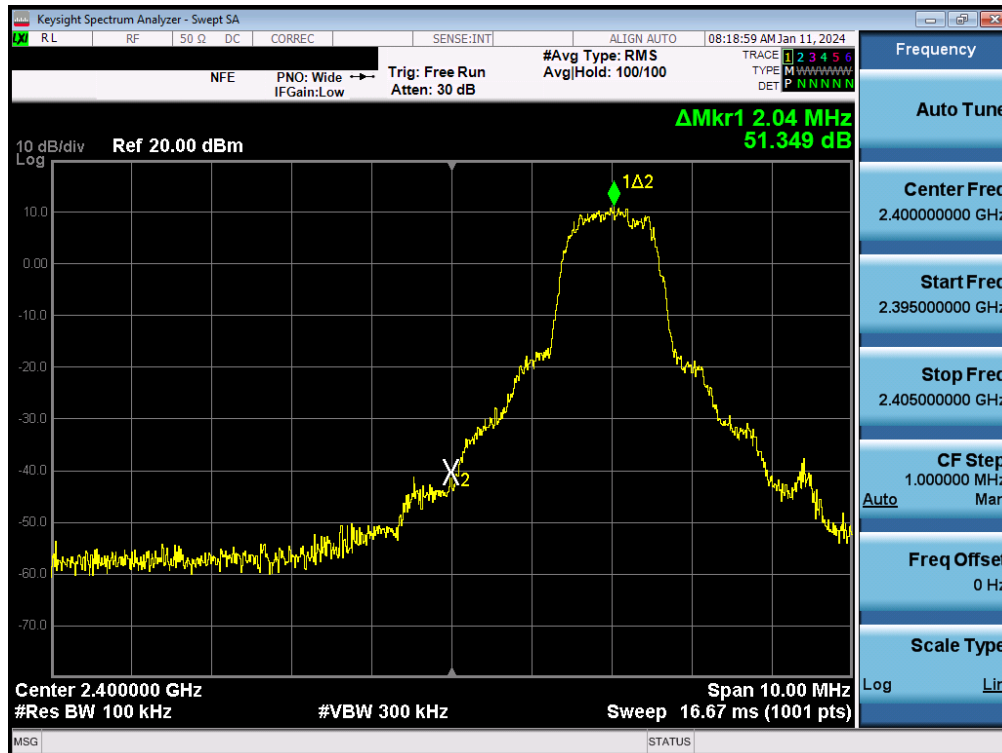
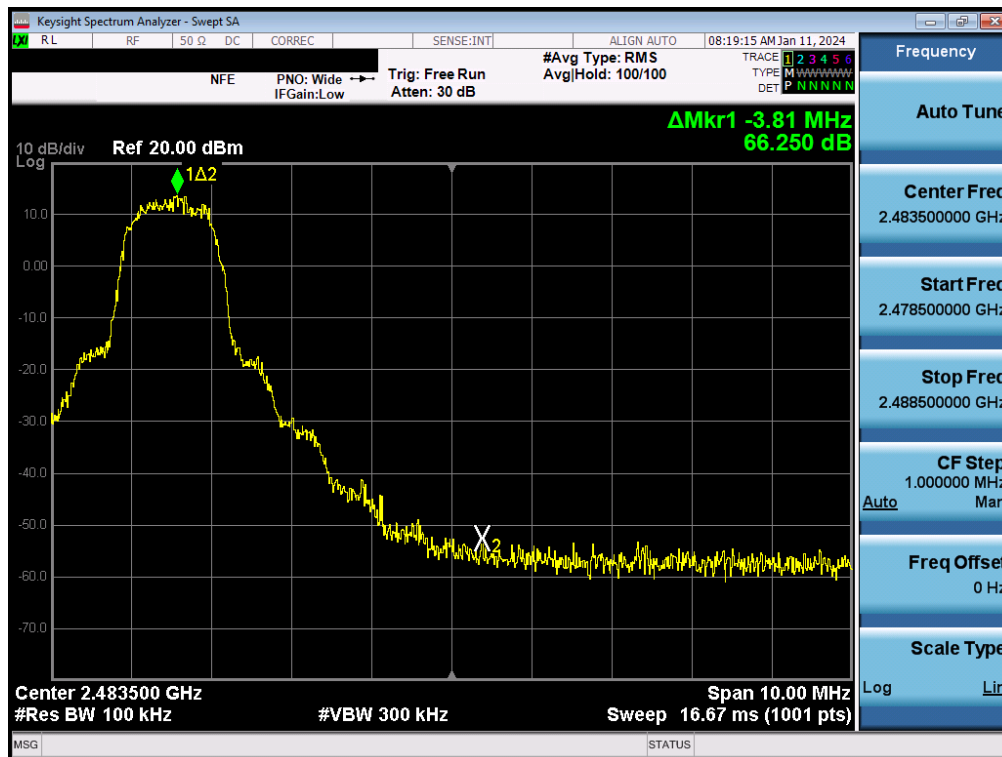


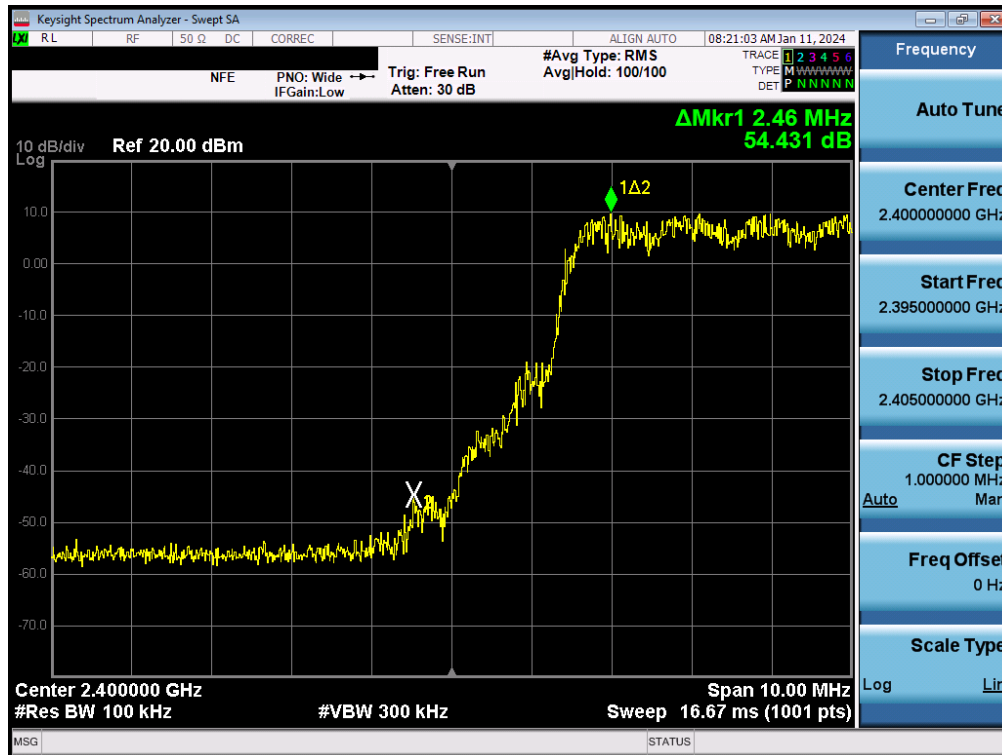


Plot 7-109. Band Edge Plot (Bluetooth with Hopping Disabled, 3 Mbps – Ch. 0) – ANT1

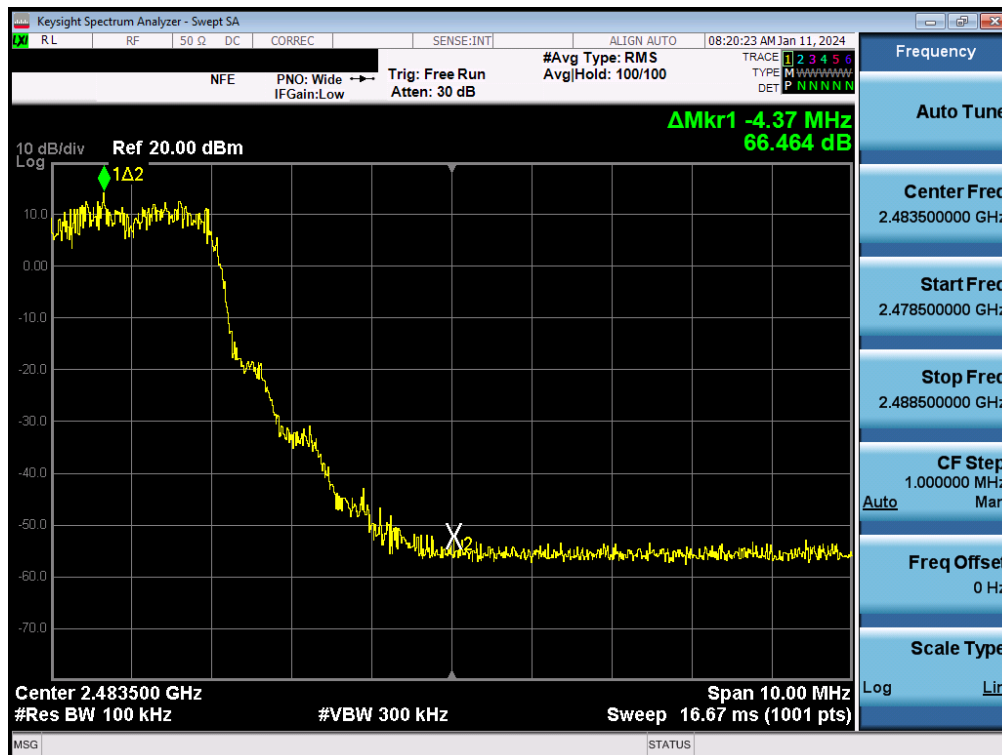


Plot 7-110. Band Edge Plot (Bluetooth with Hopping Disabled, 3 Mbps – Ch. 78) – ANT1

FCC ID: A3LSMS928JPN	MEASUREMENT REPORT (CERTIFICATION)		Approved by: Technical Manager
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Plot 7-111. Band Edge Plot (Bluetooth with Hopping Enabled, 3 Mbps – Ch. 0) – ANT1

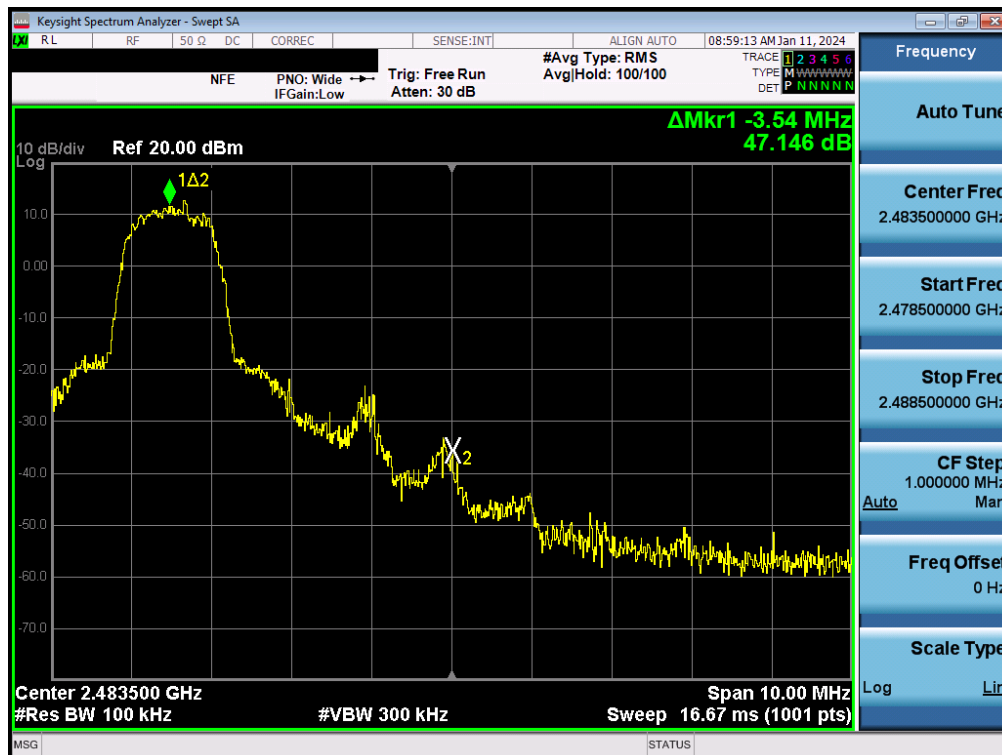


Plot 7-112. Band Edge Plot (Bluetooth with Hopping Enabled, 3 Mbps – Ch. 78) – ANT1

FCC ID: A3LSMS928JPN	MEASUREMENT REPORT (CERTIFICATION)		Approved by: Technical Manager
Test Report S/N: 1M2312110124-13.A3L	Test Dates: 1/11/2024-2/6/2024	EUT Type: Portable Handset	Page 75 of 138



Plot 7-113. Band Edge Plot (Bluetooth with Hopping Disabled, 3 Mbps – Ch. 0) – ANT2



Plot 7-114. Band Edge Plot (Bluetooth with Hopping Disabled, 3 Mbps – Ch. 78) – ANT2

FCC ID: A3LSMS928JPN	MEASUREMENT REPORT (CERTIFICATION)		Approved by: Technical Manager
Test Report S/N: 1M2312110124-13.A3L	Test Dates: 1/11/2024-2/6/2024	EUT Type: Portable Handset	Page 76 of 138

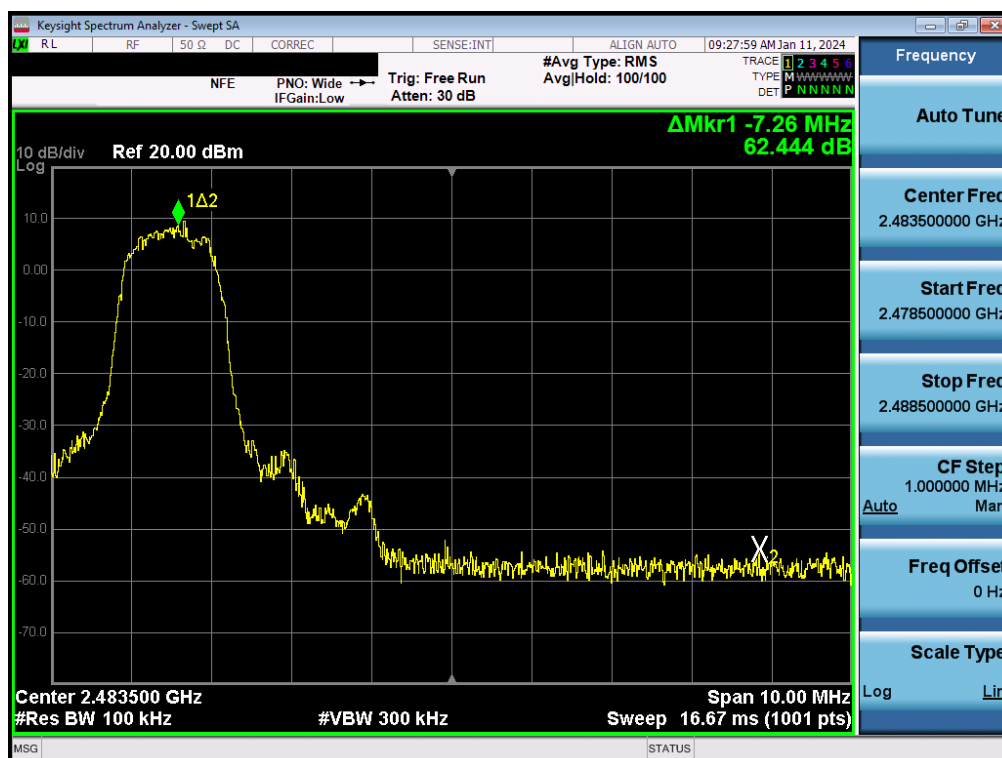
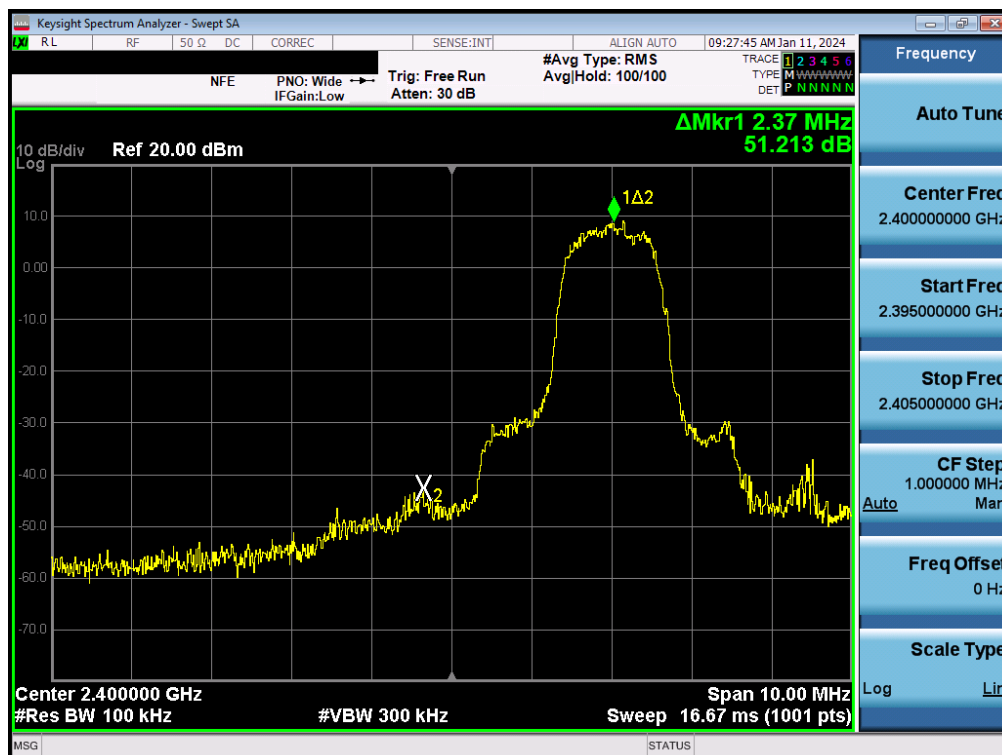


Plot 7-115. Band Edge Plot (Bluetooth with Hopping Enabled, 3 Mbps – Ch. 0) – ANT2

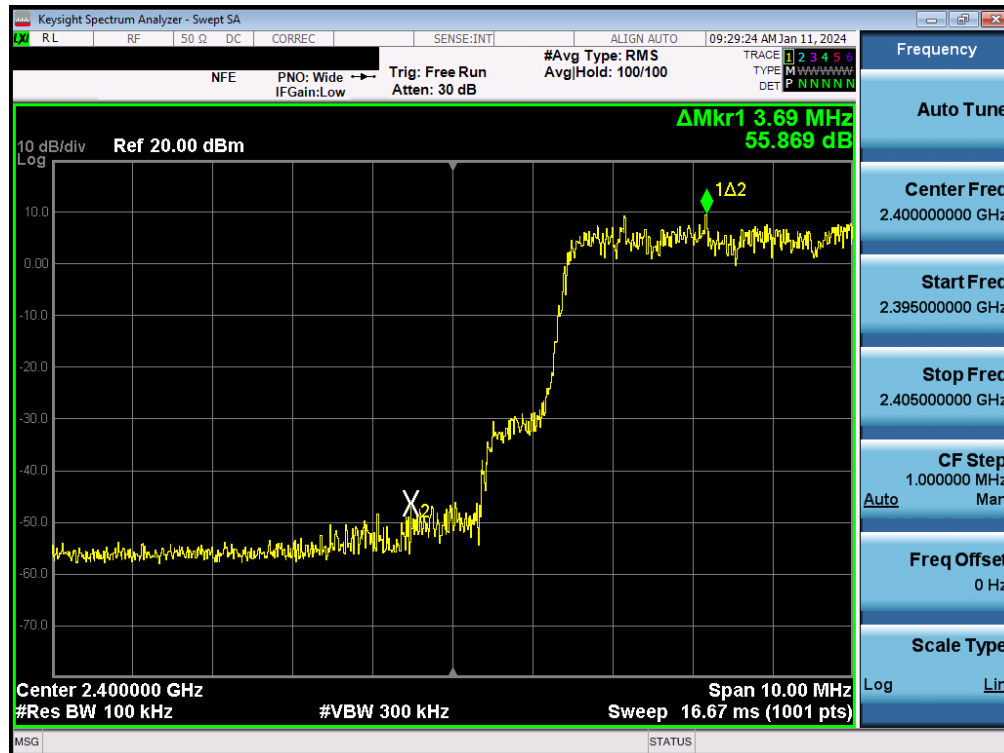


Plot 7-116. Band Edge Plot (Bluetooth with Hopping Enabled, 3 Mbps – Ch. 78) – ANT2

FCC ID: A3LSMS928JPN	MEASUREMENT REPORT (CERTIFICATION)		Approved by: Technical Manager
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FCC ID: A3LSMS928JPN	MEASUREMENT REPORT (CERTIFICATION)		Approved by: Technical Manager
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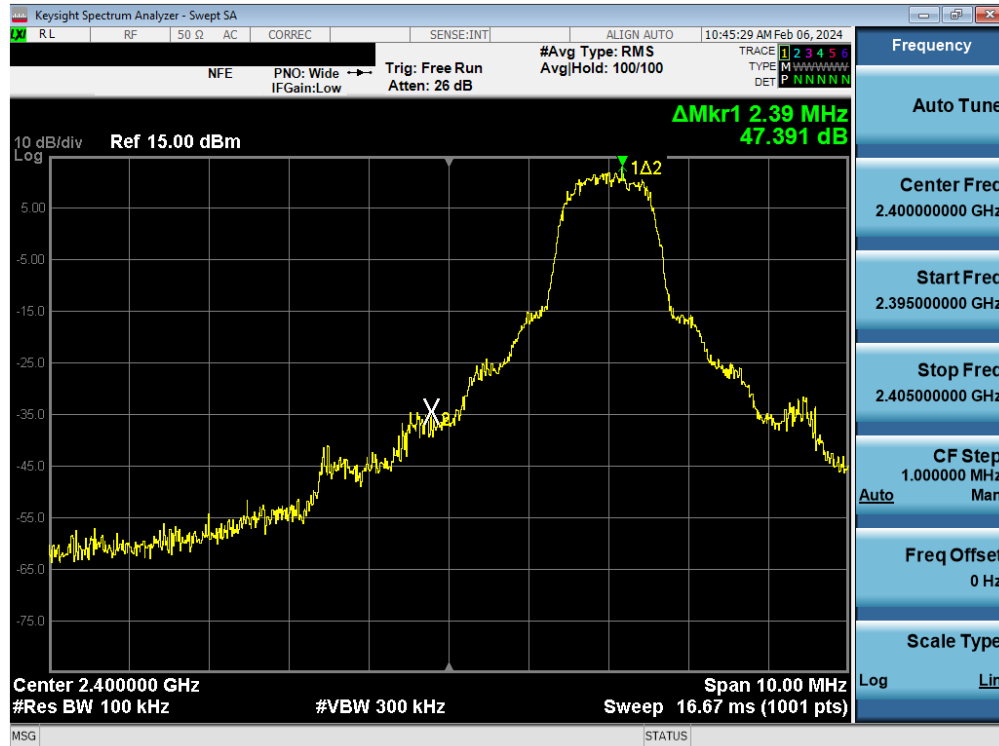


Plot 7-119. Band Edge Plot (Bluetooth with Hopping Enabled, 3 Mbps) – Dual ANT1

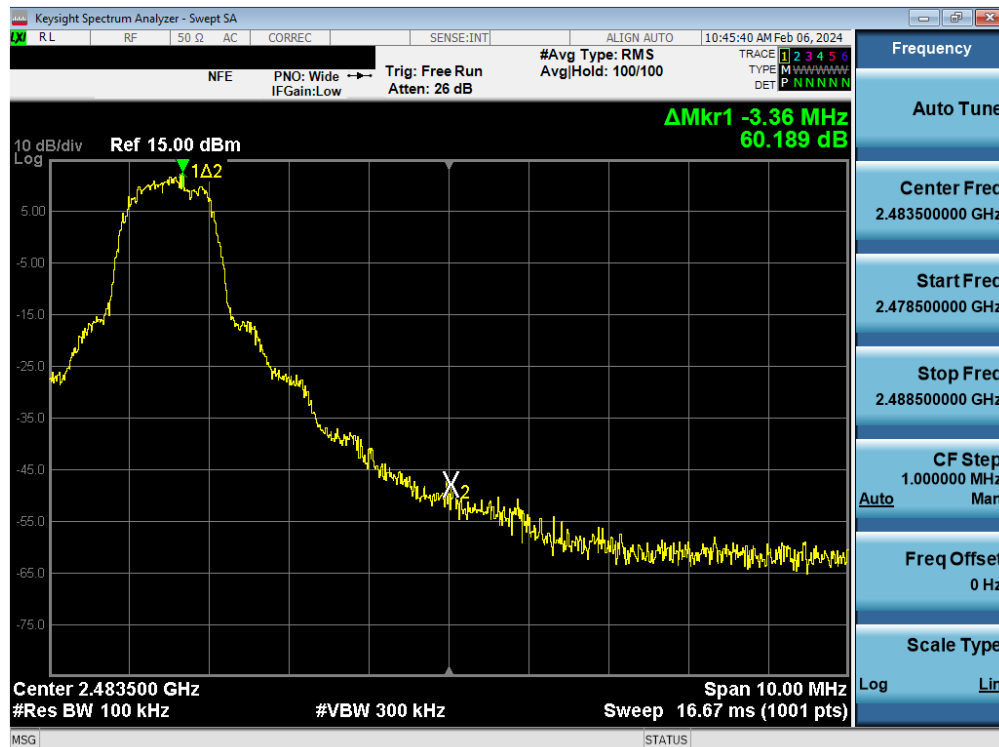


Plot 7-120. Band Edge Plot (Bluetooth with Hopping Enabled, 3 Mbps) – Dual ANT1

FCC ID: A3LSMS928JPN	MEASUREMENT REPORT (CERTIFICATION)		Approved by: Technical Manager
Test Report S/N: 1M2312110124-13.A3L	Test Dates: 1/11/2024-2/6/2024	EUT Type: Portable Handset	Page 79 of 138

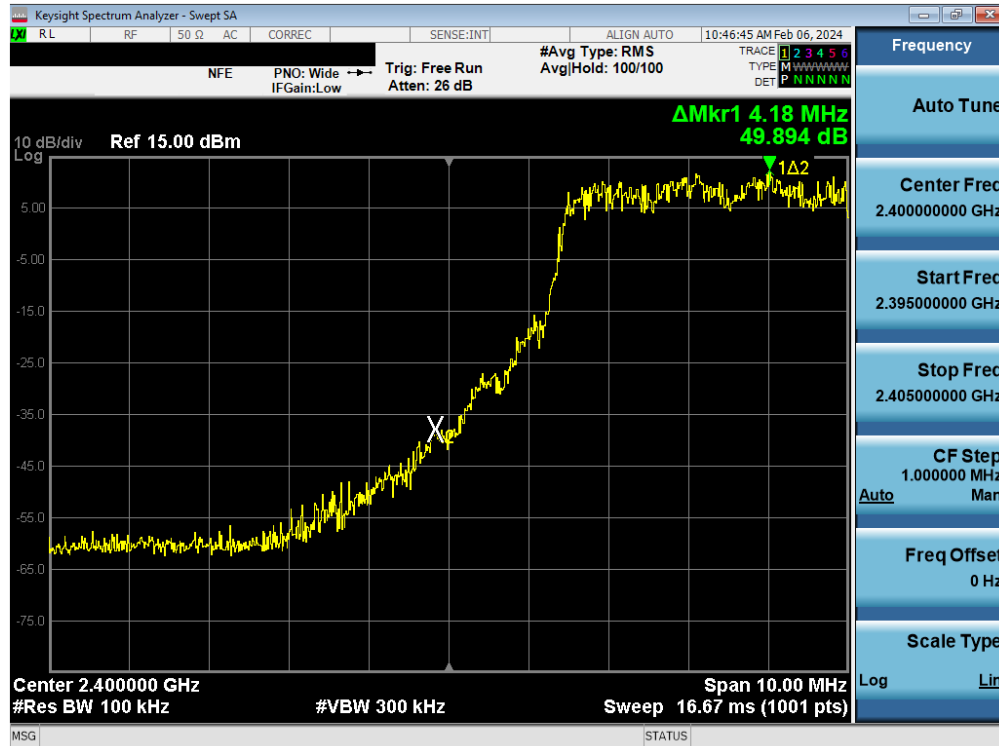


Plot 7-121. Band Edge Plot (Bluetooth with Hopping Disabled, 3 Mbps – Ch. 0) – Dual ANT2

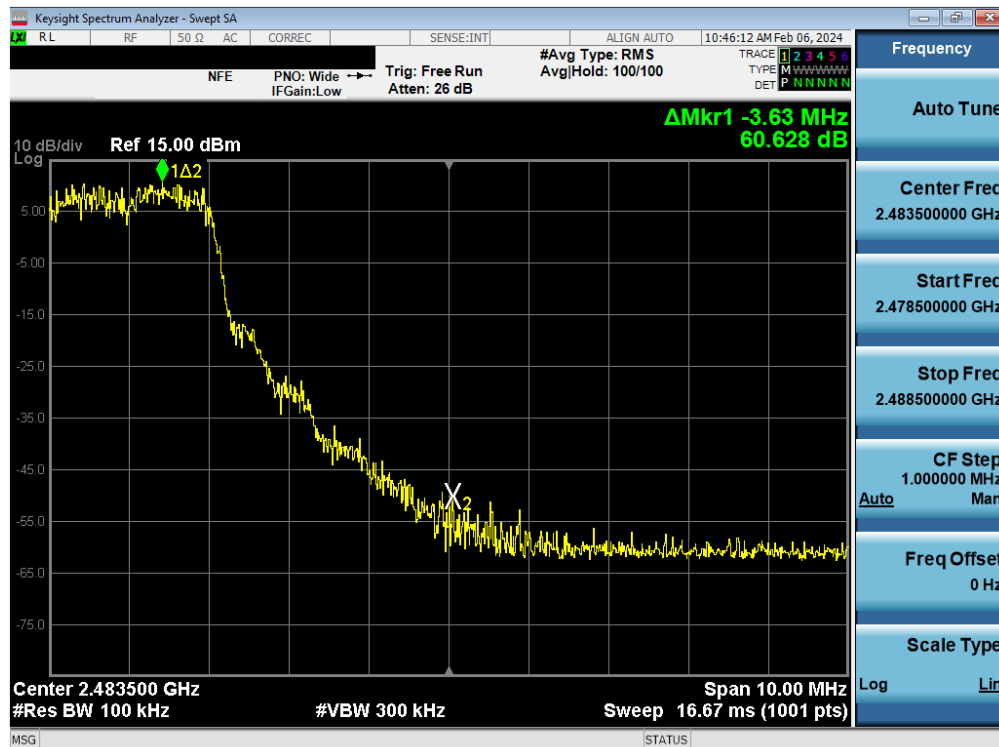


Plot 7-122. Band Edge Plot (Bluetooth with Hopping Disabled, 3 Mbps – Ch. 78) – Dual ANT2

FCC ID: A3LSMS928JPN	MEASUREMENT REPORT (CERTIFICATION)		Approved by: Technical Manager
Test Report S/N: 1M2312110124-13.A3L	Test Dates: 1/11/2024-2/6/2024	EUT Type: Portable Handset	Page 80 of 138



Plot 7-123. Band Edge Plot (Bluetooth with Hopping Enabled, 3 Mbps – Ch. 0) – Dual ANT2



Plot 7-124. Band Edge Plot (Bluetooth with Hopping Enabled, 3 Mbps – Ch. 78) – Dual ANT2

FCC ID: A3LSMS928JPN	MEASUREMENT REPORT (CERTIFICATION)		Approved by: Technical Manager
Test Report S/N: 1M2312110124-13.A3L	Test Dates: 1/11/2024-2/6/2024	EUT Type: Portable Handset	Page 81 of 138

7.5 Carrier Frequency Separation

§15.247 (a.1); RSS-247 [5.1(2)]

Test Overview and Limit

Measurement is made with EUT operating in hopping mode. ***The minimum permissible channel separation for this system is 2/3 the value of the 20dB BW.***

Test Procedure Used

ANSI C63.10-2013 – Section 7.8.2

Test Settings

1. Span = Wide enough to capture peaks of two adjacent channels
2. RBW = 30% of channel spacing. Adjust as necessary to best identify center of each individual channel
3. VBW $\geq$ RBW
4. Sweep = Auto
5. Detector = Peak
6. Trace mode = max hold
7. The trace was allowed to stabilize.
8. Marker-delta function used to determine separation between peaks of the adjacent channels

Test Setup

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



Figure 7-4. Test Instrument & Measurement Setup

Test Notes

The EUT complies with the minimum channel separation requirement when it is operating in 1x/EDR mode using 79 channels and when operating in AFH mode using 20 channels.

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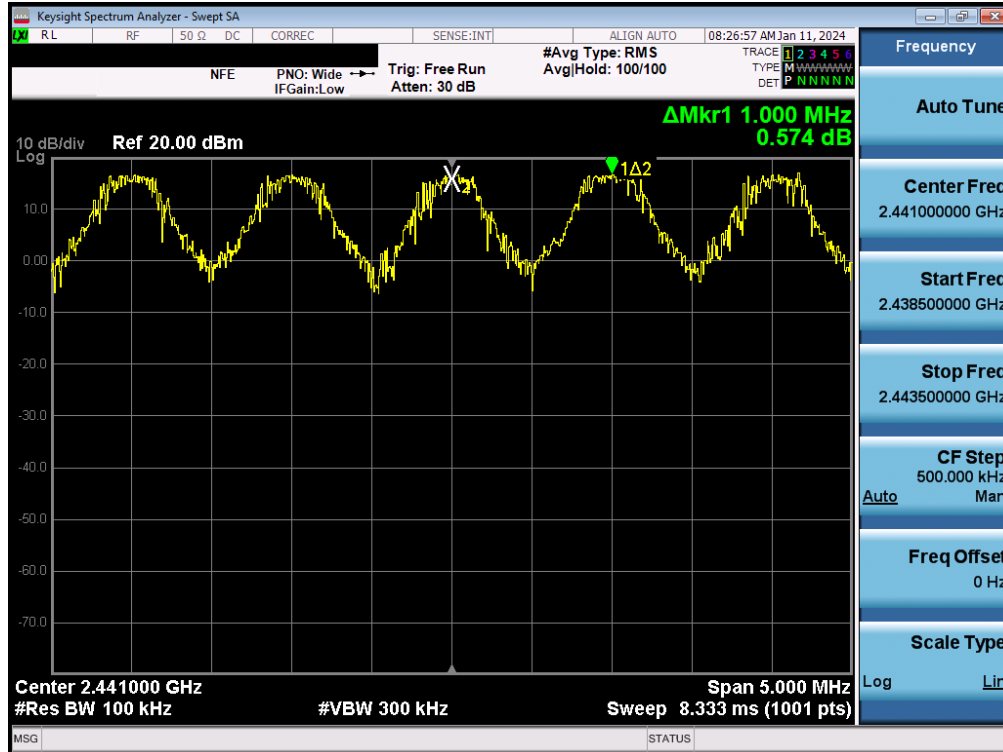
Frequency [MHz]	Data Rate [Mbps]	Mod.	Channel No.	Min. Channel Separation [MHz]
2402	1.0	GFSK	0	0.624
2441	1.0	GFSK	39	0.629
2480	1.0	GFSK	78	0.622
2402	2.0	$\pi/4$ -DQPSK	0	0.863
2441	2.0	$\pi/4$ -DQPSK	39	0.899
2480	2.0	$\pi/4$ -DQPSK	78	0.874
2402	3.0	8DPSK	0	0.860
2441	3.0	8DPSK	39	0.885
2480	3.0	8DPSK	78	0.871

Table 7-9. Minimum Channel Separation – ANT1

Frequency [MHz]	Data Rate [Mbps]	Mod.	Channel No.	Min. Channel Separation [MHz]
2402	1.0	GFSK	0	0.631
2441	1.0	GFSK	39	0.631
2480	1.0	GFSK	78	0.625
2402	2.0	$\pi/4$ -DQPSK	0	0.898
2441	2.0	$\pi/4$ -DQPSK	39	0.883
2480	2.0	$\pi/4$ -DQPSK	78	0.891
2402	3.0	8DPSK	0	0.890
2441	3.0	8DPSK	39	0.873
2480	3.0	8DPSK	78	0.871

Table 7-10. Minimum Channel Separation – ANT2

FCC ID: A3LSMS928JPN	MEASUREMENT REPORT (CERTIFICATION)		Approved by: Technical Manager
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Plot 7-125. Channel Spacing Plot (Bluetooth) – ANT1



Plot 7-126. Channel Spacing Plot (Bluetooth) – ANT2

FCC ID: A3LSMS928JPN	MEASUREMENT REPORT (CERTIFICATION)		Approved by: Technical Manager
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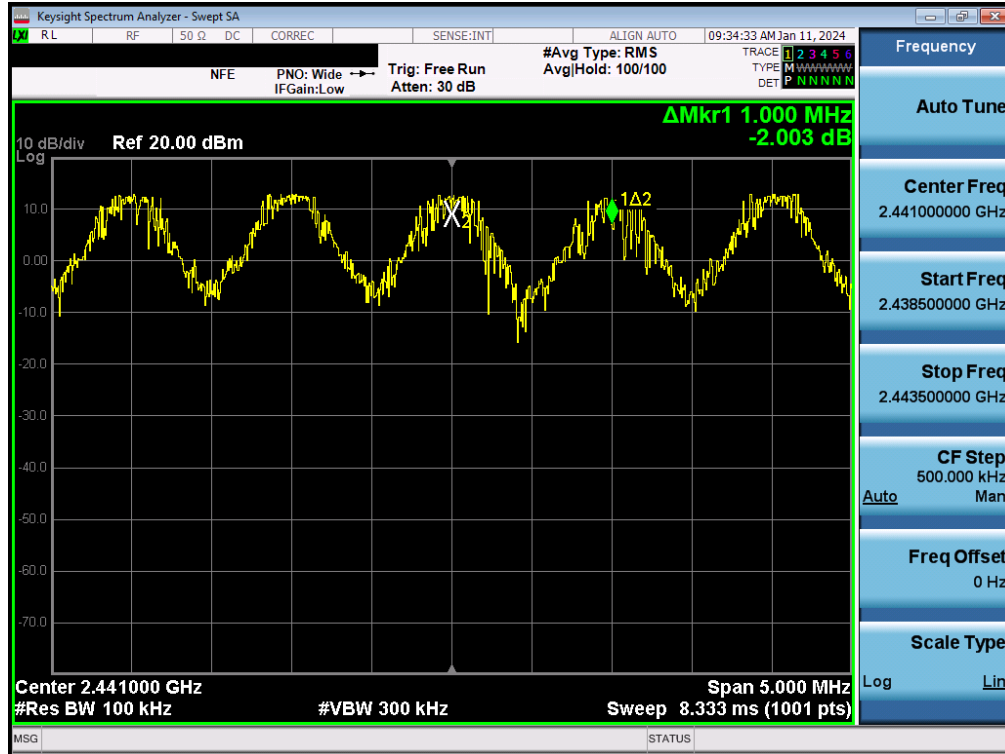
Frequency [MHz]	Data Rate [Mbps]	Mod.	Channel No.	Min. Channel Separation [MHz]
2402	1.0	GFSK	0	0.623
2441	1.0	GFSK	39	0.613
2480	1.0	GFSK	78	0.623
2402	2.0	$\pi/4$ -DQPSK	0	0.890
2441	2.0	$\pi/4$ -DQPSK	39	0.861
2480	2.0	$\pi/4$ -DQPSK	78	0.868
2402	3.0	8DPSK	0	0.847
2441	3.0	8DPSK	39	0.877
2480	3.0	8DPSK	78	0.866

Table 7-11. Minimum Channel Separation – Dual ANT1

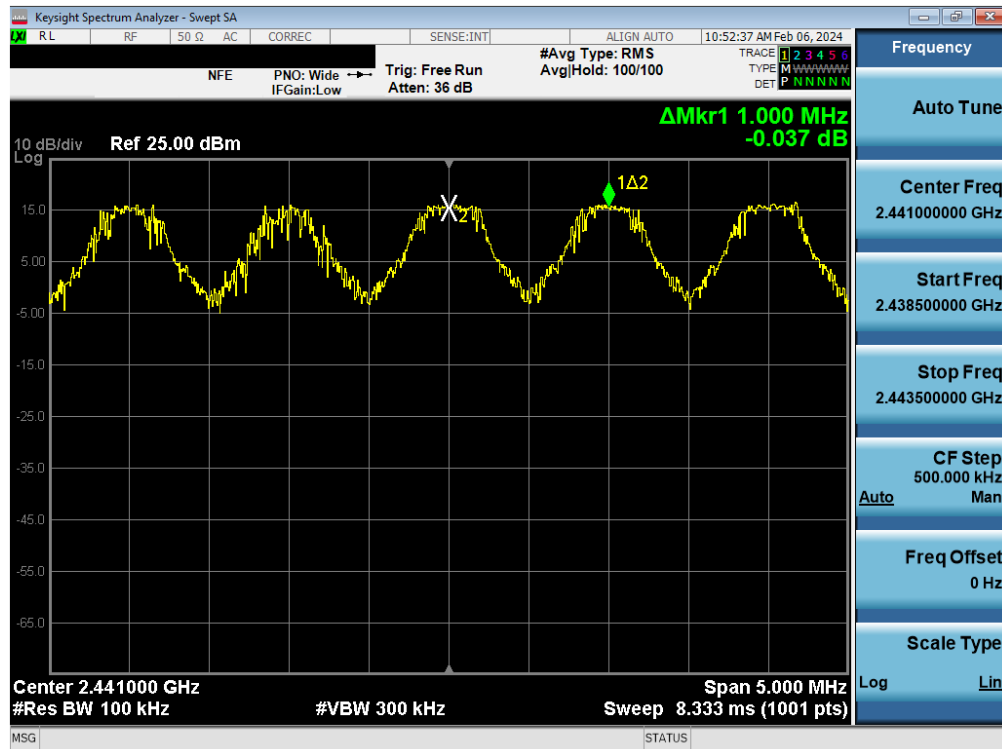
Frequency [MHz]	Data Rate [Mbps]	Mod.	Channel No.	Min. Channel Separation [MHz]
2402	1.0	GFSK	0	0.864
2441	1.0	GFSK	39	0.687
2480	1.0	GFSK	78	0.615
2402	2.0	$\pi/4$ -DQPSK	0	0.901
2441	2.0	$\pi/4$ -DQPSK	39	0.903
2480	2.0	$\pi/4$ -DQPSK	78	0.889
2402	3.0	8DPSK	0	0.872
2441	3.0	8DPSK	39	0.871
2480	3.0	8DPSK	78	0.873

Table 7-12. Minimum Channel Separation – Dual ANT2

FCC ID: A3LSMS928JPN	MEASUREMENT REPORT (CERTIFICATION)		Approved by: Technical Manager
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Plot 7-127. Channel Spacing Plot (Bluetooth) – Dual ANT1



Plot 7-128. Channel Spacing Plot (Bluetooth) –Dual ANT2

FCC ID: A3LSMS928JPN	MEASUREMENT REPORT (CERTIFICATION)		Approved by: Technical Manager
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7.6 Time of Occupancy

§15.247 (a.1.iii); RSS-247 [5.1(4)]

Test Overview and Limit

Measurement is made while EUT is operating in hopping mode with the spectrum analyzer set to zero span. **The maximum permissible time of occupancy is 400 ms within a period of 400ms multiplied by the number of hopping channels employed.**

Test Procedure Used

ANSI C63.10-2013 – Section 7.8.4

Test Settings

1. Span = zero span, centered on a hopping channel
2. RBW $\leq$ channel spacing and $\gg 1/T$, where T is expected dwell time per channel
3. Sweep = as necessary to capture entire dwell time. Second plot may be required to demonstrate two successive hops on a channel
4. Trigger is set with appropriate trigger delay to place pulse near the center of the plot
5. Detector = peak
6. Trace mode = max hold
7. Marker-delta function used to determine transmit time per hop

Test Setup

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

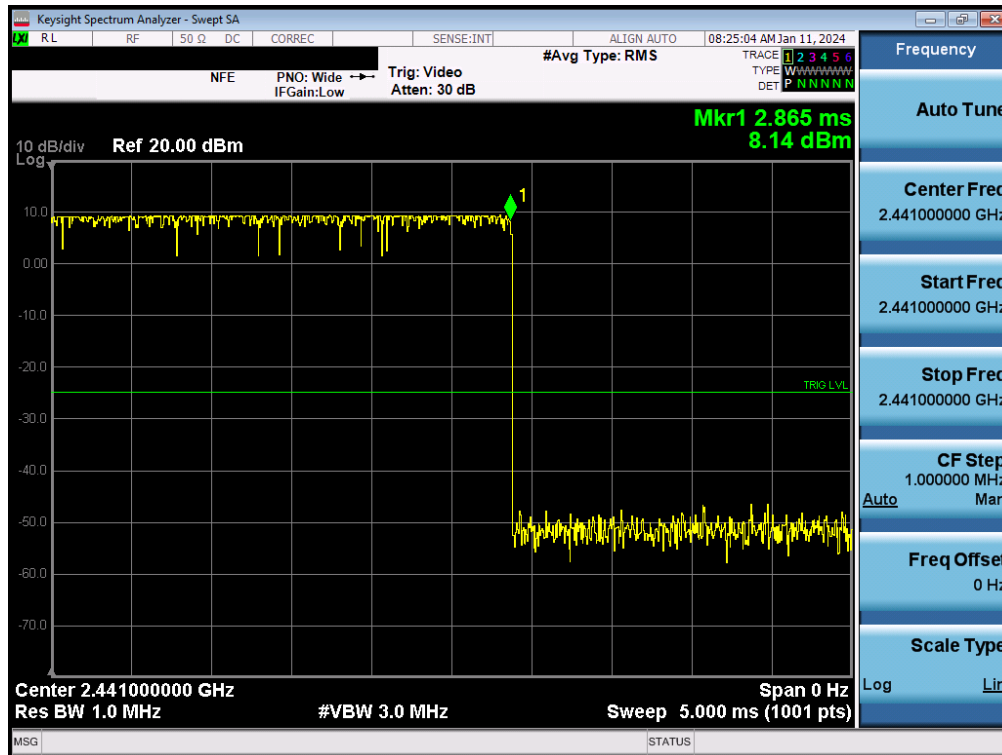


Figure 7-5. Test Instrument & Measurement Setup

Test Notes

None

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Plot 7-129. Time of Occupancy Plot (Bluetooth) – ANT1

Bluetooth Time of Occupancy Calculation

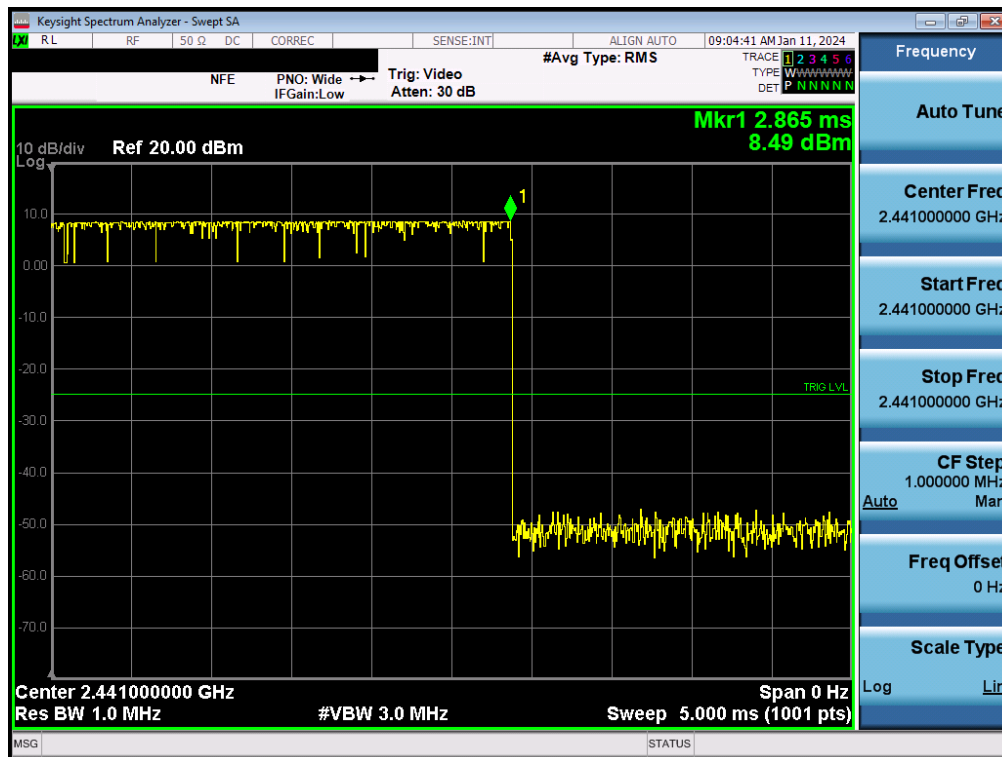
Typically, Bluetooth 1x/EDR mode has a channel hopping rate of 1600 hops/s. Since 1x/EDR modes use 5 transmit and 1 receive slot, for a total of 6 slots, the Bluetooth transmitter is actually hopping at a rate of $1600 / 6 = 266.67$ hops/s/slot

- $400\text{ms} \times 79$ hopping channels = 31.6 sec (Time of Occupancy Limit)
- Worst case BT has 266.67 hops/second (for 1x/EDR modes with DH5 operation)
- $266.67 \text{ hops/second} / 79 \text{ channels} = 3.38 \text{ hops/second}$ (# of hops/second on one channel)
- $3.38 \text{ hops/second/channel} \times 31.6 \text{ seconds} = 106.67 \text{ hops}$ (# hops over a 31.6 second period)
- $106.67 \text{ hops} \times 2.865\text{ms/channel} = 305.61 \text{ ms}$ (worst case dwell time for one channel in 1x/EDR modes)

With AFH, the number of channels is reduced to a minimum of 20 channels and the channel hopping rate is reduced by 50% to 800 hops/s. AFH mode also uses 6 total slots so the Bluetooth transmitter hops at a rate of $800 / 6 = 133.3$ hops/s/slot

- $400\text{ms} \times 20$ hopping channels = 8 sec (Time of Occupancy Limit)
- Worst case BT has 133.3 hops/second/slot (for AFH mode with DH5 operation)
- $133.3 \text{ hops/s} / 20 \text{ channels} = 6.67 \text{ hops/second}$ (# of hops/second on one channel)
- $6.67 \text{ hops/s} / \text{channel} \times 8 \text{ seconds} = 53.34 \text{ hops}$ (# hops over a 8 second period)
- $53.34 \text{ hops} \times 2.865 \text{ ms/channel} = 152.82 \text{ ms}$ (worst case dwell time for one channel in AFH mode)

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Plot 7-130. Time of Occupancy Plot (Bluetooth) – ANT2

Bluetooth Time of Occupancy Calculation

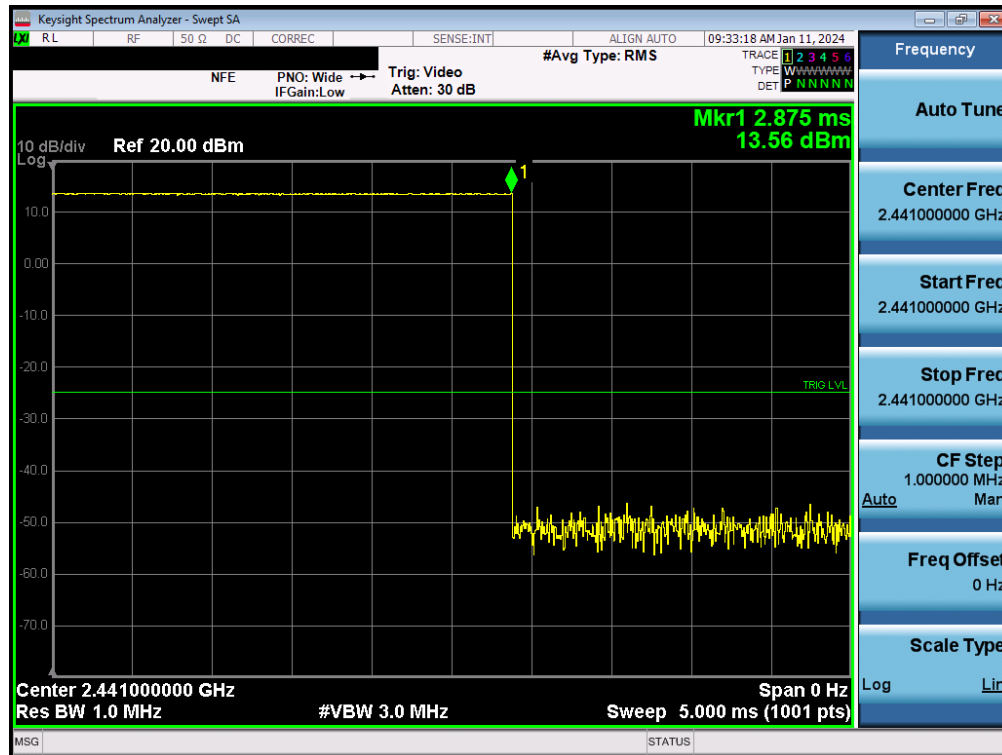
Typically, Bluetooth 1x/EDR mode has a channel hopping rate of 1600 hops/s. Since 1x/EDR modes use 5 transmit and 1 receive slot, for a total of 6 slots, the Bluetooth transmitter is actually hopping at a rate of $1600 / 6 = 266.67$ hops/s/slot

- $400\text{ms} \times 79$ hopping channels = 31.6 sec (Time of Occupancy Limit)
- Worst case BT has 266.67 hops/second (for 1x/EDR modes with DH5 operation)
- $266.67 \text{ hops/second} / 79 \text{ channels} = 3.38 \text{ hops/second}$ (# of hops/second on one channel)
- $3.38 \text{ hops/second/channel} \times 31.6 \text{ seconds} = 106.67 \text{ hops}$ (# hops over a 31.6 second period)
- $106.67 \text{ hops} \times 2.865\text{ms/channel} = 305.61 \text{ ms}$ (worst case dwell time for one channel in 1x/EDR modes)

With AFH, the number of channels is reduced to a minimum of 20 channels and the channel hopping rate is reduced by 50% to 800 hops/s. AFH mode also uses 6 total slots so the Bluetooth transmitter hops at a rate of $800 / 6 = 133.3$ hops/s/slot

- $400\text{ms} \times 20$ hopping channels = 8 sec (Time of Occupancy Limit)
- Worst case BT has 133.3 hops/second/slot (for AFH mode with DH5 operation)
- $133.3 \text{ hops/s} / 20 \text{ channels} = 6.67 \text{ hops/second}$ (# of hops/second on one channel)
- $6.67 \text{ hops/s} / \text{channel} \times 8 \text{ seconds} = 53.34 \text{ hops}$ (# hops over a 8 second period)
- $53.34 \text{ hops} \times 2.865 \text{ ms/channel} = 152.82 \text{ ms}$ (worst case dwell time for one channel in AFH mode)

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Plot 7-131. Time of Occupancy Plot (Bluetooth) – Dual ANT1

Bluetooth Time of Occupancy Calculation

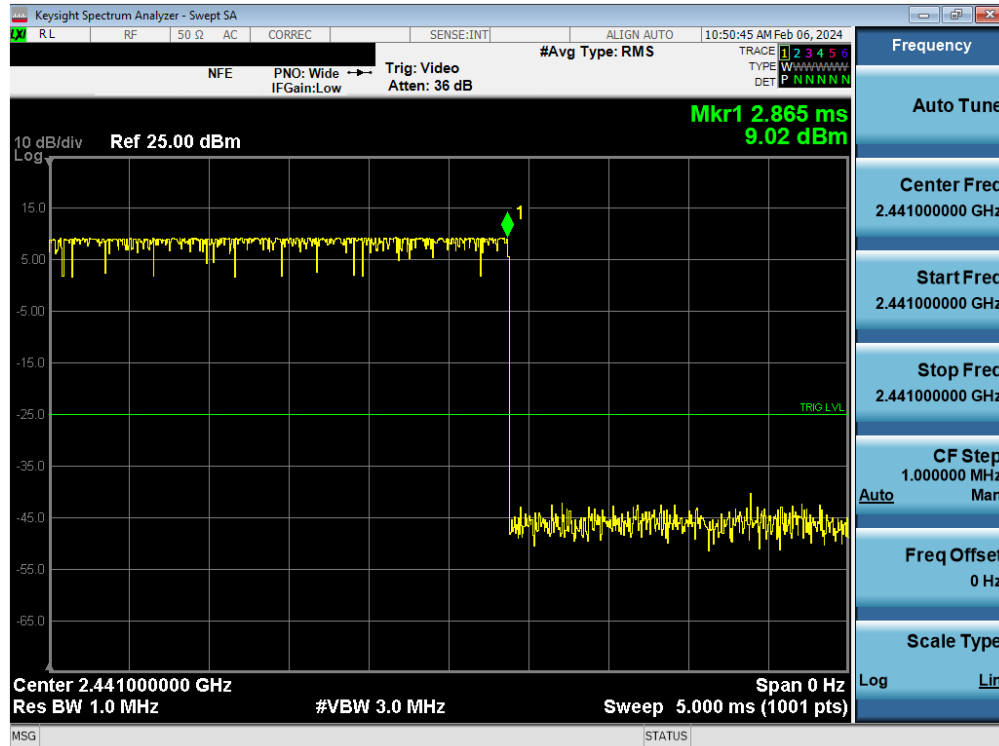
Typically, Bluetooth 1x/EDR mode has a channel hopping rate of 1600 hops/s. Since 1x/EDR modes use 5 transmit and 1 receive slot, for a total of 6 slots, the Bluetooth transmitter is actually hopping at a rate of $1600 / 6 = 266.67$ hops/s/slot

- $400\text{ms} \times 79$ hopping channels = 31.6 sec (Time of Occupancy Limit)
- Worst case BT has 266.67 hops/second (for 1x/EDR modes with DH5 operation)
- $266.67 \text{ hops/second} / 79 \text{ channels} = 3.38 \text{ hops/second}$ (# of hops/second on one channel)
- $3.38 \text{ hops/second/channel} \times 31.6 \text{ seconds} = 106.67 \text{ hops}$ (# hops over a 31.6 second period)
- $106.67 \text{ hops} \times 2.875 \text{ ms/channel} = 306.68 \text{ ms}$ (worst case dwell time for one channel in 1x/EDR modes)

With AFH, the number of channels is reduced to a minimum of 20 channels and the channel hopping rate is reduced by 50% to 800 hops/s. AFH mode also uses 6 total slots so the Bluetooth transmitter hops at a rate of $800 / 6 = 133.3$ hops/s/slot

- $400\text{ms} \times 20$ hopping channels = 8 sec (Time of Occupancy Limit)
- Worst case BT has 133.3 hops/second/slot (for AFH mode with DH5 operation)
- $133.3 \text{ hops/s} / 20 \text{ channels} = 6.67 \text{ hops/second}$ (# of hops/second on one channel)
- $6.67 \text{ hops/s} / \text{channel} \times 8 \text{ seconds} = 53.34 \text{ hops}$ (# hops over a 8 second period)
- $53.34 \text{ hops} \times 2.875 \text{ ms/channel} = 153.35 \text{ ms}$ (worst case dwell time for one channel in AFH mode)

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Plot 7-132. Time of Occupancy Plot (Bluetooth) – ANT1

Bluetooth Time of Occupancy Calculation

Typically, Bluetooth 1x/EDR mode has a channel hopping rate of 1600 hops/s. Since 1x/EDR modes use 5 transmit and 1 receive slot, for a total of 6 slots, the Bluetooth transmitter is actually hopping at a rate of $1600 / 6 = 266.67$ hops/s/slot

- $400\text{ms} \times 79$ hopping channels = 31.6 sec (Time of Occupancy Limit)
- Worst case BT has 266.67 hops/second (for 1x/EDR modes with DH5 operation)
- $266.67 \text{ hops/second} / 79 \text{ channels} = 3.38 \text{ hops/second}$ (# of hops/second on one channel)
- $3.38 \text{ hops/second/channel} \times 31.6 \text{ seconds} = 106.67 \text{ hops}$ (# hops over a 31.6 second period)
- $106.67 \text{ hops} \times 2.865 \text{ ms/channel} = 305.61 \text{ ms}$ (worst case dwell time for one channel in 1x/EDR modes)

With AFH, the number of channels is reduced to a minimum of 20 channels and the channel hopping rate is reduced by 50% to 800 hops/s. AFH mode also uses 6 total slots so the Bluetooth transmitter hops at a rate of $800 / 6 = 133.3$ hops/s/slot

- $400\text{ms} \times 20$ hopping channels = 8 sec (Time of Occupancy Limit)
- Worst case BT has 133.3 hops/second/slot (for AFH mode with DH5 operation)
- $133.3 \text{ hops/s} / 20 \text{ channels} = 6.67 \text{ hops/second}$ (# of hops/second on one channel)
- $6.67 \text{ hops/s} / \text{channel} \times 8 \text{ seconds} = 53.34 \text{ hops}$ (# hops over a 8 second period)
- $53.34 \text{ hops} \times 2.865 \text{ ms/channel} = 152.82 \text{ ms}$ (worst case dwell time for one channel in AFH mode)

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7.7 Number of Hopping Channels

§15.247 (a.1.iii); RSS-247 [5.1(4)]

Test Overview and Limit

Measurement is made while EUT is operating in hopping mode. ***This frequency hopping system must employ a minimum of 15 hopping channels.***

Test Procedure Used

ANSI C63.10-2013 – Section 7.8.3

Test Settings

1. Span = frequency of band of operation (divided into two plots)
2. RBW < 30% of channel spacing or 20dB bandwidth, whichever is smaller
3. VBW ≥ RBW
4. Sweep = auto
5. Detector = peak
6. Trace mode = max hold
7. Trace was allowed to stabilize

Test Setup

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

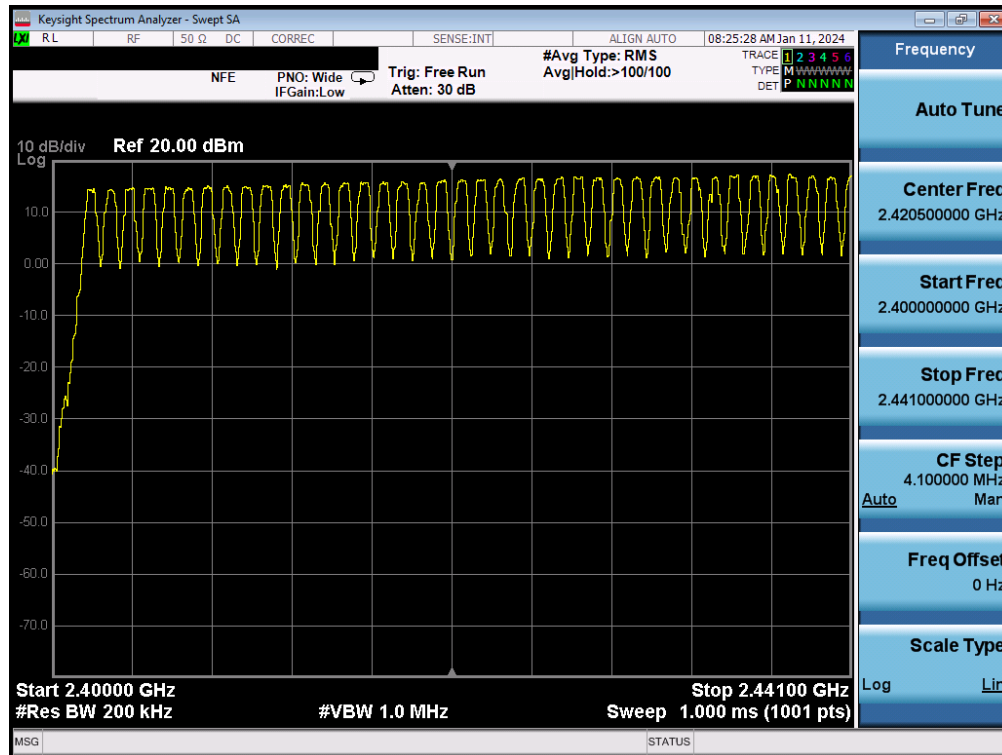


Figure 7-6. Test Instrument & Measurement Setup

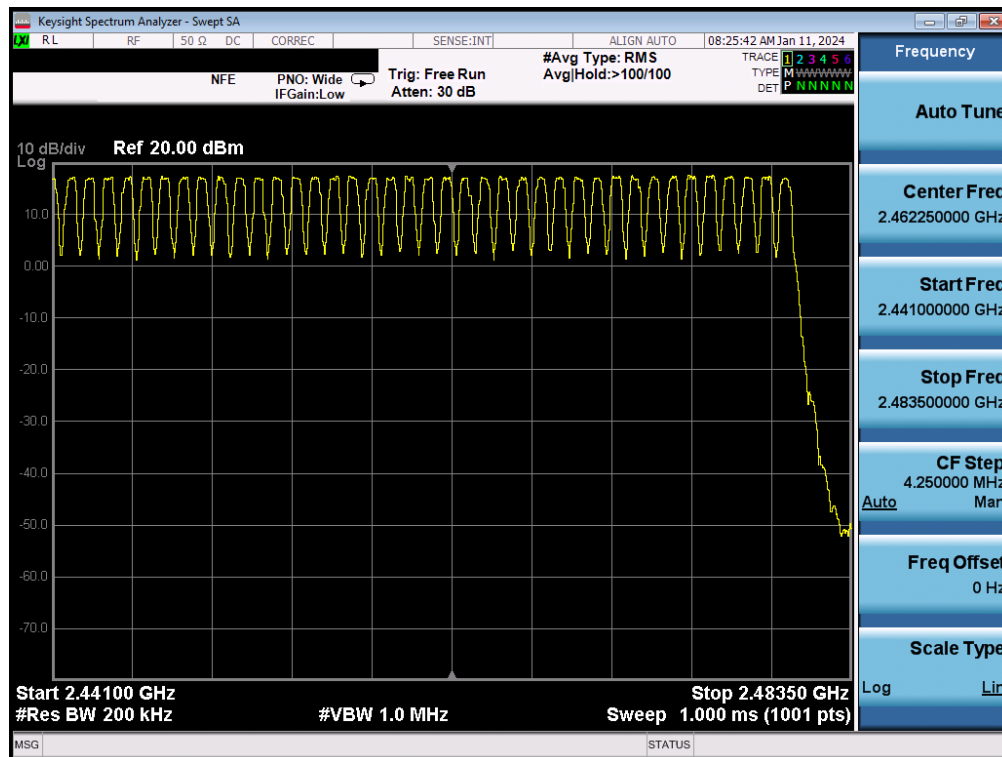
Test Notes

The frequency spectrum was broken up into two sub-ranges to clearly show all the hopping frequencies. In AFH mode, this device operates using 20 channels so the requirement for minimum number of hopping channels is satisfied.

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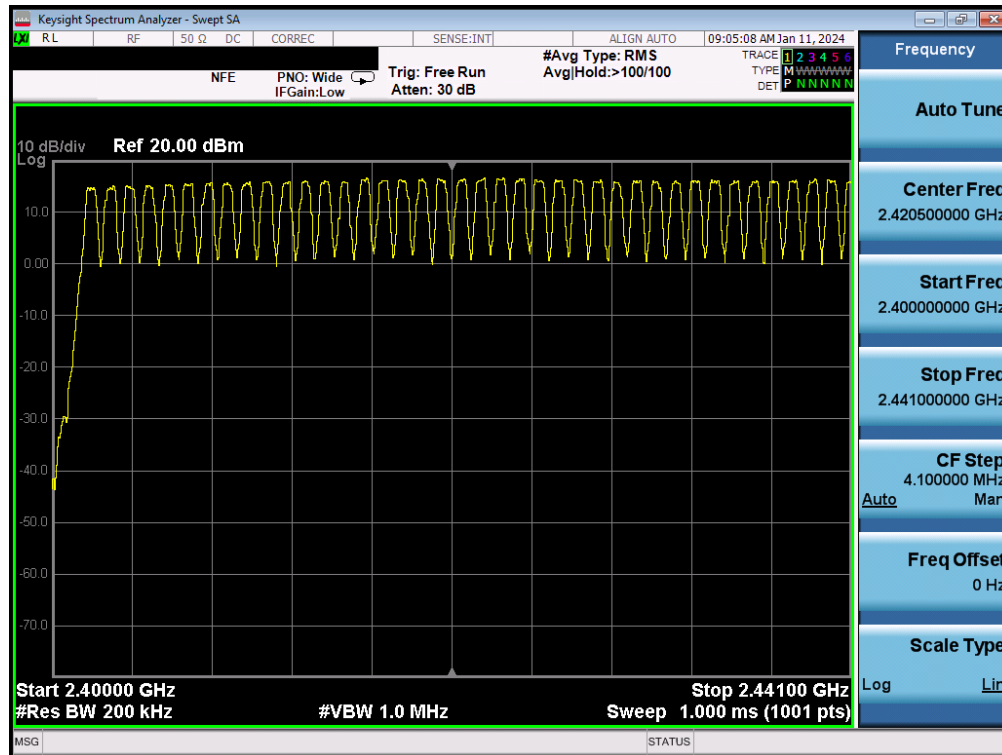


Plot 7-133. Low End Spectrum Channel Hopping Plot (Bluetooth) – ANT1

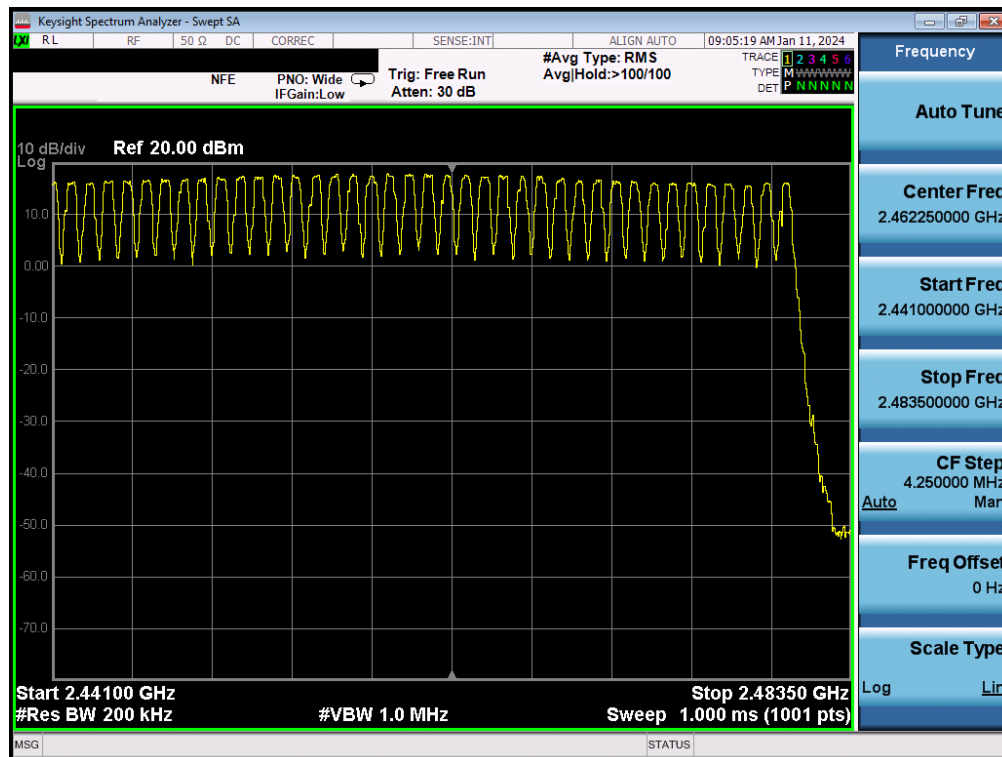


Plot 7-134. High End Spectrum Channel Hopping Plot (Bluetooth) – ANT1

FCC ID: A3LSMS928JPN	MEASUREMENT REPORT (CERTIFICATION)		Approved by: Technical Manager
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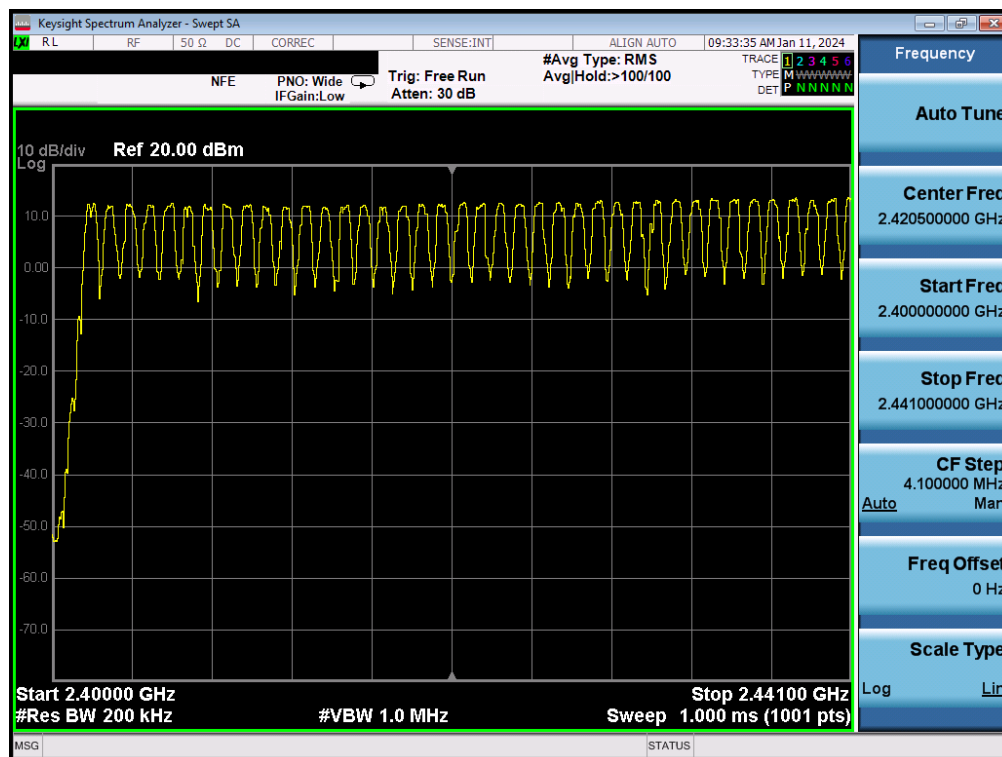


Plot 7-135. Low End Spectrum Channel Hopping Plot (Bluetooth) – ANT2

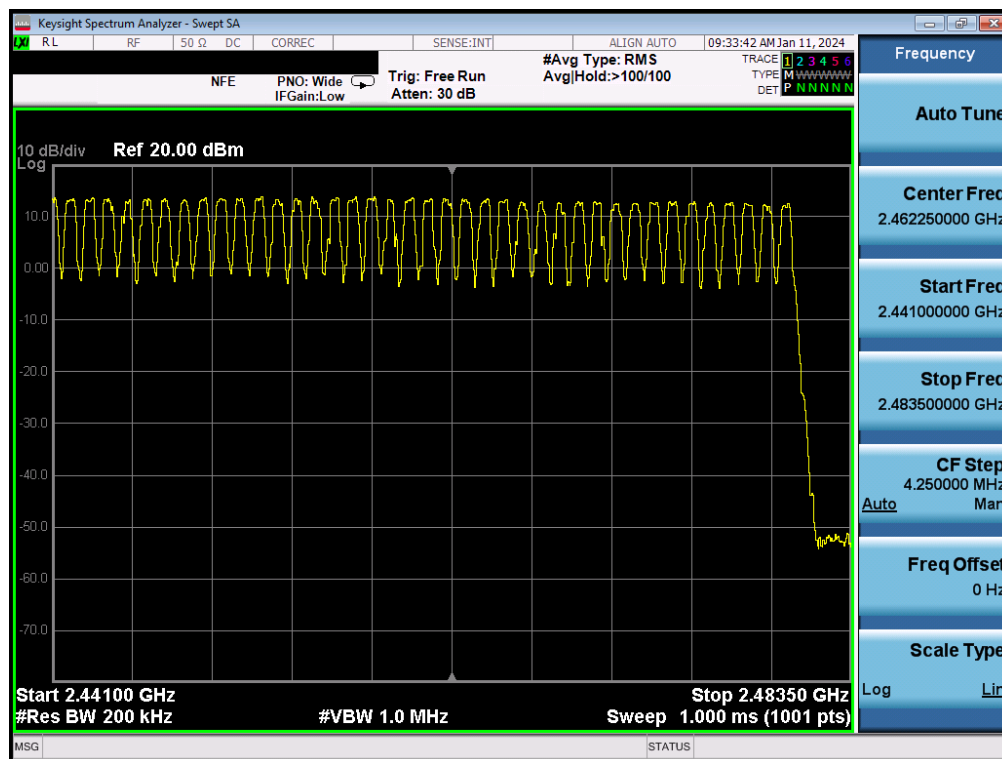


Plot 7-136. High End Spectrum Channel Hopping Plot (Bluetooth) – ANT2

FCC ID: A3LSMS928JPN	MEASUREMENT REPORT (CERTIFICATION)		Approved by: Technical Manager
Test Report S/N: 1M2312110124-13.A3L	Test Dates: 1/11/2024-2/6/2024	EUT Type: Portable Handset	Page 94 of 138

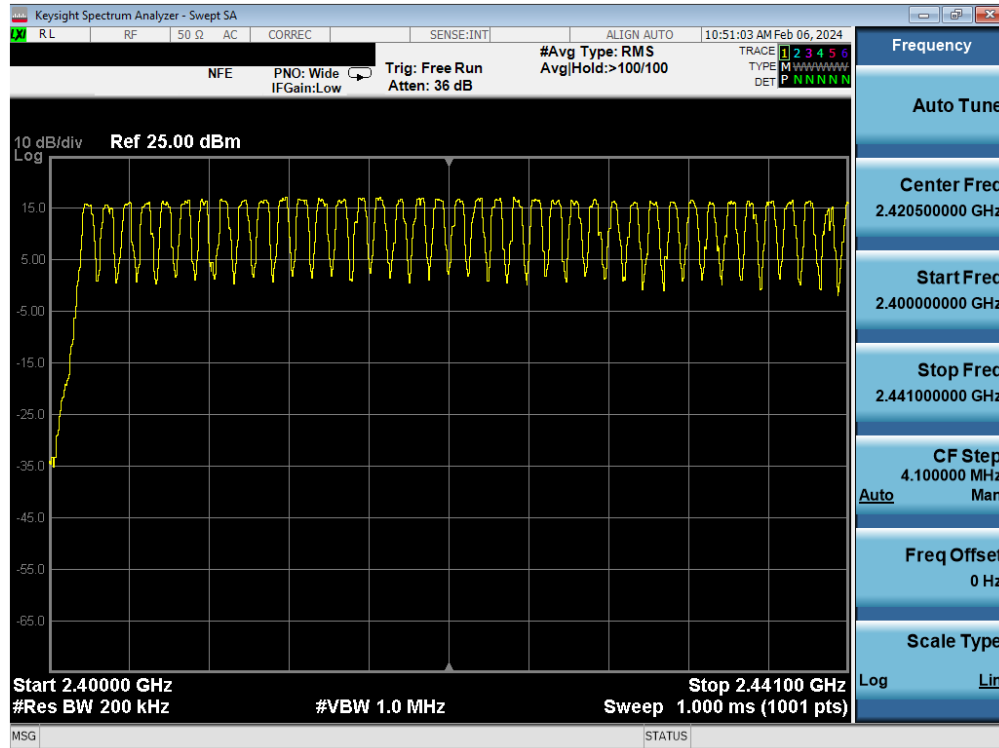


Plot 7-137. Low End Spectrum Channel Hopping Plot (Bluetooth) – Dual ANT1

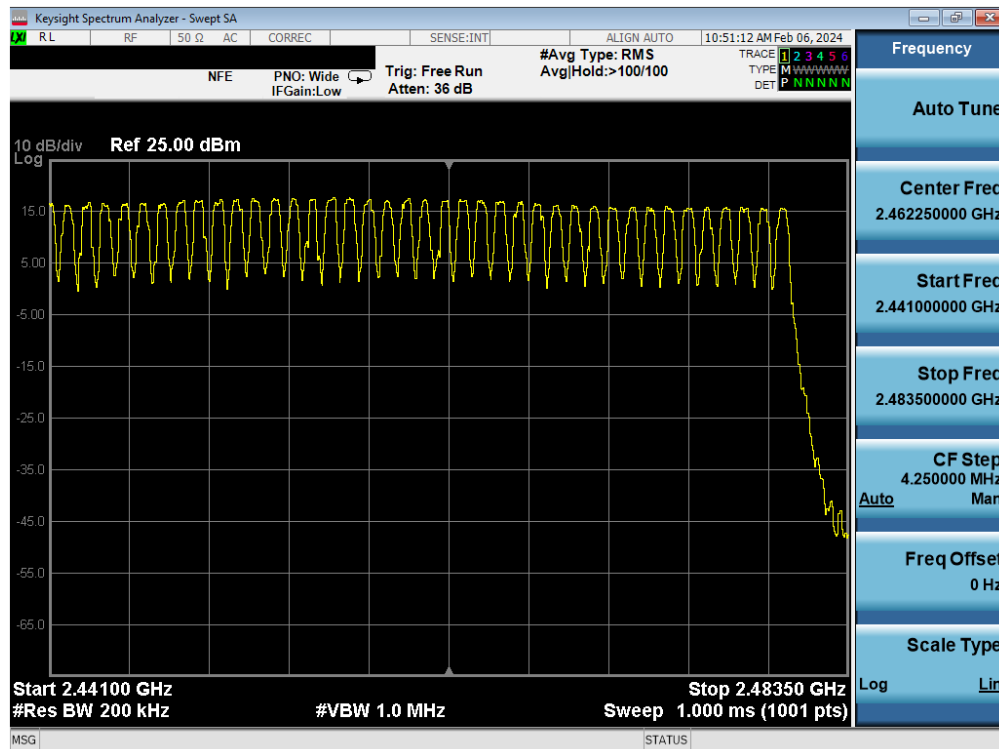


Plot 7-138. High End Spectrum Channel Hopping Plot (Bluetooth) – Dual ANT1

FCC ID: A3LSMS928JPN	MEASUREMENT REPORT (CERTIFICATION)		Approved by: Technical Manager
Test Report S/N: 1M2312110124-13.A3L	Test Dates: 1/11/2024-2/6/2024	EUT Type: Portable Handset	Page 95 of 138



Plot 7-139. Low End Spectrum Channel Hopping Plot (Bluetooth) – Dual ANT2



Plot 7-140. High End Spectrum Channel Hopping Plot (Bluetooth) – Dual ANT2

FCC ID: A3LSMS928JPN	MEASUREMENT REPORT (CERTIFICATION)		Approved by: Technical Manager
Test Report S/N: 1M2312110124-13.A3L	Test Dates: 1/11/2024-2/6/2024	EUT Type: Portable Handset	Page 96 of 138

7.8 Conducted Spurious Emissions

§15.247 (d); RSS-247 [5.5]

Test Overview and Limit

Conducted out-of-band spurious emissions were investigated from 30MHz up to 25GHz to include the 10th harmonic of the fundamental transmit frequency. **The maximum permissible out-of-band emission level is 20 dBc.**

Test Procedure Used

ANSI C63.10-2013 – Section 7.8.8

Test Settings

1. Start frequency was set to 30MHz and stop frequency was set to 25GHz (separated into two plots per channel)
2. RBW = 1MHz* (See note below)
3. VBW = 3MHz
4. Detector = Peak
5. Trace mode = max hold
6. Sweep time = 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.

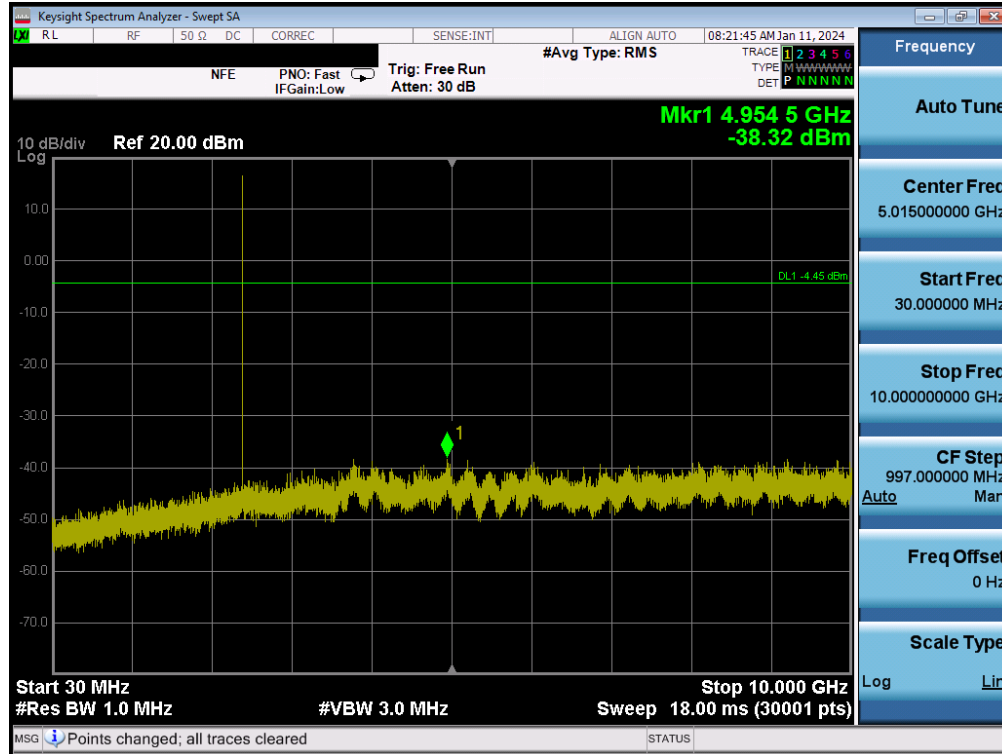


Figure 7-7. Test Instrument & Measurement Setup

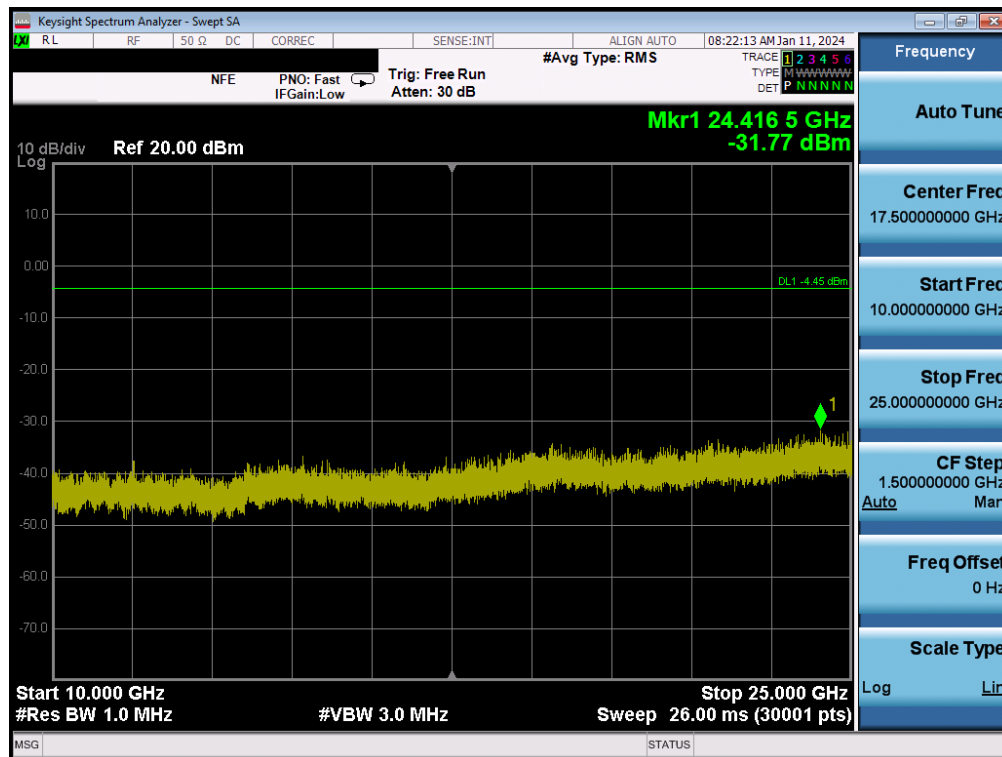
Test Notes

Out-of-band conducted spurious emissions were investigated for all data rates and the worst-case emissions were found with the EUT transmitting at 3Mbps. The display line shown in the following plots is the limit at 20dB below the fundamental emission level measured in a 100kHz bandwidth. However, the traces in the following plots are measured with a 1MHz RBW to reduce test time, so the display line may not necessarily appear to be 20dB below the level of the fundamental in a 1MHz bandwidth.

FCC ID: A3LSMS928JPN	MEASUREMENT REPORT (CERTIFICATION)		Approved by: Technical Manager
Test Report S/N: 1M2312110124-13.A3L	Test Dates: 1/11/2024-2/6/2024	EUT Type: Portable Handset	Page 97 of 138

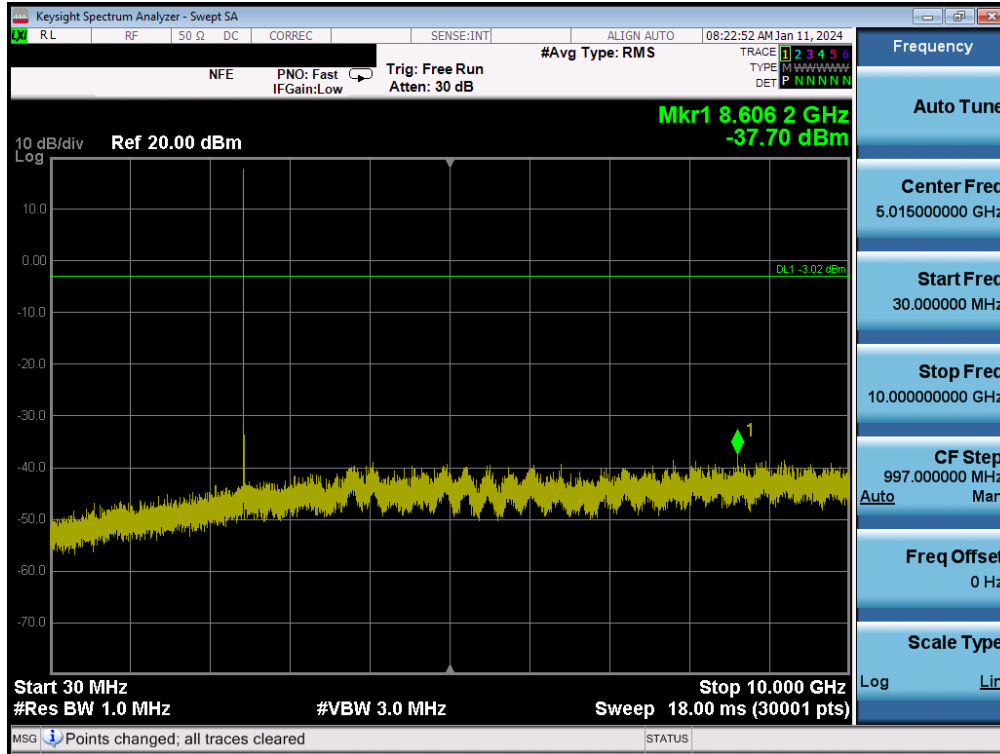


Plot 7-141. Conducted Spurious Plot (Bluetooth, 1Mbps - Ch. 0) - ANT1

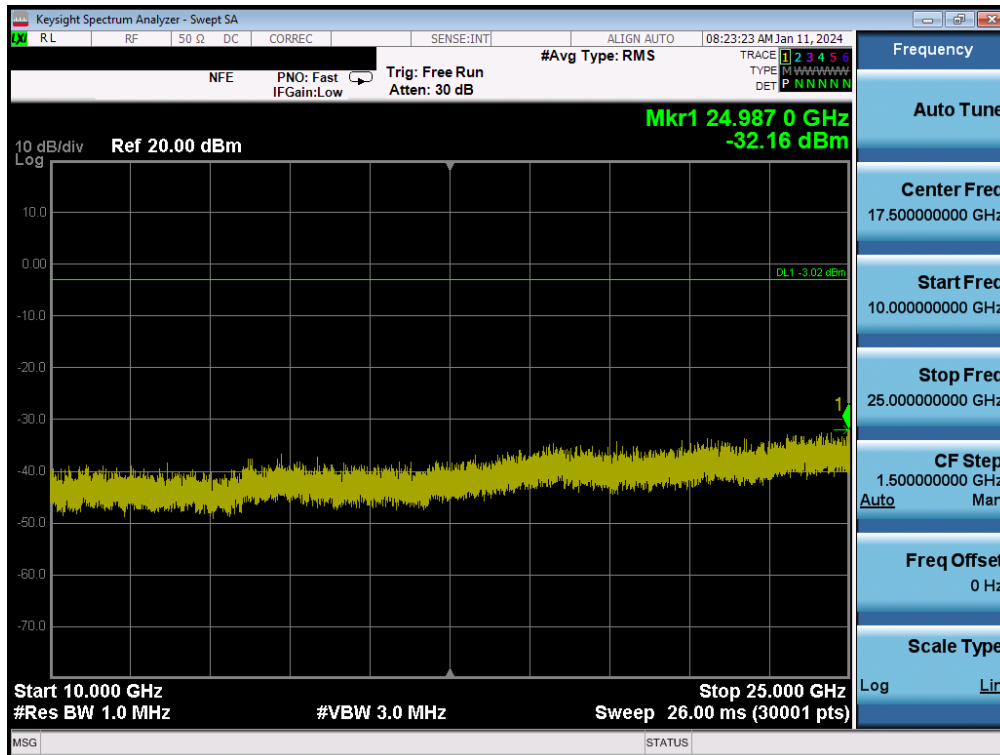


Plot 7-142. Conducted Spurious Plot (Bluetooth, 1Mbps - Ch. 0) - ANT1

FCC ID: A3LSMS928JPN	MEASUREMENT REPORT (CERTIFICATION)		Approved by: Technical Manager
Test Report S/N: 1M2312110124-13.A3L	Test Dates: 1/11/2024-2/6/2024	EUT Type: Portable Handset	Page 98 of 138

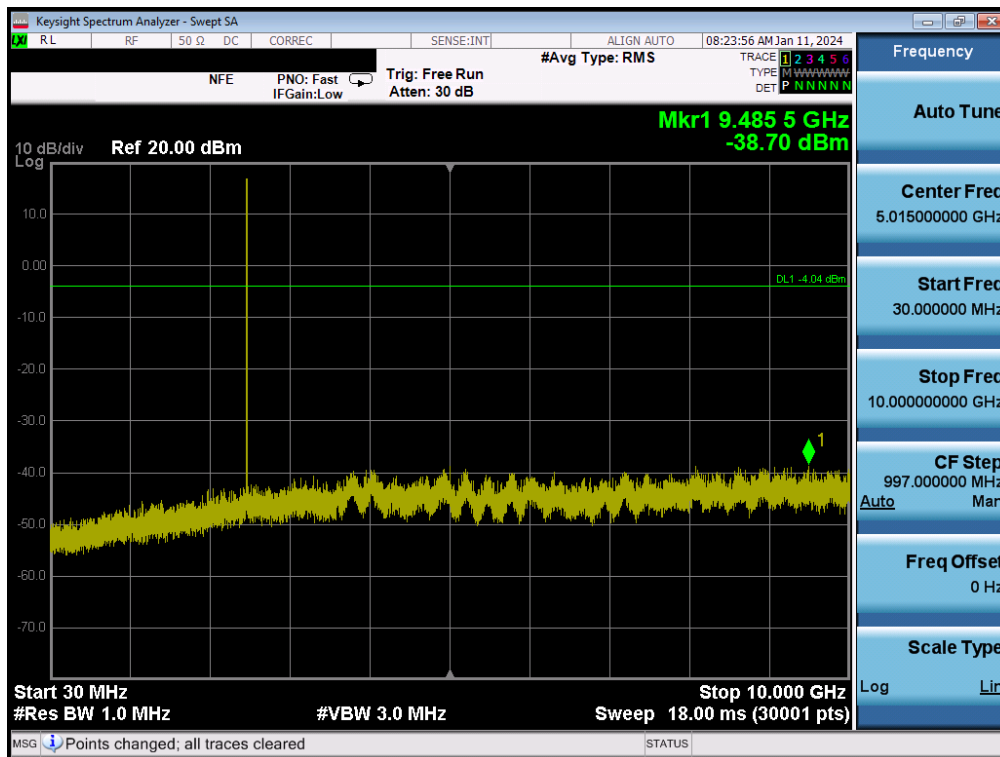


Plot 7-143. Conducted Spurious Plot (Bluetooth, 1Mbps – Ch. 39) – ANT1

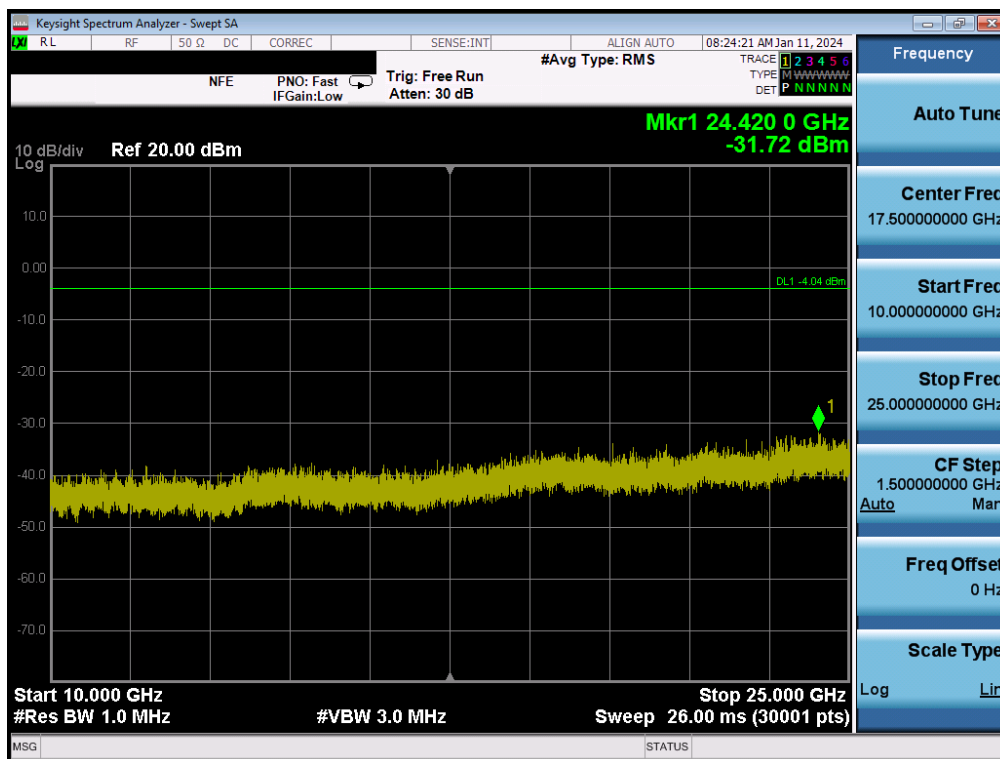


Plot 7-144. Conducted Spurious Plot (Bluetooth, 1Mbps – Ch. 39) – ANT1

FCC ID: A3LSMS928JPN	MEASUREMENT REPORT (CERTIFICATION)		Approved by: Technical Manager
Test Report S/N: 1M2312110124-13.A3L	Test Dates: 1/11/2024-2/6/2024	EUT Type: Portable Handset	Page 99 of 138

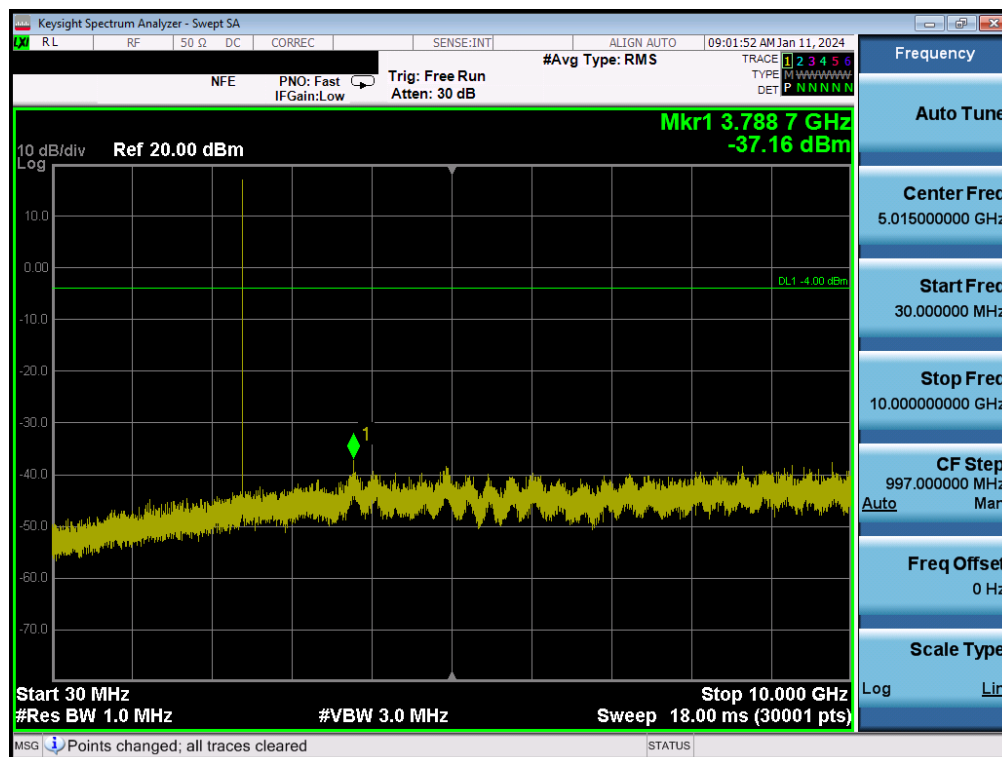


Plot 7-145. Conducted Spurious Plot (Bluetooth, 1Mbps – Ch. 78) – ANT1

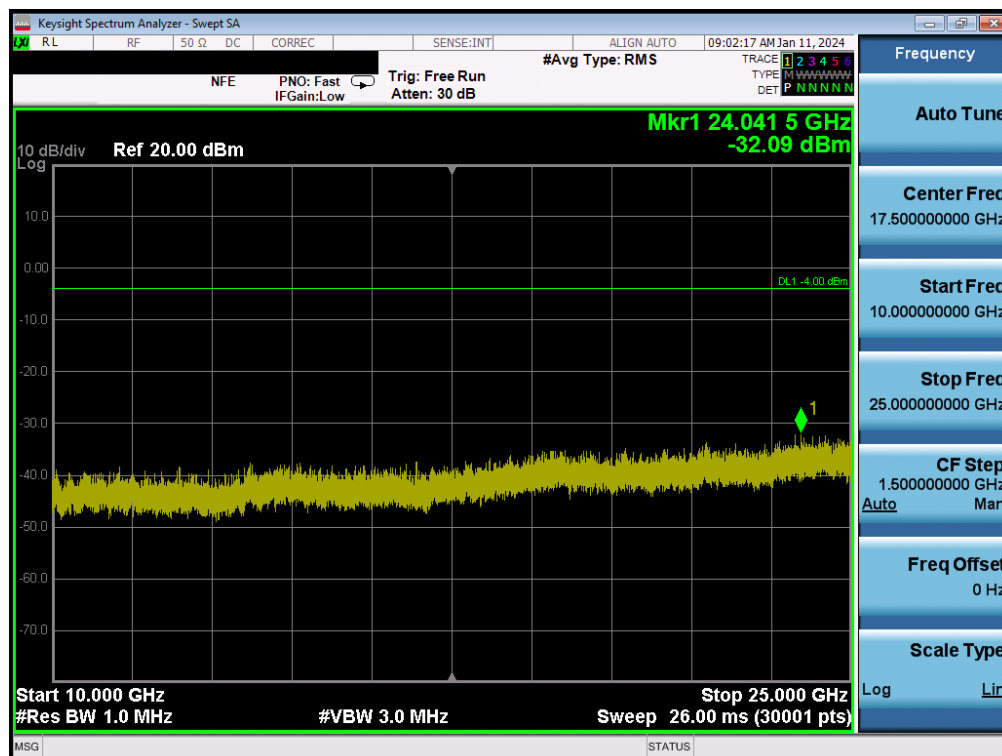


Plot 7-146. Conducted Spurious Plot (Bluetooth, 1Mbps – Ch. 78) – ANT1

FCC ID: A3LSMS928JPN	MEASUREMENT REPORT (CERTIFICATION)		Approved by: Technical Manager
Test Report S/N: 1M2312110124-13.A3L	Test Dates: 1/11/2024-2/6/2024	EUT Type: Portable Handset	Page 100 of 138

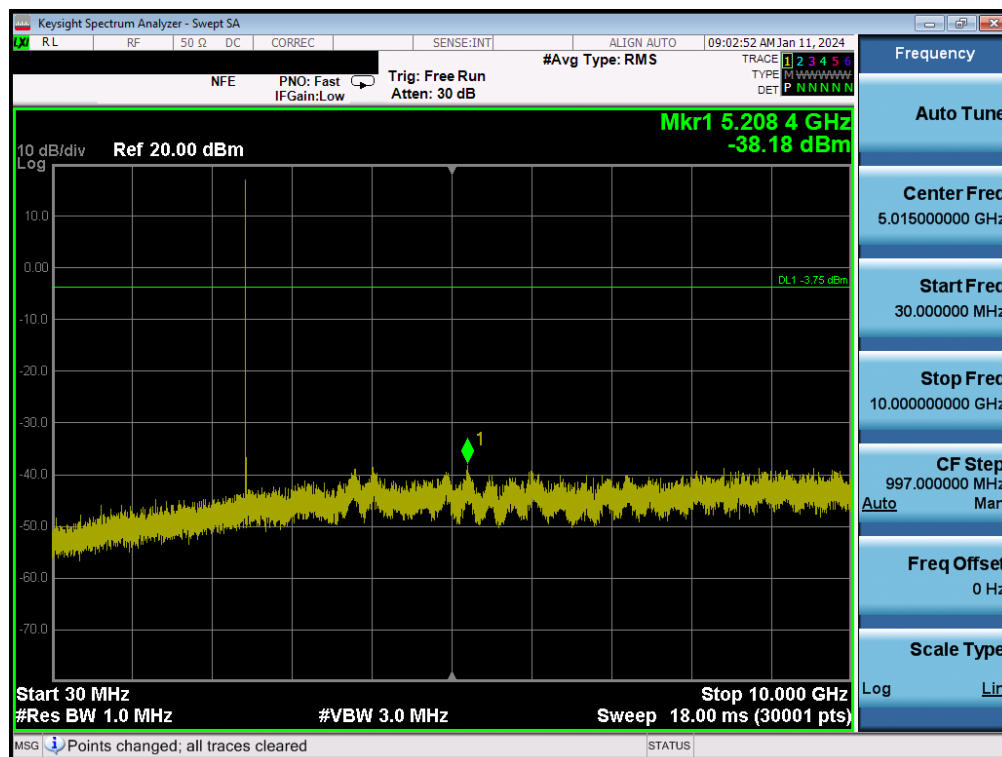


Plot 7-147. Conducted Spurious Plot (Bluetooth, 1Mbps – Ch. 0) – ANT2

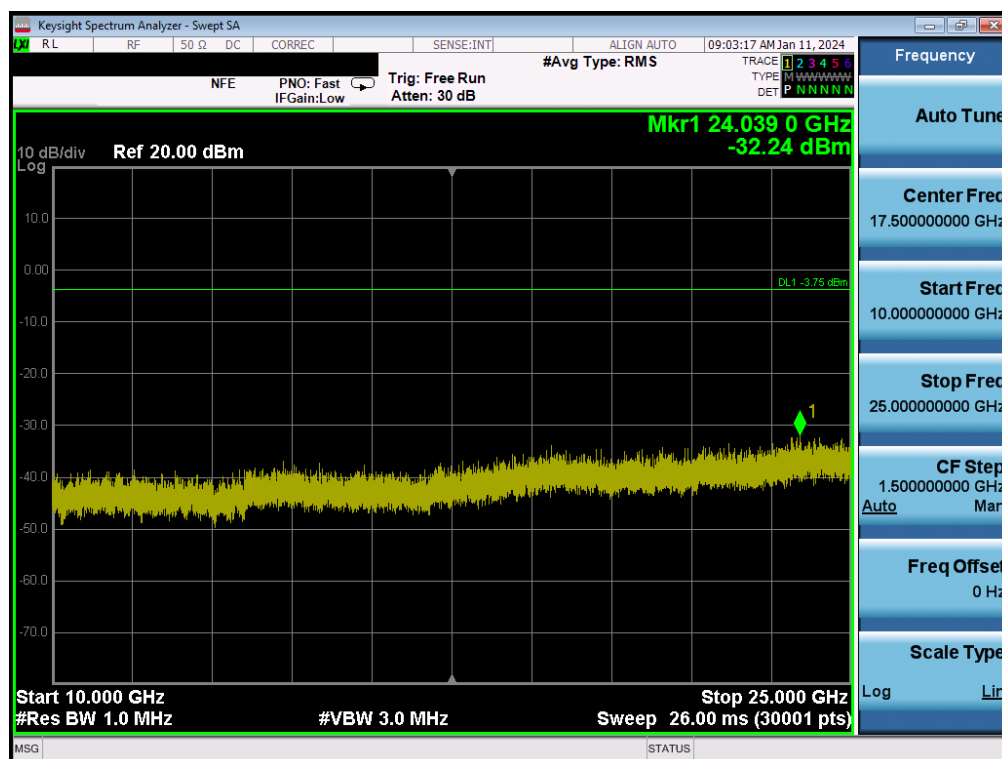


Plot 7-148. Conducted Spurious Plot (Bluetooth, 1Mbps – Ch. 0) – ANT2

FCC ID: A3LSMS928JPN	MEASUREMENT REPORT (CERTIFICATION)		Approved by: Technical Manager
Test Report S/N: 1M2312110124-13.A3L	Test Dates: 1/11/2024-2/6/2024	EUT Type: Portable Handset	Page 101 of 138

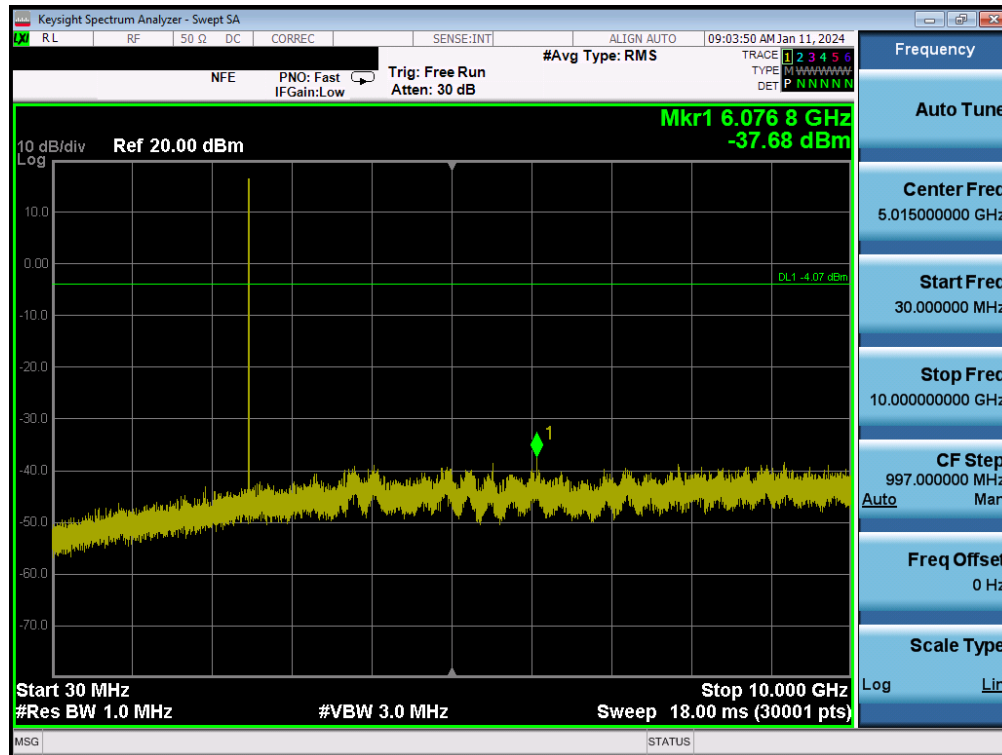


Plot 7-149. Conducted Spurious Plot (Bluetooth, 1Mbps - Ch. 39) - ANT2

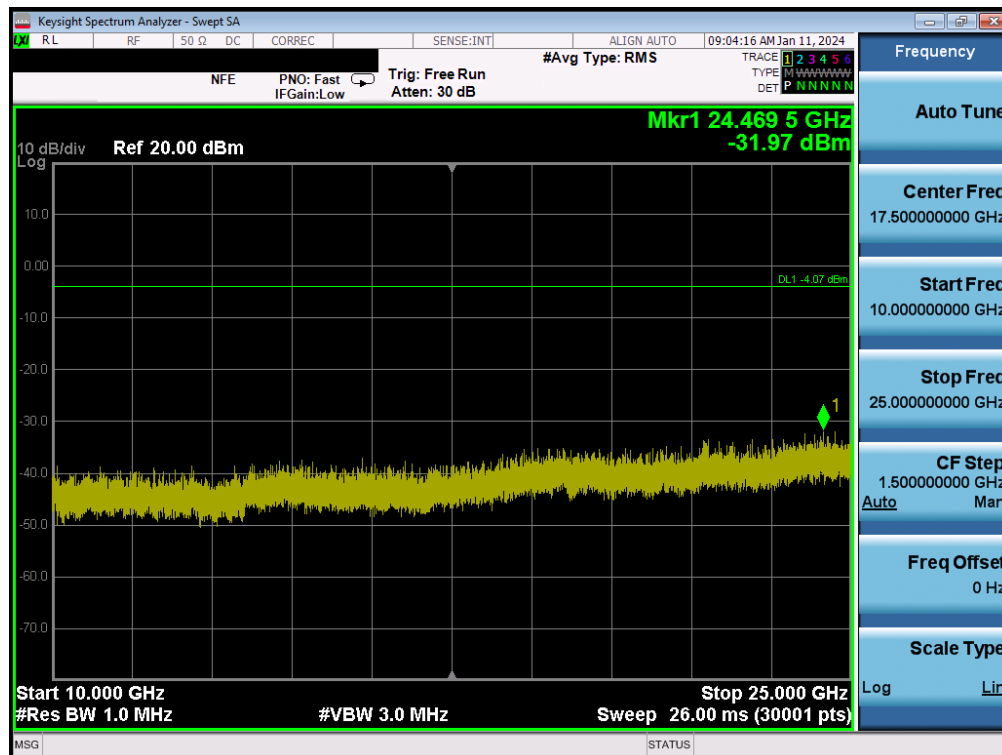


Plot 7-150. Conducted Spurious Plot (Bluetooth, 1Mbps - Ch. 39) - ANT2

FCC ID: A3LSMS928JPN	MEASUREMENT REPORT (CERTIFICATION)		Approved by: Technical Manager
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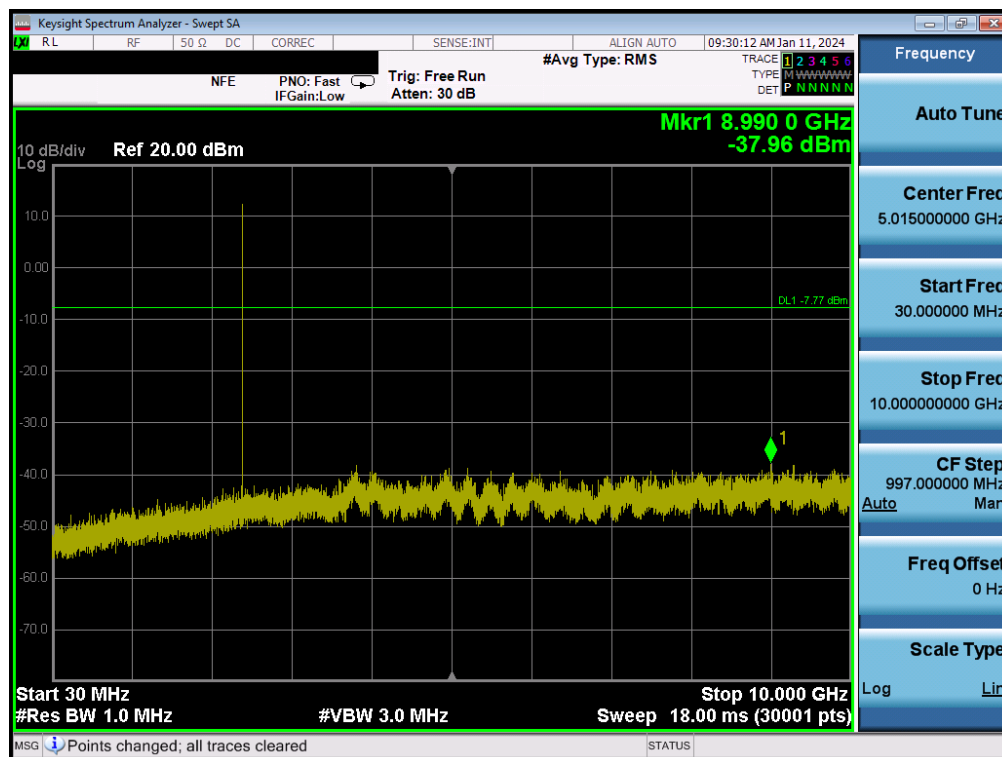


Plot 7-151. Conducted Spurious Plot (Bluetooth, 1Mbps – Ch. 78) – ANT2

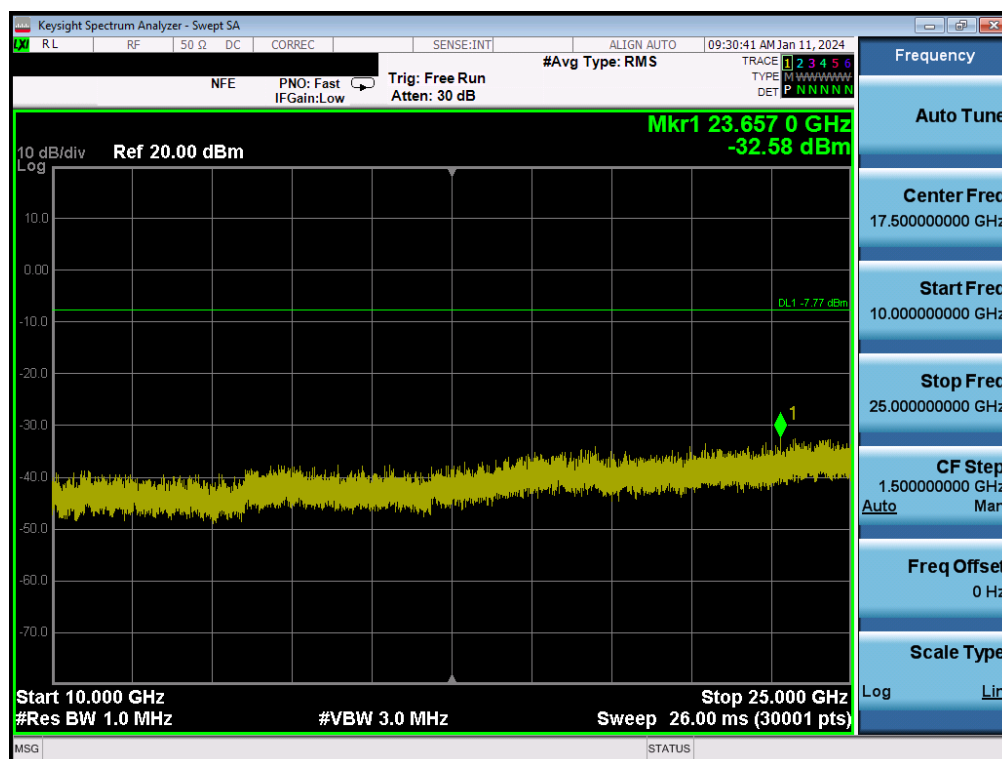


Plot 7-152. Conducted Spurious Plot (Bluetooth, 1Mbps – Ch. 78) – ANT2

FCC ID: A3LSMS928JPN	MEASUREMENT REPORT (CERTIFICATION)		Approved by: Technical Manager
Test Report S/N: 1M2312110124-13.A3L	Test Dates: 1/11/2024-2/6/2024	EUT Type: Portable Handset	Page 103 of 138

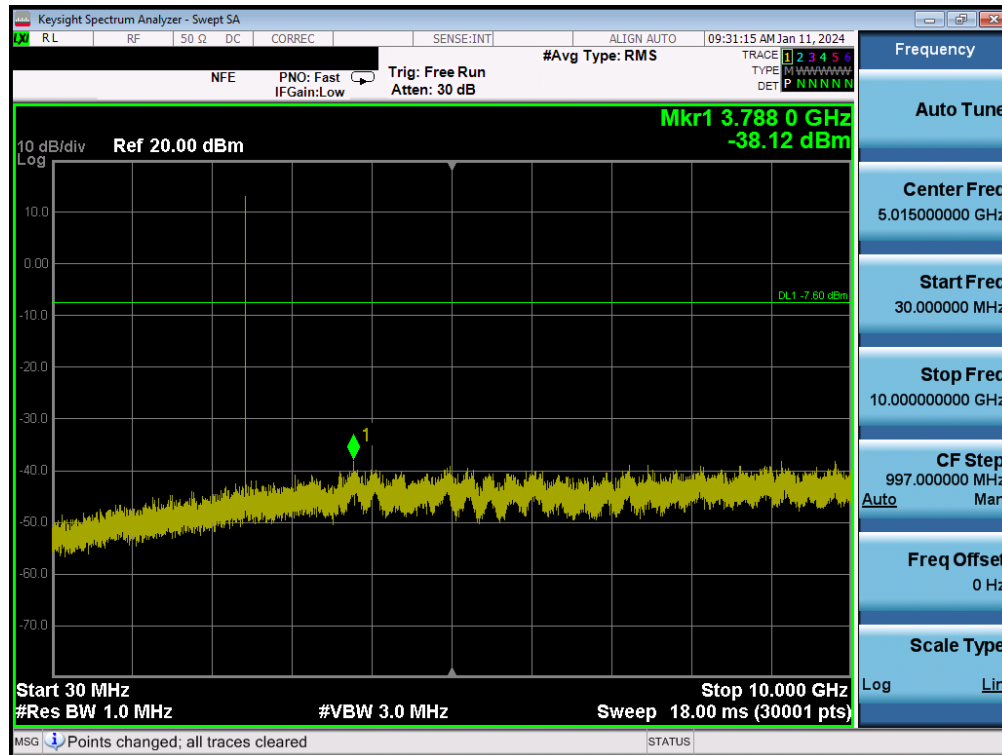


Plot 7-153. Conducted Spurious Plot (Bluetooth, 1Mbps – Ch. 0) – Dual ANT1

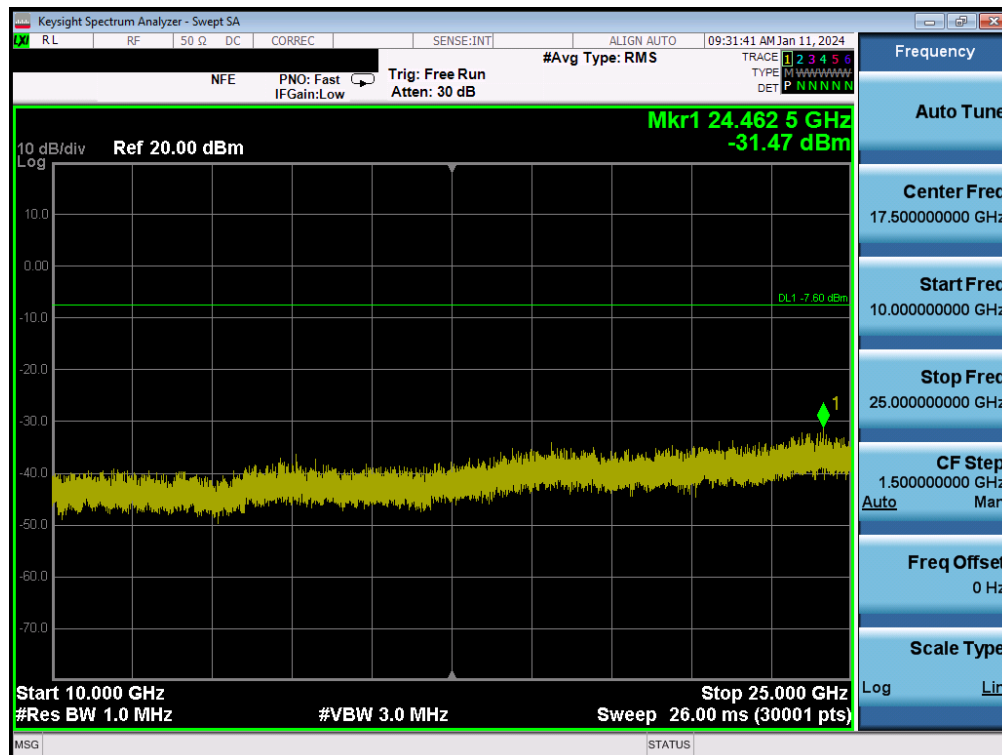


Plot 7-154. Conducted Spurious Plot (Bluetooth, 1Mbps – Ch. 0) – Dual ANT1

FCC ID: A3LSMS928JPN	MEASUREMENT REPORT (CERTIFICATION)		Approved by: Technical Manager
Test Report S/N: 1M2312110124-13.A3L	Test Dates: 1/11/2024-2/6/2024	EUT Type: Portable Handset	Page 104 of 138

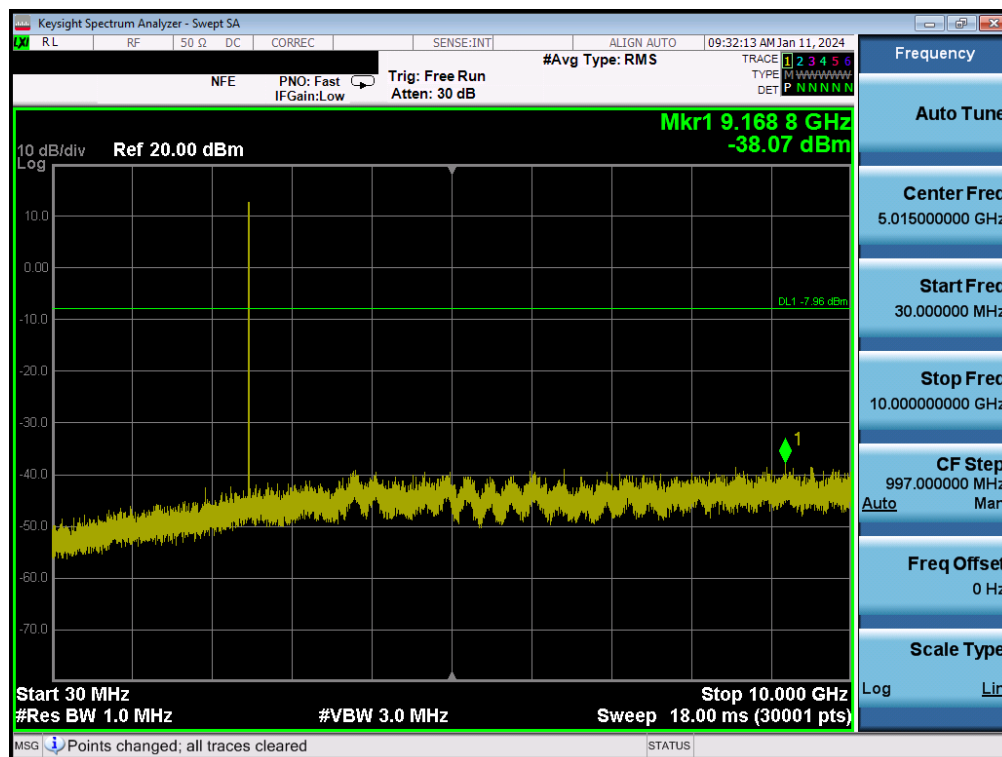


Plot 7-155. Conducted Spurious Plot (Bluetooth, 1Mbps – Ch. 39) – Dual ANT1

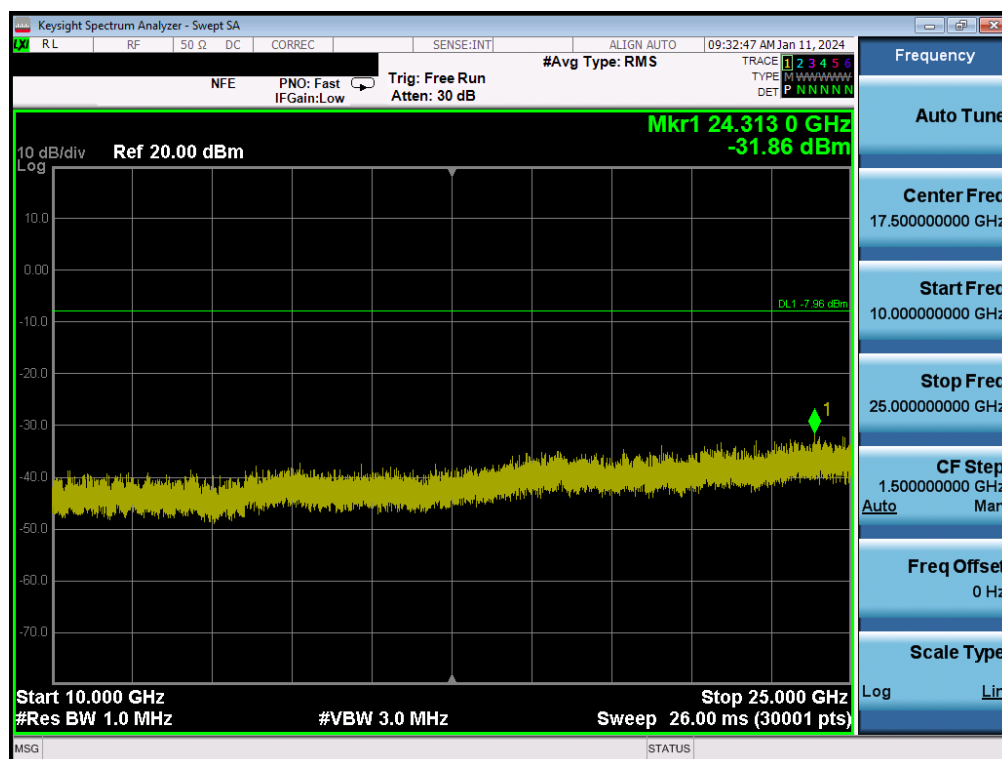


Plot 7-156. Conducted Spurious Plot (Bluetooth, 1Mbps – Ch. 39) – Dual ANT1

FCC ID: A3LSMS928JPN	MEASUREMENT REPORT (CERTIFICATION)		Approved by: Technical Manager
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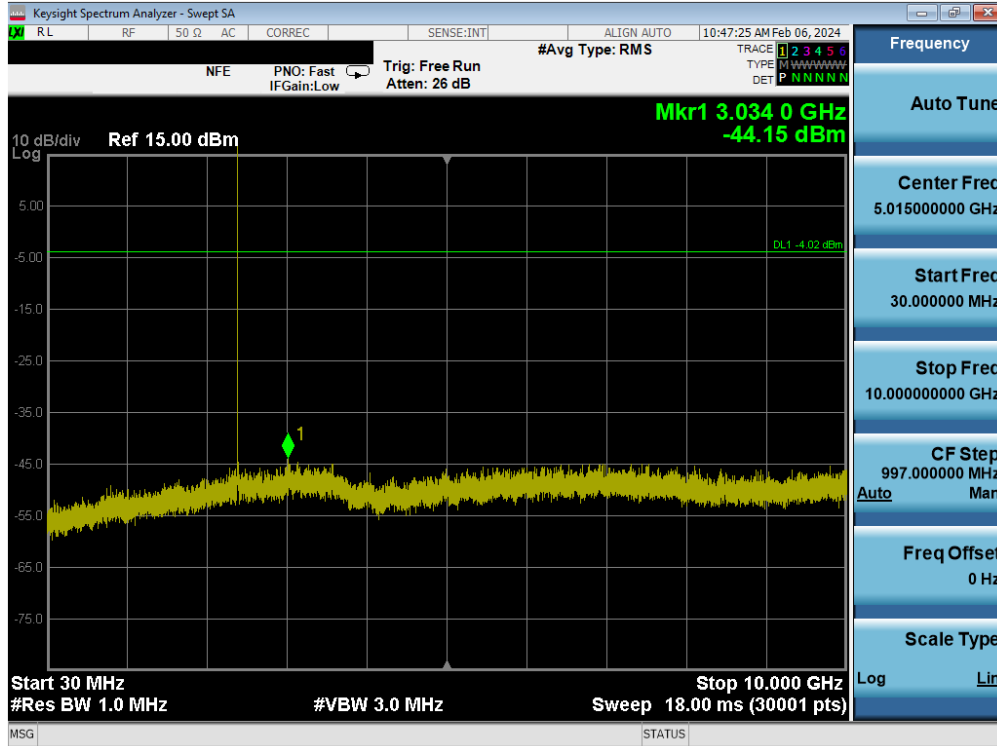


Plot 7-157. Conducted Spurious Plot (Bluetooth, 1Mbps – Ch. 78) – Dual ANT1

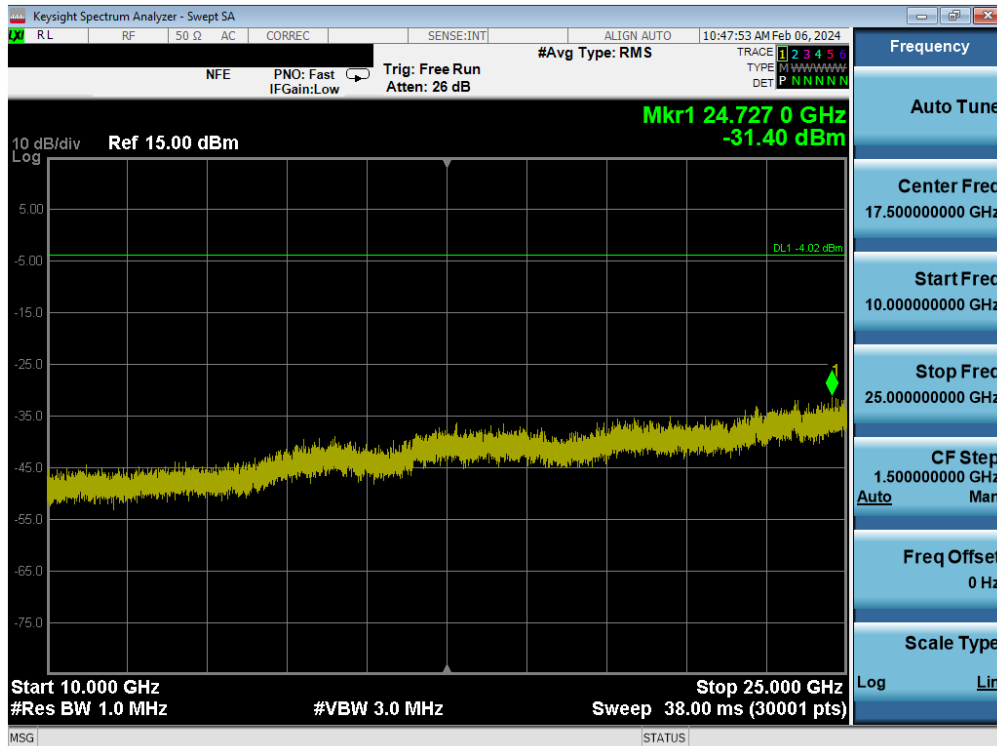


Plot 7-158. Conducted Spurious Plot (Bluetooth, 1Mbps – Ch. 78) – Dual ANT1

FCC ID: A3LSMS928JPN	MEASUREMENT REPORT (CERTIFICATION)		Approved by: Technical Manager
Test Report S/N: 1M2312110124-13.A3L	Test Dates: 1/11/2024-2/6/2024	EUT Type: Portable Handset	Page 106 of 138

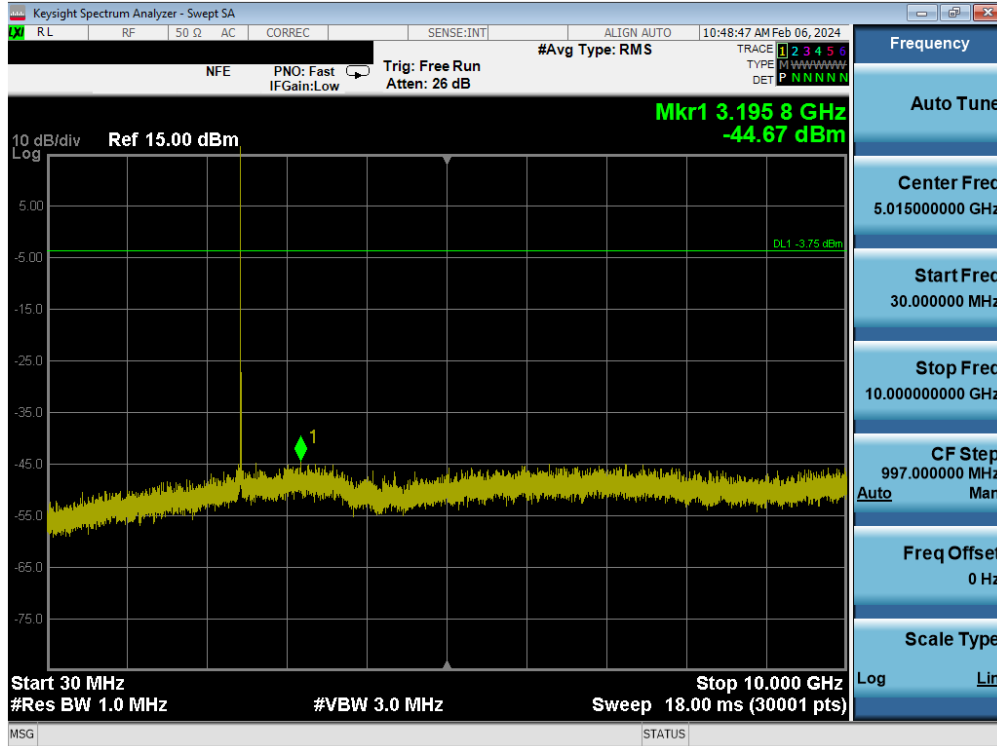


Plot 7-159. Conducted Spurious Plot (Bluetooth, 1Mbps – Ch. 0) – Dual ANT2

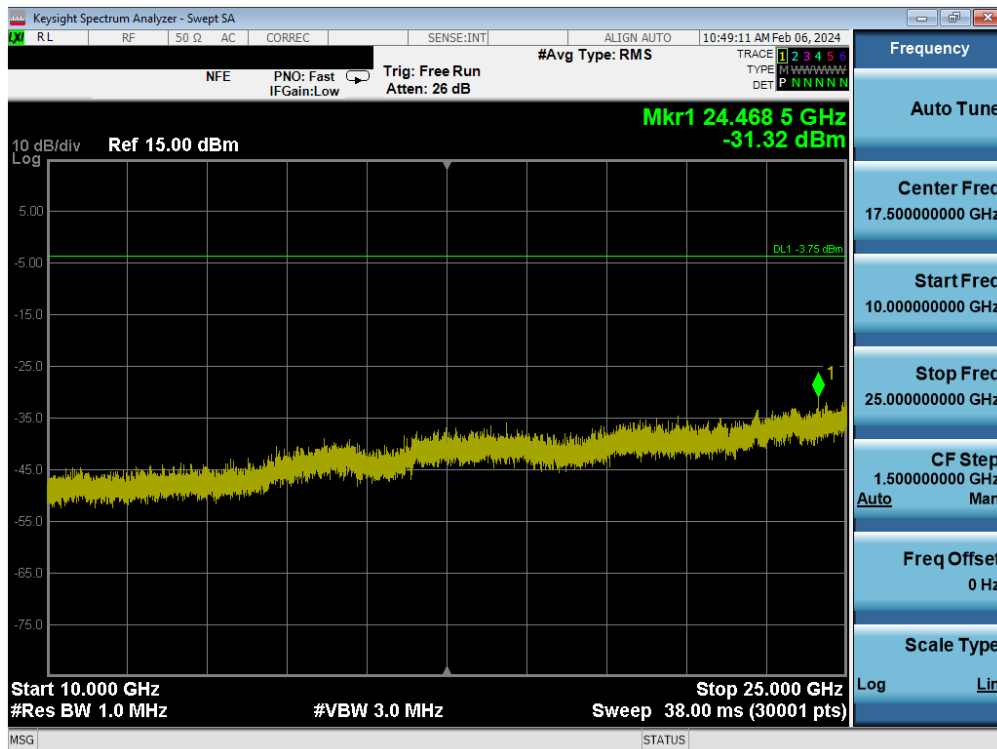


Plot 7-160. Conducted Spurious Plot (Bluetooth, 1Mbps – Ch. 0) – Dual ANT2

FCC ID: A3LSMS928JPN	MEASUREMENT REPORT (CERTIFICATION)		Approved by: Technical Manager
Test Report S/N: 1M2312110124-13.A3L	Test Dates: 1/11/2024-2/6/2024	EUT Type: Portable Handset	Page 107 of 138

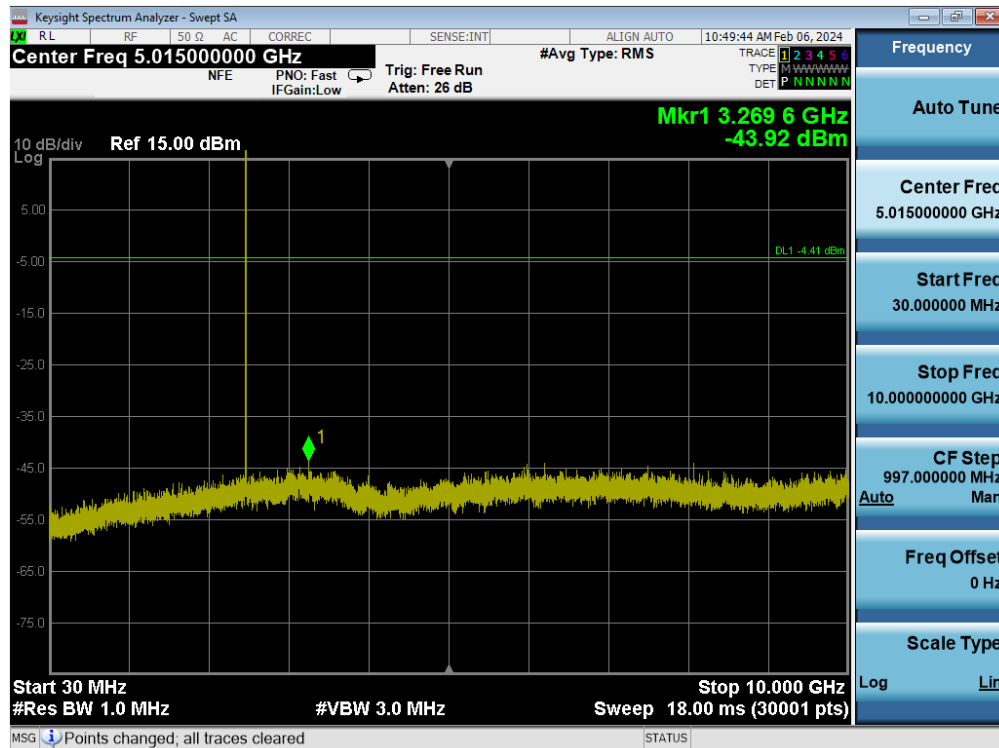


Plot 7-161. Conducted Spurious Plot (Bluetooth, 1Mbps – Ch. 39) – Dual ANT2

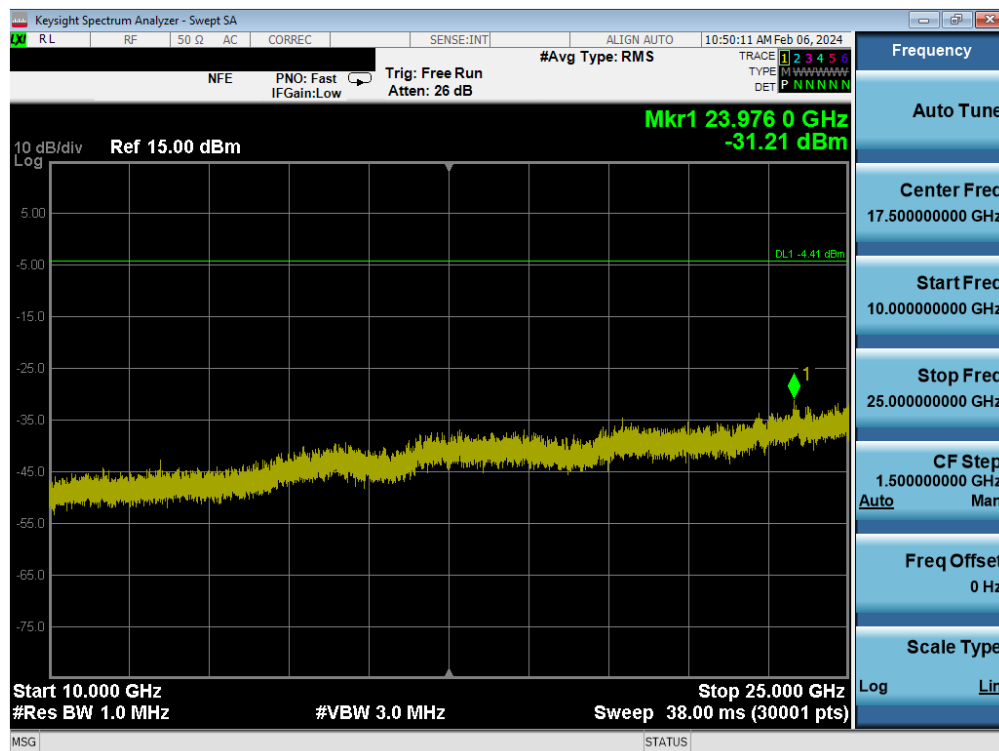


Plot 7-162. Conducted Spurious Plot (Bluetooth, 1Mbps – Ch. 39) – Dual ANT2

FCC ID: A3LSMS928JPN	MEASUREMENT REPORT (CERTIFICATION)		Approved by: Technical Manager
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Plot 7-163. Conducted Spurious Plot (Bluetooth, 1Mbps – Ch. 78) – Dual ANT2



Plot 7-164. Conducted Spurious Plot (Bluetooth, 1Mbps – Ch. 78) – Dual ANT2

FCC ID: A3LSMS928JPN	MEASUREMENT REPORT (CERTIFICATION)		Approved by: Technical Manager
Test Report S/N: 1M2312110124-13.A3L	Test Dates: 1/11/2024-2/6/2024	EUT Type: Portable Handset	Page 109 of 138

7.9 Radiated Spurious Emission Measurements – Above 1GHz

§15.205 §15.209 §15.247 (d); 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 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.

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 below per Section 15.209 and RSS-Gen (8.9).

Frequency	Field Strength [$\mu\text{V/m}$]	Measured Distance [Meters]
Above 960.0 MHz	500	3

Table 7-13. Radiated Limits

Test Procedure Used

ANSI C63.10-2013 – Section 6.6.4.3

Test Settings

Average Field Strength Measurements per Section 4.1.4.2.3 of ANSI C63.10-2013

1. Analyzer center frequency was set to the frequency of the radiated spurious emission of interest
2. RBW = 1MHz
3. VBW = 1kHz $\geq 1/\tau$ Hz, where τ = pulse width in seconds
4. Averaging type was set to RMS to ensure that video filtering was applied in the power domain
5. Detector = peak
6. Sweep time = auto
7. Trace mode = max hold
8. Trace was allowed to stabilize

Peak Field Strength Measurements per Section 4.1.4.2.2 of ANSI C63.10-2013

1. Analyzer center frequency was set to the frequency of the radiated spurious emission of interest
2. RBW is set depending on measurement frequency, as specified in Table 7-14 below
3. VBW = 3MHz
4. Detector = peak
5. Sweep time = auto couple
6. Trace mode = max hold
7. Trace was allowed to stabilize

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Frequency	RBW
9 – 150kHz	200 – 300Hz
0.15 – 30MHz	9 – 10kHz
30 – 1000MHz	100 – 120kHz
> 1000MHz	1MHz

Table 7-14. RBW as a Function of Frequency

Test Setup

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

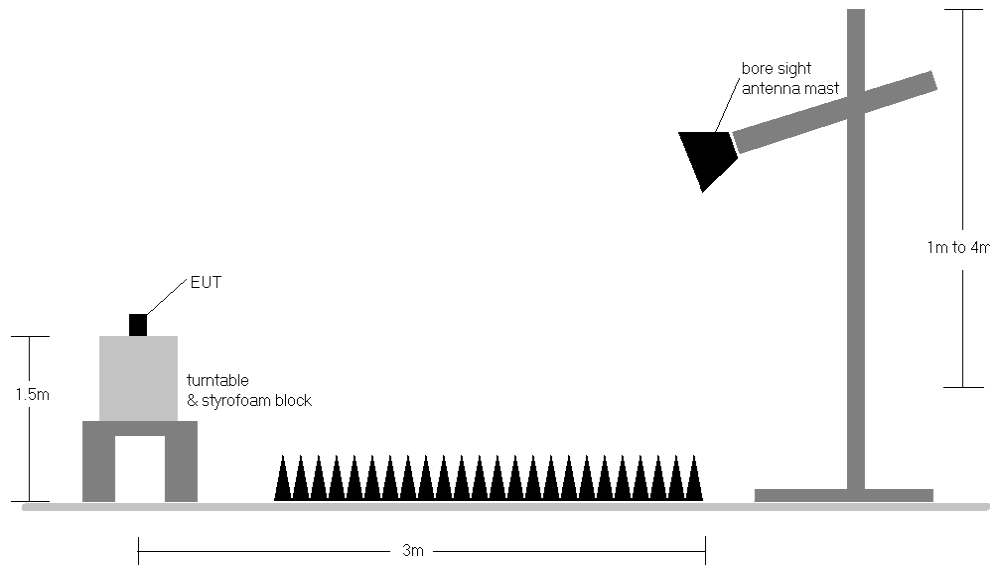


Figure 7-8. Radiated Test Setup >1GHz

Test Notes

1. All emissions lying in restricted bands specified in §15.205 and Section 8.10 of RSS-Gen are below the limit shown in §15.209.
2. No significant radiated emissions were found in the 2310 - 2390MHz restricted band.
3. The antenna is manipulated through typical positions, polarity, and length during the tests. The EUT is manipulated through three orthogonal planes.
4. This unit was tested with its standard battery.
5. The spectrum is measured from 9kHz to the 10th harmonic and the worst-case emissions are reported.
6. The duty cycle correction factor was not applied to noise floor measurements.
7. The wide spectrum spurious emissions plots shown on the following pages are used only for the purpose of emission identification. Any emissions found to be within 20dB of the limit are fully investigated and the results are shown in this section.
8. The "-" shown in the following RSE tables is used to denote a noise floor measurement.

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Sample Calculation

- Field Strength Level $_{[dB\mu V/m]} = \text{Analyzer Level }_{[dBm]} + 107 + \text{AFCL }_{[dB/m]} + \text{Duty Cycle Correction }_{[dB]}$
- $\text{AFCL }_{[dB/m]} = \text{Antenna Factor }_{[dB/m]} + \text{Cable Loss }_{[dB]}$
- $\text{Margin }_{[dB]} = \text{Field Strength Level }_{[dB\mu V/m]} - \text{Limit }_{[dB\mu V/m]}$

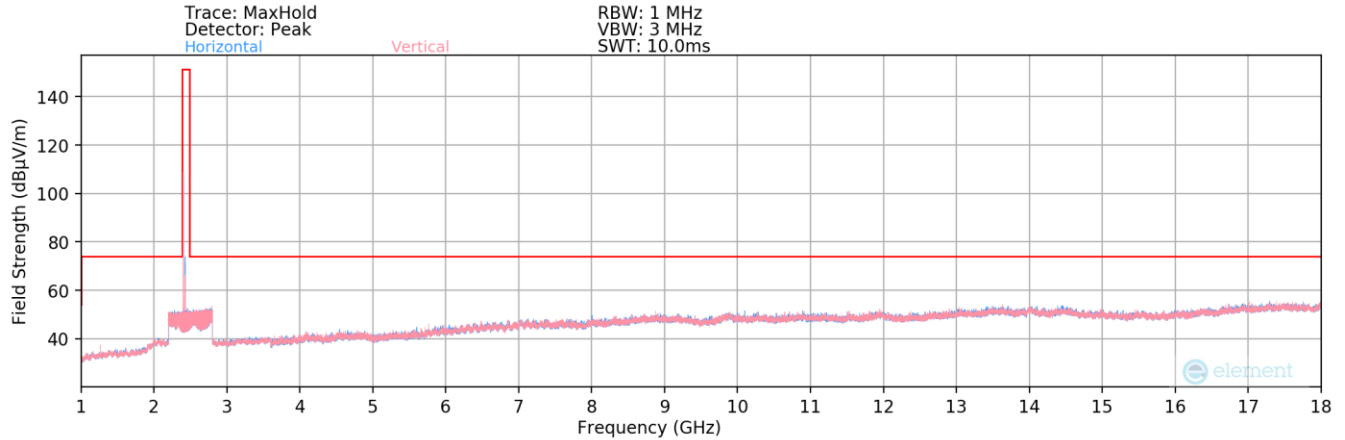
Duty Cycle Correction Factor Calculation

- Channel hop rate = 800 hops/second (AFH Mode)
- Adjusted channel hop rate for DH5 mode = 133.33 hops/second
- Time per channel hop = $1 / 133.33 \text{ hops/second} = 7.50 \text{ ms}$
- Time to cycle through all channels = $7.50 \times 20 \text{ channels} = 150 \text{ ms}$
- Number of times transmitter hits on one channel = $100 \text{ ms} / 150 \text{ ms} = 1 \text{ time(s)}$
- Worst case dwell time = 7.5 ms
- Duty cycle correction factor = $20\log_{10}(7.5\text{ms}/100\text{ms}) = -22.5 \text{ dB}$

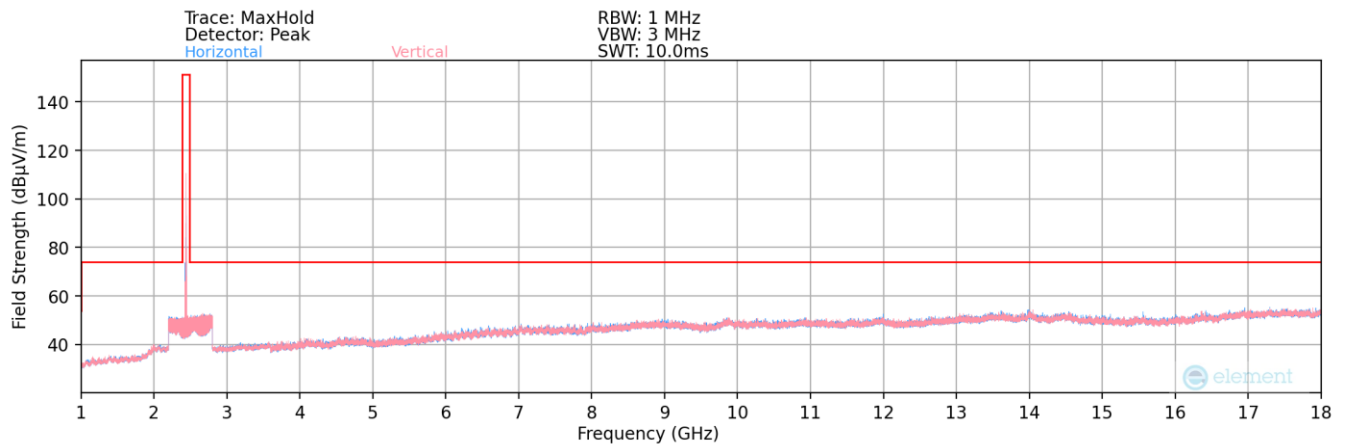
FCC ID: A3LSMS928JPN	MEASUREMENT REPORT (CERTIFICATION)		Approved by: Technical Manager
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Radiated Spurious Emission Measurements – ANT1

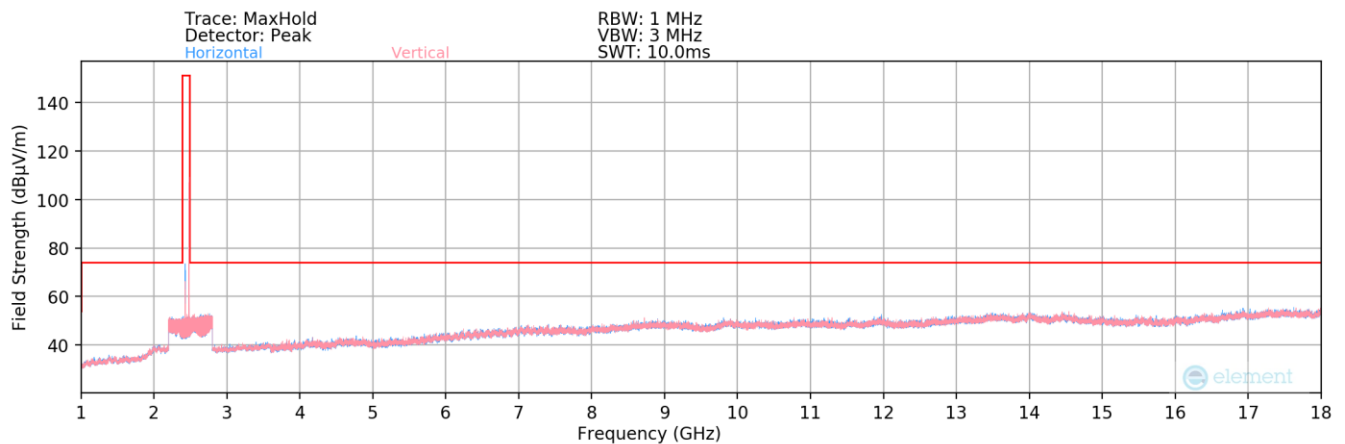
§15.205 §15.209 §15.247 (d); RSS-Gen [8.9]



Plot 7-165. Radiated Spurious Plot above 1GHz (BT– Ch. 0) – ANT1



Plot 7-166. Radiated Spurious Plot above 1GHz (BT– Ch. 39) – ANT1

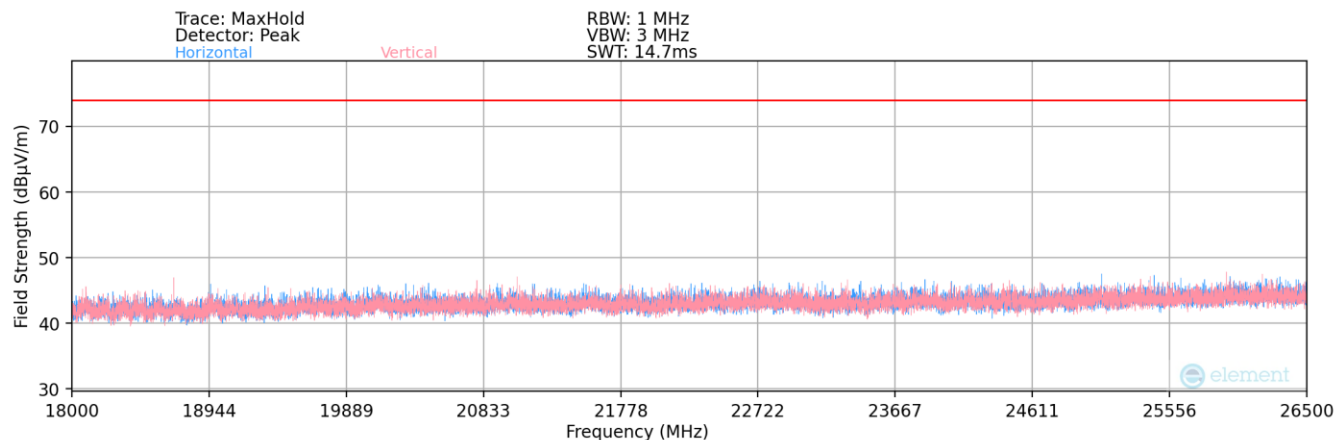


Plot 7-167. Radiated Spurious Plot above 1GHz (BT– Ch. 78) – ANT1

FCC ID: A3LSMS928JPN	MEASUREMENT REPORT (CERTIFICATION)		Approved by: Technical Manager
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Radiated Spurious Emissions Measurements (Above 18GHz) – ANT1

§15.209; RSS-Gen [8.9]



Plot 7-168. Radiated Spurious Plot above 18GHz – ANT1

FCC ID: A3LSMS928JPN	MEASUREMENT REPORT (CERTIFICATION)		Approved by: Technical Manager
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Radiated Spurious Emission Measurements – ANT1

§15.205 §15.209 §15.247 (d); RSS-Gen [8.9]

Worst Case Mode: Bluetooth
Worst Case Data Rate: 1 Mbps
Measurement Distance: 3 Meters
Operating Frequency: 2402MHz
Channel: 0

Frequency [MHz]	Detector	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Analyzer Level [dBm]	AFCL [dB/m]	Duty Cycle Correction [dB]	Field Strength [dBμV/m]	Limit [dBμV/m]	Margin [dB]
4804.00	Avg	H	139	359	-75.57	2.69	-22.50	11.63	53.98	-42.35
4804.00	Peak	H	139	359	-66.70	2.69	0.00	42.99	73.98	-30.99
12010.00	Avg	H	-	-	-81.42	13.53	0.00	39.11	53.98	-14.87
12010.00	Peak	H	-	-	-68.86	13.53	0.00	51.67	73.98	-22.31

Table 7-15. Radiated Measurements – ANT1

Worst Case Mode: Bluetooth
Worst Case Data Rate: 1 Mbps
Measurement Distance: 3 Meters
Operating Frequency: 2441MHz
Channel: 39

Frequency [MHz]	Detector	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Analyzer Level [dBm]	AFCL [dB/m]	Duty Cycle Correction [dB]	Field Strength [dBμV/m]	Limit [dBμV/m]	Margin [dB]
4882.00	Avg	H	-	-	-79.46	3.16	0.00	30.70	53.98	-23.28
4882.00	Peak	H	-	-	-67.08	3.16	0.00	43.08	73.98	-30.90
7323.00	Avg	H	-	-	-67.54	9.56	0.00	49.02	53.98	-4.96
7323.00	Peak	H	-	-	-79.83	9.56	0.00	36.73	73.98	-37.25
12205.00	Avg	H	-	-	-81.89	13.00	0.00	38.11	53.98	-15.87
12205.00	Peak	H	-	-	-69.19	13.00	0.00	50.81	73.98	-23.17

Table 7-16. Radiated Measurements – ANT1

FCC ID: A3LSMS928JPN	MEASUREMENT REPORT (CERTIFICATION)		Approved by: Technical Manager
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Worst Case Mode: Bluetooth
Worst Case Data Rate: 1 Mbps
Measurement Distance: 3 Meters
Operating Frequency: 2480MHz
Channel: 78

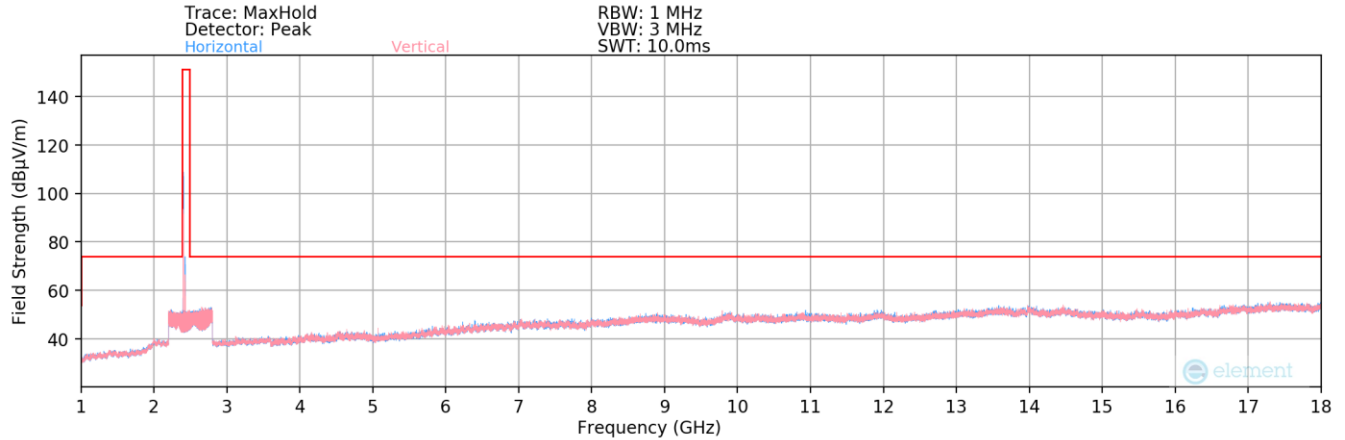
Frequency [MHz]	Detector	Ant. Pol.	Antenna Height	Turntable Azimuth	Analyzer Level	AFCL [dB/m]	Duty Cycle Correction	Field Strength	Limit [dBμV/m]	Margin [dB]
7440.00	Avg	H	-	-	-80.00	9.07	0.00	36.07	53.98	-17.91
7440.00	Peak	H	-	-	-68.43	9.07	0.00	47.64	73.98	-26.34
12400.00	Avg	H	-	-	-81.61	13.05	0.00	38.44	53.98	-15.54
12400.00	Peak	H	-	-	-67.70	13.05	0.00	52.35	73.98	-21.63

Table 7-17. Radiated Measurements – ANT1

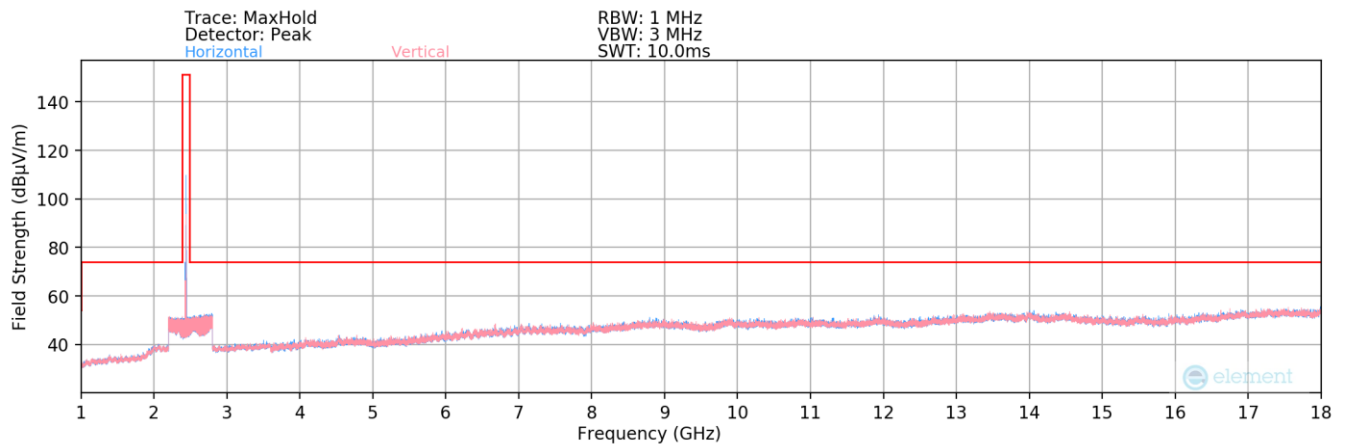
FCC ID: A3LSMS928JPN	MEASUREMENT REPORT (CERTIFICATION)		Approved by: Technical Manager
Test Report S/N: 1M2312110124-13.A3L	Test Dates: 1/11/2024-2/6/2024	EUT Type: Portable Handset	Page 116 of 138

Radiated Spurious Emission Measurements – ANT2

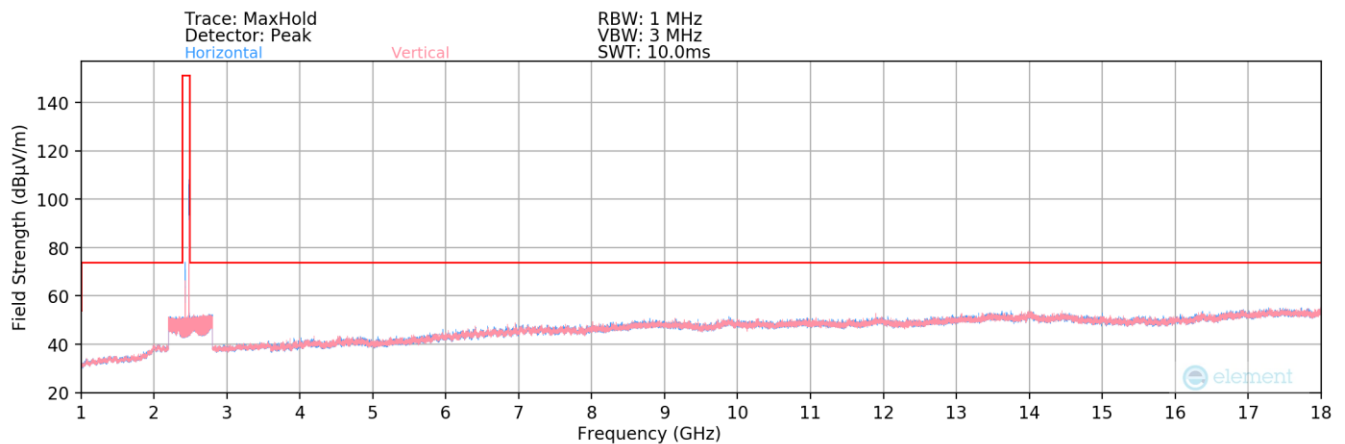
§15.205 §15.209 §15.247 (d); RSS-Gen [8.9]



Plot 7-169. Radiated Spurious Plot above 1GHz (BT– Ch. 0) – ANT2



Plot 7-170. Radiated Spurious Plot above 1GHz (BT– Ch. 39) – ANT2

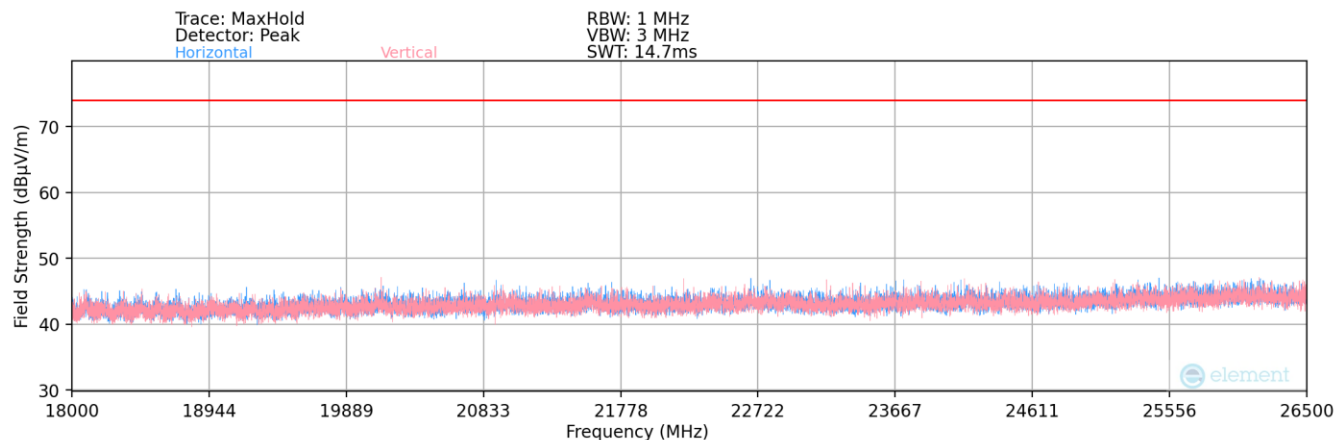


Plot 7-171. Radiated Spurious Plot above 1GHz (BT– Ch. 78) – ANT2

FCC ID: A3LSMS928JPN	MEASUREMENT REPORT (CERTIFICATION)		Approved by: Technical Manager
Test Report S/N: 1M2312110124-13.A3L	Test Dates: 1/11/2024-2/6/2024	EUT Type: Portable Handset	Page 117 of 138



Radiated Spurious Emissions Measurements (Above 18GHz) – ANT2
§15.209; RSS-Gen [8.9]



Plot 7-172. Radiated Spurious Plot above 18GHz – ANT2

FCC ID: A3LSMS928JPN		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Technical Manager
Test Report S/N: 1M2312110124-13.A3L	Test Dates: 1/11/2024-2/6/2024	EUT Type: Portable Handset		Page 118 of 138

Radiated Spurious Emission Measurements – ANT2

§15.205 §15.209 §15.247 (d); RSS-Gen [8.9]

Worst Case Mode: Bluetooth
Worst Case Data Rate: 1 Mbps
Measurement Distance: 3 Meters
Operating Frequency: 2402MHz
Channel: 0

Frequency [MHz]	Detector	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Analyzer Level [dBm]	AFCL [dB/m]	Duty Cycle Correction [dB]	Field Strength [dBμV/m]	Limit [dBμV/m]	Margin [dB]
4804.00	Avg	H	207	347	-78.60	2.69	-22.50	8.60	53.98	-45.38
4804.00	Peak	H	207	347	-66.29	2.69	0.00	43.40	73.98	-30.58
12010.00	Avg	H	-	-	-81.24	13.53	0.00	39.29	53.98	-14.69
12010.00	Peak	H	-	-	-69.28	13.53	0.00	51.25	73.98	-22.73

Table 7-18. Radiated Measurements – ANT2

Worst Case Mode: Bluetooth
Worst Case Data Rate: 1 Mbps
Measurement Distance: 3 Meters
Operating Frequency: 2441MHz
Channel: 39

Frequency [MHz]	Detector	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Analyzer Level [dBm]	AFCL [dB/m]	Duty Cycle Correction [dB]	Field Strength [dBμV/m]	Limit [dBμV/m]	Margin [dB]
4882.00	Avg	H	-	-	-79.31	3.16	0.00	30.85	53.98	-23.13
4882.00	Peak	H	-	-	-66.50	3.16	0.00	43.66	73.98	-30.32
7323.00	Avg	H	-	-	-79.89	9.56	0.00	36.67	53.98	-17.31
7323.00	Peak	H	-	-	-67.28	9.56	0.00	49.28	73.98	-24.70
12205.00	Avg	H	-	-	-81.65	13.00	0.00	38.35	53.98	-15.63
12205.00	Peak	H	-	-	-69.01	13.00	0.00	50.99	73.98	-22.99

Table 7-19. Radiated Measurements – ANT2

FCC ID: A3LSMS928JPN	MEASUREMENT REPORT (CERTIFICATION)		Approved by: Technical Manager
Test Report S/N: 1M2312110124-13.A3L	Test Dates: 1/11/2024-2/6/2024	EUT Type: Portable Handset	Page 119 of 138



Worst Case Mode: Bluetooth
Worst Case Data Rate: 1 Mbps
Measurement Distance: 3 Meters
Operating Frequency: 2480MHz
Channel: 78

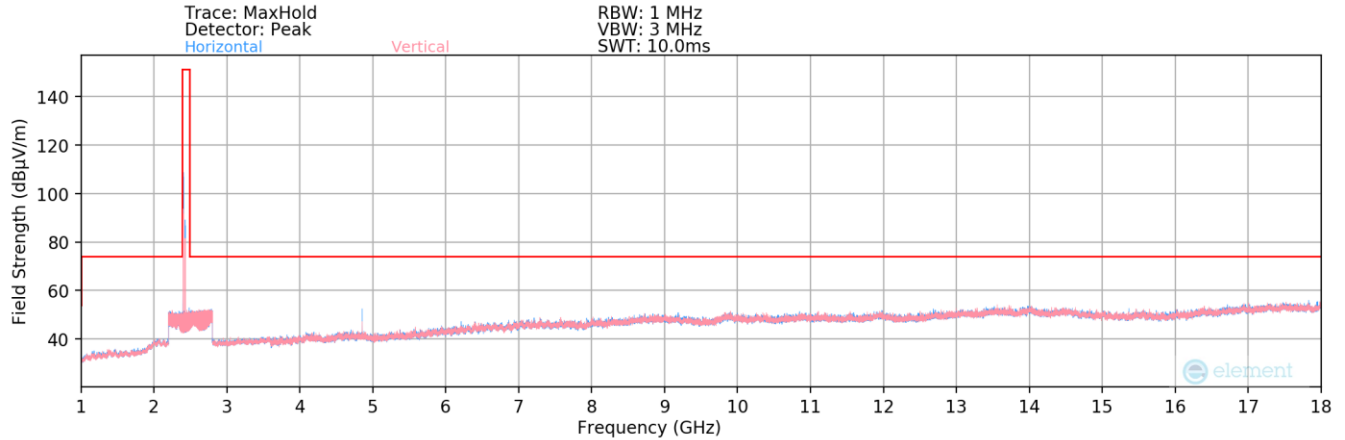
Frequency [MHz]	Detector	Ant. Pol.	Antenna Height	Turntable Azimuth	Analyzer Level	AFCL [dB/m]	Duty Cycle Correction	Field Strength	Limit [dBμV/m]	Margin [dB]
7440.00	Avg	H	-	-	-80.14	9.07	0.00	35.93	53.98	-18.05
7440.00	Peak	H	-	-	-67.77	9.07	0.00	48.30	73.98	-25.68
12400.00	Avg	H	-	-	-81.95	13.05	0.00	38.10	53.98	-15.88
12400.00	Peak	H	-	-	-69.31	13.05	0.00	50.74	73.98	-23.24

Table 7-20. Radiated Measurements – ANT2

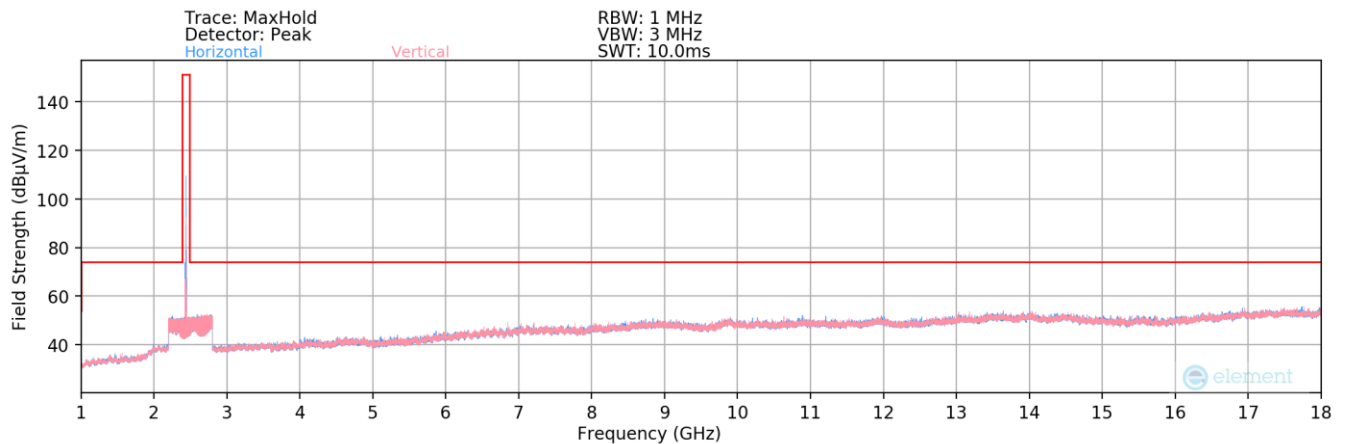
FCC ID: A3LSMS928JPN	MEASUREMENT REPORT (CERTIFICATION)		Approved by: Technical Manager
Test Report S/N: 1M2312110124-13.A3L	Test Dates: 1/11/2024-2/6/2024	EUT Type: Portable Handset	Page 120 of 138

Radiated Spurious Emission Measurements – Dual

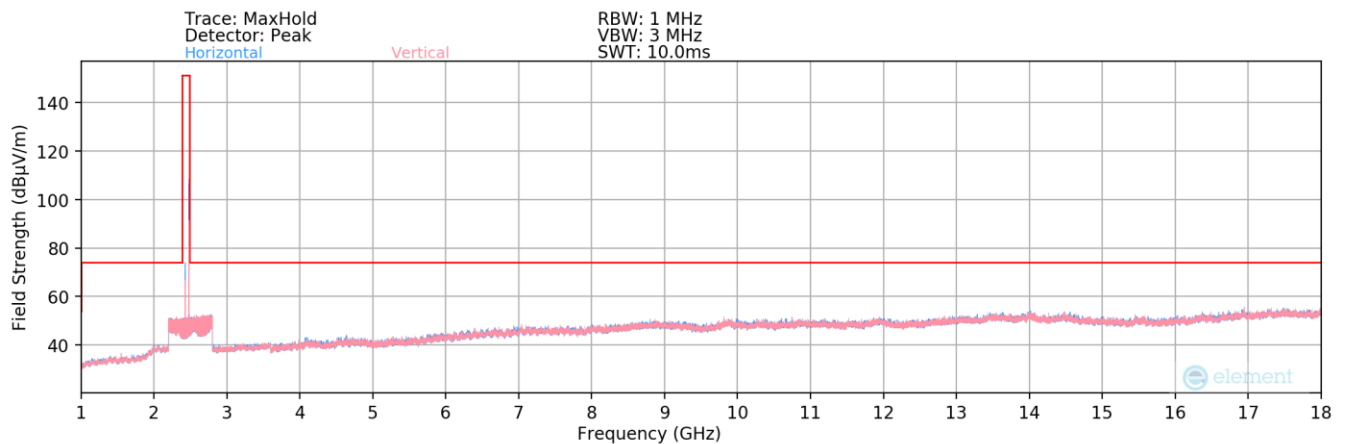
§15.205 §15.209 §15.247 (d); RSS-Gen [8.9]



Plot 7-173. Radiated Spurious Plot above 1GHz (BT– Ch. 0) – Dual



Plot 7-174. Radiated Spurious Plot above 1GHz (BT– Ch. 39) – Dual

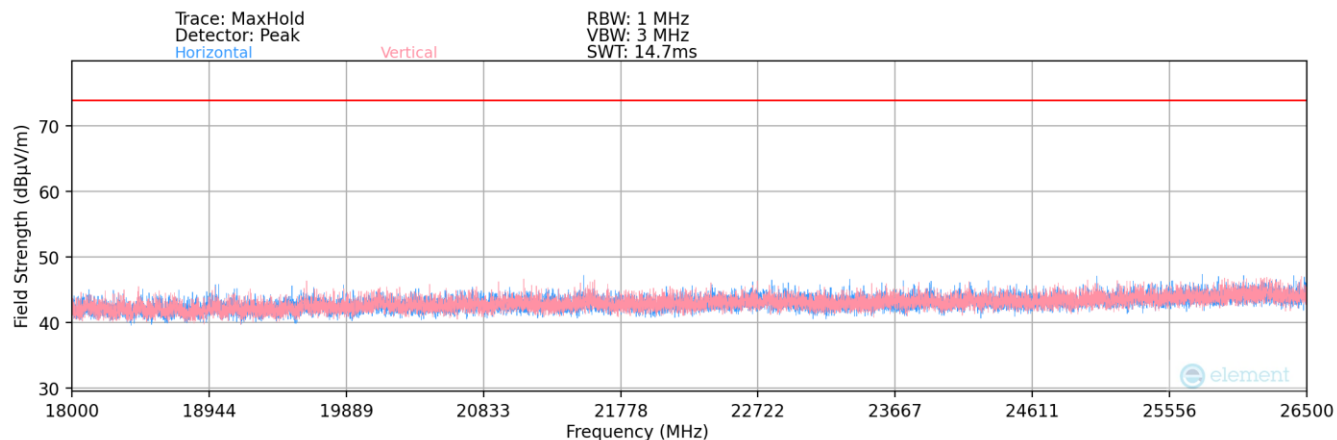


Plot 7-175. Radiated Spurious Plot above 1GHz (BT– Ch. 78) – Dual

FCC ID: A3LSMS928JPN	MEASUREMENT REPORT (CERTIFICATION)		Approved by: Technical Manager
Test Report S/N: 1M2312110124-13.A3L	Test Dates: 1/11/2024-2/6/2024	EUT Type: Portable Handset	Page 121 of 138

Radiated Spurious Emissions Measurements (Above 18GHz) – Dual

§15.209; RSS-Gen [8.9]



Plot 7-176. Radiated Spurious Plot above 18GHz – Dual

FCC ID: A3LSMS928JPN	MEASUREMENT REPORT (CERTIFICATION)		Approved by: Technical Manager
Test Report S/N: 1M2312110124-13.A3L	Test Dates: 1/11/2024-2/6/2024	EUT Type: Portable Handset	Page 122 of 138



Radiated Spurious Emission Measurements – Dual

§15.205 §15.209 §15.247 (d); RSS-Gen [8.9]

Worst Case Mode: Bluetooth
Worst Case Data Rate: 1 Mbps
Measurement Distance: 3 Meters
Operating Frequency: 2402MHz
Channel: 0

Frequency [MHz]	Detector	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Analyzer Level [dBm]	AFCL [dB/m]	Duty Cycle Correction [dB]	Field Strength [dBµV/m]	Limit [dBµV/m]	Margin [dB]
4804.00	Avg	H	339	349	-76.95	2.69	-22.50	10.25	53.98	-43.73
4804.00	Peak	H	339	349	-64.52	2.69	0.00	45.17	73.98	-28.81
12010.00	Avg	H	-	-	-81.17	13.53	0.00	39.36	53.98	-14.62
12010.00	Peak	H	-	-	-68.65	13.53	0.00	51.88	73.98	-22.10

Table 7-21. Radiated Measurements – Dual

Worst Case Mode: Bluetooth
Worst Case Data Rate: 1 Mbps
Measurement Distance: 3 Meters
Operating Frequency: 2441MHz
Channel: 39

Frequency [MHz]	Detector	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Analyzer Level [dBm]	AFCL [dB/m]	Duty Cycle Correction [dB]	Field Strength [dBµV/m]	Limit [dBµV/m]	Margin [dB]
4882.00	Avg	H	199	341	-78.32	3.16	-22.50	9.34	53.98	-44.64
4882.00	Peak	H	199	341	-66.59	3.16	0.00	43.57	73.98	-30.41
7323.00	Avg	H	-	-	-79.76	9.56	0.00	36.80	53.98	-17.18
7323.00	Peak	H	-	-	-67.79	9.56	0.00	48.77	73.98	-25.21
12205.00	Avg	H	-	-	-81.87	13.00	0.00	38.13	53.98	-15.85
12205.00	Peak	H	-	-	-69.34	13.00	0.00	50.66	73.98	-23.32

Table 7-22. Radiated Measurements – Dual

Worst Case Mode: Bluetooth
Worst Case Data Rate: 1 Mbps

FCC ID: A3LSMS928JPN	MEASUREMENT REPORT (CERTIFICATION)		Approved by: Technical Manager
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Measurement Distance: 3 Meters
 Operating Frequency: 2480MHz
 Channel: 78

Frequency [MHz]	Detector	Ant. Pol.	Antenna Height	Turntable Azimuth	Analyzer Level	AFCL [dB/m]	Duty Cycle Correction	Field Strength	Limit [dBμV/m]	Margin [dB]
7440.00	Avg	H	-	-	-80.14	9.07	0.00	35.93	53.98	-18.05
7440.00	Peak	H	-	-	-68.13	9.07	0.00	47.94	73.98	-26.04
12400.00	Avg	H	-	-	-82.08	13.05	0.00	37.97	53.98	-16.01
12400.00	Peak	H	-	-	-68.94	13.05	0.00	51.11	73.98	-22.87

Table 7-23. Radiated Measurements – Dual

Worst Case Mode: Bluetooth
 Worst Case Data Rate: 1 Mbps
 Measurement Distance: 3 Meters
 Operating Frequency: 2441MHz
 Channel: 0

Frequency [MHz]	Detector	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Analyzer Level [dBm]	AFCL [dB/m]	Duty Cycle Correction [dB]	Field Strength [dBμV/m]	Limit [dBμV/m]	Margin [dB]
4804.00	Avg	H	-	-	-78.91	2.69	0.00	30.78	53.98	-23.20
4804.00	Peak	H	-	-	-66.79	2.69	0.00	42.90	73.98	-31.08
12010.00	Avg	H	-	-	-81.24	13.53	0.00	39.29	53.98	-14.69
12010.00	Peak	H	-	-	-68.83	13.53	0.00	51.70	73.98	-22.28

Table 7-24. Radiated Measurements with WCP – Dual

FCC ID: A3LSMS928JPN	MEASUREMENT REPORT (CERTIFICATION)		Approved by: Technical Manager
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7.10 Radiated Restricted Band Edge Measurements

§15.205 §15.209 §15.247 (d); RSS-Gen [8.9]

Test Overview and Limit

All out of band radiated emissions at the band edge are measured with a spectrum analyzer connected to a receive antenna while the EUT is operating at maximum power, at the appropriate frequencies, and with hopping disabled. 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 below per Section 15.209 and RSS-Gen (8.9).

Frequency	Field Strength [$\mu\text{V/m}$]	Measured Distance [Meters]
Above 960.0 MHz	500	3

Table 7-25. Radiated Limits

Test Procedure Used

ANSI C63.10-2013 – Section 6.10.5.2

Test Settings

- Span is set large enough to capture the peak level of the emission operating on the channel closest to the band edge
- Reference level offset is set with the appropriate corrections for the frequencies shown in the plots
- Reference level is set to provide the appropriate amount of “head room” above the signal as specified in ANSI C63.10-2013 Section 4.1.5.2
- Attenuation is set to a low enough level to maintain enough dynamic range between the noise floor and the radiated limit
- Sweep time = Auto coupled
- RBW = 1MHz
- VBW = 3 x RBW for peak measurements and 1kHz for RMS measurements
- Detector = RMS and peak
- Trace = Max Hold
- Trace was allowed to stabilize

FCC ID: A3LSMS928JPN	MEASUREMENT REPORT (CERTIFICATION)		Approved by: Technical Manager
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Test Setup

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

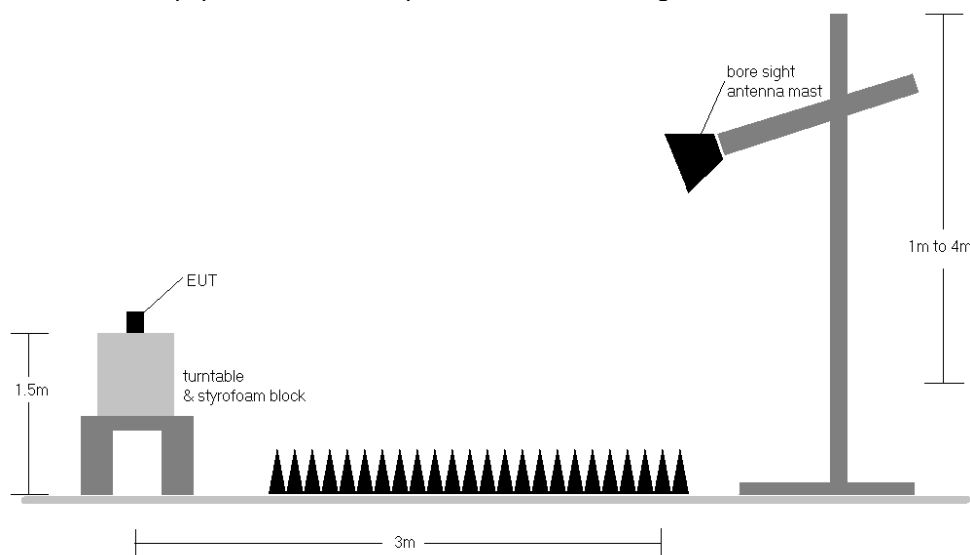


Figure 7-9. Radiated Test Setup >1GHz

Test Notes

1. All emissions lying in restricted bands specified in §15.205 and Section 8.10 of RSS-Gen are below the limits shown in §15.209.
2. No significant radiated emissions were found in the 2310 - 2390MHz restricted band.
3. The antenna is manipulated through typical positions, polarity, and length during the tests. The EUT is manipulated through three orthogonal planes.
4. This unit was tested with its standard battery.
5. The spectrum is measured from 9kHz to the 10th harmonic and the worst-case emissions are reported.
6. Two different amplitude offsets were used depending on whether peak or average measurements were measured. The average measurements use a duty cycle correction factor (DCCF).

The amplitude offset shown in the following plots for average measurements was calculated using the formula:

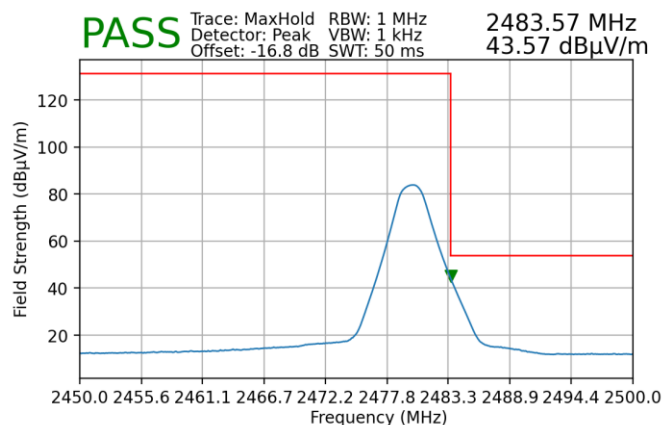
$$\text{Offset (dB)} = (\text{Antenna Factor} + \text{Cable Loss} + \text{Attenuator}) - \text{Preamplifier Gain} + \text{DCCF}$$

7. The "-" shown in the following RSE tables is used to denote a noise floor measurement.

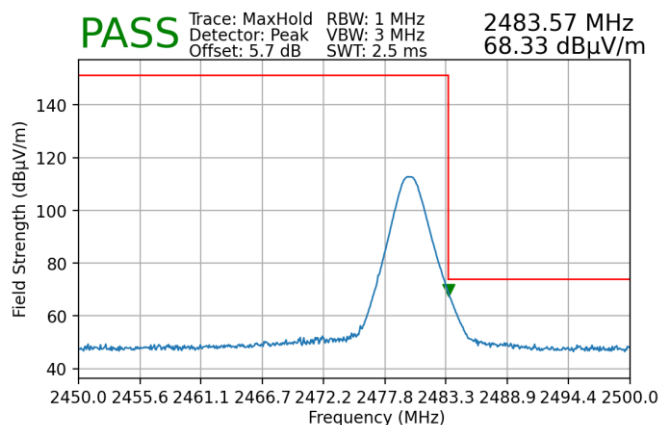
FCC ID: A3LSMS928JPN	MEASUREMENT REPORT (CERTIFICATION)		Approved by: Technical Manager
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Radiated Band Edge Measurement – ANT1

Worst Case Mode:	Bluetooth
Worst Case Data Rate:	1 Mbps
Measurement Distance:	3 Meters
Operating Frequency:	2480MHz
Channel:	78



Plot 7-177. Radiated Restricted Upper Band Edge Measurement (Average) – ANT1

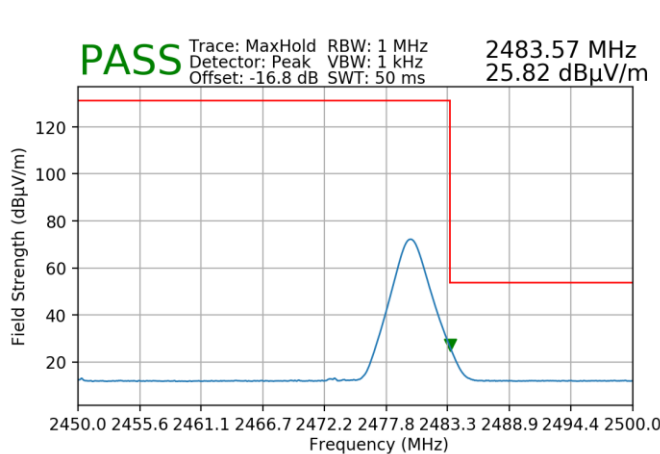


Plot 7-178. Radiated Restricted Upper Band Edge Measurement (Peak) – ANT1

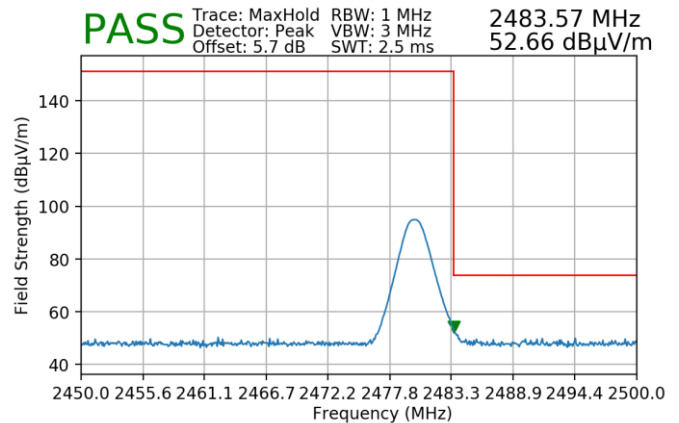
FCC ID: A3LSMS928JPN	MEASUREMENT REPORT (CERTIFICATION)		Approved by: Technical Manager
Test Report S/N: 1M2312110124-13.A3L	Test Dates: 1/11/2024-2/6/2024	EUT Type: Portable Handset	Page 127 of 138

Radiated Band Edge Measurement – ANT2

Worst Case Mode:	Bluetooth
Worst Case Data Rate:	1 Mbps
Measurement Distance:	3 Meters
Operating Frequency:	2480MHz
Channel:	78



Plot 7-179. Radiated Restricted Upper Band Edge Measurement (Average) – ANT2

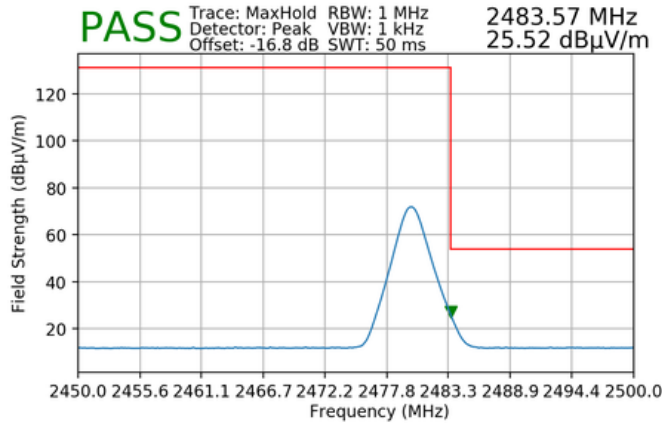


Plot 7-180. Radiated Restricted Upper Band Edge Measurement (Peak) – ANT2

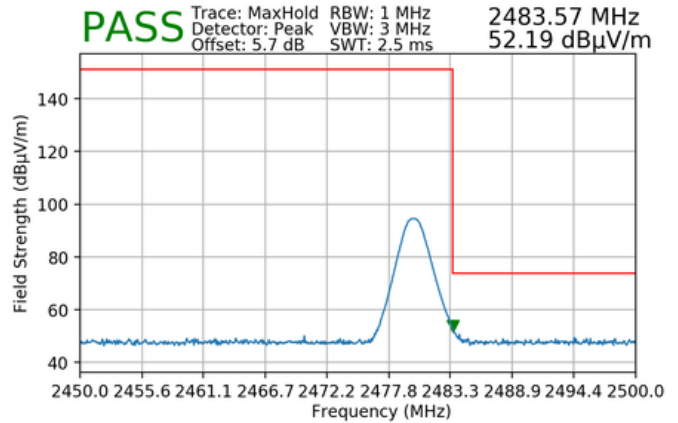
FCC ID: A3LSMS928JPN	MEASUREMENT REPORT (CERTIFICATION)		Approved by: Technical Manager
Test Report S/N: 1M2312110124-13.A3L	Test Dates: 1/11/2024-2/6/2024	EUT Type: Portable Handset	Page 128 of 138

Radiated Band Edge Measurement – Dual

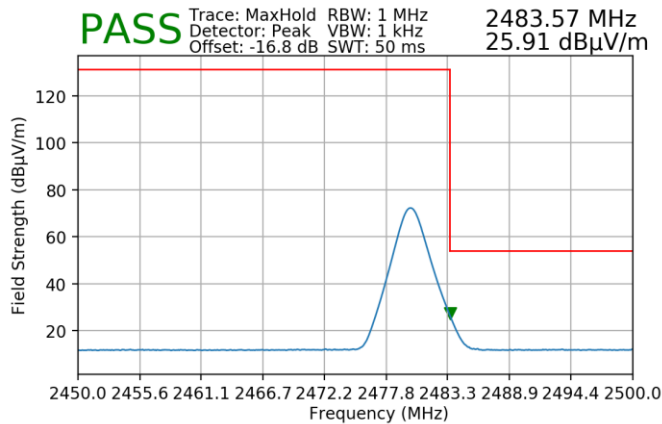
Worst Case Mode:	Bluetooth
Worst Case Data Rate:	3 Mbps
Measurement Distance:	3 Meters
Operating Frequency:	2480MHz
Channel:	78



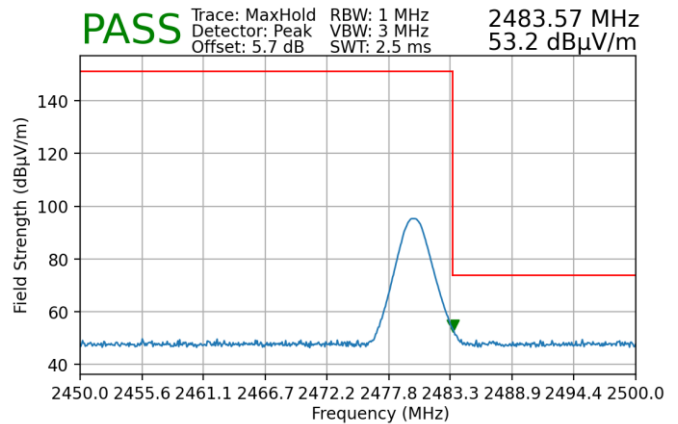
Plot 7-181. Radiated Restricted Upper Band Edge Measurement (Average) – Dual



Plot 7-182. Radiated Restricted Upper Band Edge Measurement (Peak) – Dual



Plot 7-183. Radiated Restricted Upper Band Edge Measurement (Average) – Dual – WPT



Plot 7-184. Radiated Restricted Upper Band Edge Measurement (Peak) – Dual – WPT

FCC ID: A3LSMS928JPN	MEASUREMENT REPORT (CERTIFICATION)		Approved by: Technical Manager
Test Report S/N: 1M2312110124-13.A3L	Test Dates: 1/11/2024-2/6/2024	EUT Type: Portable Handset	Page 129 of 138

7.11 Radiated Spurious Emissions Measurements – Below 1GHz

§15.209; 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 must not exceed the limits shown below per Section 15.209 and RSS-Gen (8.9).

Frequency	Field Strength [μV/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 7-26. 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: A3LSMS928JPN	MEASUREMENT REPORT (CERTIFICATION)		Approved by: Technical Manager
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Test Setup

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

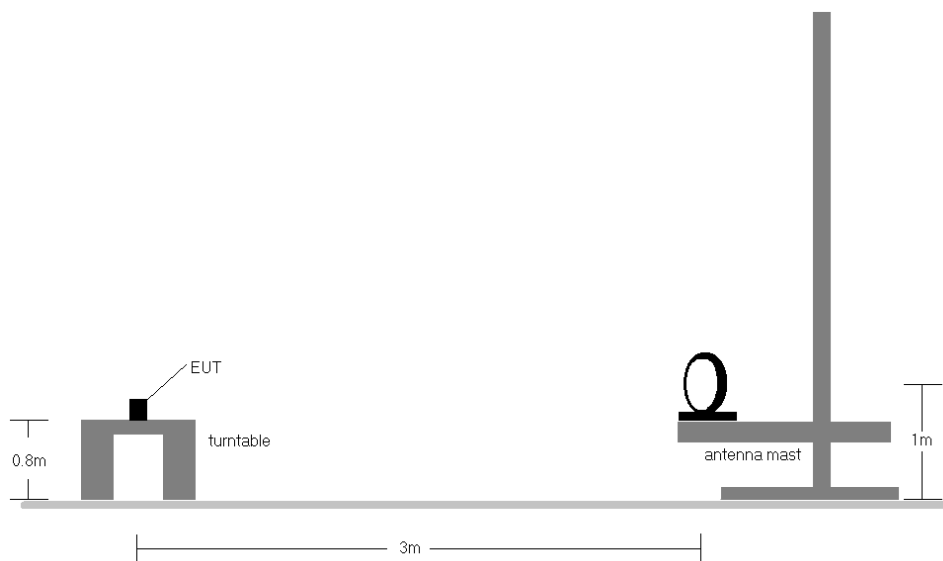


Figure 7-10. Radiated Test Setup < 30Mhz

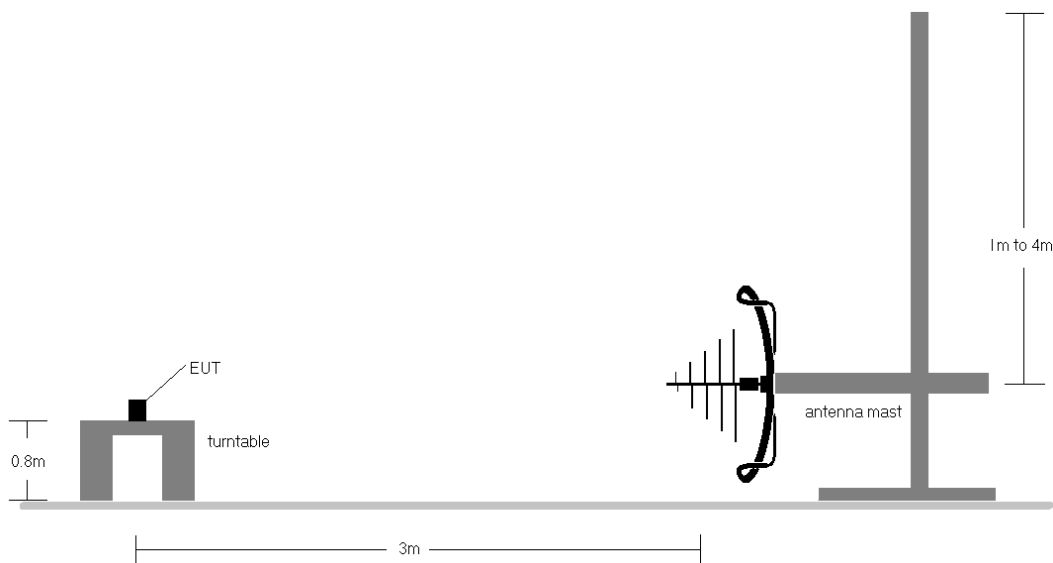


Figure 7-11. Radiated Test Setup < 1GHz

FCC ID: A3LSMS928JPN	MEASUREMENT REPORT (CERTIFICATION)		Approved by: Technical Manager
Test Report S/N: 1M2312110124-13.A3L	Test Dates: 1/11/2024-2/6/2024	EUT Type: Portable Handset	Page 131 of 138

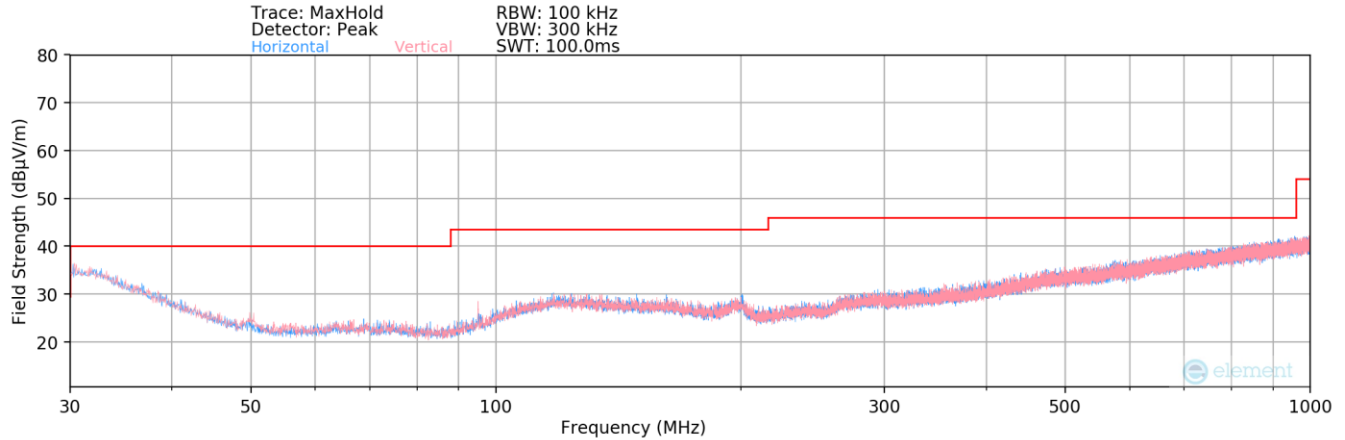
Test Notes

1. All emissions lying in restricted bands specified in §15.205 and RSS-Gen (8.10) are below the limits shown in §15.209.
2. The broadband receive antenna is manipulated through vertical and horizontal polarizations during the tests. The EUT is manipulated through three orthogonal planes.
3. This unit was tested with its standard battery.
4. 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.
5. Emissions were measured at a 3 meter test distance.
6. 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.
7. No spurious emissions were detected within 20dB of the limit below 30MHz.
8. 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.
9. 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.

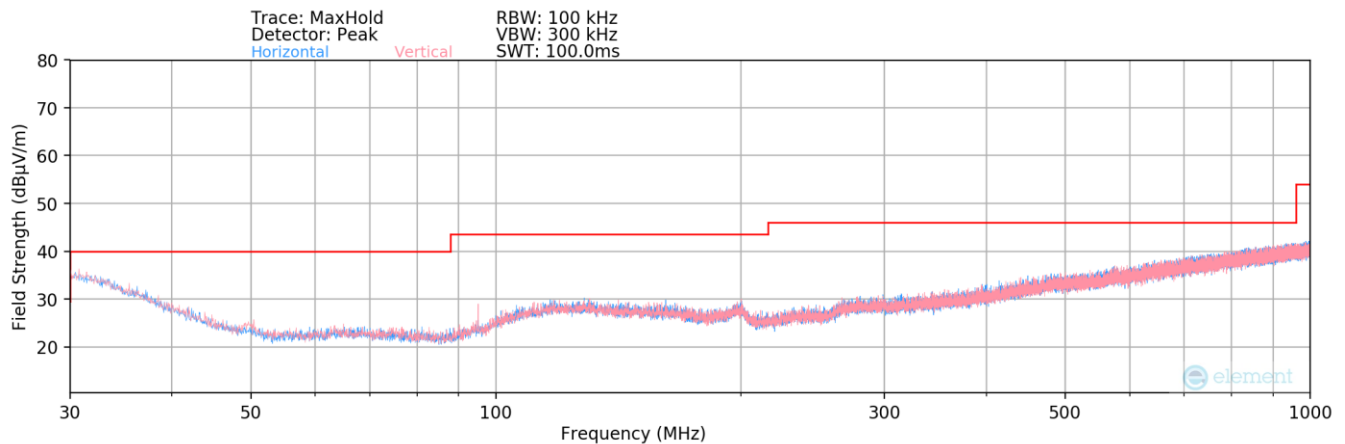
FCC ID: A3LSMS928JPN	MEASUREMENT REPORT (CERTIFICATION)		Approved by: Technical Manager
Test Report S/N: 1M2312110124-13.A3L	Test Dates: 1/11/2024-2/6/2024	EUT Type: Portable Handset	Page 132 of 138

Radiated Spurious Emissions Measurements (Below 1GHz)

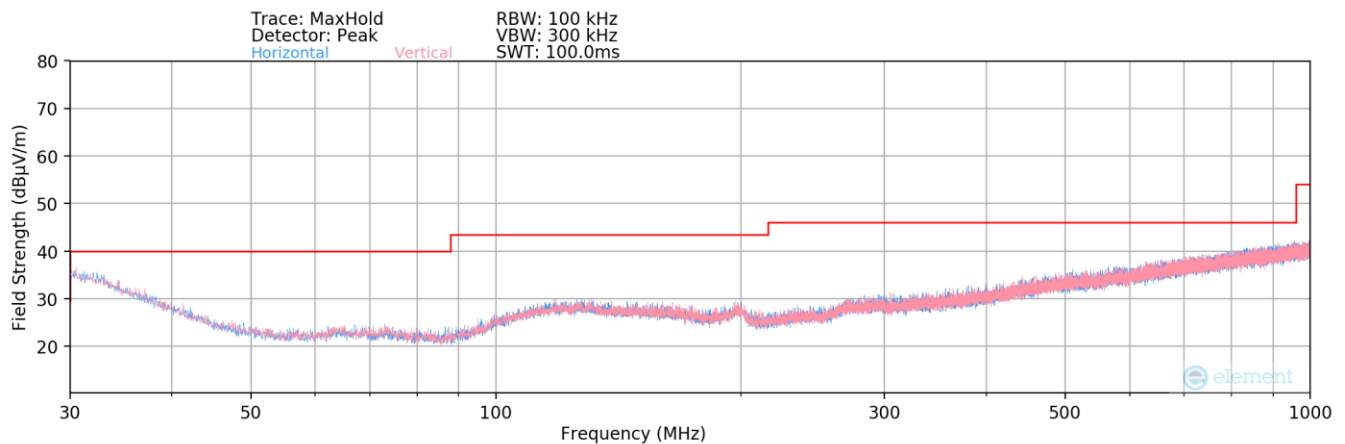
§15.209; RSS-Gen [8.9]



Plot 7-185. Radiated Spurious Plot below 1GHz – ANT1



Plot 7-186. Radiated Spurious Plot below 1GHz – ANT2



Plot 7-187. Radiated Spurious Plot below 1GHz – Dual

FCC ID: A3LSMS928JPN	MEASUREMENT REPORT (CERTIFICATION)		Approved by: Technical Manager
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7.12 Line Conducted Measurement Data

§15.207; RSS-Gen [8.8]

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 conducted emissions must not exceed the limits shown in the table below per Section 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 7-27. Conducted Limits

*Decreases with the logarithm of the frequency.

Test Procedures Used

ANSI C63.10-2013, Section 6.2

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

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Test Setup

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

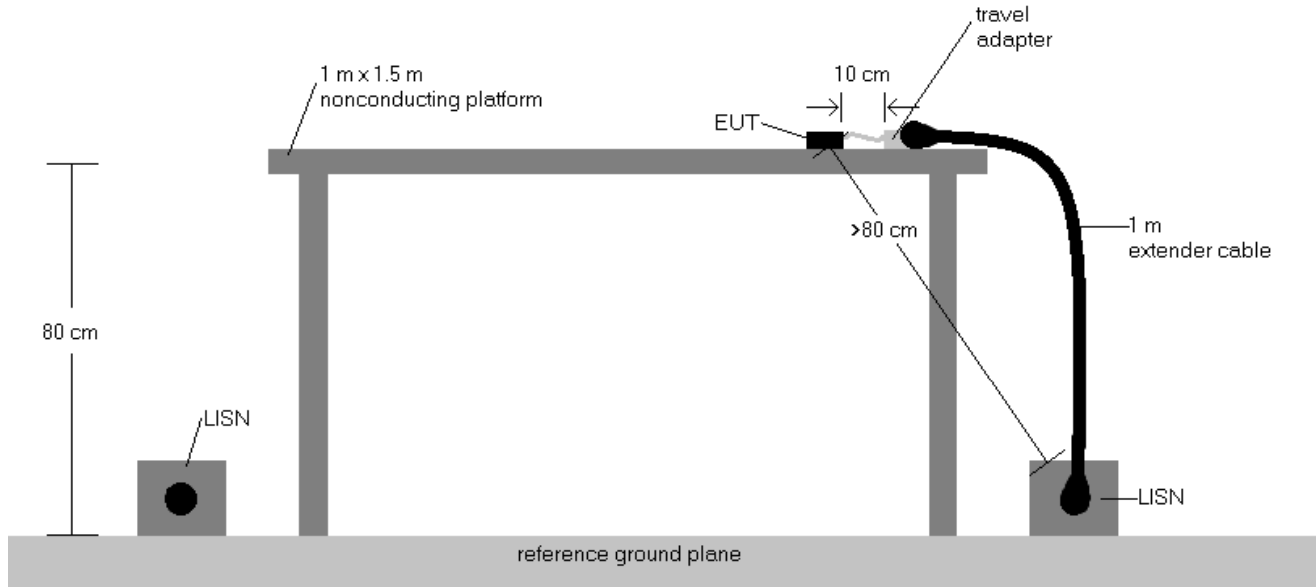
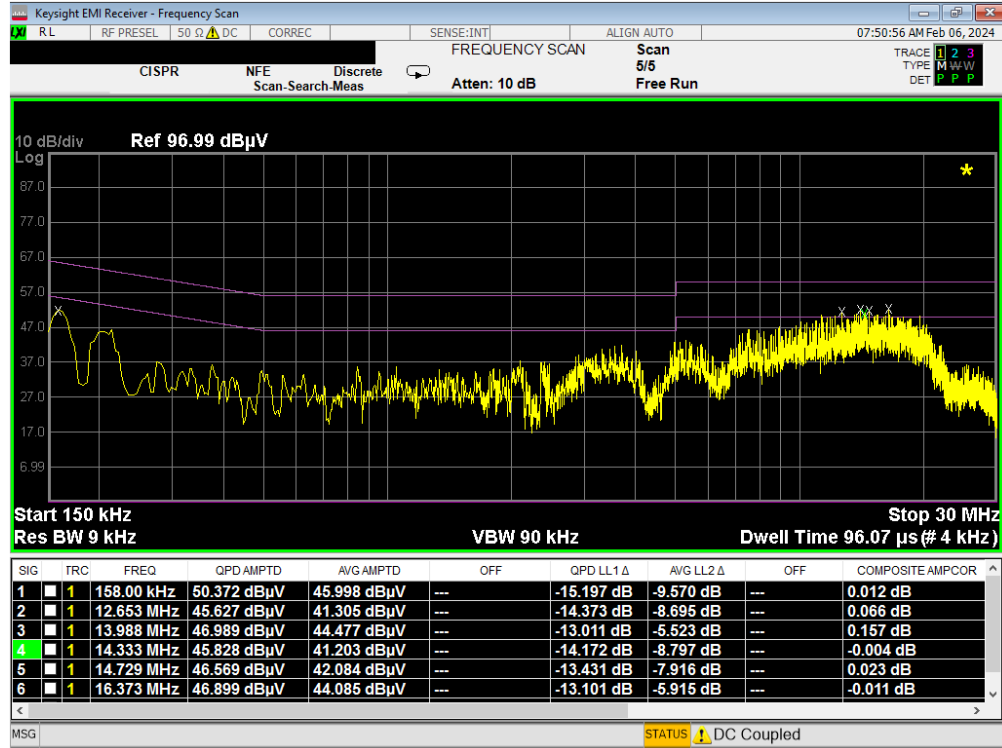


Figure 7-12. Test Instrument & Measurement Setup

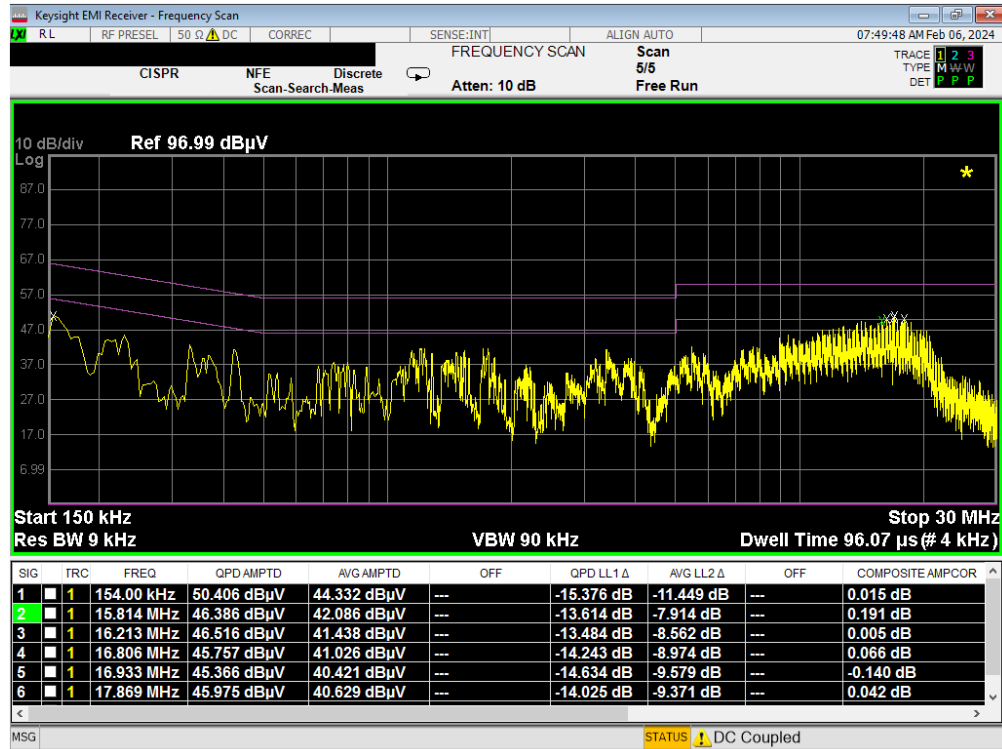
Test Notes

1. All modes of operation were investigated, and the worst-case emissions are reported using mid channel. The emissions found were not affected by the choice of channel used during testing.
2. The limit for an intentional radiator from 150kHz to 30MHz are specified in 15.207 and RSS-Gen (8.8).
3. $\text{Corr. (dB)} = \text{Cable loss (dB)} + \text{LISN insertion factor (dB)}$
4. $\text{QP/AV Level (dB}\mu\text{V)} = \text{QP/AV Analyzer/Receiver Level (dB}\mu\text{V)} + \text{Corr. (dB)}$
5. $\text{Margin (dB)} = \text{QP/AV Limit (dB}\mu\text{V)} - \text{QP/AV Level (dB}\mu\text{V)}$
6. Traces shown in plot are made using a peak detector.
7. Deviations to the Specifications: None.

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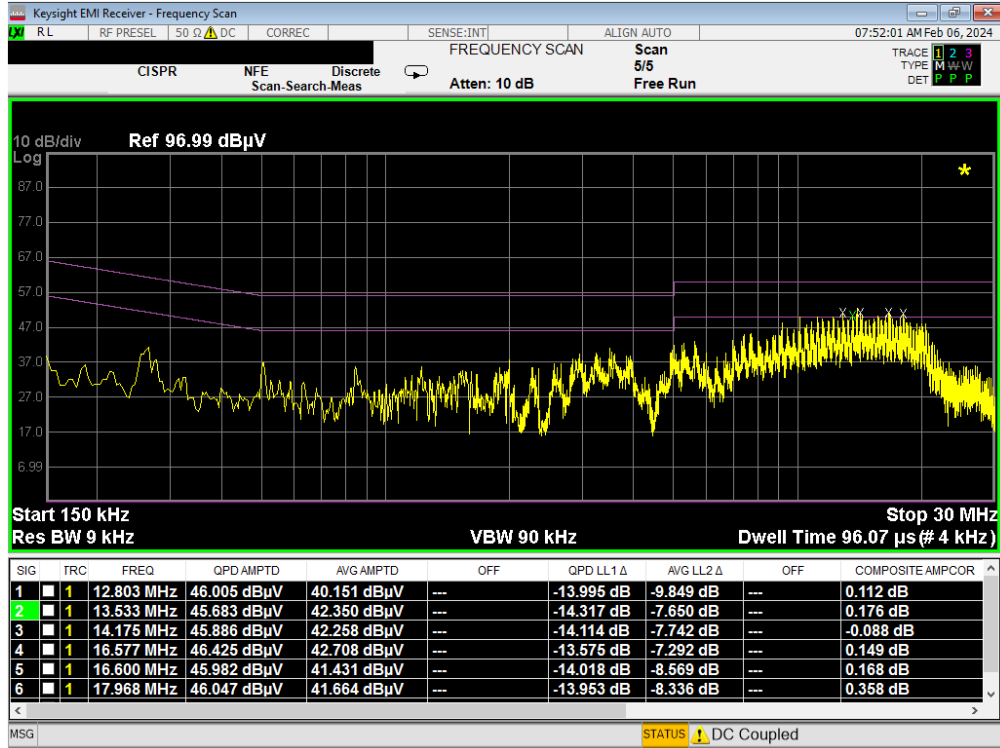


Plot 7-188. Line-Conducted Test Plot (L1)

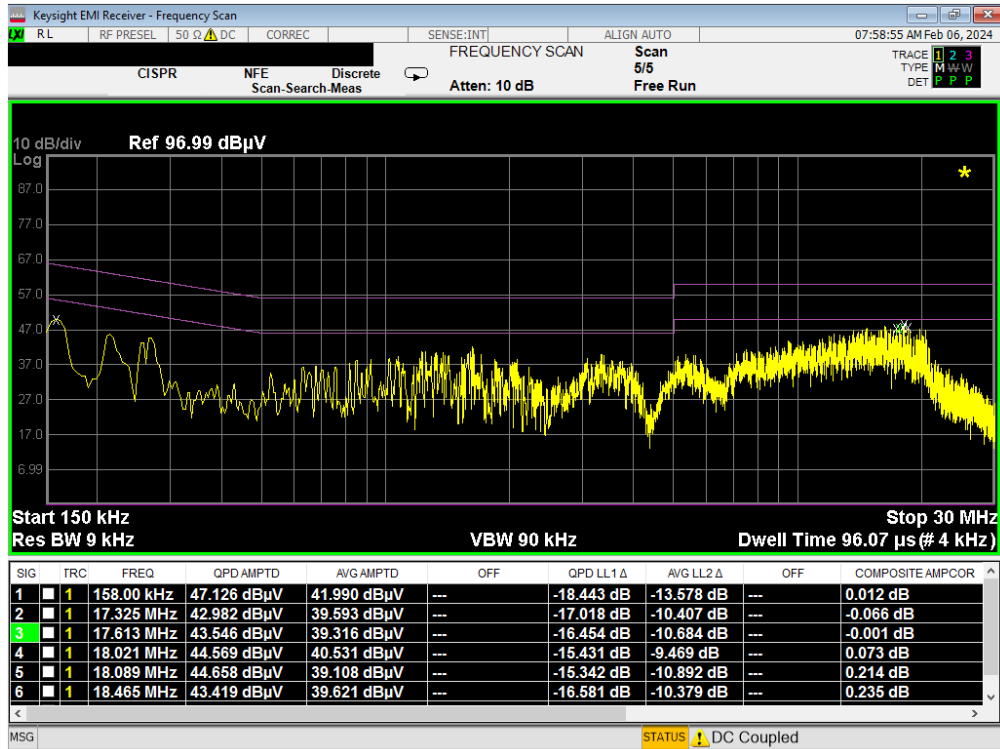


Plot 7-189. Line-Conducted Test Plot (N)

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Plot 7-190. Line-Conducted Test Plot (L1) – WPT



Plot 7-191. Line-Conducted Test Plot (N) – WPT

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8.0 CONCLUSION

The data collected relate only to the item(s) tested and show that the **Samsung Portable Handset FCC ID: A3LSMS928JPN** is in compliance with Part 15 Subpart C (15.247) of the FCC Rules.

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