



# RF Test Report

**Applicant:** Quectel Wireless Solutions Co., Ltd.  
**Address:** Building 5, Shanghai Business Park Phase III (Area B), No.1016  
Tianlin Road, Minhang District, Shanghai, China, 200233  
**Product:** Smart Module  
**Model No.:** SG560D-WF  
**Brand Name:** QUECTEL  
**FCC ID:** XMR2023SG560DWF  
**Standards:** FCC CFR47 Part 15C  
**Report No.:** PD20230213RF01  
**Issue Date:** 2024/01/15  
**Test Result:** PASS \*

\* The above equipment has been tested and compliance with the requirement of the relative standards by Hefei Panwin Technology Co., Ltd.

**Reviewed By:** Charlie Wang

**Approved By:** Alec Yang

**Hefei Panwin Technology Co., Ltd.**

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Avenue, High-tech Zone, Hefei City, Anhui Province, China  
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# Test Report

Report No.: PD20230213RF01

Report Version: 01

## Revision History

| Report No.     | Version | Description    | Issue Date | Note  |
|----------------|---------|----------------|------------|-------|
| PD20230213RF01 | 01      | Initial Report | 2024/01/15 | Valid |

### Remark:

The customer claimed that the clocking scheme of the module's WiFi unit had been updated, and the old clock scheme continues to provide the clock signal for the entire system except WiFi. After the update, the module is the same everywhere except for the difference in the clock scheme of WiFi. The new XO solution has no RF impact. Therefore, this report verifies the 20dB and 99% Bandwidth, Hopping Channel Separation, Radiated Band Edges and Radiated Spurious Emission, and other data can be referred to in the original report(Report No.: SEWA2303000041RG01) released by SGS on 2023/05/24.

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## Summary of Test Results

| No.                                                                                                                                                                                                                                                                                  | Test Case                                          | FCC Rules          | Verdict     |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------|--------------------|-------------|
| 1                                                                                                                                                                                                                                                                                    | 20dB and 99% Bandwidth                             | 15.247(a)(1)       | Report only |
| 2                                                                                                                                                                                                                                                                                    | Hopping Channel Separation                         | 15.247(a)(1)       | PASS        |
| 3                                                                                                                                                                                                                                                                                    | Radiated Band Edges and Radiated Spurious Emission | 15.247(d)          | PASS        |
| 4                                                                                                                                                                                                                                                                                    | Antenna Requirement                                | 15.203 & 15.247(b) | PASS        |
| Date of Testing:2023/12/07 to 2024/01/11                                                                                                                                                                                                                                             |                                                    |                    |             |
| Date of Sample Received: 2023/12/04                                                                                                                                                                                                                                                  |                                                    |                    |             |
| Note: All indications of PASS/FAIL in this report are opinions expressed by Hefei Panwin Technology Co., Ltd. based on interpretations and/or observations of test results. Measurement Uncertainties were not taken into account and are published for informational purposes only. |                                                    |                    |             |

### Remark:

We, Hefei Panwin Technology Co., Ltd., would like to declare that the tested sample has been evaluated in accordance with the procedures given in ANSI C63.10-2013 and shown compliance with the applicable technical standards.

## 1 General Information

### 1.1 Notes of the Test Report

This report is invalid without signature of auditor and approver or with any alterations. The report shall not be partially reproduced without written approval of the testing company. Entrusted test results are only responsible for incoming samples. If there is any objection to the testing report, it shall be raised to the testing company within 15 days from the date of receiving the report. In the test results, "NA" means "not applicable", and the test items marked with "Δ" are subcontracted projects.

### 1.2 Test Facility

**FCC (Designation number: CN1361, Test Firm Registration Number: 473156)**

Hefei Panwin Technology Co., Ltd. has been listed on the US Federal Communications Commission list of test facilities recognized to perform measurements.

**A2LA (Certificate Number: 6849.01)**

Hefei Panwin Technology Co., Ltd. has been listed by American Association for Laboratory Accreditation to perform measurement.

### 1.3 Testing Laboratory

|              |                                                                                                                                |
|--------------|--------------------------------------------------------------------------------------------------------------------------------|
| Company Name | Hefei Panwin Technology Co., Ltd.                                                                                              |
| Address      | Floor 1, Zone E, Plant 2#, Mingzhu Industrial Park, No.106 Chuangxin Avenue, High-tech Zone, Hefei City, Anhui Province, China |
| Telephone    | +86-0551-63811775                                                                                                              |
| Post Code    | 230031                                                                                                                         |

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## 2 General Description of Equipment under Test

### 2.1 Details of Application

|                      |                                                                                                                        |
|----------------------|------------------------------------------------------------------------------------------------------------------------|
| Applicant            | Quectel Wireless Solutions Co., Ltd.                                                                                   |
| Applicant Address    | Building 5, Shanghai Business Park Phase III (Area B), No.1016 Tianlin Road, Minhang District, Shanghai, China, 200233 |
| Manufacturer         | Quectel Wireless Solutions Co., Ltd.                                                                                   |
| Manufacturer Address | Building 5, Shanghai Business Park Phase III (Area B), No.1016 Tianlin Road, Minhang District, Shanghai, China, 200233 |

### 2.2 General Information

|                                                                                                                                                                                                                                    |                                                                       |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------|
| Product                                                                                                                                                                                                                            | Smart Module                                                          |
| Model                                                                                                                                                                                                                              | SG560D-WF                                                             |
| SN                                                                                                                                                                                                                                 | 1. P1Y23141B000037<br>2. P1Y23123V000012                              |
| Hardware Version                                                                                                                                                                                                                   | R1.1                                                                  |
| Software Version                                                                                                                                                                                                                   | SG560DWFPARO2A04                                                      |
| Antenna Type                                                                                                                                                                                                                       | External Antenna                                                      |
| Antenna Gain                                                                                                                                                                                                                       | 0.47dBi                                                               |
| Operating voltage range                                                                                                                                                                                                            | Typical 4.0Vdc                                                        |
| Modulation Type                                                                                                                                                                                                                    | Frequency Hopping Spread Spectrum (FHSS):GFSK, $\pi/4$ -DQPSK, 8-DPSK |
| Operating Frequency Range(s)                                                                                                                                                                                                       | Bluetooth : 2402 ~ 2480 MHz                                           |
| Number of channels                                                                                                                                                                                                                 | 79                                                                    |
| Carrier Frequency of Each Channel                                                                                                                                                                                                  | 2402+n*1 MHz; n=0~78                                                  |
| <b>Note:</b> The declared of product specification for EUT and/or Antenna presented in the report are provided by the manufacturer, and the manufacturer takes all the responsibilities for the accuracy of product specification. |                                                                       |

## 2.3 Applicable Standards

According to the specifications of the manufacturer, the EUT must comply with the requirements of the following standards:

- 47 CFR Part 15 Subpart C S15.247
- FCC KDB 558074 D01 15.247 Meas Guidance v05r02
- ANSI C63.10-2013

## 3 Test Condition

### 3.1 Test Configuration

#### Test mode

Pre-Scan has been conducted to determine the worst-case mode from all possible combinations between available modulations, data rates and antenna ports (if EUT with antenna diversity architecture). The worst cases were recorded in this report.

Radiated measurements are performed by rotating the EUT in three different orthogonal test planes (Z, X, Y axis), receiver antenna polarization (horizontal and vertical), the worst emission was found in Z position and the worst case was recorded.

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## 3.2 Carrier Frequency Channel

| Frequency Band | Channel | Freq (MHz) | Channel | Freq (MHz) | Channel | Freq (MHz) |
|----------------|---------|------------|---------|------------|---------|------------|
| 2400-2483.5MHz | 0       | 2402       | 27      | 2429       | 54      | 2456       |
|                | 1       | 2403       | 28      | 2430       | 55      | 2457       |
|                | 2       | 2404       | 29      | 2431       | 56      | 2458       |
|                | 3       | 2405       | 30      | 2432       | 57      | 2459       |
|                | 4       | 2406       | 31      | 2433       | 58      | 2460       |
|                | 5       | 2407       | 32      | 2434       | 59      | 2461       |
|                | 6       | 2408       | 33      | 2435       | 60      | 2462       |
|                | 7       | 2409       | 34      | 2436       | 61      | 2463       |
|                | 8       | 2410       | 35      | 2437       | 62      | 2464       |
|                | 9       | 2411       | 36      | 2438       | 63      | 2465       |
|                | 10      | 2412       | 37      | 2439       | 64      | 2466       |
|                | 11      | 2413       | 38      | 2440       | 65      | 2467       |
|                | 12      | 2414       | 39      | 2441       | 66      | 2468       |
|                | 13      | 2415       | 40      | 2442       | 67      | 2469       |
|                | 14      | 2416       | 41      | 2443       | 68      | 2470       |
|                | 15      | 2417       | 42      | 2444       | 69      | 2471       |
|                | 16      | 2418       | 43      | 2445       | 70      | 2472       |
|                | 17      | 2419       | 44      | 2446       | 71      | 2473       |
|                | 18      | 2420       | 45      | 2447       | 72      | 2474       |
|                | 19      | 2421       | 46      | 2448       | 73      | 2475       |
|                | 20      | 2422       | 47      | 2449       | 74      | 2476       |
|                | 21      | 2423       | 48      | 2450       | 75      | 2477       |
|                | 22      | 2424       | 49      | 2451       | 76      | 2478       |
|                | 23      | 2425       | 50      | 2452       | 77      | 2479       |
|                | 24      | 2426       | 51      | 2453       | 78      | 2480       |
|                | 25      | 2427       | 52      | 2454       | -       | -          |
|                | 26      | 2428       | 53      | 2455       | -       | -          |

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## 3.3 Equipment List

| Instrument                  | Manufacturer      | Model            | Asset No. | Cal. Interval | Cal. Due Date |
|-----------------------------|-------------------|------------------|-----------|---------------|---------------|
| EMI Test Receiver           | R&S               | ESR7             | PWB0023   | 1 Year        | 2024/10/11    |
| Spectrum Analyzer           | R&S               | FSV3044          | PWB0024   | 1 Year        | 2024/10/11    |
| Loop Antenna                | R&S               | HFH2-Z2E         | PWB0026   | 1 Year        | 2024/10/21    |
| TRILOG Broadband Antenna    | Schwarzbeck       | VULB9162         | PWB0029   | 1 Year        | 2024/10/14    |
| Double-Ridged Guide Antenna | ETS-Lindgren      | 3117             | PWB0031   | 1 Year        | 2024/10/12    |
| k Type Horn Antenna         | Steatite Antennas | QMS-00880        | PWB0035   | 1 Year        | 2024/10/17    |
| Spectrum Analyzer           | KEYSIGHT          | N9020B           | PWC0055   | 1 Year        | 2024/10/11    |
| DC Power                    | KEYSIGHT          | E3640A           | PWC0046   | 1 Year        | 2024/10/11    |
| Anechoic Chamber            | ETS.LINDGREN      | Fact 3-2m        | PWB0003   | 3 Years       | 2024/08/28    |
| Shielded Chamber            | Maorui            | MR543            | PWC0041   | 3 Years       | 2026/08/26    |
| Pre-Amplifier               | R&S               | SCU18F           | PWB0034   | 1 Year        | 2024/10/11    |
| Pre-Amplifier               | R&S               | SCU40F1          | PWB0036   | 1 Year        | 2024/10/11    |
| Pre-Amplifier               | COM-MW            | DLNA8            | PWB0094   | 1 Year        | 2024/11/08    |
| Test Software               | Tonsecod          | JS1120-3 V3.2.22 | /         | /             | /             |
| Test Software               | R&S               | ELEKTRA 4.20.2   | /         | /             | /             |

## 3.4 Support Equipment List

| Equipment | Manufacturer                          | Description    | Model       | Serial Number |
|-----------|---------------------------------------|----------------|-------------|---------------|
| EVB       | QUECTEL                               | NA             | NA          | NA            |
| USB Cable | NA                                    | NA             | NA          | NA            |
| Adapter   | Xiamen Xinsenhai Electronics Co., Ltd | Output:12V 60W | P60EB120500 | NA            |

## 3.5 Test Uncertainty

| No. | Parameter                      | Uncertainty                             |
|-----|--------------------------------|-----------------------------------------|
| 1   | 20dB Emission Bandwidth        | 1.9%                                    |
| 2   | Occupied channel bandwidth     | 1.9%                                    |
| 3   | Carrier Frequency Separation   | 1.9%                                    |
| 4   | Band-edge Spurious Emission    | 1.21dB                                  |
| 5   | Conducted RF Spurious Emission | 9kHz-7GHz: 1.21dB<br>7GHz-40GHz: 3.31dB |
| 6   | Temperature                    | 3℃                                      |
| 7   | Humidity                       | 1.3 %                                   |
| 8   | Supply voltages                | 0.006 V                                 |

## 4 Test Items Description

### Ambient condition

Shielded Chamber

|                  |                |
|------------------|----------------|
| Temperature [°C] | 20.4 to 25.6   |
| Humidity [%RH]   | 29 to 40       |
| Pressure [kPa]   | 100.8 to 102.7 |

Anechoic Chamber

|                  |                |
|------------------|----------------|
| Temperature [°C] | 20.1 to 27.1   |
| Humidity [%RH]   | 30 to 49       |
| Pressure [kPa]   | 100.8 to 104.1 |

## 4.1 20dB and 99% Bandwidth Measurement

### 4.1.1 Limit of 20dB and 99% Bandwidth

Reporting only

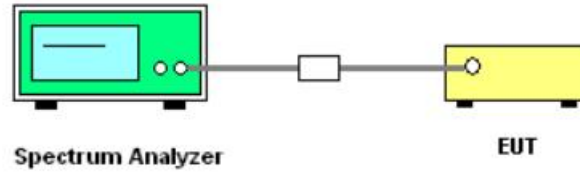
### 4.1.2 Measuring Instruments

The measuring equipment is listed in the section 3.3 of this test report.

### 4.1.3 Test Procedures

1. The testing follows ANSI C63.10-2013 clause 6.9.2 and 6.9.3.
2. The RF output of EUT was connected to the spectrum analyzer by RF cable and attenuator. The path loss was compensated to the results for each measurement.
3. Set to the maximum power setting and enable the EUT transmit continuously.
4. Use the following spectrum analyzer settings for 20dB Bandwidth measurement.  
Span = approximately 2 to 5 times the 20 dB bandwidth, centered on a hopping channel;  
The RBW is set to 1% to 5% of the 99% OBW, the VBW is set to 3 times the RBW;  
Sweep = auto; Detector function = peak;  
Trace = max hold.
5. Use the following spectrum analyzer settings for 99 % Bandwidth measurement;  
Span = approximately 1.5 to 5 times the 99% bandwidth, centered on a hopping channel;  
The RBW is set to 1% to 5% of the 99% OBW, the VBW is set to 3 times the RBW;  
Sweep = auto; Detector function = peak;  
Trace = max hold.
6. Measure and record the results in the test report.

## 4.1.4 Test Setup



## 4.1.5 Test Results

See Appendix A.1.

## 4.2 Hopping Channel Separation Measurement

### 4.2.1 Limit of Hopping Channel Separation

Frequency hopping systems operating in the 2400-2483.5 MHz band may have hopping channel carrier frequencies that are separated by 25 kHz or two-thirds of the 20 dB bandwidth of the hopping channel, whichever is greater.

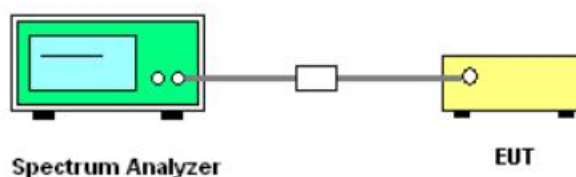
### 4.2.2 Measuring Instruments

The measuring equipment is listed in the section 3.3 of this test report.

### 4.2.3 Test Procedures

1. The testing follows ANSI C63.10-2013 clause 7.8.2.
2. The RF output of EUT was connected to the spectrum analyzer by RF cable and attenuator. The path loss was compensated to the results for each measurement.
3. Set to the maximum power setting and enable the EUT transmit continuously.
4. Enable the EUT hopping function.
5. Use the following spectrum analyzer settings:  
Span = wide enough to capture the peaks of two adjacent channels;  
RBW = 300kHz; VBW  $\geq$  RBW; Sweep = auto; Detector function = peak;  
Trace = max hold.
6. Measure and record the results in the test report.

### 4.2.4 Test Setup



### 4.2.5 Test Results

See Appendix A.2.

## 4.3 Radiated Band Edges and Spurious Emission Measurement

### 4.3.1 Limit of Radiated Band Edges and Spurious Emission

In any 100 kHz bandwidth outside the intentional radiator frequency band, all harmonics/spurious must be at least 20 dB below the highest emission level within the authorized band. In addition radiated emissions which fall in the restricted bands must also comply with the limits as below.

| Frequency of emission<br>(MHz) | Field strength<br>(microvolts/meter) | Measurement Distance<br>(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                                |
| Above960                       | 500                                  | 3                                |

### 4.3.2 Measuring Instruments

The measuring equipment is listed in the section 3.3 of this test report.

### 4.3.3 Test Procedures

1. The EUT was placed on a turntable with 0.8 meter for frequency below 1GHz and 1.5 meter for frequency above 1GHz respectively above ground.
2. The EUT was set 3 meters from the interference receiving antenna, which was mounted on the top of a variable height antenna tower.
3. For each suspected emission, the EUT was arranged to its worst case and then tune the Antenna tower (from 1 m to 4 m) and turntable (from 0 degree to 360 degrees) to find the maximum reading. A pre-amp and a high pass filter are used for the test in order to get better signal level to comply with the guidelines.
4. Set to the maximum power setting and enable the EUT transmit continuously.
5. Use the following spectrum analyzer settings:
  - (1) Span shall wide enough to fully capture the emission being measured.
  - (2) Set RBW=100 kHz for  $f < 1$  GH, RBW=1MHz for  $f > 1$ GHz ; VBW  $\geq$  RBW; Sweep = auto;Detector function = peak;Trace = max hold for peak.
  - (3) For average measurement: use duty cycle correction factor method per 15.35(c).  
Duty cycle = On time/100 milliseconds

$$\text{On time} = N_1 \cdot L_1 + N_2 \cdot L_2 + \dots + N_{n-1} \cdot L_{n-1} + N_n \cdot L_n$$

Where  $N_1$  is number of type 1 pulses,  $L$ , is length of type 1 pulses, etc.

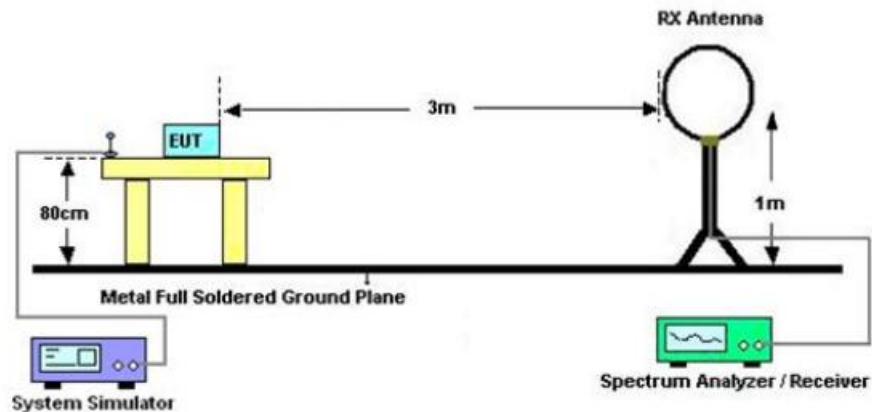
Average Emission Level = Peak Emission Level +  $20 \cdot \log(\text{Duty cycle})$ .

6. Corrected Reading: Antenna Factor + Cable Loss + Read Level - Pre-amp Factor = Level
7. For testing below 1GHz, if the emission level of the EUT in peak mode was 3 dB lower than the limit specified, then peak values of EUT will be reported, otherwise, the emissions will be repeated one by one using the CISPR quasi-peak method and reported.
8. For testing above 1GHz, the emission level of the EUT in peak mode was 20dB lower than peak limit (that means the emission level in average mode also complies with the limit in average mode), then peak values of EUT will be reported, otherwise, the emissions will be measured in average mode again and reported.

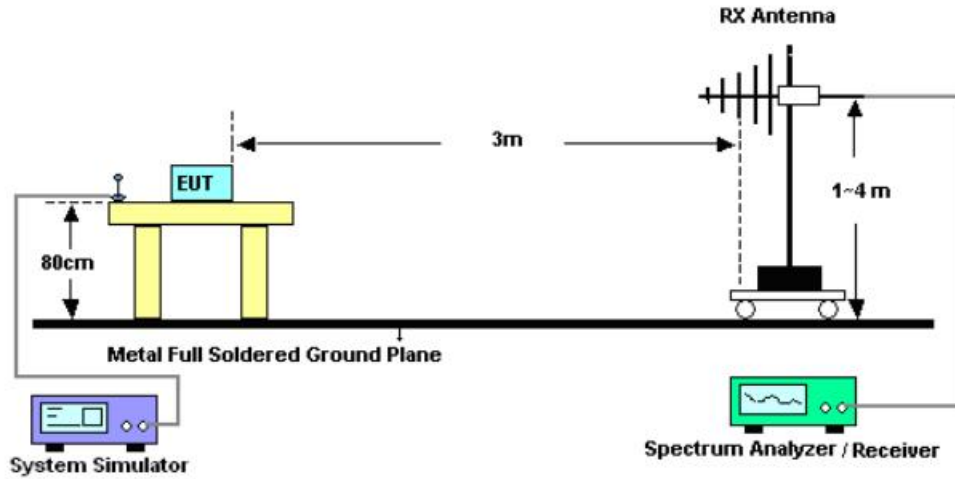
Note: The average levels were calculated from the peak level corrected with duty cycle correction factor (-24.79dB) derived from  $20 \log(\text{dwell time}/100\text{ms})$ . This correction is only for signals that hop with the fundamental signal, such as band-edge and harmonic. Other spurious signals that are independent of the hopping signal would not use this correction.

## 4.3.4 Test Setup

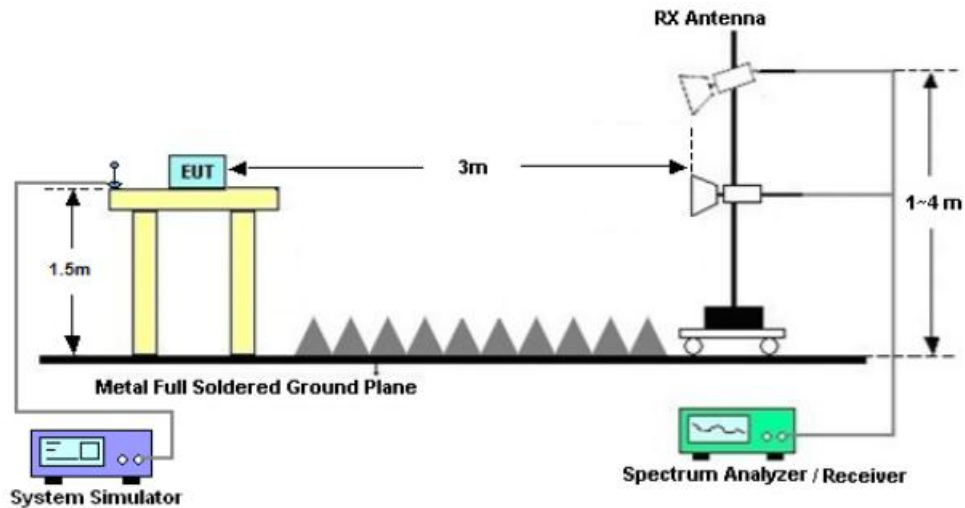
For radiated emissions below 30MHz



For radiated emissions from 30MHz to 1GHz



For radiated emissions above 1GHz



#### 4.3.5 Test Results of Radiated Spurious Emissions (9 kHz ~ 30 MHz)

The low frequency, which started from 9 kHz to 30MHz, was pre-scanned and the result which was 20dB lower than the limit line was not reported. There is a comparison data of both open-field test site and semi-Anechoic chamber, and the result came out very similar.

#### 4.3.6 Test Result of Radiated Spurious at Band Edges

See Appendix B.1.

## 4.3.7 Test Result of Radiated Spurious Emission (30MHz ~ 10th Harmonic or 40GHz, whichever is lower)

See Appendix B.1.

## 4.4 Antenna Requirements

### 4.4.1 Standard Applicable

If directional gain of transmitting antennas is greater than 6dBi, the power shall be reduced by the same level in dB comparing to gain minus 6dBi. 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 rule.

### 4.4.2 Antenna Anti-Replacement Construction

An embedded-in antenna design is used.

### 4.4.3 Antenna Gain

The antenna peak gain of EUT is less than 6 dBi. Therefore, it is not necessary to reduce maximum peak output power limit.

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## Appendix A – Test Results of Conducted Test

### A.1 20dB and 99% Bandwidth Measurement

#### Test Result

##### 20dB Bandwidth

| Test Mode | Antenna | Frequency[MHz] | 20db EBW[MHz] | FL[MHz]  | FH[MHz]  | Limit[MHz] | Verdict |
|-----------|---------|----------------|---------------|----------|----------|------------|---------|
| DH5       | Ant1    | 2402           | 0.942         | 2401.565 | 2402.507 | ---        | ---     |
| DH5       | Ant1    | 2441           | 0.933         | 2440.571 | 2441.504 | ---        | ---     |
| DH5       | Ant1    | 2480           | 0.933         | 2479.568 | 2480.501 | ---        | ---     |
| 2DH5      | Ant1    | 2402           | 1.287         | 2401.391 | 2402.678 | ---        | ---     |
| 2DH5      | Ant1    | 2441           | 1.311         | 2440.367 | 2441.678 | ---        | ---     |
| 2DH5      | Ant1    | 2480           | 1.308         | 2479.367 | 2480.675 | ---        | ---     |
| 3DH5      | Ant1    | 2402           | 1.302         | 2401.376 | 2402.678 | ---        | ---     |
| 3DH5      | Ant1    | 2441           | 1.317         | 2440.367 | 2441.684 | ---        | ---     |
| 3DH5      | Ant1    | 2480           | 1.302         | 2479.373 | 2480.675 | ---        | ---     |

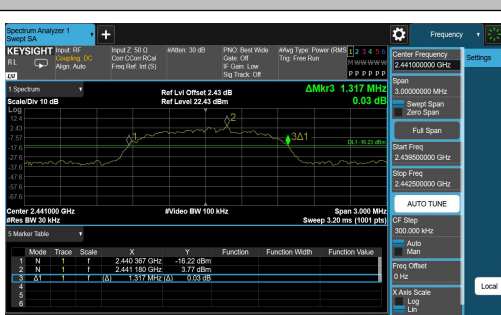
##### 99% Bandwidth

| Test Mode | Antenna | Frequency[MHz] | OCB [MHz] | FL[MHz]   | FH[MHz]   | Limit[MHz] | Verdict |
|-----------|---------|----------------|-----------|-----------|-----------|------------|---------|
| DH5       | Ant1    | 2402           | 0.83211   | 2401.6047 | 2402.4368 | ---        | ---     |
| DH5       | Ant1    | 2441           | 0.83463   | 2440.6036 | 2441.4382 | ---        | ---     |
| DH5       | Ant1    | 2480           | 0.83149   | 2479.6013 | 2480.4328 | ---        | ---     |
| 2DH5      | Ant1    | 2402           | 1.1928    | 2401.4278 | 2402.6206 | ---        | ---     |
| 2DH5      | Ant1    | 2441           | 1.1957    | 2440.4263 | 2441.6220 | ---        | ---     |
| 2DH5      | Ant1    | 2480           | 1.1919    | 2479.4253 | 2480.6172 | ---        | ---     |
| 3DH5      | Ant1    | 2402           | 1.2043    | 2401.4182 | 2402.6225 | ---        | ---     |
| 3DH5      | Ant1    | 2441           | 1.2048    | 2440.4175 | 2441.6223 | ---        | ---     |
| 3DH5      | Ant1    | 2480           | 1.2069    | 2479.4135 | 2480.6204 | ---        | ---     |

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## Test Graphs 20dB Bandwidth

| DH5-Ant1-2402                                                                       | DH5-Ant1-2441                                                                        |
|-------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------|
|    |    |
| DH5-Ant1-2480                                                                       | 2DH5-Ant1-2402                                                                       |
|   |   |
| 2DH5-Ant1-2441                                                                      | 2DH5-Ant1-2480                                                                       |
|  |  |
| 3DH5-Ant1-2402                                                                      | 3DH5-Ant1-2441                                                                       |
|  |  |
| 3DH5-Ant1-2480                                                                      | /                                                                                    |



A

## 99% Bandwidth

DH5-Ant1-2402



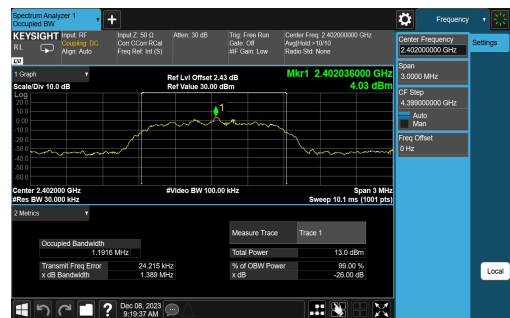
DH5-Ant1-2441



DH5-Ant1-2480



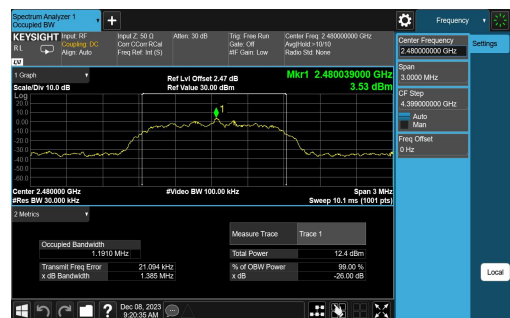
2DH5-Ant1-2402



2DH5-Ant1-2441

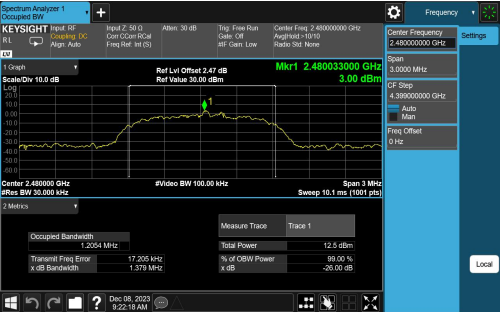


2DH5-Ant1-2480



# Test Report

Report No.: PD20230213RF01  
Report Version: 01

|                                                                                                                         |                                                                                                                         |
|-------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------|
| <div>3DH5-Ant1-2402</div> <div></div>  | <div>3DH5-Ant1-2441</div> <div></div> |
| <div>3DH5-Ant1-2480</div> <div></div> | <div>/</div> <div>/</div>                                                                                               |

# Test Report

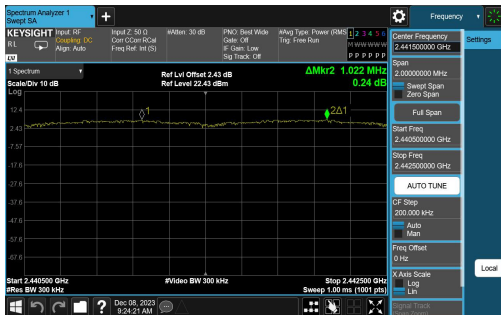
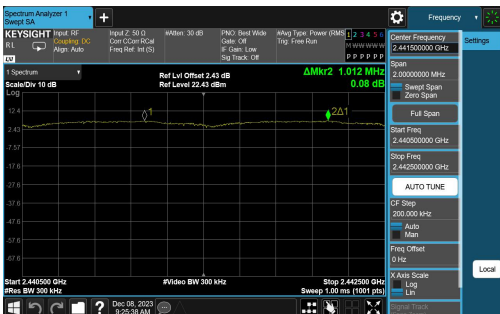
Report No.: PD20230213RF01  
Report Version: 01

## A.2 Hopping Channel Separation

### Test Result

| Test Mode | Antenna | Frequency[MHz] | Result[MHz] | Limit[MHz]   | Verdict |
|-----------|---------|----------------|-------------|--------------|---------|
| DH5       | Ant1    | Hop            | 1.006       | $\geq 0.942$ | PASS    |
| 2DH5      | Ant1    | Hop            | 1.022       | $\geq 0.874$ | PASS    |
| 3DH5      | Ant1    | Hop            | 1.012       | $\geq 0.878$ | PASS    |

### Test Graphs

| DH5-Ant1-Hop-PASS                                                                   | 2DH5-Ant1-Hop-PASS                                                                  |
|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
|   |  |
| 3DH5-Ant1-Hop-PASS                                                                  | /                                                                                   |
|  | /                                                                                   |

# Test Report

Report No.: PD20230213RF01

Report Version: 01

## Appendix B – Test Results of Radiated Test

### B.1 Radiated Band Edges and Spurious Emission

#### Test Result\_Band Edges

| Test Mode & Test Freq.[MHz] | Frequency [MHz] | PK+ Level [dBμV/m] | PK+ Limit [dBμV/m] | PK+ Margin [dB] | AVG Level [dBμV/m] | AVG Limit [dBμV/m] | AVG Margin [dB] | Polarization | Azimuth [deg] |
|-----------------------------|-----------------|--------------------|--------------------|-----------------|--------------------|--------------------|-----------------|--------------|---------------|
| BT_DH5_2402_edge            | 2,389.950       | 59.64              | 74.00              | 14.36           | 46.10              | 54.00              | 7.90            | V            | 303.3         |
| BT_DH5_2480_edge            | 2,483.000       | 62.38              | 74.00              | 11.62           | 46.49              | 54.00              | 7.51            | V            | 165.8         |
| BT_2DH5_2402_edge           | 2,389.950       | 59.26              | 74.00              | 14.74           | 46.03              | 54.00              | 7.97            | H            | 20.4          |
| BT_2DH5_2480_edge           | 2,483.500       | 59.58              | 74.00              | 14.42           | 46.34              | 54.00              | 7.66            | V            | 0.8           |
| BT_3DH5_2402_edge           | 2,389.950       | 59.82              | 74.00              | 14.18           | 46.05              | 54.00              | 7.95            | H            | 0             |
| BT_3DH5_2480_edge           | 2,483.000       | 60.82              | 74.00              | 13.18           | 46.62              | 54.00              | 7.38            | V            | 115.7         |

#### Test Graphs\_Band Edges

