

ELEMENT WASHINGTON DC LLC

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PART 22 MEASUREMENT REPORT

Applicant Name:

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

Date of Testing: 6/15 - 7/4/2022 Test Report Issue Date: 7/7/2022 Test Site/Location: Element lab. Columbia, MD, USA Test Report Serial No.: 1M2206010070-02.A3L

FCC ID:

A3LSMF936JPN

Samsung Electronics Co., Ltd.

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

Applicant Name:

Certification SC-55C SCG16 Portable Handset PCS Licensed Transmitter Held to Ear (PCE) 22 ANSI C63.26-2015, 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.

RJ Ortanez Executive Vice President



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		Ty Fraguency		RP E		RP	Emission
Mode	Modulation	Tx Frequency Range [MHz]	Max. Power [W]	Max. Power [dBm]	Max. Power [W]	Max. Power [dBm]	Designator
GSM/GPRS	GMSK	824.2 - 848.8	0.484	26.85	0.794	29.00	244KGXW
EDGE	8-PSK	824.2 - 848.8	0.099	19.97	0.163	22.12	241KG7W
WCDMA	Spread Spectrum	826.4 - 846.6	0.070	18.43	0.114	20.58	4M15F9W

			Ty Frequency	EF	RP	EII	RP	Emission
Mode	Bandwidth	Modulation	Tx Frequency Range [MHz]	Max. Power [W]	Max. Power [dBm]	Max. Power [W]	Max. Power [dBm]	Emission Designator 9M01G7D 9M01W7D 4M54G7D 4M54W7D 2M72G7D 2M71W7D 1M10G7D
	10 MHz	QPSK	829.0 - 844.0	0.051	17.07	0.083	19.22	9M01G7D
		16QAM	829.0 - 844.0	0.043	16.32	0.070	18.47	Designator 9M01G7D 9M01W7D 4M54G7D 4M54W7D 2M72G7D 2M71W7D
	5 MHz	QPSK	826.5 - 846.5	0.051	17.05	0.083	19.20	4M54G7D
LTE Band 5	5 MHZ	16QAM	826.5 - 846.5	0.043	16.34	0.071	18.49	4M54W7D
LTE Danu 5	3 MHz	QPSK	825.5 - 847.5	0.051	17.04	0.083	19.19	2M72G7D
	3 10172	16QAM	825.5 - 847.5	0.042	16.27	0.069	18.42	ver Designator 9M01G7D 9M01W7D 4M54G7D 4M54W7D 2M72G7D 2M71W7D 1M10G7D
	1.4 MHz	QPSK	824.7 - 848.3	0.050	17.00	0.082	19.15	1M10G7D
		16QAM	824.7 - 848.3	0.042	16.26	0.069	Max. Power Emiss Design [dBm] 9M010 19.22 9M010 18.47 9M010 18.49 4M540 18.49 4M540 19.19 2M720 18.42 2M710 19.15 1M100	1M11W7D

EUT Overview

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1.0 INTRODUCTION

1.1 Scope

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

1.2 Element Test Location

These measurement tests were conducted at the Element laboratory 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 Element lab located in Columbia, MD 21046, U.S.A.

- Element Washington DC LLC 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.
- Element Washington DC LLC 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).
- Element Washington DC LLC facility is a registered (2451B) test laboratory with the site description on file with ISED.
- Element Washington DC LLC is a Recognized U.S. Certification Assessment Body (CAB # US0110) for ISED Canada as designated by NIST under the U.S. and Canada Mutual Recognition Agreement.

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2.0 PRODUCT INFORMATION

2.1 Equipment Description

The Equipment Under Test (EUT) is the **Samsung Portable Handset FCC ID: A3LSMF936JPN**. 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 22.

Test Device Serial No.: 0370M, 0402M, 0421M, 0068M

2.2 Device Capabilities

This device contains the following capabilities:

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

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

2.3 Test Configuration

The EUT was tested per the guidance of ANSI C63.26-2015. See Section 7.0 of this test report for a description of the radiated and antenna port conducted emissions tests.

This device supports wireless charging capability and, thus, is subject to the test requirements of KDB 648474 D03 v01r04. Additional radiated spurious emission measurements were performed with the EUT lying flat on an authorized wireless charging pad (WCP) Model: EP-N5100 while operating under normal conditions in a simulated call or data transmission configuration. The worst case radiated emissions data is shown in this report.

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

This device supports two additional antenna configurations for GSM, WCDMA, LTE Low bands [AFS operation]: one is with two antennas transmitting from one feed, and one is with a singular antenna transmitting. Both configurations are tested, and the worst case radiated emissions data is shown in this report.

2.4 Software and Firmware

Testing was performed on device(s) using software/firmware version SC55COMU0AVEE installed on the EUT.

2.5 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 "American National Standard for Compliance Testing of Transmitters Used in Licensed Radio Services" (ANSI C63.26-2015) 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 C63.26-2015. For emissions below 1GHz, a half-wave dipole is substituted in place of the EUT. For emissions above 1GHz, a horn antenna is substituted in place of the EUT. The substitute antenna is driven by a signal generator with the level of the signal generator being adjusted to obtain the same receive spectrum analyzer level previously recorded from the spurious emission from the EUT. The power of the emission is calculated using the following formula:

Pd [dBm] = Pg [dBm] - cable loss [dB] + antenna gain [dBd/dBi];

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

For radiated spurious emissions measurements, the field strength conversion method is used per the formulas in Section 5.2.7 of ANSI C63.26-2015. 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 414788 D01 v01r01.

Radiated power and radiated spurious emission levels are investigated with the receive antenna horizontally and vertically polarized per ANSI C63.26-2015.

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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
-	AP2-001	EMC Cable and Switch System	1/4/2022	Annual	1/4/2023	AP2-001
-	AP2-002	EMC Cable and Switch System	3/11/2022	Annual	3/11/2023	AP2-002
-	ETS-001	EMC Cable and Switch System	12/9/2021	Annual	12/9/2022	ETS-001
-	ETS-002	EMC Cable and Switch System	3/10/2022	Annual	3/10/2023	ETS-002
-	LTx1	Licensed Transmitter Cable Set	12/19/2021	Annual	12/19/2022	LTx1
-	LTx3	LIcensed Transmitter Cable Set	8/18/2021	Annual	8/18/2022	LTx3
-	LTx5	LIcensed Transmitter Cable Set	12/19/2021	Annual	12/19/2022	LTx5
-	LTx6-40	Licensed Transmitter Cable Set	12/19/2021	Annual	12/19/2022	LTx6-40
-	WL40-1	WLAN Cable Set (40GHz)	12/19/2021	Annual	12/19/2022	WL40-1
Anritsu	MT8000A	Radio Communication Test Station	8/2/2021	Annual	8/2/2022	6272337437
Anritsu	MT8821C	Radio Communication Analyzer	N/A			6201525694
Espec	ESX-2CA	Environmental Chamber	8/27/2020	Annual	8/27/2022	17620
ETS-Lindgren	3116C	DRG Horn Antenna	5/11/2021	Biennial	5/11/2023	218893
ETS Lindgren	3117	1-18 GHz DRG Horn (Medium)	4/20/2021	Biennial	4/20/2023	00125518
Keysight Technologies	N9030A	PXA Signal Analyzer (44GHz)	7/21/2021	Annual	7/21/2022	MY49430494
Keysight Technologies	N9030A	PXA Signal Analyzer (44GHz)	2/14/2022	Annual	2/14/2023	MY52350166
Keysight Technologies	N9030B	PXA Signal Analyzer, Multi-touch	1/7/2022	Annual	1/7/2023	MY57141001
Keysight Technologies	N9038A	MXE EMI Receiver	1/21/2022	Annual	1/21/2023	MY51210133
Rohde & Schwarz	CMW500	Radio Communication Tester		N/A		100976
Rohde & Schwarz	CMW500	Radio Communication Tester		N/A		112347
Rohde & Schwarz	ESU40	EMI Test Receiver (40GHz)	5/25/2021	Annual	7/25/2022	100348
Rohde & Schwarz	ESW44	EMI Test Receiver 2Hz to 44 GHz	3/28/2022	Annual	3/28/2023	101716
Rohde & Schwarz	TC-TA18	Cross Polarized Vivaldi Test Antenna	8/13/2020	Biennial	8/13/2022	101073
Sunol	JB5	Bi-Log Antenna (30M - 5GHz)	7/27/2020	Biennial	7/27/2022	A051107
Sunol	JB6	LB6 Antenna	11/13/2020	Biennial	11/13/2022	A082816

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

 $\begin{array}{l} \text{GSM BW} = 250 \text{ kHz} \\ \text{G} = \text{Phase Modulation} \\ \text{X} = \text{Cases not otherwise covered} \\ \text{W} = \text{Combination (Audio/Data)} \end{array}$

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 E = Frequency Modulation

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

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:	A3LSMF936JPN
FCC Classification:	PCS Licensed Transmitter Held to Ear (PCE)
Mode(s):	<u>GSM/GPRS/WCDMA/LTE</u>

Test Condition	Test Description	FCC Part Section(s)	Test Limit	Test Result	Reference
	Transmitter Conducted Output Power	2.1046(a), 2.1046(c)	N/A	PASS	Section 7.2
G	Occupied Bandwidth	2.1049(h)	N/A	PASS	Section 7.3
CONDUCTED	Conducted Band Edge / Spurious Emissions	2.1051, 22.917(a)	≥ 43 + 10 log (P[Watts]) dB of attenuation below transmitter power	PASS	Sections 7.4, 7.5
CON	Peak-to-Average Ratio	N/A	≤ 13 dB	PASS	Section 7.6
	Frequency Stability	2.1055, 22.355	The carrier frequency of the transmitter must be maintained within the 2.5ppm	PASS	Section 7.9
RADIATED	Effective Radiated Power / Equivalent Isotropic Radiated Power	22.913(a)(5)	< 7 Watts max. ERP	PASS	Section 7.7
RADI	Radiated Spurious Emissions	2.1053, 22.917(a)	> 43 + 10 log10 (P[Watts]) for all out-of-band emissions	PASS	Section 7.8

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.
- All conducted emissions measurements are performed with automated test software to capture the corresponding plots necessary to show compliance. The measurement software utilized is EMC Software Tool v1.1.

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7.2 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

ANSI C63.26-2015 - Section 5.4.4

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 7-1. Test Instrument & Measurement Setup

Test Notes

None.

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LTE Band 5

Keysight Spectrum Analyzer - Occupied E	3W				
IXI RL RF 50Ω DC	CORREC	SENSE:INT Center Freq: 836.500000 MH Trig: Free Run Avg #Atten: 36 dB	ALIGN AUTO z Hold: 100/100	08:26:21 PM Jun 15, 2022 Radio Std: None Radio Device: BTS	Trace/Detector
10 dB/div Ref 40.00 dB	m				
30.0 20.0		Mall Marganese Security Marganese Security	<u>م</u>		Clear Write
10.0 0.00 -10.0 -20.0	MIN		howala		Average
-30.0				him many	Max Hold
Center 836.50 MHz Res BW 240 kHz		#VBW 750 kHz		Span 25.00 MHz Sweep 1 ms	Min Hold
Occupied Bandwid 9 Transmit Freg Error	ith .0137 MH -15.474 kl			7 dBm 9.00 %	Detector Peak▶ Auto Man
x dB Bandwidth	10.14 MI			.00 dB	
MSG			STATU	S	

Plot 7-1. Occupied Bandwidth Plot (LTE Band 5 - 10MHz QPSK - Full RB)



Plot 7-2. Occupied Bandwidth Plot (LTE Band 5 - 10MHz 16-QAM - Full RB)

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Plot 7-3. Occupied Bandwidth Plot (LTE Band 5 - 5MHz QPSK - Full RB)



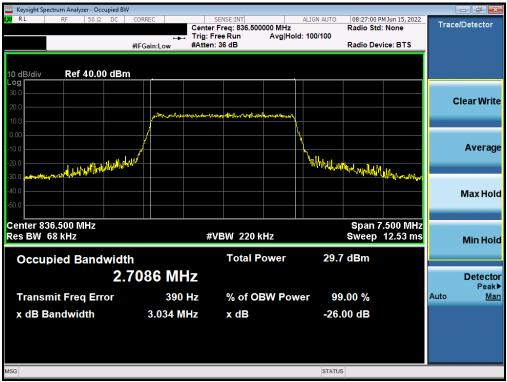
Plot 7-4. Occupied Bandwidth Plot (LTE Band 5 - 5MHz 16-QAM - Full RB)

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Plot 7-5. Occupied Bandwidth Plot (LTE Band 5 - 3MHz QPSK - Full RB)



Plot 7-6. Occupied Bandwidth Plot (LTE Band 5 - 3MHz 16-QAM - Full RB)

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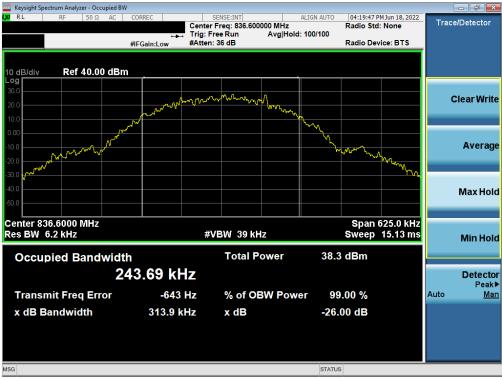


Plot 7-8. Occupied Bandwidth Plot (LTE Band 5 - 1.4MHz 16-QAM - Full RB)

FCC ID: A3LSMF936JPN	PART 22 MEASUREMENT REPORT		Approved by: Technical Manager
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GPRS Cell



Plot 7-9. Occupied Bandwidth Plot (GPRS, Ch. 190)



Plot 7-10. Occupied Bandwidth Plot (EDGE, Ch. 190)

FCC ID: A3LSMF936JPN		PART 22 MEASUREMENT REPORT	
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WCDMA Cell

🔤 Keysight Spectrum Analyze													
LXI RL RF	50 Ω D	00 00	RREC			NSE:INT reg: 836.60	0000 N		ALIGN AUTO	12:06:22 / Radio Std	MJun 16, 2022	Trac	e/Detector
				÷	Trig: Fre	e Run			100/100				
		#11	Gain:Lo	w	#Atten: 3	l6 dB				Radio Dev	/ice: BTS		
	0.00 c	dBm											
Log 30.0													
20.0													Clear Write
10.0				son a	ᠾᢦᡅᢝᡭᡷᢪᡟ᠋᠕ᡗ᠂ᢦᢦ	- marine	when h						
0.00			(ς					
-10.0													Average
-20.0			كمر					- ¹					
~ ~ ~	monor	~~~~	1 W						herend	my m			
-30.0											moren and		
-50.0											a headaana		Max Hold
-30.0													
Center 836.600 MI	z										5.00 MHz		
Res BW 150 kHz					#VE	3W 910	кНz			SW	eep 1 ms		Min Hold
Occupied Ba	ndw	idth				Total I	owe	r	30.2	2 dBm			
Occupied Ba			40										
		4.15	018	MIH	IZ								Detector Peak
Transmit Freq	Error	r	6.4	71 kl	Hz	% of O	BW	Powe	er 99	0.00 %		Auto	Mar
x dB Bandwidt			4 77	79 MI	H7	x dB			-26	00 dB			
					12	AUD			-20.				
MSG									STATU	-			
Wod									STATUS				

Plot 7-11. Occupied Bandwidth Plot (WCDMA, Ch. 4183)

FCC ID: A3LSMF936JPN		PART 22 MEASUREMENT REPORT	Approved by: Technical Manager
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7.3 Spurious and Harmonic Emissions at Antenna Terminal

Test Overview

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

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

Test Procedure Used

ANSI C63.26-2015 – Section 5.7.4

Test Settings

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

Test Setup

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



Figure 7-2. Test Instrument & Measurement Setup

Test Notes

1. Per Part 22, compliance with the applicable limits is based on the use of measurement instrumentation employing a resolution bandwidth 100 kHz or greater for measurements below 1GHz. However, in the 1 MHz bands immediately outside and adjacent to the frequency block a resolution bandwidth of at least one percent of the emission bandwidth of the fundamental emission of the transmitter may be employed. The emission bandwidth is defined as the width of the signal between two points, one below the carrier center frequency and one above the carrier center frequency, outside of which all emission are attenuated at least 26 dB below the transmitter power.

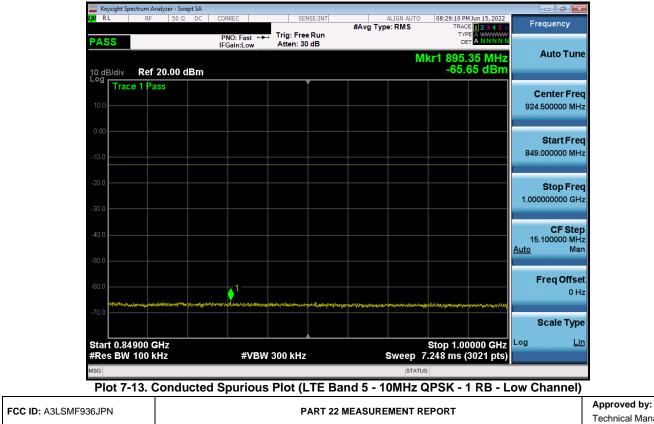
FCC ID: A3LSMF936JPN		PART 22 MEASUREMENT REPORT	Approved by: Technical Manager
Test Report S/N:	Test Dates:	Dates: EUT Type:	
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LTE Band 5

	ectrum Analy												
L <mark>XI</mark> RL	RF	50 Ω	DC	CORREC		SE	NSE:INT	#Avg Typ	ALIGN AUTO	TRAC	M Jun 15, 2022	Fr	equency
PASS				PNO: Fa	ast ↔ ∟ow	Trig: Fre Atten: 30		• • •		TYI Di			
10 dB/div Log	Ref 20).00 dE	Зm						Μ	kr1 823. -62.7	.00 MHz 80 dBm		Auto Tune
Trac	e 1 Pass						Ĭ					(Center Freq
10.0												426	5.500000 MHz
0.00													
49.9												30	Start Freq
-10.0													
-20.0													Stop Freq
-30.0												823	8.000000 MHz
													CF Step
-40.0												79 Auto	.300000 MHz Mar
-50.0													
-60.0											1		Freq Offset
		Marginal States	at a disabata dari			an she where a new literature							0 Hz
-70.0			الدرو فرونية بلار		1	تمانا أألد وانقتا أتحداد	1997, 1997, 1997, 1997, 1997, 1997, 1997, 1997, 1997, 1997, 1997, 1997, 1997, 1997, 1997, 1997, 1997, 1997, 19						Scale Type
Start 30.0	MHz									Stop 8	23.0 MHz	Log	Lin
#Res BW		z		;	#VBW	300 kHz		8	weep 3	3.06 ms (1	5861 pts)		
MSG									STATU	s			

Plot 7-12. Conducted Spurious Plot (LTE Band 5 - 10MHz QPSK - 1 RB - Low Channel)

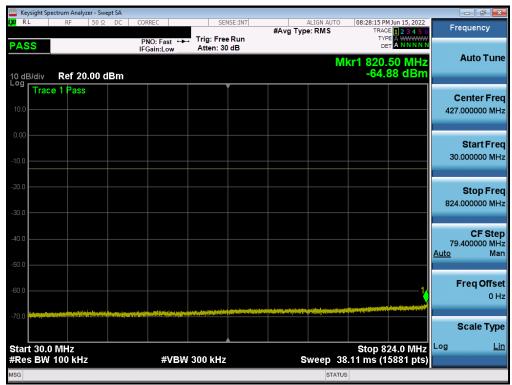


			Technical Manager
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weysight Spectrum Analyzer - Swept SA				
LXI RL RF 50 Ω DC	PNO: Fast +>+ Trig: Free I	#Avg Type: R	TYPE A WANAAAAA	Frequency
PASS 10 dB/div Ref 0.00 dBm	IFGain:Low #Atten: 26		Mkr1 1.658 0 GHz -45.765 dBm	Auto Tune
-10.0 Trace 1 Pass				Center Freq 5.500000000 GHz
-20.0				Start Freq 1.000000000 GHz
-40.0				Stop Freq 10.000000000 GHz
-60.0				CF Step 900.000000 MHz <u>Auto</u> Man
-80.0				Freq Offset 0 Hz
Start 1.000 GHz #Res BW 1.0 MHz	#VBW 3.0 MHz	Swe	Stop 10.000 GHz ep 15.60 ms (18001 pts)	Scale Type
MSG			STATUS	

Plot 7-14. Conducted Spurious Plot (LTE Band 5 - 10MHz QPSK - 1 RB - Low Channel)



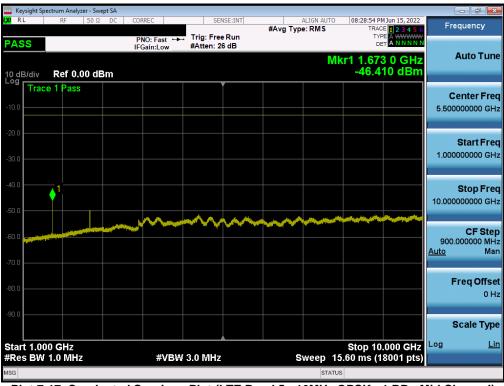
Plot 7-15. Conducted Spurious Plot (LTE Band 5 - 10MHz QPSK - 1 RB - Mid Channel)

FCC ID: A3LSMF936JPN		PART 22 MEASUREMENT REPORT	Approved by: Technical Manager	
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		ctrum Analy												
LXI RI	L	RF	50 Ω	DC	CORR	EC	S	ENSE:INT	#Avg Typ	ALIGN AUTO		1 Jun 15, 2022 E 1 2 3 4 5 6	Fre	quency
PAS	S): Fast ↔ iin:Low	Trig: Fr Atten:			М	TYF DE kr1 849.		,	Auto Tune
10 dE Log		Ref 20		Bm							-65.	72 dBm		
10.0	Trace	e 1 Pass												enter Freq 500000 MHz
0.00														Start Freq
-20.0														Stop Freq
-30.0 -40.0														CF Step
-50.0													<u>Auto</u>	Man
-60.0	1-		leylard, gösigetert	يە بەر يەر بەر يەر بەر يەر يەر يەر يەر يەر يەر يەر يەر يەر ي		eren antal direct	and a live a signal		ىلىرىمىيى ئۇرۇر ھۆكۈرىمىيى تىرىد	and the second	neysandar staden stangeredyt	lationartessalesanessigning	F	r eq Offset 0 Hz
-70.0														cale Type
#Res		900 GH 100 kH				#VB۱	№ 300 kH	z			7.248 ms (0000 GHz 3021 pts)	Log	Lin
MSG										STATU	S			

Plot 7-16. Conducted Spurious Plot (LTE Band 5 - 10MHz QPSK - 1 RB - Mid Channel)



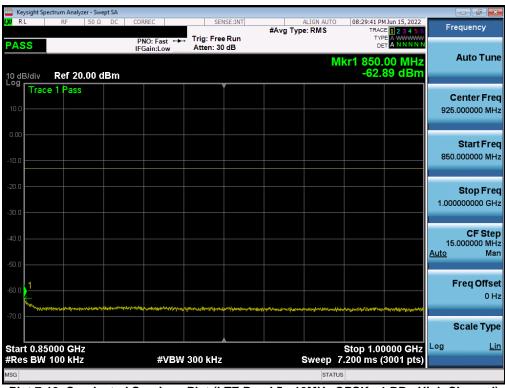
Plot 7-17. Conducted Spurious Plot (LTE Band 5 - 10MHz QPSK - 1 RB - Mid Channel)

FCC ID: A3LSMF936JPN		PART 22 MEASUREMENT REPORT	Approved by: Technical Manager
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	ctrum Analyzer - S						
LXI RL	RF 50	ΩDC	CORREC	SENSE:INT	ALIGN AL #Avg Type: RMS		Frequency
PASS			PNO: Fast ↔ IFGain:Low	 Trig: Free Run Atten: 30 dB 		TYPE A WWWW DET A NNNN	
10 dB/div Log	Ref 20.00	dBm				Mkr1 821.65 MHz -64.946 dBm	Auto Tune
Trace	e 1 Pass			Ĭ			Center Freq
10.0							427.000000 MHz
0.00							Start Freq
-10.0							30.000000 MHz
-20.0							Stop Freq
-30.0							824.000000 MHz
(0.0)							CF Step
-40.0							79.400000 MHz <u>Auto</u> Man
-50.0							
-60.0						1	Freq Offset 0 Hz
-70.0					per per anticipation de la company de la La company de la company de		Casla Trma
							Scale Type
Start 30.0 #Res BW			#VBV	/ 300 kHz	Sweep	Stop 824.0 MHz 38.11 ms (15881 pts)	
MSG						TATUS	

Plot 7-18. Conducted Spurious Plot (LTE Band 5 - 10MHz QPSK - 1 RB - High Channel)



Plot 7-19. Conducted Spurious Plot (LTE Band 5 - 10MHz QPSK - 1 RB - High Channel)

FCC ID: A3LSMF936JPN		PART 22 MEASUREMENT REPORT	Approved by: Technical Manager
Test Report S/N:	Test Dates:	st Dates: EUT Type:	
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	ectrum Analyzer - S										×
LXIRL	RF 50	Ω DC	CORREC	SEI	NSE:INT	#Avg Typ	ALIGN AUTO		MJun 15, 2022	Frequency	у
PASS			PNO: Fast 🔸	Trig: Free #Atten: 2				TY	PE A WWWWW T A N N N N N		
1,400			IFGain:Low	#Atten: 2	0 ab		8/1			Auto 1	Tune
10 dB/div	Ref 0.00 (Rm					IVIP	-45.7	8 0 GHz 37 dBm		
Log	e 1 Pass			,							
										Center	
-10.0										5.50000000	GHz
-20.0											
-20.0										Start	Freq
-30.0										1.00000000) GHz
-40.0	1									Stop	Frea
	Y									10.00000000	
-50.0											
~~~~										CF	Step
-60.0										900.00000	) MHz
-70.0										<u>Auto</u>	Man
										<b>F</b>	
-80.0										Freq O	0 Hz
											0 112
-90.0										O colo 1	Turne I
										Scale 1	Type
Start 1.00								Stop 10	.000 GHz	Log	Lin
#Res BW	1.0 MHz		#VBW	3.0 MHz		s	weep 15	i.60 ms (1	8001 pts)		
MSG							STATUS	5			

Plot 7-20. Conducted Spurious Plot (LTE Band 5 - 10MHz QPSK - 1 RB - High Channel)

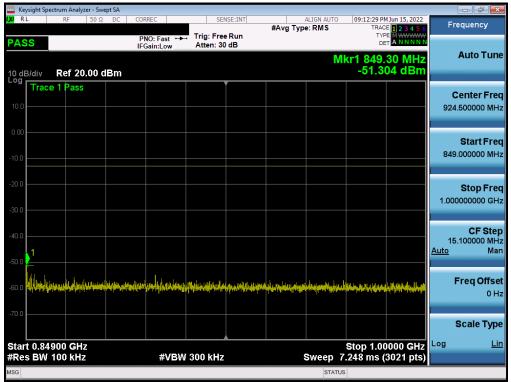
FCC ID: A3LSMF936JPN		PART 22 MEASUREMENT REPORT	Approved by: Technical Manager			
Test Report S/N:	Test Dates:	Fest Dates: EUT Type:				
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# **GSM/GPRS** Cell

		rum Analyzei	r - Swep	et SA										
<mark>l,XI</mark> RL		RF	50 Ω	DC C	ORREC		SEI	NSE:INT	#Avg Typ	ALIGN AUTO		MJun 16, 2022	F	requency
PAS	S				PNO: Fa FGain:Lo		Trig: Free #Atten: 3		#rtvg i yp	e. 11113	TYI DI			
10 dB	/div	Ref 20.0	00 di	3m						MI	(r1 822. -35.2	75 MHz 68 dBm		Auto Tune
Log 10.0 -	Trace	1 Pass												Center Freq 5.500000 MHz
0.00 - -10.0 -													30	Start Freq 0.000000 MHz
-20.0 - -30.0 -												1	823	Stop Freq 3.000000 MHz
-40.0 -													79 <u>Auto</u>	CF Step 9.300000 MHz Man
-60.0	lag betal benege Monostraction (	eljin nandelstand referentingen	Hyylagon () Dal fewa (*	Y LA DIAN DAN DAN	We <mark>ylindanı</mark> ed. olubolu		a laga sagari da gara da Para	Algen Hill Sport And Olympics at which is	na (Mintan Yerle) yana A na ang kanang kana A na ang kanang	a y fange Kang a Kang da yang da ya Ang mang sang sang sang sang sang sang sang s		Terresting Constructions		Freq Offset 0 Hz
-70.0	: 30.0	٩Hz									Stop 8	23.0 MHz	Log	Scale Type <u>Lin</u>
		00 kHz			#	VBW	300 kHz		S	weep 38	.06 ms (1	5861 pts)		
MSG										STATUS				

Plot 7-21. Conducted Spurious Plot (GPRS Ch. 128)



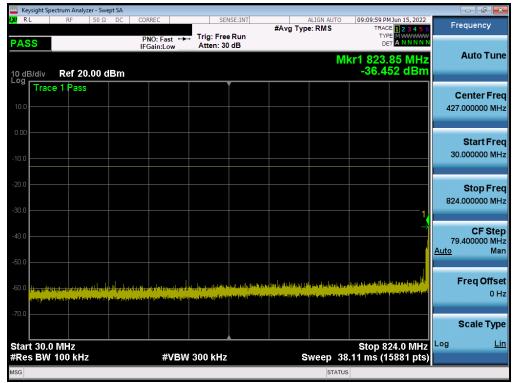
#### Plot 7-22. Conducted Spurious Plot (GPRS Ch. 128)

FCC ID: A3LSMF936JPN		PART 22 MEASUREMENT REPORT	Approved by: Technical Manager		
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© 2022 ELEMENT		·	V3.0 1/4/2022		



	ght Spectru	m Analyzer	- Swept	SA										
IXI RL		RF 5	50 Ω	DC CO	ORREC		SEI	SE:INT	#Avg Typ	ALIGN AUT		AM Jun 16, 2022	Fr	equency
PASS	<b>;</b>				PNO: Fa FGain:Lo	ist ↔ ow_	Trig: Free #Atten: 3		#7 <b>19</b> 1 JF					Auto Tune
10 dB/	div R	ef 0.00	dBn	n						l	Mkr1 9.1 -32.	89 5 GHz 994 dBm		Auto Tune
Log	Trace 1	Pass												Center Fred
-20.0													5.50	000000 GH2
-30.0												<u>1</u>	1.00	Start Fred
-40.0				a land an hair a		obride di jere			Anna att allanti	li yan kanadar Manadari yang kanadari yang kanadari yang kanadari kanadari kanadari kanadari kanadari kanadari	مر حدر رومی واللوں استاد و میں واللوں	Hall Strangerstrand Straft		
-50.0	and a line of the second s Second second s			and the second second									10.00	Stop Fred 0000000 GH:
-60.0														CF Step
-70.0													900 <u>Auto</u>	0.000000 MH Mar
-80.0														Freq Offse
-90.0														0 H
														Scale Type
	1.000 C BW 1.0				#	VBW	3.0 MHz		s	weep	Stop 1 15.60 ms	0.000 GHz (18001 pts)	Log	Lir
MSG											ATUS			

Plot 7-23. Conducted Spurious Plot (GPRS Ch. 128)



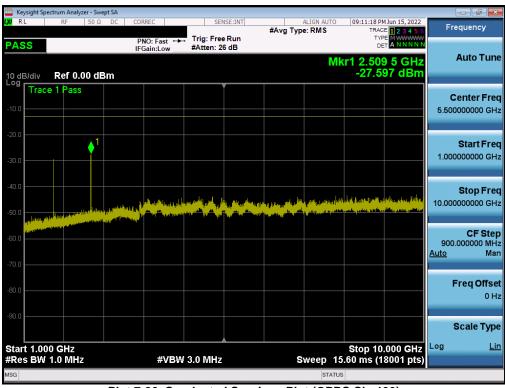


FCC ID: A3LSMF936JPN		PART 22 MEASUREMENT REPORT				
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_		m Analyzer - Sw										×
LXI RL		RF 50 Ω	DC DC	CORREC	SEI	NSE:INT	#Avg Typ	ALIGN AUTO		MJun 15, 2022	Frequenc	У
PASS				PNO: Fast ++ IFGain:Low	Trig: Free Atten: 30				TYF			
				IFGaIn:Low	Atten. 30	ub .		M	kr1 849.		Auto T	Tune
10 dB/	div R	ef 20.00 (	dBm						-35.	92 dBm		
	Trace 1	Pass			)	Í					Center	Erog
10.0											924.500000	
											024.000000	
0.00												_
											Start 849.00000	
-10.0											849.00000	WHZ
~ ~												
-20.0 —											Stop	-
-30.0	ı ———										1.00000000	) GHz
2	-											
-40.0	<b>\</b>										CF : 15.100000	Step
	1										Auto	Man
-50.0												
	, ili		والمتحاج والأراجة	والاطاراد وسلونه أعاقتها	بوالإدرام والبألية الدامه		-	add the second		an for the left and the	Freq O	ffset
-60.0 —												0 Hz
-70.0												
10.0											Scale	Гуре
L											Log	Lin
	0.8490 BW 10			#\/B\A	/ 300 kHz			Sween 7	Stop 1.00 7.248 ms (	JOOD GILZ	LUg	<u></u>
MSG	DW IV	0 MH2		# 8 D 9 4	-500 KHZ			STATU		502 r ptsj		
								31/10	<u> </u>			

Plot 7-25. Conducted Spurious Plot (GPRS Ch. 190)



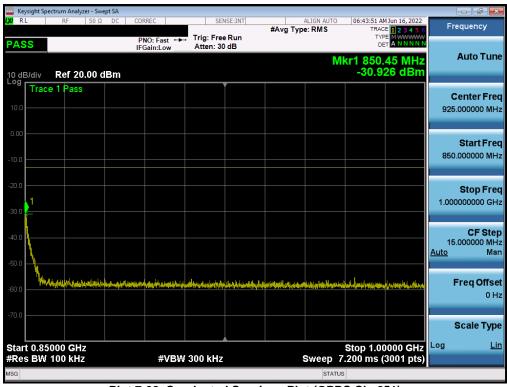
Plot 7-26. Conducted Spurious Plot (GPRS Ch. 190)

FCC ID: A3LSMF936JPN		PART 22 MEASUREMENT REPORT				
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	ight Spectrun												
LXI RL	F	RF 50	ΩDC	CORREC		SEN	ISE:INT	#Avg Tvp	ALIGN AUTO e: RMS		1 Jun 15, 2022 E 1 2 3 4 5 6	F	requency
PASS	6			PNO: Fas IFGain:Lo		Trig: Free Atten: 30				TYP			Auto Turo
10 dB/ Log	div Re	ef 20.00	dBm						М	kr1 823. -53.8	45 MHz 88 dBm		Auto Tune
	Trace 1	Pass				,						(	Center Freq
10.0													.000000 MHz
0.00													
													Start Freq
-10.0												30	0.000000 MHz
-20.0													Stop Freq
												824	4.000000 MHz
-30.0 -													
-40.0												79	CF Step 9.400000 MHz
-50.0											1.	<u>Auto</u>	Man
											<u> </u>		
-60.0 🚜	بقودينان إفاريك	and a state of the	tin a start of the	llegister og byfet. Andere vælder som	و <mark>ليا ويا من</mark>	and the product of th	an the activity of		Angen Ang	a de la companya de Esta companya de la c	ann e bran ann an		Freq Offset 0 Hz
-70.0	and the set of the set		and the particular second										
													Scale Type
	30.0 MH									Stop 8	24.0 MHz	Log	Lin
	BW 100	) kHz		#\	/BW :	300 kHz		S		3.11 ms (1	5881 pts)		
MSG									STATUS	3			

Plot 7-27. Conducted Spurious Plot (GPRS Ch. 251)



Plot 7-28. Conducted Spurious Plot (GPRS Ch. 251)

FCC ID: A3LSMF936JPN		PART 22 MEASUREMENT REPORT				
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Plot 7-29. Conducted Spurious Plot (GPRS Ch. 251)

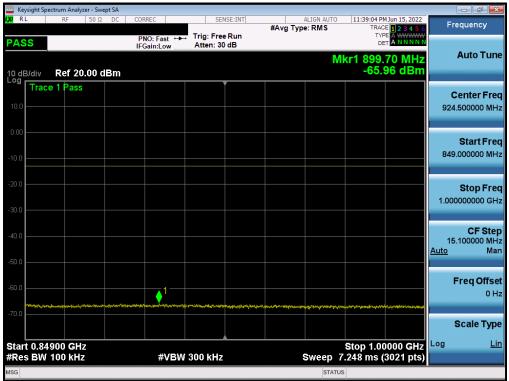
FCC ID: A3LSMF936JPN		PART 22 MEASUREMENT REPORT					
Test Report S/N:	Test Dates:	Test Dates: EUT Type:					
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# WCDMA Cell

	trum Analyzer									_	
X/RL	RF	50Ω DC	CORREC	5	SENSE:INT	#Avg Typ	ALIGN AUTO e: RMS		I Jun 15, 2022	Fred	uency
PASS			PNO: Fast IFGain:Lov					TYP DE			
10 dB/div Log	Ref 20.0	00 dBm					Μ	kr1 822. -31.52	85 MHz 22 dBm	A	uto Tune
10.0 Trace	1 Pass										nter Freq 00000 MHz
-10.0											Start Fred 00000 MHz
-20.0									1		<b>Stop Frec</b> 00000 MH;
-40.0										79.3 <u>Auto</u>	CF Step 00000 MH Mar
-60.0	n sen af at the coloradistic stress		rd ben verstere delse Bardinska		ngen geste statistication of a set	li je konstante se postante				Fr	e <b>q Offse</b> 0 H:
-70.0	ية <del>الله بي مشاهلة ال</del> ي قد الارا عند بين ا	id - Hile address of	te ar er el notad en (LER) limbel de le	The second s						S	cale Type
Start 30.0 I #Res BW 1			#\	/BW 300 kH	lz	s	weep 38	Stop 82 3.06 ms (1	20.0 191112	Log	Lin
MSG							STATUS	6			

Plot 7-30. Conducted Spurious Plot (WCDMA Ch. 4132)



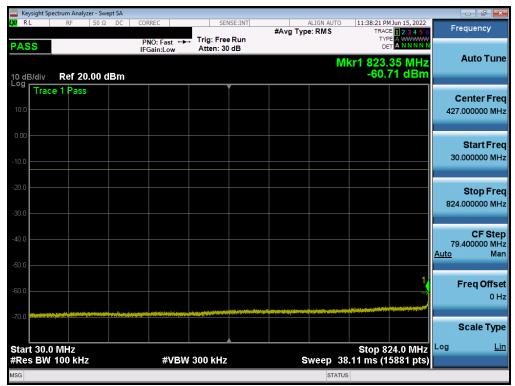
Plot 7-31. Conducted Spurious Plot (WCDMA Ch. 4132)

FCC ID: A3LSMF936JPN		PART 22 MEASUREMENT REPORT			
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	ectrum Analyzer -	- Swept SA									
LXI RL	RF 5	0Ω DC	CORREC	SEI	NSE:INT	#Avg Typ	ALIGN AUTO		MJun 15, 2022	Fr	equency
PASS			PNO: Fast ++ IFGain:Low	Trig: Free #Atten: 2		#Avg Typ	e. RIVIS	TY			
10 dB/div	Ref 0.00	dBm					Μ	kr1 1.65 -50.6	4 5 GHz 14 dBm		Auto Tune
Log Trac	e 1 Pass									c	enter Freq
-10.0										5.500	000000 GHz
-20.0											Otort From
-30.0										1.000	Start Fred 0000000 GHz
-40.0	▲1									10.000	Stop Fred
-50.0	<b>?</b>				-						
-60.0	and the second s									900	CF Step .000000 MH;
-70.0										<u>Auto</u>	Mar
										F	Freq Offset
-80.0											0 Hz
-90.0											Scale Type
								<u></u>			Lin
Start 1.00 #Res BW			#VBW	/ 3.0 MHz		s	weep 1	Stop 10 5.60 ms (1	.000 GHz 8001 pts)	209	
MSG							STATU	JS			

Plot 7-32. Conducted Spurious Plot (WCDMA Ch. 4132)



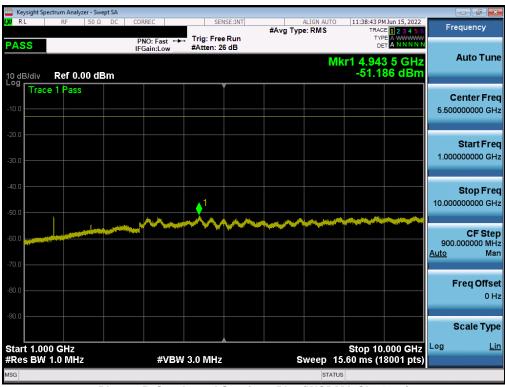


FCC ID: A3LSMF936JPN		PART 22 MEASUREMENT REPORT					
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	ectrum Analyz												
LXI RL	RF	50 Ω	DC	CORREC		SEN	ISE:INT	#Avg Typ	ALIGN AUTO		M Jun 15, 2022	Fr	equency
PASS				PNO: Fast IFGain:Lov		rig: Free Atten: 30				TYI Di			
10 dB/div Log	Ref 20	.00 dB	sm						Μ	lkr1 849. -60.	00 MHz 56 dBm		Auto Tune
Trac	e 1 Pass											c	enter Freq
10.0												924	.500000 MHz
0.00													
10.0												849	Start Freq .000000 MHz
-10.0													
-20.0													Stop Freq
-30.0												1.000	0000000 GHz
													CF Step
-40.0												15 Auto	.100000 MHz Man
-50.0												Auto	Wan
-60.0												I	=req Offset
-00.0	No. 35 advant Arabitation			وور وروار المناطق		mandaduration	. de Addesse of . b.b.	and the other star shifts also		A da mate na Maria anda a da ana	fin and the same time the Wild		0 Hz
-70.0													Scale Type
													Lin
Start 0.84 #Res BW				#\	/BW 30	00 kHz			Sweep	Stop 1.0 7.248 ms (	0000 GHz (3021 pts)		
MSG									STATU				

Plot 7-34. Conducted Spurious Plot (WCDMA Ch. 4183)



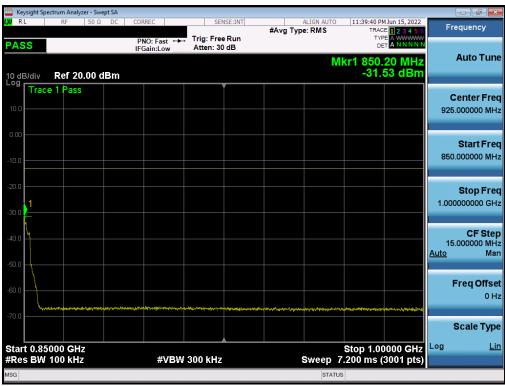
Plot 7-35. Conducted Spurious Plot (WCDMA Ch. 4183)

FCC ID: A3LSMF936JPN		PART 22 MEASUREMENT REPORT				
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CORREC	SENSE:INT					
	SENSE:1NT	#Avg Type	ALIGN AUTO		1 Jun 15, 2022 E 1 2 3 4 5 6	Frequency
PNO: Fast ↔→ IFGain:Low	Trig: Free Run Atten: 30 dB	• ,		TYF De		
			M	kr1 821. -65.3	35 MHz 09 dBm	Auto Tune
	Ĭ					Center Freq
						427.000000 MHz
						Start Freq 30.000000 MHz
						30.000000 Mil 12
						Stop Freq
						824.000000 MHz
						CF Step 79.400000 MHz
						<u>Auto</u> Man
						Freq Offset
					1	0 Hz
					a bene fan de bester of an oddie	
						Scale Type
#VBM	300 kHz		ween 39	Stop 8	24.0 MHz	Log <u>Lin</u>
# V D V V	500 MH2				soor pisj	
	IFGain:Low		PNO: Fast → Trig: Free Run IFGain:Low Atten: 30 dB	PNO: Fast       Trig: Free Run         IFGain:Low       Trig: Free Run         Atten: 30 dB       MI         Image: State of the	PNO: Fast	PNO: Fast         Trig: Free Run Atten: 30 dB         Type Community           Mkr1 821.35 MHz -65.309 dBm

Plot 7-36. Conducted Spurious Plot (WCDMA Ch. 4233)



Plot 7-37. Conducted Spurious Plot (WCDMA Ch. 4233)

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Keysight Spec													×
L <mark>XI</mark> RL	RF	50Ω [	DC C	ORREC		SEI	SE:INT	#Avg Typ	ALIGN AUTO	TRA	MJun 15, 2022 CE 1 2 3 4 5 6	Frequency	
PASS				PNO: Fa FGain:Lo		Trig: Free #Atten: 2				T) E		Auto Tu	
10 dB/div Log	Ref 0.00	) dBm	n						N	/kr1 4.95 -51.3	7 0 GHz 09 dBm	Auto Tu	ine
Trace	1 Pass											Center Fi	req
-10.0												5.500000000	GHz
-20.0													
-30.0												Start Fr 1.000000000 G	
-40.0												Stop Fr	
-50.0												10.000000000	SHZ
-60.0	and the second second					~~~						CF St	tep
												900.000000 N <u>Auto</u> N	MH2 Mar
-70.0													
-80.0												Freq Offs 0	set ) Hz
-90.0													
												Scale Ty	/pe
Start 1.000 #Res BW 1						2.0 Mille				Stop 1	0.000 GHz	—	Lin
#Res BW 1	.U WHZ			#	VBW	3.0 MHz		8	stat		18001 pts)		

Plot 7-38. Conducted Spurious Plot (WCDMA Ch. 4233)

FCC ID: A3LSMF936JPN		PART 22 MEASUREMENT REPORT					
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# 7.4 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 log₁₀(P_[Watts]), where P is the transmitter power in Watts.

### Test Procedure Used

ANSI C63.26-2015 - Section 5.7.3

### **Test Settings**

- 1. Start and stop frequency were set such that the band edge would be placed in the center of the plot
- 2. Span was set large enough so as to capture all out of band emissions near the band edge
- 3. RBW > 1% of the emission bandwidth
- 4. VBW  $\geq$  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 7-3. Test Instrument & Measurement Setup

### Test Notes

1. Per 22.917(b), 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 5



Plot 7-39. Lower Band Edge Plot (LTE Band 5 - 10MHz QPSK – Full RB)



Plot 7-40. Upper Band Edge Plot (LTE Band 5 - 10MHz QPSK – Full RB)

FCC ID: A3LSMF936JPN		PART 22 MEASUREMENT REPORT				
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🚾 Keysight Spectrum Analyzer - Swept SA 👘					
X RL RF 50 Ω DC	CORREC	SENSE:INT	ALIGN AUTO #Avg Type: RMS	08:49:10 PM Jun 15, 2022 TRACE 1 2 3 4 5 6	Frequency
PASS	PNO: Wide ↔ IFGain:Low	Trig: Free Run #Atten: 36 dB	#Avg Type: RMS		
10 dB/div Ref 25.00 dBm			Mkr1	823.987 5 MHz -25.07 dBm	Auto Tune
Trace 1 Pass		Ĭ			Center Fred
15.0					824.000000 MH
5.00					
5.00					Start Free
-5.00					817.750000 MH:
45.0					
-15.0		1			Stop Free 830.250000 MH
-25.0		<u>}</u>			830.250000 MH
		1			CF Ster
-35.0	~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~	~~~~			1.250000 MH Auto Mar
-45.0					
-55.0					FreqOffse
					0 H
-65.0					Scale Type
Center 824.000 MHz #Res BW 100 kHz	#VBW	300 kHz	Sween	Span 12.50 MHz 1.000 ms (1001 pts)	Log <u>Lir</u>
MSG	****		STATU		

Plot 7-41. Lower Band Edge Plot (LTE Band 5 - 5MHz QPSK – Full RB)



Plot 7-42. Upper Band Edge Plot (LTE Band 5 - 5MHz QPSK – Full RB)

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Plot 7-43. Lower Band Edge Plot (LTE Band 5 - 3MHz QPSK – Full RB)



Plot 7-44. Upper Band Edge Plot (LTE Band 5 - 3MHz QPSK – Full RB)

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Plot 7-45. Lower Band Edge Plot (LTE Band 5 – 1.4MHz QPSK – Full RB)

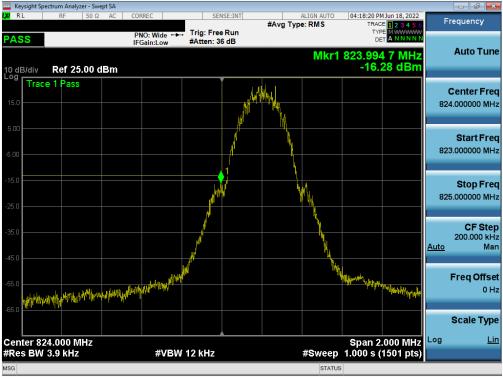


Plot 7-46. Upper Band Edge Plot (LTE Band 5 – 1.4MHz QPSK – Full RB)

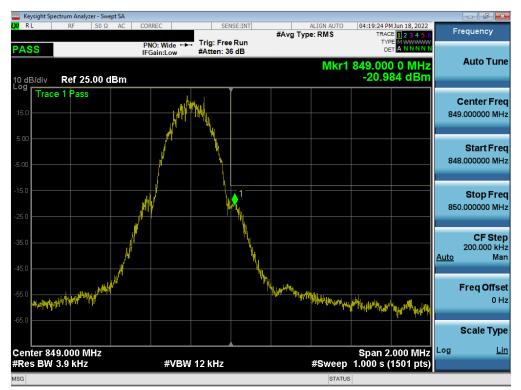
FCC ID: A3LSMF936JPN		PART 22 MEASUREMENT REPORT	Approved by: Technical Manager
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## **GSM/GPRS Cell**



Plot 7-47. Lower Band Edge Plot (GPRS Cell - Ch. 128)





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# WCDMA Cell



Plot 7-49. Lower Band Edge Plot (WCDMA Cell – Ch. 4132)



#### Plot 7-50. Upper Band Edge Plot (WCDMA Cell – Ch. 4233)

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## 7.5 Radiated Power (ERP)

### **Test Overview**

Effective Radiated Power (ERP) measurements are performed using the substitution method described in ANSI C63.26-2015 with the EUT transmitting into an integral antenna. Measurements are performed using vertically and horizontally polarized broadband horn antennas. All measurements are performed as RMS average measurements while the EUT is operating at maximum power, and at the appropriate frequencies.

### Test Procedures Used

ANSI C63.26-2015 - Section 5.2.4.4

#### **Test Settings**

- 1. Radiated power measurements are performed using the signal analyzer's "channel power" measurement capability for signals with continuous operation. For signals with burst transmission, the signal analyzer's "time domain power" measurement capability is used.
- 2. RBW = 1 5% of the expected OBW, not to exceed 1MHz
- 3. VBW  $\geq$  3 x RBW
- 4. Span = 1.5 times the OBW
- 5. No. of sweep points  $\geq 2 \times \text{span} / \text{RBW}$
- 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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#### <u>1001 0010p</u>

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

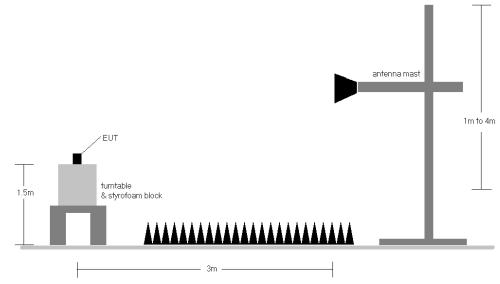


Figure 7-4. Radiated Test Setup < 1GHz

#### Test Notes

- 1) This device employs GSM, GPRS, and EDGE capabilities. The EUT was tested under all configurations and the highest powers are 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 powers are 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.

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Bandwidth	Mod.	Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Ant. Gain [dBi]	RB Size/Offset	Substitute Level [dBm]	ERP [dBm]	ERP [Watts]	ERP Limit [dBm]	Margin [dB]	EIRP [dBm]	EIRP [Watts]	EIRP Limit [dBm]	Margin [dB]
	QPSK	829.0	Н	102	327	6.70	1/0	12.43	16.98	0.050	38.45	-21.47	19.13	0.082	40.61	-21.48
10 MHz	QPSK	836.5	Н	112	334	6.73	1 / 25	12.15	16.73	0.047	38.45	-21.72	18.88	0.077	40.61	-21.73
	QPSK	844.0	Н	207	331	6.76	1 / 25	12.46	17.07	0.051	38.45	-21.38	19.22	0.083	40.61	-21.39
	16-QAM	844.0	Н	207	331	6.76	1 / 25	11.71	16.32	0.043	38.45	-22.13	18.47	0.070	40.61	-22.14
	QPSK	829.0	Н	102	327	6.67	1 / 12	12.53	17.05	0.051	38.45	-21.40	19.20	0.083	40.61	-21.41
5 MHz	QPSK	836.5	Н	112	334	6.73	1 / 12	12.23	16.81	0.048	38.45	-21.64	18.96	0.079	40.61	-21.65
3 WHZ	QPSK	844.0	Н	207	331	6.78	1 / 12	12.35	16.99	0.050	38.45	-21.46	19.14	0.082	40.61	-21.47
	16-QAM	844.0	Н	207	331	6.78	1 / 12	11.71	16.34	0.043	38.45	-22.11	18.49	0.071	40.61	-22.11
	QPSK	829.0	Н	102	327	6.66	1/7	12.53	17.04	0.051	38.45	-21.41	19.19	0.083	40.61	-21.42
3 MHz	QPSK	836.5	Н	112	334	6.73	1/7	12.03	16.61	0.046	38.45	-21.84	18.76	0.075	40.61	-21.85
3 11112	QPSK	844.0	Н	207	331	6.79	1/7	12.36	17.01	0.050	38.45	-21.45	19.16	0.082	40.61	-21.45
	16-QAM	844.0	Н	207	331	6.79	1/7	11.62	16.27	0.042	38.45	-22.19	18.42	0.069	40.61	-22.19
	QPSK	829.0	Н	102	327	6.66	1/3	12.50	17.00	0.050	38.45	-21.45	19.15	0.082	40.61	-21.45
1.4 MHz	QPSK	836.5	Н	112	334	6.73	1/3	12.11	16.68	0.047	38.45	-21.77	18.83	0.076	40.61	-21.77
1.4 MITZ	QPSK	844.0	Н	207	331	6.77	1/3	12.37	16.99	0.050	38.45	-21.46	19.14	0.082	40.61	-21.47
	16-QAM	844.0	Н	207	331	6.77	1/3	11.64	16.26	0.042	38.45	-22.20	18.41	0.069	40.61	-22.20
	QPSK (Opposite Pol.)	844.0	V	137	48	6.36	1 / 49	12.60	16.81	0.048	38.45	-21.64	18.96	0.079	40.61	-21.65
10 MHz	QPSK (Half Open)	844.0	Н	190	331	6.76	1 / 49	11.89	16.50	0.045	38.45	-21.95	18.65	0.073	40.61	-21.96
	QPSK (WCP)	844.0	Н	188	350	6.76	1 / 49	8.97	13.58	0.023	38.45	-24.87	15.73	0.037	40.61	-24.88

#### Table 7-2. ERP Data (LTE Band 5 _Ant A + Ant B) _OPEN

Bandwidth	Mod.	Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Ant. Gain [dBi]	RB Size/Offset	Substitute Level [dBm]	ERP [dBm]	ERP [Watts]	ERP Limit [dBm]	Margin [dB]	EIRP [dBm]	EIRP [Watts]	EIRP Limit [dBm]	Margin [dB]
	QPSK	829.0	Н	197	205	6.70	1 / 25	7.91	12.46	0.018	38.45	-25.99	14.61	0.029	40.61	-26.00
10 MHz	QPSK	836.5	Н	201	205	6.73	1/0	8.10	12.68	0.019	38.45	-25.77	14.83	0.030	40.61	-25.78
	QPSK	844.0	Н	191	204	6.76	1/0	7.42	12.03	0.016	38.45	-26.42	14.18	0.026	40.61	-26.43
	16-QAM	836.5	H	201	205	6.73	1/0	7.22	11.80	0.015	38.45	-26.65	13.95	0.025	40.61	-26.66
	QPSK	829.0	Н	197	205	6.70	1 / 12	7.98	12.53	0.018	38.45	-25.92	14.68	0.029	40.61	-25.93
5 MHz	QPSK	836.5	Н	201	205	6.73	1 / 12	8.18	12.76	0.019	38.45	-25.69	14.91	0.031	40.61	-25.70
JIMITZ	QPSK	844.0	Н	191	204	6.76	1 / 12	7.34	11.95	0.016	38.45	-26.50	14.10	0.026	40.61	-26.51
	16-QAM	829.0	H	197	205	6.70	1 / 12	7.14	11.69	0.015	38.45	-26.76	13.84	0.024	40.61	-26.76
	QPSK	829.0	Н	197	205	6.70	1/7	7.97	12.52	0.018	38.45	-25.93	14.67	0.029	40.61	-25.94
3 MHz	QPSK	836.5	Н	201	205	6.73	1 / 7	7.98	12.56	0.018	38.45	-25.89	14.71	0.030	40.61	-25.90
3 10112	QPSK	844.0	Н	191	204	6.76	1 / 7	7.36	11.97	0.016	38.45	-26.49	14.12	0.026	40.61	-26.49
	16-QAM	836.5	H	201	205	6.73	1 / 7	7.14	11.72	0.015	38.45	-26.73	13.87	0.024	40.61	-26.74
	QPSK	829.0	Н	197	205	6.70	1/3	7.93	12.48	0.018	38.45	-25.97	14.63	0.029	40.61	-25.97
1.4 MHz	QPSK	836.5	Н	201	205	6.73	1/3	8.06	12.63	0.018	38.45	-25.82	14.78	0.030	40.61	-25.82
1.4 WITZ	QPSK	844.0	Н	191	204	6.76	1/3	7.34	11.95	0.016	38.45	-26.50	14.10	0.026	40.61	-26.51
	16-QAM	829.0	Н	197	205	6.70	1/3	7.07	11.62	0.015	38.45	-26.83	13.77	0.024	40.61	-26.84
10 MHz	QPSK (Opposite Pol.)	836.5	V	121	209	6.18	1 / 25	8.54	12.57	0.018	38.45	-25.88	14.72	0.030	40.61	-25.89
TO MINZ	QPSK (WCP)	836.5	Н	103	164	6.73	1/0	6.43	11.01	0.013	38.45	-27.44	13.16	0.021	40.61	-27.45

### Table 7-3. ERP Data (LTE Band 5 _Ant A) _CLOSED

Frequency [MHz]	Mode	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Substitute Level [dBm]	Ant. Gain [dBi]	ERP [dBm]	ERP [Watts]	ERP Limit [dBm]	Margin [dB]	EIRP [dBm]	EIRP [Watts]	EIRP Limit [dBm]	Margin [dB]
824.20	GPRS850	н	103	349	22.35	6.65	26.85	0.484	38.45	-11.60	29.00	0.794	40.61	-11.61
836.60	GPRS850	Н	102	351	21.88	6.74	26.47	0.444	38.45	-11.98	28.62	0.728	40.61	-11.99
848.80	GPRS850	н	106	356	21.07	6.73	25.65	0.367	38.45	-12.81	27.80	0.602	40.61	-12.81
824.20	GPRS850 (Opposite Pol.)	V	137	64	22.22	6.13	26.20	0.417	38.45	-12.25	28.35	0.684	40.61	-12.26
824.20	EDGE850	Н	103	349	15.47	6.65	19.97	0.099	38.45	-18.48	22.12	0.163	40.61	-18.49
824.20	GPRS850 (Half Open)	Н	102	319	21.77	6.65	26.27	0.424	38.45	-12.18	28.42	0.695	40.61	-12.19
824.20	GPRS850 (WCP)	Н	114	328	17.77	6.65	22.27	0.169	38.45	-16.18	24.42	0.277	40.61	-16.19

#### Table 7-4. ERP Data (GPRS Cell _Ant A + Ant B) _OPEN

Frequency [MHz]	Mode	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Substitute Level [dBm]	Ant. Gain [dBi]	ERP [dBm]	ERP [Watts]	ERP Limit [dBm]	Margin [dB]	EIRP [dBm]	EIRP [Watts]	EIRP Limit [dBm]	Margin [dB]
824.20	GPRS850	V	137	358	17.65	6.13	21.63	0.146	38.45	-16.82	23.78	0.239	40.61	-16.83
836.60	GPRS850	V	127	5	17.54	6.18	21.57	0.144	38.45	-16.88	23.72	0.235	40.61	-16.89
848.80	GPRS850	V	226	21	16.69	6.41	20.95	0.124	38.45	-17.51	23.10	0.204	40.61	-17.51
824.20	GPRS850 (Opposite Pol.)	Н	217	229	15.61	6.65	20.11	0.103	38.45	-18.34	22.26	0.168	40.61	-18.35
824.20	EDGE850	V	137	358	12.43	6.18	16.46	0.044	38.45	-21.99	18.61	0.073	40.61	-22.00
824.20	GPRS850 (WCP)	V	137	183	16.58	6.18	20.61	0.115	38.45	-17.84	22.76	0.189	40.61	-17.85

### Table 7-5. ERP Data (GPRS Cell _Ant A) _CLOSED

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Frequency [MHz]	Mode	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Substitute Level [dBm]		ERP [dBm]	ERP [Watts]	ERP Limit [dBm]	Margin [dB]	EIRP [dBm]	EIRP [Watts]	EIRP Limit [dBm]	Margin [dB]
826.40	WCDMA850	Н	103	351	13.91	6.67	18.43	0.070	38.45	-20.02	20.58	0.114	40.61	-20.02
836.60	WCDMA850	Н	104	351	13.60	6.74	18.19	0.066	38.45	-20.26	20.34	0.108	40.61	-20.27
846.60	WCDMA850	Н	203	356	12.65	6.78	17.28	0.053	38.45	-21.17	19.43	0.088	40.61	-21.17
826.40	WCDMA850(Opposite Pol.)	V	102	47	13.77	6.07	17.69	0.059	38.45	-20.76	19.84	0.096	40.61	-20.76
826.40	WCDMA850 (Half Open)	Н	155	351	13.10	6.67	17.62	0.058	38.45	-20.83	19.77	0.095	40.61	-20.83
826.40	WCDMA850 (WCP)	Н	328	345	8.72	6.67	13.24	0.021	38.45	-25.21	15.39	0.035	40.61	-25.21

#### Table 7-6. ERP Data (WCDMA Cell _Ant A + Ant B) _OPEN

Frequency [MHz]	Mode	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Substitute Level [dBm]	Ant. Gain [dBi]	ERP [dBm]	ERP [Watts]	ERP Limit [dBm]	Margin [dB]	EIRP [dBm]	EIRP [Watts]	EIRP Limit [dBm]	Margin [dB]
826.40	WCDMA850	Н	220	41	8.73	6.67	13.25	0.021	38.45	-25.20	15.40	0.035	40.61	-25.20
836.60	WCDMA850	Н	207	199	8.79	6.74	13.38	0.022	38.45	-25.07	15.53	0.036	40.61	-25.08
846.60	WCDMA850	Н	204	189	6.70	6.78	11.33	0.014	38.45	-27.12	13.48	0.022	40.61	-27.12
836.60	WCDMA850(Opposite Pol.)	V	134	16	8.11	6.18	12.14	0.016	38.45	-26.31	14.29	0.027	40.61	-26.32
836.60	WCDMA850 (WCP)	Н	122	171	6.97	6.74	11.56	0.014	38.45	-26.89	13.71	0.023	40.61	-26.90

Table 7-7. ERP Data (WCDMA Cell _Ant A) _CLOSED

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### 7.6 Radiated Spurious Emissions Measurements

#### **Test Overview**

Radiated spurious emissions measurements are performed using the field strength conversion method described in ANSI C63.26-2015 with the EUT transmitting into an integral antenna. Measurements on signals operating below 1GHz are performed using hybrid (biconical/log) antennas. Measurements on signals operating above 1GHz are performed using vertically and horizontally polarized broadband horn antennas. All measurements are performed as RMS measurements while the EUT is operating at maximum power, and at the appropriate frequencies.

#### **Test Procedures Used**

ANSI C63.26-2015 - Section 5.5.4

#### **Test Settings**

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

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

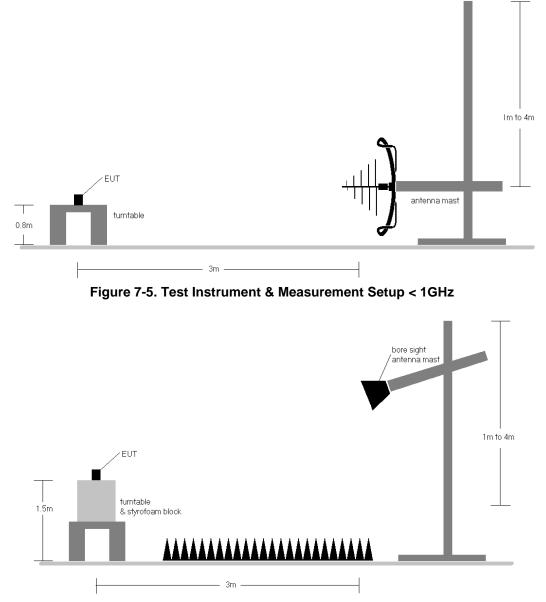


Figure 7-6. Test Instrument & Measurement Setup > 1GHz

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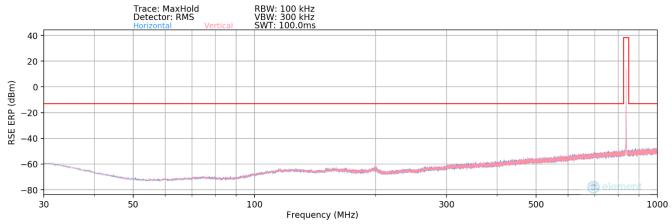
### Test Notes

- 1) Field strengths are calculated using the Measurement quantity conversions in ANSI C63.26-2015 Section 5.2.7:
  - a)  $E(dB\mu V/m) = Measured amplitude level (dBm) + 107 + Cable Loss (dB) + Antenna Factor (dB/m) b) EIRP (dBm) = E(dB\mu V/m) + 20logD 104.8; where D is the measurement distance in meters.$
- 2) This device employs GSM, GPRS, and EDGE capabilities. The EUT was tested under all configurations and the highest powers are 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 powers are 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 spectrum is measured from 9kHz to the 10th harmonic of the fundamental frequency of the transmitter. The worst-case emissions are reported.
- 7) 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.
- 8) The "-" shown in the following RSE tables are used to denote a noise floor measurement.

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# LTE Band 5 _Ant A + Ant B



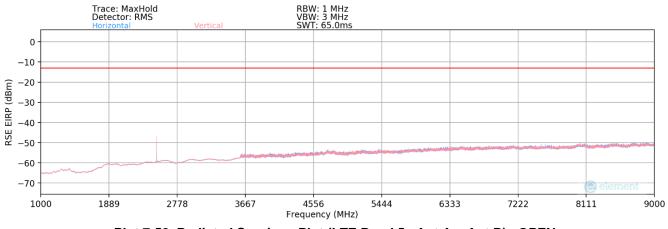


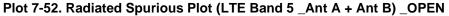
Bandwidth (MHz):	: 10								
Frequency (MHz):	836.5								
RB / Offset:	1 / 25								
Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Analyzer Level [dBm]	AFCL [dB/m]	Field Strength [dBµV/m]	ERP Spurious Emission Level [dBm]	Limit [dBm]	Margin [dB]
429.14	V	-	-	-101.26	24.25	29.99	-67.42	-13.00	-54.42
	V 7 9 Dodio	- ted Spurie					-		-54.42

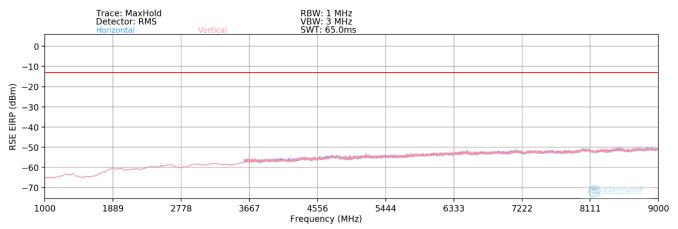
Table 7-8. Radiated Spurious Data (LTE Band 5 – Mid Channel _Ant A + Ant B)

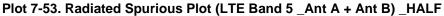
FCC ID: A3LSMF936JPN		PART 22 MEASUREMENT REPORT				
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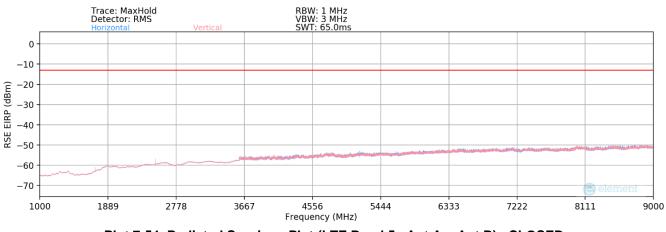














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Bandwidth (MHz):	10
Frequency (MHz):	829
RB / Offset:	1 / 25

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]
1658.00	V	-	-	-76.42	-3.75	26.83	-68.42	-13.00	-55.42
2487.00	V	311	321	-58.97	0.56	48.59	-46.66	-13.00	-33.66
3316.00	V	-	-	-77.18	1.92	31.74	-63.52	-13.00	-50.52
4145.00	V	-	-	-77.28	2.87	32.59	-62.67	-13.00	-49.67
4974.00	V	-	-	-78.09	4.07	32.98	-62.28	-13.00	-49.28

Table 7-9. Radiated Spurious Data (LTE Band 5 – Low Channel _Ant A + Ant B)

Bandwidth (MHz):	10
Frequency (MHz):	836.5
RB / Offset:	1 / 25

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]
1673.00	V	-	-	-76.42	-3.55	27.03	-68.22	-13.00	-55.22
2509.50	V	316	296	-56.13	0.80	51.67	-43.59	-13.00	-30.59
3346.00	V	-	-	-77.21	1.95	31.74	-63.52	-13.00	-50.52
4182.50	V	-	-	-77.68	2.95	32.27	-62.99	-13.00	-49.99
5019.00	V	-	-	-78.13	4.33	33.20	-62.05	-13.00	-49.05

Table 7-10. Radiated Spurious Data (LTE Band 5 – Mid Channel _Ant A + Ant B)

Bandwidth (MHz):	10
Frequency (MHz):	844
RB / Offset:	1 / 25

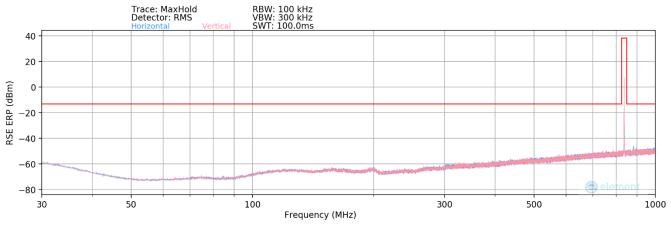
Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Analyzer Level [dBm]	AFCL [dB/m]	Field Strength [dBµV/m]	EIRP Spurious Emission Level [dBm]	Limit [dBm]	Margin [dB]
1688.00	V	-	-	-76.24	-3.19	27.57	-67.69	-13.00	-54.69
2532.00	V	344	277	-57.12	1.17	51.05	-44.20	-13.00	-31.20
3376.00	V	-	-	-76.58	1.79	32.21	-63.05	-13.00	-50.05
4220.00	V	-	-	-76.85	2.94	33.09	-62.16	-13.00	-49.16
5064.00	V	-	-	-78.49	4.86	33.37	-61.88	-13.00	-48.88

Table 7-11. Radiated Spurious Data (LTE Band 5 – High Channel _Ant A + Ant B)

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# LTE Band 5 _Ant A





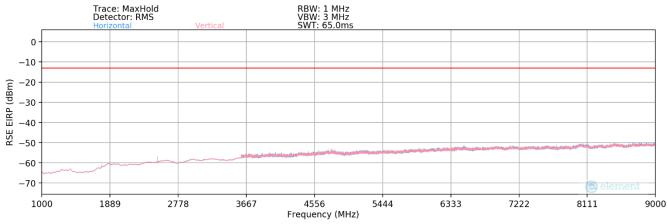
Bandwidth (MHz):	10	
Frequency (MHz):	836.5	
RB / Offset:	1 / 25	

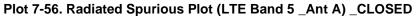
Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Analyzer Level [dBm]	AFCL [dB/m]	Field Strength [dBµV/m]	ERP Spurious Emission Level [dBm]	Limit [dBm]	Margin [dB]
778.48	Н	-	-	-99.32	29.79	37.47	-59.94	-13.00	-46.94
881.50	Н	-	-	-99.13	30.76	38.63	-58.78	-13.00	-45.78

Table 7-12. Radiated Spurious Data (LTE Band 5 – Mid Channel _Ant A)

FCC ID: A3LSMF936JPN		PART 22 MEASUREMENT REPORT			
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Bandwidth (MHz):		10							
Frequency (MHz):		829							
RB / Offset:		1 / 25							
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]
1658.00	Н	147	222	-75.76	-3.87	27.37	-67.89	-13.00	-54.89
2487.00	Н	149	137	-66.72	0.42	40.70	-54.56	-13.00	-41.56
3316.00	Н	-	-	-76.88	1.85	31.97	-63.29	-13.00	-50.29
4145.00	Н	-	-	-76.74	2.88	33.14	-62.11	-13.00	-49.11
4974.00	Н	-	-	-77.42	4.02	33.60	-61.66	-13.00	-48.66

Table 7-13. Radiated Spurious Data (LTE Band 5 – Low Channel _Ant A)

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]
1673.00	Н	-	-	-75.96	-3.66	27.38	-67.87	-13.00	-54.87
2509.50	Н	181	130	-68.41	0.73	39.32	-55.94	-13.00	-42.94
3346.00	Н	-	-	-76.65	1.85	32.20	-63.06	-13.00	-50.06
4182.50	Н	-	-	-77.14	2.76	32.62	-62.63	-13.00	-49.63
5019.00	Н	-	-	-77.90	4.18	33.28	-61.98	-13.00	-48.98

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Bandwidth (MHz):	10
Frequency (MHz):	844
RB / Offset:	1 / 25

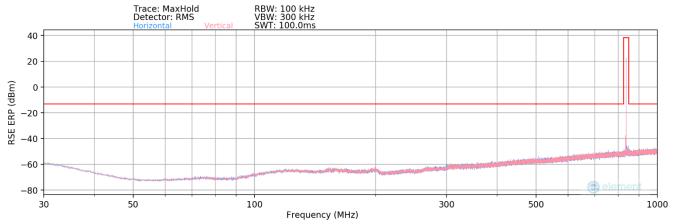
Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Analyzer Level [dBm]	AFCL [dB/m]	Field Strength [dBµV/m]	EIRP Spurious Emission Level [dBm]	Limit [dBm]	Margin [dB]
1688.00	Н	-	-	-76.21	-3.26	27.53	-67.73	-13.00	-54.73
2532.00	Н	174	132	-71.34	1.03	36.69	-58.56	-13.00	-45.56
3376.00	Н	-	-	-76.50	1.77	32.27	-62.98	-13.00	-49.98
4220.00	Н	-	-	-76.65	2.79	33.14	-62.12	-13.00	-49.12
5064.00	Н	-	-	-77.72	4.56	33.84	-61.42	-13.00	-48.42

Table 7-15. Radiated Spurious Data (LTE Band 5 – High Channel _Ant A)

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# GSM/GPRS Cell _Ant A + Ant B





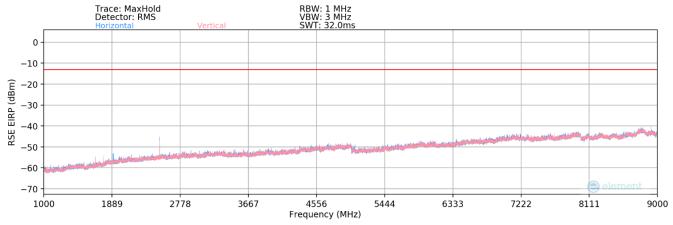
Mode:	GPRS 1 Tx Slot
Channel:	190
Frequency (MHz):	836.6

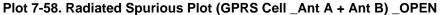
Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Analyzer Level [dBm]	AFCL [dB/m]	Field Strength [dBµV/m]	ERP Spurious Emission Level [dBm]	Limit [dBm]	Margin [dB]
161.38	Н	-	-	-93.98	19.67	32.69	-64.72	-13.00	-51.72
506.70	Н	-	-	-92.51	25.91	40.40	-57.00	-13.00	-44.00
881.60	Н	-	-	-91.55	30.75	46.20	-51.21	-13.00	-38.21

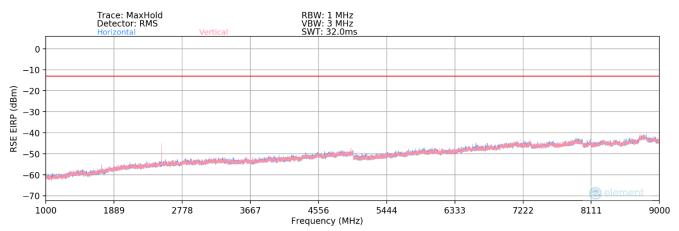
Table 7-16. Radiated Spurious Data (GPRS Cell – Mid Channel _Ant A + Ant B)

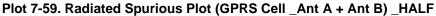
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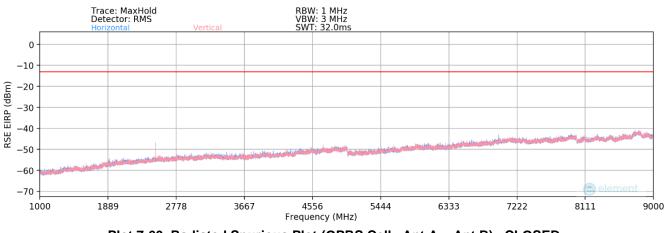














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Mode:	GPRS 1 Tx Slot
Channel:	128
Frequency (MHz):	824.2

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]
1648.40	Н	168	9	-69.26	-3.81	33.93	-61.33	-13.00	-48.33
2472.60	Н	218	143	-55.14	0.49	52.35	-42.90	-13.00	-29.90
3296.80	Н	-	-	-72.28	1.99	36.71	-58.55	-13.00	-45.55
4121.00	Н	-	-	-74.92	3.09	35.17	-60.09	-13.00	-47.09
4945.20	Н	-	-	-75.52	3.90	35.38	-59.88	-13.00	-46.88

Table 7-17. Radiated Spurious Data (GPRS Cell – Low Channel _Ant A + Ant B)

Mode:	GPRS 1 Tx Slot
Channel:	190
Frequency (MHz):	836.6

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]
1673.20	Н	153	353	-69.41	-3.54	34.05	-61.21	-13.00	-48.21
2509.80	Н	124	141	-51.10	0.80	56.70	-38.55	-13.00	-25.55
3346.40	Н	-	-	-72.08	1.95	36.87	-58.39	-13.00	-45.39
4183.00	Н	-	-	-75.29	2.95	34.66	-60.60	-13.00	-47.60
5019.60	Н	-	-	-75.42	4.35	35.93	-59.33	-13.00	-46.33
5856.20	Н	-	-	-76.32	6.10	36.78	-58.48	-13.00	-45.48

Table 7-18. Radiated Spurious Data (GPRS Cell – Mid Channel _Ant A + Ant B)

Mode:	GPRS 1 Tx Slot
Channel:	251
Frequency (MHz):	848.8
	l

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]
1697.60	Н	152	121	-67.05	-2.94	37.01	-58.25	-13.00	-45.25
2546.40	Н	137	143	-53.40	1.29	54.89	-40.37	-13.00	-27.37
3395.20	Н	-	-	-71.87	1.69	36.82	-58.43	-13.00	-45.43
4244.00	Н	-	-	-74.97	3.00	35.03	-60.23	-13.00	-47.23
5092.80	Н	-	-	-75.36	4.49	36.13	-59.12	-13.00	-46.12

Table 7-19. Radiated Spurious Data (GPRS Cell – High Channel _Ant A + Ant B)

FCC ID: A3LSMF936JPN		Approved by: Technical Manager	
Test Report S/N:	Test Dates:	EUT Type:	Dage FC of 71
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Case:	w/ Wireless Charging Pad				
Mode:	GPRS 1 Tx Slot				
Channel:	190				
Frequency (MHz):	836.6				

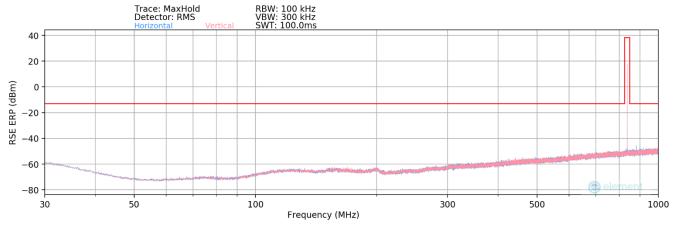
Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Analyzer Level [dBm]	AFCL [dB/m]	Field Strength [dBµV/m]	EIRP Spurious Emission Level [dBm]	Limit [dBm]	Margin [dB]
1673.20	Н	172	245	-69.47	-3.54	33.99	-61.27	-13.00	-48.27
2509.80	Н	142	145	-57.45	0.80	50.35	-44.90	-13.00	-31.90
3346.40	Н	-	-	-71.41	1.95	37.54	-57.72	-13.00	-44.72
4183.00	Н	-	-	-74.68	2.95	35.27	-59.99	-13.00	-46.99
5019.60	Н	-	-	-75.56	4.35	35.79	-59.47	-13.00	-46.47

Table 7-20. Radiated Spurious Data with WCP (GPRS Cell _Ant A + Ant B)

FCC ID: A3LSMF936JPN		Approved by: Technical Manager	
Test Report S/N:	Test Dates:	EUT Type:	Page 57 of 71
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## GSM/GPRS Cell _Ant A





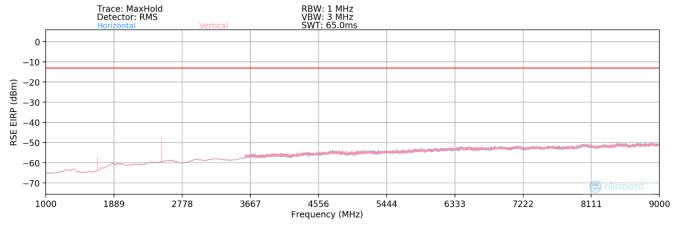
Mode:	GPRS 1 Tx Slot
Channel:	190
Frequency (MHz):	836.6

Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Analyzer Level [dBm]	AFCL [dB/m]	Field Strength [dBµV/m]	ERP Spurious Emission Level [dBm]	Limit [dBm]	Margin [dB]
185.52	V	-	-	-91.73	18.56	33.83	-63.58	-13.00	-50.58
428.52	V	-	-	-92.43	24.20	38.77	-58.64	-13.00	-45.64
881.60	V	-	-	-91.23	30.75	46.52	-50.89	-13.00	-37.89

Table 7-21. Radiated Spurious Data (GPRS Cell – Mid Channel _Ant A)

FCC ID: A3LSMF936JPN		PART 22 MEASUREMENT REPORT			
Test Report S/N:	Test Dates:	EUT Type:	Page 58 of 71		
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Mode:	GPRS 1 Tx Slot
Channel:	128
Frequency (MHz):	824.2

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]
1648.40	V	266	267	-63.10	-3.94	39.96	-55.30	-13.00	-42.30
2472.60	V	233	158	-51.67	0.32	55.65	-39.61	-13.00	-26.61
3296.80	V	361	3	-71.09	2.00	37.91	-57.35	-13.00	-44.35
4121.00	V	131	171	-70.12	2.95	39.83	-55.43	-13.00	-42.43
4945.20	V	-	-	-75.66	3.76	35.10	-60.15	-13.00	-47.15
5769.40	V	-	-	-75.83	5.42	36.59	-58.67	-13.00	-45.67
6593.60	V	-	-	-75.54	6.36	37.83	-57.43	-13.00	-44.43

Table 7-22. Radiated Spurious Data (GPRS Cell – Low Channel _Ant A)

Mode:	GPRS 1 Tx Slot
Channel:	190
Frequency (MHz):	836.6

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]
1673.20	V	141	265	-60.80	-3.65	42.55	-52.71	-13.00	-39.71
2509.80	V	191	158	-53.91	0.74	53.83	-41.43	-13.00	-28.43
3346.40	V	-	-	-71.88	1.85	36.97	-58.29	-13.00	-45.29
4183.00	V	150	198	-72.99	2.76	36.77	-58.48	-13.00	-45.48
5019.60	V	-	-	-75.86	4.18	35.32	-59.93	-13.00	-46.93
5856.20	V	-	-	-76.19	5.68	36.49	-58.76	-13.00	-45.76
6692.80	V	-	-	-76.11	6.91	37.80	-57.46	-13.00	-44.46

Table 7-23. Radiated Spurious Data (GPRS Cell – Mid Channel _Ant A)

FCC ID: A3LSMF936JPN		Approved by: Technical Manager		
Test Report S/N:	Test Dates:	EUT Type:	Daga 50 of 71	
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Mode:	GPRS 1 Tx Slot
Channel:	251
Frequency (MHz):	848.8

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]
1697.60	V	190	247	-62.12	-2.97	41.91	-53.34	-13.00	-40.34
2546.40	V	128	348	-51.77	1.23	56.46	-38.80	-13.00	-25.80
3395.20	V	-	-	-71.93	1.61	36.68	-58.57	-13.00	-45.57
4244.00	V	147	293	-70.56	2.95	39.39	-55.87	-13.00	-42.87
5092.80	V	-	-	-75.72	4.56	35.84	-59.42	-13.00	-46.42
5941.60	V	-	-	-76.12	5.72	36.60	-58.66	-13.00	-45.66
6790.40	V	-	-	-76.16	6.76	37.60	-57.66	-13.00	-44.66

### Table 7-24. Radiated Spurious Data (GPRS Cell – High Channel _Ant A)

Sample #:	w/ Wireless Charging Pad
Mode:	GPRS 1 Tx Slot
Channel:	251
Frequency (MHz):	848.8

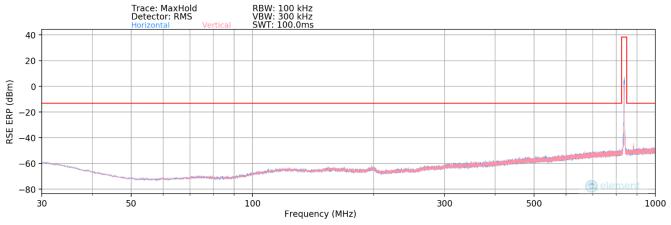
Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Analyzer Level [dBm]	AFCL [dB/m]	Field Strength [dBµV/m]	EIRP Spurious Emission Level [dBm]	Limit [dBm]	Margin [dB]
1697.60	V	173	62	-63.84	-2.97	40.19	-55.06	-13.00	-42.06
2546.40	V	184	10	-52.64	1.23	55.59	-39.67	-13.00	-26.67
3395.20	V	-	-	-71.43	1.61	37.18	-58.07	-13.00	-45.07
4244.00	V	139	320	-70.52	2.95	39.43	-55.83	-13.00	-42.83
5092.80	V	-	-	-75.70	4.56	35.86	-59.40	-13.00	-46.40
5941.60	V	-	-	-76.19	5.72	36.53	-58.73	-13.00	-45.73
6790.40	V	-	-	-76.31	6.76	37.45	-57.81	-13.00	-44.81

Table 7-25. Radiated Spurious Data with WCP (GPRS Cell _Ant A)

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# WCDMA Cell _Ant A + Ant B



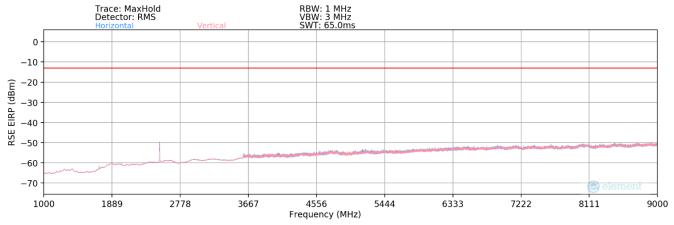


Mode:		WCDMA RMC							
Channel:		4183							
Frequency (MHz):	Frequency (MHz): 836.6								
Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Analyzer Level [dBm]	AFCL [dB/m]	Field Strength [dBµV/m]	ERP Spurious Emission Level [dBm]	Limit [dBm]	Margin [dB]
194.14	Н	-	-	-100.92	19.57	25.65	-71.76	-13.00	-58.76
537.66	Н	-	-	-100.81	26.22	32.41	-65.00	-13.00	-52.00
881.60	Н	-	-	-97.16	30.75	40.59	-56.82	-13.00	-43.82

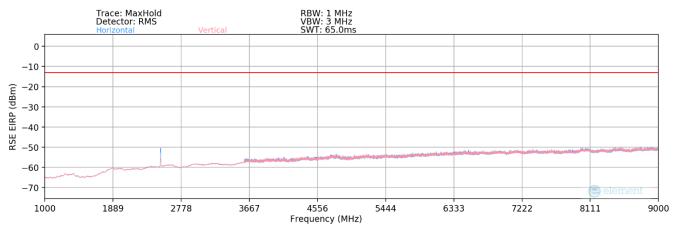
Table 7-26. Radiated Spurious Data (WCDMA Cell – Mid Channel _Ant A + Ant B)

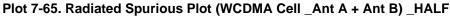
FCC ID: A3LSMF936JPN		Approved by: Technical Manager	
Test Report S/N:	Test Dates:	EUT Type:	Page 61 of 71
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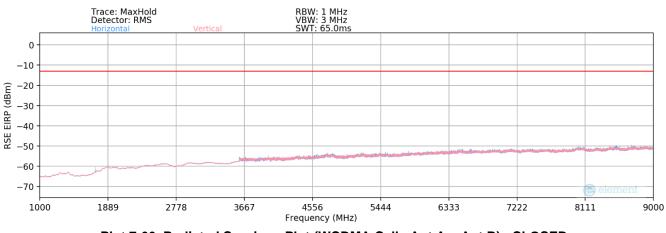












Plot 7-66. Radiated Spurious Plot (WCDMA Cell _Ant A + Ant B) _CLOSED

FCC ID: A3LSMF936JPN		PART 22 MEASUREMENT REPORT			
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Mode:	WCDMA RMC
Channel:	4132
Frequency (MHz):	826.4

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]
1652.80	Н	158	68	-74.68	-3.78	28.54	-66.71	-13.00	-53.71
2479.20	Н	168	145	-63.06	0.51	44.45	-50.80	-13.00	-37.80
3305.60	Н	-	-	-77.06	1.95	31.89	-63.37	-13.00	-50.37
4132.00	Н	-	-	-77.15	2.98	32.83	-62.43	-13.00	-49.43
4958.40	Н	-	-	-77.64	3.94	33.30	-61.96	-13.00	-48.96

Table 7-27. Radiated Spurious Data (WCDMA Cell – Low Channel _Ant A + Ant B)

Mode:	WCDMA RMC
Channel:	4183
Frequency (MHz):	836.6

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]
1673.20	Н	205	57	-74.32	-3.54	29.14	-66.12	-13.00	-53.12
2509.80	Н	199	210	-62.98	0.80	44.82	-50.43	-13.00	-37.43
3346.40	Н	-	-	-77.01	1.95	31.94	-63.32	-13.00	-50.32
4183.00	Н	-	-	-77.62	2.95	32.33	-62.93	-13.00	-49.93
5019.60	Н	-	-	-77.81	4.35	33.54	-61.72	-13.00	-48.72

Table 7-28. Radiated Spurious Data (WCDMA Cell – Mid Channel _Ant A + Ant B)

Mode:	WCDMA RMC
Channel:	4233
Frequency (MHz):	846.6

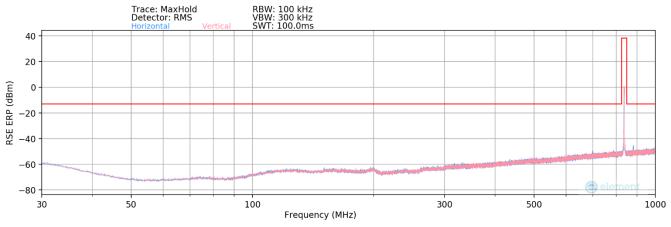
Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Analyzer Level [dBm]	AFCL [dB/m]	Field Strength [dBµV/m]	EIRP Spurious Emission Level [dBm]	Limit [dBm]	Margin [dB]
1693.20	Н	143	58	-75.01	-3.06	28.93	-66.33	-13.00	-53.33
2539.80	Н	139	202	-63.55	1.21	44.66	-50.60	-13.00	-37.60
3386.40	Н	-	-	-76.43	1.72	32.29	-62.97	-13.00	-49.97
4233.00	Н	-	-	-77.09	2.89	32.80	-62.45	-13.00	-49.45
5079.60	Н	-	-	-78.18	4.56	33.38	-61.88	-13.00	-48.88

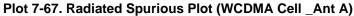
Table 7-29. Radiated Spurious Data (WCDMA Cell – High Channel _Ant A + Ant B)

FCC ID: A3LSMF936JPN		PART 22 MEASUREMENT REPORT				
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# WCDMA Cell _Ant A



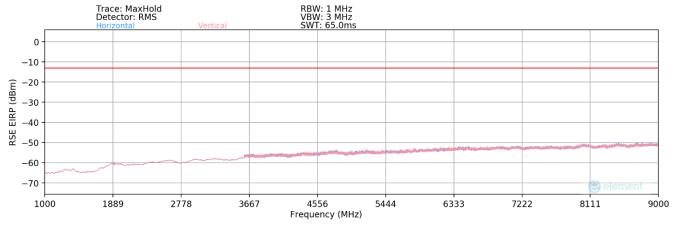


Mode:	WCDMA RMC								
Channel:		4183							
Frequency (MHz): 836.6									
Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Analyzer Level [dBm]	AFCL [dB/m]	Field Strength [dBµV/m]	ERP Spurious Emission Level [dBm]	Limit [dBm]	Margin [dB]
154.30	Н	-	-	-101.82	19.83	25.01	-72.40	-13.00	-59.40
692.12	Н	-	-	-99.52	28.34	35.82	-61.59	-13.00	-48.59
881.60	H	-	-	-99.26	30.75	38.49	-58.92	-13.00	-45.92

Table 7-30. Radiated Spurious Data (WCDMA Cell – Mid Channel _Ant A)

FCC ID: A3LSMF936JPN		PART 22 MEASUREMENT REPORT			
Test Report S/N:	Test Dates:	EUT Type:	Page 64 of 71		
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Mode:	WCDMA RMC
Channel:	4132
Frequency (MHz):	826.4

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]
1652.80	Н	-	-	-75.92	-3.90	27.18	-68.08	-13.00	-55.08
2479.20	Н	157	143	-75.49	0.35	31.86	-63.40	-13.00	-50.40
3305.60	Н	-	-	-76.72	1.93	32.21	-63.05	-13.00	-50.05
4132.00	Н	-	-	-77.24	2.86	32.62	-62.64	-13.00	-49.64
4958.40	Н	-	-	-77.85	3.90	33.05	-62.21	-13.00	-49.21

Table 7-31. Radiated Spurious Data (WCDMA Cell – Low Channel _Ant A)

Mode:	WCDMA RMC
Channel:	4183
Frequency (MHz):	836.6

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]
1673.20	Н	-	-	-76.18	-3.65	27.17	-68.09	-13.00	-55.09
2509.80	Н	153	352	-75.98	0.74	31.76	-63.50	-13.00	-50.50
3346.40	Н	-	-	-76.73	1.85	32.12	-63.14	-13.00	-50.14
4183.00	Н	-	-	-77.39	2.76	32.37	-62.88	-13.00	-49.88
5019.60	Н	-	-	- <b>7</b> 8.15	4.18	33.03	-62.22	-13.00	-49.22

Table 7-32. Radiated Spurious Data (WCDMA Cell – Mid Channel _Ant A)

FCC ID: A3LSMF936JPN		PART 22 MEASUREMENT REPORT			
Test Report S/N:	Test Dates:	EUT Type:	Dage CE of 71		
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Mode:	WCDMA RMC
Channel:	4233
Frequency (MHz):	846.6

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]
1693.20	Н	-	-	-76.52	-3.11	27.37	-67.89	-13.00	-54.89
2539.80	Н	184	332	-75.94	1.12	32.18	-63.08	-13.00	-50.08
3386.40	Н	-	-	-76.62	1.66	32.04	-63.22	-13.00	-50.22
4233.00	Н	-	-	-77.62	2.84	32.22	-63.04	-13.00	-50.04
5079.60	Н	-	-	-78.09	4.52	33.43	-61.82	-13.00	-48.82

Table 7-33. Radiated Spurious Data (WCDMA Cell – High Channel _Ant A)

FCC ID: A3LSMF936JPN		Approved by: Technical Manager	
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### 7.7 Frequency Stability / Temperature Variation

### **Test Overview and Limit**

Frequency stability testing is performed in accordance with the guidelines of ANSI C63.26-2015. 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.

For Part 22 and RSS-132, the frequency stability of the transmitter shall be maintained within  $\pm 0.00025\%$  ( $\pm 2.5$  ppm) of the center frequency.

#### Test Procedure Used

ANSI C63.26-2015 – Section 5.6

#### 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

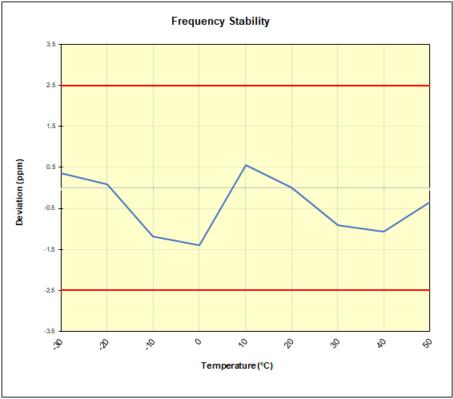
None

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LTE Band 5							
	Operating F	requency (Hz):	836,500,000				
	Ref.	Voltage (VDC):	4.38				
		Deviation Limit:	± 0.00025%	or 2.5 ppm			
Voltage (%)	Power (VDC)	Temp (°C)	Frequency (Hz)	Freq. Dev. (Hz)	Deviation (%)		
		- 30	836,500,476	300	0.0000359		
		- 20	836,500,241	65	0.000078		
		- 10	836,499,183	-993	-0.0001187		
		0	836,499,010	-1,166	-0.0001394		
100 %	4.38	+ 10	836,500,638	463	0.0000553		
		+ 20 (Ref)	836,500,176	0	0.0000000		
		+ 30	836,499,420	-756	-0.0000903		
		+ 40	836,499,291	-885	-0.0001057		
		+ 50	836,499,886	-290	-0.0000347		
Battery Endpoint	3.35	+ 20	836,499,327	-849	-0.0001015		

Table 7-34. LTE Band 5 Frequency Stability Data



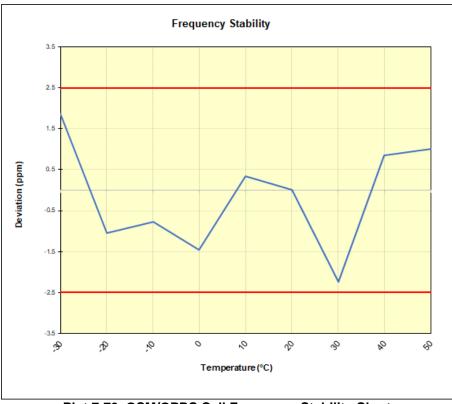
Plot 7-69. LTE Band 5 Frequency Stability Chart

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GSM/GPRS Cellular							
	Operating F	requency (Hz):	836,60	00,000			
	Ref.	Voltage (VDC):	4.38				
		Deviation Limit:	± 0.00025%	or 2.5 ppm			
					-		
Voltage (%)	Power (VDC)	Temp (°C)	Frequency (Hz)	Freq. Dev. (Hz)	Deviation (%)		
		- 30	836,604,719	1,566	0.0001871		
		- 20	836,602,273	-880	-0.0001052		
		- 10	836,602,511	-642	-0.0000768		
		0	836,601,938	-1,215	-0.0001453		
100 %	4.38	+ 10	836,603,440	287	0.0000343		
		+ 20 (Ref)	836,603,153	0	0.0000000		
		+ 30	836,601,283	-1,870	-0.0002235		
		+ 40	836,603,865	712	0.0000851		
		+ 50	836,604,002	849	0.0001015		
Battery Endpoint	3.35	+ 20	836,601,781	-1,372	-0.0001640		

Table 7-35. GSM/GPRS Cell Frequency Stability Data



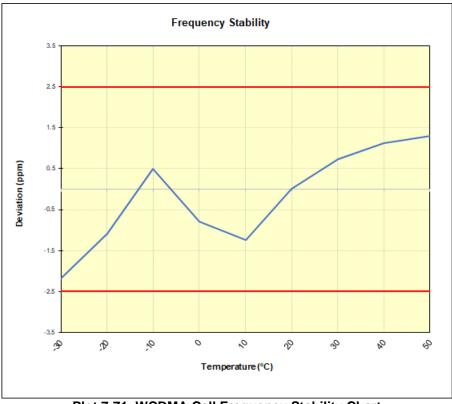
Plot 7-70. GSM/GPRS Cell Frequency Stability Chart

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WCDMA Cellular							
	Operating F	requency (Hz):	826,400,000				
	Ref.	Voltage (VDC):	4.	4.38			
		Deviation Limit:	± 0.00025%	o or 2.5 ppm			
Voltage (%)	Power (VDC)	Temp (°C)	Frequency (Hz)	Freq. Dev. (Hz)	Deviation (%)		
		- 30	826,407,275	-1,802	-0.0002181		
		- 20	826,408,187	-891	-0.0001078		
		- 10	826,409,490	412	0.0000499		
		0	826,408,427	-651	-0.0000787		
100 %	4.38	+ 10	826,408,050	-1,028	-0.0001244		
		+ 20 (Ref)	826,409,077	0	0.0000000		
		+ 30	826,409,682	605	0.0000732		
		+ 40	826,410,011	934	0.0001130		
		+ 50	826,410,153	1,076	0.0001301		
Battery Endpoint	3.35	+ 20	826,410,694	1,617	0.0001956		

Table 7-36. WCDMA Cell Frequency Stability Data



Plot 7-71. WCDMA Cell 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: A3LSMF936JPN** complies with all the requirements of Part 22 of the FCC rules.

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