

InnoComm Mobile Technology Corp.

TEST REPORT

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Radio Spectrum TEST REPORT

| | |
|-------------------------------|--|
| Applicant: | InnoComm Mobile Technology Corp. 3F, No. 6, Hsin Ann Rd., Hsinchu Science Park, Hsinchu 30078, Taiwan |
| Product: | Wireless console module |
| Model No.: | Foenix_AN, Foenix_A, Foenix_N, Foenix |
| Brand Name: | InnoComm |
| FCC ID: | YAI-CIC22101 |
| Test Method/ Standard: | 47 CFR FCC Part 15.225 |
| Test By: | Intertek Testing Services Taiwan Ltd., Hsinchu Laboratory No. 11, Lane 275, Ko-Nan 1 Street, Chia-Tung Li, Shiang-Shan District, Hsinchu City, Taiwan |



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Revision History

| Report No. | Issue Date | Revision Summary |
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| 181200215TWN-001 | Jan. 28, 2019 | Original report |

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Summary of Test Data

| Test Requirement | Applicable Rule (Section 15.225) | Result |
|----------------------------------|-------------------------------------|--------|
| Fundamental emission | 15.225 (a) | Pass |
| 20 dB Bandwidth | 15.215 | Pass |
| Frequency Satiability | 15.225 (e) | Pass |
| In band Radiated Emissions | 15.225(b),15.225(c) | Pass |
| Out of band Radiated Emissions | 15.225(d) | Pass |
| AC Power Line Conducted Emission | 15.207 | Pass |
| Antenna Requirement | 15.203 | Pass |

1. General Information

1.1 Identification of the EUT

| | |
|-------------------------------|-----------------------------|
| Product: | Wireless console module |
| Model No.: | Foenix_AN |
| Operating Frequency: | 13.56 MHz |
| Access scheme: | ASK |
| Rated Power: | DC 12V from adapter |
| Power Cord: | N/A |
| Sample receiving date: | Dec. 20, 2018 |
| Sample condition: | Workable |
| Test Date(s): | Jan. 22, 2019~Jan. 23, 2019 |

1.2 Additional information about the EUT

The customer confirmed the models listed as below were series model to model Foenix_AN (EUT), the difference between main model and series model are listed as below.

| Model Number | Different |
|--------------|---|
| Foenix_AN | Wi-Fi 2.4G(2T2R)/5G (B1+B4 2T2R) / BT 2.1+4.2 / ANT+ / NFC |
| Foenix_A | Wi-Fi 2.4G(2T2R)/5G (B1+B4 2T2R) / BT 2.1+4.2 /ANT+ |
| Foenix_N | Wi-Fi 2.4G(2T2R)/5G (B1+B4 2T2R) / BT 2.1+4.2 /NFC |
| Foenix | Wi-Fi 2.4G(2T2R)/5G (B1+B4 2T2R) / BT 2.1+4.2 |

1.3 Antenna description

Antenna Type : Loop Antenna

Connector Type : Fixed

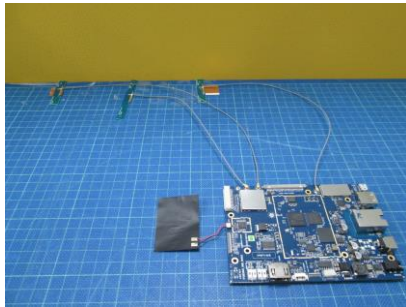
1.4 Peripherals equipment

| No. | Model no. | Specification |
|---------|--------------|--|
| Adapter | EA10681G-120 | I/P: 100-240V~, 2.0A, 50-60Hz O/P: 12V, 4.16A |

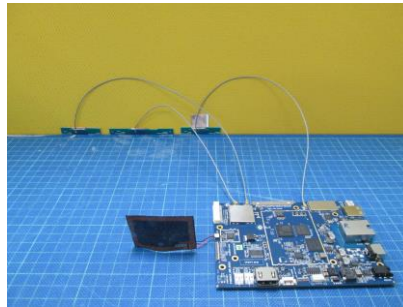
1.5 Operation mode

TX mode: The EUT transmit 13.56MHz signal continuously while we power on the EUT.

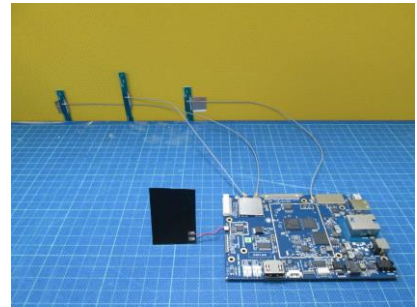
The signal is maximized through rotation and placement in the three orthogonal axes.



X axis



Y axis



Z axis

After verifying three axes, we found the maximum electromagnetic field was occurred at Y axis. The final test data was executed under this configuration.

2. Fundamental emission

2.1 Operating environment

| | | |
|---------------------------|------------|-----|
| Temperature: | 25 | °C |
| Relative Humidity: | 55 | % |
| Atmospheric Pressure | 1008 | hPa |
| Requirement & Test method | 15.225 (a) | |

2.2 Limit for Fundamental emission

The field strength of any emissions within the band 13.553-13.567 MHz shall not exceed 15,848 uV/m(83.99 dBuV/m) at 30 meters.

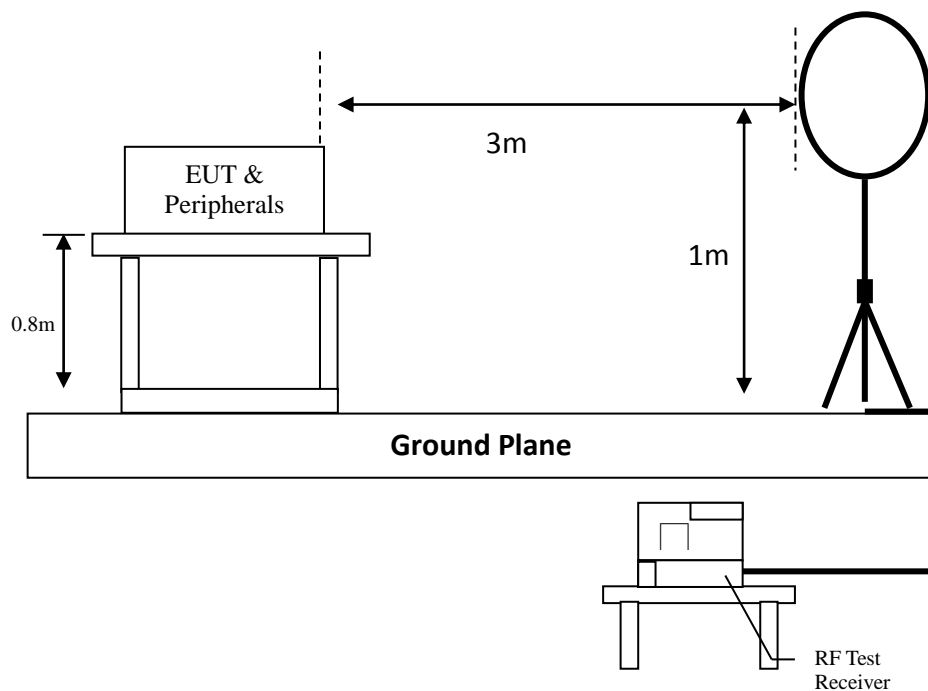
2.3 Measuring instrument setting

| Spectrum analyzer settings | |
|----------------------------|-------------|
| Spectrum Analyzer function | Setting |
| Detector | QP |
| RBW | 10 kHz |
| Sweep | Auto couple |
| Trace | Max hold |
| Span | 900 kHz |
| Attenuation | Auto |

2.4 Test procedure

1. Configure the EUT according to ANSI C63.10:2013. The EUT was placed on the top of the turntable 0.8 meter above ground. The center of the receiving antenna mounted on the top of a height-variable antenna tower was placed 3 meters far away from the turntable.
2. Power on the EUT and all the companion devices. The turntable was rotated by 360 degree to find the position of the maximum emission level.
3. The height of the receiving antenna was one meter above ground to find the maximum emission field strength of the both plane and coaxial polarity
4. Set the test-receiver system to peak or CISPR quasi-peak detector with specified bandwidth under maximum hold mode.

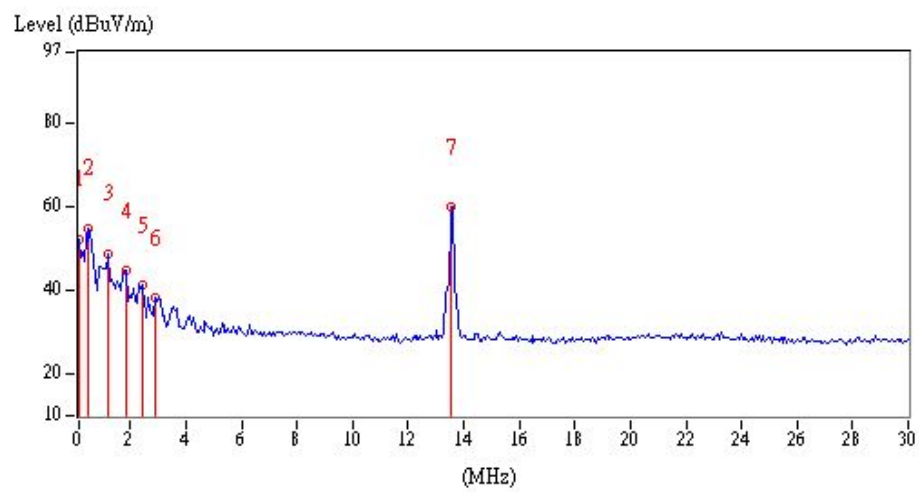
2.5 Test diagram



2.6 Test result

| Polarity (circle) | Frequency (MHz) | Detection value | factor (dB/m) | Reading (dBμV) | value (dBμV/m) | Limit @ 3m (dBμV/m) | Tolerance (dB) |
|----------------------|--------------------|--------------------|------------------|-------------------|-------------------|---------------------------|-------------------|
| Plane | 13.56 | QP | 21.03 | 38.92 | 59.95 | 124.00 | -64.05 |

13.56MHz , Limit= 84dBuV +40 dB (decade) = 124 dB



3. 20 dB Bandwidth

3.1 Operating environment

| | | |
|---------------------------|--------|-----|
| Temperature: | 25 | °C |
| Relative Humidity: | 55 | % |
| Atmospheric Pressure | 1008 | hPa |
| Requirement & Test method | 15.215 | |

3.2 Limit for 20 dB bandwidth

None

3.3 Measuring instrument setting

| Spectrum analyzer settings | |
|----------------------------|--------------------------------------|
| Spectrum Analyzer function | Setting |
| Detector | Peak |
| RBW | 20kHz |
| VBW | 62kHz |
| Sweep | Auto couple |
| Trace | Allow the trace to stabilize. |
| Span | \geq 1.2 times the 20 dB bandwidth |
| Attenuation | Auto |

3.4 Test procedure

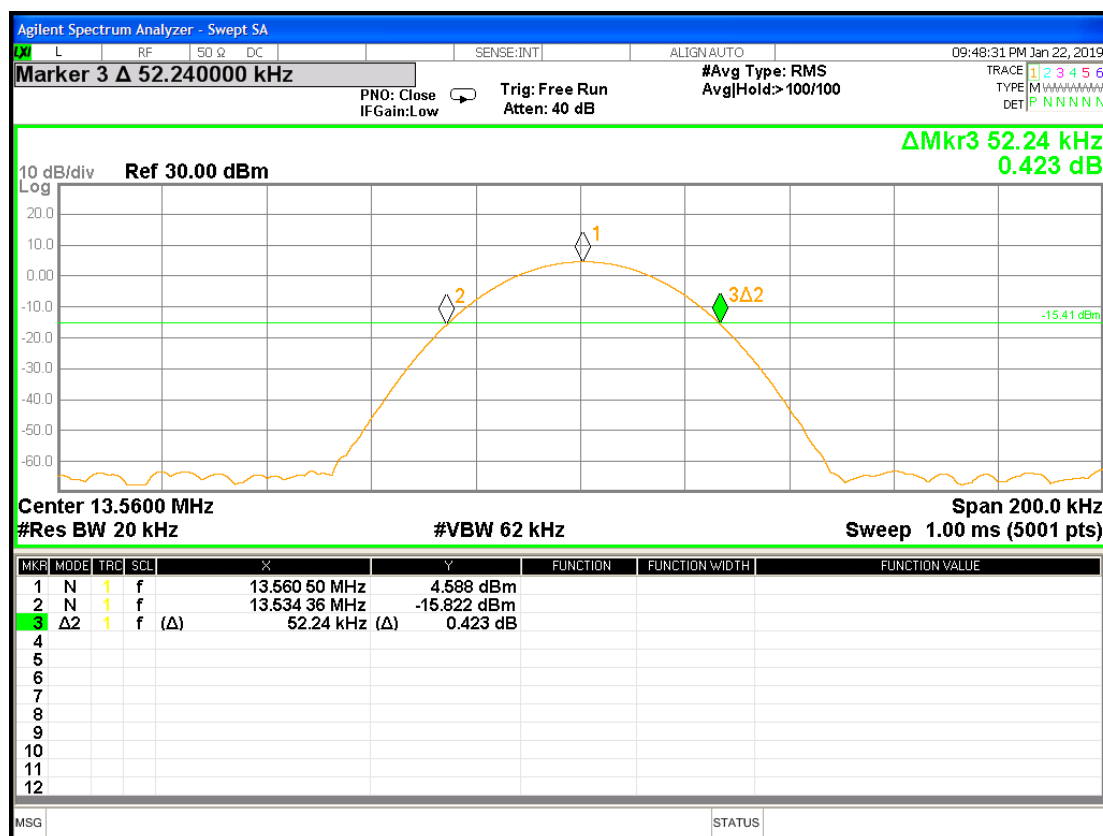
The 20 dB bandwidth was measured by spectrum analyzer connected to a receive antenna placed near the test sample while it is transmitting.

3.5 Test results

Single TX

| Mode | Frequency (MHz) | 20dB Occupied Bandwidth (kHz) |
|------|-----------------|-------------------------------|
| NFC | 13.56 | 52.24 |

20dB Bandwidth @ NFC 13.56MHz



4. Frequency Satiability

4.1 Operating environment

| | | |
|---------------------------|-----------|-----|
| Temperature: | 25 | °C |
| Relative Humidity: | 55 | % |
| Atmospheric Pressure | 1008 | hPa |
| Requirement & Test method | 15.225(e) | |

4.2 Limit for Frequency Satiability

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.

4.3 Measuring instrument setting

| Spectrum analyzer settings | |
|----------------------------|--|
| Spectrum Analyzer function | Setting |
| Detector | Peak |
| RBW | 3kHz |
| VBW | 9.1kHz |
| Sweep | Auto couple |
| Trace | Allow the trace to stabilize. |
| Span | Sufficient to see the complete emission BW |
| Attenuation | Auto |

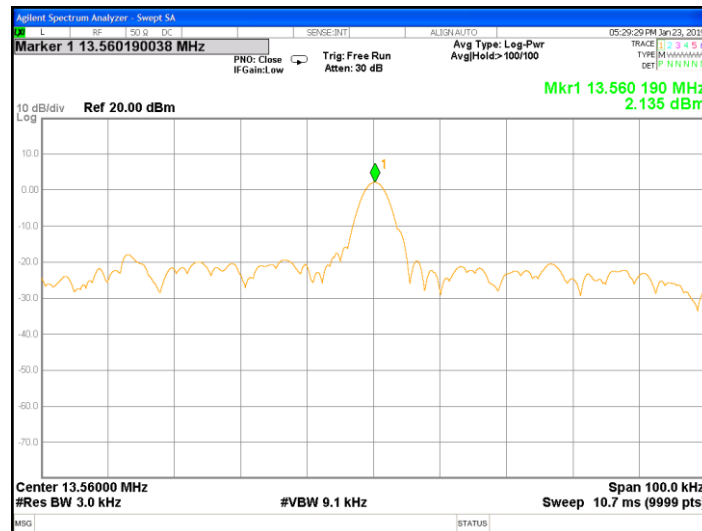
4.4 Test procedure

Turn the EUT on and couple its output to a frequency counter or other frequency-measuring device of sufficient accuracy, considering the frequency tolerance with which the EUT shall comply.

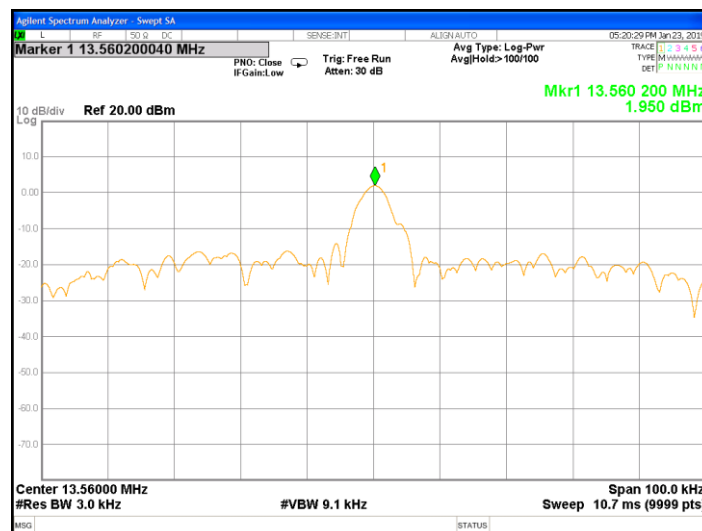
4.5 Test result

| Temperature | Measuring Frequency (MHz) | Voltage | Comparison Frequency | Difference (MHz) | Difference (%) | Limit (%) | Result |
|-------------|---------------------------|---------|----------------------|------------------|----------------|-----------|--------|
| -20 | 13.56020 | 120Vac | 13.56 | 0.000200 | 0.001475% | ±0.01 | Pass |
| -10 | 13.56018 | 120Vac | 13.56 | 0.000180 | 0.001327% | ±0.01 | Pass |
| 0 | 13.56018 | 120Vac | 13.56 | 0.000180 | 0.001327% | ±0.01 | Pass |
| 10 | 13.56018 | 120Vac | 13.56 | 0.000180 | 0.001327% | ±0.01 | Pass |
| 20 | 13.56019 | 120Vac | 13.56 | 0.000190 | 0.001401% | ±0.01 | Pass |
| 30 | 13.56016 | 120Vac | 13.56 | 0.000160 | 0.001180% | ±0.01 | Pass |
| 40 | 13.56017 | 120Vac | 13.56 | 0.000170 | 0.001254% | ±0.01 | Pass |
| 50 | 13.56017 | 120Vac | 13.56 | 0.000170 | 0.001254% | ±0.01 | Pass |
| 20 | 13.56020 | 102Vac | 13.56 | 0.000200 | 0.001475% | ±0.01 | Pass |
| | 13.56019 | 120Vac | 13.56 | 0.000190 | 0.001401% | ±0.01 | Pass |
| | 13.56020 | 138Vac | 13.56 | 0.000200 | 0.001475% | ±0.01 | Pass |

20°C 120Vdc



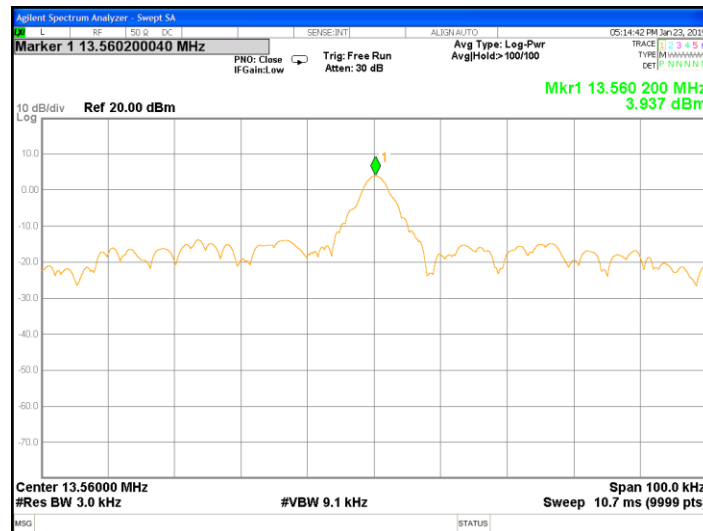
20°C 102Vdc



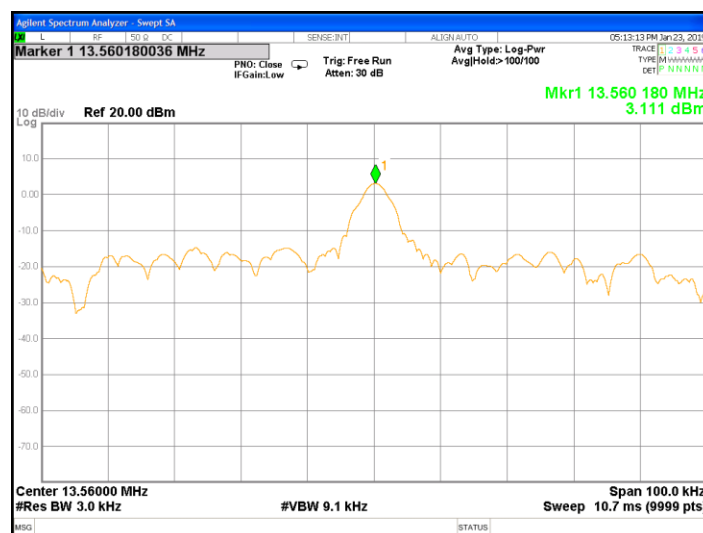
20°C 138Vac



-20°C



-10°C



0°C



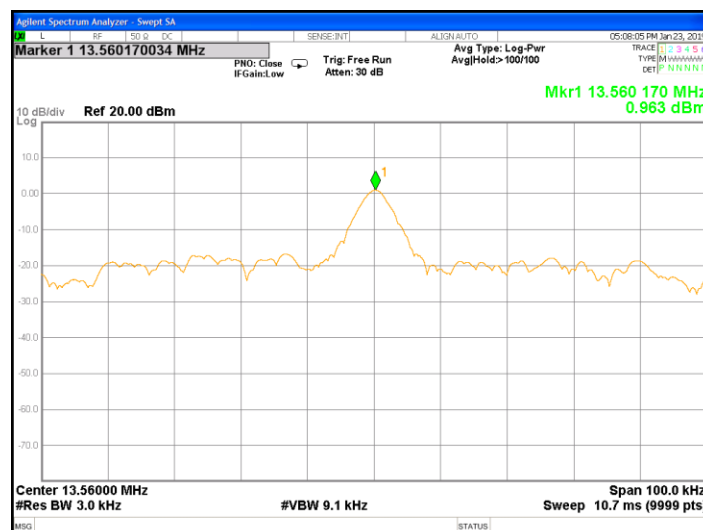
10°C



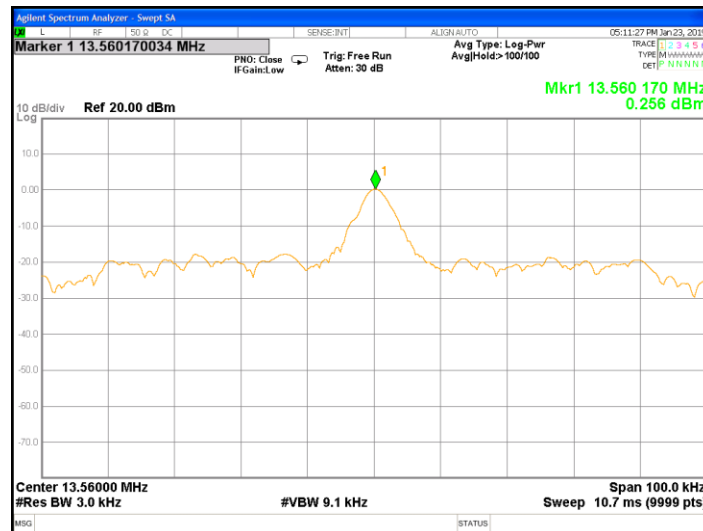
30°C



40°C



50°C



5. In band Radiated Emissions

5.1 Operating environment

| | | |
|----------------------|---------------------|-----|
| Temperature: | 25 | °C |
| Relative Humidity: | 55 | % |
| Atmospheric Pressure | 1008 | hPa |
| Requirement | 15.225(b),15.225(c) | |

5.2 Limit for emissions in non-restricted frequency bands

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.

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.

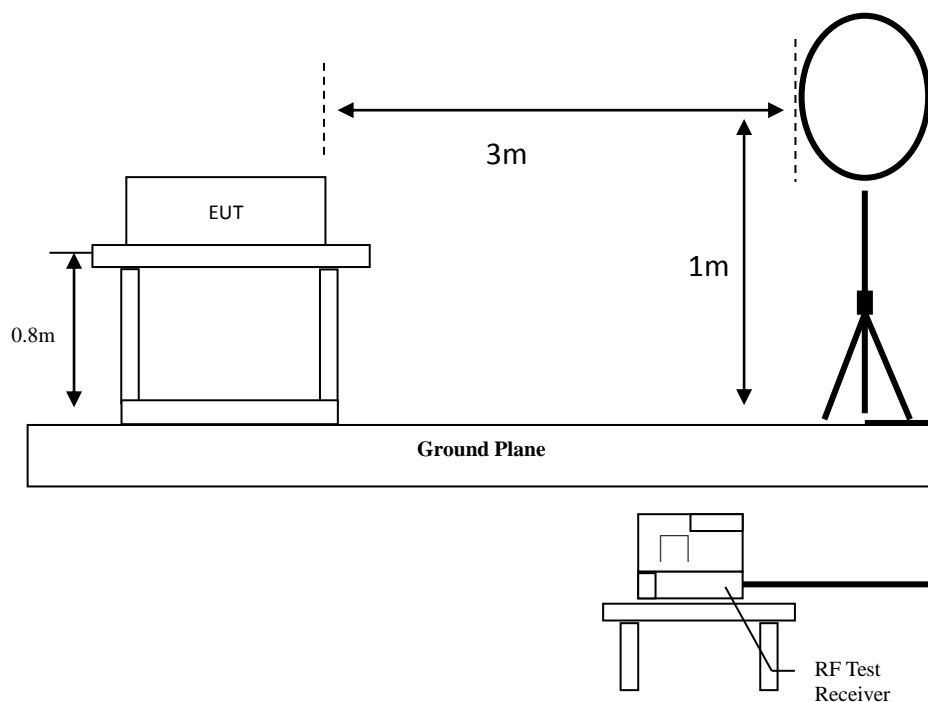
5.3 Measuring instruments setting

| Spectrum analyzer settings | |
|----------------------------|-------------|
| Spectrum Analyzer function | Setting |
| Detector | QP |
| RBW | 10 kHz |
| Sweep | Auto couple |
| Trace | Max hold |
| Span | 900 kHz |
| Attenuation | Auto |

5.4 Test procedure

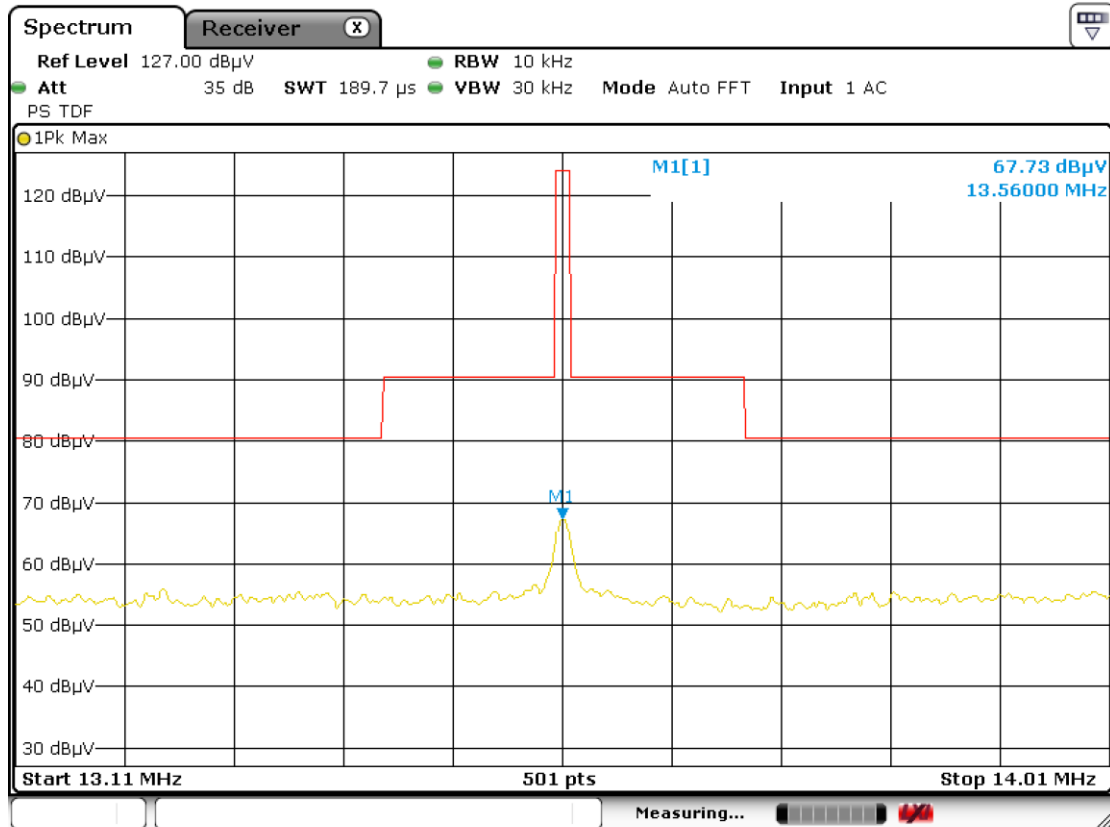
1. Configure the EUT according to ANSI C63.10:2013. The EUT was placed on the top of the turntable 0.8 meter above ground. The center of the receiving antenna mounted on the top of a height-variable antenna tower was placed 3 meters far away from the turntable.
2. Power on the EUT and all the companion devices. The turntable was rotated by 360 degree to find the position of the maximum emission level.
3. The height of the receiving antenna is one meter above ground to find the maximum emission field strength of the both plane and coaxial polarity
4. Set the test-receiver system to peak or CISPR quasi-peak detector with specified bandwidth under maximum hold mode.

5.5 Test diagram



5.6 Test results

FCC 15.225 Mask @ NFC 13.56MHz



6. Out of band Radiated Emissions

6.1 Operating environment

| | | |
|----------------------|---------------------------|-----|
| Temperature: | 25 | °C |
| Relative Humidity: | 55 | % |
| Atmospheric Pressure | 1008 | hPa |
| Requirement | 15.225(d), 15.205, 15.209 | |

6.2 Limit for emission in restricted frequency bands (Radiated emission measurement)

| Frequency (MHz) | Field Strength (microvolts/meter) | Measurement distance (meters) |
|-----------------|-----------------------------------|-------------------------------|
| 0.009~0.490 | 2400/F(kHz) | 300 |
| 0.490~1.705 | 2400/F(kHz) | 30 |
| 1.705~30 | 30 | 30 |
| 30-88 | 100 | 3 |
| 88-216 | 150 | 3 |
| 216-960 | 200 | 3 |
| Above 960 | 500 | 3 |

Remark:

1. In the above table, the tighter limit applies at the band edges.
2. Distance refers to the distance in meters between the measuring instrument antenna and the closed point of any part of the device or system

6.3 Measuring instrument setting

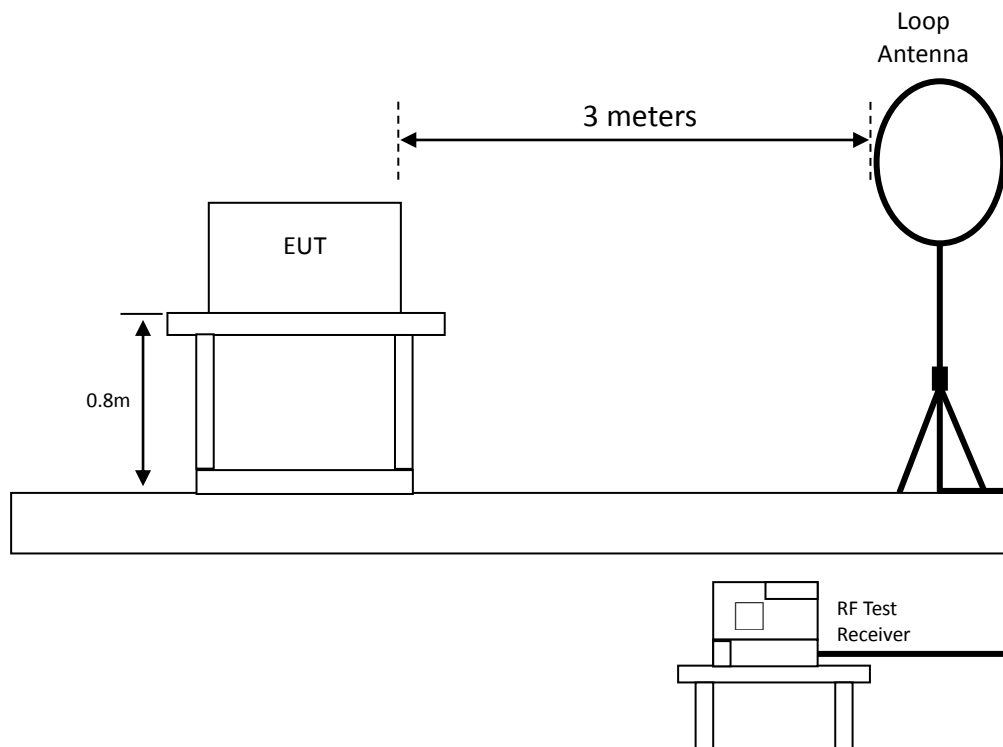
| Receiver settings | |
|-------------------|---|
| Receiver function | Setting |
| Detector | QP |
| RBW | 9-150 kHz ; 200-300 Hz 0.15-30 MHz; 9-10 kHz 30-1000 MHz; 100-120 kHz |
| VBW | $\geq 3 \times \text{RBW}$ |
| Sweep | Auto couple |
| Attenuation | Auto |

6.4 Test procedure

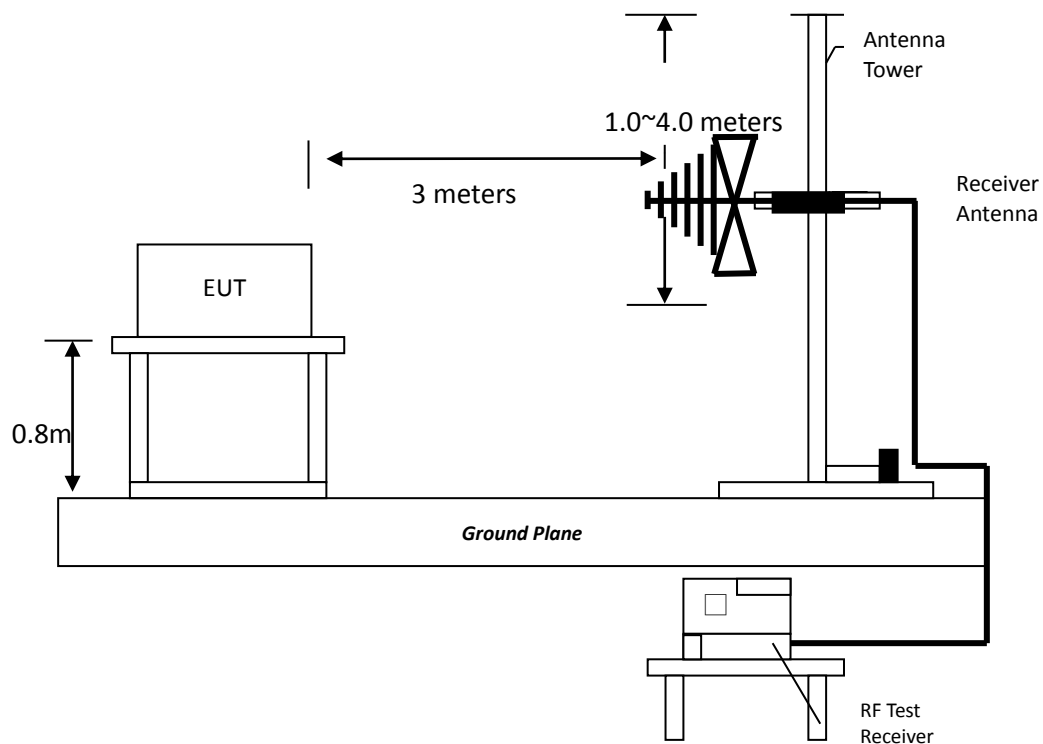
1. Configure the EUT according to ANSI C63.10:2013. The EUT was placed on the top of the turntable 0.8 meter above ground. The center of the receiving antenna mounted on the top of a height-variable antenna tower was placed 3 meters far away from the turntable.
2. Power on the EUT and all the companion devices. The turntable was rotated by 360 degree to find the position of the maximum emission level.
3. The height of the receiving antenna was varied between one meter and four meters above ground to find the maximum emission field strength of the both horizontal and vertical polarization
4. If find the frequencies above the limit or below within 3dB, the antenna tower was scan (from 1m to 4m) and then the turntable was rotated to find the maximum reading.
5. Set the test-receiver system to peak or CISPR quasi-peak detector with specified bandwidth under maximum hold mode.
6. If the emissions level of the EUT in peak mode was 3dB lower than the average limit specified then testing will be stopped and peak values of the EUT will be reported. Otherwise, the emissions which do not have 3dB margin will be measured using the quasi-peak method for below 1GHz.
7. In case the emission is lower than 30MHz, loop antenna has to be used for measurement and the recorded data should be quasi-peak measured by receiver.

6.5 Test configuration

6.5.1 Radiated emission from 9kHz to 30MHz uses Loop Antenna:



6.5.2 Radiated emission below 1GHz using Bilog Antenna



6.6 Test result

6.6.1 Measurement results: frequency range from 9 kHz to 30 MHz

The test was performed on EUT under continuously transmitting mode.

EUT : Foenix_AN

Worst Case : Tx mode

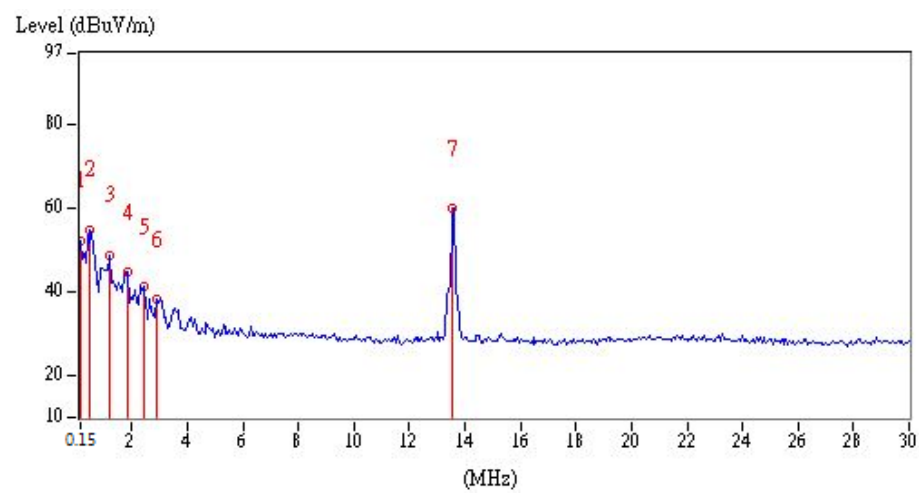
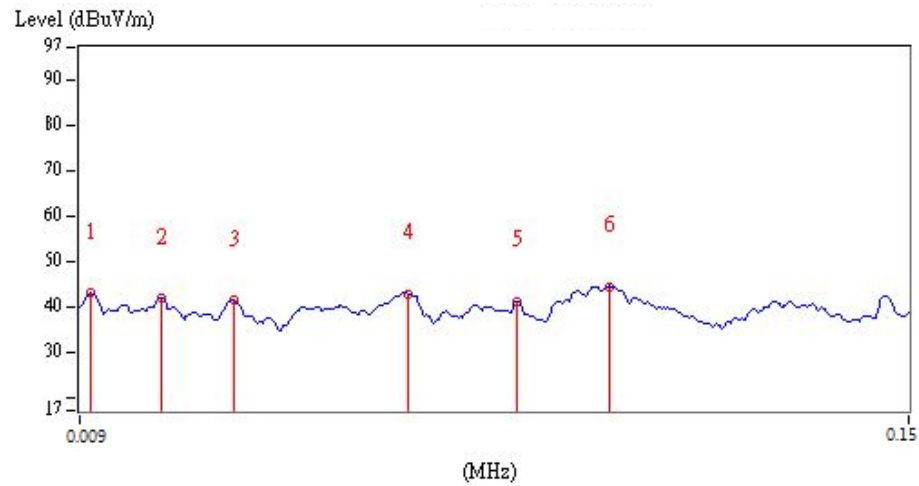
| Frequency (MHz) | Detection value | factor (dB/m) | Reading (dBμV) | value (dBμV/m) | Limit @ 3m (dBμV/m) | Tolerance (dB) |
|--------------------|--------------------|------------------|-------------------|-------------------|---------------------------|-------------------|
| 0.01 | PK | 18.99 | 23.82 | 42.81 | 127.60 | -84.79 |
| 0.02 | PK | 19.34 | 22.39 | 41.73 | 121.58 | -79.85 |
| 0.04 | PK | 19.43 | 21.82 | 41.25 | 115.56 | -74.31 |
| 0.06 | PK | 18.97 | 23.69 | 42.66 | 112.04 | -69.38 |
| 0.08 | PK | 18.86 | 22.28 | 41.14 | 109.54 | -68.40 |
| 0.10 | QP | 18.76 | 25.64 | 44.40 | 107.60 | -63.20 |
| 0.15 | PK | 18.77 | 33.54 | 52.31 | 104.08 | -51.77 |
| 0.45 | PK | 18.72 | 36.24 | 54.96 | 94.54 | -39.58 |
| 1.22 | QP | 18.69 | 30.05 | 48.74 | 65.88 | -17.14 |
| 1.82 | QP | 18.67 | 26.05 | 44.72 | 69.54 | -24.82 |
| 2.42 | QP | 18.66 | 22.50 | 41.16 | 69.54 | -28.38 |
| 2.90 | QP | 18.65 | 19.57 | 38.22 | 69.54 | -31.32 |

Remark:

1. Corr. Factor = Antenna Factor + Cable Loss

2. Corrected Level = Reading + Corr. Factor

Note: The amplitude of spurious emissions that are attenuated by more than 20dB below the permissible value has no need to be reported.



6.6.2 Measurement results: frequencies below 1 GHz

The test was performed on EUT under continuously transmitting mode.

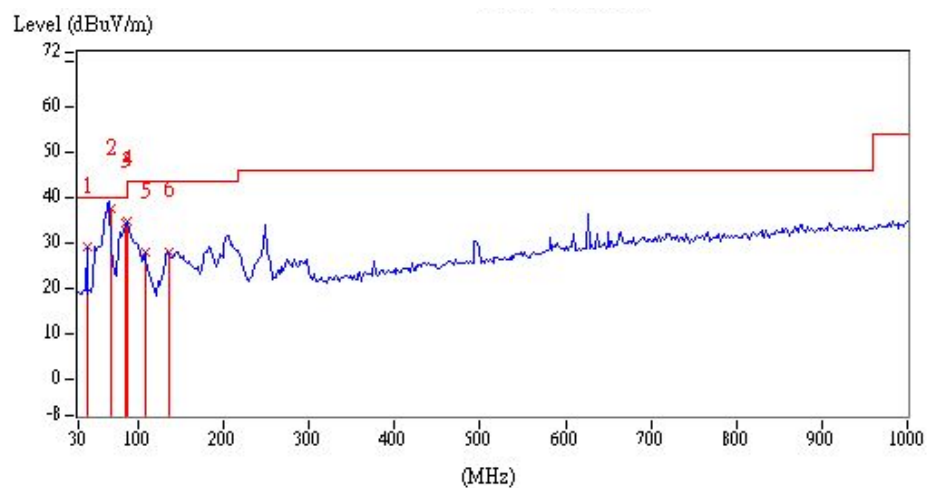
EUT : Foenix_AN

Worst Case : Tx mode

| Ant. Pol. (H/V) | Frequency (MHz) | Spectrum Analyzer Detector | Correction Factor (dB/m) | Reading (dBμV) | Corrected Reading (dBμV/m) | Limit @ 3 m (dBμV/m) | Margin (dB) |
|-----------------|-----------------|----------------------------|--------------------------|----------------|----------------------------|----------------------|-------------|
| Vertical | 40.68 | QP | 19.88 | 9.32 | 29.20 | 40.00 | -10.80 |
| Vertical | 67.80 | QP | 18.56 | 18.94 | 37.50 | 40.00 | -2.50 |
| Vertical | 84.32 | QP | 15.22 | 19.35 | 34.57 | 40.00 | -5.43 |
| Vertical | 88.20 | QP | 14.58 | 20.31 | 34.89 | 43.50 | -8.61 |
| Vertical | 108.48 | QP | 16.57 | 11.41 | 27.98 | 43.50 | -15.52 |
| Vertical | 135.60 | QP | 19.27 | 8.77 | 28.04 | 43.50 | -15.46 |
| Vertical | 40.68 | QP | 19.88 | 9.32 | 29.20 | 40.00 | -10.80 |

Remark:

1. Corr. Factor = Antenna Factor + Cable Loss
2. Corrected Level = Reading + Corr. Factor



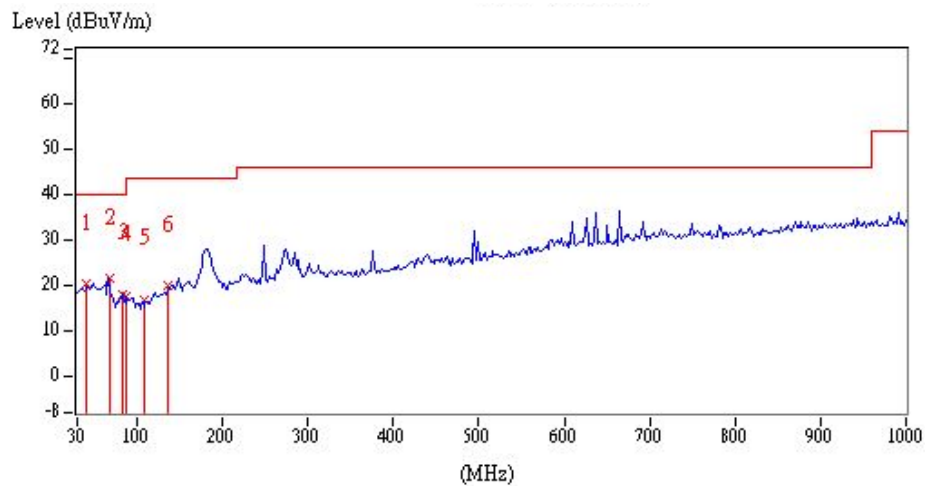
EUT : Foenix_AN

Worst Case : Tx mode

| Ant. Pol. (H/V) | Frequency (MHz) | Spectrum Analyzer Detector | Correction Factor (dB/m) | Reading (dBμV) | Corrected Reading (dBμV/m) | Limit @ 3 m (dBμV/m) | Margin (dB) |
|-----------------|-----------------|----------------------------|--------------------------|----------------|----------------------------|----------------------|-------------|
| Horizontal | 40.68 | QP | 19.88 | 0.39 | 20.27 | 40.00 | -19.73 |
| Horizontal | 67.80 | QP | 18.56 | 2.86 | 21.42 | 40.00 | -18.58 |
| Horizontal | 82.38 | QP | 15.53 | 2.67 | 18.20 | 40.00 | -21.80 |
| Horizontal | 88.20 | QP | 14.58 | 3.03 | 17.61 | 43.50 | -25.89 |
| Horizontal | 108.48 | QP | 16.57 | 0.30 | 16.87 | 43.50 | -26.63 |
| Horizontal | 135.60 | QP | 19.27 | 0.67 | 19.94 | 43.50 | -23.56 |
| Horizontal | 40.68 | QP | 19.88 | 0.39 | 20.27 | 40.00 | -19.73 |

Remark:

1. Corr. Factor = Antenna Factor + Cable Loss
2. Corrected Level = Reading + Corr. Factor



7. AC Power Line Conducted Emission

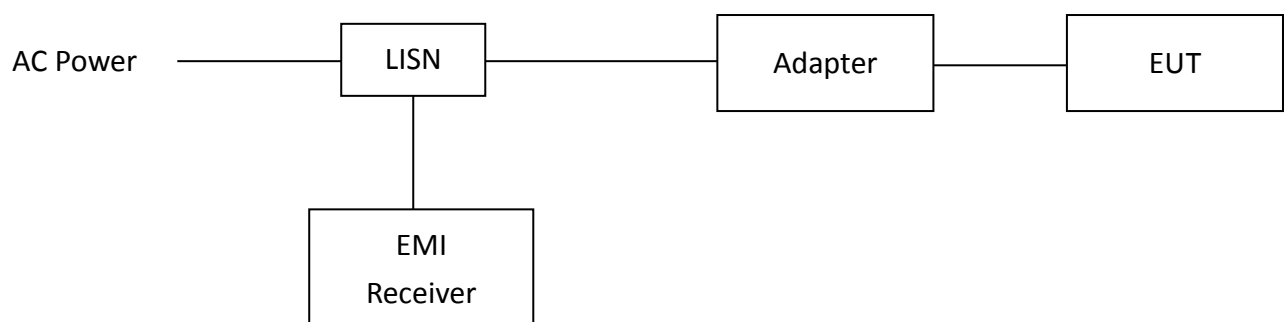
7.1 Measuring instrument setting

| Receiver Function | Setting |
|-------------------|---------|
| Detector | QP |
| Start frequency | 0.15MHz |
| Stop frequency | 30MHz |
| IF bandwidth | 9 kHz |
| Attenuation | 10dB |

7.2 Test Procedure

| | |
|--------|---|
| Step 1 | Configure the EUT according to ANSI C63.10:2013. The EUT or host of EHT has to be placed 0.4 meter far from the conducting wall of the shielding room and at least 80 centimeters from any other grounded conducting surface. |
| Step 2 | Connect EUT or host of EUT to the power mains through a line impedance stabilization network. |
| Step 3 | All the companion devices are connected to the other LISN. The LISN should provide 50Uh/50ohms coupling impedance. |
| Step 4 | The frequency range from 150 kHz to 30MHz was searched. |
| Step 5 | Set the test-receiver system to peak detector and specified bandwidth with maximum hold mode. |
| Step 6 | The measurement has to be done between each power line and ground at the power terminal. |

7.3 Test Diagram



7.4 Limit

| Frequency (MHz) | Conducted Limit (dBuV) | |
|--------------------|------------------------|---------|
| | Q.P. | Ave. |
| 0.15~0.50 | 66 – 56 | 56 – 46 |
| 0.50~5.00 | 56 | 46 |
| 5.00~30.0 | 60 | 50 |

7.5 Operating Environment Condition

| | |
|------------------------------|------------|
| Temperature (°C) : | 25 |
| Relative Humidity (%) : | 52 |
| Atmospheric Pressure (hPa) : | 1008 |
| Test Date : | 2019/01/22 |

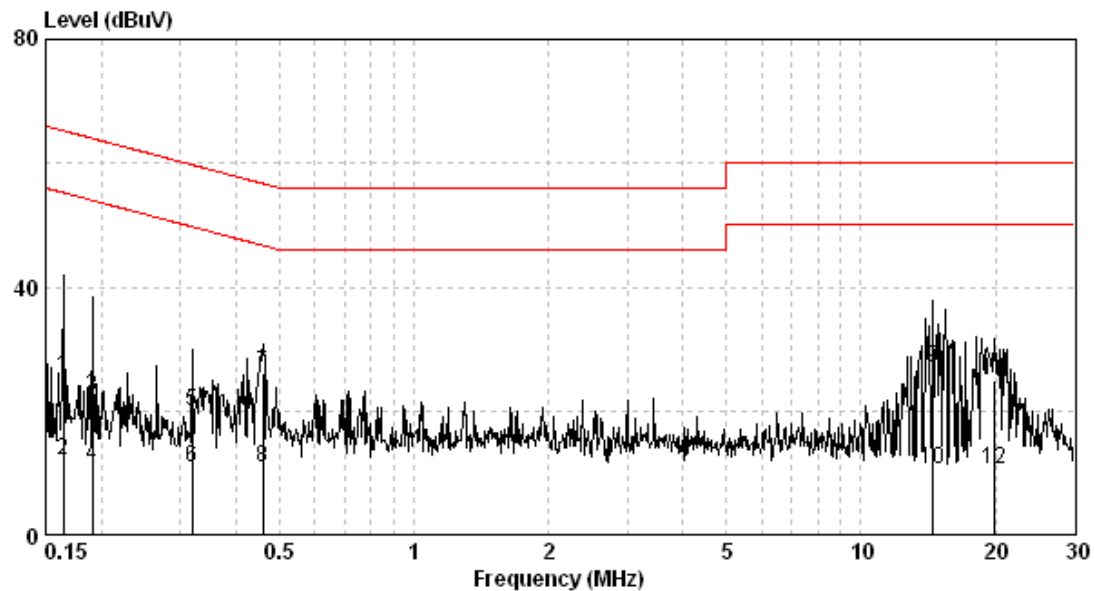
7.6 Test Results

Phase: Live Line
Model No.: Foenix_AN
Test Condition: Tx mode

| Frequency (MHz) | Corr. Factor (dB) | Reading QP (dBuV) | Level QP (dBuV) | Limit QP (dBuV) | Reading AV (dBuV) | Level AV (dBuV) | Limit AV (dBuV) | Margin (dB) | |
|--------------------|-------------------------|-------------------------|-----------------------|-----------------------|-------------------------|-----------------------|-----------------------|----------------|--------|
| | | | | | | | | QP | AV |
| 0.164 | 9.73 | 15.84 | 25.57 | 65.25 | 2.26 | 11.99 | 55.25 | -39.68 | -43.26 |
| 0.190 | 9.73 | 12.51 | 22.24 | 64.02 | 1.42 | 11.15 | 54.02 | -41.78 | -42.87 |
| 0.318 | 9.73 | 10.11 | 19.85 | 59.75 | 1.09 | 10.82 | 49.75 | -39.90 | -38.93 |
| 0.459 | 9.74 | 16.20 | 25.94 | 56.71 | 1.06 | 10.80 | 46.71 | -30.77 | -35.91 |
| 14.517 | 9.90 | 16.91 | 26.82 | 60.00 | 0.51 | 10.42 | 50.00 | -33.18 | -39.58 |
| 19.845 | 9.90 | 14.91 | 24.81 | 60.00 | 0.51 | 10.41 | 50.00 | -35.19 | -39.59 |

Remark:

1. Corr. Factor (dB) = LISN Factor (dB) + Cable Loss (dB)
2. Level (dBuV) = Corr. Factor (dB) + Reading (dBuV)
3. Margin (dB) = Level (dBuV) – Limit (dBuV)

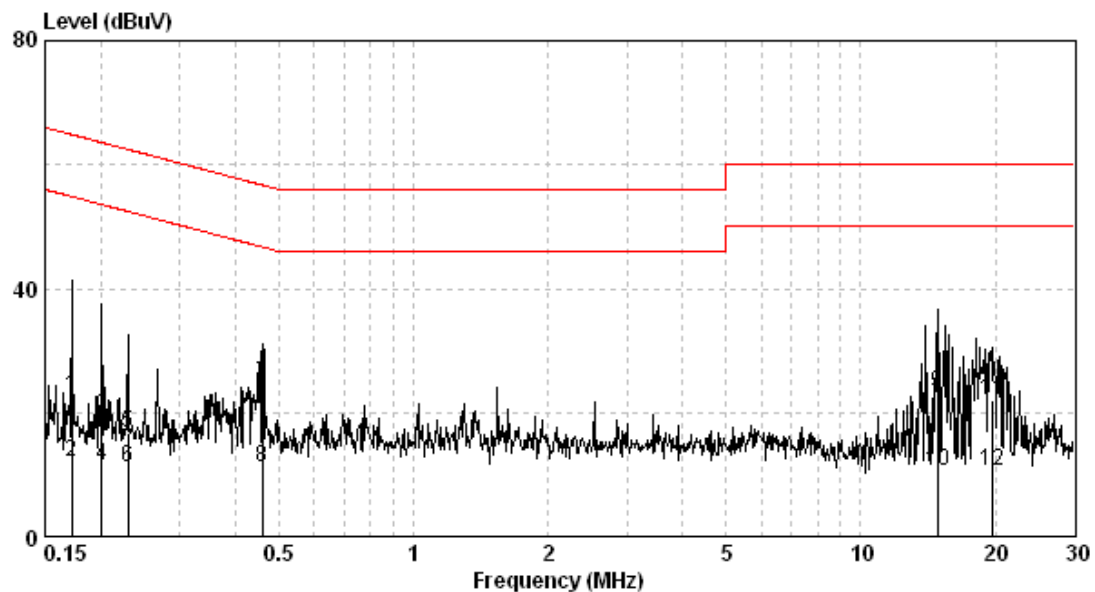


Phase: Neutral Line
Model No.: Foenix_AN
Test Condition: Tx mode

| Frequency (MHz) | Corr. Factor (dB) | Reading QP (dBuV) | Level QP (dBuV) | Limit QP (dBuV) | Reading AV (dBuV) | Level AV (dBuV) | Limit AV (dBuV) | Margin (dB) | |
|--------------------|-------------------------|-------------------------|-----------------------|-----------------------|-------------------------|-----------------------|-----------------------|----------------|--------|
| | | | | | | | | QP | AV |
| 0.172 | 9.74 | 12.68 | 22.42 | 64.86 | 2.25 | 11.99 | 54.86 | -42.43 | -42.87 |
| 0.201 | 9.74 | 9.66 | 19.40 | 63.58 | 1.55 | 11.29 | 53.58 | -44.18 | -42.29 |
| 0.230 | 9.74 | 6.82 | 16.56 | 62.44 | 1.48 | 11.22 | 52.44 | -45.88 | -41.22 |
| 0.459 | 9.75 | 14.79 | 24.54 | 56.71 | 1.32 | 11.07 | 46.71 | -32.18 | -35.64 |
| 14.828 | 9.95 | 13.11 | 23.06 | 60.00 | 0.61 | 10.56 | 50.00 | -36.94 | -39.44 |
| 19.635 | 9.97 | 11.88 | 21.85 | 60.00 | 0.65 | 10.62 | 50.00 | -38.15 | -39.38 |

Remark:

1. Corr. Factor (dB) = LISN Factor (dB) + Cable Loss (dB)
2. Level (dBuV) = Corr. Factor (dB) + Reading (dBuV)
3. Margin (dB) = Level (dBuV) – Limit (dBuV)



Appendix A: Test equipment list

| Test Equipment/ Test site | Brand | Model No. | Serial No. | Calibration Date | Next Calibration Date |
|---|--------------------------------|-------------------------|-------------|---------------------|-----------------------------|
| ESCI EMI Test Receiver | Rohde & Schwarz | ESCI | 100018 | 2018/11/14 | 2019/11/13 |
| Spectrum Analyzer | Rohde & Schwarz | FSP30 | 100245 | 2018/02/23 | 2019/02/22 |
| Horn Antenna (1-18G) | SHWARZBECK | BBHA 9120 D | 9120D-456 | 2018/01/23 | 2019/01/22 |
| Horn Antenna (14-42G) | SHWARZBECK | BBHA 9170 | BBHA9170159 | 2017/09/04 | 2020/09/02 |
| Broadband Antenna | SHWARZBECK | VULB 9168 | 9168-172 | 2018/04/23 | 2019/04/22 |
| Pre-Amplifier | EMC Co. | EMC12635SE | 980205 | 2018/12/10 | 2019/12/09 |
| Pre-Amplifier | MITEQ | JS4-26004000--2 7-8A | 828825 | 2018/08/28 | 2019/08/27 |
| Power Meter | Anritsu | ML2495A | 0844001 | 2018/10/29 | 2019/10/28 |
| Power Sensor | Anritsu | MA2411B | 0738452 | 2018/10/29 | 2019/10/28 |
| Signal Analyzer | Agilent | N9030A | MY51380492 | 2018/08/24 | 2019/08/23 |
| 966-2(A) Cable 9kHz~26.5GHz | SUHNER | SMA / EX 100 | N/A | 2018/08/07 | 2019/08/06 |
| 966-2(B) Cable 9kHz~26.5GHz | SUHNER | SUCOFLEX 104P | CB0005 | 2018/08/07 | 2019/08/06 |
| RF Cable 9kHz~26.5GHz | SUHNER | SUCOFLEX 102 | CB0006 | 2018/05/03 | 2019/05/02 |
| 966-2_3m Semi-Anechoic Chamber | 966_2 | CEM-966_2 | N/A | 2018/03/05 | 2019/03/04 |
| High Pass Filter | Wainwright | WHKX3.0/ 18G-12SS | N/A | 2018/06/01 | 2019/05/31 |
| Active Loop Antenna | SCHWARZBECK MESS-ELEKTRONIC | FMZB1519 | 1519-067 | 2018/04/17 | 2019/04/16 |
| Wideband Radio Communication Tester | Rohde & Schwarz | CMW500 | 124781 | 2018/09/21 | 2019/09/20 |

Note: No Calibration Required (NCR)

| Test Equipment/ Test site | Brand | Model No. | Serial No. | Calibration Date | Next Calibration Date |
|------------------------------|--------|--------------|-------------|---------------------|-----------------------------|
| EMI Receiver | R&S | ESCI | 100059 | 2018/11/07 | 2019/11/06 |
| Two-Line V-Network | R&S | ENV216 | 101159 | 2018/06/01 | 2019/05/31 |
| Two-Line -V-Network | R&S | ESH3-Z5 | 825562/003 | 2018/09/03 | 2019/09/02 |
| CON-1 Shielded Room | N/A | N/A | N/A | NCR | NCR |
| CON-1 Cable | SUHNER | SUCOFLEX-104 | 26438414 | 2018/05/03 | 2019/05/02 |
| Test software | Audix | e3 | 4.20040112L | NCR | NCR |

Note: No Calibration Required (NCR).

Appendix B: Measurement Uncertainty

This uncertainty represents an expanded uncertainty expressed at approximately the 95 % confidence level using a coverage factor of $k=2$.

| Item | Uncertainty |
|--|-------------|
| Vertically polarized radiated disturbances from 30MHz~1GHz in a semi-anechoic chamber at a distance of 3m | 5.14 dB |
| Horizontally polarized radiated disturbances from 30MHz~1GHz in a semi-anechoic chamber at a distance of 3m | 5.22 dB |
| Vertically polarized Radiated disturbances from 1GHz~18GHz in a semi-anechoic chamber at a distance of 3m | 3.64 dB |
| Horizontally polarized Radiated disturbances from 1GHz~18GHz in a semi-anechoic chamber at a distance of 3m | 3.64 dB |
| Vertically polarized Radiated disturbances from 18GHz~40GHz in a semi-anechoic chamber at a distance of 3m | 2.68 dB |
| Horizontally polarized Radiated disturbances from 18GHz~40GHz in a semi-anechoic chamber at a distance of 3m | 2.68 dB |
| Conducted Output power | 0.86 dB |
| Radiated electromagnetic disturbances in the frequency range from 9kHz to 30MHz | 3.54 dB |
| Conducted disturbance measurements at a mains port from 9 kHz to 30 MHz using a 50 Ω /50 μ H +5 Ω artificial mains network (AMN) | 2.48 dB |