

## TEST REPORT

**Product** : Smart Access Controller  
**Trade mark** : N/A  
**Model/Type reference** : SC2ER-3642700  
**Serial Number** : N/A  
**Report Number** : EED32O805433  
**FCC ID** : 2A5DHSC2ER-3642700  
**Date of Issue** : Jun. 15, 2022  
**Test Standards** : 47 CFR Part 15 Subpart C  
**Test result** : PASS

Prepared for:

**FinDreams Technology Company Limited**  
**NO.3001-3009, Hengping Road, Pingshan New District, Shenzhen,**  
**Guangdong, P.R.China**

Prepared by:

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Jun. 15, 2022

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Check No.:3452200422



## 1 Version

| Version No. | Date          | Description |
|-------------|---------------|-------------|
| 00          | Jun. 15, 2022 | Original    |
|             |               |             |
|             |               |             |

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### 3 Test Summary

| Test Item                                                                    | FCC Test Requirement                                   | Test Method      | Result |
|------------------------------------------------------------------------------|--------------------------------------------------------|------------------|--------|
| Antenna Requirement                                                          | 47 CFR Part 15, Subpart C<br>Section 15.203            | ANSI C63.10 2013 | Pass   |
| Conducted Emission<br>(150KHz to 30MHz)                                      | 47 CFR Part 15, Subpart C<br>Section 15.207            | ANSI C63.10 2013 | N/A    |
| Electric Field Strength of<br>Fundamental and Outside<br>the Allocated bands | 47 CFR Part 15, Subpart C<br>Section 15.225(a)/(b)/(c) | ANSI C63.10 2013 | Pass   |
| Radiated Emission                                                            | 47 CFR Part 15, Subpart C<br>Section 15.225(d)/15.209  | ANSI C63.10 2013 | Pass   |
| Frequency Tolerance                                                          | 47 CFR Part 15, Subpart C<br>Section 15.225(e)         | ANSI C63.10 2013 | Pass   |
| 20dB Occupied Bandwidth                                                      | 47 CFR Part 15, Subpart C<br>Section 15.215            | ANSI C63.10 2013 | Pass   |

Remark:

N/A:The product is powered by DC 5.0V.

Company Name and Address shown on Report, the sample(s) and sample Information was/ were provided by the applicant who should be responsible for the authenticity which CTI hasn't verified.

## 4 General Information

### 4.1 Client Information

|                          |                                                                                                        |
|--------------------------|--------------------------------------------------------------------------------------------------------|
| Applicant:               | FinDreams Technology Company Limited                                                                   |
| Address of Applicant:    | NO.3001-3009, Hengping Road, Pingshan New District, Shenzhen, Guangdong, P.R.China                     |
| Manufacturer:            | FinDreams Technology Company Limited                                                                   |
| Address of Manufacturer: | NO.3001-3009, Hengping Road, Pingshan New District, Shenzhen, Guangdong, P.R.China                     |
| Factory:                 | Electric Appliance Factory                                                                             |
| Address of Factory:      | No.1, West Qinling Avenue, Science and Technology Industrial Park, Caotang Town, High-tech Zone, Xi'an |

### 4.2 General Description of E.U.T.

|                       |                                                                                                                    |
|-----------------------|--------------------------------------------------------------------------------------------------------------------|
| Product Name:         | Smart Access Controller                                                                                            |
| Model No.(EUT):       | SC2ER-3642700                                                                                                      |
| Trade Mark:           | N/A                                                                                                                |
| Product Type:         | <input type="checkbox"/> Mobile <input type="checkbox"/> Portable <input checked="" type="checkbox"/> Fix Location |
| Operation Frequency:  | 13.56MHz                                                                                                           |
| Modulation Type:      | BPSK&ASK                                                                                                           |
| Antenna Type:         | PCB Antenna                                                                                                        |
| Antenna Gain:         | 2dBi                                                                                                               |
| Power Supply:         | DC 5.0V                                                                                                            |
| Test voltage:         | DC 5.0V                                                                                                            |
| Sample Received Date: | Apr. 20, 2022                                                                                                      |
| Sample tested Date:   | Apr. 20, 2022 to May 11, 2022                                                                                      |

### 4.3 Test Environment & Test Mode

|                               |                                                                        |
|-------------------------------|------------------------------------------------------------------------|
| <b>Operating Environment:</b> |                                                                        |
| <b>Radiated Emissions:</b>    |                                                                        |
| Temperature:                  | 20.0 °C                                                                |
| Humidity:                     | 53 % RH                                                                |
| Atmospheric Pressure:         | 1010mbar                                                               |
| <b>Test Mode:</b>             |                                                                        |
| Test mode:                    | Keep EUT working in continuous transmitting mode with 100% duty cycle. |

### 4.4 Description of Support Units

The EUT has been tested with associated equipment below.

1) Support equipment

| Description | Manufacturer | Model No. | Certification | Supplied by |
|-------------|--------------|-----------|---------------|-------------|
| ---         | ---          | ---       | ---           | ---         |

### 4.5 Test Location

All tests were performed at:

Centre Testing International Group Co., Ltd

Building C, Hongwei Industrial Park Block 70, Bao'an District, Shenzhen, China

Telephone: +86 (0) 755 33683668 Fax: +86 (0) 755 33683385

No tests were sub-contracted.

FCC Designation No.: CN1164

### 4.6 Deviation from Standards

None.

### 4.7 Abnormalities from Standard Conditions

None.

### 4.8 Other Information Requested by the Customer

None.

**4.9 Measurement Uncertainty (95% confidence levels, k=2)**

| No. | Item                            | Measurement Uncertainty |
|-----|---------------------------------|-------------------------|
| 1   | Radio Frequency                 | $7.9 \times 10^{-8}$    |
| 2   | RF power, conducted             | 0.46dB (30MHz-1GHz)     |
|     |                                 | 0.55dB (1GHz-18GHz)     |
| 3   | Radiated Spurious emission test | 3.3dB (9kHz-30MHz)      |
|     |                                 | 4.3dB (30MHz-1GHz)      |
|     |                                 | 4.5dB (1GHz-12.75GHz)   |
| 4   | Conduction emission             | 3.5dB (9kHz to 150kHz)  |
|     |                                 | 3.1dB (150kHz to 30MHz) |
| 5   | Temperature test                | 0.64°C                  |
| 6   | Humidity test                   | 3.8%                    |
| 7   | DC power voltages               | 0.026%                  |

## 4.10 Equipment List

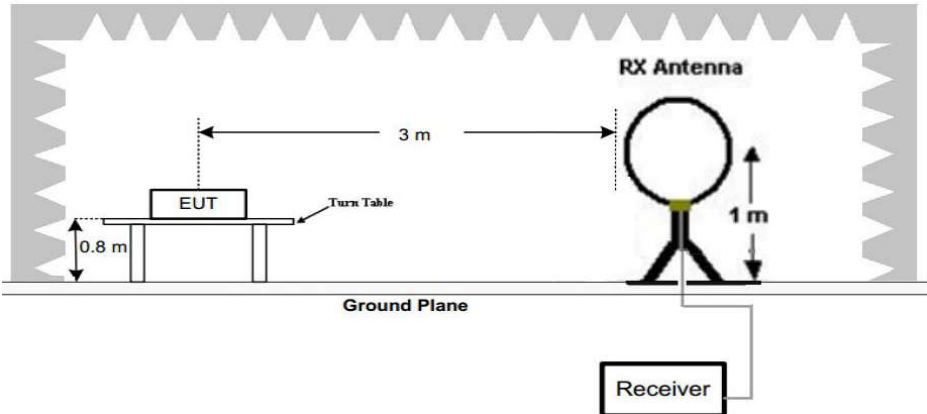
| 3M Semi/full-anechoic Chamber      |                     |                      |               |                        |                            |
|------------------------------------|---------------------|----------------------|---------------|------------------------|----------------------------|
| Equipment                          | Manufacturer        | Model No.            | Serial Number | Cal. date (mm-dd-yyyy) | Cal. Due date (mm-dd-yyyy) |
| 3M Chamber & Accessory Equipment   | TDK                 | SAC-3                | ---           | 05-24-2019             | 05-23-2022                 |
| TRILOG Broadband Antenna           | Schwarzbeck         | VULB9163             | 9163-618      | 05-21-2021             | 05-22-2022                 |
| Loop Antenna                       | Schwarzbeck         | FMZB 1519B           | 1519B-076     | 04-17-2021             | 04-16-2024                 |
| Receiver                           | R&S                 | ESCI7                | 100938-003    | 10-15-2021             | 10-13-2022                 |
| Spectrum Analyzer                  | R&S                 | FSV40                | 101200        | 08-26-2021             | 08-25-2022                 |
| Spectrum Analyzer                  | R&S                 | FSP40                | 100416        | 04-28-2022             | 03-31-2023                 |
| Multi device Controller            | maturo              | NCD/070/107<br>11112 | ---           | ---                    | ---                        |
| Temperature/<br>Humidity Indicator | Shanghai<br>qixiang | HM10                 | 1804298       | 06-24-2021             | 06-23-2022                 |
| Cable line                         | Fulai(7M)           | SF106                | 5219/6A       | ---                    | ---                        |
| Cable line                         | Fulai(6M)           | SF106                | 5220/6A       | ---                    | ---                        |
| Cable line                         | Fulai(3M)           | SF106                | 5216/6A       | ---                    | ---                        |
| Cable line                         | Fulai(3M)           | SF106                | 5217/6A       | ---                    | ---                        |

## 5 Test Result and Measurement Data

### 5.1 Antenna Requirement

|                                                                       |                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
|-----------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Standard requirement:</b>                                          | 47 CFR Part15 C Section 15.203                                                                                                                                                                                                                                                                                                                                                                                                                     |
| <b>15.203 requirement:</b>                                            | An intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device. The use of a permanently attached antenna or of an antenna that uses a unique coupling to the intentional radiator, the manufacturer may design the unit so that a broken antenna can be replaced by the user, but the use of a standard antenna jack or electrical connector is prohibited. |
| <b>EUT Antenna:</b>                                                   |                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| The antenna is PCB Antenna.The best case gain of the antenna is 2dBi. |                                                                                                                                                                                                                                                                                                                                                                                                                                                    |

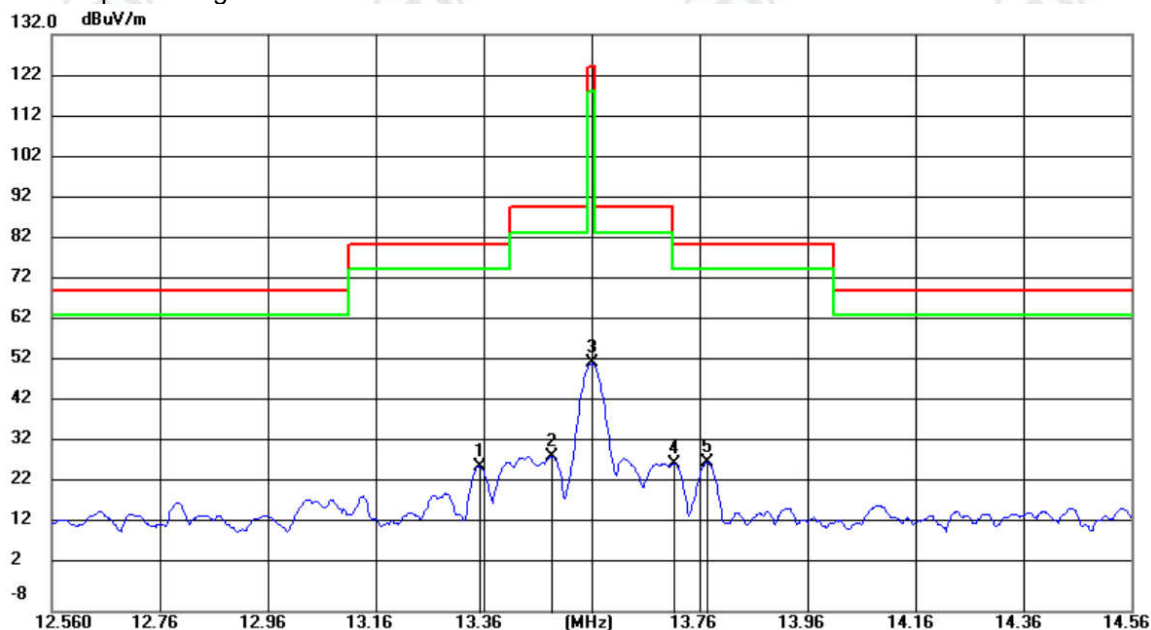
## 5.2 Electric Field Strength of Fundamental and Outside the Allocated bands

|                   |                                                                                                                                                                                                                                                         |                                                     |       |                                       |            |
|-------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------|-------|---------------------------------------|------------|
| Test Requirement: |                                                                                                                                                                                                                                                         | 47 CFR Part 15, Subpart C Section 15.225(a)/(b)/(c) |       |                                       |            |
| Test Method:      |                                                                                                                                                                                                                                                         | ANSI C63.10: 2013                                   |       |                                       |            |
| Test Site:        |                                                                                                                                                                                                                                                         | 3m (Semi-Anechoic Chamber)                          |       |                                       |            |
| Receiver Setup:   | Frequency                                                                                                                                                                                                                                               | Detector                                            | RBW   | VBW                                   | Remark     |
|                   | 0.009MHz-0.090MHz                                                                                                                                                                                                                                       | Peak                                                | 10kHz | 30kHz                                 | Peak       |
|                   | 0.009MHz-0.090MHz                                                                                                                                                                                                                                       | Average                                             | 10kHz | 30kHz                                 | Average    |
|                   | 0.090MHz-0.110MHz                                                                                                                                                                                                                                       | Quasi-peak                                          | 10kHz | 30kHz                                 | Quasi-peak |
|                   | 0.110MHz-0.490MHz                                                                                                                                                                                                                                       | Peak                                                | 10kHz | 30kHz                                 | Peak       |
|                   | 0.110MHz-0.490MHz                                                                                                                                                                                                                                       | Average                                             | 10kHz | 30kHz                                 | Average    |
|                   | 0.490MHz -30MHz                                                                                                                                                                                                                                         | Quasi-peak                                          | 10kHz | 30kHz                                 | Quasi-peak |
| Limit:            | Frequency Range(MHz)                                                                                                                                                                                                                                    | E-field Strength Limit @ 30 m (μV/m)                |       | E-field Strength Limit @ 3 m (dBμV/m) |            |
|                   | 13.560 ± 0.007                                                                                                                                                                                                                                          | 15848                                               |       | 124                                   |            |
|                   | 13.410 to 13.553<br>13.567 to 13.710                                                                                                                                                                                                                    | 334                                                 |       | 90                                    |            |
|                   | 13.110 to 13.410<br>13.710 to 14.010                                                                                                                                                                                                                    | 106                                                 |       | 81                                    |            |
|                   | Note: Where the limits have been defined at one distance, and a signal level measured at another, the limits have been extrapolated using the following formula:<br>Extrapolation(dB)=40log <sub>10</sub> (Measurement Distance/Specification Distance) |                                                     |       |                                       |            |
| Test Setup:       |                                                                                                                                                                     |                                                     |       |                                       |            |
|                   | Figure 1. Below 30MHz                                                                                                                                                                                                                                   |                                                     |       |                                       |            |

|                               |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
|-------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <p><b>Test Procedure:</b></p> | <ol style="list-style-type: none"> <li>1. The EUT was placed on the top of a rotating table 0.8 meters above the ground at a 3 meter semi-anechoic chamber. The table was rotated 360 degrees to determine the position of the highest radiation.</li> <li>2. The EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower.</li> <li>3. The antenna height is varied from one meter to four meters above the ground to determine the maximum value of the field strength. Both horizontal and vertical polarizations of the antenna are set to make the measurement.</li> <li>4. For each suspected emission, the EUT was arranged to its worst case and then the antenna was tuned to heights from 1 meter to 4 meters (for the test frequency of below 30MHz, the antenna was tuned to heights 1 meter) and the rotatable table was turned from 0 degrees to 360 degrees to find the maximum reading.</li> <li>5. The test-receiver system was set to Peak Detect Function and Specified Bandwidth with Maximum Hold Mode.</li> <li>6. If the emission level of the EUT in peak mode was 10dB lower than the limit specified, then testing could be stopped and the peak values of the EUT would be reported. Otherwise the emissions that did not have 10dB margin would be re-tested one by one using peak, quasi-peak or average method as specified and then reported in a data sheet.</li> <li>7. The radiation measurements are performed in X, Y, Z axis positioning. And found the X axis positioning which it is worse case, only the test worst case mode is recorded in the report.</li> </ol> |
| <p><b>Test Mode:</b></p>      | <p>Transmitting with ASK modulation.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| <p><b>Test Result:</b></p>    | <p>Pass</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |

## Measurement Data

X axis positioning



| No. Mk. | Freq.<br>MHz | Reading<br>Level<br>dBuV | Correct<br>Factor<br>dB | Measure-<br>ment<br>dBuV/m | Limit<br>dBuV/m | Margin<br>dB | Detector | Antenna<br>Height<br>cm | Table<br>Degree | Comment |
|---------|--------------|--------------------------|-------------------------|----------------------------|-----------------|--------------|----------|-------------------------|-----------------|---------|
| 1       | 13.3520      | 6.98                     | 20.35                   | 27.33                      | 81.00           | -53.67       | peak     |                         |                 |         |
| 2       | 13.4860      | 9.40                     | 20.35                   | 29.75                      | 90.00           | -60.25       | peak     |                         |                 |         |
| 3       | 13.5600      | 31.92                    | 20.35                   | 52.27                      | 124.00          | -71.73       | peak     |                         |                 |         |
| 4       | 13.7120      | 7.67                     | 20.35                   | 28.02                      | 81.00           | -52.98       | peak     |                         |                 |         |
| 5 *     | 13.7740      | 7.81                     | 20.35                   | 28.16                      | 81.00           | -52.84       | peak     |                         |                 |         |

Remark:

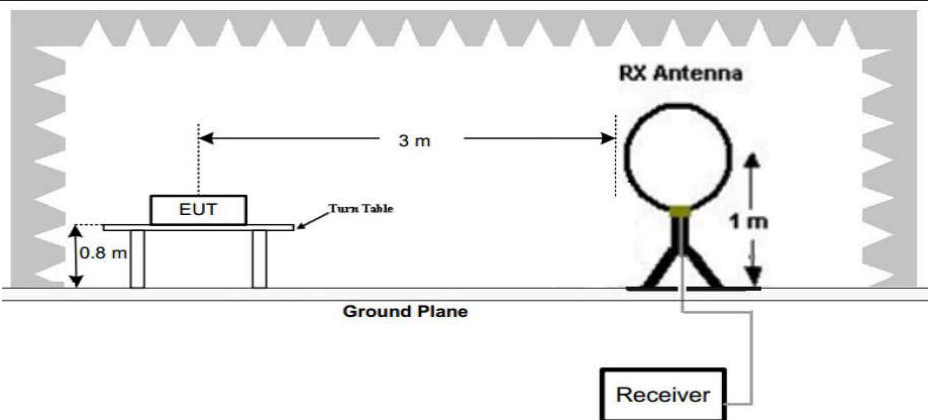
The field strength is calculated by adding the Antenna Factor, Cable Factor & Preamplifier. The basic equation with a sample calculation is as follows:

Factor= Antenna Factor + Cable Factor – Preamplifier Factor,

Level = Read Level + Factor,

Over Limit=Level-Limit Line.

### 5.3 Radiated Emissions

|                                                                                                                                                                                                                                                         |                                                                                                                                  |                                     |                         |            |            |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------|-------------------------------------|-------------------------|------------|------------|
| Test Requirement:                                                                                                                                                                                                                                       | 47 CFR Part 15C Section 15.209 and 15.225(d),                                                                                    |                                     |                         |            |            |
| Test Method:                                                                                                                                                                                                                                            | ANSI C63.10: 2013                                                                                                                |                                     |                         |            |            |
| Test Site:                                                                                                                                                                                                                                              | 3m (Semi-Anechoic Chamber)                                                                                                       |                                     |                         |            |            |
| Receiver Setup:                                                                                                                                                                                                                                         | Frequency                                                                                                                        | Detector                            | RBW                     | VBW        | Remark     |
|                                                                                                                                                                                                                                                         | 0.009MHz-0.090MHz                                                                                                                | Peak                                | 10kHz                   | 30kHz      | Peak       |
|                                                                                                                                                                                                                                                         | 0.009MHz-0.090MHz                                                                                                                | Average                             | 10kHz                   | 30kHz      | Average    |
|                                                                                                                                                                                                                                                         | 0.090MHz-0.110MHz                                                                                                                | Quasi-peak                          | 10kHz                   | 30kHz      | Quasi-peak |
|                                                                                                                                                                                                                                                         | 0.110MHz-0.490MHz                                                                                                                | Peak                                | 10kHz                   | 30kHz      | Peak       |
|                                                                                                                                                                                                                                                         | 0.110MHz-0.490MHz                                                                                                                | Average                             | 10kHz                   | 30kHz      | Average    |
|                                                                                                                                                                                                                                                         | 0.490MHz -30MHz                                                                                                                  | Quasi-peak                          | 10kHz                   | 30kHz      | Quasi-peak |
|                                                                                                                                                                                                                                                         | 30MHz-1GHz                                                                                                                       | Peak                                | 100 kHz                 | 300kHz     | Peak       |
| Limit:                                                                                                                                                                                                                                                  | Frequency                                                                                                                        | Field strength<br>(microvolt/meter) | Limit (dBuV/m)<br>@ 3 m | Remark     |            |
|                                                                                                                                                                                                                                                         | 0.009MHz-0.490MHz                                                                                                                | 2400/F(kHz) @300m                   | 128.5-93.8              | Quasi-peak |            |
|                                                                                                                                                                                                                                                         | 0.490MHz-1.705MHz                                                                                                                | 24000/F(kHz) @30m                   | 73.8-63                 | Quasi-peak |            |
|                                                                                                                                                                                                                                                         | 1.705MHz-30MHz                                                                                                                   | 30 @30m                             | 70                      | Quasi-peak |            |
|                                                                                                                                                                                                                                                         | 30MHz-88MHz                                                                                                                      | 100 @3m                             | 40.0                    | Quasi-peak |            |
|                                                                                                                                                                                                                                                         | 88MHz-216MHz                                                                                                                     | 150 @3m                             | 43.5                    | Quasi-peak |            |
|                                                                                                                                                                                                                                                         | 216MHz-960MHz                                                                                                                    | 200 @3m                             | 46.0                    | Quasi-peak |            |
|                                                                                                                                                                                                                                                         | 960MHz-1GHz                                                                                                                      | 500 @3m                             | 54.0                    | Quasi-peak |            |
| Note: Where the limits have been defined at one distance, and a signal level measured at another, the limits have been extrapolated using the following formula:<br>Extrapolation(dB)=40log <sub>10</sub> (Measurement Distance/Specification Distance) |                                                                                                                                  |                                     |                         |            |            |
| Test Setup:                                                                                                                                                                                                                                             | <div></div> <div>Figure 1. Below 30MHz</div> |                                     |                         |            |            |

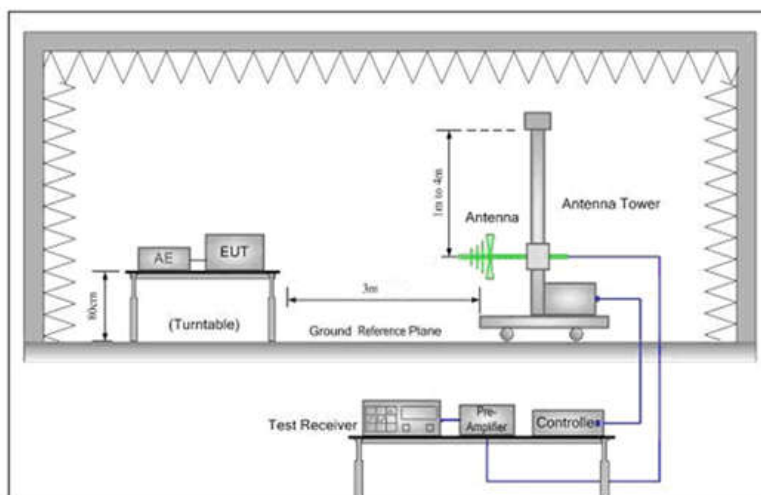


Figure 2. 30MHz to 1GHz

**Test Procedure:**

5. The EUT was placed on the top of a rotating table 0.8 meters above the ground at a 3 meter semi-anechoic chamber. The table was rotated 360 degrees to determine the position of the highest radiation.
6. The EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower.
7. The antenna height is varied from one meter to four meters above the ground to determine the maximum value of the field strength. Both horizontal and vertical polarizations of the antenna are set to make the measurement.
8. 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 (for the test frequency of below 30MHz, the antenna was tuned to heights 1 meter) and the rotatable table was turned from 0 degrees to 360 degrees to find the maximum reading.
5. The test-receiver system was set to Peak Detect Function and Specified Bandwidth with Maximum Hold Mode.
6. If the emission level of the EUT in peak mode was 10dB lower than the limit specified, then testing could be stopped and the peak values of the EUT would be reported. Otherwise the emissions that did not have 10dB margin would be re-tested one by one using peak, quasi-peak or average method as specified and then reported in a data sheet.
7. The radiation measurements are performed in X, Y, Z axis positioning. And found the X axis positioning which it is worse case, only the test worst case mode is recorded in the report.

**Test Mode:**

Transmitting with ASK modulation.

**Test Result:**

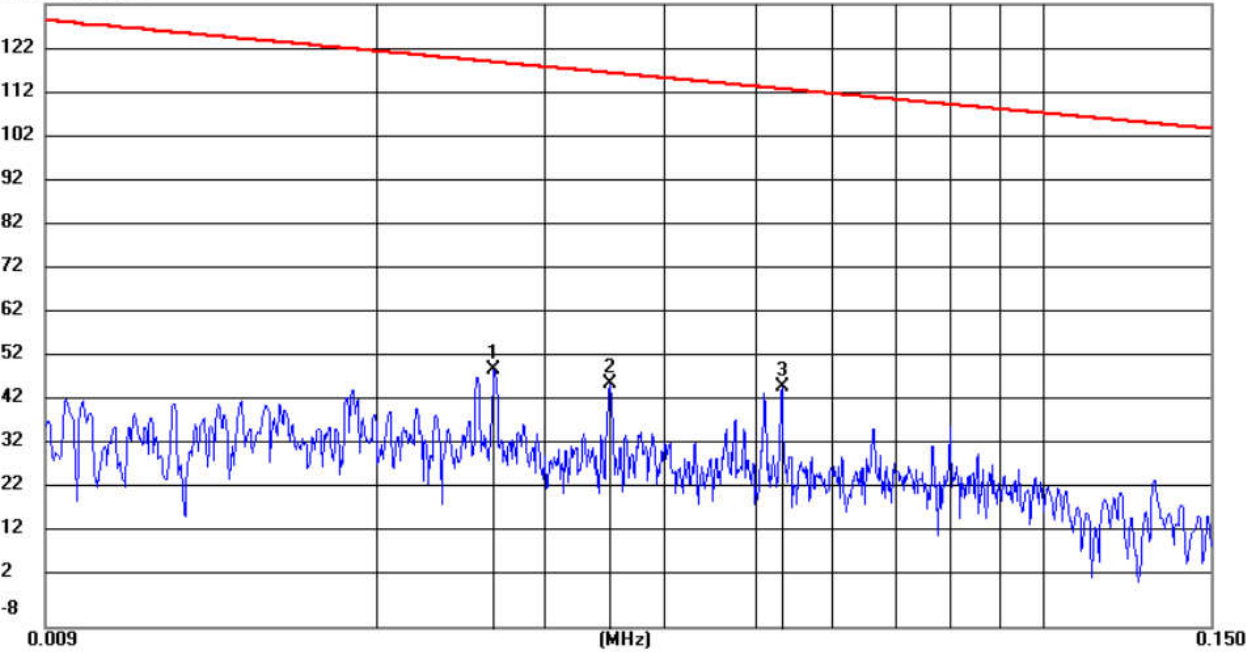
Pass

Measurement Data

X axis positioning

9kHz – 150KHz:

132.0 dBuV/m



| No. | Mk. | Freq.  | Reading | Correct | Measure- | Limit  | Margin | Antenna | Table  |         |
|-----|-----|--------|---------|---------|----------|--------|--------|---------|--------|---------|
|     |     | MHz    | Level   | Factor  | ment     |        |        | Height  | Degree | Comment |
|     |     |        | dBuV    | dB      | dBuV/m   | dBuV/m | dB     | cm      | degree |         |
| 1   |     | 0.0265 | 29.11   | 20.78   | 49.89    | 118.98 | -69.09 | peak    |        |         |
| 2   |     | 0.0352 | 26.08   | 20.76   | 46.84    | 116.53 | -69.69 | peak    |        |         |
| 3   | *   | 0.0532 | 25.30   | 20.71   | 46.01    | 112.97 | -66.96 | peak    |        |         |

Remark:

The field strength is calculated by adding the Antenna Factor, Cable Factor & Preamplifier. The basic equation with a sample calculation is as follows:

Factor= Antenna Factor + Cable Factor – Preamplifier Factor,

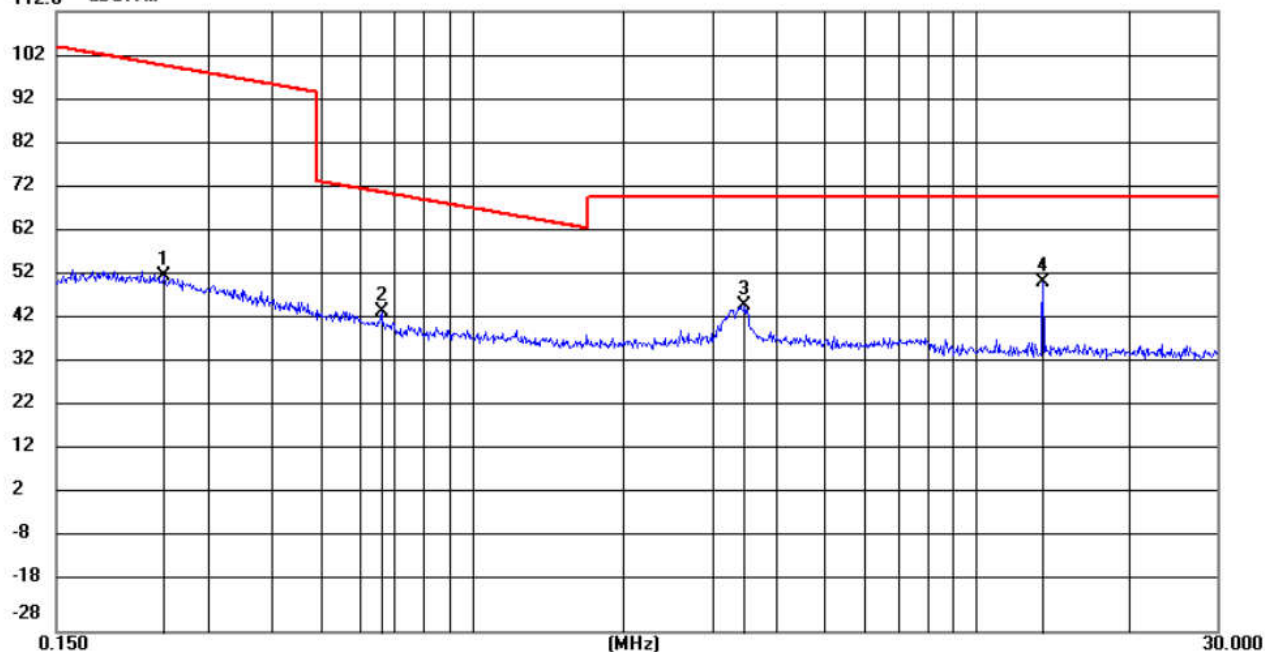
Level = Read Level + Factor,

Over Limit=Level-Limit Line.

X axis positioning

150KHz-30MHz:

112.0 dBuV/m



| No. | Mk. | Freq.   | Reading | Correct | Measure- | Limit  | Margin | Antenna | Table  |         |
|-----|-----|---------|---------|---------|----------|--------|--------|---------|--------|---------|
|     |     | MHz     | Level   | Factor  | ment     |        |        | Height  | Degree | Comment |
|     |     |         | dBuV    | dB      | dBuV/m   | dBuV/m | dB     | cm      | degree |         |
| 1   |     | 0.2455  | 31.33   | 20.92   | 52.25    | 99.77  | -47.52 | peak    |        |         |
| 2   |     | 0.6611  | 23.78   | 20.54   | 44.32    | 71.21  | -26.89 | peak    |        |         |
| 3   |     | 3.4721  | 25.37   | 20.41   | 45.78    | 70.00  | -24.22 | peak    |        |         |
| 4   | *   | 13.5508 | 30.55   | 20.50   | 51.05    | 70.00  | -18.95 | peak    |        |         |

Remark:

The field strength is calculated by adding the Antenna Factor, Cable Factor & Preamplifier. The basic equation with a sample calculation is as follows:

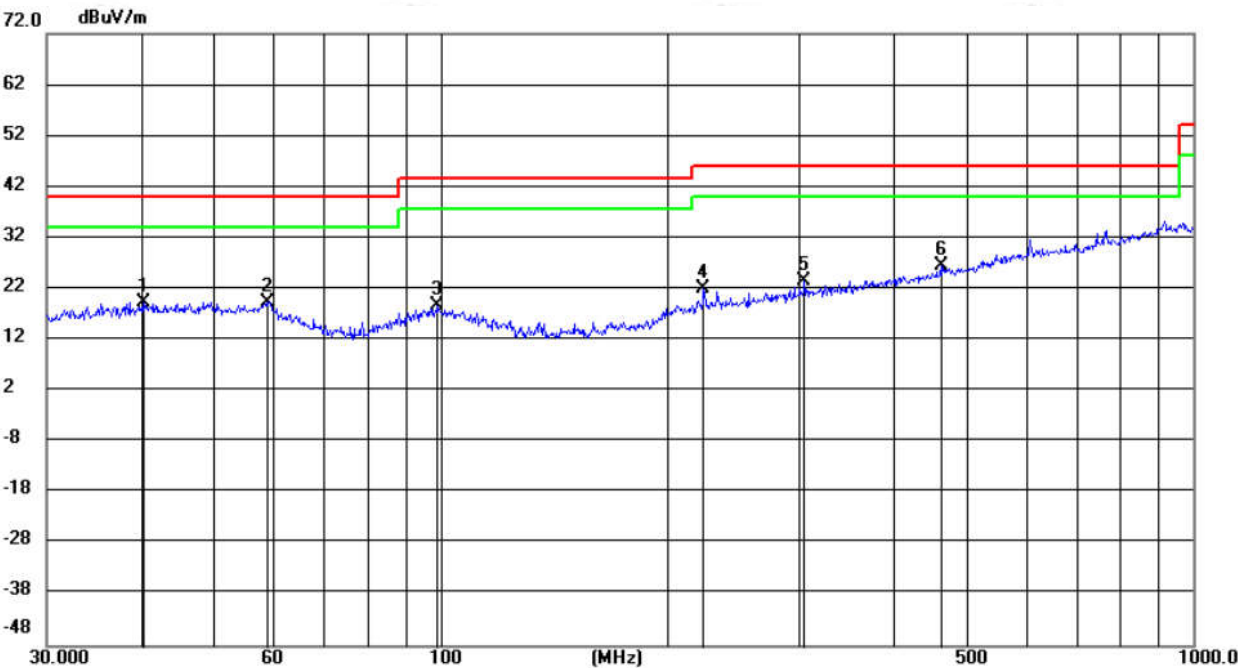
Factor= Antenna Factor + Cable Factor – Preamplifier Factor,

Level = Read Level + Factor,

Over Limit=Level-Limit Line.

30MHz-1GHz

Horizontal



| No. | Mk. | Freq.    | Reading Level | Correct Factor | Measurement | Limit  | Margin | Antenna Height | Table Degree |        |
|-----|-----|----------|---------------|----------------|-------------|--------|--------|----------------|--------------|--------|
|     |     | MHz      | dBuV          | dB             | dBuV/m      | dBuV/m | dB     | Detector       | cm           | degree |
| 1   |     | 40.2756  | 4.80          | 14.52          | 19.32       | 40.00  | -20.68 | peak           | 200          | 271    |
| 2   |     | 58.8185  | 5.72          | 13.65          | 19.37       | 40.00  | -20.63 | peak           | 100          | 302    |
| 3   |     | 99.1797  | 4.69          | 13.93          | 18.62       | 43.50  | -24.88 | peak           | 200          | 172    |
| 4   |     | 223.7333 | 7.52          | 14.60          | 22.12       | 46.00  | -23.88 | peak           | 100          | 286    |
| 5   |     | 304.6099 | 6.28          | 17.35          | 23.63       | 46.00  | -22.37 | peak           | 100          | 309    |
| 6   | *   | 462.3455 | 5.90          | 20.73          | 26.63       | 46.00  | -19.37 | peak           | 200          | 164    |

Remark:

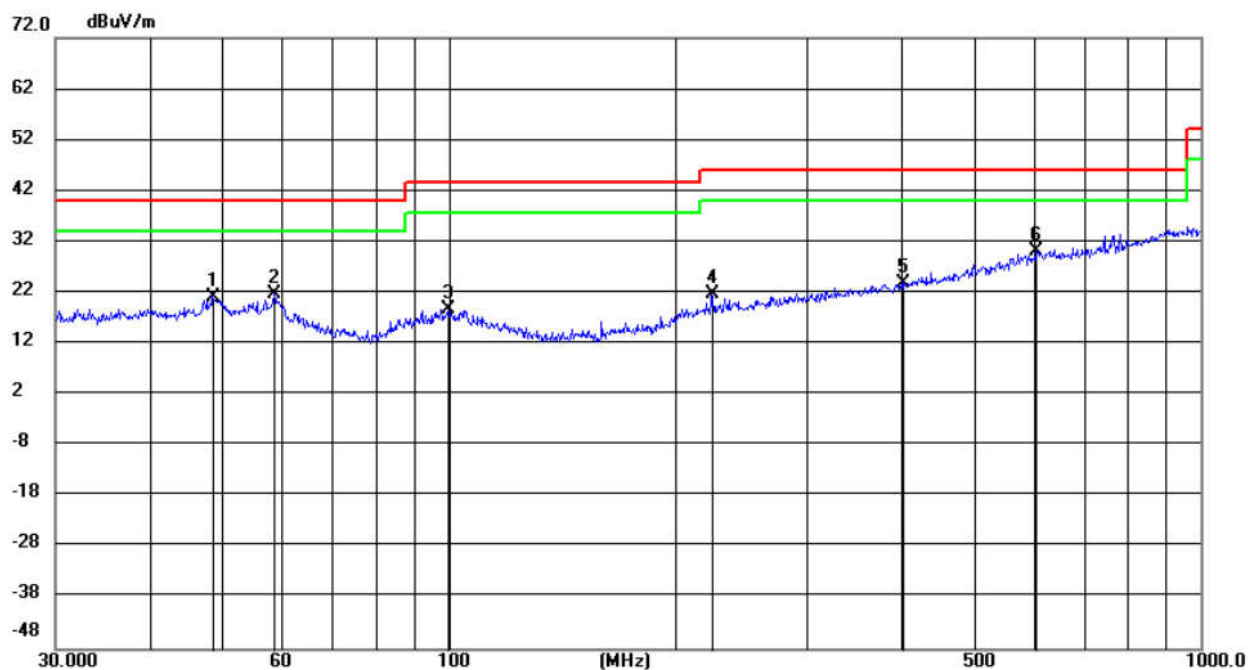
The field strength is calculated by adding the Antenna Factor, Cable Factor & Preamplifier. The basic equation with a sample calculation is as follows:

Factor= Antenna Factor + Cable Factor – Preamplifier Factor,

Level = Read Level + Factor,

Over Limit=Level-Limit Line.

Vertical



| No. | Mk. | Freq.    | Reading Level | Correct Factor | Measurement | Limit  | Margin | Antenna Height | Table Degree |         |
|-----|-----|----------|---------------|----------------|-------------|--------|--------|----------------|--------------|---------|
|     |     | MHz      | dBuV          | dB             | dBuV/m      | dBuV/m | dB     | cm             | degree       | Comment |
| 1   |     | 48.5016  | 6.99          | 14.31          | 21.30       | 40.00  | -18.70 | peak           | 100          | 211     |
| 2   |     | 58.6126  | 8.23          | 13.67          | 21.90       | 40.00  | -18.10 | peak           | 100          | 5       |
| 3   |     | 99.8777  | 4.73          | 14.03          | 18.76       | 43.50  | -24.74 | peak           | 100          | 111     |
| 4   |     | 223.7334 | 7.20          | 14.60          | 21.80       | 46.00  | -24.20 | peak           | 200          | 101     |
| 5   |     | 403.2500 | 4.54          | 19.46          | 24.00       | 46.00  | -22.00 | peak           | 200          | 177     |
| 6   | *   | 605.6592 | 6.15          | 24.07          | 30.22       | 46.00  | -15.78 | peak           | 100          | 96      |

Remark:

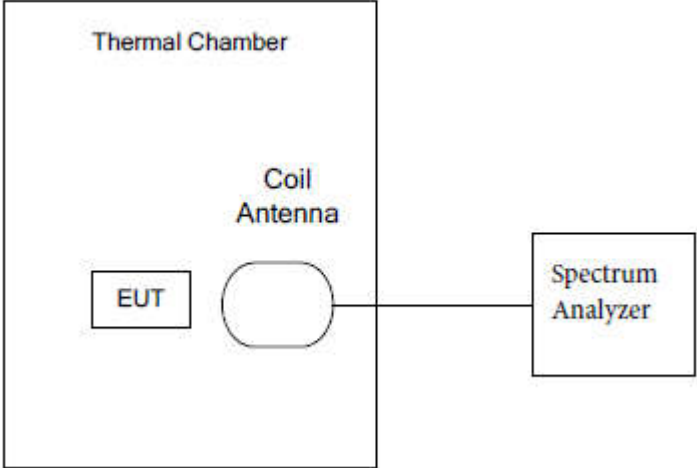
The field strength is calculated by adding the Antenna Factor, Cable Factor & Preamplifier. The basic equation with a sample calculation is as follows:

Factor= Antenna Factor + Cable Factor – Preamplifier Factor,

Level = Read Level + Factor,

Over Limit=Level-Limit Line.

## 5.4 Frequency Stability

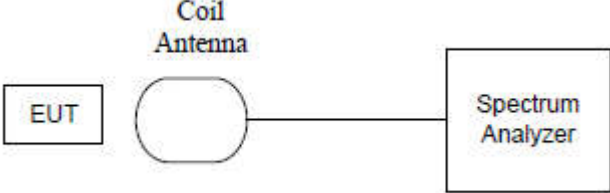
|                               |                                                                                                                                                                                                                                                                                                                                                                                                                                   |
|-------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Test Requirement:</b>      | 47 CFR Part 15 C Section 15.225(e)                                                                                                                                                                                                                                                                                                                                                                                                |
| <b>Test Method:</b>           | ANSI C63.10: 2013                                                                                                                                                                                                                                                                                                                                                                                                                 |
| <b>Test Setup:</b>            |  <pre> graph LR     subgraph Thermal Chamber         EUT[EUT]         CA[Coil Antenna]     end     CA --- SA[Spectrum Analyzer]             </pre>                                                                                                                                                                                              |
| <b>Frequency Range:</b>       | Operation within the band 13.110-14.010 MHz                                                                                                                                                                                                                                                                                                                                                                                       |
| <b>Requirements:</b>          | The frequency tolerance of the carrier signal shall be maintained within +/- 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>Method of Measurement:</b> | The EUT was placed in an environmental test chamber and powered such that control element received normal voltage and the transmitter provided maximum RF output.                                                                                                                                                                                                                                                                 |
| <b>Test Result:</b>           | The unit does meet the FCC Part 15 C Section 15.225(e) requirements.                                                                                                                                                                                                                                                                                                                                                              |

| Test Frequency: 13.56MHz |                      |                    | Temperature:20°C      |        |
|--------------------------|----------------------|--------------------|-----------------------|--------|
| Supply Voltage<br>(V) DC | Test Result<br>(MHz) | Deviation<br>(kHz) | Limit<br>±0.01% (kHz) | Result |
| 4.25                     | 13.55976             | -0.24              | 1.3560                | Pass   |
| 5.00                     | 13.55974             | -0.26              | 1.3560                | Pass   |
| 5.75                     | 13.55976             | -0.24              | 1.3560                | Pass   |

| Test Frequency: 13.56MHz |                      |                    | Normal Voltage:3.7Vdc |        |
|--------------------------|----------------------|--------------------|-----------------------|--------|
| Temperature<br>(°C)      | Test Result<br>(MHz) | Deviation<br>(kHz) | Limit<br>±0.01% (kHz) | Result |
| -20                      | 13.55977             | -0.23              | 1.3560                | Pass   |
| -10                      | 13.55976             | -0.24              | 1.3560                |        |
| 0                        | 13.55974             | -0.26              | 1.3560                |        |
| 10                       | 13.55978             | -0.22              | 1.3560                |        |
| 20                       | 13.55976             | -0.24              | 1.3560                |        |
| 30                       | 13.55976             | -0.24              | 1.3560                |        |
| 40                       | 13.55974             | -0.26              | 1.3560                |        |
| 50                       | 13.55972             | -0.28              | 1.3560                |        |

Note: Deviation (KHz) = (Test Result-13.56MHz)\*1000

## 5.5 20dB Occupied Bandwidth

|                          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
|--------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Test Requirement:</b> | 47 CFR Part 15 C Section 15.215 (C)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| <b>Test Method:</b>      | ANSI C63.10: 2013                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| <b>Test Setup:</b>       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| <b>Frequency Range:</b>  | Operation within the band 13.110 – 14.010 MHz                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| <b>Requirements:</b>     | Intentional radiators operating under the alternative provisions to the general emission limits, as contained in §15.217 through §15.257 and in subpart E of this part, must be designed to ensure that the 20 dB bandwidth of the emission is contained within the frequency band designated in the rule section under which the equipment is operated. The requirement to contain the 20 dB bandwidth of the emission within the specified frequency band includes the effects from frequency sweeping, frequency hopping and other modulation techniques that may be employed as well as the frequency stability of the transmitter over expected variations in temperature and supply voltage. If frequency stability is not specified in the regulations, it is recommended that the fundamental emission be kept within at least the central 80% of the permitted band in order to minimize the possibility of out-of-band operation. |
| <b>Limit:</b>            | For 13.56 MHz the permitted frequency band is 14kHz, so the limit is 11.2 kHz.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |

### Test Data:

| 20dB bandwidth (kHz) | FL (MHz)   | FH (MHz)   | Limit(MHz)      | Result |
|----------------------|------------|------------|-----------------|--------|
| 1.013                | 13.5594210 | 13.5604340 | 13.110 – 14.010 | Pass   |

### Test plot as follows:

