TEST REPORT

No.24T04N002517-002-BT

for

Datalogic S.r.l.

MOBILE COMPUTER / BARCODE READER

Model Name: AELWF

with

Hardware Version: V3

Software Version: 1.15.000.20241025 release-keys

FCC ID: U4G-AELWF

ISED Number: 3862E-AELWF

Issued Date: 2024-11-28

Designation Number: CN1210

ISED Assigned Code: 23289

Note:

The test results in this test report relate only to the devices specified in this report. This report shall not be reproduced except in full without the written approval of SAICT.

Test Laboratory:

SAICT, Shenzhen Academy of Information and Communications Technology

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REPORT HISTORY

Report Number	Revision	Description	Issue Date
24T04N002517-002-BT	Rev.0	1st edition	2024-11-28

Note: the latest revision of the test report supersedes all previous versions.

CONTENTS

1. Summary of Test Report

1.1. Test Items

Description	MOBILE COMPUTER / BARCODE READER
Model Name	AELWF
Applicant's name	Datalogic S.r.l.
Manufacturer's Name	Datalogic S.r.l.

1.2. Test Standards

FCC Part15-2023; ANSI C63.10-2013; RSS-247 Issue 3; RSS-Gen Issue 5 A2.

1.3. Test Result

Pass

Please refer to "5.2.Test Results"

1.4. Testing Location

Address: Building G, Shenzhen International Innovation Center, No.1006 Shennan Road, Futian District, Shenzhen, Guangdong, P. R. China 51800

1.5. Project data

Testing Start Date:	2024-10-23
Testing End Date:	2024-11-20

1.6. Signature

Lin Zechuang	**An Ran**
(Prepared this test report)	**(Reviewed this test report)**

Zhang Bojun

(Approved this test report)

2. Client Information

2.1. Applicant Information

Company Name:	Datalogic S.r.l.
Address:	Via San Vitalino 13 CALDERARA DI RENO, BO 40012 Italy
Contact Person	Ruggero Cacioppo
E-Mail	ruggero.cacioppo@datalogic.com
Telephone:	+39 0516765611
Fax:	/

2.2. Manufacturer Information

Company Name:	Datalogic S.r.l.
Address:	Via San Vitalino 13 CALDERARA DI RENO, BO 40012 Italy
Contact Person	Ruggero Cacioppo
E-Mail	ruggero.cacioppo@datalogic.com
Telephone:	+39 0516765611
Fax:	/

3. Equipment Under Test (EUT) and Ancillary Equipment (AE)

3.1. About EUT

Description	MOBILE COMPUTER / BARCODE READER
Model Name	AELWF
Frequency Band	ISM 2400MHz~2483.5MHz
Equipment type	Bluetooth® BR/EDR
Type of Modulation	GFSK/π/4 DQPSK/8DPSK (DH5/2DH5/3DH5)
Number of Channels	79
Antenna Type	Integrated antenna
Power Supply	Battery
FCC ID	U4G-AELWF
ISED Number	3862E-AELWF
Condition of EUT as received	No abnormality in appearance

Note: Components list, please refer to documents of the manufacturer; it is also included in the original test record of Shenzhen Academy of Information and Communications Technology.

3.2. Internal Identification of EUT used during the test

EUT ID*	SN or IMEI	HW Version	SW Version	Date of Receipt
UT08aa	X24L00107	V3	1.15.000.20241025 release-keys	2024-10-23
UT01aa	X24L00216	V3	1.15.000.20241025 release-keys	2024-10-23

*EUT ID: is used to identify the test sample in the lab internally.
UT08aa is used for conduction test, UT01aa is used for radiation test and AC Power line Conducted Emission test.

3.3. Internal Identification of AE used during the test

AE No.	Description	AE ID*
AE1	Battery	/
AE2	Charger	/
AE3	Data Cable	/

AE1

Model	AEL-BY-184
Manufacturer	TWS TECHNOLOGY (GUANGZHOU) LIMITED
Capacity	3870mAh(Min.)/4000mAh(Typ.)
Nominal Voltage	3.87V

AE2

Model	S018BYU12000150; SGVSSDWLC; 2ACP0183C
Manufacturer	Datalogic

AE3

Model	94ACC0327

Manufacturer Datalogic

*AE ID and AE Label: is used to identify the test sample in the lab internally.

3.4. General Description

The Equipment under Test (EUT) is a model of MOBILE COMPUTER / BARCODE READER with integrated antenna and battery.
It consists of normal options: Lithium Battery, Charger and USB Cable.
Manual and specifications of the EUT were provided to fulfil the test.
Samples undergoing test were selected by the client.

4. Reference Documents

4.1. Documents supplied by applicant

EUT feature information is supplied by the applicant or manufacturer, which is the basis of testing.

4.2. Reference Documents for testing

The following documents listed in this section are referred for testing.

Reference	Title	Version
FCC Part 15	FCC CFR 47, Part 15, Subpart C: 15.205 Restricted bands of operation; 15.209 Radiated emission limits, general requirements; 15.247 Operation within the bands 902–928MHz, 2400–2483.5 MHz, and 5725–5850 MHz	2023
ANSI C63.10	American National Standard of Procedures for Compliance Testing of Unlicensed Wireless Devices	2013
RSS-247	Spectrum Management and Telecommunications Radio Standards Specification Digital Transmission Systems (DTSs), Frequency Hopping Systems (FHSs) and License-Exempt Local Area Network (LE-LAN) Devices	Issue 3 August, 2023
RSS-Gen	Spectrum Management and Telecommunications Radio Standards Specification General Requirements for Compliance of Radio Apparatus	Issue 5 February,2021 Amendment 2

5. Test Results

5.1. Testing Environment

Normal Temperature: 15~35℃

Relative Humidity: 20~75%

5.2. Test Results

No	Test cases	Sub-clause of Part 15C	Sub-clause of IC	Verdict
0	Antenna Requirement	15.203	/	**P**
1	Maximum Peak Output Power	15.247 (b)	RSS-247 section 5.4	**P**
2	Band Edges Compliance	15.247 (d)	RSS-247 section 5.1	**P**
3	Conducted Spurious Emission	15.247 (d)	RSS-247 section 5.5/ RSS-Gen section 6.13	**P**
4	Radiated Spurious Emission	15.247,15.205,15.209	RSS-247 section 5.5/ RSS-Gen section 6.13	**P**
5	Occupied 20dB bandwidth	15.247(a)	RSS-247 section 5.1	**P**
6	Time of Occupancy (Dwell Time)	15.247(a)	RSS-247 section 5.1	**P**
7	Number of Hopping Channel	15.247(a)	RSS-247 section 5.1	**P**
8	Carrier Frequency Separation	15.247(a)	RSS-247 section 5.1	**P**
9	99% Occupied Bandwidth	/	RSS-Gen section 6.7	**P**
10	AC Power line Conducted Emission	15.107, 15.207	RSS-Gen section 8.8	**P**

See **ANNEX A** for details.

5.3. Statements

SAICT has evaluated the test cases requested by the applicant/manufacturer as listed in section 5.2 of this report, for the EUT specified in section 3, according to the standards or reference documents listed in section 4.2.

Disclaimer:

A. After confirmation with the customer, the sample information provided by the customer may affect the validity of the measurement results in this report, and the impact and consequences arising therefrom shall be borne by the customer.

B. The samples in this report are provided by the customer, and the test results are only applicable to the samples received.

6. Test Equipments Utilized

Conducted test system

No.	Equipment	Model	Serial Number	Manufacturer	Calibration Due date	Calibration Period
1	Signal Analyzer	N9020B	My60112379	Keysight	2025-08-25	1 year
3	RF Control Unit	JS0806-2	21C8060398	Tonscend	2025-05-06	1 year
4	Wireless Connective Tester	CMW270	100540	Rohde & Schwarz	2025-03-11	1 year
5	Shielding Room	S81	CT000986-1344	ETS-Lindgren	2026-09-12	5 years

Radiated test system

No.	Equipment	Model	Serial Number	Manufacturer	Calibration Due date	Calibration Period
1	Test Receiver	ESR7	101676	Rohde & Schwarz	2024-11-22	1 year
2	Hybrid antenna	VULB 9163	330	Schwarzbeck	2027-04-21	3 years
3	Horn Antenna	3117	00066577	ETS-Lindgren	2025-04-17	3 years
4	Anechoic Chamber	FACT3-2.0	1285	ETS-Lindgren	2025-05-28	2 years
5	Spectrum Analyzer	FSV40	101192	Rohde & Schwarz	2025-01-12	1 year
6	Loop Antenna	HLA6120	35779	TESEQ	2025-05-10	3 years
7	Horn Antenna	QSH-SL-18-26-S-20	17013	Q-par	2026-02-01	3 years
8	Test Receiver	ESCI	100702	Rohde & Schwarz	2025-01-10	1 year
9	LISN	ENV216	102067	Rohde & Schwarz	2024-10-07	1 year

Test software

No.	Equipment	Manufacturer	Version
1	JS1120-3	Tonscend	3.5
2	EMC32	Rohde & Schwarz	10.50.40

EUT is engineering software provided by the customer to control the transmitting signal.
The EUT was programmed to be in continuously transmitting mode.

7. Laboratory Environment

Shielded room

Temperature	Min. = 15 ˚C, Max. = 35 ˚C
Relative humidity	Min. = 20 %, Max. = 75 %
Shielding effectiveness	0.014MHz-1MHz> 60 dB; 1MHz-18000MHz>90 dB
Electrical insulation	> 2MΩ
Ground system resistance	< 4 Ω

Anechoic chamber

Temperature	Min. = 15 ˚C, Max. = 35 ˚C
Relative humidity	Min. = 20 %, Max. = 75 %
Shielding effectiveness	0.014MHz-1MHz> 60 dB; 1MHz-18000MHz>90 dB
Electrical insulation	> 2MΩ
Ground system resistance	< 4 Ω
Normalised site attenuation (NSA)	<±4 dB, 3 m distance, from 30 to 1000 MHz
Voltage Standing Wave Ratio (VSWR)	≤ 6 dB, from 1 to 18 GHz, 3m distance
Uniformity of field strength	Between 0 and 6 dB, from 80 to 6000 MHz

8. Measurement Uncertainty

Test Name	Uncertainty (*k*=2)	
1. Maximum Peak Output Power	1.32dB	
2. Band Edges Compliance	1.92dB	
3. Transmitter Spurious Emission - Conducted	30MHz≤f<1GHz	1.41dB
	1GHz≤f<7GHz	1.92dB
	7GHz≤f<13GHz	2.31dB
	13GHz≤f≤26GHz	2.61dB
4.. Transmitter Spurious Emission - Radiated	9kHz≤f<30MHz	1.79dB
	30MHz≤f<1GHz	4.86dB
	1GHz≤f<18GHz	4.82dB
	18GHz≤f≤40GHz	2.90dB
5. 20dB Bandwidth	4.56kHz	
6. Time of Occupancy (Dwell Time) & Number of Hopping Channels	0.58ms	
7. Carrier Frequency Separation	4.56kHz	
8. 99% Occupied Bandwidth	4.56kHz	
9. AC Power line Conducted Emission	150kHz≤f≤30MHz	2.62dB

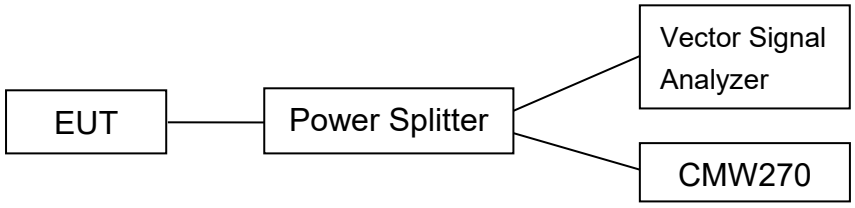
ANNEX A: Detailed Test Results

Test Configuration

The measurement is made according to ANSI C63.10.

1) Conducted Measurements

1. Connect the EUT to the test system correctly.
2. Set the EUT to the required work mode.
3. Set the EUT to the required channel.
4. Set the EUT hopping mode (hopping on or hopping off).
5. Set the spectrum analyzer to start measurement.
6. Record the values.

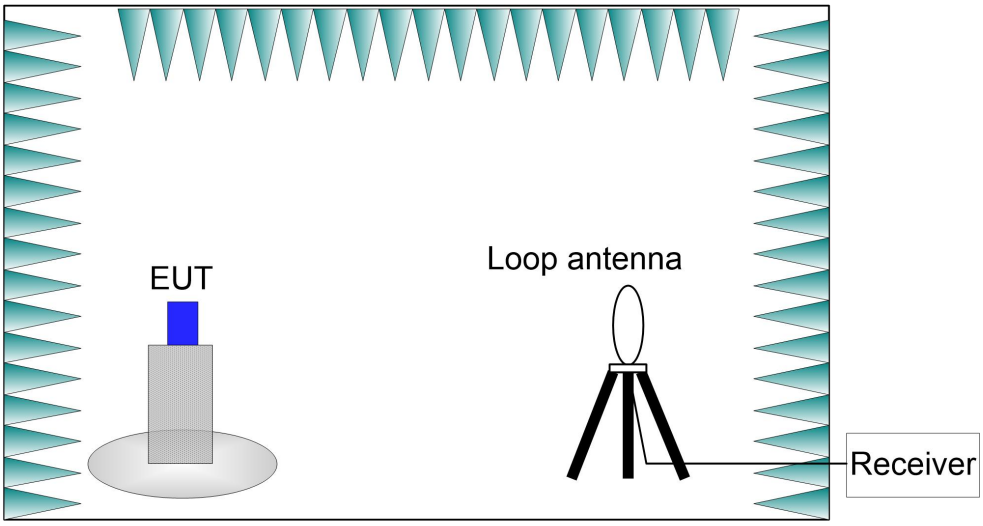


2) Radiated Measurements

Test setup:

9kHz-30MHz:

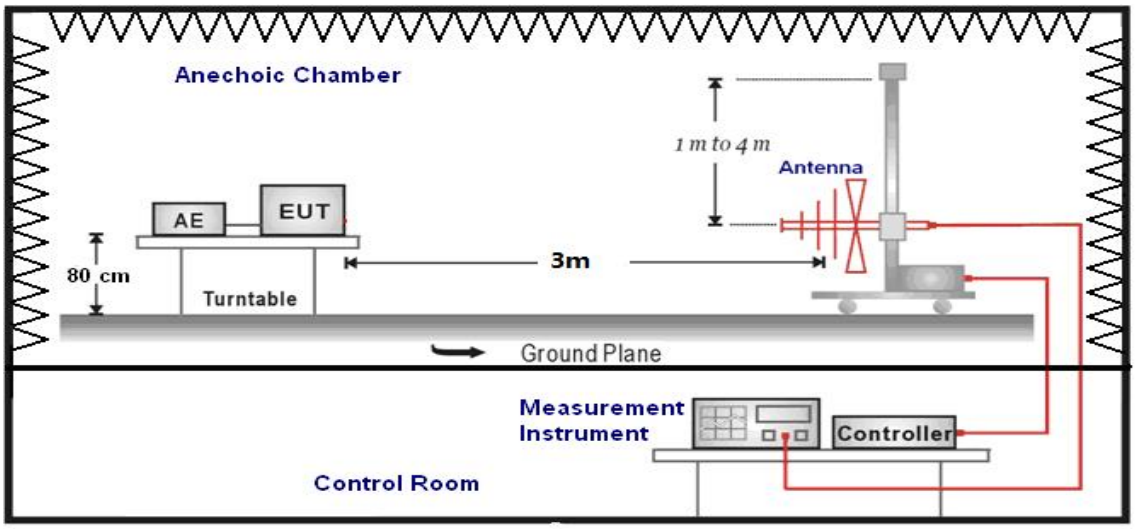
The EUT are measured in a anechoic chamber. The EUT is placed on a non-conductive stand of 80cm high, and at a measurement distance of 3m from the receiving antenna. The center of the receiving loop antenna is 1.0 meter above the ground. The test setup refers to figure below. Detected emissions were maximized at each frequency by rotating the EUT and adjusting the receiver antenna polarization.



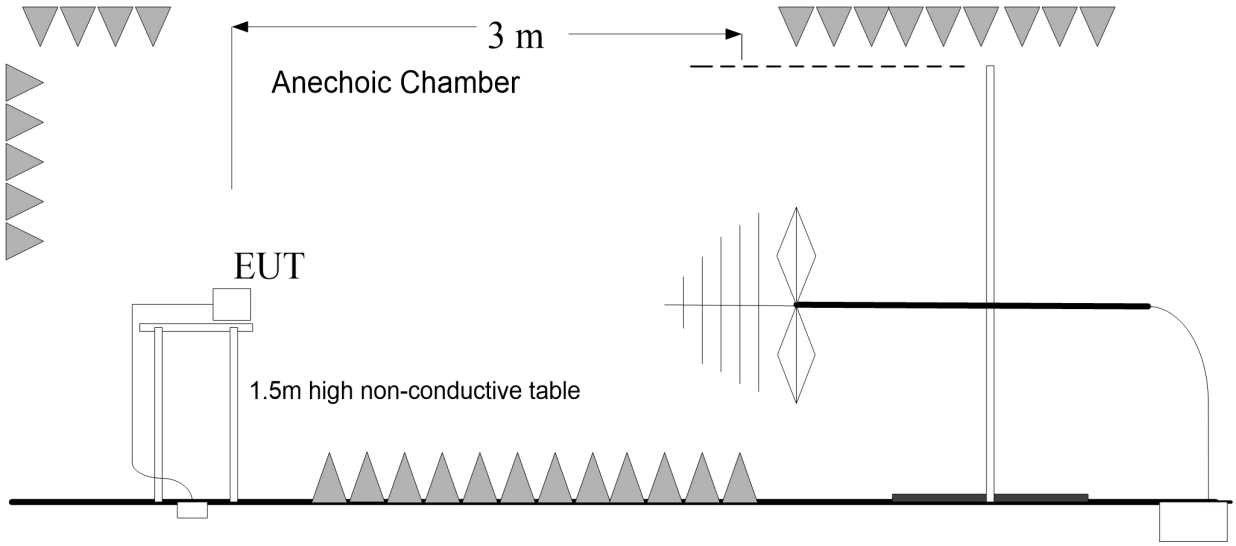
30MHz-26.5GHz:

The EUT are measured in a anechoic chamber. The EUT is placed on a non-conductive stand of 80cm high, and at a measurement distance of 3m from the receiving antenna. The center of the receiving antenna is 1.0 meter to 4.0 meter above the ground. The test setup refers to figure below. Detected emissions were maximized at each frequency by rotating the EUT and adjusting the receiver antenna polarization.

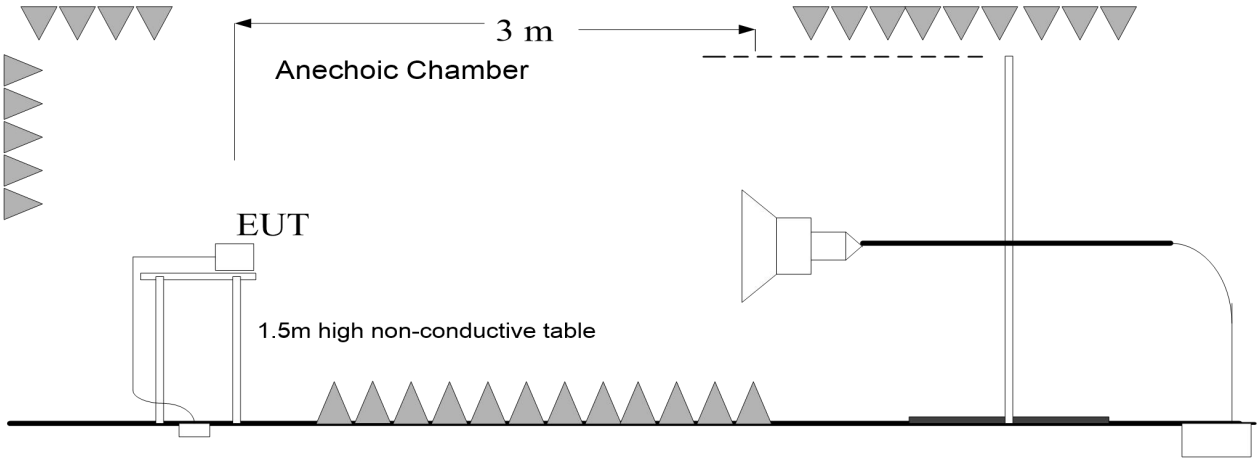
30MHz-1GHz:



1GHz-3GHz:

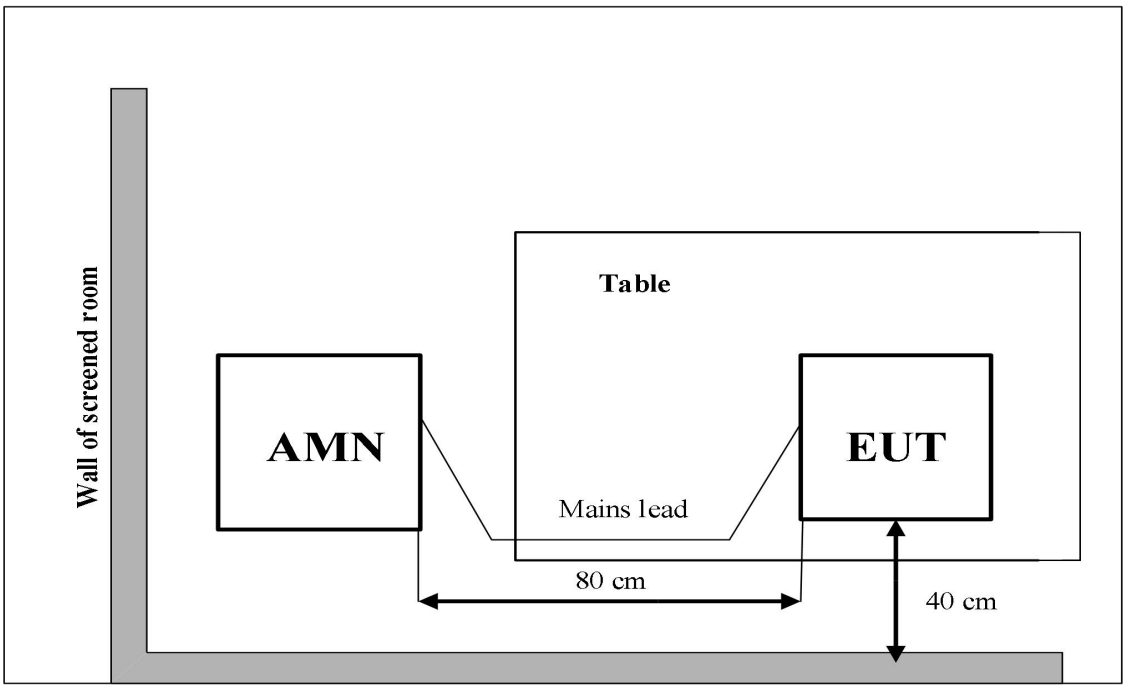


3GHz-26.5GHz:



3) AC Power line Conducted Emission Measurement

The EUT is working as Bluetooth terminal. A communication link of Bluetooth is set up with a System Simulator (SS). The EUT is commanded to operate at maximum transmitting power.



A.0 Antenna requirement

Measurement Limit:

Standard	Requirement
FCC CRF Part 15.203	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 manufacturer may design the unit so that a broken antenna can be replaced by the user, but the use of a standard antenna jack or electrical connector is prohibited. This requirement does not apply to carrier current devices or to devices operated under the provisions of §15.211, §15.213, §15.217, §15.219, or §15.221. Further, this requirement does not apply to intentional radiators that must be professionally installed, such as perimeter protection systems and some field disturbance sensors, or to other intentional radiators which, in accordance with §15.31(d), must be measured at the installation site. However, the installer shall be responsible for ensuring that the proper antenna is employed so that the limits in this part are not exceeded.

Conclusion: The Directional gains of antenna used for transmitting is: Antenna 8:0.3dB.
The RF transmitter uses an integrate antenna without connector.

A.1 Maximum Peak Output Power

Method of Measurement: See ANSI C63.10-clause 7.8.5.

Measurement Limit:

Standard	Limit (dBm)
FCC CRF Part 15.247(b) & RSS-247 section 5.4	< 20.97(0.125mw)
	< 36(E.I.R.P)

Measurement Results:

Test Mode	Antenna	Frequency [MHz]	Conducted Peak Powert[dBm]	Conducted Limit[dBm]	EIRP [dBm]	EIRP Limit[dBm]	Verdict
DH5	Ant8	2402	8.20	≤20.97	8.50	≤36	PASS
DH5	Ant8	2441	8.51	≤20.97	8.81	≤36	PASS
DH5	Ant8	2480	7.09	≤20.97	7.39	≤36	PASS
2DH5	Ant8	2402	7.58	≤20.97	7.88	≤36	PASS
2DH5	Ant8	2441	7.89	≤20.97	8.19	≤36	PASS
2DH5	Ant8	2480	6.38	≤20.97	6.68	≤36	PASS
3DH5	Ant8	2402	7.89	≤20.97	8.19	≤36	PASS
3DH5	Ant8	2441	8.25	≤20.97	8.55	≤36	PASS
3DH5	Ant8	2480	6.80	≤20.97	7.10	≤36	PASS

Conclusion: Pass

A.2 Band Edges Compliance

Method of Measurement: See ANSI C63.10-clause 7.8.6.

Measurement Limit:

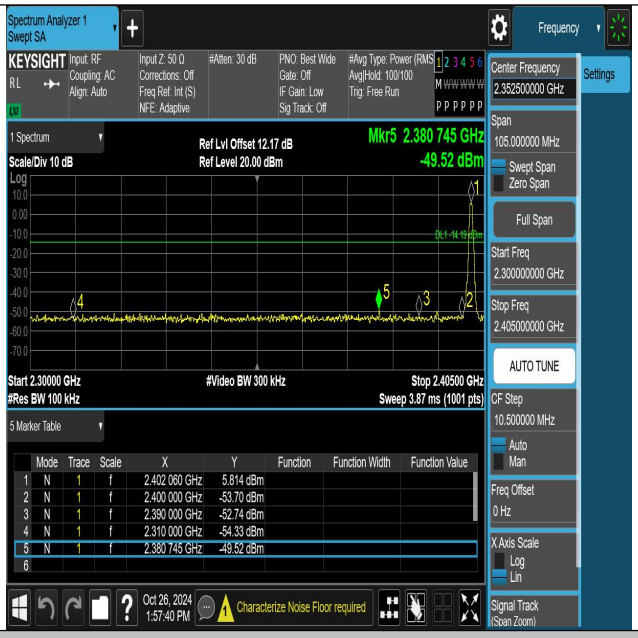
Standard	Limit (dBc)
FCC 47 CFR Part 15.247 (d) & RSS-247 Section 5.1	20dBm below peak output power in 100kHz bandwidth

Measurement Result:

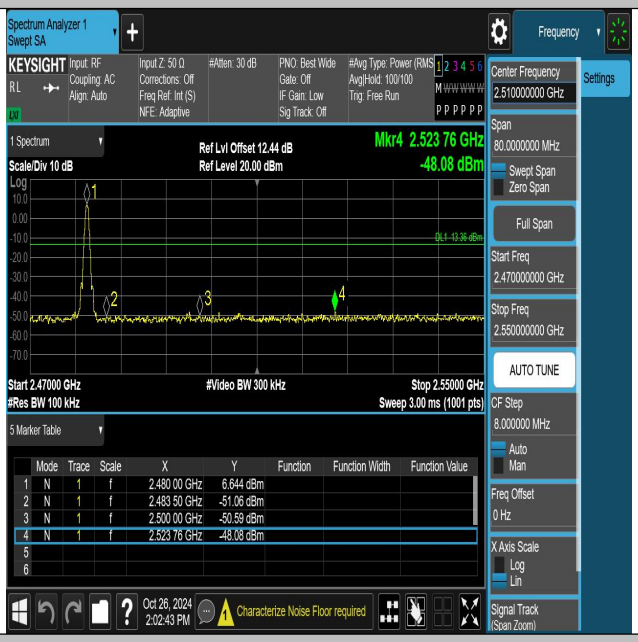
TestMode	Antenna	ChName	Frequency [MHz]	RefLevel [dBm]	Result [dBm]	Limit [dBm]	Verdict
DH5	Ant8	Low	2402	5.81	-49.52	≤-14.19	PASS
DH5	Ant8	High	2480	6.64	-48.08	≤-13.36	PASS
DH5	Ant8	Low	Hop_2402	6.83	-48.86	≤-13.17	PASS
DH5	Ant8	High	Hop_2480	7.08	-47.72	≤-12.93	PASS
2DH5	Ant8	Low	2402	4.46	-48.64	≤-15.55	PASS
2DH5	Ant8	High	2480	3.12	-48.25	≤-16.88	PASS
2DH5	Ant8	Low	Hop_2402	4.02	-49.12	≤-15.98	PASS
2DH5	Ant8	High	Hop_2480	1.98	-47.77	≤-18.02	PASS
3DH5	Ant8	Low	2402	4.74	-48.73	≤-15.26	PASS
3DH5	Ant8	High	2480	4.13	-36.7	≤-15.87	PASS
3DH5	Ant8	Low	Hop_2402	0.44	-48.51	≤-19.56	PASS
3DH5	Ant8	High	Hop_2480	4.15	-47.65	≤-15.85	PASS

See below for test graphs.

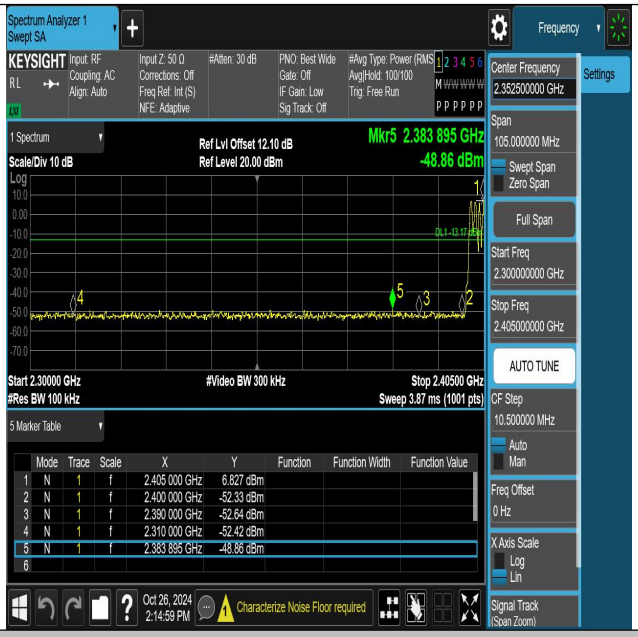
Conclusion: Pass



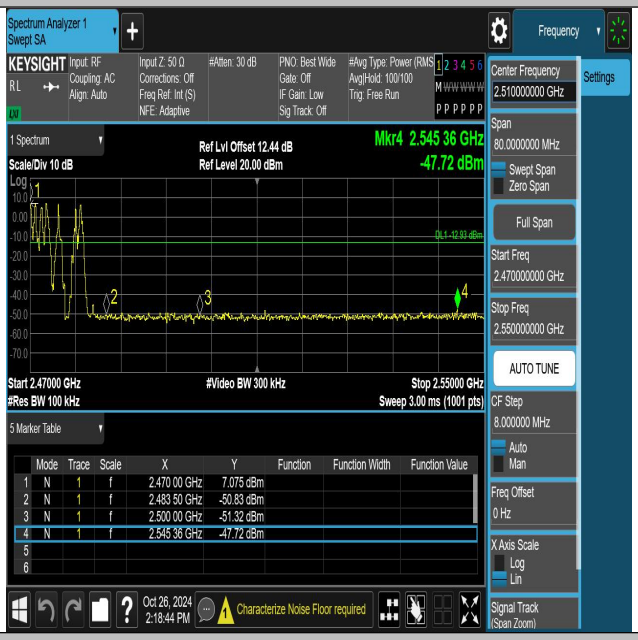
DH5-Ant8-2402-PASS



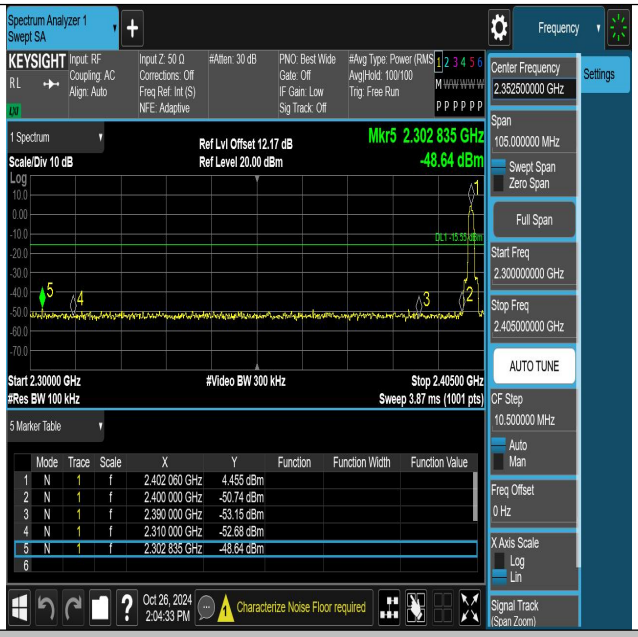
DH5-Ant8-2480-PASS



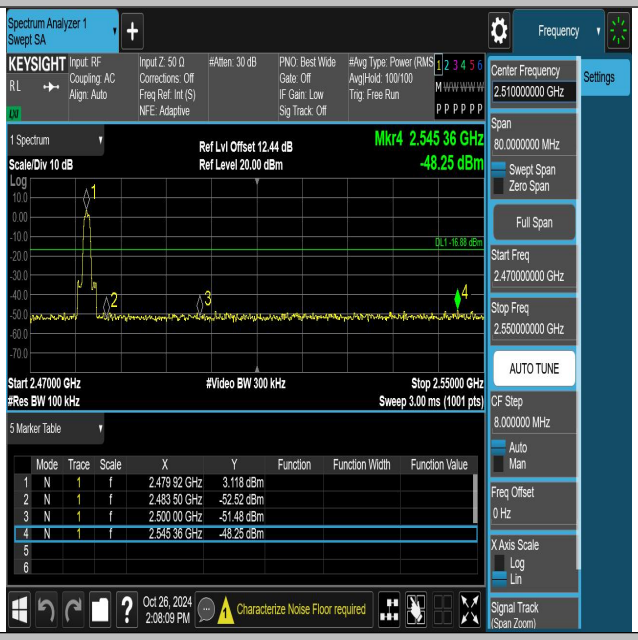
DH5-Ant8-Hop_2402-PASS



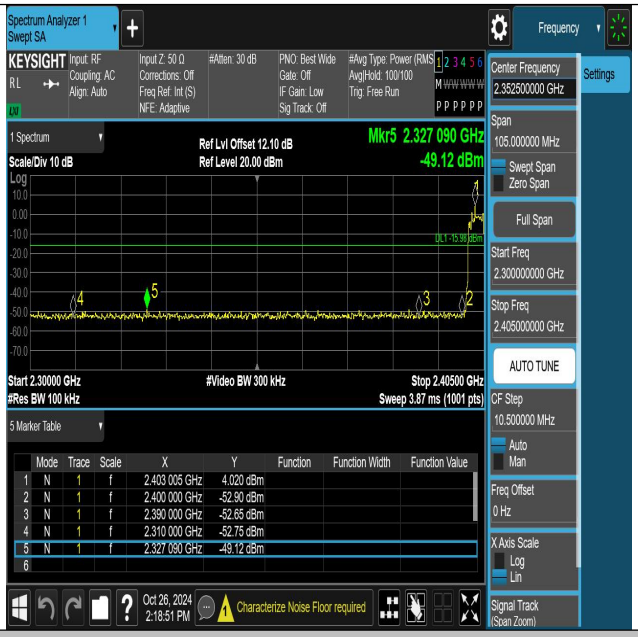
DH5-Ant8-Hop_2480-PASS



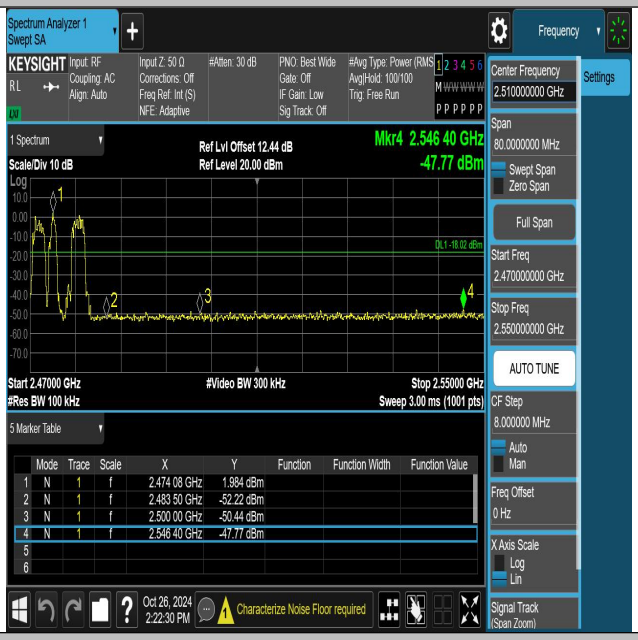
2DH5-Ant8-2402-PASS



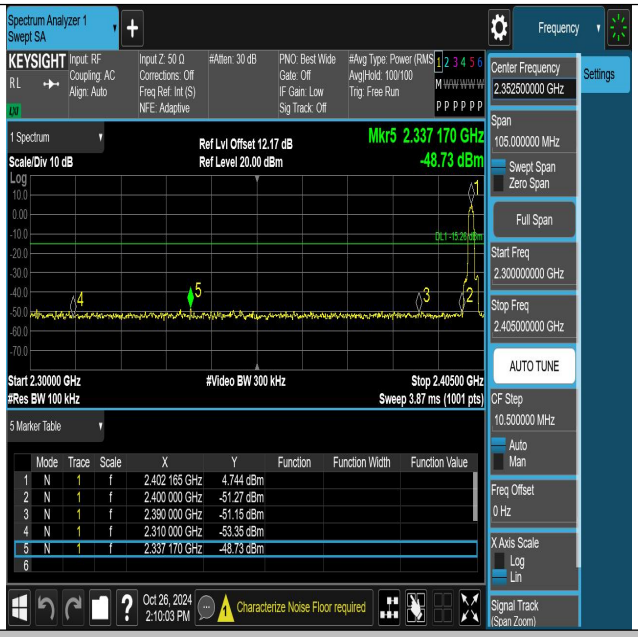
2DH5-Ant8-2480-PASS



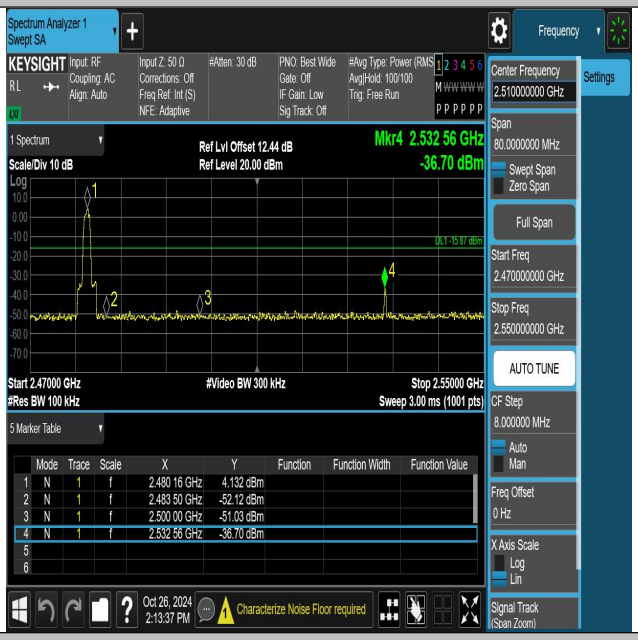
2DH5-Ant8-Hop_2402-PASS



2DH5-Ant8-Hop_2480-PASS



3DH5-Ant8-2402-PASS



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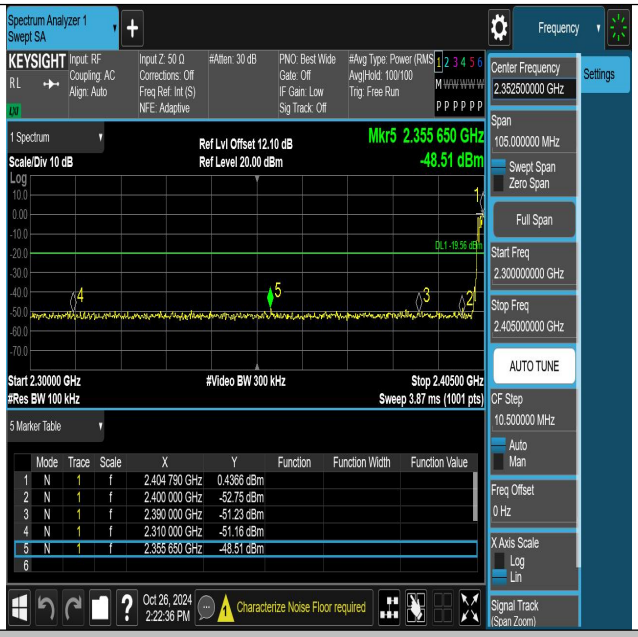

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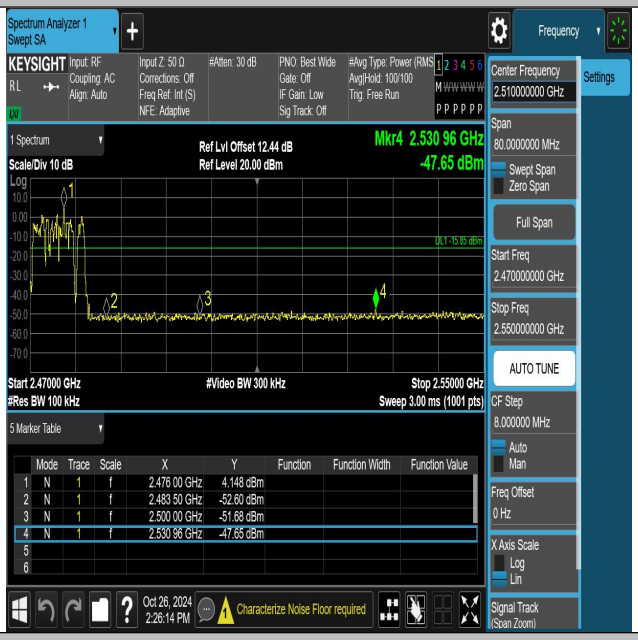


3DH5-Ant8-Hop_2480-PASS

A.3 Conducted Emission

Method of Measurement: See ANSI C63.10-clause 7.8.8.

Measurement Limit:

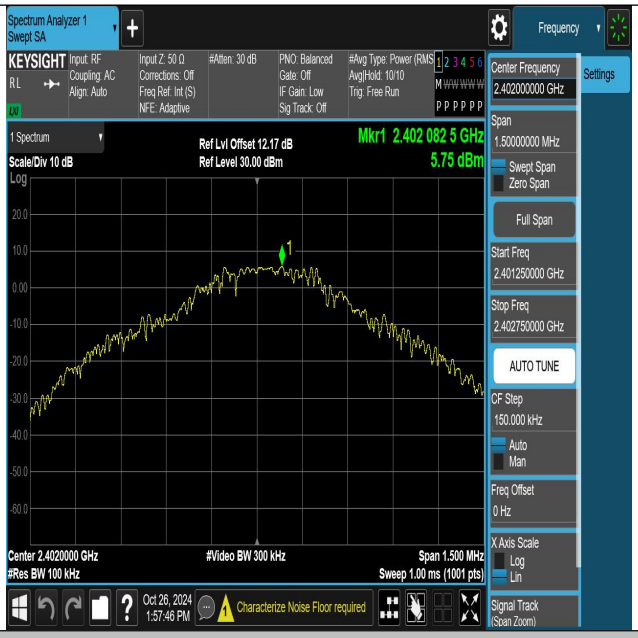
Standard	Limit (dBm)
FCC 47 CFR Part 15.247 (d) & RSS-247 section 5.5/RSS-Gen section 6.13	20dBm below peak output power in 100kHz bandwidth

Measurement Results:

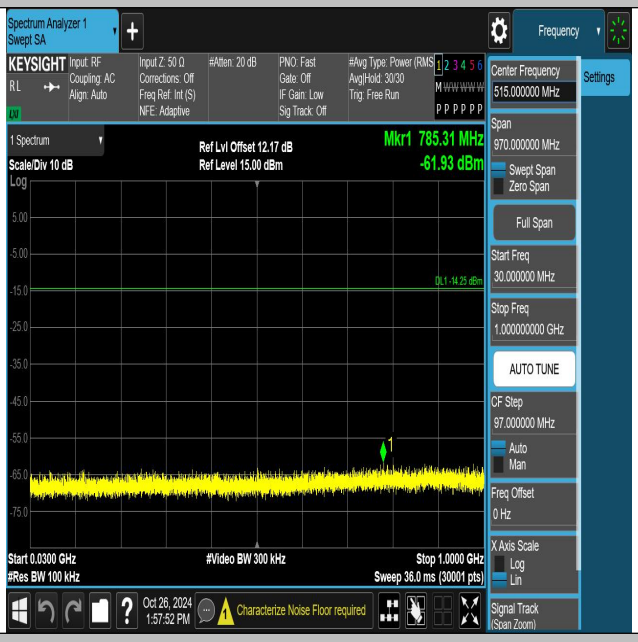
TestMode	Antenna	Frequency[MHz]	FreqRange [MHz]	RefLevel [dBm]	Result [dBm]	Limit [dBm]	Verdict
DH5	Ant8	2402	0~Reference	5.75	5.75	---	PASS
DH5	Ant8	2402	30~1000	5.75	-61.93	≤-14.25	PASS
DH5	Ant8	2402	1000~26500	5.75	-44.85	≤-14.25	PASS
DH5	Ant8	2441	0~Reference	6.01	6.01	---	PASS
DH5	Ant8	2441	30~1000	6.01	-61.1	≤-13.99	PASS
DH5	Ant8	2441	1000~26500	6.01	-43.15	≤-13.99	PASS
DH5	Ant8	2480	0~Reference	6.07	6.07	---	PASS
DH5	Ant8	2480	30~1000	6.07	-59.78	≤-13.93	PASS
DH5	Ant8	2480	1000~26500	6.07	-41.5	≤-13.93	PASS
2DH5	Ant8	2402	0~Reference	4.61	4.61	---	PASS
2DH5	Ant8	2402	30~1000	4.61	-59.94	≤-15.39	PASS
2DH5	Ant8	2402	1000~26500	4.61	-42.8	≤-15.39	PASS
2DH5	Ant8	2441	0~Reference	4.19	4.19	---	PASS
2DH5	Ant8	2441	30~1000	4.19	-59.98	≤-15.81	PASS
2DH5	Ant8	2441	1000~26500	4.19	-42.77	≤-15.81	PASS
2DH5	Ant8	2480	0~Reference	2.10	2.10	---	PASS
2DH5	Ant8	2480	30~1000	2.10	-59.05	≤-17.9	PASS
2DH5	Ant8	2480	1000~26500	2.10	-42.55	≤-17.9	PASS
3DH5	Ant8	2402	0~Reference	2.96	2.96	---	PASS
3DH5	Ant8	2402	30~1000	2.96	-60.41	≤-17.04	PASS
3DH5	Ant8	2402	1000~26500	2.96	-43.21	≤-17.04	PASS
3DH5	Ant8	2441	0~Reference	5.69	5.69	---	PASS
3DH5	Ant8	2441	30~1000	5.69	-60.19	≤-14.31	PASS
3DH5	Ant8	2441	1000~26500	5.69	-42.22	≤-14.31	PASS
3DH5	Ant8	2480	0~Reference	2.06	2.06	---	PASS
3DH5	Ant8	2480	30~1000	2.06	-60.71	≤-17.94	PASS
3DH5	Ant8	2480	1000~26500	2.06	-42.04	≤-17.94	PASS

See below for test graphs.

Conclusion: Pass



DH5-Ant8-2402-0~Reference-PASS



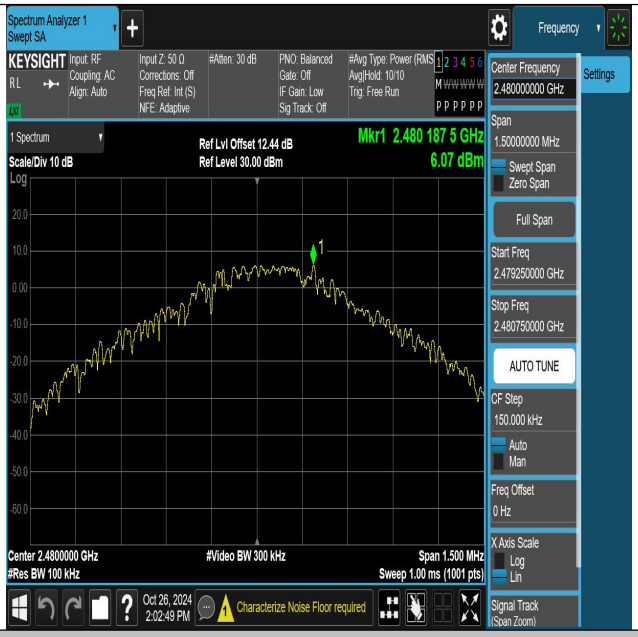
DH5-Ant8-2402-30~1000-PASS

DH5-Ant8-2402-1000~26500-PASS

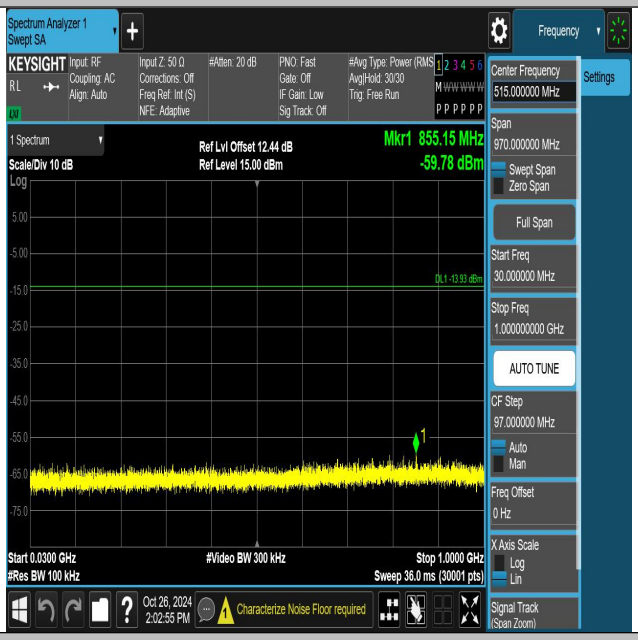
DH5-Ant8-2441-0~Reference-PASS

DH5-Ant8-2441-30~1000-PASS

DH5-Ant8-2441-1000~26500-PASS

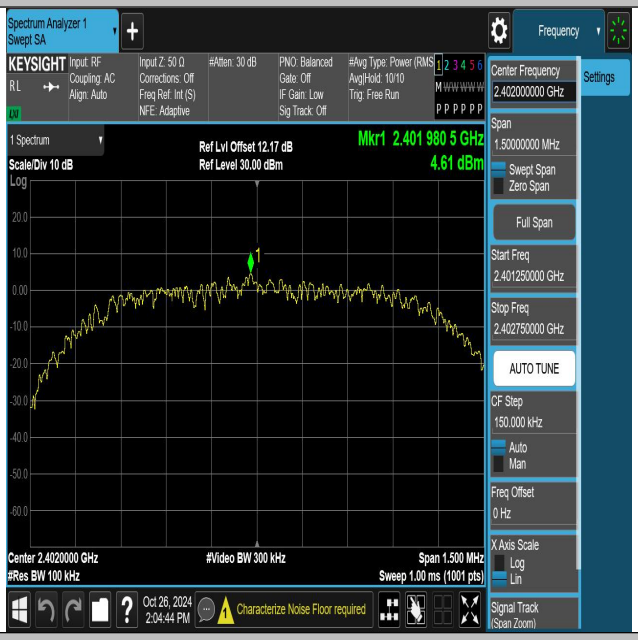


DH5-Ant8-2480-0~Reference-PASS

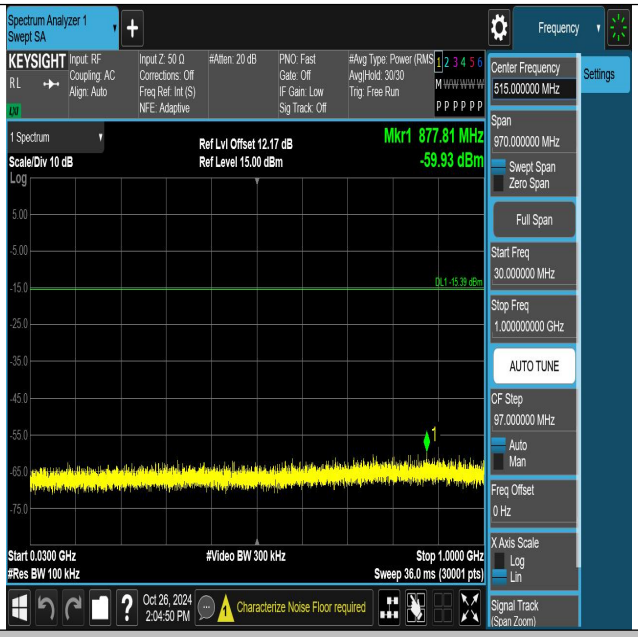


DH5-Ant8-2480-30~1000-PASS

DH5-Ant8-2480-1000~26500-PASS

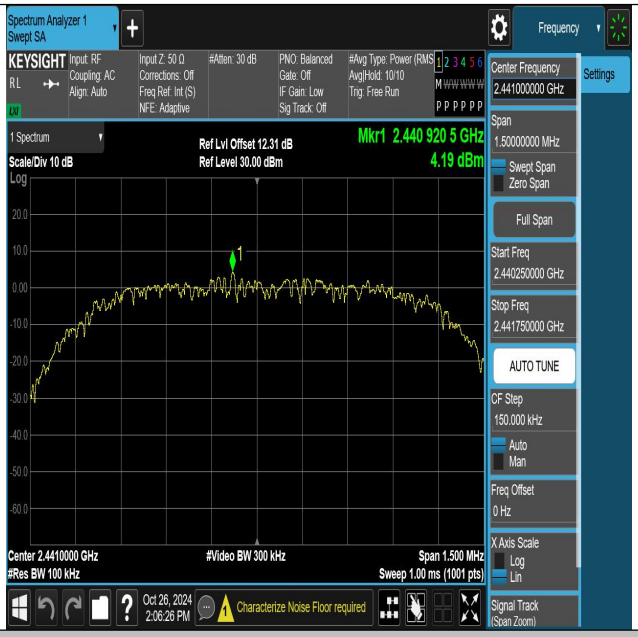


2DH5-Ant8-2402-0~Reference-PASS

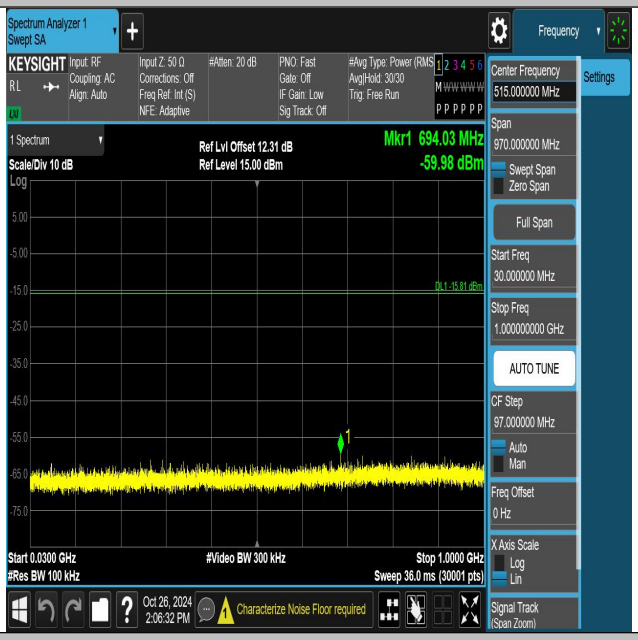


2DH5-Ant8-2402-30~1000-PASS

2DH5-Ant8-2402-1000~26500-PASS



2DH5-Ant8-2441-0~Reference-PASS



2DH5-Ant8-2441-30~1000-PASS

2DH5-Ant8-2441-1000~26500-PASS

2DH5-Ant8-2480-0~Reference-PASS