

**ELEMENT WASHINGTON DC LLC** 

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**MEASUREMENT REPORT** 

Bluetooth (Low Energy)

#### **Applicant Name:**

Samsung Electronics Co., Ltd. 129, Samsung-ro, Yeongtong-gu, Suwon-si Gyeonggi-do, 16677, Korea Date of Testing: 09/03/24 - 10/25/2024 Test Report Issue Date: 11/15/2024 Test Site/Location: Element lab., Columbia, MD, USA Test Report Serial No.: 1M2408260066-11.A3L

# FCC ID:

APPLICANT:

#### A3LSMS936B

Samsung Electronics Co., Ltd.

Application Type:	Certification
Model:	SM-S936B/DS
Additional Model(s):	SM-S936B
EUT Type:	Portable Handset
Max. RF Output Power:	68.976 mW (18.39 dBm) Peak Conducted
Frequency Range:	2402 – 2480MHz
FCC Classification:	Digital Transmission System (DTS)
FCC Rule Part(s):	Part 15 Subpart C (15.247)
Test Procedure(s):	ANSI C63.10-2013, KDB 558074 D01 v05r02, 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 ANSI C63.10-2013 and KDB 558074 D01 v05r02. 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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## 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 U.S. and Canada Mutual Recognition Agreements (MRAs).

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## 2.0 PRODUCT INFORMATION

## 2.1 Equipment Description

The Equipment Under Test (EUT) is the **Samsung Portable Handset FCC ID: A3LSMS936B**. The data found in this test report was taken with the EUT operating in Bluetooth low energy mode. While in low energy mode, the Bluetooth transmitter hops pseudo-randomly between 40 channels, three of which are "advertising channels". When the transmitter is hopping only between the three advertising channels, the EUT does not fall under the category of a "hopper" as defined in 15.247(a)(iii) which states that a "frequency hopping systems in the 2400–2483.5 MHz band shall use at least 15 channels." As operation on only the advertising channels does not qualify the EUT as a hopper, the EUT is certified as a DTS device in this mode. The data found in this report is representative of the device when it transmits on its advertising channels. Typical Bluetooth operation is covered under the DSS report found with this application.

Test Device Serial No.: N/A

## 2.2 Device Capabilities

This device contains the following capabilities:

850/1700/1900 WCDMA/HSPA, 850/1900 GSM/GPRS/EDGE Multi-Band LTE, MultiBand 5G NR (FR1 and FR2),

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

Ch.	Frequency (MHz)
0	2402
:	:
19	2440
:	:
39	2480

Table 2-1. Frequency / Channel Operations

## 2.3 Antenna Description

Following antenna was used for the testing.

Frequency [GHz]	Antenna-1 Gain [dBi]	Antenna-2 Gain [dBi]	Directional Gain [dBi]
2.4	-1.72	-4.06	0.20

### Table 2-2. Antenna Peak Gain

**Note:** This device is capable of operating in hopping and non-hopping mode. The EUT can hop between 79 different channels in the 2400 – 2483.5MHz band.

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## 2.4 Test Configuration

The EUT was tested per the guidance of ANSI C63.10-2013 and KDB 558074 D01 v05r02. ANSI C63.10-2013 was used to reference the appropriate EUT setup for radiated spurious emissions testing and AC line conducted testing. See Sections 3.2 for AC line conducted emissions test setups, 3.3 for radiated emissions test setups, and 7.2, 7.3, 7.4, 0, and 7.6 for antenna port conducted emissions test setups.

There are two vendors of the WiFi/Bluetooth radio modules, variant 1 and variant 2. Both radio modules have the same mechanical outline, same on-board antenna matching circuit, identical antenna structure, and are built and tested to conform to the same specifications and to operate within the same tolerances. The worst case configuration was found between the two variants. The EUT was also investigated with and without charger.

The emissions below 1GHz and above 18GHz were tested with the highest transmitting power channel and the worst case configuration.

The EUT was manipulated through three orthogonal planes of X-orientation (flatbed), Y-orientation (landscape), and Z-orientation (portrait) during the testing. Only the worst case emissions were reported in this test report. The worst orientation was found to be Y-orientation (landscape).

For AC line conducted and radiated test below 1GHz, following configuration were investigated and EUT powered by AC/DC was the worst case.

- EUT powered by AC/DC adaptor via USB cable with wire charger
- EUT powered by host PC via USB cable with wire charger

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 NQ-WC-06 while operating under normal conditions in a simulated call or data transmission configuration. The worst case radiated emissions data is shown in this report.

### 2.5 Software and Firmware

The test was conducted with software/firmware version S936USQU0AXI3 installed on the EUT.

### 2.6 EMI Suppression Device(s)/Modifications

No EMI suppression device(s) were added and/or 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 of Procedures for Compliance Testing of Unlicensed Wireless Devices (ANSI C63.10-2013) and the guidance provided in KDB 558074 D01 v05r02 were used in the measurement of the EUT.

Deviation from measurement procedure.....None

## 3.2 AC Line Conducted Emissions

The line-conducted facility is located inside a 10'x16'x9' shielded enclosure. The shielded enclosure is manufactured by ETS Lindgren RF Enclosures. The line-conducted facility is located inside a 7m x 3.66m x 2.7m shielded enclosure. The shielded enclosure is manufactured by AP Americas. The shielding effectiveness of the shielded room is in accordance with MIL-Std-285 or NSA 65-5. A 1m x 1.5m wooden table 80cm high is placed 40cm away from the vertical wall and 80cm away from the sidewall of the shielded room. Two 10kHz-30MHz,  $50\Omega/50\mu$ H Line-Impedance Stabilization Networks (LISNs) are bonded to the shielded room floor. Power to the LISNs is filtered by external high-current high-insertion loss power line filters. The external power line filter is an ETS Lindgren Model LPRX-4X30 (100dB Attenuation, 14kHz-18GHz) and the two EMI/RFI filters are ETS Lindgren Model LRW-2030-S1 (100dB Minimum Insertion Loss, 14kHz – 10GHz). These filters attenuate ambient signal noise from entering the measurement lines. These filters are also bonded to the shielded enclosure.

The EUT is powered from one LISN and the support equipment is powered from the second LISN. If the EUT is a DC-powered device, power will be derived from the source power supply it normally will be powered from and this supply line(s) will be connected to the second LISN. All interconnecting cables more than 1 meter were shortened to a 1 meter length by non-inductive bundling (serpentine fashion) and draped over the back edge of the test table. All cables were at least 40cm above the horizontal reference groundplane. Power cables for support equipment were routed down to the second LISN while ensuring that those cables were not draped over the second LISN.

Sufficient time for the EUT, support equipment, and test equipment was allowed in order for them to warm up to their normal operating condition. The RF output of the LISN was connected to the spectrum analyzer and exploratory measurements were made to determine the frequencies producing the maximum emission from the EUT. The spectrum was scanned from 150kHz to 30MHz with a spectrum analyzer. The detector function was set to peak mode for exploratory measurements while the bandwidth of the analyzer was set to 10kHz. The EUT, support equipment, and interconnecting cables were arranged and manipulated to maximize each emission. Once the worst case emissions have been identified, the one EUT cable configuration/arrangement and mode of operation that produced these emissions is used for final measurements on the same test site. The analyzer is set to CISPR quasi-peak and average detectors with a 9kHz resolution bandwidth for final measurements.

Line conducted emissions test results are shown in Section 7.11. The EMI Receiver mode of the Agilent MXE was used to perform AC line conducted emissions testing.

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## 3.3 Radiated 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. An 80cm tall test table made of Styrodur is placed on top of the turn table. For measurements above 1GHz, an additional Styrodur pedestal is placed on top of the test table to bring the total table height to 1.5m.

For all measurements, the spectrum was scanned through all EUT azimuths and from 1 to 4 meter receive antenna height using a broadband antenna from 30MHz up to the upper frequency shown in 15.33 depending on the highest frequency generated or used in the device or on which the device operates or tunes. For frequencies above 1GHz, linearly polarized double ridge horn antennas were used. For frequencies below 30MHz, a calibrated loop antenna was used. When exploratory measurements were necessary, they were performed at 1 meter test distance inside the semi-anechoic chamber using broadband antennas, broadband amplifiers, and spectrum analyzers to determine the frequencies and modes producing the maximum emissions. Sufficient time for the EUT, support equipment, and test equipment was allowed in order for them to warm up to their normal operating condition. The test set-up was placed on top of the 1 x 1.5 meter table. The EUT, support equipment, and interconnecting cables were arranged and manipulated to maximize each emission. Appropriate precaution was taken to ensure that all emissions from the EUT were maximized and investigated. The system configuration, mode of operation, turntable azimuth, and receive antenna height was noted for each frequency found.

Final measurements were made in the semi-anechoic chamber using calibrated, linearly polarized broadband and horn antennas. The test setup was configured to the setup that produced the worst case emissions. The spectrum analyzer was set to investigate all frequencies required for testing to compare the highest radiated disturbances with respect to the specified limits. The turntable containing the EUT was rotated through 360 degrees and the height of the receive antenna was varied 1 to 4 meters and stopped at the azimuth and height producing the maximum emission. Each emission was maximized by changing the orientation of the EUT through three orthogonal planes and changing the polarity of the receive antenna, whichever produced the worst-case emissions.

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.

## 3.4 Environmental Conditions

The temperature is controlled within range of 15°C to 35°C. The relative humidity is controlled within range of 10% to 75%. The atmospheric pressure is monitored within the range 86-106kPa (860-1060mbar).

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# 4.0 ANTENNA REQUIREMENTS

#### Excerpt from §15.203 of the FCC Rules/Regulations:

"An intentional radiator antenna shall be designed to ensure that no antenna other than that furnished by the responsible party can be used with the device. The use of a permanently attached antenna or of an antenna that uses a unique coupling to the intentional radiator shall be considered sufficient to comply with the provisions of this section."

- The antenna(s) of the EUT are **permanently attached**.
- There are no provisions for connection to an external antenna.

#### Conclusion:

The EUT complies with the requirement of §15.203.

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# 5.0 MEASUREMENT UNCERTAINTY

The measurement uncertainties shown below were calculated in accordance with the requirements of ANSI C63.10-2013. 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  $U_{\text{CISPR}}$  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
Line Conducted Disturbance	3.09
Radiated Disturbance (<1GHz)	4.98
Radiated Disturbance (>1GHz)	5.07
Radiated Disturbance (>18GHz)	5.09

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# 6.0 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 Numbe
ā	WL25-1	Conducted Cable Set (25GHz)	4/2/2024	Annual	4/2/2025	WL25-1
15	WL25-2	Conducted Cable Set (25GHz)	4/2/2024	Annual	4/2/2025	WL25-2
12	WL40-1	Conducted Cable Set (40GHz)	4/2/2024	Annual	4/2/2025	WL40-1
ā	AP1-002	EMC Cable and Switch System	4/2/2024	Annual	4/2/2025	AP1-002
5	ETS-001	EMC Cable and Switch System	4/2/2024	Annual	4/2/2025	ETS-001
12	ETS-002	EMC Cable and Switch System	4/2/2024	Annual	4/2/2025	ETS-002
2	MD 1M 18-40	EMC Cable and Switch System	4/2/2024	Annual	4/2/2025	MD 1M 18-40
Anritsu	MA24408A	Microw ave Peak Pow er Sensor	5/21/2024	Annual	5/21/2025	11675
Anritsu	MA24408A	Microwave Peak Power Sensor	4/10/2024	Annual	4/10/2025	12798
ETS-Lindgren	3116C	Horn Antenna (18-40GHz)	2/27/2023	Biennial	2/27/2025	218893
Rohde & Schwarz	TC-TA18	Vivaldi Antenna	2/23/2023	Biennial	2/23/2025	26040036
Rohde & Schwarz	FSW26	Signal and Spectrum Analyzer (26.5GHz)	3/8/2024	Annual	3/8/2025	103187
Rohde & Schwarz	ESU26	EMI Test Receiver (26.5GHz)	9/25/2023	Annual	9/25/2024	100342
Rohde & Schwarz	ESU40	EMI Test Receiver (40GHz)	9/11/2023	Annual	9/11/2024	100348
Rohde & Schwarz	ESW44	EMI Test Receiver (44GHz)	4/5/2024	Annual	4/5/2025	101716
Pasternak	NMLC-2	EMI Test Receiver (2Hz to 44GHz)	4/2/2024	Annual	4/2/2025	NMLC-2
Rohde & Schwarz	EW216	Two-Line V-Network	1/31/2023	Biennial	1/31/2025	101379
Keysight Technologies	N9030A	PXA Signal Analyzer (44GHz)	4/9/2024	Annual	4/9/2025	MY52350166
Keysight Technologies	N9020A	MXA Signal Analyzer	4/11/2024	Annual	4/11/2025	MY 54500644
Keysight Technologies	N9030A	PXA Signal Analyzer	2/29/2024	Annual	3/1/2025	MY55410501
Keysight Technologies	N9030B	PXA Signal Analyzer, Multi-touch	9/19/2024	Annual	9/19/2025	MY57141001
Sunol	JB6	JB6 Antenna	3/2/2023	Biennial	3/2/2025	A082816
Sunol	JB5	Bi-Log Antenna (20M-5GHz)	9/11/2024	Biennial	9/11/2026	A051107
Rohde & Schwarz	SMW200A	Vector Signal Generator	4/4/2024	Annual	4/4/2025	109456

Table 6-1. Annual Test Equipment Calibration Schedule

### Note:

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.

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## 7.0 TEST RESULTS

### 7.1 Summary

Company Name:	Samsung Electronics Co., Ltd.
FCC ID:	A3LSMS936B
FCC Classification:	Digital Transmission System (DTS)
Number of Channels:	<u>40</u>

FCC Part Section(s)	RSS Section(s)	Test Description	Test Limit	Test Condition	Test Result	Reference
15.247(a)(2)	RSS-247 [5.2]	6dB Bandwidth	> 500kHz		PASS	Section 7.2
15.247(b)(3)	RSS-247 [5.4(4)]	Transmitter Output Power	< 1 Watt		PASS	Sections 7.3
15.247(e)	RSS-247 [5.2]	Transmitter Power Spectral Density	< 8dBm / 3kHz Band	CONDUCTED	PASS	Section 7.4
15.247(d)	RSS-247 [5.5]	Band Edge / Out-of-Band Emissions	≥ 20dBc		PASS	Sections 7.5, 7.6
15.205 15.209	RSS-Gen [8.9]	General Field Strength Limits (Restricted Bands and Radiated Emission Limits)	Bands bands must meet the		PASS	Sections 7.7, 7.8, 7.9
15.207	5 207 RSS. Cen [8 8] AC Conducted Emissions		< FCC 15.207 limits (RSS-Gen[8.8])	LINE CONDUCTED	PASS	Section 7.11

 Table 7-1. Summary of Test Results

#### Notes:

- 1. All modes of operation were investigated. The test results shown in the following sections represent the worst case emissions.
- 2. The analyzer plots shown in this section were all taken with a correction table loaded into the analyzer. The correction table was used to account for the losses of the cables and attenuators used as part of the system to connect the EUT to the analyzer 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 and attenuators.
- 4. For conducted spurious emissions, automated test software was used to measure emissions and capture the corresponding plots necessary to show compliance. The measurement software utilized is PCTEST "Bluetooth LE Automation," Version 3.6.
- 5. For radiated band edge, automated test software was used to measure emissions and capture the corresponding plots necessary to show compliance. The measurement software utilized is PCTEST "Chamber Automation," Version 1.3.1.
- 6. Data was leveraged from model SM-S938U for the certification of SM-S938B/DS. See Table 7-2 for spotcheck results.

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FCC Rules	Test Item	Test Case	Units	Limit	Reference Model: SM-S936U	Variant Model: SM-S936B	Deviation (dB)	Max Deviation (dB)	Pass/Fail
15.247(b)(3)	Conducted Output Power	Ant2 Ch.19 - 1 Mbps - Peak	dBm	N/A	18.11	17.72	0.39	1	PASS
15.209	Radiated Spurious Emissions	SISO Ant1 Ch.19 - Average - 4880 MHz	dBm	53.98	49.35	49.12	0.23	3	PASS
15.209	Radiated Band Edge Emissions	SISO Ant1 Ch.39 - Average	dBm	53.98	44.32	41.52	2.8	3	PASS

Table 7-2. Summary of Spot-Checks

Frequency	Data Rate	Channel	Bluetooth	Peak Condu	lucted Power	
[MHz]	[Mbps]	No. Mode		[dBm]	[mW]	
2440	1 Mbps	19	LE	17.72	59.156	



Plot 7-1. Conducted Peak Power Measurement (Spot-check)

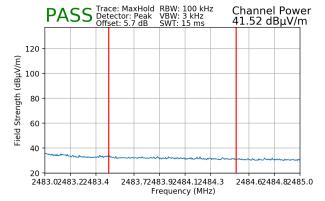
Frequency [MHz]	Detector	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Analyzer Level [dBm]	AFCL [dB/m]	Distance Correction Factor [dB]	Field Strength [dBµV/m]	Limit [dBµV/m]	Margin [dB]
4880.00	Avg	Н	132	277	-61.00	3.12	0.00	49.12	53.98	-4.85

Table 7-4. Radiated Measurements MIMO (Spot-check)

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Bluetooth Mode:	LE
Measurement Distance:	3 Meters
Operating Frequency:	2480MHz
Channel:	39
Bluetooth Mode:	LE



Plot 7-2. Radiated Restricted Upper Band Edge Measurement (Average)

- 1. Each spot check test on the EUT was performed using the same procedure and setting that were used to perform the test on the corresponding reference device.
- 2. All test cases were performed to verify the variant EUT is still in compliance with the spot checked results to the reference device and was performed using the guidance of ANSI C63.10-2013.

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### 7.2 6dB Bandwidth Measurement – Bluetooth (LE)

<u>§15.247(a.2); RSS-247 [5.2]</u>

### **Test Overview and Limit**

The bandwidth at 6dB down from the highest in-band spectral density is measured with a spectrum analyzer connected to the transmitter antenna terminal of the EUT while the EUT is operating at maximum power and at the appropriate frequencies. All modes of operation were investigated and the worst case configuration results are reported in this section.

#### The minimum permissible 6dB bandwidth is 500 kHz.

#### **Test Procedure Used**

ANSI C63.10-2013 – Section 11.8.2 Option 2 KDB 558074 D01 v05r02 – Section 8.2

#### Test Settings

- The signal analyzers' automatic bandwidth measurement capability of the spectrum analyzer was used to perform the 6dB bandwidth measurement. The "X" dB bandwidth parameter was set to X = 6. The bandwidth measurement was not influenced by any intermediate power nulls in the fundamental emission.
- 2. RBW = 100kHz
- 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

#### Test Setup

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





#### **Test Notes**

None

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Frequency [MHz]	Data Rate	Channel No.	Bluetooth Mode	Measured Bandwidth [kHz]	Minimum Bandwidth [kHz]	Pass / Fail
2402	125 kbps	0	LE	677.7	500	Pass
2440	125 kbps	19	LE	680.5	500	Pass
2480	125 kbps	39	LE	682.6	500	Pass
2402	500 kbps	0	LE	674.3	500	Pass
2440	500 kbps	19	LE	662.0	500	Pass
2480	500 kbps	39	LE	669.6	500	Pass
2402	1 Mbps	0	LE	658.3	500	Pass
2440	1 Mbps	19	LE	649.6	500	Pass
2480	1 Mbps	39	LE	658.7	500	Pass
2402	2 Mbps	0	LE	1153.0	500	Pass
2440	2 Mbps	19	LE	1110.0	500	Pass
2480	2 Mbps	39	LE	1142.0	500	Pass

Table 7-5. Condue	cted Bandwidth Measurements – An	t 1
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Plot 7-3. 6dB Bandwidth Plot (Bluetooth (LE), 125kbps - Ch. 0) - Ant 1



Plot 7-4. 6dB Bandwidth Plot (Bluetooth (LE), 125kbps - Ch. 19) - Ant 1

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Plot 7-5. 6dB Bandwidth Plot (Bluetooth (LE), 125kbps - Ch. 39) - Ant 1



Plot 7-6. 6dB Bandwidth Plot (Bluetooth (LE), 500kbps - Ch. 0) - Ant 1

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Plot 7-7. 6dB Bandwidth Plot (Bluetooth (LE), 500kbps – Ch. 19) – Ant 1



Plot 7-8. 6dB Bandwidth Plot (Bluetooth (LE), 500kbps - Ch. 39) - Ant 1

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Plot 7-9. 6dB Bandwidth Plot (Bluetooth (LE), 1Mbps - Ch. 0) - Ant 1



Plot 7-10. 6dB Bandwidth Plot (Bluetooth (LE), 1Mbps - Ch. 19) - Ant 1

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Keysight Spectrum Analyzer - Occupied B	N				
KA RL RF 50Ω DC	Trig:	SENSE:INT er Freq: 2.480000000 G Free Run Avg en: 36 dB	ALIGN AUTO Hz Hold: 100/100	12:46:47 PM Sep 17, 2024 Radio Std: None Radio Device: BTS	Frequency
10 dB/div Ref 25.00 dB	n				
15.0 5.00		~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~	man and a second se		Center Free 2.480000000 GH:
-5.00				Mana	
-35.0					
-65.0					
Center 2.480000 GHz #Res BW 100 kHz	1	#VBW 300 kHz		Span 2.000 MHz Sweep 1 ms	
Occupied Bandwid	<sup>th</sup> 0325 MHz	Total Power	23.3	3 dBm	
•• Transmit Freq Error	-11.254 kHz	% of OBW P	ower 99	9.00 %	Freq Offse 0 H
x dB Bandwidth	658.7 kHz	x dB	-6.	.00 dB	
MSG			STATU	g	

Plot 7-11. 6dB Bandwidth Plot (Bluetooth (LE), 1Mbps - Ch. 39) - Ant 1



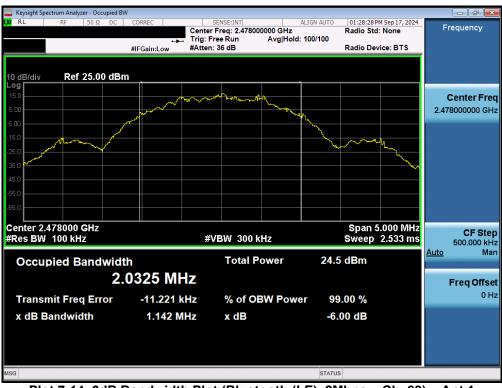
Plot 7-12. 6dB Bandwidth Plot (Bluetooth (LE), 2Mbps - Ch. 0) - Ant 1

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Plot 7-13. 6dB Bandwidth Plot (Bluetooth (LE), 2Mbps - Ch. 19) - Ant 1



Plot 7-14. 6dB Bandwidth Plot (Bluetooth (LE), 2Mbps - Ch. 39) - Ant 1

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Frequency [MHz]	Data Rate	Channel No.	Bluetooth Mode	Measured Bandwidth [kHz]	Minimum Bandwidth [kHz]	Pass / Fail
2402	125 kbps	0	LE	679.9	500	Pass
2440	125 kbps	19	LE	677.6	500	Pass
2480	125 kbps	39	LE	680.9	500	Pass
2402	500 kbps	0	LE	683.0	500	Pass
2440	500 kbps	19	LE	657.7	500	Pass
2480	500 kbps	39	LE	654.8	500	Pass
2402	1 Mbps	0	LE	663.0	500	Pass
2440	1 Mbps	19	LE	678.6	500	Pass
2480	1 Mbps	39	LE	721.0	500	Pass
2404	2 Mbps	0	LE	1145.0	500	Pass
2444	2 Mbps	19	LE	1131.0	500	Pass
2480	2 Mbps	39	LE	1131.0	500	Pass

Table 7-6. Conducted Bandwidth Measurements – Ant 2

FCC ID: A3LSMS936B		Approved by: Technical Manager	
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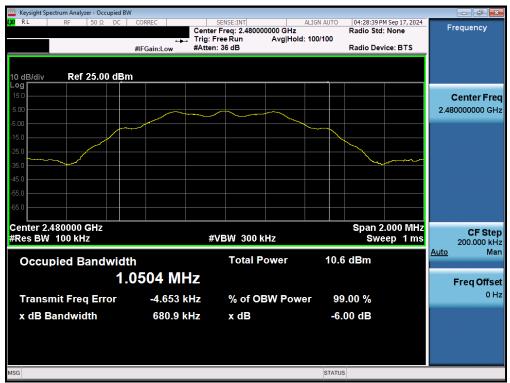
Plot 7-15. 6dB Bandwidth Plot (Bluetooth (LE), 125kbps - Ch. 0) - Ant 2



Plot 7-16. 6dB Bandwidth Plot (Bluetooth (LE), 125kbps - Ch. 19) - Ant 2

FCC ID: A3LSMS936B		Approved by: Technical Manager	
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Plot 7-17. 6dB Bandwidth Plot (Bluetooth (LE), 125kbps - Ch. 39) - Ant 2



Plot 7-18. 6dB Bandwidth Plot (Bluetooth (LE), 500kbps - Ch. 0) - Ant 2

FCC ID: A3LSMS936B		Approved by: Technical Manager	
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Plot 7-19. 6dB Bandwidth Plot (Bluetooth (LE), 500kbps – Ch. 19) – Ant 2



Plot 7-20. 6dB Bandwidth Plot (Bluetooth (LE), 500kbps – Ch. 39) – Ant 2

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Plot 7-21. 6dB Bandwidth Plot (Bluetooth (LE), 1Mbps - Ch. 0) - Ant 2



Plot 7-22. 6dB Bandwidth Plot (Bluetooth (LE), 1Mbps – Ch. 19) – Ant 2

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Plot 7-23. 6dB Bandwidth Plot (Bluetooth (LE), 1Mbps - Ch. 39) - Ant 2



Plot 7-24. 6dB Bandwidth Plot (Bluetooth (LE), 2Mbps - Ch. 0) - Ant 2

FCC ID: A3LSMS936B		MEASUREMENT REPORT (CERTIFICATION)		
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Plot 7-25. 6dB Bandwidth Plot (Bluetooth (LE), 2Mbps - Ch. 19) - Ant 2



Plot 7-26. 6dB Bandwidth Plot (Bluetooth (LE), 2Mbps - Ch. 39) - Ant 2

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Frequency [MHz]	Data Rate	Channel No.	Bluetooth		Minimum Bandwidth [kHz]	Pass / Fail
2402	1 Mbps	0	LE	677.3	500	Pass
2440	1 Mbps	19	LE	669.5	500	Pass
2480	1 Mbps	39	LE	676.4	500	Pass
2404	2 Mbps	1	LE	1144.0	500	Pass
2444	2 Mbps	19	LE	1142.0	500	Pass
2480	2 Mbps	38	LE	1138.0	500	Pass

 Table 7-7. Conducted Bandwidth Measurements – Dual Ant 1



Plot 7-27. 6dB Bandwidth Plot (Bluetooth (LE), 1Mbps - Ch. 0) - Dual Ant 1

FCC ID: A3LSMS936B		MEASUREMENT REPORT (CERTIFICATION)		
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Keysight Spectrum Analyzer - Occupied BV						
XX RL RF 50Ω AC		SENSE:INT Center Freq: 2.44000 Trig: Free Run		Radio	27 PM Oct 03, 2024 Std: None	Frequency
NFE		#Atten: 30 dB			Device: BTS	
10 dB/div Ref 20.00 dBn	n					
10.0						Center Freq
0.00						2.440000000 GHz
-10.0						2
-20.0						
-30.0						
-40.0						
-50.0						
-60.0						
-70.0						
					. 0.000 5411-	
Center 2.440000 GHz #Res BW 100 kHz		#VBW 300 k	H7	Spai Swee	n 2.000 MHz p= 3.333 ms	Crotep
					p 01000 1110	200.000 kHz Auto Man
Occupied Bandwidt	h	Total P	ower	17.8 dBm		
1.	0400 MH	Z				Freq Offset
Transmit Freq Error	-4.890 kH	Iz % of OE	3W Power	99.00 %		0 Hz
x dB Bandwidth	669.5 k⊦	lz x dB		-6.00 dB		
MSG				STATUS		

Plot 7-28. 6dB Bandwidth Plot (Bluetooth (LE), 1Mbps - Ch. 19) - Dual Ant 1



Plot 7-29. 6dB Bandwidth Plot (Bluetooth (LE), 1Mbps - Ch. 39) - Dual Ant 1

FCC ID: A3LSMS936B	MEASUREMENT REPORT (CERTIFICATION)		Approved by: Technical Manager
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Plot 7-30. 6dB Bandwidth Plot (Bluetooth (LE), 2Mbps - Ch. 1) - Dual Ant 1



Plot 7-31. 6dB Bandwidth Plot (Bluetooth (LE), 2Mbps - Ch. 19) - Dual Ant 1

FCC ID: A3LSMS936B	MEASUREMENT REPORT (CERTIFICATION)		Approved by: Technical Manager
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🔤 Keysight Spectrum Analyzer - Occupied BW							
XX RL RF 50Ω AC	Trig:	SENSE:INT er Freq: 2.478000000 GH Free Run Avg F en: 30 dB	ALIGN AUTO Iz Iold: 100/100	04:42:11 PM Radio Std: M Radio Devic	None	Trace	/Detector
10 dB/div Ref 20.00 dBm							
10.0 0.00 -10.0		· ^ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~	~			с	lear Write
20.0				<u></u>	<u></u>		Average
-50.0 -60.0 -70.0							Max Hold
Center 2.478000 GHz #Res BW 100 kHz	#	<b>≇VBW 300 kHz</b>		Span 5.0 Sweep 8			Min Hold
Occupied Bandwidth	י ס <b>502 MHz</b>	Total Power	17.8	3 dBm		-	Detector
Transmit Freq Error	-1.122 kHz	% of OBW Po	ower 99	0.00 %		Auto	Peak▶ <u>Man</u>
x dB Bandwidth	1.138 MHz	x dB	-6.	00 dB			
MSG			STATUS	5			

Plot 7-32. 6dB Bandwidth Plot (Bluetooth (LE), 2Mbps – Ch. 38) – Dual Ant 1

FCC ID: A3LSMS936B	MEASUREMENT REPORT (CERTIFICATION)		Approved by: Technical Manager
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Frequency [MHz]	Data Rate	Channel No.	Bluetooth Mode	Measured Bandwidth [kHz]	Minimum Bandwidth [kHz]	Pass / Fail
2402	1 Mbps	0	LE	687.8	500	Pass
2440	1 Mbps	19	LE	667.8	500	Pass
2480	1 Mbps	39	LE	692.3	500	Pass
2404	2 Mbps	1	LE	1146.0	500	Pass
2444	2 Mbps	19	LE	1136.0	500	Pass
2480	2 Mbps	38	LE	1145.0	500	Pass

 Table 7-8. Conducted Bandwidth Measurements – Dual Ant 2



Plot 7-33. 6dB Bandwidth Plot (Bluetooth (LE), 1Mbps - Ch. 1) - Dual Ant 2

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Keysight Spectrum Analyzer - Occupied B							d ×
(X) RL RF 50Ω AC	CORREC	SENSE:INT Center Freq: 2.44000 Trig: Free Run #Atten: 30 dB	0000 GHz Avg Hold: 100/	Radio Sto		Trace/D	etector
	#IFGalli.LOW			itadio Be			
10 dB/div Ref 20.00 dBr	n			_			
10.0							
0.00				<u> </u>		Cle	ear Write
-10.0							
-20.0							
-30.0							Average
-40.0							
-50.0							
-70.0						N	lax Hold
Center 2.440000 GHz #Res BW 100 kHz		#VBW 300 k	Hz		2.000 MHz 3.333 ms		<b>4</b>
						ſ	/lin Hold
Occupied Bandwid		Total P	ower	18.1 dBm			
1.	0389 MH	Z				I	Detector Peak▶
Transmit Freq Error	2.058 kl	Hz % of OI	3W Power	99.00 %		Auto	Man
x dB Bandwidth	667.8 kl	Hz xdB		-6.00 dB			
MSG				STATUS			

Plot 7-34. 6dB Bandwidth Plot (Bluetooth (LE), 1Mbps - Ch. 19) - Dual Ant 2



Plot 7-35. 6dB Bandwidth Plot (Bluetooth (LE), 1Mbps – Ch. 39) – Dual Ant 2

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Plot 7-36. 6dB Bandwidth Plot (Bluetooth (LE), 2Mbps - Ch. 1) - Dual Ant 2



Plot 7-37. 6dB Bandwidth Plot (Bluetooth (LE), 2Mbps – Ch. 19) – Dual Ant 2

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40.0         50.0         50.0         50.0         60.0         70.0 <th< th=""><th>a x</th></th<>	a x
NFE       Trig: Free Run       Avg Hold: 100/100       Radio Device: BTS         10 dB/div       Ref 20.00 dBm       Cleating       Cleating         10 dB/div       Ref 20.00 dBm       Ref 20.00 dBm       Ref 20.00 dBm         20 data       Ref 20.00 dBm       Ref 20.00 dBm       Ref 20.00 dBm         20 data       Ref 20.00 dBm       Ref 20.00 dBm       Ref 20.00 dBm         20 data       Ref 20.00 dBm       Ref 20.00 dBm       Ref 20.00 dBm         20 data       Ref 20.00 dBm       Ref 20.00 dBm       Ref 20.00 dBm         20 data       Ref 20.00 dBm       Ref 20.00 dBm       Ref 20.00 dBm         20 data       Ref 20.00 dBm       Ref 20.00 dBm       Ref 20.00 dBm         20 data<	tector
#IFGain:Low       #Atten: 30 dB       Radio Device: BTS         10 dB/div       Ref 20.00 dBm       Cleating         20 do       do       do       do         30 do       do       do       do         40 do       do       do       do       do         40 do       do       do       do       do         40 do       do       do       do       do       do         60 do       do       do       do       do       do       do         60 do       do       do       do	
Log 100 100 100 100 100 100 100 10	
Log 100 100 100 100 100 100 100 10	
Log 100 100 100 100 100 100 100 10	
Clear Cl	
000       0	r \Alrit
200 200 200 200 200 200 200 200	II VVI IU
300       4	
400       4	
400       4	verag
500	g
600	
Center 2.478000 GHz #Res BW 100 kHz Cocupied Bandwidth 2.0491 MHz Transmit Freq Error -2.321 kHz % of OBW Power 99.00 %	
Center 2.478000 GHz #Res BW 100 kHz #VBW 300 kHz Sweep 8.333 ms Occupied Bandwidth Total Power 17.5 dBm 2.0491 MHz Transmit Freq Error -2.321 kHz % of OBW Power 99.00 %	ax Hole
#Res BW 100 kHz       #VBW 300 kHz       Sweep       8.333 ms         Occupied Bandwidth       Total Power       17.5 dBm         2.0491 MHz       D         Transmit Freq Error       -2.321 kHz       % of OBW Power       99.00 %	_
#Res BW 100 kHz       #VBW 300 kHz       Sweep       8.333 ms       M         Occupied Bandwidth       Total Power       17.5 dBm       D         2.0491 MHz       Transmit Freq Error       -2.321 kHz       % of OBW Power       99.00 %       Auto	
Occupied Bandwidth       Total Power       17.5 dBm         2.0491 MHz       D         Transmit Freq Error       -2.321 kHz       % of OBW Power       99.00 %	
2.0491 MHz         Transmit Freq Error       -2.321 kHz       % of OBW Power       99.00 %	in Hol
2.0491 MHz     D       Transmit Freq Error     -2.321 kHz     % of OBW Power     99.00 %	
Transmit Freq Error -2.321 kHz % of OBW Power 99.00 %	
	etecto Peak
	Ma
MSG STATUS	

Plot 7-38. 6dB Bandwidth Plot (Bluetooth (LE), 2Mbps - Ch. 38) - Dual Ant 2

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# 7.3 Output Power Measurement – Bluetooth (LE)

§15.247(b.3); RSS-247 [5.4(4)]

## **Test Overview and Limits**

The transmitter antenna terminal of the EUT is connected to the input of a spectrum analyzer. Measurements are made while the EUT is operating at maximum power and at the appropriate frequencies.

### The maximum permissible conducted output power is 1 Watt.

### **Test Procedure Used**

ANSI C63.10-2013 – Section 11.9.1.1 KDB 558074 D01 v05r02 – Section 8.3.1.1

### **Test Settings**

- 1. RBW = 3MHz
- 2. VBW = 50MHz
- 3. Span  $\ge$  3 x RBW
- 4. Sweep = auto couple
- 5. Detector = Peak
- 6. Trace mode = max hold
- 7. The trace was allowed to stabilize

### Test Setup

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



Figure 7-2. Test Instrument & Measurement Setup

#### **Test Notes**

None

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Frequency	Data Rate	Channel	Bluetooth	Peak Conducted Power			
[MHz]	[Mbps]	No.	Mode	[dBm]	[mW]		
2402	125 kbps	0	LE	7.58	5.721		
2440	125 kbps	19	LE	6.51	4.475		
2480	125 kbps	39	LE	5.96	3.947		
2402	500 kbps	0	LE	7.51	5.642		
2440	500 kbps	19	LE	6.57	4.539		
2480	500 kbps	39	LE	5.97	3.954		
2402	2402 1 Mbps		LE	18.39	68.976		
2440	1 Mbps	19	LE	18.11	64.670		
2480	1 Mbps	39	LE	17.65	58.170		
2402	402 2 Mbps (		LE	17.93	62.087		
2440	2 Mbps	19	LE	18.10	64.506		
2480	2 Mbps	39	LE	17.94	62.259		

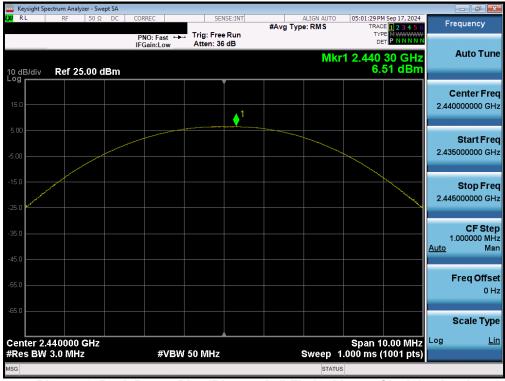
Table 7-9. Conducted Output Power Measurements (Bluetooth (LE)) – Ant 1

FCC ID: A3LSMS936B		MEASUREMENT REPORT (CERTIFICATION)			
Test Report S/N:	Test Dates:	EUT Type:	Dama 20 of 120		
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XI RL RF 5		REC IO: Fast ↔→ Sain:Low		Run	#Avg Typ	ALIGN AUTO e: RMS		Sep 17, 2024	Peak Search
	IFG	ain:Low	Atten: 36				TYP	E MWWWW P NNNN	
10 dB/div Ref 25.0	0 dBm			dB		Mkr	1 2.402	34 GHz 75 dBm	Next Pea
15.0				<b>↓</b> 1					Next Pk Righ
5.00									Next Pk Le
25.0									Marker Del
35.0									Mkr→C
55.0									Mkr→RefL
65.0	Hz						Span 1	0.00 MHz	<b>Mo</b> 1 of
Res BW 3.0 MHz		#VBW	50 MHz			Sweep 1.	.000 ms (	1001 pts)	

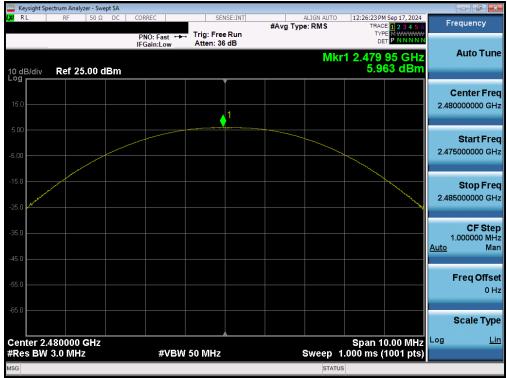
Plot 7-39. Peak Power Plot (Bluetooth (LE), 125kbps – Ch. 0) – Ant
--



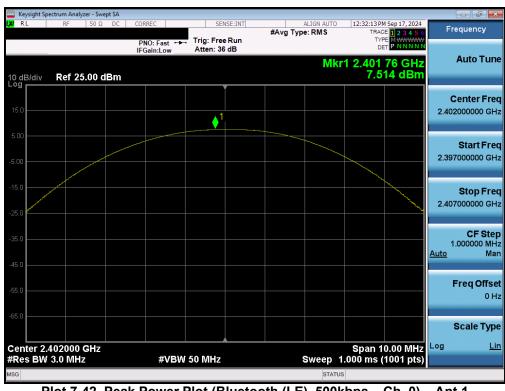
Plot 7-40. Peak Power Plot (Bluetooth (LE), 125kbps - Ch. 19) - Ant 1

FCC ID: A3LSMS936B		MEASUREMENT REPORT (CERTIFICATION)				
Test Report S/N:	Test Dates:	EUT Type:	Dage 20 of 120			
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Plot 7-41. Peak Power Plot (Bluetooth (LE), 125kbps - Ch. 39) - Ant 1



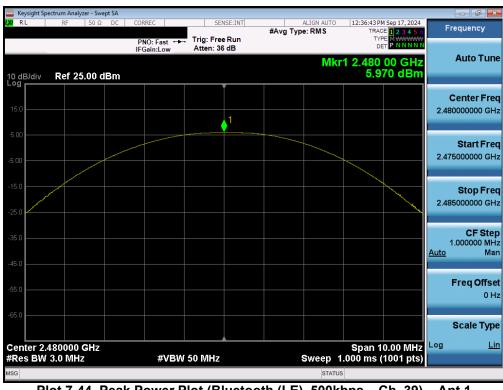
Plot 7-42. Peak Power Plot (Bluetooth (LE), 500kbps - Ch. 0) - Ant 1

FCC ID: A3LSMS936B		MEASUREMENT REPORT (CERTIFICATION)			
Test Report S/N:	Test Dates:	EUT Type:	Dega 40 of 120		
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	ctrum Analyzer - S									_	
LXVI RL	RF 50	Ω DC	CORREC	SEN	ISE:INT	#Avg Typ	ALIGN AUTO e: RMS		M Sep 17, 2024	F	requency
			PNO: Fast ↔→ IFGain:Low	Trig: Free Atten: 36				TYF DE			A
10 dB/div Log	Ref 25.00	dBm					Mkr	1 2.440 6.5	30 GHz 70 dBm		Auto Tune
											Center Freq
15.0					<b>♦</b> <sup>1</sup>					2.44	10000000 GHz
5.00											Start Freq
-5.00		and and a second second								2.43	5000000 GHz
-15.0									and the second s	2.44	Stop Freq
-25.0											
-35.0											CF Step 1.000000 MHz Man
-45.0										<u>Auto</u>	wan
-55.0											Freq Offset
-65.0											0112
											Scale Type
Center 2.4 #Res BW	140000 GHz 3 0 MHz	z	#VBW	50 MHz			Sween 1	Span 1	0.00 MHz 1001 pts)	Log	<u>Lin</u>
MSG	5 V WIL12			50 WH12			STATUS	1	roor prsj		

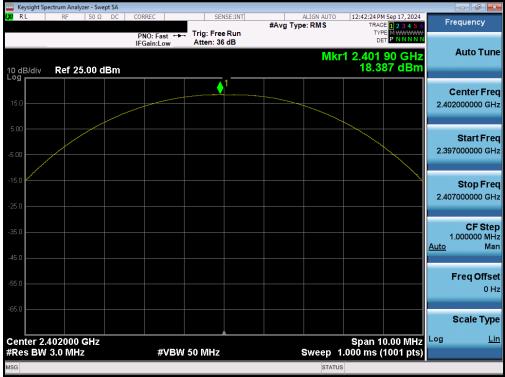
Plot 7-43. Peak Power Plot (Bluetooth (LE), 500kbps - Ch. 19) - Ant 1



Plot 7-44. Peak Power Plot (Bluetooth (LE), 500kbps - Ch. 39) - Ant 1

FCC ID: A3LSMS936B		MEASUREMENT REPORT (CERTIFICATION)			
Test Report S/N:	Test Dates:	EUT Type:	Dega 41 of 120		
1M2408260066-11.A3L	09/03/24 - 10/25/2024	Portable Handset	Page 41 of 130		
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Plot 7-45. Peak Power Plot (Bluetooth (LE), 1Mbps - Ch. 0) - Ant 1

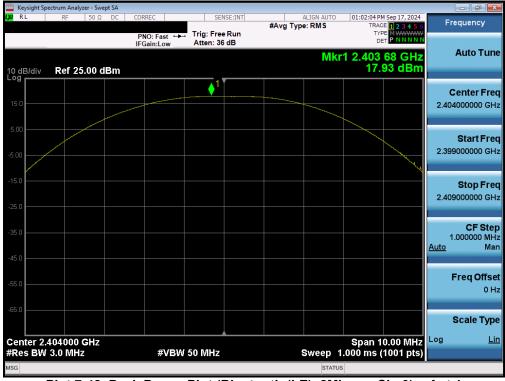


Plot 7-46. Peak Power Plot (Bluetooth (LE), 1Mbps - Ch. 19) - Ant 1

FCC ID: A3LSMS936B		MEASUREMENT REPORT (CERTIFICATION)			
Test Report S/N:	Test Dates:	EUT Type:	Dega 42 of 120		
1M2408260066-11.A3L	09/03/24 - 10/25/2024	Portable Handset	Page 42 of 130		
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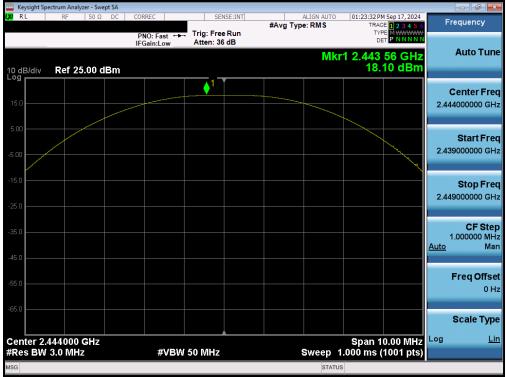
	ctrum Analyzer - Sv	wept SA							di X
XI RL	RF 50 9	Ω DC	CORREC	SENSE:IN	ALIGN AUTO		Sep 17, 2024	Frequen	nev.
			PNO: Fast ↔ IFGain:Low	Trig: Free Run Atten: 36 dB	Type: RMS	TYP	1 2 3 4 5 6 MWWWWW P N N N N N		
10 dB/div Log	Ref 25.00	dBm			Mkr	1 2.479 17.64	86 GHz 47 dBm	Auto	Tun
15.0				1				Cente 2.4800000	
-5.00								Star 2.4750000	tFre 00 G⊢
-15.0								<b>Stoj</b> 2.4850000	p <b>Fre</b> 00 G⊦
35.0								CF 1.00000 <u>Auto</u>	= Ste DO MI Mi
45.0 <u> </u>								Freq	Offs 0 I
65.0								Scale	
Center 2.4 ≇Res BW	180000 GHz 3.0 MHz		#VBV	v 50 MHz	Sweep 1	Span 10 .000 ms (1	2.00 11112	Log	L
MSG					STATUS	3			



Plot 7-48. Peak Power Plot (Bluetooth (LE), 2Mbps - Ch. 0) - Ant 1

FCC ID: A3LSMS936B		MEASUREMENT REPORT (CERTIFICATION)			
Test Report S/N:	Test Dates:	EUT Type:	Dage 42 of 120		
1M2408260066-11.A3L	09/03/24 - 10/25/2024	Portable Handset	Page 43 of 130		
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Plot 7-49. Peak Power Plot (Bluetooth (LE), 2Mbps - Ch. 19) - Ant 1



Plot 7-50. Peak Power Plot (Bluetooth (LE), 2Mbps - Ch. 39) - Ant 1

FCC ID: A3LSMS936B		MEASUREMENT REPORT (CERTIFICATION)			
Test Report S/N:	Test Dates:	EUT Type:	Dega 14 of 120		
1M2408260066-11.A3L	09/03/24 - 10/25/2024	Portable Handset	Page 44 of 130		
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Frequency	Data Rate	Channel	Bluetooth	Peak Co Pov	nducted wer
[MHz]	[Mbps]	No.	Mode	[dBm]	[mW]
2402	125 kbps	0	LE	8.39	6.896
2440	125 kbps	19	LE	8.42	6.947
2480	125 kbps	39	LE	7.64	5.805
2402	500 kbps	0	LE	8.45	6.997
2440	500 kbps	19	LE	8.43	6.968
2480	500 kbps	39	LE	7.67	5.844
2402	1 Mbps	0	LE	17.11	51.416
2440	1 Mbps	19	LE	18.02	63.329
2480	1 Mbps	39	LE	17.89	61.489
2404	2 Mbps	0	LE	17.19	52.336
2444	2 Mbps	19	LE	17.65	58.237
2480	2 Mbps	39	LE	18.28	67.251

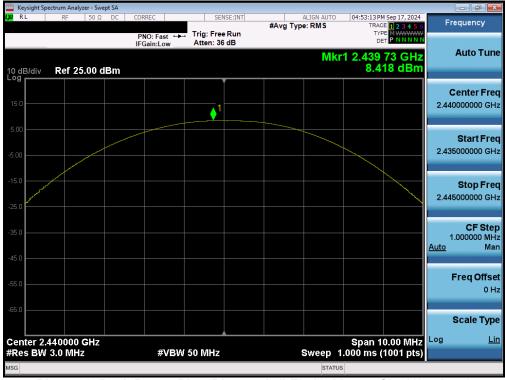
Table 7-10. Conducted Output Power Measurements (Bluetooth (LE)) – Ant 2

FCC ID: A3LSMS936B		MEASUREMENT REPORT (CERTIFICATION)			
Test Report S/N:	Test Dates:	EUT Type:	Dage 45 of 120		
1M2408260066-11.A3L	09/03/24 - 10/25/2024	Portable Handset	Page 45 of 130		
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	pectrum Analyzer	- Swept SA							
L <mark>XI</mark> RL	RF	50 Ω DC	CORREC	SENSE:		ALIGN AUTO	04:24:04 PM Sep TRACE		Frequency
	_		PNO: Fast ↔ IFGain:Low	Trig: Free R Atten: 36 dE	un	a per ano	TYPE M		
10 dB/div Log	Ref 25.0	0 dBm				Mk	r1 2.402 33 8.386	GHz dBm	Auto Tun
15.0					1				Center Fre 2.402000000 GH
5.00									<b>Start Fre</b> 2.397000000 GF
-15.0									<b>Stop Fre</b> 2.407000000 GH
25.0 35.0 45.0								Ē	CF Ste 1.000000 Mł <u>Auto</u> Ma
55.0									<b>Freq Offs</b> 0 F
-65.0									Scale Typ
	.402000 GI / 3.0 MHz	Hz	#VBW	/ 50 MHz		Sweep	Span 10.0 1.000 ms (100	0 MHz 01 pts)	.og <u>L</u>
ISG						STATU			

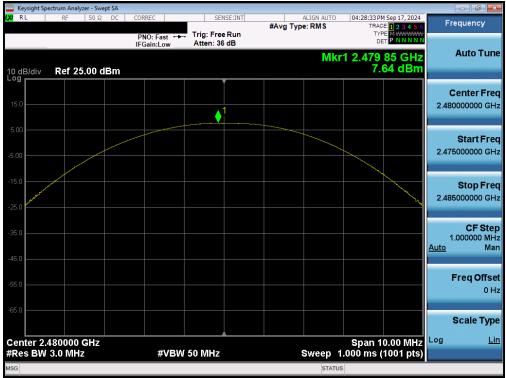
Plot 7-51. Peak Power Plot (Bluetooth (LE), 125kbps – Ch. 0) – Ant 2
--



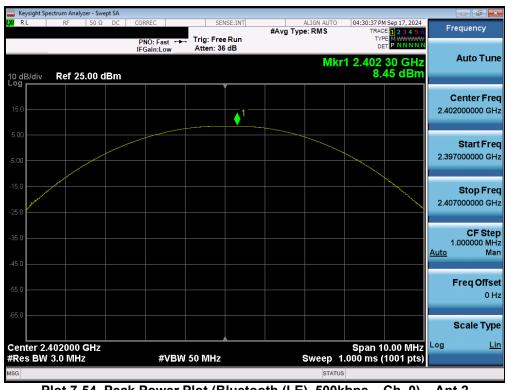
Plot 7-52. Peak Power Plot (Bluetooth (LE), 125kbps - Ch. 19) - Ant 2

FCC ID: A3LSMS936B		MEASUREMENT REPORT (CERTIFICATION)			
Test Report S/N:	Test Dates:	EUT Type:	Dage 46 of 120		
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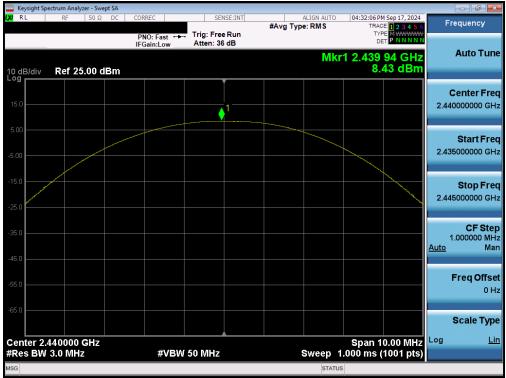
Plot 7-53. Peak Power Plot (Bluetooth (LE), 125kbps - Ch. 39) - Ant 2



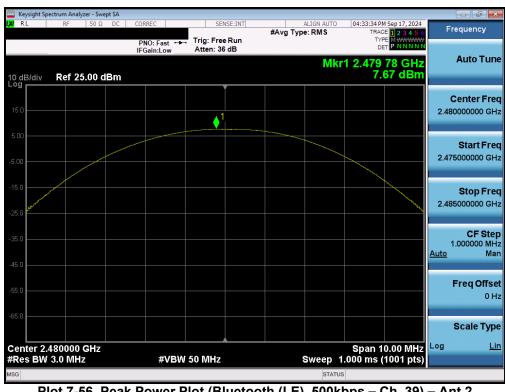
Plot 7-54. Peak Power Plot (Bluetooth (LE), 500kbps - Ch. 0) - Ant 2

FCC ID: A3LSMS936B		MEASUREMENT REPORT (CERTIFICATION)			
Test Report S/N:	Test Dates:	EUT Type:	Dega 47 of 120		
1M2408260066-11.A3L	09/03/24 - 10/25/2024	Portable Handset	Page 47 of 130		
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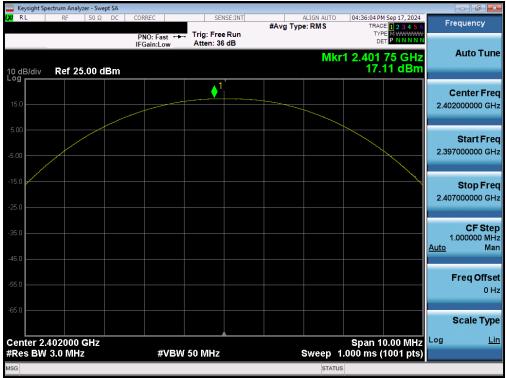
Plot 7-55. Peak Power Plot (Bluetooth (LE), 500kbps - Ch. 19) - Ant 2



Plot 7-56. Peak Power Plot (Bluetooth (LE), 500kbps - Ch. 39) - Ant 2

FCC ID: A3LSMS936B		MEASUREMENT REPORT (CERTIFICATION)			
Test Report S/N:	Test Dates:	EUT Type:	Demo 40 of 400		
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Plot 7-57. Peak Power Plot (Bluetooth (LE), 1Mbps - Ch. 0) - Ant 2



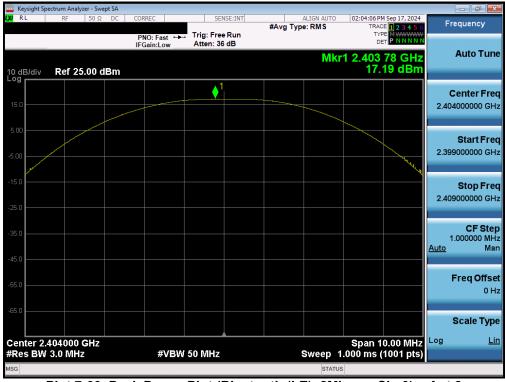
Plot 7-58. Peak Power Plot (Bluetooth (LE), 1Mbps - Ch. 19) - Ant 2

FCC ID: A3LSMS936B		MEASUREMENT REPORT (CERTIFICATION)			
Test Report S/N:	Test Dates:	EUT Type:	Dage 40 of 120		
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	um Analyzer - Swej	pt SA									
LXU RL	RF 50 Ω	DC CO	RREC	SEI	ISE:INT	#Avg Typ	ALIGN AUTO		E 1 2 3 4 5 6	Fr	equency
			NO: Fast ↔ Gain:Low	, Trig: Free Atten: 36				TYF De			
10 dB/div	Ref 25.00 d	Bm					Mkr	1 2.479 17.	84 GHz 89 dBm		Auto Tune
				<b>•</b>	l 						Center Free
15.0										2.48	0000000 GH
5.00											Start Fre
-5.00										2.47	5000000 GH
-15.0											Stop Fre
-25.0										2.48	5000000 GH
-35.0										1	CF Ste
-45.0										<u>Auto</u>	Ma
-55.0											Freq Offse
											0 H
-65.0											Scale Typ
Center 2.48								Span 1	0.00 MHz	Log	Li
#Res BW 3.	0 WIHŻ		#VBV	/ 50 MHz			Sweep 1		1001 pts)		

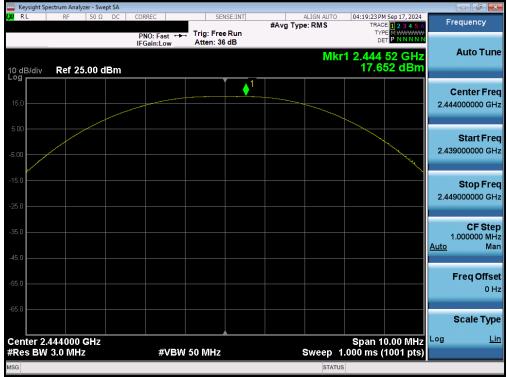
Plot 7-59. Peak Power Plot (Bluetooth (LE), 1Mbps – Ch. 39) – Ant :	Plot 7-59.	Peak Power F	Plot (Bluetooth	(LE), 1N	Ibps – Ch.	39) – Ant 2
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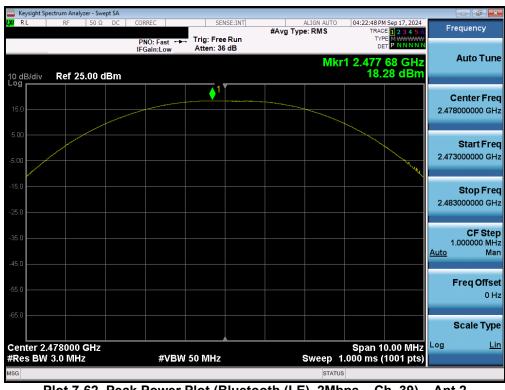
Plot 7-60. Peak Power Plot (Bluetooth (LE), 2Mbps - Ch. 0) - Ant 2

FCC ID: A3LSMS936B		MEASUREMENT REPORT (CERTIFICATION)	Approved by: Technical Manager
Test Report S/N: Test Dates:		EUT Type:	Dava 50 af 400
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Plot 7-61. Peak Power Plot (Bluetooth (LE), 2Mbps - Ch. 19) - Ant 2



Plot 7-62. Peak Power Plot (Bluetooth (LE), 2Mbps - Ch. 39) - Ant 2

FCC ID: A3LSMS936B		MEASUREMENT REPORT (CERTIFICATION)	Approved by: Technical Manager
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Frequency	Data Rate	Channel	Bluetooth	Ant1 Peak Pov	Conducted wer		Peak ed Power	Dual Peak Conducted Power	
[MHz]	[Mbps]	No.	Mode	[dBm]	[mW]	[dBm]	[mW]	[dBm]	[mW]
2402	1 Mbps	0	LE	12.35	17.179	11.92	15.560	15.15	32.739
2440	1 Mbps	19	LE	11.39	13.772	11.67	14.689	14.54	28.461
2480	1 Mbps	39	LE	10.98	12.531	11.22	13.243	14.11	25.775
2404	2 Mbps	1	LE	11.99	15.812	11.04	12.706	14.55	28.518
2444	2 Mbps	19	LE	11.24	13.305	11.37	13.709	14.32	27.013
2480	2 Mbps	38	LE	10.96	12.474	10.45	11.092	13.72	23.566

Table 7-11. Conducted Output Power Measurements (Bluetooth (LE)) – Dual

FCC ID: A3LSMS936B		MEASUREMENT REPORT (CERTIFICATION)	Approved by: Technical Manager
Test Report S/N:	Test Dates: EUT Type:		Dege 52 of 120
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Keysight Spectrum Ana						- 6
RL RF	50 Ω AC	CORREC	SENSE:INT	ALIGN AUTO	04:43:10 PM Oct 03, 2024	Frequency
	NFE	PNO: Fast G	Trig: Free Run Atten: 30 dB	#Avg Type: RMS	TRACE 1 2 3 4 5 6 TYPE MWWWWW DET PNNNNN	
0 dB/div Ref 2	0.00 dBm			Mkr	1 2.401 83 GHz 12.35 dBm	Auto Tur
10.0			<b>↓</b> 1			Center Fre 2.402000000 GH
0.00						Start Fro 2.397000000 G
0.0						Stop Fr 2.407000000 G
0.0						CF St 1.000000 M <u>Auto</u> M
D.0						Freq Offs 0
0.0						Scale Ty
enter 2.402000 Res BW 3.0 MH		#VBW	/ 50 MHz	Sweep 1	Span 10.00 MHz .000 ms (1001 pts)	Log <u>I</u>

Plot 7-63. Peak Power Plot (Bluetooth (LE), 1Mbps - Ch. 0) - Daul Ant 1

Keysight Spectrum Analyzer - Swep	pt SA				
XIRL RF 50 Ω	AC CORREC	SENSE:INT	ALIGN AUTO #Avg Type: RMS	04:44:22 PM Oct 03, 2024 TRACE 1 2 3 4 5 6 TYPE M WWWWW	Frequency
	IFGain:Low	Atten: 30 dB	Mkr	1 2.440 06 GHz	Auto Tune
10 dB/div Ref 20.00 dl	Bm			11.39 dBm	
		<b>↓</b> <sup>1</sup>			Center Fred
10.0					2.440000000 GH
0.00					Start Free 2.435000000 GH;
-10.0					2.43500000 GH
-20.0					Stop Free
-30.0					2.445000000 GH
-40.0					CF Ster
-40.0					1.000000 MH <u>Auto</u> Mar
50.0					
-60.0					Freq Offse 0 H
-70.0					
					Scale Type
Center 2.440000 GHz #Res BW 3.0 MHz	#VBW	50 MHz	Sweep 1	Span 10.00 MHz .000 ms (1001 pts)	Log <u>Lir</u>
MSG			STATUS		

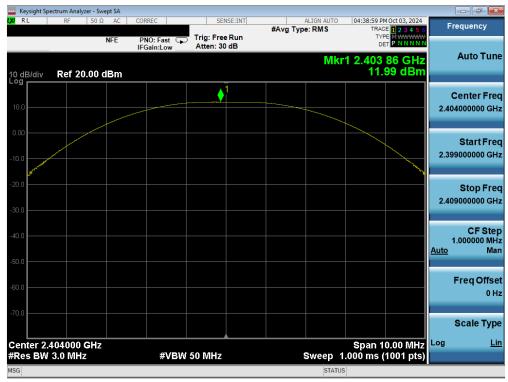
Plot 7-64. Peak Power Plot (Bluetooth (LE), 1Mbps - Ch. 19) - Daul Ant 1

FCC ID: A3LSMS936B		MEASUREMENT REPORT (CERTIFICATION)	Approved by: Technical Manager
Test Report S/N:	Test Dates:	EUT Type:	Daga 52 of 120
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	pectrum Analy													
RL	RF	50 Ω /	AC O	ORREC		SEI	NSE:INT	#Ava	ALIGN Type: RM			CE 1 2 3 4 5 (		requency
	-	NF		PNO: Fas FGain:Lo		Trig: Free Atten: 30			Type. Ita		TY			
) dB/div	Ref 20	.00 dB	m							Mkr	1 2.479 10.	91 GHz 98 dBm		Auto Tu
							1						2.4	Center Fr 80000000 G
														Start Fr
0.0													2.4	75000000 G
0.0													2.4	Stop Fi 85000000 0
0.0														CF St
).0													Auto	1.000000 N
														Freq Off
).0														C
ontor 2	480000	CH-7									Snap-	10.00 MHz	Log	Scale Ty
	480000 3.0 MHz			#	VBW 5	0 MHz			Swe	ep <u>1</u> .	000 m <u>s</u>	(1001 pts)		
G										STATUS				





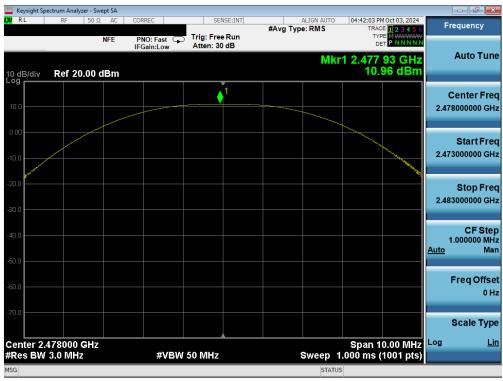
Plot 7-66. Peak Power Plot (Bluetooth (LE), 2Mbps – Ch. 0) – Daul Ant 1

FCC ID: A3LSMS936B		MEASUREMENT REPORT (CERTIFICATION)	Approved by: Technical Manager
Test Report S/N: Test Dates: E		EUT Type:	Daga 54 of 120
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Keysight Spectrum A									
LXXIRL RF	50 Ω AC	CORREC	SENSE:INT	#Avg Typ	ALIGN AUTO	TRAC	1 Oct 03, 2024 E 1 2 3 4 5 6	F	requency
	NFE	PNO: Fast IFGain:Low	Trig: Free Run Atten: 30 dB			TYP DE			Auto Tune
10 dB/div Ref	20.00 dBm				MKr	1 2.439 11.:	90 GHZ 24 dBm		
			<b>∮</b> <sup>1</sup>					(	Center Freq
10.0								2.44	0000000 GHz
0.00									Start Freq
-10.0							- Martine -	2.43	5000000 GHz
and the second se							A. Mare		
-20.0									Stop Freq
-30.0								2.44	5000000 GHz
									CF Step
-40.0								<u>Auto</u>	1.000000 MHz Man
-50.0									Wall
~									Freq Offset
-60.0									0 Hz
-70.0									Ocolo Turro
									Scale Type
Center 2.44000						Span 1	0.00 191112	Log	<u>Lin</u>
#Res BW 3.0 N	/IHZ	#VBW	50 MHz			.000 ms (	1001 pts)		
MSG					STATUS	5			

Plot 7-67. Peak Power Plot (Bluetooth (LE), 2Mbps - Ch. 19) - Daul Ant 1



Plot 7-68. Peak Power Plot (Bluetooth (LE), 2Mbps - Ch. 39) - Daul Ant 1

FCC ID: A3LSMS936B		MEASUREMENT REPORT (CERTIFICATION)	Approved by: Technical Manager
Test Report S/N: Test Dates:		EUT Type:	Dege EE of 120
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Keysight Spectrum Analyzer - Sw									
RL RF 50 Ω	AC CORRE	C	SENSE:INT		ALIGN AUTO		Oct 03, 2024	Frequ	Jency
			rig: Free Run tten: 30 dB	#Avg Type	RMS	TYP	E 1 2 3 4 5 6 E M WWWWW T P N N N N N		
dB/div Ref 20.00 d	dBm				Mkr	1 2.402 11.9	04 GHz 92 dBm	A	ito Tui
-9			1					Cer	nter Fre
).0								2.40200	0000 G
00									tart Fr
0.0								2.39700	0000 G
.0								S	top Fr
).0								2.40700	0000 G
).0									CFS
								1.00 <u>Auto</u>	0000 N N
).0									
).0								Fre	eq Offs 0
0.0									
								Sc	ale Ty
enter 2.402000 GHz Res BW 3.0 MHz		#VBW 50			woon 1	Span 1	0.00 MHz 1001 pts)	Log	
		#VDVV 30	IWITIZ		sweep 1.	Joon ins (	roo r pis)		

Plot 7-69. Peak Power Plot (Bluetooth (LE), 1Mbps - Ch. 0) - Daul Ant 2

	ectrum Analyzer	- Swept SA										- 🖻 💌
X/RL	RF	50 Ω AC	CORRE	C	SEI	NSE:INT		ALIGN AUTO		M Oct 03, 2024	E	requency
		NFE	PNO: IFGair	Fast 🖵 n:Low	Trig: Free Atten: 30		#Avg Typ	e:RMS	TY	DE 1 2 3 4 5 6 PE M WWWWW ET P N N N N N		
0 dB/div	Ref 20.0	00 dBm						Mk	r1 2.439 11.	89 GHz 67 dBm		Auto Tune
10.0					•	1						Center Fred 0000000 GH;
10.00											2.43	Start Free 5000000 GH;
20.0											2.44	Stop Free 5000000 GH
40.0											Auto	CF Ste 1.000000 MH Ma
60.0												Freq Offso 0 H
70.0												Scale Typ
Center 2.4 Res BW	440000 G	Hz		#\(B\)	50 MHz			Swoon	Span 1	0.00 1911 12	Log	<u>Lii</u>
ikes dw	3.0 WINZ			#VDW	<b>JU IVIHZ</b>			Sweep	1.000 ms (	(1001 pts)		

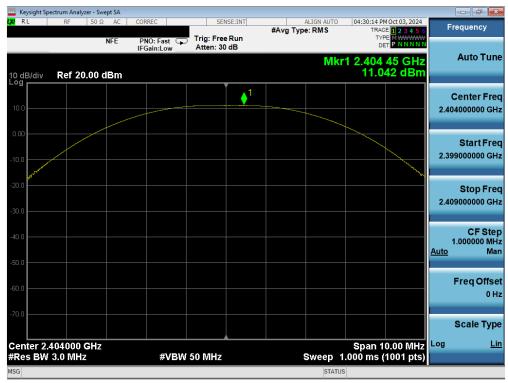
Plot 7-70. Peak Power Plot (Bluetooth (LE), 1Mbps - Ch. 19) - Daul Ant 2

FCC ID: A3LSMS936B		MEASUREMENT REPORT (CERTIFICATION)		
Test Report S/N:	Test Dates:	EUT Type:	Daga 56 of 120	
1M2408260066-11.A3L	09/03/24 - 10/25/2024	Portable Handset	Page 56 of 130	
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	pectrum Analy													
RL	RF	50 Ω	AC C	ORREC		SE	NSE:INT	#Ava	ALIGN AL Type: RMS			M Oct 03, 2024		Frequency
	-	NF		PNO: Fas FGain:Lo		Trig: Fre Atten: 30			rype. runo		TY			
) dB/div	Ref 20	.00 dB	m						Ν	/kr1	2.480 11.	01 GHz 22 dBm		Auto Tu
							1						2.4	Center Fr 80000000 G
.00														
0.0													2.4	Start Fr 75000000 G
1.0														Stop Fi
D.0													2.4	85000000 0
).0														CFS
).0													<u>Auto</u>	1.000000 N
).0														Freq Off
0.0														C
														Scale Ty
	.480000 3.0 MHz			#	VBW 5				Swee	n 10	Span 1	0.00 MHz (1001 pts)	Log	
G	- <b>3.0</b> Winz			#	J VC V					TATUS	oo iiis i	roor pis,		





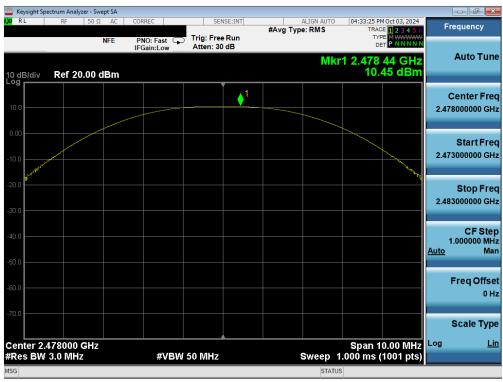
Plot 7-72. Peak Power Plot (Bluetooth (LE), 2Mbps – Ch. 0) – Daul Ant 2

FCC ID: A3LSMS936B		MEASUREMENT REPORT (CERTIFICATION)		
Test Report S/N:	Test Dates:	EUT Type:	Dana 57 af 400	
1M2408260066-11.A3L	260066-11.A3L 09/03/24 - 10/25/2024 Portable Handset		Page 57 of 130	
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🔤 Keysight Spectrum Analyz										
LXIRL RF	50 Ω AC	CORREC	SEI	NSE:INT	#Avg Typ	ALIGN AUTO		1 Oct 03, 2024 E 1 2 3 4 5 6	F	requency
	NFE	PNO: Fast G	Trig: Free Atten: 30	e Run ) dB	41. 8		TYF DE 1 2.439			Auto Tune
10 dB/div Ref 20.	.00 dBm						11.	37 dBm		
10.0			<b>↓</b> 1							Center Freq 10000000 GHz
0.00										
-10.0									2.43	Start Freq 35000000 GHz
and the second s								ومكبهر		
-30.0									2.44	Stop Freq 15000000 GHz
-30.0										
-40.0									<u>Auto</u>	CF Step 1.000000 MHz Man
-50,0										
-60.0										Freq Offset 0 Hz
-70.0										
										Scale Type
Center 2.440000 (							Span 1	0.00 MHz	Log	<u>Lin</u>
#Res BW 3.0 MHz		#VBV	V 50 MHz			Sweep 1	.000 ms (	1001 pts)		
MSG						STATUS	5			

Plot 7-73. Peak Power Plot (Bluetooth (LE), 2Mbps - Ch. 19) - Daul Ant 2



Plot 7-74. Peak Power Plot (Bluetooth (LE), 2Mbps - Ch. 39) - Daul Ant 2

FCC ID: A3LSMS936B		MEASUREMENT REPORT (CERTIFICATION)			
Test Report S/N:	Test Dates:	EUT Type:	Dege 59 of 120		
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# 7.4 Power Spectral Density – Bluetooth (LE)

§15.247(e); RSS-247 [5.2]

# **Test Overview and Limit**

The peak power density is 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.

### The maximum permissible power spectral density is 8 dBm in any 3 kHz band.

### **Test Procedure Used**

ANSI C63.10-2013 – Section 11.10.2 Method PKPSD KDB 558074 D01 v05r02 – Section 8.4 DTS Maximum Power Spectral Density level in the fundamental emission

### **Test Settings**

- 1. Analyzer was set to the center frequency of the DTS channel under investigation
- 2. Span = 1.5 times the DTS channel bandwidth
- 3. RBW = 3kHz
- 4. VBW = 1MHz
- 5. Detector = peak
- 6. Sweep time = auto couple
- 7. Trace mode = max hold
- 8. 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

None

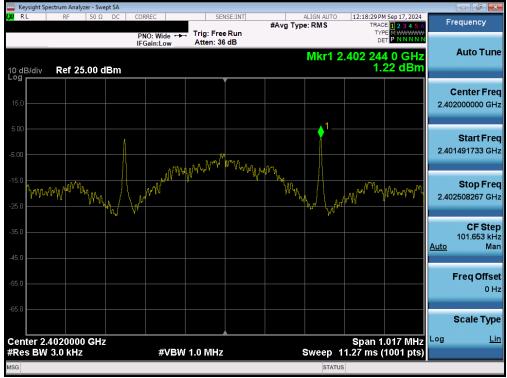
FCC ID: A3LSMS936B		MEASUREMENT REPORT (CERTIFICATION)			
Test Report S/N:	Test Dates:	EUT Type:	Dage 50 of 120		
1M2408260066-11.A3L	09/03/24 - 10/25/2024	Portable Handset	Page 59 of 130		
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Frequency [MHz]	Data Rate [Mbps]	Channel No.	Bluetooth Mode	Measured Power Spectral Density [dBm]	Maximum Permissible Power Density [dBm / 3kHz]	Margin [dB]
2402	125 kbps	0	LE	1.22	8.0	-6.78
2440	125 kbps	19	LE	0.19	8.0	-7.81
2480	125 kbps	39	LE	-0.41	8.0	-8.41
2402	500 kbps	0	LE	0.91	8.0	-7.09
2440	500 kbps	19	LE	-0.09	8.0	-8.09
2480	500 kbps	39	LE	-0.55	8.0	-8.55
2402	1 Mbps	0	LE	2.03	8.0	-5.97
2440	1 Mbps	19	LE	1.82	8.0	-6.18
2480	1 Mbps	39	LE	0.96	8.0	-7.04
2402	2 Mbps	0	LE	-1.63	8.0	-9.63
2440	2 Mbps	19	LE	-1.48	8.0	-9.48
2480	2 Mbps	39	LE	-1.66	8.0	-9.66

FCC ID: A3LSMS936B		MEASUREMENT REPORT (CERTIFICATION)			
Test Report S/N:	Test Dates:	EUT Type:	Dage 60 of 120		
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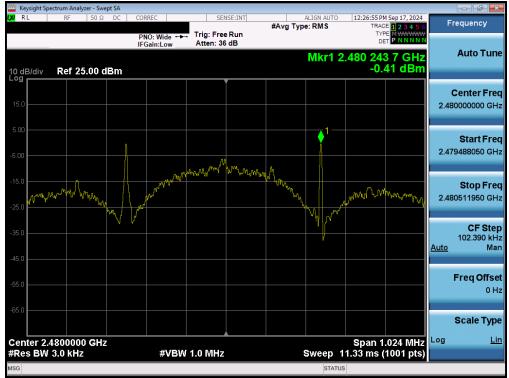
Plot 7-75. Power Spectral Density Plot (Bluetooth (LE), 125kbps - Ch. 0) - Ant 1



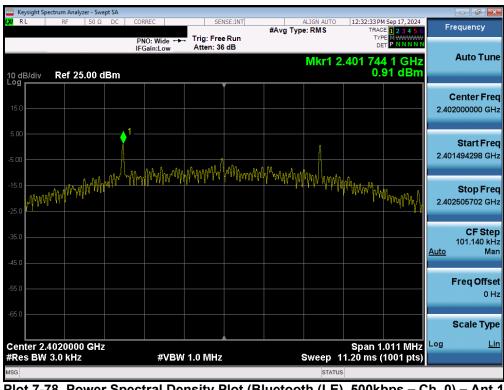
Plot 7-76. Power Spectral Density Plot (Bluetooth (LE), 125kbps – Ch. 19) – Ant 1

FCC ID: A3LSMS936B		MEASUREMENT REPORT (CERTIFICATION)			
Test Report S/N:	Test Dates:	EUT Type:	Dege 61 of 120		
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Plot 7-77. Power Spectral Density Plot (Bluetooth (LE), 125kbps – Ch. 39) – Ant 1



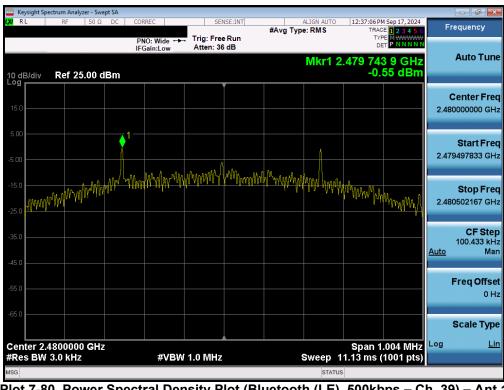
Plot 7-78. Power Spectral Density Plot (Bluetooth (LE), 500kbps - Ch. 0) - Ant 1

FCC ID: A3LSMS936B		MEASUREMENT REPORT (CERTIFICATION)		
Test Report S/N:	Test Dates:	EUT Type:	Dege 62 of 120	
1M2408260066-11.A3L	-11.A3L 09/03/24 - 10/25/2024 Portable Handset		Page 62 of 130	
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🔤 Keysight Spectrum Analyzer - Swept S					
<b>LX RL RF 50 Ω D</b>	OC CORREC	SENSE:INT	ALIGN AUTO #Avg Type: RMS	12:34:51 PM Sep 17, 2024 TRACE 1 2 3 4 5 6	Frequency
10 dB/div Ref 25.00 dBr	PNO: Wide ↔ IFGain:Low	Trig: Free Run Atten: 36 dB	• ,	TYPE MWWW DET P NNNNN .440 243 3 GHz -0.09 dBm	Auto Tune
15.0					Center Freq 2.440000000 GHz
-5.00	And Man Allan	alman and and and and	ol not not the colling of the const		Start Freq 2.439503481 GHz
-15.0 -25.0	k, dakadh atha mha		(	phymen with myper	<b>Stop Freq</b> 2.440496519 GHz
-35.0					CF Step 99.304 kHz <u>Auto</u> Man
-65.0					Freq Offset 0 Hz
					Scale Type
Center 2.4400000 GHz		A		Span 993.0 kHz	Log <u>Lin</u>
#Res BW 3.0 kHz	#VBW	1.0 MHz	Sweep 1	1.00 ms (1001 pts)	
MSG			STATUS		

Plot 7-79. Power Spectral Density Plot (Bluetooth (LE), 500kbps - Ch. 19) - Ant 1



Plot 7-80. Power Spectral Density Plot (Bluetooth (LE), 500kbps - Ch. 39) - Ant 1

FCC ID: A3LSMS936B		MEASUREMENT REPORT (CERTIFICATION)			
Test Report S/N:	Test Dates:	EUT Type:	Dege 62 of 120		
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	pectrum Analyzer - Swe										
LXU RL	RF 50 Ω	DC CO	RREC	SEI	ISE:INT	#Avg Typ	ALIGN AUTO		M Sep 17, 2024	F	requency
10 dB/div	Ref 25.00 d	IF	NO: Wide ↔ Gain:Low	→ Trig: Free Atten: 36			Mkr1 2	דץ ס 2.402 01			Auto Tune
15.0					<u></u>						<b>Center Freq</b> 2000000 GHz
-5.00	www.www	wymy	WWWWW	YWWW Vpanlar		Northmyn	W Young the	Dry Wwmy	Manager	2.40	Start Freq 1506254 GHz
-15.0										2.40	<b>Stop Freq</b> 2493746 GHz
-35.0										<u>Auto</u>	<b>CF Step</b> 98.749 kHz Man
-55.0											Freq Offset 0 Hz
-65.0											Scale Type
Center 2. #Res BW	.4020000 GHz / 3.0 kHz		#VBW	/ 1.0 MHz			Sweep	Span 9 10.93 ms (	987.5 kHz (1001 pts)	Log	<u>Lin</u>
MSG							STATU	IS			

Plot 7-81. Power Spectral Density Plot (Bluetooth (LE), 1Mbps – Ch. 0) – Ant 1

Keysight Spectrum A							
RL RF	50 Ω DC	CORREC PNO: Wide ↔	SENSE	#Avg	ALIGN AUTO J Type: RMS	12:44:53 PM Sep 17, 2024 TRACE 1 2 3 4 5 6 TYPE M	Frequency
dB/div <b>Ref</b>	25.00 dBm	IFGain:Low	Atten: 36 d	3	Mkr1 2	.440 015 6 GHz 1.82 dBm	Auto Tur
5.0							<b>Center Fr</b> 2.440000000 G
Mpmmy 00	www.hoga	n Whan we	Whit heat of	wmthnv2 <sub>vr4f1gr</sub> 4	mmhhnyh	and the state of the second	<b>Start Fr</b> 2.439512835 G
.0							<b>Stop Fr</b> 2.440487165 G
.0							CF St 97.433 k <u>Auto</u> N
.0							Freq Offs 0
i.0							Scale Ty
enter 2.44000 Res BW 3.0 k		#VBW	1.0 MHz		Sweep 1	Span 974.3 kHz 0.80 ms (1001 pts)	Log <u>l</u>
3					STATUS	3	

Plot 7-82. Power Spectral Density Plot (Bluetooth (LE), 1Mbps – Ch. 19) – Ant 1

FCC ID: A3LSMS936B		MEASUREMENT REPORT (CERTIFICATION)			
Test Report S/N:	Test Dates:	EUT Type:	Dege 64 of 120		
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	Spectrum Analyze											
KU RL	RF	50Ω DC		1			#Avg Typ	ALIGN AUTO e: RMS	TRAC	4 Sep 17, 2024 E 1 2 3 4 5 6 E M WWWW	F	requency
			PNO: IFGaiı	Wide ↔ n:Low	Atten: 36				DE			Auto Tun
I0 dB/div	Ref 25.0	00 dBm	n					Mkr1 2	.480 014	4 8 GHz 96 dBm		Auto Tui
.og											(	Center Fre
15.0											2.48	0000000 GI
5.00						<b>∳</b> <sup>1</sup> ──						Start Fr
		M	nor Ar W		hul maraly	proving the state of the state	War Wheel war	Marphag	handle		2.47	9505946 G
5.0	newerner								· IV.WUTT-VU	VW MAR AND		
5.0											2.48	Stop Fr 0494054 G
:5.0												
5.0												CF St 98.811 k
5.0											<u>Auto</u>	N
3.0												<b>F</b> == = 0#
i5.0												Freq Offs 0
5.0												
												Scale Ty
	2.4800000	GHz		#\/D\M	1.0.04			Duraan 1	Span 9	988.1 kHz	Log	ļ
	V 3.0 kHz			#VBW	1.0 MHz			Sweep 1		1001 pts)		



Plot 7-83. Power Spectral Density Plot (Bluetooth (LE), 1Mbps - Ch. 39) - Ant 1

Plot 7-84. Power Spectral Density Plot (Bluetooth (LE), 2Mbps - Ch. 0) - Ant 1

FCC ID: A3LSMS936B		MEASUREMENT REPORT (CERTIFICATION)			
Test Report S/N:	Test Dates:	EUT Type:	D 05 -f 400		
1M2408260066-11.A3L	09/03/24 - 10/25/2024	Portable Handset	Page 65 of 130		
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Keysight Spectrum Ar						
LXI RL RF	50 Ω DC	CORREC	SENSE:INT	ALIGN AUTO #Avg Type: RMS	01:24:28 PM Sep 17, 2024 TRACE 1 2 3 4 5 6	Frequency
10 dB/div Ref	25.00 dBm	PNO: Wide ↔ IFGain:Low	. Trig: Free Run Atten: 36 dB		2.444 000 0 GHz -1.48 dBm	Auto Tune
15.0						Center Freq 2.444000000 GHz
-5.00	unal my andam	nd Maron will	AND	alionauron and and a	M. M. M. Mariana	<b>Start Freq</b> 2.443167141 GHz
-15.0						<b>Stop Freq</b> 2.444832859 GHz
-35.0						CF Step 166.572 kHz <u>Auto</u> Man
-55.0						Freq Offset 0 Hz
						Scale Type
Center 2.44400 #Res BW 3.0 kl		#VBW	1.0 MHz	Sweep	Span 1.666 MHz 18.40 ms (1001 pts)	Log <u>Lin</u>
MSG				STAT	US	

Plot 7-85. Power Spectral Density Plot (Bluetooth (LE), 2Mbps - Ch. 19) - Ant 1



Plot 7-86. Power Spectral Density Plot (Bluetooth (LE), 2Mbps - Ch. 39) - Ant 1

FCC ID: A3LSMS936B		MEASUREMENT REPORT (CERTIFICATION)			
Test Report S/N:	Test Dates:	EUT Type:	Dama 00 af 120		
1M2408260066-11.A3L	09/03/24 - 10/25/2024	Portable Handset	Page 66 of 130		
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Frequency [MHz]	Data Rate [Mbps]	Channel No.	Bluetooth Mode	Measured Power Spectral Density [dBm]	Maximum Permissible Power Density [dBm / 3kHz]	Margin [dB]
2402	125 kbps	0	LE	2.02	8.0	-5.98
2440	125 kbps	19	LE	2.05	8.0	-5.95
2480	125 kbps	39	LE	1.28	8.0	-6.72
2402	500 kbps	0	LE	1.78	8.0	-6.22
2440	500 kbps	19	LE	1.90	8.0	-6.11
2480	500 kbps	39	LE	1.13	8.0	-6.87
2402	1 Mbps	0	LE	0.59	8.0	-7.41
2440	1 Mbps	19	LE	1.53	8.0	-6.47
2480	1 Mbps	39	LE	1.30	8.0	-6.70
2404	2 Mbps	0	LE	-2.13	8.0	-10.13
2444	2 Mbps	19	LE	-2.13	8.0	-10.13
2480	2 Mbps	39	LE	-1.22	8.0	-9.22

FCC ID: A3LSMS936B		MEASUREMENT REPORT (CERTIFICATION)			
Test Report S/N:	Test Dates:	EUT Type:	Dage 67 of 120		
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Plot 7-87. Power Spectral Density Plot (Bluetooth (LE), 125kbps - Ch. 0) - Ant 2



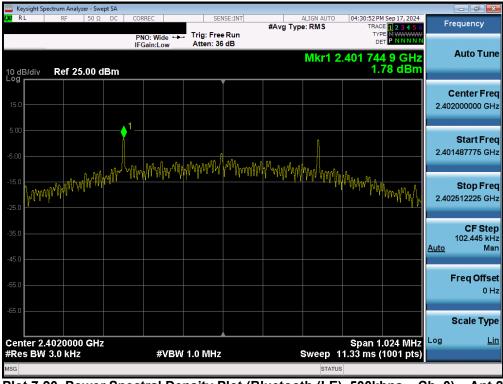
Plot 7-88. Power Spectral Density Plot (Bluetooth (LE), 125kbps – Ch. 19) – Ant 2

FCC ID: A3LSMS936B		Approved by: Technical Manager		
Test Report S/N:	Test Dates:	EUT Type:	Dama (0) of (0)	
1M2408260066-11.A3L	09/03/24 - 10/25/2024	Portable Handset	Page 68 of 130	
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	ht Spectrum Analyzer -										
XU RL	RF 5		DRREC			#Avg Typ	ALIGN AUTO e: RMS	TRAC	4 Sep 17, 2024 E 1 2 3 4 5 6 E M WAAAAAAA	F	requency
10 dB/d	liv Ref 25.0	I	PNO: Wide ↔ FGain:Low	Atten: 36			Mkr1 2	.479 74	4 7 GHz 28 dBm		Auto Tur
15.0											Center Fre
5.00			An	Mrawly may h	᠕᠁ᢅᢣᢧ᠕ᢩ᠕ᡅᠺ	۸				2.47	<b>Start Fre</b> 9489300 GI
15.0	wayne an Anna	www.	AND NOT			on high provides	m l l m	WWW WWW	ᢂᡣᡢ᠕᠕	2.48	<b>Stop Fr</b> 30510700 GI
15.0							¥			<u>Auto</u>	<b>CF Sto</b> 102.140 k M
55.0 —											Freq Offs 0
i5.0											Scale Ty
	r 2.4800000 G 3W 3.0 kHz	iHz	#VBW	1.0 MHz			Sweep 1	Span 1 1.33 ms (	.021 MHz 1001 pts)	Log	L
SG							STATUS				





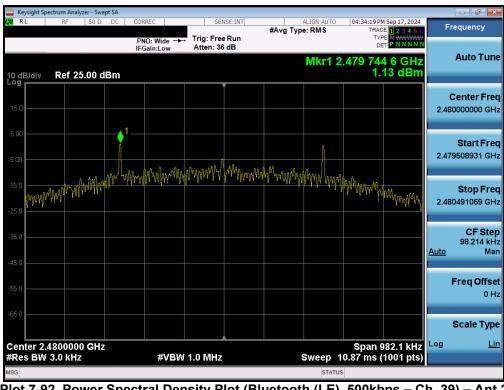
Plot 7-90. Power Spectral Density Plot (Bluetooth (LE), 500kbps – Ch. 0) – Ant 2

FCC ID: A3LSMS936B		Approved by: Technical Manager		
Test Report S/N:	Test Dates:	EUT Type:	Dama 00 af 400	
1M2408260066-11.A3L	09/03/24 - 10/25/2024	Portable Handset	Page 69 of 130	
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Keysight Spectrum Analyzer - Swept SA					
LXX RL RF 50Ω DC	CORREC	SENSE:INT	ALIGN AUTO	04:32:21 PM Sep 17, 2024 TRACE 1 2 3 4 5 6	Frequency
10 dB/div Ref 25.00 dBm		ig: Free Run tten: 36 dB	Mkr1 2	439 744 5 GHz 1.89 dBm	Auto Tune
					Center Freq 2.440000000 GHz
5.00 -15.0 WWWWWWWWWWW	lond Mr. May MM. M. M.	MMW MMMMM	A A A A A A A A A A A A A A A A A A A		Start Freq 2.439506738 GHz
-15.0				ha Malan Lawa ha Marada 194	<b>Stop Freq</b> 2.440493262 GHz
-35.0					CF Step 98.652 kHz <u>Auto</u> Man
-55.0					Freq Offset 0 Hz
Center 2.4400000 GHz #Res BW 3.0 kHz	#VBW 1.0		Swoon 1	Span 986.5 kHz 0.93 ms (1001 pts)	Scale Type Log <u>Lin</u>
MSG	#VBW 1.0		Sweep 1	0.95 ms (1001 pts)	

Plot 7-91. Power Spectral Density Plot (Bluetooth (LE), 500kbps - Ch. 19) - Ant 2



Plot 7-92. Power Spectral Density Plot (Bluetooth (LE), 500kbps - Ch. 39) - Ant 2

FCC ID: A3LSMS936B		Approved by: Technical Manager		
Test Report S/N:	Test Dates:	EUT Type:	Dama 70 of 400	
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