ROCA BATHROOM PRODUCTS, INC

RF TEST REPORT

Report Type:
FCC Part 15.249 RF report

Model:
H8261644000001

REPORT NUMBER:
2504B0947SHA-001

ISSUE DATE:
July 18, 2025

DOCUMENT CONTROL NUMBER:
TTRF15.249-01_V1

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Total Quality. Assured.

TEST REPORT

Report no.: 2504B0947SHA-001

Applicant:	ROCA BATHROOM PRODUCTS, INC 11190 NW 25TH ST SUITE 110, Miami, Florida, 33172 USA
Manufacturer:	Roca Sanitaryware (Suzhou) Co., Ltd 16, Xiasheng Road, Suzhou Industrial Park, SUZHOU Jiangsu 215123
Manufacturer Site:	Roca Sanitaryware (Suzhou) Co., Ltd 16, Xiasheng Road, Suzhou Industrial Park, SUZHOU Jiangsu 215123
Product Name:	Intelligent Toilet
Type/Model:	H8261644000001
FCC ID:	2BKHX-ALVIAFS

SUMMARY:

The equipment complies with the requirements according to the following standard(s) or Specification:
47CFR Part 15 (2024): Radio Frequency Devices (Subpart C) **ANSI C63.10 (2020):** American National Standard of Procedures for Compliance Testing of Unlicensed Wireless Devices

PREPARED BY:	**REVIEWED BY:**
Project Engineer Dylan Tang	Reviewer Wakeyou Wang

TEST REPORT

Content

Revision History

Report No.	Version	Description	Issued Date
2504B0947SHA-001	Rev. 01	Initial issue of report	July 18, 2025

Measurement result summary

TEST ITEM	FCC REFERENCE	RESULT
Radiated Emissions	15.249(a)&15.209	Pass
Power line conducted emission	15.207(a)	Pass
20 dB Bandwidth & 99% Occupied Bandwidth	15.215(c)	Pass
Antenna requirement	15.203	Pass

Notes: 1: NA =Not Applicable

1 GENERAL INFORMATION

1.1 Description of Equipment Under Test (EUT)

Product name:	Intelligent Toilet
Type/Model:	H8261644000001
Description of EUT:	The EUT is Intelligent Toilet, it has only one model.
Rating:	110V~, 60Hz
Category of EUT:	Class B
EUT type:	☐ Table top ☒ Floor standing
Software Version:	V35
Hardware Version:	V12
Sample received date:	April 1, 2025
Date of test:	April 5, 2025 ~ April 22, 2025

1.2 Technical Specification

Frequency Range:	24010MHz ~ 24200MHz
Type of Modulation:	FMCW
Channel Number:	1
Antenna Information:	Integrated antenna

1.3 Description of Test Facility

Name:	Intertek Testing Services (Shanghai FTZ) Co., Ltd.
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 L21189
	FCC Accredited Lab Designation Number: CN0175
	IC Registration Lab CAB identifier.: CN0014
	VCCI Registration Lab Registration No.: R-4243, G-845, C-4723, T-2252
	NVLAP Accreditation Lab NVLAP LAB CODE: 200849-0
	A2LA Accreditation Lab Certificate Number: 3309.02

2 TEST SPECIFICATIONS

2.1 Standards or specification

47CFR Part 15 (2024)
ANSI C63.10 (2020)

2.2 Mode of operation during the test

The channel was tested as representatives.

Frequency Band (MHz)				24000 ~ 24250			
Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)
1	**24120**	-	-	-	-	-	-

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
-	-	-	-

2.5 Test environment condition:

Test items	Temperature	Humidity
20 dB Bandwidth & 99% Occupied Bandwidth	22°C	55% RH
Radiated Emissions		
Power line conducted emission	21°C	52% RH

2.6 Instrument list

Conducted Emission					
Used	Equipment	Manufacturer	Type	Internal no.	Due date
☑	Test Receiver	R&S	ESR7	EC 6194	2026-02-17
☑	A.M.N.	R&S2025-07-23	ESH2-Z5	EC 3119	2025-07-23
☐	A.M.N.	R&S	ENV4200	EC 3558	2026-06-04
☑	Attenuator	Hua Xiang	Ts5-10db-6g	EC 6194-1	2025-12-06
☑	Shielded room	Zhongyu	-	EC 2838	2026-01-09
Radiated Emission					
Used	Equipment	Manufacturer	Type	Internal no.	Due date
☑	Test Receiver	R&S	ESIB 26	EC 3045	2025-08-18
☑	PXA Signal Analyzer	Keysight	N9030B	EC 6078	2026-03-25
☑	Bilog Antenna	TESEQ	CBL 6112B	EC 6411	2025-09-11
☐	Pre-amplifier	R&S	AFS42-00101800-25-S-42	EC 5262	2025-11-06
☑	Pre-amplifier	Tonscend	tap01018050	EC 6432-1	2025-12-03
☑	Horn antenna	Tonscend	bha9120d	EC 6432-2	2026-04-10
☑	Horn antenna	ETS	3116c	EC 5955	2025-08-14
☑	WW wave antenna (40-60G)	VDi	HD-500SGAH25	EC 6529-1	2026-03-09
☑	Mixer (40-60G)		M19RH	EC 6529	2026-03-24
☑	WW wave antenna (60-90G)	VDi	HD-620SGAH25	EC 6382-1	2026-03-12
☑	Mixer (60-90G)		M12RH	EC 6382	2026-03-24
☑	WW wave antenna (90-140G)	VDi	HD-900SGAH25	EC 6383-1	2026-03-12
☑	Mixer (90-140G)		M15RH	EC 6383	2026-03-24
☑	Semi-anechoic chamber	Albatross project	-	EC 3048	2026-07-11
Additional instrument					
Used	Equipment	Manufacturer	Type	Internal no.	Due date
☑	Therom-Hygrograph	Testo	175h1	EC 6640	2025-08-29
☑	Pressure meter	YM3	Shanghai Mengde	EC 3320	2025-08-16

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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
Radiated Emissions in restricted frequency bands below 1GHz	± 4.90dB
Radiated Emissions in restricted frequency bands above 1GHz	± 5.02dB
Emission outside the frequency band	± 2.89dB

3 Radiated Emissions

Test result: **Pass**

3.1 Limit

Fundamental Frequency (MHz)	Field strength of fundamental (millivolts/meter)	Field strength of harmonics (millivolts/meter)
902 - 928	94	54
2400 - 2483.5	94	54
5725 - 5875	94	54
24000 - 24250	108	68

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

3.2 Measurement Procedure

For Radiated emission below 30MHz:

a) The EUT was placed on the top of a rotating table 0.1 meters above the ground at a 3 meter chamber room. 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) Both X and Y axes of the antenna are set to make the measurement.
d) 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.
e) The test-receiver system was set to Quasi-Peak Detect Function and Specified Bandwidth with Maximum Hold Mode.

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NOTE:

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

For Radiated emission above 30MHz:

a) The EUT was placed on the top of a rotating table 0.1 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 or 1 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.

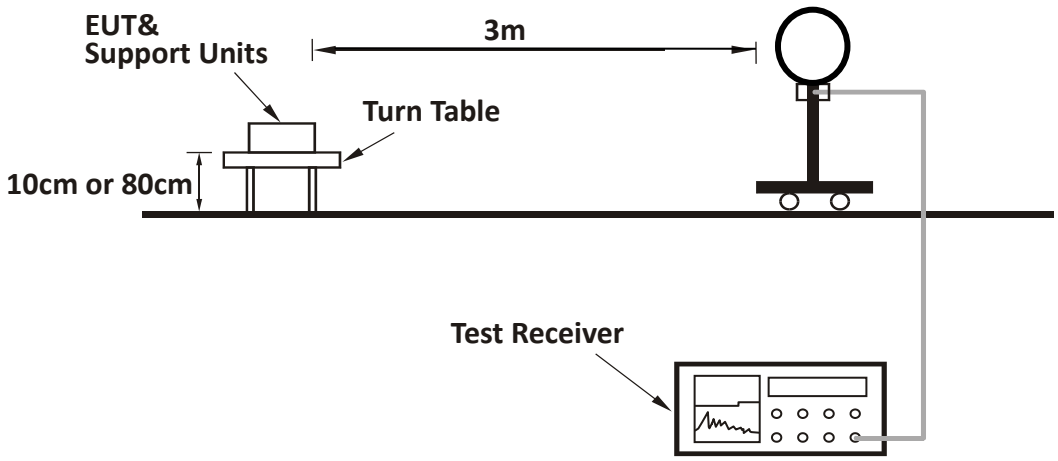
f) The test-receiver system was set to peak and average detect function and specified bandwidth with maximum hold mode when the test frequency is above 1 GHz. If the peak reading value also meets average limit, measurement with the average detector is unnecessary.

Note:

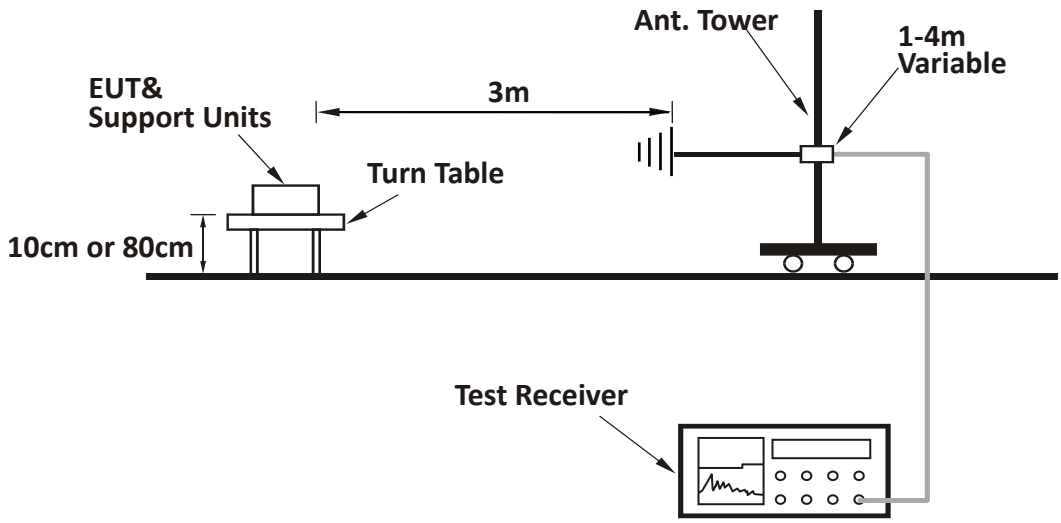
1. The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 120kHz for Quasi-peak detection (QP) at frequency below 1GHz.
2. The resolution bandwidth of test receiver/spectrum analyzer is 1 MHz and the video bandwidth is 3 MHz for Peak detection (PK) at frequency above 1GHz.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

3.3 Test Configuration

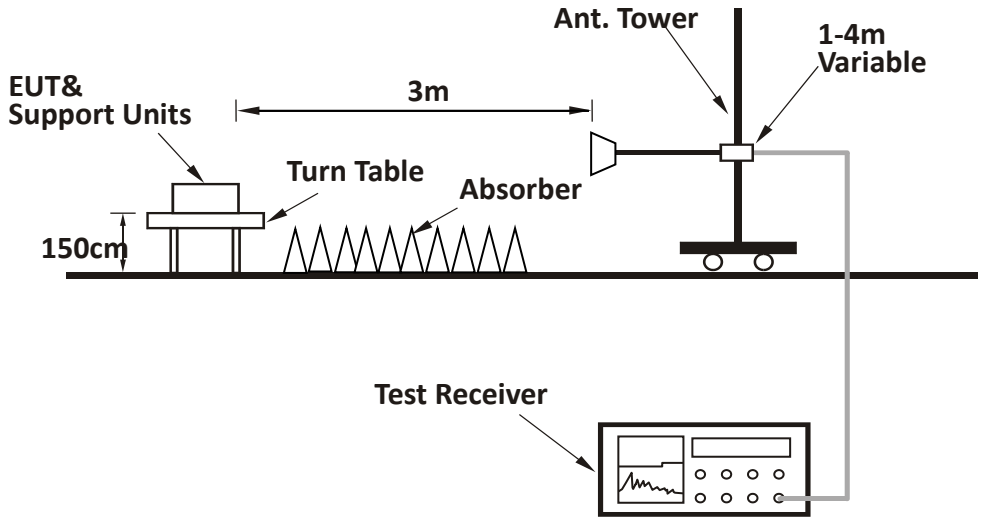
For Radiated emission below 30MHz:



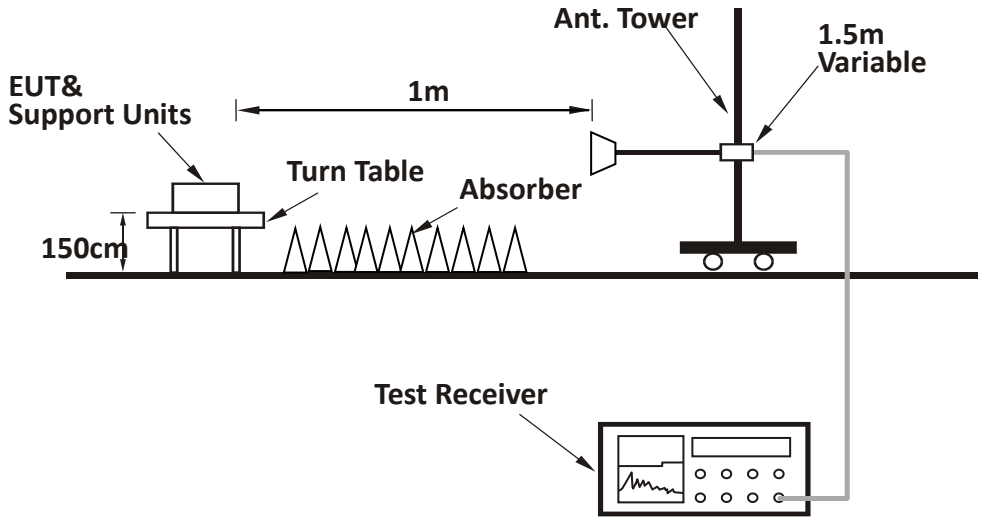
For Radiated emission 30MHz to 1GHz:



For Radiated emission 1GHz to 40GHz:



For Radiated emission above 40GHz:

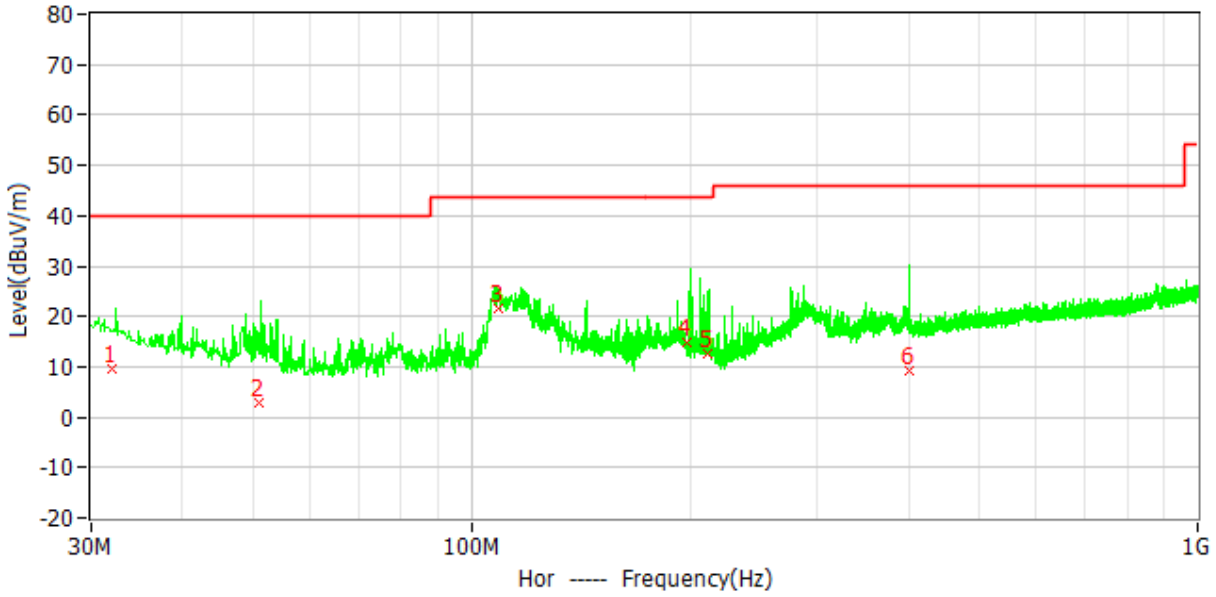


3.4 Test Results of Radiated Emissions

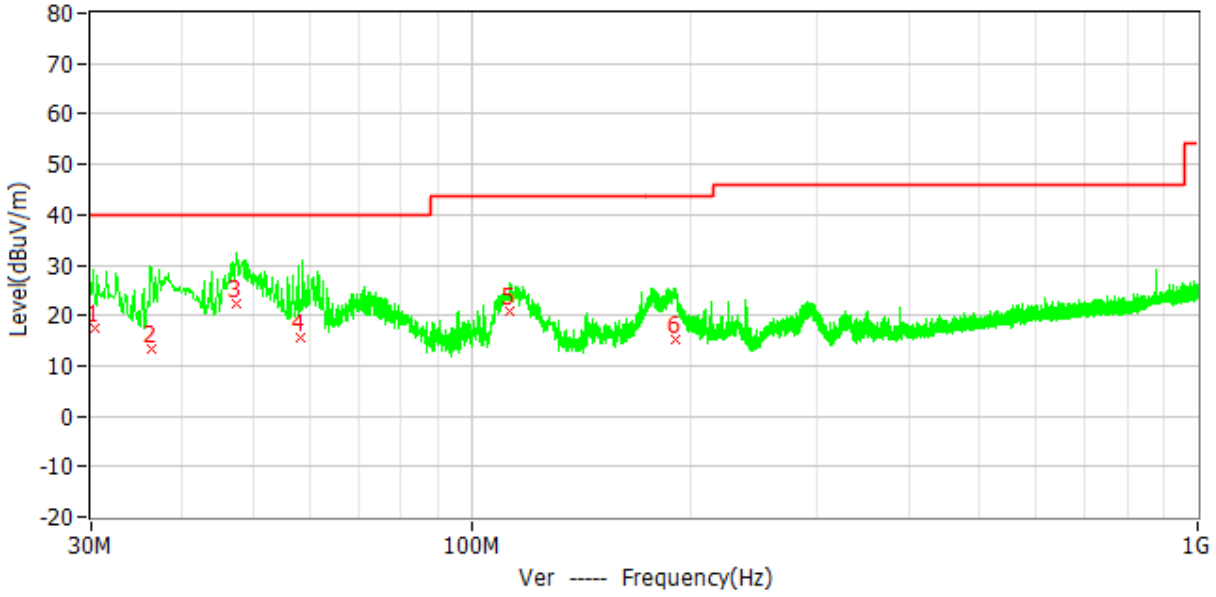
The low frequency, which started from 9 kHz to 30MHz, was pre-scanned and the result which was 20dB lower than the limit line per 15.31(o) was not reported.

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

Horizontal



Vertical



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Test data below 1GHz

Antenna	Frequency (MHz)	Corrected Reading (dBuV/m)	Correct Factor (dB/m)	Limit (dBuV/m)	Margin (dB)	Detector
H	32.081	9.7	18.7	40.0	30.3	QP
H	51.036	2.9	9.1	40.0	37.1	QP
H	108.721	21.7	12.6	43.5	21.8	QP
H	198.340	14.9	10.8	43.5	28.6	QP
H	211.888	12.5	10.9	43.5	31.0	QP
H	400.128	9.1	18.0	46.0	36.9	QP
V	30.278	17.4	19.6	40.0	22.6	QP
V	36.363	13.2	16.3	40.0	26.8	QP
V	47.624	22.5	10.5	40.0	17.5	QP
V	58.165	15.6	7.7	40.0	24.4	QP
V	113.037	20.9	12.9	43.5	22.6	QP
V	191.473	15.2	10.8	43.5	28.3	QP

Test result above 1GHz:

Antenna	Frequency Band (GHz)	Desensitization factor (dB)	Peak Power @3m (dBuV/m)	Limit (dBuV/m)	Average Power @3m (dBuV/m)	Limit (dBuV/m)
H	24.00 ~ 24.25	1.2	89.6	128.0	66.7	108.0
V		1.2	90.0	128.0	67.1	108.0

FMCW desensitization factor =20 * Log(α) =1.2dB

$$\alpha = \frac{1}{\sqrt[4]{1+\left(\frac{2\ln(2)}{\pi}\right)^2\left(\frac{F_s}{T_s B^2}\right)^2}}$$

F_S = Sweep width = 187.89MHz

T_S = Sweep time = 110 μs

B = 3 dB IF bandwidth =1MHz

Average Power= Peak Power + Ducy Cycle Factor

Antenna	Frequency (MHz)	Corrected Reading (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector
H	23386	60.45	74.00	13.55	PK
H	23386	40.68	54.00	13.32	AV
H	24000	55.77	74.00	18.23	PK
H	24000	36.98	54.00	17.02	AV
H	24250	56.68	74.00	17.32	PK
H	24250	37.12	54.00	16.88	AV
H	24954	57.29	74.00	16.71	PK
H	24954	38.01	54.00	15.99	AV
V	23361	56.26	74.00	17.74	PK
V	23361	36.46	54.00	17.54	AV
V	24000	49.31	74.00	24.69	PK
V	24000	30.22	54.00	23.78	AV
V	24250	51.32	74.00	22.68	PK
V	24250	31.87	54.00	22.13	AV
V	24432	53.78	74.00	20.22	PK
V	24432	33.98	54.00	20.02	AV

The emission was conducted from 1GHz to 40GHz

Antenna	Frequency (MHz)	Corrected Reading (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector
H	6758	49.19	74.00	24.81	PK
H	6758	37.67	54.00	16.33	AV
H	17864	55.75	74.00	18.25	PK
H	17864	43.38	54.00	10.62	AV
H	23363	57.06	74.00	16.94	PK
H	23363	46.58	54.00	7.42	AV
H	40000	56.68	74.00	17.32	PK
H	40000	45.52	54.00	8.48	AV
V	6723	48.62	74.00	25.38	PK
V	6723	37.43	54.00	16.57	AV
V	17625	55.12	74.00	18.88	PK
V	17625	43.32	54.00	10.68	AV
V	23364	57.01	74.00	16.99	PK
V	23364	48.12	54.00	5.88	AV
V	32331	55.96	74.00	18.04	PK
V	32331	44.94	54.00	9.06	AV

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.

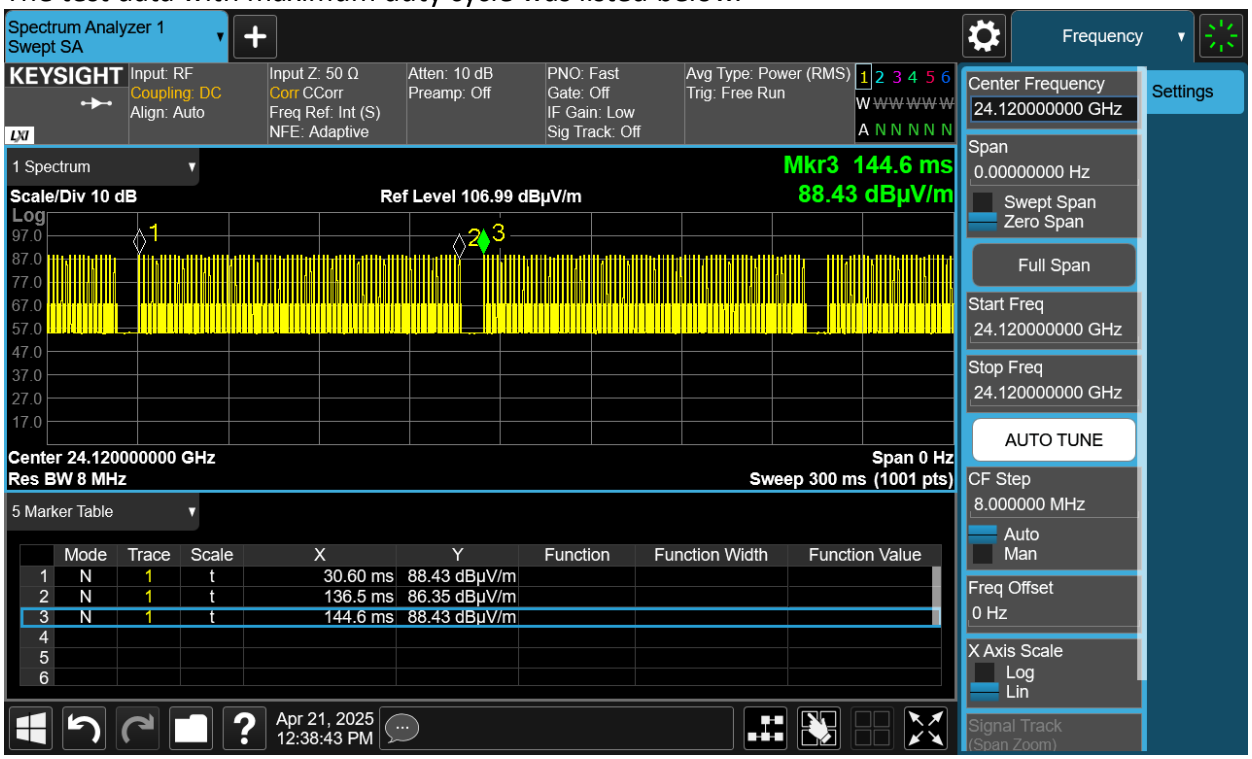
The emission was conducted from 40GHz to 100GHz

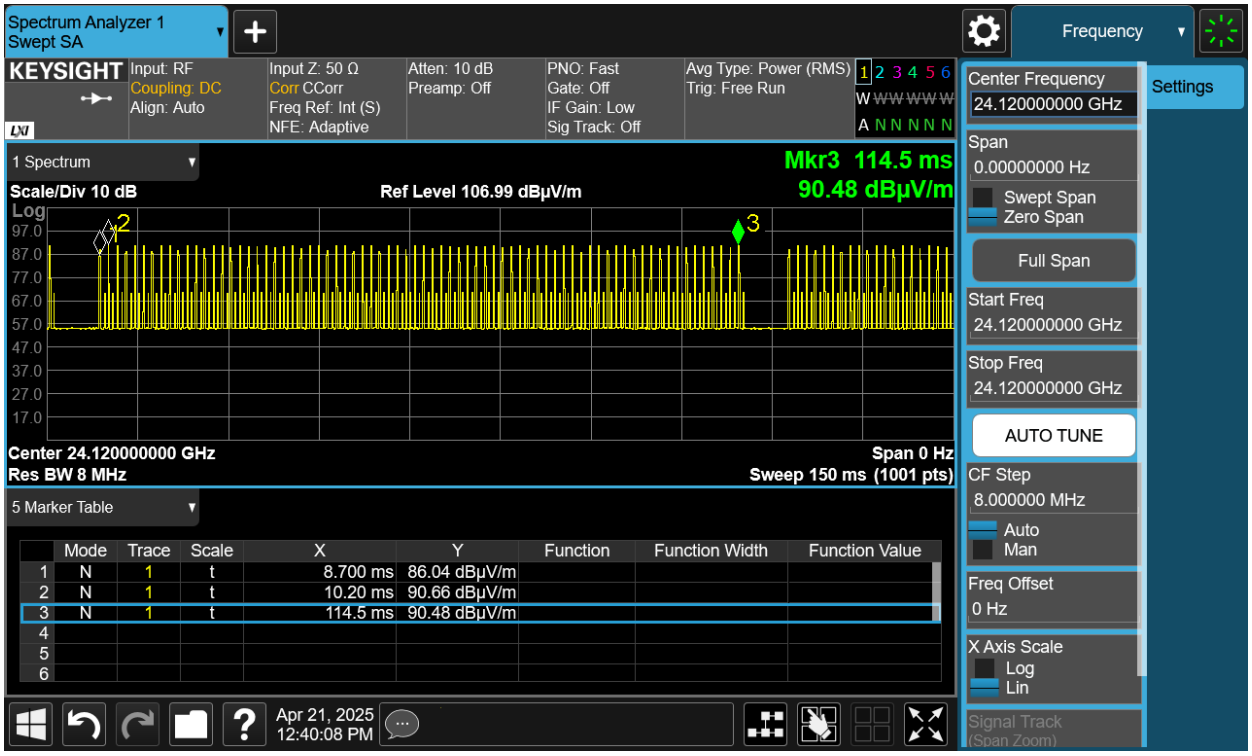
Antenna	Frequency (MHz)	Measured Level (dBm)	Antenna Gain (dBi)	Level@1m (dBuV/m)	Level@3m (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector
H	40920	-69.86	22.76	76.88	67.33	74.00	6.67	PK
H	40920	-85.52	22.76	61.22	51.67	54.00	2.33	AV
H	71070	-70.02	23.23	81.04	71.50	74.00	2.50	PK
H	71070	-89.96	23.23	61.10	51.56	54.00	2.44	AV
H	98750	-72.84	23.06	81.25	71.71	74.00	2.29	PK
H	98750	-91.85	23.06	62.24	52.70	54.00	1.30	AV
V	48100	-67.93	23.25	79.72	70.18	74.00	3.82	PK
V	48100	-85.01	23.25	62.64	53.10	54.00	0.90	AV
V	69210	-70.47	23.16	80.43	70.89	74.00	3.11	PK
V	69210	-89.35	23.16	61.55	52.01	54.00	1.99	AV
V	100000	-72.32	23.00	81.94	72.40	74.00	1.60	PK
V	100000	-90.92	23.00	63.38	53.80	54.00	0.20	AV

Remark: 1. Correct Factor = Antenna Factor + Cable Loss + Mixer Conversion Loss, the value was added to Original Receiver Reading by the software automatically.
2. Level@1m = 126.8 − 20log(λ) + P −G
where (According to ANSI 63.10 section 9.4):
E is the field strength of the emission at the measurement distance, in dBμV/m
P is the power measured at the output of the test antenna, in dBm
λ is the wavelength of the emission under investigation [300/fMHz], in m
G is the gain of the test antenna, in dBi
3. Margin = Limit - Level@1m
4. Level@3m= Level@1m + 20log(1m/3m).

3.5 Duty Cycle:

The test data with maximum duty cycle was listed below.





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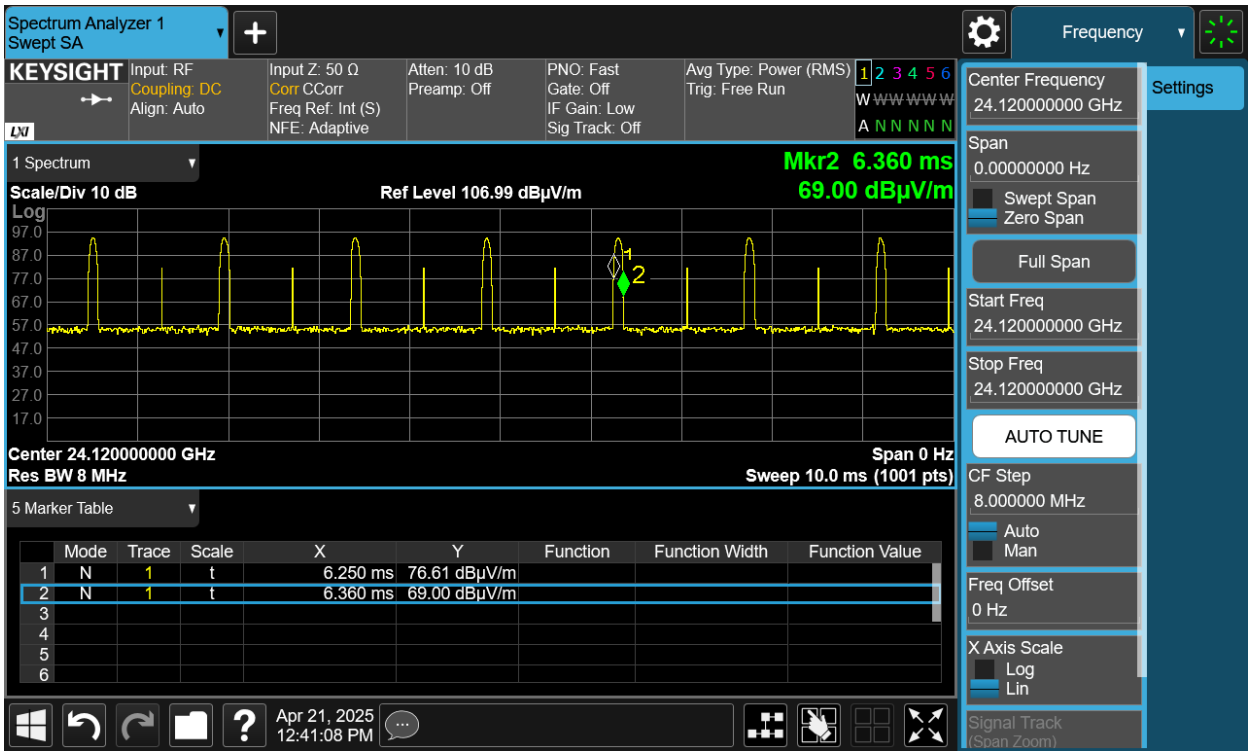


Duty Cycle Factor=20lg*(Cycle Factor) =-22.9dB

Note 1: Duty Cycle=Transmission Time/ Burst Period

2: Transmission Time = Chirp Width * Chirp number = 110us*74=8.14ms

3: Burst Period =114ms

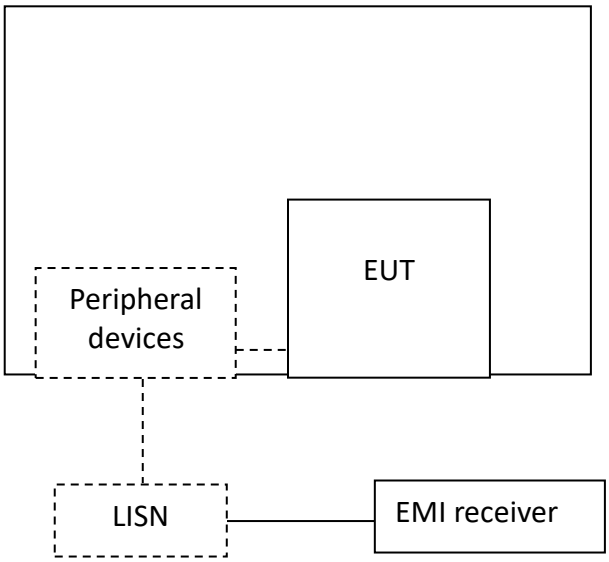
4 Power line conducted emission

Test result: **Pass**

4.1 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.		

4.2 Test Configuration



4.3 Measurement Procedure

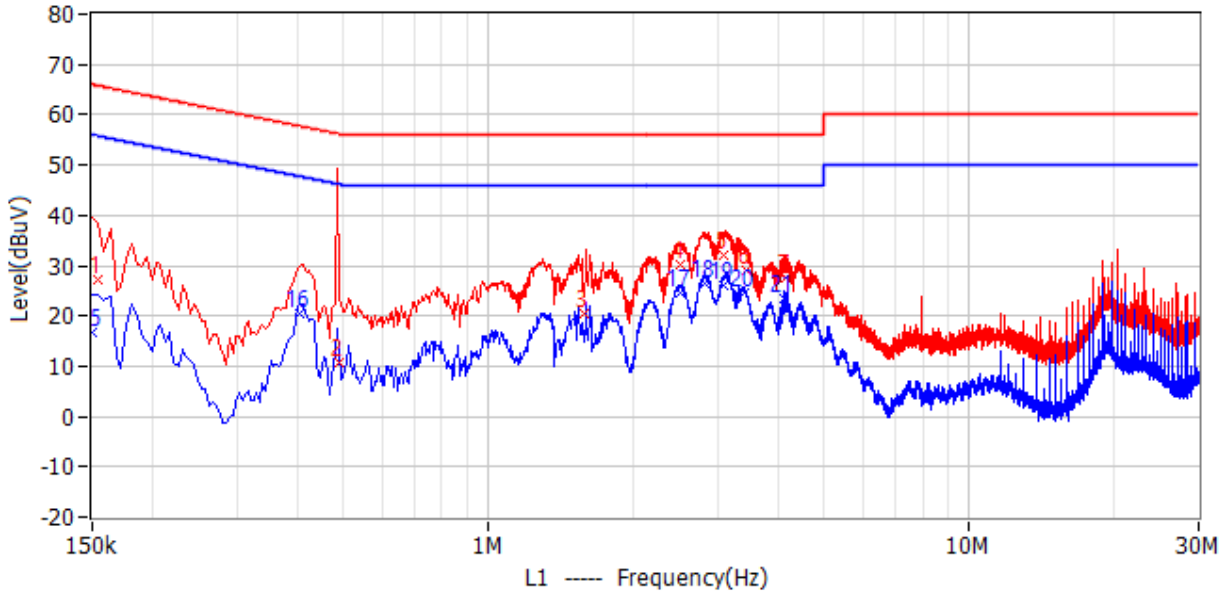
Measured levels of ac power-line conducted emission shall be the emission voltages from the voltage probe, where permitted, or across the 50 Ω LISN port (to which the EUT is connected), where permitted, terminated into a 50 Ω measuring instrument. All emission voltage and current measurements shall be 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 Ω measuring port is terminated by a measuring instrument having 50 Ω input impedance. All other ports are terminated in 50 Ω 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.

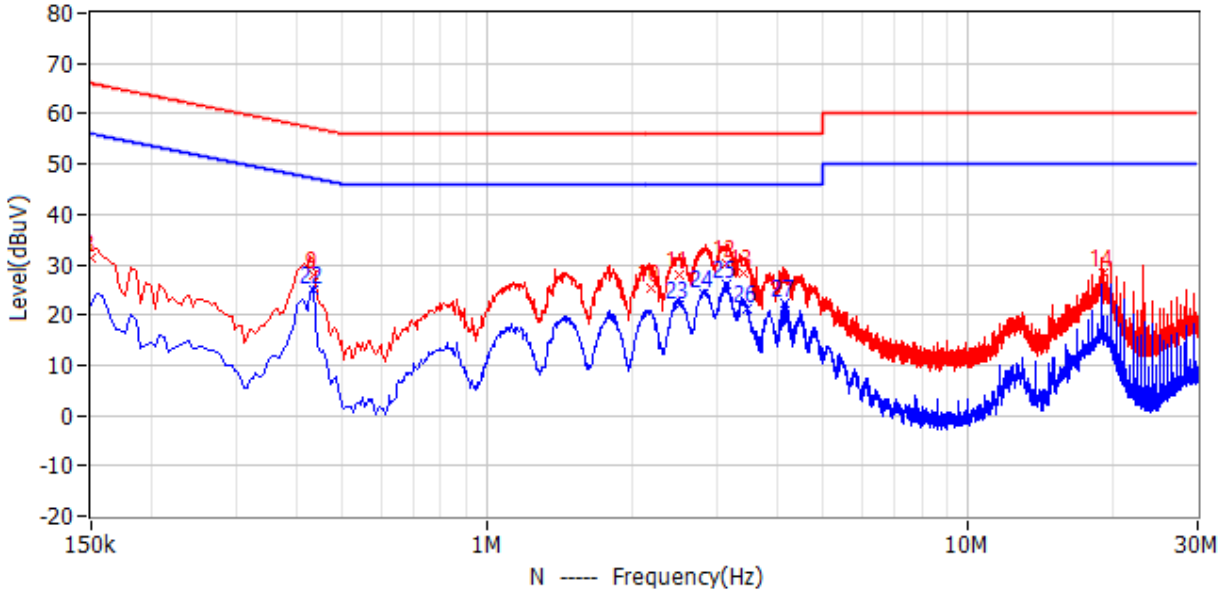
The bandwidth of the test receiver is set at 9 kHz.

4.4 Test Results of Power line conducted emission

L line



N line



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Test Data:

No.	Frequency	Limit dBuV	Level dBuV	Margin dB	Reading dBuV	Factor dB	Detector	Phase
1	154.500kHz	65.75	27.20	38.55	21.00	6.20	QP	L1
2	487.500kHz	56.21	10.81	45.40	4.61	6.20	QP	L1
3	1.577MHz	56.00	20.32	35.68	14.12	6.20	QP	L1
4	2.508MHz	56.00	30.14	25.86	23.84	6.30	QP	L1
5	3.093MHz	56.00	32.09	23.91	25.79	6.30	QP	L1
6	3.453MHz	56.00	28.92	27.08	22.62	6.30	QP	L1
7	4.151MHz	56.00	27.45	28.55	21.05	6.40	QP	L1
8	150.000kHz	66.00	31.16	34.84	25.06	6.10	QP	N
9	433.500kHz	57.19	27.94	29.25	21.84	6.10	QP	N
10	2.189MHz	56.00	25.40	30.60	19.10	6.30	QP	N
11	2.513MHz	56.00	27.95	28.05	21.65	6.30	QP	N
12	3.152MHz	56.00	30.27	25.73	23.97	6.30	QP	N
13	3.413MHz	56.00	28.36	27.64	22.06	6.30	QP	N
14	19.019MHz	60.00	28.25	31.75	21.05	7.20	QP	N
15	150.000kHz	56.00	16.59	39.41	10.39	6.20	AV	L1
16	406.500kHz	47.72	20.53	27.19	14.33	6.20	AV	L1
17	2.504MHz	46.00	24.51	21.49	18.21	6.30	AV	L1
18	2.823MHz	46.00	26.30	19.70	20.00	6.30	AV	L1
19	3.080MHz	46.00	26.02	19.98	19.72	6.30	AV	L1
20	3.399MHz	46.00	24.47	21.53	18.17	6.30	AV	L1
21	4.133MHz	46.00	23.53	22.47	17.13	6.40	AV	L1
22	433.500kHz	47.19	25.12	22.07	19.02	6.10	AV	N
23	2.504MHz	46.00	22.10	23.90	15.80	6.30	AV	N
24	2.823MHz	46.00	24.37	21.63	18.07	6.30	AV	N
25	3.143MHz	46.00	26.09	19.91	19.79	6.30	AV	N
26	3.462MHz	46.00	21.29	24.71	14.99	6.30	AV	N
27	4.155MHz	46.00	22.15	23.85	15.75	6.40	AV	N

Remark: 1. Factor = LISN Factor + Cable Loss, the value was added to Original Receiver Reading by the software automatically.

2. Level = Reading + Factor

3. Margin = Limit - Level

4. If the PK Corrected Reading is lower than AV limit, the AV test can be elided.

5 20 dB Bandwidth & 99% Occupied Bandwidth

Test result: **Pass**

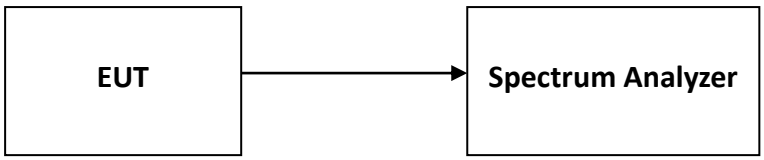
5.1 Limit

Intentional radiators must be designed to ensure that the 20 dB bandwidth of the emission is contained within the allocated frequency band.

5.2 Measurement Procedure

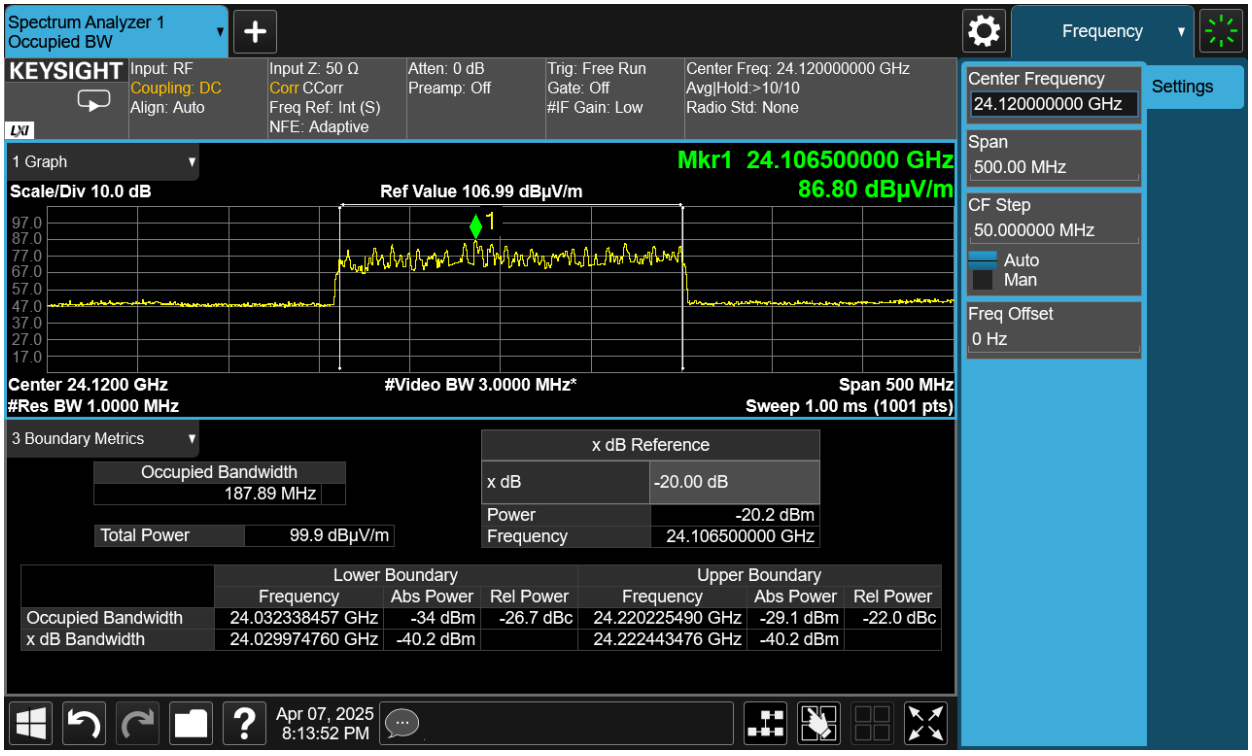
The 20dB Bandwidth is measured using the Spectrum Analyzer.
Set Span = 2 to 3 times the 20 dB bandwidth, RBW = approximately 1% of the 20 dB bandwidth, VBW>RBW, Sweep = auto, Detector = peak, Trace = max hold.
The test was performed at 2 channels (lowest and highest channel).

5.3 Test Configuration



5.4 The results

Frequency band (MHz)	F_L at 20dB BW (MHz)	F_H at 20dB BW (MHz)	F_L at 99% BW (MHz)	F_H at 20dB BW (MHz)	20dB BW (MHz)	99% BW (MHz)
24000 ~ 24250	24029.97	24224.43	24032.33	24220.22	194.46	187.89
Limit	F_L >24000	F_H <24250	F_L >24000	F_H <24250	/	/
Result	**Complied**					



6 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 uses permanently attached antenna to the intentional radiator, so it can comply with the provisions of this section.

********** END **********