

**ELEMENT WASHINGTON DC LLC**

7185 Oakland Mills Road, Columbia, MD 21046 USA

Tel. 410.290.6652 / Fax 410.290.6654

<http://www.element.com>**MEASUREMENT REPORT****FCC Part 15F | RSS-220****ULTRA WIDEBAND****Applicant Name:**

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

Date of Testing:

4/4/2025 – 4/18/2025

Test Report Issue Date:

4/19/2025

Test Site/Location:

Element lab., Columbia, MD, USA

Test Report Serial No.:

1M2502210015-30.A3L

FCC ID:**A3LSMF966U****IC:****649E-SMF966W****APPLICANT:****Samsung Electronics Co., Ltd.****Application Type:**

Certification

Model:

SM-F966U

HVIN:

SM-F966W

Additional Model(s):

SM-F966U1

EUT Type:

Portable Handset

FCC Classification:

Ultra Wideband (UWB)

FCC Rule Parts(s):

FCC Part 15 Subpart F (15.519, 15.521)

ISED Specification:

RSS-220 Issue 1, Amendment 1

UWB Classification:

Hand-held Communication Device

Test Procedure(s):

ANSI C63.10-2013, KDB 393764 D01

This equipment has been shown to be capable of compliance with the applicable technical standards as indicated in the measurement report and has been tested in accordance with the measurement procedures specified in ANSI C63.10-2013 (See Test Report). These measurements were performed with no deviation from the standards. 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



FCC ID: A3LSMF966U IC: 649E-SMF966W	MEASUREMENT REPORT (CERTIFICATION)		Approved by: Technical Manager
Test Report S/N: 1M2502210015-30.A3L	Test Dates: 4/4/2025 – 4/18/2025	EUT Type: Portable Handset	Page 1 of 70

TABLE OF CONTENTS

1.0	Introduction	3
1.1	Scope.....	3
1.2	Element Test Location	3
1.3	Test Facility / Accreditations	3
2.0	PRODUCT INFORMATION	4
2.1	Equipment Description.....	4
2.2	Device Capabilities	4
2.3	Test Configuration	4
2.4	EMI Suppression Device(s)/Modifications.....	4
2.5	Antenna Description.....	4
2.6	Software and Firmware.....	4
3.0	DESCRIPTION OF TESTS	5
3.1	Evaluation Procedure.....	5
3.2	AC Line Conducted Emissions	5
3.3	Radiated Emissions	6
3.4	Environmental Conditions	6
4.0	Antenna Requirements	7
5.0	Measurement Uncertainty	8
6.0	TEST EQUIPMENT CALIBRATION DATA.....	9
7.0	TEST DATA	10
7.1	Summary	10
7.2	10dBc Bandwidth Measurement.....	11
7.3	Occupied Bandwidth Measurement	28
7.4	Cessation Time.....	45
7.5	Peak Power and Maximum Average Emissions	47
7.6	Radiated Measurement Data above 960MHz	54
7.7	Radiated Spurious Emissions Measurements – Below 1GHz.....	62
7.8	Line Conducted Measurement Data	66
8.0	CONCLUSION	70

FCC ID: A3LSMF966U IC: 649E-SMF966W	MEASUREMENT REPORT (CERTIFICATION)		Approved by: Technical Manager
Test Report S/N: 1M2502210015-30.A3L	Test Dates: 4/4/2025 – 4/18/2025	EUT Type: Portable Handset	Page 2 of 70

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 Innovation, Science and Economic Development Canada.

1.2 Element Test Location

These measurement tests were conducted at Element laboratory(ies) located in Section 1.3 below. 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 Agreements (MRAs).

FCC ID: A3LSMF966U IC: 649E-SMF966W	MEASUREMENT REPORT (CERTIFICATION)		Approved by: Technical Manager
Test Report S/N: 1M2502210015-30.A3L	Test Dates: 4/4/2025 – 4/18/2025	EUT Type: Portable Handset	Page 3 of 70

2.0 PRODUCT INFORMATION

2.1 Equipment Description

The Equipment Under Test (EUT) is the **Samsung Portable Handset FCC ID: A3LSMF966U**. The test data contained in this report pertains only to the EUT's ultra-wideband transmitter.

Test Device Serial No.: 0501M

2.2 Device Capabilities

This device contains the following capabilities:

850/1900 GSM/GPRS/EDGE, 850/1700/1900 WCDMA/HSPA, Multi-band LTE, Multi-band 5G NR (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, NTN, SCS

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 Section 10 of ANSI C63.10-2013. The EUT setup procedures of ANSI C63.10-2013 were used to reference the appropriate EUT setup for radiated spurious emissions testing and AC line conducted testing. See Section 3.2 for AC line conducted emissions test setups, 3.3 for radiated emissions test setups, respectively.

The Equipment Under Test (EUT) was capable of operating on two antennas in two separate modes [HPRF, preamble 27] and [BPRF, preamble 9~12]. Care was taken to ensure the worst-case modes were investigated and reported.

This device supports three folder configurations: one is with folder fully open, one is where the folder is half open (90 degrees), and one is with folder closed. All configurations are tested, and the worst case radiated emissions data is shown in this report.

For more information, please see Section 7.0 for test data and the test setup photos document for the test setup photographs.

2.4 EMI Suppression Device(s)/Modifications

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

2.5 Antenna Description

Following antenna was used for the testing.

Frequency [GHz]	Antenna Gain [dBi]
6.5	-6.1
8.0	-3.3

Table 2-1. Maximum Peak Antenna Gain

2.6 Software and Firmware

The test was conducted with firmware version F966USQU0AYC4 installed on the EUT.

FCC ID: A3LSMF966U IC: 649E-SMF966W	MEASUREMENT REPORT (CERTIFICATION)		Approved by: Technical Manager
Test Report S/N: 1M2502210015-30.A3L	Test Dates: 4/4/2025 – 4/18/2025	EUT Type: Portable Handset	Page 4 of 70

3.0 DESCRIPTION OF TESTS

3.1 Evaluation Procedure

The measurement procedure described in the American National Standard for Methods of Measurement of Radio-Noise Emission from Low-Voltage Electrical and Electronic Equipment in the Range of 9kHz to 40GHz (ANSI C63.4-2014) was 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, 50Ω/50ΩH 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 the 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 7.7. The EMI Receiver mode of the Agilent MXE was used to perform AC line conducted emissions testing.

FCC ID: A3LSMF966U IC: 649E-SMF966W	MEASUREMENT REPORT (CERTIFICATION)		Approved by: Technical Manager
Test Report S/N: 1M2502210015-30.A3L	Test Dates: 4/4/2025 – 4/18/2025	EUT Type: Portable Handset	Page 5 of 70

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 Clause 5, Figure 5.7 of ANSI C63.4-2014. A raised turntable is used for radiated measurement. It 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. 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(b)(1) 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).

FCC ID: A3LSMF966U IC: 649E-SMF966W	MEASUREMENT REPORT (CERTIFICATION)		Approved by: Technical Manager
Test Report S/N: 1M2502210015-30.A3L	Test Dates: 4/4/2025 – 4/18/2025	EUT Type: Portable Handset	Page 6 of 70

4.0 ANTENNA REQUIREMENTS

Except from §15.203 of the FCC Rules/Regulations:

“An intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall 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 a connection to an external antenna

The EUT complies with the requirements of §15.203.

FCC ID: A3LSMF966U IC: 649E-SMF966W	MEASUREMENT REPORT (CERTIFICATION)		Approved by: Technical Manager
Test Report S/N: 1M2502210015-30.A3L	Test Dates: 4/4/2025 – 4/18/2025	EUT Type: Portable Handset	Page 7 of 70

5.0 MEASUREMENT UNCERTAINTY

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

Contribution	Expanded Uncertainty ($\pm$ dB)
Conducted Bench Top Measurements	1.13
Conducted Disturbance	3.09
Radiated Disturbance (<1GHz)	4.98
Radiated Disturbance (>1GHz)	5.07
Radiated Disturbance (>18GHz)	5.09

FCC ID: A3LSMF966U IC: 649E-SMF966W	MEASUREMENT REPORT (CERTIFICATION)		Approved by: Technical Manager
Test Report S/N: 1M2502210015-30.A3L	Test Dates: 4/4/2025 – 4/18/2025	EUT Type: Portable Handset	Page 8 of 70

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 Number
-	ETS-001	EMC Cable and Switch System	12/11/2025	Annual	12/11/2026	ETS-001
-	ETS-002	EMC Cable and Switch System	12/11/2025	Annual	12/11/2026	ETS-002
-	AP1	EMC Cable and Switch System	2/25/2025	Annual	2/25/2026	AP1
Agilent	N9038A	MXE EMI Receiver	9/16/2024	Annual	9/16/2025	MY51210133
Agilent	N9020A	MXA Signal Analyzer	3/22/2024	Annual	3/22/2025	US46470561
Anritsu	MA2411B	Pulse Power Sensor	11/8/2023	Annual	11/8/2024	1027293
Agilent	N9030A	PXA Signal Analyzer (44GHz)	10/16/2024	Annual	10/16/2025	MY49430494
Anritsu	MA2411B	Pulse Power Sensor	7/1/2024	Annual	7/1/2025	1911105
EMCO	3115	Horn Antenna (1-18GHz)	9/6/2024	Biennial	9/6/2026	9704-5182
EMCO	3116	Horn Antenna (18-40GHz)	7/5/2023	Biennial	7/5/2025	9203-2178
Com-Power	AL-130R	Active Loop Antenna	2/22/2024	Biennial	2/22/2026	121085
Rohde & Schwarz	ESW44	EMI Test Receiver (44 GHz)	4/5/2024	Annual	4/5/2025	101716
Rohde & Schwarz	ESU26	EMI Test Receiver (26.5GHz)	10/16/2024	Annual	10/16/2025	100342
Rohde & Schwarz	ENV216	Two-Line V-Network	1/31/2023	Biennial	1/31/2025	101379
Sunol	DRH-118	Horn Antenna (1-18GHz)	2/21/2024	Biennial	2/21/2026	A050307
Sunol	JB5	Bi-Log Antenna (30M - 5GHz)	9/11/2024	Biennial	9/11/2026	A051107

Table 6-1. 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.

FCC ID: A3LSMF966U IC: 649E-SMF966W	MEASUREMENT REPORT (CERTIFICATION)		Approved by: Technical Manager
Test Report S/N: 1M2502210015-30.A3L	Test Dates: 4/4/2025 – 4/18/2025	EUT Type: Portable Handset	Page 9 of 70

7.0 TEST DATA

7.1 Summary

Company Name: Samsung Electronics Co., Ltd.
FCC ID: A3LSMF966U
IC: 649E-SMF966W
FCC Classification: Ultra-Wideband (UWB)

FCC Part Section(s)	RSS Specifications	Test Description	Test Limit	Test Condition	Test Result	Reference
§15.503, §15.519 (b)	RSS-220 [2], RSS-220 [5.1]	10dBc Bandwidth	≥ 500MHz	RADIATED	PASS	Section 7.2
N/A	RSS-Gen [6.7]	Occupied Bandwidth	N/A			Section 7.3
§15.519(a)(1)	RSS-220 [5.3]	Cessation Time	Transmission shall cease in less than 10s			Section 7.4
§15.519(e)	RSS-220 [5.3]	Maximum Peak Power	< 0dBm EIRP in 50MHz BW			Section 7.5
§15.519(c)	RSS-220 [5.3]	Maximum Average Emission in the range of 3100 – 10600 MHz	< -41.3 EIRP in dBm			Section 7.5
§15.519(c)	RSS-220 [5.3]	Radiated Emissions Above 960MHz	See table in 15.519(c) for details See table in RSS-220 [5.3] for details			Section 7.5, 7.6
§15.519(d)	RSS-220 [5.3]	Radiated Emissions in the 1164 – 1240MHz and 1559 – 1610MHz GPS Bands	< -85.3 EIRP in dBm See table in RSS-220 [5.3] for details			Section 7.6
§15.519(c), §15.519(a)	RSS-220 [5.3], RSS-220 [3.4], RSS-Gen	Radiate Emissions Below 960MHz	Emissions in restricted bands must meet the radiated limits detailed in 15.209 Emissions must meet the radiated limits detailed in RSS-220 [3.4]	LINE CONDUCTED		Section 7.7
§15.207	RSS-Gen	AC Conducted Emissions 150kHz – 30MHz	< FCC 15.207 limits (RSS-Gen) < RSS-Gen limits			Section 7.7

Table 7-1. Summary of Test Results

FCC ID: A3LSMF966U IC: 649E-SMF966W	MEASUREMENT REPORT (CERTIFICATION)		Approved by: Technical Manager
Test Report S/N: 1M2502210015-30.A3L	Test Dates: 4/4/2025 – 4/18/2025	EUT Type: Portable Handset	Page 10 of 70

7.2 10dBc Bandwidth Measurement

§15.503(a), §15.519(b)

Test Overview and Limit

Per the definition of 15.503, the UWB Bandwidth is the frequency band bounded by the points that are 10 dB below the highest radiated emission, as based on the complete transmission system including the antenna.

The 10dB bandwidth of the UWB signal must remain fully within the 3100 – 10,600MHz band. The 10dB bandwidth of the UWB signal must also be greater than or equal to 500MHz.

Test Procedures Used

ANSI C63.10-2013 Section 10.1

Test Settings

1. RBW = 1MHz
2. VBW = 3MHz
3. Detector = Peak
4. Span was set wide enough to capture the 10dB points of the signal
5. Trace mode = max hold
6. Sweep = 2s
7. The trace was allowed to stabilize

Test Setup

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



Figure 7-1. Test Instrument and Measurement Setup

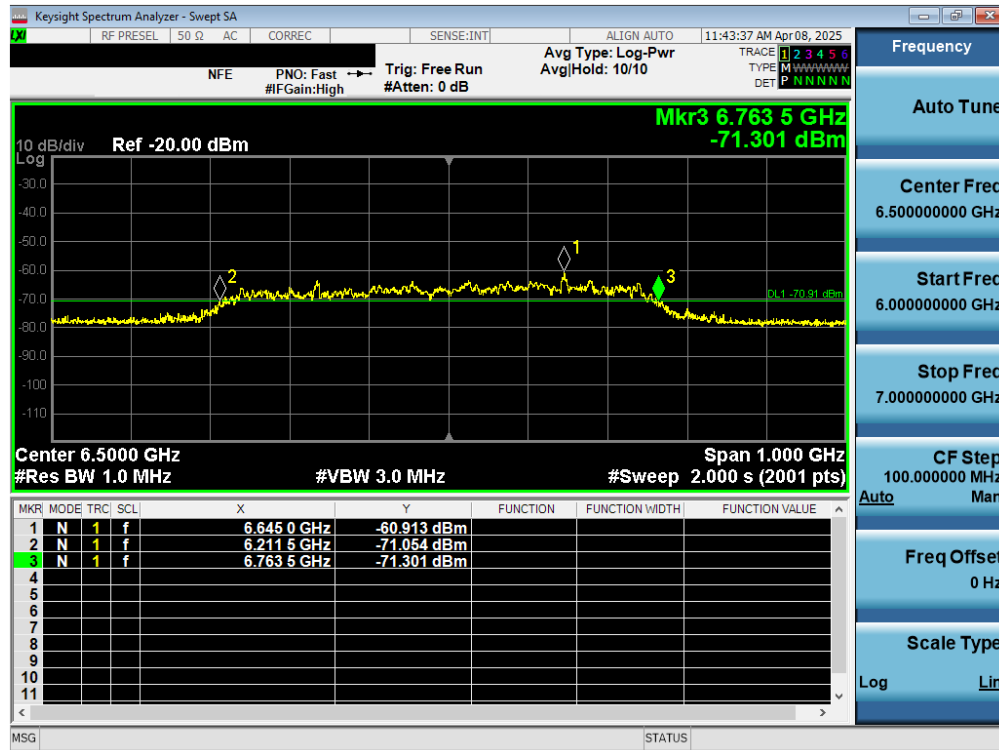
FCC ID: A3LSMF966U IC: 649E-SMF966W	MEASUREMENT REPORT (CERTIFICATION)		Approved by: Technical Manager
Test Report S/N: 1M2502210015-30.A3L	Test Dates: 4/4/2025 – 4/18/2025	EUT Type: Portable Handset	Page 11 of 70

Frequency [GHz]	Channel	Preamble ID	Config	Mode	F _M [GHz]	F _L [GHz]	F _H [GHz]	F _c [GHz]	Measured Bandwidth [MHz]	Minimum Bandwidth [MHz]	Pass / Fail
6.5	5	9	SP0	BPRF	6.645	6.212	6.764	6.488	552.00	500	Pass
		9	SP1	BPRF	6.646	6.217	6.771	6.494	554.00	500	Pass
		9	SP3	BPRF	6.645	6.208	6.778	6.493	570.00	500	Pass
		10	SP0	BPRF	6.489	6.244	6.751	6.497	506.50	500	Pass
		10	SP1	BPRF	6.489	6.231	6.751	6.491	520.00	500	Pass
		10	SP3	BPRF	6.521	6.208	6.782	6.495	573.50	500	Pass
		11	SP0	BPRF	6.656	6.209	6.772	6.490	563.50	500	Pass
		11	SP1	BPRF	6.656	6.208	6.774	6.491	566.00	500	Pass
		11	SP3	BPRF	6.459	6.215	6.774	6.495	559.00	500	Pass
		12	SP0	BPRF	6.680	6.210	6.779	6.494	569.00	500	Pass
		12	SP1	BPRF	6.681	6.213	6.774	6.493	561.50	500	Pass
		12	SP3	BPRF	6.459	6.270	6.773	6.522	503.00	500	Pass
		27	SP0	HPRF	6.731	6.219	6.775	6.497	556.00	500	Pass
		27	SP1	HPRF	6.552	6.262	6.775	6.518	513.50	500	Pass
		27	SP3	HPRF	6.552	6.255	6.773	6.514	518.00	500	Pass
8.0	9	9	SP0	BPRF	7.832	7.641	8.238	7.939	597.50	500	Pass
		9	SP1	BPRF	7.832	7.643	8.239	7.941	596.00	500	Pass
		9	SP3	BPRF	7.769	7.695	8.238	7.966	542.50	500	Pass
		10	SP0	BPRF	7.988	7.716	8.231	7.973	514.50	500	Pass
		10	SP1	BPRF	7.987	7.676	8.181	7.929	505.00	500	Pass
		10	SP3	BPRF	7.769	7.695	8.234	7.965	539.00	500	Pass
		11	SP0	BPRF	7.763	7.681	8.213	7.947	532.00	500	Pass
		11	SP1	BPRF	7.763	7.696	8.215	7.955	519.00	500	Pass
		11	SP3	BPRF	7.769	7.696	8.231	7.964	535.00	500	Pass
		12	SP0	BPRF	7.797	7.660	8.223	7.941	563.00	500	Pass
		12	SP1	BPRF	7.797	7.676	8.231	7.953	555.00	500	Pass
		12	SP3	BPRF	7.769	7.696	8.231	7.963	535.00	500	Pass
		27	SP0	HPRF	7.746	7.698	8.246	7.972	547.50	500	Pass
		27	SP1	HPRF	7.746	7.697	8.246	7.971	549.00	500	Pass
		27	SP3	HPRF	7.800	7.696	8.238	7.967	541.50	500	Pass

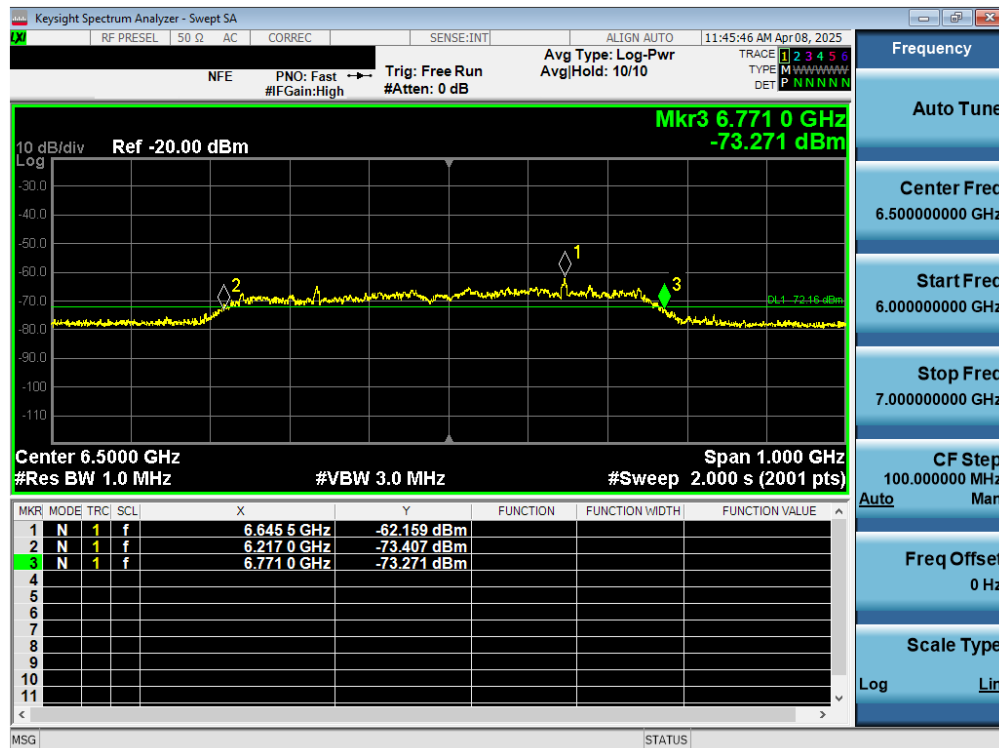
Table 7-2. UWB 10dBc Bandwidth Summary

FCC ID: A3LSMF966U IC: 649E-SMF966W	MEASUREMENT REPORT (CERTIFICATION)		Approved by: Technical Manager
Test Report S/N: 1M2502210015-30.A3L	Test Dates: 4/4/2025 – 4/18/2025	EUT Type: Portable Handset	Page 12 of 70

10dBc Bandwidth Results

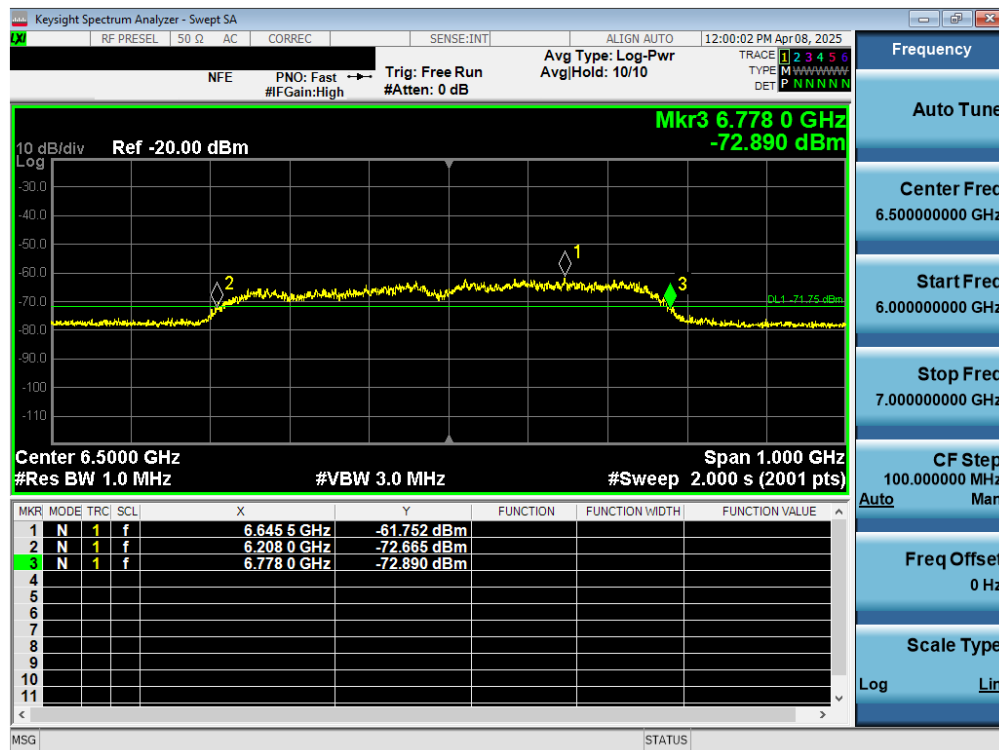


Plot 7-1. 10dBc Bandwidth – CH.5 - SP0 – Preamble 9

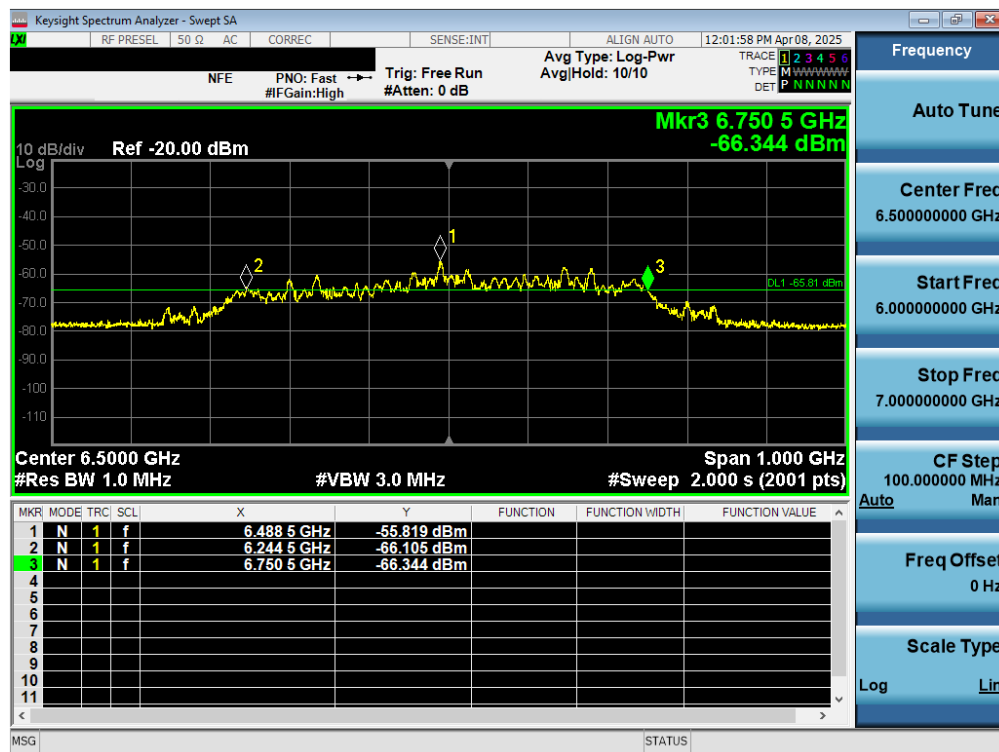


Plot 7-2. 10dBc Bandwidth – CH.5 – SP1 – Preamble 9

FCC ID: A3LSMF966U IC: 649E-SMF966W	MEASUREMENT REPORT (CERTIFICATION)		Approved by: Technical Manager
Test Report S/N: 1M2502210015-30.A3L	Test Dates: 4/4/2025 – 4/18/2025	EUT Type: Portable Handset	Page 13 of 70

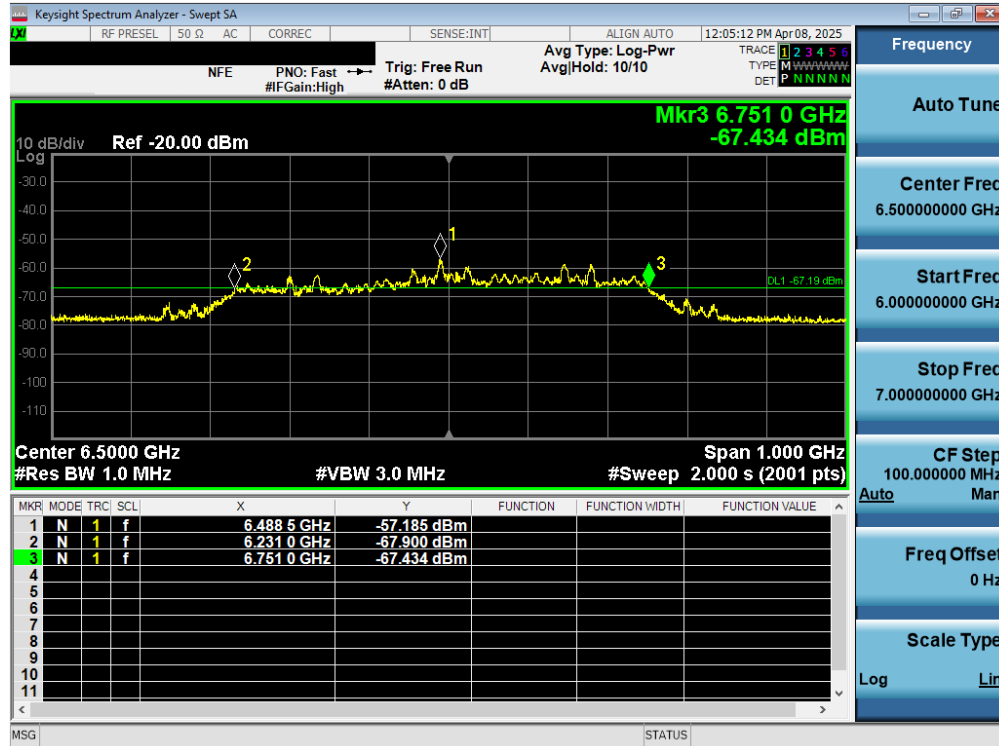


Plot 7-3. 10dBc Bandwidth – CH.5 – SP3 – Preamble 9

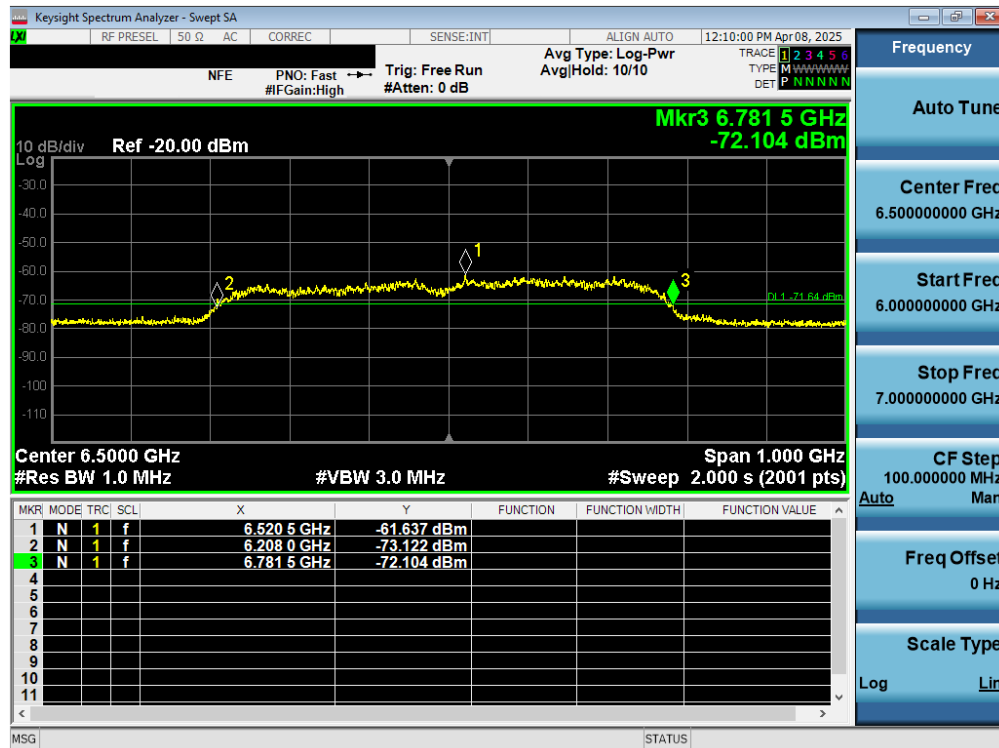


Plot 7-4. 10dBc Bandwidth – CH.5 - SP0 – Preamble 10

FCC ID: A3LSMF966U IC: 649E-SMF966W	MEASUREMENT REPORT (CERTIFICATION)		Approved by: Technical Manager
Test Report S/N: 1M2502210015-30.A3L	Test Dates: 4/4/2025 – 4/18/2025	EUT Type: Portable Handset	Page 14 of 70

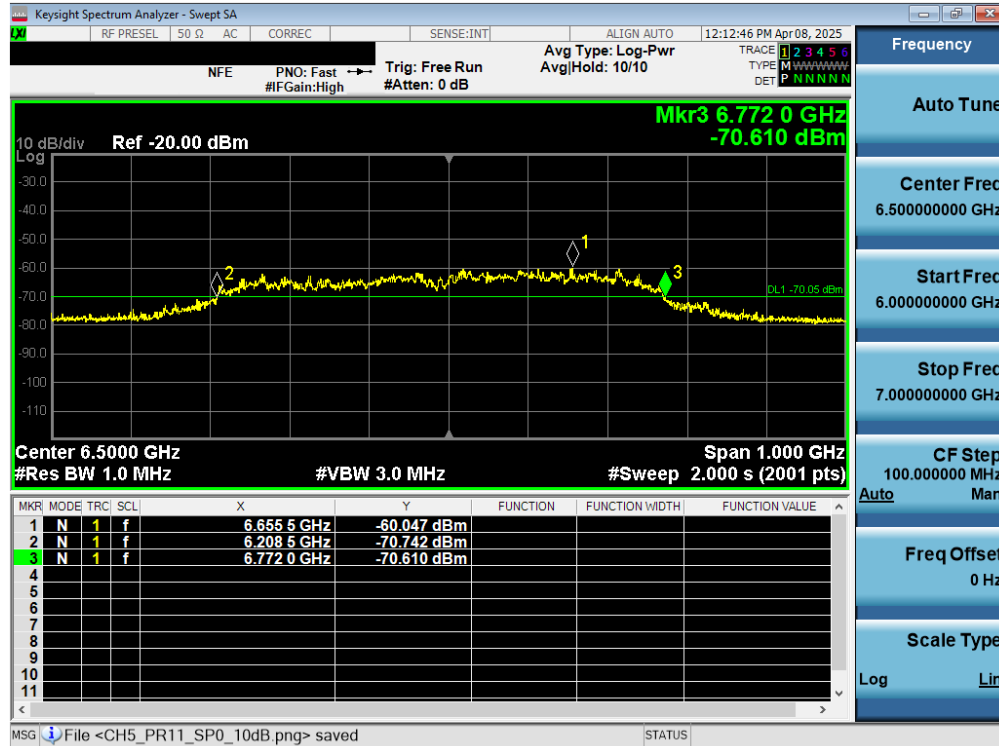


Plot 7-5. 10dBc Bandwidth – CH.5 – SP1 – Preamble 10

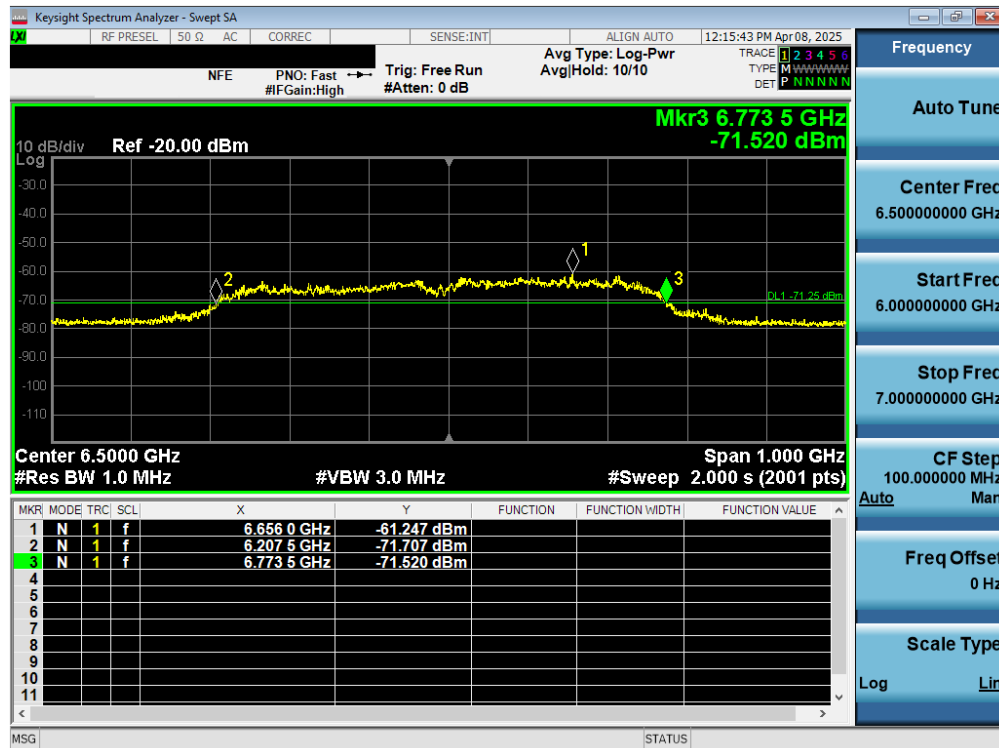


Plot 7-6. 10dBc Bandwidth – CH.5 – SP3 – Preamble 10

FCC ID: A3LSMF966U IC: 649E-SMF966W	MEASUREMENT REPORT (CERTIFICATION)		Approved by: Technical Manager
Test Report S/N: 1M2502210015-30.A3L	Test Dates: 4/4/2025 – 4/18/2025	EUT Type: Portable Handset	Page 15 of 70

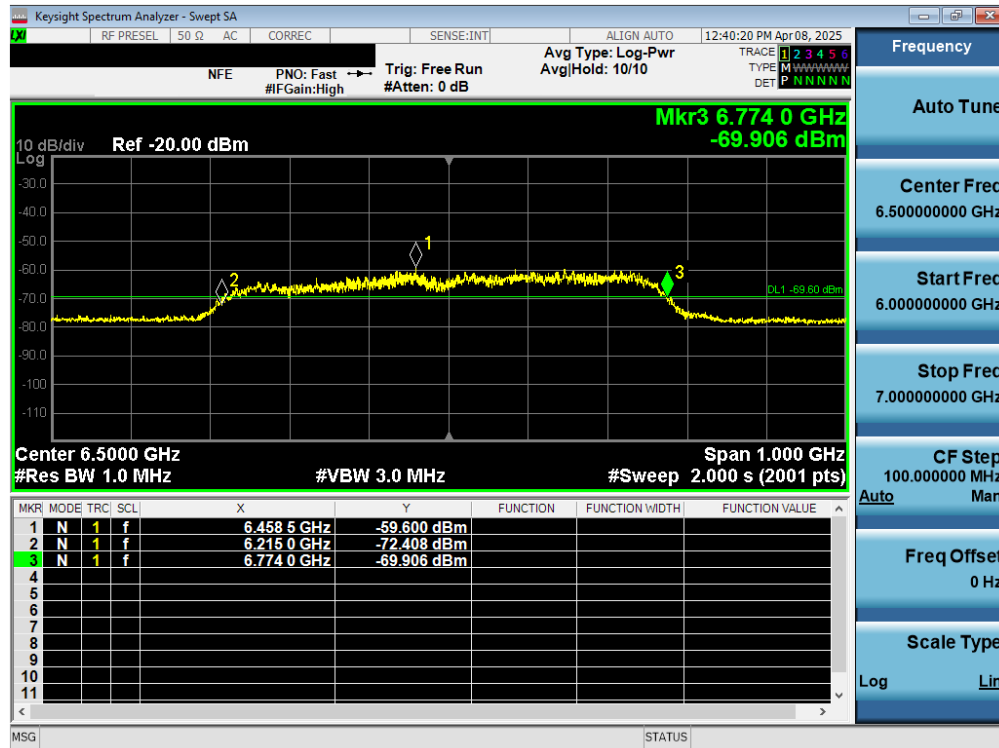


Plot 7-7. 10dBc Bandwidth – CH.5 - SP0 – Preamble 11

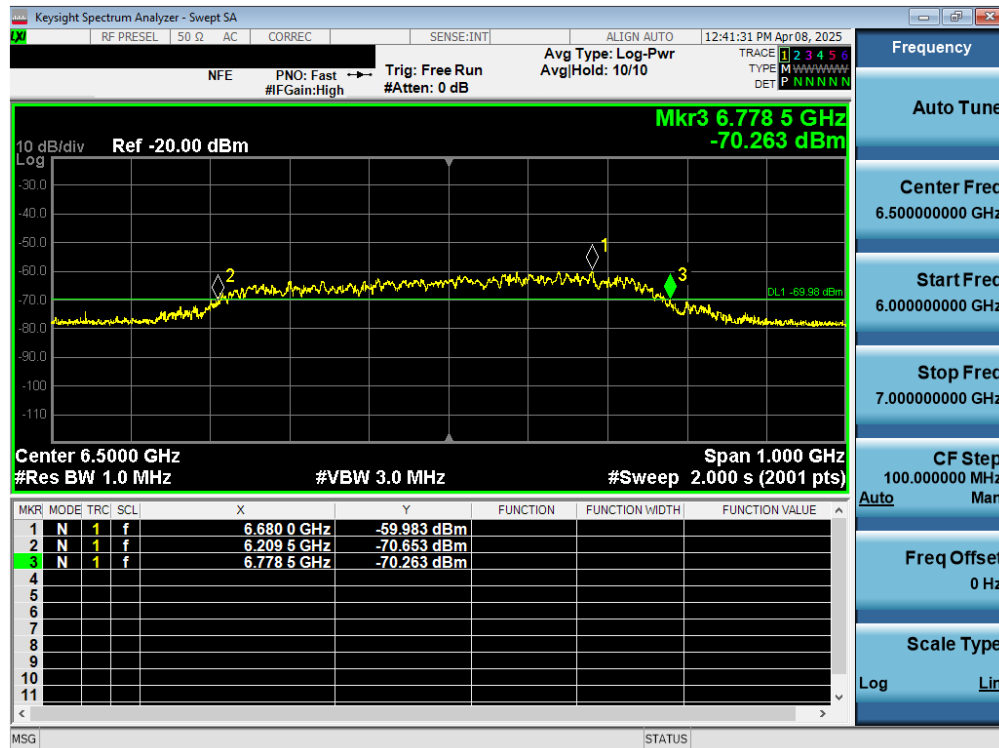


Plot 7-8. 10dBc Bandwidth – CH.5 – SP1 – Preamble 11

FCC ID: A3LSMF966U IC: 649E-SMF966W	MEASUREMENT REPORT (CERTIFICATION)		Approved by: Technical Manager
Test Report S/N: 1M2502210015-30.A3L	Test Dates: 4/4/2025 – 4/18/2025	EUT Type: Portable Handset	Page 16 of 70

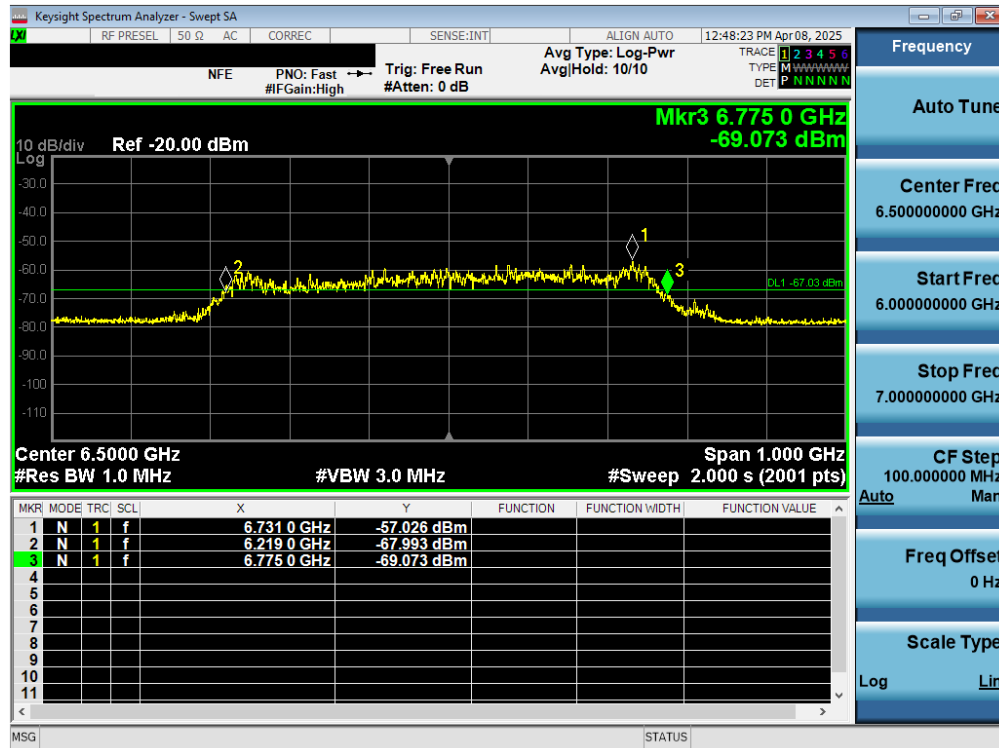


Plot 7-9. 10dBc Bandwidth – CH.5 – SP3 – Preamble 11

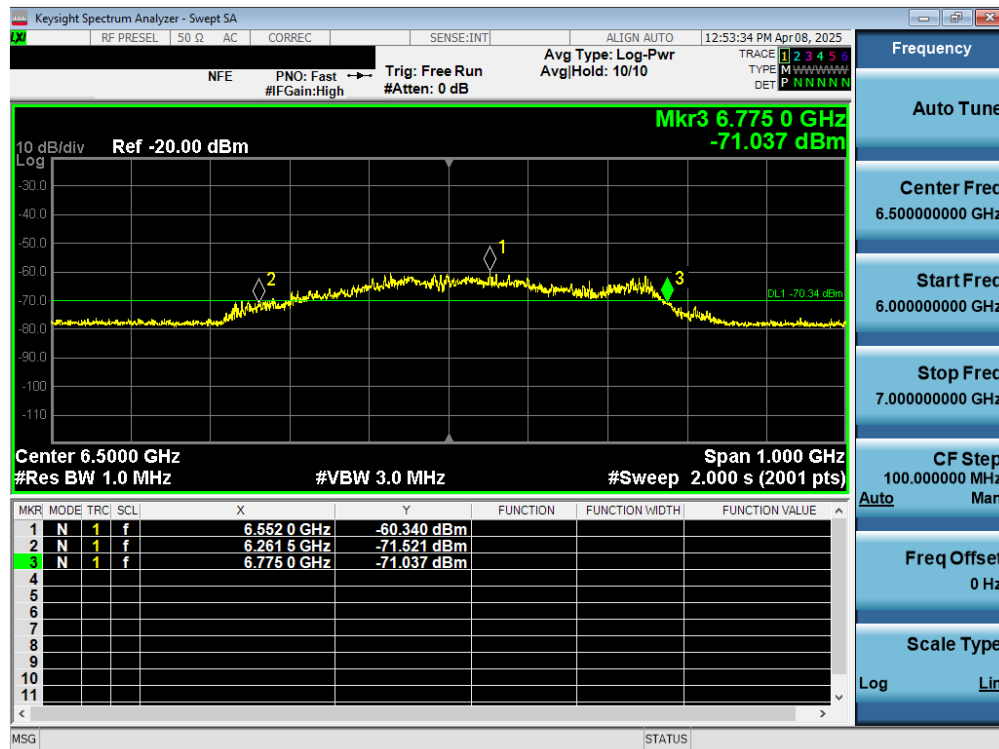


Plot 7-10. 10dBc Bandwidth – CH.5 - SP0 – Preamble 12

FCC ID: A3LSMF966U IC: 649E-SMF966W	MEASUREMENT REPORT (CERTIFICATION)		Approved by: Technical Manager
Test Report S/N: 1M2502210015-30.A3L	Test Dates: 4/4/2025 – 4/18/2025	EUT Type: Portable Handset	Page 17 of 70

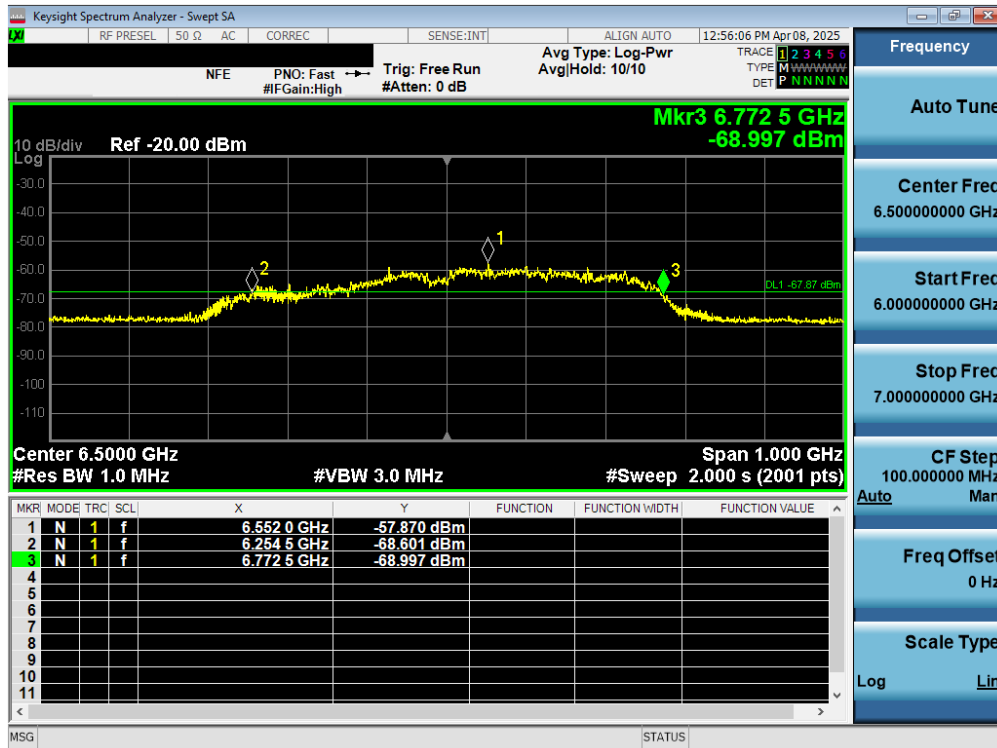


Plot 7-13. 10dBc Bandwidth – CH.5 - SP0 – Preamble 27



Plot 7-14. 10dBc Bandwidth – CH.5 – SP1 – Preamble 27

FCC ID: A3LSMF966U IC: 649E-SMF966W	MEASUREMENT REPORT (CERTIFICATION)		Approved by: Technical Manager
Test Report S/N: 1M2502210015-30.A3L	Test Dates: 4/4/2025 – 4/18/2025	EUT Type: Portable Handset	Page 19 of 70



Plot 7-15. 10dBc Bandwidth – CH.5 – SP3 – Preamble 27



Plot 7-16. 10dBc Bandwidth – CH.9 - SP0 – Preamble 9

FCC ID: A3LSMF966U IC: 649E-SMF966W	MEASUREMENT REPORT (CERTIFICATION)		Approved by: Technical Manager
Test Report S/N: 1M2502210015-30.A3L	Test Dates: 4/4/2025 – 4/18/2025	EUT Type: Portable Handset	Page 20 of 70

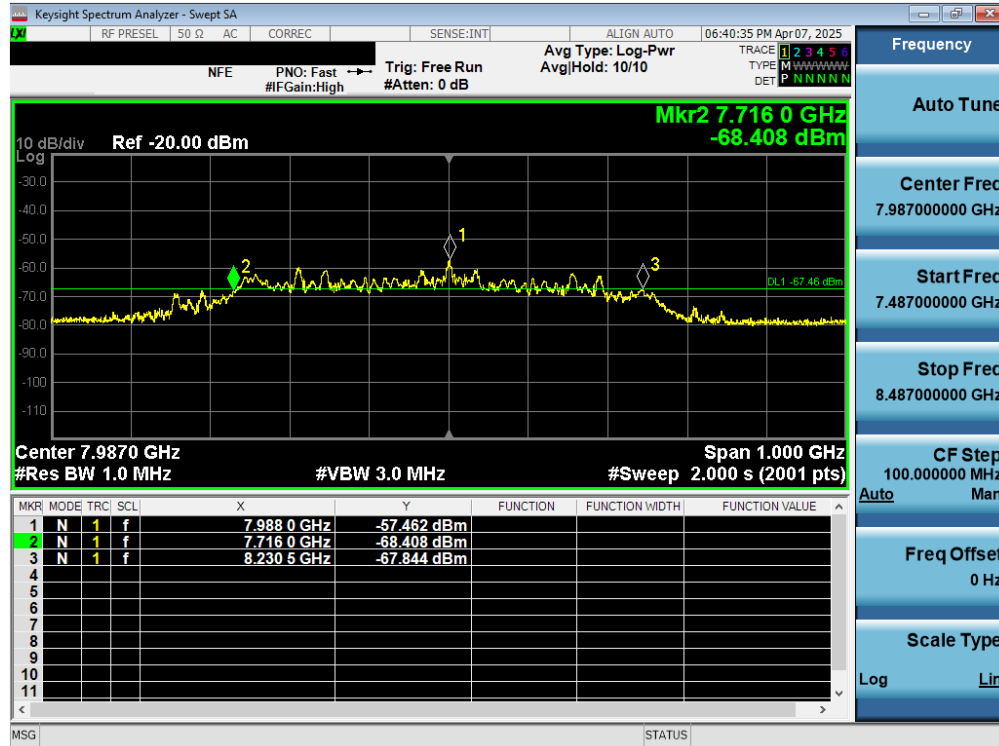


Plot 7-17. 10dBc Bandwidth – CH.9 – SP1 – Preamble 9

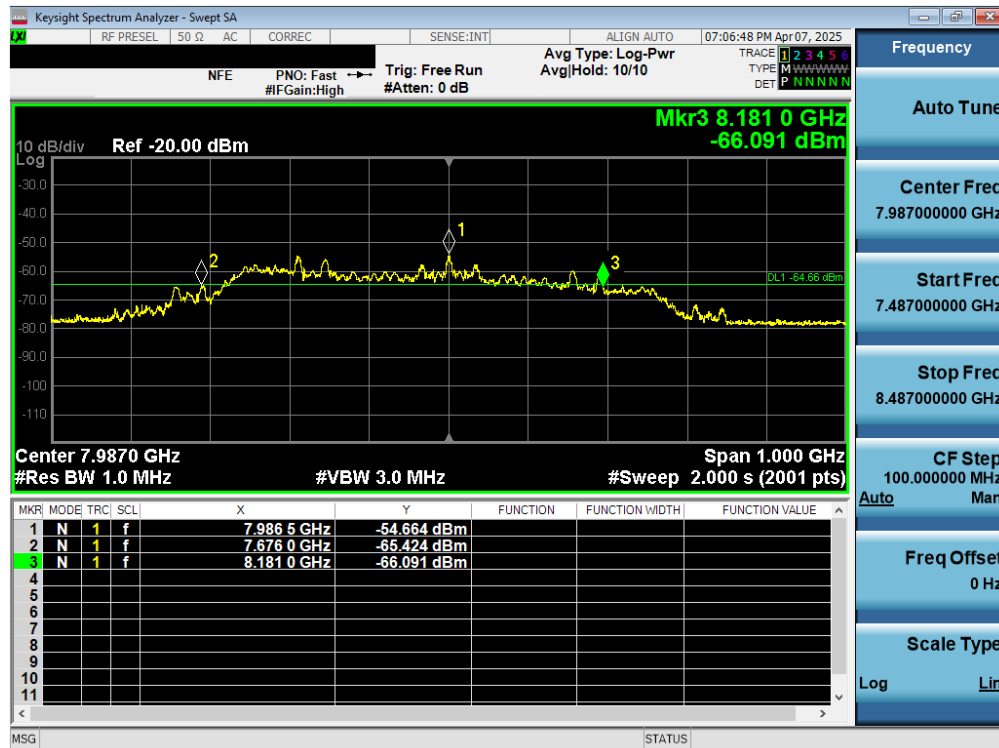


Plot 7-18. 10dBc Bandwidth – CH.9 – SP3 – Preamble 9

FCC ID: A3LSMF966U IC: 649E-SMF966W	MEASUREMENT REPORT (CERTIFICATION)		Approved by: Technical Manager
Test Report S/N: 1M2502210015-30.A3L	Test Dates: 4/4/2025 – 4/18/2025	EUT Type: Portable Handset	Page 21 of 70



Plot 7-19. 10dBc Bandwidth – CH.9 - SP0 – Preamble 10



Plot 7-20. 10dBc Bandwidth – CH.9 – SP1 – Preamble 10

FCC ID: A3LSMF966U IC: 649E-SMF966W	MEASUREMENT REPORT (CERTIFICATION)		Approved by: Technical Manager
Test Report S/N: 1M2502210015-30.A3L	Test Dates: 4/4/2025 – 4/18/2025	EUT Type: Portable Handset	Page 22 of 70



Plot 7-21. 10dBc Bandwidth – CH.9 – SP3 – Preamble 10



Plot 7-22. 10dBc Bandwidth – CH.9 - SP0 – Preamble 11

FCC ID: A3LSMF966U IC: 649E-SMF966W	MEASUREMENT REPORT (CERTIFICATION)		Approved by: Technical Manager
Test Report S/N: 1M2502210015-30.A3L	Test Dates: 4/4/2025 – 4/18/2025	EUT Type: Portable Handset	Page 23 of 70



Plot 7-23. 10dBc Bandwidth – CH.9 – SP1 – Preamble 11



Plot 7-24. 10dBc Bandwidth – CH.9 – SP3 – Preamble 11

FCC ID: A3LSMF966U IC: 649E-SMF966W	MEASUREMENT REPORT (CERTIFICATION)		Approved by: Technical Manager
Test Report S/N: 1M2502210015-30.A3L	Test Dates: 4/4/2025 – 4/18/2025	EUT Type: Portable Handset	Page 24 of 70



Plot 7-25. 10dBc Bandwidth – CH.9 - SP0 – Preamble 12

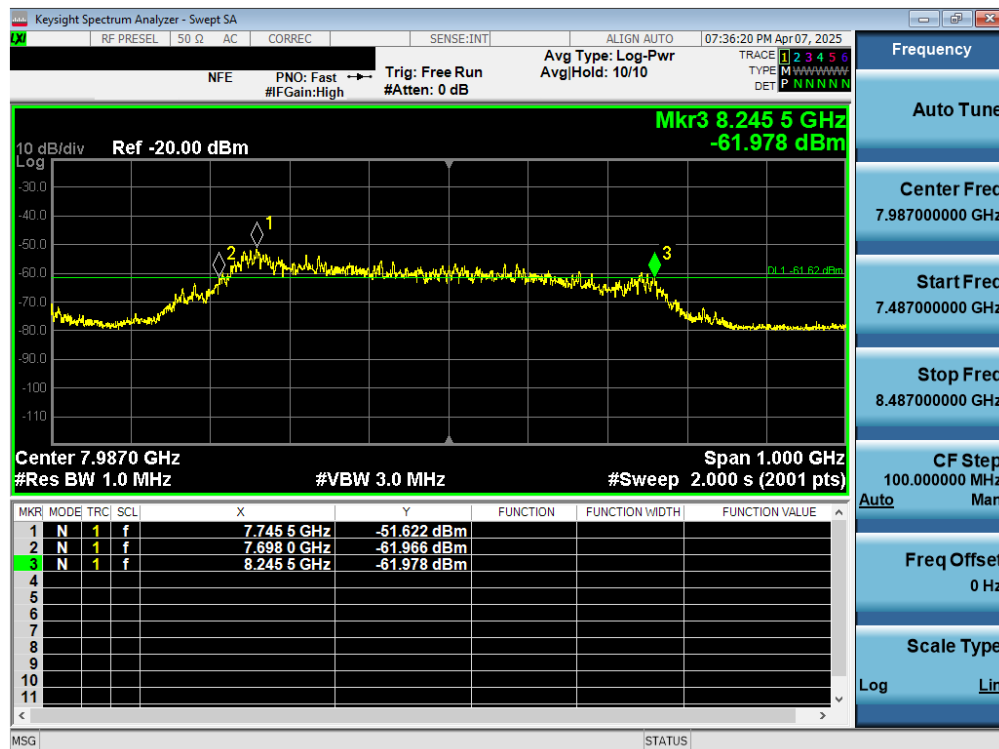


Plot 7-26. 10dBc Bandwidth – CH.9 – SP1 – Preamble 12

FCC ID: A3LSMF966U IC: 649E-SMF966W	MEASUREMENT REPORT (CERTIFICATION)		Approved by: Technical Manager
Test Report S/N: 1M2502210015-30.A3L	Test Dates: 4/4/2025 – 4/18/2025	EUT Type: Portable Handset	Page 25 of 70

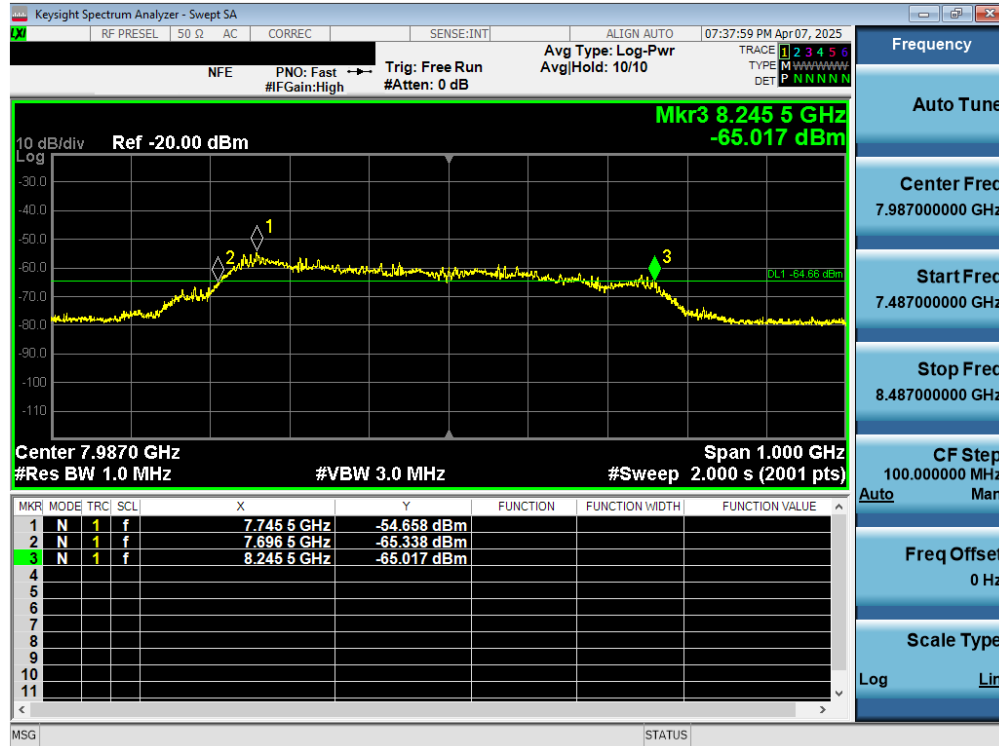


Plot 7-27. 10dBc Bandwidth – CH.9 – SP3 – Preamble 12



Plot 7-28. 10dBc Bandwidth – CH.9 - SP0 – Preamble 27

FCC ID: A3LSMF966U IC: 649E-SMF966W	MEASUREMENT REPORT (CERTIFICATION)		Approved by: Technical Manager
Test Report S/N: 1M2502210015-30.A3L	Test Dates: 4/4/2025 – 4/18/2025	EUT Type: Portable Handset	Page 26 of 70



Plot 7-29. 10dBc Bandwidth – CH.9 – SP1 – Preamble 27



Plot 7-30. 10dBc Bandwidth – CH.9 – SP3 – Preamble 27

FCC ID: A3LSMF966U IC: 649E-SMF966W	MEASUREMENT REPORT (CERTIFICATION)		Approved by: Technical Manager
Test Report S/N: 1M2502210015-30.A3L	Test Dates: 4/4/2025 – 4/18/2025	EUT Type: Portable Handset	Page 27 of 70

7.3 Occupied Bandwidth Measurement

RSS-220[2]; RSS-Gen[6.7]

Test Overview and Limit

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 Procedures Used

ANSI C63.10-2013 Section 6.9

RSS-Gen [6.7]

Test Settings

1. The signal analyzer's automatic bandwidth measurement capability was used to perform the 99% occupied bandwidth and the 10dB bandwidth. The bandwidth measurement was not influenced by any intermediate power nulls in the fundamental emission.
2. RBW = 1 – 5% of the expected OBW
3. VBW $\geq 3 \times$ RBW
4. Detector = Peak
5. Trace mode = max hold
6. Sweep = auto couple
7. The trace was allowed to stabilize
8. If necessary, steps 2 – 7 were repeated after changing the RBW such that it would be within 1 – 5% of the 99% occupied bandwidth observed in Step 7.

Test Setup

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

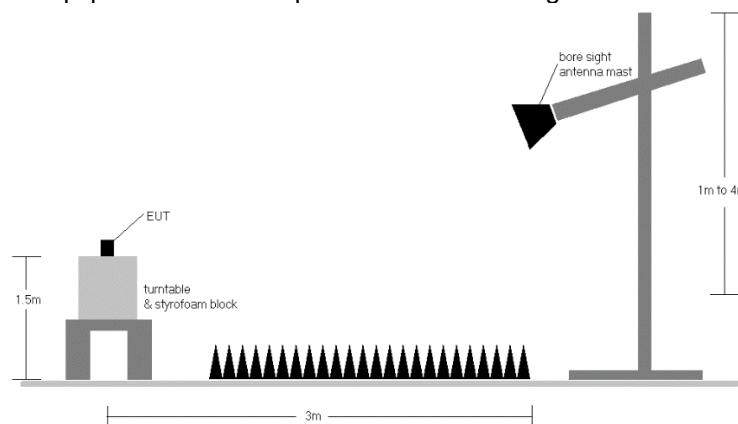


Figure 7-2. Test Instrument and Measurement Setup

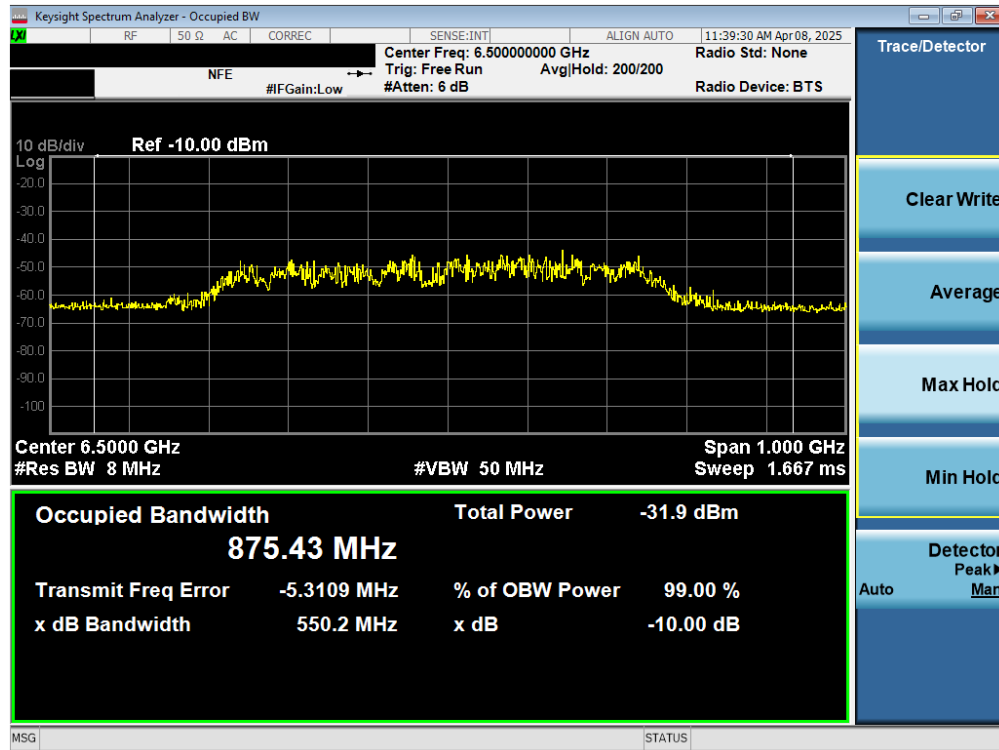
FCC ID: A3LSMF966U IC: 649E-SMF966W	MEASUREMENT REPORT (CERTIFICATION)		Approved by: Technical Manager
Test Report S/N: 1M2502210015-30.A3L	Test Dates: 4/4/2025 – 4/18/2025	EUT Type: Portable Handset	Page 28 of 70

Frequency [GHz]	Channel	Preamble ID	Config	Mode	Measured Bandwidth [MHz]
6.5	5	9	SP0	BPRF	875.4
		9	SP1	BPRF	916.9
		9	SP3	BPRF	788.5
		10	SP0	BPRF	761.6
		10	SP1	BPRF	777.5
		10	SP3	BPRF	876.4
		11	SP0	BPRF	781.6
		11	SP1	BPRF	801.5
		11	SP3	BPRF	897.1
		12	SP0	BPRF	778.3
		12	SP1	BPRF	800.8
		12	SP3	BPRF	817.9
		27	SP0	HPRF	815.5
		27	SP1	HPRF	883.5
		27	SP3	HPRF	877.7
8.0	9	9	SP0	BPRF	714.0
		9	SP1	BPRF	707.7
		9	SP3	BPRF	777.7
		10	SP0	BPRF	706.7
		10	SP1	BPRF	662.6
		10	SP3	BPRF	749.1
		11	SP0	BPRF	689.2
		11	SP1	BPRF	699.7
		11	SP3	BPRF	778.6
		12	SP0	BPRF	699.7
		12	SP1	BPRF	692.1
		12	SP3	BPRF	765.8
		27	SP0	HPRF	683.3
		27	SP1	HPRF	755.5
		27	SP3	HPRF	750.7

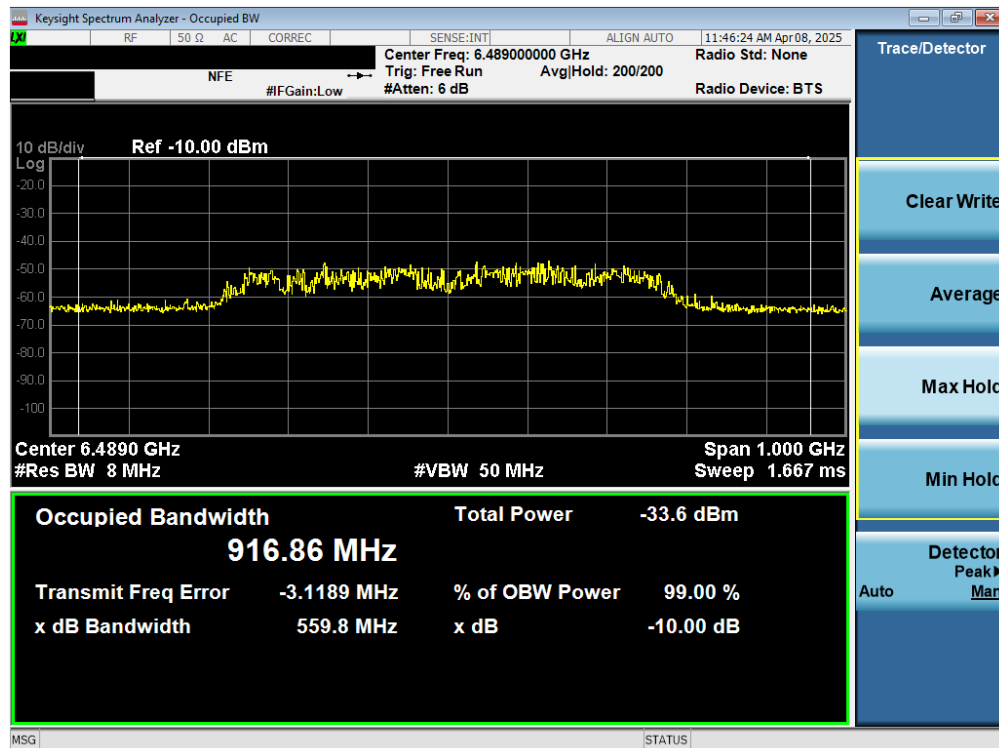
Table 7-3. UWB Occupied Bandwidth Summary

FCC ID: A3LSMF966U IC: 649E-SMF966W	MEASUREMENT REPORT (CERTIFICATION)		Approved by: Technical Manager
Test Report S/N: 1M2502210015-30.A3L	Test Dates: 4/4/2025 – 4/18/2025	EUT Type: Portable Handset	Page 29 of 70

Occupied Bandwidth Results

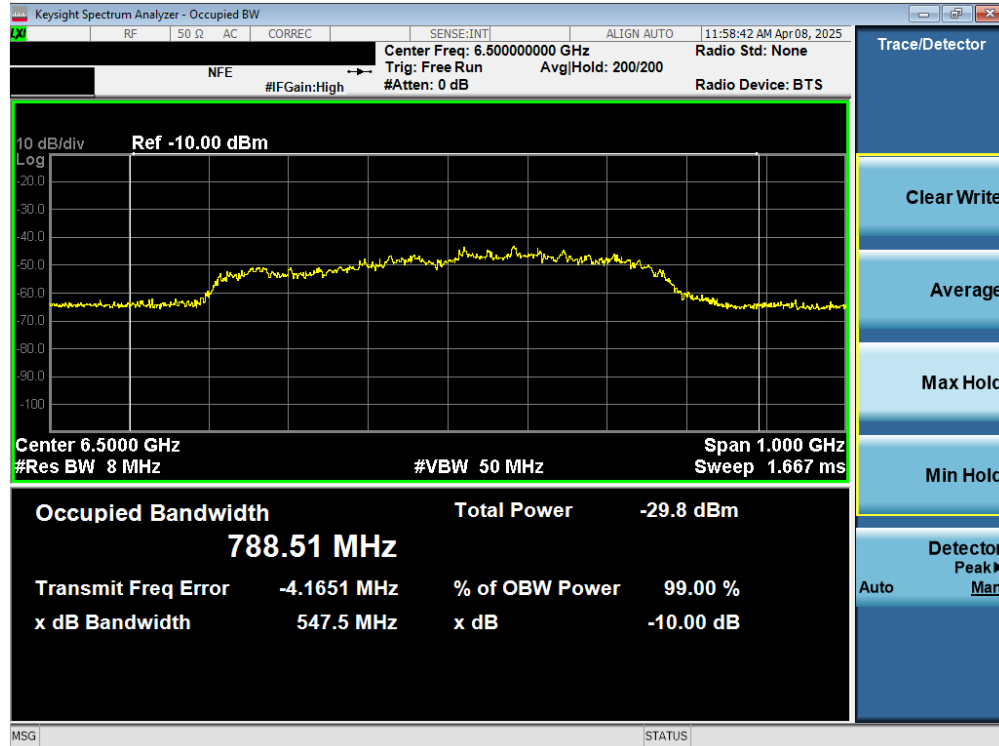


Plot 7-31. Occupied Bandwidth – CH.5 - SP0 – Preamble 9

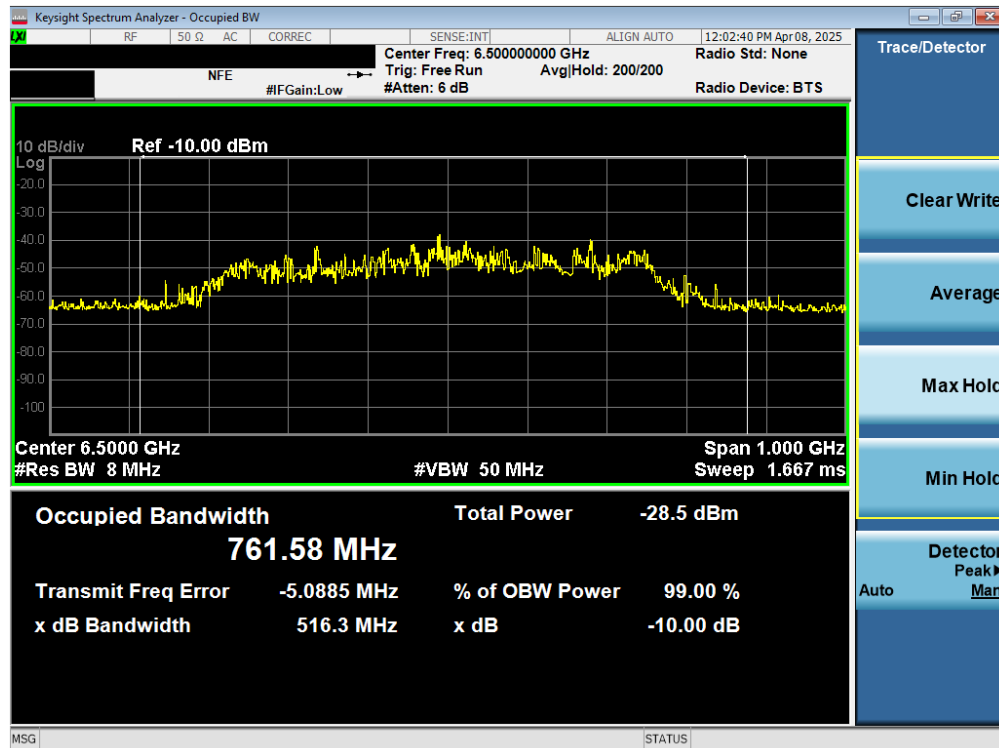


Plot 7-32. Occupied Bandwidth – CH.5 - SP1 – Preamble 9

FCC ID: A3LSMF966U IC: 649E-SMF966W	MEASUREMENT REPORT (CERTIFICATION)		Approved by: Technical Manager
Test Report S/N: 1M2502210015-30.A3L	Test Dates: 4/4/2025 – 4/18/2025	EUT Type: Portable Handset	Page 30 of 70

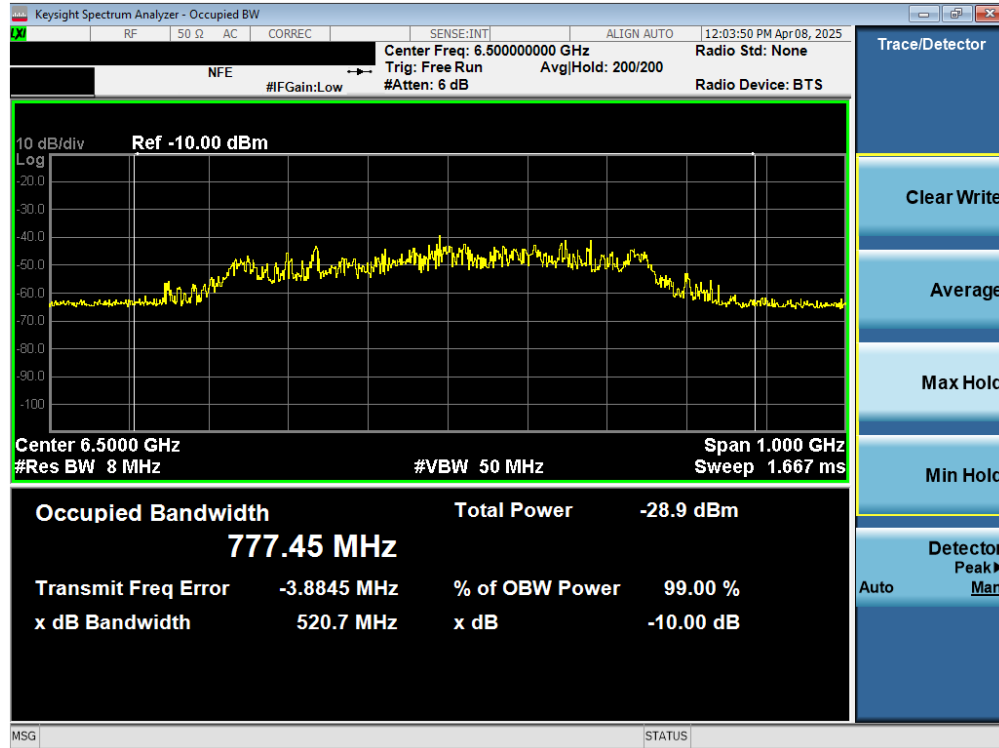


Plot 7-33. Occupied Bandwidth – CH.5 – SP3 – Preamble 9

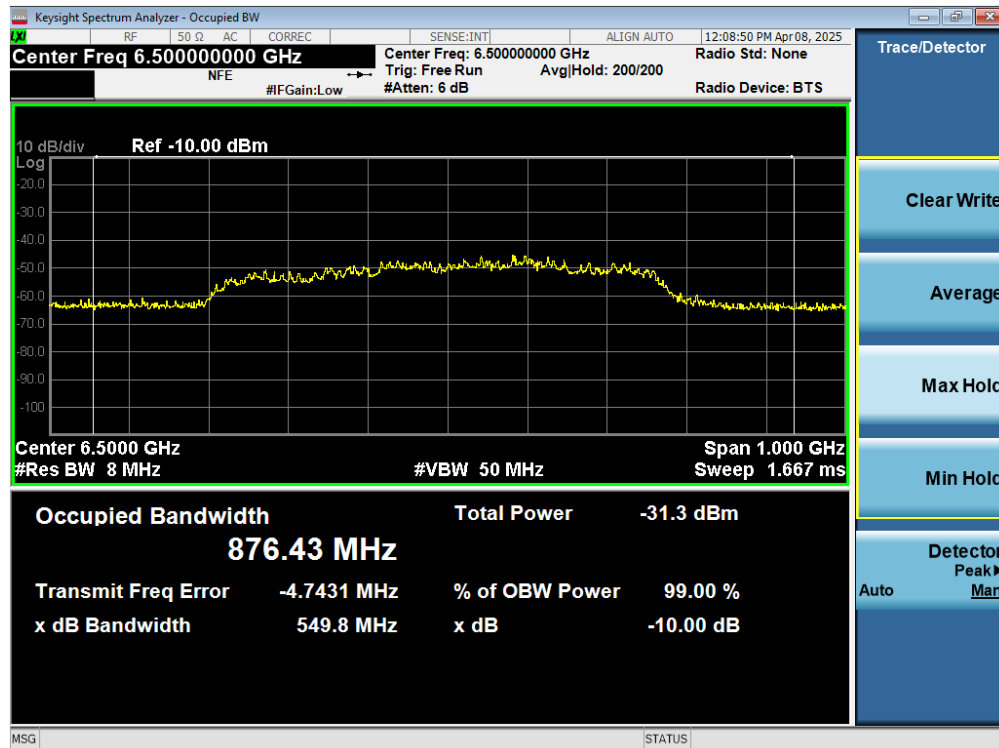


Plot 7-34. Occupied Bandwidth – CH.5 – SP0 – Preamble 10

FCC ID: A3LSMF966U IC: 649E-SMF966W	MEASUREMENT REPORT (CERTIFICATION)		Approved by: Technical Manager
Test Report S/N: 1M2502210015-30.A3L	Test Dates: 4/4/2025 – 4/18/2025	EUT Type: Portable Handset	Page 31 of 70

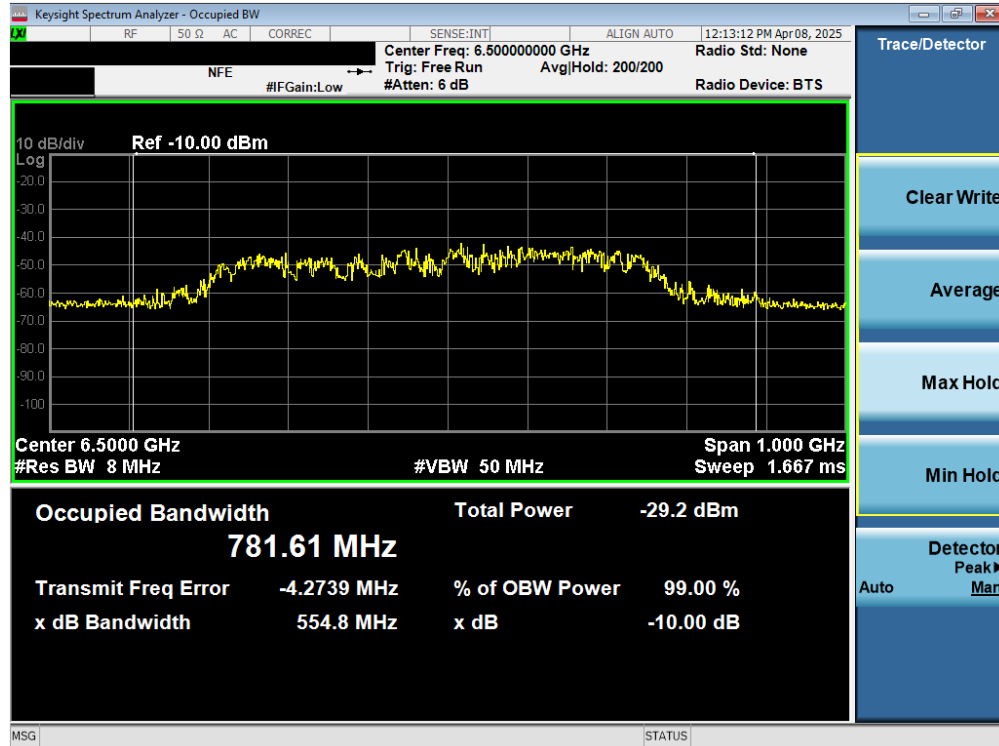


Plot 7-35. Occupied Bandwidth – CH.5 – SP1 – Preamble 10

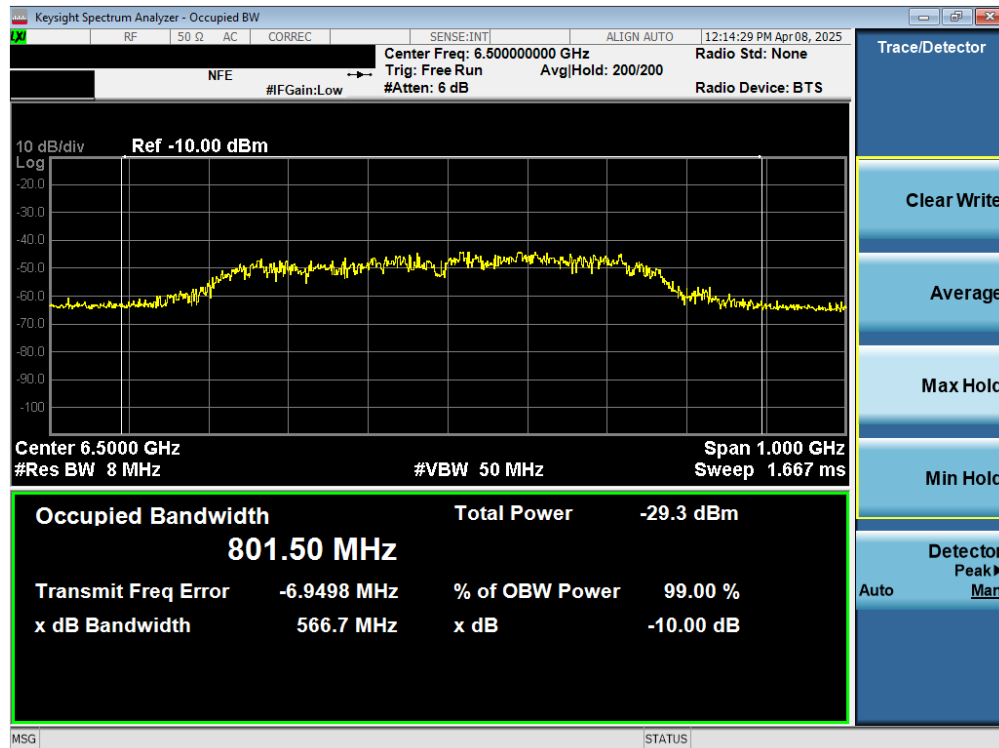


Plot 7-36. Occupied Bandwidth – CH.5 – SP3 – Preamble 10

FCC ID: A3LSMF966U IC: 649E-SMF966W	MEASUREMENT REPORT (CERTIFICATION)		Approved by: Technical Manager
Test Report S/N: 1M2502210015-30.A3L	Test Dates: 4/4/2025 – 4/18/2025	EUT Type: Portable Handset	Page 32 of 70

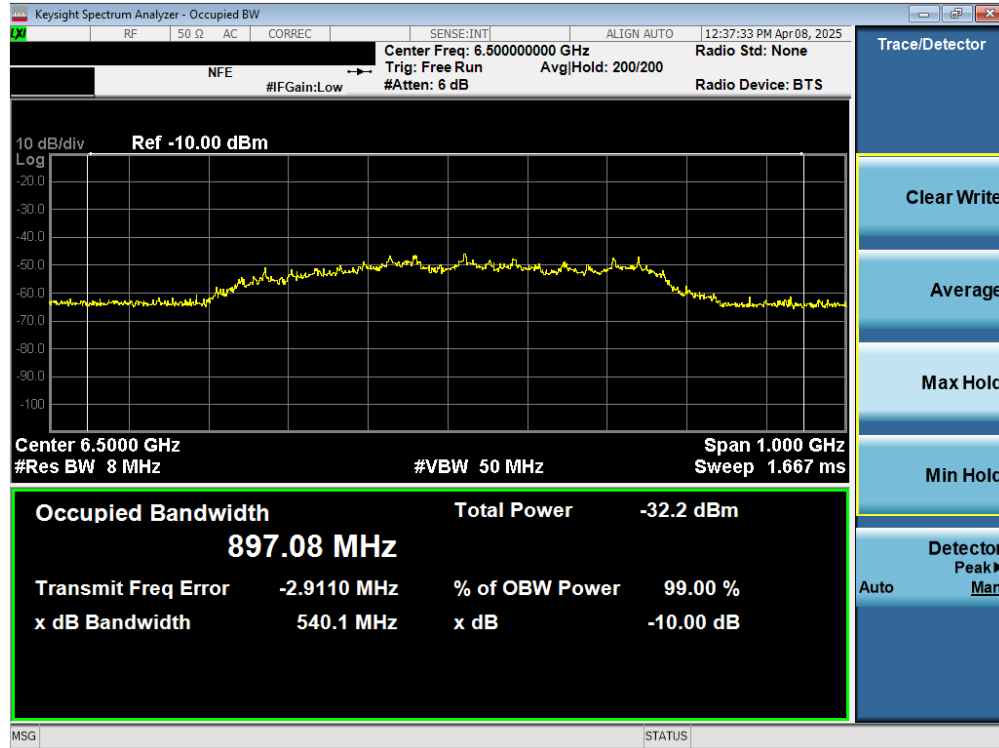


Plot 7-37. Occupied Bandwidth – CH.5 - SP0 – Preamble 11

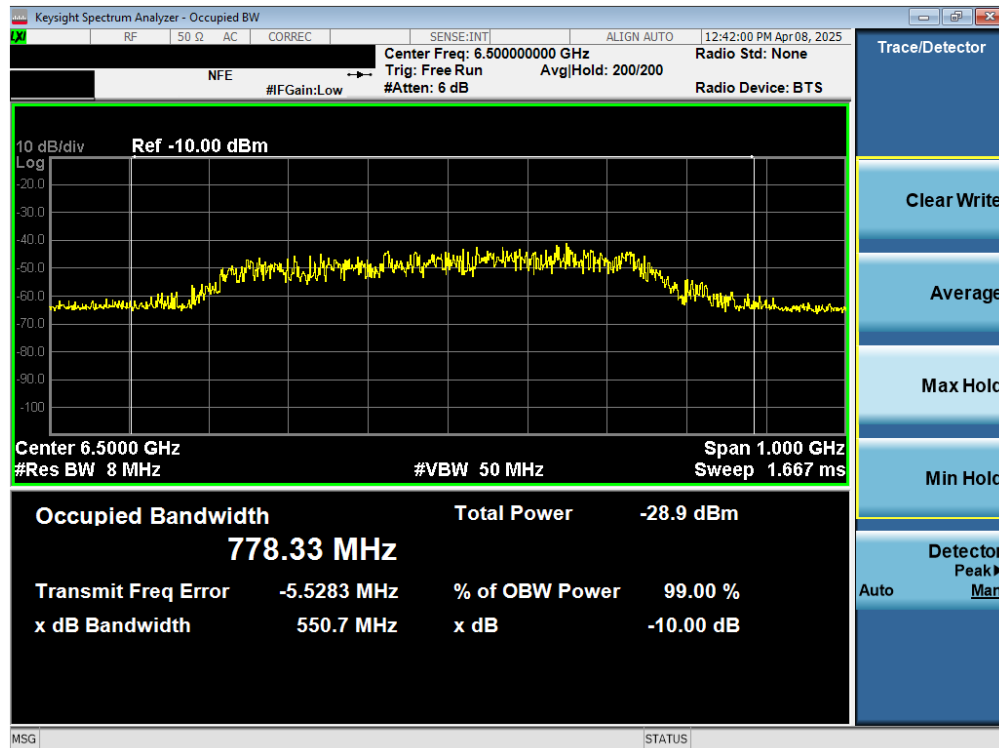


Plot 7-38. Occupied Bandwidth – CH.5 – SP1 – Preamble 11

FCC ID: A3LSMF966U IC: 649E-SMF966W	MEASUREMENT REPORT (CERTIFICATION)		Approved by: Technical Manager
Test Report S/N: 1M2502210015-30.A3L	Test Dates: 4/4/2025 – 4/18/2025	EUT Type: Portable Handset	Page 33 of 70

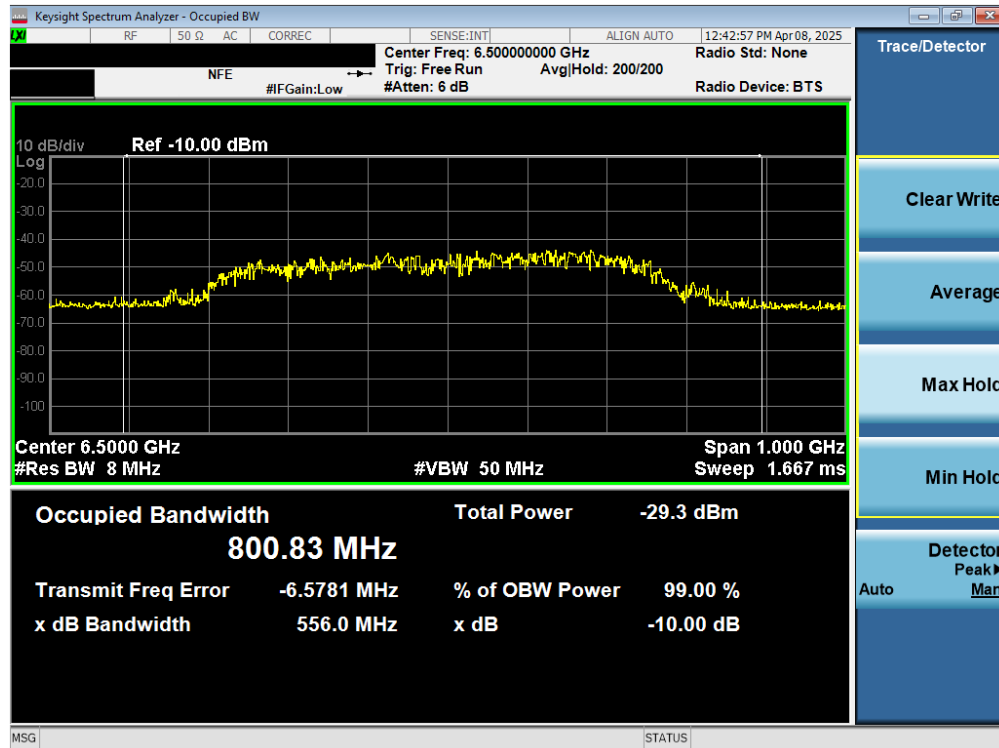


Plot 7-39. Occupied Bandwidth – CH.5 – SP3 – Preamble 11

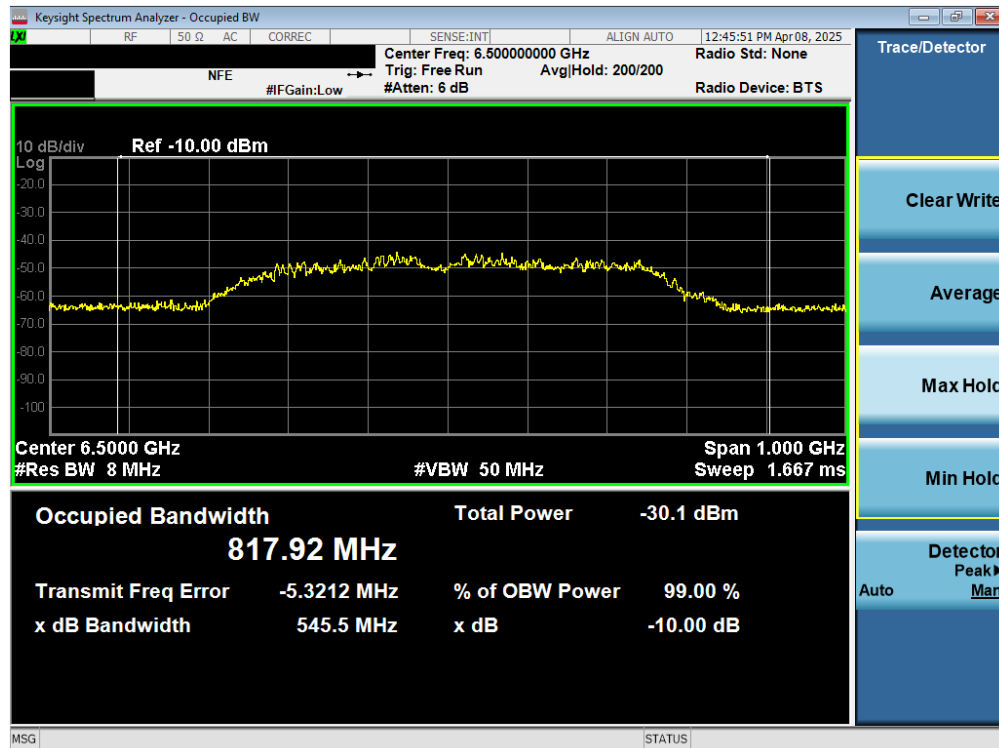


Plot 7-40. Occupied Bandwidth – CH.5 – SP0 – Preamble 12

FCC ID: A3LSMF966U IC: 649E-SMF966W	MEASUREMENT REPORT (CERTIFICATION)		Approved by: Technical Manager
Test Report S/N: 1M2502210015-30.A3L	Test Dates: 4/4/2025 – 4/18/2025	EUT Type: Portable Handset	Page 34 of 70

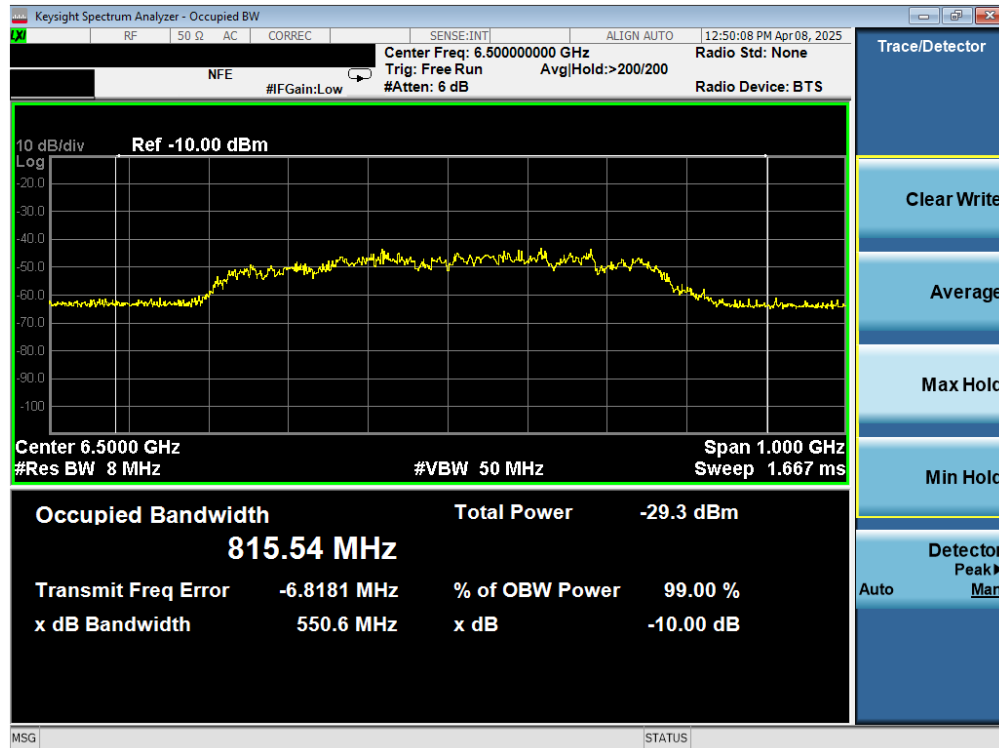


Plot 7-41. Occupied Bandwidth – CH.5 – SP1 – Preamble 12

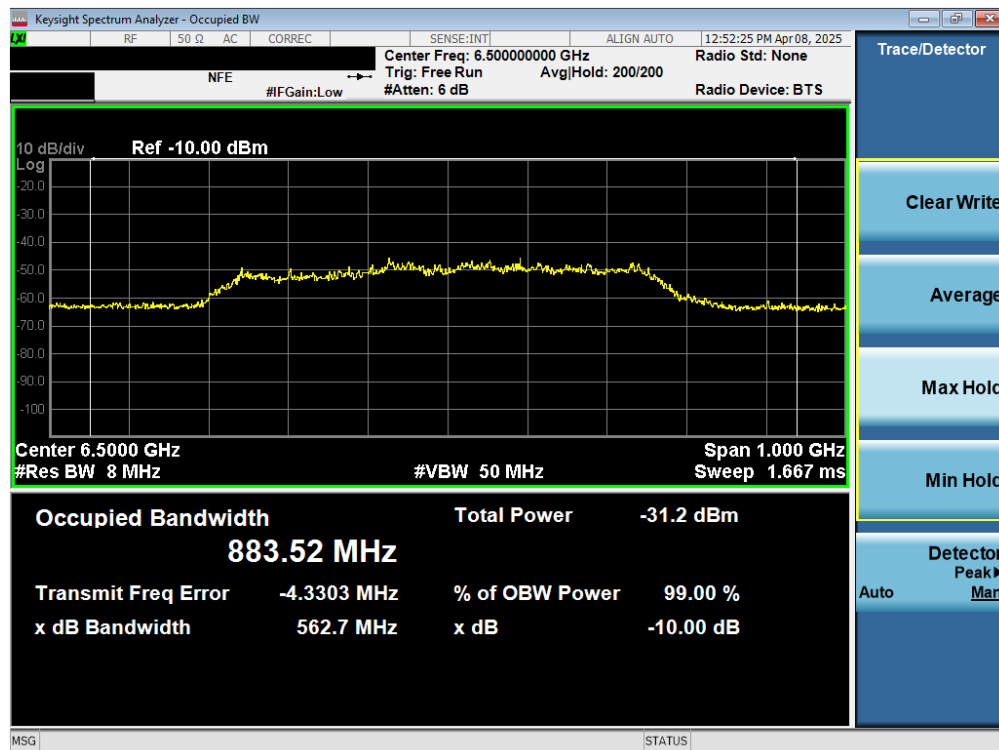


Plot 7-42. Occupied Bandwidth – CH.5 – SP3 – Preamble 12

FCC ID: A3LSMF966U IC: 649E-SMF966W	MEASUREMENT REPORT (CERTIFICATION)		Approved by: Technical Manager
Test Report S/N: 1M2502210015-30.A3L	Test Dates: 4/4/2025 – 4/18/2025	EUT Type: Portable Handset	Page 35 of 70

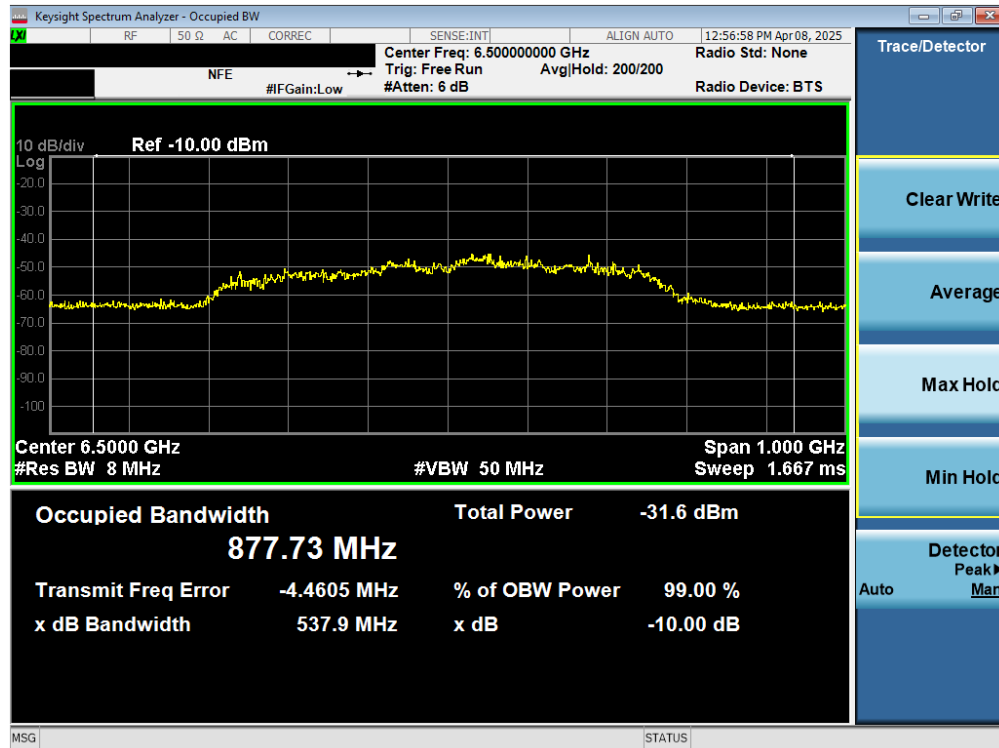


Plot 7-43. Occupied Bandwidth – CH.5 – SP0 – Preamble 27

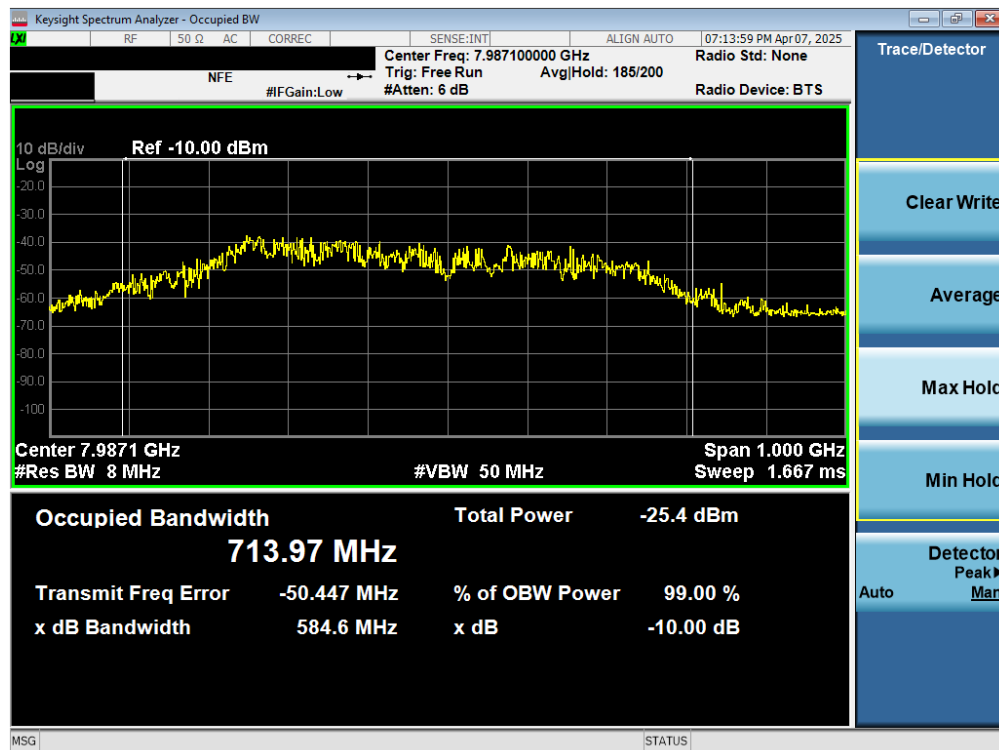


Plot 7-44. Occupied Bandwidth – CH.5 – SP1 – Preamble 27

FCC ID: A3LSMF966U IC: 649E-SMF966W	MEASUREMENT REPORT (CERTIFICATION)		Approved by: Technical Manager
Test Report S/N: 1M2502210015-30.A3L	Test Dates: 4/4/2025 – 4/18/2025	EUT Type: Portable Handset	Page 36 of 70

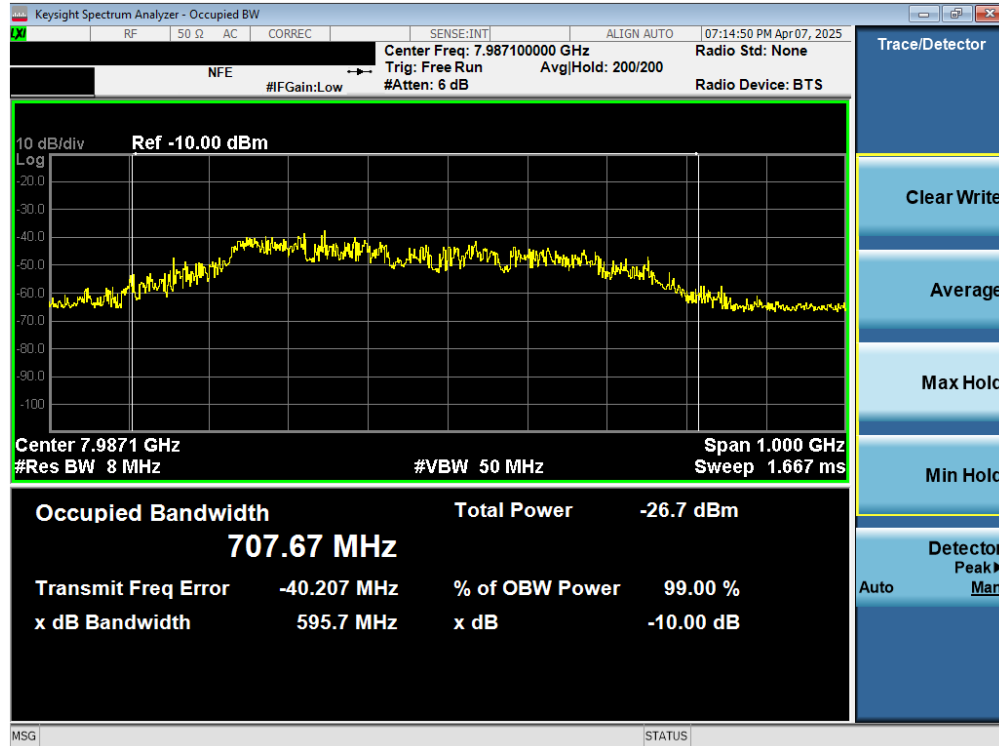


Plot 7-45. Occupied Bandwidth – CH.5 – SP3 – Preamble 27

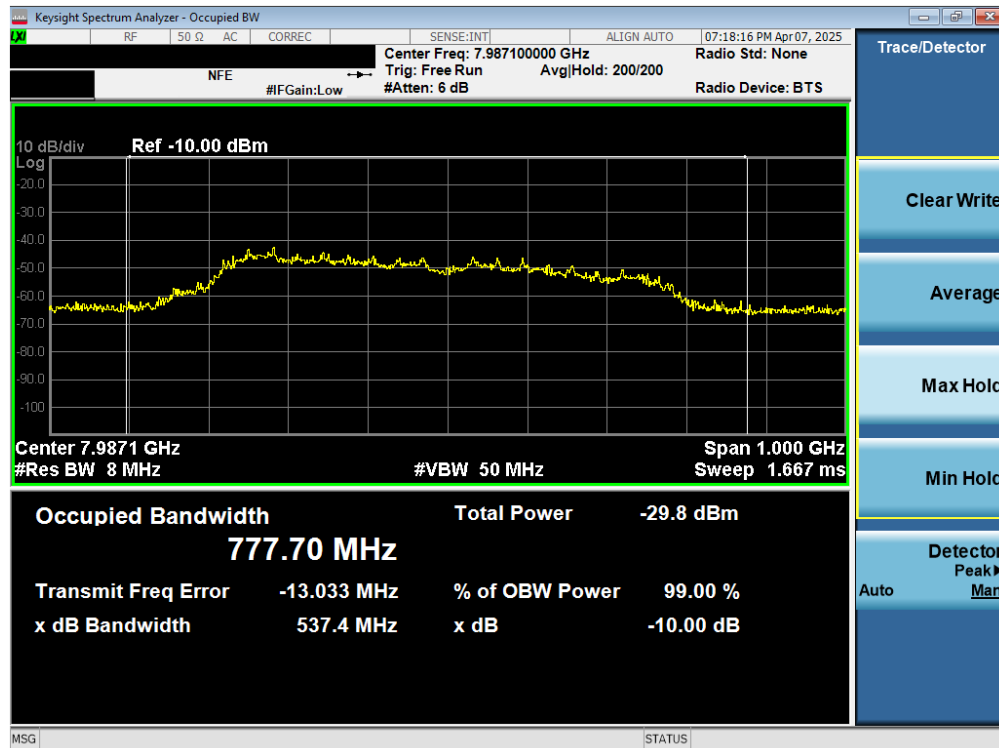


Plot 7-46. Occupied Bandwidth – CH.9 – SP0 – Preamble 9

FCC ID: A3LSMF966U IC: 649E-SMF966W	MEASUREMENT REPORT (CERTIFICATION)		Approved by: Technical Manager
Test Report S/N: 1M2502210015-30.A3L	Test Dates: 4/4/2025 – 4/18/2025	EUT Type: Portable Handset	Page 37 of 70

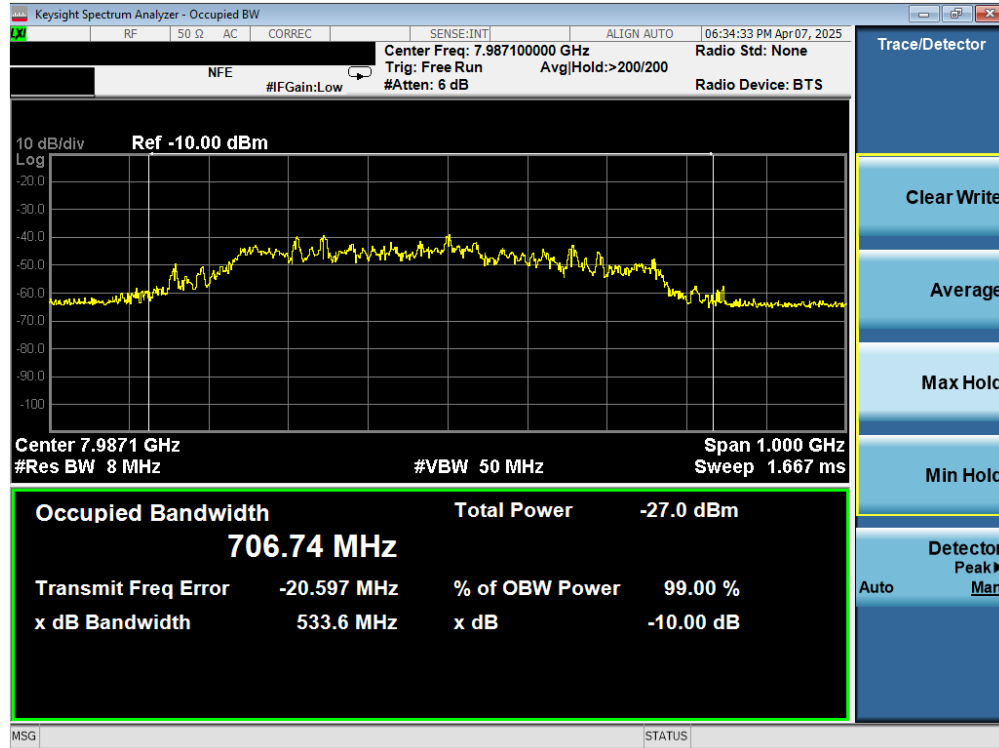


Plot 7-47. Occupied Bandwidth – CH.9 – SP1 – Preamble 9

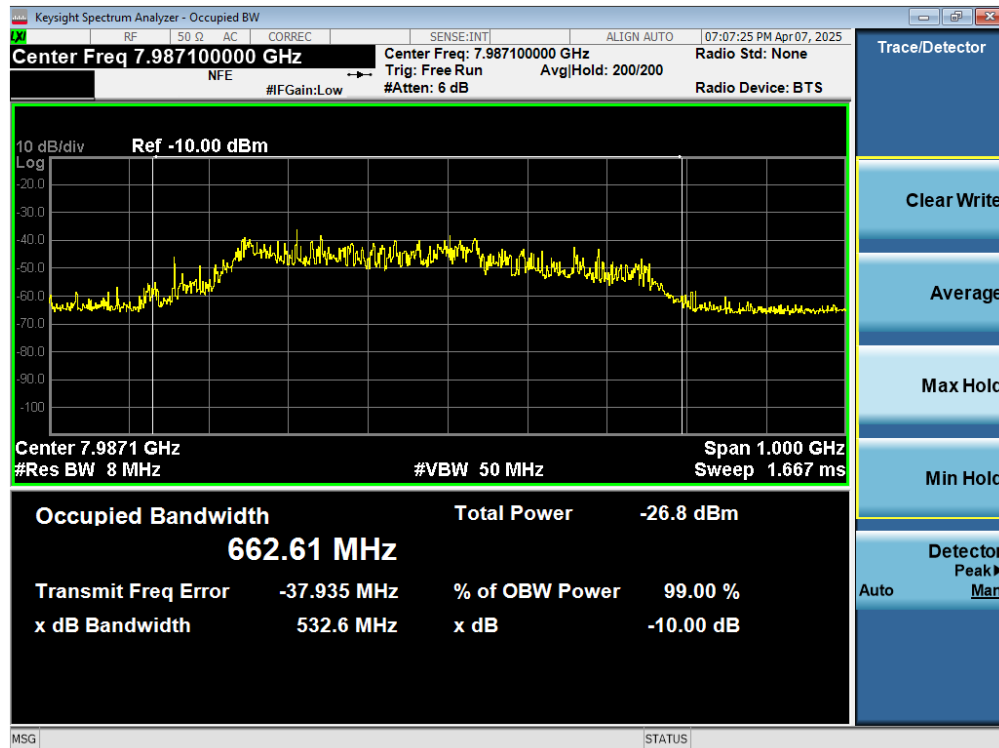


Plot 7-48. Occupied Bandwidth – CH.9 – SP3 – Preamble 9

FCC ID: A3LSMF966U IC: 649E-SMF966W	MEASUREMENT REPORT (CERTIFICATION)		Approved by: Technical Manager
Test Report S/N: 1M2502210015-30.A3L	Test Dates: 4/4/2025 – 4/18/2025	EUT Type: Portable Handset	Page 38 of 70

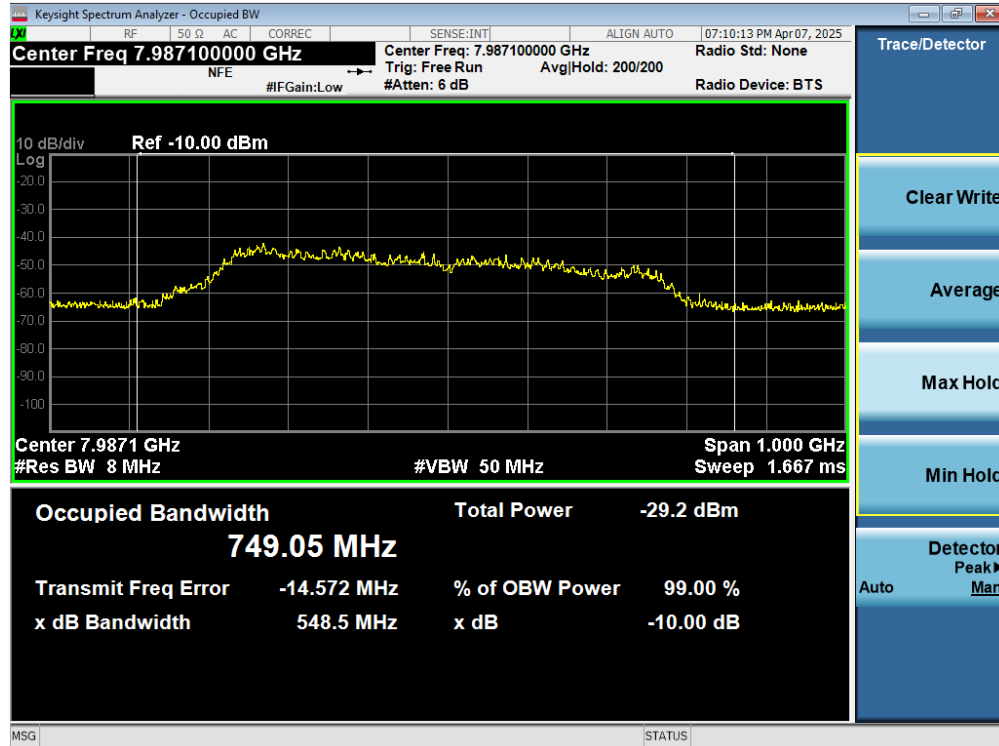


Plot 7-49. Occupied Bandwidth – CH.9 – SP0 – Preamble 10

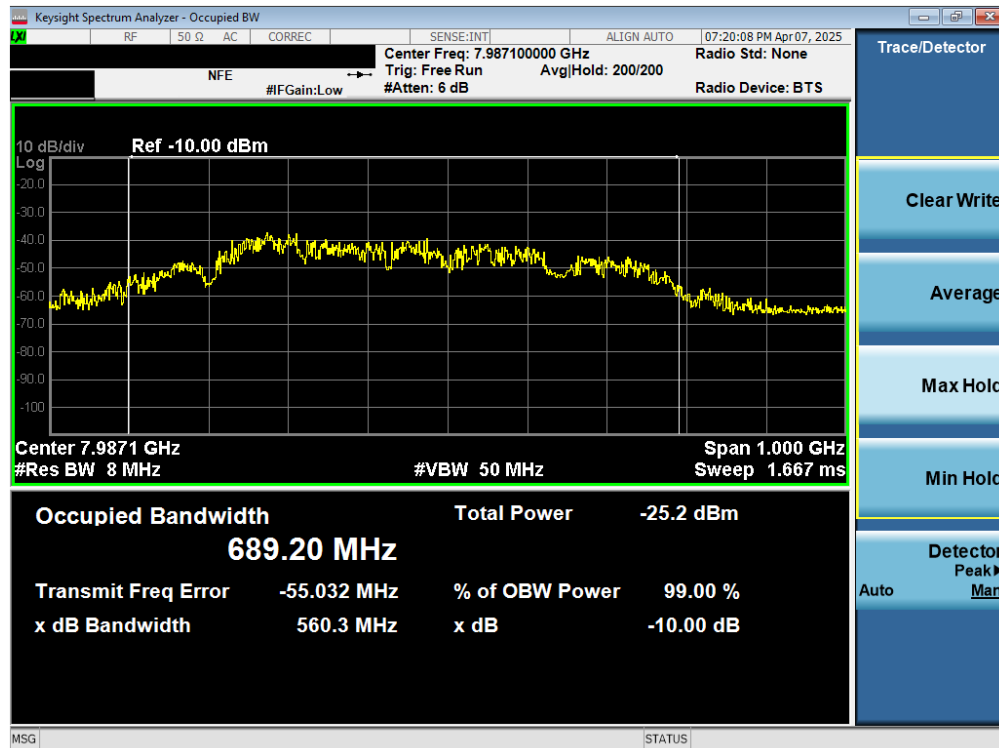


Plot 7-50. Occupied Bandwidth – CH.9 – SP1 – Preamble 10

FCC ID: A3LSMF966U IC: 649E-SMF966W	MEASUREMENT REPORT (CERTIFICATION)		Approved by: Technical Manager
Test Report S/N: 1M2502210015-30.A3L	Test Dates: 4/4/2025 – 4/18/2025	EUT Type: Portable Handset	Page 39 of 70

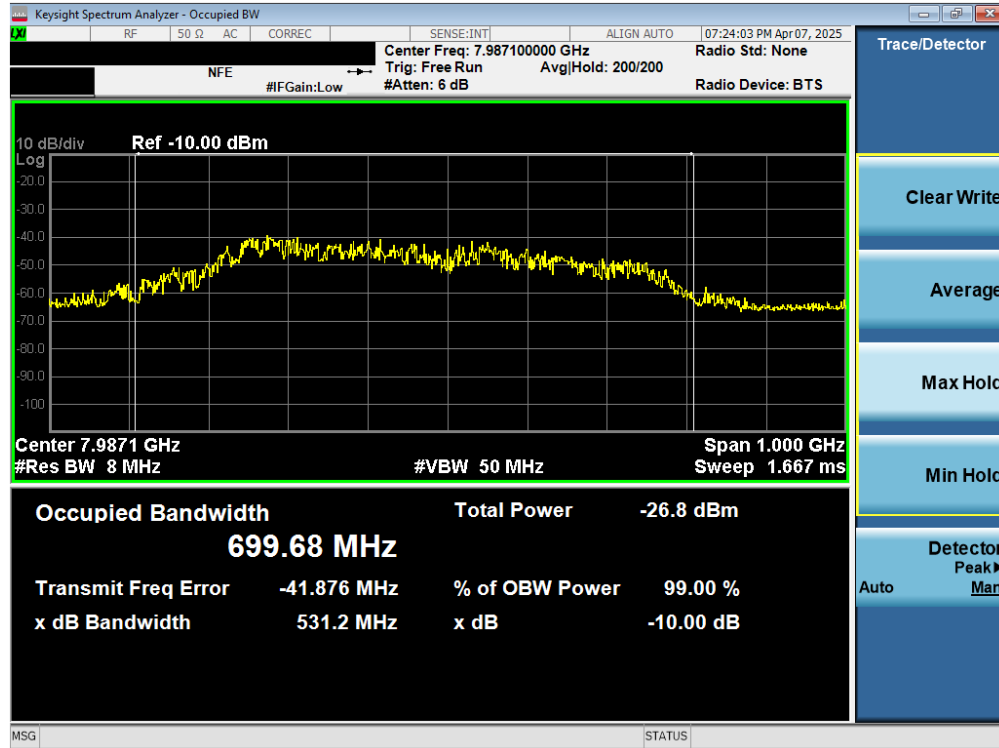


Plot 7-51. Occupied Bandwidth – CH.9 – SP3 – Preamble 10

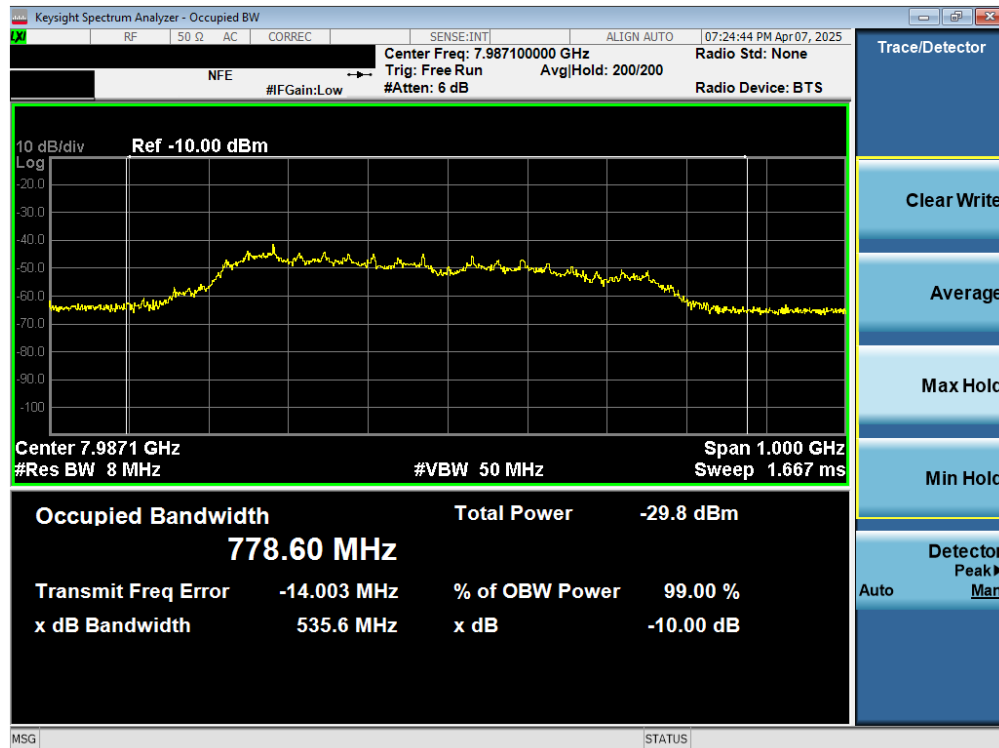


Plot 7-52. Occupied Bandwidth – CH.9 – SP0 – Preamble 11

FCC ID: A3LSMF966U	MEASUREMENT REPORT (CERTIFICATION)		Approved by:
IC: 649E-SMF966W			Technical Manager
Test Report S/N:	Test Dates:	EUT Type:	Page 40 of 70
1M2502210015-30.A3L	4/4/2025 – 4/18/2025	Portable Handset	

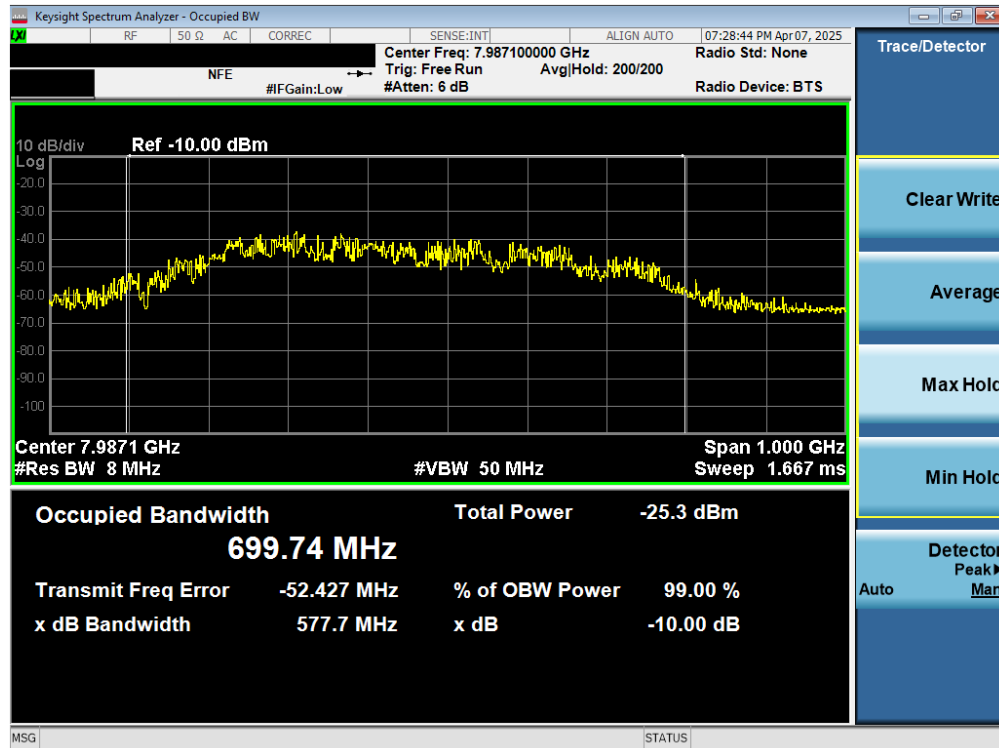


Plot 7-53. Occupied Bandwidth – CH.9 – SP1 – Preamble 11

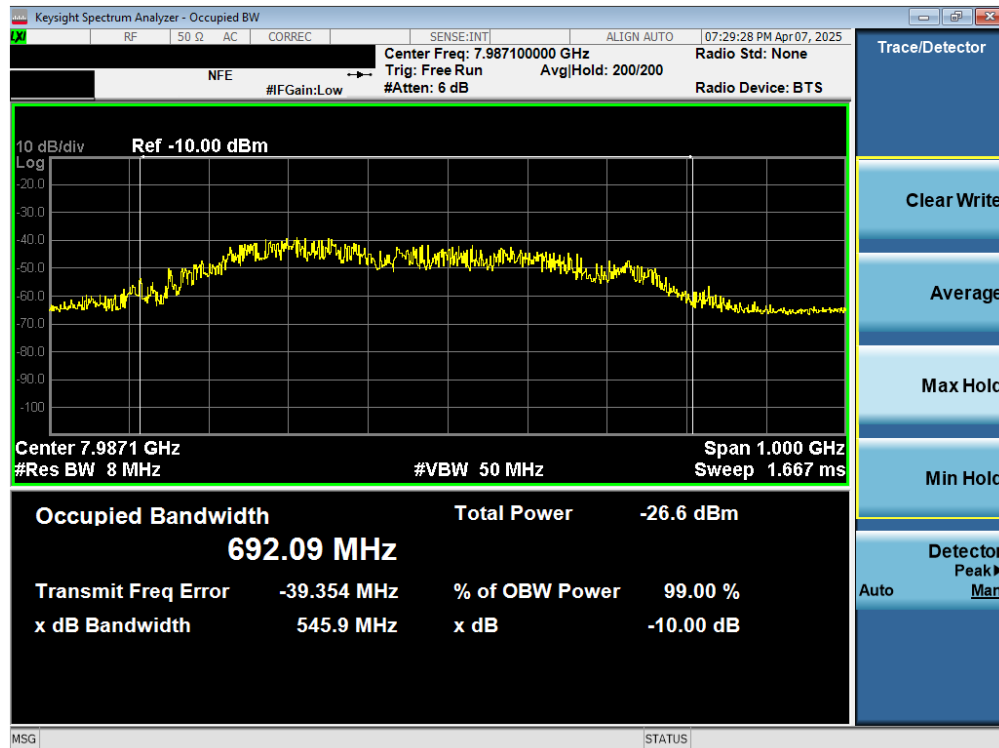


Plot 7-54. Occupied Bandwidth – CH.9 – SP3 – Preamble 11

FCC ID: A3LSMF966U IC: 649E-SMF966W	MEASUREMENT REPORT (CERTIFICATION)		Approved by: Technical Manager
Test Report S/N: 1M2502210015-30.A3L	Test Dates: 4/4/2025 – 4/18/2025	EUT Type: Portable Handset	Page 41 of 70

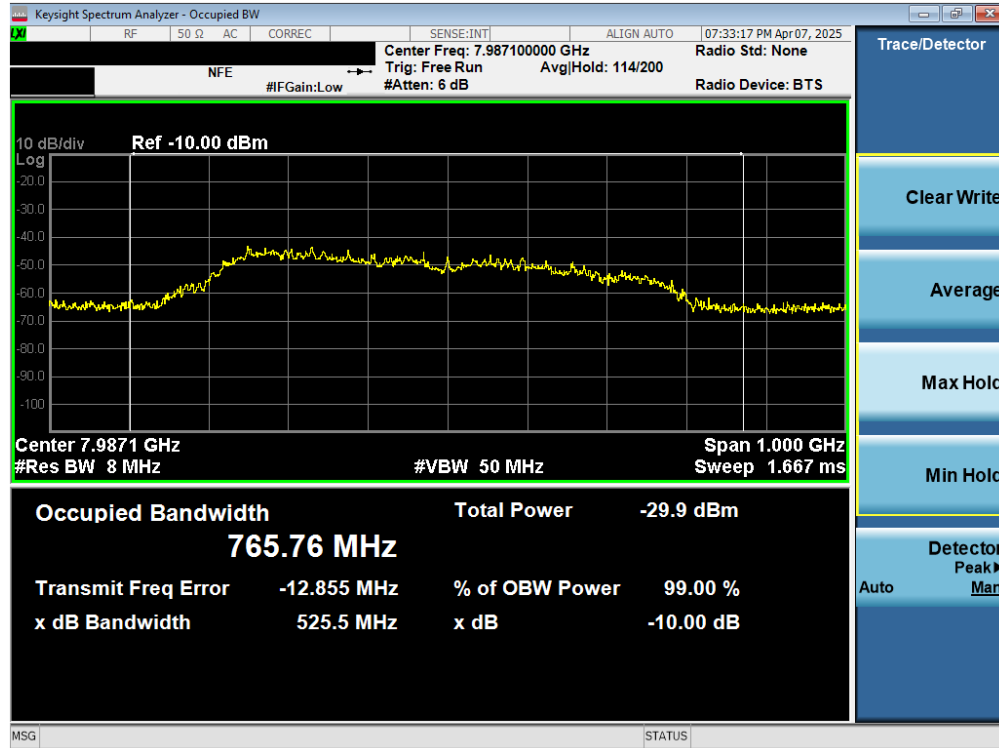


Plot 7-55. Occupied Bandwidth – CH.9 – SP0 – Preamble 12

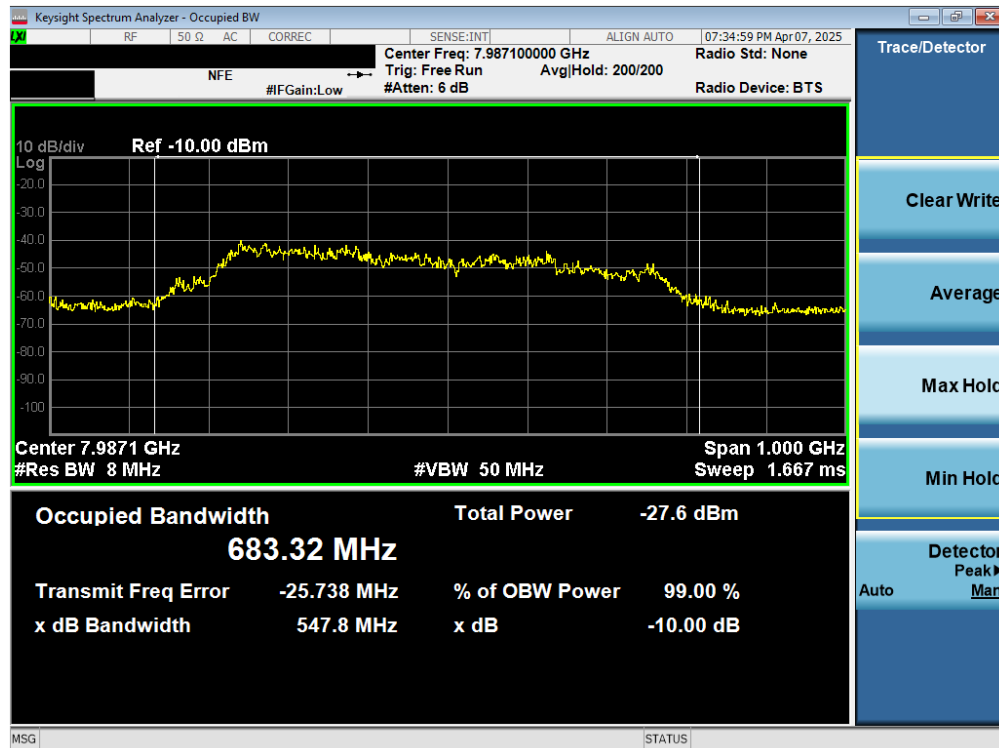


Plot 7-56. Occupied Bandwidth – CH.9 – SP1 – Preamble 12

FCC ID: A3LSMF966U IC: 649E-SMF966W	MEASUREMENT REPORT (CERTIFICATION)		Approved by: Technical Manager
Test Report S/N: 1M2502210015-30.A3L	Test Dates: 4/4/2025 – 4/18/2025	EUT Type: Portable Handset	Page 42 of 70

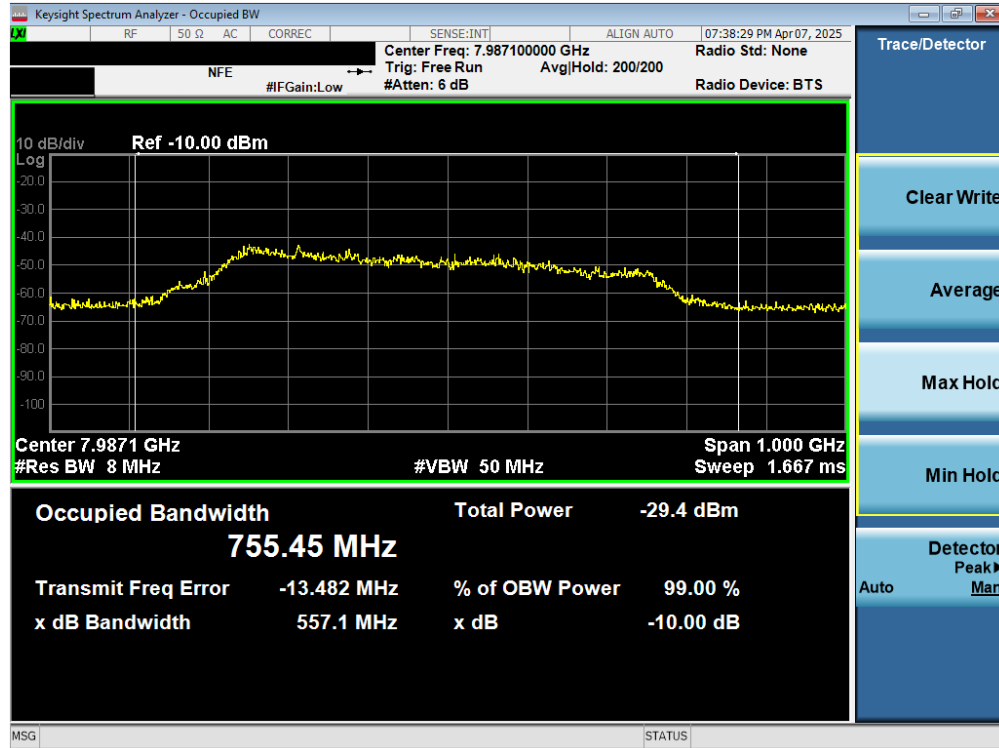


Plot 7-57. Occupied Bandwidth – CH.9 – SP3 – Preamble 12

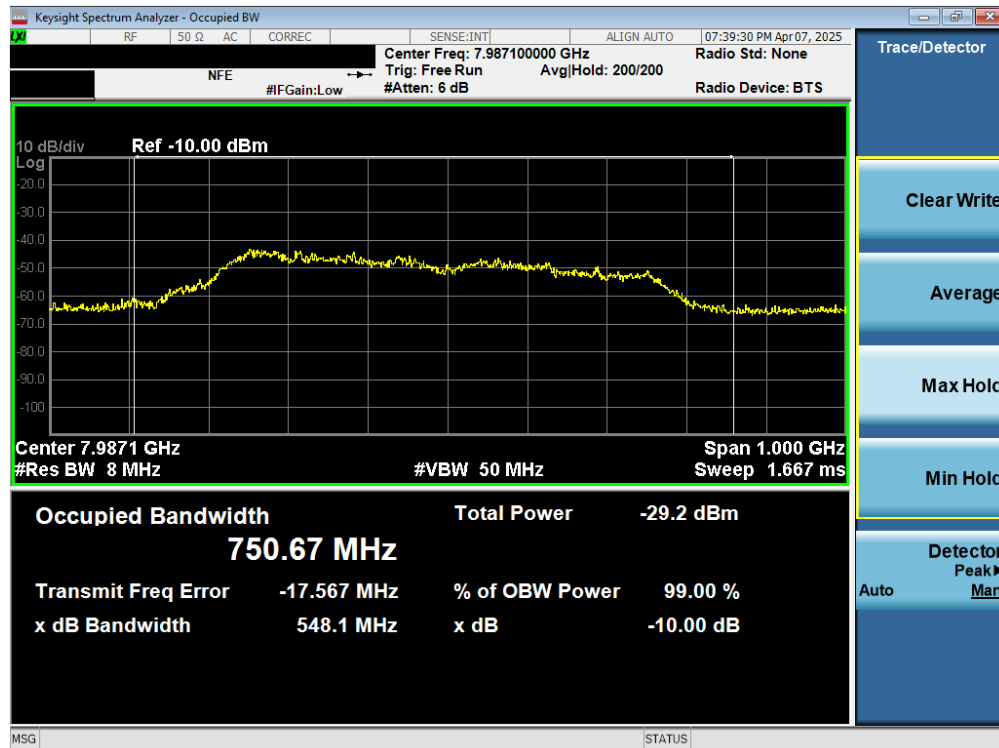


Plot 7-58. Occupied Bandwidth – CH.9 – SP0 – Preamble 27

FCC ID: A3LSMF966U IC: 649E-SMF966W	MEASUREMENT REPORT (CERTIFICATION)		Approved by: Technical Manager
Test Report S/N: 1M2502210015-30.A3L	Test Dates: 4/4/2025 – 4/18/2025	EUT Type: Portable Handset	Page 43 of 70



Plot 7-59. Occupied Bandwidth – CH.9 – SP1 – Preamble 27



Plot 7-60. Occupied Bandwidth – CH.9 – SP3 – Preamble 27

FCC ID: A3LSMF966U IC: 649E-SMF966W	MEASUREMENT REPORT (CERTIFICATION)		Approved by: Technical Manager
Test Report S/N: 1M2502210015-30.A3L	Test Dates: 4/4/2025 – 4/18/2025	EUT Type: Portable Handset	Page 44 of 70

7.4 Cessation Time

§15.519(a)(1)

Test Overview and Limit

§15.519(a)(1) A UWB device operating under the provisions of this section shall transmit only when it is sending information to an associated receiver. The UWB intentional radiator shall cease transmission within 10 seconds unless it receives an acknowledgment from the associated receiver that its transmission is being received an acknowledgment of reception must continue to be received by the UWB intentional radiator at least every 10 seconds or the UWB device must cease transmitting.

Test Settings

1. RBW = 1MHz
2. VBW = 3MHz
3. Span = 0 Span Mode
4. Sweep time shall be sufficient to demonstrate EUTs compliance with the rule part.

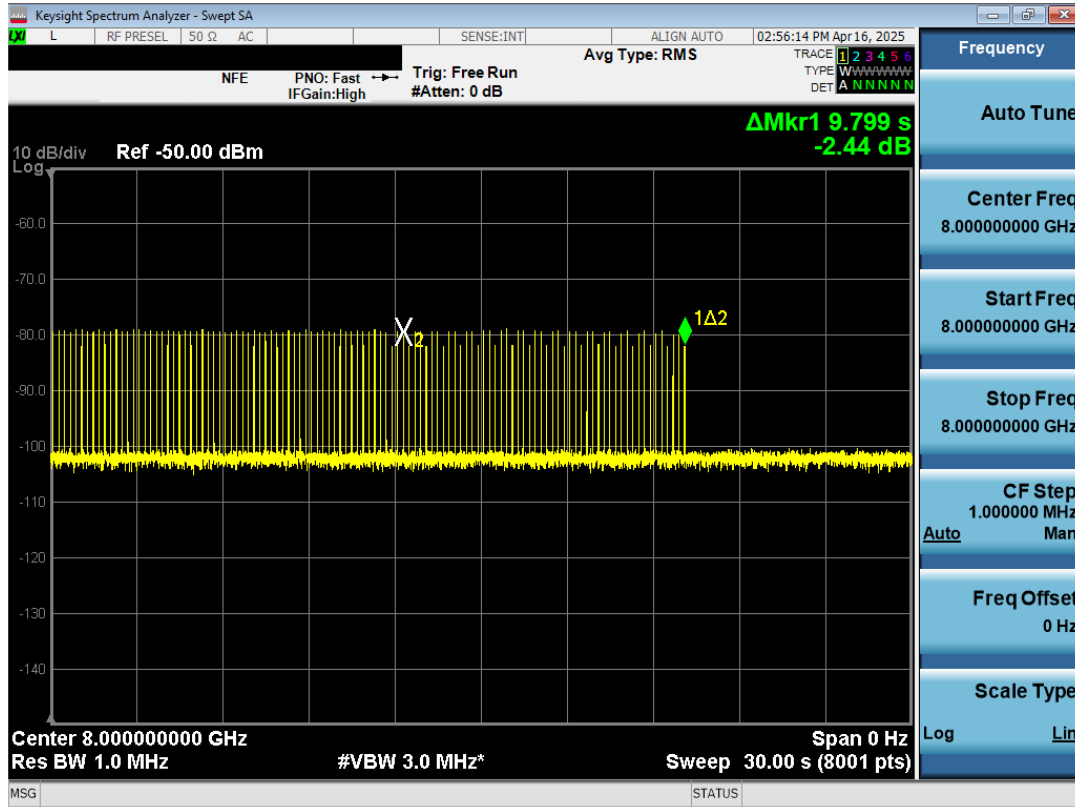
Test Setup

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



Figure 7-3. Test Instrument and Measurement Setup

FCC ID: A3LSMF966U IC: 649E-SMF966W	MEASUREMENT REPORT (CERTIFICATION)		Approved by: Technical Manager
Test Report S/N: 1M2502210015-30.A3L	Test Dates: 4/4/2025 – 4/18/2025	EUT Type: Portable Handset	Page 45 of 70



Plot 7-61. Cessation Time Plot

Test Note

X2 represents the EUT for UWB stop receiving, and 1Δ2 shows the EUT for UWB cease transmitting.

FCC ID: A3LSMF966U IC: 649E-SMF966W	MEASUREMENT REPORT (CERTIFICATION)		Approved by: Technical Manager
Test Report S/N: 1M2502210015-30.A3L	Test Dates: 4/4/2025 – 4/18/2025	EUT Type: Portable Handset	Page 46 of 70

7.5 Peak Power and Maximum Average Emissions

§15.519(e), §15.519(c)

Test Overview and Limit

15.519 (e) There is a limit on the peak level of the emissions contained within a 50 MHz bandwidth centered on the frequency at which the highest radiated emission occurs, fM. That limit is 0 dBm EIRP.

15.519 (c) The radiated emissions above 960 MHz from a device operating under the provisions of this section shall not exceed the following average limits when measured using a resolution bandwidth of 1 MHz:

Frequency in MHz	EIRP in dBm
3100 - 10600	-41.3

Table 7-4. Average EIRP Limit

Test Procedures Used

ANSI C63.10-2013

Test Settings

Peak:

1. Analyzer frequency set to the frequency of the radiated spurious emission of interest
2. RBW = 50MHz, VBW = 80MHz
3. Detector = Peak
4. Sweep time = auto coupled
5. Trace mode = max hold
6. Trace was allowed to stabilize

Average:

1. Analyzer frequency set to the frequency of the radiated spurious emission of interest
2. RBW = 1MHz, VBW = 3MHz
3. Detector = Average (RMS)
4. Sweep time = No more than 1ms integration period over measurement bin
5. Trace mode = max hold
6. Trace was allowed to stabilize

FCC ID: A3LSMF966U IC: 649E-SMF966W	MEASUREMENT REPORT (CERTIFICATION)		Approved by: Technical Manager
Test Report S/N: 1M2502210015-30.A3L	Test Dates: 4/4/2025 – 4/18/2025	EUT Type: Portable Handset	Page 47 of 70

Test Note

All combinations of HPRF/BPRF, power mode, and preamble are investigated for average and peak EIRP measurements. Only the worst case combinations are reported for each channel and each antenna.

RESULTS – BPRF

CH	Mode	Preamble	Meas. Ant.	Peak Power (dBm/50MHz)	Peak Limit (dBm/50MHz)	Margin [dB]
5	SP0	10	H	-1.51	0	-1.51
9	SP0	10	H	-1.56	0	-1.56

Table 7-5. BPRF Highest Peak Power Results

CH	Mode	Preamble	Meas. Ant.	Average Power (dBm)	Average Limit (dBm)	Margin [dB]
5	SP3	10	H	-43.15	-41.3	-1.85
9	SP1	11	H	-43.26	-41.3	-1.96

Table 7-6. BPRF Highest Average Power Results

Sample Calculation:

The raw radiated spurious level is converted to field strength in dBuV/m. Then, the EIRP level is calculated by applying the additional factors shown below for a test distance of 3 meter.

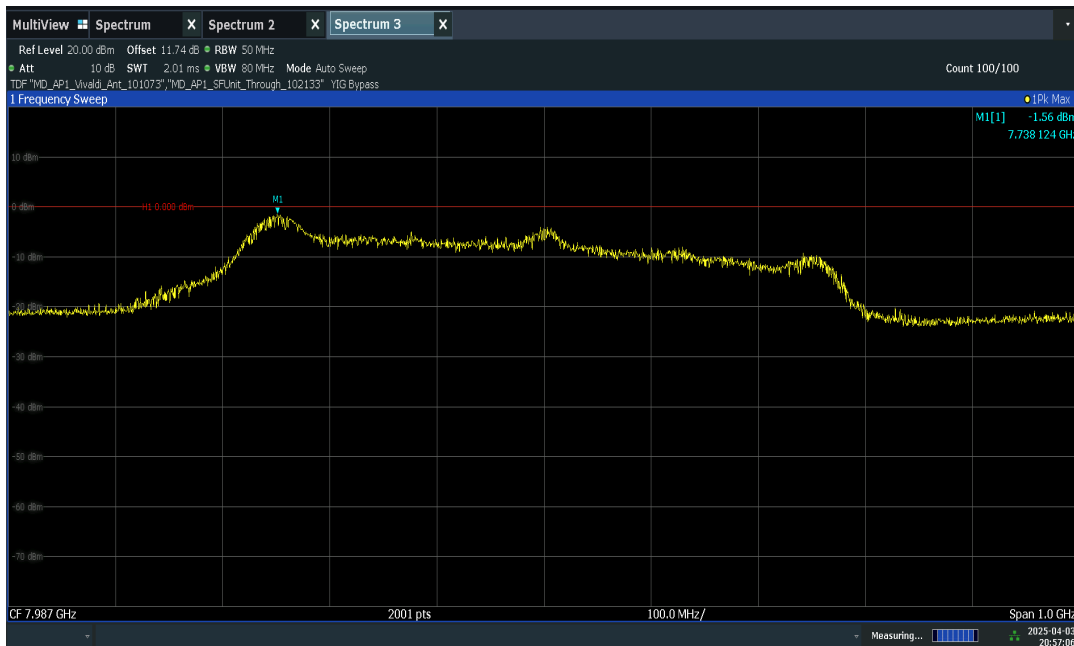
$$\text{RSE EIRP (dBm)} = \text{Analyzer Level (dBm)} + 107 + \text{AFCL (dB/m)} + 20\text{Log(Dm)} - 104.8$$

FCC ID: A3LSMF966U IC: 649E-SMF966W	MEASUREMENT REPORT (CERTIFICATION)		Approved by: Technical Manager
Test Report S/N: 1M2502210015-30.A3L	Test Dates: 4/4/2025 – 4/18/2025	EUT Type: Portable Handset	Page 48 of 70



02:59:57 PM 04/03/2025

Plot 7-62. UWB Peak Power Measurement - CH.5 – BPRF



08:57:06 PM 04/03/2025

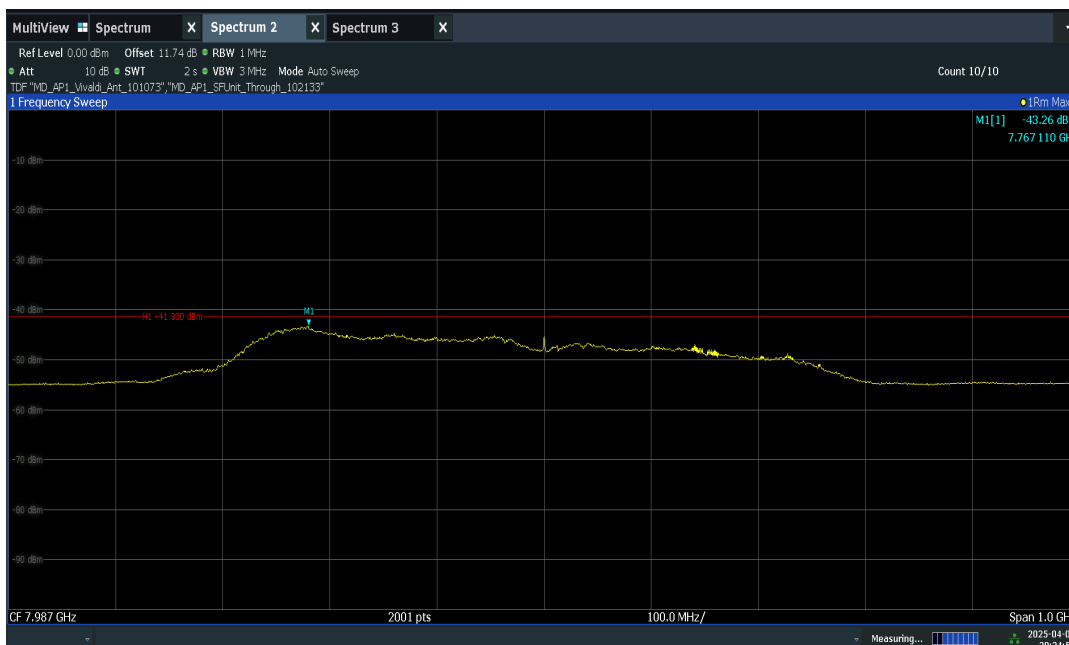
Plot 7-63. UWB Peak Power Measurement - CH.9 – BPRF

FCC ID: A3LSMF966U IC: 649E-SMF966W	MEASUREMENT REPORT (CERTIFICATION)		Approved by: Technical Manager
Test Report S/N: 1M2502210015-30.A3L	Test Dates: 4/4/2025 – 4/18/2025	EUT Type: Portable Handset	Page 49 of 70



02:41:47 PM 04/03/2025

Plot 7-64. UWB Average Power Measurement - CH.5 – BPRF



08:24:56 PM 04/03/2025

Plot 7-65. UWB Average Power Measurement - CH.9 – BPRF

FCC ID: A3LSMF966U IC: 649E-SMF966W	MEASUREMENT REPORT (CERTIFICATION)		Approved by: Technical Manager
Test Report S/N: 1M2502210015-30.A3L	Test Dates: 4/4/2025 – 4/18/2025	EUT Type: Portable Handset	Page 50 of 70

RESULTS – HPRF

CH	Mode	Preamble	Meas. Ant.	Peak Power (dBm/50MHz)	Peak Limit (dBm/50MHz)	Margin [dB]
5	SP0	27	H	-6.31	0	-6.31
9	SP0	27	H	-7.63	0	-7.63

Table 7-7. HPRF Highest Peak Power Results

CH	Mode	Preamble	Meas. Ant.	Average Power (dBm)	Average Limit (dBm)	Margin [dB]
5	SP0	27	H	-42.88	-41.3	-1.58
9	SP0	27	H	-42.85	-41.3	-1.55

Table 7-8. HPRF Highest Average Power Results

Sample Calculation

The raw radiated spurious level is converted to field strength in dBuV/m. Then, the EIRP level is calculated by applying the additional factors shown below for a test distance of 3 meter

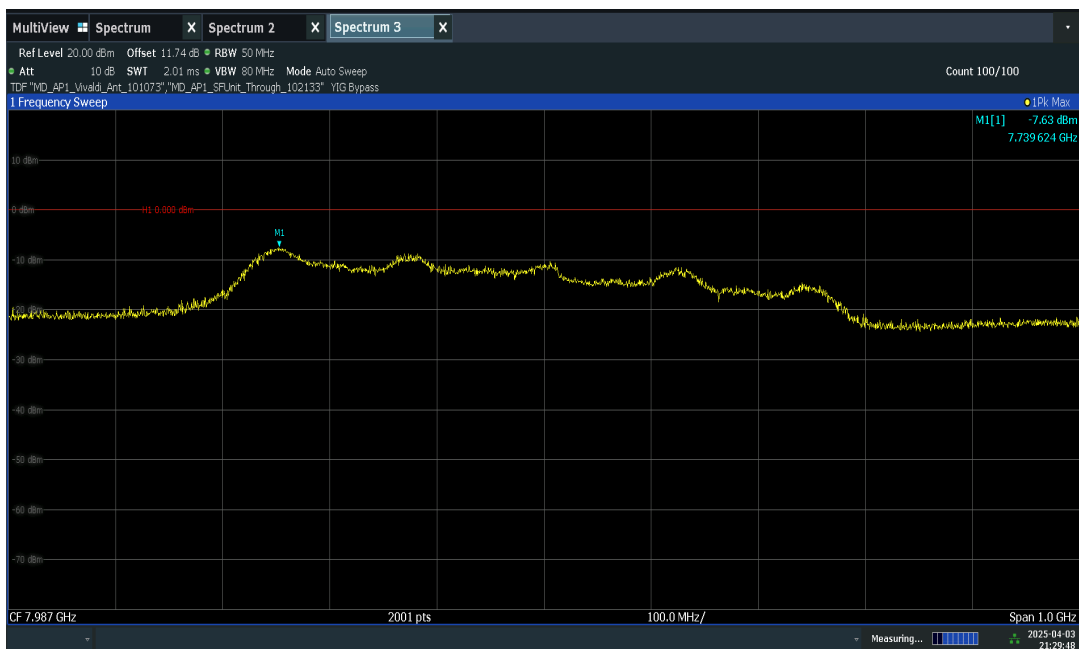
$$\text{RSE EIRP (dBm)} = \text{Analyzer Level (dBm)} + 107 + \text{AFCL (dB/m)} + 20\text{Log(Dm)} - 104.8$$

FCC ID: A3LSMF966U IC: 649E-SMF966W	MEASUREMENT REPORT (CERTIFICATION)		Approved by: Technical Manager
Test Report S/N: 1M2502210015-30.A3L	Test Dates: 4/4/2025 – 4/18/2025	EUT Type: Portable Handset	Page 51 of 70



03:19:10 PM 04/03/2025

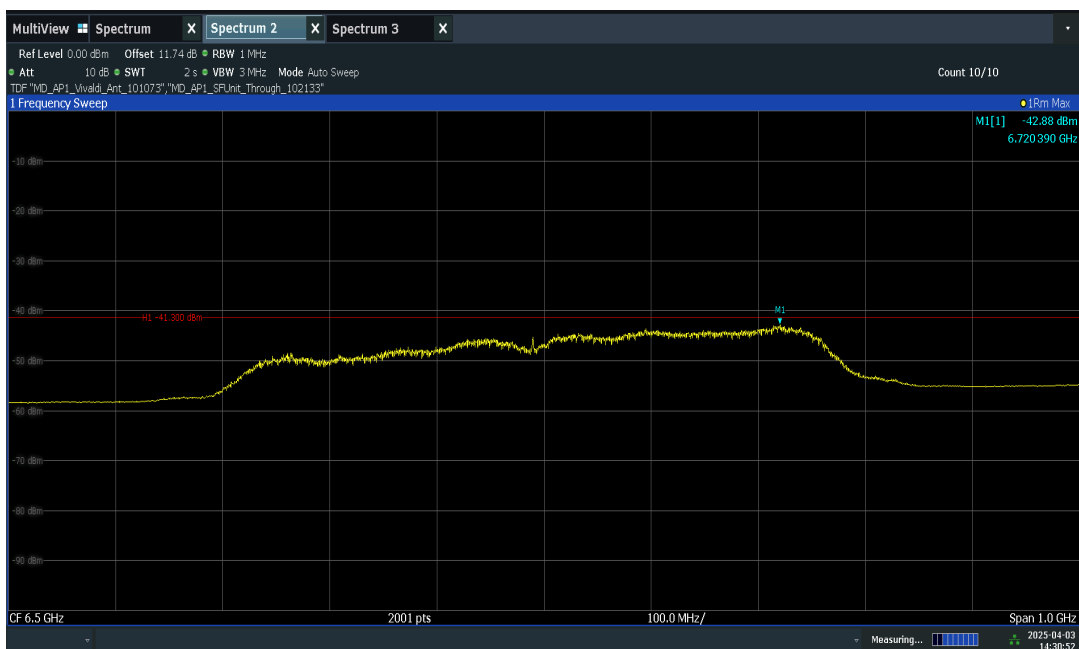
Plot 7-66. UWB Peak Power Measurement - CH.5 – HPRF



09:29:49 PM 04/03/2025

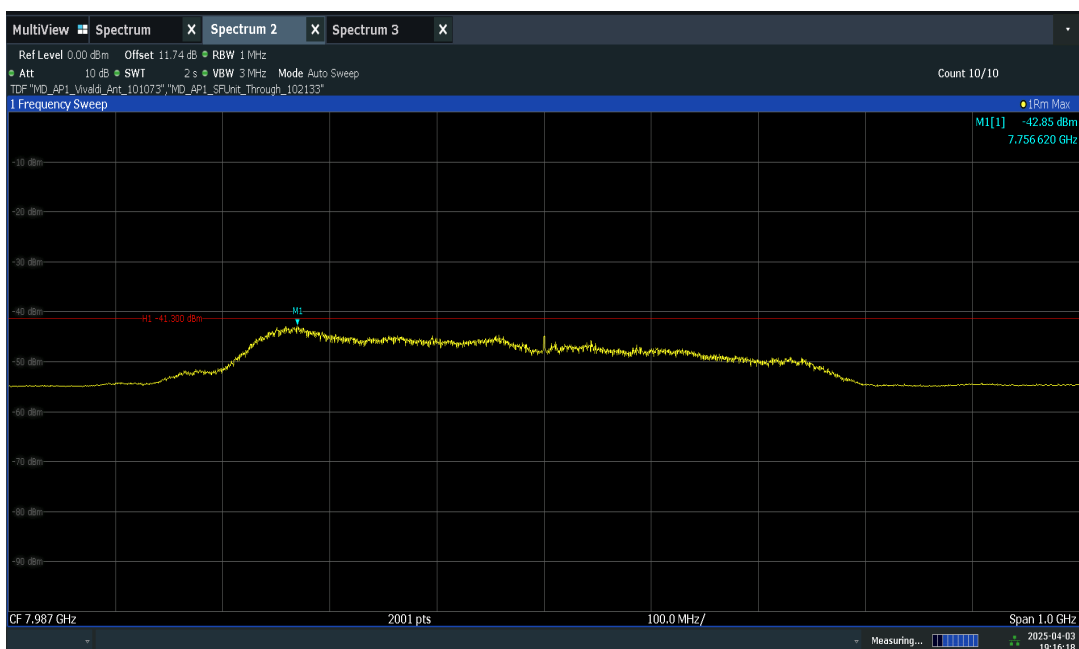
Plot 7-67. UWB Peak Power Measurement - CH.9 – HPRF

FCC ID: A3LSMF966U IC: 649E-SMF966W	MEASUREMENT REPORT (CERTIFICATION)		Approved by: Technical Manager
Test Report S/N: 1M2502210015-30.A3L	Test Dates: 4/4/2025 – 4/18/2025	EUT Type: Portable Handset	Page 52 of 70



02:30:53 PM 04/03/2025

Plot 7-68. UWB Average Power Measurement - CH.5 – HPRF



07:16:19 PM 04/03/2025

Plot 7-69. UWB Average Power Measurement - CH.9 – HPRF

FCC ID: A3LSMF966U IC: 649E-SMF966W	MEASUREMENT REPORT (CERTIFICATION)		Approved by: Technical Manager
Test Report S/N: 1M2502210015-30.A3L	Test Dates: 4/4/2025 – 4/18/2025	EUT Type: Portable Handset	Page 53 of 70

7.6 Radiated Measurement Data above 960MHz

§15.519 (c), §15.519(d)

Test Overview and Limit

All out of band radiated spurious emissions are measured with a spectrum analyzer connected to a receive antenna while the EUT is operating at maximum power and at the appropriate frequencies. Only the radiated emissions of the configuration that produced the worst case emissions are reported in this section.

§15.519(c)

Frequency in MHz	EIRP in dBm/1mhz
960-1610	-75.3
1610-1990	-63.3
1990-3100	-61.3
3100-10600	-41.3
Above 10600	-61.3

Table 7-9. Above 960MHz Average Limits

§15.519(d)

Frequency in MHz	EIRP in dBm/1kHz
1164-1240	-85.3
1559-1610	-85.3

Table 7-10. Above 960MHz Average Limits

Test Procedures Used

ANSI C63.10-2013

Test Settings

Average EIRP Measurements

1. Analyzer frequency set to the frequency of the radiated spurious emission of interest
2. RBW = 1MHz (30kHz for emissions in the GPS bands)
3. VBW = 3MHz (100kHz for the emissions in the GPS bands)
4. Detector = RMS
5. Sweep time = No more than 1ms integration period over each measurement bin
6. Trace mode = Max hold
7. Trace was allowed to stabilize

FCC ID: A3LSMF966U IC: 649E-SMF966W	MEASUREMENT REPORT (CERTIFICATION)		Approved by: Technical Manager
Test Report S/N: 1M2502210015-30.A3L	Test Dates: 4/4/2025 – 4/18/2025	EUT Type: Portable Handset	Page 54 of 70

Test Setup

The EUT and measurement equipment were set up as shown test setup photos provided.

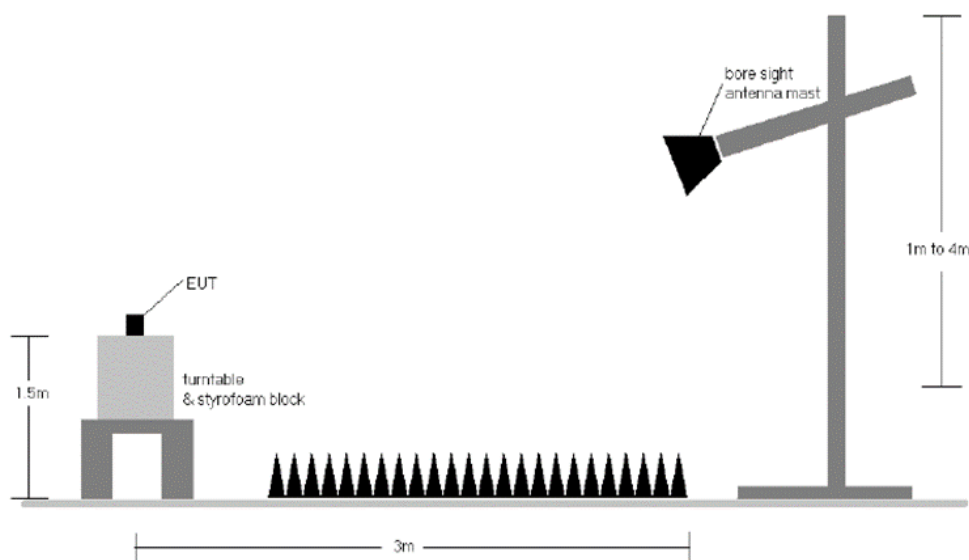


Figure 7-4. Radiated Test Setup > 1GHz

Test Notes

1. All modes of operation and settings (Preamble, Packet Type, etc) were investigated and the worst-case emissions are reported.
2. The RBW for measurements in the GPS Bands were reduced to 30kHz in order to prove compliance.
3. 1000 ~ 18000 MHz and above 18000 MHz pre-scan plots were conducted at 0.7 and 0.6 meter respectively. The plots are only for the purpose of spurious emission identification.
4. All final measurements were made at 0.7 and 0.6 meters respectively.
5. All readings are calibrated by a signal generator with accuracy traceable to the National Institute of Standards and Technology (NIST).
6. $AFCL \text{ (dB/m)} = \text{Antenna Factor (dB/m)} + \text{Cable Loss (dB)}$

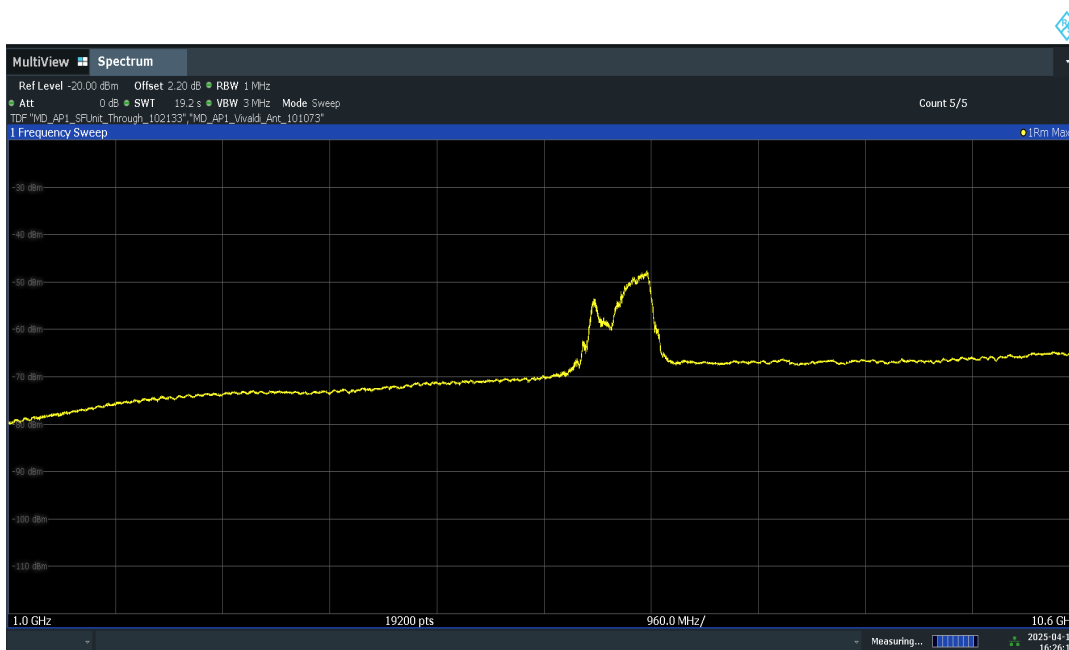
Sample Calculation

The raw radiated spurious level is converted to field strength in dBuV/m. Then, the RSE level is calculated by applying the additional factors shown below for a test distance of 3 meter.

$$\text{Spurious Emission Level (dBm)} = \text{Analyzer Level (dBm)} + 107 + AFCL \text{ (dB/m)} + 20\text{Log(Dm)} - 104.8$$

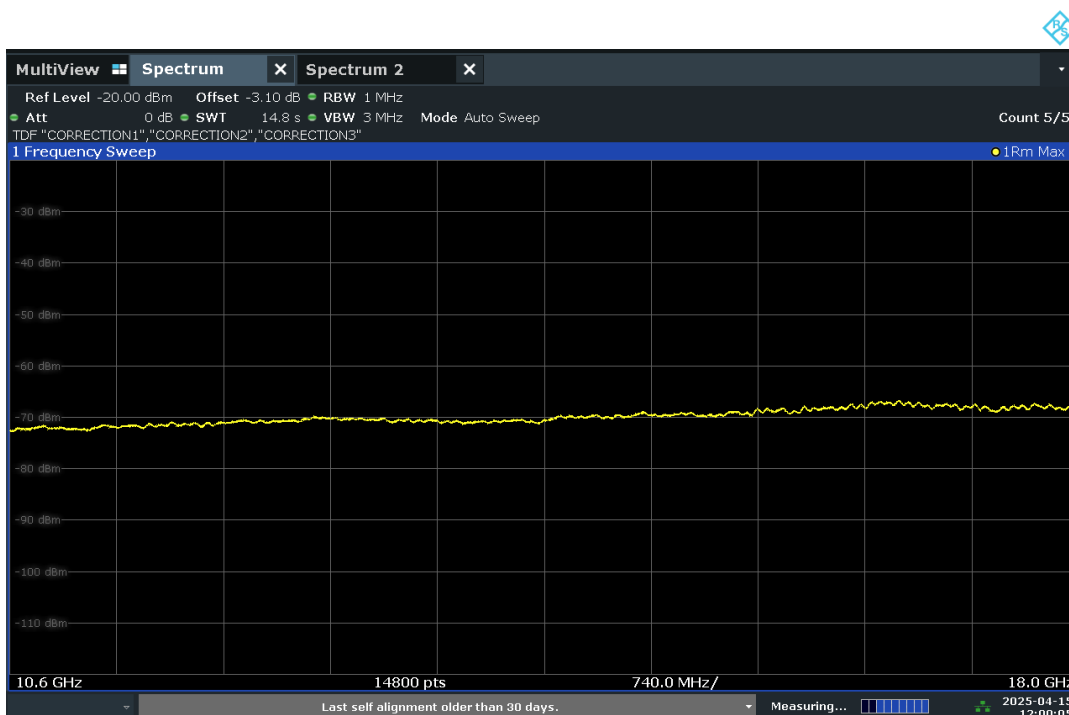
FCC ID: A3LSMF966U IC: 649E-SMF966W	MEASUREMENT REPORT (CERTIFICATION)		Approved by: Technical Manager
Test Report S/N: 1M2502210015-30.A3L	Test Dates: 4/4/2025 – 4/18/2025	EUT Type: Portable Handset	Page 55 of 70

Channel 5



04:26:11 PM 04/14/2025

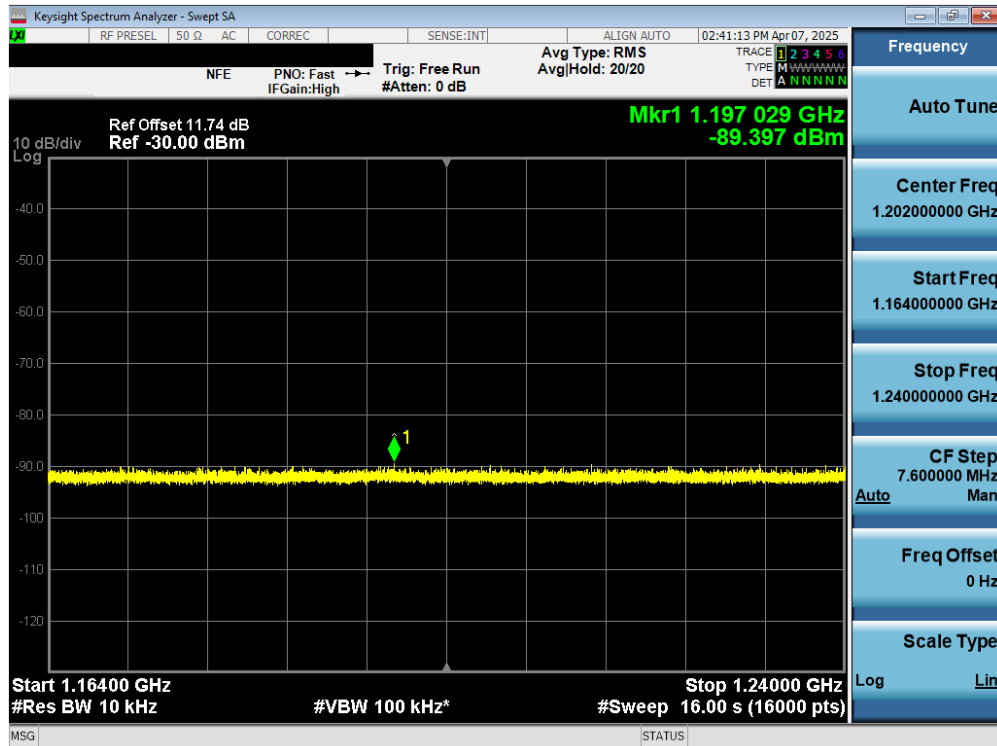
Plot 7-70. Radiated Spurious Pre-Scan 1000 - 10600 MHz - CH.5



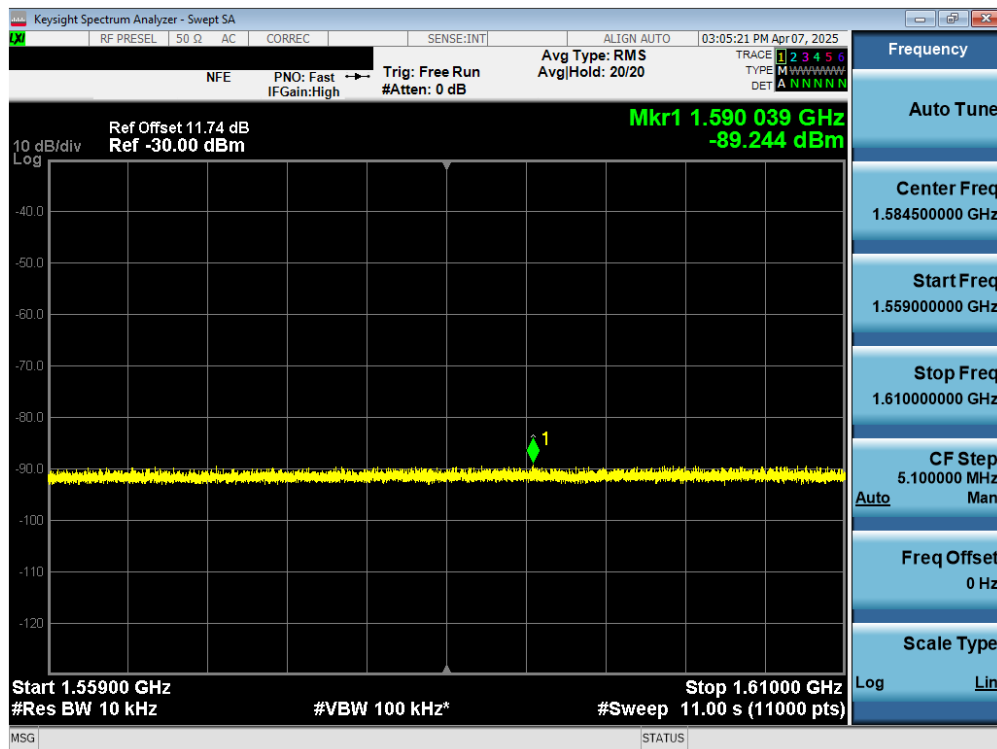
12:00:06 PM 04/15/2025

Plot 7-71. Radiated Spurious Pre-Scan 10600 - 18000 MHz - CH.5

FCC ID: A3LSMF966U IC: 649E-SMF966W	MEASUREMENT REPORT (CERTIFICATION)		Approved by: Technical Manager
Test Report S/N: 1M2502210015-30.A3L	Test Dates: 4/4/2025 – 4/18/2025	EUT Type: Portable Handset	Page 56 of 70

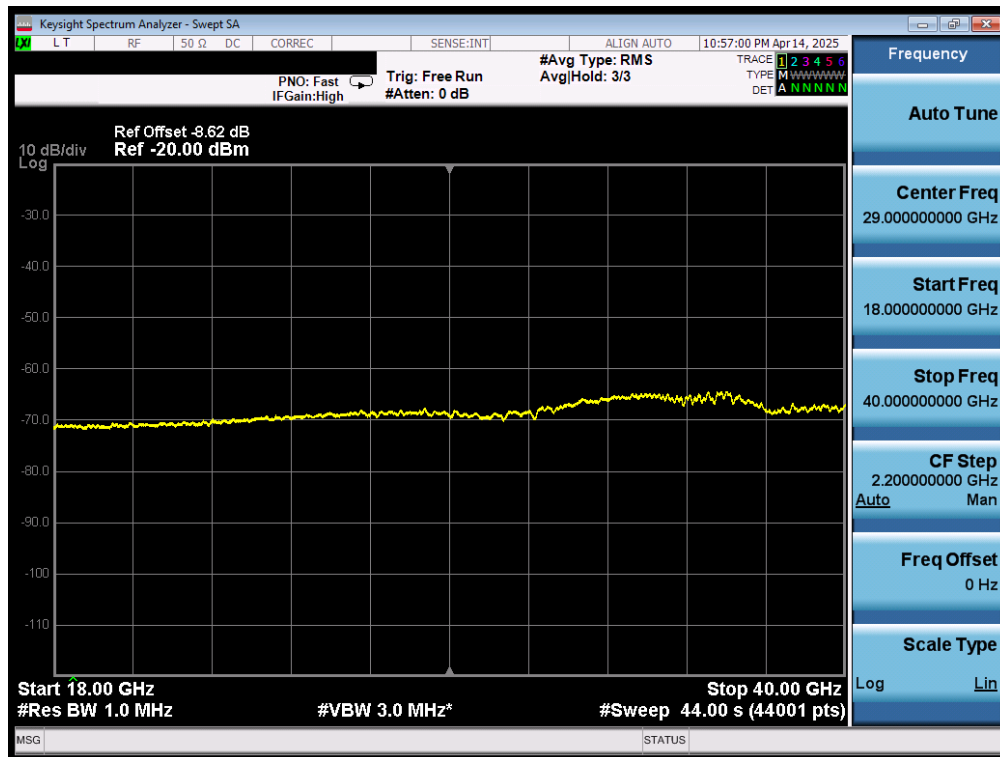


Plot 7-72. Radiated Spurious Pre-Scan 1164 - 1240 MHz - CH.5 – GPS band



Plot 7-73. Radiated Spurious Pre-Scan 1559 - 1610 MHz - CH.5 – GPS band

FCC ID: A3LSMF966U IC: 649E-SMF966W	MEASUREMENT REPORT (CERTIFICATION)		Approved by: Technical Manager
Test Report S/N: 1M2502210015-30.A3L	Test Dates: 4/4/2025 – 4/18/2025	EUT Type: Portable Handset	Page 57 of 70



Plot 7-74. Radiated Spurious Pre-Scan 18 – 40 GHz - CH.5

Channel:	5
Frequency (MHz):	6489
Preamble ID	27
Config	SP3

Frequency [MHz]	Detector	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Spurious Emission Level [dBm]	Limit [dBm]	Margin [dB]
1592	RMS	H	-	-	-78.41	-75.30	-3.11
1972	RMS	H	-	-	-75.41	-63.30	-12.11
2988	RMS	H	-	-	-71.38	-61.30	-10.08
10597	RMS	H	-	-	-64.30	-41.30	-23.00
16761	RMS	H	-	-	-66.69	-61.30	-5.39
36550	RMS	H	-	-	-64.32	-61.30	-3.02

Table 7-11. Radiated Spurious Emissions CH. 5

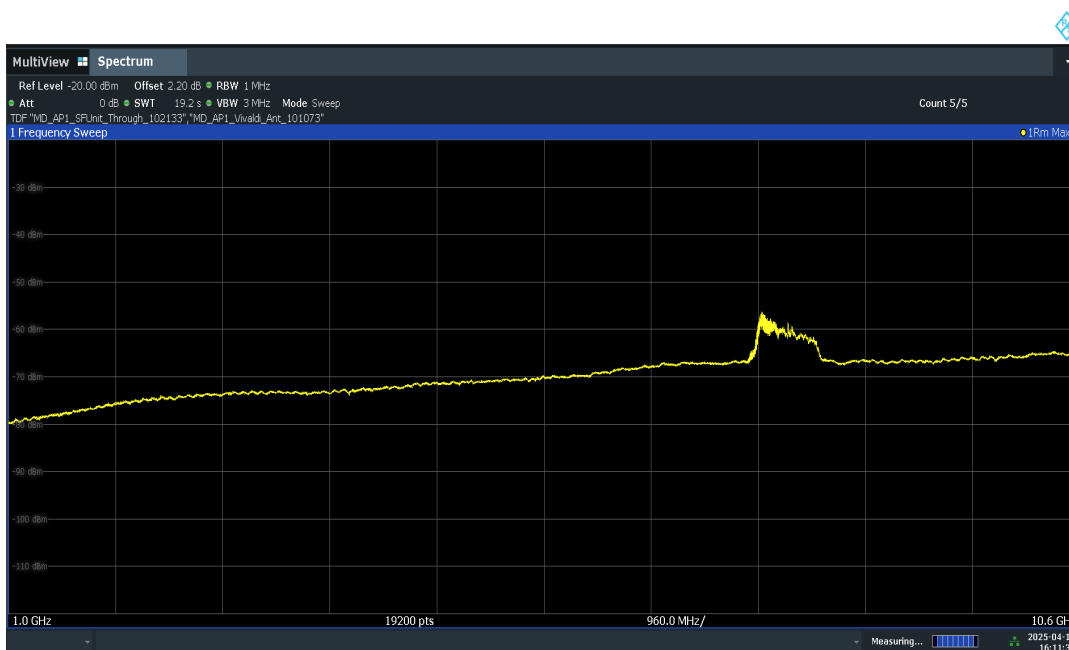
Channel:	5
Frequency (MHz):	6489
Preamble ID	27
Config	SP3

Frequency [MHz]	Detector	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Spurious Emission Level [dBm]	Limit [dBm]	Margin [dB]
1179	RMS	H	-	-	-89.51	-85.30	-4.21
1590	RMS	H	-	-	-89.22	-85.30	-3.92

Table 7-12. Radiated Spurious Emissions CH. 5 – GPS BANDS

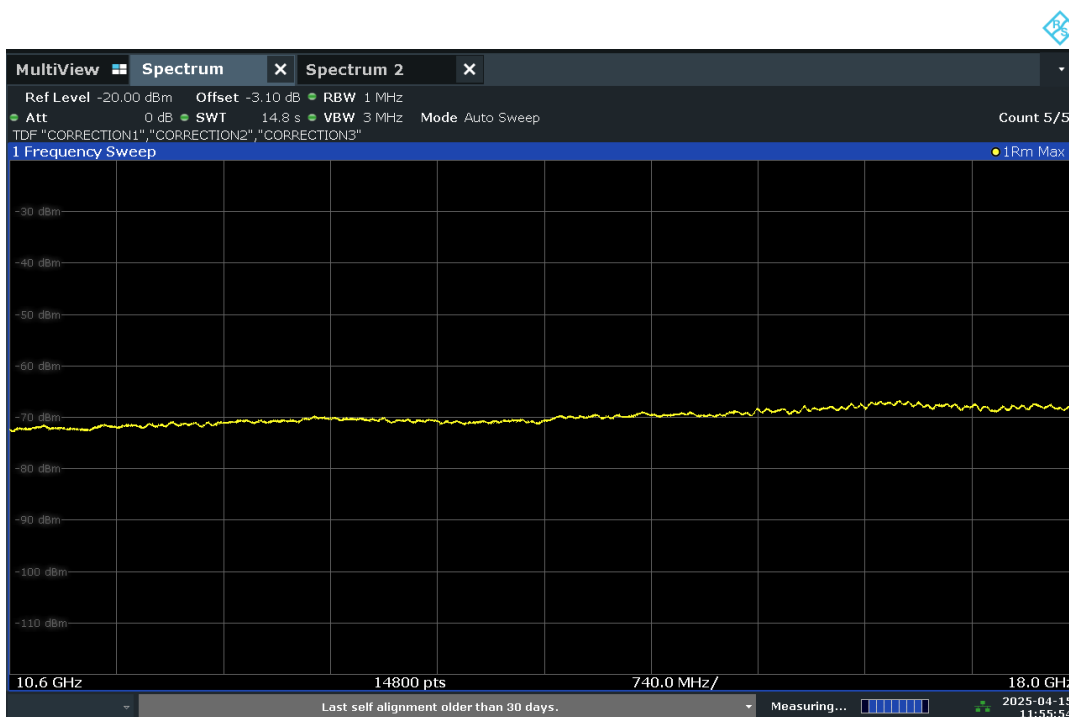
FCC ID: A3LSMF966U IC: 649E-SMF966W	MEASUREMENT REPORT (CERTIFICATION)		Approved by: Technical Manager
Test Report S/N: 1M2502210015-30.A3L	Test Dates: 4/4/2025 – 4/18/2025	EUT Type: Portable Handset	Page 58 of 70

Channel 9



04:11:31 PM 04/14/2025

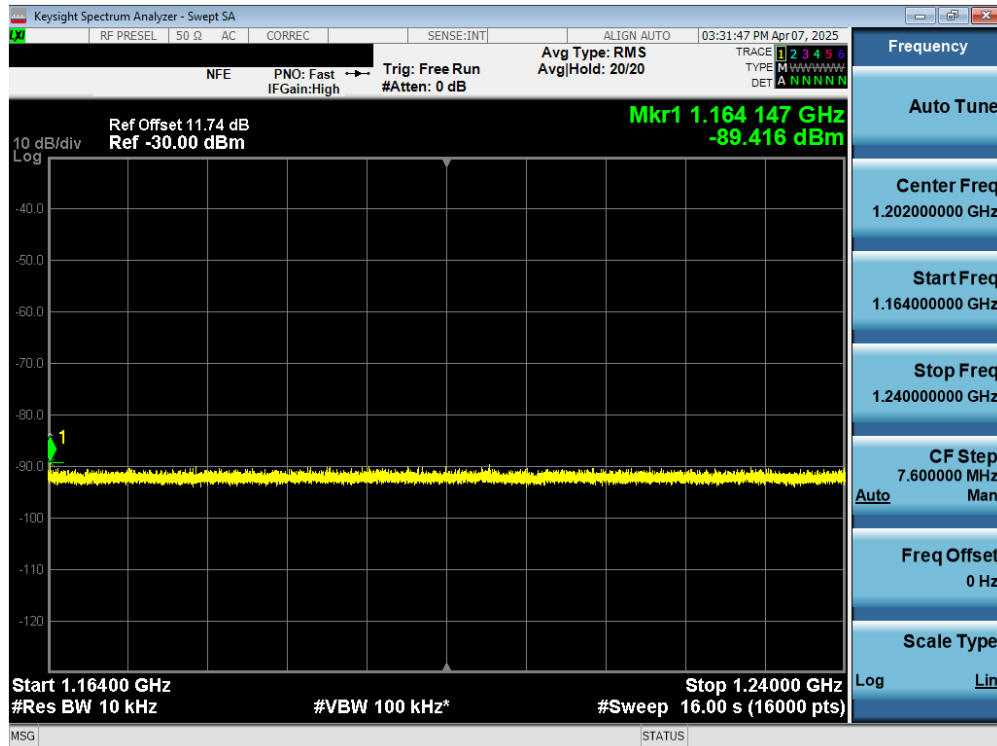
Plot 7-75. Radiated Spurious Pre-Scan 1000 - 10600 MHz - CH.9



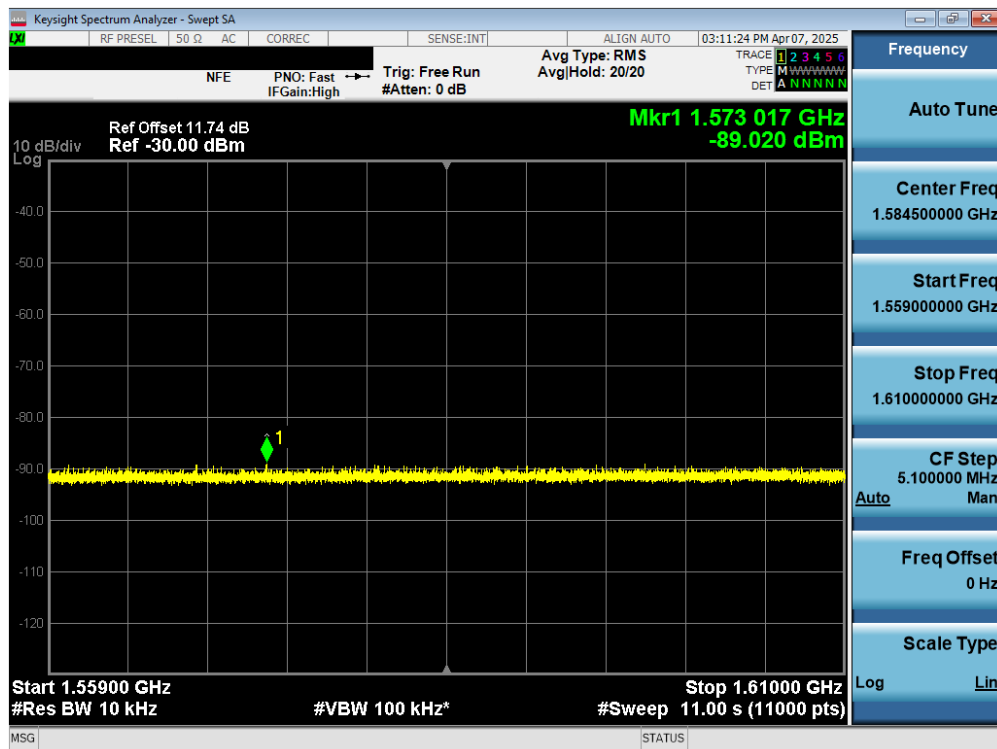
11:55:54 AM 04/15/2025

Plot 7-76. Radiated Spurious Pre-Scan 10600 - 18000 MHz - CH.9

FCC ID: A3LSMF966U IC: 649E-SMF966W	MEASUREMENT REPORT (CERTIFICATION)		Approved by: Technical Manager
Test Report S/N: 1M2502210015-30.A3L	Test Dates: 4/4/2025 – 4/18/2025	EUT Type: Portable Handset	Page 59 of 70

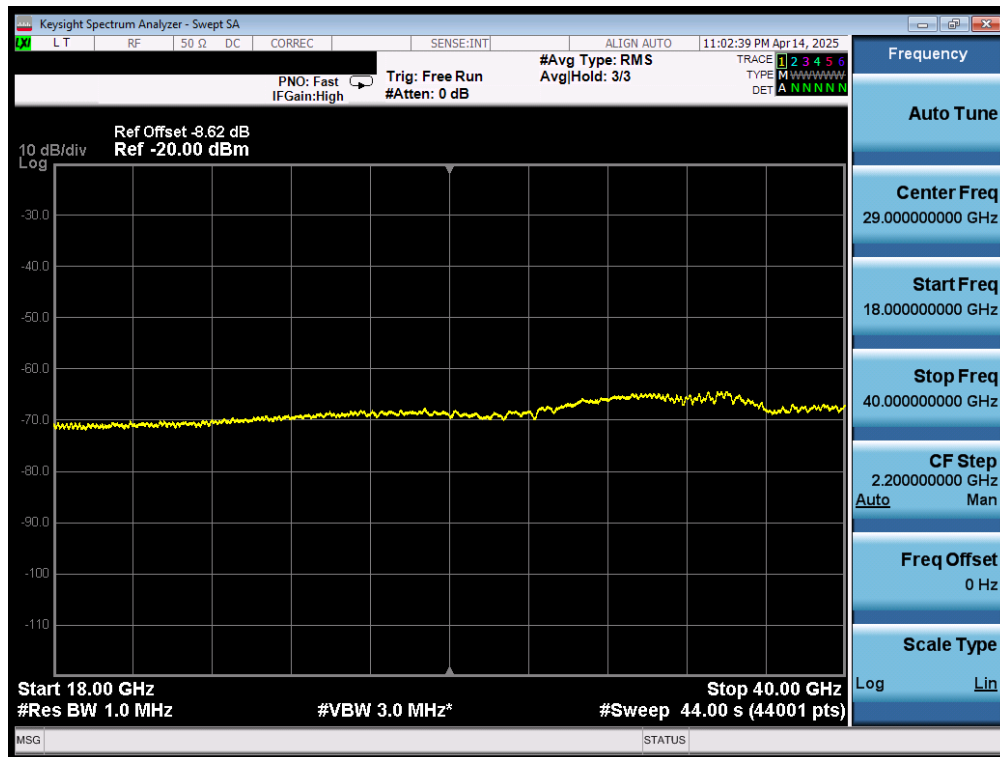


Plot 7-77. Radiated Spurious Pre-Scan 1164 - 1240 MHz - CH.9 – GPS band



Plot 7-78. Radiated Spurious Pre-Scan 1559 - 1610 MHz - CH.9 – GPS band

FCC ID: A3LSMF966U IC: 649E-SMF966W	MEASUREMENT REPORT (CERTIFICATION)		Approved by: Technical Manager
Test Report S/N: 1M2502210015-30.A3L	Test Dates: 4/4/2025 – 4/18/2025	EUT Type: Portable Handset	Page 60 of 70



Plot 7-79. Radiated Spurious Pre-Scan 18 – 40 GHz - CH.9

Channel:	9
Frequency (MHz):	7987
Preamble ID	27
Config	SP3

Frequency [MHz]	Detector	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Spurious Emission Level [dBm]	Limit [dBm]	Margin [dB]
1584	RMS	H	-	-	-78.52	-75.30	-3.22
1981	RMS	H	-	-	-75.38	-63.30	-12.08
2986	RMS	H	-	-	-71.69	-61.30	-10.39
10532	RMS	H	-	-	-64.89	-41.30	-23.59
16756	RMS	H	-	-	-66.65	-61.30	-5.35
36563	RMS	H	-	-	-64.36	-61.30	-3.06

Table 7-13. Radiated Spurious Emissions CH. 9

Channel:	9
Frequency (MHz):	7987
Preamble ID	27
Config	SP3

Frequency [MHz]	Detector	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Spurious Emission Level [dBm]	Limit [dBm]	Margin [dB]
1164	RMS	H	-	-	-89.42	-85.30	-4.12
1573	RMS	H	-	-	-89.02	-85.30	-3.72

Table 7-14. Radiated Spurious Emissions CH. 9 – GPS BANDS

FCC ID: A3LSMF966U IC: 649E-SMF966W	MEASUREMENT REPORT (CERTIFICATION)		Approved by: Technical Manager
Test Report S/N: 1M2502210015-30.A3L	Test Dates: 4/4/2025 – 4/18/2025	EUT Type: Portable Handset	Page 61 of 70

7.7 Radiated Spurious Emissions Measurements – Below 1GHz

§15.209(a), §15.519(c); RSS-Gen [8.9]

Test Overview and Limit

All out of band radiated spurious emissions are measured with a spectrum analyzer connected to a receive antenna while the EUT is operating at its maximum duty cycle, at maximum power, and at the appropriate frequencies. All data rates and modes were investigated for radiated spurious emissions. Only the radiated emissions of the configuration that produced the worst case emissions are reported in this section.

All out of band emissions appearing in a restricted band as specified in Section 15.205 of the Title 47 CFR and Table 6 of RSS-Gen (8.10) must not exceed the limits shown in Table 7-19 per Section 15.209 and RSS-Gen (8.9).

Frequency	Field Strength [$\mu\text{V/m}$]	Measured Distance [Meters]
0.009 – 0.490 MHz	2400/F (kHz)	300
0.490 – 1.705 MHz	24000/F (kHz)	30
1.705 – 30.00 MHz	30	30
30.00 – 88.00 MHz	100	3
88.00 – 216.0 MHz	150	3
216.0 – 960.0 MHz	200	3
Above 960.0 MHz	500	3

Table 7-15. Radiated Limits

Test Procedures Used

ANSI C63.10-2013

Test Settings

Quasi-Peak Field Strength Measurements

1. Analyzer center frequency was set to the frequency of the radiated spurious emission of interest
2. RBW = 120kHz (for emissions from 30MHz – 1GHz)
3. Detector = quasi-peak
4. Sweep time = auto couple
5. Trace mode = max hold
6. Trace was allowed to stabilize

FCC ID: A3LSMF966U IC: 649E-SMF966W	MEASUREMENT REPORT (CERTIFICATION)		Approved by: Technical Manager
Test Report S/N: 1M2502210015-30.A3L	Test Dates: 4/4/2025 – 4/18/2025	EUT Type: Portable Handset	Page 62 of 70

Test Setup

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

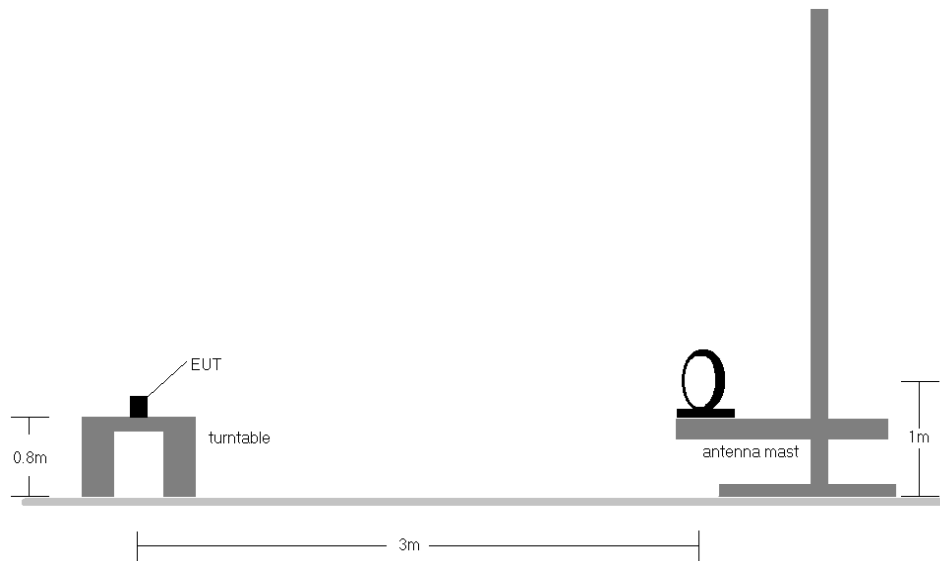


Figure 7-5. Radiated Test Setup < 30Mhz

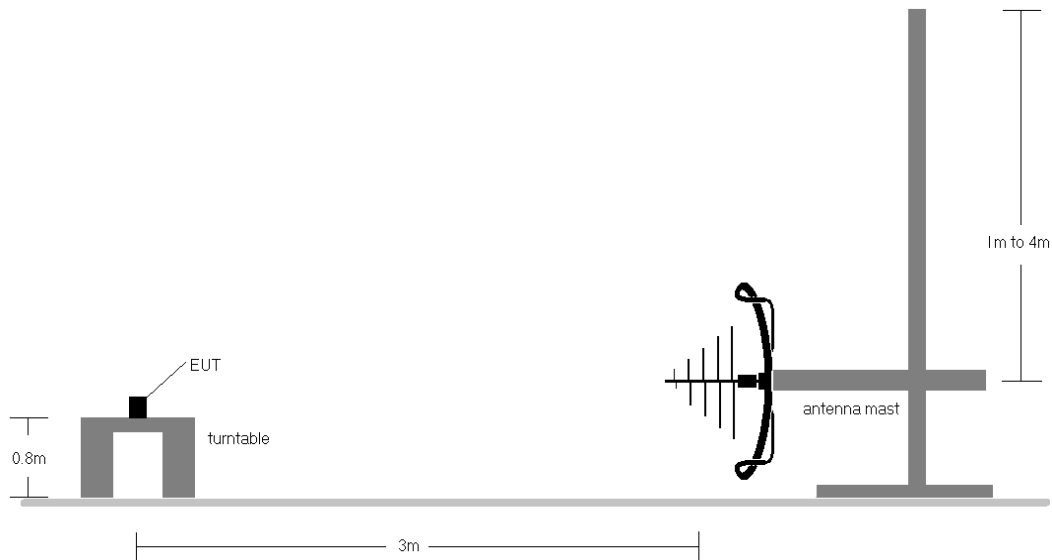


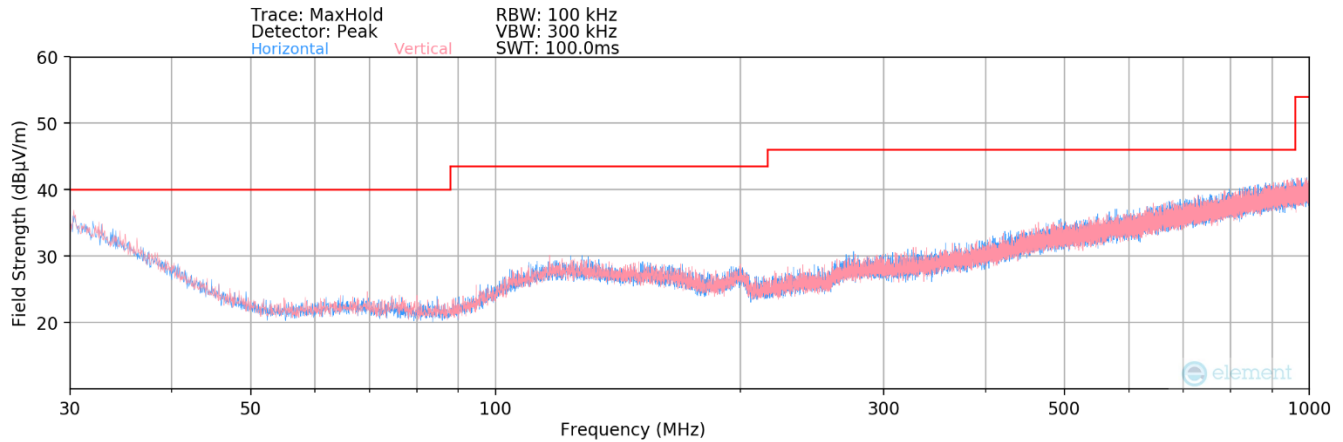
Figure 7-6. Radiated Test Setup < 1GHz

FCC ID: A3LSMF966U IC: 649E-SMF966W	MEASUREMENT REPORT (CERTIFICATION)		Approved by: Technical Manager
Test Report S/N: 1M2502210015-30.A3L	Test Dates: 4/4/2025 – 4/18/2025	EUT Type: Portable Handset	Page 63 of 70

Test Notes

1. The broadband receive antenna is manipulated through vertical and horizontal polarizations during the tests. The EUT is manipulated through three orthogonal planes.
2. The spectrum is investigated using a peak detector and final measurements are recorded using CISPR quasi peak detector. The worst-case emissions are reported however emissions whose levels were not within 20dB of the respective limits were not reported.
3. Emissions were measured at a 3 meter test distance.
4. Emissions are investigated while operating on the center channel of the mode, band, and modulation that produced the worst case results during the transmitter spurious emissions testing.
5. No spurious emissions were detected within 20dB of the limit below 30MHz.
6. The results recorded using the broadband antenna is known to correlate with the results obtained by using a tuned dipole with an acceptable degree of accuracy. The VSWR for the measurement antenna was found to be less than 2:1.
7. The wide spectrum spurious emissions plots shown on the following pages are used only for the purpose of emission identification. There were no emissions detected in the 30MHz – 1GHz frequency range, as shown in the subsequent plots.

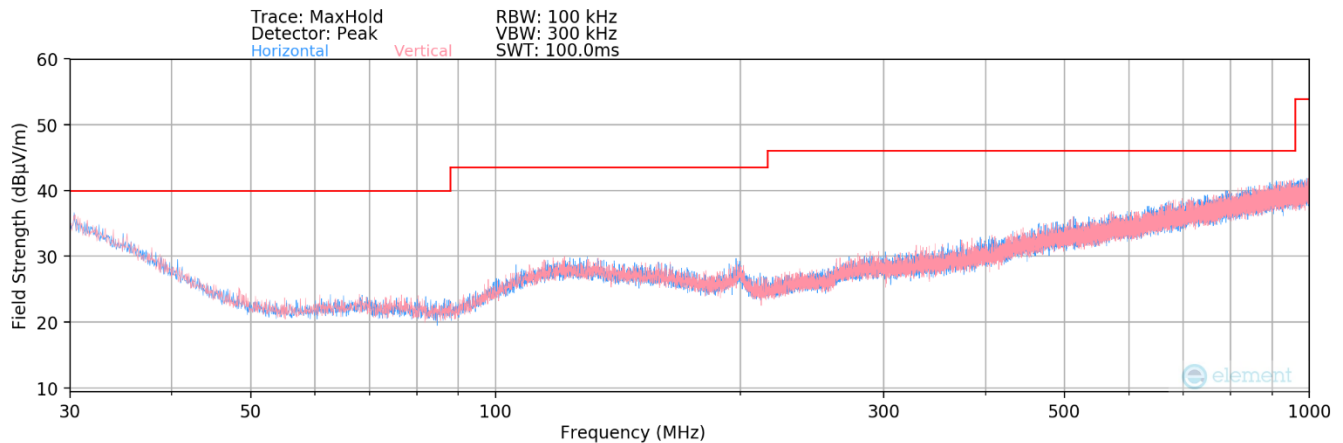
FCC ID: A3LSMF966U IC: 649E-SMF966W	MEASUREMENT REPORT (CERTIFICATION)		Approved by: Technical Manager
Test Report S/N: 1M2502210015-30.A3L	Test Dates: 4/4/2025 – 4/18/2025	EUT Type: Portable Handset	Page 64 of 70



Plot 7-80. 30MHz - 1 GHz Pre-Scan Plots – CH 5

Frequency [MHz]	Detector	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Analyzer Level [dBuV/m]	AFCL [dB/m]	Field Strength [dBuV/m]	Limit [dBuV/m]	Margin [dB]
52.18	Quasi-Peak	V	-	-	1.67	20.39	22.06	40.00	-17.94
879.35	Quasi-Peak	V	-	-	2.86	30.27	33.13	46.02	-12.89
962.74	Quasi-Peak	V	-	-	2.95	30.73	33.68	53.98	-20.30

Table 7-16. Radiated Spurious Emissions Below 1GHz – CH5



Plot 7-81. 30MHz - 1 GHz Pre-Scan Plots – CH 9

Frequency [MHz]	Detector	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Analyzer Level [dBm]	AFCL [dB/m]	Spurious Emission Level [dBm]	Limit [dBm]	Margin [dB]
53.01	Quasi-Peak	V	-	-	1.49	20.31	21.80	40.00	-18.20
875.85	Quasi-Peak	V	-	-	2.27	30.26	32.53	46.02	-13.49
986.95	Quasi-Peak	V	-	-	2.62	31.03	33.65	53.98	-20.33

Table 7-17. Radiated Spurious Emissions Below 1GHz – CH9

FCC ID: A3LSMF966U IC: 649E-SMF966W	MEASUREMENT REPORT (CERTIFICATION)		Approved by: Technical Manager
Test Report S/N: 1M2502210015-30.A3L	Test Dates: 4/4/2025 – 4/18/2025	EUT Type: Portable Handset	Page 65 of 70

7.8 Line Conducted Measurement Data

§15.207

Test Overview and Limit

All AC line conducted spurious emissions are measured with a receiver connected to a grounded LISN while the EUT is operating at its maximum duty cycle, at maximum power, and at the appropriate frequencies. All data rates and modes were investigated for conducted spurious emissions. Only the conducted emissions of the configuration that produced the worst case emissions are reported in this section.

All emissions must not exceed the limits shown in Table 7-20 per FCC 15.207 and RSS-Gen (8.8).

Frequency of emission (MHz)	Conducted Limit (dBμV)	
	Quasi-peak	Average
0.15 – 0.5	66 to 56*	56 to 46*
0.5 – 5	56	46
5 – 30	60	50

Table 7-18. Conducted Limits

*Decreases with the logarithm of the frequency.

Test Procedures Used

ANSI C63.4-2014

Test Settings

Quasi-Peak Field Strength Measurements

1. Analyzer center frequency was set to the frequency of the spurious emission of interest
2. RBW = 9kHz (for emissions from 150kHz – 30MHz)
3. Detector = quasi-peak
4. Sweep time = auto couple
5. Trace mode = max hold
6. Trace was allowed to stabilize

Average Field Strength Measurements

1. Analyzer center frequency was set to the frequency of the spurious emission of interest
2. RBW = 9kHz (for emissions from 150kHz – 30MHz)
3. Detector = RMS
4. Sweep time = auto couple
5. Trace mode = max hold
6. Trace was allowed to stabilize

FCC ID: A3LSMF966U IC: 649E-SMF966W	MEASUREMENT REPORT (CERTIFICATION)		Approved by: Technical Manager
Test Report S/N: 1M2502210015-30.A3L	Test Dates: 4/4/2025 – 4/18/2025	EUT Type: Portable Handset	Page 66 of 70

Test Setup

The EUT and measurement equipment were set up as shown in the test setup photos provided.

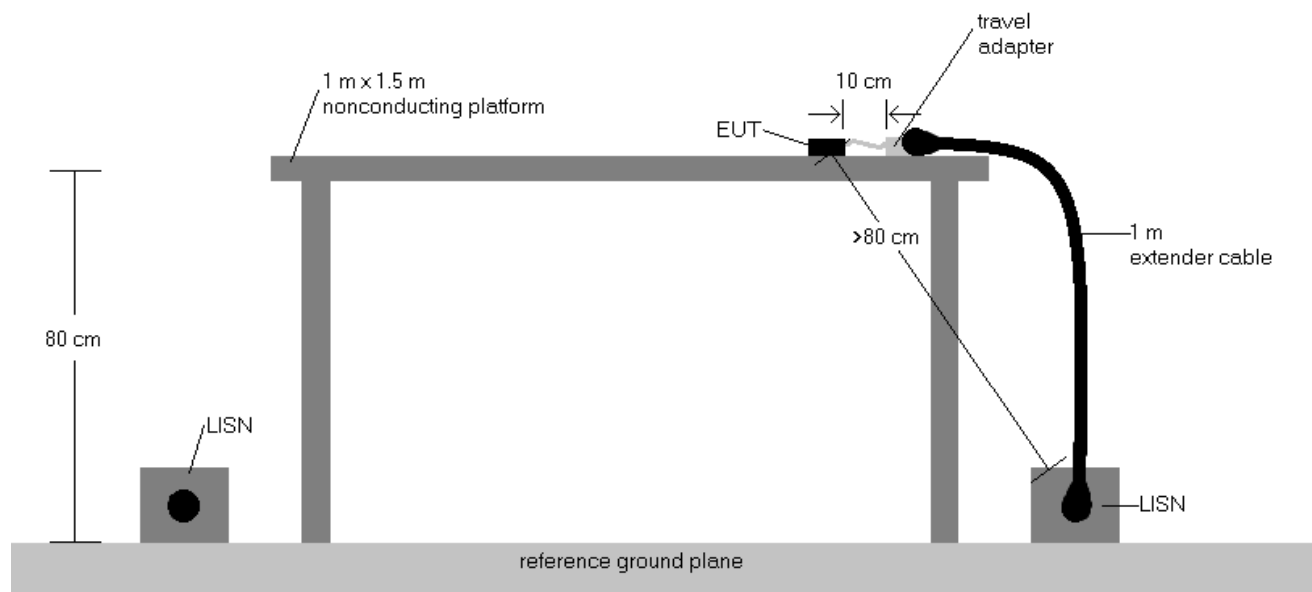
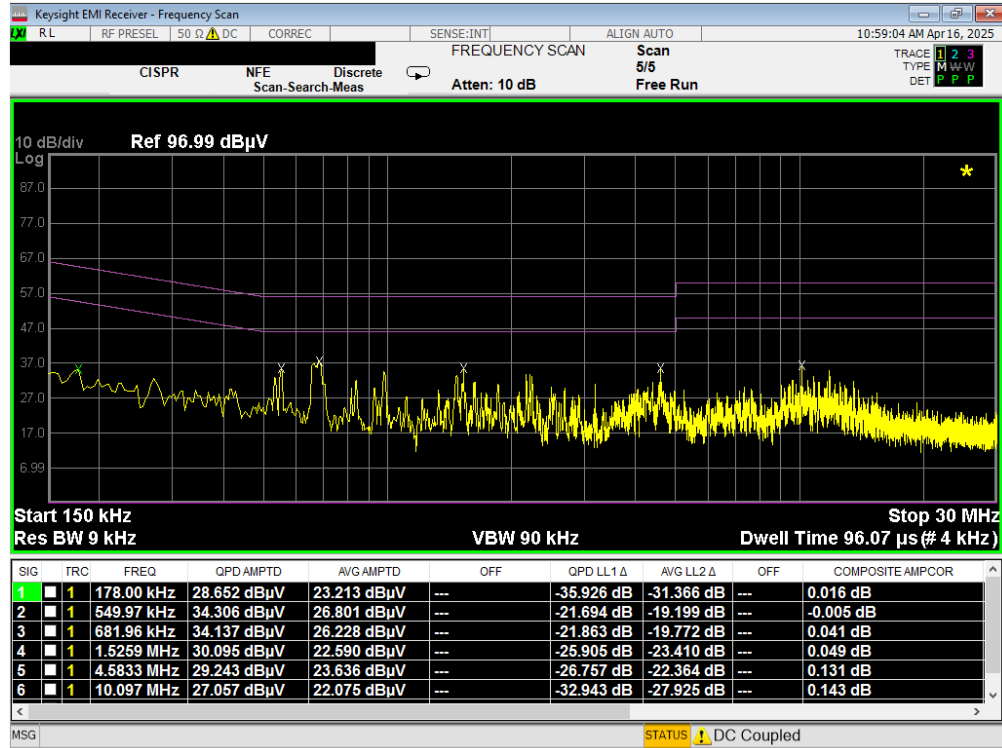


Figure 7-7. Test Instrument & Measurement Setup

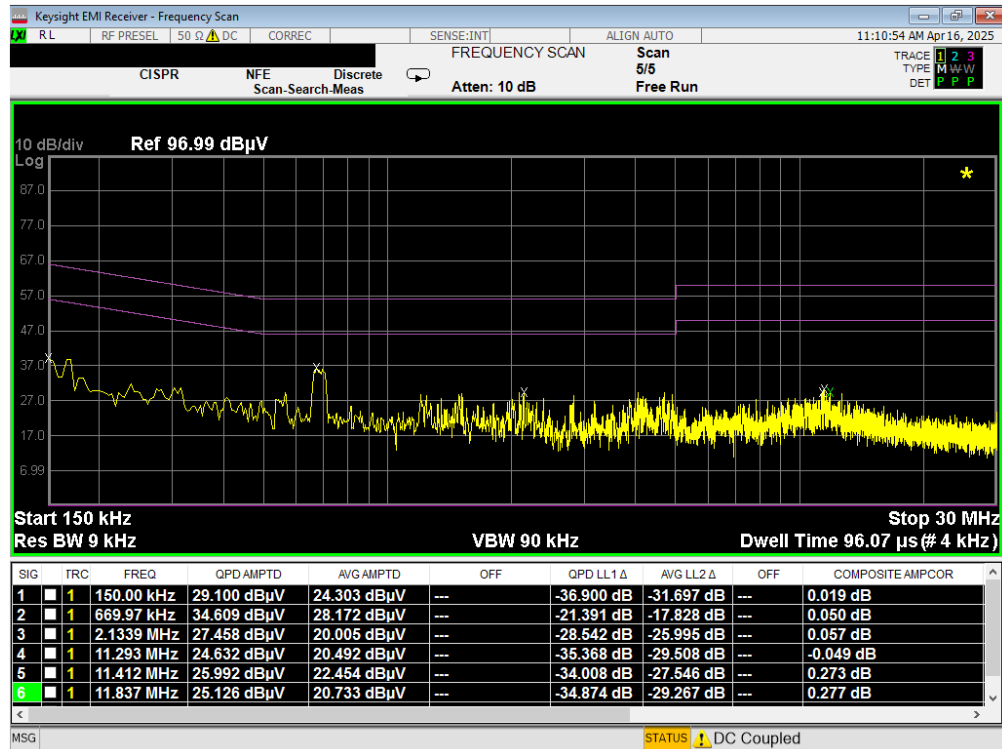
Test Notes

1. All Modes of operation were investigated and the worst-case emissions are reported.
2. The limit for Class B device(s) from 150kHz to 30MHz are specified in Section 15.207 and RSS-Gen.
3. L1 = Phase; N = Neutral
4. $\text{Corr. (dB)} = \text{Cable loss (dB)} + \text{LISN insertion factor (dB)}$
5. $\text{QP/AV Level (dB}\mu\text{V)} = \text{QP/AV Reading (dB}\mu\text{V)} + \text{Factor (dB)}$
6. $\text{Margin (dB)} = \text{QP/AV Limit (dB}\mu\text{V)} - \text{QP/AV Level (dB}\mu\text{V)}$
7. Traces shown in plot are made using a peak detector.
8. Deviations to the Specifications: None.

FCC ID: A3LSMF966U IC: 649E-SMF966W	MEASUREMENT REPORT (CERTIFICATION)		Approved by: Technical Manager
Test Report S/N: 1M2502210015-30.A3L	Test Dates: 4/4/2025 – 4/18/2025	EUT Type: Portable Handset	Page 67 of 70

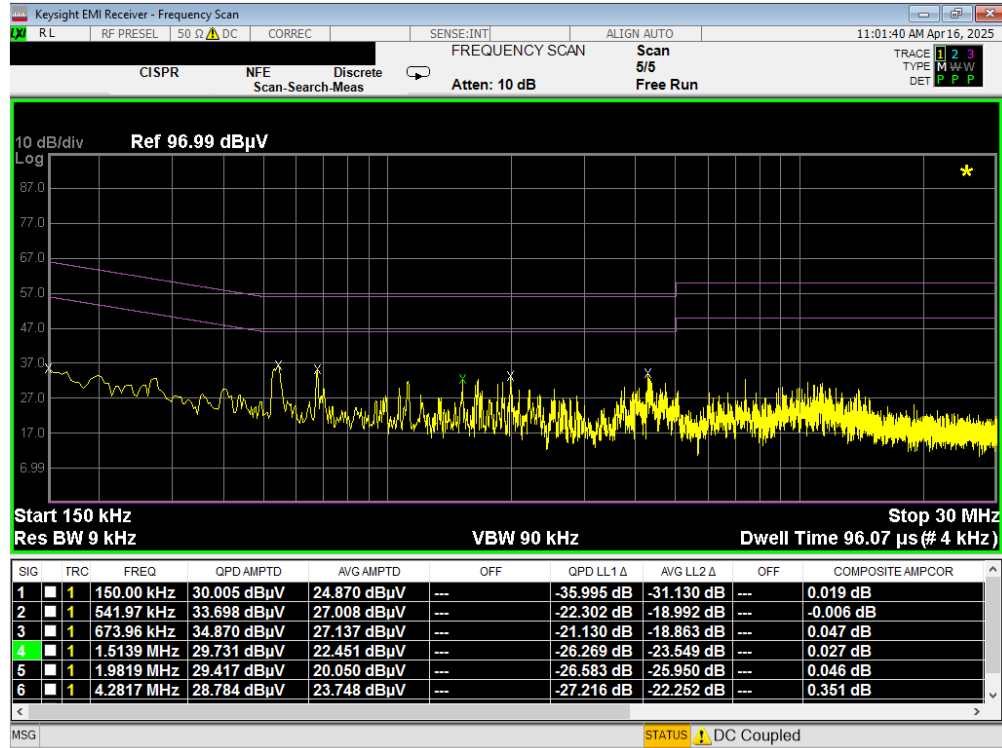


Plot 7-82. Line Conducted Plot (L1) – CH 5

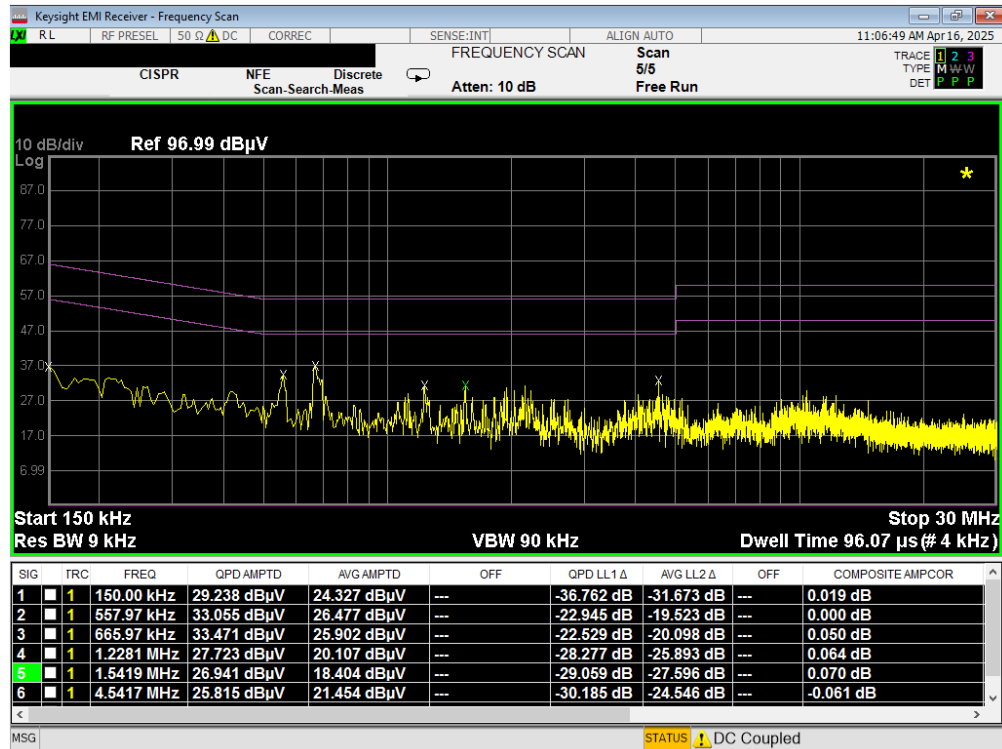


Plot 7-83. Line Conducted Plot (N) – CH 5

FCC ID: A3LSMF966U IC: 649E-SMF966W	MEASUREMENT REPORT (CERTIFICATION)		Approved by: Technical Manager
Test Report S/N: 1M2502210015-30.A3L	Test Dates: 4/4/2025 – 4/18/2025	EUT Type: Portable Handset	Page 68 of 70



Plot 7-84. Line Conducted Plot (L1) – CH 9



Plot 7-85. Line Conducted Plot (N) – CH 9

FCC ID: A3LSMF966U IC: 649E-SMF966W	MEASUREMENT REPORT (CERTIFICATION)		Approved by: Technical Manager
Test Report S/N: 1M2502210015-30.A3L	Test Dates: 4/4/2025 – 4/18/2025	EUT Type: Portable Handset	Page 69 of 70

8.0 CONCLUSION

The data collected relate only to the item(s) tested and show that the **Samsung Portable Handset FCC ID: A3LSMF966U** has been tested to comply with the requirements specified in §15.519 and §15.521 of the FCC rules and RSS-220 of the Innovation, Science and Economic Development Canada Rules.

FCC ID: A3LSMF966U IC: 649E-SMF966W	MEASUREMENT REPORT (CERTIFICATION)		Approved by: Technical Manager
Test Report S/N: 1M2502210015-30.A3L	Test Dates: 4/4/2025 – 4/18/2025	EUT Type: Portable Handset	Page 70 of 70