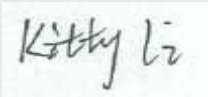
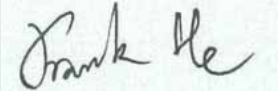
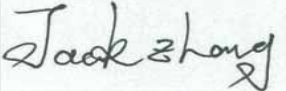




Test report No:  
1962139R-RF-US-P06V05

## TEST REPORT

### FCC Rules&Regulations 47 CFR Chapter I - Part 15C

|                                           |                                                                                                                             |
|-------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------|
| Product Name                              | Barcode Scanner                                                                                                             |
| Trademark                                 | Honeywell                                                                                                                   |
| Model and /or type reference              | 8680i                                                                                                                       |
| FCC ID                                    | HD5-8680B                                                                                                                   |
| Applicant's name / address                | HONEYWELL INTERNATIONAL INC<br>Honeywell Safety and Productivity Solutions<br>9680 OLD BAILES RD<br>FORT MILL SC 29707-7539 |
| Test method requested, standard           | FCC CFR Title 47 Part 15 Subpart C Section 15.225                                                                           |
| Verdict Summary                           | IN COMPLIANCE                                                                                                               |
| Documented By                             | Kitty Li/Project Assistant<br>           |
| Tested by (name / position & signature)   | Frank He/ Technical Supervisor<br>      |
| Approved by (name / position & signature) | Jack Zhang/ Supervisor<br>              |
| Date of issue                             | 2019-07-05                                                                                                                  |
| Report template No                        | 1962139R-RF-US-P06V05                                                                                                       |

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## COMPETENCES AND GUARANTEES

---

DEKRA is a testing laboratory competent to carry out the tests described in this report.

In order to assure the traceability to other national and international laboratories, DEKRA has a calibration and maintenance program for its measurement equipment.

DEKRA guarantees the reliability of the data presented in this report, which is the result of the measurements and the tests performed to the item under test on the date and under the conditions stated in the report and it is based on the knowledge and technical facilities available at DEKRA at the time of performance of the test.

DEKRA is liable to the client for the maintenance of the confidentiality of all information related to the item under test and the results of the test.

The results presented in this Test Report apply only to the particular item under test established in this document.

**IMPORTANT:** No parts of this report may be reproduced or quoted out of context, in any form or by any means, except in full, without the previous written permission of DEKRA.

## GENERAL CONDITIONS

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1. This report is only referred to the item that has undergone the test.
2. This report does not constitute or imply on its own an approval of the product by the Certification Bodies or Competent Authorities.
3. This document is only valid if complete; no partial reproduction can be made without previous written permission of DEKRA.
4. This test report cannot be used partially or in full for publicity and/or promotional purposes without previous written permission of DEKRA.

## ENVIRONMENTAL CONDITIONS

---

The climatic conditions during the tests are within the limits specified by the manufacturer for the operation of the EUT and the test equipment. The climatic conditions during the tests were within the following limits:

|                       |               |
|-----------------------|---------------|
| Ambient temperature   | 15 °C – 35 °C |
| Relative Humidity air | 30% - 60%     |

If explicitly required in the basic standard or applied product / product family standard the climatic values are recorded and documented separately in this test report.

## POSSIBLE TEST CASE VERDICTS

---

|                                         |                 |
|-----------------------------------------|-----------------|
| Test case does not apply to test object | N/A             |
| Test object does meet requirement       | P (Pass) / PASS |
| Test object does not meet requirement   | F (Fail) / FAIL |
| Not measured                            | N/M             |

## ABBREVIATIONS

---

For the purposes of the present document, the following abbreviations apply:

|       |                               |
|-------|-------------------------------|
| EUT   | : Equipment Under Test        |
| QP    | : Quasi-Peak                  |
| CAV   | : CISPR Average               |
| AV    | : Average                     |
| CDN   | : Coupling Decoupling Network |
| SAC   | : Semi-Anechoic Chamber       |
| OATS  | : Open Area Test Site         |
| BW    | : Bandwidth                   |
| AM    | : Amplitude Modulation        |
| PM    | : Pulse Modulation            |
| HCP   | : Horizontal Coupling Plane   |
| VCP   | : Vertical Coupling Plane     |
| $U_N$ | : Nominal voltage             |
| $T_x$ | : Transmitter                 |
| $R_x$ | : Receiver                    |
| N/A   | : Not Applicable              |
| N/M   | : Not Measured                |

## DOCUMENT HISTORY

| Report No.            | Version | Description              | Issued Date |
|-----------------------|---------|--------------------------|-------------|
| 1962139R-RF-US-P06V05 |         | Initial issue of report. | 2019-07-05  |
|                       |         |                          |             |
|                       |         |                          |             |
|                       |         |                          |             |
|                       |         |                          |             |
|                       |         |                          |             |
|                       |         |                          |             |
|                       |         |                          |             |
|                       |         |                          |             |
|                       |         |                          |             |

## REMARKS AND COMMENTS

1. The equipment under test (EUT) does meet the essential requirements of the stated standard(s)/test(s).
2. These test results on a sample of the device are for the purpose of demonstrating Compliance with Part 15 Subpart C Paragraph 15.225.
3. The test results presented in this report relate only to the object tested..
4. This report shall not be reproduced, except in full, without the written approval of the Issuing CB Testing laboratory.
5. The measurement result is considered in conformance with the requirement if it is within the prescribed limit, It is not necessary to account the uncertainty associated with the measurement result, unless the specification, standard or customer have special requirements.
6. This report is not used for social proof in China (or Mainland China) market.

## USED EQUIPMENT

### AC Power Line Conducted Emission / TR1(Chamber details)

| Instrument                 | Manufacturer | Model No. | Serial No. | Cal. Date  | Next Cal. Date |
|----------------------------|--------------|-----------|------------|------------|----------------|
| EMI Test Receiver          | R&S          | ESCI      | 100906     | 2019.03.04 | 2020.03.04     |
| Two-Line V-Network         | R&S          | ENV216    | 101190     | 2019.06.09 | 2020.06.09     |
| Two-Line V-Network         | R&S          | ENV216    | 101044     | 2019.06.15 | 2020.06.15     |
| Current Probe              | R&S          | EZ-17     | 100678     | 2019.03.07 | 2020.03.07     |
| 50ohm Termination          | SHX          | TF2       | 07081402   | 2018.09.08 | 2019.09.08     |
| 50ohm Termination          | SHX          | TF2       | 07081403   | 2018.09.08 | 2019.09.08     |
| 50ohm Coaxial Switch       | Anritsu      | MP59B     | 6200464462 | N/A        | N/A            |
| Temperature/Humidity Meter | RTS          | RTS-8S    | TR1-TH     | 2019.01.09 | 2020.01.09     |
| Coaxial Cable              | Suhner       | RG 223    | TR1-C1     | 2018.09.11 | 2019.09.11     |
| Coaxial Cable              | Suhner       | RG 223    | TR1-C2     | 2018.09.11 | 2019.09.11     |
| Dekra test software        |              |           |            |            |                |

### RF conducted test / TR8(Chamber details)

| Instrument                | Manufacturer | Model No. | Serial No. | Cal. Date  | Next Cal. Date |
|---------------------------|--------------|-----------|------------|------------|----------------|
| Spectrum Analyzer         | Agilent      | N9010A    | MY48030494 | 2019.02.04 | 2020.02.03     |
| EXA Spectrum Analyzer     | Keysight     | N9010A    | MY55370495 | 2019.04.09 | 2020.04.08     |
| MXA Signal Analyzer       | Keysight     | N9020A    | MY56060147 | 2019.04.09 | 2020.04.08     |
| Wideband Peak Power Meter | Anritsu      | ML2495A   | 0905006    | 2018.10.14 | 2019.10.13     |
| Power Sensor              | Anritsu      | MA2411B   | 0846014    | 2018.10.14 | 2019.10.13     |
| Dekra test software       |              |           |            |            |                |
|                           |              |           |            |            |                |

### Radiated Emission(30MHz-1GHz) / AC2(Chamber details)

| Instrument                 | Manufacturer | Model No. | Serial No. | Cal. Date  | Next Cal. Date |
|----------------------------|--------------|-----------|------------|------------|----------------|
| EMI Test Receiver          | R&S          | ESCI      | 100573     | 2019.03.04 | 2020.03.04     |
| Bilog Antenna              | Teseq GmbH   | CBL6112D  | 27611      | 2019.06.09 | 2020.06.09     |
| Temperature/Humidity Meter | RTS          | RTS-8S    | AC2-TH     | 2019.01.09 | 2020.01.09     |
| Coaxial Cable              | Huber+Suhner | RG 214    | AC2-C      | 2019.02.28 | 2020.02.28     |
| Dekra test software        |              |           |            |            |                |

Radiated Emission / AC5(1GHz-40GHz)(Chamber details)

| Instrument                 | Manufacturer | Model No.    | Serial No.  | Cal. Date  | Next Cal. Date |
|----------------------------|--------------|--------------|-------------|------------|----------------|
| Spectrum Analyzer          | Agilent      | E4446A       | MY45300103  | 2019.01.04 | 2020.01.03     |
| Preamplifier               | Miteq        | NSP1800-25   | 1364185     | 2019.05.06 | 2020.05.05     |
| Preamplifier               | QuieTek      | AP-040G      | CHM-0906001 | 2019.05.06 | 2020.05.05     |
| DRG Horn                   | ETS-Lindgren | 3117         | 00123988    | 2019.01.22 | 2020.01.21     |
| Temperature/Humidity Meter | Zhichen      | ZC1-2        | AC5-TH      | 2019.01.04 | 2020.01.03     |
| Coaxial Cable              | Huber+Suhner | SUCOFLEX 106 | AC5-C1      | 2019.03.02 | 2020.03.01     |
| Coaxial Cable              | Huber+Suhner | SUCOFLEX 106 | AC5-C2      | 2019.03.02 | 2020.03.01     |
| Coaxial Cable              | Huber+Suhner | SUCOFLEX 102 | AC5-C3      | 2019.03.02 | 2020.03.01     |
| Dekra test software        |              |              |             |            |                |

## UNCERTAINTY

---

Uncertainties have been calculated according to the DEKRA internal document. The reported expanded uncertainties are based on a standard uncertainty multiplied by a coverage factor of  $k=2$ , providing a level of confidence of approximately 95%

| Test item                        | Uncertainty          |
|----------------------------------|----------------------|
| AC Power Line Conducted Emission | $\pm 2.02\text{dB}$  |
| Peak Power Output                | $\pm 1.27\text{ dB}$ |
| Radiated Emission(30MHz~1GHz)    | $\pm 3.80\text{ dB}$ |
| Radiated Emission(1GHz~40GHz)    | $\pm 3.90\text{ dB}$ |
| RF antenna conducted test        | $\pm 1.27\text{dB}$  |
| Radiated Emission Band Edge      | $\pm 3.9\text{ dB}$  |
| DTS Bandwidth                    | $\pm 1\text{kHz}$    |
| Occupied Bandwidth               | $\pm 1\text{kHz}$    |
| Power Density                    | $\pm 1.27\text{dB}$  |
| Frequency Stability              | $\pm 100\text{ Hz}$  |

## 1 GENERAL INFORMATION

### 1.1 General Description of the Item(s)

|                            |                                                                                                                     |
|----------------------------|---------------------------------------------------------------------------------------------------------------------|
| Model / Type number.....:  | 8680i                                                                                                               |
| Trademark.....:            | Honeywell                                                                                                           |
| Manufacturer.....:         | HONEYWELL INTERNATIONAL INC<br>Honeywell Safety and Productivity Solutions<br>2、Metro(Suzhou)Technologies Co.,Ltd   |
| Manufacturer Address.....: | 1、 9680 OLD BAILES RD<br>FORT MILL SC 29707-7539<br>2、 No.221 Xinghai street China-Singapore Suzhou Industrial Park |

|                                    |           |
|------------------------------------|-----------|
| Wireless specification.....:       | NFC       |
| Operating frequency range(s).....: | 13.56 MHz |
| Type of modulation.....:           | ASK       |
| Number of channel.....:            | 1         |
| Data rate.....:                    | 106kbps   |

|                          |                                     |                                |
|--------------------------|-------------------------------------|--------------------------------|
| Rated power supply.....: | Voltage and Frequency               |                                |
|                          | <input type="checkbox"/>            | AC: 220 – 240 V, 50/60 Hz      |
|                          | <input type="checkbox"/>            | AC: 100 – 240 V, 50/60 Hz      |
|                          | <input type="checkbox"/>            | DC: 12 V, 24 V, 12 / 24 V      |
|                          | <input checked="" type="checkbox"/> | Battery: DC 3.8V               |
| Mounting position.....:  | <input type="checkbox"/>            | Table top equipment            |
|                          | <input type="checkbox"/>            | Wall/Ceiling mounted equipment |
|                          | <input type="checkbox"/>            | Floor standing equipment       |
|                          | <input checked="" type="checkbox"/> | Hand-held equipment            |
|                          | <input type="checkbox"/>            | Other:                         |

### 1.2 Antenna Information

|                                   |                                     |              |                                       |
|-----------------------------------|-------------------------------------|--------------|---------------------------------------|
| Antenna model / type number.....: | N/A                                 |              |                                       |
| Antenna serial number.....:       | N/A                                 |              |                                       |
| Antenna Delivery .....            | <input checked="" type="checkbox"/> | 1TX + 1RX    |                                       |
|                                   | <input type="checkbox"/>            | 2TX + 2RX    |                                       |
|                                   | <input type="checkbox"/>            | Others:..... |                                       |
| Antenna technology.....:          | <input checked="" type="checkbox"/> | SISO         |                                       |
|                                   | <input type="checkbox"/>            | MIMO         | <input type="checkbox"/> Basic        |
|                                   |                                     |              | <input type="checkbox"/> CDD          |
|                                   |                                     |              | <input type="checkbox"/> Sectorized   |
|                                   |                                     |              | <input type="checkbox"/> Beam-forming |
| Antenna Type.....:                | <input type="checkbox"/>            | External     | <input type="checkbox"/> Dipole       |
|                                   |                                     |              | <input type="checkbox"/> Sectorized   |



|  |                                     |          |                                     |              |
|--|-------------------------------------|----------|-------------------------------------|--------------|
|  | <input checked="" type="checkbox"/> | Internal | <input type="checkbox"/>            | PIFA         |
|  |                                     |          | <input type="checkbox"/>            | PCB          |
|  |                                     |          | <input checked="" type="checkbox"/> | Loop Antenna |

### 1.3 Test date

|                      |                                                                        |
|----------------------|------------------------------------------------------------------------|
| Test Location        | No. 99, Hongye Road, Suzhou Industrial Park Suzhou, 215006, P.R. China |
| Date(receive sample) | Jun. 20, 2019                                                          |
| Date (start test)    | Jun. 20, 2019                                                          |
| Date (finish test)   | Jul. 05, 2019                                                          |

## 2 DESCRIPTION OF TEST SETUP

### 2.1 Operating mode(s) used for tests

During the tests the following operating mode(s) has(have) been used.

|           |                         |
|-----------|-------------------------|
| Test Mode | Mode 1: Transmit by NFC |
|-----------|-------------------------|

### 2.2 Support / Auxiliary equipment / unit / Test software for the EUT

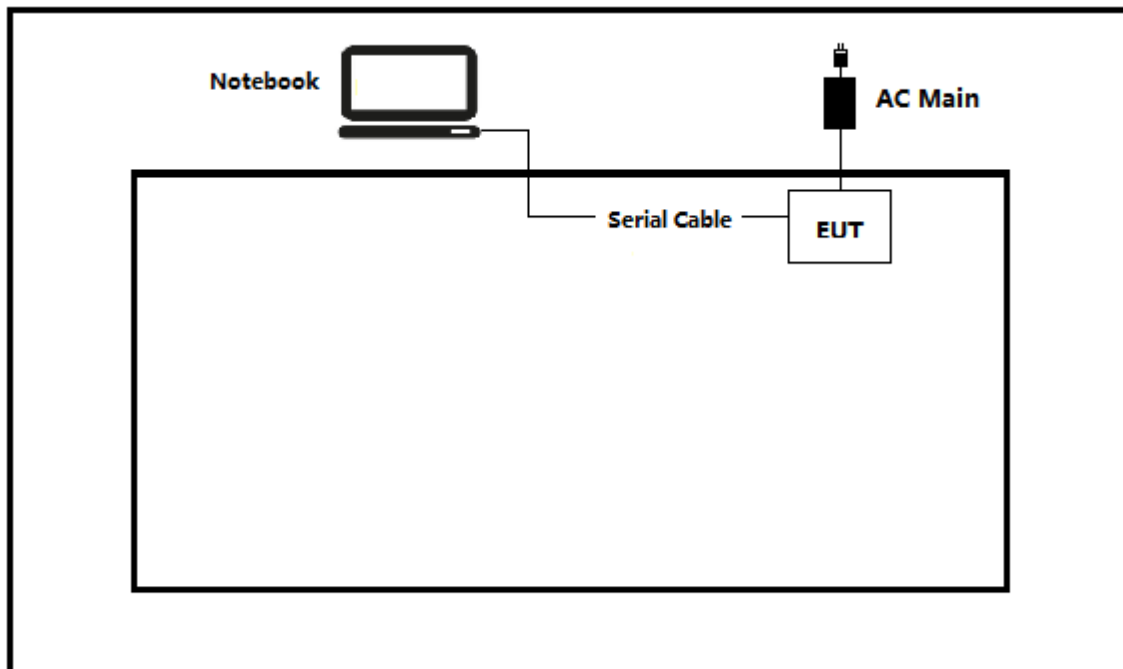
The EUT has been tested with the following auxiliary equipment / unit / software:

| Auxiliary equipment       | Type / Version | Manufacturer | Supplied by |
|---------------------------|----------------|--------------|-------------|
| Notebook                  | Think pad x220 | Lenovo       | Adapter     |
|                           |                |              |             |
| unit / software           | Type / Version | Manufacturer | Supplied by |
|                           |                |              |             |
|                           |                |              |             |
| software                  | Type / Version | Manufacturer | Supplied by |
|                           |                |              |             |
| Supplemental information: |                |              |             |

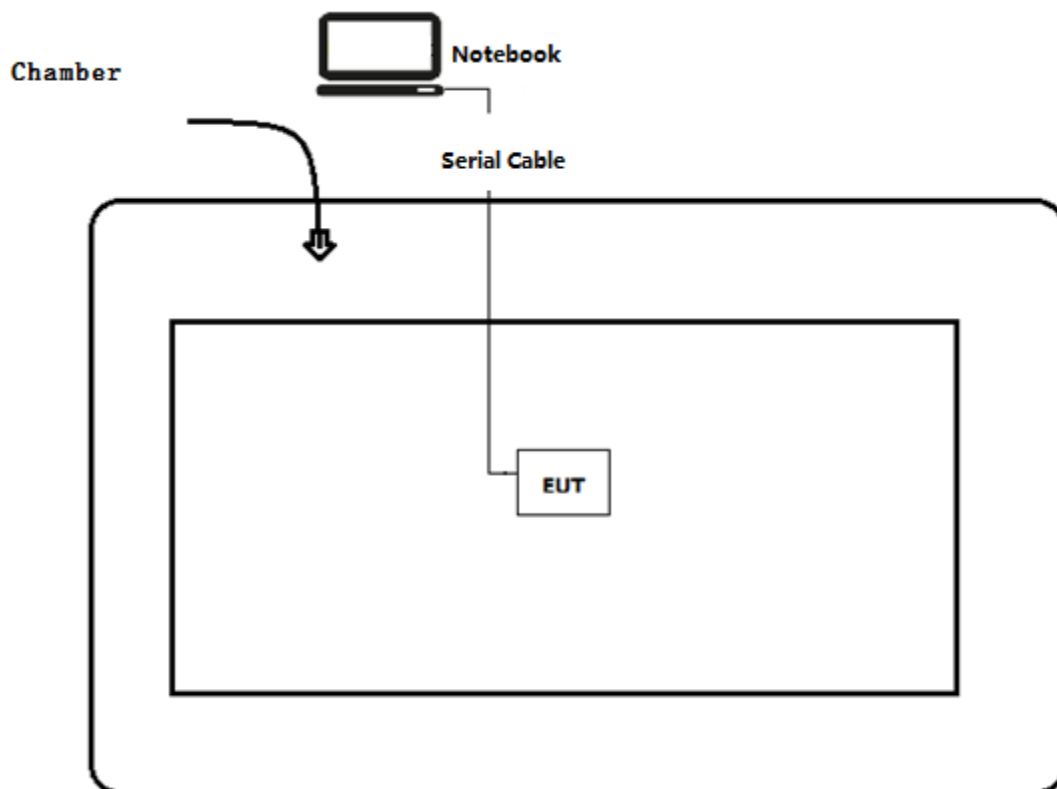
## 2.3 Test Configuration / Block diagram used for tests

The following test setup / configuration / block diagram has been used during the tests:

Test setup Diagram- AC Line Conducted Emission Test



Test setup Diagram- AC Line Conducted Emission Test



## 2.4 Testing process

|   |                                                               |
|---|---------------------------------------------------------------|
| 1 | Setup the EUT as shown in Section 2.3.                        |
| 2 | Input the commands.                                           |
| 3 | Configure the test mode, the test channel, and the data rate. |
| 4 | Start the continuous Transmitter.                             |
| 5 | Verify that the EUT works properly.                           |

### 3 VERDICT SUMMARY SECTION

This chapter presents an overview of standards and results. Refer to the next chapters for details of measured test results and applied test levels.

#### 3.1 Standards

| Standard                                          | Year | Description                                 |
|---------------------------------------------------|------|---------------------------------------------|
| FCC CFR Title 47 Part 15 Subpart C Section 15.225 | 2019 | Operation within the band 13.110-14.010 MHz |

#### 3.2 Overview of results

| Requirement – Test case           | Basic standard(s)                                             | Verdict | Remark |
|-----------------------------------|---------------------------------------------------------------|---------|--------|
| Conducted Emission                | FCC CFR Title 47 Part 15 Subpart C Section 15.207             | PASS    | ---    |
| Field Strength of Fundamental     | FCC CFR Title 47 Part 15 Subpart C Section 15.225(a)(b)(c)    | PASS    | ---    |
| Field Strength of Spurious        | FCC CFR Title 47 Part 15 Subpart C Section 15.209 & 15.225(d) | PASS    | ---    |
| Frequency Tolerance               | FCC CFR Title 47 Part 15 Subpart C Section 15.225(e)          | PASS    | ---    |
| Channel Bandwidth                 | FCC CFR Title 47 Part 15 Subpart C Section 15.215(c)          | PASS    | ---    |
| Antenna Requirement               | FCC CFR Title 47 Part 15 Subpart C Section 15.203             | PASS    | ---    |
| <u>Supplementary information:</u> |                                                               |         |        |

### 3.3 Test Facility

|               |          |                                       |
|---------------|----------|---------------------------------------|
| <b>USA</b>    | <b>:</b> | <b>FCC Designation Number: CN1199</b> |
| <b>Canada</b> | <b>:</b> | <b>CAB identifier Number: CN0040</b>  |

## 4 TEST RESULTS

### 4.1 AC Power Line Conducted Emission

**VERDICT: PASS**

#### 4.1.1 Limit

| Standard              | FCC Part 15 Subpart E Paragraph 15.207 |                                 |  |
|-----------------------|----------------------------------------|---------------------------------|--|
| Frequency range [MHz] | Limit: QP [dB(μV) <sup>1)</sup>        | Limit: AV [dB(μV) <sup>1)</sup> |  |
| 0,15 - 0,50           | 66 - 56 <sup>2)</sup>                  | 56 - 46 <sup>2)</sup>           |  |
| 0,50 - 5,0            | 56                                     | 46                              |  |
| 5,0 - 30              | 60                                     | 50                              |  |

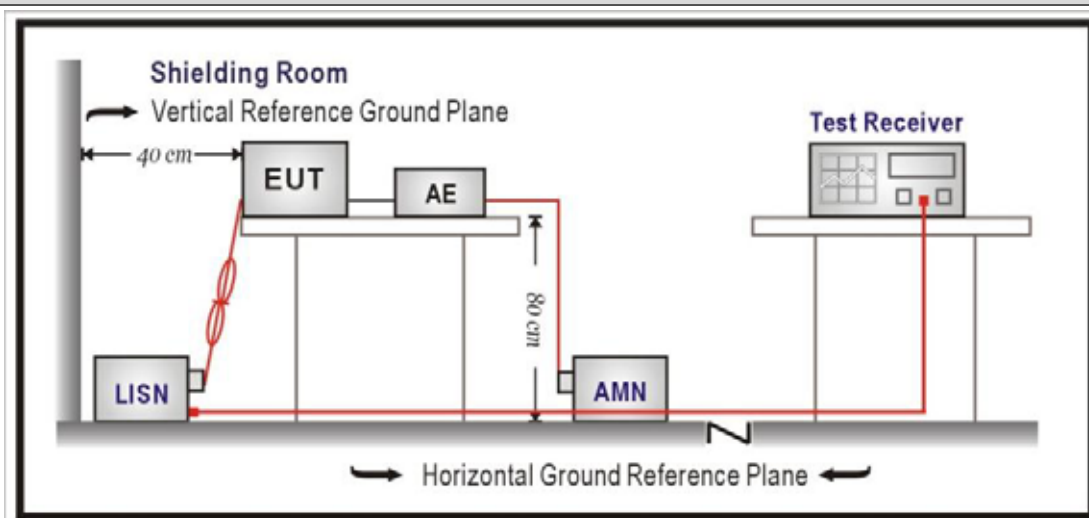
<sup>1)</sup> At the transition frequency, the lower limit applies.

<sup>2)</sup> The limit decreases linearly with the logarithm of the frequency.

**NOTE 1:** The exclusion band for transmitters shall be considered for transmitters operating at frequencies below 30 MHz.

**NOTE 2:** Where the AC output port is directly connected (or via a circuit breaker) to the AC power input port of the EUT the AC power output port need not to be tested.

#### 4.1.2 Test Setup

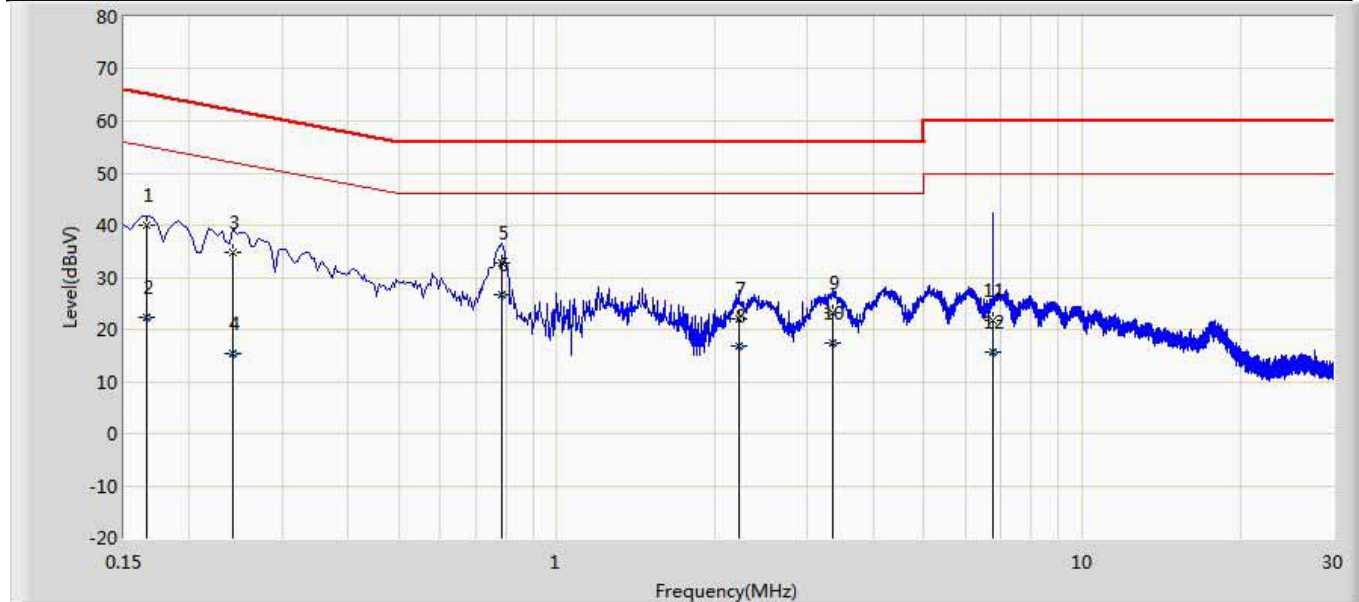


#### 4.1.3 Test Procedure

|                                     | References Rule  | Chapter | Item                                                                                        |
|-------------------------------------|------------------|---------|---------------------------------------------------------------------------------------------|
| <input checked="" type="checkbox"/> | ANSI C63.10-2013 | 6.2     | Standard test method for ac power-line conducted emissions from unlicensed wireless devices |

#### 4.1.4 Test Data

|                                   |                     |
|-----------------------------------|---------------------|
| Site: TR1                         | Time: 2019/06/25    |
| Limit: FCC_Part15.207_CE          | Margin: 0           |
| Probe: ENV216_101190(0.009-30MHz) | Polarity: Line      |
| EUT: Barcode Scanner              | Power: AC 120V/60Hz |
| Note: Mode 1                      |                     |



| No | Mark | Frequency (MHz) | Measure Level (dBuV) | Reading Level (dBuV) | Over Limit (dB) | Limit (dBuV) | Probe (dB) | Cable (dB) | Amp (dB) | Type |
|----|------|-----------------|----------------------|----------------------|-----------------|--------------|------------|------------|----------|------|
| 1  |      | 0.166           | 39.891               | 30.257               | -25.268         | 65.158       | 9.607      | 0.027      | 0.000    | QP   |
| 2  |      | 0.166           | 22.186               | 12.553               | -32.972         | 55.158       | 9.607      | 0.027      | 0.000    | AV   |
| 3  |      | 0.242           | 34.827               | 25.196               | -27.201         | 62.027       | 9.600      | 0.030      | 0.000    | QP   |
| 4  |      | 0.242           | 15.337               | 5.706                | -36.691         | 52.027       | 9.600      | 0.030      | 0.000    | AV   |
| 5  |      | 0.786           | 32.728               | 23.072               | -23.272         | 56.000       | 9.603      | 0.052      | 0.000    | QP   |
| 6  | *    | 0.786           | 26.739               | 17.084               | -19.261         | 46.000       | 9.603      | 0.052      | 0.000    | AV   |
| 7  |      | 2.218           | 22.066               | 12.360               | -33.934         | 56.000       | 9.614      | 0.093      | 0.000    | QP   |
| 8  |      | 2.218           | 16.759               | 7.053                | -29.241         | 46.000       | 9.614      | 0.093      | 0.000    | AV   |
| 9  |      | 3.358           | 23.271               | 13.523               | -32.729         | 56.000       | 9.633      | 0.115      | 0.000    | QP   |
| 10 |      | 3.358           | 17.441               | 7.693                | -28.559         | 46.000       | 9.633      | 0.115      | 0.000    | AV   |
| 11 |      | 6.770           | 21.862               | 12.001               | -38.138         | 60.000       | 9.695      | 0.165      | 0.000    | QP   |
| 12 |      | 6.770           | 15.721               | 5.861                | -34.279         | 50.000       | 9.695      | 0.165      | 0.000    | AV   |

|                                                                 |      |                 |                      |                      |                     |              |            |            |          |      |
|-----------------------------------------------------------------|------|-----------------|----------------------|----------------------|---------------------|--------------|------------|------------|----------|------|
| Site: TR1                                                       |      |                 |                      |                      | Time: 2019/06/25    |              |            |            |          |      |
| Limit: FCC_Part15.207_CE                                        |      |                 |                      |                      | Margin: 0           |              |            |            |          |      |
| Probe: ENV216_101190(0.009-30MHz)                               |      |                 |                      |                      | Polarity: Neutral   |              |            |            |          |      |
| EUT: Barcode Scanner                                            |      |                 |                      |                      | Power: AC 120V/60Hz |              |            |            |          |      |
| Note: Mode 1                                                    |      |                 |                      |                      |                     |              |            |            |          |      |
|                                                                 |      |                 |                      |                      |                     |              |            |            |          |      |
| No                                                              | Mark | Frequency (MHz) | Measure Level (dBuV) | Reading Level (dBuV) | Over Limit (dB)     | Limit (dBuV) | Probe (dB) | Cable (dB) | Amp (dB) | Type |
| 1                                                               |      | 0.162           | 38.860               | 29.241               | -26.501             | 65.361       | 9.593      | 0.026      | 0.000    | QP   |
| 2                                                               |      | 0.162           | 19.223               | 9.604                | -36.137             | 55.361       | 9.593      | 0.026      | 0.000    | AV   |
| 3                                                               |      | 0.194           | 38.004               | 28.377               | -25.860             | 63.864       | 9.598      | 0.028      | 0.000    | QP   |
| 4                                                               |      | 0.194           | 18.951               | 9.325                | -34.912             | 53.864       | 9.598      | 0.028      | 0.000    | AV   |
| 5                                                               |      | 0.246           | 36.078               | 26.449               | -25.813             | 61.891       | 9.598      | 0.031      | 0.000    | QP   |
| 6                                                               |      | 0.246           | 17.681               | 8.053                | -34.210             | 51.891       | 9.598      | 0.031      | 0.000    | AV   |
| 7                                                               |      | 0.270           | 34.127               | 24.496               | -26.991             | 61.118       | 9.597      | 0.033      | 0.000    | QP   |
| 8                                                               |      | 0.270           | 15.908               | 6.277                | -35.210             | 51.118       | 9.597      | 0.033      | 0.000    | AV   |
| 9                                                               |      | 0.782           | 33.040               | 23.397               | -22.960             | 56.000       | 9.590      | 0.052      | 0.000    | QP   |
| 10                                                              | *    | 0.782           | 23.674               | 14.032               | -22.326             | 46.000       | 9.590      | 0.052      | 0.000    | AV   |
| 11                                                              |      | 7.246           | 17.825               | 7.947                | -42.175             | 60.000       | 9.707      | 0.171      | 0.000    | QP   |
| 12                                                              |      | 7.246           | 11.605               | 1.727                | -38.395             | 50.000       | 9.707      | 0.171      | 0.000    | AV   |
| Remark                                                          |      |                 |                      |                      |                     |              |            |            |          |      |
| 1. " * ", means this data is the worst emission level.          |      |                 |                      |                      |                     |              |            |            |          |      |
| 2. Measurement Level = Reading Level + Factor(Probe+Cable-Amp). |      |                 |                      |                      |                     |              |            |            |          |      |

|                             |                      |
|-----------------------------|----------------------|
| <b>4.2 E-field Emission</b> | <b>VERDICT: PASS</b> |
|-----------------------------|----------------------|

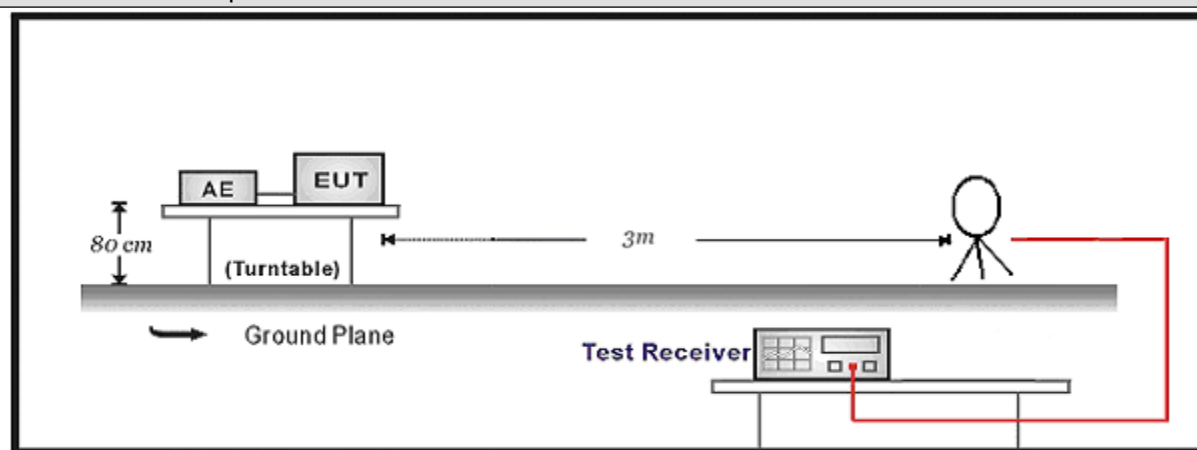
#### 4.2.1 Limit

|                 |                                        |
|-----------------|----------------------------------------|
| <b>Standard</b> | FCC Part 15 Subpart C Paragraph 15.225 |
|-----------------|----------------------------------------|

- (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.

#### 4.2.2 Test Setup

Below 30MHz Test Setup:



#### 4.2.3 Test Procedure

| References Rule                                 | Chapter | Description                                                                                      |
|-------------------------------------------------|---------|--------------------------------------------------------------------------------------------------|
| <input checked="" type="checkbox"/> ANSI C63.10 | 6.4     | Radiated emissions from unlicensed wireless devices below 30 MHz                                 |
| <input type="checkbox"/> ANSI C63.10            | 6.5     | Radiated emissions from unlicensed wireless devices in the frequency range of 30 MHz to 1000 MHz |
| <input type="checkbox"/> ANSI C63.10            | 6.6     | Radiated emissions from unlicensed wireless devices above 1 GHz                                  |

#### 4.2.4 Test Data

| Frequency (MHz) | Measure Level (dBμV/m) (10m) | Loop Ant. Pol. (H/V) | Correction factor (dB) | Reading Level (dBμV/m) (10m) | Distance factor (dB) | Corrected Measure level (dBμV/m) (30m) | Limit (dBμV/m) (30m) | Over Limit (dB) |
|-----------------|------------------------------|----------------------|------------------------|------------------------------|----------------------|----------------------------------------|----------------------|-----------------|
| 13.56           | 24.055                       | H                    | -29.406                | 53.461                       | -20                  | 4.055                                  | 84.00                | -79.945         |
| 13.56           | 20.057                       | V                    | -29.406                | 49.463                       | -20                  | 0.057                                  | 84.00                | -83.943         |
| 13.553          | 1.376                        | H                    | -29.406                | 30.782                       | -20                  | -18.624                                | 50.50                | -69.124         |
| 13.567          | 0.927                        | H                    | -29.406                | 30.333                       | -20                  | -19.073                                | 50.50                | -69.573         |
| 13.41           | 0.576                        | H                    | -29.414                | 29.990                       | -20                  | -19.424                                | 40.50                | -59.924         |
| 13.71           | 0.767                        | H                    | -29.392                | 30.159                       | -20                  | -19.233                                | 40.50                | -59.733         |

Note1: Antenna Test Distance at 10 meters.

Note2: Measurements were performed at 10m and the data was extrapolated to the specified measurement distance of 30m using the square of an inverse linear distance extrapolation factor (40 dB/decade) as specified in §15.31(f)(2). Extrapolation Factor =  $20 \log_{10}(30/10)^2 = 20\text{dB}$ .

|                               |                      |
|-------------------------------|----------------------|
| <b>4.3 Radiated Emissions</b> | <b>VERDICT: PASS</b> |
|-------------------------------|----------------------|

|                    |                                         |
|--------------------|-----------------------------------------|
| <b>4.3.1 Limit</b> |                                         |
| <b>Standard</b>    | FCC Part 15 Subpart C Paragraph 15. 209 |

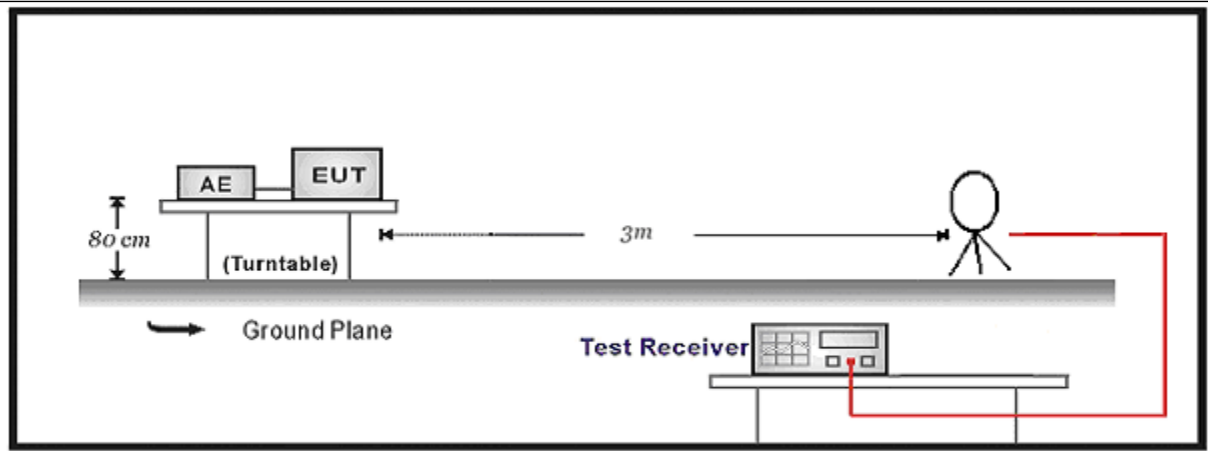
| Restricted Band Emissions Limit |                                |                                  |                             |
|---------------------------------|--------------------------------|----------------------------------|-----------------------------|
| Frequency<br>(MHz)              | Field strength<br>( $\mu$ V/m) | Field strength<br>(dB $\mu$ V/m) | Measurement distance<br>(m) |
| 0.009 - 0.49                    | 2400/F(kHz)                    | 48.5 – 13.8                      | 300 <sub>(Note 1)</sub>     |
| 0.49 - 1.705                    | 24000/F(kHz)                   | 33.8 - 23                        | 30 <sub>(Note 1)</sub>      |
| 1.705 - 30                      | 30                             | 29.5                             | 30 <sub>(Note 1)</sub>      |
| 30 - 88                         | 100                            | 40                               | 3 <sub>(Note 2)</sub>       |
| 88 - 216                        | 150                            | 43.5                             | 3 <sub>(Note 2)</sub>       |
| 216 - 960                       | 200                            | 46                               | 3 <sub>(Note 2)</sub>       |
| Above 960                       | 500                            | 54                               | 3 <sub>(Note 2)</sub>       |

Note 1: At frequencies below 30 MHz, 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. Pending the development of an appropriate measurement procedure for measurements performed below 30 MHz, when performing measurements at a closer distance than specified, the results shall be extrapolated to the specified distance by either making measurements at a minimum of two distances on at least one radial to determine the proper extrapolation factor or by using the square of an inverse linear distance extrapolation factor (40 dB/decade).

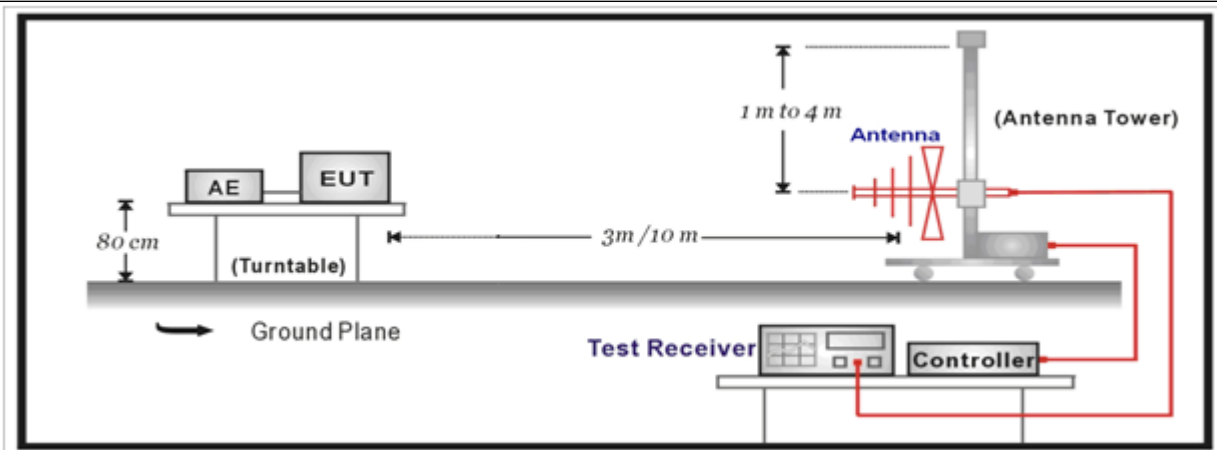
Note 2: At frequencies at or above 30 MHz, measurements may be performed at a distance other than what is specified provided: measurements are not made in the near field except where it can be shown that near field measurements are appropriate due to the characteristics of the device; and it can be demonstrated that the signal levels needed to be measured at the distance employed can be detected by the measurement equipment. Measurements shall not be performed at a distance greater than 30 meters unless it can be further demonstrated that measurements at a distance of 30 meters or less are impractical. When performing measurements at a distance other than that specified, the results shall be extrapolated to the specified distance using an extrapolation factor of 20 dB/decade (inverse linear-distance for field strength measurements; inverse-linear-distance-squared for power density measurements).

### 4.3.2 Test Setup

Below 30MHz Test Setup:



30MHz-1GHz Test Setup:

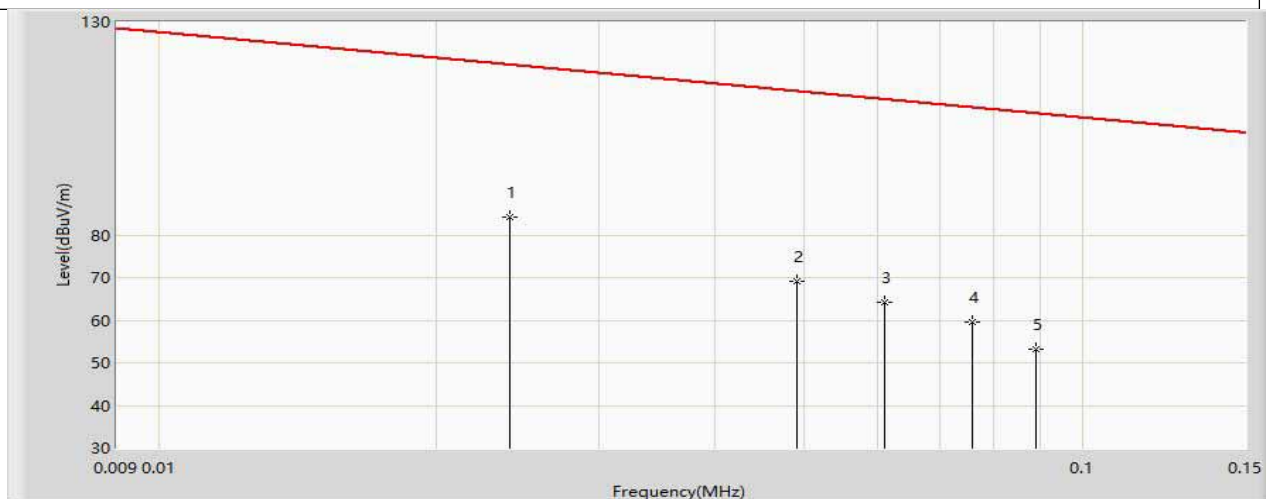


#### 4.3.3 Test Procedure

|  | References Rule                                 | Chapter | Description                                                                                      |
|--|-------------------------------------------------|---------|--------------------------------------------------------------------------------------------------|
|  | <input checked="" type="checkbox"/> ANSI C63.10 | 6.4     | Radiated emissions from unlicensed wireless devices below 30 MHz                                 |
|  | <input checked="" type="checkbox"/> ANSI C63.10 | 6.5     | Radiated emissions from unlicensed wireless devices in the frequency range of 30 MHz to 1000 MHz |
|  | <input type="checkbox"/> ANSI C63.10            | 6.6     | Radiated emissions from unlicensed wireless devices above 1 GHz                                  |

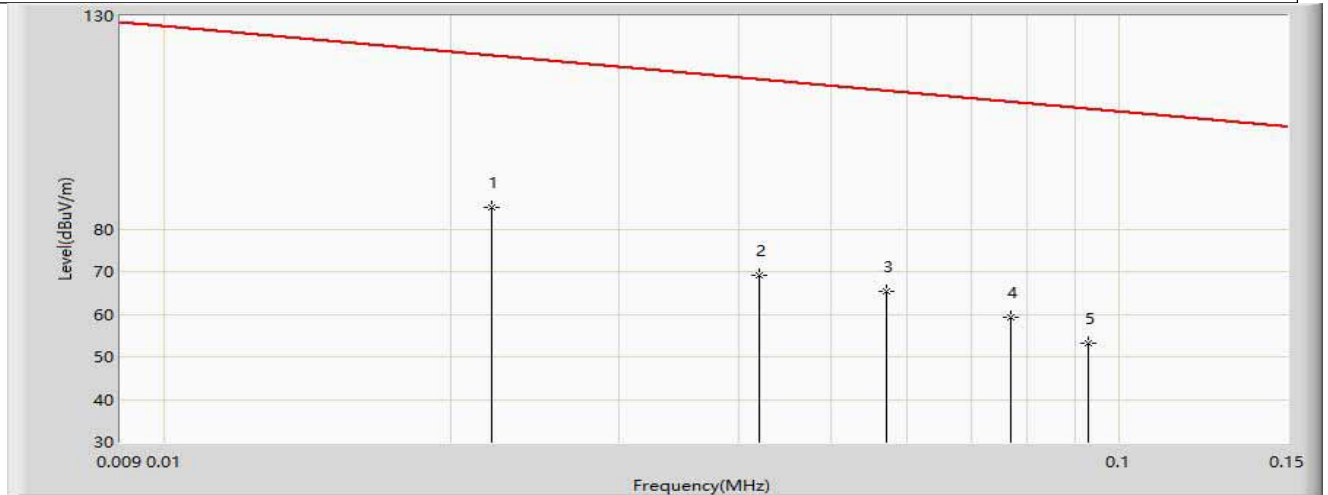
#### 4.3.4 Test Data

|                                    |                          |
|------------------------------------|--------------------------|
| Engineer: Pawn                     |                          |
| Site: AC3                          | Time: 2019/07/08 - 09:45 |
| Limit: FCC_Part15.209_RE(3m)       | Margin: 0                |
| Probe: HFH2-Z2_833799(0.009-30MHz) | Polarity: Horizontal     |
| EUT: BARCODE SCANNER               | Power: AV 120V/60Hz      |
| Note: Transmit                     |                          |



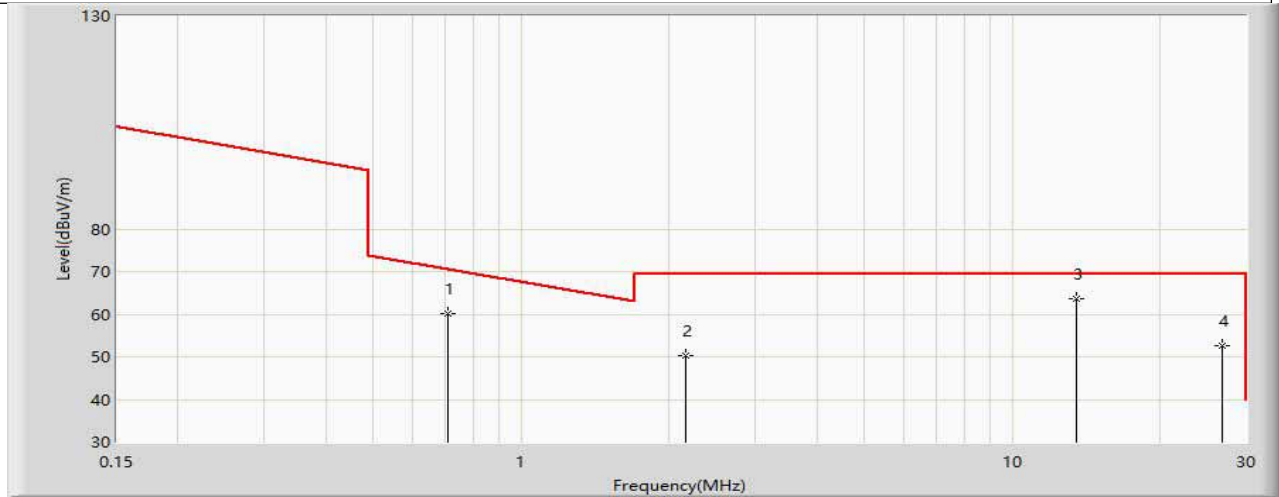
| No | Mark | Frequency (MHz) | Measure Level (dBuV/m) | Reading Level (dBuV) | Over Limit (dB) | Limit (dBuV/m) | Factor (dB) | Type |
|----|------|-----------------|------------------------|----------------------|-----------------|----------------|-------------|------|
| 1  | *    | 0.024           | 84.290                 | 62.820               | -35.695         | 119.985        | 21.470      | QP   |
| 2  |      | 0.049           | 69.043                 | 47.113               | -44.746         | 113.789        | 21.930      | QP   |
| 3  |      | 0.061           | 64.335                 | 42.417               | -47.552         | 111.887        | 21.918      | QP   |
| 4  |      | 0.076           | 59.453                 | 37.552               | -50.526         | 109.979        | 21.901      | QP   |
| 5  |      | 0.089           | 53.060                 | 31.177               | -55.548         | 108.608        | 21.883      | QP   |

|                                    |                          |
|------------------------------------|--------------------------|
| Engineer: Pawn                     |                          |
| Site: AC3                          | Time: 2019/07/08 - 10:02 |
| Limit: FCC_Part15.209_RE(3m)       | Margin: 0                |
| Probe: HFH2-Z2_833799(0.009-30MHz) | Polarity: Vertical       |
| EUT: BARCODE SCANNER               | Power: AV 120V/60Hz      |
| Note: Transmit                     |                          |



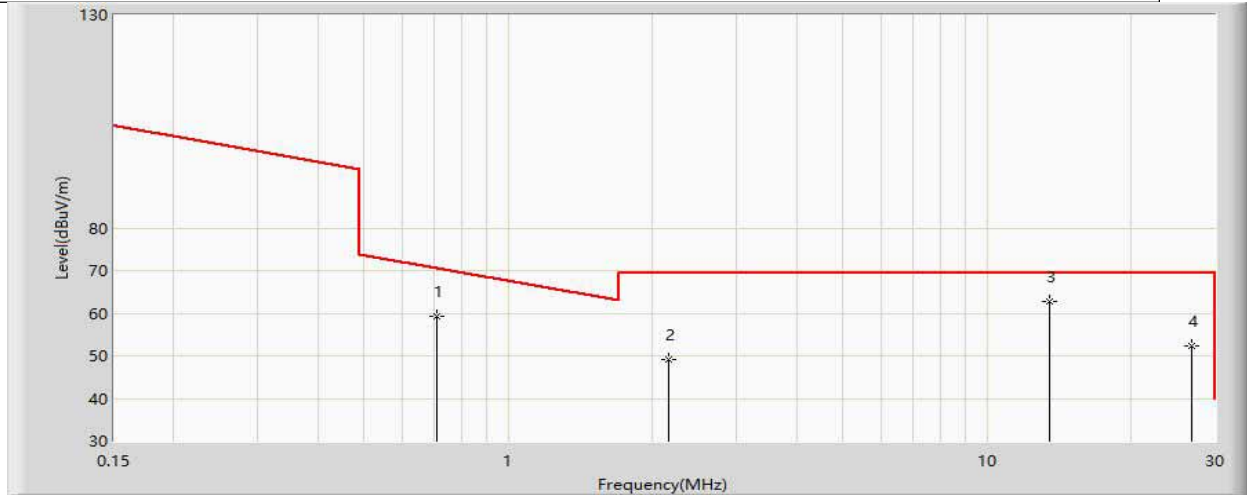
| No | Mark | Frequency (MHz) | Measure Level (dBuV/m) | Reading Level (dBuV) | Over Limit (dB) | Limit (dBuV/m) | Factor (dB) | Type |
|----|------|-----------------|------------------------|----------------------|-----------------|----------------|-------------|------|
| 1  | *    | 0.022           | 85.075                 | 63.668               | -35.665         | 120.741        | 21.407      | QP   |
| 2  |      | 0.042           | 69.130                 | 47.193               | -45.997         | 115.127        | 21.937      | QP   |
| 3  |      | 0.057           | 65.232                 | 43.310               | -47.244         | 112.476        | 21.922      | QP   |
| 4  |      | 0.077           | 59.341                 | 37.442               | -50.524         | 109.865        | 21.899      | QP   |
| 5  |      | 0.093           | 53.215                 | 31.337               | -55.011         | 108.226        | 21.878      | QP   |

|                                    |                         |
|------------------------------------|-------------------------|
| Engineer: Pawn                     |                         |
| Site: AC3                          | Time: 2019/07/08- 10:08 |
| Limit: FCC_Part15.209_RE(3m)       | Margin: 0               |
| Probe: HFH2-Z2_833799(0.009-30MHz) | Polarity: Horizontal    |
| EUT: BARCODE SCANNER               | Power: AV 120V/60Hz     |
| Note: Transmit                     |                         |



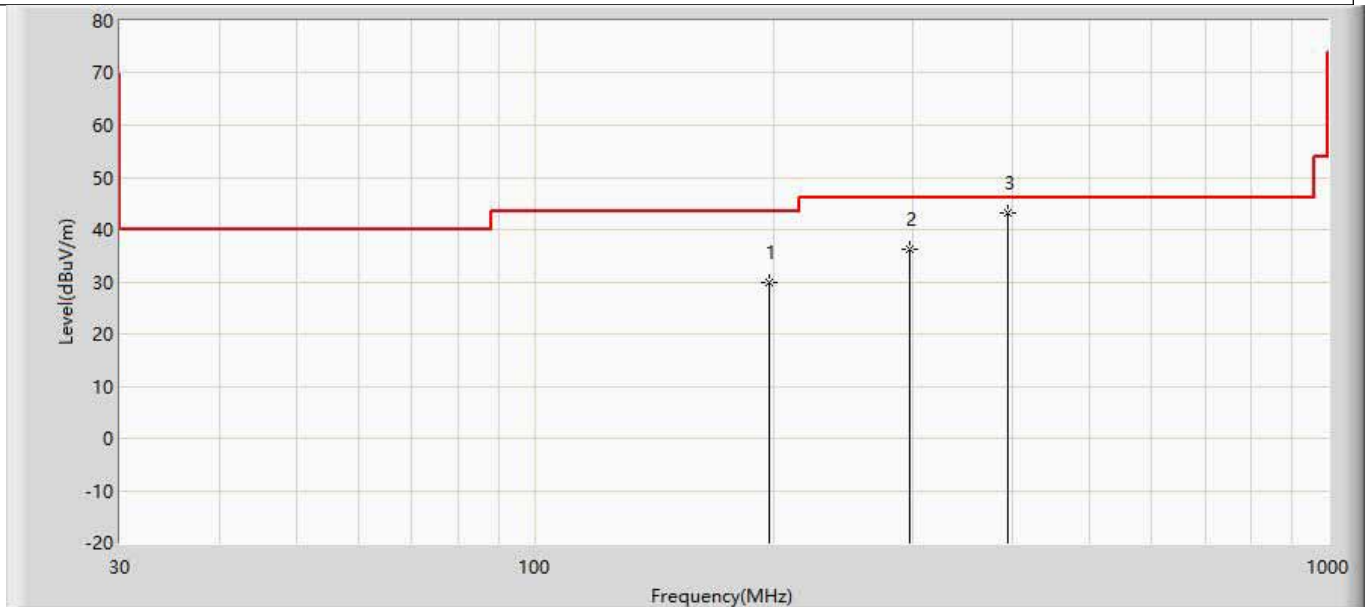
| No | Mar<br>k | Frequency<br>(MHz) | Measure Level<br>(dBuV/m) | Reading Level<br>(dBuV) | Over Limit<br>(dB) | Limit<br>(dBuV/m) | Factor<br>(dB) | Type |
|----|----------|--------------------|---------------------------|-------------------------|--------------------|-------------------|----------------|------|
| 1  |          | 0.711              | 60.039                    | 39.266                  | -10.536            | 70.576            | 20.773         | QP   |
| 2  |          | 2.168              | 50.287                    | 29.467                  | -19.213            | 69.500            | 20.820         | QP   |
| 3  | *        | 13.560             | 63.500                    | 42.750                  | -6.000             | 69.500            | 20.750         | QP   |
| 4  |          | 26.880             | 52.676                    | 32.156                  | -16.824            | 69.500            | 20.520         | QP   |

|                                    |                         |
|------------------------------------|-------------------------|
| Engineer: Pawn                     |                         |
| Site: AC3                          | Time: 2019/07/08- 10:30 |
| Limit: FCC_Part15.209_RE(3m)       | Margin: 0               |
| Probe: HFH2-Z2_833799(0.009-30MHz) | Polarity: Vertical      |
| EUT: BARCODE SCANNER               | Power: AV 120V/60Hz     |
| Note: Transmit                     |                         |



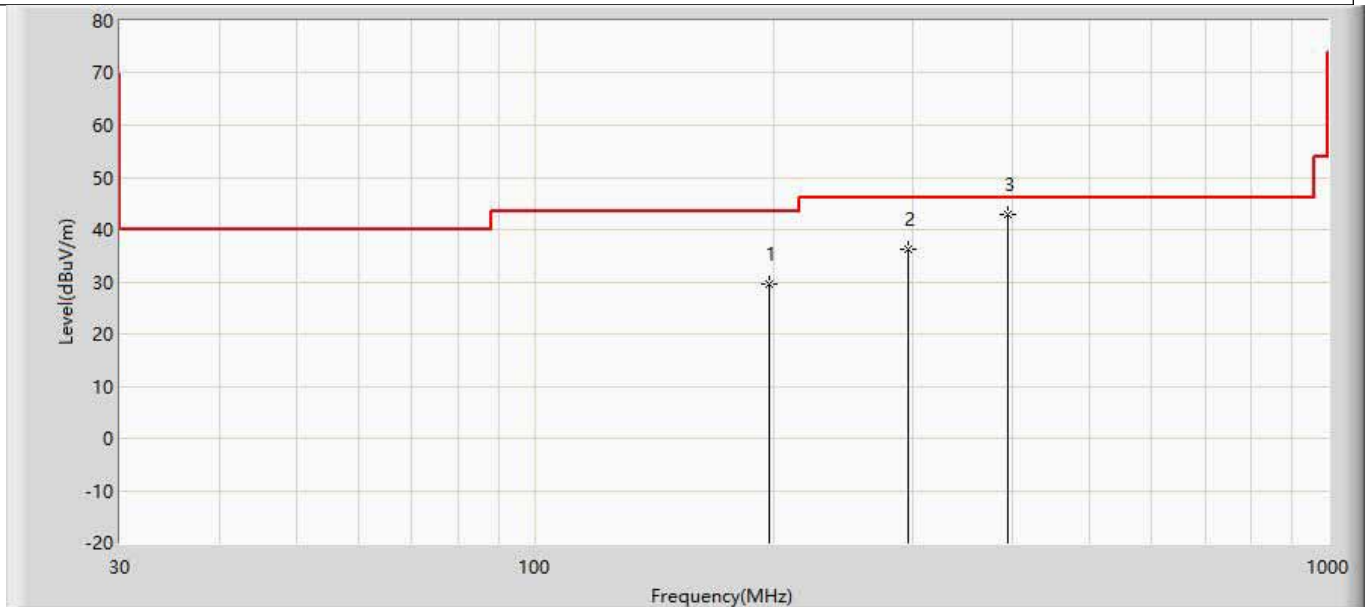
| No | Mar<br>k | Frequency<br>(MHz) | Measure Level<br>(dBuV/m) | Reading Level<br>(dBuV) | Over Limit<br>(dB) | Limit<br>(dBuV/m) | Factor<br>(dB) | Type |
|----|----------|--------------------|---------------------------|-------------------------|--------------------|-------------------|----------------|------|
| 1  |          | 0.711              | 59.293                    | 38.520                  | -11.282            | 70.576            | 20.773         | QP   |
| 2  |          | 2.168              | 49.250                    | 28.430                  | -20.250            | 69.500            | 20.820         | QP   |
| 3  | *        | 13.560             | 62.632                    | 41.862                  | -6.868             | 69.500            | 20.750         | QP   |
| 4  |          | 26.880             | 52.283                    | 21.763                  | -17.217            | 69.500            | 20.520         | QP   |

|                              |                          |
|------------------------------|--------------------------|
| Engineer: pawn               |                          |
| Site: AC3                    | Time: 2019/07/08 - 09:52 |
| Limit: FCC_Part15.209_RE(3m) | Margin: 0                |
| Probe: AC3_3m (30-1000MHz)   | Polarity: Horizontal     |
| EUT: BARCODE SCANNER         | Power: AC 120V/60Hz      |
| Note: Mode 1                 |                          |



| No | Mark | Frequency (MHz) | Measure Level (dBuV/m) | Reading Level (dBuV) | Over Limit (dB) | Limit (dBuV/m) | Factor (dB) | Type |
|----|------|-----------------|------------------------|----------------------|-----------------|----------------|-------------|------|
| 1  | *    | 197.430         | 29.765                 | 23.550               | -13.735         | 43.500         | 6.215       | PK   |
| 2  |      | 296.342         | 36.270                 | 29.655               | -9.730          | 46.000         | 6.615       | PK   |
| 3  |      | 395.110         | 43.306                 | 31.860               | -2.694          | 46.000         | 11.446      | PK   |

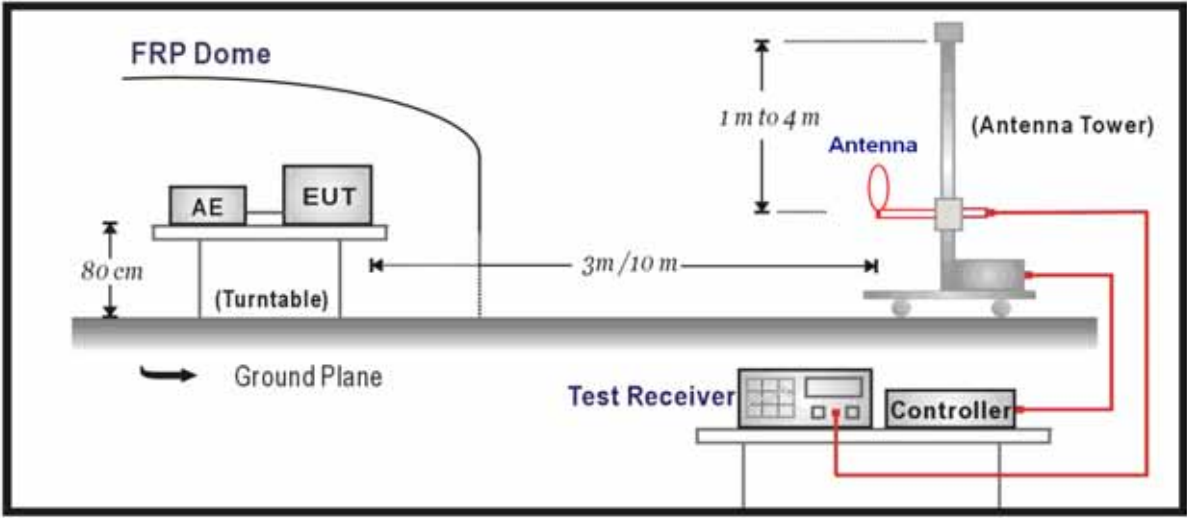
|                              |                          |
|------------------------------|--------------------------|
| Engineer: pawn               |                          |
| Site: AC3                    | Time: 2019/07/08 - 09:52 |
| Limit: FCC_Part15.209_RE(3m) | Margin: 0                |
| Probe: AC3_3m (30-1000MHz)   | Polarity: Vertical       |
| EUT: BARCODE SCANNER         | Power: AC 120V/60Hz      |
| Note: Mode 1                 |                          |



| No | Mark | Frequency (MHz) | Measure Level (dBuV/m) | Reading Level (dBuV) | Over Limit (dB) | Limit (dBuV/m) | Factor (dB) | Type |
|----|------|-----------------|------------------------|----------------------|-----------------|----------------|-------------|------|
| 1  |      | 197.430         | 29.545                 | 23.330               | -13.955         | 43.500         | 6.215       | PK   |
| 2  |      | 296.342         | 36.266                 | 29.663               | -9.734          | 46.000         | 6.615       | PK   |
| 3  | *    | 395.110         | 42.879                 | 31.433               | -3.121          | 46.000         | 11.446      | PK   |

|                        |               |
|------------------------|---------------|
| 4.4 Emission bandwidth | VERDICT: PASS |
|------------------------|---------------|

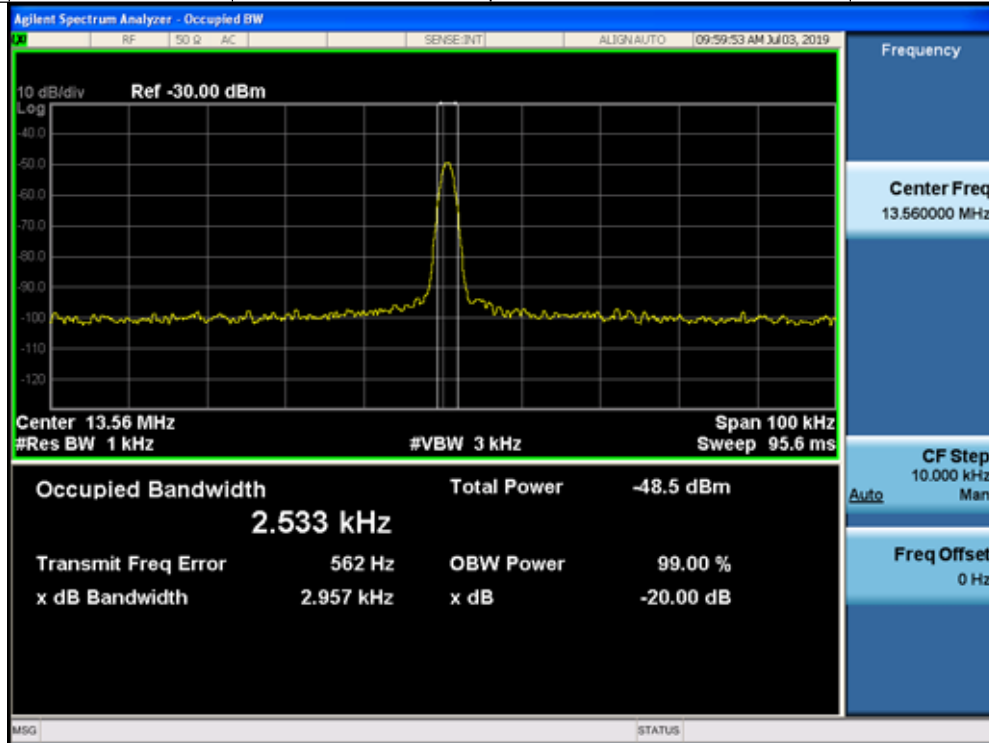
|                  |                                        |
|------------------|----------------------------------------|
| 4.4.1 Limit      |                                        |
| Standard         | FCC Part 15 Subpart C Paragraph 15.215 |
| Within the band. |                                        |

|                                                                                     |  |
|-------------------------------------------------------------------------------------|--|
| 4.4.2 Test Setup                                                                    |  |
|  |  |

|                                     |                |         |                                           |
|-------------------------------------|----------------|---------|-------------------------------------------|
| 4.4.3 Test Procedure                |                |         |                                           |
|                                     | Reference Rule | Chapter | Description                               |
| <input checked="" type="checkbox"/> | ANSI C63.10    | 12.4    | Emission bandwidth and occupied bandwidth |
| <input checked="" type="checkbox"/> | ANSI C63.10    | 12.4.1  | Emission bandwidth                        |
| <input type="checkbox"/>            | ANSI C63.10    | 12.4.2  | Occupied bandwidth                        |

#### 4.4.4 Test Data

| Frequency (MHz) | 20dB Bandwidth (kHz) | 20dBc point (Low) (MHz) | 20dBc point (High) (MHz) | Frequency Range (MHz) | Result |
|-----------------|----------------------|-------------------------|--------------------------|-----------------------|--------|
| 13.56           | 2.957                | 12.0815                 | 15.0385                  | 13.553 ~ 13.567       | Pass   |



|                                |                      |
|--------------------------------|----------------------|
| <b>4.5 Frequency Stability</b> | <b>VERDICT: PASS</b> |
|--------------------------------|----------------------|

|                                     |                                                                                                                                                                                                                                                                                                                                                                                                                                           |
|-------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>4.5.1 Limit:</b>                 |                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| <b>Standard</b>                     | FCC Part 15 Subpart C Paragraph 15.225(e)                                                                                                                                                                                                                                                                                                                                                                                                 |
| <input checked="" type="checkbox"/> | 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. For battery operated equipment, the equipment tests shall be performed using a new battery. |

|                                                                                                                                                                                                                                                                                                                  |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>4.5.2 Test Setup</b>                                                                                                                                                                                                                                                                                          |
| <p>The diagram illustrates the test setup. A Spectrum Analyzer is positioned on a Non-Conducted Table. A Power Supply is connected to the EUT (Equipment Under Test) which is housed within a STANDARD TEMPERATURE &amp; HUMIDITY CHAMBER. A Ground Reference Plane is indicated at the bottom of the setup.</p> |

|                                     |                                                 |         |                                                         |
|-------------------------------------|-------------------------------------------------|---------|---------------------------------------------------------|
| <b>4.5.3 Test Procedure</b>         |                                                 |         |                                                         |
|                                     | References Rule                                 | Chapter | Description                                             |
| <input checked="" type="checkbox"/> | ANSI C63.10                                     | 6.8     | Frequency stability tests                               |
|                                     | <input checked="" type="checkbox"/> ANSI C63.10 | 6.8.1   | Frequency stability with respect to ambient temperature |
|                                     | <input checked="" type="checkbox"/> ANSI C63.10 | 6.8.2   | Frequency stability when varying supply voltage         |

#### 4.5.4 Test Data

##### Frequency Stability under Temperature at 0min

| Temperature Interval ( ) | Test Frequency (MHz) | Deviation (Hz) | Limit (ppm) |
|--------------------------|----------------------|----------------|-------------|
| -30                      | 13.56                | 150            | ±100        |
| -20                      | 13.56                | 51             | ±100        |
| -10                      | 13.56                | -86            | ±100        |
| 0                        | 13.56                | -118           | ±100        |
| 10                       | 13.56                | 81             | ±100        |
| 20                       | 13.56                | -65            | ±100        |
| 30                       | 13.56                | 19             | ±100        |
| 40                       | 13.56                | -139           | ±100        |
| 50                       | 13.56                | 170            | ±100        |

##### Frequency Stability under Temperature at 2min

| Temperature Interval ( ) | Test Frequency (MHz) | Deviation (Hz) | Limit (ppm) |
|--------------------------|----------------------|----------------|-------------|
| -30                      | 13.56                | -121           | ±100        |
| -20                      | 13.56                | -2             | ±100        |
| -10                      | 13.56                | -142           | ±100        |
| 0                        | 13.56                | 110            | ±100        |
| 10                       | 13.56                | -110           | ±100        |
| 20                       | 13.56                | 187            | ±100        |
| 30                       | 13.56                | -62            | ±100        |
| 40                       | 13.56                | -144           | ±100        |
| 50                       | 13.56                | -63            | ±100        |

| Frequency Stability under Temperature at 5min  |                      |                |             |
|------------------------------------------------|----------------------|----------------|-------------|
| Temperature Interval ( )                       | Test Frequency (MHz) | Deviation (Hz) | Limit (ppm) |
| -30                                            | 13.56                | 40             | ±100        |
| -20                                            | 13.56                | -130           | ±100        |
| -10                                            | 13.56                | 196            | ±100        |
| 0                                              | 13.56                | -56            | ±100        |
| 10                                             | 13.56                | 55             | ±100        |
| 20                                             | 13.56                | 79             | ±100        |
| 30                                             | 13.56                | 90             | ±100        |
| 40                                             | 13.56                | -43            | ±100        |
| 50                                             | 13.56                | -85            | ±100        |
| Frequency Stability under Temperature at 10min |                      |                |             |
| Temperature Interval ( )                       | Test Frequency (MHz) | Deviation (Hz) | Limit (ppm) |
| -30                                            | 13.56                | -79            | ±100        |
| -20                                            | 13.56                | 9              | ±100        |
| -10                                            | 13.56                | -23            | ±100        |
| 0                                              | 13.56                | -85            | ±100        |
| 10                                             | 13.56                | -40            | ±100        |
| 20                                             | 13.56                | 57             | ±100        |
| 30                                             | 13.56                | 88             | ±100        |
| 40                                             | 13.56                | 54             | ±100        |
| 50                                             | 13.56                | 28             | ±100        |
| Frequency Stability under Voltage              |                      |                |             |
| AC Voltage (V)                                 | Test Frequency (MHz) | Deviation (Hz) | Limit (ppm) |
| 102                                            | 13.56                | 48             | ±100        |
| 120                                            | 13.56                | 28             | ±100        |
| 138                                            | 13.56                | 151            | ±100        |

|                                |                      |
|--------------------------------|----------------------|
| <b>4.6 Antenna Requirement</b> | <b>VERDICT: PASS</b> |
|--------------------------------|----------------------|

| <b>4.6.1 Limit:</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                                               |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------|
| <b>Standard</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | <b>FCC Part 15 Subpart E Paragraph 15.203</b> |
| <p>An intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device. The use of a permanently attached antenna or of an antenna that uses a unique coupling to the intentional radiator shall be considered sufficient to comply with the provisions of this section. The manufacturer may design the unit so that a broken antenna can be replaced by the user, but the use of a standard antenna jack or electrical connector is prohibited. This requirement does not apply to carrier current devices or to devices operated under the provisions of §15.211, §15.213, §15.217, §15.219, or §15.221. Further, this requirement does not apply to intentional radiators that must be professionally installed, such as perimeter protection systems and some field disturbance sensors, or to other intentional radiators which, in accordance with §15.31(d), must be measured at the installation site. However, the installer shall be responsible for ensuring that the proper antenna is employed so that the limits in this part are not exceeded.</p> |                                               |

| <b>4.6.2 Antenna Connector Construction:</b>                                               |                                                                  |
|--------------------------------------------------------------------------------------------|------------------------------------------------------------------|
| <input checked="" type="checkbox"/>                                                        | The use of a permanently attached antenna                        |
| <input type="checkbox"/>                                                                   | The antenna use of a unique coupling to the intentional radiator |
| <input type="checkbox"/>                                                                   | The use of a nonstandard antenna jack or electrical connector    |
| Please refer to the attached document "Internal Photograph" to show the antenna connector. |                                                                  |



|                                    |               |
|------------------------------------|---------------|
| 4.7 Test setup photo and EUT Photo | VERDICT: PASS |
|------------------------------------|---------------|

Remark: The test setup photo and EUT Photo please see appendix.

\_\_\_\_\_ The End \_\_\_\_\_