

PART 24 MEASUREMENT REPORT

Applicant Name:

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

Date of Testing:

4/27/2021 - 5/11/2021

Test Site/Location:

PCTEST Lab. Columbia, MD, USA

Test Report Serial No.:

1M2104190044-03.A3L

FCC ID:

A3LSMF926B

Applicant Name:

Samsung Electronics Co., Ltd.

Application Type:

Certification

Model:

SM-F926B

Additional Model(s):

SM-F926B/DS

EUT Type:

Portable Handset

FCC Classification:

PCS Licensed Transmitter Held to Ear (PCE)

FCC Rule Part:

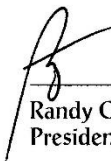
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Test Procedure(s):

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.

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


Randy Ortanez
President







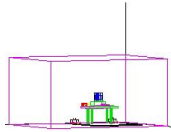
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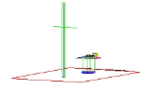
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Mode	Modulation	Tx Frequency Range [MHz]	EIRP		Emission Designator
			Max. Power [W]	Max. Power [dBm]	
GSM/GPRS	GMSK	1850.2 - 1909.8	0.829	29.19	244KGXW
EDGE	8-PSK	1850.2 - 1909.8	0.257	24.10	246KG7W
WCDMA	Spread Spectrum	1852.4 - 1907.6	0.276	24.41	4M16F9W

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	0.257	24.10	18M0G7D
		16QAM	1860 - 1905	0.225	23.52	18M0W7D
		64QAM	1860 - 1905	0.165	22.18	18M0W7D
		256QAM	1860 - 1905	0.121	20.83	18M0W7D
	15 MHz	QPSK	1857.5 - 1907.5	0.263	24.20	13M5G7D
		16QAM	1857.5 - 1907.5	0.219	23.41	13M5W7D
		64QAM	1857.5 - 1907.5	0.178	22.49	13M5W7D
		256QAM	1857.5 - 1907.5	0.120	20.80	13M5W7D
	10 MHz	QPSK	1855 - 1910	0.261	24.16	9M04G7D
		16QAM	1855 - 1910	0.225	23.51	8M99W7D
		64QAM	1855 - 1910	0.181	22.57	9M01W7D
		256QAM	1855 - 1910	0.121	20.82	9M00W7D
	5 MHz	QPSK	1852.5 - 1912.5	0.262	24.18	4M51G7D
		16QAM	1852.5 - 1912.5	0.219	23.40	4M50W7D
		64QAM	1852.5 - 1912.5	0.177	22.48	4M51W7D
		256QAM	1852.5 - 1912.5	0.123	20.89	4M50W7D
	3 MHz	QPSK	1851.5 - 1913.5	0.257	24.10	2M70G7D
		16QAM	1851.5 - 1913.5	0.218	23.39	2M71W7D
		64QAM	1851.5 - 1913.5	0.180	22.56	2M71W7D
		256QAM	1851.5 - 1913.5	0.121	20.81	2M71W7D
	1.4 MHz	QPSK	1850.7 - 1914.3	0.240	23.80	1M10G7D
		16QAM	1850.7 - 1914.3	0.198	22.96	1M10W7D
		64QAM	1850.7 - 1914.3	0.178	22.49	1M10W7D
		256QAM	1850.7 - 1914.3	0.116	20.65	1M09W7D

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1.0 INTRODUCTION

1.1 Scope

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



1.2 PCTEST Test Location

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

1.3 Test Facility / Accreditations

Measurements were performed at PCTEST Engineering Lab located in Columbia, MD 21046, U.S.A.

- PCTEST is an ISO 17025-2017 accredited test facility under the American Association for Laboratory Accreditation (A2LA) with Certificate number 2041.01 for Specific Absorption Rate (SAR), Hearing Aid Compatibility (HAC) testing, where applicable, and Electromagnetic Compatibility (EMC) testing for FCC and Innovation, Science, and Economic Development Canada rules.
- PCTEST TCB is a Telecommunication Certification Body (TCB) accredited to ISO/IEC 17065-2012 by A2LA (Certificate number 2041.03) in all scopes of FCC Rules and ISSED Standards (RSS).
- PCTEST facility is a registered (2451B) test laboratory with the site description on file with ISSED.

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2.0 PRODUCT INFORMATION

2.1 Equipment Description

The Equipment Under Test (EUT) is the **Samsung Portable Handset FCC ID:A3LSMF926B**. 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.: 0714M, 0450M

2.2 Device Capabilities

This device contains the following capabilities:

850/1900 GSM/GPRS/EDGE, 850/1700/1900 WCDMA/HSPA, Multi-band LTE, Multi-band 5G NR (n5, n66), 802.11b/g/n/ax WLAN, 802.11a/n/ac/ax UNII (5GHz and 6GHz), Bluetooth (1x, EDR, LE), NFC, Wireless Power Transfer, UWB

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.

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

2.4 EMI Suppression Device(s)/Modifications

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

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3.0 DESCRIPTION OF TESTS

3.1 Evaluation Procedure

The measurement procedures described in the “Land Mobile FM or PM – Communications Equipment – Measurements and Performance Standards” (ANSI/TIA-603-E-2016) and “Measurement Guidance for Certification of Licensed Digital Transmitters” (KDB 971168 D01 v03r01) were used in the measurement of the EUT.

Deviation from Measurement Procedure.....None

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:

$$P_d \text{ [dBm]} = P_g \text{ [dBm]} - \text{cable loss [dB]} + \text{antenna gain [dBd/dBi]};$$

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

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:



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

And

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

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 474788 D01.



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

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4.0 MEASUREMENT UNCERTAINTY

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

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

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5.0 TEST EQUIPMENT CALIBRATION DATA



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

Manufacturer	Model	Description	Cal Date	Cal Interval	Cal Due	Serial Number
-	AP2	EMC Cable and Switch System	3/4/2021	Annual	3/4/2022	AP2
-	AP1	EMC Cable and Switch System	3/9/2021	Annual	3/9/2022	AP1
-	ETS	EMC Cable and Switch System	3/4/2021	Annual	3/4/2022	ETS
-	LTx1	Licensed Transmitter Cable Set	3/12/2021	Annual	3/12/2022	LTx1
-	LTx2	Licensed Transmitter Cable Set	3/12/2021	Annual	3/12/2022	LTx2
Agilent	E5515C	Wireless Communications Test Set	N/A			GB46310798
Agilent	N9030A	50GHz PXA Signal Analyzer	1/20/2021	Annual	1/20/2022	US51350301
Anritsu	MT8820C	Radio Communication Analyzer	N/A			6201300731
Com-Power	AL-130R	Active Loop Antenna	8/22/2019	Biennial	8/22/2021	121085
Emco	3115	Horn Antenna (1-18GHz)	6/18/2020	Biennial	6/18/2022	9704-5182
Emco	3116	Horn Antenna (18 - 40GHz)	8/7/2018	Triennial	8/7/2021	9203-2178
Espec	ESX-2CA	Environmental Chamber	8/27/2020	Annual	8/27/2022	17620
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	N9020A	MXA Signal Analyzer	9/22/2020	Annual	9/22/2021	MY54500644
Keysight Technologies	N9030A	PXA Signal Analyzer (44GHz)	7/17/2020	Annual	7/17/2021	MY49430494
Keysight Technologies	N9038A	MXE EMI Receiver	8/11/2020	Annual	8/11/2021	MY51210133
Mini-Circuits	SSG-4000HP	Synthesized Signal Generator	N/A			11403100002
Rohde & Schwarz	CMW500	Radio Communication Tester	N/A			100976
Rohde & Schwarz	ESU26	EMI Test Receiver (26.5GHz)	7/15/2020	Annual	7/15/2021	100342
Rohde & Schwarz	ESU40	EMI Test Receiver (40GHz)	9/9/2020	Annual	9/9/2021	100348
Rohde & Schwarz	FSW67	Signal / Spectrum Analyzer	8/10/2020	Annual	8/10/2021	103200
Sunol	JB5	Bi-Log Antenna (30M - 5GHz)	7/27/2020	Biennial	7/27/2022	A051107

Table 5-1. Test Equipment

Notes:

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

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6.0 SAMPLE CALCULATIONS

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

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Spurious Radiated Emission

Example: Spurious emission at 3700.40 MHz

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

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7.0 TEST RESULTS

7.1 Summary



Company Name: Samsung Electronics Co., Ltd.
 FCC ID: A3LSMF926B
 FCC Classification: PCS Licensed Transmitter Held to Ear (PCE)
 Mode(s): GSM/GPRS/EDGE/WCDMA/LTE

Test Condition	Test Description	FCC Part Section(s)	RSS Section(s)	Test Limit	Test Result	Reference
CONDUCTED	Occupied Bandwidth	2.1049	RSS-Gen(6.7)	N/A	PASS	Section 7.2
	Conducted Band Edge / Spurious Emissions	2.1051, 24.238(a)	RSS-133(6.5)	> 43 + 10log10(P[Watts]) at Band Edge and for all out-of-band emissions	PASS	Sections 7.3, 7.4
	Transmitter Conducted Output Power	2.1046	RSS-133(4.1)	N/A	PASS	See RF Exposure Report
	Frequency Stability	2.1055, 24.235	RSS-133(6.3)	Fundamental emissions stay within authorized frequency block	PASS	Section 7.8
RADIATED	Effective Radiated Power / Equivalent Isotropic Radiated Power	24.232(c)	RSS-132(5.4)	< 7 Watts max. ERP	PASS	Section 7.6
	Radiated Spurious Emissions	2.1053, 24.238(a)	RSS-133(6.5)	> 43 + 10 log10 (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 Beta 8.

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7.2 Conducted Power Output Data

Test Overview

The EUT is set up to transmit two contiguous LTE channels. The power level of both carriers is measured by means of a calibrated spectrum analyzer. All emissions are measured with a spectrum analyzer connected to the antenna terminal of the EUT while the EUT is operating at its maximum duty cycle, at maximum power, and at the appropriate frequencies. All data rates were investigated to determine the worst case configuration. 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. 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.

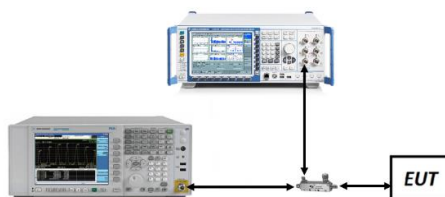


Figure 7-1. Test Instrument & Measurement Setup



Test Notes

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

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Bandwidth	Modulation	Channel	Frequency [MHz]	RB Size/Offset	Conducted Power [dBm]
20 MHz	QPSK	26140	1860.0	1 / 0	24.13
		26365	1882.5	1 / 99	23.97
		26590	1905.0	1 / 99	24.20
	16-QAM	26590	1905.0	1 / 99	23.28
15 MHz	QPSK	26115	1857.5	1 / 37	24.14
		26365	1882.5	1 / 74	24.04
		26615	1907.5	1 / 74	24.08
	16-QAM	26615	1907.5	1 / 74	23.32
10 MHz	QPSK	26090	1855.0	1 / 25	23.87
		26365	1882.5	1 / 25	23.81
		26640	1910.0	1 / 25	24.25
	16-QAM	26640	1910.0	1 / 25	23.27
5 MHz	QPSK	26065	1852.5	1 / 24	24.07
		26365	1882.5	1 / 12	23.81
		26665	1912.5	1 / 24	24.46
	16-QAM	26665	1912.5	1 / 24	23.78
3 MHz	QPSK	26055	1851.5	1 / 14	24.10
		26365	1882.5	1 / 14	23.96
		26675	1913.5	1 / 7	24.29
	16-QAM	26675	1913.5	1 / 7	23.19
1.4 MHz	QPSK	26047	1850.7	1 / 5	24.03
		26365	1882.5	1 / 5	23.86
		26683	1914.3	1 / 0	24.07
	16-QAM	26683	1914.3	1 / 0	23.12

Table 7-2. Conducted Max Powers (LTE Band 25/2)

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7.3 Occupied Bandwidth

Test Overview

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

Test Procedure Used

KDB 971168 D01 v03r01 – Section 4.2

Test Settings

1. The signal analyzer's automatic bandwidth measurement capability was used to perform the 99% occupied bandwidth and the 26dB bandwidth. The bandwidth measurement was not influenced by any intermediate power nulls in the fundamental emission.
2. RBW = 1 – 5% of the expected OBW
3. VBW $\geq 3 \times$ 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.

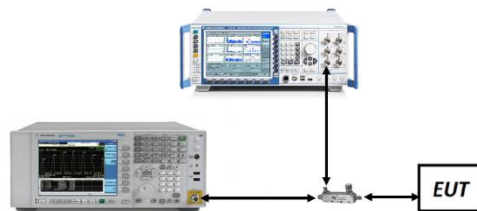


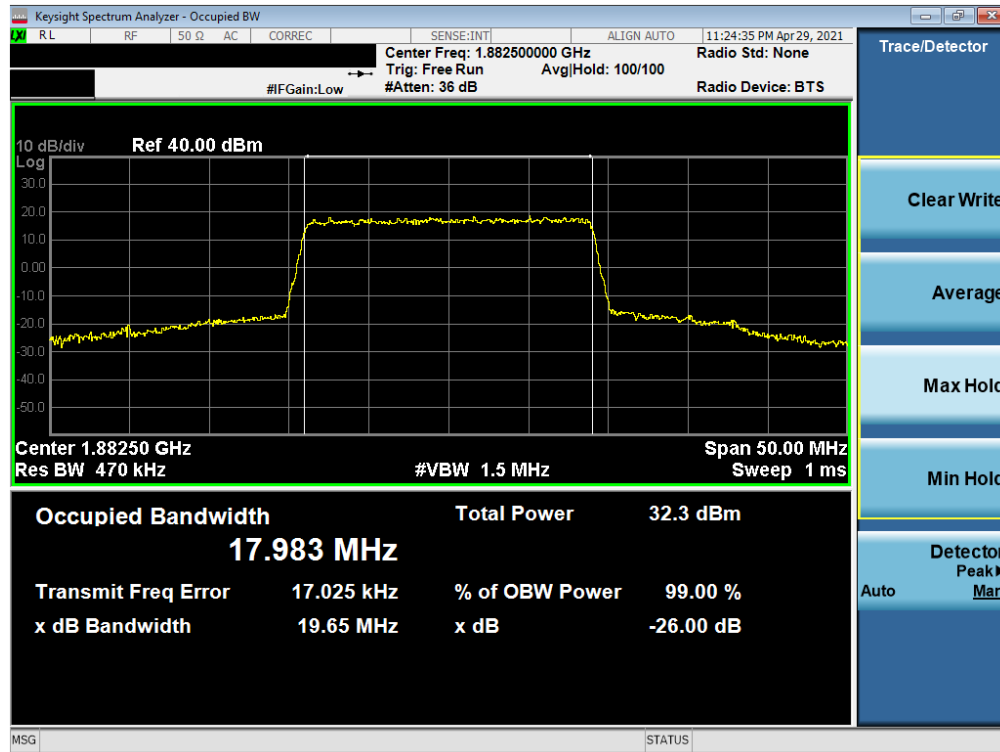
Figure 7-2. Test Instrument & Measurement Setup

Test Notes

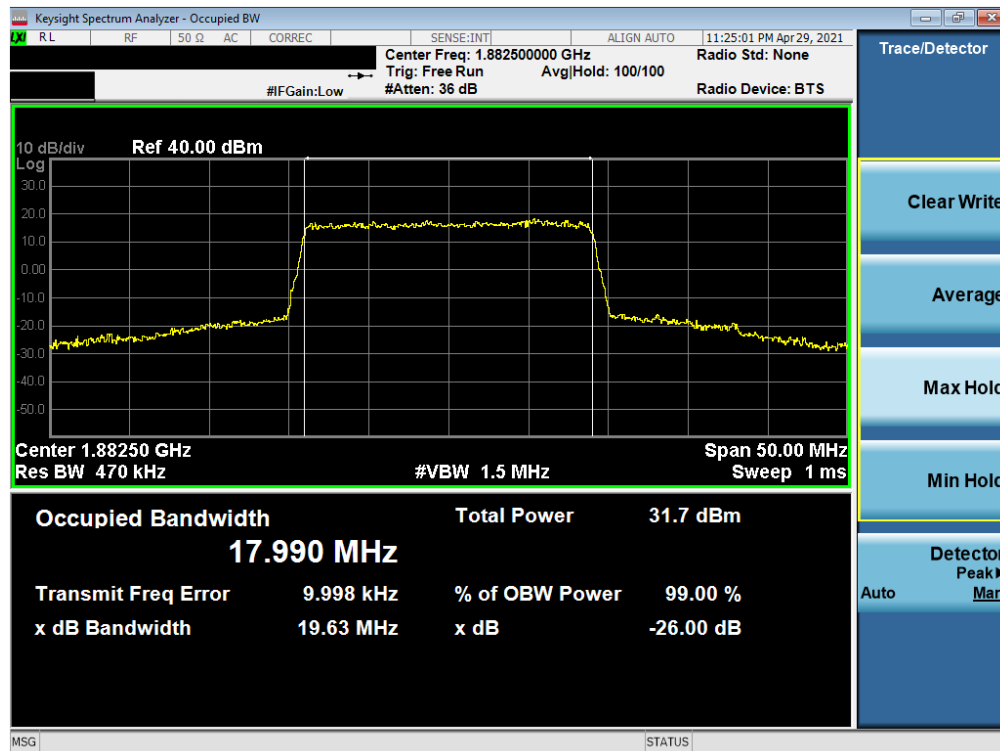
None.

FCC ID: A3LSMF926B	PCTEST Proud to be part of element	PART 24 MEASUREMENT REPORT	SAMSUNG	Approved by: Technical Manager
Test Report S/N: 1M2104190044-03.A3L	Test Dates: 4/27/2021 - 5/11/2021	EUT Type: Portable Handset		Page 14 of 88

LTE Band 25/2

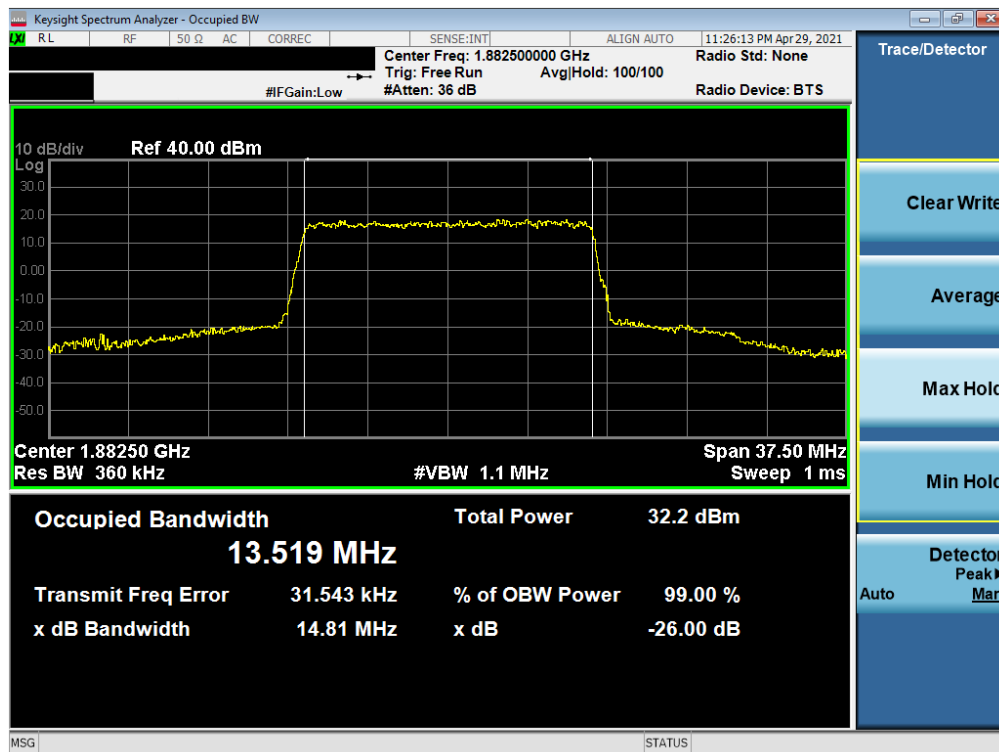


Plot 7-1. Occupied Bandwidth Plot (LTE Band 25/2 - 20MHz QPSK - Full RB)

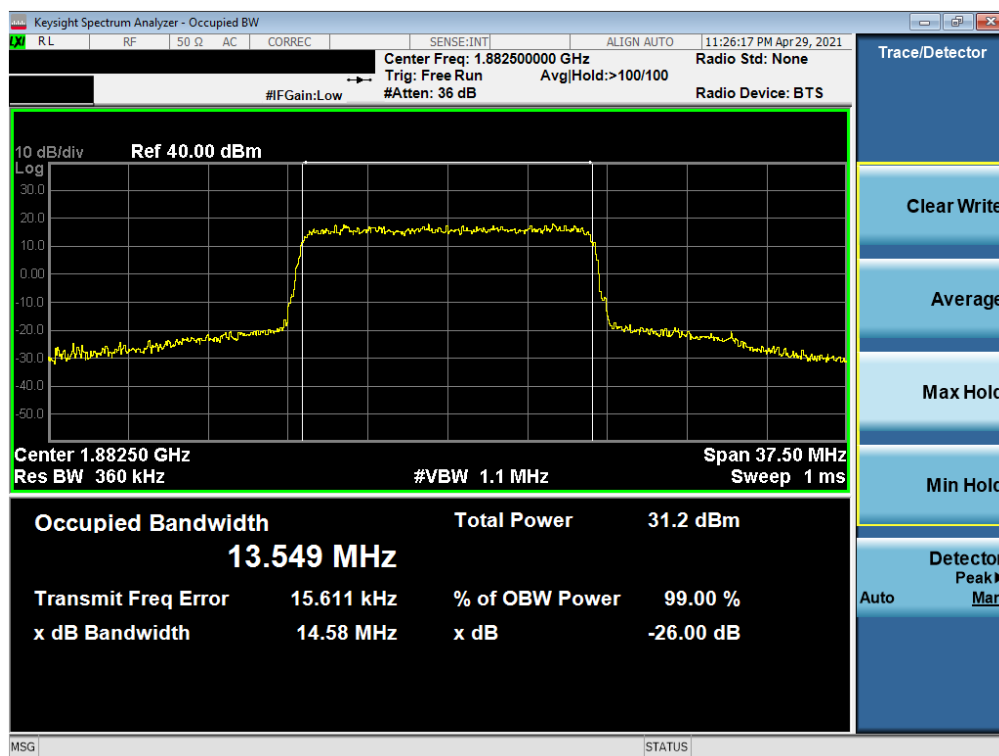


Plot 7-2. Occupied Bandwidth Plot (LTE Band 25/2 - 20MHz 16-QAM - Full RB)

FCC ID: A3LSMF926B	PCTEST Proud to be part of element	PART 24 MEASUREMENT REPORT	SAMSUNG	Approved by: Technical Manager
Test Report S/N: 1M2104190044-03.A3L	Test Dates: 4/27/2021 - 5/11/2021	EUT Type: Portable Handset		Page 15 of 88



Plot 7-3. Occupied Bandwidth Plot (LTE Band 25/2 - 15MHz QPSK - Full RB)



Plot 7-4. Occupied Bandwidth Plot (LTE Band 25/2 - 15MHz 16-QAM - Full RB)

FCC ID: A3LSMF926B	PCTEST Proud to be part of element	PART 24 MEASUREMENT REPORT	SAMSUNG	Approved by: Technical Manager
Test Report S/N: 1M2104190044-03.A3L	Test Dates: 4/27/2021 - 5/11/2021	EUT Type: Portable Handset		Page 16 of 88

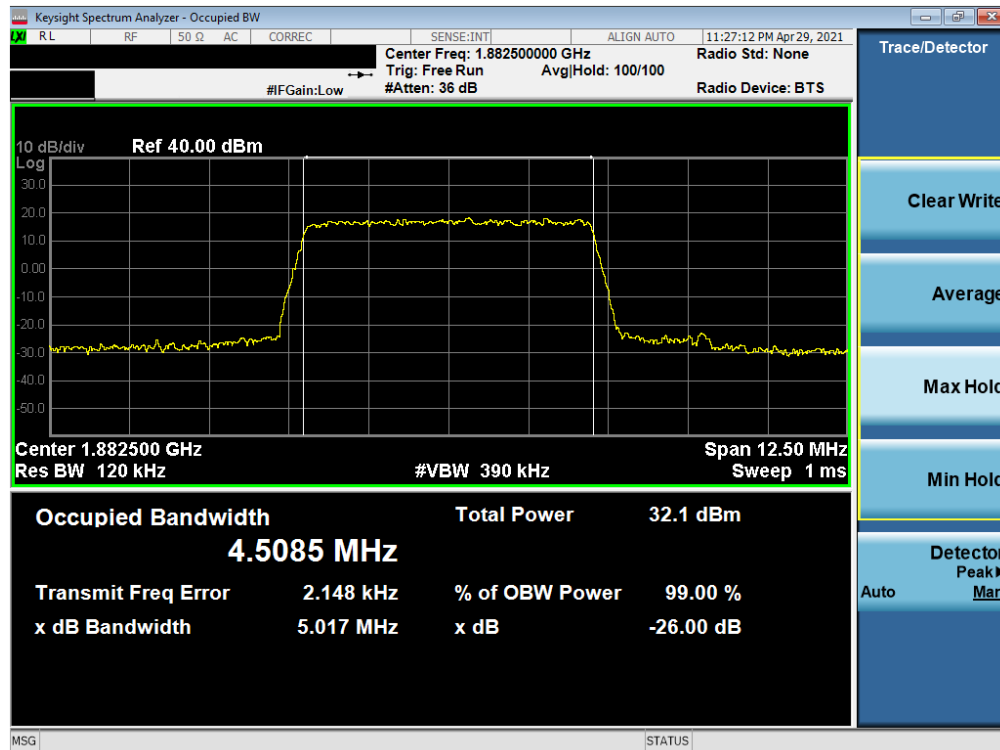


Plot 7-5. Occupied Bandwidth Plot (LTE Band 25/2 - 10MHz QPSK - Full RB)

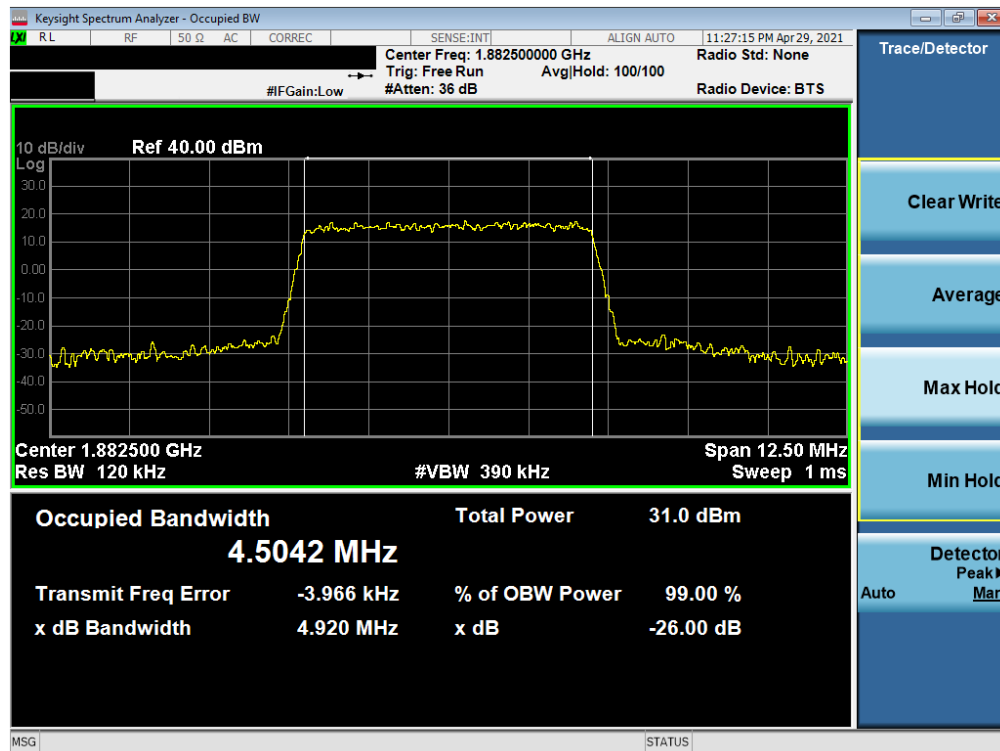


Plot 7-6. Occupied Bandwidth Plot (LTE Band 25/2 - 10MHz 16-QAM - Full RB)

FCC ID: A3LSMF926B	PCTEST Proud to be part of element	PART 24 MEASUREMENT REPORT	SAMSUNG	Approved by: Technical Manager
Test Report S/N: 1M2104190044-03.A3L	Test Dates: 4/27/2021 - 5/11/2021	EUT Type: Portable Handset		Page 17 of 88

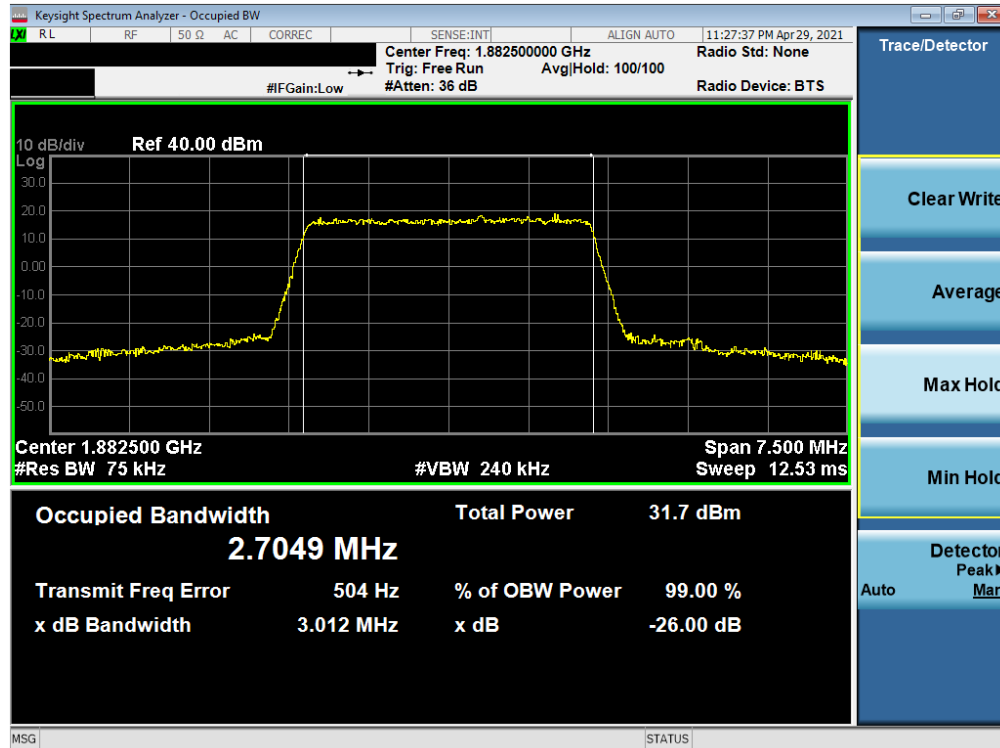


Plot 7-7. Occupied Bandwidth Plot (LTE Band 25/2 - 5MHz QPSK - Full RB)

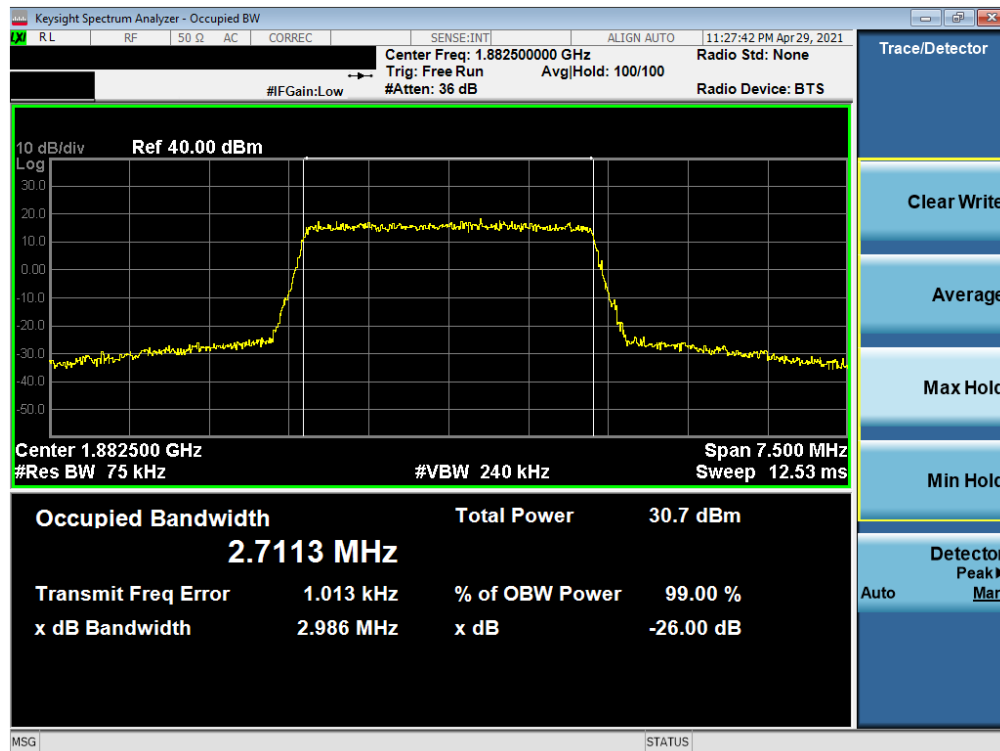


Plot 7-8. Occupied Bandwidth Plot (LTE Band 25/2 - 5MHz 16-QAM - Full RB)

FCC ID: A3LSMF926B	PCTEST Proud to be part of element	PART 24 MEASUREMENT REPORT	SAMSUNG	Approved by: Technical Manager
Test Report S/N: 1M2104190044-03.A3L	Test Dates: 4/27/2021 - 5/11/2021	EUT Type: Portable Handset		Page 18 of 88

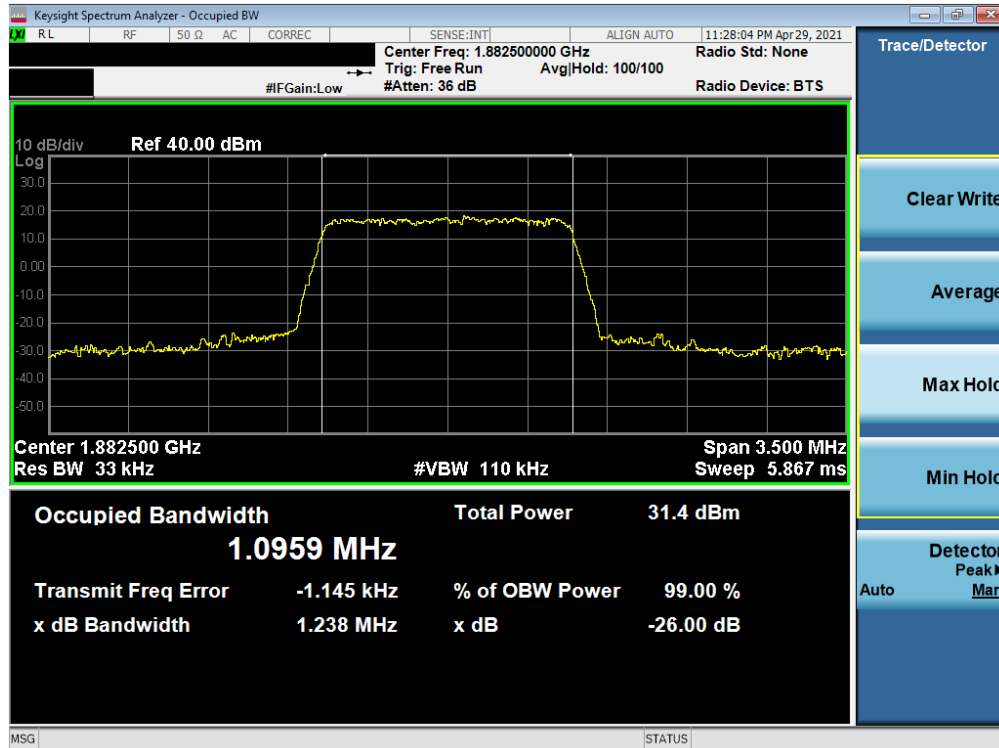


Plot 7-9. Occupied Bandwidth Plot (LTE Band 25/2 - 3MHz QPSK - Full RB)

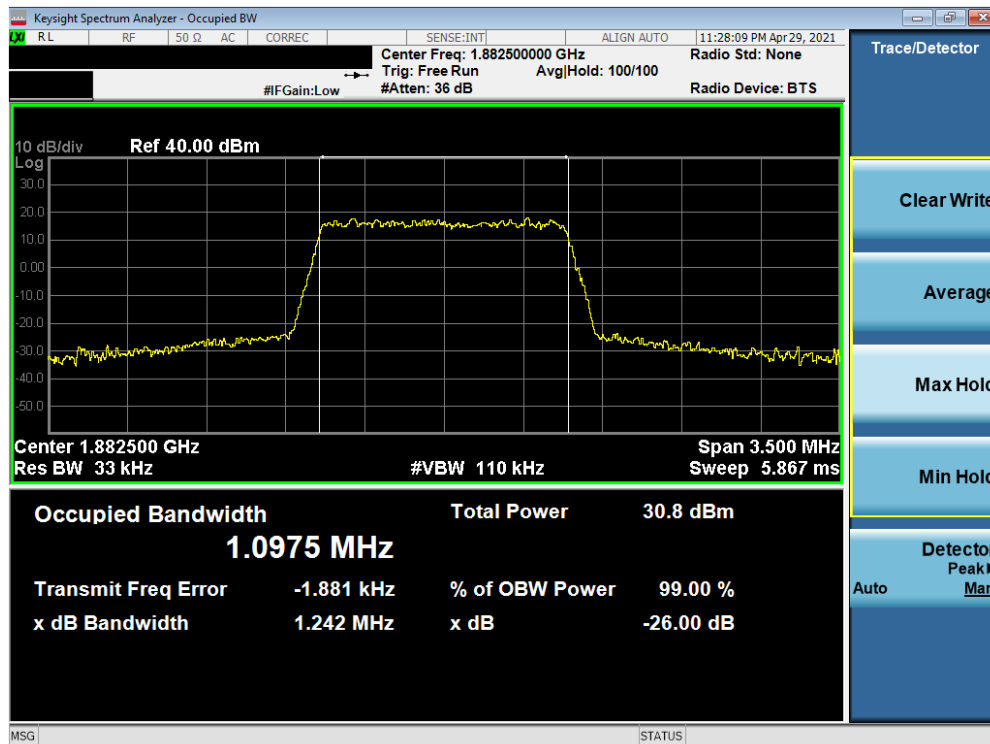


Plot 7-10. Occupied Bandwidth Plot (LTE Band 25/2 - 3MHz 16-QAM - Full RB)

FCC ID: A3LSMF926B	PCTEST Proud to be part of element	PART 24 MEASUREMENT REPORT	SAMSUNG	Approved by: Technical Manager
Test Report S/N: 1M2104190044-03.A3L	Test Dates: 4/27/2021 - 5/11/2021	EUT Type: Portable Handset		Page 19 of 88



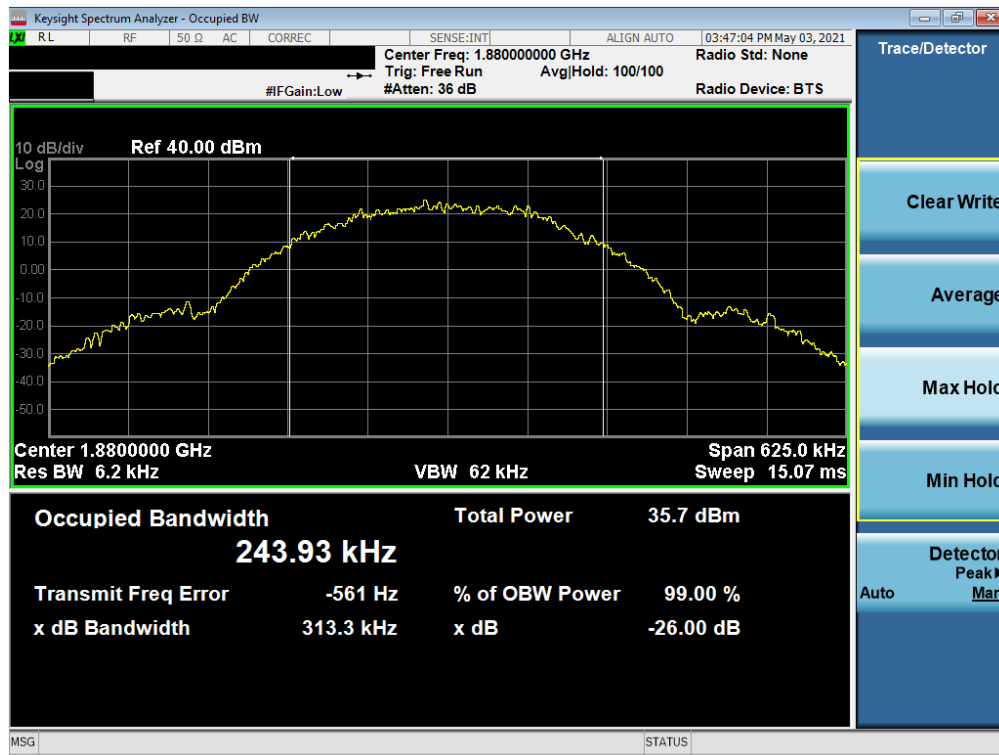
Plot 7-11. Occupied Bandwidth Plot (LTE Band 25/2 - 1.4MHz QPSK - Full RB)



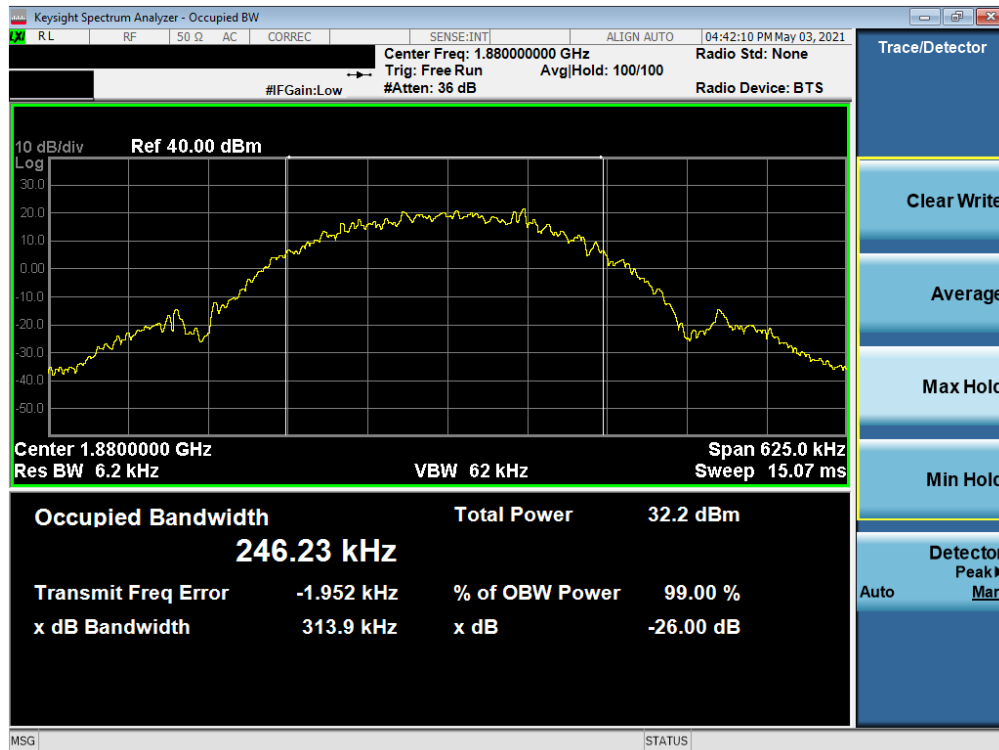
Plot 7-12. Occupied Bandwidth Plot (LTE Band 25/2 - 1.4MHz 16-QAM - Full RB)

FCC ID: A3LSMF926B	PCTEST Proud to be part of element	PART 24 MEASUREMENT REPORT	SAMSUNG	Approved by: Technical Manager
Test Report S/N: 1M2104190044-03.A3L	Test Dates: 4/27/2021 - 5/11/2021	EUT Type: Portable Handset		Page 20 of 88

GSM/GPRS PCS



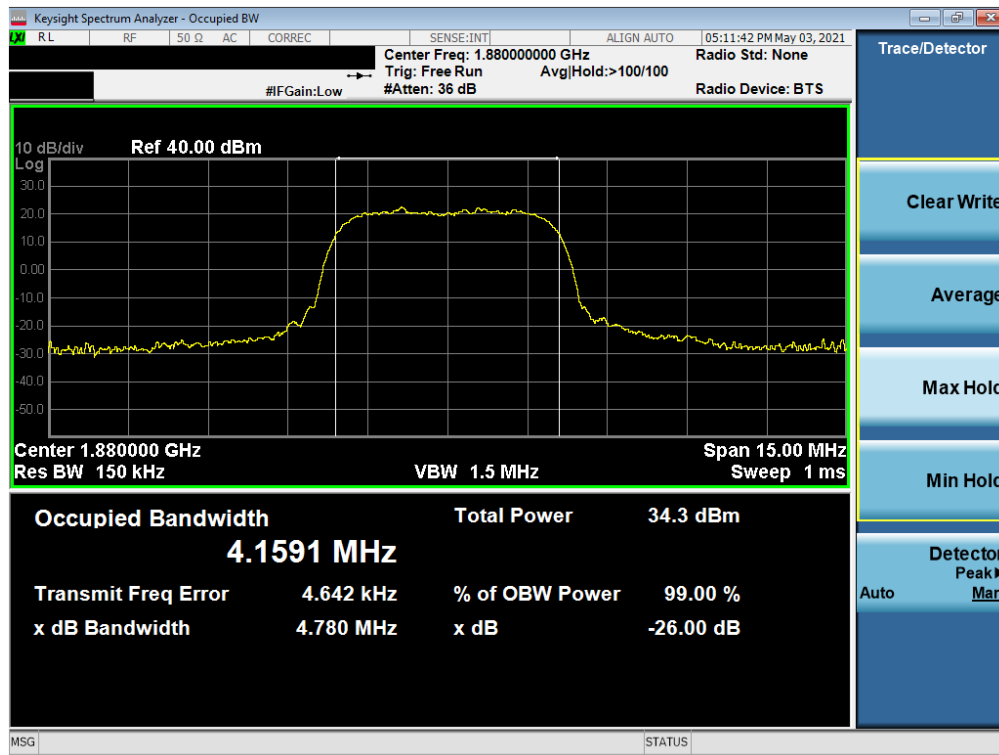
Plot 7-13. Occupied Bandwidth Plot (GPRS, Ch. 661)



Plot 7-14. Occupied Bandwidth Plot (EDGE, Ch. 661)

FCC ID: A3LSMF926B	PCTEST Proud to be part of element	PART 24 MEASUREMENT REPORT	SAMSUNG	Approved by: Technical Manager
Test Report S/N: 1M2104190044-03.A3L	Test Dates: 4/27/2021 - 5/11/2021	EUT Type: Portable Handset		Page 21 of 88

WCDMA PCS



Plot 7-15. Occupied Bandwidth Plot (WCDMA, Ch. 9400)

FCC ID: A3LSMF926B	PCTEST Proud to be part of element	PART 24 MEASUREMENT REPORT	SAMSUNG	Approved by: Technical Manager
Test Report S/N: 1M2104190044-03.A3L	Test Dates: 4/27/2021 - 5/11/2021	EUT Type: Portable Handset		Page 22 of 88

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 $43 + 10 \log_{10}(P_{\text{Watts}})$, 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.

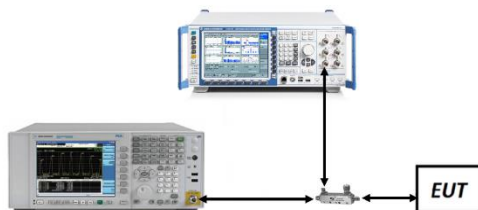


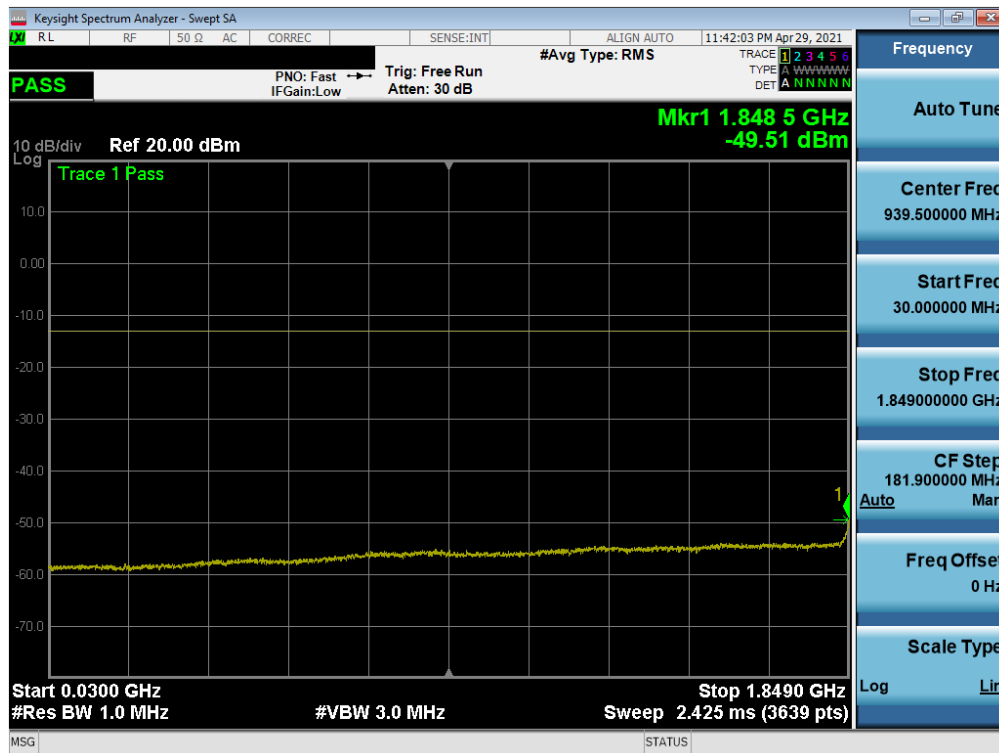
Figure 7-3. Test Instrument & Measurement Setup

Test Notes

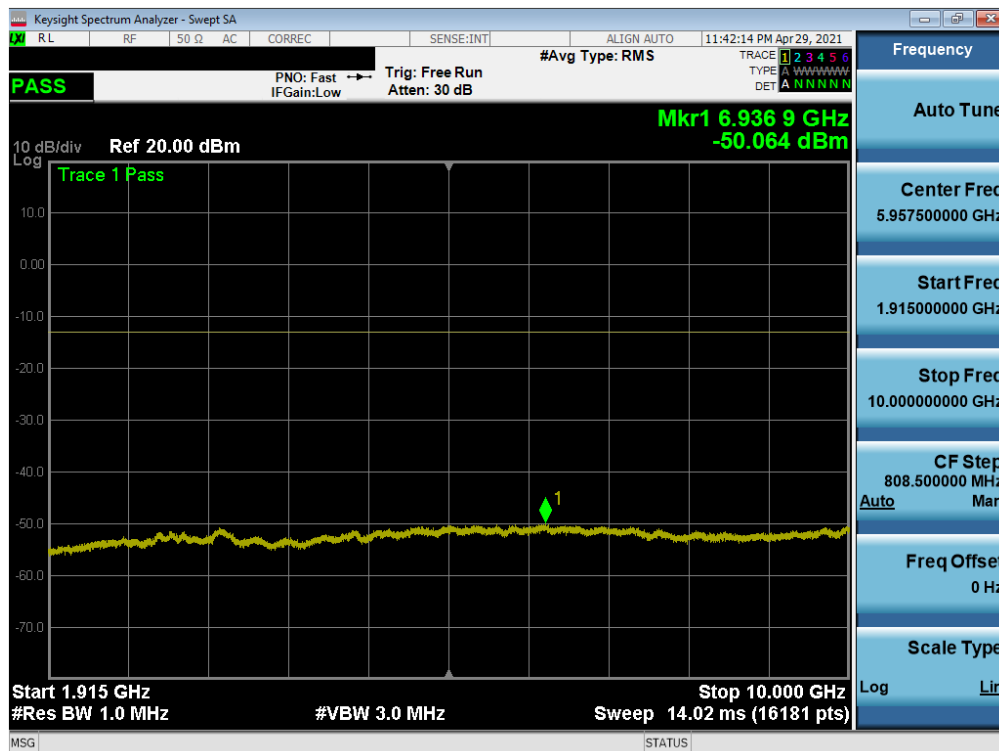
1. Per Part 24 and RSS-133, compliance with the applicable limits is based on the use of measurement instrumentation employing a resolution bandwidth 100 kHz or greater for measurements below 1GHz. However, in the 1 MHz bands immediately outside and adjacent to the frequency block a resolution bandwidth 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.

FCC ID: A3LSMF926B	PCTEST Proud to be part of element	PART 24 MEASUREMENT REPORT	SAMSUNG	Approved by: Technical Manager
Test Report S/N: 1M2104190044-03.A3L	Test Dates: 4/27/2021 - 5/11/2021	EUT Type: Portable Handset		Page 23 of 88

LTE Band 25/2

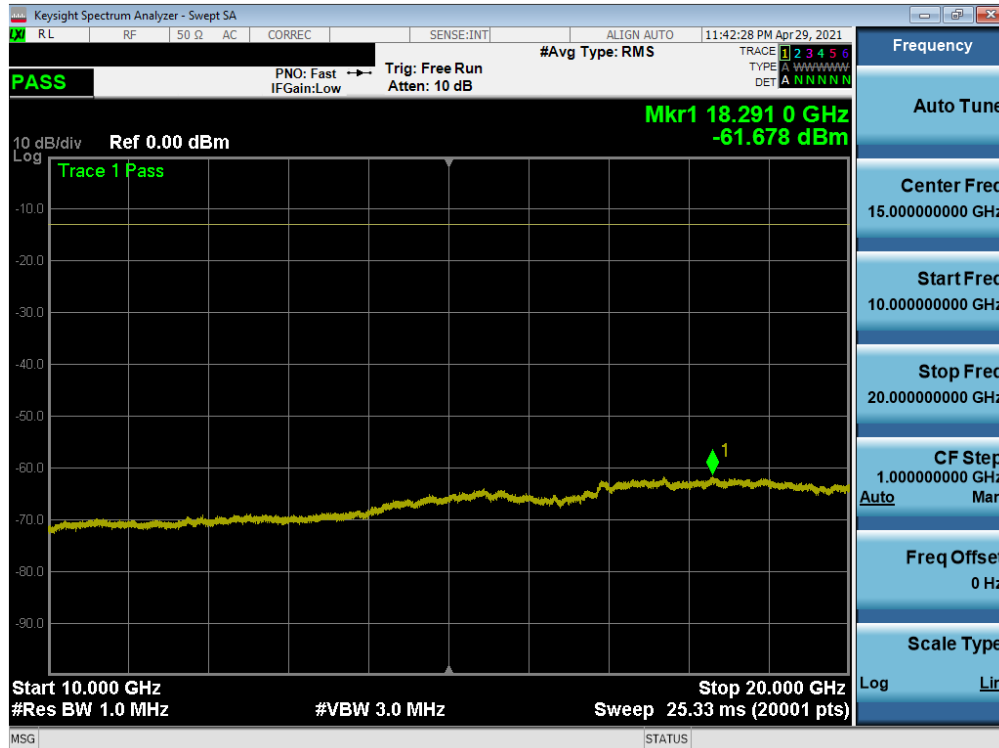


Plot 7-16. Conducted Spurious Plot (LTE Band 25/2 - 20MHz QPSK - 1RB - Low Channel)

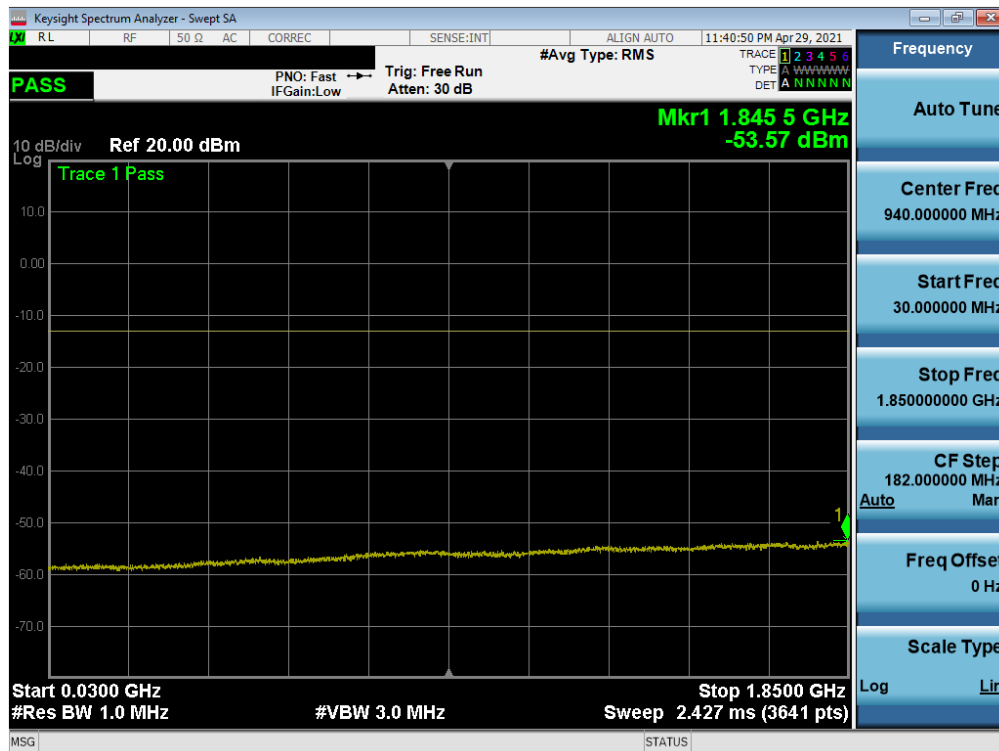


Plot 7-17. Conducted Spurious Plot (LTE Band 25/2 - 20MHz QPSK - 1RB - Low Channel)

FCC ID: A3LSMF926B	PCTEST Proud to be part of element	PART 24 MEASUREMENT REPORT	SAMSUNG	Approved by: Technical Manager
Test Report S/N: 1M2104190044-03.A3L	Test Dates: 4/27/2021 - 5/11/2021	EUT Type: Portable Handset		Page 24 of 88

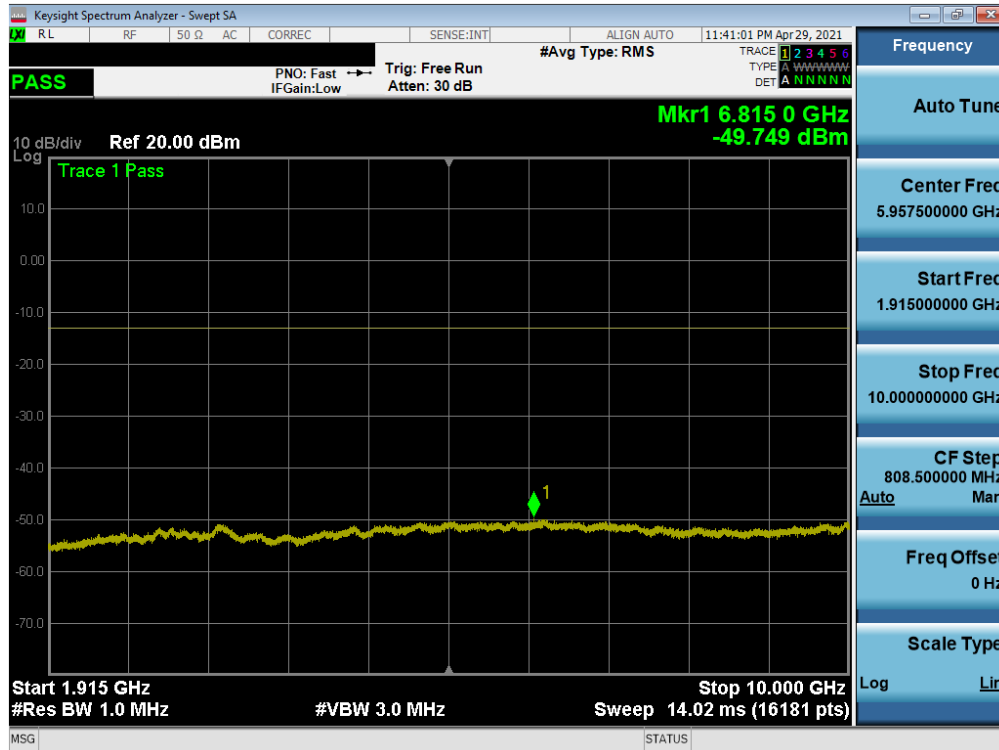


Plot 7-18. Conducted Spurious Plot (LTE Band 25/2 - 20MHz QPSK - 1RB - Low Channel)



Plot 7-19. Conducted Spurious Plot (LTE Band 25/2 - 20MHz QPSK - 1RB - Mid Channel)

FCC ID: A3LSMF926B	PCTEST Proud to be part of element	PART 24 MEASUREMENT REPORT	SAMSUNG	Approved by: Technical Manager
Test Report S/N: 1M2104190044-03.A3L	Test Dates: 4/27/2021 - 5/11/2021	EUT Type: Portable Handset		Page 25 of 88

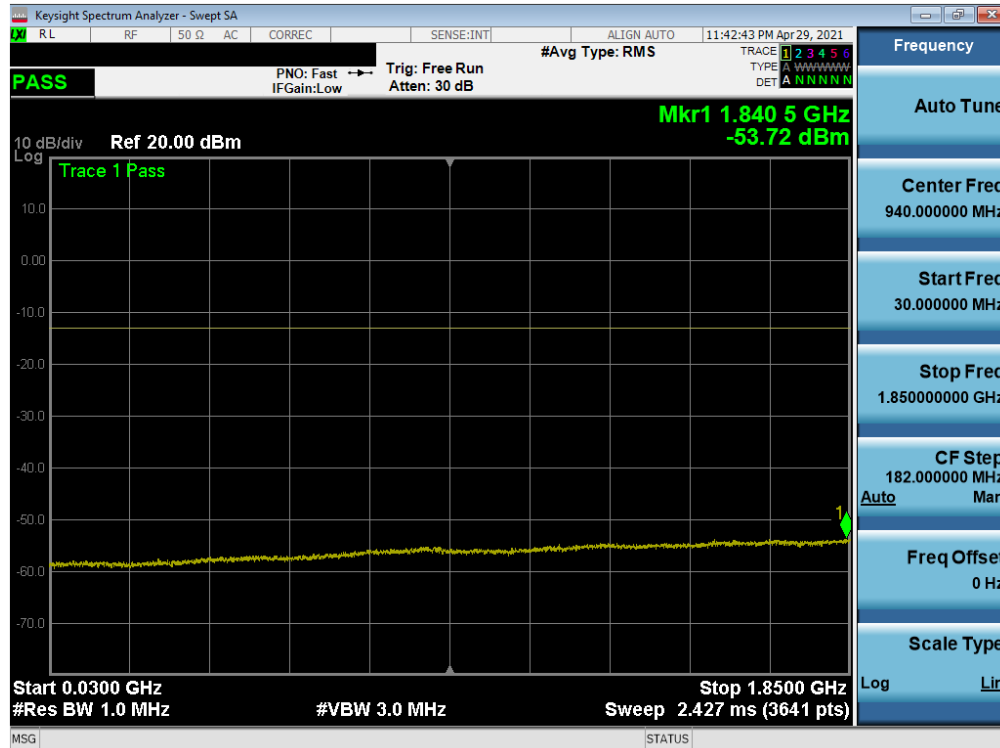


Plot 7-20. Conducted Spurious Plot (LTE Band 25/2 - 20MHz QPSK - 1RB - Mid Channel)

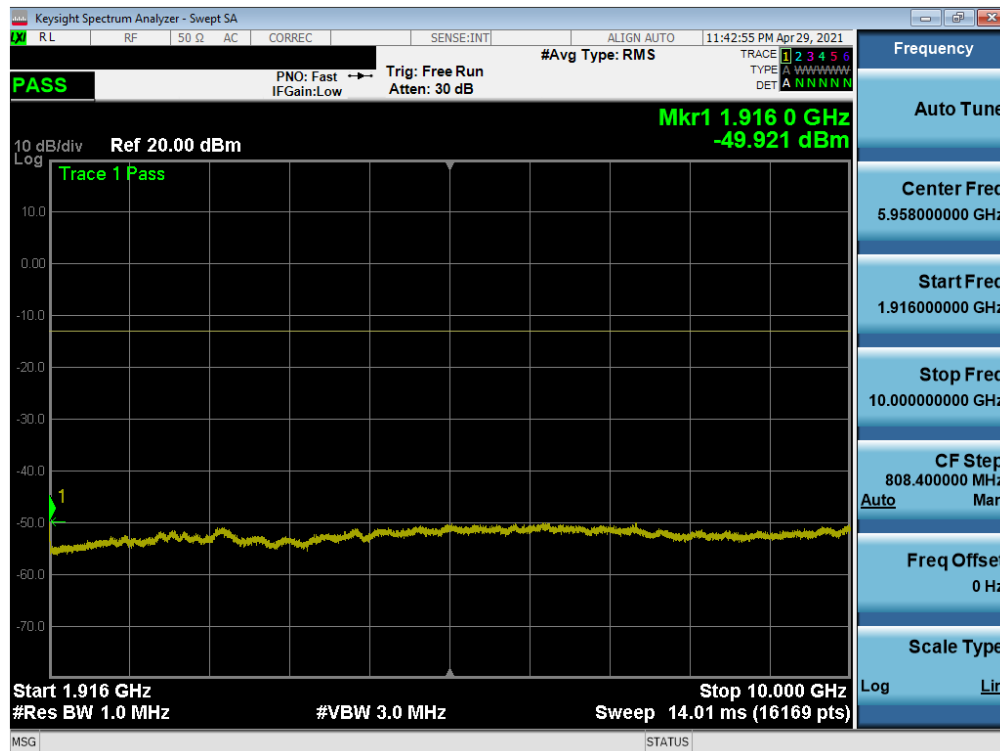


Plot 7-21. Conducted Spurious Plot (LTE Band 25/2 - 20MHz QPSK - 1RB - Mid Channel)

FCC ID: A3LSMF926B	PCTEST Proud to be part of element	PART 24 MEASUREMENT REPORT	SAMSUNG	Approved by: Technical Manager
Test Report S/N: 1M2104190044-03.A3L	Test Dates: 4/27/2021 - 5/11/2021	EUT Type: Portable Handset		Page 26 of 88

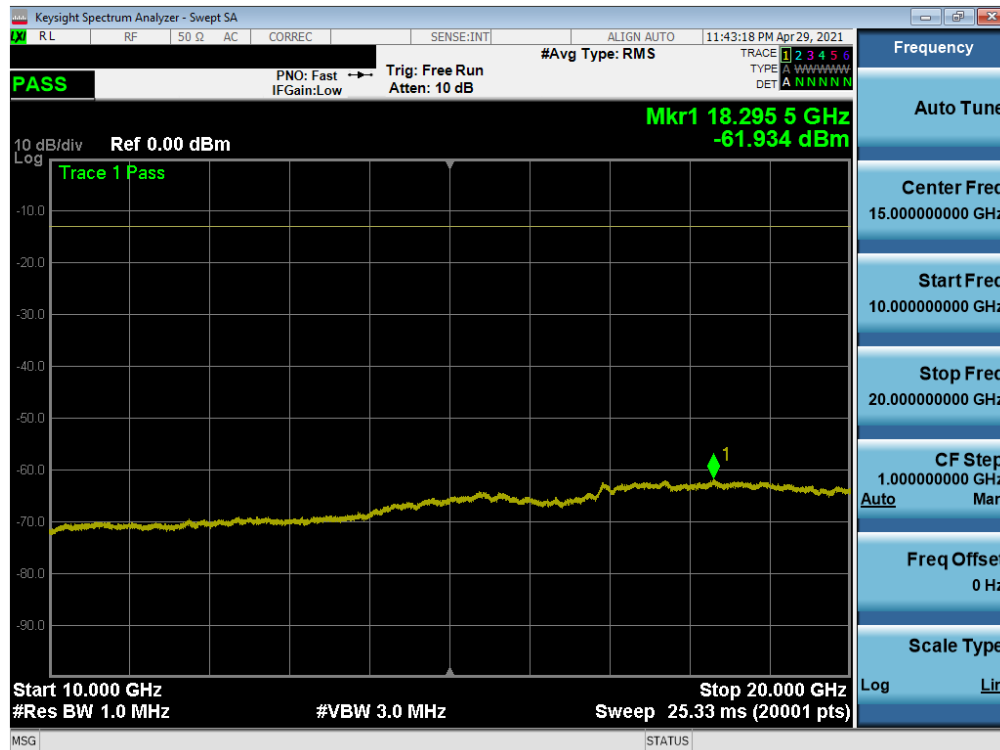


Plot 7-22. Conducted Spurious Plot (LTE Band 25/2 - 20MHz QPSK - 1RB - High Channel)



Plot 7-23. Conducted Spurious Plot (LTE Band 25/2 - 20MHz QPSK - 1RB - High Channel)

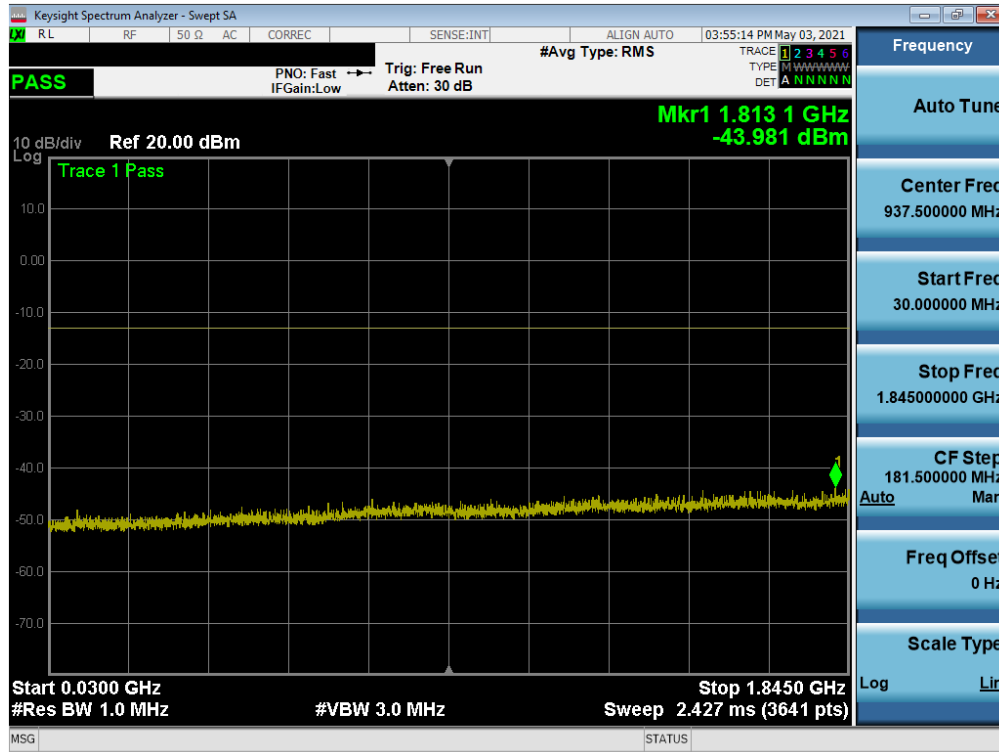
FCC ID: A3LSMF926B	PCTEST Proud to be part of element	PART 24 MEASUREMENT REPORT	SAMSUNG	Approved by: Technical Manager
Test Report S/N: 1M2104190044-03.A3L	Test Dates: 4/27/2021 - 5/11/2021	EUT Type: Portable Handset		Page 27 of 88



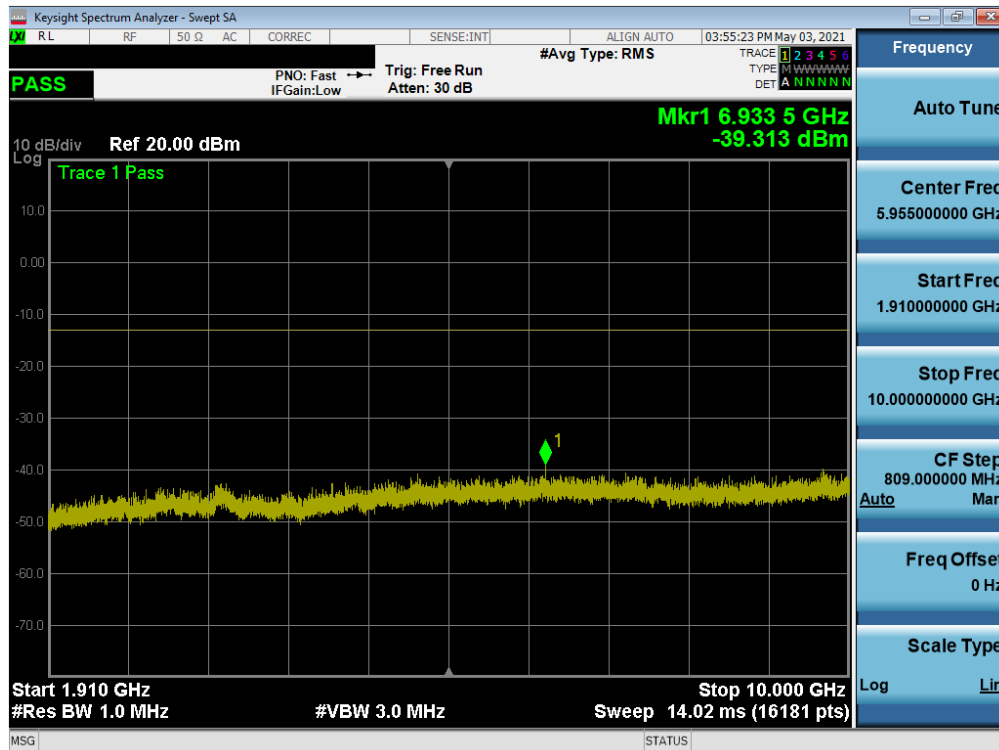
Plot 7-24. Conducted Spurious Plot (LTE Band 25/2 - 20MHz QPSK - 1RB - High Channel)

FCC ID: A3LSMF926B	PCTEST Proud to be part of element	PART 24 MEASUREMENT REPORT	SAMSUNG	Approved by: Technical Manager
Test Report S/N: 1M2104190044-03.A3L	Test Dates: 4/27/2021 - 5/11/2021	EUT Type: Portable Handset		Page 28 of 88

GSM/GPRS PCS

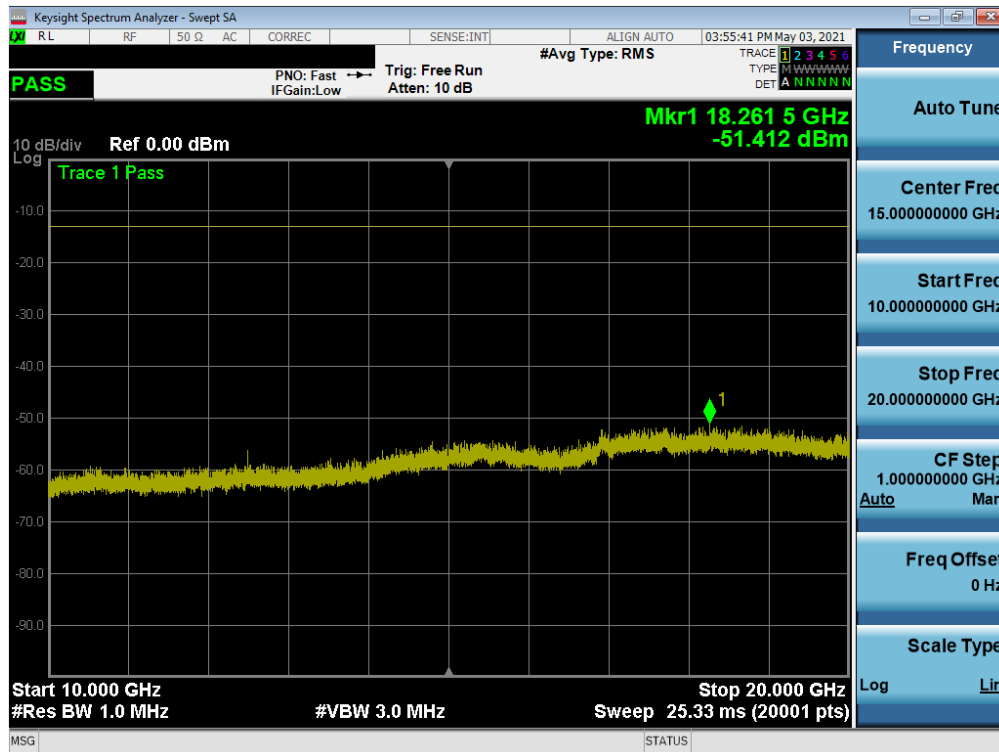


Plot 7-25. Conducted Spurious Plot (GPRS Ch. 512)

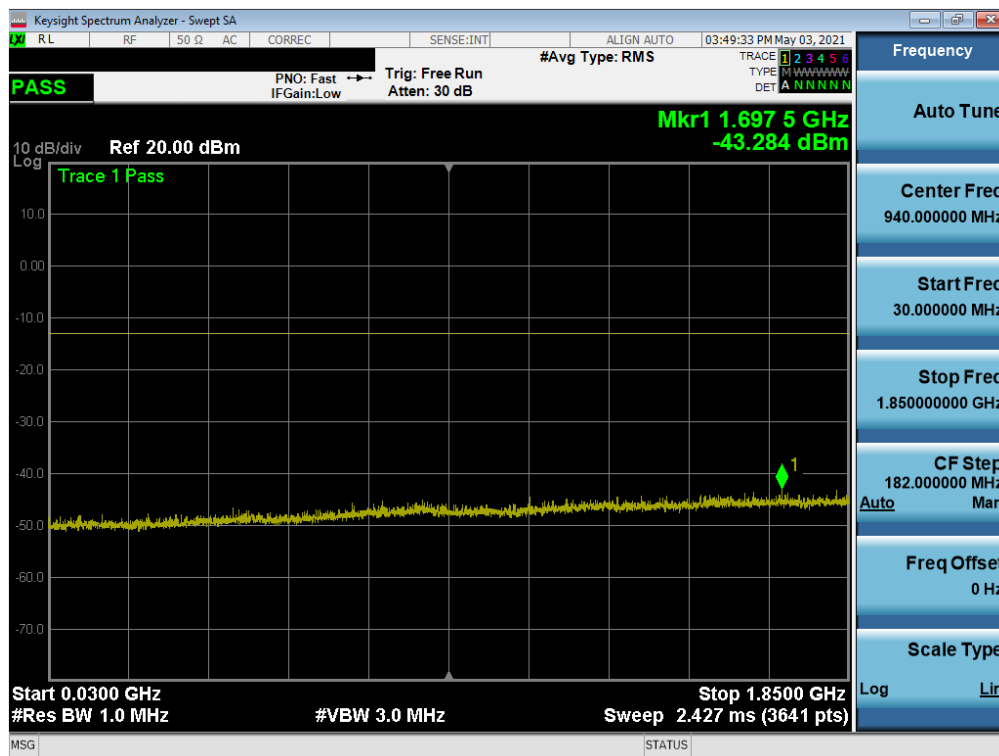


Plot 7-26. Conducted Spurious Plot (GPRS Ch. 512)

FCC ID: A3LSMF926B	PCTEST Proud to be part of element	PART 24 MEASUREMENT REPORT	SAMSUNG	Approved by: Technical Manager
Test Report S/N: 1M2104190044-03.A3L	Test Dates: 4/27/2021 - 5/11/2021	EUT Type: Portable Handset		Page 29 of 88

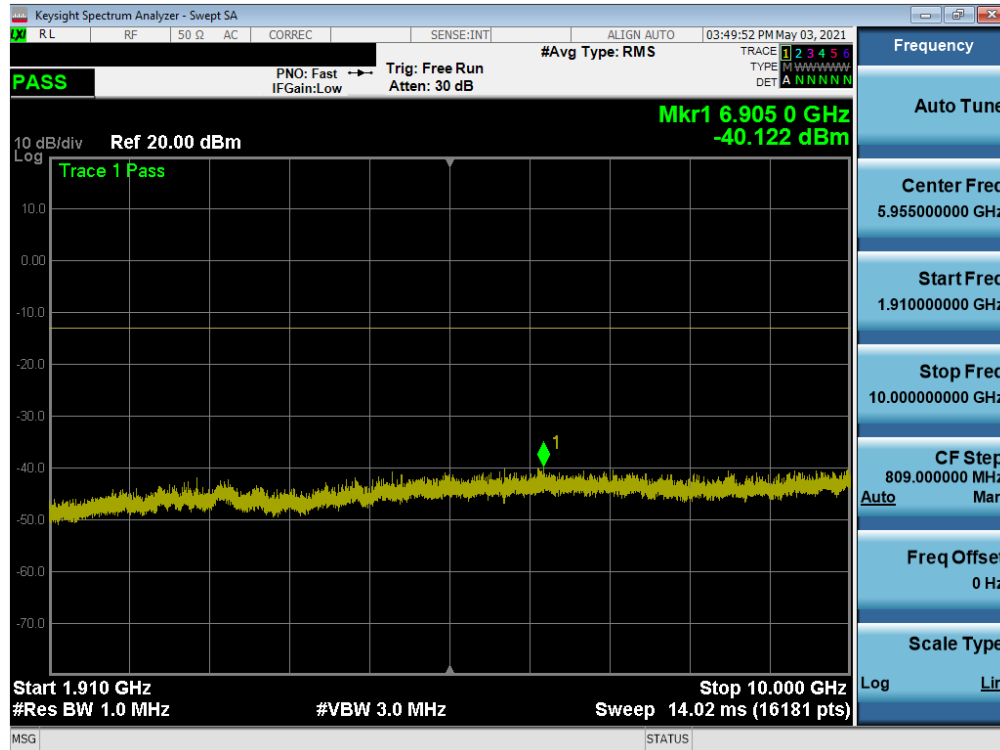


Plot 7-27. Conducted Spurious Plot (GPRS Ch. 512)

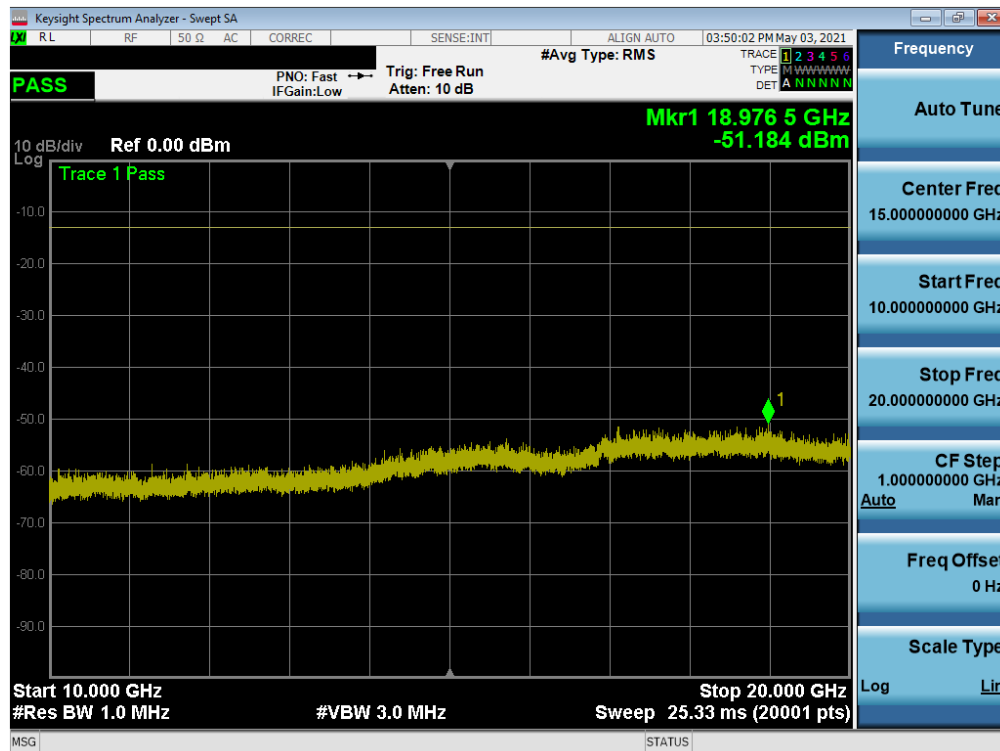


Plot 7-28. Conducted Spurious Plot (GPRS Ch. 661)

FCC ID: A3LSMF926B	PCTEST Proud to be part of element	PART 24 MEASUREMENT REPORT	SAMSUNG	Approved by: Technical Manager
Test Report S/N: 1M2104190044-03.A3L	Test Dates: 4/27/2021 - 5/11/2021	EUT Type: Portable Handset		Page 30 of 88

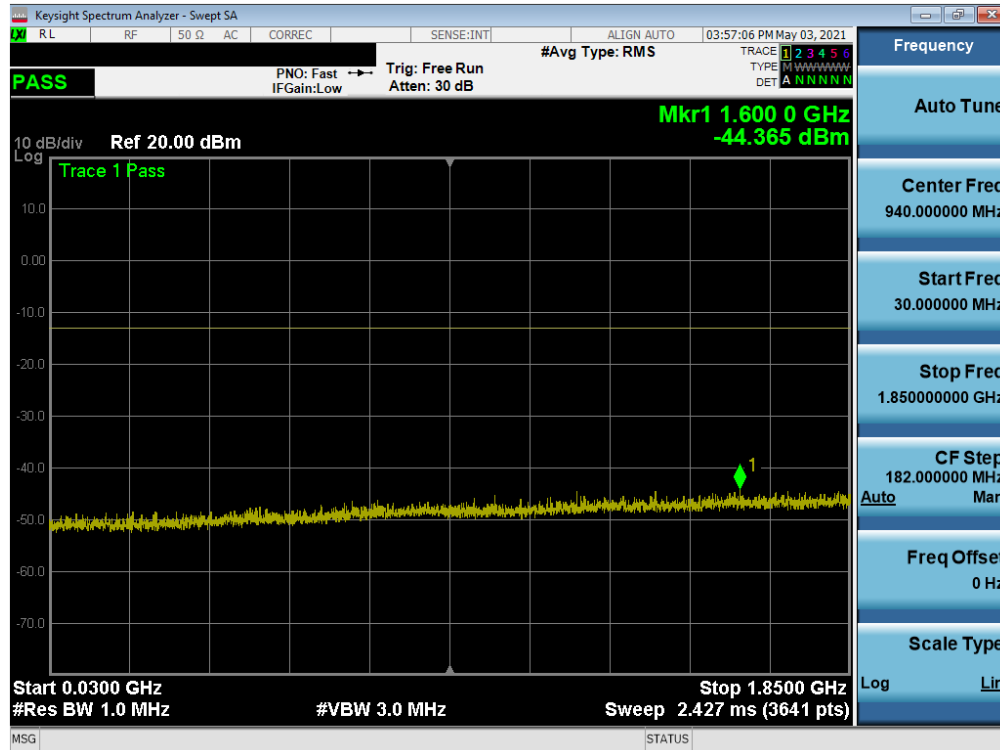


Plot 7-29. Conducted Spurious Plot (GPRS Ch. 661)

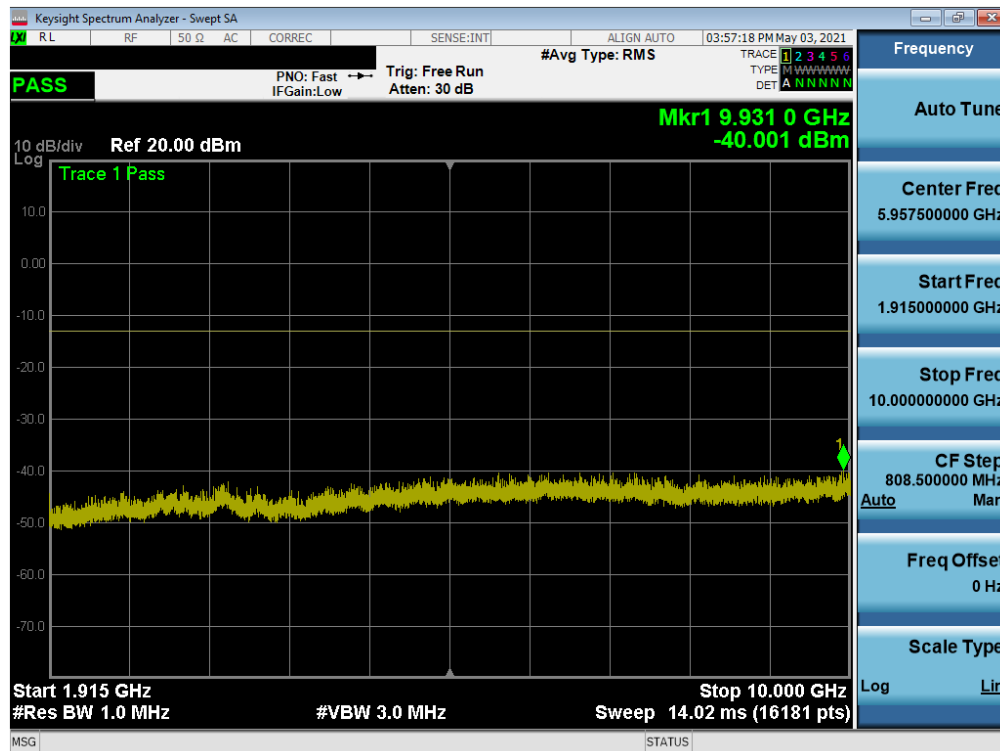


Plot 7-30. Conducted Spurious Plot (GPRS Ch. 661)

FCC ID: A3LSMF926B	PCTEST Proud to be part of element	PART 24 MEASUREMENT REPORT	SAMSUNG	Approved by: Technical Manager
Test Report S/N: 1M2104190044-03.A3L	Test Dates: 4/27/2021 - 5/11/2021	EUT Type: Portable Handset		Page 31 of 88

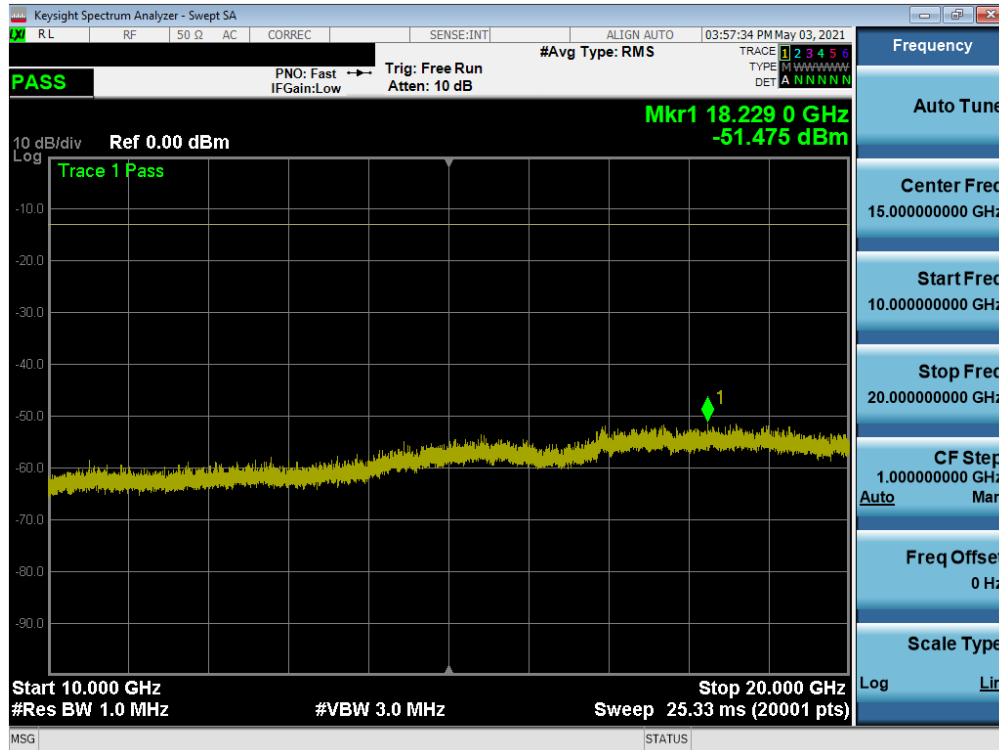


Plot 7-31. Conducted Spurious Plot (GPRS Ch. 810)



Plot 7-32. Conducted Spurious Plot (GPRS Ch. 810)

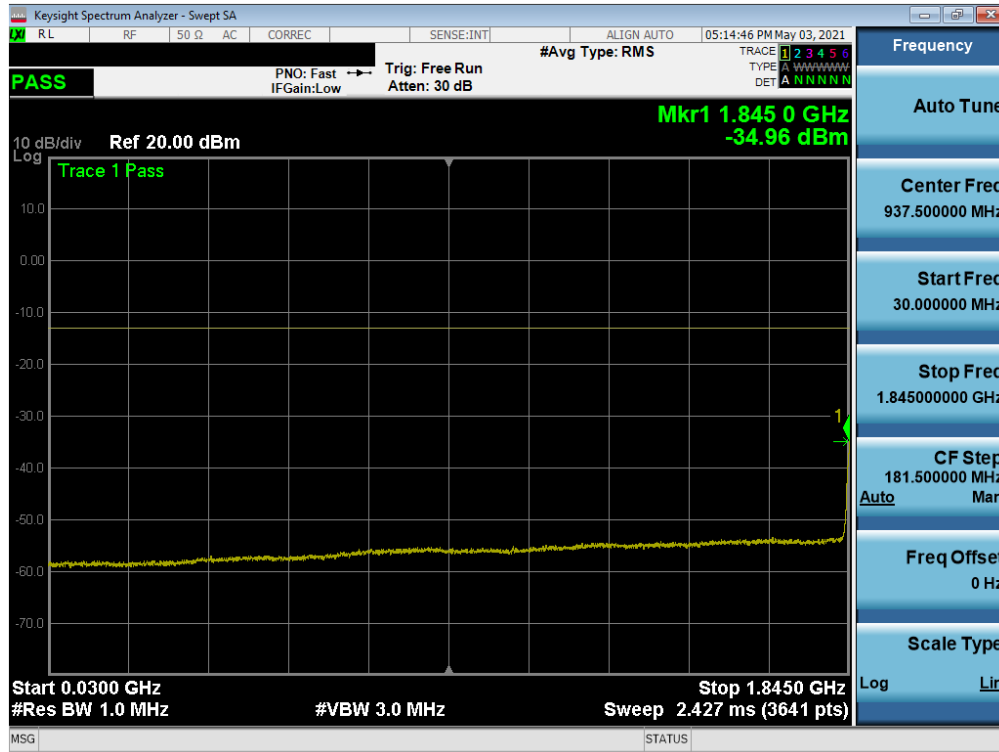
FCC ID: A3LSMF926B	PCTEST Proud to be part of element	PART 24 MEASUREMENT REPORT	SAMSUNG	Approved by: Technical Manager
Test Report S/N: 1M2104190044-03.A3L	Test Dates: 4/27/2021 - 5/11/2021	EUT Type: Portable Handset		Page 32 of 88



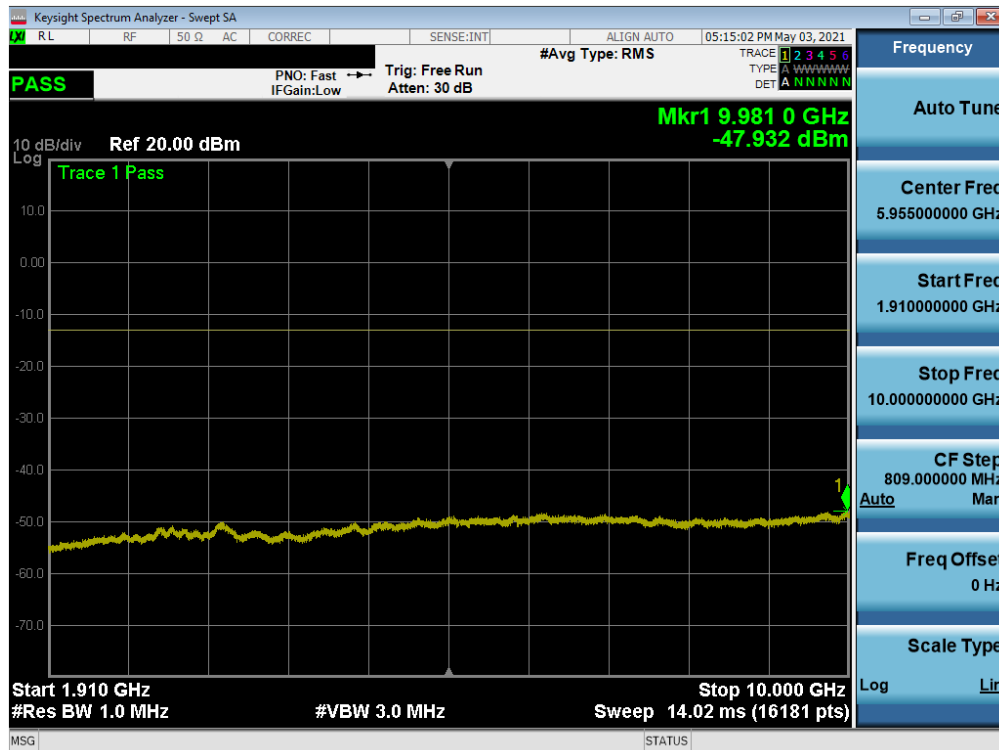
Plot 7-33. Conducted Spurious Plot (GPRS Ch. 810)

FCC ID: A3LSMF926B	PCTEST Proud to be part of element	PART 24 MEASUREMENT REPORT	SAMSUNG	Approved by: Technical Manager
Test Report S/N: 1M2104190044-03.A3L	Test Dates: 4/27/2021 - 5/11/2021	EUT Type: Portable Handset		Page 33 of 88

WCDMA PCS

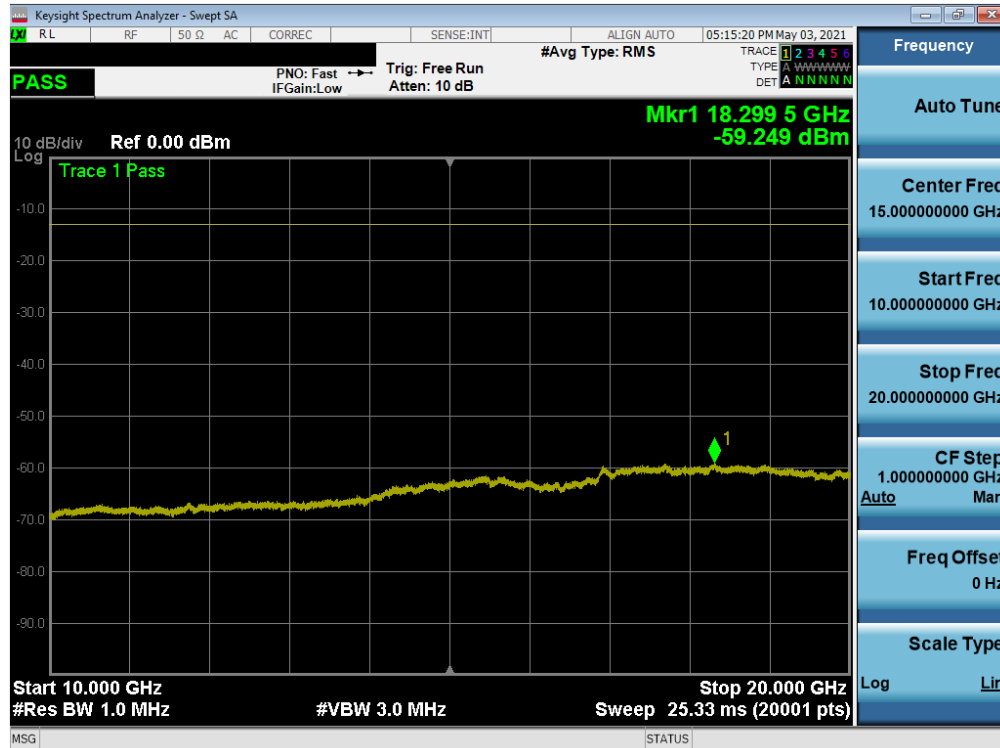


Plot 7-34. Conducted Spurious Plot (WCDMA Ch. 9262)

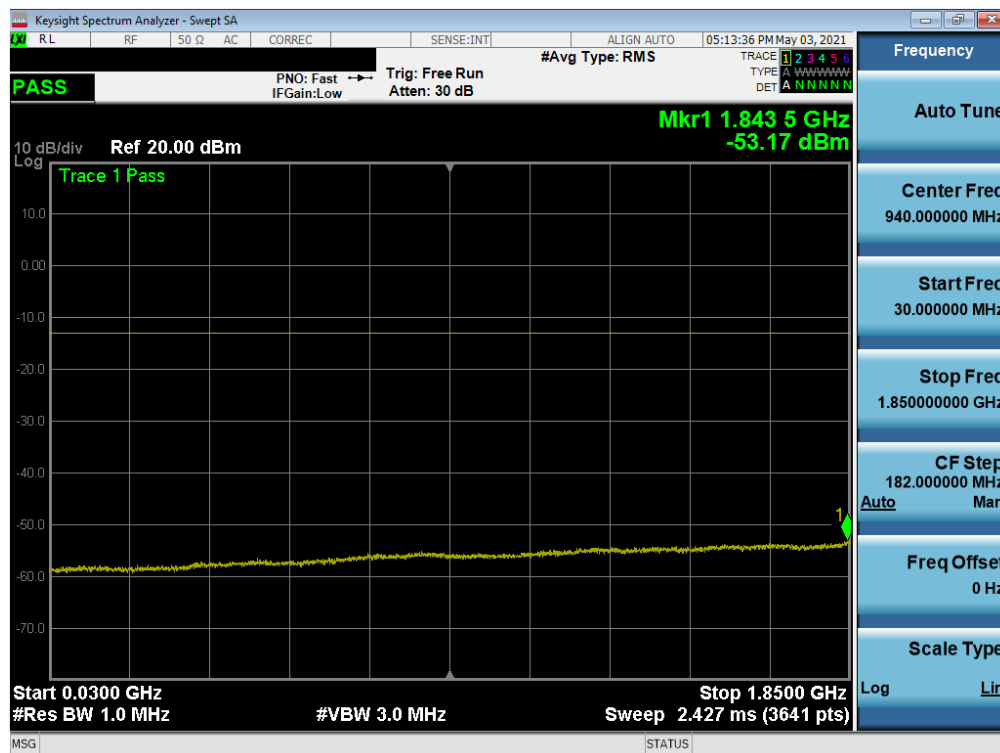


Plot 7-35. Conducted Spurious Plot (WCDMA Ch. 9262)

FCC ID: A3LSMF926B	PCTEST Proud to be part of element	PART 24 MEASUREMENT REPORT	SAMSUNG	Approved by: Technical Manager
Test Report S/N: 1M2104190044-03.A3L	Test Dates: 4/27/2021 - 5/11/2021	EUT Type: Portable Handset		Page 34 of 88

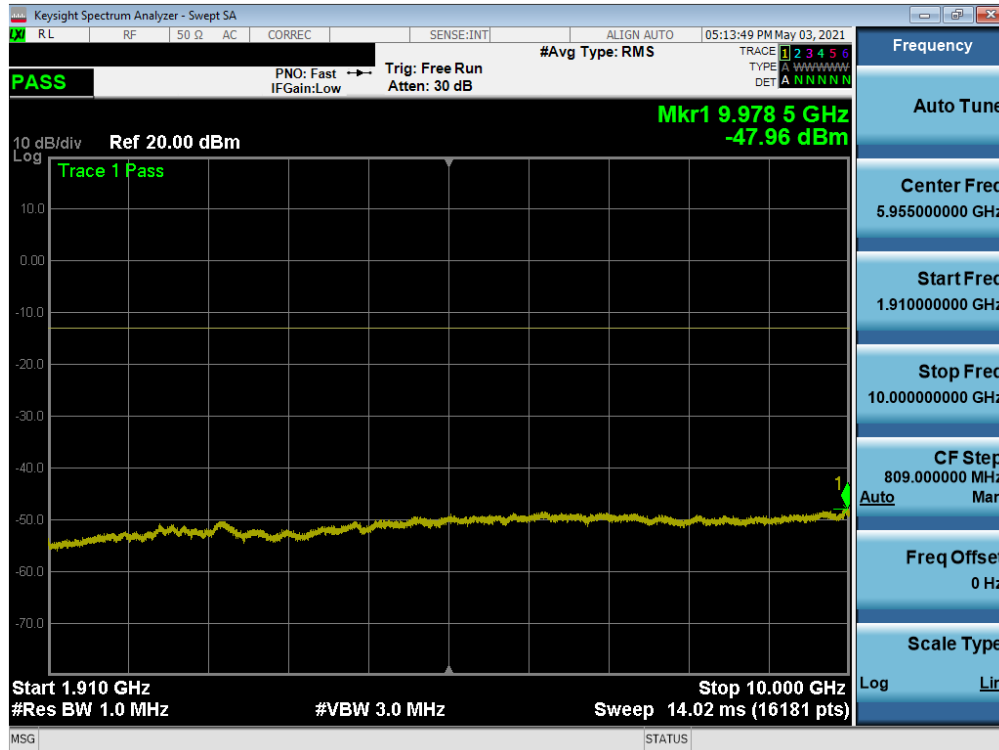


Plot 7-36. Conducted Spurious Plot (WCDMA Ch. 9262)

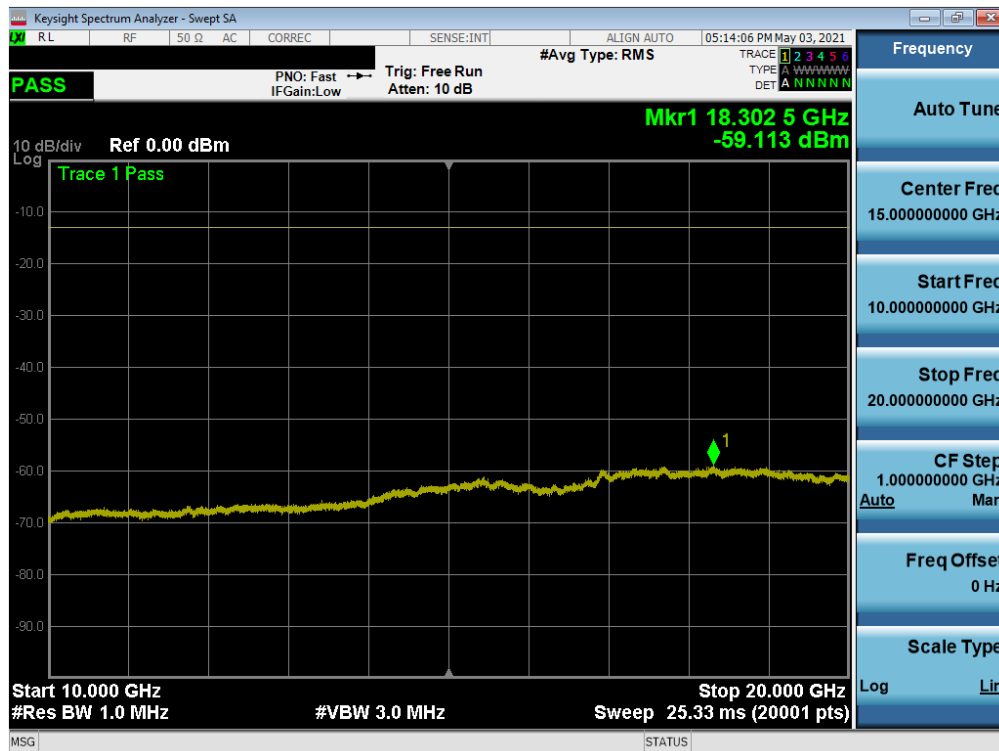


Plot 7-37. Conducted Spurious Plot (WCDMA Ch. 9400)

FCC ID: A3LSMF926B	PCTEST Proud to be part of element	PART 24 MEASUREMENT REPORT	SAMSUNG	Approved by: Technical Manager
Test Report S/N: 1M2104190044-03.A3L	Test Dates: 4/27/2021 - 5/11/2021	EUT Type: Portable Handset		Page 35 of 88

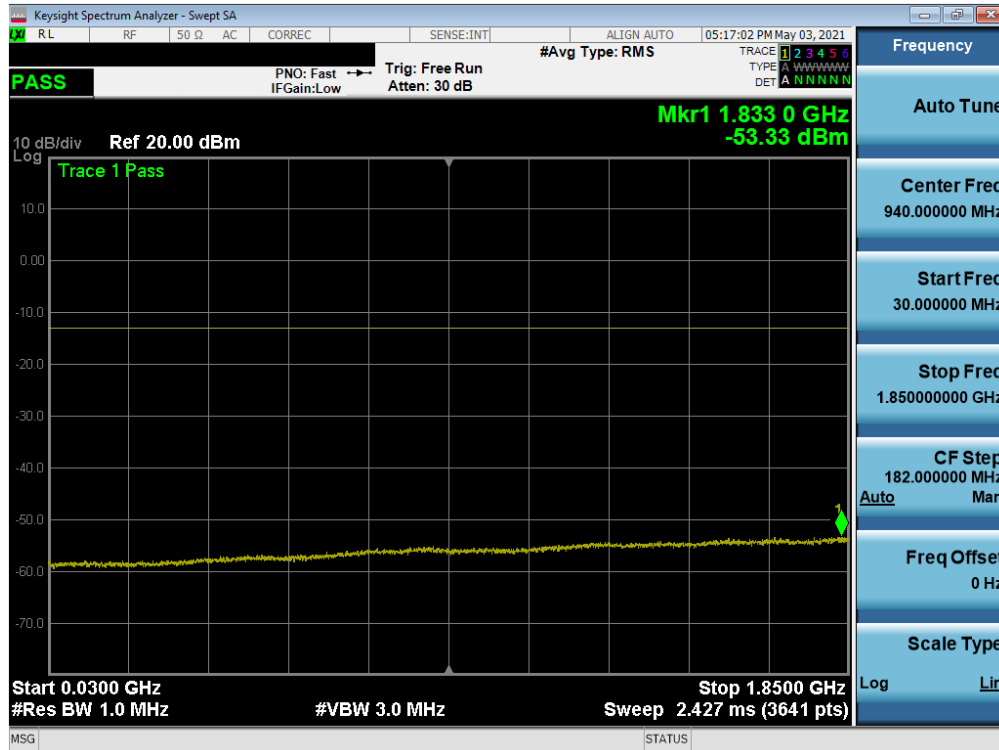


Plot 7-38. Conducted Spurious Plot (WCDMA Ch. 9400)

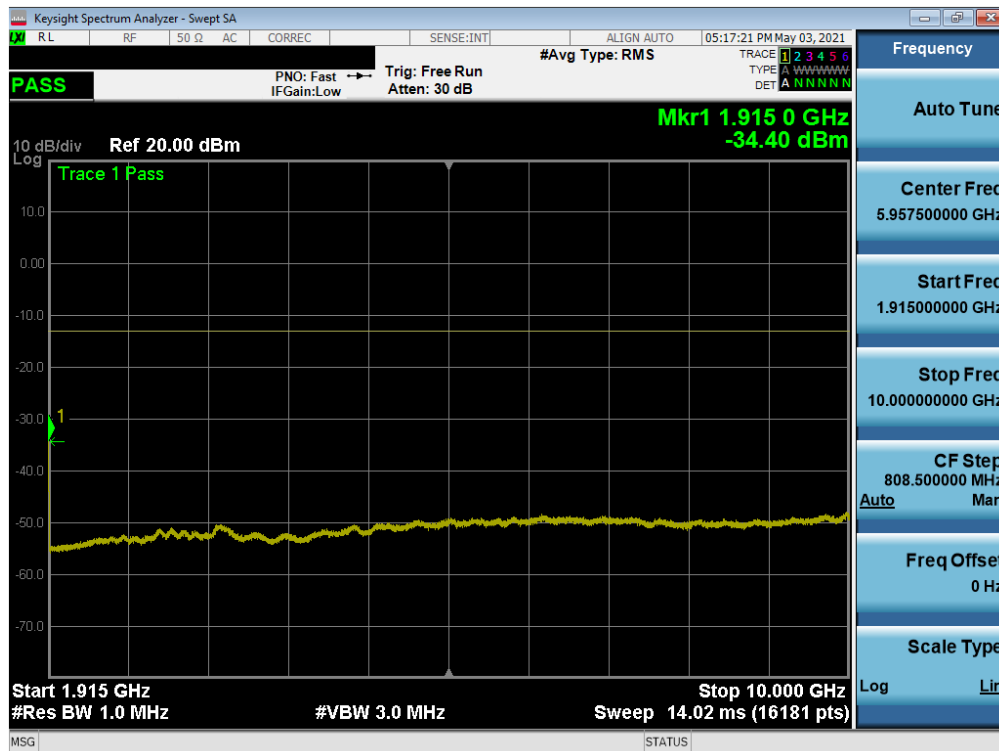


Plot 7-39. Conducted Spurious Plot (WCDMA Ch. 9400)

FCC ID: A3LSMF926B	PCTEST Proud to be part of element	PART 24 MEASUREMENT REPORT	SAMSUNG	Approved by: Technical Manager
Test Report S/N: 1M2104190044-03.A3L	Test Dates: 4/27/2021 - 5/11/2021	EUT Type: Portable Handset		Page 36 of 88

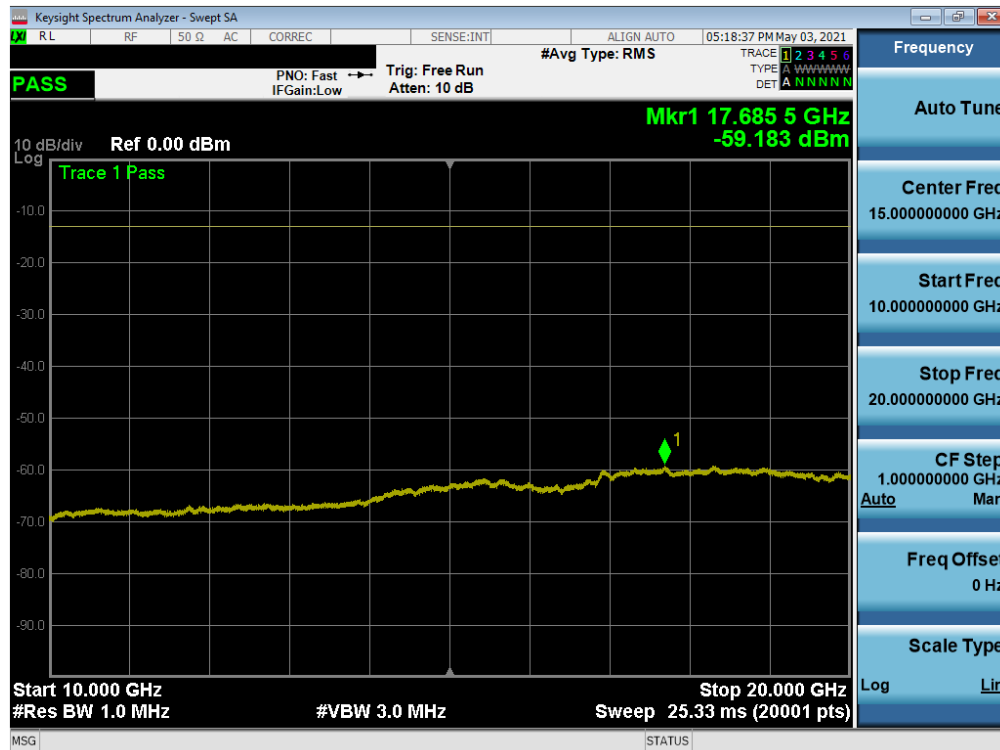


Plot 7-40. Conducted Spurious Plot (WCDMA Ch. 9538)



Plot 7-41. Conducted Spurious Plot (WCDMA Ch. 9538)

FCC ID: A3LSMF926B	PCTEST Proud to be part of element	PART 24 MEASUREMENT REPORT	SAMSUNG	Approved by: Technical Manager
Test Report S/N: 1M2104190044-03.A3L	Test Dates: 4/27/2021 - 5/11/2021	EUT Type: Portable Handset		Page 37 of 88



Plot 7-42. Conducted Spurious Plot (WCDMA Ch. 9538)

FCC ID: A3LSMF926B	PCTEST Proud to be part of element	PART 24 MEASUREMENT REPORT	SAMSUNG	Approved by: Technical Manager
Test Report S/N: 1M2104190044-03.A3L	Test Dates: 4/27/2021 - 5/11/2021	EUT Type: Portable Handset		Page 38 of 88

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 $43 + 10 \log_{10}(P_{\text{Watts}})$, 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. $\text{RBW} \geq 1\%$ of the emission bandwidth
4. $\text{VBW} \geq 3 \times \text{RBW}$
5. Detector = RMS
6. Number of sweep points $\geq 2 \times \text{Span}/\text{RBW}$
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.

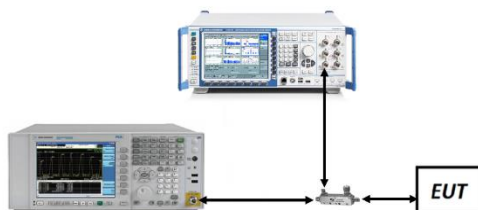






Figure 7-4. Test Instrument & Measurement Setup

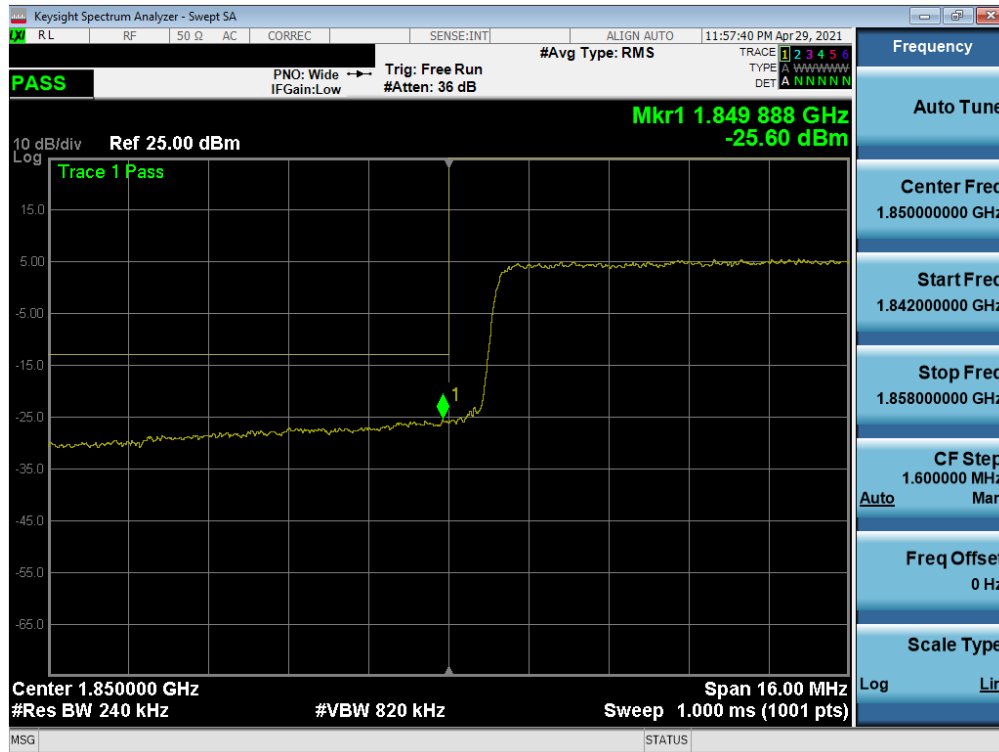
FCC ID: A3LSMF926B	 PART 24 MEASUREMENT REPORT 	Approved by: Technical Manager
Test Report S/N: 1M2104190044-03.A3L	Test Dates: 4/27/2021 - 5/11/2021	EUT Type: Portable Handset
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Test Notes

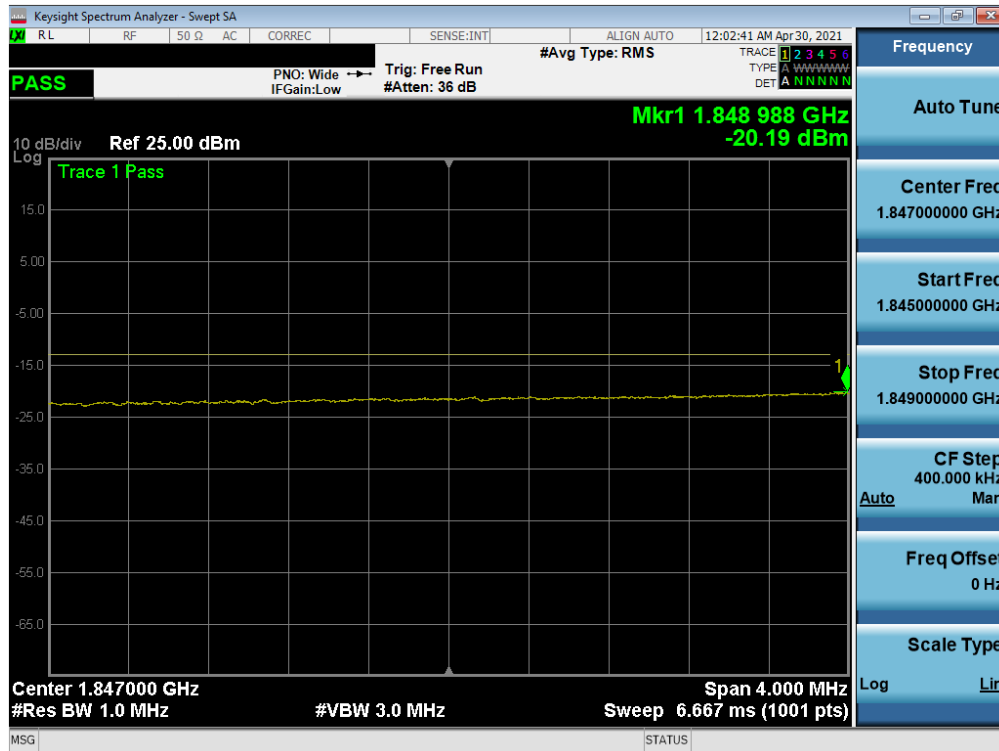
1. Per 24.238(a) and RSS-133(6.5), in the 1 MHz bands immediately outside and adjacent to the frequency block a resolution bandwidth of at least one percent of the emission bandwidth of the fundamental emission of the transmitter may be employed to demonstrate compliance with the out-of-band emissions 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.

FCC ID: A3LSMF926B	 PART 24 MEASUREMENT REPORT 	Approved by: Technical Manager
Test Report S/N: 1M2104190044-03.A3L	Test Dates: 4/27/2021 - 5/11/2021	EUT Type: Portable Handset

LTE Band 25/2

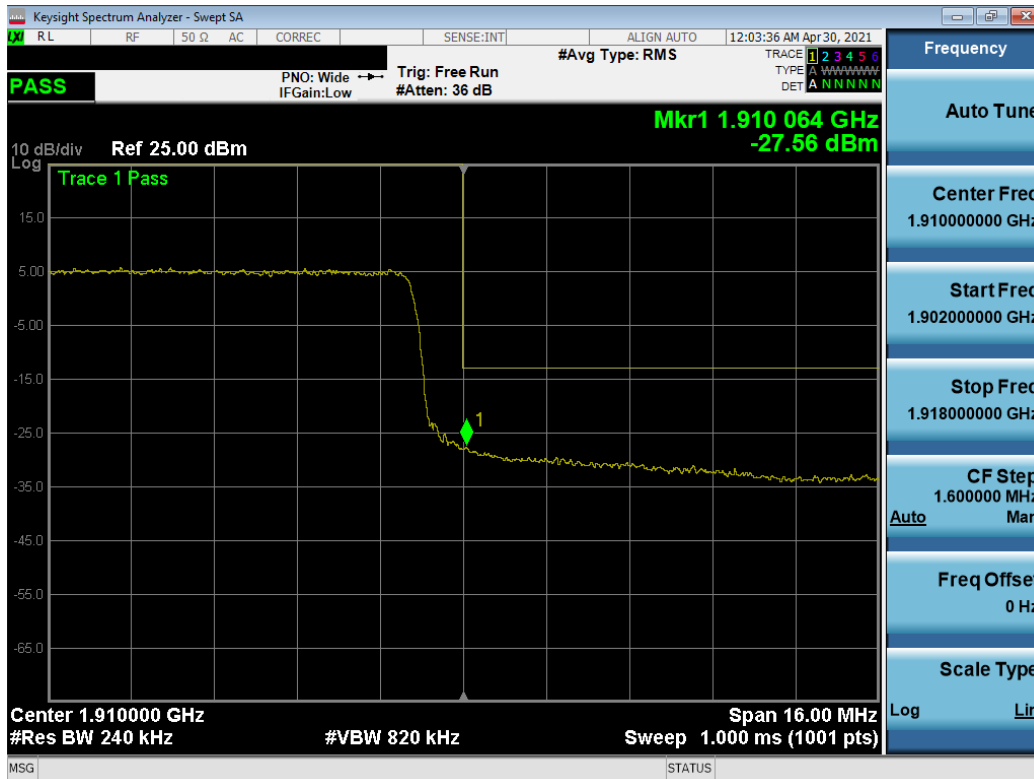


Plot 7-43. Lower Band Edge Plot (LTE Band 25/2 - 20MHz QPSK – Full RB)

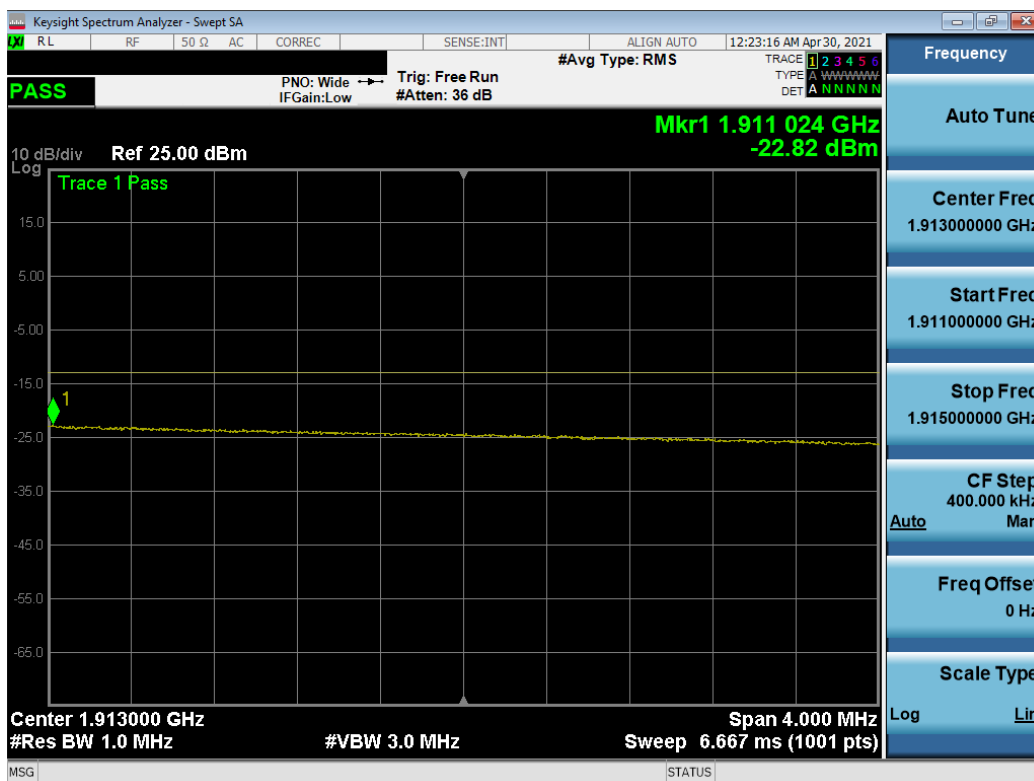


Plot 7-44. Extended Lower Band Edge Plot (LTE Band 25/2 - 20MHz QPSK – Full RB)

FCC ID: A3LSMF926B	PCTEST Proud to be part of element	PART 24 MEASUREMENT REPORT	SAMSUNG	Approved by: Technical Manager
Test Report S/N: 1M2104190044-03.A3L	Test Dates: 4/27/2021 - 5/11/2021	EUT Type: Portable Handset		Page 41 of 88

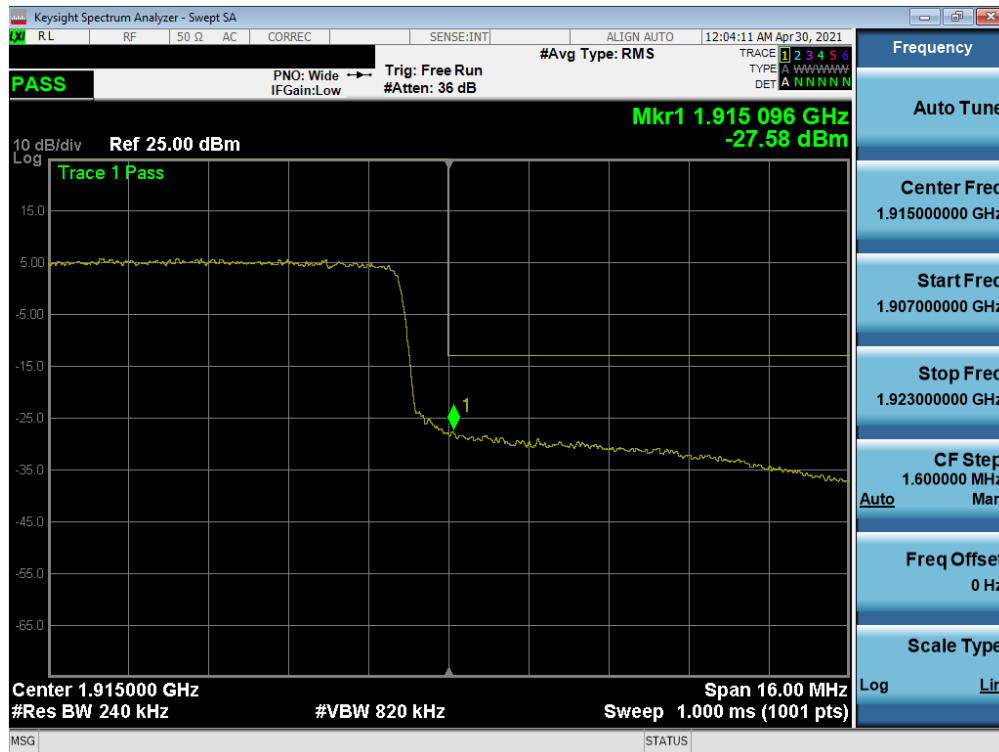


Plot 7-45. Upper Band Edge Plot (LTE Band 2 - 20MHz QPSK – Full RB)

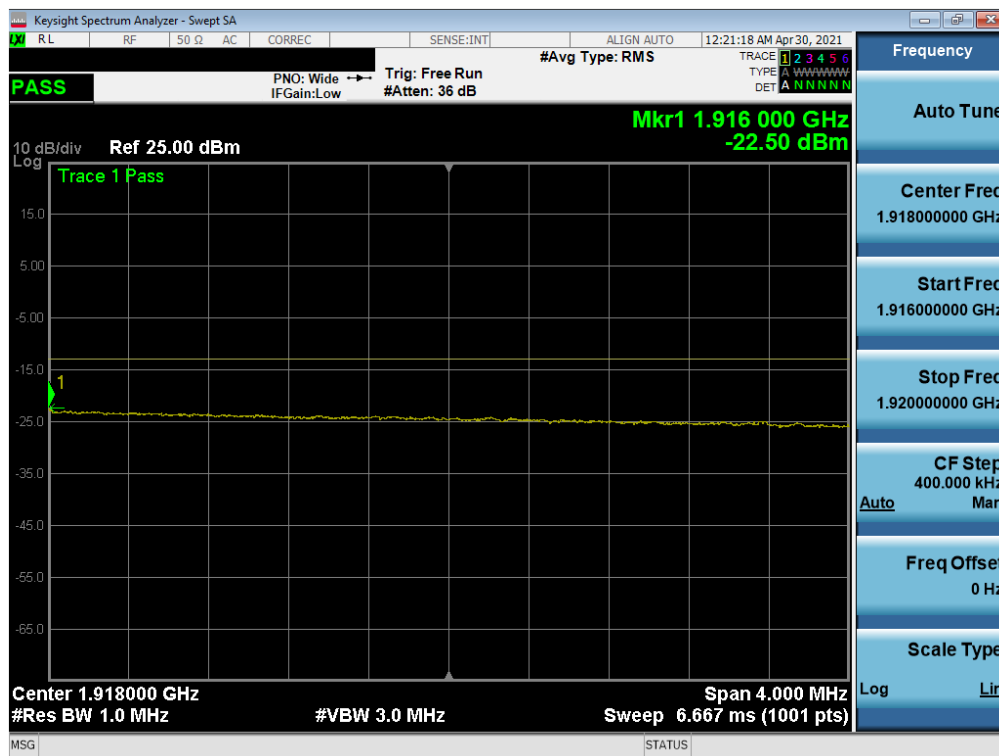


Plot 7-46. Extended Upper Band Edge Plot (LTE Band 2 - 20MHz QPSK – Full RB)

FCC ID: A3LSMF926B	PCTEST Proud to be part of element	PART 24 MEASUREMENT REPORT	SAMSUNG	Approved by: Technical Manager
Test Report S/N: 1M2104190044-03.A3L	Test Dates: 4/27/2021 - 5/11/2021	EUT Type: Portable Handset		Page 42 of 88

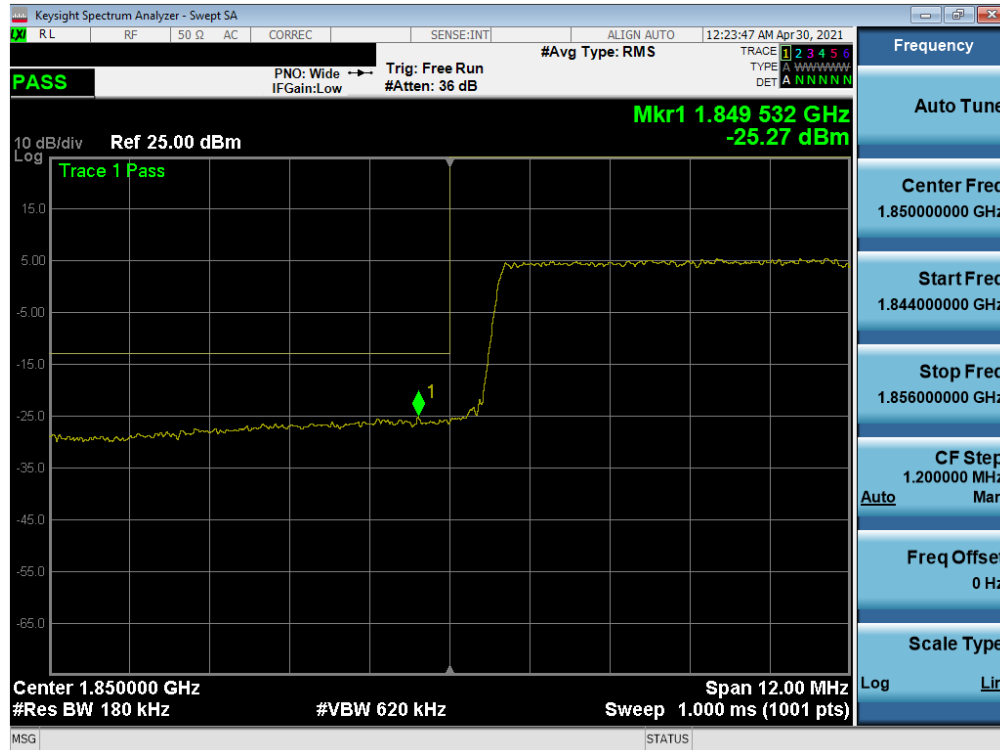


Plot 7-47. Upper Band Edge Plot (LTE Band 25 - 20MHz QPSK – Full RB)

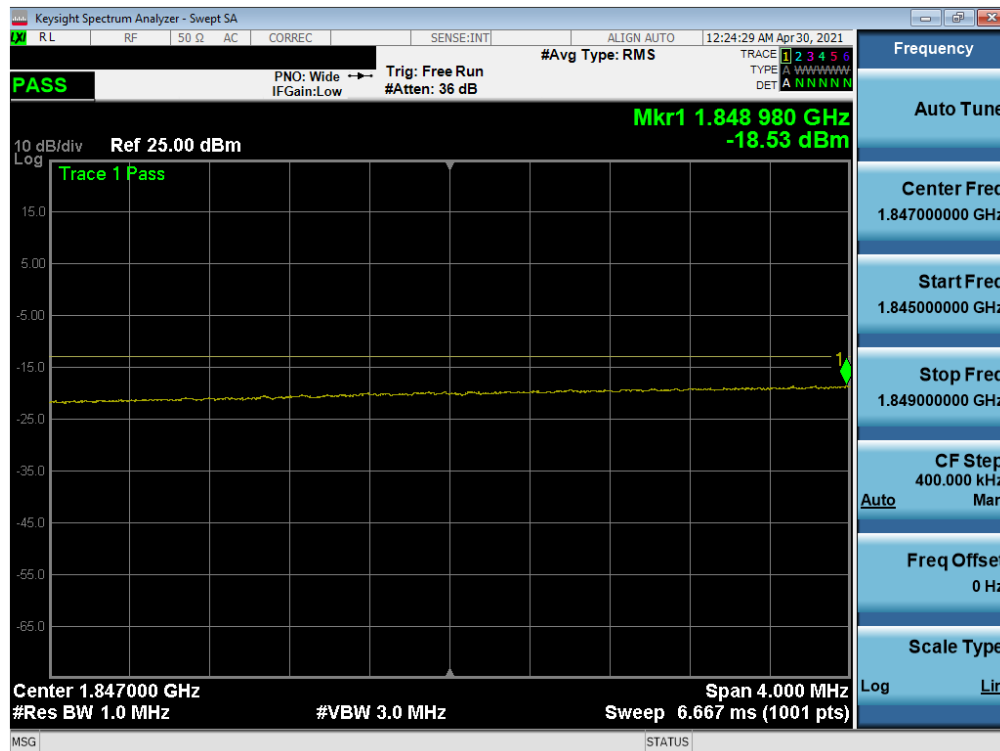


Plot 7-48. Extended Upper Band Edge Plot (LTE Band 25 - 20MHz QPSK – Full RB)

FCC ID: A3LSMF926B	PCTEST Proud to be part of element	PART 24 MEASUREMENT REPORT	SAMSUNG	Approved by: Technical Manager
Test Report S/N: 1M2104190044-03.A3L	Test Dates: 4/27/2021 - 5/11/2021	EUT Type: Portable Handset		Page 43 of 88

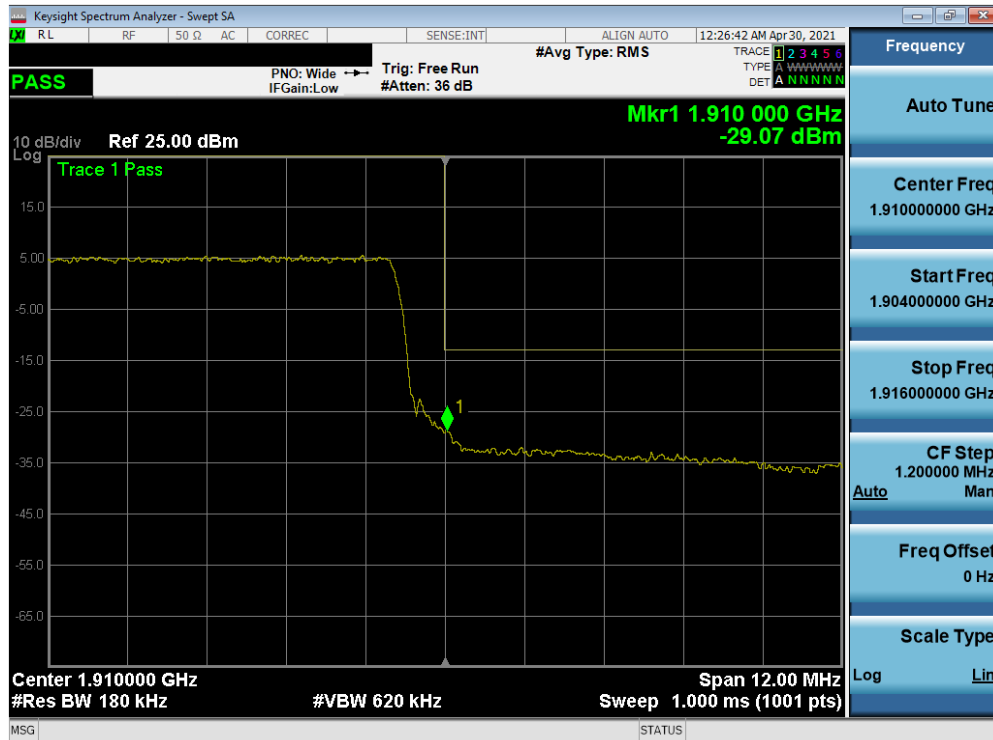


Plot 7-49. Lower Band Edge Plot (LTE Band 25/2 - 15MHz QPSK – Full RB)

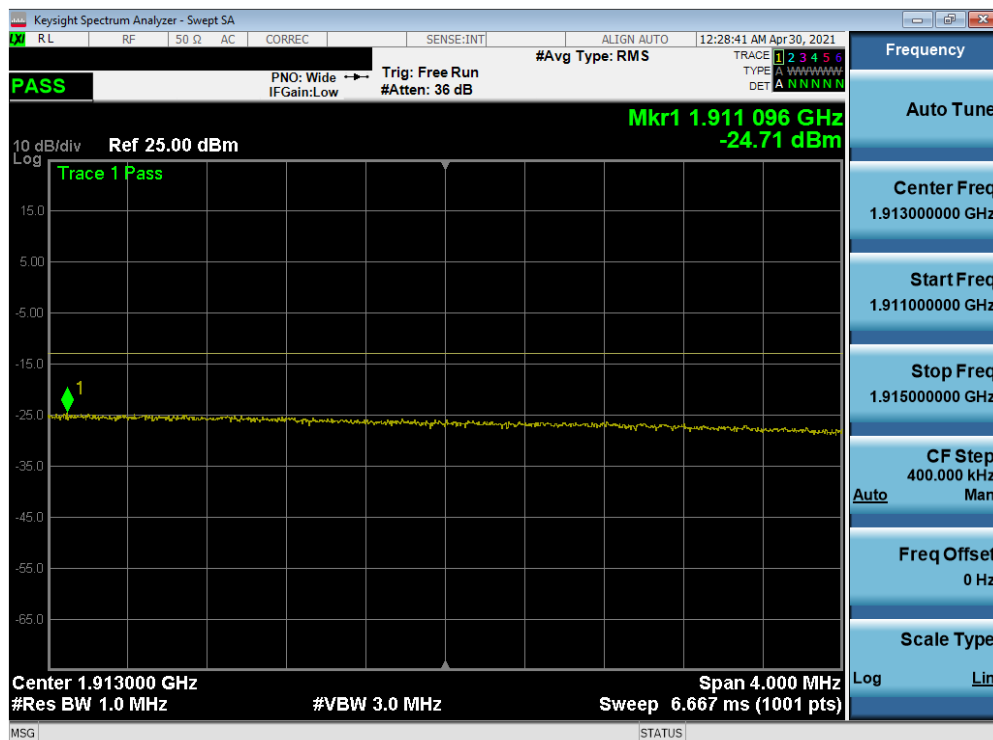


Plot 7-50. Extended Lower Band Edge Plot (LTE Band 25/2 - 15MHz QPSK – Full RB)

FCC ID: A3LSMF926B	PCTEST Proud to be part of element	PART 24 MEASUREMENT REPORT	SAMSUNG	Approved by: Technical Manager
Test Report S/N: 1M2104190044-03.A3L	Test Dates: 4/27/2021 - 5/11/2021	EUT Type: Portable Handset		Page 44 of 88

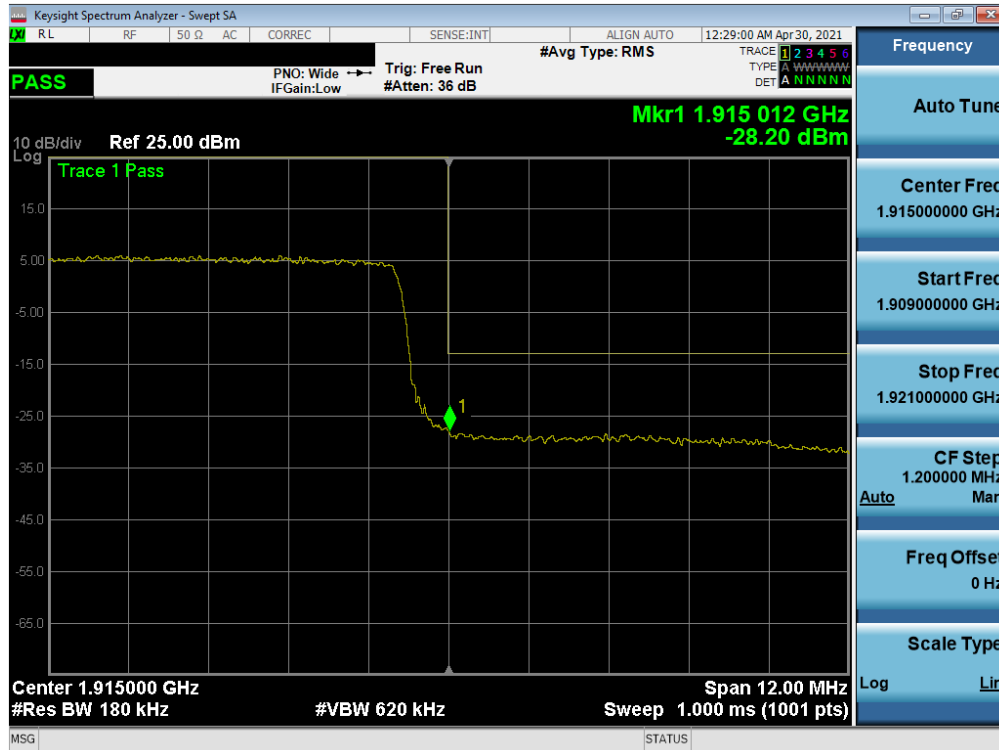


Plot 7-51. Upper Band Edge Plot (LTE Band 2 - 15MHz QPSK – Full RB)

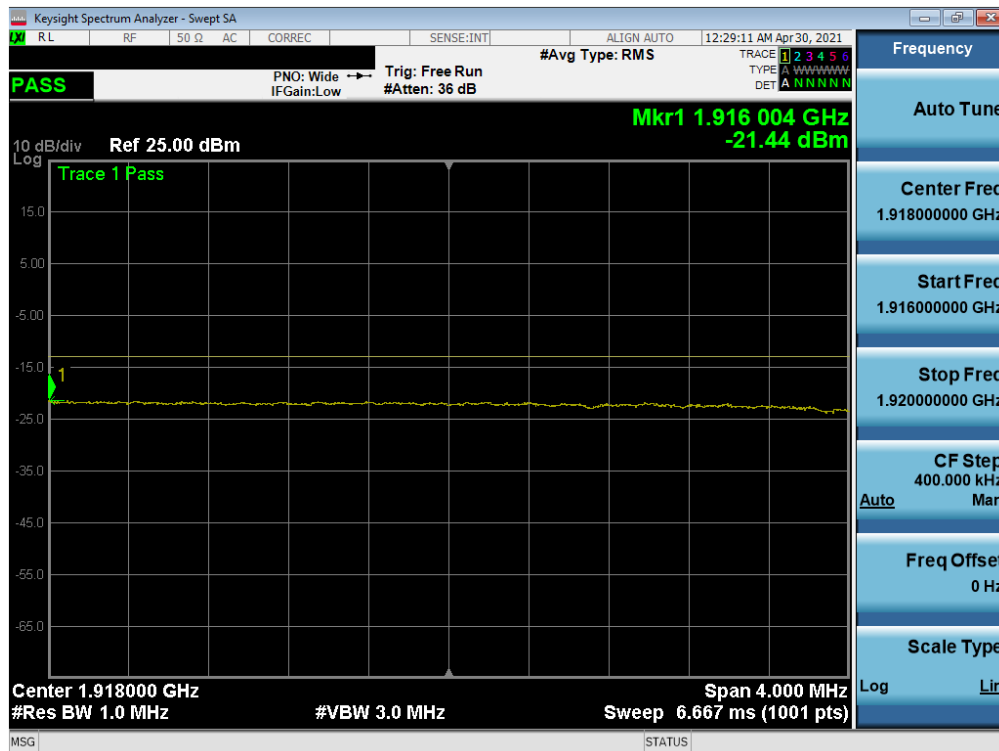


Plot 7-52. Extended Upper Band Edge Plot (LTE Band 2 - 15MHz QPSK – Full RB)

FCC ID: A3LSMF926B	PCTEST Proud to be part of element	PART 24 MEASUREMENT REPORT	SAMSUNG	Approved by: Technical Manager
Test Report S/N: 1M2104190044-03.A3L	Test Dates: 4/27/2021 - 5/11/2021	EUT Type: Portable Handset		Page 45 of 88

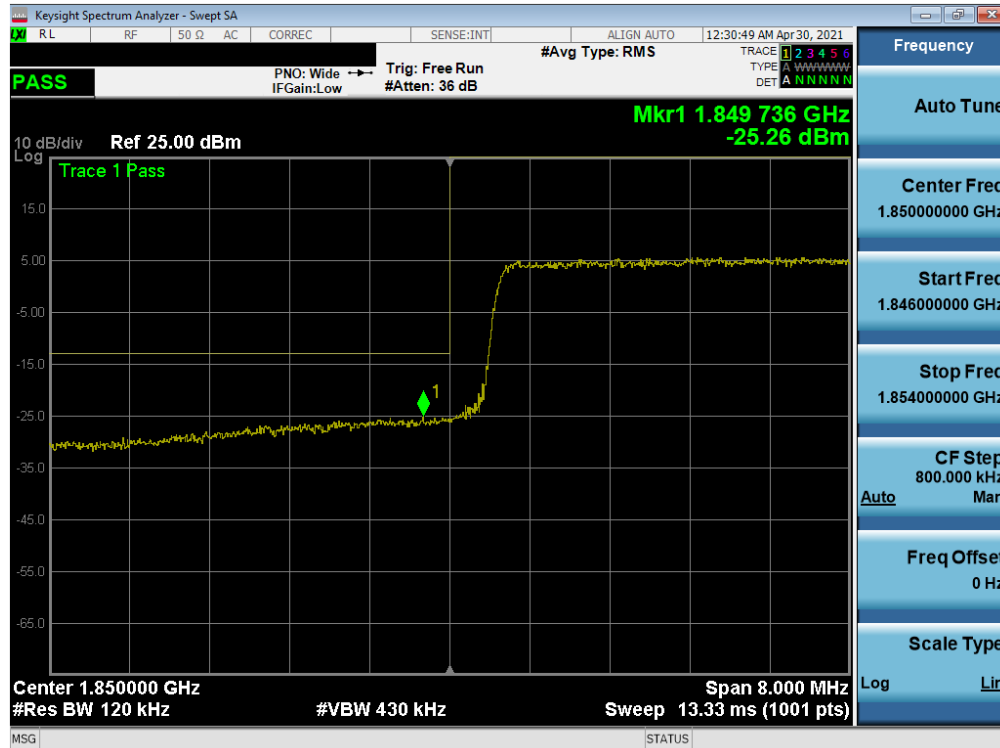


Plot 7-53. Upper Band Edge Plot (LTE Band 25 - 15MHz QPSK – Full RB)

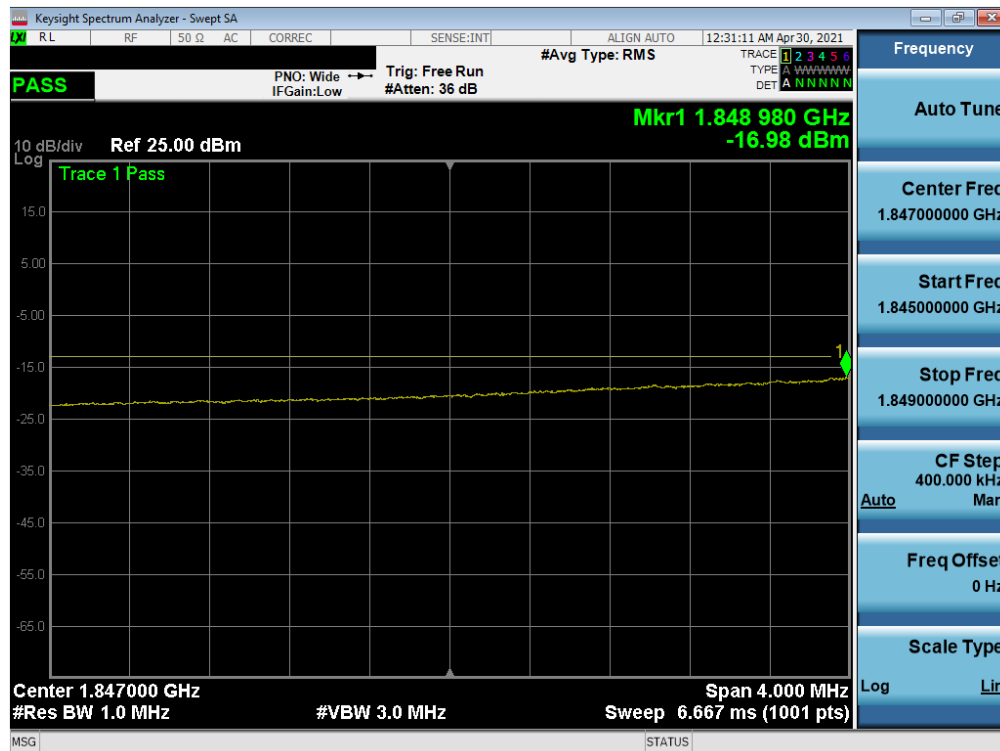


Plot 7-54. Extended Upper Band Edge Plot (LTE Band 25 - 15MHz QPSK – Full RB)

FCC ID: A3LSMF926B	PCTEST Proud to be part of element	PART 24 MEASUREMENT REPORT	SAMSUNG	Approved by: Technical Manager
Test Report S/N: 1M2104190044-03.A3L	Test Dates: 4/27/2021 - 5/11/2021	EUT Type: Portable Handset		Page 46 of 88

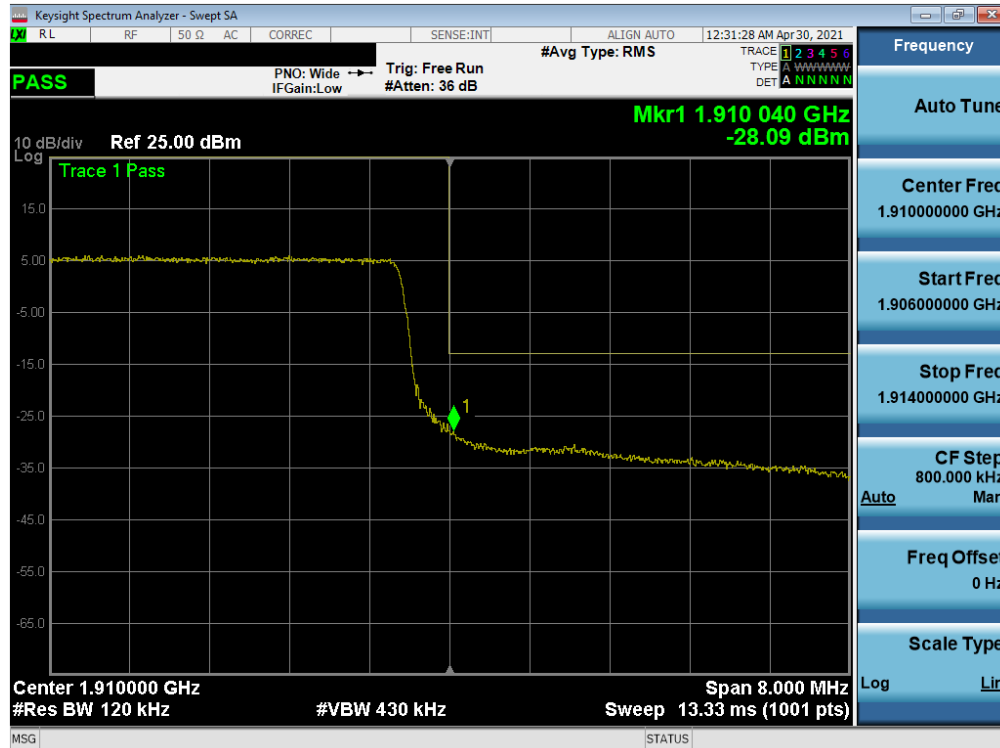


Plot 7-55. Lower Band Edge Plot (LTE Band 25/2 - 10MHz QPSK – Full RB)

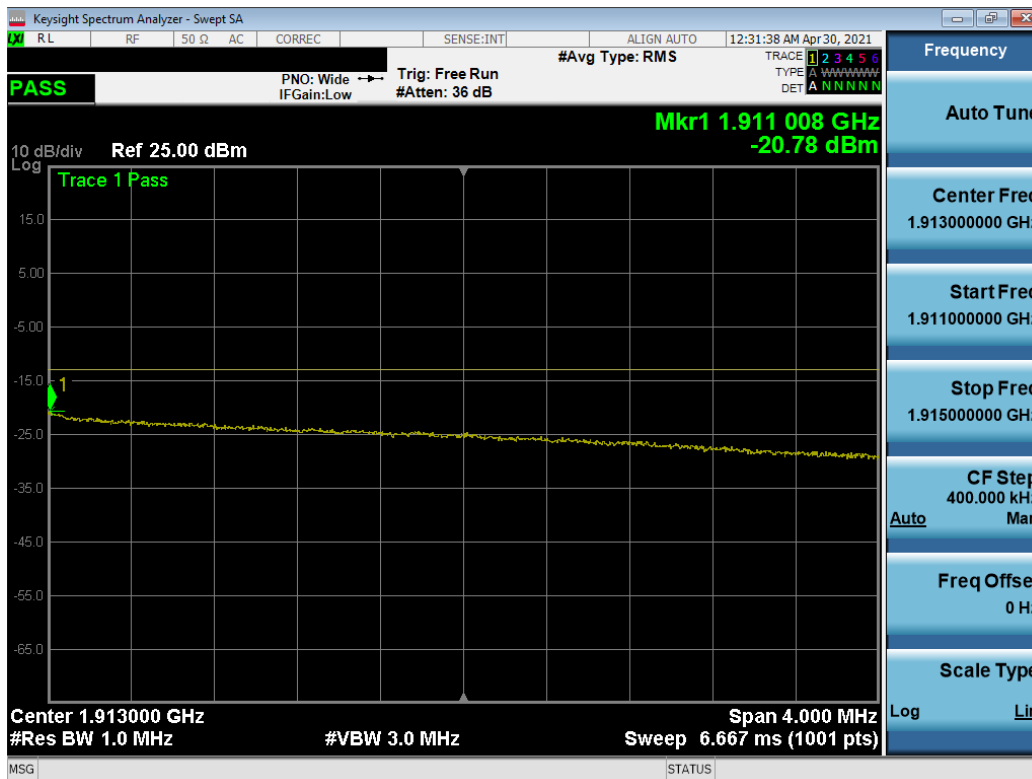


Plot 7-56. Extended Lower Band Edge Plot (LTE Band 25/2 - 10MHz QPSK – Full RB)

FCC ID: A3LSMF926B	PCTEST Proud to be part of element	PART 24 MEASUREMENT REPORT	SAMSUNG	Approved by: Technical Manager
Test Report S/N: 1M2104190044-03.A3L	Test Dates: 4/27/2021 - 5/11/2021	EUT Type: Portable Handset		Page 47 of 88

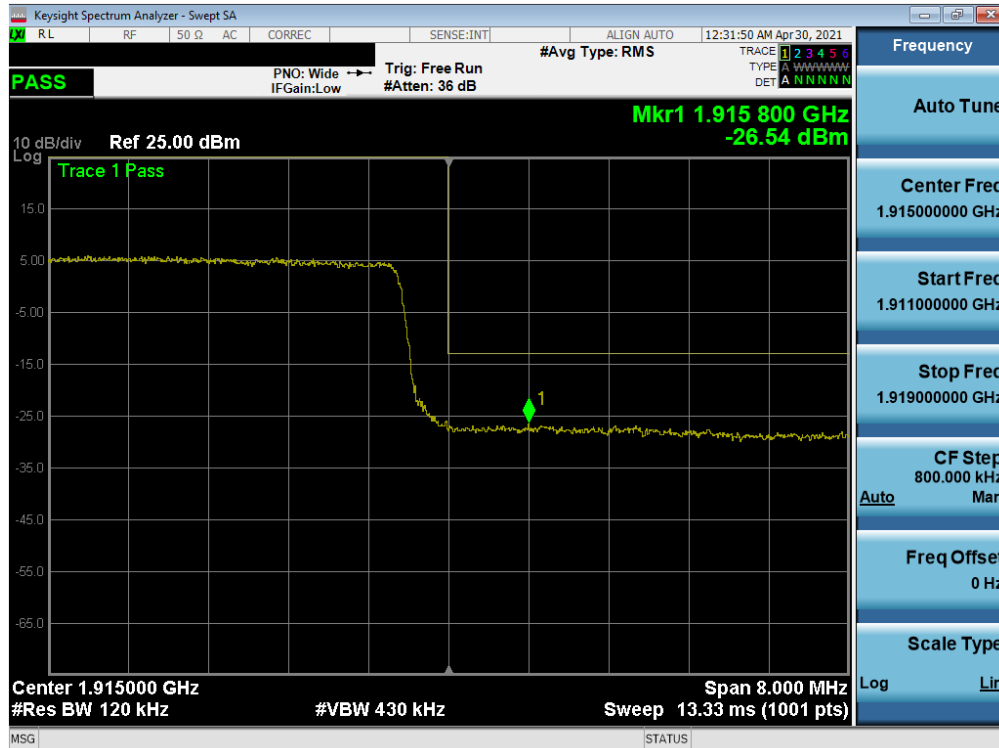


Plot 7-57. Upper Band Edge Plot (LTE Band 2 - 10MHz QPSK – Full RB)

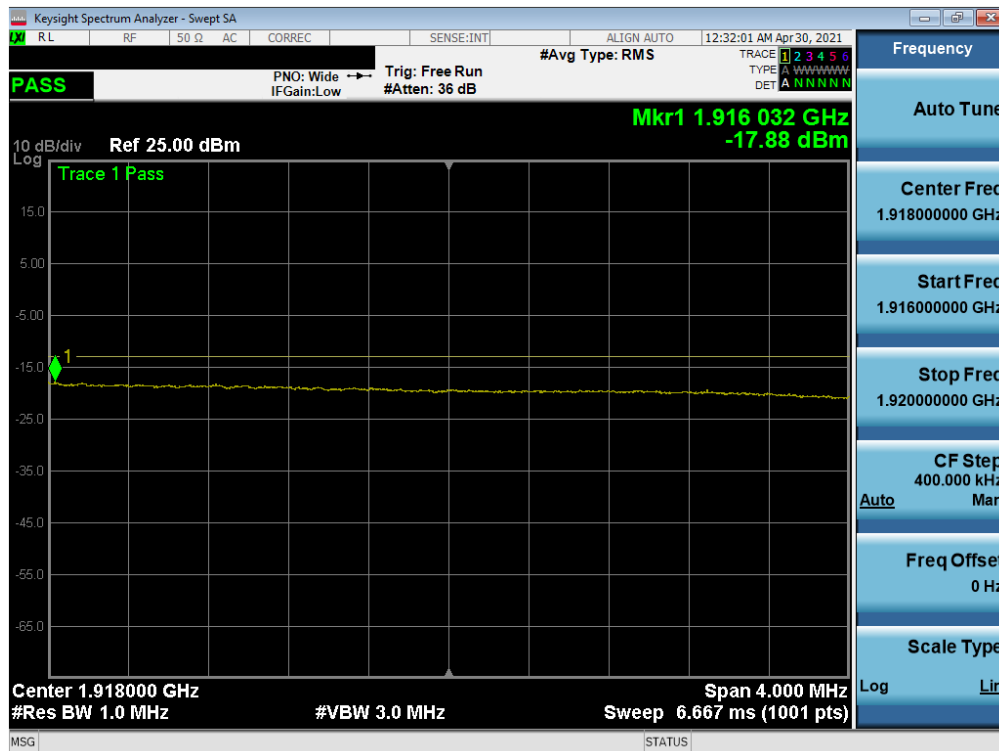


Plot 7-58. Extended Upper Band Edge Plot (LTE Band 2 - 10MHz QPSK – Full RB)

FCC ID: A3LSMF926B	PCTEST Proud to be part of element	PART 24 MEASUREMENT REPORT	SAMSUNG	Approved by: Technical Manager
Test Report S/N: 1M2104190044-03.A3L	Test Dates: 4/27/2021 - 5/11/2021	EUT Type: Portable Handset		Page 48 of 88

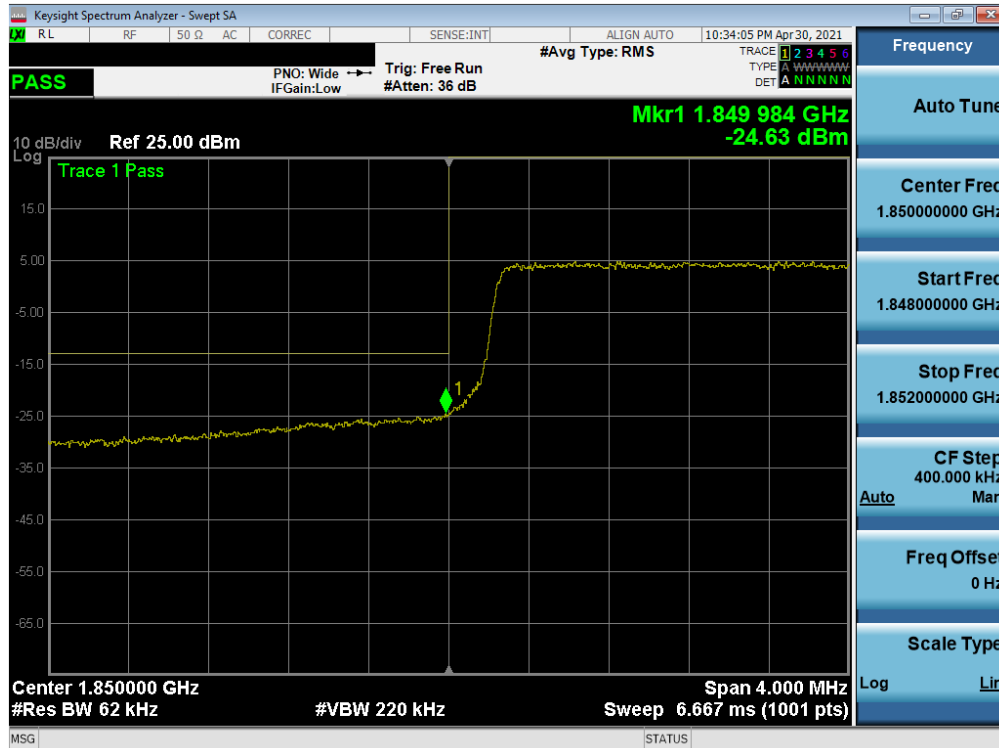


Plot 7-59. Upper Band Edge Plot (LTE Band 25 - 10MHz QPSK – Full RB)

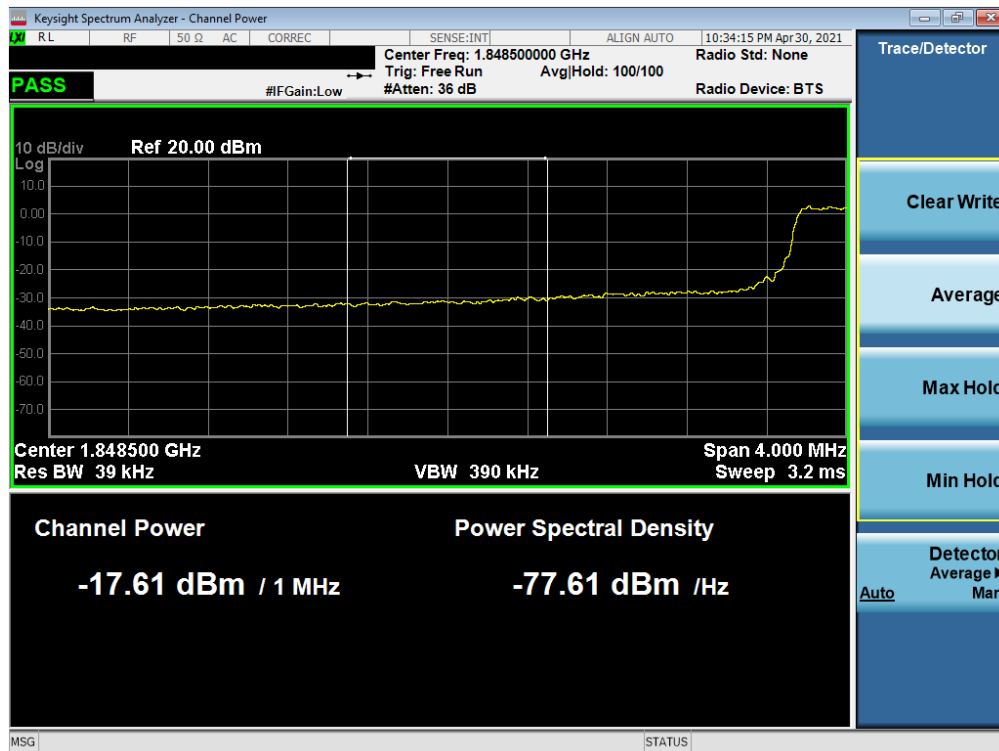


Plot 7-60. Extended Upper Band Edge Plot (LTE Band 25 - 10MHz QPSK – Full RB)

FCC ID: A3LSMF926B	PCTEST Proud to be part of element	PART 24 MEASUREMENT REPORT	SAMSUNG	Approved by: Technical Manager
Test Report S/N: 1M2104190044-03.A3L	Test Dates: 4/27/2021 - 5/11/2021	EUT Type: Portable Handset		Page 49 of 88

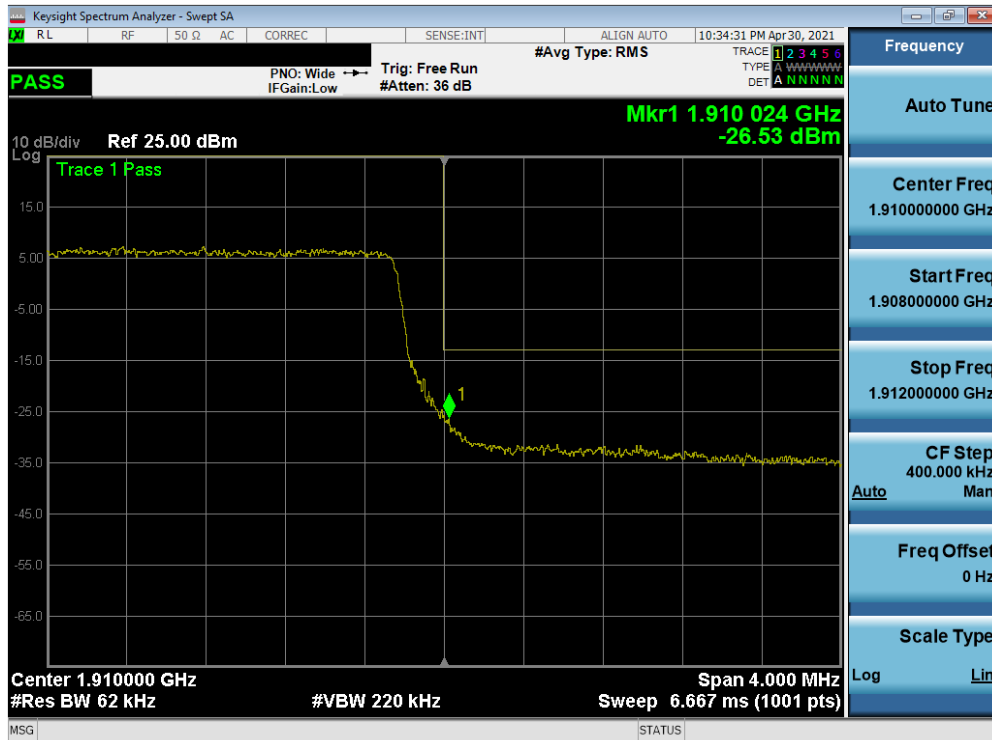


Plot 7-61. Lower Band Edge Plot (LTE Band 25/2 - 5MHz QPSK – Full RB)

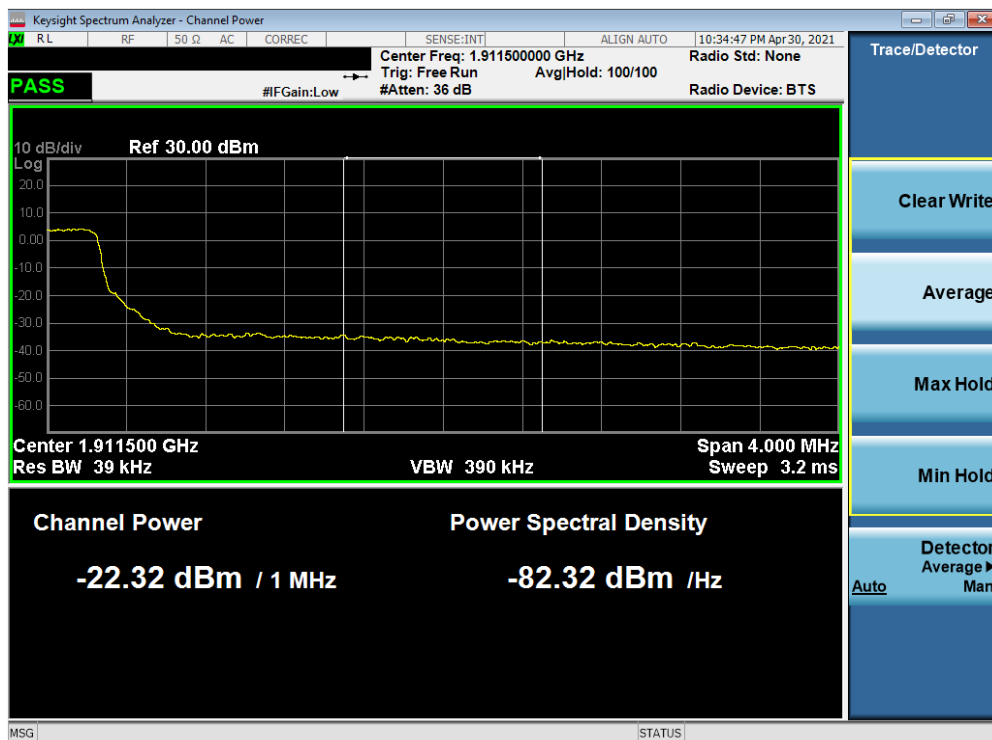


Plot 7-62. Extended Lower Band Edge Plot (LTE Band 25/2 - 5MHz QPSK – Full RB)



FCC ID: A3LSMF926B	PCTEST Proud to be part of element	PART 24 MEASUREMENT REPORT	SAMSUNG	Approved by: Technical Manager
Test Report S/N: 1M2104190044-03.A3L	Test Dates: 4/27/2021 - 5/11/2021	EUT Type: Portable Handset		Page 50 of 88

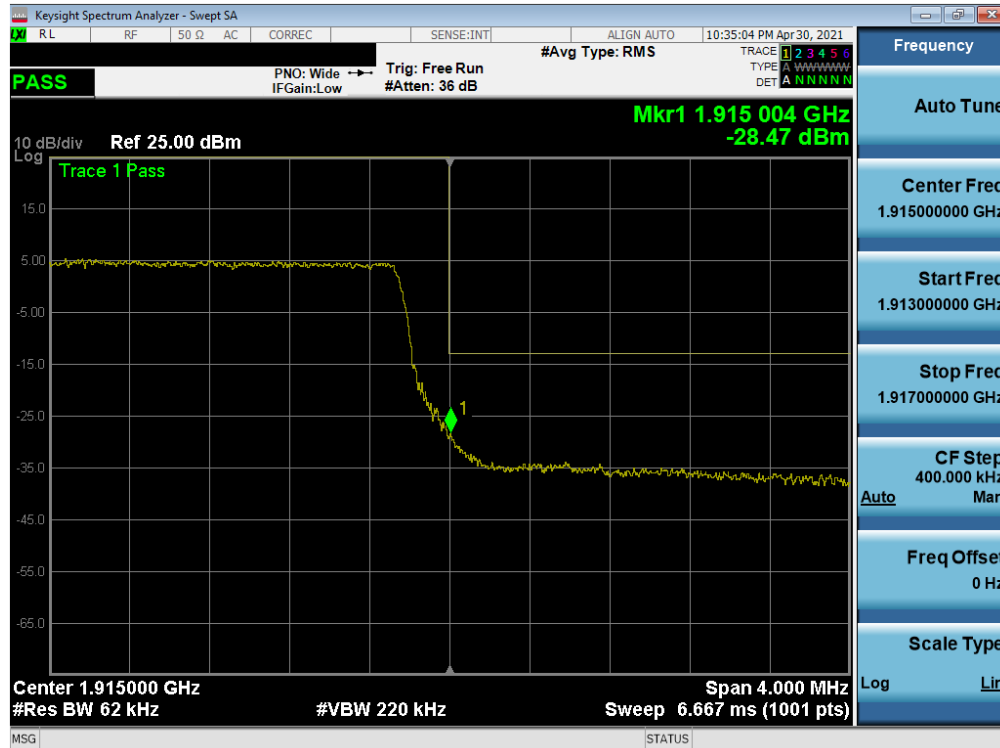


Plot 7-63. Upper Band Edge Plot (LTE Band 2 - 5MHz QPSK – Full RB)

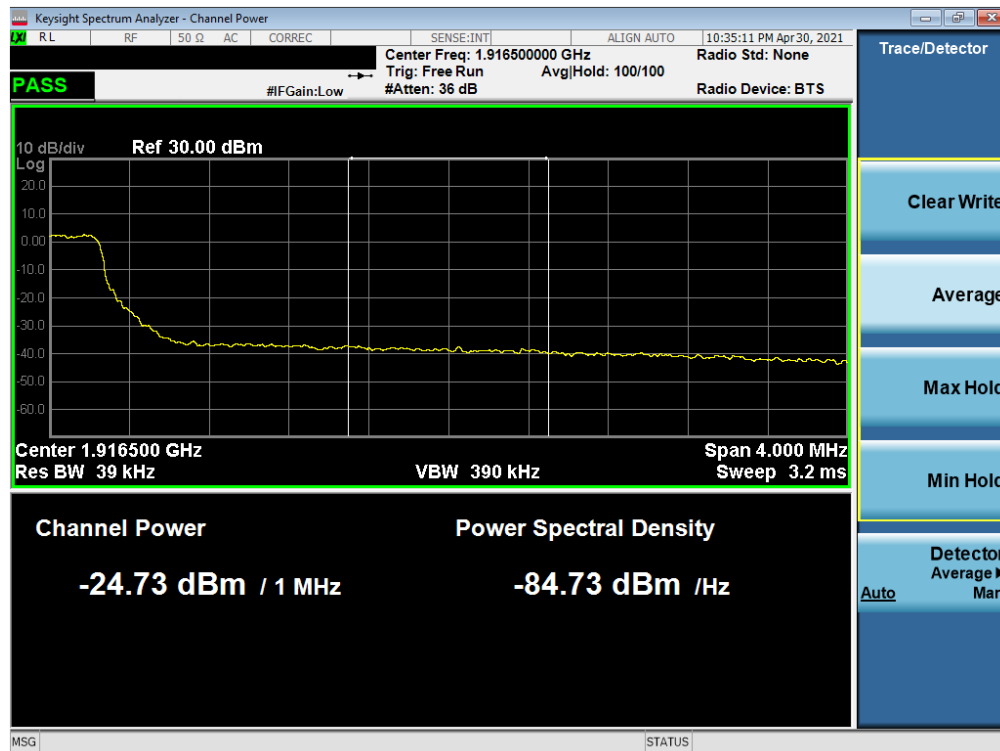


Plot 7-64. Extended Upper Band Edge Plot (LTE Band 2 - 5MHz QPSK – Full RB)

FCC ID: A3LSMF926B	 PART 24 MEASUREMENT REPORT 		Approved by: Technical Manager
Test Report S/N: 1M2104190044-03.A3L	Test Dates: 4/27/2021 - 5/11/2021	EUT Type: Portable Handset	Page 51 of 88

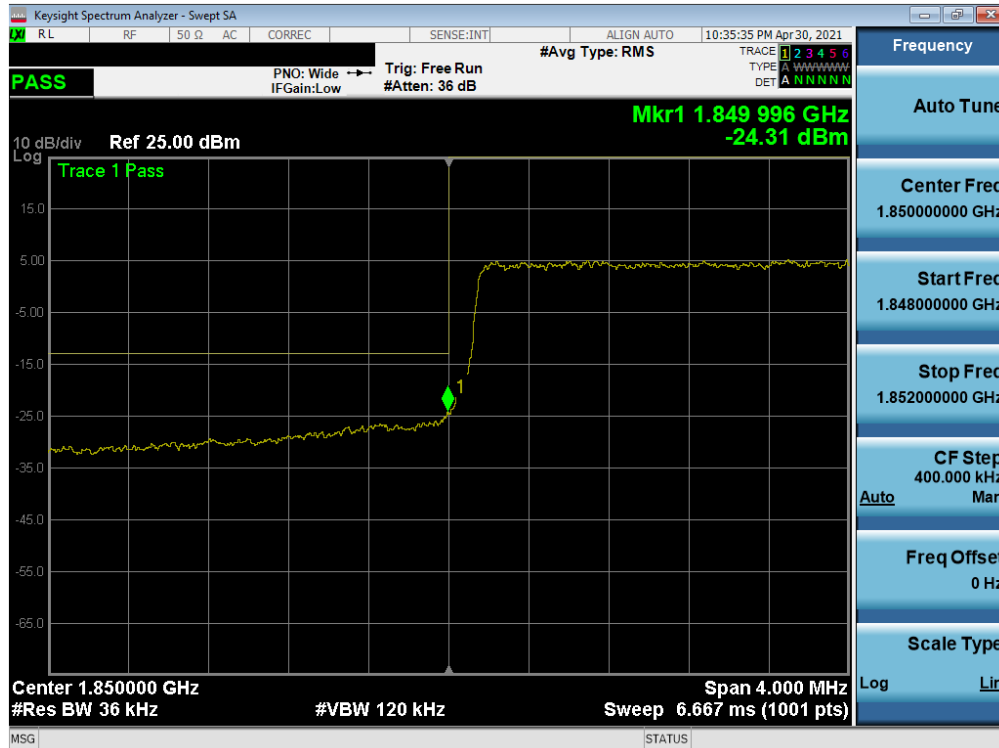


Plot 7-65. Upper Band Edge Plot (LTE Band 25 - 5MHz QPSK – Full RB)

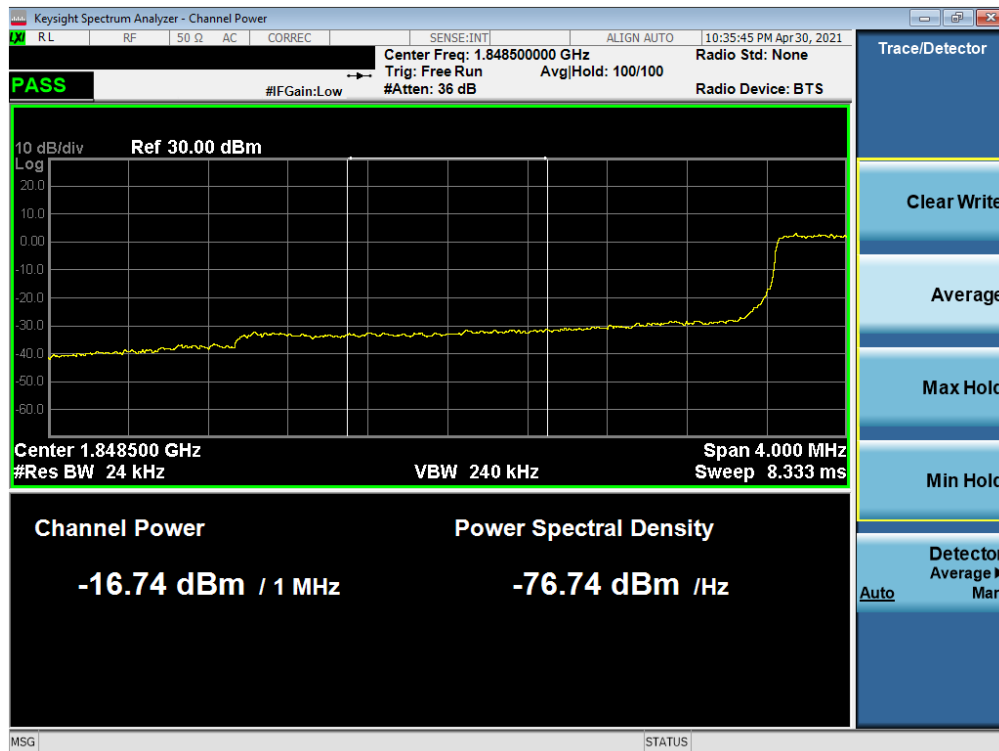


Plot 7-66. Extended Upper Band Edge Plot (LTE Band 25 - 5MHz QPSK – Full RB)

FCC ID: A3LSMF926B	PCTEST Proud to be part of element	PART 24 MEASUREMENT REPORT	SAMSUNG	Approved by: Technical Manager
Test Report S/N: 1M2104190044-03.A3L	Test Dates: 4/27/2021 - 5/11/2021	EUT Type: Portable Handset		Page 52 of 88



Plot 7-67. Lower Band Edge Plot (LTE Band 25/2 - 3MHz QPSK – Full RB)

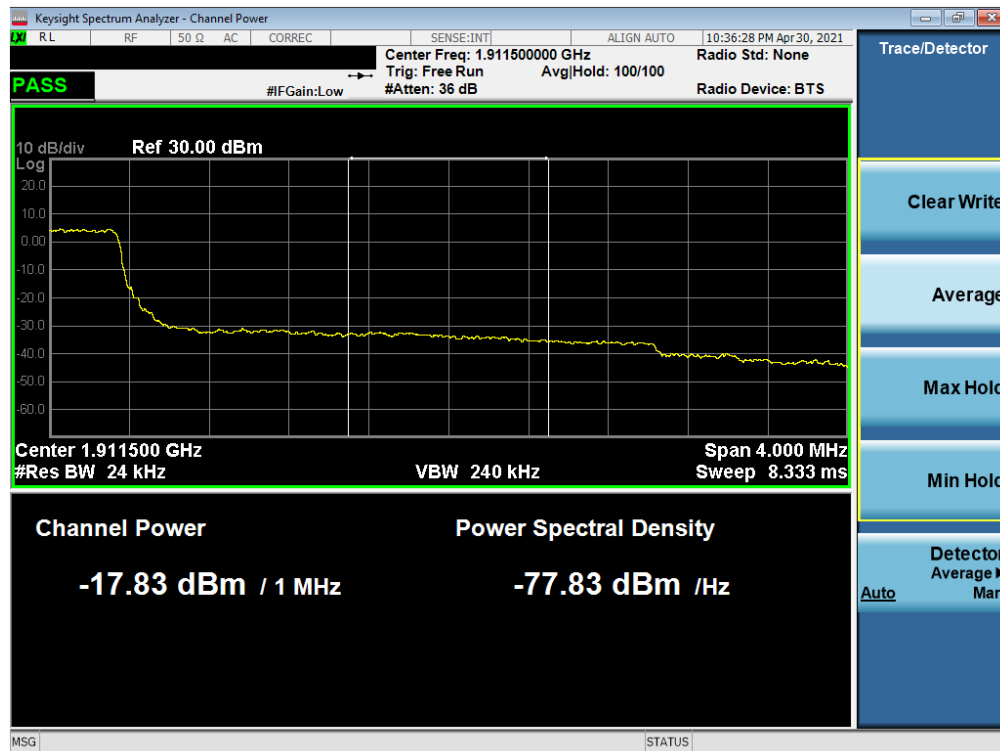


Plot 7-68. Extended Lower Band Edge Plot (LTE Band 25/2 - 3MHz QPSK – Full RB)

FCC ID: A3LSMF926B	PCTEST Proud to be part of element	PART 24 MEASUREMENT REPORT	SAMSUNG	Approved by: Technical Manager
Test Report S/N: 1M2104190044-03.A3L	Test Dates: 4/27/2021 - 5/11/2021	EUT Type: Portable Handset		Page 53 of 88



Plot 7-69. Upper Band Edge Plot (LTE Band 2 - 3MHz QPSK – Full RB)

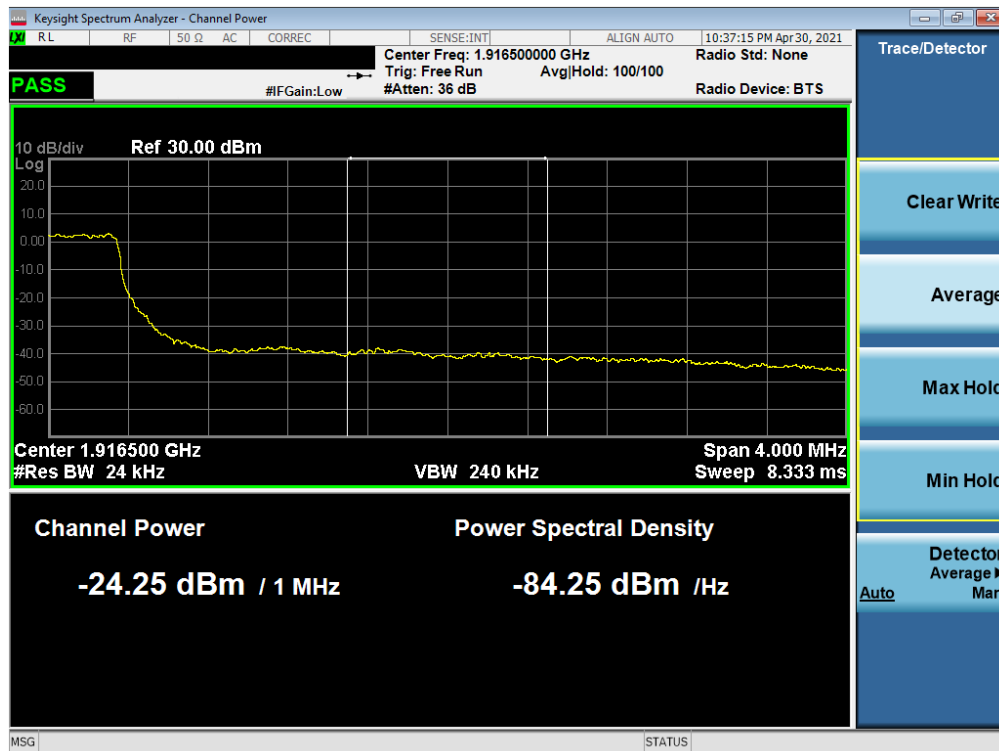


Plot 7-70. Extended Upper Band Edge Plot (LTE Band 2 - 3MHz QPSK – Full RB)

FCC ID: A3LSMF926B	PCTEST Proud to be part of element	PART 24 MEASUREMENT REPORT	SAMSUNG	Approved by: Technical Manager
Test Report S/N: 1M2104190044-03.A3L	Test Dates: 4/27/2021 - 5/11/2021	EUT Type: Portable Handset		Page 54 of 88

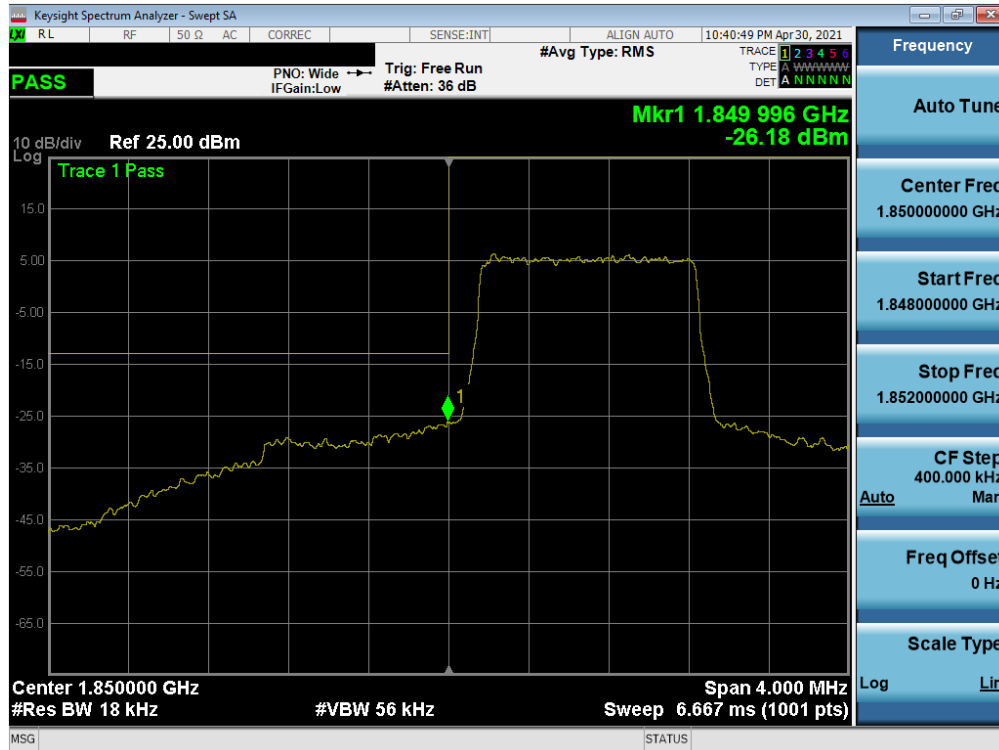


Plot 7-71. Upper Band Edge Plot (LTE Band 25 - 3MHz QPSK – Full RB)

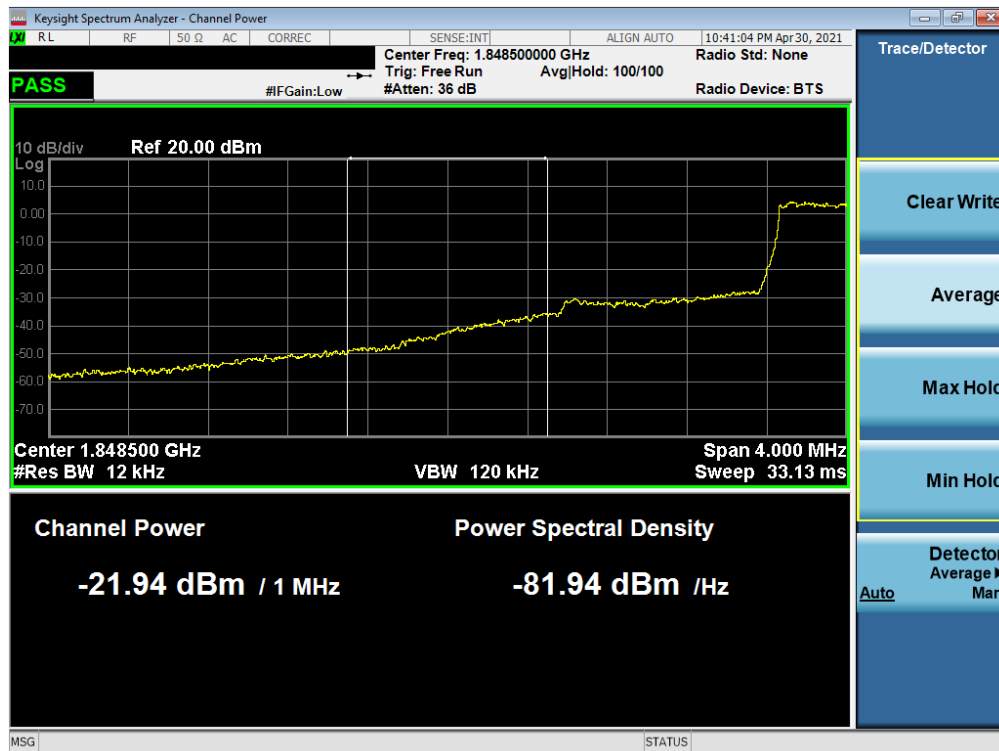


Plot 7-72. Extended Upper Band Edge Plot (LTE Band 25 - 3MHz QPSK – Full RB)

FCC ID: A3LSMF926B	PCTEST Proud to be part of element	PART 24 MEASUREMENT REPORT	SAMSUNG	Approved by: Technical Manager
Test Report S/N: 1M2104190044-03.A3L	Test Dates: 4/27/2021 - 5/11/2021	EUT Type: Portable Handset		Page 55 of 88

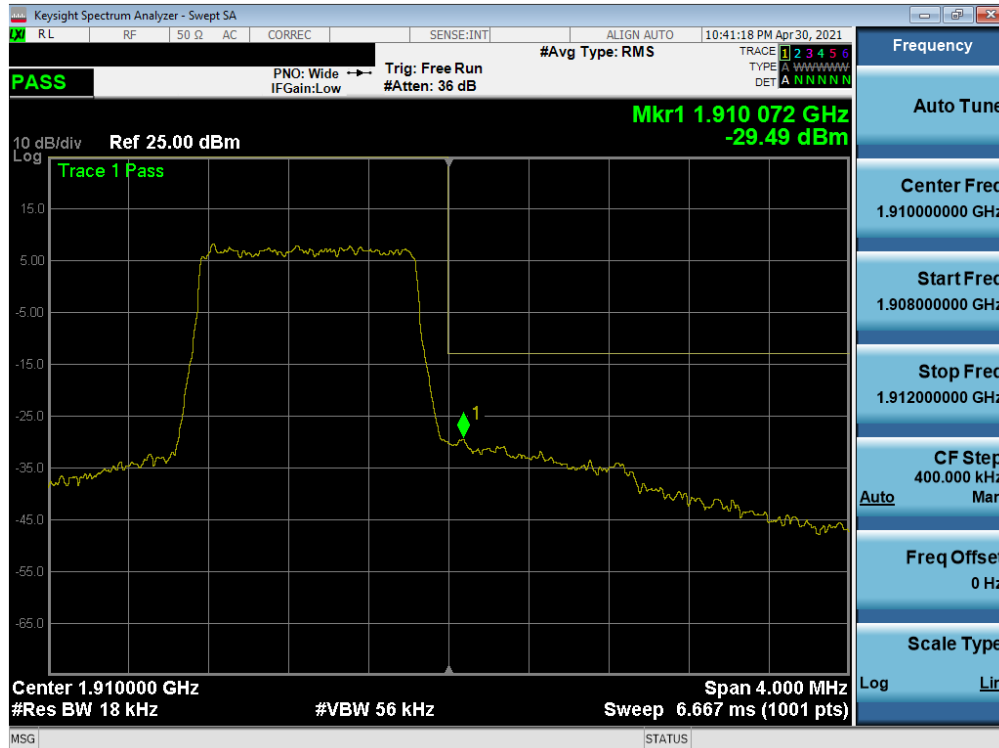


Plot 7-73. Lower Band Edge Plot (LTE Band 25/2 – 1.4MHz QPSK – Full RB)

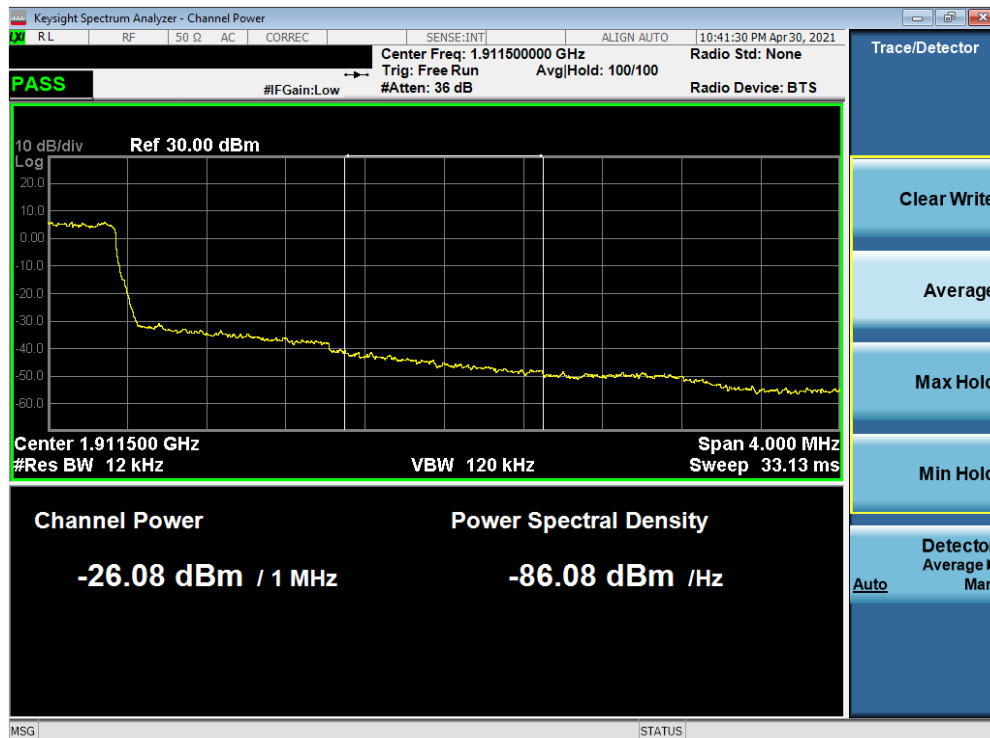


Plot 7-74. Extended Lower Band Edge Plot (LTE Band 25/2 – 1.4MHz QPSK – Full RB)

FCC ID: A3LSMF926B	PCTEST Proud to be part of element	PART 24 MEASUREMENT REPORT	SAMSUNG	Approved by: Technical Manager
Test Report S/N: 1M2104190044-03.A3L	Test Dates: 4/27/2021 - 5/11/2021	EUT Type: Portable Handset		Page 56 of 88

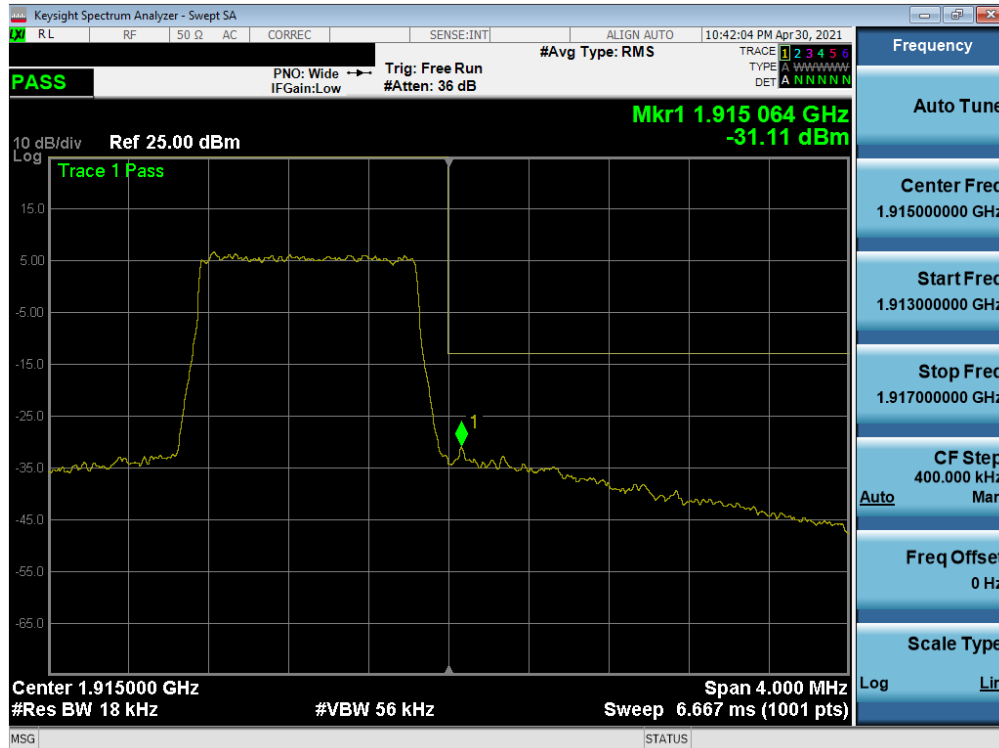


Plot 7-75. Upper Band Edge Plot (LTE Band 2 – 1.4MHz QPSK – Full RB)

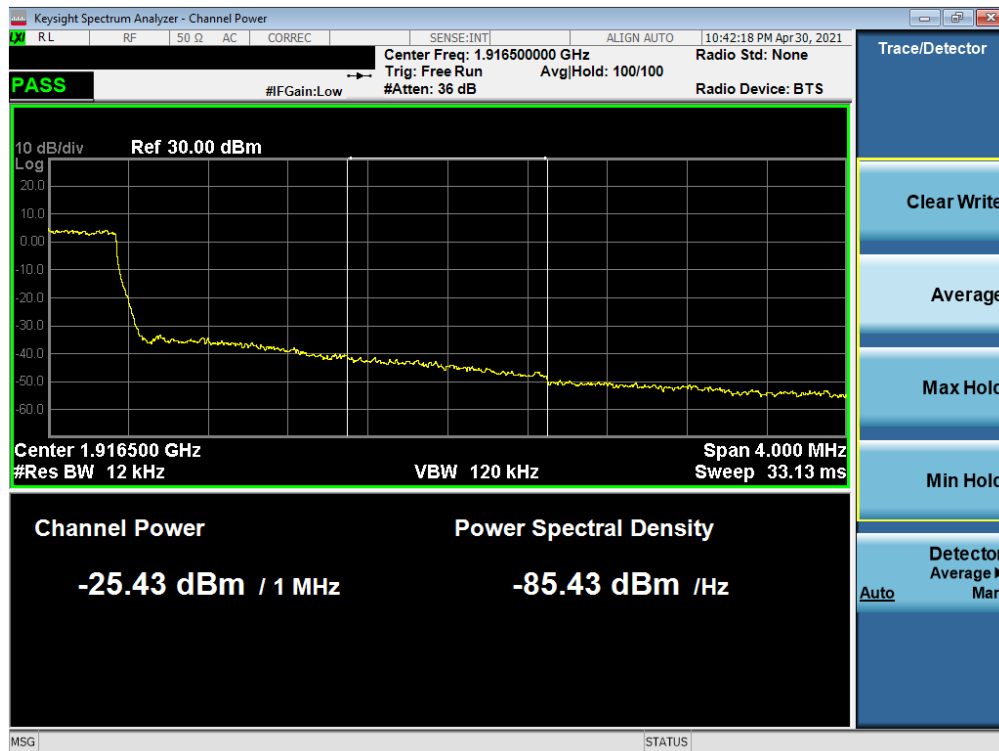


Plot 7-76. Extended Upper Band Edge Plot (LTE Band 2 – 1.4MHz QPSK – Full RB)

FCC ID: A3LSMF926B	PCTEST Proud to be part of element	PART 24 MEASUREMENT REPORT	SAMSUNG	Approved by: Technical Manager
Test Report S/N: 1M2104190044-03.A3L	Test Dates: 4/27/2021 - 5/11/2021	EUT Type: Portable Handset		Page 57 of 88



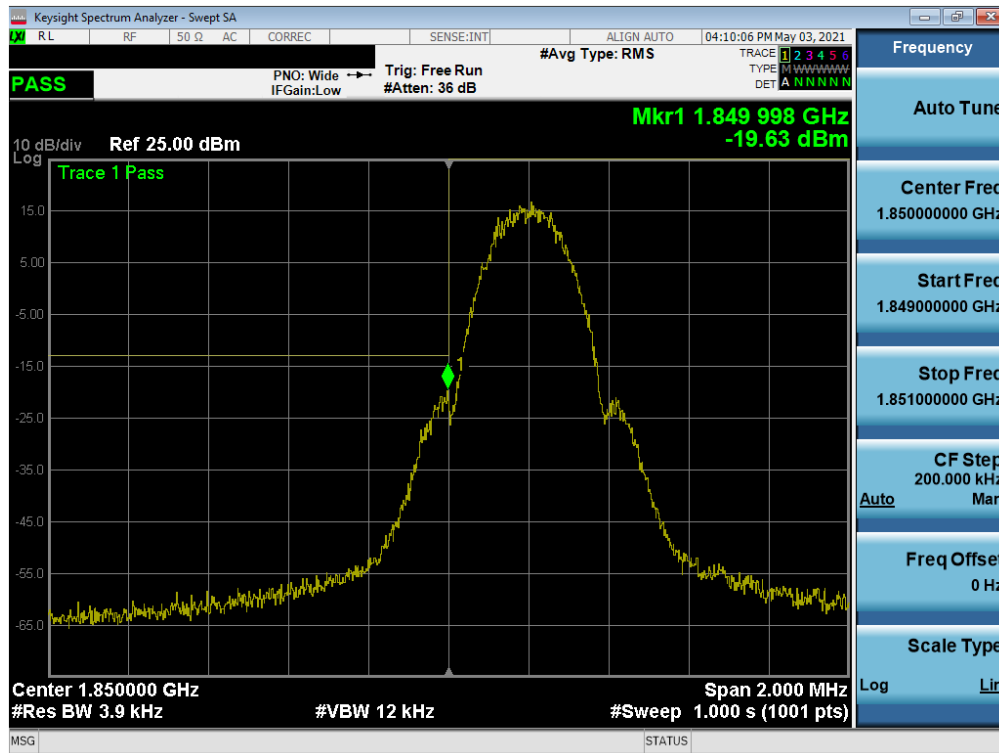
Plot 7-77. Upper Band Edge Plot (LTE Band 25 - 1.4MHz QPSK - Full RB)



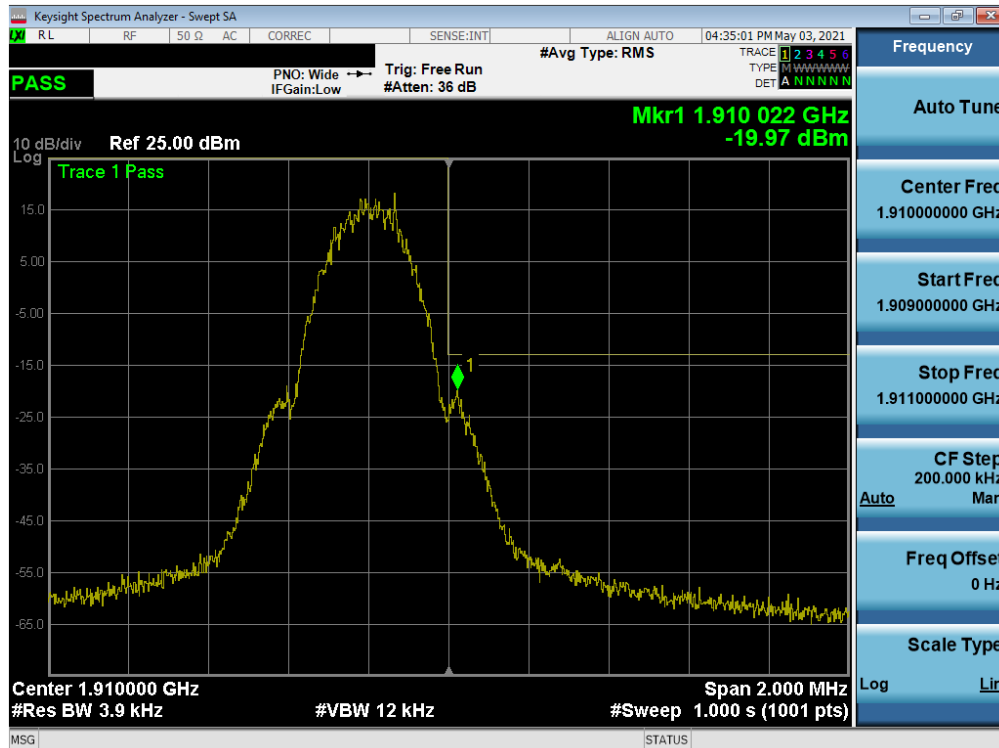
Plot 7-78. Extended Upper Band Edge Plot (LTE Band 25 - 1.4MHz QPSK - Full RB)

FCC ID: A3LSMF926B	PCTEST Proud to be part of element	PART 24 MEASUREMENT REPORT	SAMSUNG	Approved by: Technical Manager
Test Report S/N: 1M2104190044-03.A3L	Test Dates: 4/27/2021 - 5/11/2021	EUT Type: Portable Handset		Page 58 of 88

GSM/GPRS PCS



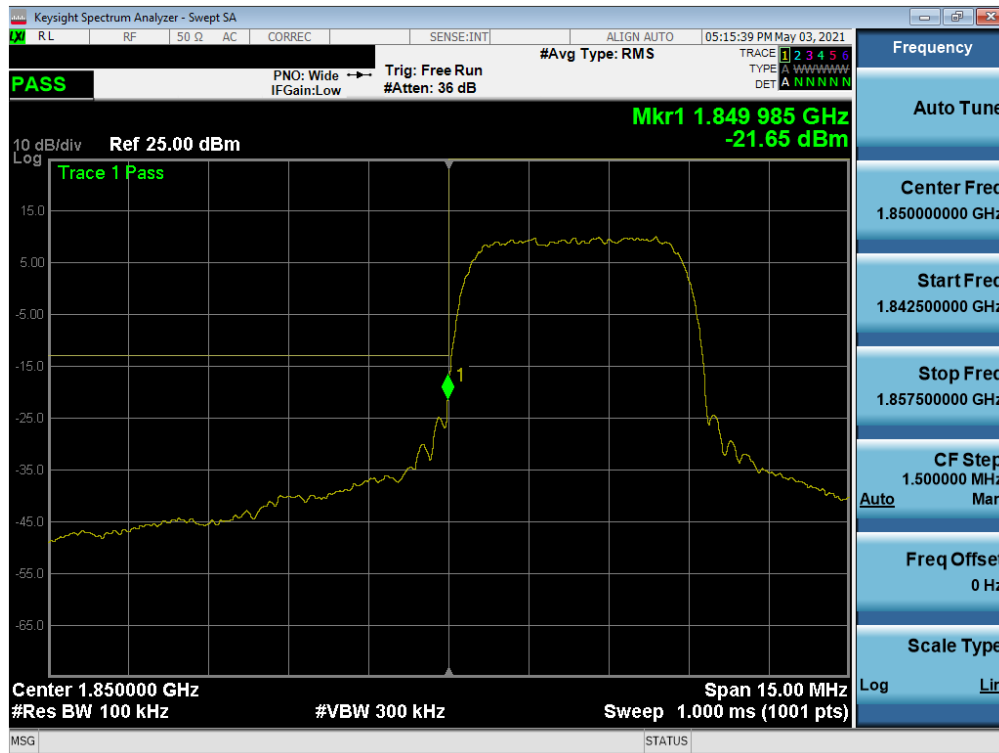
Plot 7-79. Lower Band Edge Plot (GPRS PCS – Ch. 512)



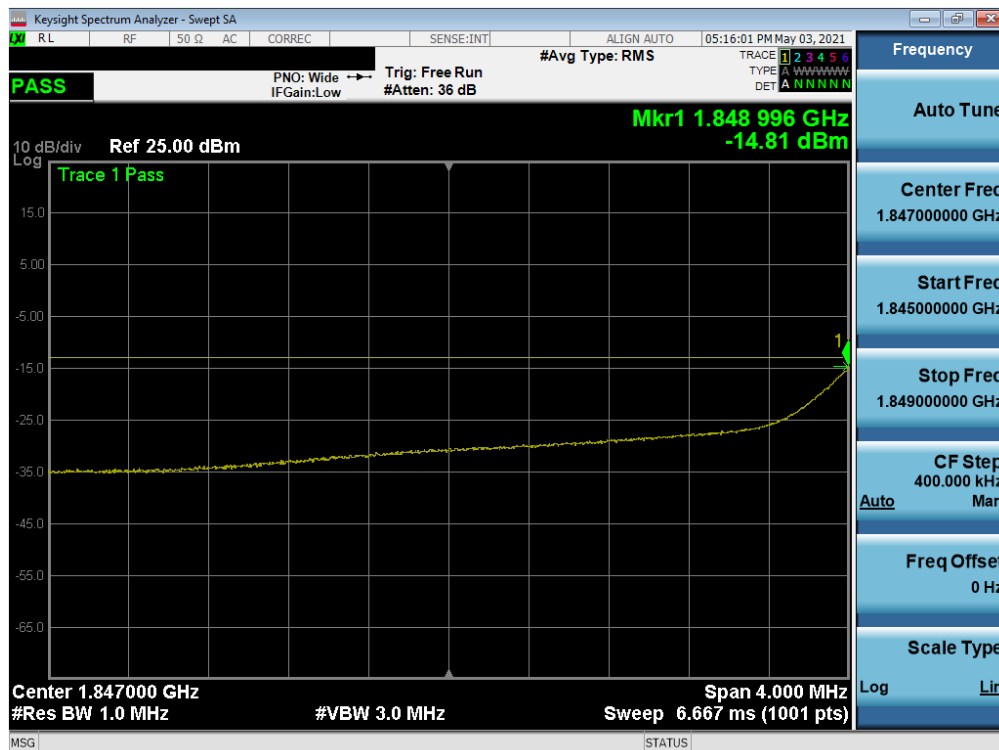
Plot 7-80. Upper Band Edge Plot (GPRS PCS – Ch. 810)

FCC ID: A3LSMF926B	PCTEST Proud to be part of element	PART 24 MEASUREMENT REPORT	SAMSUNG	Approved by: Technical Manager
Test Report S/N: 1M2104190044-03.A3L	Test Dates: 4/27/2021 - 5/11/2021	EUT Type: Portable Handset		Page 59 of 88

WCDMA PCS



Plot 7-81. Lower Band Edge Plot (WCDMA PCS – Ch. 9262)

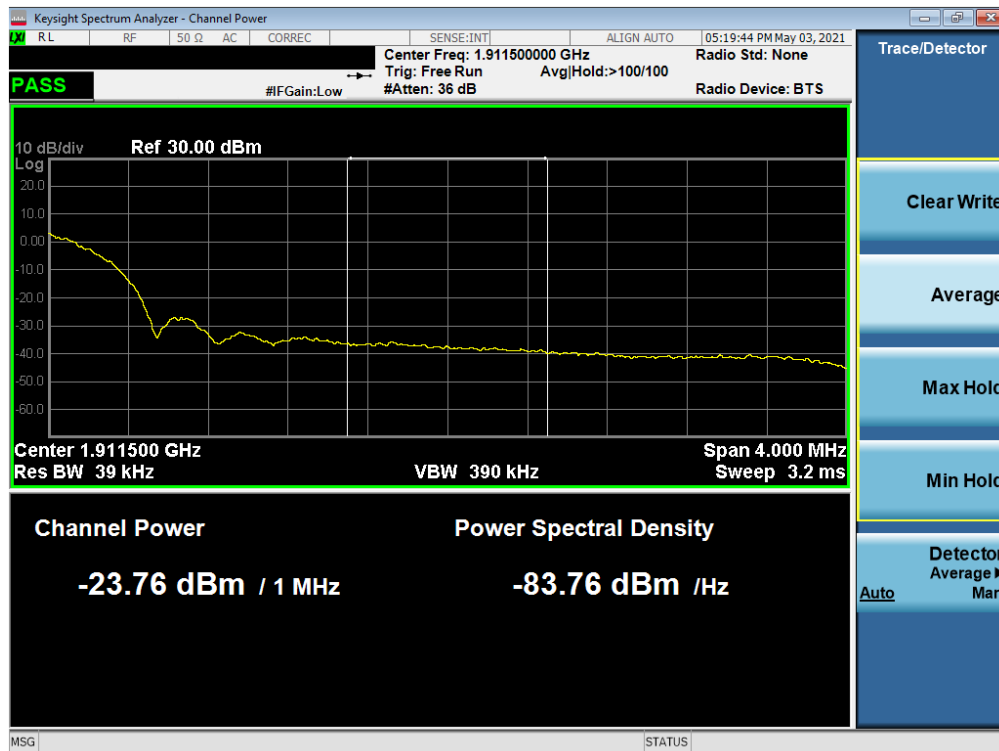


Plot 7-82. Extended Lower Band Edge Plot (WCDMA PCS – Ch. 9262)

FCC ID: A3LSMF926B	PCTEST Proud to be part of element	PART 24 MEASUREMENT REPORT	SAMSUNG	Approved by: Technical Manager
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Plot 7-83. Upper Band Edge Plot (WCDMA PCS – Ch. 9538)



Plot 7-84. Extended Upper Band Edge Plot (WCDMA PCS – Ch. 9538)

FCC ID: A3LSMF926B	PCTEST Proud to be part of element	PART 24 MEASUREMENT REPORT	SAMSUNG	Approved by: Technical Manager
Test Report S/N: 1M2104190044-03.A3L	Test Dates: 4/27/2021 - 5/11/2021	EUT Type: Portable Handset		Page 61 of 88

7.6 Peak-Average Ratio

Test Overview

A peak to average ratio measurement is performed at the conducted port of the EUT. The spectrum analyzers Complementary Cumulative Distribution Function (CCDF) measurement profile is used to determine the largest deviation between the average and the peak power of the EUT in a given bandwidth. The CCDF curve shows how much time the peak waveform spends at or above a given average power level. The percent of time the signal spends at or above the level defines the probability for that particular power level.

Test Procedure Used

KDB 971168 D01 v03r01 – Section 5.7.1

Test Settings

1. The signal analyzer's CCDF measurement profile is enabled
2. Frequency = carrier center frequency
3. Measurement BW \geq OBW or specified reference bandwidth
4. The signal analyzer was set to collect one million samples to generate the CCDF curve
5. The measurement interval was set depending on the type of signal analyzed. For continuous signals (>98% duty cycle), the measurement interval was set to 1ms. For burst transmissions, the spectrum analyzer is set to use an internal "RF Burst" trigger that is synced with an incoming pulse and the measurement interval is set to less than the duration of the "on time" of one burst to ensure that energy is only captured during a time in which the transmitter is operating at maximum power

Test Setup

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

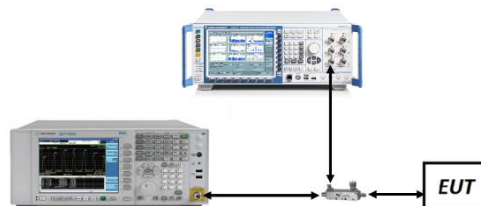


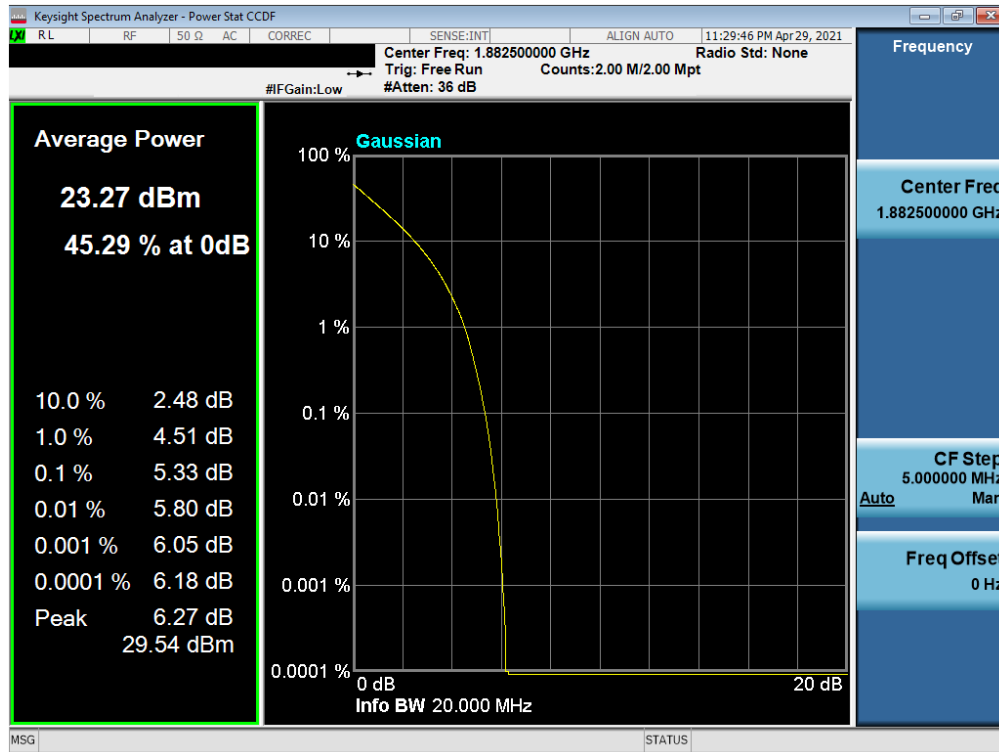
Figure 7-5. Test Instrument & Measurement Setup

Test Notes

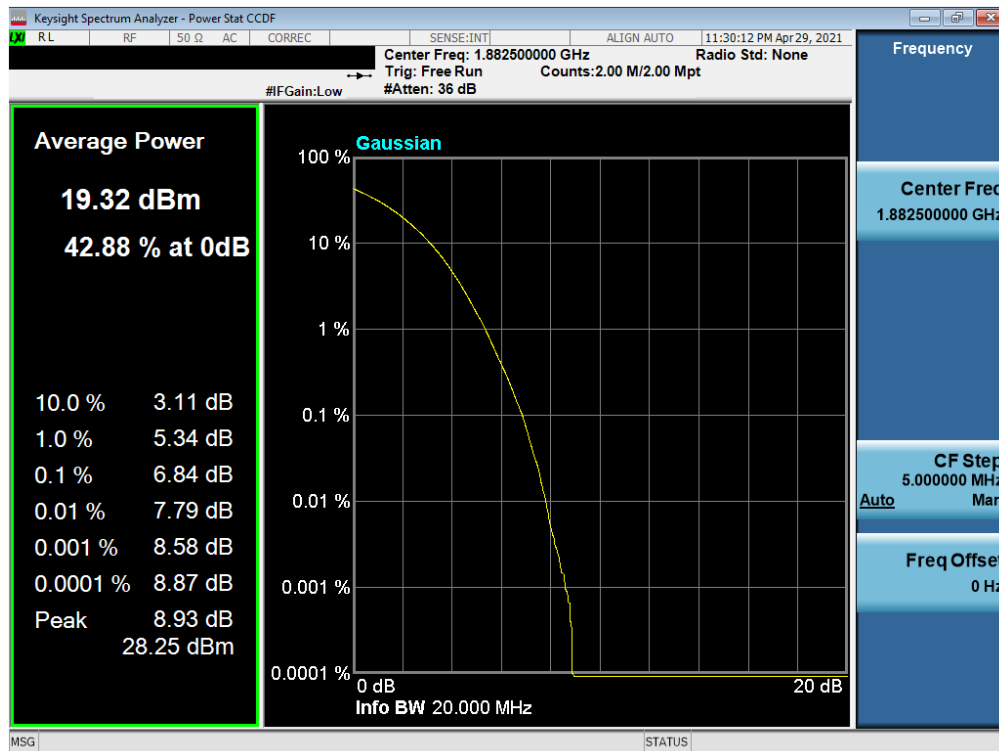
None.

FCC ID: A3LSMF926B	PCTEST Proud to be part of element	PART 24 MEASUREMENT REPORT	Approved by: Technical Manager
Test Report S/N: 1M2104190044-03.A3L	Test Dates: 4/27/2021 - 5/11/2021	EUT Type: Portable Handset	Page 62 of 88

LTE Band 25/2

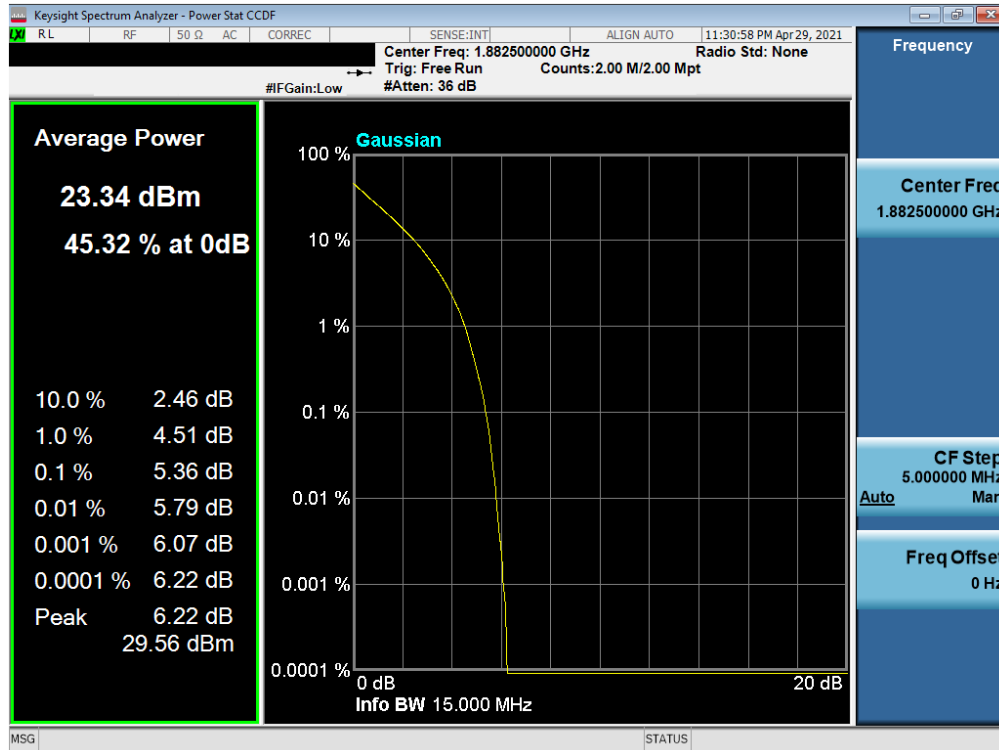


Plot 7-85. PAR Plot (LTE Band 25/2 - 20MHz QPSK - Full RB)

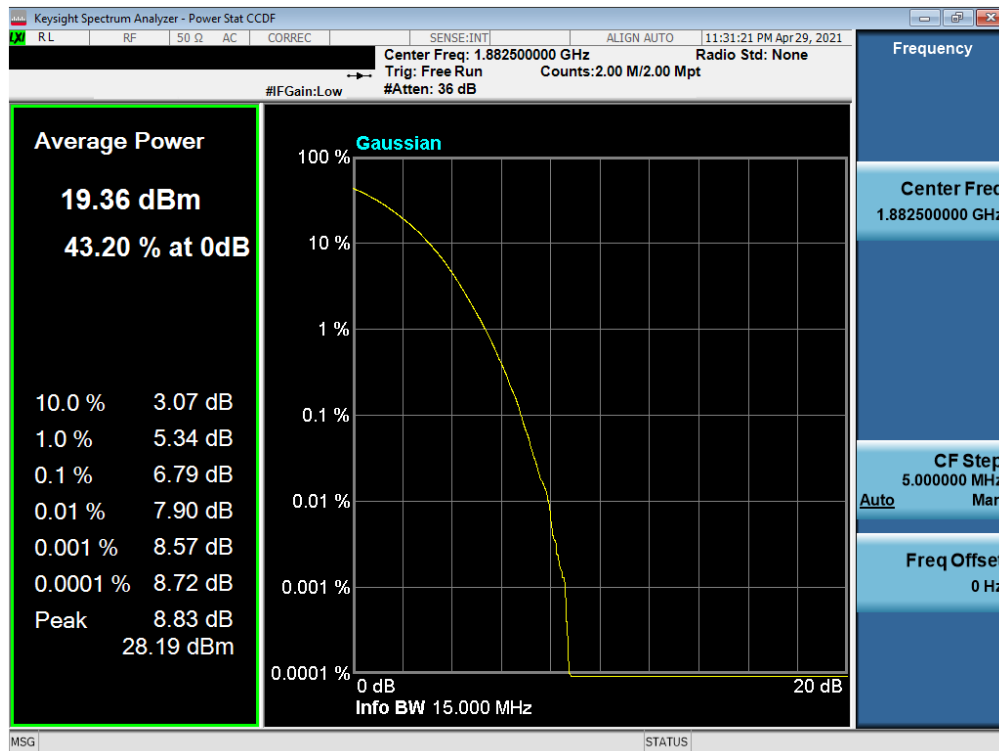


Plot 7-86. PAR Plot (LTE Band 25/2 - 20MHz 256-QAM - Full RB)

FCC ID: A3LSMF926B	PCTEST Proud to be part of element	PART 24 MEASUREMENT REPORT	SAMSUNG	Approved by: Technical Manager
Test Report S/N: 1M2104190044-03.A3L	Test Dates: 4/27/2021 - 5/11/2021	EUT Type: Portable Handset		Page 63 of 88

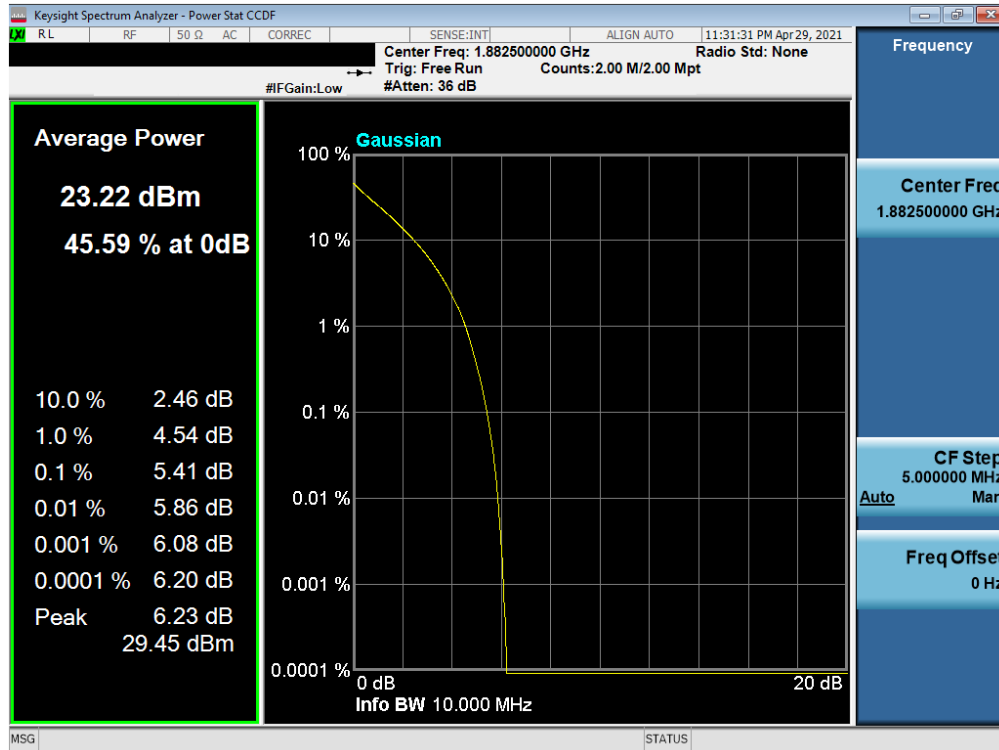


Plot 7-87. PAR Plot (LTE Band 25/2 - 15MHz QPSK - Full RB)

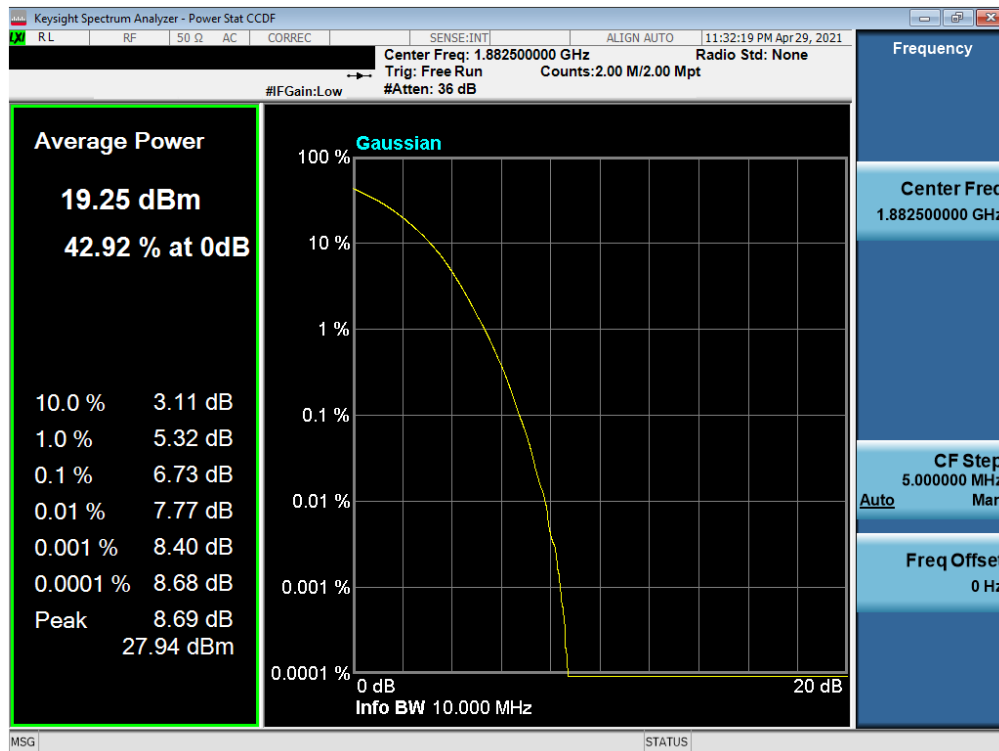


Plot 7-88. PAR Plot (LTE Band 25/2 - 15MHz 256-QAM - Full RB)

FCC ID: A3LSMF926B	PCTEST Proud to be part of element	PART 24 MEASUREMENT REPORT	SAMSUNG	Approved by: Technical Manager
Test Report S/N: 1M2104190044-03.A3L	Test Dates: 4/27/2021 - 5/11/2021	EUT Type: Portable Handset		Page 64 of 88

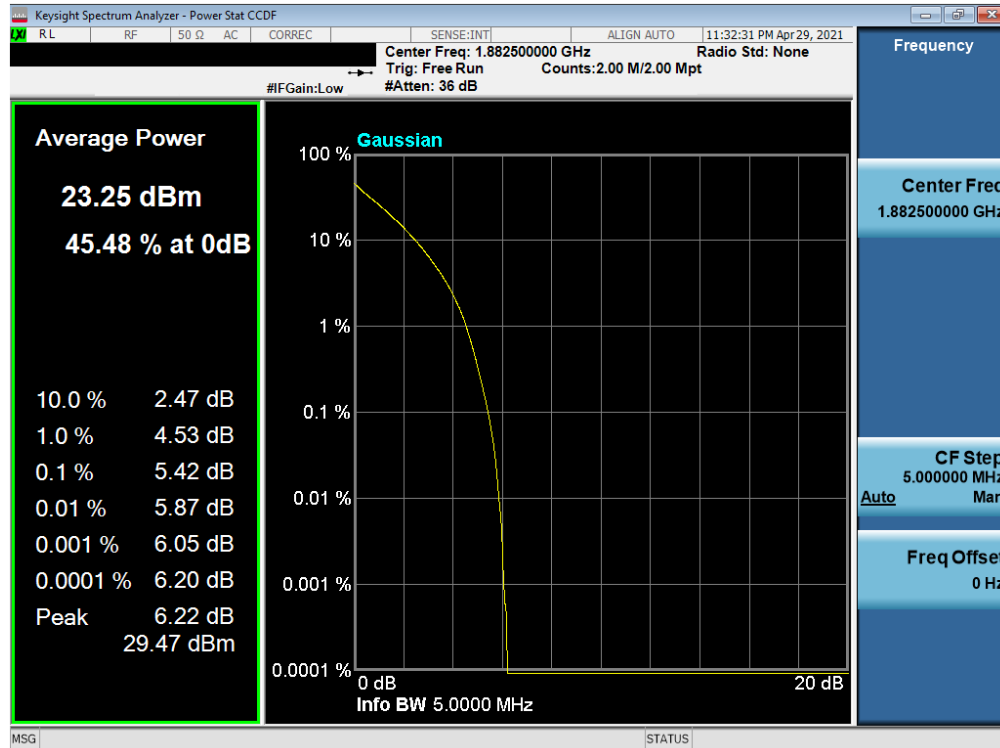


Plot 7-89. PAR Plot (LTE Band 25/2 - 10MHz QPSK - Full RB)

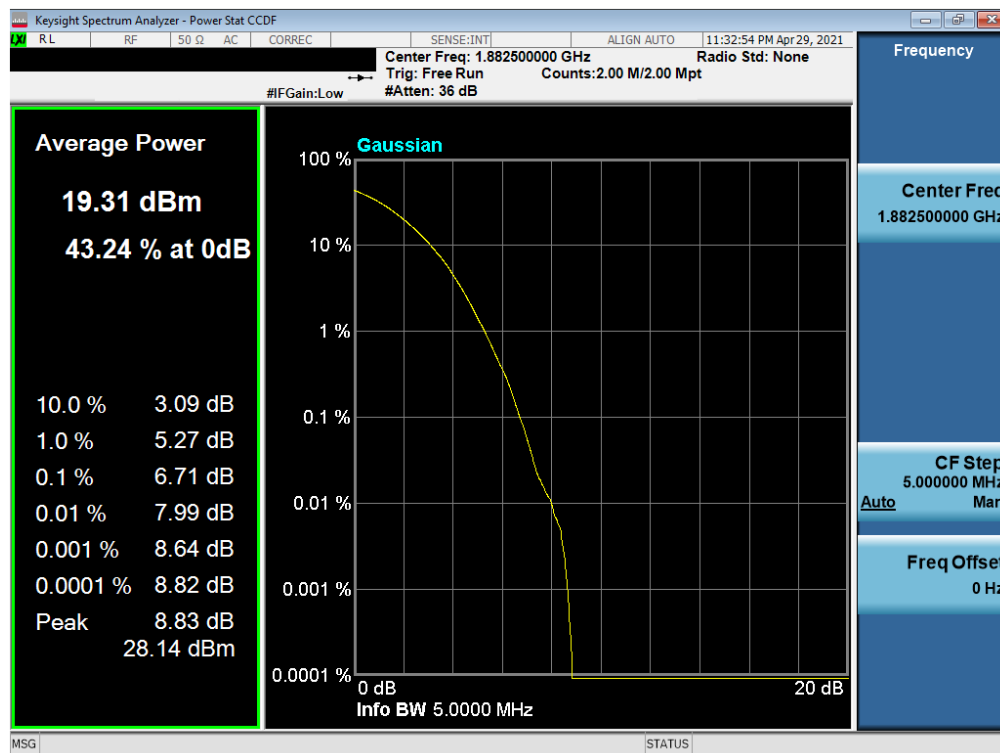


Plot 7-90. PAR Plot (LTE Band 25/2 - 10MHz 256-QAM - Full RB)

FCC ID: A3LSMF926B	PCTEST Proud to be part of element	PART 24 MEASUREMENT REPORT	SAMSUNG	Approved by: Technical Manager
Test Report S/N: 1M2104190044-03.A3L	Test Dates: 4/27/2021 - 5/11/2021	EUT Type: Portable Handset		Page 65 of 88

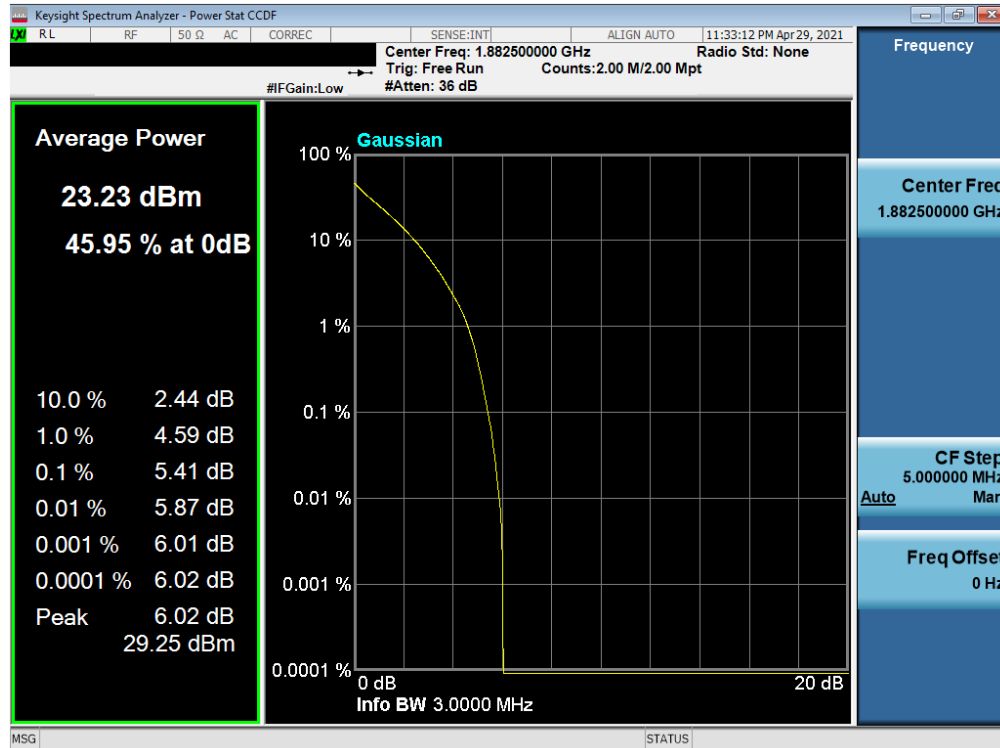


Plot 7-91. PAR Plot (LTE Band 25/2 - 5MHz QPSK - Full RB)

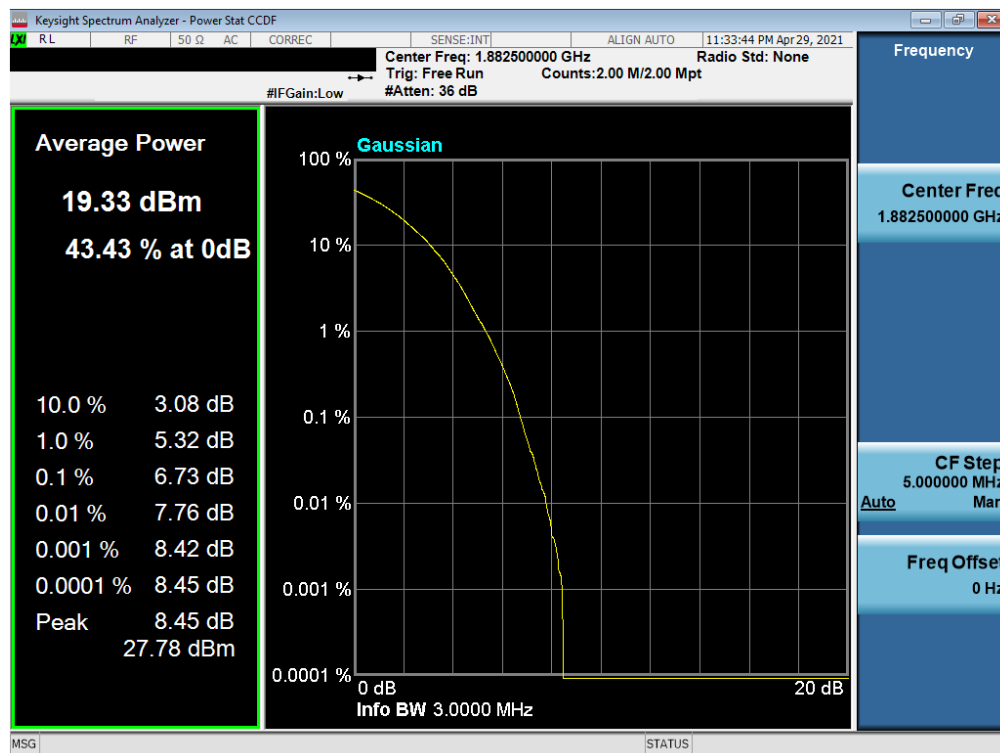


Plot 7-92. PAR Plot (LTE Band 25/2 - 5MHz 256-QAM - Full RB)

FCC ID: A3LSMF926B	PCTEST Proud to be part of element	PART 24 MEASUREMENT REPORT	SAMSUNG	Approved by: Technical Manager
Test Report S/N: 1M2104190044-03.A3L	Test Dates: 4/27/2021 - 5/11/2021	EUT Type: Portable Handset		Page 66 of 88

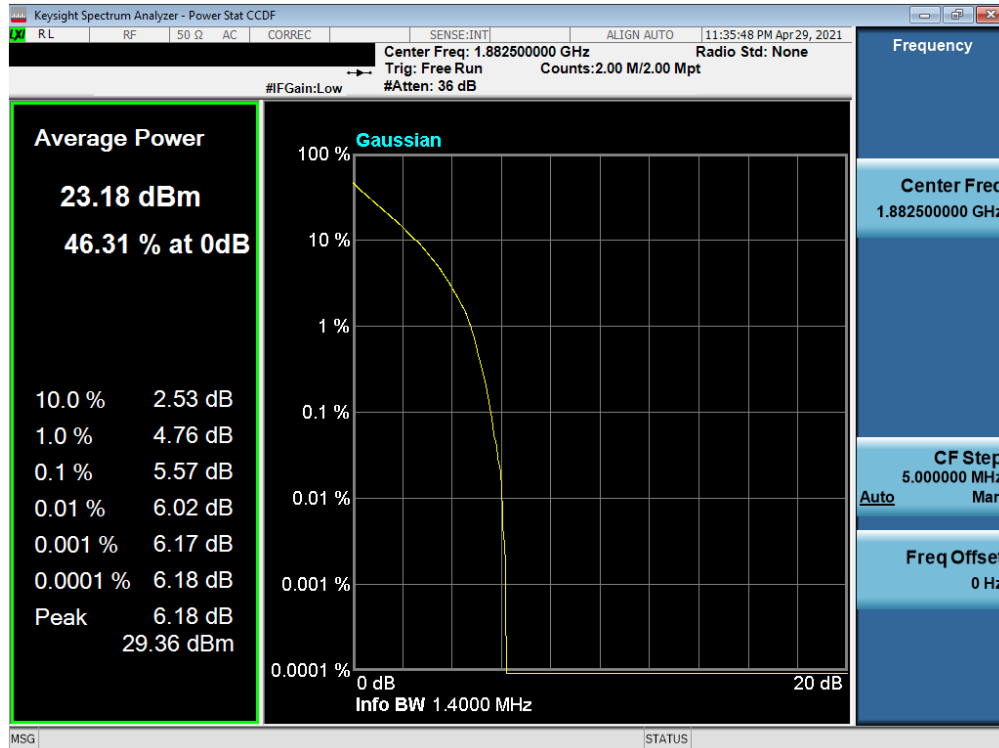


Plot 7-93. PAR Plot (LTE Band 25/2 - 3MHz QPSK - Full RB)

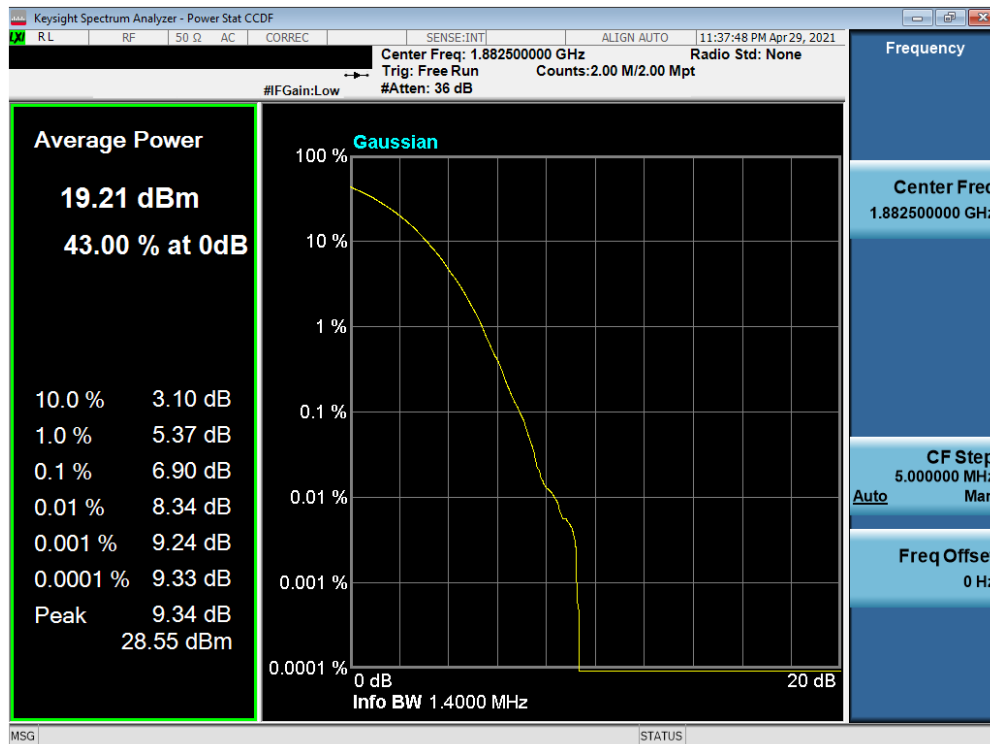


Plot 7-94. PAR Plot (LTE Band 25/2 - 3MHz 256-QAM - Full RB)

FCC ID: A3LSMF926B	PCTEST Proud to be part of element	PART 24 MEASUREMENT REPORT	SAMSUNG	Approved by: Technical Manager
Test Report S/N: 1M2104190044-03.A3L	Test Dates: 4/27/2021 - 5/11/2021	EUT Type: Portable Handset		Page 67 of 88



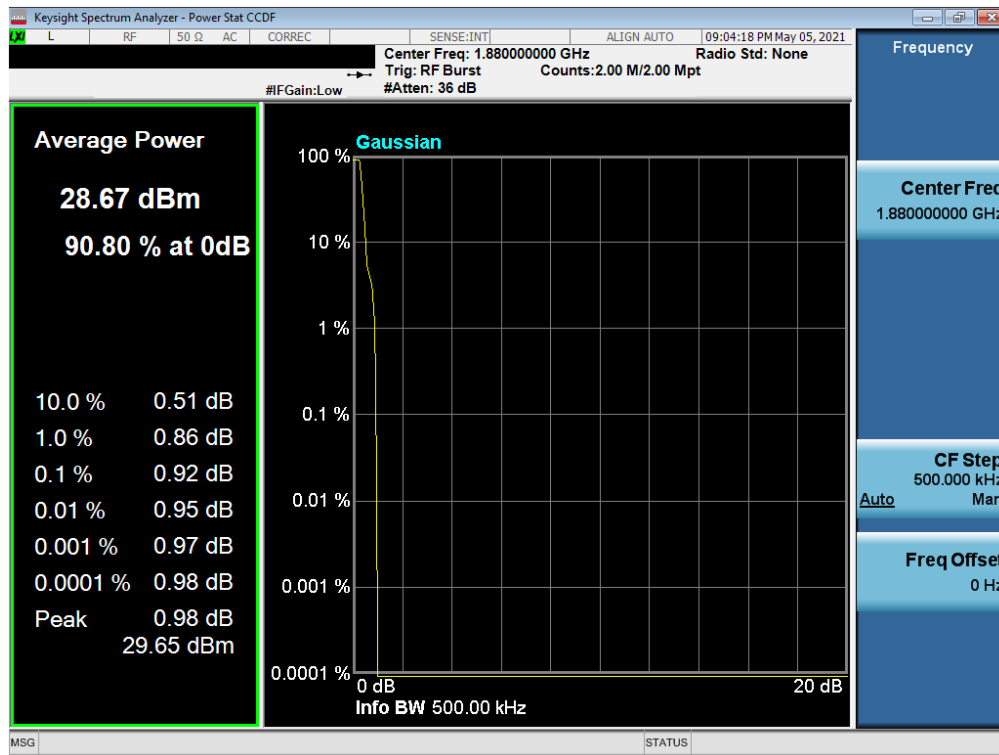
Plot 7-95. PAR Plot (LTE Band 25/2 - 1.4MHz QPSK - Full RB)



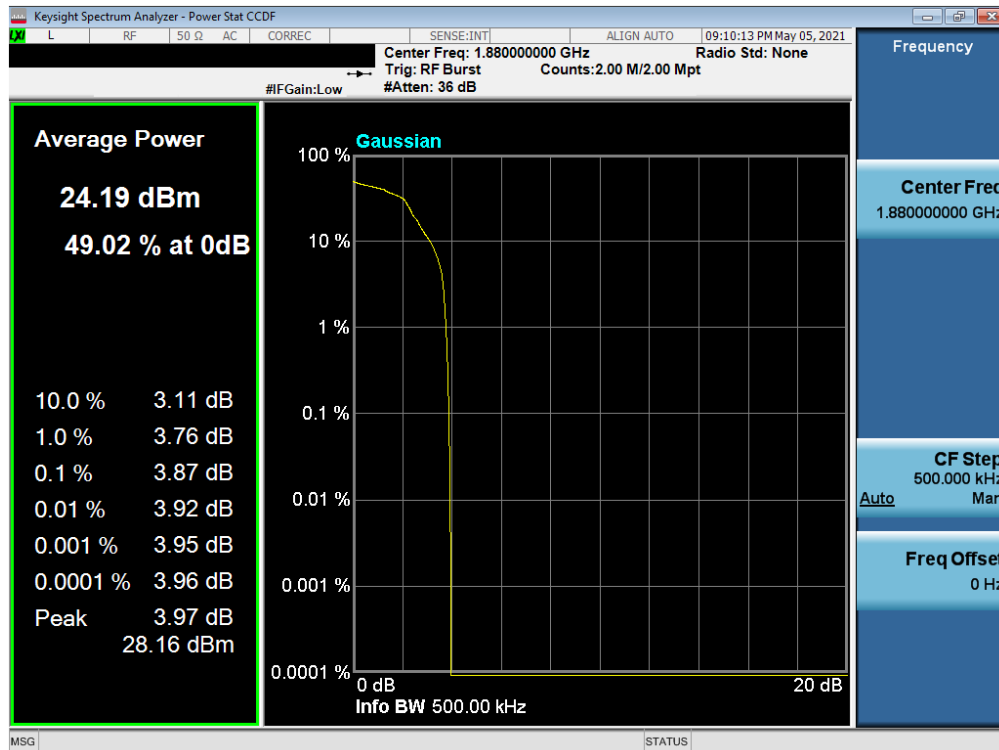
Plot 7-96. PAR Plot (LTE Band 25/2 - 1.4MHz 256-QAM - Full RB)

FCC ID: A3LSMF926B	PCTEST Proud to be part of element	PART 24 MEASUREMENT REPORT	SAMSUNG	Approved by: Technical Manager
Test Report S/N: 1M2104190044-03.A3L	Test Dates: 4/27/2021 - 5/11/2021	EUT Type: Portable Handset		Page 68 of 88

GSM/GPRS PCS



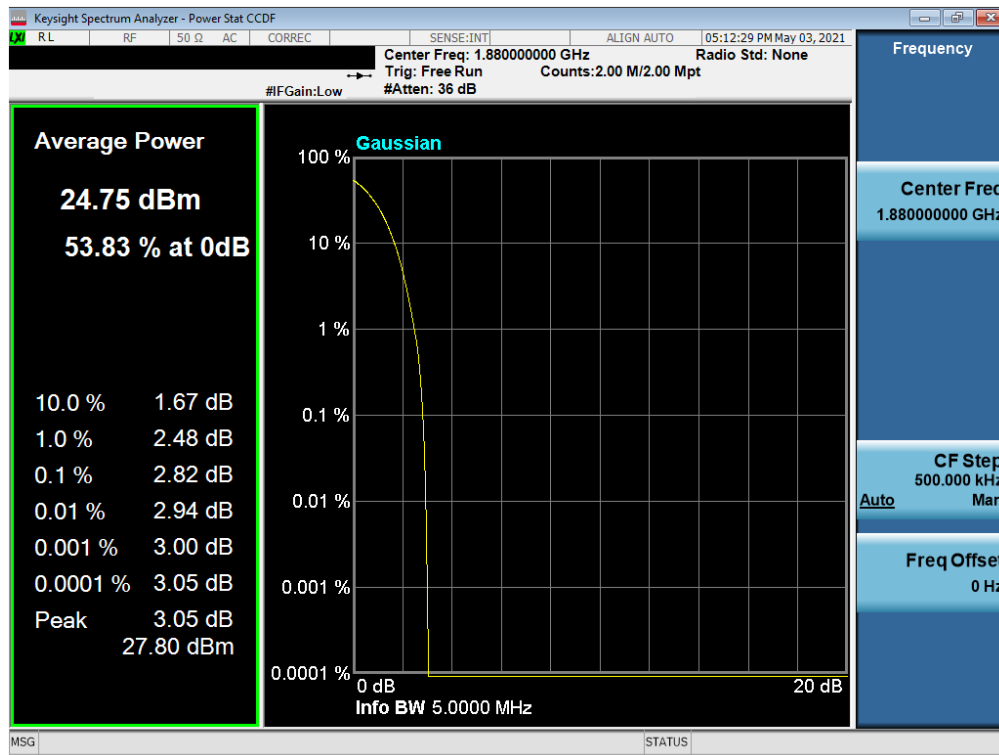
Plot 7-97. PAR Plot (GPRS, Ch. 661)



Plot 7-98. PAR Plot (EDGE, Ch. 661)

FCC ID: A3LSMF926B	PCTEST Proud to be part of element	PART 24 MEASUREMENT REPORT	SAMSUNG	Approved by: Technical Manager
Test Report S/N: 1M2104190044-03.A3L	Test Dates: 4/27/2021 - 5/11/2021	EUT Type: Portable Handset		Page 69 of 88

WCDMA PCS



Plot 7-99. PAR Plot (WCDMA, Ch. 9400)

FCC ID: A3LSMF926B	PCTEST Proud to be part of element	PART 24 MEASUREMENT REPORT	SAMSUNG	Approved by: Technical Manager
Test Report S/N: 1M2104190044-03.A3L	Test Dates: 4/27/2021 - 5/11/2021	EUT Type: Portable Handset		Page 70 of 88

7.7 Radiated Power (ERP/EIRP)

Test Overview

Effective Radiated Power (ERP) and 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 $\geq 3 \times$ RBW
4. Span = 1.5 times the OBW
5. No. of sweep points $\geq 2 \times$ 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

FCC ID: A3LSMF926B	 PCTEST Proud to be part of element	PART 24 MEASUREMENT REPORT		Approved by: Technical Manager
Test Report S/N: 1M2104190044-03.A3L	Test Dates: 4/27/2021 - 5/11/2021	EUT Type: Portable Handset		Page 71 of 88

Test Setup

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

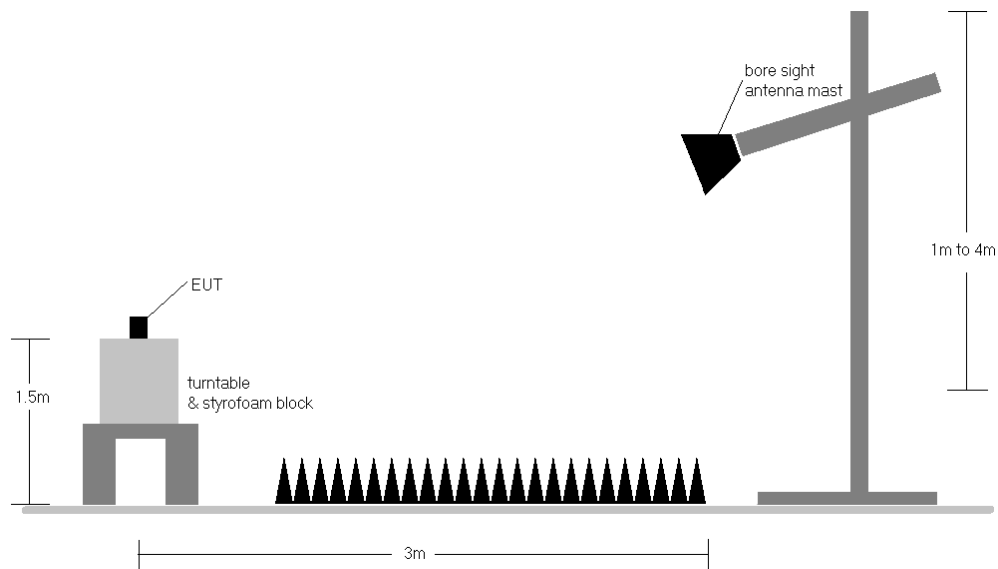


Figure 7-6. Radiated Test Setup >1GHz



FCC ID: A3LSMF926B	PCTEST Proud to be part of element	PART 24 MEASUREMENT REPORT	Approved by: Technical Manager
Test Report S/N: 1M2104190044-03.A3L	Test Dates: 4/27/2021 - 5/11/2021	EUT Type: Portable Handset	Page 72 of 88

Test Notes

- 1) This device employs GSM, GPRS, and EDGE capabilities. The EUT was tested under all configurations and the highest powers is reported in GPRS mode while transmitting with one slot active.
- 2) This device employs UMTS technology with WCDMA (AMR/RMC) and HSDPA capabilities. The EUT was tested under all configurations and the highest power is reported in WCDMA mode with HSDPA Inactive at 12.2 kbps RMC and TPC bits all set to "1".
- 3) 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.
- 4) This unit was tested with its standard battery.
- 5) The EUT was tested in three orthogonal planes and in all possible test configurations and positioning. The worst case setup is reported in the tables below.

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]
20 MHz	QPSK	1860.0	H	152.0	41.0	9.64	1 / 50	13.48	23.12	0.205	33.01	-9.89
		1882.5	H	103.0	47.0	9.96	1 / 50	13.58	23.54	0.226	33.01	-9.47
		1905.0	H	114.0	30.0	10.24	1 / 0	13.86	24.10	0.257	33.01	-8.91
	16-QAM	1905.0	H	114.0	30.0	10.24	1 / 0	13.28	23.52	0.225	33.01	-9.49
15 MHz	QPSK	1857.5	H	152.0	41.0	9.61	1 / 37	13.49	23.09	0.204	33.01	-9.92
		1882.5	H	103.0	47.0	9.96	1 / 37	13.57	23.53	0.225	33.01	-9.48
		1907.5	H	114.0	30.0	10.26	1 / 37	13.94	24.20	0.263	33.01	-8.81
	16-QAM	1907.5	H	114.0	30.0	10.26	1 / 37	13.15	23.41	0.219	33.01	-9.60
10 MHz	QPSK	1855.0	H	152.0	41.0	9.57	1 / 25	13.47	23.04	0.202	33.01	-9.97
		1882.5	H	103.0	47.0	9.96	1 / 25	13.46	23.42	0.220	33.01	-9.59
		1910.0	H	114.0	30.0	10.28	1 / 25	13.88	24.16	0.261	33.01	-8.85
	16-QAM	1910.0	H	114.0	30.0	10.28	1 / 25	13.23	23.51	0.225	33.01	-9.50
5 MHz	QPSK	1852.5	H	152.0	41.0	9.54	1 / 24	13.60	23.13	0.206	33.01	-9.88
		1882.5	H	103.0	47.0	9.96	1 / 24	13.60	23.56	0.227	33.01	-9.45
		1912.5	H	114.0	30.0	10.30	1 / 12	13.88	24.18	0.262	33.01	-8.83
	16-QAM	1912.5	H	114.0	30.0	10.30	1 / 12	13.10	23.40	0.219	33.01	-9.61
3 MHz	QPSK	1851.5	H	152.0	41.0	9.52	1 / 14	13.56	23.08	0.203	33.01	-9.93
		1882.5	H	103.0	47.0	9.96	1 / 14	13.57	23.53	0.225	33.01	-9.48
		1913.5	H	114.0	30.0	10.31	1 / 0	13.79	24.10	0.257	33.01	-8.91
	16-QAM	1913.5	H	114.0	30.0	10.31	1 / 0	13.08	23.39	0.218	33.01	-9.62
1.4 MHz	QPSK	1850.7	H	152.0	41.0	9.51	1 / 5	13.52	23.03	0.201	33.01	-9.98
		1882.5	H	103.0	47.0	9.96	1 / 3	13.47	23.43	0.220	33.01	-9.58
		1914.3	H	114.0	30.0	10.32	1 / 3	13.49	23.80	0.240	33.01	-9.21
	16-QAM	1914.3	H	114.0	30.0	10.32	1 / 3	12.65	22.96	0.198	33.01	-10.05
20 MHz	Opposite Pol.	1905.0	V	100.0	255.0	10.31	1 / 0	12.40	22.71	0.187	33.01	-10.30
	WCP	1905.0	H	155.0	20.0	10.24	1 / 0	12.66	22.90	0.195	33.01	-10.11
	Closed	1905.0	H	142	227	10.24	1 / 0	11.89	22.13	0.163	33.01	-10.88

Table 7-3. EIRP Data (LTE Band 25/2)



FCC ID: A3LSMF926B	 PART 24 MEASUREMENT REPORT 	Approved by: Technical Manager
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Frequency [MHz]	Mode	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Substitute Level [dBm]	Ant. Gain [dBi]	EIRP [dBm]	EIRP [Watts]	EIRP Limit [dBm]	Margin [dB]
1850.20	GPRS1900	H	107	42	18.11	9.51	27.62	0.578	33.01	-5.39
1880.00	GPRS1900	H	159	22	19.26	9.93	29.19	0.829	33.01	-3.82
1909.80	GPRS1900	H	111	34	18.00	10.28	28.28	0.673	33.01	-4.73
1880.00	GPRS1900	V	104	276	18.29	9.93	28.22	0.663	33.01	-4.79
1880.00	EDGE1900	H	159	22	13.97	10.13	24.10	0.257	33.01	-8.91
1880.00	GPRS900 (WCP)	H	109	12	18.00	9.93	27.93	0.620	33.01	-5.08
1880.00	GPRS1900 (Closed)	H	154	229	18.48	9.93	28.41	0.693	33.01	-4.60

Table 7-4. EIRP Data (GPRS PCS)

Frequency [MHz]	Mode	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Substitute Level [dBm]	Ant. Gain [dBi]	EIRP [dBm]	EIRP [Watts]	EIRP Limit [dBm]	Margin [dB]
1852.40	WCDMA1900	H	157	35	14.10	9.54	23.64	0.231	33.01	-9.37
1880.00	WCDMA1900	H	147	163	13.51	9.93	23.44	0.221	33.01	-9.57
1907.60	WCDMA1900	H	111	35	14.15	10.26	24.41	0.276	33.01	-8.60
1907.60	WCDMA1900	V	106	294	12.97	10.26	23.23	0.211	33.01	-9.78
1907.60	WCDMA1900 (WCP)	H	157	22	13.86	10.26	24.12	0.258	33.01	-8.89
1907.60	WCDMA1900 (Close)	H	118	145	13.81	10.26	24.07	0.255	33.01	-8.94

Table 7-5. EIRP Data (WCDMA PCS)

FCC ID: A3LSMF926B	 PART 24 MEASUREMENT REPORT 	Approved by: Technical Manager
Test Report S/N: 1M2104190044-03.A3L	Test Dates: 4/27/2021 - 5/11/2021	EUT Type: Portable Handset
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7.8 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 peak measurements while the EUT is operating at maximum power, and at the appropriate frequencies.

Test Procedures Used

KDB 971168 D01 v03r01 – Section 5.8

Test Settings

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

FCC ID: A3LSMF926B	 PART 24 MEASUREMENT REPORT 	Approved by: Technical Manager
Test Report S/N: 1M2104190044-03.A3L	Test Dates: 4/27/2021 - 5/11/2021	EUT Type: Portable Handset
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Test Setup

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

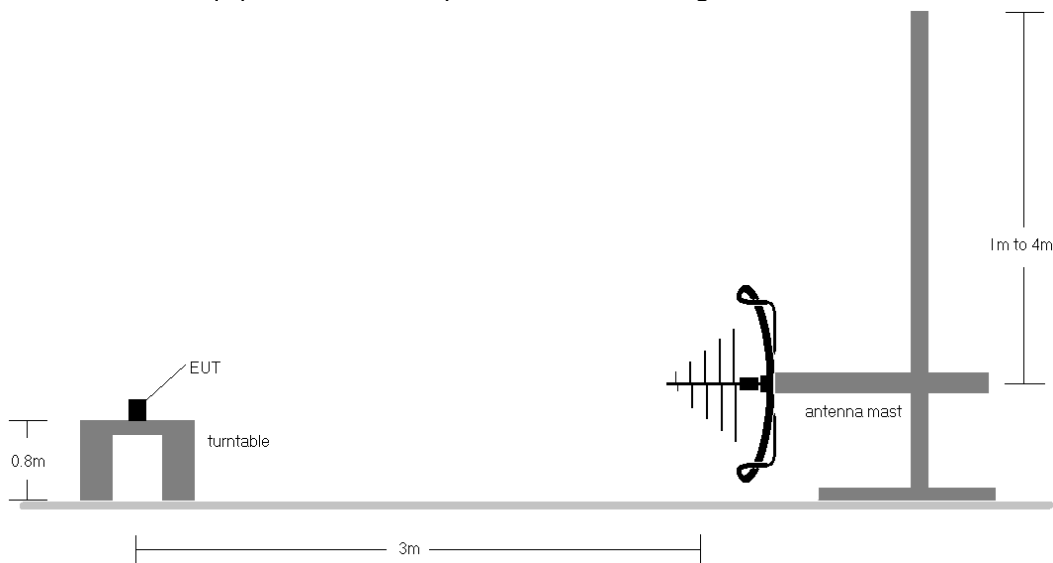


Figure 7-7. Test Instrument & Measurement Setup < 1GHz

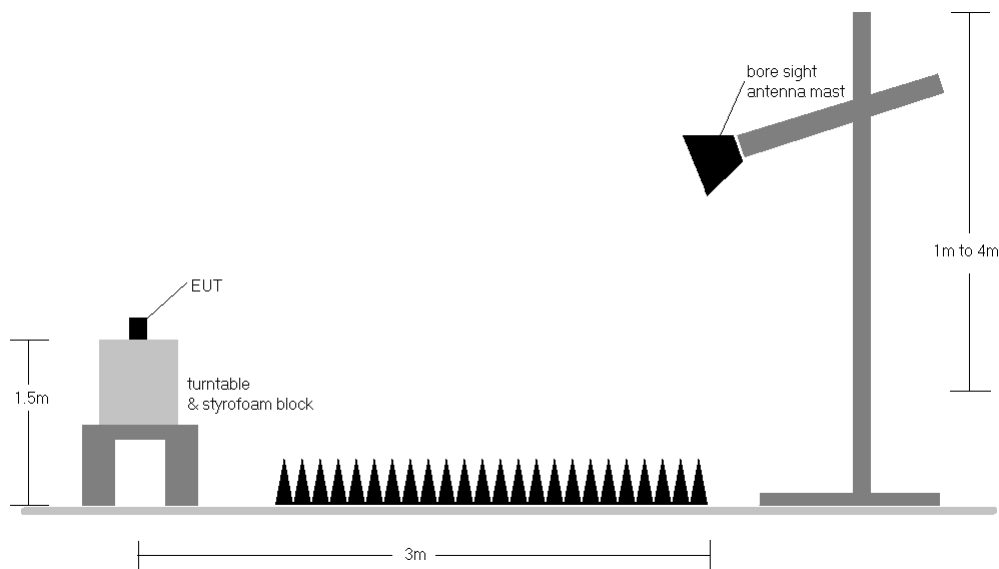




Figure 7-8. Test Instrument & Measurement Setup >1 GHz

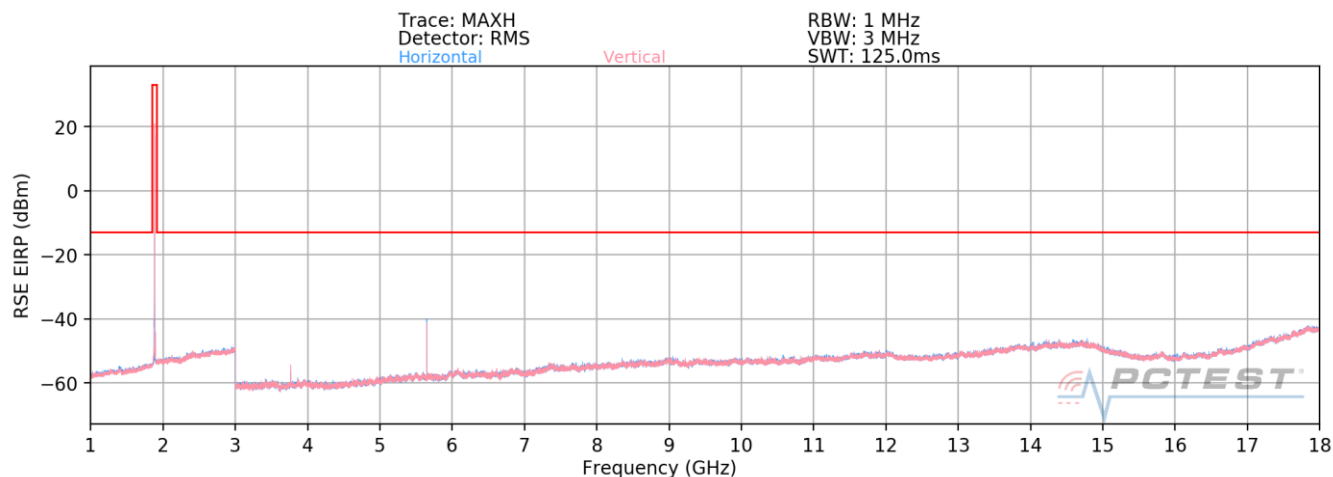
FCC ID: A3LSMF926B	PCTEST Proud to be part of element	PART 24 MEASUREMENT REPORT	SAMSUNG	Approved by: Technical Manager
Test Report S/N: 1M2104190044-03.A3L	Test Dates: 4/27/2021 - 5/11/2021	EUT Type: Portable Handset		Page 76 of 88

Test Notes

- 1) Field strengths are calculated using the Measurement quantity conversions in KDB 971168 Section 5.8.4.
 - b) $E(\text{dB}\mu\text{V}/\text{m}) = \text{Measured amplitude level (dBm)} + 107 + \text{Cable Loss (dB)} + \text{Antenna Factor (dB/m)}$
 - d) $\text{EIRP (dBm)} = E(\text{dB}\mu\text{V}/\text{m}) + 20\log D - 104.8$; where D is the measurement distance in meters.
- 2) This device employs GSM, GPRS, and EDGE capabilities. The EUT was tested under all configurations and the highest powers is reported in GPRS mode while transmitting with one slot active.
- 3) This device employs UMTS technology with WCDMA (AMR/RMC) and HSDPA capabilities. The EUT was tested under all configurations and the highest power is reported in WCDMA mode with HSDPA Inactive at 12.2 kbps RMC and TPC bits all set to "1".
- 4) 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.
- 5) This unit was tested with its standard battery.
- 6) The EUT was tested in three orthogonal planes and in all possible test configurations and positioning. The worst case setup is reported in the tables below.
- 7) The spectrum is measured from 9kHz to the 10th harmonic of the fundamental frequency of the transmitter. The worst-case emissions are reported.
- 8) 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.
- 9) The "-" shown in the following RSE tables are used to denote a noise floor measurement.

FCC ID: A3LSMF926B	 PART 24 MEASUREMENT REPORT 	Approved by: Technical Manager
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LTE Band 25/2



Plot 7-100. Radiated Spurious Plot (LTE Band 25/2)

Bandwidth (MHz):	20
Frequency (MHz):	1860.0
RB / Offset:	1 / 50

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]
3720.0	H	330	224	-75.81	2.44	33.63	-61.62	-13.00	-48.62
5580.0	H	220	116	-56.07	5.41	56.34	-38.92	-13.00	-25.92
7440.0	H	-	-	-79.54	8.71	36.17	-59.08	-13.00	-46.08
9300.0	H	-	-	-80.41	10.96	37.55	-57.71	-13.00	-44.71
11160.0	H	-	-	-80.80	12.45	38.65	-56.61	-13.00	-43.61

Table 7-6. Radiated Spurious Data (LTE Band 25/2 – Low Channel)

Bandwidth (MHz):	20
Frequency (MHz):	1882.5
RB / Offset:	1 / 50

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]
3765.0	H	278	182	-73.89	2.88	35.99	-59.27	-13.00	-46.27
5647.5	H	221	115	-56.41	5.56	56.15	-39.11	-13.00	-26.11
7530.0	H	-	-	-79.77	8.99	36.22	-59.04	-13.00	-46.04
9412.5	H	247	21	-79.64	11.54	38.90	-56.36	-13.00	-43.36
11295.0	H	-	-	-80.88	12.43	38.55	-56.71	-13.00	-43.71
13177.5	H	-	-	-81.11	14.30	40.19	-55.06	-13.00	-42.06
15060.0	H	-	-	-81.37	15.38	41.01	-54.25	-13.00	-41.25



Table 7-7. Radiated Spurious Data (LTE Band 25/2 – Mid Channel)

FCC ID: A3LSMF926B	PCTEST Proud to be part of element	PART 24 MEASUREMENT REPORT	SAMSUNG	Approved by: Technical Manager
Test Report S/N: 1M2104190044-03.A3L	Test Dates: 4/27/2021 - 5/11/2021	EUT Type: Portable Handset		Page 78 of 88

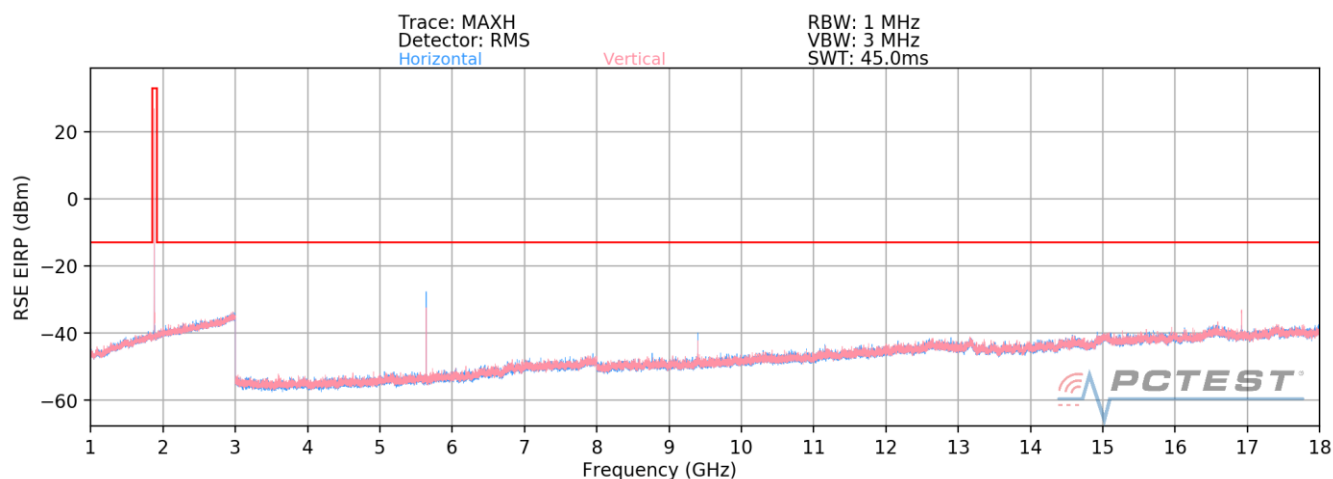
Bandwidth (MHz):	20
Frequency (MHz):	1905.0
RB / Offset:	1 / 50

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]
3810.00	H	265	105	-77.05	2.30	32.25	-63.01	-13.00	-50.01
5715.00	H	232	118	-58.41	5.47	54.06	-41.19	-13.00	-28.19
7620.00	H	-	-	-79.69	8.88	36.19	-59.07	-13.00	-46.07
9525.00	H	258	18	-78.71	11.06	39.35	-55.90	-13.00	-42.90
11430.00	H	244	308	-79.79	13.50	40.71	-54.55	-13.00	-41.55
13335.00	H	-	-	-80.96	14.71	40.75	-54.51	-13.00	-41.51
15240.00	H	-	-	-81.21	14.59	40.38	-54.88	-13.00	-41.88
17145.00	H	-	-	-81.47	17.88	43.41	-51.85	-13.00	-38.85

Table 7-8. Radiated Spurious Data (LTE Band 25/2 – High Channel)

FCC ID: A3LSMF926B	 <small>Proud to be part of element</small>	PART 24 MEASUREMENT REPORT		Approved by: Technical Manager
Test Report S/N: 1M2104190044-03.A3L	Test Dates: 4/27/2021 - 5/11/2021	EUT Type: Portable Handset		Page 79 of 88

GSM/GPRS PCS



Plot 7-101. Radiated Spurious Plot (GPRS PCS)

Mode:	GPRS 1 Tx Slot
Channel:	512
Frequency (MHz):	1850.2

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]
3700.4	H	248	66	-67.39	5.22	44.83	-50.42	-13.00	-37.42
5550.6	H	190	115	-46.73	8.72	68.99	-26.27	-13.00	-13.27
7400.8	H	-	-	-71.82	12.46	47.64	-47.61	-13.00	-34.61
9251.0	H	163	329	-66.78	14.34	54.56	-40.69	-13.00	-27.69
11101.2	H	-	-	-73.82	17.13	50.31	-44.95	-13.00	-31.95
12951.4	H	-	-	-73.92	19.26	52.34	-42.91	-13.00	-29.91
14801.6	H	-	-	-74.93	21.54	53.61	-41.65	-13.00	-28.65
16651.8	H	-	-	-75.11	25.10	56.99	-38.26	-13.00	-25.26

Table 7-9. Radiated Spurious Data (GPRS PCS – Low Channel)

Mode:	GPRS 1 Tx Slot
Channel:	661
Frequency (MHz):	1880

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]
3760.0	H	204	184	-68.28	6.10	44.82	-50.43	-13.00	-37.43
5640.0	H	247	107	-47.56	8.18	67.62	-27.63	-13.00	-14.63
7520.0	H	-	-	-71.34	12.75	48.41	-46.85	-13.00	-33.85
9400.0	H	212	343	-65.30	15.43	57.13	-38.12	-13.00	-25.12
11280.0	H	-	-	-74.08	17.43	50.35	-44.91	-13.00	-31.91
13160.0	H	-	-	-74.27	20.67	53.40	-41.86	-13.00	-28.86
15040.0	H	-	-	-73.67	22.29	55.62	-39.64	-13.00	-26.64
16920.0	H	168	353	-73.09	23.82	57.73	-37.53	-13.00	-24.53



Table 7-10. Radiated Spurious Data (GPRS PCS – Mid Channel)

FCC ID: A3LSMF926B	PCTEST Proud to be part of element	PART 24 MEASUREMENT REPORT	SAMSUNG	Approved by: Technical Manager
Test Report S/N: 1M2104190044-03.A3L	Test Dates: 4/27/2021 - 5/11/2021	EUT Type: Portable Handset		Page 80 of 88

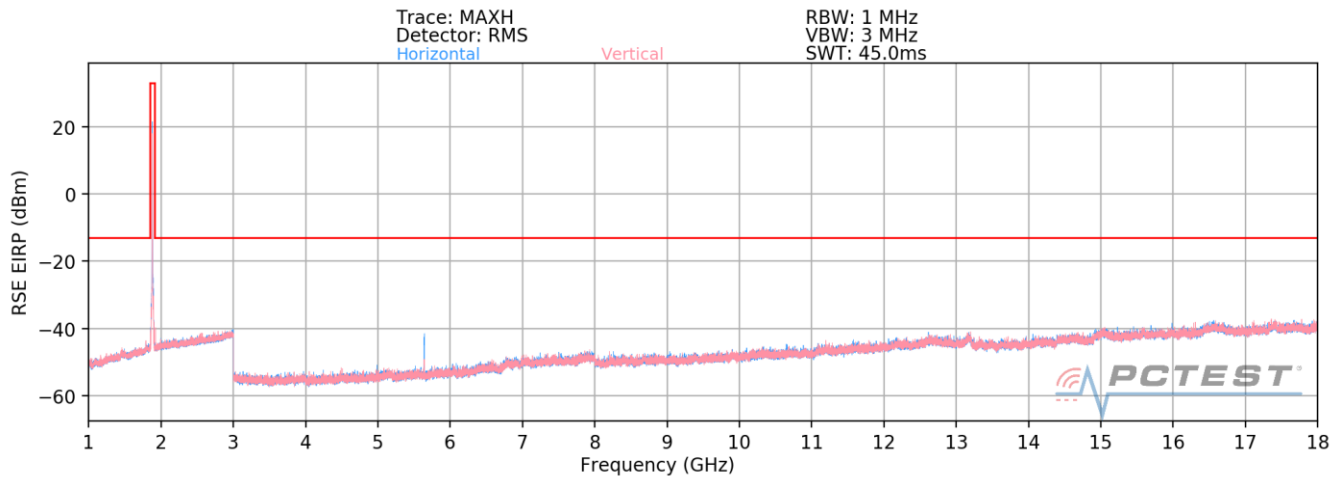
Mode:	GPRS 1 Tx Slot
Channel:	810
Frequency (MHz):	1909.8

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]
3819.6	H	171	310	-68.25	5.96	44.71	-50.55	-13.00	-37.55
5729.4	H	229	118	-51.45	8.57	64.12	-31.14	-13.00	-18.14
7639.2	H	237	12	-71.34	12.81	48.47	-46.79	-13.00	-33.79
9549.0	H	252	341	-64.95	14.64	56.69	-38.57	-13.00	-25.57
11458.8	H	241	10	-72.56	17.77	52.21	-43.05	-13.00	-30.05
13368.6	H	-	-	-73.60	19.79	53.19	-42.07	-13.00	-29.07
15278.4	H	225	326	-72.53	21.57	56.04	-39.22	-13.00	-26.22
17188.2	H	180	9	-70.67	24.75	61.08	-34.18	-13.00	-21.18

Table 7-11. Radiated Spurious Data (GPRS PCS – High Channel)

FCC ID: A3LSMF926B	 <small>Proud to be part of element</small>	PART 24 MEASUREMENT REPORT		Approved by: Technical Manager
Test Report S/N: 1M2104190044-03.A3L	Test Dates: 4/27/2021 - 5/11/2021	EUT Type: Portable Handset		Page 81 of 88

WCDMA PCS



Plot 7-102. Radiated Spurious Plot (WCDMA PCS)

Mode:	WCDMA RMC
Channel:	9262
Frequency (MHz):	1852.4

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]
3704.8	H	146	184	-76.97	4.74	34.77	-60.49	-13.00	-47.49
5557.2	H	218	124	-67.41	8.51	48.10	-47.16	-13.00	-34.16
7409.6	H	-	-	-80.11	12.59	39.48	-55.78	-13.00	-42.78
9262.0	H	-	-	-81.56	14.58	40.02	-55.23	-13.00	-42.23
11114.4	H	-	-	-82.09	17.06	41.97	-53.29	-13.00	-40.29

Table 7-12. Radiated Spurious Data (WCDMA PCS – Low Channel)

Mode:	WCDMA RMC
Channel:	9400
Frequency (MHz):	1880

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]
3760.0	H	-	-	-79.44	5.20	32.76	-62.50	-13.00	-49.50
5640.0	H	242	121	-69.79	8.10	45.31	-49.95	-13.00	-36.95
7520.0	H	-	-	-80.31	12.52	39.21	-56.05	-13.00	-43.05
9400.0	H	-	-	-81.77	14.90	40.13	-55.13	-13.00	-42.13
11280.0	H	-	-	-82.12	17.41	42.29	-52.96	-13.00	-39.96



Table 7-13. Radiated Spurious Data (WCDMA PCS – Mid Channel)

FCC ID: A3LSMF926B	PCTEST Proud to be part of element	PART 24 MEASUREMENT REPORT	SAMSUNG	Approved by: Technical Manager
Test Report S/N: 1M2104190044-03.A3L	Test Dates: 4/27/2021 - 5/11/2021	EUT Type: Portable Handset		Page 82 of 88

Mode:	WCDMA RMC
Channel:	9538
Frequency (MHz):	1907.6

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]
3815.2	H	217	194	-78.41	5.16	33.75	-61.51	-13.00	-48.51
5722.8	H	209	115	-71.81	8.62	43.81	-51.45	-13.00	-38.45
7630.4	H	-	-	-80.39	12.25	38.86	-56.40	-13.00	-43.40
9538.0	H	-	-	-81.69	14.33	39.64	-55.62	-13.00	-42.62
11445.6	H	-	-	-82.21	18.58	43.37	-51.89	-13.00	-38.89

Table 7-14. Radiated Spurious Data (WCDMA PCS – High Channel)

FCC ID: A3LSMF926B	 PART 24 MEASUREMENT REPORT 	Approved by: Technical Manager
Test Report S/N: 1M2104190044-03.A3L	Test Dates: 4/27/2021 - 5/11/2021	EUT Type: Portable Handset
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7.9 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

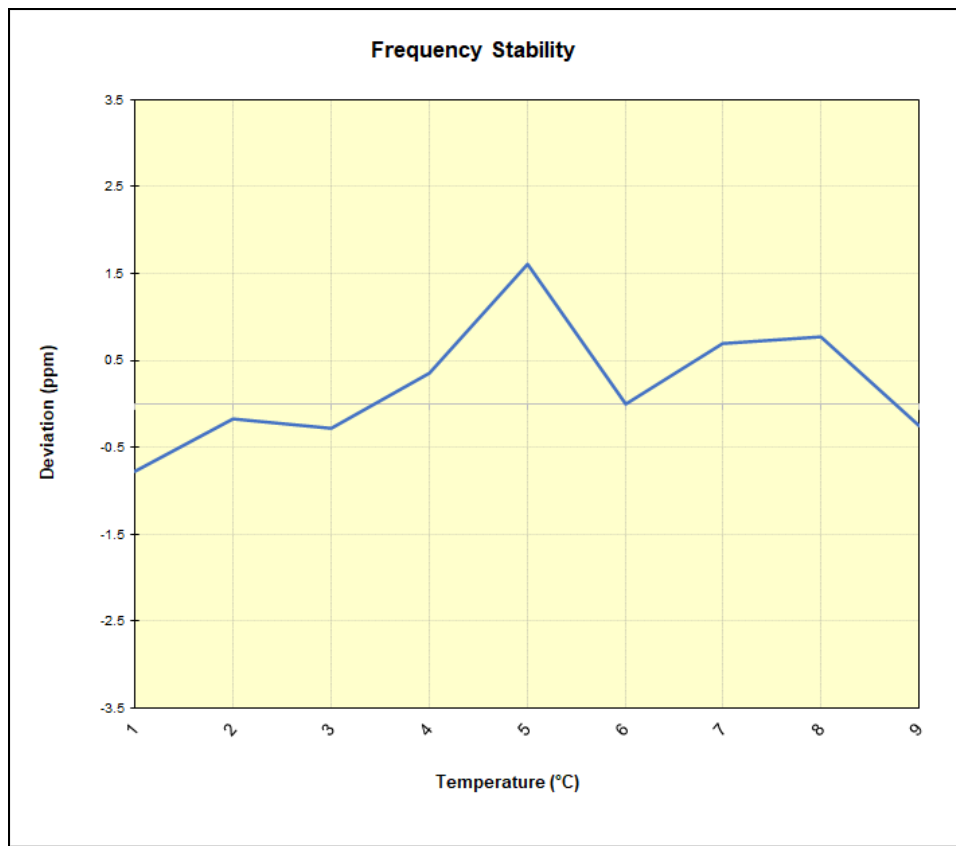
FCC ID: A3LSMF926B	 PART 24 MEASUREMENT REPORT 	Approved by: Technical Manager
Test Report S/N: 1M2104190044-03.A3L	Test Dates: 4/27/2021 - 5/11/2021	EUT Type: Portable Handset
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LTE Band 25/2

Operating Frequency (Hz):	1,882,500,000
Ref. Voltage (VDC):	4.36

Voltage (%)	Power (VDC)	Temp (°C)	Frequency (Hz)	Freq. Dev. (Hz)	Deviation (%)
100 %	4.36	- 30	1,882,502,401	-1,470	-0.0000781
		- 20	1,882,503,548	-323	-0.0000171
		- 10	1,882,503,341	-530	-0.0000282
		0	1,882,504,545	675	0.0000358
		+ 10	1,882,506,911	3,040	0.0001615
		+ 20 (Ref)	1,882,503,871	0	0.0000000
		+ 30	1,882,505,172	1,301	0.0000691
		+ 40	1,882,505,320	1,449	0.0000770
		+ 50	1,882,503,412	-459	-0.0000244
Battery Endpoint	2.46	+ 20	1,882,505,559	1,689	0.0000897

Table 7-15. LTE Band 25/2 Frequency Stability Data

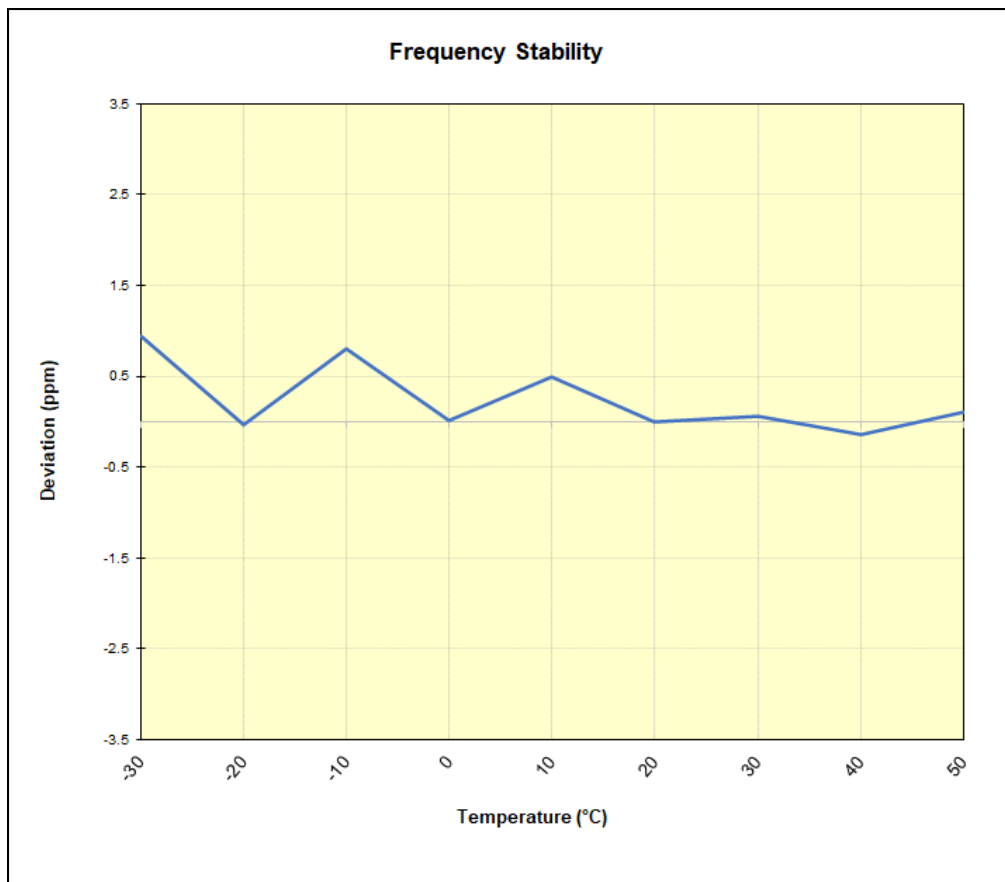


Plot 7-103. LTE Band 25/2 Frequency Stability Chart

FCC ID: A3LSMF926B	PCTEST Proud to be part of element	PART 24 MEASUREMENT REPORT	SAMSUNG	Approved by: Technical Manager
Test Report S/N: 1M2104190044-03.A3L	Test Dates: 4/27/2021 - 5/11/2021	EUT Type: Portable Handset		Page 85 of 88

GSM/GPRS PCS					
Operating Frequency (Hz):			1,880,000,000		
Ref. Voltage (VDC):			4.36		
Voltage (%)	Power (VDC)	Temp (°C)	Frequency (Hz)	Freq. Dev. (Hz)	Deviation (%)
100 %	4.36	- 30	1,880,002,637	1,764	0.0000938
		- 20	1,880,000,820	-53	-0.0000028
		- 10	1,880,002,373	1,500	0.0000798
		0	1,880,000,893	20	0.0000010
		+ 10	1,880,001,792	918	0.0000488
		+ 20 (Ref)	1,880,000,874	0	0.0000000
		+ 30	1,880,000,980	107	0.0000057
		+ 40	1,880,000,601	-273	-0.0000145
Battery Endpoint	2.46	+ 50	1,880,001,068	195	0.0000104
		+ 20	1,880,001,372	498	0.0000265

Table 7-16. GSM/GPRS PCS Frequency Stability Data

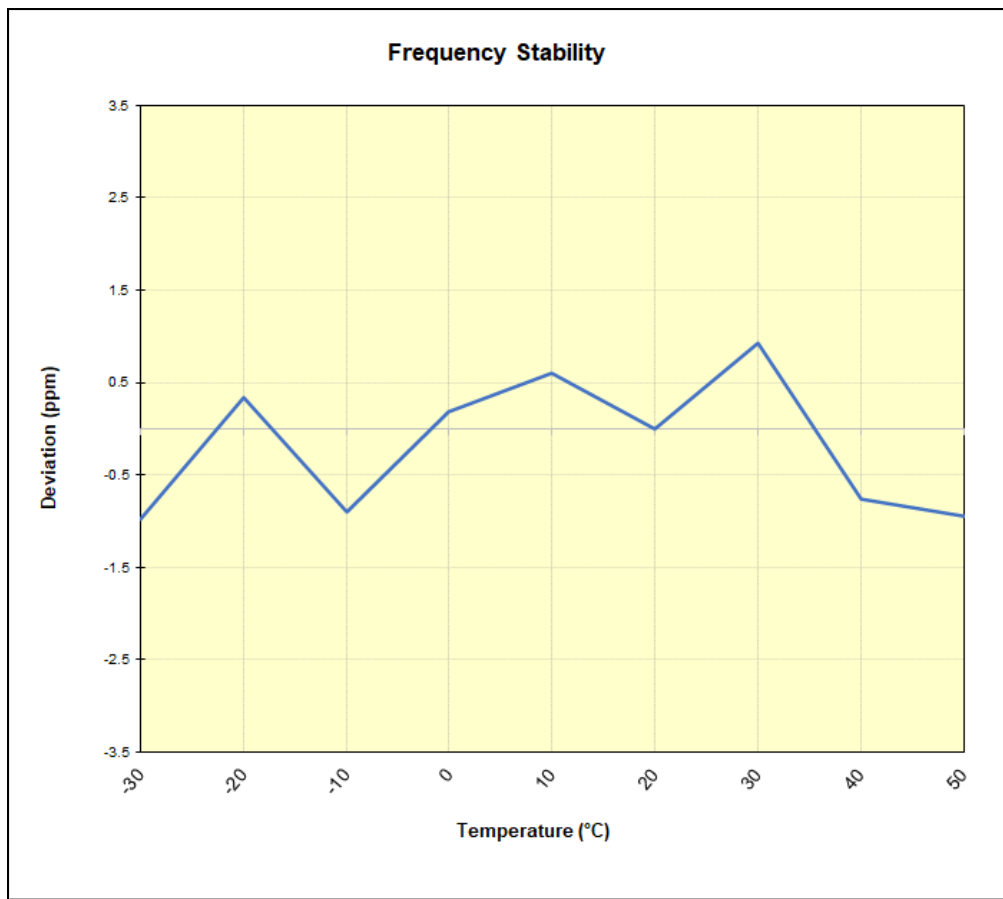


Plot 7-104. GSM/GPRS PCS Frequency Stability Chart

FCC ID: A3LSMF926B	PCTEST Proud to be part of element	PART 24 MEASUREMENT REPORT	SAMSUNG	Approved by: Technical Manager
Test Report S/N: 1M2104190044-03.A3L	Test Dates: 4/27/2021 - 5/11/2021	EUT Type: Portable Handset	Page 86 of 88	

WCDMA PCS					
			Operating Frequency (Hz):	1,880,000,000	
			Ref. Voltage (VDC):	4.36	
Voltage (%)	Power (VDC)	Temp (°C)	Frequency (Hz)	Freq. Dev. (Hz)	Deviation (%)
100 %	4.36	- 30	1,880,004,002	-1,822	-0.0000969
		- 20	1,880,006,467	643	0.0000342
		- 10	1,880,004,131	-1,692	-0.0000900
		0	1,880,006,173	349	0.0000186
		+ 10	1,880,006,969	1,145	0.0000609
		+ 20 (Ref)	1,880,005,824	0	0.0000000
		+ 30	1,880,007,564	1,740	0.0000926
		+ 40	1,880,004,389	-1,435	-0.0000763
		+ 50	1,880,004,046	-1,778	-0.0000946
Battery Endpoint	2.46	+ 20	1,880,004,875	-949	-0.0000505

Table 7-17. WCDMA PCS Frequency Stability Data





Plot 7-105. WCDMA PCS Frequency Stability Chart

FCC ID: A3LSMF926B	PCTEST Proud to be part of element	PART 24 MEASUREMENT REPORT	SAMSUNG	Approved by: Technical Manager
Test Report S/N: 1M2104190044-03.A3L	Test Dates: 4/27/2021 - 5/11/2021	EUT Type: Portable Handset	Page 87 of 88	

8.0 CONCLUSION

The data collected relate only to the item(s) tested and show that the Samsung **Portable Handset** **FCC ID: A3LSMF926B** complies with all the requirements of Part 24 of the FCC rules.

FCC ID: A3LSMF926B	 PCTEST Proud to be part of element	PART 24 MEASUREMENT REPORT		Approved by: Technical Manager
Test Report S/N: 1M2104190044-03.A3L	Test Dates: 4/27/2021 - 5/11/2021	EUT Type: Portable Handset		Page 88 of 88