



# TEST REPORT

Applicant: Huizhoushichaokupinkeji Co., Ltd.  
Address of Applicant: No.33 Rongxin Road, LuoyangSubdistrict, Boluo County,Huizhou City, Guangdong Province,China  
Manufacturer: Huizhoushichaokupinkeji Co., Ltd.  
Address of Manufacturer: No.33 Rongxin Road, LuoyangSubdistrict, Boluo County,Huizhou City, Guangdong Province,China  
Product Name: CUTE BUNNY SPEAKER  
Model No.: TK-400,T-11,T-33,T-77,T-99,TK-61,TK-100,TK-118,TK-420,TK-430, TK-431,TK-440,TK-450,TK-470,TK-480,TK-490,TK-491,TK-492, TK-493,TK-494,TK-500,TK-501,TK-502,TK-600,TK-601,TK-700, TK-800,TK-801,TK-900,TK-910  
Trade Mark: N/A  
FCC ID: 2BOXJ-TK-400  
Applicable standards: 47CFR Part 15.247  
Date of Test: Dec.12, 2025-Dec.22, 2025  
Date of report issued: Dec.29, 2025

**Remark:**

*The results shown in this test report refer only to the sample(s) tested , this test report cannot be reproduced, except in full without prior written permission of the company.*

*The report would be invalid without specific stamp of test institute and the signatures of compiler and approver*

## Prepared By

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## 1 Test Summary

| Test Item                        | Section                                       | Result | Test by     |
|----------------------------------|-----------------------------------------------|--------|-------------|
| Antenna Requirement              | 47CFR Part 15.203/15.247 (b) (4)              | Pass   | /           |
| AC Power Line Conducted Emission | 47CFR Part 15.207                             | Pass   | Jason Huang |
| Conducted Peak Output Power      | 47CFR Part 15.247 (b)(1)                      | Pass   | Kara Wu     |
| 20dB Occupied Bandwidth          | 47CFR Part 15.247 (a)(1)                      | Pass   | Kara Wu     |
| Carrier Frequencies Separation   | 47CFR Part 15.247 (a)(1)                      | Pass   | Kara Wu     |
| Hopping Channel Number           | 47CFR Part 15.247 (a)(1)(iii)                 | Pass   | Kara Wu     |
| Dwell Time                       | 47CFR Part 15.247 (a)(1)(iii)                 | Pass   | Kara Wu     |
| Radiated Emission                | 47CFR Part 15.205/15.209                      | Pass   | Jason Huang |
| Band Edge                        | 47CFR Part 15.247(d) 47CFR part 15.205/15.209 | Pass   | Kara Wu     |

### Remarks:

1. Pass: The EUT complies with the essential requirements in the standard.
2. Test according to ANSI C63.10-2020 and KDB558074 D01 15.247 Meas Guidance v05r02.
3. Note: Compliance determination rules
  - 1). The Compliance determination of test results does not take into account measurement uncertainty. Measurement results are determined based on regulatory limitations or requirements specified by the applicant/manufacture. If measurement uncertainty is taken into account, the applicant/manufacture will bear all possible risks of non-compliance.
  - 2). The measurement uncertainty please refer to each test result in the "Measurement Uncertainty"

### Measurement Uncertainty

| Test Item                         | Measurement Uncertainty | Notes |
|-----------------------------------|-------------------------|-------|
| Occupied Channel Bandwidth        | 0.55%                   | (1)   |
| RF output power, conducted        | ±0.57 dB                | (1)   |
| Power Spectral Density, conducted | ±0.61 dB                | (1)   |
| Unwanted Emissions, conducted     | ±0.64 dB                | (1)   |
| AC Power Line Conducted Emission  | ± 2.55 dB               | (1)   |
| Radiated emissions 9K-30MHz       | ±3.79 dB                | (1)   |
| Radiated emissions 30M- 1GHz      | ± 4.24 dB               | (1)   |
| Radiated emissions 1GHz-18GHz     | ± 4.26 dB               | (1)   |
| Radiated emissions 18GHz-40GHz    | ±4.17 dB                | (1)   |
| Frequency error                   | Uc=1X10 <sup>-7</sup>   | (1)   |
| Dwell Time                        | ±5%                     | (1)   |

Note (1): The measurement uncertainty is for coverage factor of k=2 and a level of confidence of 95%.

## 2 General Information

### 2.1 General Description of EUT

|                                                                                                                                                                                                                 |                                                                                                                                                                                                                      |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Product Name:                                                                                                                                                                                                   | CUTE BUNNY SPEAKER                                                                                                                                                                                                   |
| Model No.:                                                                                                                                                                                                      | TK-400,T-11,T-33,T-77,T-99,TK-61,TK-100,TK-118,TK-420,TK-430,<br>TK-431,TK-440,TK-450,TK-470,TK-480,TK-490,TK-491,TK-492,<br>TK-493,TK-494,TK-500,TK-501,TK-502,TK-600,TK-601,TK-700,<br>TK-800,TK-801,TK-900,TK-910 |
| Test Model:                                                                                                                                                                                                     | TK-400                                                                                                                                                                                                               |
| Difference of model(s)                                                                                                                                                                                          | All the model are the same circuit and RF module, except the model names and housing colors.                                                                                                                         |
| Hardware Version:                                                                                                                                                                                               | V1.0                                                                                                                                                                                                                 |
| Software Version:                                                                                                                                                                                               | V1.0                                                                                                                                                                                                                 |
| Power supply:                                                                                                                                                                                                   | DC 5V or DC 3.7V From Battery                                                                                                                                                                                        |
| Battery:                                                                                                                                                                                                        | DC 3.7V 300mAh                                                                                                                                                                                                       |
| Adapter:                                                                                                                                                                                                        | N/A                                                                                                                                                                                                                  |
| Radio Technology:                                                                                                                                                                                               | Bluetooth                                                                                                                                                                                                            |
| Operation Frequency:                                                                                                                                                                                            | 2402MHz~2480MHz                                                                                                                                                                                                      |
| Channel numbers:                                                                                                                                                                                                | 79                                                                                                                                                                                                                   |
| Channel separation:                                                                                                                                                                                             | 1MHz                                                                                                                                                                                                                 |
| Modulation type:                                                                                                                                                                                                | GFSK, $\pi/4$ -DQPSK                                                                                                                                                                                                 |
| Antenna Type:                                                                                                                                                                                                   | PCB antenna                                                                                                                                                                                                          |
| Antenna gain:                                                                                                                                                                                                   | 1.68dBi                                                                                                                                                                                                              |
| <b>Note:</b><br><i>1.For more details, refer to the user's manual of the EUT.</i><br><i>2.Antenna information is provided by applicant, Testing lab is not responsible for the accuracy of the information.</i> |                                                                                                                                                                                                                      |

| Operation Frequency each of channel |           |         |           |         |           |         |           |
|-------------------------------------|-----------|---------|-----------|---------|-----------|---------|-----------|
| Channel                             | Frequency | Channel | Frequency | Channel | Frequency | Channel | Frequency |
| 1                                   | 2402MHz   | 21      | 2422MHz   | 41      | 2442MHz   | 61      | 2462MHz   |
| 2                                   | 2403MHz   | 22      | 2423MHz   | 42      | 2443MHz   | 62      | 2463MHz   |
| 3                                   | 2404MHz   | 23      | 2424MHz   | 43      | 2444MHz   | 63      | 2464MHz   |
| 4                                   | 2405MHz   | 24      | 2425MHz   | 44      | 2445MHz   | 64      | 2465MHz   |
| 5                                   | 2406MHz   | 25      | 2426MHz   | 45      | 2446MHz   | 65      | 2466MHz   |
| 6                                   | 2407MHz   | 26      | 2427MHz   | 46      | 2447MHz   | 66      | 2467MHz   |
| 7                                   | 2408MHz   | 27      | 2428MHz   | 47      | 2448MHz   | 67      | 2468MHz   |
| 8                                   | 2409MHz   | 28      | 2429MHz   | 48      | 2449MHz   | 68      | 2469MHz   |
| 9                                   | 2410MHz   | 29      | 2430MHz   | 49      | 2450MHz   | 69      | 2470MHz   |
| 10                                  | 2411MHz   | 30      | 2431MHz   | 50      | 2451MHz   | 70      | 2471MHz   |
| 11                                  | 2412MHz   | 31      | 2432MHz   | 51      | 2452MHz   | 71      | 2472MHz   |
| 12                                  | 2413MHz   | 32      | 2433MHz   | 52      | 2453MHz   | 72      | 2473MHz   |
| 13                                  | 2414MHz   | 33      | 2434MHz   | 53      | 2454MHz   | 73      | 2474MHz   |
| 14                                  | 2415MHz   | 34      | 2435MHz   | 54      | 2455MHz   | 74      | 2475MHz   |
| 15                                  | 2416MHz   | 35      | 2436MHz   | 55      | 2456MHz   | 75      | 2476MHz   |
| 16                                  | 2417MHz   | 36      | 2437MHz   | 56      | 2457MHz   | 76      | 2477MHz   |
| 17                                  | 2418MHz   | 37      | 2438MHz   | 57      | 2458MHz   | 77      | 2478MHz   |
| 18                                  | 2419MHz   | 38      | 2439MHz   | 58      | 2459MHz   | 78      | 2479MHz   |
| 19                                  | 2420MHz   | 39      | 2440MHz   | 59      | 2460MHz   | 79      | 2480MHz   |
| 20                                  | 2421MHz   | 40      | 2441MHz   | 60      | 2461MHz   |         |           |

Note:

In section 15.31(m), regards to the operating frequency range over 10 MHz, the Lowest frequency, the middle frequency, and the highest frequency of channel were selected to perform the test, and the selected channel see below:

| Channel             | Frequency |
|---------------------|-----------|
| The lowest channel  | 2402MHz   |
| The middle channel  | 2441MHz   |
| The Highest channel | 2480MHz   |

## 2.2 Test mode

|                                                                                            |                                                                                         |
|--------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------|
| Conducted test                                                                             | Link mode                                                                               |
| RF and Radiated test                                                                       | Transmitting mode<br>(Keep the EUT in Max. power level continuously transmitting mode.) |
| Remark: For battery operated equipment, the EUT was performed using a new DC 3.7V battery. |                                                                                         |

## 2.3 Description of Support Units

| No. | Description | Manufacturer | Model     | Serial Number |
|-----|-------------|--------------|-----------|---------------|
| 1   | Adapter     | Xiaomi       | MDY-11-EM | /             |

## 2.4 Test Facility

|                             |                                                                                                                           |
|-----------------------------|---------------------------------------------------------------------------------------------------------------------------|
| Test laboratory:            | Shenzhen ETR Standard Technology Co., Ltd.                                                                                |
| CNAS Registration Number:   | L11864                                                                                                                    |
| A2LA Certificate Number:    | 6640.01                                                                                                                   |
| FCC Designation Number:     | CN1326                                                                                                                    |
| FCC Test Firm Registration: | 183064                                                                                                                    |
| IC Company Number:          | 28440                                                                                                                     |
| Laboratory location:        | No.103, No.10, Phase I, Zone 3, Xinxing Industrial Park, Xinhe, Fuhai Street, Bao'an District, Shenzhen, Guangdong, China |

## 2.5 Additional Instructions

|                   |                |
|-------------------|----------------|
| Test Software     | FCC_assist.exe |
| Power level setup | Default        |

### 3 Test Instruments list

| Item | Equipment name           | Manufacturer        | Model                      | Serial No.   | Calibration date | Due date  |
|------|--------------------------|---------------------|----------------------------|--------------|------------------|-----------|
| 1    | EMI Test Receiver        | Rohde&schwarz       | ESCI7                      | 100605       | 2025.3.06        | 2026.3.05 |
| 2    | EMI Test Receiver        | Rohde&schwarz       | ESCI3                      | 102696       | 2025.3.06        | 2026.3.05 |
| 3    | Loop Antenna             | schwarabeck         | FMZB 1519 B                | FMZB 1519 B  | 2024.3.22        | 2026.3.21 |
| 4    | Broadband antenna        | schwarabeck         | VULB9168                   | 1064         | 2024.3.26        | 2026.3.25 |
| 5    | Horn antenna             | schwarabeck         | BBHA9120D                  | 9120D-1145   | 2024.3.22        | 2026.3.21 |
| 6    | amplifier                | EMtrace             | RP01A                      | 50117        | 2025.3.06        | 2026.3.05 |
| 7    | AMN                      | schwarabeck         | NSLK8127                   | 8127483      | 2025.3.06        | 2026.3.05 |
| 8    | AMN                      | ETS                 | 3186/2NM                   | 1132         | 2025.3.06        | 2026.3.05 |
| 9    | 10dB attenuator          | HUBER+SUHN<br>R     | 10dB                       | /            | 2025.3.06        | 2026.3.05 |
| 10   | amplifier                | Space-Dtronics      | EWLAN0118G-<br>P40         | 19113001     | 2025.3.06        | 2026.3.05 |
| 11   | Filter                   | Xingbo              | XBLBQ-GTA19                | 210410-3-1   | 2025.3.06        | 2026.3.05 |
| 12   | Spectrum analyzer        | KEYSIGHT            | N9020A                     | MY55370280   | 2025.3.06        | 2026.3.05 |
| 13   | Power control box        | MWRFTest            | MW100-PSB                  | MW201020JYT  | 2025.3.06        | 2026.3.05 |
| 14   | Power Sensor             | Keysight            | U2021XA                    | MY54111006   | 2025.3.06        | 2026.3.05 |
| 15   | amplifier                | SKET                | LNPA_1840-50<br>(18-40GHz) | SK2019040302 | 2025.3.06        | 2026.3.05 |
| 16   | Horn antenna             | schwarabeck         | BBHA 9170                  | 946          | 2024.3.22        | 2026.3.21 |
| 17   | Spectrum analyzer        | Rohde&schwarz       | FSU40                      | 1166.1660K43 | 2025.3.06        | 2026.3.05 |
| 18   | Temp. & Humidity Chamber | Jiecheng Instrument | QA-LP-80                   | 20160705001  | 2025.3.07        | 2026.3.06 |

Note: the calibration interval of the above test instruments is 12 or 24 months and the calibrations are traceable to international system unit (SI).

| Software Name           | Manufacturer | Model    | Version           |
|-------------------------|--------------|----------|-------------------|
| RF test software        | MWRFTest     | MTS 8310 | V2.0.0.0          |
| Conducted test software | EZ-EMC       | Farad    | Ver.EMC-CON 3A1.1 |
| Radiated test software  | EZ-EMC       | Farad    | Ver.FA-03A2 RE    |

## 4 Test results and Measurement Data

### 4.1 Antenna requirement

|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                                         |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------|
| <b>Standard requirement:</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                     | FCC Part15 C Section 15.203 /247(b) (4) |
| <b>15.203 requirement:</b><br>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, the manufacturer may design the unit so that a broken antenna can be replaced by the user, but the use of a standard antenna jack or electrical connector is prohibited. |                                         |
| <b>15.247(b) (4) requirement:</b><br>If transmitting antennas of directional gain greater than 6dBi are used, the conducted output power limit shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6dBi.                                                                                                                                                                                                                                       |                                         |
| <b>E.U.T Antenna:</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                            |                                         |
| The antenna is PCB antenna, the best case gain of the is 1.68dBi, reference to the Internal photos for details.                                                                                                                                                                                                                                                                                                                                                                  |                                         |

## 4.2 Conducted Emissions

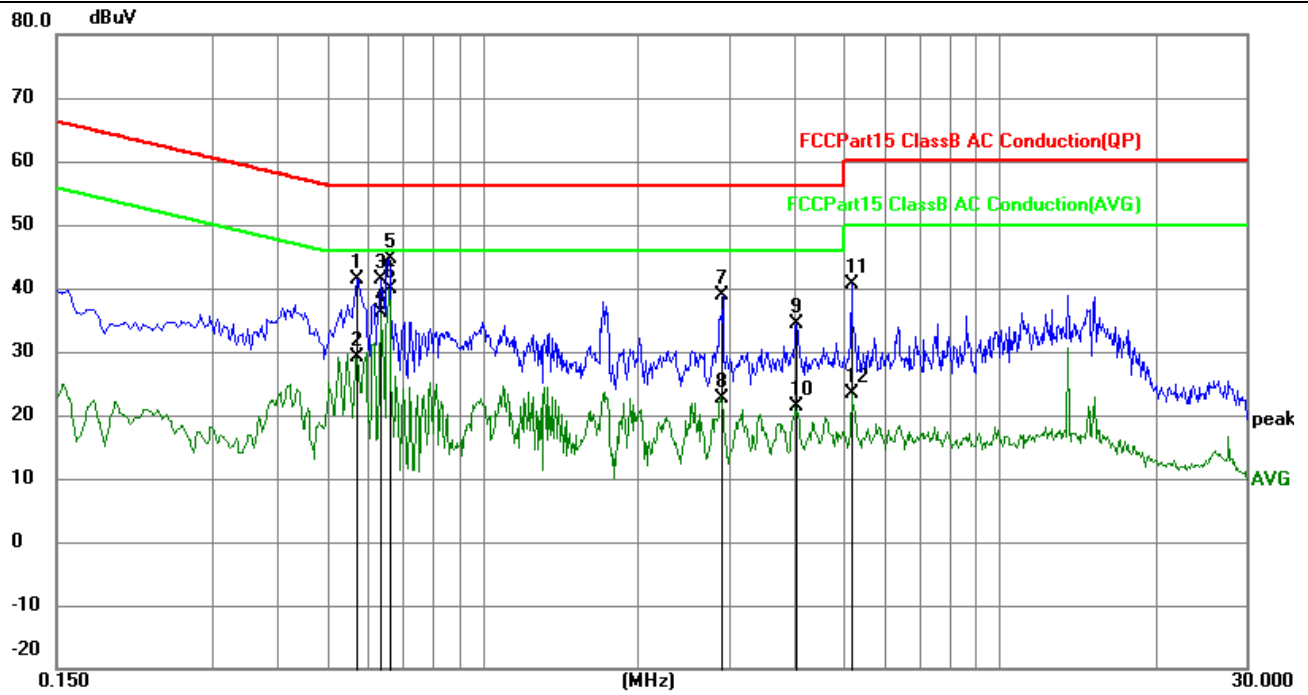
|                       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |              |         |           |         |                                                         |
|-----------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------|---------|-----------|---------|---------------------------------------------------------|
| Test Requirement:     | 47CRF Part 15.207                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |              |         |           |         |                                                         |
| Test Method:          | ANSI C63.10:2020 §6.2                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |              |         |           |         |                                                         |
| Test Frequency Range: | 150KHz to 30MHz                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |              |         |           |         |                                                         |
| Receiver setup:       | RBW=9KHz, VBW=30KHz, Sweep time=auto                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |              |         |           |         |                                                         |
| Limit:                | Frequency range (MHz)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | Limit (dBUV) |         |           |         | <i>* Decreases with the logarithm of the frequency.</i> |
|                       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | Quasi-peak   |         | Average   |         |                                                         |
|                       | 0.15-0.5                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | 66 to 56*    |         | 56 to 46* |         |                                                         |
|                       | 0.5-5                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | 56           |         | 46        |         |                                                         |
|                       | 5-30                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | 60           |         | 50        |         |                                                         |
| Test setup:           | <div><div><div>Reference Plane</div><div>40cm</div><div><div>LISN</div><div><div>AUX Equipment</div><div>E.U.T</div></div><div>80cm</div><div><div>LISN</div><div>Filter</div><div>AC power</div></div><div>EMI Receiver</div></div><div>Test table/Insulation plane</div></div><div><div>Remark:</div><div>E.U.T: Equipment Under Test</div><div>LISN: Line Impedance Stabilization Network</div><div>Test table height=0.8m</div></div></div>                                                                                                                                                                                                                                                                                      |              |         |           |         |                                                         |
| Test procedure:       | <div><div>1. The E.U.T and simulators are connected to the main power through a line impedance stabilization network (L.I.S.N.). This provides a 50ohm/50uH coupling impedance for the measuring equipment.</div><div>2. The peripheral devices are also connected to the main power through a LISN that provides a 50ohm/50uH coupling impedance with 50ohm termination. (Please refer to the block diagram of the test setup and photographs).</div><div>3. Both sides of A.C. line are checked for maximum conducted interference. In order to find the maximum emission, the relative positions of equipment and all of the interface cables must be changed according to ANSI C63.10:2020 on conducted measurement.</div></div> |              |         |           |         |                                                         |
| Test Instruments:     | Refer to section 3.0 for details                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |              |         |           |         |                                                         |
| Test mode:            | Refer to section 2.2 for details                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |              |         |           |         |                                                         |
| Test environment:     | Temp.:                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | 22.8°C       | Humid.: | 41%       | Press.: | 1002 mbar                                               |
| Test voltage:         | AC 120V, 60Hz                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |              |         |           |         |                                                         |
| Test results:         | Pass                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |              |         |           |         |                                                         |

### Remark:

Both high voltage and low voltage have been tested, and the report only shows the worst case data with AC 120V/60Hz.

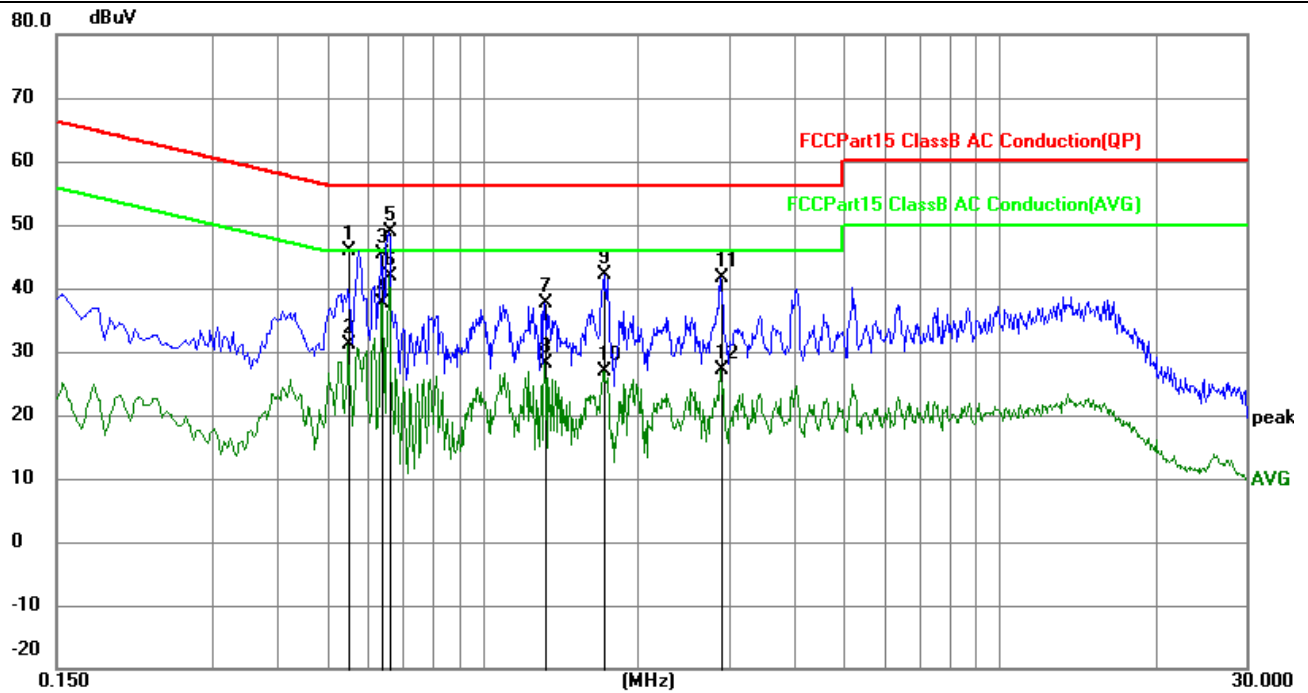
Measurement data:

Line:



| No. | Frequency (MHz) | Reading (dBuV) | Factor (dB) | Level (dBuV) | Limit (dBuV) | Margin (dB) | Detector |
|-----|-----------------|----------------|-------------|--------------|--------------|-------------|----------|
| 1   | 0.5685          | 31.37          | 9.94        | 41.31        | 56.00        | -14.69      | QP       |
| 2   | 0.5685          | 19.07          | 9.94        | 29.01        | 46.00        | -16.99      | AVG      |
| 3   | 0.6360          | 31.54          | 9.94        | 41.48        | 56.00        | -14.52      | QP       |
| 4   | 0.6360          | 26.24          | 9.94        | 36.18        | 46.00        | -9.82       | AVG      |
| 5   | 0.6585          | 34.78          | 9.94        | 44.72        | 56.00        | -11.28      | QP       |
| 6   | 0.6585          | 29.82          | 9.94        | 39.76        | 46.00        | -6.24       | AVG      |
| 7   | 2.8860          | 29.07          | 9.85        | 38.92        | 56.00        | -17.08      | QP       |
| 8   | 2.8860          | 12.90          | 9.85        | 22.75        | 46.00        | -23.25      | AVG      |
| 9   | 4.0470          | 24.61          | 9.84        | 34.45        | 56.00        | -21.55      | QP       |
| 10  | 4.0470          | 11.62          | 9.84        | 21.46        | 46.00        | -24.54      | AVG      |
| 11  | 5.1765          | 30.77          | 9.83        | 40.60        | 60.00        | -19.40      | QP       |
| 12  | 5.1765          | 13.55          | 9.83        | 23.38        | 50.00        | -26.62      | AVG      |

### Neutral:

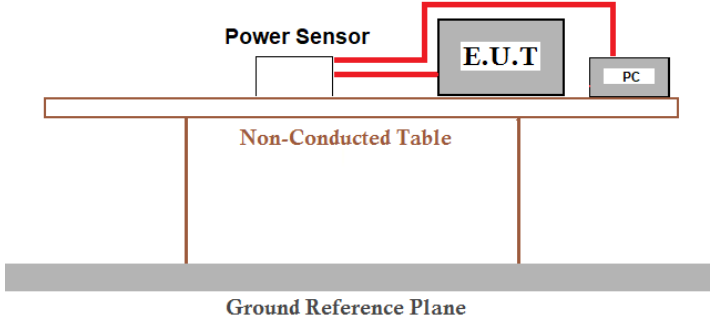


| No. | Frequency (MHz) | Reading (dBuV) | Factor (dB) | Level (dBuV) | Limit (dBuV) | Margin (dB) | Detector |
|-----|-----------------|----------------|-------------|--------------|--------------|-------------|----------|
| 1   | 0.5503          | 35.89          | 9.94        | 45.83        | 56.00        | -10.17      | QP       |
| 2   | 0.5503          | 21.26          | 9.94        | 31.20        | 46.00        | -14.80      | AVG      |
| 3   | 0.6404          | 35.32          | 9.94        | 45.26        | 56.00        | -10.74      | QP       |
| 4   | 0.6404          | 27.78          | 9.94        | 37.72        | 46.00        | -8.28       | AVG      |
| 5   | 0.6584          | 39.03          | 9.94        | 48.97        | 56.00        | -7.03       | QP       |
| 6   | 0.6584          | 31.90          | 9.94        | 41.84        | 46.00        | -4.16       | AVG      |
| 7   | 1.3200          | 27.81          | 9.92        | 37.73        | 56.00        | -18.27      | QP       |
| 8   | 1.3200          | 18.33          | 9.92        | 28.25        | 46.00        | -17.75      | AVG      |
| 9   | 1.7159          | 32.26          | 9.89        | 42.15        | 56.00        | -13.85      | QP       |
| 10  | 1.7159          | 17.07          | 9.89        | 26.96        | 46.00        | -19.04      | AVG      |
| 11  | 2.8860          | 31.81          | 9.85        | 41.66        | 56.00        | -14.34      | QP       |
| 12  | 2.8860          | 17.18          | 9.85        | 27.03        | 46.00        | -18.97      | AVG      |

#### Notes:

1. An initial pre-scan was performed on the line and neutral lines with peak detector.
2. Quasi-Peak and Average measurement were performed at the frequencies with maximized peak emission.
3. Final Level = Receiver Read level + LISN Factor + Cable Loss

### 4.3 Conducted Peak Output Power & EIRP

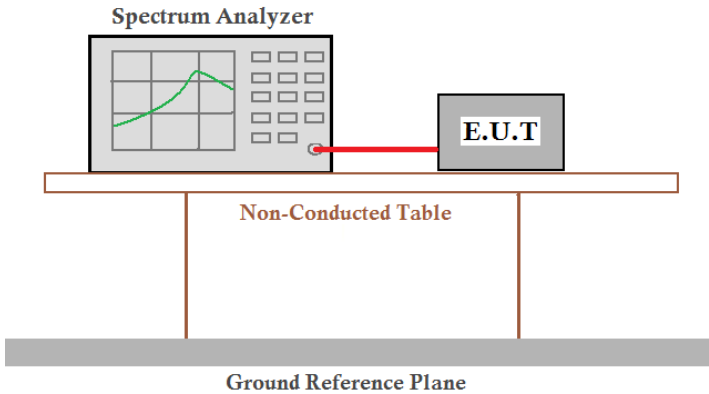
|                   |                                                                                                                                                                                                                                                                                                                    |               |
|-------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------|
| Test Requirement: | 47CRF Part 15.247 (b)(1)                                                                                                                                                                                                                                                                                           |               |
| Test Method:      | KDB558074 D01 15.247 Meas Guidance v05r02<br>ANSI C63.10-2020 §7.8.5                                                                                                                                                                                                                                               |               |
| Limit:            | Output Power :30dBm                                                                                                                                                                                                                                                                                                |               |
| Test setup:       |  <p>The diagram illustrates the test setup. A Power Sensor is connected to an E.U.T. (Equipment Under Test) and a PC. The E.U.T. and PC are placed on a Non-Conducted Table, which is supported by a Ground Reference Plane.</p> |               |
| Test Instruments: | Refer to section 3.0 for details                                                                                                                                                                                                                                                                                   |               |
| Test mode:        | Refer to section 2.2 for details                                                                                                                                                                                                                                                                                   |               |
| Test environment: | Temp.: 24.1°C                                                                                                                                                                                                                                                                                                      | Humid.: 49%RH |
| Test voltage:     | DC 3.7V                                                                                                                                                                                                                                                                                                            |               |
| Test results:     | Pass                                                                                                                                                                                                                                                                                                               |               |



**Measurement Result**

| Mode           | Test channel | Peak Output Power (dBm) | Limit (dBm) | Result |
|----------------|--------------|-------------------------|-------------|--------|
| GFSK           | Lowest       | -0.49                   | 30          | Pass   |
|                | Middle       | -0.16                   |             |        |
|                | Highest      | -0.90                   |             |        |
| $\pi/4$ -DQPSK | Lowest       | 0.25                    | 30          | Pass   |
|                | Middle       | 0.52                    |             |        |
|                | Highest      | -0.19                   |             |        |

#### 4.4 20dB Emission Bandwidth

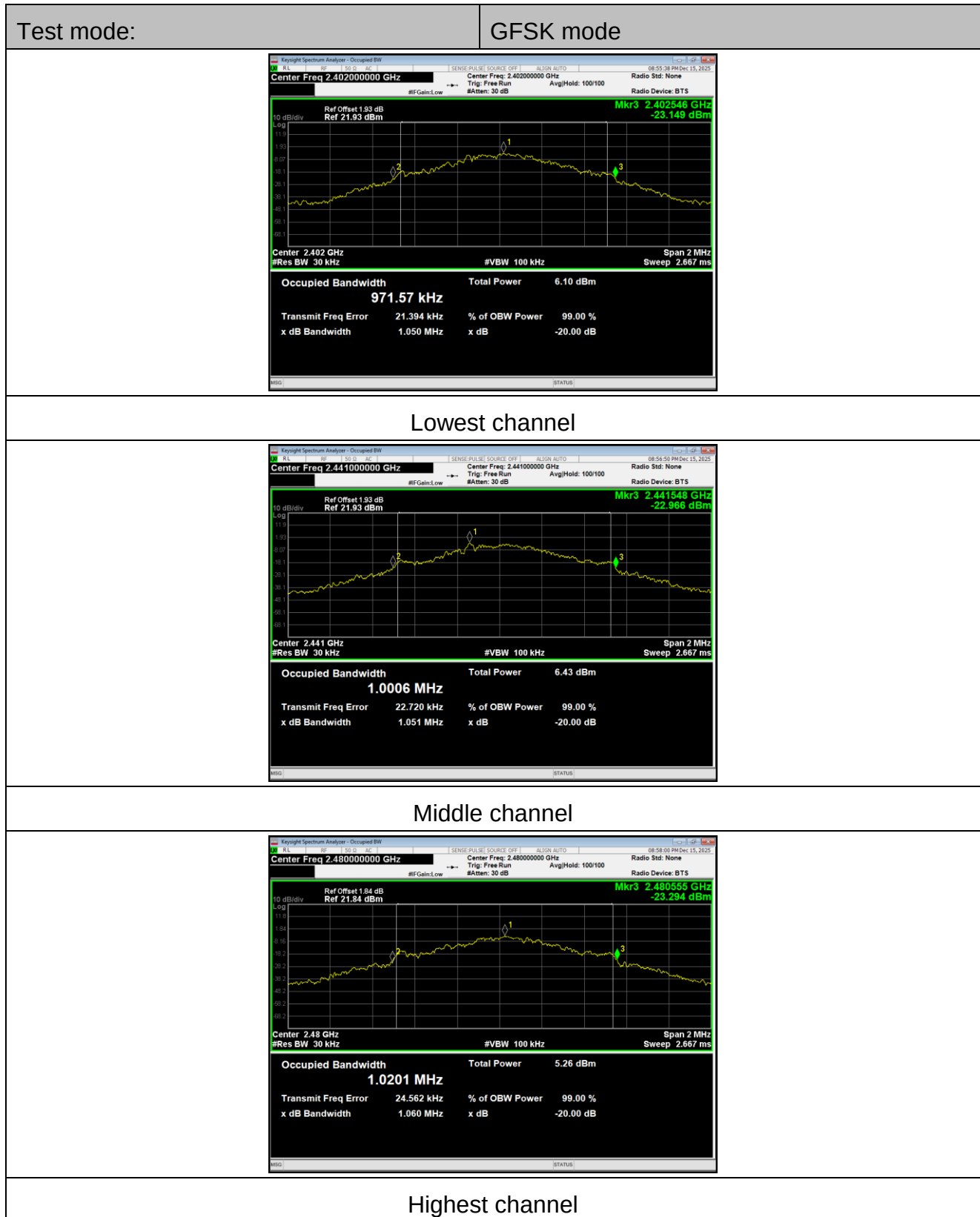
|                   |                                                                                    |               |
|-------------------|------------------------------------------------------------------------------------|---------------|
| Test Requirement: | 47CRF Part 15.247 (a)(1)                                                           |               |
| Test Method:      | ANSI C63.10-2020 §6.9.2                                                            |               |
| Limit:            | N/A                                                                                |               |
| Test setup:       |  |               |
| Test Instruments: | Refer to section 3.0 for details                                                   |               |
| Test mode:        | Refer to section 2.2 for details                                                   |               |
| Test environment: | Temp.: 24.1°C                                                                      | Humid.: 49%RH |
| Test voltage:     | DC 3.7V                                                                            |               |
| Test results:     | Pass                                                                               |               |

#### Measurement Data

| Mode           | Test channel | 20dB Emission Bandwidth (MHz) | Result |
|----------------|--------------|-------------------------------|--------|
| GFSK           | Lowest       | 1.050                         | Pass   |
|                | Middle       | 1.051                         |        |
|                | Highest      | 1.060                         |        |
| $\pi/4$ -DQPSK | Lowest       | 1.339                         | Pass   |
|                | Middle       | 1.363                         |        |
|                | Highest      | 1.386                         |        |

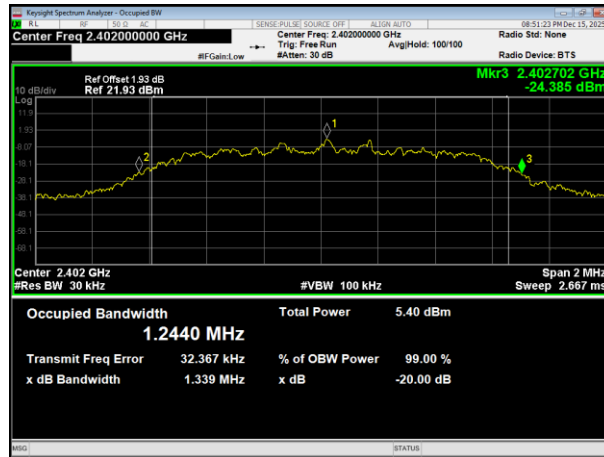
Remark: Test performed at worst case in DH5, 2DH5 mode separately.

Test plot as follows:

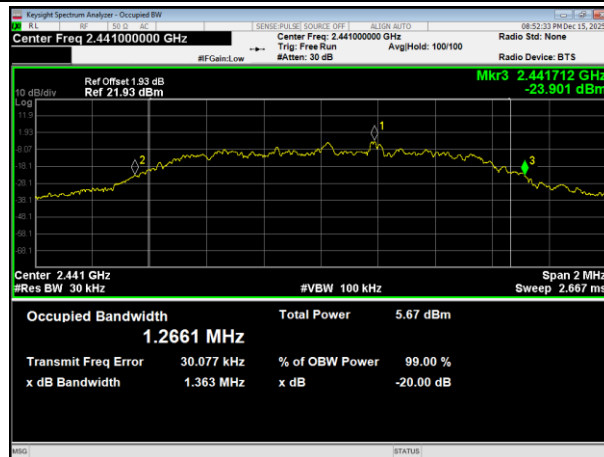


Test mode:

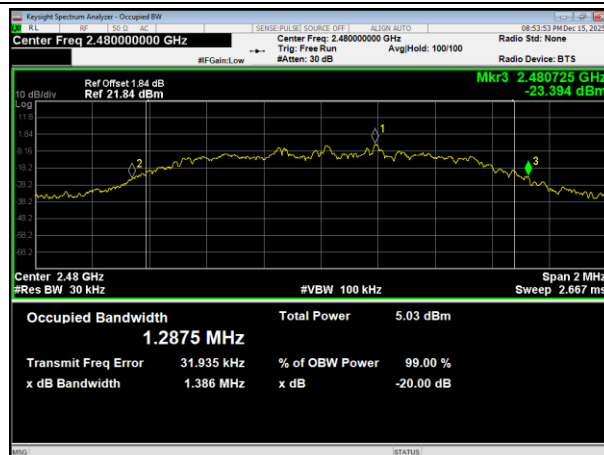
$\pi/4$ -DQPSK mode



Lowest channel

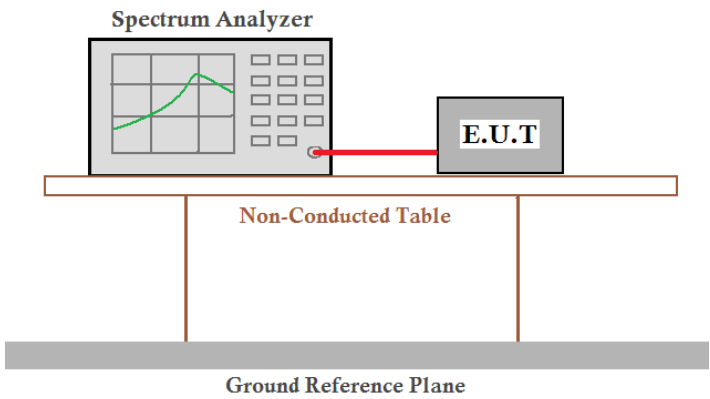


Middle channel



Highest channel

#### 4.5 Carrier Frequencies Separation

|                   |                                                                                    |               |
|-------------------|------------------------------------------------------------------------------------|---------------|
| Test Requirement: | 47CRF Part 15.247 (a)(1)                                                           |               |
| Test Method:      | ANSI C63.10-2020 §7.8.2                                                            |               |
| Receiver setup:   | RBW=300KHz, VBW=1000KHz, detector=Peak                                             |               |
| Limit:            | >0.025MHz or 2/3 of the 20dB bandwidth (whichever is greater)                      |               |
| Test setup:       |  |               |
| Test Instruments: | Refer to section 3.0 for details                                                   |               |
| Test mode:        | Refer to section 2.2 for details                                                   |               |
| Test environment: | Temp.: 24.1°C                                                                      | Humid.: 49%RH |
| Test voltage:     | DC 3.7V                                                                            |               |
| Test results:     | Pass                                                                               |               |

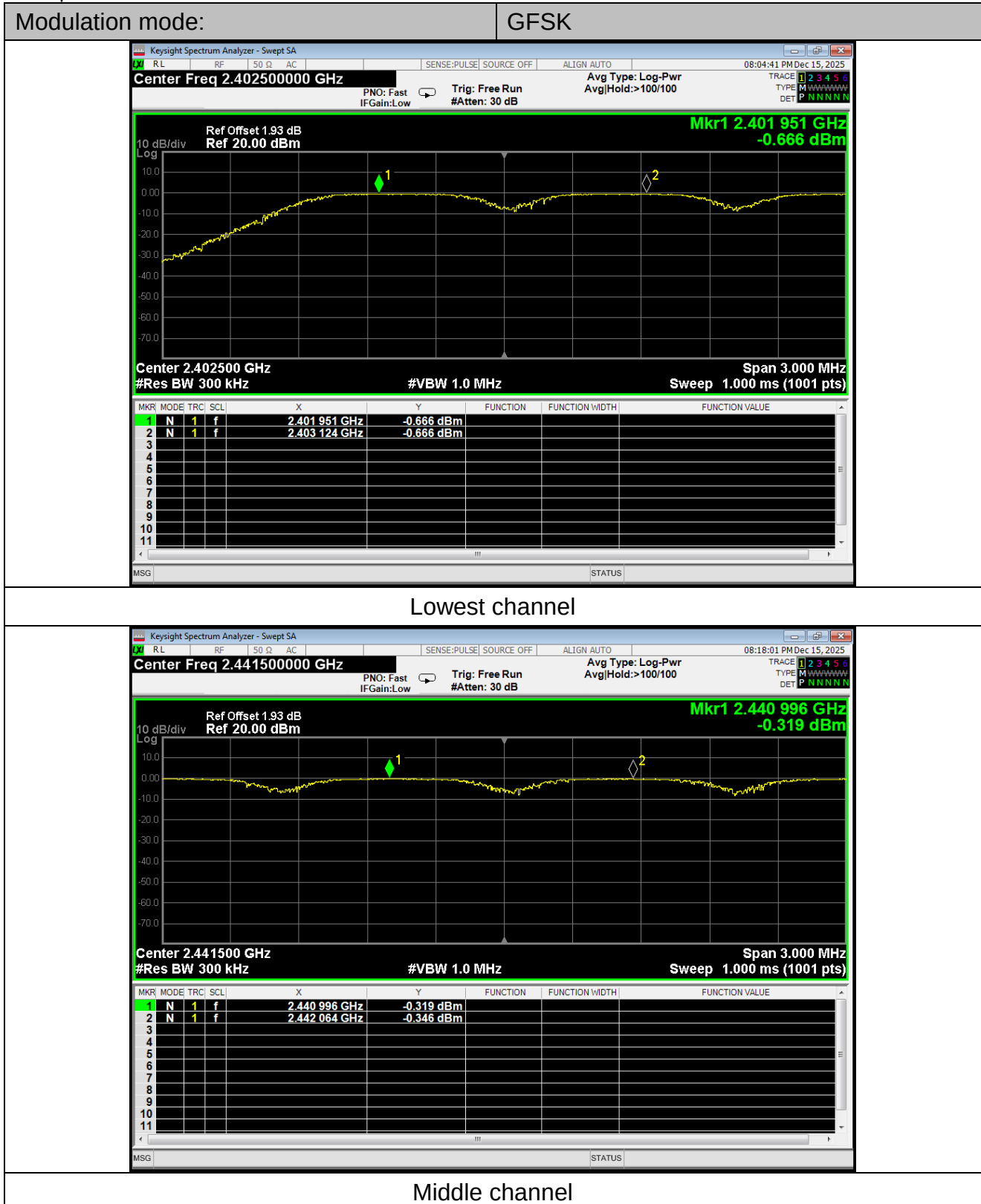
#### Measurement Data

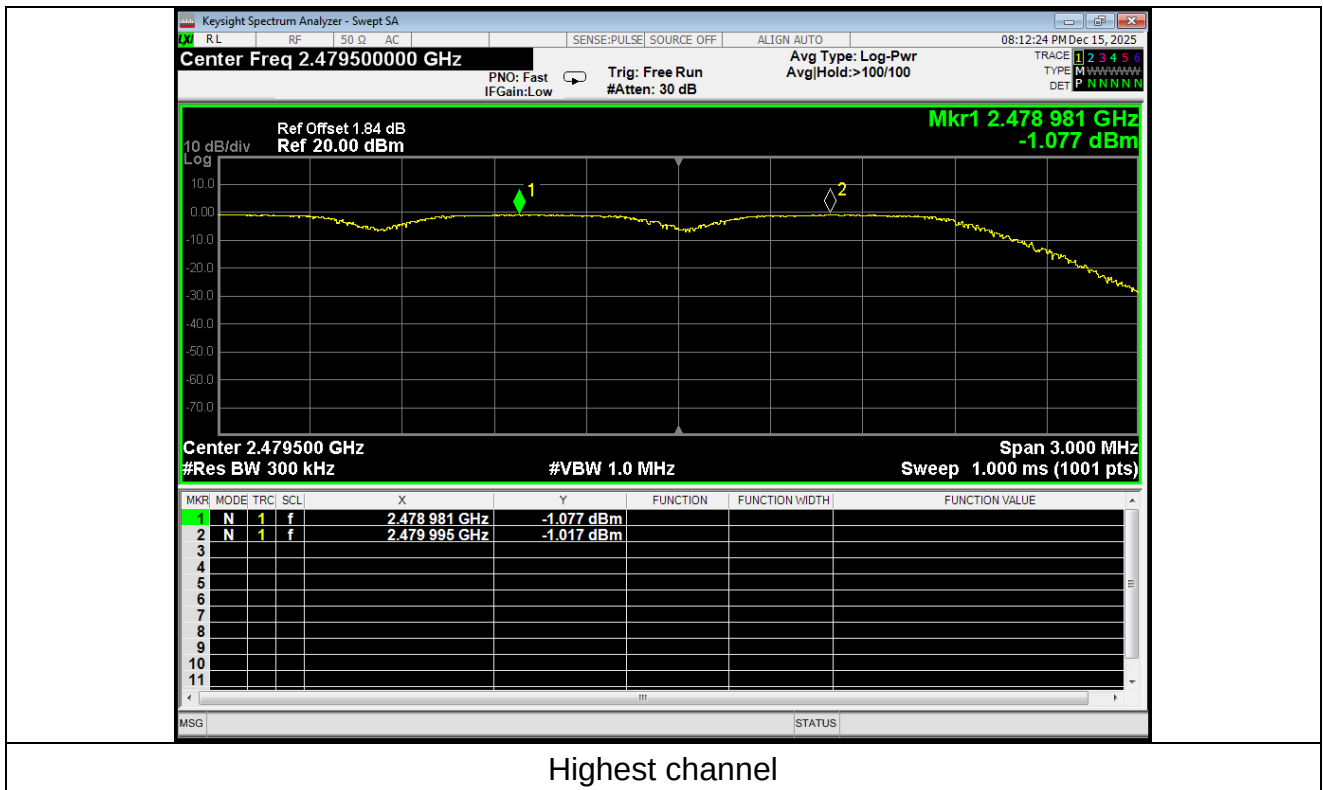
| Mode           | Test channel | Carrier Frequencies Separation (MHz) | Limit (MHz) | Result |
|----------------|--------------|--------------------------------------|-------------|--------|
| GFSK           | Lowest       | 1.173                                | 0.700       | Pass   |
|                | Middle       | 1.068                                | 0.701       | Pass   |
|                | Highest      | 1.014                                | 0.707       | Pass   |
| $\pi/4$ -DQPSK | Lowest       | 1.248                                | 0.893       | Pass   |
|                | Middle       | 1.092                                | 0.909       | Pass   |
|                | Highest      | 1.035                                | 0.924       | Pass   |

Note:

1. Limit According to section 4.4.
2. Test performed at worst case in DH5, 2DH5 mode separately.

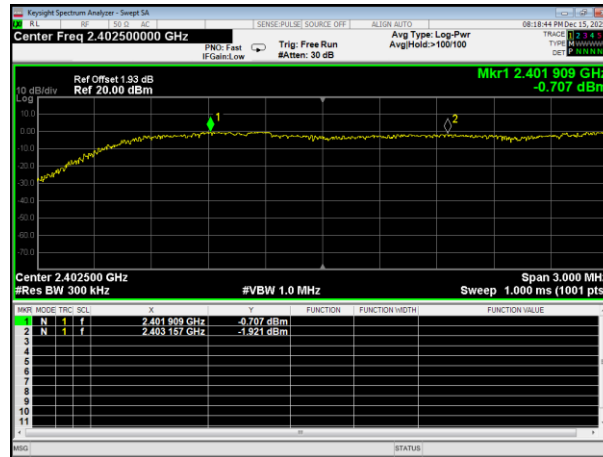
Test plot as follows:



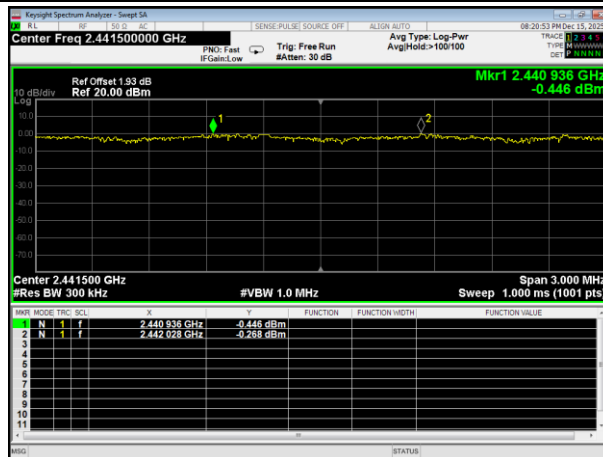


Test mode:

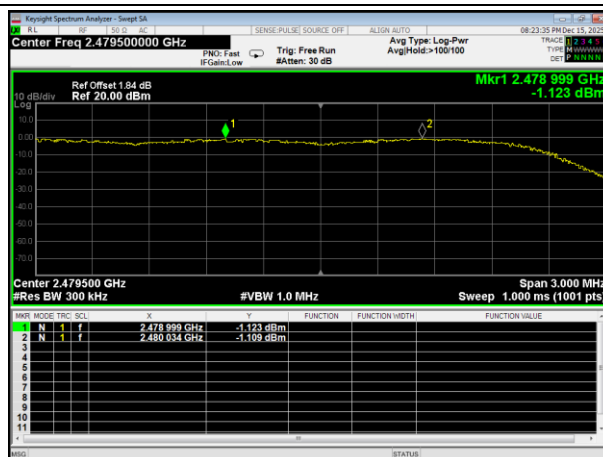
$\pi/4$ -DQPSK



Lowest channel

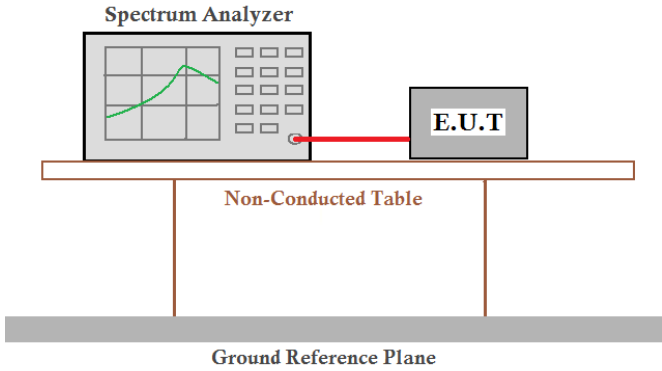


Middle channel



Highest channel

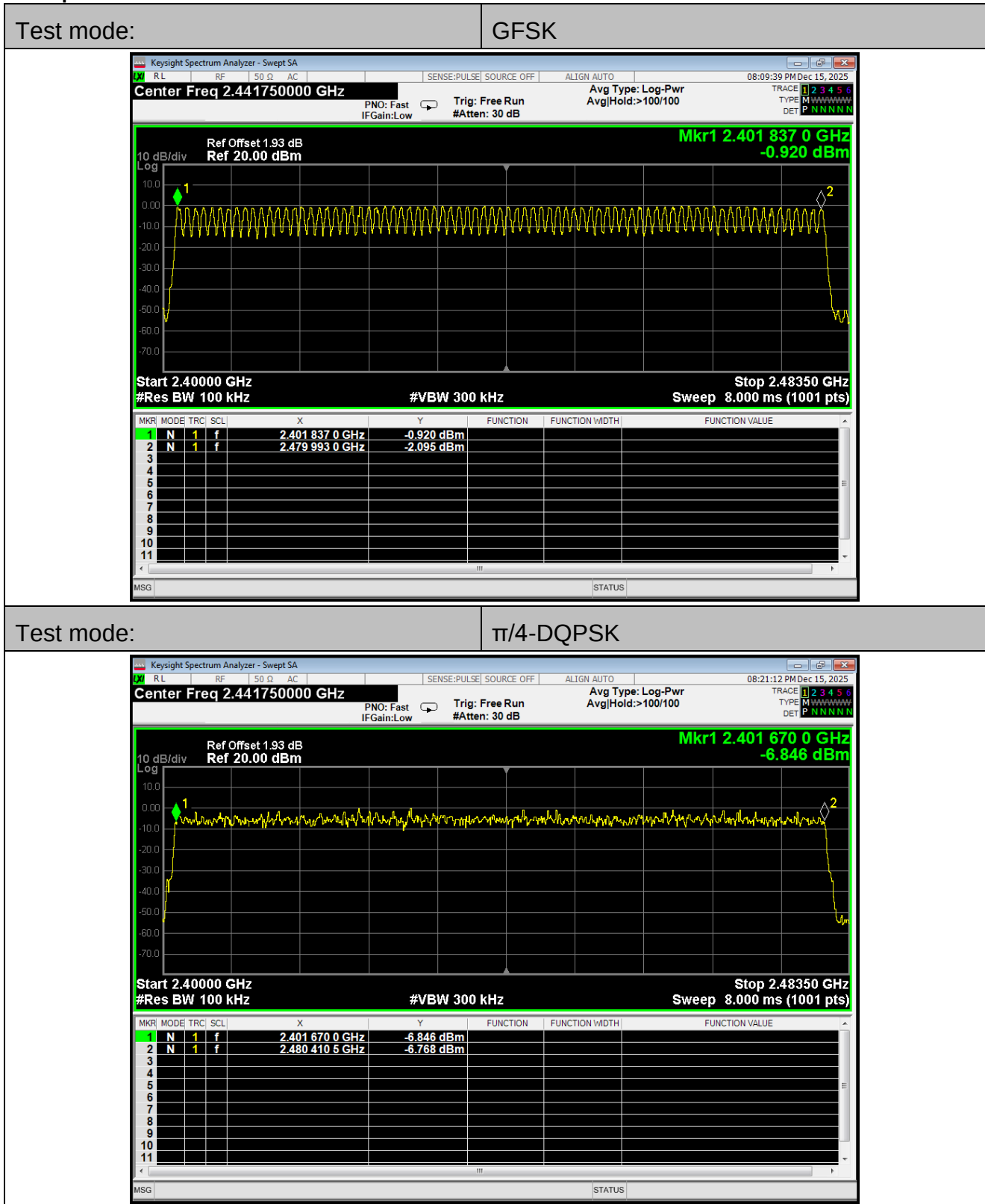
#### 4.6 Hopping Channel Number

|                   |                                                                                                                                                                                                                                                                                                                |               |
|-------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------|
| Test Requirement: | 47CRF Part 15.247 (a)(1)(iii)                                                                                                                                                                                                                                                                                  |               |
| Test Method:      | ANSI C63.10-2020 §7.8.3                                                                                                                                                                                                                                                                                        |               |
| Receiver setup:   | RBW=100kHz, VBW=300kHz, Frequency range=2400MHz-2483.5MHz, Detector=Peak                                                                                                                                                                                                                                       |               |
| Limit:            | 15 channels                                                                                                                                                                                                                                                                                                    |               |
| Test setup:       |  <p>The diagram illustrates the test setup. A Spectrum Analyzer is connected via a red cable to an E.U.T. (Equipment Under Test). Both are placed on a Non-Conducted Table. Below the table is a Ground Reference Plane.</p> |               |
| Test Instruments: | Refer to section 3.0 for details                                                                                                                                                                                                                                                                               |               |
| Test mode:        | Refer to section 2.2 for details                                                                                                                                                                                                                                                                               |               |
| Test environment: | Temp.: 24.1°C                                                                                                                                                                                                                                                                                                  | Humid.: 49%RH |
| Test voltage:     | DC 3.7V                                                                                                                                                                                                                                                                                                        |               |
| Test results:     | Pass                                                                                                                                                                                                                                                                                                           |               |

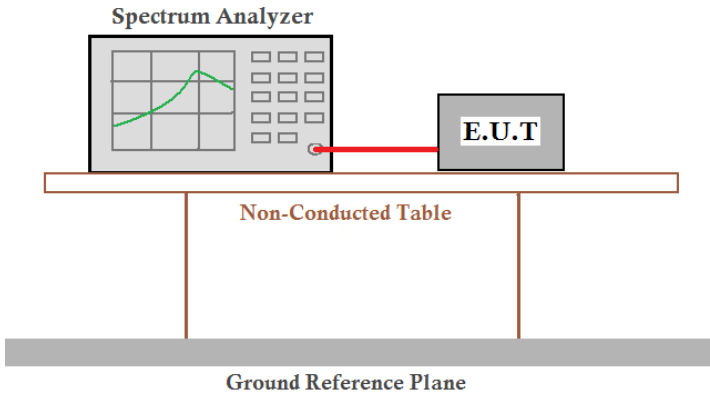
#### Measurement Data:

| Mode           | Hopping channel numbers | Limit | Result |
|----------------|-------------------------|-------|--------|
| GFSK           | 79                      | 15    | Pass   |
| $\pi/4$ -DQPSK | 79                      | 15    | Pass   |

Test plot as follows:



#### 4.7 Dwell Time

|                   |                                                                                                                                                                                                                                                                                                                                                                                                |               |
|-------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------|
| Test Requirement: | 47CRF Part 15.247 (a)(1)(iii)                                                                                                                                                                                                                                                                                                                                                                  |               |
| Test Method:      | ANSI C63.10-2020 §7.8.4                                                                                                                                                                                                                                                                                                                                                                        |               |
| Receiver setup:   | RBW=1MHz, VBW=3MHz, Span=0Hz, Detector=Peak                                                                                                                                                                                                                                                                                                                                                    |               |
| Limit:            | 0.4 Second                                                                                                                                                                                                                                                                                                                                                                                     |               |
| Test setup:       |  <p>The diagram illustrates the test setup. A Spectrum Analyzer is connected to an E.U.T (Equipment Under Test) via a red cable. Both the Spectrum Analyzer and the E.U.T are placed on a Non-Conducted Table. The table is supported by two vertical legs. Below the table is a Ground Reference Plane.</p> |               |
| Test Instruments: | Refer to section 3.0 for details                                                                                                                                                                                                                                                                                                                                                               |               |
| Test mode:        | Refer to section 2.2 for details                                                                                                                                                                                                                                                                                                                                                               |               |
| Test environment: | Temp.: 24.1°C                                                                                                                                                                                                                                                                                                                                                                                  | Humid.: 49%RH |
| Test voltage:     | DC 3.7V                                                                                                                                                                                                                                                                                                                                                                                        |               |
| Test results:     | Pass                                                                                                                                                                                                                                                                                                                                                                                           |               |

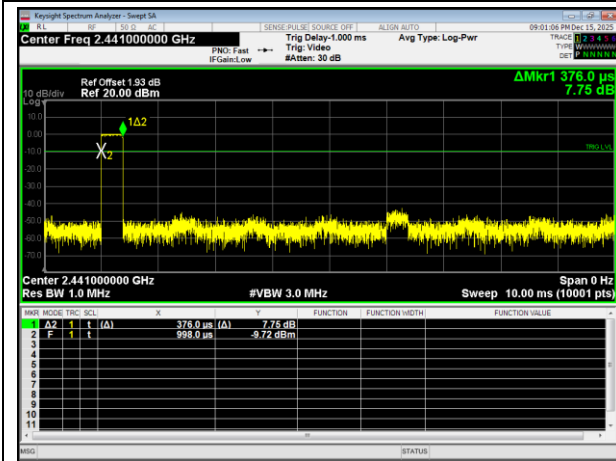


**Measurement Result**

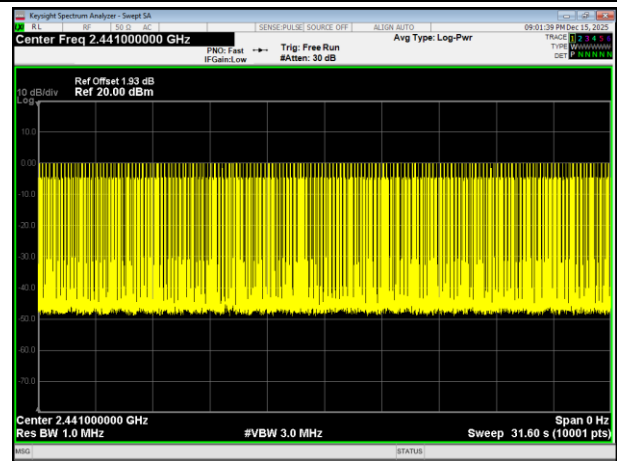
| Mode  | Frequency<br>(MHz) | Pulse Time<br>(ms) | Total Dwell Time<br>(ms) | Burst<br>Count | Period Time<br>(ms) | Limit<br>(ms) | Result |
|-------|--------------------|--------------------|--------------------------|----------------|---------------------|---------------|--------|
| 1-DH1 | 2441               | 0.376              | 118.064                  | 314            | 31600               | 400           | Pass   |
| 1-DH3 | 2441               | 1.632              | 252.96                   | 155            | 31600               | 400           | Pass   |
| 1-DH5 | 2441               | 2.879              | 305.174                  | 106            | 31600               | 400           | Pass   |
| 2-DH1 | 2441               | 0.383              | 121.028                  | 316            | 31600               | 400           | Pass   |
| 2-DH3 | 2441               | 1.637              | 261.92                   | 160            | 31600               | 400           | Pass   |
| 2-DH5 | 2441               | 2.885              | 305.81                   | 106            | 31600               | 400           | Pass   |

Test plot as follows:

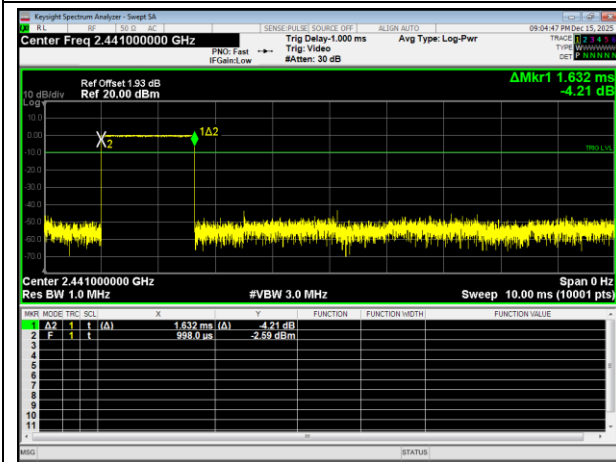
1DH1-2441MHz-One burst



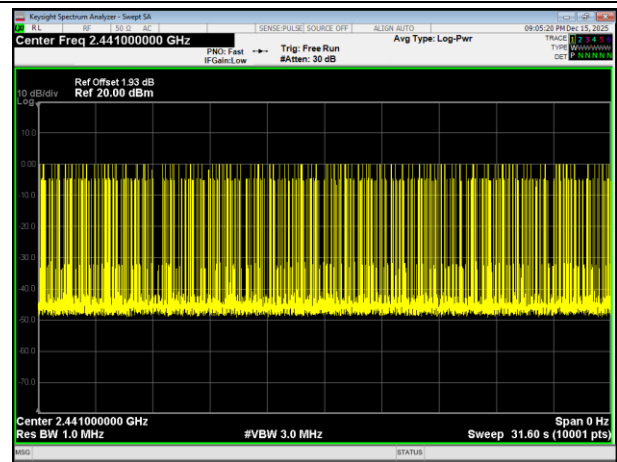
1DH1-2441MHz-Accumulated



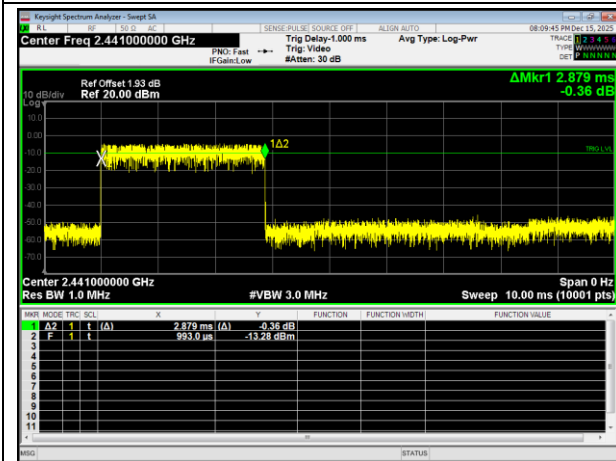
1DH3-2441MHz-One burst



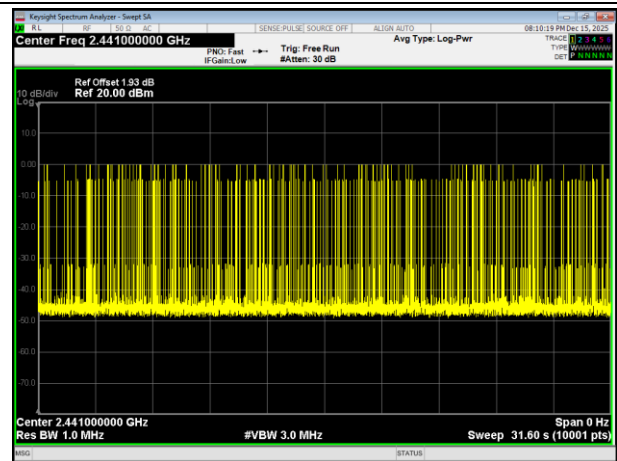
1DH3-2441MHz-Accumulated



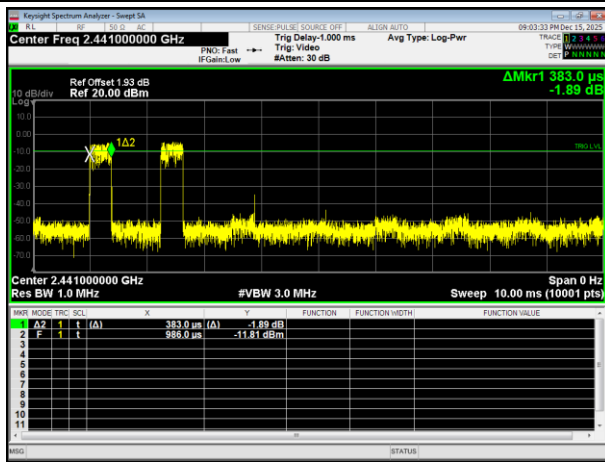
1DH5-2441MHz-One burst



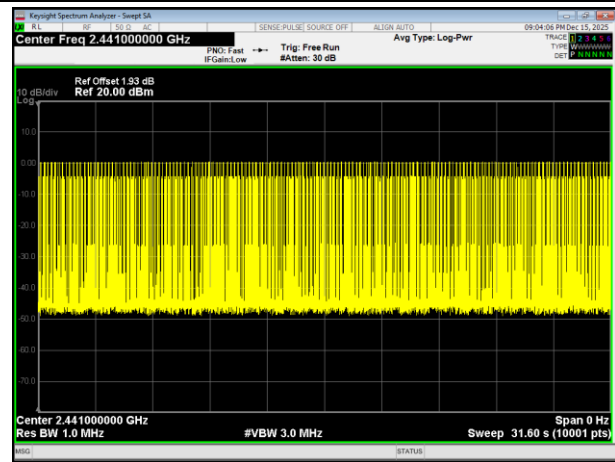
1DH5-2441MHz-Accumulated



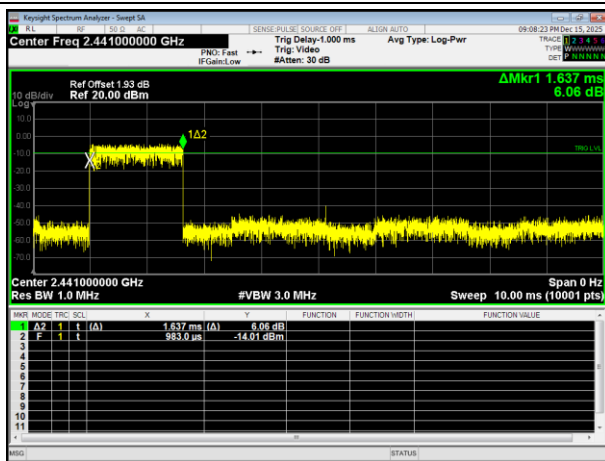
2DH1-2441MHz-One burst



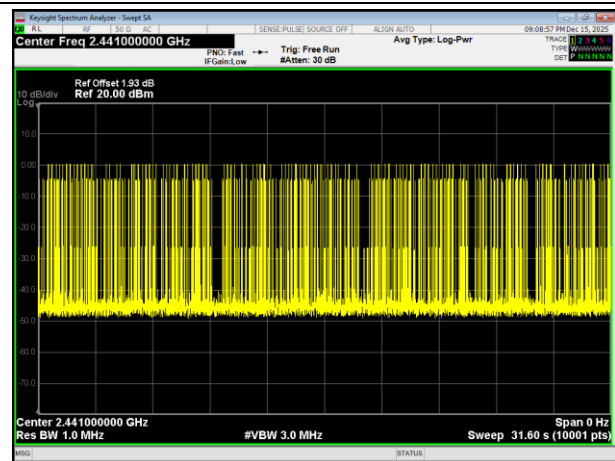
2DH1-2441MHz-Accumulated



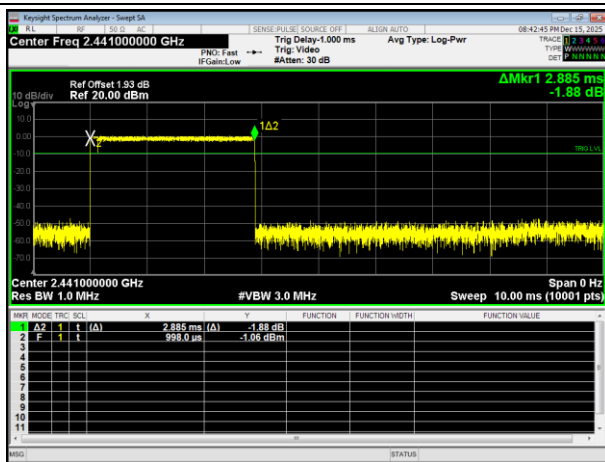
2DH3-2441MHz-One burst



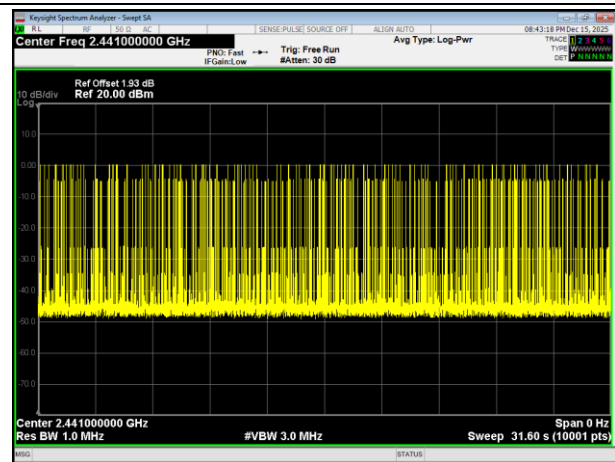
2DH3-2441MHz-Accumulated



2DH5-2441MHz-One burst

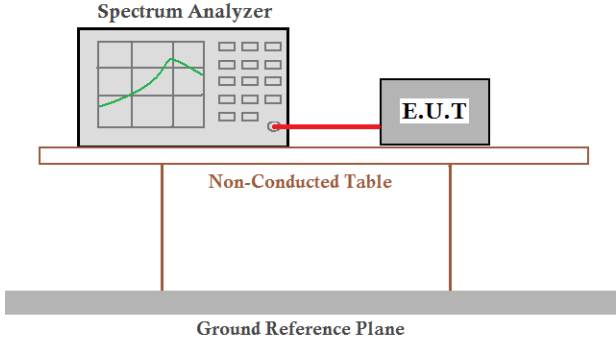


2DH5-2441MHz-Accumulated

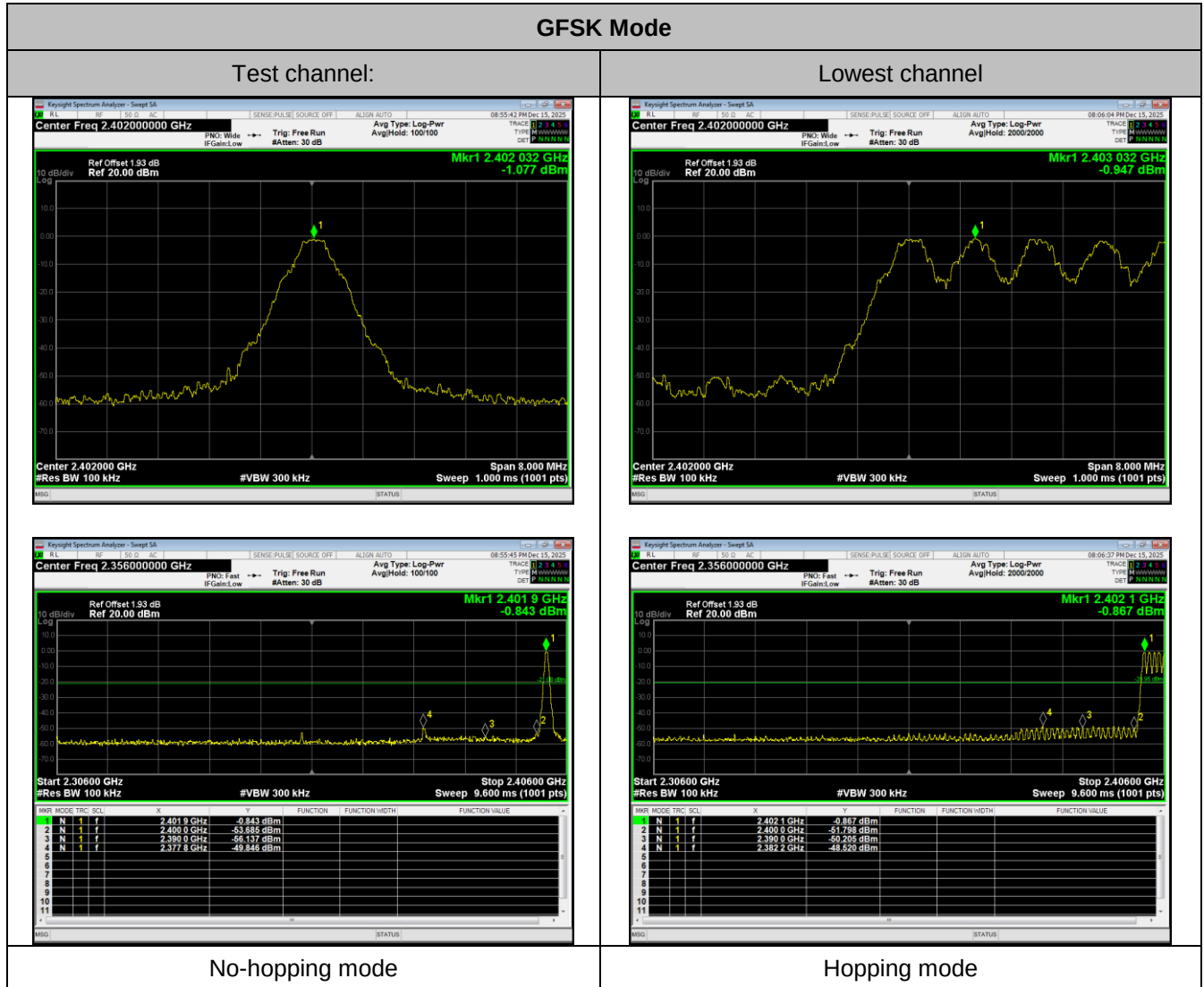


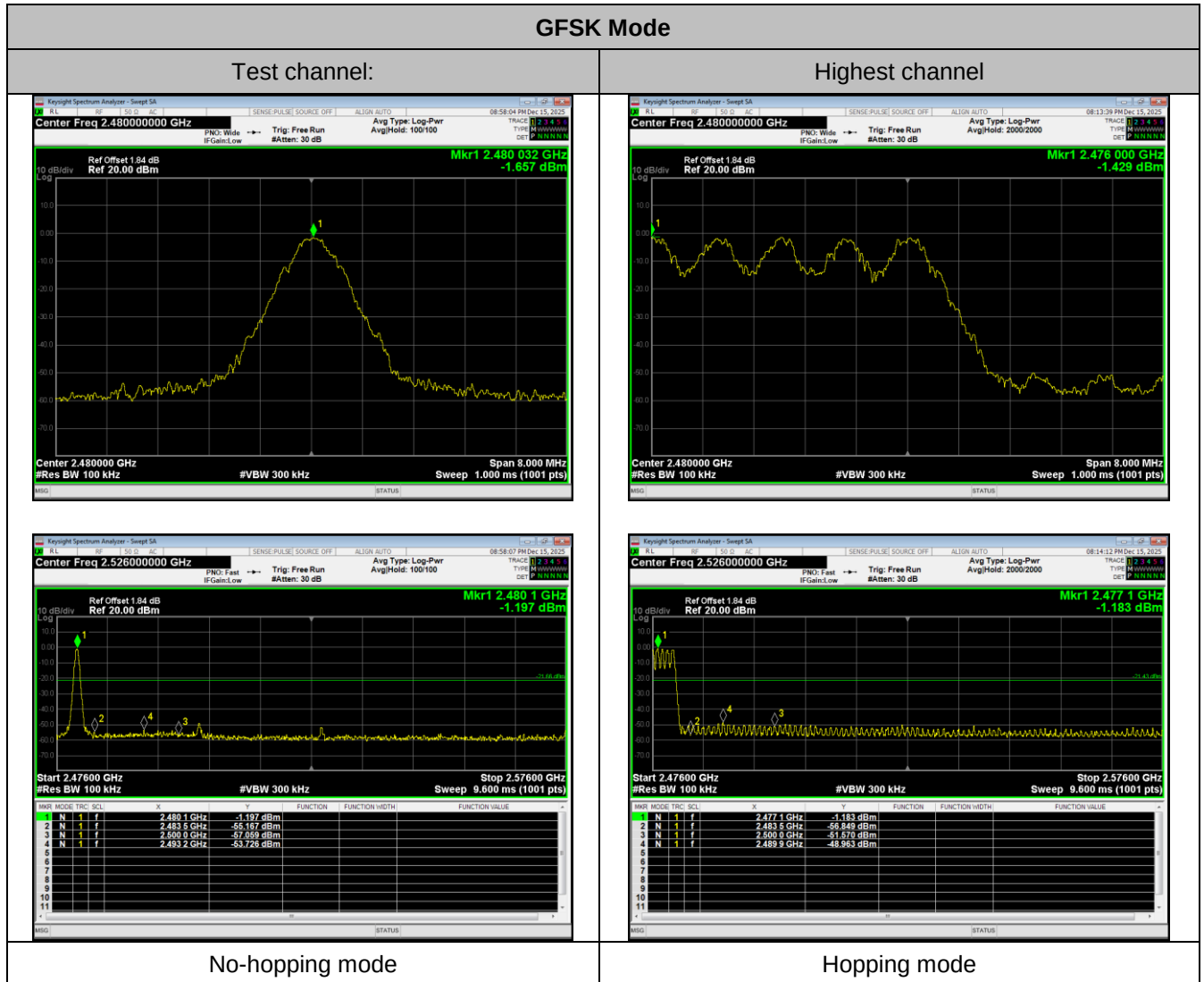
## 4.8 Band Edge

### 4.8.1 Conducted Emission Method

|                   |                                                                                                                                                                                                                                                                                                                                                                                         |               |
|-------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------|
| Test Requirement: | 47CRF Part 15.247 (d)                                                                                                                                                                                                                                                                                                                                                                   |               |
| Test Method:      | ANSI C63.10-2020 §7.8.6                                                                                                                                                                                                                                                                                                                                                                 |               |
| Receiver setup:   | RBW=100kHz, VBW=300kHz, Detector=Peak                                                                                                                                                                                                                                                                                                                                                   |               |
| Limit:            | In any 100 kHz bandwidth outside the frequency band in which the spread spectrum intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement. |               |
| Test setup:       |                                                                                                                                                                                                                                                                                                      |               |
| Test Instruments: | Refer to section 3.0 for details                                                                                                                                                                                                                                                                                                                                                        |               |
| Test mode:        | Refer to section 2.2 for details                                                                                                                                                                                                                                                                                                                                                        |               |
| Test environment: | Temp.: 24.1°C                                                                                                                                                                                                                                                                                                                                                                           | Humid.: 49%RH |
| Test voltage:     | DC 3.7V                                                                                                                                                                                                                                                                                                                                                                                 |               |
| Test results:     | Pass                                                                                                                                                                                                                                                                                                                                                                                    |               |

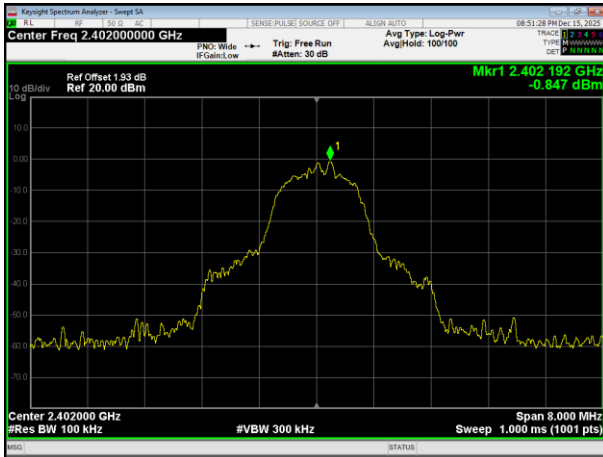
Test plot as follows:



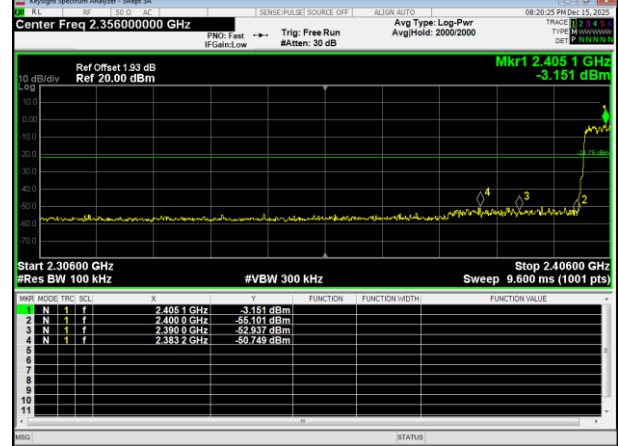
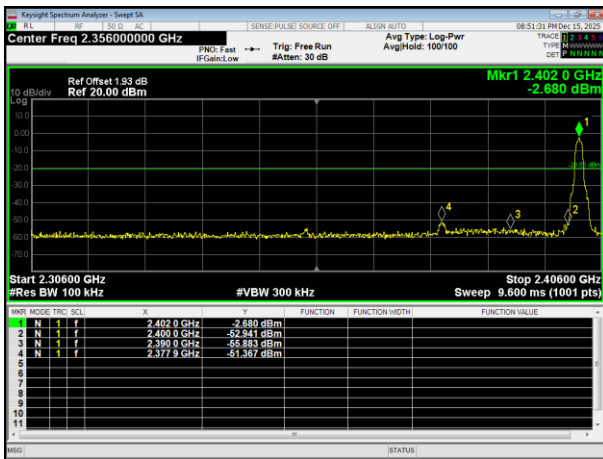
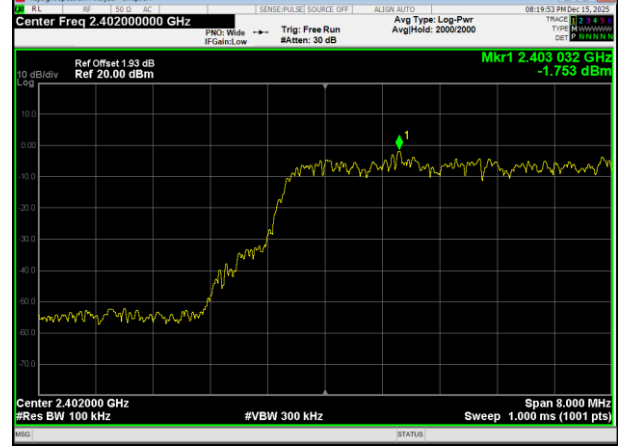


## π/4-DQPSK Mode

Test channel:

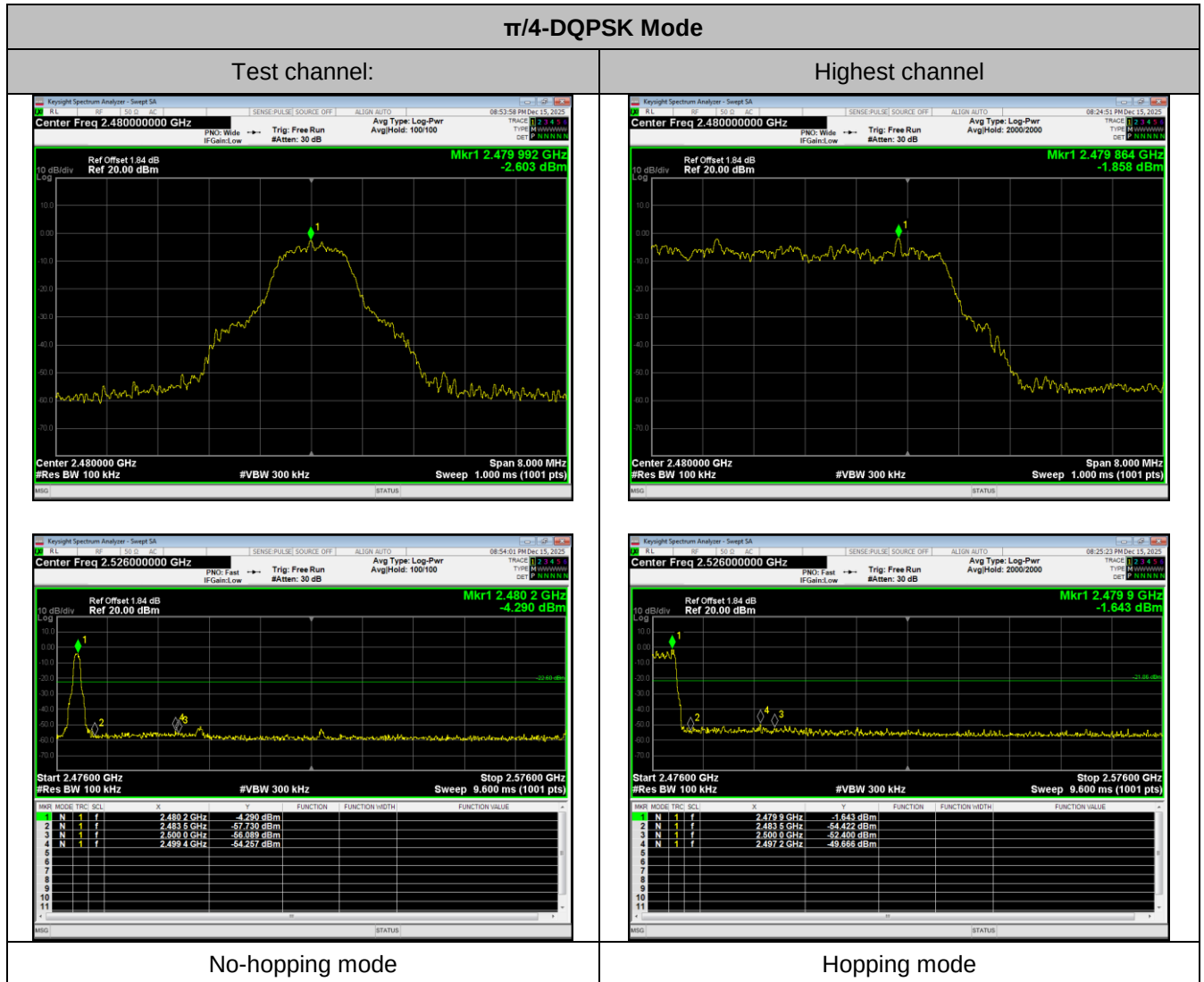


Lowest channel

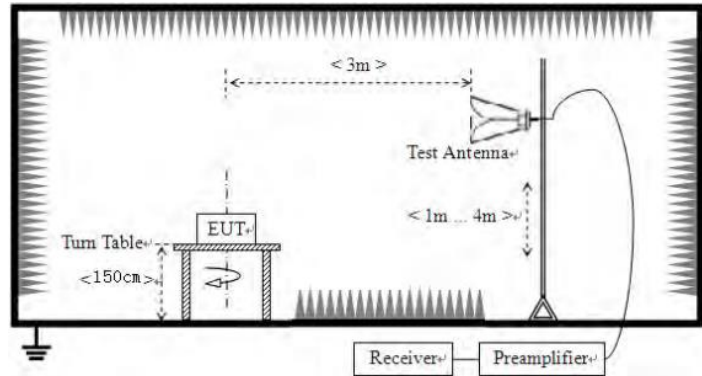


No-hopping mode

Hopping mode



#### 4.8.2 Radiated Emission Method

|                       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |          |                    |      |               |
|-----------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------|--------------------|------|---------------|
| Test Requirement:     | FCC Part15 C Section 15.209 and 15.205                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |          |                    |      |               |
| Test Method:          | ANSI C63.10:2020 § 6.10.4                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |          |                    |      |               |
| Test Frequency Range: | All of the restrict bands were tested, only the worst band's (2310MHz to 2500MHz) data was showed.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |          |                    |      |               |
| Test site:            | Measurement Distance: 3m                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |          |                    |      |               |
| Receiver setup:       | Frequency                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | Detector | RBW                | VBW  | Remark        |
|                       | Above 1GHz                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | Peak     | 1MHz               | 3MHz | Peak Value    |
|                       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | Peak     | 1MHz               | 10Hz | Average Value |
| Limit:                | Frequency                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |          | Limit (dBuV/m @3m) |      | Remark        |
|                       | Above 1GHz                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |          | 54.00              |      | Average Value |
|                       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |          | 74.00              |      | Peak Value    |
| Test setup:           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |          |                    |      |               |
| Test Procedure:       | <div>1. The EUT was placed on the top of a rotating table 1.5 meters above the ground at a 3 meter camber. The table was rotated 360 degrees to determine the position of the highest radiation.</div> <div>2. The EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower.</div> <div>3. The antenna height 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.</div> <div>4. 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 rota table was turned from 0 degrees to 360 degrees to find the maximum reading.</div> <div>5. The test-receiver system was set to Peak Detect Function and Specified Bandwidth with Maximum Hold Mode.</div> <div>6. If the emission level of the EUT in peak mode was 10dB lower than the limit specified, then testing could be stopped and the peak values of the EUT would be reported. Otherwise the emissions that did not have 10dB margin would be re-tested one by one using peak, quasi-peak or average method as specified and then reported in a data sheet.</div> |          |                    |      |               |
| Test Instruments:     | Refer to section 3.0 for details                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |          |                    |      |               |
| Test mode:            | Refer to section 2.2 for details                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |          |                    |      |               |
| Test environment:     | Temp.: 24.1°C                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |          | Humid.: 49%RH      |      |               |
| Test voltage:         | DC 3.7V                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |          |                    |      |               |
| Test results:         | Pass                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |          |                    |      |               |

**Measurement Data**

|               |        |
|---------------|--------|
| Test channel: | Lowest |
|---------------|--------|

**Peak value:**

| Frequency (MHz) | Read Level (dBuV) | Factor (dB/m) | Level (dBuV/m) | Limit (dBuV/m) | Over Limit (dB) | Polarization |
|-----------------|-------------------|---------------|----------------|----------------|-----------------|--------------|
| 2310.00         | 58.07             | -13.36        | 44.71          | 74.00          | -29.29          | Horizontal   |
| 2390.00         | 63.49             | -13.03        | 50.46          | 74.00          | -23.54          | Horizontal   |
| 2310.00         | 58.77             | -13.36        | 45.41          | 74.00          | -28.59          | Vertical     |
| 2390.00         | 63.41             | -13.03        | 50.38          | 74.00          | -23.62          | Vertical     |

**Average value:**

| Frequency (MHz) | Read Level (dBuV) | Factor (dB/m) | Level (dBuV/m) | Limit Line (dBuV/m) | Over Limit (dB) | Polarization |
|-----------------|-------------------|---------------|----------------|---------------------|-----------------|--------------|
| 2310.00         | 46.61             | -13.36        | 33.25          | 54.00               | -20.75          | Horizontal   |
| 2390.00         | 51.80             | -13.03        | 38.77          | 54.00               | -15.23          | Horizontal   |
| 2310.00         | 46.15             | -13.36        | 32.79          | 54.00               | -21.21          | Vertical     |
| 2390.00         | 51.46             | -13.03        | 38.43          | 54.00               | -15.57          | Vertical     |

|               |         |
|---------------|---------|
| Test channel: | Highest |
|---------------|---------|

**Peak value:**

| Frequency (MHz) | Read Level (dBuV) | Factor (dB/m) | Level (dBuV/m) | Limit Line (dBuV/m) | Over Limit (dB) | Polarization |
|-----------------|-------------------|---------------|----------------|---------------------|-----------------|--------------|
| 2483.50         | 63.48             | -12.64        | 50.84          | 74.00               | -23.16          | Horizontal   |
| 2500.00         | 59.68             | -12.57        | 47.11          | 74.00               | -26.89          | Horizontal   |
| 2483.50         | 63.80             | -12.64        | 51.16          | 74.00               | -22.84          | Vertical     |
| 2500.00         | 59.63             | -12.57        | 47.06          | 74.00               | -26.94          | Vertical     |

**Average value:**

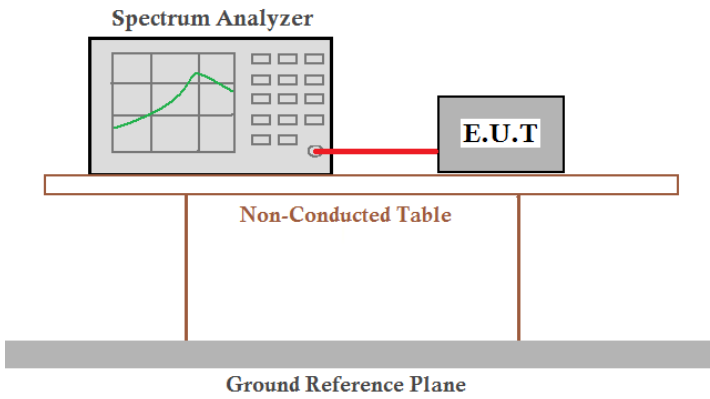
| Frequency (MHz) | Read Level (dBuV) | Factor (dB/m) | Level (dBuV/m) | Limit Line (dBuV/m) | Over Limit (dB) | Polarization |
|-----------------|-------------------|---------------|----------------|---------------------|-----------------|--------------|
| 2483.50         | 52.16             | -12.64        | 39.52          | 54.00               | -14.48          | Horizontal   |
| 2500.00         | 48.70             | -12.57        | 36.13          | 54.00               | -17.87          | Horizontal   |
| 2483.50         | 52.78             | -12.64        | 40.14          | 54.00               | -13.86          | Vertical     |
| 2500.00         | 47.64             | -12.57        | 35.07          | 54.00               | -18.93          | Vertical     |

**Remarks:**

1. Level = Read level + Factor
2. Factor = Antenna Factor + Cable Loss – Preamplifier Factor
3. The emission levels of other frequencies are very lower than the limit and not show in test report.
4. The pre-test were performed on lowest, middle and highest frequencies, only the worst case's (lowest and highest frequencies) data was showed.
5. During the test, pre-scan the GFSK,  $\pi/4$ -DQPSK modulation, and found the  $\pi/4$ -DQPSK modulation which it is worse case.

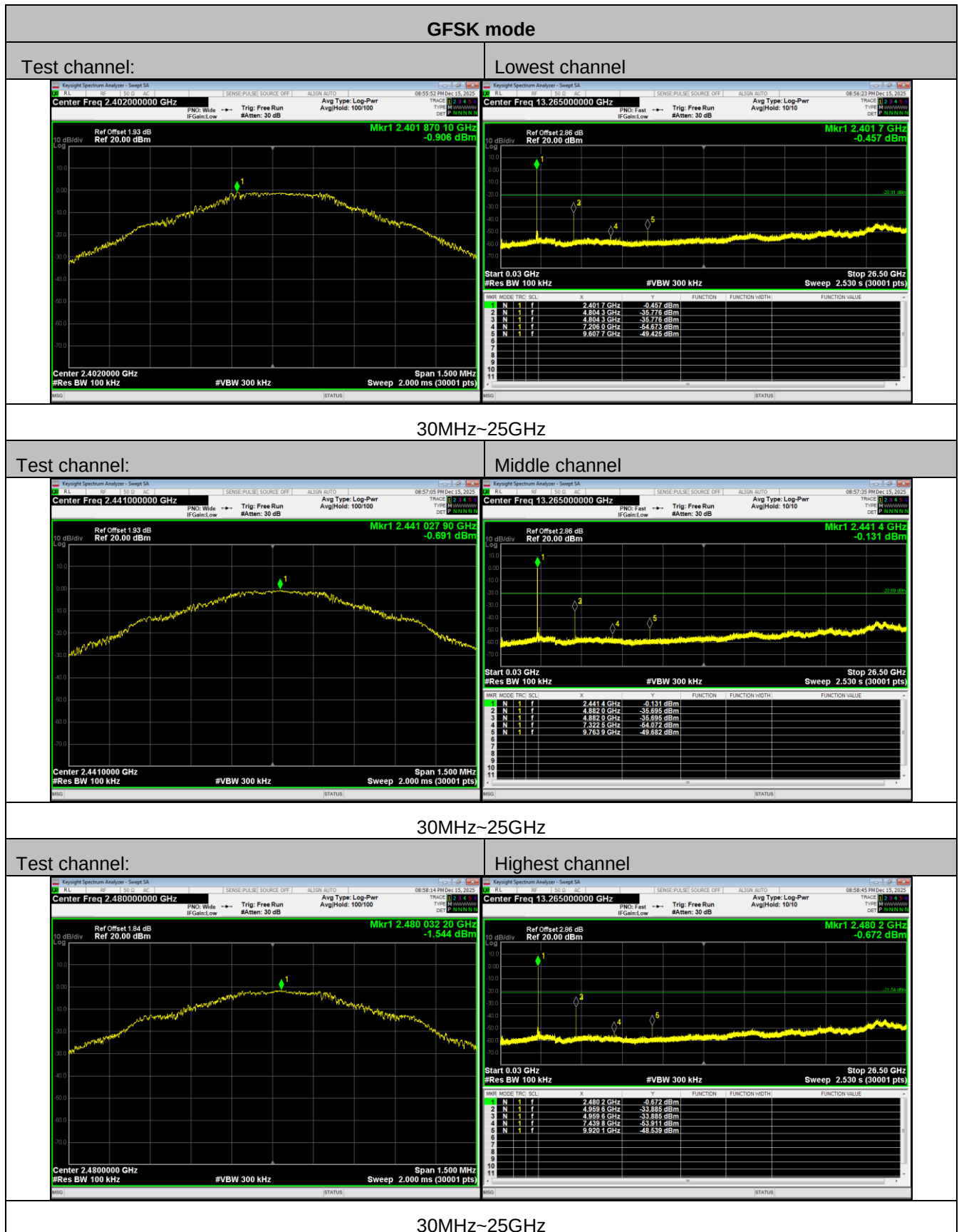
## 4.9 Spurious Emission

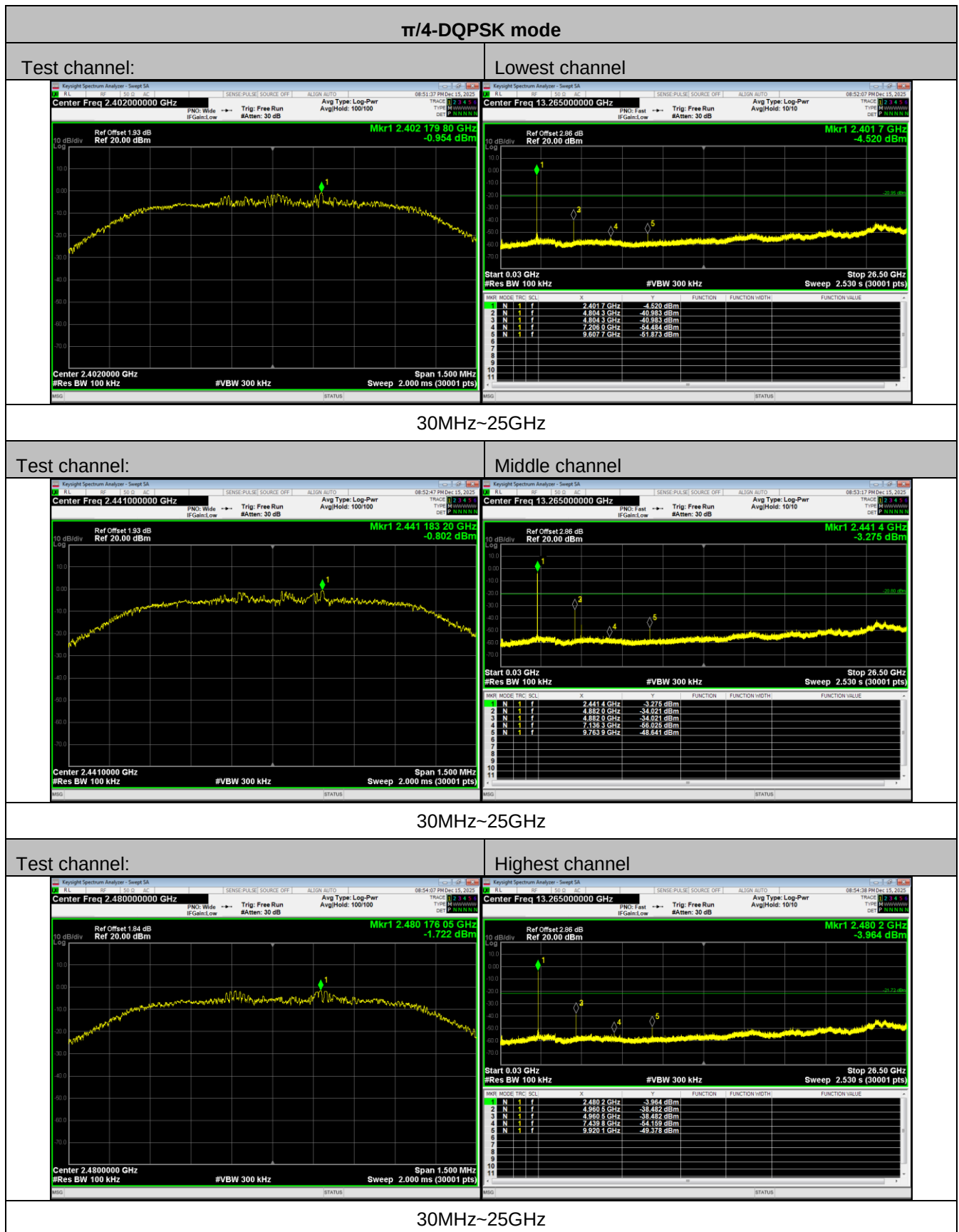
### 4.9.1 Conducted Emission Method

|                   |                                                                                                                                                                                                                                                                                                                                                                                         |               |
|-------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------|
| Test Requirement: | 47CRF Part 15.247 (d), 47CRF Part 15.209 and 15.205                                                                                                                                                                                                                                                                                                                                     |               |
| Test Method:      | ANSI C63.10:2020 §7.8.7                                                                                                                                                                                                                                                                                                                                                                 |               |
| Limit:            | In any 100 kHz bandwidth outside the frequency band in which the spread spectrum intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement. |               |
| Test setup:       |                                                                                                                                                                                                                                                                                                      |               |
| Test Instruments: | Refer to section 3.0 for details                                                                                                                                                                                                                                                                                                                                                        |               |
| Test mode:        | Refer to section 2.2 for details                                                                                                                                                                                                                                                                                                                                                        |               |
| Test environment: | Temp.: 24.1°C                                                                                                                                                                                                                                                                                                                                                                           | Humid.: 49%RH |
| Test voltage:     | DC 3.7V                                                                                                                                                                                                                                                                                                                                                                                 |               |
| Test results:     | Pass                                                                                                                                                                                                                                                                                                                                                                                    |               |

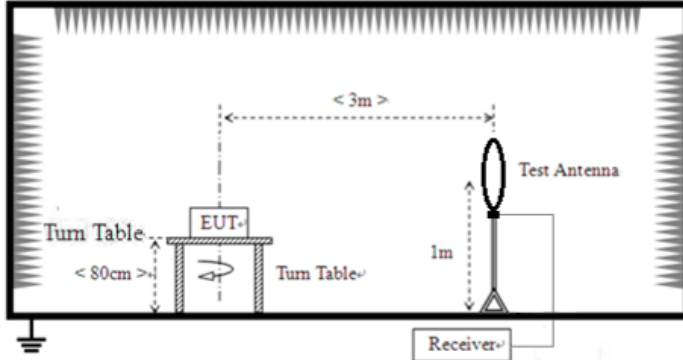
Remark:

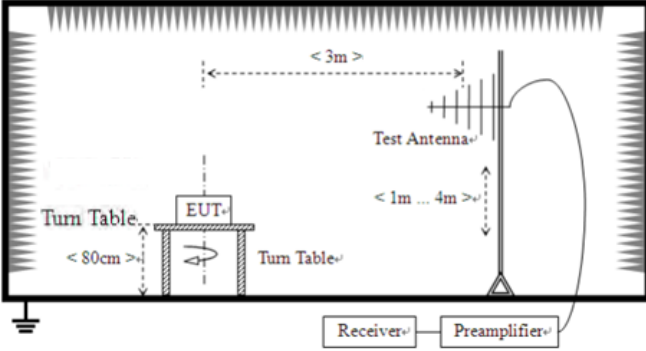
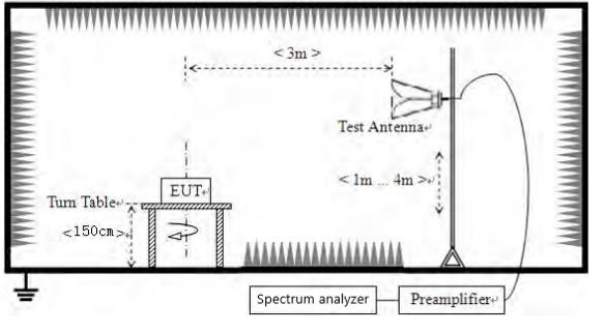
1. Cable loss data included in Offset.





#### 4.9.2 Radiated Emission Method

|                       |                                                                                      |              |         |                      |            |
|-----------------------|--------------------------------------------------------------------------------------|--------------|---------|----------------------|------------|
| Test Requirement:     | 47CRF Part 15.247 (d), 47CRF Part 15.209 and 15.205                                  |              |         |                      |            |
| Test Method:          | ANSI C63.10:2020 § 6.4&6.5&6.6                                                       |              |         |                      |            |
| Test Frequency Range: | 9kHz to 25GHz                                                                        |              |         |                      |            |
| Test site:            | Measurement Distance: 3m                                                             |              |         |                      |            |
| Receiver setup:       | Frequency                                                                            | Detector     | RBW     | VBW                  | Value      |
|                       | 9KHz-150KHz                                                                          | Quasi-peak   | 200Hz   | 600Hz                | Quasi-peak |
|                       | 150KHz-30MHz                                                                         | Quasi-peak   | 9KHz    | 30KHz                | Quasi-peak |
|                       | 30MHz-1GHz                                                                           | Quasi-peak   | 120KHz  | 300KHz               | Quasi-peak |
|                       | Above 1GHz                                                                           | Peak         | 1MHz    | 3MHz                 | Peak       |
|                       |                                                                                      | Peak         | 1MHz    | 10Hz                 | Average    |
| Limit:                | Frequency                                                                            | Limit (uV/m) | Value   | Measurement Distance |            |
|                       | 0.009MHz-0.490MHz                                                                    | 6.37/F(KHz)  | QP      | 300m                 |            |
|                       | 0.490MHz-1.705MHz                                                                    | 63.7/F(KHz)  | QP      | 30m                  |            |
|                       | 1.705MHz-30MHz                                                                       | 0.08         | QP      | 30m                  |            |
|                       | 30MHz-88MHz                                                                          | 100          | QP      | 3m                   |            |
|                       | 88MHz-216MHz                                                                         | 150          | QP      |                      |            |
|                       | 216MHz-960MHz                                                                        | 200          | QP      |                      |            |
|                       | 960MHz-1GHz                                                                          | 500          | QP      |                      |            |
|                       | Above 1GHz                                                                           | 500          | Average |                      |            |
|                       |                                                                                      | 5000         | Peak    |                      |            |
| Test setup:           | For radiated emissions from 9kHz to 30MHz                                            |              |         |                      |            |
|                       |  |              |         |                      |            |

|                          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
|--------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                          | <p>For radiated emissions from 30MHz to 1GHz</p>  <p>For radiated emissions above 1GHz</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| <p>Test Procedure:</p>   | <ol style="list-style-type: none"> <li>1. The EUT was placed on the top of a rotating table (0.8m for below 1G and 1.5m for above 1G) above the ground at a 3 meter camber. The table was rotated 360 degrees to determine the position of the highest radiation.</li> <li>2. The EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower.</li> <li>3. The antenna height 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.</li> <li>4. 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 rota table was turned from 0 degrees to 360 degrees to find the maximum reading.</li> <li>5. The test-receiver system was set to Peak Detect Function and Specified Bandwidth with Maximum Hold Mode.</li> <li>6. If the emission level of the EUT in peak mode was 10dB lower than the limit specified, then testing could be stopped and the peak values of the EUT would be reported. Otherwise the emissions that did not have 10dB margin would be re-tested one by one using peak, quasi-peak or average method as specified and then reported in a data sheet.</li> </ol> |
| <p>Test Instruments:</p> | <p>Refer to section 3.0 for details</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| <p>Test mode:</p>        | <p>Refer to section 2.2 for details</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| <p>Test results:</p>     | <p>Pass</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |



**Measurement data:**

*Remarks:*

1. *The report only shows the worst mode.*
2. *Pre-scan all kind of the place mode (X-axis, Y-axis, Z-axis), and found the Y-axis which it is worse case.*

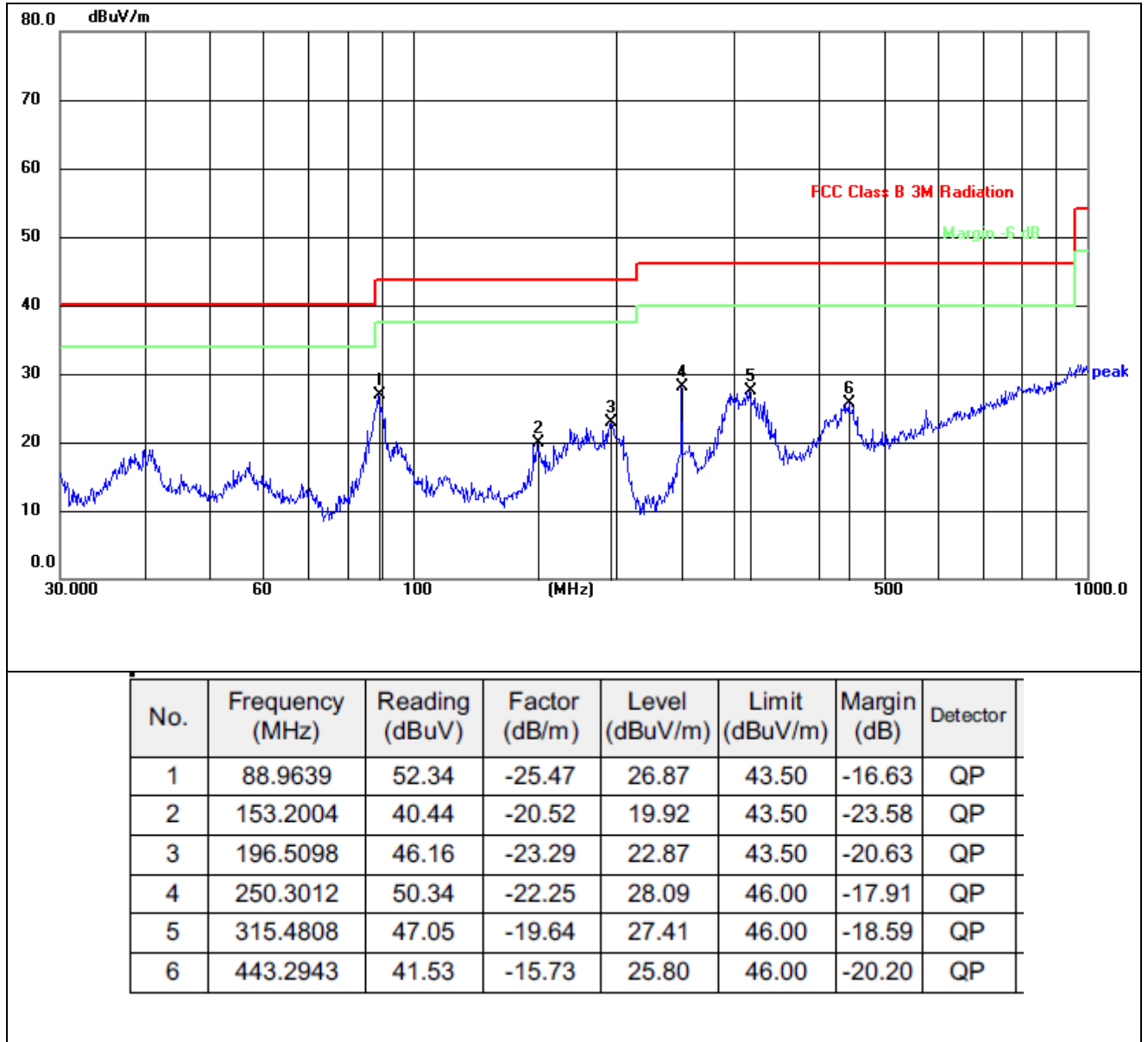
■ **9kHz~30MHz**

The emission from 9 kHz to 30MHz was pre-tested and found the result was 20dB lower than the limit, and according to 47CRF part 15.31(o), the test result no need to reported.

## ■ Below 1GHz

All modes have been tested, and the report only displays the worst mode (3DH3-Hopping) data.

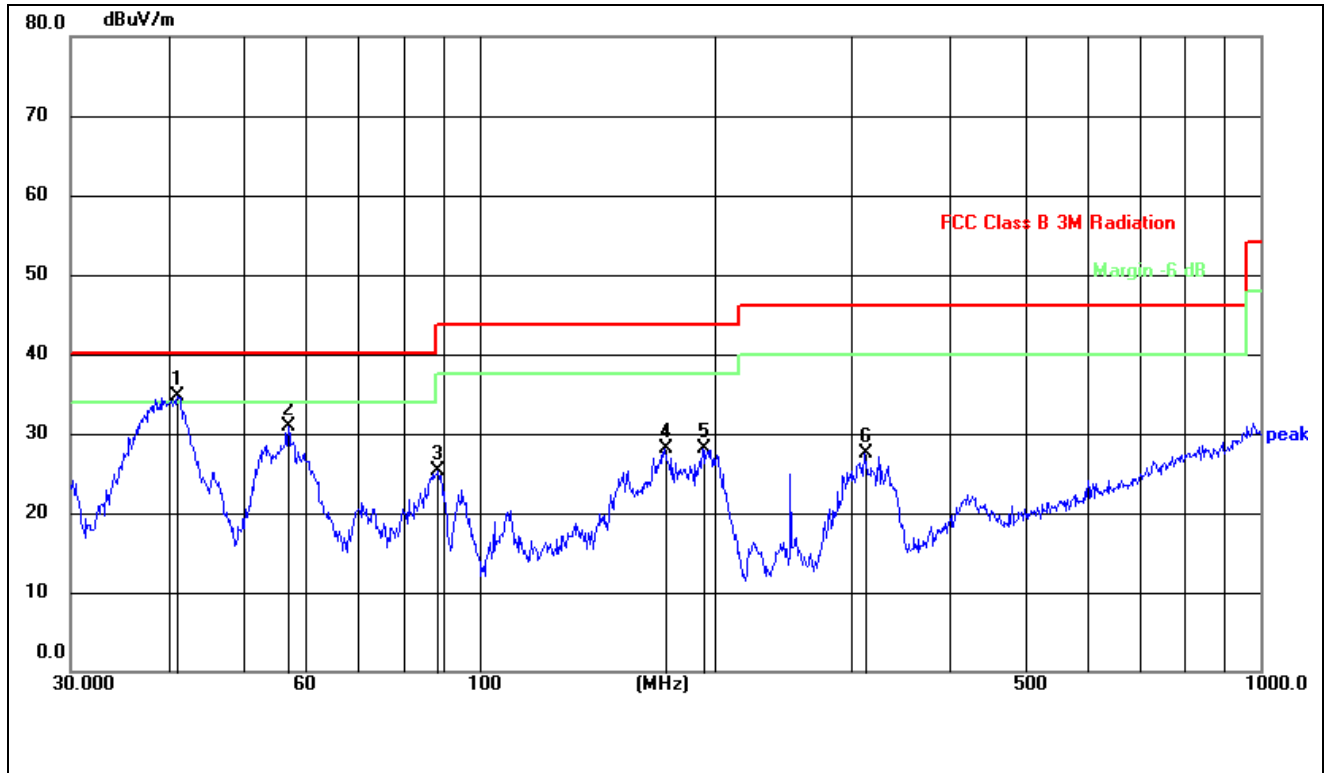
|                    |            |               |                                      |
|--------------------|------------|---------------|--------------------------------------|
| Test polarization: | Horizontal | Test voltage: | DC 5V from adapter with AC 120V/60Hz |
| Temp.:             | 24.5°C     | Humid.:       | 48%RH                                |



Factor= Antenna Factor + Cable Loss – Preamplifier Factor

Level = Reading + Factor, Margin=level-Limit

|                    |          |               |                                      |
|--------------------|----------|---------------|--------------------------------------|
| Test polarization: | Vertical | Test voltage: | DC 5V from adapter with AC 120V/60Hz |
| Temp.:             | 24.5°C   | Humid.:       | 48%RH                                |



| No. | Frequency (MHz) | Reading (dBuV) | Factor (dB/m) | Level (dBuV/m) | Limit (dBuV/m) | Margin (dB) | Detector |
|-----|-----------------|----------------|---------------|----------------|----------------|-------------|----------|
| 1   | 41.1320         | 55.75          | -21.00        | 34.75          | 40.00          | -5.25       | QP       |
| 2   | 56.9912         | 53.24          | -22.32        | 30.92          | 40.00          | -9.08       | QP       |
| 3   | 88.6524         | 50.84          | -25.49        | 25.35          | 43.50          | -18.15      | QP       |
| 4   | 172.5988        | 49.39          | -21.36        | 28.03          | 43.50          | -15.47      | QP       |
| 5   | 193.0945        | 51.36          | -23.19        | 28.17          | 43.50          | -15.33      | QP       |
| 6   | 311.0867        | 47.42          | -19.83        | 27.59          | 46.00          | -18.41      | QP       |

Level = Reading + Factor, Margin=level-Limit

Factor= Antenna Factor + Cable Loss – Preamplifier Factor

# ■ Above 1GHz

All modes have been tested, and the report only displays the worst mode (3DH3) data.

|               |         |         |       |
|---------------|---------|---------|-------|
| Test voltage: | DC 3.7V |         |       |
| Temp.:        | 24.5°C  | Humid.: | 48%RH |

|               |        |
|---------------|--------|
| Test channel: | Lowest |
|---------------|--------|

## Peak value:

| Frequency (MHz) | Read Level (dBuV) | Factor (dB/m) | Level (dBuV/m) | Limit Line (dBuV/m) | Over Limit (dB) | Polarization |
|-----------------|-------------------|---------------|----------------|---------------------|-----------------|--------------|
| 4804.00         | 60.84             | -7.69         | 53.15          | 74.00               | -20.85          | Vertical     |
| 7206.00         | 56.79             | -1.70         | 55.09          | 74.00               | -18.91          | Vertical     |
| 9608.00         | 58.30             | 1.31          | 59.61          | 74.00               | -14.39          | Vertical     |
| 12010.00        | *                 | --            | --             | 74.00               | --              | Vertical     |
| 14412.00        | *                 | --            | --             | 74.00               | --              | Vertical     |
| 4804.00         | 59.94             | -7.69         | 52.25          | 74.00               | -21.75          | Horizontal   |
| 7206.00         | 57.10             | -1.70         | 55.40          | 74.00               | -18.60          | Horizontal   |
| 9608.00         | 57.11             | 1.31          | 58.42          | 74.00               | -15.58          | Horizontal   |
| 12010.00        | *                 | --            | --             | 74.00               | --              | Horizontal   |
| 14412.00        | *                 | --            | --             | 74.00               | --              | Horizontal   |

## Average value:

| Frequency (MHz) | Read Level (dBuV) | Factor (dB/m) | Level (dBuV/m) | Limit Line (dBuV/m) | Over Limit (dB) | Polarization |
|-----------------|-------------------|---------------|----------------|---------------------|-----------------|--------------|
| 4804.00         | 48.60             | -7.69         | 40.91          | 54.00               | -13.09          | Vertical     |
| 7206.00         | 43.58             | -1.70         | 41.88          | 54.00               | -12.12          | Vertical     |
| 9608.00         | 42.73             | 1.31          | 44.04          | 54.00               | -9.96           | Vertical     |
| 12010.00        | *                 | --            | --             | 54.00               | --              | Vertical     |
| 14412.00        | *                 | --            | --             | 54.00               | --              | Vertical     |
| 4804.00         | 48.65             | -7.69         | 40.96          | 54.00               | -13.04          | Horizontal   |
| 7206.00         | 43.25             | -1.70         | 41.55          | 54.00               | -12.45          | Horizontal   |
| 9608.00         | 41.77             | 1.31          | 43.08          | 54.00               | -10.92          | Horizontal   |
| 12010.00        | *                 | --            | --             | 54.00               | --              | Horizontal   |
| 14412.00        | *                 | --            | --             | 54.00               | --              | Horizontal   |



|               |        |
|---------------|--------|
| Test channel: | Middle |
|---------------|--------|

**Peak value:**

| Frequency (MHz) | Read Level (dBuV) | Factor (dB/m) | Level (dBuV/m) | Limit Line (dBuV/m) | Over Limit (dB) | Polarization |
|-----------------|-------------------|---------------|----------------|---------------------|-----------------|--------------|
| 4882.00         | 59.89             | -7.56         | 52.33          | 74.00               | -21.67          | Vertical     |
| 7323.00         | 52.95             | -1.38         | 51.57          | 74.00               | -22.43          | Vertical     |
| 9764.00         | 54.30             | 1.19          | 55.49          | 74.00               | -18.51          | Vertical     |
| 12205.00        | *                 | --            | --             | 74.00               | --              | Vertical     |
| 14646.00        | *                 | --            | --             | 74.00               | --              | Vertical     |
| 4882.00         | 59.21             | -7.56         | 51.65          | 74.00               | -22.35          | Horizontal   |
| 7323.00         | 53.78             | -1.38         | 52.40          | 74.00               | -21.60          | Horizontal   |
| 9764.00         | 55.33             | 1.19          | 56.52          | 74.00               | -17.48          | Horizontal   |
| 12205.00        | *                 | --            | --             | 74.00               | --              | Horizontal   |
| 14646.00        | *                 | --            | --             | 74.00               | --              | Horizontal   |

**Average value:**

| Frequency (MHz) | Read Level (dBuV) | Factor (dB/m) | Level (dBuV/m) | Limit Line (dBuV/m) | Over Limit (dB) | Polarization |
|-----------------|-------------------|---------------|----------------|---------------------|-----------------|--------------|
| 4882.00         | 49.56             | -7.56         | 42.00          | 54.00               | -12.01          | Vertical     |
| 7323.00         | 43.32             | -1.38         | 41.94          | 54.00               | -12.06          | Vertical     |
| 9764.00         | 42.94             | 1.19          | 44.13          | 54.00               | -9.87           | Vertical     |
| 12205.00        | *                 | --            | --             | 54.00               | --              | Vertical     |
| 14646.00        | *                 | --            | --             | 54.00               | --              | Vertical     |
| 4882.00         | 49.46             | -7.56         | 41.90          | 54.00               | -12.10          | Horizontal   |
| 7323.00         | 44.31             | -1.38         | 42.93          | 54.00               | -11.07          | Horizontal   |
| 9764.00         | 43.66             | 1.19          | 44.85          | 54.00               | -9.15           | Horizontal   |
| 12205.00        | *                 | --            | --             | 54.00               | --              | Horizontal   |
| 14646.00        | *                 | --            | --             | 54.00               | --              | Horizontal   |



|               |         |
|---------------|---------|
| Test channel: | Highest |
|---------------|---------|

**Peak value:**

| Frequency (MHz) | Read Level (dBUV) | Factor (dB/m) | Level (dBUV/m) | Limit Line (dBUV/m) | Over Limit (dB) | Polarization |
|-----------------|-------------------|---------------|----------------|---------------------|-----------------|--------------|
| 4960.00         | 58.05             | -7.43         | 50.62          | 74.00               | -23.38          | Vertical     |
| 7440.00         | 54.52             | -1.02         | 53.50          | 74.00               | -20.50          | Vertical     |
| 9920.00         | 56.88             | 1.08          | 57.96          | 74.00               | -16.04          | Vertical     |
| 12400.00        | *                 | --            | --             | 74.00               | --              | Vertical     |
| 14880.00        | *                 | --            | --             | 74.00               | --              | Vertical     |
| 4960.00         | 59.46             | -7.43         | 52.03          | 74.00               | -21.97          | Horizontal   |
| 7440.00         | 56.41             | -1.02         | 55.39          | 74.00               | -18.61          | Horizontal   |
| 9920.00         | 55.20             | 1.08          | 56.28          | 74.00               | -17.72          | Horizontal   |
| 12400.00        | *                 | --            | --             | 74.00               | --              | Horizontal   |
| 14880.00        | *                 | --            | --             | 74.00               | --              | Horizontal   |

**Average value:**

| Frequency (MHz) | Read Level (dBUV) | Factor (dB/m) | Level (dBUV/m) | Limit Line (dBUV/m) | Over Limit (dB) | Polarization |
|-----------------|-------------------|---------------|----------------|---------------------|-----------------|--------------|
| 4960.00         | 48.82             | -7.43         | 41.39          | 54.00               | -12.61          | Vertical     |
| 7440.00         | 45.15             | -1.02         | 44.13          | 54.00               | -9.87           | Vertical     |
| 9920.00         | 44.22             | 1.08          | 45.30          | 54.00               | -8.70           | Vertical     |
| 12400.00        | *                 | --            | --             | 54.00               | --              | Vertical     |
| 14880.00        | *                 | --            | --             | 54.00               | --              | Vertical     |
| 4960.00         | 47.67             | -7.43         | 40.24          | 54.00               | -13.76          | Horizontal   |
| 7440.00         | 44.51             | -1.02         | 43.49          | 54.00               | -10.51          | Horizontal   |
| 9920.00         | 44.41             | 1.08          | 45.49          | 54.00               | -8.51           | Horizontal   |
| 12400.00        | *                 | --            | --             | 54.00               | --              | Horizontal   |
| 14880.00        | *                 | --            | --             | 54.00               | --              | Horizontal   |

**Remarks:**

1. Final Level = Receiver Read level + Antenna Factor + Cable Loss – Preamplifier Factor
2. “\*”, means this data is the too weak instrument of signal is unable to test.
3. The emission levels of other frequencies are very lower than the limit and not show in test report.



## **5 Test Setup Photo**

Reference to the file No.: ET-25124885SP for details.

## **6 EUT Constructional Details**

Reference to the file No.: ET-25124885EP and ET-25124885IP for details.

-----End-----