

TEST REPORT

Report No.: SHE24110067-02CE

Date: 2025-02-19

Page 1 of 80

Applicant : SKYTECH USA LLC.
Address of Applicant : INCORP SERVICES, INC. 3458 LAKESHORE DRIVE
TALLAHASSEE, FL 32312 US

Product Name : Desktop Computer
Brand Name : STGAubron & STGsivir
Model Name : ABR1924
Sample Acquisition Method : Sent by Client
Sample No. : E24110067-01#03
E24110067-01#04

FCC ID : 2BGCAABR1924

Standards : FCC CFR47 Part 15.247, Subpart C

Date of Receipt : 2024-11-21
Date of Test : 2024-11-21~ 2025-02-18
Date of Issue : 2025-02-19

Remark:

This report details the results of the testing carried out on one sample, the results contained in this report do not relate to other samples of the same product. The manufacturer should ensure that all products in series production are in conformity with the product sample detailed in this report.

Prepared by:



(Erik Yang)

Reviewed by:



(Jennifer Zhou)

Approved by:



(Authorized signatory: Echo Mu)

TEST REPORT

Report No.: SHE24110067-02CE Date: 2025-02-19 Page 2 of 80

Contents

- 1 GENERAL INFORMATION 3
 - 1.1 TESTING LABORATORY 3
 - 1.2 DETAILS OF APPLICATION 3
 - 1.3 DETAILS OF EUT 3
 - 1.4 TEST METHODOLOGY 5
 - 1.5 TEST SUMMARY 5
- 2 TEST CONDITION 6
 - 2.1 ENVIRONMENTAL CONDITIONS 6
 - 2.2 EQUIPMENT LIST 6
 - 2.3 MEASUREMENT UNCERTAINTY 7
- 3 TEST SET-UP AND OPERATION MODES 8
 - 3.1 DETAILS OF TEST MODE 8
 - 3.2 SPECIAL ACCESSORIES AND AUXILIARY EQUIPMENT 8
 - 3.3 SUPPORT SOFTWARE 8
 - 3.4 TEST SETUP DIAGRAM 9
- 4 TEST RESULTS 11
 - 4.1 TRANSMITTER REQUIREMENT & TEST SUITES 11
 - 4.1.1 Antenna Requirement 11
 - 4.1.2 Maximum Peak Output Power 12
 - 4.1.3 20dB Bandwidth and 99% Bandwidth 18
 - 4.1.4 Conducted Spurious Emission & Authorized-band band-edge 24
 - 4.1.5 Radiated Spurious Emission 49
 - 4.1.6 Band Edge (Restricted-band band-edge) 50
 - 4.1.7 Hopping Frequency Separation 51
 - 4.1.8 Number of Hopping Frequency 54
 - 4.1.9 Time of Occupancy 57
 - 4.2 MAINS EMISSIONS 63
 - 4.2.1 Conducted Emission on AC Mains 63
- 5 APPENDIXES 66
 - 5.1 PHOTOGRAPHS OF THE SAMPLE 66
 - 5.2 SET-UP FOR CONDUCTED EMISSION ON AC MAINS 79
 - 5.3 SET-UP FOR CONDUCTED RF TEST AT ANTENNA PORT 79
 - 5.4 SET-UP FOR RADIATED SPURIOUS EMISSIONS BELOW 1GHZ 80
 - 5.5 SET-UP FOR RADIATED SPURIOUS EMISSIONS ABOVE 1GHZ 80

TEST REPORT

Report No.: SHE24110067-02CE

Date: 2025-02-19

Page 3 of 80

1 General Information

1.1 Testing Laboratory

Company Name	ICAS Testing Technology Service (Shanghai) Co., Ltd.
Address	No.1298, Pingan Road, Minhang District, Shanghai, China
Telephone	0086 21-51682999
Fax	0086 21-54711112
Homepage	www.icasiso.com

1.2 Details of Application

Applicant Company Name	SKYTECH USA LLC.
Address	INCORP SERVICES, INC. 3458 LAKESHORE DRIVE TALLAHASSEE, FL 32312 US
Contact Person	Hu yan
Telephone	001-647-8892-868
Email	yan.hu@astsys.com
Manufacturer Company Name	SKYTECH USA LLC.
Address	INCORP SERVICES, INC. 3458 LAKESHORE DRIVE TALLAHASSEE, FL 32312 US
Factory Company Name	SKYTECH USA LLC.
Address	INCORP SERVICES, INC. 3458 LAKESHORE DRIVE TALLAHASSEE, FL 32312 US

1.3 Details of EUT

Product Name	Desktop Computer
Brand Name	STGAubron & STGsivir
Test Model Name	ABR1924
FCC ID	2BGCAABR1924
Mode of Operation	Bluetooth BR/EDR
Operating Frequency Range	2402MHz ~ 2480MHz
Number of Channels	79 (at intervals of 1 MHz)
Modulation Type	GFSK, $\pi/4$ -DQPSK, 8-DPSK
Max RF Output Power	8.17dBm
Antenna Type	Internal Antenna
Antenna Gain	1.51dBi
Extreme Temperature Range	0°C~ +70°C
Test Voltage	AC 100-240V 50/60Hz
Hardware Version	H311M-K PLUS
Software Version	5.12

TEST REPORT

Report No.: SHE24110067-02CE

Date: 2025-02-19

Page 4 of 80

RF power setting in TEST_SW

Bluetooth RF Test Tool (RtlBluetooth MP.dll Version: 5.3.1.89 RTLBTAPP
Version: 5.2.3.16)_Power level setting_ Default

Note:

1. The above information was declared by the manufacture.
2. For more details, please refer to the User's manual of the EUT.

Channel List

Channel	Frequency	Channel	Frequency	Channel	Frequency
00	2.402GHz	27	2.429GHz	54	2.456GHz
01	2.403GHz	28	2.430GHz	55	2.457GHz
02	2.404GHz	29	2.431GHz	56	2.458GHz
03	2.405GHz	30	2.432GHz	57	2.459GHz
04	2.406GHz	31	2.433GHz	58	2.460GHz
05	2.407GHz	32	2.434GHz	59	2.461GHz
06	2.408GHz	33	2.435GHz	60	2.462GHz
07	2.409GHz	34	2.436GHz	61	2.463GHz
08	2.410GHz	35	2.437GHz	62	2.464GHz
09	2.411GHz	36	2.438GHz	63	2.465GHz
10	2.412GHz	37	2.439GHz	64	2.466GHz
11	2.413GHz	38	2.440GHz	65	2.467GHz
12	2.414GHz	39	2.441GHz	66	2.468GHz
13	2.415GHz	40	2.442GHz	67	2.469GHz
14	2.416GHz	41	2.443GHz	68	2.470GHz
15	2.417GHz	42	2.444GHz	69	2.471GHz
16	2.418GHz	43	2.445GHz	70	2.472GHz
17	2.419GHz	44	2.446GHz	71	2.473GHz
18	2.420GHz	45	2.447GHz	72	2.474GHz
19	2.421GHz	46	2.448GHz	73	2.475GHz
20	2.422GHz	47	2.449GHz	74	2.476GHz
21	2.423GHz	48	2.450GHz	75	2.477GHz
22	2.424GHz	49	2.451GHz	76	2.478GHz
23	2.425GHz	50	2.452GHz	77	2.479GHz
24	2.426GHz	51	2.453GHz	78	2.480GHz
25	2.427GHz	52	2.454GHz		
26	2.428GHz	53	2.455GHz		

TEST REPORT

Report No.: SHE24110067-02CE

Date: 2025-02-19

Page 5 of 80

1.4 Test Methodology

47 CFR Part 15, Subpart C	Telecommunication-Radio Frequency Devices-Intentional Radiators
KDB Publication 558074 D01 v05r02	15.247 Meas Guidance.
ANSI C63.10-2013	American National Standard for Testing Unlicensed Wireless Devices

Note(s):

All test items were verified and recorded according to the standards and without any addition/deviation/exclusion during the test.

1.5 Test Summary

Test Item	FCC Rules	Result
Antenna Requirement	FCC Part 15.247(b)(4), FCC Part 15.203	PASS
Maximum Conducted Peak Output Power	FCC Part 15.247(b)(1)	PASS
20dB Bandwidth and 99% Bandwidth	FCC Part 15.247(a)(1)	PASS
Conducted Spurious Emission & Authorized-band band-edge	FCC Part 15.247(d)	PASS
Radiated Emission	FCC Part 15.247(d), 15.205, 15.209	PASS
Band Edge (Restricted-band band-edge)	FCC Part 15.247(d), 15.205, 15.209	PASS
Hopping Frequency Separation	FCC Part 15.247(a)(1)	PASS
Number of Hopping Frequency	FCC Part 15.247(a)(1)(iii)	PASS
Time of Occupancy	FCC Part 15.247(a)(1)(iii)	PASS
Conducted Emission on AC Mains	FCC Part 15.207(a)	PASS

TEST REPORT

Report No.: SHE24110067-02CE

Date: 2025-02-19

Page 6 of 80

2 Test Condition

2.1 Environmental conditions

Temperature (°C)	15-35
Humidity (%RH)	30-60
Barometric Pressure (mbar)	860-1060

Note: Actual values will be recorded during the test.

2.2 Equipment List

Name of Equipment	Manufacturer	Model	Serial No.	Cal. Date	Cal. Due
Spectrum Analyzer	Keysight	N9020B	MY59260184	2024-06-26	2025-06-25
Spectrum Analyzer	Rohde & Schwarz	FSV40N	101450	2024-06-04	2025-06-03
Signal Generator	Rohde & Schwarz	SMR27	100184	2024-06-26	2025-06-25
EMI Test Receiver	Rohde & Schwarz	ESPI3	100173	2024-06-05	2025-06-04
EMI Test Receiver	Rohde & Schwarz	ESR 7	101911	2024-06-04	2025-06-03
V-network	SCHWARZBECK	NSLK 8127	8127-902	2024-06-05	2025-06-04
Attenuator	SCHWARZBECK	VTSD 9561-FN	/	2024-06-05	2025-06-04
Broadband Antenna	SCHWARZBECK	VULB9163	9163-1037	2023-03-22	2025-03-21
Horn Antenna-18G	SCHWARZBECK	BBHA9120D	9120D-1775	2023-06-13	2025-06-12
Loop Antenna	SCHWARZBECK	FMZB 1513	/	2023-06-09	2025-06-08
Horn Antenna-40G	YINGLIAN	LB-180400-KF	N/A	2023-06-18	2025-06-17
Broadband Preamplifier	SCHWARZBECK	BBV 9718	346	2024-06-04	2025-06-03
EMC chamber 9*6*6(L*W*H)	CHANGNING	966	N/A	2023-06-09	2025-06-08
Shielded Enclosure 8*5*4(L*W*H)	CHANGNING	854	N/A	2023-06-09	2025-06-08
Test Software	BL	BL410_E	Version:2.1.1.436	N/A	N/A
Test Software	BL	BL410_R	Version:2.1.1.409	N/A	N/A

TEST REPORT

Report No.: SHE24110067-02CE

Date: 2025-02-19

Page 7 of 80

2.3 Measurement Uncertainty

The uncertainty is calculated using the methods suggested in the “Guide to the Expression of Uncertainty in measurement” (GUM) published by CISPR and ANSI. The reported uncertainty of measurement $y \pm U$, where expended uncertainty U is based on a standard uncertainty multiplied by a coverage factor of $k=2$, providing a level of confidence of approximately 95%.

Parameter		Uncertainty
Antenna Port Conducted Emission		$\pm 1.04\text{dB}$
Radiated Emission	< 1GHz	$\pm 5.00\text{dB}$
	> 1GHz	$\pm 5.46\text{dB}$
Conducted Emission on AC Mains	150kHz-30MHz	$\pm 2.68\text{ dB}$
Occupied Channel Bandwidth		$\pm 39.26\text{KHz}$
Maximum Conducted Output Power		$\pm 1.12\text{dB}$

TEST REPORT

Report No.: SHE24110067-02CE

Date: 2025-02-19

Page 8 of 80

3 Test Set-up and Operation Modes

3.1 Details of Test Mode

Using test software to control EUT work in continuous transmit mode. Select test channel as below:

Channel	Frequency
The lowest channel (CH00)	2402MHz
The middle channel (CH39)	2441MHz
The highest channel (CH78)	2480MHz

The basic operation modes are:

- A. On
 - 1. BR/EDR mode
 - a. Transmitting
 - i. Low Channel
 - ii. Middle Channel
 - iii. High Channel
 - iv. Hopping mode
 - b. Receiving
 - 2. Normal working with Bluetooth on
- B. Standby
- C. Off

3.2 Special Accessories and Auxiliary Equipment

Description	Manufacturer	Model Name	Serial No.
Display	Dell	YMLK003	YMLK003
Mouse	Dell	MS116t1	CN-065K5F-LO300-248-0VP2
Keyboard	Dell	KB216P	CN-0M4W71-73826-6C801SQ-A02
HDMI Cable	N/A	N/A	1m Unshielded

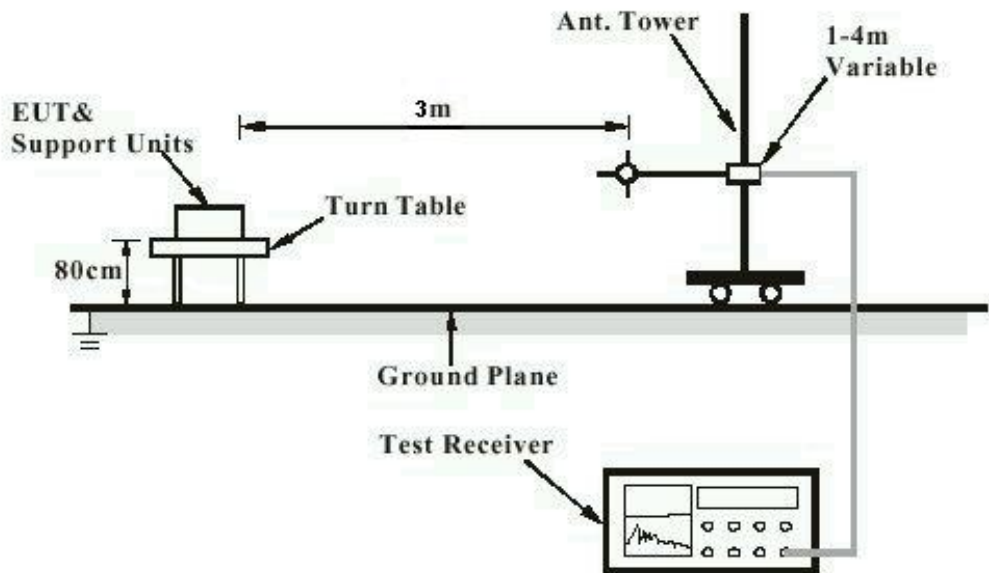
3.3 Support Software

Description	Manufacturer	Software Name
Software	N/A	Bluetooth RF Test Tool (RtlBluetooth MP.dll Version: 5.3.1.89 RTLBTAPP Version: 5.2.3.16)

TEST REPORT

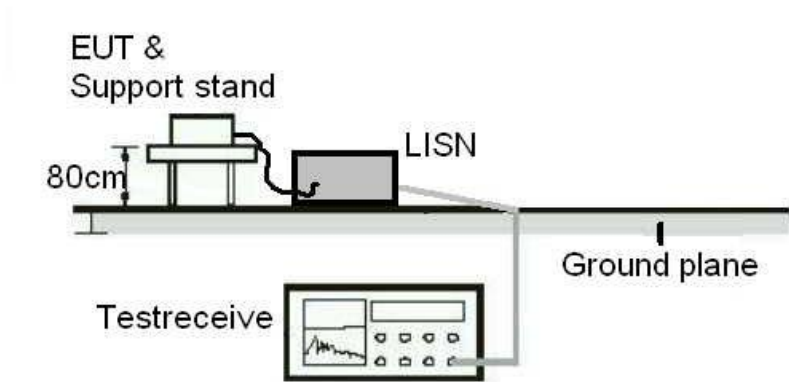
3.4 Test Setup Diagram

Diagram of Measurement Configuration for Radiation Test



Note: Measurements above 1GHz are done with a table height of 1.5m. In addition, there is RF absorbing material on the floor of the test site for above 1GHz measurement.

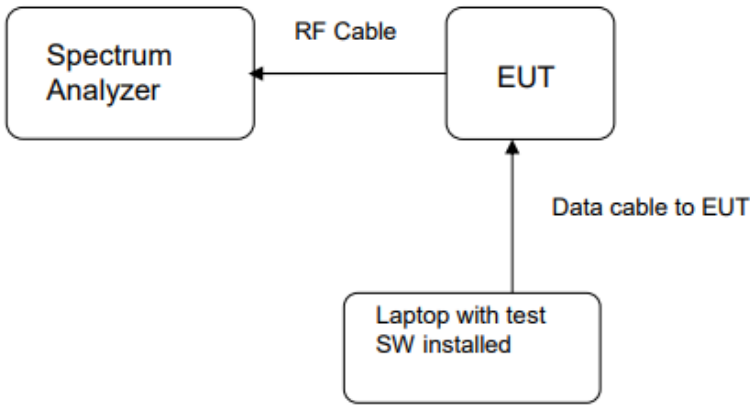
Diagram of Measurement Configuration for Conduction Test



TEST REPORT

Report No.: SHE24110067-02CE Date: 2025-02-19 Page 10 of 80

Diagram of Measurement Configuration for Transmitter Test



TEST REPORT

Report No.: SHE24110067-02CE Date: 2025-02-19 Page 11 of 80

4 Test Results

4.1 Transmitter Requirement & Test Suites

4.1.1 Antenna Requirement

RESULT: PASS

Test standard Requirement	: FCC Part 15.247(b)(4), 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. In addition, If transmitting antennas of directional gain greater than 6dBi are used, both the maximum conducted output power and the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6dBi.
------------------------------	--

According to the manufacturer declaration, the EUT has an antenna with a directional gain of 1.51dBi. The antenna is an internal antenna with no possibility of replacement with a non-approved antenna by the end-user.

Therefore, the EUT is considered to comply with this provision.

TEST REPORT

Report No.: SHE24110067-02CE

Date: 2025-02-19

Page 12 of 80

4.1.2 Maximum Peak Output Power

RESULT:

PASS

Test standard : FCC Part 15.247(b)(1)

Requirement : ANSI C63.10-2013, Clause 7.8.5
KDB 558074 D01 v05r02, Clause 2.2

Kind of test site : Shielded room

Test setup

Test Channel : Low/Middle/High

Operation Mode : A.1.a

Ambient temperature : 22.2°C

Relative humidity : 32%

Table 1: Maximum Peak Output Power

Test Mode	Test Channel (MHz)	Peak Output Power Measurement Result		Limit (W)
		(dBm)	(mW)	
GFSK	2402	4.56	2.86	< 1
	2441	4.29	2.69	
	2480	4.97	3.14	
$\pi/4$ -DQPSK	2402	7.76	5.97	< 0.125
	2441	7.03	5.05	
	2480	7.23	5.28	
8-DPSK	2402	8.17	6.56	< 0.125
	2441	7.57	5.71	
	2480	7.72	5.92	

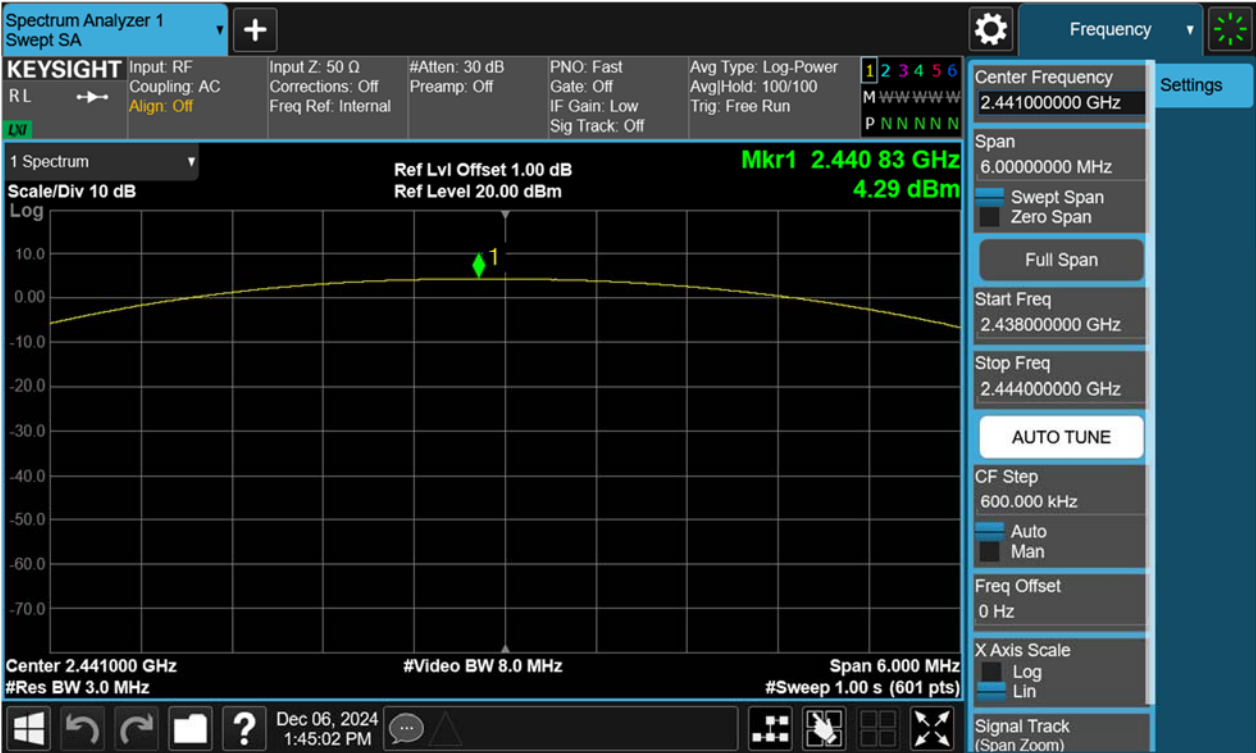
TEST REPORT

Report No.: SHE24110067-02CE Date: 2025-02-19 Page 13 of 80

Figure 1: Maximum Peak Output Power, 2402MHz, GFSK



Figure 2: Maximum Peak Output Power, 2441MHz, GFSK



TEST REPORT

Report No.: SHE24110067-02CE Date: 2025-02-19 Page 14 of 80

Figure 3: Maximum Peak Output Power, 2480MHz, GFSK



Figure 4: Maximum Peak Output Power, 2402MHz, $\pi/4$ -DQPSK



TEST REPORT

Report No.: SHE24110067-02CE Date: 2025-02-19 Page 15 of 80

Figure 5: Maximum Peak Output Power, 2441MHz, $\pi/4$ -DQPSK



Figure 6: Maximum Peak Output Power, 2480MHz, $\pi/4$ -DQPSK



TEST REPORT

Report No.: SHE24110067-02CE Date: 2025-02-19 Page 16 of 80

Figure 7: Maximum Peak Output Power, 2402MHz, 8-DPSK

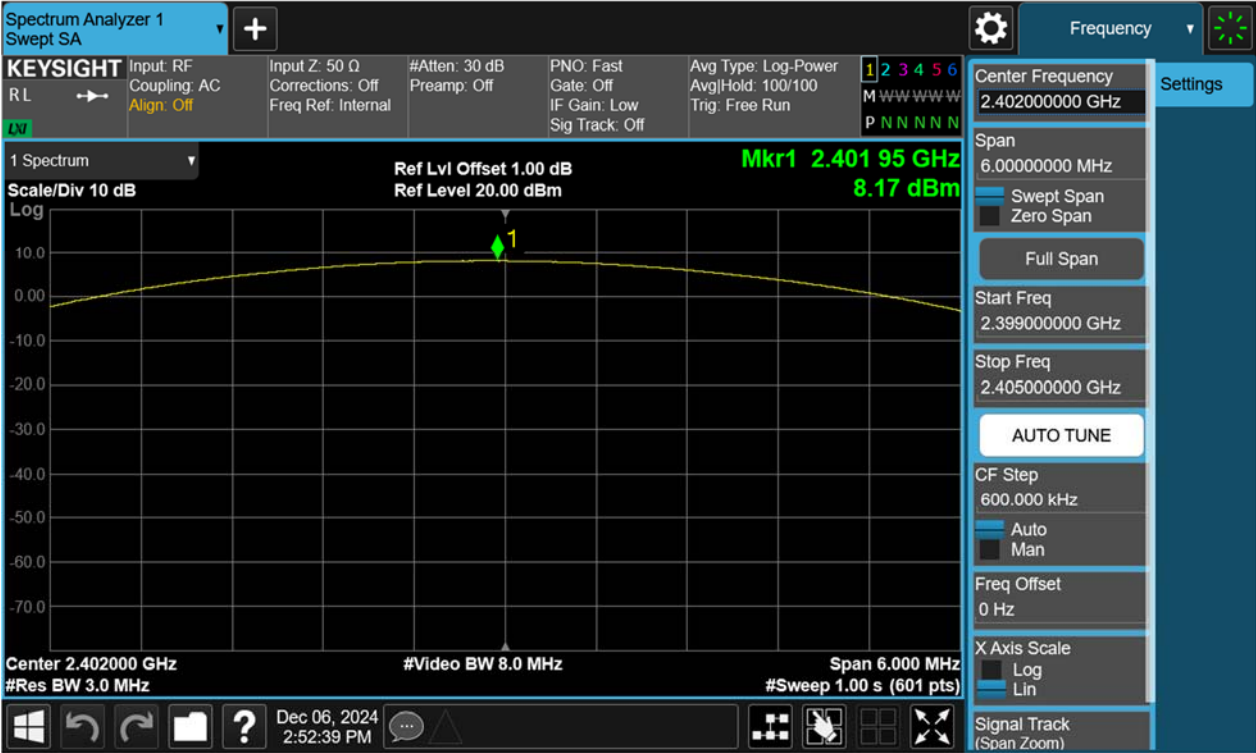
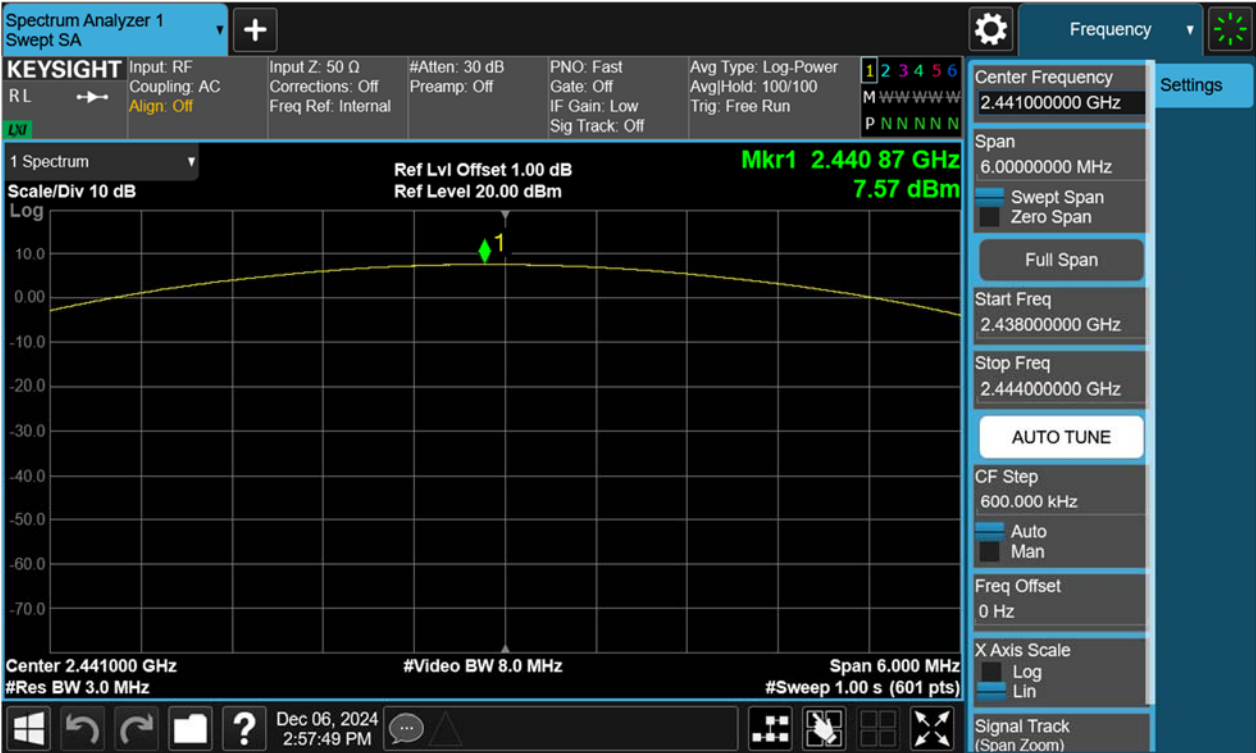


Figure 8: Maximum Peak Output Power, 2441MHz, 8-DPSK



TEST REPORT

Report No.: SHE24110067-02CE

Date: 2025-02-19

Page 17 of 80

Figure 9: Maximum Peak Output Power, 2480MHz, 8-DPSK



TEST REPORT

Report No.: SHE24110067-02CE

Date: 2025-02-19

Page 18 of 80

4.1.3 20dB Bandwidth and 99% Bandwidth

RESULT:

PASS

Test standard : FCC Part 15.247(a)(1)

Requirement : ANSI C63.10-2013, Clause 7.8.7
KDB 558074 D01 v05r02, Clause 2.2

Kind of test site : Shielded room

Test setup

Test Channel : Low/Middle/High

Operation Mode : A.1.a

Ambient temperature : 22.2°C

Relative humidity : 32%

Table 2: 20dB Bandwidth and 99% Bandwidth

Test Mode	Test Channel (MHz)	20dB Bandwidth (MHz)	99% Bandwidth (MHz)
GFSK	2402	0.9595	0.8614
	2441	0.9629	0.8673
	2480	0.9602	0.8618
π /4-DQPSK	2402	1.3710	1.1950
	2441	1.3700	1.1941
	2480	1.3690	1.1938
8-DPSK	2402	1.3510	1.2043
	2441	1.3510	1.2026
	2480	1.3500	1.2024

TEST REPORT

Report No.: SHE24110067-02CE Date: 2025-02-19 Page 19 of 80

Figure 10: 20dB Bandwidth and 99% Bandwidth, 2402MHz, GFSK



Figure 11: 20dB Bandwidth and 99% Bandwidth, 2441MHz, GFSK



TEST REPORT

Report No.: SHE24110067-02CE Date: 2025-02-19 Page 20 of 80

Figure 12: 20dB Bandwidth and 99% Bandwidth, 2480MHz, GFSK



Figure 13: 20dB Bandwidth and 99% Bandwidth, 2402MHz, π /4-DQPSK



TEST REPORT

Report No.: SHE24110067-02CE Date: 2025-02-19 Page 21 of 80

Figure 14: 20dB Bandwidth and 99% Bandwidth, 2441MHz, $\pi/4$ -DQPSK



Figure 15: 20dB Bandwidth and 99% Bandwidth, 2480MHz, $\pi/4$ -DQPSK



TEST REPORT

Report No.: SHE24110067-02CE Date: 2025-02-19 Page 22 of 80

Figure 16: 20dB Bandwidth and 99% Bandwidth, 2402MHz, 8-DPSK

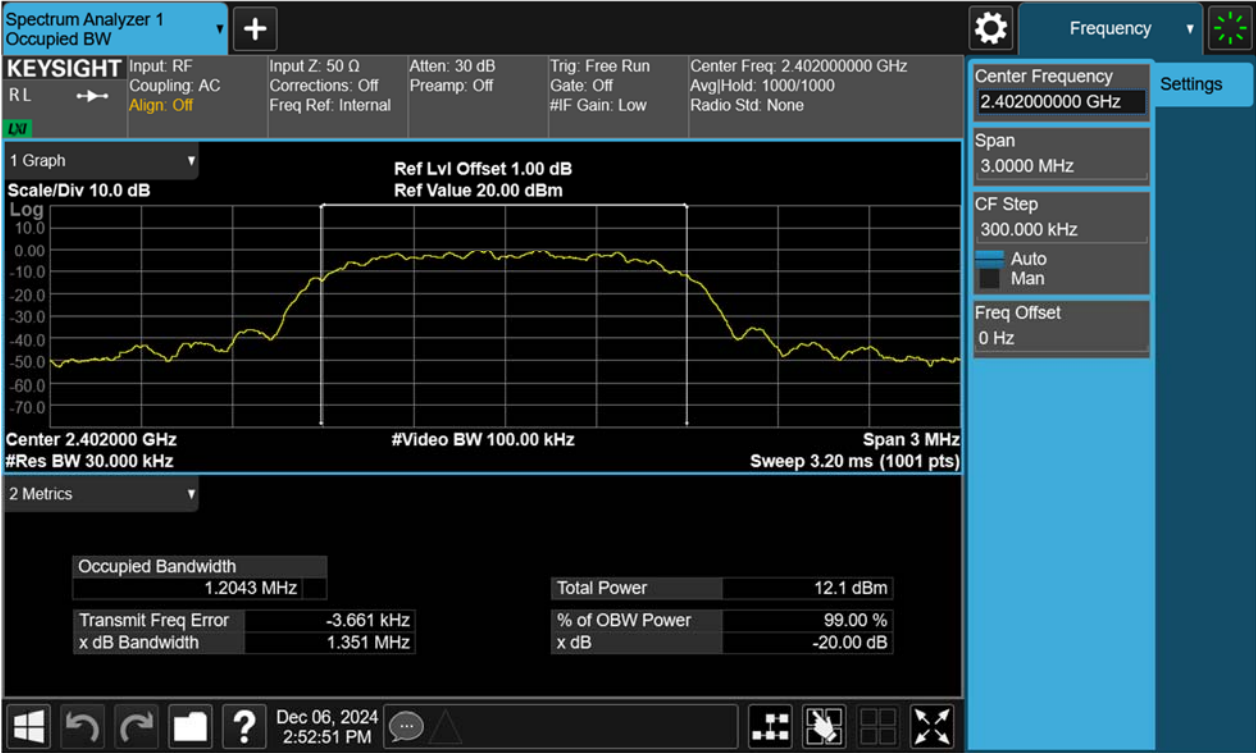


Figure 17: 20dB Bandwidth and 99% Bandwidth, 2441MHz, 8-DPSK



TEST REPORT

Report No.: SHE24110067-02CE

Date: 2025-02-19

Page 23 of 80

Figure 18: 20dB Bandwidth and 99% Bandwidth, 2480MHz, 8-DPSK



TEST REPORT

Report No.: SHE24110067-02CE

Date: 2025-02-19

Page 24 of 80

4.1.4 Conducted Spurious Emission & Authorized-band band-edge

RESULT:

PASS

Test standard	: FCC Part 15.247(d)
Requirement	: ANSI C63.10-2013, Clause 7.8.8
Kind of test site	: Shielded room

Test setup

Test Channel	: Low/Middle/High for spurious, Low/High for Band Edge
Operation Mode	: A.1.a
Ambient temperature	: 22.2°C
Relative humidity	: 32%

For details refer to following test plot.

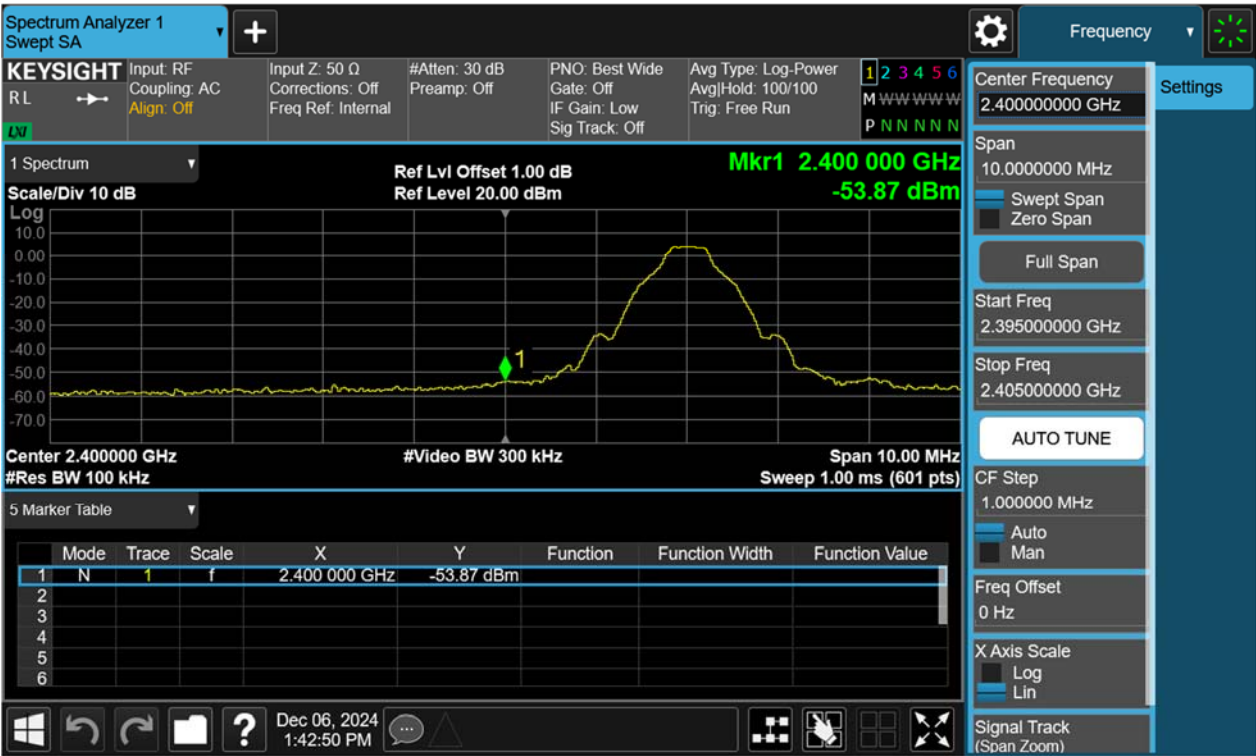
TEST REPORT

Report No.: SHE24110067-02CE Date: 2025-02-19 Page 25 of 80

Figure 19: Conducted Spurious Emission & Authorized-band band-edge, 2402MHz, GFSK Carrier Level



Band Edge



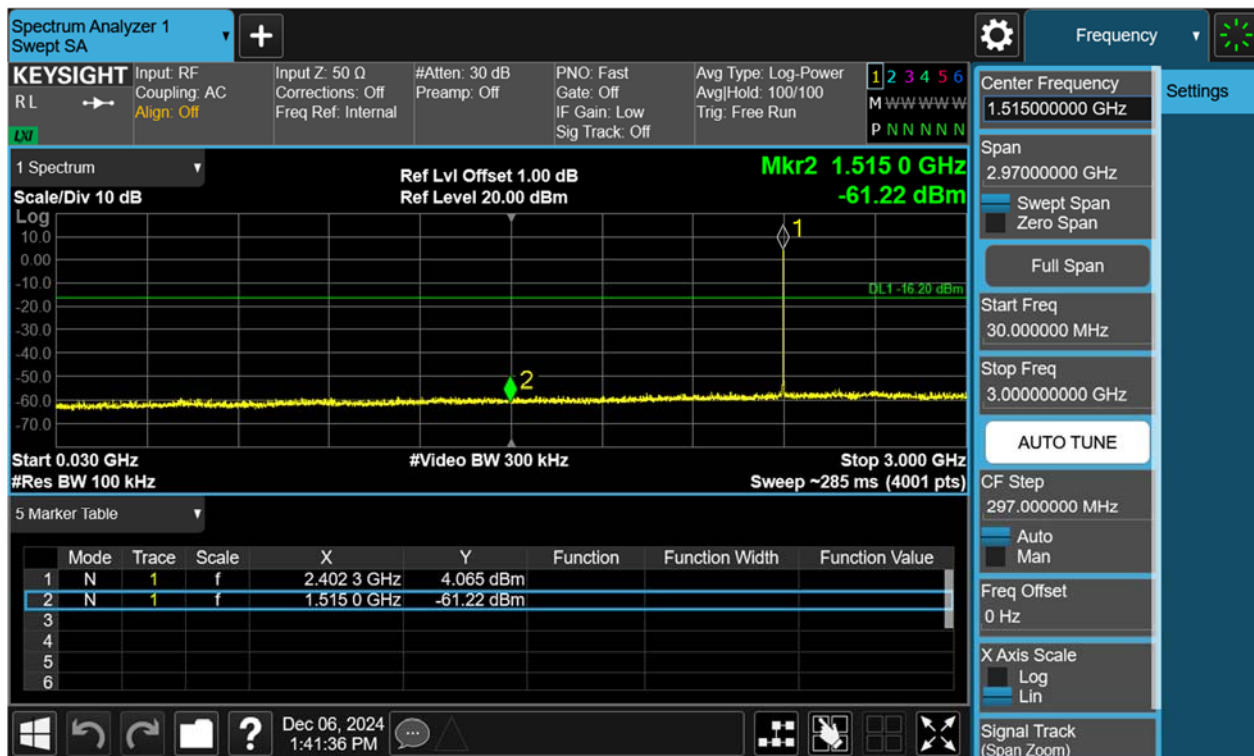
TEST REPORT

Report No.: SHE24110067-02CE

Date: 2025-02-19

Page 26 of 80

Conducted spurious emissions 30MHz-25GHz



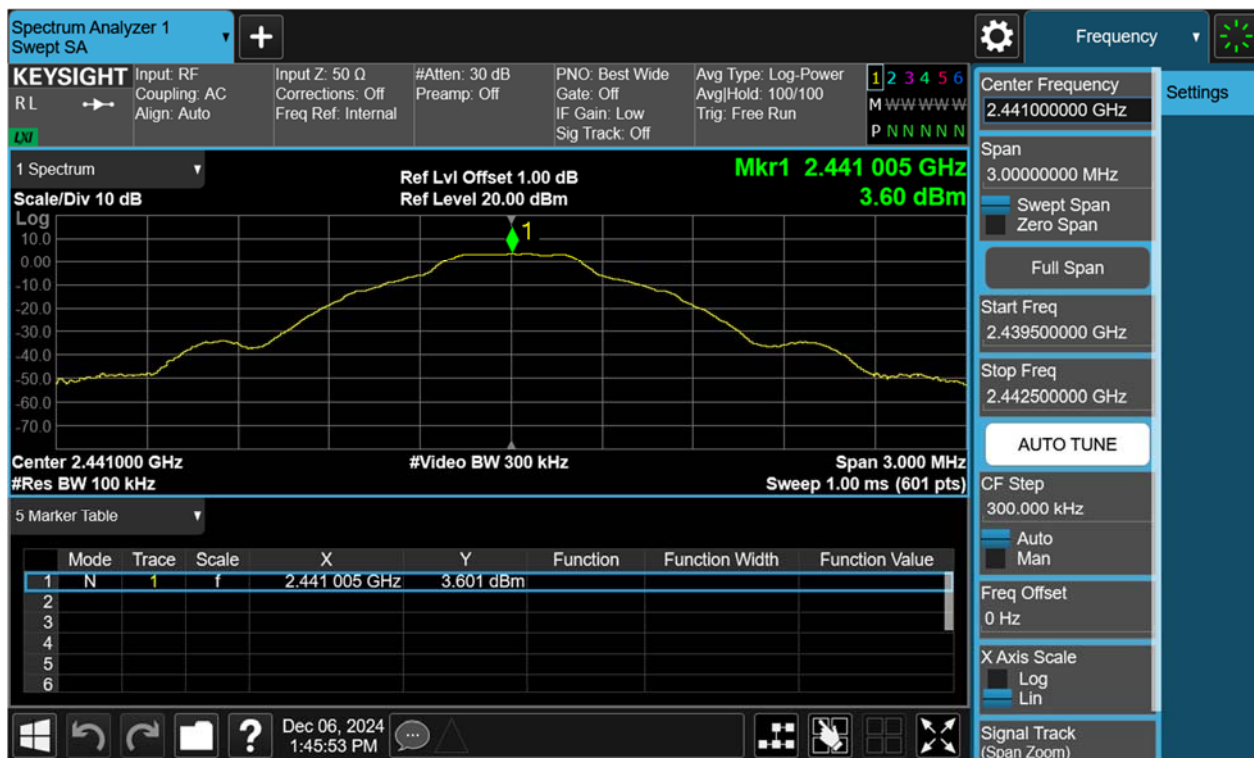
TEST REPORT

Report No.: SHE24110067-02CE

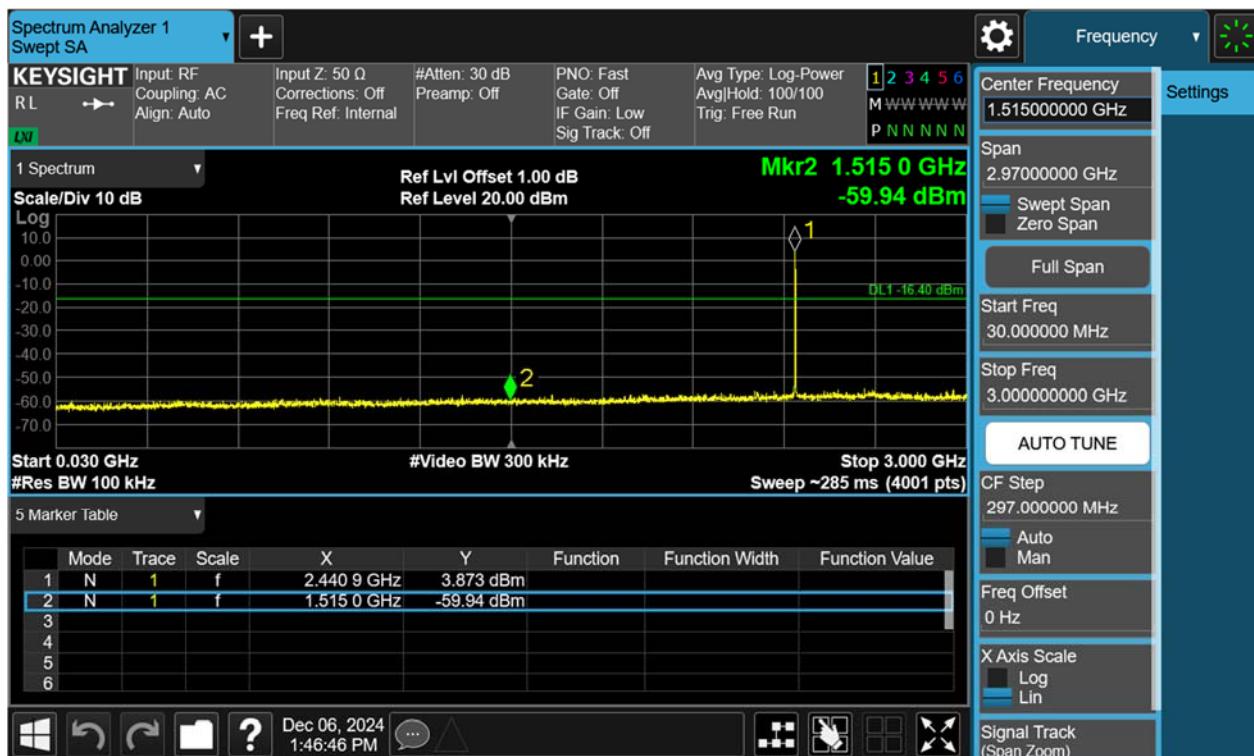
Date: 2025-02-19

Page 27 of 80

Figure 20: Conducted Spurious Emission & Authorized-band band-edge, 2441MHz, GFSK Carrier Level



Conducted spurious emissions 30MHz-25GHz



TEST REPORT

Report No.: SHE24110067-02CE Date: 2025-02-19 Page 28 of 80

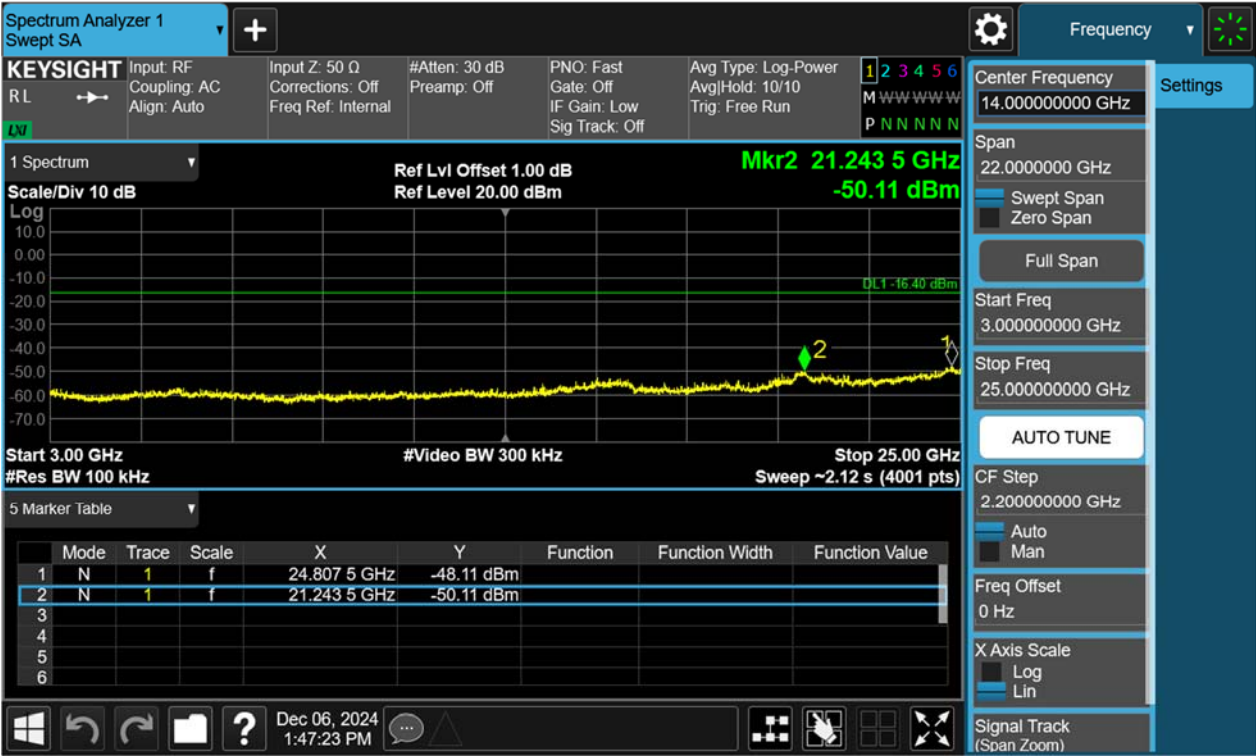


Figure 21: Conducted Spurious Emission & Authorized-band band-edge, 2480MHz, GFSK Carrier Level



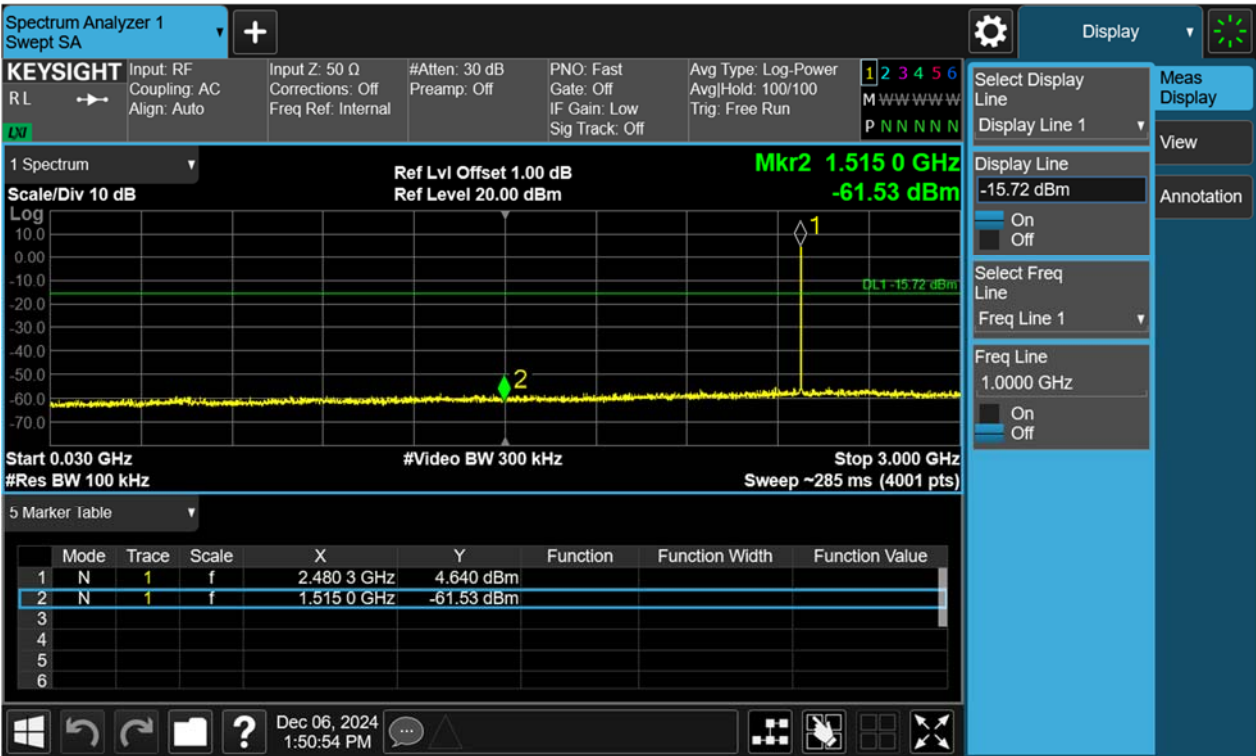
TEST REPORT

Report No.: SHE24110067-02CE Date: 2025-02-19 Page 29 of 80

Band Edge



Conducted spurious emissions 30MHz-25GHz



TEST REPORT

Report No.: SHE24110067-02CE Date: 2025-02-19 Page 30 of 80

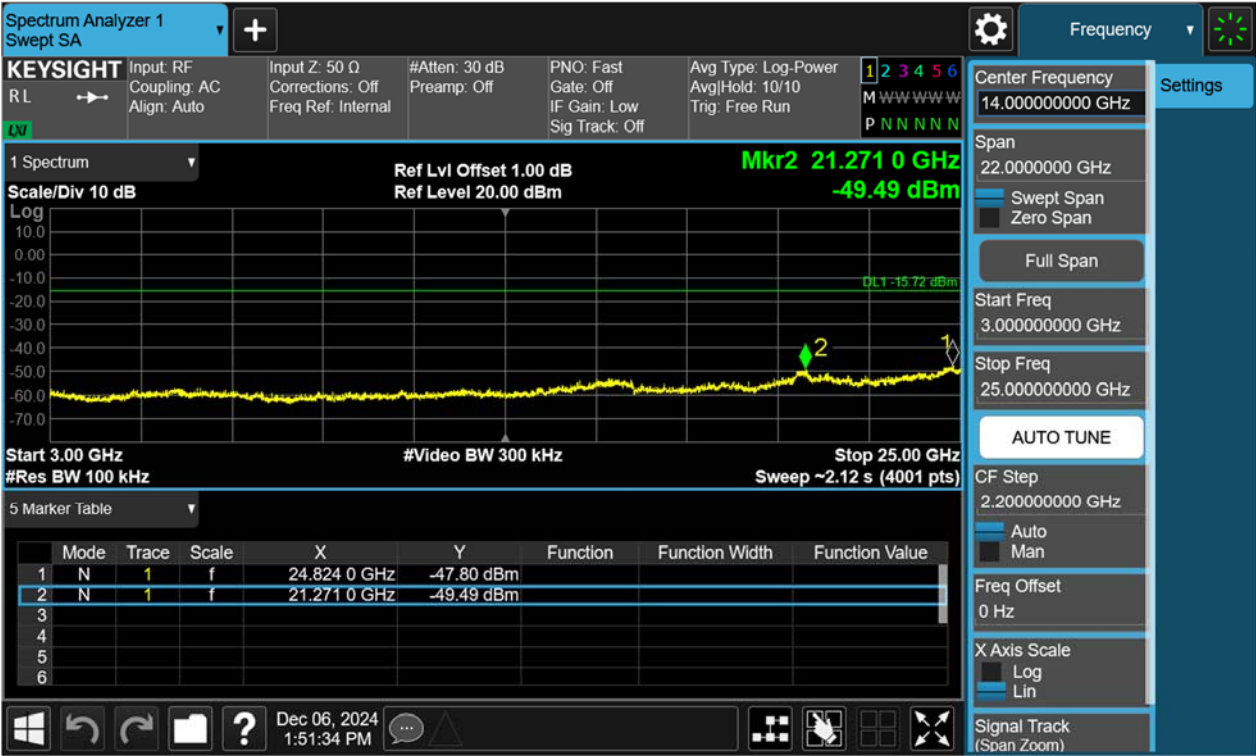
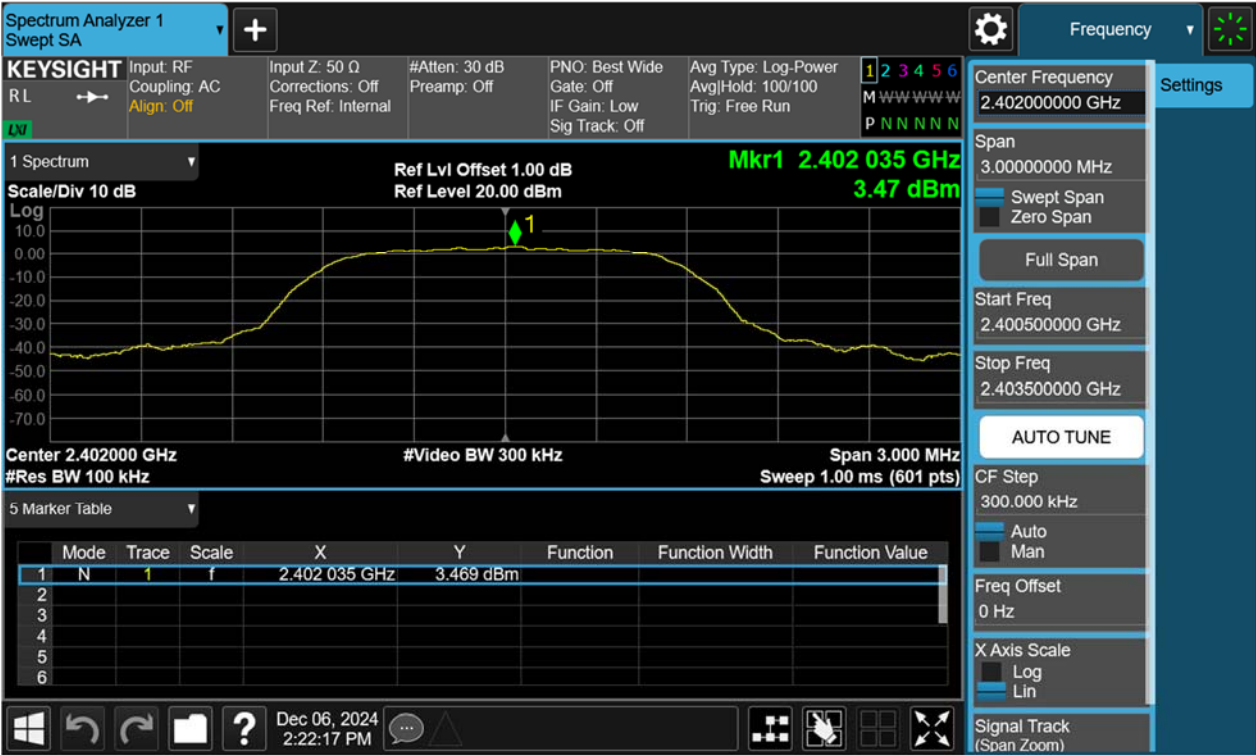


Figure 22: Conducted Spurious Emission & Authorized-band band-edge, 2402MHz, $\pi/4$ -DQPSK Carrier Level



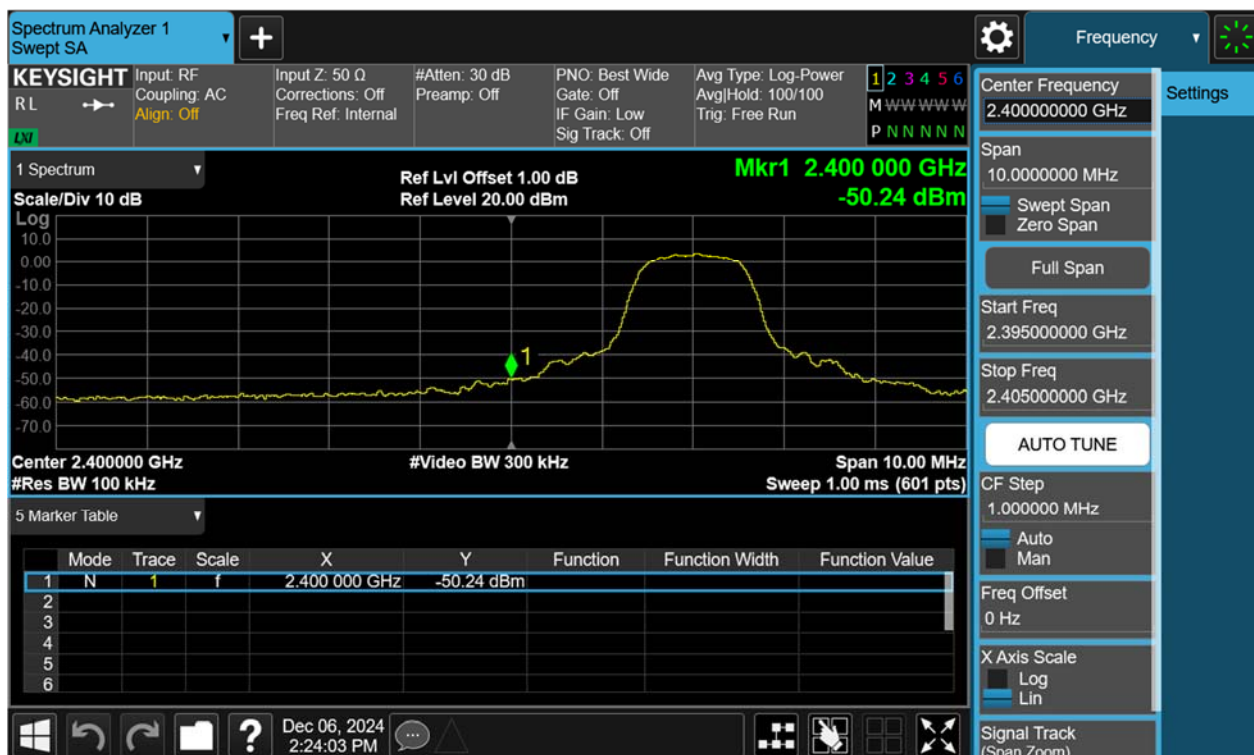
TEST REPORT

Report No.: SHE24110067-02CE

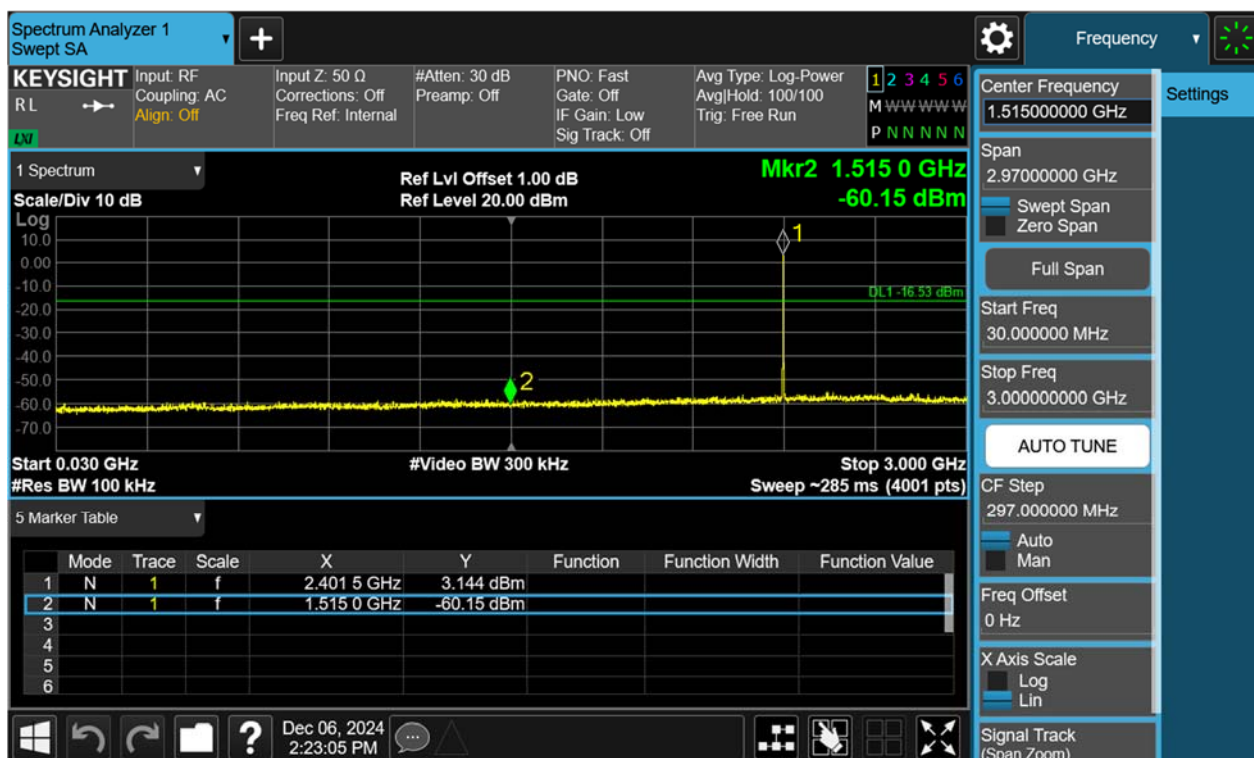
Date: 2025-02-19

Page 31 of 80

Band Edge



Conducted spurious emissions 30MHz-25GHz

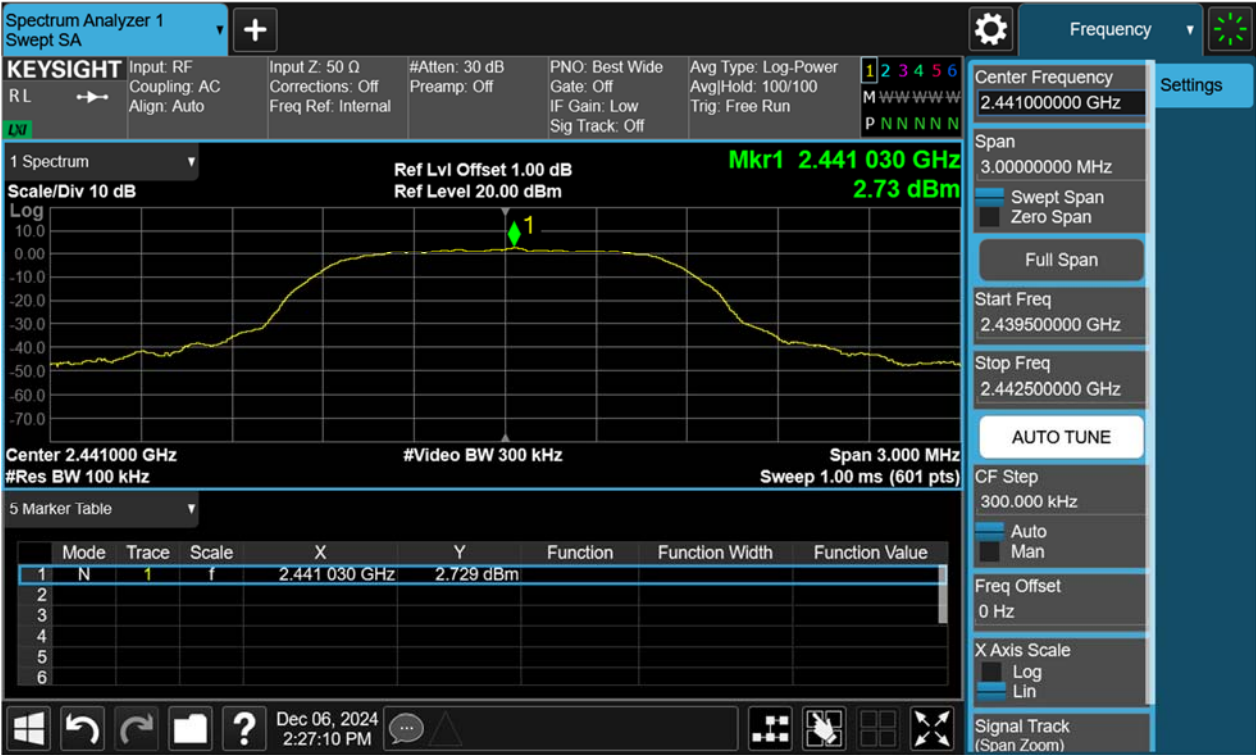


TEST REPORT

Report No.: SHE24110067-02CE Date: 2025-02-19 Page 32 of 80



Figure 23: Conducted Spurious Emission & Authorized-band band-edge, 2441MHz, $\pi/4$ -DQPSK Carrier Level



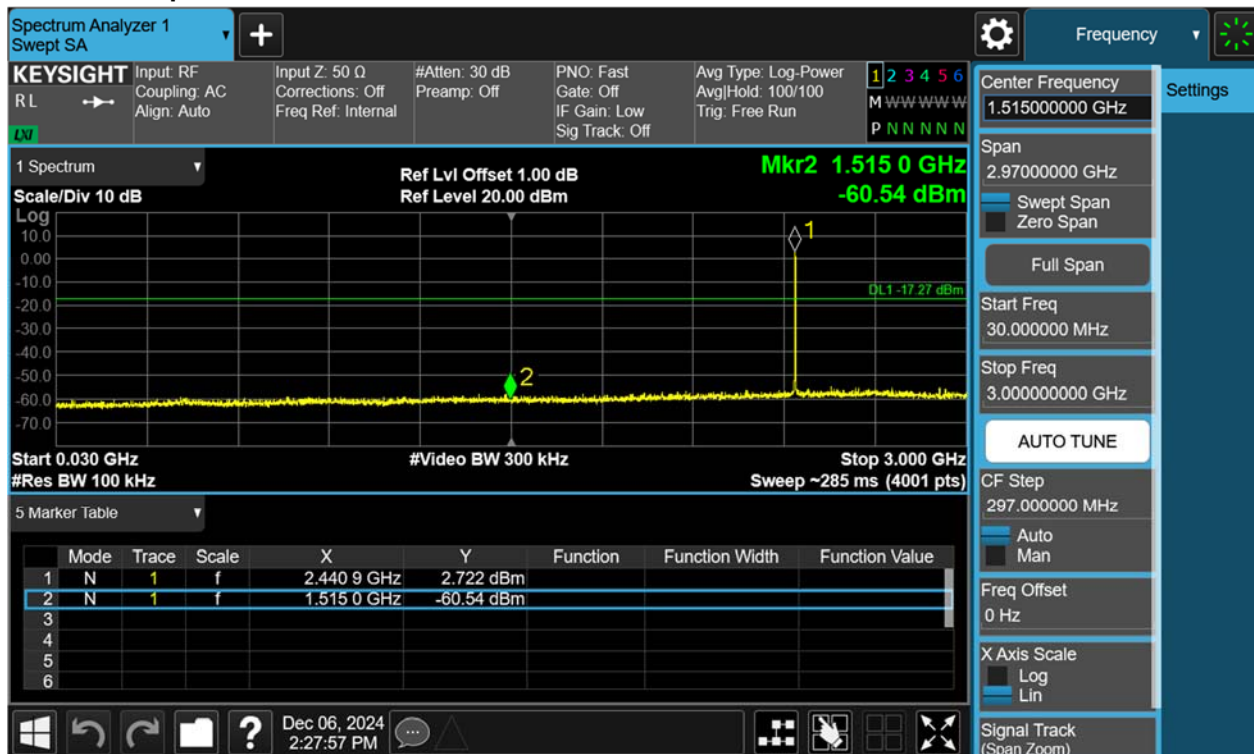
TEST REPORT

Report No.: SHE24110067-02CE

Date: 2025-02-19

Page 33 of 80

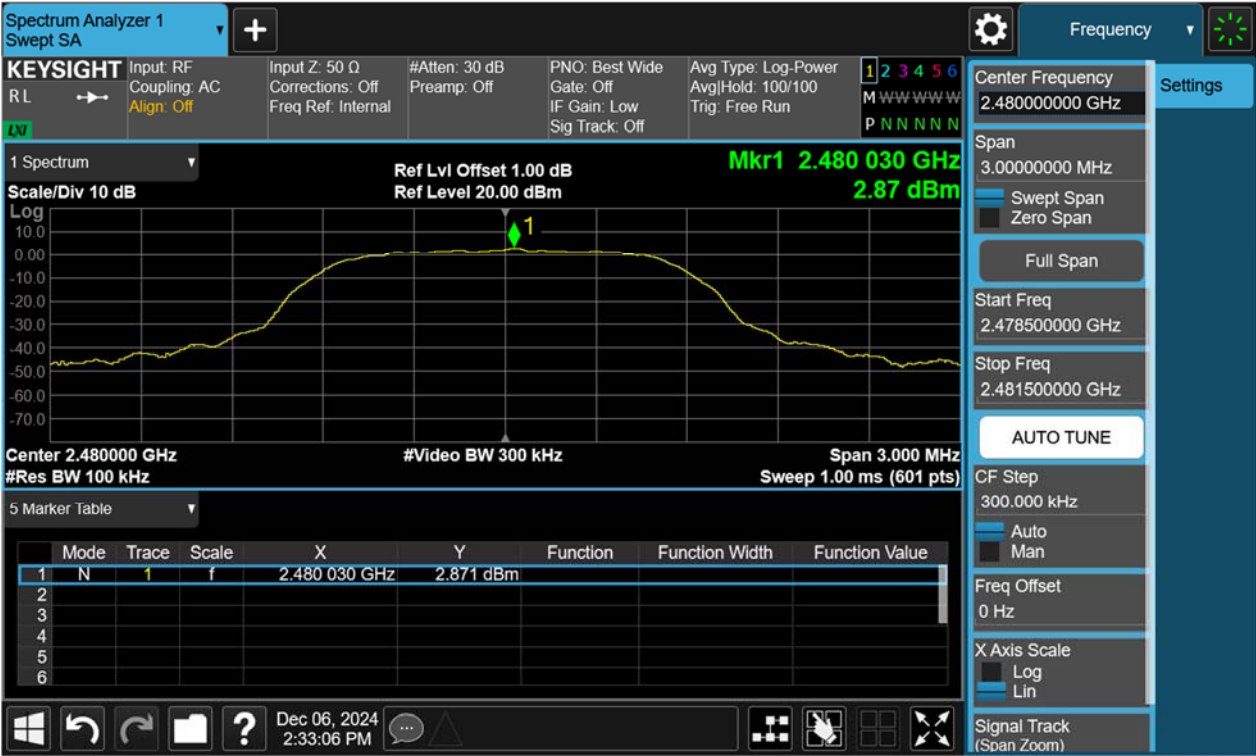
Conducted spurious emissions 30MHz-25GHz



TEST REPORT

Report No.: SHE24110067-02CE Date: 2025-02-19 Page 34 of 80

Figure 24: Conducted Spurious Emission & Authorized-band band-edge, 2480MHz, $\pi/4$ -DQPSK Carrier Level



Band Edge



TEST REPORT

Report No.: SHE24110067-02CE

Date: 2025-02-19

Page 35 of 80

Conducted spurious emissions 30MHz-25GHz

