



**FCC PART 22H, PART 24E
MEASUREMENT AND TEST REPORT**

For

Amgoo Telecom Co., Ltd.

3/F, Block R2-A (North), Gaoxin S.Ave.4th, Hi-Tech Industrial Park, Nanshan District, Shenzhen,
China

FCC ID: UOSAM86B

| | |
|---|--------------------------------------|
| Report Type: Original Report | Product Type: Mobile phone |
| Report Number: <u>RSZ170815001-00C</u> | |
| Report Date: <u>2017-08-24</u> | |
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GENERAL INFORMATION

Product Description for Equipment under Test (EUT)

The *Amgoo Telecom Co., Ltd.*'s product, model number: *AM86 (FCC ID: UOSAM86B)* or the "EUT" in this report was a *Mobile phone*, which was measured approximately: 14.3 cm (L) × 7.1 cm (W) × 0.8 cm (H), rated with input voltage: DC 3.7 V battery or DC 5V from adapter.

Adapter Information:

Model: CH3

Input: AC 100-240V, 50/60Hz, 0.15A

Output: DC 5V, 500 mA

**All measurement and test data in this report was gathered from production sample serial number: 1701930 (Assigned by applicant). The EUT supplied by the applicant was received on 2017-08-15.*

Objective

This type approval report is prepared on behalf of *Amgoo Telecom Co., Ltd.* in accordance with Part 2, Part 22-Subpart H, Part 24-Subpart E of the Federal Communication Commission's rules.

The objective is to determine the compliance of EUT with FCC rules for output power, modulation characteristic, occupied bandwidth, and spurious emission at antenna terminal, spurious radiated emission, frequency stability, and band edge.

Related Submittal(s)/Grant(s)

FCC Part 15B JBP, Part 15.247 DSS submissions with FCC ID: UOSAM86BB.

Test Methodology

All tests and measurements indicated in this document were performed in accordance with the Code of Federal Regulations Title 47 Part 2, Sub-Part J as well as the following parts:

Part 22 Subpart H - Public Mobile Services

Part 24 Subpart E - Personal Communication Services

Applicable Standards: TIA/EIA 603-D.

All emissions measurement was performed at Bay Area Compliance Laboratories Corp. (Shenzhen). The radiated testing was performed at an antenna-to-EUT distance of 3 meters.

Measurement Uncertainty

| Parameter | uncertainty |
|------------------------------|-------------|
| Occupied Channel Bandwidth | ±5% |
| RF output power, conducted | ±1.5dB |
| Unwanted Emission, conducted | ±1.5dB |
| All emissions, radiated | ±4.88dB |
| Temperature | ±1 °C |
| Supply voltages | ±0.4% |

Test Facility

The Test site used by Bay Area Compliance Laboratories Corp. (Shenzhen) to collect test data is located on the 6/F., West Wing, Third Phase of Wanli Industrial Building, Shihua Road, Futian Free Trade Zone, Shenzhen, Guangdong, China.

Bay Area Compliance Laboratories Corp. (Shenzhen) has been accredited to ISO/IEC 17025 by CNAS(Lab code: L2408). And accredited to ISO/IEC 17025 by NVLAP(Lab code: 200707-0), the FCC Designation No. CN5001 under the KDB 974614 D01.

The Federal Communications Commission has the reports on file and is listed under FCC Registration No.: 382179. The test site has been approved by the FCC for public use and is listed in the FCC Public Access Link (PAL) database.

Bay Area Compliance Laboratories Corp. (Shenzhen) was registered with ISED Canada under ISED Canada Registration Number 3062B.

SYSTEM TEST CONFIGURATION

Justification

The EUT was configured for testing according to TIA/EIA-603-D.

The final qualification test was performed with the EUT operating at normal mode.

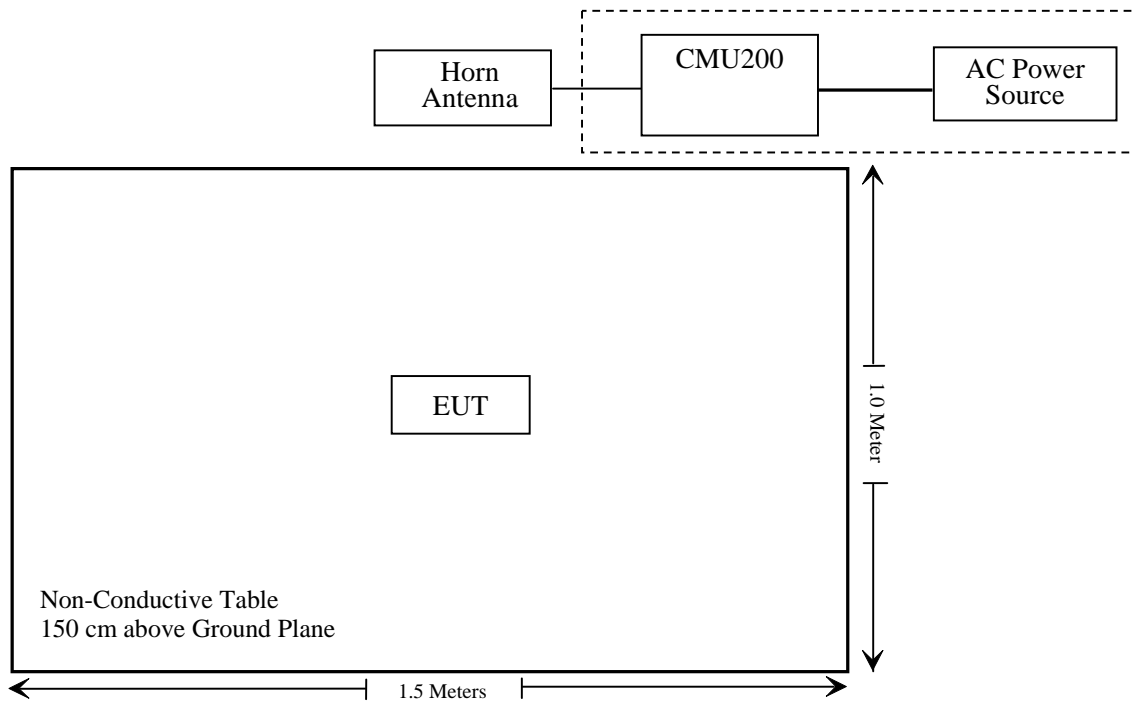
Equipment Modifications

No modifications were made to the EUT.

Support Equipment List and Details

| Manufacturer | Description | Model | Serial Number |
|-----------------|--------------------------------------|--------|---------------|
| Rohde & Schwarz | Universal Radio Communication Tester | CMU200 | 106891 |

Block Diagram of Test Setup



SUMMARY OF TEST RESULTS

| FCC Rules | Description of Test | Result |
|--|--|----------------|
| §1.1307, §2.1093 | RF Exposure Information | Compliance* |
| §2.1046; § 22.913 (a); § 24.232 (c) | RF Output Power | Compliance |
| § 2.1047 | Modulation Characteristics | Not Applicable |
| § 2.1049; § 22.905 § 22.917; § 24.238 | 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) | Spurious Radiated Emissions | Compliance |
| § 22.917 (a); § 24.238 (a) | Band Edge | Compliance |
| § 2.1055 § 22.355; § 24.235 | Frequency stability | Compliance |

Compliance*: Please refer to SAR report released by BACL, report number: RSZ170815001-20.

TEST EQUIPMENT LIST

| Manufacturer | Description | Model | Serial Number | Calibration Date | Calibration Due Date |
|-------------------------------|-------------------------------------|-----------------------|------------------------|------------------|----------------------|
| Radiated Emission Test | | | | | |
| Sunol Sciences | Horn Antenna | DRH-118 | A052604 | 2014-12-29 | 2017-12-28 |
| Rohde & Schwarz | Signal Generator | FSIQ26 | 8386001028 | 2017-04-24 | 2018-04-24 |
| Sunol Sciences | Bi-log Antenna | JB1 | A040904-2 | 2014-12-17 | 2017-12-16 |
| Mini | Pre-amplifier | ZVA-183-S+ | 5969001149 | 2017-02-14 | 2018-02-14 |
| HP | Amplifier | HP8447E | 1937A01046 | 2017-05-21 | 2017-11-19 |
| Rohde & Schwarz | EMI Test Receiver | ESCI | 101120 | 2016-12-07 | 2017-12-07 |
| COM POWER | Dipole Antenna | AD-100 | 041000 | NCR | NCR |
| A.H. System | Horn Antenna | SAS-200/571 | 135 | 2015-08-18 | 2018-08-17 |
| R & S | Wideband Radio Communication Tester | CMW500 | 146520 | 2017-02-14 | 2018-02-14 |
| Ducommun technologies | RF Cable | UFA210A-1-4724-30050U | MFR64369 223410-001 | 2017-05-21 | 2017-11-19 |
| Ducommun technologies | RF Cable | 104PEA | 218124002 | 2017-05-21 | 2017-11-19 |
| Ducommun technologies | RF Cable | RG-214 | 1 | 2017-05-21 | 2017-11-19 |
| Ducommun technologies | RF Cable | RG-214 | 2 | 2017-05-22 | 2017-11-22 |
| Ducommun Technologies | Horn Antenna | ARH-4223-02 | 1007726-04 | 2014-12-29 | 2017-12-28 |
| Ducommun technologies | Horn Antenna | ARH-4223-02 | 1007726-03 | 2014-12-29 | 2017-12-28 |
| Ducommun technologies | Pre-amplifier | ALN-22093530-01 | 991373-01 | 2017-08-03 | 2018-08-03 |
| RF Conducted Test | | | | | |
| Rohde & Schwarz | Signal Analyzer | FSIQ26 | 837405/023 | 2017-04-24 | 2018-04-24 |
| Rohde & Schwarz | SPECTRUM ANALYZER | FSU26 | 200120 | 2016-12-05 | 2017-12-05 |
| ESPEC | Temperature & Humidity Chamber | EL-10KA | 09107726 | 2016-11-22 | 2017-11-22 |
| Long Wei | DC Power Supply | TPR-6420D | 398363 | NCR | NCR |
| Aglient | ESG Vector Signal Generator | E4438C | MY42080875 | 2017-05-09 | 2018-05-09 |
| Rohde & Schwarz | Wideband Radio Communication Tester | CMU200 | 106891 | 2016-10-18 | 2017-10-18 |
| Ducommun technologies | RF Cable | RG-214 | 3 | 2017-05-22 | 2017-11-22 |
| WEINSCHL | 10dB Attenuator | 5324 | AU0709 | 2017-06-15 | 2018-06-15 |
| Fluke | Digital Multimeter | 287 | 19000011 | 2017-04-09 | 2018-04-09 |

* **Statement of Traceability:** Bay Area Compliance Laboratories Corp. (Shenzhen) attests that all calibrations have been performed in accordance to requirements that traceable to National Primary Standards and International System of Units (SI).

FCC §1.1307(b) & §2.1093 - RF EXPOSURE INFORMATION

Applicable Standard

FCC§1.1307, §2.1093.

Test Result

Compliance, please refer to the SAR report: RSZ170815001-20.

FCC §2.1047 - 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.

§2.1046; § 22.913 (a); § 24.232 (c) - RF OUTPUT POWER

Applicable Standards

According to FCC §2.1046 and §22.913 (a), the ERP of mobile transmitters and auxiliary test transmitters must not exceed 7 watts.

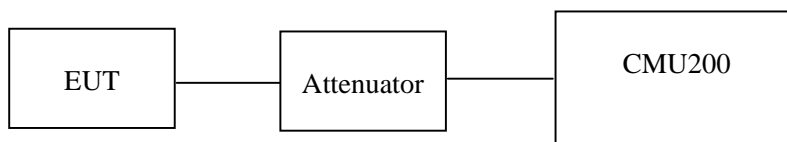
According to FCC §2.1046 and §24.232 (c), mobile and portable stations are limited to 2 watts EIRP and the equipment must employ a means for limiting power to the minimum necessary for successful communications.

The peak-to-average power ratio (PAPR) of the transmitter output power must not exceed 13 dB.

Test Procedure

Conducted method:

The RF output of the transmitter was connected to the CMU200 through sufficient attenuation.



Radiated method:

TIA603-D section 2.2.17

Test Data

Environmental Conditions

| | |
|---------------------------|-----------|
| Temperature: | 25 °C |
| Relative Humidity: | 55 % |
| ATM Pressure: | 101.0 kPa |

The testing was performed by Hill He on 2017-08-22.

Conducted Power**Cellular Band (Part 22H)**

| Mode | Channel | Frequency (MHz) | Average Output Power (dBm) | Limit (dBm) |
|------|---------|-----------------|----------------------------|-------------|
| GSM | 128 | 824.2 | 32.97 | 38.45 |
| | 190 | 836.6 | 32.77 | 38.45 |
| | 251 | 848.8 | 32.81 | 38.45 |

| Mode | Channel | Frequency (MHz) | Average Output Power (dBm) | | | | Limit (dBm) |
|------|---------|-----------------|----------------------------|---------|---------|---------|-------------|
| | | | 1 slot | 2 slots | 3 slots | 4 slots | |
| GPRS | 128 | 824.2 | 32.98 | 30.95 | 29.03 | 26.88 | 38.45 |
| | 190 | 836.6 | 32.79 | 31.09 | 29.21 | 26.98 | 38.45 |
| | 251 | 848.8 | 32.81 | 31.22 | 29.33 | 27.15 | 38.45 |

PCS Band (Part 24E)

| Mode | Channel | Frequency (MHz) | Average Output Power (dBm) | Limit (dBm) |
|------|---------|-----------------|----------------------------|-------------|
| GSM | 512 | 1850.2 | 29.48 | 33 |
| | 661 | 1880.0 | 29.50 | 33 |
| | 810 | 1909.8 | 29.70 | 33 |

| Mode | Channel | Frequency (MHz) | Average Output Power (dBm) | | | | Limit (dBm) |
|------|---------|-----------------|----------------------------|---------|---------|---------|-------------|
| | | | 1 slot | 2 slots | 3 slots | 4 slots | |
| GPRS | 512 | 1850.2 | 29.45 | 27.28 | 25.81 | 23.62 | 33 |
| | 661 | 1880.0 | 29.46 | 27.30 | 25.58 | 23.46 | 33 |
| | 810 | 1909.8 | 29.67 | 27.44 | 25.56 | 23.77 | 33 |

Peak-to-average ratio (PAR)

Cellular Band

| Mode | Channel | PAR (dB) | Limit (dB) |
|------|---------|----------|------------|
| GSM | Low | 0.23 | 13 |
| | Middle | 0.17 | 13 |
| | High | 0.26 | 13 |

PCS Band

| Mode | Channel | PAR (dB) | Limit (dB) |
|------|---------|----------|------------|
| GSM | Low | 0.19 | 13 |
| | Middle | 0.15 | 13 |
| | High | 0.14 | 13 |

Radiated Power

GSM Mode:

| Frequency (MHz) | Receiver Reading (dBμV) | Turntable Angle Degree | Rx Antenna | | Substituted | | | Absolute Level (dBm) | Limit (dBm) | Margin (dB) |
|---|-------------------------|------------------------|------------|-------------|-------------|-----------------|-------------------|----------------------|-------------|-------------|
| | | | Height (m) | Polar (H/V) | Level (dBm) | Cable loss (dB) | Antenna Gain (dB) | | | |
| ERP, Cellular Band (Part 22H), Middle Channel | | | | | | | | | | |
| 836.6 | 75.61 | 108 | 1.2 | H | 15.6 | 0.60 | 0.0 | 14.96 | 38.45 | 23.49 |
| 836.6 | 90.71 | 195 | 1.3 | V | 31.6 | 0.60 | 0.0 | 31.04 | 38.45 | 7.41 |
| EIRP, PCS Band (Part 24E), Middle Channel | | | | | | | | | | |
| 1880.00 | 82.09 | 42 | 2.4 | H | 12.0 | 1.30 | 8.50 | 19.20 | 33 | 13.80 |
| 1880.00 | 92.30 | 78 | 2.2 | V | 22.0 | 1.30 | 8.50 | 29.20 | 33 | 3.80 |

Note:

All above data were tested with no amplifier.

Absolute Level = Substituted Level - Cable loss + Antenna Gain

Margin = Limit- Absolute Level

FCC §2.1049, §22.917, §22.905 & §24.238 - OCCUPIED BANDWIDTH

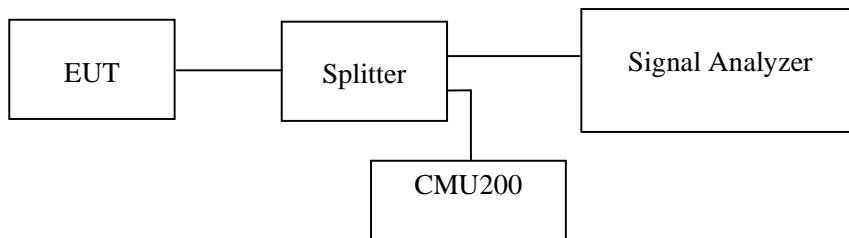
Applicable Standards

FCC 47 §2.1049, §22.917, §22.905, §24.238.

Test Procedure

The RF output of the transmitter was connected to the simulator and the spectrum analyzer through sufficient attenuation.

The resolution bandwidth of the spectrum analyzer was set at 1% to 5% of the anticipated emission bandwidth and the 26 dB & 99% bandwidth was recorded.



Test Data

Environmental Conditions

| | |
|---------------------------|-----------|
| Temperature: | 25 °C |
| Relative Humidity: | 56 % |
| ATM Pressure: | 101.0 kPa |

The testing was performed by Hill He on 2017-08-21.

EUT operation mode: Transmitting

Test Result: Compliance. Please refer to the following tables and plots.

Cellular Band (Part 22H)

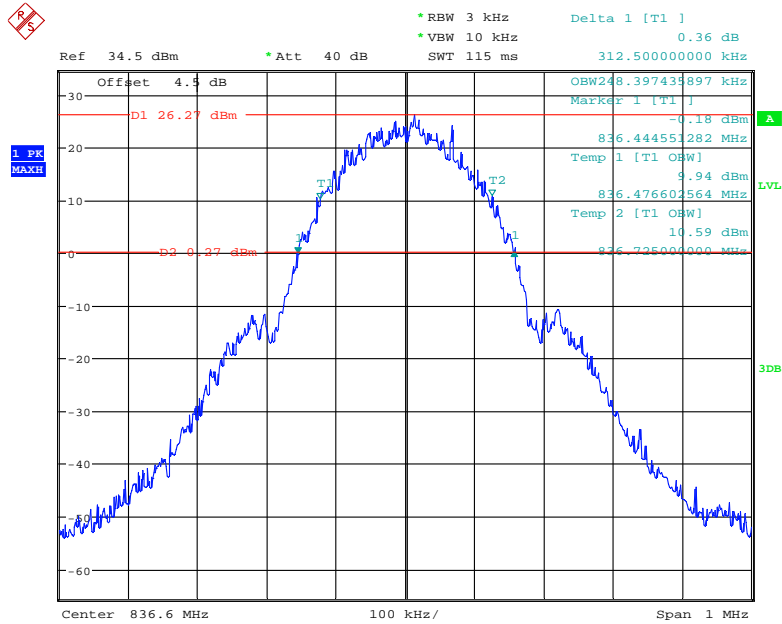
| Mode | Frequency (MHz) | 99% Occupied Bandwidth (kHz) | 26 dB Emission Bandwidth (kHz) |
|-------------|------------------------|-------------------------------------|---------------------------------------|
| GSM(GMSK) | 836.6 | 248.4 | 312.5 |

PCS Band (Part 24E)

| Mode | Frequency (MHz) | 99% Occupied Bandwidth (kHz) | 26 dB Emission Bandwidth (kHz) |
|-------------|------------------------|-------------------------------------|---------------------------------------|
| GSM(GMSK) | 1880.0 | 245.2 | 312.5 |

Cellular Band (Part 22H)

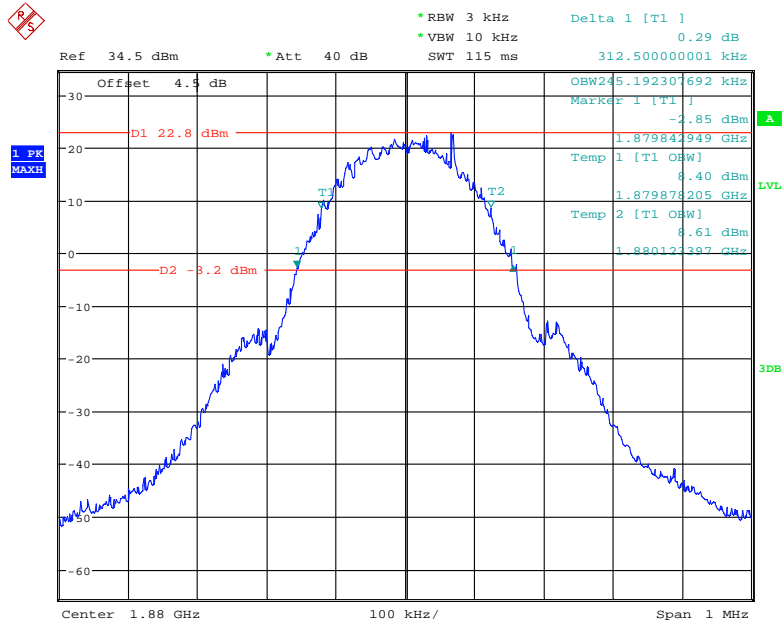
26 dB Emissions & 99% Occupied Bandwidth for GSM (GMSK) Mode



Date: 21.AUG.2017 11:06:11

PCS Band (Part 24E)

26 dB Emissions & 99% Occupied Bandwidth for GSM (GMSK) Mode



Date: 21.AUG.2017 11:11:39

§ 2.1051; § 22.917 (a); § 24.238 (a)-SPURIOUS EMISSIONS AT ANTENNA TERMINALS

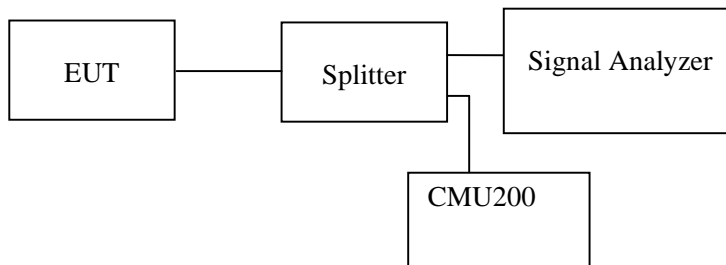
Applicable Standards

FCC §2.1051, §22.917(a) and §24.238(a).

The spectrum was to be investigated to the tenth harmonics of the highest fundamental frequency as specified in § 2.1051.

Test Procedure

The RF output of the transceiver was connected to a spectrum analyzer and simulator through appropriate attenuation. The resolution bandwidth of the spectrum analyzer was set at 1MHz. Sufficient scans were taken to show any out of band emissions up to 10th harmonic.



Test Data

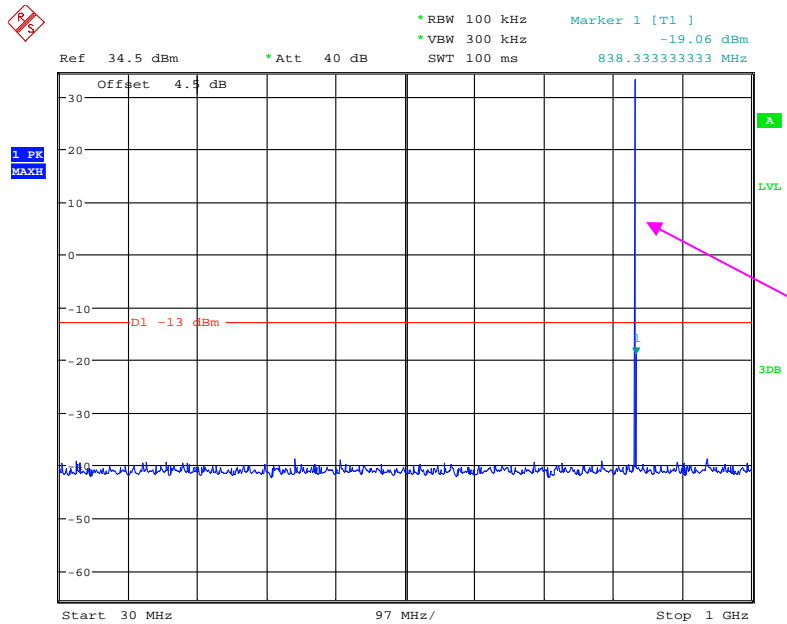
Environmental Conditions

| | |
|---------------------------|-----------|
| Temperature: | 24 °C |
| Relative Humidity: | 56 % |
| ATM Pressure: | 101.0 kPa |

The testing was performed by Hill He on 2017-08-24.

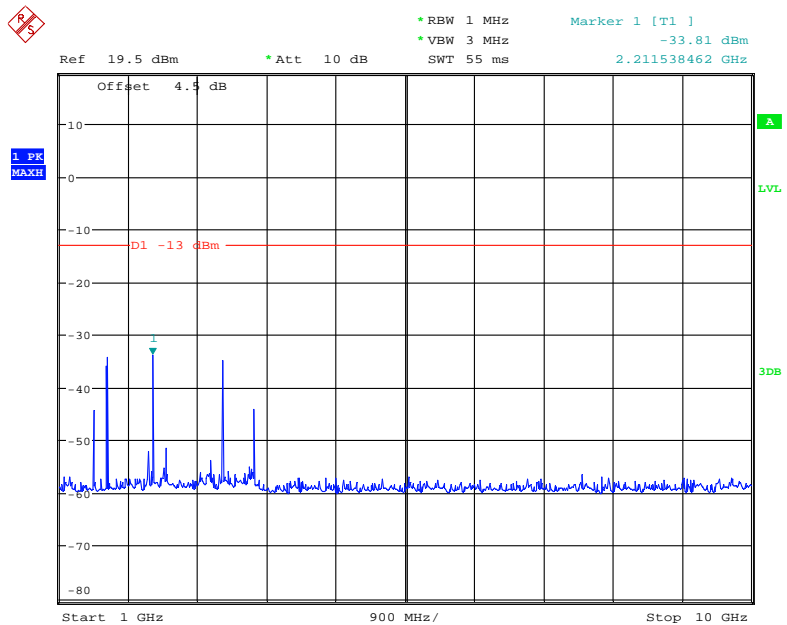
Cellular Band (Part 22H)

30 MHz – 1 GHz (GSM Mode)



Date: 24.AUG.2017 13:46:39

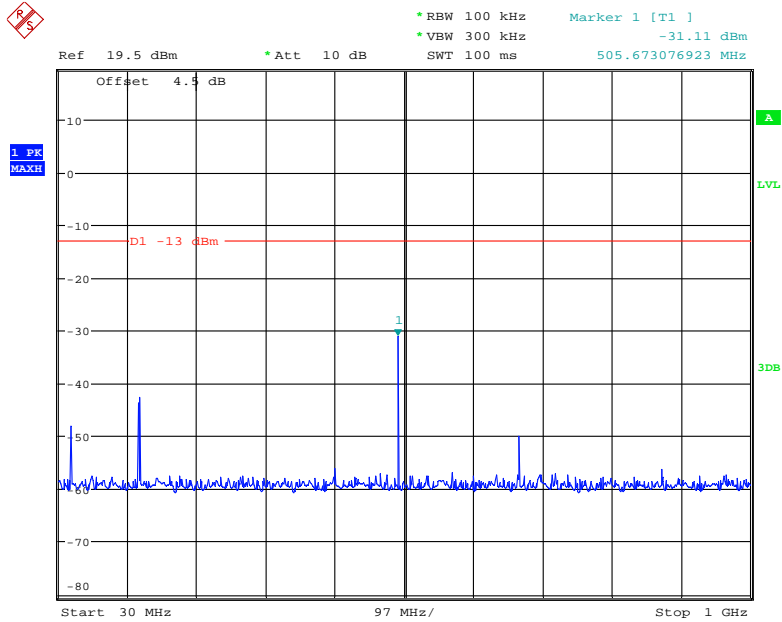
1 GHz – 10 GHz (GSM Mode)



Date: 24.AUG.2017 13:49:14

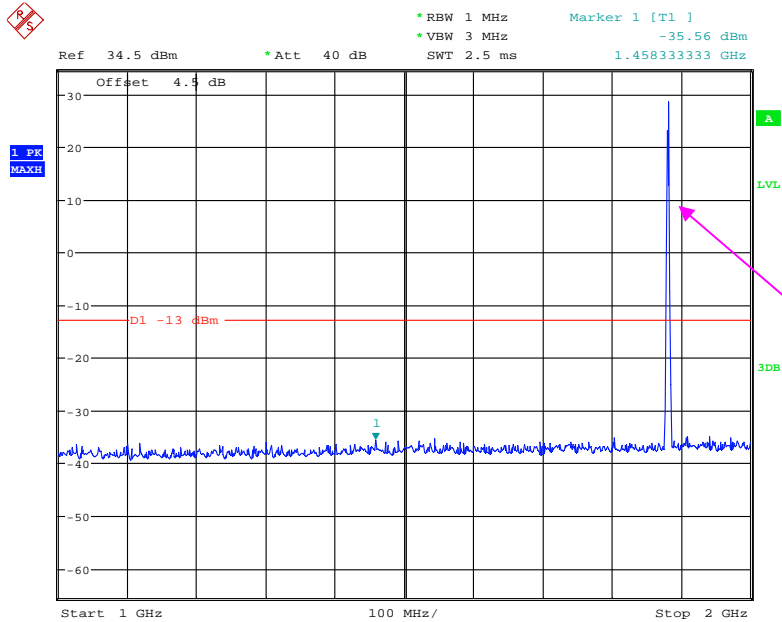
PCS Band (Part 24E)

30 MHz – 1 GHz (GSM Mode)



Date: 24.AUG.2017 13:57:52

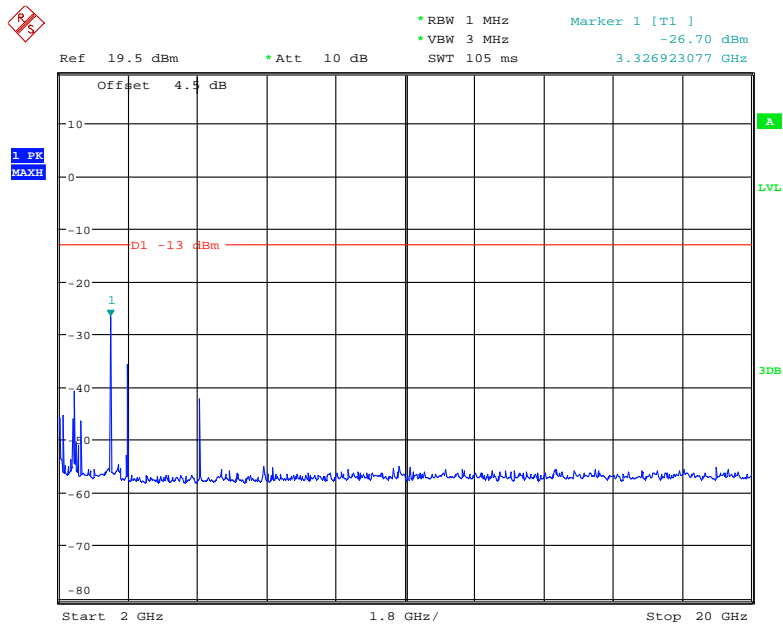
1 GHz – 2 GHz (GSM Mode)



Fundamental test

Date: 24.AUG.2017 13:56:46

2 GHz – 20 GHz (GSM Mode)



Date: 24.AUG.2017 13:55:47

FCC § 2.1053; § 22.917 (a); § 24.238 (a)-SPURIOUS RADIATED EMISSIONS

Applicable Standards

FCC § 2.1053, §22.917(a) and § 24.238(a)

For mobile digital stations, the attenuation factor shall be not less than $40 + 10 \log (P)$ dB on all frequencies between the channel edge and 5 megahertz from the channel edge, $43 + 10 \log (P)$ dB on all frequencies between 5 megahertz and X megahertz from the channel edge, and $55 + 10 \log (P)$ dB on all frequencies more than X megahertz from the channel edge, where X is the greater of 6 megahertz or the actual emission bandwidth as defined in paragraph (m)(6) of this section. In addition, the attenuation factor shall not be less than $43 + 10 \log (P)$ dB on all frequencies between 2490.5 MHz and 2496 MHz and $55 + 10 \log (P)$ dB at or below 2490.5 MHz. Mobile Satellite Service licensees operating on frequencies below 2495 MHz may also submit a documented interference complaint against BRS licensees operating on channel BRS Channel 1 on the same terms and conditions as adjacent channel BRS or EBS licensees.

Test Procedure

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 = $10 \lg (\text{TX pwr in Watts}/0.001)$ – the absolute level

Spurious attenuation limit in dB = $43 + 10 \text{Log}_{10} (\text{power out in Watts})$ or,

Test Data

Environmental Conditions

| | |
|---------------------------|-----------|
| Temperature: | 24 °C |
| Relative Humidity: | 56 % |
| ATM Pressure: | 101.0 kPa |

The testing was performed by Hill He on 2017-08-24.

Test mode: Transmitting

Test mode: Transmitting (Pre-scan with Low, Middle, High channel, and the worse case data as below)

30 MHz ~ 10 GHz:

Cellular Band (Part 22H)

| Frequency (MHz) | Receiver Reading (dBμV) | Turntable Angle Degree | Rx Antenna | | Substituted | | | Absolute Level (dBm) | Limit (dBm) | Margin (dB) |
|-----------------|-------------------------|------------------------|------------|-------------|-------------|-----------------|-------------------|----------------------|-------------|-------------|
| | | | Height (m) | Polar (H/V) | Level (dBm) | Cable Loss (dB) | Antenna Gain (dB) | | | |
| GSM 850 Mode | | | | | | | | | | |
| 356.19 | 35.43 | 8 | 1.6 | H | -61.57 | 0.40 | 0 | -61.97 | -13 | 48.97 |
| 356.19 | 36.55 | 204 | 1.7 | V | -60.45 | 0.40 | 0 | -60.85 | -13 | 47.85 |
| 1673.20 | 57.52 | 274 | 1.1 | H | -50.0 | 1.30 | 9.10 | -42.20 | -13 | 29.20 |
| 1673.20 | 61.09 | 83 | 1.9 | V | -45.8 | 1.30 | 9.10 | -38.00 | -13 | 25.00 |
| 2509.80 | 52.98 | 211 | 1.9 | H | -51.2 | 2.60 | 9.30 | -44.50 | -13 | 31.50 |
| 2509.80 | 56.21 | 199 | 2.0 | V | -47.4 | 2.60 | 9.30 | -40.70 | -13 | 27.70 |
| 3346.40 | 49.33 | 275 | 2.4 | H | -51.1 | 1.50 | 9.60 | -43.00 | -13 | 30.00 |
| 3346.40 | 47.95 | 335 | 2.3 | V | -52.5 | 1.50 | 9.60 | -44.40 | -13 | 31.40 |

30 MHz ~ 20 GHz:

PCS Band (Part 24E)

| Frequency (MHz) | Receiver Reading (dBμV) | Turntable Angle Degree | Rx Antenna | | Substituted | | | Absolute Level (dBm) | Limit (dBm) | Margin (dB) |
|-----------------|-------------------------|------------------------|------------|-------------|-------------|-----------------|-------------------|----------------------|-------------|-------------|
| | | | Height (m) | Polar (H/V) | Level (dBm) | Cable Loss (dB) | Antenna Gain (dB) | | | |
| GSM 1900 Mode | | | | | | | | | | |
| 356.19 | 36.79 | 288 | 1.0 | H | -60.21 | 0.40 | 0 | -60.61 | -13 | 47.61 |
| 356.19 | 37.01 | 342 | 2.0 | V | -59.99 | 0.40 | 0 | -60.39 | -13 | 47.39 |
| 3760.00 | 61.13 | 170 | 2.4 | H | -40.1 | 1.50 | 9.70 | -31.90 | -13 | 18.90 |
| 3760.00 | 57.95 | 152 | 1.9 | V | -42.8 | 1.50 | 9.70 | -34.60 | -13 | 21.60 |

Note:

- 1) Absolute Level = Substituted Level - Cable loss + Antenna Gain
- 2) Margin = Limit- Absolute Level

FCC § 22.917 (a);§ 24.238 (a) - BAND EDGES

Applicable Standards

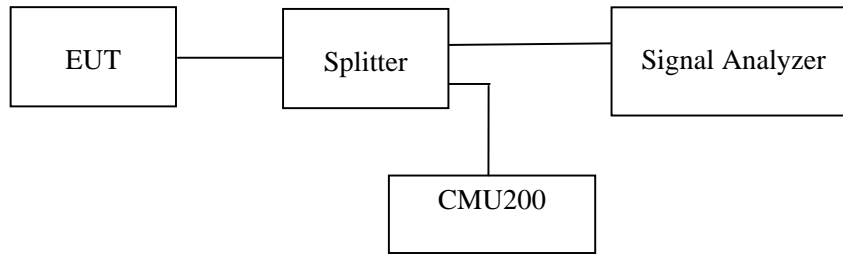
According to § 22.917(a), the power of any emissions outside of the authorized operating frequency ranges must be attenuated below the transmitting power (P) by a factor of at least $43 + 10 \log(P)$ dB.

According to §24.238(a), the power of any emissions outside of the authorized operating frequency ranges must be attenuated below the transmitting power (P) by a factor of at least $43 + 10 \log(P)$ dB.

Test Procedure

The RF output of the transmitter was connected to the input of the spectrum analyzer through sufficient attenuation.

The center of the spectrum analyzer was set to block edge frequency



Test Data

Environmental Conditions

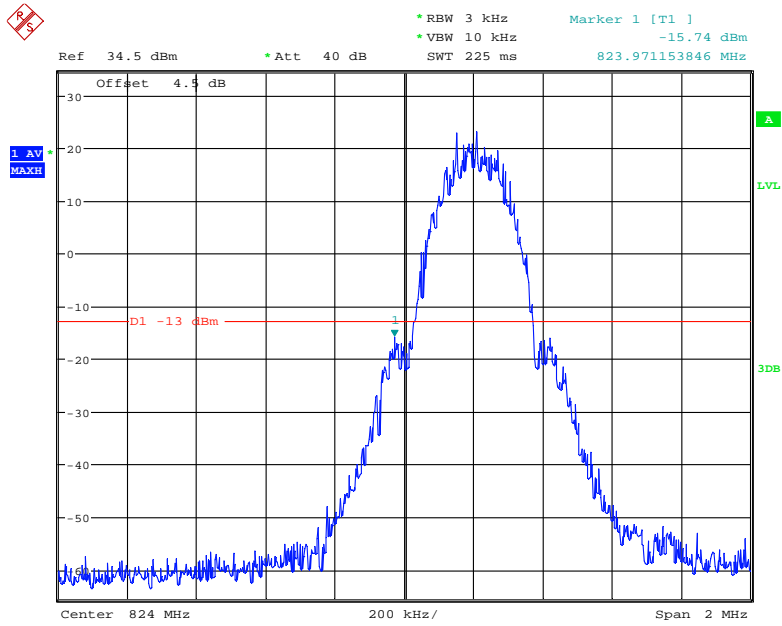
| | |
|---------------------------|-----------|
| Temperature: | 25 °C |
| Relative Humidity: | 56 % |
| ATM Pressure: | 101.0 kPa |

The testing was performed by Hill He on 2017-08-21.

EUT operation mode: Transmitting

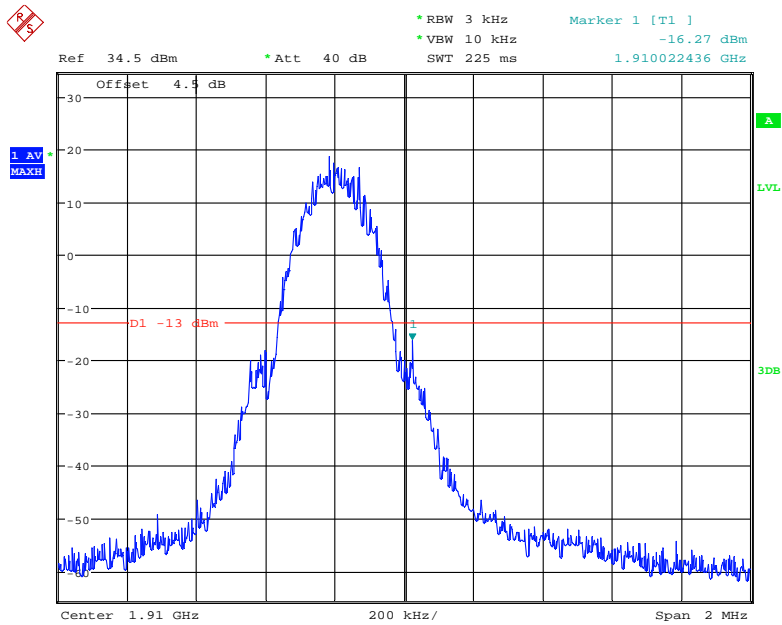
Test Result: Compliance. Please refer to the following plots.

Cellular Band, Left Band Edge for GSM (GMSK) Mode



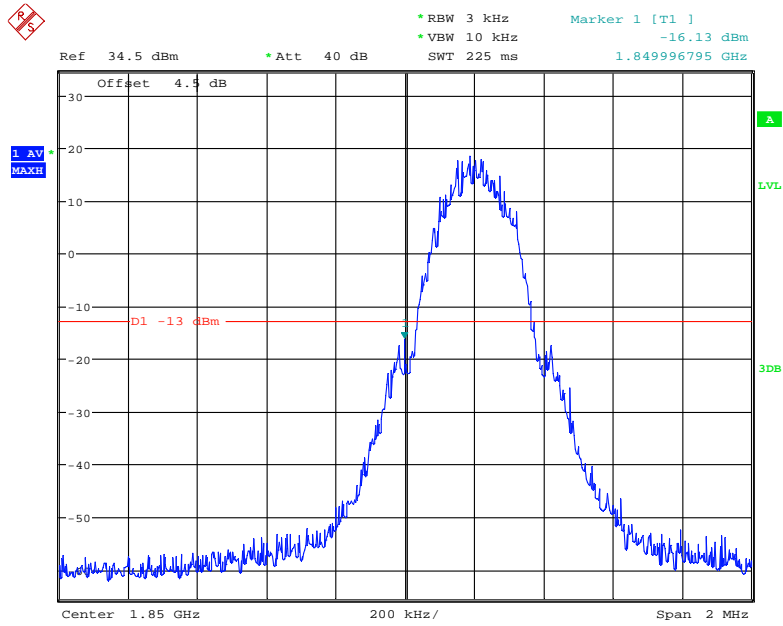
Date: 21.AUG.2017 11:20:55

Cellular Band, Right Band Edge for GSM (GMSK) Mode



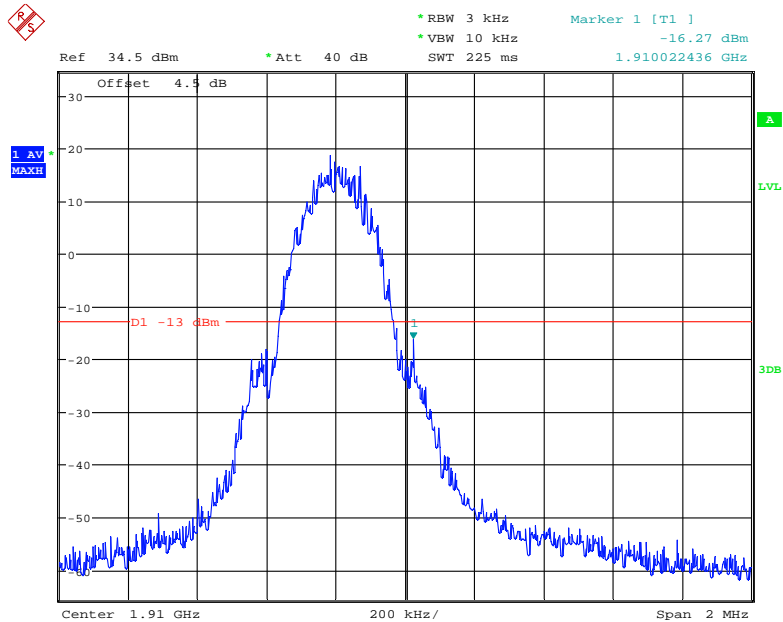
Date: 21.AUG.2017 11:24:01

PCS Band, Left Band Edge for GSM (GMSK) Mode



Date: 21.AUG.2017 11:23:15

PCS Band, Right Band Edge for GSM (GMSK) Mode



Date: 21.AUG.2017 11:24:01

FCC § 2.1055; § 22.355; § 24.235 - FREQUENCY STABILITY

Applicable Standards

FCC § 2.1055, §22.355, §24.235.

According to FCC §2.1055, the frequency stability shall be sufficient to ensure that the fundamental emissions stay within the authorized bands of operation.

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

| 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 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 |

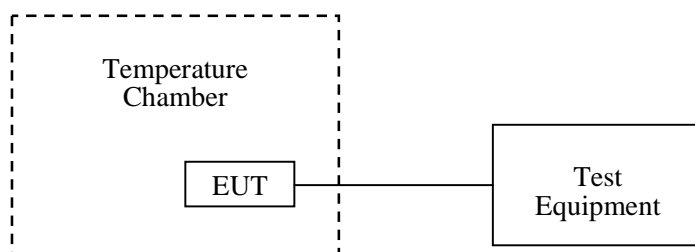
According to §24.235, the frequency stability shall be sufficient to ensure that the fundamental emissions stays within the authorized frequency block.

Test Procedure

Frequency Stability vs. Temperature: The equipment under test was connected to an external DC power supply and the RF output was connected to communication test set via feed-through attenuators. The EUT was placed inside the temperature chamber. The DC leads and RF output cable exited the chamber through an opening made for the purpose.

After the temperature stabilized for approximately 20 minutes, the frequency output was recorded from the communication test set.

Frequency Stability vs. Voltage: For hand carried, battery powered equipment; reduce primary supply voltage to the battery operating end point which shall be specified by the manufacturer.



Test Data

Environmental Conditions

| | |
|---------------------------|-----------|
| Temperature: | 25 °C |
| Relative Humidity: | 56 % |
| ATM Pressure: | 101.0 kPa |

The testing was performed by Hill He on 2017-08-21.

EUT operation mode: Transmitting

Test Result: Compliance. Please refer to the following tables.

Cellular Band (Part 22H)

GSM Mode

| Middle Channel, $f_0 = 836.6$ MHz | | | | |
|-----------------------------------|-----------------------------------|----------------------|-----------------------|-------------|
| Temperature (°C) | Power Supplied (V _{DC}) | Frequency Error (Hz) | Frequency Error (ppm) | Limit (ppm) |
| -30 | 3.7 | -5 | -0.005977 | 2.5 |
| -20 | | 6 | 0.007172 | 2.5 |
| -10 | | 3 | 0.003586 | 2.5 |
| 0 | | -2 | -0.002391 | 2.5 |
| 10 | | -5 | -0.005977 | 2.5 |
| 20 | | 1 | 0.001195 | 2.5 |
| 30 | | 3 | 0.003586 | 2.5 |
| 40 | | 1 | 0.001195 | 2.5 |
| 50 | | 6 | 0.007172 | 2.5 |
| 20 | | V min.= 3.5 | -1 | -0.001195 |
| | V max.= 4.2 | -3 | -0.003586 | 2.5 |

PCS Band (Part 24E)

GSM Mode

| Middle Channel, $f_0 = 1880.0$ MHz | | | | |
|------------------------------------|-----------------------------------|----------------------|-----------------------|----------|
| Temperature (°C) | Power Supplied (V _{DC}) | Frequency Error (Hz) | Frequency Error (ppm) | Result |
| -30 | 3.7 | 9 | 0.004787 | pass |
| -20 | | 5 | 0.002660 | pass |
| -10 | | 3 | 0.001596 | pass |
| 0 | | 21 | 0.011170 | pass |
| 10 | | 6 | 0.003191 | pass |
| 20 | | 25 | 0.013298 | pass |
| 30 | | 10 | 0.005319 | pass |
| 40 | | 12 | 0.006383 | pass |
| 50 | | 6 | 0.003191 | pass |
| 20 | | V min.= 3.5 | 3 | 0.001596 |
| | V max.= 4.2 | 1 | 0.000532 | pass |

***** END OF REPORT *****