

FCC 47 CFR PART 22H and 24E

Test Report

Product Type : Quad band GSM/GPRS modules
Applicant : Telit Communications S.p.A.
Address : Viale Stazione di Prosecco 5/b, Trieste, 34010, Italy
Trade Name : Telit
Model Number : GE910-GNSS, GE910-QUAD
Test Specification : FCC 47 CFR PART 22H: Oct, 2012
FCC 47 CFR PART 24E: Oct, 2012
CANADA RSS-132 ISSUE 3: Jan. 2013
CANADA RSS-133 ISSUE 6: Jan. 2013
Canada RSS-Gen ISSUE 3: Dec., 2010
ANSI/TIA-603-C-2004
Application Purpose : Original
Receive Date : Mar. 12, 2013
Test Period : Mar. 27 ~ Mar. 29, 2013
Issue Date : Apr. 26, 2013

Issue by

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Taiwan Accreditation Foundation accreditation number: 1330

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Revision History

| Rev. | Issue Date | Revisions | Revised By |
|------|---------------|-----------------------------|------------|
| 00 | Apr. 12, 2013 | Initial Issue | |
| 01 | Apr. 26, 2013 | Revised report information. | Joyce Liao |
| | | | |
| | | | |

Verification of Compliance

Issued Date: 04/26/2013

Product Type : Quad band GSM/GPRS modules
Applicant : Telit Communications S.p.A.
Address : Viale Stazione di Prosecco 5/b, Trieste, 34010, Italy
Trade Name : Telit
Model Number : GE910-GNSS, GE910-QUAD
FCC ID : RI7GE910G
IC : 5131A-GE910
EUT Rated Voltage : DC 3.4V / 3.8V / 4.2V
Test Voltage : DC 3.8V
Applicable Standard : FCC 47 CFR PART 22H: Oct, 2012
FCC 47 CFR PART 24E: Oct, 2012
CANADA RSS-132 ISSUE 3: Jan. 2013
CANADA RSS-133 ISSUE 6: Jan. 2013
Canada RSS-Gen ISSUE 3: Dec., 2010
ANSI/TIA-603-C-2004

Application Purpose : Original

Test Result : Complied

Performing Lab. : A Test Lab Techno Corp.
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Taiwan Accreditation Foundation accreditation number: 1330
<http://www.atl-lab.com.tw/e-index.htm>

The above equipment was tested by A Test Lab Techno Corp. The test data, data evaluation, test procedures, and equipment configurations shown in this report were made in accordance with the procedures given in ANSI C63.4: 2009 and the energy emitted by the sample tested as described in this report is in compliance with the requirements of FCC Rules Part 22H, Part 24E.

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

Approved By :



(Manager)

(Murphy Wang)

Reviewed By :



(Testing Engineer)

(Fly Lu)

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1 General Information

1.1. EUT Description

| | | | | | |
|-----------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------|--------------------|---------------------|------------|
| Applicant | Telit Communications S.p.A. | | | | |
| Applicant Address | Viale Stazione di Prosecco 5/b, Trieste, 34010, Italy | | | | |
| Manufacturer | Telit Communications S.p.A. | | | | |
| Manufacturer Address | Via Stazione di Prosecco, 5/B 34010 Sgonico Italy | | | | |
| Product Type | Quad band GSM/GPRS modules | | | | |
| Trade Name | Telit | | | | |
| Model Number | GE910-GNSS, GE910-QUAD | | | | |
| Model different description | HW (PCB layout, component placement and components) of GE910-QUAD module is identical to GE910-GNSS module except for the standalone GNSS (GPS/Glonass) components that are not mounted on GE910-QUAD. | | | | |
| FCC ID | R17GE910G | | | | |
| IC | 5131A-GE910 | | | | |
| IMEI No. | 359785029001917 | | | | |
| Mode | GPRS | Band | UL Frequency (MHz) | DL Frequency (MHz) | Modulation |
| | | 850 | 824.2 ~ 848.8 | 869.2 ~ 893.8 | GMSK |
| | | 1900 | 1850.2 ~ 1909.8 | 1930.2 ~ 1989.8 | GMSK |
| Channel Control | Auto | | | | |
| Type of Antenna | External type | | | | |
| Antenna Gain (dBi) | GPRS 850 | | : | 2.14 dBi | |
| | GPRS 1900 | | : | 2.14 dBi | |
| Max. RF Output power | GPRS 850 | | : | 32.68 dBm / 1.854 W | |
| | GPRS 1900 | | : | 30.48 dBm / 1.117 W | |
| Max. ERP/EIRP | GPRS 850 | | : | 29.71 dBm / 0.935 W | |
| | GPRS 1900 | | : | 27.70 dBm / 0.589 W | |
| Emission Designator | GPRS 850 | | : | 247KGXW | |
| | GPRS 1900 | | : | 250KGXW | |

1.2. Mode of Operation

ATL has verified the construction and function in typical operation. All the test modes were carried out with the EUT in normal operation, which was shown in this test report and defined as:

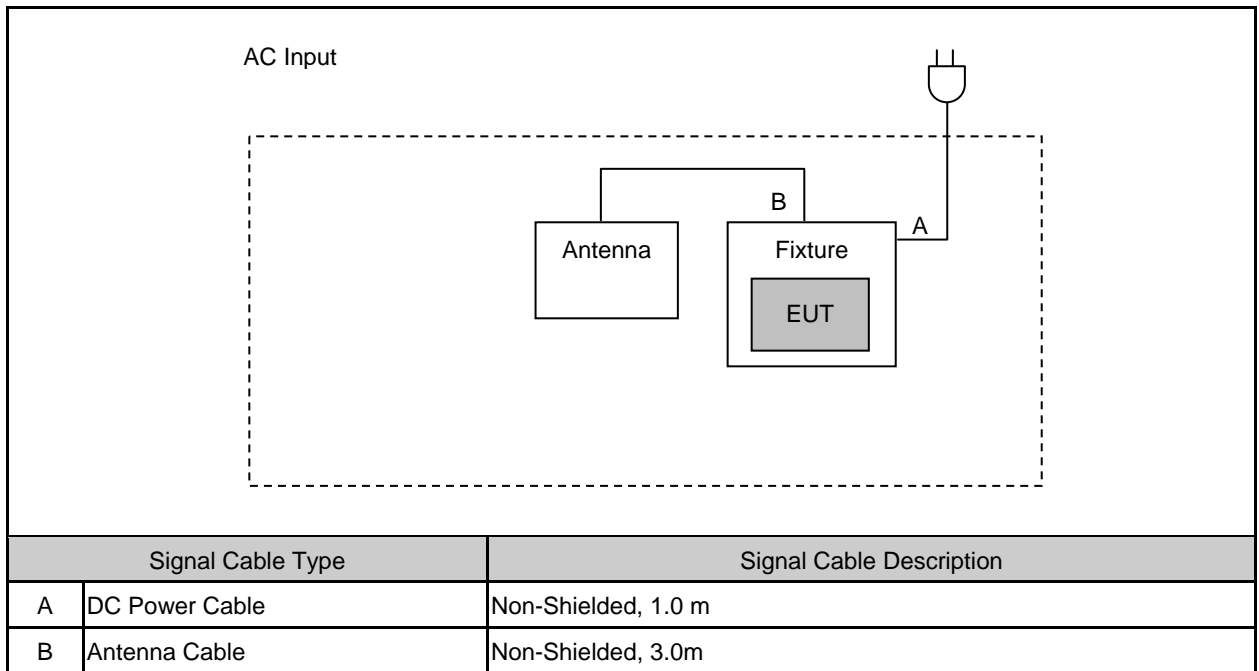
| Test Mode |
|-----------------------------|
| Mode 1: GPRS 850 Link Mode |
| Mode 2: GPRS 1900 Link Mode |
| Mode 3: Receive Link Mode |

Note: Regards to the frequency band operation: the lowest, middle and highest frequency of channel were selected to perform the test, then shown on this report.

1.3. EUT Exercise Software

| | |
|---|----------------------------------------------------------|
| 1 | Setup the EUT and Base Station (CMU200) as shown on 1.4. |
| 2 | Turn on the power of all equipment. |

1.4. Configuration of Test System Details



| Devices Description | | | | |
|---------------------|--------------|--------------|---------------|------------|
| Product | Manufacturer | Model Number | Serial Number | Power Cord |
| 1. | ----- | ----- | ----- | ----- |

1.5. Test Site Environment

| Items | Required (IEC 68-1) | Actual |
|----------------------------|---------------------|--------|
| Temperature (°C) | 15-35 | 26 |
| Humidity (%RH) | 25-75 | 60 |
| Barometric pressure (mbar) | 860-1060 | 950 |

1.6. Summary of Test Result

| Description | FCC Rule | IC Rule | Limit | Result |
|-----------------------------------------------|-------------------------------------|------------------------------------------------------|------------------------------------------|--------|
| Conducted Output Power | §2.1046 | N/A | N/A | Pass |
| Effective Radiated Power | §22.913(a)(2) | RSS-132(4.4) SRSP-503(5.1.3) | < 7 Watts for FCC (<6.3 Watts for IC) | Pass |
| Equivalent Isotropic Radiated Power | §24.232(c) | RSS-133 (6.4) SRSP-510(5.1.2) | < 2 Watts | Pass |
| Occupied Bandwidth | §2.1049 §22.917(a) §24.238(a) | RSS-Gen (4.6.1) | N/A | Pass |
| Band Edge Measurement | §2.1051 §22.917(a) §24.238(a) | RSS-132 (4.5.1)RSS-133 (6.5.1) | < 43+10log ₁₀ (P[Watts]) | Pass |
| Conducted Spurious Emission | §2.1051 §22.917(a) §24.238(a) | RSS-132 (4.5.1) RSS-133 (6.5.1) | < 43+10log ₁₀ (P[Watts]) | Pass |
| Field Strength of Spurious Radiation | §2.1053 §22.917(a) §24.238(a) | RSS-132 (4.5.1) RSS-133 (6.5.1) RSS-Gen (4.10) | < 43+10log ₁₀ (P[Watts]) | Pass |
| Frequency Stability for Temperature & Voltage | §2.1055 §22.355 §24.235 | RSS-132(4.3) RSS-133(6.3) | < 2.5 ppm | Pass |

2 RF Output Power Test

2.1. Limit

N/A

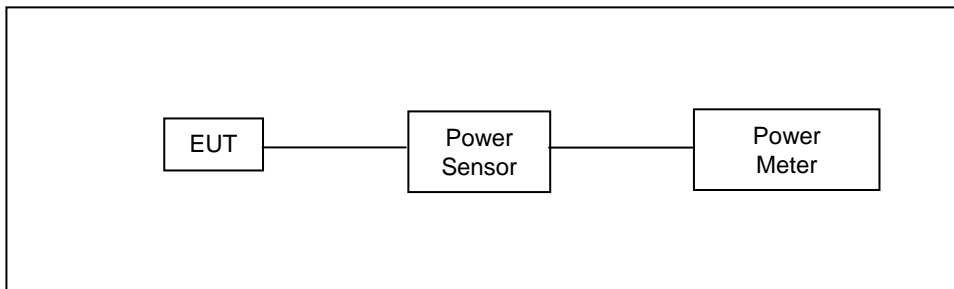
2.2. Test Instruments

| Equipment | Manufacturer | Model Number | Serial Number | Cal. Date | Remark |
|--------------------------------------|--------------|--------------|---------------|------------|--------|
| Universal Radio Communication Tester | R & S | CMU200 | 109369 | 08/07/2012 | (2) |
| Single Channel PK Power Sensor | Agilent | N1911A | MY45101619 | 12/15/2011 | (2) |
| Wideband Power Meter | Agilent | N1921A | MY45241957 | 12/15/2011 | (2) |
| Test Site | ATL | TE05 | TE05 | N.C.R. | ----- |

Remark: ⁽¹⁾ Calibration period 1 year. ⁽²⁾ Calibration period 2 years.

Note: N.C.R. = No Calibration Request.

2.3. Test Setup



2.4. Test Procedure

The measurement is made according to ANSI/TIA-603-C-2004 as follows:

1. The transmitter output was connected to power meter and base station through Power Divider.
2. Set base station for EUT at GSM 850: PCL=5 and PCS 1900: PCL=0.
3. Set base station for EUT at WCDMA Band V and WCDMA Band II, power level was set to maximum.
4. Select lowest, middle, and highest channels for each band.

2.5. Uncertainty

The measurement uncertainty is defined as for RF output power measurement is 1.2 dB.

2.6. Test Result

| Model Number | GE910-GNSS | | | | | | |
|-----------------------------------------------------------------|-----------------|-------------------------------|-----------------|---------------------|-------|--------------|--------------|
| Test Item | RF Output Power | | | | | | |
| Date of Test | 03/27/2013 | | | Test Site | | TE05 | |
| Bands | Modulation Type | Data Rate | Frequency (MHz) | Burst Average Power | | Peak Power | |
| | | | | (dBm) | (W) | (dBm) | (W) |
| GRRS 850 Multi Class :10 Max Up:2 Max Down:4 Sum:5 | GMSK | 4Down1Up (Duty Factor 1/8) | 824.2 | 32.46 | 1.762 | 32.54 | 1.795 |
| | | | 836.6 | 32.50 | 1.778 | 32.68 | 1.854 |
| | | | 848.8 | 32.37 | 1.726 | 32.44 | 1.754 |
| | | 3Down2Up (Duty Factor 2/8) | 824.2 | 32.38 | 1.730 | 32.46 | 1.762 |
| | | | 836.6 | 32.47 | 1.766 | 32.51 | 1.782 |
| | | | 848.8 | 32.22 | 1.667 | 32.34 | 1.714 |

Note: The peak power testing result was used peak detector.

| Model Number | GE910-GNSS | | | | | | |
|-----------------------------------------------------------------|-----------------|-------------------------------|-----------------|---------------------|-------|--------------|--------------|
| Test Item | RF Output Power | | | | | | |
| Date of Test | 03/27/2013 | | | Test Site | | TE05 | |
| Bands | Modulation Type | Data Rate | Frequency (MHz) | Burst Average Power | | Peak Power | |
| | | | | (dBm) | (W) | (dBm) | (W) |
| GRRS 1900 Multi Class 10 Max Up:2 Max Down:4 Sum:5 | GMSK | 4Down1Up (Duty Factor 1/8) | 1850.20 | 30.26 | 1.062 | 30.48 | 1.117 |
| | | | 1880.00 | 29.81 | 0.957 | 30.02 | 1.005 |
| | | | 1909.80 | 29.63 | 0.918 | 29.84 | 0.964 |
| | | 3Down2Up (Duty Factor 2/8) | 1850.20 | 30.03 | 1.007 | 30.29 | 1.069 |
| | | | 1880.00 | 29.64 | 0.920 | 29.88 | 0.973 |
| | | | 1909.80 | 29.42 | 0.875 | 29.61 | 0.914 |

Note: The peak power testing result was used peak detector.

3 Effective Radiated Power / Equivalent Isotropic Radiated Power Test

3.1. Limit

For FCC Part 22.913(a)(2): The ERP of mobile transmitters and auxiliary test transmitters must not exceed 7 Watts.

For FCC Part 24.232(b): The EIRP of mobile transmitters and auxiliary test transmitters must not exceed 2 Watts.

3.2. Test Instruments

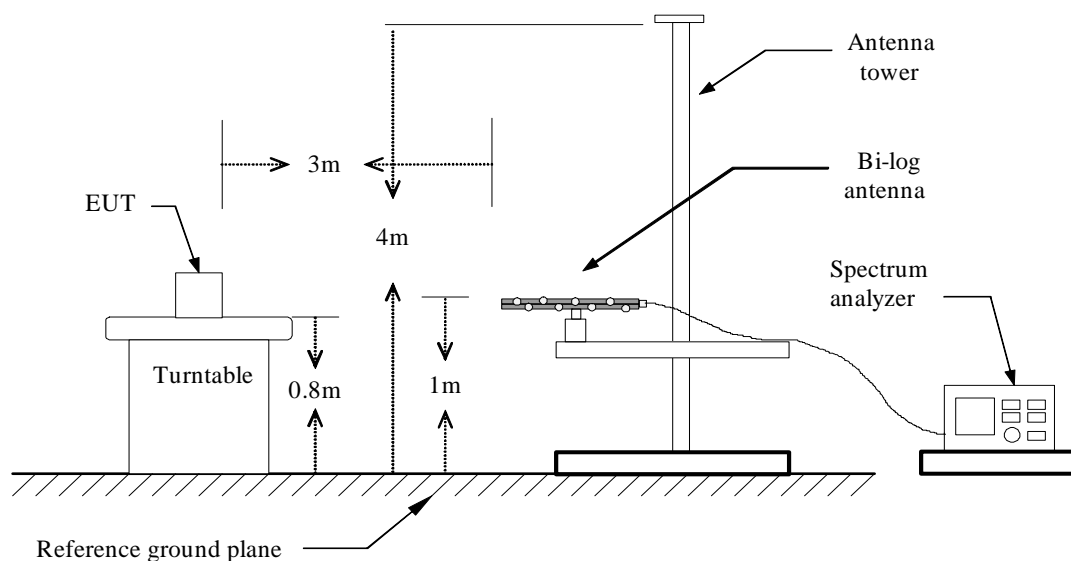
| 3 Meter Chamber (966-A) | | | | | |
|-----------------------------------|--------------------------------|--------------|---------------|------------|--------|
| Equipment | Manufacturer | Model Number | Serial Number | Cal. Date | Remark |
| RF Pre-selector | Agilent | N9039A | MY46520256 | 01/21/2013 | (2) |
| Spectrum Analyzer | Agilent | E4446A | MY46180578 | 01/21/2013 | (1) |
| Pre Amplifier | Agilent | 8449B | 3008A02237 | 02/21/2013 | (1) |
| Pre Amplifier | Agilent | 8447D | 2944A10961 | 02/21/2013 | (1) |
| Broadband Antenna (30MHz~1GHz) | SCHWARZBECK MESS-ELEKTRONIK | VULB9163 | 9163-270 | 06/29/2012 | (1) |
| Horn Antenna (1~18GHz) | SCHWARZBECK MESS-ELEKTRONIK | BBHA9120D | 9120D-550 | 06/15/2012 | (1) |
| Horn Antenna (18~40GHz) | SCHWARZBECK MESS-ELEKTRONIK | BBHA9170 | 9170-320 | 06/21/2012 | (1) |
| Test Site | ATL | TE01 | 888001 | 08/28/2012 | (1) |

Remark: ⁽¹⁾ Calibration period 1 year. ⁽²⁾ Calibration period 2 years.

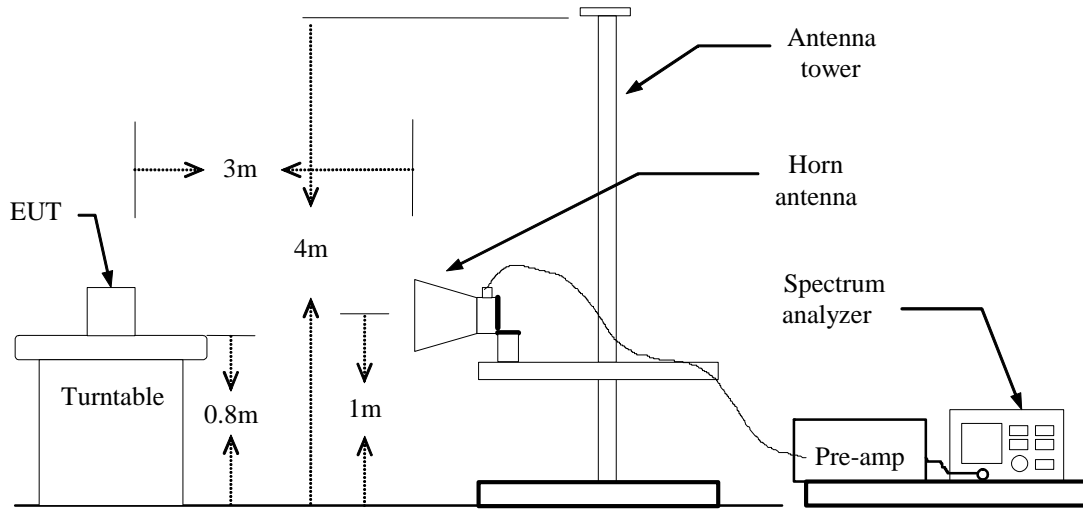
Note: N.C.R. = No Calibration Request.

3.3. Setup

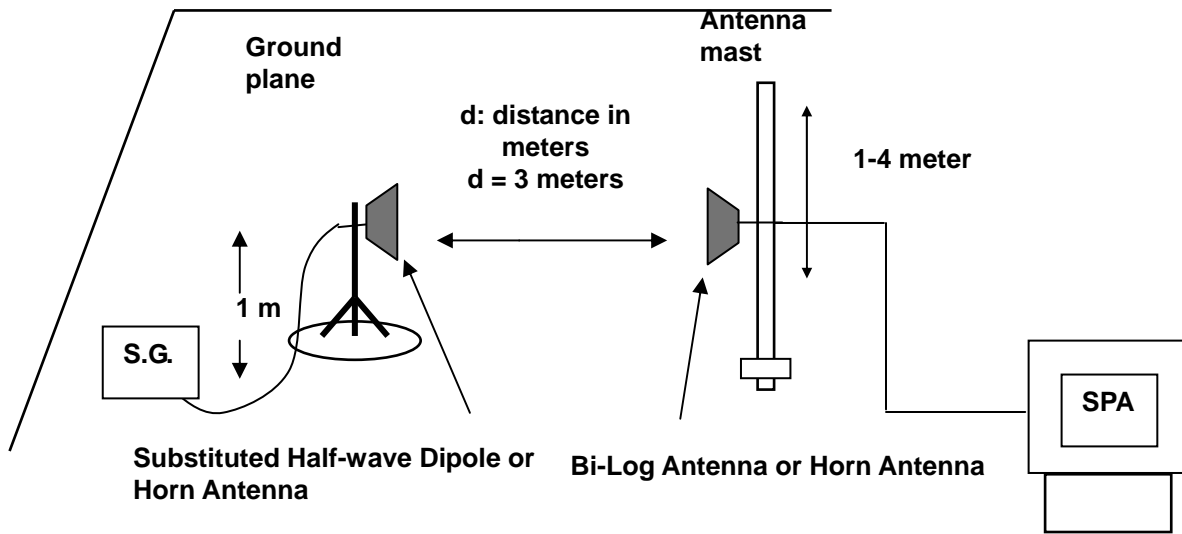
Below 1 GHz



Above 1 GHz



For Substituted Method Test Set-UP



3.4. Test Procedure

The measurement is made according to ANSI/TIA-603-C-2004 as follows:

The EUT was placed on a 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 of the EUT, the resolution bandwidth was set to 3MHz and the average bandwidth was set to 3MHz. The highest emission was recorded with the rotation of the turntable and the lowering of the test antenna.

The reading was recorded and the field strength (E in dBuV/m) was calculated.

ERP in frequency band 824-849MHz, and EIRP in frequency band 1851.25 –1910MHz were measured using a substitution method. The EUT was replaced by half-wave dipole (824-849MHz) or horn antenna (1851.25-1910MHz) connected to a signal generator. The spectrum analyzer reading was recorded and ERP/EIRP was calculated as follows:

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

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

3.5. Uncertainty

The measurement uncertainty is defined as for Field Strength of Spurious Radiation measurement is ± 3.072 dB.

3.6. Test Result

| Model Number | GE910-GNSS | | | | | | | | |
|--------------|-----------------|-----------------|-------------|------------------|-------------------------|--------------|--------------|-------|--|
| Test Item | ERP/EIRP | | | | | | | | |
| Date of Test | 03/27/2013 | | | | | Test Site | TE01 | | |
| Bands | Modulation Type | Frequency (MHz) | Ant. Polar. | Read Level (dBm) | Correction Factor (dBm) | ERP | | Limit | |
| | | | | | | (dBm) | (W) | | |
| GPRS 850 | GMSK | 824.2 | H | 17.76 | 11.95 | 29.71 | 0.935 | < 7W | |
| | | | V | 14.46 | 11.30 | 25.76 | 0.377 | < 7W | |
| | | 836.6 | H | 17.43 | 12.07 | 29.50 | 0.891 | < 7W | |
| | | | V | 17.57 | 11.34 | 28.91 | 0.778 | < 7W | |
| | | 848.8 | H | 16.19 | 12.51 | 28.70 | 0.741 | < 7W | |
| | | | V | 16.54 | 11.47 | 28.01 | 0.632 | < 7W | |

| Model Number | GE910-GNSS | | | | | | | | |
|--------------|-----------------|-----------------|-------------|------------------|-------------------------|--------------|--------------|-------|--|
| Test Item | ERP/EIRP | | | | | | | | |
| Date of Test | 03/27/2013 | | | | | Test Site | TE01 | | |
| Bands | Modulation Type | Frequency (MHz) | Ant. Polar. | Read Level (dBm) | Correction Factor (dBm) | EIRP | | Limit | |
| | | | | | | (dBm) | (W) | | |
| GPRS 1900 | GMSK | 1850.20 | H | 15.13 | 11.39 | 26.52 | 0.449 | < 2W | |
| | | | V | 14.61 | 11.39 | 26.00 | 0.398 | < 2W | |
| | | 1880.00 | H | 13.77 | 13.59 | 27.36 | 0.545 | < 2W | |
| | | | V | 14.78 | 11.65 | 26.43 | 0.440 | < 2W | |
| | | 1909.80 | H | 14.09 | 13.61 | 27.70 | 0.589 | < 2W | |
| | | | V | 14.07 | 11.91 | 25.98 | 0.396 | < 2W | |

Note: 1. ERP/EIRP = Read Level + Correction factor.

2. For WCDMA signals, a peak detector is used with RBW = VBW = 5MHz.

3. For AMPS, GSM, and NADC TDMA signals, a peak detector is used, with RBW = VBW= 1 MHz.

4 Occupied Bandwidth Test

4.1. Limit

The Occupied Bandwidth Limit:

N/A.

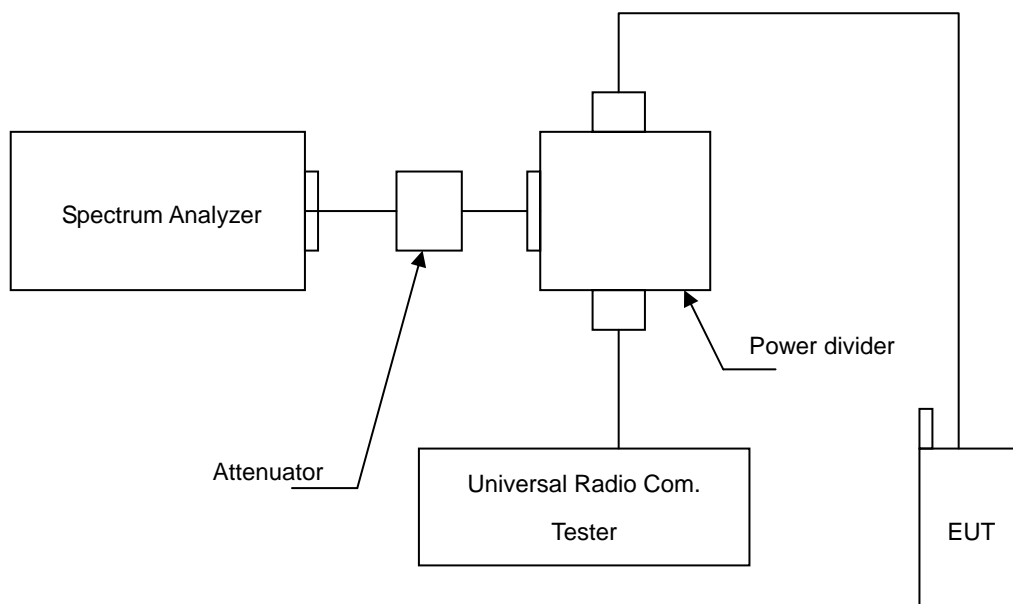
4.2. Test Instruments

| Equipment | Manufacturer | Model Number | Serial Number | Cal. Date | Remark |
|--------------------------------------|--------------|--------------|---------------|------------|--------|
| Universal Radio Communication Tester | R & S | CMU200 | 109369 | 08/07/2012 | (2) |
| Spectrum Analyzer | Agilent | E4445A | MY46181986 | 05/10/2012 | (1) |
| Attenuator | RADIALL | R41572000 | 0603033073 | N.C.R. | ----- |
| Power Divider | Agilent | 87302C | 3239A00760 | N.C.R. | ----- |
| Test Site | ATL | TE05 | TE05 | N.C.R. | ----- |

Remark: ⁽¹⁾ Calibration period 1 year. ⁽²⁾ Calibration period 2 years.

Note: N.C.R. = No Calibration Request.

4.3. Setup



4.4. Test Procedure

The measurement is made according to FCC rules part 22 and 24:

1. The EUT was connected to Spectrum Analyzer and Base Station via Power Divider.
2. The occupied bandwidth of middle channel for the highest and lowest RF powers was measured.

4.5. Uncertainty

The measurement uncertainty is defined as $\pm 10\text{Hz}$

4.6. Test Result

| Model Number | GE910-GNSS | | | | |
|--------------|--------------------|-----------------|---------------------|-----------------------|------|
| Test Item | Occupied Bandwidth | | | | |
| Date of Test | 03/29/2013 | | | Test Site | TE05 |
| Bands | Channel | Frequency (MHz) | 99% Bandwidth (kHz) | Note | |
| GPRS 850 | 128 | 824.2 | 246.6378 | RBW:10KHz , VBW:30KHz | |
| | 190 | 836.6 | 245.5663 | RBW:10KHz , VBW:30KHz | |
| | 251 | 848.8 | 244.7171 | RBW:10KHz , VBW:30KHz | |
| GPRS 1900 | 512 | 1850.20 | 249.9591 | RBW:10KHz , VBW:30KHz | |
| | 661 | 1880.00 | 241.6008 | RBW:10KHz , VBW:30KHz | |
| | 810 | 1909.80 | 246.0669 | RBW:10KHz , VBW:30KHz | |

4.7. Test Graphs

| Mode 1: GPRS 850 Link Mode | |
|----------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 824.2 MHz | <p>Agilent R T</p> <p>Ch Freq 824.2 MHz Trig Free</p> <p>Occupied Bandwidth</p> <p>Ref 40 dBm Atten 40 dB</p> <p>#Peak Log 10 dB/Offset 13.5 dB</p> <p>Center 824.2 MHz Span 1 MHz</p> <p>#Res BW 10 kHz #VBW 30 kHz Sweep 10.36 ms (401 pts)</p> <p>Occupied Bandwidth 246.6378 kHz</p> <p>Occ BW % Pwr 99.00 % x dB -26.00 dB</p> <p>Transmit Freq Error -2.052 kHz</p> <p>x dB Bandwidth 316.416 kHz</p> <p>Freq/Channel</p> <p>Center Freq 824.200000 MHz</p> <p>Start Freq 823.700000 MHz</p> <p>Stop Freq 824.700000 MHz</p> <p>CF Step 100.000000 kHz Auto Man</p> <p>Freq Offset 0.00000000 Hz</p> <p>Signal Track On Off</p> |
| 836.6 MHz | <p>Agilent R T</p> <p>Ch Freq 836.6 MHz Trig Free</p> <p>Occupied Bandwidth</p> <p>Ref 40 dBm Atten 40 dB</p> <p>#Peak Log 10 dB/Offset 13.5 dB</p> <p>Center 836.6 MHz Span 1 MHz</p> <p>#Res BW 10 kHz #VBW 30 kHz Sweep 10.36 ms (401 pts)</p> <p>Occupied Bandwidth 245.5663 kHz</p> <p>Occ BW % Pwr 99.00 % x dB -26.00 dB</p> <p>Transmit Freq Error -481.263 Hz</p> <p>x dB Bandwidth 322.237 kHz</p> <p>Freq/Channel</p> <p>Center Freq 836.600000 MHz</p> <p>Start Freq 836.100000 MHz</p> <p>Stop Freq 837.100000 MHz</p> <p>CF Step 100.000000 kHz Auto Man</p> <p>Freq Offset 0.00000000 Hz</p> <p>Signal Track On Off</p> |
| 848.8 MHz | <p>Agilent R T</p> <p>Ch Freq 848.8 MHz Trig Free</p> <p>Occupied Bandwidth</p> <p>Ref 40 dBm Atten 40 dB</p> <p>#Peak Log 10 dB/Offset 13.5 dB</p> <p>Center 848.8 MHz Span 1 MHz</p> <p>#Res BW 10 kHz #VBW 30 kHz Sweep 10.36 ms (401 pts)</p> <p>Occupied Bandwidth 244.7171 kHz</p> <p>Occ BW % Pwr 99.00 % x dB -26.00 dB</p> <p>Transmit Freq Error -2.480 kHz</p> <p>x dB Bandwidth 319.065 kHz</p> <p>Freq/Channel</p> <p>Center Freq 848.800000 MHz</p> <p>Start Freq 848.300000 MHz</p> <p>Stop Freq 849.300000 MHz</p> <p>CF Step 100.000000 kHz Auto Man</p> <p>Freq Offset 0.00000000 Hz</p> <p>Signal Track On Off</p> |

| Mode 2: GPRS 1900 Link Mode | |
|-----------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1850.20 MHz | <p>Agilent R T</p> <p>Ch Freq 1.8502 GHz Trig Free</p> <p>Occupied Bandwidth</p> <p>Ref 40 dBm Atten 40 dB</p> <p>#Peak Log 10 dB/Offset 13.8 dB</p> <p>Center 1.85 GHz Span 1 MHz</p> <p>#Res BW 10 kHz #VBW 30 kHz Sweep 10.36 ms (401 pts)</p> <p>Occupied Bandwidth 249.9591 kHz</p> <p>Occ BW % Pwr 99.00 % x dB -26.00 dB</p> <p>Transmit Freq Error -636.322 Hz</p> <p>x dB Bandwidth 310.056 kHz</p> <p>Freq/Channel</p> <p>Center Freq 1.85020000 GHz</p> <p>Start Freq 1.84970000 GHz</p> <p>Stop Freq 1.85070000 GHz</p> <p>CF Step 100.000000 kHz Auto Man</p> <p>Freq Offset 0.00000000 Hz</p> <p>Signal Track On Off</p> |
| 1880.00 MHz | <p>Agilent R T</p> <p>Ch Freq 1.88 GHz Trig Free</p> <p>Occupied Bandwidth</p> <p>Ref 40 dBm Atten 40 dB</p> <p>#Peak Log 10 dB/Offset 13.8 dB</p> <p>Center 1.88 GHz Span 1 MHz</p> <p>#Res BW 10 kHz #VBW 30 kHz Sweep 10.36 ms (401 pts)</p> <p>Occupied Bandwidth 241.6008 kHz</p> <p>Occ BW % Pwr 99.00 % x dB -26.00 dB</p> <p>Transmit Freq Error -2.566 kHz</p> <p>x dB Bandwidth 315.992 kHz</p> <p>Freq/Channel</p> <p>Center Freq 1.88000000 GHz</p> <p>Start Freq 1.87950000 GHz</p> <p>Stop Freq 1.88050000 GHz</p> <p>CF Step 100.000000 kHz Auto Man</p> <p>Freq Offset 0.00000000 Hz</p> <p>Signal Track On Off</p> |
| 1909.80 MHz | <p>Agilent R T</p> <p>Ch Freq 1.9098 GHz Trig Free</p> <p>Occupied Bandwidth</p> <p>Ref 40 dBm Atten 40 dB</p> <p>#Peak Log 10 dB/Offset 13.8 dB</p> <p>Center 1.91 GHz Span 1 MHz</p> <p>#Res BW 10 kHz #VBW 30 kHz Sweep 10.36 ms (401 pts)</p> <p>Occupied Bandwidth 246.0699 kHz</p> <p>Occ BW % Pwr 99.00 % x dB -26.00 dB</p> <p>Transmit Freq Error -2.398 kHz</p> <p>x dB Bandwidth 315.834 kHz</p> <p>Freq/Channel</p> <p>Center Freq 1.90980000 GHz</p> <p>Start Freq 1.90930000 GHz</p> <p>Stop Freq 1.91030000 GHz</p> <p>CF Step 100.000000 kHz Auto Man</p> <p>Freq Offset 0.00000000 Hz</p> <p>Signal Track On Off</p> |

5 Band Edge Test

5.1. Limit

The Band Edge Limit:

The power of any emission outside of the authorized operating frequency ranges must be attenuated below the transmitting power (P) by a factor of at least $43 + 10\log(P)$ dB.

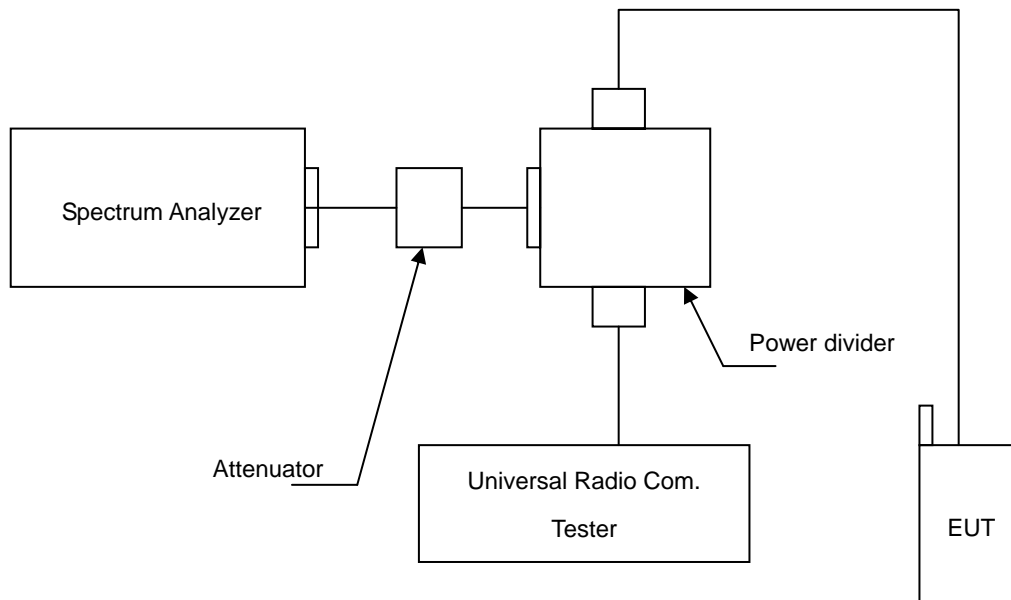
5.2. Test Instruments

| Equipment | Manufacturer | Model Number | Serial Number | Cal. Date | Remark |
|--------------------------------------|--------------|--------------|---------------|------------|--------|
| Universal Radio Communication Tester | R & S | CMU200 | 109369 | 08/07/2012 | (2) |
| Spectrum Analyzer | Agilent | E4445A | MY46181986 | 05/10/2012 | (1) |
| Attenuator | RADIALL | R41572000 | 0603033073 | N.C.R. | ----- |
| Power Divider | Agilent | 87302C | 3239A00760 | N.C.R. | ----- |
| Test Site | ATL | TE05 | TE05 | N.C.R. | ----- |

Remark: ⁽¹⁾ Calibration period 1 year. ⁽²⁾ Calibration period 2 years.

Note: N.C.R. = No Calibration Request.

5.3. Setup



5.4. Test Procedure

The measurement is made according to FCC rules part 22 and 24:

3. The EUT was connected to Spectrum Analyzer and Base Station via Power Divider.
4. The band edge of low and high channels for the highest RF powers within the transmitting frequency band were measured. Setting RBW as roughly BW/100.
5. The band edge setting:
 - a. RB=10 kHz; VB=30 kHz for GSM 850 and PCS 1900.
 - b. RB=100 kHz; VB=300 kHz for WCDMA Band V and WCDMA Band II.

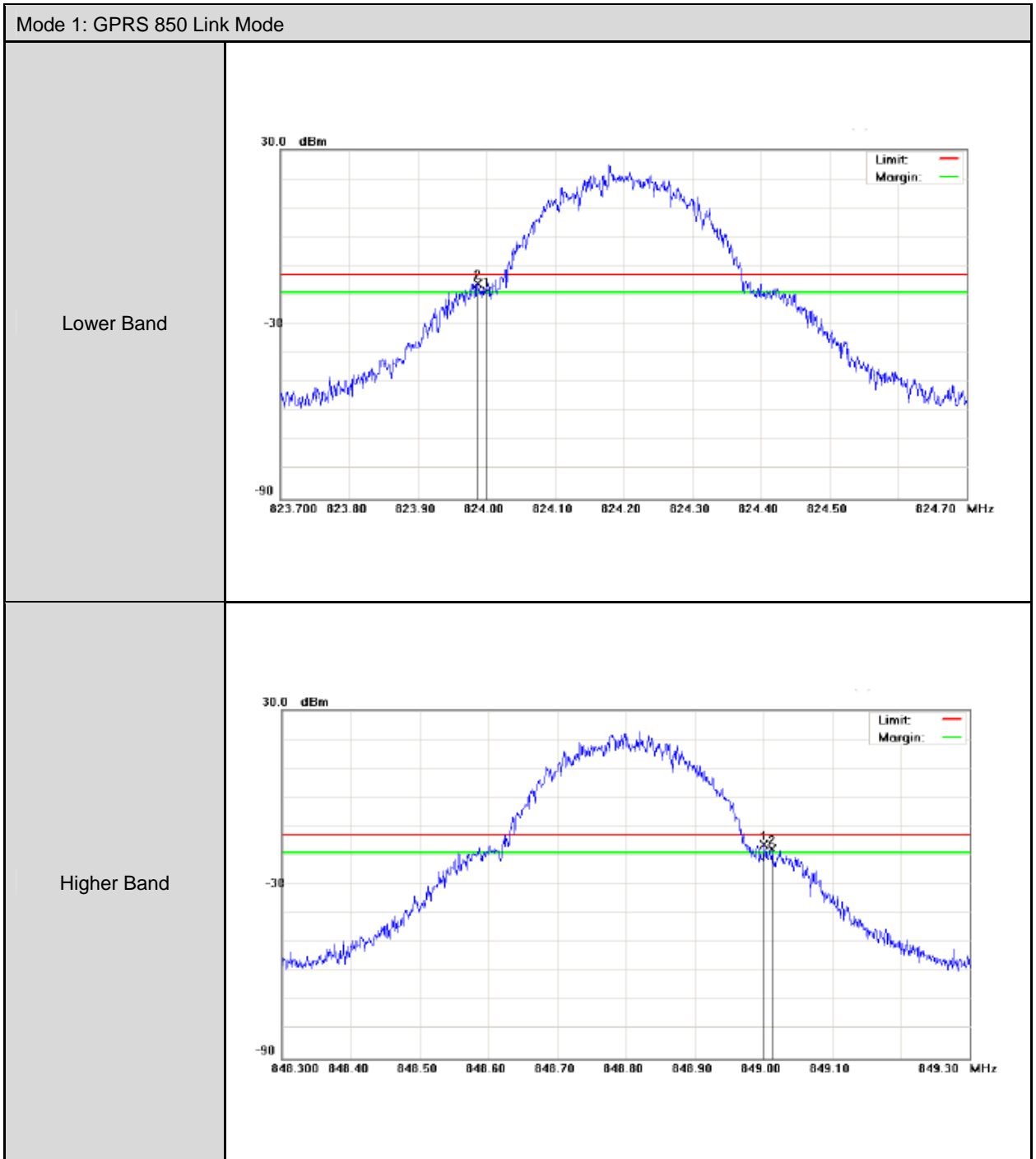
5.5. Uncertainty

The measurement uncertainty is defined as $\pm 10\text{Hz}$

5.6. Test Result

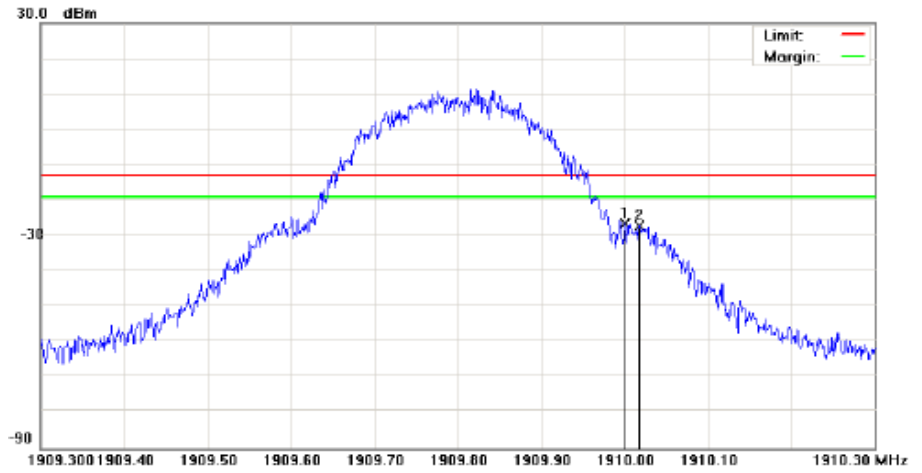
| Model Number | | GE910-GNSS | | | | |
|--------------|--------|------------|-----------------|-----------------|-------------|--------|
| Test Item | | Band Edge | | | | |
| Date of Test | | 03/29/2013 | | | Test Site | TE05 |
| Bands | | Channel | Frequency (MHz) | Bandwidth (dBm) | Limit (dBm) | Result |
| GSM 850 | Lower | 128 | 824.0000 | -16.15 | -13 | Pass |
| | Higher | 251 | 849.0000 | -16.27 | -13 | Pass |
| GPRS 1900 | Lower | 512 | 1850.000 | -26.04 | -13 | Pass |
| | Higher | 810 | 1910.000 | -26.68 | -13 | Pass |

5.7. Test Graphs

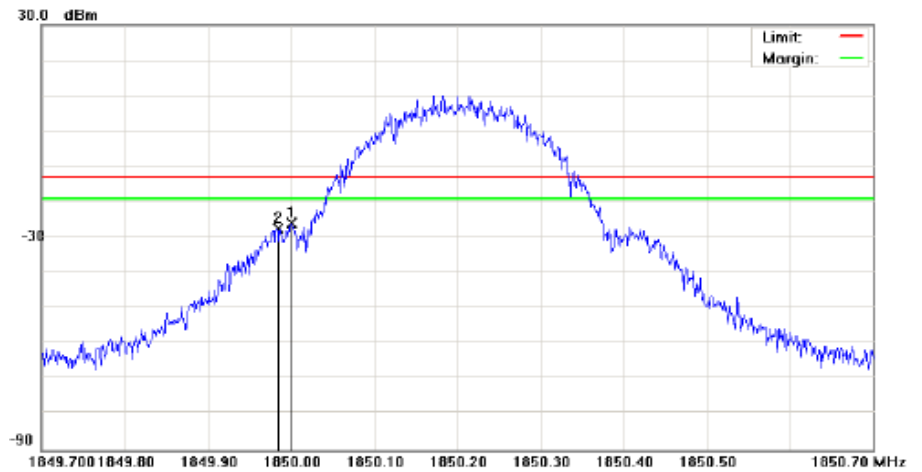


Mode 2: GPRS 1900 Link Mode

Lower Band



Higher Band



6 Conducted Spurious Emission Test

6.1. Limit

The power of any emission outside of the authorized operating frequency ranges must be attenuated below the transmitting power (P) by a factor of at least $43 + 10\log(P)$ dB.

6.2. Test Instruments

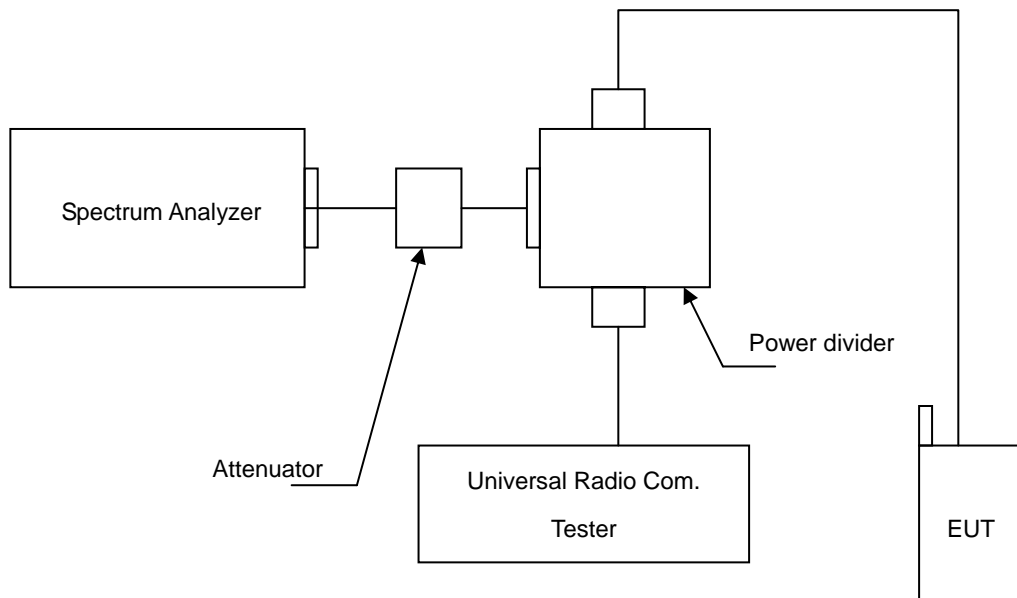
| Equipment | Manufacturer | Model Number | Serial Number | Cal. Date | Remark |
|--------------------------------------|--------------|--------------|---------------|------------|--------|
| Universal Radio Communication Tester | R & S | CMU200 | 109369 | 08/07/2012 | (2) |
| Spectrum Analyzer | Agilent | E4445A | MY46181986 | 05/10/2012 | (1) |
| Attenuator | RADIALL | R41572000 | 0603033073 | N.C.R. | ----- |
| Power Divider | Agilent | 87302C | 3239A00760 | N.C.R. | ----- |
| Test Site | ATL | TE05 | TE05 | N.C.R. | ----- |

Remark: ⁽¹⁾ Calibration period 1 year. ⁽²⁾ Calibration period 2 years.

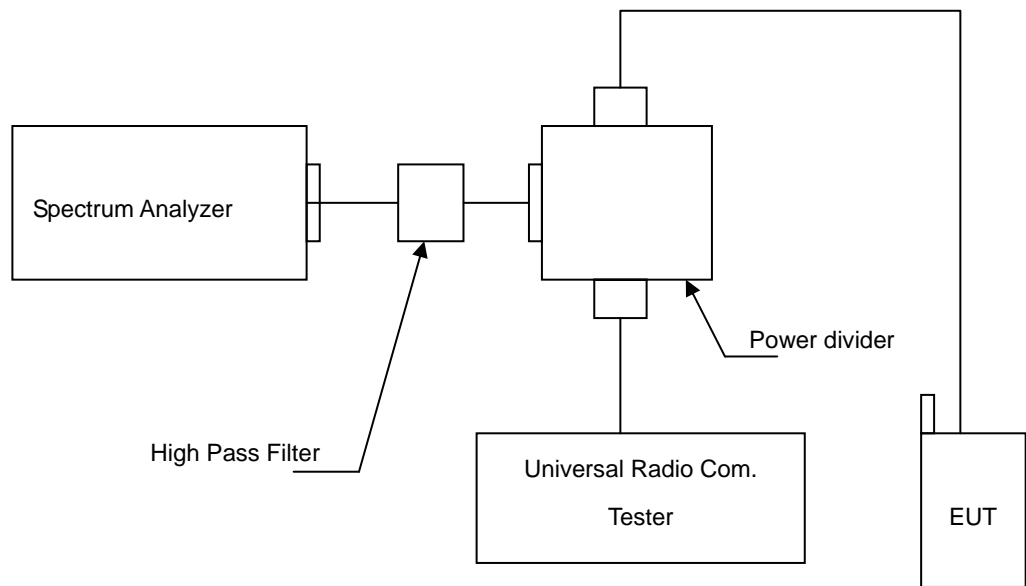
Note: N.C.R. = No Calibration Request.

6.3. Setup

Below 2.8GHz



Above 2.8GHz



6.4. Test Procedure

1. The EUT was connected to Spectrum Analyzer and Base Station via Power Divider.
2. The middle channel for the highest RF power within the transmitting frequency was measured.
3. The conducted spurious emission for the whole frequency range was taken.
4. Test setting at GSM 850 RB>100 kHz, VB>100 kHz; PCS 1900 RB>1MHz, VB>1MHz.

6.5. Uncertainty

The measurement uncertainty is evaluated as ± 2.24 dB.

6.6. Test Result

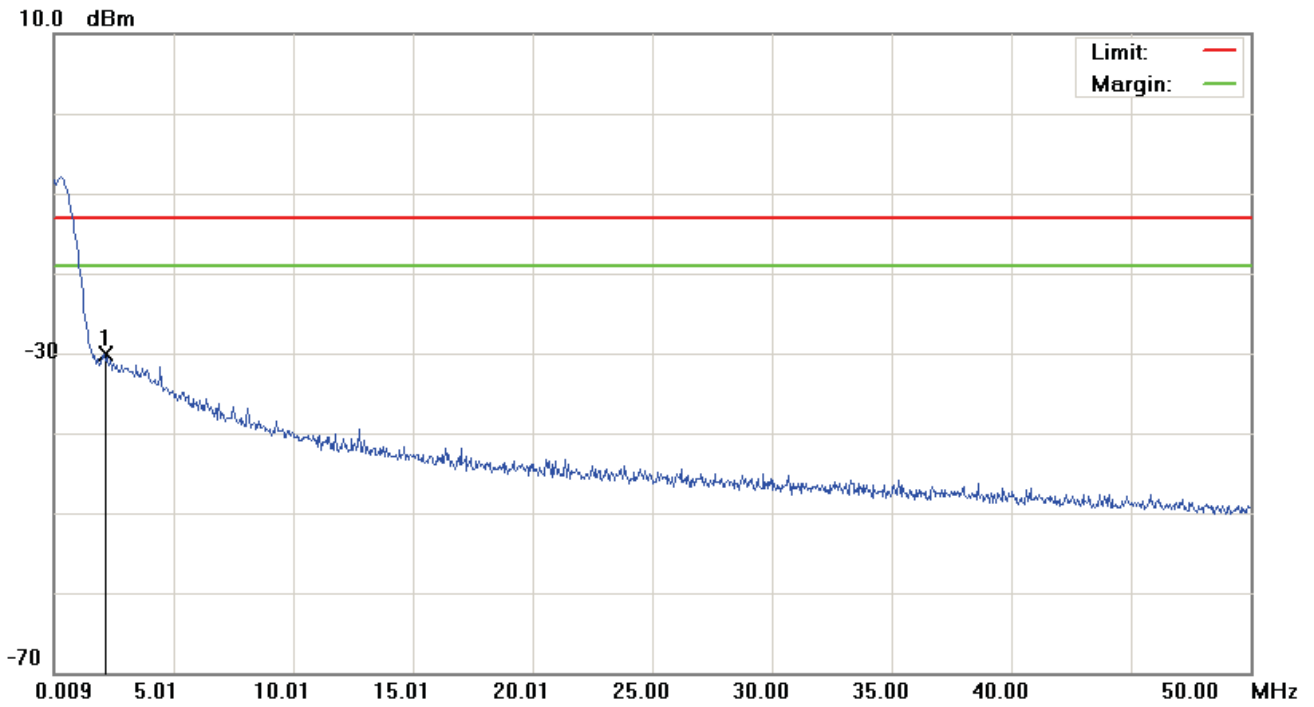
| | | | |
|--------------|-----------------------------------|-----------|------|
| Model Number | GE910-GNSS | | |
| Test Item | Conducted Emission | | |
| Test Mode | Mode 1 / Mode 2 / Mode 4 / Mode 5 | | |
| Date of Test | 03/29/2013 | Test Site | TE05 |

File:GE910(CH128)

Data :#1

Date: 2013/3/29

Time: 下午 03:34:38



| | | |
|-----------------------------------------|-----------------------------------|-----------------------------|
| Site: : RF Conducted | Polarization: <i>Conducted po</i> | Temperature: 23 °C |
| Limit: FCC Part 22 conducted(9k-12.75G) | Power: DC 3.8V | Humidity: 55.2 % |
| EUT: Quad band GSM/GPRS modules | Distance: | RBW: 1000 KHz VBW: 1000 KHz |
| M/N: GE910-GNSS | | |
| Mode: GPRS 850 | | |
| Note: | | |

| No. | Mk. | Freq. MHz | Reading Level dBm | Correct Factor dB | Measure- ment dBm | Limit dBm | Over dB | Antenna Height cm | Table Degree degree | Detector | Comment |
|-----|-----|--------------|-------------------------|-------------------------|-------------------------|--------------|------------|-------------------------|---------------------------|----------|---------|
| 1 | * | 2.1335 | -61.47 | 31.47 | -30.00 | -13.00 | -17.00 | | | peak | |

*:Maximum data x:Over limit !:over margin

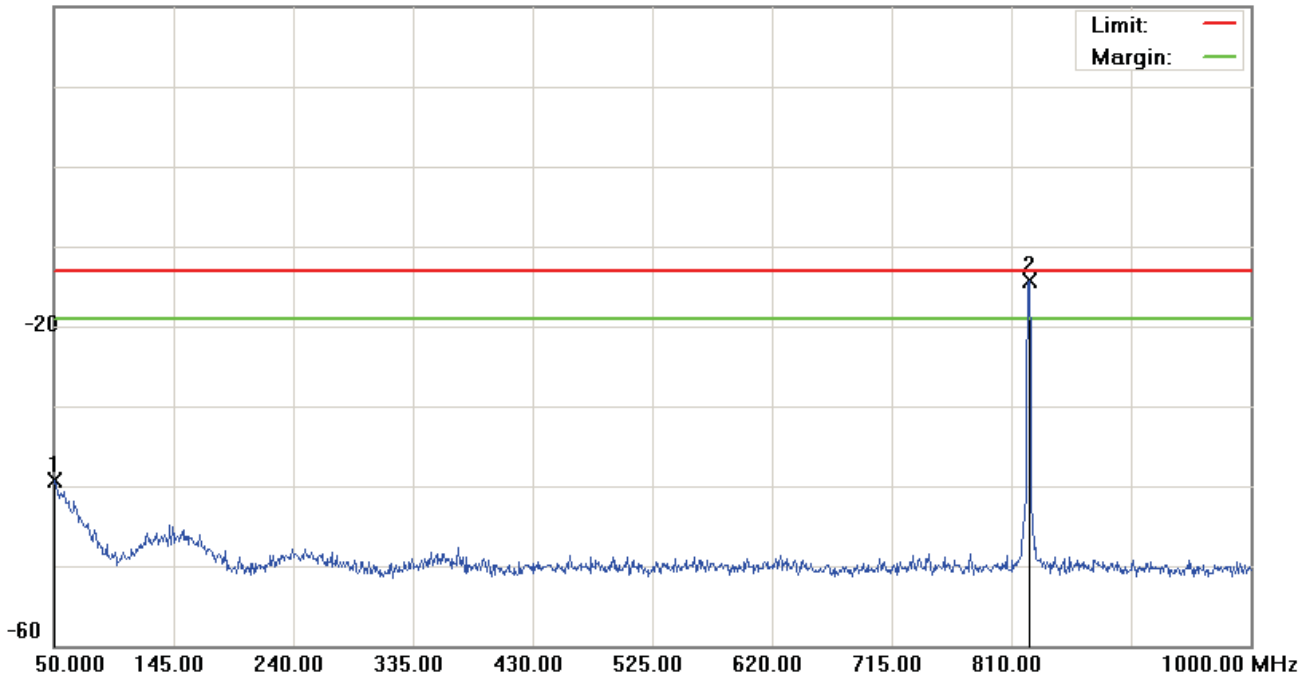
File:GE910(CH128)

Data :#2

Date:2013/3/29

Time: 下午 03:35:02

20.0 dBm



| | | |
|-----------------------------------------|-----------------------------------|-----------------------------|
| Site: : RF Conducted | Polarization: <i>Conducted po</i> | Temperature: 23 °C |
| Limit: FCC Part 22 conducted(9k-12.75G) | Power: DC 3.8V | Humidity: 55.2 % |
| EUT: Quad band GSM/GPRS modules | Distance: | RBW: 1000 KHz VBW: 1000 KHz |
| M/N: GE910-GNSS | | |
| Mode: GPRS 850 | | |
| Note: | | |

| No. | Mk. | Freq. MHz | Reading Level dBm | Correct Factor dB | Measure- ment dBm | Limit dBm | Over dB | Antenna Height cm | Table Degree degree | Comment |
|-----|-----|--------------|-------------------------|-------------------------|-------------------------|--------------|------------|-------------------------|---------------------------|---------|
| 1 | | 50.0000 | -53.90 | 14.69 | -39.21 | -13.00 | -26.21 | peak | | |
| 2 | * | 824.2500 | -18.17 | 3.84 | -14.33 | -13.00 | -1.33 | peak | | Tx |

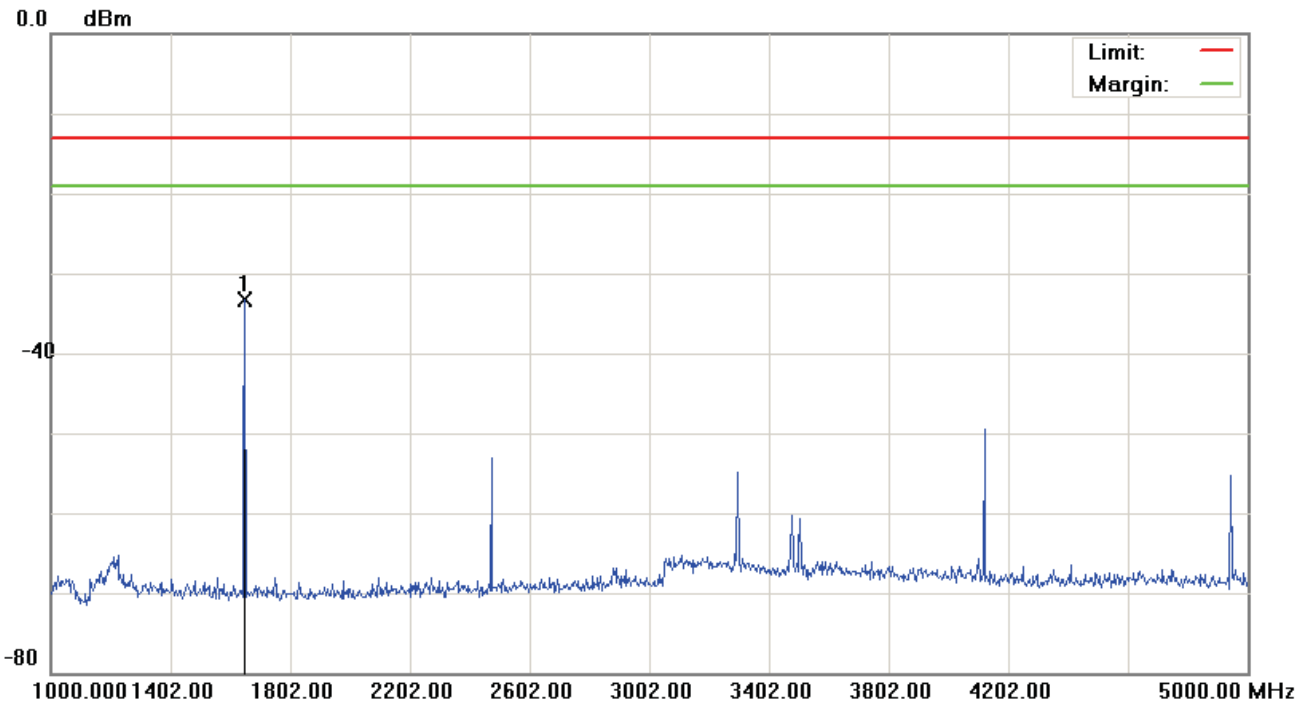
*:Maximum data x:Over limit !:over margin

File:GE910(CH128)

Data :#3

Date: 2013/3/29

Time: 下午 03:43:25



| | | |
|-----------------------------------------|-----------------------------------|-----------------------------|
| Site: : RF Conducted | Polarization: <i>Conducted po</i> | Temperature: 23 °C |
| Limit: FCC Part 22 conducted(9k-12.75G) | Power: DC 3.8V | Humidity: 55.2 % |
| EUT: Quad band GSM/GPRS modules | Distance: | RBW: 1000 KHz VBW: 1000 KHz |
| M/N: GE910-GNSS | | |
| Mode: GPRS 850 | | |
| Note: | | |

| No. | Mk. | Freq. MHz | Reading Level dBm | Correct Factor dB | Measure- ment dBm | Limit dBm | Over dB | Antenna Height cm | Table Degree degree | Comment |
|-----|-----|--------------|-------------------------|-------------------------|-------------------------|--------------|------------|-------------------------|---------------------------|---------|
| 1 | * | 1648.000 | -37.73 | 4.45 | -33.28 | -13.00 | -20.28 | | | peak |

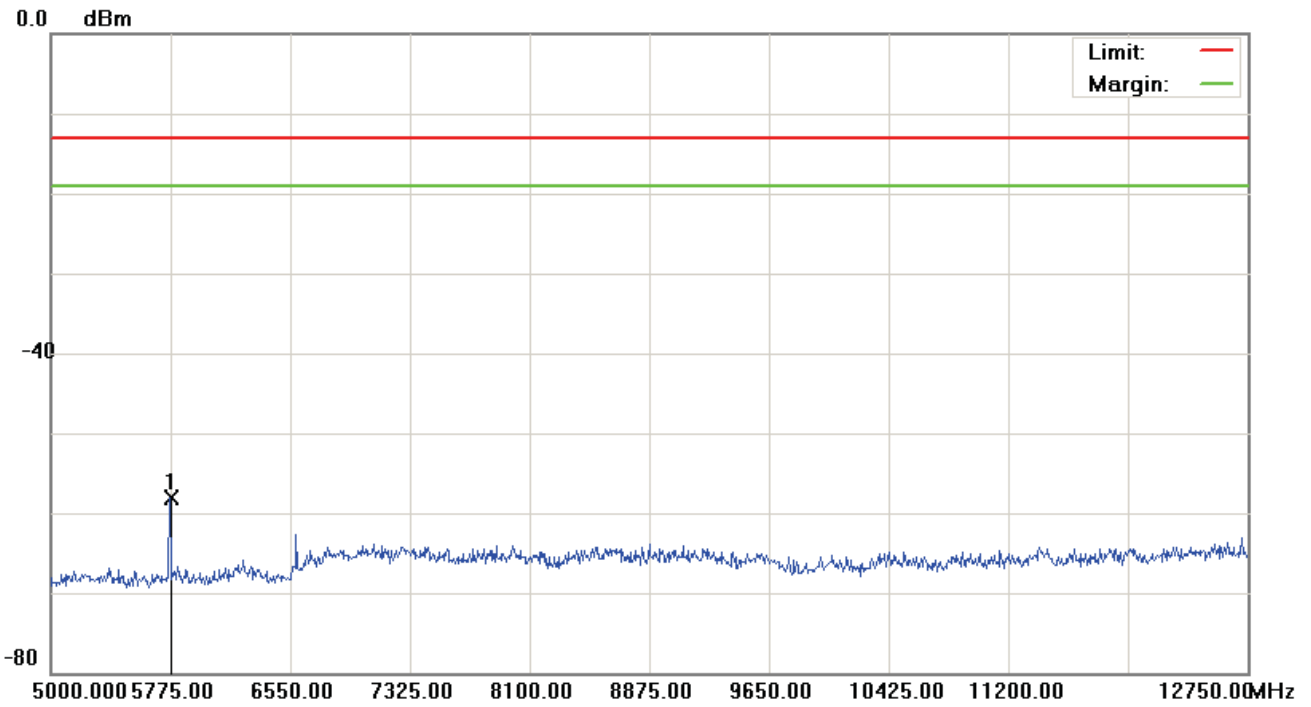
*:Maximum data x:Over limit !:over margin

File:GE910(CH128)

Data :#4

Date: 2013/3/29

Time: 下午 03:43:48



| | | |
|-----------------------------------------|-----------------------------------|-----------------------------|
| Site: : RF Conducted | Polarization: <i>Conducted po</i> | Temperature: 23 °C |
| Limit: FCC Part 22 conducted(9k-12.75G) | Power: DC 3.8V | Humidity: 55.2 % |
| EUT: Quad band GSM/GPRS modules | Distance: | RBW: 1000 KHz VBW: 1000 KHz |
| M/N: GE910-GNSS | | |
| Mode: GPRS 850 | | |
| Note: | | |

| No. | Mk. | Freq. MHz | Reading Level dBm | Correct Factor dB | Measure- ment dBm | Limit dBm | Over dB | Antenna Height cm | Table Degree degree | Detector | Comment |
|-----|-----|--------------|-------------------------|-------------------------|-------------------------|--------------|------------|-------------------------|---------------------------|----------|---------|
| 1 | * | 5771.125 | -63.14 | 5.01 | -58.13 | -13.00 | -45.13 | | | peak | |

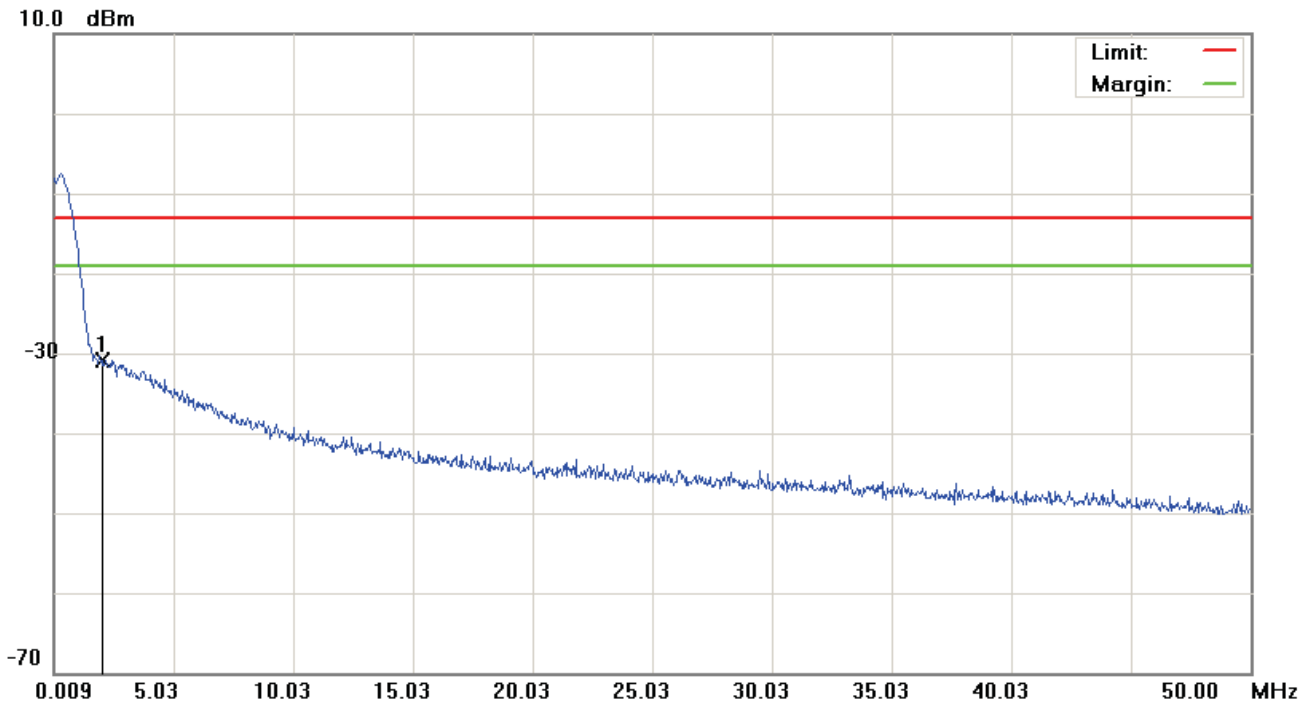
*:Maximum data x:Over limit !:over margin

File:GE910(CH190)

Data :#1

Date: 2013/3/29

Time: 下午 03:37:14



| | | |
|-----------------------------------------|-----------------------------------|-----------------------------|
| Site: : RF Conducted | Polarization: <i>Conducted po</i> | Temperature: 23 °C |
| Limit: FCC Part 22 conducted(9k-12.75G) | Power: DC 3.8V | Humidity: 55.2 % |
| EUT: Quad band GSM/GPRS modules | Distance: | RBW: 1000 KHz VBW: 1000 KHz |
| M/N: GE910-GNSS | | |
| Mode: GPRS 850 | | |
| Note: | | |

| No. | Mk. | Freq. MHz | Reading Level dBm | Correct Factor dB | Measure- ment dBm | Limit dBm | Over dB | Antenna Height cm | Table Degree degree | Comment |
|-----|-----|--------------|-------------------------|-------------------------|-------------------------|--------------|------------|-------------------------|---------------------------|---------|
| 1 | * | 2.0335 | -62.23 | 31.41 | -30.82 | -13.00 | -17.82 | peak | | |

*:Maximum data x:Over limit !:over margin

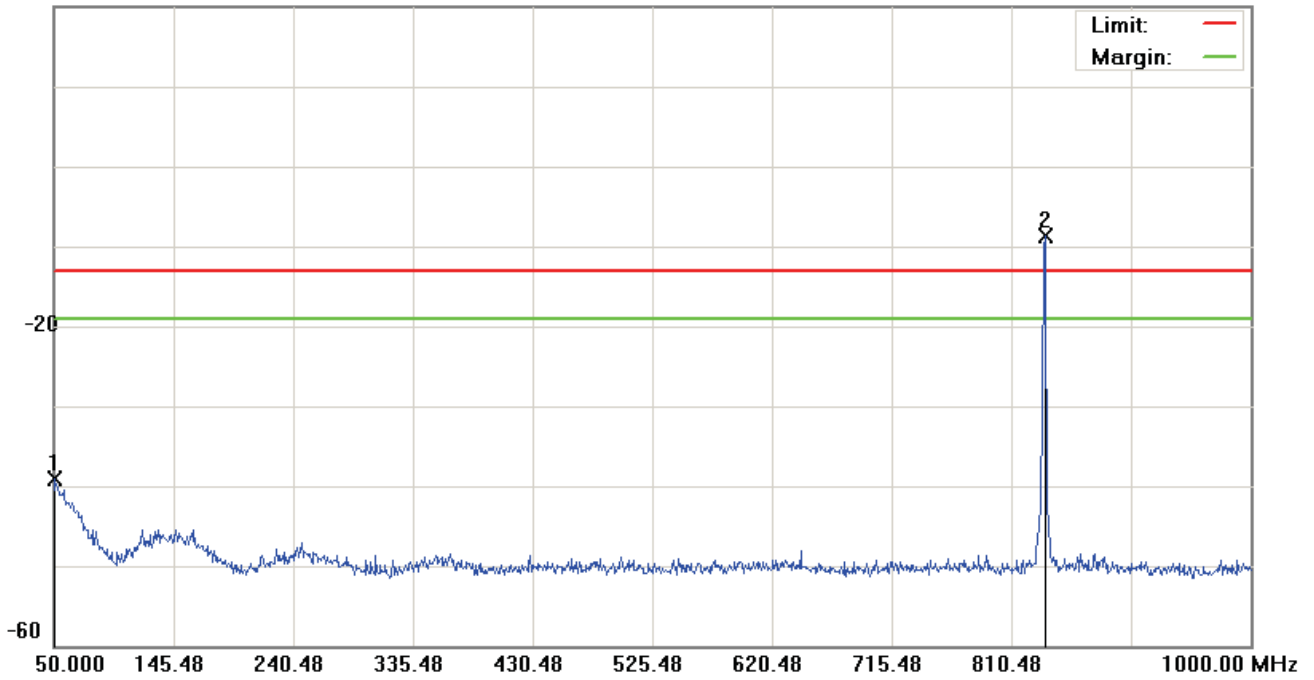
File:GE910(CH190)

Data :#2

Date:2013/3/29

Time: 下午 03:37:38

20.0 dBm



| | | |
|-----------------------------------------|-----------------------------------|-----------------------------|
| Site: : RF Conducted | Polarization: <i>Conducted po</i> | Temperature: 23 °C |
| Limit: FCC Part 22 conducted(9k-12.75G) | Power: DC 3.8V | Humidity: 55.2 % |
| EUT: Quad band GSM/GPRS modules | Distance: | RBW: 1000 KHz VBW: 1000 KHz |
| M/N: GE910-GNSS | | |
| Mode: GPRS 850 | | |
| Note: | | |

| No. | Mk. | Freq. MHz | Reading Level dBm | Correct Factor dB | Measure- ment dBm | Limit dBm | Over dB | Antenna Height cm | Table Degree degree | Comment |
|-----|-----|--------------|-------------------------|-------------------------|-------------------------|--------------|------------|-------------------------|---------------------------|---------|
| 1 | | 50.4750 | -53.73 | 14.61 | -39.12 | -13.00 | -26.12 | peak | | |
| 2 | * | 836.6000 | -12.63 | 3.96 | -8.67 | -13.00 | 4.33 | peak | | Tx |

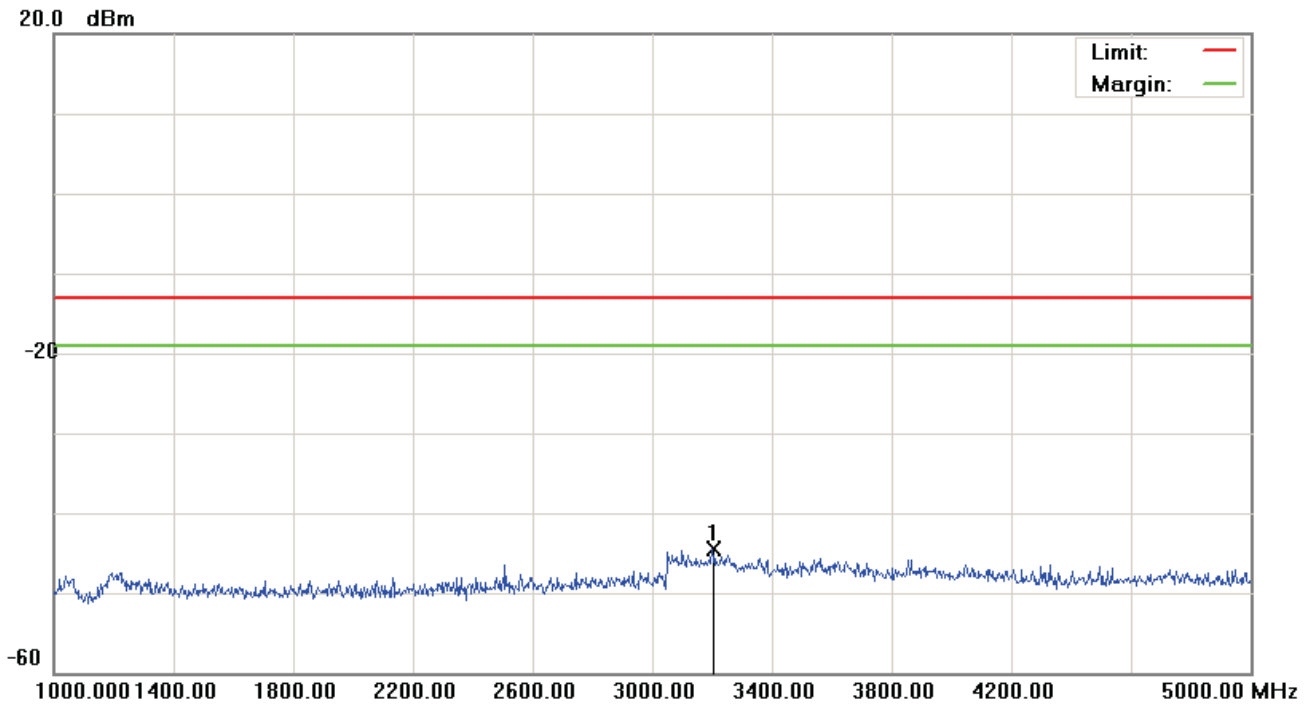
*:Maximum data x:Over limit !:over margin

File:GE910(CH190)

Data :#3

Date: 2013/3/29

Time: 下午 03:46:47



| | | |
|-----------------------------------------|-----------------------------------|-----------------------------|
| Site: : RF Conducted | Polarization: <i>Conducted po</i> | Temperature: 23 °C |
| Limit: FCC Part 22 conducted(9k-12.75G) | Power: DC 3.8V | Humidity: 55.2 % |
| EUT: Quad band GSM/GPRS modules | Distance: | RBW: 1000 KHz VBW: 1000 KHz |
| M/N: GE910-GNSS | | |
| Mode: GPRS 850 | | |
| Note: | | |

| No. | Mk. | Freq. MHz | Reading Level dBm | Correct Factor dB | Measure- ment dBm | Limit dBm | Over dB | Antenna Height cm | Table Degree degree | Comment |
|-----|-----|--------------|-------------------------|-------------------------|-------------------------|--------------|------------|-------------------------|---------------------------|---------|
| 1 | * | 3202.000 | -49.12 | 4.66 | -44.46 | -13.00 | -31.46 | peak | | |

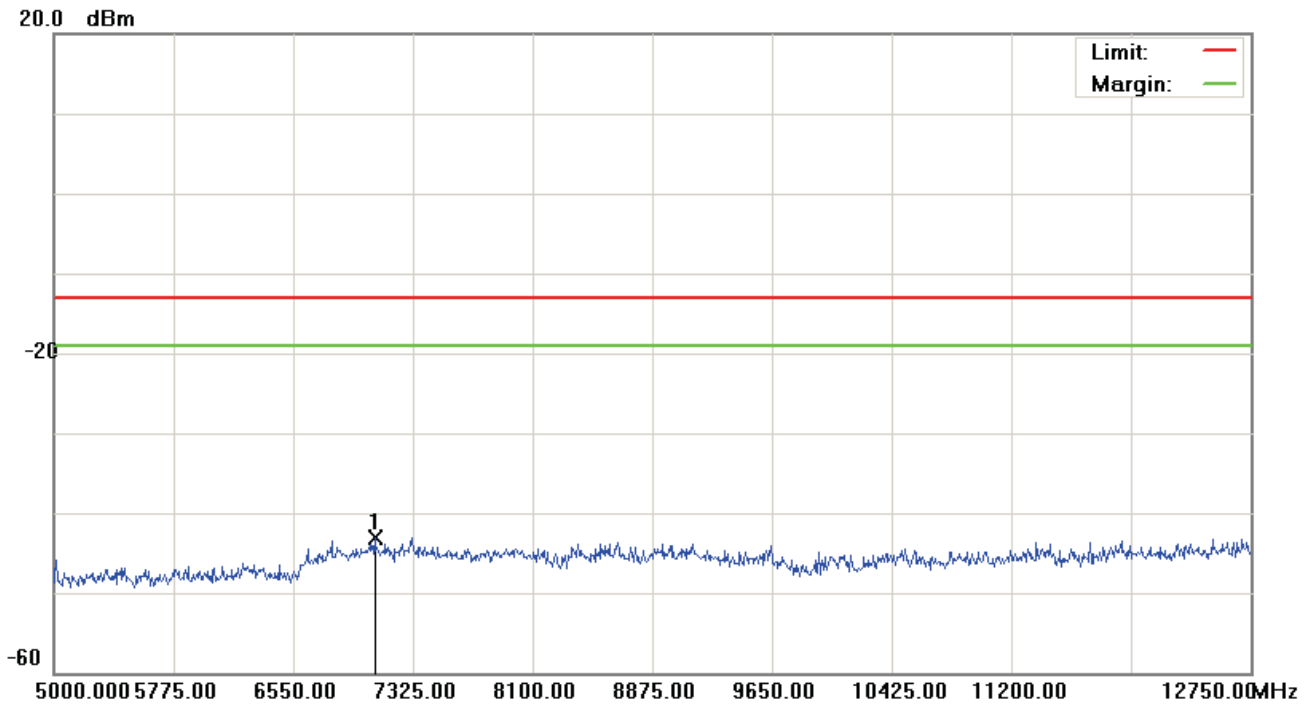
*:Maximum data x:Over limit !:over margin

File:GE910(CH190)

Data :#4

Date:2013/3/29

Time: 下午 03:47:10



| | | |
|-----------------------------------------|-----------------------------------|-----------------------------|
| Site: : RF Conducted | Polarization: <i>Conducted po</i> | Temperature: 23 °C |
| Limit: FCC Part 22 conducted(9k-12.75G) | Power: DC 3.8V | Humidity: 55.2 % |
| EUT: Quad band GSM/GPRS modules | Distance: | RBW: 1000 KHz VBW: 1000 KHz |
| M/N: GE910-GNSS | | |
| Mode: GPRS 850 | | |
| Note: | | |

| No. | Mk. | Freq. MHz | Reading Level dBm | Correct Factor dB | Measure- ment dBm | Limit dBm | Over dB | Antenna Height cm | Table Degree degree | Comment |
|-----|-----|--------------|-------------------------|-------------------------|-------------------------|--------------|------------|-------------------------|---------------------------|---------|
| 1 | * | 7077.000 | -48.08 | 4.96 | -43.12 | -13.00 | -30.12 | peak | | |

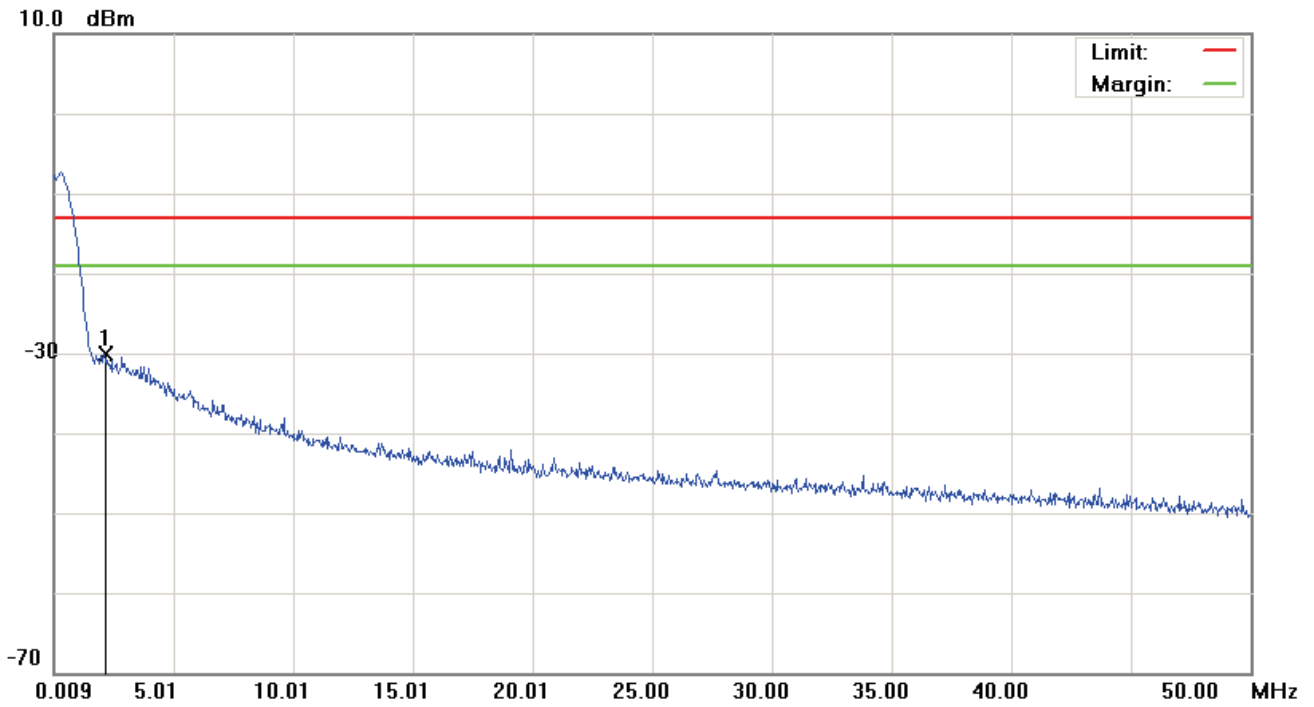
*:Maximum data x:Over limit !:over margin

File:GE910(CH251)

Data :#1

Date:2013/3/29

Time: 下午 03:39:28



| | | |
|-----------------------------------------|-----------------------------------|-----------------------------|
| Site: : RF Conducted | Polarization: <i>Conducted po</i> | Temperature: 23 °C |
| Limit: FCC Part 22 conducted(9k-12.75G) | Power: DC 3.8V | Humidity: 55.2 % |
| EUT: Quad band GSM/GPRS modules | Distance: | RBW: 1000 KHz VBW: 1000 KHz |
| M/N: GE910-GNSS | | |
| Mode: GPRS 850 | | |
| Note: | | |

| No. | Mk. | Freq. MHz | Reading Level dBm | Correct Factor dB | Measure- ment dBm | Limit dBm | Over dB | Antenna Height cm | Table Degree degree | Comment |
|-----|-----|--------------|-------------------------|-------------------------|-------------------------|--------------|------------|-------------------------|---------------------------|---------|
| 1 | * | 2.1335 | -61.54 | 31.47 | -30.07 | -13.00 | -17.07 | peak | | |

*:Maximum data x:Over limit !:over margin

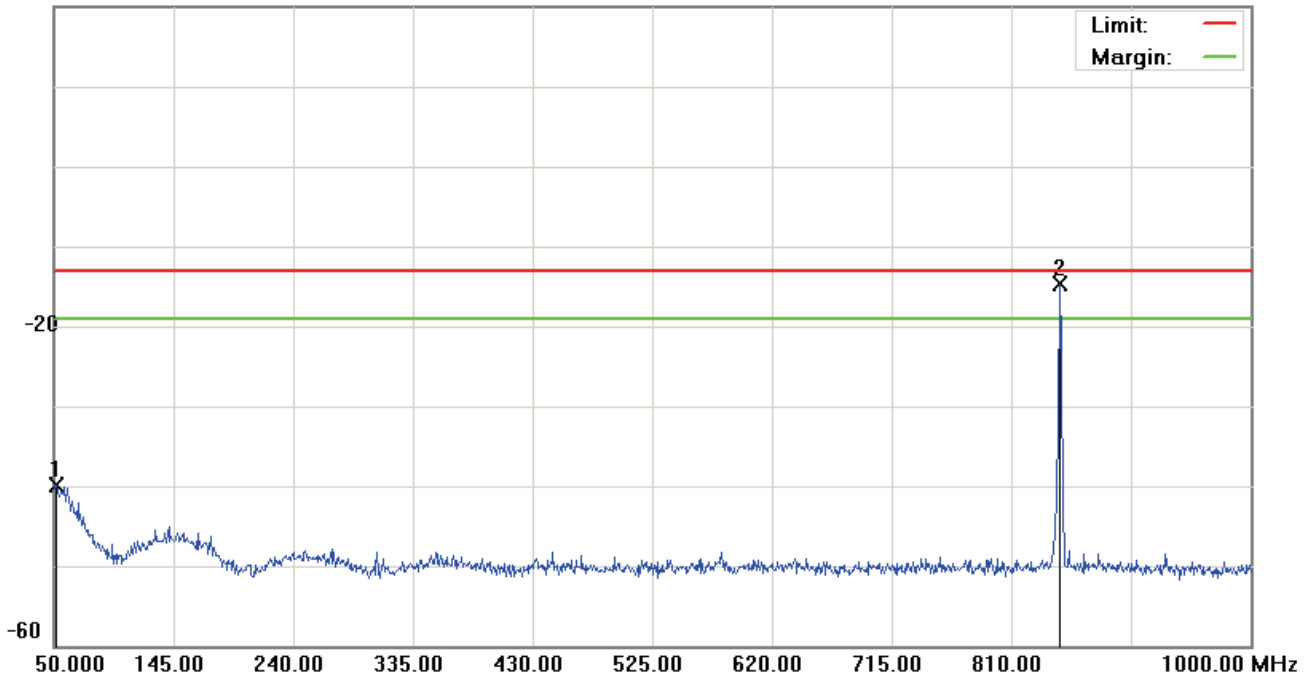
File:GE910(CH251)

Data :#2

Date:2013/3/29

Time: 下午 03:39:52

20.0 dBm



| | | |
|-----------------------------------------|-----------------------------------|-----------------------------|
| Site: : RF Conducted | Polarization: <i>Conducted po</i> | Temperature: 23 °C |
| Limit: FCC Part 22 conducted(9k-12.75G) | Power: DC 3.8V | Humidity: 55.2 % |
| EUT: Quad band GSM/GPRS modules | Distance: | RBW: 1000 KHz VBW: 1000 KHz |
| M/N: GE910-GNSS | | |
| Mode: GPRS 850 | | |
| Note: | | |

| No. | Mk. | Freq. MHz | Reading Level dBm | Correct Factor dB | Measure- ment dBm | Limit dBm | Over dB | Antenna Height cm | Table Degree degree | Comment |
|-----|-----|--------------|-------------------------|-------------------------|-------------------------|--------------|------------|-------------------------|---------------------------|---------|
| 1 | | 51.9000 | -54.17 | 14.36 | -39.81 | -13.00 | -26.81 | peak | | |
| 2 | * | 848.9500 | -18.70 | 3.98 | -14.72 | -13.00 | -1.72 | peak | | Tx |

*:Maximum data x:Over limit !:over margin

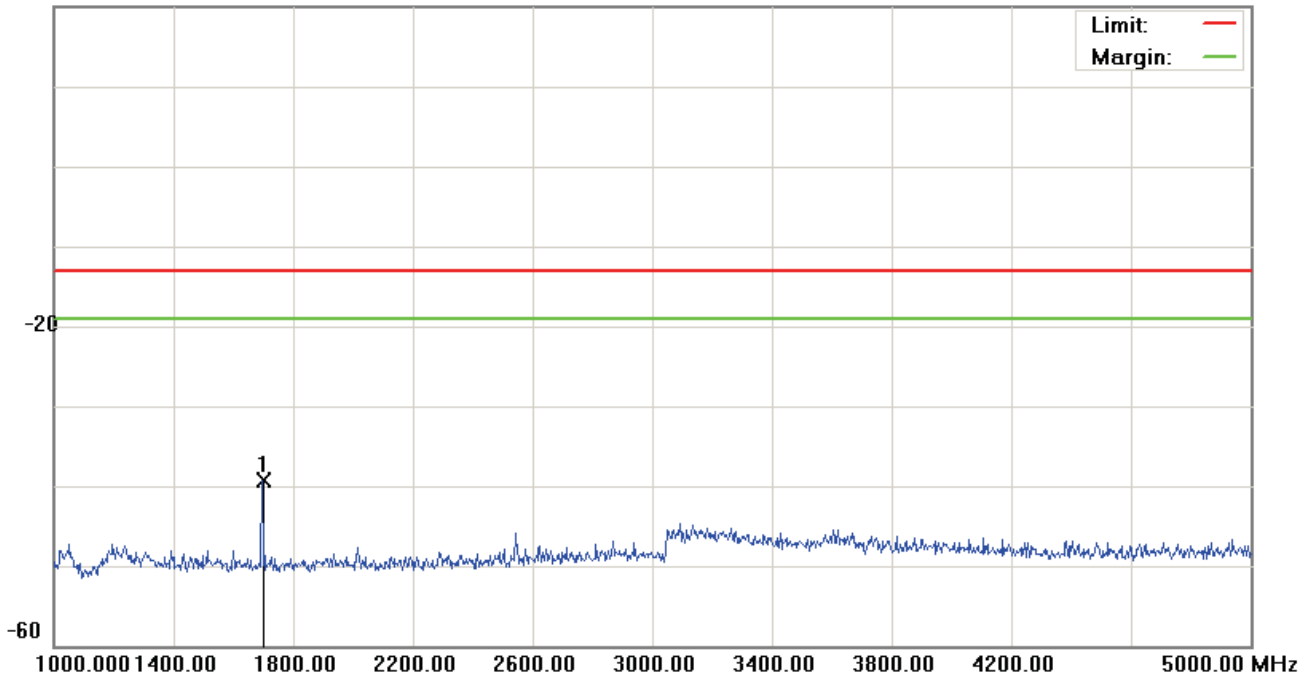
File:GE910(CH251)

Data :#3

Date: 2013/3/29

Time: 下午 03:47:49

20.0 dBm



| | | |
|-----------------------------------------|-----------------------------------|-----------------------------|
| Site: : RF Conducted | Polarization: <i>Conducted po</i> | Temperature: 23 °C |
| Limit: FCC Part 22 conducted(9k-12.75G) | Power: DC 3.8V | Humidity: 55.2 % |
| EUT: Quad band GSM/GPRS modules | Distance: | RBW: 1000 KHz VBW: 1000 KHz |
| M/N: GE910-GNSS | | |
| Mode: GPRS 850 | | |
| Note: | | |

| No. | Mk. | Freq. MHz | Reading Level dBm | Correct Factor dB | Measure- ment dBm | Limit dBm | Over dB | Antenna Height cm | Table Degree degree | Comment |
|-----|-----|--------------|-------------------------|-------------------------|-------------------------|--------------|------------|-------------------------|---------------------------|---------|
| 1 | * | 1698.000 | -43.68 | 4.48 | -39.20 | -13.00 | -26.20 | peak | | |

*:Maximum data x:Over limit !:over margin

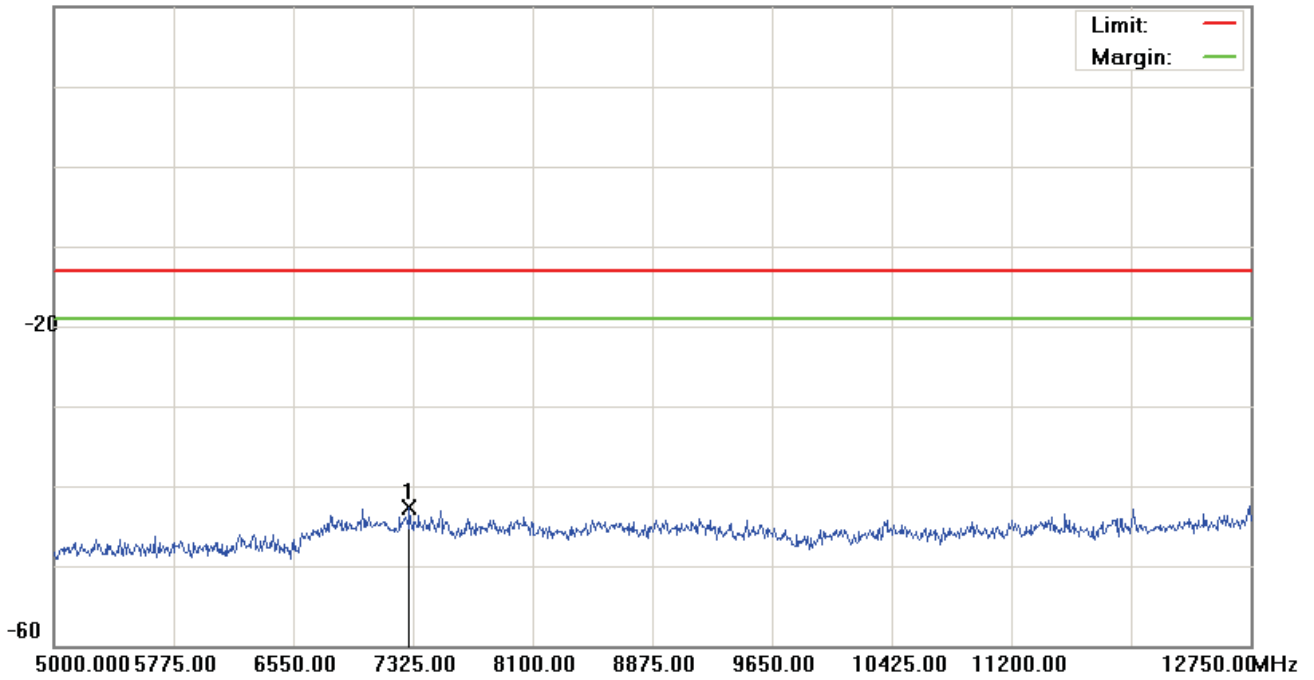
File:GE910(CH251)

Data :#4

Date:2013/3/29

Time: 下午 03:48:12

20.0 dBm



| | | |
|-----------------------------------------|-----------------------------------|-----------------------------|
| Site: : RF Conducted | Polarization: <i>Conducted po</i> | Temperature: 23 °C |
| Limit: FCC Part 22 conducted(9k-12.75G) | Power: DC 3.8V | Humidity: 55.2 % |
| EUT: Quad band GSM/GPRS modules | Distance: | RBW: 1000 KHz VBW: 1000 KHz |
| M/N: GE910-GNSS | | |
| Mode: GPRS 850 | | |
| Note: | | |

| No. | Mk. | Freq. MHz | Reading Level dBm | Correct Factor dB | Measure- ment dBm | Limit dBm | Over dB | Antenna Height cm | Table Degree degree | Detector | Comment |
|-----|-----|--------------|-------------------------|-------------------------|-------------------------|--------------|------------|-------------------------|---------------------------|----------|---------|
| 1 | * | 7301.750 | -47.92 | 5.16 | -42.76 | -13.00 | -29.76 | | | peak | |

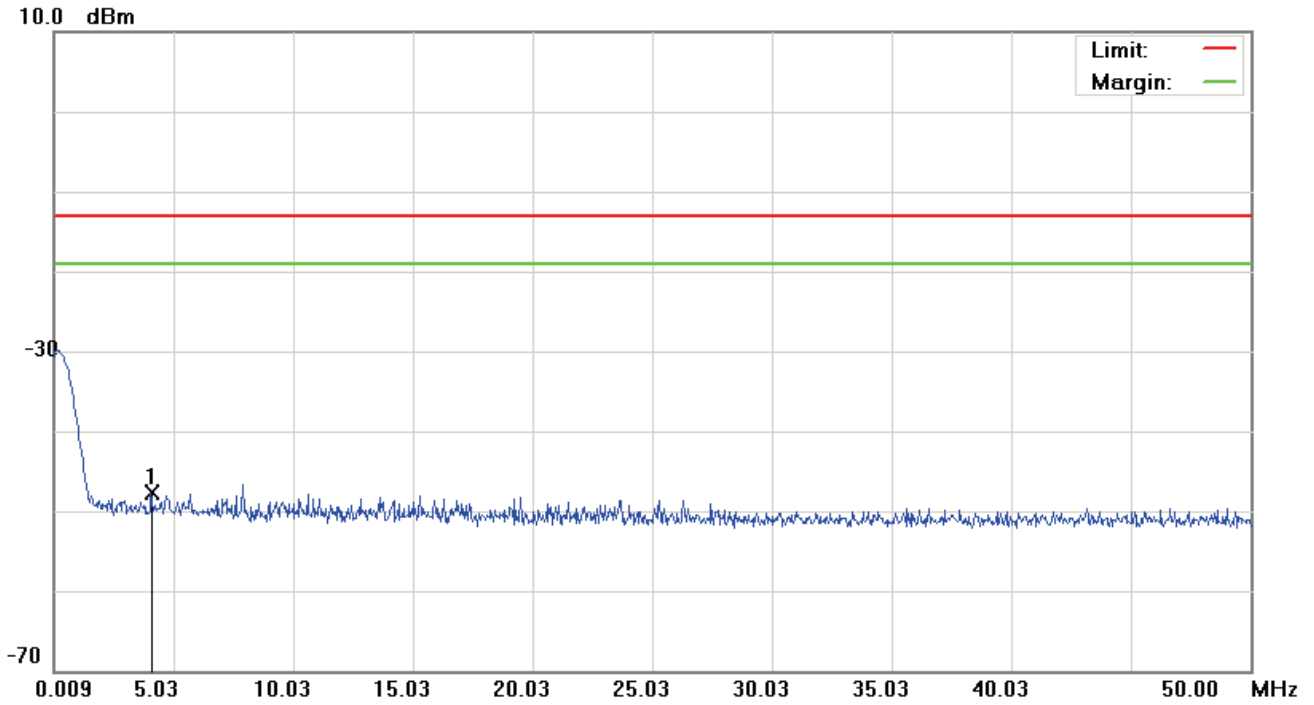
*:Maximum data x:Over limit !:over margin

File:GE910(CH512)

Data :#1

Date: 2013/3/29

Time: 下午 03:10:35



| | | |
|----------------------------------------|-----------------------------------|-----------------------------|
| Site: : RF Conducted | Polarization: <i>Conducted po</i> | Temperature: 23 °C |
| Limit: FCC Part 24 conducted(9k-26.5G) | Power: DC 3.8V | Humidity: 55.2 % |
| EUT: Quad band GSM/GPRS modules | Distance: | RBW: 1000 KHz VBW: 1000 KHz |
| M/N: GE910-GNSS | | |
| Mode: GPRS 1900 | | |
| Note: | | |

| No. | Mk. | Freq. MHz | Reading Level dBm | Correct Factor dB | Measure- ment dBm | Limit dBm | Over dB | Antenna Height cm | Table Degree degree | Comment |
|-----|-----|--------------|-------------------------|-------------------------|-------------------------|--------------|------------|-------------------------|---------------------------|---------|
| 1 | * | 4.0833 | -60.93 | 13.21 | -47.72 | -13.00 | -34.72 | peak | | |

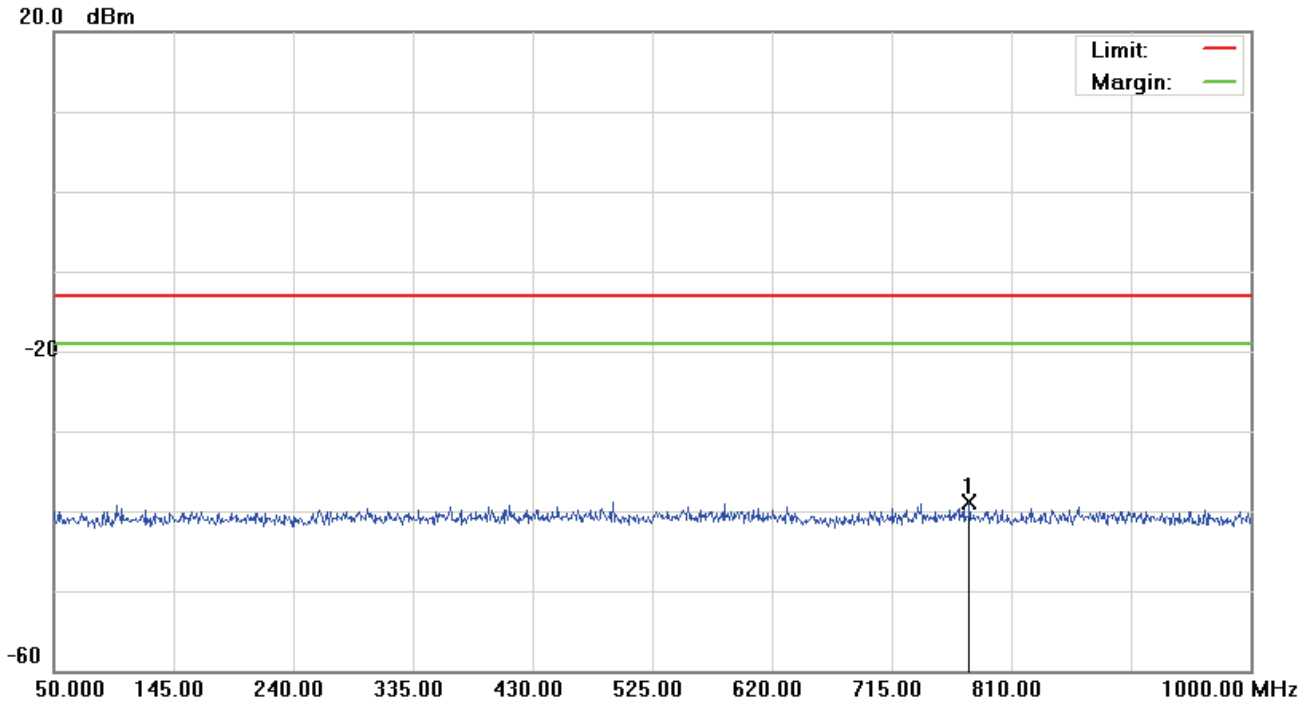
*:Maximum data x:Over limit !:over margin

File:GE910(CH512)

Data :#2

Date: 2013/3/29

Time: 下午 03:10:59



| | | |
|----------------------------------------|-----------------------------------|-----------------------------|
| Site: : RF Conducted | Polarization: <i>Conducted po</i> | Temperature: 23 °C |
| Limit: FCC Part 24 conducted(9k-26.5G) | Power: DC 3.8V | Humidity: 55.2 % |
| EUT: Quad band GSM/GPRS modules | Distance: | RBW: 1000 KHz VBW: 1000 KHz |
| M/N: GE910-GNSS | | |
| Mode: GPRS 1900 | | |
| Note: | | |

| No. | Mk. | Freq. MHz | Reading Level dBm | Correct Factor dB | Measure- ment dBm | Limit dBm | Over dB | Antenna Height cm | Table Degree degree | Comment |
|-----|-----|--------------|-------------------------|-------------------------|-------------------------|--------------|------------|-------------------------|---------------------------|---------|
| 1 | * | 776.7500 | -52.01 | 13.15 | -38.86 | -13.00 | -25.86 | peak | | |

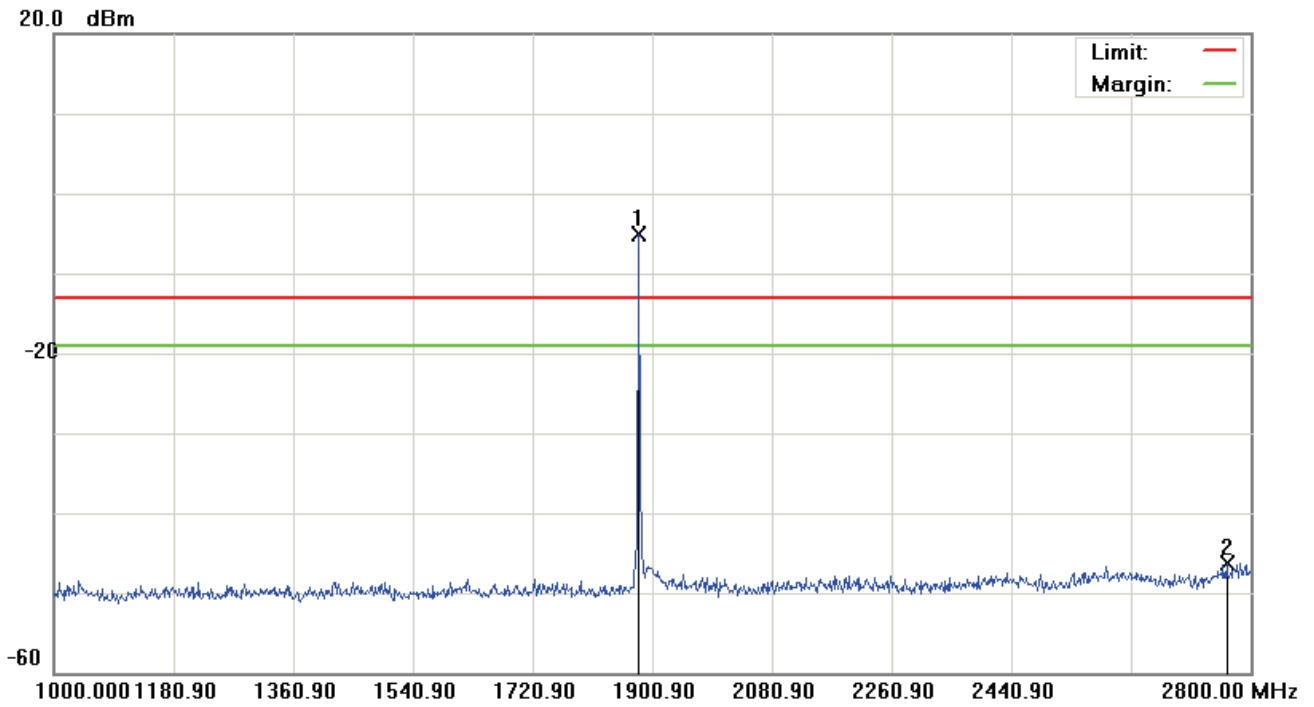
*:Maximum data x:Over limit !:over margin

File:GE910(CH512)

Data :#3

Date: 2013/3/29

Time: 下午 03:28:06



| | | |
|----------------------------------------|-----------------------------------|-----------------------------|
| Site: : RF Conducted | Polarization: <i>Conducted po</i> | Temperature: 23 °C |
| Limit: FCC Part 24 conducted(9k-26.5G) | Power: DC 3.8V | Humidity: 55.2 % |
| EUT: Quad band GSM/GPRS modules | Distance: | RBW: 1000 KHz VBW: 1000 KHz |
| M/N: GE910-GNSS | | |
| Mode: GPRS 1900 | | |
| Note: | | |

| No. | Mk. | Freq. MHz | Reading Level dBm | Correct Factor dB | Measure- ment dBm | Limit dBm | Over dB | Antenna Height cm | Table Degree degree | Comment |
|-----|-----|--------------|-------------------------|-------------------------|-------------------------|--------------|------------|-------------------------|---------------------------|---------|
| 1 | * | 1880.200 | -9.83 | 4.65 | -5.18 | -13.00 | 7.82 | peak | | Tx |
| 2 | | 2764.000 | -51.90 | 5.66 | -46.24 | -13.00 | -33.24 | peak | | |

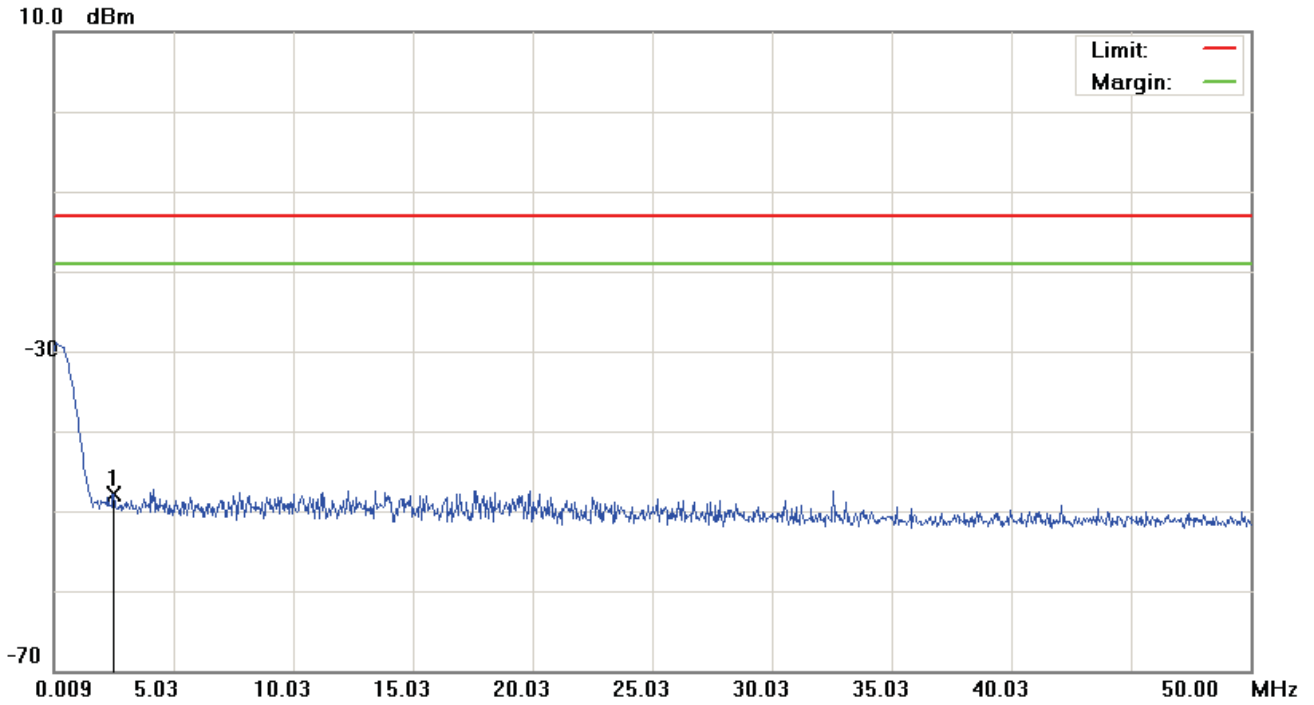
*:Maximum data x:Over limit !:over margin

File:GE910(CH661)

Data :#1

Date: 2013/3/29

Time: 下午 03:18:30



| | | |
|----------------------------------------|-----------------------------------|-----------------------------|
| Site: : RF Conducted | Polarization: <i>Conducted po</i> | Temperature: 23 °C |
| Limit: FCC Part 24 conducted(9k-26.5G) | Power: DC 3.8V | Humidity: 55.2 % |
| EUT: Quad band GSM/GPRS modules | Distance: | RBW: 1000 KHz VBW: 1000 KHz |
| M/N: GE910-GNSS | | |
| Mode: GPRS 1900 | | |
| Note: | | |

| No. | Mk. | Freq. MHz | Reading Level dBm | Correct Factor dB | Measure- ment dBm | Limit dBm | Over dB | Antenna Height cm | Table Degree degree | Detector | Comment |
|-----|-----|--------------|-------------------------|-------------------------|-------------------------|--------------|------------|-------------------------|---------------------------|----------|---------|
| 1 | * | 2.4836 | -60.82 | 12.91 | -47.91 | -13.00 | -34.91 | | | peak | |

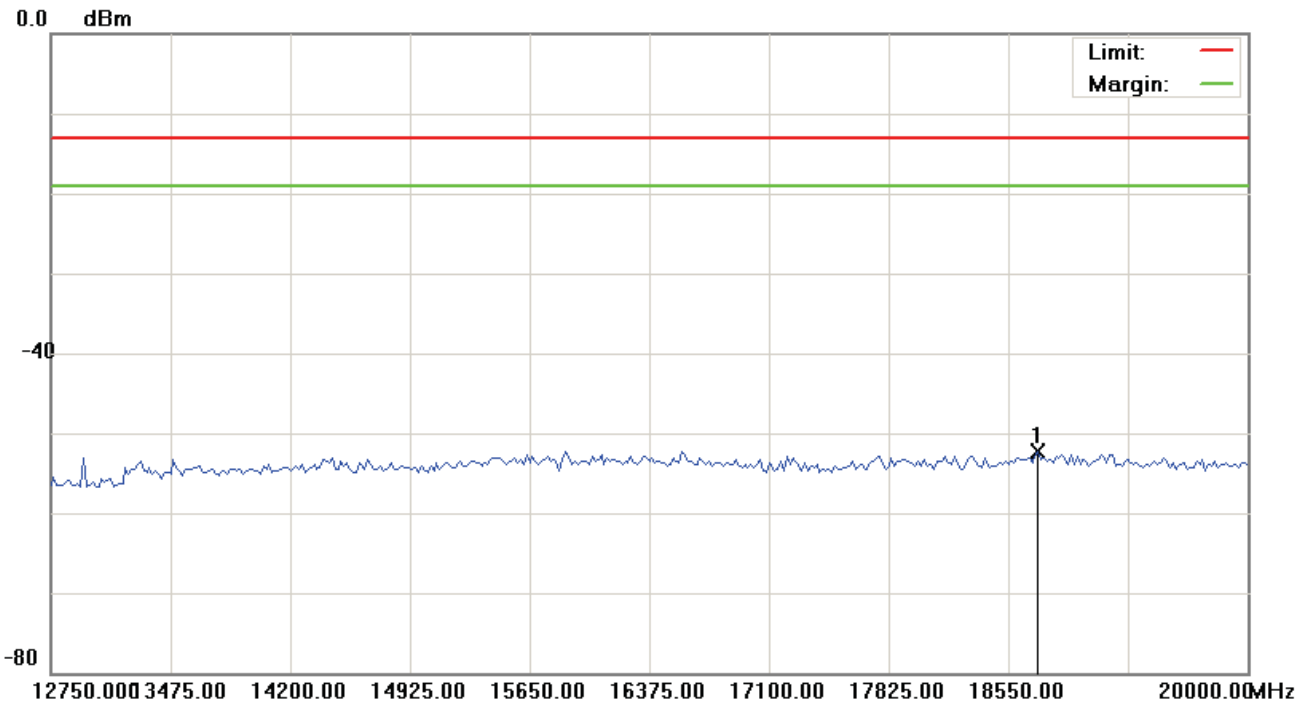
*:Maximum data x:Over limit !:over margin

File: GE910(CH512)

Data :#5

Date: 2013/3/29

Time: 下午 03:55:01



| | | |
|----------------------------------------|-----------------------------------|-----------------------------|
| Site: : RF Conducted | Polarization: <i>Conducted po</i> | Temperature: 23 °C |
| Limit: FCC Part 24 conducted(9k-26.5G) | Power: DC 3.8V | Humidity: 55.2 % |
| EUT: Quad band GSM/GPRS modules | Distance: | RBW: 1000 KHz VBW: 1000 KHz |
| M/N: GE910-GNSS | | |
| Mode: GPRS 1900 | | |
| Note: | | |

| No. | Mk. | Freq. MHz | Reading Level dBm | Correct Factor dB | Measure- ment dBm | Limit dBm | Over dB | Antenna Height cm | Table Degree degree | Detector | Comment |
|-----|-----|--------------|-------------------------|-------------------------|-------------------------|--------------|------------|-------------------------|---------------------------|----------|---------|
| 1 | * | 18731.250 | -59.29 | 7.08 | -52.21 | -13.00 | -39.21 | | | peak | |

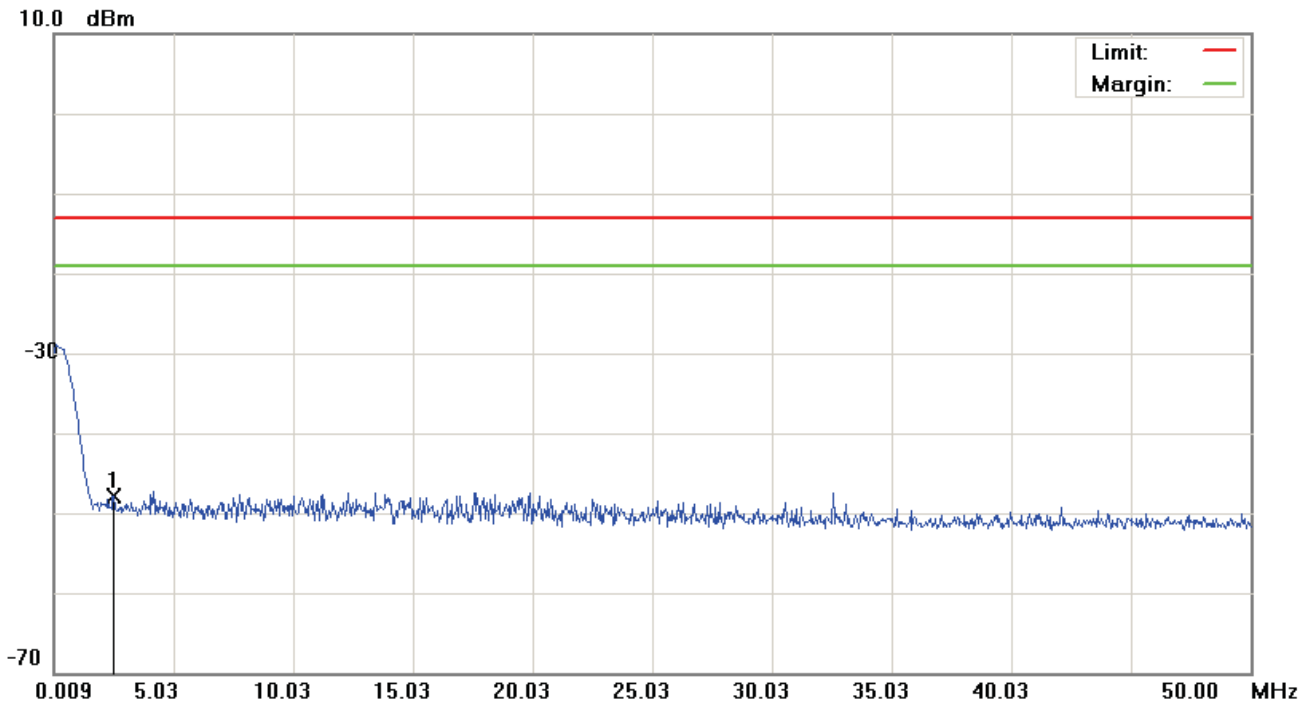
*:Maximum data x:Over limit !:over margin

File:GE910(CH661)

Data :#1

Date: 2013/3/29

Time: 下午 03:18:30



| | | |
|----------------------------------------|-----------------------------------|-----------------------------|
| Site: : RF Conducted | Polarization: <i>Conducted po</i> | Temperature: 23 °C |
| Limit: FCC Part 24 conducted(9k-26.5G) | Power: DC 3.8V | Humidity: 55.2 % |
| EUT: Quad band GSM/GPRS modules | Distance: | RBW: 1000 KHz VBW: 1000 KHz |
| M/N: GE910-GNSS | | |
| Mode: GPRS 1900 | | |
| Note: | | |

| No. | Mk. | Freq. MHz | Reading Level dBm | Correct Factor dB | Measure- ment dBm | Limit dBm | Over dB | Antenna Height cm | Table Degree degree | Detector | Comment |
|-----|-----|--------------|-------------------------|-------------------------|-------------------------|--------------|------------|-------------------------|---------------------------|----------|---------|
| 1 | * | 2.4836 | -60.82 | 12.91 | -47.91 | -13.00 | -34.91 | | | peak | |

*:Maximum data x:Over limit !:over margin

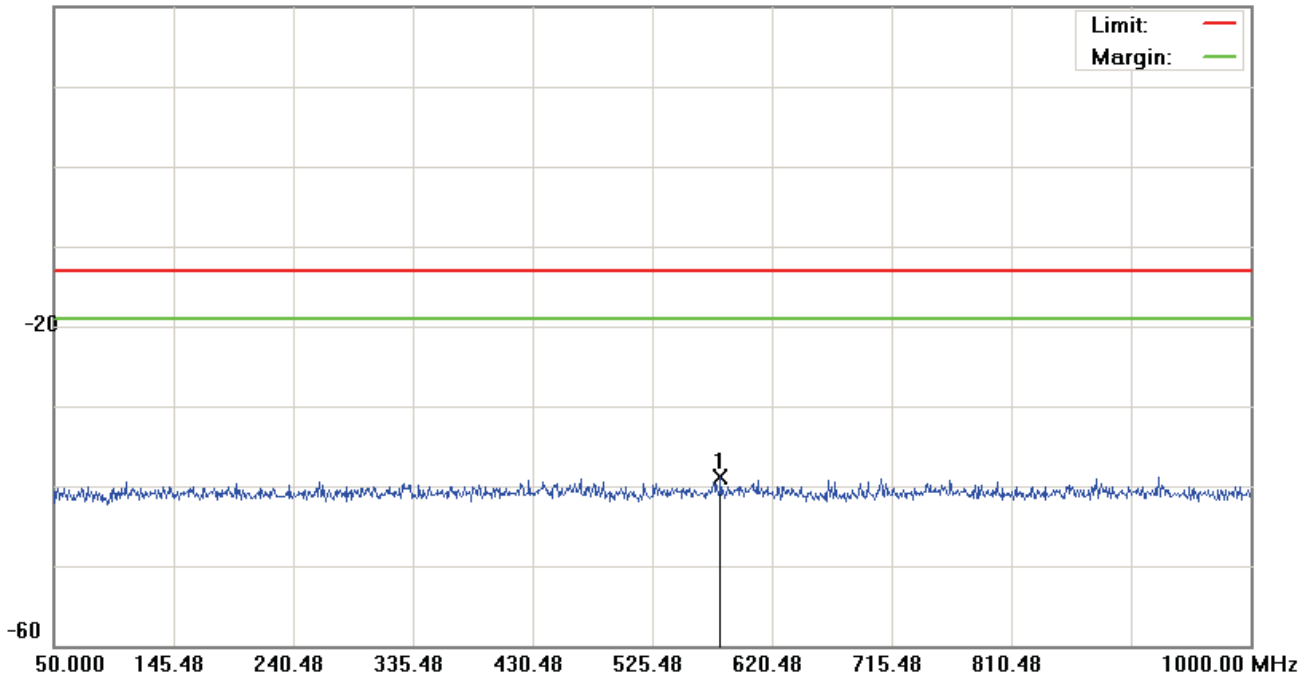
File: GE910(CH661)

Data :#2

Date: 2013/3/29

Time: 下午 03:18:54

20.0 dBm



| | | |
|----------------------------------------|-----------------------------------|-----------------------------|
| Site: : RF Conducted | Polarization: <i>Conducted po</i> | Temperature: 23 °C |
| Limit: FCC Part 24 conducted(9k-26.5G) | Power: DC 3.8V | Humidity: 55.2 % |
| EUT: Quad band GSM/GPRS modules | Distance: | RBW: 1000 KHz VBW: 1000 KHz |
| M/N: GE910-GNSS | | |
| Mode: GPRS 1900 | | |
| Note: | | |

| No. | Mk. | Freq. MHz | Reading Level dBm | Correct Factor dB | Measure- ment dBm | Limit dBm | Over dB | Antenna Height cm | Table Degree degree | Detector | Comment |
|-----|-----|--------------|-------------------------|-------------------------|-------------------------|--------------|------------|-------------------------|---------------------------|----------|---------|
| 1 | * | 579.1500 | -52.14 | 13.16 | -38.98 | -13.00 | -25.98 | | | peak | |

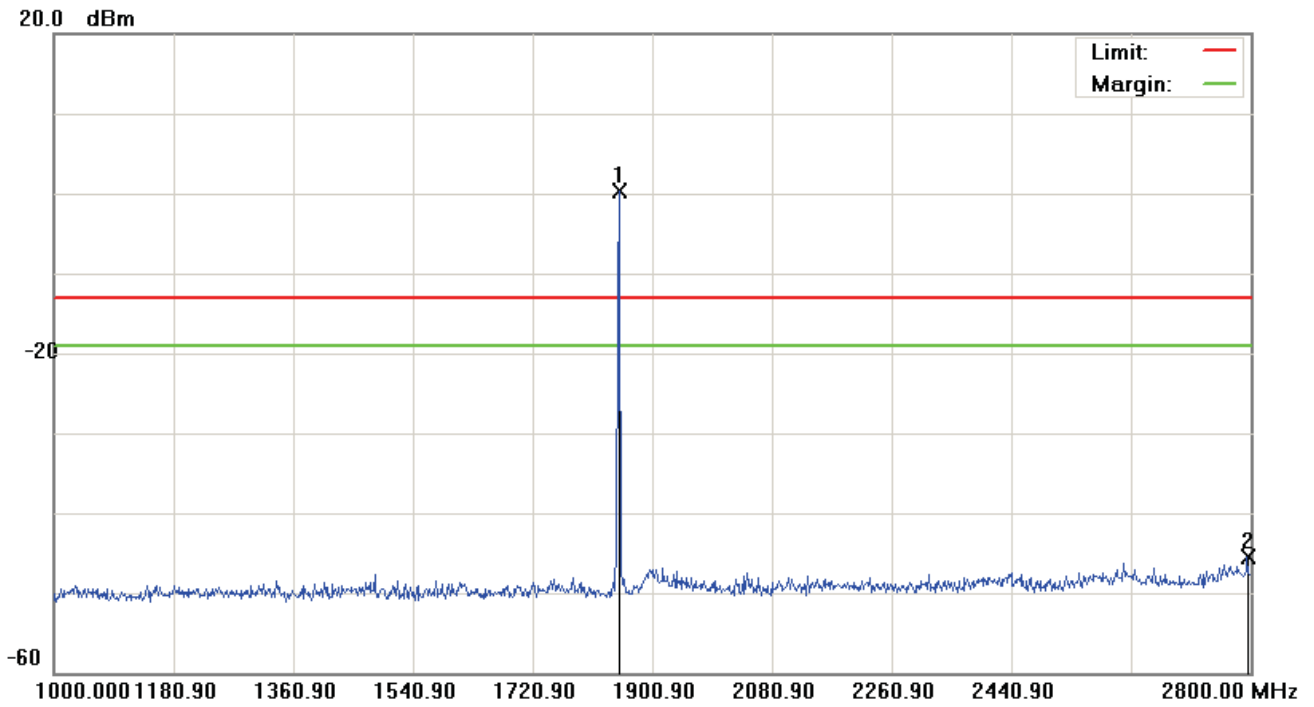
*:Maximum data x:Over limit !:over margin

File:GE910(CH661)

Data :#3

Date: 2013/3/29

Time: 下午 03:25:30



| | | |
|----------------------------------------|-----------------------------------|-----------------------------|
| Site: : RF Conducted | Polarization: <i>Conducted po</i> | Temperature: 23 °C |
| Limit: FCC Part 24 conducted(9k-26.5G) | Power: DC 3.8V | Humidity: 55.2 % |
| EUT: Quad band GSM/GPRS modules | Distance: | RBW: 1000 KHz VBW: 1000 KHz |
| M/N: GE910-GNSS | | |
| Mode: GPRS 1900 | | |
| Note: | | |

| No. | Mk. | Freq. MHz | Reading Level dBm | Correct Factor dB | Measure- ment dBm | Limit dBm | Over dB | Antenna Height cm | Table Degree degree | Comment |
|-----|-----|--------------|-------------------------|-------------------------|-------------------------|--------------|------------|-------------------------|---------------------------|---------|
| 1 | * | 1850.500 | -3.88 | 4.26 | 0.38 | -13.00 | 13.38 | peak | | Tx |
| 2 | | 2795.500 | -51.43 | 5.90 | -45.53 | -13.00 | -32.53 | peak | | |

*:Maximum data x:Over limit !:over margin

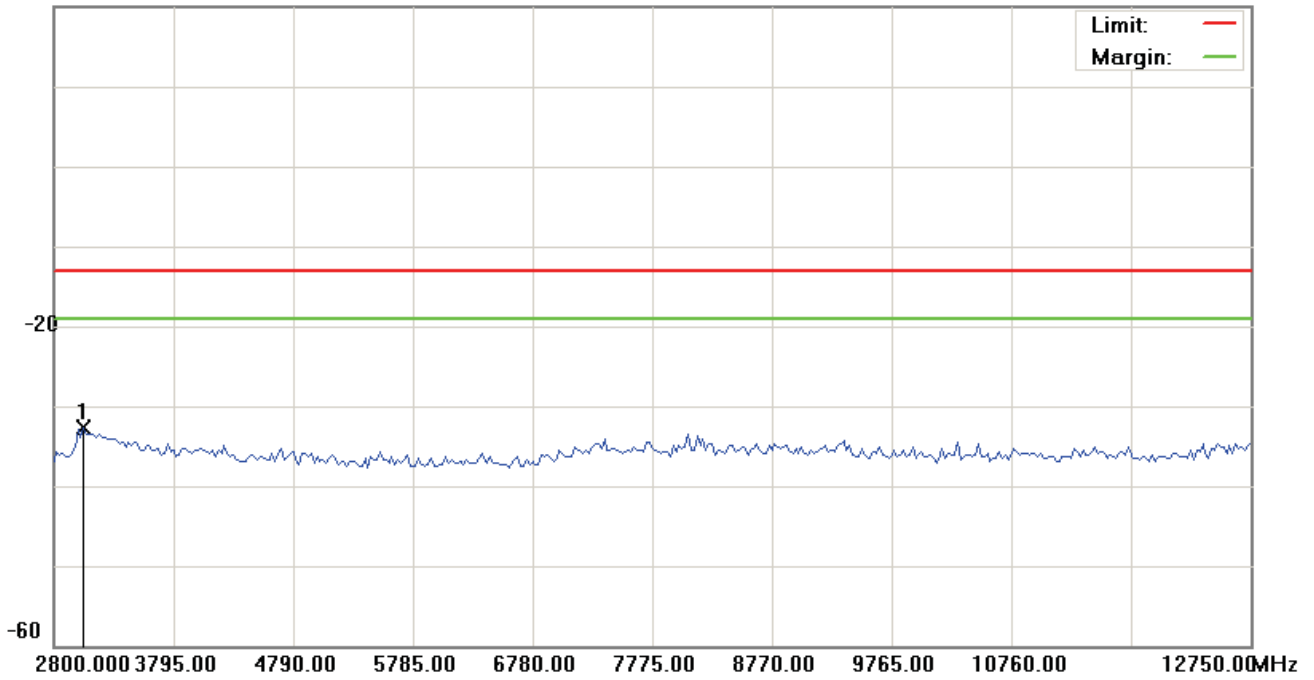
File:GE910(CH661)

Data :#4

Date: 2013/3/29

Time: 下午 03:55:36

20.0 dBm



| | | |
|----------------------------------------|-----------------------------------|-----------------------------|
| Site: : RF Conducted | Polarization: <i>Conducted po</i> | Temperature: 23 °C |
| Limit: FCC Part 24 conducted(9k-26.5G) | Power: DC 3.8V | Humidity: 55.2 % |
| EUT: Quad band GSM/GPRS modules | Distance: | RBW: 1000 KHz VBW: 1000 KHz |
| M/N: GE910-GNSS | | |
| Mode: GPRS 1900 | | |
| Note: | | |

| No. | Mk. | Freq. MHz | Reading Level dBm | Correct Factor dB | Measure- ment dBm | Limit dBm | Over dB | Antenna Height cm | Table Degree degree | Detector | Comment |
|-----|-----|--------------|-------------------------|-------------------------|-------------------------|--------------|------------|-------------------------|---------------------------|----------|---------|
| 1 | * | 3048.750 | -38.23 | 5.47 | -32.76 | -13.00 | -19.76 | | | peak | |

*:Maximum data x:Over limit !:over margin

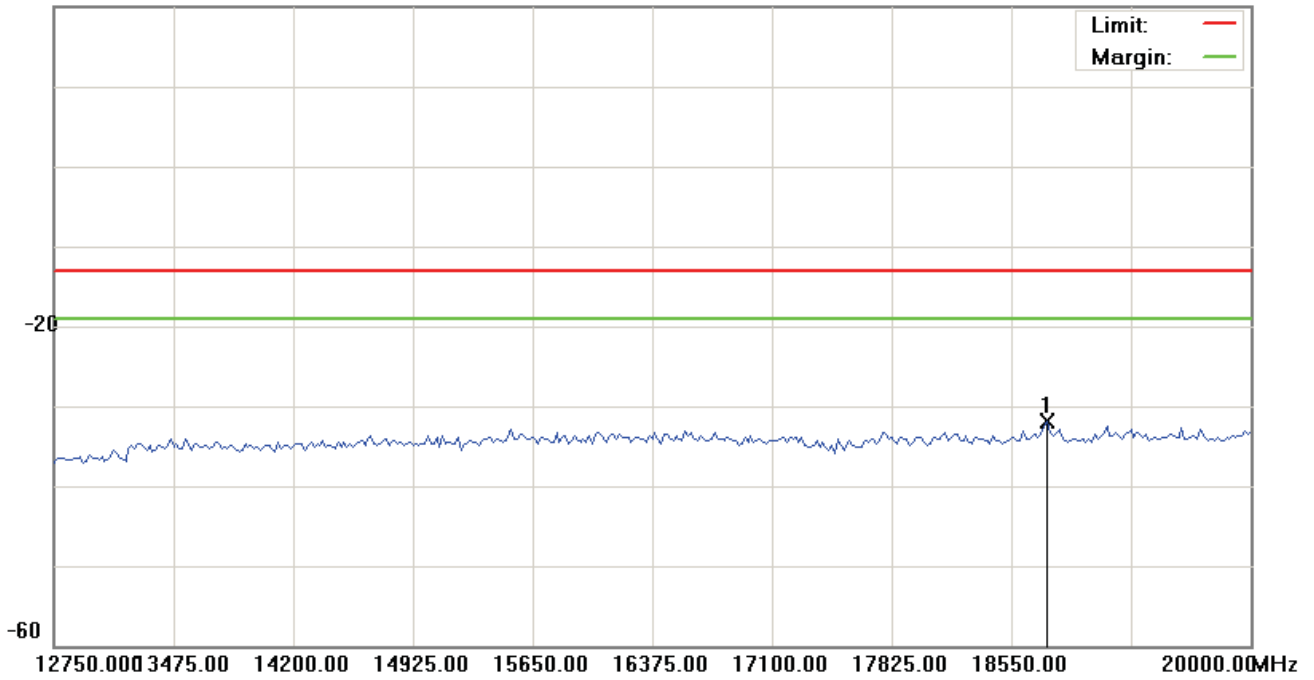
File: GE910(CH661)

Data :#5

Date: 2013/3/29

Time: 下午 03:55:56

20.0 dBm



| | | |
|----------------------------------------|-----------------------------------|-----------------------------|
| Site: : RF Conducted | Polarization: Conducted po | Temperature: 23 °C |
| Limit: FCC Part 24 conducted(9k-26.5G) | Power: DC 3.8V | Humidity: 55.2 % |
| EUT: Quad band GSM/GPRS modules | Distance: | RBW: 1000 KHz VBW: 1000 KHz |
| M/N: GE910-GNSS | | |
| Mode: GPRS 1900 | | |
| Note: | | |

| No. | Mk. | Freq. MHz | Reading Level dBm | Correct Factor dB | Measure- ment dBm | Limit dBm | Over dB | Antenna Height cm | Table Degree degree | Detector | Comment |
|-----|-----|--------------|-------------------------|-------------------------|-------------------------|--------------|------------|-------------------------|---------------------------|----------|---------|
| 1 | * | 18767.500 | -39.06 | 7.09 | -31.97 | -13.00 | -18.97 | | | peak | |

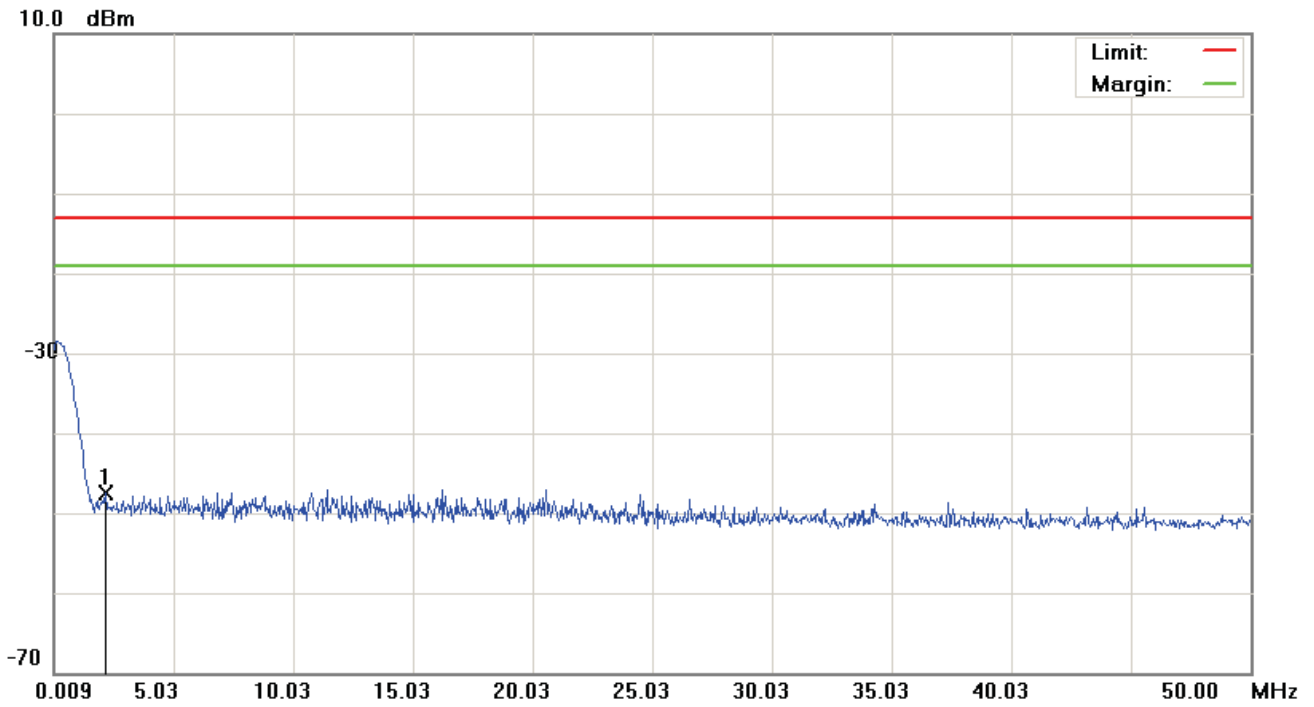
*:Maximum data x:Over limit !:over margin

File:GE910(CH810)

Data :#1

Date: 2013/3/29

Time: 下午 03:19:46



| | | |
|----------------------------------------|-----------------------------------|-----------------------------|
| Site: : RF Conducted | Polarization: <i>Conducted po</i> | Temperature: 23 °C |
| Limit: FCC Part 24 conducted(9k-26.5G) | Power: DC 3.8V | Humidity: 55.2 % |
| EUT: Quad band GSM/GPRS modules | Distance: | RBW: 1000 KHz VBW: 1000 KHz |
| M/N: GE910-GNSS | | |
| Mode: GPRS 1900 | | |
| Note: | | |

| No. | Mk. | Freq. | Reading Level | Correct Factor | Measurement | Limit | Over | Antenna Height | Table Degree | |
|-----|-----|--------|---------------|----------------|-------------|--------|--------|----------------|--------------|---------|
| | | MHz | dBm | dB | dBm | dBm | dB | cm | degree | Comment |
| 1 | * | 2.1585 | -60.67 | 13.12 | -47.55 | -13.00 | -34.55 | | | peak |

*:Maximum data x:Over limit !:over margin

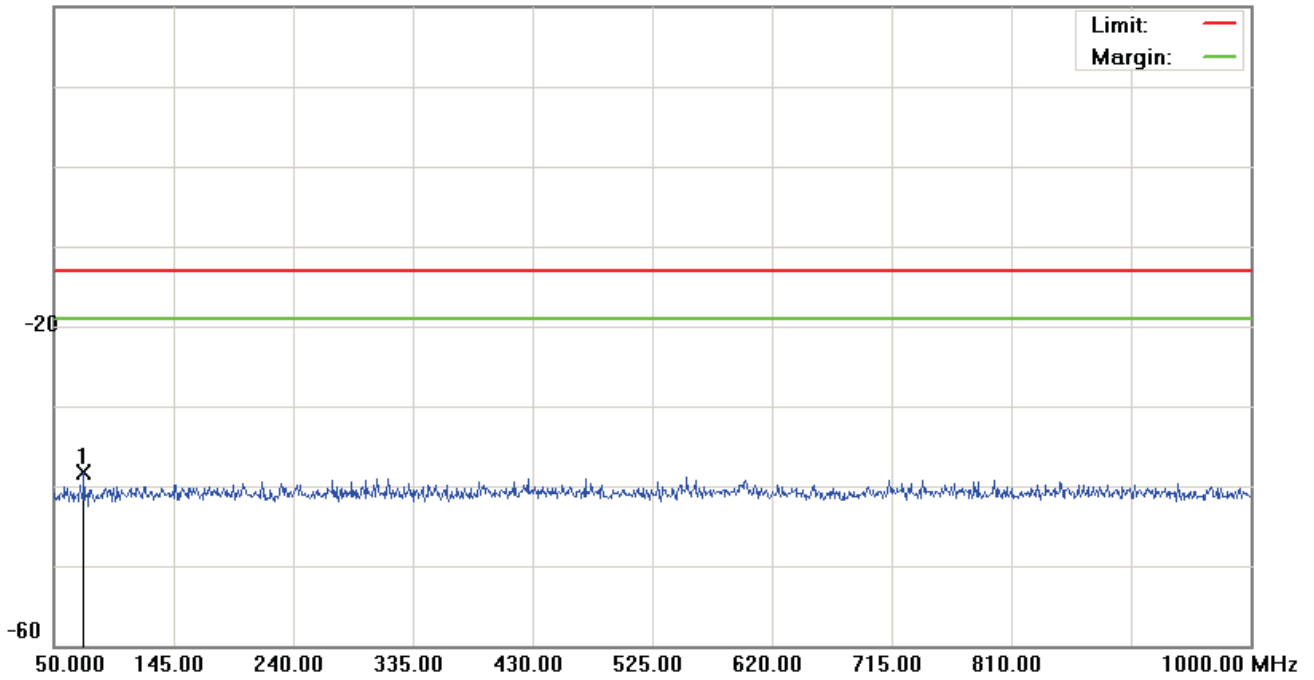
File:GE910(CH810)

Data :#2

Date: 2013/3/29

Time: 下午 03:20:10

20.0 dBm



| | | |
|----------------------------------------|-----------------------------------|-----------------------------|
| Site: : RF Conducted | Polarization: <i>Conducted po</i> | Temperature: 23 °C |
| Limit: FCC Part 24 conducted(9k-26.5G) | Power: DC 3.8V | Humidity: 55.2 % |
| EUT: Quad band GSM/GPRS modules | Distance: | RBW: 1000 KHz VBW: 1000 KHz |
| M/N: GE910-GNSS | | |
| Mode: GPRS 1900 | | |
| Note: | | |

| No. | Mk. | Freq. MHz | Reading Level dBm | Correct Factor dB | Measure- ment dBm | Limit dBm | Over dB | Antenna Height cm | Table Degree degree | Detector | Comment |
|-----|-----|--------------|-------------------------|-------------------------|-------------------------|--------------|------------|-------------------------|---------------------------|----------|---------|
| 1 | * | 73.7500 | -51.61 | 13.27 | -38.34 | -13.00 | -25.34 | | | peak | |

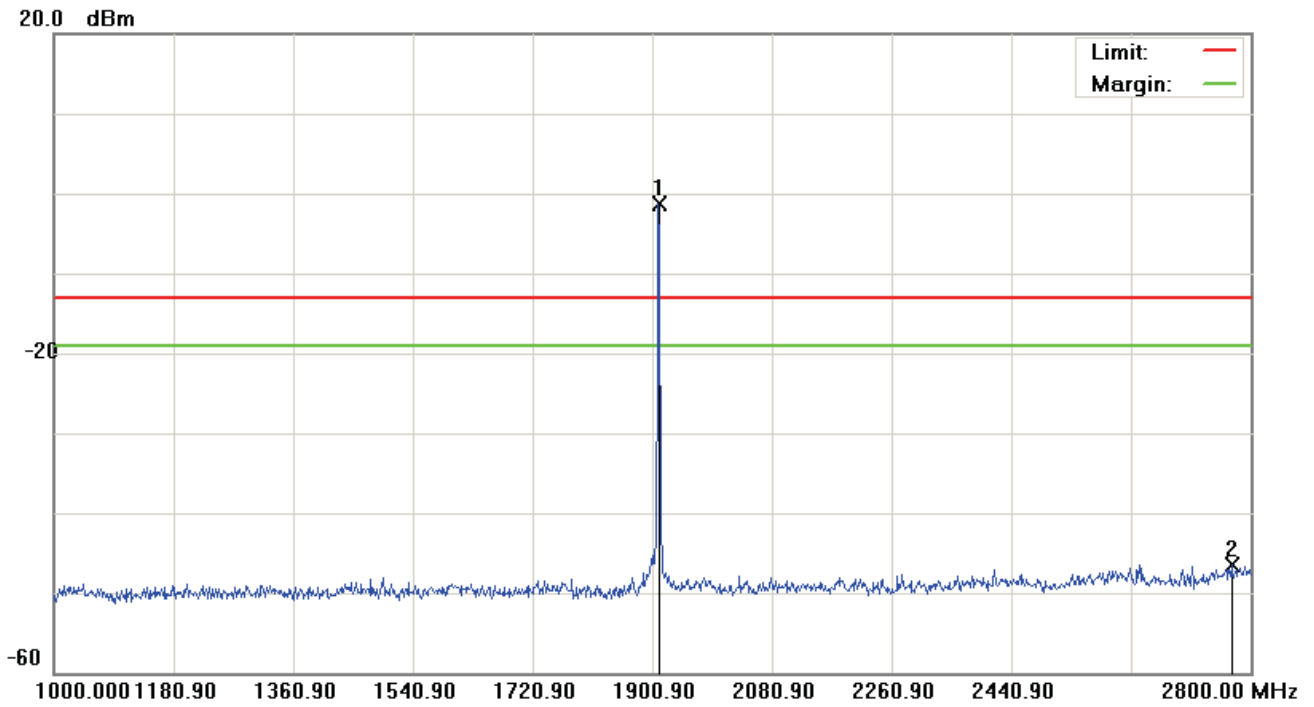
*:Maximum data x:Over limit !:over margin

File:GE910(CH810)

Data :#3

Date: 2013/3/29

Time: 下午 03:32:05



| | | |
|----------------------------------------|-----------------------------------|-----------------------------|
| Site: : RF Conducted | Polarization: <i>Conducted po</i> | Temperature: 23 °C |
| Limit: FCC Part 24 conducted(9k-26.5G) | Power: DC 3.8V | Humidity: 55.2 % |
| EUT: Quad band GSM/GPRS modules | Distance: | RBW: 1000 KHz VBW: 1000 KHz |
| M/N: GE910-GNSS | | |
| Mode: GPRS 1900 | | |
| Note: | | |

| No. | Mk. | Freq. MHz | Reading Level dBm | Correct Factor dB | Measure- ment dBm | Limit dBm | Over dB | Antenna Height cm | Table Degree degree | Comment |
|-----|-----|--------------|-------------------------|-------------------------|-------------------------|--------------|------------|-------------------------|---------------------------|---------|
| 1 | * | 1909.900 | -6.96 | 5.71 | -1.25 | -13.00 | 11.75 | peak | | Tx |
| 2 | | 2772.100 | -52.33 | 5.77 | -46.56 | -13.00 | -33.56 | peak | | |

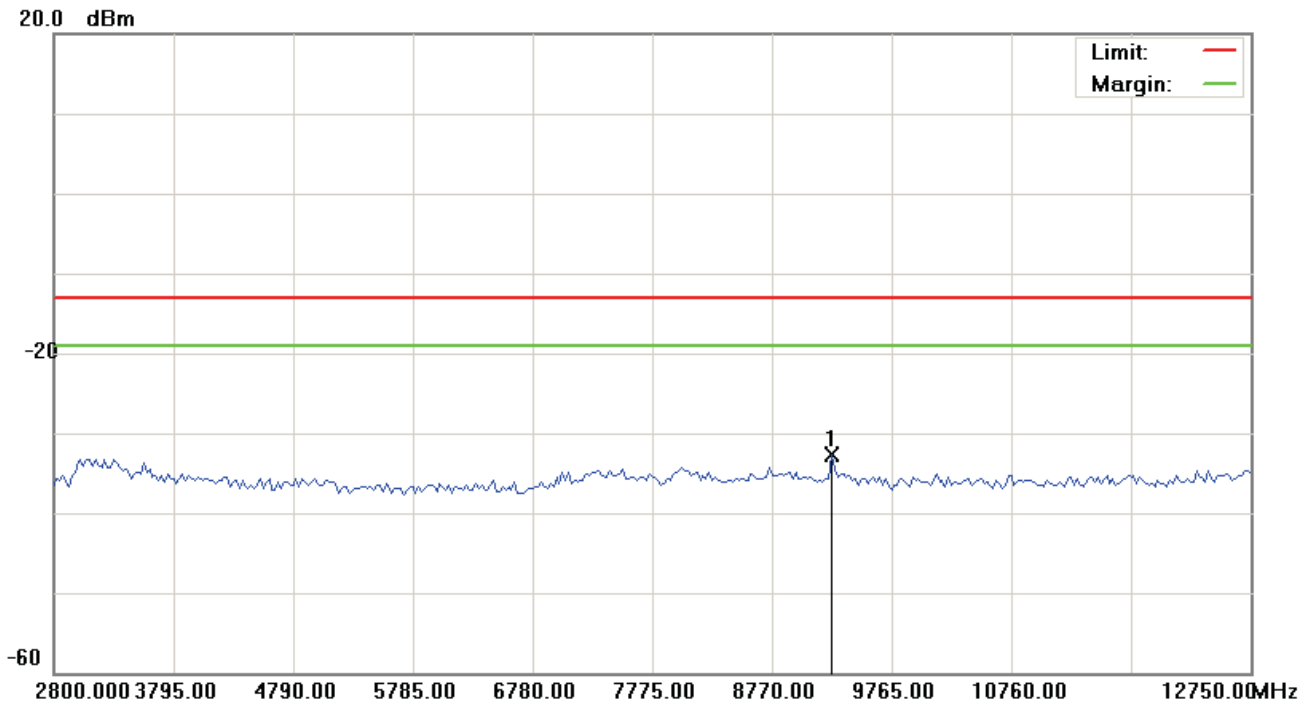
*:Maximum data x:Over limit !:over margin

File:GE910(CH810)

Data :#4

Date: 2013/3/29

Time: 下午 03:56:29



| | | |
|----------------------------------------|-----------------------------------|-----------------------------|
| Site: : RF Conducted | Polarization: <i>Conducted po</i> | Temperature: 23 °C |
| Limit: FCC Part 24 conducted(9k-26.5G) | Power: DC 3.8V | Humidity: 55.2 % |
| EUT: Quad band GSM/GPRS modules | Distance: | RBW: 1000 KHz VBW: 1000 KHz |
| M/N: GE910-GNSS | | |
| Mode: GPRS 1900 | | |
| Note: | | |

| No. | Mk. | Freq. MHz | Reading Level dBm | Correct Factor dB | Measure- ment dBm | Limit dBm | Over dB | Antenna Height cm | Table Degree degree | Comment |
|-----|-----|--------------|-------------------------|-------------------------|-------------------------|--------------|------------|-------------------------|---------------------------|---------|
| 1 | * | 9267.500 | -38.27 | 5.49 | -32.78 | -13.00 | -19.78 | peak | | |

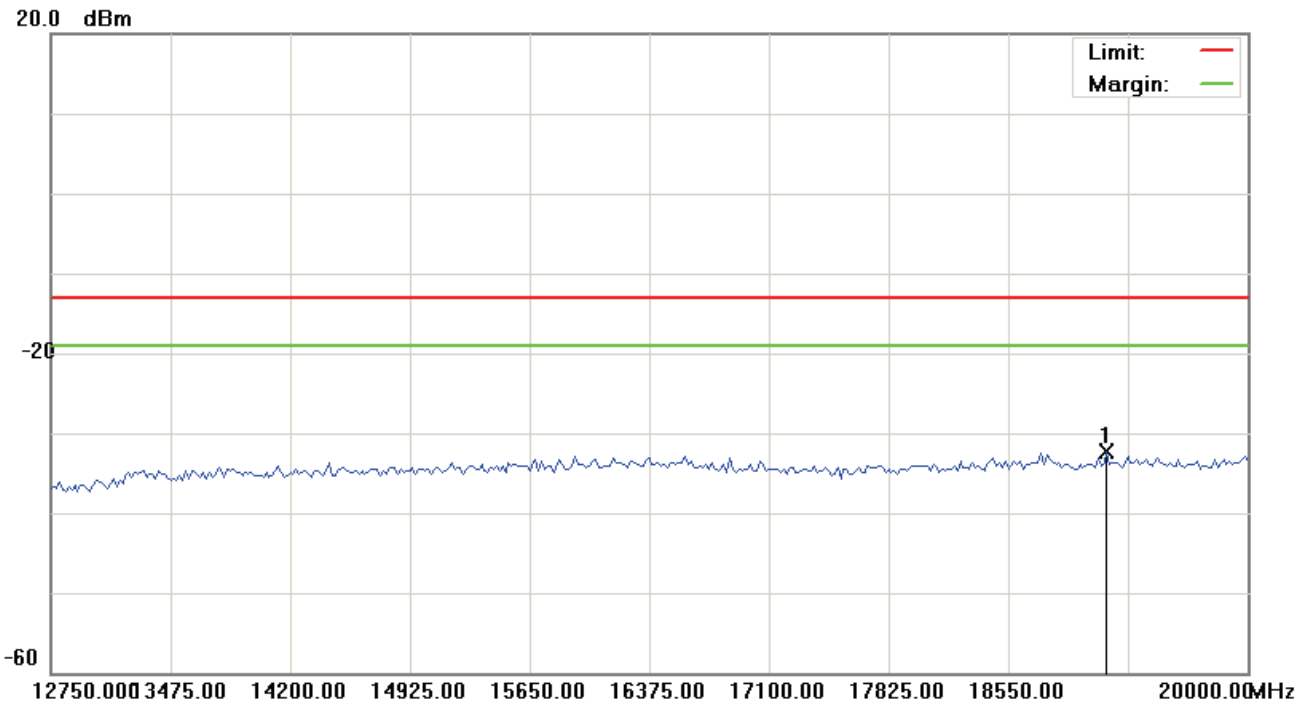
*:Maximum data x:Over limit !:over margin

File:GE910(CH810)

Data :#5

Date: 2013/3/29

Time: 下午 03:56:49



| | | |
|----------------------------------------|-----------------------------------|-----------------------------|
| Site: : RF Conducted | Polarization: <i>Conducted po</i> | Temperature: 23 °C |
| Limit: FCC Part 24 conducted(9k-26.5G) | Power: DC 3.8V | Humidity: 55.2 % |
| EUT: Quad band GSM/GPRS modules | Distance: | RBW: 1000 KHz VBW: 1000 KHz |
| M/N: GE910-GNSS | | |
| Mode: GPRS 1900 | | |
| Note: | | |

| No. | Mk. | Freq. MHz | Reading Level dBm | Correct Factor dB | Measure- ment dBm | Limit dBm | Over dB | Antenna Height cm | Table Degree degree | Detector | Comment |
|-----|-----|--------------|-------------------------|-------------------------|-------------------------|--------------|------------|-------------------------|---------------------------|----------|---------|
| 1 | * | 19148.125 | -39.46 | 7.20 | -32.26 | -13.00 | -19.26 | | | peak | |

*:Maximum data x:Over limit !:over margin

7 Field Strength of Spurious Radiation Test

7.1. Limit

The power of any emission outside of the authorized operating frequency ranges must be attenuated below the transmitting power (P) by a factor of at least $43 + 10\log(P)$ dB.

It is measured by means of a calibrated spectrum analyzer and scanned from 30 MHz up to a frequency including its 10th harmonic.

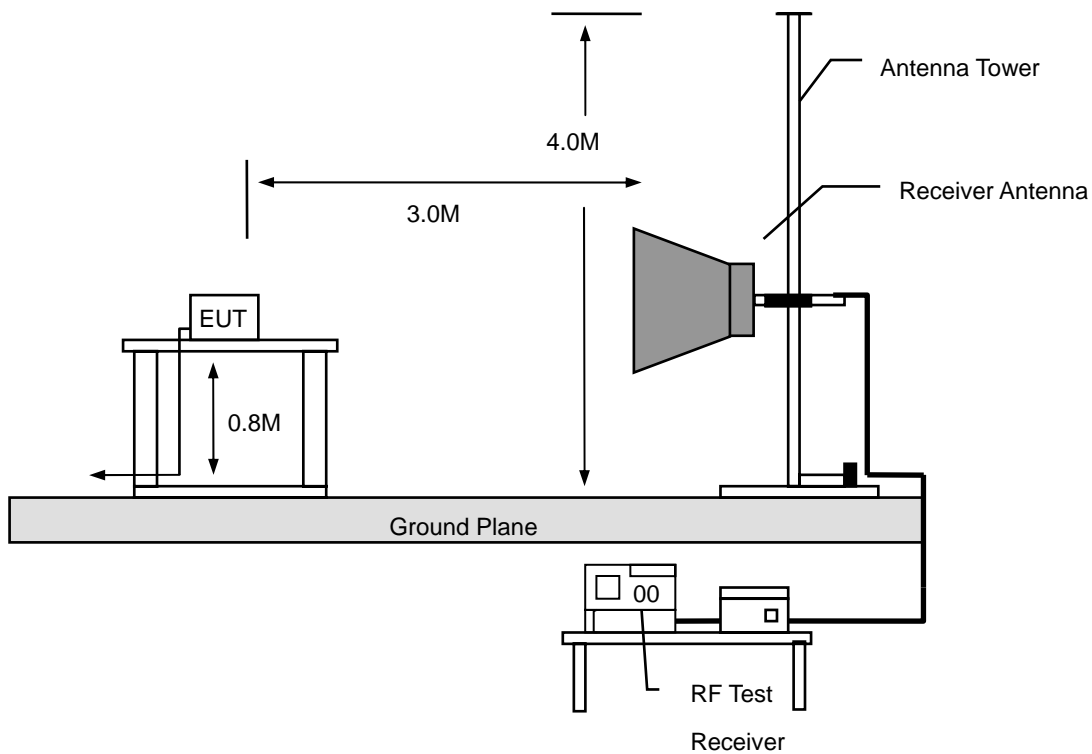
7.2. Test Instruments

| 3 Meter Chamber (966-A) | | | | | |
|-----------------------------------|--------------------------------|--------------|---------------|------------|--------|
| Equipment | Manufacturer | Model Number | Serial Number | Cal. Date | Remark |
| RF Pre-selector | Agilent | N9039A | MY46520256 | 01/21/2013 | (2) |
| Spectrum Analyzer | Agilent | E4446A | MY46180578 | 01/21/2013 | (1) |
| Pre Amplifier | Agilent | 8449B | 3008A02237 | 02/21/2013 | (1) |
| Pre Amplifier | Agilent | 8447D | 2944A10961 | 02/21/2013 | (1) |
| Broadband Antenna (30MHz~1GHz) | SCHWARZBECK MESS-ELEKTRONIK | VULB9163 | 9163-270 | 06/29/2012 | (1) |
| Horn Antenna (1~18GHz) | SCHWARZBECK MESS-ELEKTRONIK | BBHA9120D | 9120D-550 | 06/15/2012 | (1) |
| Horn Antenna (18~40GHz) | SCHWARZBECK MESS-ELEKTRONIK | BBHA9170 | 9170-320 | 06/21/2012 | (1) |
| Test Site | ATL | TE01 | 888001 | 08/28/2012 | (1) |

Remark: ⁽¹⁾ Calibration period 1 year. ⁽²⁾ Calibration period 2 years.

Note: N.C.R. = No Calibration Request.

7.3. Setup



7.4. Test Procedure

Final radiation measurements were made on a three-meter, Semi Anechoic Chamber. The EUT system was placed on a nonconductive turntable which is 0.8 meters height, top surface 1.0 x 1.5 meter. The spectrum was examined from 250 MHz to 2.5 GHz in order to cover the whole spectrum below 10th harmonic which could generate from the EUT. During the test, EUT was set to transmit continuously & Measurements spectrum range from 30 MHz to 26.5 GHz is investigated.

For measurements below 1 GHz the resolution bandwidth is set to 100 kHz for peak detection measurements or 120 kHz for quasi-peak detection measurements. Peak detection is used unless otherwise noted as quasi-peak.

For measurements above 1 GHz the resolution bandwidth is set to 1 MHz, and then the video bandwidth is set to 1 MHz for peak measurements and 10 Hz for average measurements.

A nonconductive material surrounded the EUT to supporting the EUT for standing on three orthogonal planes. At each condition, the EUT was rotated 360 degrees, and the antenna was raised and lowered from one to four meters to find the maximum emission levels. Measurements were taken using both horizontal and vertical antenna polarization.

SCHWARZBECK MESS-ELEKTRONIK Biconilog Antenna (mode VULB9163) at 3 Meter and the SCHWARZBECK Double Ridged Guide Antenna (model BBHA9120D&9170) was used in frequencies 1 – 26.5 GHz at a distance of 1 meter. All test results were extrapolated to equivalent signal at 3 meters utilizing an inverse linear distance extrapolation Factor (20dB/decade).

For testing above 1GHz, the emission level of the EUT in peak mode was 20dB lower than average limit (that means the emission level in peak mode also complies with the limit in average mode), then testing will be stopped and peak values of EUT will be reported, otherwise, the emissions will be measured in average mode again and reported.

Appropriate preamplifiers were used for improving sensitivity and precautions were taken to avoid overloading or desensitizing the spectrum analyzer. No post – detector video filters were used in the test.

The spectrum analyzer's 6 dB bandwidth was set to 1 MHz, and the analyzer was operated in the peak detection mode, for frequencies both below and up 1 GHz. The average levels were obtained by subtracting the duty cycle correction factor from the peak readings.

The following procedures were used to convert the emission levels measured in decibels referenced to 1 microvolt (dBuV) into field intensity in micro volts pre meter (uV/m).

The actual field intensity in decibels referenced to 1 microvolt in to field intensity in micro volts per meter (dBuV/m).

The actual field intensity in decibels referenced to 1 microvolt per meter (dBuV/m) is determined by algebraically adding the measured reading in dBuV, the antenna factor (dB), and cable loss (dB) and Subtracting the gain of preamplifier (dB) is auto calculate in spectrum analyzer.

(1) $\text{Amplitude (dBuV/m)} = \text{FI (dBuV)} + \text{AF (dBuV)} + \text{CL (dBuV)} - \text{Gain (dB)}$

FI= Reading of the field intensity.

AF= Antenna factor.

CL= Cable loss.

P.S Amplitude is auto calculate in spectrum analyzer.

(2) $\text{Actual Amplitude (dBuV/m)} = \text{Amplitude (dBuV)} - \text{Dis(dB)}$

The FCC specified emission limits were calculated according the EUT operating frequency and by following linear interpolation equations:

(a) For fundamental frequency : Transmitter Output < +30dBm

(b) For spurious frequency : Spurious emission limits = fundamental emission limit /10

7.5. Uncertainty

The measurement uncertainty is defined as for Field Strength of Spurious Radiation measurement is ± 3.072 dB.

7.6. Test Result

| | | | |
|---------------|-------------------|----------------------|--------------|
| Standard: | FCC Part 22 | Test Distance: | 3m |
| Test item: | Radiated Emission | Power: | AC 120V/60Hz |
| Model Number: | GE910-GNSS | Temp.(°C)/Hum.(%RH): | 26(°C)/60%RH |
| Mode: | 1 | Date: | 03/27/2013 |
| Frequency: | 824.2 MHz | Test By: | Fly Lu |

| Frequency (MHz) | Reading (dBm) | Correct Factor (dB) | Result (dBm) | Limit (dBm) | Margin (dB) | Remark | Ant.Polar. H / V |
|-----------------|---------------|---------------------|--------------|-------------|-------------|--------|------------------|
| 150.5000 | -71.45 | -1.59 | -73.04 | -13.00 | -60.04 | peak | H |
| 260.0000 | -69.57 | -4.34 | -73.91 | -13.00 | -60.91 | peak | H |
| 390.0000 | -79.91 | 1.66 | -78.25 | -13.00 | -65.25 | peak | H |
| 479.0000 | -75.04 | 5.67 | -69.37 | -13.00 | -56.37 | peak | H |
| 599.5000 | -79.95 | 7.94 | -72.01 | -13.00 | -59.01 | peak | H |
| 703.0000 | -81.05 | 7.03 | -74.02 | -13.00 | -61.02 | peak | H |
| 3628.000 | -68.71 | 19.37 | -49.34 | -13.00 | -36.34 | peak | H |
| 5500.000 | -71.15 | 26.05 | -45.10 | -13.00 | -32.10 | peak | H |
| 7192.000 | -71.56 | 33.08 | -38.48 | -13.00 | -25.48 | peak | H |
| 133.0000 | -73.53 | 12.74 | -60.79 | -13.00 | -47.79 | peak | V |
| 260.0000 | -66.33 | -1.56 | -67.89 | -13.00 | -54.89 | peak | V |
| 390.0000 | -66.80 | 1.49 | -65.31 | -13.00 | -52.31 | peak | V |
| 564.0000 | -75.01 | 4.69 | -70.32 | -13.00 | -57.32 | peak | V |
| 680.0000 | -77.98 | 9.56 | -68.42 | -13.00 | -55.42 | peak | V |
| 779.0000 | -80.28 | 11.27 | -69.01 | -13.00 | -56.01 | peak | V |
| 3028.000 | -68.71 | 20.39 | -48.32 | -13.00 | -35.32 | peak | V |
| 5284.000 | -70.82 | 27.54 | -43.28 | -13.00 | -30.28 | peak | H |
| 7108.000 | -71.10 | 30.68 | -40.42 | -13.00 | -27.42 | peak | V |

| | | | |
|---------------|-------------------|----------------------|--------------|
| Standard: | FCC Part 22 | Test Distance: | 3m |
| Test item: | Radiated Emission | Power: | AC 120V/60Hz |
| Model Number: | GE910-GNSS | Temp.(°C)/Hum.(%RH): | 26(°C)/60%RH |
| Mode: | 1 | Date: | 03/27/2013 |
| Frequency: | 836.6 MHz | Test By: | Fly Lu |

| Frequency (MHz) | Reading (dBm) | Correct Factor (dB) | Result (dBm) | Limit (dBm) | Margin (dB) | Remark | Ant.Polar. H / V |
|-----------------|---------------|---------------------|--------------|-------------|-------------|--------|------------------|
| 151.0000 | -72.91 | -1.41 | -74.32 | -13.00 | -61.32 | peak | H |
| 260.0000 | -69.89 | -4.34 | -74.23 | -13.00 | -61.23 | peak | H |
| 370.0000 | -79.96 | 0.41 | -79.55 | -13.00 | -66.55 | peak | H |
| 491.0000 | -76.42 | 6.42 | -70.00 | -13.00 | -57.00 | peak | H |
| 631.5000 | -80.78 | 7.20 | -73.58 | -13.00 | -60.58 | peak | H |
| 781.0000 | -81.04 | 10.24 | -70.80 | -13.00 | -57.80 | peak | H |
| 3364.000 | -69.17 | 18.72 | -50.45 | -13.00 | -37.45 | peak | H |
| 5392.000 | -71.76 | 25.55 | -46.21 | -13.00 | -33.21 | peak | H |
| 7528.000 | -71.72 | 33.76 | -37.96 | -13.00 | -24.96 | peak | H |
| 136.5000 | -71.33 | 10.85 | -60.48 | -13.00 | -47.48 | peak | V |
| 260.0000 | -67.05 | -1.56 | -68.61 | -13.00 | -55.61 | peak | V |
| 390.0000 | -67.48 | 1.49 | -65.99 | -13.00 | -52.99 | peak | V |
| 564.0000 | -72.44 | 4.69 | -67.75 | -13.00 | -54.75 | peak | V |
| 690.0000 | -78.09 | 9.87 | -68.22 | -13.00 | -55.22 | peak | V |
| 760.0000 | -79.75 | 10.96 | -68.79 | -13.00 | -55.79 | peak | V |
| 3136.000 | -69.37 | 21.01 | -48.36 | -13.00 | -35.36 | peak | V |
| 5104.000 | -71.41 | 27.27 | -44.14 | -13.00 | -31.14 | peak | H |
| 7252.000 | -72.45 | 30.83 | -41.62 | -13.00 | -28.62 | peak | V |

| | | | |
|---------------|-------------------|----------------------|--------------|
| Standard: | FCC Part 22 | Test Distance: | 3m |
| Test item: | Radiated Emission | Power: | AC 120V/60Hz |
| Model Number: | GE910-GNSS | Temp.(°C)/Hum.(%RH): | 26(°C)/60%RH |
| Mode: | 1 | Date: | 03/27/2013 |
| Frequency: | 848.8 MHz | Test By: | Fly Lu |

| Frequency (MHz) | Reading (dBm) | Correct Factor (dB) | Result (dBm) | Limit (dBm) | Margin (dB) | Remark | Ant.Polar. H / V |
|-----------------|---------------|---------------------|--------------|-------------|-------------|--------|------------------|
| 149.5000 | -73.36 | -1.89 | -75.25 | -13.00 | -62.25 | peak | H |
| 260.0000 | -69.93 | -4.34 | -74.27 | -13.00 | -61.27 | peak | H |
| 419.5000 | -82.28 | 3.40 | -78.88 | -13.00 | -65.88 | peak | H |
| 479.0000 | -74.31 | 5.67 | -68.64 | -13.00 | -55.64 | peak | H |
| 590.5000 | -80.49 | 7.77 | -72.72 | -13.00 | -59.72 | peak | H |
| 760.0000 | -81.41 | 9.09 | -72.32 | -13.00 | -59.32 | peak | H |
| 3196.000 | -67.30 | 18.27 | -49.03 | -13.00 | -36.03 | peak | H |
| 5248.000 | -71.38 | 24.89 | -46.49 | -13.00 | -33.49 | peak | H |
| 7228.000 | -71.80 | 33.17 | -38.63 | -13.00 | -25.63 | peak | H |
| 133.5000 | -72.39 | 12.47 | -59.92 | -13.00 | -46.92 | peak | V |
| 260.0000 | -66.27 | -1.56 | -67.83 | -13.00 | -54.83 | peak | V |
| 390.0000 | -67.11 | 1.49 | -65.62 | -13.00 | -52.62 | peak | V |
| 564.0000 | -73.50 | 4.69 | -68.81 | -13.00 | -55.81 | peak | V |
| 639.5000 | -78.97 | 8.63 | -70.34 | -13.00 | -57.34 | peak | V |
| 728.0000 | -76.45 | 10.72 | -65.73 | -13.00 | -52.73 | peak | V |
| 3124.000 | -67.72 | 20.95 | -46.77 | -13.00 | -33.77 | peak | V |
| 5320.000 | -71.83 | 27.59 | -44.24 | -13.00 | -31.24 | peak | V |
| 7216.000 | -71.17 | 30.79 | -40.38 | -13.00 | -27.38 | peak | V |

| | | | |
|---------------|-------------------|----------------------|--------------|
| Standard: | FCC Part 22 | Test Distance: | 3m |
| Test item: | Radiated Emission | Power: | AC 120V/60Hz |
| Model Number: | GE910-GNSS | Temp.(°C)/Hum.(%RH): | 26(°C)/60%RH |
| Mode: | 2 | Date: | 03/27/2013 |
| Frequency: | 1850.2 MHz | Test By: | Fly Lu |

| Frequency (MHz) | Reading (dBm) | Correct Factor (dB) | Result (dBm) | Limit (dBm) | Margin (dB) | Remark | Ant.Polar. H / V |
|-----------------|---------------|---------------------|--------------|-------------|-------------|--------|------------------|
| 150.0000 | -71.99 | -1.74 | -73.73 | -13.00 | -60.73 | peak | H |
| 260.0000 | -68.33 | -4.34 | -72.67 | -13.00 | -59.67 | peak | H |
| 404.5000 | -81.81 | 2.75 | -79.06 | -13.00 | -66.06 | peak | H |
| 479.0000 | -73.00 | 5.67 | -67.33 | -13.00 | -54.33 | peak | H |
| 646.0000 | -79.64 | 6.92 | -72.72 | -13.00 | -59.72 | peak | H |
| 767.0000 | -80.84 | 9.47 | -71.37 | -13.00 | -58.37 | peak | H |
| 3340.000 | -68.60 | 18.66 | -49.94 | -13.00 | -36.94 | peak | H |
| 5968.000 | -72.01 | 27.93 | -44.08 | -13.00 | -31.08 | peak | H |
| 7444.000 | -71.18 | 33.65 | -37.53 | -13.00 | -24.53 | peak | H |
| 134.5000 | -73.93 | 11.93 | -62.00 | -13.00 | -49.00 | peak | V |
| 260.0000 | -68.49 | -1.56 | -70.05 | -13.00 | -57.05 | peak | V |
| 390.0000 | -68.12 | 1.49 | -66.63 | -13.00 | -53.63 | peak | V |
| 546.0000 | -79.07 | 4.29 | -74.78 | -13.00 | -61.78 | peak | V |
| 680.0000 | -79.65 | 9.56 | -70.09 | -13.00 | -57.09 | peak | V |
| 779.0000 | -79.75 | 11.27 | -68.48 | -13.00 | -55.48 | peak | V |
| 3292.000 | -68.82 | 21.91 | -46.91 | -13.00 | -33.91 | peak | V |
| 5500.000 | -71.11 | 27.85 | -43.26 | -13.00 | -30.26 | peak | H |
| 7324.000 | -70.96 | 30.89 | -40.07 | -13.00 | -27.07 | peak | V |

| | | | |
|---------------|-------------------|----------------------|--------------|
| Standard: | FCC Part 22 | Test Distance: | 3m |
| Test item: | Radiated Emission | Power: | AC 120V/60Hz |
| Model Number: | GE910-GNSS | Temp.(°C)/Hum.(%RH): | 26(°C)/60%RH |
| Mode: | 2 | Date: | 03/27/2013 |
| Frequency: | 1880.0 MHz | Test By: | Fly Lu |

| Frequency (MHz) | Reading (dBm) | Correct Factor (dB) | Result (dBm) | Limit (dBm) | Margin (dB) | Remark | Ant.Polar. H / V |
|-----------------|---------------|---------------------|--------------|-------------|-------------|--------|------------------|
| 152.0000 | -72.87 | -1.11 | -73.98 | -13.00 | -60.98 | peak | H |
| 260.0000 | -68.65 | -4.34 | -72.99 | -13.00 | -59.99 | peak | H |
| 400.0000 | -79.97 | 2.55 | -77.42 | -13.00 | -64.42 | peak | H |
| 557.5000 | -79.82 | 7.86 | -71.96 | -13.00 | -58.96 | peak | H |
| 730.0000 | -79.19 | 7.85 | -71.34 | -13.00 | -58.34 | peak | H |
| 913.5000 | -81.97 | 14.51 | -67.46 | -13.00 | -54.46 | peak | H |
| 3136.000 | -68.03 | 18.10 | -49.93 | -13.00 | -36.93 | peak | H |
| 5332.000 | -72.15 | 25.28 | -46.87 | -13.00 | -33.87 | peak | H |
| 7456.000 | -71.96 | 33.69 | -38.27 | -13.00 | -25.27 | peak | H |
| 135.5000 | -71.87 | 11.39 | -60.48 | -13.00 | -47.48 | peak | V |
| 260.0000 | -67.94 | -1.56 | -69.50 | -13.00 | -56.50 | peak | V |
| 390.0000 | -67.33 | 1.49 | -65.84 | -13.00 | -52.84 | peak | V |
| 480.0000 | -78.31 | 2.39 | -75.92 | -13.00 | -62.92 | peak | V |
| 631.5000 | -80.18 | 8.74 | -71.44 | -13.00 | -58.44 | peak | V |
| 728.0000 | -75.85 | 10.72 | -65.13 | -13.00 | -52.13 | peak | V |
| 3388.000 | -67.43 | 22.46 | -44.97 | -13.00 | -31.97 | peak | V |
| 5608.000 | -70.67 | 27.83 | -42.84 | -13.00 | -29.84 | peak | H |
| 7180.000 | -71.76 | 30.76 | -41.00 | -13.00 | -28.00 | peak | V |

| | | | |
|---------------|-------------------|----------------------|--------------|
| Standard: | FCC Part 22 | Test Distance: | 3m |
| Test item: | Radiated Emission | Power: | AC 120V/60Hz |
| Model Number: | GE910-GNSS | Temp.(°C)/Hum.(%RH): | 26(°C)/60%RH |
| Mode: | 2 | Date: | 03/27/2013 |
| Frequency: | 1909.8 MHz | Test By: | Fly Lu |

| Frequency (MHz) | Reading (dBm) | Correct Factor (dB) | Result (dBm) | Limit (dBm) | Margin (dB) | Remark | Ant.Polar. H / V |
|-----------------|---------------|---------------------|--------------|-------------|-------------|--------|------------------|
| 151.0000 | -73.12 | -1.41 | -74.53 | -13.00 | -61.53 | peak | H |
| 260.0000 | -69.45 | -4.34 | -73.79 | -13.00 | -60.79 | peak | H |
| 417.0000 | -81.46 | 3.31 | -78.15 | -13.00 | -65.15 | peak | H |
| 489.0000 | -75.60 | 6.28 | -69.32 | -13.00 | -56.32 | peak | H |
| 614.5000 | -80.99 | 7.77 | -73.22 | -13.00 | -60.22 | peak | H |
| 768.5000 | -80.90 | 9.56 | -71.34 | -13.00 | -58.34 | peak | H |
| 3520.000 | -69.44 | 19.14 | -50.30 | -13.00 | -37.30 | peak | H |
| 5992.000 | -71.91 | 28.04 | -43.87 | -13.00 | -30.87 | peak | H |
| 7936.000 | -71.73 | 33.68 | -38.05 | -13.00 | -25.05 | peak | H |
| 135.5000 | -73.26 | 11.39 | -61.87 | -13.00 | -48.87 | peak | V |
| 260.0000 | -66.72 | -1.56 | -68.28 | -13.00 | -55.28 | peak | V |
| 390.0000 | -67.90 | 1.49 | -66.41 | -13.00 | -53.41 | peak | V |
| 557.5000 | -80.08 | 4.35 | -75.73 | -13.00 | -62.73 | peak | V |
| 685.5000 | -80.04 | 9.74 | -70.30 | -13.00 | -57.30 | peak | V |
| 751.0000 | -74.39 | 10.75 | -63.64 | -13.00 | -50.64 | peak | V |
| 3616.000 | -69.28 | 23.40 | -45.88 | -13.00 | -32.88 | peak | V |
| 5368.000 | -71.57 | 27.66 | -43.91 | -13.00 | -30.91 | peak | H |
| 6976.000 | -71.41 | 30.51 | -40.90 | -13.00 | -27.90 | peak | V |

| | | | |
|---------------|-------------------|----------------------|--------------|
| Standard: | RSS-Gen | Test Distance: | 3m |
| Test item: | Radiated Emission | Power: | AC 120V/60Hz |
| Model Number: | GE910-GNSS | Temp.(°C)/Hum.(%RH): | 26(°C)/60%RH |
| Mode: | 3 | Date: | 03/28/2013 |
| | | Test By: | Fly Lu |

| Frequency (MHz) | Reading (dBm) | Correct Factor (dB) | Result (dBm) | Limit (dBm) | Margin (dB) | Remark | Ant.Polar. H / V |
|--------------------|------------------|------------------------|-----------------|----------------|----------------|--------|---------------------|
| 2470.000 | 37.95 | 4.42 | 42.37 | 74.00 | -31.63 | peak | H |
| 4514.000 | 34.83 | 10.92 | 45.75 | 74.00 | -28.25 | peak | H |
| 6166.000 | 34.31 | 16.39 | 50.70 | 74.00 | -23.30 | peak | H |
| 2869.000 | 38.59 | 5.57 | 44.16 | 74.00 | -29.84 | peak | V |
| 4570.000 | 34.89 | 11.06 | 45.95 | 74.00 | -28.05 | peak | V |
| 6257.000 | 33.78 | 16.66 | 50.44 | 74.00 | -23.56 | peak | V |

8 Frequency Stability (Temperature & Voltage Variation) Test

8.1. Limit

The frequency stability shall be measured by variation of ambient temperature and variation of primary supply voltage to ensure that the fundamental emission stays within the authorized frequency block. The frequency stability of the transmitter shall be maintained within $\pm 0.00025\%$ ($\pm 2.5\text{ppm}$) of the center frequency.

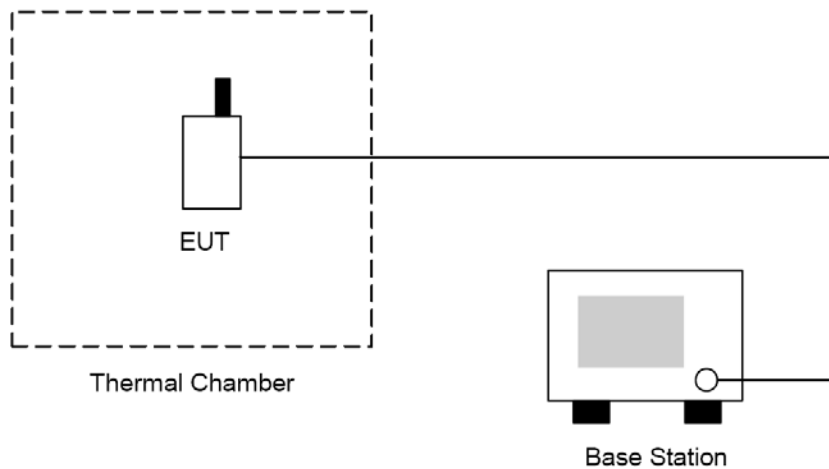
8.2. Test Instruments

| Equipment | Manufacturer | Model Number | Serial Number | Cal. Date | Remark |
|--------------------------------------|--------------|--------------|---------------|------------|--------|
| Universal Radio Communication Tester | R & S | CMU200 | 109369 | 08/07/2012 | (2) |
| Temperature & Humidity Chamber | TAICHY | MHU-225LA | 980729 | 08/07/2012 | (1) |
| Test Site | ATL | TE05 | TE05 | N.C.R. | ----- |

Remark: ⁽¹⁾ Calibration period 1 year. ⁽²⁾ Calibration period 2 years.

Note: N.C.R. = No Calibration Request.

8.3. Setup



8.4. Test Procedure

The measurement is made according to FCC rules part 22 and 24:

1. The EUT and test equipment were set up as shown on the following section.
2. With all power removed, the temperature was decreased to -30°C and permitted to stabilize for three hours. Power was applied and the maximum change in frequency was note within one minute.
3. With power OFF, the temperature was raised in 10°C steps. The sample was permitted to stabilize at each step for at least one-half hour. Power was applied and the maximum frequency change was noted within one minute.
4. The EUT was placed in a temperature chamber at $25 \pm 5^{\circ}\text{C}$ and connected as the following section.
5. The power supply voltage to the EUT was varied from BEP to 115% of the nominal value measured at the input to the EUT.
6. The temperature tests were performed for the worst case.
7. Test data was recorded.

8.5. Uncertainty

The measurement uncertainty is defined as for Frequency Stability (Temperature Variation) measurement is $\pm 10\text{Hz}$.

8.6. Test Result

| Model Number | GE910-GNSS | | | | | |
|--------------|-------------------------------------------------------|------------------|----------------|-----------------|-------------|--------|
| Test Item | Frequency Stability (Temperature & Voltage Variation) | | | | | |
| Test Mode | Mode 1 | | | | | |
| Date of Test | 03/29/2013 | | | | Test Site | TE05 |
| Level | Voltage [Vdc] | Temperature (°C) | Deviation (Hz) | Deviation (ppm) | Limit (ppm) | Result |
| Normal | 3.80 | -30 | -16 | -0.019 | ±2.5 | Pass |
| Normal | 3.80 | -20 | -23 | -0.027 | ±2.5 | Pass |
| Normal | 3.80 | -10 | 9 | 0.011 | ±2.5 | Pass |
| Normal | 3.80 | 0 | 11 | 0.013 | ±2.5 | Pass |
| Normal | 3.80 | 10 | -21 | -0.025 | ±2.5 | Pass |
| High Voltage | 4.20 | 20 | -17 | -0.020 | ±2.5 | Pass |
| Normal | 3.80 | 20 | -20 | -0.024 | ±2.5 | Pass |
| Low Voltage | 3.40 | 20 | -11 | -0.013 | ±2.5 | Pass |
| Normal | 3.80 | 30 | 17 | 0.020 | ±2.5 | Pass |
| Normal | 3.80 | 40 | 22 | 0.026 | ±2.5 | Pass |
| Normal | 3.80 | 50 | -16 | -0.019 | ±2.5 | Pass |

| Model Number | GE910-GNSS | | | | | |
|--------------|-------------------------------------------------------|------------------|----------------|-----------------|-------------|--------|
| Test Item | Frequency Stability (Temperature & Voltage Variation) | | | | | |
| Test Mode | Mode 2 | | | | | |
| Date of Test | 03/29/2013 | | | | Test Site | TE05 |
| Level | Voltage [Vdc] | Temperature (°C) | Deviation (Hz) | Deviation (ppm) | Limit (ppm) | Result |
| Normal | 3.80 | -30 | -42 | -0.022 | ±2.5 | Pass |
| Normal | 3.80 | -20 | -45 | -0.024 | ±2.5 | Pass |
| Normal | 3.80 | -10 | -14 | -0.007 | ±2.5 | Pass |
| Normal | 3.80 | 0 | -17 | -0.009 | ±2.5 | Pass |
| Normal | 3.80 | 10 | -12 | -0.006 | ±2.5 | Pass |
| High Voltage | 4.20 | 20 | -29 | -0.015 | ±2.5 | Pass |
| Normal | 3.80 | 20 | -15 | -0.008 | ±2.5 | Pass |
| Low Voltage | 3.40 | 20 | -37 | -0.020 | ±2.5 | Pass |
| Normal | 3.80 | 30 | -7 | -0.004 | ±2.5 | Pass |
| Normal | 3.80 | 40 | -12 | -0.006 | ±2.5 | Pass |
| Normal | 3.80 | 50 | -11 | -0.006 | ±2.5 | Pass |