



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

For

Shanghai Rising Digital Co., Ltd.

No 318, Chuanda Road, Pudong New District, Shanghai, China

FCC ID: 2AJONSECD-10IA-03

Report Type: **Product Type:** SECD-10IA-03(S) display screen Original Report Max Min Max Min **Test Engineer:** Report Number: RSHA171213002-00B **Report Date:** 2018-02-12 Oscar. Ye Oscar Ye **Reviewed By:** RF Leader Prepared By: Bay Area Compliance Laboratories Corp. (Kunshan) No.248 Chenghu Road, Kunshan, Jiangsu province, China Tel: +86-0512-86175000 Fax: +86-0512-88934268 www.baclcorp.com.cn

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| ****** **** ***** ***** ***** ***** **** | |

GENERAL INFORMATION

Product Description for Equipment under Test (EUT)

| Applicant | Shanghai Rising Digital Co., Ltd. |
|--------------|-----------------------------------|
| Tested Model | SECD-10IA-03 (S) |
| Product Type | SECD-10IA-03 (S) display screen |
| Dimension | 272.0 mm(L)*216.0 mm(W)*59.9mm(H) |
| Power Supply | DC 24V |

Report No.: RSHA171213002-00B

Objective

This type approval report is prepared on behalf of Shanghai Rising Digital 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)

No Related Submittal(s)/Grant(s).

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 radiated and conducted emissions measurements were performed at Bay Area Compliance Laboratories Corp. (Kunshan). The radiated testing was performed at an antenna-to-EUT distance of 3 meters.

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^{*}All measurement and test data in this report was gathered from production sample serial number: 20171213002. (Assigned by the BACL. The EUT supplied by the applicant was received on 2017-12-13)

Measurement Uncertainty

| | Item | Uncertainty | |
|--------------------|-----------------------|-------------|--|
| RF conducte | ed test with spectrum | 0.9dB | |
| RF Output F | Power with CMU200 | 0.5dB | |
| | 30MHz~1GHz | 6.11dB | |
| Radiated emission | 1GHz~6GHz | 4.45dB | |
| Radiated emission | 6GHz~18GHz | 5.23dB | |
| | 18GHz~40GHz | 5.65dB | |
| Occupied Bandwidth | | 0.5kHz | |
| Temperature | | 1.0℃ | |
| I | Humidity | 6% | |

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Test Facility

The test site used by Bay Area Compliance Laboratories Corp. (Kunshan) to collect test data is located on the No.248 Chenghu Road, Kunshan, Jiangsu province, China.

Bay Area Compliance Laboratories Corp. (Kunshan) Lab is accredited to ISO/IEC 17025 by A2LA (Lab code: 4323.01) and the FCC designation No. CN1185 under the FCC KDB 974614 D01. The facility also complies with the radiated and AC line conducted test site criteria set forth in ANSI C63.4-2014.

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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.

Channel List

| Band | Cha | Frequency | |
|-----------|--------|-----------|--------|
| | Low | 128 | 824.2 |
| GPRS 850 | Middle | 190 | 836.6 |
| | High | 251 | 848.8 |
| | Low | 512 | 1850.2 |
| GPRS 1900 | Middle | 661 | 1880.0 |
| | High | 810 | 1909.8 |

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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 | 110605 |
| Shenzhen Ao Kai Pu | Camera 1 | CM111XY | A1707600282 |
| Shenzhen Ao Kai Pu | Camera 2 | CM111XY | / |
| Shenzhen Ao Kai Pu | Camera 3 | CM111XY | / |
| Shenzhen Ao Kai Pu | Camera 4 | CM111XY | / |
| МСН | DC Source | MCH-303D-II | 14070562 |
| / | GPRS Antenna | / | / |

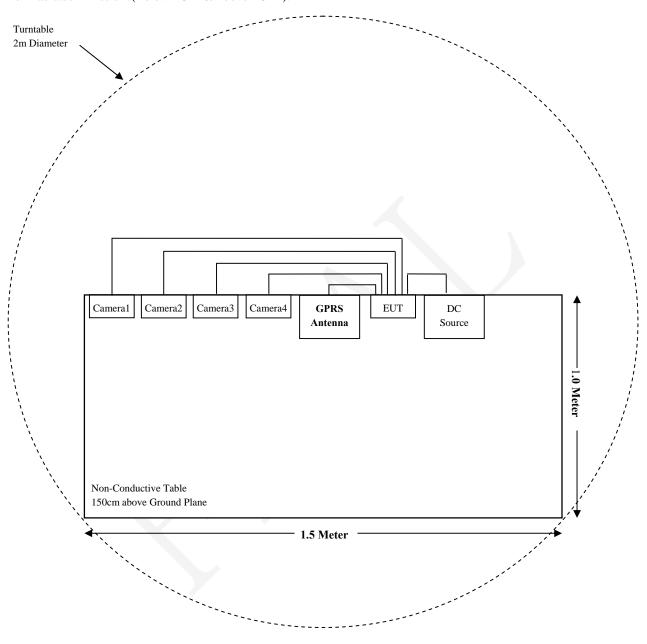
External I/O Cable

| Cable Description | Shielding Type | Length (m) | From Port | То |
|-------------------|----------------|------------|-----------|-------------|
| Power cable | 1.0 | Adapter | AC Source | Power cable |

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Block Diagram of Test Setup

For Radiated Emissions(Below 1GHz&Above 1GHz):



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SUMMARY OF TEST RESULTS

| FCC Rules | Description of Test | Result |
|---|--|----------------|
| FCC §1.1307 (b) (1) & §2.1091 | Maximum Permissible Exposure (MPE) | 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 |

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TEST EQUIPMENT LIST

| Manufacturer | Description | Model | Serial Number | Calibration Date | Calibration Due Date |
|-------------------|--|---------------------|------------------|---------------------|-------------------------|
| | Radiated Em | nission Test (Cha | mber 1#) | • | |
| Rohde & Schwarz | EMI Test Receiver | ESCI | 100195 | 2017-11-12 | 2018-11-11 |
| HP | Signal Generator | HP 8341B | 2624A00116 | 2017-08-29 | 2018-08-28 |
| Sunol Sciences | Broadband Antenna | JB3 | A090413-1 | 2016-12-26 | 2019-12-25 |
| Sunol Sciences | Broadband Antenna | JB3 | A090314-2 | 2016-01-09 | 2019-01-08 |
| Sonoma Instrunent | Pre-amplifier | 310N | 171205 | 2017-08-15 | 2018-08-14 |
| Rohde & Schwarz | Auto test Software | EMC32 | 100361 | / | / |
| MICRO-COAX | Coaxial Cable | Cable-6 | 006 | 2017-08-15 | 2018-08-14 |
| MICRO-COAX | Coaxial Cable | Cable-8 | 008 | 2017-08-15 | 2018-08-14 |
| MICRO-COAX | Coaxial Cable | Cable-9 | 009 | 2017-08-15 | 2018-08-14 |
| MICRO-COAX | Coaxial Cable | Cable-10 | 010 | 2017-08-15 | 2018-08-14 |
| Rohde & Schwarz | UNIVERSAL RADIO COMMUNICATION TESTER | CMU200 | 110605 | 2017-11-12 | 2018-11-11 |
| | Radiated Em | ission Test (Cha | mber 2#) | | |
| HP | Signal Generator | HP 8341B | 2624A00116 | 2017-08-29 | 2018-08-28 |
| Rohde & Schwarz | EMI Test Receiver | ESU40 | 100207 | 2017-08-27 | 2018-08-26 |
| ETS-LINDGREN | Horn Antenna | 3115 | 9311-4159 | 2016-01-11 | 2019-01-10 |
| ETS-LINDGREN | Horn Antenna | 3115 | 6229 | 2016-01-11 | 2019-01-10 |
| ETS-LINDGREN | Horn Antenna | 3116 | 00084159 | 2016-10-18 | 2019-10-17 |
| ETS-LINDGREN | Horn Antenna | 3116 | 2516 | 2016-12-12 | 2019-12-12 |
| Narda | Pre-amplifier | AFS42- 00101800 | 2001270 | 2017-12-12 | 2018-12-11 |
| Heatsink Required | Amplifier | QLW- 18405536-J0 | 15964001009 | 2017-12-12 | 2018-12-11 |
| Rohde & Schwarz | Auto test Software | EMC32 | 100361 | / | / |
| MICRO-COAX | Coaxial Cable | Cable-6 | 006 | 2017-08-15 | 2018-08-14 |
| MICRO-COAX | Coaxial Cable | Cable-11 | 011 | 2017-08-15 | 2018-08-14 |
| MICRO-COAX | Coaxial Cable | Cable-12 | 012 | 2017-08-15 | 2018-08-14 |
| MICRO-COAX | Coaxial Cable | Cable-13 | 013 | 2017-08-15 | 2018-08-14 |
| MICRO-COAX | Coaxial Cable | Cable-16 | 016 | 2017-08-15 | 2018-08-14 |
| Rohde & Schwarz | UNIVERSAL RADIO COMMUNICATION TESTER | CMU200 | 110605 | 2017-11-12 | 2018-11-11 |

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| Manufacturer | Description | Model | Serial Number | Calibration Date | Calibration Due Date | |
|-------------------|--|-------------|------------------|---------------------|-------------------------|--|
| RF Conducted Test | | | | | | |
| Rohde & Schwarz | Signal Analyzer | FSIQ26 | 836131/009 | 2017-09-21 | 2018-09-20 | |
| Rohde & Schwarz | UNIVERSAL RADIO COMMUNICATION TESTER | CMU200 | 110605 | 2017-11-12 | 2018-11-11 | |
| BACL | Temperature & Humidity Chamber | BTH-150 | 30023 | 2017-10-10 | 2018-10-09 | |
| EAST | Regulated DC Power Supply | MCH-303D-II | 14070562 | 2017-10-10 | 2018-10-09 | |
| Rising Digital | RF Cable | / | / | / | / | |

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

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FCC §1.1307 (b) (1) & §2.1091- MAXIMUM PERMISSIBLE EXPOSURE (MPE)

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Applicable Standard

According to subpart 1.1307 (b)(1), 2.1091 systems operating under the provisions of this section shall be operated in a manner that ensures the public is not exposed to RF energy level in excess of the communication guidelines.

| Limits for General Population/Uncontrolled Exposure | | | | | | |
|---|-------|--------|-----------|----|--|--|
| Frequency Range (MHz) | | | | | | |
| 0.3-1.34 | 614 | 1.63 | *(100) | 30 | | |
| 1.34-30 | 824/f | 2.19/f | *(180/f²) | 30 | | |
| 30-300 | 27.5 | 0.073 | 0.2 | 30 | | |
| 300-1500 | / | | f/1500 | 30 | | |
| 1500-100,000 | / | | 1.0 | 30 | | |

f = frequency in MHz; * = Plane-wave equivalent power density

Calculated Formulary:

Predication of MPE limit at a given distance

 $S = PG/4 \pi R^2 = power density (in appropriate units, e.g. mW/cm^2);$

P = power input to the antenna (in appropriate units, e.g., mW);

G = power gain of the antenna in the direction of interest relative to an isotropic radiator, the power gain factor, is normally numeric gain;

R = distance to the center of radiation of the antenna (appropriate units, e.g., cm);

Calculated Data:

Calculation maximum antenna gain based on ERP/EIRP

| Mode | Max Tune-up power (dBm) | ERP/EIRP Limit (dBm) | Max Antenna Gain (dBi) |
|-----------|----------------------------|-------------------------|---------------------------|
| GPRS 850 | 33.50 | 38.45 | 4.95 |
| GPRS 1900 | 31.00 | 33.00 | 2.00 |

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Calculation maximum antenna gain based on MPE

| Mode | Frequency Range (MHz) | MPE Limit (mW/cm²) | Tune-up Power Source Based Time Average Power | | Evaluation Distance (cm) | Antenna Gain | | Power Density (mW/cm²) |
|-----------|-----------------------------|--------------------------|--|--------|--------------------------|--------------|-----------|------------------------|
| | (1/1111) | (111 /// (1111) | (dBm) | (mW) | (CIII) | (dBi) | (numeric) | (111 / / / C111) |
| GPRS 850 | 824.2-848.8 | 0.55 | 26.00 | 398.11 | 20 | 8.45 | 7.00 | 0.55 |
| GPRS 1900 | 1850.2- 1909.8 | 1.00 | 23.00 | 199.53 | 20 | 14.00 | 25.12 | 1.00 |

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Note:

1. Tune-up power:

GPRS 850: 1 slot 33 \pm 0.5dBm, 2 slots 31.5 \pm 0.5dBm, max average power 26dBm; GPRS 1900: 1 slot 30.5 \pm 0.5dBm, 2slots 28.5 \pm 0.5dBm, max average power 23dBm.

| Number of Time slot | 1 | 2 |
|--|-------|-------|
| Duty Cycle | 1:8 | 1:4 |
| Time based Ave. power compared to slotted Ave. power | -9 dB | -6 dB |

| Mode | Max Allow Antenna Gain (dBi) |
|-----------|---------------------------------|
| GPRS 850 | 4.95 |
| GPRS 1900 | 2.00 |

Result: To meet RF exposure & ERP/ERIP, the maximum net gain of antennas allowed are 4.95 dBi @ GPRS 850 and 2.00 @ GPRS1900. The antenna(s) used for this transmitter must be installed to provide a separation distance of at least 20 cm from all persons and must not be co-located or operating in conjunction with any other antenna or transmitter.

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FCC §2.1047 – MODULATION CHARACTERISTIC

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

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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 (38.45dBm).

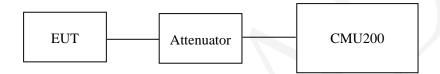
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According to FCC §2.1046 and §24.232 (c), mobile and portable stations are limited to 2 watts (33dBm) EIRP and the equipment must employ a means for limiting power to the minimum necessary for successful communications..

Test Procedure

Conducted method:

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



Test Data

Environmental Conditions

| Temperature: | 23.4 ℃ |
|--------------------|-----------|
| Relative Humidity: | 50 % |
| ATM Pressure: | 101.2 kPa |

The testing was performed by Max Min on 2017-12-20.

Conducted Power:

GSM 850 Band

| Mode | Channel | Frequency (MHz) | | itput Power Bm) | Limit (dBm) |
|------|---------|--------------------|--------|--------------------|----------------|
| | | (WIIIZ) | 1 slot | 2 slots | (ubiii) |
| | 128 | 824.2 | 32.90 | 31.26 | 38.45 |
| GPRS | 190 | 836.6 | 33.14 | 31.51 | 38.45 |
| | 251 | 848.8 | 33.10 | 31.47 | 38.45 |

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PCS 1900 Band

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| Mode | Channel | Frequency | | itput Power Bm) | Limit |
|------|---------|-----------|--------|--------------------|-------|
| | | (MHz) | 1 slot | 2 slots | (dBm) |
| | 512 | 1850.2 | 30.37 | 28.61 | 33 |
| GPRS | 661 | 1880.0 | 30.27 | 28.53 | 33 |
| | 810 | 1909.8 | 30.26 | 28.54 | 33 |

Peak-to-average ratio (PAR):

PCS 1900 Band

| Mode | Channel | PAR (dB) | Limit (dB) |
|------|---------|-------------|------------|
| | Low | 2.32 | 13 |
| GPRS | Middle | 2.32 | 13 |
| | High | 2.41 | 13 |

Radiated Power:

| | Receiver Turntable Rx Antenn | | tenna | Substituted | | | Absolute | | | |
|------------------------------------|--------------------------------------|-----------------|-------------|----------------|-----------------------------|-----------------|------------------------------|-------------|-------------|----------------|
| Frequency (MHz) | Reading (dBµV) | Angle Degree | Height (cm) | Polar (H/V) | Submitted Level (dBm) | Cable loss (dB) | Antenna Gain (dBd/dBi) | Level (dBm) | Limit (dBm) | Margin (dB) |
| GSM 850 Band, Middle Channel (ERP) | | | | | | | | | | |
| 836.60 | 94.02 | 57 | 182 | Н | 30.33 | 0.63 | -1.14 | 28.56 | 38.45 | 9.89 |
| 836.60 | 99.70 | 245 | 173 | V | 32.55 | 0.63 | -1.14 | 30.78 | 38.45 | 7.67 |
| | PCS 1900 Band, Middle Channel (EIRP) | | | | | | | | | |
| 1880.00 | 89.25 | 228 | 170 | Н | 18.21 | 0.85 | 8.81 | 26.17 | 33.00 | 12.83 |
| 1880.00 | 91.55 | 134 | 187 | V | 20.20 | 0.85 | 8.81 | 28.16 | 33.00 | 10.84 |

All above data were tested with no amplifier. Absolute Level = Submitted Level - Cable loss + Antenna Gain

Margin = Limit- Absolute Level

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

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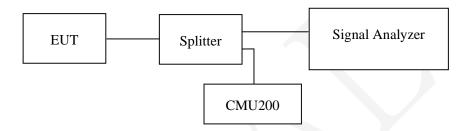
Applicable Standards

FCC 47 §2.1049, §22.917, §22.905 and §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 $5~\mathrm{kHz}$ (Cellular /PCS) and the $26~\mathrm{dB}$ & 99% bandwidth was recorded.



Test Data

Environmental Conditions

| Temperature: | 23.4 ℃ |
|--------------------|-----------|
| Relative Humidity: | 50 % |
| ATM Pressure: | 101.2 kPa |

The testing was performed by Max Min on 2017-12-20.

EUT operation mode: Transmitting

Test Result: Compliant.

GSM 850 Band

| Mode | Frequency (MHz) | 26 dB Emission Bandwidth (MHz) | 99% Occupied Bandwidth (MHz) |
|------|--------------------|--------------------------------|---------------------------------|
| GPRS | 836.6 | 0.327 | 0.248 |

PCS 1900Band

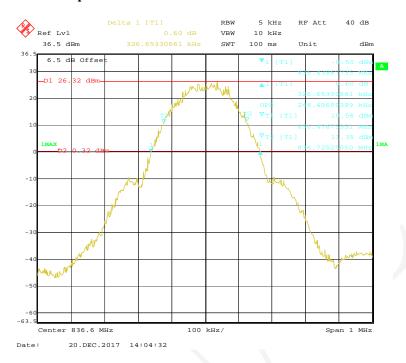
| Mode | Frequency (MHz) | 26 dB Emission Bandwidth (MHz) | 99% Occupied Bandwidth (MHz) |
|------|--------------------|--------------------------------|------------------------------|
| GPRS | 1880.0 | 0.323 | 0.246 |

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GSM 850 Band

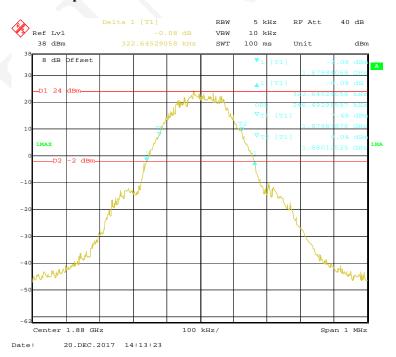
99% Occupied & 26 dB Emissions Bandwidth for GPRS Mode

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PCS 1900Band

99% Occupied & 26 dB Emissions Bandwidth for GPRS Mode



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

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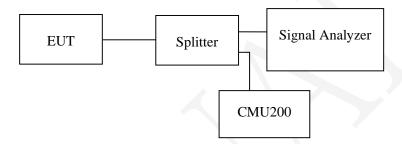
Applicable Standards

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 100 kHz for below 1GHz and 1MHz for above 1MHz. Sufficient scans were taken to show any out of band emissions up to 10th harmonic.



Test Data

Environmental Conditions

| Temperature: | 23.4 ℃ |
|--------------------|-----------|
| Relative Humidity: | 50 % |
| ATM Pressure: | 101.2 kPa |

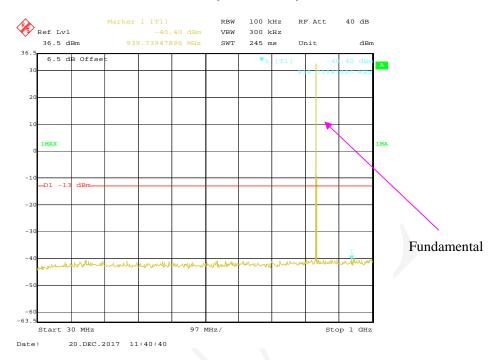
The testing was performed by Max Min on 2017-12-20.

EUT operation mode: Transmitting

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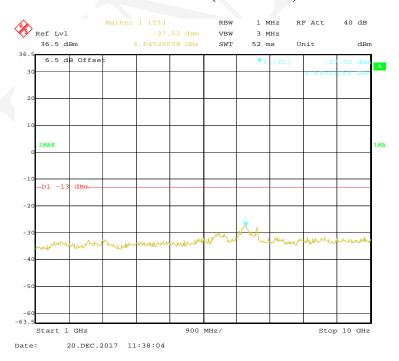
GSM 850 Band:

30 MHz – 1 GHz (GPRS Mode)



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1 GHz – 10 GHz (GPRS Mode)

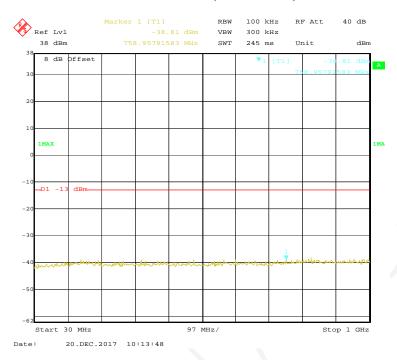


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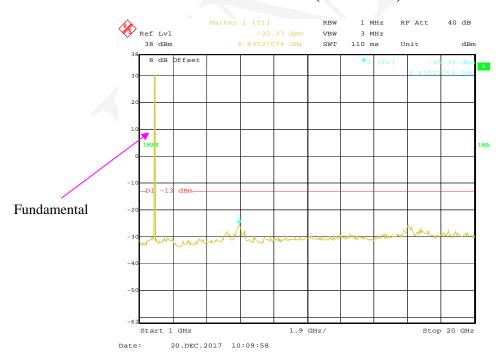
PCS 1900 Band:

30 MHz – 1 GHz (GPRS Mode)

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1 GHz – 20 GHz (GPRS Mode)



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

Applicable Standards

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

22.917 (a) Out of band emissions. The power of any emission 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.

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24.238 (a) Out of band emissions. The power of any emission 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 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 $dB = 10 \lg (TX \text{ pwr in Watts}/0.001)$ – the absolute level

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

Test Data

Environmental Conditions

| Temperature: | 23.2 ℃ |
|--------------------|----------|
| Relative Humidity: | 50 % |
| ATM Pressure: | 101.2kPa |

The testing was performed by Max Min on 2017-12-20.

Test mode: Transmitting (Pre-scan with low, middle, high channel, and the worse case data as below)

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30 MHz ~ **10 GHz**:

GSM 850 Band

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| | Receiver Reading (dBµV) | Angle | Rx Antenna | | Substituted | | | Absolute | | |
|--------------------|-------------------------------|-------|-------------|----------------|-----------------------------|-----------------------|------------------------------|----------------|-------------|----------------|
| Frequency (MHz) | | | Height (cm) | Polar (H/V) | Submitted Level (dBm) | Cable Loss (dB) | Antenna Gain (dBi/dBd) | Level (dBm) | Limit (dBm) | Margin (dB) |
| | | | (| GPRS Mo | ode, Middle Cl | hannel | | | | |
| 199.36 | 57.83 | 49 | 110 | Н | -53.85 | 0.42 | -3.97 | -58.24 | -13 | 45.24 |
| 199.36 | 57.12 | 165 | 148 | V | -53.90 | 0.42 | -3.97 | -58.29 | -13 | 45.29 |
| 1673.20 | 60.59 | 84 | 133 | Н | -50.36 | 0.84 | 8.48 | -42.72 | -13 | 29.72 |
| 1673.20 | 61.38 | 3 | 129 | V | -49.82 | 0.84 | 8.48 | -42.18 | -13 | 29.18 |
| 2509.80 | 49.13 | 70 | 153 | Н | -59.49 | 0.89 | 10.09 | -50.29 | -13 | 37.29 |
| 2509.80 | 48.22 | 85 | 148 | V | -60.47 | 0.89 | 10.09 | -51.27 | -13 | 38.27 |

30 MHz ~ 20 GHz:

PCS 1900 Band

| | Receiver Reading (dBµV) | ading Angle | Rx Antenna | | Substituted | | | Absolute | | |
|--------------------|-------------------------------|-------------|-------------|----------------|-----------------------------|-----------------------|------------------------------|----------------|-------------|----------------|
| Frequency (MHz) | | | Height (cm) | Polar (H/V) | Submitted Level (dBm) | Cable Loss (dB) | Antenna Gain (dBi/dBd) | Level (dBm) | Limit (dBm) | Margin (dB) |
| | GPRS Mode, Middle Channel | | | | | | | | | |
| 199.36 | 57.56 | 27 | 131 | Н | -54.12 | 0.42 | -3.97 | -58.51 | -13 | 45.51 |
| 199.36 | 56.99 | 56 | 139 | V | -54.03 | 0.42 | -3.97 | -58.42 | -13 | 45.42 |
| 3760.00 | 49.16 | 282 | 105 | Н | -54.53 | 0.95 | 9.74 | -45.74 | -13 | 32.74 |
| 3760.00 | 48.99 | 157 | 186 | V | -55.02 | 0.95 | 9.74 | -46.23 | -13 | 33.23 |
| 5640.00 | 42.79 | 342 | 204 | Н | -57.72 | 1.15 | 10.47 | -48.40 | -13 | 35.40 |
| 5640.00 | 43.97 | 282 | 184 | V | -56.84 | 1.15 | 10.47 | -47.52 | -13 | 34.52 |

Note:

Absolute Level = Submitted Level - Cable loss + Antenna Gain

Margin = Limit- Absolute Level

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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.

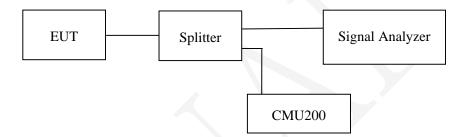
Report No.: RSHA171213002-00B

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: | 23.4 ℃ | | |
|--------------------|-----------|--|--|
| Relative Humidity: | 50 % | | |
| ATM Pressure: | 101.2 kPa | | |

The testing was performed by Max Min on 2017-12-20.

EUT operation mode: Transmitting

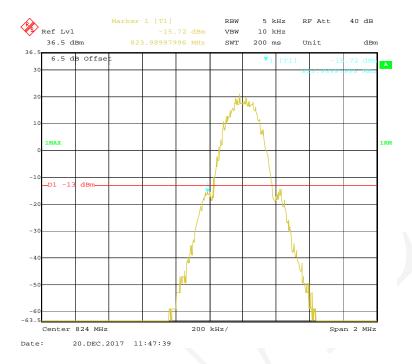
Test Result: Compliant

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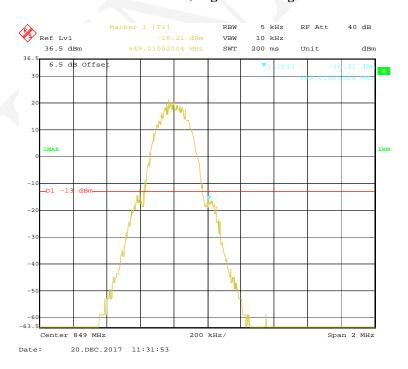
GSM 850 Band:

GPRS Mode, Left Band Edge

Report No.: RSHA171213002-00B



GPRS Mode, Right Band Edge

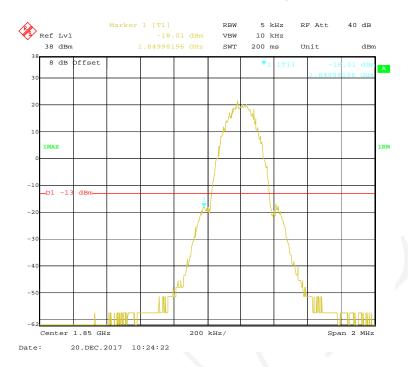


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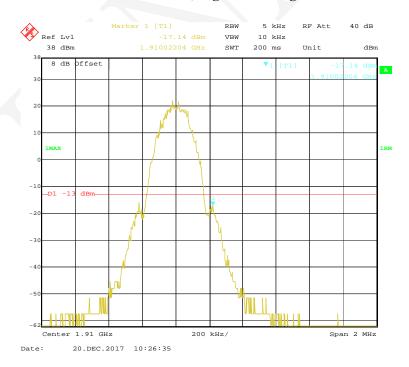
PCS 1900 Band:

GPRS Mode, Left Band Edge

Report No.: RSHA171213002-00B



GPRS Mode, Right Band Edge



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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 Tole | rance for Tran | smitters in the | Public M | Tobile Services |
|-----------------------|----------------|-----------------|----------|------------------------|
|-----------------------|----------------|-----------------|----------|------------------------|

Report No.: RSHA171213002-00B

| 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 |

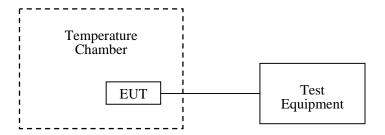
According to §24.235, the frequency stability shall be sufficient to ensure that the fundamental emissions stays within the authorized frequency block.

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.



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Test Data

Environmental Conditions

| Temperature: | 23.4 ℃ |
|--------------------|-----------|
| Relative Humidity: | 50 % |
| ATM Pressure: | 101.2 kPa |

The testing was performed by Max Min on 2017-12-20.

EUT operation mode: Transmitting

Test Result: Compliance.

GSM 850 Band:

| | GPRS Mode, Middle Channel, f ₀ =836.6 MHz | | | | | | | |
|---------------------|--|----------------------------|-----------------------------|----------------|--|--|--|--|
| Temperature (°C) | Power Supplied (V _{DC}) | Frequency Error (Hz) | Frequency Error (ppm) | Limit (ppm) | | | | |
| -30 | | 10 | 0.0120 | 2.5 | | | | |
| -20 | 1 | 7 | 0.0084 | 2.5 | | | | |
| -10 | 1 | 8 | 0.0096 | 2.5 | | | | |
| 0 | 1 | 5 | 0.0060 | 2.5 | | | | |
| 10 | 24.0 | 1 | 0.0012 | 2.5 | | | | |
| 20 | | 7 | 0.0084 | 2.5 | | | | |
| 30 | | 2 | 0.0024 | 2.5 | | | | |
| 40 | | 4 | 0.0048 | 2.5 | | | | |
| 50 | | 8 | 0.0096 | 2.5 | | | | |
| 25 | V min.= 20.4 | 4 | 0.0048 | 2.5 | | | | |
| 25 | V max.= 27.6 | 7 | 0.0084 | 2.5 | | | | |

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PCS 1900 Band:

| | GPRS Mode, Middle Channel, f _o =1880.0 MHz | | | | | | |
|---------------------|---|----------------------------|-----------------------------|--------|--|--|--|
| Temperature (°C) | Power Supplied (V _{DC}) | Frequency Error (Hz) | Frequency Error (ppm) | Result | | | |
| -30 | | -8 | -0.0043 | pass | | | |
| -20 | | -5 | -0.0027 | pass | | | |
| -10 | | -6 | -0.0032 | pass | | | |
| 0 | | -2 | -0.0011 | pass | | | |
| 10 | 24.0 | -5 | -0.0027 | pass | | | |
| 20 | | -3 | -0.0016 | pass | | | |
| 30 | | -1 | -0.0005 | pass | | | |
| 40 | | -2 | -0.0011 | pass | | | |
| 50 | | -5 | -0.0027 | pass | | | |
| 25 | V min.= 20.4 | -11 | -0.0059 | pass | | | |
| 25 | V max.= 27.6 | -13 | -0.0069 | pass | | | |

Report No.: RSHA171213002-00B

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

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