

# Allgon AB

## RF TEST REPORT

**Report Type:**

FCC Part 15.247 & ISSED RSS-247 RF report

**Model:**

D5-40, CL-AL017-1

**REPORT NUMBER:**

2309A1227SHA-001

**ISSUE DATE:**

December 20, 2023

**DOCUMENT CONTROL NUMBER:**

TTRF15.247-02\_V1 © 2018 Intertek



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**Manufacturer:** Allgon AB  
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**FCC ID:** 2BC3H2316A

**IC:** 31388-2316A

**SUMMARY:**

The equipment complies with the requirements according to the following standard(s) or Specification:

**47CFR Part 15 (2021):** Radio Frequency Devices (Subpart C)

**ANSI C63.10 (2020):** American National Standard of Procedures for Compliance Testing of Unlicensed Wireless Devices

**RSS-247 Issue 3 (August 2023):** Digital Transmission Systems (DTSS), Frequency Hopping Systems (FHSs) and Licence-Exempt Local Area Network (LE-LAN) Devices

**RSS-Gen Issue 5 Amendment 1 (March 2019) Amendment 2 (February 2021):** General Requirements for Compliance of Radio Apparatus

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## TEST REPORT

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## Revision History

Report No.	Version	Description	Issued Date
2309A1227SHA-001	Rev. 01	Initial issue of report	December 20, 2023

## Measurement result summary

TEST ITEM	FCC REFERENCE	IC REFERENCE	RESULT
Minimum 6dB Bandwidth	15.247(a)(2)	RSS-247 Issue 2 Clause 5.2	Pass
Maximum conducted output power and e.i.r.p.	15.247(b)(3)	RSS-247 Issue 2 Clause 5.4	Pass
Power spectrum density	15.247(e)	RSS-247 Issue 2 Clause 5.2	Pass
Emission outside the frequency band	15.247(d)	RSS-247 Issue 2 Clause 5.5	Pass
Radiated Emissions in restricted frequency bands	15.247(d), 15.205&15.209	RSS-Gen Issue 5 Clause 8.9&8.10	Pass
Power line conducted emission	15.207(a)	RSS-Gen Issue 5 Clause 8.8	NA
Occupied bandwidth	-	RSS-Gen Issue 5 Clause 6.6	Tested
Antenna requirement	15.203	-	Pass

Notes: 1: NA =Not Applicable

2: Determination of the test conclusion is based on IEC Guide 115 in consideration of measurement uncertainty.

3: Additions, Deviations and Exclusions from Standards: None.

## 1 GENERAL INFORMATION

### 1.1 Description of Equipment Under Test (EUT)

Product name:	Transceiver
Type/Model:	D5-40, CL-AL017-1
Host model:	T36-02
Description of EUT:	EUT is a wireless transceiver module, all models are the same except for the model name. The EUT was tested together with the host device.
Rating:	2.8V DC Host: 5-45Vdc 1A or 2.8-4.2Vdc,2000mAh (battery)
Category of EUT:	Class B
EUT type:	<input checked="" type="checkbox"/> Table top <input type="checkbox"/> Floor standing
Software Version:	/
Hardware Version:	/
Sample ID:	0230917-30-002
Sample received date:	October 11, 2023
Date of test:	October 11, 2023 – November 24, 2023

### 1.2 Technical Specification

Frequency Range:	2405-2480MHz
Type of Modulation:	O-QPSK
Channel Number:	16
Channel Separation:	5MHz
Antenna Information:	Internal chip antenna, 4.0dBi max

**Note:**

1. This information is supplied by the applicant. Any change on this value would result in different test data / conclusion.

### 1.3 Description of Test Facility

Name:	Intertek Testing Services Shanghai
Address:	Building 86, No. 1198 Qinzhou Road(North), Shanghai 200233, P.R. China
Telephone:	86 21 61278200
Telefax:	86 21 54262353

The test facility is recognized, certified, or accredited by these organizations:	CNAS Accreditation Lab Registration No. CNAS L0139
	FCC Accredited Lab Designation Number: CN0175
	IC Registration Lab CAB identifier.: CN0014
	VCCI Registration Lab Registration No.: R-14243, G-10845, C-14723, T-12252
	A2LA Accreditation Lab Certificate Number: 3309.02

## 2 TEST SPECIFICATIONS

### 2.1 Standards or specification

47CFR Part 15 (2021)

ANSI C63.10 (2020)

RSS-247 Issue 3 (August 2023)

RSS-Gen Issue 5 Amendment 1 (March 2019) Amendment 2 (February 2021)

KDB 558074 D01 15.247 Meas Guidance v05r02

### 2.2 Mode of operation during the test

Three axes (X, Y, Z) were observed while the test receiver worked as “max hold” continuously and the highest reading among the whole test procedure was recorded. Compare with the test results that X axis is the worst case.

The channels were tested as representatives.

Frequency Band (MHz)				2405 ~ 2480			
Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)
11	2405	15	2425	19	2445	23	2465
12	2410	16	2430	20	2450	24	2470
13	2415	17	2435	21	2455	25	2475
14	2420	18	2440	22	2460	26	2480

#### Data rate VS Power:

The test setting software is offered by the manufactory. The pre-scan for the conducted power with all rates in each modulation and bands was used, and the worst case was found and used in all test cases.

Test software and Power Setting parameter			
Test Software	SW0026-15v01pre10-RadioPerformanceMeterII		
Working Mode	Continuously transmission		
Test Channel	2405MHz	2440MHz	2480MHz
Power Setting	15	15	15

While testing transmitting mode of EUT, the internal modulation and continuously transmission was applied. The EUT was tested together with the host device.

Radiated test mode: EUT transmitted signal with antenna;

Conducted test mode: EUT transmitted signal from RF port connected to SPA directly;

## TEST REPORT

### 2.3 Test software list

Test Items	Software	Manufacturer	Version
Conducted emission	ESxS-K1	R&S	V2.1.0
Radiated emission	ES-K1	R&S	V1.71

### 2.4 Test peripherals list

Item No.	Name	Band and Model	Description
1	Laptop computer	HP	-
-	-	-	-
-	-	-	-

### 2.5 Test environment condition:

Test items	Temperature	Humidity
Minimum 6dB Bandwidth	25°C	54% RH
Maximum conducted output power and e.i.r.p.		
Power spectrum density		
Emission outside the frequency band		
Occupied bandwidth		
Radiated Emissions in restricted frequency bands	24°C	52% RH
Power line conducted emission	NA	NA

## 2.6 Instrument list

Radiated Emission					
Used	Equipment	Manufacturer	Type	Internal no.	Due date
<input checked="" type="checkbox"/>	Test Receiver	R&S	ESIB 26	EC 3045	2024-09-14
<input checked="" type="checkbox"/>	Bilog Antenna	TESEQ	CBL 6112D	EC 4206	2024-10-24
<input checked="" type="checkbox"/>	Pre-amplifier	R&S	AFS42-00101800-25-S-42	EC5262	2024-06-10
<input type="checkbox"/>	Horn antenna	R&S	HF 906	EC 3049	2024-01-16
<input checked="" type="checkbox"/>	Horn antenna	ETS	3117	EC 4792-1	2024-03-14
<input type="checkbox"/>	Horn antenna	TOYO	HAP18-26W	EC 4792-3	2024-07-07
<input type="checkbox"/>	Active loop antenna	Schwarzbeck	FMZB1519	EC 5345	2024-03-23
<input type="checkbox"/>	Horn antenna	ETS	3116c	Ec5955	2024-01-16
RF test					
Used	Equipment	Manufacturer	Type	Internal no.	Due date
<input checked="" type="checkbox"/>	PXA Signal Analyzer	Keysight	N9030A	EC 5338	2024-09-08
<input type="checkbox"/>	Power sensor	Agilent	U2021XA	EC 5338-1	2024-03-01
<input type="checkbox"/>	Vector Signal Generator	Agilent	N5182B	EC 5175	2024-03-01
<input type="checkbox"/>	MXG Analog Signal Generator	Agilent	N5181A	EC 5338-2	2024-03-01
<input type="checkbox"/>	Mobile Test System	Litepoint	lqxel	EC 5176	2024-01-09
<input type="checkbox"/>	Test Receiver	R&S	ESCI 7	EC 4501	2024-01-09
Additional instrument					
Used	Equipment	Manufacturer	Type	Internal no.	Due date
<input checked="" type="checkbox"/>	Therom-Hygrograph	ZJ1-2A	S.M.I.F.	EC 3442	2024-01-09

## 2.7 Measurement uncertainty

The measurement uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of k=2.

Test item	Measurement uncertainty
Maximum peak output power	$\pm 0.74\text{dB}$
Radiated Emissions in restricted frequency bands below 1GHz	$\pm 4.90\text{dB}$
Radiated Emissions in restricted frequency bands above 1GHz	$\pm 5.02\text{dB}$
Emission outside the frequency band	$\pm 2.89\text{dB}$
Power line conducted emission	$\pm 3.19\text{dB}$

### 3 Minimum 6dB bandwidth

Test result: Pass

#### 3.1 Limit

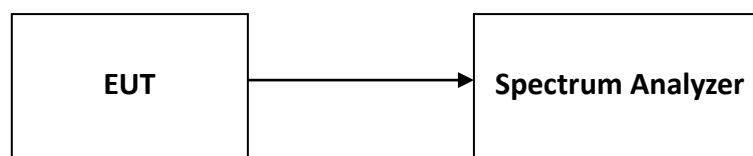
For systems using digital modulation techniques that may operate in the 902 - 928 MHz, 2400 - 2483.5 MHz and 5725 - 5850 MHz bands, the minimum 6 dB bandwidth shall be at least 500 kHz.

#### 3.2 Measurement Procedure

The minimum 6dB bandwidth is measured using the Spectrum Analyzer according to “KDB558074 D01” (clause 8.2) for compliance requirements.

- a) Set RBW = 100 kHz.
- b) Set the video bandwidth (VBW)  $\geq 3 \times$  RBW.
- c) Detector = Peak.
- d) Trace mode = max hold.
- e) Sweep = auto couple.
- f) Allow the trace to stabilize.
- g) Measure the maximum width of the emission that is constrained by the frequencies associated with the two outermost amplitude points (upper and lower frequencies) that are attenuated by 6 dB relative to the maximum level measured in the fundamental emission.

#### 3.3 Test Configuration



#### 3.4 Test Results of Minimum 6dB bandwidth

Please refer to Appendix A

## 4 Maximum conducted output power and e.i.r.p.

**Test result:** Pass

### 4.1 Limit

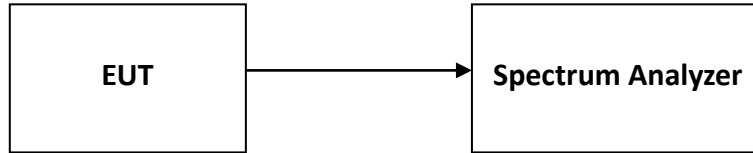
For systems using digital modulation in the 902-928 MHz, 2400-2483.5 MHz, and 5725-5850 MHz bands:  
1 W. (The e.i.r.p. shall not exceed 4 W)

If the transmitting antenna of directional gain greater than 6dBi is used, the power shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6dBi. If there have a beam forming type, the limit should be the minimum of 30dBm and 30+ (6 –antenna gain-beam forming gain).

### 4.2 Measurement Procedure

The EUT was tested according to test procedure of “KDB558074 D01” (clause 9.1.1) for compliance requirements.

- a) Set the RBW  $\geq$  6dB bandwidth.
- b) Set VBW  $\geq$  3  $\times$  RBW.
- c) Set span  $\geq$  3  $\times$  RBW
- d) Sweep time = auto couple.
- e) Detector = peak.
- f) Trace mode = max hold.
- g) Allow trace to fully stabilize.
- h) Use peak marker function to determine the peak amplitude level.

**TEST REPORT****4.3 Test Configuration****4.4 Test Results of Maximum conducted output power**

Please refer to Appendix A

**TEST REPORT**

## 5 Power spectrum density

**Test result:** Pass

### 5.1 Limit

For digitally modulated systems, the power spectral density conducted from the intentional radiator to the antenna shall not be greater than 8dBm in any 3 kHz band during any time interval of continuous transmission.

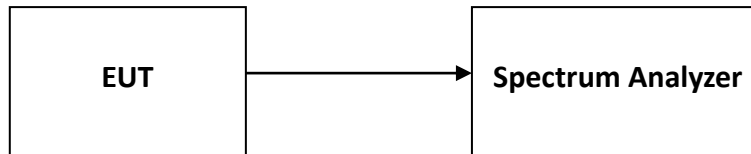
If the transmitting antenna of directional gain greater than 6dBi is used, the power shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6dBi. If there have a beam forming type, the limit should be the minimum of 8dBm/MHz and  $8 + (6 - \text{antenna gain} - \text{beam forming gain})$ .

### 5.2 Measurement Procedure

The power output was tested according to test procedure of "KDB558074 D01" (clause 10.2) for compliance requirements.

- a) Set analyzer center frequency to channel center frequency.
- b) Set the span to 1.5 times the 6dB bandwidth.
- c) Set the RBW to:  $3 \text{ kHz} \leq \text{RBW} \leq 100 \text{ kHz}$ .
- d) Set the VBW  $\geq 3 \times \text{RBW}$ .
- e) Detector = peak.
- f) Sweep time = auto couple.
- g) Trace mode = max hold.
- h) Allow trace to fully stabilize.
- i) Use the peak marker function to determine the maximum amplitude level within the RBW.
- j) If measured value exceeds limit, reduce RBW (no less than 3 kHz) and repeat.

### 5.3 Test Configuration



### 5.4 Test Results of Power spectrum density

Please refer to Appendix A

## 6 Emission outside the frequency band

**Test result:** Pass

### 6.1 Limit

In any 100 kHz bandwidth outside the frequency band in which the spread spectrum intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power.

### 6.2 Measurement Procedure

The EUT was tested according to test procedure of "KDB558074 D01 e" (clause 11.0) for compliance requirements.

#### Reference level measurement

Establish a reference level by using the following procedure:

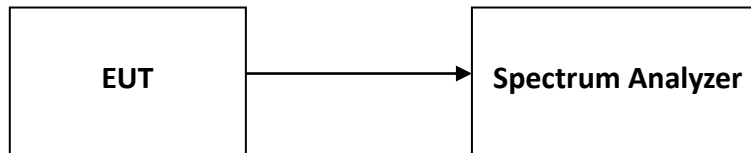
- a) Set instrument center frequency to channel center frequency.
- b) Set the span to  $\geq 1.5$  times the 6dB bandwidth.
- c) Set the RBW = 100 kHz.
- d) Set the VBW  $\geq 3 \times$  RBW.
- e) Detector = peak.
- f) Sweep time = auto couple.
- g) Trace mode = max hold.
- h) Allow trace to fully stabilize.
- i) Use the peak marker function to determine the maximum PSD level.

#### Emission level measurement

- a) Set the center frequency and span to encompass frequency range to be measured.
- b) Set the RBW = 100 kHz.
- c) Set the VBW  $\geq 3 \times$  RBW.
- d) Detector = peak.
- e) Sweep time = auto couple.
- f) Trace mode = max hold.
- g) Allow trace to fully stabilize.
- h) Use the peak marker function to determine the maximum amplitude level.

Ensure that the amplitude of all unwanted emissions outside of the authorized frequency band (excluding restricted frequency bands) are attenuated by at least the minimum requirements specified in 11.1 a) or 11.1 b). Report the three highest emissions relative to the limit.

### 6.3 Test Configuration



### 6.4 The results of Emission outside the frequency band

Please refer to Appendix A

## 7 Radiated Emissions in restricted frequency bands

**Test result:** Pass

### 7.1 Limit

The radiated emissions which fall in the restricted bands, must also comply with the radiated emission limits specified showed as below:

Frequencies (MHz)	Field Strength (microvolts/meter)	Measurement Distance (meters)
0.009 ~ 0.490	2400/F(kHz)	300
0.490 ~ 1.705	24000/F(kHz)	30
1.705 ~ 30.0	30	30
30 ~ 88	100	3
88 ~ 216	150	3
216 ~ 960	200	3
Above 960	500	3

### 7.2 Measurement Procedure

#### For Radiated emission below 30MHz:

- The EUT was placed on the top of a rotating table 0.8 meters above the ground at a 3 meter chamber room. The table was rotated 360 degrees to determine the position of the highest radiation.
- The EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower.
- Both X and Y axes of the antenna are set to make the measurement.
- For each suspected emission, the EUT was arranged to its worst case and the rotatable table was turned from 0 degrees to 360 degrees to find the maximum reading.
- The test-receiver system was set to Quasi-Peak Detect Function and Specified Bandwidth with Maximum Hold Mode.

#### NOTE:

- The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 9kHz at frequency below 30MHz.

**TEST REPORT****For Radiated emission above 30MHz:**

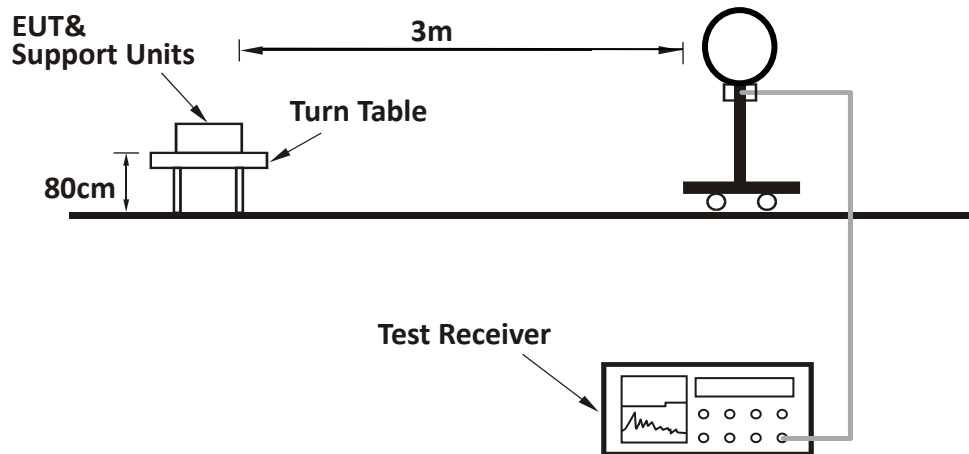
- a) The EUT was placed on the top of a rotating table 0.8 meters (for 30MHz ~ 1GHz) / 1.5 meters (for above 1GHz) above the ground at 3 meter chamber room for test. The table was rotated 360 degrees to determine the position of the highest radiation.
- b) The EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower.
- c) The height of antenna is varied from one meter to four meters above the ground to determine the maximum value of the field strength. Both horizontal and vertical polarizations of the antenna are set to make the measurement.
- d) For each suspected emission, the EUT was arranged to its worst case and then the antenna was tuned to heights from 1 meter to 4 meters and the rotatable table was turned from 0 degrees to 360 degrees to find the maximum reading.
- e) The test-receiver system was set to quasi-peak detect function and specified bandwidth with maximum hold mode when the test frequency is below 1 GHz.
- f) The test-receiver system was set to peak and average detect function and specified bandwidth with maximum hold mode when the test frequency is above 1 GHz. If the peak reading value also meets average limit, measurement with the average detector is unnecessary.

**Note:**

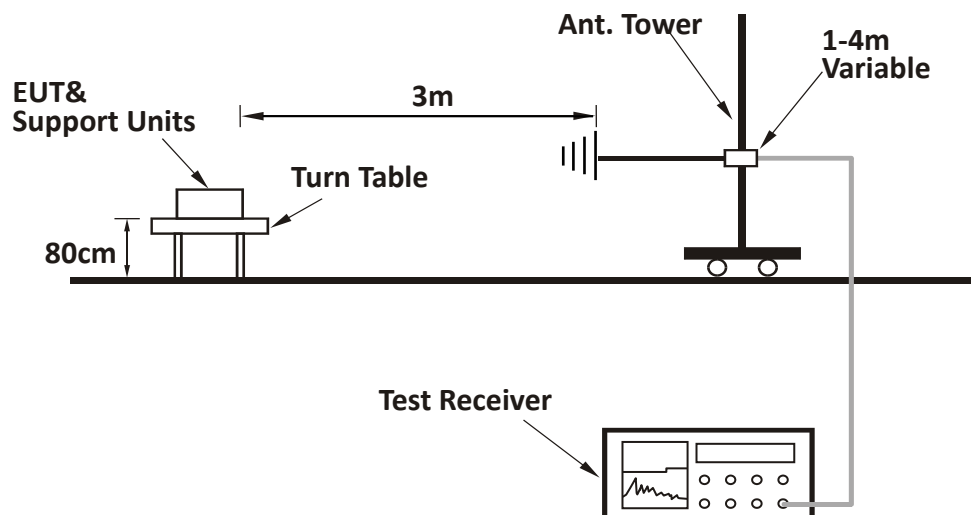
- 1. The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 120kHz for Quasi-peak detection (QP) at frequency below 1GHz.
- 2. The resolution bandwidth of test receiver/spectrum analyzer is 1 MHz and the video bandwidth is 3 MHz for Peak detection (PK) at frequency above 1GHz.
- 3. The resolution bandwidth of test receiver/spectrum analyzer is 1 MHz and the video bandwidth is  $\geq 1/T$  (Duty cycle < 98%), peak detector or 3 x RBW (Duty cycle  $\geq 98\%$ ), RMS detector, trace average for AV data measurement at frequency above 1GHz.
- 4. All modes of operation were investigated and the worst-case emissions are reported.

### 7.3 Test Configuration

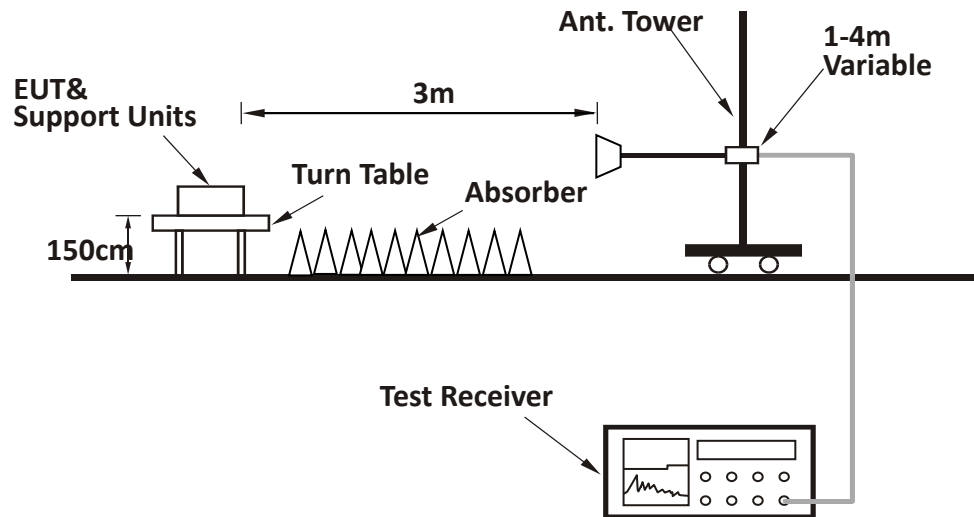
For Radiated emission below 30MHz:



For Radiated emission 30MHz to 1GHz:



**For Radiated emission above 1GHz:**



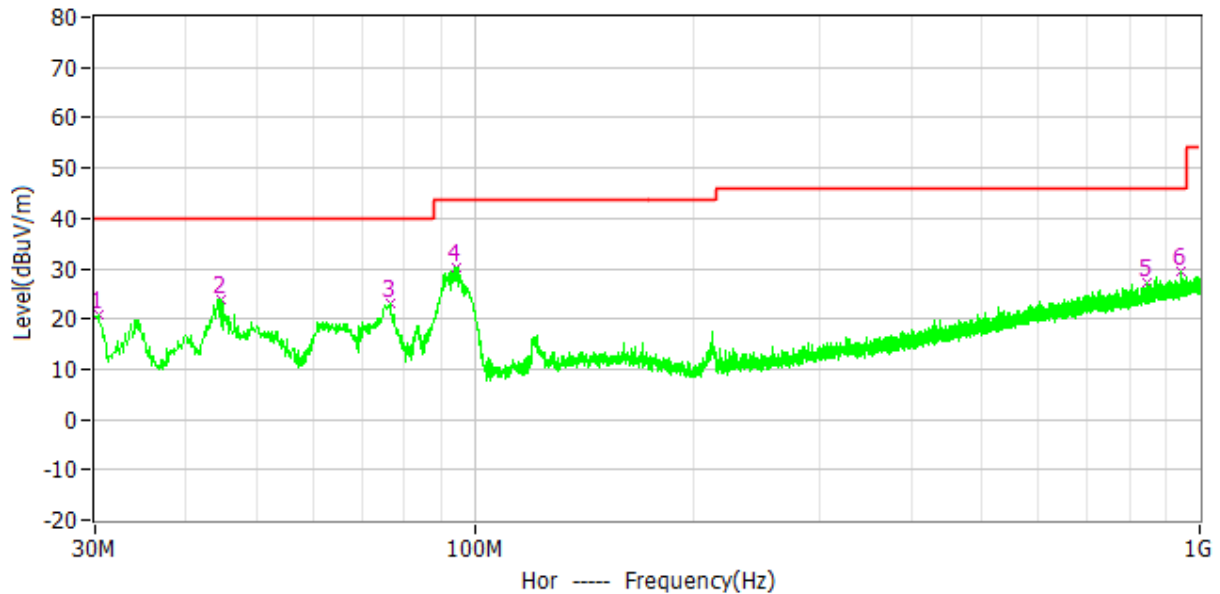
## TEST REPORT

### 7.4 Test Results of Radiated Emissions

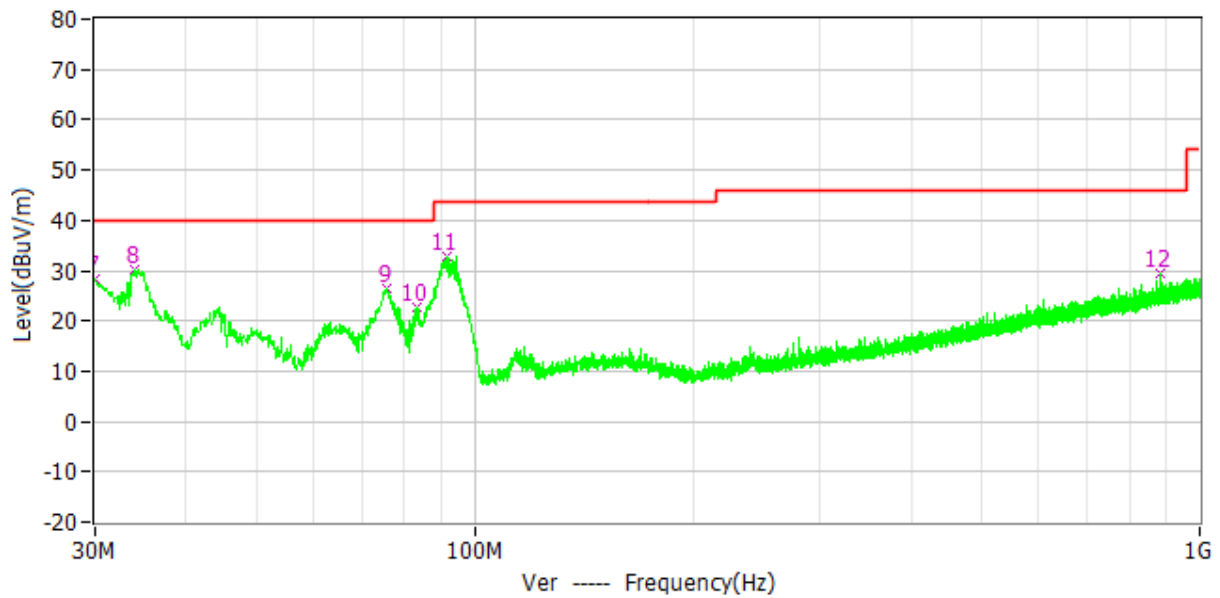
The low frequency, which started from 9 kHz to 30MHz, was pre-scanned and the result which was 20dB lower than the limit line per 15.31(o) was not reported.

The worst waveform from 30MHz to 1000MHz is listed as below:

Horizontal



Vertical



## TEST REPORT

### Test data below 1GHz

No.	Frequency	Limit dBuV/m	Level dBuV/m	Delta dB	Reading dBuV	Factor dB/m	Detector	Polar
1*	30.291MHz	40.0	20.8	-19.2	8.8	12.0	PK	Hor
2*	44.841MHz	40.0	23.9	-16.1	9.8	14.1	PK	Hor
3*	76.463MHz	40.0	23.2	-16.8	12.1	11.1	PK	Hor
4*	94.505MHz	43.5	30.3	-13.2	20.7	9.6	PK	Hor
5*	844.994MHz	46.0	27.2	-18.8	1.7	25.5	PK	Hor
6*	942.867MHz	46.0	29.3	-16.7	2.6	26.7	PK	Hor
7*	30.000MHz	40.0	28.2	-11.8	16.2	12.0	PK	Ver
8*	34.074MHz	40.0	30.2	-9.8	17.5	12.7	PK	Ver
9*	75.590MHz	40.0	26.3	-13.7	15.0	11.3	PK	Ver
10*	83.156MHz	40.0	22.8	-17.2	12.7	10.1	PK	Ver
11*	91.498MHz	43.5	32.8	-10.7	23.4	9.4	PK	Ver
12*	879.817MHz	46.0	29.6	-16.4	3.7	25.9	PK	Ver

## TEST REPORT

### Test result above 1GHz:

The emission was conducted from 1GHz to 25GHz

CH	Antenna	Frequency (MHz)	Correct Factor (dB/m)	Corrected Reading (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector
11	H&V	2405.00	32.60	101.20	Fundamental	/	PK
	H	2390.00	30.30	43.40	74.00	30.60	PK
	V	2390.00	30.30	43.20	74.00	30.80	PK
	H	7215.00	-1.50	48.90	74.00	25.10	PK
	V	7215.00	-1.50	49.70	74.00	24.30	PK
18	H&V	2440.00	32.70	102.10	Fundamental	/	PK
	H	7320.00	-1.10	49.60	74.00	24.40	PK
	V	7320.00	-1.10	50.30	74.00	23.70	PK
26	H&V	2480.00	32.70	100.80	Fundamental	/	PK
	H	2483.50	30.80	58.60	74.00	15.40	PK
	H	2483.50	30.80	51.80	54.00	2.20	AV
	V	2483.50	30.80	59.60	74.00	14.40	PK
	V	2483.50	30.80	51.70	54.00	2.30	AV
	H	7440.00	-0.80	46.80	74.00	27.20	PK
	V	7440.00	-0.80	48.70	74.00	25.30	PK

- Remark: 1. Correct Factor = Antenna Factor + Cable Loss (+ Amplifier, for higher than 1GHz), the value was added to Original Receiver Reading by the software automatically.  
2. Corrected Reading = Original Receiver Reading + Correct Factor  
3. Margin = Limit - Corrected Reading  
4. If the PK Corrected Reading is lower than AV limit, the AV test can be elided.

Example: Assuming Antenna Factor = 30.20dB/m, Cable Loss = 2.00dB,  
Gain of Preamplifier = 32.00dB, Original Receiver Reading = 10.00dBuV,  
Limit = 40.00dBuV/m.  
Then Correct Factor = 30.20 + 2.00 – 32.00 = 0.20dB/m;  
Corrected Reading = 10dBuV + 0.20dB/m = 10.20dBuV/m;  
Margin = 40.00dBuV/m - 10.20dBuV/m = 29.80dB.

## 8 Power line conducted emission

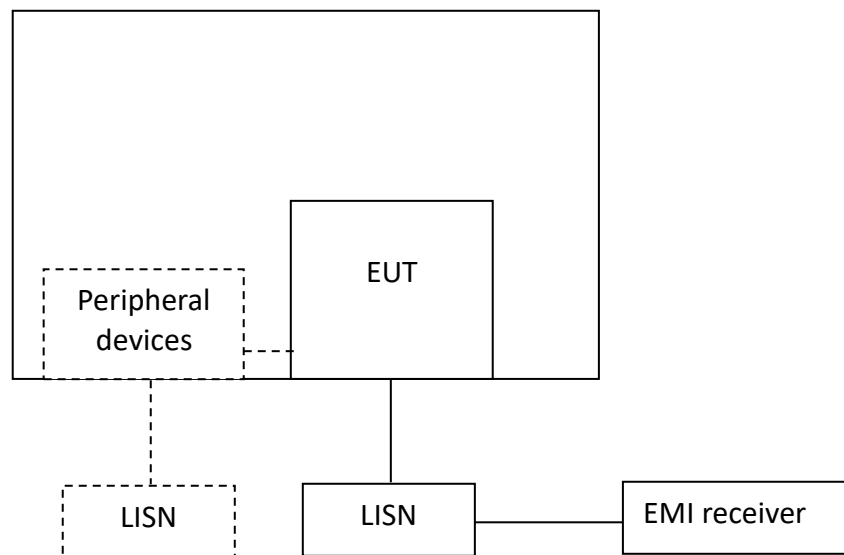
Test result: NA

### 8.1 Limit

Frequency of Emission (MHz)	Conducted Limit (dBuV)	
	QP	AV
0.15-0.5	66 to 56*	56 to 46 *
0.5-5	56	46
5-30	60	50

\* Decreases with the logarithm of the frequency.

### 8.2 Test Configuration



### 8.3 Measurement Procedure

Measured levels of ac power-line conducted emission shall be the emission voltages from the voltage probe, where permitted, or across the 50  $\Omega$  LISN port (to which the EUT is connected), where permitted, terminated into a 50  $\Omega$  measuring instrument. All emission voltage and current measurements shall be made on each current-carrying conductor at the plug end of the EUT power cord by the use of mating plugs and receptacles on the LISN, if used. Equipment shall be tested with power cords that are normally supplied or recommended by the manufacturer and that have electrical and shielding characteristics that are the same as those cords normally supplied or recommended by the manufacturer. For those measurements using a LISN, the 50  $\Omega$  measuring port is terminated by a measuring instrument having 50  $\Omega$  input impedance. All other ports are terminated in 50  $\Omega$  loads.

Tabletop devices shall be placed on a platform of nominal size 1 m by 1.5 m, raised 80 cm above the reference ground plane. The vertical conducting plane or wall of an RF-shielded (screened) room shall be located 40 cm to the rear of the EUT. Floor-standing devices shall be placed either directly on the reference ground-plane or on insulating material as described in ANSI C63.4. All other surfaces of tabletop or floor-standing EUTs shall be at least 80 cm from any other grounded conducting surface, including the case or cases of one or more LISNs.

The bandwidth of the test receiver is set at 9 kHz.

### 8.4 Test Results of Power line conducted emission

None.

## 9 Occupied Bandwidth

**Test result:**      **Tested**

### 9.1 Limit

None

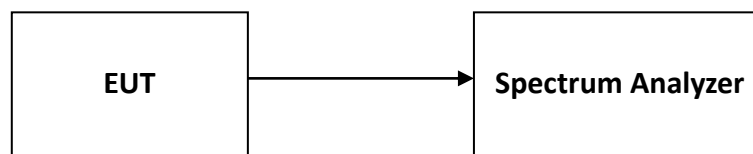
### 9.2 Measurement Procedure

The occupied bandwidth per RSS-Gen was measured using the Spectrum Analyzer.

The span of the analyzer shall be set to capture all products of the modulation process, including the emission skirts.

The resolution bandwidth (RBW) shall be in the range of 1% to 5% of the occupied bandwidth (OBW) and video bandwidth (VBW) shall be approximately 3x RBW.

### 9.3 Test Configuration



### 9.4 The results of Occupied Bandwidth

Please refer to Appendix A

## 10 Antenna requirement

**Requirement:**

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.

**Result:**

EUT use of a permanently attached antenna and unique coupling to the intentional radiator, so it can comply with the provisions of this section.

## Appendix A: Test results

### 6dB Bandwidth Test Result

Frequency[MHz]	6dB BW [MHz]	FL[MHz]	FH[MHz]	Limit[MHz]	Verdict
2405	1.580	2404.200	2405.780	0.5	PASS
2440	1.550	2439.210	2440.760	0.5	PASS
2480	1.520	2479.220	2480.740	0.5	PASS

## Test Graphs

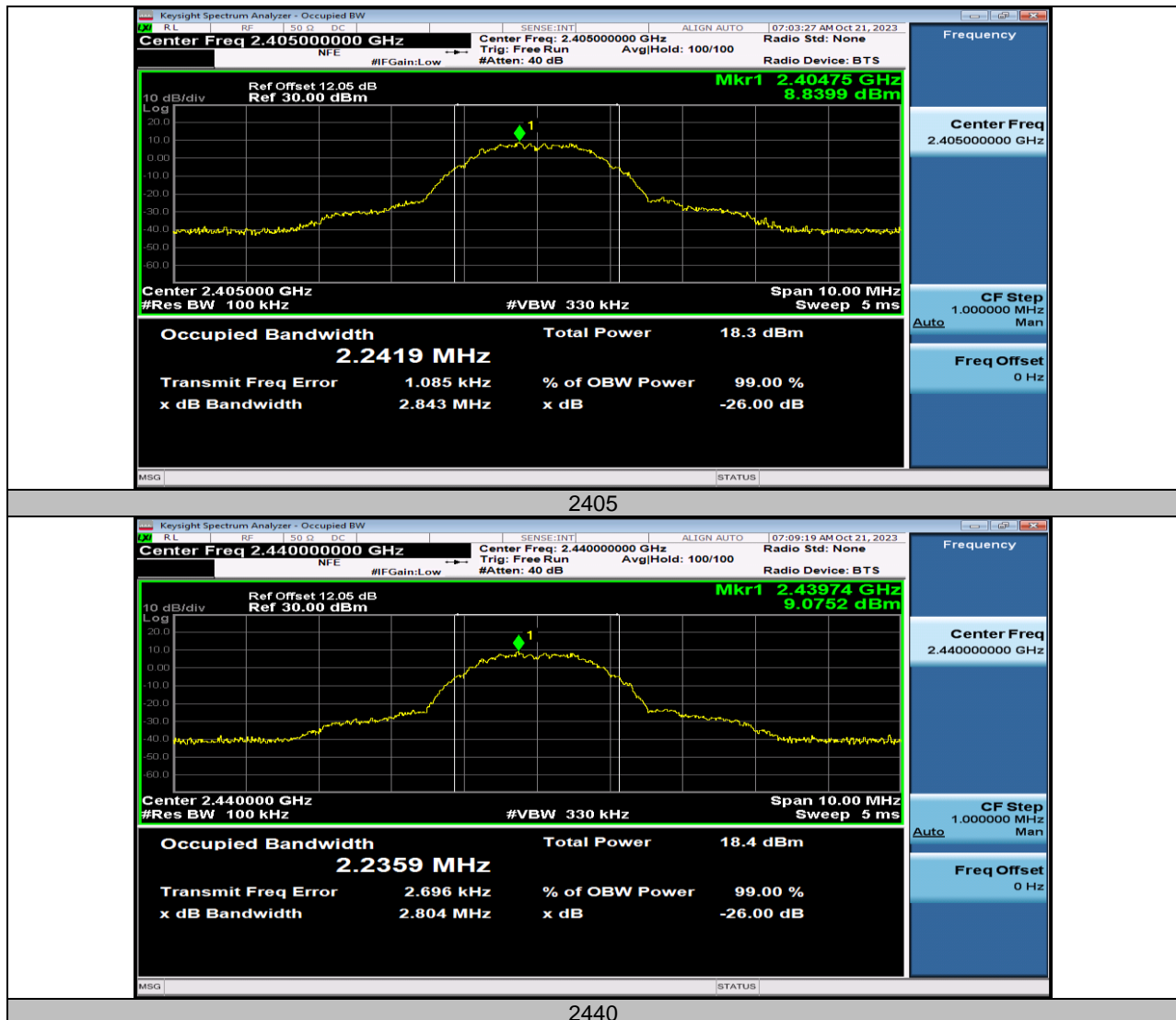




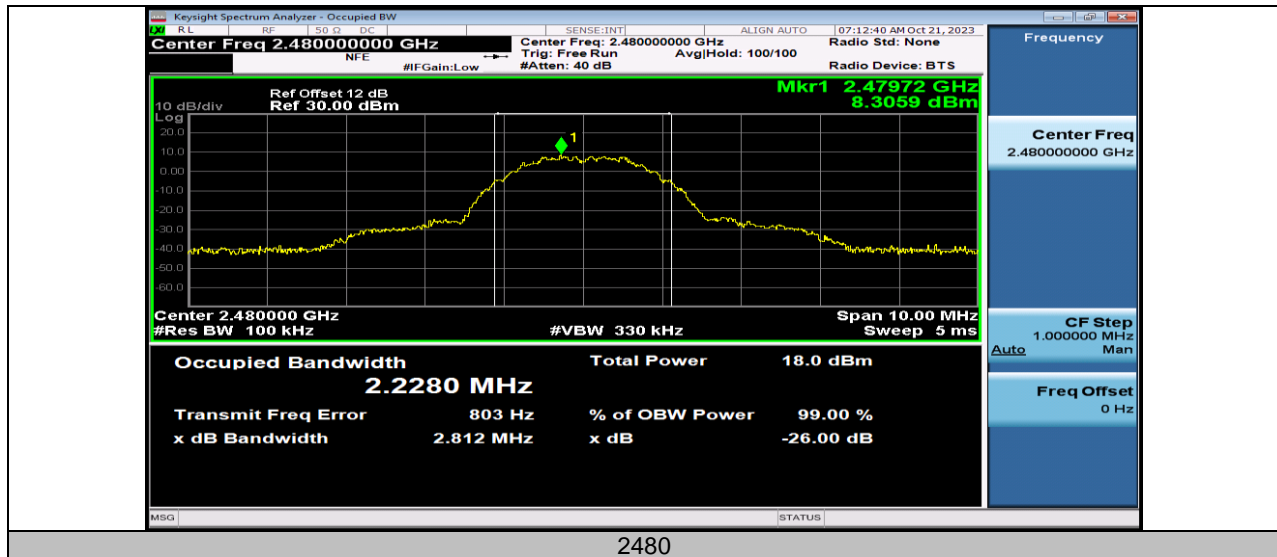
## Occupied Channel Bandwidth Test Result

Frequency[MHz]	OCB [MHz]	FL[MHz]	FH[MHz]	Limit[MHz]	Verdict
2405	2.2419	2403.8801	2406.1220	---	---
2440	2.2359	2438.8848	2441.1207	---	---
2480	2.2280	2478.8868	2481.1148	---	---

## Test Graphs



**TEST REPORT**



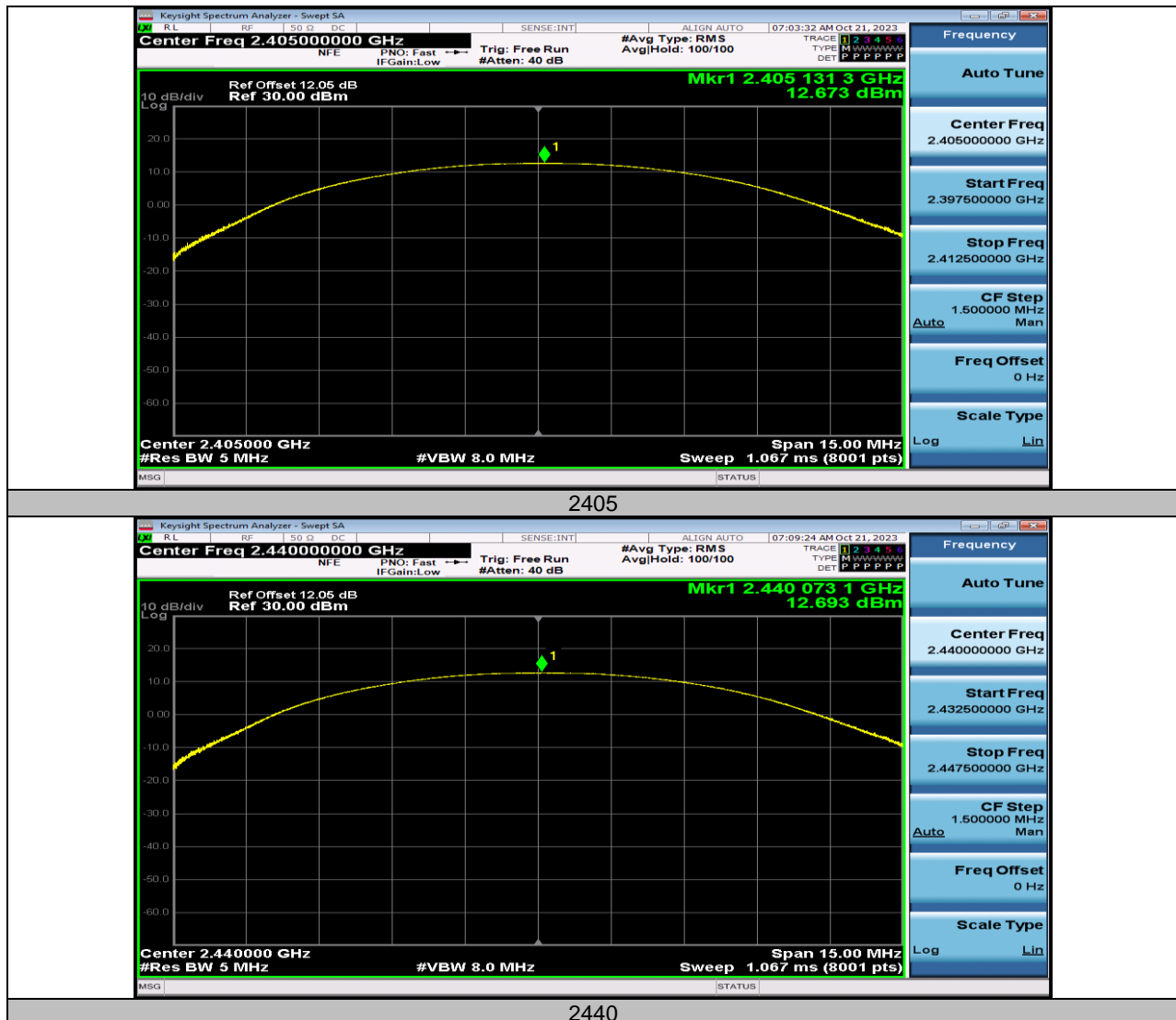
2480

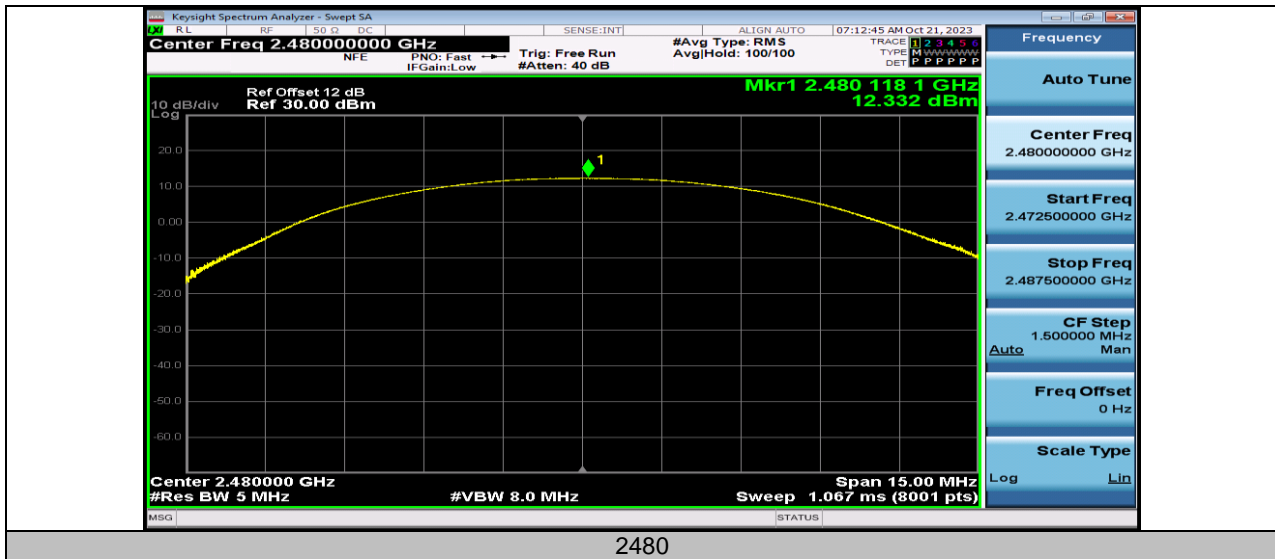
## Maximum conducted output power Test Result

Frequency[MHz]	Result[dBm]	Limit[dBm]	Verdict
2405	12.67	$\leq 30$	PASS
2440	12.69	$\leq 30$	PASS
2480	12.33	$\leq 30$	PASS

Max EIRP is  $12.69\text{dBm} + 4\text{dBi} = 16.69\text{dBm} = 46.67\text{mW} < 4\text{W}$ .

## Test Graphs



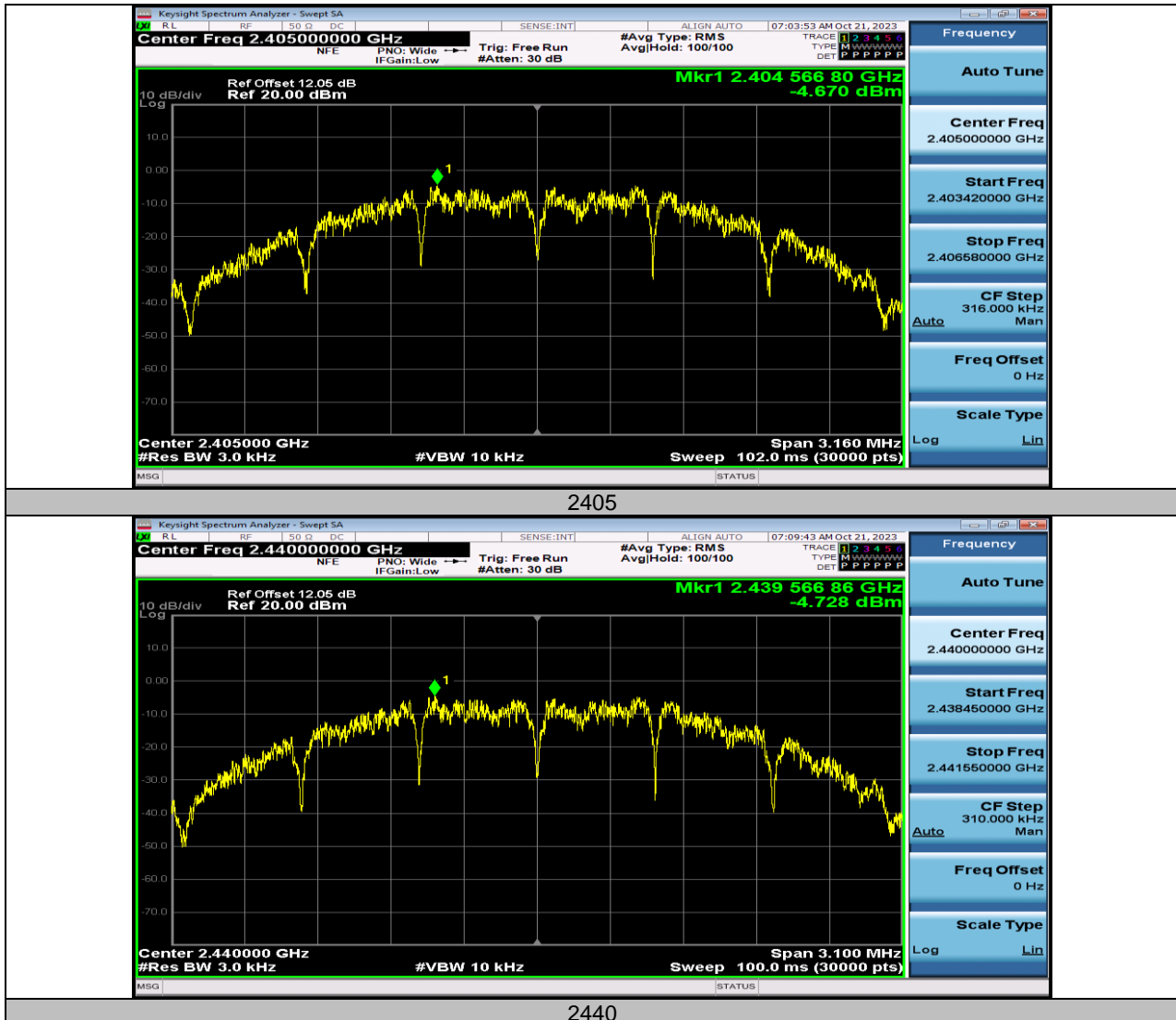


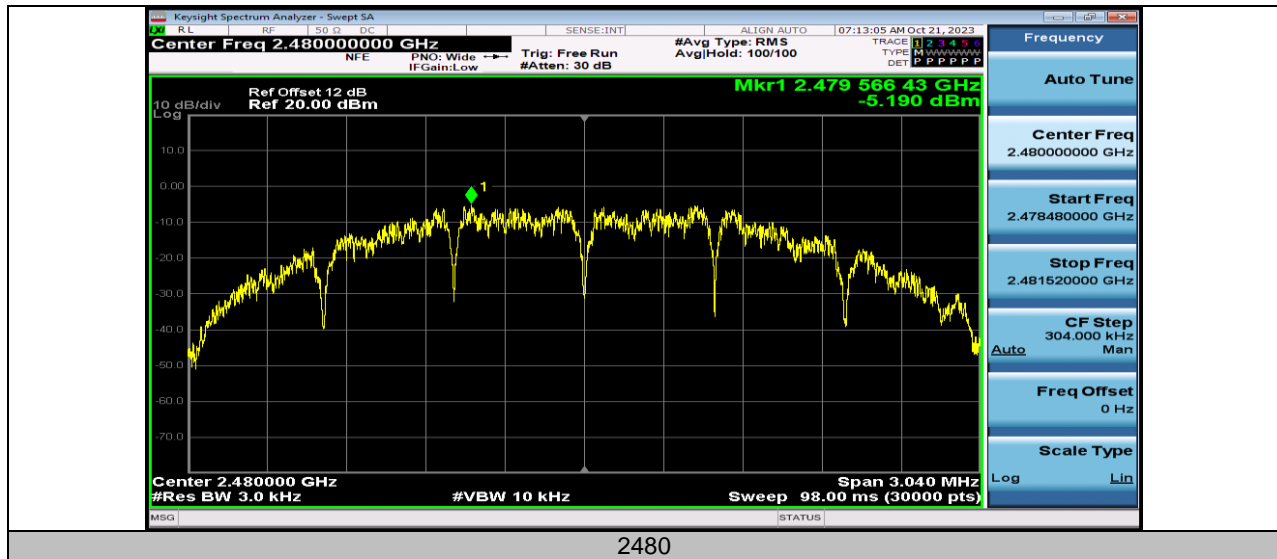
2480

## Maximum power spectral density Test Result

Frequency[MHz]	Result[dBm/3kHz]	Limit[dBm/3kHz]	Verdict
2405	-4.67	$\leq 8.00$	PASS
2440	-4.73	$\leq 8.00$	PASS
2480	-5.19	$\leq 8.00$	PASS

## Test Graphs





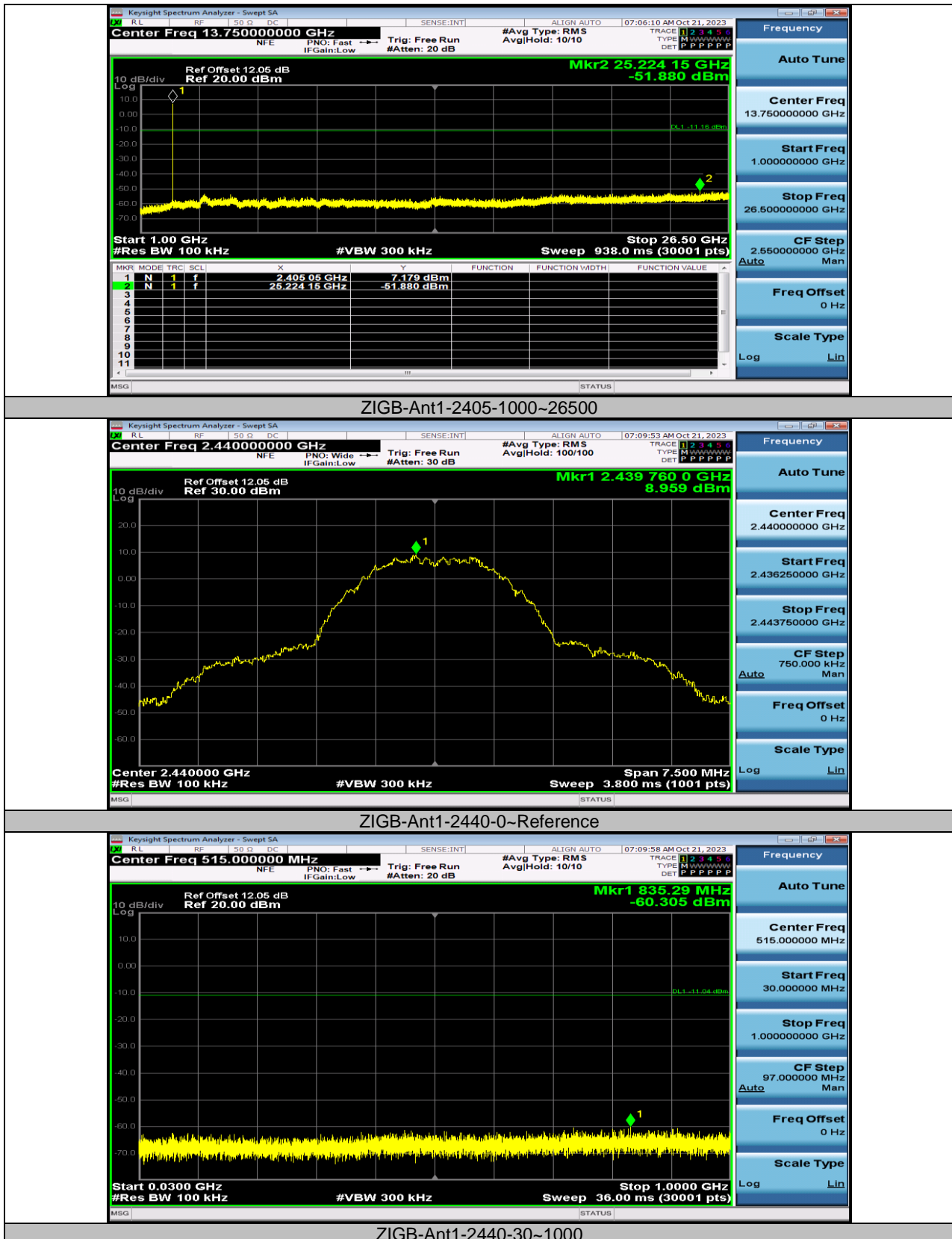
## TEST REPORT

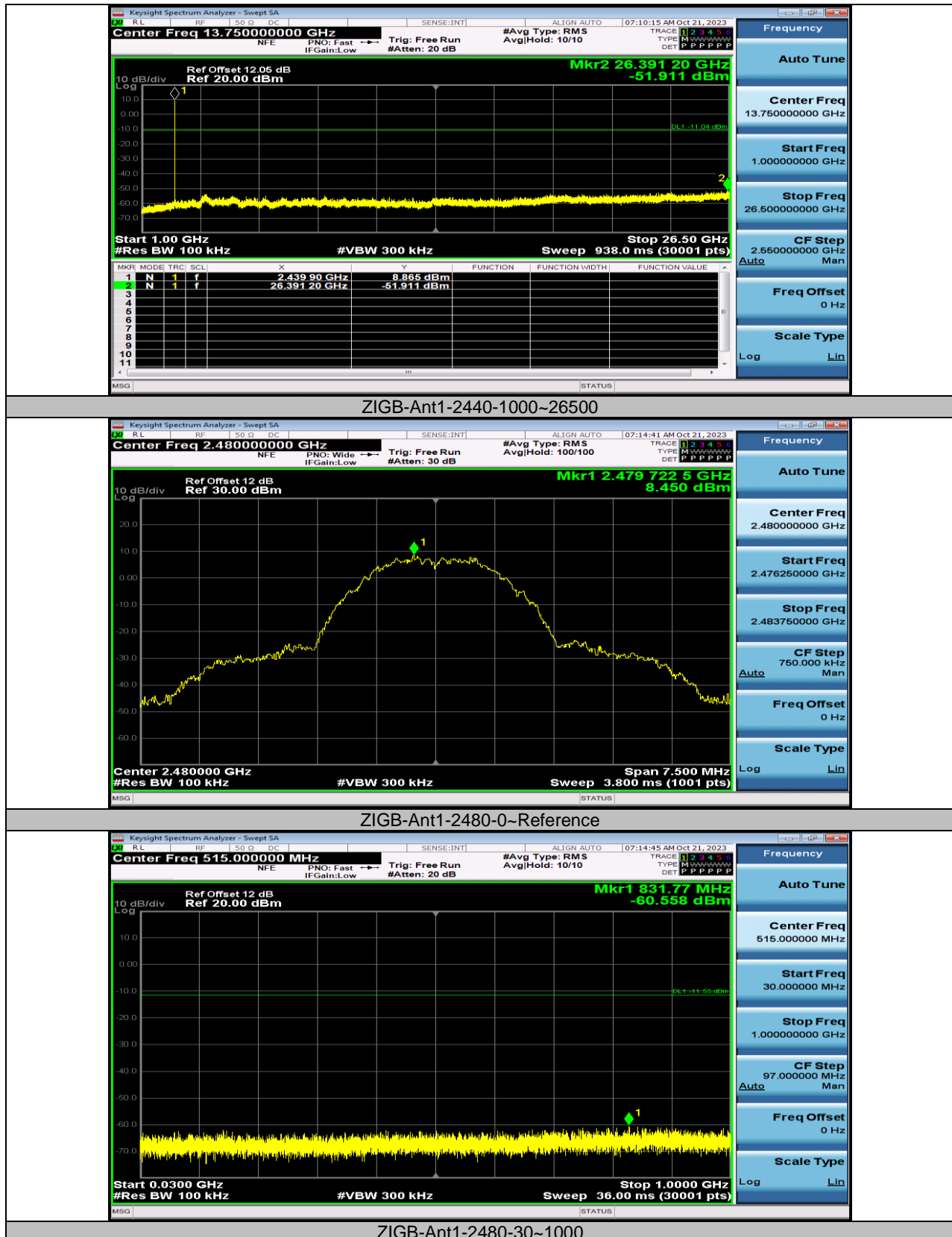
### Conducted Spurious Emission Test Result

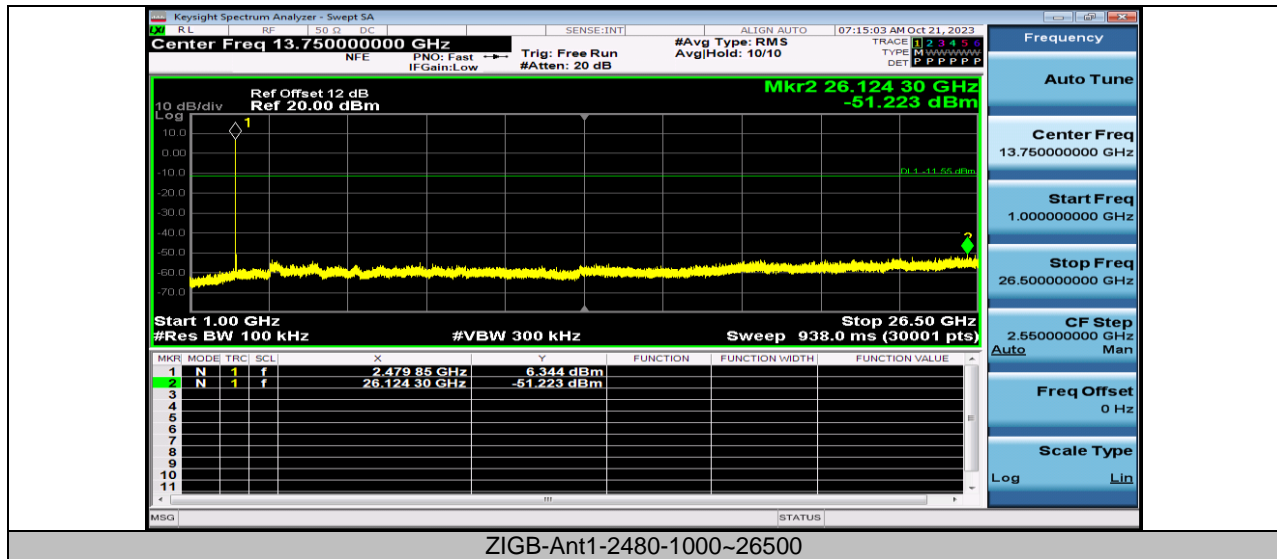
Frequency[MHz]	FreqRange [MHz]	RefLevel [dBm]	Result[dBm]	Limit[dBm]	Verdict
2405	0~Reference	8.84	8.84	---	PASS
2405	30~1000	8.84	-60.16	$\leq -11.16$	PASS
2405	1000~26500	8.84	-51.88	$\leq -11.16$	PASS
2440	0~Reference	8.96	8.96	---	PASS
2440	30~1000	8.96	-60.31	$\leq -11.04$	PASS
2440	1000~26500	8.96	-51.91	$\leq -11.04$	PASS
2480	0~Reference	8.45	8.45	---	PASS
2480	30~1000	8.45	-60.56	$\leq -11.55$	PASS
2480	1000~26500	8.45	-51.22	$\leq -11.55$	PASS

## Test Graphs









ZIGB-Ant1-2480-1000~26500

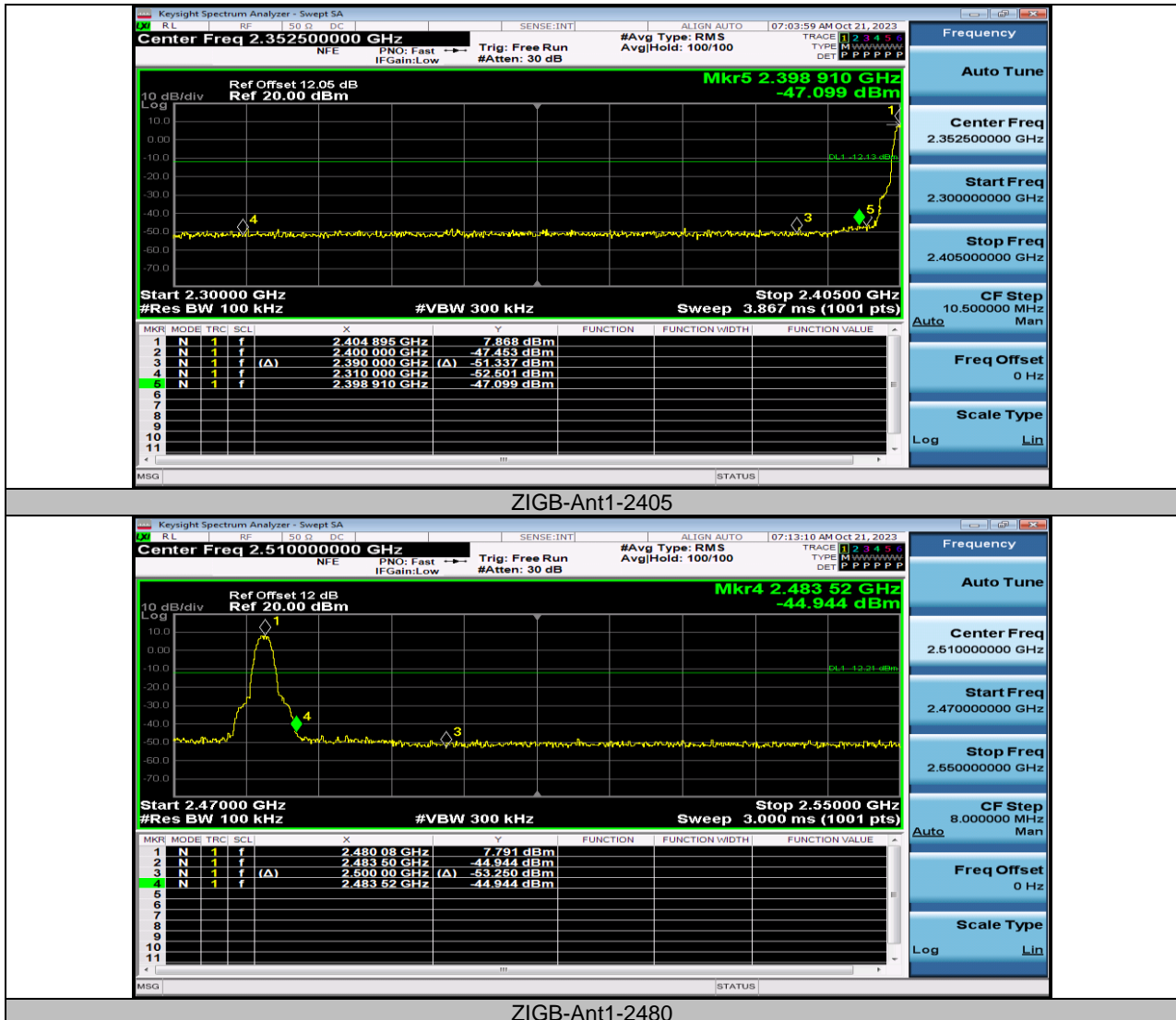
## TEST REPORT

### Band edge measurements

#### Test Result

ChName	Frequency[MHz]	RefLevel[dBm]	Result[dBm]	Limit[dBm]	Verdict
Low	2405	7.87	-47.1	$\leq -12.13$	PASS
High	2480	7.79	-44.94	$\leq -12.21$	PASS

## Test Graphs



\*\*\*\*\* END \*\*\*\*\*