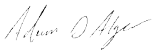
TR3882-BTC-Murata

Equipment Under Test:	Polaris Ride Command
Requirement(s):	eCFR 47 Part 15.247 | RSS-247
Test Date(s):	07/07/2025-08/25/2025
Prepared for:	Polaris Attn: Laura Zehnder 7290 E Viking Blvd. Wyoming, MN 55092

Report Issued by: Dylan Rosenfeldt, EMC Engineer

Signature:  Date: 09/30/2025

Report Reviewed by: Adam Alger, Sr. Manager EMC Laboratory

Signature:  Date: 09/24/2025

Report Constructed by: Dylan Rosenfeldt, EMC Engineer

Signature:  Date: 09/24/2025

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Ezurio Test Services in Review

The Ezurio laboratory located at W66 N220 Commerce Court Cedarburg, Wisconsin, 53012 USA is recognized through the following organizations:

Certificate #1255.01

A2LA – American Association for Laboratory Accreditation

Accreditation based on ISO/IEC 17025:2017 with Electrical (EMC) Scope

A2LA Certificate Number: 1255.01

Scope of accreditation includes all test methods listed herein unless otherwise noted

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Federal Communications Commission (FCC) – USA

Accredited Test Firm Registration Number: 953492

Recognition of two 3 meter Semi-Anechoic Chambers

Government of Canada

Innovation, Science and Economic Development Canada

Accredited U.S. Identification Number: US0218

Recognition of two 3 meter Semi-Anechoic Chambers

1 TEST REPORT SUMMARY

During **07/07/2025-08/25/2025** the Equipment Under Test (EUT), **Polaris Ride Command**, as provided by **Polaris** was tested to the following requirements:

FCC 15.247 | RSS-247 – FHSS Bluetooth Classic

Requirements	Description	Method	Compliant
15.247(d) 15.209 RSS-247 Clause 5.5 RSS-GEN Clause 8.10	Spurious Radiated Emissions in Restricted Bands 30-25000 MHz	ANSI C63.10	Yes
15.247(a)(1)(i) RSS-247 Clause 5.2 (a)	20dB and 99% Occupied Bandwidth	ANSI C63.10	Yes
15.247(b)(3) RSS-247 Clause 5.4 (d)	RF Output Power	ANSI C63.10	Yes
15.247 (a)(1)(i) RSS-247 Clause 5.1 (c)	Frequency Hopping Systems	ANSI C63.10	Yes
15.247(d) RSS-247 Clause 5.5 RSS-GEN A1 Clause 8.9	Out-of-band Emissions	ANSI C63.10	Yes
2.1055(d) RSS-GEN 6.11	Frequency Stability	ANSI C63.10	Reported

Notice:

The results relate only to the item tested as configured and described in this report. Any additional configurations, modes of operation, or modifications made to the equipment under test after the specified test date(s) are at the decision of the client and may not apply to the data seen in this test report.

The decision rule for Pass / Fail assessment to the specification or standard listed in this test report has been agreed upon by the client and laboratory to be as follows:

Measurement Type	Rule
Emissions – Amplitude	4.7 dB below specified limit
Emissions – Frequency	1% less than the specification
Immunity	Tested at specified level

2 CLIENT INFORMATION

Company Name	Polaris
Contact Person	Laura Zehnder
Address	7290 E Viking Blvd. Wyoming, MN 55092

2.1 Equipment Under Test (EUT) Information

The following information has been supplied by the client

Product Name	Polaris Ride Command
Model Number	RCIP-1040
Serial Number	Conducted Sample 1 & 2, Radiated Sample 1 & 2
FCC ID	2A0W7-RCIP-1040V1
IC ID	5966A-RCIP1040V1

2.2 Product Description

The Polaris Ride Command RCIP-1040 is an infotainment display. The display supports AM/FM/WB radio, Bluetooth connectivity, Wi-Fi connectivity, vehicle health/performance information, buddy tracking system [V2V] using LoRa Technology, GPS, maps, and camera output.

2.3 Modifications Incorporated for Compliance

None noted at time of test

2.4 Deviations and Exclusions from Test Specifications

None noted at time of test

2.5 EUT Information

Power Supply – 12V Automotive Battery or 13V supplied via Variable Power Supply

Firmware - Compliance HMI v1.5.1 & v1.7.0

Ancillary Equipment

HP Elitebook 840G1

2.6 Antenna Information

Manufacturer	Radio	Model / Part Number	Type	Peak Gain (dBi)	
				900-930 MHz	2400-2500 MHz
Amphenol	LoRa	SAA: SLB608-04-000-C-FD Polaris: 4019300	Coil	1.1	-
F3 Wireless	Infineon BT	-	Trace	-	7.4
F3 Wireless	Murata WLAN	-	Trace	-	4.7
F3 Wireless	Murata BT	-	Trace	-	4.7

2.7 Test Channels

Channel	Frequency (MHz)	Data Rates
0	2402	1Mbps, 2Mbps, 3Mbps
39	2441	
78	2480	

2.8 Power Table and Reduced Video Bandwidth for Average Measurements

Mode	Data Rate	Power Setting	Minimum Average VBW (Hz)
BR	1Mbps	12	10
EDR2	2Mbps	12	10
EDR3	3Mbps	12	10

3 REFERENCES

Publication	Edition	Date	AMD 1	AMD 2
FCC eCFR 47 Part 15	-	2025	-	-
ANSI C63.10	-	2020	-	-
RSS-247	3	2023	-	-
RSS-GEN	5	2018	2019	2021
KDB 558074 D01	-	2019	-	-

4 UNCERTAINTY SUMMARY

Using the guidance of the following publications the calculated measurement uncertainty represents an expanded uncertainty expressed at approximately the 95 % confidence level, using a coverage factor of k = 2.

References
CISPR 16-4-1
CISPR 16-4-2
CISPR 32
ANSI C63.23
A2LA P103
A2LA P103c
ETSI TR 100-028

Measurement Type	Configuration	Uncertainty ±
Radiated Emissions	Biconical Antenna	5.0 dB
Radiated Emissions	Log Periodic Antenna	5.3 dB
Radiated Emissions	Horn Antenna	4.7 dB
AC Line Conducted Emissions	Artificial Mains Network	3.4 dB
Telecom Conducted Emissions	Asymmetric Artificial Network	4.9 dB
Disturbance Power Emissions	Absorbing Clamp	4.1 dB
Radiated Immunity	3 Volts/meter	2.2 dB
Conducted Immunity	CDN/EM/BCI	2.4/3.5/3.4 dB
EFT Burst/Surge	Peak pulse voltage	164 volts
ESD Immunity	15 kV level	1377 Volts

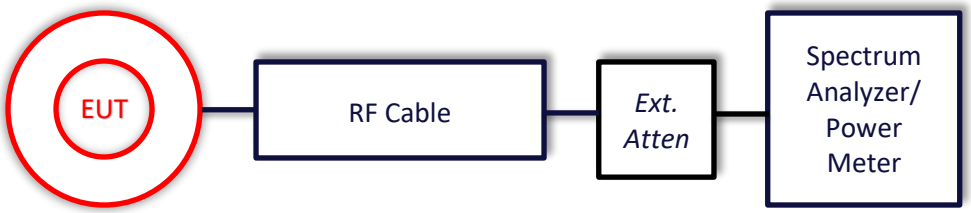
Parameter	ETSI U.C. ±	U.C. ±
Radio Frequency, from F0	$1x10^{-7}$	$0.55x10^{-7}$
Occupied Channel Bandwidth	5 %	2 %
RF conducted Power (Power Meter)	1.5 dB	1.2 dB
RF conducted emissions (Spectrum Analyzer)	3.0 dB	1.7 dB
All emissions, radiated	6.0 dB	5.3 dB
Temperature	1° C	0.65° C
Humidity	5 %	2.9 %
Supply voltages	3 %	1 %

5 TEST DATA

5.1 Antenna Port Conducted Emissions

Description of Measurement	The direct measurement of emissions at the antenna port of the EUT is achieved by use of a RF connection to a spectrum analyzer or power meter. The cable and attenuator factors are loaded into the analyzer or power meter allowing for direct measurement readings without the need for further corrections.
Example Calculations	Measurement (dBm) + Cable factor (dB) + External Attenuator (dB) = Corrected Reading (dBm) Margin (dB) = Limit (dBm) – Corrected Reading (dBm)

Block Diagram



5.1.1 20dB and 99% Occupied Bandwidth

Operator	Dylan Rosenfeldt	**QA**	Jon Dilley
Temperature	22.7°C, 23.2°C	**R.H. %**	49.1%, 47.1%
Test Date	7/8/2025, 7/10/2025	**Location**	RF Bench
Requirement	15.247 (a)(2) RSS-247 6.2.1	**Method**	ANSI C63.10 6.9

Test Parameters

Frequency	2400-2483.5 MHz	**Setup**	Antenna Port
RBW	27kHz	**VBW**	270kHz
Detector(s)	Peak	**Settings**	Max Hold

Instrumentation

Asset #	Description	Manufacturer	Model #	Serial #	Date	Due Date	Status
AA 960172	Cable	A.H. Systems, Inc.	SAC-26G-1	387	1/28/2025	1/28/2026	Active Verification
EE 960087	Analyzer - Spectrum	Agilent	N9010A	MY53400296	6/1/2025	6/1/2026	Active Calibration

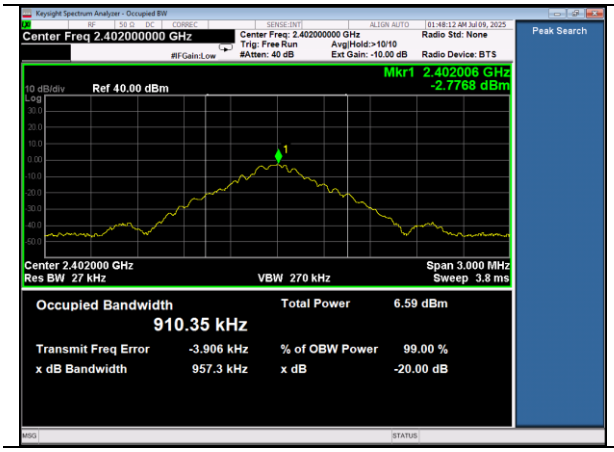
EUT Parameters

Input Power	12VDC	**Mode**	BTC Tx
Frequency	2400-2483.5 MHz	**Channel**	See 2.7

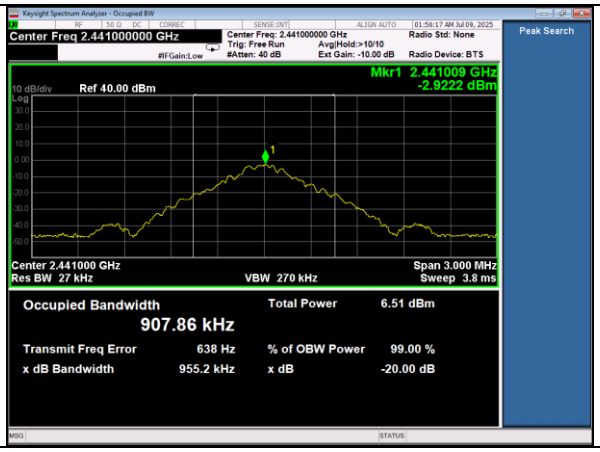
Table

Mode	Rate	Channel	99% BW (kHz)	20dB BW (kHz)
BR	1Mbps	0	910	957
		39	908	955
		78	914	955
EDR2	2Mbps	0	1237	1394
		39	1238	1394
		78	1251	1409
EDR3	3Mbps	0	1236	1383
		39	1238	1384
		78	1251	1395

Plots

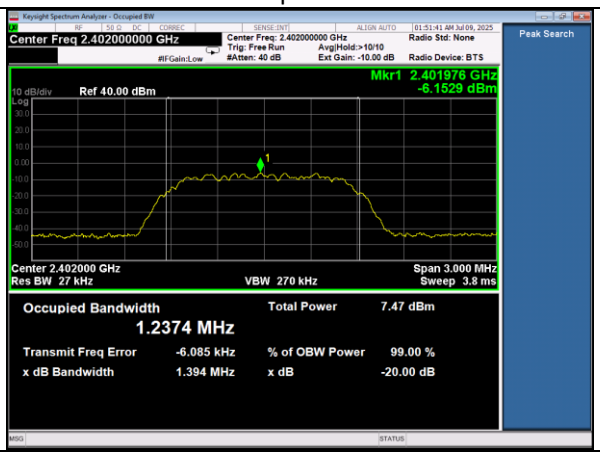


BR | Ch 0

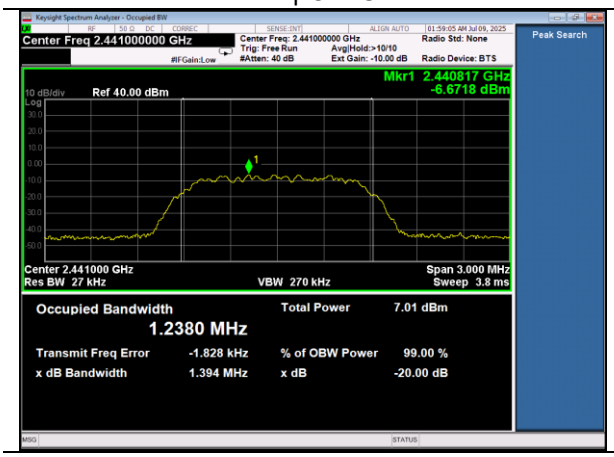


BR | Ch 39

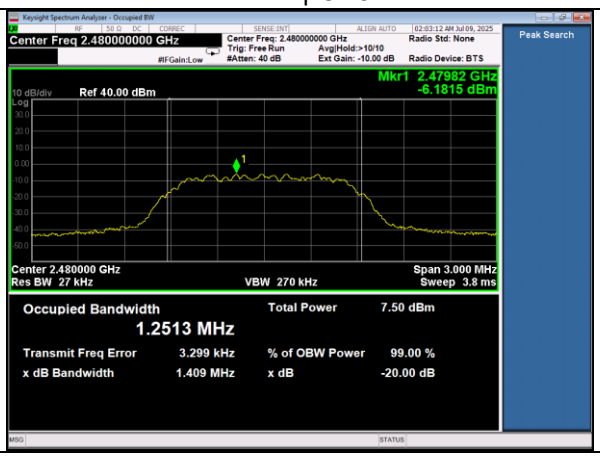
BR | Ch 78



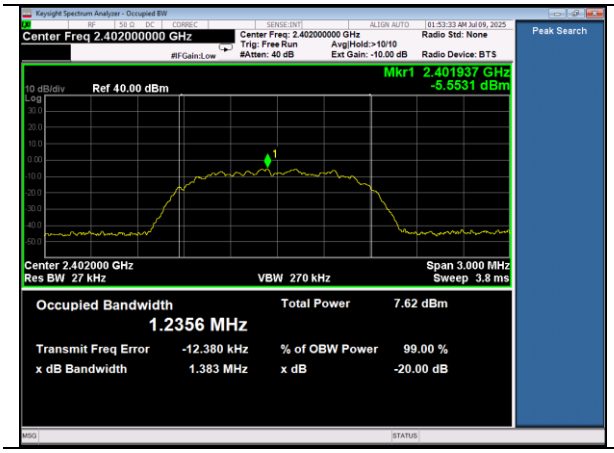
EDR2 | Ch 0



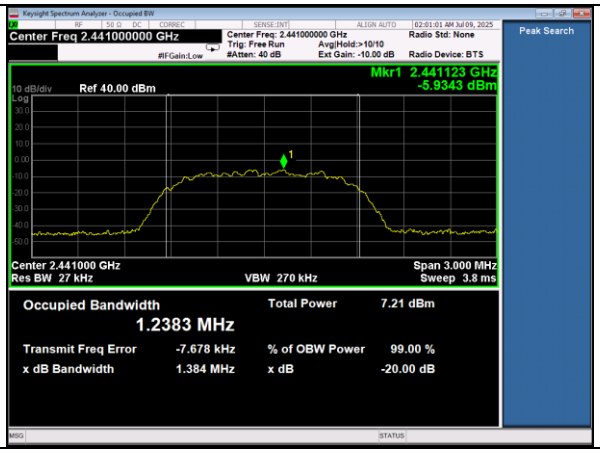
EDR2 | Ch 39



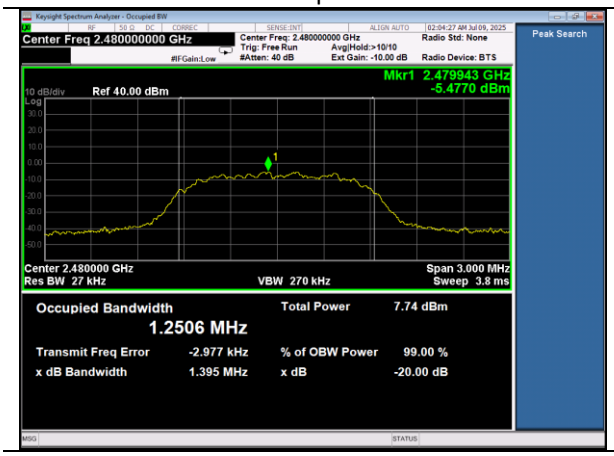
EDR2 | Ch 78



EDR3 | Ch 0



EDR3 | Ch 39



EDR3 | Ch 78

5.1.2 RF Output Power

Operator	Dylan Rosenfeldt	**QA**	Jon Dilley
Temperature	23.2°C	**R.H. %**	47.80%
Test Date	7/8/2025	**Location**	Conducted RF Bench
Requirement	15.247 (b)(2) RSS-247 6.2.2.2	**Method**	ANSI C63.10 7.8.5

Limit: The maximum peak conducted output power of the intentional radiator shall not exceed 1 Watt.

Test Parameters

Frequency	2400-2483.5 MHz	**Setup**	Antenna Port
RBW	3MHz	**VBW**	3MHz
Detector(s)	Peak	**Settings**	Max Hold

Instrumentation

Asset #	Description	Manufacturer	Model #	Serial #	Date	Due Date	Status
AA 960172	Cable	A.H. Systems, Inc.	SAC-26G-1	387	1/28/2025	1/28/2026	Active Verification
EE 960087	Analyzer - Spectrum	Agilent	N9010A	MY53400296	6/1/2025	6/1/2026	Active Calibration

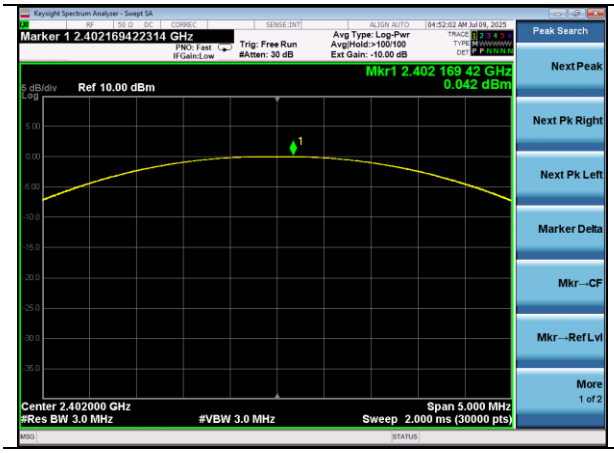
EUT Parameters

Input Power	12VDC	**Mode**	BTC Tx
Frequency	2400-2483.5 MHz	**Channel**	See 2.7

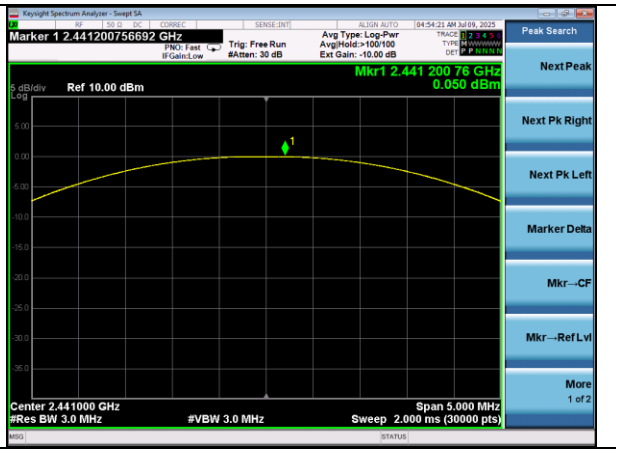
Tables

Channel	Mode	Pk Output Power (dBm)	Limit (dBm)	Margin (dB)	Power Setting
0	BR	0.0	30	30.0	12
0	EDR2	2.8	30	27.2	12
0	EDR3	3.2	30	26.8	12
39	BR	0.1	30	29.9	12
39	EDR2	2.8	30	27.2	12
39	EDR3	3.2	30	26.8	12
78	BR	0.4	30	29.6	12
78	EDR2	2.9	30	27.1	12
78	EDR3	3.3	30	26.7	12

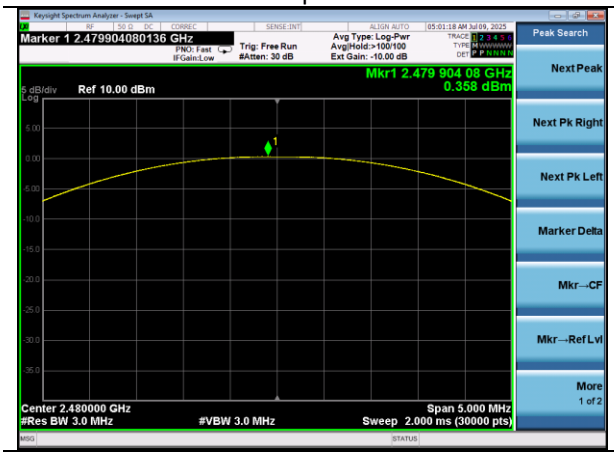
Plots



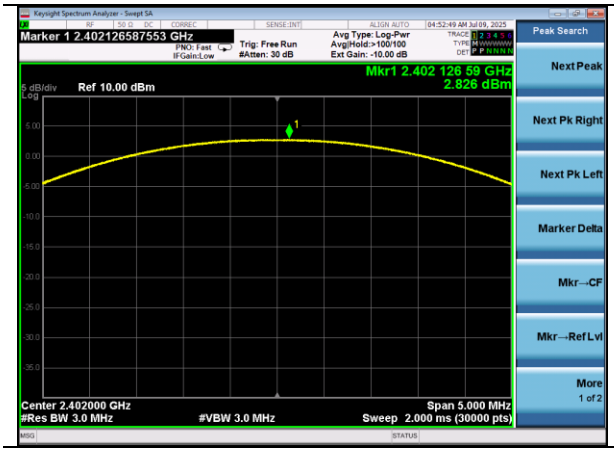
BR | ch 0



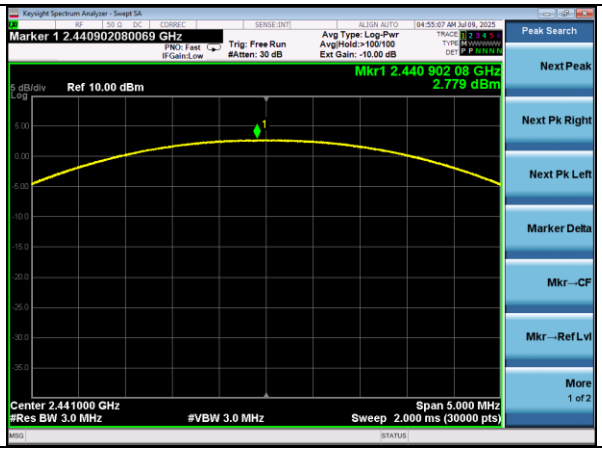
BR | ch 39



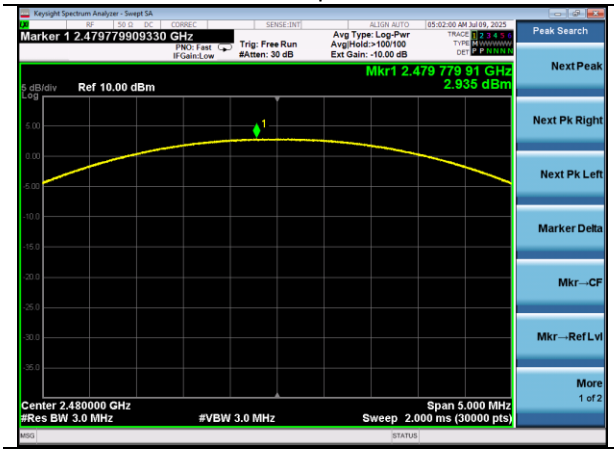
BR | ch 78



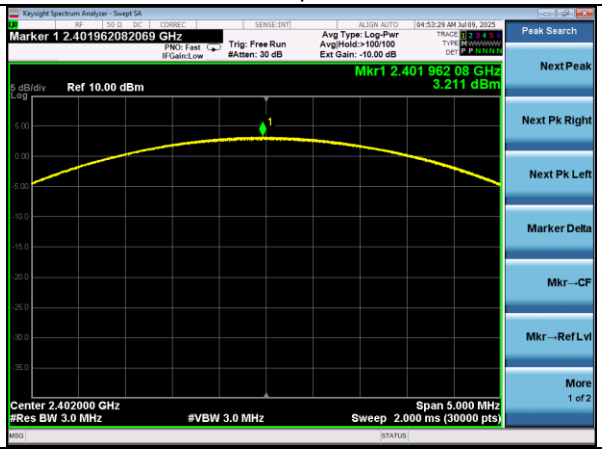
EDR2 | ch 0



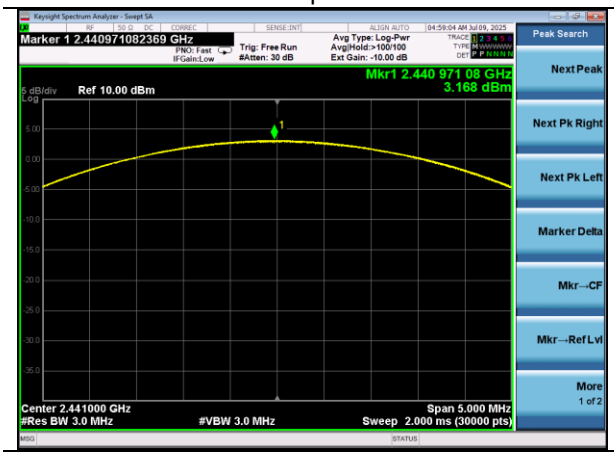
EDR2 | ch 39



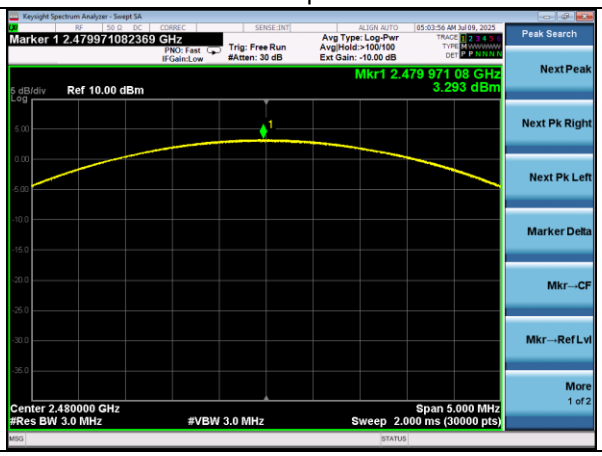
EDR2 | ch 78



EDR3 | ch 0



EDR3 | ch 39



EDR3 | ch 78

5.1.3 Frequency Hopping Systems

Operator	Dylan Rosenfeldt	**QA**	Anthony Smith
Temperature	22.3°C	**R.H. %**	51.70%
Test Date	7/11/2025	**Location**	Conducted RF Bench
Requirement	15.247a(1), f RSS-247 6.2.2.1, 6.2.3.1	**Method**	ANSI C63.10 7.8.2 - 7.8.4

Limits:

Carrier separation: At least 2/3 of 20dB BW

Number of Channels: At Least 15 channels

Time of Occupancy: no greater than 0.4s in a period of 0.4s multiplied by the number of channels

Test Parameters

Frequency	2400-2483.5 MHz	**Setup**	Antenna Port
RBW	200kHz, 300kHz	**VBW**	200kHz, 300kHz
Detector(s)	Peak	**Settings**	Max Hold

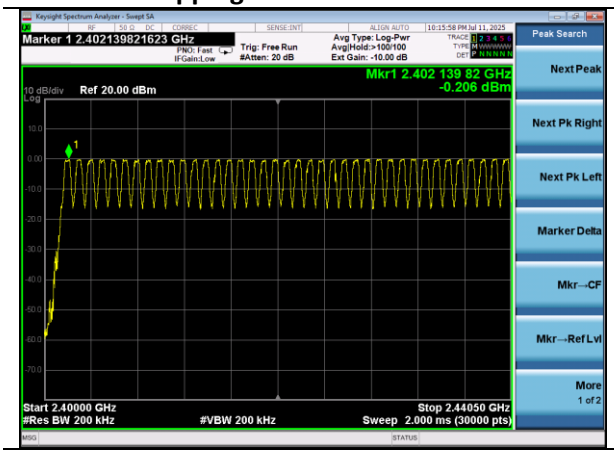
Instrumentation

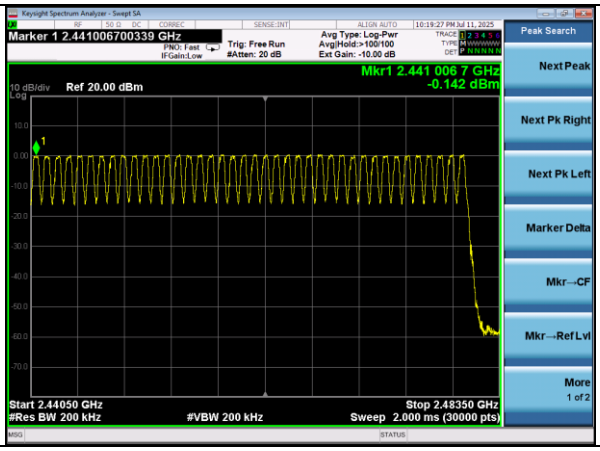
Asset #	Description	Manufacturer	Model #	Serial #	Date	Due Date	Status
AA 960172	Cable	A.H. Systems, Inc.	SAC-26G-1	387	1/28/2025	1/28/2026	Active Verification
EE 960087	Analyzer - Spectrum	Agilent	N9010A	MY53400296	6/1/2025	6/1/2026	Active Calibration

EUT Parameters

Input Power	12VDC	**Mode**	BTC Hopping TX
Frequency	2400-2483.5 MHz	**Channels**	0-78

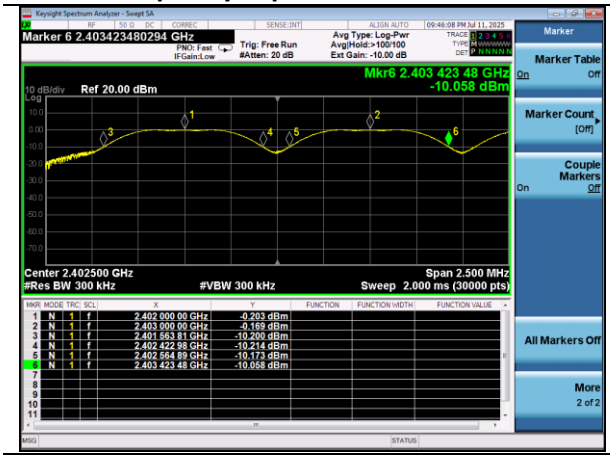
Number of Hopping Channels





2400-2440.5 MHz | 39 channels	2440.5-2483.5 MHz | 40 channels
79 total channels	

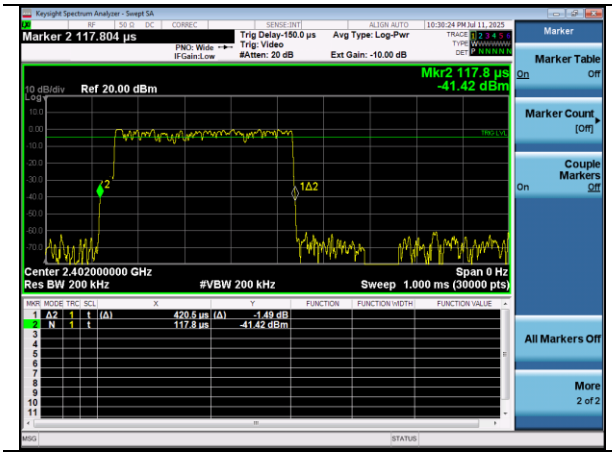
Channel Frequency Separation



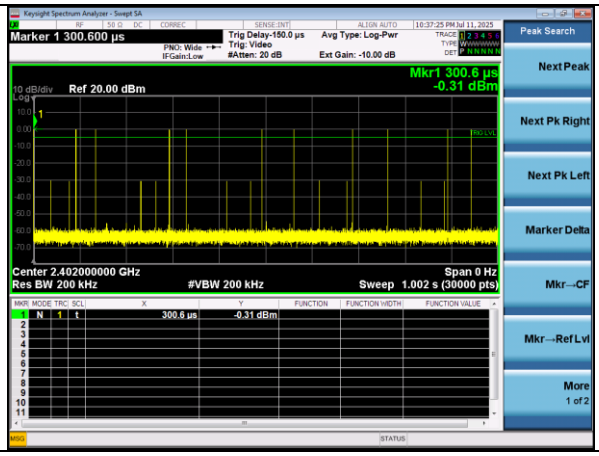
Channel Separation between channel 0 & 1

Channel	Mode	Frequency (MHz)	Frequency seperation (kHz)	Limit (2/3 20dB BW) (kHz)	Margin (kHz)
0 & 1	Hopping BR	2402.50	1000.8	939.8	61.0

Dwell Time



Dwell Time 420.5µs



11 hops per second

Channel	Mode	Frequency (MHz)	dwell time (us)	Average Hops / 1s	Average Occupancy Time per 31.6s (ms)	Limit (ms)	Margin (ms)
0	Hopping	2402.0	420.5	11.0	146.2	400	253.8

5.1.4 Emissions in Non-Restricted Frequency Bands

Operator	Dylan Rosenfeldt	**QA**	Anthony Smith
Temperature	22.7°C, 22.8°C	**R.H. %**	52.4%, 51.2%
Test Date	7/9/2025, 7/10/2025	**Location**	Conducted RF Bench
Requirement	15.247(d) RSS-247 6.6	**Method**	ANSI C63.10 11.11

Limits: -20dBc

Reference Level (Worst Case PSD)

Channel 78 – EDR3 (-1.3 dBm/100 kHz)

-1.3 dBm-20 dB = -21.3 dBm Limit

Test Parameters

Frequency	30-25000 MHz	**Setup**	Antenna Port
RBW	100 kHz	**VBW**	300 kHz
Detector(s)	Peak		

Instrumentation

Asset #	Description	Manufacturer	Model #	Serial #	Date	Due Date	Status
AA 960172	Cable	A.H. Systems, Inc.	SAC-26G-1	387	1/28/2025	1/28/2026	Active Verification
EE 960087	Analyzer - Spectrum	Agilent	N9010A	MY53400296	6/1/2025	6/1/2026	Active Calibration

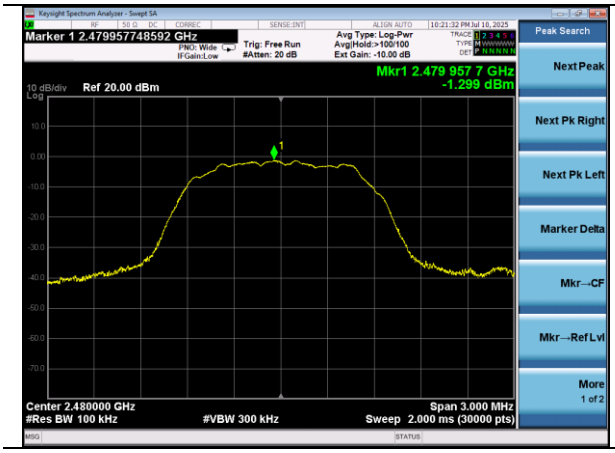
EUT Parameters

Input Power	12VDC	**Mode**	BTC Tx
Frequency	2400-2483.5 MHz	**Channel**	See 2.7

Measurements

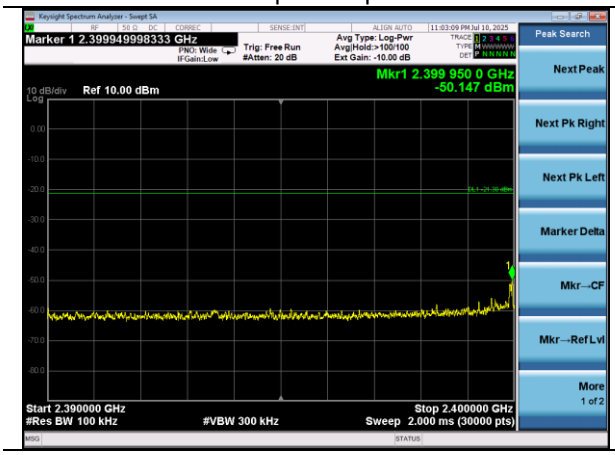
Channel	Mode	Frequency (MHz)	Measurement (dBm)	Limit (dBm)	Margin (dB)	pwr setting
0	EDR2	2399.9	-52.8	-21.3	31.5	12
0	EDR3	2400.0	-50.1	-21.3	28.8	12
19	BR	24126.8	-51.9	-21.3	30.6	12
39	EDR2	2483.8	-58.5	-21.3	37.2	12
39	EDR3	2484.2	-57.5	-21.3	36.2	12

Worst Case Plots

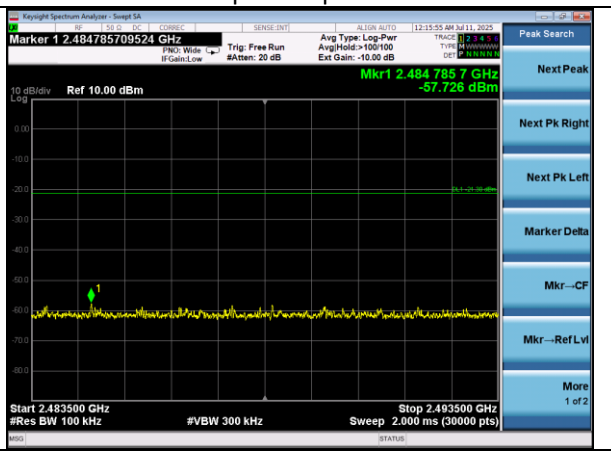


Channel 78 | EDR3 | Reference

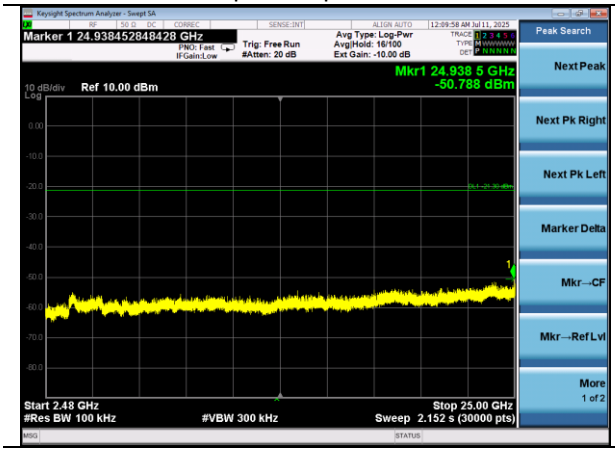
Channel 0 | EDR3 | 30-2400 MHz



Channel 0 | EDR3 | 2390-2400 MHz



Hopping | BR | 2483.5-2493.5 MHz



Channel 78 | EDR3 | 2483.5-25000 MHz

5.1.5 Frequency Stability

Operator	Dylan Rosenfeldt	**QA**	Anthony Smith
Temperature	22.3°C	**R.H. %**	54.1%
Test Date	8/25/2025	**Location**	Conducted RF Bench
Requirement	2.1055(d) RSS-GEN Clause 6.11	**Method**	ANSI C63.10 6.8

Test Parameters

Frequency	2400-2483.5 MHz	**Voltage**	12.0, 10.2, 13.8 VDC
Detector(s)	Peak	**Settings**	Max Hold
Notes	DC power supply used for voltage variation.		

Instrumentation

Asset #	Description	Manufacturer	Model #	Serial #	Date	Due Date	Status
AA 960172	Cable	A.H. Systems, Inc.	SAC-26G-1	387	1/28/2025	1/28/2026	Active Verification
EE 960087	Analyzer - Spectrum	Agilent	N9010A	MY53400296	6/1/2025	6/1/2026	Active Calibration

EUT Parameters

Input Power	12VDC	**Mode**	CW Tx
Frequency	2400-2483.5 MHz	**Channel**	See 2.7

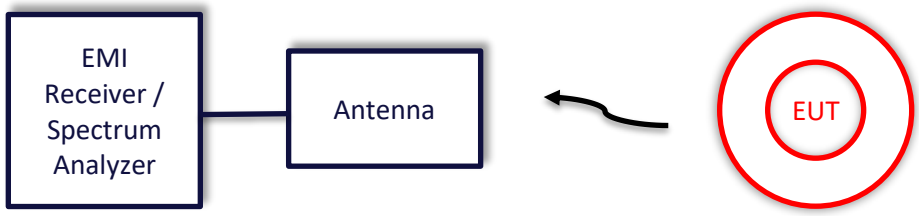
Table

Channel	Voltage (VDC)	Center Frequency (Hz)
0	12.0	2401998169
	13.8	2401998151
	10.2	2401998164
39	12.0	2441002320
	13.8	2441002446
	10.2	2441002410
78	12.0	2480006883
	13.8	2480006798
	10.2	2480006741

5.2 Radiated Emissions

Description of Measurement	The frequency spectrum is investigated for intentional and / or unintentional signals emanating from the EUT by use of a standardized test site and measurement antenna. The antenna, cable, pre-amp, and other necessary measurement system correction factors are loaded onto the EMI receiver / spectrum analyzer when the measurements are performed allowing the data to be gathered and reported as corrected values. The maximum emissions from the EUT are determined by turn-table azimuth rotation (360°) and scanning of the measurement antenna. Maximized levels are noted at degree values of azimuth, measurement antenna height, and measurement antenna polarity.
Example Calculations	Measurement (dBµV) + Cable factor (dB) + Other (dB) + Antenna Factor (dB/m) = Corrected Reading (dBµV/m) Margin (dB) = Limit (dBµV/m) - Corrected Reading (dBµV/m) Example at 4000 MHz: Reading = 40 dBµV + 3.4 dB + 0.9 dB + 6.5 dB/m = 50.8 dBµV/m Average Limit = 20 log (500) = 54 dBµV/m Margin = 54 dBµV/m - 50.8 dBµV/m = 3.2 dB

Block Diagram



5.2.1 Spurious Radiated Emissions in the Restricted Bands

Operator	Jon Dilley	**QA**	Dylan Rosenfeldt
Temperature	23.3°C	**R.H. %**	48.7%
Test Date	7/10/2025	**Location**	Chamber 5
Requirement	15.247 (d) | 15.209 RSS-247 Clause 5.5 RSS-GEN Clause 8.10	**Method**	ANSI C63.10 11.12

15.209 Limits:

Frequency (MHz)	Quasi-Peak Limit (dBµV/m)	Average Limit (dBµV/m)	Peak Limit (dBµV/m)
30-88	40.0	-	-
88-216	43.5	-	-
216-960	46.0	-	-
960-1000	54.0	-	-
1000-40000	-	54.0	74.0

Test Parameters

Frequency	30-25000 MHz	**Distance**	3 m
Detector(s)	Peak Trace Peak and Average Final	**Table height**	<1000 MHz – 80cm >1000 MHz – 150 cm
RBW	<1000 MHz – 120 kHz >1000 MHz – 1 MHz	**VBW**	<1000 – 1.2 MHz >1000 MHz – 3MHz | See 2.8

Instrumentation

Asset #	Description	Manufacturer	Model #	Serial #	Date	Due Date	Status
AA 960081	Antenna - Double Ridge Horn	EMCO	3115	6907	1/8/2025	1/8/2026	Active Calibration
AA 960210	Antenna - Low Noise Amplifier	Mini-Circuits	ZVA-213X-S+	037101808	1/8/2025	1/8/2026	Active Calibration
AA 960194	Antenna - Biconical	A.H. Systems, Inc.	SAS-540	780	12/9/2024	12/9/2025	Active Calibration
AA 960195	Antenna - Log Periodic	A.H. Systems, Inc.	SAS-512-2	557	11/22/2024	11/23/2025	Active Calibration
LSC-500	Cable	Chamber 5 Emissions	-	-	1/27/2025	1/27/2026	Active Verification
AA 960154	Filter - High Pass 2.4 GHz	KWM	HPF-L-14186	7272-02	4/3/2025	4/3/2026	Active Calibration
AA 960174	Antenna - Small Horn	ETS Lindgren	3116C-PA	00206880	12/2/2024	12/2/2025	Active Calibration
AA 960220	Cable	A.H. Systems, Inc.	SAC-26G-6	552	1/28/2025	1/28/2026	Active Verification
EE 960085	Analyzer - EMI Receiver	Agilent	N9038A	MY51210148	4/3/2025	4/3/2026	Active Calibration

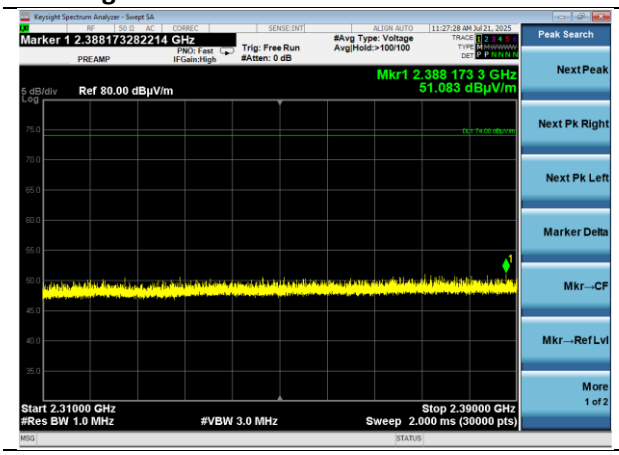
EUT Parameters

Input Power	13VDC	**Mode**	BTC Tx
AE	Cameras, AM/FM Antenna, USB cable	**Channels**	See 2.7
Notes	Cameras not connected during testing, power supplied by variable DC supply		

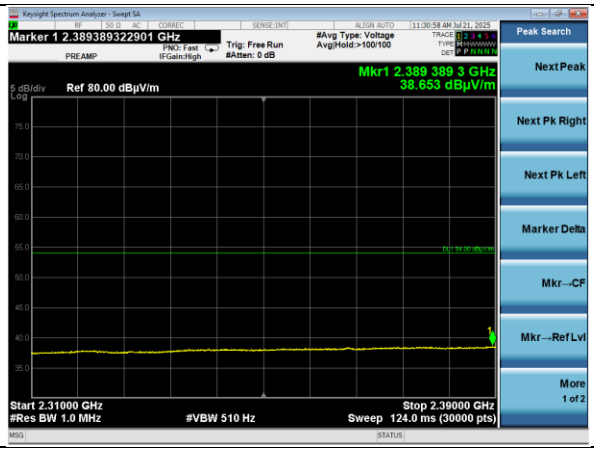
Band Edge Radiated Emissions

Frequency (MHz)	Polarity	Reading (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Measurement	Data Rate	Power Setting	Channel
2388.2	Vertical	51.1	74.0	22.9	Pk	1Mbps	12	0
2389.4	Vertical	38.7	54.0	15.3	Avg	1Mbps	12	0
2383.0	Vertical	51.2	74.0	22.8	Pk	2Mbps	12	0
2376.5	Vertical	38.8	54.0	15.2	Avg	2Mbps	12	0
2377.3	Vertical	51.3	74.0	22.7	Pk	3Mbps	12	0
2388.5	Vertical	38.9	54.0	15.1	Avg	3Mbps	12	0
2483.7	Vertical	53.4	74.0	20.6	Pk	1Mbps	12	78
2483.5	Vertical	41.9	54.0	12.1	Avg	1Mbps	12	78
2483.6	Vertical	57.9	74.0	16.1	Pk	2Mbps	12	78
2483.5	Vertical	40.2	54.0	13.8	Avg	2Mbps	12	78
2483.5	Vertical	60.9	74.0	13.1	Pk	3Mbps	12	78
2483.5	Vertical	43.4	54.0	10.6	Avg	3Mbps	12	78

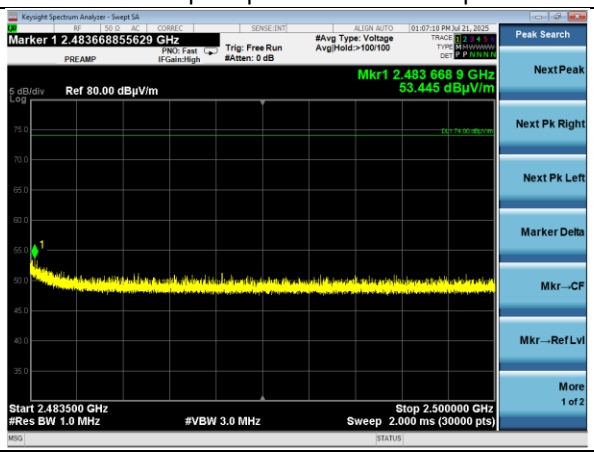
Band Edge Plots



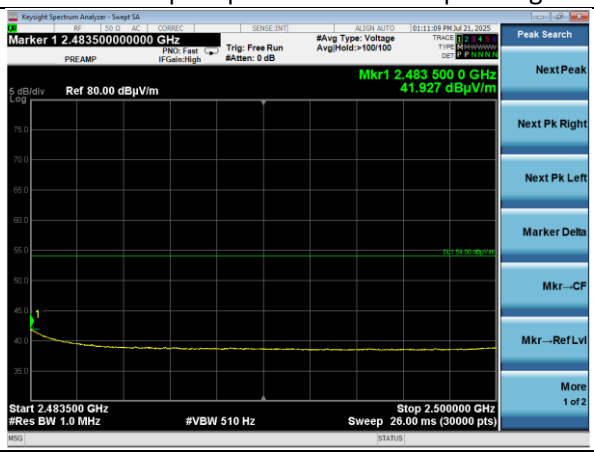
Channel 0 | BR | 2310-2390 MHz | Peak



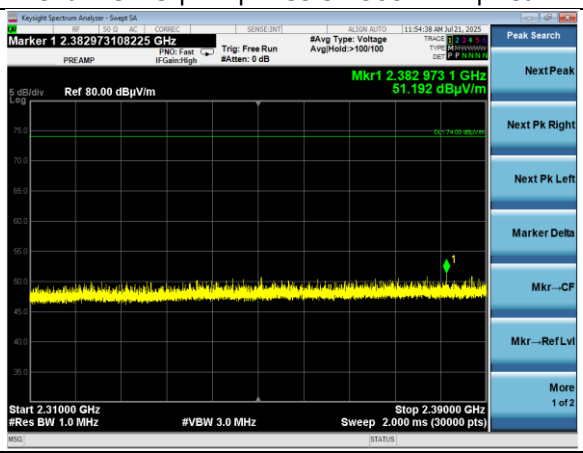
Channel 0 | BR | 2310-2390 MHz | Average



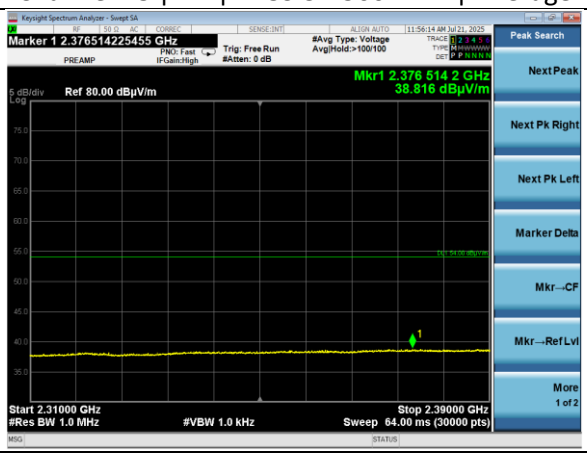
Channel 78 | BR | 2483.5-2500 MHz | Peak



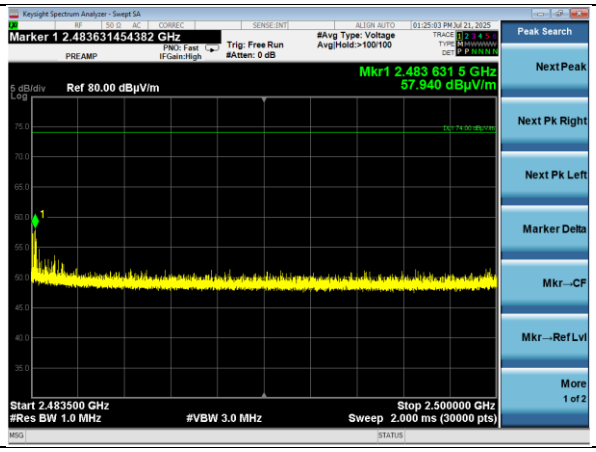
Channel 78 | BR | 2483.5-2500 MHz | Average



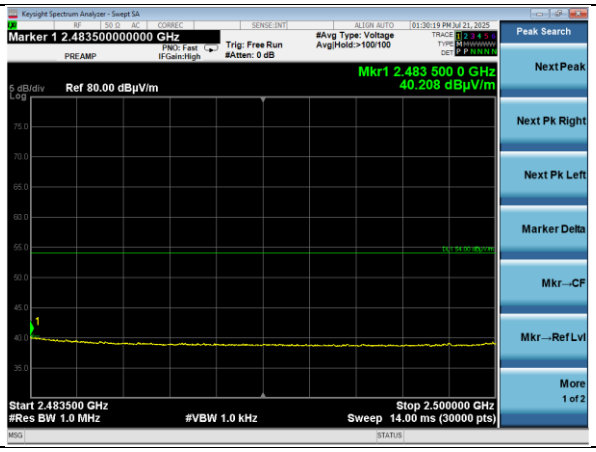
Channel 0 | EDR2 | 2310-2390 MHz | Peak



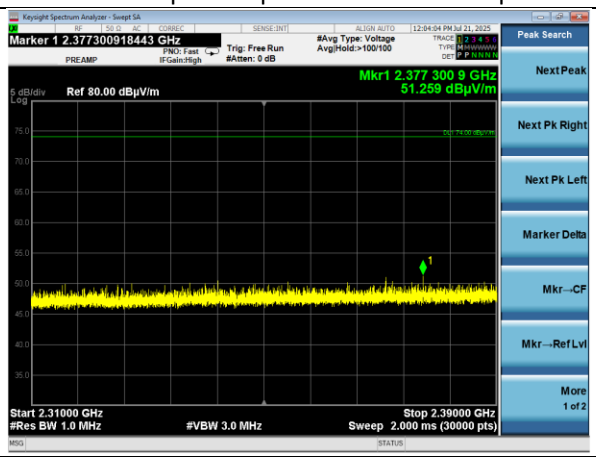
Channel 0 | EDR2 | 2310-2390 MHz | Average



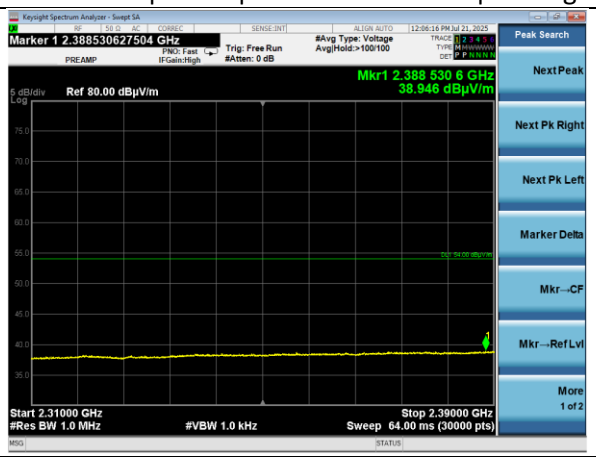
Channel 78 | EDR2 | 2483.5-2500 MHz | Peak



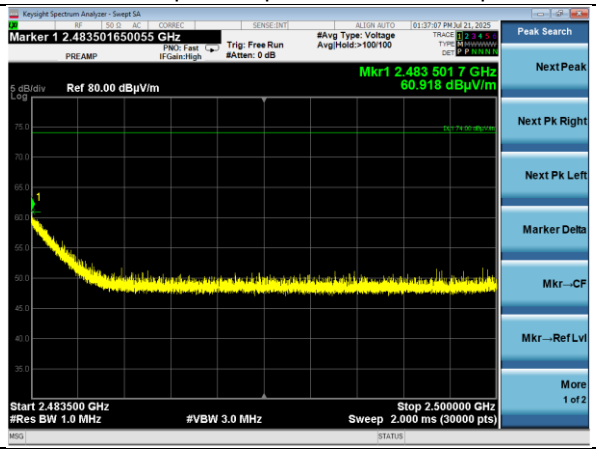
Channel 78 | EDR2 | 2483.5-2500 MHz | Average



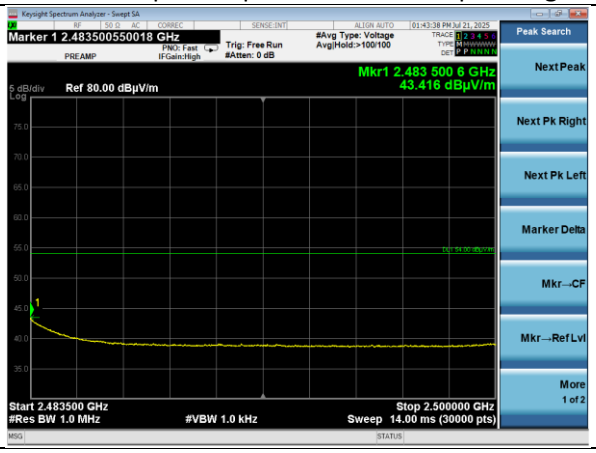
Channel 0 | EDR3 | 2310-2390 MHz | Peak



Channel 0 | EDR3 | 2310-2390 MHz | Average

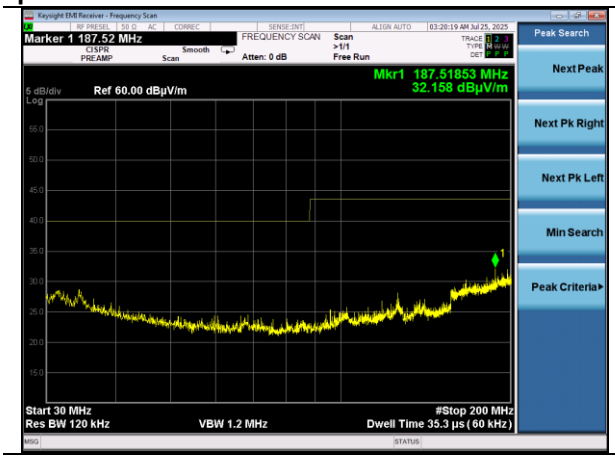


Channel 78 | EDR3 | 2483.5-2500 MHz | Peak

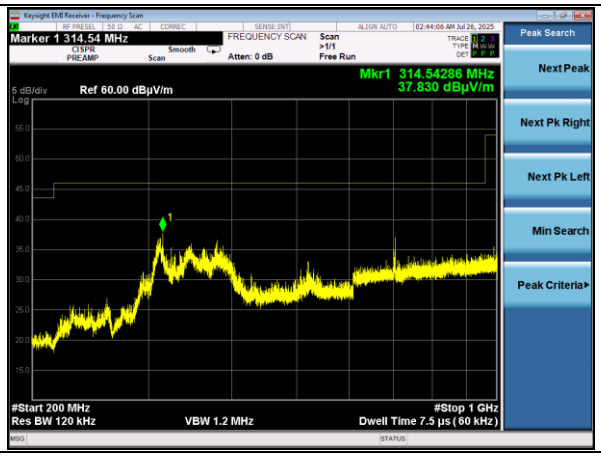


Channel 78 | EDR3 | 2483.5-2500 MHz | Average

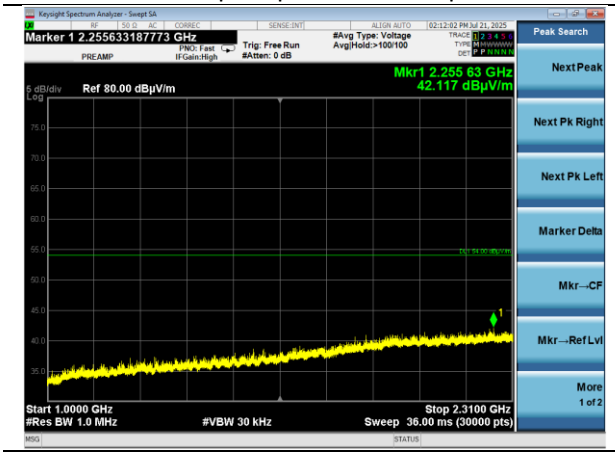
Spurious Emissions Plots



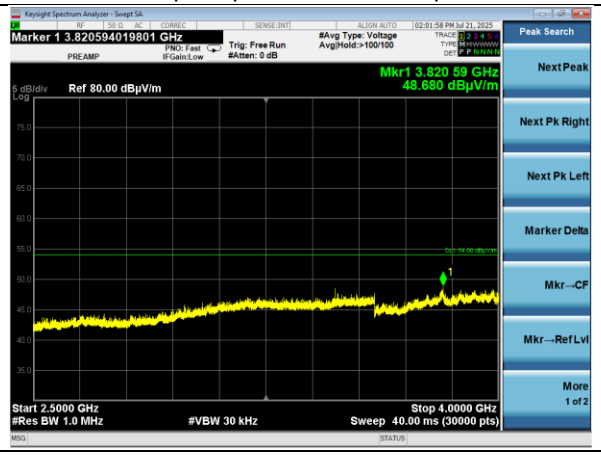
Channel 39 | BR | 30-200 MHz | Vertical



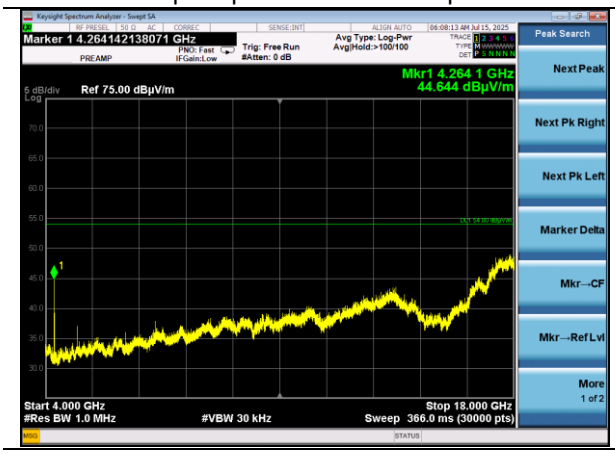
Channel 39 | BR | 200-1000 MHz | Horizontal



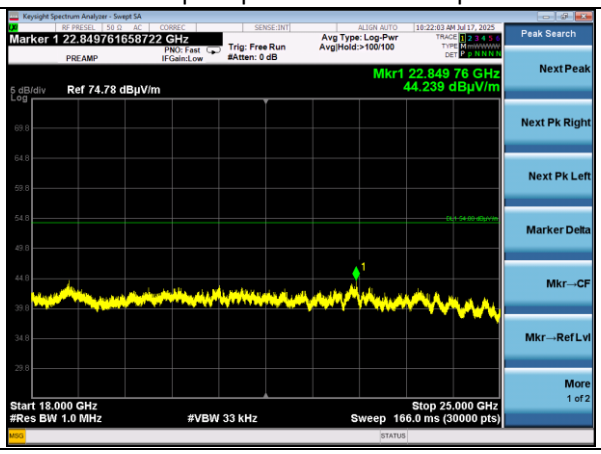
Channel 0 | BR | 1000-2310 MHz | Horizontal



Channel 78 | BR | 2500-4000 MHz | Vertical



Channel 39 | BR | 4-18 GHz | Horizontal



Channel 39 | BR | 18-25 GHz | Vertical

6 REVISION HISTORY

Version	Date	Notes	Person
0	9/17/2025	Initial Draft	Dylan Rosenfeldt
1	9/24/2025	Updated Draft	Dylan Rosenfeldt
2	9/30/2025	Final Draft	Dylan Rosenfeldt

END OF REPORT