# ELECTROMAGNETIC EMISSIONS COMPLIANCE REPORT

## INTENTIONAL RADIATOR CERTIFICATION TO FCC PART 22 SUBPART H, PART 24 SUBPART E and PART 27 INDUSTRY CANADA RSS-132 and RSS-133 CLASS II PC REPORT

*OF*

| | |
|---|---|
| **Product Name:** | **Mini-PCIe wireless WAN (E362) card** |
| **Brand Name:** | **N/A** |
| **Model No. for WWAN Module:** | **E362** |
| **Model Name of Host:** | **HSTNN-F05C** |
| **Model Difference:** | **N/A** |
| **FCC ID:** | **PKRNVWE362-H** |
| **IC:** | **3229B-E362H** |
| **Report No.:** | **EH/2010/B0018-19** |
| **Issue Date:** | **Dec. 15, 2010** |
| **FCC Rule Part:** | **2 , 22H & 24E & 27**<br>**RSS 132 Issue 2 and RSS 133 Issue 5** |
| **Prepared for:** | **Novatel Wireless Inc**<br>**9645 Scranton Road, Suite 205 San Diego, CA 92121-3030 United States** |
| **Prepared by:** | **SGS Taiwan Ltd.**<br>**Electronics & Communication Laboratory**<br>**No. 134, Wu Kung Rd., Wuku Industrial Zone, Taipei County, Taiwan.** |

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# VERIFICATION OF COMPLIANCE

| | |
|---|---|
| **Applicant:** | Novatel Wireless Inc<br>9645 Scranton Road, Suite 205 San Diego, CA 92121-3030 United States |
| **Product Name:** | Mini-PCIe wireless WAN (E362) card |
| **Brand Name:** | N/A |
| **Model No. for WWAN Module:** | E362 |
| **Model Name of Host:** | HSTNN-F05C |
| **Model Difference:** | N/A |
| **FCC ID:** | PKRNVWE362-H |
| **IC:** | 3229B-E362H |
| **Report No.:** | EH/2010/B0018-19 |
| **Date of test:** | Nov. 11, 2010 ~ Dec. 14, 2010 |
| **Date of EUT Received:** | Nov. 11, 2010 |

## We hereby certify that:

The above equipment was tested by SGS Taiwan Ltd. Electronics & Communication Laboratory The test data, data evaluation, test procedures, and equipment configurations shown in this report were made in accordance with the procedures given in TIA/EIA-603-C-2004 Issue 2 of RSS-Gen the energy emitted by the sample EUT tested as described in this report is in compliance with conducted and radiated emission limits of FCC Rule FCC PART 22 subpart H, PART 24 subpart E and PART 27. and IC standards RSS-132 Issue 2, Issue 5 of RSS-133 .

The test results of this report relate only to the tested sample identified in this report.

| | | | |
|---|---|---|---|
| ***Test By:*** | Jazz Huang | ***Date:*** | Dec. 15 2010 |
| | ***Jazz Huang / Engineer*** | | |
| ***Prepared By:*** | Gigi yeh | ***Date:*** | Dec. 15 2010 |
| | ***Gigi Yeh / Clerk*** | | |
| ***Approved By:*** | Arno Hsieh | ***Date:*** | Dec. 15 2010 |
| | ***Arno Hsieh / Asst. Supervisor*** | | |

# Version

| Version No. | Date | Description |
|---|---|---|
| 00 | Dec. 15 2010 | Initial creation of document |
| | | |
| | | |
| | | |

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# GENERAL PRODUCT INFORMATION

## General Information of Notebook

| | | |
|---|---|---|
| Product Name: | Mini-PCIe wireless WAN (E362) card | |
| WWAN Module Name: | E362 | |
| Brand Name: | N/A | |
| Model No of the host | HSTNN-F05C | |
| Model Difference of Host: | N/A | |
| Hardware Version for WWAN Modular: | HP Beta4 | |
| Software Version for WWAN Modular | 1.18 | |
| Power Supply: | 10.8 Vdc Li-Ion battery or 19.5Vdc from AC/DC adapter | |
| | Battery: | Model No.: HSTNN-UB1Y, Supplier: HP |
| | Adapter : | Model: HSTNN-DA18, supplier: HP |

**GSM/GPRS/EDGE/WCDMA/ CDMA/EVDO:**

| | | | |
|---|---|---|---|
| Cellular Phone Standards Frequency Range: | GSM / GPRS 850, Class 12 | 824.2 MHz– 848.8 MHz | 33 dBm |
| | EDGE 850, Class 12 | 824.2 MHz– 848.8 MHz | 27 dBm |
| | GSM / GPRS 1900, Class 12 | 1850.2MHz – 1909.8MHz | 30 dBm |
| | EDGE 1900, Class 12 | 1850.2MHz – 1909.8MHz | 26 dBm |
| | WCDMA/HSUPA/HSDPA /HSPA+ Band II | 1852.4MHz – 1907.6MHz | 24 dBm |
| | WCDMA/HSUPA/HSDPA /HSPA+ Band V | 826.4MHz - 846.6MHz | 24 dBm |
| | CDMA 2000 Cellular / EVDO Cellular | 824.7MHz – 848.31MHz | 24 dBm |
| | CDMA 2000 PCS / EVDO PCS | 1851.25MHz– 1908.75MHz | 24 dBm |
| | 5MHz BW LTE-Band 13 | 779.5MHz – 784.56MHz | 23 dBm |
| | 10Mhz BW LTE-Band 13 | 782MHz | 23 dBm |
| IMEI: | 990000468005873 | | |
| Hardware Version: | N/A | | |
| Software Version: | N/A | | |
| WWAN module FCC ID: | PKRNVWE362-H | | |
| Class II Permissive change: | Notebook PC with Embedded WWAN Radio | | |

This test report applies for 850/1900 GSM/GPRS/EDGE/ WCDMA/CDMA/EvDO and 700MHz LTE

## 1.1. Related Submittal(s) / Grant (s)

This submittal(s) (test report) is intended for FCC ID: **PKRNVWE362-H** filing to comply with Section Part 22 subpart H, Part 24 subpart E and Part27 of the FCC CFR 47 Rules. And **IC: 3229B-E362H** filing to comply with RSS-132 and Issue 5 of RSS-133

## 1.2. Test Methodology

Both conducted and radiated testing were performed according to the procedures document of TIA/EIA 603C and FCC CFR 47.1046, 2.1047, 2.1049, 2.1051, 2.1053, 2.1055 and 2.1057.

The Output power Procedure of KDB941225 (SAR Measurement Procedures for 3G devices, WCDMA / HSDPA) was used for EUT and Base station setting.

## 1.3. Test Facility

The measurement facilities used to collect the 3m Radiated Emission and AC power line conducted data are located on the address of SGS Taiwan Ltd. Electronics & Communication Laboratory No. 134, Wu Kung Rd., Wuku Industrial Zone, Taipei Country, Taiwan which are constructed and calibrated to meet the FCC requirements in documents ANSI C63.4: 2003. FCC Registration Number are: 990257 and 236194, Canada Registration Number: 4620A-4

The 10 m Open Area Test Sites located on the address of SGS Taiwan Ltd. Electronics & Communication Laboratory No. 29, Pau-Tou-Tsuo Valley Chia-Pau Tsuen, Linkou Hsiang, Taipei county, which is constructed and calibrated to meet the CISPR 22/EN 55022 requirements. SGS Site No. 1(3 &10 meters) and FCC Registration Number: 94644.

All equipment is calibrated externally and traceable to SI (International System of Unit).

## 1.4. Special Accessories

Not available for this EUT intended for grant.

## 1.5. Equipment Modifications

Not available for this EUT intended for grant.

# 2. SYSTEM TEST CONFIGURATION

## 2.1. EUT Configuration

The EUT configuration for testing is installed on RF field strength measurement to meet the Commissions requirement and operating in a manner which intends to maximize its emission characteristics in a continuous normal application.

## 2.2. EUT Exercise

The EUT (Transmitter) was operated in the engineering mode to fix the Tx frequency which was for the purpose of the measurements.

## 2.3. Test Procedure

### 2.3.1 Conducted Measurement at Antenna Port:

According to measurement procured TIA/EIA 603C, the EUT is placed on a turn table which is 0.8 m above ground plane. A low loss of RF cable was used to connect the antenna port of EUT to measurement equipment.

### 2.3.2 Radiated Emissions (ERP/EIRP):

The EUT is a placed on as turn table which is 80 cm above ground plane. The turn table shall rotate 360 degrees to determine the position of maximum emission level. EUT is set 3m away from the receiving antenna which varied from 1m to 4m to find out the highest emission. And also, each emission was to be maximized by changing the polarization of receiving antenna both Horizontal and Vertical. In order to find out the max. emission, the relative positions of this hand-held transmitter (EUT) was rotated through three orthogonal axes and measurement procedures for electric field radiated emissions above 1 GHz the EUT measurement is to be made “while keeping the antenna in the ‘cone of radiation’ from that area and pointed at the area both in azimuth and elevation, with polarization oriented for maximum response.” is still within the 3dB illumination BW of the measurement antenna according to the requirements in Section 2 of TIA/EIA 603C.

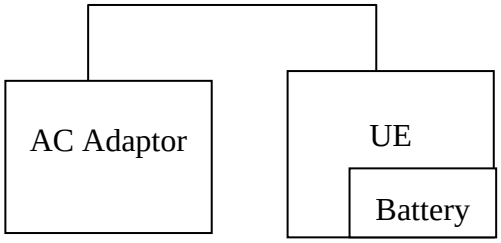
## 2.4. Measurement Equipment Used:

| Conducted Emission Test Site | | | | | |
|---|---|---|---|---|---|
| **EQUIPMENT TYPE** | **MFR** | **MODEL NUMBER** | **SERIAL NUMBER** | **LAST CAL.** | **CAL DUE.** |
| Spectrum Analyzer | Agilent | E4446A | MY43360126 | 04/19/2010 | 04/18/2012 |
| Spectrum Analyzer | Agilent | E4440A | US41160416 | 01/25/2010 | 01/24/2011 |
| Radio Communication Analyzer | R&S | CMU200 | 111787 | 10/31/2010 | 10/30/2012 |
| 800 – 1000MHz Filter | Micro-Tronics | BRM13462 | 001 | 01/05/2010 | 01/04/2011 |
| 1800 – 2000MHz Filter | Micro-Tronics | BRM13463 | 001 | 01/05/2010 | 01/04/2011 |
| Temperature Chamber | TERCHY | MHG-120LF | 911009 | 04/30/2010 | 04/29/2012 |
| Temperature Chamber | GIANT FORCE | GTH-150-40-CP-AR | MAA0512-018 | 02/24/2010 | 02/23/2012 |
| DC Block | Agilent | BLK-18 | 155452 | 07/05/2010 | 07/04/2011 |
| Attenuator | Mini-Circuit | BW-S20W5 | N/A | 07/05/2010 | 07/04/2011 |
| Attenuator | Mini-Circuit | BW-S10W5 | N/A | 07/05/2010 | 07/04/2011 |
| Attenuator | Mini-Circuit | BW-S6W5 | N/A | 07/05/2010 | 07/04/2011 |
| Splitter | Agilent | 11636B | N/A | 07/05/2010 | 07/04/2011 |
| DC Power Supply | Chroma | 41901 | 777188 | 04/15/2010 | 04/14/2012 |
| Universal Radio Communication Tester | R&S | CMW500 | 101582 | 07/12/2010 | 07/11/2012 |

| ERP, EIRP MEASUREMENT EQUIPMENT List 966 Chamber | | | | | |
|---|---|---|---|---|---|
| **EQUIPMENT TYPE** | **MFR** | **MODEL NUMBER** | **SERIAL NUMBER** | **LAST CAL.** | **CAL DUE.** |
| Spectrum Analyzer | R&S | FSP 40 | 100034 | 02/12/2010 | 02/11/2011 |
| Bilog Antenna | SCHWAZBECK | VULB9160 | 3136 | 11/19/2010 | 11/18/2011 |
| Dipole Antenna | SCHWAZBECK | VHAP | 908/909 | 07/17/2010 | 07/16/2012 |
| Dipole Antenna | SCHWAZBECK | UHAP | 891/892 | 07/17/2010 | 07/16/2012 |
| Horn antenna | SCHWAZBECK | BBHA 9120D | 309/320 | 03/09/2009 | 03/08/2011 |
| Signal Generator | R&S | SMR40 | 100210 | 02/10/2010 | 02/09/2012 |
| Signal Generator | Agilent | E4438C | MY45093613 | 07/08/2010 | 07/07/2011 |
| Pre-Amplifier | Agilent | 8447D | 1937A02834 | 11/28/2010 | 11/27/2011 |
| Pre-Amplifier | Agilent | 8449B | 3008A01973 | 01/05/2010 | 01/04/2011 |
| Attenuator | Mini-Circuit | BW-S20W5 | 001 | 07/05/2010 | 07/04/2011 |
| Attenuator | Mini-Circuit | BW-S10W5 | 001 | 07/05/2010 | 07/04/2011 |
| Attenuator | Mini-Circuit | BW-S6W5 | 001 | 07/05/2010 | 07/04/2011 |
| Radio Communication Analyzer | R&S | CMU200 | 111787 | 10/31/2010 | 10/30/2012 |
| Turn Table | HD | DT420 | N/A | N.C.R | N.C.R |
| Antenna Tower | HD | MA240-N | 240/657 | N.C.R | N.C.R |
| Controller | HD | HD100 | N/A | N.C.R | N.C.R |
| Low Loss Cable | HUBER+SUHNER | SUCOFLEX 104PEA-10M | 10m | 01/05/2010 | 01/04/2011 |
| Low Loss Cable | HUBER+SUHNER | SUCOFLEX 104PEA-3M | 3m | 01/05/2010 | 01/04/2011 |
| Filter 800-1000 | Micro-Tronics | BRM13462 | 1 | 01/05/2010 | 01/04/2011 |
| Filter 1800-2000 | Micro-Tronics | BRM13463 | 1 | 01/05/2010 | 01/04/2011 |
| 3m Site | SGS | 966 chamber | N/A | 11/08/20010 | 11/09/2011 |

## 2.5. Configuration of Tested System

**Fig. 2-1 Configuration of Tested System (Fixed Channel)**




**Remote Side**

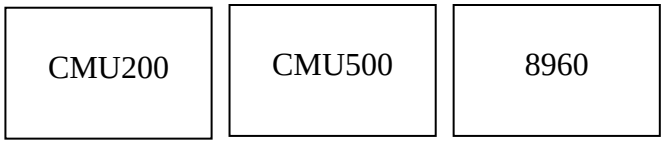



**Table 2-1 Equipment Used in Tested System**

| Item | Equipment | Mfr/Brand | Model/ Type No. | Series No. | Data Cable | Power Cord |
|---|---|---|---|---|---|---|
| 1. | Universal Radio Communication Tester | R&S | CMU200 | 102189 | shielded | Un-shielded |
| 2. | Wireless communications Test set | Agilent | 8960 | GB47050617 | shielded | Un-shielded |
| 3. | Universal Radio Communication Tester | R&S | CMW500 | 101582 | shielded | Un-shielded |

# 3. SUMMARY OF TEST RESULTS

| FCC Rules | IC Rules | Description Of Test | Result |
|---|---|---|---|
| §2.1046(a)<br>§22.913(a)(2)<br>§24.232(c)<br>§27.50(b)(10) | §4.8 (RSS-Gen)<br>§4.4 (RSS-132)<br>§6.4 (RSS-133) | RF peak power | Compliant |
| §2.1046(a)<br>§22.913(a)(2)<br>§24.232(c)<br>§27.50(b)(10) | §4.8 (RSS-Gen)<br>§4.4 (RSS-132)<br>§6.4 (RSS-133) | ERP/ EIRP measurement | Compliant |
| §2.1053<br>§22.917(a)<br>§24.238(a)<br>§27.53(c)(2) | §4.9 (RSS-Gen)<br>§4.5 (RSS-132)<br>§6.5 (RSS-133) | Field Strength of Spurious Radiation | Compliant |
| §27.53f | N/A | Spurious emission in 1559 -1610MHz Band | Compliant |
| N/A | §4.10 (RSS-Gen)<br>§4.6 (RSS-132)<br>§6.6 (RSS-133) | Receiver Spurious Emissions | Compliant |

Max ERP/EIRP measurement result:

| | dBm | | W |
|---|---|---|---|
| GPRS 850 Band | 30.69 | ERP | 1.172 |
| GPRS 1900 Band | 24.20 | EIRP | 0.263 |
| EDGE 850 Band | 27.96 | ERP | 0.625 |
| EDGE 1900 Band | 24.16 | EIRP | 0.261 |
| WCDMA Band II | 22.02 | EIRP | 0.159 |
| WCDMA Band V | 25.78 | ERP | 0.378 |
| HSUPA Band II | 21.26 | EIRP | 0.134 |
| HSUPA Band V | 25.06 | ERP | 0.321 |
| CDMA 2000 Cellular | 27.92 | ERP | 0.619 |
| CDMA 2000 PCS | 25.58 | EIRP | 0.361 |
| CDMA 2000 EVDO Cellular | 28.09 | ERP | 0.644 |
| CDMA 2000 EVDO PCS | 24.73 | EIRP | 0.297 |
| 5M/QPSK RB 1 Offset 0 | 28.36 | ERP | 0.685 |
| 5M/16QAM RB 1 Offset 0 | 28.46 | ERP | 0.701 |
| 5M/QPSK RB 1 Offset 24 | 28.94 | ERP | 0.783 |
| 5M/16QAM RB 1 Offset 24 | 28.81 | ERP | 0.760 |
| 5M/QPSK RB 12 Offset 6 | 28.48 | ERP | 0.705 |
| 5M/16QAM RB 12 Offset 6 | 28.39 | ERP | 0.690 |
| 5M/QPSK RB 25 Offset 0 | 27.50 | ERP | 0.562 |
| 5M/16QAM RB 25 Offset 0 | 27.42 | ERP | 0.552 |
| 10M/QPSK RB 1 Offset 0 | 28.20 | ERP | 0.661 |
| 10M/16QAM RB 1 Offset 0 | 28.04 | ERP | 0.637 |
| 10M/QPSK RB 1 Offset 49 | 28.24 | ERP | 0.667 |
| 10M/16QAM RB 1 Offset 49 | 28.73 | ERP | 0.746 |
| 10M/QPSK RB 25 Offset 12 | 26.82 | ERP | 0.481 |
| 10M/16QAM RB 25 Offset 12 | 26.77 | ERP | 0.475 |
| 10M/QPSK RB 50 Offset 0 | 26.82 | ERP | 0.481 |
| 10M/16QAM RB 50 Offset 0 | 26.90 | ERP | 0.490 |

# 4. DESCRIPTION OF TEST MODES

The EUT has been tested under operating condition.

EUT staying in continuous transmitting mode. Channel Low, Mid and High for each type band with rated data rate were chosen for full testing.

The field strength of ERP/EIRP power and spurious radiation emission were measured as EUT stand up position (E2 plan as defined by SGS testing lab) for GPRS 850 / 1900 bands and 700MHz LTE were reported which has worst data.

In comparison among the RSE data of the all modulations (GPRS, WCDMA, and CDMA2000) we found that while the radiation is in GPRS mode, the spurious emission is found to be the worst, and therefore documenting the data of radiated spurious emission on GPRS 850/1900 mode would be representative sufficiently.

# 5. RF POWER OUTPUT MEASUREMENT

## 5.1. Standard Applicable:

According to FCC §2.1046.

FCC 22.913(a) Mobile station are limited to 7W.

FCC 24.232(c) Peak Power Measurement limited to 2W

Part 27, 50(b)(10) Portable stations are limited to 3W

According to IC RSS-133 §6.4

The peak e.i.r.p. for transmitters operating in the band 1850-1910 MHz shall not exceed the limits 2W which given in SRSP-510.

According to issue 2 of RSS 132, section 4.4. The transmitter output power shall not exceed the limits given in SRSP-503.

3GPP Power limitation for HSDPA and HSUPA

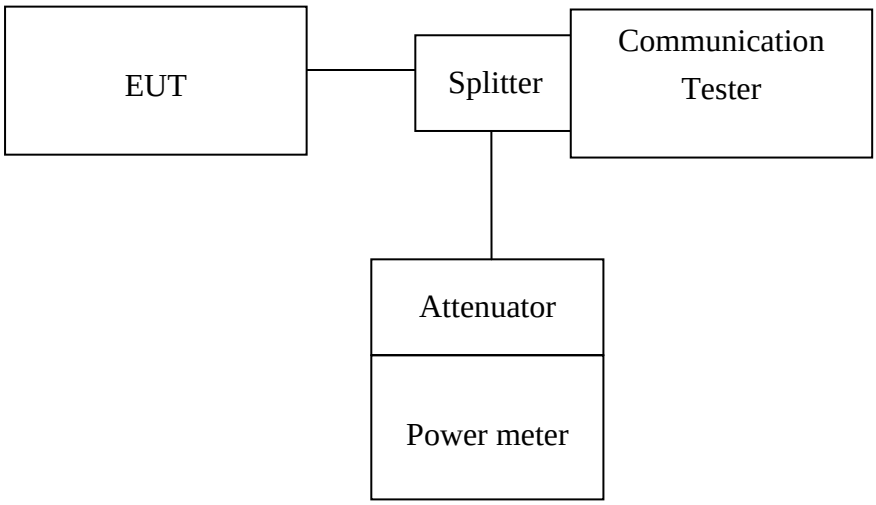
**Maximum Output Powers for HSDPA**

| Sub-test in table C.10.1.4 | Power Class 3 | | Power Class 4 | |
|---|---|---|---|---|
| | Power (dBm) | Tol (dB) | Power (dBm) | Tol (dB) |
| 1 | +24 | +1.7/-3.7 | +21 | +2.7/-2.7 |
| 2 | +24 | +1.7/-3.7 | +21 | +2.7/-2.7 |
| 3 | +23.5 | +2.2/-3.7 | +20.5 | +3.2/-2.7 |
| 4 | +23.5 | +2.2/-3.7 | +20.5 | +3.2/-2.7 |

**Maximum Output Powers for HSUPA**

| Sub-test in table C.11.1.3 | Power Class 3 | | Power Class 4 | |
|---|---|---|---|---|
| | Power (dBm) | Tol (dB) | Power (dBm) | Tol (dB) |
| 1 | +24 | +1.7/-6.7 | +21 | +2.7/-5.7 |
| 2 | +22 | +3.7/-5.2 | +19 | +4.7/-4.2 |
| 3 | +23 | +2.7/-5.2 | +20 | +3.7/-4.2 |
| 4 | +22 | +3.7/-5.2 | +19 | +4.7/-4.2 |
| 5 | +24 | +1.7/-6.7 | +21 | +2.7/-5.7 |

## 5.2. Test Set-up:




***Note:*** *Measurement setup for testing on Antenna connector*

## 5.3. Measurement Procedure:

The transmitter output was connected to a calibrated attenuator, the other end of which was connected to a power meter. Transmitter output was read off the power meter in dBm. The power output at the transmitter antenna port was determined by adding the value of the attenuator to the power meter reading. The Procedure of KDB941225 (SAR Measurement Procedures for 3G devices, WCDMA/HSDPA) was used for EUT and Base station setting. RMC 12.2kps is used for this testing

## 5.4. Measurement Equipment Used:

Refer to section 2.4 in this report

## 5.5. Measurement Result:

### 5.5.1. RF Conducted Output Power

### 5.5.1.1.: GPRS/EDGE (GMSK; 8-PSK)

**Result:**

| EUT Mode | Frequency (MHz) | CH | Peak Power (1DN 1UP) (dBm) | Avg. Power (1DN 1UP) (dBm) | Peak Power (1DN 2UP) (dBm) | Avg. Power (1DN 2UP) (dBm) | Peak Power (1DN 3UP) (dBm) | Avg. Power (1DN 3UP) (dBm) | Peak Power (1DN 4UP) (dBm) | Avg. Power (1DN 4UP) (dBm) |
|---|---|---|---|---|---|---|---|---|---|---|
| GPRS 850 (Class 12) | 824.2 | 128 | 31.30 | 31.20 | 29.10 | 29.00 | 27.50 | 27.40 | 26.30 | 26.20 |
| | 836.6 | 190 | 31.20 | 31.10 | 29.10 | 29.00 | 27.40 | 27.30 | 26.20 | 26.10 |
| | 848.8 | 251 | 31.20 | 31.10 | 28.90 | 28.80 | 27.30 | 27.20 | 26.20 | 26.10 |

| EUT Mode | Frequency (MHz) | CH | Peak Power (1DN 1UP) (dBm) | Avg. Power (1DN 1UP) (dBm) | Peak Power (1DN 2UP) (dBm) | Avg. Power (1DN 2UP) (dBm) | Peak Power (1DN 3UP) (dBm) | Avg. Power (1DN 3UP) (dBm) | Peak Power (1DN 4UP) (dBm) | Avg. Power (1DN 4UP) (dBm) |
|---|---|---|---|---|---|---|---|---|---|---|
| GPRS 1900 (Class 12) | 1850.2 | 512 | 28.10 | 28.00 | 25.90 | 25.80 | 24.10 | 24.02 | 22.90 | 22.80 |
| | 1880.0 | 661 | 28.00 | 27.90 | 25.50 | 25.40 | 23.60 | 23.50 | 22.30 | 22.20 |
| | 1909.8 | 810 | 28.00 | 27.90 | 25.20 | 25.10 | 23.40 | 23.30 | 22.10 | 22.10 |

| EUT Mode | Frequency (MHz) | CH | Peak Power (1DN 1UP) (dBm) | Avg. Power (1DN 1UP) (dBm) | Peak Power (1DN 2UP) (dBm) | Avg. Power (1DN 2UP) (dBm) | Peak Power (1DN 3UP) (dBm) | Avg. Power (1DN 3UP) (dBm) | Peak Power (1DN 4UP) (dBm) | Avg. Power (1DN 4UP) (dBm) |
|---|---|---|---|---|---|---|---|---|---|---|
| EDGE 850 (Class 12) | 824.2 | 128 | 30.30 | 26.90 | 27.30 | 24.10 | 25.70 | 22.30 | 24.90 | 21.50 |
| | 836.6 | 190 | 30.30 | 26.90 | 27.30 | 24.10 | 25.80 | 22.40 | 24.90 | 21.60 |
| | 848.8 | 251 | 30.20 | 26.80 | 27.20 | 24.00 | 25.70 | 22.30 | 24.80 | 21.50 |

| EUT Mode | Frequency (MHz) | CH | Peak Power (1DN 1UP) (dBm) | Avg. Power (1DN 1UP) (dBm) | Peak Power (1DN 2UP) (dBm) | Avg. Power (1DN 2UP) (dBm) | Peak Power (1DN 3UP) (dBm) | Avg. Power (1DN 3UP) (dBm) | Peak Power (1DN 4UP) (dBm) | Avg. Power (1DN 4UP) (dBm) |
|---|---|---|---|---|---|---|---|---|---|---|
| EDGE 1900 (Class 12) | 1850.2 | 512 | 28.10 | 25.00 | 25.40 | 22.30 | 23.90 | 20.80 | 22.60 | 19.50 |
| | 1880.0 | 661 | 28.00 | 25.00 | 25.00 | 21.90 | 23.40 | 20.20 | 22.00 | 19.00 |
| | 1909.8 | 810 | 28.00 | 24.90 | 24.80 | 21.60 | 23.20 | 20.00 | 21.90 | 18.60 |

### 5.5.1.2.: WCDMA mode

The following tests were completed according to the test requirements outlined in section 5.2 of the 3GPP TS34.121-1 V8.4.0 specification. The EUT supports power Class 3, which has a nominal maximum output power of 24 dBm (+1.7/-3.7). RMC 12.2kps is used for this testing.

**Results:**

| EUT Mode | Frequency (MHz) | CH | Peak Power (dBm) | Avg Power (dBm) |
|---|---|---|---|---|
| WCDMA Band II | 1852.4 | 9262 | 24.78 | 21.81 |
| | 1880.0 | 9400 | 25.16 | 21.91 |
| | 1907.6 | 9538 | 25.75 | 22.69 |

| EUT Mode | Frequency (MHz) | CH | Peak Power (dBm) | Avg Power (dBm) |
|---|---|---|---|---|
| HSUPA Band II | 1852.4 | 9262 | 25.22 | 21.68 |
| | 1880.0 | 9400 | 25.48 | 21.65 |
| | 1907.6 | 9538 | 25.59 | 21.50 |

| EUT Mode | Frequency (MHz) | CH | Peak Power (dBm) | Avg Power (dBm) |
|---|---|---|---|---|
| WCDMA Band V | 826.4 | 4132 | 26.65 | 22.90 |
| | 836.6 | 4183 | 26.71 | 23.02 |
| | 846.6 | 4233 | 26.39 | 22.89 |

| EUT Mode | Frequency (MHz) | CH | Peak Power (dBm) | Avg Power (dBm) |
|---|---|---|---|---|
| HSUPA Band V | 826.4 | 4132 | 26.03 | 22.05 |
| | 836.6 | 4183 | 26.15 | 22.19 |
| | 846.6 | 4233 | 26.35 | 22.22 |

| EUT Mode | Frequency (MHz) | CH | Peak Power (dBm) | Avg. Power (dBm) |
|---|---|---|---|---|
| CDMA 2000 Cellular | 824.70 | 1013 | 23.85 | 23.43 |
| | 836.52 | 384 | 23.64 | 23.48 |
| | 848.31 | 777 | 23.85 | 23.79 |

| EUT Mode | Frequency (MHz) | CH | Peak Power (dBm) | Avg. Power (dBm) |
|---|---|---|---|---|
| CDMA 2000 PCS | 1851.25 | 25 | 23.55 | 23.41 |
| | 1880 | 600 | 23.40 | 23.25 |
| | 1908.75 | 1175 | 23.52 | 23.36 |

| EUT Mode | Frequency (MHz) | CH | Avg. Power (dBm) |
|---|---|---|---|
| CDMA 2000 EVDO Cellular | 824.70 | 1013 | 23.59 |
| | 836.52 | 384 | 23.50 |
| | 848.31 | 777 | 23.42 |

| EUT Mode | Frequency (MHz) | CH | Avg. Power (dBm) |
|---|---|---|---|
| CDMA 2000 EVDO PCS | 1851.25 | 25 | 23.60 |
| | 1880 | 600 | 23.32 |
| | 1908.75 | 1175 | 23.19 |

Note: The results above reflect max power with all up bits.

# MPR Table

| Freq (MHz) | Modulation | Channel Bandwidth (MHz) | RB Size | RB Offset | MPR Target Backoff (dB) |
|---|---|---|---|---|---|
| 779.5 | QPSK | 5 | 1 | 0 | 0 |
| | 16QAM | 5 | 1 | 0 | 1 |
| | QPSK | 5 | 1 | 24 | 0 |
| | 16QAM | 5 | 1 | 24 | 1 |
| | QPSK | 5 | 12 | 6 | 1 |
| | 16QAM | 5 | 12 | 6 | 2 |
| | QPSK | 5 | 25 | 0 | 1 |
| | 16QAM | 5 | 25 | 0 | 2 |
| 784.5 | QPSK | 5 | 1 | 0 | 0 |
| | 16QAM | 5 | 1 | 0 | 1 |
| | QPSK | 5 | 1 | 24 | 0 |
| | 16QAM | 5 | 1 | 24 | 1 |
| | QPSK | 5 | 12 | 6 | 1 |
| | 16QAM | 5 | 12 | 6 | 2 |
| | QPSK | 5 | 25 | 0 | 1 |
| | 16QAM | 5 | 25 | 0 | 2 |
| 782 | QPSK | 10 | 1 | 0 | 0 |
| | 16QAM | 10 | 1 | 0 | 1 |
| | QPSK | 10 | 1 | 49 | 0 |
| | 16QAM | 10 | 1 | 49 | 1 |
| | QPSK | 10 | 25 | 13 | 1 |
| | 16QAM | 10 | 25 | 13 | 2 |
| | QPSK | 10 | 50 | 0 | 1 |
| | 16QAM | 10 | 50 | 0 | 2 |

| Smaller channel bandwidth of LTE band 13_5 MHz | | | | | | | |
|---|---|---|---|---|---|---|---|
| channel | Frequency (MHz) | Uplink Channel Number | Bandwidth (MHz) | RB Number | RB Offset | Modulation | Max. Average Power (dBm) |
| Low | 779.5 | 23205 | 5 | 12 | 6 | QPSK | 22.44 |
| | 779.5 | 23205 | 5 | 25 | 0 | QPSK | 22.51 |
| | 779.5 | 23205 | 5 | 1 | 24 | QPSK | 23.75 |
| | 779.5 | 23205 | 5 | 1 | 0 | QPSK | 23.65 |
| | 779.5 | 23205 | 5 | 12 | 6 | 16 QAM | 21.42 |
| | 779.5 | 23205 | 5 | 25 | 0 | 16 QAM | 21.41 |
| | 779.5 | 23205 | 5 | 1 | 24 | 16 QAM | 22.44 |
| | 779.5 | 23205 | 5 | 1 | 0 | 16 QAM | 22.45 |
| Middle | 782 | 23230 | 5 | 12 | 6 | QPSK | 22.39 |
| | 782 | 23230 | 5 | 25 | 0 | QPSK | 22.43 |
| | 782 | 23230 | 5 | 1 | 24 | QPSK | 23.74 |
| | 782 | 23230 | 5 | 1 | 0 | QPSK | 23.67 |
| | 782 | 23230 | 5 | 12 | 6 | 16 QAM | 21.37 |
| | 782 | 23230 | 5 | 25 | 0 | 16 QAM | 21.34 |
| | 782 | 23230 | 5 | 1 | 24 | 16 QAM | 22.46 |
| | 782 | 23230 | 5 | 1 | 0 | 16 QAM | 22.45 |
| High | 784.5 | 23255 | 5 | 12 | 6 | QPSK | 22.40 |
| | 784.5 | 23255 | 5 | 25 | 0 | QPSK | 22.56 |
| | 784.5 | 23255 | 5 | 1 | 24 | QPSK | 23.73 |
| | 784.5 | 23255 | 5 | 1 | 0 | QPSK | 23.77 |
| | 784.5 | 23255 | 5 | 12 | 6 | 16 QAM | 21.34 |
| | 784.5 | 23255 | 5 | 25 | 0 | 16 QAM | 21.45 |
| | 784.5 | 23255 | 5 | 1 | 24 | 16 QAM | 22.48 |
| | 784.5 | 23255 | 5 | 1 | 0 | 16 QAM | 22.49 |

| Largest channel bandwidth of LTE band 13_10 MHz | | | | | | | |
|---|---|---|---|---|---|---|---|
| channel | Frequency (MHz) | Uplink Channel Number | Bandwidth (MHz) | RB Number | RB Offset | Modulation | Max. Average Power (dBm) |
| Middle | 782 | 23230 | 10 | 25 | 12 | QPSK | 22.45 |
| | 782 | 23230 | 10 | 50 | 0 | QPSK | 22.38 |
| | 782 | 23230 | 10 | 1 | 49 | QPSK | 23.72 |
| | 782 | 23230 | 10 | 1 | 0 | QPSK | 23.75 |
| | 782 | 23230 | 10 | 25 | 12 | 16 QAM | 21.22 |
| | 782 | 23230 | 10 | 50 | 0 | 16 QAM | 21.47 |
| | 782 | 23230 | 10 | 1 | 49 | 16 QAM | 22.43 |
| | 782 | 23230 | 10 | 1 | 0 | 16 QAM | 22.48 |

### 5.5.1.3.:HSDPA mode

The following 4 Sub-Tests were completed according to the test requirements outlined in section 5.2A of the 3GPP TS34.121-1 V8.4.0 specification. All TX RMS power requirements for Power Class 3 were met according to table 5.2AA.5 and 5.2B.5 All UE channels and power ratio's are set according to table C10.1.4 & C11.1.3 in the 3GPP TS34.121-1 V8.4.0. RMC 12.2kps is used for this testing

### HSDPA SUB-TEST Setting

**Table C.10.1.4: β values for transmitter characteristics tests with HS-DPCCH(FOR HSDPA)**

| Sub-test | $\beta_c$ | $\beta_d$ | $\beta_d$ *(SF)* | $\beta_c/\beta_d$ | $\beta_{HS}$ (*Note1, Note 2*) | CM (dB) *(Note 3)* | MPR (dB) *(Note 3)* | RMC (Kbps) |
|---|---|---|---|---|---|---|---|---|
| 1 | 2/15 | 15/15 | 64 | 2/15 | 4/15 | 0.0 | 0.0 | 12.2 |
| 2 | 12/15 *(Note 4)* | 15/15 *(Note 4)* | 64 | 12/15 *(Note 4)* | 24/15 | 1.0 | 0.0 | 12.2 |
| 3 | 15/15 | 8/15 | 64 | 15/8 | 30/15 | 1.5 | 0.5 | 12.2 |
| 4 | 15/15 | 4/15 | 64 | 15/4 | 30/15 | 1.5 | 0.5 | 12.2 |

**Note: The recommended HSDPA MPRs are implemented as per following sub-tests.**

**Results:**

| Mode | Sub-test | RMS Power (dBm) Channel | | | Power Class 3 Limitation (dBm) | Comments |
|---|---|---|---|---|---|---|
| | | 9262 | 9400 | 9538 | | |
| HSDPA B2 | 1 | 22.10 | 22.17 | 22.96 | 20.3dBm – 25.7dBm | Pass |
| | 2 | 21.69 | 21.77 | 22.54 | 20.3dBm – 25.7dBm | Pass |
| | 3 | 21.62 | 21.72 | 22.43 | 19.8dBm – 25.7dBm | Pass |
| | 4 | 21.69 | 21.73 | 22.55 | 19.8dBm – 25.7dBm | Pass |

| Mode | Sub-test | RMS Power (dBm) Channel | | | Power Class 3 Limitation (dBm) | Comments |
|---|---|---|---|---|---|---|
| | | 4132 | 4183 | 4233 | | |
| HSDPA B5 | 1 | 23.12 | 23.27 | 23.08 | 20.3dBm – 25.7dBm | Pass |
| | 2 | 22.83 | 22.91 | 22.76 | 20.3dBm – 25.7dBm | Pass |
| | 3 | 22.66 | 22.79 | 22.59 | 19.8dBm – 25.7dBm | Pass |
| | 4 | 22.71 | 22.83 | 22.65 | 19.8dBm – 25.7dBm | Pass |

### 5.5.1.3.:HSPA(HSDPA & HSUPA) mode

The following 5 Sub-Tests were completed according to the test requirements outlined in section 5.2A of the 3GPP TS34.121-1 V8.4.0 specification. All TX RMS power requirements for Power Class 3 were met according to table 5.2AA.5 and 5.2B.5 All UE channels and power ratio's are set according to table C11.1.3 in the 3GPP TS34.121-1 V8.4.0. RMC 12.2kps is used for this testing

### HSPA SUB-TEST Setting

**Table C.11.1.3: β values for transmitter characteristics tests with HS-DPCCH and E-DCH(FOR HSUPA)**

| Sub-test | $\beta_c$ | $\beta_d$ | $\beta_d$ (SF) | $\beta_c/\beta_d$ | $\beta_{HS}$ | $\beta_{ec}$ | $\beta_{ed}$ | $\beta_{ed}$ (SF) | $\beta_{ed}$ (Codes) | CM (dB) | MPR (dB) | AG Index | E-TFCI | RMC (Kbps) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 11/15 (Note 3) | 15/15 (Note 3) | 64 | 11/15 (Note 3) | 22/15 | 209/225 | 1309/225 | 4 | 1 | 1.0 | 0.0 | 20 | 75 | 12.2 |
| 2 | 6/15 | 15/15 | 64 | 6/15 | 12/15 | 12/15 | 94/75 | 4 | 1 | 3.0 | 2.0 | 12 | 67 | 12.2 |
| 3 | 15/15 | 9/15 | 64 | 15/9 | 30/15 | 30/15 | $\beta_{ed}$1: 47/15<br>$\beta_{ed}$2: 47/15 | 4<br>4 | 2 | 2.0 | 1.0 | 15 | 92 | 12.2 |
| 4 | 2/15 | 15/15 | 64 | 2/15 | 4/15 | 2/15 | 56/75 | 4 | 1 | 3.0 | 2.0 | 17 | 71 | 12.2 |
| 5 | 15/15 (Note 4) | 15/15 (Note 4) | 64 | 15/15 (Note 4) | 30/15 | 24/15 | 134/15 | 4 | 1 | 1.0 | 0.0 | 21 | 81 | 12.2 |

**Note: The recommended HSUPA MPRs are implemented as per following sub-tests.**

**Results:**

| Mode | Sub-test | RMS Power (dBm) Channel | | | Power Class 3 Limita-tion (dBm) | Comments |
|---|---|---|---|---|---|---|
| | | 9262 | 9400 | 9538 | | |
| HSUPA B2 | 1 | 21.73 | 21.89 | 22.63 | 18.8dBm – 25.7dBm | Pass |
| | 2 | 19.78 | 19.96 | 20.67 | 16.8dBm – 25.7dBm | Pass |
| | 3 | 20.79 | 20.91 | 21.71 | 17.8dBm – 25.7dBm | Pass |
| | 4 | 19.91 | 20.01 | 20.71 | 16.8dBm – 25.7dBm | Pass |
| | 5 | 21.62 | 21.75 | 22.54 | 18.8dBm – 25.7dBm | Pass |

| Mode | Sub-test | RMS Power (dBm) Channel | | | Power Class 3 Limitation (dBm) | Comments |
|---|---|---|---|---|---|---|
| | | 4132 | 4183 | 4233 | | |
| HSUPA B5 | 1 | 22.86 | 22.95 | 22.81 | 18.8dBm – 25.7dBm | Pass |
| | 2 | 20.92 | 21.03 | 20.85 | 16.8dBm – 25.7dBm | Pass |
| | 3 | 21.09 | 22.01 | 21.89 | 17.8dBm – 25.7dBm | Pass |
| | 4 | 20.97 | 21.09 | 20.93 | 16.8dBm – 25.7dBm | Pass |
| | 5 | 22.72 | 22.78 | 22.70 | 18.8dBm – 25.7dBm | Pass |

# 6. ERP, EIRP MEASUREMENT

## 6.1. Standard Applicable:

According to FCC §2.1046

FCC 22.913(a) Mobile station are limited to 7W ERP.

FCC 24.232(b) Mobile station are limited to 2W EIRP.

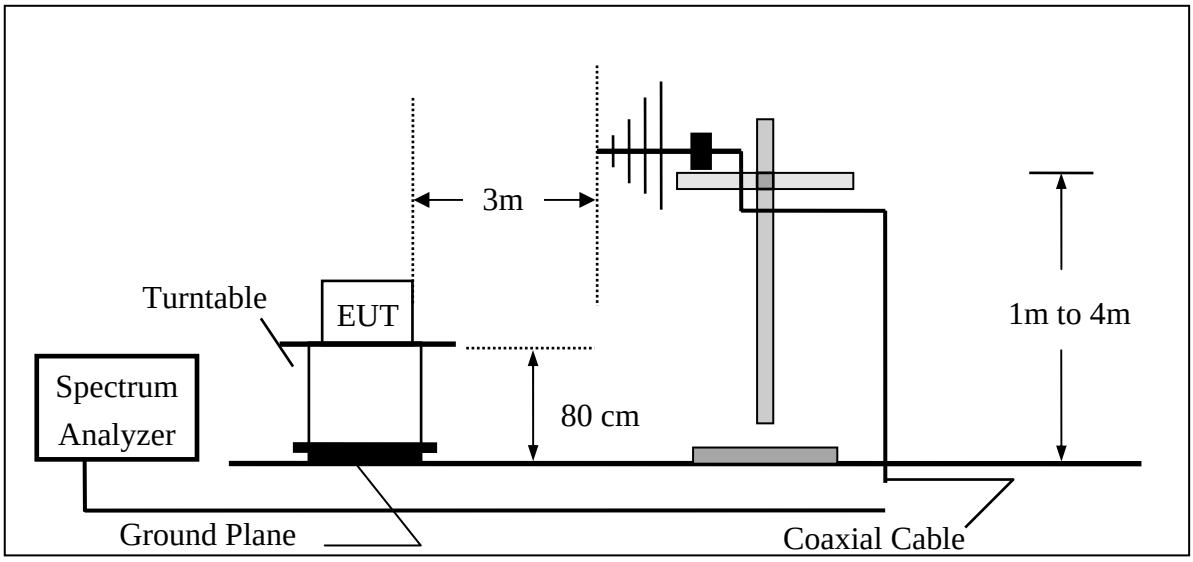
FCC 27.50(b)(10) Portable stations are limited to 3W ERP.

According to issue 5 of RSS-133 §6.4. The peak e.i.r.p. for transmitters operating in the band 1850-1910 MHz shall not exceed the limits given in SRSP-510.

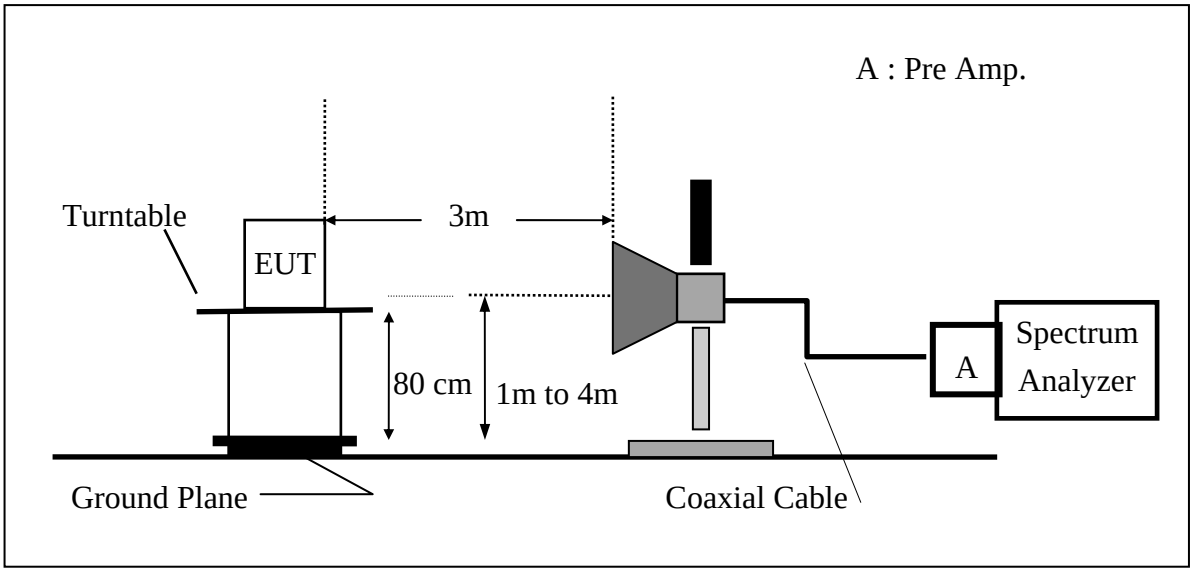
According to issue 2 of RSS 132, section 4.4. The transmitter output power shall not exceed the limits given in SRSP-503.

## 6.2. Test SET-UP (Block Diagram of Configuration):

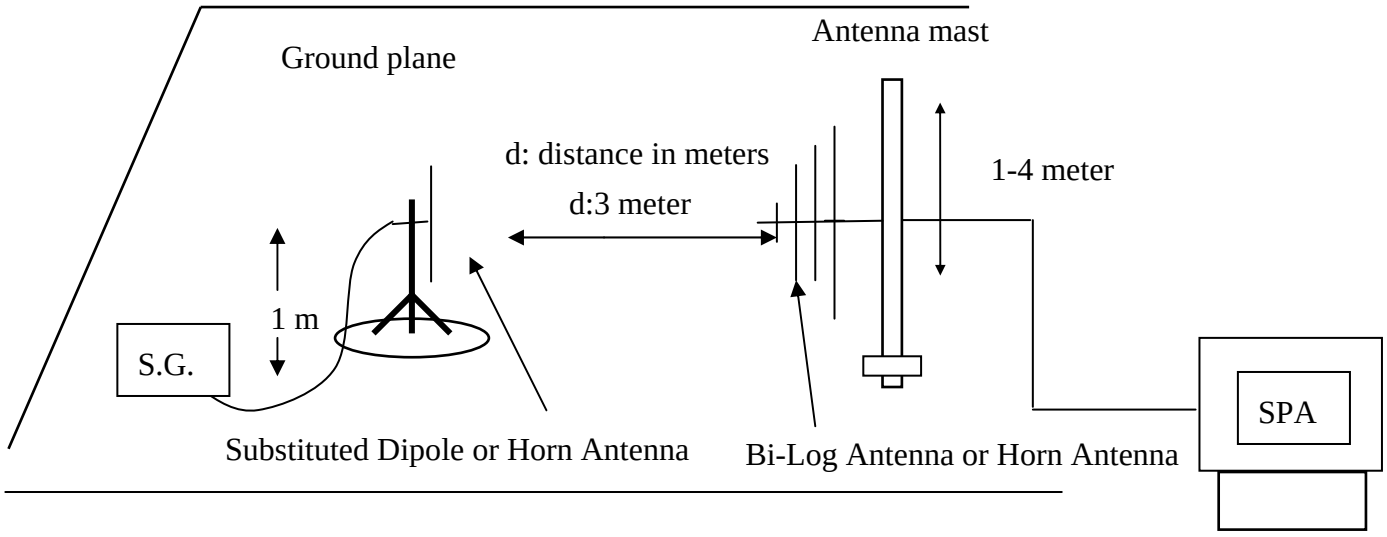
(A) Radiated Emission Test Set-Up, Frequency Below 1000MHz



(B) Radiated Emission Test Set-UP Frequency Over 1 GHz




(C) Substituted Method Test Set-UP



## 6.3. Measurement Procedure:

The EUT was placed on an non-conductive turntable using a non-conductive support. The radiated emission at the fundamental frequency was measured at 3 m with a test antenna and EMI spectrum analyzer.

During the measurement, the EUT was communication with the station. The highest emission was recorded with the rotation of the turntable and the lowering of the test antenna from 4m to 1m. The reading was recorded and the field strength (E in dBuV/m) was calculated.

ERP in frequency band 824.2 – 848.80MHz and 779.5 – 784.5 were measured using a substitution method. The EUT was replaced by dipole antenna connected, the S.G. output was recorded and ERP was calculated as follows:

EIRP in frequency band 1710-1755MHz and 1850.2 –1909.8MHz were measured using a substitution method. The EUT was replaced by a horn antenna connected, the S.G. output was recorded and EIRP was calculated as follows:

ERP = S.G. output (dBm) + Antenna Gain (dBd) – Cable Loss (dB)

EIRP = S.G. output (dBm) + Antenna Gain (dBi) – Cable Loss (dB)

## 6.4. Measurement Equipment Used:

Refer to section 2.4 in this report

## 6.5. Measurement Result:

| EUT Mode | Frequency (MHz) | CH | EUT Pol. | Antenna Pol. | SPA Reading (dBuV) | S.G. Output (dBm) | Antenna Gain (dBd) | Cable Loss (dB) | ERP (dBm) | Limit (dBm) |
|---|---|---|---|---|---|---|---|---|---|---|
| GPRS 850 | 824.20 | 128 | E2 | V | 124.09 | 37.70 | -7.87 | 3.62 | 26.20 | 38.45 |
| | | | | H | 128.46 | 42.19 | -7.87 | 3.62 | **30.69** | 38.45 |
| | 836.60 | 190 | E2 | V | 124.97 | 38.72 | -7.88 | 3.65 | 27.19 | 38.45 |
| | | | | H | 127.74 | 41.51 | -7.88 | 3.65 | 29.98 | 38.45 |
| | 848.80 | 251 | E2 | V | 124.67 | 38.55 | -7.88 | 3.68 | 26.99 | 38.45 |
| | | | | H | 127.94 | 41.75 | -7.88 | 3.68 | 30.19 | 38.45 |

**Remark：**

(1) The RBW,VBW of SPA for frequency

RBW=300 KHz, VBW=1MHz

Detector = Peak

| EUT Mode | Frequency (MHz) | CH | EUT Pol. | Antenna Pol. | SPA Reading (dBuV) | S.G. Output (dBm) | Antenna Gain (dBi) | Cable Loss (dB) | EIRP (dBm) | Limit (dBm) |
|---|---|---|---|---|---|---|---|---|---|---|
| GPRS 1900 | 1850.20 | 512 | E2 | V | 123.65 | 19.26 | 9.90 | 5.56 | 23.60 | 33.00 |
| | | | | H | 124.32 | 20.14 | 9.90 | 5.84 | **24.20** | 33.00 |
| | 1880.00 | 661 | E2 | V | 121.50 | 17.14 | 9.99 | 5.61 | 21.52 | 33.00 |
| | | | | H | 122.86 | 18.72 | 9.99 | 5.61 | 23.09 | 33.00 |
| | 1909.80 | 810 | E2 | V | 121.55 | 17.22 | 10.08 | 5.66 | 21.64 | 33.00 |
| | | | | H | 122.91 | 18.80 | 10.08 | 5.66 | 23.22 | 33.00 |

**Remark：**

(1) The RBW,VBW of SPA for frequency

RBW=300 KHz, VBW=1MHz

Detector = Peak

| EUT Mode | Frequency (MHz) | CH | EUT Pol. | Antenna Pol. | SPA Reading (dBuV) | S.G. Output (dBm) | Antenna Gain (dBd) | Cable Loss (dB) | ERP (dBm) | Limit (dBm) |
|---|---|---|---|---|---|---|---|---|---|---|
| EDGE 850 | 824.20 | 128 | E2 | V | 121.54 | 35.15 | -7.87 | 3.62 | 23.65 | 38.45 |
| | | | | H | 125.73 | 39.46 | -7.87 | 3.62 | **27.96** | 38.45 |
| | 836.60 | 190 | E2 | V | 122.52 | 36.27 | -7.88 | 3.65 | 24.74 | 38.45 |
| | | | | H | 124.90 | 38.67 | -7.88 | 3.65 | 27.14 | 38.45 |
| | 848.80 | 251 | E2 | V | 122.49 | 36.37 | -7.88 | 3.68 | 24.81 | 38.45 |
| | | | | H | 125.47 | 39.28 | -7.88 | 3.68 | 27.72 | 38.45 |

**Remark：**

(1) The RBW,VBW of SPA for frequency

RBW=300 KHz, VBW=1MHz

Detector = Peak

| EUT Mode | Frequency (MHz) | CH | EUT Pol. | Antenna Pol. | SPA Reading (dBuV) | S.G. Output (dBm) | Antenna Gain (dBi) | Cable Loss (dB) | EIRP (dBm) | Limit (dBm) |
|---|---|---|---|---|---|---|---|---|---|---|
| EDGE 1900 | 1850.20 | 512 | E2 | V | 123.71 | 19.32 | 9.90 | 5.56 | 23.66 | 33.00 |
| | | | | H | 124.28 | 20.10 | 9.90 | 5.84 | **24.16** | 33.00 |
| | 1880.00 | 661 | E2 | V | 121.92 | 17.56 | 9.99 | 5.61 | 21.94 | 33.00 |
| | | | | H | 122.64 | 18.50 | 9.99 | 5.61 | 22.87 | 33.00 |
| | 1909.80 | 810 | E2 | V | 121.04 | 16.71 | 10.08 | 5.66 | 21.13 | 33.00 |
| | | | | H | 121.70 | 17.59 | 10.08 | 5.66 | 22.01 | 33.00 |

**Remark：**

(1) The RBW,VBW of SPA for frequency

RBW=300 KHz, VBW=1MHz

Detector = Peak

**Measurement Result:**

| EUT Mode | Frequency (MHz) | CH | EUT Pol. | Antenna Pol. | SPA Reading (dBuV) | S.G. Output (dBm) | Antenna Gain (dBi) | Cable Loss (dB) | EIRP (dBm) | Limit (dBm) |
|---|---|---|---|---|---|---|---|---|---|---|
| WCDMA Band II | 1852.40 | 9262 | E2 | V | 117.40 | 13.02 | 9.90 | 5.56 | 17.35 | 33.00 |
| | | | | H | 121.18 | 17.00 | 9.90 | 5.84 | 21.06 | 33.00 |
| | 1880.00 | 9400 | E2 | V | 117.13 | 12.77 | 9.99 | 5.61 | 17.15 | 33.00 |
| | | | | H | 120.36 | 16.22 | 9.99 | 5.61 | 20.59 | 33.00 |
| | 1907.60 | 9538 | E2 | V | 119.02 | 14.69 | 10.07 | 5.66 | 19.10 | 33.00 |
| | | | | H | 121.72 | 17.61 | 10.07 | 5.66 | **22.02** | 33.00 |

**Remark：**

(1) The RBW,VBW of SPA for frequency

RBW= 5MHz , VBW= 8MHz

Detector = Peak

| EUT Mode | Frequency (MHz) | CH | EUT Pol. | Antenna Pol. | SPA Reading (dBuV) | S.G. Output (dBm) | Antenna Gain (dBd) | Cable Loss (dB) | ERP (dBm) | Limit (dBm) |
|---|---|---|---|---|---|---|---|---|---|---|
| WCDMA Band V | 826.40 | 4132 | E2 | V | 117.23 | 30.87 | -7.88 | 3.63 | 19.36 | 38.45 |
| | | | | H | 122.63 | 36.37 | -7.88 | 3.63 | 24.87 | 38.45 |
| | 836.60 | 4183 | E2 | V | 117.38 | 31.12 | -7.88 | 3.65 | 19.59 | 38.45 |
| | | | | H | 123.54 | 37.31 | -7.88 | 3.65 | **25.78** | 38.45 |
| | 846.60 | 4233 | E2 | V | 117.07 | 30.92 | -7.88 | 3.67 | 19.37 | 38.45 |
| | | | | H | 122.57 | 36.37 | -7.88 | 3.67 | 24.82 | 38.45 |

**Remark：**

(1) The RBW,VBW of SPA for frequency

RBW= 5MHz , VBW= 8MHz

Detector = Peak

**Measurement Result:**

| EUT Mode | Frequency (MHz) | CH | EUT Pol. | Antenna Pol. | SPA Reading (dBuV) | S.G. Output (dBm) | Antenna Gain (dBi) | Cable Loss (dB) | EIRP (dBm) | Limit (dBm) |
|---|---|---|---|---|---|---|---|---|---|---|
| HSUPA Band II | 1852.40 | 9262 | E2 | V | 119.28 | 14.76 | 9.48 | 5.33 | 18.90 | 33.00 |
| | | | | H | 120.54 | 16.21 | 9.90 | 5.84 | 20.27 | 33.00 |
| | 1880.00 | 9400 | E2 | V | 118.31 | 13.81 | 9.54 | 5.36 | 17.98 | 33.00 |
| | | | | H | 120.02 | 15.71 | 9.54 | 5.36 | 19.88 | 33.00 |
| | 1907.60 | 9538 | E2 | V | 120.12 | 15.64 | 9.61 | 5.40 | 19.84 | 33.00 |
| | | | | H | 121.34 | 17.05 | 9.61 | 5.40 | **21.26** | 33.00 |

**Remark：**

(1) The RBW,VBW of SPA for frequency

RBW= 5MHz , VBW= 8MHz

Detector = Peak

| EUT Mode | Frequency (MHz) | CH | EUT Pol. | Antenna Pol. | SPA Reading (dBuV) | S.G. Output (dBm) | Antenna Gain (dBd) | Cable Loss (dB) | ERP (dBm) | Limit (dBm) |
|---|---|---|---|---|---|---|---|---|---|---|
| HSUPA Band V | 826.40 | 4132 | E2 | V | 117.60 | 31.24 | -7.88 | 3.63 | 19.73 | 38.45 |
| | | | | H | 121.49 | 35.23 | -7.88 | 3.63 | 23.73 | 38.45 |
| | 836.60 | 4183 | E2 | V | 118.40 | 32.14 | -7.88 | 3.65 | 20.61 | 38.45 |
| | | | | H | 122.82 | 36.59 | -7.88 | 3.65 | **25.06** | 38.45 |
| | 846.60 | 4233 | E2 | V | 117.12 | 30.97 | -7.88 | 3.67 | 19.42 | 38.45 |
| | | | | H | 121.62 | 35.42 | -7.88 | 3.67 | 23.87 | 38.45 |

**Remark：**

(1) The RBW,VBW of SPA for frequency

RBW= 5MHz , VBW= 8MHz

Detector = Peak

**Measurement Result:**

| EUT Mode | Frequency (MHz) | CH | EUT Pol. | Antenna Pol. | SPA Reading (dBuV) | S.G. Output (dBm) | Antenna Gain (dBd) | Cable Loss (dB) | EIRP (dBm) | Limit (dBm) |
|---|---|---|---|---|---|---|---|---|---|---|
| CDMA 2000 Cellular | 824.70 | 1013 | E2 | V | 122.74 | 36.38 | -7.88 | 3.63 | 24.87 | 38.45 |
| | | | | H | 125.57 | 39.31 | -7.88 | 3.63 | 27.81 | 38.45 |
| | 836.52 | 384 | E2 | V | 124.01 | 37.75 | -7.88 | 3.65 | 26.22 | 38.45 |
| | | | | H | 125.68 | 39.45 | -7.88 | 3.65 | **27.92** | 38.45 |
| | 848.31 | 777 | E2 | V | 122.73 | 36.58 | -7.88 | 3.67 | 25.03 | 38.45 |
| | | | | H | 124.13 | 37.93 | -7.88 | 3.67 | 26.38 | 38.45 |

**Remark：**

(1) The RBW,VBW of SPA for frequency

RBW= 5MHz , VBW= 8MHz

Detector = Peak

| EUT Mode | Frequency (MHz) | CH | EUT Pol. | Antenna Pol. | SPA Reading (dBuV) | S.G. Output (dBm) | Antenna Gain (dBi) | Cable Loss (dB) | ERP (dBm) | Limit (dBm) |
|---|---|---|---|---|---|---|---|---|---|---|
| CDMA 2000 PCS | 1851.25 | 25 | E2 | V | 122.97 | 18.59 | 9.90 | 5.56 | 22.92 | 33.00 |
| | | | | H | 123.41 | 19.23 | 9.90 | 5.84 | 23.29 | 33.00 |
| | 1880.0 | 600 | E2 | V | 123.18 | 18.82 | 9.99 | 5.61 | 23.20 | 33.00 |
| | | | | H | 124.69 | 20.55 | 9.99 | 5.61 | 24.92 | 33.00 |
| | 1908.75 | 1175 | E2 | V | 122.07 | 17.74 | 10.07 | 5.66 | 22.15 | 33.00 |
| | | | | H | 125.28 | 21.17 | 10.07 | 5.66 | **25.58** | 33.00 |

**Remark：**

(1) The RBW,VBW of SPA for frequency

RBW= 5MHz , VBW= 8MHz

Detector = Peak

**Measurement Result:**

| EUT Mode | Frequency (MHz) | CH | EUT Pol. | Antenna Pol. | SPA Reading (dBuV) | S.G. Output (dBm) | Antenna Gain (dBd) | Cable Loss (dB) | EIRP (dBm) | Limit (dBm) |
|---|---|---|---|---|---|---|---|---|---|---|
| CDMA 2000 EVDO Cellular | 824.70 | 1013 | E2 | V | 122.04 | 35.68 | -7.88 | 3.63 | 24.17 | 38.45 |
| | | | | H | 125.29 | 39.03 | -7.88 | 3.63 | 27.53 | 38.45 |
| | 836.52 | 384 | E2 | V | 123.37 | 37.11 | -7.88 | 3.65 | 25.58 | 38.45 |
| | | | | H | 125.85 | 39.62 | -7.88 | 3.65 | **28.09** | 38.45 |
| | 848.31 | 777 | E2 | V | 121.88 | 35.73 | -7.88 | 3.67 | 24.18 | 38.45 |
| | | | | H | 124.00 | 37.80 | -7.88 | 3.67 | 26.25 | 38.45 |

**Remark：**

(1) The RBW,VBW of SPA for frequency

RBW= 5MHz , VBW= 8MHz

Detector = Peak

| EUT Mode | Frequency (MHz) | CH | EUT Pol. | Antenna Pol. | SPA Reading (dBuV) | S.G. Output (dBm) | Antenna Gain (dBi) | Cable Loss (dB) | ERP (dBm) | Limit (dBm) |
|---|---|---|---|---|---|---|---|---|---|---|
| CDMA 2000 EVDO PCS | 1851.25 | 25 | E2 | V | 122.06 | 17.68 | 9.90 | 5.56 | 22.01 | 33.00 |
| | | | | H | 123.26 | 19.08 | 9.90 | 5.84 | 23.14 | 33.00 |
| | 1880.0 | 600 | E2 | V | 123.56 | 19.20 | 9.99 | 5.61 | 23.58 | 33.00 |
| | | | | H | 124.50 | 20.36 | 9.99 | 5.61 | **24.73** | 33.00 |
| | 1908.75 | 1175 | E2 | V | 121.70 | 17.37 | 10.07 | 5.66 | 21.78 | 33.00 |
| | | | | H | 123.82 | 19.71 | 10.07 | 5.66 | 24.12 | 33.00 |

**Remark：**

(1) The RBW,VBW of SPA for frequency

RBW= 5MHz , VBW= 8MHz

Detector = Peak

**Measurement Result:**

| EUT Mode | Frequency (MHz) | CH | EUT Pol. | Antenna Pol. | SPA Reading (dBuV) | S.G. Output (dBm) | Antenna Gain (dBd) | Cable Loss (dB) | ERP (dBm) | Limit (dBm) |
|---|---|---|---|---|---|---|---|---|---|---|
| 5MHz BW LTE-Band 13 (QPSK RB 1 Offset 0) | 779.50 | 23205 | E2 | V | 124.87 | 38.03 | -7.87 | 3.53 | 26.63 | 34.77 |
| | | | | H | 126.85 | 36.15 | -7.87 | 5.84 | 22.44 | 34.77 |
| | 782.00 | 23230 | E2 | V | 126.31 | 39.49 | -7.87 | 3.53 | 28.09 | 34.77 |
| | | | | H | 126.31 | 36.14 | -7.87 | 3.53 | 24.74 | 34.77 |
| | 784.50 | 23255 | E2 | V | 126.56 | 39.77 | -7.87 | 3.54 | **28.36** | 34.77 |
| | | | | H | 126.78 | 37.14 | -7.87 | 3.54 | 25.73 | 34.77 |

**Remark：**

(1) The RBW,VBW of SPA for frequency

RBW= 5MHz , VBW= 8MHz

Detector = Peak

| EUT Mode | Frequency (MHz) | CH | EUT Pol. | Antenna Pol. | SPA Reading (dBuV) | S.G. Output (dBm) | Antenna Gain (dBd) | Cable Loss (dB) | ERP (dBm) | Limit (dBm) |
|---|---|---|---|---|---|---|---|---|---|---|
| 5MHz BW LTE-Band 13 (16QAM RB 1 Offset 0) | 779.50 | 23205 | E2 | V | 124.98 | 38.14 | -7.87 | 3.53 | 26.74 | 34.77 |
| | | | | H | 126.74 | 36.04 | -7.87 | 5.84 | 22.33 | 34.77 |
| | 782.00 | 23230 | E2 | V | 125.46 | 38.64 | -7.87 | 3.53 | 27.24 | 34.77 |
| | | | | H | 126.20 | 36.03 | -7.87 | 3.53 | 24.63 | 34.77 |
| | 784.50 | 23255 | E2 | V | 126.66 | 39.87 | -7.87 | 3.54 | **28.46** | 34.77 |
| | | | | H | 126.76 | 37.12 | -7.87 | 3.54 | 25.71 | 34.77 |

**Remark：**

(1) The RBW,VBW of SPA for frequency

RBW= 5MHz , VBW= 8MHz

Detector = Peak

**Measurement Result:**

| EUT Mode | Frequency (MHz) | CH | EUT Pol. | Antenna Pol. | SPA Reading (dBuV) | S.G. Output (dBm) | Antenna Gain (dBd) | Cable Loss (dB) | ERP (dBm) | Limit (dBm) |
|---|---|---|---|---|---|---|---|---|---|---|
| 5MHz BW LTE-Band 13 (QPSK RB 1 Offset 24) | 779.50 | 23205 | E2 | V | 125.18 | 38.34 | -7.87 | 3.53 | 26.94 | 34.77 |
| | | | | H | 126.08 | 35.38 | -7.87 | 5.84 | 21.67 | 34.77 |
| | 782.00 | 23230 | E2 | V | 126.24 | 39.42 | -7.87 | 3.53 | 28.02 | 34.77 |
| | | | | H | 127.11 | 36.94 | -7.87 | 3.53 | 25.54 | 34.77 |
| | 784.50 | 23255 | E2 | V | 127.14 | 40.35 | -7.87 | 3.54 | **28.94** | 34.77 |
| | | | | H | 127.49 | 37.85 | -7.87 | 3.54 | 26.44 | 34.77 |

**Remark：**

(1) The RBW,VBW of SPA for frequency

RBW= 5MHz , VBW= 8MHz

Detector = Peak

| EUT Mode | Frequency (MHz) | CH | EUT Pol. | Antenna Pol. | SPA Reading (dBuV) | S.G. Output (dBm) | Antenna Gain (dBd) | Cable Loss (dB) | ERP (dBm) | Limit (dBm) |
|---|---|---|---|---|---|---|---|---|---|---|
| 5MHz BW LTE-Band 13 (16QAM RB 1 Offset 24) | 779.50 | 23205 | E2 | V | 125.16 | 38.32 | -7.87 | 3.53 | 26.92 | 34.77 |
| | | | | H | 124.92 | 34.22 | -7.87 | 5.84 | 20.51 | 34.77 |
| | 782.00 | 23230 | E2 | V | 126.27 | 39.45 | -7.87 | 3.53 | 28.05 | 34.77 |
| | | | | H | 127.11 | 36.94 | -7.87 | 3.53 | 25.54 | 34.77 |
| | 784.50 | 23255 | E2 | V | 127.01 | 40.22 | -7.87 | 3.54 | **28.81** | 34.77 |
| | | | | H | 127.54 | 37.90 | -7.87 | 3.54 | 26.49 | 34.77 |

**Remark：**

(1) The RBW,VBW of SPA for frequency

RBW= 5MHz , VBW= 8MHz

Detector = Peak

**Measurement Result:**

| EUT Mode | Frequency (MHz) | CH | EUT Pol. | Antenna Pol. | SPA Reading (dBuV) | S.G. Output (dBm) | Antenna Gain (dBd) | Cable Loss (dB) | ERP (dBm) | Limit (dBm) |
|---|---|---|---|---|---|---|---|---|---|---|
| 5MHz BW LTE-Band 13 (QPSK RB 12 Offset 6) | 779.50 | 23205 | E2 | V | 124.31 | 37.47 | -7.87 | 3.53 | 26.07 | 34.77 |
| | | | | H | 125.02 | 34.32 | -7.87 | 5.84 | 20.61 | 34.77 |
| | 782.00 | 23230 | E2 | V | 125.30 | 38.48 | -7.87 | 3.53 | 27.08 | 34.77 |
| | | | | H | 126.22 | 36.05 | -7.87 | 3.53 | 24.65 | 34.77 |
| | 784.50 | 23255 | E2 | V | 126.68 | 39.89 | -7.87 | 3.54 | **28.48** | 34.77 |
| | | | | H | 127.00 | 37.36 | -7.87 | 3.54 | 25.95 | 34.77 |

**Remark：**

(1) The RBW,VBW of SPA for frequency

RBW= 5MHz , VBW= 8MHz

Detector = Peak

| EUT Mode | Frequency (MHz) | CH | EUT Pol. | Antenna Pol. | SPA Reading (dBuV) | S.G. Output (dBm) | Antenna Gain (dBd) | Cable Loss (dB) | ERP (dBm) | Limit (dBm) |
|---|---|---|---|---|---|---|---|---|---|---|
| 5MHz BW LTE-Band 13 (16QAM RB 12 Offset 6) | 779.50 | 23205 | E2 | V | 124.46 | 37.62 | -7.87 | 3.53 | 26.22 | 34.77 |
| | | | | H | 124.89 | 34.19 | -7.87 | 5.84 | 20.48 | 34.77 |
| | 782.00 | 23230 | E2 | V | 126.38 | 39.56 | -7.87 | 3.53 | 28.16 | 34.77 |
| | | | | H | 126.38 | 36.21 | -7.87 | 3.53 | 24.81 | 34.77 |
| | 784.50 | 23255 | E2 | V | 126.59 | 39.80 | -7.87 | 3.54 | **28.39** | 34.77 |
| | | | | H | 127.10 | 37.46 | -7.87 | 3.54 | 26.05 | 34.77 |

**Remark：**

(1) The RBW,VBW of SPA for frequency

RBW= 5MHz , VBW= 8MHz

Detector = Peak

**Measurement Result:**

| EUT Mode | Frequency (MHz) | CH | EUT Pol. | Antenna Pol. | SPA Reading (dBuV) | S.G. Output (dBm) | Antenna Gain (dBd) | Cable Loss (dB) | ERP (dBm) | Limit (dBm) |
|---|---|---|---|---|---|---|---|---|---|---|
| 5MHz BW LTE-Band 13 (QPSK RB 25 Offset 0) | 779.50 | 23205 | E2 | V | 124.10 | 37.26 | -7.87 | 3.53 | 25.86 | 34.77 |
| | | | | H | 124.89 | 34.19 | -7.87 | 5.84 | 20.48 | 34.77 |
| | 782.00 | 23230 | E2 | V | 124.99 | 38.17 | -7.87 | 3.53 | 26.77 | 34.77 |
| | | | | H | 125.36 | 35.19 | -7.87 | 3.53 | 23.79 | 34.77 |
| | 784.50 | 23255 | E2 | V | 125.70 | 38.91 | -7.87 | 3.54 | **27.50** | 34.77 |
| | | | | H | 126.03 | 36.39 | -7.87 | 3.54 | 24.98 | 34.77 |

**Remark：**

(1) The RBW,VBW of SPA for frequency

RBW= 5MHz , VBW= 8MHz

Detector = Peak

| EUT Mode | Frequency (MHz) | CH | EUT Pol. | Antenna Pol. | SPA Reading (dBuV) | S.G. Output (dBm) | Antenna Gain (dBd) | Cable Loss (dB) | ERP (dBm) | Limit (dBm) |
|---|---|---|---|---|---|---|---|---|---|---|
| 5MHz BW LTE-Band 13 (16QAM RB 25 Offset 0) | 779.50 | 23205 | E2 | V | 123.97 | 37.13 | -7.87 | 3.53 | 25.73 | 34.77 |
| | | | | H | 124.79 | 34.09 | -7.87 | 5.84 | 20.38 | 34.77 |
| | 782.00 | 23230 | E2 | V | 124.75 | 37.93 | -7.87 | 3.53 | 26.53 | 34.77 |
| | | | | H | 125.50 | 35.33 | -7.87 | 3.53 | 23.93 | 34.77 |
| | 784.50 | 23255 | E2 | V | 125.62 | 38.83 | -7.87 | 3.54 | **27.42** | 34.77 |
| | | | | H | 126.09 | 36.45 | -7.87 | 3.54 | 25.04 | 34.77 |

**Remark：**

(1) The RBW,VBW of SPA for frequency

RBW= 5MHz , VBW= 8MHz

Detector = Peak

**Measurement Result:**

| EUT Mode | Frequency (MHz) | CH | EUT Pol. | Antenna Pol. | SPA Reading (dBuV) | S.G. Output (dBm) | Antenna Gain (dBd) | Cable Loss (dB) | ERP (dBm) | Limit (dBm) |
|---|---|---|---|---|---|---|---|---|---|---|
| 10MHz BW LTE-Band 13 (QPSK RB 1 Offset 0) | 782.00 | 23230 | E2 | V | 126.42 | 39.60 | -7.87 | 3.53 | **28.20** | 34.77 |
| | | | | H | 126.17 | 36.00 | -7.87 | 3.53 | 24.60 | 34.77 |

**Remark：**

(1) The RBW,VBW of SPA for frequency

RBW= 5MHz , VBW= 8MHz

Detector = Peak

| EUT Mode | Frequency (MHz) | CH | EUT Pol. | Antenna Pol. | SPA Reading (dBuV) | S.G. Output (dBm) | Antenna Gain (dBd) | Cable Loss (dB) | ERP (dBm) | Limit (dBm) |
|---|---|---|---|---|---|---|---|---|---|---|
| 10MHz BW LTE-Band 13 (16QAM RB 1 Offset 0) | 782.00 | 23230 | E2 | V | 126.26 | 39.44 | -7.87 | 3.53 | **28.04** | 34.77 |
| | | | | H | 126.28 | 36.11 | -7.87 | 3.53 | 24.71 | 34.77 |

**Remark：**

(1) The RBW,VBW of SPA for frequency

RBW= 5MHz , VBW= 8MHz

Detector = Peak

**Measurement Result:**

| EUT Mode | Frequency (MHz) | CH | EUT Pol. | Antenna Pol. | SPA Reading (dBuV) | S.G. Output (dBm) | Antenna Gain (dBd) | Cable Loss (dB) | ERP (dBm) | Limit (dBm) |
|---|---|---|---|---|---|---|---|---|---|---|
| 10MHz BW LTE-Band 13 (QPSK RB 1 Offset 49) | 782.00 | 23230 | E2 | V | 126.46 | 39.64 | -7.87 | 3.53 | **28.24** | 34.77 |
| | | | | H | 127.09 | 36.92 | -7.87 | 3.53 | 25.52 | 34.77 |

**Remark：**

(1) The RBW,VBW of SPA for frequency

RBW= 5MHz , VBW= 8MHz

Detector = Peak

| EUT Mode | Frequency (MHz) | CH | EUT Pol. | Antenna Pol. | SPA Reading (dBuV) | S.G. Output (dBm) | Antenna Gain (dBd) | Cable Loss (dB) | ERP (dBm) | Limit (dBm) |
|---|---|---|---|---|---|---|---|---|---|---|
| 10MHz BW LTE-Band 13 (16QAM RB 1 Offset 49) | 782.00 | 23230 | E2 | V | 126.95 | 40.13 | -7.87 | 3.53 | **28.73** | 34.77 |
| | | | | H | 127.47 | 37.30 | -7.87 | 3.53 | 25.90 | 34.77 |

**Remark：**

(1) The RBW,VBW of SPA for frequency

RBW= 5MHz , VBW= 8MHz

Detector = Peak

**Measurement Result:**

| EUT Mode | Frequency (MHz) | CH | EUT Pol. | Antenna Pol. | SPA Reading (dBuV) | S.G. Output (dBm) | Antenna Gain (dBd) | Cable Loss (dB) | ERP (dBm) | Limit (dBm) |
|---|---|---|---|---|---|---|---|---|---|---|
| 10MHz BW LTE-Band 13 (QPSK RB 25 Offset 12) | 782.00 | 23230 | E2 | V | 125.04 | 38.22 | -7.87 | 3.53 | **26.82** | 34.77 |
| | | | | H | 125.59 | 35.42 | -7.87 | 3.53 | 24.02 | 34.77 |

**Remark：**

(1) The RBW,VBW of SPA for frequency

RBW= 5MHz , VBW= 8MHz

Detector = Peak

| EUT Mode | Frequency (MHz) | CH | EUT Pol. | Antenna Pol. | SPA Reading (dBuV) | S.G. Output (dBm) | Antenna Gain (dBd) | Cable Loss (dB) | ERP (dBm) | Limit (dBm) |
|---|---|---|---|---|---|---|---|---|---|---|
| 10MHz BW LTE-Band 13 (16QAM RB 25 Offset 12) | 782.00 | 23230 | E2 | V | 124.99 | 38.17 | -7.87 | 3.53 | **26.77** | 34.77 |
| | | | | H | 125.57 | 35.40 | -7.87 | 3.53 | 24.00 | 34.77 |

**Remark：**

(1) The RBW,VBW of SPA for frequency

RBW= 5MHz , VBW= 8MHz

Detector = Peak

**Measurement Result:**

| EUT Mode | Frequency (MHz) | CH | EUT Pol. | Antenna Pol. | SPA Reading (dBuV) | S.G. Output (dBm) | Antenna Gain (dBd) | Cable Loss (dB) | ERP (dBm) | Limit (dBm) |
|---|---|---|---|---|---|---|---|---|---|---|
| 10MHz BW LTE-Band 13 (QPSK RB 50 Offset 0) | 782.00 | 23230 | E2 | V | 125.04 | 38.22 | -7.87 | 3.53 | **29.83** | 34.77 |
| | | | | H | 125.36 | 35.19 | -7.87 | 3.53 | 26.80 | 34.77 |

**Remark：**

(1) The RBW,VBW of SPA for frequency

RBW= 5MHz , VBW= 8MHz

Detector = Peak

Due to the limitation of spectrum, RBW cannot be set = 10MHz to capture all the energy of the fundamental emission. A resolution of bandwidth is set as 5 MHz instead to determine the compliance. Using 5 MHz bandwidth, the ERP of final value is re-adjusted by the following equation:

ERP (final value) = ERP (measure using 5 MHz) + 10 *log (10MHz/5MHz)

| EUT Mode | Frequency (MHz) | CH | EUT Pol. | Antenna Pol. | SPA Reading (dBuV) | S.G. Output (dBm) | Antenna Gain (dBd) | Cable Loss (dB) | ERP (dBm) | Limit (dBm) |
|---|---|---|---|---|---|---|---|---|---|---|
| 10MHz BW LTE-Band 13 (16QAM RB 50 Offset 0) | 782.00 | 23230 | E2 | V | 125.12 | 38.30 | -7.87 | 3.53 | **29.91** | 34.77 |
| | | | | H | 125.34 | 35.17 | -7.87 | 3.53 | 26.78 | 34.77 |

**Remark：**

(1) The RBW,VBW of SPA for frequency

RBW= 5MHz , VBW= 8MHz

Detector = Peak

Due to the limitation of spectrum, RBW cannot be set = 10MHz to capture all the energy of the fundamental emission. A resolution of bandwidth is set as 5 MHz instead to determine the compliance. Using 5 MHz bandwidth, the ERP of final value is re-adjusted by the following equation:

ERP (final value) = ERP (measure using 5 MHz) + 10 *log (10MHz/5MHz)

# 7. FIELD STRENGTH OF SPURIOUS RADIATION MEASUREMENT

## 7.1. Standard Applicable:

According to FCC §2.1053,

FCC §22.917(a),§24.238(a), §27.53(c) the magnitude of each spurious and harmonic emission that can be detected when the equipment is operated under the conditions specified in the instruction manual and/ or alignment procedure, shall not be less than 43 + 10 log (mean output power in watts) dBc below the mean power output outside a license's frequency block (-13dBm)

FCC §27.53(f) For operations in the 746–763 MHz,775–793 MHz, and 805–806 MHz bands, emissions in the band 1559–1610 MHz shall be limited to -70 dBW/MHz(-40dBm/MHz) EIRP for wideband signals, and -80dBW(-50dBm) EIRP for discrete emissions of less than 700 Hz bandwidth.

According to RSS-132 §4.5 and RSS-133 §6.5

Out-of-Block Emissions

a. Mobile stations must comply with subsection i. below.

In the first 1.0MHz band immediately outside and adjacent to the licensee's frequency block. the power of emissions per any 1% of the emission bandwidth shall be attenuated below the transmitter output power P (in watts) by at least 43 + 10 log (P), dB.

b. After the first 1.0 MHz (for equipment that complies with a.i. of this subsection) or 1.5 MHz (for equipment that complies with a.ii.of this subsection), the power of emissions shall be attenuated below the transmitter output power by at least 43 + 10 log (P), dB, per any MHz of bandwidth.

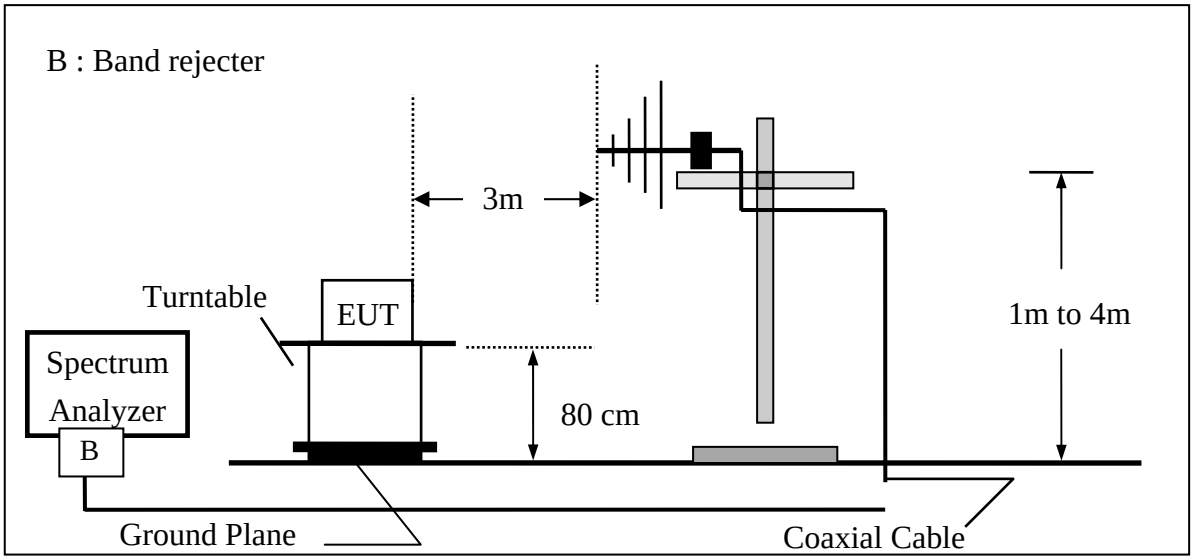
(Note: If the test result using 1% of the emission bandwidth is used, then power integration over 1.0 MHz is required; alternatively, the spectrum analyser resolution and video bandwidths can be increased to 1.0 MHz for this measurement).

Out-of-Sub-band Emissions

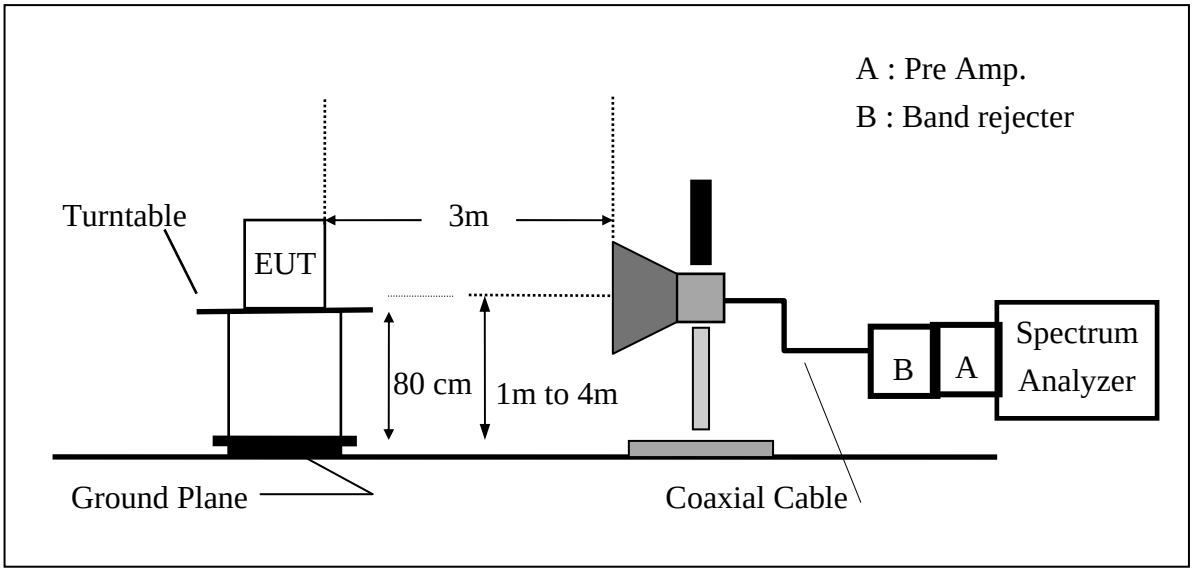
Outside the sub-bands 1850-1910 MHz and 1930-1990 MHz, the attenuation shall be equal to or greater than the out-of-block emission limits in Section 6.5.1.

## 7.2. EUT Setup (Block Diagram of Configuration):

Radiated Emission Test Set-Up, Frequency Below 1000MHz



Radiated Emission Test Set-UP Frequency Over 1 GHz




## 7.3. Measurement Procedure:

The EUT was placed on a non-conductive; The measurement antenna was placed at a distance of 3 meters from the EUT. During the tests, the antenna height and the EUT azimuth were varied in order to identify the maximum level of emissions from the EUT. This maximization process was repeated with the EUT positioned in each of its three orthogonal orientations.

The frequency range up to tenth harmonic was investigated for each of three fundamental frequency (low, middle and high channels). Once spurious emission was identified, the power of the emission was determined using the substitution method.

The spurious emissions attenuation was calculated as the difference between radiated power at the fundamental frequency and the spurious emissions frequency.

ERP= S.G. output (dBm) + Antenna Gain (dBd) – Cable Loss (dB)

EIRP = S.G. output (dBm) + Antenna Gain(dBi) – Cable Loss (dB)

## 7.4. Measurement Equipment Used:

Refer to section 2.4 in this report

## 7.5. Measurement Result:

Refer to attach tabular data sheets.

**Radiated Spurious Emission Measurement Result: GPRS 850 Mode**

| | | | |
|---|---|---|---|
| Operation Mode | : TX CH Low Mode | Test Date: | Dec. 04, 2010 |
| Fundamental Frequency | : 824.20 MHz | Test By: | Jazz |
| Temperature | : 25℃ | Pol: | Ver |
| Humidity | : 65% | | |

| Freq. (MHz) | SPA. Reading (dBuV) | Ant.Pol. H/V | S.G Out-put (dBm) | Antenna Gain (dBd/dBi) | Cable Loss (dB) | ERP/ EIRP (dBm) | Limit (dBm) | Safe Margin (dBm) |
|---|---|---|---|---|---|---|---|---|
| 90.14 | 49.13 | V | -54.05 | -7.75 | 1.27 | -63.07 | -13.00 | -50.07 |
| 219.15 | 42.77 | V | -58.29 | -7.86 | 1.82 | -67.96 | -13.00 | -54.96 |
| 284.14 | 36.41 | V | -62.36 | -7.91 | 2.11 | -72.38 | -13.00 | -59.38 |
| 340.40 | 39.75 | V | -58.00 | -7.69 | 2.32 | -68.02 | -13.00 | -55.02 |
| 474.26 | 32.96 | V | -61.07 | -7.71 | 2.73 | -71.51 | -13.00 | -58.51 |
| 623.64 | 32.49 | V | -56.77 | -7.80 | 3.09 | -67.66 | -13.00 | -54.66 |
| 823.98 | 77.48 | V | -8.91 | -7.87 | 3.62 | -20.41 | -13.00 | -7.41 |
| 1648.40 | 52.73 | V | -51.85 | 9.29 | 5.23 | -47.79 | -13.00 | -34.79 |
| 2472.60 | 57.70 | V | -43.31 | 10.08 | 6.53 | -39.76 | -13.00 | -26.76 |
| 3296.80 | 50.05 | V | -48.82 | 12.17 | 7.71 | -44.37 | -13.00 | -31.37 |
| 4121.00 | 46.61 | V | -49.51 | 12.61 | 8.86 | -45.76 | -13.00 | -32.76 |
| 4945.20 | --- | V | | 12.65 | 9.74 | | -13.00 | |
| 5769.40 | --- | V | | 13.55 | 10.54 | | -13.00 | |
| 6593.60 | --- | V | | 12.05 | 11.30 | | -13.00 | |
| 7417.80 | --- | V | | 11.49 | 12.10 | | -13.00 | |
| 8242.00 | --- | V | | 11.48 | 12.71 | | -13.00 | |

| | |
|---|---|
| Measurement uncertainty | 30MHz - 80MHz: 5.04dB |
| | 80MHz -1000MHz: 3.76dB |
| | 1GHz - 13GHz: 4.45dB |

Remark:

1 The emission behaviors belong to narrowband spurious emission.

2 Remark"---" means that the emission level is too low to be measured

3 The result basic equation calculation is as follows:

4 ERP/EIRP (dBm) = SG Setting(dBm) + Antenna Gain (dBd/dBi) – Cable loss (dB)

5. Radiated emissions measured were made with an instrument using Peak detector mode with RBW = 1 MHz, VBW = 1MHz

## Radiated Spurious Emission Measurement Result: GPRS 850 Mode

| | | | |
|---|---|---|---|
| Operation Mode | : TX CH Low Mode | Test Date: | Dec. 04, 2010 |
| Fundamental Frequency | : 824.20 MHz | Test By: | Jazz |
| Temperature | : 25℃ | Pol: | Hor |
| Humidity | : 65% | | |

| Freq. (MHz) | SPA. Reading (dBuV) | Ant.Pol. H/V | S.G Out-put (dBm) | Antenna Gain (dBd/dBi) | Cable Loss (dB) | ERP/ EIRP (dBm) | Limit (dBm) | Safe Margin (dBm) |
|---|---|---|---|---|---|---|---|---|
| 70.74 | 40.44 | H | -71.87 | -1.18 | 1.16 | -74.21 | -13.00 | -61.21 |
| 107.60 | 39.01 | H | -63.20 | -7.77 | 1.39 | -72.36 | -13.00 | -59.36 |
| 227.88 | 33.82 | H | -66.48 | -7.87 | 1.87 | -76.21 | -13.00 | -63.21 |
| 284.14 | 37.45 | H | -60.70 | -7.91 | 2.11 | -70.73 | -13.00 | -57.73 |
| 340.40 | 38.12 | H | -59.17 | -7.69 | 2.32 | -69.19 | -13.00 | -56.19 |
| 396.66 | 37.35 | H | -59.13 | -7.66 | 2.50 | -69.29 | -13.00 | -56.29 |
| 823.98 | 82.49 | H | -3.78 | -7.87 | 3.62 | -15.28 | -13.00 | -2.28 |
| 1648.40 | 54.44 | H | -49.96 | 9.29 | 5.23 | -45.90 | -13.00 | -32.90 |
| 2472.60 | 60.53 | H | -40.38 | 10.08 | 6.53 | -36.83 | -13.00 | -23.83 |
| 3296.80 | 46.74 | H | -52.36 | 12.17 | 7.71 | -47.90 | -13.00 | -34.90 |
| 4121.00 | 39.99 | H | -56.26 | 12.61 | 8.86 | -52.51 | -13.00 | -39.51 |
| 4945.20 | --- | H | | 12.65 | 9.74 | | -13.00 | |
| 5769.40 | --- | H | | 13.55 | 10.54 | | -13.00 | |
| 6593.60 | --- | H | | 12.05 | 11.30 | | -13.00 | |
| 7417.80 | --- | H | | 11.49 | 12.10 | | -13.00 | |
| 8242.00 | --- | H | | 11.48 | 12.71 | | -13.00 | |

| | |
|---|---|
| Measurement uncertainty | 30MHz - 80MHz: 5.04dB |
| | 80MHz -1000MHz: 3.76dB |
| | 1GHz - 13GHz: 4.45dB |

Remark:

1 The emission behaviors belong to narrowband spurious emission.

2 Remark"---" means that the emission level is too low to be measured

3 The result basic equation calculation is as follows:

4 ERP/EIRP (dBm) = SG Setting(dBm) + Antenna Gain (dBd/dBi) – Cable loss (dB)

5. R Radiated emissions measured were made with an instrument using Peak detector mode with RBW = 1 MHz, VBW = 1MHz

**Radiated Spurious Emission Measurement Result: GPRS 850 Mode**

| | | | |
|---|---|---|---|
| Operation Mode | : TX CH Mid Mode | Test Date: | Dec. 04, 2010 |
| Fundamental Frequency | : 836.60 MHz | Test By: | Jazz |
| Temperature | : 25℃ | Pol: | Ver |
| Humidity | : 65% | | |

| Freq. (MHz) | SPA. Reading (dBuV) | Ant.Pol. H/V | S.G Out-put (dBm) | Antenna Gain (dBd/dBi) | Cable Loss (dB) | ERP/ EIRP (dBm) | Limit (dBm) | Safe Margin (dBm) |
|---|---|---|---|---|---|---|---|---|
| 90.14 | 47.03 | V | -56.15 | -7.75 | 1.27 | -65.17 | -13.00 | -52.17 |
| 107.60 | 45.42 | V | -55.80 | -7.77 | 1.39 | -64.96 | -13.00 | -51.96 |
| 255.04 | 36.04 | V | -63.68 | -7.89 | 2.01 | -73.59 | -13.00 | -60.59 |
| 284.14 | 37.31 | V | -61.46 | -7.91 | 2.11 | -71.48 | -13.00 | -58.48 |
| 340.40 | 40.38 | V | -57.37 | -7.69 | 2.32 | -67.39 | -13.00 | -54.39 |
| 565.44 | 34.92 | V | -56.67 | -7.77 | 2.98 | -67.42 | -13.00 | -54.42 |
| 1673.20 | 52.56 | V | -52.00 | 9.36 | 5.27 | -47.90 | -13.00 | -34.90 |
| 2509.80 | 57.81 | V | -42.97 | 10.09 | 6.58 | -39.47 | -13.00 | -26.47 |
| 3346.40 | 50.05 | V | -48.81 | 12.28 | 7.79 | -44.33 | -13.00 | -31.33 |
| 4183.00 | 47.12 | V | -48.77 | 12.62 | 8.93 | -45.08 | -13.00 | -32.08 |
| 5019.60 | --- | V | | 12.67 | 9.81 | | -13.00 | |
| 5856.20 | --- | V | | 13.68 | 10.62 | | -13.00 | |
| 6692.80 | --- | V | | 11.95 | 11.39 | | -13.00 | |
| 7529.40 | --- | V | | 11.45 | 12.20 | | -13.00 | |
| 8366.00 | --- | V | | 11.59 | 12.81 | | -13.00 | |

| | |
|---|---|
| Measurement uncertainty | 30MHz - 80MHz: 5.04dB |
| | 80MHz -1000MHz: 3.76dB |
| | 1GHz - 13GHz: 4.45dB |

Remark:

1 The emission behaviors belongs to narrowband spurious emission.

2 Remark"---" means that the emission level is too low to be measured

3 The result basic equation calculation is as follows:

4 ERP/EIRP (dBm) = SG Setting(dBm) + Antenna Gain (dBd/dBi) – Cable loss (dB)

5. Radiated emissions measured were made with an instrument using Peak detector mode with RBW = 1 MHz, VBW = 1MHz

**Radiated Spurious Emission Measurement Result: GPRS 850 Mode**

| | | | |
|---|---|---|---|
| Operation Mode | : TX CH Mid Mode | Test Date: | Dec. 04, 2010 |
| Fundamental Frequency | : 836.60 MHz | Test By: | Jazz |
| Temperature | : 25℃ | Pol: | Hor |
| Humidity | : 65% | | |

| Freq. (MHz) | SPA. Reading (dBuV) | Ant.Pol. H/V | S.G Out-put (dBm) | Antenna Gain (dBd/dBi) | Cable Loss (dB) | ERP/ EIRP (dBm) | Limit (dBm) | Safe Margin (dBm) |
|---|---|---|---|---|---|---|---|---|
| 70.74 | 41.69 | H | -70.62 | -1.18 | 1.16 | -72.96 | -13.00 | -59.96 |
| 107.60 | 40.36 | H | -61.85 | -7.77 | 1.39 | -71.01 | -13.00 | -58.01 |
| 255.04 | 35.72 | H | -63.34 | -7.89 | 2.01 | -73.24 | -13.00 | -60.24 |
| 284.14 | 38.38 | H | -59.77 | -7.91 | 2.11 | -69.80 | -13.00 | -56.80 |
| 342.34 | 37.67 | H | -59.60 | -7.68 | 2.33 | -69.61 | -13.00 | -56.61 |
| 396.66 | 36.08 | H | -60.40 | -7.66 | 2.50 | -70.56 | -13.00 | -57.56 |
| 1673.20 | 56.45 | H | -47.93 | 9.36 | 5.27 | -43.83 | -13.00 | -30.83 |
| 2509.80 | 58.52 | H | -42.18 | 10.09 | 6.58 | -38.68 | -13.00 | -25.68 |
| 3346.40 | 43.53 | H | -55.53 | 12.28 | 7.79 | -51.05 | -13.00 | -38.05 |
| 4183.00 | 39.85 | H | -56.18 | 12.62 | 8.93 | -52.49 | -13.00 | -39.49 |
| 5019.60 | --- | H | | 12.67 | 9.81 | | -13.00 | |
| 5856.20 | --- | H | | 13.68 | 10.62 | | -13.00 | |
| 6692.80 | --- | H | | 11.95 | 11.39 | | -13.00 | |
| 7529.40 | --- | H | | 11.45 | 12.20 | | -13.00 | |
| 8366.00 | --- | H | | 11.59 | 12.81 | | -13.00 | |

| | |
|---|---|
| Measurement uncertainty | 30MHz - 80MHz: 5.04dB |
| | 80MHz -1000MHz: 3.76dB |
| | 1GHz - 13GHz: 4.45dB |

Remark:

1 The emission behaviors belong to narrowband spurious emission.

2 Remark"---" means that the emission level is too low to be measured

3 The result basic equation calculation is as follows:

4 ERP/EIRP (dBm) = SG Setting(dBm) + Antenna Gain (dBd/dBi) – Cable loss (dB)

5. Radiated emissions measured were made with an instrument using Peak detector mode with RBW = 1 MHz, VBW = 1MHz

**Radiated Spurious Emission Measurement Result: GPRS 850 Mode**

| | | | |
|---|---|---|---|
| Operation Mode | : TX CH High Mode | Test Date: | Dec. 04, 2010 |
| Fundamental Frequency | : 848.80 MHz | Test By: | Jazz |
| Temperature | : 25℃ | Pol: | Ver |
| Humidity | : 65% | | |

| Freq. (MHz) | SPA. Reading (dBuV) | Ant.Pol. H/V | S.G Out-put (dBm) | Antenna Gain (dBd/dBi) | Cable Loss (dB) | ERP/ EIRP (dBm) | Limit (dBm) | Safe Margin (dBm) |
|---|---|---|---|---|---|---|---|---|
| 107.60 | 46.94 | V | -54.28 | -7.77 | 1.39 | -63.44 | -13.00 | -50.44 |
| 255.04 | 35.40 | V | -64.32 | -7.89 | 2.01 | -74.23 | -13.00 | -61.23 |
| 284.14 | 37.67 | V | -61.10 | -7.91 | 2.11 | -71.12 | -13.00 | -58.12 |
| 340.40 | 39.77 | V | -57.98 | -7.69 | 2.32 | -68.00 | -13.00 | -55.00 |
| 568.35 | 33.68 | V | -57.74 | -7.77 | 2.99 | -68.50 | -13.00 | -55.50 |
| 726.46 | 34.54 | V | -53.67 | -7.87 | 3.39 | -64.92 | -13.00 | -51.92 |
| 849.00 | 76.23 | V | -9.89 | -7.88 | 3.68 | -21.45 | -13.00 | -8.45 |
| 1697.60 | 53.15 | V | -51.39 | 9.44 | 5.31 | -47.26 | -13.00 | -34.26 |
| 2546.40 | 54.07 | V | -46.57 | 10.20 | 6.63 | -43.01 | -13.00 | -30.01 |
| 3395.20 | 48.37 | V | -50.48 | 12.38 | 7.87 | -45.97 | -13.00 | -32.97 |
| 4244.00 | 47.25 | V | -48.41 | 12.63 | 9.00 | -44.78 | -13.00 | -31.78 |
| 5092.80 | --- | V | | 12.74 | 9.88 | | -13.00 | |
| 5941.60 | --- | V | | 13.81 | 10.70 | | -13.00 | |
| 6790.40 | --- | V | | 11.86 | 11.48 | | -13.00 | |
| 7639.20 | --- | V | | 11.40 | 12.27 | | -13.00 | |
| 8488.00 | --- | V | | 11.70 | 12.91 | | -13.00 | |

| | |
|---|---|
| Measurement uncertainty | 30MHz - 80MHz: 5.04dB |
| | 80MHz -1000MHz: 3.76dB |
| | 1GHz - 13GHz: 4.45dB |

Remark:

1 The emission behaviors belong to narrowband spurious emission.

2 Remark"---" means that the emission level is too low to be measured

3 The result basic equation calculation is as follows:

4 ERP/EIRP (dBm) = SG Setting(dBm) + Antenna Gain (dBd/dBi) – Cable loss (dB)

5. Radiated emissions measured were made with an instrument using Peak detector mode with RBW = 1 MHz, VBW = 1MHz

**Radiated Spurious Emission Measurement Result: GPRS 850 Mode**

| | | | |
|---|---|---|---|
| Operation Mode | : TX CH High Mode | Test Date: | Dec. 04, 2010 |
| Fundamental Frequency | : 848.80 MHz | Test By: | Jazz |
| Temperature | : 25℃ | Pol: | Hor |
| Humidity | : 65% | | |

| Freq. (MHz) | SPA. Reading (dBuV) | Ant.Pol. H/V | S.G Out-put (dBm) | Antenna Gain (dBd/dBi) | Cable Loss (dB) | ERP/ EIRP (dBm) | Limit (dBm) | Safe Margin (dBm) |
|---|---|---|---|---|---|---|---|---|
| 107.60 | 41.91 | H | -60.30 | -7.77 | 1.39 | -69.46 | -13.00 | -56.46 |
| 284.14 | 39.29 | H | -58.86 | -7.91 | 2.11 | -68.89 | -13.00 | -55.89 |
| 340.40 | 36.75 | H | -60.54 | -7.69 | 2.32 | -70.56 | -13.00 | -57.56 |
| 398.60 | 34.83 | H | -61.62 | -7.66 | 2.51 | -71.79 | -13.00 | -58.79 |
| 568.35 | 33.71 | H | -57.64 | -7.77 | 2.99 | -68.39 | -13.00 | -55.39 |
| 691.54 | 33.85 | H | -54.13 | -7.85 | 3.27 | -65.25 | -13.00 | -52.25 |
| 849.00 | 81.28 | H | -4.91 | -7.88 | 3.68 | -16.47 | -13.00 | -3.47 |
| 1697.60 | 52.44 | H | -51.91 | 9.44 | 5.31 | -47.78 | -13.00 | -34.78 |
| 2546.40 | 60.66 | H | -39.94 | 10.20 | 6.63 | -36.38 | -13.00 | -23.38 |
| 3395.20 | 46.16 | H | -52.87 | 12.38 | 7.87 | -48.35 | -13.00 | -35.35 |
| 4244.00 | 37.99 | H | -57.82 | 12.63 | 9.00 | -54.20 | -13.00 | -41.20 |
| 5092.80 | --- | H | | 12.74 | 9.88 | | -13.00 | |
| 5941.60 | --- | H | | 13.81 | 10.70 | | -13.00 | |
| 6790.40 | --- | H | | 11.86 | 11.48 | | -13.00 | |
| 7639.20 | --- | H | | 11.40 | 12.27 | | -13.00 | |
| 8488.00 | --- | H | | 11.70 | 12.91 | | -13.00 | |

| | |
|---|---|
| Measurement uncertainty | 30MHz - 80MHz: 5.04dB |
| | 80MHz -1000MHz: 3.76dB |
| | 1GHz - 13GHz: 4.45dB |

Remark:

1 The emission behaviors belong to narrowband spurious emission.

2 Remark"---" means that the emission level is too low to be measured

3 The result basic equation calculation is as follows:

4 ERP/EIRP (dBm) = SG Setting(dBm) + Antenna Gain (dBd/dBi) – Cable loss (dB)

5. Radiated emissions measured were made with an instrument using Peak detector mode with RBW = 1 MHz, VBW = 1MHz

**Radiated Spurious Emission Measurement Result: GPRS 1900 Mode**

| | | | |
|---|---|---|---|
| Operation Mode | : TX CH Low Mode | Test Date: | Dec. 04, 2010 |
| Fundamental Frequency | : 1850.20MHz | Test By: | Jazz |
| Temperature | : 25℃ | Pol: | Ver |
| Humidity | : 65% | | |

| Freq. (MHz) | SPA. Reading (dBuV) | Ant.Pol. H/V | S.G Out-put (dBm) | Antenna Gain (dBd/dBi) | Cable Loss (dB) | ERP/ EIRP (dBm) | Limit (dBm) | Safe Margin (dBm) |
|---|---|---|---|---|---|---|---|---|
| 107.60 | 46.25 | V | -54.97 | -7.77 | 1.39 | -64.13 | -13.00 | -51.13 |
| 284.14 | 39.63 | V | -59.14 | -7.91 | 2.11 | -69.16 | -13.00 | -56.16 |
| 340.40 | 39.63 | V | -58.12 | -7.69 | 2.32 | -68.14 | -13.00 | -55.14 |
| 565.44 | 35.05 | V | -56.54 | -7.77 | 2.98 | -67.29 | -13.00 | -54.29 |
| 681.84 | 35.79 | V | -53.46 | -7.84 | 3.24 | -64.55 | -13.00 | -51.55 |
| 794.36 | 39.03 | V | -47.67 | -7.87 | 3.56 | -59.10 | -13.00 | -46.10 |
| 1850.00 | 79.16 | V | -25.23 | 9.90 | 5.56 | -20.89 | -13.00 | -7.89 |
| 3700.40 | 55.82 | V | -42.11 | 12.61 | 8.31 | -37.81 | -13.00 | -24.81 |
| 5550.60 | 62.06 | V | -28.78 | 13.23 | 10.33 | -25.88 | -13.00 | -12.88 |
| 7400.80 | --- | V | | 11.50 | 12.08 | | -13.00 | |
| 9251.00 | --- | V | | 11.92 | 13.50 | | -13.00 | |
| 11101.20 | --- | V | | 11.66 | 15.11 | | -13.00 | |
| 12951.40 | --- | V | | 13.63 | 16.60 | | -13.00 | |
| 14801.60 | --- | V | | 12.76 | 17.95 | | -13.00 | |
| 16651.80 | --- | V | | 15.92 | 19.14 | | -13.00 | |

| | |
|---|---|
| Measurement uncertainty | 30MHz - 80MHz: 5.04dB |
| | 80MHz -1000MHz: 3.76dB |
| | 1GHz - 13GHz: 4.45dB |

Remark:

1 The emission behaviors belong to narrowband spurious emission.

2 Remark"---" means that the emission level is too low to be measured

3 The result basic equation calculation is as follows:

4 ERP/EIRP (dBm) = SG Setting(dBm) + Antenna Gain (dBd/dBi) – Cable loss (dB)

5. Radiated emissions measured were made with an instrument using Peak detector mode with RBW = 1 MHz, VBW = 1MHz

**Radiated Spurious Emission Measurement Result: GPRS 1900 Mode**

| | | | |
|---|---|---|---|
| Operation Mode | : TX CH Low Mode | Test Date: | Dec. 04, 2010 |
| Fundamental Frequency | : 1850.20MHz | Test By: | Jazz |
| Temperature | : 25℃ | Pol: | Hor |
| Humidity | : 65% | | |

| Freq. (MHz) | SPA. Reading (dBuV) | Ant.Pol. H/V | S.G Out-put (dBm) | Antenna Gain (dBd/dBi) | Cable Loss (dB) | ERP/ EIRP (dBm) | Limit (dBm) | Safe Margin (dBm) |
|---|---|---|---|---|---|---|---|---|
| 104.66 | 46.60 | H | -55.91 | -7.76 | 1.38 | -65.06 | -13.00 | -52.06 |
| 225.94 | 36.72 | H | -63.67 | -7.87 | 1.86 | -73.39 | -13.00 | -60.39 |
| 284.14 | 40.38 | H | -57.77 | -7.91 | 2.11 | -67.80 | -13.00 | -54.80 |
| 398.60 | 36.79 | H | -59.66 | -7.66 | 2.51 | -69.83 | -13.00 | -56.83 |
| 607.15 | 33.82 | H | -56.74 | -7.79 | 3.05 | -67.58 | -13.00 | -54.58 |
| 679.90 | 37.14 | H | -51.33 | -7.84 | 3.24 | -62.41 | -13.00 | -49.41 |
| 1850.00 | 77.14 | H | -27.04 | 9.90 | 5.56 | -22.70 | -13.00 | -9.70 |
| 3700.40 | 50.26 | H | -47.78 | 12.61 | 8.31 | -43.48 | -13.00 | -30.48 |
| 5550.60 | 57.34 | H | -33.71 | 13.23 | 10.33 | -30.81 | -13.00 | -17.81 |
| 7400.80 | --- | H | | 11.50 | 12.08 | | -13.00 | |
| 9251.00 | --- | H | | 11.92 | 13.50 | | -13.00 | |
| 11101.20 | --- | H | | 11.66 | 15.11 | | -13.00 | |
| 12951.40 | --- | H | | 13.63 | 16.60 | | -13.00 | |
| 14801.60 | --- | H | | 12.76 | 17.95 | | -13.00 | |
| 16651.80 | --- | H | | 15.92 | 19.14 | | -13.00 | |

| | |
|---|---|
| Measurement uncertainty | 30MHz - 80MHz: 5.04dB |
| | 80MHz -1000MHz: 3.76dB |
| | 1GHz - 13GHz: 4.45dB |

Remark:

1 The emission behaviors belong to narrowband spurious emission.

2 Remark"---" means that the emission level is too low to be measured

3 The result basic equation calculation is as follows:

4 ERP/EIRP (dBm) = SG Setting(dBm) + Antenna Gain (dBd/dBi) – Cable loss (dB)

5. Radiated emissions measured were made with an instrument using Peak detector mode with RBW = 1 MHz, VBW = 1MHz

**Radiated Spurious Emission Measurement Result: GPRS 1900 Mode**

Operation Mode : TX CH Mid Mode
Fundamental Frequency : 1880MHz
Temperature : 25℃
Humidity : 65%

Test Date: Dec. 04, 2010
Test By: Jazz
Pol: Ver

| Freq. (MHz) | SPA. Reading (dBuV) | Ant.Pol. H/V | S.G Out-put (dBm) | Antenna Gain (dBd/dBi) | Cable Loss (dB) | ERP/ EIRP (dBm) | Limit (dBm) | Safe Margin (dBm) |
|---|---|---|---|---|---|---|---|---|
| 107.60 | 46.64 | V | -54.58 | -7.77 | 1.39 | -63.74 | -13.00 | -50.74 |
| 225.94 | 37.80 | V | -63.00 | -7.87 | 1.86 | -72.72 | -13.00 | -59.72 |
| 284.14 | 40.30 | V | -58.47 | -7.91 | 2.11 | -68.49 | -13.00 | -55.49 |
| 340.40 | 40.17 | V | -57.58 | -7.69 | 2.32 | -67.60 | -13.00 | -54.60 |
| 623.64 | 33.10 | V | -56.16 | -7.80 | 3.09 | -67.05 | -13.00 | -54.05 |
| 681.84 | 34.72 | V | -54.53 | -7.84 | 3.24 | -65.62 | -13.00 | -52.62 |
| 3760.00 | 53.29 | V | -44.37 | 12.60 | 8.39 | -40.15 | -13.00 | -27.15 |
| 5640.00 | 57.27 | V | -33.31 | 13.36 | 10.41 | -30.36 | -13.00 | -17.36 |
| 7520.00 | --- | V | | 11.45 | 12.19 | | -13.00 | |
| 9400.00 | --- | V | | 11.93 | 13.61 | | -13.00 | |
| 11280.00 | --- | V | | 11.92 | 15.27 | | -13.00 | |
| 13160.00 | --- | V | | 13.33 | 16.71 | | -13.00 | |
| 15040.00 | --- | V | | 13.76 | 18.15 | | -13.00 | |
| 16920.00 | --- | V | | 15.27 | 19.32 | | -13.00 | |

| | |
|---|---|
| Measurement uncertainty | 30MHz - 80MHz: 5.04dB |
| | 80MHz -1000MHz: 3.76dB |
| | 1GHz - 13GHz: 4.45dB |

Remark:

1 The emission behaviors belong to narrowband spurious emission.

2 Remark"---" means that the emission level is too low to be measured

3 The result basic equation calculation is as follows:

4 ERP/EIRP (dBm) = SG Setting(dBm) + Antenna Gain (dBd/dBi) – Cable loss (dB)

5. Radiated emissions measured were made with an instrument using Peak detector mode with RBW = 1 MHz, VBW = 1MHz

**Radiated Spurious Emission Measurement Result: GPRS 1900 Mode**

Operation Mode : TX CH Mid Mode
Fundamental Frequency : 1880MHz
Temperature : 25℃
Humidity : 65%

Test Date: Dec. 04, 2010
Test By: Jazz
Pol: Hor

| Freq. (MHz) | SPA. Reading (dBuV) | Ant.Pol. H/V | S.G Out-put (dBm) | Antenna Gain (dBd/dBi) | Cable Loss (dB) | ERP/ EIRP (dBm) | Limit (dBm) | Safe Margin (dBm) |
|---|---|---|---|---|---|---|---|---|
| 107.60 | 43.97 | H | -58.24 | -7.77 | 1.39 | -67.40 | -13.00 | -54.40 |
| 260.86 | 36.52 | H | -62.36 | -7.90 | 2.03 | -72.29 | -13.00 | -59.29 |
| 284.14 | 39.62 | H | -58.53 | -7.91 | 2.11 | -68.56 | -13.00 | -55.56 |
| 396.66 | 37.22 | H | -59.26 | -7.66 | 2.50 | -69.42 | -13.00 | -56.42 |
| 681.84 | 35.51 | H | -52.88 | -7.84 | 3.24 | -63.96 | -13.00 | -50.96 |
| 796.30 | 35.39 | H | -51.74 | -7.87 | 3.56 | -63.17 | -13.00 | -50.17 |
| 3760.00 | 44.53 | H | -53.24 | 12.60 | 8.39 | -49.03 | -13.00 | -36.03 |
| 5640.00 | 53.08 | H | -37.67 | 13.36 | 10.41 | -34.72 | -13.00 | -21.72 |
| 7520.00 | --- | H | | 11.45 | 12.19 | | -13.00 | |
| 9400.00 | --- | H | | 11.93 | 13.61 | | -13.00 | |
| 11280.00 | --- | H | | 11.92 | 15.27 | | -13.00 | |
| 13160.00 | --- | H | | 13.33 | 16.71 | | -13.00 | |
| 15040.00 | --- | H | | 13.76 | 18.15 | | -13.00 | |
| 16920.00 | --- | H | | 15.27 | 19.32 | | -13.00 | |

| | |
|---|---|
| Measurement uncertainty | 30MHz - 80MHz: 5.04dB |
| | 80MHz -1000MHz: 3.76dB |
| | 1GHz - 13GHz: 4.45dB |

Remark:

1 The emission behaviors belong to narrowband spurious emission.

2 Remark"---" means that the emission level is too low to be measured

3 The result basic equation calculation is as follows:

4 ERP/EIRP (dBm) = SG Setting(dBm) + Antenna Gain (dBd/dBi) – Cable loss (dB)

5. Radiated emissions measured were made with an instrument using Peak detector mode with RBW = 1 MHz, VBW = 1MHz

**Radiated Spurious Emission Measurement Result: GPRS 1900 Mode**

| | | | |
|---|---|---|---|
| Operation Mode | : TX CH High Mode | Test Date: | Dec. 04, 2010 |
| Fundamental Frequency | : 1909.8 MHz | Test By: | Jazz |
| Temperature | : 25℃ | Pol: | Ver |
| Humidity | : 65% | | |

| Freq. (MHz) | SPA. Reading (dBuV) | Ant.Pol. H/V | S.G Out-put (dBm) | Antenna Gain (dBd/dBi) | Cable Loss (dB) | ERP/ EIRP (dBm) | Limit (dBm) | Safe Margin (dBm) |
|---|---|---|---|---|---|---|---|---|
| 107.60 | 45.75 | V | -55.47 | -7.77 | 1.39 | -64.63 | -13.00 | -51.63 |
| 225.94 | 38.07 | V | -62.73 | -7.87 | 1.86 | -72.45 | -13.00 | -59.45 |
| 284.14 | 40.32 | V | -58.45 | -7.91 | 2.11 | -68.47 | -13.00 | -55.47 |
| 340.40 | 38.57 | V | -59.18 | -7.69 | 2.32 | -69.20 | -13.00 | -56.20 |
| 568.35 | 33.67 | V | -57.75 | -7.77 | 2.99 | -68.51 | -13.00 | -55.51 |
| 679.90 | 35.19 | V | -54.04 | -7.84 | 3.24 | -65.12 | -13.00 | -52.12 |
| 1910.00 | 74.37 | V | -29.96 | 10.08 | 5.66 | -25.54 | -13.00 | -12.54 |
| 3819.60 | 49.11 | V | -48.28 | 12.60 | 8.47 | -44.15 | -13.00 | -31.15 |
| 5729.40 | 49.38 | V | -40.94 | 13.49 | 10.50 | -37.94 | -13.00 | -24.94 |
| 7639.20 | --- | V | | 11.40 | 12.27 | | -13.00 | |
| 9549.00 | --- | V | | 11.95 | 13.74 | | -13.00 | |
| 11458.80 | --- | V | | 12.17 | 15.43 | | -13.00 | |
| 13368.60 | --- | V | | 12.97 | 16.82 | | -13.00 | |
| 15278.40 | --- | V | | 15.00 | 18.29 | | -13.00 | |
| 17188.20 | --- | V | | 14.47 | 19.52 | | -13.00 | |
| 19098.00 | --- | V | | 18.66 | 20.78 | | -13.00 | |

| | |
|---|---|
| Measurement uncertainty | 30MHz - 80MHz: 5.04dB |
| | 80MHz -1000MHz: 3.76dB |
| | 1GHz - 13GHz: 4.45dB |

Remark:

1 The emission behaviors belong to narrowband spurious emission.

2 Remark"---" means that the emission level is too low to be measured

3 The result basic equation calculation is as follows:

4 ERP/EIRP (dBm) = SG Setting(dBm) + Antenna Gain (dBd/dBi) – Cable loss (dB)

5. Radiated emissions measured were made with an instrument using Peak detector mode with RBW = 1 MHz, VBW = 1MHz

**Radiated Spurious Emission Measurement Result: GPRS 1900 Mode**

| | | | |
|---|---|---|---|
| Operation Mode | : TX CH High Mode | Test Date: | Dec. 04, 2010 |
| Fundamental Frequency | : 1909.8 MHz | Test By: | Jazz |
| Temperature | : 25℃ | Pol: | Hor |
| Humidity | : 65% | | |

| Freq. (MHz) | SPA. Reading (dBuV) | Ant.Pol. H/V | S.G Out-put (dBm) | Antenna Gain (dBd/dBi) | Cable Loss (dB) | ERP/ EIRP (dBm) | Limit (dBm) | Safe Margin (dBm) |
|---|---|---|---|---|---|---|---|---|
| 105.66 | 45.99 | H | -56.42 | -7.76 | 1.39 | -65.57 | -13.00 | -52.57 |
| 260.86 | 37.05 | H | -61.83 | -7.90 | 2.03 | -71.76 | -13.00 | -58.76 |
| 284.14 | 41.63 | H | -56.52 | -7.91 | 2.11 | -66.55 | -13.00 | -53.55 |
| 396.66 | 37.36 | H | -59.12 | -7.66 | 2.50 | -69.28 | -13.00 | -56.28 |
| 613.94 | 33.46 | H | -56.97 | -7.80 | 3.07 | -67.83 | -13.00 | -54.83 |
| 681.84 | 35.40 | H | -52.99 | -7.84 | 3.24 | -64.07 | -13.00 | -51.07 |
| 1910.01 | 70.70 | H | -33.41 | 10.08 | 5.66 | -28.99 | -13.00 | -15.99 |
| 3819.60 | 42.97 | H | -54.54 | 12.60 | 8.47 | -50.40 | -13.00 | -37.40 |
| 5729.40 | 52.30 | H | -38.15 | 13.49 | 10.50 | -35.16 | -13.00 | -22.16 |
| 7639.20 | --- | H | | 11.40 | 12.27 | | -13.00 | |
| 9549.00 | --- | H | | 11.95 | 13.74 | | -13.00 | |
| 11458.80 | --- | H | | 12.17 | 15.43 | | -13.00 | |
| 13368.60 | --- | H | | 12.97 | 16.82 | | -13.00 | |
| 15278.40 | --- | H | | 15.00 | 18.29 | | -13.00 | |
| 17188.20 | --- | H | | 14.47 | 19.52 | | -13.00 | |
| 19098.00 | --- | H | | 18.66 | 20.78 | | -13.00 | |

| | |
|---|---|
| Measurement uncertainty | 30MHz - 80MHz: 5.04dB |
| | 80MHz -1000MHz: 3.76dB |
| | 1GHz - 13GHz: 4.45dB |

Remark:

1 The emission behaviors belong to narrowband spurious emission.

2 Remark"---" means that the emission level is too low to be measured

3 The result basic equation calculation is as follows:

4 ERP/EIRP (dBm) = SG Setting(dBm) + Antenna Gain (dBd/dBi) – Cable loss (dB)

5. Radiated emissions measured were made with an instrument using Peak detector mode with RBW = 1 MHz, VBW = 1MHz

## Radiated Spurious Emission Measurement Result: 5MHz BW LTE-Band 13 (QPSK RB 1 Offset 24)

Operation Mode : QPSK LOW Mode
Fundamental Frequency : 779.5 MHz
Temperature : 25℃
Humidity : 65%

Test Date: Dec. 04, 2010
Test By: Jazz
Pol: Ver

| Freq. (MHz) | SPA. Reading (dBuV) | Ant.Pol. H/V | S.G Out-put (dBm) | Antenna Gain (dBd/dBi) | Cable Loss (dB) | ERP/ EIRP (dBm) | Limit (dBm) | Safe Margin (dBm) |
|---|---|---|---|---|---|---|---|---|
| 41.64 | 43.00 | V | -59.65 | -2.31 | 0.93 | -62.90 | -13.00 | -49.90 |
| 90.14 | 49.48 | V | -53.70 | -7.75 | 1.27 | -62.72 | -13.00 | -49.72 |
| 107.60 | 43.63 | V | -57.59 | -7.77 | 1.39 | -66.75 | -13.00 | -53.75 |
| 340.40 | 45.43 | V | -52.32 | -7.69 | 2.32 | -62.34 | -13.00 | -49.34 |
| 398.60 | 34.87 | V | -60.69 | -7.66 | 2.51 | -70.85 | -13.00 | -57.85 |
| 568.35 | 34.25 | V | -57.17 | -7.77 | 2.99 | -67.93 | -13.00 | -54.93 |
| 776.00 | 77.44 | V | -9.43 | -7.87 | 3.52 | -20.82 | -13.00 | -7.82 |
| 2338.50 | 46.39 | V | -55.53 | 10.15 | 6.32 | -51.71 | -13.00 | -38.71 |
| 3118.00 | --- | V | | 11.78 | 7.43 | | -13.00 | |
| 3897.50 | --- | V | | 12.60 | 8.58 | | -13.00 | |
| 4677.00 | --- | V | | 12.66 | 9.47 | | -13.00 | |
| 5456.50 | --- | V | | 13.11 | 10.24 | | -13.00 | |
| 6236.00 | --- | V | | 13.07 | 10.97 | | -13.00 | |
| 7015.50 | --- | V | | 11.64 | 11.70 | | -13.00 | |
| 7795.00 | --- | V | | 11.34 | 12.38 | | -13.00 | |

| | |
|---|---|
| Measurement uncertainty | 30MHz - 80MHz: 5.04dB |
| | 80MHz -1000MHz: 3.76dB |
| | 1GHz - 13GHz: 4.45dB |

Remark:

1 The emission behaviors belong to narrowband spurious emission.

2 Remark"---" means that the emission level is too low to be measured

3 The result basic equation calculation is as follows:

4 ERP/EIRP (dBm) = SG Setting(dBm) + Antenna Gain (dBd/dBi) – Cable loss (dB)

5. Radiated emissions measured were made with an instrument using Peak detector mode with RBW = 1 MHz, VBW = 1MHz

## Radiated Spurious Emission Measurement Result: 5MHz BW LTE-Band 13

## (QPSK RB 1 Offset 24)

Operation Mode : QPSK LOW Mode
Fundamental Frequency : 779.5 MHz
Temperature : 25℃
Humidity : 65%

Test Date: Dec. 04, 2010
Test By: Jazz
Pol: Hor

| Freq. (MHz) | SPA. Reading (dBuV) | Ant.Pol. H/V | S.G Out-put (dBm) | Antenna Gain (dBd/dBi) | Cable Loss (dB) | ERP/ EIRP (dBm) | Limit (dBm) | Safe Margin (dBm) |
|---|---|---|---|---|---|---|---|---|
| 44.55 | 45.60 | H | -59.16 | -1.72 | 1.00 | -61.87 | -13.00 | -48.87 |
| 90.14 | 48.39 | H | -55.34 | -7.75 | 1.27 | -64.36 | -13.00 | -51.36 |
| 148.34 | 42.96 | H | -54.98 | -7.80 | 1.58 | -64.36 | -13.00 | -51.36 |
| 342.34 | 45.64 | H | -51.63 | -7.68 | 2.33 | -61.64 | -13.00 | -48.64 |
| 398.60 | 36.29 | H | -60.16 | -7.66 | 2.51 | -70.33 | -13.00 | -57.33 |
| 718.70 | 33.77 | H | -57.36 | -7.86 | 3.36 | -68.58 | -13.00 | -55.58 |
| 776.00 | 76.84 | H | -14.61 | -7.87 | 3.52 | -26.00 | -13.00 | -13.00 |
| 2338.50 | 44.98 | H | -56.81 | 10.15 | 6.32 | -52.98 | -13.00 | -39.98 |
| 3118.00 | --- | H | | 11.78 | 7.43 | | -13.00 | |
| 3897.50 | --- | H | | 12.60 | 8.58 | | -13.00 | |
| 4677.00 | --- | H | | 12.66 | 9.47 | | -13.00 | |
| 5456.50 | --- | H | | 13.11 | 10.24 | | -13.00 | |
| 6236.00 | --- | H | | 13.07 | 10.97 | | -13.00 | |
| 7015.50 | --- | H | | 11.64 | 11.70 | | -13.00 | |
| 7795.00 | --- | H | | 11.34 | 12.38 | | -13.00 | |

| | |
|---|---|
| Measurement uncertainty | 30MHz - 80MHz: 5.04dB |
| | 80MHz -1000MHz: 3.76dB |
| | 1GHz - 13GHz: 4.45dB |

Remark:

1 The emission behaviors belong to narrowband spurious emission.

2 Remark"---" means that the emission level is too low to be measured

3 The result basic equation calculation is as follows:

4 ERP/EIRP (dBm) = SG Setting(dBm) + Antenna Gain (dBd/dBi) – Cable loss (dB)

5. Radiated emissions measured were made with an instrument using Peak detector mode with RBW = 1 MHz, VBW = 1MHz

## Radiated Spurious Emission Measurement Result: 5MHz BW LTE-Band 13 (QPSK RB 1 Offset 24)

Operation Mode : QPSK High Mode
Fundamental Frequency : 784.5 MHz
Temperature : 25℃
Humidity : 65%

Test Date: Dec. 04, 2010
Test By: Jazz
Pol: Ver

| Freq. (MHz) | SPA. Reading (dBuV) | Ant.Pol. H/V | S.G Out-put (dBm) | Antenna Gain (dBd/dBi) | Cable Loss (dB) | ERP/ EIRP (dBm) | Limit (dBm) | Safe Margin (dBm) |
|---|---|---|---|---|---|---|---|---|
| 41.64 | 42.81 | V | -59.84 | -2.31 | 0.93 | -63.09 | -13.00 | -50.09 |
| 90.14 | 48.95 | V | -54.23 | -7.75 | 1.27 | -63.25 | -13.00 | -50.25 |
| 107.60 | 44.31 | V | -56.91 | -7.77 | 1.39 | -66.07 | -13.00 | -53.07 |
| 342.34 | 46.17 | V | -51.55 | -7.68 | 2.33 | -61.57 | -13.00 | -48.57 |
| 398.60 | 34.94 | V | -60.62 | -7.66 | 2.51 | -70.78 | -13.00 | -57.78 |
| 568.35 | 33.78 | V | -57.64 | -7.77 | 2.99 | -68.40 | -13.00 | -55.40 |
| 788.00 | 75.05 | V | -11.71 | -7.87 | 3.55 | -23.13 | -13.00 | -10.13 |
| 2353.50 | 46.38 | V | -55.44 | 10.14 | 6.35 | -51.64 | -13.00 | -38.64 |
| 3138.00 | --- | V | | 11.82 | 7.47 | | -13.00 | |
| 3922.50 | --- | V | | 12.60 | 8.61 | | -13.00 | |
| 4707.00 | --- | V | | 12.66 | 9.50 | | -13.00 | |
| 5491.50 | --- | V | | 13.14 | 10.27 | | -13.00 | |
| 6276.00 | --- | V | | 12.93 | 11.01 | | -13.00 | |
| 7060.50 | --- | V | | 11.63 | 11.74 | | -13.00 | |
| 7845.00 | --- | V | | 11.32 | 12.41 | | -13.00 | |

| | |
|---|---|
| Measurement uncertainty | 30MHz - 80MHz: 5.04dB |
| | 80MHz -1000MHz: 3.76dB |
| | 1GHz - 13GHz: 4.45dB |

Remark:

1 The emission behaviors belong to narrowband spurious emission.

2 Remark"---" means that the emission level is too low to be measured

3 The result basic equation calculation is as follows:

4 ERP/EIRP (dBm) = SG Setting(dBm) + Antenna Gain (dBd/dBi) – Cable loss (dB)

5. Radiated emissions measured were made with an instrument using Peak detector mode with RBW = 1 MHz, VBW = 1MHz

**Radiated Spurious Emission Measurement Result: 5MHz BW LTE-Band 13**

**(QPSK RB 1 Offset 24)**

| | | | |
|---|---|---|---|
| Operation Mode | : QPSK High Mode | Test Date: | Dec. 04, 2010 |
| Fundamental Frequency | : 784.5 MHz | Test By: | Jazz |
| Temperature | : 25℃ | Pol: | Hor |
| Humidity | : 65% | | |

| Freq. (MHz) | SPA. Reading (dBuV) | Ant.Pol. H/V | S.G Out-put (dBm) | Antenna Gain (dBd/dBi) | Cable Loss (dB) | ERP/ EIRP (dBm) | Limit (dBm) | Safe Margin (dBm) |
|---|---|---|---|---|---|---|---|---|
| 41.64 | 46.50 | H | -57.01 | -2.31 | 0.93 | -60.25 | -13.00 | -47.25 |
| 90.14 | 48.58 | H | -55.15 | -7.75 | 1.27 | -64.17 | -13.00 | -51.17 |
| 102.75 | 45.24 | H | -57.47 | -7.76 | 1.37 | -66.61 | -13.00 | -53.61 |
| 322.94 | 37.05 | H | -60.40 | -7.79 | 2.26 | -70.45 | -13.00 | -57.45 |
| 340.40 | 44.57 | H | -52.72 | -7.69 | 2.32 | -62.74 | -13.00 | -49.74 |
| 398.60 | 36.53 | H | -59.92 | -7.66 | 2.51 | -70.09 | -13.00 | -57.09 |
| 788.60 | 75.84 | H | -12.93 | -7.87 | 3.55 | -24.34 | -13.00 | -11.34 |
| 2353.50 | 45.16 | H | -56.53 | 10.14 | 6.35 | -52.73 | -13.00 | -39.73 |
| 3138.00 | --- | H | | 11.82 | 7.47 | | -13.00 | |
| 3922.50 | --- | H | | 12.60 | 8.61 | | -13.00 | |
| 4707.00 | --- | H | | 12.66 | 9.50 | | -13.00 | |
| 5491.50 | --- | H | | 13.14 | 10.27 | | -13.00 | |
| 6276.00 | --- | H | | 12.93 | 11.01 | | -13.00 | |
| 7060.50 | --- | H | | 11.63 | 11.74 | | -13.00 | |
| 7845.00 | --- | H | | 11.32 | 12.41 | | -13.00 | |

| | |
|---|---|
| Measurement uncertainty | 30MHz - 80MHz: 5.04dB |
| | 80MHz -1000MHz: 3.76dB |
| | 1GHz - 13GHz: 4.45dB |

Remark:

1 The emission behaviors belong to narrowband spurious emission.

2 Remark"---" means that the emission level is too low to be measured

3 The result basic equation calculation is as follows:

4 ERP/EIRP (dBm) = SG Setting(dBm) + Antenna Gain (dBd/dBi) – Cable loss (dB)

5. Radiated emissions measured were made with an instrument using Peak detector mode with RBW = 1 MHz, VBW = 1MHz

## Radiated Spurious Emission Measurement Result: 5MHz BW LTE-Band 13 (16QAM RB 1 Offset 24)

Operation Mode : 16QAM LOW Mode
Fundamental Frequency : 779.5 MHz
Temperature : 25℃
Humidity : 65%

Test Date: Dec. 04, 2010
Test By: Jazz
Pol: Ver

| Freq. (MHz) | SPA. Reading (dBuV) | Ant.Pol. H/V | S.G Out-put (dBm) | Antenna Gain (dBd/dBi) | Cable Loss (dB) | ERP/ EIRP (dBm) | Limit (dBm) | Safe Margin (dBm) |
|---|---|---|---|---|---|---|---|---|
| 41.64 | 43.58 | V | -59.07 | -2.31 | 0.93 | -62.32 | -13.00 | -49.32 |
| 90.14 | 49.62 | V | -53.56 | -7.75 | 1.27 | -62.58 | -13.00 | -49.58 |
| 107.60 | 44.08 | V | -57.14 | -7.77 | 1.39 | -66.30 | -13.00 | -53.30 |
| 340.40 | 45.99 | V | -51.76 | -7.69 | 2.32 | -61.78 | -13.00 | -48.78 |
| 396.66 | 34.52 | V | -61.12 | -7.66 | 2.50 | -71.28 | -13.00 | -58.28 |
| 568.35 | 33.66 | V | -57.76 | -7.77 | 2.99 | -68.52 | -13.00 | -55.52 |
| 776.00 | 77.73 | V | -9.14 | -7.87 | 3.52 | -20.53 | -13.00 | -7.53 |
| 2338.50 | 45.60 | V | -56.32 | 10.15 | 6.32 | -52.50 | -13.00 | -39.50 |
| 3118.00 | --- | V | | 11.78 | 7.43 | | -13.00 | |
| 3897.50 | --- | V | | 12.60 | 8.58 | | -13.00 | |
| 4677.00 | --- | V | | 12.66 | 9.47 | | -13.00 | |
| 5456.50 | --- | V | | 13.11 | 10.24 | | -13.00 | |
| 6236.00 | --- | V | | 13.07 | 10.97 | | -13.00 | |
| 7015.50 | --- | V | | 11.64 | 11.70 | | -13.00 | |
| 7795.00 | --- | V | | 11.34 | 12.38 | | -13.00 | |

| | |
|---|---|
| Measurement uncertainty | 30MHz - 80MHz: 5.04dB |
| | 80MHz -1000MHz: 3.76dB |
| | 1GHz - 13GHz: 4.45dB |

Remark:

1 The emission behaviors belong to narrowband spurious emission.

2 Remark"---" means that the emission level is too low to be measured

3 The result basic equation calculation is as follows:

4 ERP/EIRP (dBm) = SG Setting(dBm) + Antenna Gain (dBd/dBi) – Cable loss (dB)

5. Radiated emissions measured were made with an instrument using Peak detector mode with RBW = 1 MHz, VBW = 1MHz

## Radiated Spurious Emission Measurement Result: 5MHz BW LTE-Band 13 (16QAM RB 1 Offset 24)

Operation Mode : 16QAM LOW Mode
Fundamental Frequency : 779.5 MHz
Temperature : 25℃
Humidity : 65%

Test Date: Dec. 04, 2010
Test By: Jazz
Pol: Hor

| Freq. (MHz) | SPA. Reading (dBuV) | Ant.Pol. H/V | S.G Out-put (dBm) | Antenna Gain (dBd/dBi) | Cable Loss (dB) | ERP/ EIRP (dBm) | Limit (dBm) | Safe Margin (dBm) |
|---|---|---|---|---|---|---|---|---|
| 44.55 | 45.06 | H | -59.70 | -1.72 | 1.00 | -62.41 | -13.00 | -49.41 |
| 90.14 | 47.81 | H | -55.92 | -7.75 | 1.27 | -64.94 | -13.00 | -51.94 |
| 105.66 | 44.86 | H | -57.55 | -7.76 | 1.39 | -66.70 | -13.00 | -53.70 |
| 284.14 | 38.26 | H | -59.89 | -7.91 | 2.11 | -69.92 | -13.00 | -56.92 |
| 340.40 | 44.43 | H | -52.86 | -7.69 | 2.32 | -62.88 | -13.00 | -49.88 |
| 565.44 | 35.21 | H | -56.20 | -7.77 | 2.98 | -66.95 | -13.00 | -53.95 |
| 776.00 | 77.56 | H | -13.89 | -7.87 | 3.52 | -25.28 | -13.00 | -12.28 |
| 2338.50 | 45.48 | H | -56.31 | 10.15 | 6.32 | -52.48 | -13.00 | -39.48 |
| 3118.00 | --- | H | | 11.78 | 7.43 | | -13.00 | |
| 3897.50 | --- | H | | 12.60 | 8.58 | | -13.00 | |
| 4677.00 | --- | H | | 12.66 | 9.47 | | -13.00 | |
| 5456.50 | --- | H | | 13.11 | 10.24 | | -13.00 | |
| 6236.00 | --- | H | | 13.07 | 10.97 | | -13.00 | |
| 7015.50 | --- | H | | 11.64 | 11.70 | | -13.00 | |
| 7795.00 | --- | H | | 11.34 | 12.38 | | -13.00 | |

| | |
|---|---|
| Measurement uncertainty | 30MHz - 80MHz: 5.04dB |
| | 80MHz -1000MHz: 3.76dB |
| | 1GHz - 13GHz: 4.45dB |

Remark:

1 The emission behaviors belong to narrowband spurious emission.

2 Remark"---" means that the emission level is too low to be measured

3 The result basic equation calculation is as follows:

4 ERP/EIRP (dBm) = SG Setting(dBm) + Antenna Gain (dBd/dBi) – Cable loss (dB)

5. Radiated emissions measured were made with an instrument using Peak detector mode with RBW = 1 MHz, VBW = 1MHz

## Radiated Spurious Emission Measurement Result: 5MHz BW LTE-Band 13 (16QAM RB 1 Offset 24)

Operation Mode : 16QAM High Mode
Fundamental Frequency : 784.5 MHz
Temperature : 25℃
Humidity : 65%

Test Date: Dec. 04, 2010
Test By: Jazz
Pol: Ver

| Freq. (MHz) | SPA. Reading (dBuV) | Ant.Pol. H/V | S.G Out-put (dBm) | Antenna Gain (dBd/dBi) | Cable Loss (dB) | ERP/ EIRP (dBm) | Limit (dBm) | Safe Margin (dBm) |
|---|---|---|---|---|---|---|---|---|
| 41.64 | 43.98 | V | -58.67 | -2.31 | 0.93 | -61.92 | -13.00 | -48.92 |
| 90.14 | 49.94 | V | -53.24 | -7.75 | 1.27 | -62.26 | -13.00 | -49.26 |
| 107.60 | 44.60 | V | -56.62 | -7.77 | 1.39 | -65.78 | -13.00 | -52.78 |
| 284.14 | 38.12 | V | -60.65 | -7.91 | 2.11 | -70.67 | -13.00 | -57.67 |
| 340.40 | 45.14 | V | -52.61 | -7.69 | 2.32 | -62.63 | -13.00 | -49.63 |
| 568.35 | 34.65 | V | -56.77 | -7.77 | 2.99 | -67.53 | -13.00 | -54.53 |
| 776.00 | 74.79 | V | -12.08 | -7.87 | 3.52 | -23.47 | -13.00 | -10.47 |
| 2353.50 | 46.41 | V | -55.41 | 10.14 | 6.35 | -51.61 | -13.00 | -38.61 |
| 3138.00 | --- | V | | 11.82 | 7.47 | | -13.00 | |
| 3922.50 | --- | V | | 12.60 | 8.61 | | -13.00 | |
| 4707.00 | --- | V | | 12.66 | 9.50 | | -13.00 | |
| 5491.50 | --- | V | | 13.14 | 10.27 | | -13.00 | |
| 6276.00 | --- | V | | 12.93 | 11.01 | | -13.00 | |
| 7060.50 | --- | V | | 11.63 | 11.74 | | -13.00 | |
| 7845.00 | --- | V | | 11.32 | 12.41 | | -13.00 | |

| | |
|---|---|
| Measurement uncertainty | 30MHz - 80MHz: 5.04dB |
| | 80MHz -1000MHz: 3.76dB |
| | 1GHz - 13GHz: 4.45dB |

Remark:

1 The emission behaviors belong to narrowband spurious emission.

2 Remark"---" means that the emission level is too low to be measured

3 The result basic equation calculation is as follows:

4 ERP/EIRP (dBm) = SG Setting(dBm) + Antenna Gain (dBd/dBi) – Cable loss (dB)

5. Radiated emissions measured were made with an instrument using Peak detector mode with RBW = 1 MHz, VBW = 1MHz

## Radiated Spurious Emission Measurement Result: 5MHz BW LTE-Band 13 (16QAM RB 1 Offset 24)

Operation Mode : 16QAM High Mode
Fundamental Frequency : 784.5 MHz
Temperature : 25℃
Humidity : 65%

Test Date: Dec. 04, 2010
Test By: Jazz
Pol: Hor

| Freq. (MHz) | SPA. Reading (dBuV) | Ant.Pol. H/V | S.G Out-put (dBm) | Antenna Gain (dBd/dBi) | Cable Loss (dB) | ERP/ EIRP (dBm) | Limit (dBm) | Safe Margin (dBm) |
|---|---|---|---|---|---|---|---|---|
| 44.55 | 46.05 | H | -58.71 | -1.72 | 1.00 | -61.42 | -13.00 | -48.42 |
| 90.14 | 48.05 | H | -55.68 | -7.75 | 1.27 | -64.70 | -13.00 | -51.70 |
| 107.60 | 44.86 | H | -57.35 | -7.77 | 1.39 | -66.51 | -13.00 | -53.51 |
| 284.14 | 37.16 | H | -60.99 | -7.91 | 2.11 | -71.02 | -13.00 | -58.02 |
| 340.40 | 44.63 | H | -52.66 | -7.69 | 2.32 | -62.68 | -13.00 | -49.68 |
| 398.60 | 36.64 | H | -59.81 | -7.66 | 2.51 | -69.98 | -13.00 | -56.98 |
| 788.00 | 76.03 | H | -12.86 | -7.87 | 3.55 | -24.28 | -13.00 | -11.28 |
| 2353.50 | 44.48 | H | -57.21 | 10.14 | 6.35 | -53.41 | -13.00 | -40.41 |
| 3138.00 | --- | H | | 11.82 | 7.47 | | -13.00 | |
| 3922.50 | --- | H | | 12.60 | 8.61 | | -13.00 | |
| 4707.00 | --- | H | | 12.66 | 9.50 | | -13.00 | |
| 5491.50 | --- | H | | 13.14 | 10.27 | | -13.00 | |
| 6276.00 | --- | H | | 12.93 | 11.01 | | -13.00 | |
| 7060.50 | --- | H | | 11.63 | 11.74 | | -13.00 | |
| 7845.00 | --- | H | | 11.32 | 12.41 | | -13.00 | |

| | |
|---|---|
| Measurement uncertainty | 30MHz - 80MHz: 5.04dB |
| | 80MHz -1000MHz: 3.76dB |
| | 1GHz - 13GHz: 4.45dB |

Remark:

1 The emission behaviors belong to narrowband spurious emission.

2 Remark"---" means that the emission level is too low to be measured

3 The result basic equation calculation is as follows:

4 ERP/EIRP (dBm) = SG Setting(dBm) + Antenna Gain (dBd/dBi) – Cable loss (dB)

5. Radiated emissions measured were made with an instrument using Peak detector mode with RBW = 1 MHz, VBW = 1MHz

## Radiated Spurious Emission Measurement Result: 10MHz BW LTE-Band 13 (QPSK RB 1 Offset 49)

Operation Mode : QPSK MID Mode
Fundamental Frequency : 782 MHz
Temperature : 25℃
Humidity : 65%

Test Date: Dec. 04, 2010
Test By: Jazz
Pol: Ver

| Freq. (MHz) | SPA. Reading (dBuV) | Ant.Pol. H/V | S.G Out-put (dBm) | Antenna Gain (dBd/dBi) | Cable Loss (dB) | ERP/ EIRP (dBm) | Limit (dBm) | Safe Margin (dBm) |
|---|---|---|---|---|---|---|---|---|
| 41.64 | 43.97 | V | -58.68 | -2.31 | 0.93 | -61.93 | -13.00 | -48.93 |
| 90.14 | 50.20 | V | -52.98 | -7.75 | 1.27 | -62.00 | -13.00 | -49.00 |
| 107.60 | 44.25 | V | -56.97 | -7.77 | 1.39 | -66.13 | -13.00 | -53.13 |
| 284.14 | 38.15 | V | -60.62 | -7.91 | 2.11 | -70.64 | -13.00 | -57.64 |
| 340.40 | 45.90 | V | -51.85 | -7.69 | 2.32 | -61.87 | -13.00 | -48.87 |
| 568.35 | 34.00 | V | -57.42 | -7.77 | 2.99 | -68.18 | -13.00 | -55.18 |
| 776.00 | 70.81 | V | -16.06 | -7.87 | 3.52 | -27.45 | -13.00 | -14.45 |
| 1710.00 | 68.13 | V | -36.39 | 9.47 | 5.33 | -32.25 | -13.00 | -19.25 |
| 2346.00 | 44.98 | V | -56.89 | 10.15 | 6.34 | -53.08 | -13.00 | -40.08 |
| 3128.00 | --- | V | | 11.80 | 7.45 | | -13.00 | |
| 3910.00 | --- | V | | 12.60 | 8.60 | | -13.00 | |
| 4692.00 | --- | V | | 12.66 | 9.49 | | -13.00 | |
| 5474.00 | --- | V | | 13.12 | 10.25 | | -13.00 | |
| 6256.00 | --- | V | | 13.00 | 10.99 | | -13.00 | |
| 7038.00 | --- | V | | 11.64 | 11.72 | | -13.00 | |
| 7820.00 | --- | V | | 11.33 | 12.40 | | -13.00 | |

| | |
|---|---|
| Measurement uncertainty | 30MHz - 80MHz: 5.04dB |
| | 80MHz -1000MHz: 3.76dB |
| | 1GHz - 13GHz: 4.45dB |

Remark:

1 The emission behaviors belong to narrowband spurious emission.

2 Remark"---" means that the emission level is too low to be measured

3 The result basic equation calculation is as follows:

4 ERP/EIRP (dBm) = SG Setting(dBm) + Antenna Gain (dBd/dBi) – Cable loss (dB)

5. Radiated emissions measured were made with an instrument using Peak detector mode with RBW = 1 MHz, VBW = 1MHz

## Radiated Spurious Emission Measurement Result: 10MHz BW LTE-Band 13 (QPSK RB 1 Offset 49)

Operation Mode : QPSK MID Mode
Fundamental Frequency : 782.0 MHz
Temperature : 25℃
Humidity : 65%

Test Date: Dec. 04, 2010
Test By: Jazz
Pol: Hor

| Freq. (MHz) | SPA. Reading (dBuV) | Ant.Pol. H/V | S.G Out-put (dBm) | Antenna Gain (dBd/dBi) | Cable Loss (dB) | ERP/ EIRP (dBm) | Limit (dBm) | Safe Margin (dBm) |
|---|---|---|---|---|---|---|---|---|
| 44.55 | 45.17 | H | -59.59 | -1.72 | 1.00 | -62.30 | -13.00 | -49.30 |
| 90.14 | 48.01 | H | -55.72 | -7.75 | 1.27 | -64.74 | -13.00 | -51.74 |
| 102.75 | 44.52 | H | -58.19 | -7.76 | 1.37 | -67.33 | -13.00 | -54.33 |
| 284.14 | 38.47 | H | -59.68 | -7.91 | 2.11 | -69.71 | -13.00 | -56.71 |
| 340.40 | 44.99 | H | -52.30 | -7.69 | 2.32 | -62.32 | -13.00 | -49.32 |
| 398.60 | 35.50 | H | -60.95 | -7.66 | 2.51 | -71.12 | -13.00 | -58.12 |
| 776.00 | 70.00 | H | -21.45 | -7.87 | 3.52 | -32.84 | -13.00 | -19.84 |
| 2346.00 | 45.04 | H | -56.70 | 10.15 | 6.34 | -52.89 | -13.00 | -39.89 |
| 3128.00 | --- | H | | 11.80 | 7.45 | | -13.00 | |
| 3910.00 | --- | H | | 12.60 | 8.60 | | -13.00 | |
| 4692.00 | --- | H | | 12.66 | 9.49 | | -13.00 | |
| 5474.00 | --- | H | | 13.12 | 10.25 | | -13.00 | |
| 6256.00 | --- | H | | 13.00 | 10.99 | | -13.00 | |
| 7038.00 | --- | H | | 11.64 | 11.72 | | -13.00 | |
| 7820.00 | --- | H | | 11.33 | 12.40 | | -13.00 | |

| | |
|---|---|
| Measurement uncertainty | 30MHz - 80MHz: 5.04dB |
| | 80MHz -1000MHz: 3.76dB |
| | 1GHz - 13GHz: 4.45dB |

Remark:

1 The emission behaviors belong to narrowband spurious emission.

2 Remark"---" means that the emission level is too low to be measured

3 The result basic equation calculation is as follows:

4 ERP/EIRP (dBm) = SG Setting(dBm) + Antenna Gain (dBd/dBi) – Cable loss (dB)

5. Radiated emissions measured were made with an instrument using Peak detector mode with RBW = 1 MHz, VBW = 1MHz

## Radiated Spurious Emission Measurement Result: 10MHz BW LTE-Band 13 (16QAM RB 1 Offset 49)

Operation Mode : 16QAM MID Mode
Fundamental Frequency : 782.0 MHz
Temperature : 25℃
Humidity : 65%

Test Date: Dec. 04, 2010
Test By: Jazz
Pol: Ver

| Freq. (MHz) | SPA. Reading (dBuV) | Ant.Pol. H/V | S.G Out-put (dBm) | Antenna Gain (dBd/dBi) | Cable Loss (dB) | ERP/ EIRP (dBm) | Limit (dBm) | Safe Margin (dBm) |
|---|---|---|---|---|---|---|---|---|
| 41.64 | 44.54 | V | -58.11 | -2.31 | 0.93 | -61.36 | -13.00 | -48.36 |
| 90.14 | 48.51 | V | -54.67 | -7.75 | 1.27 | -63.69 | -13.00 | -50.69 |
| 107.60 | 43.28 | V | -57.94 | -7.77 | 1.39 | -67.10 | -13.00 | -54.10 |
| 340.40 | 45.93 | V | -51.82 | -7.69 | 2.32 | -61.84 | -13.00 | -48.84 |
| 397.63 | 34.99 | V | -60.61 | -7.66 | 2.50 | -70.77 | -13.00 | -57.77 |
| 568.35 | 34.21 | V | -57.21 | -7.77 | 2.99 | -67.97 | -13.00 | -54.97 |
| 788.00 | 74.79 | V | -11.97 | -7.87 | 3.55 | -23.39 | -13.00 | -10.39 |
| 2346.00 | 45.36 | V | -56.51 | 10.15 | 6.34 | -52.70 | -13.00 | -39.70 |
| 3128.00 | --- | V | | 11.80 | 7.45 | | -13.00 | |
| 3910.00 | --- | V | | 12.60 | 8.60 | | -13.00 | |
| 4692.00 | --- | V | | 12.66 | 9.49 | | -13.00 | |
| 5474.00 | --- | V | | 13.12 | 10.25 | | -13.00 | |
| 6256.00 | --- | V | | 13.00 | 10.99 | | -13.00 | |
| 7038.00 | --- | V | | 11.64 | 11.72 | | -13.00 | |
| 7820.00 | --- | V | | 11.33 | 12.40 | | -13.00 | |

| | |
|---|---|
| Measurement uncertainty | 30MHz - 80MHz: 5.04dB |
| | 80MHz -1000MHz: 3.76dB |
| | 1GHz - 13GHz: 4.45dB |

Remark:

1 The emission behaviors belong to narrowband spurious emission.

2 Remark"---" means that the emission level is too low to be measured

3 The result basic equation calculation is as follows:

4 ERP/EIRP (dBm) = SG Setting(dBm) + Antenna Gain (dBd/dBi) – Cable loss (dB)

5. Radiated emissions measured were made with an instrument using Peak detector mode with RBW = 1 MHz, VBW = 1MHz

## Radiated Spurious Emission Measurement Result: 10MHz BW LTE-Band 13 (16QAM RB 1 Offset 49)

Operation Mode : 16QAM MID Mode
Fundamental Frequency : 782.0 MHz
Temperature : 25℃
Humidity : 65%

Test Date: Dec. 04, 2010
Test By: Jazz
Pol: Hor

| Freq. (MHz) | SPA. Reading (dBuV) | Ant.Pol. H/V | S.G Out-put (dBm) | Antenna Gain (dBd/dBi) | Cable Loss (dB) | ERP/ EIRP (dBm) | Limit (dBm) | Safe Margin (dBm) |
|---|---|---|---|---|---|---|---|---|
| 41.64 | 44.64 | H | -58.87 | -2.31 | 0.93 | -62.11 | -13.00 | -49.11 |
| 90.14 | 47.72 | H | -56.01 | -7.75 | 1.27 | -65.03 | -13.00 | -52.03 |
| 284.14 | 38.56 | H | -59.59 | -7.91 | 2.11 | -69.62 | -13.00 | -56.62 |
| 340.40 | 43.31 | H | -53.98 | -7.69 | 2.32 | -64.00 | -13.00 | -51.00 |
| 398.60 | 36.94 | H | -59.51 | -7.66 | 2.51 | -69.68 | -13.00 | -56.68 |
| 568.35 | 33.37 | H | -57.98 | -7.77 | 2.99 | -68.73 | -13.00 | -55.73 |
| 788.00 | 76.03 | H | -12.86 | -7.87 | 3.55 | -24.28 | -13.00 | -11.28 |
| 2346.00 | 45.17 | H | -56.57 | 10.15 | 6.34 | -52.76 | -13.00 | -39.76 |
| 3128.00 | --- | H | | 11.80 | 7.45 | | -13.00 | |
| 3910.00 | --- | H | | 12.60 | 8.60 | | -13.00 | |
| 4692.00 | --- | H | | 12.66 | 9.49 | | -13.00 | |
| 5474.00 | --- | H | | 13.12 | 10.25 | | -13.00 | |
| 6256.00 | --- | H | | 13.00 | 10.99 | | -13.00 | |
| 7038.00 | --- | H | | 11.64 | 11.72 | | -13.00 | |
| 7820.00 | --- | H | | 11.33 | 12.40 | | -13.00 | |

| | |
|---|---|
| Measurement uncertainty | 30MHz - 80MHz: 5.04dB |
| | 80MHz -1000MHz: 3.76dB |
| | 1GHz - 13GHz: 4.45dB |

Remark:

1 The emission behaviors belong to narrowband spurious emission.

2 Remark"---" means that the emission level is too low to be measured

3 The result basic equation calculation is as follows:

4 ERP/EIRP (dBm) = SG Setting(dBm) + Antenna Gain (dBd/dBi) – Cable loss (dB)

5. Radiated emissions measured were made with an instrument using Peak detector mode with RBW = 1 MHz, VBW = 1MHz

## Radiated Spurious Emission Measurement Result: in 1559 – 1610MHz Band

| | | | |
|---|---|---|---|
| Operation Mode | : 5M QPSK RB1 Offset 24 LOW Mode | Test Date: | Dec. 04, 2010 |
| Fundamental Frequency | : 779.5 MHz | Test By: | Jazz |
| Temperature | : 25℃ | Pol: | Hor |
| Humidity | : 65% | | |

| Freq. (MHz) | SPA. Reading (dBuV) | Ant.Pol. H/V | S.G Out-put (dBm) | Antenna Gain (dBi) | Cable Loss (dB) | EIRP (dBm) | Limit (dBm) | Safe Margin (dBm) |
|---|---|---|---|---|---|---|---|---|
| 1559.00 | 45.46 | V | -59.21 | 9.02 | 5.08 | -55.27 | -40.00 | -15.27 |
| | | | | | | | | |
| 1559.00 | 45.00 | H | -59.50 | 9.02 | 5.08 | -55.56 | -40.00 | -15.56 |

| | |
|---|---|
| Measurement uncertainty | 30MHz - 80MHz: 5.04dB |
| | 80MHz -1000MHz: 3.76dB |
| | 1GHz - 13GHz: 4.45dB |

Remark:

1 The emission behaviors belong to narrowband spurious emission.

2 Remark"---" means that the emission level is too low to be measured

3 The result basic equation calculation is as follows:

4 EIRP (dBm) = SG Setting(dBm) + Antenna Gain (dBd/dBi) – Cable loss (dB)

5. Radiated emissions measured were made with an instrument using Peak detector mode with RBW = 1 MHz, VBW = 1MHz

## Radiated Spurious Emission Measurement Result: in 1559 – 1610MHz Band

| | | | |
|---|---|---|---|
| Operation Mode | : 5M QPSK RB1 Offset 24High Mode | Test Date: | Dec. 04, 2010 |
| Fundamental Frequency | : 784.5 MHz | Test By: | Jazz |
| Temperature | : 25℃ | Pol: | Hor |
| Humidity | : 65% | | |

| Freq. (MHz) | SPA. Reading (dBuV) | Ant.Pol. H/V | S.G Out-put (dBm) | Antenna Gain (dBi) | Cable Loss (dB) | EIRP (dBm) | Limit (dBm) | Safe Margin (dBm) |
|---|---|---|---|---|---|---|---|---|
| 1569.00 | 45.36 | V | -59.30 | 9.05 | 5.09 | -55.35 | -40.00 | -15.35 |
| | | | | | | | | |
| 1569.00 | 44.85 | H | -59.64 | 9.05 | 5.09 | -55.69 | -40.00 | -15.69 |

| | |
|---|---|
| Measurement uncertainty | 30MHz - 80MHz: 5.04dB |
| | 80MHz -1000MHz: 3.76dB |
| | 1GHz - 13GHz: 4.45dB |

Remark:

1 The emission behaviors belong to narrowband spurious emission.

2 Remark"---" means that the emission level is too low to be measured

3 The result basic equation calculation is as follows:

4 EIRP (dBm) = SG Setting(dBm) + Antenna Gain (dBd/dBi) – Cable loss (dB)

5. Radiated emissions measured were made with an instrument using Peak detector mode with RBW = 1 MHz, VBW = 1MHz

## Radiated Spurious Emission Measurement Result: in 1559 – 1610MHz Band

| | | | |
|---|---|---|---|
| Operation Mode | : 5M 16QAM RB1 Offset 24 Low Mode | Test Date: | Dec. 04, 2010 |
| Fundamental Frequency | : 779.5 MHz | Test By: | Jazz |
| Temperature | : 25℃ | Pol: | Hor |
| Humidity | : 65% | | |

| Freq. (MHz) | SPA. Reading (dBuV) | Ant.Pol. H/V | S.G Out-put (dBm) | Antenna Gain (dBi) | Cable Loss (dB) | EIRP (dBm) | Limit (dBm) | Safe Margin (dBm) |
|---|---|---|---|---|---|---|---|---|
| 1559.00 | 46.00 | V | -58.67 | 9.02 | 5.08 | -54.73 | -40.00 | -14.73 |
| | | | | | | | | |
| 1559.00 | 45.98 | H | -58.52 | 9.02 | 5.08 | -54.58 | -40.00 | -14.58 |

| | |
|---|---|
| Measurement uncertainty | 30MHz - 80MHz: 5.04dB |
| | 80MHz -1000MHz: 3.76dB |
| | 1GHz - 13GHz: 4.45dB |

Remark:

1 The emission behaviors belong to narrowband spurious emission.

2 Remark"---" means that the emission level is too low to be measured

3 The result basic equation calculation is as follows:

4 EIRP (dBm) = SG Setting(dBm) + Antenna Gain (dBd/dBi) – Cable loss (dB)

5. Radiated emissions measured were made with an instrument using Peak detector mode with RBW = 1 MHz, VBW = 1MHz

## Radiated Spurious Emission Measurement Result: in 1559 – 1610MHz Band

| | | | |
|---|---|---|---|
| Operation Mode | : 5M 16QAM RB1 Offset 24 High Mode | Test Date: | Dec. 04, 2010 |
| Fundamental Frequency | : 784.5 MHz | Test By: | Jazz |
| Temperature | : 25℃ | Pol: | Hor |
| Humidity | : 65% | | |

| Freq. (MHz) | SPA. Reading (dBuV) | Ant.Pol. H/V | S.G Out-put (dBm) | Antenna Gain (dBi) | Cable Loss (dB) | EIRP (dBm) | Limit (dBm) | Safe Margin (dBm) |
|---|---|---|---|---|---|---|---|---|
| 1569.00 | 44.60 | V | -60.06 | 9.05 | 5.09 | -56.11 | -40.00 | -16.11 |
| | | | | | | | | |
| 1569.00 | 44.07 | H | -60.42 | 9.05 | 5.09 | -56.47 | -40.00 | -16.47 |

| | |
|---|---|
| Measurement uncertainty | 30MHz - 80MHz: 5.04dB |
| | 80MHz -1000MHz: 3.76dB |
| | 1GHz - 13GHz: 4.45dB |

Remark:

1 The emission behaviors belong to narrowband spurious emission.

2 Remark"---" means that the emission level is too low to be measured

3 The result basic equation calculation is as follows:

4 EIRP (dBm) = SG Setting(dBm) + Antenna Gain (dBd/dBi) – Cable loss (dB)

5. Radiated emissions measured were made with an instrument using Peak detector mode with RBW = 1 MHz, VBW = 1MHz

## Radiated Spurious Emission Measurement Result: in 1559 – 1610MHz Band

| | | | |
|---|---|---|---|
| Operation Mode | : 10M QPSK RB1 Offset 49 Mid Mode | Test Date: | Dec. 04, 2010 |
| Fundamental Frequency | : 782 MHz | Test By: | Jazz |
| Temperature | : 25℃ | Pol: | Hor |
| Humidity | : 65% | | |

| Freq. (MHz) | SPA. Reading (dBuV) | Ant.Pol. H/V | S.G Out-put (dBm) | Antenna Gain (dBi) | Cable Loss (dB) | EIRP (dBm) | Limit (dBm) | Safe Margin (dBm) |
|---|---|---|---|---|---|---|---|---|
| 1564.00 | 44.89 | V | -59.78 | 9.03 | 5.09 | -55.83 | -40.00 | -15.83 |
| | | | | | | | | |
| 1564.00 | 45.39 | H | -59.11 | 9.03 | 5.09 | -55.16 | -40.00 | -15.16 |

| | |
|---|---|
| Measurement uncertainty | 30MHz - 80MHz: 5.04dB |
| | 80MHz -1000MHz: 3.76dB |
| | 1GHz - 13GHz: 4.45dB |

Remark:

1 The emission behaviors belong to narrowband spurious emission.

2 Remark"---" means that the emission level is too low to be measured

3 The result basic equation calculation is as follows:

4 EIRP (dBm) = SG Setting(dBm) + Antenna Gain (dBd/dBi) – Cable loss (dB)

5. Radiated emissions measured were made with an instrument using Peak detector mode with RBW = 1 MHz, VBW = 1MHz

## Radiated Spurious Emission Measurement Result: in 1559 – 1610MHz Band

| | | | |
|---|---|---|---|
| Operation Mode | : 10M 16QAM RB1 Offset 49 Mid Mode | Test Date: | Dec. 04, 2010 |
| Fundamental Frequency | : 782 MHz | Test By: | Jazz |
| Temperature | : 25℃ | Pol: | Hor |
| Humidity | : 65% | | |

| Freq. (MHz) | SPA. Reading (dBuV) | Ant.Pol. H/V | S.G Out-put (dBm) | Antenna Gain (dBi) | Cable Loss (dB) | EIRP (dBm) | Limit (dBm) | Safe Margin (dBm) |
|---|---|---|---|---|---|---|---|---|
| 1564.00 | 44.69 | V | -59.98 | 9.03 | 5.09 | -56.03 | -40.00 | -16.03 |
| | | | | | | | | |
| 1564.00 | 40.16 | H | -64.34 | 9.03 | 5.09 | -60.39 | -40.00 | -20.39 |

| | |
|---|---|
| Measurement uncertainty | 30MHz - 80MHz: 5.04dB |
| | 80MHz -1000MHz: 3.76dB |
| | 1GHz - 13GHz: 4.45dB |

Remark:

1 The emission behaviors belong to narrowband spurious emission.

2 Remark"---" means that the emission level is too low to be measured

3 The result basic equation calculation is as follows:

4 EIRP (dBm) = SG Setting(dBm) + Antenna Gain (dBd/dBi) – Cable loss (dB)

5. Radiated emissions measured were made with an instrument using Peak detector mode with RBW = 1 MHz, VBW = 1MHz

# 8. SPURIOUS RADIATED EMISSION TEST (RX)

## 8.1. Standard Applicable

According to RSS 132 §4.6, all spurious emissions shall comply with the limits of Table 2. The resolution bandwidth of the spectrum analyzer shall be 100 kHz for spurious emissions measurements below 1.0 GHz, and 1.0 MHz for measurements above 1.0 GHz.

| Frequency (MHz) | Field strength μV/m | Distance (m) | Field strength at 3m dBμV/m |
|---|---|---|---|
| 30-88 | 100 | 3 | 40 |
| 88-216 | 150 | 3 | 43.5 |
| 216-960 | 200 | 3 | 46 |
| Above 960 | 500 | 3 | 54 |

According to RSS 133 §6.6, Receiver spurious emissions shall comply with the limits specified in RSS-Gen.

## 8.2. EUT Setup

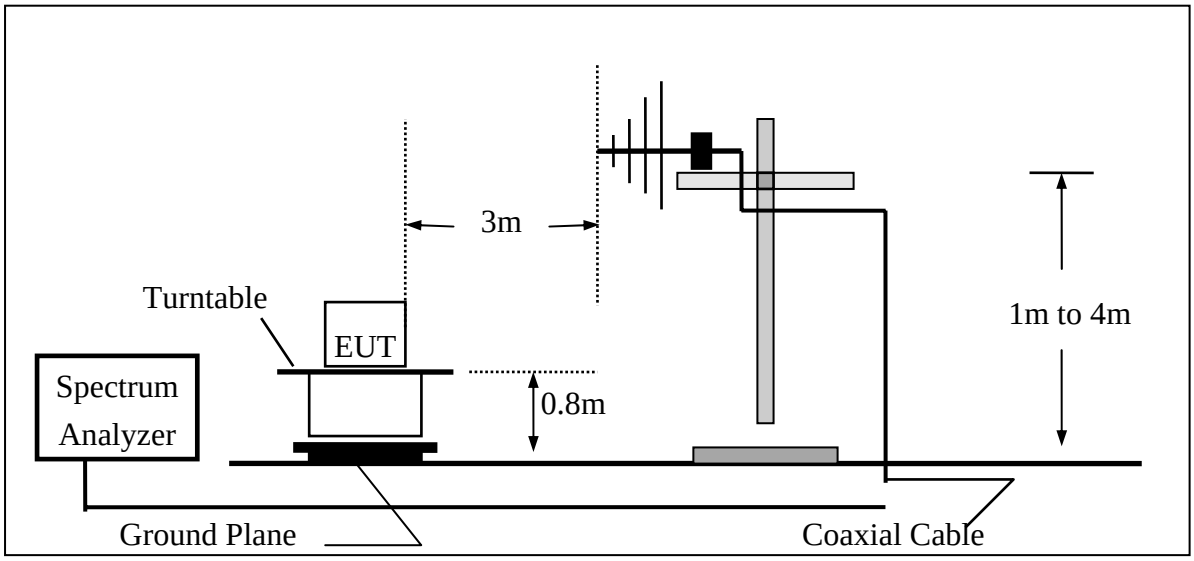
1. The radiated emission tests were performed in the 3 meter open-test site, using the setup in accordance with the ANSI C63.4-2003.
2. The EUT was put in the front of the test table. The rear of the EUT and peripherals were placed flushed with the rear of the tabletop.
3. The spacing between the peripherals was 10 centimeters.
4. External I/O cables were draped along the edge of the test table and bundle when necessary.
5. The host was connected with 110Vac/60Hz power source.

## 8.3. Measurement Procedure

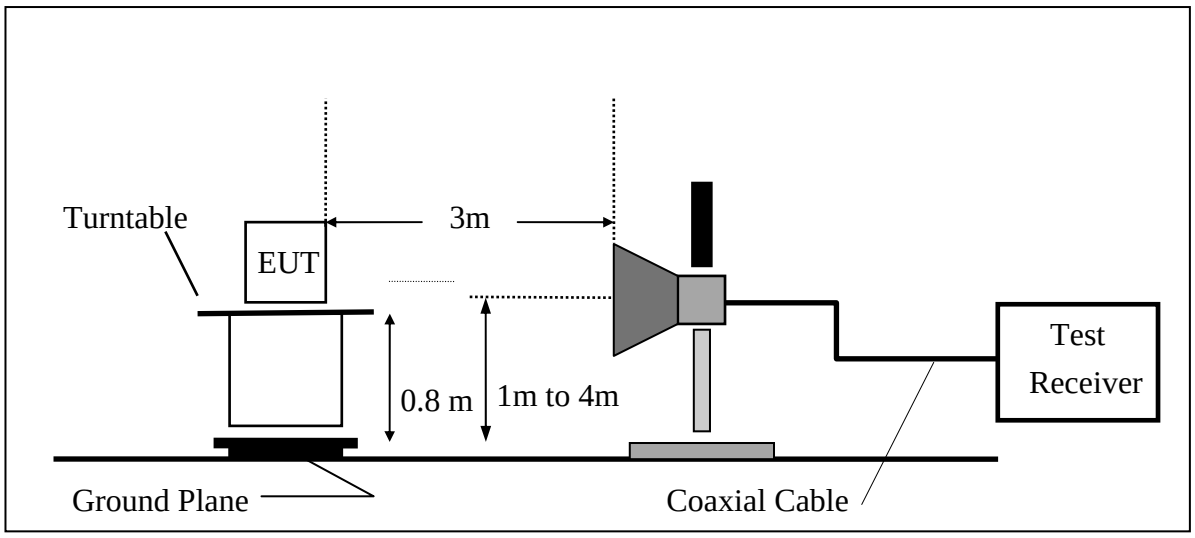
1. The EUT was placed on a turn table which is 0.8m above ground plane.
2. The turn table shall rotate 360 degrees to determine the position of maximum emission level.
3. EUT is set 3m away from the receiving antenna which varied from 1m to 4m to find out the highest emissions.
4. Maximum procedure was performed on the six highest emissions to ensure EUT compliance. And also, each emission was to be maximized by changing the polarization of receiving antenna both horizontal and vertical.
5. Repeat above procedures until all frequency measured were complete.

## 8.4. Test SET-UP (Block Diagram of Configuration)

Radiated Emission Test Set-Up, Frequency Below 1000MHz




(B) Radiated Emission Test Set-UP Frequency Over 1 GHz



## 8.5. Measurement Equipment Used:

| EQUIPMENT TYPE | MFR | MODEL NUMBER | SERIAL NUMBER | LAST CAL. | CAL DUE. |
|---|---|---|---|---|---|
| Spectrum Analyzer | R&S | FSP 40 | 100034 | 02/12/2010 | 02/11/2011 |
| Bilog Antenna | SCHWAZBECK | VULB9160 | 3136 | 11/19/2010 | 11/18/2011 |
| Horn antenna | SCHWAZBECK | BBHA 9120D | 309/320 | 03/09/2009 | 03/08/2011 |
| Pre-Amplifier | Agilent | 8447D | 1937A02834 | 11/28/2010 | 11/27/2011 |
| Pre-Amplifier | Agilent | 8449B | 3008A01973 | 01/05/2010 | 01/04/2011 |
| Radio Communica-tion Analyzer | R & S | CMU200 | 102189 | 08/12/2010 | 08/11/2012 |
| DC Block | Agilent | BLK-18 | 155452 | 07/05/2010 | 07/04/2011 |
| Turn Table | HD | DT420 | N/A | N.C.R | N.C.R |
| Antenna Tower | HD | MA240-N | 240/657 | N.C.R | N.C.R |
| Controller | HD | HD100 | N/A | N.C.R | N.C.R |
| Low Loss Cable | HUBER+SUHNER | SUCOFLEX 104PEA-10M | 10m | 01/05/2010 | 01/04/2011 |
| Low Loss Cable | HUBER+SUHNER | SUCOFLEX 104PEA-3M | 3m | 01/05/2010 | 01/04/2011 |
| 3m Site | SGS | 966 chamber | N/A | 09/06/2010 | 09/05/2011 |

## 8.6. Field Strength Calculation

The field strength is calculated by adding the Antenna Factor and Cable Factor and subtracting the Amplifier Gain and Duty Cycle Correction Factor(if any) from the measured reading. The basic equation with a sample calculation is as follows:

**FS = RA + AF + CL - AG**

| | | |
|---|---|---|
| Where | FS = Field Strength | CL = Cable Attenuation Factor (Cable Loss) |
| | RA = Reading Amplitude | AG = Amplifier Gain |
| | AF = Antenna Factor | |

## 8.7. Measurement Result

Refer to attach tabular data sheets.

**Radiated Spurious Emission Measurement Result (below 1GHz) (worst case for each band)**

| | | | |
|---|---|---|---|
| Operation Mode: | GPRS 850 RX CH Low Mode | Test Date | Dec. 04, 2010 |
| Fundamental Frequency | 824.20 MHz | Test By | Jazz |
| Temperature: | 25 ℃ | Pol | Ver./Hor |
| Humidity: | 65 % | | |

| Freq. (MHz) | Ant.Pol. H/V | Detector Mode (PK/QP) | Reading (dBuV) | Factor (dB) | Actual FS (dBuV/m) | Limit3m (dBuV/m) | Safe Margin (dB) |
|---|---|---|---|---|---|---|---|
| 107.60 | V | Peak | 46.29 | -16.41 | 29.88 | 43.50 | -13.62 |
| 260.86 | V | Peak | 36.30 | -13.63 | 22.67 | 46.00 | -23.33 |
| 284.14 | V | Peak | 38.11 | -13.28 | 24.83 | 46.00 | -21.17 |
| 340.40 | V | Peak | 40.26 | -12.01 | 28.25 | 46.00 | -17.75 |
| 565.44 | V | Peak | 34.62 | -7.15 | 27.47 | 46.00 | -18.53 |
| 681.84 | V | Peak | 34.39 | -4.99 | 29.40 | 46.00 | -16.60 |
| 107.60 | H | Peak | 39.72 | -16.41 | 23.31 | 43.50 | -20.19 |
| 340.40 | H | Peak | 37.90 | -12.01 | 25.89 | 46.00 | -20.11 |
| 398.60 | H | Peak | 36.04 | -10.05 | 25.99 | 46.00 | -20.01 |
| 621.70 | H | Peak | 33.19 | -5.55 | 27.64 | 46.00 | -18.36 |
| 679.90 | H | Peak | 34.74 | -4.99 | 29.75 | 46.00 | -16.25 |
| 794.36 | H | Peak | 34.95 | -3.16 | 31.79 | 46.00 | -14.21 |

Remark：

(1) Measuring frequencies from 30 MHz to the 1GHz。

(2) Radiated emissions measured in frequency range from 30 MHz to 1000MHz were made with an instrument using Peak/QP detector mode.

(3) Data of measurement within this frequency range shown " - " in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.

(4) The IF bandwidth of SPA between 30MHz to 1GHz was 100KHz.

| | | | |
|---|---|---|---|
| Operation Mode: | GPRS 850 RX CH Mid Mode | Test Date | Dec. 04, 2010 |
| Fundamental Frequency: | 836.60 MHz | Test By | Jazz |
| Temperature: | 25 ℃ | Pol | Ver./Hor |
| Humidity: | 65 % | | |

| Freq. (MHz) | Ant.Pol. H/V | Detector Mode (PK/QP) | Reading (dBuV) | Factor (dB) | Actual FS (dBuV/m) | Limit3m (dBuV/m) | Safe Margin (dB) |
|---|---|---|---|---|---|---|---|
| 90.14 | V | Peak | 51.75 | -17.62 | 34.13 | 43.50 | -9.37 |
| 255.04 | V | Peak | 38.78 | -13.69 | 25.09 | 46.00 | -20.91 |
| 340.40 | V | Peak | 39.34 | -12.01 | 27.33 | 46.00 | -18.67 |
| 364.65 | V | Peak | 36.38 | -11.23 | 25.15 | 46.00 | -20.85 |
| 519.85 | V | Peak | 37.38 | -8.13 | 29.25 | 46.00 | -16.75 |
| 679.90 | V | Peak | 34.00 | -4.99 | 29.01 | 46.00 | -16.99 |
| 93.05 | H | Peak | 40.51 | -17.35 | 23.16 | 43.50 | -20.34 |
| 255.04 | H | Peak | 38.37 | -13.69 | 24.68 | 46.00 | -21.32 |
| 284.14 | H | Peak | 39.72 | -13.28 | 26.44 | 46.00 | -19.56 |
| 340.40 | H | Peak | 37.89 | -12.01 | 25.88 | 46.00 | -20.12 |
| 393.75 | H | Peak | 37.17 | -10.21 | 26.96 | 46.00 | -19.04 |
| 679.90 | H | Peak | 34.15 | -4.99 | 29.16 | 46.00 | -16.84 |

Remark：

(1) Measuring frequencies from 30 MHz to the 1GHz。

(2) Radiated emissions measured in frequency range from 30 MHz to 1000MHz were made with an instrument using Peak/QP detector mode.

(3) Data of measurement within this frequency range shown " - " in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.

(4) The IF bandwidth of SPA between 30MHz to 1GHz was 100KHz.

| | | | |
|---|---|---|---|
| Operation Mode: | GPRS 850 RX CH High Mode | Test Date | Dec. 04, 2010 |
| Fundamental Frequency | 848.80MHz | Test By | Jazz |
| Temperature: | 25 ℃ | Pol | Ver./Hor |
| Humidity: | 65 % | | |

| Freq. (MHz) | Ant.Pol. H/V | Detector Mode (PK/QP) | Reading (dBuV) | Factor (dB) | Actual FS (dBuV/m) | Limit3m (dBuV/m) | Safe Margin (dB) |
|---|---|---|---|---|---|---|---|
| 107.60 | V | Peak | 46.21 | -16.41 | 29.80 | 43.50 | -13.70 |
| 255.04 | V | Peak | 38.39 | -13.69 | 24.70 | 46.00 | -21.30 |
| 284.14 | V | Peak | 35.55 | -13.28 | 22.27 | 46.00 | -23.73 |
| 340.40 | V | Peak | 40.38 | -12.01 | 28.37 | 46.00 | -17.63 |
| 568.35 | V | Peak | 35.10 | -7.04 | 28.06 | 46.00 | -17.94 |
| 679.90 | V | Peak | 34.04 | -4.99 | 29.05 | 46.00 | -16.95 |
| 93.05 | H | Peak | 40.85 | -17.35 | 23.50 | 43.50 | -20.00 |
| 260.86 | H | Peak | 37.14 | -13.63 | 23.51 | 46.00 | -22.49 |
| 284.14 | H | Peak | 38.26 | -13.28 | 24.98 | 46.00 | -21.02 |
| 398.60 | H | Peak | 36.81 | -10.05 | 26.76 | 46.00 | -19.24 |
| 513.06 | H | Peak | 35.18 | -8.32 | 26.86 | 46.00 | -19.14 |
| 681.84 | H | Peak | 34.70 | -4.99 | 29.71 | 46.00 | -16.29 |

Remark：

(1) Measuring frequencies from 30 MHz to the 1GHz。

(2) Radiated emissions measured in frequency range from 30 MHz to 1000MHz were made with an instrument using Peak/QP detector mode.

(3) Data of measurement within this frequency range shown " - " in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.

(4) The IF bandwidth of SPA between 30MHz to 1GHz was 100KHz.

| | | | |
|---|---|---|---|
| Operation Mode: | GPSR1900 RX CH Low Mode | Test Date | Dec. 04, 2010 |
| Fundamental Frequency: | 1850.2MHz | Test By | Jazz |
| Temperature: | 25 ℃ | Pol | Ver./Hor |
| Humidity: | 65 % | | |

| Freq. (MHz) | Ant.Pol. H/V | Detector Mode (PK/QP) | Reading (dBuV) | Factor (dB) | Actual FS (dBuV/m) | Limit3m (dBuV/m) | Safe Margin (dB) |
|---|---|---|---|---|---|---|---|
| 107.60 | V | Peak | 46.21 | -16.41 | 29.80 | 43.50 | -13.70 |
| 255.04 | V | Peak | 38.83 | -13.69 | 25.14 | 46.00 | -20.86 |
| 284.14 | V | Peak | 38.73 | -13.28 | 25.45 | 46.00 | -20.55 |
| 340.40 | V | Peak | 39.96 | -12.01 | 27.95 | 46.00 | -18.05 |
| 568.35 | V | Peak | 33.77 | -7.04 | 26.73 | 46.00 | -19.27 |
| 679.90 | V | Peak | 34.48 | -4.99 | 29.49 | 46.00 | -16.51 |
| 66.86 | H | Peak | 39.54 | -15.34 | 24.20 | 40.00 | -15.80 |
| 284.14 | H | Peak | 39.23 | -13.28 | 25.95 | 46.00 | -20.05 |
| 340.40 | H | Peak | 37.74 | -12.01 | 25.73 | 46.00 | -20.27 |
| 398.60 | H | Peak | 37.49 | -10.05 | 27.44 | 46.00 | -18.56 |

Remark：

(1) Measuring frequencies from 30 MHz to the 1GHz。

(2) Radiated emissions measured in frequency range from 30 MHz to 1000MHz were made with an instrument using Peak/QP detector mode.

(3) Data of measurement within this frequency range shown " - " in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.

(4) The IF bandwidth of SPA between 30MHz to 1GHz was 100KHz.

| | | | |
|---|---|---|---|
| Operation Mode: | GPSR1900 RX CH Mid Mode | Test Date | Dec. 04, 2010 |
| Fundamental Frequency: | 1880.00MHz | Test By | Jazz |
| Temperature: | 25 ℃ | Pol | Ver./Hor |
| Humidity: | 65 % | | |

| Freq. (MHz) | Ant.Pol. H/V | Detector Mode (PK/QP) | Reading (dBuV) | Factor (dB) | Actual FS (dBuV/m) | Limit3m (dBuV/m) | Safe Margin (dB) |
|---|---|---|---|---|---|---|---|
| 255.04 | V | Peak | 37.12 | -13.69 | 23.43 | 46.00 | -22.57 |
| 284.14 | V | Peak | 38.84 | -13.28 | 25.56 | 46.00 | -20.44 |
| 340.40 | V | Peak | 40.07 | -12.01 | 28.06 | 46.00 | -17.94 |
| 388.90 | V | Peak | 34.43 | -10.38 | 24.05 | 46.00 | -21.95 |
| 568.35 | V | Peak | 34.65 | -7.04 | 27.61 | 46.00 | -18.39 |
| 681.84 | V | Peak | 33.83 | -4.99 | 28.84 | 46.00 | -17.16 |
| 107.60 | H | Peak | 39.77 | -16.41 | 23.36 | 43.50 | -20.14 |
| 284.14 | H | Peak | 40.58 | -13.28 | 27.30 | 46.00 | -18.70 |
| 332.64 | H | Peak | 38.82 | -12.16 | 26.66 | 46.00 | -19.34 |
| 388.90 | H | Peak | 35.33 | -10.38 | 24.95 | 46.00 | -21.05 |
| 510.15 | H | Peak | 34.84 | -8.37 | 26.47 | 46.00 | -19.53 |
| 679.90 | H | Peak | 33.14 | -4.99 | 28.15 | 46.00 | -17.85 |

Remark：

(1) Measuring frequencies from 30 MHz to the 1GHz。

(2) Radiated emissions measured in frequency range from 30 MHz to 1000MHz were made with an instrument using Peak/QP detector mode.

(3) Data of measurement within this frequency range shown " - " in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.

(4) The IF bandwidth of SPA between 30MHz to 1GHz was 100KHz.

| | | | |
|---|---|---|---|
| Operation Mode: | GPSR1900 RX CH High Mode | Test Date | Dec. 04, 2010 |
| Fundamental Frequency: | 1909.80MHz | Test By | Jazz |
| Temperature: | 25 ℃ | Pol | Ver./Hor |
| Humidity: | 65 % | | |

| Freq. (MHz) | Ant.Pol. H/V | Detector Mode (PK/QP) | Reading (dBuV) | Factor (dB) | Actual FS (dBuV/m) | Limit3m (dBuV/m) | Safe Margin (dB) |
|---|---|---|---|---|---|---|---|
| 255.04 | V | Peak | 36.79 | -13.69 | 23.10 | 46.00 | -22.90 |
| 284.14 | V | Peak | 38.90 | -13.28 | 25.62 | 46.00 | -20.38 |
| 340.40 | V | Peak | 37.76 | -12.01 | 25.75 | 46.00 | -20.25 |
| 388.90 | V | Peak | 34.84 | -10.38 | 24.46 | 46.00 | -21.54 |
| 568.35 | V | Peak | 33.66 | -7.04 | 26.62 | 46.00 | -19.38 |
| 681.84 | V | Peak | 34.35 | -4.99 | 29.36 | 46.00 | -16.64 |
| 93.05 | H | Peak | 42.22 | -17.35 | 24.87 | 43.50 | -18.63 |
| 260.86 | H | Peak | 35.72 | -13.63 | 22.09 | 46.00 | -23.91 |
| 284.14 | H | Peak | 38.57 | -13.28 | 25.29 | 46.00 | -20.71 |
| 340.40 | H | Peak | 36.75 | -12.01 | 24.74 | 46.00 | -21.26 |
| 396.66 | H | Peak | 36.02 | -10.12 | 25.90 | 46.00 | -20.10 |
| 681.84 | H | Peak | 34.18 | -4.99 | 29.19 | 46.00 | -16.81 |

Remark：

(1) Measuring frequencies from 30 MHz to the 1GHz。

(2) Radiated emissions measured in frequency range from 30 MHz to 1000MHz were made with an instrument using Peak/QP detector mode.

(3) Data of measurement within this frequency range shown " - " in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.

(4) The IF bandwidth of SPA between 30MHz to 1GHz was 100KHz.

**Radiated Spurious Emission Measurement Result (above 1GHz) (worst case for each band)**

| | | | |
|---|---|---|---|
| Operation Mode: | GPRS 850 RX CH Low | Test Date | Dec. 04, 2010 |
| Fundamental Frequency: | 824.2 MHz | Test By | Jazz |
| Temperature: | 25℃ | Pol | Ver./ Hor. |
| Humidity: | 65 % | | |

| Freq. (MHz) | Ant.Pol. H/V | Peak Reading (dBuV) | AV Reading (dBuV) | Ant./CL CF(dB) | Actual FS Peak (dBuV/m) | Actual FS AV (dBuV/m) | Peak Limit (dBuV/m) | AV Limit (dBuV/m) | Margin (dB) | |
|---|---|---|---|---|---|---|---|---|---|---|
| 1648.4 | V | 38.22 | -- | -5.13 | 33.09 | -- | 74.00 | 54.00 | -20.91 | H |
| 2472.6 | V | -- | -- | | | -- | 74.00 | 54.00 | | H |
| 3296.8 | V | -- | -- | | | -- | 74.00 | 54.00 | | H |
| 4121.0 | V | -- | -- | | | -- | 74.00 | 54.00 | | H |
| 4945.2 | V | -- | -- | | | -- | 74.00 | 54.00 | | H |
| 1648.4 | H | 36.08 | -- | -5.18 | 30.90 | -- | 74.00 | 54.00 | -23.10 | H |
| 2472.6 | H | -- | -- | | | -- | 74.00 | 54.00 | | H |
| 3296.8 | H | -- | -- | | | -- | 74.00 | 54.00 | | H |
| 4121.0 | H | -- | -- | | | -- | 74.00 | 54.00 | | H |
| 4945.2 | H | -- | -- | | | -- | 74.00 | 54.00 | | H |

Remark：

(1) Measuring frequencies from 1GHz to the 10th harmonic of highest fundamental frequency。

(2) Data of measurement within this frequency range shown " - " in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.

(3) Radiated emissions measured in frequency above 1000MHz were made with an instrument using Peak detector mode and average detector mode of the emission shown in Actual FS column。

(4) Spectrum Peak Setting : 1GHz- 40GHz, RBW= 3MHz, VBW= 1MHz, Sweep time= 200 ms.

(5) Spectrum AV Setting : 1GHz- 40GHz, RBW= 1MHz, VBW= 10Hz, Sweep time= 200 ms.

| | | | |
|---|---|---|---|
| Operation Mode: | GPRS 850 RX CH Mid | Test Date | Dec. 04, 2010 |
| Fundamental Frequency: | 836.60 MHz | Test By | Jazz |
| Temperature: | 25 ℃ | Pol | Ver./ Hor. |
| Humidity: | 65 % | | |

| Freq. (MHz) | Ant.Pol. H/V | Peak Reading (dBuV) | AV Reading (dBuV) | Ant./CL CF(dB) | Actual FS Peak (dBuV/m) | Actual FS AV (dBuV/m) | Peak Limit (dBuV/m) | AV Limit (dBuV/m) | Margin (dB) | |
|---|---|---|---|---|---|---|---|---|---|---|
| 1673.2 | V | 36.33 | -- | -5.08 | 31.25 | -- | 74.00 | 54.00 | -22.75 | H |
| 2509.8 | V | -- | -- | | | -- | 74.00 | 54.00 | | H |
| 3346.4 | V | -- | -- | | | -- | 74.00 | 54.00 | | H |
| 4183.0 | V | -- | -- | | | -- | 74.00 | 54.00 | | H |
| 5019.6 | V | -- | -- | | | -- | 74.00 | 54.00 | | H |
| 1673.2 | H | 36.54 | -- | -5.08 | 31.46 | -- | 74.00 | 54.00 | -22.54 | H |
| 2509.8 | H | -- | -- | | | -- | 74.00 | 54.00 | | H |
| 3346.4 | H | -- | -- | | | -- | 74.00 | 54.00 | | H |
| 4183.0 | H | -- | -- | | | -- | 74.00 | 54.00 | | H |
| 5019.6 | H | -- | -- | | | -- | 74.00 | 54.00 | | H |

Remark：

(1) Measuring frequencies from 1GHz to the 10th harmonic of highest fundamental frequency。

(2) Data of measurement within this frequency range shown " - " in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.

(3) Radiated emissions measured in frequency above 1000MHz were made with an instrument using Peak detector mode and average detector mode of the emission shown in Actual FS column。

(4) Spectrum Peak Setting : 1GHz- 40GHz, RBW= 3MHz, VBW= 1MHz, Sweep time= 200 ms.

(5) Spectrum AV Setting : 1GHz- 40GHz, RBW= 1MHz, VBW= 10Hz, Sweep time= 200 ms.

| | | | |
|---|---|---|---|
| Operation Mode: | GPRS 850 RX CH High | Test Date | Dec. 04, 2010 |
| Fundamental Frequency: | 848.80MHz | Test By | Jazz |
| Temperature: | 25℃ | Pol | Ver./ Hor. |
| Humidity: | 65 % | | |

| Freq. (MHz) | Ant.Pol. H/V | Peak Reading (dBuV) | AV Reading (dBuV) | Ant./CL CF(dB) | Actual FS Peak (dBuV/m) | Actual FS AV (dBuV/m) | Peak Limit (dBuV/m) | AV Limit (dBuV/m) | Margin (dB) | |
|---|---|---|---|---|---|---|---|---|---|---|
| 1697.6 | V | 35.74 | -- | -4.96 | 30.78 | -- | 74.00 | 54.00 | -23.22 | H |
| 2546.4 | V | -- | -- | | | -- | 74.00 | 54.00 | | H |
| 3395.2 | V | -- | -- | | | -- | 74.00 | 54.00 | | H |
| 4244.0 | V | -- | -- | | | -- | 74.00 | 54.00 | | H |
| 5092.8 | V | -- | -- | | | -- | 74.00 | 54.00 | | H |
| 1697.6 | H | 36.10 | -- | -4.96 | 31.14 | -- | 74.00 | 54.00 | -22.86 | H |
| 2546.4 | H | -- | -- | | | -- | 74.00 | 54.00 | | H |
| 3395.2 | H | -- | -- | | | -- | 74.00 | 54.00 | | H |
| 4244.0 | H | -- | -- | | | -- | 74.00 | 54.00 | | H |
| 5092.8 | H | -- | -- | | | -- | 74.00 | 54.00 | | H |

Remark：

(1) Measuring frequencies from 1GHz to the 10th harmonic of highest fundamental frequency。

(2) Data of measurement within this frequency range shown " - " in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.

(3) Radiated emissions measured in frequency above 1000MHz were made with an instrument using Peak detector mode and average detector mode of the emission shown in Actual FS column。

(4) Spectrum Peak Setting : 1GHz- 40GHz, RBW= 3MHz, VBW= 1MHz, Sweep time= 200 ms.

(5) Spectrum AV Setting : 1GHz- 40GHz, RBW= 1MHz, VBW= 10Hz, Sweep time= 200 ms.

| | | | |
|---|---|---|---|
| Operation Mode: | GPRS 1900 RX CH Low | Test Date | Dec. 04, 2010 |
| Fundamental Frequency: | 1850.2MHz | Test By | Jazz |
| Temperature: | 25 ℃ | Pol | Hor |
| Humidity: | 65 % | | |

| Freq. (MHz) | Ant.Pol. H/V | Peak Reading (dBuV) | AV Reading (dBuV) | Ant./CL CF(dB) | Actual FS Peak (dBuV/m) | Actual FS AV (dBuV/m) | Peak Limit (dBuV/m) | AV Limit (dBuV/m) | Margin (dB) | |
|---|---|---|---|---|---|---|---|---|---|---|
| 3700.4 | V | 34.76 | -- | 2.72 | 37.48 | -- | 74.00 | 54.00 | -16.52 | H |
| 5550.6 | V | -- | -- | | | -- | 74.00 | 54.00 | | H |
| 7400.8 | V | -- | -- | | | -- | 74.00 | 54.00 | | H |
| 9251.0 | V | -- | -- | | | -- | 74.00 | 54.00 | | H |
| 11101.2 | V | -- | -- | | | -- | 74.00 | 54.00 | | H |
| 3700.4 | H | 34.03 | -- | 2.72 | 36.75 | -- | 74.00 | 54.00 | -17.25 | H |
| 5550.6 | H | -- | -- | | | -- | 74.00 | 54.00 | | H |
| 7400.8 | H | -- | -- | | | -- | 74.00 | 54.00 | | H |
| 9251.0 | H | -- | -- | | | -- | 74.00 | 54.00 | | H |
| 11101.2 | H | -- | -- | | | -- | 74.00 | 54.00 | | H |

Remark：

(1) Measuring frequencies from 1GHz to the 10th harmonic of highest fundamental frequency。

(2) Data of measurement within this frequency range shown " - " in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.

(3) Radiated emissions measured in frequency above 1000MHz were made with an instrument using Peak detector mode and average detector mode of the emission shown in Actual FS column。

(4) Spectrum Peak Setting : 1GHz- 40GHz, RBW= 3MHz, VBW= 1MHz, Sweep time= 200 ms.

(5) Spectrum AV Setting : 1GHz- 40GHz, RBW= 1MHz, VBW= 10Hz, Sweep time= 200 ms.

| | | | |
|---|---|---|---|
| Operation Mode: | GPRS 1900 RX CH Mid | Test Date | Dec. 04, 2010 |
| Fundamental Frequency: | 1880.0MHz | Test By | Jazz |
| Temperature: | 25℃ | Pol | Ver. |
| Humidity: | 65 % | | |

| Freq. (MHz) | Ant.Pol. H/V | Peak Reading (dBuV) | AV Reading (dBuV) | Ant./CL CF(dB) | Actual FS Peak (dBuV/m) | Actual FS AV (dBuV/m) | Peak Limit (dBuV/m) | AV Limit (dBuV/m) | Margin (dB) | |
|---|---|---|---|---|---|---|---|---|---|---|
| 3760.0 | V | 34.30 | -- | 2.83 | 37.13 | -- | 74.00 | 54.00 | -16.87 | H |
| 5640.0 | V | -- | -- | | | -- | 74.00 | 54.00 | | H |
| 7520.0 | V | -- | -- | | | -- | 74.00 | 54.00 | | H |
| 9400.0 | V | -- | -- | | | -- | 74.00 | 54.00 | | H |
| 11280.0 | V | -- | -- | | | -- | 74.00 | 54.00 | | H |
| 3760.0 | H | 34.12 | -- | 2.88 | 37.00 | -- | 74.00 | 54.00 | -17.00 | H |
| 5640.0 | H | -- | -- | | | -- | 74.00 | 54.00 | | H |
| 7520.0 | H | -- | -- | | | -- | 74.00 | 54.00 | | H |
| 9400.0 | H | -- | -- | | | -- | 74.00 | 54.00 | | H |
| 11280.0 | H | -- | -- | | | -- | 74.00 | 54.00 | | H |

Remark：

(1) Measuring frequencies from 1GHz to the 10th harmonic of highest fundamental frequency。

(2) Data of measurement within this frequency range shown " - " in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.

(3) Radiated emissions measured in frequency above 1000MHz were made with an instrument using Peak detector mode and average detector mode of the emission shown in Actual FS column。

(4) Spectrum Peak Setting : 1GHz- 40GHz, RBW= 3MHz, VBW= 1MHz, Sweep time= 200 ms.

(5) Spectrum AV Setting : 1GHz- 40GHz, RBW= 1MHz, VBW= 10Hz, Sweep time= 200 ms.

| | | | |
|---|---|---|---|
| Operation Mode: | GPRS 1900 RX CH High | Test Date | Dec. 04, 2010 |
| Fundamental Frequency: | 1909.8MHz | Test By | Jazz |
| Temperature: | 25 ℃ | Pol | Hor |
| Humidity: | 65 % | | |

| Freq. (MHz) | Ant.Pol. H/V | Peak Reading (dBuV) | AV Reading (dBuV) | Ant./CL CF(dB) | Actual FS Peak (dBuV/m) | Actual FS AV (dBuV/m) | Peak Limit (dBuV/m) | AV Limit (dBuV/m) | Margin (dB) | |
|---|---|---|---|---|---|---|---|---|---|---|
| 3819.6 | V | 34.42 | -- | 3.08 | 37.50 | -- | 74.00 | 54.00 | -16.50 | H |
| 5729.4 | V | -- | -- | | | -- | 74.00 | 54.00 | | H |
| 7639.2 | V | -- | -- | | | -- | 74.00 | 54.00 | | H |
| 9549.0 | V | -- | -- | | | -- | 74.00 | 54.00 | | H |
| 11458.8 | V | -- | -- | | | -- | 74.00 | 54.00 | | H |
| 3819.6 | H | 33.96 | -- | 3.08 | 37.04 | -- | 74.00 | 54.00 | -16.96 | H |
| 5729.4 | H | -- | -- | | | -- | 74.00 | 54.00 | | H |
| 7639.2 | H | -- | -- | | | -- | 74.00 | 54.00 | | H |
| 9549.0 | H | -- | -- | | | -- | 74.00 | 54.00 | | H |
| 11458.8 | H | -- | -- | | | -- | 74.00 | 54.00 | | H |

Remark：

(1) Measuring frequencies from 1GHz to the 10th harmonic of highest fundamental frequency。

(2) Data of measurement within this frequency range shown " - " in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.

(3) Radiated emissions measured in frequency above 1000MHz were made with an instrument using Peak detector mode and average detector mode of the emission shown in Actual FS column。

(4) Spectrum Peak Setting : 1GHz- 40GHz, RBW= 3MHz, VBW= 1MHz, Sweep time= 200 ms.

(5) Spectrum AV Setting : 1GHz- 40GHz, RBW= 1MHz, VBW= 10Hz, Sweep time= 200 ms.