

## PCTEST

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



# 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:

## Applicant Name:

# A3LSMF926B

#### Samsung Electronics Co., Ltd.

Application Type: Model: Additional Model(s): EUT Type: FCC Classification: FCC Rule Part: Test Procedure(s): Certification SM-F926B SM-F926B/DS Portable Handset PCS Licensed Transmitter Held to Ear (PCE) 24 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

#### Randy Ortai President



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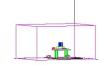


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# **PART 24 MEASUREMENT REPORT**



		Tx Frequency	Ell	Emission	
Mode	Modulation	Range [MHz]	Max. Power [W]	Max. Power [dBm]	Designator
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

				EI	RP	Emission
Mode	Bandwidth	Modulation	Tx Frequency Range [MHz]	Max. Power [W]	Max. Power [dBm]	Designator
		QPSK	1860 - 1905	0.257	24.10	18M0G7D
	20 MH7	16QAM	1860 - 1905	0.225	23.52	18M0W7D
	20 MHz	64QAM	1860 - 1905	0.165	22.18	18M0W7D
		256QAM	1860 - 1905	0.121	20.83	18M0W7D
		QPSK	1857.5 - 1907.5	0.263	24.20	13M5G7D
	15 MHz	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
LTE Band 25/2		256QAM	1855 - 1910	0.121	20.82	9M00W7D
LTE Dariu 25/2	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
		QPSK	1851.5 - 1913.5	0.257	24.10	2M70G7D
	3 MHz	16QAM	1851.5 - 1913.5	0.218	23.39	2M71W7D
	3 IVITIZ	64QAM	1851.5 - 1913.5	0.180	22.56	2M71W7D
		256QAM	1851.5 - 1913.5	0.121	20.81	2M71W7D
		QPSK	1850.7 - 1914.3	0.240	23.80	1M10G7D
	1.4 MHz	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 ISED Standards (RSS).
- PCTEST facility is a registered (2451B) test laboratory with the site description on file with ISED.

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# 2.0 PRODUCT INFORMATION

## 2.1 Equipment Description

The Equipment Under Test (EUT) is the **Samsung Portable Handset FCC ID: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 halfwave dipole is substituted in place of the EUT. For emissions above 1GHz, a horn antenna is substituted in place of the EUT. The substitute antenna is driven by a signal generator with the level of the signal generator being adjusted to obtain the same receive spectrum analyzer level previously recorded from the spurious emission from the EUT. The power of the emission is calculated using the following formula:

P<sub>d [dBm]</sub> = P<sub>g [dBm]</sub> - cable loss [dB] + antenna gain [dBd/dBi];

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

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

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

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 (±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	/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 <mark>(</mark> 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:

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

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# 6.0 SAMPLE CALCULATIONS

## **GSM Emission Designator**

## Emission Designator = 250KGXW

GSM BW = 250 kHzG = 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
0	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
CONDUCTED	Transmitter Conducted Output Power	2.1046	RSS-133(4.1)	N/A	PASS	See RF Exposure Report
0	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
RADI	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 =  $2 \times OBW$  to  $3 \times OBW$
- 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]
N		26140	1860.0	1 / 0	24.13
НИ	QPSK	26365	1882.5	1 / 99	23.97
20 MHz		26590	1905.0	1 / 99	24.20
5	16-QAM	26590	1905.0	1 / 99	23.28
N		26115	1857.5	1 / 37	24.14
MHz	QPSK	26365	1882.5	1 / 74	24.04
15 N		26615	1907.5	1 / 74	24.08
1	16-QAM	26615	1907.5	1 / 74	23.32
Ν		26090	1855.0	1 / 25	23.87
10 MHz	QPSK	26365	1882.5	1 / 25	23.81
		26640	1910.0	1 / 25	24.25
-	16-QAM	26640	1910.0	1 / 25	23.27
N		26065	1852.5	1 / 24	24.07
MHz	QPSK	26365	1882.5	1 / 12	23.81
5 N		26665	1912.5	1 / 24	24.46
1	16-QAM	26665	1912.5	1 / 24	23.78
N		26055	1851.5	1 / 14	24.10
MHz	QPSK	26365	1882.5	1 / 14	23.96
3 N		26675	1913.5	1 / 7	24.29
	16-QAM	26675	1913.5	1 / 7	23.19
2		26047	1850.7	1 / 5	24.03
MHz	QPSK	26365	1882.5	1 / 5	23.86
1.4		26683	1914.3	1 / 0	24.07
1	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 x RBW
- 4. Detector = Peak
- 5. Trace mode = max hold
- 6. Sweep = auto couple
- 7. The trace was allowed to stabilize
- 8. If necessary, steps 2 7 were repeated after changing the RBW such that it would be within
  - 1-5% of the 99% occupied bandwidth observed in Step 7

#### Test Setup

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



Figure 7-2. Test Instrument & Measurement Setup

#### Test Notes

None.

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# LTE Band 25/2

	er - Occup	pied BW									- 0 ×
LXIRL RF	50 Ω	AC	CORREC		NSE:INT reg: 1.88250	0000 011-	ALIGN AUTO	11:24:35 P Radio Std	M Apr 29, 2021	Trace	e/Detector
							d: 100/100	Radio Sta	: None		
			#IFGain:Low	#Atten: 3				Radio Dev	vice: BTS		
10 dB/div Ref 4	10.00	dBm									
Log	+0.00	uDill									
30.0											
20.0										C	Clear Write
10.0			- marine	are when the second	-≈≈-₽~₹ <b>₩</b> ₽~₽₽~	an winny					
			/								
0.00			/								•
-10.0							<b>1</b>				Average
-20.0	-enverope	and the second	- <b>-</b>				" Verner	Contraction and Contract	tert contra		
-30.0									the and the second		
-40.0											Max Hold
-50.0											
30.0											_
Center 1.88250 GI	Hz							Span 5	0.00 MHz		
Res BW 470 kHz				#VE	3W 1.5 N	IHz			eep 1 ms		Min Hold
											minnena
Occupied Ba	andv	vidth	1		Total P	ower	32.3	dBm			
		17	.983 MI	H7							Detector
											Peak▶
Transmit Freq	Erro	r	17.025	kHz	% of O	BW Pow	ver 99	.00 %		Auto	<u>Man</u>
x dB Bandwid	th		19.65 N		x dB		-26	00 dB			
	uir		19.00 1	1112			-20.				
MSG							STATUS	5			





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

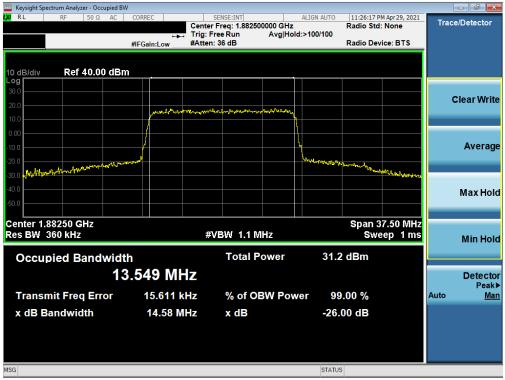
FCC ID: A3LSMF926B		PART 24 MEASUREMENT REPORT	Approved by: Technical Manager	
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Plot 7-4. Occupied Bandwidth Plot (LTE Band 25/2 - 15MHz 16-QAM - Full RB)

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Keysight Spectrum Analyze													
RL RF	50 Ω AC	C   C	ORREC			NSE:INT			ALIGN AUTO		M Apr 29, 2021	Trac	e/Detector
					Trig: Fre	req: 1.882			100/100	Radio Std	: None		0/20100101
		-#1	FGain:L	++-	#Atten: 3		Avgin	oiu.	100/100	Radio Dev	vice: BTS		
		#1	-Gain:L	ow	#Atten. 0	U U D				Radio De	NCE. DT3		
0 dB/div Ref 4	0.00 d	Rm											
og	0.00 a	5111											
0.0													
												(	Clear Wri
0.0					and the second second	-	manhow	v					
).0			<b>_</b>										
00			11					٦I					
			1					٦					_
).0			1										Avera
).0			/										
Ma	man								and the sound for	man have	ᠰ᠋ᠬᡟᡐᠧᡳᡘᢔᡗᢇᡰᡙ		
10 Desternal Desternations													
).0								_					Max Ho
0.0													Maxino
												_	_
enter 1.88250 GH	1-7									Cnon f	25.00 MHz		
es BW 240 kHz	12				-#\/E	3W 750							
					#VE	5WV 73U	КПZ			500	eep 1 ms		Min Ho
Occupied Ba	ndwi	dth				lotal	Power		32.0	) dBm			
		2 01	267	MH	7								Detect
		9.0	557		Z								Peal
Transmit Freq	Error		4	193 k⊦		0/ of C	BW Po		- 00	.00 %		Auto	геан Ма
rransmit Freq	Entor		1.4	190 K	12	70 OI C		we	a 98	.00 %		Auto	111
x dB Bandwidt	h		9.8	76 MH	Z	x dB			-26.	00 dB			
									LUI				
3									STATUS	5			

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)

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Keysight Spectrum Analyzer	- Occupied BV	v							
X/RL RF 5	OΩ AC	CORREC	SENSE:INT		ALIGN AUTO		M Apr 29, 2021	Trace	/Detector
			Center Freq: 1.882	500000 GHz Avg Hold:	400/400	Radio Std:	None	macc	Detector
		↔ #IFGain:Low	#Atten: 36 dB	Avginola:	100/100	Radio Dev	ice: BTS		
		#IFGaIn:Low	#Atten: 00 dB			Radio Dev	ice. DT3		
10 dB/div Ref 40	0.00 dBn	n							
og									
30.0									
20.0								c	lear Writ
		man -	m sim man	mon					
10.0									
0.00		/							
10.0		/							Averag
					\ \				Arciug
20.0					montone	~			
30.0 mmphonether	without the				· ····································	W Turner	may approved and		
40.0									
40.0									Max Hole
50.0									
Center 1.882500 GI	Hz						2.50 MHz		
Res BW 120 kHz			#VBW 390	kHz		Swe	ep 1 ms		Min Hole
Occupied Bar	ndwidt	h	Total	Power	32.1	dBm		_	
	4.	5085 MI							Detecto
Terrer and it Farmer		2 4 40			- 00	00.0/		0	Peak
Transmit Freq I	=mor	2.148	KHZ % of C	BW Powe	r 99	.00 %		Auto	Ma
x dB Bandwidt	h	5.017 N	lHz x dB		-26	00 dB			
	_	0.0171			20.			_	
								_	
					074				
G					STATUS				

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)

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Keysight Spectrum Analyzer - Occupied	BW				
XIRL RF 50Ω AC	CORREC	SENSE:INT	ALIGN AUTO	11:27:37 PM Apr 29, 2021	Trace/Detector
		nter Freq: 1.882500 g: Free Run	000 GHz Avg Hold: 100/100	Radio Std: None	indecide clocker
		ten: 36 dB	Avginola. Tool too	Radio Device: BTS	
	in Gameon				-
10 dB/div Ref 40.00 dE	3m				
_og					
30.0					Clear Write
20.0	Marter Marter	and many and the second	مم الد م		Clear Will
10.0		cont Manhaman, 1444, 14			
0.00	1		N.		
					_
10.0					Average
20.0			\		
30.0 - attithe automatic and and	and a		Minutario	Mr. Barry	
and and all a				and a seal and the light deal	
-40.0					Max Hold
-50.0					
Center 1.882500 GHz				Span 7.500 MHz	
#Res BW 75 kHz		#VBW 240 kH	iz	Sweep 12.53 ms	Min Hole
Occupied Bandwic	lth	Total Po	wer 31./	dBm	
2	.7049 MHz				Detector
2					Peak
Transmit Freq Error	504 Hz	% of OB	W Power 99	.00 %	Auto Mar
x dB Bandwidth	3.012 MHz	x dB	-26.	00 dB	
SG			STATUS	5	

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



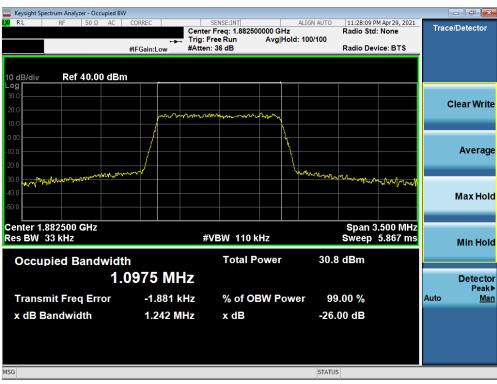
Plot 7-10. Occupied Bandwidth Plot (LTE Band 25/2 - 3MHz 16-QAM - Full RB)

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Keysight Spectrum Analyzer -	Occupied B	W								- 7
C RL RF 50	Ω AC	CORREC		SENSE:INT		ALIGN AUTO		PM Apr 29, 2021	Trace	e/Detector
				iter Freq: 1.8825 j: Free Run		: old: 100/100	Radio Sto	: None	1140.	Detector
		#IFGain:Lo		ten: 36 dB	Avgine	100/100	Radio De	vice: BTS		
· · · · · ·		#II Galli.EC	Jw							
	.00 dBi	n .								
.og										
30.0										lear Writ
20.0										
0.0		/	And an one of the state of the	Cherry and a starter	-111-VI .					
100					A					
					Ì					_
0.0						\				Averag
20.0						<u> </u>				
0.0 Jone Mary market	mm	And all and a state of the stat				have de	Amphino	1. Anna mar		
							1.000	MA No. where		
40.0										Max Ho
50.0										
	-									
enter 1.882500 GH	IZ							3.500 MHz		
es BW 33 kHz				#VBW 110	KHZ		sweep	5.867 ms		Min Ho
		41-		Total	Jouwar	24	dBm			
Occupied Ban				TOTAL	ower	31.4	авт			
	1	0959	MHz							Detecto
										Peak
Transmit Freq E	rror	-1.1	45 kHz	% of O	BW Po	wer 99	.00 %		Auto	Ma
		4.0								
x dB Bandwidth		1.2	38 MHz	x dB		-26.	00 dB			
						0747				
G						STATUS	5			

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)

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## **GSM/GPRS PCS**



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



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

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# WCDMA PCS

Keysight Spectrum Analyzer - Occup					
X RL RF 50 Ω	<b>→</b> .	SENSE:INT Center Freq: 1.880000000 GHz Trig: Free Run Avg Hold #Atten: 36 dB	Ra d:>100/100	5:11:42 PM May 03, 2021 dio Std: None dio Device: BTS	Trace/Detector
	#IFGain:Low	#Atten: 36 dB	Ra	Idio Device: B15	
10 dB/div Ref 40.00 (	dBm				
- <b>og</b> 30.0					
20.0		~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~			Clear Writ
10.0					
0.00					A
20.0		<u> </u>	<b>~</b>		Averag
0.0 hanganan	source and the second s			manner round	
10.0					Max Ho
50.0					
enter 1.880000 GHz			5	pan 15.00 MHz	
tes BW 150 kHz		VBW 1.5 MHz		Sweep 1 ms	Min Ho
Occupied Bandw	ridth	Total Power	34.3 dl	Зm	
	4.1591 MH	Z			Detecto
Transmit Freq Erro	r 4.642 kł	Hz % of OBW Pow	ver 99.00	%	Peak Auto Ma
x dB Bandwidth	4.780 MI		-26.00		
	4.100 111		20.00	u B	
SG			STATUS		

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

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## 7.4 Spurious and Harmonic Emissions at Antenna Terminal

#### **Test Overview**

The level of the carrier and the various conducted spurious and harmonic frequencies is measured by means of a calibrated spectrum analyzer. The spectrum is scanned from the lowest frequency generated in the equipment up to a frequency including its 10<sup>th</sup> harmonic. All out of band emissions are measured with a spectrum analyzer connected to the antenna terminal of the EUT while the EUT is operating at maximum power, and at the appropriate frequencies. All data rates were investigated to determine the worst case configuration. All modes of operation were investigated and the worst case configuration results are reported in this section.

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

#### Test Procedure Used

KDB 971168 D01 v03r01 - Section 6.0

#### Test Settings

- 1. Start frequency was set to 30MHz and stop frequency was set to 20GHz (separated into at least two plots per channel)
- 2. Detector = RMS
- 3. Trace mode = trace average for continuous emissions, max hold for pulse emissions
- 4. Sweep time = auto couple
- 5. The trace was allowed to stabilize
- 6. Please see test notes below for RBW and VBW settings

#### Test Setup

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



Figure 7-3. Test Instrument & Measurement Setup

#### Test Notes

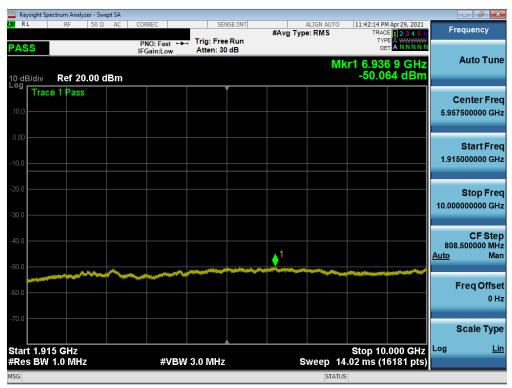
 Per Part 24 and RSS-133, compliance with the applicable limits is based on the use of measurement instrumentation employing a resolution bandwidth 100 kHz or greater for measurements below 1GHz. However, in the 1 MHz bands immediately outside and adjacent to the frequency block a resolution bandwidth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

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## LTE Band 25/2

	ectrum Analyz	er - Swep	ot SA										
LXI RL	RF	50 Ω	AC	CORREC		SEI	NSE:INT		ALIGN AUTO		PM Apr 29, 2021	F	requency
PASS				PNO: F IFGain:	ast ↔ ow	Trig: Fre Atten: 30		#Avg	Type: RMS		CE 1 2 3 4 5 6 (PE A WWWW A NNNNN		,
10 dB/div	Ref 20	.00 dl	Bm						N	1kr1 1.84 -49	8 5 GHz .51 dBm		Auto Tune
10.0	e 1 Pass												Center Freq 9.500000 MHz
-10.0												3	Start Freq 0.000000 MHz
-20.0												1.84	Stop Freq 19000000 GHz
-40.0											1	18 <u>Auto</u>	CF Step 1.900000 MHz Man
-60.0	r.,	-	ي - اوروني الم	*****		tertile-ingrapiete print	ing of the state o		**************************************	ferfyl og og for som for første som en s I			Freq Offset 0 Hz
-70.0										Otop 4		Log	Scale Type Lin
Start 0.03 #Res BW					#VBW	3.0 MHz			Sweep	2.425 ms	8490 GHz (3639 pts)	209	
MSG									STA		<u> </u>		



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)

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	ectrum Analyzer - Sw										
LXI RL	RF 50 Ω	2 AC	CORREC	SEI	ISE:INT	#Avg Typ	ALIGN AUTO		M Apr 29, 2021	Frequenc	sy
PASS			PNO: Fast ++ IFGain:Low	Atten: 10				TYF DE		<b>0</b>	
10 dB/div Log	Ref 0.00 d	Bm					M	(r1 18.29 -61.6	1 0 GHz 78 dBm	Auto	Tune
Trac	e 1 Pass									Center	Freq
-10.0										15.00000000	0 GHz
-20.0										Start	Freq
-30.0										10.00000000	0 GHz
-40.0										Stop	Frea
-50.0										20.00000000	
								<b>1</b>		CF	Step
-60.0						hand				1.00000000 <u>Auto</u>	
-70.0											
-80.0										Freq O	Offset 0 Hz
-90.0											UTIL
										Scale	Туре
Start 10.0 #Res BW			#VBM	/ 3.0 MHz		8	weep	Stop 20 25.33 ms (2	.000 GHz 0001 pts)	Log	<u>Lin</u>
MSG							STAT				

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

Keysight Spe R L	ctrum Analyzer - S		ORREC	SE	NSE:INT		ALIGN AUTO	11:40:50 PM	Apr 29, 2021		
ASS	14 50		PNO: Fast ← FGain:Low		e Run	#Avg Typ		TRACE	<b>1 2 3 4 5</b> 6 A WWWWW A N N N N N	Freque	
0 dB/div og	Ref 20.00	dBm					Mk	r1 1.845 -53.5	5 GHz 57 dBm	Auto	o Tun
	e 1 Pass									Cente 940.0000	
0.00										Star 30.0000	rt Fre
0.0										Sto 1.8500000	p Fre
0.0									1	C 182.0000 <u>Auto</u>	F Ste 000 MI Ma
0.0	hannagagama ili ang kaunakay na katalakan k	anti de la compañía d	here alle a fan ar f	gendenten Autoria men det name		lay - personal da angenera angen	902).41499-8799-88999-94	and a start of the s		Freq	Offs 0 I
0.0 tart 0.03	00 CHz							Stop 1-9	500 GHz	Scal Log	е Тур 
Res BW			#VB	W 3.0 MHz			Sweep 2	.427 ms (3	OCC OIL		

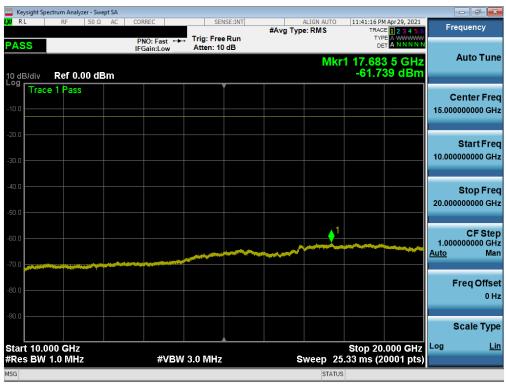
Plot 7-19. Conducted Spurious Plot (LTE Band 25/2 - 20MHz QPSK - 1RB - Mid Channel)

FCC ID: A3LSMF926B	PCTEST* Proud to be part of @ element	PART 24 MEASUREMENT REPORT	SAMSUNG	Approved by: Technical Manager
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	ectrum Analyz		pt SA										- @ ×
X/RL	RF	50 Ω	AC	CORREC		SEN	ISE:INT	#0	ALIGN AUT		PM Apr 29, 2021	En	equency
					ast ↔	Trig: Free	Run	#Avg i	ype: Rivis	1	ACE 1 2 3 4 5 6		
PASS				IFGain:L		Atten: 30					DET A NNNNN		
										Mkr1 6.8	15 0 GHz		Auto Tune
10 dB/div	Ref 20.	.00 d	Bm							-49.	749 dBm		
Log Trac	e 1 Pass												
													enter Freq
10.0												5.957	7500000 GHz
0.00													
													Start Freq
-10.0												1.91	5000000 GHz
-20.0													
-20.0													Stop Freq
												10.000	0000000 GHz
-30.0													
													CF Step
-40.0											<u> </u>	808	500000 MHz
								1				Auto	Man
-50.0			-					THE OWNER OF THE OWNER					
- Martineter	and the second						the selection of the selection of						
-60.0												I	req Offset
-00.0													0 Hz
70.0													
-70.0													Scale Type
													scale Type
Start 1.91	5 GHz									Stop_1	0.000 GHz	Log	Lin
#Res BW				4	źVB₩	3.0 MHz			Sween	14.02 ms	(16181 pts)		
					-1.11						(in the pro)		
MSG									STA	TUS			





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

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	ctrum Analyze	er - Swept	SA									[	- 6 ×
L <mark>XI</mark> RL	RF	50 Ω	AC	CORREC			NSE:INT	#Avg Ty	ALIGN AUTO pe: RMS	TR	PM Apr 29, 2021 ACE 1 2 3 4 5 6	Fre	equency
PASS				PNO: Fa	ast ↔ .ow	Trig: Free Atten: 30				1			A
10 dB/div	Ref 20.	00 dB	sm						N	1kr1 1.84 -53	40 5 GHz .72 dBm		Auto Tune
Log Trac	e 1 Pass						Ĭ					С	enter Freq
10.0												940	.000000 MHz
0.00													Otort Eror
-10.0												30.	Start Freq 000000 MHz
-20.0												1 950	Stop Freq
-30.0												1.000	000000 GHZ
-40.0												182	CF Step
-50.0											1	Auto	Man
00.0						handrender (and the faile of the faile of the faile of the faile of the fail o							req Offset
-60.0	a and and a second s												0 Hz
-70.0													
													Scale Type
Start 0.03 #Res BW				\$	≠VB₩	3.0 MHz			Sweep		.8500 GHz (3641 pts)		<u>Lin</u>
MSG									STAT				

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		PART 24 MEASUREMENT REPORT	Approved by: Technical Manager
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		m Analyzer - Sv										
LXU RL		RF 50 S	Ω AC	CORREC		ISE:INT	#Avg Typ	ALIGN AUTO e: RMS	TRAC	M Apr 29, 2021	Fre	quency
PASS				PNO: Fast ↔ IFGain:Low	Trig: Free Atten: 10				TYI Di			
								Mk	r1 18.29	5 5 GHz		Auto Tune
10 dB/di Log		ef 0.00 d	Bm						-61.9	34 dBm		
Tr	race 1	Pass									C	enter Freq
-10.0											15.000	000000 GHz
-20.0												
												Start Freq
-30.0											10.000	000000 GHz
-40.0												
10.0												Stop Freq
-50.0												
-60.0									1			CF Step
-00.0							Lend	بر مستعمیند <sub>ک</sub>			1.000 Auto	000000 GHz Man
-70.0				*****								
-80.0											F	req Offset
-80.0												0 Hz
-90.0												
											s	cale Type
Start 1									Stop 20	.000 0112	Log	Lin
#Res B	SW 1.0	MHz		#VBV	№ 3.0 MHz		s		_	0001 pts)		
MSG								STATU	S			

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

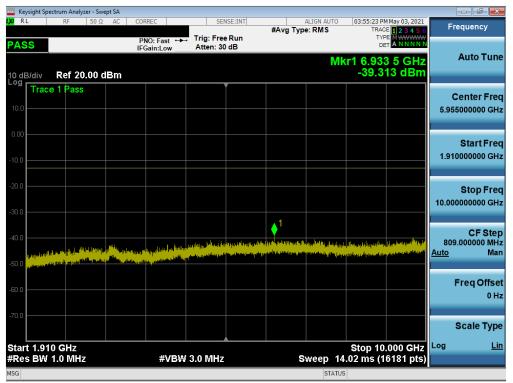
FCC ID: A3LSMF926B	POLICE ST Proud to be part of the element	PART 24 MEASUREMENT REPORT	Approved by: Technical Manager
Test Report S/N:	Test Dates:	EUT Type:	Page 28 of 88
1M2104190044-03.A3L	4/27/2021 - 5/11/2021	Portable Handset	Faye 20 01 00
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## **GSM/GPRS PCS**

	ectrum Analyze	r - Swept S	A										- • •
LXIRL	RF	50Ω A		RREC			ISE:INT	#Avg Typ	ALIGN AUTO e: RMS	TRAC	M May 03, 2021 E <b>1 2 3 4 5</b> 6	Fn	equency
PASS			IF	NO: Fas Gain:Lo		Trig: Free Atten: 30			MI	cr1 1.81			Auto Tune
10 dB/div	Ref 20.	00 dBr	m							-43.9	81 dBm		
10.0	e 1 Pass												enter Freq .500000 MHz
-10.0												30	Start Freq .000000 MHz
-20.0												1.84	Stop Freq
-40.0		فالم معالمات	تلول والفرند.	us canatan ala	و المحمد الم	in the second	a alterne de tit la com	AN A STRANGER AND AND A STRANGER	engaga sila disebut si di	l de staat in de staat de staa	Annald Hanglinghold	181 <u>Auto</u>	CF Step .500000 MHz Man
-50.0 <b></b>			The last of the line of the			10 p - 24 p - 10 a - 25						1	Freq Offset 0 Hz
-70.0													Scale Type
Start 0.03 #Res BW				#\	/BW	3.0 MHz			Sweep_2	Stop 1.8 2.427 ms	3450 GHz 3641 pts)	Log	<u>Lin</u>
MSG									STATU				

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



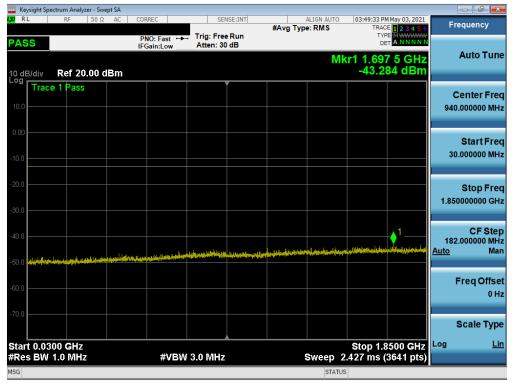
Plot 7-26. Conducted Spurious Plot (GPRS Ch. 512)

FCC ID: A3LSMF926B		PART 24 MEASUREMENT REPORT	SAMSUNG	Approved by: Technical Manager
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	pectrum Analy											_	- 6
RL	RF	50 Ω	AC	CORREC		SEN	ISE:INT	#Ava T	ALIGN AU ype: RMS		PM May 03, 2021 ACE 1 2 3 4 5 6	En	equency
ASS				PNO: F IFGain:	ast ↔ Low	Trig: Free Atten: 10			ype. raiie	Т			
dB/div	Ref 0.	00 dB	m						N	lkr1 18.2 -51.	61 5 GHz 412 dBm		Auto Tur
<sup>rg</sup> Tra	ce 1 Pass					,						-	enter Fre
D.0													0000000 G
												13.000	1000000 Gi
0.0													
													Start Fr
0.0												10.000	000000 G
0.0													Stop Fr
										▲1		20.000	0000000 G
0.0									to contribution	the state of the s	ويعرب والملط المتعاد والملا		
						a la china dini ari	ephericalitecte	and the particular state of th	in an and the second states of	A DESCRIPTION OF THE OWNER	and the state of the state		CF Ste
March 199	مىرىدە مىر يەب بارساندە دەر ئەسقىدار مەماتدە رارى		and a state of the	a na statistica di mana statistica Na statistica di mana statistica di	مطمعياتهم	A DESCRIPTION OF THE OWNER OF THE							000000 G
0.0												<u>Auto</u>	М
5.0													
D.O 0.C												ł	req Offs
													0
D.O													
												:	Scale Ty
Lart 10	000 GHz									Stop 2	0.000 GHz	Log	Ļ
	1.0 MH				#VBW	3.0 MHz			Sweep	25.33 ms	(20001 pts)	-	
G										ATUS			_

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



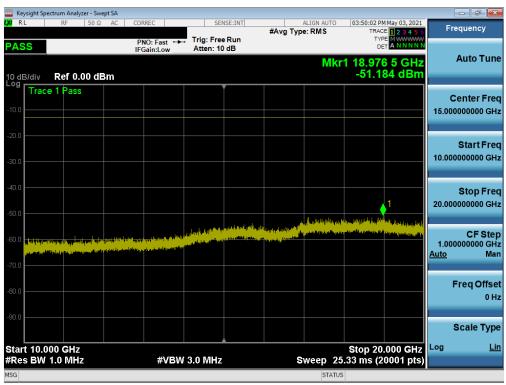
Plot 7-28. Conducted Spurious Plot (GPRS Ch. 661)

FCC ID: A3LSMF926B		PART 24 MEASUREMENT REPORT	SAMSUNG	Approved by: Technical Manager		
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	ctrum Analyzer	- Swept SA									- F	X
LXIRL	RF 5	0Ω AC	CORREC		SEN	ISE:INT	#Avg Typ	ALIGN AUTO		M May 03, 2021	Frequency	у
PASS			PNO: F IFGain:	ast ↔ Low	Trig: Free Atten: 30		0 //		TYI Di		Auto T	Tune
10 dB/div Log	Ref 20.0	0 dBm						N	1kr1 6.90 -40.1	5 0 GHz 22 dBm	Autor	une
Trace	e 1 Pass										Center	Freq
10.0											5.955000000	GHz
0.00												
											Start I 1.91000000	
-10.0												
-20.0											Stop I	Freq
-30.0											10.00000000	) GHz
00.0							<b>1</b>				CE (	Step
-40.0	ليلالمهن البانية	. بطلق و الحط	ور و ور ملاق	والمتعالمة المتعاد	philip and and	en and the state of the state o	and the second	All Hermony and Annual All	in an Charles and Alles and Alles Anna an Anna an	ala dan kanalara ar	809.00000	) MHz
-50.0 <b>1979-001</b>		and a state of the second	Alling and Provide		فأعم معاقعاته واستعدائه	الي فقد الناني ملية ا	ALC: NO CHAPT				<u>Auto</u>	Man
											Freq O	ffset
-60.0												0 Hz
-70.0											O codo 7	Transa
											Scale 1	
Start 1.91 #Res BW				#VBW	3.0 MHz		s	weep	Stop 10 14.02 ms (1	.000 GHz 6181 pts)	Log	Lin
MSG								STAT				

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



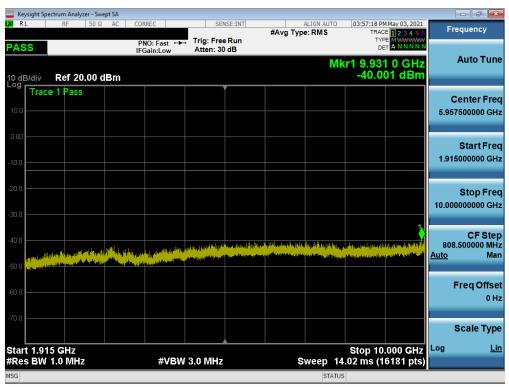
Plot 7-30. Conducted Spurious Plot (GPRS Ch. 661)

FCC ID: A3LSMF926B		PART 24 MEASUREMENT REPORT	SAMSUNG	Approved by: Technical Manager
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	ectrum Analyz	er - Swep	pt SA										
L <mark>XI</mark> RL	RF	50 Ω	AC	CORREC		SEI	ISE:INT	#Avg Typ	ALIGN AUTO	TRAC	May 03, 2021	Fn	equency
PASS				PNO: Fa	ow	Trig: Free Atten: 30		• //		TYF			
10 dB/div	Ref 20	.00 d	Bm						Mł	(r1 1.60 -44.3	0 0 GHz 65 dBm		Auto Tune
Log Trac	e 1 Pass												enter Freq
												940	.000000 10112
-10.0												30	Start Freq .000000 MHz
-20.0												1.850	Stop Freq
-30.0		. 1 11 - 14	اللاسطارين		فالملابع		ang ti bala a dina at paga	here of the second second	in the first states	1-	ele Bijngi dere Kandilije	182 <u>Auto</u>	CF Step .000000 MHz Mar
-50.0 <b>-50.0</b>			dd ac a la									'	Freq Offset 0 Hz
-70.0													Scale Type
Start 0.03 #Res BW				#	¢VB₩	3.0 MHz			Sweep 2	Stop 1.8 2.427 ms (	3500 GHz 3641 pts)	Log	<u>Lin</u>
MSG									STATUS	5			

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



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

FCC ID: A3LSMF926B		PART 24 MEASUREMENT REPORT	SAMSUNG	Approved by: Technical Manager
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	pectrum Analy												- 7 💌
RL	RF	50 Ω	AC	CORREC		SEN	ISE:INT	#Avg Typ	ALIGN AUTO		M May 03, 2021	Fre	quency
ASS				PNO: F IFGain:	ast ↔ Low	Trig: Free Atten: 10		*Avg iyp	e. Rivis	TY			
dB/div	Ref 0.	00 dB	m						M	(r1 18.22 -51.4	9 0 GHz 75 dBm	· · · · ·	Auto Tun
Trac	e 1 Pass					`````						C	enter Fre
3.0												15.000	000000 GH
).0													Start Fre
0.0												10.000	000000 GH
D.O													Stop Fre
0.0										1			000000 GI
					بالمريد الم	a Barra Dia antara	y na ang Mganang	a Managalahan Ballah	lighten staff.	and the second secon	an de la companya de		CF Ste
	n i vijene in versteren Nationalise de sete	ine s'ar a'	a ta a ta da ta		ing langan Kalabaran	an a		الله من (م. <u></u>				1.000 <u>Auto</u>	000000 GI Ma
												F	req Offs
0.0													01
D.O													cale Typ
tart 10	000 GHz									Stop 20	.000 GHz	Log	L
	1.0 MH				#VBW	3.0 MHz		s	weep 2	25.33 ms (2	.000 0112		
G									STAT				

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

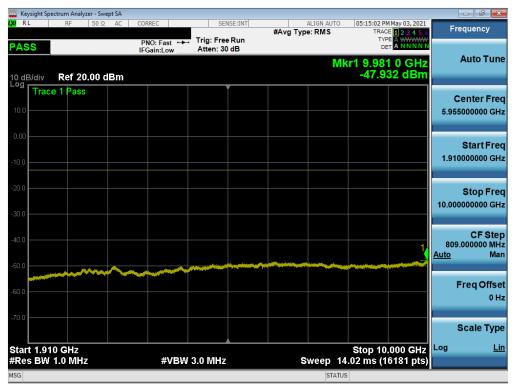
FCC ID: A3LSMF926B		PART 24 MEASUREMENT REPORT	SAMSUNG	Approved by: Technical Manager		
Test Report S/N:	Test Dates:	EUT Type:				
1M2104190044-03.A3L	4/27/2021 - 5/11/2021	Portable Handset		Page 33 of 88		
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# WCDMA PCS

	ectrum Analyze	r - Swept SA										
LX/ RL	RF	50 Ω AC		EC			#Avg Typ	ALIGN AUTO e: RMS	TRAC	M May 03, 2021 DE <b>1 2 3 4 5</b> 6 PE A WWWWW	Fr	requency
PASS	Ref 20.	00 dBm	IFGa	in:Low	Atten: 30			M	⊳ kr1 1.84	5 0 GHz 96 dBm		Auto Tune
Log Trac	e 1 Pass											Center Freq 7.500000 MHz
-10.0											30	Start Freq 0.000000 MHz
-20.0										1,	1.84	Stop Freq 5000000 GHz
-40.0											181 <u>Auto</u>	CF Step I.500000 MHz Man
-50.0	Hartpainte and an Arabitation	يونور ويورو <mark>ا</mark> والمستحدثين	uni) altalagu yu fada	nje marena na sanje i na manje na	***********************	ng man ang di salam tang dag d						Freq Offset 0 Hz
-70.0									Stop 1	8450 GHz	Log	Scale Type <u>Lin</u>
#Res BW				#VBW	3.0 MHz			Sweep 2	2.427 ms	(3641 pts)	_	
MSG								STATU	s			

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



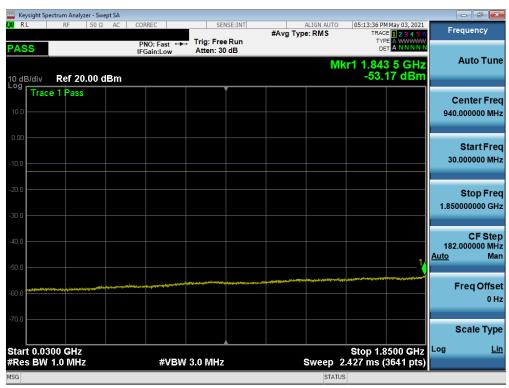
Plot 7-35. Conducted Spurious Plot (WCDMA Ch. 9262)

FCC ID: A3LSMF926B		PART 24 MEASUREMENT REPORT	SAMSUNG	Approved by: Technical Manager	
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	ectrum Analyzei											
LXU RL	RF	50 Ω AC	CORR	EC	SEI	ISE:INT	#Avg Typ	ALIGN AUTO		M May 03, 2021	Fre	quency
PASS				):Fast ↔ in:Low	Trig: Free Atten: 10		"a)r		TYI Di			
10 dB/div	Ref 0.00	) dBm						Mkı	1 18.29 -59.2	9 5 GHz 49 dBm		Auto Tune
Log Trace	e 1 Pass											enter Freq 000000 GHz
-20.0												Start Freq 000000 GHz
-40.0												Stop Freq 000000 GHz
-60.0							m		1		1.0000 <u>Auto</u>	CF Step 000000 GHz Man
-70.0											F	req Offset 0 Hz
-90.0												cale Type Lin
Start 10.0 #Res BW				#VBW	/ 3.0 MHz		s	weep 2	Stop 20 5.33 ms (2	.000 GHz 20001 pts)	Log	<u></u>
MSG								STATU	S			

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



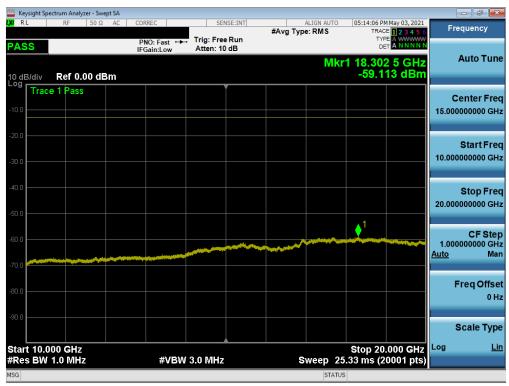
Plot 7-37. Conducted Spurious Plot (WCDMA Ch. 9400)

FCC ID: A3LSMF926B		PART 24 MEASUREMENT REPORT	SAMSUNG	Approved by: Technical Manager
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	ctrum Analyze	r - Swept	SA										- 0 ×
LXI RL	RF	50 Ω	AC C	ORREC		SE	NSE:INT	#Avg Typ	ALIGN AUTO		M May 03, 2021	Fre	equency
PASS				PNO: Fa FGain:L	ist ↔ ow	Trig: Fre Atten: 3		#/18/JP		TΥ			
10 dB/div Log	Ref 20.	00 dB	m						Μ	lkr1 9.97 -47	8 5 GHz 96 dBm		Auto Tune
10.0 Trace	e 1 Pass												enter Freq 000000 GHz
-10.0												1.910	Start Freq
-20.0												10.000	Stop Freq
-30.0											1	809. <u>Auto</u>	CF Step 000000 MHz Man
-60.0		~~~~					**************************************					F	Freq Offset 0 Hz
-70.0													Scale Type Lin
Start 1.91 #Res BW				#	VBW	3.0 MHz		S	weep 1	4.02 ms (	).000 GHz  6181 pts)	209	
MSG									STAT	US			

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



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

FCC ID: A3LSMF926B		PART 24 MEASUREMENT REPORT	SAMSUNG	Approved by: Technical Manager	
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Keysight Spectrum		ot SA									
LXI RL RF	50 Ω	AC	CORREC	Telev	SENSE:INT	#Avg Typ	ALIGN AUTO e: RMS	TRA	M May 03, 2021 CE 1 2 3 4 5 6	Freque	ency
PASS			PNO: Fast IFGain:Low		Free Run n: 30 dB						
10 dB/div Ref	f 20.00 di	Bm					M	(r1 1.83 -53.	3 0 GHz 33 dBm	Au	to Tune
Log Trace 1 P	ass				Ĭ					Cent	ter Freq
10.0										940.000	000 MHz
0.00											
-10.0											art Freq 000 MHz
-10.0											
-20.0											op Freq
-30.0										1.850000	000 GHz
										C	CF Step
-40.0										182.000 Auto	000 MHz Man
-50.0											
-60.0		nadel the state from the	****		************	A REAL FOR THE REAL PROPERTY AND ADDRESS OF THE REAL PROPERTY ADDRESS OF T	an a fair an			Free	q Offset
											0 Hz
-70.0										Sca	іе Туре
Start 0.0300 G	Hz							Stop 1.	8500 GHz	Log	Lin
#Res BW 1.0 I			#V	'BW 3.0 N	1Hz		Sweep 2	.427 ms	(3641 pts)		
MSG							STATU	5			

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



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

FCC ID: A3LSMF926B		PART 24 MEASUREMENT REPORT	SAMSUNG	Approved by: Technical Manager	
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ASS PNO: Fast IFGain:Low Trig: FreeRun Atten: 10 dB Mkr1 17.685 5 GHz -59.183 dBm Center Freq 15.000000000 GHz 15.000000000 GHz 200 0 0 0 0 0 0 0 0 0 0 0 0		ectrum Analyz	zer - Swep	ot SA											
Ass PRO: East Tig: Free Run Atten: 10 dB Mkr1 17.685 5 GHz -59.183 dBm Trace 1 Pass Center Freq 15.00000000 GHz Stop Freq 20.00000000 GHz Center Freq 15.00000000 GHz Stop Freq 20.0000000 GHz Stop 20.000 GHz Log Lin	LXU RL	RF	50 Ω	AC	CORREC		SEN	ISE:INT	#Avg Tvi		0 0			Fi	requency
Mikr 17,085 5 GHz      0    -59.183 dBm      10.00000000 GHz      00    -59.183 dBm      00	PASS				PNO: Fa	ast ⊶⊷ .ow			0,1			TYF DE			Auto Tuno
Trace 1 Pass    Center Freq      100    Center Freq      200    Start Freq      200    Start Freq      200    Start Freq      200    Start Freq      200    Center Freq      200    Center Freq      200    Center Freq      200    Center Freq      200    Freq      200    Freq      200    Freq Offset      200    Center Freq      200    Start Freq      200    Start Freq      200    Freq Offset      0 Hz    Stale Type      Log    Lin	10 dB/div	Ref 0.0	00 dB	m						Μ	kr1	17.68 -59.1	5 5 GHz 83 dBm		Auto Tune
200 200 200 200 200 200 200 200	Trac	e 1 Pass					,							(	Center Freq
Start Freq Start Freq Stop Freq 20.00000000 GHz Stop Freq 20.00000000 GHz Stop	-10.0													15.00	0000000 GHz
10.00000000 GHz 10.00000000 GHz	-20.0														
400 400 400 400 400 400 400 400														10.00	
Stop Freq 20.00000000 GHz CF Step 1.00000000 GHz Stop 20.00000000 GHz CF Step 1.000000000 GHz Stop 20.00000000 GHz Log Lin	-30.0													10.00	0000000 GH2
500 20.00000000 GHz 500 20.00000000 GHz 20.00000000 GHz CF Step 1.00000000 GHz Step 20.000 GHz Log Lin	-40.0														Stop Fred
300    1    1    1    1    1    1    1    1    1    1    0    1    0    0    1    0    0    1    0	50.0													20.00	
1.00000000 GHz Auto Man Freq Offset 0 Hz Scale Type	-50.0										1				
Freq Offset Scale Type Start 10.000 GHz Stop 20.000 GHz	-60.0									-				1.00	
3000    Image: Constraint of the second sec	-70.0													<u>Auto</u>	Man
2000 CHz Stop 20.000 GHz Log Ling															Frea Offset
tart 10.000 GHz Stop 20.000 GHz Log Lin	-80.0														•
tart 10.000 GHz Stop 20.000 GHz Log	-90.0														
															Scale Type
Res BW 1.0 MHz #VBW 3.0 MHz Sweep 25.33 ms (20001 pts)						(5)	0.0.04				S	top 20	.000 GHz		Lin
SG STATUS	#Res BW	1.0 MHz			2	¥γΒ₩	3.0 MHz					3 ms (2	0001 pts)		

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

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## 7.5 Band Edge Emissions at Antenna Terminal

#### **Test Overview**

All out of band emissions are measured with a spectrum analyzer connected to the antenna terminal of the EUT while the EUT is operating at maximum power, and at the appropriate frequencies. All data rates were investigated to determine the worst case configuration. All modes of operation were investigated and the worst case configuration results are reported in this section.

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

#### **Test Procedure Used**

KDB 971168 D01 v03r01 - Section 6.0

#### **Test Settings**

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

#### Test Setup

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



Figure 7-4. Test Instrument & Measurement Setup

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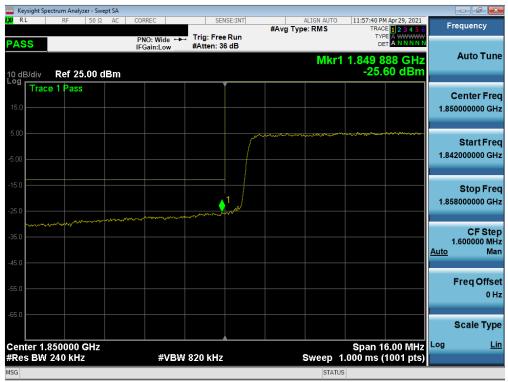
## Test Notes

 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.

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# 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)

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RL      RF      50 Ω      AC      CORREC      SENSE:INT      ALIGN AUTO      12:03:36 AM Apr:30,2021      Frequency        MASS      PNO: Wide      Trig: Free Run IFGain:Low      Trig: Free Run #Atten: 36 dB      Trig: Tree Run Der ANNNN      Tree I 2:34:56      2:34:56      AC      Auto Tur        dB/div      Ref 25.00 dBm      -27.56 dBm      -27.56 dBm      -27.56 dBm      Center Fre        50      0      -0
ASS PNO: Wide +++ Trig: Free Run #Atten: 36 dB PET ANNNNN Mkr1 1.910 064 GHz -27.56 dBm Trace 1 Pass Center Fre 1.91000000 G
Trace 1 Pass Center Fro 1.910000000 G
50 Center Fr 1.91000000 G
00 Start Fro 1.902000000 G
5.0 Stop Fro 5.0 1.918000000 G
5.0 CF Ste 1.600000 M Auto M
5.0 Freq Offs 0
50 Scale Ty
enter 1.910000 GHz Span 16.00 MHz Log Leg Sweep 1.000 ms (1001 pts)
si status

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

Keysight Spe			t SA								_	
RL	RF	50 Ω	AC	CORREC	SE	NSE:INT	#Ava	ALIGN AUT Type: RMS		AM Apr 30, 2021	F	requency
ASS				PNO: Wide + IFGain:Low	Trig: Fre #Atten: 3		#/119		T) E			
) dB/div	Ref 25	.00 dE	3m					Mk	r1 1.911 -22	024 GHz .82 dBm		Auto Tui
og Trace	e 1 Pass					Ĭ						Center Fr
5.0										<u> </u>		13000000 G
.00												Start Fr
.00											1.91	1000000 0
5.0												Stop F
2			مىرىدى. مەربىيە								1.91	5000000
5.0									*****			
5.0												CF St 400.000
											<u>Auto</u>	400.000
5.0												
5.0												Freq Off
												C
5.0												
												Scale Ty
enter 1.9									Span 4	4.000 MHz	Log	
Res BW	1.0 MHz			#VB	W 3.0 MHz	2			6.667 ms	(1001 pts)		
G								STA	TUS			

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

FCC ID: A3LSMF926B		PART 24 MEASUREMENT REPORT	Approved by: Technical Manager
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	pectrum Analy												
RL	RF	50 Ω	AC	CORREC		SEI	ISE:INT	#Avg Ty	ALIGN AUTO		M Apr 30, 2021	Fi	requency
ASS				PNO: W IFGain:L	ide ↔ .ow	Trig: Free #Atten: 3		#Avg Ty	pe. Rivis	TY			
) dB/div	Ref 25	.00 dE	3m						Mkr	1.915 ( -27.	)96 GHz 58 dBm		Auto Tur
5.0 Trac	ce 1 Pass												Center Fro 5000000 Gi
.00	, , , , , , , , , , , , , , , , , , ,	<u>,</u>	P	<u></u>	to max							1.90	<b>Start Fr</b> 7000000 G
5.0							<b>↓</b> 1					1.92	Stop Fr 3000000 G
5.0							the way way was a second s	maw.www.		mar and a start and a start a	delama dela	Auto	CF St 1.600000 M N
5.0													Freq Offs 0
5.0													Scale Ty
	.915000 240 kHz			\$	≠vBW :	820 kHz			Sweep	Span 1 1.000 ms (	6.00 MHz (1001 pts)	Log	ļ
G									STATU				

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



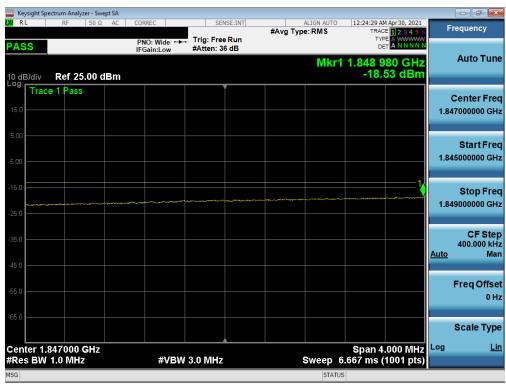
Plot 7-48. Extended Upper Band Edge Plot (LTE Band 25 - 20MHz QPSK – Full RB)

FCC ID: A3LSMF926B	PCTEST* Proud to be part of @ interest	PART 24 MEASUREMENT REPORT	SAMSUNG	Approved by: Technical Manager	
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	pectrum Analyz		t SA										
XU RL	RF	50 Ω	AC	CORREC		SEI	ISE:INT	#Avg Typ	ALIGN AUTO		M Apr 30, 2021	F	requency
PASS				PNO: W IFGain:L	ide ↔ ow	Trig: Free #Atten: 3		#ravg +yp		TY	PE A WWWWW ET A NNNNN		
10 dB/div Log	Ref 25	.00 dE	3m						Mkr1	1.849 5 -25.	32 GHz 27 dBm		Auto Tune
15.0	e 1 Pass												Center Freq 50000000 GHz
-5.00									~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~	n jan manan an	aver and an	1.84	Start Freq 14000000 GHz
-15.0				~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~	~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~	1						1.85	Stop Freq 6600000 GHz
-35.0												<u>Auto</u>	CF Step 1.200000 MHz Man
-55.0													Freq Offset 0 Hz
-65.0													Scale Type
Center 1. #Res BW				#	VBW	620 kHz			Sweep 1	Span 1 .000 ms (	2.00 MHz 1001 pts)	Log	<u>Lin</u>
MSG									STATU				

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		PART 24 MEASUREMENT REPORT	SAMSUNG	Approved by: Technical Manager
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	ectrum Analyz	er - Swep	t SA										
X/RL	RF	50 Ω	AC	CORREC		SEI	ISE:INT	#Avg Typ	ALIGN AUTO		M Apr 30, 2021	F	requency
PASS				PNO: V IFGain:	Vide ↔ Low	Trig: Free #Atten: 3				TY D			
10 dB/div	Ref 25	.00 dE	3m						Mkr1	1.910 ( -29.	00 GHz 07 dBm		Auto Tune
Log Trac	e 1 Pass											(	Center Freq
15.0												1.91	0000000 GHz
5.00	•	<del>4-0-0-0</del> -0-0-0-0-		<b>~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~</b>	ᢍᢇᠾᢇᠳᡇᠰ	~							Start Freq
-5.00												1.90	4000000 GHz
-15.0													Stop Freq
-25.0						\A	1					1.91	6000000 GHz
						and the second second	hanne	an and the second se	~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~				CF Step
-35.0										~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~	alenn and and	<u>Auto</u>	1.200000 MHz Mar
-45.0													
-55.0													Freq Offset 0 Hz
-65.0													
													Scale Type
Center 1.9 #Res BW					#\/D\M	620 kHz			Curoon (	Span 1	2.00 MHz	Log	Lin
	180 KH2				₩₩₩₽₩₩	020 KHZ					(1001 pts)		
ASG									STATU	S			

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



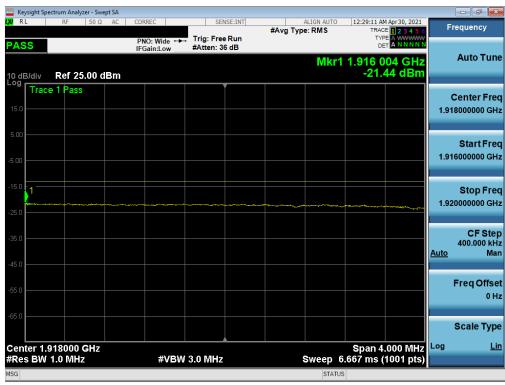
Plot 7-52. Extended Upper Band Edge Plot (LTE Band 2 - 15MHz QPSK - Full RB)

FCC ID: A3LSMF926B		PART 24 MEASUREMENT REPORT	SAMSUNG	Approved by: Technical Manager
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	ectrum Analyz	er - Swept	t SA										- 0 ×
X/RL	RF	50 Ω	AC	CORREC			NSE:INT	#Avg Ty	ALIGN AUTO	TRAC	M Apr 30, 2021	Fr	equency
PASS				PNO: W IFGain:L	ide ↔ .ow_	Trig: Fre #Atten: 3			Mkr1	DE			Auto Tune
10 dB/div	Ref 25.	00 dE	3m							-28.	20 dBm		
Log Trac	e 1 Pass												enter Freq
												1.010	
-5.00			,60.,7.,8.,764									1.909	Start Freq
-15.0													
-25.0						ر ار سر	1					1.921	Stop Freq
-35.0						ۍي مړ	·····	·····	www.	~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~	han		CF Step 200000 MHz
-45.0												<u>Auto</u>	Man
-55.0												F	req Offset 0 Hz
-65.0													Scale Type
Center 1.9	15000 0	NU-7								- Spon 4	2.00 MH-	Log	Lin
#Res BW				\$	¢VB₩	620 kHz			Sweep 1	span 1 .000 ms (	2.00 MHz 1001 pts)		<u></u>
MSG									STATU	5			

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



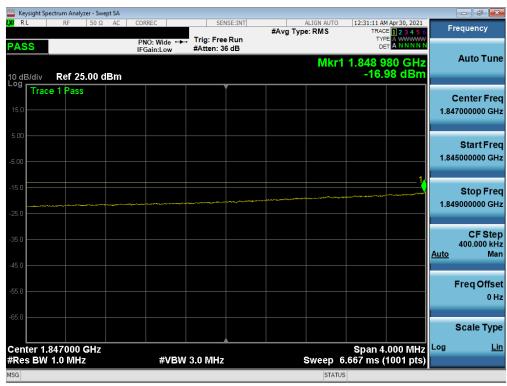
Plot 7-54. Extended Upper Band Edge Plot (LTE Band 25 - 15MHz QPSK - Full RB)

FCC ID: A3LSMF926B		PART 24 MEASUREMENT REPORT	SAMSUNG	Approved by: Technical Manager
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	pectrum Analyz		SA										
XI RL	RF	50 Ω	AC	CORREC		SEI	ISE:INT	#Avg Typ	ALIGN AUTO		M Apr 30, 2021	F	requency
PASS				PNO: Wi IFGain:L	ide ↔ ow	Trig: Free #Atten: 3				TY			
10 dB/div Log	Ref 25.	00 dB	m						Mkr1	1.849 7 -25.	′36 GHz 26 dBm		Auto Tune
15.0 Trac	e 1 Pass												Center Freq 50000000 GHz
5.00							/**	to should be a strain of the second	nt to a find	Al Poly - A population	- <del>1 - 1 - 1 - 1 - 1 - 1 - 1 - 1 - 1 - 1</del>	1.84	Start Fred 16000000 GHz
-15.0						<b>∮</b> <sup>1</sup>	J. J					1.85	Stop Frec 54000000 GHz
-35.0	hin by and	nar land an	medal	Lollympychd	and and a second se	nvlaayutate**						<u>Auto</u>	CF Step 800.000 kHz Mar
-45.0													Freq Offse 0 Hi
-65.0													Scale Type
	.850000 ( 120 kHz			#	VBW	430 kHz			Sweep	Span 8  3.33 ms (	.000 MHz 1001 pts)	Log	<u>Lin</u>
ASG									STATU				

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



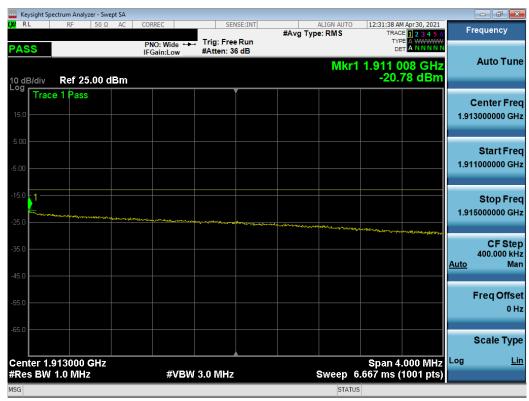
Plot 7-56. Extended Lower Band Edge Plot (LTE Band 25/2 - 10MHz QPSK - Full RB)

FCC ID: A3LSMF926B		PART 24 MEASUREMENT REPORT	SAMSUNG	Approved by: Technical Manager
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	ectrum Analy:												
(RL	RF	50 Ω	AC	CORREC		SEN		#Avg Typ	ALIGN AUTO	TRAC	Apr 30, 2021	F	requency
PASS				PNO: Wi IFGain:L	ide ↔ ow	#Atten: 3							Auto Tun
0 dB/div	Ref 25	.00 d	Bm						MKr1	1.910 0 -28.	40 GHZ 09 dBm		Auto Tun
Trac	e 1 Pass					,							Center Fre
15.0												1.91	0000000 GH
5.00 <b>مەسەبە</b>	of a day to be a day to be a day.	****	<del>ور ساند پر ا</del> ند	and the second secon									Start Fre
5.00												1.90	6000000 GH
15.0													Stop Fre
25.0						h	1					1.91	4000000 GH
						•W	A CONTRACTOR OF THE OWNER OF THE		and freed and an	many			CF Ste
:5.0										- Corestin Colorisa	and a star of the second start of the	Auto	800.000 kł Ma
15.0													_
55.0													Freq Offs 0 H
i5.0													
													Scale Typ
	910000 ( 120 kHz			#	VBW -	430 kHz			Sweep	Span 8  3.33 m <u>s (</u>	.000 MHz 1001 pts)	Log	L
SG									STATU				

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



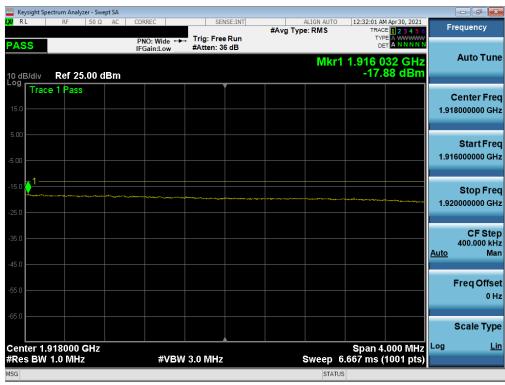
Plot 7-58. Extended Upper Band Edge Plot (LTE Band 2 - 10MHz QPSK – Full RB)

FCC ID: A3LSMF926B	PCTEST* Proud to be part of @ element	PART 24 MEASUREMENT REPORT	SAMSUNG	Approved by: Technical Manager
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	pectrum Analy:		t SA										
XU RL	RF	50 Ω	AC	CORREC		SEN	ISE:INT	#Ava Tu	ALIGN AUTO		M Apr 30, 2021	F	requency
PASS				PNO: Wi IFGain:L		Trig: Free #Atten: 30		" <b>ə</b> .)		TY			
10 dB/div Log	Ref 25	.00 di	Зm						Mkr	1 1.915 8 -26.	300 GHz 54 dBm		Auto Tune
15.0 Trac	e 1 Pass												Center Freq 15000000 GHz
5.00 -5.00	وردخذمودي ي دواويون	A-4+9,, a->-44	*****	man and a start of the start of	***}*****							1.91	Start Freq 1000000 GHz
-15.0						hin and	Նուդեութություն	1	W. Marthe Brand			1.91	Stop Freq 19000000 GHz
-35.0										an gangan na ganga panah	<b>, , , , , , , , , , , , , , , , , , , </b>	<u>Auto</u>	CF Step 800.000 kHz Man
-45.0													Freq Offset 0 Hz
-65.0													Scale Type
Center 1. #Res BW				#	VBW	430 kHz			Sweep	Span 8 13.33 ms	.000 MHz (1001 pts)	Log	<u>Lin</u>
MSG									STAT		(inter pro)		

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



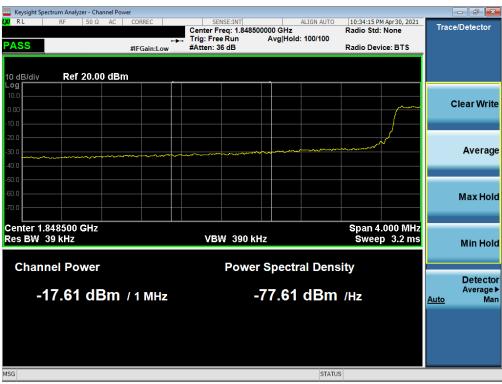
Plot 7-60. Extended Upper Band Edge Plot (LTE Band 25 - 10MHz QPSK - Full RB)

FCC ID: A3LSMF926B		PART 24 MEASUREMENT REPORT	SAMSUNG	Approved by: Technical Manager
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	Spectrum Analyz	er - Swept	t SA										
X/RL	RF	50 Ω	AC	CORREC		SE	NSE:INT	#Avg Ty	ALIGN AUTO		Apr 30, 2021	F	requency
PASS				PNO: Wi IFGain:L		Trig: Fre #Atten: 3		#Avg iy	pe. Kivis	TYF			
10 dB/div	Ref 25	.00 dE	3m						Mkr1	1.849 9 -24.	84 GHz 63 dBm		Auto Tune
15.0	ice 1 Pass												Center Freq 50000000 GHz
-5.00								guilte marte for the ser	n y Maran Maran M		ydyddododau yn	1.84	Start Freq 18000000 GHz
-15.0			- Prover Devert	مسرومين المستروم	ay Maral	A DARK MAN	1,					1.85	Stop Freq 2000000 GHz
-35.0	Mm. S. Carlos	Al / La reaction of the										<u>Auto</u>	CF Step 400.000 kHz Mar
55.0													Freq Offse 0 Hz
-65.0													Scale Type
	1.850000 ( N 62 kHz	GHz		#	VBW	220 kHz			Sweep 6	Span 4 .667 ms (	.000 MHz 1001 pts)	Log	Lin
ASG									STATUS				

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



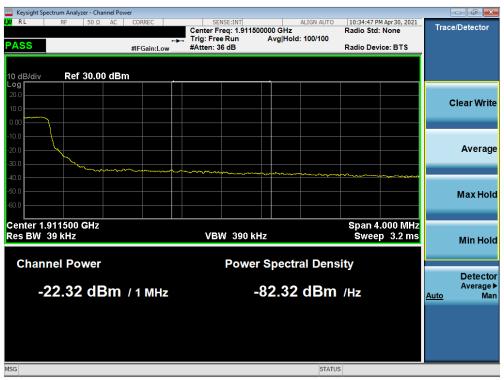
Plot 7-62. Extended Lower Band Edge Plot (LTE Band 25/2 - 5MHz QPSK – Full RB)

FCC ID: A3LSMF926B	PCTEST Proud to be part of @ element	PART 24 MEASUREMENT REPORT	SAMSUNG	Approved by: Technical Manager	
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	ectrum Analy												
ASS	RF	50 Ω	AC		/ide ↔	Trig: Fre		#Avg Ty	ALIGN AUTO pe: RMS	TRAC	M Apr 30, 2021 DE <b>1 2 3 4 5</b> 6 PE A WWWWWW ET A N N N N N	F	requency
0 dB/div	Ref 25	.00 d	Bm	IFGain:	Low	#Atten: 3	6 dB		Mkr	1 1.910 (			Auto Tun
-og Trac	e 1 Pass												Center Fre 10000000 GH
5.00	~~11~1~~~	~~~~~	www.~~	n.s.ydafer <sup>en</sup> a	Marrian Carl							1.90	Start Fre
25.0						- Land	1					1.91	Stop Fre
5.0							And Connected and a	Nanghangen	mhalland	-Marazahnangha	apathanga ang an	<u>Auto</u>	CF Ste 400.000 kl M
5.0													Freq Offs 0
5.0													Scale Typ
enter 1. Res BW		GHz			#\/B\M	220 kHz			Swoon	Span 4 6.667 ms (	.000 MHz	Log	L
1. <del>1</del> . 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1.	02 NH2					220 MH2			oweep	0.007 ms	(TOUT PLS)		

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



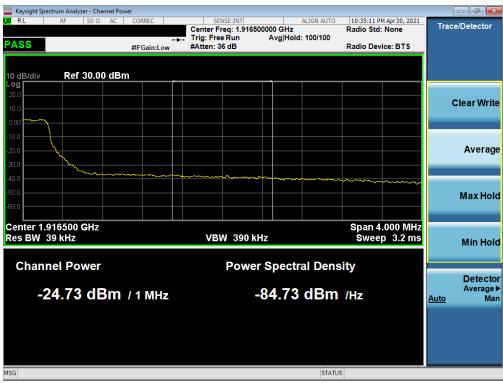
Plot 7-64. Extended Upper Band Edge Plot (LTE Band 2 - 5MHz QPSK - Full RB)

FCC ID: A3LSMF926B		PART 24 MEASUREMENT REPORT	SAMSUNG	Approved by: Technical Manager
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	Spectrum Analy												
( <mark>0</mark> RL	RF	50 Ω	AC	CORREC	de 🗭	Trig: Free		#Avg Ty	ALIGN AUTO pe: RMS	TRAC	M Apr 30, 2021 E 1 2 3 4 5 6 E A WWWW T A N N N N N	F	requency
O dB/div	Ref 2	i.00 dl	Bm	IFGain:L		#Atten: 3	6 dB		Mkr	1 1.915 0			Auto Tune
15.0 Tra	ice 1 Pass												Center Fre 5000000 GH
5.00	- and a second	*********	al of the second se		an a							1.91	Start Fre 3000000 GH
25.0							1					1.91	Stop Fre 7000000 GH
15.0							Anna for the	el dellar (on the second of	terno homen	Martin What Minghe	ang yang yang yang yang yang yang yang y	<u>Auto</u>	CF Ste 400.000 kH Ma
5.0													Freq Offs 0 I
i5.0	.915000	CH7								Snan 4	.000 MHz	Log	Scale Typ
	V 62 kHz	GHZ		;	VBW	220 kHz			Sweep	6.667 ms (	1001 pts)		
SG									STAT	JS			

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



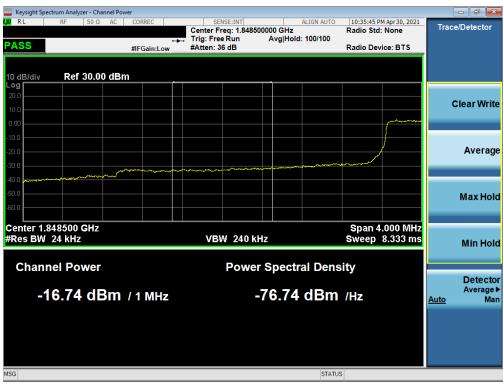
Plot 7-66. Extended Upper Band Edge Plot (LTE Band 25 - 5MHz QPSK – Full RB)

FCC ID: A3LSMF926B		PART 24 MEASUREMENT REPORT	SAMSUNG	Approved by: Technical Manager
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	pectrum Analyz	er - Swept	SA										
K <mark>U</mark> RL	RF	50 Ω	AC	CORREC		SE	NSE:INT	# <b>A</b> ve T	ALIGN AUTO		Apr 30, 2021	F	requency
PASS				PNO: Wi IFGain:L	de ⊶⊶ ow	Trig: Fre #Atten: 3		#Avg Ty	pe. Rivis	TYP	E A WWWWW T A N N N N N		
10 dB/div	Ref 25	.00 dB	m						Mkr1	1.849 9 -24.3	96 GHz 31 dBm		Auto Tune
-og Trac	ce 1 Pass												Center Fred 0000000 GH
5.00								row we wanted	and the second sec	and the second	and and a second of the second	1.84	Start Free 8000000 GH
25.0					- manda	man and a start	1					1.85	Stop Free 2000000 GH
35.0	un hander	-	-080 <sup>-0</sup> -080									<u>Auto</u>	CF Ste 400.000 kH Ma
55.0													Freq Offse 0 H
65.0													Scale Typ
	.850000 ( / 36 kHz	GHz		#	VBW	120 kHz			Sweep 6	Span 4 .667 ms (	.000 MHz 1001 pts)	Log	<u>Lir</u>
ISG									STATUS	5			

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



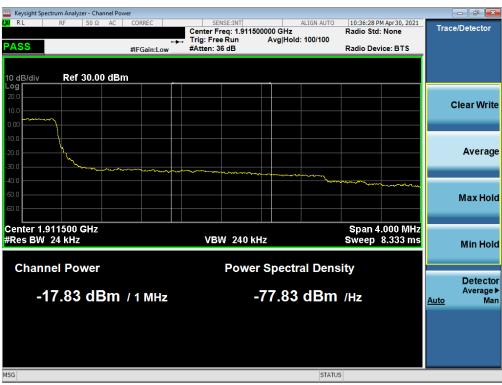
Plot 7-68. Extended Lower Band Edge Plot (LTE Band 25/2 - 3MHz QPSK – Full RB)

FCC ID: A3LSMF926B	PCTEST Proud to be part of @ element	PART 24 MEASUREMENT REPORT	SAMSUNG	Approved by: Technical Manager	
Test Report S/N:	Test Dates:	EUT Type:	e:		
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	ectrum Analy:	ter - Swep	ot SA										
XI RL	RF	50 Ω	AC	CORREC		SE	NSE:INT	#Avg Ty	ALIGN AUTO		M Apr 30, 2021	F	requency
PASS				PNO: W IFGain:L	ide ↔ .ow	Trig: Fre #Atten: 3				TY D			
10 dB/div	Ref 25	.00 d	Bm						Mkr	1 1.910 ( -23.	)04 GHz 79 dBm		Auto Tune
Log Trac	e 1 Pass												Center Fred 0000000 GH2
5.00 <b>*****</b> 5.00	v~~~u_u_v~v_u_	~~~	www.	~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~	kan man	www						1.90	Start Free 8000000 GH
25.0						h,	1					1.91	Stop Free 2000000 GH
35.0							- Laker and	~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~	manna	mar Anna anna	Mann	<u>Auto</u>	CF Stej 400.000 kH Mar
45.0 <u></u> 55.0 <u></u>													Freq Offse 0 H
-65.0													Scale Type
Center 1. #Res BW		GHz			۷BW	120 kHz			Sweep	Span 4 6.667 ms (	.000 MHz (1001 nts)	Log	Lin
ISG	JO KI12								STAT		noor pisj		

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



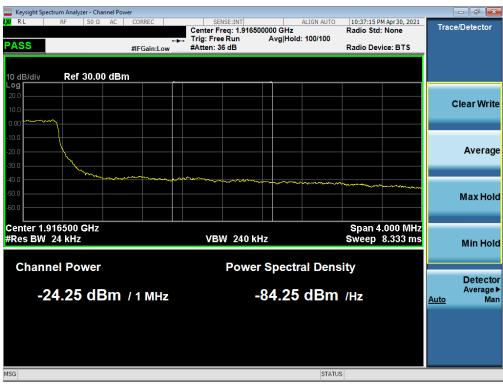
Plot 7-70. Extended Upper Band Edge Plot (LTE Band 2 - 3MHz QPSK – Full RB)

FCC ID: A3LSMF926B	PCTEST. Prout to be part of @ element	PART 24 MEASUREMENT REPORT	SAMSUNG	Approved by: Technical Manager
Test Report S/N:	Test Dates:	EUT Type:		Page 54 of 88
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	pectrum Analy	zer - Swep	ot SA										
( <mark>R</mark> L	RF	50 Ω	AC	CORREC	ide ↔	SE	e Run	#Avg Typ	ALIGN AUTO	TRAC	Apr 30, 2021 E 1 2 3 4 5 6 E A WWWWWW T A N N N N N	F	requency
0 dB/div	Ref 25	i.00 dl	Bm	IFGain:1		#Atten: 3	36 dB		Mkr1	1.915 0			Auto Tun
15.0 Trac	ce 1 Pass												Center Fre 5000000 GH
.00	and a second	*****	and and	www.mybyr	r-w-Ar	ww						1.91	Start Fre 3000000 GI
5.0						ł	¢ <sup>1</sup>					1.91	<b>Stop Fr</b> 7000000 G
5.0							how we	ha way and	ann Marana	- Martin	and the for the second s	<u>Auto</u>	CF Sto 400.000 k M
i.0													Freq Offs 0
	.915000	GHz				400 1-11-				Span 4	.000 MHz	Log	Scale Tyj <u>L</u>
Res BW	36 kHz				₹VB₩	120 kHz			Sweep to	.667 ms (	TOUT pts)		

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



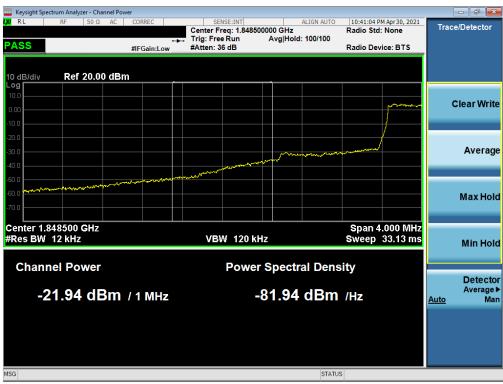
Plot 7-72. Extended Upper Band Edge Plot (LTE Band 25 - 3MHz QPSK – Full RB)

FCC ID: A3LSMF926B	PCTEST. Prout to be part of @ element	PART 24 MEASUREMENT REPORT	SAMSUNG	Approved by: Technical Manager
Test Report S/N:	Test Dates:	EUT Type:		Dogo EE of 99
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	ctrum Analyze	er - Swept	SA										
X/RL	RF	50 Ω		ORREC		SEI		#Avg Typ	ALIGN AUTO e: RMS	TRAC	M Apr 30, 2021	F	requency
PASS	Ref 25.	00 dB	I	PNO: Wie FGain:Lo		#Atten: 3			Mkr1	1.849 9	96 GHz 18 dBm		Auto Tune
00	e 1 Pass												Center Fred
-5.00								~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~	-horthoush-			1.84	Start Free 8000000 GH
-15.0							<u>_</u>			- m		1.85	Stop Free 2000000 GH
45.0	~~~~	~~~	ron J	v~~.	Level .	~~~~~					~~~~~	<u>Auto</u>	CF Stej 400.000 kH Ma
55.0													Freq Offse 0 H
65.0	250000									Snon 4			Scale Typ Li
Center 1.8 #Res BW		ΠZ		#	VBW	56 kHz			Sweep 6	span 4 .667 ms (	.000 MHz 1001 pts)	209	
SG									STATUS	5			

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



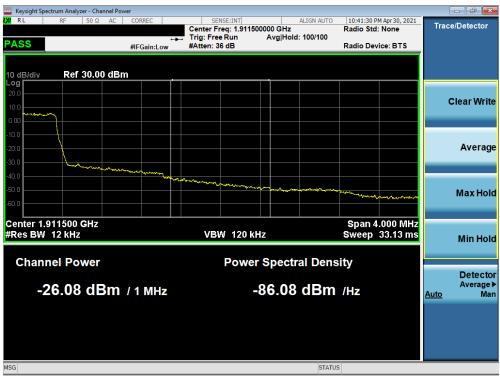
Plot 7-74. Extended Lower Band Edge Plot (LTE Band 25/2 – 1.4MHz QPSK – Full RB)

FCC ID: A3LSMF926B		PART 24 MEASUREMENT REPORT	SAMSUNG	Approved by: Technical Manager
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	pectrum Analyzer										
XU RL	RF 5	OΩ AC	CORREC		NSE:INT	#Avg Typ	ALIGN AUTO	TRAC	Apr 30, 2021	F	requency
PASS			PNO: Wide ↔ IFGain:Low	Trig: Fre #Atten: 3							Auto Tune
10 dB/div	Ref 25.0	0 dBm					Mkr1	1.910 0 -29.4	72 GHz 49 dBm		Auto Tune
Log Trac	e 1 Pass				Ĭ					(	Center Fred
15.0										1.91	0000000 GH2
5.00			~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~								Start Free
-5.00										1.90	8000000 GH2
15.0											Stop Free
-25.0					1					1.91	2000000 GH2
35.0	mm				m.	m	w-~~				CF Step
35.0	~						mon	m who y		<u>Auto</u>	400.000 kH Mar
45.0									- Mr.		Freq Offse
55.0											0 Hz
65.0											
											Scale Type
Center 1. #Res BW	.910000 GI   18 kHz	IZ	#VBV	V 56 kHz			Sweep 6	Span 4. .667 m <u>s (</u>	.000 MHz 1001 pts)	Log	Lir
1SG							STATUS				

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



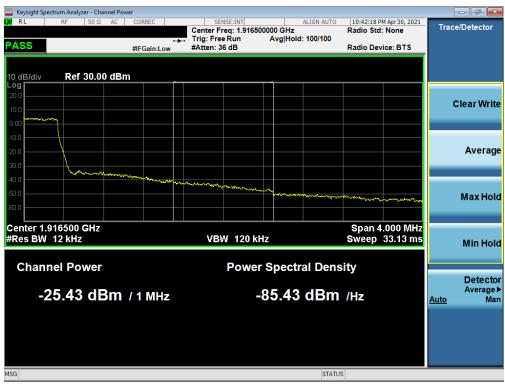
Plot 7-76. Extended Upper Band Edge Plot (LTE Band 2 – 1.4MHz QPSK – Full RB)

FCC ID: A3LSMF926B		PART 24 MEASUREMENT REPORT	SAMSUNG	Approved by: Technical Manager
Test Report S/N:	Test Dates:	EUT Type:		Dage EZ of 99
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	ectrum Analyz	er - Swep	pt SA										
X/RL	RF	50 Ω	AC	CORREC	de 🔸	SEI	NSE:INT	#Avg Typ	ALIGN AUTO e: RMS	TRAC	M Apr 30, 2021	F	requency
PASS	Ref 25	.00 d	Bm	IFGain:L		#Atten: 3			Mkr1	1.915 0	et A NN NN N A NN NN N 11 dBm		Auto Tune
Log Trac	e 1 Pass												Center Fred 15000000 GH:
5.00			<u>^</u>	<b>v~3,⊼,≹~∽3∞ -</b>	~~~~~							1.91	Start Free 3000000 GH
25.0							1					1.91	Stop Free
-35.0	~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~	ر ار					Ann.	un here	m	······	Mr. and	<u>Auto</u>	CF Stej 400.000 kH Ma
55.0													Freq Offse 0 H
-65.0													Scale Type
Center 1. #Res BW		SHz		#	¢VB₩	56 kHz			Sweep 6	Span 4 .667 ms (	.000 MHz 1001 pts)	Log	<u>Lir</u>
1SG									STATUS				

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

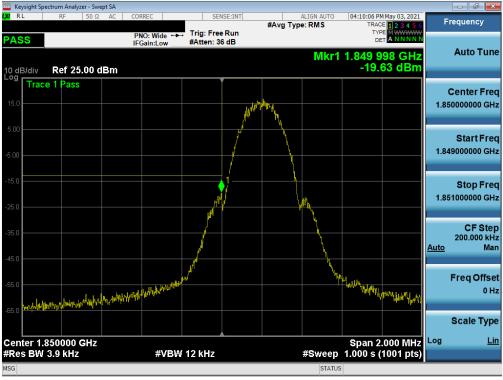


Plot 7-78. Extended Upper Band Edge Plot (LTE Band 25 – 1.4MHz QPSK – Full RB)

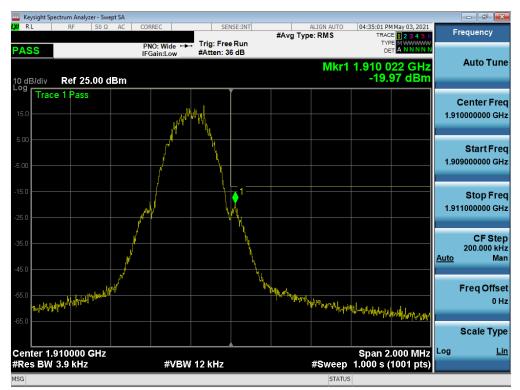
FCC ID: A3LSMF926B		PART 24 MEASUREMENT REPORT	SAMSUNG	Approved by: Technical Manager
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## **GSM/GPRS PCS**



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		PART 24 MEASUREMENT REPORT	SAMSUNG	Approved by: Technical Manager
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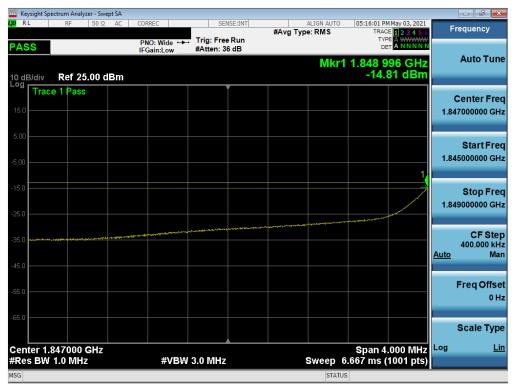
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## WCDMA PCS



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



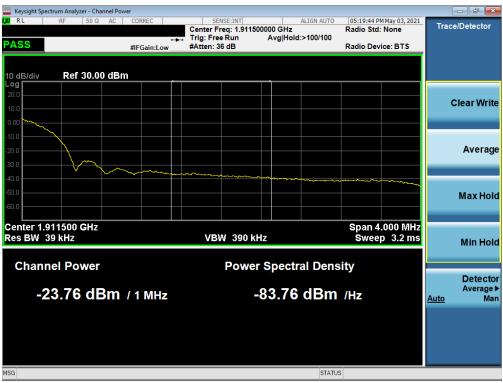
Plot 7-82. Extended Lower Band Edge Plot (WCDMA PCS - Ch. 9262)

FCC ID: A3LSMF926B		PART 24 MEASUREMENT REPORT	MSUNG	Approved by: Technical Manager	
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	pectrum Analyze	er - Swep	ot SA										
X/RL	RF	50 Ω	AC	CORREC		SE	NSE:INT	#Ava Tv	ALIGN AUTO		M May 03, 2021	Fn	equency
PASS				PNO: W IFGain:L	ide ↔ ow	Trig: Fre #Atten: 3				TY D			
10 dB/div	Ref 25.	00 di	Bm						Mkr1	1.910 ( -20.	015 GHz 61 dBm		Auto Tune
Log Trac	ce 1 Pass		~~	~~~~~	~~~~~	Long to							enter Freq 0000000 GHz
-5.00												1.902	Start Fred 2500000 GHz
-15.0							1					1.917	Stop Free 500000 GH2
-35.0							h		~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~	0. 59.0		1 <u>Auto</u>	CF Step 500000 MH: Mar
-45.0											hours	ľ	Freq Offse 0 Ha
-65.0												:	Scale Type
	.910000 G I 100 kHz	Hz		#	VBW	300 kHz			Sweep 1	Span 1 .000 ms	5.00 MHz (1001 pts)	Log	Lin
MSG									STATUS				

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		PART 24 MEASUREMENT REPORT	SAMSUNG	Approved by: Technical Manager
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## 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 ≥ 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

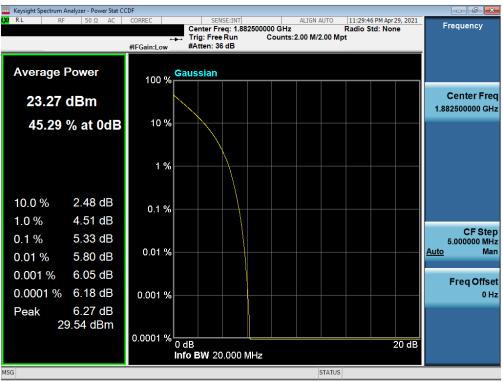
## Test Notes

None.

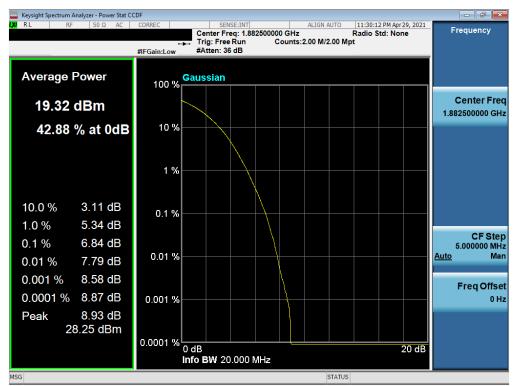
FCC ID: A3LSMF926B		PART 24 MEASUREMENT REPORT	SAMSUNG	Approved by: Technical Manager
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# LTE Band 25/2



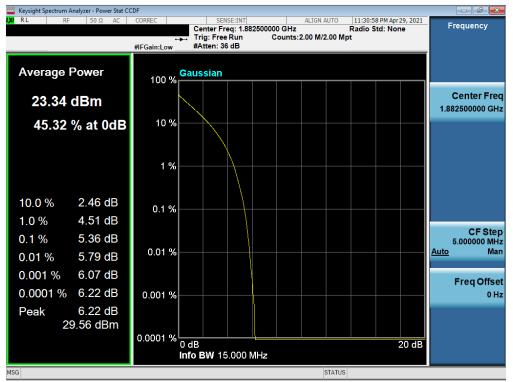
Plot 7-85. PAR Plot (LTE Band 25/2 - 20MHz QPSK - Full RB)



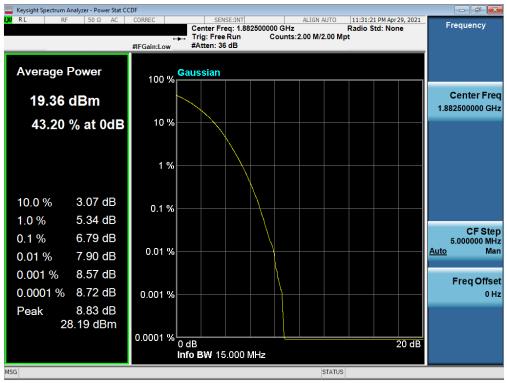
#### Plot 7-86. PAR Plot (LTE Band 25/2 - 20MHz 256-QAM - Full RB)

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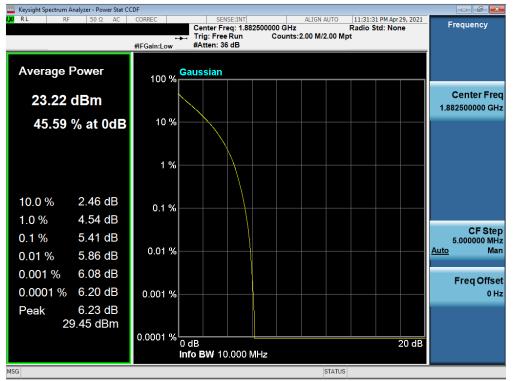




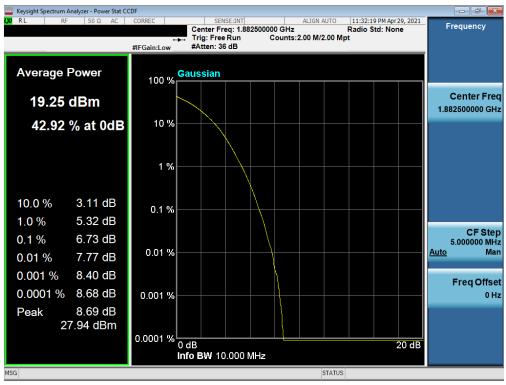
Plot 7-88. PAR Plot (LTE Band 25/2 - 15MHz 256-QAM - Full RB)

FCC ID: A3LSMF926B		PART 24 MEASUREMENT REPORT	SAMSUNG	Approved by: Technical Manager
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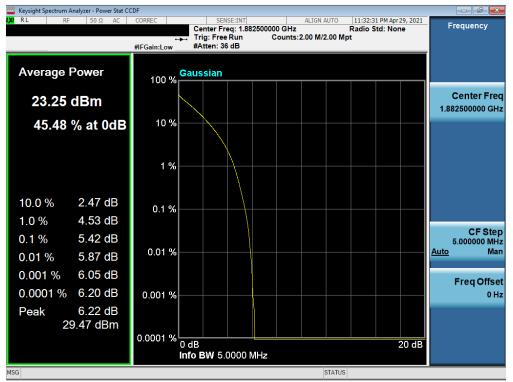




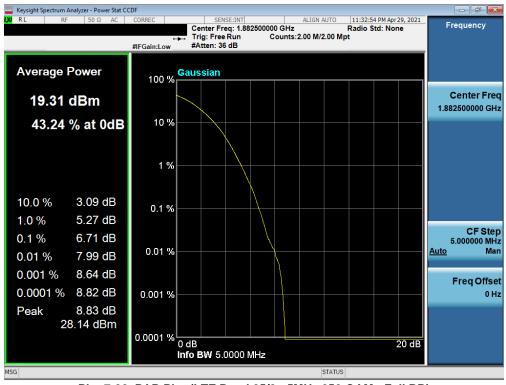
Plot 7-90. PAR Plot (LTE Band 25/2 - 10MHz 256-QAM - Full RB)

FCC ID: A3LSMF926B		PART 24 MEASUREMENT REPORT	SAMSUNG	Approved by: Technical Manager
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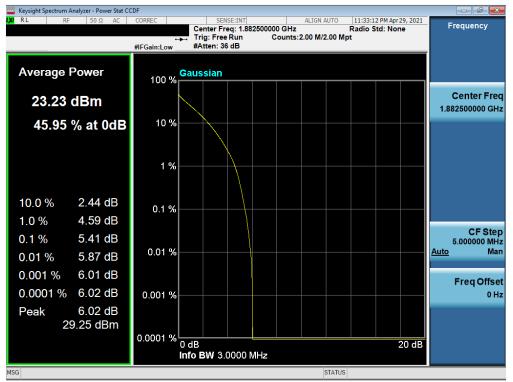




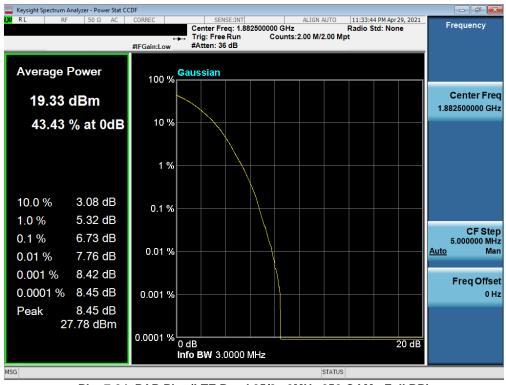
Plot 7-92. PAR Plot (LTE Band 25/2 - 5MHz 256-QAM - Full RB)

FCC ID: A3LSMF926B	PCTEST* Houd to be part of @ element	PART 24 MEASUREMENT REPORT	SAMSUNG	Approved by: Technical Manager
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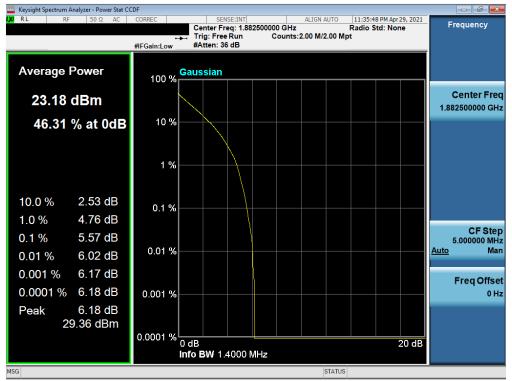




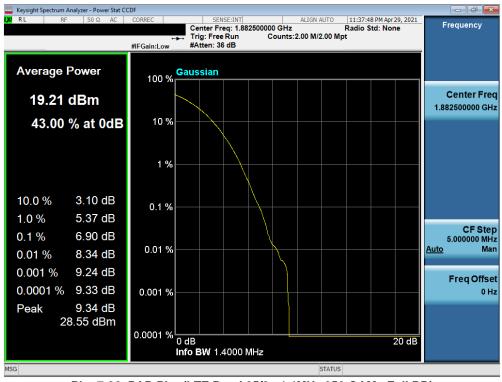
Plot 7-94. PAR Plot (LTE Band 25/2 - 3MHz 256-QAM - Full RB)

FCC ID: A3LSMF926B		PART 24 MEASUREMENT REPORT	SAMSUNG	Approved by: Technical Manager
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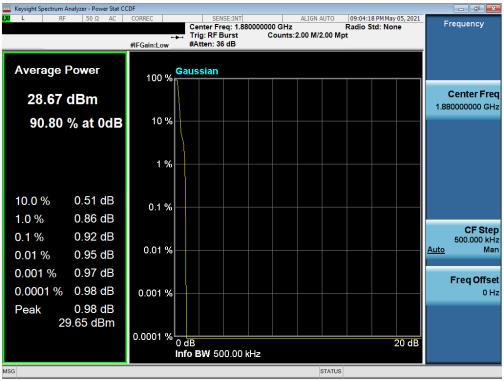


Plot 7-96. PAR Plot (LTE Band 25/2 - 1.4MHz 256-QAM - Full RB)

FCC ID: A3LSMF926B		PART 24 MEASUREMENT REPORT	SAMSUNG	Approved by: Technical Manager
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## **GSM/GPRS PCS**







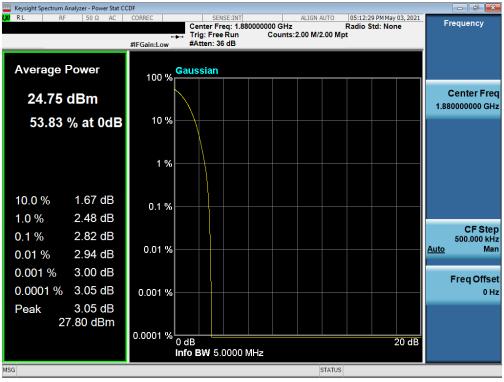
Plot 7-98. PAR Plot (EDGE, Ch. 661)

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# WCDMA PCS



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

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# 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 and horizontally polarized broadband horn antennas. All measurements are performed as RMS average measurements while the EUT is operating at maximum power, and at the appropriate frequencies.

#### Test Procedures Used

KDB 971168 D01 v03r01 - Section 5.2.1

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

#### Test Settings

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

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## Test Setup

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

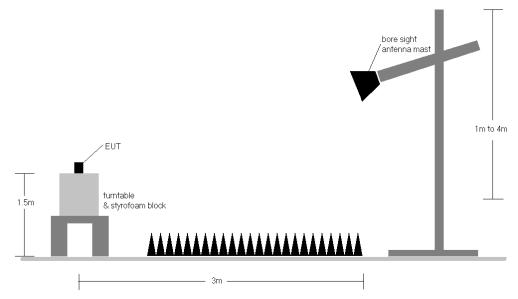


Figure 7-6. Radiated Test Setup >1GHz

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### 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.

20 MHz				[cm]	Azimuth [degree]	Ant. Gain [dBi]	RB Size/Offset	Substitute Level [dBm]	EIRP [dBm]	EIRP [Watts]	EIRP Limit [dBm]	Margin [dB]
<b>. .</b>		1860.0	Н	152.0	41.0	9.64	1 / 50	13.48	23.12	0.205	33.01	-9.89
5	QPSK	1882.5	Н	103.0	47.0	9.96	1 / 50	13.58	23.54	0.226	33.01	-9.47
2 2		1905.0	Н	114.0	30.0	10.24	1/0	13.86	24.10	0.257	33.01	-8.91
2	16-QAM	1905.0	Н	114.0	30.0	10.24	1/0	13.28	23.52	0.225	33.01	-9.49
N		1857.5	Н	152.0	41.0	9.61	1 / 37	13.49	23.09	0.204	33.01	-9.92
MHz	QPSK	1882.5	Н	103.0	47.0	9.96	1 / 37	13.57	23.53	0.225	33.01	-9.48
15 N		1907.5	Н	114.0	30.0	10.26	1 / 37	13.94	24.20	0.263	33.01	-8.81
-	16-QAM	1907.5	Н	114.0	30.0	10.26	1 / 37	13.15	23.41	0.219	33.01	-9.60
N		1855.0	Н	152.0	41.0	9.57	1 / 25	13.47	23.04	0.202	33.01	-9.97
Ę	QPSK	1882.5	Н	103.0	47.0	9.96	1 / 25	13.46	23.42	0.220	33.01	-9.59
10 MHz		1910.0	Н	114.0	30.0	10.28	1 / 25	13.88	24.16	0.261	33.01	-8.85
-	16-QAM	1910.0	Н	114.0	30.0	10.28	1 / 25	13.23	23.51	0.225	33.01	-9.50
N		1852.5	Н	152.0	41.0	9.54	1 / 24	13.60	23.13	0.206	33.01	-9.88
MHz	QPSK	1882.5	Н	103.0	47.0	9.96	1 / 24	13.60	23.56	0.227	33.01	-9.45
2 2		1912.5	Н	114.0	30.0	10.30	1 / 12	13.88	24.18	0.262	33.01	-8.83
47	16-QAM	1912.5	Н	114.0	30.0	10.30	1 / 12	13.10	23.40	0.219	33.01	-9.61
N		1851.5	Н	152.0	41.0	9.52	1 / 14	13.56	23.08	0.203	33.01	-9.93
MHz	QPSK	1882.5	Н	103.0	47.0	9.96	1 / 14	13.57	23.53	0.225	33.01	-9.48
≥ ∞		1913.5	Н	114.0	30.0	10.31	1/0	13.79	24.10	0.257	33.01	-8.91
	16-QAM	1913.5	Н	114.0	30.0	10.31	1/0	13.08	23.39	0.218	33.01	-9.62
۲ ۲		1850.7	Н	152.0	41.0	9.51	1/5	13.52	23.03	0.201	33.01	-9.98
	QPSK	1882.5	Н	103.0	47.0	9.96	1/3	13.47	23.43	0.220	33.01	-9.58
1.4 MHz		1914.3	Н	114.0	30.0	10.32	1/3	13.49	23.80	0.240	33.01	-9.21
-	16-QAM	1914.3	Н	114.0	30.0	10.32	1/3	12.65	22.96	0.198	33.01	-10.05
	Opposite Pol.	1905.0	V	100.0	255.0	10.31	1/0	12.40	22.71	0.187	33.01	-10.30
20 MHz	WCP	1905.0	Н	155.0	20.0	10.24	1/0	12.66	22.90	0.195	33.01	-10.11
	Closed	1905.0	Н	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)

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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	Н	107	42	18.11	9.51	27.62	0.578	33.01	-5.39
1880.00	GPRS1900	Н	159	22	19.26	9.93	29.19	0.829	33.01	-3.82
1909.80	GPRS1900	Н	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	Н	159	22	13.97	10.13	24.10	0.257	33.01	- <mark>8.9</mark> 1
1880.00	GPRS900 (WCP)	Н	109	12	18.00	9.93	27.93	0.620	33.01	- <mark>5.08</mark>
1880.00	GPRS1900 (Closed)	Н	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	Н	157	35	14.10	9.54	23.64	0.231	33.01	-9.37
1880.00	WCDMA1900	Н	147	163	13.51	9.93	23.44	0.221	33.01	-9.57
1907.60	WCDMA1900	Н	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)	Н	157	22	13.86	10.26	24.12	0.258	33.01	-8.89
1907.60	WCDMA1900 (Close)	Н	118	145	13.81	10.26	24.07	0.255	33.01	-8.94

Table 7-5. EIRP Data (WCDMA PCS)

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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 x RBW
- 3. Span = 1.5 times the OBW
- 4. No. of sweep points > 2 x span / RBW
- 5. Detector = RMS
- 6. Trace mode = Average (Max Hold for pulsed emissions)
- 7. The trace was allowed to stabilize

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### Test Setup

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

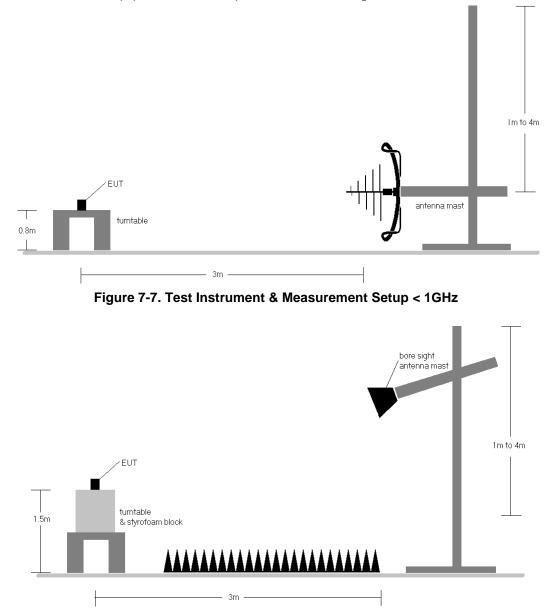


Figure 7-8. Test Instrument & Measurement Setup >1 GHz

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### Test Notes

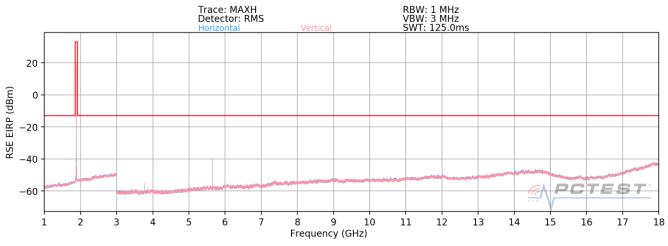
- Field strengths are calculated using the Measurement quantity conversions in KDB 971168 Section 5.8.4.
  b) E(dBµV/m) = Measured amplitude level (dBm) + 107 + Cable Loss (dB) + Antenna Factor (dB/m)
  d) EIRP (dBm) = E(dBµV/m) + 20logD 104.8; where D is the measurement distance in meters.
- 2) This 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.

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# 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	Н	330	224	-75.81	2.44	33.63	-61.62	-13.00	-48.62
5580.0	Н	220	116	-56.07	5.41	56.34	-38.92	-13.00	-25.92
7440.0	Н	-	-	-79.54	8.71	36.17	-59.08	-13.00	-46.08
9300.0	Н	-	-	-80.41	10.96	37.55	-57.71	-13.00	-44.71
11160.0	Н	-	-	-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	Н	278	182	-73.89	2.88	35.99	-59.27	-13.00	-46.27
5647.5	Н	221	115	-56.41	5.56	56.15	-39.11	-13.00	-26.11
7530.0	Н	-	-	-79.77	8.99	36.22	-59.04	-13.00	-46.04
9412.5	Н	247	21	-79.64	11.54	38.90	-56.36	-13.00	-43.36
11295.0	Н	-	-	-80.88	12.43	38.55	-56.71	-13.00	-43.71
13177.5	Н	-	-	-81.11	14.30	40.19	-55.06	-13.00	-42.06
15060.0	Н	-	-	-81.37	15.38	41.01	-54.25	-13.00	-41.25

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

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

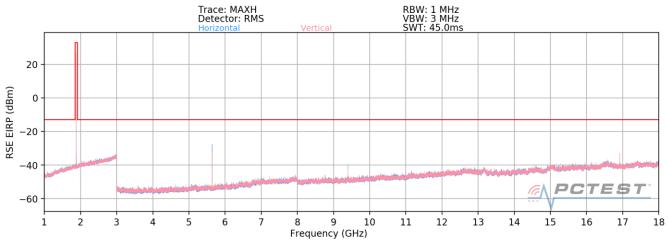
Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Analyzer Level [dBm]	AFCL [dB/m]	Field Strength [dBµV/m]	EIRP Spurious Emission Level [dBm]	Limit [dBm]	Margin [dB]
3810.00	Н	265	105	-77.05	2.30	32.25	-63.01	-13.00	-50.01
5715.00	Н	232	118	-58.41	5.47	54.06	-41.19	-13.00	-28.19
7620.00	Н	-	-	-79.69	8.88	36.19	-59.07	-13.00	-46.07
9525.00	Н	258	18	-78.71	11.06	39.35	-55.90	-13.00	-42.90
11430.00	Н	244	308	-79.79	13.50	40.71	-54.55	-13.00	-41.55
13335.00	Н	-	-	-80.96	14.71	40.75	-54.51	-13.00	-41.51
15240.00	Н	-	-	-81.21	14.59	40.38	-54.88	-13.00	-41.88
17145.00	Н	-	-	-81.47	17.88	43.41	-51.85	-13.00	-38.85

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

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## **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	Н	248	66	-67.39	5.22	44.83	-50.42	-13.00	-37.42
5550.6	Н	190	115	-46.73	8.72	68.99	-26.27	-13.00	-13.27
7400.8	Н	-	-	-71.82	12.46	47.64	-47.61	-13.00	-34.61
9251.0	Н	163	329	-66.78	14.34	54.56	-40.69	-13.00	-27.69
11101.2	Н	-	-	-73.82	17.13	50.31	-44.95	-13.00	-31.95
12951.4	Н	-	-	-73.92	19.26	52.34	-42.91	-13.00	-29.91
14801.6	Н	-	-	-74.93	21.54	53.61	-41.65	-13.00	-28.65
16651.8	Н	-	-	-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	Н	204	184	-68.28	6.10	44.82	-50.43	-13.00	-37.43
5640.0	Н	247	107	-47.56	8.18	67.62	-27.63	-13.00	-14.63
7520.0	Н	-	-	-71.34	12.75	48.41	-46.85	-13.00	-33.85
9400.0	Н	212	343	-65.30	15.43	57.13	-38.12	-13.00	-25.12
11280.0	Н	-	-	-74.08	17.43	50.35	-44.91	-13.00	-31.91
13160.0	Н	-	-	-74.27	20.67	53.40	-41.86	-13.00	-28.86
15040.0	Н	-	-	-73.67	22.29	55.62	-39.64	-13.00	-26.64
16920.0	Н	168	353	-73.09	23.82	57.73	-37.53	-13.00	-24.53

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

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

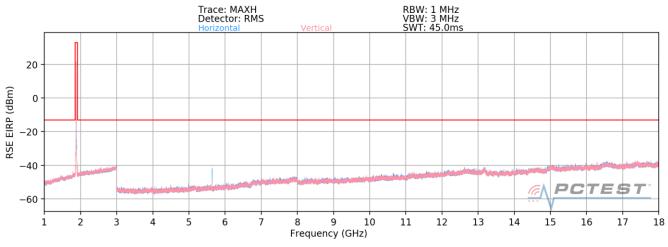
Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Analyzer Level [dBm]	AFCL [dB/m]	Field Strength [dBµV/m]	EIRP Spurious Emission Level [dBm]	Limit [dBm]	Margin [dB]
3819.6	Н	171	310	-68.25	5.96	44.71	-50.55	-13.00	-37.55
5729.4	Н	229	118	-51.45	8.57	64.12	-31.14	-13.00	-18.14
7639.2	Н	237	12	-71.34	12.81	48.47	-46.79	-13.00	-33.79
9549.0	Н	252	341	-64.95	14.64	56.69	-38.57	-13.00	-25.57
11458.8	Н	241	10	-72.56	17.77	52.21	-43.05	-13.00	-30.05
13368.6	Н	-	-	-73.60	19.79	53.19	-42.07	-13.00	-29.07
15278.4	Н	225	326	-72.53	21.57	56.04	-39.22	-13.00	-26.22
17188.2	Н	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		PART 24 MEASUREMENT REPORT	SAMSUNG	Approved by: Technical Manager
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# 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	Н	146	184	-76.97	4.74	34.77	-60.49	-13.00	-47.49
5557.2	Н	218	124	-67.41	8.51	48.10	-47.16	-13.00	-34.16
7409.6	Н	-	-	-80.11	12.59	39.48	-55.78	-13.00	-42.78
9262.0	Н	-	-	-81.56	14.58	40.02	-55.23	-13.00	-42.23
11114.4	Н	-	-	-82.09	17.06	41.97	-53.29	-13.00	-40.29

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

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	Н	-	-	-79.44	5.20	32.76	-62.50	-13.00	-49.50
5640.0	Н	242	121	-69.79	8.10	45.31	-49.95	-13.00	-36.95
7520.0	Н	-	-	-80.31	12.52	39.21	-56.05	-13.00	-43.05
9400.0	Н	-	-	-81.77	14.90	40.13	-55.13	-13.00	-42.13
11280.0	Н	-	-	-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		PART 24 MEASUREMENT REPORT	SAMSUNG	Approved by: Technical Manager	
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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	Н	217	194	-78.41	5.16	33.75	-61.51	-13.00	-48.51
5722.8	Н	209	115	-71.81	8.62	43.81	-51.45	-13.00	-38.45
7630.4	Н	-	-	-80.39	12.25	38.86	-56.40	-13.00	-43.40
9538.0	Н	-	-	-81.69	14.33	39.64	-55.62	-13.00	-42.62
11445.6	Н	-	-	-82.21	18.58	43.37	-51.89	-13.00	-38.89

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

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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

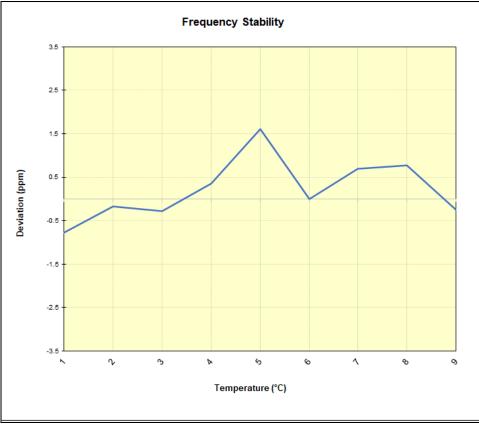
None

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LTE Band 25/2								
	Operating F	requency (Hz):	1,882,50	00,000	]			
	Ref.	Voltage (VDC):	4.3	6	]			
					-			
Voltage (%)	Power (VDC)	Temp (°C)	Frequency (Hz)	Freq. Dev. (Hz)	Deviation (%)			
		- 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			
100 %	4.36	+ 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



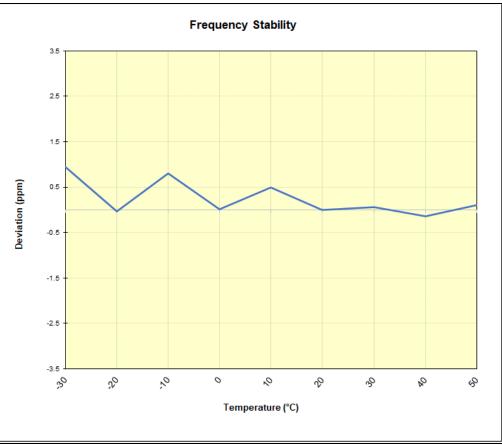
Plot 7-103. LTE Band 25/2 Frequency Stability Chart

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GSM/GPRS PCS								
	Operating F	requency (Hz):	1,880,00	00,000				
	Ref.	Voltage (VDC):	4.3	6				
Voltage (%)	Power (VDC)	Temp (°C)	Frequency (Hz)	Freq. Dev. (Hz)	Deviation (%)			
		- 30	1,880,002,637	1,764	0.0000938			
		- 20	1,880,000,820	-53	-0.000028			
		- 10	1,880,002,373	1,500	0.0000798			
		0	1,880,000,893	20	0.0000010			
100 %	4.36	+ 10	1,880,001,792	918	0.0000488			
		+ 20 (Ref)	1,880,000,874	0	0.0000000			
		+ 30	1,880,000,980	107	0.000057			
		+ 40	1,880,000,601	-273	-0.0000145			
		+ 50	1,880,001,068	195	0.0000104			
Battery Endpoint	2.46	+ 20	1,880,001,372	498	0.0000265			

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



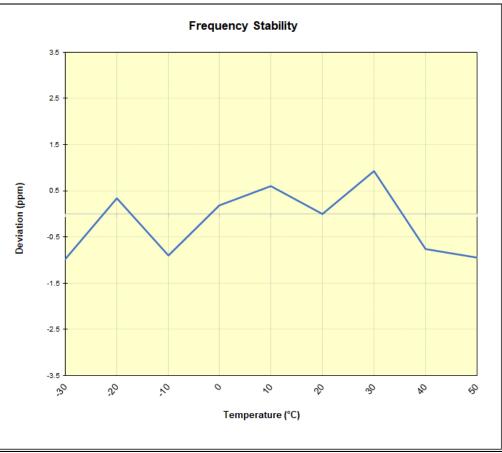
Plot 7-104. GSM/GPRS PCS Frequency Stability Chart

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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 (%)	
		- 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	
100 %	4.36	+ 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

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# 8.0 CONCLUSION

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

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