# Radio
# Measurement and Test Report

## For

## Vonino ELectronics LTD.

**Miramar Tower 10F-No.1010, 132 Nathan Road, Tsim Sha Tsui , Kowloon,**

**Hong Kong**

| | |
|---|---|
| **Test Standard(s):** | EN 301 908-1 V7.1.1 (2015-03)<br>EN 301 908-2 V7.1.1 (2015-12) |
| **Product Description:** | Smart Phone |
| **Tested Model:** | VOLT X |
| **Report No.:** | STR16128114E-2 |
| **Tested Date:** | 2016-12-12 to 2016-12-21 |
| **Issued Date:** | 2016-12-22 |
| **Tested By:** | Iven Guo / Engineer |
| **Reviewed By:** | Silin Chen / EMC Manager |
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# 1. GENERAL INFORMATION

## 1.1 Product Description for Equipment Under Test (EUT)

**Client Information**

| | |
|---|---|
| Applicant: | Vonino ELectronics LTD. |
| Address of applicant: | Miramar Tower 10F-No.1010, 132 Nathan Road, Tsim Sha Tsui , Kowloon, Hong Kong |
| Manufacturer: | Gui zhou Fortuneship Technology Co., Ltd. |
| Address of manufacturer: | No. 4 Plant, High-tech Industrial Park, Xinpu Economic Development Zone) Jingkai Road, Xinpu Jingkai District, Xinpu New District, Zunyi City, Guizhou Province, P. R. China |

| **General Description of EUT** | |
|---|---|
| Product Name: | Smart Phone |
| Brand Name: | vonino |
| Model No.: | VOLT X |
| Adding Model(s): | / |
| Rated Voltage: | DC 3.8V by Battery |
| Battery Capacity: | 4000mAh |
| Adapter Model: | JT288-05100<br>Input: 100-240Vac, 50/60Hz, 0.15A Output: 5.0V⎓, 1A |
| Software Version: | Vonino_v1.1.1_20161130 |
| Hardware Version: | F1-4G-V60-CF9-KS670 |
| | |
| *Note: The test data is gathered from a production sample, provided by the manufacturer. The product have two SIM, Test is carry on SIM1 which is the worst case* | |

| **Technical Characteristics of EUT** | |
|---|---|
| **3G** | |
| Support Networks: | WCDMA, HSDPA, HSUPA |
| Support Bands: | WCDMA Band 1, WCDMA Band 8 |
| Frequency Range: | WCDMA Band 1: Tx: 1920-1980MHz, Rx: 2110-2170MHz |
| | WCDMA Band 8: Tx: 880-915MHz, Rx: 925-960MHz |
| RF Output Power: | WCDMA Band 1: 22.48dBm, WCDMA Band 8: 22.44dBm |
| Modulation Type: | BPSK, QPSK, 16QAM |
| Antenna Type: | Integral Antenna |
| Antenna Gain: | WCDMA Band 1: 0dBi, WCDMA Band 8: -0.3dBi |

## 1.2 Test Standards

The following report is prepared on behalf of the Vonino ELectronics LTD. in accordance with ETSI EN 301908-1 V7.1.1, Electromagnetic compatibility and Radio spectrum Matters (ERM); Base Stations (BS), Repeaters and User Equipment (UE) for IMT-2000 Third-Generation cellular networks; Part 1: Harmonized EN for IMT-2000, introduction and common requirements, covering essential requirements of article 3.2 of the R&TTE Directive. And the harmonicze standard ETSI EN 301908-2 V7.2.1, Electromagnetic compatibility and Radio spectrum Matters (ERM); Base Stations (BS), Repeaters and User Equipment (UE) for IMT-2000 Third-Generation cellular networks; Part 2: Harmonized EN for IMT-2000, CDMA Direct Spread (UTRA FDD) (UE) covering essential requirements of article 3.2 of the R&TTE Directive. This standard refers to ETSI TS 134 121-1 V9.1.0(2010-07), which is based on ETSI Specification Universal Mobile Telecommunications System (UMTS); User Equipment (UE) conformance specification; Radio transmission and reception (FDD); Part 1: Conformance specification (3GPP TS 34.121-1 version 9.1.0 Release 9). Every time when standard TS 134 121-1 is mentioned in this test report without version or date than TS 134 121-1 V9.1.0 (2010-07) is the only valid reference.

***The objective of the manufacturer*** is to determine compliance with ETSI EN 301908-2 V7.1.1, Electromagnetic compatibility and Radio spectrum Matters (ERM); Base Stations (BS), Repeaters and User Equipment (UE) for IMT-2000 Third-Generation cellular networks; Part 2: Harmonized EN for IMT-2000, CDMA Direct Spread (UTRA FDD) (UE) covering essential requirements of article 3.2 of the R&TTE Directive.
Abbreviations and acronyms you may find in ETSI Technical Report ETR 350 November 1996.

***Maintenance of compliance*** is the responsibility of the manufacturer. Any modification of the product which maybe results in lowering the emission/immunity should be checked to ensure that compliance has been maintained.

## 1.3 Test Facility

- **FCC – Registration No.: 934118**
  Shenzhen SEM.Test Technology Co., Ltd. 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 and the Registration is 934118.

- **Industry Canada (IC) Registration No.: 11464A**
  The 3m Semi-anechoic chamber of Shenzhen SEM.Test Technology Co., Ltd. has been registered by Certification and Engineering Bureau of Industry Canada for radio equipment testing with Registration No.: 11464A.

- **CNAS Registration No.: L4062**
  Shenzhen SEM.Test Technology Co., Ltd. is a testing organization accredited by China National Accreditation Service for Conformity Assessment (CNAS) according to ISO/IEC 17025. The accreditation certificate number is L4062. All measurement facilities used to collect the measurement data are located at 1/F, Building A, Hongwei Industrial Park, Liuxian 2nd Road, Bao'an District, Shenzhen, P.R.C (518101)

### 1.4 Test Equipment List and Details

| Kind of Equipment | Manufacturer | Type | S/N | Cal Date | Due Date |
|---|---|---|---|---|---|
| Equipment list of <SEM.Test Compliance Service Co., Ltd.> | | | | | |
| Test SIM card | - | | - | N/A | N/A |
| Wireless Communications Test Set | Agilent | E5515C | MY48365163 | 2016-06-04 | 2017-06-03 |
| PSA Series Spectrum Analyzer | Agilent | E4440A | MY49420128 | 2016-06-04 | 2017-06-03 |
| EPM Series Power Meter | Agilent | E4418B | MY50000188 | 2016-06-04 | 2017-06-03 |
| E-Series Power Sensor | Agilent | E9304A | MY50000187 | 2016-06-04 | 2017-06-03 |
| Mobile Communication DC Source | Agilent | 66319D | MY43003946 | 2016-06-04 | 2017-06-03 |
| Universal Switck Control Unit | Agilent | N9370A | MY46130177 | N/A | N/A |
| RF Interface Box | Agilent | N1960-80103 | MY45490191 | N/A | N/A |
| GSM Filter Module | Agilent | N1960-80104 | MY45490185 | N/A | N/A |
| PSG Analog Signal Generator | Agilent | E8257D | MY44321116 | 2016-06-04 | 2017-06-03 |
| ESG Vector Signal Generator | Agilent | E4438C | MY49070163 | 2016-06-04 | 2017-06-03 |
| Temperature & Humidity Chamber | Agilent | TH-1P-B | WIT-05121302 | 2016-06-04 | 2017-06-03 |
| Temperature/Humidity Meter | Agilent | ZC1-2 | TR7-TH | 2016-06-04 | 2017-06-03 |
| Spectrum Analyzer | R&S | FSP | 836079/035 | 2016-06-04 | 2017-06-03 |
| Pre-amplifier | Agilent | 8447F | 3113A06717 | 2016-06-04 | 2017-06-03 |
| Pre-amplifier | Compliance Direction | PAP-0118 | 24002 | 2016-06-04 | 2017-06-03 |
| Trilog Broadband Antenna | SCHWARZBECK | VULB9163 | 9163-333 | 2016-06-04 | 2017-06-03 |
| Horn Antenna | ETS | 3117 | 00086197 | 2016-06-04 | 2017-06-03 |
| Signal Generator | Rohde & Schwarz | SMR20 | 100047 | 2016-06-04 | 2017-06-03 |

### 1.5 Environmental conditions for testing

General conditions (GC) as stated in TS 134 121-1 V9.1.0 (2010-07) Annex G G1 This normative annex specifies the environmental requirements of the UE. Within these limits the requirements of the present documents shall be fulfilled.

For extreme test conditions (TC2.2) the manufacturer declared the low voltage to 3.3 V (for Lithium-Ion battery). Higher extreme voltages of 4.2V.

If not other noted, the temperature was in range of +15 ℃ to +35 ℃, the relative humidity was in the range of 20% to 95% and the DC power supply voltage was set to 3.8V (normal test conditions TC2.1).

Note: The relative humidity during all the tests is higher than the mentioned 20%-75% in TS 134 121-1 V9.1.0 (2010-07) for test conditions. Since the weather situation in the testing area gives always this humidity level, all tests are performed within this range. No extra notification in the single test clauses is done.

Table 1 Parameters for normal test conditions TC2.1

| | |
|---|---|
| Temperature: | +15 ℃ to + 35 ℃ |

| | |
|---|---|
| Voltage | DC 3.8V |
| Humidity | 20%-95% |

Table 2 Parameters for extreme test conditions TC2.2

| | | | | |
|---|---|---|---|---|
| Temperature: | +55 ℃ | +55 ℃ | -10 ℃ | -10 ℃ |
| Voltage | DC 3.3V | DC 4.2V | DC 3.3V | DC 4.2V |

For the Vibration requirements (TC4) as stated in TS 134 121-1 V9.1.0 (2010-07) Annex G G2.3.1 the following conditions apply

Table 3 Parameter for vibration requirements TC4

| Frequency in Hz | ASD in $m^2/s^3$ |
|---|---|
| 5-20<br>20-500 | 0,96<br>0,96 at 20 Hz, thereafter –5dB/octave |

# 2. SUMMARY OF TEST RESULTS

| Conformance requirement according to EN 301 908-2 | | | | |
|---|---|---|---|---|
| **No.** | **Reference** | **EN-R (note)** | **TS 134 121-1 Clause** | **Result** |
| 1 | 4.2.2 | Transmitter maximum output power | 5.2.4 | Yes |
| 2 | 4.2.3 | Transmitter spectrum emission mask | 5.9.4 | Yes |
| 3 | 4.2.4 | Transmitter spurious emission | 5.11.4 | Yes |
| 4 | 4.2.5 | Transmitter minimum output power | 5.2.4 | Yes |
| 5 | 4.2.6 | Receiver adjacent channel selectivity | 6.4.4 | Yes |
| 6 | 4.2.7 | Receiver blocking characteristics | 6.5.4 | Yes |
| 7 | 4.2.8 | Receiver spurious response | 6.6.4 | Yes |
| 8 | 4.2.9 | Receiver intermediation characteristics | 6.7.4 | Yes |
| 9 | 4.2.10 | Receiver spurious emission | 6.8.4 | Yes |
| 10 | 4.2.11 | Out-of-synchronization handling of output power | 5.4.4 | Yes |
| 11 | 4.2.12 | Transmitter adjacent channel leakage power ratio | 5.10.4 | Yes |
| Conformance requirement according to EN 301 908-1 | | | | |
| 12 | 4.2.2 | Radiated emissions | / | Yes |
| 13 | 4.2.4 | Control and monitoring functions | / | Yes |

Yes **Test shall be performed**
N/A **Test not applicable**

*Detailed information's, which test data/plots are to find in Appendix 1.*

# 3. Essential radio test suites

## 3.1 Transmitter maximum output power

Clause 5.2 of TS 134 121-1 V9.1.0 (2010-07) applies.

RESULT: Pass

### 3.1.1 Definition and applicability

The nominal maximum output power and its tolerance are defined according to the power class of the UE.
The nominal power defined is the broadband transmit power of the UE, i.e. the power in a bandwidth of at least (1 + α) times the chip rate of the radio access mode. The period of measurement shall be at least one timeslot.

### 3.1.2 Conformance requirements

Test environment: normal, TL/VL,TL/VH,TH/VL,TH/VH (see section 1.6).
The frequencies to be tested are low range, mid range and high range as defined in TS 134 108 [3]:
1) Connect the SS to the UE antenna connector.
2) A call is set up according to the Generic call setup procedure.
3) Enter the UE into loopback test mode and start the loopback test.
NOTE: When reference is made to test set up, call set up and loopback test mode, guidance on the applicability of these can be found in TS 134 121-1 [2], TS 134 108 [3] and TS 134 109 [4] respectively.

The UE maximum output power shall be within the shown value in table 4.2.2.2-1 even for the multi-code DPDCH transmission mode.

**Table 4.2.2.2-1: UE power classes**

| Operating Band | Power Class 3 | | Power Class 3bis | | Power Class 4 | |
|---|---|---|---|---|---|---|
| | Power (dBm) | Tol (dB) | Power (dBm) | Tol (dB) | Power (dBm) | Tol (dB) |
| Band I | +24 | +1,7/-3,7 | | | +21 | +2,7/-2,7 |
| Band III | +24 | +1,7/-3,7 | | | +21 | +2,7/-2,7 |
| Band VII | +24 | +1,7/-3,7 | +23 | +2,7/-2,7 | +21 | +2,7/-2,7 |
| Band VIII | +24 | +1,7/-3,7 | +23 | +2,7/-2,7 | +21 | +2,7/-2,7 |
| Band XV | +24 | +1,7/-3,7 | +23 | +2,7/-1,7 | +21 | +2,7/-1,7 |
| Band XVI | +24 | +1,7/-3,7 | +23 | +2,7/-1,7 | +21 | +2,7/-1,7 |

### 3.1.3 Set up for testing

1) Set and send continuously Up power control commands to the UE.
2) Measure the mean power of the UE in a bandwidth of at least (1+ α) times the chip rate of the radio access mode. The mean power shall be averaged over at least one timeslot.

### 3.1.4 Test result

Test result transmitter maximum output power.

WCDMA Band 1

| Test conditions | | Maximum output power in dBm | | |
|---|---|---|---|---|
| | | Maximum output power RMC (Power Class 3: 24dBm) | | |
| | ARFCN | Channel 9612 | Channel 9750 | Channel 9888 |
| Tnom(25℃) | Vnom(3.8V) | 22.20 | 22.32 | 22.48 |
| Tmin(-10℃) | Vmin(3.3V) | 22.15 | 22.30 | 22.45 |
| | Vmax(4.2V) | 22.19 | 22.31 | 22.40 |
| Tmax(+55℃) | Vmin(3.3V) | 22.13 | 22.25 | 22.41 |
| | Vmax(4.2V) | 22.11 | 22.29 | 22.46 |
| Max. permitted error | | +1.7/-3.7dB | | |
| Measurement uncertainty | | <+/-0.6dB | | |

| Test conditions | | Maximum output power in dBm | | |
|---|---|---|---|---|
| | | Maximum output power HSDPA (Power Class 3: 24dBm) | | |
| | ARFCN | Channel 9612 | Channel 9750 | Channel 9888 |
| Tnom(25℃) | Vnom(3.8V) | 21.11 | 21.03 | 21.96 |
| Tmin(-10℃) | Vmin(3.3V) | 21.02 | 21.00 | 21.91 |
| | Vmax(4.2V) | 21.07 | 21.01 | 21.90 |
| Tmax(+55℃) | Vmin(3.3V) | 21.03 | 21.03 | 21.95 |
| | Vmax(4.2V) | 21.08 | 21.02 | 21.93 |
| Max. permitted error | | +1.7/-3.7dB | | |
| Measurement uncertainty | | <+/-0.6dB | | |

| Test conditions | | Maximum output power in dBm | | |
|---|---|---|---|---|
| | | Maximum output power HSUPA (Power Class 3: 24dBm) | | |
| | ARFCN | Channel 9612 | Channel 9750 | Channel 9888 |
| Tnom(25℃) | Vnom(3.8V) | 21.12 | 21.66 | 21.05 |
| Tmin(-10℃) | Vmin(3.6V) | 21.05 | 21.61 | 21.00 |
| | Vmax(4.2V) | 21.08 | 21.65 | 21.01 |
| Tmax(+55℃) | Vmin(3.6V) | 21.04 | 21.60 | 21.03 |
| | Vmax(4.2V) | 21.10 | 21.64 | 21.04 |
| Max. permitted error | | +1.7/-3.7dB | | |
| Measurement uncertainty | | <+/-0.6dB | | |

WCDMA Band 8

| Test conditions | | Maximum output power in dBm | | |
|---|---|---|---|---|
| | | Maximum output power RMC (Power Class 3: 24dBm) | | |
| | ARFCN | Channel 2712 | Channel 2788 | Channel 2863 |
| Tnom(25℃) | Vnom(3.8V) | 22.20 | 22.30 | 22.44 |
| Tmin(-10℃) | Vmin(3.3V) | 22.11 | 22.22 | 22.40 |
| | Vmax(4.2V) | 22.16 | 22.24 | 22.41 |
| Tmax(+55℃) | Vmin(3.3V) | 22.14 | 22.29 | 22.43 |
| | Vmax(4.2V) | 22.18 | 22.27 | 22.40 |
| Max. permitted error | | +1.7/-3.7dB | | |
| Measurement uncertainty | | <+/-0.6dB | | |

| Test conditions | | Maximum output power in dBm | | |
|---|---|---|---|---|
| | | Maximum output power HSDPA (Power Class 3: 24dBm) | | |
| | ARFCN | Channel 2712 | Channel 2788 | Channel 2863 |
| Tnom(25℃) | Vnom(3.8V) | 21.65 | 21.60 | 21.59 |
| Tmin(-10℃) | Vmin(3.3V) | 21.61 | 21.51 | 21.53 |
| | Vmax(4.2V) | 21.64 | 21.59 | 21.52 |
| Tmax(+55℃) | Vmin(3.3V) | 21.63 | 21.52 | 21.55 |
| | Vmax(4.2V) | 21.60 | 21.55 | 21.59 |
| Max. permitted error | | +1.7/-3.7dB | | |
| Measurement uncertainty | | <+/-0.6dB | | |

| Test conditions | | Maximum output power in dBm | | |
|---|---|---|---|---|
| | | Maximum output power HSUPA (Power Class 3: 24dBm) | | |
| | ARFCN | Channel 2712 | Channel 2788 | Channel 2863 |
| Tnom(25 ℃) | Vnom(3.8V) | 21.01 | 21.49 | 21.84 |
| Tmin(-10 ℃) | Vmin(3.6V) | 21.00 | 21.41 | 21.81 |
| | Vmax(4.2V) | 20.91 | 21.45 | 21.79 |
| Tmax(+55 ℃) | Vmin(3.6V) | 20.95 | 21.47 | 21.75 |
| | Vmax(4.2V) | 21.00 | 21.43 | 21.80 |
| Max. permitted error | | +1.7/-3.7dB | | |
| Measurement uncertainty | | <+/-0.6dB | | |

## 32 TRANSMITTER SPECTRUM EMISSION MASK

Clause 5.9 of TS 134 121-1 V9.1.0 (2010-07) applies.

RESULT: Pass

### 3.2.1 Definition and applicability

Spurious emissions are emissions, which are caused by unwanted transmitter effects such as harmonics emission, parasitic emission, intermodulation products and frequency conversion products, but exclude out-of-band emissions.

### 3.2.2 Conformance requirements

Test environment: normal (see section 1.6).
The frequencies to be tested are low range, mid range and high range as defined in TS 134 108 [3]:
1) Connect the SS to the UE antenna connector.
2) A call is set up according to the Generic call setup procedure.
3) Enter the UE into loopback test mode and start the loopback test.
NOTE: When reference is made to test set up, call set up and loopback test mode, guidance on the applicability of these can be found in TS 134 121-1 [2], TS 134 108 [3] and TS 134 109 [4] respectively.

The power of any UE emission shall not exceed the levels specified in table 4.2.3.2-1. The requirements are applicable for all for the values of βc, βd, βhs, βec and βed defined in TS 125 214 [8].

**Table 4.2.3.2-1: Spectrum emission mask requirement**

| Δf in MHz (note 1) | Minimum requirement (note 2) | | Measurement bandwidth (note 5) |
|---|---|---|---|
| | Relative requirement | Absolute requirement (in measurement bandwidth) | |
| 2,5 MHz to 3,5 MHz | $\left\{-33{,}5-15\cdot\left(\frac{\Delta f}{MHz}-2{,}5\right)\right\}dBc$ | -69,6 dBm | 30 kHz (see note 3) |
| 3,5 MHz to 7,5 MHz | $\left\{-33{,}5-1\cdot\left(\frac{\Delta f}{MHz}-3{,}5\right)\right\}dBc$ | -54,3 dBm | 1 MHz (see note 4) |
| 7,5 MHz to 8,5 MHz | $\left\{-37{,}5-10\cdot\left(\frac{\Delta f}{MHz}-7{,}5\right)\right\}dBc$ | -54,3 dBm | 1 MHz (see note 4) |
| 8,5 MHz to 12,5 MHz | -47,5 dBc | -54,3 dBm | 1 MHz (see note 4) |

NOTE 1: Δf is the separation between the carrier frequency and the centre of the measurement bandwidth.
NOTE 2: The minimum requirement is calculated from the relative requirement or the absolute requirement, whichever is the higher power.
NOTE 3: The first and last measurement position with a 30 kHz filter is at Δf equals to 2,515 MHz and 3,485 MHz.
NOTE 4: The first and last measurement position with a 1 MHz filter is at Δf equals to 4 MHz and 12 MHz.
NOTE 5: As a general rule, the resolution bandwidth of the measuring equipment should be equal to the measurement bandwidth. However, to improve measurement accuracy, sensitivity and efficiency, the resolution bandwidth may be smaller than the measurement bandwidth. When the resolution bandwidth is smaller than the measurement bandwidth, the result should be integrated over the measurement bandwidth in order to obtain the equivalent noise bandwidth of the measurement bandwidth.

### 3.2.3 Set up for testing

1) Set and send continuously Up power control commands to the UE until the UE output power shall be at the maximum level.
2) Measure the power of the transmitted signal with a measurement filter of bandwidths according to table 4.2.3.2-1. Measurements with an offset from the carrier centre frequency between 2,515 MHz and 3,485 MHz shall use a 30 kHz measurement filter. Measurements with an offset from the carrier centre frequency between 4 MHz and 12 MHz shall use 1 MHz measurement bandwidth and the result may be calculated by integrating multiple 50 kHz or narrower filter measurements. The characteristic of the filter shall be approximately Gaussian (typical spectrum analyzer filter). The centre frequency of the filter shall be stepped in contiguous steps according to table 4.2.3.2-1. The measured power shall be recorded for each step.
3) Measure the RRC filtered mean power centred on the assigned channel frequency.
4) Calculate the ratio of the power 2) with respect to 3) in dBc.

### 3.2.4 Test result

Test result transmitter spectrum emission mask

Band 1

| requirements / Test Condition | | Transmitter spectrum emission mask – Max. emission value (dBc) in the measure frequency band | | | |
|---|---|---|---|---|---|
| | | Measure range | Low channel | Mid. Channel | High Channel |
| $T_{nom}$(25 ℃) | Vnom(3.8V) | 2.5MHz to 3.5MHz | Pass | Pass | Pass |
| | | 3.5MHz to 7.5MHz | Pass | Pass | Pass |
| | | 7.5MHz to 8.5MHz | Pass | Pass | Pass |
| | | 8.5MHz to 12.5MHz | Pass | Pass | Pass |
| Measurement uncertainty | | +/-1.5dB | | | |

Band 8

| requirements / Test Condition | | Transmitter spectrum emission mask – Max. emission value (dBc) in the measure frequency band | | | |
|---|---|---|---|---|---|
| | | Measure range | Low channel | Mid. Channel | High Channel |
| $T_{nom}$(25 ℃) | Vnom(3.8V) | 2.5MHz to 3.5MHz | Pass | Pass | Pass |
| | | 3.5MHz to 7.5MHz | Pass | Pass | Pass |
| | | 7.5MHz to 8.5MHz | Pass | Pass | Pass |
| | | 8.5MHz to 12.5MHz | Pass | Pass | Pass |
| Measurement uncertainty | | +/-1.5dB | | | |

### 3.3 Transmitter spurious emissions

Clause 5.11 of ETSI TS 134 121-1 V9.1.0 (2010-07) applies.

RESULT: Pass

#### 3.3.1 Definition and applicability

Spurious emissions are emissions, which are caused by unwanted transmitter effects such as harmonics emission, parasitic emission, intermediation products and frequency conversion products, but exclude out-of-band emissions.

#### 3.3.2 Conformance requirements

Test environment: normal condition (see section 1.6).
The frequencies to be tested are low range, mid range and high range as defined in TS 134 108 [3]:
1) Connect the SS to the UE antenna connector.
2) A call is set up according to the Generic call setup procedure.
3) Enter the UE into loopback test mode and start the loopback test.
NOTE: When reference is made to test set up, call set up and loopback test mode, guidance on the applicability of these can be found in TS 134 121-1 [2], TS 134 108 [3] and TS 134 109 [4] respectively.

The power of spurious emissions shall not exceed the limits defined in tables 4.2.4.2-1 and 4.2.4.2-2. The limits shown in tables 4.2.4.2-1 and 4.2.4.2-2 are only applicable for frequencies, which are greater than 12,5 MHz away from the UE centre carrier frequency.

**Table 4.2.4.1.2-1: General spurious emissions requirements**

| Frequency bandwidth | Measurement bandwidth | Minimum requirement |
|---|---|---|
| 9 kHz ≤ f < 150 kHz | 1 kHz | -36 dBm |
| 150 kHz ≤ f < 30 MHz | 10 kHz | -36 dBm |
| 30 MHz ≤ f < 1 000 MHz | 100 kHz | -36 dBm |
| 1 GHz ≤ f < 12,75 GHz | 1 MHz | -30 dBm |
| 12,75 GHz ≤ f < 5$^{th}$ harmonic of the upper frequency edge of the UL operating band in GHz | 1 MHz | –30 dBm (note) |
| NOTE: Applies only for Band XXII. | | |

**Table 4.2.4.1.2-2: Additional spurious emissions requirements**

| Operating band | Frequency bandwidth | Measurement bandwidth | Minimum requirement |
|---|---|---|---|
| I | 791 MHz ≤ f ≤ 821 MHz | 3,84 MHz | -60 dBm |
| | 921 MHz ≤ f < 925 MHz | 100 kHz | -60 dBm (note 1) |
| | 925 MHz ≤ f ≤ 935 MHz | 100 kHz | -67 dBm (note 1) |
| | 935 MHz < f ≤ 960 MHz | 100 kHz | -79 dBm (note 1) |
| | 1 805 MHz ≤ f ≤ 1 880 MHz | 100 kHz | -71 dBm (note 1) |
| | 2 110 MHz ≤ f ≤ 2 170 MHz | 3,84 MHz | -60 dBm |
| | 2 585 MHz ≤ f ≤ 2 690 MHz | 3,84 MHz | -60 dBm |
| III | 791 MHz ≤ f ≤ 821 MHz | 3,84 MHz | -60 dBm |
| | 921 MHz ≤ f < 925 MHz | 100 kHz | -60 dBm (note 1) |
| | 925 MHz ≤ f ≤ 935 MHz | 100 kHz | -67 dBm (note 1) |
| | 935 MHz < f ≤ 960 MHz | 100 kHz | -79 dBm (note 1) |
| | 1 805 MHz ≤ f ≤ 1 880 MHz | 3,84 MHz | -60 dBm |
| | 2 110 MHz ≤ f ≤ 2 170 MHz | 3,84 MHz | -60 dBm |
| | 2 585 MHz ≤ f ≤ 2 690 MHz | 3,84 MHz | -60 dBm |

| | | | |
|---|---|---|---|
| VII | 921 MHz ≤ f < 925 MHz | 100 kHz | -60 dBm (note 1) |
| | 925 MHz ≤ f ≤ 935 MHz | 100 kHz | -67 dBm (note 1) |
| | 935 MHz < f ≤ 960 MHz | 100 kHz | -79 dBm (note 1) |
| | 1 805 MHz ≤ f ≤ 1 880 MHz | 100 kHz | -71 dBm (note 1) |
| | 2 110 MHz ≤ f ≤ 2 170 MHz | 3,84 MHz | -60 dBm |
| | 2 620 MHz ≤ f ≤ 2 690 MHz | 3,84 MHz | -60 dBm |
| | 2 590 MHz ≤ f ≤ 2 620 MHz | 3,84 MHz | -50 dBm |
| VIII | 791 MHz ≤ f ≤ 821 MHz | 3,84 MHz | -60 dBm |
| | 925 MHz ≤ f ≤ 935 MHz | 100 kHz<br>3,84 MHz | -67 dBm (note 1)<br>-60 dBm |
| | 935 MHz < f ≤ 960 MHz | 100 kHz<br>3,84 MHz | -79 dBm (note 1)<br>-60 dBm |
| | 1 805 MHz < f ≤ 1 830 MHz | 100 kHz<br>3,84 MHz | -71 dBm (notes 1 and 2)<br>-60 dBm (note 2) |
| | 1 830 MHz < f ≤ 1 880 MHz | 100 kHz<br>3,84 MHz | -71 dBm (note 1)<br>-60 dBm |
| | 2 110 MHz ≤ f ≤ 2 170 MHz | 3,84 MHz | -60 dBm |
| | 2 585 MHz ≤ f ≤ 2 640 MHz | 3,84 MHz | -60 dBm |
| | 2 640 MHz ≤ f ≤ 2 690 MHz | 3,84 MHz | -60 dBm (note 2) |
| XV | 791 MHz ≤ f ≤ 821 MHz | 3,84 MHz | -60 dBm |
| | 921 MHz ≤ f ≤ 925 MHz | 100 kHz | -60 dBm (note 1) |
| | 925 MHz ≤ f ≤ 935 MHz | 100 kHz<br>3,84 MHz | -67 dBm (note 1)<br>-60 dBm |
| | 935 MHz ≤ f ≤ 960 MHz | 100 kHz | -79 dBm (note 1) |
| | 1 805 MHz ≤ f ≤ 1 880 MHz | 100 kHz | -71 dBm (note 1) |
| | 2 110 MHz ≤ f ≤ 2 170 MHz | 3,84 MHz | -60 dBm |
| | 2 585 MHz ≤ f ≤ 2 620 MHz | 3,84 MHz | -50 dBm |
| | 2 620 MHz ≤ f ≤ 2 690 MHz | 3,84 MHz | -60 dBm |
| XVI | 791 MHz ≤ f ≤ 821 MHz | 3,84 MHz | -60 dBm |
| | 921 MHz ≤ f ≤ 925 MHz | 100 kHz | -60 dBm (note 1) |
| | 925 MHz ≤ f ≤ 935 MHz | 100 kHz<br>3,84 MHz | -67 dBm (note 1)<br>-60 dBm |
| | 935 MHz ≤ f ≤ 960 MHz | 100 kHz | -79 dBm (note 1) |
| | 1 805 MHz ≤ f ≤ 1 880 MHz | 100 kHz | -71 dBm (note 1) |
| | 2 110 MHz ≤ f ≤ 2 170 MHz | 3,84 MHz | -60 dBm |
| | 2 585 MHz ≤ f ≤ 2 620 MHz | 3,84 MHz | -50 dBm |
| | 2 620 MHz ≤ f ≤ 2 690 MHz | 3,84 MHz | -60 dBm |

| Operating band | Frequency bandwidth | Measurement bandwidth | Minimum requirement |
|---|---|---|---|
| XX | 470 MHz ≤ f ≤ 790 MHz | 8 MHz | -65 dBm (note 3) |
| | 791 MHz ≤ f ≤ 821 MHz | 3,84 MHz | -60 dBm |
| | 921 MHz ≤ f ≤ 925 MHz | 100 kHz | -60 dBm (note 1) |
| | 925 MHz ≤ f ≤ 935 MHz | 100 kHz<br>3,84 MHz | -67 dBm (note 1)<br>-60 dBm |
| | 935 MHz ≤ f ≤ 960 MHz | 100 kHz | -79 dBm (note 1) |
| | 1 805 MHz ≤ f ≤ 1 880 MHz | 100 kHz | -71 dBm (note 1) |
| | 2 110 MHz ≤ f ≤ 2 170 MHz | 3,84 MHz | -60 dBm |
| | 2 585 MHz ≤ f ≤ 2 620 MHz | 3,84 MHz | -50 dBm |
| | 2 620 MHz ≤ f ≤ 2 690 MHz | 3,84 MHz | -60 dBm |
| XXII | 791 MHz ≤ f ≤ 821 MHz | 3,84 MHz | -60 dBm |
| | 921 MHz ≤ f < 925 MHz | 100 kHz | -60 dBm (note 1) |
| | 925 MHz ≤ f ≤ 935 MHz | 100 kHz<br>3,84 MHz | -67 dBm (note 1)<br>-60 dBm |
| | 935 MHz < f ≤ 960 MHz | 100 kHz | -79 dBm (note 1) |
| | 1 805 MHz ≤ f ≤ 1 880 MHz | 100 kHz | -71 dBm (note 1) |
| | 2 110 MHz ≤ f ≤ 2 170 MHz | 3,84 MHz | -60 dBm |
| | 2 585 MHz ≤ f ≤ 2 620 MHz | 3,84 MHz | -50 dBm |
| | 2 620 MHz ≤ f ≤ 2 690 MHz | 3,84 MHz | -60 dBm |
| | 3 510 MHz ≤ f ≤ 3 525 MHz | 1 MHz | -40 dBm |
| | 3 525 MHz ≤ f ≤ 3 590 MHz | 1 MHz | -50 dBm |
| | 3 600 MHz ≤ f ≤ 3 800 MHz | 3,84 MHz | -50 dBm |

NOTE 1: The measurements are made on frequencies which are integer multiples of 200 kHz. As exceptions, up to five measurements with a level up to the applicable requirements defined in table 4.2.4.1.2-1 are permitted for each UARFCN used in the measurement.

NOTE 2: The measurements are made on frequencies which are integer multiples of 200 kHz. As exceptions, measurements with a level up to the applicable requirements defined in table 4.2.4.1.2-1 are permitted for each UARFCN used in the measurement due to 2nd or 3rd harmonic spurious emissions.

NOTE 3: The conformance shall be assessed using the measurement position placed at the following centre frequencies: 474 MHz, 586 MHz, 690 MHz, 754 MHz, 770 MHz and 786 MHz.

### 3.3.3 Set up for testing

1) Set and send continuously Up power control commands to the UE until the UE output power shall be maximum level.
2) Sweep the spectrum analyser (or equivalent equipment) over a frequency range and measure the average power of spurious emission.

### 3.3.4 Test result

For WCDMA Band 1:

| Measurement frequency range | Max. spurious emission frequency (MHz) | Measured value dBm | Limit dBm | Result |
|---|---|---|---|---|
| Low Channel 9612 | | | | |
| 9k~150kHz | 0.77 | -64.55 | -36 | Pass |
| 150kHz~30MHz | 3.08 | -38.18 | -36 | Pass |
| 30MHz~791MHz | 160.00 | -40.91 | -36 | Pass |
| 791MHz~821MHz | 806.15 | -64.55 | -60 | Pass |
| 821MHz~921MHz | 910.00 | -40.00 | -36 | Pass |
| 921MHz~925MHz | 924.62 | -65.45 | -60 | Pass |
| 925MHz~935MHz | 926.15 | -81.82 | -67 | Pass |
| 935MHz~960MHz | 958.46 | -81.82 | -79 | Pass |
| 960MHz~1000MHz | 963.85 | -43.64 | -36 | Pass |
| 1000MHz~1805MHz | 1015.38 | -70.00 | -30 | Pass |
| 1805MHz~1880MHz | 1809.23 | -68.18 | -71 | Pass |
| 1880MHz~2110MHz | 2090.00 | -70.91 | -30 | Pass |
| 2110MHz~2170MHz | 2144.62 | -71.82 | -60 | Pass |
| 2170MHz~2585MHz | 2190.77 | -75.45 | -30 | Pass |
| 2585MHz~2690MHz | 2623.08 | -74.55 | -60 | Pass |
| 2690MHz~12.75GHz | 7845.38 | -71.82 | -30 | Pass |
| Middle Channel 9750 | | | | |
| 9k~150kHz | 0.77 | -64.55 | -36 | Pass |
| 150kHz~30MHz | 20.77 | -39.09 | -36 | Pass |
| 30MHz~791MHz | 304.62 | -39.09 | -36 | Pass |
| 791MHz~821MHz | 792.31 | -68.18 | -60 | Pass |
| 821MHz~921MHz | 846.15 | -38.18 | -36 | Pass |
| 921MHz~925MHz | 922.31 | -67.27 | -60 | Pass |
| 925MHz~935MHz | 929.23 | -69.09 | -67 | Pass |
| 935MHz~960MHz | 940.77 | -84.55 | -79 | Pass |
| 960MHz~1000MHz | 986.15 | -42.73 | -36 | Pass |
| 1000MHz~1805MHz | 1081.54 | -72.73 | -30 | Pass |
| 1805MHz~1880MHz | 1820.00 | -69.09 | -71 | Pass |
| 1880MHz~2110MHz | 2060.77 | -75.45 | -30 | Pass |
| 2110MHz~2170MHz | 2113.85 | -72.73 | -60 | Pass |
| 2170MHz~2585MHz | 2356.15 | -80.00 | -30 | Pass |

| | | | | |
|---|---|---|---|---|
| 2585MHz~2690MHz | 2589.23 | -72.73 | -60 | Pass |
| 2690MHz~12.75GHz | 10850.77 | -73.64 | -30 | Pass |
| High Channel 9888 | | | | |
| 9k~150kHz | 0.77 | -66.36 | -36 | Pass |
| 150kHz~30MHz | 11.54 | -40.91 | -36 | Pass |
| 30MHz~791MHz | 733.85 | -38.18 | -36 | Pass |
| 791MHz~821MHz | 806.15 | -65.45 | -60 | Pass |
| 821MHz~921MHz | 850.00 | -38.18 | -36 | Pass |
| 921MHz~925MHz | 921.54 | -66.36 | -60 | Pass |
| 925MHz~935MHz | 930.77 | -75.45 | -67 | Pass |
| 935MHz~960MHz | 943.08 | -86.36 | -79 | Pass |
| 960MHz~1000MHz | 990.77 | -42.73 | -36 | Pass |
| 1000MHz~1805MHz | 1405.38 | -70.00 | -30 | Pass |
| 1805MHz~1880MHz | 1863.85 | -75.45 | -71 | Pass |
| 1880MHz~2110MHz | 1890.00 | -76.36 | -30 | Pass |
| 2110MHz~2170MHz | 2163.85 | -73.64 | -60 | Pass |
| 2170MHz~2585MHz | 2410.00 | -69.09 | -30 | Pass |
| 2585MHz~2690MHz | 2659.23 | -72.73 | -60 | Pass |
| 2690MHz~12.75GHz | 7651.54 | -71.82 | -30 | Pass |

For WCDMA Band 8:

| Measurement frequency range | Max. spurious emission frequency (MHz) | Measured value dBm | Limit dBm | Result |
|---|---|---|---|---|
| Low Channel 2712 | | | | |
| 9k~150kHz | 0.77 | -74.55 | -36 | Pass |
| 150kHz~30MHz | 8.46 | -41.82 | -36 | Pass |
| 30MHz~791MHz | 203.08 | -65.45 | -36 | Pass |
| 791MHz~821MHz | 804.62 | -40.91 | -60 | Pass |
| 821MHz~921MHz | 917.69 | -38.18 | -36 | Pass |
| 921MHz~925MHz | 923.08 | -70.00 | -60 | Pass |
| 925MHz~935MHz | 926.15 | -79.09 | -67 | Pass |
| 935MHz~960MHz | 943.08 | -82.73 | -79 | Pass |
| 960MHz~1000MHz | 979.23 | -41.82 | -36 | Pass |
| 1000MHz~1805MHz | 1189.23 | -81.82 | -30 | Pass |
| 1805MHz~1880MHz | 1877.69 | -73.64 | -71 | Pass |
| 1880MHz~2110MHz | 2016.92 | -72.73 | -30 | Pass |
| 2110MHz~2170MHz | 2110.00 | -71.82 | -60 | Pass |
| 2170MHz~2585MHz | 2336.15 | -70.00 | -30 | Pass |
| 2585MHz~2640MHz | 2590.00 | -69.09 | -60 | Pass |
| 2640MHz~12.75GHz | 3144.62 | -80.91 | -30 | Pass |
| Middle Channel 2788 | | | | |
| 9k~150kHz | 0.77 | -71.82 | -36 | Pass |

| | | | | |
|---|---|---|---|---|
| 150kHz~30MHz | 13.85 | -40.91 | -36 | Pass |
| 30MHz~791MHz | 438.46 | -67.27 | -36 | Pass |
| 791MHz~821MHz | 815.38 | -38.18 | -60 | Pass |
| 821MHz~921MHz | 883.85 | -42.73 | -36 | Pass |
| 921MHz~925MHz | 923.08 | -66.36 | -60 | Pass |
| 925MHz~935MHz | 929.23 | -80.00 | -67 | Pass |
| 935MHz~960MHz | 937.69 | -84.55 | -79 | Pass |
| 960MHz~1000MHz | 992.31 | -43.64 | -36 | Pass |
| 1000MHz~1805MHz | 1448.46 | -73.64 | -30 | Pass |
| 1805MHz~1880MHz | 1856.15 | -81.82 | -71 | Pass |
| 1880MHz~2110MHz | 2023.08 | -69.09 | -30 | Pass |
| 2110MHz~2170MHz | 2162.31 | -72.73 | -60 | Pass |
| 2170MHz~2585MHz | 2203.85 | -78.18 | -30 | Pass |
| 2585MHz~2640MHz | 2614.62 | -80.00 | -60 | Pass |
| 2640MHz~12.75GHz | 2841.54 | -75.45 | -30 | Pass |
| High Channel 2863 | | | | |
| 9k~150kHz | 0.77 | -79.09 | -36 | Pass |
| 150kHz~30MHz | 17.69 | -41.82 | -36 | Pass |
| 30MHz~791MHz | 682.31 | -70.00 | -36 | Pass |
| 791MHz~821MHz | 793.08 | -39.09 | -60 | Pass |
| 821MHz~921MHz | 898.46 | -39.09 | -36 | Pass |
| 921MHz~925MHz | 924.62 | -69.09 | -60 | Pass |
| 925MHz~935MHz | 934.62 | -69.09 | -67 | Pass |
| 935MHz~960MHz | 953.08 | -82.73 | -79 | Pass |
| 960MHz~1000MHz | 996.15 | -39.09 | -36 | Pass |
| 1000MHz~1805MHz | 1023.85 | -74.55 | -30 | Pass |
| 1805MHz~1880MHz | 1863.85 | -72.73 | -71 | Pass |
| 1880MHz~2110MHz | 2099.23 | -75.45 | -30 | Pass |
| 2110MHz~2170MHz | 2122.31 | -70.91 | -60 | Pass |
| 2170MHz~2585MHz | 2177.69 | -80.91 | -30 | Pass |
| 2585MHz~2640MHz | 2605.38 | -80.91 | -60 | Pass |
| 2640MHz~12.75GHz | 3400.77 | -79.09 | -30 | Pass |

### 3.4 Transmitter minimum output power

Clause 4.2.5 of EN 301 908-2 V7.1.1 applies.

RESULT: Pass

#### 3.4.1 Definition and applicability

The minimum controlled output power of the UE is when the power is set to a minimum value. The minimum transmit power is defined as a mean power in one time slot.

#### 3.4.2 Conformance requirements

Test environment: normal, TL/VL, TL/VH, TH/VL, TH/VH (see section 1.6)
The frequencies to be tested are mid range as defined in TS 134 108 [3]:
1) Connect the SS to the UE antenna connector.
2) A call is set up according to the Generic call setup procedure.
3) Enter the UE into loopback test mode and start the loopback test.
NOTE: When reference is made to test set up, call set up and loopback test mode, guidance on the applicability of these can be found in TS 134 121-1 [2], TS 134 108 [3] and TS 134 109 [4].

The minimum output power shall be less than -49 dBm.

#### 3.4.3 Set up for testing

1) Set and send continuously Down power control commands to the UE.
2) Measure the mean power of the UE.

### 3.4.4 Test result

Test est result transmitter minimum output power

| Test conditions | | Minimum output power in dBm | | |
|---|---|---|---|---|
| | | Minimum output power WCDMA Band 1 | | |
| | ARFCN | Channel 9612 | Channel 9750 | Channel 9887 |
| Tnom(25 ℃) | Vnom(3.8V) | -53.85 | -53.85 | -55.38 |
| Tmin(-10 ℃) | Vmin(3.3V) | -53.85 | -56.92 | -53.08 |
| | Vmax(4.2V) | -57.69 | -53.85 | -53.85 |
| Tmax(+55 ℃) | Vmin(3.3V) | -55.38 | -54.62 | -53.85 |
| | Vmax(4.2V) | -59.23 | -53.08 | -53.08 |
| Max. permitted value | | -49dBm | | |
| Measurement uncertainty | | <+/-1.0dB | | |

| Test conditions | | Minimum output power in dBm | | |
|---|---|---|---|---|
| | | Minimum output power HSDPA Band 1 | | |
| | ARFCN | Channel 9612 | Channel 9750 | Channel 9888 |
| Tnom(25 ℃) | Vnom(3.8V) | -53.85 | -52.31 | -54.62 |
| Tmin(-10 ℃) | Vmin(3.3V) | -54.62 | -57.69 | -53.85 |
| | Vmax(4.2V) | -52.31 | -60.00 | -60.00 |
| Tmax(+55 ℃) | Vmin(3.3V) | -53.08 | -56.15 | -55.38 |
| | Vmax(4.2V) | -53.08 | -54.62 | -56.92 |
| Max. permitted value | | -49dBm | | |
| Measurement uncertainty | | <+/-1.0dB | | |

| Test conditions | | Minimum output power in dBm | | |
|---|---|---|---|---|
| | | Minimum output power HSUPA Band 1 | | |
| | ARFCN | Channel 9613 | Channel 9750 | Channel 9887 |
| Tnom(25 ℃) | Vnom(3.8V) | -60.00 | -53.85 | -54.62 |
| Tmin(-10 ℃) | Vmin(3.6V) | -57.69 | -57.69 | -54.62 |
| | Vmax(4.2V) | -60.00 | -53.85 | -56.15 |
| Tmax(+55 ℃) | Vmin(3.6V) | -53.08 | -53.08 | -53.85 |
| | Vmax(4.2V) | -55.38 | -53.85 | -54.62 |
| Max. permitted value | | -49dBm | | |
| Measurement uncertainty | | <+/-1.0dB | | |

| Test conditions | | Minimum output power in dBm | | |
|---|---|---|---|---|
| | | Minimum output power WCDMA Band 8 | | |
| | ARFCN | Channel 2712 | Channel 2788 | Channel 2863 |
| Tnom(25℃) | Vnom(3.8V) | -56.92 | -58.46 | -53.85 |
| Tmin(-10℃) | Vmin(3.3V) | -54.62 | -58.46 | -52.31 |
| | Vmax(4.2V) | -55.38 | -58.46 | -59.23 |
| Tmax(+55℃) | Vmin(3.3V) | -55.38 | -57.69 | -54.62 |
| | Vmax(4.2V) | -56.92 | -58.46 | -56.92 |
| Max. permitted value | | -49dBm | | |
| Measurement uncertainty | | <+/-1.0dB | | |

| Test conditions | | Minimum output power in dBm | | |
|---|---|---|---|---|
| | | Minimum output power HSDPA Band 8 | | |
| | ARFCN | Channel 2712 | Channel 2788 | Channel 2863 |
| Tnom(25℃) | Vnom(3.8V) | -56.92 | -52.31 | -60.00 |
| Tmin(-10℃) | Vmin(3.3V) | -56.92 | -59.23 | -56.15 |
| | Vmax(4.2V) | -60.00 | -53.85 | -59.23 |
| Tmax(+55℃) | Vmin(3.3V) | -54.62 | -56.92 | -53.85 |
| | Vmax(4.2V) | -59.23 | -57.69 | -52.31 |
| Max. permitted value | | -49dBm | | |
| Measurement uncertainty | | <+/-1.0dB | | |

| Test conditions | | Minimum output power in dBm | | |
|---|---|---|---|---|
| | | Minimum output power HSUPA Band 8 | | |
| | ARFCN | Channel 2712 | Channel 2788 | Channel 2863 |
| Tnom(25℃) | Vnom(3.8V) | -55.38 | -58.46 | -58.46 |
| Tmin(-10℃) | Vmin(3.6V) | -52.31 | -56.92 | -56.92 |
| | Vmax(4.2V) | -58.46 | -53.08 | -57.69 |
| Tmax(+55℃) | Vmin(3.6V) | -53.08 | -57.69 | -52.31 |
| | Vmax(4.2V) | -53.85 | -53.08 | -56.92 |
| Max. permitted value | | -49dBm | | |
| Measurement uncertainty | | <+/-1.0dB | | |

### 3.5 Receiver adjacent channel selectivity

Clause 6.4 of TS 134 121-1 V9.1.0(2010-07) applies.

RESULT: Pass

#### 3.5.1 Definition and applicability

Adjacent Channel Selectivity (ACS) is a measure of a receiver's ability to receive a WCDMA signal at its assigned channel frequency in the presence of an adjacent channel signal at a given frequency offset from the centre frequency of the assigned channel. ACS is the ratio of the receive filter attenuation on the assigned channel frequency to the receive filter attenuation on the adjacent channel(s).

#### 3.5.2 Conformance requirements

Test environment: normal (see section 1.6).
The frequencies to be tested are mid range as defined in TS 134 108 [3]:
1) Connect the SS to the UE antenna connector.
2) A call is set up according to the Generic call setup procedure, and RF parameters are set up according to table 4.2.6.2-1.
3) Enter the UE into loopback test mode and start the loopback test.
NOTE: When reference is made to test set up, call set up and loopback test mode, guidance on the applicability of these can be found in TS 134 121-1 [2], TS 134 108 [3] and TS 134 109 [4] respectively.

For the UE of power class 3 and 4, the BER shall not exceed 0,001 for the parameters specified in table 4.2.6.2-1. This test condition is equivalent to the ACS value 33 dB.

**Table 4.2.6.2-1: Test parameters for adjacent channel selectivity**

| Parameter | Unit | Case 1 | Case 2 |
|---|---|---|---|
| DPCH_Ec | dBm/3,84 MHz | <REFSENS> + 14 dB | <REFSENS> + 41 dB |
| $\hat{I}_{or}$ | dBm/3,84 MHz | <REF$\hat{I}_{or}$> + 14 dB | <REF$\hat{I}_{or}$> + 41 dB |
| $I_{oac}$ mean power (modulated) | dBm | -52 | -25 |
| $F_{uw}$ (offset) | MHz | +5 or -5 | +5 or -5 |
| UE transmitted mean power | dBm | 20 (for Power class 3)<br>18 (for Power class 4) | 20 (for Power class 3)<br>18 (for Power class 4) |
| NOTE 1: <REFSENS> and <REF$\hat{I}_{or}$> as specified in TS 134 121-1 [2].<br>NOTE 2: The $I_{oac}$ (modulated) signal consists of the common channels and the 16 dedicated data channels as specified in TS 125 101 [5]. | | | |

#### 3.5.3 Set up for testing

1) Set the parameters of the interference signal generator as shown in table 4.2.6.2-1 case 1.
2) Set the power level of UE according to the table 4.2.6.2-1 case 1 with ±1 dB tolerance.
3) Measure the BER of DCH received from the UE at the SS.

4) Set the parameters of the interference signal generator as shown in table 4.2.6.2-1 case 2.
5) Set the power level of UE according to the table 4.2.6.2-1 case 2 with ±1 dB tolerance.
6) Measure the BER of DCH received from the UE at the SS.

### 3.5.4 Test result

Band 1

| Test conditions | | WCDMA Band 1 - Receiver adjacent channel selectivity for Power Class 3 | | | | |
|---|---|---|---|---|---|---|
| T | V | Case | Fuw (offset) | BER | Limit | Test Result |
| Tnom(25℃) | Vnom(3.8V) | Case 1 | -5MHz | 0 | 0.001 | Pass |
| | | | +5MHz | 0 | 0.001 | Pass |
| | | Case 2 | -5MHz | 0 | 0.001 | Pass |
| | | | +5MHz | 0 | 0.001 | Pass |
| Measurement uncertainty | | <+/-0.5dB | | | | |

Band 8

| Test conditions | | WCDMA Band 8 - Receiver adjacent channel selectivity for Power Class 3 | | | | |
|---|---|---|---|---|---|---|
| T | V | Case | Fuw (offset) | BER | Limit | Test Result |
| Tnom(25℃) | Vnom(3.8V) | Case 1 | -5MHz | 0 | 0.001 | Pass |
| | | | +5MHz | 0 | 0.001 | Pass |
| | | Case 2 | -5MHz | 0 | 0.001 | Pass |
| | | | +5MHz | 0 | 0.001 | Pass |
| Measurement uncertainty | | <+/-0.5dB | | | | |

The equipment complied with the requirement of this clause.

### 3.6 Receiver blocking characteristics

Clause 6.5 of TS 134 121-1 V9.1.0(2010-07) applies.

RESULT: Pass

#### 3.6.1 Definition and applicability

The blocking characteristic is a measure of the receiver's ability to receive a wanted signal at its assigned channel frequency in the presence of an unwanted interferer on frequencies other than those of the spurious response or the adjacent channels, without this unwanted input signal causing a degradation of the performance of the receiver beyond a specified limit. The blocking performance shall apply at all frequencies except those at which a spurious response occur.

#### 3.6.2 Conformance requirements

Test environment: normal (see section 1.6).
For in-band case, the frequencies to be tested are mid range as defined in TS 134 108 [3]. For out-of-band case, frequencies to be tested are mid range as defined in TS 134 108 [3].
For narrow band case, frequencies to be tested are mid range as defined in TS 134 108 [3]:
1) Connect the SS to the UE antenna connector.
2) A call is set up according to the Generic call setup procedure, and RF parameters are set up according to tables 4.2.7.2-1, 4.2.7.2-2 and 4.2.7.2-3.
3) Enter the UE into loopback test mode and start the loopback test.
NOTE: When reference is made to test set up, call set up and loopback test mode, guidance on the applicability of these can be found in TS 134 121-1 [2], TS 134 108 [3] and TS 134 109 [4] respectively.

The BER shall not exceed 0,001 for the parameters specified in tables 4.2.7.2-1 and 4.2.7.2-2. For table 4.2.7.2-2 up to 24 exceptions are allowed for spurious response frequencies in each assigned frequency channel when measured using a 1 MHz step size.

**Table 4.2.7.2-1: Test parameters for in-band blocking characteristics**

| Parameter | Unit | Level | |
|---|---|---|---|
| DPCH Ec | dBm/3,84 MHz | <REFSENS> + 3 dB | |
| $I_{or}$ | dBm/3,84 MHz | <$REFI_{or}$> + 3 dB | |
| $I_{blocking}$ mean power (modulated) | dBm | -56 (for $F_{uw}$ offset ±10 MHz) | -44 (for $F_{uw}$ offset ±15 MHz) |
| UE transmitted mean power | dBm | 20 (for Power class 3)<br>18 (for Power class 4) | |
| NOTE 1: <REFSENS> and <$REFI_{or}$> as specified in TS 134 121-1 [2].<br>NOTE 2: The $I_{blocking}$ (modulated) signal consists of the common channels and the 16 dedicated data channels as specified in TS 125 101 [5]. | | | |

**Table 4.2.7.2-2: Test parameters for out-of-band blocking characteristics**

| Parameter | Unit | Frequency range 1 | Frequency range 2 | Frequency range 3 |
|---|---|---|---|---|
| DPCH_Ec | dBm/3,84 MHz | <REFSENS> + 3 dB | <REFSENS> + 3 dB | <REFSENS> + 3 dB |
| $I_{or}$ | dBm/3,84 MHz | <REFI$_{or}$> + 3 dB | <REFI$_{or}$> + 3 dB | <REFI$_{or}$> + 3 dB |
| $I_{blocking}$ (CW) | dBm | -44 | -30 | -15 |
| $F_{uw}$ (Band I operation) | MHz | 2 050 < f < 2 095<br>2 185 < f < 2 230 | 2 025 < f ≤ 2 050<br>2 230 ≤ f < 2 255 | 1 < f ≤ 2 025<br>2 255 ≤ f < 12 750 |
| $F_{uw}$ (Band III operation) | MHz | 1 745 < f < 1 790<br>1 895 < f < 1 940 | 1 720 < f ≤ 1 745<br>1 940 ≤ f < 1 965 | 1 < f ≤ 1 720<br>1 965 ≤ f < 12 750 |
| $F_{uw}$ (Band VII operation) | MHz | 2 570 < f < 2 605<br>2 705 < f < 2 750 | Na<br>2 750 ≤ f < 2 775 | 1 < f ≤ 2 570<br>2 775 ≤ f < 12 750 |
| $F_{uw}$ (Band VIII operation) | MHz | 865 < f < 910<br>975 < f < 1 020 | 840 < f < 865<br>1 020 ≤ f < 1 045 | 1 < f ≤ 840<br>1 045 ≤ f < 12 750 |
| Fuw (Band XV operation) | MHz | 2 570 < f < 2 585<br>2 705 < f < 2 750 | Na<br>2 750 ≤ f < 2 775 | 1 < f ≤ 2 570<br>2 775 ≤ f < 12 750 |
| Fuw (Band XVI operation) | MHz | Na<br>2 705 < f < 2 750 | 2 500 < f ≤ 2 570<br>2 750 ≤ f < 2 775 | 1 < f ≤ 2 500<br>2 775 ≤ f < 12 750 |
| UE transmitted mean power | dBm | 20 (for Power class 3)<br>18 (for Power class 4) | | |
| Band I operation | For 2 095 MHz ≤ f ≤ 2 185 MHz, the appropriate in-band blocking or adjacent channel selectivity in clause 4.2.6 and table 4.2.7.2-1 shall be applied. | | | |
| Band III operation | For 1 790 MHz ≤ f ≤ 1 895 MHz, the appropriate in-band blocking or adjacent channel selectivity in clause 4.2.6 and table 4.2.7.2-1 shall be applied. | | | |

| Parameter | Unit | Frequency range 1 | Frequency range 2 | Frequency range 3 |
|---|---|---|---|---|
| Band VII operation | For 2 605 MHz ≤ f ≤ 2 705 MHz, the appropriate in-band blocking or adjacent channel selectivity in clause 4.2.6 and table 4.2.7.2-1 shall be applied. | | | |
| Band VIII operation | For 910 MHz ≤ f ≤ 975 MHz, the appropriate in-band blocking or adjacent channel selectivity in clause 4.2.6 and table 4.2.7.2-1 shall be applied. | | | |
| Band XV operation | For 2 585 ≤ f ≤ 2 705 MHz, the appropriate in-band blocking or adjacent channel selectivity in clause 4.2.6 and table 4.2.7.2-1 shall be applied. | | | |
| Band XVI operation | For 2 570 ≤ f ≤ 2 705 MHz, the appropriate in-band blocking or adjacent channel selectivity in clause 4.2.6 and table 4.2.7.2-1 shall be applied | | | |
| NOTE: <REFSENS> and <REFI$_{or}$> as specified in TS 134 121-1 [2]. | | | | |

**Table 4.2.7.2-3: Test parameters for narrow band blocking**

| Parameter | Unit | Band III, VIII |
|---|---|---|
| DPCH_Ec | dBm/3,84 MHz | <REFSENS> + 10 dB |
| $I_{or}$ | dBm/3,84 MHz | <REFI$_{or}$> + 10 dB |
| $I_{blocking}$ (GMSK) | dBm | -56 |
| $F_{uw}$ (offset) | MHz | 2,8 |
| UE transmitted mean power | dBm | 20 (for Power class 3)<br>18 (for Power class 4) |
| NOTE 1: <REFSENS> and <REFI$_{or}$> as specified in TS 134 121-1 [2].<br>NOTE 2: $I_{blocking}$ (GMSK) is an interfering signal as defined in TS 145 004 [9]. It is a continuous GMSK modulated carrier following the structure of the GSM signals, but with all modulating bits (including the midamble period) derived directly from a random or any pseudo random data stream. | | |

### 3.6.3 Set up for testing

1) Set the parameters of the CW generator or the interference signal generator as shown in tables 4.2.7.2-1, 4.2.7.2-2 and 4.2.7.2-3. For table 4.2.7.2-2 the frequency step size is 1 MHz.
2) Set the power level of the UE according to tables 4.2.7.2-1, 4.2.7.2-2 and 4.2.7.2-3 with a ±1 dB tolerance.
3) Measure the BER of DCH received from the UE at the SS.
4) For table 4.2.7.2-2, record the frequencies for which the BER exceeds the test requirements.

### 3.6.4 Test result

*In-band blocking test In-band blocking test*

| Test conditions | | WCDMA Band 1 - Receiver blocking characteristics for Power Class 3 | | | |
|---|---|---|---|---|---|
| T | V | Parameter | Level | | Unit |
| Tnom(25℃) | Vnom(3.8V) | DPCH_Ec | -110 | | dBm/3.84MHz |
| | | Ior | -104.6 | | dBm/3.84MHz |
| | | Iblocking mean power (modulated) | -56 (for Fuw offse ± 10MHz) | -44 (for Fuw offse ± 15MHz) | MHz |
| | | UE transmitted mean power | 20 | | dBm |
| | | BER | 0 | 0 | % |
| | | Limit | 0.1 | 0.1 | % |
| | | Result | Pass | Pass | |

*Out-of-band blocking test*

| Test conditions | | WCDMA Band 1 – Receiver blocking characteristics for Power Class 3 | | | | |
|---|---|---|---|---|---|---|
| T | V | Parameter | Frequency range1 | Frequency range2 | Frequency range3 | Unit |
| Tnom(25℃) | Vnom(3.8V) | DPCH_Ec | -114 | -114 | -114 | dBm/3.84MHz |
| | | Ior | -103.7 | -103.7 | -103.7 | dBm/3.84MHz |
| | | Iblocking (cw) | -44 | -30 | -15 | dBm |
| | | Fuw | 2050<f<2095<br>2185<f<2230 | 2025<f<2050<br>2230<f<2255 | 1<f<2025<br>2255<f<12750 | MHz |
| | | Spurious response frequency | No | No | 188, 1763, 4088, 6042 | MHz |
| | | Result | Pass | Pass | Pass | |

| Test conditions | | WCDMA Band 8 - Receiver blocking characteristics for Power Class 3 | | | |
|---|---|---|---|---|---|
| T | V | Parameter | Level | | Unit |
| Tnom(25℃) | Vnom(3.8V) | DPCH_Ec | -110 | | dBm/3.84MHz |
| | | Ior | -104.6 | | dBm/3.84MHz |
| | | Iblocking mean power (modulated) | -56 (for Fuw offse ± 10MHz) | -44 (for Fuw offse ± 15MHz) | MHz |
| | | UE transmitted mean power | 20 | | dBm |
| | | BER | 0 | 0 | % |
| | | Limit | 0.1 | 0.1 | % |
| | | Result | Pass | Pass | |

*Out-of-band blocking test*

| Test conditions | | WCDMA Band 8 – Receiver blocking characteristics for Power Class 3 | | | | |
|---|---|---|---|---|---|---|
| T | V | Parameter | Frequency range1 | Frequency range2 | Frequency range3 | Unit |
| Tnom(25℃) | Vnom(3.8V) | DPCH_Ec | -114 | -114 | -114 | dBm/3.84MHz |
| | | Ior | -103.7 | -103.7 | -103.7 | dBm/3.84MHz |
| | | Iblocking (cw) | -44 | -30 | -15 | dBm |
| | | Fuw | 2050<f<2095<br>2185<f<2230 | 2025<f<2050<br>2230<f<2255 | 1<f<2025<br>2255<f<12750 | MHz |
| | | Spurious response frequency | No | No | 188, 1763, 4088, 6042 | MHz |
| | | Result | Pass | Pass | Pass | |

| Measurement uncertainty | |
|---|---|
| f < 15 MHz offset: | +/-1.3dB |
| 15 MHz offset ≤ f ≤ 2,2 GHz | +/-1.0dB |
| 2,2 GHz < f ≤ 4 GHz | +/-1.7dB |
| f > 4 GHz | +/-2.7dB |

The equipment complied with the requirement of this clause.

### 3.7 Receiver spurious response

Clause 6.6 of TS 134 121-1 V9.1.0 (2010-07) applies.

RESULT: Pass

#### 3.7.1 Definition and applicability

Spurious response is a measure of the receiver's ability to receive a wanted signal on its assigned channel frequency without exceeding a given degradation due to the presence of an unwanted CW interfering signal at any other frequency at which a response is obtained i.e. for which the out-of-band blocking limit as specified in table 4.2.7.2-2 is not met.

#### 3.7.2 Conformance requirements

Test environment: normal (see section 1.6).
The frequencies to be tested are mid range as defined in TS 134 108 [3]:
1) Connect the SS to the UE antenna connector.
2) A call is set up according to the Generic call setup procedure, and RF parameters are set up according to table 4.2.8.2-1.
3) Enter the UE into loopback test mode and start the loopback test.
NOTE: When reference is made to test set up, call set up and loopback test mode, guidance on the applicability of these can be found in TS 134 121-1 [2], TS 134 108 [3] and TS 134 109 [4] respectively.

The BER shall not exceed 0,001 for the parameters specified in table 4.2.8.2-1.

**Table 4.2.8.2-1: Test parameters for spurious response**

| Parameter | Level | Unit |
|---|---|---|
| DPCH Ec | <REFSENS> + 3 dB | dBm/3,84 MHz |
| $I_{or}$ | <REF$I_{or}$> + 3 dB | dBm/3,84 MHz |
| $I_{blocking}$(CW) | -44 | dBm |
| $F_{uw}$ | Spurious response frequencies | MHz |
| UE transmitted mean power | 20 (for Power class 3)<br>18 (for Power class 4) | dBm |
| NOTE: <REFSENS> and <REF$I_{or}$> as specified in TS 134 121-1 [2]. | | |

### 3.7.3 Set up for testing

1) Set the parameter of the CW generator as shown in table 4.2.8.2-1. The spurious response frequencies are determined in step 4) of clause 5.3.6.1.2.
2) Set the power level of the UE according to table 4.2.8.2-1 with a ±1 dB tolerance.
3) Measure the BER of DCH received from the UE at the SS.

### 3.7.3 Test result

| Test conditions | | WCDMA Band 1 - Receiver spurious response for power class 3 | | | |
|---|---|---|---|---|---|
| T | V | Spurious response frequencies (MHz) | BER | Limit | Result |
| Tnom(25℃) | Vnom(3.8V) | 288 | 0 | 0.001 | Pass |
| | | 1663 | 0 | 0.001 | Pass |
| | | 5288 | 0 | 0.001 | Pass |
| | | 63 | 0 | 0.001 | Pass |

| Test conditions | | WCDMA Band 8 - Receiver spurious response for power class 3 | | | |
|---|---|---|---|---|---|
| T | V | Spurious response frequencies (MHz) | BER | Limit | Result |
| Tnom(25℃) | Vnom(3.8V) | 288 | 0 | 0.001 | Pass |
| | | 1663 | 0 | 0.001 | Pass |
| | | 5288 | 0 | 0.001 | Pass |
| | | 63 | 0 | 0.001 | Pass |

| Measurement uncertainty | |
|---|---|
| f ≤ 2,2 GHz | +/-1.0dB |
| 2,2 GHz < f ≤ 4 GHz | +/-1.7dB |
| f > 4 GHz | +/-2.7dB |

The equipment complied with the requirement of this clause.

### 3.8 Receiver intermodulation charactistics

Clause 6.7 of TS 134 121-1 V9.1.0 (2010-07) applies.

RESULT: Pass

#### 3.8.1 Definition and applicability

Third and higher order mixing of the two interfering RF signals can produce an interfering signal in the band of the desired channel. Intermodulation response rejection is a measure of the capability of the receiver to receiver a wanted signal on its assigned channel frequency in the presence of two or more interfering signals which have a specific frequency relationship to the wanted signal.

#### 3.8.2 Conformance requirements

Test environment: normal (see section 1.6).
The frequencies to be tested are mid range as defined in TS 134 108 [3]:
1) Connect the SS to the UE antenna connector.
2) A call is set up according to the Generic call setup procedure as per TS 134 108 [3], and RF parameters are set up according to tables 4.2.9.2-1 and 4.2.9.2-2.
3) Enter the UE into loopback test mode and start the loopback test using the procedure defined in TS 134 109 [4].
NOTE: When reference is made to test set up, call set up and loopback test mode, guidance on the applicability of these can be found in TS 134 121-1 [2], TS 134 108 [3] and TS 134 109 [4].

The BER shall not exceed 0,001 for the parameters specified in table 4.2.9.2-1.

**Table 4.2.9.2-1: Receive intermodulation characteristics**

| Parameter | Level | | Unit |
|---|---|---|---|
| DPCH_Ec | <REFSENS> + 3 dB | | dBm/3,84 MHz |
| $\hat{I}_{or}$ | <REF$\hat{I}_{or}$> + 3 dB | | dBm/3,84 MHz |
| $I_{ouw1}$ (CW) | -46 | | dBm |
| $I_{ouw2}$ mean power (modulated) | -46 | | dBm |
| $F_{uw1}$ (offset) | 10 | -10 | MHz |
| $F_{uw2}$ (offset) | 20 | -20 | MHz |
| UE transmitted mean power | 20 (for Power class 3)<br>18 (for Power class 4) | | dBm |
| NOTE 1: $I_{ouw2}$ (modulated) consists of the common channels and the 16 dedicated data channels as specified in TS 125 101 [5].<br>NOTE 2: <REFSENS> and <REF$\hat{I}_{or}$> as specified in TS 134 121-1 [2]. | | | |

### 3.8.3 Set up for testing

1) Set the parameters of the CW generator and interference generator as shown in tables 4.2.9.2-1 and 4.2.9.2-2.
2) Set the power level of the UE according to tables 4.2.9.2-1 and 4.2.9.2-2 with a ±1 dB tolerance.
3) Measure the BER of DCH received from the UE at the SS.

### 3.8.4 Test result

| Test conditions | | WCDMA Band 1 - intermodulation charactistics for Power Class 3 | | | |
|---|---|---|---|---|---|
| T | V | Channel | Level | | Unit |
| Tnom(25℃) | Vnom(3.8V) | DPCH_Ec | -116 | | dBm/3.84MHz |
| | | Îbr | -103.7 | | dBm/3.84MHz |
| | | Iouw1 (CW) | -46 | | dBm |
| | | Iouw2 (Modulated) | -45 | | dBm/3.84MHz |
| | | Fuw1 (offset) | 10 | -10 | MHz |
| | | Fuw2 (offset) | 20 | -20 | MHz |
| | | UE transmitted mean power | 20 | | dBm |
| | | BER | 0 | 0 | % |
| | | Limit | 0.1 | 0.1 | % |
| | | Result | Pass | Pass | |
| Measurement uncertainty | | <+/-1.3dB | | | |

| Test conditions | | WCDMA Band 8 - intermodulation charactistics for Power Class 3 | | | |
|---|---|---|---|---|---|
| T | V | Channel | Level | | Unit |
| Tnom(25℃) | Vnom(3.8V) | DPCH_Ec | -116 | | dBm/3.84MHz |
| | | Îbr | -103.7 | | dBm/3.84MHz |
| | | Iouw1 (CW) | -46 | | dBm |
| | | Iouw2 (Modulated) | -45 | | dBm/3.84MHz |
| | | Fuw1 (offset) | 10 | -10 | MHz |
| | | Fuw2 (offset) | 20 | -20 | MHz |
| | | UE transmitted mean power | 20 | | dBm |
| | | BER | 0 | 0 | % |
| | | Limit | 0.1 | 0.1 | % |
| | | Result | Pass | Pass | |
| Measurement uncertainty | | <+/-1.3dB | | | |

The equipment complied with the requirement of this clause

### 3.9 Receiver spurious emissions

Clause 6.8 of TS 134 121-1 V9.1.0 (2010-07) applies.

RESULT: Pass

### 3.9.1 Definition and applicability

The spurious emissions power is the power of emissions, generated or amplified in a receiver, which appear at the UE antenna connector. The requirements in UE transmit bands are valid in URA_PCH, Cell_PCH and idle state.

### 3.9.2 Conformance requirements

Test environment: normal (see section 1.6).
The frequencies to be tested are mid range as defined in TS 134 108 [3]:
1) Connect a spectrum analyser (or other suitable test equipment) to the UE antenna connector.
2) UE shall be in CELL_FACH state.
3) The UE shall be setup such that UE will not transmit during the measurement. (For guidance see TS 134 121-1 [2]).

The power of any narrow band CW spurious emission shall not exceed the maximum level specified in tables 4.2.10.2-1 and 4.2.10.2-2.

**Table 4.2.10.2-1: General receiver spurious emission requirements**

| Frequency band | Measurement bandwidth | Maximum level |
|---|---|---|
| 30 MHz ≤ f < 1 GHz | 100 kHz | -57 dBm |
| 1 GHz ≤ f ≤ 12,75 GHz | 1 MHz | -47 dBm |

**Table 4.2.10.2-2: Additional receiver spurious emission requirements**

| Band | Frequency Range | Measurement Bandwidth | Maximum level |
|---|---|---|---|
| I | 791 MHz ≤ f ≤ 821 MHz | 3,84 MHz | -60 dBm |
| | 921 MHz ≤ f < 925 MHz | 100 kHz | -60 dBm (see note) |
| | 925 MHz ≤ f ≤ 935 MHz | 100 kHz | -67 dBm (see note) |
| | 935 MHz < f ≤ 960 MHz | 100 kHz | -79 dBm (see note) |
| | 1 805 MHz ≤ f ≤ 1 880 MHz | 100 kHz | -71 dBm (see note) |
| | 1 920 MHz ≤ f ≤ 1 980 MHz | 3,84 MHz | -60 dBm |
| | 2 110 MHz ≤ f ≤ 2 170 MHz | 3,84 MHz | -60 dBm |
| | 2 585 MHz ≤ f ≤ 2 690 MHz | 3,84 MHz | -60 dBm |
| III | 791 MHz ≤ f ≤ 821 MHz | 3,84 MHz | -60 dBm |
| | 921 MHz ≤ f < 925 MHz | 100 kHz | -60 dBm (see note) |
| | 925 MHz ≤ f ≤ 935 MHz | 100 kHz | -67 dBm (see note) |
| | 935 MHz < f ≤ 960 MHz | 100 kHz | -79 dBm (see note) |
| | 1 710 MHz ≤ f ≤ 1 785 MHz | 3,84 MHz | -60 dBm |
| | 1 805 MHz ≤ f ≤ 1 880 MHz | 3,84 MHz | -60 dBm |
| | 2 110 MHz ≤ f ≤ 2 170 MHz | 3,84 MHz | -60 dBm |

| Band | Frequency Range | Measurement Bandwidth | Maximum level |
|---|---|---|---|
| | 2 585 MHz ≤ f ≤ 2 690 MHz | 3,84 MHz | -60 dBm |
| VII | 791 MHz ≤ f ≤ 821 MHz | 3,84 MHz | -60 dBm |
| | 921 MHz ≤ f < 925 MHz | 100 kHz | -60 dBm (see note) |
| | 925 MHz ≤ f ≤ 935 MHz | 100 kHz | -67 dBm (see note) |
| | 935 MHz < f ≤ 960 MHz | 100 kHz | -79 dBm (see note) |
| | 1 805 MHz ≤ f ≤ 1 880 MHz | 100 kHz | -71 dBm (see note) |
| | 2 110 MHz ≤ f ≤ 2 170 MHz | 3,84 MHz | -60 dBm |
| | 2 500 MHz ≤ f ≤ 2 570 MHz | 3,84 MHz | -60 dBm |
| | 2 620 MHz ≤ f ≤ 2 690 MHz | 3,84 MHz | -60 dBm |
| VIII | 791 MHz ≤ f < 821 MHz | 3,84 MHz | -60 dBm |
| | 880 MHz ≤ f ≤ 915 MHz | 3,84 MHz | -60 dBm |
| | 921 MHz ≤ f < 925 MHz | 100 kHz | -60 dBm (see note) |
| | 925 MHz ≤ f ≤ 935 MHz | 100 kHz<br>3,84 MHz | -67 dBm (see note)<br>-60 dBm |
| | 935 MHz < f ≤ 960 MHz | 100 kHz | -79 dBm (see note) |
| | 1 805 MHz < f ≤ 1 880 MHz | 3,84 MHz | -60 dBm |
| | 2 110 MHz ≤ f ≤ 2 170 MHz | 3,84 MHz | -60 dBm |
| | 2 585 MHz ≤ f ≤ 2 690 MHz | 3,84 MHz | -60 dBm |
| XV | 791 MHz ≤ f < 821 MHz | 3,84 MHz | -60 dBm |
| | 921 MHz ≤ f < 925 MHz | 100 kHz | -60 dBm (see note) |
| | 925 MHz ≤ f < 935 MHz | 100 kHz<br>3,84 MHz | -67 dBm (see note)<br>-60 dBm |
| | 935 MHz ≤ f ≤ 960 MHz | 100 kHz | -79 dBm (see note) |
| | 1 805 MHz ≤ f ≤ 1 880 MHz | 100 kHz | -71 dBm (see note) |
| | 1 900 MHz ≤ f ≤ 1 920 MHz | 3,84 MHz | -60 dBm |
| | 2 110 MHz ≤ f ≤ 2 170 MHz | 3,84 MHz | -60 dBm |
| | 2 585 MHz ≤ f ≤ 2 690 MHz | 3,84 MHz | -60 dBm |
| XVI | 791 MHz ≤ f < 821 MHz | 3,84 MHz | -60 dBm |
| | 921 MHz ≤ f < 925 MHz | 100 kHz | -60 dBm (see note) |
| | 925 MHz ≤ f < 935 MHz | 100 kHz<br>3,84 MHz | -67 dBm (see note)<br>-60 dBm |
| | 935 MHz ≤ f ≤ 960 MHz | 100 kHz | -79 dBm (see note) |
| | 1 805 MHz ≤ f ≤ 1 880 MHz | 100 kHz | -71 dBm (see note) |
| | 2 010 MHz ≤ f ≤ 2 025 MHz | 3,84 MHz | -60 dBm |
| | 2 110 MHz ≤ f ≤ 2 170 MHz | 3,84 MHz | -60 dBm |
| | 2 585 MHz ≤ f ≤ 2 690 MHz | 3,84 MHz | -60 dBm |
| XX | 791 MHz ≤ f < 821 MHz | 3,84 MHz | -60 dBm |
| | 832 MHz ≤ f ≤ 862 MHz | 3,84 MHz | -60 dBm |
| | 921 MHz ≤ f < 925 MHz | 100 kHz | -60 dBm (see note) |
| | 925 MHz ≤ f ≤ 935 MHz | 100 kHz<br>3,84 MHz | -67 dBm (see note)<br>-60 dBm |
| | 935 MHz < f ≤ 960 MHz | 100 kHz | -79 dBm (see note) |
| | 1 805 MHz ≤ f ≤ 1 880 MHz | 3,84 MHz | -60 dBm |
| | 2 110 MHz ≤ f ≤ 2 170 MHz | 3,84 MHz | -60 dBm |
| | 2 585 MHz ≤ f ≤ 2 690 MHz | 3,84 MHz | -60 dBm |
| XXII | 791 MHz ≤ f < 821 MHz | 3,84 MHz | -60 dBm |
| | 921 MHz ≤ f < 925 MHz | 100 kHz | -60 dBm (see note) |
| | 925 MHz ≤ f ≤ 935 MHz | 100 kHz<br>3,84 MHz | -67 dBm<br>(see note 1)<br>-60 dBm |
| | 935 MHz < f ≤ 960 MHz | 100 kHz | -79 dBm (see note) |
| | 1 805 MHz ≤ f ≤ 1 880 MHz | 3,84 MHz | -60 dBm |
| | 2 110 MHz ≤ f ≤ 2 170 MHz | 3,84 MHz | -60 dBm |
| | 2 585 MHz ≤ f ≤ 2 690 MHz | 3,84 MHz | -60 dBm |
| | 3 410 MHz ≤ f ≤ 3 490 MHz | 3,84 MHz | -60 dBm |
| | 3 510 MHz ≤ f ≤ 3 590 MHz | 3,84 MHz | -60 dBm |
| | 3 600 MHz ≤ f ≤ 3 800 MHz | 3,84 MHz | -50 dBm |
| NOTE: | The measurements are made on frequencies which are integer multiples of 200 kHz. As exceptions, up to five measurements with a level up to the applicable requirements defined in table 4.2.10.2-1 are permitted for each UARFCN used in the measurement. | | |

### 3.9.3 Set up for testing

Sweep the spectrum analyser (or other suitable test equipment) over a frequency range from 30 MHz to 12,75 GHz and measure the average power of the spurious emissions.

### 3.9.4 Test result

For WCDMA Band 1

| Measurement frequency range | Max. spurious emission frequency (MHz) | Measured value (dBm) | Limit (dBm) | Result |
|---|---|---|---|---|
| Low Channel 9613 | | | | |
| 30MHz~791MHz | 430.00 | -65.45 | -57 | Pass |
| 791MHz~821MHz | 796.15 | -65.45 | -60 | Pass |
| 821MHz ~921MHz | 916.92 | -68.18 | -57 | Pass |
| 921MHz~925MHz | 923.85 | -67.27 | -60 | Pass |
| 925MHz~935MHz | 927.69 | -68.18 | -67 | Pass |
| 935MHz~960MHz | 949.23 | -83.64 | -79 | Pass |
| 960MHz~1000MHz | 960.77 | -66.36 | -57 | Pass |
| 1000MHz~1805MHz | 1748.46 | -65.45 | -47 | Pass |
| 1805MHz~1880MHz | 1827.69 | -75.45 | -60 | Pass |
| 1880MHz~1920MHz | 1913.08 | -68.18 | -47 | Pass |
| 1920MHz~1980MHz | 1970.77 | -78.18 | -60 | Pass |
| 1980MHz~2110MHz | 1983.85 | -70.00 | -47 | Pass |
| 2110MHz~2170MHz | 2152.31 | -70.00 | -60 | Pass |
| 2170MHz~2585MHz | 2171.54 | -65.45 | -47 | Pass |
| 2585MHz~2690MHz | 2653.08 | -67.27 | -60 | Pass |
| 2690MHz ~12.75GHz | 8550.00 | -63.64 | -47 | Pass |
| Middle Channel 9750 | | | | |
| 30MHz~791MHz | 692.31 | -70.00 | -57 | Pass |
| 791MHz~821MHz | 819.23 | -70.00 | -60 | Pass |
| 821MHz ~921MHz | 853.85 | -69.09 | -57 | Pass |
| 921MHz~925MHz | 922.31 | -70.00 | -60 | Pass |
| 925MHz~935MHz | 933.08 | -70.00 | -67 | Pass |
| 935MHz~960MHz | 945.38 | -82.73 | -79 | Pass |
| 960MHz~1000MHz | 978.46 | -64.55 | -57 | Pass |
| 1000MHz~1805MHz | 1586.15 | -66.36 | -47 | Pass |
| 1805MHz~1880MHz | 1813.08 | -80.00 | -60 | Pass |
| 1880MHz~1920MHz | 1880.00 | -64.55 | -47 | Pass |
| 1920MHz~1980MHz | 1962.31 | -78.18 | -60 | Pass |
| 1980MHz~2110MHz | 2090.00 | -68.18 | -47 | Pass |
| 2110MHz~2170MHz | 2135.38 | -70.00 | -60 | Pass |

| | | | | |
|---|---|---|---|---|
| 2170MHz~2585MHz | 2518.46 | -68.18 | -47 | Pass |
| 2585MHz~2690MHz | 2598.46 | -63.64 | -60 | Pass |
| 2690MHz ~12.75GHz | 12749.23 | -66.36 | -47 | Pass |
| High Channel 9887 | | | | |
| 30MHz~791MHz | 748.46 | -67.27 | -57 | Pass |
| 791MHz~821MHz | 813.85 | -69.09 | -60 | Pass |
| 821MHz ~921MHz | 848.46 | -65.45 | -57 | Pass |
| 921MHz~925MHz | 922.31 | -67.27 | -60 | Pass |
| 925MHz~935MHz | 929.23 | -81.82 | -67 | Pass |
| 935MHz~960MHz | 953.85 | -85.45 | -79 | Pass |
| 960MHz~1000MHz | 996.15 | -63.64 | -57 | Pass |
| 1000MHz~1805MHz | 1736.15 | -67.27 | -47 | Pass |
| 1805MHz~1880MHz | 1822.31 | -73.64 | -60 | Pass |
| 1880MHz~1920MHz | 1911.54 | -65.45 | -47 | Pass |
| 1920MHz~1980MHz | 1936.92 | -75.45 | -60 | Pass |
| 1980MHz~2110MHz | 2047.69 | -65.45 | -47 | Pass |
| 2110MHz~2170MHz | 2167.69 | -64.55 | -60 | Pass |
| 2170MHz~2585MHz | 2290.00 | -65.45 | -47 | Pass |
| 2585MHz~2690MHz | 2610.77 | -65.45 | -60 | Pass |
| 2690MHz ~12.75GHz | 3850.00 | -64.55 | -47 | Pass |

For WCDMA Band 8

| Measurement frequency range | Max. spurious emission frequency (MHz) | Measured value (dBm) | Limit (dBm) | Result |
|---|---|---|---|---|
| Low Channel 2712 | | | | |
| 30MHz~791MHz | 390.00 | -65.45 | -57 | Pass |
| 791MHz~821MHz | 800.00 | -68.18 | -60 | Pass |
| 821MHz ~921MHz | 862.31 | -68.18 | -57 | Pass |
| 921MHz~925MHz | 920.77 | -66.36 | -60 | Pass |
| 925MHz~935MHz | 931.54 | -76.36 | -67 | Pass |
| 935MHz~960MHz | 940.00 | -84.55 | -79 | Pass |
| 960MHz~1000MHz | 963.85 | -64.55 | -57 | Pass |
| 1000MHz~1805MHz | 1406.92 | -65.45 | -47 | Pass |
| 1805MHz~1880MHz | 1850.00 | -73.64 | -60 | Pass |
| 1880MHz~1920MHz | 1883.08 | -66.36 | -47 | Pass |
| 1920MHz~1980MHz | 1926.15 | -75.45 | -60 | Pass |
| 1980MHz~2110MHz | 2063.85 | -69.09 | -47 | Pass |
| 2110MHz~2170MHz | 2170.00 | -68.18 | -60 | Pass |
| 2170MHz~2585MHz | 2199.23 | -66.36 | -47 | Pass |
| 2585MHz~2690MHz | 2677.69 | -66.36 | -60 | Pass |
| 2690MHz ~12.75GHz | 6900.77 | -70.00 | -47 | Pass |
| Middle Channel 2788 | | | | |
| 30MHz~791MHz | 508.46 | -69.09 | -57 | Pass |

| | | | | |
|---|---|---|---|---|
| 791MHz~821MHz | 796.15 | -66.36 | -60 | Pass |
| 821MHz ~921MHz | 843.85 | -70.00 | -57 | Pass |
| 921MHz~925MHz | 923.85 | -70.00 | -60 | Pass |
| 925MHz~935MHz | 927.69 | -74.55 | -67 | Pass |
| 935MHz~960MHz | 954.62 | -85.45 | -79 | Pass |
| 960MHz~1000MHz | 992.31 | -64.55 | -57 | Pass |
| 1000MHz~1805MHz | 1755.38 | -63.64 | -47 | Pass |
| 1805MHz~1880MHz | 1810.77 | -72.73 | -60 | Pass |
| 1880MHz~1920MHz | 1919.23 | -69.09 | -47 | Pass |
| 1920MHz~1980MHz | 1966.92 | -74.55 | -60 | Pass |
| 1980MHz~2110MHz | 2048.46 | -63.64 | -47 | Pass |
| 2110MHz~2170MHz | 2154.62 | -65.45 | -60 | Pass |
| 2170MHz~2585MHz | 2378.46 | -64.55 | -47 | Pass |
| 2585MHz~2690MHz | 2632.31 | -69.09 | -60 | Pass |
| 2690MHz ~12.75GHz | 3701.54 | -66.36 | -47 | Pass |
| High Channel 2863 | | | | |
| 30MHz~791MHz | 94.62 | -67.27 | -57 | Pass |
| 791MHz~821MHz | 805.38 | -65.45 | -60 | Pass |
| 821MHz ~921MHz | 843.08 | -66.36 | -57 | Pass |
| 921MHz~925MHz | 921.54 | -65.45 | -60 | Pass |
| 925MHz~935MHz | 927.69 | -74.55 | -67 | Pass |
| 935MHz~960MHz | 952.31 | -83.64 | -79 | Pass |
| 960MHz~1000MHz | 986.92 | -66.36 | -57 | Pass |
| 1000MHz~1805MHz | 1649.23 | -69.09 | -47 | Pass |
| 1805MHz~1880MHz | 1804.62 | -75.45 | -60 | Pass |
| 1880MHz~1920MHz | 1888.46 | -67.27 | -47 | Pass |
| 1920MHz~1980MHz | 1979.23 | -73.64 | -60 | Pass |
| 1980MHz~2110MHz | 2073.08 | -67.27 | -47 | Pass |
| 2110MHz~2170MHz | 2132.31 | -63.64 | -60 | Pass |
| 2170MHz~2585MHz | 2365.38 | -63.64 | -47 | Pass |
| 2585MHz~2690MHz | 2685.38 | -70.00 | -60 | Pass |
| 2690MHz ~12.75GHz | 10549.23 | -70.00 | -47 | Pass |

| Measurement uncertainty | |
|---|---|
| f ≤ 2,2 GHz | +/-2.0dB |
| 2,2 GHz < f ≤ 4 GHz | +/-2.0dB |
| f > 4 GHz | +/-4.0dB |
| For UE receive band (-78 dBm) | +/-3.0dB |

## 3.10 OUT-OF-SYNCHRONIZATION HANDLING OF OUTPUT POWER

Clause 4.2.11 of EN 301 908 V6.2.1 (2013-10) applies.

RESULT: Pass

### 3.10.1 Definition and applicability

The UE shall monitor the DPCCH quality in order to detect a loss of the signal on Layer 1. The threshold Qout specifies at what DPCCH quality levels the UE shall shut its power off. The threshold is not defined explicitly, but is defined by the conditions under which the UE shall shut its transmitter off, as stated in this clause.

The DPCCH quality shall be monitored in the UE and compared to the threshold Qout for the purpose of monitoring synchronization. The threshold Qout should correspond to a level of DPCCH quality where no reliable detection of the TPC commands transmitted on the downlink DPCCH can be made. This can be at a TPC command error ratio level of e.g. 20 %.

### 3.10.2 Conformance requirements

Test environment: normal (see section 1.6).
The frequencies to be tested are mid range as defined in TS 134 108 [3]:
1) Connect the SS to the UE antenna connector.
2) A call is set up according to the Generic call setup procedure, with the following exception according to table 5.3.10.1.1-1 for information elements in System Information Block type 1 found in TS 134 108 [3].
UE Timers and constants in connected mode

**Table 5.3.10.1.1-1: System Information Block type 1 message**

| Information Element | Value |
|---|---|
| UE Timers and constants in connected mode | |
| - T313 | 15 s |
| - N313 | 200 |

3) RF parameters are set up according to table 4.2.11.2-1 with DPCCH_Ec/Ior ratio level at -16,6 dB.
4) Enter the UE into loopback test mode and start the loopback test.
NOTE: When reference is made to test set up, call set up and loopback test mode, guidance on the applicability of these can be found in TS 134 121-1 [2], TS 134 108 [3] and TS 134 109 [4] respectively.

When the UE estimates the DPCCH quality over the last 160 ms period to be worse than a threshold Qout, the UE shall shut its transmitter off within 40 ms.
The quality level at the thresholds Qoutcorrespond to different signal levels depending on the downlink conditions DCH parameters. For the conditions in table 4.2.11.2-1, a signal with the quality at the level Qout can be generated by a DPCCH_Ec/Ior ratio of -25 dB. The DL reference measurement channel 12,2 kbit/s is specified in TS 134 121-1 [2] and with static propagation conditions. The downlink physical channels, other than those specified in table 4.2.11.2-1, are as specified in TS 134 121-1 [2].

**Table 4.2.11.2-1: DCH parameters for test of out-of-synchronization handling**

| Parameter | Value | Unit |
|---|---|---|
| $\hat{I}_{or}/I_{oc}$ | -1 | dB |
| $I_{oc}$ | -60 | dBm/3,84 MHz |
| $\frac{DPDCH\_E_c}{I_{or}}$ | See figure 4.2.11.2-1:<br>Before point A -16,6<br>After point A not defined | dB |
| $\frac{DPCCH\_E_c}{I_{or}}$ | See figure 4.2.11.2-1 | dB |
| Information Data Rate | 12,2 | kbit/s |

### 3.10.3 Set up for testing

1) The SS sends continuously up power control commands to the UE until the UE transmitter power reach maximum level.
2) The SS controls the DPCCH_Ec/Ior ratio level to -21,6 dB.
3) The SS controls the DPCCH_Ec/Ior ratio level to -28,4 dB. The SS waits 200 ms and then verifies that the UE transmitter has been switched off.
4) The SS monitors the UE transmitted power for 5 s and verifies that the UE transmitter is not switched on during this time.

### 3.10.4 Test result

| Test conditions | | WCDMA Band 1 – Out-of-synchronization handling of output power | | | |
|---|---|---|---|---|---|
| T | V | Test Item | Test data | Limit | Result |
| Tnom(25℃) | Vnom(30V) | Switch off power | -64.54 | -55dBm | Pass |
| Measurement uncertainty | | +/-0.4dB | | | |

| Test conditions | | WCDMA Band 8 - Out-of-synchronization handling of output power | | | |
|---|---|---|---|---|---|
| T | V | Test Item | Test data | Limit | Result |
| Tnom(25℃) | Vnom(30V) | Switch off power | -65.43 | -55dBm | Pass |
| Measurement uncertainty | | +/-0.4dB | | | |

The equipment complied with the requirement of this clause.

### 3.11 Transmitter adjacent channel power leakage ratio

Clause 5.10 of ETSI TS 134 121-1 V9.1.0 (2010-07) applies.

RESULT: Pass

#### 3.11.1 Definition and applicability

Adjacent Channel Leakage power Ratio (ACLR) is the ratio of the RRC filtered mean power centred on the assigned channel frequency to the RRC filtered mean power centred on an adjacent channel frequency.

#### 3.11.2 Conformance requirements

Test environment: normal, TL/VL, TL/VH, TH/VL, TH/VH (see section 1.6).
The frequencies to be tested are mid range as defined in TS 134 108 [3]:
1) Connect the SS to the UE antenna connector.
2) A call is set up according to the Generic call setup procedure.
3) Enter the UE into loopback test mode and start the loopback test.
NOTE: When reference is made to test set up, call set up and loopback test mode, guidance on the applicability of these can be found in TS 134 121-1 [2], TS 134 108 [3] and TS 134 109 [4] respectively.

If the adjacent channel power is greater than -50dBm then the ACLR shall be higher than the value specified in table 4.2.12.2-1.The requirements are applicable for all for the values of βc, βd, βhs, βec and βed defined in TS 125 214 [8].

**Table 4.2.12.2-1: UE ACLR**

| Power Class | Adjacent channel frequency relative to assigned channel frequency | ACLR limit |
|---|---|---|
| 3 | +5 MHz or -5 MHz | 32,2 dB |
| 3 | +10 MHz or -10 MHz | 42,2 dB |
| 4 | +5 MHz or -5 MHz | 32,2 dB |
| 4 | +10 MHz or -10 MHz | 42,2 dB |
| NOTE 1: The requirement shall still be met in the presence of switching transients.<br>NOTE 2: The ACLR requirements reflect what can be achieved with present state of the art technology.<br>NOTE 3: Requirement on the UE shall be reconsidered when the state of the art technology progresses. | | |

#### 3.11.3 Set up for testing

1) The SS sends continuously Up power control commands to the UE until the UE transmitter power reach maximum level.
2) Measure the RRC filtered mean power.
3) Measure the RRC filtered mean power of the first adjacent channels and the second adjacent channels.
4) Calculate the ratio of the power between the values measured in 2) and 3) above.

### 3.11.4 Test result

Band 1

| Test conditions | | Transmitter adjacent channel power leadkage ratio for Power Class 3 | | | | | |
|---|---|---|---|---|---|---|---|
| T | V | ACF | Low Channel/dBc | Middle Channel/dBc | High Channel/dBc | Limit dBc | Result |
| Tnom(25℃) | Vnom(3.8V) | +5MHz | 40.91 | 39.09 | 36.36 | 32.2 | Pass |
| | | -5MHz | 40.91 | 42.73 | 39.09 | 32.2 | Pass |
| | | +10MHz | 45.45 | 51.82 | 48.18 | 42.2 | Pass |
| | | -10MHz | 46.36 | 50.00 | 48.18 | 42.2 | Pass |
| Tmin(-10℃) | Vmin(3.3V) | +5MHz | 41.82 | 41.82 | 40.00 | 32.2 | Pass |
| | | -5MHz | 42.73 | 36.36 | 35.45 | 32.2 | Pass |
| | | +10MHz | 50.91 | 43.64 | 51.82 | 42.2 | Pass |
| | | -10MHz | 44.55 | 50.91 | 50.91 | 42.2 | Pass |
| | Vmax(4.2V) | +5MHz | 39.09 | 40.91 | 40.00 | 32.2 | Pass |
| | | -5MHz | 35.45 | 41.82 | 42.73 | 32.2 | Pass |
| | | +10MHz | 43.64 | 46.36 | 46.36 | 42.2 | Pass |
| | | -10MHz | 51.82 | 50.00 | 48.18 | 42.2 | Pass |
| Tmax(+55℃) | Vmin(3.3V) | +5MHz | 37.27 | 42.73 | 42.73 | 32.2 | Pass |
| | | -5MHz | 36.36 | 36.36 | 37.27 | 32.2 | Pass |
| | | +10MHz | 44.55 | 43.64 | 47.27 | 42.2 | Pass |
| | | -10MHz | 46.36 | 50.00 | 49.09 | 42.2 | Pass |
| | Vmax(4.2V) | +5MHz | 39.09 | 41.82 | 36.36 | 32.2 | Pass |
| | | -5MHz | 36.36 | 42.73 | 36.36 | 32.2 | Pass |
| | | +10MHz | 48.18 | 43.64 | 50.00 | 42.2 | Pass |
| | | -10MHz | 43.64 | 48.18 | 51.82 | 42.2 | Pass |
| Measurement uncertainty | | +/-0.8dB | | | | | |

Band 8

| Test conditions | | Transmitter adjacent channel power leadkage ratio for Power Class 3 | | | | | |
|---|---|---|---|---|---|---|---|
| T | V | ACF | Low Channel/dBc | Middle Channel/dBc | High Channel/dBc | Limit dBc | Result |
| Tnom(25℃) | Vnom(3.8V) | +5MHz | 39.09 | 40.91 | 37.27 | 32.2 | Pass |
| | | -5MHz | 35.45 | 41.82 | 38.18 | 32.2 | Pass |
| | | +10MHz | 50.00 | 50.00 | 49.09 | 42.2 | Pass |
| | | -10MHz | 50.00 | 48.18 | 51.82 | 42.2 | Pass |
| Tmin(-10℃) | Vmin(3.3V) | +5MHz | 40.00 | 35.45 | 36.36 | 32.2 | Pass |
| | | -5MHz | 41.82 | 37.27 | 36.36 | 32.2 | Pass |
| | | +10MHz | 51.82 | 43.64 | 44.55 | 42.2 | Pass |
| | | -10MHz | 50.91 | 44.55 | 49.09 | 42.2 | Pass |
| | Vmax(4.2V) | +5MHz | 38.18 | 37.27 | 36.36 | 32.2 | Pass |
| | | -5MHz | 39.09 | 38.18 | 40.91 | 32.2 | Pass |
| | | +10MHz | 50.91 | 47.27 | 43.64 | 42.2 | Pass |
| | | -10MHz | 44.55 | 51.82 | 50.91 | 42.2 | Pass |
| Tmax(+55℃) | Vmin(3.3V) | +5MHz | 40.91 | 36.36 | 38.18 | 32.2 | Pass |
| | | -5MHz | 37.27 | 41.82 | 36.36 | 32.2 | Pass |
| | | +10MHz | 45.45 | 45.45 | 47.27 | 42.2 | Pass |
| | | -10MHz | 43.64 | 48.18 | 50.00 | 42.2 | Pass |
| | Vmax(4.2V) | +5MHz | 39.09 | 40.91 | 42.73 | 32.2 | Pass |
| | | -5MHz | 40.91 | 37.27 | 42.73 | 32.2 | Pass |
| | | +10MHz | 44.55 | 44.55 | 49.09 | 42.2 | Pass |
| | | -10MHz | 48.18 | 51.82 | 50.00 | 42.2 | Pass |
| Measurement uncertainty | | +/-0.8dB | | | | | |

The equipment complied with the requirement of this clause.

### 3.12 Radiated emissions

Clause 4.2.2.1 of ETSI EN 301 908-1 V6.2.1 (2013-10) applies.

RESULT: Pass

### 3.12.1 Definition and applicability

This test assesses the ability of radio communications equipment and ancillary equipment to limit unwanted emissions from the enclosure port.
This test is applicable to radio communications equipment and ancillary equipment.
This test shall be performed on the radio communications equipment and/or a representative configuration of the ancillary equipment.

### 3.12.2 Conformance requirements

The frequency boundary and reference bandwidths for the detailed transitions of the limits between the requirements for out of band emissions and spurious emissions are based on ITU-R Recommendations SM.329-10 [3] and SM.1539-1 [4].
The requirements shown in the following table are only applicable for frequencies in the spurious domain.

| Frequency | Minimum requirement (e.r.p.)/ reference bandwidth idle mode | Minimum requirement (e.r.p.)/ reference bandwidth traffic mode | Applicability |
|---|---|---|---|
| 30 MHz ≤ f < 1 000 MHz | -57 dBm/100 kHz | -36 dBm/100 kHz | All |
| 1 GHz ≤ f < 12,75 GHz | -47 dBm/1 MHz | -30 dBm/1 MHz | All |
| fc - 2,5 × 5 MHz < f < fc + 2,5 × 5 MHz | | Not defined | UTRA FDD, UTRA TDD, 3,84 Mcps option, cdma2000, spreading rate 3 |
| fc - 2,5 × $BW_{Channel}$ MHz < f < fc + 2,5 × $BW_{Channel}$ MHz | | Not defined | E-UTRA FDD, E-UTRA TDD, UMB |
| fc - 2,5 × 10 MHz < f < fc1 + 2,5 × 10 MHz | | Not defined | UTRA TDD, 7,68 Mcps option |
| fc - 4 MHz < f < fc + 4 MHz | | Not defined | UTRA TDD, 1,28 Mcps option cdma2000, spreading rate 1 |
| fc - 500 kHz < f < fc + 500 kHz | | Not defined | UWC 136, 200 kHz option |
| fc - 250 kHz < f < fc + 250 kHz | | Not defined | UWC 136, 30 kHz option |
| NOTE: fc is the UE transmit centre frequency. | | | |

### 3.12.3 Set up for testing

Whenever possible the test site should be a fully anechoic chamber simulating the free-space conditions. EUT shall be placed on a non-conducting support. Mean power of any spurious components shall be detected by the test antenna and measuring receiver (e.g. a spectrum analyser).

At each frequency at which a component is detected, the EUT shall be rotated to obtain maximum response, and

the effective radiated power (e.r.p.) of that component determined by a substitution measurement, which shall be the reference method. The measurement shall be repeated with the test antenna in the orthogonal polarization plane.
NOTE: Effective radiated power (e.r.p.) refers to the radiation of a half wave tuned dipole instead of an isotropic antenna. There is a constant difference of 2,15 dB between e.i.r.p. and e.r.p.
e.r.p. (dBm) = e.i.r.p. (dBm) - 2,15 (ITU-R Recommendation SM.329-10 [3], annex 1).

Measurements are made with a tuned dipole antenna or a reference antenna with a known gain referenced to an isotropic antenna. Unless otherwise stated, all measurements are done as mean power (RMS).

If a different test site or method is used, this shall be stated in the test report. The results shall be converted to the reference method values and the validity of the conversion shall be demonstrated.

### 3.12.4 Test result

Traffic Mode

| Frequency range | Max. measure value (dBm) | Test result |
|---|---|---|
| 30MHz to 1GHz | <-36 | Pass |
| 1GHz to 12.75GHz | <-30 | Pass |

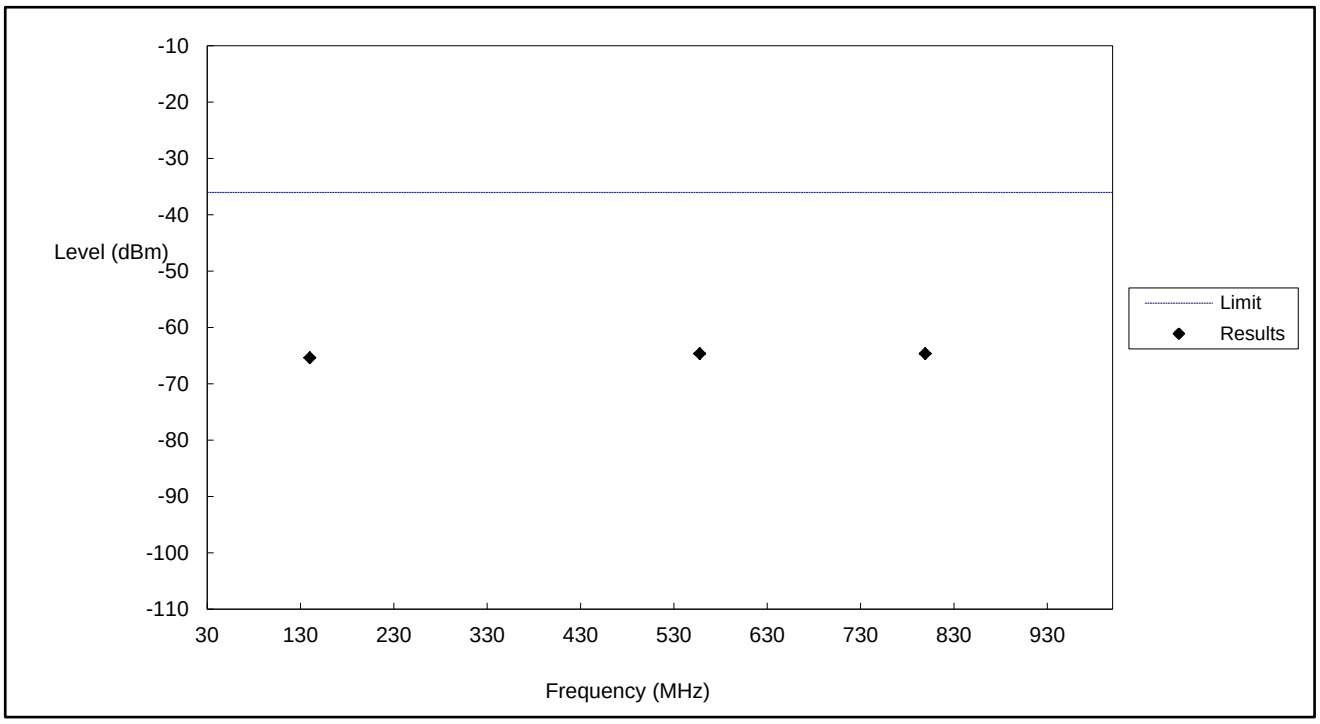
Idle Mode

| Frequency range | Max. measure value (dBm) | Test result |
|---|---|---|
| 30MHz to 1GHz | <-57 | Pass |
| 1GHz to 12.75GHz | <-47 | Pass |

| | | |
|---|---|---|
| Measurement uncertainty | between 30 MHz and 180 MHz | +/-5.0dB |
| | between 180 MHz and 12,75 GHz | +/-3.0dB |

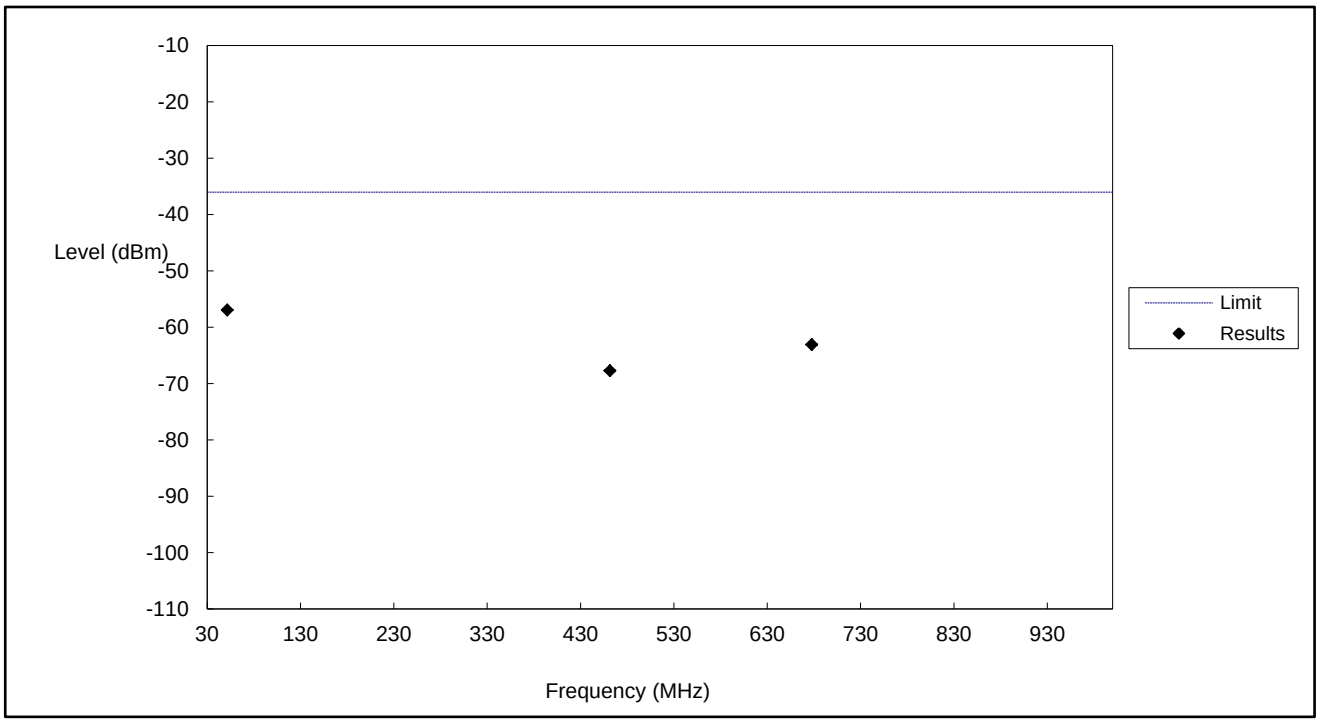
*Please refer to the following test plots and data*

*Radiated Spurious Emissions(30MHz-1GHz)*
*Test Mode: Traffic(Band 1-worst case)*
*Horizontal:*



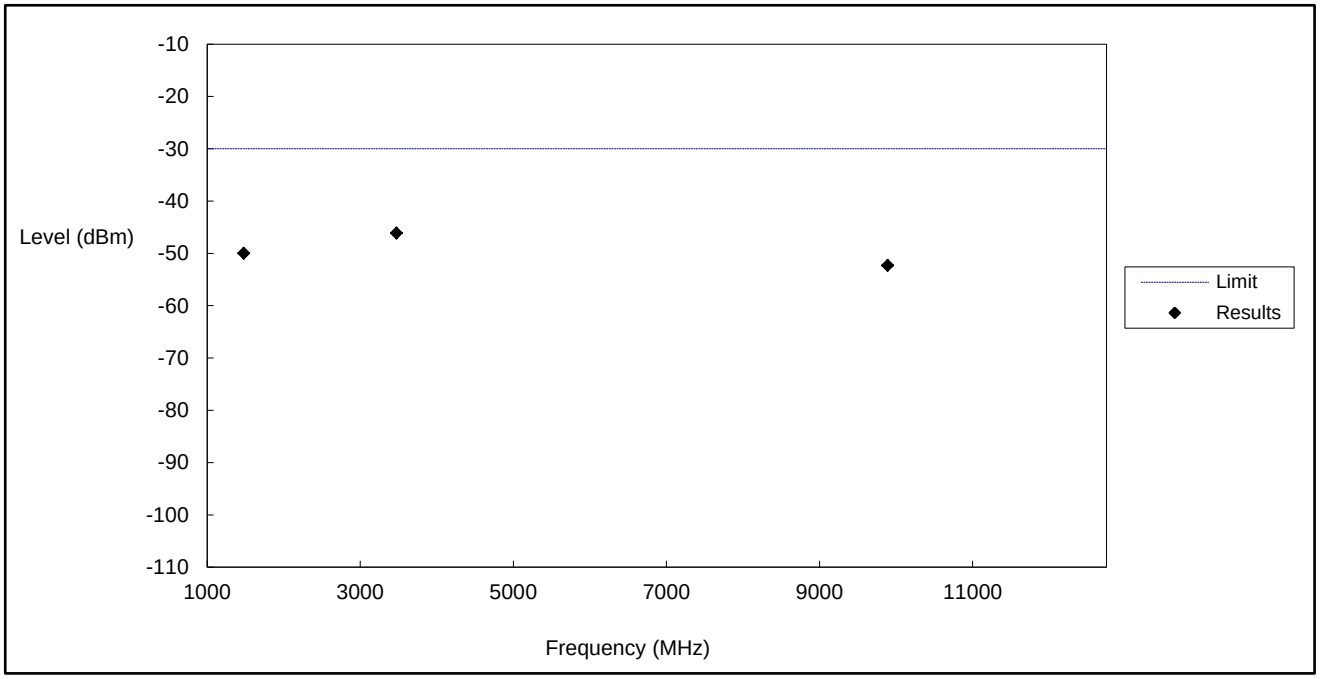

| No. | Frequency | Result | Limit | Margin | Remark |
|---|---|---|---|---|---|
| | (MHz) | (dBm) | (dBm) | (dB) | |
| 1 | 140.0000 | -65.38 | -36.00 | -29.38 | RMS |
| 2 | 557.6923 | -64.62 | -36.00 | -28.62 | RMS |
| 3 | 799.2308 | -64.62 | -36.00 | -28.62 | RMS |

*Vertical:*



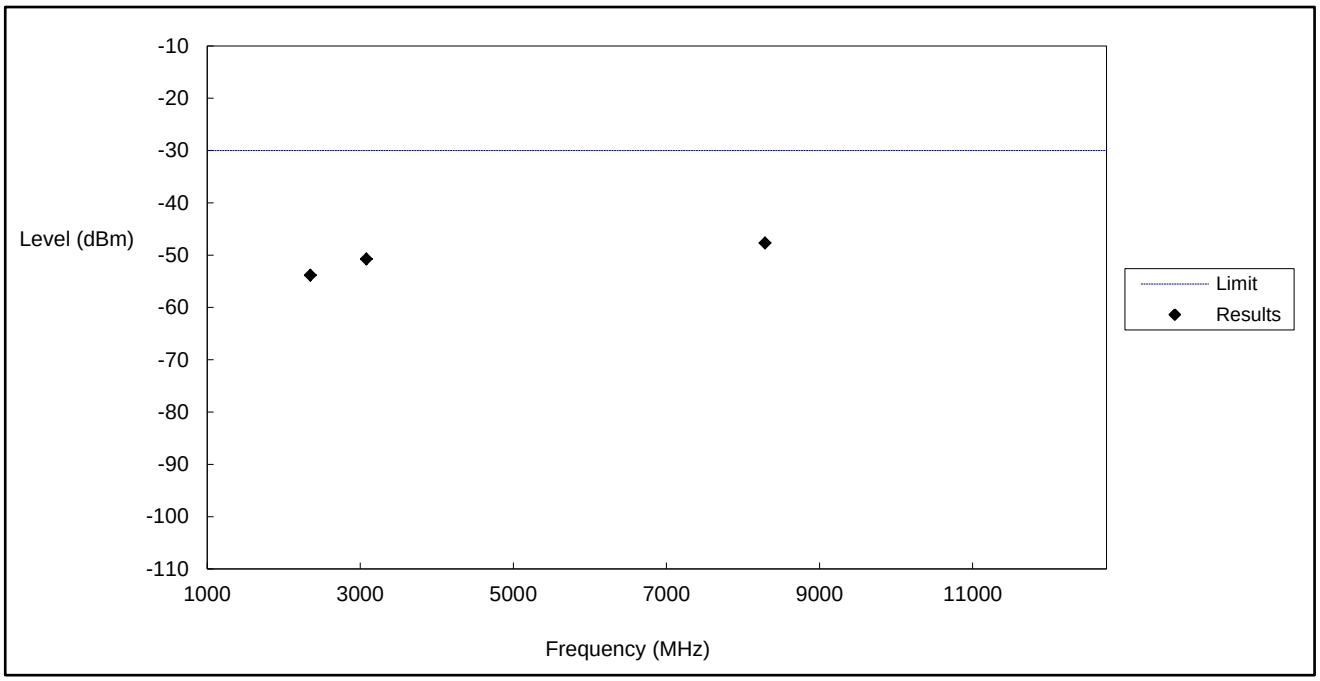

| No. | Frequency | Result | Limit | Margin | Remark |
|---|---|---|---|---|---|
| | (MHz) | (dBm) | (dBm) | (dB) | |
| 1 | 51.5385 | -56.92 | -36.00 | -20.92 | RMS |
| 2 | 461.5385 | -67.69 | -36.00 | -31.69 | RMS |
| 3 | 677.6923 | -63.08 | -36.00 | -27.08 | RMS |

*Radiated Spurious Emissions(above 1GHz)*
*Test Mode: Traffic(Band 1-worst case)*
*Horizontal:*



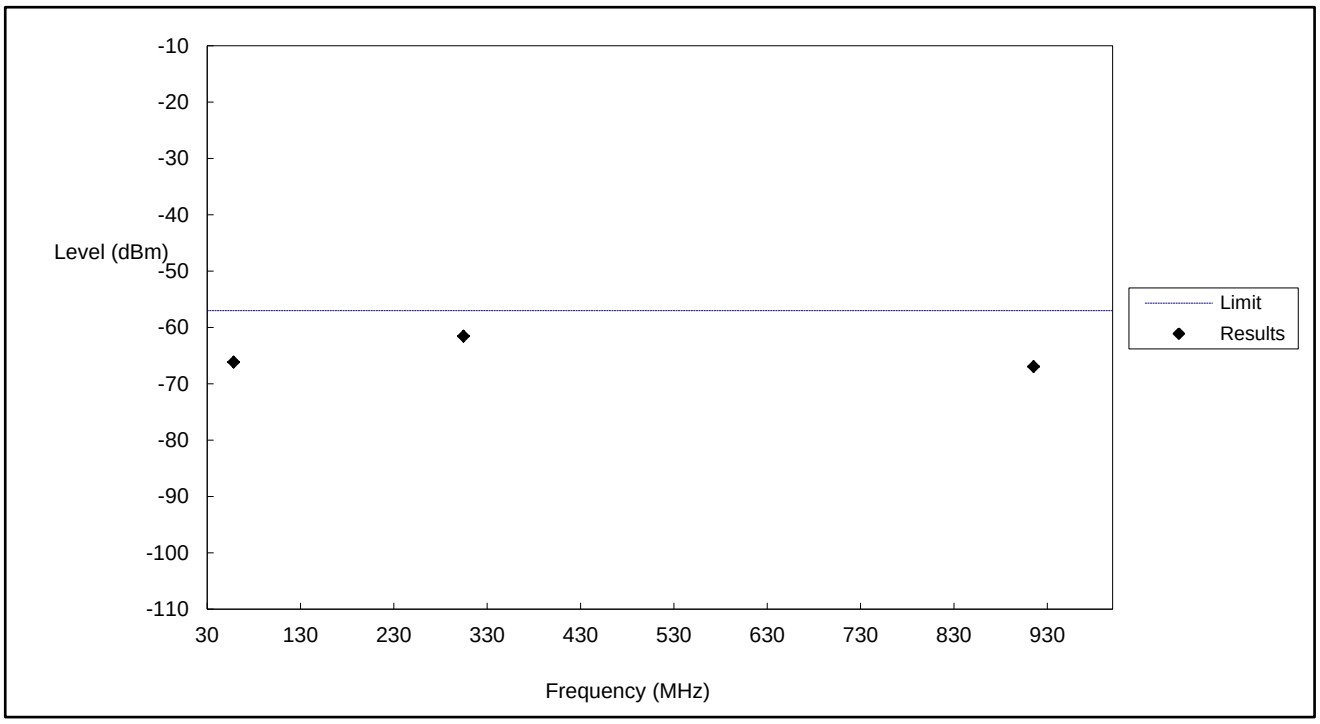

| No. | Frequency | Result | Limit | Margin | Remark |
|---|---|---|---|---|---|
| | (MHz) | (dBm) | (dBm) | (dB) | |
| 1 | 1479.2308 | -50.00 | -30.00 | -20.00 | RMS |
| 2 | 3473.8462 | -46.15 | -30.00 | -16.15 | RMS |
| 3 | 9890.7692 | -52.31 | -30.00 | -22.31 | RMS |

*Vertical:*



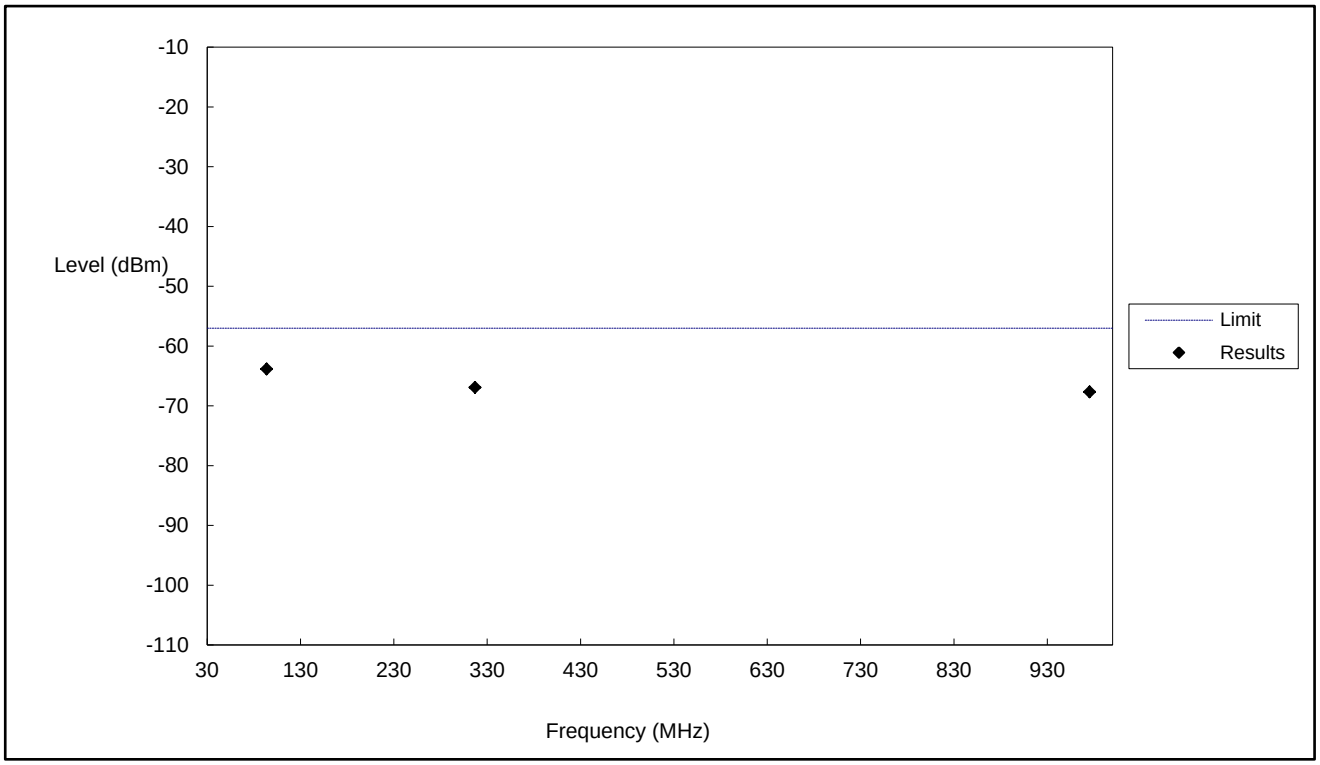

| No. | Frequency | Result | Limit | Margin | Remark |
|---|---|---|---|---|---|
| | (MHz) | (dBm) | (dBm) | (dB) | |
| 1 | 2348.4615 | -53.85 | -30.00 | -23.85 | RMS |
| 2 | 3080.0000 | -50.77 | -30.00 | -20.77 | RMS |
| 3 | 8288.4615 | -47.69 | -30.00 | -17.69 | RMS |

*Radiated Spurious Emissions(30MHz-1GHz)*
*Test Mode: Idle(Band 1-worst case)*
*Horizontal:*



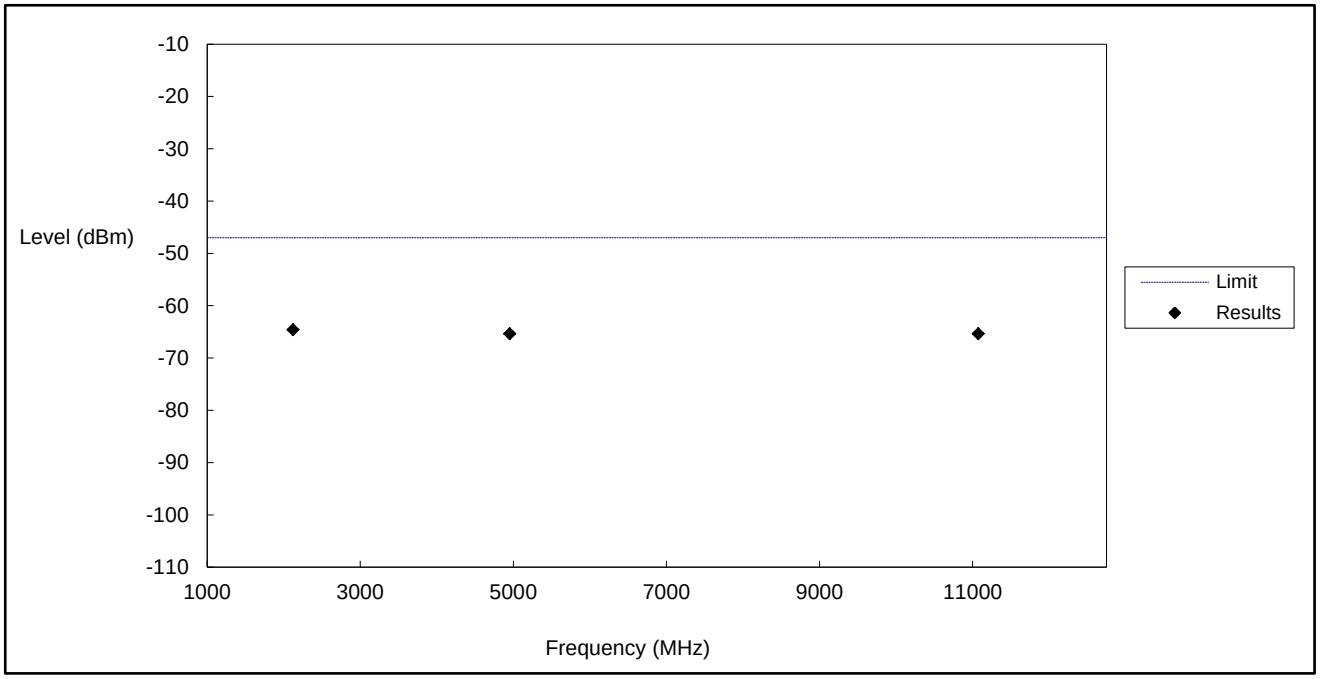

| No. | Frequency | Result | Limit | Margin | Remark |
|---|---|---|---|---|---|
| | (MHz) | (dBm) | (dBm) | (dB) | |
| 1 | 58.4615 | -66.15 | -57.00 | -9.15 | RMS |
| 2 | 304.6154 | -61.54 | -57.00 | -4.54 | RMS |
| 3 | 915.3846 | -66.92 | -57.00 | -9.92 | RMS |

*Vertical:*



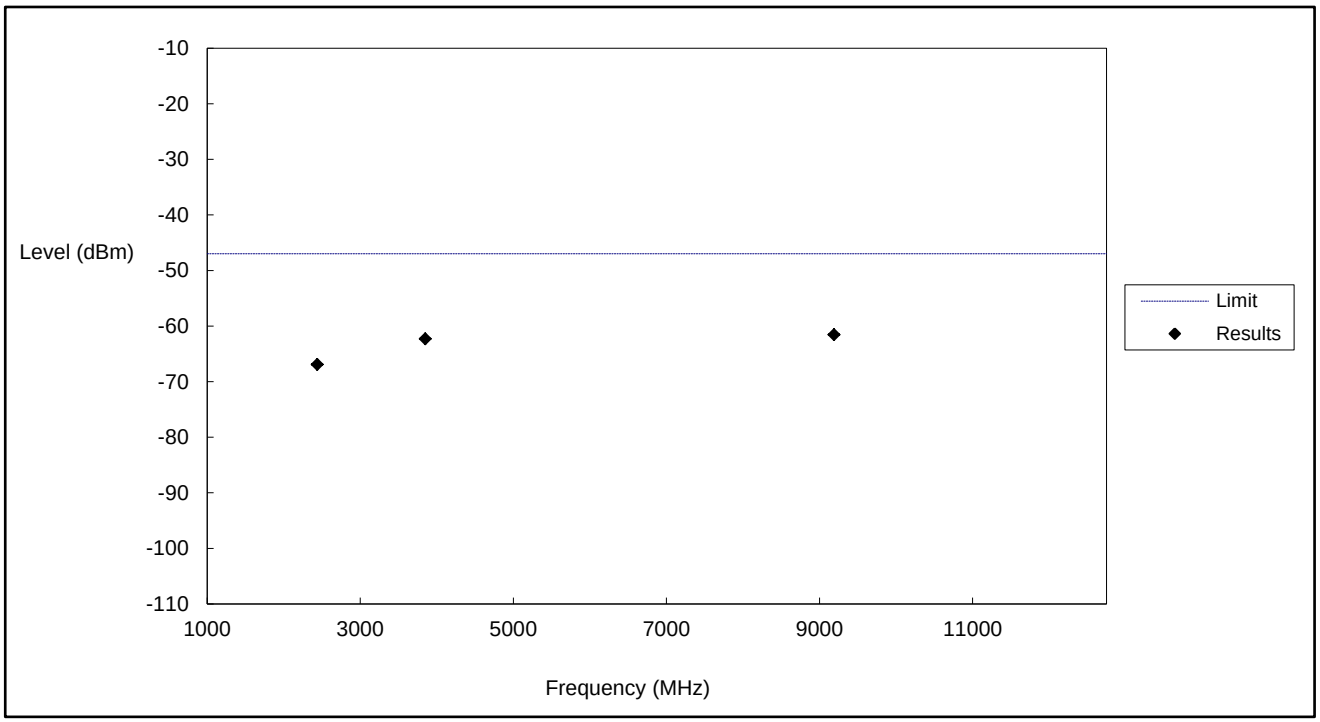

| No. | Frequency | Result | Limit | Margin | Remark |
|---|---|---|---|---|---|
| | (MHz) | (dBm) | (dBm) | (dB) | |
| 1 | 93.8462 | -63.85 | -57.00 | -6.85 | RMS |
| 2 | 316.9231 | -66.92 | -57.00 | -9.92 | RMS |
| 3 | 975.3846 | -67.69 | -57.00 | -10.69 | RMS |

*Radiated Spurious Emissions(above 1GHz)*
*Test Mode: Idle(Band 1-worst case)*
*Horizontal:*




| No. | Frequency | Result | Limit | Margin | Remark |
|---|---|---|---|---|---|
| | (MHz) | (dBm) | (dBm) | (dB) | |
| 1 | 2122.3077 | -64.62 | -47.00 | -17.62 | RMS |
| 2 | 4954.6154 | -65.38 | -47.00 | -18.38 | RMS |
| 3 | 11073.8462 | -65.38 | -47.00 | -18.38 | RMS |

*Vertical:*




| No. | Frequency | Result | Limit | Margin | Remark |
|---|---|---|---|---|---|
| | (MHz) | (dBm) | (dBm) | (dB) | |
| 1 | 2439.2308 | -66.92 | -47.00 | -19.92 | RMS |
| 2 | 3850.7692 | -62.31 | -47.00 | -15.31 | RMS |
| 3 | 9190.7692 | -61.54 | -47.00 | -14.54 | RMS |

*Note: only list the worst case for Traffic Mode<1GHz, Traffic Mode >1GHz, idle Mode <1GHz, idle Mode >1GHz.*

### 3.13 Control and monitoring functions

Clause 4.2.4 of ETSI EN 301 908-1 V6.2.1 (2013-10) applies.

RESULT: Pass

#### 3.13.1 Definition and applicability

This requirement, together with other control and monitoring technical requirements identified in the table of cross references in the applicable part, verifies that the control and monitoring functions of the UE prevent it from transmitting in the absence of a valid network.
This test is applicable to radio communications equipment and ancillary equipment in the operating band defined in the applicable part of this multipart harmonized standard.
This test shall be performed on the radio communications equipment and/or a representative configuration of the ancillary equipment.

#### 3.13.2 Conformance requirements

The maximum measured power during the duration of the test shall not exceed -30 dBm.

#### 3.13.3 Set up for testing

a) At the start of the test, the UE shall be switched off. The UE antenna connector shall be connected to a power measuring equipment, with the following characteristics:
- the RF bandwidth shall exceed the total operating transmit frequency range of the UE for operation with an applicable part;
- the response time of the power measuring equipment shall be such that the measured power has reached within 1 dB of its steady state value within 100 µs of a CW signal being applied;
- it shall record the maximum power measured.

NOTE: The equipment may include a video low pass filter to minimize its response to transients or Gaussian noise peaks.

b) The UE shall be switched on for a period of approximately fifteen minutes, and then switched off.

c) The EUT shall remain switched off for a period of at least thirty seconds, and shall then be switched on for a period of approximately one minute.

d) The maximum power emitted from the UE throughout the duration of the test shall be recorded.
The results obtained shall be compared to the limits in clause 3.13.2 in order to prove compliance.

### 3.13.4 Test result

| Test conditions | | WCDMA Band 1 – Control and monitoring functions | | | | | | |
|---|---|---|---|---|---|---|---|---|
| T | V | Measured range | Test data (dBm) | | | | Limit (dBm) | Result |
| | | | 1st | 2nd | 3rd | 4th | | |
| Tnom(25℃) | Vnom(3.7) | WCDMA Band 1<br>1920MHz to 1980MHz | -43.1 | -42.6 | -41.5 | -42。2 | -30 | Pass |

| Test conditions | | WCDMA Band 8 – Control and monitoring functions | | | | | | |
|---|---|---|---|---|---|---|---|---|
| T | V | Measured range | Test data (dBm) | | | | Limit (dBm) | Result |
| | | | 1st | 2nd | 3rd | 4th | | |
| Tnom(25℃) | Vnom(3.7) | WCDMA Band 8<br>880MHz to 915MHz | -42.7 | -41.5 | -42.3 | -41.5 | -30 | Pass |

| Measurement uncertainty | +/-1.0dB |
|---|---|

The equipment complied with the requirement of this clause.

# EXHIBIT 1 - PRODUCT LABELING

## Proposed CE Label Format

Smart Phone
Model: VOLT X
Input: 5V⎓, 1A or Powered by 3.8V, 4000mAh
Rechargeable Li-polymer Battery
CE 0700
Gui zhou Fortuneship Technology Co., Ltd.

Specifications: Text is Black in color and is justified. Labels are printed in indelible ink on permanent adhesive backing or silk-screened onto the EUT or shall be affixed at a conspicuous location on the EUT. The 'CE' marking must be affixed to the EUT or to its data plate. Where this is not possible or not warranted on account of the nature of the apparatus, it must be affixed to the packaging, if any, and to the accompanying documents. The 'CE' marking is allowed less than 5 mm but must clear. If the 'CE' marking is reduced or enlarged the proportions given in the above graduated drawing must be respected. The Importer name, address and Manufacturer name and address should indicate on marking label or packaging or in a document accompanying

## Proposed Label Location on EUT

CE Label Location

# EXHIBIT 2 - EUT PHOTOGRAPHS

**EUT View 1**

**EUT View 2**

**EUT View 3**

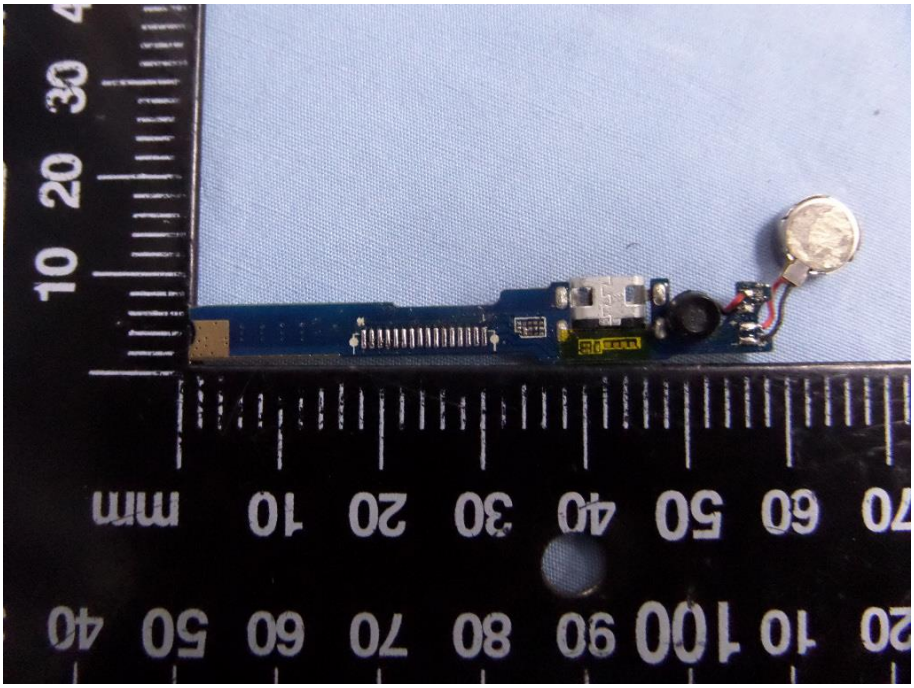
**EUT Housing and Board View 1**

**EUT Housing and Board View 2**

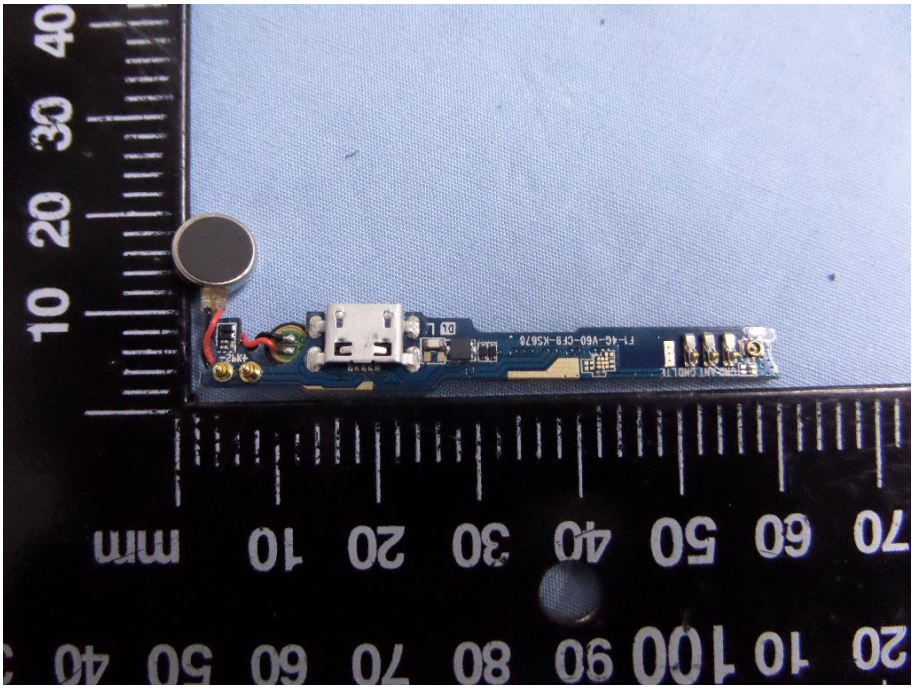

**EUT Housing and Board View 3**

**EUT Housing and Board View 4**

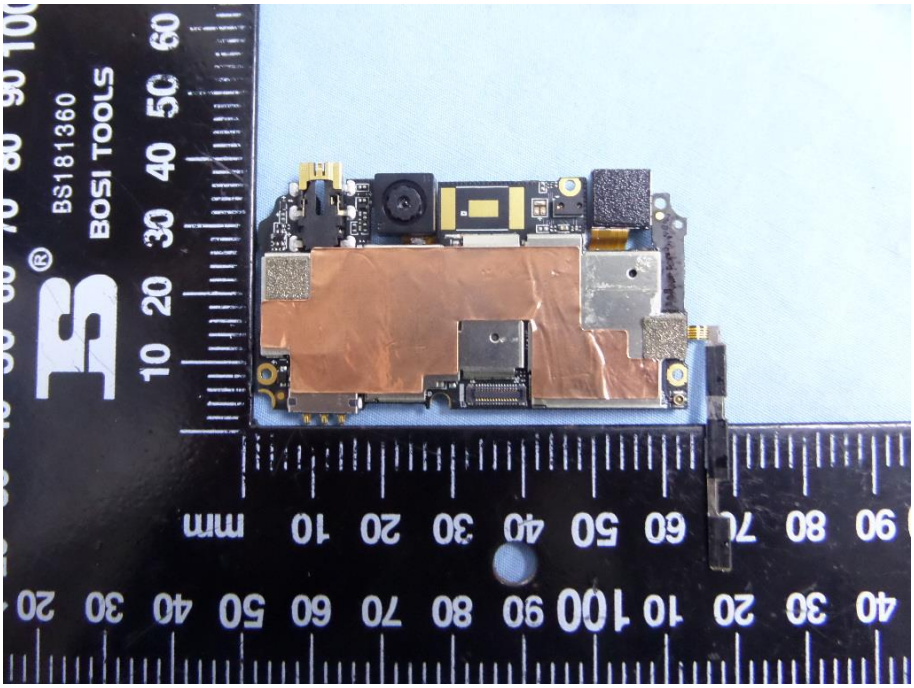

**Solder Board-Component View 1**



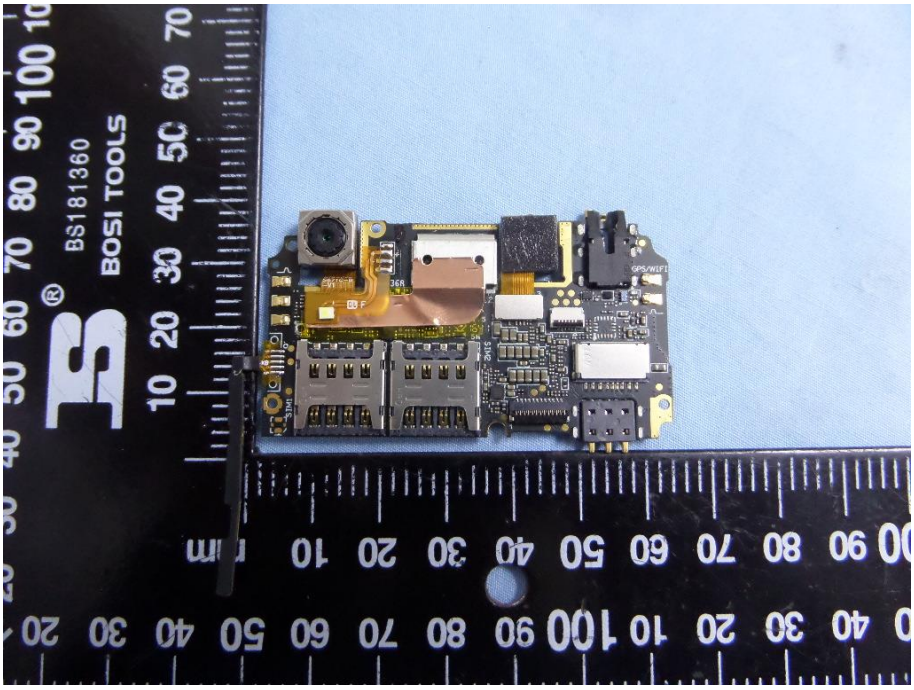
**Solder Board-Component View 2**



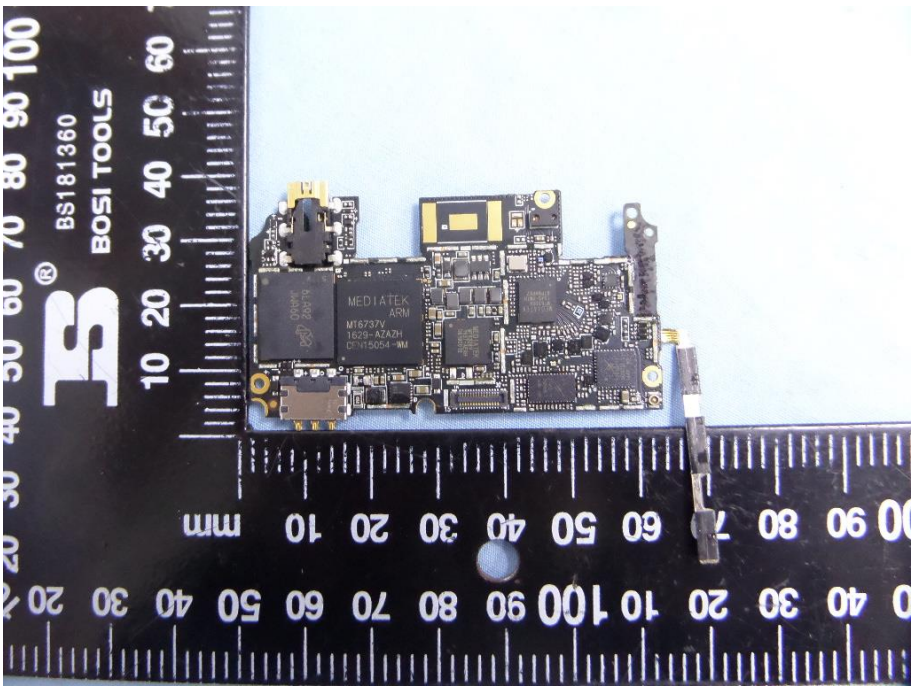
**Solder Board-Component View 3**



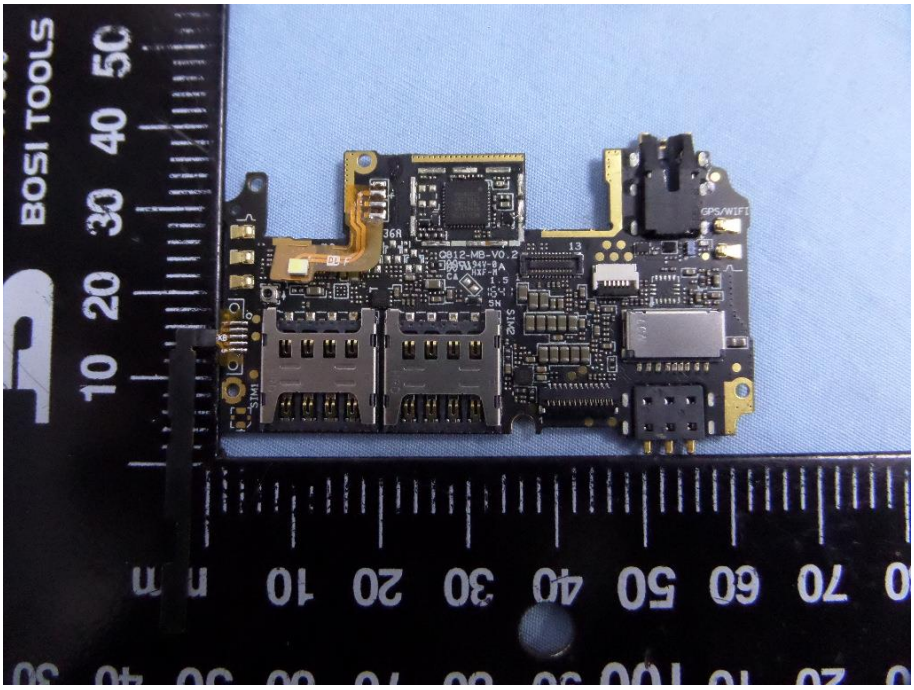
**Solder Board-Component View 4**



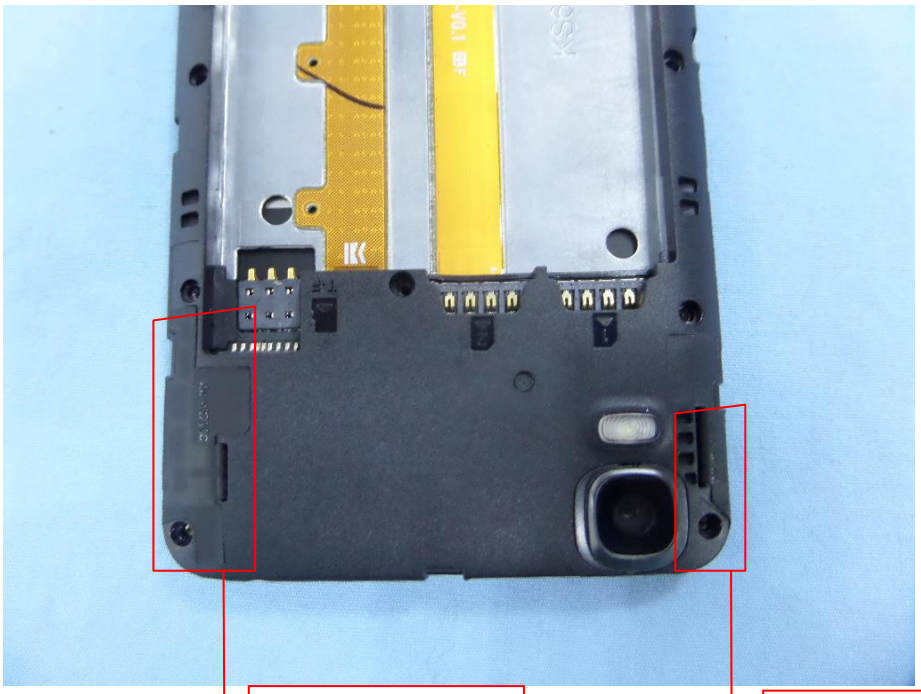

**Solder Board-Component View 5**

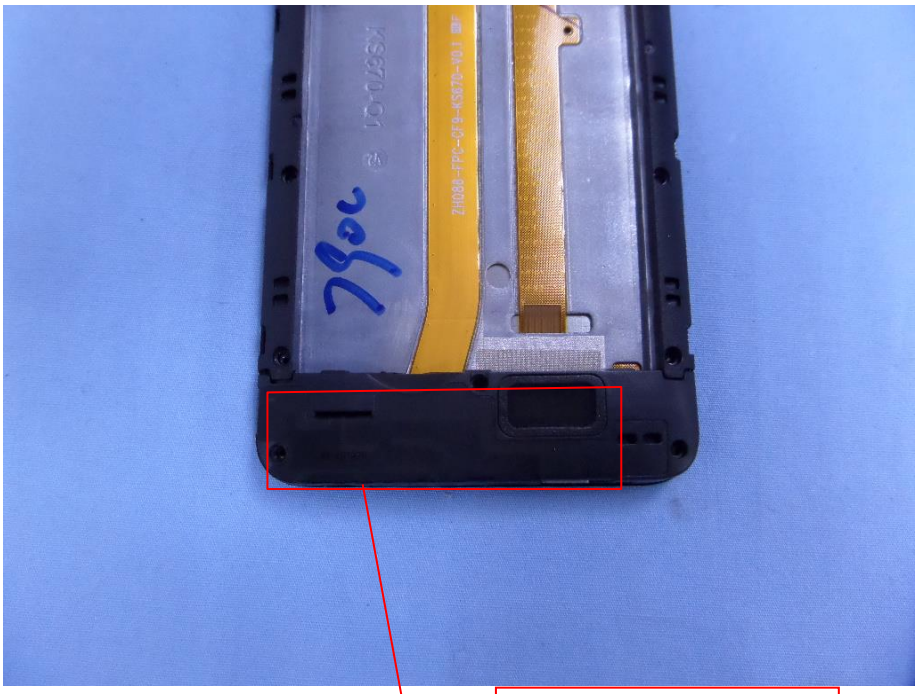


**Solder Board-Component View 6**



**Antenna View**

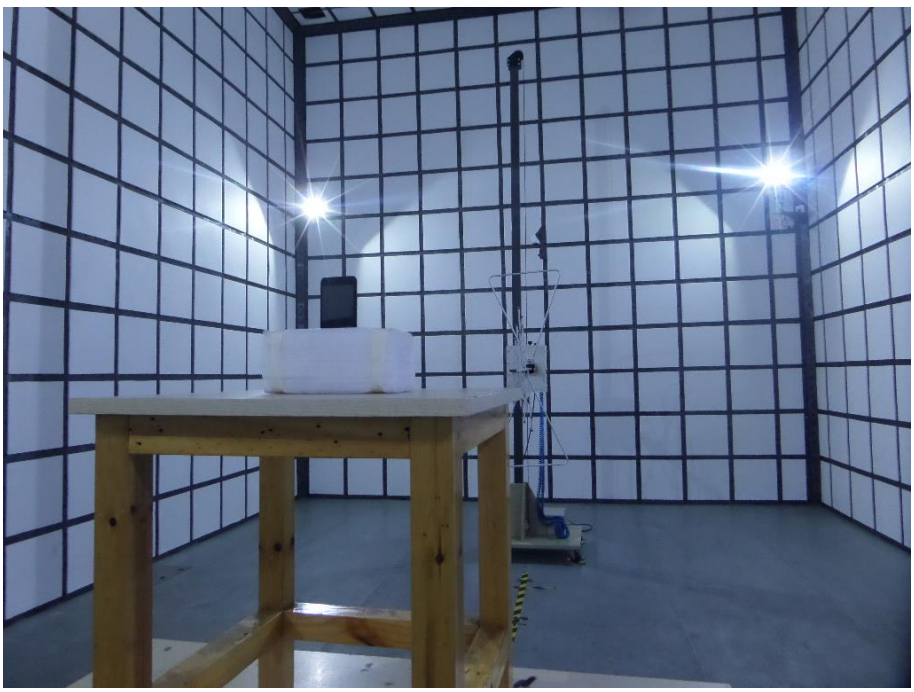


# EXHIBIT 3 - Test setup photo

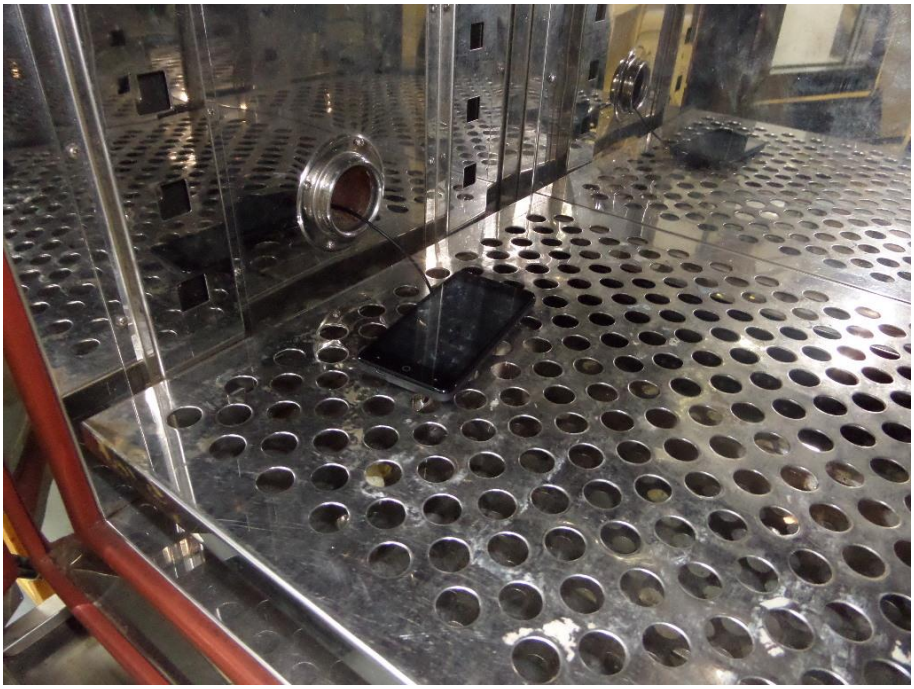
**Radio Test Suite 1**


**Spurious Emission Test Setup (Below 1GHz)**



**Spurious Emission Test Setup (Above 1GHz)**

**Extreme Condition Test Setup**



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