

# TEST REPORT

## CERTIFICATE OF CONFORMITY

**Standard:** 47 CFR FCC Part 15, Subpart C (Section 15.225)

**Report No.:** RFCDVB-WTW-P25040433

**FCC ID:** QYLSNNSVG7V12

**Product:** RFID module

**Brand:** Smart Approach

**Model No.:** SN-NSVG7-C01

**Received Date:** 2025/4/21

**Test Date:** 2025/5/14 ~ 2025/5/15

**Issued Date:** 2025/7/2

**Applicant:** Getac Technology Corporation.

**Address:** 5F., Building A, No. 209, Sec.1, Nangang Rd., Nangang Dist., Taipei City 115018, Taiwan, R.O.C.

**Issued By:** Bureau Veritas Consumer Products Services (H.K.) Ltd., Taoyuan Branch  
Lin Kou Laboratories

**Lab Address:** No. 47-2, 14th Ling, Chia Pau Vil., Lin Kou Dist., New Taipei City, Taiwan

**Test Location:** No. 19, Hwa Ya 2nd Rd., Wen Hwa Vil., Kwei Shan Dist., Taoyuan City 33383, Taiwan

**FCC Registration /** 788550 / TW0003

**Designation Number:**

Approved by: \_\_\_\_\_

Jeremy Lin

Jeremy Lin / Project Engineer

, Date: \_\_\_\_\_

2025/7/2

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Prepared by : Gina Liu / Specialist



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## Release Control Record

| Issue No.            | Description       | Date Issued |
|----------------------|-------------------|-------------|
| RFCDVB-WTW-P25040433 | Original release. | 2025/7/2    |

## 1 Certificate

**Product:** RFID module

**Brand:** Smart Approach

**Test Model:** SN-NSVG7-C01

**Sample Status:** Engineering sample

**Applicant:** Getac Technology Corporation.

**Test Date:** 2025/5/14 ~ 2025/5/15

**Standard:** 47 CFR FCC Part 15, Subpart C (Section 15.225)

**Measurement procedure:** ANSI C63.10-2013

The above equipment has been tested by **Bureau Veritas Consumer Products Services (H.K.) Ltd., Taoyuan Branch**, and found compliance with the requirement of the above standards. The test record, data evaluation & Equipment Under Test (EUT) configurations represented herein are true and accurate accounts of the measurements of the sample's RF characteristics under the conditions specified in this report.

## 2 Summary of Test Results

| 47 CFR FCC Part 15, Subpart C (Section 15.225) |                                                                                                 |        |                                                             |
|------------------------------------------------|-------------------------------------------------------------------------------------------------|--------|-------------------------------------------------------------|
| Standard / Clause                              | Test Item                                                                                       | Result | Remark                                                      |
| 15.207                                         | AC Power Conducted Emissions                                                                    | Pass   | Minimum passing margin is -10.34 dB at 13.55800 MHz         |
| 15.225 (a)                                     | The field strength of any emissions within the band 13.553-13.567 MHz                           | Pass   | Meet the requirement of limit.                              |
| 15.225 (b)                                     | The field strength of any emissions within the bands 13.410-13.553 MHz and 13.567-13.710 MHz    | Pass   | Meet the requirement of limit.                              |
| 15.225 (c)                                     | The field strength of any emissions within the bands 13.110-13.410 MHz and 13.710-14.010 MHz    | Pass   | Meet the requirement of limit.                              |
| 15.225 (d)                                     | The field strength of any emissions appearing outside of the 13.110-14.010 MHz band below 30MHz | Pass   | Meet the requirement of limit.                              |
| 15.225 (d)                                     | The field strength of any emissions appearing outside of the 13.110-14.010 MHz band above 30MHz | Pass   | Minimum passing margin is -1.6 dB at 251.16 MHz             |
| 15.225 (e)                                     | Frequency Stability                                                                             | Pass   | Meet the requirement of limit.                              |
| 15.215 (c)                                     | 20 dB Bandwidth                                                                                 | Pass   | Meet the requirement of limit.                              |
| 15.203                                         | Antenna Requirement                                                                             | Pass   | Antenna connector are I-PEX gen 4 not a standard connector. |

Note: Determining compliance based on the results of the compliance measurement, not taking into account measurement instrumentation uncertainty.

### 2.1 Measurement Uncertainty

Where relevant, the following measurement uncertainty levels have been estimated for tests performed on the EUT as specified in CISPR 16-4-2:

| Measurement                     | Specification  | Expanded Uncertainty<br>(k=2)<br>(±) |
|---------------------------------|----------------|--------------------------------------|
| AC Power Conducted Emissions    | 9 kHz ~ 30 MHz | 2.90 dB                              |
| Radiated Emissions below 30 MHz | 9 kHz ~ 30 MHz | 2.44 dB                              |
| Radiated Emissions above 30 MHz | 30 MHz ~ 1 GHz | 2.95 dB                              |
| Frequency Stability             | -              | 0.176 ppm                            |

The other instruments specified are routine verified to remain within the calibrated levels, no measurement uncertainty is required to be calculated.

### 2.2 Supplementary Information

There is not any deviation from the test standards for the test method, and no modifications required for compliance.

### 3 General Information

#### 3.1 General Description

|                               |                                                                                                                      |
|-------------------------------|----------------------------------------------------------------------------------------------------------------------|
| Product                       | RFID module                                                                                                          |
| Brand                         | Smart Approach                                                                                                       |
| Test Model                    | SN-NSVG7-C01                                                                                                         |
| Host Marketing Name (HMN)     | V120                                                                                                                 |
| Status of EUT                 | Engineering sample                                                                                                   |
| Power Supply Rating           | End-product:<br>19 Vdc (adapter)<br>7.74 / 11.61 Vdc (battery)                                                       |
| Modulation Type               | ASK                                                                                                                  |
| NFC Technology Type           | NFC-A(ISO/IEC 14443 Type A)<br>NFC-B(ISO/IEC 14443 Type B)<br>NFC-F(ISO/IEC 18092 or FeliCa)<br>NFC-V(ISO/IEC 15693) |
| Data Rate                     | Type A: 106 kbit/s<br>Type B: 106 kbit/s<br>Type F: 212 kbit/s, 424 kbit/s<br>Type V: 848 kbit/s                     |
| Operating Frequency           | 13.56 MHz                                                                                                            |
| Number of Channel             | 1                                                                                                                    |
| Field Strength Of Fundamental | 23.40 dBuV/m (Quasi-Peak) at 30 meters                                                                               |

Note:

1. The EUT is authorized for use in specific End-product. Please refer to below for more details.

| Product  | Brand | Model                                                                                                       | Difference            |
|----------|-------|-------------------------------------------------------------------------------------------------------------|-----------------------|
| Notebook | Getac | V120                                                                                                        | For marketing purpose |
|          |       | V120Y(Y= 10 characters, Y can be 0 to 9, A to Z, a to z, “/”, “\”, “-”, “_” or blank for marketing purpose) |                       |

2. The End-product uses following accessories.

| Item       | Brand | Model        | Specification                                                                                                                               |
|------------|-------|--------------|---------------------------------------------------------------------------------------------------------------------------------------------|
| Battery 1  | Getac | BP2S1P4070P  | Power Rating : Rating: 7.74Vdc , 3800mAh, 29.42Wh<br>Typical Capacity: 4070mAh, 31.51Wh                                                     |
| Battery 2  | Getac | BP3S1P4070P  | Power Rating : Rating: 11.61Vdc , 3800mAh, 44.12Wh<br>Typical Capacity: 4070mAh, 47.26Wh                                                    |
| AC Adapter | FSP   | FSP065-RBBN3 | AC Input : 100-240 Vac ; 50-60 Hz ; 1.5 A<br>DC Output : 19.0Vdc ; 3.42A, 65.0W<br>DC Output Cable : 1.45M / 1core<br>AC Power Cord : 1.75M |
| Touch Pen  | Getac | 340GA8900001 | -                                                                                                                                           |

3. The above EUT information is declared by manufacturer and for more detailed features description, please refer to the manufacturer's specifications or User's Manual.

### 3.2 Antenna Description of EUT

| RF Chain NO. | Antenna Type | Connector Type | Frequency (MHz) |
|--------------|--------------|----------------|-----------------|
| RFID 1       | Loop         | I-PEX gen 4    | 13.56           |
| RFID 2       | Loop         | I-PEX gen 4    | 13.56           |

\* Due to radiated measurements are made and the antenna gain is already accounted for this device, so provide an antenna datasheet and/or antenna measurement report is not required. The antenna dimensions and pictures (include antenna wire length if have) are stated in EUT photo exhibit.

### 3.3 Channel List

1 channel is provided to this EUT:

| Channel | Frequency (MHz) |
|---------|-----------------|
| 1       | 13.56           |

### 3.4 Test Mode Applicability and Tested Channel Detail

|             |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
|-------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Pre-Scan:   | <ol style="list-style-type: none"> <li>1. EUT can be used in the following ways: X-axis/ Y-axis/ Z-axis/NB-axis. Pre-scan these ways and find the worst case as a representative test condition.</li> <li>2. EUT can be used in the following ways: Antenna 1/ Antenna 2. Pre-scan these ways and find the worst case as a representative test condition.</li> <li>3. EUT can be used in the following ways: Battery 1/ Battery 2. Pre-scan these ways and find the worst case as a representative test condition.</li> </ol> |
| Worst Case: | <ol style="list-style-type: none"> <li>1. NB-axis / Antenna 1 / Battery 1.</li> <li>2. The EUT had been pre-tested on Type A, Type B, Type F and Type V data rate. The worst case was found when data raw were Type B for final testing.</li> </ol>                                                                                                                                                                                                                                                                           |

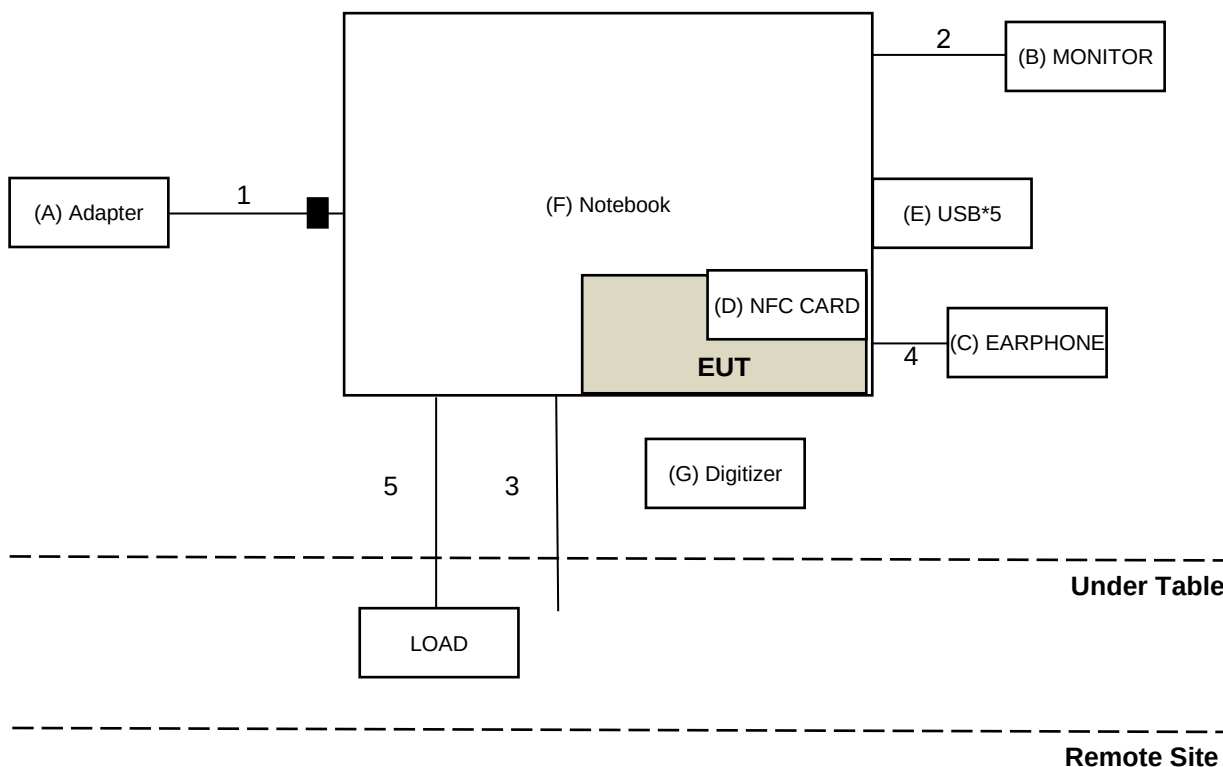
Following channel(s) was (were) selected for the final test as listed below:

| Test Item                       | Type | Tested Channel | Modulation  | Data Rate Parameter |
|---------------------------------|------|----------------|-------------|---------------------|
| AC Power Conducted Emissions    | B    | 1              | 10%, ASK    | 106 kbit/s          |
| Radiated Emissions below 30 MHz | B    | 1              | 10%, ASK    | 106 kbit/s          |
| Radiated Emissions above 30 MHz | B    | 1              | 10%, ASK    | 106 kbit/s          |
| Frequency Stability             | B    | 1              | unmodulated | -                   |
| 20 dB Bandwidth                 | B    | 1              | 10%, ASK    | 106 kbit/s          |

### 3.5 Test Program Used and Operation Descriptions

Set the EUT under transmission condition continuously at specific channel frequency.

### 3.6 Connection Diagram of EUT and Peripheral Devices



### 3.7 Configuration of Peripheral Devices and Cable Connections

| ID | Product   | Brand   | Model No.      | Serial No.               | FCC ID | Remarks            |
|----|-----------|---------|----------------|--------------------------|--------|--------------------|
| A  | Adapter   | FSP     | FSP065-RBBN3   | NA                       | NA     | Accessory of EUT   |
| B  | Monitor   | DELL    | A14S2421HSXmTW | CN-01KWWF-WSL00-24C-711B | NA     | Provided by Lab    |
| C  | EARPHONE  | APPLE   | MB77PFEB       | NA                       | NA     | Provided by Lab    |
| D  | NFC CARD  | TYPE-B  | NA             | NA                       | NA     | Provided by Lab    |
| E  | USB*5     | SanDisk | SDDDC3-032G    | NA                       | NA     | Provided by Lab    |
| F  | Notebook  | Getac   | V120           | NA                       | NA     | Provided by client |
| G  | Digitizer | EMRight | GET-122L       | NA                       | NA     | Provided by client |

| ID | Cable Descriptions | Qty. | Length (m) | Shielding (Yes/No) | Cores (Qty.) | Remarks          |
|----|--------------------|------|------------|--------------------|--------------|------------------|
| 1  | DC Cable           | 1    | 1.45       | Y                  | 1            | Accessory of EUT |
| 2  | HDMI               | 1    | 1.8        | Y                  | 0            | Provided by Lab  |
| 3  | RS232              | 1    | 1.5        | N                  | 0            | Provided by Lab  |
| 4  | AUDIO              | 1    | 1.2        | N                  | 0            | Provided by Lab  |
| 5  | LAN                | 1    | 1.5        | N                  | 0            | Provided by Lab  |

## 4 Test Instruments

The calibration interval of the all test instruments are 12 months and the calibrations are traceable to NML/ROC and NIST/USA.

### 4.1 AC Power Conducted Emissions

| Description<br>Manufacturer | Model No.            | Serial No.     | Calibrated<br>Date | Calibrated<br>Until |
|-----------------------------|----------------------|----------------|--------------------|---------------------|
| 50 ohm terminal resistance  | E1-011279            | 04             | 2024/11/28         | 2025/11/27          |
|                             | E1-011280            | 05             | 2024/11/28         | 2025/11/27          |
|                             | E1-011311            | 09             | 2024/11/28         | 2025/11/27          |
| DC-LISN<br>Schwarzbeck      | NNBM 8126G           | 8126G-069      | 2024/11/5          | 2025/11/4           |
| EMI Test Receiver<br>R&S    | ESR3                 | 102783         | 2024/12/17         | 2025/12/16          |
| Fixed Attenuator<br>STI     | BNC5W10dB            | PAD-COND2-01   | 2024/8/25          | 2025/8/24           |
| LISN<br>R&S                 | ESH2-Z5              | 100100         | 2025/3/5           | 2026/3/4            |
|                             | ESH3-Z5              | 100312         | 2024/9/9           | 2025/9/8            |
| RF Coaxial Cable<br>Woken   | 5D-FB                | Cable-cond2-01 | 2024/8/25          | 2025/8/24           |
| Software<br>BVADT           | BVADT_Conf_ V7.4.1.0 | N/A            | N/A                | N/A                 |
| V-LISN<br>Schwarzbeck       | NNBL 8226-2          | 8226-142       | 2024/8/28          | 2025/8/27           |

Notes:

1. The test was performed in HY - Conduction 2.
2. Tested Date: 2025/5/14

#### 4.2 Radiated Emissions below 30 MHz

| Description<br>Manufacturer       | Model No.                    | Serial No.    | Calibrated<br>Date | Calibrated<br>Until |
|-----------------------------------|------------------------------|---------------|--------------------|---------------------|
| Antenna Tower & Turn<br>Max-Full  | MFA-440H                     | AT93021705    | N/A                | N/A                 |
| EXA Signal Analyzer<br>Agilent    | N9010A                       | MY52220207    | 2024/12/30         | 2025/12/29          |
| Loop Antenna<br>TESEQ             | HLA 6121                     | 45745         | 2024/8/21          | 2025/8/20           |
| MXE EMI Receiver<br>Agilent       | N9038A                       | MY51210203    | 2024/8/27          | 2025/8/26           |
| Preamplifier<br>EMCI              | EMC001340                    | 980201        | 2024/9/24          | 2025/9/23           |
| RF Coaxial Cable<br>Woken         | 8D-FB                        | Cable-Ch10-01 | 2024/9/24          | 2025/9/23           |
| Software<br>BV ADT                | ADT_Radiated_<br>V7.6.15.9.5 | N/A           | N/A                | N/A                 |
| Turn Table<br>Max-Full            | MFT-201SS                    | N/A           | N/A                | N/A                 |
| Turn Table Controller<br>Max-Full | MG-7802                      | N/A           | N/A                | N/A                 |

Notes:

1. The test was performed in HY - 966 chamber 5.
2. Tested Date: 2025/5/14

#### 4.3 Radiated Emissions above 30 MHz

| Description<br>Manufacturer       | Model No.                    | Serial No.    | Calibrated<br>Date | Calibrated<br>Until |
|-----------------------------------|------------------------------|---------------|--------------------|---------------------|
| Antenna Tower & Turn<br>Max-Full  | MFA-440H                     | AT93021705    | N/A                | N/A                 |
| Bi_Log Antenna<br>Schwarzbeck     | VULB 9168                    | 9168-472      | 2024/10/14         | 2025/10/13          |
| EXA Signal Analyzer<br>Agilent    | N9010A                       | MY52220207    | 2024/12/30         | 2025/12/29          |
| MXE EMI Receiver<br>Agilent       | N9038A                       | MY51210203    | 2024/8/27          | 2025/8/26           |
| Preamplifier<br>EMCI              | EMC 330H                     | 980112        | 2024/9/24          | 2025/9/23           |
| RF Coaxial Cable<br>Woken         | 8D-FB                        | Cable-Ch10-01 | 2024/9/24          | 2025/9/23           |
| Software<br>BV ADT                | ADT_Radiated_<br>V7.6.15.9.5 | N/A           | N/A                | N/A                 |
| Turn Table<br>Max-Full            | MFT-201SS                    | N/A           | N/A                | N/A                 |
| Turn Table Controller<br>Max-Full | MG-7802                      | N/A           | N/A                | N/A                 |

Notes:

1. The test was performed in HY - 966 chamber 5.
2. Tested Date: 2025/5/14

#### 4.4 Frequency Stability

| Description<br>Manufacturer              | Model No.                        | Serial No.        | Calibrated<br>Date | Calibrated<br>Until |
|------------------------------------------|----------------------------------|-------------------|--------------------|---------------------|
| 3-channel DC power supply<br>OWON        | ODP3033                          | ODP30332128138    | N/A                | N/A                 |
| Digital Multimeter<br>Fluke              | 8050A                            | 4660081           | 2024/6/14          | 2025/6/13           |
| Fixed Attenuator<br>Woken                | 00800A1K01A-10                   | 00800A1K01A-10-01 | 2024/5/29          | 2025/5/28           |
| Loop Antenna<br>TESEQ                    | HLA 6121                         | 45745             | 2024/8/21          | 2025/8/20           |
| MXA Signal Analyzer<br>Keysight          | N9020B                           | MY60110462        | 2025/4/22          | 2026/4/21           |
| Preamplifier<br>EMCI                     | EMC001340                        | 980201            | 2024/9/24          | 2025/9/23           |
| RF Coaxial Cable<br>Woken                | 8D-FB                            | Cable-Ch10-01     | 2024/9/24          | 2025/9/23           |
| Signal & Spectrum Analyzer<br>R&S        | FSV3044                          | 101504            | 2024/6/18          | 2025/6/17           |
|                                          | FSW26                            | 102023            | 2024/11/11         | 2025/11/10          |
|                                          | FSW43                            | 101582            | 2025/4/15          | 2026/4/14           |
| Signal Analyzer<br>R&S                   | FSV40                            | 100980            | 2025/5/7           | 2026/5/6            |
| Software<br>BV                           | ADT_RF Test Software<br>V7.6.5.4 | N/A               | N/A                | N/A                 |
| Spectrum Analyzer<br>R&S                 | FSU26                            | 101645            | 2024/7/27          | 2025/7/26           |
|                                          | FSU43                            | 101261            | 2025/4/16          | 2026/4/15           |
| Temperature & Humidity Chamber<br>Terchy | MHU-225AU                        | 920842            | 2024/6/21          | 2025/6/20           |

Notes:

1. The test was performed in Oven room.
2. Tested Date: 2025/5/15

#### 4.5 20 dB Bandwidth

| Description<br>Manufacturer       | Model No.                    | Serial No.    | Calibrated<br>Date | Calibrated<br>Until |
|-----------------------------------|------------------------------|---------------|--------------------|---------------------|
| Antenna Tower & Turn<br>Max-Full  | MFA-440H                     | AT93021705    | N/A                | N/A                 |
| EXA Signal Analyzer<br>Agilent    | N9010A                       | MY52220207    | 2024/12/30         | 2025/12/29          |
| Loop Antenna<br>TESEQ             | HLA 6121                     | 45745         | 2024/8/21          | 2025/8/20           |
| MXE EMI Receiver<br>Agilent       | N9038A                       | MY51210203    | 2024/8/27          | 2025/8/26           |
| Preamplifier<br>EMCI              | EMC001340                    | 980201        | 2024/9/24          | 2025/9/23           |
| RF Coaxial Cable<br>Woken         | 8D-FB                        | Cable-Ch10-01 | 2024/9/24          | 2025/9/23           |
| Software<br>BV ADT                | ADT_Radiated_<br>V7.6.15.9.5 | N/A           | N/A                | N/A                 |
| Turn Table<br>Max-Full            | MFT-201SS                    | N/A           | N/A                | N/A                 |
| Turn Table Controller<br>Max-Full | MG-7802                      | N/A           | N/A                | N/A                 |

Notes:

1. The test was performed in HY - 966 chamber 5.
2. Tested Date: 2025/5/15

## 5 Limits of Test Items

### 5.1 AC Power Conducted Emissions

| Frequency (MHz) | Conducted Limit (dBuV) |         |
|-----------------|------------------------|---------|
|                 | Quasi-peak             | Average |
| 0.15 - 0.5      | 66 - 56                | 56 - 46 |
| 0.50 - 5.0      | 56                     | 46      |
| 5.0 - 30.0      | 60                     | 50      |

Notes:

1. The lower limit shall apply at the transition frequencies.
2. The limit decreases in line with the logarithm of the frequency in the range of 0.15 to 0.50 MHz.

### 5.2 Radiated Emissions below 30 MHz

- (a) The field strength of any emissions within the band 13.553-13.567 MHz shall not exceed 15,848 microvolts/meter at 30 meters.
- (b) Within the bands 13.410-13.553 MHz and 13.567-13.710 MHz, the field strength of any emissions shall not exceed 334 microvolts/meter at 30 meters.
- (c) Within the bands 13.110-13.410 MHz and 13.710-14.010 MHz the field strength of any emissions shall not exceed 106 microvolts/meter at 30 meters.
- (d) The field strength of any emissions appearing outside of the 13.110-14.010 MHz band shall not exceed the general radiated emission limits in §15.209 as below table:

| Frequency (MHz) | Field Strength (microvolts/meter) | Measurement Distance (meters) |
|-----------------|-----------------------------------|-------------------------------|
| 0.009 ~ 0.490   | 2400/F(kHz)                       | 300                           |
| 0.490 ~ 1.705   | 24000/F(kHz)                      | 30                            |
| 1.705 ~ 30.0    | 30                                | 30                            |

Notes:

1. The lower limit shall apply at the transition frequencies.
2. Emission level (dBuV/m) = 20 log Emission level (uV/m).
3. The emission limits shown in the above table are based on measurements employing a CISPR quasi-peak detect or except for the frequency bands 9-90 kHz, 110-490 kHz and above 1000 MHz. Radiated emission limits in these three bands are based on measurements employing an average detector, and the peak field strength of any emission shall not exceed the maximum permitted average limits, specified above by more than 20 dB under any condition of modulation.

### 5.3 Radiated Emissions above 30 MHz

Radiated emissions which fall in the restricted bands must comply with the radiated emission limits specified as below table.

| Frequency (MHz) | Field Strength (microvolts/meter) | Measurement Distance (meters) |
|-----------------|-----------------------------------|-------------------------------|
| 30 ~ 88         | 100                               | 3                             |
| 88 ~ 216        | 150                               | 3                             |
| 216 ~ 960       | 200                               | 3                             |
| Above 960       | 500                               | 3                             |

Notes:

1. The lower limit shall apply at the transition frequencies.
2. Emission level (dBuV/m) = 20 log Emission level (uV/m).

#### 5.4 Frequency Stability

The frequency tolerance of the carrier signal shall be maintained within  $\pm 0.01\%$  of the operating frequency over a temperature variation of  $-20$  degrees to  $50$  degrees C at normal supply voltage, and for a variation in the primary supply voltage from  $85\%$  to  $115\%$  of the rated supply voltage at a temperature of  $20$  degrees C.

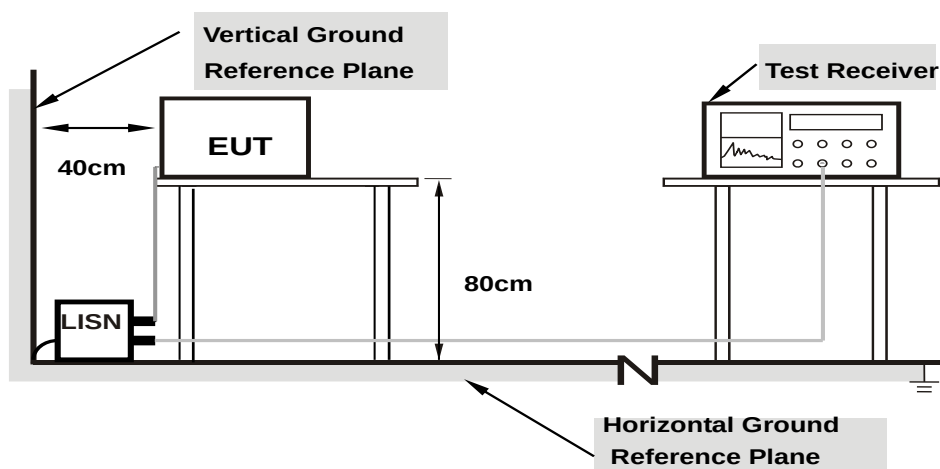
#### 5.5 20 dB Bandwidth

The 20dB bandwidth shall be specified in operating frequency band.

## 6 Test Arrangements

### 6.1 AC Power Conducted Emissions

#### 6.1.1 Test Setup



**Note: 1. Support units were connected to second LISN.**

For the actual test configuration, please refer to the attached file (Test Setup Photo).

#### 6.1.2 Test Procedure

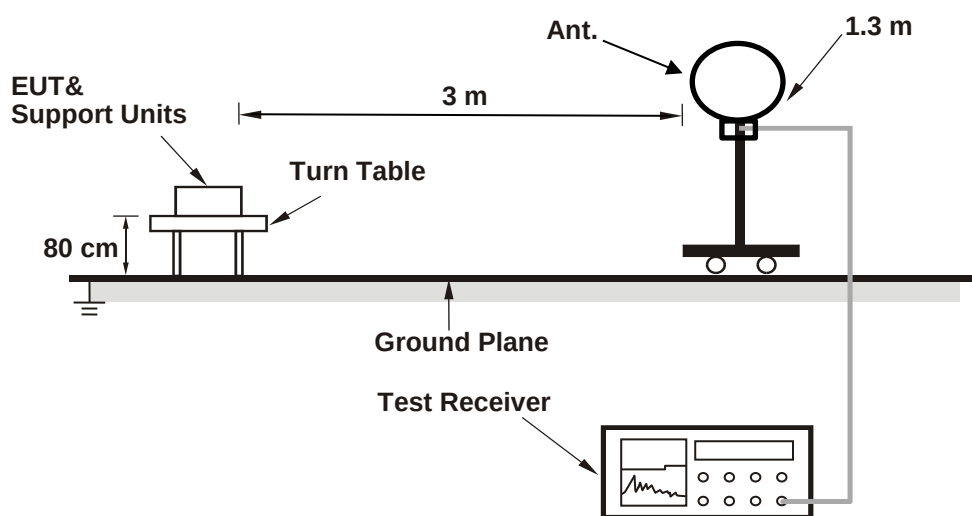
- The EUT was placed on a 0.8 meter to the top of table and placed 0.4 meters from the conducting wall of the shielded room with EUT being connected to the power mains through a line impedance stabilization network (LISN). Other support units were connected to the power mains through another LISN. The two LISNs provide 50 ohm/ 50 uH of coupling impedance for the measuring instrument.
- Both lines of the power mains connected to the EUT were checked for maximum conducted interference.
- The frequency range from 150 kHz to 30 MHz was searched. Emission levels under (Limit – 20 dB) was not recorded.

**Note:** The resolution bandwidth and video bandwidth of test receiver is 9 kHz for quasi-peak detection (QP) and average detection (AV) at frequency 0.15 MHz-30 MHz.

## 6.2 Radiated Emissions below 30 MHz

### 6.2.1 Test Setup

#### For Radiated emission below 30 MHz



For the actual test configuration, please refer to the attached file (Test Setup Photo).

## 6.2.2 Test Procedure

### For Radiated emission below 30 MHz

- The EUT was placed on the top of a rotating table 0.8 meters above the ground at 3 meter chamber room for test. The table was rotated 360 degrees to determine the position of the highest radiation.
- The EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower.
- Parallel, perpendicular, and ground-parallel orientations of the antenna are set to make the measurement.
- For each suspected emission, the EUT was arranged to its worst case and the rotatable table was turned from 0 degrees to 360 degrees to find the maximum reading.
- The test-receiver system was set to Quasi-Peak Detect Function and Specified Bandwidth with Maximum Hold Mode, except for the frequency band (9 kHz to 90 kHz and 110 kHz to 490 kHz) set to average detect function and peak detect function.

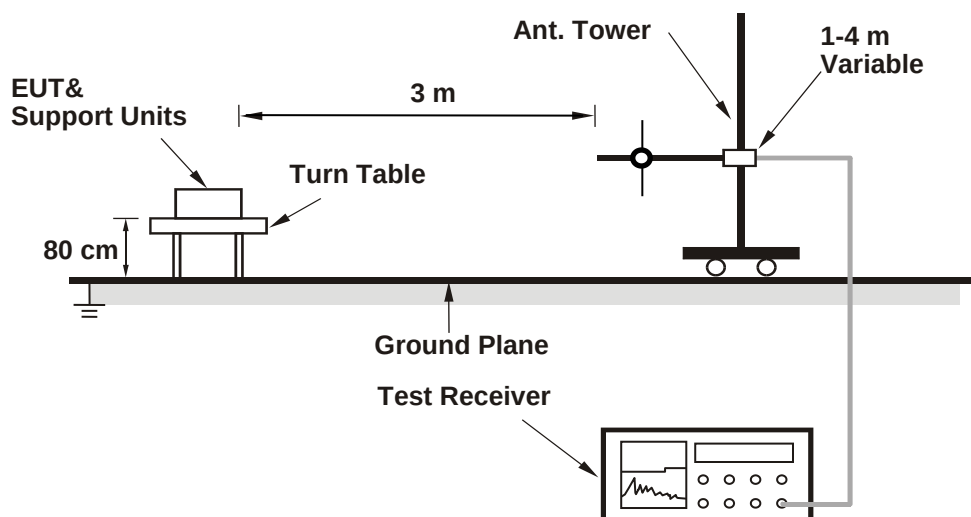
#### Notes:

- The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 200 Hz at frequency below 150 kHz.
- The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 9 kHz or 10 kHz at frequency (150 kHz to 30 MHz).
- All modes of operation were investigated and the worst-case emissions are reported.
- KDB 414788 OATS and Chamber Correlation Justification
- Based on FCC 15.31(f)(2): measurements may be performed at a distance closer than that specified in the regulations; however, an attempt should be made to avoid making measurements in the near field.
- OATs and chamber correlation testing had been performed and chamber measured test result is the worst case test result.

## 6.3 Radiated Emissions above 30 MHz

### 6.3.1 Test Setup

#### For Radiated emission above 30 MHz



For the actual test configuration, please refer to the attached file (Test Setup Photo).

### 6.3.2 Test Procedure

#### For Radiated emission above 30 MHz

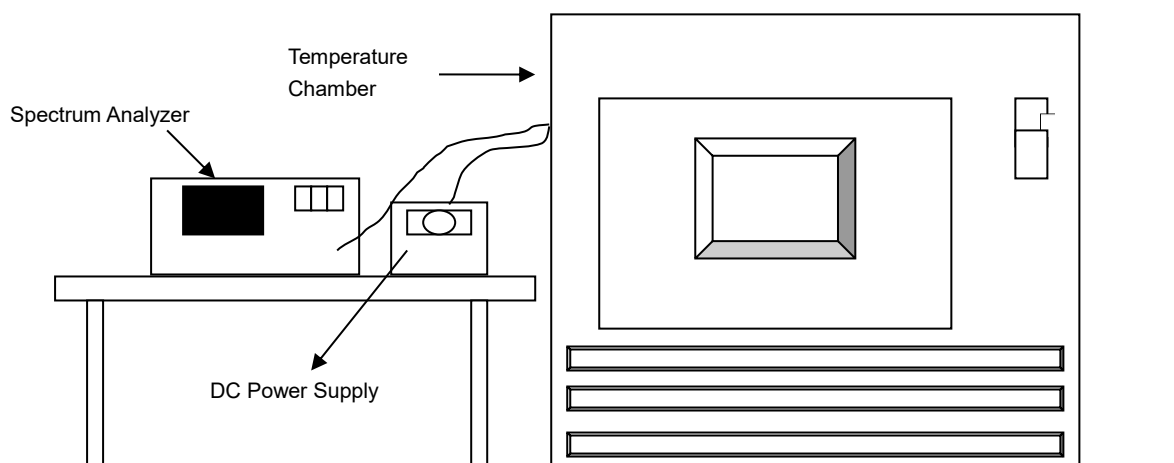
- The EUT was placed on the top of a rotating table 0.8 meters above the ground at 3 meter chamber room for test. The table was rotated 360 degrees to determine the position of the highest radiation.
- The EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower.
- The height of antenna is varied from one meter to four meters above the ground to determine the maximum value of the field strength. Both horizontal and vertical polarizations of the antenna are set to make the measurement.
- For each suspected emission, the EUT was arranged to its worst case and then the antenna was tuned to heights from 1 meter to 4 meters and the rotatable table was turned from 0 degrees to 360 degrees to find the maximum reading.
- The test-receiver system was set to quasi-peak detect function and specified bandwidth with maximum hold mode when the test frequency is below 1 GHz.

#### Notes:

- The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 120 kHz for Quasi-peak detection (QP) at frequency below 1 GHz.
- All modes of operation were investigated and the worst-case emissions are reported.

## 6.4 Frequency Stability

### 6.4.1 Test Setup

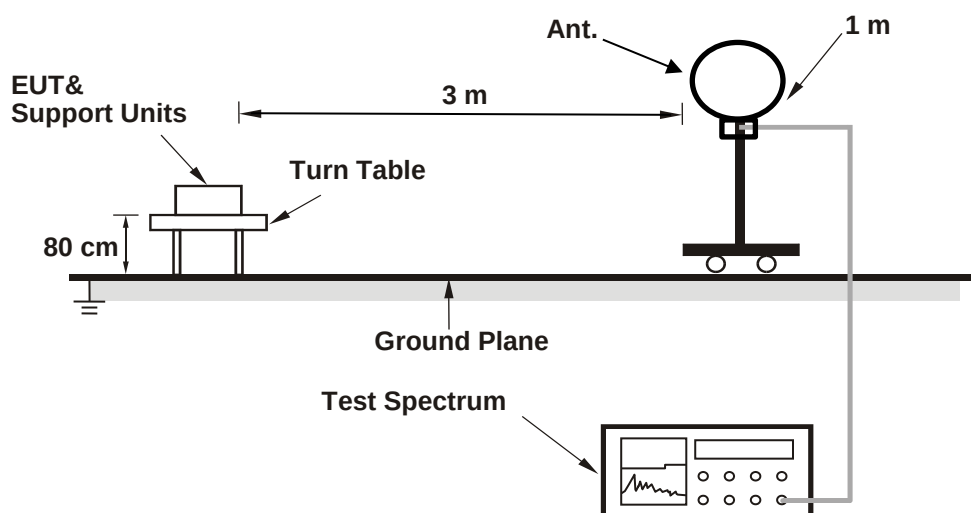


### 6.4.2 Test Procedure

- The EUT was placed inside the environmental test chamber and powered by nominal DC voltage.
- Turn the EUT on and couple its output to a spectrum analyzer.
- Turn the EUT off and set the chamber to the highest temperature specified.
- Allow sufficient time (approximately 30 min) for the temperature of the chamber to stabilize, turn the EUT on and measure the operating frequency after 2, 5, and 10 Minutes.
- Repeat step (d) with the temperature chamber set to the next desired temperature until measurements down to the lowest specified temperature have been completed.
- The test chamber was allowed to stabilize at +20 degree C for a minimum of 30 Minutes. The supply voltage was then adjusted on the EUT from 85% to 115% and the frequency record.

## 6.5 20 dB Bandwidth

### 6.5.1 Test Setup



For the actual test configuration, please refer to the attached file (Test Setup Photo)

### 6.5.2 Test Procedure

#### Radiated Measurement:

- The EUT was placed on the top of a rotating table 0.8 meters above the ground at 3 meter chamber room for test. The table was rotated 360 degrees to determine the position of the highest radiation.
- The EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower.
- Parallel, perpendicular, and ground-parallel orientations of the antenna are set to make the measurement.
- For each suspected emission, the EUT was arranged to its worst case and the rotatable table was turned from 0 degrees to 360 degrees to find the maximum reading.
- The test-spectrum system was set to Peak Detect Function and Maximum Hold.
- Set resolution bandwidth (RBW) = 1% to 5% of the OBW.
- Set the video bandwidth (VBW)  $\geq 3 \times$  RBW.
- Sweep = auto couple.
- Measure the maximum width of the emission that is constrained by the frequencies associated with the two amplitude points (upper and lower) that are attenuated by 20 dB relative to the maximum level measured in the fundamental emission.

## 7 Test Results of Test Item

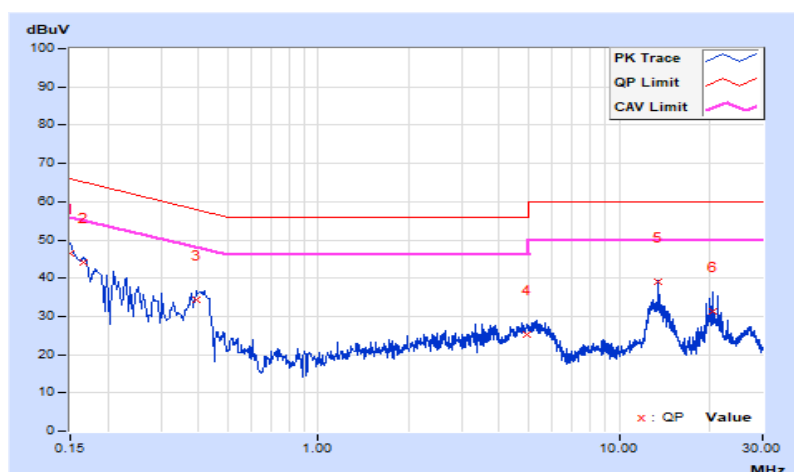
### 7.1 AC Power Conducted Emissions

|                 |                  |                                          |                                       |
|-----------------|------------------|------------------------------------------|---------------------------------------|
| RF Mode         | NFC-13.56MHz     | Channel                                  | CH 1 : 13.56 MHz                      |
| Frequency Range | 150 kHz ~ 30 MHz | Detector Function & Resolution Bandwidth | Quasi-Peak (QP) / Average (AV), 9 kHz |
| Input Power     | 120 Vac, 60 Hz   | Environmental Conditions                 | 23 °C, 71% RH                         |
| Tested By       | Thomas Cheng     |                                          |                                       |

| Phase Of Power : Line (L) |                 |                        |                      |       |                       |       |              |       |             |        |
|---------------------------|-----------------|------------------------|----------------------|-------|-----------------------|-------|--------------|-------|-------------|--------|
| No                        | Frequency (MHz) | Correction Factor (dB) | Reading Value (dBuV) |       | Emission Level (dBuV) |       | Limit (dBuV) |       | Margin (dB) |        |
|                           |                 |                        | Q.P.                 | AV.   | Q.P.                  | AV.   | Q.P.         | AV.   | Q.P.        | AV.    |
| 1                         | 0.15000         | 10.25                  | 36.24                | 21.10 | 46.49                 | 31.35 | 66.00        | 56.00 | -19.51      | -24.65 |
| 2                         | 0.16579         | 10.25                  | 33.70                | 18.94 | 43.95                 | 29.19 | 65.17        | 55.17 | -21.22      | -25.98 |
| 3                         | 0.39400         | 10.29                  | 24.22                | 17.99 | 34.51                 | 28.28 | 57.98        | 47.98 | -23.47      | -19.70 |
| 4                         | 4.96200         | 10.42                  | 14.95                | 6.05  | 25.37                 | 16.47 | 56.00        | 46.00 | -30.63      | -29.53 |
| 5                         | 13.55800        | 10.50                  | 28.63                | 28.55 | 39.13                 | 39.05 | 60.00        | 50.00 | -20.87      | -10.95 |
| 6                         | 20.40200        | 10.62                  | 20.56                | 8.10  | 31.18                 | 18.72 | 60.00        | 50.00 | -28.82      | -31.28 |

#### Remarks:

1. Q.P. and AV. are abbreviations of quasi-peak and average individually.
2. The emission levels of other frequencies were very low against the limit.
3. Margin value = Emission level – Limit value
4. Correction factor = Insertion loss + Cable loss
5. Emission Level = Correction Factor + Reading Value

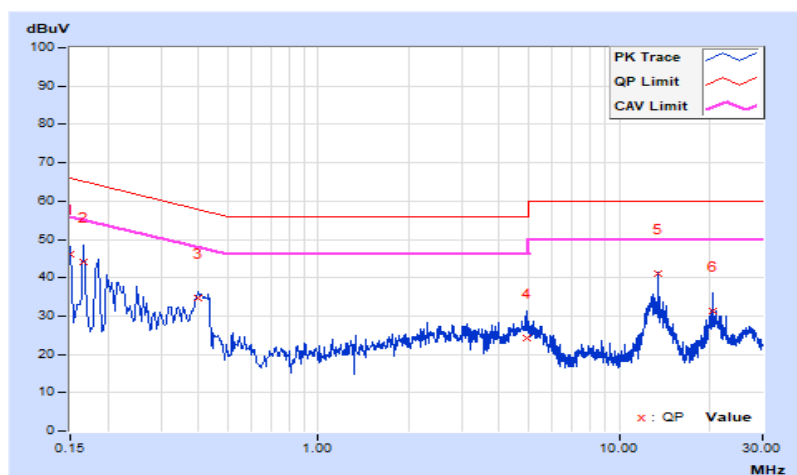


|                        |                  |                                                     |                                       |
|------------------------|------------------|-----------------------------------------------------|---------------------------------------|
| <b>RF Mode</b>         | NFC-13.56MHz     | <b>Channel</b>                                      | CH 1 : 13.56 MHz                      |
| <b>Frequency Range</b> | 150 kHz ~ 30 MHz | <b>Detector Function &amp; Resolution Bandwidth</b> | Quasi-Peak (QP) / Average (AV), 9 kHz |
| <b>Input Power</b>     | 120 Vac, 60 Hz   | <b>Environmental Conditions</b>                     | 23 °C, 71% RH                         |
| <b>Tested By</b>       | Thomas Cheng     |                                                     |                                       |

| Phase Of Power : Neutral (N) |                 |                        |                      |              |                       |              |              |              |               |               |
|------------------------------|-----------------|------------------------|----------------------|--------------|-----------------------|--------------|--------------|--------------|---------------|---------------|
| No                           | Frequency (MHz) | Correction Factor (dB) | Reading Value (dBuV) |              | Emission Level (dBuV) |              | Limit (dBuV) |              | Margin (dB)   |               |
|                              |                 |                        | Q.P.                 | AV.          | Q.P.                  | AV.          | Q.P.         | AV.          | Q.P.          | AV.           |
| 1                            | 0.15000         | 10.29                  | 35.97                | 20.89        | 46.26                 | 31.18        | 66.00        | 56.00        | -19.74        | -24.82        |
| 2                            | 0.16579         | 10.30                  | 33.68                | 18.82        | 43.98                 | 29.12        | 65.17        | 55.17        | -21.19        | -26.05        |
| 3                            | 0.39800         | 10.32                  | 24.51                | 19.26        | 34.83                 | 29.58        | 57.90        | 47.90        | -23.07        | -18.32        |
| 4                            | 4.91800         | 10.48                  | 13.77                | 7.01         | 24.25                 | 17.49        | 56.00        | 46.00        | -31.75        | -28.51        |
| <b>5</b>                     | <b>13.55800</b> | <b>10.64</b>           | <b>30.37</b>         | <b>29.02</b> | <b>41.01</b>          | <b>39.66</b> | <b>60.00</b> | <b>50.00</b> | <b>-18.99</b> | <b>-10.34</b> |
| 6                            | 20.39800        | 10.83                  | 20.62                | 8.27         | 31.45                 | 19.10        | 60.00        | 50.00        | -28.55        | -30.90        |

**Remarks:**

1. Q.P. and AV. are abbreviations of quasi-peak and average individually.
2. The emission levels of other frequencies were very low against the limit.
3. Margin value = Emission level – Limit value
4. Correction factor = Insertion loss + Cable loss
5. Emission Level = Correction Factor + Reading Value



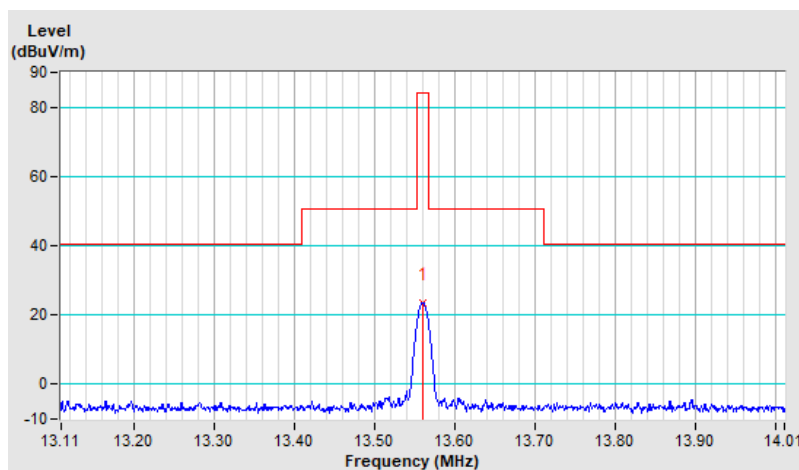
## 7.2 Radiated Emissions below 30 MHz

|                 |                       |                               |                        |
|-----------------|-----------------------|-------------------------------|------------------------|
| RF Mode         | NFC-13.56MHz          | Channel                       | CH 1 : 13.56 MHz       |
| Frequency Range | 13.11 MHz ~ 14.01 MHz | Detector Function & Bandwidth | Quasi-Peak (QP), 9 kHz |
| Input Power     | 120 Vac, 60 Hz        | Environmental Conditions      | 23 °C, 68% RH          |
| Tested By       | Thomas Cheng          |                               |                        |

| Antenna Polarity : Parallel |                 |                         |                |             |                    |                      |                  |                          |
|-----------------------------|-----------------|-------------------------|----------------|-------------|--------------------|----------------------|------------------|--------------------------|
| No                          | Frequency (MHz) | Emission Level (dBuV/m) | Limit (dBuV/m) | Margin (dB) | Antenna Height (m) | Table Angle (Degree) | Raw Value (dBuV) | Correction Factor (dB/m) |
| 1                           | *13.560         | 23.40 QP                | 84.00          | -60.60      | 1.00               | 165                  | 42.00            | -18.60                   |

### Remarks:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB) + Distance Factor
3. Margin value = Emission Level – Limit value
4. The other emission levels were very low against the limit.
5. " \* ": Fundamental frequency.
6. The test distance for 0.49 ~ 30 MHz is 3 m, extrapolate the measured field strength to a distance of 30 meters.  
Distance factor@10 m =  $40 \cdot \log(3/30) = -40$  dB

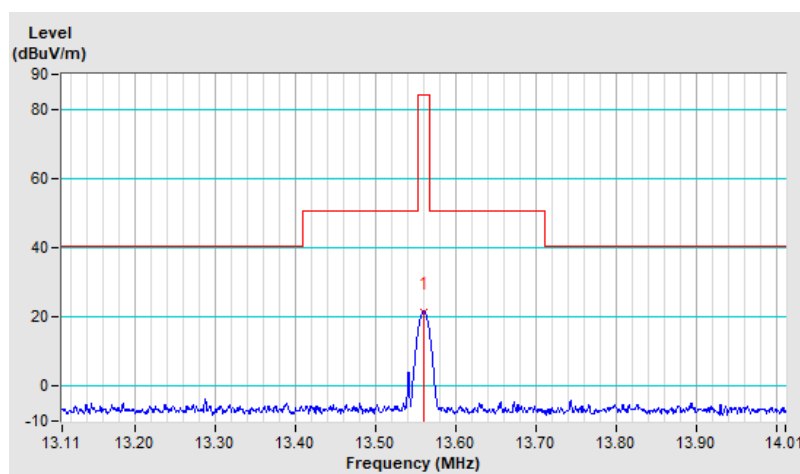


|                 |                       |                               |                        |
|-----------------|-----------------------|-------------------------------|------------------------|
| RF Mode         | NFC-13.56MHz          | Channel                       | CH 1 : 13.56 MHz       |
| Frequency Range | 13.11 MHz ~ 14.01 MHz | Detector Function & Bandwidth | Quasi-Peak (QP), 9 kHz |
| Input Power     | 120 Vac, 60 Hz        | Environmental Conditions      | 23 °C, 68% RH          |
| Tested By       | Thomas Cheng          |                               |                        |

| Antenna Polarity : Perpendicular |                 |                         |                |             |                    |                      |                  |                          |
|----------------------------------|-----------------|-------------------------|----------------|-------------|--------------------|----------------------|------------------|--------------------------|
| No                               | Frequency (MHz) | Emission Level (dBuV/m) | Limit (dBuV/m) | Margin (dB) | Antenna Height (m) | Table Angle (Degree) | Raw Value (dBuV) | Correction Factor (dB/m) |
| 1                                | *13.560         | 21.50 QP                | 84.00          | -62.50      | 1.00               | 260                  | 40.10            | -18.60                   |

**Remarks:**

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB) + Distance Factor
3. Margin value = Emission Level – Limit value
4. The other emission levels were very low against the limit.
5. " \* ": Fundamental frequency.
6. The test distance for 0.49 ~ 30 MHz is 3 m, extrapolate the measured field strength to a distance of 30 meters.  
Distance factor@10 m =  $40 \cdot \log(3/30) = -40$  dB

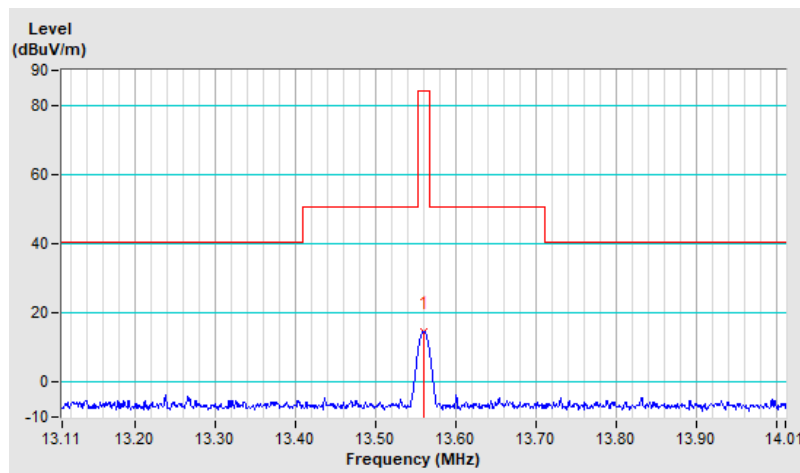


|                 |                       |                               |                        |
|-----------------|-----------------------|-------------------------------|------------------------|
| RF Mode         | NFC-13.56MHz          | Channel                       | CH 1 : 13.56 MHz       |
| Frequency Range | 13.11 MHz ~ 14.01 MHz | Detector Function & Bandwidth | Quasi-Peak (QP), 9 kHz |
| Input Power     | 120 Vac, 60 Hz        | Environmental Conditions      | 23 °C, 68% RH          |
| Tested By       | Thomas Cheng          |                               |                        |

| Antenna Polarity : Ground-parallel |                 |                         |                |             |                    |                      |                  |                          |
|------------------------------------|-----------------|-------------------------|----------------|-------------|--------------------|----------------------|------------------|--------------------------|
| No                                 | Frequency (MHz) | Emission Level (dBuV/m) | Limit (dBuV/m) | Margin (dB) | Antenna Height (m) | Table Angle (Degree) | Raw Value (dBuV) | Correction Factor (dB/m) |
| 1                                  | *13.560         | 14.60 QP                | 84.00          | -69.40      | 1.00               | 247                  | 33.20            | -18.60                   |

**Remarks:**

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB) + Distance Factor
3. Margin value = Emission Level – Limit value
4. The other emission levels were very low against the limit.
5. " \* ": Fundamental frequency.
6. The test distance for 0.49 ~ 30 MHz is 3 m, extrapolate the measured field strength to a distance of 30 meters.  
Distance factor@10 m =  $40 \cdot \log(3/30) = -40$  dB

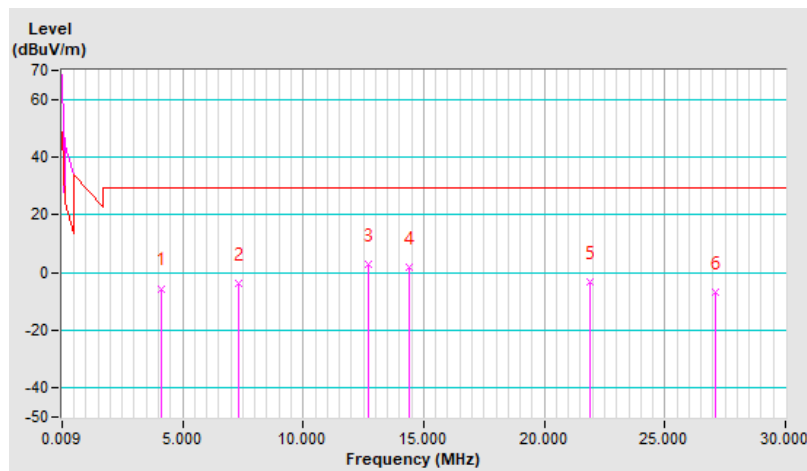


|                        |                                      |                                          |                                        |
|------------------------|--------------------------------------|------------------------------------------|----------------------------------------|
| <b>RF Mode</b>         | NFC-13.56MHz                         | <b>Channel</b>                           | CH 1 : 13.56 MHz                       |
| <b>Frequency Range</b> | 9 kHz ~ 150 kHz;<br>150 kHz ~ 30 MHz | <b>Detector Function &amp; Bandwidth</b> | Peak (PK), 200 Hz;<br>Peak (PK), 9 kHz |
| <b>Input Power</b>     | 120 Vac, 60 Hz                       | <b>Environmental Conditions</b>          | 23 °C, 68% RH                          |
| <b>Tested By</b>       | Thomas Cheng                         |                                          |                                        |

| Antenna Polarity : Parallel |                 |                         |                |             |                    |                      |                  |                          |
|-----------------------------|-----------------|-------------------------|----------------|-------------|--------------------|----------------------|------------------|--------------------------|
| No                          | Frequency (MHz) | Emission Level (dBuV/m) | Limit (dBuV/m) | Margin (dB) | Antenna Height (m) | Table Angle (Degree) | Raw Value (dBuV) | Correction Factor (dB/m) |
| 1                           | 4.150           | -5.50 PK                | 29.50          | -35.00      | 1.00               | 177                  | 14.80            | -20.30                   |
| 2                           | 7.300           | -3.60 PK                | 29.50          | -33.10      | 1.00               | 58                   | 15.40            | -19.00                   |
| 3                           | 12.730          | 2.90 PK                 | 29.50          | -26.60      | 1.00               | 288                  | 21.50            | -18.60                   |
| 4                           | 14.400          | 1.80 PK                 | 29.50          | -27.70      | 1.00               | 41                   | 20.40            | -18.60                   |
| 5                           | 21.870          | -3.40 PK                | 29.50          | -32.90      | 1.00               | 134                  | 14.80            | -18.20                   |
| 6                           | 27.120          | -6.90 PK                | 29.50          | -36.40      | 1.00               | 2                    | 11.30            | -18.20                   |

**Remarks:**

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB) + Distance Factor
3. Margin value = Emission Level – Limit value
4. The other emission levels were very low against the limit.
5. The test distance for 0.49 ~ 30 MHz is 3 m, extrapolate the measured field strength to a distance of 30 meters.  
Distance factor@3 m =  $40 \cdot \log(3/30) = -40$  dB

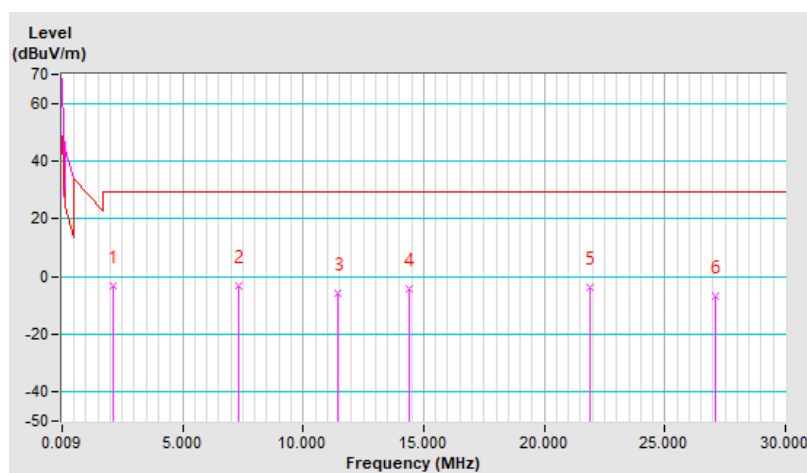


|                        |                                      |                                          |                                        |
|------------------------|--------------------------------------|------------------------------------------|----------------------------------------|
| <b>RF Mode</b>         | NFC-13.56MHz                         | <b>Channel</b>                           | CH 1 : 13.56 MHz                       |
| <b>Frequency Range</b> | 9 kHz ~ 150 kHz;<br>150 kHz ~ 30 MHz | <b>Detector Function &amp; Bandwidth</b> | Peak (PK), 200 Hz;<br>Peak (PK), 9 kHz |
| <b>Input Power</b>     | 120 Vac, 60 Hz                       | <b>Environmental Conditions</b>          | 23 °C, 68% RH                          |
| <b>Tested By</b>       | Thomas Cheng                         |                                          |                                        |

| Antenna Polarity : Perpendicular |                 |                         |                |             |                    |                      |                  |                          |
|----------------------------------|-----------------|-------------------------|----------------|-------------|--------------------|----------------------|------------------|--------------------------|
| No                               | Frequency (MHz) | Emission Level (dBuV/m) | Limit (dBuV/m) | Margin (dB) | Antenna Height (m) | Table Angle (Degree) | Raw Value (dBuV) | Correction Factor (dB/m) |
| 1                                | 2.140           | -3.10 PK                | 29.50          | -32.60      | 1.00               | 290                  | 17.30            | -20.40                   |
| 2                                | 7.300           | -3.40 PK                | 29.50          | -32.90      | 1.00               | 119                  | 15.60            | -19.00                   |
| 3                                | 11.470          | -5.80 PK                | 29.50          | -35.30      | 1.00               | 9                    | 12.90            | -18.70                   |
| 4                                | 14.370          | -4.20 PK                | 29.50          | -33.70      | 1.00               | 177                  | 14.40            | -18.60                   |
| 5                                | 21.870          | -3.50 PK                | 29.50          | -33.00      | 1.00               | 213                  | 14.70            | -18.20                   |
| 6                                | 27.120          | -6.80 PK                | 29.50          | -36.30      | 1.00               | 83                   | 11.40            | -18.20                   |

#### Remarks:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB) + Distance Factor
3. Margin value = Emission Level – Limit value
4. The other emission levels were very low against the limit.
5. The test distance for 0.49 ~ 30 MHz is 3 m, extrapolate the measured field strength to a distance of 30 meters.  
Distance factor@3 m =  $40 \cdot \log(3/30) = -40$  dB

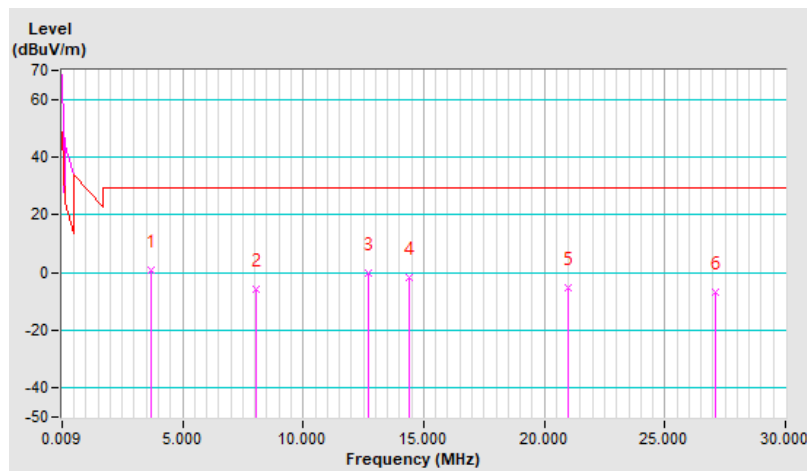


|                 |                                      |                               |                                        |
|-----------------|--------------------------------------|-------------------------------|----------------------------------------|
| RF Mode         | NFC-13.56MHz                         | Channel                       | CH 1 : 13.56 MHz                       |
| Frequency Range | 9 kHz ~ 150 kHz;<br>150 kHz ~ 30 MHz | Detector Function & Bandwidth | Peak (PK), 200 Hz;<br>Peak (PK), 9 kHz |
| Input Power     | 120 Vac, 60 Hz                       | Environmental Conditions      | 23 °C, 68% RH                          |
| Tested By       | Thomas Cheng                         |                               |                                        |

| Antenna Polarity : Ground-parallel |                 |                         |                |             |                    |                      |                  |                          |
|------------------------------------|-----------------|-------------------------|----------------|-------------|--------------------|----------------------|------------------|--------------------------|
| No                                 | Frequency (MHz) | Emission Level (dBuV/m) | Limit (dBuV/m) | Margin (dB) | Antenna Height (m) | Table Angle (Degree) | Raw Value (dBuV) | Correction Factor (dB/m) |
| 1                                  | 3.670           | 0.80 PK                 | 29.50          | -28.70      | 1.00               | 196                  | 21.10            | -20.30                   |
| 2                                  | 8.080           | -5.60 PK                | 29.50          | -35.10      | 1.00               | 78                   | 13.30            | -18.90                   |
| 3                                  | 12.730          | 0.00 PK                 | 29.50          | -29.50      | 1.00               | 271                  | 18.60            | -18.60                   |
| 4                                  | 14.400          | -1.50 PK                | 29.50          | -31.00      | 1.00               | 223                  | 17.10            | -18.60                   |
| 5                                  | 20.970          | -5.10 PK                | 29.50          | -34.60      | 1.00               | 274                  | 13.10            | -18.20                   |
| 6                                  | 27.120          | -6.60 PK                | 29.50          | -36.10      | 1.00               | 14                   | 11.60            | -18.20                   |

#### Remarks:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB) + Distance Factor
3. Margin value = Emission Level – Limit value
4. The other emission levels were very low against the limit.
5. The test distance for 0.49 ~ 30 MHz is 3 m, extrapolate the measured field strength to a distance of 30 meters.  
Distance factor@3 m =  $40 \cdot \log(3/30) = -40$  dB



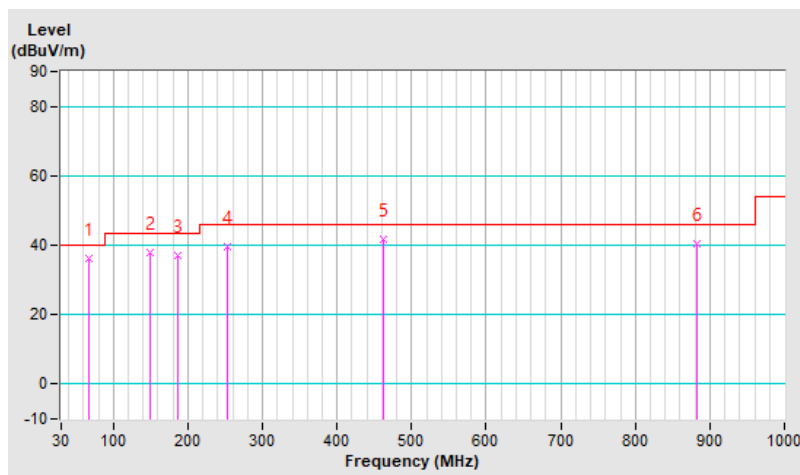
### 7.3 Radiated Emissions above 30 MHz

|                        |                |                                          |                                |
|------------------------|----------------|------------------------------------------|--------------------------------|
| <b>RF Mode</b>         | NFC-13.56MHz   | <b>Channel</b>                           | CH 1 : 13.56 MHz               |
| <b>Frequency Range</b> | 30 MHz ~ 1 GHz | <b>Detector Function &amp; Bandwidth</b> | QP: RB=120 kHz, DET=Quasi-Peak |
| <b>Input Power</b>     | 120 Vac, 60 Hz | <b>Environmental Conditions</b>          | 23 °C, 68% RH                  |
| <b>Tested By</b>       | Thomas Cheng   |                                          |                                |

| Antenna Polarity & Test Distance : Horizontal at 3 m |                 |                         |                |             |                    |                      |                  |                          |
|------------------------------------------------------|-----------------|-------------------------|----------------|-------------|--------------------|----------------------|------------------|--------------------------|
| No                                                   | Frequency (MHz) | Emission Level (dBuV/m) | Limit (dBuV/m) | Margin (dB) | Antenna Height (m) | Table Angle (Degree) | Raw Value (dBuV) | Correction Factor (dB/m) |
| 1                                                    | 67.83           | 36.1 QP                 | 40.0           | -3.9        | 2.00 H             | 40                   | 50.4             | -14.3                    |
| 2                                                    | 148.34          | 37.9 QP                 | 43.5           | -5.6        | 2.00 H             | 108                  | 50.2             | -12.3                    |
| 3                                                    | 186.17          | 37.0 QP                 | 43.5           | -6.5        | 2.00 H             | 90                   | 51.6             | -14.6                    |
| 4                                                    | 252.13          | 39.4 QP                 | 46.0           | -6.6        | 1.01 H             | 91                   | 52.9             | -13.5                    |
| 5                                                    | 462.62          | 41.6 QP                 | 46.0           | -4.4        | 2.00 H             | 190                  | 49.0             | -7.4                     |
| 6                                                    | 883.60          | 40.3 QP                 | 46.0           | -5.7        | 1.01 H             | 187                  | 40.8             | -0.5                     |

#### Remarks:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
3. Margin value = Emission Level – Limit value
4. The other emission levels were very low against the limit.

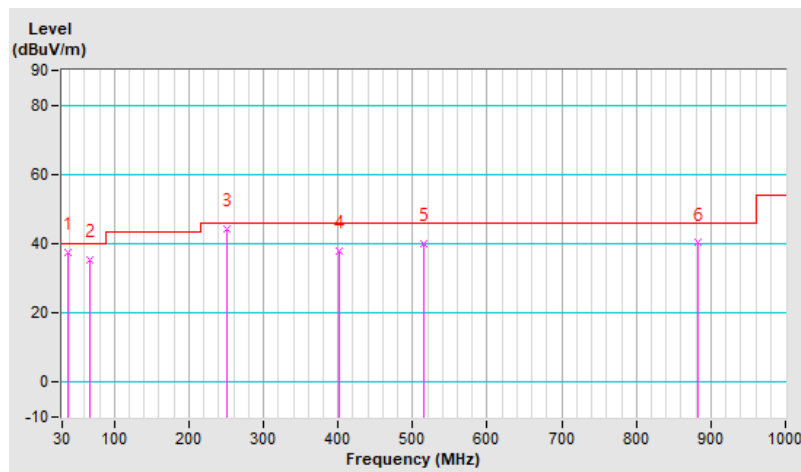


|                 |                |                               |                                |
|-----------------|----------------|-------------------------------|--------------------------------|
| RF Mode         | NFC-13.56MHz   | Channel                       | CH 1 : 13.56 MHz               |
| Frequency Range | 30 MHz ~ 1 GHz | Detector Function & Bandwidth | QP: RB=120 kHz, DET=Quasi-Peak |
| Input Power     | 120 Vac, 60 Hz | Environmental Conditions      | 23 °C, 68% RH                  |
| Tested By       | Thomas Cheng   |                               |                                |

| Antenna Polarity & Test Distance : Vertical at 3 m |                 |                         |                |             |                    |                      |                  |                          |
|----------------------------------------------------|-----------------|-------------------------|----------------|-------------|--------------------|----------------------|------------------|--------------------------|
| No                                                 | Frequency (MHz) | Emission Level (dBuV/m) | Limit (dBuV/m) | Margin (dB) | Antenna Height (m) | Table Angle (Degree) | Raw Value (dBuV) | Correction Factor (dB/m) |
| 1                                                  | 38.73           | 37.6 QP                 | 40.0           | -2.4        | 1.00 V             | 189                  | 50.2             | -12.6                    |
| 2                                                  | 67.83           | 35.5 QP                 | 40.0           | -4.5        | 1.00 V             | 189                  | 49.8             | -14.3                    |
| 3                                                  | 251.16          | 44.4 QP                 | 46.0           | -1.6        | 1.99 V             | 184                  | 58.0             | -13.6                    |
| 4                                                  | 402.48          | 37.8 QP                 | 46.0           | -8.2        | 1.00 V             | 162                  | 46.9             | -9.1                     |
| 5                                                  | 515.00          | 40.1 QP                 | 46.0           | -5.9        | 1.49 V             | 206                  | 46.1             | -6.0                     |
| 6                                                  | 883.60          | 40.2 QP                 | 46.0           | -5.8        | 1.99 V             | 156                  | 40.7             | -0.5                     |

**Remarks:**

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
3. Margin value = Emission Level – Limit value
4. The other emission levels were very low against the limit.



## 7.4 Frequency Stability

|                           |              |            |              |
|---------------------------|--------------|------------|--------------|
| Environmental Conditions: | 24°C, 65% RH | Tested By: | Vincent Chen |
|---------------------------|--------------|------------|--------------|

| Frequency Stability Versus Temperature |                    |                          |                     |                          |                     |                          |                     |                          |                     |
|----------------------------------------|--------------------|--------------------------|---------------------|--------------------------|---------------------|--------------------------|---------------------|--------------------------|---------------------|
| Operating Frequency: 13.56 MHz         |                    |                          |                     |                          |                     |                          |                     |                          |                     |
| Temp. (°C)                             | Power Supply (Vdc) | 0 Minute                 |                     | 2 Minutes                |                     | 5 Minutes                |                     | 10 Minutes               |                     |
|                                        |                    | Measured Frequency (MHz) | Frequency Drift (%) | Measured Frequency (MHz) | Frequency Drift (%) | Measured Frequency (MHz) | Frequency Drift (%) | Measured Frequency (MHz) | Frequency Drift (%) |
| 50                                     | 7.74               | 13.56003                 | 0.00022             | 13.56002                 | 0.00015             | 13.56001                 | 0.00007             | 13.56002                 | 0.00015             |
| 40                                     | 7.74               | 13.56003                 | 0.00022             | 13.56003                 | 0.00022             | 13.56003                 | 0.00022             | 13.56003                 | 0.00022             |
| 30                                     | 7.74               | 13.55996                 | -0.00029            | 13.55996                 | -0.00029            | 13.55996                 | -0.00029            | 13.55997                 | -0.00022            |
| 20                                     | 7.74               | 13.55993                 | -0.00052            | 13.55993                 | -0.00052            | 13.55994                 | -0.00044            | 13.55994                 | -0.00044            |
| 10                                     | 7.74               | 13.56003                 | 0.00022             | 13.56003                 | 0.00022             | 13.56003                 | 0.00022             | 13.56003                 | 0.00022             |
| 0                                      | 7.74               | 13.56006                 | 0.00044             | 13.56006                 | 0.00044             | 13.56007                 | 0.00052             | 13.56007                 | 0.00052             |
| -10                                    | 7.74               | 13.55999                 | -0.00007            | 13.55998                 | -0.00015            | 13.55999                 | -0.00007            | 13.55999                 | -0.00007            |
| -20                                    | 7.74               | 13.55995                 | -0.00037            | 13.55995                 | -0.00037            | 13.55994                 | -0.00044            | 13.55996                 | -0.00029            |

| Frequency Stability Versus Voltage |                    |                          |                     |                          |                     |                          |                     |                          |                     |
|------------------------------------|--------------------|--------------------------|---------------------|--------------------------|---------------------|--------------------------|---------------------|--------------------------|---------------------|
| Operating Frequency: 13.56 MHz     |                    |                          |                     |                          |                     |                          |                     |                          |                     |
| Temp. (°C)                         | Power Supply (Vdc) | 0 Minute                 |                     | 2 Minutes                |                     | 5 Minutes                |                     | 10 Minutes               |                     |
|                                    |                    | Measured Frequency (MHz) | Frequency Drift (%) | Measured Frequency (MHz) | Frequency Drift (%) | Measured Frequency (MHz) | Frequency Drift (%) | Measured Frequency (MHz) | Frequency Drift (%) |
| 20                                 | 8.901              | 13.55993                 | -0.00052            | 13.55993                 | -0.00052            | 13.55994                 | -0.00044            | 13.55994                 | -0.00044            |
|                                    | 7.74               | 13.55993                 | -0.00052            | 13.55993                 | -0.00052            | 13.55994                 | -0.00044            | 13.55994                 | -0.00044            |
|                                    | 6.579              | 13.55993                 | -0.00052            | 13.55993                 | -0.00052            | 13.55994                 | -0.00044            | 13.55994                 | -0.00044            |

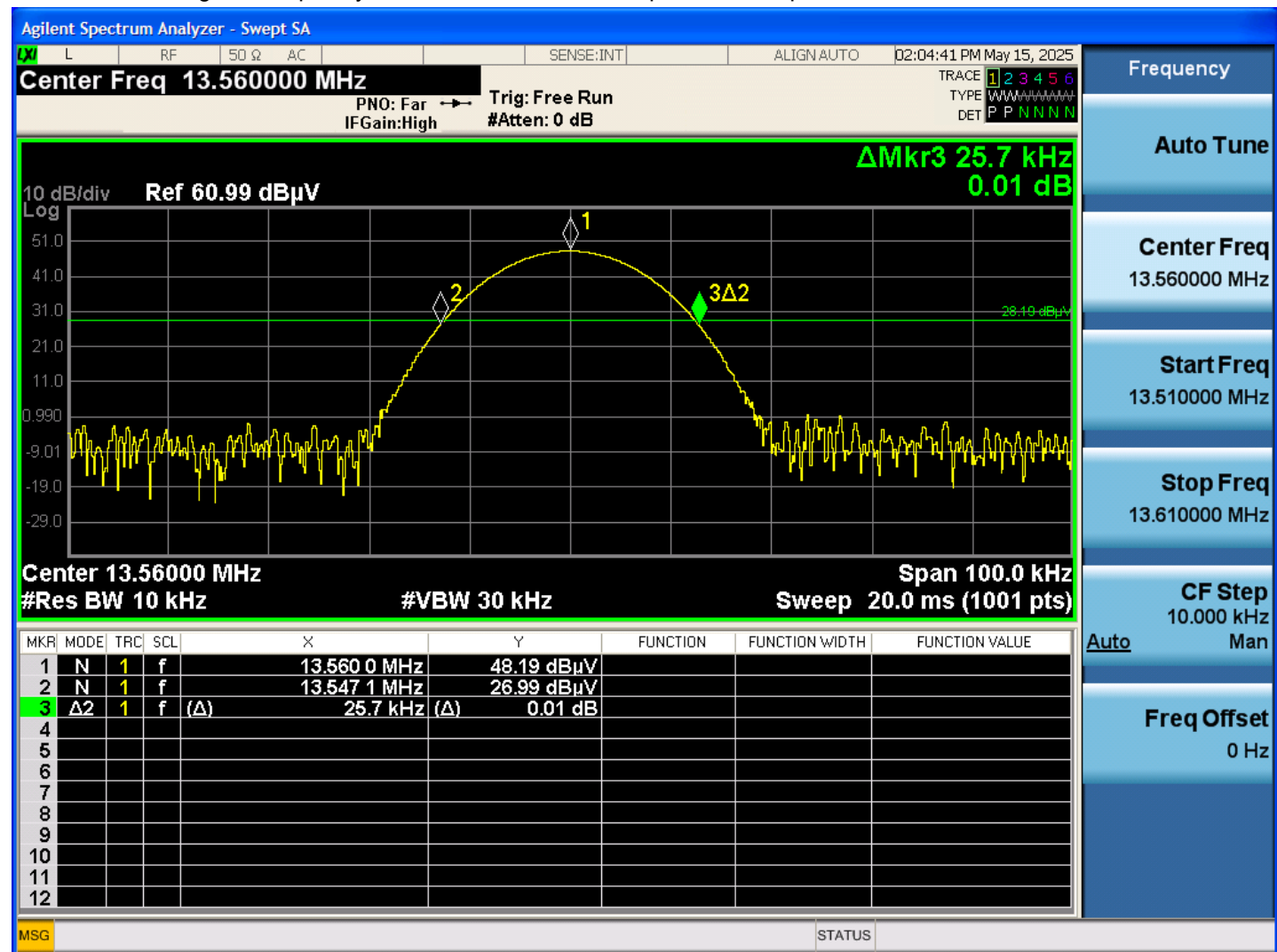
## 7.5 20 dB Bandwidth

|                           |              |            |              |
|---------------------------|--------------|------------|--------------|
| Environmental Conditions: | 24°C, 65% RH | Tested By: | Vincent Chen |
|---------------------------|--------------|------------|--------------|

| Channel | Channel Frequency (MHz) | 20 dB Bandwidth (MHz) | Measured Frequencies |          | Operating Frequency Band (MHz) | Test Result |
|---------|-------------------------|-----------------------|----------------------|----------|--------------------------------|-------------|
|         |                         |                       | FL (MHz)             | FH (MHz) |                                |             |
| 1       | 13.56                   | 0.0257                | 13.5471              | 13.5728  | 13.11 ~ 14.01                  | Pass        |

Notes:

1. FL is the lowest frequency of the 20 dB bandwidth of power envelope.
2. FH is the highest frequency of the 20 dB bandwidth of power envelope.



Note: The signal look like CW signal, so RBW can't be match 1~5 % OBW.

## 8 Pictures of Test Arrangements

Please refer to the attached file (Test Setup Photo)

## 9 Information of the Testing Laboratories

We, Bureau Veritas Consumer Products Services (H.K.) Ltd., Taoyuan Branch, were founded in 1988 to provide our best service in EMC, Radio, Telecom and Safety consultation. Our laboratories are FCC recognized accredited test firms and accredited according to ISO/IEC 17025.

If you have any comments, please feel free to contact us at the following:

**Lin Kou EMC/RF Lab**

Tel: 886-2-26052180

Fax: 886-2-26051924

**Hsin Chu EMC/RF/Telecom Lab**

Tel: 886-3-6668565

Fax: 886-3-6668323

**Hwa Ya EMC/RF/Safety Lab**

Tel: 886-3-3183232

Fax: 886-3-3270892

**Email:** [service.adt@bureauveritas.com](mailto:service.adt@bureauveritas.com)

**Web Site:** <http://ee.bureauveritas.com.tw>

The address and road map of all our labs can be found in our web site also.

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