

Project No: TM-2310000098P  
Report No.: TMWK2311004081KR

FCC ID: NOIKB-E70P24

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Rev.: 00

# CLASS II PERMISSIVE CHANGE

## RADIO TEST REPORT

### FCC 47 CFR PART 15 SUBPART C

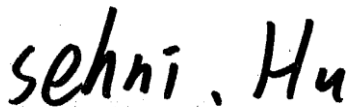
|                          |   |
|--------------------------|---|
| Test Standard            | FCC Part 15.247   |
| Product name             | 7.8" Digital Note Pad; 7.8" Color Digital Note Pad;<br>7.8" Digital Reader; 7.8" Color Digital Reader   |
| Brand Name               | MobiScribe  |
| Model No.                | E70P24  |
| Test Result              | Pass  |
| Statements of Conformity | Determination of compliance is based on the results of the compliance measurement, not taking into account measurement instrumentation uncertainty. |

The test Result was tested by Compliance Certification Services Inc. The test data, data evaluation, test procedures, and equipment configurations shown in this report were given in ANSI C63.10: 2013 and compliance standards.

The test results of this report relate only to the tested sample (EUT) identified in this report.

The test Report of full or partial shall not copy. Without written approval of Compliance Certification Services Inc. (Wugu Laboratory)

Approved by:



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Sehni Hu  
Supervisor

Unless otherwise stated the results shown in this test report refer only to the sample(s) tested and such sample(s) are retained for 90 days only.  
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**Revision History**

| Rev. | Issue Date        | Revisions     | Effect Page | Revised By |
|------|-------------------|---------------|-------------|------------|
| 00   | November 23, 2023 | Initial Issue | ALL         | Peggy Tsai |

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## 1. GENERAL INFORMATION





### 1.1 EUT INFORMATION

|                                   |  |                  |                  |
|-----------------------------------|--|------------------|------------------|
| <b>Applicant</b>                  | NETRONIX, INC.<br>No. 945, Boai St., Jubei City, Hsin-Chu, 30265, Taiwan   |                  |                  |
| <b>Manufacturer</b>               | NETRONIX, INC.<br>No. 945, Boai St., Jubei City, Hsin-Chu, 30265, Taiwan   |                  |                  |
| <b>Equipment</b>                  | 7.8" Digital Note Pad; 7.8" Color Digital Note Pad;<br>7.8" Digital Reader; 7.8" Color Digital Reader  |                  |                  |
| <b>Model Name</b>                 | E70P24   |                  |                  |
| <b>Product Discrepancy</b>        | Please see remark as below.  |                  |                  |
| <b>Brand Name</b>                 | MobiScribe   |                  |                  |
| <b>Received Date</b>              | October 13, 2023   |                  |                  |
| <b>Date of Test</b>               | October 26, 2023   |                  |                  |
| <b>Power Supply</b>               | 1. Power from Host System. (DC 5V)<br>2. Power from Battery.<br>Brand / Model: EVE Energy Co., LTD. / EVE2275A7GH<br>Rating: 3.85VDC, 9.63Wh   |                  |                  |
| <b>Class II Permissive Change</b> | The major change filed under this application is:<br>Product Name: 7.8" Color Digital Note Pad, Adding EPD Panel with two different configurations as follows:<br>1. Configured with the new Digitizer on the newly modified PCBA.<br>2. Configured with the old Digitizer and the old PCBA. |                  |                  |
|                                   |  | Update Model     |                  |
|                                   |  | Original Model   |                  |
|                                   | Panel (CFA)  | EC078KH7         | EC078KH5         |
|                                   | Wacom Digitizer  | SUEE-07S01MI-02X | SUDE-07S01MI-01A |
| PCBA                              | B3   | B2               |                  |

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**Remark:**

1. For more details, please refer to the User's manual of the EUT.
2. Disclaimer: Antenna information is provided by the applicant, test results of this report are applicable to the sample EUT received.
3. Disclaimer: Variant information between/among model numbers / trademarks is provided by the applicant, test results of this report are applicable to the sample EUT received of main test model name.
4. Model Discrepancy:

| Product Name  | 7.8" Digital Note Pad  | 7.8" Color Digital Note Pad  | 7.8" Digital Reader   | 7.8" Color Digital Reader  |
|---------------|--|--|---|--|
| Model Name    | E70P24   |  |   |  |
| Button        | N/A  | N/A  | Yes   | Yes  |
| Touch Pen     | Yes  | Yes  | N/A   | N/A  |
| Panel display | Black and White  | Color  | Black and White   | Color  |
| Appearance    |  |  |  |  |

## 1.2 INFORMATION ABOUT THE FHSS CHARACTERISTICS

### 1.2.1 Pseudorandom Frequency Hopping Sequence

The channel is represented by a pseudo-random hopping sequence hopping through the 79 RF channels. The hopping sequence is unique for the piconet and is determined by the Bluetooth device address of the master; the phase in the hopping sequence is determined by the Bluetooth clock of the master. The channel is divided into time slots where each slot corresponds to an RF hop frequency. Consecutive hops correspond to different RF hop frequencies. The nominal hop rate is 1 600 hops/s.

### 1.2.2 Equal Hopping Frequency Use

The channels of this system will be used equally over the long-term distribution of the hopsets.

### 1.2.3 Example of a 79 hopping sequence in data mode:

02, 05, 31, 24, 20, 10, 43, 36, 30, 23, 40, 06, 21, 50, 44, 09, 71, 78, 01, 13, 73, 07, 70, 72, 35, 62, 42, 11, 41, 08, 16, 29, 60, 15, 34, 61, 58, 04, 67, 12, 22, 53, 57, 18, 27, 76, 39, 32, 17, 77, 52, 33, 56, 46, 37, 47, 64, 49, 45, 38, 69, 14, 51, 26, 79, 19, 28, 65, 75, 54, 48, 03, 25, 66, 05, 16, 68, 74, 59, 63, 55

### 1.2.4 System Receiver Input Bandwidth

Each channel bandwidth is 1MHz.

The system receivers have input bandwidths that match the hopping channel bandwidths of their corresponding transmitters and shift frequencies in synchronization with the transmitted signals.

### 1.2.5 Equipment Description

15.247(a)(1) that the Rx input bandwidths shift frequencies in synchronization with the transmitted signals.

15.247(g): In accordance with the Bluetooth Industry Standard, the system is designed to comply with all of the regulations in Section 15.247 when the transmitter is presented with a continuous data (or information) system.

15.247(h): In accordance with the Bluetooth Industry Standard, the system does not coordinate its channels selection/ hopping sequence with other frequency hopping systems for the express purpose of avoiding the simultaneous occupancy of individual hopping frequencies by multiple transmitters.

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### 1.3 EUT CHANNEL INFORMATION

|                   |  |
|-------------------|--|
| Frequency Range   | 2402MHz-2480MHz  |
| Modulation Type   | 1. GFSK for BDR-1Mbps<br>2. $\pi/4$ -DQPSK for EDR-2Mbps<br>3. 8DPSK for EDR-3Mbps |
| Number of channel | 79 Channels  |

**Remark:**

Refer as ANSI C63.10: 2013 clause 5.6.1 Table 4 for test channels

| Number of frequencies to be tested                   |                       |  |
|--|-----------------------|--|
| Frequency range in which device operates             | Number of frequencies | Location in frequency range of operation     |
| <input type="checkbox"/> 1 MHz or less               | 1                     | Middle                                       |
| <input type="checkbox"/> 1 MHz to 10 MHz             | 2                     | 1 near top and 1 near bottom                 |
| <input checked="" type="checkbox"/> More than 10 MHz | 3                     | 1 near top, 1 near middle, and 1 near bottom |

### 1.4 ANTENNA INFORMATION

|                       |  |
|-----------------------|--|
| Antenna Specification | <input type="checkbox"/> PIFA <input checked="" type="checkbox"/> PCB <input type="checkbox"/> Dipole <input type="checkbox"/> Coils |
| Antenna Gain          | Gain: 2.64 dBi   |
| Brand / Model         | INPAQ Technology Co., Ltd. / RFPCA310710EMLB301  |

**Notes:**

1.The antenna(s) of the EUT are permanently attached and there are no provisions for connection to an external antenna. So the EUT complies with the requirements of §15.203.

## 1.5 MEASUREMENT UNCERTAINTY

| PARAMETER                       | UNCERTAINTY    |
|---------------------------------|----------------|
| AC Powerline Conducted Emission | $\pm 2.213$ dB |
| Radiated Emission_9kHz-30MHz    | $\pm 3.761$ dB |
| Radiated Emission_30MHz-200MHz  | $\pm 3.473$ dB |
| Radiated Emission_200MHz-1GHz   | $\pm 3.946$ dB |

**Remark:**

- 1.This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of  $k=2$
2. ISO/IEC 17025 requires that an estimate of the measurement uncertainties associated with the emissions test results be included in the report.



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## 1.6 FACILITIES AND TEST LOCATION

All measurement facilities used to collect the measurement data are located at

No.11, Wugong 6th Rd., Wugu Dist., New Taipei City, Taiwan.

No. 12, Ln. 116, Wugong 3rd Rd., Wugu Dist., New Taipei City, Taiwan.

CAB identifier: TW1309

| Test site          | Test Engineer | Remark |
|--------------------|---------------|--------|
| AC Conduction Room | Tony Chao     | -      |
| Radiation          | Tony Chao     | -      |

**Remark:** The lab has been recognized as the FCC accredited lab. under the KDB 974614 D01 and is listed in the FCC public Access Link (PAL) database, FCC Registration No. :444940, the FCC Designation No.:TW1309

## 1.7 INSTRUMENT CALIBRATION

| 966A_Radiated_30M~1G |                |         |                        |                  |                 |
|----------------------|----------------|---------|------------------------|------------------|-----------------|
| Name of Equipment    | Manufacturer   | Model   | Serial Number          | Calibration Date | Calibration Due |
| Bi-Log Antenna       | Sunol Sciences | JB3     | A030105                | 2023-08-08       | 2024-08-07      |
| Signal Analyzer      | KEYSIGHT       | N9010A  | MY54200716             | 2023-10-13       | 2024-10-12      |
| Thermo-Hygro Meter   | WISEWIND       | 1206    | D07                    | 2022-12-19       | 2023-12-18      |
| Preamplifier         | EMEC           | EM330   | 060609                 | 2023-02-22       | 2024-02-21      |
| Cable                | Huber+Suhner   | 104PEA  | 20995+21000+<br>182330 | 2023-02-22       | 2024-02-21      |
| Turn Table           | CCS            | CC-T-1F | N/A                    | N.C.R            | N.C.R           |
| Controller           | CCS            | CC-C-1F | N/A                    | N.C.R            | N.C.R           |
| Antenna Tower        | CCS            | CC-A-1F | N/A                    | N.C.R            | N.C.R           |
| <b>Software</b>      | e3 V9-210616c  |         |                        |                  |                 |

| RF_Conduction(RF) |                         |           |               |                  |                 |
|-------------------|-------------------------|-----------|---------------|------------------|-----------------|
| Name of Equipment | Manufacturer            | Model     | Serial Number | Calibration Date | Calibration Due |
| EMI Test Receiver | R&S                     | ESCI      | 100064        | 2023-06-07       | 2024-06-06      |
| LISN              | TESEQ                   | LN2-16N   | 22012         | 2023-03-08       | 2024-03-07      |
| Cable             | EMCI                    | CFD300-NL | CERF          | 2023-06-27       | 2024-06-26      |
| <b>Software</b>   | EZ-EMC(CCS-3A1-CE-WUKU) |           |               |                  |                 |

**Remark:**

1. Each piece of equipment is scheduled for calibration once a year.
2. N.C.R. = No Calibration Required.

## 1.8 SUPPORT AND EUT ACCESSORIES EQUIPMENT

| EUT Accessories Equipment |           |       |       |            |        |    |
|---------------------------|-----------|-------|-------|------------|--------|----|
| No.                       | Equipment | Brand | Model | Series No. | FCC ID | IC |
|                           | N/A       |       |       |            |        |    |

| Support Equipment |           |        |               |            |        |     |
|-------------------|-----------|--------|---------------|------------|--------|-----|
| No.               | Equipment | Brand  | Model         | Series No. | FCC ID | IC  |
| 1                 | NB        | Lenovo | IBM 7663      | N/A        | N/A    | N/A |
| 2                 | NB(D)     | Lenovo | ThinkPad X260 | N/A        | N/A    | N/A |

## 1.9 TEST METHODOLOGY AND APPLIED STANDARDS

The test methodology, setups and results comply with all requirements in accordance with ANSI C63.10:2013, FCC Part 2, FCC Part 15.247.

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## 2. TEST SUMMARY

| FCC Standard Section          | Report Section | Test Item                   | Result |
|-------------------------------|----------------|-----------------------------|--------|
| 15.203                        | 1.3            | Antenna Requirement         | Pass   |
| 15.207(a)                     | 4.1            | AC Conducted Emission       | Pass   |
| 15.247(d)<br>15.209<br>15.205 | 4.2            | Radiation Spurious Emission | Pass   |

**Note:**

Per check with the RF output power, the RF parameters are same with the certified device. So the changes are not affect the test result of RF conducted tests. Therefore, the AC Line conducted test, Radiation Below 1GHz test were performed. other test items please refer to the original FCC ID report.

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### 3. DESCRIPTION OF TEST MODES

#### 3.1 THE WORST MODE OF OPERATING CONDITION

|                          |   |
|--------------------------|---|
| Operation mode           | GFSK for BDR-1Mbps (DH5)<br>$\pi/4$ -DQPSK for 2Mbps (2DH5)<br>8DPSK for EDR-3Mbps (3DH5)   |
| Test Channel Frequencies | <p><b>GFSK for BDR-1Mbps:</b><br/>1.Lowest Channel: 2402MHz<br/>2.Middle Channel: 2441MHz<br/>3.Highest Channel: 2480MHz</p> <p><b><math>\pi/4</math>-DQPSK for 2Mbps:</b><br/>1.Lowest Channel: 2402MHz<br/>2.Middle Channel: 2441MHz<br/>3.Highest Channel: 2480MHz</p> <p><b>8DPSK for EDR-3Mbps:</b><br/>1.Lowest Channel: 2402MHz<br/>2.Middle Channel: 2441MHz<br/>3.Highest Channel: 2480MHz</p> |

**Remark:**

1. EUT pre-scanned data rate of output power for each mode, the worst data rate were recorded in this report.
2. The system support GFSK , $\pi/4$  DQPSK ,8DPSK , the  $\pi/4$  DQPSK were reduced since the identical parameters with 8dpsk. In the following test items, frequency hopping, Conducted band edge, radiated band edge and spurious emissions.

### 3.2 THE WORST MODE OF MEASUREMENT

| AC Power Line Conducted Emission |   |
|----------------------------------|---|
| Test Condition                   | AC Power line conducted emission for line and neutral   |
| Power supply Mode                | Mode 1: EUT power by Host System(New PCB)<br>Mode 2: EUT power by Host System(Old PCB)  |
| Worst Mode                       | <input checked="" type="checkbox"/> Mode 1 <input checked="" type="checkbox"/> Mode 2 <input type="checkbox"/> Mode 3 <input type="checkbox"/> Mode 4 |

| Radiated Emission Measurement Below 1G |   |
|--|---|
| Test Condition                         | Radiated Emission Below 1G  |
| Power supply Mode                      | Mode 1: EUT power by Host System(New PCB)<br>Mode 2: EUT power by Host System(Old PCB)  |
| Worst Mode                             | <input checked="" type="checkbox"/> Mode 1 <input checked="" type="checkbox"/> Mode 2 <input type="checkbox"/> Mode 3 <input type="checkbox"/> Mode 4 |

**Remark:**

1. The worst mode was record in this test report.
2. AC power line conducted emission and for below 1G radiation emission were performed the EUT transmit at the highest output power channel as worse case.
3. EUT pre-scanned in three axis ,X,Y, Z and two polarity, for radiated measurement. The worst case(X-Plane) were recorded in this report

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## 4. TEST RESULT

### 4.1 AC POWER LINE CONDUCTED EMISSION

#### 4.1.1 Test Limit

According to §15.207(a),

| Frequency Range (MHz) | Limits(dB $\mu$ V) |           |
|-----------------------|--------------------|-----------|
|                       | Quasi-peak         | Average   |
| 0.15 to 0.50          | 66 to 56*          | 56 to 46* |
| 0.50 to 5             | 56                 | 46        |
| 5 to 30               | 60                 | 50        |

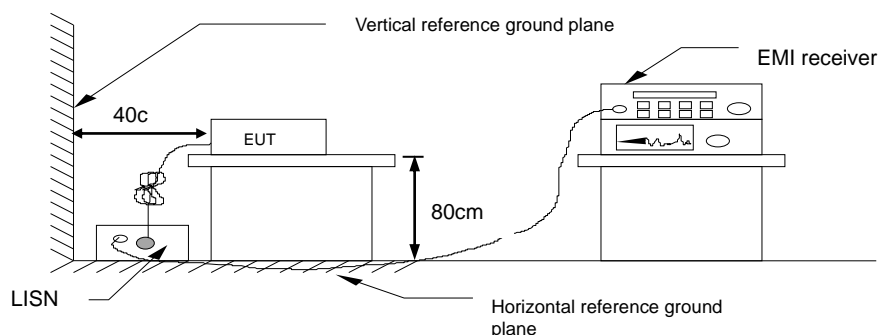
\* Decreases with the logarithm of the frequency.

#### 4.1.2 Test Procedure

Test method Refer as ANSI C63.10: 2013 clause 6.2,

1. The EUT was placed on a non-conducted table, which is 0.8m above horizontal ground plane and 0.4m above vertical ground plane.
2. EUT connected to the line impedance stabilization network (LISN)
3. Receiver set RBW of 9kHz and Detector Peak, and note as quasi-peak and average.
4. Maximum procedure was performed on the six highest emissions to ensure EUT compliance.
5. Recorded Line for Neutral and Line.

#### 4.1.3 Test Setup



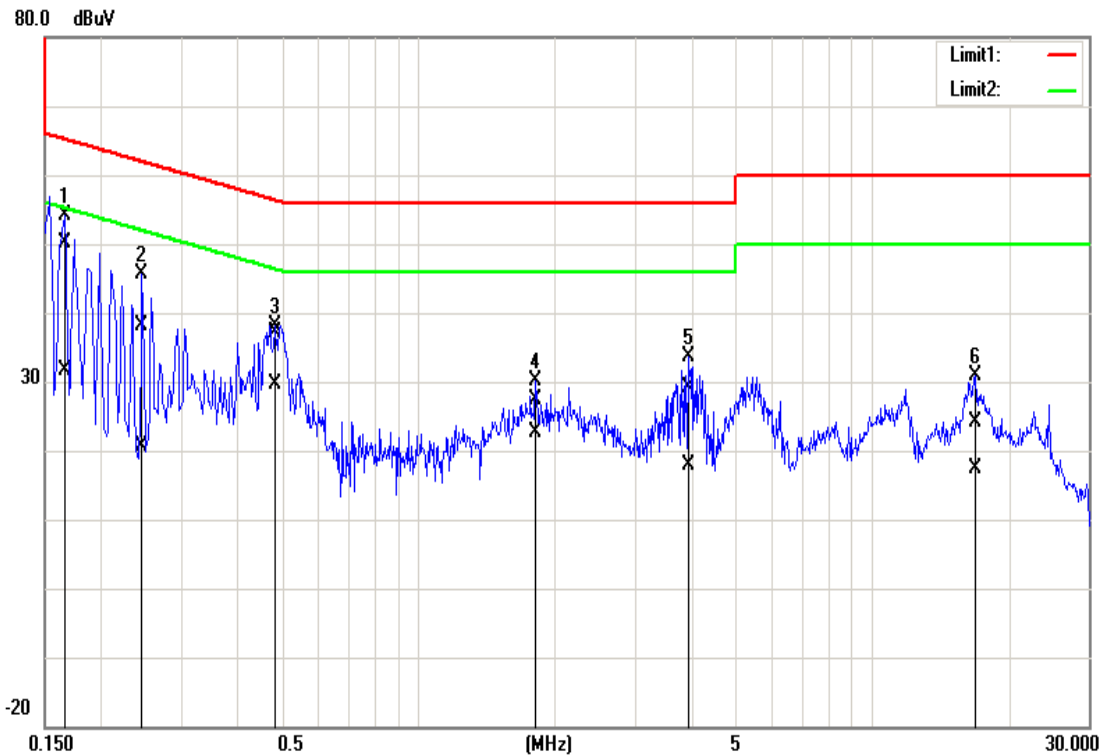
#### 4.1.4 Test Result

Pass.

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**Test Data**

|               |              |               |                  |
|---------------|--------------|---------------|------------------|
| Test Mode:    | Mode 1       | Temp/Hum      | 24.3(°C)/ 52%RH  |
| Phase:        | Line         | Test Date     | October 26, 2023 |
| Test Voltage: | 120Vac, 60Hz | Test Engineer | Tony Chao        |

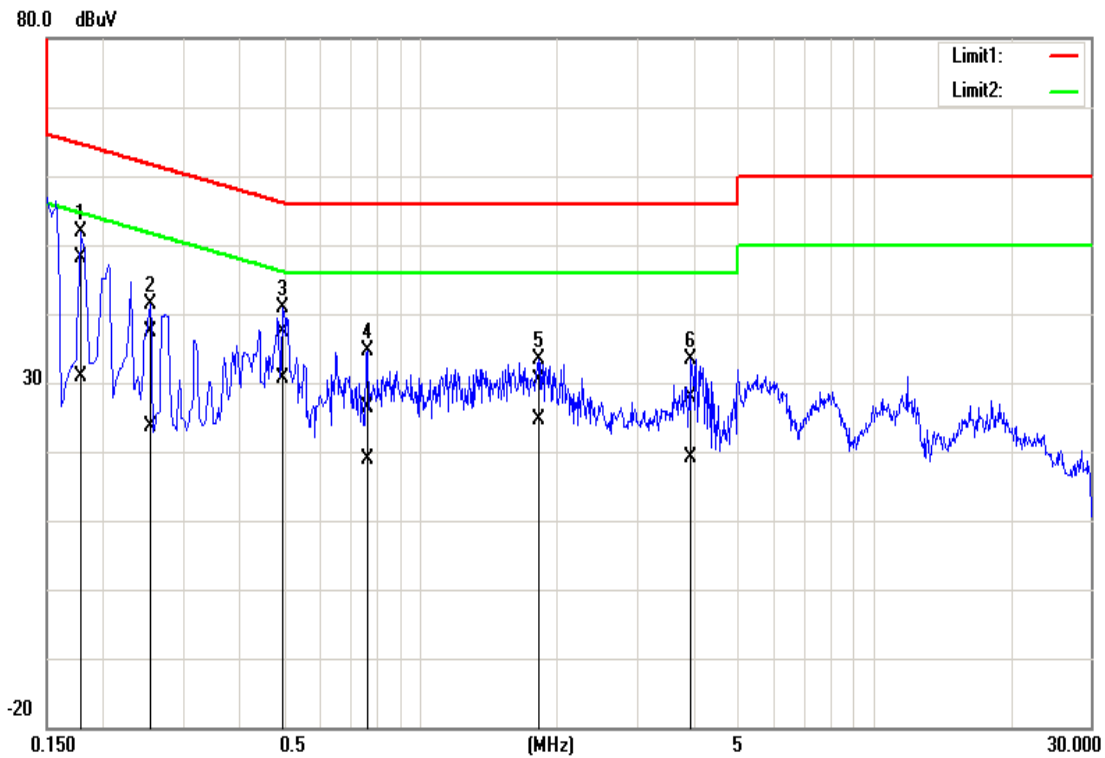


| Frequency (MHz) | Quasi Peak reading (dBuV) | Average reading (dBuV) | Correction factor (dB) | Quasi Peak result (dBuV) | Average result (dBuV) | Quasi Peak limit (dBuV) | Average limit (dBuV) | Quasi Peak margin (dB) | Average margin (dB) | Remark |
|-----------------|---------------------------|------------------------|------------------------|--------------------------|-----------------------|-------------------------|----------------------|------------------------|---------------------|--------|
| 0.1660          | 49.95                     | 31.54                  | 0.15                   | 50.10                    | 31.69                 | 65.16                   | 55.16                | -15.06                 | -23.47              | Pass   |
| 0.2460          | 37.96                     | 20.40                  | 0.15                   | 38.11                    | 20.55                 | 61.89                   | 51.89                | -23.78                 | -31.34              | Pass   |
| 0.4820          | 36.96                     | 29.55                  | 0.15                   | 37.11                    | 29.70                 | 56.30                   | 46.30                | -19.19                 | -16.60              | Pass   |
| 1.8180          | 27.15                     | 22.33                  | 0.21                   | 27.36                    | 22.54                 | 56.00                   | 46.00                | -28.64                 | -23.46              | Pass   |
| 3.9300          | 28.78                     | 17.60                  | 0.26                   | 29.04                    | 17.86                 | 56.00                   | 46.00                | -26.96                 | -28.14              | Pass   |
| 16.9100         | 23.55                     | 16.81                  | 0.47                   | 24.02                    | 17.28                 | 60.00                   | 50.00                | -35.98                 | -32.72              | Pass   |

Note: Correction factor = LISN loss + Cable loss.

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|               |              |               |                  |
|---------------|--------------|---------------|------------------|
| Test Mode:    | Mode 1       | Temp/Hum      | 24.3(°C)/ 52%RH  |
| Phase:        | Neutral      | Test Date     | October 26, 2023 |
| Test Voltage: | 120Vac, 60Hz | Test Engineer | Tony Chao        |



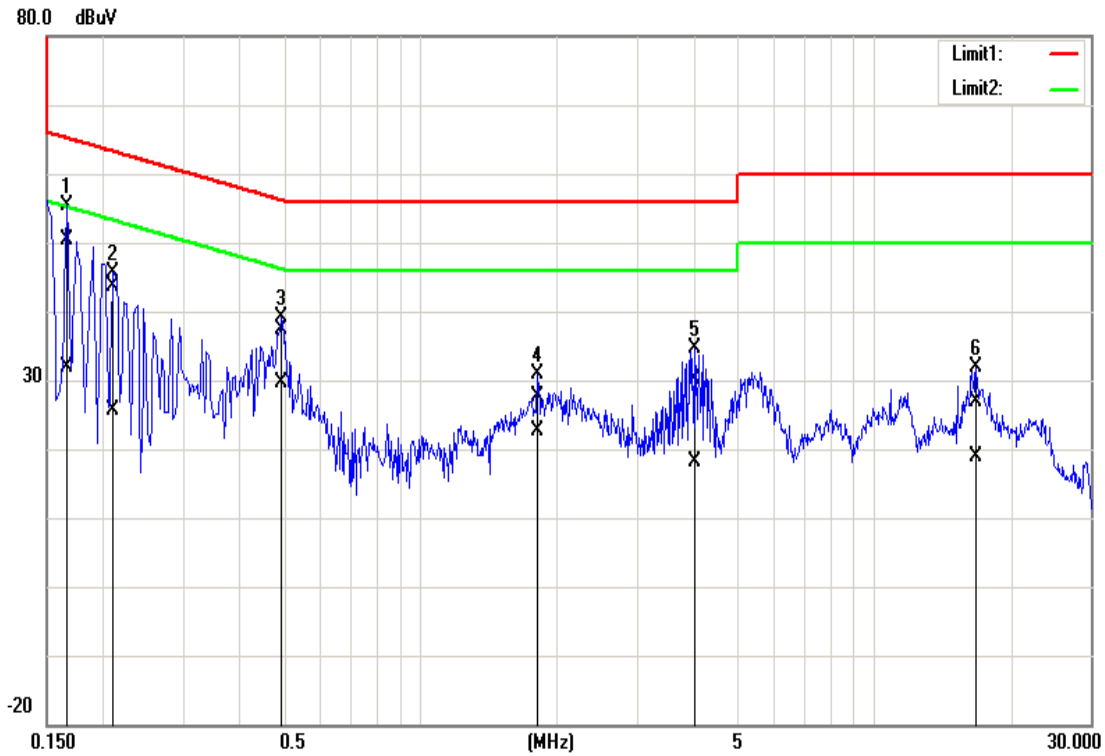
| Frequency (MHz) | Quasi Peak reading (dBuV) | Average reading (dBuV) | Correction factor (dB) | Quasi Peak result (dBuV) | Average result (dBuV) | Quasi Peak limit (dBuV) | Average limit (dBuV) | Quasi Peak margin (dB) | Average margin (dB) | Remark |
|-----------------|---------------------------|------------------------|------------------------|--------------------------|-----------------------|-------------------------|----------------------|------------------------|---------------------|--------|
| 0.1780          | 47.88                     | 30.78                  | 0.20                   | 48.08                    | 30.98                 | 64.58                   | 54.58                | -16.50                 | -23.60              | Pass   |
| 0.2540          | 37.18                     | 23.45                  | 0.19                   | 37.37                    | 23.64                 | 61.63                   | 51.63                | -24.26                 | -27.99              | Pass   |
| 0.4980          | 37.31                     | 30.32                  | 0.19                   | 37.50                    | 30.51                 | 56.03                   | 46.03                | -18.53                 | -15.52              | Pass   |
| 0.7660          | 26.29                     | 18.79                  | 0.21                   | 26.50                    | 19.00                 | 56.00                   | 46.00                | -29.50                 | -27.00              | Pass   |
| 1.8220          | 30.15                     | 24.43                  | 0.25                   | 30.40                    | 24.68                 | 56.00                   | 46.00                | -25.60                 | -21.32              | Pass   |
| 3.9500          | 27.68                     | 18.81                  | 0.31                   | 27.99                    | 19.12                 | 56.00                   | 46.00                | -28.01                 | -26.88              | Pass   |

Note: Correction factor = LISN loss + Cable loss.



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|               |              |               |                  |
|---------------|--------------|---------------|------------------|
| Test Mode:    | Mode 2       | Temp/Hum      | 24.3(°C)/ 52%RH  |
| Phase:        | Line         | Test Date     | October 26, 2023 |
| Test Voltage: | 120Vac, 60Hz | Test Engineer | Tony Chao        |

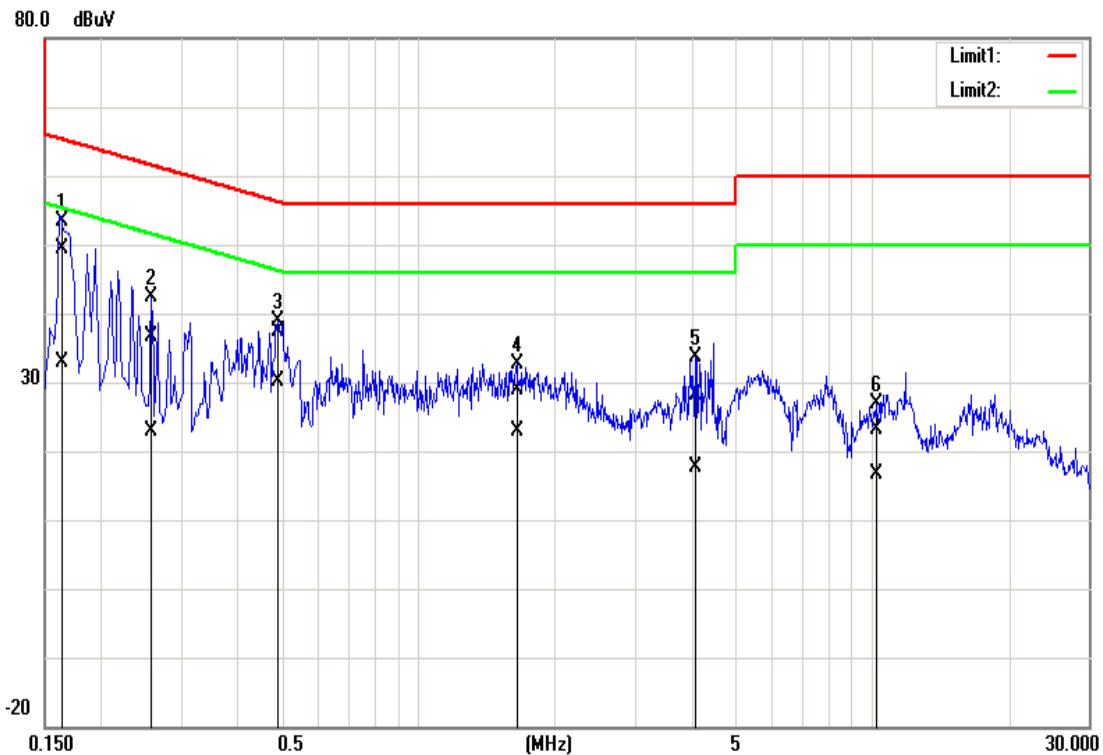


| Frequency (MHz) | Quasi Peak reading (dBuV) | Average reading (dBuV) | Correction factor (dB) | Quasi Peak result (dBuV) | Average result (dBuV) | Quasi Peak limit (dBuV) | Average limit (dBuV) | Quasi Peak margin (dB) | Average margin (dB) | Remark |
|-----------------|---------------------------|------------------------|------------------------|--------------------------|-----------------------|-------------------------|----------------------|------------------------|---------------------|--------|
| 0.1660          | 50.29                     | 31.78                  | 0.15                   | 50.44                    | 31.93                 | 65.16                   | 55.16                | -14.72                 | -23.23              | Pass   |
| 0.2100          | 43.58                     | 25.53                  | 0.15                   | 43.73                    | 25.68                 | 63.21                   | 53.21                | -19.48                 | -27.53              | Pass   |
| 0.4940          | 37.15                     | 29.55                  | 0.15                   | 37.30                    | 29.70                 | 56.10                   | 46.10                | -18.80                 | -16.40              | Pass   |
| 1.8180          | 27.37                     | 22.41                  | 0.21                   | 27.58                    | 22.62                 | 56.00                   | 46.00                | -28.42                 | -23.38              | Pass   |
| 4.0220          | 29.77                     | 17.93                  | 0.26                   | 30.03                    | 18.19                 | 56.00                   | 46.00                | -25.97                 | -27.81              | Pass   |
| 16.7660         | 26.54                     | 18.44                  | 0.46                   | 27.00                    | 18.90                 | 60.00                   | 50.00                | -33.00                 | -31.10              | Pass   |

Note: Correction factor = LISN loss + Cable loss.

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|               |              |               |                  |
|---------------|--------------|---------------|------------------|
| Test Mode:    | Mode 2       | Temp/Hum      | 24.3(°C)/ 52%RH  |
| Phase:        | Neutral      | Test Date     | October 26, 2023 |
| Test Voltage: | 120Vac, 60Hz | Test Engineer | Tony Chao        |



| Frequency (MHz) | Quasi Peak reading (dBuV) | Average reading (dBuV) | Correction factor (dB) | Quasi Peak result (dBuV) | Average result (dBuV) | Quasi Peak limit (dBuV) | Average limit (dBuV) | Quasi Peak margin (dB) | Average margin (dB) | Remark |
|-----------------|---------------------------|------------------------|------------------------|--------------------------|-----------------------|-------------------------|----------------------|------------------------|---------------------|--------|
| 0.1650          | 49.23                     | 32.78                  | 0.19                   | 49.42                    | 32.97                 | 65.21                   | 55.21                | -15.79                 | -22.24              | Pass   |
| 0.2580          | 36.49                     | 22.63                  | 0.19                   | 36.68                    | 22.82                 | 61.50                   | 51.50                | -24.82                 | -28.68              | Pass   |
| 0.4900          | 37.23                     | 29.85                  | 0.19                   | 37.42                    | 30.04                 | 56.17                   | 46.17                | -18.75                 | -16.13              | Pass   |
| 1.6460          | 28.55                     | 22.70                  | 0.25                   | 28.80                    | 22.95                 | 56.00                   | 46.00                | -27.20                 | -23.05              | Pass   |
| 4.0820          | 27.89                     | 17.20                  | 0.31                   | 28.20                    | 17.51                 | 56.00                   | 46.00                | -27.80                 | -28.49              | Pass   |
| 10.2260         | 22.66                     | 16.36                  | 0.39                   | 23.05                    | 16.75                 | 60.00                   | 50.00                | -36.95                 | -33.25              | Pass   |

Note: Correction factor = LISN loss + Cable loss.

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## 4.2 RADIATION BANDEDGE AND SPURIOUS EMISSION

### 4.2.1 Test Limit

FCC according to §15.247(d), §15.209 and §15.205,

In any 100 kHz bandwidth outside the authorized frequency band, all harmonic and spurious must be least 20 dB below the highest emission level with the authorized frequency band. Radiation emission which fall in the restricted bands must also follow the FCC section 15.209 as below limit in table.

#### Below 30 MHz

| Frequency     | Field Strength (microvolts/m) | Magnetic H-Field (microamperes/m) | Measurement Distance (metres) |
|---------------|-------------------------------|-----------------------------------|-------------------------------|
| 9-490 kHz     | 2,400/F (F in kHz)            | 2,400/F (F in kHz)                | 300                           |
| 490-1,705 kHz | 24,000/F (F in kHz)           | 24,000/F (F in kHz)               | 30                            |
| 1.705-30 MHz  | 30                            | N/A                               | 30                            |

#### Above 30 MHz

| Frequency (MHz) | Field Strength microvolts/m at 3 metres (watts, e.i.r.p.) |              |
|-----------------|---|--------------|
|                 | Transmitters  | Receivers    |
| 30-88           | 100 (3 nW)  | 100 (3 nW)   |
| 88-216          | 150 (6.8 nW)  | 150 (6.8 nW) |
| 216-960         | 200 (12 nW)   | 200 (12 nW)  |
| Above 960       | 500 (75 nW)   | 500 (75 nW)  |

Remark:

Although these tests were performed other than open area test site, adequate comparison measurements were confirmed against 30 m open are test site. Therefore sufficient tests were made to demonstrate that the alternative site produces results that correlate with the ones of tests made in an open field based on KDB 414788.

## 4.2.2 Test Procedure

1. The EUT is placed on a turntable, below 1 GHz is 0.8m above ground plane. The EUT Configured un accordance with ANSI C63.10: 2013, and the EUT set in a continuous mode.

2. The turntable shall be rotated for 360 degrees to determine the position of maximum emission level. And EUT is set 3m away from the receiving antenna, which is scanned from 1m to 4m above the ground plane to find out the highest emissions. Measurement are made polarized in both the vertical and the horizontal positions with antenna.

3. Span shall wide enough to full capture the emission measured. The SA from 9kHz to 1GHz set to high power channels with the EUT transmit.

Note: No emission found between lowest internal used/generated frequency to 30MHz(9KHz~30MHz)

4. The SA setting following :

Below 1G : RBW = 100kHz, VBW  $\geq$  3 RBW, Sweep = Auto, Detector = Peak, Trace = Max hold.

5. Data result

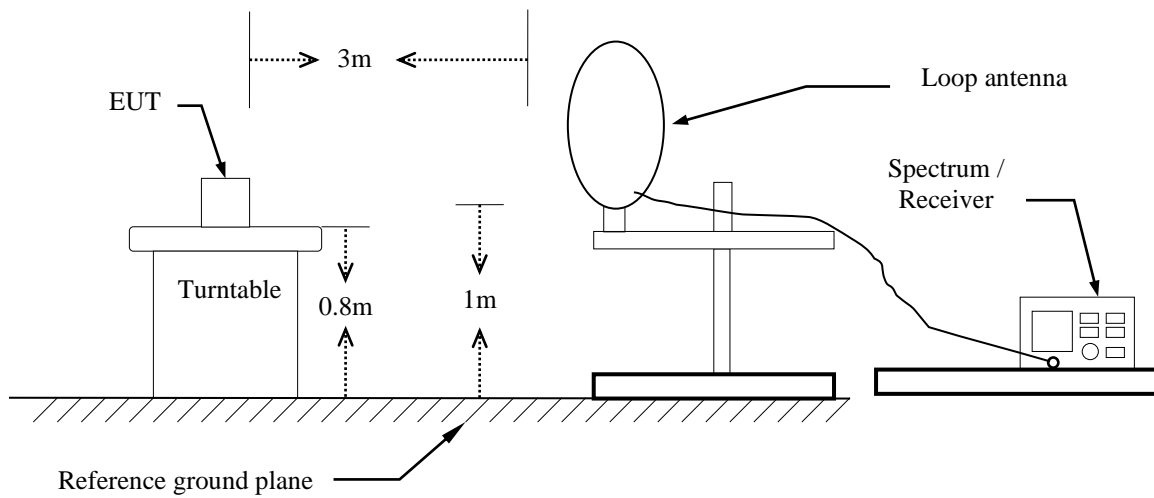
Actual FS=Spectrum Reading Level + Factor

Margin=Actual FS- Limit

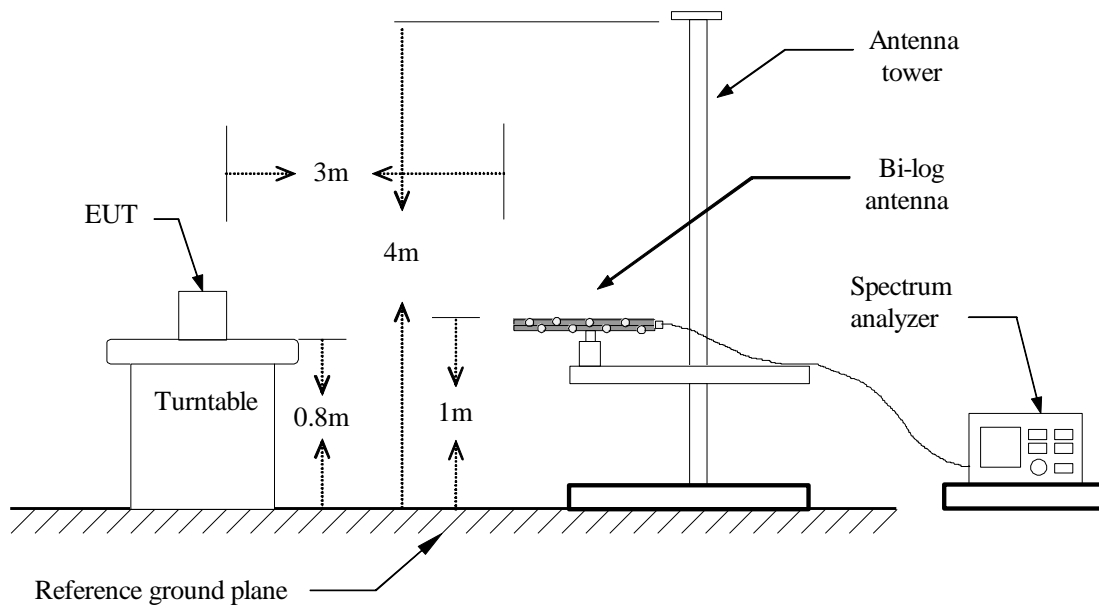
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## 4.2.3 Test Setup

### 9kHz ~ 30MHz



### 30MHz ~ 1GHz

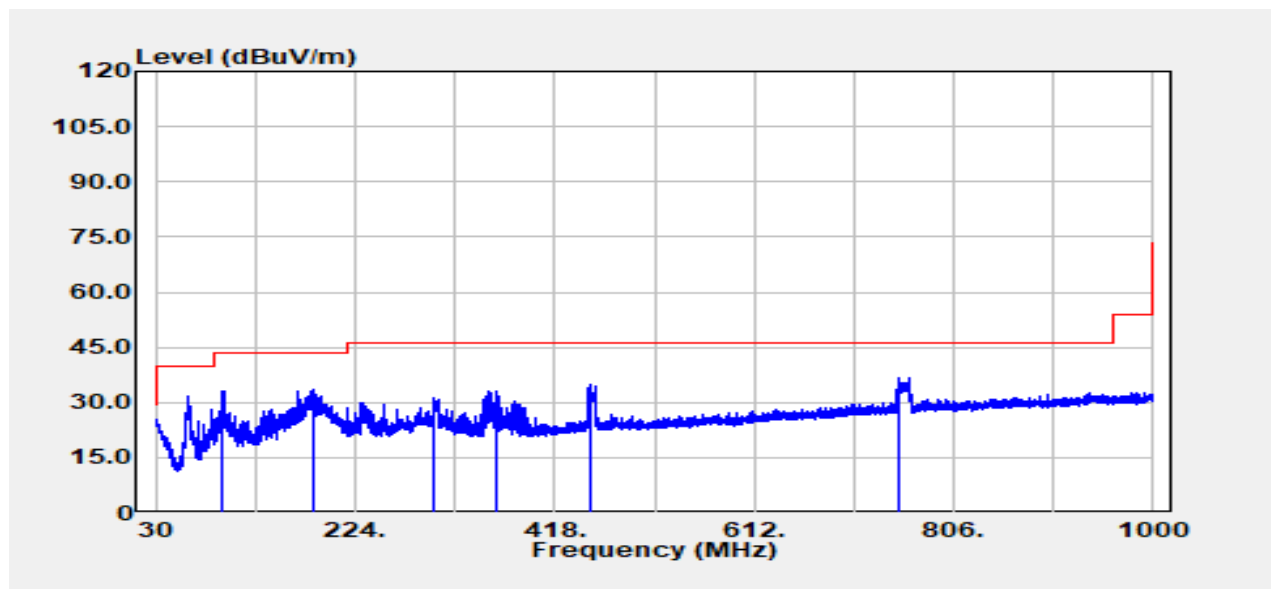


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### 4.2.4 Test Result

#### Below 1G Test Data

|            |                          |               |                  |
|------------|--------------------------|---------------|------------------|
| Test Mode: | GFSK_BDR-1Mbps<br>Low CH | Temp/Hum      | 24.6(°C) / 56%RH |
| Test Item  | 30MHz-1GHz               | Test Date     | October 26, 2023 |
| Polarize   | Vertical                 | Test Engineer | Tony Chao        |
| Detector   | Peak                     | Test Mode     | Mode 1           |

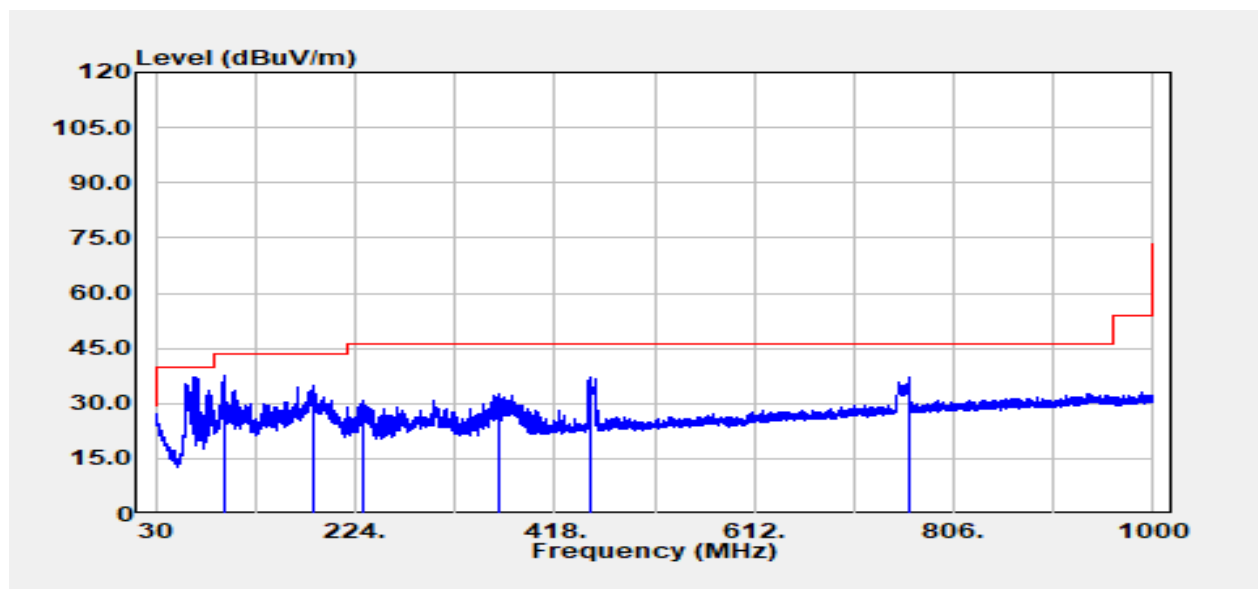


| Freq.<br>(MHz) | Detector<br>Mode<br>(PK/QP/AV) | Spectrum<br>Reading Level<br>(dBμV) | Factor<br>(dB) | Actual<br>FS<br>(dBμV/m) | Limit<br>@3m<br>(dBμV/m) | Margin<br>(dB) |
|----------------|--------------------------------|-------------------------------------|----------------|--------------------------|--------------------------|----------------|
| 95.72          | Peak                           | 47.15                               | -14.05         | 33.10                    | 43.50                    | -10.40         |
| 183.02         | Peak                           | 45.31                               | -11.64         | 33.67                    | 43.50                    | -9.83          |
| 301.12         | Peak                           | 39.74                               | -8.64          | 31.10                    | 46.00                    | -14.90         |
| 361.98         | Peak                           | 40.30                               | -7.14          | 33.15                    | 46.00                    | -12.85         |
| 451.59         | Peak                           | 39.34                               | -4.52          | 34.82                    | 46.00                    | -11.18         |
| 751.92         | Peak                           | 36.14                               | 0.45           | 36.59                    | 46.00                    | -9.41          |

Note: No emission found between lowest internal used/generated frequency to 30MHz (9kHz~30MHz).

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|            |                          |               |                  |
|------------|--------------------------|---------------|------------------|
| Test Mode: | GFSK_BDR-1Mbps<br>Low CH | Temp/Hum      | 24.6(°C) / 56%RH |
| Test Item  | 30MHz-1GHz               | Test Date     | October 26, 2023 |
| Polarize   | Horizontal               | Test Engineer | Tony Chao        |
| Detector   | Peak                     | Test Mode     | Mode 1           |

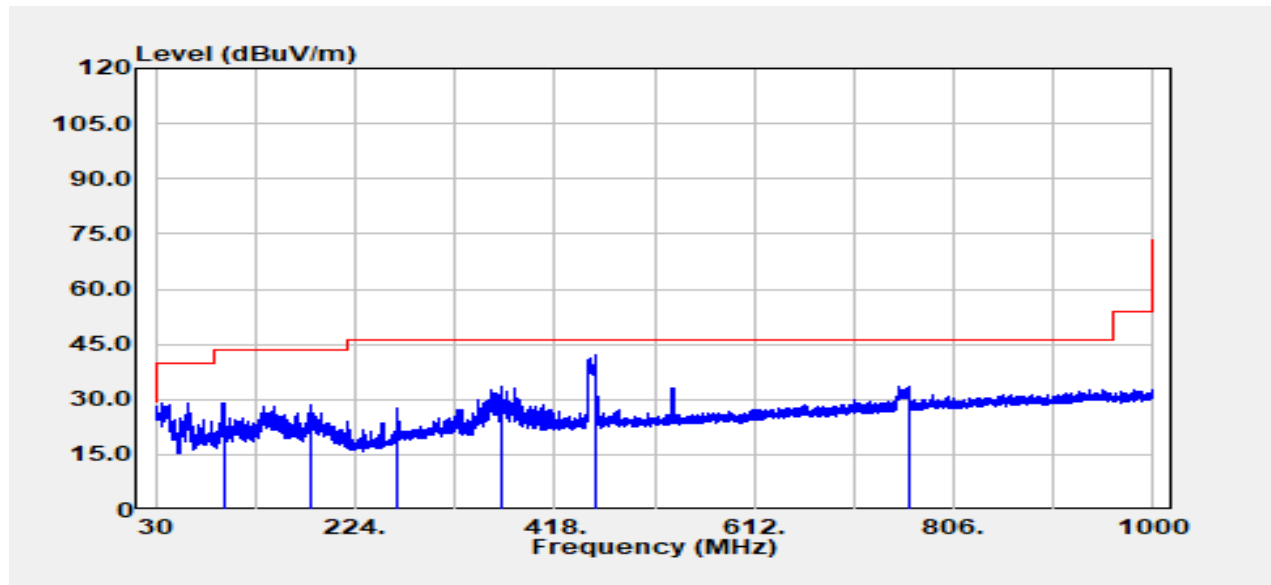


| Freq.<br>(MHz) | Detector<br>Mode<br>(PK/QP/AV) | Spectrum<br>Reading Level<br>(dBμV) | Factor<br>(dB) | Actual<br>FS<br>(dBμV/m) | Limit<br>@3m<br>(dBμV/m) | Margin<br>(dB) |
|----------------|--------------------------------|-------------------------------------|----------------|--------------------------|--------------------------|----------------|
| 95.84          | Peak                           | 51.62                               | -13.97         | 37.65                    | 43.50                    | -5.85          |
| 183.99         | Peak                           | 46.42                               | -11.63         | 34.79                    | 43.50                    | -8.71          |
| 232.37         | Peak                           | 41.83                               | -11.15         | 30.68                    | 46.00                    | -15.32         |
| 364.04         | Peak                           | 39.53                               | -7.11          | 32.42                    | 46.00                    | -13.58         |
| 451.59         | Peak                           | 41.81                               | -4.52          | 37.29                    | 46.00                    | -8.71          |
| 762.35         | Peak                           | 36.43                               | 0.66           | 37.09                    | 46.00                    | -8.91          |

Note: No emission found between lowest internal used/generated frequency to 30MHz (9kHz~30MHz).

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|            |                           |               |                  |
|------------|---------------------------|---------------|------------------|
| Test Mode: | 8DPSK_EDR-3Mbps<br>Low CH | Temp/Hum      | 24.6(°C) / 56%RH |
| Test Item  | Harmonic                  | Test Date     | October 26, 2023 |
| Polarize   | Vertical                  | Test Engineer | Tony Chao        |
| Detector   | Peak / Average            | Test Mode     | Mode 1           |



| Freq.<br>(MHz) | Detector<br>Mode<br>(PK/QP/AV) | Spectrum<br>Reading Level<br>(dBµV) | Factor<br>(dB) | Actual<br>FS<br>(dBµV/m) | Limit<br>@3m<br>(dBµV/m) | Margin<br>(dB) |
|----------------|--------------------------------|-------------------------------------|----------------|--------------------------|--------------------------|----------------|
| 95.84          | Peak                           | 43.03                               | -13.97         | 29.05                    | 43.50                    | -14.45         |
| 182.05         | Peak                           | 40.02                               | -11.64         | 28.38                    | 43.50                    | -15.12         |
| 265.10         | Peak                           | 36.99                               | -9.52          | 27.47                    | 46.00                    | -18.53         |
| 366.11         | Peak                           | 40.46                               | -7.06          | 33.40                    | 46.00                    | -12.60         |
| 457.41         | Peak                           | 46.41                               | -4.30          | 42.11                    | 46.00                    | -3.89          |
| 763.20         | Peak                           | 32.92                               | 0.65           | 33.57                    | 46.00                    | -12.43         |

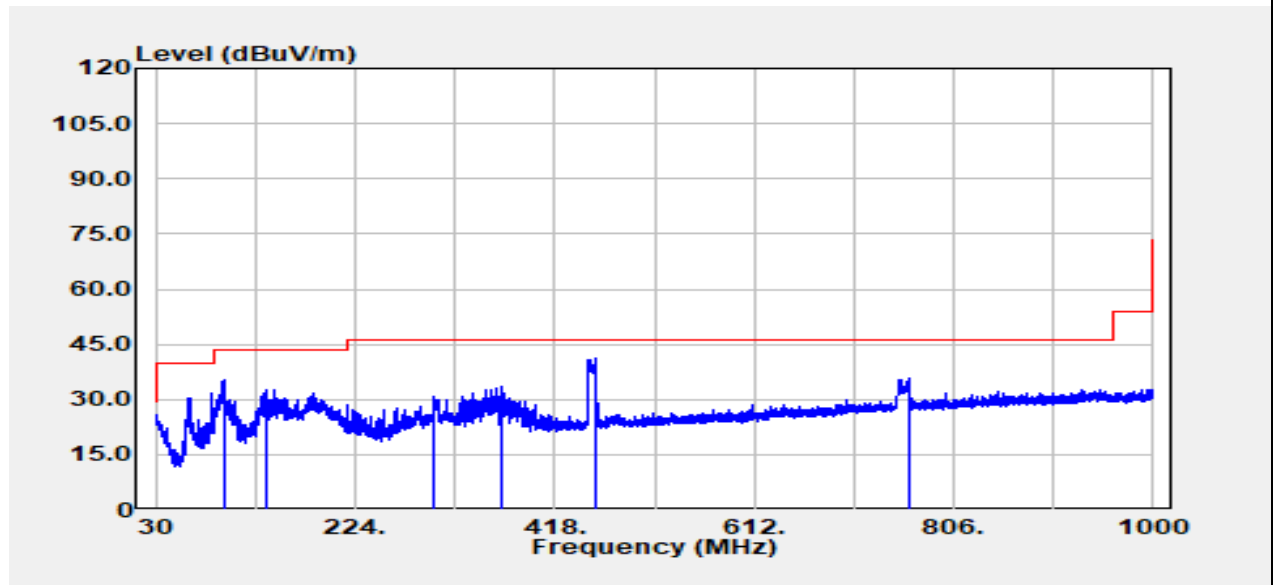
**Remark:**

1. Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.



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|            |                           |               |                  |
|------------|---------------------------|---------------|------------------|
| Test Mode: | 8DPSK_EDR-3Mbps<br>Low CH | Temp/Hum      | 24.6(°C) / 56%RH |
| Test Item  | Harmonic                  | Test Date     | October 26, 2023 |
| Polarize   | Horizontal                | Test Engineer | Tony Chao        |
| Detector   | Peak / Average            | Test Mode     | Mode 1           |



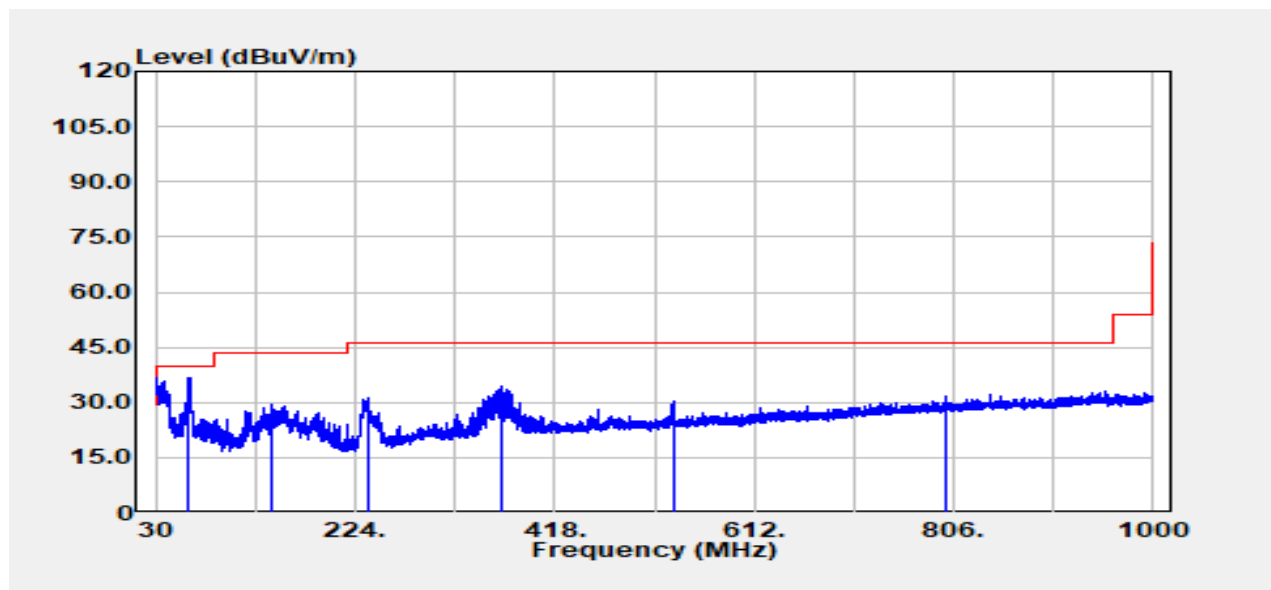
| Freq.<br>(MHz) | Detector<br>Mode<br>(PK/QP/AV) | Spectrum<br>Reading Level<br>(dBµV) | Factor<br>(dB) | Actual<br>FS<br>(dBµV/m) | Limit<br>@3m<br>(dBµV/m) | Margin<br>(dB) |
|----------------|--------------------------------|-------------------------------------|----------------|--------------------------|--------------------------|----------------|
| 95.84          | Peak                           | 49.08                               | -13.97         | 35.11                    | 43.50                    | -8.39          |
| 138.64         | Peak                           | 42.40                               | -9.78          | 32.61                    | 43.50                    | -10.89         |
| 300.75         | Peak                           | 39.53                               | -8.65          | 30.88                    | 46.00                    | -15.12         |
| 367.20         | Peak                           | 40.76                               | -7.03          | 33.72                    | 46.00                    | -12.28         |
| 457.77         | Peak                           | 45.52                               | -4.29          | 41.22                    | 46.00                    | -4.78          |
| 763.32         | Peak                           | 35.30                               | 0.65           | 35.95                    | 46.00                    | -10.05         |

**Remark:**

1. Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.

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|            |                          |               |                  |
|------------|--------------------------|---------------|------------------|
| Test Mode: | GFSK_BDR-1Mbps<br>Low CH | Temp/Hum      | 24.6(°C) / 56%RH |
| Test Item  | 30MHz-1GHz               | Test Date     | October 26, 2023 |
| Polarize   | Vertical                 | Test Engineer | Tony Chao        |
| Detector   | Peak                     | Test Mode     | Mode 2           |

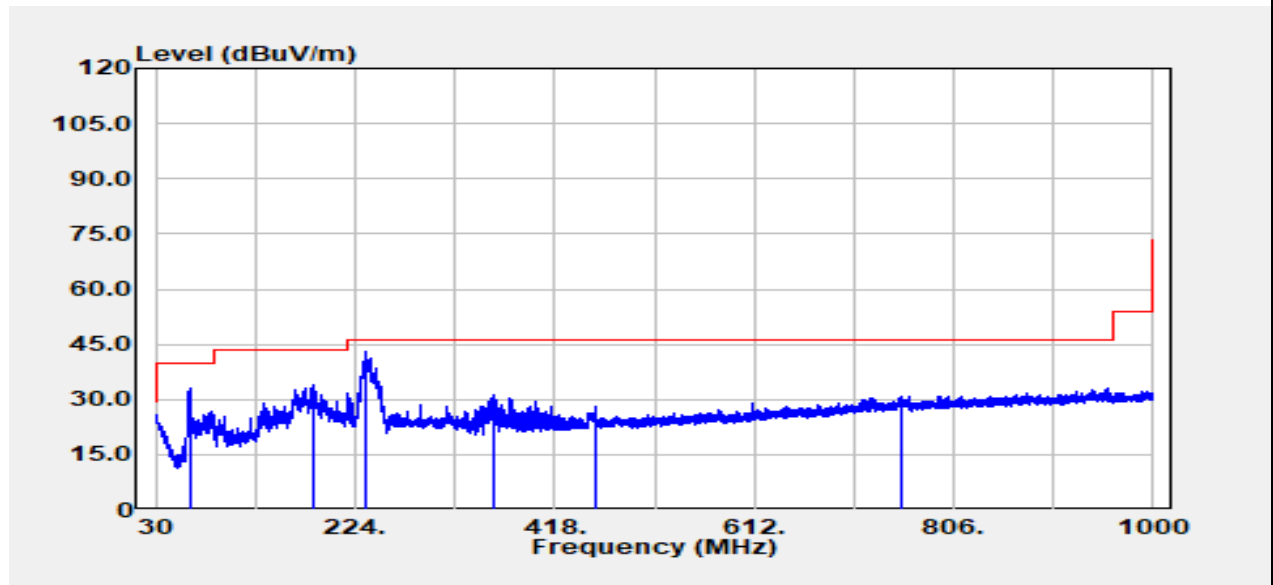


| Freq. (MHz) | Detector Mode (PK/QP/AV) | Spectrum Reading Level (dBμV) | Factor (dB) | Actual FS (dBμV/m) | Limit @3m (dBμV/m) | Margin (dB) |
|-------------|--------------------------|-------------------------------|-------------|--------------------|--------------------|-------------|
| 62.25       | Peak                     | 52.49                         | -15.72      | 36.76              | 40.00              | -3.24       |
| 142.40      | Peak                     | 39.66                         | -10.05      | 29.61              | 43.50              | -13.89      |
| 236.13      | Peak                     | 42.03                         | -10.96      | 31.07              | 46.00              | -14.93      |
| 365.62      | Peak                     | 41.36                         | -7.07       | 34.29              | 46.00              | -11.71      |
| 533.07      | Peak                     | 33.41                         | -3.13       | 30.28              | 46.00              | -15.72      |
| 798.12      | Peak                     | 30.17                         | 1.32        | 31.49              | 46.00              | -14.51      |

Note: No emission found between lowest internal used/generated frequency to 30MHz (9kHz~30MHz).

Report No.: TMWK2311004081KR

|            |                          |               |                  |
|------------|--------------------------|---------------|------------------|
| Test Mode: | GFSK_BDR-1Mbps<br>Low CH | Temp/Hum      | 24.6(°C) / 56%RH |
| Test Item  | 30MHz-1GHz               | Test Date     | October 26, 2023 |
| Polarize   | Horizontal               | Test Engineer | Tony Chao        |
| Detector   | Peak                     | Test Mode     | Mode 2           |

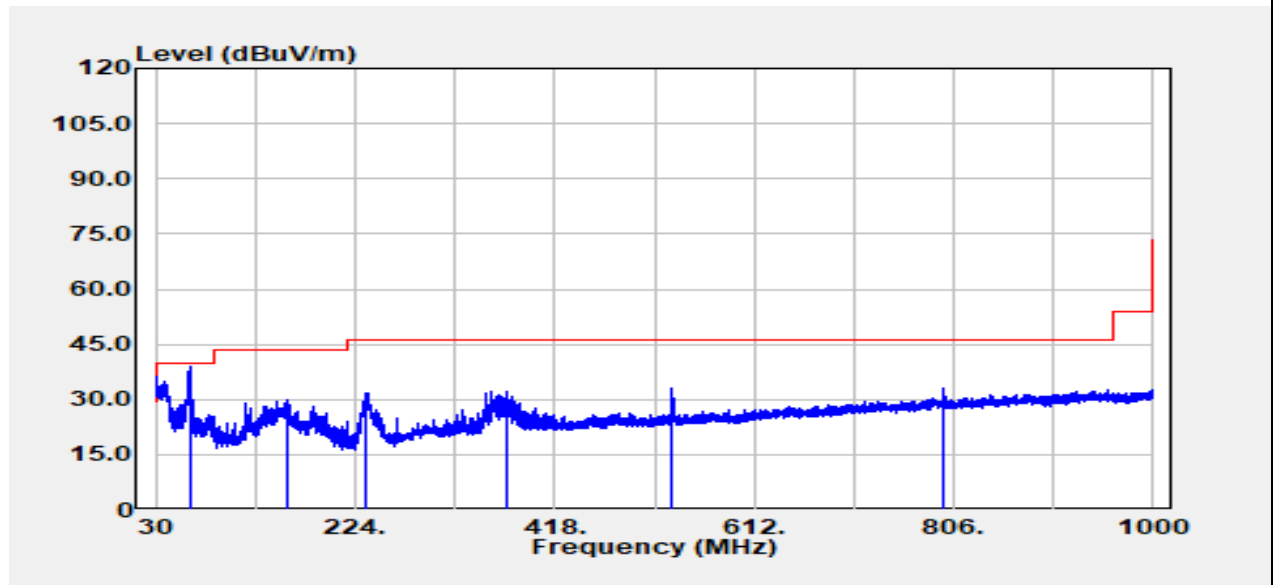


| Freq. (MHz) | Detector Mode (PK/QP/AV) | Spectrum Reading Level (dBμV) | Factor (dB) | Actual FS (dBμV/m) | Limit @3m (dBμV/m) | Margin (dB) |
|-------------|--------------------------|-------------------------------|-------------|--------------------|--------------------|-------------|
| 63.22       | Peak                     | 48.59                         | -15.66      | 32.93              | 40.00              | -7.07       |
| 182.65      | Peak                     | 45.56                         | -11.64      | 33.92              | 43.50              | -9.58       |
| 234.91      | Peak                     | 53.81                         | -11.00      | 42.81              | 46.00              | -3.19       |
| 357.50      | Peak                     | 38.61                         | -7.25       | 31.35              | 46.00              | -14.65      |
| 457.89      | Peak                     | 32.18                         | -4.29       | 27.89              | 46.00              | -18.11      |
| 755.08      | Peak                     | 30.46                         | 0.52        | 30.99              | 46.00              | -15.01      |

Note: No emission found between lowest internal used/generated frequency to 30MHz (9kHz~30MHz).

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|            |                           |               |                  |
|------------|---------------------------|---------------|------------------|
| Test Mode: | 8DPSK_EDR-3Mbps<br>Low CH | Temp/Hum      | 24.6(°C) / 56%RH |
| Test Item  | Harmonic                  | Test Date     | October 26, 2023 |
| Polarize   | Vertical                  | Test Engineer | Tony Chao        |
| Detector   | Peak / Average            | Test Mode     | Mode 2           |



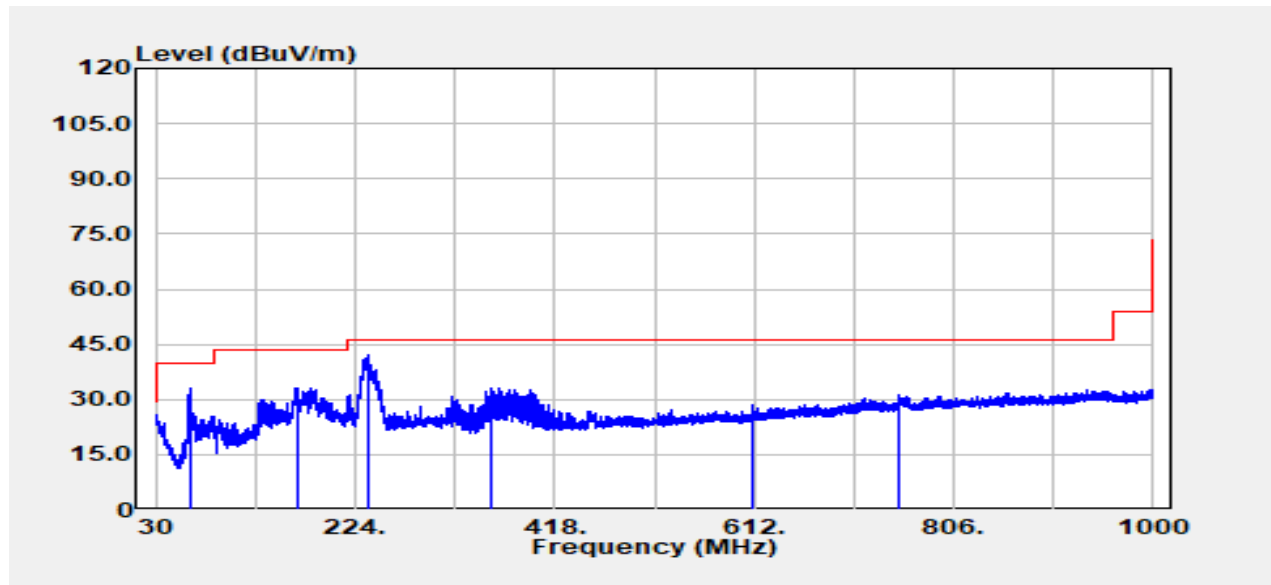
| Freq.<br>(MHz) | Detector<br>Mode<br>(PK/QP/AV) | Spectrum<br>Reading Level<br>(dBµV) | Factor<br>(dB) | Actual<br>FS<br>(dBµV/m) | Limit<br>@3m<br>(dBµV/m) | Margin<br>(dB) |
|----------------|--------------------------------|-------------------------------------|----------------|--------------------------|--------------------------|----------------|
| 63.34          | Peak                           | 54.37                               | -15.63         | 38.74                    | 40.00                    | -1.26          |
| 157.56         | Peak                           | 40.45                               | -10.56         | 29.89                    | 43.50                    | -13.61         |
| 233.70         | Peak                           | 42.85                               | -11.07         | 31.78                    | 46.00                    | -14.22         |
| 371.93         | Peak                           | 39.22                               | -6.91          | 32.30                    | 46.00                    | -13.70         |
| 532.22         | Peak                           | 36.24                               | -3.13          | 33.11                    | 46.00                    | -12.89         |
| 795.82         | Peak                           | 31.65                               | 1.31           | 32.96                    | 46.00                    | -13.04         |

**Remark:**

1. Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.

Report No.: TMWK2311004081KR

|            |                           |               |                  |
|------------|---------------------------|---------------|------------------|
| Test Mode: | 8DPSK_EDR-3Mbps<br>Low CH | Temp/Hum      | 24.6(°C) / 56%RH |
| Test Item  | Harmonic                  | Test Date     | October 26, 2023 |
| Polarize   | Horizontal                | Test Engineer | Tony Chao        |
| Detector   | Peak / Average            | Test Mode     | Mode 2           |



| Freq.<br>(MHz) | Detector<br>Mode<br>(PK/QP/AV) | Spectrum<br>Reading Level<br>(dBµV) | Factor<br>(dB) | Actual<br>FS<br>(dBµV/m) | Limit<br>@3m<br>(dBµV/m) | Margin<br>(dB) |
|----------------|--------------------------------|-------------------------------------|----------------|--------------------------|--------------------------|----------------|
| 63.34          | Peak                           | 48.73                               | -15.63         | 33.09                    | 40.00                    | -6.91          |
| 166.89         | Peak                           | 43.97                               | -10.98         | 32.99                    | 43.50                    | -10.51         |
| 235.52         | Peak                           | 52.90                               | -10.98         | 41.93                    | 46.00                    | -4.07          |
| 355.07         | Peak                           | 40.40                               | -7.32          | 33.09                    | 46.00                    | -12.91         |
| 609.33         | Peak                           | 30.28                               | -1.87          | 28.41                    | 46.00                    | -17.59         |
| 751.56         | Peak                           | 30.80                               | 0.44           | 31.24                    | 46.00                    | -14.76         |

**Remark:**

1. Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.

- End of Test Report -