
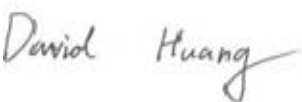



RF TEST REPORT



Report No.: 16050010-FCC-R

Supersede Report No.: N/A

| | | |
|--|---|---|
| Applicant | Micron Electronics LLC. | |
| Product Name | Tracker | |
| Model No. | Prime mPERs X | |
| Serial No. | N/A | |
| Test Standard | FCC Part 22(H):2015; FCC Part 24(E): 2015; ANSI/TIA C603D: 2010 | |
| Test Date | February 26 to March 10 , 2016 | |
| Issue Date | March 11, 2016 | |
| Test Result | <input checked="" type="checkbox"/> Pass <input type="checkbox"/> Fail | |
| Equipment complied with the specification | <input checked="" type="checkbox"/> | |
| Equipment did not comply with the specification | <input type="checkbox"/> | |
|  |  |  |
| Winnie Zhang Test Engineer | David Huang Checked By | |
| This test report may be reproduced in full only Test result presented in this test report is applicable to the tested sample only | | |

Issued by:

SIEMIC (SHENZHEN-CHINA) LABORATORIES

Zone A, Floor 1, Building 2 Wan Ye Long Technology Park

South Side of Zhoushi Road, Bao' an District, Shenzhen, Guangdong China 518108

Phone: +86 0755 2601 4629801 Email: China@siemic.com.cn

Laboratories Introduction

SIEMIC, headquartered in the heart of Silicon Valley, with superior facilities in US and Asia, is one of the leading independent testing and certification facilities providing customers with one-stop shop services for Compliance Testing and Global Certifications.



In addition to testing and certification, SIEMIC provides initial design reviews and compliance management throughout a project. Our extensive experience with China, Asia Pacific, North America, European, and International compliance requirements, assures the fastest, most cost effective way to attain regulatory compliance for the global markets.

Accreditations for Conformity Assessment

| Country/Region | Scope |
|----------------|------------------------------------|
| USA | EMC, RF/Wireless, SAR, Telecom |
| Canada | EMC, RF/Wireless, SAR, Telecom |
| Taiwan | EMC, RF, Telecom, SAR, Safety |
| Hong Kong | RF/Wireless, SAR, Telecom |
| Australia | EMC, RF, Telecom, SAR, Safety |
| Korea | EMI, EMS, RF, SAR, Telecom, Safety |
| Japan | EMI, RF/Wireless, SAR, Telecom |
| Singapore | EMC, RF, SAR, Telecom |
| Europe | EMC, RF, SAR, Telecom, Safety |

| | |
|-------------|----------------|
| Test Report | 16050010-FCC-R |
| Page | 3 of 41 |

This page has been left blank intentionally.

CONTENTS

| | |
|--|----|
| 1. REPORT REVISION HISTORY | 5 |
| 2. CUSTOMER INFORMATION | 5 |
| 3. TEST SITE INFORMATION | 5 |
| 4. EQUIPMENT UNDER TEST (EUT) INFORMATION | 6 |
| 5. TEST SUMMARY | 8 |
| 6. MEASUREMENTS, EXAMINATION AND DERIVED RESULTS | 9 |
| 6.1 MAXIMUM PERMISSIBLE EXPOSURE (MPE)..... | 9 |
| 6.2 RF OUTPUT POWER | 10 |
| 6.3 PEAK-AVERAGE RATIO | 13 |
| 6.4 OCCUPIED BANDWIDTH | 15 |
| 6.6 SPURIOUS EMISSIONS AT ANTENNA TERMINALS | 18 |
| 6.7 SPURIOUS RADIATED EMISSIONS | 21 |
| 6.8 BAND EDGE..... | 25 |
| 6.9 FREQUENCY STABILITY | 28 |
| ANNEX A. TEST INSTRUMENT..... | 31 |
| ANNEX B. EUT AND TEST SETUP PHOTOGRAPHS..... | 32 |
| ANNEX C. TEST SETUP AND SUPPORTING EQUIPMENT..... | 37 |
| ANNEX C.II. EUT OPERATING CONKITIONS | 39 |
| ANNEX D. USER MANUAL / BLOCK DIAGRAM / SCHEMATICS / PARTLIST | 40 |
| ANNEX E. DECLARATION OF SIMILARITY | 41 |

1. Report Revision History

| Report No. | Report Version | Description | Issue Date |
|----------------|----------------|-------------|----------------|
| 16050010-FCC-R | NONE | Original | March 11, 2016 |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |

2. Customer information

| | |
|------------------|--|
| Applicant Name | Micron Electronics LLC. |
| Applicant Add | 1001 Yamato Road, Suite 400, Boca Raton, FL 33431, USA |
| Manufacturer | Micron Electronics LLC. |
| Manufacturer Add | 1001 Yamato Road, Suite 400, Boca Raton, FL 33431, USA |

3. Test site information

| | |
|----------------------|--|
| Lab performing tests | SIEMIC (Shenzhen-China) LABORATORIES |
| Lab Address | Zone A, Floor 1, Building 2 Wan Ye Long Technology Park South Side of Zhoushi Road, Bao' an District, Shenzhen, Guangdong China 518108 |
| FCC Test Site No. | 718246 |
| IC Test Site No. | 4842E-1 |
| Test Software | Radiated Emission Program-To Shenzhen v2.0 |

4. Equipment under Test (EUT) Information

| | |
|---|---|
| Description of EUT: | Tracker |
| Main Model: | Prime mPERs X |
| Serial Model: | N/A |
| Date EUT received: | February 25 , 2016 |
| Test Date(s): | February 26 to March 10 , 2016 |
| Equipment Category : | PCB |
| Antenna Gain: | Cellular CDMA:0dBi PCS CDMA:1.8dBi |
| Type of Modulation: | CDMA: QPSK |
| RF Operating Frequency (ies): | Cellular CDMA TX: 824.7 ~ 848.37 MHz; RX: 869.7 ~ 893.37 MHz PCS CDMA TX: 1851.25 ~ 1908.75 MHz; RX: 1931.25 ~ 1988.75 MHz |
| Maximum Conducted AV Power to Antenna: | Cellular CDMA: 24.09 dBm PCS CDMA: 23.05 dBm |
| ERP/EIRP: | Cellular CDMA: 21.74 dBm / ERP PCS CDMA: 24.50 dBm / EIRP |
| Port: | USB Port |

| | |
|-------------|----------------|
| Test Report | 16050010-FCC-R |
| Page | 7 of 41 |

Input Power: Adapter:
Model:K05100-3
Input: AC 100-240V; 50/60Hz;0.3A
Output: DC 5.0V,1000mA
Battery:
Model:PA23W
Capacity: 3.8V,400mAh,1.52Wh
Charge Voltage:4.35V

Trade Name : Prime

FCC ID: ZKQ-PMAX

5. Test Summary

The product was tested in accordance with the following specifications.

All testing has been performed according to below product classification:

| FCC Rules | Description of Test | Result |
|--|--|------------|
| § 1.1307; § 2.1093 | RF Exposure (SAR) | Compliance |
| §2.1046; § 22.913(a); § 24.232(c); | RF Output Power | Compliance |
| § 24.232 (d) ; | Peak-Average Ratio | Compliance |
| § 2.1049; § 22.905; § 22.917; § 24.238; | 99% & -26 dB Occupied Bandwidth | Compliance |
| § 2.1051; § 22.917(a); § 24.238(a); | Spurious Emissions at Antenna Terminal | Compliance |
| § 2.1053; § 22.917(a); § 24.238(a); | Field Strength of Spurious Radiation | Compliance |
| § 22.917(a); § 24.238(a); | Out of band emission, Band Edge | Compliance |
| § 2.1055; § 22.355; § 24.235; | Frequency stability vs. temperature Frequency stability vs. voltage | Compliance |
| § 1.1307; § 2.1093 | RF Exposure (SAR) | Compliance |

Note: Testing was performed by configuring EUT to maximum output power status, the declared output power class for different

Measurement Uncertainty

| Emissions | | |
|--|---|---------------|
| Test Item | Description | Uncertainty |
| Band Edge and Radiated Spurious Emissions | Confidence level of approximately 95% (in the case where distributions are normal), with a coverage factor of 2 (for EUTs < 0.5m X 0.5m X 0.5m) | +5.6dB/-4.5dB |
| - | - | - |

6. MEASUREMENTS, EXAMINATION AND DERIVED RESULTS

6.1 Maximum Permissible Exposure (MPE)

Test Result: Pass

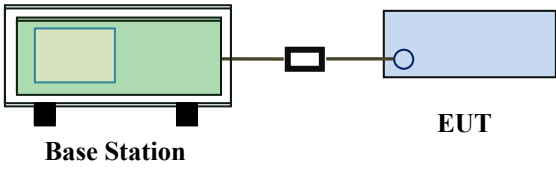
The EUT is a portable device, thus requires SAR evaluation;
Please refer to RF Exposure Evaluation Report: 16050010-FCC-H.

6.2 RF Output Power

| | |
|----------------------|----------------|
| Temperature | 24°C |
| Relative Humidity | 59% |
| Atmospheric Pressure | 1007mbar |
| Test date : | March 07, 2016 |
| Tested By : | Winnie Zhang |

Requirement(s):

| Spec | Item | Requirement | Applicable |
|-------------|------|--------------|-------------------------------------|
| §22.913 (a) | a) | ERP:38.45dBm | <input checked="" type="checkbox"/> |
| §24.232 (c) | b) | EIRP:33dBm | <input checked="" type="checkbox"/> |

| | |
|----------------|--|
| Test Setup |  <p>The diagram illustrates the test setup. On the left, a green rectangular box represents the 'Base Station'. A black line connects it to a small black square, which is then connected to a blue rectangular box labeled 'EUT' (Equipment Under Test).</p> |
| Test Procedure | <p>For Conducted Power:</p> <ul style="list-style-type: none"> - The transmitter output port was connected to base station. - Set EUT at maximum power through base station. - Select lowest, middle, and highest channels for each band and different test mode. <p>For ERP/EIRP:</p> <ul style="list-style-type: none"> - The transmitter was placed on a wooden turntable, and it was transmitting into a non-radiating load which was also placed on the turntable. - The measurement antenna was placed at a distance of 3 meters from the EUT. During the tests, the antenna height and polarization as well as EUT azimuth were varied in order to identify the maximum level of emissions from the EUT. The test was performed by placing the EUT on 3-orthogonal axis. - The frequency range up to tenth harmonic of the fundamental frequency was investigated. - Remove the EUT and replace it with substitution antenna. A signal generator was connected to the substitution antenna by a non- |

| | | |
|------------------|--|---|
| Test Data | <input checked="" type="checkbox"/> Yes | <input type="checkbox"/> N/A |
| Test Plot | <input type="checkbox"/> Yes (See below) | <input checked="" type="checkbox"/> N/A |

1x RTT Mode:

| Burst Average Power (dBm); | | | | | | | | |
|----------------------------|----------|--------------|--------|------------------------------|---------|-------|--------------|------------------------------|
| Band | Cellular | | | | PCS | | | |
| Channel | 1013 | 384 | 779 | Tune up Power tolerant | 25 | 600 | 1175 | Tune up Power tolerant |
| Frequency (MHz) | 824.7 | 836.5 | 848.37 | / | 1851.25 | 1880 | 1908.75 | / |
| 1x RTT | 23.64 | 24.09 | 24.03 | 24±1 | 22.38 | 22.10 | 23.05 | 21.3±1 |

ERP & EIRP

ERP for Cellular Band (Part 22H)

| Frequency (MHz) | Substituted level (dBm) | Antenna Polarization | Antenna Gain correction (dBi) | Cable Loss (dB) | Absolute Level (dBm) | Limit (dBm) |
|-----------------|-------------------------|----------------------|-------------------------------|-----------------|----------------------|-------------|
| 824.7 | 15.26 | V | 6.8 | 0.53 | 21.53 | 38.45 |
| 824.7 | 13.61 | H | 6.8 | 0.53 | 19.88 | 38.45 |
| 836.5 | 15.43 | V | 6.8 | 0.53 | 21.70 | 38.45 |
| 836.5 | 13.88 | H | 6.8 | 0.53 | 20.15 | 38.45 |
| 848.37 | 15.37 | V | 6.9 | 0.53 | 21.74 | 38.45 |
| 848.37 | 13.82 | H | 6.9 | 0.53 | 20.19 | 38.45 |

EIRP for PCS Band (Part 24E)

| Frequency (MHz) | Substituted level (dBm) | Antenna Polarization | Antenna Gain correction (dBi) | Cable Loss (dB) | Absolute Level (dBm) | Limit (dBm) |
|-----------------|-------------------------|----------------------|-------------------------------|-----------------|----------------------|-------------|
| 1851.25 | 16.79 | V | 7.88 | 0.85 | 23.82 | 33 |
| 1851.25 | 14.91 | H | 7.88 | 0.85 | 21.94 | 33 |
| 1880 | 16.65 | V | 7.88 | 0.85 | 23.68 | 33 |
| 1880 | 14.83 | H | 7.88 | 0.85 | 21.86 | 33 |
| 1908.75 | 17.49 | V | 7.86 | 0.85 | 24.50 | 33 |
| 1908.75 | 15.74 | H | 7.86 | 0.85 | 22.75 | 33 |

6.3 Peak-Average Ratio

| | |
|----------------------|----------------|
| Temperature | 24°C |
| Relative Humidity | 59% |
| Atmospheric Pressure | 1007mbar |
| Test date : | March 07, 2016 |
| Tested By : | Winnie Zhang |

Requirement(s):

| Spec | Item | Requirement | Applicable |
|----------------|--|---|-------------------------------------|
| §24.232(d) | a) | The peak-to-average ratio (PAR) of the transmission may not exceed 13 dB. | <input checked="" type="checkbox"/> |
| Test Setup | <p style="text-align: center;">Base Station Spectrum Analyzer EUT</p> | | |
| Test Procedure | <p>According with KDB 971168 v02r02</p> <ol style="list-style-type: none"> 1. The signal analyzer's CCDF measurement profile is enabled 2. Frequency = carrier center frequency 3. Measurement BW > Emission bandwidth of signal 4. The signal analyzer was set to collect one million samples to generate the CCDF curve 5. The measurement interval was set depending on the type of signal analyzed. For continuous signals (>98% duty cycle), the measurement interval was set to 1ms. For burst transmissions, the spectrum analyzer is set to use an internal " RF Burst" trigger that is synced with an incoming pulse and the measurement interval is set to less than the duration of the " on time" of one burst to ensure that energy is only captured during a time in which the transmitter is operating at maximum power | | |
| Remark | | | |
| Result | <input checked="" type="checkbox"/> Pass <input type="checkbox"/> Fail | | |

Test Data ☒ Yes ☐ N/A

Test Plot ☒ Yes (See below) ☐ N/A

1x RTT Mode:

PCS Band

| Frequency (MHz) | Conducted power(dBm) | | Peak-Average Ratio(PAR) |
|--------------------|----------------------|---------|----------------------------|
| | Peak | Average | |
| 1851.25 | 23.78 | 22.38 | 1.40 |
| 1880 | 23.65 | 22.10 | 1.55 |
| 1908.75 | 24.33 | 23.05 | 1.28 |

6.4 Occupied Bandwidth

| | |
|----------------------|----------------|
| Temperature | 24°C |
| Relative Humidity | 56% |
| Atmospheric Pressure | 1004mbar |
| Test date : | March 04, 2016 |
| Tested By : | Winnie Zhang |

Requirement(s):

| Spec | Item | Requirement | Applicable |
|--|--|-----------------------------|-------------------------------------|
| §2.1049, §22.917, §22.905 §24.238 | a) | 99% Occupied Bandwidth(kHz) | <input checked="" type="checkbox"/> |
| | b) | 26 dB Bandwidth(kHz) | <input checked="" type="checkbox"/> |
| Test Setup | <p>Base Station Spectrum Analyzer EUT</p> | | |
| Test Procedure | <ul style="list-style-type: none"> - The EUT was connected to Spectrum Analyzer and Base Station via power divider. - The 99% and 26 dB occupied bandwidth (BW) of the middle channel for the highest RF powers. | | |
| Remark | | | |
| Result | <input checked="" type="checkbox"/> Pass <input type="checkbox"/> Fail | | |

Test Data ☒ Yes ☐ N/A

Test Plot ☒ Yes (See below) ☐ N/A

1x RTT Mode:

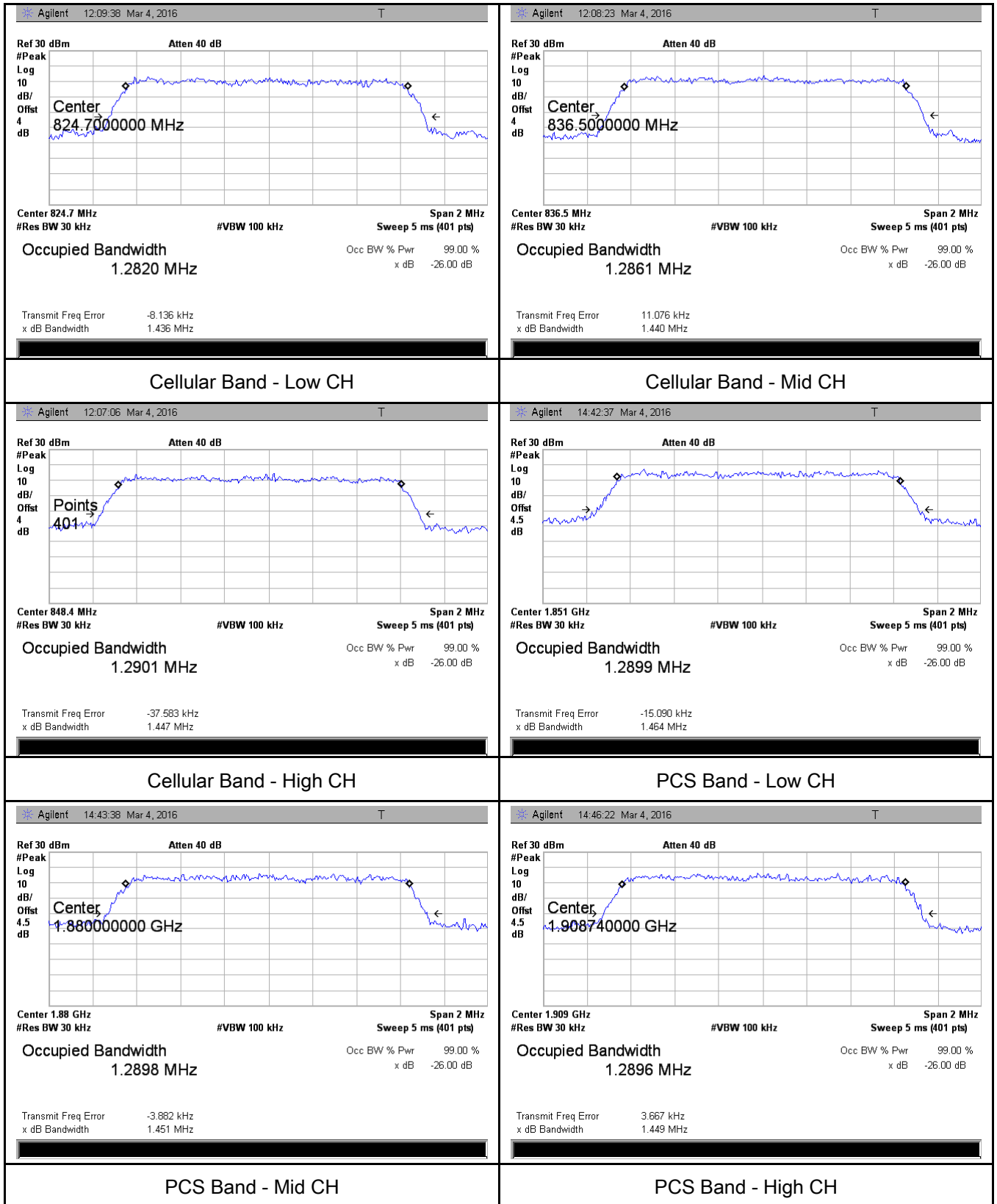
Cellular Band (Part 22H) result

| Channel | Frequency (MHz) | 99% Occupied Bandwidth (MHz) | 26 dB Bandwidth (MHz) |
|---------|-----------------|------------------------------|-----------------------|
| 1013 | 824.7 | 1.2820 | 1.436 |
| 384 | 836.5 | 1.2861 | 1.440 |
| 779 | 848.37 | 1.2901 | 1.447 |

PCS Band (Part 24E) result

| Channel | Frequency (MHz) | 99% Occupied Bandwidth (MHz) | 26 dB Bandwidth (MHz) |
|---------|-----------------|------------------------------|-----------------------|
| 25 | 1851.25 | 1.2899 | 1.464 |
| 600 | 1880.0 | 1.2898 | 1.451 |
| 1175 | 1908.75 | 1.2896 | 1.449 |

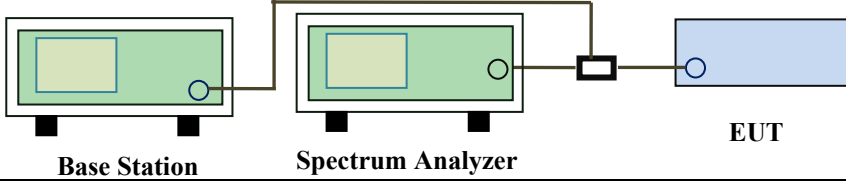
Test Plots



6.6 Spurious Emissions at Antenna Terminals

| | |
|----------------------|----------------|
| Temperature | 24°C |
| Relative Humidity | 56% |
| Atmospheric Pressure | 1004mbar |
| Test date : | March 04, 2016 |
| Tested By : | Winnie Zhang |

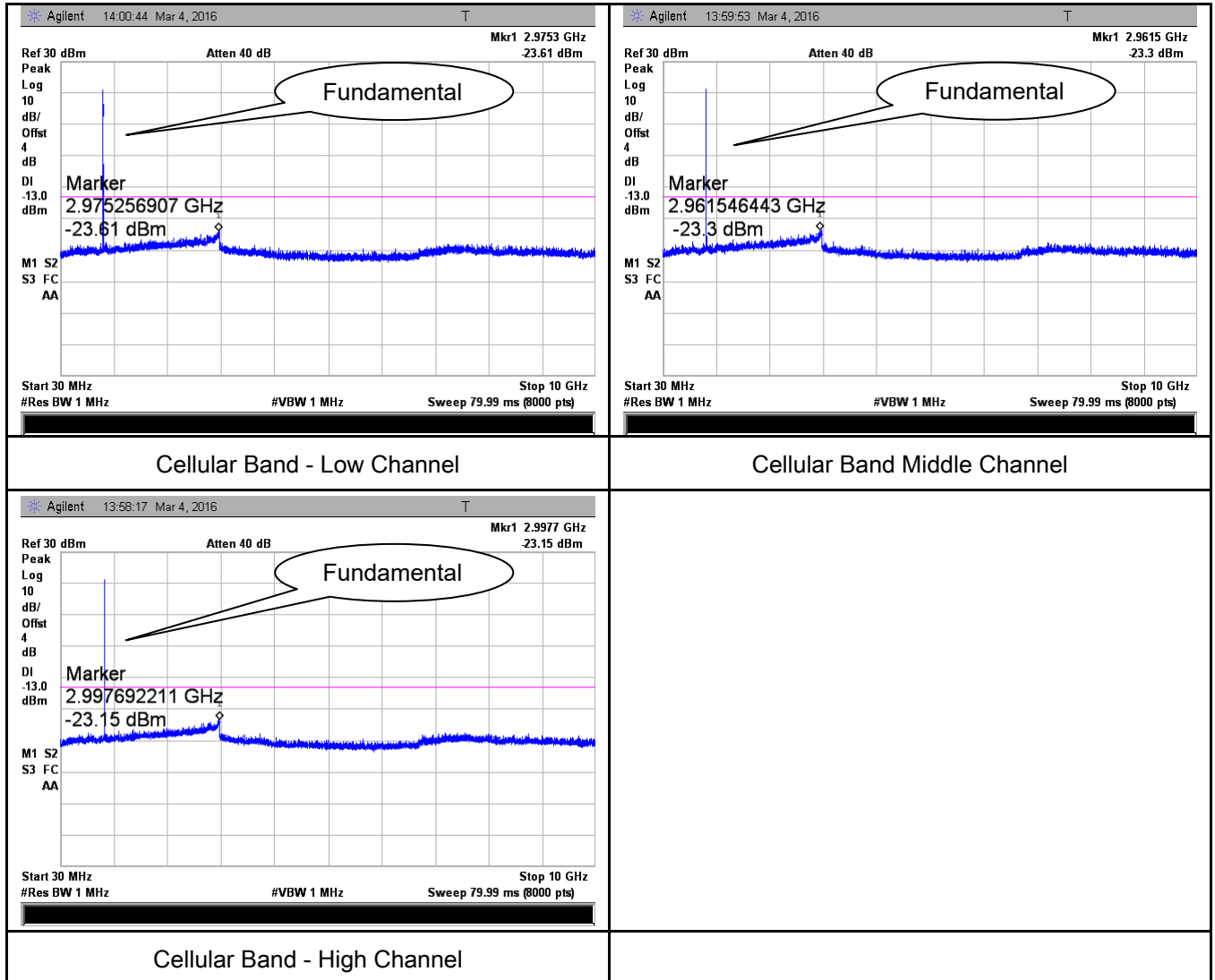
Requirement(s):

| Spec | Item | Requirement | Applicable |
|---------------------------------------|--|---|-------------------------------------|
| §2.1051, §22.917(a)& §24.238(a) | a) | The power of any emission outside of the authorized operating frequency ranges must be lower than the transmitter power (P) by a factor of at least $43 + 10 \log (P)$ dB | <input checked="" type="checkbox"/> |
| Test Setup |  <p style="text-align: center;">Base Station Spectrum Analyzer EUT</p> | | |
| Test Procedure | <ul style="list-style-type: none"> - The EUT was connected to Spectrum Analyzer and Base Station via power divider. - The Band Edges of low and high channels for the highest RF powers were measured. - Setting RBW as roughly BW/100. | | |
| Remark | | | |
| Result | <input checked="" type="checkbox"/> Pass <input type="checkbox"/> Fail | | |

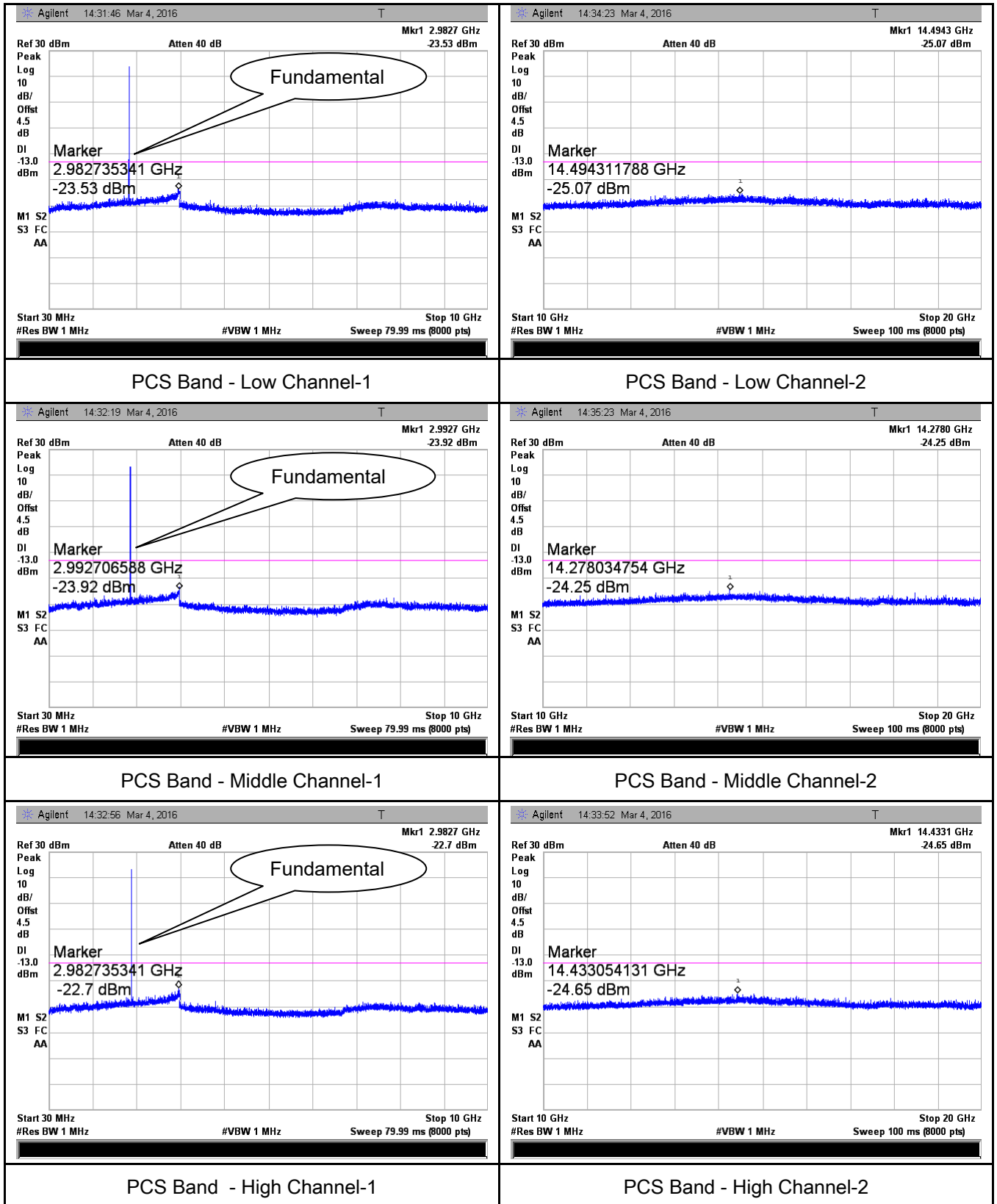
Test Data ☒ Yes ☐ N/A
 Test Plot ☒ Yes (See below) ☐ N/A

Test Plots

Cellular Band (Part 22H) result



PCS Band (Part24E) result

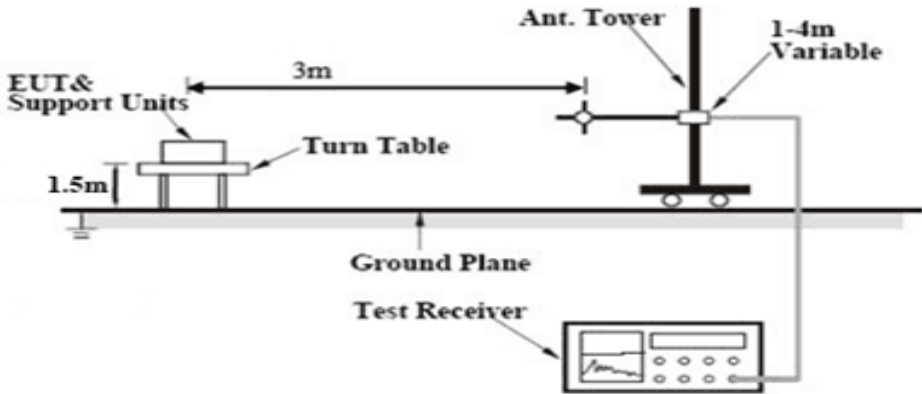


6.7 Spurious Radiated Emissions

| | |
|----------------------|----------------|
| Temperature | 24°C |
| Relative Humidity | 59% |
| Atmospheric Pressure | 1007mbar |
| Test date : | March 07, 2016 |
| Tested By : | Winnie Zhang |

Requirement(s):

| Spec | Item | Requirement | Applicable |
|----------------------------------|------|---|-------------------------------------|
| §2.1053, §22.917 & §24.238 | a) | The power of any emission outside of the authorized operating frequency ranges must be attenuated below the transmitter power (P) by a factor of at least $43 + 10 \log (P)$ dB. The spectrum is scanned from 30 MHz up to a frequency including its 10th harmonic. | <input checked="" type="checkbox"/> |

| | |
|------------|--|
| Test setup |  |
|------------|--|

| | |
|----------------|---|
| Test Procedure | <ol style="list-style-type: none"> The transmitter was placed on a wooden turntable, and it was transmitting into a non-radiating load which was also placed on the turntable. The measurement antenna was placed at a distance of 3 meters from the EUT. During the tests, the antenna height and polarization as well as EUT azimuth were varied in order to identify the maximum level of emissions from the EUT. The test was performed by placing the EUT on 3-orthogonal axis. Remove the EUT and replace it with substitution antenna. A signal generator was connected to the substitution antenna by a non-radiating cable. The absolute levels of the spurious emissions were measured by the substitution. <p>Sample Calculation:</p> <p>EUT Field Strength = Raw Amplitude (dBμV/m) – Amplifier Gain (dB) + Antenna Factor (dB) + Cable Loss (dB) + Filter Attenuation (dB, if used)</p> |
|----------------|---|

| | |
|-------------|----------------|
| Test Report | 16050010-FCC-R |
| Page | 22 of 41 |

| | |
|--------|--|
| Remark | |
| Result | <input checked="" type="checkbox"/> Pass <input type="checkbox"/> Fail |

Test Data ☒ Yes ☐ N/A

Test Plot ☐ Yes (See below) ☒ N/A

Cellular Band (Part 22H) result

Low channel

| Frequency (MHz) | Substituted level (dBm) | Polarity (H/V) | Antenna Gain Correction (dB) | Cable Loss (dB) | Corrected Reading (dBm) | Limit (dBm) | Margin (dB) |
|-----------------|-------------------------|----------------|------------------------------|-----------------|-------------------------|-------------|-------------|
| 1649.4 | -41.87 | V | 7.95 | 0.78 | -34.7 | -13 | -21.7 |
| 1649.4 | -42.18 | H | 7.95 | 0.78 | -35.01 | -13 | -22.01 |
| 276.5 | -50.12 | V | 5.7 | 0.25 | -44.67 | -13 | -31.67 |
| 623.7 | -48.95 | H | 7 | 0.38 | -42.33 | -13 | -29.33 |

Middle channel

| Frequency (MHz) | Substituted level (dBm) | Polarity (H/V) | Antenna Gain Correction (dB) | Cable Loss (dB) | Corrected Reading (dBm) | Limit (dBm) | Margin (dB) |
|-----------------|-------------------------|----------------|------------------------------|-----------------|-------------------------|-------------|-------------|
| 1673 | -41.56 | V | 7.95 | 0.78 | -34.39 | -13 | -21.39 |
| 1673 | -42.63 | H | 7.95 | 0.78 | -35.46 | -13 | -22.46 |
| 276.2 | -50.24 | V | 5.7 | 0.25 | -44.79 | -13 | -31.79 |
| 623.8 | -48.87 | H | 7 | 0.38 | -42.25 | -13 | -29.25 |

High channel

| Frequency (MHz) | Substituted level (dBm) | Polarity (H/V) | Antenna Gain Correction (dB) | Cable Loss (dB) | Corrected Reading (dBm) | Limit (dBm) | Margin (dB) |
|-----------------|-------------------------|----------------|------------------------------|-----------------|-------------------------|-------------|-------------|
| 1696.7 | -41.66 | V | 7.95 | 0.78 | -34.49 | -13 | -21.49 |
| 1696.7 | -42.24 | H | 7.95 | 0.78 | -35.07 | -13 | -22.07 |
| 276.6 | -50.31 | V | 5.7 | 0.25 | -44.86 | -13 | -31.86 |
| 623.2 | -48.75 | H | 7 | 0.38 | -42.13 | -13 | -29.13 |

Note:

- 1, The testing has been conformed to $10 \times 848.37 \text{ MHz} = 8483.7 \text{ MHz}$
- 2, All other emissions more than 30 dB below the limit

PCS Band (Part24E) result

Low channel

| Frequency (MHz) | Substituted level (dBm) | Polarity (H/V) | Antenna Gain Correction (dB) | Cable Loss (dB) | Corrected Reading (dBm) | Limit (dBm) | Margin (dB) |
|-----------------|-------------------------|----------------|------------------------------|-----------------|-------------------------|-------------|-------------|
| 3702.5 | -48.86 | V | 10.25 | 2.73 | -41.34 | -13 | -28.34 |
| 3702.5 | -48.12 | H | 10.25 | 2.73 | -40.6 | -13 | -27.6 |
| 276.4 | -52.13 | V | 5.7 | 0.25 | -46.68 | -13 | -33.68 |
| 623.1 | -51.46 | H | 7 | 0.38 | -44.84 | -13 | -31.84 |

Middle channel

| Frequency (MHz) | Substituted level (dBm) | Polarity (H/V) | Antenna Gain Correction (dB) | Cable Loss (dB) | Corrected Reading (dBm) | Limit (dBm) | Margin (dB) |
|-----------------|-------------------------|----------------|------------------------------|-----------------|-------------------------|-------------|-------------|
| 3760 | -48.78 | V | 10.25 | 2.73 | -41.26 | -13 | -28.26 |
| 3760 | -48.36 | H | 10.25 | 2.73 | -40.84 | -13 | -27.84 |
| 276.5 | -52.28 | V | 5.7 | 0.25 | -46.83 | -13 | -33.83 |
| 623.4 | -51.51 | H | 7 | 0.38 | -44.89 | -13 | -31.89 |

High channel

| Frequency (MHz) | Substituted level (dBm) | Polarity (H/V) | Antenna Gain Correction (dB) | Cable Loss (dB) | Corrected Reading (dBm) | Limit (dBm) | Margin (dB) |
|-----------------|-------------------------|----------------|------------------------------|-----------------|-------------------------|-------------|-------------|
| 3817.5 | -48.69 | V | 10.36 | 2.73 | -41.06 | -13 | -28.06 |
| 3817.5 | -48.23 | H | 10.36 | 2.73 | -40.6 | -13 | -27.6 |
| 276.3 | -52.06 | V | 5.7 | 0.25 | -46.61 | -13 | -33.61 |
| 623.6 | -51.39 | H | 7 | 0.38 | -44.77 | -13 | -31.77 |

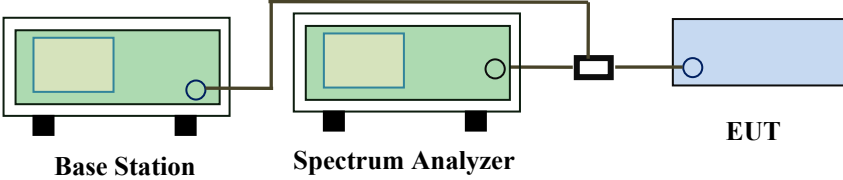
Note:

- 1, The testing has been conformed to $10 \times 1908.75 \text{ MHz} = 19087.5 \text{ MHz}$
- 2, All other emissions more than 30 dB below the limit

6.8 Band Edge

| | |
|----------------------|----------------|
| Temperature | 24°C |
| Relative Humidity | 56% |
| Atmospheric Pressure | 1004mbar |
| Test date : | March 04, 2016 |
| Tested By : | Winnie Zhang |

Requirement(s):

| Spec | Item | Requirement | Applicable |
|--------------------------|---|--|-------------------------------------|
| §22.917(a) §24.238(a) | a) | The power of any emission outside of the authorized operating frequency ranges must be lower than the transmitter power (P) by a factor of at least $43 + 10 \log (P)$ dB. | <input checked="" type="checkbox"/> |
| Test setup |  <p>The diagram illustrates the test setup. A Base Station (green box) and a Spectrum Analyzer (green box) are connected to an EUT (blue box) via a power divider (black box). The Base Station and Spectrum Analyzer are connected to the power divider, which then connects to the EUT.</p> | | |
| Procedure | <ul style="list-style-type: none"> - The EUT was connected to Spectrum Analyzer and Base Station via power divider. - The Band Edges of low and high channels for the highest RF powers were measured. Setting RBW as roughly BW/100. | | |
| Remark | | | |
| Result | <input checked="" type="checkbox"/> Pass <input type="checkbox"/> Fail | | |

Test Data ☒ Yes ☐ N/A

Test Plot ☒ Yes (See below) ☐ N/A

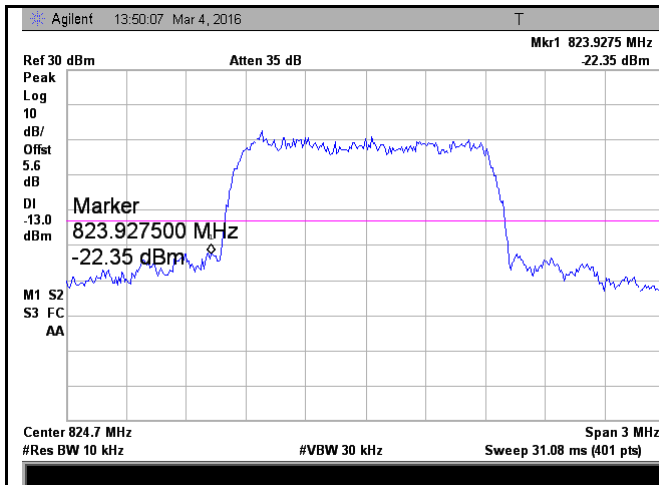
Cellular Band (Part 22H) result

| Frequency (MHz) | Emission (dBm) | Limit (dBm) |
|-----------------|----------------|-------------|
| 823.9275 | -22.35 | -13 |
| 849.2100 | -22.64 | -13 |

PCS Band (Part24E) result

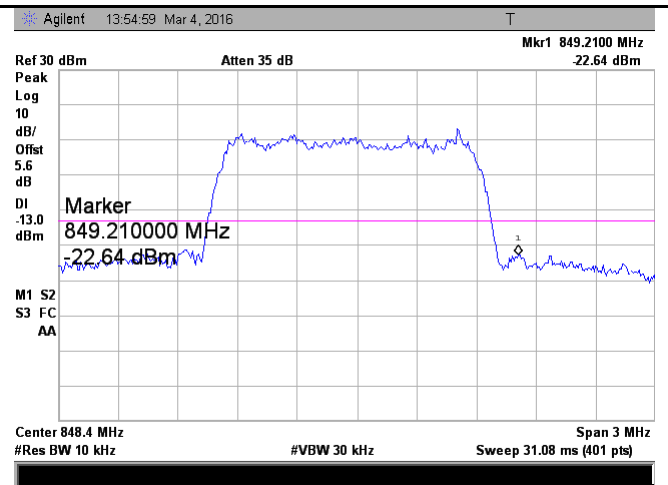
| Frequency (MHz) | Emission (dBm) | Limit (dBm) |
|-----------------|----------------|-------------|
| 1850.3175 | -18.82 | -13 |
| 1909.5650 | -20.18 | -13 |

Test Plots



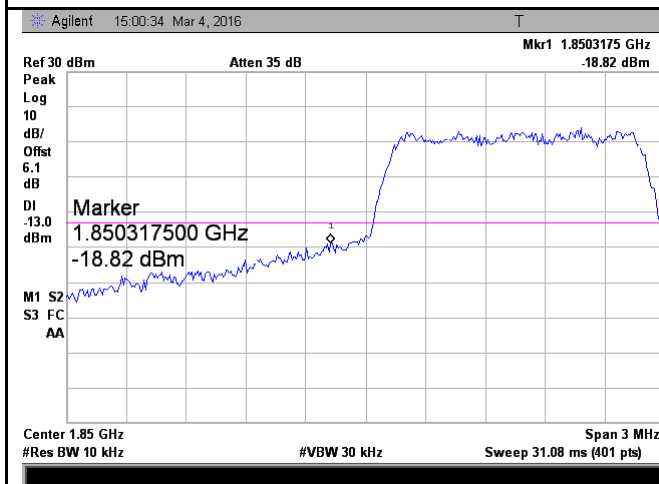
Cellular Band - Low Channel

Note: Offset=Cable loss (4.0) + 10log
(1.436)=4.0+1.6=5.6 dB



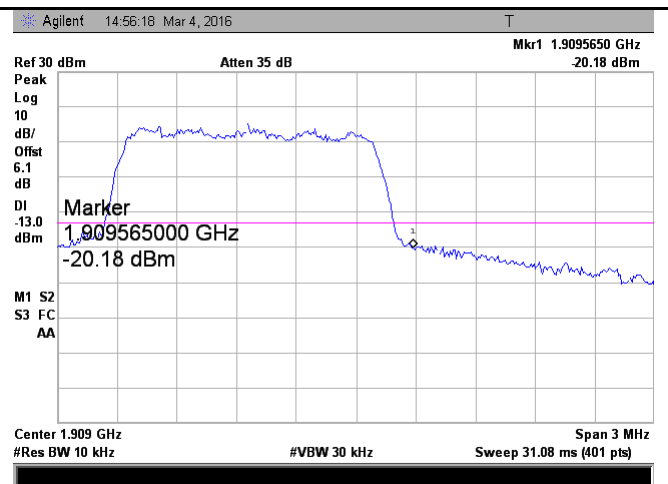
Cellular Band - High Channel

Note: Offset=Cable loss (4.0) + 10log
(1.447)=4.0+1.6=5.6 dB



PCS Band - Low Channel

Note: Offset=Cable loss (4.5) + 10log
(1.464)=4.5+1.6=6.1 dB




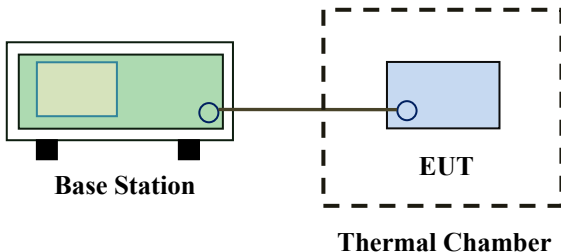
PCS Band - High Channel

Note: Offset=Cable loss (4.5) + 10log
(1.449)=4.5+1.6=6.1 dB

6.9 Frequency Stability

| | |
|----------------------|----------------|
| Temperature | 23°C |
| Relative Humidity | 55% |
| Atmospheric Pressure | 1003mbar |
| Test date : | March 03, 2016 |
| Tested By : | Winnie Zhang |

Requirement(s):

| Spec | Item | Requirement | Applicable | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|----------------------------------|---|--|------------------------|-------------------|------------------------|------------------------|----------|------|------|------|-----------|-----|-----|------|-----------|-----|----|-----|------------|-----|-----|-----|-------------|-----|-----|-----|-------------|-----|-----|-----|--------------|------|-----|-----|---|
| §2.1055, §22.355 & §24.235 | a) | <p>According to §22.355, the carrier frequency of each transmitter in the Public Mobile Services must be maintained within the tolerances given in Table below:</p> <p>Frequency Tolerance for Transmitters in the Public Mobile Services</p> <table border="1"> <thead> <tr> <th>Frequency Range (MHz)</th><th>Base, fixed (ppm)</th><th>Mobile ≤ 3 watts (ppm)</th><th>Mobile ≤ 3 watts (ppm)</th></tr> </thead> <tbody> <tr> <td>25 to 50</td><td>20.0</td><td>20.0</td><td>50.0</td></tr> <tr> <td>50 to 450</td><td>5.0</td><td>5.0</td><td>50.0</td></tr> <tr> <td>450 to 51</td><td>2.5</td><td>5.</td><td>5.0</td></tr> <tr> <td>821 to 896</td><td>1.5</td><td>2.5</td><td>2.5</td></tr> <tr> <td>928 to 929.</td><td>5 0</td><td>N/A</td><td>N/A</td></tr> <tr> <td>929 to 960.</td><td>1.5</td><td>N/A</td><td>N/A</td></tr> <tr> <td>2110 to 2220</td><td>10.0</td><td>N/A</td><td>N/A</td></tr> </tbody> </table> <p>According to §24.235, the frequency stability shall be sufficient to ensure that the fundamental emissions stay within the authorized frequency block.</p> | Frequency Range (MHz) | Base, fixed (ppm) | Mobile ≤ 3 watts (ppm) | Mobile ≤ 3 watts (ppm) | 25 to 50 | 20.0 | 20.0 | 50.0 | 50 to 450 | 5.0 | 5.0 | 50.0 | 450 to 51 | 2.5 | 5. | 5.0 | 821 to 896 | 1.5 | 2.5 | 2.5 | 928 to 929. | 5 0 | N/A | N/A | 929 to 960. | 1.5 | N/A | N/A | 2110 to 2220 | 10.0 | N/A | N/A |  |
| Frequency Range (MHz) | Base, fixed (ppm) | Mobile ≤ 3 watts (ppm) | Mobile ≤ 3 watts (ppm) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 25 to 50 | 20.0 | 20.0 | 50.0 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 50 to 450 | 5.0 | 5.0 | 50.0 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 450 to 51 | 2.5 | 5. | 5.0 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 821 to 896 | 1.5 | 2.5 | 2.5 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 928 to 929. | 5 0 | N/A | N/A | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 929 to 960. | 1.5 | N/A | N/A | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 2110 to 2220 | 10.0 | N/A | N/A | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Test setup |  <p>The diagram illustrates the test setup. On the left, a green rectangular box represents the 'Base Station'. A horizontal line connects it to a blue rectangular box labeled 'EUT' (Equipment Under Test). The 'EUT' is enclosed within a dashed-line rectangular box labeled 'Thermal Chamber'.</p> | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

| | |
|-------------|----------------|
| Test Report | 16050010-FCC-R |
| Page | 29 of 41 |

| | |
|-----------|--|
| Procedure | A communication link was established between EUT and base station. The frequency error was monitored and measured by base station under variation of ambient temperature and variation of primary supply voltage. Limit: The frequency stability of the transmitter shall be maintained within $\pm 0.00025\%$ ($\pm 2.5\text{ppm}$) of the center frequency. |
| Remark | |
| Result | <input checked="" type="checkbox"/> Pass <input type="checkbox"/> Fail |

Test Data ☒ Yes ☐ N/A

Test Plot ☐ Yes (See below) ☒ N/A

Cellular Band (Part 22H) result

| Middle Channel, $f_0 = 836.52$ MHz | | | | |
|------------------------------------|-----------------------------------|----------------------|-----------------------|-------------|
| Temperature (°C) | Power Supplied (V _{DC}) | Frequency Error (Hz) | Frequency Error (ppm) | Limit (ppm) |
| -10 | 3.7 | 19 | 0.0227 | 2.5 |
| 0 | | 16 | 0.0191 | 2.5 |
| 10 | | 15 | 0.0179 | 2.5 |
| 20 | | 15 | 0.0179 | 2.5 |
| 30 | | 14 | 0.0167 | 2.5 |
| 40 | | 17 | 0.0203 | 2.5 |
| 50 | | 13 | 0.0155 | 2.5 |
| 55 | | 17 | 0.0203 | 2.5 |
| 25 | 4.2 | 16 | 0.0191 | 2.5 |
| | 3.5 | 20 | 0.0239 | 2.5 |

PCS Band (Part 24E) result

| Middle Channel, $f_0 = 1880$ MHz | | | | |
|----------------------------------|-----------------------------------|----------------------|-----------------------|-------------|
| Temperature (°C) | Power Supplied (V _{DC}) | Frequency Error (Hz) | Frequency Error (ppm) | Limit (ppm) |
| -10 | 3.7 | 21 | 0.0112 | 2.5 |
| 0 | | 17 | 0.0090 | 2.5 |
| 10 | | 14 | 0.0074 | 2.5 |
| 20 | | 14 | 0.0074 | 2.5 |
| 30 | | 15 | 0.0080 | 2.5 |
| 40 | | 21 | 0.0112 | 2.5 |
| 50 | | 23 | 0.0122 | 2.5 |
| 55 | | 21 | 0.0112 | 2.5 |
| 25 | 4.2 | 20 | 0.0106 | 2.5 |
| | 3.5 | 210 | 0.1117 | 2.5 |

Annex A. TEST INSTRUMENT

| Instrument | Model | Serial # | Cal Date | Cal Due | In use |
|--|-----------------|------------|------------|------------|-------------------------------------|
| RF Conducted Test | | | | | |
| Agilent ESA-E SERIES SPECTRUM ANALYZER | E4407B | 09/16/2015 | 09/16/2015 | 09/15/2016 | <input checked="" type="checkbox"/> |
| Power Splitter | 1# | 09/01/2015 | 09/01/2015 | 08/31/2016 | <input checked="" type="checkbox"/> |
| Universal Radio Communication Tester | CMU200 | 09/25/2015 | 09/25/2015 | 09/24/2016 | <input checked="" type="checkbox"/> |
| Power Amplifier | SMC150D | R1553-0313 | 03/10/2015 | 03/10/2016 | <input checked="" type="checkbox"/> |
| Power Amplifier | S41-25D | R1553-0314 | 05/28/2015 | 05/28/2016 | <input checked="" type="checkbox"/> |
| Temperature/Humidity Chamber | UHL-270 | 10/09/2015 | 10/09/2015 | 10/08/2016 | <input checked="" type="checkbox"/> |
| DC Power Supply | E3640A | 09/17/2015 | 09/17/2015 | 09/16/2016 | <input checked="" type="checkbox"/> |
| Radiated Emissions | | | | | |
| EMI test receiver | ESL6 | 100262 | 09/17/2015 | 09/16/2016 | <input checked="" type="checkbox"/> |
| OPT 010 AMPLIFIER (0.1-1300MHz) | 8447E | 2727A02430 | 09/01/2015 | 08/31/2016 | <input checked="" type="checkbox"/> |
| Microwave Preamplifier (0.5 ~ 18GHz) | PAM-118 | 443008 | 03/25/2015 | 03/24/2016 | <input checked="" type="checkbox"/> |
| Bilog Antenna (30MHz~6GHz) | JB6 | A110712 | 09/21/2015 | 09/20/2016 | <input checked="" type="checkbox"/> |
| Bilog Antenna (30MHz~2GHz) | JB1 | A112017 | 09/21/2015 | 09/20/2016 | <input checked="" type="checkbox"/> |
| Double Ridge Horn Antenna (1 ~18GHz) | AH-118 | 71259 | 09/24/2015 | 09/23/2016 | <input checked="" type="checkbox"/> |
| Double Ridge Horn Antenna (1 ~18GHz) | AH-118 | 71283 | 09/24/2015 | 09/23/2016 | <input checked="" type="checkbox"/> |
| SYNTHESIZED SIGNAL GENERATOR | 8665B | 3744A01293 | 09/17/2015 | 09/16/2016 | <input checked="" type="checkbox"/> |
| Tunable Notch Filter | 3NF-800/1000-S | AA4 | 09/01/2015 | 08/31/2016 | <input checked="" type="checkbox"/> |
| Tunable Notch Filter | 3NF-1000/2000-S | AM 4 | 09/01/2015 | 08/31/2016 | <input checked="" type="checkbox"/> |

Annex B. EUT And Test Setup Photographs

Annex B.i. Photograph: EUT External Photo



Whole Package - Top View



Adapter - Front View



EUT - Front View



EUT - Rear View



EUT - Top View



EUT - Bottom View



EUT - Left View

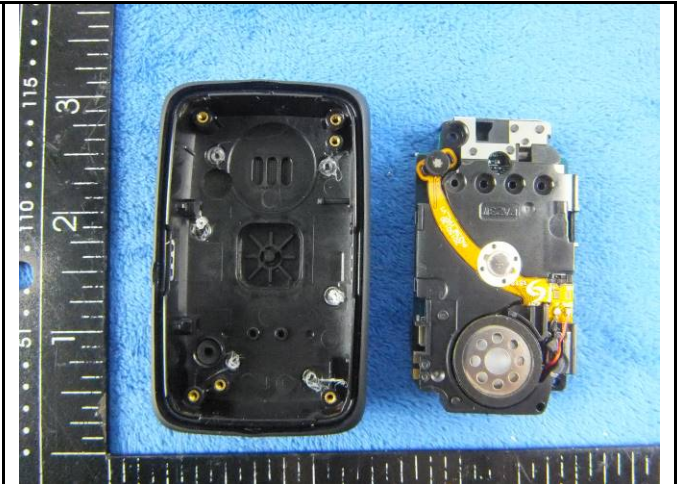


EUT - Right View

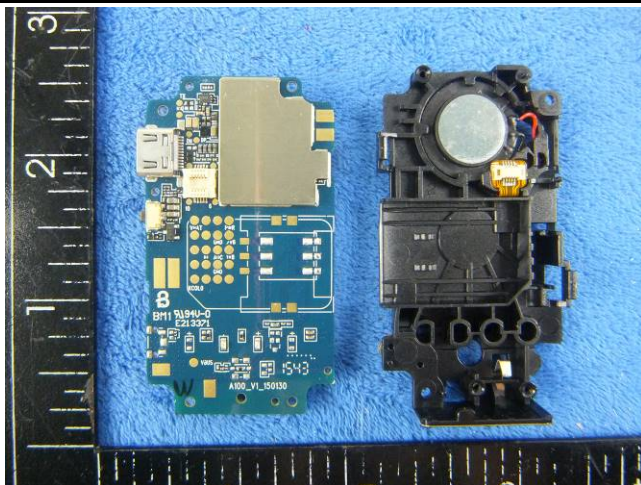
Annex B.ii. Photograph: EUT Internal Photo



Cover Off - Top View 1



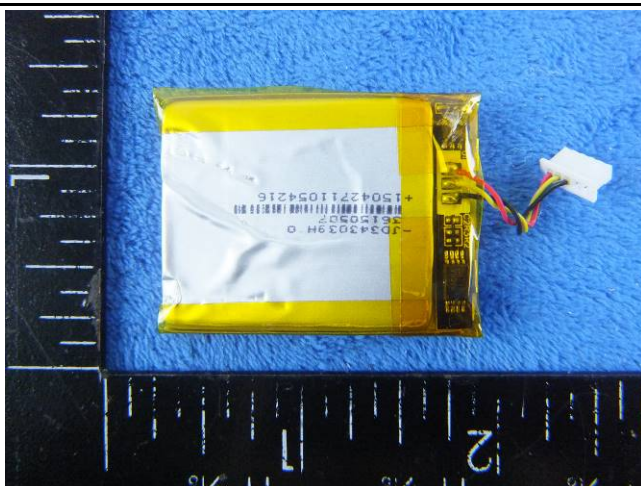
Cover Off - Top View 2



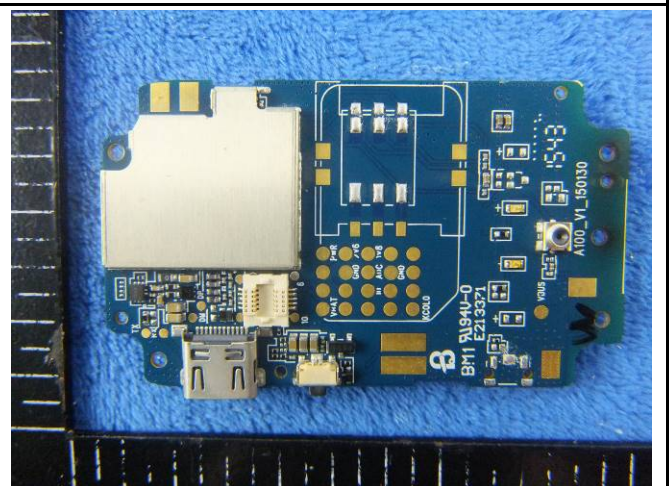
Cover Off - Top View 3



Battery - Front View



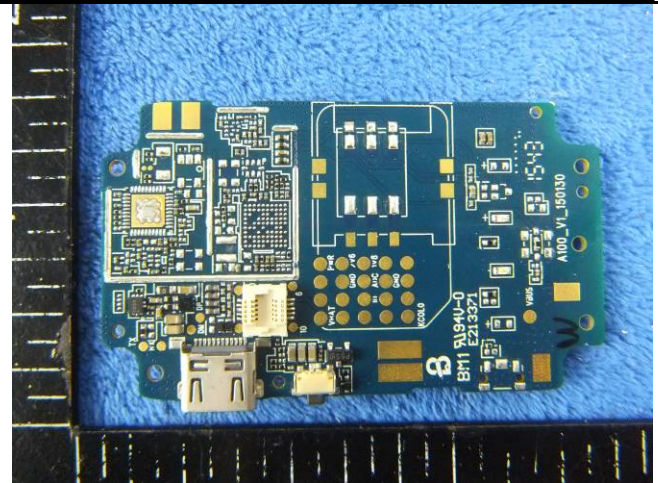
Battery - Rear View



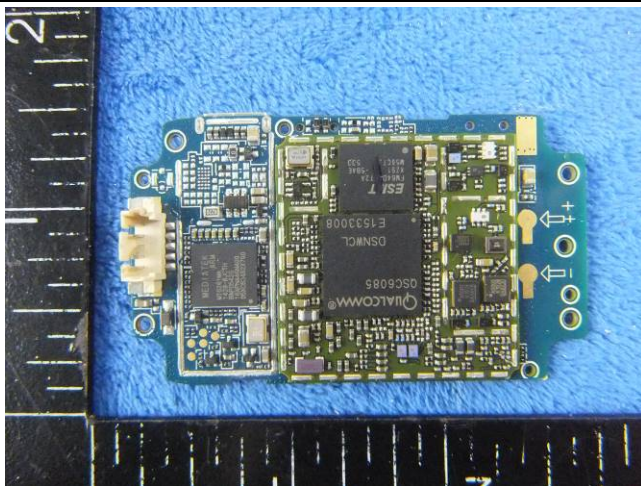
Mainboard with Shielding - Front View



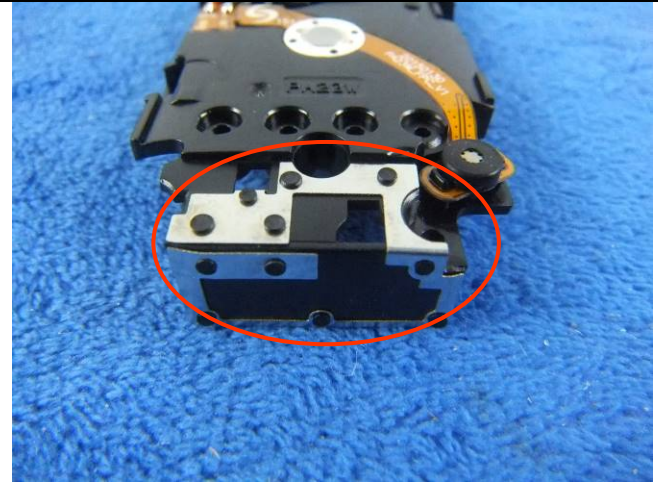
Mainboard with Shielding - Rear View



Mainboard without shielding - Front View

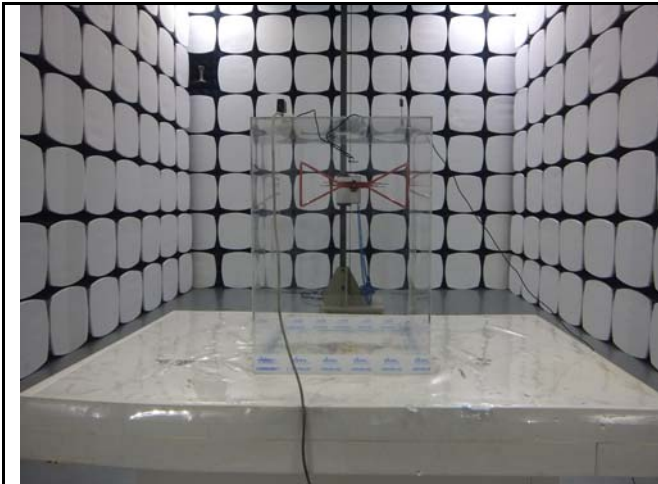


Mainboard without Shielding - Rear View

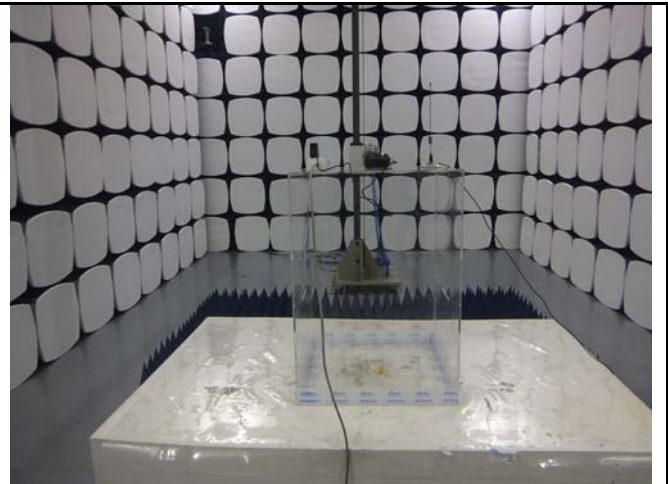


CDMA - Antenna View

Annex B.iii. Photograph: Test Setup Photo



Radiated Spurious Emissions Test Setup Below 1GHz

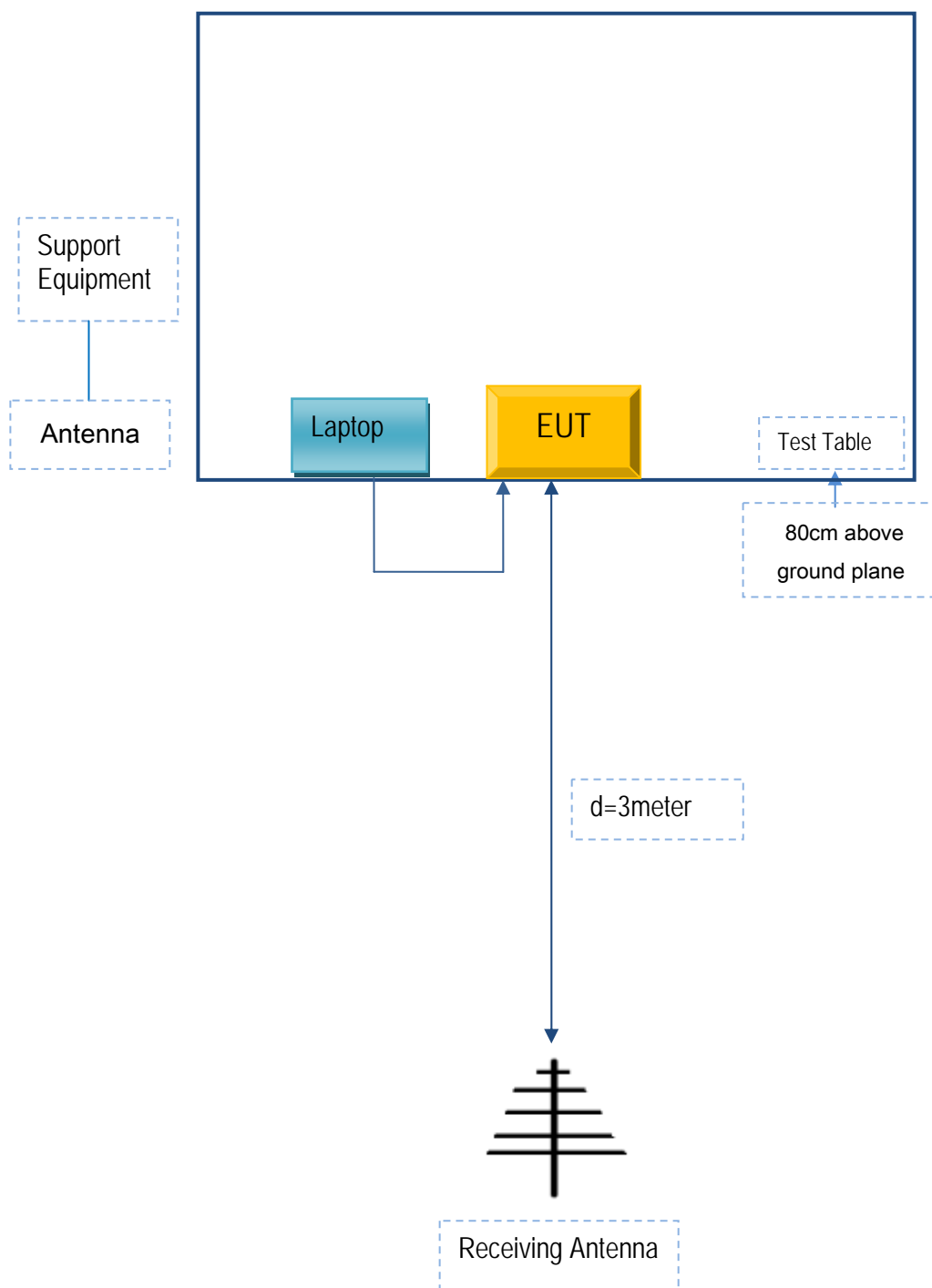


Radiated Spurious Emissions Test Setup Above
1GHz

Annex C. TEST SETUP AND SUPPORTING EQUIPMENT

Annex C.ii. TEST SET UP BLOCK

Block Configuration Diagram for Radiated Emissions



Annex C. ii. SUPPORTING EQUIPMENT DESCRIPTION

The following is a description of supporting equipment and details of cables used with the EUT.

| Manufacturer | Equipment Description | Model | Serial No |
|-------------------------|-----------------------|----------|-----------|
| Micron Electronics LLC. | Adapter | K05100-3 | JX05100 |

Supporting Cable:

| Cable type | Shield Type | Ferrite Core | Length | Serial No |
|------------|--------------|--------------|--------|-----------|
| USB Cable | Un-shielding | No | 0.8m | JX04022 |

Annex C.ii. EUT OPERATING CONKITIONS

The following is the description of how the EUT is exercised during testing.

| Test | Description Of Operation |
|-------------------|--|
| Emissions Testing | The EUT was communicating with base station and set to work at maximum output power. |
| Others Testing | The EUT was communicating with base station and set to work at maximum output power. |

| | |
|-------------|----------------|
| Test Report | 16050010-FCC-R |
| Page | 40 of 41 |

Annex D. User Manual / Block Diagram / Schematics / Partlist

Please see attachment

| | |
|-------------|----------------|
| Test Report | 16050010-FCC-R |
| Page | 41 of 41 |

Annex E. DECLARATION OF SIMILARITY

N/A