# FCC Radio Test Report

## FCC ID: X4YTRNTY3G

**This report concerns (check one):** ☒**Original Grant** ☐**Class II Change**

| | | |
|---|---|---|
| **Project No.** | : | 1510C002 |
| **Equipment** | : | 3G/4G TRINITY PORTABLE SIM-BASED WI-FI HOTSPOT |
| **Model Name** | : | ARNPR3G5U1 |
| **Applicant** | : | NEXXT SOLUTIONS |
| **Address** | : | 3505 N.W 107TH AVE,MIAMI,FL,33178 |

| | | |
|---|---|---|
| **Date of Receipt** | : | Oct. 08, 2015 |
| **Date of Test** | : | Oct. 08, 2015 ~ Nov. 02, 2015 |
| **Issued Date** | : | Nov. 03, 2015 |
| **Tested by** | : | BTL Inc. |

**Technical Engineer** : Shawn xiao

(Shawn Xiao)

**Authorized Signatory** : Steven Lu

(Steven Lu)


**BTL INC.**

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## Declaration

**BTL** represents to the client that testing is done in accordance with standard procedures as applicable and that test instruments used has been calibrated with the standards traceable to National Measurement Laboratory (**NML**) of **R.O.C**., or National Institute of Standards and Technology (**NIST**) of **U.S.A.**

**BTL**'s reports apply only to the specific samples tested under conditions. It is manufacture's responsibility to ensure that additional production units of this model are manufactured with the identical electrical and mechanical components. **BTL** shall have no liability for any declarations, inferences or generalizations drawn by the client or others from **BTL** issued reports.

**BTL**'s report must not be used by the client to claim product certification, approval, or endorsement by NVLAP, NIST, or any agency of the Federal Government.

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**BTL**'s laboratory quality assurance procedures are in compliance with the **ISO Guide17025** requirements, and accredited by the conformity assessment authorities listed in this test report.

## Limitation

For the use of the authority's logo is limited unless the Test Standard(s)/Scope(s)/Item(s) mentioned in this test report is (are) included in the conformity assessment authorities acceptance respective.

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## REPORT ISSUED HISTORY

| Issued No. | Description | Issued Date |
|---|---|---|
| BTL-FCCP-2-1510C002 | Original Issue. | Nov. 03, 2015 |

## 1. CERTIFICATION

| | | |
|---|---|---|
| Equipment | : | 3G/4G TRINITY PORTABLE SIM-BASED WI-FI HOTSPOT |
| Brand Name | : | NEXXT |
| Model Name | : | ARNPR3G5U1 |
| Applicant | : | NEXXT SOLUTIONS |
| Manufacturer | : | NEXXT SOLUTIONS |
| Address | : | 3505 N.W 107TH AVE,MIAMI,FL,33178 |
| Date of Test | : | Oct. 08, 2015 ~ Nov. 02, 2015 |
| Test Sample | : | Engineering Sample |
| Standard(s) | : | 47 CFR FCC Part 22 Subpart H<br>47 CFR FCC Part 2 &ANSI/TIA-603-D-2004 |

The above equipment has been tested and found compliance with the requirement of the relative standards by BTL Inc.
The test data, data evaluation, and equipment configuration contained in our test report (Ref No. BTL-FCCP-2-1510C002) were obtained utilizing the test procedures, test instruments, test sites that has been accredited by the Authority of TAF according to the ISO-17025 quality assessment standard and technical standard(s).

**Test result included in this report is only for the GSM 850MHz approvalpart of the product.**

## 2. SUMMARY OF TEST RESULTS

Test procedures according to the technical standard(s):

| FCC Part 22 Subpart H& Part 2 | | | |
|---|---|---|---|
| Standard(s) Section<br>FCC | Test Item | Judgment | Remark |
| 2.1046<br>22.913(a) | Radiated power | PASS | |
| 2.1049(h)<br>22.917(a) | Occupied Bandwidth | PASS | |
| 2.1051<br>22.917(a) | Conducted Spurious Emissions | PASS | |
| 2.1053<br>22.917(a) | Radiated Spurious Emissions | PASS | |
| 22.917(a) | Band Edge Measurements | PASS | |
| 2.1055<br>22.355 | Frequency Stability | PASS | |

NOTE:

(1)" N/A" denotes test is not applicable to this device.

## 2.1 TEST FACILITY

The test facilities used to collect the test data in this report is at the location of No.3, Jinshagang 1st Road, Shixia, Dalang Town, Dongguan, Guangdong, China.
BTL's test firm number for FCC: 319330

## 2.2 MEASUREMENT UNCERTAINTY

Where relevant, the following measurement uncertainty levels have been estimatedfor tests performed on the EUT as specified in CISPR 16-4-2. The BTL measurement uncertainty is less than the CISPR 16-4-2 $U_{cispr}$ requirement.

The reported uncertainty of measurement **y** ± **U**, where expanded uncertainty **U** is based on astandard uncertainty multiplied by a coverage factor of **k=2**, providing a level of confidence of approximately **95**% ◦

A. Radiated Measurement :

| Test Site | Method | Measurement Frequency Range | Ant. H / V | U,(dB) |
|---|---|---|---|---|
| DG-CB03 (3m) | CISPR | 9KHz ~ 30MHz | V | 3.79 |
| | | 9KHz ~ 30MHz | H | 3.57 |
| | | 30MHz ~ 200MHz | V | 3.82 |
| | | 30MHz ~ 200MHz | H | 3.78 |
| | | 200MHz ~ 1,000MHz | V | 4.10 |
| | | 200MHz ~ 1,000MHz | H | 4.06 |

| Test Site | Method | Measurement Frequency Range | Ant. H / V | U,(dB) |
|---|---|---|---|---|
| DG-CB03 (3m) | CISPR | 1GHz ~ 18GHz | V | 3.12 |
| | | 1GHz ~ 18GHz | H | 3.68 |
| | | 18GHz ~ 40GHz | V | 4.15 |
| | | 18GHz ~ 40GHz | H | 4.14 |

Note: Unless specifically mentioned, the uncertainty of measurement has not been taken into account to declare the compliance or non-compliance to the specification.

# 3. GENERAL INFORMATION

## 3.1 GENERAL DESCRIPTION OF EUT

| | | |
|---|---|---|
| Equipment | 3G/4G TRINITY PORTABLE SIM-BASED WI-FI HOTSPOT | |
| Brand Name | NEXXT | |
| Model Name | ARNPR3G5U1 | |
| Model Difference | NA | |
| Modulation Type | GSM/GPRS | GMSK |
| | EDGE | GMSK, 8PSK |
| Operation Frequency | GSM/GPRS/EDGE | 824.2 ~ 848.8 MHz |
| Max. ERP Power | GSM/GPRS | 30.65dBm |
| | EDGE | 28.24dBm |
| Antenna Type | Fixed Internal Antenna | |
| Antenna Gain | -1.66dBi | |
| Power Source | #1 Supplied from PC USB port.<br>#2 Supplied from LI-ion Battery. | |
| Power Rating | #1 DC 5V<br>#2 2000mAh/3.7V/7.4Wh | |

Note:
1. For a more detailed features description, please refer to the manufacturer's specifications or the user's manual.
2. The EUT contains following accessory devices.

| Product | Brand | Model | Description |
|---|---|---|---|
| Battery | N/A | BM301 | 3.7Vdc, 2000mAh |
| USB Cable | N/A | N/A | 0.8m shielded cable without core |

## 3.2 DESCRIPTION OF TEST MODES AND TEST CONDITION

Pre-Scan has been conducted to determine the worst-case mode from all possible combinations between available modulations, data rates, XYZ axis and antenna ports
The worst case was found when positioned on Z-plane for ERP and Z-axis for radiated emission.
Following channel(s) was (were) selected for the final test as listed below:

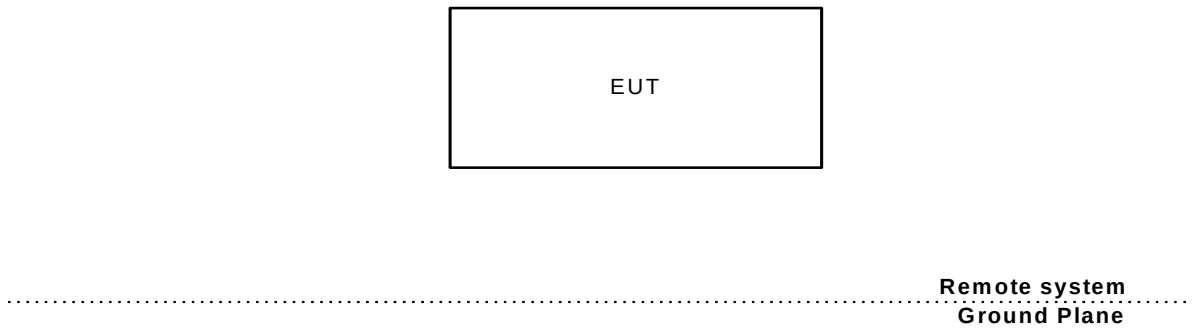
| GSM MODE | | | |
|---|---|---|---|
| Test Item | Available Channel | Tested Channel | Mode |
| ERP | 128 to 251 | 128, 189, 251 | GSM, EDGE |
| Occupied Bandwidth | 128 to 251 | 128, 189, 251 | GSM, EDGE |
| Condcudeted Emission | 128 to 251 | 128 | GSM, EDGE |
| Radiated Emission | 128 to 251 | 128 | GSM, EDGE |
| Band Edge | 128 to 251 | 128, 251 | GSM, EDGE |
| Frequency Stability | 128 to 251 | 189 | GSM, EDGE |

**EUT TEST CONDITIONS:**

| Test Item | Environmental Conditions | Input Power | Tested By |
|---|---|---|---|
| ERP | 25°C, 65%RH | DC 3.7V | Kai Xu |
| Occupied Bandwidth | 25°C, 65%RH | DC 3.7V | Kai Xu |
| Conducted Emission | 25°C, 65%RH | DC 3.7V | Kai Xu |
| Radiated Emission | 25°C, 65%RH | DC 3.7V | Kai Xu |
| Band Edge | 25°C, 65%RH | DC 3.7V | Kai Xu |
| Frequency Stability | 25°C, 65%RH | DC 3.7V | Kai Xu |

### 3.3 BLOCK DIGRAM SHOWING THE CONFIGURATION OF SYSTEM TESTED

**E.R.P:**




### 3.4 DESCRIPTION OF SUPPORT UNITS

The EUT has been tested as an independent unit together with other necessary accessories or support units. The following support units or accessories were used to form a representative test configuration during the tests.

| Item | Equipment | Mfr/Brand | Model/Type No. | FCC ID | Series No. | Note |
|---|---|---|---|---|---|---|
| - | - | - | - | - | - | - |

| Item | Shielded Type | Ferrite Core | Length | Note |
|---|---|---|---|---|
| - | - | - | - | - |

# 4. TEST RESULT

## 4.1 OUTPUT POWER MEASUREMENT

### 4.1.1 LIMIT

Mobile / Portable station are limited to 7 watts e.r.p.

### 4.1.2 TEST PROCEDURE

**EIRP/ERP:**

1. All measurements were done at low, middle and high operational frequency range. RBW and VBW is 1MHz for GSM, GPRS & EDGE, 5MHz for WCDMA & CDMA, and 10MHz for LTE mode.
2. Substitution method is used for E.I.R.P measurement. In the semi-anechoic chamber, EUT placed on the 0.8m height of Turn Table, rotated the table around 360 degrees to search the maximum radiation power and receiver antenna shall be rotated vertical and horizontal polarization and moved height from 1m to 4m to find the maximum polar radiated power. The “Read Value” is the spectrum reading the maximum power value.
3. The substitution horn antenna is substituted for EUT at the same position and signals generator export the CW signal to the substitution antenna via a tx cable. Rotated the Turn Table and moved receiving antenna to find the maximum radiation power. Adjust output power level of S.G to get a Value of spectrum reading equal to “Read Value“ of step b. Record the power level of S.G
5. E.R.P power can be calculated form E.I.R.P power by subtracting the gain of Integral, E.R.P power=E.I.P.R power-2.15dBi.

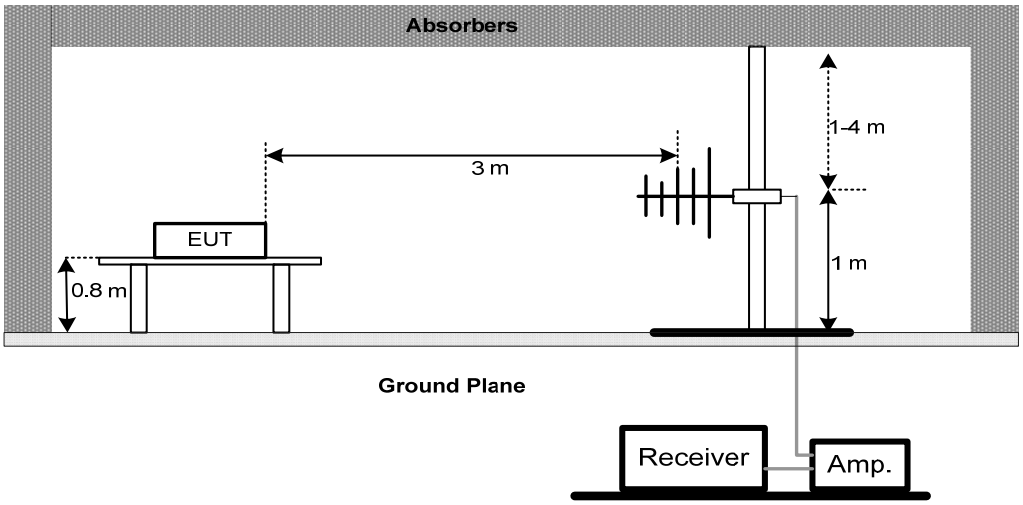
Conducted Power:

The EUT was set up for the maximum power with GSM, GPRS, EDGE, WCDMA, CDMA, and LTE link data modulation and link up with simulator. Set the EUT to transmit under low, middle and high channel and record the power level shown on simulator.

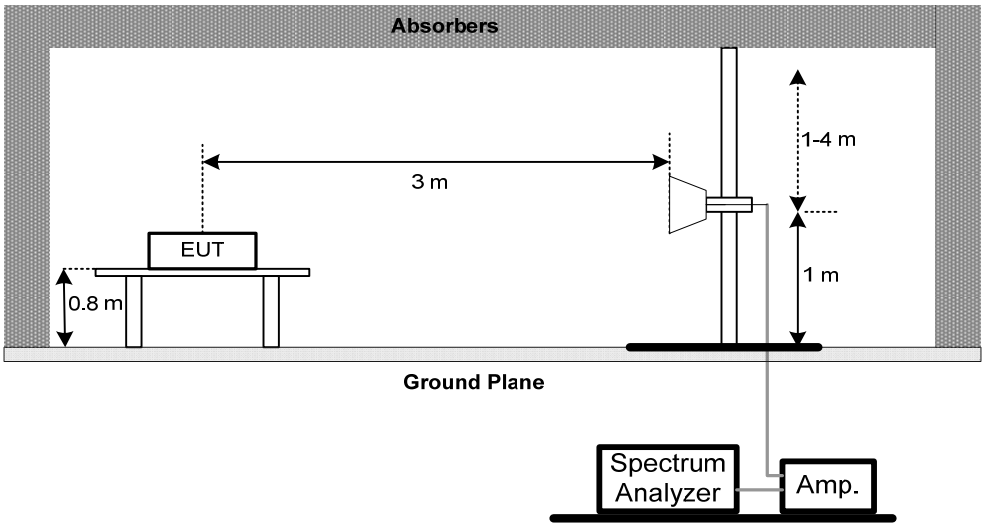
### 4.1.3 TESTSETUP LAYOUT

**ERP Power Measurement**

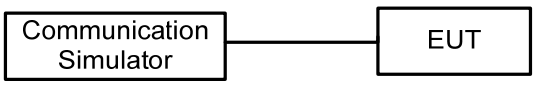
**Below 1G**




**Above 1G**




**Conducted Power Measurement**




### 4.1.4 TEST DEVIATION

No deviation

### 4.1.5 TEST RESULTS

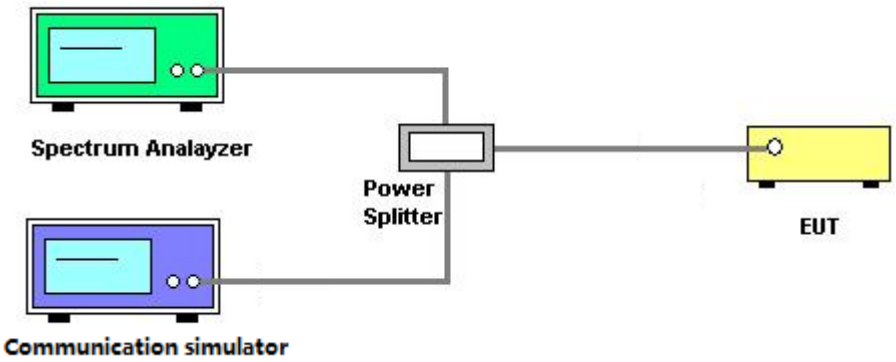
Please refer to the Attachment A.

## 4.2 OCCUPIED BANDWIDTH MEASUREMENT

### 4.2.1 TEST PROCEDURE

The EUT makes a call to the communication simulator. All measurements were done at low, middle and high operational frequency range. The communication simulator station system controlled a EUT to export maximum output power under transmission mode and specific channel frequency. Use OBW measurement function of Spectrum analyzer to measure 99 % occupied bandwidth.

### 4.2.2 TEST SETUP LAYOUT




### 4.2.3 TEST DEVIATION

No deviation

### 4.2.4 TEST RESULTS

Please refer to the Attachment B.

## 4.3 CONDUCTED EMISSIONS MEASUREMENT

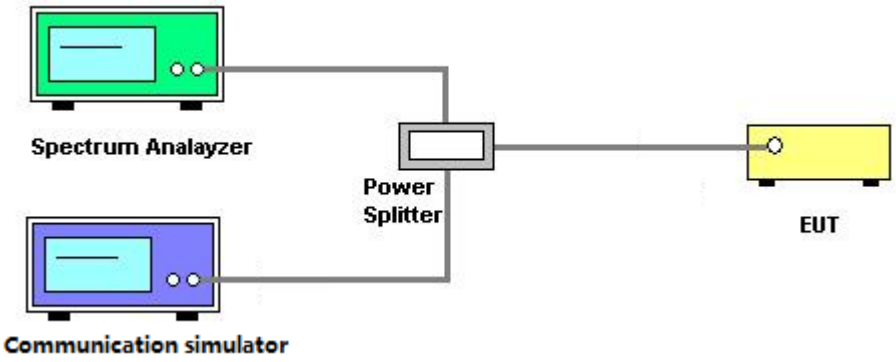
### 4.3.1 LIMIT

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. The emission limit equal to -13dBm.

### 4.3.2 TEST PROCEDURES

1. The EUT makes a phone call to the communication simulator. All measurements were done at low, middle and high operational frequency range.
2. Measuring frequency range is from 9 kHz to 9GHz. 20dB attenuation pad is connected with spectrum. RBW=1MHz and VBW=3MHz is used for conducted emission measurement.

### 4.3.3 TESTSETUP LAYOUT




### 4.3.4 TESTDEVIATION

No deviation

### 4.3.5 TEST RESULTS

Please refer to the Attachment C.

## 4.4 RADIATED EMISSIONS MEASUREMENT

### 4.4.1 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. The emission limit equal to -13dBm.

### 4.4.2 TEST PROCEDURES

1. Substitution method is used for E.I.R.P measurement. In the semi-anechoic chamber, EUT placed on the 0.8m height of Turn Table, rotated the table around 360 degrees to search the maximum radiation power and receiver antenna shall be rotated vertical and horizontal polarization and moved height from 1m to 4m to find the maximum polar radiated power. The “Read Value” is the spectrum reading the maximum power value.
2. The substitution horn antenna is substituted for EUT at the same position and signals generator export the CW signal to the substitution antenna via a TX cable. Rotated the Turn Table and moved receiving antenna to find the maximum radiation power. Adjust output power level of S.G to get a Value of spectrum reading equal to “Read Value “ of step a. Record the power level of S.G
3. EIRP = Output power level of S.G – TX cable loss + Antenna gain of substitution horn.
4. E.R.P power can be calculated form E.I.R.P power by subtracting the gain of dipole, E.R.P power = E.I.P.R power - 2.15dBi.
5. The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 1MHz/3MHz.

### 4.4.3 TESTSETUP LAYOUT

This test setup layout is the same as that shown in **section 4.1.3.**

### 4.4.4 TESTDEVIATION

No deviation

### 4.4.5 TEST RESULTS

Please refer to the Attachment D.

## 4.5 BAND EDGE MEASUREMENT

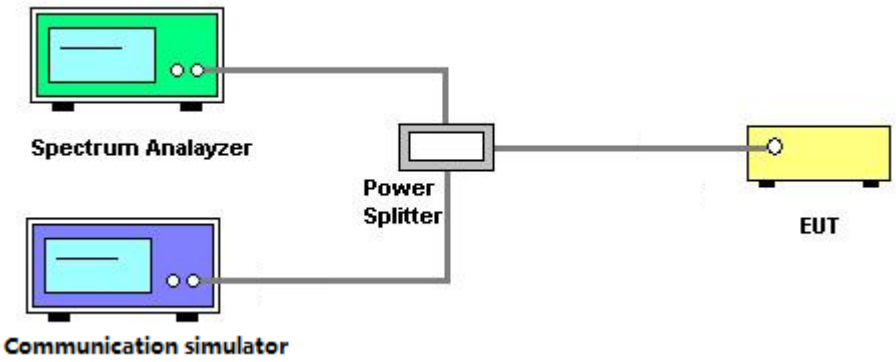
### 4.5.1 LIMIT

A 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. In the 1 MHz bands immediately outside and adjacent to the frequency block a resolution bandwidth of at least one percent of the emission bandwidth of the fundamental emission of the transmitter may be employed.

### 4.5.2 TEST PROCEDURES

1. All measurements were done at low and high operational frequency range.
2. The center frequency of spectrum is the band edge frequency and span is 1MHz. RB of the spectrum is 3kHz and VB of the spectrum is 10kHz (GSM/GPRS/EDGE).
3. The center frequency of spectrum is the band edge frequency and span is 5MHz. RB of the spectrum is 100kHz and VB of the spectrum is 300kHz (WCDMA).
4. The center frequency of spectrum is the band edge frequency and span is 1MHz. RB of the spectrum is 13kHz and VB of the spectrum is 51kHz (LTE Bandwidth 1.4MHz).
5. The center frequency of spectrum is the band edge frequency and span is 1MHz. RB of the spectrum is 30kHz and VB of the spectrum is 100kHz (LTE Bandwidth 3MHz).
6. The center frequency of spectrum is the band edge frequency and span is 1MHz. RB of the spectrum is 100kHz and VB of the spectrum is 300kHz (LTE Bandwidth 5MHz/10MHz).
7. Record the max trace plot into the test report.

### 4.5.3 TESTSETUP LAYOUT




### 4.5.4 TESTDEVIATION

No deviation

### 4.5.5 TEST RESULTS

Please refer to the Attachment E.

## 4.6 FREQUENCY STABILITY MEASUREMENT

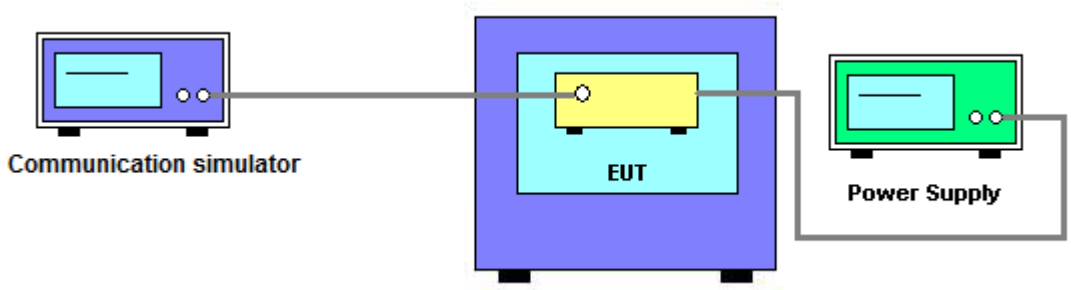
### 4.6.1 LIMIT

1.5 ppm is for base and fixed station. 2.5 ppm is for mobile station.

### 4.6.2 TEST PROCEDURES

1. Device is placed at the oven room. The oven room could control the temperatures and humidity. Power warm up is at least 15 min and power applied should perform before recording frequency error.
2. EUT is connected the external power supply to control the DC input power. The test voltage range is from minimum to maximum working voltage. Each step shall be record the frequency error rate.
3. The temperature range step is 10 degrees in this test items. All temperature levels shall be hold the ±0.5°C during the measurement testing. The each temperature step shall be at least 0.5 hours, consider the EUT could be test under the stability condition.
4. The frequency error was recorded frequency error from the communication simulator.

### 4.6.3 TESTSETUP LAYOUT




### 4.6.4 TESTDEVIATION

No deviation

### 4.6.5 TEST RESULTS

Please refer to the Attachment F.

## 5. LIST OF MEASUREMENT EQUIPMENTS

| Radiated Emission & ERP or EIRP Measurement | | | | | |
|---|---|---|---|---|---|
| Item | Kind of Equipment | Manufacturer | Type No. | Serial No. | Calibrated until |
| 1 | Antenna | Schwarbeck | VULB9160 | 9160-3232 | Mar. 28, 2016 |
| 2 | Amplifier | HP | 8447D | 2944A09673 | Nov. 17, 2015 |
| 3 | Receiver | AGILENT | N9038A | MY52130039 | Oct. 11, 2016 |
| 4 | Test Cable | emci | LMR-400(30MHz-1GHz) | C-01 | Jun. 28, 2016 |
| 5 | Controller | CT | SC100 | N/A | N/A |
| 6 | Antenna | ETS | 3115 | 75789 | Mar. 28, 2016 |
| 7 | Broad-Band Horn Antenna | Schwarzbeck | BBHA 9170 | 9170319 | Mar. 28, 2016 |
| 8 | Microwave Preamplifier With Adaptor | EMC INSTRUMENT | EMC2654045 | 980039 & HA01 | Mar. 28, 2016 |
| 9 | Measurement Software | Farad | EZ-EMC Ver.NB-03A1-01 | N/A | N/A |
| 10 | Wireless Communication Test Set | (8960 Series) Agilent | E5515C | MY48364183 | Mar. 28, 2016 |
| 11 | Band Reject Filter | Wairrwright Instruments Gmbh | WRCG 824/849-810/863-60/9SS | 7 | Mar. 04, 2016 |

| Conducted Emission & Band Edge & Occupied Bandwidth Measurement | | | | | |
|---|---|---|---|---|---|
| Item | Kind of Equipment | Manufacturer | Type No. | Serial No. | Calibrated until |
| 1 | EXA SpectrumAnalyzer | Agilent | N9010A | MY50520044 | Mar. 28, 2016 |
| 2 | Wireless Communication Test Set | (8960 Series)Agilent | E5515C | MY48364183 | Mar. 28, 2016 |
| 3 | wideband radio communication tester | R&S | CMW500 | 152372 | Jan.30, 2016 |
| 4 | POWER SPLITTER | Mini-Circuits | ZFRSC-123-S+ | 331000910-1 | Mar. 17, 2016 |
| 5 | Test Cable | N/A | RG316 | Cable4-001 | Jul. 15, 2016 |
| 6 | Test Cable | N/A | RG316 | Cable4-002 | Jul. 15, 2016 |

| Frequency Stability Measurement | | | | | |
|---|---|---|---|---|---|
| Item | Kind of Equipment | Manufacturer | Type No. | Serial No. | Calibrated until |
| 1 | Wireless Communication Test Set | (8960 Series)Agilent | E5515C | MY48364183 | Mar. 28, 2016 |
| 2 | POWER SPLITTER | Mini-Circuits | ZFRSC-123-S+ | 331000910-1 | Mar. 17, 2016 |
| 3 | Test Cable | N/A | RG316 | Cable4-001 | Jul. 15, 2016 |
| 4 | Const Temp. & Humidity Chamber | GIANT FORCE | ITH-225-20-S | IAB0309-001 | Dec.05, 2015 |
| 5 | DC power supply | GW Instek | GPC-3030DN | EK880675 | Oct. 13, 2016 |

Remark: ”N/A” denotes no model name, serial no. or calibration specified.
All calibration period of equipment list is one year.

## 6. EUT TEST PHOTO

**Radiated Measurement Photos**

**30MHz to 1000MHz**

## Radiated Measurement Photos

### Above 1000MHz

# ATTACHMENT A - OUTPUT POWER

| Test Mode: | TX CH 128/190/251 |
|---|---|

**ERP Power**

| GSM 850 | | | | | |
|---|---|---|---|---|---|
| GSM | | | | | |
| Plane | Channel | Frequency (MHz) | ERP(dBm) | Max. Limit(dBm) | Polarization (H/V) |
| Z | 128 | 824.2 | 29.97 | 38.50 | H |
| | 190 | 836.6 | 30.65 | 38.50 | H |
| | 251 | 848.8 | 30.45 | 38.50 | H |
| | 128 | 824.2 | 19.95 | 38.50 | V |
| | 190 | 836.6 | 19.94 | 38.50 | V |
| | 251 | 848.8 | 19.74 | 38.50 | V |
| EDGE | | | | | |
| Plane | Channel | Frequency (MHz) | ERP(dBm) | Max. Limit(dBm) | Polarization (H/V) |
| Z | 128 | 824.2 | 27.68 | 38.50 | H |
| | 190 | 836.6 | 28.24 | 38.50 | H |
| | 251 | 848.8 | 28.13 | 38.50 | H |
| | 128 | 824.2 | 17.49 | 38.50 | V |
| | 190 | 836.6 | 17.55 | 38.50 | V |
| | 251 | 848.8 | 17.62 | 38.50 | V |

**Conducted Power:**

| GSM850 | | Tune-up | Max Burst Average Power (dBm) | | | Tune-up | Max Frame Average Power (dBm) | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | 128CH | 190CH | 251CH | | 128CH | 190CH | 251CH |
| | | | 824.2MHz | 836.6MHz | 848.8MHz | | 824.2MHz | 836.6MHz | 848.8MHz |
| GPRS /EDGE (GMSK) | 1 Tx Slot | 32.00 | 31.81 | 31.83 | 31.82 | 22.81 | 22.62 | 22.64 | 22.63 |
| | 2 Tx Slot | 29.50 | 28.94 | 28.91 | 28.91 | 23.37 | 22.81 | 22.78 | 22.78 |
| | 3 Tx Slot | 28.00 | 27.24 | 27.23 | 27.22 | 23.58 | 22.82 | 22.81 | 22.80 |
| | 4 Tx Slot | 27.00 | 26.70 | 26.72 | 26.70 | 23.82 | 23.52 | 23.54 | 23.52 |
| EDGE (8PSK) | 1 Tx Slot | 27.50 | 27.12 | 27.04 | 26.96 | 18.31 | 17.93 | 17.85 | 17.77 |
| | 2 Tx Slot | 23.50 | 23.03 | 23.01 | 22.73 | 17.37 | 16.90 | 16.88 | 16.60 |
| | 3 Tx Slot | 21.50 | 21.25 | 21.18 | 21.02 | 17.08 | 16.83 | 16.76 | 16.60 |
| | 4 Tx Slot | 21.00 | 20.54 | 20.53 | 20.50 | 17.82 | 17.36 | 17.35 | 17.32 |

**REMARKS:**

1. Radiated Output Power(dBm)=Raw Value(dBm) + Correction Factor(dB) +Ant Gain(dBi)
2. Correction Factor(dB) = Power SplitterLoss(dB) + Cable Loss(dB)
3. The antenna gain is -1.66dBi
4. Tests have been conducted for both vertical and horizontal plane and the worst case was found in horizontal plane and the results were selected and recorded in the report

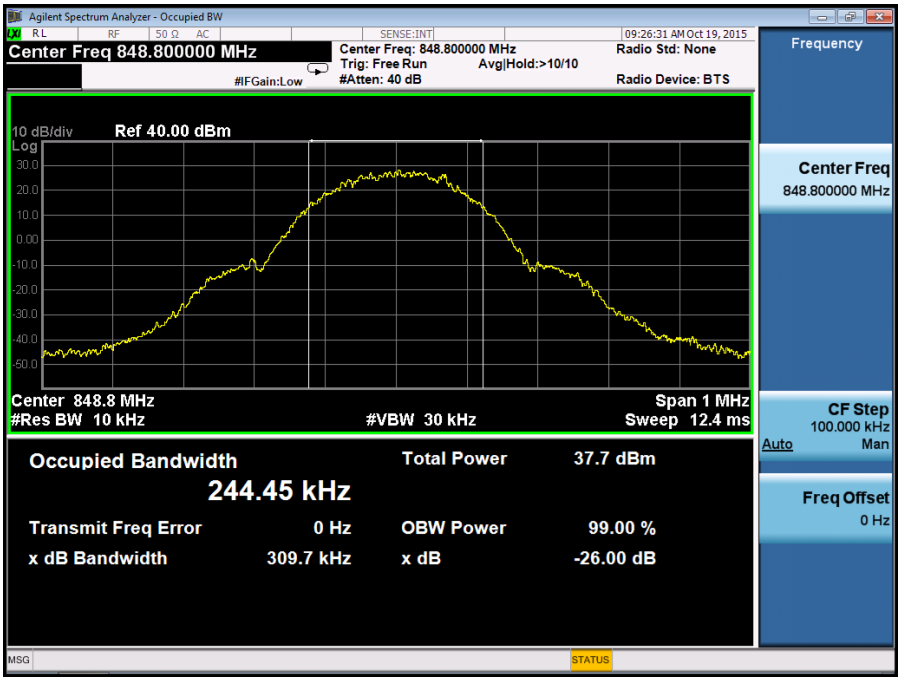
# ATTACHMENT B - OCCUPIED BANDWIDTH

| Test Mode : TX Mode Configuration GSM | | | | |
|---|---|---|---|---|
| **Channel** | **Frequency** | **99% OBW (MHz)** | **-26dBc Bandwidth(MHz)** | **Result** |
| 128 | 824.20 MHz | 0.246 | 0.317 | **Complies** |
| 190 | 836.60 MHz | 0.244 | 0.320 | **Complies** |
| 251 | 848.80 MHz | 0.244 | 0.310 | **Complies** |

**99% Occupied Bandwidth channel 128**

## 99% Occupied Bandwidth channel 190

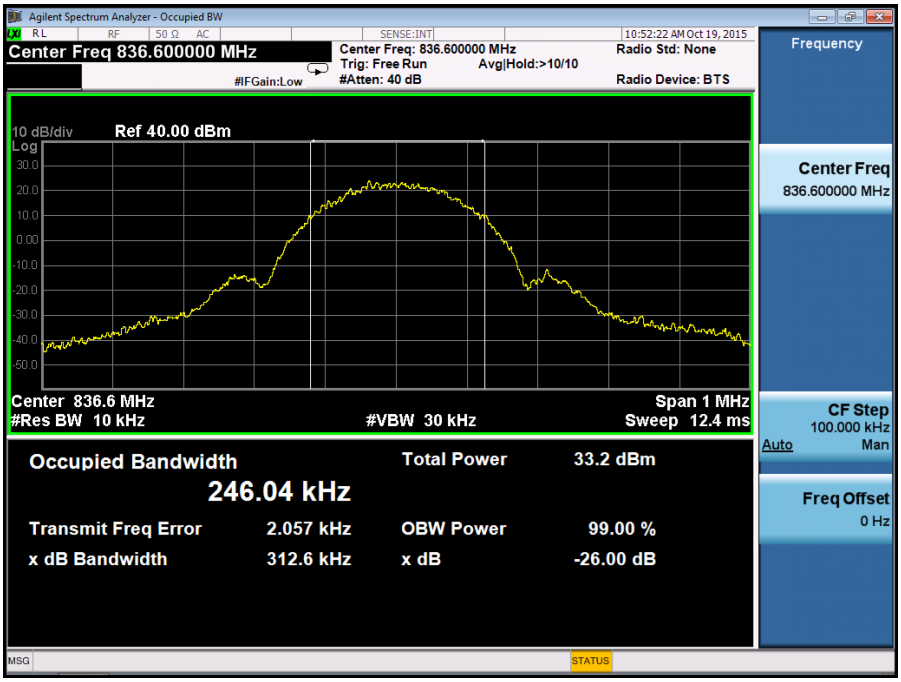

## 99% Occupied Bandwidth channel 251



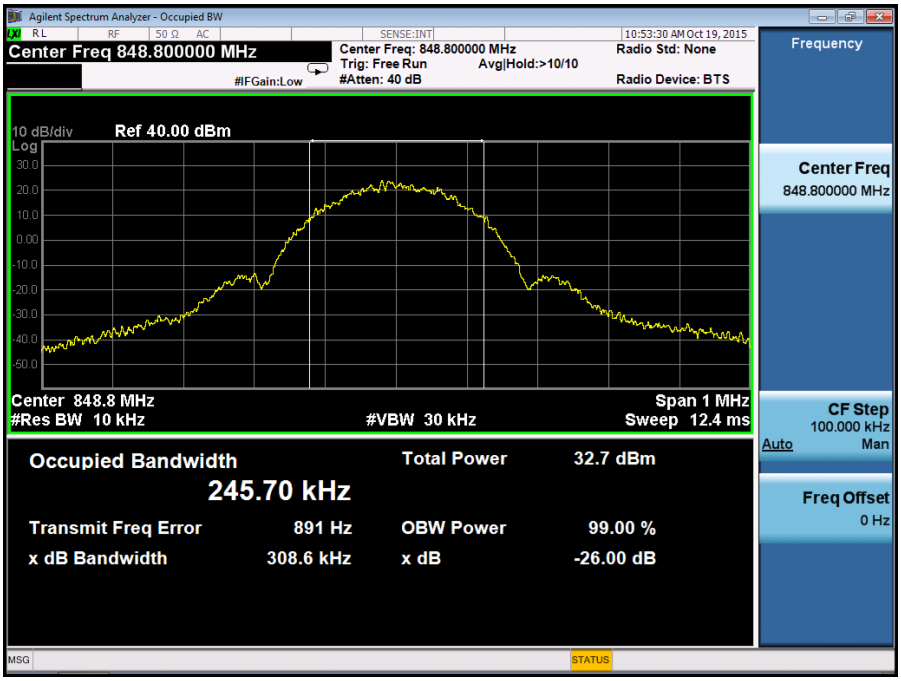
| Test Mode : TX Mode Configuration EDGE | | | | |
|---|---|---|---|---|
| **Channel** | **Frequency** | **99% OBW (MHz)** | **-26dBc Bandwidth(MHz)** | **Result** |
| 128 | 824.20 MHz | 0.242 | 0.311 | **Complies** |
| 190 | 836.60 MHz | 0.246 | 0.313 | **Complies** |
| 251 | 848.80 MHz | 0.246 | 0.309 | **Complies** |

**99% Occupied Bandwidth channel 128**

## 99% Occupied Bandwidth channel 190




## 99% Occupied Bandwidth channel 251



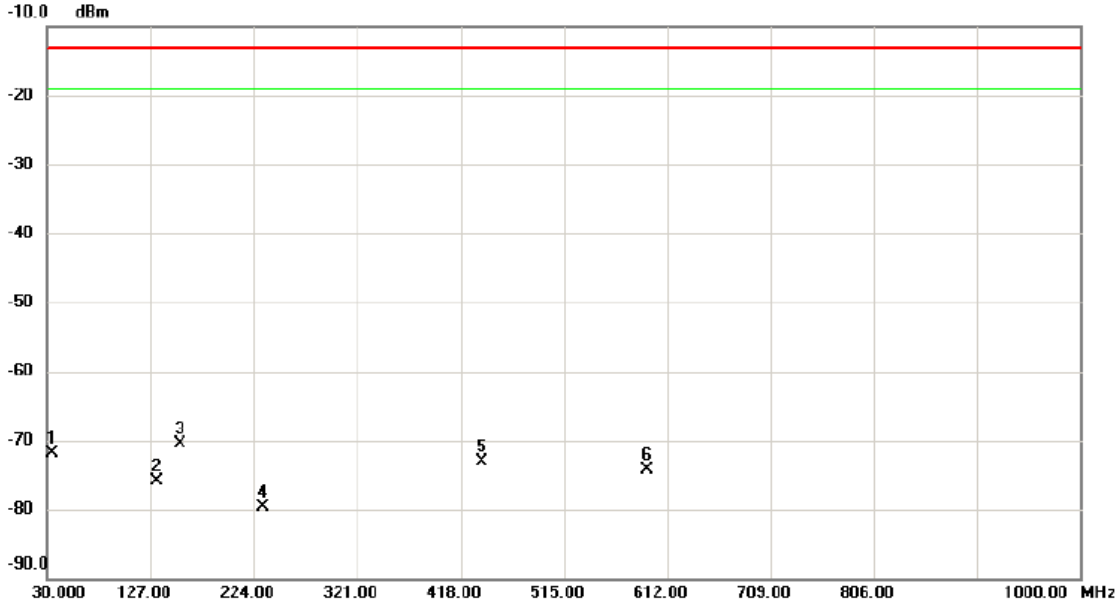
# ATTACHMENT C – CONDUCTED EMISSIONS

## Conducted Spurious of Configuration GSMchannel 190

# ATTACHMENT D - RADIATED EMISSION

| Test Mode: | TX CH190 GSM |
|---|---|

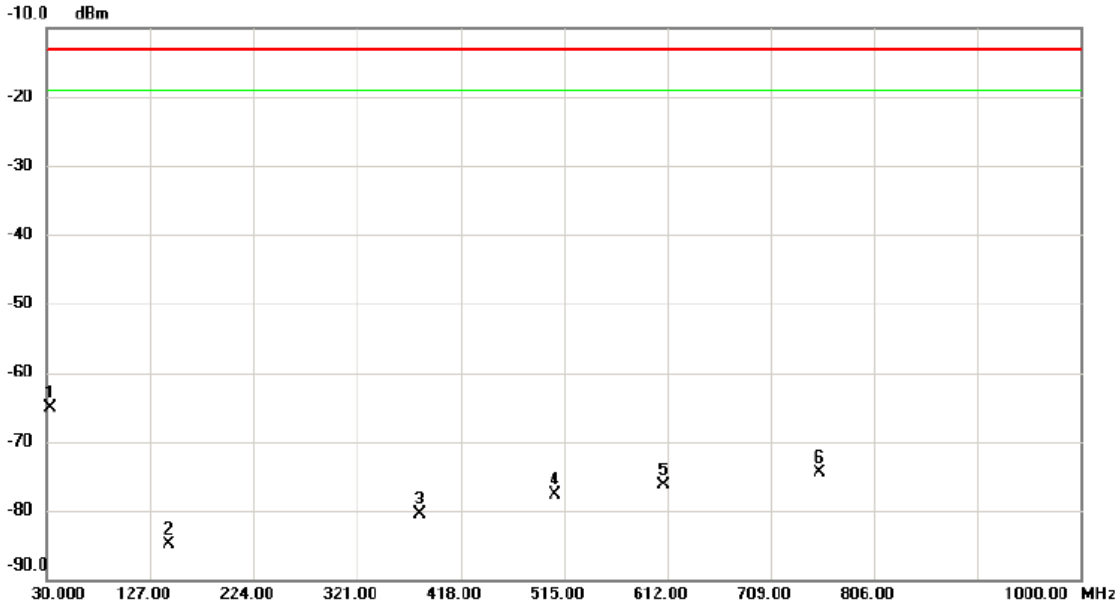
**Vertical**




| No. | Mk. | Freq. | Reading Level | Correct Factor | Measure-ment | Limit | Margin | | |
|---|---|---|---|---|---|---|---|---|---|
| | | MHz | dBm | dB | dBm | dBm | dB | Detector | Comment |
| 1 | | 33.8800 | -62.30 | -9.62 | -71.92 | -13.00 | -58.92 | peak | |
| 2 | | 132.8200 | -73.47 | -2.46 | -75.93 | -13.00 | -62.93 | peak | |
| 3 | * | 155.1300 | -68.30 | -2.21 | -70.51 | -13.00 | -57.51 | peak | |
| 4 | | 231.7600 | -79.03 | -0.64 | -79.67 | -13.00 | -66.67 | peak | |
| 5 | | 437.4000 | -71.80 | -1.36 | -73.16 | -13.00 | -60.16 | peak | |
| 6 | | 592.6000 | -79.50 | 5.25 | -74.25 | -13.00 | -61.25 | peak | |

| Test Mode: | TX CH190 GSM |
|---|---|

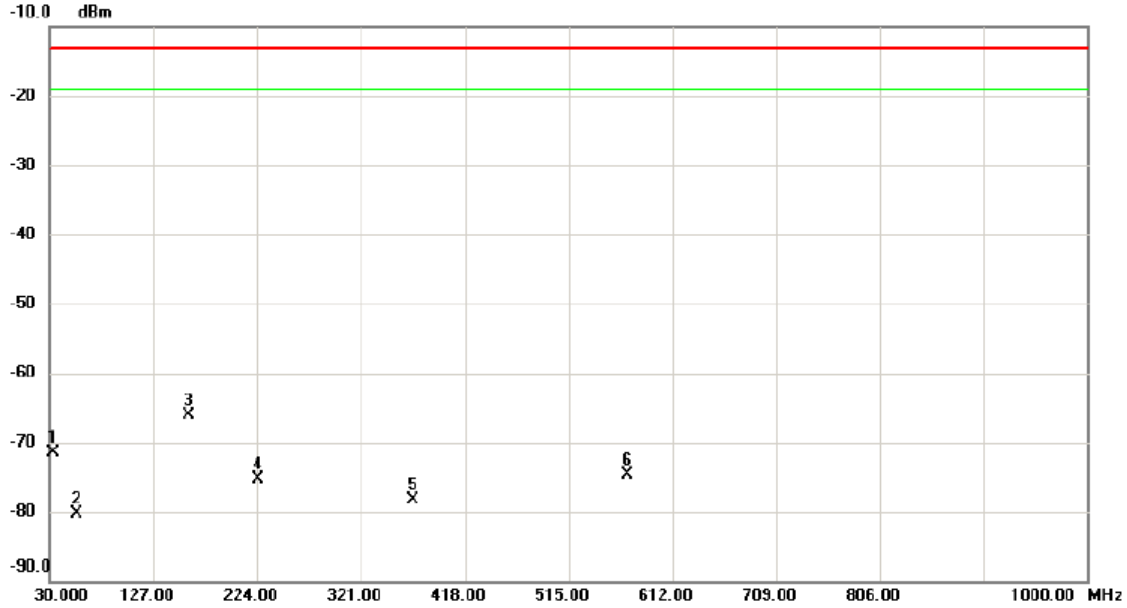
**Horizontal**




| No. | Mk. | Freq. | Reading Level | Correct Factor | Measure-ment | Limit | Margin | | |
|---|---|---|---|---|---|---|---|---|---|
| | | MHz | dBm | dB | dBm | dBm | dB | Detector | Comment |
| 1 | * | 32.9100 | -66.31 | 1.15 | -65.16 | -13.00 | -52.16 | peak | |
| 2 | | 144.4600 | -79.64 | -5.32 | -84.96 | -13.00 | -71.96 | peak | |
| 3 | | 379.2000 | -79.93 | -0.54 | -80.47 | -13.00 | -67.47 | peak | |
| 4 | | 506.2700 | -78.51 | 0.86 | -77.65 | -13.00 | -64.65 | peak | |
| 5 | | 609.0900 | -78.54 | 2.18 | -76.36 | -13.00 | -63.36 | peak | |
| 6 | | 754.5900 | -78.98 | 4.43 | -74.55 | -13.00 | -61.55 | peak | |

| Test Mode: | TX CH190 EDGE |
|---|---|

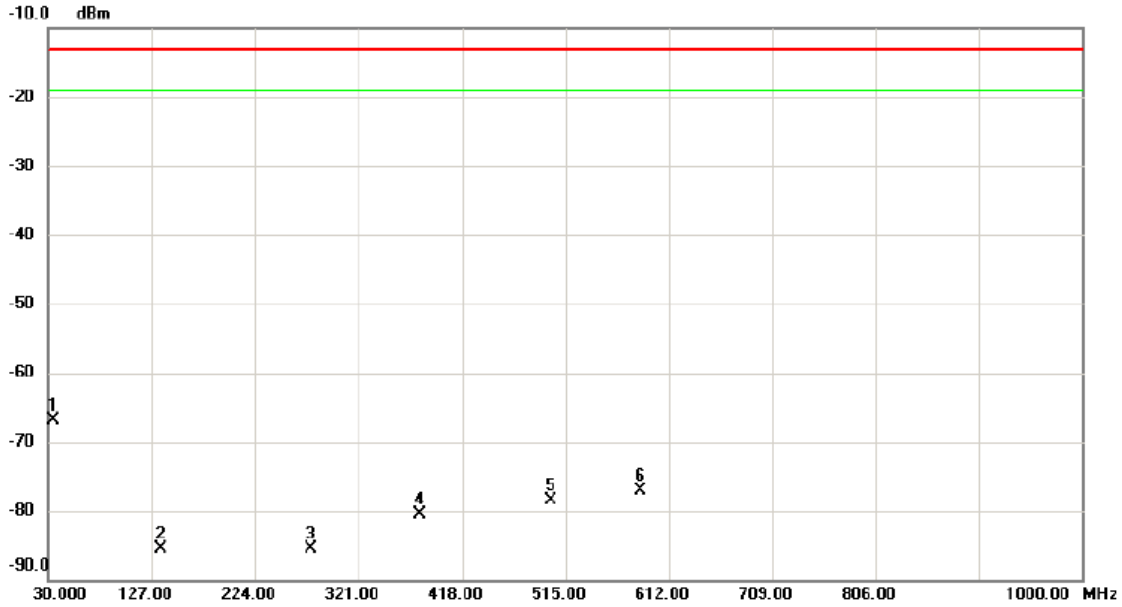
**Vertical**




| No. | Mk. | Freq. | Reading Level | Correct Factor | Measure-ment | Limit | Margin | | |
|---|---|---|---|---|---|---|---|---|---|
| | | MHz | dBm | dB | dBm | dBm | dB | Detector | Comment |
| 1 | | 32.9100 | -62.11 | -9.42 | -71.53 | -13.00 | -58.53 | peak | |
| 2 | | 55.2200 | -73.48 | -6.88 | -80.36 | -13.00 | -67.36 | peak | |
| 3 | * | 159.9800 | -64.51 | -1.66 | -66.17 | -13.00 | -53.17 | peak | |
| 4 | | 224.0000 | -73.21 | -2.08 | -75.29 | -13.00 | -62.29 | peak | |
| 5 | | 369.5000 | -78.05 | -0.17 | -78.22 | -13.00 | -65.22 | peak | |
| 6 | | 570.2900 | -78.87 | 4.15 | -74.72 | -13.00 | -61.72 | peak | |

| Test Mode: | TX CH190 EDGE |
|---|---|

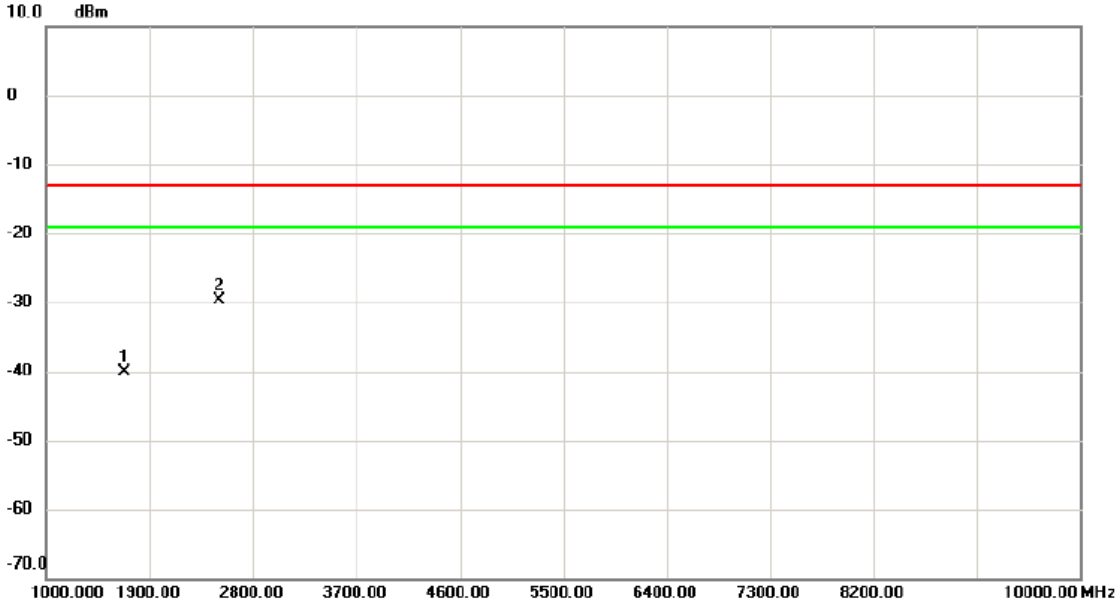
**Horizontal**




| No. | Mk. | Freq. | Reading Level | Correct Factor | Measure-ment | Limit | Margin | | |
|---|---|---|---|---|---|---|---|---|---|
| | | MHz | dBm | dB | dBm | dBm | dB | Detector | Comment |
| 1 | * | 33.8800 | -67.84 | 0.91 | -66.93 | -13.00 | -53.93 | peak | |
| 2 | | 135.7300 | -80.15 | -5.39 | -85.54 | -13.00 | -72.54 | peak | |
| 3 | | 276.3800 | -80.32 | -5.15 | -85.47 | -13.00 | -72.47 | peak | |
| 4 | | 378.2300 | -79.92 | -0.55 | -80.47 | -13.00 | -67.47 | peak | |
| 5 | | 501.4200 | -79.45 | 0.94 | -78.51 | -13.00 | -65.51 | peak | |
| 6 | | 585.8100 | -78.95 | 1.87 | -77.08 | -13.00 | -64.08 | peak | |

| Test Mode: | TX CH190 GSM |
|---|---|

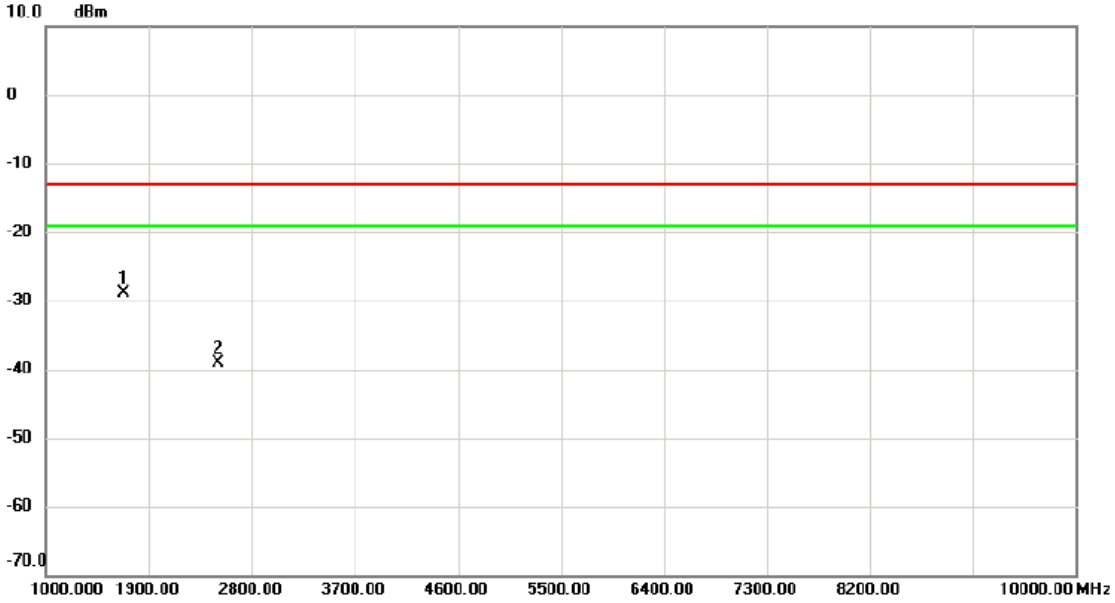
**Vertical**




| No. | Mk. | Freq. | Reading Level | Correct Factor | Measure-ment | Limit | Margin | | |
|---|---|---|---|---|---|---|---|---|---|
| | | MHz | dBm | dB | dBm | dBm | dB | Detector | Comment |
| 1 | | 1673.080 | -46.65 | 6.49 | -40.16 | -13.00 | -27.16 | peak | |
| 2 | * | 2509.845 | -41.97 | 12.20 | -29.77 | -13.00 | -16.77 | peak | |

| Test Mode: | TX CH190 GSM |
|---|---|

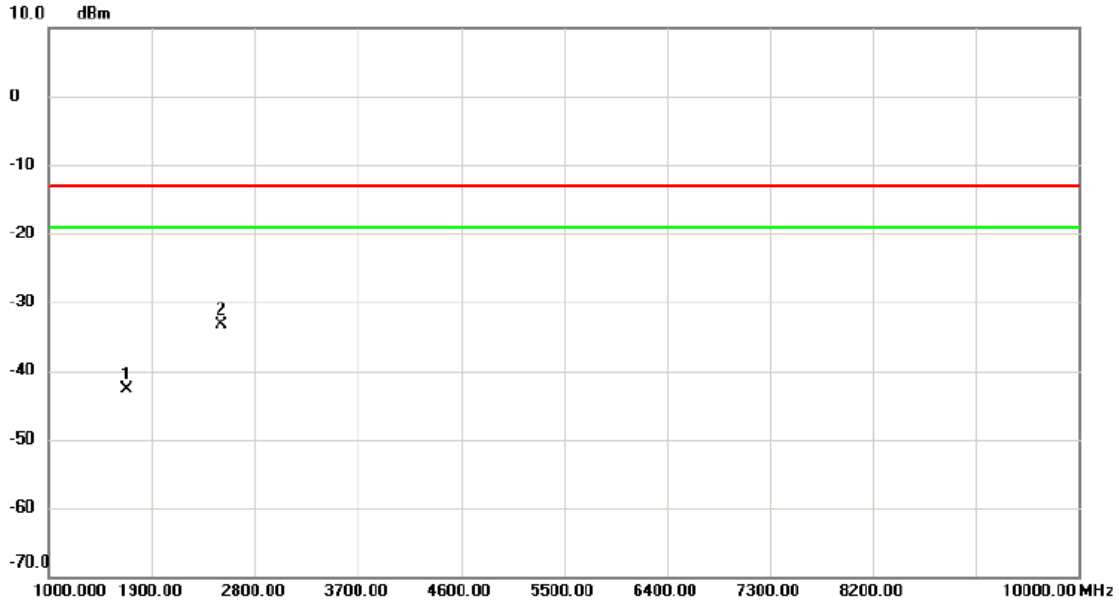
**Horizontal**




| No. | Mk. | Freq. | Reading Level | Correct Factor | Measure-ment | Limit | Margin | | |
|---|---|---|---|---|---|---|---|---|---|
| | | MHz | dBm | dB | dBm | dBm | dB | Detector | Comment |
| 1 | * | 1673.345 | -36.98 | 8.16 | -28.82 | -13.00 | -15.82 | peak | |
| 2 | | 2509.845 | -44.29 | 5.28 | -39.01 | -13.00 | -26.01 | peak | |

| Test Mode: | TX CH190 EDGE |
|---|---|

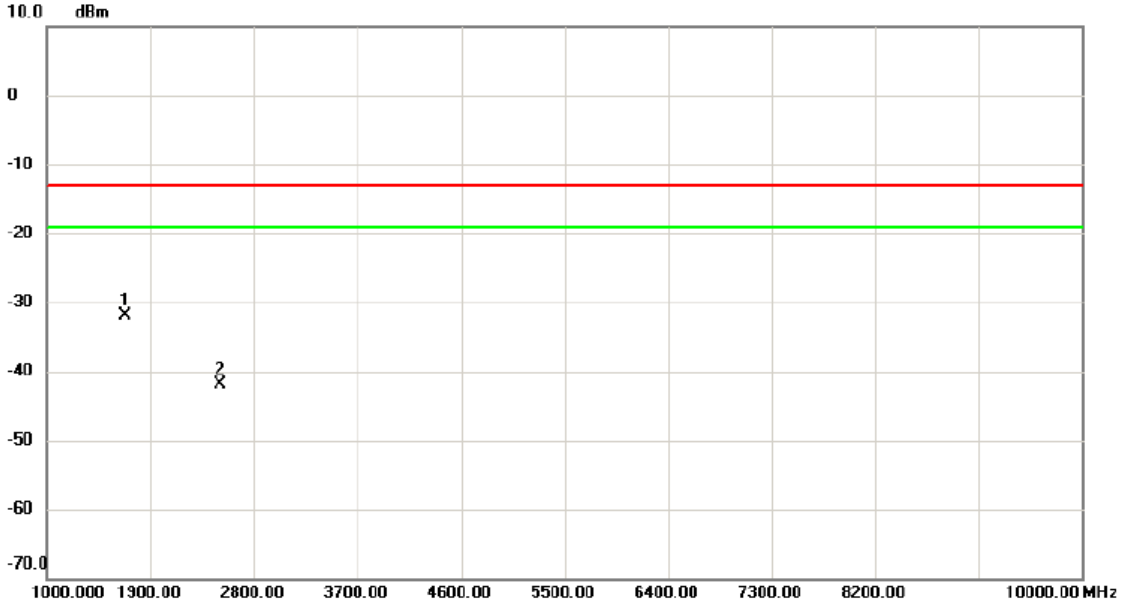
**Vertical**




| No. | Mk. | Freq. | Reading Level | Correct Factor | Measure-ment | Limit | Margin | | |
|---|---|---|---|---|---|---|---|---|---|
| | | MHz | dBm | dB | dBm | dBm | dB | Detector | Comment |
| 1 | | 1673.205 | -49.14 | 6.50 | -42.64 | -13.00 | -29.64 | peak | |
| 2 | * | 2509.795 | -45.42 | 12.20 | -33.22 | -13.00 | -20.22 | peak | |

| Test Mode: | TX CH190 EDGE |
|---|---|

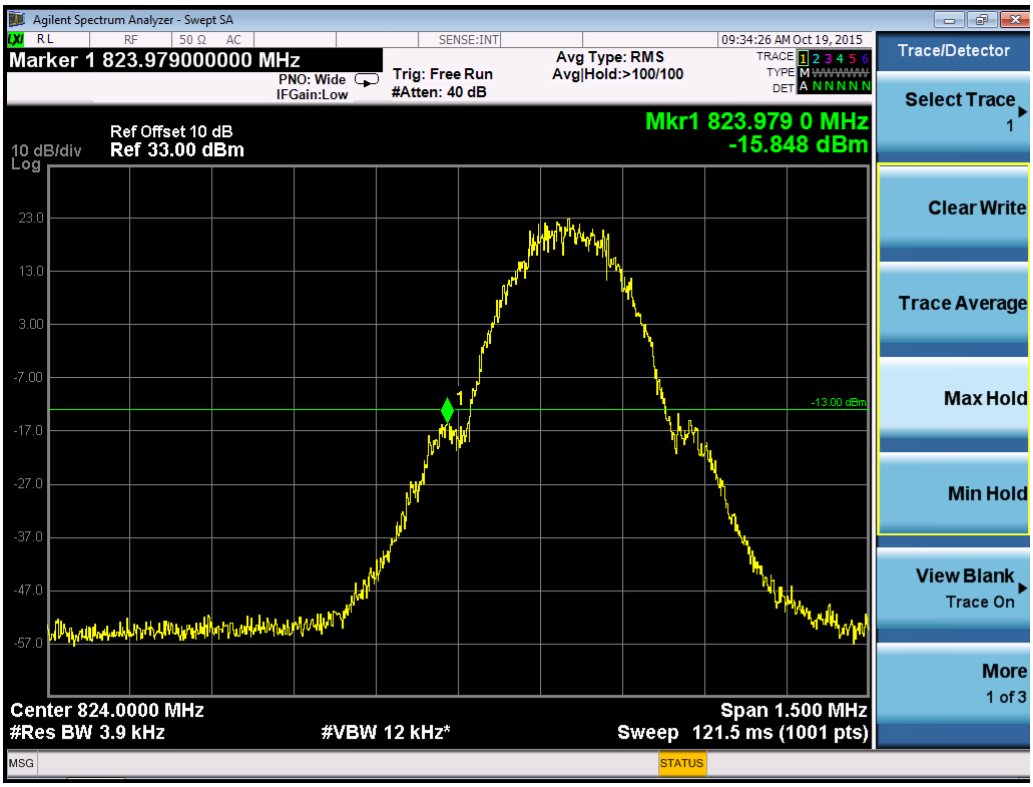
**Horizontal**



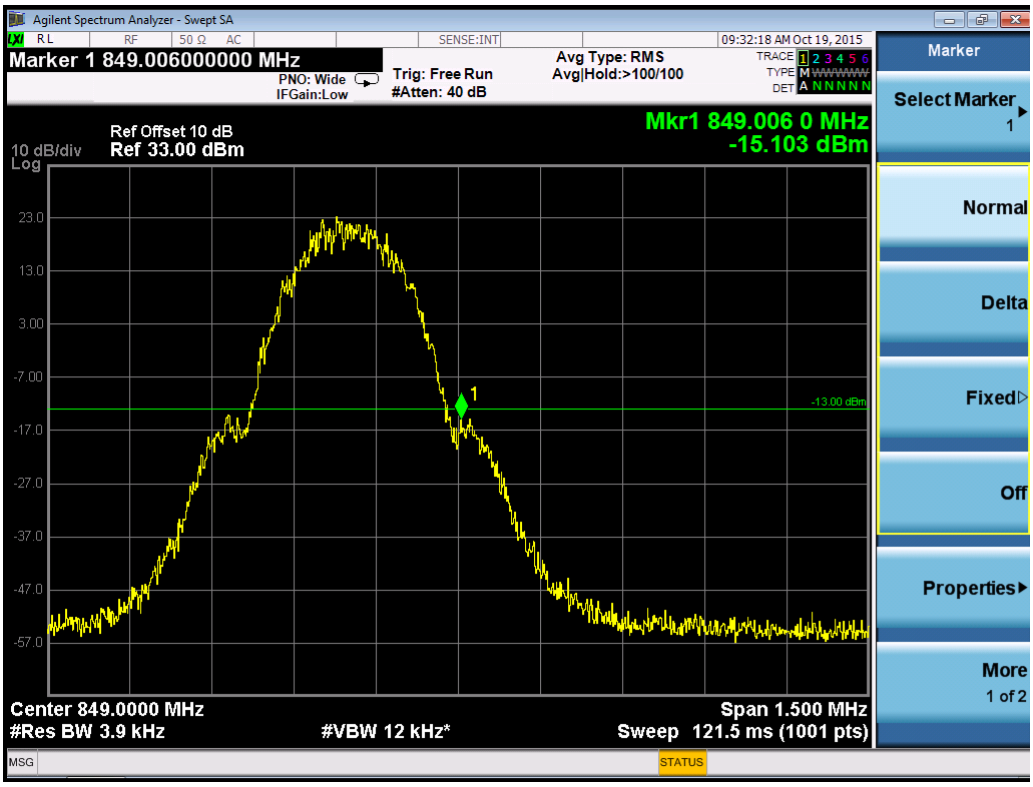

| No. | Mk. | Freq. | Reading Level | Correct Factor | Measure-ment | Limit | Margin | | |
|---|---|---|---|---|---|---|---|---|---|
| | | MHz | dBm | dB | dBm | dBm | dB | Detector | Comment |
| 1 | * | 1673.135 | -40.10 | 8.16 | -31.94 | -13.00 | -18.94 | peak | |
| 2 | | 2509.880 | -47.10 | 5.28 | -41.82 | -13.00 | -28.82 | peak | |

# ATTACHMENT E - BAND EDGE

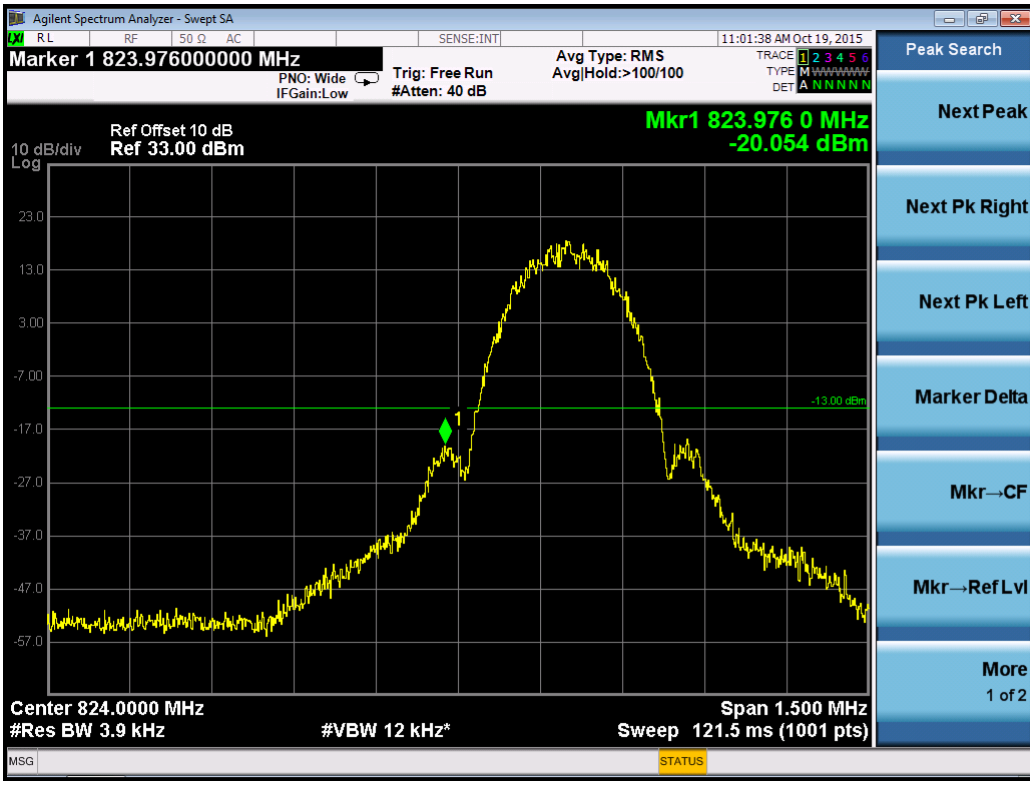
## Band Edge on Configuration GSM / Channel 128-CONDUCTED MODE



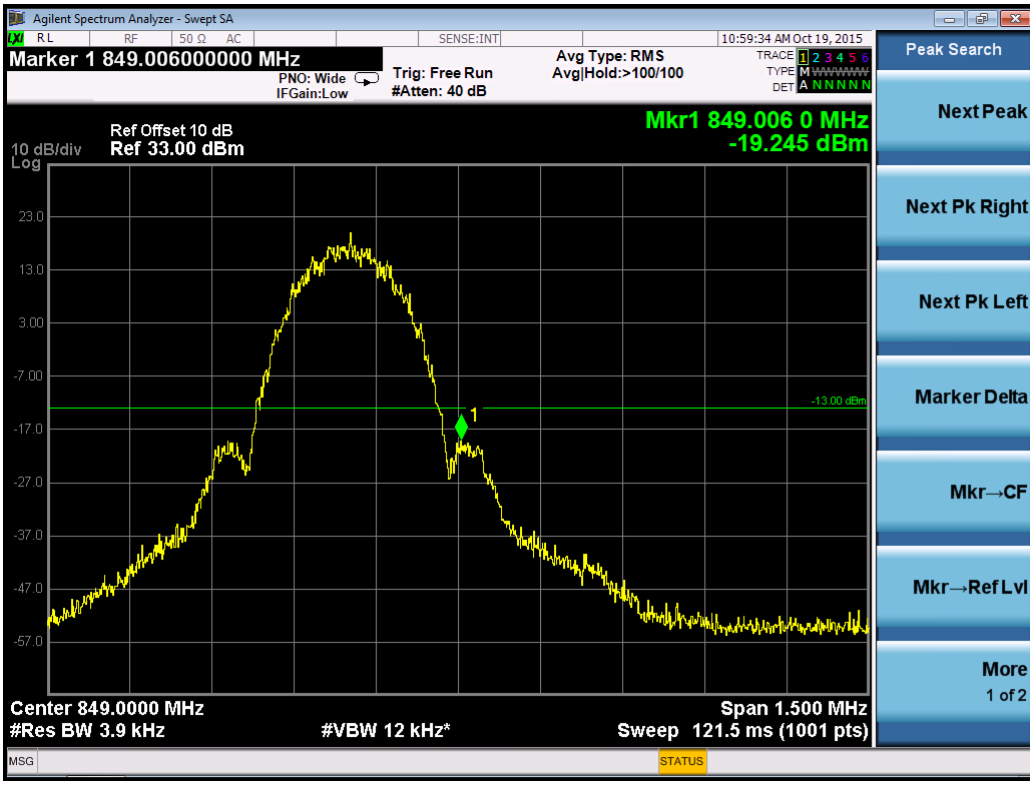

## Band Edge on Configuration GSM / Channel 251-CONDUCTED MODE



## Band Edge on Configuration EDGE / Channel 128-CONDUCTED MODE




## Band Edge on Configuration EDGE / Channel 251-CONDUCTED MODE



# ATTACHMENT F - FREQUENCY STABILITY

| Test Mode: | TX CH 128 GSM |
|---|---|

**Temperature vs. Frequency Stability**

| Temperature(℃) | Frequency Error (Hz) | Frequency Error (ppm) | Limit(ppm) |
|---|---|---|---|
| 0 | 6.21 | 0.007534579 | 2.5 |
| 10 | 5.23 | 0.006345547 | 2.5 |
| 20 | 3.11 | 0.003773356 | 2.5 |
| 30 | 4.85 | 0.005884494 | 2.5 |
| 40 | 5.24 | 0.00635768 | 2.5 |
| 45 | 3.45 | 0.004185877 | 2.5 |
| Max. Deviation (ppm) | **6.21** | **0.007534579** | 2.5 |

**Voltage vs. Frequency Stability**

| Voltage(Volts) | Frequency Error (Hz) | Frequency Error (ppm) | Limit(ppm) |
|---|---|---|---|
| 3.7 | 2.14 | 0.002596457 | 2.5 |
| 3.5 | 3.24 | 0.003931085 | 2.5 |
| 4.35 | 0.28 | 0.000339723 | 2.5 |
| Max. Deviation (ppm) | **3.24** | **0.003931085** | 2.5 |