

FCC TEST REPORT

For

Universal Physicians, LLC

Personal Emergency Help Device

Model No.: SC911

Prepared For : Universal Physicians, LLC
Address : 7747 Supreme Ave NW N. Canton, OH 44720, United States

Prepared By : Shenzhen Anbotek Compliance Laboratory Limited
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Report Number : R0217060047W
Date of Test : May 18~Jul. 03, 2017
Date of Report : Jul. 03, 2017

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TEST REPORT

Applicant : Universal Physicians, LLC
Manufacturer : SUNCHASE PI CO. LTD
Product Name : Personal Emergency Help Device
Model No. : SC911
Trade Mark : N/A
Rating(s) : Input DC5V, 550mA (Battery DC 3.8V,1000mAh)



Test Standard(s) : FCC PART 2, FCC Part 22(H), FCC Part 24(E):2016, ANSI/TIAC603 D: 2010

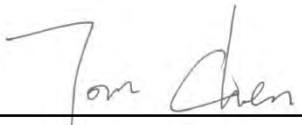
The device described above is tested by Shenzhen Anbotek Compliance Laboratory Limited to determine the maximum emission levels emanating from the device and the severe levels of the device can endure and its performance criterion. The measurement results are contained in this test report and Shenzhen Anbotek Compliance Laboratory Limited is assumed full of responsibility for the accuracy and completeness of these measurements. Also, this report shows that the EUT (Equipment Under Test) is technically compliant with the FCC Part 22(H)&24(E) requirements.

This report applies to above tested sample only and shall not be reproduced in part without written approval of Shenzhen Anbotek Compliance Laboratory Limited.

Date of Test : May 18~July 03, 2017

Prepared by : 
(Tested Engineer / Winkey Wang)

Reviewer : 

(Project Manager / Amy Ding)

Approved & Authorized Signer : 
(Manager / Tom Chen)

1. General Information

1.1. Client Information

| | | |
|--------------|---|---|
| Applicant | : | Universal Physicians, LLC |
| Address | : | 7747 Supreme Ave NW N. Canton, OH 44720, United States |
| Manufacturer | : | SUNCHASE PI CO. LTD |
| Address | : | Changyanbao Industry Zone, Sanyao of Yanta District, Xi'an, China |

1.2. Description of Device (EUT)

| | | | |
|---|---|---|---|
| Product Name | : | Personal Emergency Help Device | |
| Model No. | : | SC911 | |
| Trade Mark | : | N/A | |
| Test Power Supply | : | Input DC5V, 550mA (Battery DC 3.8V,1000mAh) | |
| Product Description | : | Operation Frequency: | UMTS-FDD Band 5 TX: 826.4 ~ 846.6 MHz; RX: 871.4 ~ 891.6 MHz UMTS-FDD Band 2 TX:1852.4 ~ 1907.6 MHz; RX: 1932.4 ~ 1987.6 MHz |
| | | Modulation Type: | UMTS-FDD: QPSK |
| | | Antenna Type: | Alloyed ANT |
| | | Antenna Gain(Peak): | 3dBi |
| Remark: 1) For a more detailed features description, please refer to the manufacturer's specifications or the User's Manual. | | | |

1.3. Auxiliary Equipment Used During Test

| | | |
|---------|---|---|
| Adapter | : | Manufacturer: ZTE M/N: STC-A2050I1000USBA-C S/N: 201202102100876 Input: 100-240V~50/60Hz 0.3A Output: DC 5V, 1000mA |
|---------|---|---|

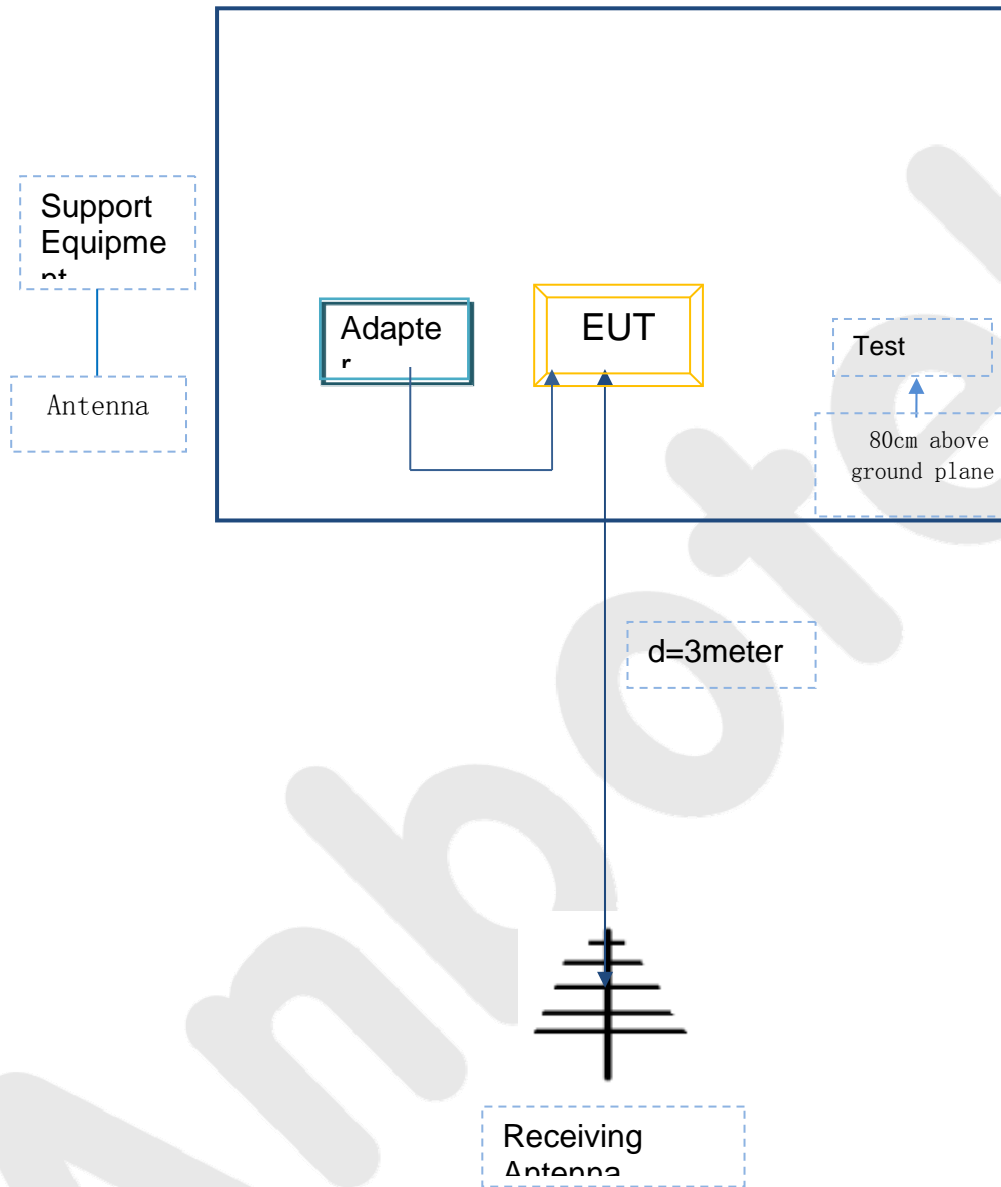
1.4. Description of Test Modes

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. |

1.5. Description Of Test Setup

Block Configuration Diagram for Radiated Emissions



1.6. Test Equipment List

| Item | Equipment | Manufacturer | Model No. | Serial No. | Last Cal. | Cal. Interval |
|------|--------------------------------------|-------------------------|-------------------------------|----------------------------|---------------|---------------|
| 1. | Spectrum Analysis | Agilent | E4407B | US39390582 | May 27, 2017 | 1 Year |
| 2. | Pre-amplifier | SKET Electronic | BK1G18G30 D | KD17503 | May 27, 2017 | 1 Year |
| 3. | EMI Test Receiver | Rohde & Schwarz | ESPI | 101604 | May 27, 2017 | 1 Year |
| 4. | Double Ridged Horn Antenna | Instruments corporation | GTH-0118 | 351600 | May 31, 2017 | 1 Year |
| 5. | Bilog Broadband Antenna | Schwarzbeck | VULB9163 | VULB 9163-289 | May 31, 2017 | 1 Year |
| 6. | Bilog Broadband Antenna | Schwarzbeck | VULB9163 | VULB 9163-387 | May 31, 2017 | 1 Year |
| 7. | Loop Antenna | Schwarzbeck | HFH2-Z2 | 100047 | Apr. 03, 2017 | 1 Year |
| 8. | Auxiliary antenna | Resenberger | SUCOFLEX 104 | 351520 | May 27, 2017 | 1 Year |
| 9. | Pre-amplifier | SONOMA | 310N | 186860 | May 27, 2017 | 1 Year |
| 10. | EMI Test Software EZ-EMC | SHURPLE | N/A | N/A | N/A | N/A |
| 11. | MXA Spectrum Analysis | Agilent | N9020A | MY51170037 | May 27, 2017 | 1 Year |
| 12. | MXG RF Vector Signal Generator | Agilent | N5182A | MY48180656 | May 27, 2017 | 1 Year |
| 13. | DC Power supply | IVYTECH | IV6003 | 1601D6030007 | May 26, 2017 | 1 Year |
| 14. | TEMP&HUMI PROGRAMMABLE CHAMBER | Sertep | ZJ- HWHS80B | ZJ-17042804 | Mar. 03, 2017 | 1 Year |
| 15. | Universal Radio Communication Tester | Rohde & Schwarz | CMU 200 | 117888 | May 27, 2017 | 1 Year |
| 16. | Wideband Radio Communication Tester | Rohde & Schwarz | CMU 500 | 1201.0002K50- 104209-JC | May 27, 2017 | 1 Year |
| 17. | High-Pass Filter | CDKMV | ZHPF- BM1100 -4000-0730 | B2015094550 | May 27, 2017 | 1 Year |
| 18. | High-Pass Filter | CDKMV | ZHPF-M3.5 -18G-3834 | 1307006523 | May 27, 2017 | 1 Year |
| 19. | Auxiliary antenna | Schwarzbeck | SUCOFLEX 105 | 351530 | May 27, 2017 | 1 Year |

1.7. Measurement Uncertainty

The reported uncertainty of measurement $y \pm U$, where expanded uncertainty U is based on a standard uncertainty multiplied by a coverage factor of $k=2$, providing a level of confidence of approximately 95 %.

Maximum measurement uncertainty

| Parameter | Uncertainty |
|-----------------------------------|--------------------------------|
| Occupied Channel Bandwidth | $\pm 5 \%$ |
| RF output power, conducted | $\pm 1,5 \text{ dB}$ |
| Power Spectral Density, conducted | $\pm 3 \text{ dB}$ |
| Unwanted Emissions, conducted | $\pm 3 \text{ dB}$ |
| All emissions, radiated | $\pm 6 \text{ dB}$ |
| Temperature | $\pm 1 \text{ }^\circ\text{C}$ |
| Humidity | $\pm 5 \%$ |
| DC and low frequency voltages | $\pm 3 \%$ |
| Time | $\pm 5 \%$ |
| Duty Cycle | $\pm 5 \%$ |

1.8. Description of Test Facility

The test facility is recognized, certified, or accredited by the following organizations:

FCC-Registration No.: 752021

Shenzhen Anbotek Compliance Laboratory Limited, EMC Laboratory has been registered and fully described in a report filed with the (FCC) Federal Communications Commission. The acceptance letter from the FCC is maintained in our files. Registration 752021, July 06, 2016.

IC-Registration No.: 8058A-1

Shenzhen Anbotek Compliance Laboratory Limited., EMC Laboratory has been registered and fully described in a report filed with the (IC) Industry Canada. The acceptance letter from the IC is maintained in our files. Registration 8058A, June 13, 2016.

Test Location

All Emissions tests were performed at Shenzhen Anbotek Compliance Laboratory Limited, at 1/F., Building 1, SEC Industrial Park, No.0409 Qianhai Road, Nanshan District, Shenzhen, Guangdong, China

2. Summary of Test Results

| FCC Rules | Description of Test | Result |
|--|--|------------|
| §2.1046; § 22.913(a); § 24.232(c); | RF Output Power | Compliance |
| § 24.232 (d); | Peak-Average Ratio | Compliance |
| § 2.1047 | Modulation Characteristics | 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 |

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

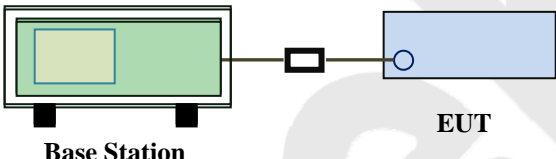
3. MEASUREMENTS, EXAMINATION AND DERIVED RESULTS

3.1 RF Output Power

| | |
|----------------------|----------|
| Temperature | 25°C |
| Relative Humidity | 60% |
| Atmospheric Pressure | 1011mbar |

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 style="text-align: center;">Base Station EUT</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-radiating cable. The absolute levels of the spurious emissions were measured by the substitution. - Spurious emissions in dB = 10 log (TX power in Watts/0.001) – the absolute level - Spurious attenuation limit in dB = 43 + 10 Log10 (power out in Watts). |
|----------------|---|

| | |
|--------|--|
| Remark | |
|--------|--|

| | |
|--------|------|
| Result | PASS |
|--------|------|

Conducted Power

UMTS Mode:

UMTS-FDD Band V

| Band/ Time Slot configuration | Channel | Frequency | Average power (dBm) |
|-------------------------------|---------|-----------|---------------------|
| RMC 12.2kbps | 4132 | 826.4 | 22.63 |
| | 4183 | 836.6 | 22.43 |
| | 4233 | 846.6 | 22.62 |
| HSDPA Subtest1 | 4132 | 826.4 | 22.55 |
| | 4183 | 836.6 | 22.54 |
| | 4233 | 846.6 | 22.57 |
| HSDPA Subtest2 | 4132 | 826.4 | 22.57 |
| | 4183 | 836.6 | 22.43 |
| | 4233 | 846.6 | 22.67 |
| HSDPA Subtest3 | 4132 | 826.4 | 22.52 |
| | 4183 | 836.6 | 22.62 |
| | 4233 | 846.6 | 22.35 |
| HSDPA Subtest4 | 4132 | 826.4 | 22.47 |
| | 4183 | 835.0 | 22.64 |
| | 4233 | 846.6 | 22.57 |
| HSUPA Subtest1 | 4132 | 826.4 | 22.63 |
| | 4183 | 836.6 | 22.42 |
| | 4233 | 846.6 | 22.48 |
| HSUPA Subtest2 | 4132 | 826.4 | 22.43 |
| | 4183 | 836.6 | 22.61 |
| | 4233 | 846.6 | 22.49 |
| HSUPA Subtest3 | 4132 | 826.4 | 22.43 |
| | 4183 | 836.6 | 22.51 |
| | 4233 | 846.6 | 22.31 |
| HSUPA Subtest4 | 4132 | 826.4 | 22.34 |
| | 4183 | 836.6 | 22.57 |
| | 4233 | 846.6 | 22.32 |
| HSUPA Subtest5 | 4132 | 826.4 | 22.60 |
| | 4183 | 836.6 | 22.65 |
| | 4233 | 846.6 | 22.32 |

UMTS-FDD Band II

| Band/ Time Slot configuration | Channel | Frequency | Average power (dBm) |
|-------------------------------|---------|-----------|---------------------|
| RMC 12.2kbps | 9262 | 1852.4 | 21.42 |
| | 9400 | 1880.0 | 21.64 |
| | 9538 | 1907.6 | 21.54 |
| HSDPA Subtest1 | 9262 | 1852.4 | 21.49 |
| | 9400 | 1880.0 | 21.42 |
| | 9538 | 1907.6 | 21.56 |
| HSDPA Subtest2 | 9262 | 1852.4 | 21.52 |
| | 9400 | 1880.0 | 21.58 |
| | 9538 | 1907.6 | 21.49 |
| HSDPA Subtest3 | 9262 | 1852.4 | 21.45 |
| | 9400 | 1880.0 | 21.46 |
| | 9538 | 1907.6 | 21.47 |
| HSDPA Subtest4 | 9262 | 1852.4 | 21.46 |
| | 9400 | 1880.0 | 21.58 |
| | 9538 | 1907.6 | 21.55 |
| HSUPA Subtest1 | 9262 | 1852.4 | 21.55 |
| | 9400 | 1880.0 | 21.40 |
| | 9538 | 1907.6 | 21.57 |
| HSUPA Subtest2 | 9262 | 1852.4 | 21.50 |
| | 9400 | 1880.0 | 21.53 |
| | 9538 | 1907.6 | 21.41 |
| HSUPA Subtest3 | 9262 | 1852.4 | 21.56 |
| | 9400 | 1880.0 | 21.47 |
| | 9538 | 1907.6 | 21.41 |
| HSUPA Subtest4 | 9262 | 1852.4 | 21.41 |
| | 9400 | 1880.0 | 21.54 |
| | 9538 | 1907.6 | 21.53 |
| HSUPA Subtest5 | 9262 | 1852.4 | 21.46 |
| | 9400 | 1880.0 | 21.56 |
| | 9538 | 1907.6 | 21.57 |

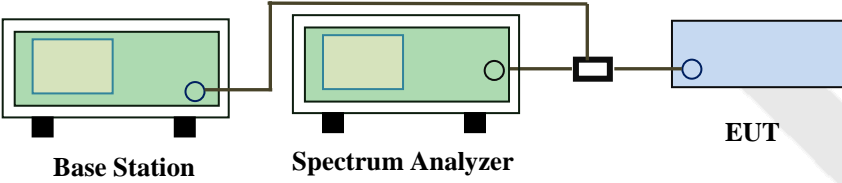
ERP & EIRP
ERP for UMTS-FDD Band V (Part 22H)

| Frequency (MHz) | Substituted level (dBm) | Antenna Polarization | Antenna Gain correction (dBi) | Cable Loss (dB) | Absolute Level (dBm) | Limit (dBm) |
|-----------------|-------------------------|----------------------|-------------------------------|-----------------|----------------------|-------------|
| 826.4 | 12.55 | V | 6.8 | 0.53 | 18.82 | 38.45 |
| 826.4 | 12.69 | H | 6.8 | 0.53 | 18.96 | 38.45 |
| 836.6 | 12.69 | V | 6.8 | 0.53 | 18.96 | 38.45 |
| 836.6 | 12.85 | H | 6.8 | 0.53 | 19.12 | 38.45 |
| 846.6 | 12.79 | V | 6.9 | 0.53 | 19.16 | 38.45 |
| 846.6 | 12.73 | H | 6.9 | 0.53 | 19.10 | 38.45 |

EIRP for UMTS-FDD Band II (Part 24E)

| Frequency (MHz) | Substituted level (dBm) | Antenna Polarization | Antenna Gain correction (dBi) | Cable Loss (dB) | Absolute Level (dBm) | Limit (dBm) |
|-----------------|-------------------------|----------------------|-------------------------------|-----------------|----------------------|-------------|
| 1852.4 | 10.92 | V | 7.88 | 0.85 | 17.95 | 33 |
| 1852.4 | 11.45 | H | 7.88 | 0.85 | 18.48 | 33 |
| 1880 | 11.04 | V | 7.88 | 0.85 | 18.07 | 33 |
| 1880 | 11.76 | H | 7.88 | 0.85 | 18.69 | 33 |
| 1907.6 | 10.98 | V | 7.86 | 0.85 | 17.99 | 33 |
| 1907.6 | 11.52 | H | 7.86 | 0.85 | 18.53 | 33 |

3.2 Peak-Average Ratio

| Temperature | 25°C | | |
|----------------------|---|---|-------------------------------------|
| Relative Humidity | 60% | | |
| Atmospheric Pressure | 1011mbar | | |
| 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>The diagram illustrates the test setup. On the left is a green box labeled 'Base Station'. A cable connects it to a central green box labeled 'Spectrum Analyzer'. Another cable connects the Spectrum Analyzer to a blue box on the right labeled 'EUT'. A small black box is positioned between the Spectrum Analyzer and the EUT, likely representing a coupler or attenuator.</p> | | |
| Test Procedure | <p>According with KDB 971168</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 | PASS | | |

WCDMA1900

| Frequency (MHz) | Peak-Average Ratio(PAR) |
|-----------------|-------------------------|
| 1852.4 | 3.14 |
| 1880 | 3.13 |
| 1907.6 | 2.91 |

WCDMA 850

| Frequency (MHz) | Peak-Average Ratio(PAR) |
|-----------------|-------------------------|
| 826.4 | 3.24 |
| 835.0 | 3.15 |
| 846.6 | 2.99 |

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3.3 Modulation Characteristic

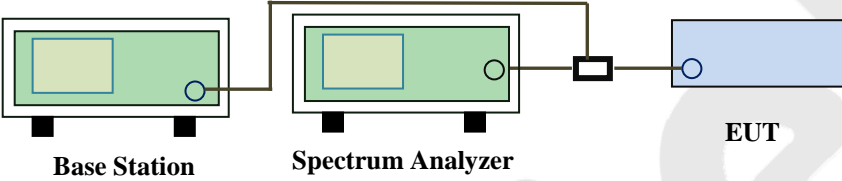
According to FCC § 2.1047(d), Part 22H, 24E there is no specific requirement for digital modulation, therefore modulation characteristic is not presented.

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3.4 Occupied Bandwidth

| | |
|----------------------|----------|
| Temperature | 25°C |
| Relative Humidity | 60% |
| Atmospheric Pressure | 1011mbar |

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>The diagram illustrates the test setup. On the left is a green box labeled 'Base Station'. A line connects it to a second green box labeled 'Spectrum Analyzer'. From the Spectrum Analyzer, a line goes to a small black square labeled 'Power Divider'. From the Power Divider, a line connects to a blue box labeled '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 | PASS | | |

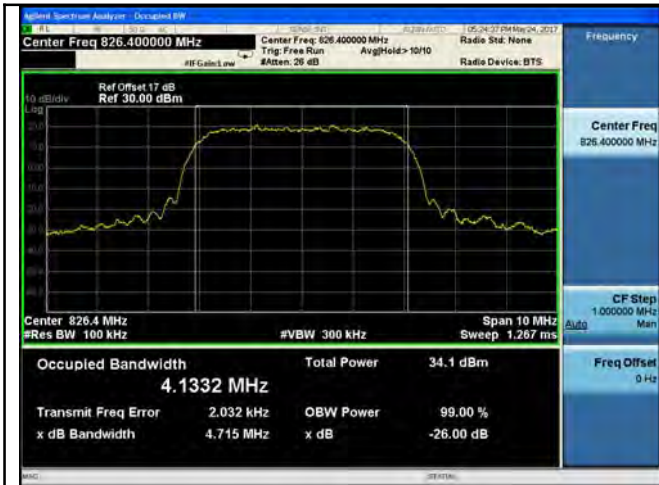
UMTS-FDD Band V (Part 22H)

| Channel | Frequency (MHz) | 99% Occupied Bandwidth (MHz) | 26 dB Bandwidth (MHz) |
|---------|-----------------|------------------------------|-----------------------|
| 4132 | 826.4 | 4.1332 | 4.715 |
| 4183 | 835.0 | 4.1366 | 4.711 |
| 4233 | 846.6 | 4.1194 | 4.690 |

UMTS-FDD Band II (Part 24E)

| Channel | Frequency (MHz) | 99% Occupied Bandwidth (MHz) | 26 dB Bandwidth (MHz) |
|---------|-----------------|------------------------------|-----------------------|
| 9262 | 1852.4 | 4.1417 | 4.715 |
| 9400 | 1880.0 | 4.1230 | 4.704 |
| 9538 | 1907.6 | 4.1448 | 4.722 |

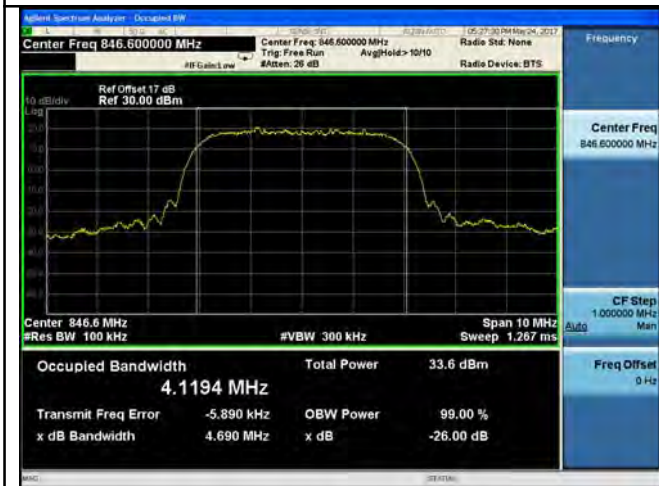
Test Plots



Band V BW - Low CH 826.6 MHz



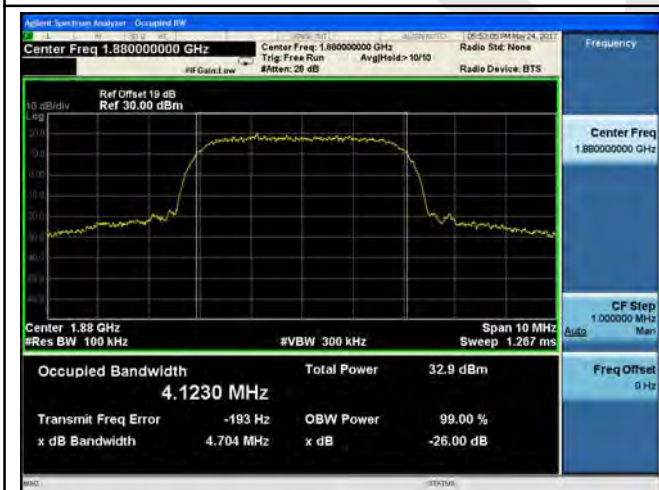
Band V BW - Mid CH 835.0 MHz



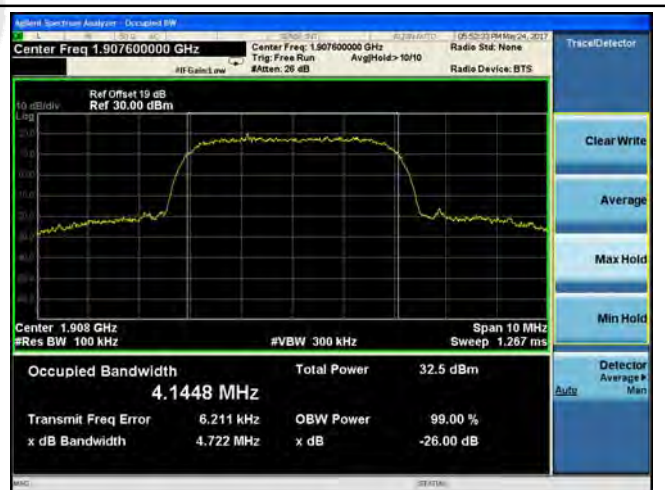
Band V BW - High CH 846.4 MHz



Band II BW - Low CH 1852.4MHz



Band II BW - Mid CH 1880MHz

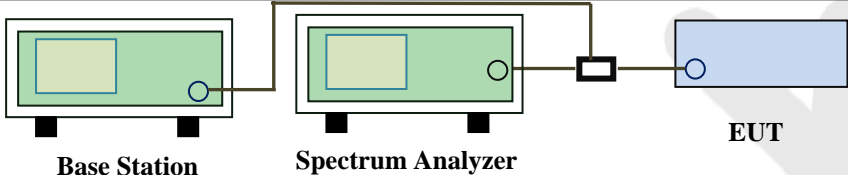


Band II BW - High CH 1907.6MHz

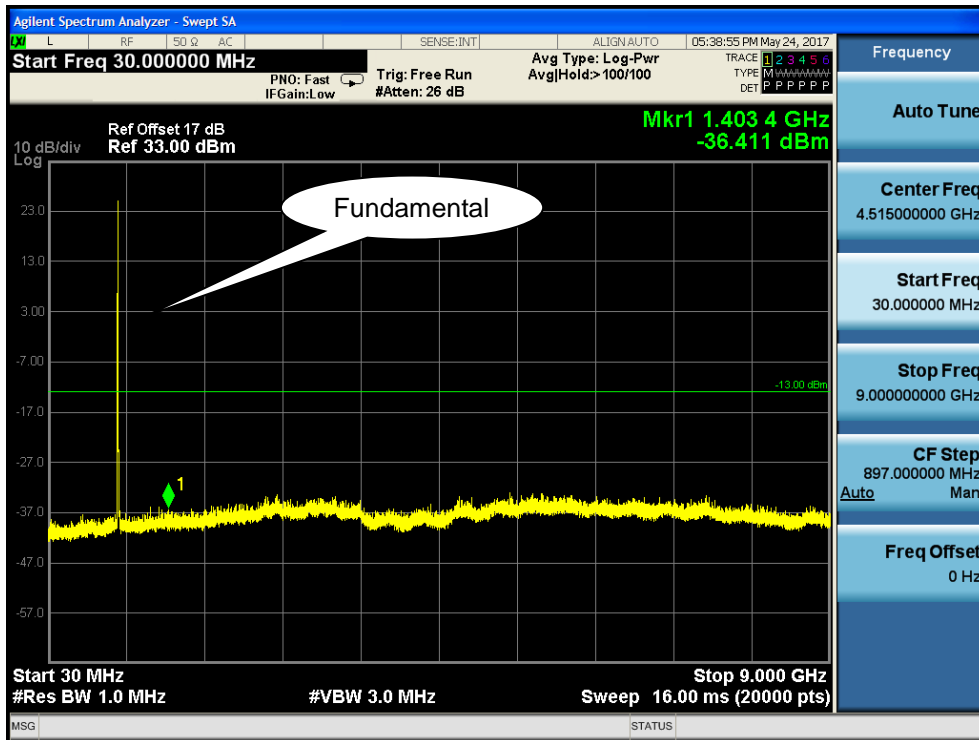
3.5 Spurious Emissions at Antenna Terminals

| | |
|----------------------|----------|
| Temperature | 25°C |
| Relative Humidity | 60% |
| Atmospheric Pressure | 1012mbar |

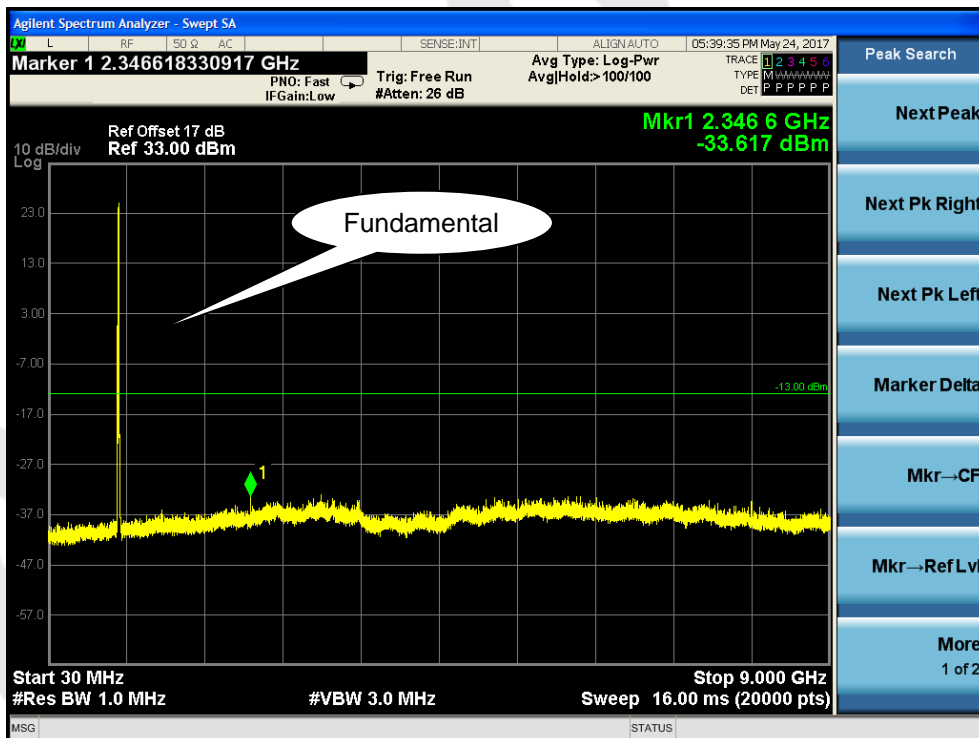
Requirement(s):

| 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>The diagram illustrates the test setup. On the left is a green box labeled 'Base Station'. In the middle is another green box labeled 'Spectrum Analyzer'. On the right is a blue box labeled 'EUT'. A power divider (represented by a small black square) is connected between the Spectrum Analyzer and the EUT. The Base Station is connected to the Spectrum Analyzer.</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 | PASS | | |

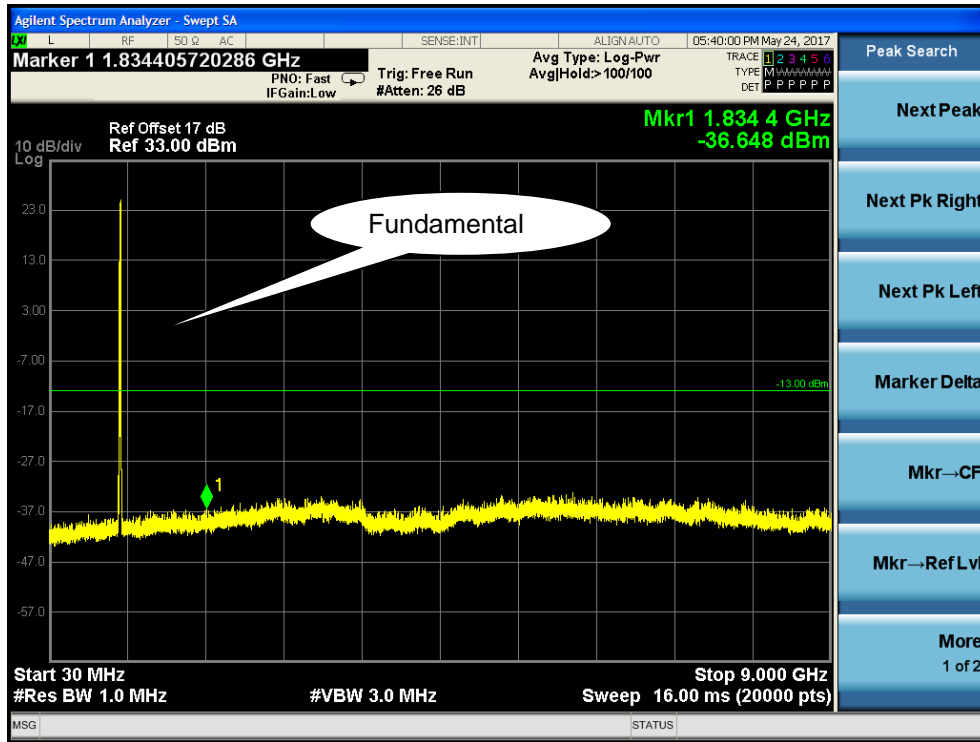
Test Plots
UMTS-FDD Band V (Part 22H)



Test Mode: Band V - Low Channel

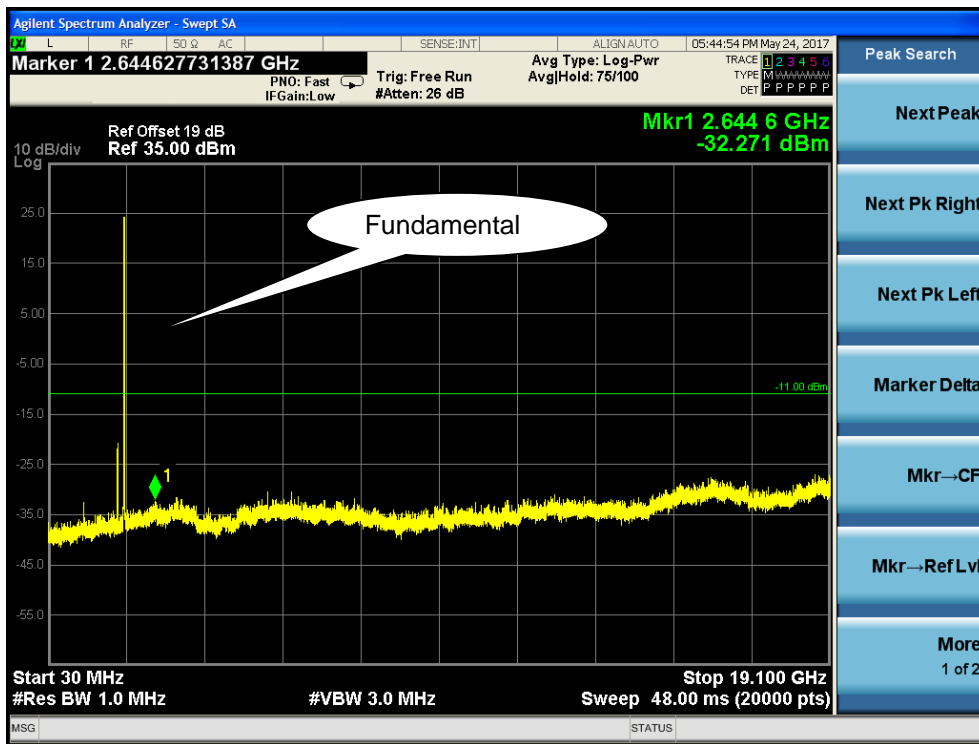


Test Mode: Band V - Middle Channel

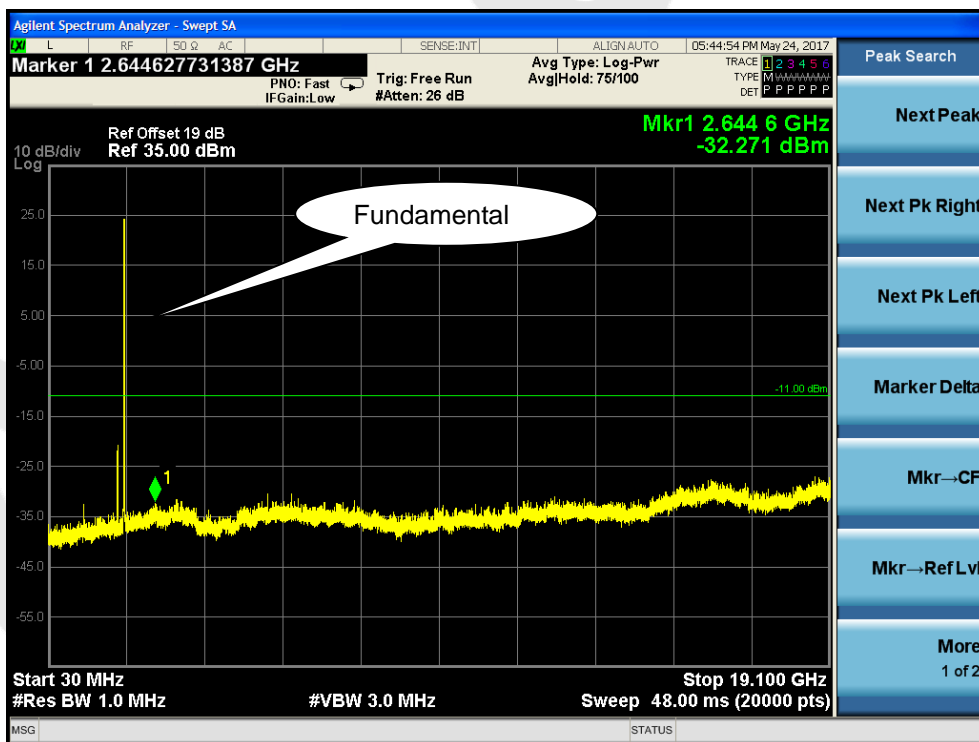


Test Mode: Band V - High Channel

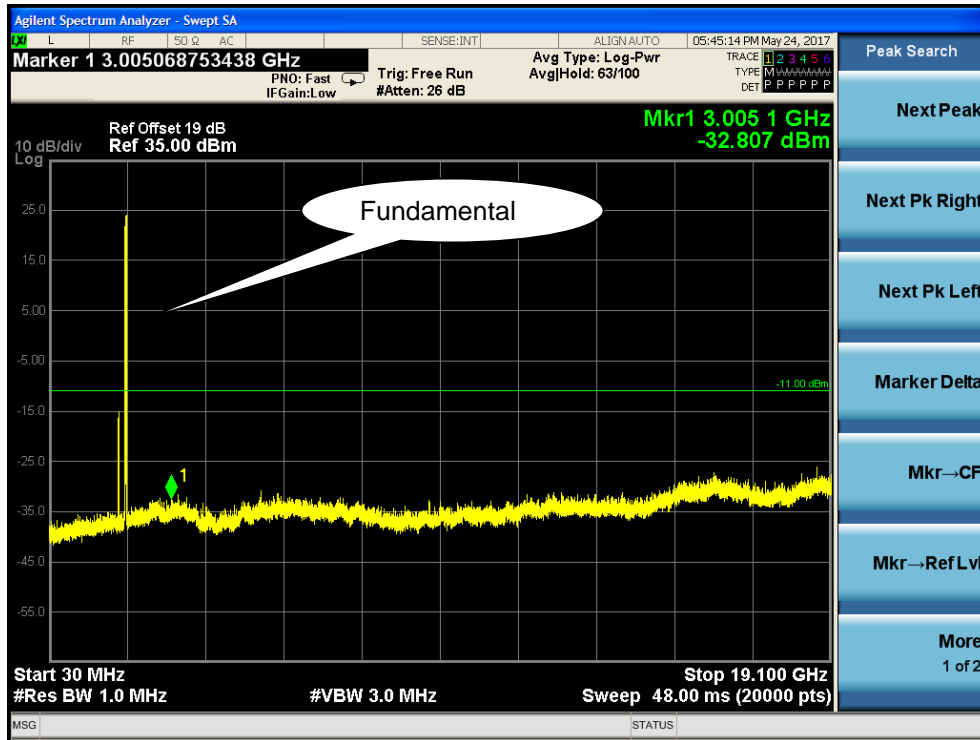
UMTS-FDD Band II (Part 24E)



Test Mode: Band II - Low Channel



Test Mode: Band II - Middle Channel



Test Mode: Band II - High Channel

3.6 Spurious Radiated Emissions

| | |
|----------------------|----------|
| Temperature | 23°C |
| Relative Humidity | 56% |
| Atmospheric Pressure | 1012mbar |

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. Sample Calculation: EUT Field Strength = Raw Amplitude (dBμV/m) – Amplifier Gain (dB) + Antenna Factor (dB) + Cable Loss (dB) + Filter Attenuation (dB, if used) | | |
| Remark | | | |
| Result | PASS | | |

UMTS-FDD Band V (Part 22H)

Low channel

| Frequency (MHz) | Substituted level (dBm) | Polarity (H/V) | Antenna Gain Correction (dB) | Cable Loss (dB) | Corrected Reading (dBm) | Limit (dBm) | Margin (dB) |
|-----------------|-------------------------|----------------|------------------------------|-----------------|-------------------------|-------------|-------------|
| 1652.8 | -46.75 | V | 7.95 | 0.78 | -39.58 | -13 | -26.58 |
| 1652.8 | -46.17 | H | 7.95 | 0.78 | -39.00 | -13 | -26.00 |
| 268.5 | -54.78 | V | 5.40 | 0.24 | -49.62 | -13 | -36.62 |
| 689.2 | -51.48 | H | 7.00 | 0.39 | -44.87 | -13 | -31.87 |

Middle channel

| Frequency (MHz) | Substituted level (dBm) | Polarity (H/V) | Antenna Gain Correction (dB) | Cable Loss (dB) | Corrected Reading (dBm) | Limit (dBm) | Margin (dB) |
|-----------------|-------------------------|----------------|------------------------------|-----------------|-------------------------|-------------|-------------|
| 1670 | -48.72 | V | 7.95 | 0.78 | -41.55 | -13 | -28.55 |
| 1670 | -47.26 | H | 7.95 | 0.78 | -40.09 | -13 | -27.09 |
| 269.4 | -54.57 | V | 5.40 | 0.24 | -49.41 | -13 | -36.41 |
| 689.6 | -51.67 | H | 7.00 | 0.39 | -45.06 | -13 | -32.06 |

High channel

| Frequency (MHz) | Substituted level (dBm) | Polarity (H/V) | Antenna Gain Correction (dB) | Cable Loss (dB) | Corrected Reading (dBm) | Limit (dBm) | Margin (dB) |
|-----------------|-------------------------|----------------|------------------------------|-----------------|-------------------------|-------------|-------------|
| 1693.2 | -48.73 | V | 7.95 | 0.78 | -41.56 | -13 | -28.56 |
| 1693.2 | -47.38 | H | 7.95 | 0.78 | -40.21 | -13 | -27.21 |
| 267.2 | -54.83 | V | 5.40 | 0.24 | -49.67 | -13 | -36.67 |
| 684.4 | -51.72 | H | 7.00 | 0.39 | -45.11 | -13 | -32.11 |

UMTS-FDD Band II (Part 24E)

Low channel

| Frequency (MHz) | Substituted level (dBm) | Polarity (H/V) | Antenna Gain Correction (dB) | Cable Loss (dB) | Corrected Reading (dBm) | Limit (dBm) | Margin (dB) |
|-----------------|-------------------------|----------------|------------------------------|-----------------|-------------------------|-------------|-------------|
| 3704.8 | -48.55 | V | 10.25 | 2.73 | -41.03 | -13 | -28.03 |
| 3704.8 | -50.02 | H | 10.25 | 2.73 | -42.5 | -13 | -29.50 |
| 269.5 | -54.19 | V | 5.40 | 0.24 | -49.03 | -13 | -36.03 |
| 690.2 | -51.62 | H | 7.00 | 0.39 | -45.01 | -13 | -32.01 |

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 | -48.66 | V | 10.25 | 2.73 | -41.14 | -13 | -28.14 |
| 3760 | -50.31 | H | 10.25 | 2.73 | -42.79 | -13 | -29.79 |
| 270.6 | -55.06 | V | 5.40 | 0.24 | -49.9 | -13 | -36.90 |
| 690.3 | -51.27 | H | 7.00 | 0.39 | -44.66 | -13 | -31.66 |

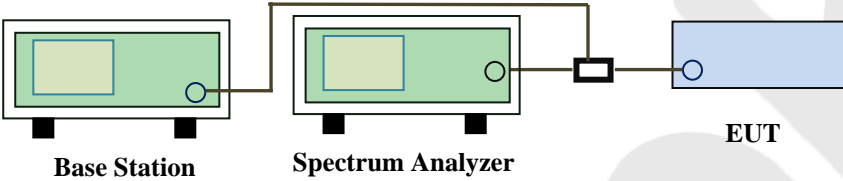
High channel

| Frequency (MHz) | Substituted level (dBm) | Polarity (H/V) | Antenna Gain Correction (dB) | Cable Loss (dB) | Corrected Reading (dBm) | Limit (dBm) | Margin (dB) |
|-----------------|-------------------------|----------------|------------------------------|-----------------|-------------------------|-------------|-------------|
| 3815.2 | -48.42 | V | 10.36 | 2.73 | -40.79 | -13 | -27.79 |
| 3815.2 | -49.72 | H | 10.36 | 2.73 | -42.09 | -13 | -29.09 |
| 270.7 | -55.64 | V | 5.40 | 0.24 | -50.48 | -13 | -37.48 |
| 689.1 | -49.21 | H | 7.00 | 0.39 | -42.6 | -13 | -29.60 |

3.7 Band Edge

| | |
|----------------------|----------|
| Temperature | 21°C |
| Relative Humidity | 56% |
| Atmospheric Pressure | 1010mbar |

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. On the left is a green box labeled 'Base Station'. In the middle is a green box labeled 'Spectrum Analyzer'. On the right is a blue box labeled 'EUT'. A power divider is connected between the Spectrum Analyzer and the EUT. The Base Station is connected to the Spectrum Analyzer.</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 | PASS | | |

UMTS-FDD Band V (Part 22H)

| Frequency (MHz) | Emission (dBm) | Limit (dBm) |
|-----------------|----------------|-------------|
| 824 | -19.058 | -13 |
| 849 | -21.016 | -13 |

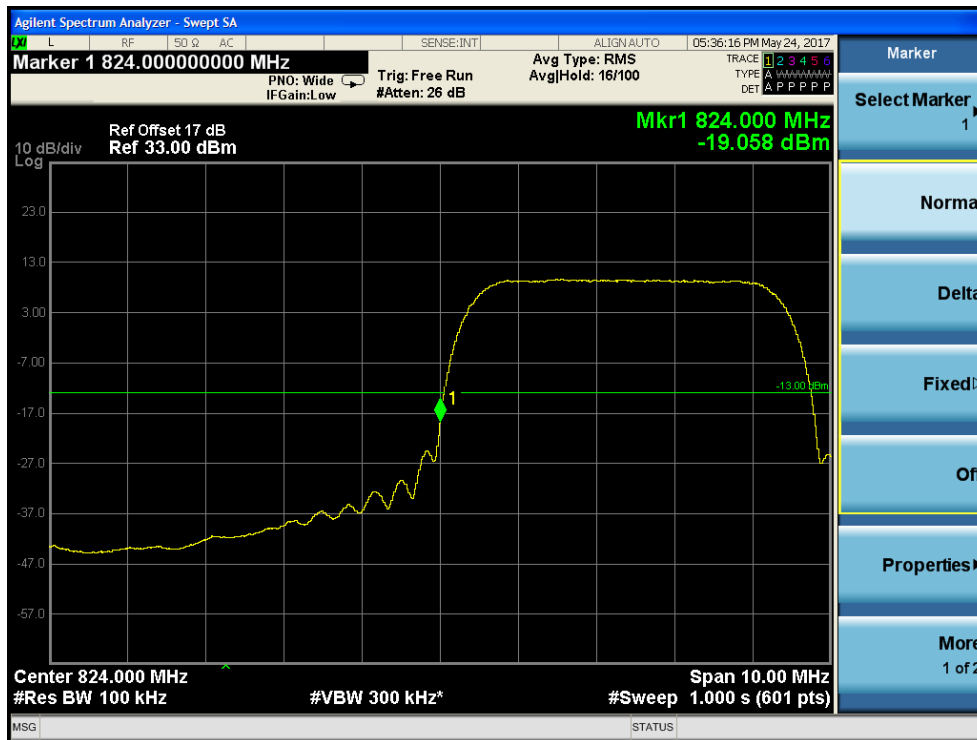
UMTS-FDD Band II (Part 24E)

| Frequency (MHz) | Emission (dBm) | Limit (dBm) |
|-----------------|----------------|-------------|
| 1850 | -19.521 | -13 |
| 1910 | -21.016 | -13 |

Anbotek

Test Plots

UMTS-FDD Band V (Part 22H)



Test Mode: Band V - Low Channel



Test Mode: Band V - High Channel

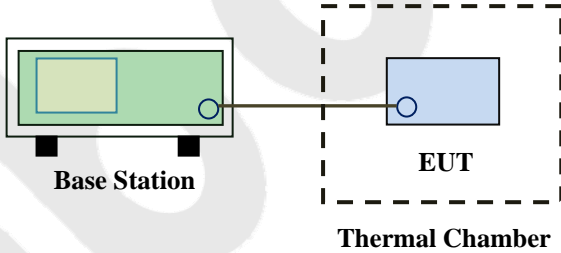
UMTS-FDD Band II (Part 24E)



3.8 Frequency Stability

| | |
|----------------------|----------|
| Temperature | 25°C |
| Relative Humidity | 56% |
| Atmospheric Pressure | 1010mbar |

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: 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 512</td> <td>2.5</td> <td>5.0</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 29.</td> <td>.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 512 | 2.5 | 5.0 | 5.0 | 821 to 896 | 1.5 | 2.5 | 2.5 | 928 to 29. | .0 | N/A | N/A | 929 to 960. | 1.5 | N/A | N/A | 2110 to 2220 | 10.0 | N/A | N/A | <input checked="" type="checkbox"/> |
| 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 512 | 2.5 | 5.0 | 5.0 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 821 to 896 | 1.5 | 2.5 | 2.5 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 928 to 29. | .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 labeled 'Base Station' is shown. A line connects it to a blue rectangular box labeled 'EUT' (Equipment Under Test) which is enclosed within a dashed-line rectangular box labeled 'Thermal Chamber'.</p> | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Procedure | | <p>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 ±0.00025% (±2.5ppm) of the center frequency.</p> | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Remark | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Result | | PASS | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

UMTS-FDD Band V (Part 22H)

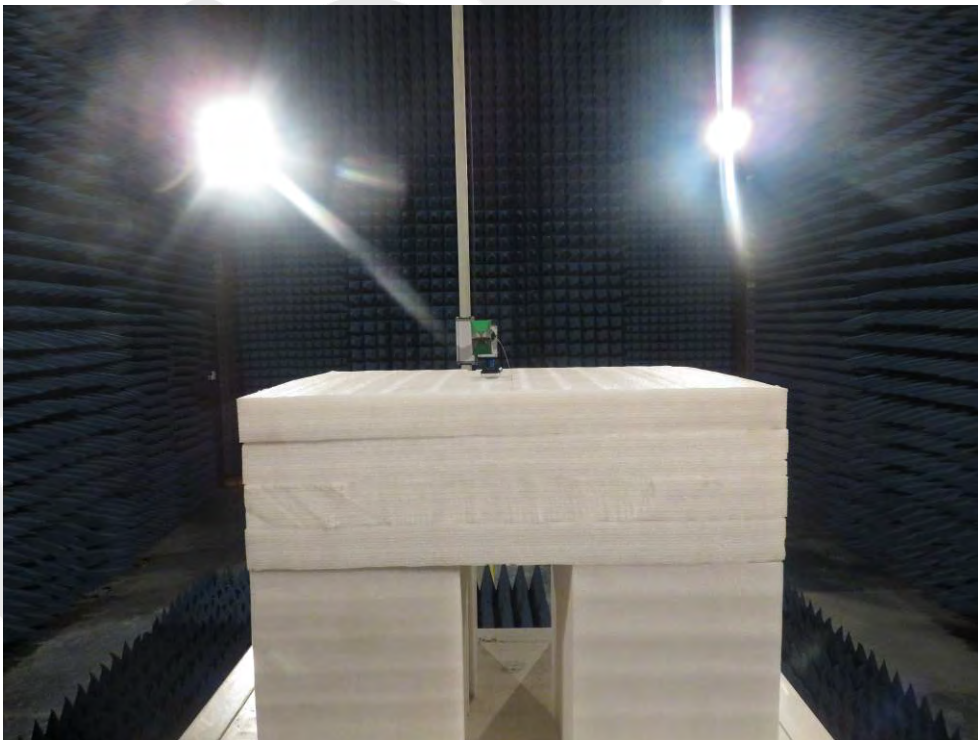
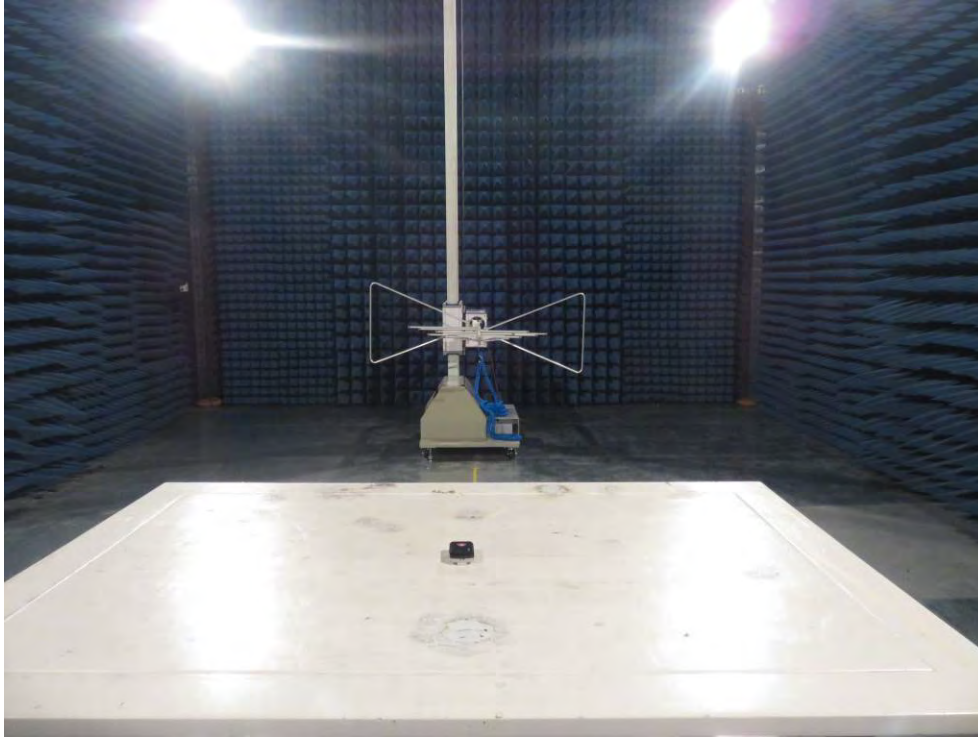
| Middle Channel, $f_0 = 835$ MHz | | | | |
|---------------------------------|-----------------------------------|----------------------|-----------------------|-------------|
| Temperature (°C) | Power Supplied (V _{DC}) | Frequency Error (Hz) | Frequency Error (ppm) | Limit (ppm) |
| -10 | 3.7 | 17 | 0.0204 | 2.5 |
| 0 | | 15 | 0.0180 | 2.5 |
| 10 | | 11 | 0.0132 | 2.5 |
| 20 | | 10 | 0.0120 | 2.5 |
| 30 | | 13 | 0.0156 | 2.5 |
| 40 | | 15 | 0.0180 | 2.5 |
| 50 | | 21 | 0.0251 | 2.5 |
| 55 | | 23 | 0.0275 | 2.5 |
| 25 | 4.2 | 18 | 0.0216 | 2.5 |
| | 3.5 | 15 | 0.0180 | 2.5 |

UMTS-FDD Band II (Part 24E)

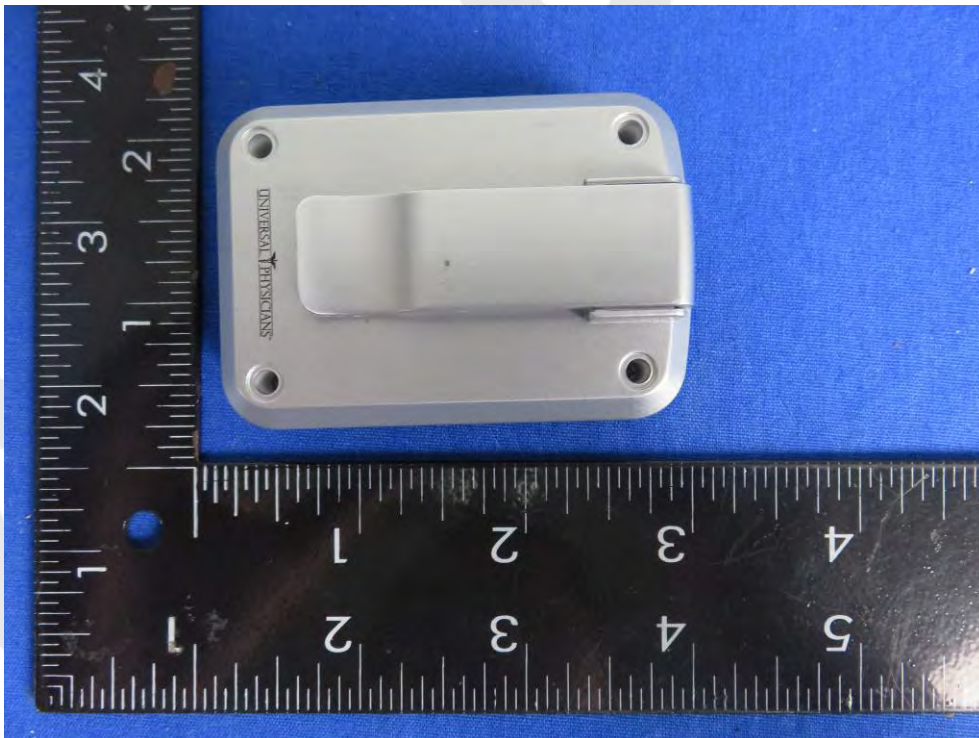
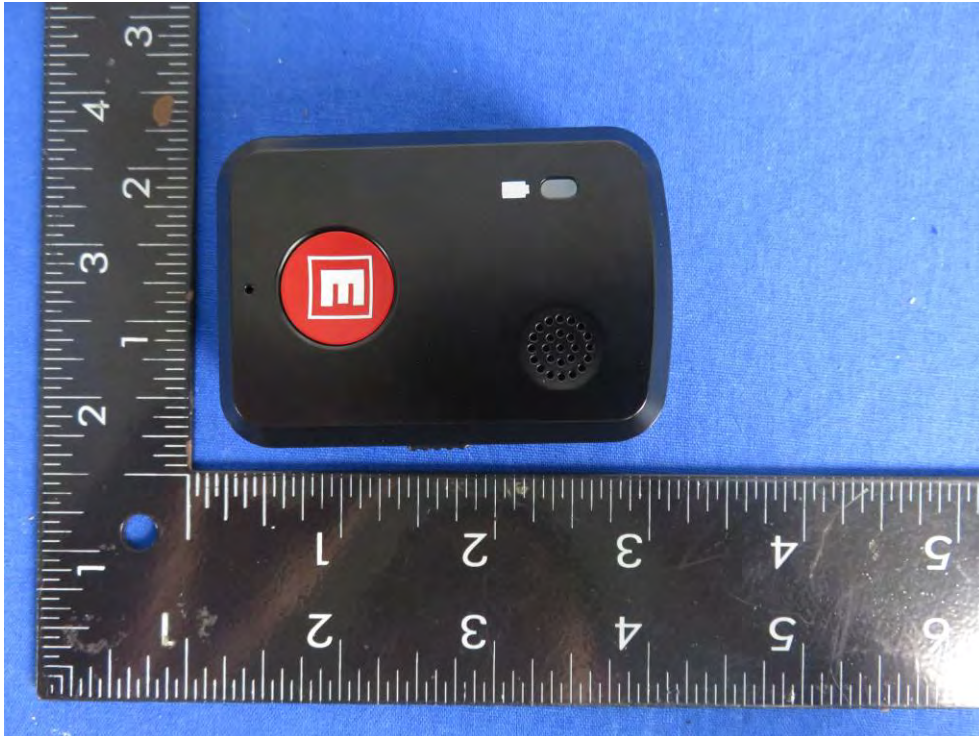
| Middle Channel, $f_0 = 1880$ MHz | | | | |
|----------------------------------|-----------------------------------|----------------------|-----------------------|-------------|
| Temperature (°C) | Power Supplied (V _{DC}) | Frequency Error (Hz) | Frequency Error (ppm) | Limit (ppm) |
| -10 | 3.7 | 15 | 0.0080 | 2.5 |
| 0 | | 12 | 0.0064 | 2.5 |
| 10 | | 8 | 0.0043 | 2.5 |
| 20 | | 5 | 0.0027 | 2.5 |
| 30 | | 7 | 0.0037 | 2.5 |
| 40 | | 13 | 0.0069 | 2.5 |
| 50 | | 15 | 0.0080 | 2.5 |
| 55 | | 20 | 0.0106 | 2.5 |
| 25 | 4.2 | 9 | 0.0048 | 2.5 |
| | 3.5 | 11 | 0.0059 | 2.5 |

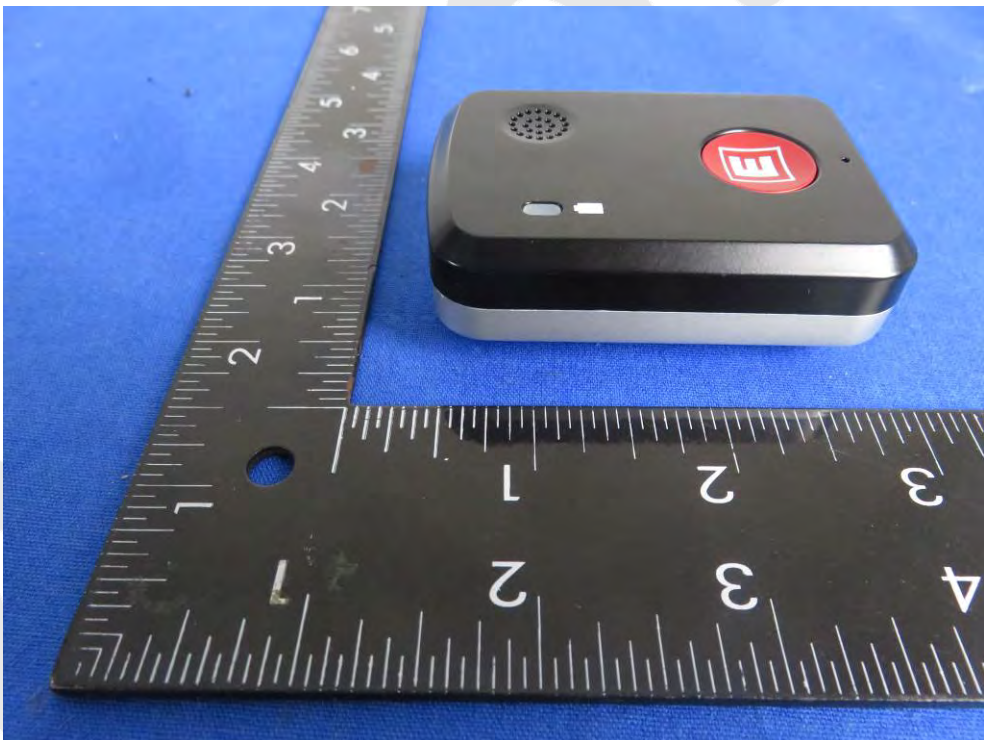
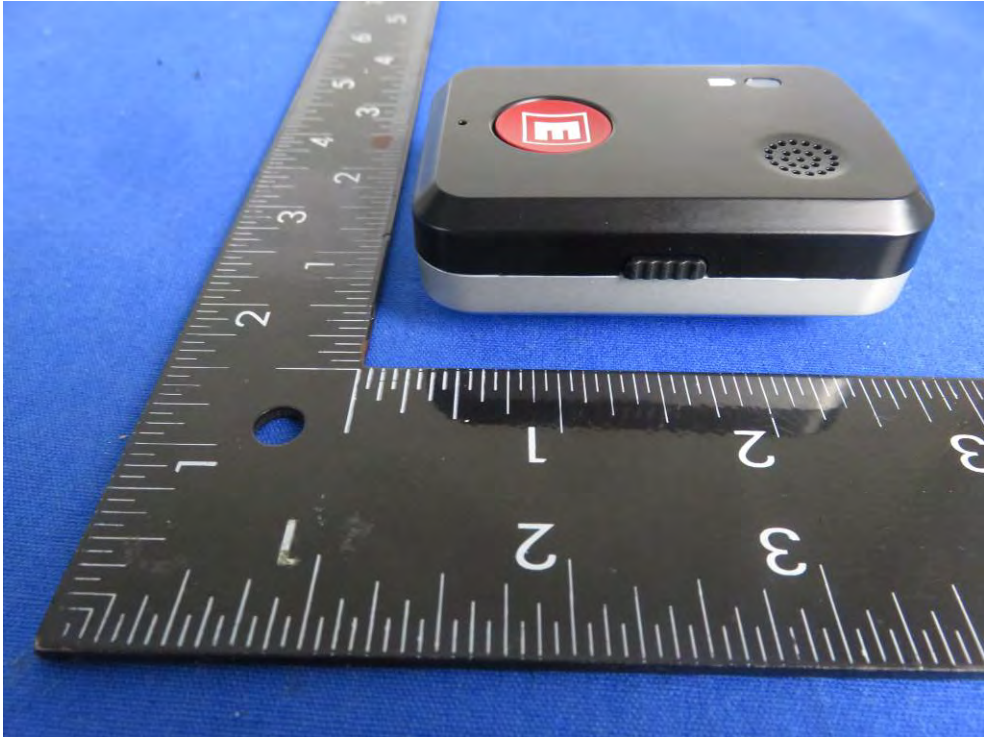
APPENDIX I -- TEST SETUP PHOTOGRAPH

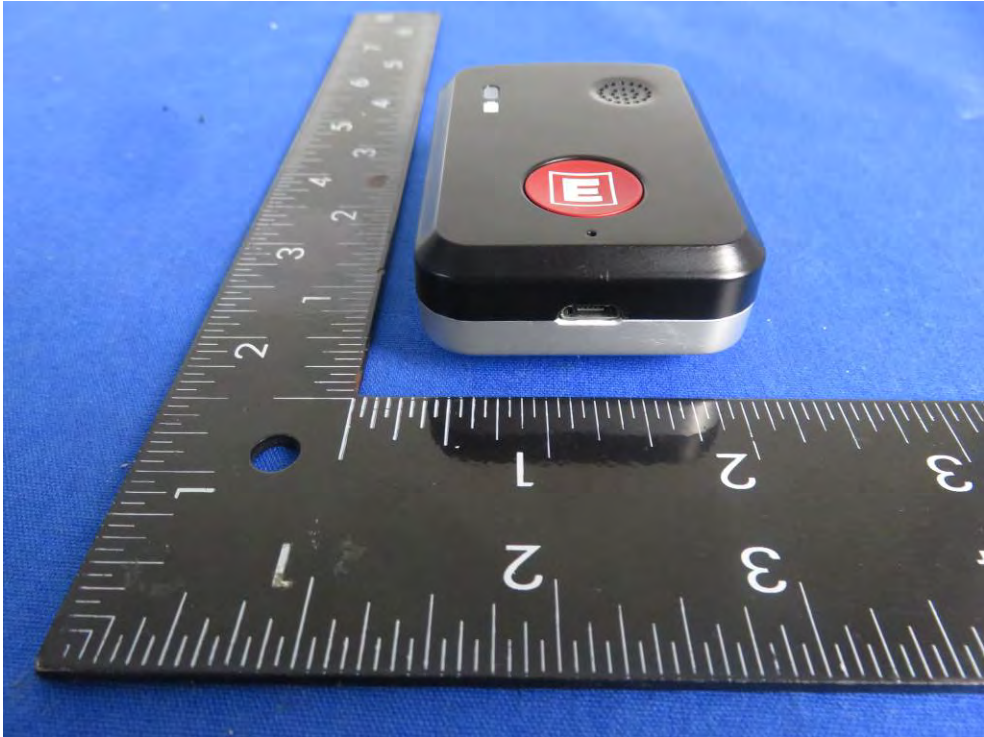
Photo of Radiation Emission Test



APPENDIX II -- EXTERNAL PHOTOGRAPH







APPENDIX III -- INTERNAL PHOTOGRAPH

