GPRS Ch. 810)

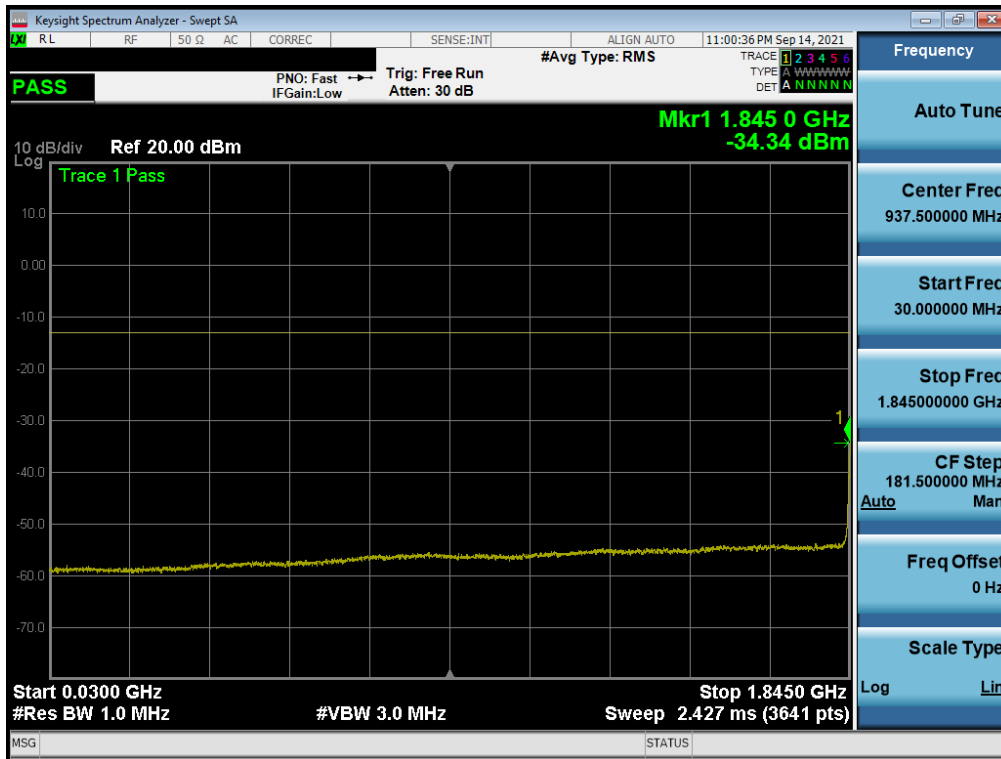
FCC ID: A3LSMS908U	PCTEST Proud to be part of element	PART 24 MEASUREMENT REPORT		Approved by: Technical Manager
Test Report S/N: 1M2109090102-03-R1.A3L	Test Dates: 9/14/2021 - 11/16/2021	EUT Type: Portable Handset		Page 51 of 146



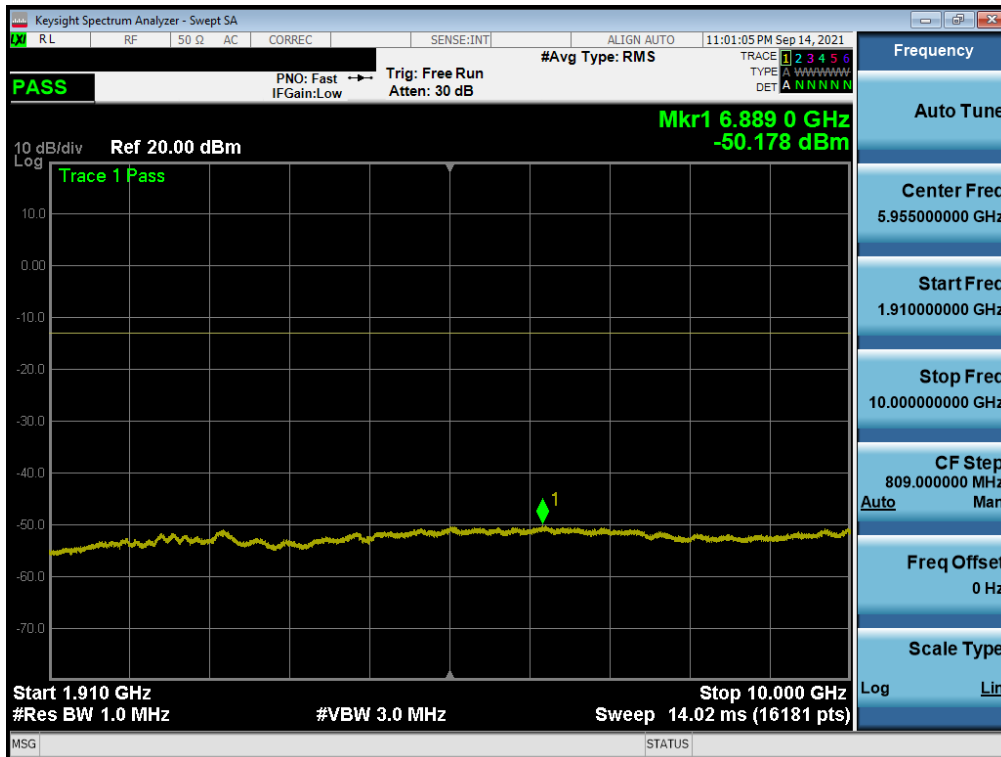
Plot 7-64. Conducted Spurious Plot (GPRS Ch. 810)

FCC ID: A3LSMS908U	PCTEST Proud to be part of element	PART 24 MEASUREMENT REPORT		Approved by: Technical Manager
Test Report S/N: 1M2109090102-03-R1.A3L	Test Dates: 9/14/2021 - 11/16/2021	EUT Type: Portable Handset		Page 52 of 146

WCDMA PCS



Plot 7-65. Conducted Spurious Plot (WCDMA Ch. 9262)

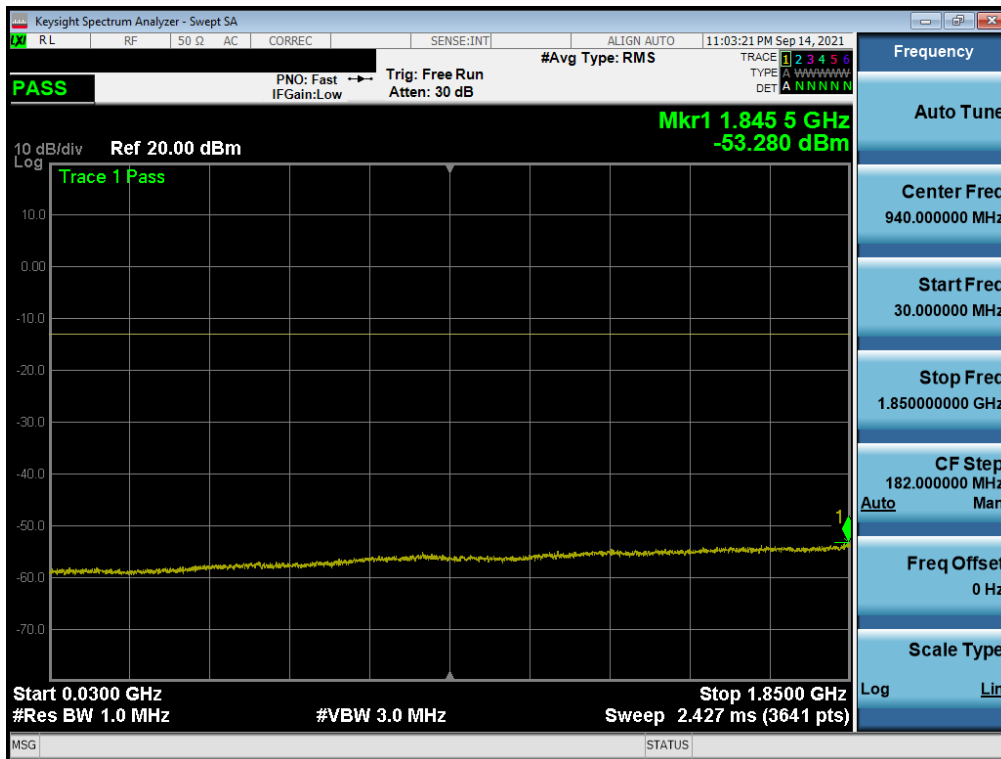


Plot 7-66. Conducted Spurious Plot (WCDMA Ch. 9262)

FCC ID: A3LSMS908U	PCTEST Proud to be part of element	PART 24 MEASUREMENT REPORT	SAMSUNG	Approved by: Technical Manager
Test Report S/N: 1M2109090102-03-R1.A3L	Test Dates: 9/14/2021 - 11/16/2021	EUT Type: Portable Handset		Page 53 of 146

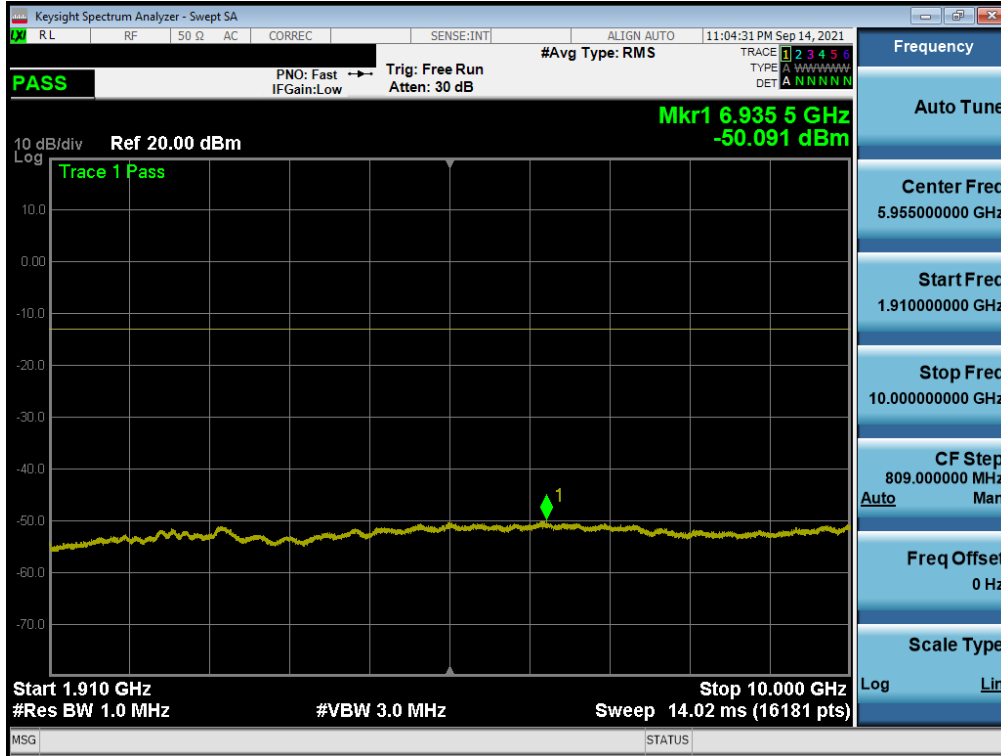


Plot 7-67. Conducted Spurious Plot (WCDMA Ch. 9262)

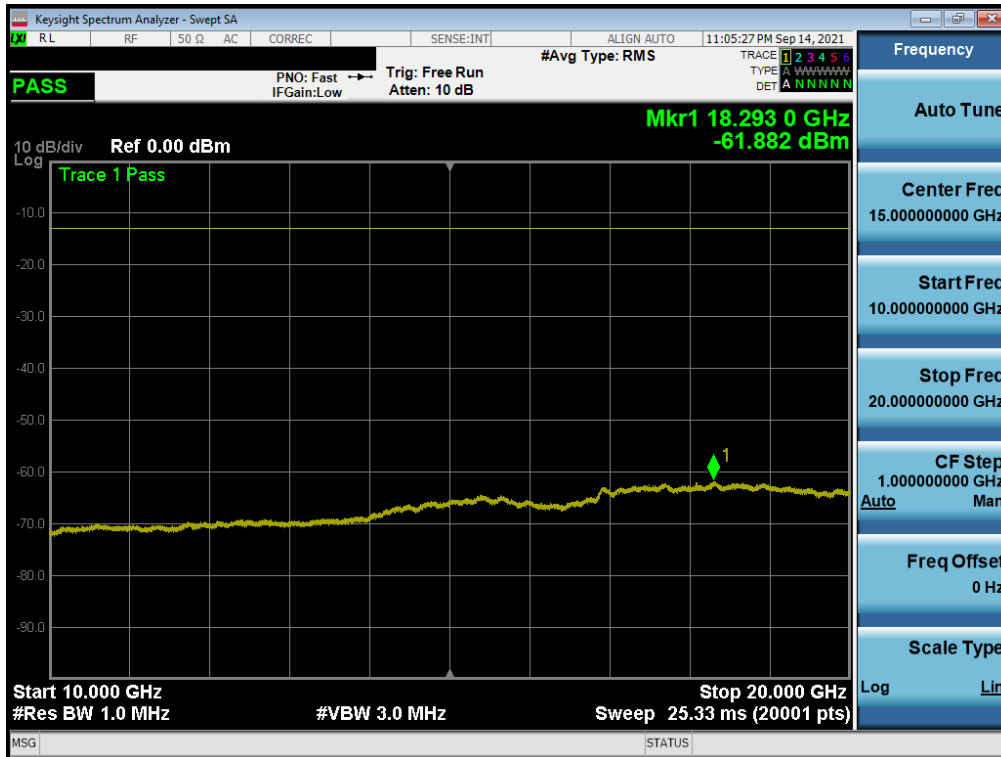


Plot 7-68. Conducted Spurious Plot (WCDMA Ch. 9400)

FCC ID: A3LSMS908U	PCTEST Proud to be part of element	PART 24 MEASUREMENT REPORT		Approved by: Technical Manager
Test Report S/N: 1M2109090102-03-R1.A3L	Test Dates: 9/14/2021 - 11/16/2021	EUT Type: Portable Handset		Page 54 of 146

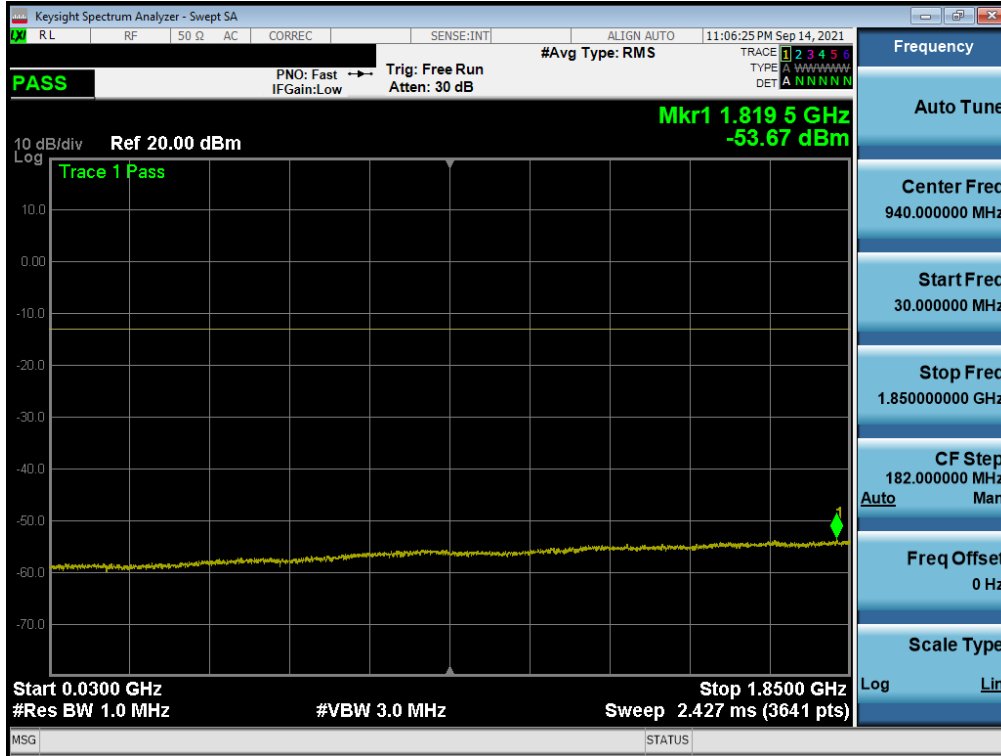


Plot 7-69. Conducted Spurious Plot (WCDMA Ch. 9400)

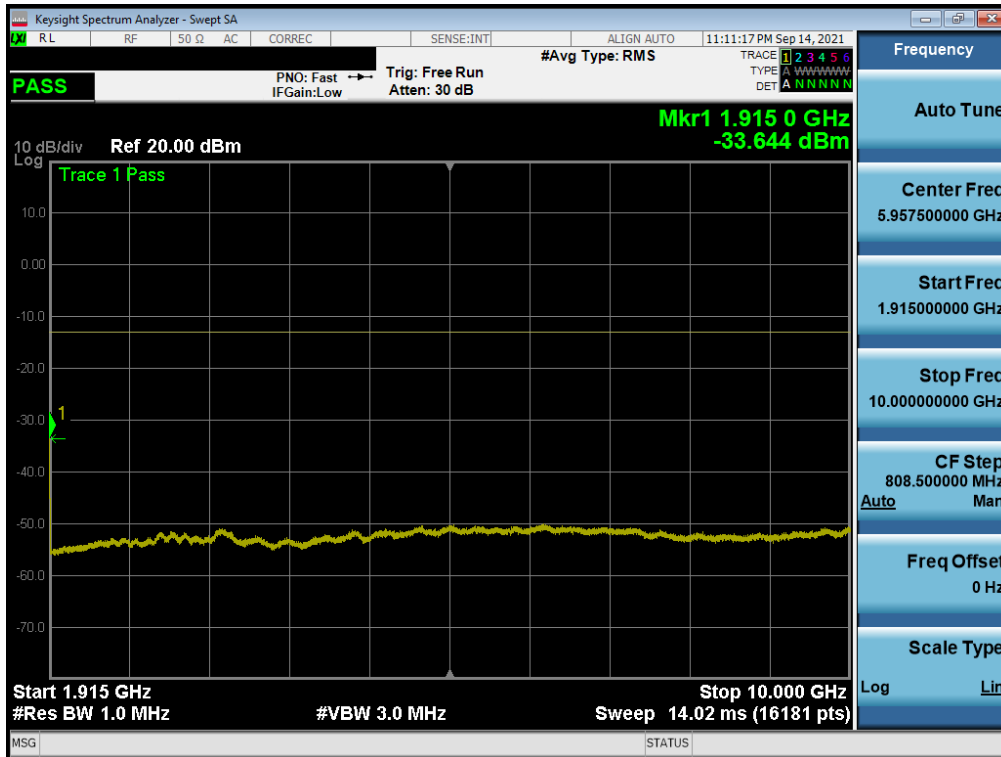


Plot 7-70. Conducted Spurious Plot (WCDMA Ch. 9400)

FCC ID: A3LSMS908U	PCTEST Proud to be part of element	PART 24 MEASUREMENT REPORT		Approved by: Technical Manager
Test Report S/N: 1M2109090102-03-R1.A3L	Test Dates: 9/14/2021 - 11/16/2021	EUT Type: Portable Handset		Page 55 of 146



Plot 7-71. Conducted Spurious Plot (WCDMA Ch. 9538)



Plot 7-72. Conducted Spurious Plot (WCDMA Ch. 9538)

FCC ID: A3LSMS908U	PCTEST Proud to be part of element	PART 24 MEASUREMENT REPORT	SAMSUNG	Approved by: Technical Manager
Test Report S/N: 1M2109090102-03-R1.A3L	Test Dates: 9/14/2021 - 11/16/2021	EUT Type: Portable Handset		Page 56 of 146



Plot 7-73. Conducted Spurious Plot (WCDMA Ch. 9538)

FCC ID: A3LSMS908U	PCTEST Proud to be part of element	PART 24 MEASUREMENT REPORT		Approved by: Technical Manager
Test Report S/N: 1M2109090102-03-R1.A3L	Test Dates: 9/14/2021 - 11/16/2021	EUT Type: Portable Handset		Page 57 of 146

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

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. $RBW \geq 1\%$ of the emission bandwidth
4. $VBW \geq 3 \times RBW$
5. Detector = RMS
6. Number of sweep points $\geq 2 \times \text{Span}/RBW$
7. Trace mode = trace average for continuous emissions, max hold for pulse emissions
8. Sweep time = auto couple
9. The trace was allowed to stabilize

Test Setup

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

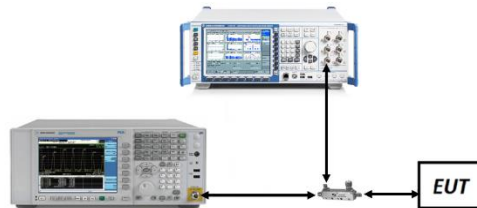






Figure 7-4. Test Instrument & Measurement Setup

FCC ID: A3LSMS908U	 PART 24 MEASUREMENT REPORT		Approved by: Technical Manager
Test Report S/N: 1M2109090102-03-R1.A3L	Test Dates: 9/14/2021 - 11/16/2021	EUT Type: Portable Handset	Page 58 of 146

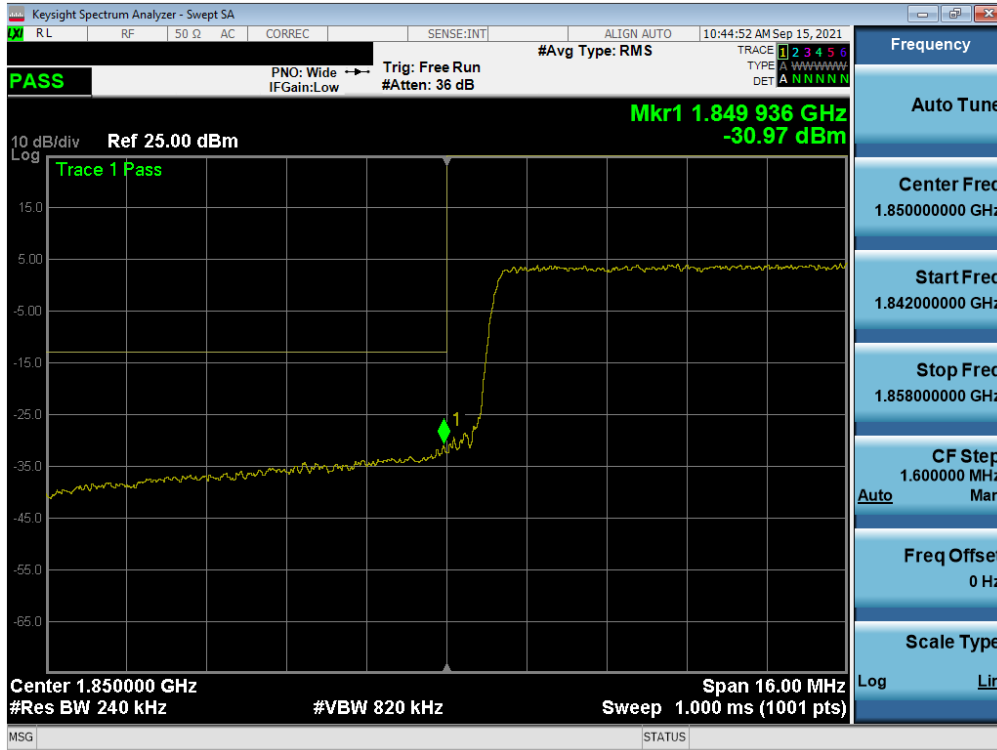
Test Notes

1. Per 24.238(b) and RSS-133(6.5), 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 to demonstrate compliance with the out-of-band emissions limit. The emission bandwidth is defined as the width of the signal between two points, one below the carrier center frequency and one above the carrier center frequency, outside of which all emission are attenuated at least 26 dB below the transmitter power.

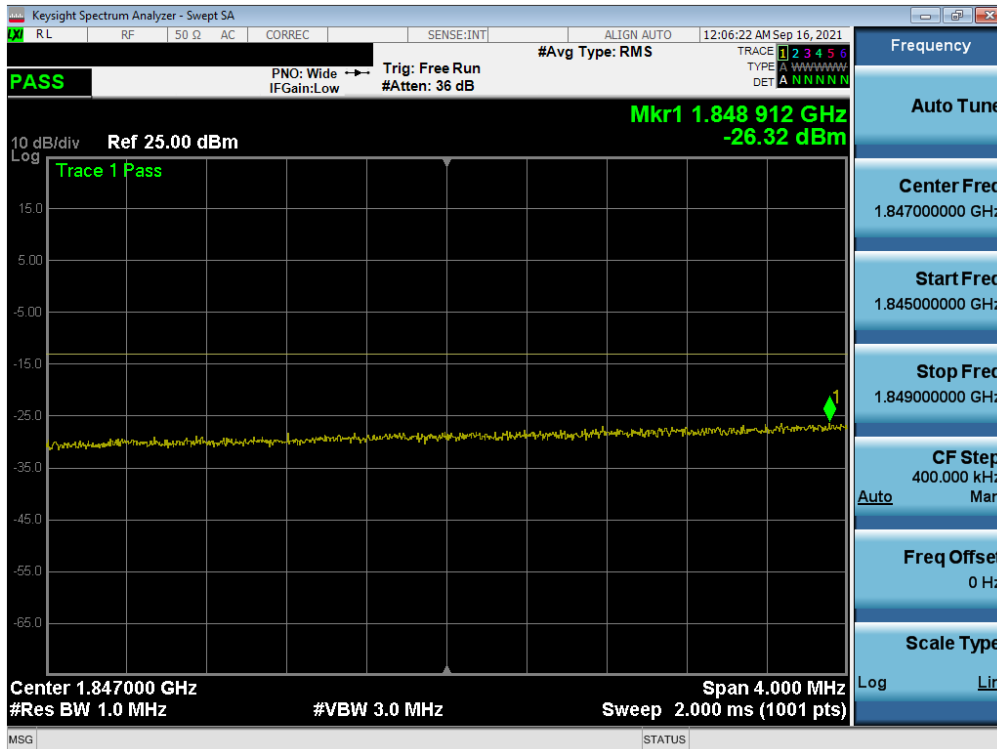
2. For NR operation, all subcarrier spacings (SCS) and transmission schemes (e.g. CP-OFDM and DFT-s-OFDM) were investigated to determine the worst case configuration. All modes of operation were investigated and the worst case configuration results are reported in this section.

FCC ID: A3LSMS908U	 PART 24 MEASUREMENT REPORT 		Approved by: Technical Manager
Test Report S/N: 1M2109090102-03-R1.A3L	Test Dates: 9/14/2021 - 11/16/2021	EUT Type: Portable Handset	Page 59 of 146

LTE Band 25/2

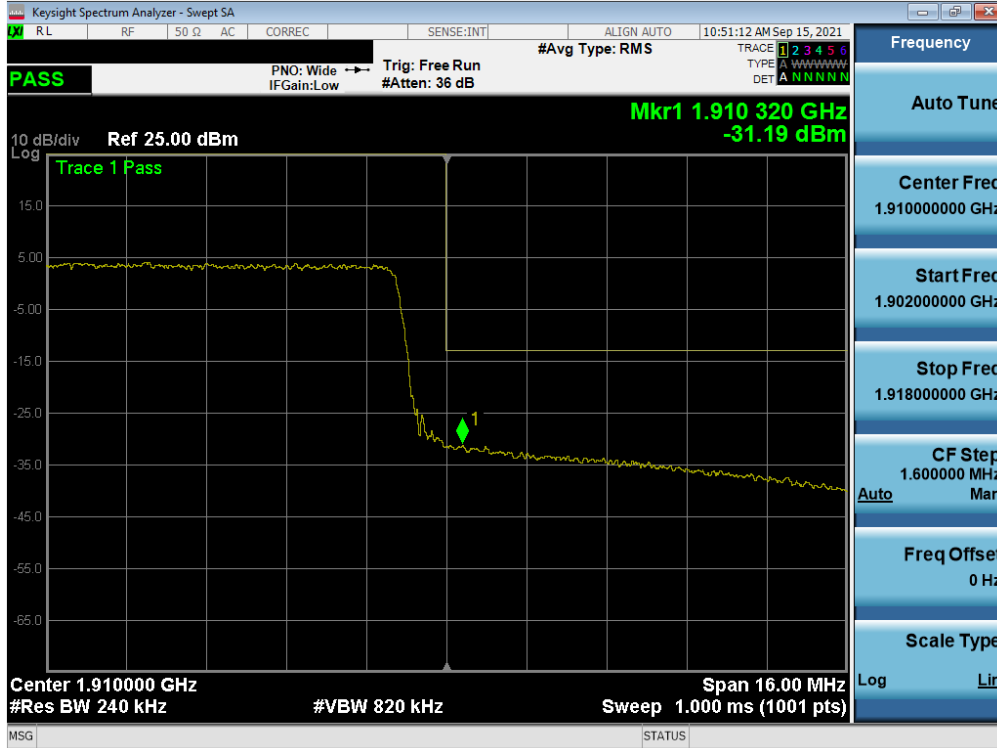


Plot 7-74. Lower Band Edge Plot (LTE Band 25/2 - 20MHz QPSK – Full RB)



Plot 7-75. Extended Lower Band Edge Plot (LTE Band 25/2 - 20MHz QPSK – Full RB)

FCC ID: A3LSMS908U	PCTEST Proud to be part of element	PART 24 MEASUREMENT REPORT	SAMSUNG	Approved by: Technical Manager
Test Report S/N: 1M2109090102-03-R1.A3L	Test Dates: 9/14/2021 - 11/16/2021	EUT Type: Portable Handset		Page 60 of 146

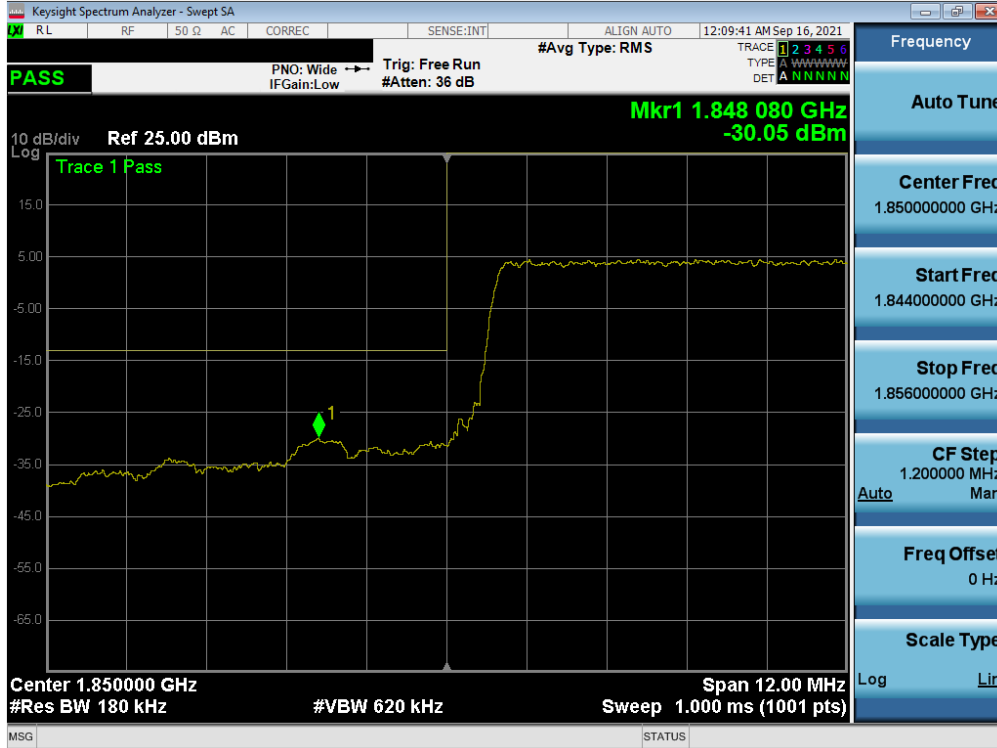


Plot 7-76. Upper Band Edge Plot (LTE Band 2 - 20MHz QPSK – Full RB)

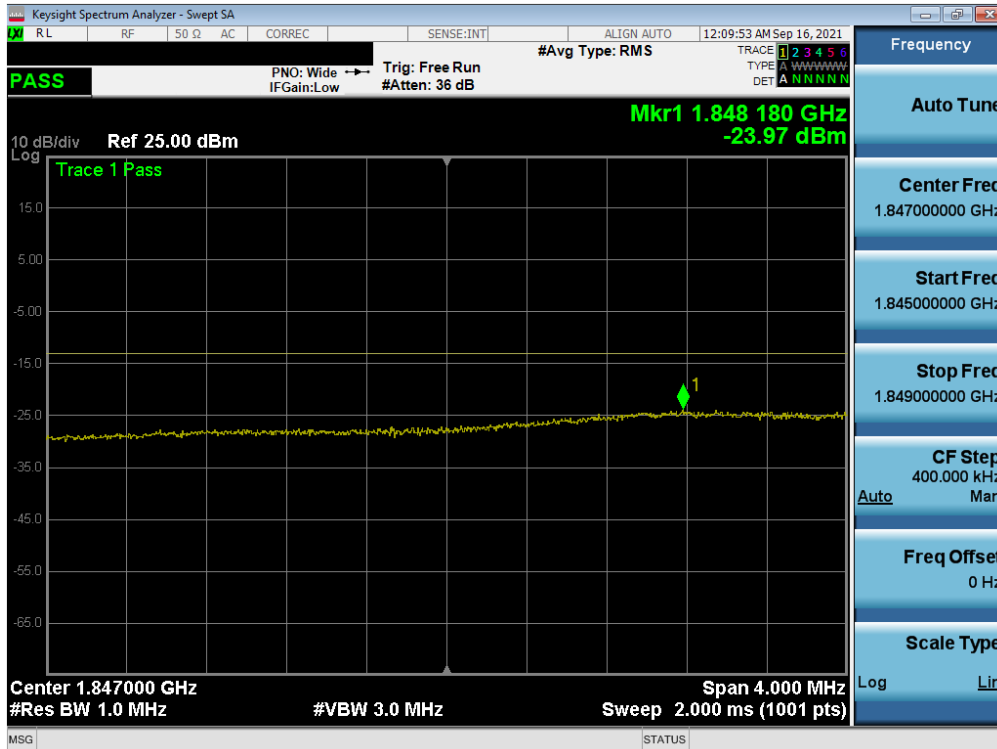


Plot 7-77. Upper Band Edge Plot (LTE Band 25 - 20MHz QPSK – Full RB)

FCC ID: A3LSMS908U	PCTEST Proud to be part of element	PART 24 MEASUREMENT REPORT		Approved by: Technical Manager
Test Report S/N: 1M2109090102-03-R1.A3L	Test Dates: 9/14/2021 - 11/16/2021	EUT Type: Portable Handset		Page 61 of 146



Plot 7-78. Lower Band Edge Plot (LTE Band 25/2 - 15MHz QPSK – Full RB)

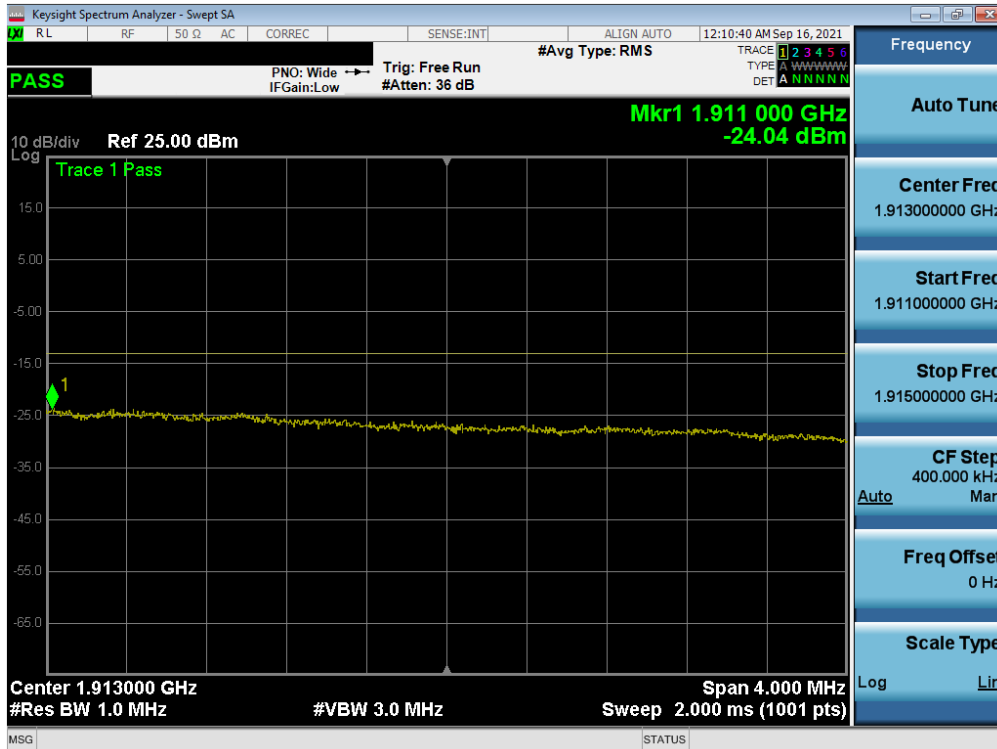


Plot 7-79. Extended Lower Band Edge Plot (LTE Band 25/2 - 15MHz QPSK – Full RB)

FCC ID: A3LSMS908U	PCTEST Proud to be part of element	PART 24 MEASUREMENT REPORT	SAMSUNG	Approved by: Technical Manager
Test Report S/N: 1M2109090102-03-R1.A3L	Test Dates: 9/14/2021 - 11/16/2021	EUT Type: Portable Handset		Page 62 of 146



Plot 7-80. Upper Band Edge Plot (LTE Band 2 - 15MHz QPSK – Full RB)



Plot 7-81. Extended Upper Band Edge Plot (LTE Band 2 - 15MHz QPSK – Full RB)

FCC ID: A3LSMS908U	PCTEST Proud to be part of element	PART 24 MEASUREMENT REPORT		Approved by: Technical Manager
Test Report S/N: 1M2109090102-03-R1.A3L	Test Dates: 9/14/2021 - 11/16/2021	EUT Type: Portable Handset		Page 63 of 146

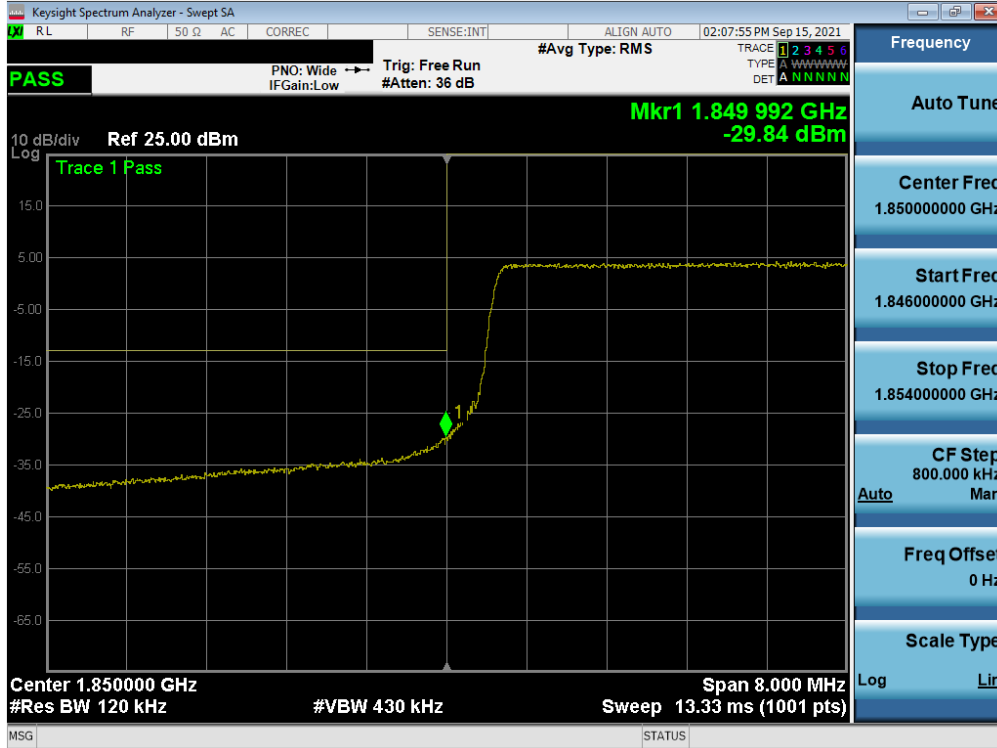


Plot 7-82. Upper Band Edge Plot (LTE Band 25 - 15MHz QPSK – Full RB)

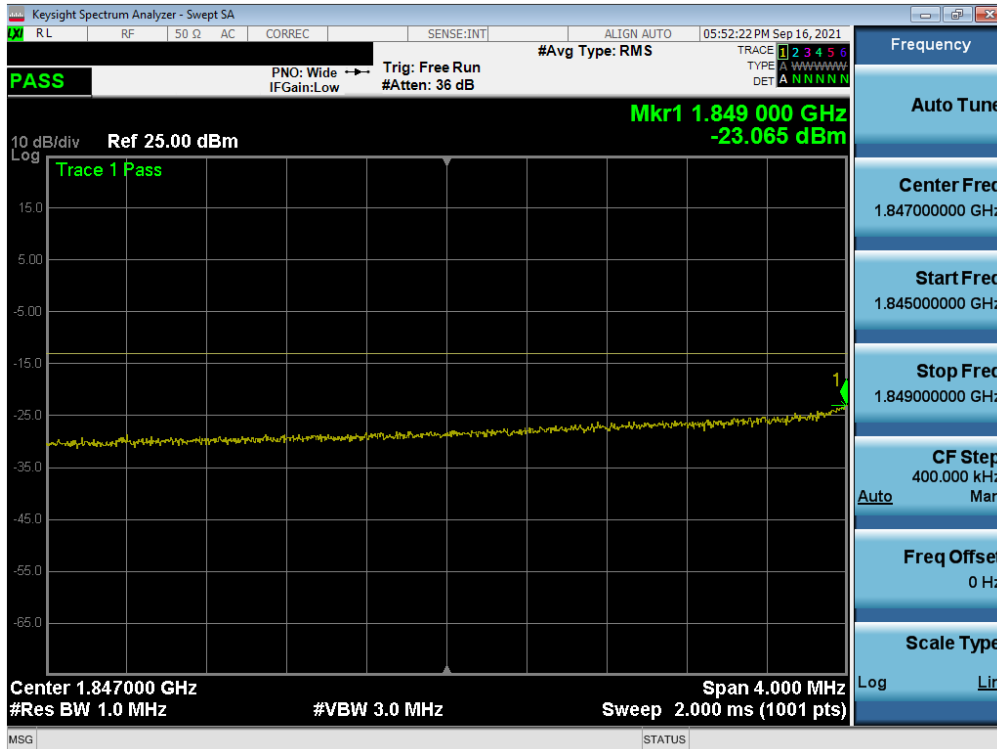


Plot 7-83. Extended Upper Band Edge Plot (LTE Band 25 - 15MHz QPSK – Full RB)

FCC ID: A3LSMS908U	PCTEST Proud to be part of element	PART 24 MEASUREMENT REPORT		Approved by: Technical Manager
Test Report S/N: 1M2109090102-03-R1.A3L	Test Dates: 9/14/2021 - 11/16/2021	EUT Type: Portable Handset		Page 64 of 146



Plot 7-84. Lower Band Edge Plot (LTE Band 25/2 - 10MHz QPSK – Full RB)

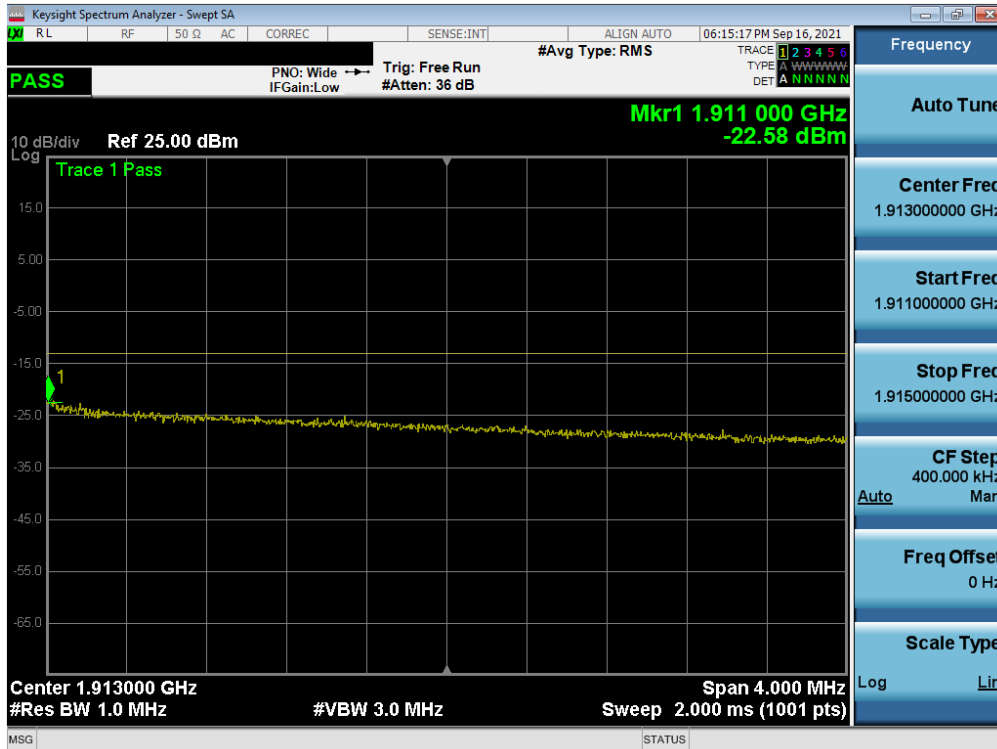


Plot 7-85. Extended Lower Band Edge Plot (LTE Band 25/2 - 10MHz QPSK – Full RB)

FCC ID: A3LSMS908U	PCTEST Proud to be part of element	PART 24 MEASUREMENT REPORT		Approved by: Technical Manager
Test Report S/N: 1M2109090102-03-R1.A3L	Test Dates: 9/14/2021 - 11/16/2021	EUT Type: Portable Handset		Page 65 of 146



Plot 7-86. Upper Band Edge Plot (LTE Band 2 - 10MHz QPSK – Full RB)



Plot 7-87. Extended Upper Band Edge Plot (LTE Band 2 - 10MHz QPSK – Full RB)

FCC ID: A3LSMS908U	PCTEST Proud to be part of element	PART 24 MEASUREMENT REPORT		Approved by: Technical Manager
Test Report S/N: 1M2109090102-03-R1.A3L	Test Dates: 9/14/2021 - 11/16/2021	EUT Type: Portable Handset		Page 66 of 146

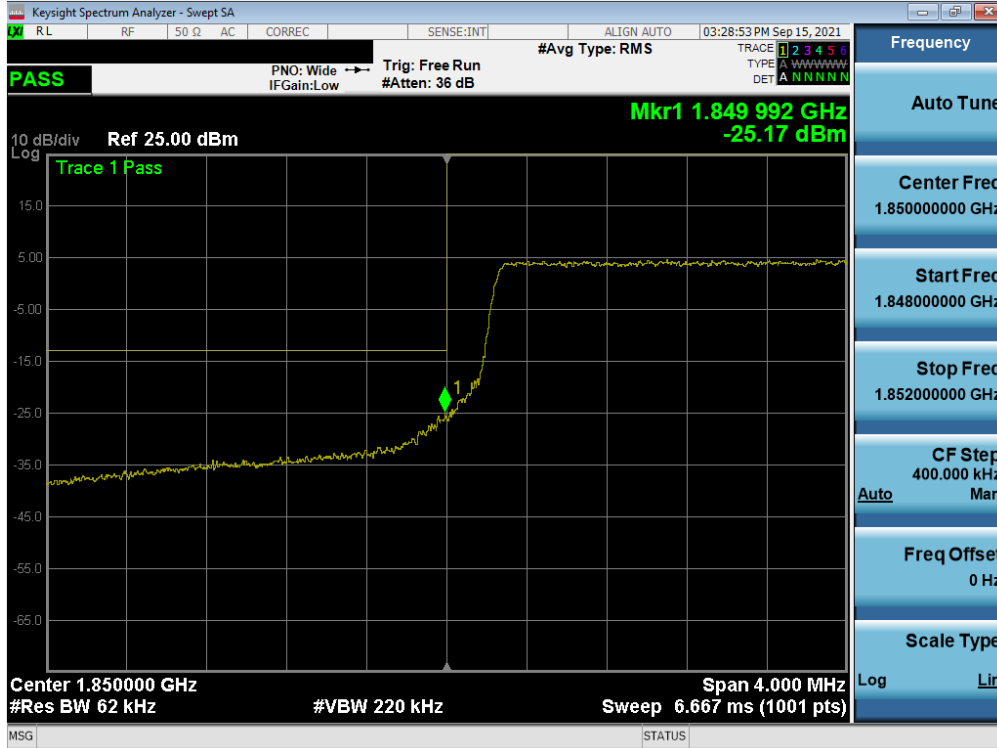


Plot 7-88. Upper Band Edge Plot (LTE Band 25 - 10MHz QPSK – Full RB)

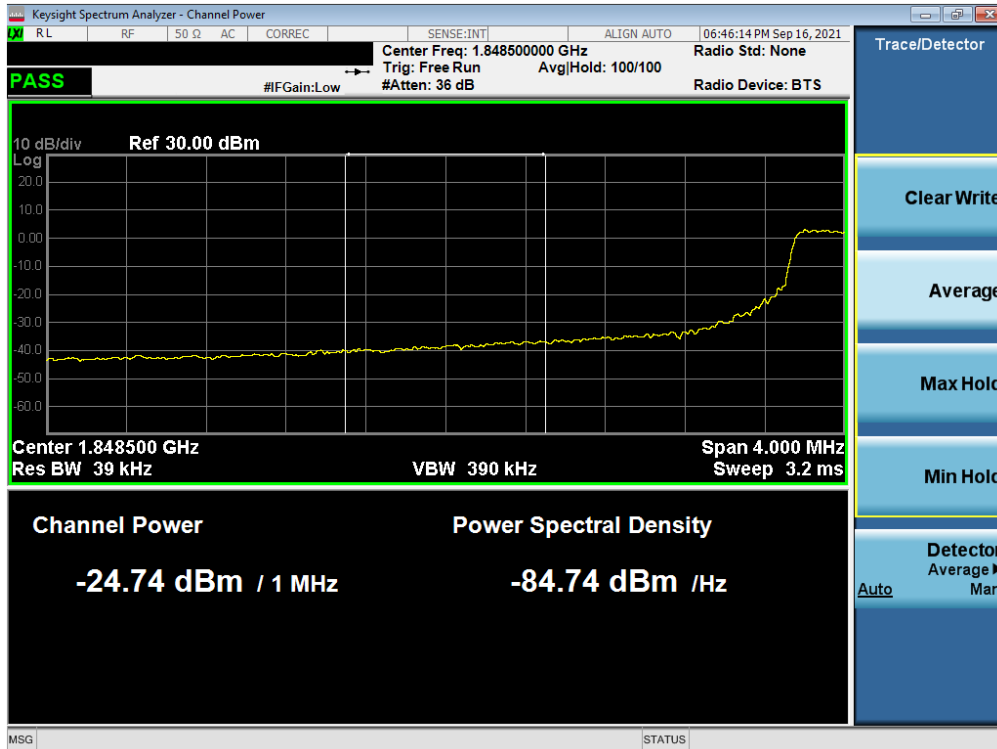


Plot 7-89. Extended Upper Band Edge Plot (LTE Band 25 - 10MHz QPSK – Full RB)

FCC ID: A3LSMS908U	PCTEST Proud to be part of element	PART 24 MEASUREMENT REPORT		Approved by: Technical Manager
Test Report S/N: 1M2109090102-03-R1.A3L	Test Dates: 9/14/2021 - 11/16/2021	EUT Type: Portable Handset		Page 67 of 146



Plot 7-90. Lower Band Edge Plot (LTE Band 25/2 - 5MHz QPSK – Full RB)

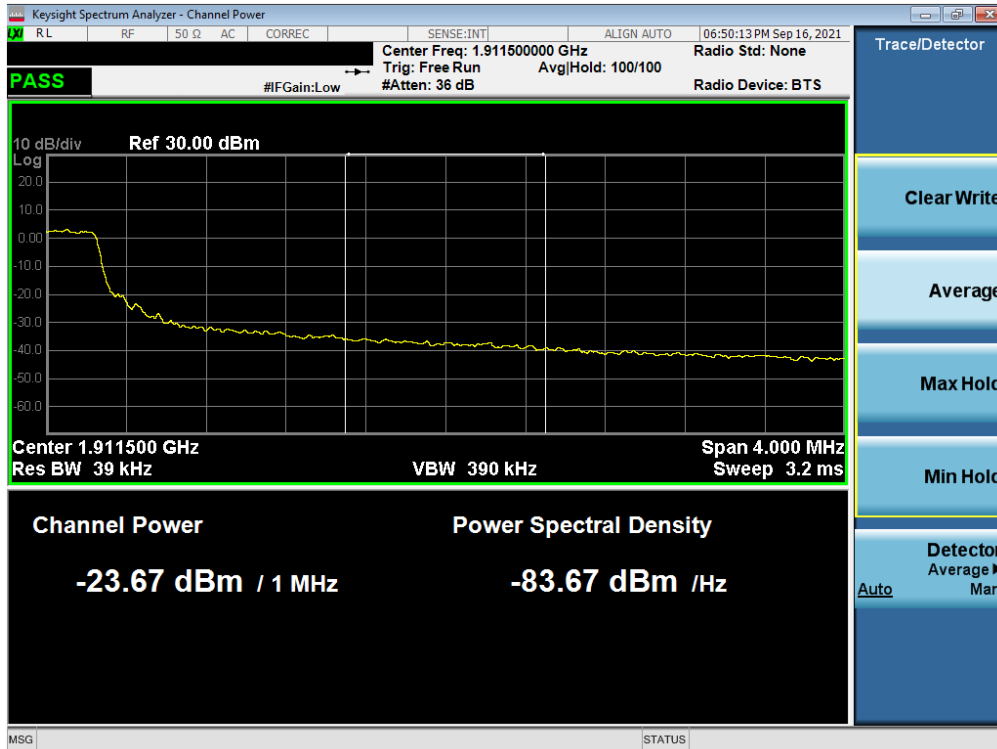


Plot 7-91. Extended Lower Band Edge Plot (LTE Band 25/2 - 5MHz QPSK – Full RB)

FCC ID: A3LSMS908U	PCTEST Proud to be part of element	PART 24 MEASUREMENT REPORT	SAMSUNG	Approved by: Technical Manager
Test Report S/N: 1M2109090102-03-R1.A3L	Test Dates: 9/14/2021 - 11/16/2021	EUT Type: Portable Handset		Page 68 of 146



Plot 7-92. Upper Band Edge Plot (LTE Band 2 - 5MHz QPSK – Full RB)

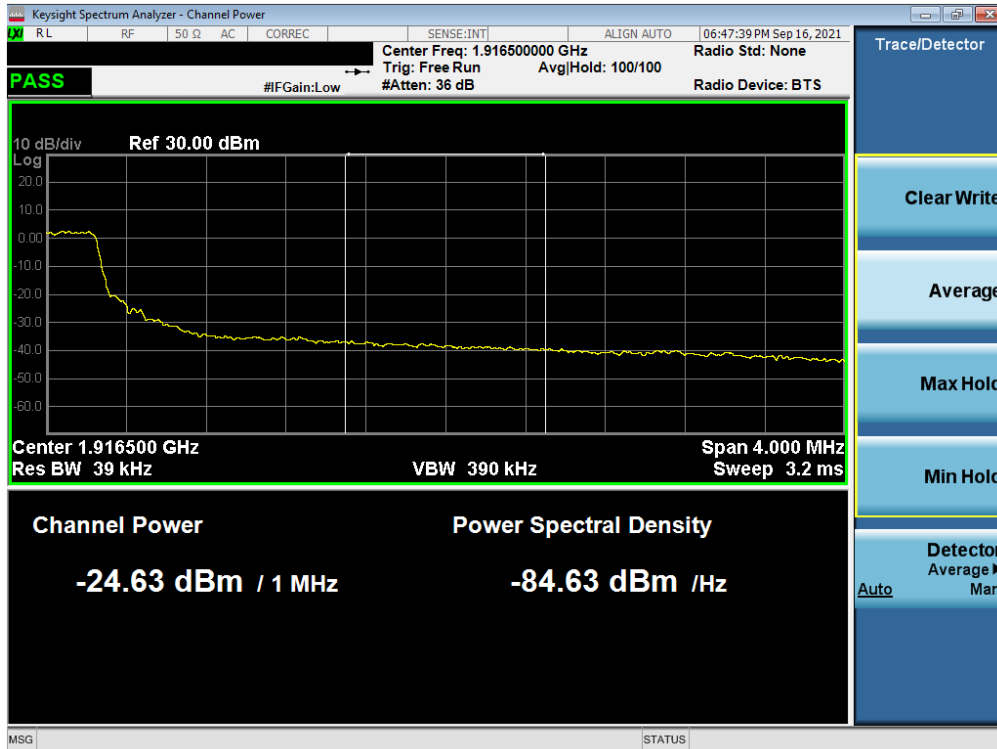


Plot 7-93. Extended Upper Band Edge Plot (LTE Band 2 - 5MHz QPSK – Full RB)

FCC ID: A3LSMS908U	PCTEST Proud to be part of element	PART 24 MEASUREMENT REPORT	SAMSUNG	Approved by: Technical Manager
Test Report S/N: 1M2109090102-03-R1.A3L	Test Dates: 9/14/2021 - 11/16/2021	EUT Type: Portable Handset		Page 69 of 146

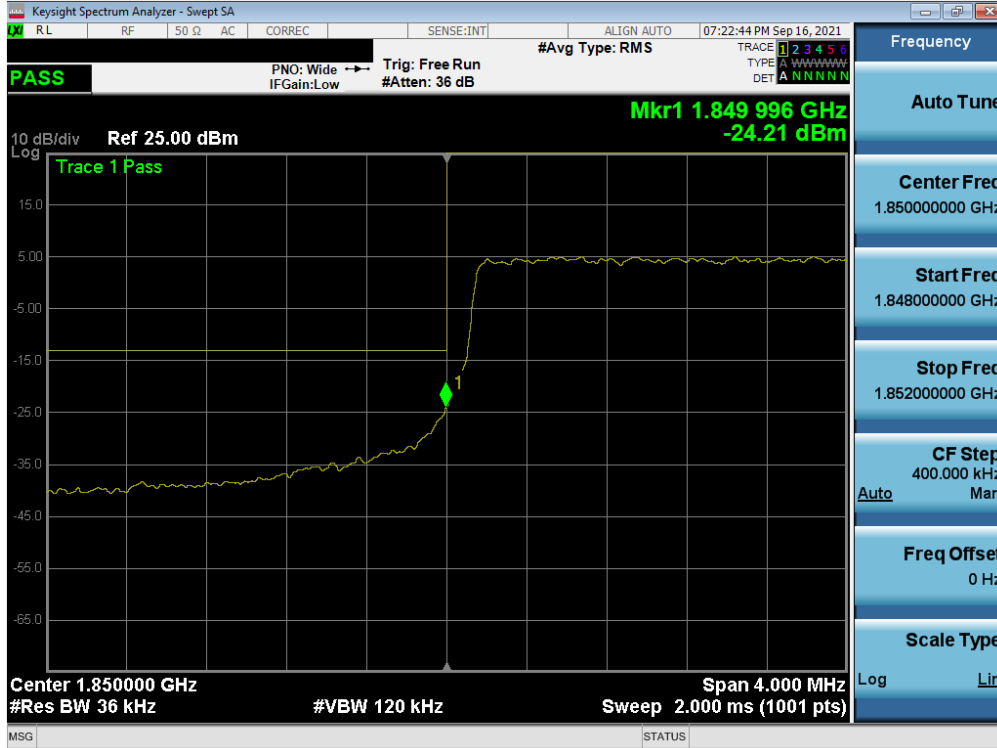


Plot 7-94. Upper Band Edge Plot (LTE Band 25 - 5MHz QPSK – Full RB)

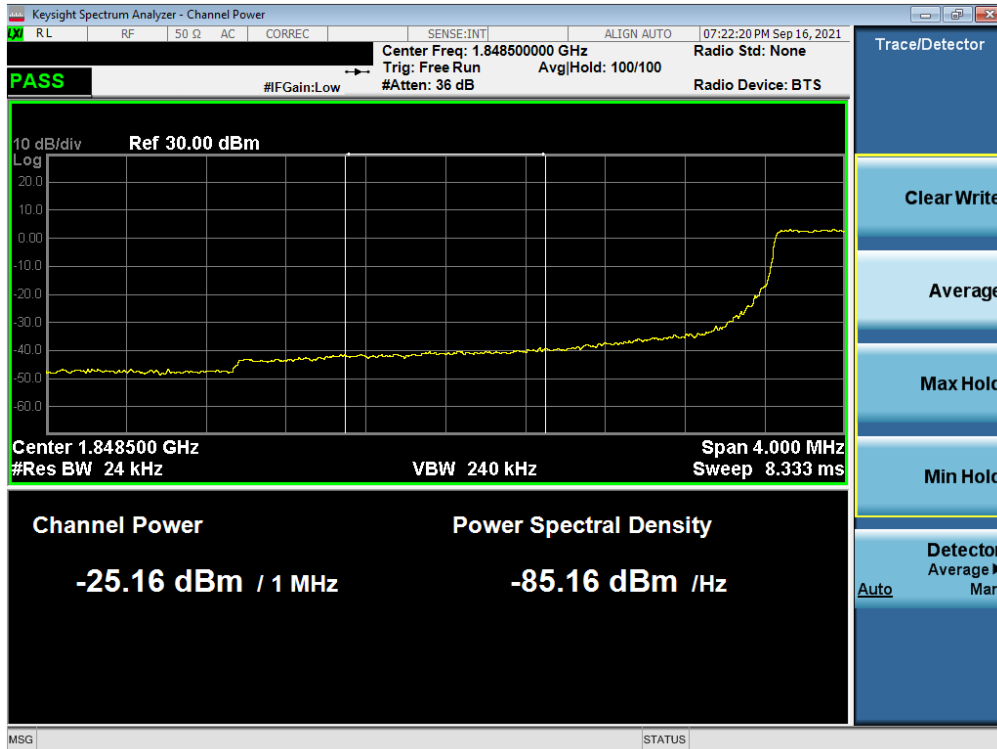


Plot 7-95. Extended Upper Band Edge Plot (LTE Band 25 - 5MHz QPSK – Full RB)

FCC ID: A3LSMS908U	PCTEST Proud to be part of element	PART 24 MEASUREMENT REPORT	SAMSUNG	Approved by: Technical Manager
Test Report S/N: 1M2109090102-03-R1.A3L	Test Dates: 9/14/2021 - 11/16/2021	EUT Type: Portable Handset		Page 70 of 146



Plot 7-96. Lower Band Edge Plot (LTE Band 25/2 - 3MHz QPSK – Full RB)

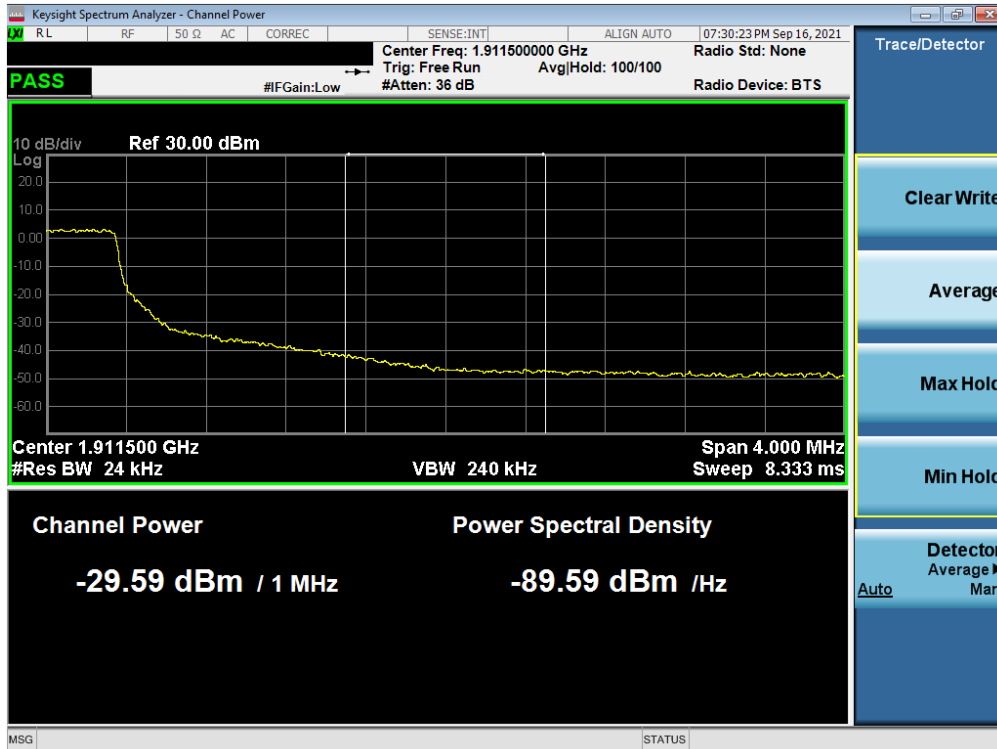


Plot 7-97. Extended Lower Band Edge Plot (LTE Band 25/2 - 3MHz QPSK – Full RB)

FCC ID: A3LSMS908U	PCTEST Proud to be part of element	PART 24 MEASUREMENT REPORT	SAMSUNG	Approved by: Technical Manager
Test Report S/N: 1M2109090102-03-R1.A3L	Test Dates: 9/14/2021 - 11/16/2021	EUT Type: Portable Handset		Page 71 of 146



Plot 7-98. Upper Band Edge Plot (LTE Band 2 - 3MHz QPSK – Full RB)

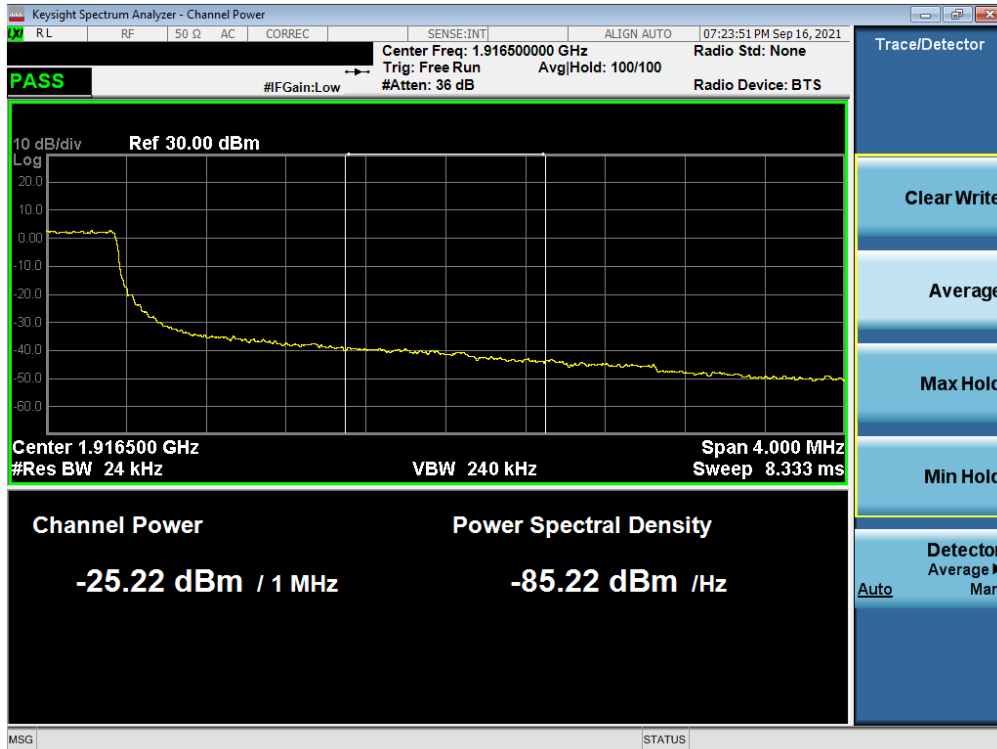


Plot 7-99. Extended Upper Band Edge Plot (LTE Band 2 - 3MHz QPSK – Full RB)

FCC ID: A3LSMS908U	PCTEST Proud to be part of element	PART 24 MEASUREMENT REPORT	SAMSUNG	Approved by: Technical Manager
Test Report S/N: 1M2109090102-03-R1.A3L	Test Dates: 9/14/2021 - 11/16/2021	EUT Type: Portable Handset		Page 72 of 146

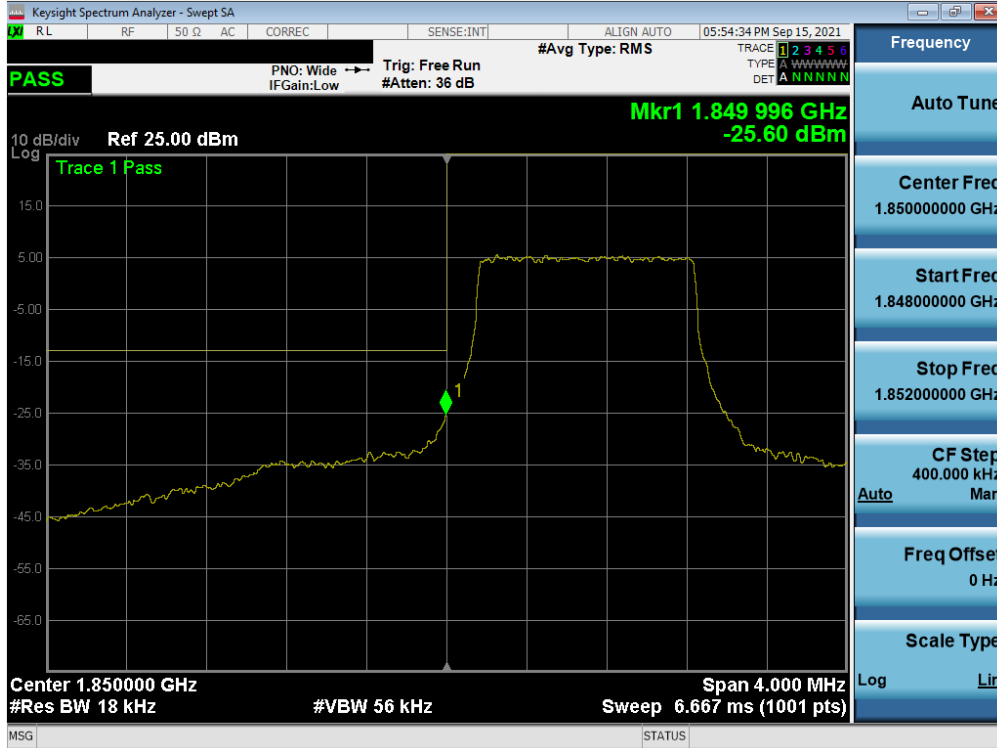


Plot 7-100. Upper Band Edge Plot (LTE Band 25 - 3MHz QPSK – Full RB)

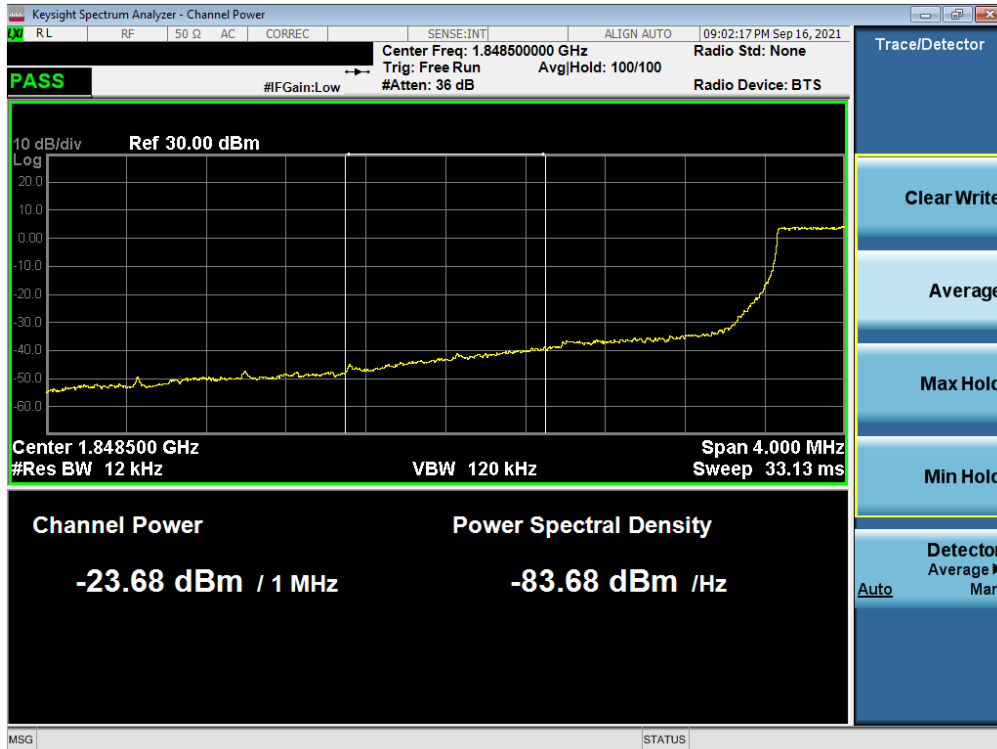


Plot 7-101. Extended Upper Band Edge Plot (LTE Band 25 - 3MHz QPSK – Full RB)

FCC ID: A3LSMS908U	PCTEST Proud to be part of element	PART 24 MEASUREMENT REPORT	SAMSUNG	Approved by: Technical Manager
Test Report S/N: 1M2109090102-03-R1.A3L	Test Dates: 9/14/2021 - 11/16/2021	EUT Type: Portable Handset		Page 73 of 146



Plot 7-102. Lower Band Edge Plot (LTE Band 25/2 – 1.4MHz QPSK – Full RB)

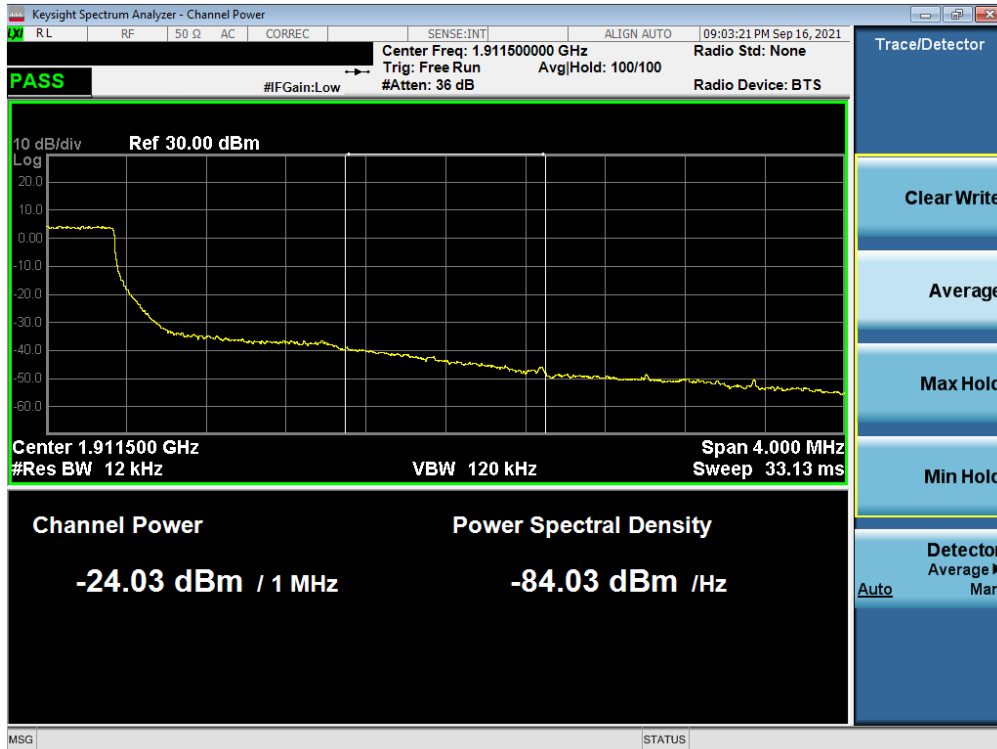


Plot 7-103. Extended Lower Band Edge Plot (LTE Band 25/2 – 1.4MHz QPSK – Full RB)

FCC ID: A3LSMS908U	PCTEST Proud to be part of element	PART 24 MEASUREMENT REPORT	SAMSUNG	Approved by: Technical Manager
Test Report S/N: 1M2109090102-03-R1.A3L	Test Dates: 9/14/2021 - 11/16/2021	EUT Type: Portable Handset		Page 74 of 146



Plot 7-104. Upper Band Edge Plot (LTE Band 2 – 1.4MHz QPSK – Full RB)

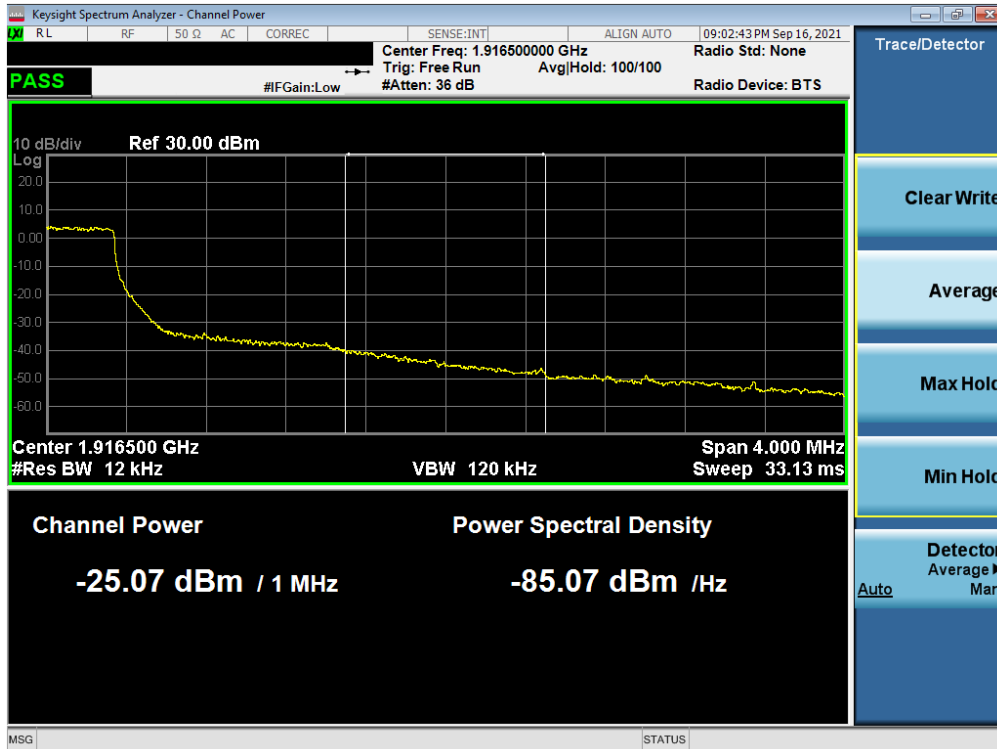


Plot 7-105. Extended Upper Band Edge Plot (LTE Band 2 – 1.4MHz QPSK – Full RB)

FCC ID: A3LSMS908U	PCTEST Proud to be part of element	PART 24 MEASUREMENT REPORT	SAMSUNG	Approved by: Technical Manager
Test Report S/N: 1M2109090102-03-R1.A3L	Test Dates: 9/14/2021 - 11/16/2021	EUT Type: Portable Handset		Page 75 of 146



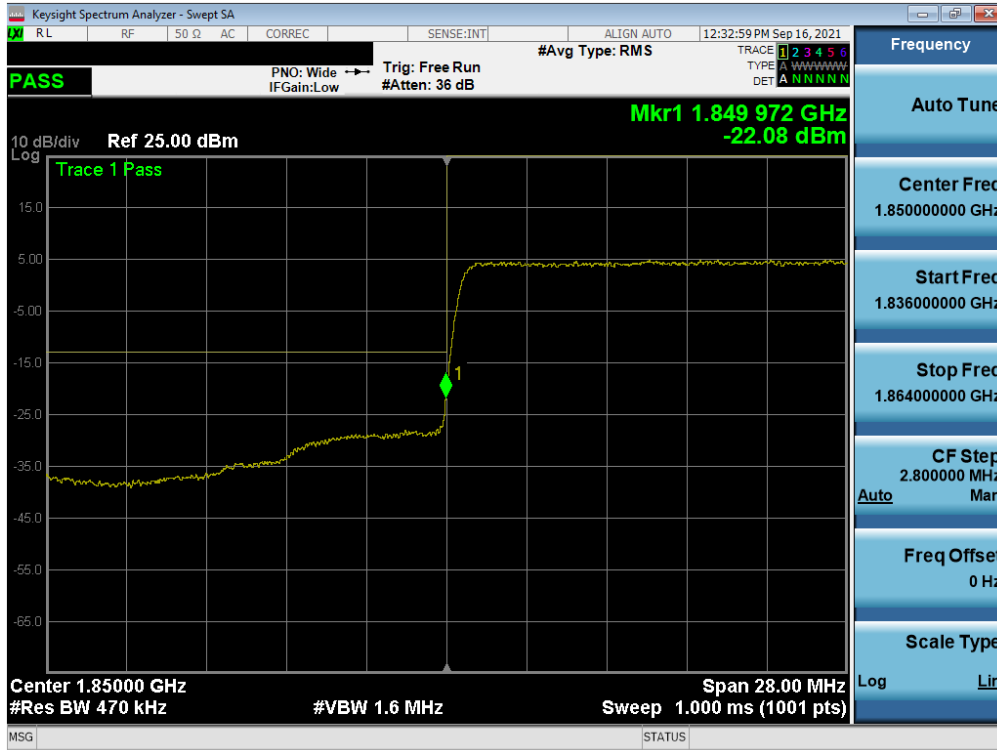
Plot 7-106. Upper Band Edge Plot (LTE Band 25 – 1.4MHz QPSK – Full RB)



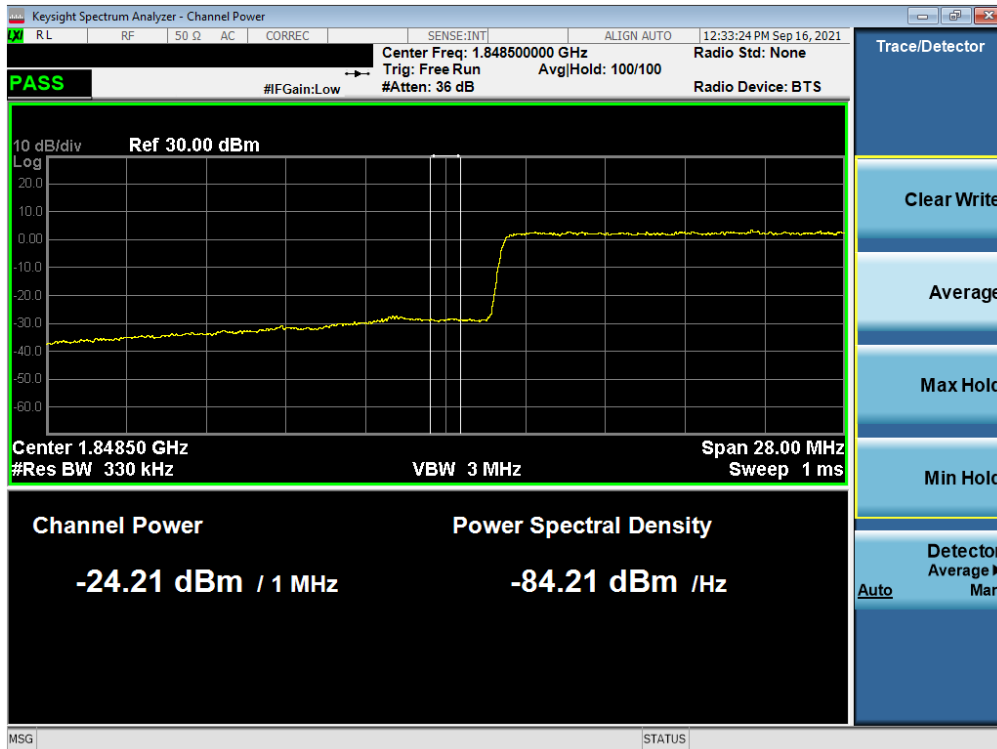
Plot 7-107. Extended Upper Band Edge Plot (LTE Band 25 – 1.4MHz QPSK – Full RB)

FCC ID: A3LSMS908U	PCTEST Proud to be part of element	PART 24 MEASUREMENT REPORT	SAMSUNG	Approved by: Technical Manager
Test Report S/N: 1M2109090102-03-R1.A3L	Test Dates: 9/14/2021 - 11/16/2021	EUT Type: Portable Handset		Page 76 of 146

NR Band n25/2



Plot 7-108. Lower Band Edge Plot (NR Band n25 - 40MHz QPSK – Full RB)

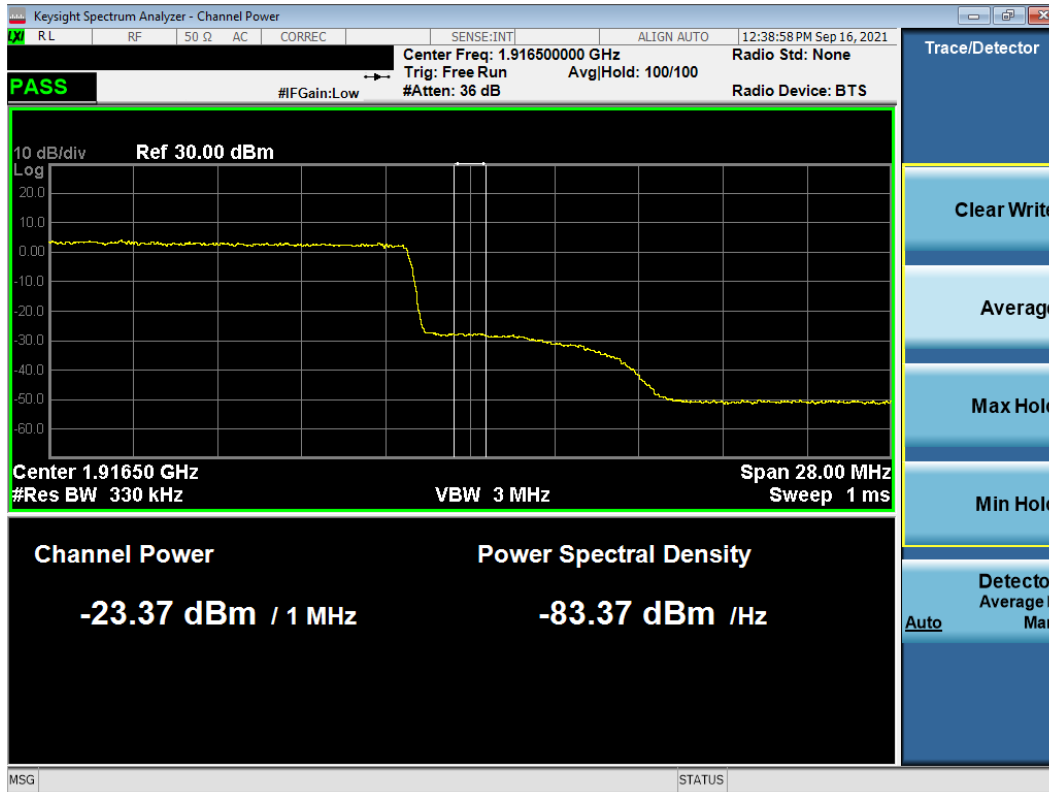


Plot 7-109. Extended Lower Band Edge Plot (NR Band n25 - 40MHz QPSK – Full RB)

FCC ID: A3LSMS908U	PCTEST Proud to be part of element	PART 24 MEASUREMENT REPORT	SAMSUNG	Approved by: Technical Manager
Test Report S/N: 1M2109090102-03-R1.A3L	Test Dates: 9/14/2021 - 11/16/2021	EUT Type: Portable Handset		Page 77 of 146

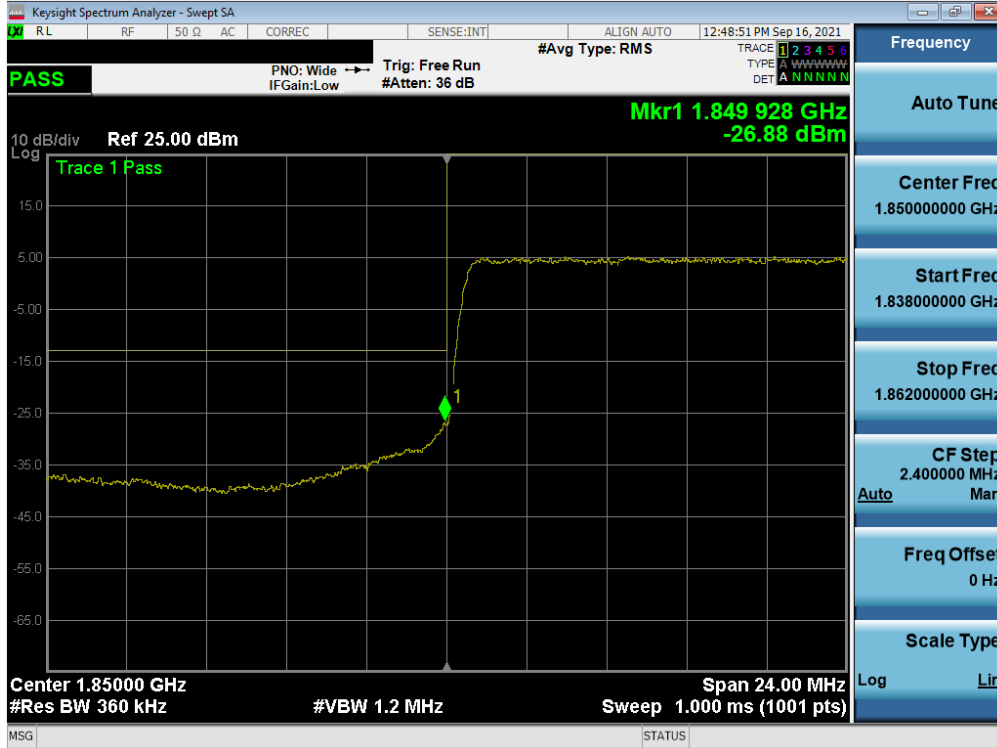


Plot 7-110. Upper Band Edge Plot (NR Band n25 - 40MHz QPSK – Full RB)

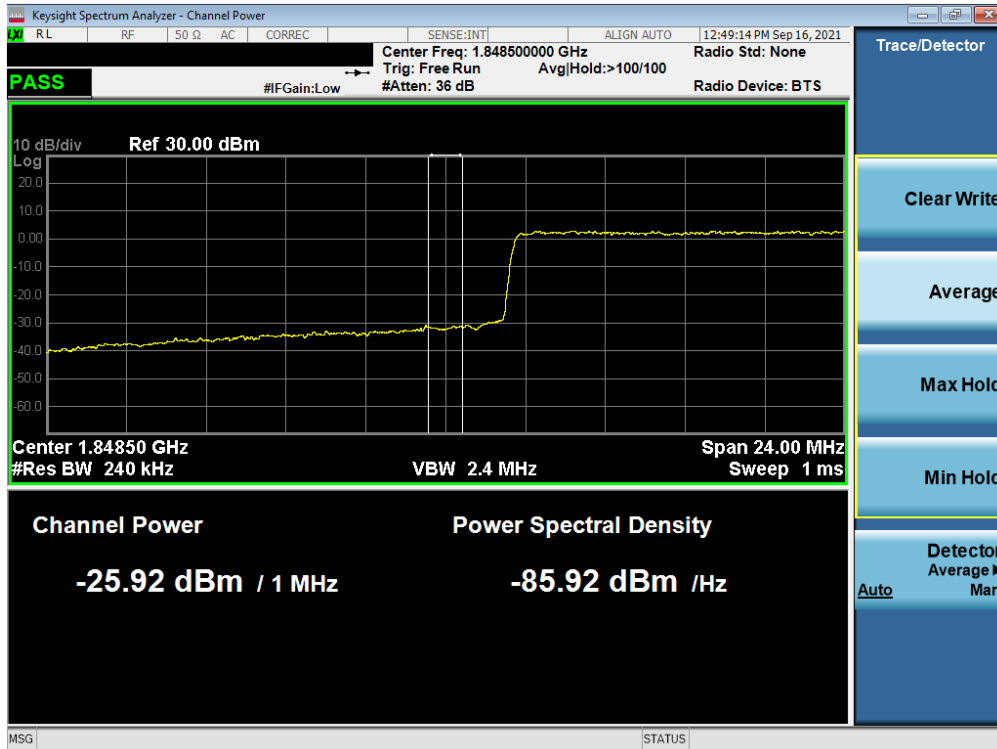


Plot 7-111. Extended Upper Band Edge Plot (NR Band n25 - 40MHz QPSK – Full RB)

FCC ID: A3LSMS908U	PCTEST Proud to be part of element	PART 24 MEASUREMENT REPORT	SAMSUNG	Approved by: Technical Manager
Test Report S/N: 1M2109090102-03-R1.A3L	Test Dates: 9/14/2021 - 11/16/2021	EUT Type: Portable Handset		Page 78 of 146



Plot 7-112. Lower Band Edge Plot (NR Band n25 - 30MHz QPSK – Full RB)

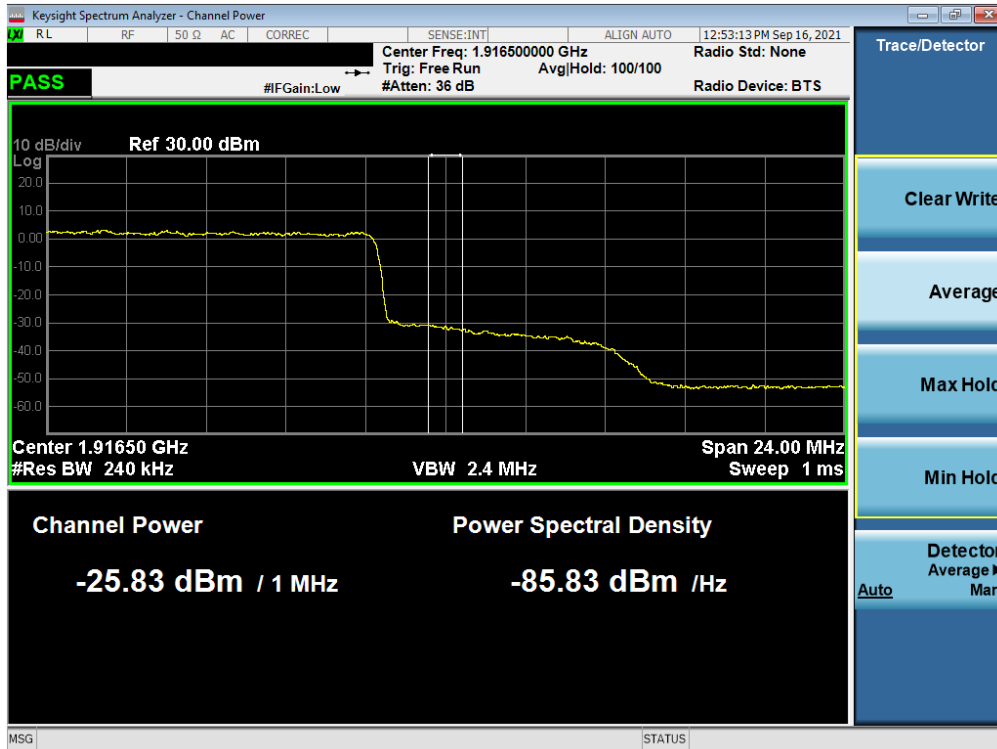


Plot 7-113. Extended Lower Band Edge Plot (NR Band n25 - 30MHz QPSK – Full RB)

FCC ID: A3LSMS908U	PCTEST Proud to be part of element	PART 24 MEASUREMENT REPORT	SAMSUNG	Approved by: Technical Manager
Test Report S/N: 1M2109090102-03-R1.A3L	Test Dates: 9/14/2021 - 11/16/2021	EUT Type: Portable Handset		Page 79 of 146

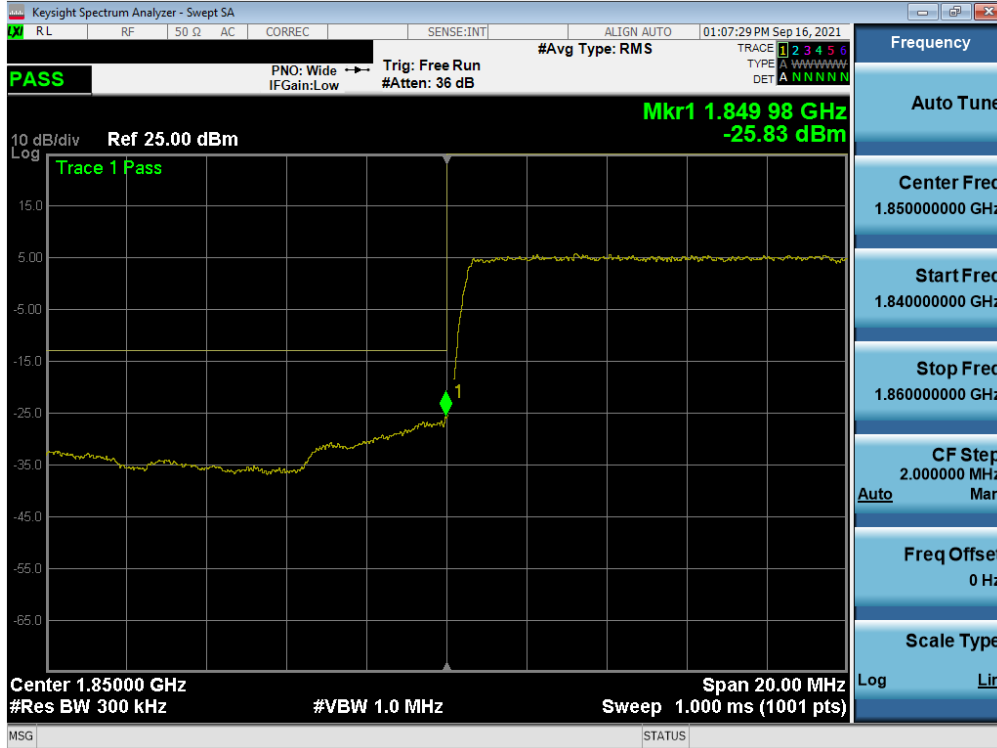


Plot 7-114. Upper Band Edge Plot (NR Band n25 - 30MHz QPSK – Full RB)

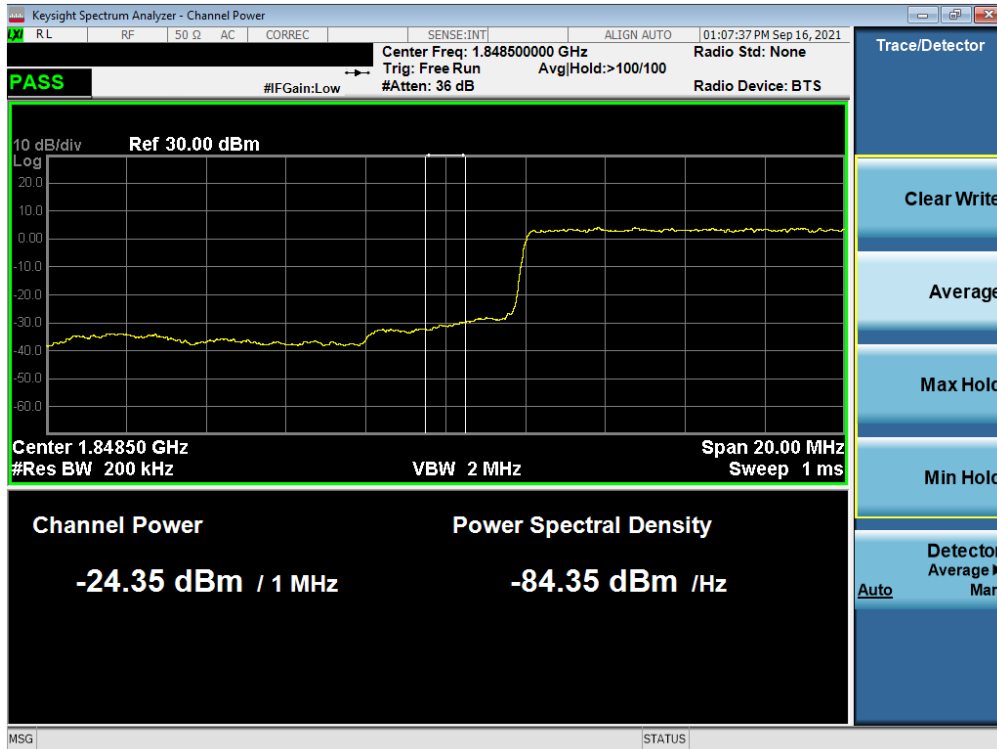


Plot 7-115. Extended Upper Band Edge Plot (NR Band n25 - 30MHz QPSK – Full RB)

FCC ID: A3LSMS908U	PCTEST Proud to be part of element	PART 24 MEASUREMENT REPORT	SAMSUNG	Approved by: Technical Manager
Test Report S/N: 1M2109090102-03-R1.A3L	Test Dates: 9/14/2021 - 11/16/2021	EUT Type: Portable Handset		Page 80 of 146



Plot 7-116. Lower Band Edge Plot (NR Band n25 - 25MHz QPSK – Full RB)

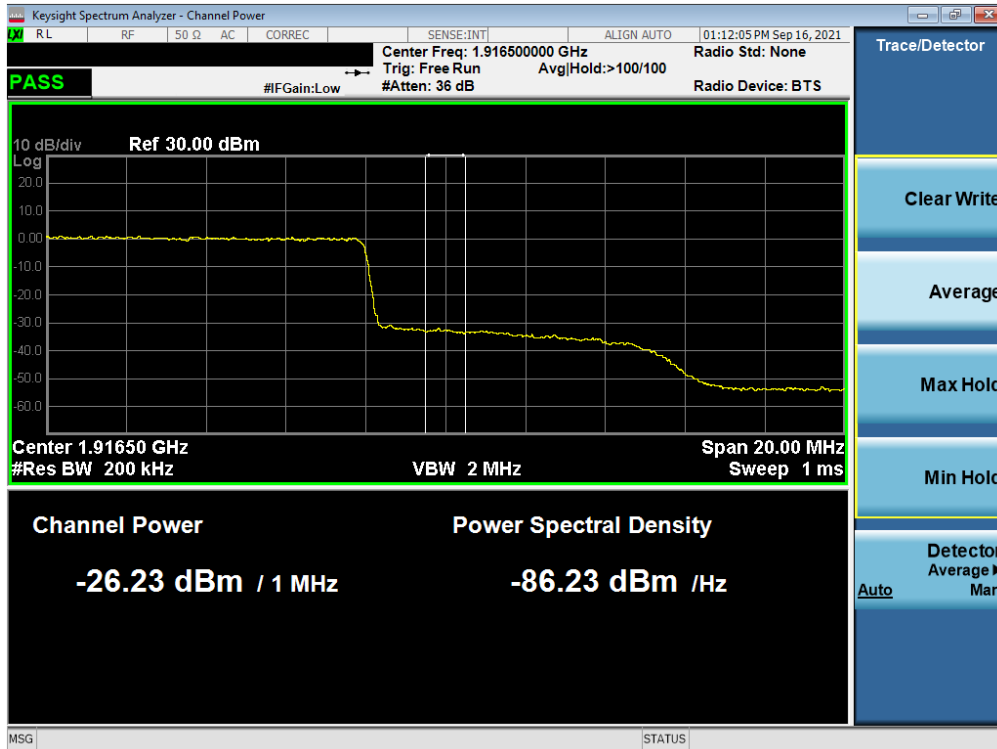


Plot 7-117. Extended Lower Band Edge Plot (NR Band n25 - 25MHz QPSK – Full RB)

FCC ID: A3LSMS908U	PCTEST Proud to be part of element	PART 24 MEASUREMENT REPORT	SAMSUNG	Approved by: Technical Manager
Test Report S/N: 1M2109090102-03-R1.A3L	Test Dates: 9/14/2021 - 11/16/2021	EUT Type: Portable Handset		Page 81 of 146

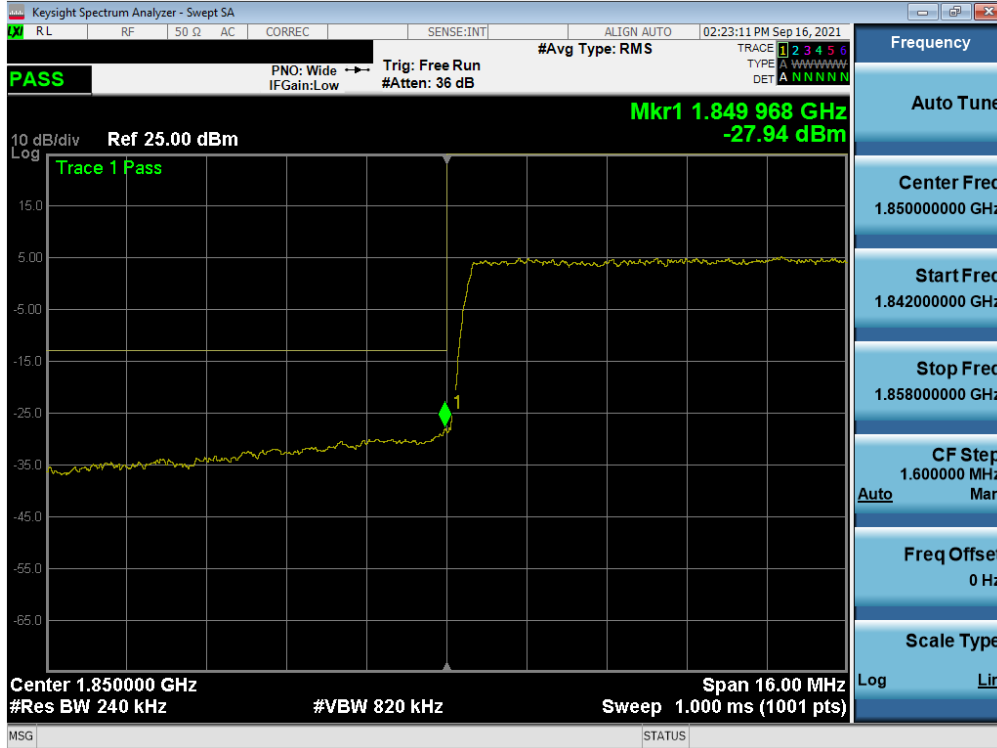


Plot 7-118. Upper Band Edge Plot (NR Band n25 - 25MHz QPSK – Full RB)

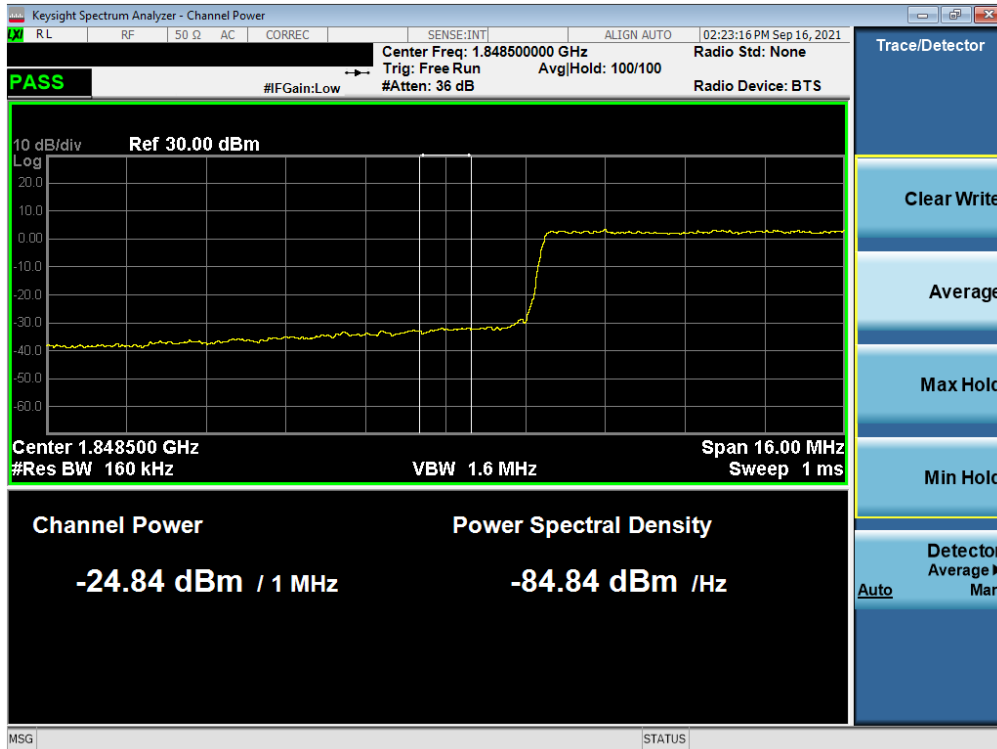


Plot 7-119. Extended Upper Band Edge Plot (NR Band n25 - 25MHz QPSK – Full RB)

FCC ID: A3LSMS908U	PCTEST Proud to be part of element	PART 24 MEASUREMENT REPORT	SAMSUNG	Approved by: Technical Manager
Test Report S/N: 1M2109090102-03-R1.A3L	Test Dates: 9/14/2021 - 11/16/2021	EUT Type: Portable Handset		Page 82 of 146

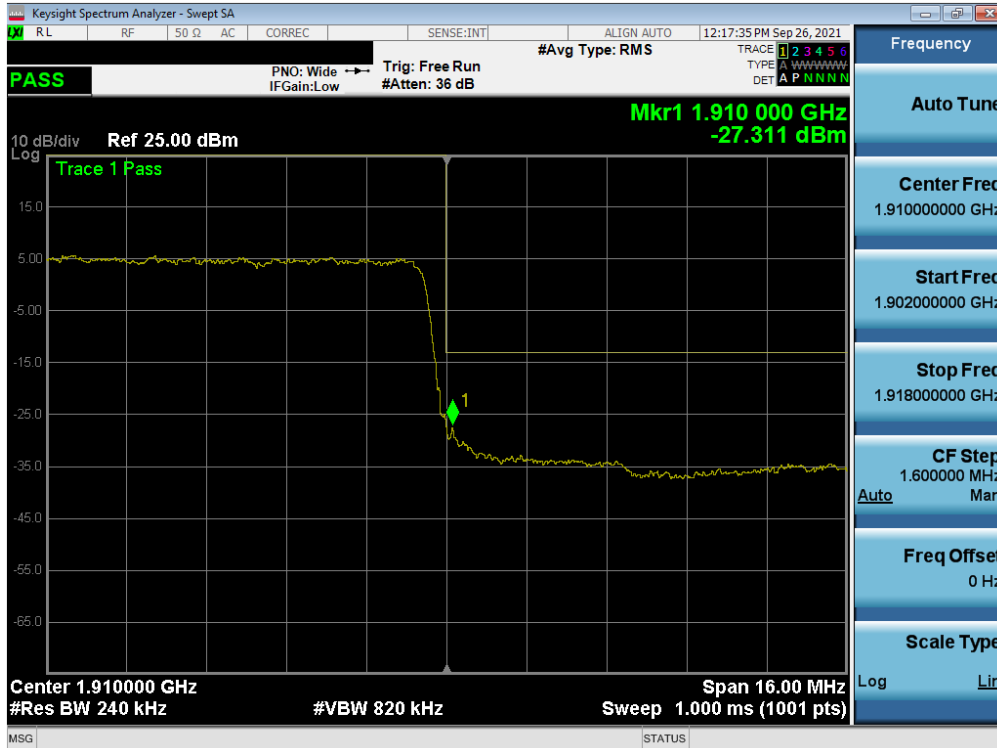


Plot 7-120. Lower Band Edge Plot (NR Band n25/2 - 20MHz QPSK – Full RB)

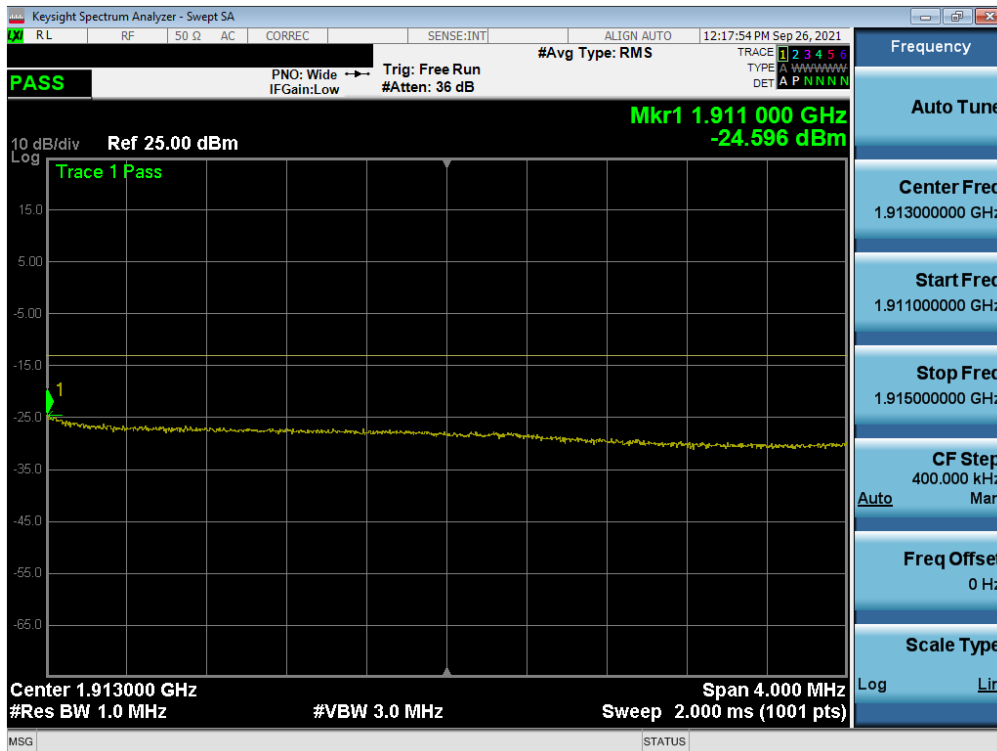


Plot 7-121. Extended Lower Band Edge Plot (NR Band n25/2 - 20MHz QPSK – Full RB)

FCC ID: A3LSMS908U	PCTEST Proud to be part of element	PART 24 MEASUREMENT REPORT	SAMSUNG	Approved by: Technical Manager
Test Report S/N: 1M2109090102-03-R1.A3L	Test Dates: 9/14/2021 - 11/16/2021	EUT Type: Portable Handset		Page 83 of 146

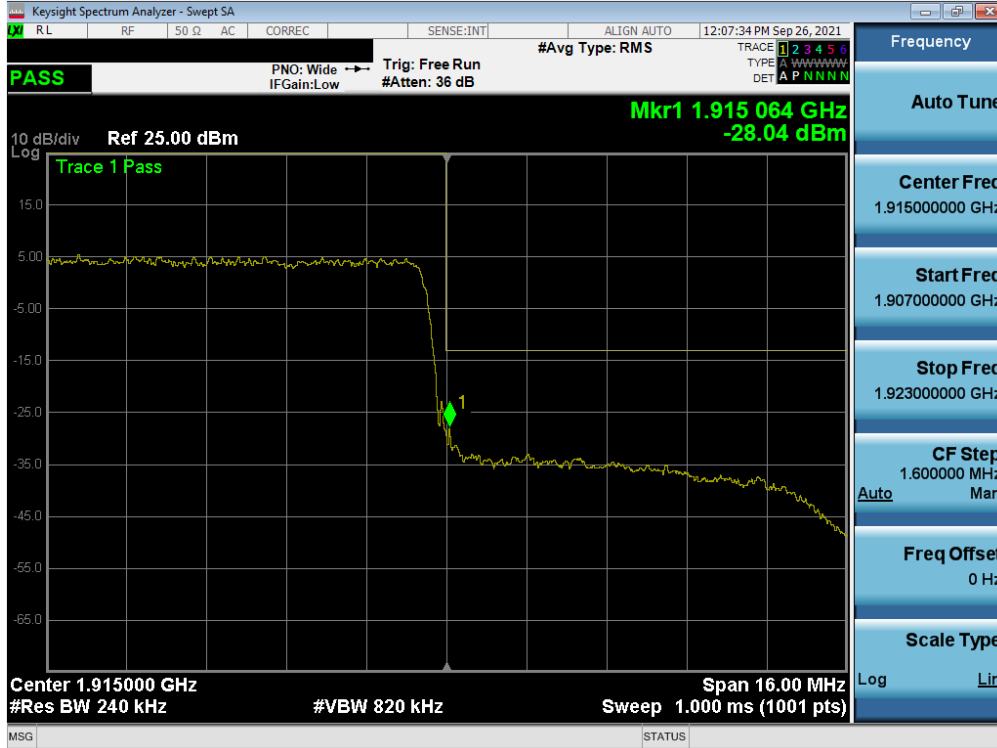


Plot 7-122. Upper Band Edge Plot (NR Band n2 - 20MHz QPSK – Full RB)



Plot 7-123. Extended Upper Band Edge Plot (NR Band n2 - 20MHz QPSK – Full RB)

FCC ID: A3LSMS908U	PCTEST Proud to be part of element	PART 24 MEASUREMENT REPORT		Approved by: Technical Manager
Test Report S/N: 1M2109090102-03-R1.A3L	Test Dates: 9/14/2021 - 11/16/2021	EUT Type: Portable Handset		Page 84 of 146



Plot 7-124. Upper Band Edge Plot (NR Band n25 - 20MHz QPSK – Full RB)



Plot 7-125. Extended Upper Band Edge Plot (NR Band n25 - 20MHz QPSK – Full RB)

FCC ID: A3LSMS908U	PCTEST Proud to be part of element	PART 24 MEASUREMENT REPORT	SAMSUNG	Approved by: Technical Manager
Test Report S/N: 1M2109090102-03-R1.A3L	Test Dates: 9/14/2021 - 11/16/2021	EUT Type: Portable Handset		Page 85 of 146