

Project No.: TM-2405000397P  
Report No.: TMWK2405001768KR

FCC ID: P4Q-N702  
IC: 2420C-N702

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Rev.: 04

# RADIO TEST REPORT

## FCC 47 CFR PART 15 SUBPART C (CLASS II PERMISSIVE CHANGE) INDUSTRY CANADA RSS-247 (CLASS I PERMISSIVE CHANGE)

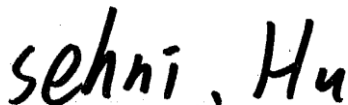
|                                 |  |
|---------------------------------|--|
| <b>Test Standard</b>            | <b>FCC Part 15.247<br/>RSS-247 issue 3 and RSS-GEN issue 5</b>   |
| <b>Product name</b>             | <b>Connected Digital Recorder</b>  |
| <b>Brand Name</b>               | <b>MiTAC, Mio, MAGELLAN, Navman, SMARTER AI,<br/>Webfleet, Azuga</b>   |
| <b>Model No.</b>                | <b>N702, N702B, CAMPro US, SafetyCam Pro</b>   |
| <b>Test Result</b>              | <b>Pass</b>  |
| <b>Statements of Conformity</b> | <b>Determination of compliance is based on the results of the compliance measurement, not taking into account measurement instrumentation uncertainty.</b> |

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   | July 31, 2024   | Initial Issue                    | ALL                                     | Peggy Tsai |
| 01   | August 14, 2024 | See the following Note Rev. (01) | P. 4, 7, 8, 11, 13, 21, 23, 26, 27, A-2 | Peggy Tsai |
| 02   | August 26, 2024 | See the following Note Rev. (02) | P.5                                     | Peggy Tsai |
| 03   | August 27, 2024 | See the following Note Rev. (03) | P.4, 5, 13                              | Peggy Tsai |
| 04   | August 28, 2024 | See the following Note Rev. (04) | P.1, 6                                  | Peggy Tsai |

**Note:**

**Rev. (01)**

1. Modify date of test in section 1.1.
2. Modify measurement uncertainty in section 1.4.
3. Modify facilities and test location in section 1.5.
4. Modify instrument calibration in section 1.6.
5. Modify note in section 2.
6. Modify the worst mode of measurement in section 3.2.
7. Modify radiation bandedge and spurious emission in section 4.2.
8. Modify appendix-A test photo.

**Rev. (02)**

1. Add Class IV Permissive Change in section 1.1.

**Rev. (03)**

1. Modify PMN and Class II Permissive Change in section 1.1.
2. Modify Remark in section 3.2.

**Rev. (04)**

1. Add Class I Permissive Change in section 1.1.

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## 1. GENERAL INFORMATION

### 1.1 EUT INFORMATION

|                          |  |
|--------------------------|--|
| <b>FCC Applicant</b>     | Mitac Digital Technology Corporation<br>4F., No. 1, R&D Road 2, Hsinchu Science Park, Hsinchu 30076 Taiwan   |
| <b>FCC Manufacturer</b>  | MITAC COMPUTER (KUNSHAN) CO., LTD.<br>No. 269, 2nd Avenue, District A, Comprehensive Free Trade Zone,<br>Kunshan, Jiangsu, P.R. China              |
| <b>IC Applicant</b>      | MiTAC Digital Technology Corporation<br>4F., No. 1, R&D Road 2, Hsinchu Science Park, Hsinchu 30076 Taiwan   |
| <b>IC Manufacturer</b>   | MITAC COMPUTER (KUNSHAN) CO., LTD.<br>No. 269, 2nd Rd, Export Processing Zone Changjiang South Road<br>Kushan, Jiangsu China (Peoples Republic Of) |
| <b>Equipment</b>         | Connected Digital Recorder   |
| <b>Model Name</b>        | N702, N702B, CAMPro US, SafetyCam Pro  |
| <b>Model Discrepancy</b> | Difference of the those model number / trademarks (list on this report)<br>are just for marketing purpose only.                                    |
| <b>Brand Name</b>        | MiTAC, Mio, MAGELLAN, Navman, SMARTER AI,<br>Webfleet, Azuga   |
| <b>Received Date</b>     | May 31, 2024   |
| <b>Date of Test</b>      | July 3 ~ August 13, 2024   |
| <b>Power Supply</b>      | Power from power supply. (DC 12~24V)   |
| <b>PMN</b>               | Connected Digital Recorder   |
| <b>EUT Serial #</b>      | HDR2CE00   |
| <b>HW Version</b>        | R03  |
| <b>SW Version</b>        | R01  |

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|  |   |   |   |              |                                       |
|--|---|---|---|--------------|---------------------------------------|
| <p><b>Class II<br/>Permissive<br/>Change</b></p> | <p>This is to request for a Re-Assessment (Modification) of the Model Name: N702, FCC ID: P4Q-N702.</p> <p>1. The intention of this application is due to volume of speaker is not loud enough, therefore MiTAC modify speaker to large dimension to increase better experience.</p> <p>MiTAC also add new model and trade mark list as below</p> <table border="1" data-bbox="550 616 1428 716"> <tr> <td data-bbox="550 616 778 683">Brand Name</td> <td data-bbox="778 616 1428 683">MiTAC, Mio, MAGELLAN, Navman, SMARTER AI, Webfleet, Azuga</td> </tr> <tr> <td data-bbox="550 683 778 716">Added Models</td> <td data-bbox="778 683 1428 716">N702, N702B, CAMPro US, SafetyCam Pro</td> </tr> </table> <p>All models are electrically identical (Include: circuitry, components, layout, antenna type and gain, enclosure), different model names are for marketing purpose only.</p> <p>2. Adding the following accessories and cables.</p> <ul style="list-style-type: none"> <li>(1) A60 Camera</li> <li>(2) Panic button</li> <li>(3) AE-CM30HB (TVI camera)</li> <li>(4) AE-CH11A (TVI camera)</li> <li>(5) ODB Transfer Cable</li> <li>(6) Open wire power cable</li> <li>(7) 12V TVI cable</li> <li>(8) OBDII power cable for 12V TVI cable</li> <li>(9) Hardwire power cable for 12V TVI cable</li> <li>(10) Clean installation V.2 cable</li> <li>(11) A60 Power cable</li> <li>(12) Mini USB Relay</li> </ul> <p>3. Update HW version to R03.</p> | Brand Name  | MiTAC, Mio, MAGELLAN, Navman, SMARTER AI, Webfleet, Azuga | Added Models | N702, N702B, CAMPro US, SafetyCam Pro |
|  | Brand Name  | MiTAC, Mio, MAGELLAN, Navman, SMARTER AI, Webfleet, Azuga |   |              |                                       |
| Added Models                                     | N702, N702B, CAMPro US, SafetyCam Pro   |   |   |              |                                       |

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|   |  |   |   |              |                                       |
|---|--|---|---|--------------|---------------------------------------|
| <p><b>Class I<br/>Permissive<br/>Change</b></p> | <p>This is to request for a Re-Assessment (Modification) of the Model Name: N702, IC Certification No: 2420C-N702.</p> <p>1. The intention of this application is due to volume of speaker is not loud enough, therefore MiTAC modify speaker to large dimension to increase better experience.</p> <p>MiTAC also add new model and trade mark list as below</p> <table border="1" style="width: 100%;"> <tr> <td style="width: 30%;">Brand Name</td> <td>MiTAC, Mio, MAGELLAN, Navman, SMARTER AI, Webfleet, Azuga</td> </tr> <tr> <td>Added Models</td> <td>N702, N702B, CAMPro US, SafetyCam Pro</td> </tr> </table> <p>All models are electrically identical (Include: circuitry, components, layout, antenna type and gain, enclosure), different model names are for marketing purpose only.</p> <p>2. Adding the following accessories and cables.</p> <p>(1) A60 Camera<br/>(2) Panic button<br/>(3) AE-CM30HB (TVI camera)<br/>(4) AE-CH11A (TVI camera)<br/>(5) ODB Transfer Cable<br/>(6) Open wire power cable<br/>(7) 12V TVI cable<br/>(8) OBDII power cable for 12V TVI cable<br/>(9) Hardwire power cable for 12V TVI cable<br/>(10) Clean installation V.2 cable<br/>(11) A60 Power cable<br/>(12) Mini USB Relay</p> <p>3. Update HW version to R03.</p> | Brand Name  | MiTAC, Mio, MAGELLAN, Navman, SMARTER AI, Webfleet, Azuga | Added Models | N702, N702B, CAMPro US, SafetyCam Pro |
|   | Brand Name   | MiTAC, Mio, MAGELLAN, Navman, SMARTER AI, Webfleet, Azuga |   |              |                                       |
|   | Added Models   | N702, N702B, CAMPro US, SafetyCam Pro                     |   |              |                                       |

**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.

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## 1.2 EUT CHANNEL INFORMATION

|                   |  |
|-------------------|--|
| Frequency Range   | 802.11b/g/n HT 20: 2412MHz ~ 2462MHz<br>802.11n HT 40: 2422MHz ~ 2452MHz   |
| Modulation Type   | 1. IEEE 802.11b mode: CCK<br>2. IEEE 802.11g mode: OFDM<br>3. IEEE 802.11n HT 20 Mode: OFDM<br>4. IEEE 802.11n HT 40 MHz mode: OFDM                              |
| Number of channel | 1. IEEE 802.11b mode: 11 Channels<br>2. IEEE 802.11g mode: 11 Channels<br>3. IEEE 802.11n HT 20 Mode : 11 Channels<br>4. IEEE 802.11n HT 40 MHz mode: 7 Channels |

### Remark:

Refer as ANSI C63.10: 2013 clause 5.6.1 Table 4 and RSS-GEN Table 1 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 |

## 1.3 ANTENNA INFORMATION

|                       |  |
|-----------------------|--|
| Antenna Specification | <input type="checkbox"/> PIFA <input type="checkbox"/> PCB <input checked="" type="checkbox"/> Dipole <input type="checkbox"/> Coils |
| Antenna Gain          | Gain: 4.2 dBi  |
| Antenna connector     | I-PEX  |

### 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 and RSS-Gen 6.8.

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## 1.4 MEASUREMENT UNCERTAINTY

| PARAMETER                                    | UNCERTAINTY |
|--|-------------|
| RF output power (Power Meter + Power sensor) | ± 0.243 dB  |
| Radiated Emission_9kHz-30MHz                 | ± 3.761 dB  |
| Radiated Emission_30MHz-200MHz               | ± 3.473 dB  |
| Radiated Emission_200MHz-1GHz                | ± 3.946 dB  |
| Radiated Emission_1GHz-6GHz                  | ± 4.797 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.

## 1.5 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.

CAB identifier: TW1309

| Test site    | Test Engineer     | Remark |
|--------------|-------------------|--------|
| Radiation    | Ray Li, Tony Chao | -      |
| RF Conducted | Jerry Chang       | -      |

**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.



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## 1.6 INSTRUMENT CALIBRATION

| Conducted_FCC/IC/NCC (All) |                             |            |               |                  |                 |
|----------------------------|-----------------------------|------------|---------------|------------------|-----------------|
| Name of Equipment          | Manufacturer                | Model      | Serial Number | Calibration Date | Calibration Due |
| Power Supply               | GWINSTEK                    | SPS-3610   | GPE880163     | 2023-11-16       | 2024-11-15      |
| Power Sensor               | Anritsu                     | MA2411B    | 1726104       | 2024-04-16       | 2025-04-15      |
| Power Sensor               | Anritsu                     | MA2411B    | 1726107       | 2024-04-16       | 2025-04-15      |
| Power Meter                | Anritsu                     | ML2496A    | 1804001       | 2024-04-16       | 2025-04-15      |
| Signal Analyzer            | KEYSIGHT                    | N9030B     | MY62291089    | 2023-10-13       | 2024-10-12      |
| Attenuator                 | Marvelous Microwave Inc     | MVE2213-10 | 08            | 2023-11-07       | 2024-11-06      |
| <b>Software</b>            | Radio Test Software Ver. 21 |            |               |                  |                 |

| 966A_Radiated       |                |              |                      |                  |                 |
|---------------------|----------------|--------------|----------------------|------------------|-----------------|
| Name of Equipment   | Manufacturer   | Model        | Serial Number        | Calibration Date | Calibration Due |
| Signal Analyzer     | KEYSIGHT       | N9010A       | MY52220817           | 2024-03-15       | 2025-03-14      |
| Thermo-Hygro Meter  | WISEWIND       | 1206         | D07                  | 2023-12-07       | 2024-12-06      |
| Active Loop Antenna | SCHWARZBECK    | FMZB 1513-60 | 1513-60-028          | 2023-12-13       | 2024-12-12      |
| Bi-Log Antenna      | Sunol Sciences | JB1          | A052609              | 2024-02-02       | 2025-02-01      |
| Preamplifier        | EMEC           | EM330        | 060609               | 2024-02-21       | 2025-02-20      |
| Cable               | Huber+Suhner   | 104PEA       | 20995+21000+182330   | 2024-02-21       | 2025-02-20      |
| Horn Antenna        | ETC            | MCTD 1209    | DRH13M02003          | 2023-12-28       | 2024-12-27      |
| Preamplifier        | HP             | 8449B        | 3008A00965           | 2023-12-22       | 2024-12-21      |
| Cable               | EMCI           | EMC101G      | 221213+221011+221012 | 2023-10-17       | 2024-10-16      |
| 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  |              |                      |                  |                 |

**Remark:**

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

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## 1.7 SUPPORT AND EUT ACCESSORIES EQUIPMENT

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

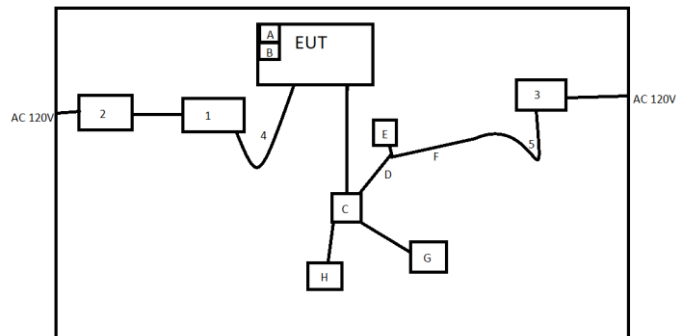
| Support Equipment (Conducted) |                  |        |          |            |        |     |
|-------------------------------|------------------|--------|----------|------------|--------|-----|
| No.                           | Equipment        | Brand  | Model    | Series No. | FCC ID | IC  |
| 1                             | NB(I)            | Lenovo | X260     | N/A        | N/A    | N/A |
| 2                             | Mini USB         | RS Pro | 2369084  | N/A        | N/A    | N/A |
| 3                             | DC Power Cable   | MISUMI | MCR3S-RE | N/A        | N/A    | N/A |
| A                             | Main entry cable | N/A    | N/A      | N/A        | N/A    | N/A |

| Support Equipment (RSE) |                                     |               |                      |            |        |     |
|-------------------------|-------------------------------------|---------------|----------------------|------------|--------|-----|
| No.                     | Equipment                           | Brand         | Model                | Series No. | FCC ID | IC  |
| 1                       | NB(D)                               | Lenovo        | ThinkPad X260        | N/A        | N/A    | N/A |
| 2                       | Adapter                             | Lenovo        | ADLX45DLC3A          | N/A        | N/A    | N/A |
| 3                       | Power Supply                        | ABM           | 9603D                | D011314    | N/A    | N/A |
| 4                       | Cable TypeA to TypeC                | Silicon-Power | SP BOOST LINK LK10AC | N/A        | N/A    | N/A |
| 5                       | DC Cable                            | MISUMI        | MCR3S-RE             | N/A        | N/A    | N/A |
| A                       | Micro SD Card                       | SP            | N/A                  | N/A        | N/A    | N/A |
| B                       | Micro SD Card                       | SP            | N/A                  | N/A        | N/A    | N/A |
| C                       | 12V TVI cable                       | N/A           | N/A                  | N/A        | N/A    | N/A |
| D                       | OBDII power cable for 12V TVI cable | N/A           | N/A                  | N/A        | N/A    | N/A |
| E                       | Panic button                        | N/A           | Panic button         | N/A        | N/A    | N/A |
| F                       | ODB Transfer Cable                  | N/A           | ODB Transfer Cable   | N/A        | N/A    | N/A |
| G                       | AE-CH11A (TVI camera)               | N/A           | AE-CH11A             | N/A        | N/A    | N/A |
| H                       | AE-CM30HB (TVI camera)              | N/A           | AE-CM30HB            | N/A        | N/A    | N/A |

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## 1.8 TEST SETUP DIAGRAM

RSE:



## 1.9 TEST PROGRAM

The EUT connection corresponds to the surrounding fixture control board. This EUT uses "QRCT4" software to set the frequency, modulation, and power to allow the sample to continuously transmit (including frequency hopping mode).

## 1.10 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, KDB 558074, RSS-247 Issue 3 and RSS-GEN Issue 5

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## 2. TEST SUMMARY

| FCC Standard Section          | IC Standard Section | Report Section | Test Item                   | Result |
|-------------------------------|---------------------|----------------|-----------------------------|--------|
| 15.203                        | RSS-GEN 6.8         | 1.3            | Antenna Requirement         | Pass   |
| 15.247(b)(3)                  | RSS-247(5.4)(d)     | 4.1            | Output Power Measurement    | Verify |
| 15.247(d)<br>15.209<br>15.205 | RSS-GEN 8.9, 8.10   | 4.2            | Radiation Spurious Emission | Pass   |

**Verify:** Verify RF power and confirm it does not exceed Tune power.

**Note:** For new changes, adding accessories and replacing speakers do not modify the RF part, so the original RF performance and characteristics are not affected. Therefore, the maximum power mode is selected for verification power. In this mode, the radiation is evaluated 30MHz to 6GHz. For other projects, refer to the original ID. Bring products into compliance.

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### 3. DESCRIPTION OF TEST MODES

#### 3.1 THE WORST MODE OF OPERATING CONDITION

|                          |   |
|--------------------------|---|
| Operation mode           | IEEE 802.11b mode :1Mbps<br>IEEE 802.11g mode :6Mbps<br>IEEE 802.11n HT20 mode :MCS0<br>IEEE 802.11n HT40 mode: MCS0  |
| Test Channel Frequencies | <b>IEEE 802.11b mode :</b><br>1. Lowest Channel : 2412MHz<br>2. Middle Channel : 2437MHz<br>3. Highest Channel : 2462MHz<br><b>IEEE 802.11g mode :</b><br>1. Lowest Channel : 2412MHz<br>2. Middle Channel : 2437MHz<br>3. Highest Channel : 2462MHz<br><b>IEEE 802.11n HT20 mode :</b><br>1. Lowest Channel : 2412MHz<br>2. Middle Channel : 2437MHz<br>3. Highest Channel : 2462MHz<br><b>IEEE 802.11n HT40 mode :</b><br>1. Lowest Channel: 2422MHz<br>2. Middle Channel: 2437MHz<br>3. Highest Channel: 2452MHz |
| Operation Transmitter    | IEEE 802.11b mode : 1T1R<br>IEEE 802.11g mode : 1T1R<br>IEEE 802.11n HT20 mode : 1T1R<br>IEEE 802.11n HT40 mode : 1T1R  |

**Remark:**

1. EUT pre-scanned data rate of output power for each mode, the worst data rate were recorded in this report.

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### 3.2 THE WORST MODE OF MEASUREMENT

| Radiated Emission Measurement Below 1G |   |
|--|---|
| Test Condition                         | Radiated Emission Below 1G  |
| Power supply Mode                      | <b>Mode 1: EUT power by Power supply</b><br>(SD+12V TVI cable+OBDII power cable for 12V TVI cable+ Panic button +ODB Transfer Cable+AE-CH11A (TVI camera)+ AE-CM30HB (TVI camera))    |
|  | <b>Mode2: EUT power by Power supply</b><br>(SD+12V TVI cable+ Hardwire power cabel for 12V TVI cable+ Panic button +ODB Transfer Cable+AE-CH11A (TVI camera)+ AE-CM30HB (TVI camera)) |
|  | <b>Mode 3: EUT power by Power supply</b><br>(SD+Mini USB Relay+A60 Camera+ A60 power cable+ Open wire power cable+ Panic button)  |
|  | <b>Mode 4: EUT power by Power supply</b><br>(SD+Mini USB Relay+A60 Camera+ A60 power cable+ Clean installation V.2 cable + ODB Transfer Cable + Panic button)                         |
| <b>Worst Mode</b>                      | <input checked="" type="checkbox"/> Mode 1 <input type="checkbox"/> Mode 2 <input type="checkbox"/> Mode 3 <input type="checkbox"/> Mode 4  |

| Radiated Emission Measurement Above 1G |  |
|--|--|
| Test Condition                         | Radiated Emission Above 1G   |
| Power supply Mode                      | <b>Mode 1: EUT power by Power supply</b><br>(SD+12V TVI cable+OBDII power cable for 12V TVI cable+ Panic button +ODB Transfer Cable+AE-CH11A (TVI camera)+ AE-CM30HB (TVI camera)) |
| <b>Worst Mode</b>                      | <input checked="" type="checkbox"/> Mode 1 <input 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. EUT pre-scanned in three axis ,X,Y, Z and two polarity, for radiated measurement. The worst case(Y-Plane) were recorded in this report
3. The device supports 12V or 24V. The original ID has been fully evaluated as 12V as the worst mode. In this accessory combination, 12V is used as the worst mode evaluation.
4. Variations between models/brands are evaluated by laboratories and the test results reported here apply to the worst model: N702B.

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## 4. TEST RESULT

### 4.1 OUTPUT POWER MEASUREMENT

#### 4.1.1 Test Limit

According to §15.247(b) and RSS-247 section 5.4(d),

**Peak output power** :

#### FCC

For systems using digital modulation in the 2400-2483.5 MHz, and 5725-5850 MHz bands: 1 Watt(30 dBm) and the e.i.r.p. shall not exceed 4Watt(36 dBm), base on the use of antennas with directional gain not exceed 6 dBi If transmitting antennas of directional gain greater than 6dBi are used the peak output power the conducted output power from the intentional radiator shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi. In case of point-to-point operation, the limit has to be reduced by 1dB for every 3 dB that the directional gain of the antenna exceeds 6 dBi.

|       |   |
|-------|---|
| Limit | <input checked="" type="checkbox"/> Antenna not exceed 6 dBi : 30dBm<br><input type="checkbox"/> Antenna with DG greater than 6 dBi :<br>[Limit = 30 – (DG – 6)]<br><input type="checkbox"/> Point-to-point operation : |
|-------|---|

#### IC

DTSS employing digital modulation techniques operating in the bands 902-928 MHz and 2400-2483.5 MHz, the maximum peak conducted output power shall not exceed 1 W. The e.i.r.p. shall not exceed 4 W, except as provided in section 5.4(e).

|       |   |
|-------|---|
| Limit | <input checked="" type="checkbox"/> Antenna not exceed 6 dBi : 30dBm<br><input type="checkbox"/> Antenna with DG greater than 6 dBi :<br>[Limit = 30 – (DG – 6)]<br><input type="checkbox"/> Point-to-point operation : |
|-------|---|

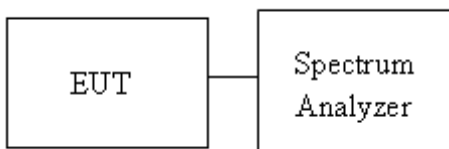
**Average output power** : For reporting purposes only

## 4.1.2 Test Procedure

Test method Refer as KDB 558074 D01 and ANSI C63.10:2013.

1. The EUT RF output connected to the power meter by RF cable.
2. Setting maximum power transmit of EUT.
3. The path loss was compensated to the results for each measurement.
4. Measure and record the result of Peak output power and Average output power. in the test report.

## 4.1.3 Test Setup





### 4.1.4 Test Result

Temperature: 21.8 ~ 23.8°C

Test date: July 3 ~ 12, 2024

Humidity: 53 ~ 58% RH

Tested by: Jerry Chang

#### Peak & Average output power :

| 802.11b Ch0 |             |           |                        |                         |             |        |
|-------------|-------------|-----------|------------------------|-------------------------|-------------|--------|
| CH          | Freq. (MHz) | Data Rate | Peak Output Power (mW) | Peak Output Power (dBm) | Limit (dBm) | RESULT |
| 1           | 2412        | 1         | 367.28                 | 25.65                   | 30.00       | PASS   |
| 6           | 2437        | 1         | 662.22                 | <b>28.21</b>            | 30.00       | PASS   |
| 11          | 2462        | 1         | 265.46                 | 24.24                   | 30.00       | PASS   |
| 802.11b Ch0 |             |           |                        |                         |             |        |
| CH          | Freq. (MHz) | Data Rate | Avg. Output Power (mW) | Avg. Output Power (dBm) | Limit (dBm) | RESULT |
| 1           | 2412        | 1         | 214.10                 | 23.31                   | 30.00       | PASS   |
| 6           | 2437        | 1         | 395.02                 | <b>25.97</b>            | 30.00       | PASS   |
| 11          | 2462        | 1         | 157.99                 | 21.99                   | 30.00       | PASS   |

| 802.11g Ch0 |             |           |                        |                         |             |        |
|-------------|-------------|-----------|------------------------|-------------------------|-------------|--------|
| CH          | Freq. (MHz) | Data Rate | Peak Output Power (mW) | Peak Output Power (dBm) | Limit (dBm) | RESULT |
| 1           | 2412        | 6         | 506.99                 | 27.05                   | 30.00       | PASS   |
| 6           | 2437        | 6         | 676.08                 | <b>28.30</b>            | 30.00       | PASS   |
| 11          | 2462        | 6         | 485.29                 | 26.86                   | 30.00       | PASS   |
| 802.11g Ch0 |             |           |                        |                         |             |        |
| CH          | Freq. (MHz) | Data Rate | Avg. Output Power (mW) | Avg. Output Power (dBm) | Limit (dBm) | RESULT |
| 1           | 2412        | 6         | 181.85                 | 22.60                   | 30.00       | PASS   |
| 6           | 2437        | 6         | 276.51                 | <b>24.42</b>            | 30.00       | PASS   |
| 11          | 2462        | 6         | 178.53                 | 22.52                   | 30.00       | PASS   |

| 802.11n_HT_20M Ch0 |             |           |                        |                         |             |        |
|--------------------|-------------|-----------|------------------------|-------------------------|-------------|--------|
| CH                 | Freq. (MHz) | Data Rate | Peak Output Power (mW) | Peak Output Power (dBm) | Limit (dBm) | RESULT |
| 1                  | 2412        | MCS0      | 512.86                 | 27.10                   | 30.00       | PASS   |
| 6                  | 2437        | MCS0      | 683.91                 | <b>28.35</b>            | 30.00       | PASS   |
| 11                 | 2462        | MCS0      | 488.65                 | 26.89                   | 30.00       | PASS   |
| 802.11n_HT_20M Ch0 |             |           |                        |                         |             |        |
| CH                 | Freq. (MHz) | Data Rate | Avg. Output Power (mW) | Avg. Output Power (dBm) | Limit (dBm) | RESULT |
| 1                  | 2412        | MCS0      | 175.50                 | 22.44                   | 30.00       | PASS   |
| 6                  | 2437        | MCS0      | 274.34                 | <b>24.38</b>            | 30.00       | PASS   |
| 11                 | 2462        | MCS0      | 173.49                 | 22.39                   | 30.00       | PASS   |
| 802.11n_HT_40M Ch0 |             |           |                        |                         |             |        |
| CH                 | Freq. (MHz) | Data Rate | Peak Output Power (mW) | Peak Output Power (dBm) | Limit (dBm) | RESULT |
| 3                  | 2422        | MCS0      | 622.30                 | 27.94                   | 30.00       | PASS   |
| 6                  | 2437        | MCS0      | 772.68                 | <b>28.88</b>            | 30.00       | PASS   |
| 9                  | 2452        | MCS0      | 522.40                 | 27.18                   | 30.00       | PASS   |
| 802.11n_HT_40M Ch0 |             |           |                        |                         |             |        |
| CH                 | Freq. (MHz) | Data Rate | Avg. Output Power (mW) | Avg. Output Power (dBm) | Limit (dBm) | RESULT |
| 3                  | 2422        | MCS0      | 179.80                 | 22.55                   | 30.00       | PASS   |
| 6                  | 2437        | MCS0      | 280.40                 | <b>24.48</b>            | 30.00       | PASS   |
| 9                  | 2452        | MCS0      | 138.29                 | 21.41                   | 30.00       | PASS   |

**EIRP :**

| 802.11b Ch0 |             |           |                         |                    |              |             |        |
|-------------|-------------|-----------|-------------------------|--------------------|--------------|-------------|--------|
| CH          | Freq. (MHz) | Data Rate | Avg. Output Power (dBm) | Antenna Gain (dBi) | EIRP (dBm)   | Limit (dBm) | RESULT |
| 1           | 2412        | 1         | 23.31                   | 4.20               | 27.51        | 36          | PASS   |
| 6           | 2437        | 1         | 25.97                   | 4.20               | <b>30.17</b> | 36          | PASS   |
| 11          | 2462        | 1         | 21.99                   | 4.20               | 26.19        | 36          | PASS   |

| 802.11g Ch0 |             |           |                         |                    |              |             |        |
|-------------|-------------|-----------|-------------------------|--------------------|--------------|-------------|--------|
| CH          | Freq. (MHz) | Data Rate | Avg. Output Power (dBm) | Antenna Gain (dBi) | EIRP (dBm)   | Limit (dBm) | RESULT |
| 1           | 2412        | 6         | 22.60                   | 4.20               | 26.80        | 36          | PASS   |
| 6           | 2437        | 6         | 24.42                   | 4.20               | <b>28.62</b> | 36          | PASS   |
| 11          | 2462        | 6         | 22.52                   | 4.20               | 26.72        | 36          | PASS   |

| 802.11n_HT_20M Ch0 |             |           |                         |                    |              |             |        |
|--------------------|-------------|-----------|-------------------------|--------------------|--------------|-------------|--------|
| CH                 | Freq. (MHz) | Data Rate | Avg. Output Power (dBm) | Antenna Gain (dBi) | EIRP (dBm)   | Limit (dBm) | RESULT |
| 1                  | 2412        | MCS0      | 22.44                   | 4.20               | 26.64        | 36          | PASS   |
| 6                  | 2437        | MCS0      | 24.38                   | 4.20               | <b>28.58</b> | 36          | PASS   |
| 11                 | 2462        | MCS0      | 22.39                   | 4.20               | 26.59        | 36          | PASS   |

| 802.11n_HT_40M Ch0 |             |           |                         |                    |              |             |        |
|--------------------|-------------|-----------|-------------------------|--------------------|--------------|-------------|--------|
| CH                 | Freq. (MHz) | Data Rate | Avg. Output Power (dBm) | Antenna Gain (dBi) | EIRP (dBm)   | Limit (dBm) | RESULT |
| 3                  | 2422        | MCS0      | 22.55                   | 4.20               | 26.75        | 36          | PASS   |
| 6                  | 2437        | MCS0      | 24.48                   | 4.20               | <b>28.68</b> | 36          | PASS   |
| 9                  | 2452        | MCS0      | 21.41                   | 4.20               | 25.61        | 36          | PASS   |

## 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 | Field Strength (microvolts/m) | Measurement Distance (metres) |
|-----------|-------------------------------|-------------------------------|
| 30-88     | 100                           | 3                             |
| 88-216    | 150                           | 3                             |
| 216-960   | 200                           | 3                             |
| Above 960 | 500                           | 3                             |

Remark:

Although these tests were performed other than open area test site, adequate comparison measurements were confirmed against 30 m open area 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.

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IC according to RSS-247 section 5.5, RSS-Gen, Section 8.9 and 8.10

**RSS-Gen Table 3 and Table 5 – General Field Strength Limits for Transmitters and Receivers at Frequencies Above 30 MHz** (Note)

| Frequency (MHz) | Field Strength<br>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)  |

**Note:** Measurements for compliance with the limits in table 3 may be performed at distances other than 3 metres, in accordance with Section 6.6.

**RSS-Gen Table 6: General Field Strength Limits for Transmitters at Frequencies Below 30 MHz (Transmit)**

| Frequency                 | Magnetic field strength (H-Field) ( $\mu\text{A/m}$ ) | Measurement Distance (m) |
|---------------------------|---|--------------------------|
| 9-490 kHz <sup>Note</sup> | 6.37/F (F in kHz)                                     | 300                      |
| 490-1,705 kHz             | 63.7/F (F in kHz)                                     | 30                       |
| 1.705-30 MHz              | 0.08  | 30                       |

**Note:** The emission limits for the ranges 9-90 kHz and 110-490 kHz are based on measurements employing a linear average detector.

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## 4.2.2 Test Procedure

Test method Refer as ANSI C63.10:2013.

1. The EUT is placed on a turntable, Above 1 GHz is 1.5m and 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 the max power channels with the EUT transmit.
4. No emission found between lowest internal used/generated frequency to 30MHz (9KHz~30MHz).

Radiated emission below 30MHz is measured in a 9m\*6m\*6m semi-ane choic chamber, the measurements correspond to those obtained at an open-field test site. There is a comparison data of both open-field test site and semi-Anechoic chamber, and the result came out very similar.

5. The SA setting following :

(1) Below 30MHz :

(1.1) 9KHz-490KHz : RBW=200Hz / VBW=1kHz / Sweep=AUTO

(1.2) 490KHz-30MHz : RBW=10kHz / VBW=30kHz / Sweep=AUTO

(2) 30MHz to 1GHz : RBW = 100kHz, VBW  $\geq$  3\*RBW, Sweep = Auto,

Detector = Peak, Trace = Max hold.

(3) Above 1G :

(2.1) For Peak measurement : RBW = 1MHz, VBW  $\geq$  3 RBW, Sweep = Auto,  
Detector = Peak, Trace = Max hold.

(2.2) For Average measurement : RBW = 1MHz, VBW

·If Duty Cycle  $\geq$  98%, VBW=10Hz.

·If Duty Cycle < 98%, VBW $\geq$ 1/T.

6. Data result :

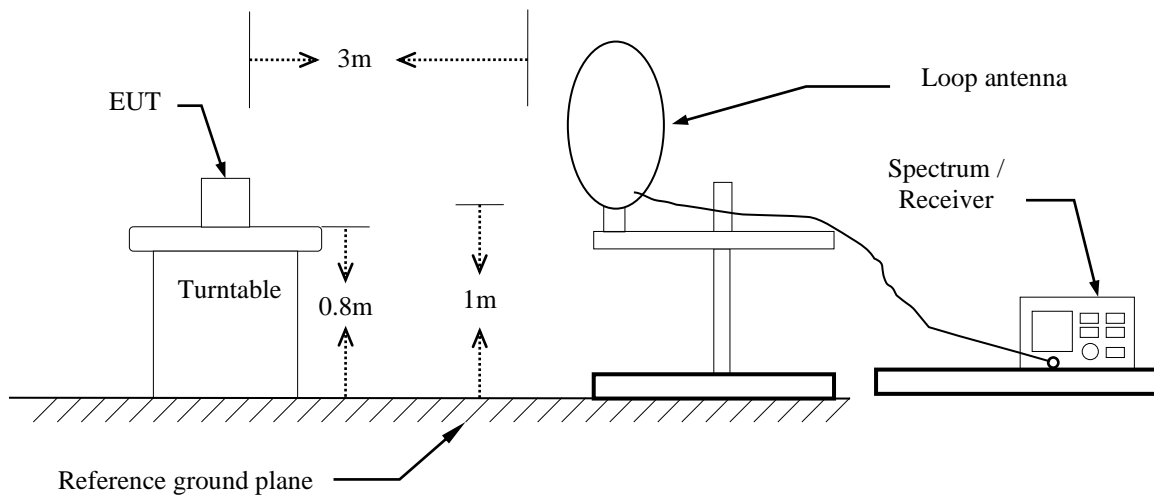
Actual FS=Spectrum Reading Level + Factor

Margin=Actual FS- Limit

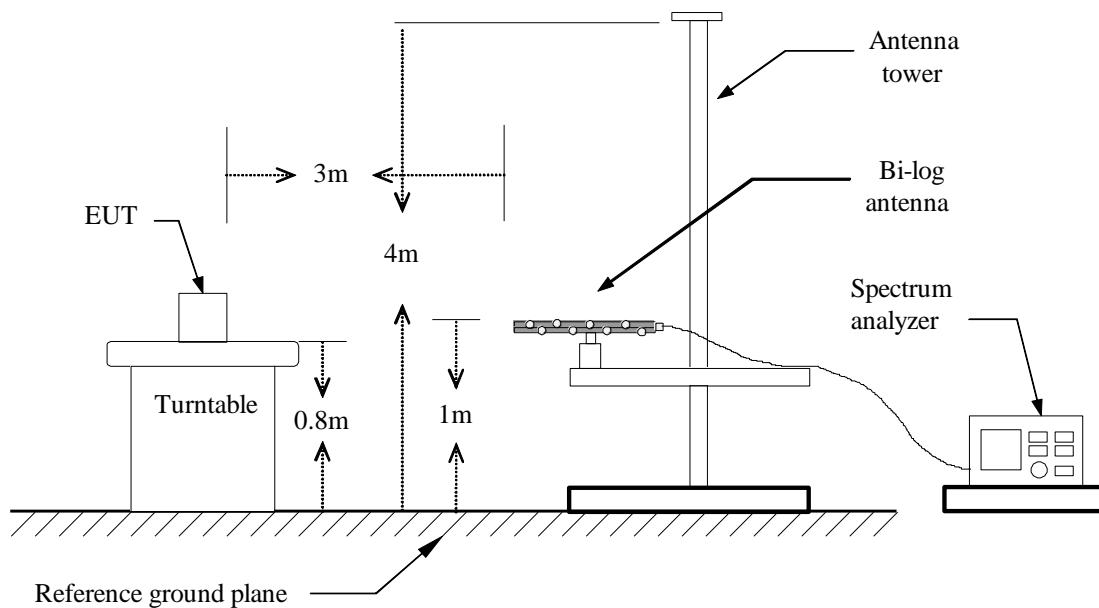
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## 4.2.3 Test Setup

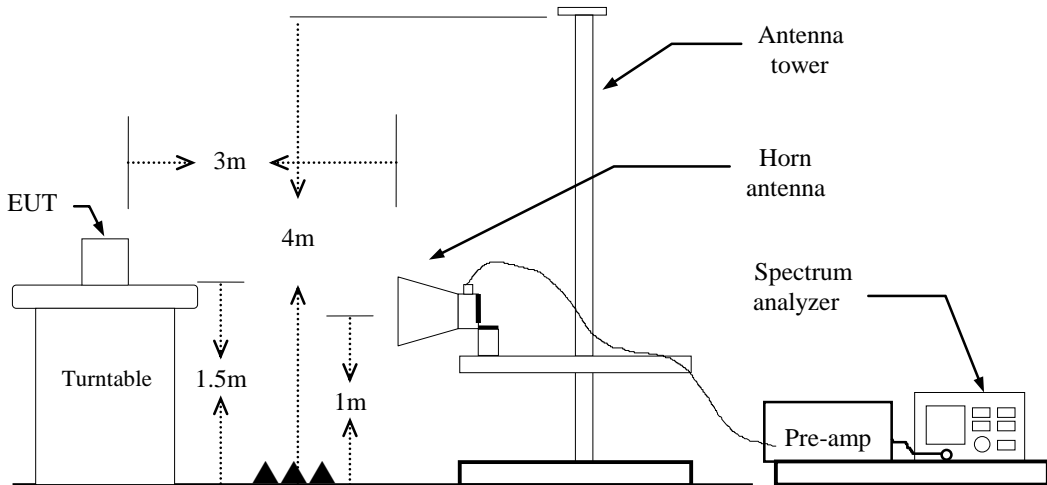
### 9kHz ~ 30MHz



### 30MHz ~ 1GHz



## Above 1 GHz

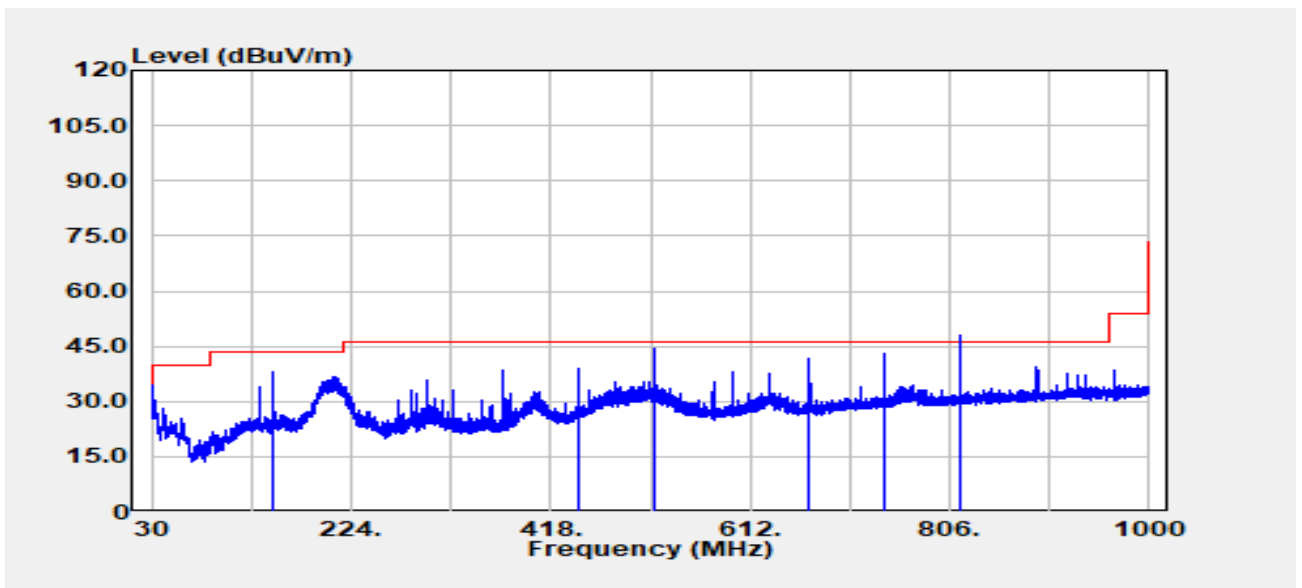




Report No.: TMWK2405001768KR

## 4.2.4 Test Result

|                |                 |              |             |
|----------------|-----------------|--------------|-------------|
| Project No     | :TM-2405000397P | Test Date    | :2024-07-12 |
| Operation Band | :802.11n40      | Temp./Humi.  | :23.9/55    |
| Frequency      | :2422 MHz       | Antenna Pol. | :VERTICAL   |
| Operation Mode | :TX             | Engineer     | :Ray Li     |
| EUT Pol        | :E1             | Test Chamber | : 966A      |
| Setting        | :               |              |             |

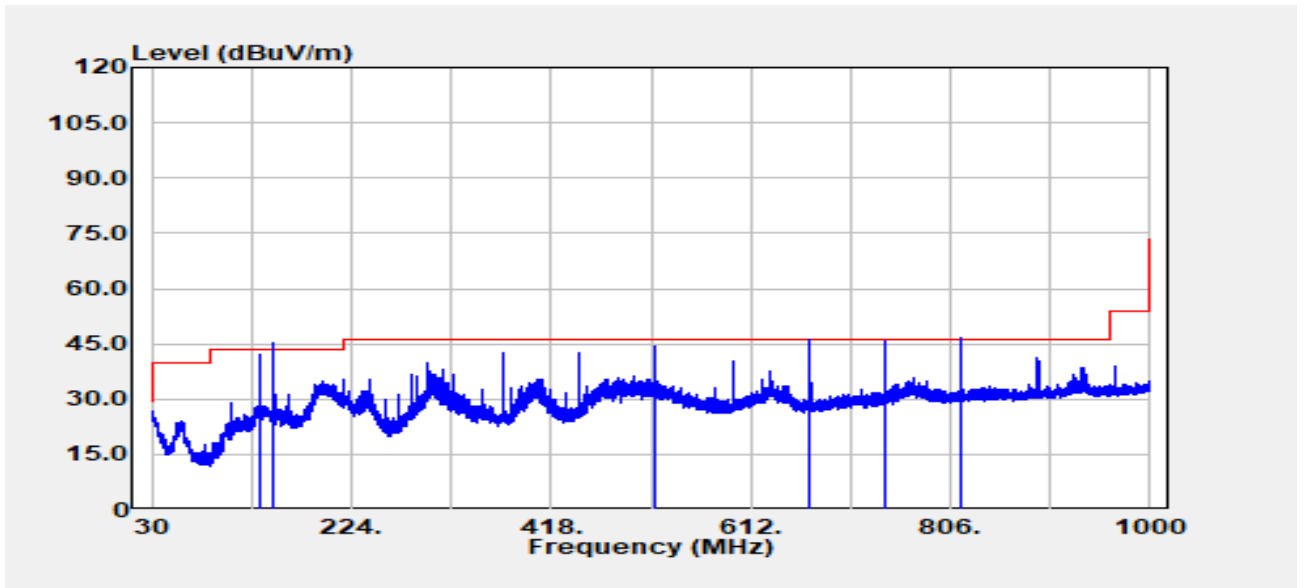


| Freq.<br>MHz | Detector<br>Mode<br>PK/QP/AV | Spectrum<br>Read Level<br>dB $\mu$ V | Factor<br>dB | Actual<br>FS<br>dB $\mu$ V/m | Limit<br>dB $\mu$ V/m | Margin<br>dB |
|--------------|------------------------------|--------------------------------------|--------------|------------------------------|-----------------------|--------------|
| 148.50       | Peak                         | 48.39                                | -10.43       | 37.96                        | 43.50                 | -5.54        |
| 445.50       | Peak                         | 43.04                                | -4.27        | 38.77                        | 46.00                 | -7.23        |
| 519.80       | Peak                         | 47.05                                | -2.75        | 44.30                        | 46.00                 | -1.70        |
| 668.30       | Peak                         | 42.07                                | -0.32        | 41.75                        | 46.00                 | -4.25        |
| 742.50       | Peak                         | 41.99                                | 1.17         | 43.16                        | 46.00                 | -2.84        |
| 816.80       | QP                           | 43.32                                | 2.54         | 45.86                        | 46.00                 | -0.14        |

Report No.: TMWK2405001768KR

Project No :TM-2405000397P  
 Operation Band :802.11n40  
 Frequency :2422 MHz  
 Operation Mode :TX  
 EUT Pol :E1  
 Setting :

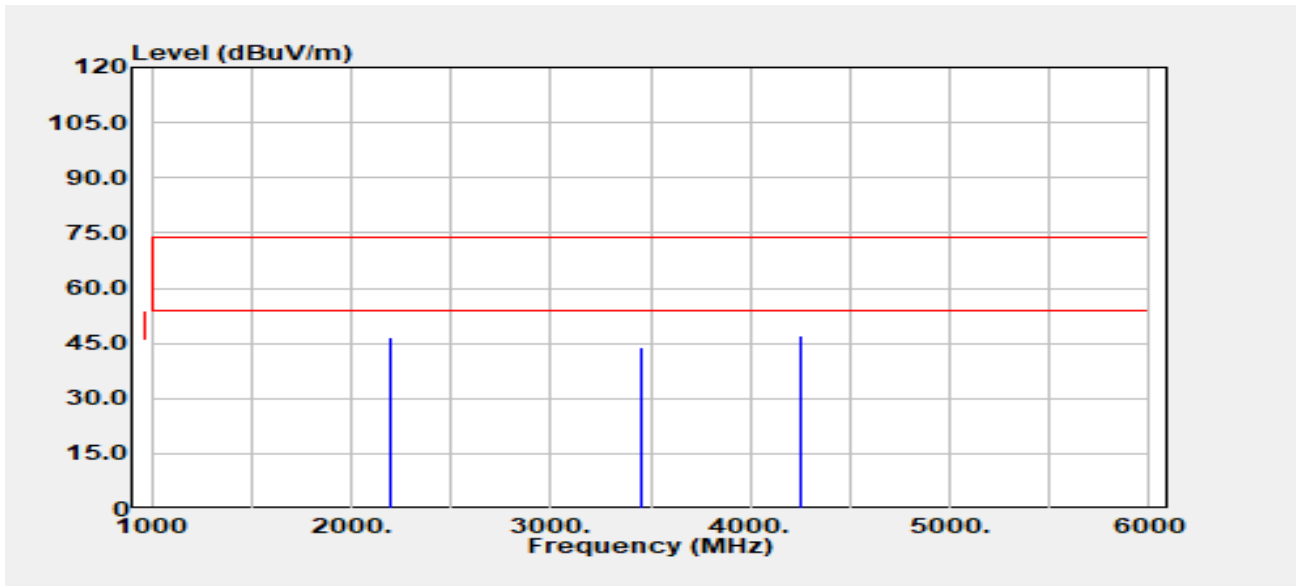
Test Date :2024-07-12  
 Temp./Humi. :23.9/55  
 Antenna Pol. :HORIZONTAL  
 Engineer :Ray Li  
 Test Chamber : 966A



| Freq.<br>MHz | Detector<br>Mode<br>PK/QP/AV | Spectrum<br>Read Level<br>dBuV | Factor<br>dB | Actual<br>FS<br>dBuV/m | Limit<br>dBuV/m | Margin<br>dB |
|--------------|------------------------------|--------------------------------|--------------|------------------------|-----------------|--------------|
| 135.00       | Peak                         | 51.35                          | -9.14        | 42.21                  | 43.50           | -1.29        |
| 148.50       | QP                           | 53.55                          | -10.43       | 43.12                  | 43.50           | -0.38        |
| 519.70       | Peak                         | 47.35                          | -2.75        | 44.60                  | 46.00           | -1.40        |
| 668.30       | QP                           | 44.45                          | -0.32        | 44.13                  | 46.00           | -1.87        |
| 742.50       | QP                           | 42.48                          | 1.17         | 43.65                  | 46.00           | -2.35        |
| 816.80       | QP                           | 41.98                          | 2.54         | 44.52                  | 46.00           | -1.48        |

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|                |                 |              |             |
|----------------|-----------------|--------------|-------------|
| Project No     | :TM-2405000397P | Test Date    | :2024-08-13 |
| Operation Band | :802.11n40      | Temp./Humi.  | :24.6/57    |
| Frequency      | :2422 MHz       | Antenna Pol. | :VERTICAL   |
| Operation Mode | :TX             | Engineer     | :Tony Chao  |
| EUT Pol        | :E1             | Test Chamber | : 966A      |
| Setting        | :               |              |             |

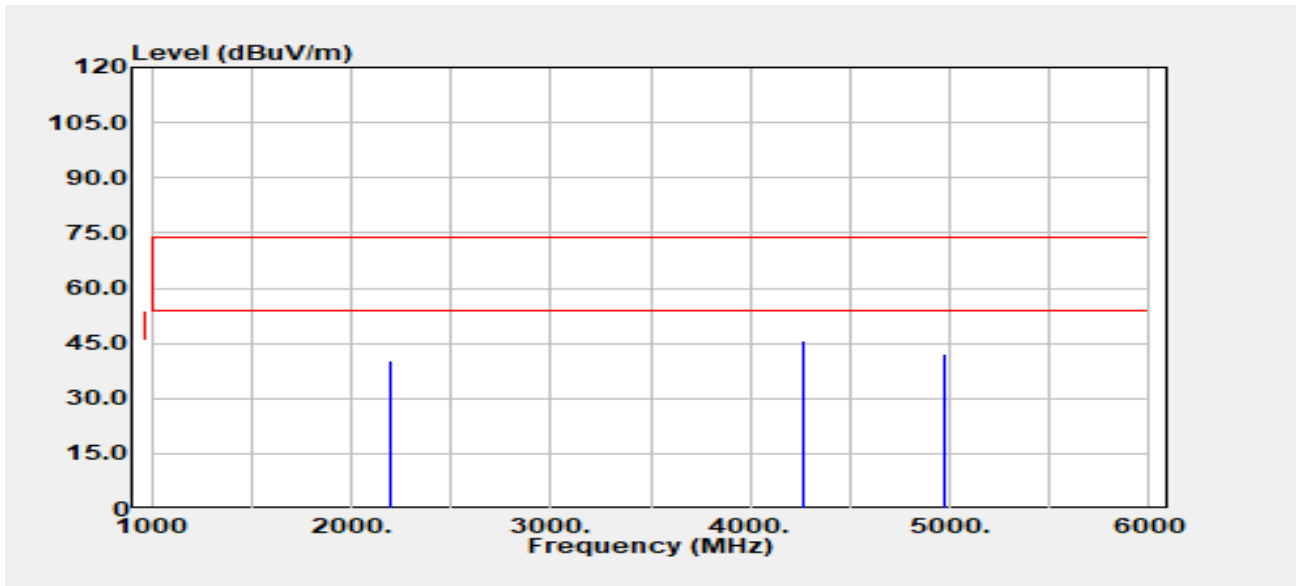


| Freq.<br>MHz | Detector<br>Mode<br>PK/QP/AV | Spectrum<br>Read Level<br>dBuV | Factor<br>dB | Actual<br>FS<br>dBuV/m | Limit<br>dBuV/m | Margin<br>dB |
|--------------|------------------------------|--------------------------------|--------------|------------------------|-----------------|--------------|
| 2199.41      | Peak                         | 49.91                          | -3.19        | 46.72                  | 74.00           | -27.28       |
| 3460.29      | Peak                         | 44.56                          | -0.65        | 43.90                  | 74.00           | -30.10       |
| 4247.06      | Peak                         | 46.05                          | 1.23         | 47.28                  | 74.00           | -26.72       |

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Project No :TM-2405000397P  
 Operation Band :802.11n40  
 Frequency :2422 MHz  
 Operation Mode :TX  
 EUT Pol :E1  
 Setting :

Test Date :2024-08-13  
 Temp./Humi. :24.6/57  
 Antenna Pol. :HORIZONTAL  
 Engineer :Tony Chao  
 Test Chamber : 966A



| Freq.<br>MHz | Detector<br>Mode<br>PK/QP/AV | Spectrum<br>Read Level<br>dBuV | Factor<br>dB | Actual<br>FS<br>dBuV/m | Limit<br>dBuV/m | Margin<br>dB |
|--------------|------------------------------|--------------------------------|--------------|------------------------|-----------------|--------------|
| 2199.41      | Peak                         | 43.63                          | -3.19        | 40.44                  | 74.00           | -33.56       |
| 4267.06      | Peak                         | 44.42                          | 1.33         | 45.75                  | 74.00           | -28.25       |
| 4967.35      | Peak                         | 38.97                          | 3.26         | 42.23                  | 74.00           | -31.77       |

- End of Test Report -