

# TEST REPORT

FCC BT LE Test for MR26GA  
Certification

**APPLICANT**  
LG Electronics Inc.

**REPORT NO.**  
HCT-RF-2506-FC096

**DATE OF ISSUE**  
June 23, 2025

**Tested by**  
Ki Jae Kwon



**Technical Manager**  
Jong Seok Lee



Accredited by KOLAS, Republic of KOREA

**HCT CO., LTD.**  
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# TEST REPORT

**REPORT NO.**

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**DATE OF ISSUE**

June 23, 2025

**Applicant**

**LG Electronics Inc.**

222, LG-ro, Jinwi-myeon, Pyeongtaek-si, Gyeonggi-do 17709, Republic of Korea

**Product Name**

Remote Control

**Model Name**

MR26GA

**FCC ID**

2B03LMR26GA

**Date of Test**

June 13, 2025 ~ June 20, 2025

**FCC Classification**

Digital Transmission System(DTS)

**Test Standard Used**

FCC Rule Part(s): Part 15 subpart C 15.247

**Location of Test**

☒ Permanent Testing Lab ☐ On Site Testing Lab

(Address: 74, Seoicheon-ro 578beon-gil, Majang-myeon, Icheon-si, Gyeonggi-do, Republic of Korea)

**Test Results**

PASS

## REVISION HISTORY

The revision history for this test report is shown in table.

Revision No.	Date of Issue	Description
0	June 23, 2025	Initial Release

## Notice

### Content

Engineering Statement:

The measurements shown in this report were made in accordance with the procedures indicated, and the emissions from this equipment were found to be within the limits applicable. I assume full responsibility for the accuracy and completeness of these measurements, and for the qualifications of all persons taking them. It is further stated that upon the basis of the measurements made, the equipment tested is capable of operation in accordance with the requirements of the FCC Rules under normal use and maintenance.

The results shown in this test report only apply to the sample(s), as received, provided by the applicant, unless otherwise stated.

The test results have only been applied with the test methods required by the standard(s).

The laboratory is not accredited for the test results marked \*.

Information provided by the applicant is marked \*\*.

Test results provided by external providers are marked \*\*\*.

When confirmation of authenticity of this test report is required, please contact [www.hct.co.kr](http://www.hct.co.kr)

This test report provides test result(s) under the scope accredited by the Korea Laboratory Accreditation Scheme (KOLAS), which signed the ILAC-MRA.

(KOLAS (KS Q ISO/IEC 17025) Accreditation No. KT197)

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## 1. EUT DESCRIPTION

Model	MR26GA		
Additional Model	-		
EUT Type	Remote Control		
Power Supply	DC 3.00 V		
Frequency Range	2 402 MHz – 2 480 MHz		
Number of Channels	40 Channels		
Max. RF Output Power (Normal)	Peak	1 M Bit/s:	3.858 dBm (2.43 mW)
	Average	1 M Bit/s:	3.69 dBm (2.34 mW)
Modulation Type	GFSK		
Bluetooth Version	4.2		
Antenna Specification	Type: PCB antenna Peak Gain: 2.51 dBi		
Serial number	Conducted : MR26GA_C1 Radiated : MR26GA_R1		

## 2. TEST METHODOLOGY

FCC KDB 558074 D01 15.247 Meas Guidance v05r02 dated April 02, 2019 entitled “guidance for compliance measurements on digital transmission system, frequency hopping spread spectrum system, and hybrid system devices and the measurement procedure described in ANSI C63.10 (Version : 2013) ‘the American National Standard of Procedures for Compliance Testing of Unlicensed Wireless Devices’.

### EUT CONFIGURATION

The EUT configuration for testing is installed on RF field strength measurement to meet the Commissions requirement and operating in a manner that intends to maximize its emission characteristics in a continuous normal application.

### EUT EXERCISE

The EUT was operated in the engineering mode to fix the Tx frequency that was for the purpose of the measurements. According to its specifications, the EUT must comply with the requirements of the Section 15.207, 15.209 and 15.247 under the FCC Rules Part 15 Subpart C.

### GENERAL TEST PROCEDURES

#### Conducted Emissions

The EUT is placed on the turntable, which is 0.8 m above ground plane. According to the requirements in Section 6.2 of ANSI C63.10. (Version :2013) Conducted emissions from the EUT measured in the frequency range between 0.15 MHz and 30 MHz using CISPR Quasi-peak and average detector modes.

#### Radiated Emissions

The EUT is placed on a turn table, which is 0.8 m above ground plane below 1 GHz. Above 1 GHz with 1.5 m using absorbers between the EUT and receive antenna. The turntable shall rotate 360 degrees to determine the position of maximum emission level. EUT is set 3 m away from the receiving antenna, which varied from 1 m to 4 m to find out the highest emission. And also, each emission was to be maximized by changing the polarization of receiving antenna both horizontal and vertical. In order to find out the max. emission, the relative positions of this hand-held transmitter (EUT) was rotated through three orthogonal axes according to the requirements in Section 6.6.5 of ANSI C63.10. (Version: 2013)

## DESCRIPTION OF TEST MODES

The EUT has been tested under operating condition. Test program used to control the EUT for staying in continuous transmitting and receiving mode is programmed.

## 3. INSTRUMENT CALIBRATION

The measuring equipment, which was utilized in performing the tests documented herein, has been calibrated in accordance with the manufacturer's recommendations for utilizing calibration equipment's, which is traceable to recognized national standards.

Especially, all antenna for measurement is calibrated in accordance with the requirements of C63.5 (Version : 2017).

## 4. FACILITIES AND ACCREDITATIONS

### FACILITIES

The SAC(Semi-Anechoic Chamber) and conducted measurement facility used to collect the radiated data are located at the 74, Seoicheon-ro 578beon-gil, Majang-myeon, Icheon-si, Gyeonggi-do, 17383, Rep. of KOREA. The site is constructed in conformance with the requirements of ANSI C63.4. (Version :2014) and CISPR Publication 22.

Detailed description of test facility was submitted to the Commission and accepted dated March 11, 2024 (Registration Number: KR0032).

### EQUIPMENT

Radiated emissions are measured with one or more of the following types of Linearly polarized antennas: tuned dipole, bi-conical, log periodic, bi-log, and/or ridged waveguide, horn. Spectrum analyzers with pre-selectors and quasi-peak detectors are used to perform radiated measurements. Conducted emissions are measured with Line Impedance Stabilization Networks and EMI Test Receivers. Calibrated wideband preamplifiers, coaxial cables, and coaxial attenuators are also used for making measurements.

All receiving equipment conforms to CISPR Publication 16-1, "Radio Interference Measuring Apparatus and Measurement Methods."

## 5. ANTENNA REQUIREMENTS

### According to FCC 47 CFR § 15.203

“An intentional radiator antenna shall be designed to ensure that no antenna other than that furnished by the responsible party can 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.”

- (1) The antennas of this E.U.T are permanently attached.
- (2) The E.U.T Complies with the requirement of § 15.203

## 6. MEASUREMENT UNCERTAINTY

The measurement uncertainties shown below were calculated in accordance with the requirements of ANSI C63.10-2013.

All measurement uncertainty values are shown with a coverage factor of  $k=2$  to indicate a 95 % level of confidence.

The measurement data shown herein meets or exceeds the  $U_{CISPR}$  measurement uncertainty values specified in CISPR 16-4-2 and, thus, can be compared directly to specified limits to determine compliance.

Parameter	Expanded Uncertainty ( $\pm$ kHz)
X dB, 99% Bandwidth	95 (Confidence level about 95 %, $k=2$ )
Frequency stability	28 (Confidence level about 95 %, $k=2$ )

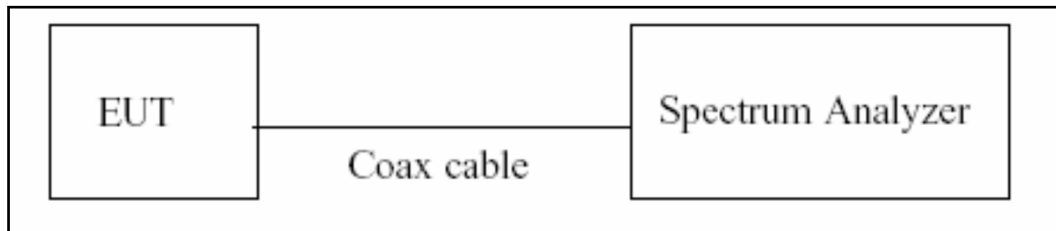
Parameter	Expanded Uncertainty ( $\pm$ dB)
Conducted Disturbance (150 kHz ~ 30 MHz)	1.54 (Confidence level about 95 %, $k=2$ )
Conducted Output Power(Power Meter)	0.54 (Confidence level about 95 %, $k=2$ )
Conducted Output Power(Signal Analyzer)	0.68 (Confidence level about 95 %, $k=2$ )
Power Spectral Density	1.03 (Confidence level about 95 %, $k=2$ )
Band Edge (Out of Band Emissions)	0.70 (Confidence level about 95 %, $k=2$ )
Radiated Disturbance (9 kHz ~ 30 MHz)	4.36 (Confidence level about 95 %, $k=2$ )
Radiated Disturbance (30 MHz ~ 1 GHz)	5.68 (Confidence level about 95 %, $k=2$ )
Radiated Disturbance (1 GHz ~ 18 GHz)	5.75 (Confidence level about 95 %, $k=2$ )
Radiated Disturbance (18 GHz ~ 40 GHz)	5.82 (Confidence level about 95 %, $k=2$ )



## 7. DESCRIPTION OF TESTS

### 7.1. Duty Cycle

#### Test Configuration



#### Test Procedure

The transmitter output is connected to the Spectrum Analyzer.

We tested according to the zero-span measurement method.

The largest available value of RBW is 8 MHz and VBW is 50 MHz.

The zero-span method of measuring duty cycle shall not be used if  $T \leq 6.25$  microseconds. ( $50/6.25 = 8$ )

The zero-span method was used because all measured T data are  $> 6.25$  microseconds and both RBW and VBW are  $> 50/T$ .

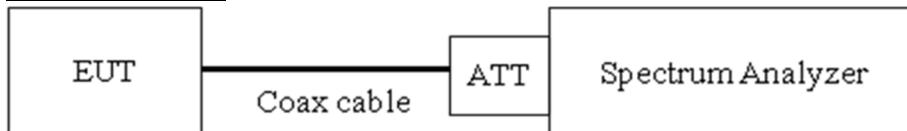
1. RBW = 8 MHz (the largest available value)
2. VBW = 8 MHz ( $\geq$  RBW)
3. SPAN = 0 Hz
4. Detector = Average
5. Number of points in sweep  $> 100$
6. Trace mode = Clear write
7. Measure  $T_{\text{total}}$  and  $T_{\text{on}}$
8. Calculate Duty Cycle =  $T_{\text{on}} / T_{\text{total}}$  and Duty Cycle Factor =  $10\log(1/\text{Duty Cycle})$

## 7.2. 6 dB Bandwidth

### Limit

The minimum permissible 6 dB bandwidth is 500 kHz.

### Test Configuration



### Test Procedure

The transmitter output is connected to the Spectrum Analyzer.

The Spectrum Analyzer is set to (Procedure 11.8.1 in ANSI 63.10-2013)

- 1) RBW = 100 kHz
- 2) VBW  $\geq 3 \times$  RBW
- 3) Detector = Peak
- 4) Trace mode = max hold
- 5) Sweep = auto couple
- 6) Allow the trace to stabilize
- 7) We tested 6 dB bandwidth using the automatic bandwidth measurement capability of a spectrum analyzer. X dB is set 6 dB.

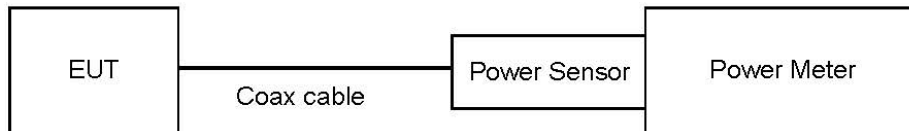
Note : We tested OBW using the automatic bandwidth measurement capability of a spectrum analyzer.

### 7.3. Output Power

#### Limit

The maximum permissible conducted output power is 1 Watt.

#### Test Configuration



#### Test Procedure

The transmitter output is connected to the Power Meter.

- Peak Power (Procedure 11.9.1.3 in ANSI 63.10-2013)  
: Measure the peak power of the transmitter.
- Average Power (Procedure 11.9.2.3 in ANSI 63.10-2013)
  - 1) Measure the duty cycle.
  - 2) Measure the average power of the transmitter. This measurement is an average over both the on and off periods of the transmitter.
  - 3) Add  $10 \log (1/x)$ , where  $x$  is the duty cycle, to the measured power in order to compute the average power during the actual transmission times.

#### Sample Calculation

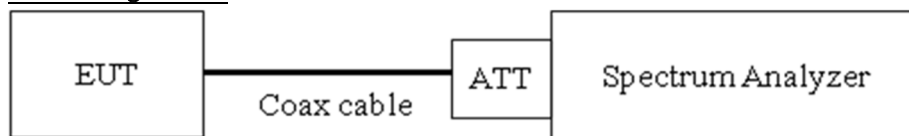
- Conducted Output Power(Peak) = Measured Value + ATT loss + Cable loss
- Conducted Output Power(Average) = Measured Value + ATT loss + Cable loss + Duty Cycle Factor

#### 7.4. Power Spectral Density

##### Limit

The transmitter power density average over 1-second interval shall not be greater than 8 dBm in any 3 kHz BW.

##### Test Configuration



##### Test Procedure

The transmitter output is connected to the Spectrum Analyzer.

We tested according to Procedure 8.4 in KDB 558074 v05r02, Procedure 11.10 in ANSI 63.10-2013.

The spectrum analyzer is set to :

- 1) Set analyzer center frequency to DTS channel center frequency.
- 2) Set span to at least 1.5 times the DTS bandwidth.
- 3)  $RBW = 3 \text{ kHz} \leq RBW \leq 100 \text{ kHz}$ .
- 4)  $VBW \geq 3 \times RBW$ .
- 5) Sweep = auto couple.
- 6) Detector = Peak.
- 7) Trace mode = max hold.
- 8) Allow trace to fully stabilize.
- 9) Use the peak marker function to determine the maximum amplitude level within the RBW.
- 10) If measured value exceeds limit, reduce RBW (no less than 3 kHz) and repeat.

##### Sample Calculation

- Power Spectral Density = Measured Value + ATT loss + Cable loss

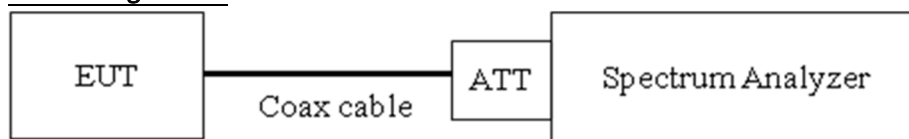
## 7.5. Conducted Band Edge(Out of Band Emissions) & Conducted Spurious Emissions

### Limit

The maximum conducted (Peak) output power was used to demonstrate compliance, then the peak power in any 100 kHz bandwidth outside of the authorized frequency band shall be attenuated by at least 20 dB relative to the maximum in-band peak PSD level in 100 kHz.

[ Conducted > 20 dBc ]

### Test Configuration



### Test Procedure

The transmitter output is connected to the spectrum analyzer.

(Procedure 11.11 in ANSI 63.10-2013)

- 1) RBW = 100 kHz
- 2) VBW  $\geq 3 \times$  RBW
- 3) Set span to encompass the spectrum to be examined
- 4) Detector = Peak
- 5) Trace Mode = max hold
- 6) Sweep time = auto couple
- 7) Ensure that the number of measurement points  $\geq 2 \times$  Span/RBW
- 8) Allow trace to fully stabilize.
- 9) Use peak marker function to determine the maximum amplitude level.

Measurements are made over the 30 MHz to 25 GHz range with the transmitter set to the lowest, middle, and highest channels.

### Factors for frequency

Freq(MHz)	Factor(dB)
30	20.43
100	20.42
200	20.53
300	20.60
400	20.55
500	20.64
600	20.61
700	20.62
800	20.68
900	20.73
1000	20.72
2000	20.95
2400	21.02
2500	21.00
3000	21.07
4000	21.23
5000	21.21
5150	21.24
6000	21.47
7000	21.50
8000	21.36
9000	21.57
10000	22.17
11000	21.78
12000	22.32
13000	21.96
14000	22.03
15000	22.75
16000	22.33
17000	22.19
18000	22.06
19000	22.30
20000	22.07
21000	22.15
22000	22.37
23000	22.28
24000	22.21
25000	22.61

Note : 1. 2400 ~ 2500 MHz is fundamental frequency range.

2. Factor = Attenuator loss + Cable loss

3. EUT cable loss = 1.00 dB

4. Total Port offset = 22.02 dB

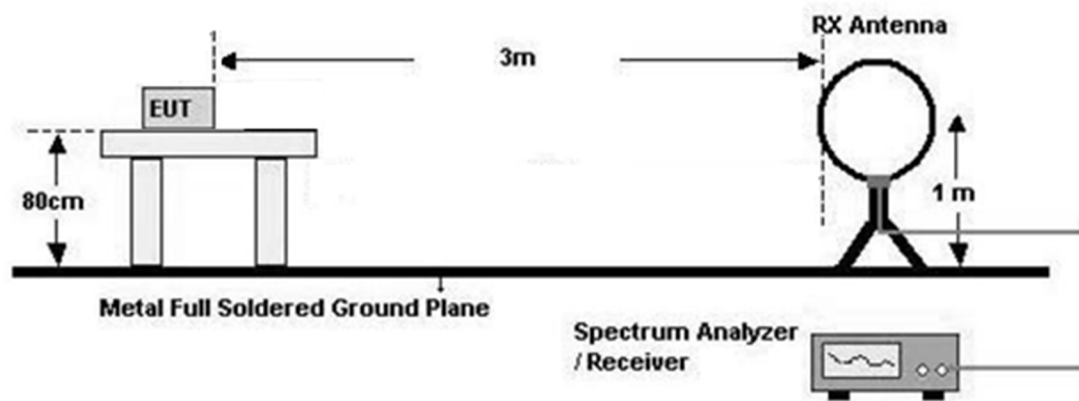
## 7.6. Radiated Test

### Limit

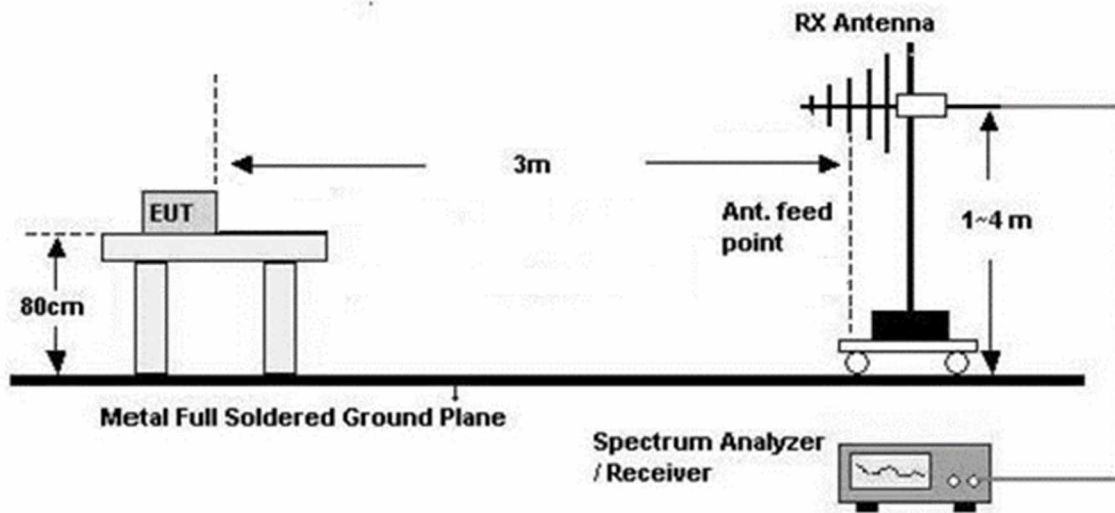
Frequency (MHz)	Field Strength ( $\mu\text{V/m}$ )	Measurement Distance (m)
0.009 – 0.490	$2400/F(\text{kHz})$	300
0.490 – 1.705	$24000/F(\text{kHz})$	30
1.705 – 30	30	30
30-88	100	3
88-216	150	3
216-960	200	3
Above 960	500	3

### Test Configuration

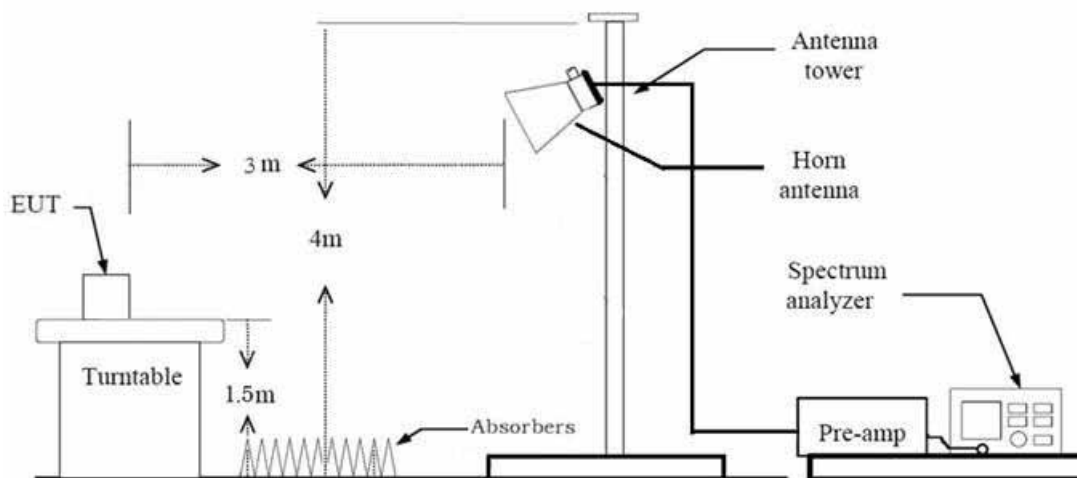
Below 30 MHz



30 MHz - 1 GHz



Above 1 GHz





**Test Procedure of Radiated spurious emissions(Below 30 MHz)**

1. The EUT was placed on a non-conductive table located on semi-anechoic chamber.
2. The loop antenna was placed at a location 3 m from the EUT
3. The EUT is placed on a turntable, which is 0.8 m above ground plane.
4. We have done x, y, z planes in EUT and horizontal and vertical polarization and Parallel to the ground plane in detecting antenna.
5. The turntable shall be rotated for 360 degrees to determine the position of maximum emission level.
6. Distance Correction Factor(0.009 MHz – 0.490 MHz) =  $40\log(3\text{ m}/300\text{ m}) = -80\text{ dB}$   
Measurement Distance : 3 m
7. Distance Correction Factor(0.490 MHz – 30 MHz) =  $40\log(3\text{ m}/30\text{ m}) = -40\text{ dB}$   
Measurement Distance : 3 m
8. Spectrum Setting
  - Frequency Range = 9 kHz ~ 30 MHz
  - Detector = Peak
  - Trace = Max hold
  - RBW = 9 kHz
  - VBW  $\geq 3 \times$  RBW
9. Total = Measured Value + Antenna Factor(A.F) + Cable Loss(C.L) + Distance Factor(D.F)
10. Measurement value only up to 6 maximum emissions noted, or would be lesser if no specific emissions from the EUT are recorded (ie: margin > 20 dB from the applicable limit) and considered that's already beyond the background noise floor.

**KDB 414788 OFS and Chamber Correlation Justification**

Base on FCC 15.31 (f) (2): measurements may be performed at a distance closer than that specified in the regulations; however, an attempt should be made to avoid making measurements in the near field.

OFS and chamber correlation testing had been performed and chamber measured test result is the worst case test result.

**Test Procedure of Radiated spurious emissions(Below 1 GHz)**

1. The EUT was placed on a non-conductive table located on semi-anechoic chamber.
2. The EUT is placed on a turntable, which is 0.8 m above ground plane.
3. The Hybrid antenna was placed at a location 3 m from the EUT, which is varied from 1m to 4 m to find out the highest emissions.
4. We have done x, y, z planes in EUT and horizontal and vertical polarization in detecting antenna.
5. The turntable shall be rotated for 360 degrees to determine the position of maximum emission level.

**6. Spectrum Setting****(1) Measurement Type(Peak):**

- Measured Frequency Range : 30 MHz – 1 GHz
- Detector = Peak
- Trace = Max hold
- RBW = 100 kHz
- VBW  $\geq$  3 x RBW

**(2) Measurement Type(Quasi-peak):**

- Measured Frequency Range : 30 MHz – 1 GHz
- Detector = Quasi-Peak
- RBW = 120 kHz

In general, (1) is used mainly

7. Total = Measured Value + Antenna Factor(A.F) + Cable Loss(C.L)
8. Measurement value only up to 6 maximum emissions noted, or would be lesser if no specific emissions from the EUT are recorded (ie: margin > 20 dB from the applicable limit) and considered that's already beyond the background noise floor.

**Test Procedure of Radiated spurious emissions (Above 1 GHz)**

1. The EUT is placed on a turntable, which is 1.5 m above ground plane.
2. We have done x, y, z planes in EUT and horizontal and vertical polarization in detecting antenna.
3. The turntable shall be rotated for 360 degrees to determine the position of maximum emission level.
4. EUT is set 3 m away from the receiving antenna, which is varied from 1 m to 4 m to find out the highest emissions.
5. Maximum procedure was performed on the six highest emissions to ensure EUT compliance.
6. Each emission was to be maximized by changing the polarization of receiving antenna both horizontal and vertical.
7. The unit was tested with provided jig and setup guide.
8. Spectrum Setting (Method 8.6 in KDB 558074 v05r02, Procedure 11.12 in ANSI 63.10-2013)

**(1) Measurement Type(Peak):**

- Measured Frequency Range : 1 GHz – 25 GHz
- Detector = Peak
- Trace = Max hold
- RBW = 1 MHz
- VBW  $\geq 3 \times$  RBW

**(2) Measurement Type(Average):**

- Duty cycle < 98 %, duty cycle variations are less than  $\pm 2$  %
  - Measured Frequency Range : 1 GHz – 25 GHz
  - Detector = RMS
  - Averaging type = power (*i.e.*, RMS)
  - RBW = 1 MHz
  - VBW  $\geq 3 \times$  RBW
  - Sweep time = auto.
  - Trace mode = average (at least 100 traces).
  - Correction factor shall be added to the measurement results prior to comparing to the emission limit in order to compute the emission level that would have been measured had the test been performed at 100 percent duty cycle.
- Duty Cycle Factor (dB) : Please refer to the please refer to section 9.1
9. Measurement value only up to 6 maximum emissions noted, or would be lesser if no specific emissions from the EUT are recorded (ie: margin > 20 dB from the applicable limit) and considered that's already beyond the background noise floor.
  10. Distance extrapolation factor =  $20\log(\text{test distance} / \text{specific distance})$  (dB)
  11. Total (Measurement Type : Peak)  
= Peak Measured Value + Antenna Factor(A.F) + Cable Loss(C.L) - Amp Gain(A.G) + Distance Factor(D.F)

Total (Measurement Type : Average)

= Average Measured Value + Antenna Factor(A.F) + Cable Loss(C.L) - Amp Gain(A.G) + Distance Factor(D.F)

#Note : Used Average measurement method according to KDB 558074 Section11 Q3

### **Test Procedure of Radiated Restricted Band Edge**

1. The EUT is placed on a turntable, which is 1.5 m above ground plane.
2. We have done x, y, z planes in EUT and horizontal and vertical polarization in detecting antenna.
3. The turntable shall be rotated for 360 degrees to determine the position of maximum emission level.
4. EUT is set 3 m away from the receiving antenna, which is varied from 1 m to 4 m to find out the highest emissions.
5. Maximum procedure was performed on the six highest emissions to ensure EUT compliance.
6. Each emission was to be maximized by changing the polarization of receiving antenna both horizontal and vertical.
7. The unit was tested with provided jig and setup guide.
8. Spectrum Setting
  - (1) Measurement Type(Peak):
    - Measured Frequency Range : 2310 MHz ~ 2390 MHz/ 2483.5 MHz ~ 2500 MHz
    - Detector = Peak
    - Trace = Max hold
    - RBW = 1 MHz
    - VBW  $\geq 3 \times$  RBW
  - (2) Measurement Type(Average):
    - Duty cycle < 98 %, duty cycle variations are less than  $\pm 2$  %
    - Measured Frequency Range : 2310 MHz ~ 2390 MHz/ 2483.5 MHz ~ 2500 MHz
    - Detector = RMS
    - Averaging type = power (*i.e.*, RMS)
    - RBW = 1 MHz
    - VBW  $\geq 3 \times$  RBW
    - Sweep time = auto.
    - Trace mode = average (at least 100 traces).
    - Correction factor shall be added to the measurement results prior to comparing to the emission limit in order to compute the emission level that would have been measured had the test been performed at 100 percent duty cycle.
    - Duty Cycle Factor (dB) : Please refer to the please refer to section 9.1.
9. Measurement value only up to 6 maximum emissions noted, or would be lesser if no specific emissions from the EUT are recorded (ie: margin > 20 dB from the applicable limit) and considered

that's already beyond the background noise floor.

10. Distance extrapolation factor =  $20\log(\text{test distance} / \text{specific distance})$  (dB)

(1) Measurement(Peak)

= Measured Value(Peak)

(2) Measurement(Avg)

= Measured Value(Avg)

- We apply to the offset in range 1 GHz - 18 GHz

- The offset = Antenna Factor(A.F) + Cable Loss(C.L) + Distance Factor(D.F)

#Note : Used Average measurement method according to KDB 558074 Section11 Q3

11.Total

(1) Measurement(Peak)

= Peak Measured Value + Antenna Factor(A.F) + Cable Loss(C.L) + Distance Factor(D.F) – Amp.

Gain(A.G) + Attenuator (ATT)

(2) Measurement(Avg)

= Average Measured Value + Antenna Factor(A.F) + Cable Loss(C.L) + Distance Factor(D.F) –

Amp. Gain(A.G) + Attenuator (ATT)

#Note : Used Average measurement method according to KDB 558074 Section11 Q3

## 7.7. AC Power line Conducted Emissions

### Limit

For an intentional radiator that is designed to be connected to the public utility (AC) power line, the radio frequency voltage that is conducted back onto the AC power line on any frequency or frequencies, within the band 150 kHz to 30 MHz, shall not exceed the limits in the following table, as measured using a 50  $\mu$ H/50 ohms line impedance stabilization network (LISN).

Frequency Range (MHz)	Limits (dB $\mu$ V)	
	Quasi-peak	Average
0.15 to 0.50	66 to 56 <sup>(a)</sup>	56 to 46 <sup>(a)</sup>
0.50 to 5	56	46
5 to 30	60	50

<sup>(a)</sup>Decreases with the logarithm of the frequency.

Compliance with this provision shall be based on the measurement of the radio frequency voltage between each power line (LINE and NEUTRAL) and ground at the power terminals.

### Test Configuration

See test photographs attached in Annex A for the actual connections between EUT and support equipment.

### Test Procedure

1. The EUT is placed on a wooden table 80 cm above the reference ground plane.
2. The EUT is connected via LISN to a test power supply.
3. The measurement results are obtained as described below:
4. Detectors : Quasi Peak and Average Detector.

### Sample Calculation

Quasi-peak(Final Result) = Measured Value + Correction Factor

## 7.8. Worst case configuration and mode

### Radiated Test

1. All modes of operation were investigated and the worst case configuration results are reported.
  - Mode : Stand alone
2. EUT Axis:
  - Radiated Spurious Emissions : X
  - Radiated Restricted Band Edge : X
3. All packet length of operation were investigated and the worst case results are reported.  
(Worst case : 1M 37 Byte)
4. All position of loop antenna were investigated and the test result is a no critical peak found at all positions.
  - Position : Horizontal, Vertical, Parallel to the ground plane

### AC Power line Conducted Emissions

1. We don't perform powerline conducted emission test. The device only employ battery power for operation.

### Conducted test

1. All packet length of operation were investigated and the worst case results are reported.  
(Worst case : 1M 37 Byte)
2. All modes of operation were investigated and the worst case configuration results are reported.
  - Mode : Stand alone

## 8. SUMMARY TEST OF RESULTS

Test Description	FCC Part Section(s)	Test Limit	Test Condition	Test Result
6 dB Bandwidth	§ 15.247(a)(2)	> 500 kHz	Conducted	PASS
Conducted Maximum Output Power	§ 15.247(b)(3)	< 1 Watt		PASS
Power Spectral Density	§ 15.247(e)	< 8 dBm / 3 kHz Band		PASS
Band Edge (Out of Band Emissions)	§ 15.247(d)	Conducted > 20 dBc		PASS
AC Power line Conducted Emissions	§ 15.207	cf. Section 7.7		N/A (Note1)
Radiated Spurious Emissions	§ 15.247(d), 15.205, 15.209	cf. Section 7.6	Radiated	PASS
Radiated Restricted Band Edge	§ 15.247(d), 15.205, 15.209	cf. Section 7.6		PASS

### Note

1. The device only employ battery power for operation.
2. The decision rule applies 'simple acceptance'



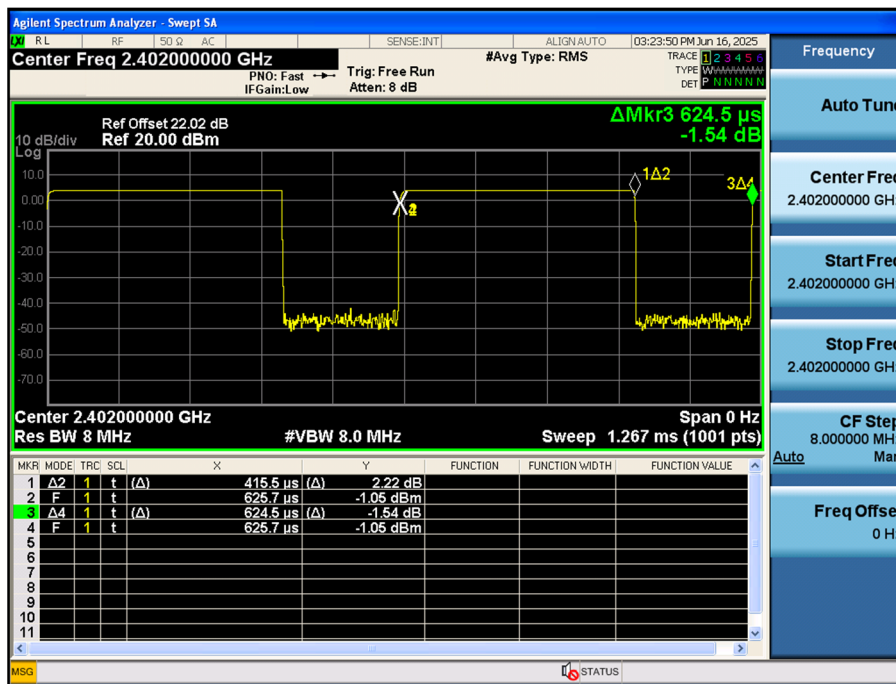
## 9. TEST RESULT

### 9.1 DUTY CYCLE

Data rate (Bit/s)	Packet length (Byte)	T <sub>on</sub> (ms)	T <sub>total</sub> (ms)	Duty Cycle	Duty Cycle Factor (dB)
1M	37	0.415	0.624	0.665	1.770

#### Test Plot

#### 1 M Bit/s (37 Byte) Duty Cycle (Low-CH 0)



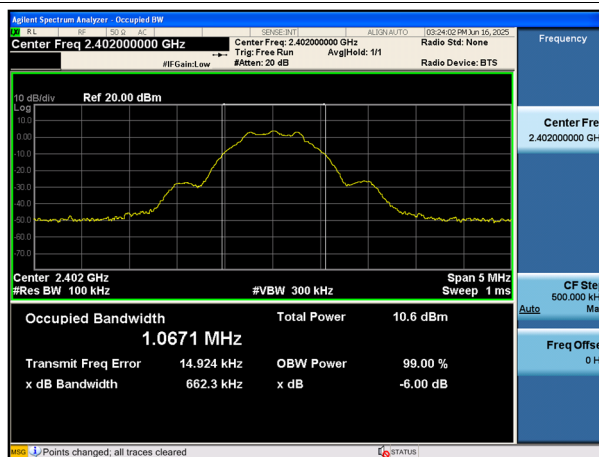
**9.2 6 dB BANDWIDTH**

Mode	Channel	Frequency [MHz]	6dB BW [kHz]	Limit [kHz]
1M 37Byte	0	2402	662.3	> 500
	19	2440	681.9	
	39	2480	690.4	

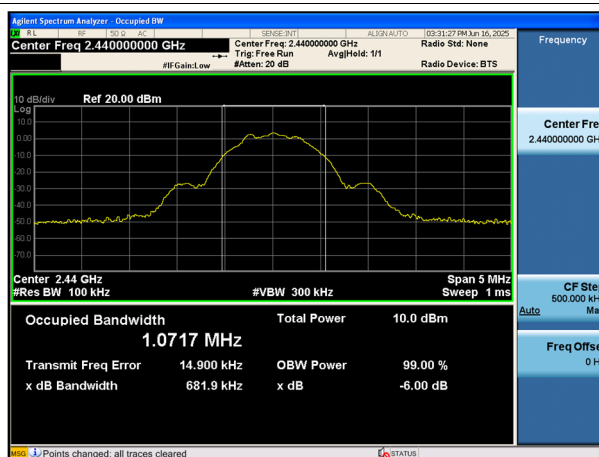
## Test Plots

### 1 MBit/s (37 Byte) Test Plots

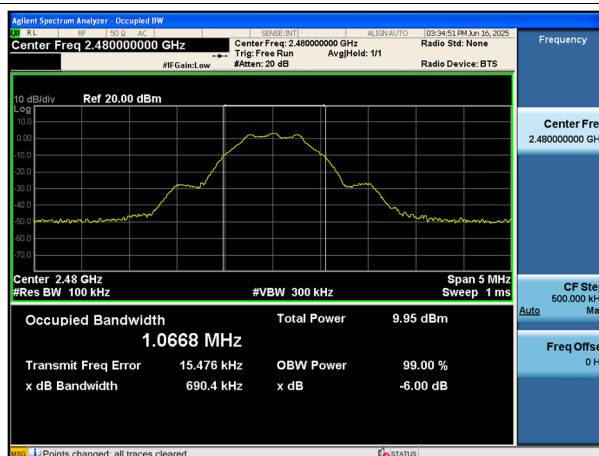
#### 6 dB Bandwidth plot (Low-CH 0)



#### 6 dB Bandwidth plot (Mid-CH 19)



#### 6 dB Bandwidth plot (High-CH 39)



### 9.3 OUTPUT POWER

#### Peak Power

Data rate (Bit/s)	Packet length (Byte)	LE Mode		Peak Power (dBm)	Limit (dBm)
		Frequency [MHz]	Channel		
1M	37	2402	0	3.858	30
		2440	19	3.451	
		2480	39	3.250	

#### Average Power

Data rate (Bit/s)	Packet length (Byte)	LE Mode		Measured Power (dBm)	Duty Cycle Factor	Result	Limit (dBm)
		Frequency [MHz]	Channel		(dB)	(dBm)	
1M	37	2402	0	1.92	1.77	3.69	30
		2440	19	1.48	1.77	3.25	
		2480	39	1.39	1.77	3.16	

#### 9.4 POWER SPECTRAL DENSITY

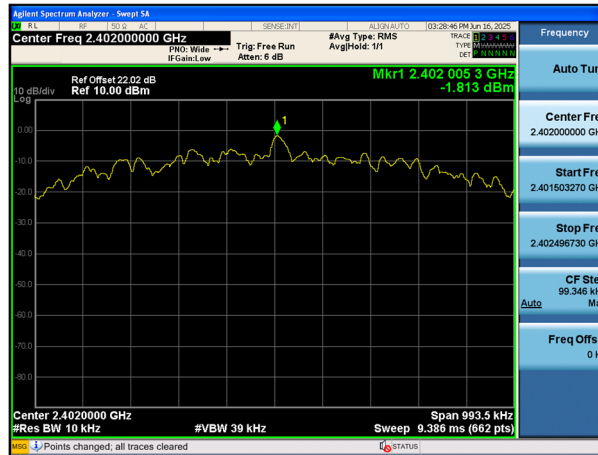
Frequency (MHz)	Channel No.	Mode	Test Result	
			Power Spectral Density (dBm/kHz)	Limit
2402	0	1M Bit/s 37 Byte	-1.813	8 dBm / 3 kHz
2440	19		-2.177	
2480	39		-2.472	

**Note :**

In order to simplify the report, Worst case test plots were attached.

## 1M Bit/s (37 Byte) Test Plots

### Power Spectral Density (Low-CH 0)



### Power Spectral Density (Mid-CH 19)



### Power Spectral Density (High-CH 39)



**9.5 BAND EDGE/ CONDUCTED SPURIOUS EMISSIONS****[BAND EDGE]**

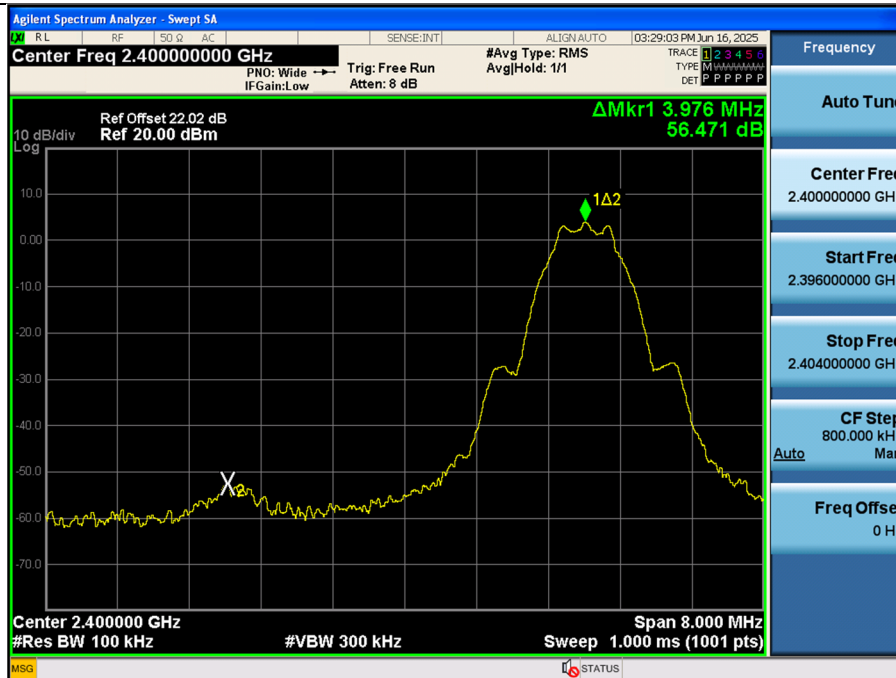
Frequency (MHz)	Mode	Channel No.	Position	Test Result	
				Measured Level (dB)	Limit (dBc)
2402	1M Bit/s 37 Byte	0	Lower	56.471	20
2480		39	Upper	59.951	20

**Note :**

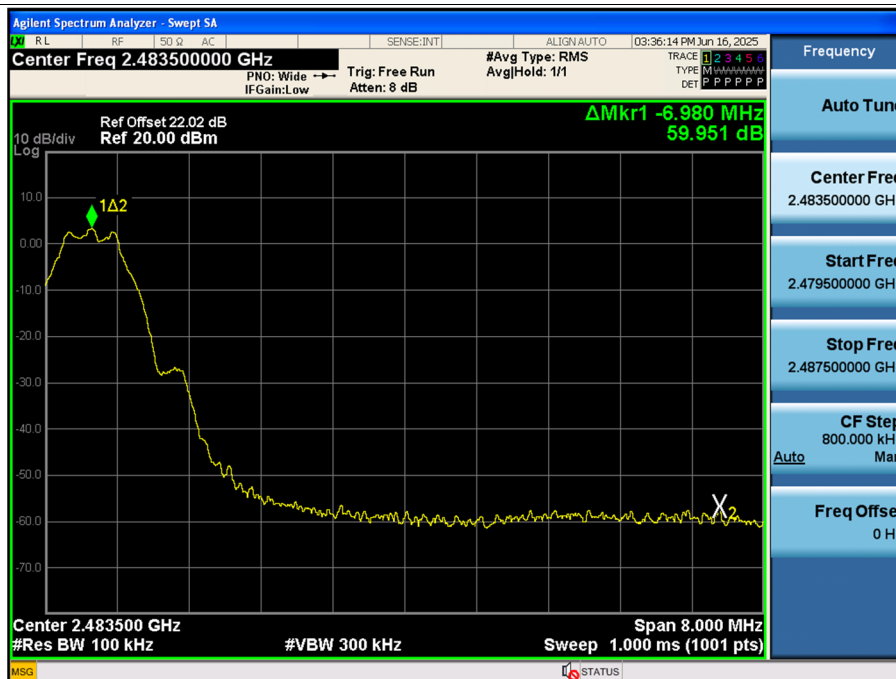
In order to simplify the report, attached plots were only the worst case channel and data rate.

## Test Plots - Band Edge

### 1M Bit/s (37 Byte) Low-CH 0



### 1M Bit/s (37 Byte) High-CH 39





## CONDUCTED SPURIOUS EMISSIONS]

### Note :

In order to simplify the report, attached plots were only the worst case channel and data rate.

- Worst case : 1M Bit/s (37 Byte)\_CH.0

### ▣ Test Plots - Conducted Spurious Emission

#### Spurious Emission (30 MHz – 26.5 GHz)



### Note:

Limit: -16.925 dBm

## 9.6 RADIATED SPURIOUS EMISSIONS

### Frequency Range : 9 kHz – 30 MHz

Frequency	Measured Value	A.F+C.L+D.F	POL	Total	Limit	Margin
[MHz]	[dBμV]	[dB/m]	[H/V]	[dBμV/m]	[dBμV/m]	[dB]

No Critical peaks found

#### Note:

1. The Measured of emissions are attenuated more than 20 dB below the permissible limits or the field strength is too small to be measured.
2. Distance extrapolation factor =  $40 \log (\text{specific distance} / \text{test distance})$  (dB)
3. Limit line = specific Limits (dBμV) + Distance extrapolation factor

### Frequency Range : Below 1 GHz

Frequency	Measured Value	A.F+C.L	POL	Total	Limit	Margin
[MHz]	[dBμV]	[dB/m]	[H/V]	[dBμV/m]	[dBμV/m]	[dB]

No Critical peaks found

#### Note:

1. Radiated emissions measured in frequency range from 30 MHz to 1000 MHz were made with an instrument using Quasi peak detector mode.

### Frequency Range : Above 1 GHz

CH 0	2402	MHz	Mode :			1 M Bit/s (37 Bytes)		
Frequency	Measured value	Duty Cycle Factor	A.F+C.L-A.G+D.F	Pol.	Total	Limit	Margin	Measurement Type
[MHz]	[dBμV]	[dB]	[dB/m]	[H/V]	[dBμV/m]	[dBμV/m]	[dB]	
4804	48.79	0.00	-0.48	V	48.31	73.98	25.67	PK
4804	40.23	1.75	-0.48	V	41.51	53.98	12.47	AV
7206	43.67	0.00	4.53	V	48.20	73.98	25.78	PK
7206	31.78	1.75	4.53	V	38.07	53.98	15.91	AV
4804	49.15	0.00	-0.48	H	48.67	73.98	25.31	PK
4804	41.14	1.75	-0.48	H	42.42	53.98	11.56	AV
7206	43.56	0.00	4.53	H	48.09	73.98	25.89	PK
7206	32.14	1.75	4.53	H	38.43	53.98	15.55	AV

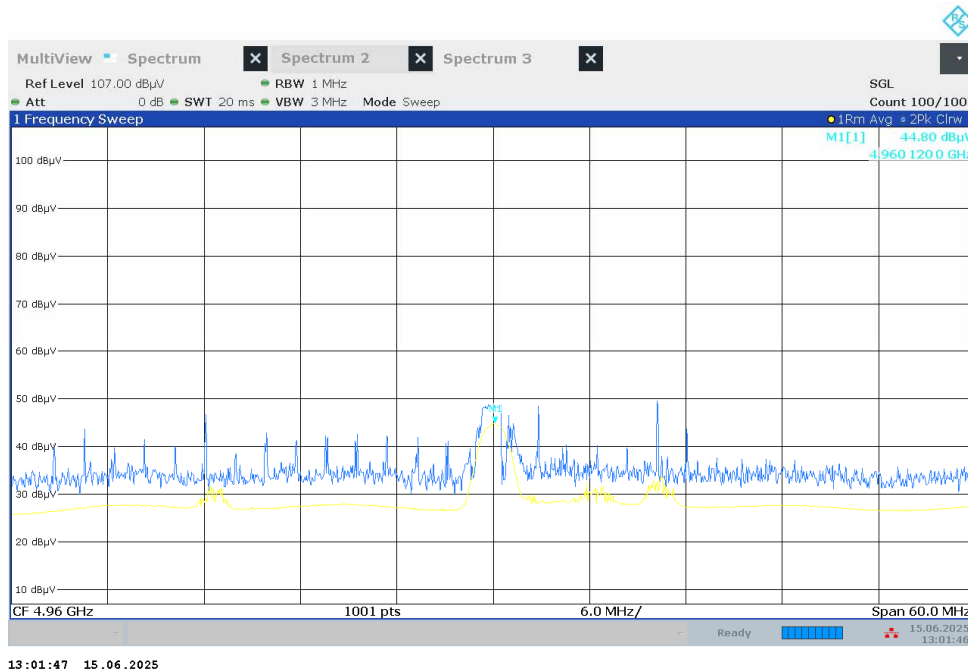
CH 19	2440	MHz	Mode :			1 M Bit/s (37 Bytes)		
Frequency	Measured value	Duty Cycle Factor	A.F+C.L-A.G+D.F	Pol.	Total	Limit	Margin	Measurement Type
[MHz]	[dBμV]	[dB]	[dB/m]	[H/V]	[dBμV/m]	[dBμV/m]	[dB]	
4880	48.43	0.00	-0.83	V	47.60	73.98	26.38	PK
4880	42.01	1.75	-0.83	V	42.94	53.98	11.04	AV
7320	44.75	0.00	4.85	V	49.60	73.98	24.38	PK
7320	32.95	1.75	4.85	V	39.55	53.98	14.43	AV
4880	50.90	0.00	-0.83	H	50.07	73.98	23.91	PK
4880	44.23	1.75	-0.83	H	45.16	53.98	8.82	AV
7320	44.91	0.00	4.85	H	49.76	73.98	24.22	PK
7320	33.20	1.75	4.85	H	39.80	53.98	14.18	AV

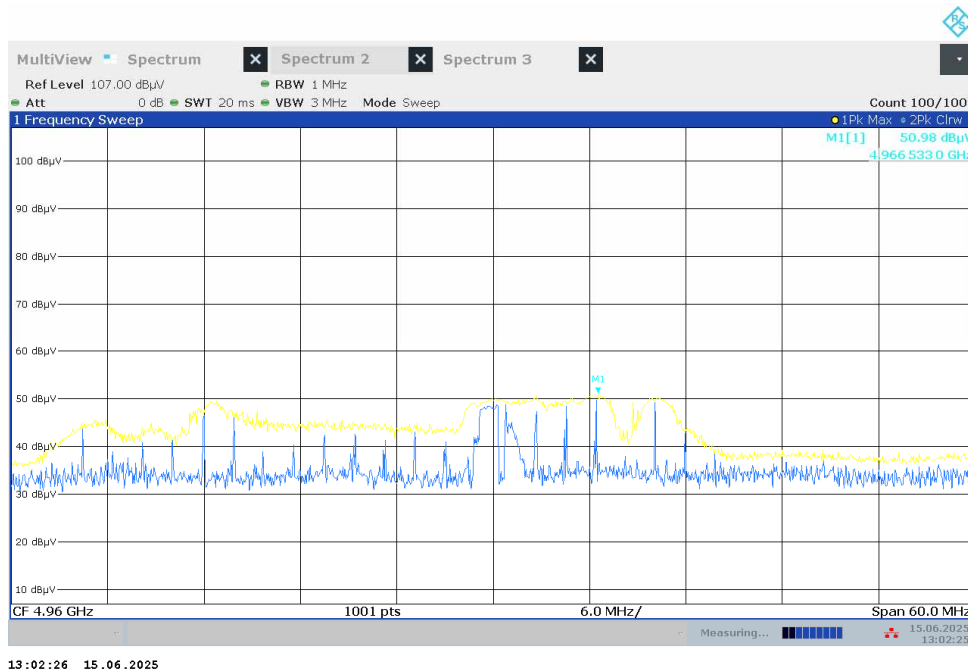
CH 39	2480	MHz	Mode :			1 M Bit/s (37 Bytes)		
Frequency	Measured value	Duty Cycle Factor	A.F+C.L-A.G+D.F	Pol.	Total	Limit	Margin	Measurement Type
[MHz]	[dBμV]	[dB]	[dB/m]	[H/V]	[dBμV/m]	[dBμV/m]	[dB]	
4960	51.43	0.00	-0.70	V	50.73	73.98	23.25	PK
4960	44.18	1.75	-0.70	V	45.23	53.98	8.75	AV
7440	44.98	0.00	5.05	V	50.03	73.98	23.95	PK
7440	33.42	1.75	5.05	V	40.23	53.98	13.75	AV
4960	50.98	0.00	-0.70	H	50.28	73.98	23.70	PK
4960	44.80	1.75	-0.70	H	45.85	53.98	8.13	AV
7440	46.07	0.00	5.05	H	51.12	73.98	22.86	PK
7440	34.66	1.75	5.05	H	41.47	53.98	12.51	AV

# 1 M Bit/s 37 Bytes Test Plots (Worst case : X-H)

## Radiated Spurious Emissions plot – Average Result (Ch.39 2nd Harmonic)



## Radiated Spurious Emissions plot –Peak Result (Ch.39 2nd Harmonic)



### Note:

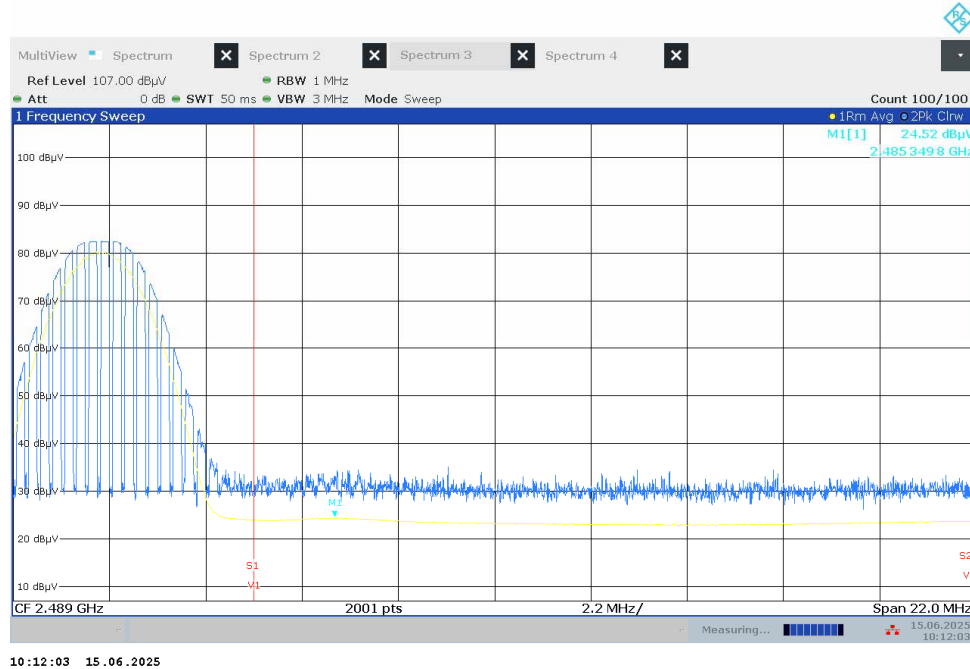
Plots of worst case are only reported.

## 9.7 RADIATED RESTRICTED BAND EDGES

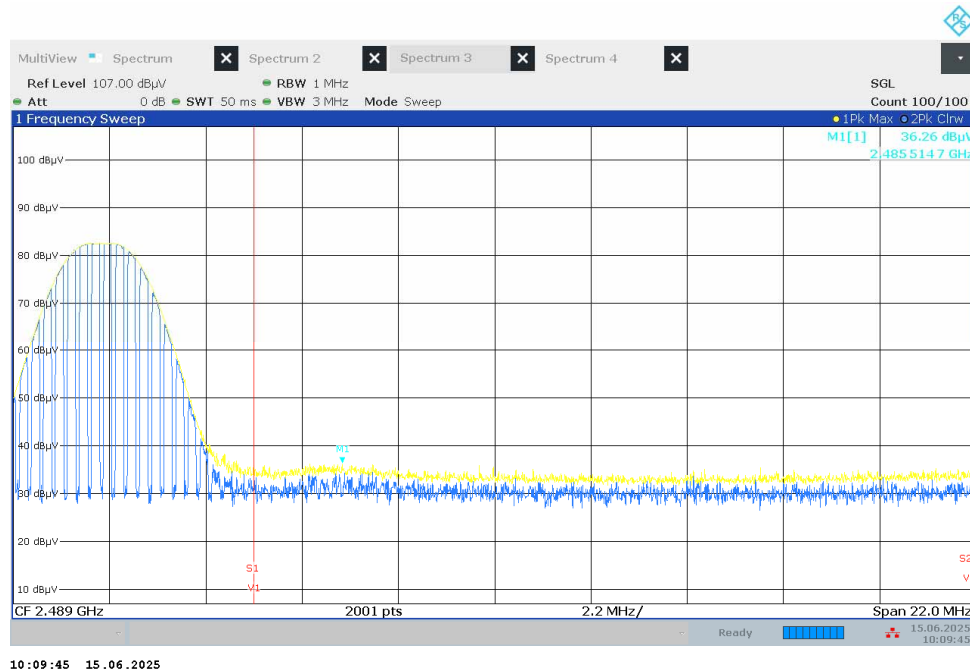
1 M Bit/s (37 Bytes)								
Channel	0 CH, 39 CH		Channel Frequency	2402 MHz, 2480 MHz				
Frequency	Measured Value	Duty Cycle Factor	A.F+C.L+Att-A.G+D.F	Ant. Pol.	Total	Limit	Margin	Measurement Type
[MHz]	[dBμV]	[dB]	[dB/m]	[H/V]	[dBμV/m]	[dBμV/m]	[dB]	
2390.0	35.83	0.00	3.35	H	39.18	73.98	34.80	PK
2390.0	24.57	1.75	3.35	H	29.67	53.98	24.31	AV
2483.5	36.26	0.00	3.55	H	39.81	73.98	34.17	PK
2483.5	24.52	1.75	3.55	H	29.82	53.98	24.16	AV

## Mode : 1M Bit/s (37 Bytes) Test Plots

### Radiated Restricted Band Edges plot – Average Result (Ch.39, X-H)



### Radiated Restricted Band Edges plot – Peak Result (Ch.39, X-H)



### Note:

In order to simplify the report, Plots of worst case were only reported.

## 10. LIST OF TEST EQUIPMENT

### Conducted Test

Equipment	Model	Manufacturer	Serial No.	Due to Calibration	Calibration Interval
Spectrum Analyzer	N9020A (10 Hz ~ 26.5 GHz)	Agilent	MY46471250	07/12/2025	Annual
Temperature and Humidity Chamber	NY-THR18750	NANGYEAL	NY-200912201A	12/17/2025	Annual
20 dB Attenuator	8493C	Agilent	52445	04/28/2026	Annual
Power Meter	N1911A	Agilent	MY45100523	02/21/2026	Annual
Power Sensor	N1921A	Agilent	MY57820067	02/04/2026	Annual
Automation Software	FCC WLAN Conducted	HCT CO., LTD	-	-	-

### Note:

1. Equipment listed above that calibrated during the testing period was set for test after the calibration.
2. Equipment listed above that has a calibration due date during the testing period, the testing is completed before equipment expiration date.

### Radiated Test

Equipment	Model	Manufacturer	Serial No.	Due to Calibration	Calibration Interval
Controller(Antenna mast & Turn Table)	CO3000	Innco systems	CO3000/1251/48920320/P	N/A	N/A
Antenna Position Tower	MA4640/800-XP-ET	Innco systems	N/A	08/07/2025	Annual
Turn Table	1060	Innco systems	N/A	N/A	N/A
Amp & Filter Bank Switch Controller	FBSM-01B	TNM system	TM20090002	N/A	N/A
RF Switching System	FBSR-04C (3 GHz HPF + LNA)	TNM system	S4L1	03/12/2026	Annual
RF Switching System	FBSR-04C (10 dB ATT + LNA)	TNM system	S4L2	03/12/2026	Annual
RF Switching System	FBSR-04C (3 dB ATT + LNA)	TNM system	S4L3	03/12/2026	Annual
RF Switching System	FBSR-04C (LNA)	TNM system	S4L4	03/12/2026	Annual
RF Switching System	FBSR-04C (Thru)	TNM system	S4L6	03/12/2026	Annual
Spectrum Analyzer	FSW67 (2 Hz ~ 67 GHz)	Rohde & Schwarz	101736	05/27/2026	Annual
Horn Antenna	BBHA 9120D	Schwarzbeck	9120D-937	02/07/2027	Biennial
Trilog Broadband Antenna	VULB9168	Schwarzbeck	895	08/28/2026	Biennial
Temperature and Humidity Chamber	NY-THR18750	NANGYEAL	NY-200912201A	12/17/2025	Annual

### **Note:**

1. Equipment listed above that calibrated during the testing period was set for test after the calibration.
2. Equipment listed above that has a calibration due date during the testing period, the testing is completed before equipment expiration date.
3. Especially, all antenna for measurement is calibrated in accordance with the requirements of C63.5(Version : 2017).



## 11. ANNEX A\_ TEST SETUP PHOTO

Please refer to test setup photo file no. as follows;

No.	Description
1	HCT-RF-2506-FC096-P