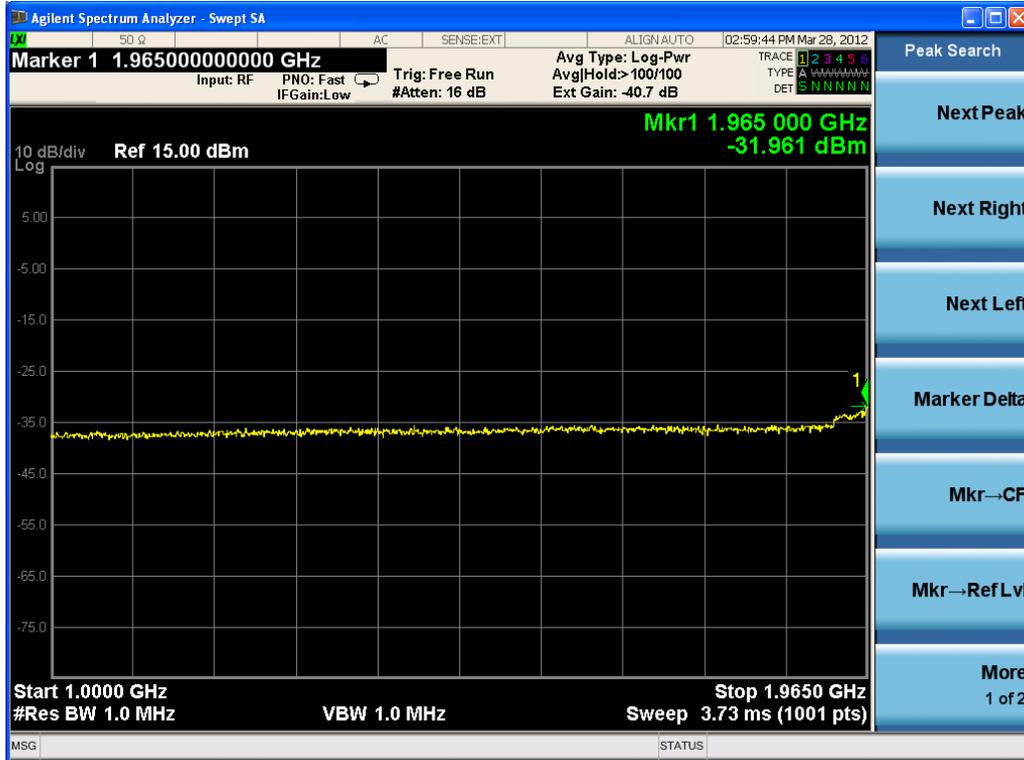
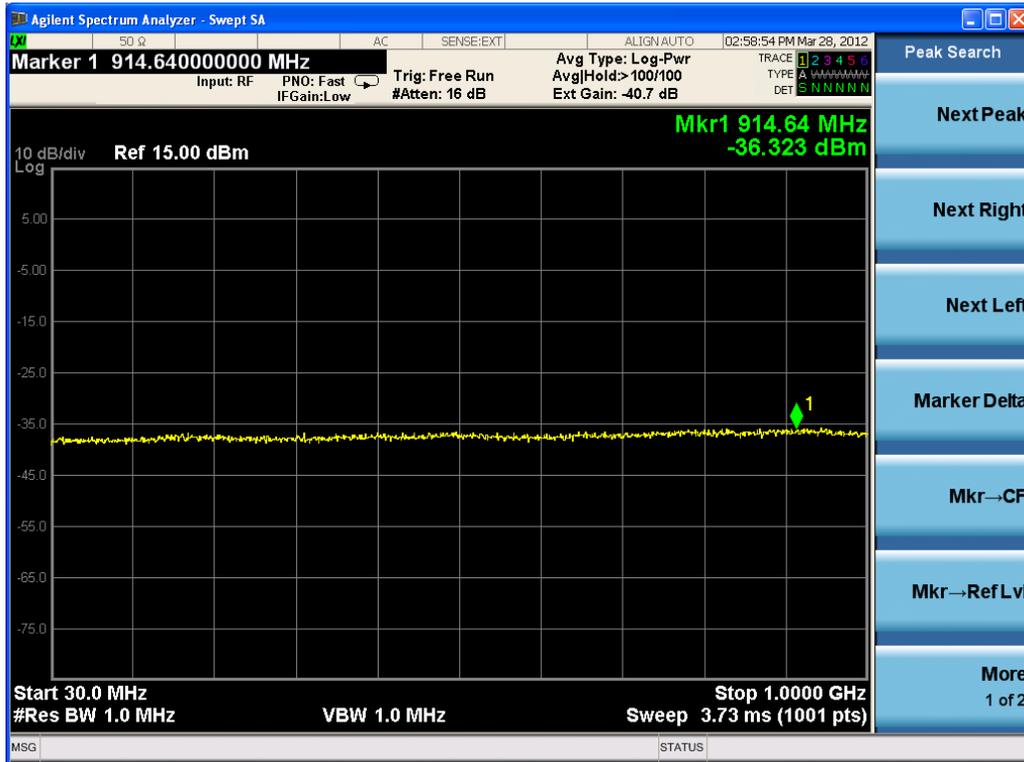


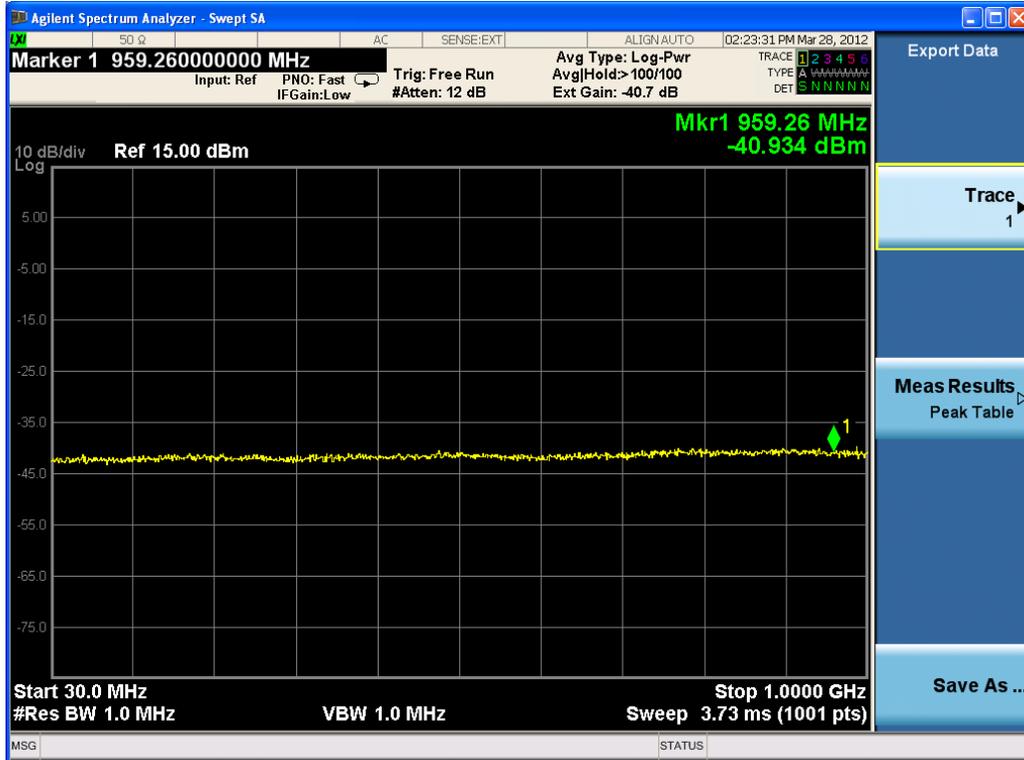


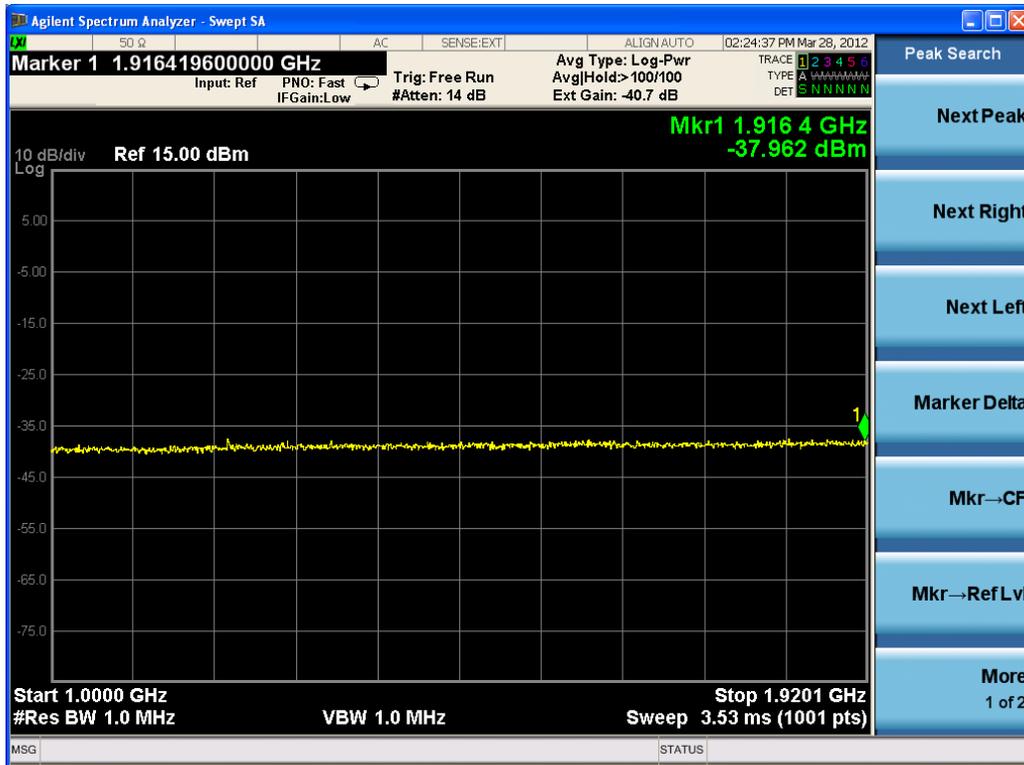
Three carriers (working in top frequency)



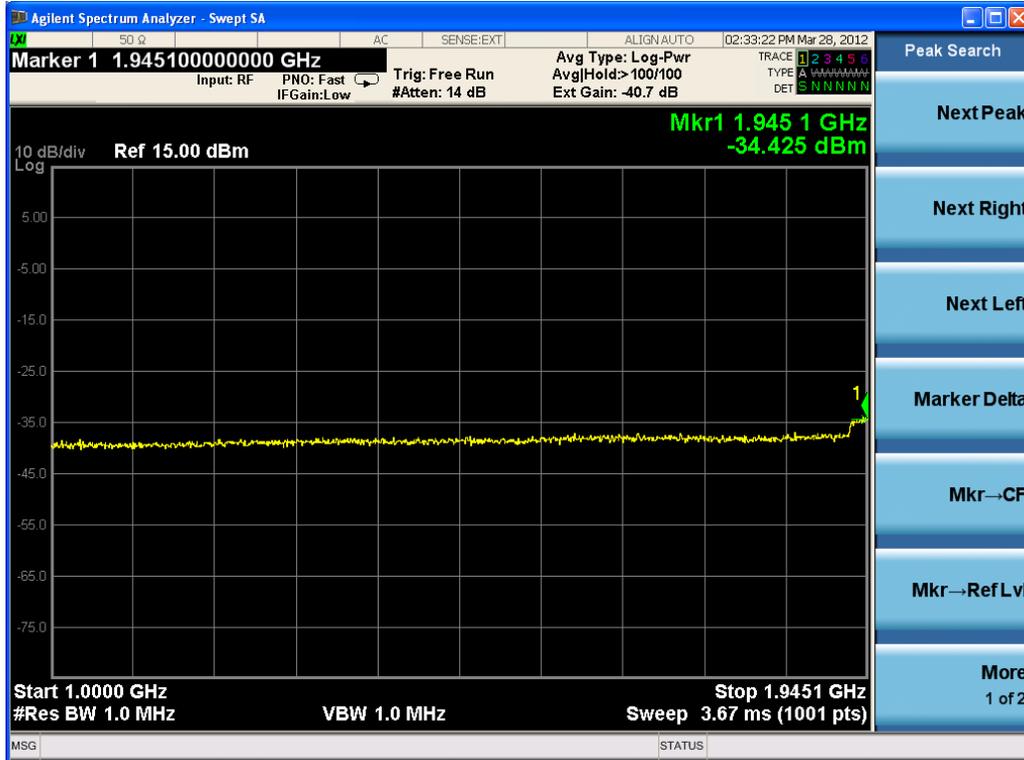
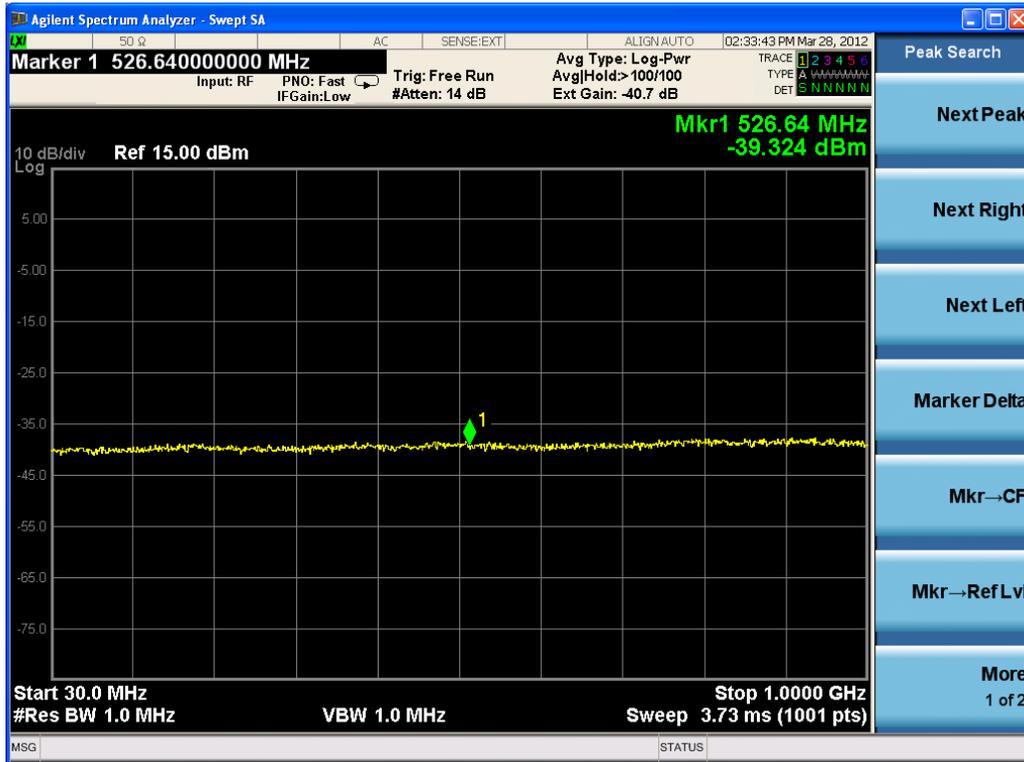


Two carrier (working in bottom frequency)



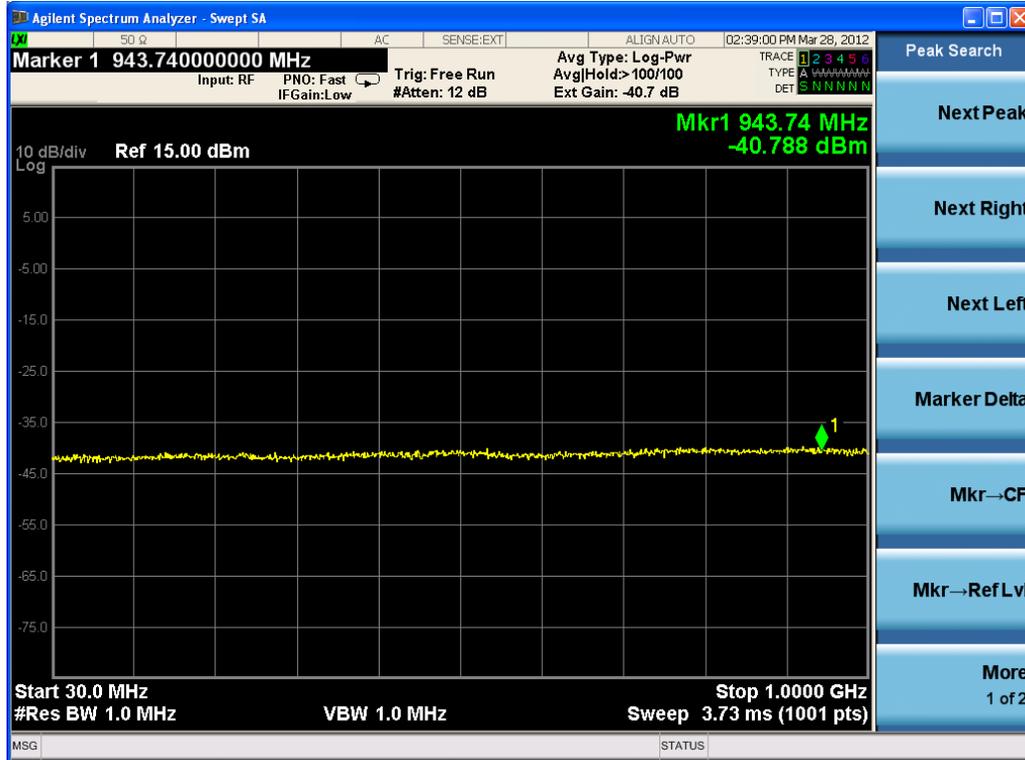


Two carriers (working in middle frequency)



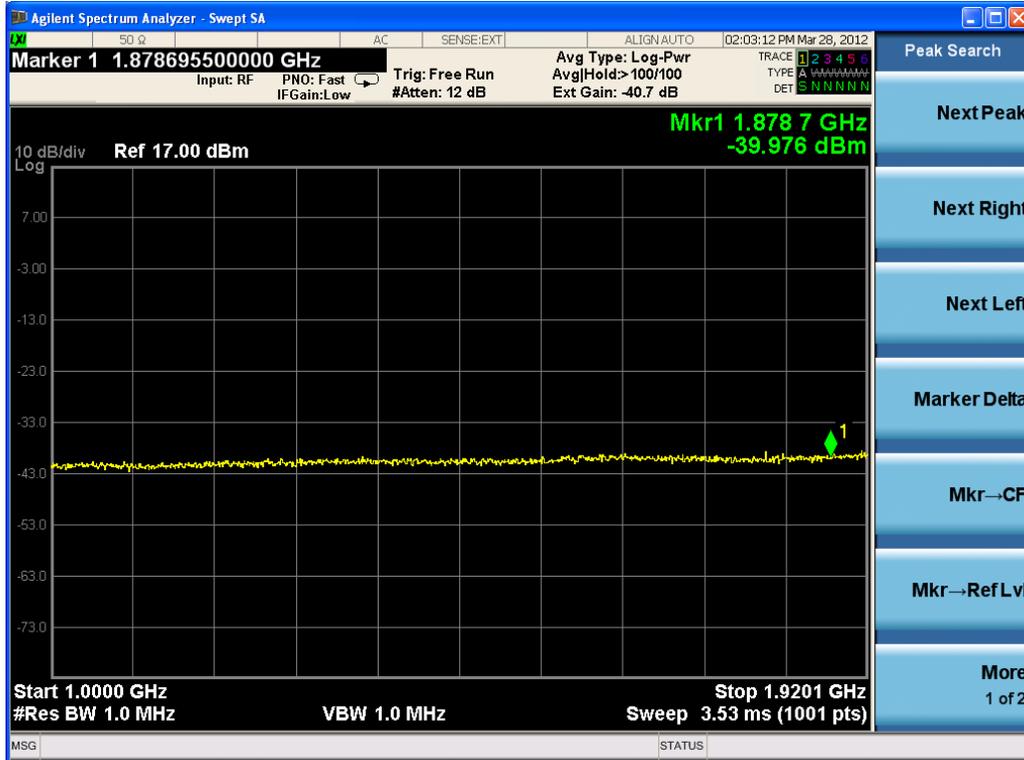
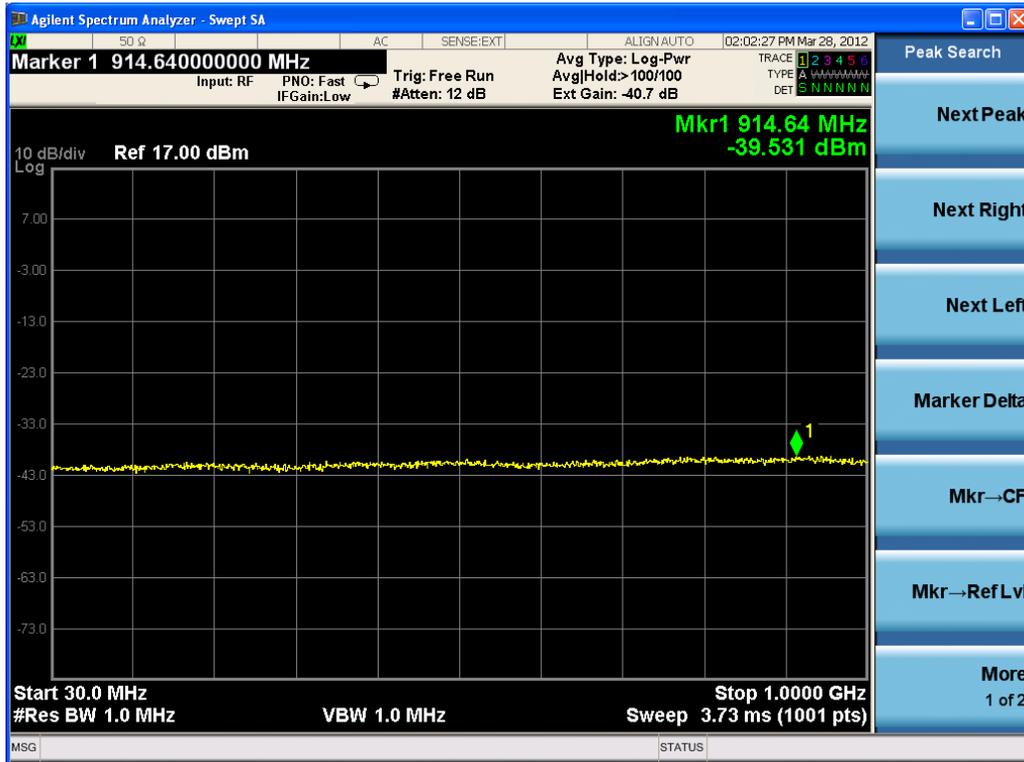


Two carriers (working in top frequency)



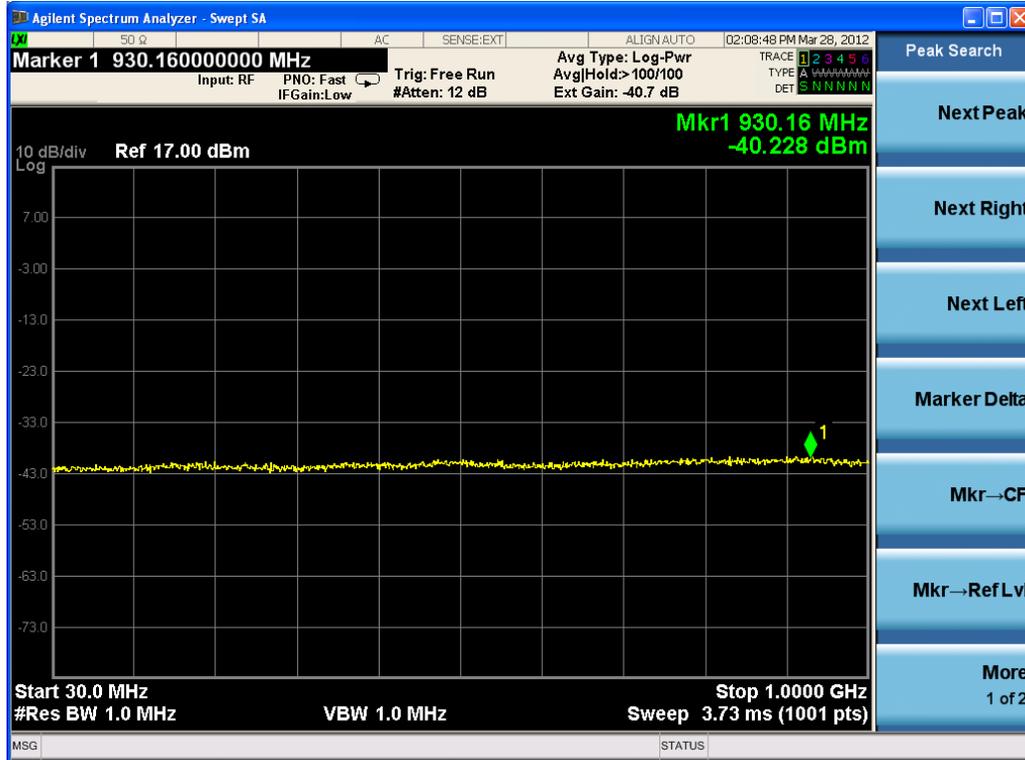


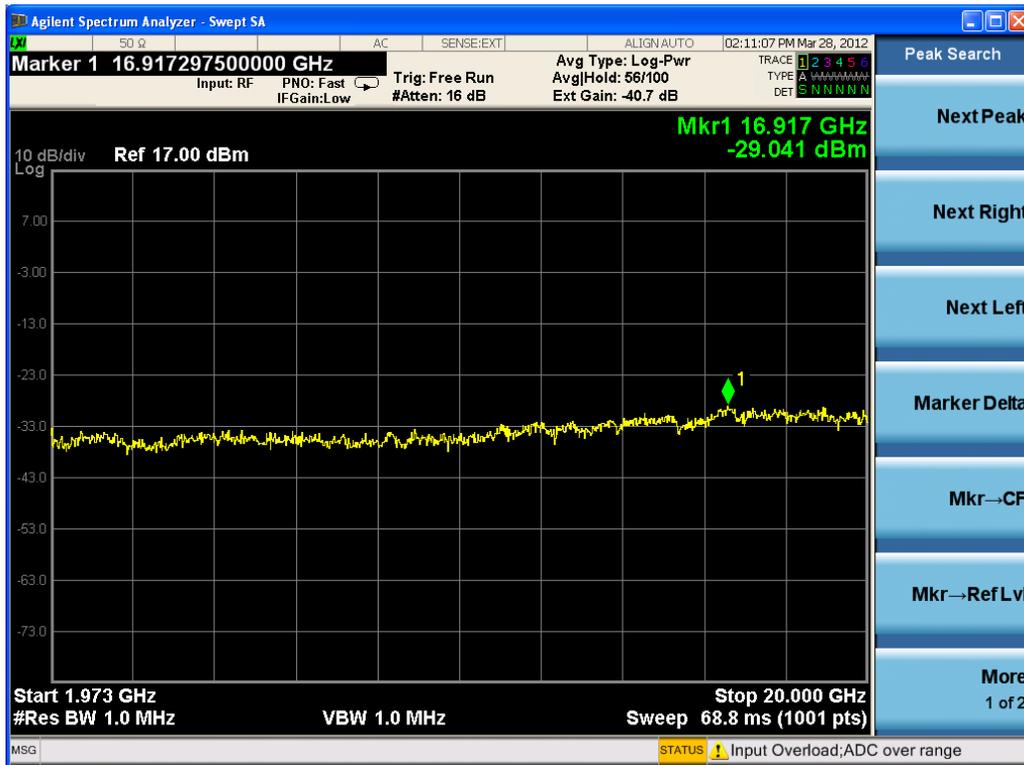
One carrier (working in bottom frequency)



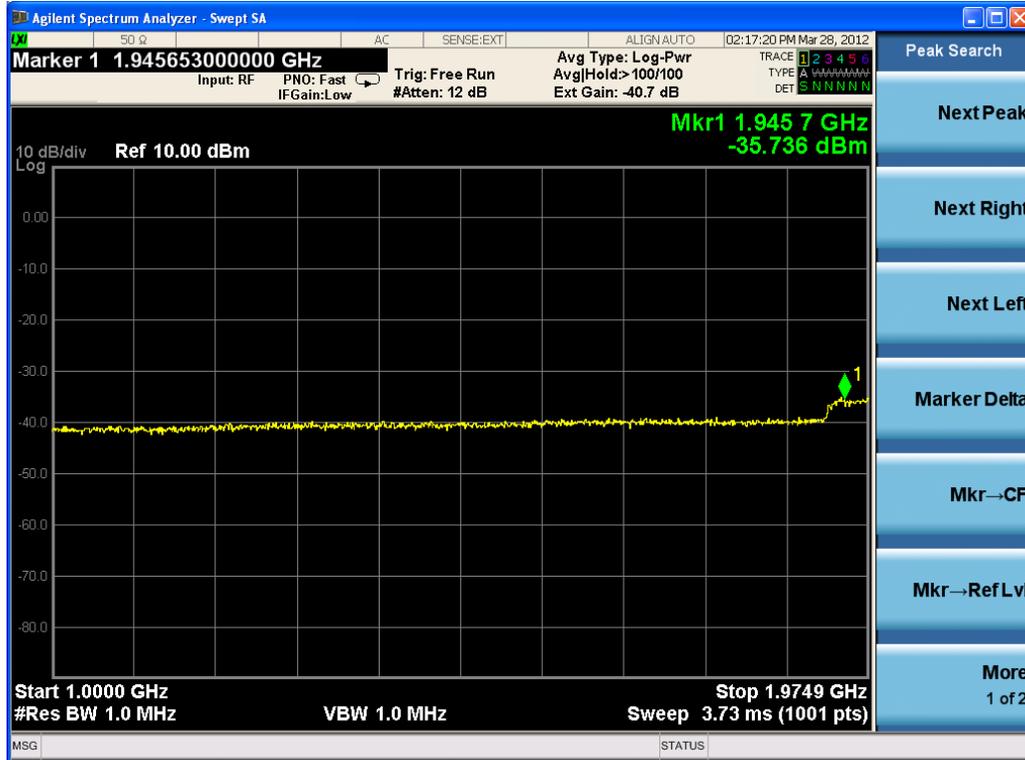
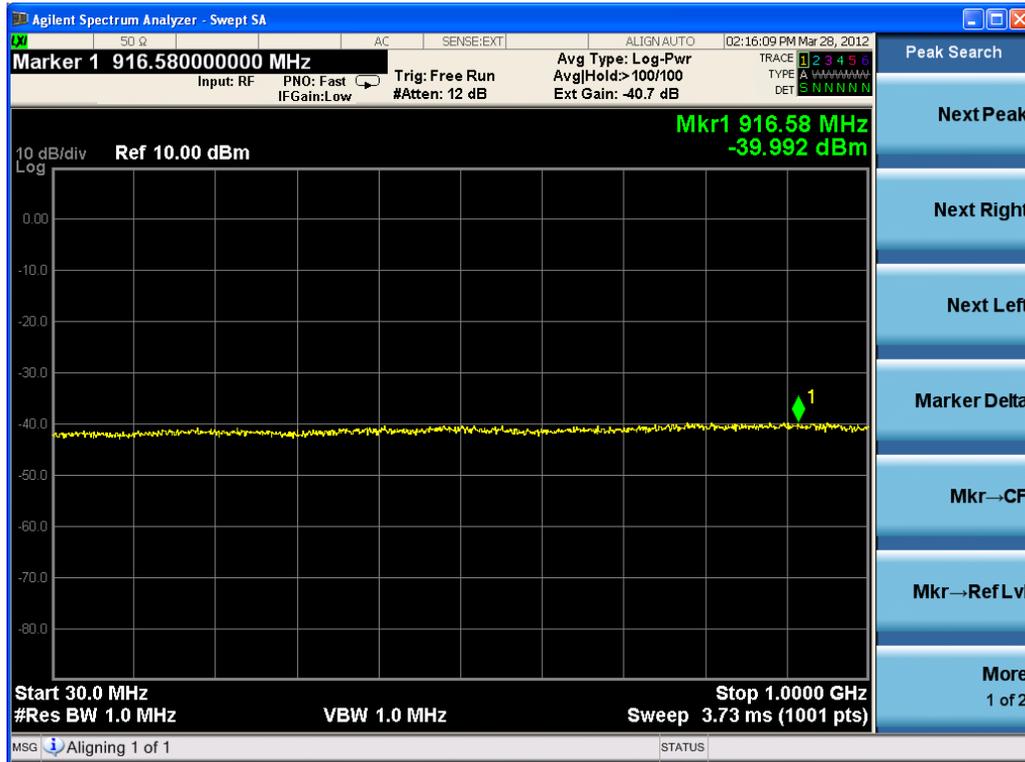


One carrier (working in middle frequency)





One carrier (working in top frequency)





4.6 OCCUPIED BANDWIDTH

Applicable Standard: FCC §2.1049 §24.229 §24.238

Test Equipment List and Details:

| Manufacturer | Description | Model | Serial Number | Calibration Date | Calibration Due Date |
|--------------|------------------------------|--------------|----------------|------------------|----------------------|
| Agilent | MXA Series Spectrum Analyzer | N9020A | MY48011941 | 2012-4-10 | 2013-4-9 |
| Atten | 40dB Attenuator | ATSI150-4-40 | 11300100204204 | 2011-7-11 | 2012-7-11 |
| Forstar | Forstar RF Cable | 002 | 1034 | 2012-4-9 | 2013-4-8 |

***statement of traceability:** ZTE Corporation Reliability Testing Center attest that all calibration have been performed per the NVLAP requirements, traceable to NIST.

Test Procedure

The RF out of the transmitter was connected to the input of the spectrum analyzer through sufficient attenuation. The resolution bandwidth of the spectrum analyzer was set at 1% of the span or higher and 99%Power bandwidth was recorded.

Environmental Conditions

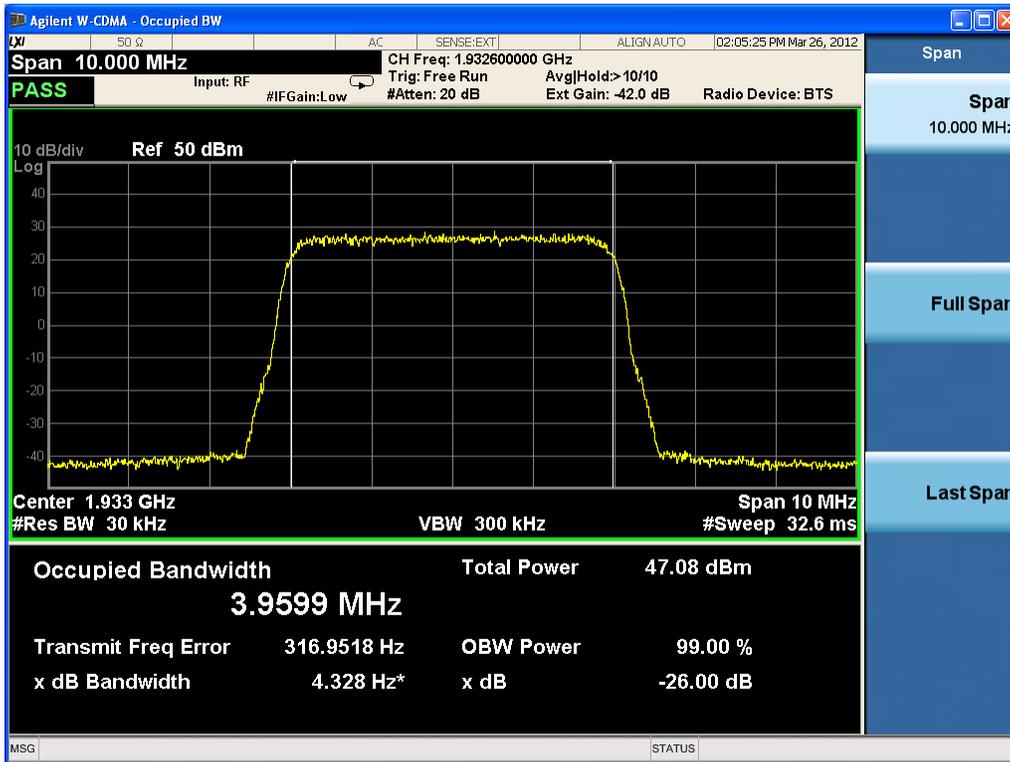
| | |
|--------------------|----------|
| Temperature: | 20 ° C |
| Relative Humidity: | 53% |
| ATM Pressure: | 1009mbar |

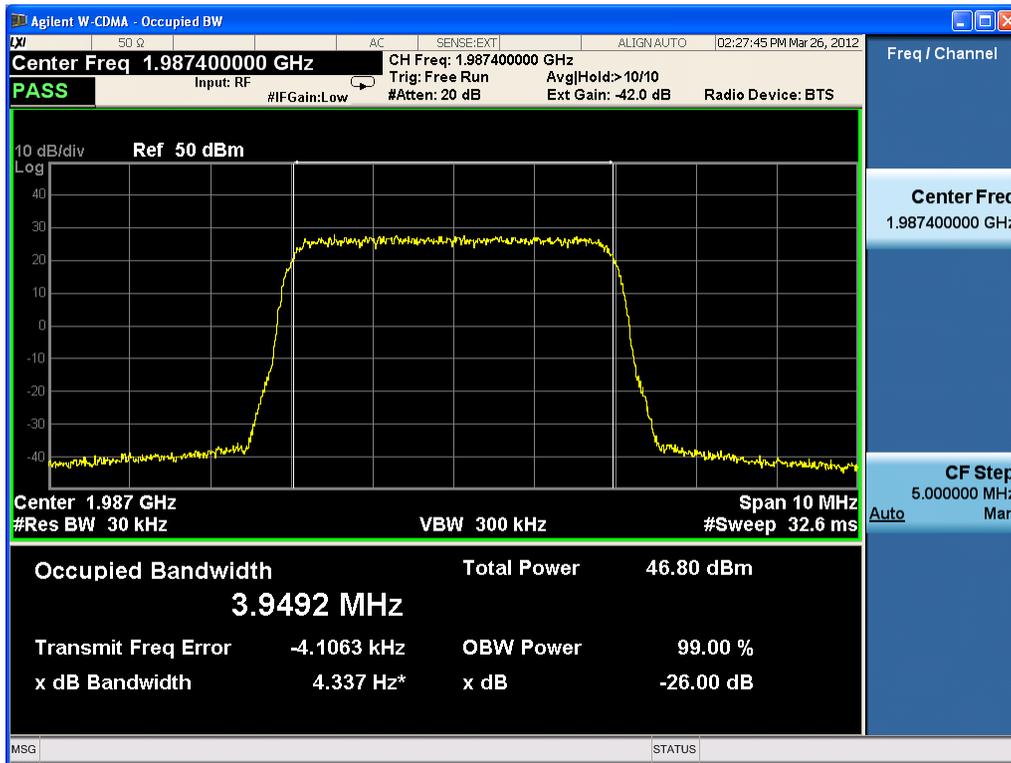
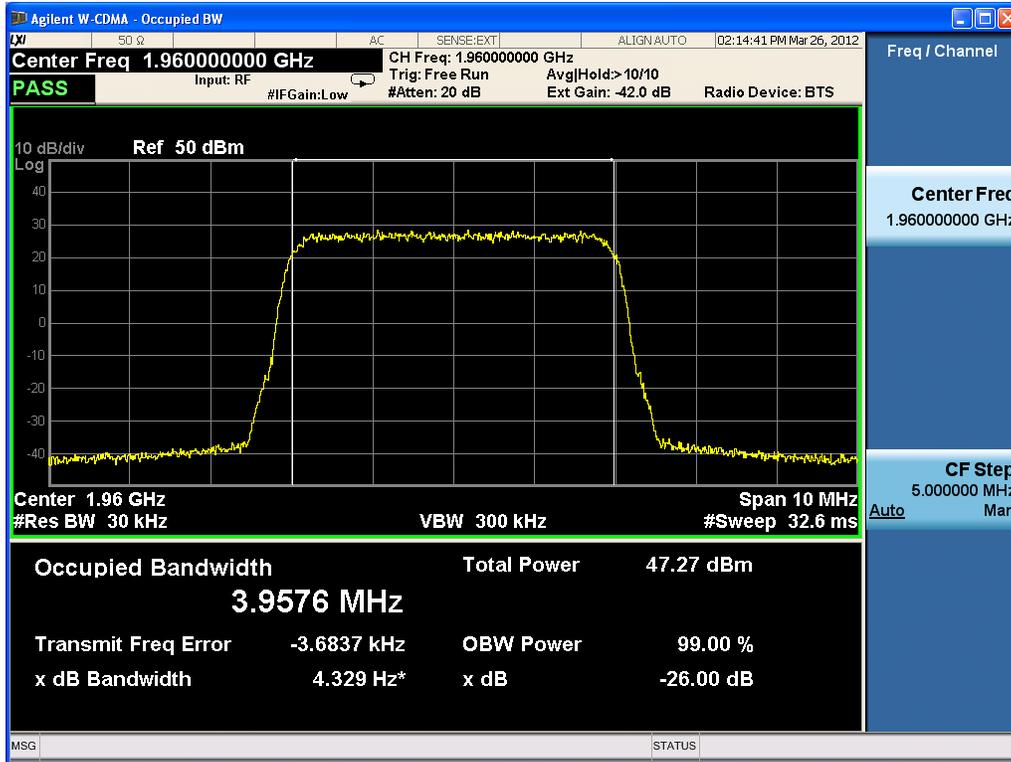
Test Result: Pass

Test Mode: Transmitting UMTS

Test Data

| Frequency (MHz) | 99% Power Bandwidth (MHz) | Limit (MHz) |
|--------------------|---------------------------|-------------|
| 1932.6/1960/1987.4 | 3.9599/3.9576/3.9492 | <4.2 |





4.7 BAND EDGES

Applicable Standard: FCC §2.1051 §24.238

According to §2.1051 and §24.238, 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 limit (dBm) should $< P - (43 + 10 \log(P)) = -13 \text{dBm}$.

Test Equipment List and Details

| Manufacturer | Description | Model | Serial Number | Calibration Date | Calibration Due Date |
|--------------|------------------------------|--------------|----------------|------------------|----------------------|
| Agilent | MXA Series Spectrum Analyzer | N9020A | MY48011941 | 2012-4-10 | 2013-4-9 |
| Atten | 40dB Attenuator | ATSI150-4-40 | 11300100204204 | 2011-7-11 | 2012-7-11 |
| Forstar | Forstar RF Cable | 002 | 1034 | 2012-4-9 | 2013-4-8 |

***statement of traceability:** ZTE Corporation Reliability Testing Center attest that all calibration have been performed per the NVLAP requirements, traceable to NIST.

Test Procedure

The RF output of the transmitter was connected to the input of the spectrum analyzer through sufficient attenuation.

The center of the spectrum analyzer was set to block edge frequency.

Test Data Environmental Conditions

| | |
|--------------------|----------|
| Temperature: | 20 °C |
| Relative Humidity: | 53% |
| ATM Pressure: | 1009mbar |

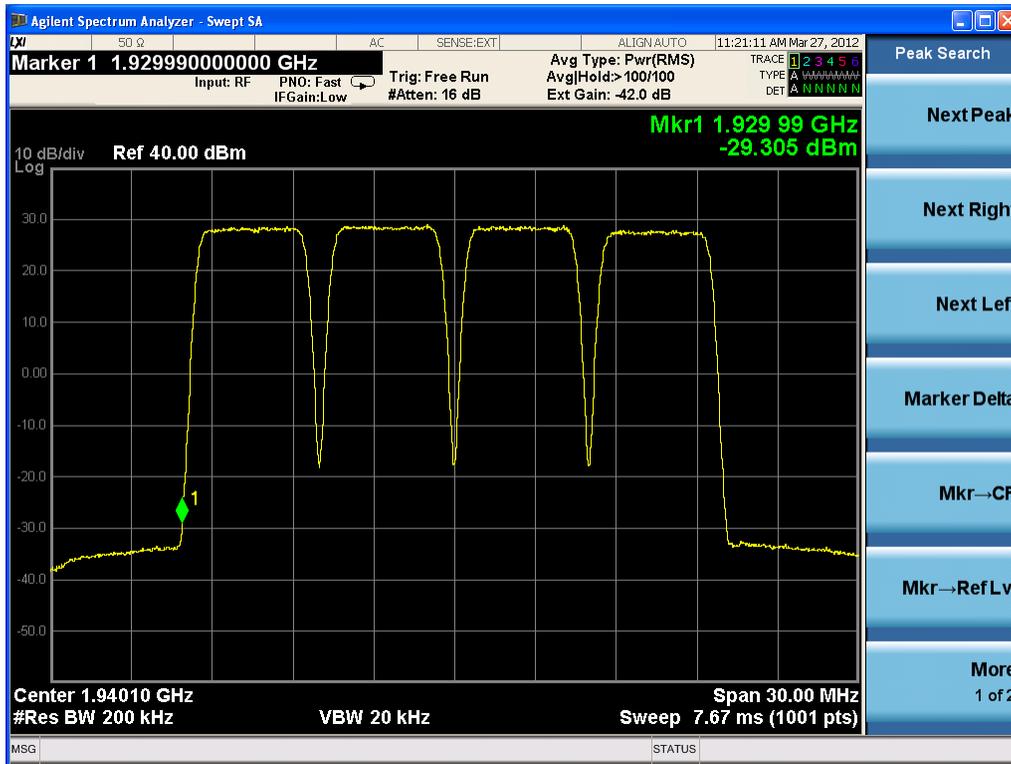
Test Result: Pass

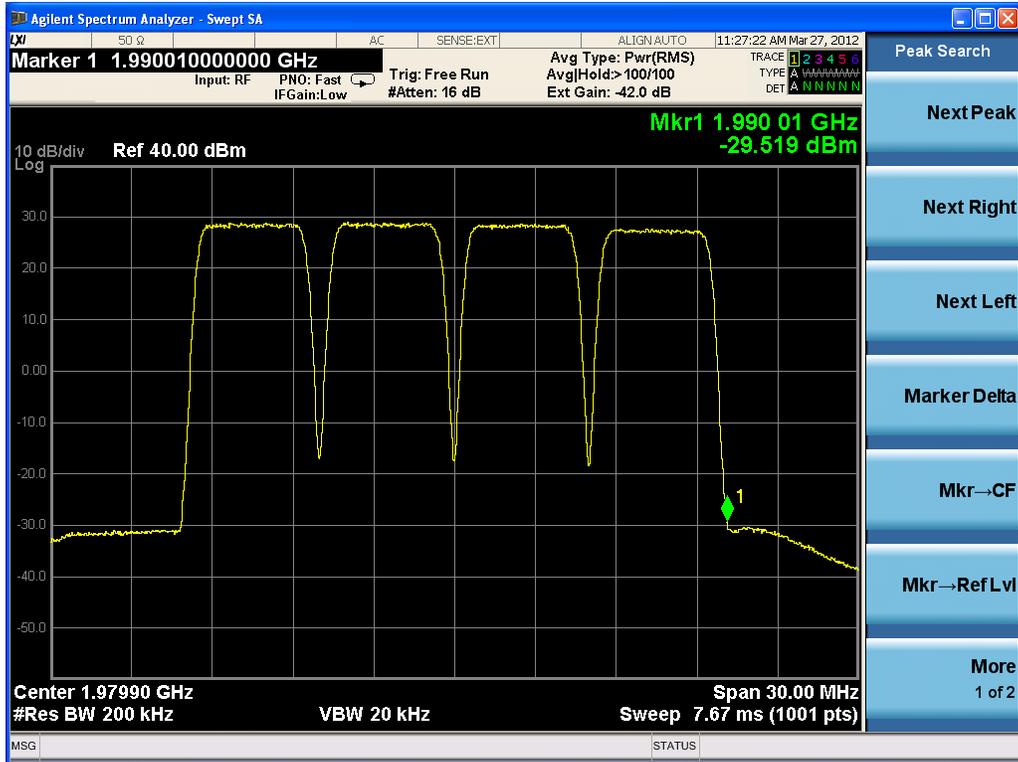
Test Mode: Transmitting UMTS

Test Data

Four carriers

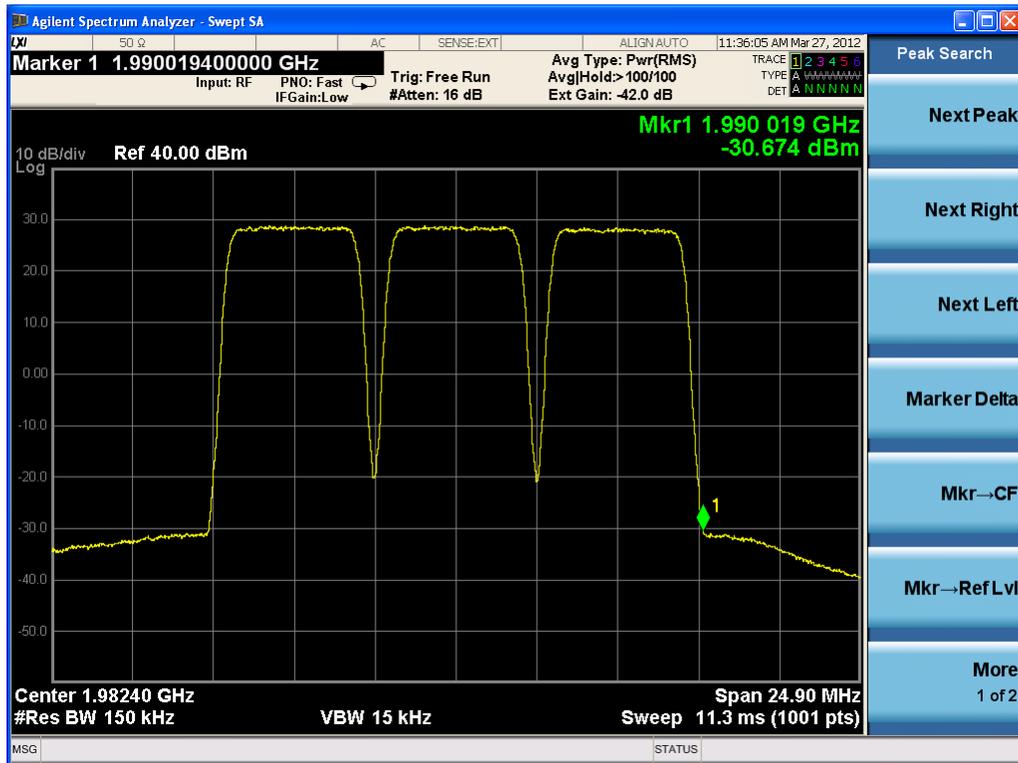
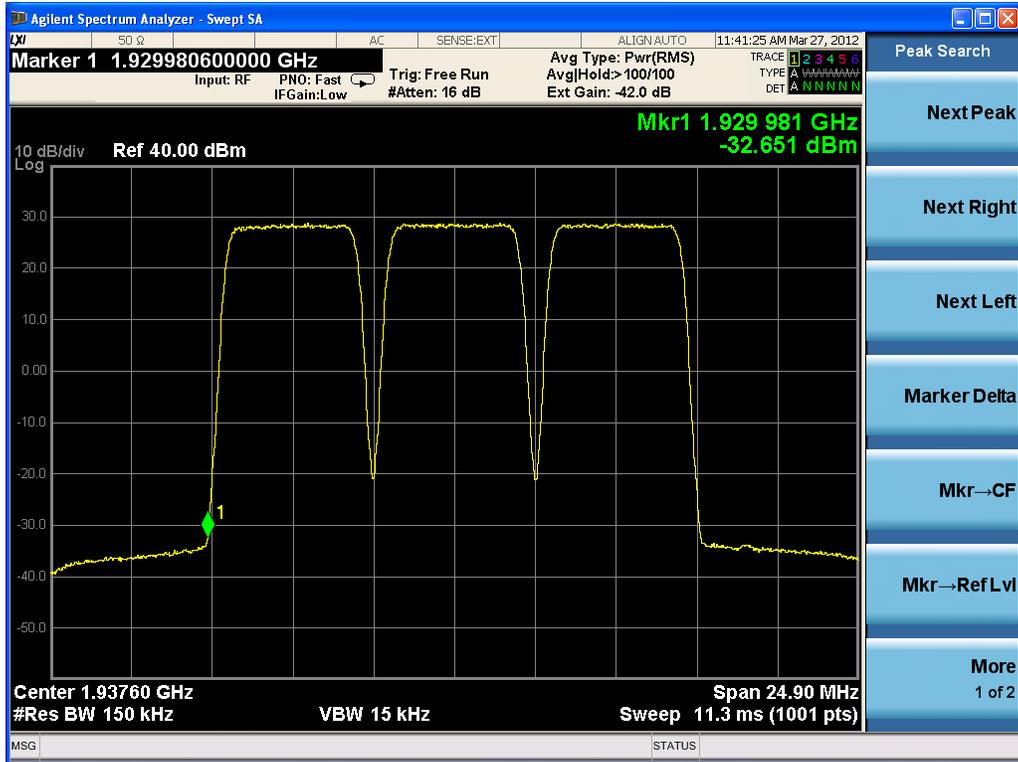
| Frequency channel | Max bandedge Emission (dBm) | Limit (dBm) |
|-----------------------------|-----------------------------|-------------|
| 1932.6/1937.6/1942.6/1947.6 | -29.305 | -13.00 |
| 1972.4/1977.4/1982.4/1987.4 | -29.519 | -13.00 |





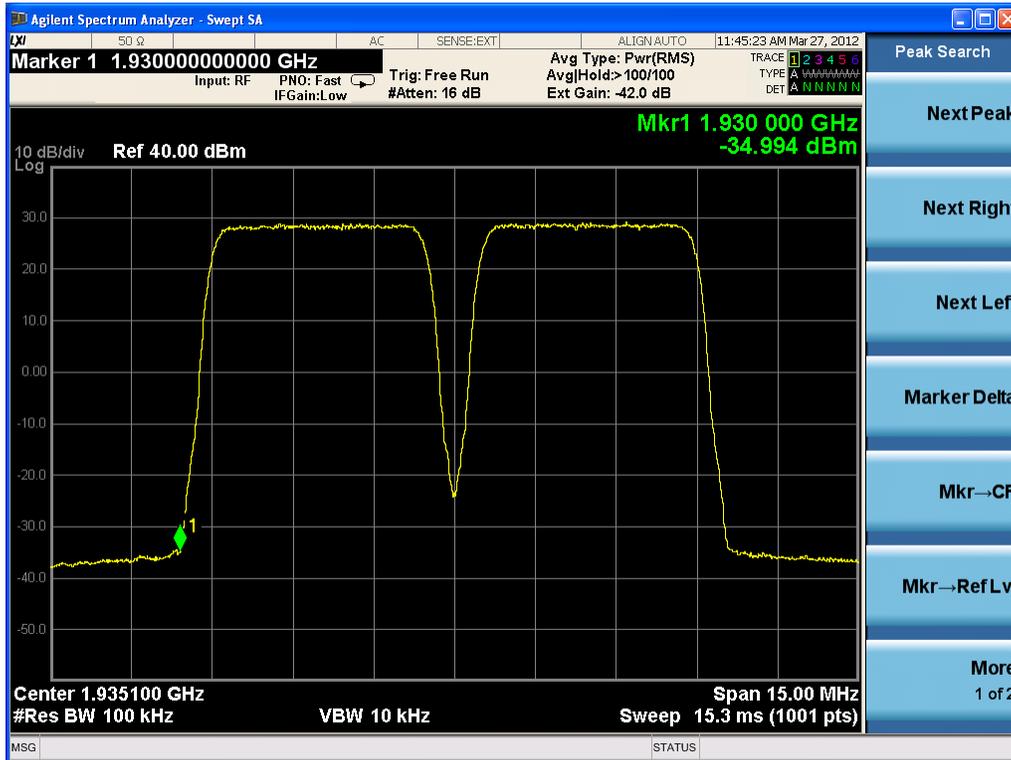
Three carriers

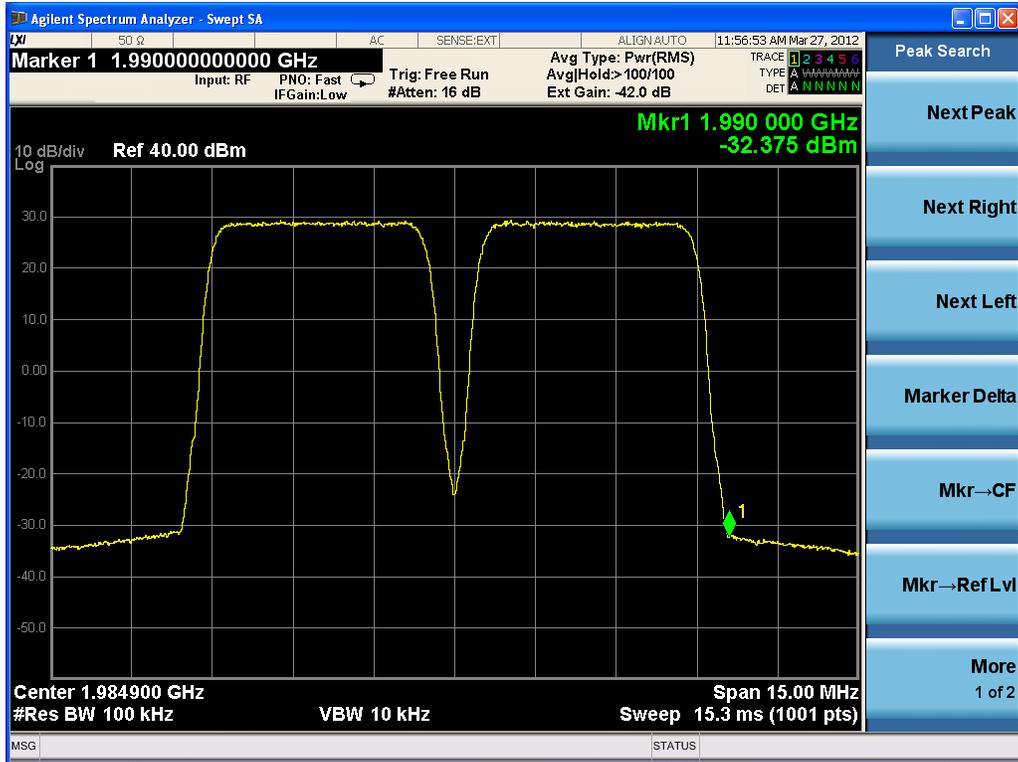
| Frequency channel | Max bandedge Emission (dBm) | Limit (dBm) |
|----------------------|-----------------------------|-------------|
| 1932.6/1937.6/1942.6 | -32.651 | -13.00 |
| 1972.4/1977.4/1982.4 | -30.674 | -13.00 |



Two carriers

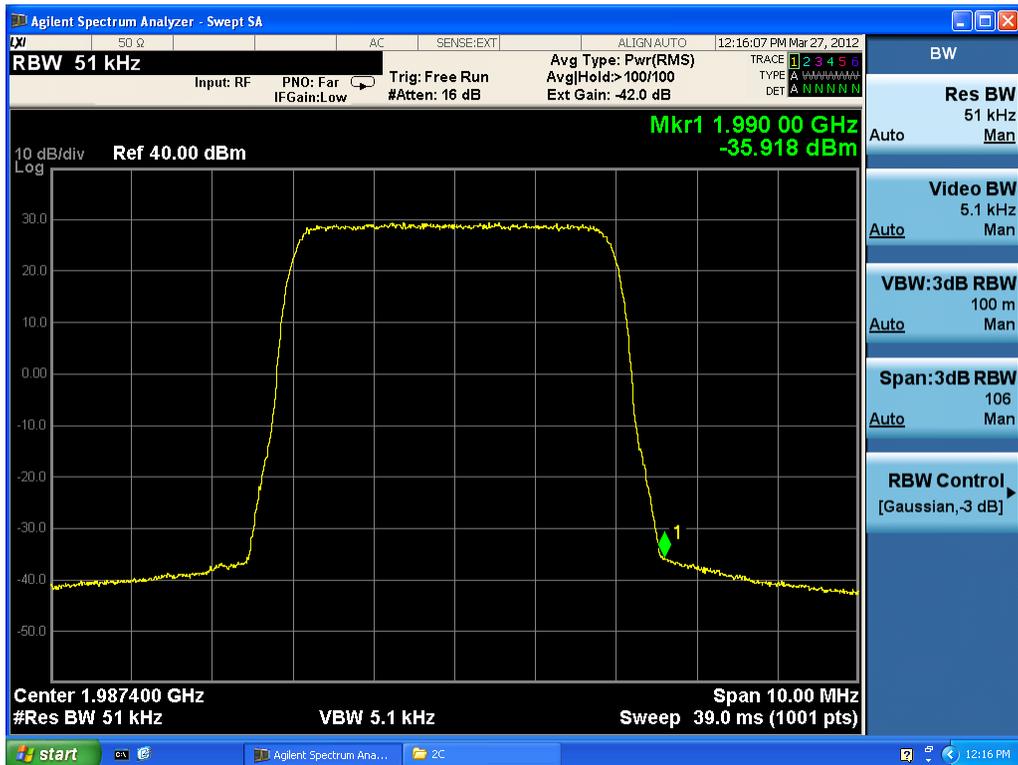
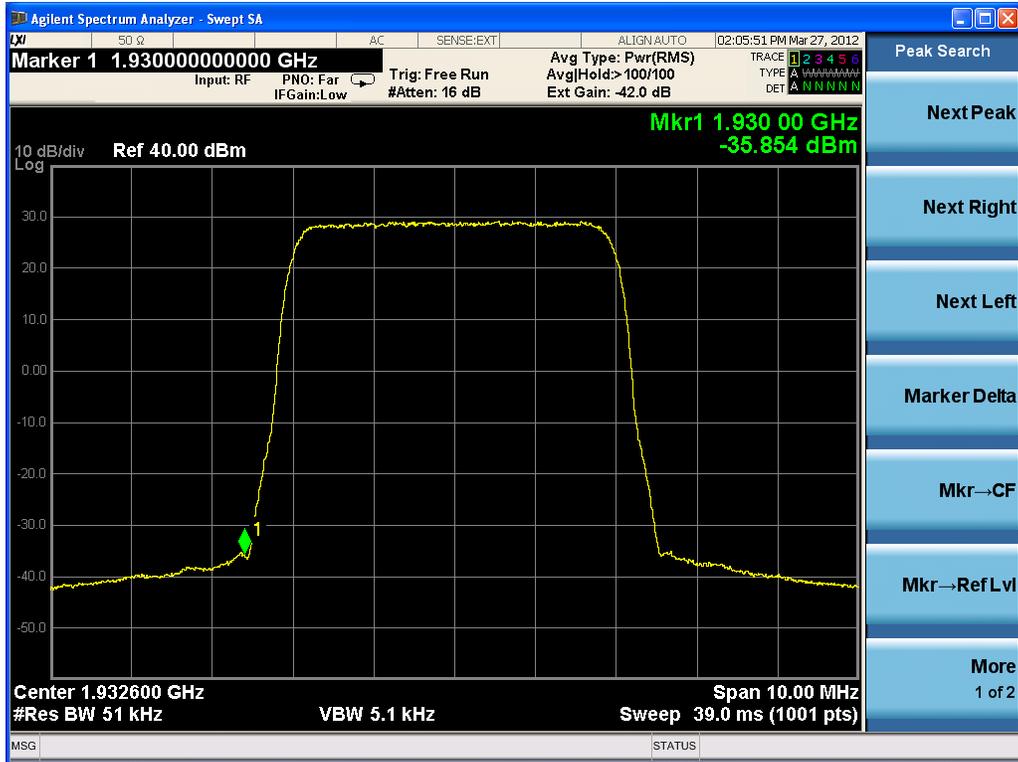
| Frequency channel | Max bandedge Emission (dBm) | Limit (dBm) |
|-------------------|-----------------------------|-------------|
| 1932.6/1937.6 | -34.994 | -13.00 |
| 1982.4/1987.4 | -32.375 | -13.00 |





One carrier

| Frequency channel | Max bandedge Emission (dBm) | Limit (dBm) |
|-------------------|-----------------------------|-------------|
| 1932.6 | -35.854 | -13.00 |
| 1987.4 | -35.918 | -13.00 |



4.8 FREQUENCY STABILITY

Applicable Standard: FCC § 2.1055 § 24.235

Requirements: FCC § 2.1055 (a)(d) .The frequency stability shall be sufficient to ensure that the fundamental emissions stay within the authorized bands of operation.

Test Equipment List and Details

| Manufacturer | Description | Model | Serial Number | Calibration Date | Calibration Due Date |
|--------------|------------------------------|--------------|----------------|------------------|----------------------|
| GZ-ESPEC | Temperature Chamber | EW0470 | 06113028 | 2012-1-26 | 2013-1-26 |
| Agilent | MXA Series Spectrum Analyzer | N9020A | MY48011941 | 2012-4-10 | 2013-4-9 |
| Atten | 40dB Attenuator | ATSI150-4-40 | 11300100204204 | 2011-7-11 | 2012-7-11 |
| Forstar | Forstar RF Cable | 002 | 1034 | 2012-4-9 | 2013-4-8 |

***statement of traceability:** ZTE Corporation Reliability Testing Center attest that all calibration have been performed per the NVLAP requirements , traceable to NIST.

Test Procedure

Frequency Stability vs. Temperature: The equipment under test was connected to an external DC power supply and the RF output was connected to a Spectrum Analyzer via feed-through attenuators. The EUT was placed inside the temperature chamber. The DC leads and RF output cable exited the chamber through an opening made for the purpose.

After the temperature stabilized for approximately 150 minutes, the frequency output was recorded from the counter.

Frequency Stability vs. Voltage: An external variable DC power supply Source. The voltage was set to 115% of the nominal value and was then decreased until the transmitter light no longer illuminated; i.e., the end point. The output frequency was recorded for each voltage.

Environmental Conditions

| | |
|-------------------|-------|
| Normal condition: | 25° C |
|-------------------|-------|

| | |
|--------------------|-----------|
| Relative Humidity: | 54% |
| ATM Pressure: | 1011 mbar |

Test Result: Pass

Test Mode: Transmitting UMTS

Test Data

Frequency Stability Versus Temperature

| Frequency Stability vs. Temperature | | | | | |
|-------------------------------------|--------------------|----------------------------|-----------|-----------|--------|
| Temperature °C | Power Supplied VDC | Frequency Measure Error Hz | Error ppm | Limit ppm | Result |
| B(1932.6MHz) | | | | | |
| -40 | -48 | 3.4 | 0.0018 | 0.02 | PASS |
| -30 | -48 | -2.1 | -0.0011 | 0.02 | PASS |
| -20 | -48 | -4.3 | -0.0022 | 0.02 | PASS |
| -10 | -48 | 3.8 | 0.0019 | 0.02 | PASS |
| 0 | -48 | -4.1 | -0.0021 | 0.02 | PASS |
| 10 | -48 | 3.7 | 0.0019 | 0.02 | PASS |
| 20 | -48 | 4.2 | 0.0022 | 0.02 | PASS |
| 30 | -48 | 3.8 | 0.0019 | 0.02 | PASS |
| 40 | -48 | -2.7 | -0.0014 | 0.02 | PASS |
| 50 | -48 | -5.3 | -0.0027 | 0.02 | PASS |
| 55 | -48 | 5.2 | 0.00269 | 0.02 | PASS |
| M(1960MHz) | | | | | |
| -40 | -48 | 4.7 | 0.0024 | 0.02 | PASS |
| -30 | -48 | 3.2 | 0.0016 | 0.02 | PASS |
| -20 | -48 | -3.3 | -0.0017 | 0.02 | PASS |
| -10 | -48 | 5.1 | 0.0026 | 0.02 | PASS |
| 0 | -48 | -3.4 | -0.0017 | 0.02 | PASS |
| 10 | -48 | 5.2 | 0.0027 | 0.02 | PASS |

| | | | | | |
|----------------------|-----|------|---------|------|------|
| 20 | -48 | -3.6 | -0.0018 | 0.02 | PASS |
| 30 | -48 | -4.3 | -0.0022 | 0.02 | PASS |
| 40 | -48 | -4.2 | -0.0021 | 0.02 | PASS |
| 50 | -48 | 5.4 | 0.0028 | 0.02 | PASS |
| 55 | -48 | 5.1 | 0.0026 | 0.02 | PASS |
| T (1987.4MHz) | | | | | |
| -40 | -48 | -5.6 | -0.0028 | 0.02 | PASS |
| -30 | -48 | -5.3 | -0.0027 | 0.02 | PASS |
| -20 | -48 | 4.1 | 0.0021 | 0.02 | PASS |
| -10 | -48 | 4.1 | 0.0021 | 0.02 | PASS |
| 0 | -48 | 3.6 | 0.0018 | 0.02 | PASS |
| 10 | -48 | 3.7 | 0.0019 | 0.02 | PASS |
| 20 | -48 | -3.2 | -0.0016 | 0.02 | PASS |
| 30 | -48 | -3.5 | -0.0018 | 0.02 | PASS |
| 40 | -48 | 3.7 | 0.0019 | 0.02 | PASS |
| 50 | -48 | 5.3 | 0.0027 | 0.02 | PASS |
| 55 | -48 | 4.2 | 0.0021 | 0.02 | PASS |

Frequency Stability Versus Voltage

| Frequency Stability vs. Voltage | | | | | |
|---------------------------------|-------------|----------------------------|-----------|-----------|--------|
| Voltage Vac | Temperature | Frequency Measure Error Hz | Error ppm | Limit ppm | Result |
| B(1930.6M) | | | | | |
| 40 | 20 | 3.6 | 0.0019 | | |
| 44 | 20 | -3.3 | -0.0017 | | PASS |
| 47 | 20 | -4.7 | -0.0024 | | PASS |
| 50 | 20 | -5.2 | -0.0027 | | PASS |
| 53 | 20 | -4.6 | -0.0024 | | PASS |
| 56 | 20 | -2.8 | -0.0015 | | PASS |
| 57 | 20 | 3.5 | 0.0018 | | PASS |
| M(1960M) | | | | | |
| 40 | 20 | 3.7 | 0.0019 | | PASS |
| 44 | 20 | -3.8 | -0.0019 | | PASS |
| 47 | 20 | -3.3 | -0.0017 | | PASS |
| 50 | 20 | 4.8 | 0.0024 | | PASS |
| 53 | 20 | -3.8 | -0.0019 | | PASS |
| 56 | 20 | -4.9 | -0.0025 | | PASS |
| 57 | 20 | 5.6 | 0.0029 | | PASS |
| T(1987.4M) | | | | | |
| 40 | 20 | -3.5 | -0.0018 | | PASS |
| 44 | 20 | 4.2 | 0.0021 | | PASS |
| 47 | 20 | -3.7 | -0.0019 | | PASS |
| 50 | 20 | 2.9 | 0.0015 | | PASS |
| 53 | 20 | 2.8 | 0.0014 | | PASS |
| 56 | 20 | -4.3 | -0.0022 | | PASS |
| 57 | 20 | -3.1 | -0.0016 | | PASS |

5 GSM OF TEST RESULTS

| FCC RULES | DESCRIPTION OF TEST | RESULT |
|-------------------------|---|-----------|
| §2.1046 §24.232 | Transmitter output Power | Compliant |
| §2.1091 §1.1037 | RF Exposure | Compliant |
| §2.1047 | Modulation Characteristic | Compliant |
| §2.1053 | Spurious Radiated Emissions | Compliant |
| §2.1051, §24.238 | Spurious Emissions AT Antenna Terminals | Compliant |
| §2.1049 §24.229 §24.238 | Occupied Bandwidth | Compliant |
| §2.1051, §24.238 | Band Edge | Compliant |
| § 2.1055 § 24.235 | Frequency stability | Compliant |

5.1 TRANSMITTER OUTPUT POWER

Applicable Standard: FCC §2.1046 §24.232

According to FCC §2.1046 & 24.232, the EIRP (equivalent isotropically radiated power) must not exceed 1640 Watts.

According to RSS-133, SRSP 510 5.1.1 the EIRP (equivalent isotropically radiated power) must not exceed 3280Watts/MHz for base station transmitters operating in the band of 1930 MHz to 1995MHz with the antenna height above average terrain up to 300 meters. If used in urban area, the limit should be 1640Watts/MHz.

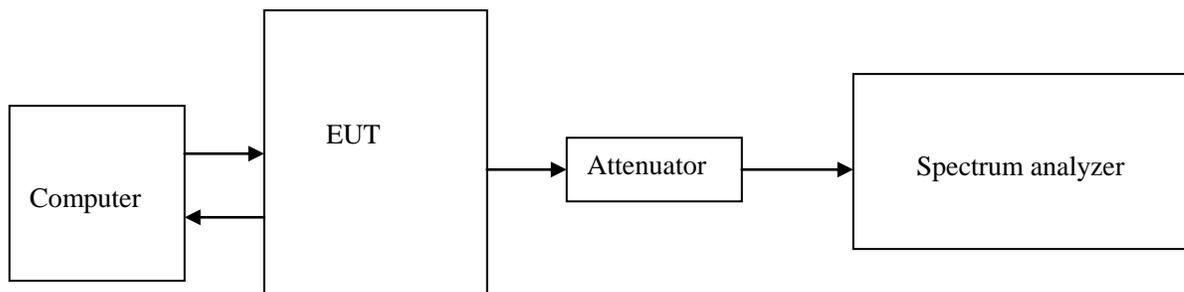
Note: $EIRP = \text{Max output Power} + \text{Antenna gain} - \text{Cable Loss}$

Test Equipment List and Details

| Manufacturer | Description | Model | Serial Number | Calibration Date | Calibration Due Date |
|--------------|------------------------------|--------------|----------------|------------------|----------------------|
| Agilent | MXA Series Spectrum Analyzer | N9020A | MY48011941 | 2012-4-10 | 2013-4-9 |
| Atten | 30dB Attenuator | ATSI150-4-30 | 11300110201221 | 2011-7-11 | 2012-7-11 |
| Forstar | Forstar RF Cable | 002 | 1034 | 2012-4-9 | 2013-4-8 |

***statement of traceability:** ZTE Corporation Reliability Testing Center attest that all calibration have been performed per the NVLAP requirements, traceable to NIST.

Test Procedure



The RF output of the transmitter was connected to the input of the spectrum analyzer through sufficient attenuation. External attenuation Loss is 30dB, Cable Loss is about 2dB

Environmental Conditions

| | |
|--------------------|-----------|
| Temperature: | 20 °C |
| Relative Humidity: | 53 % |
| ATM Pressure: | 1009 mbar |

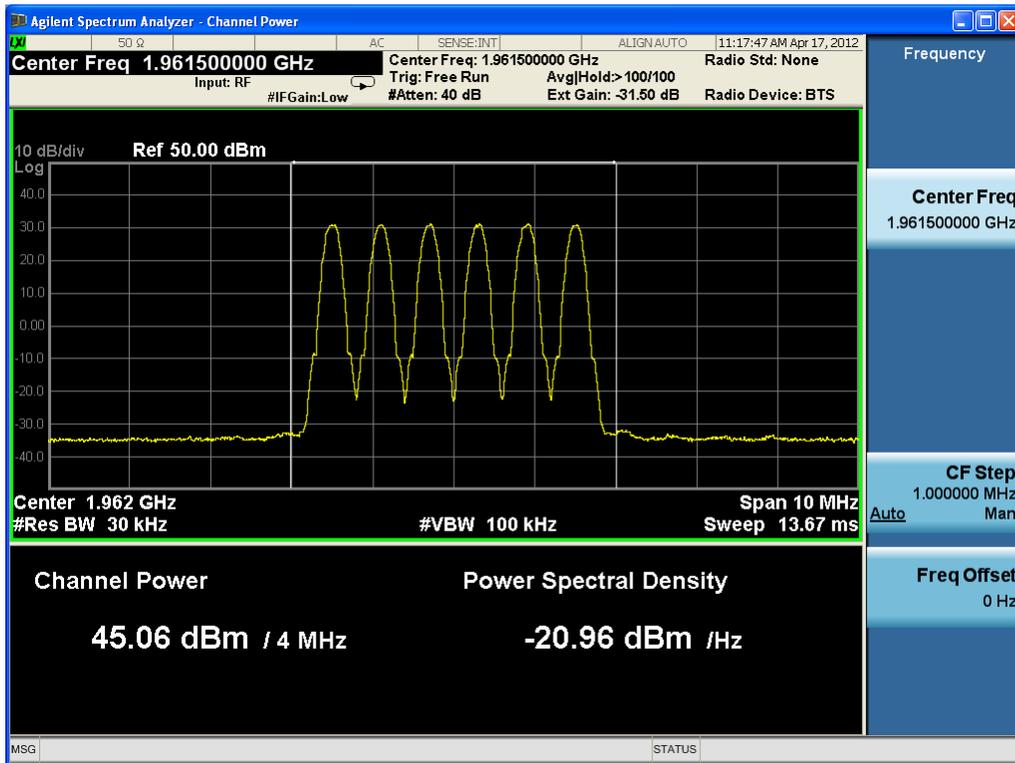
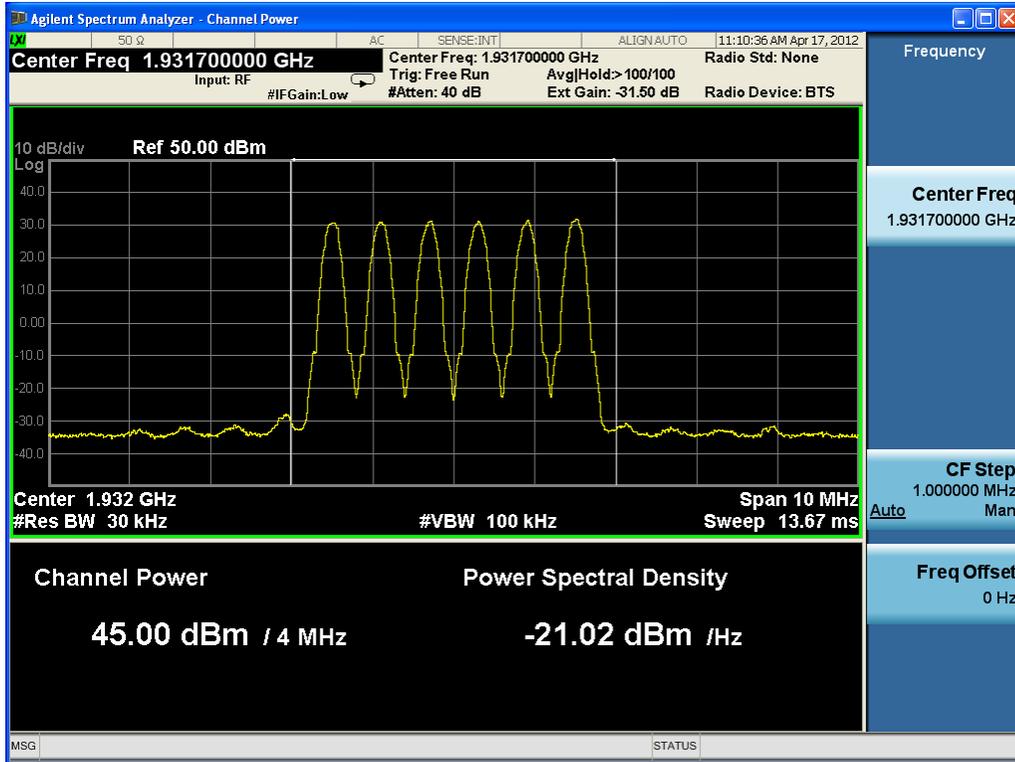
Test Result: Pass

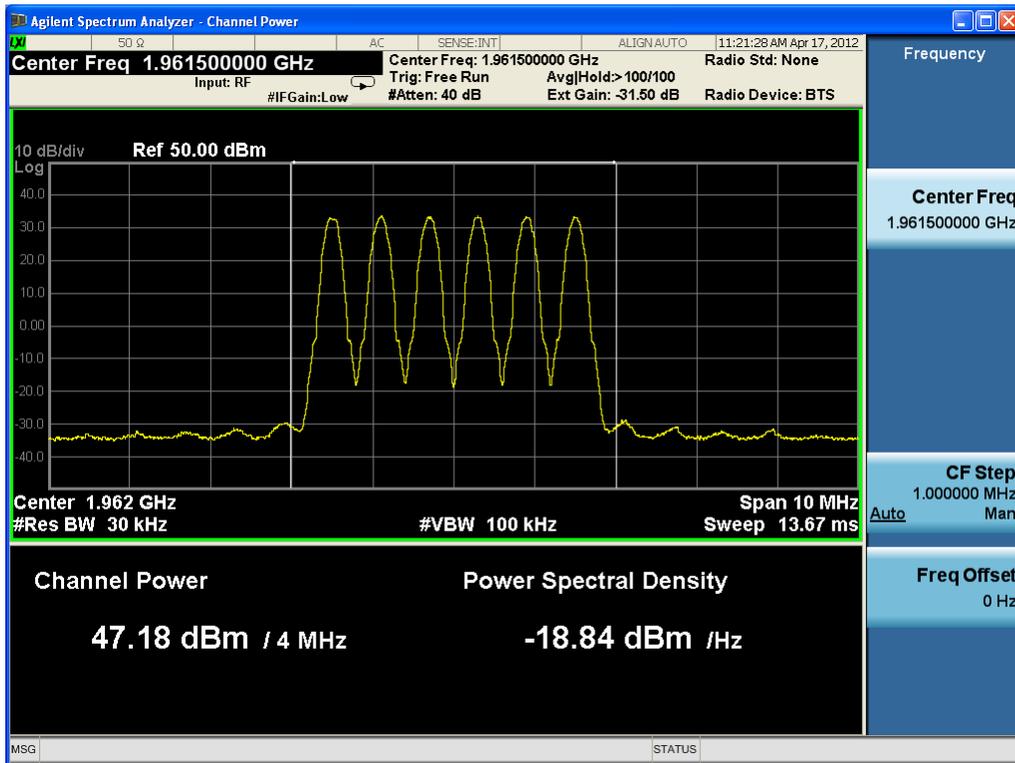
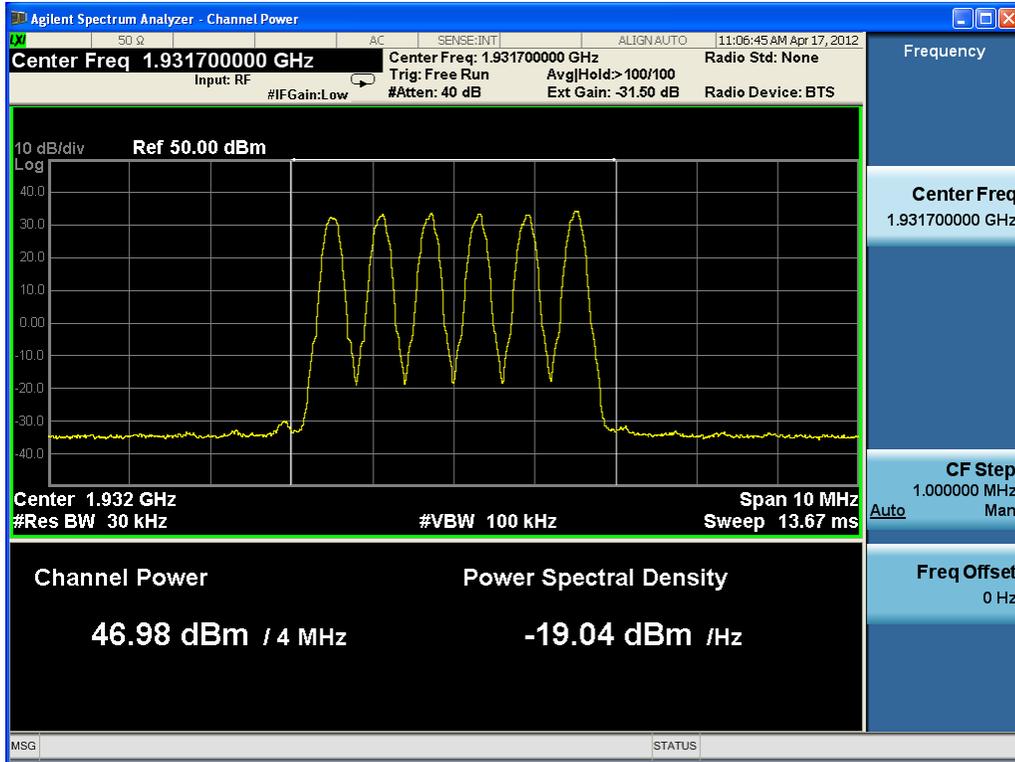
Test Mode: Transmitting GSM

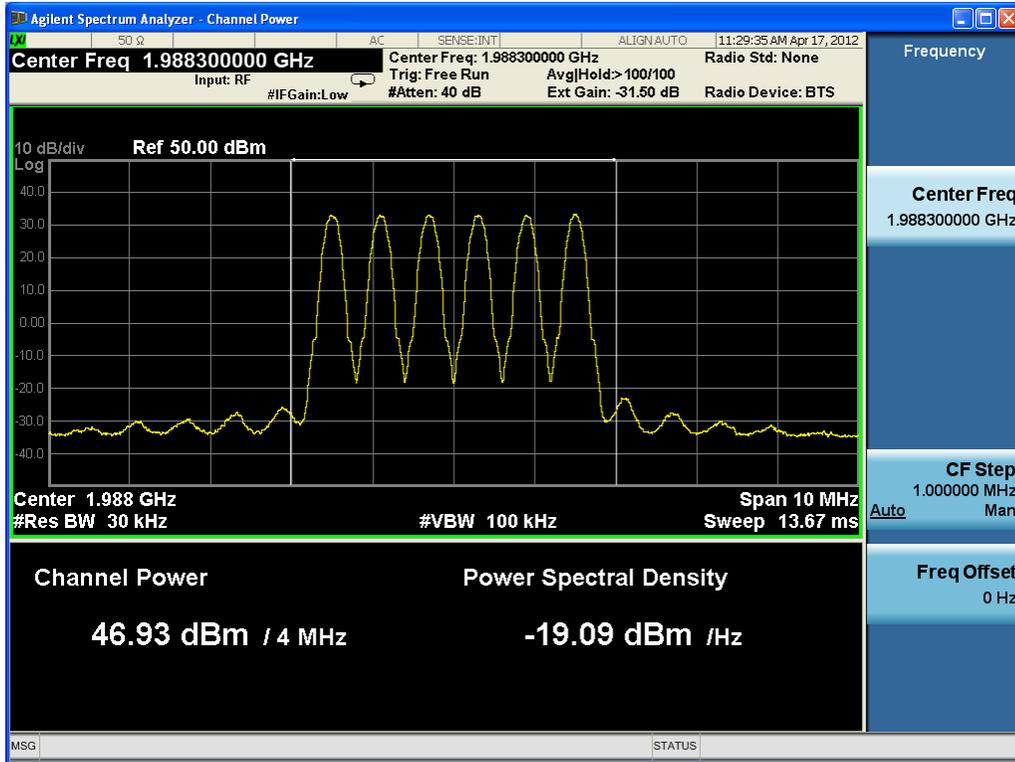
Test Data:

Six carriers

| Modulation | Center Freq. (MHz) | Frequency (MHz) | Max output Power in dBm |
|------------|-----------------------|---|----------------------------|
| 8PSK | 1931.7 | 1930.2/1930.8/1931.4/1932/1932.6/1933.2 | 45.00 |
| | 1961.5 | 1960/1960.6/1961.2/1961.8/1962.4/1963 | 45.06 |
| | 1988.3 | 1986.8/1987.4/1988/1988.6/1989.2/1989.8 | 44.90 |

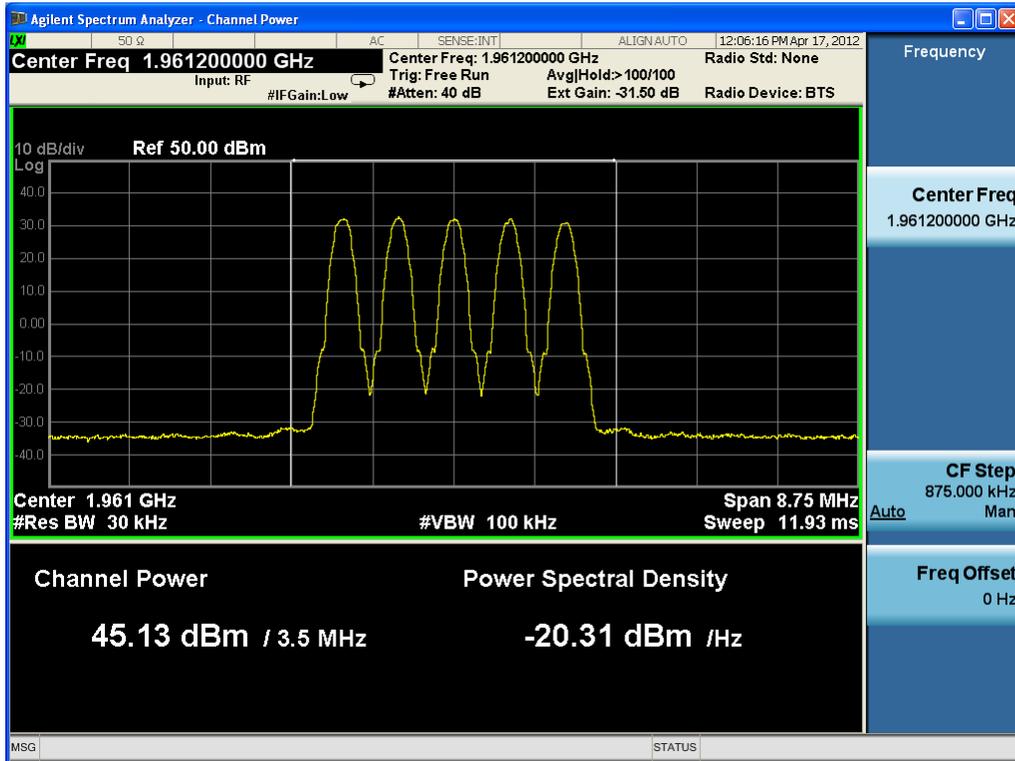
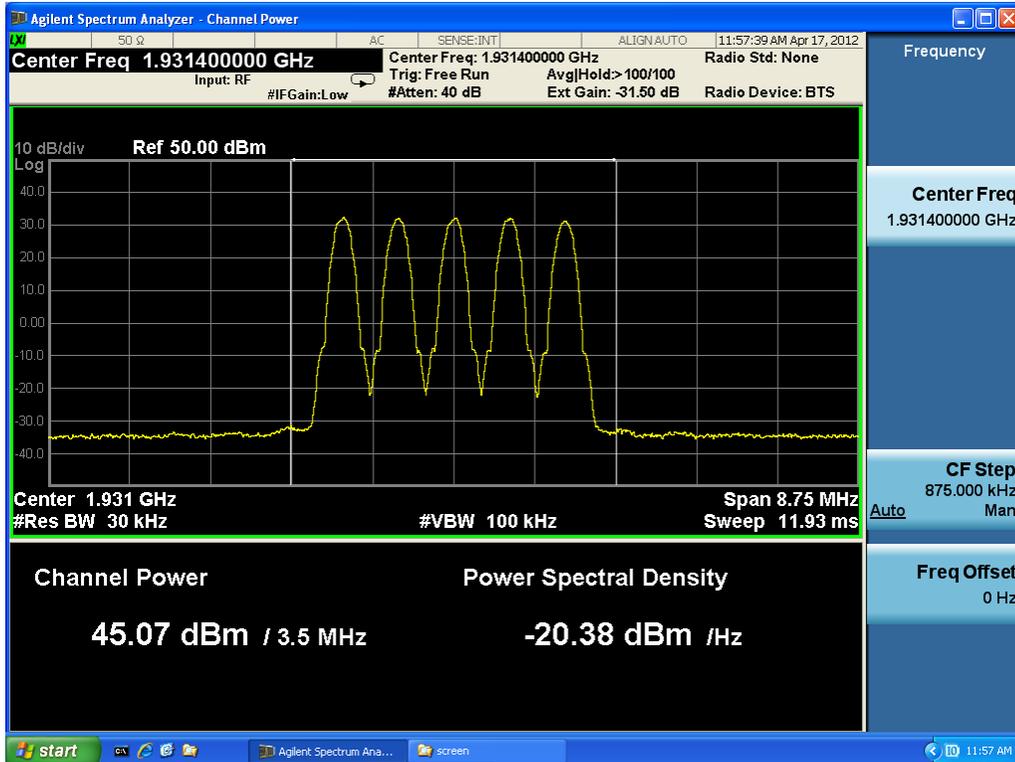


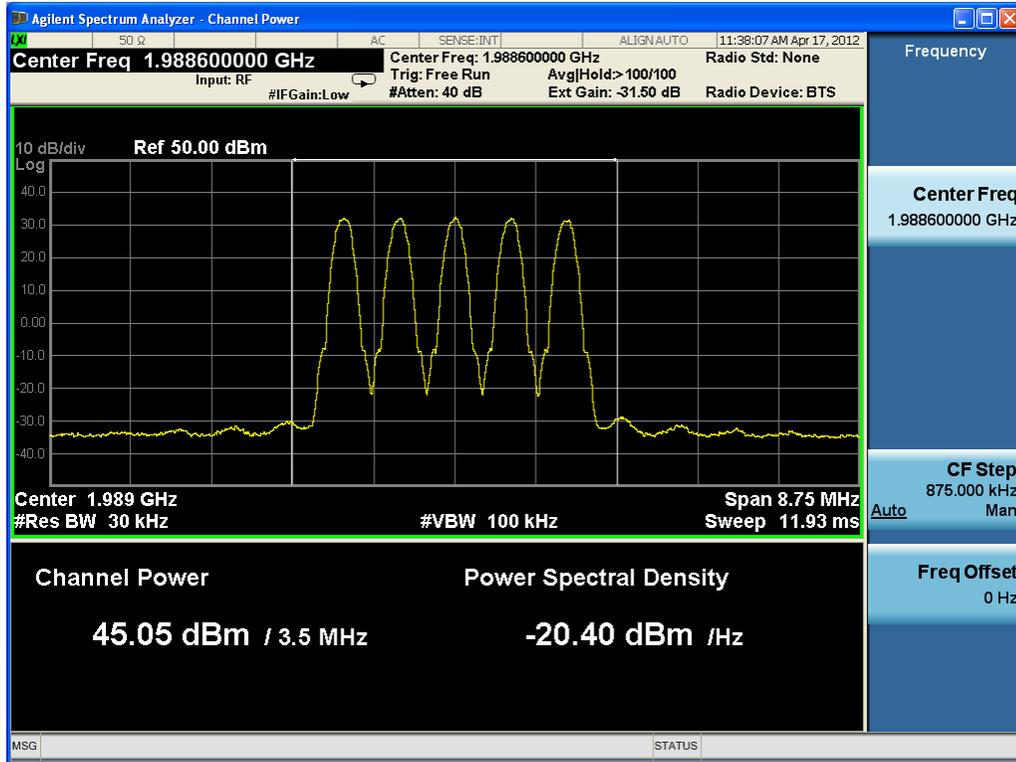




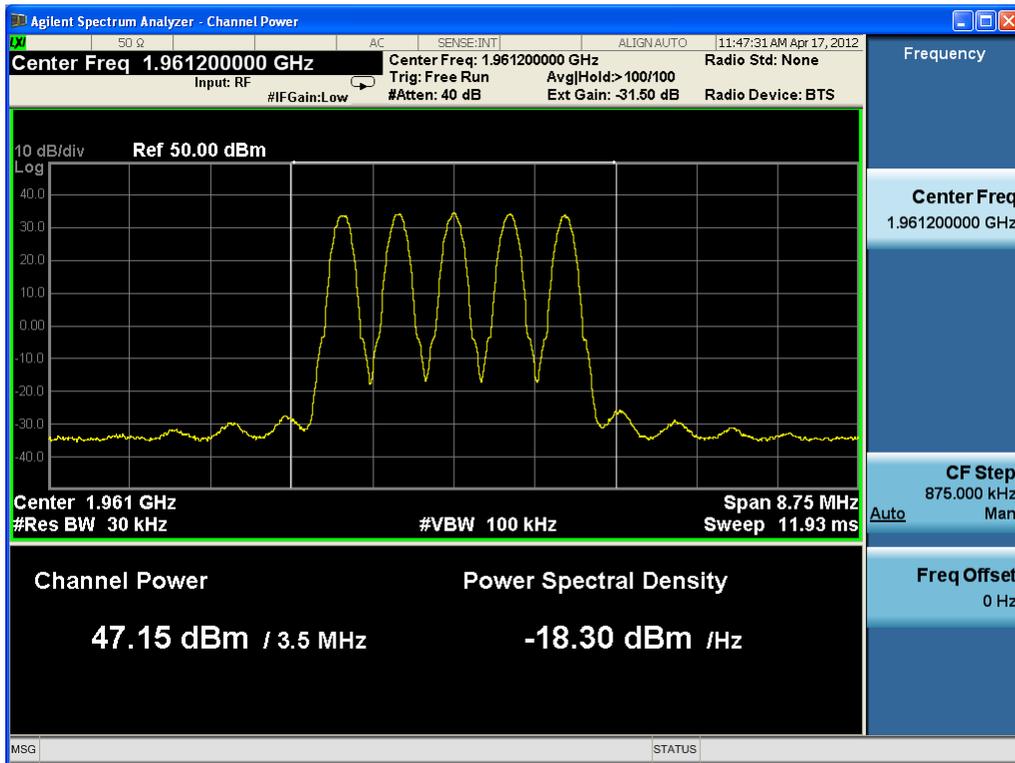
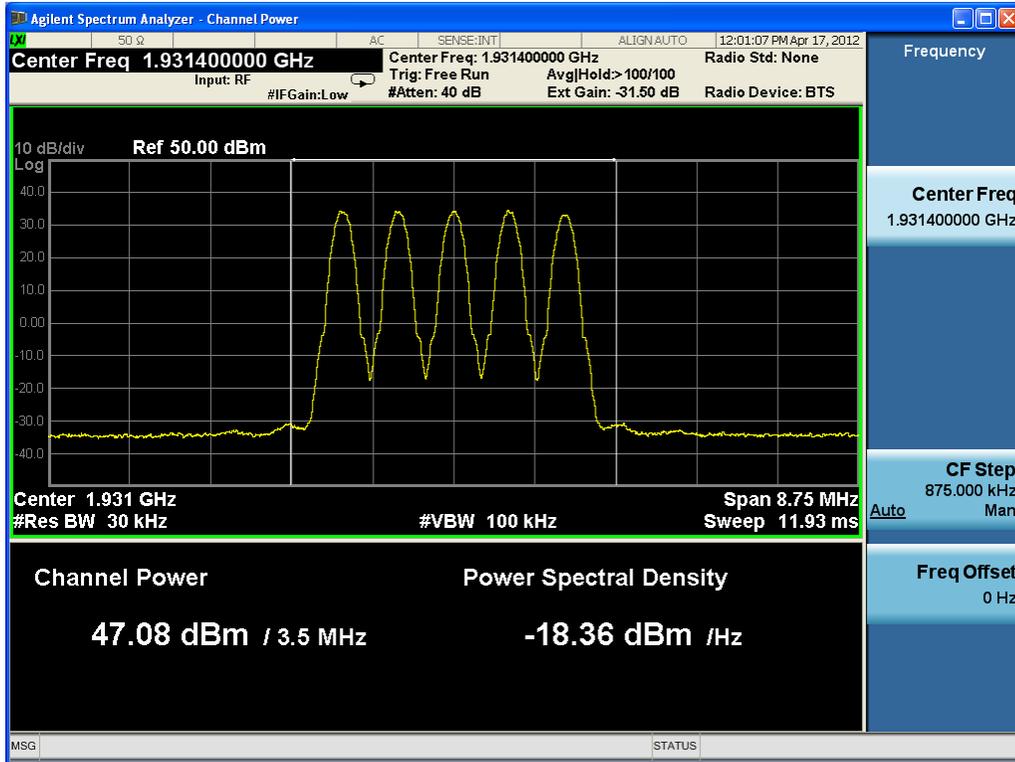
Five carriers

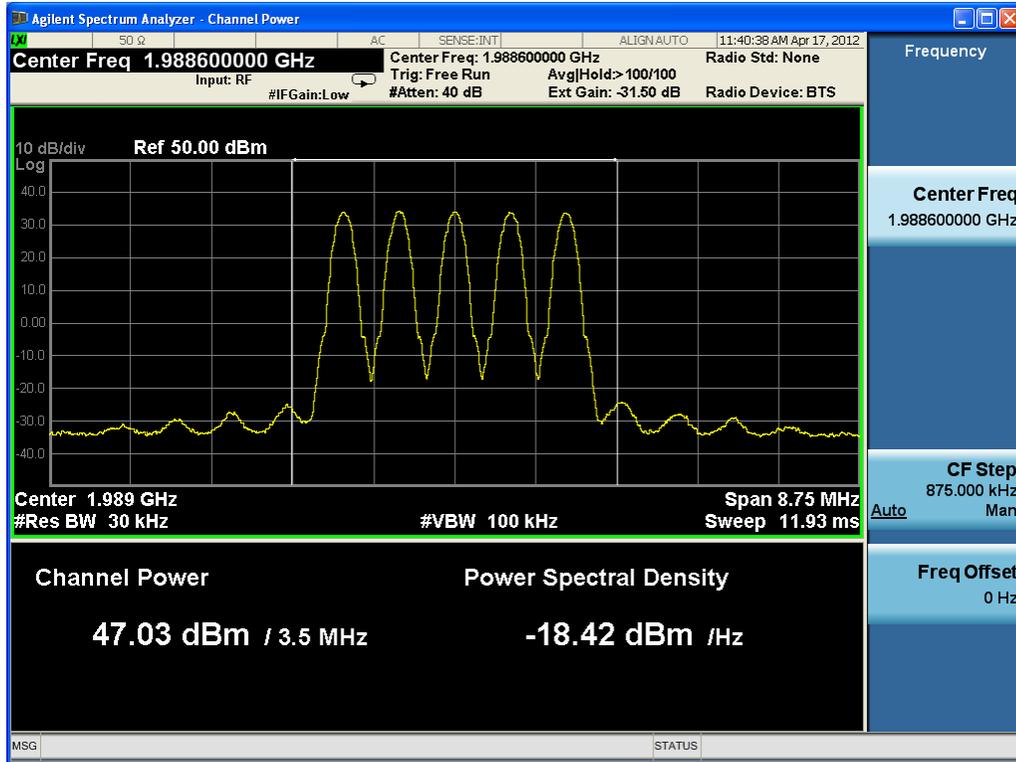
| Modulation | Center Freq. (MHz) | Frequency (MHz) | Max output Power in dBm |
|------------|--------------------|----------------------------------|-------------------------|
| 8PSK | 1931.4 | 1930.2/1930.8/1931.4/1932/1932.6 | 45.07 |
| | 1961.2 | 1960/1960.6/1961.2/1961.8/1962.4 | 45.13 |
| | 1988.6 | 1987.4/1988/1988.6/1989.2/1989.8 | 45.05 |





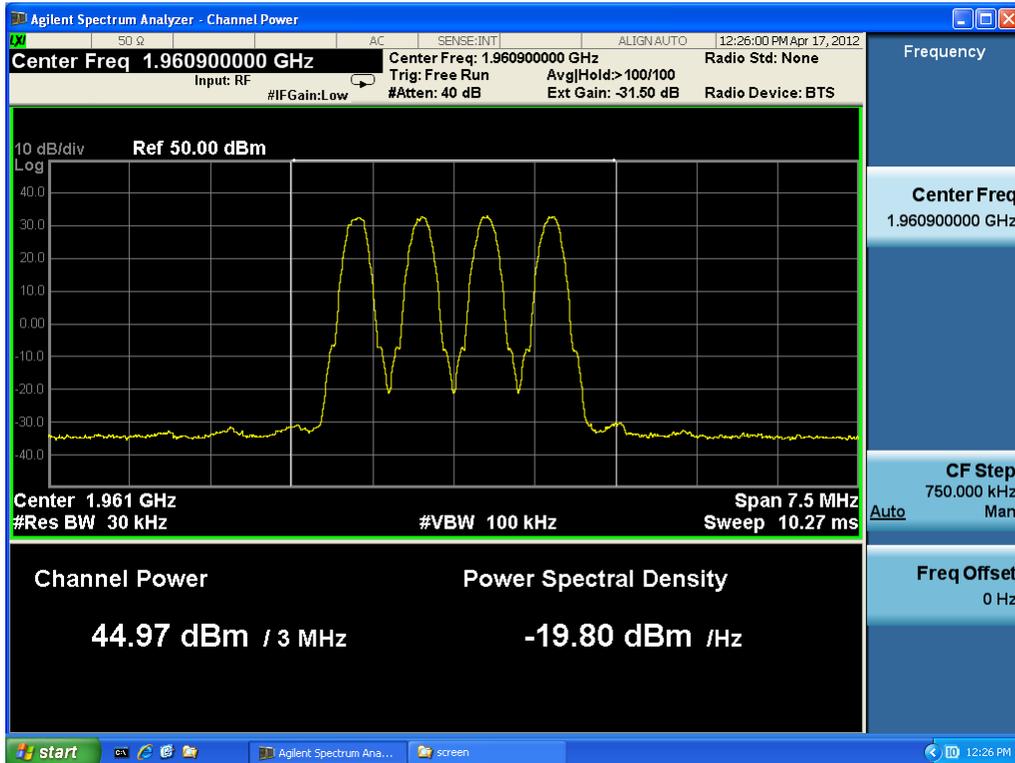
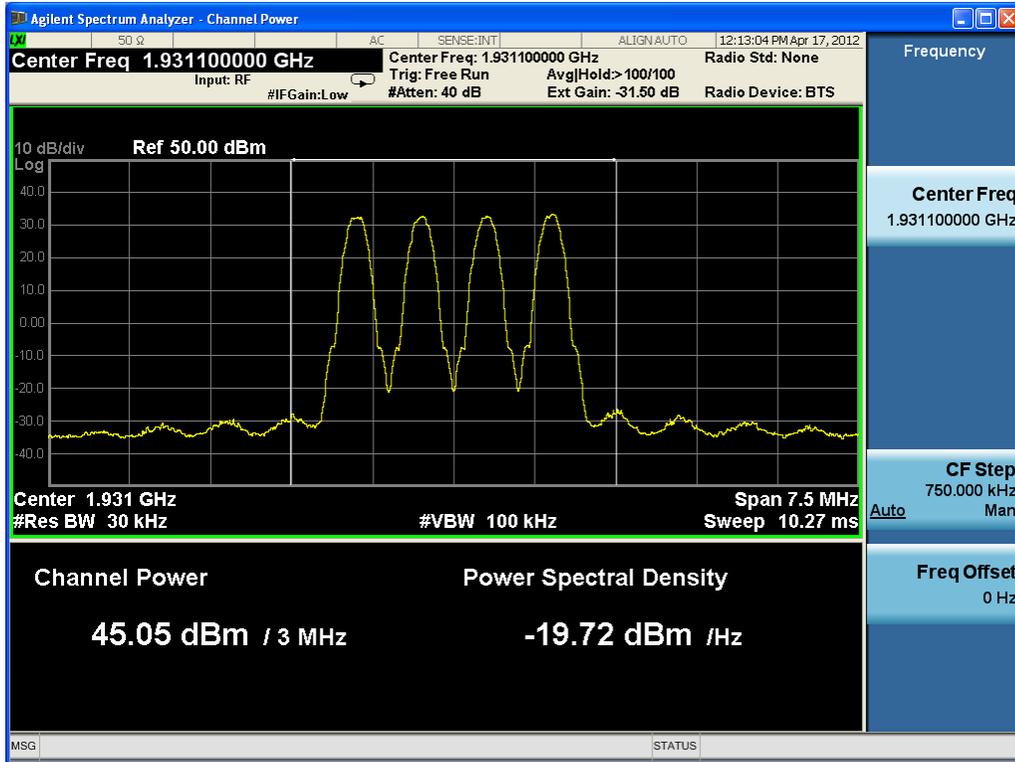
| Modulation | Center Freq. (MHz) | Frequency (MHz) | Max output Power in dBm |
|------------|--------------------|----------------------------------|-------------------------|
| GMSK | 1931.4 | 1930.2/1930.8/1931.4/1932/1932.6 | 47.08 |
| | 1961.2 | 1960/1960.6/1961.2/1961.8/1962.4 | 47.15 |
| | 1988.6 | 1987.4/1988/1988.6/1989.2/1989.8 | 47.03 |

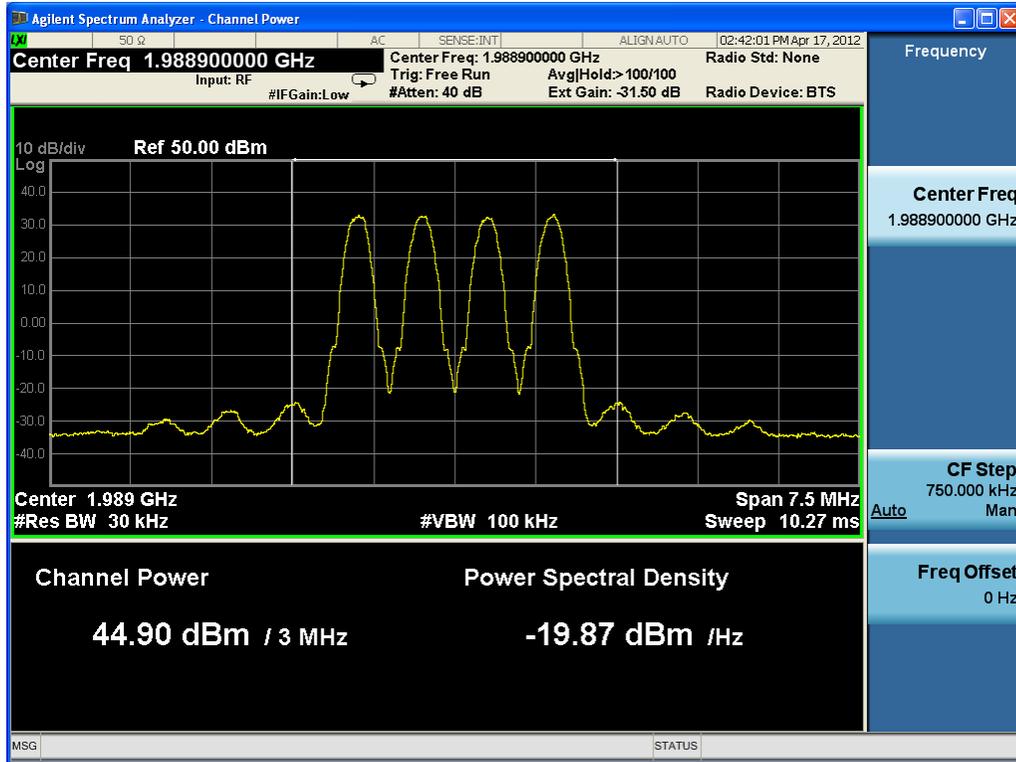




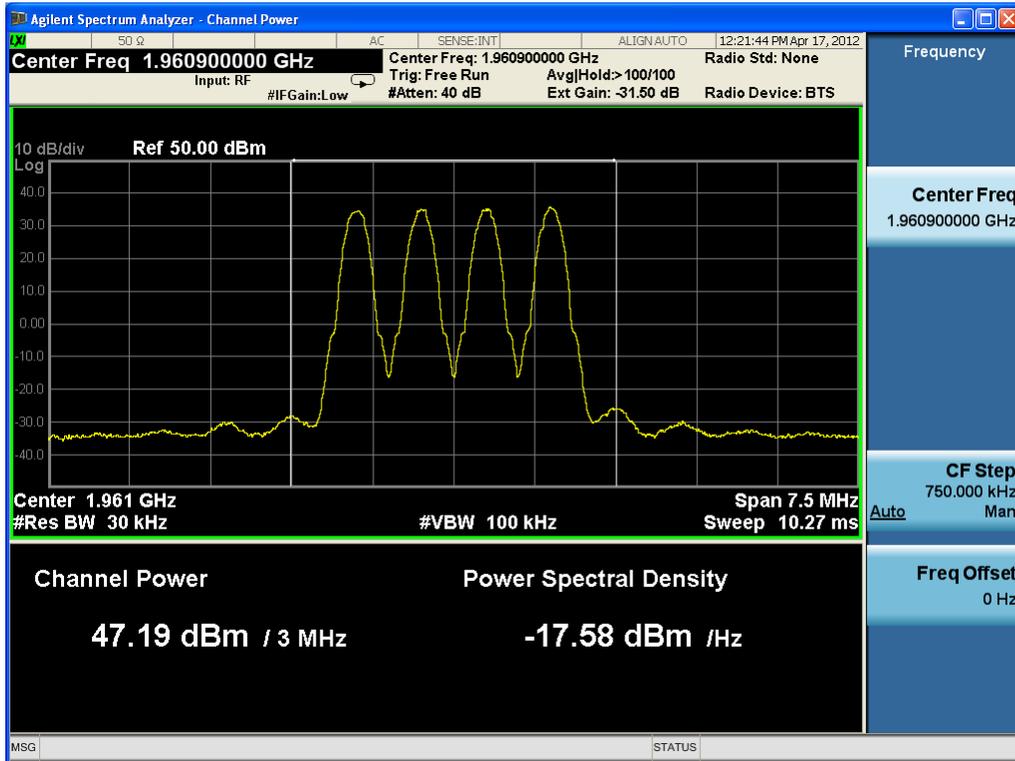
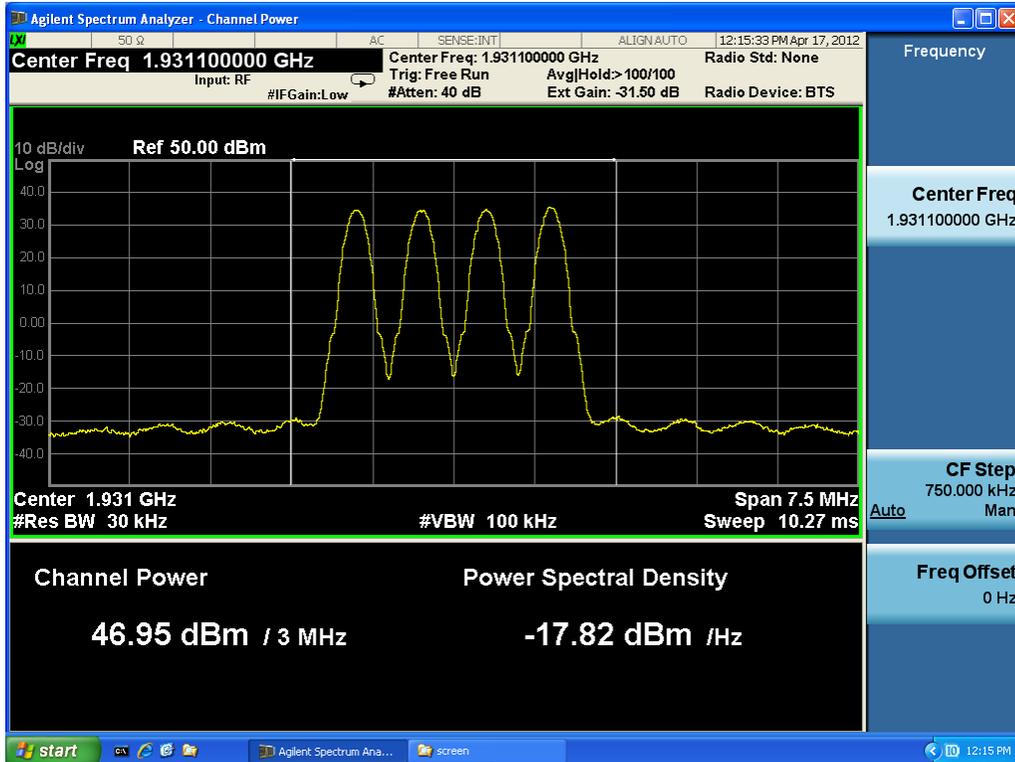
Four carriers

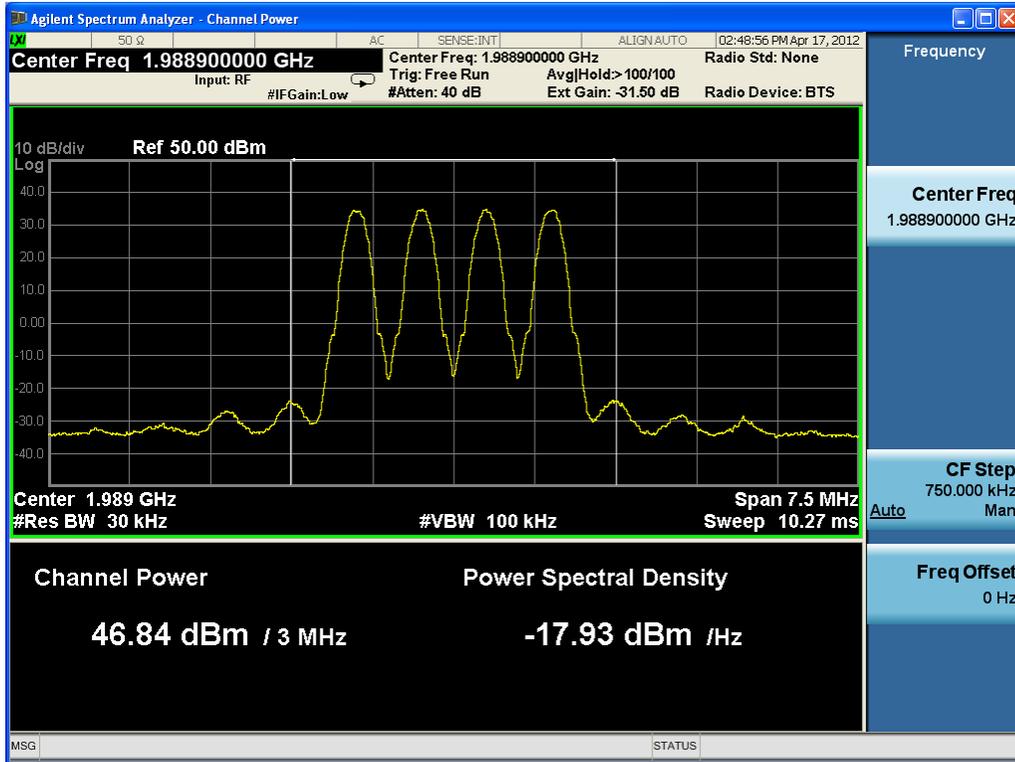
| Modulation | Center Freq. (MHz) | Frequency (MHz) | Max output Power in dBm |
|------------|--------------------|---------------------------|-------------------------|
| 8PSK | 1931.1 | 1930.2/1930.8/1931.4/1932 | 45.05 |
| | 1960.9 | 1960/1960.6/1961.2/1961.8 | 44.97 |
| | 1988.9 | 1988/1988.6/1989.2/1989.8 | 44.90 |





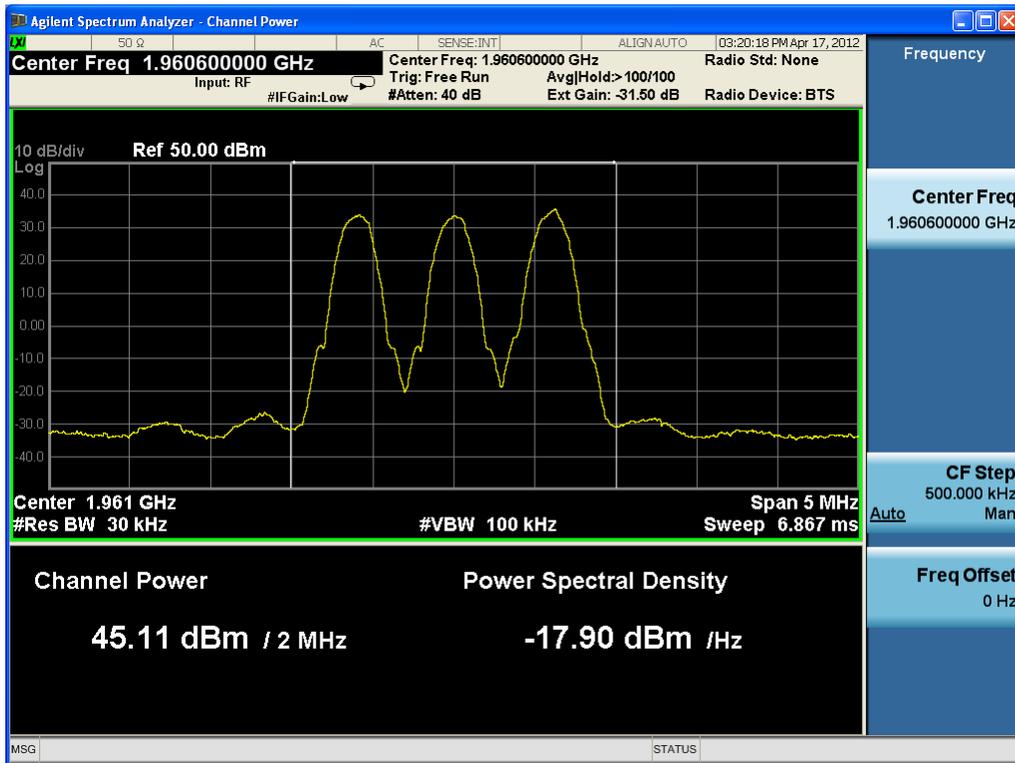
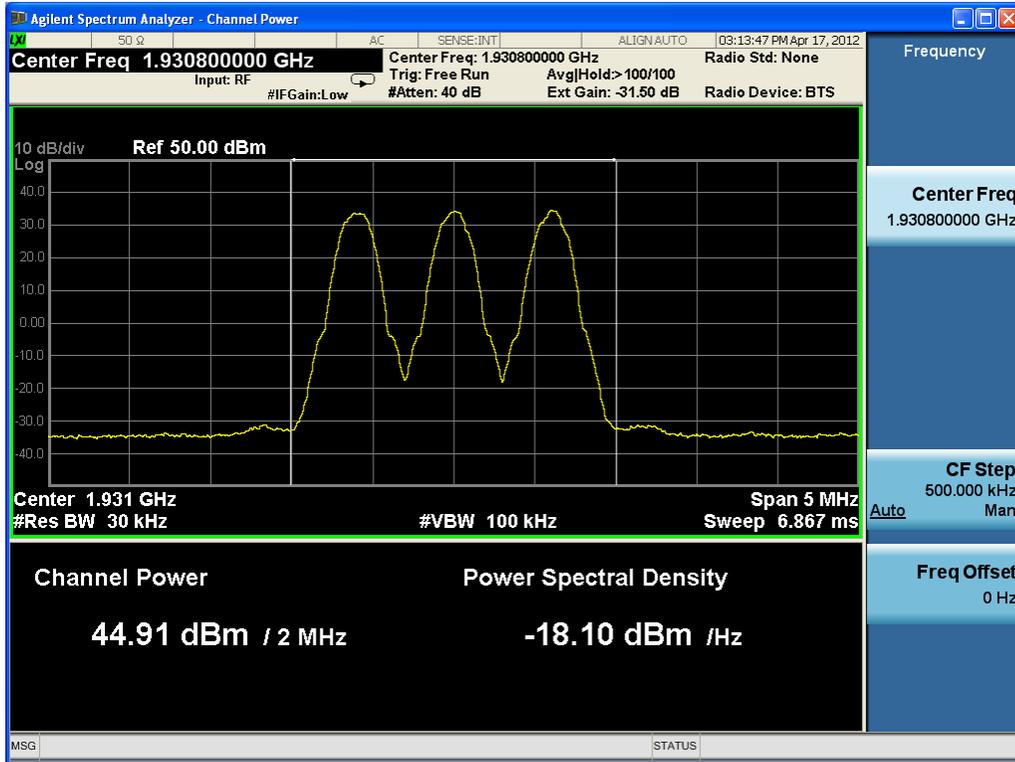
| Modulation | Center Freq. (MHz) | Frequency (MHz) | Max output Power in dBm |
|------------|--------------------|---------------------------|-------------------------|
| GMSK | 1931.1 | 1930.2/1930.8/1931.4/1932 | 46.95 |
| | 1960.9 | 1960/1960.6/1961.2/1961.8 | 47.19 |
| | 1988.9 | 1988/1988.6/1989.2/1989.8 | 46.84 |

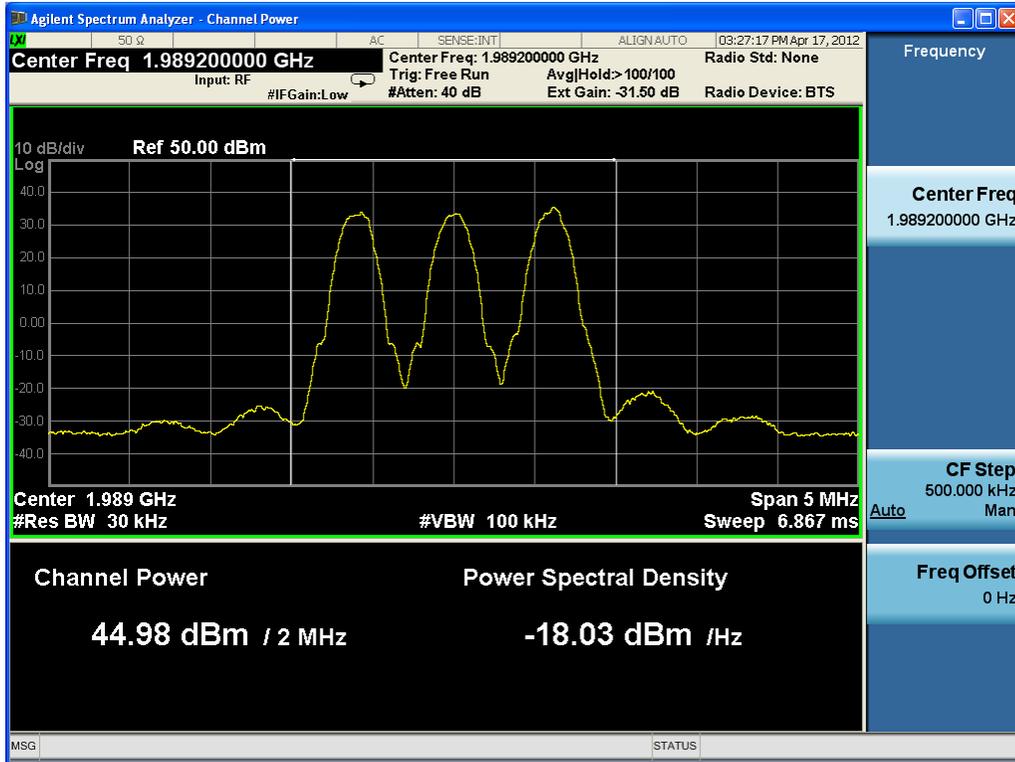




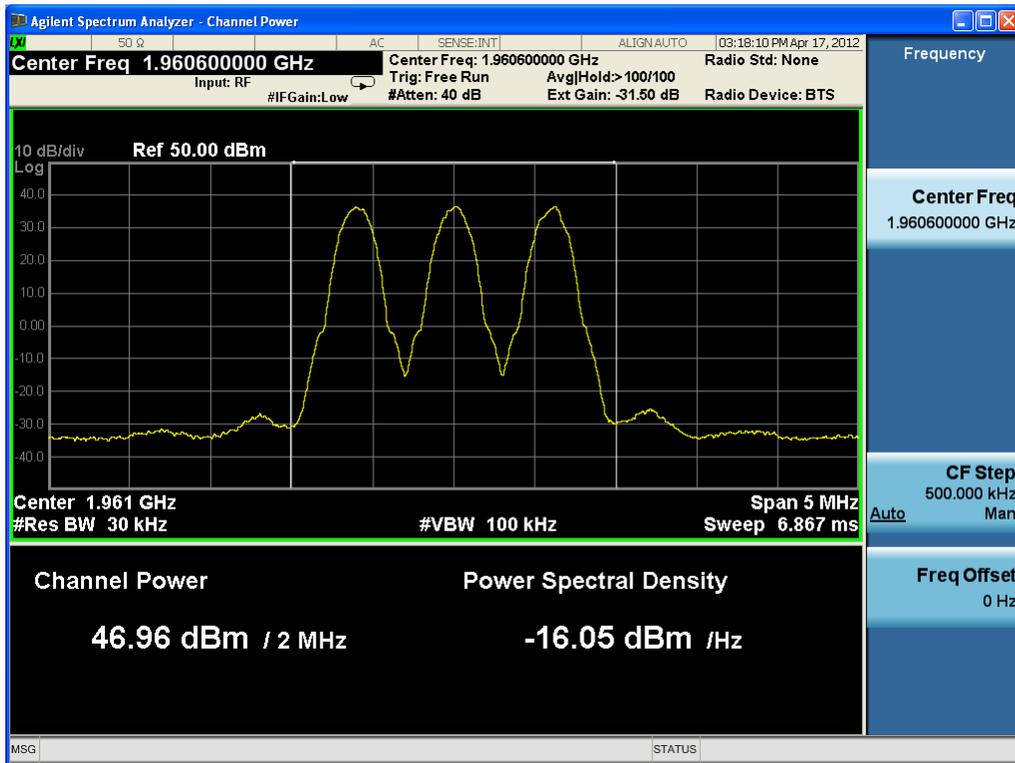
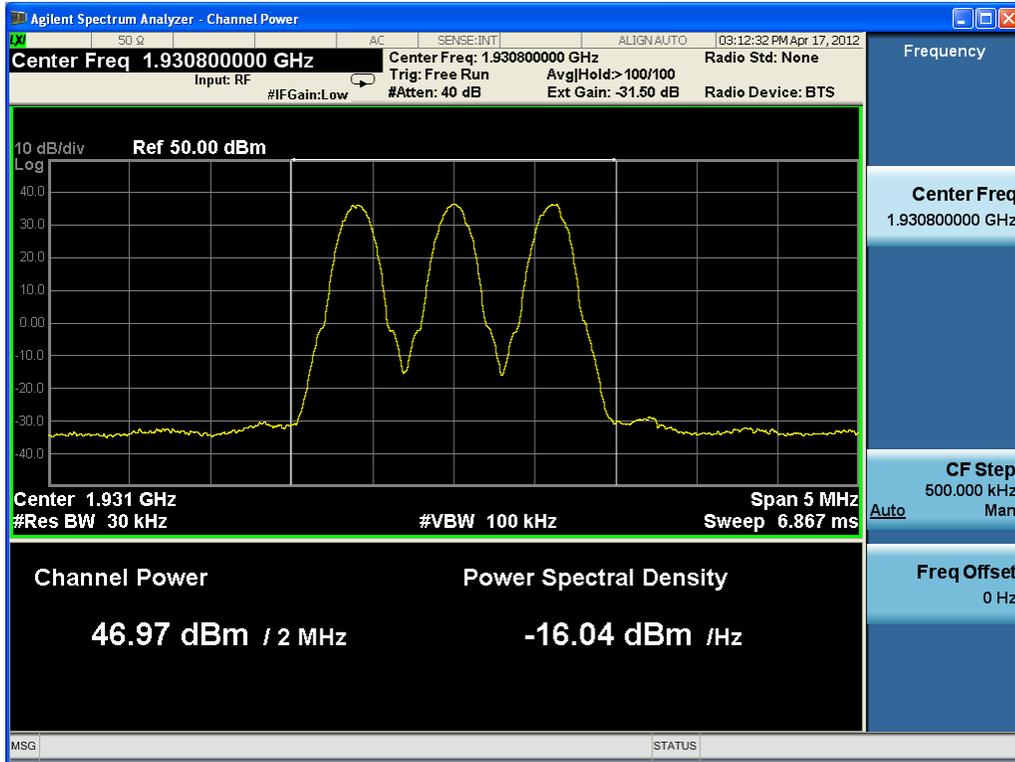
Three carriers

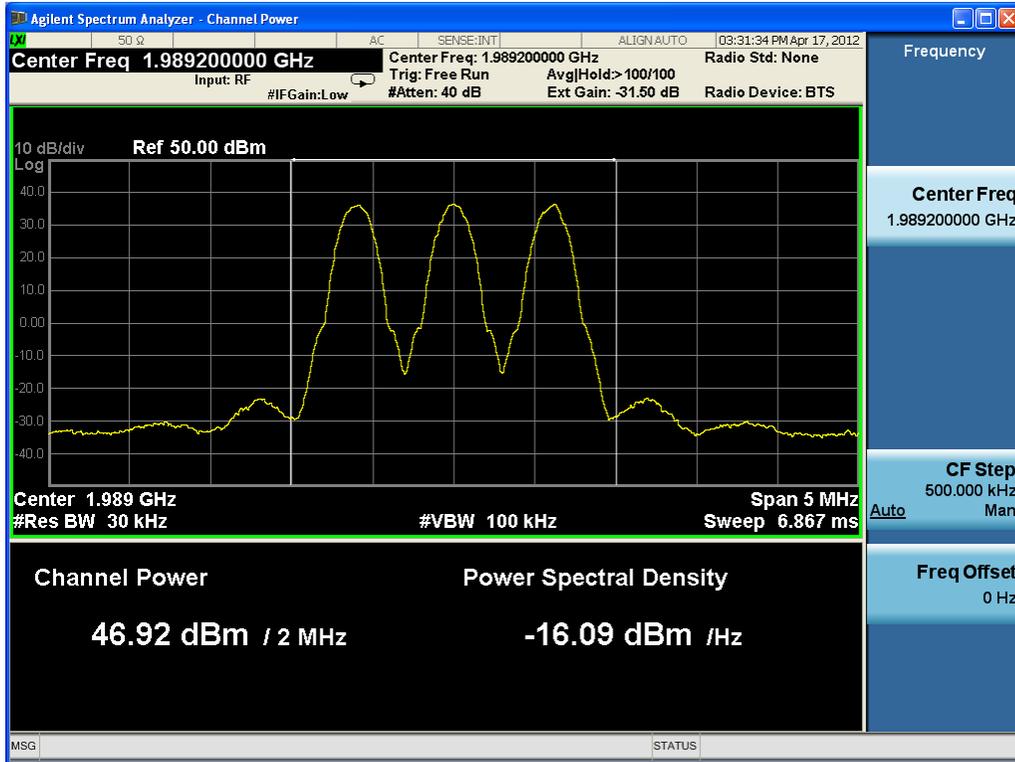
| Modulation | Center Freq. (MHz) | Frequency (MHz) | Max output Power in dBm |
|------------|--------------------|----------------------|-------------------------|
| 8PSK | 1930.8 | 1930.2/1930.8/1931.4 | 44.91 |
| | 1960.6 | 1960/1960.6/1961.2 | 45.11 |
| | 1989.2 | 1988.6/1989.2/1989.8 | 44.98 |





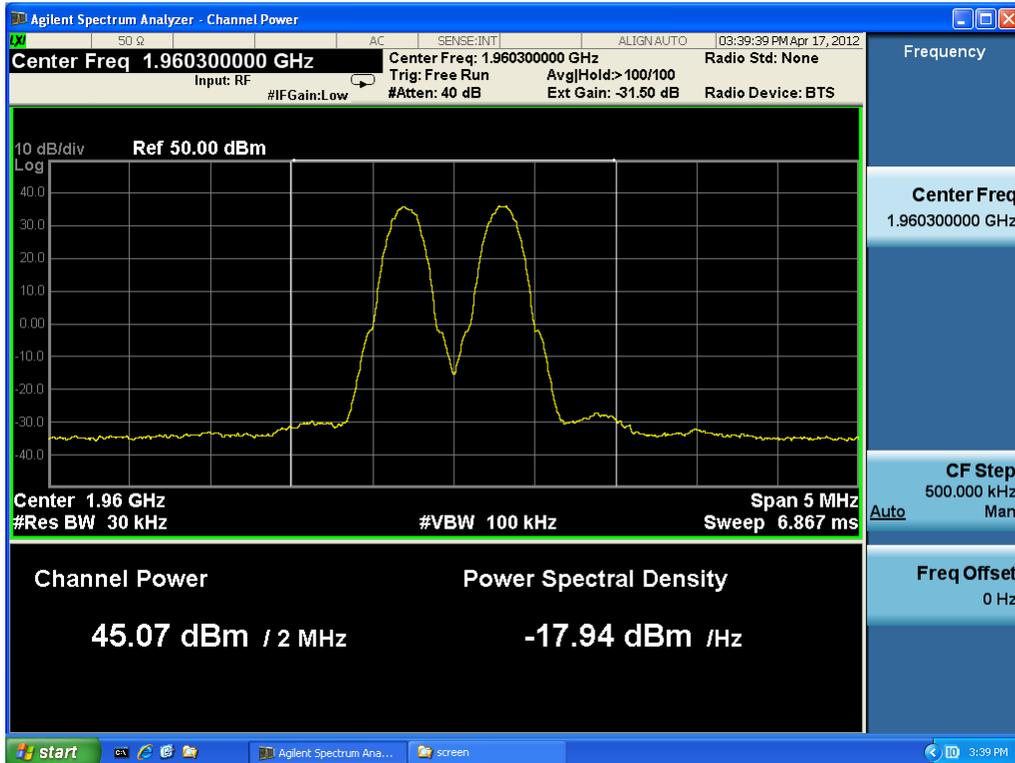
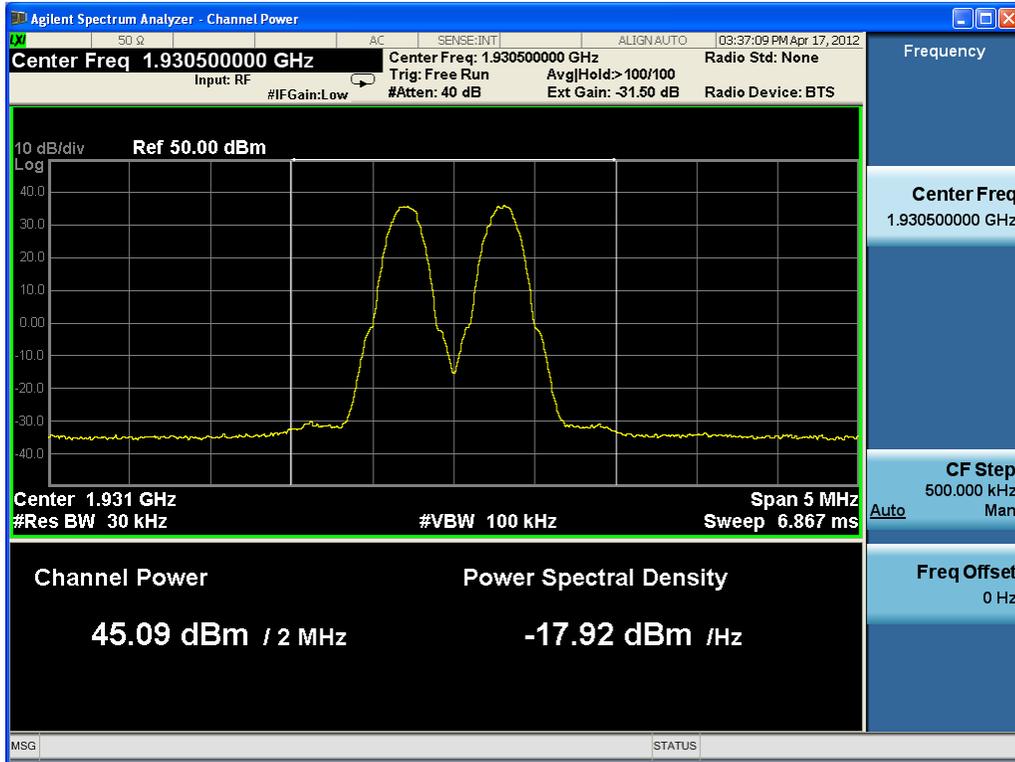
| Modulation | Center Freq. (MHz) | Frequency (MHz) | Max output Power in dBm |
|------------|--------------------|----------------------|-------------------------|
| GMSK | 1930.8 | 1930.2/1930.8/1931.4 | 46.97 |
| | 1960.6 | 1960/1960.6/1961.2 | 46.96 |
| | 1989.2 | 1988.6/1989.2/1989.8 | 46.92 |

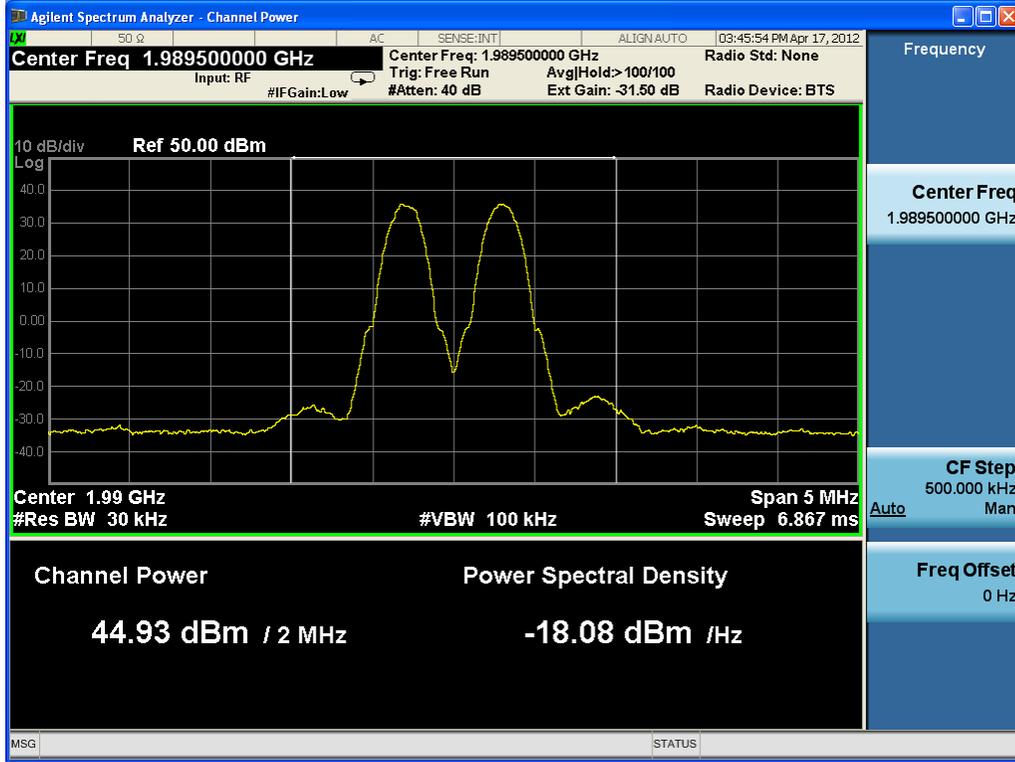




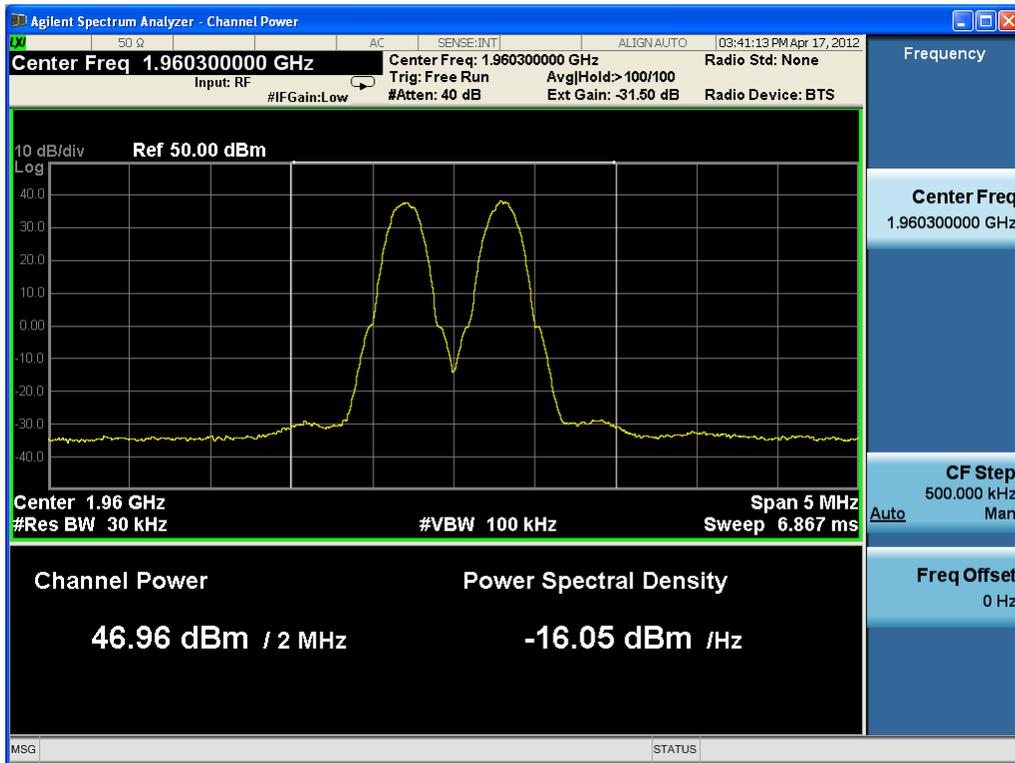
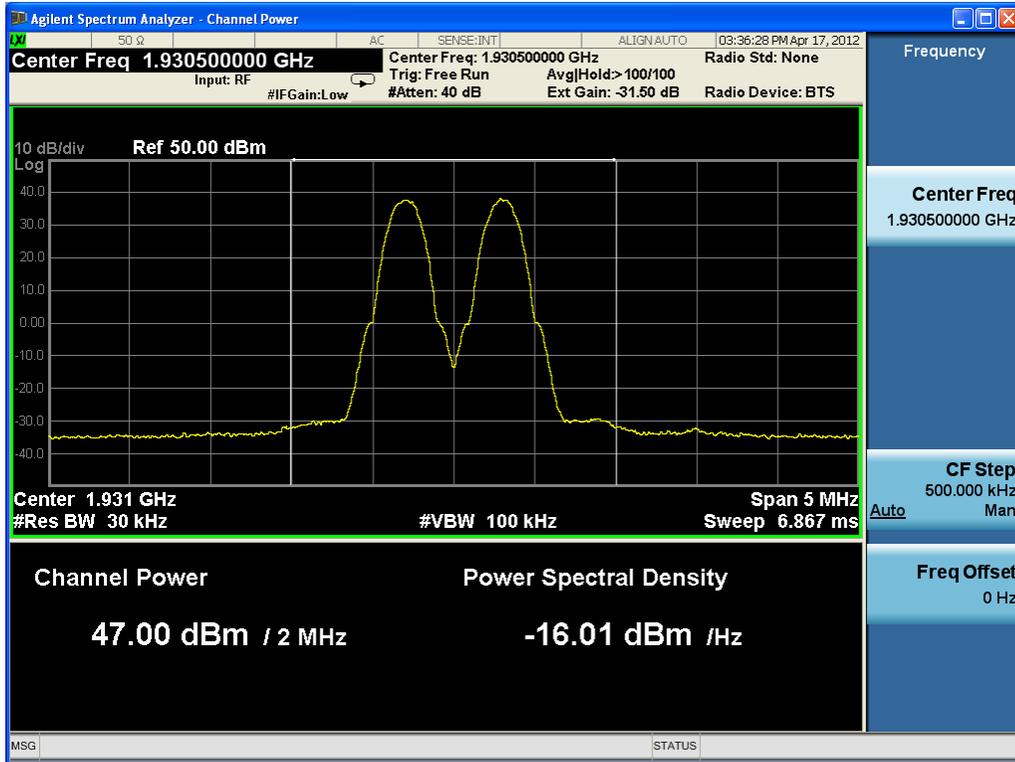
Two carriers

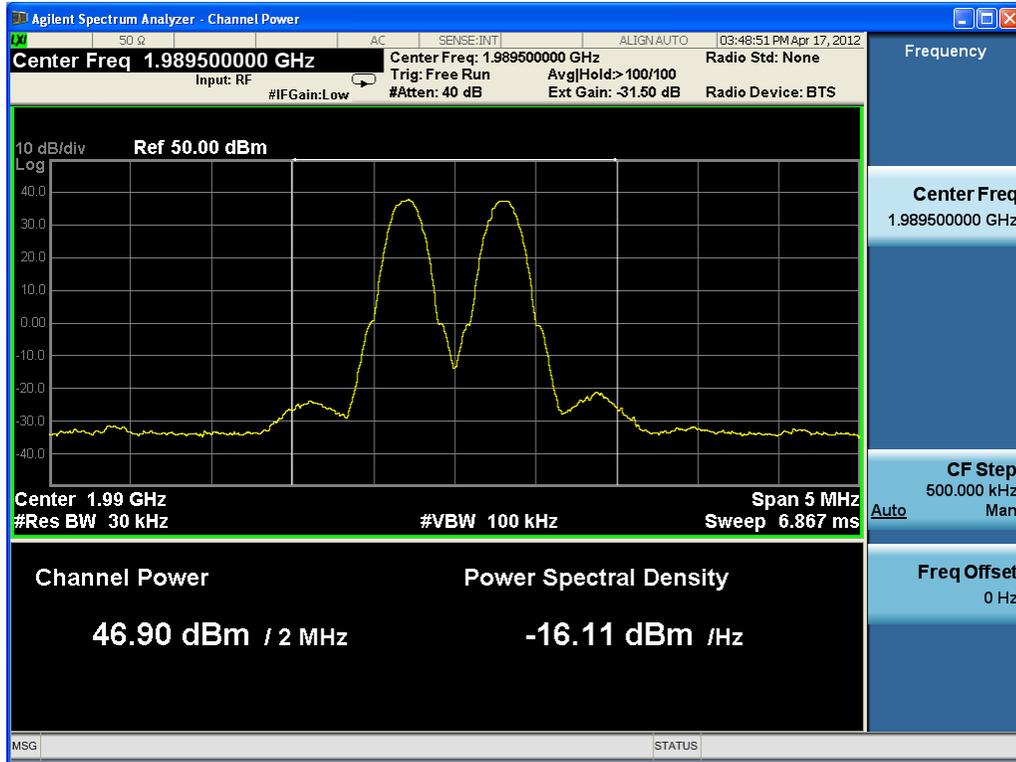
| Modulation | Center Freq. (MHz) | Frequency (MHz) | Max output Power in dBm |
|------------|--------------------|-----------------|-------------------------|
| 8PSK | 1930.5 | 1930.2/1930.8 | 45.09 |
| | 1960.3 | 1960/1960.6 | 45.07 |
| | 1989.5 | 1989.2/1989.8 | 44.93 |





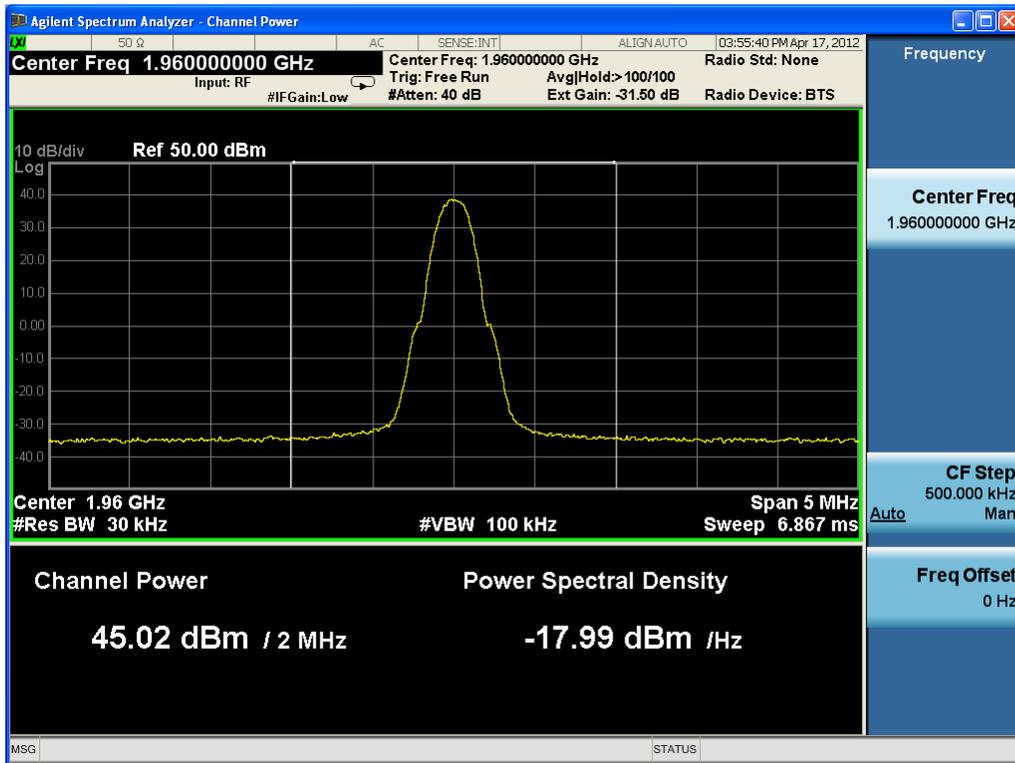
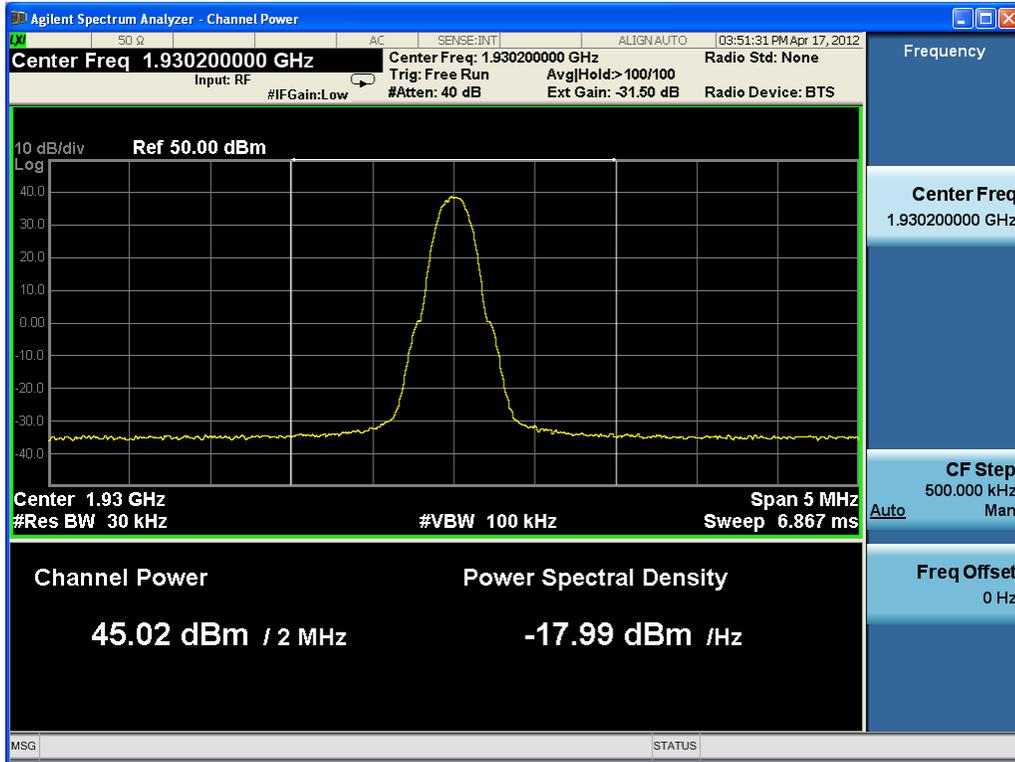
| Modulation | Center Freq. (MHz) | Frequency (MHz) | Max output Power in dBm |
|------------|--------------------|-----------------|-------------------------|
| GMSK | 1930.5 | 1930.2/1930.8 | 47.00 |
| | 1960.3 | 1960/1960.6 | 46.96 |
| | 1989.5 | 1989.2/1989.8 | 46.90 |

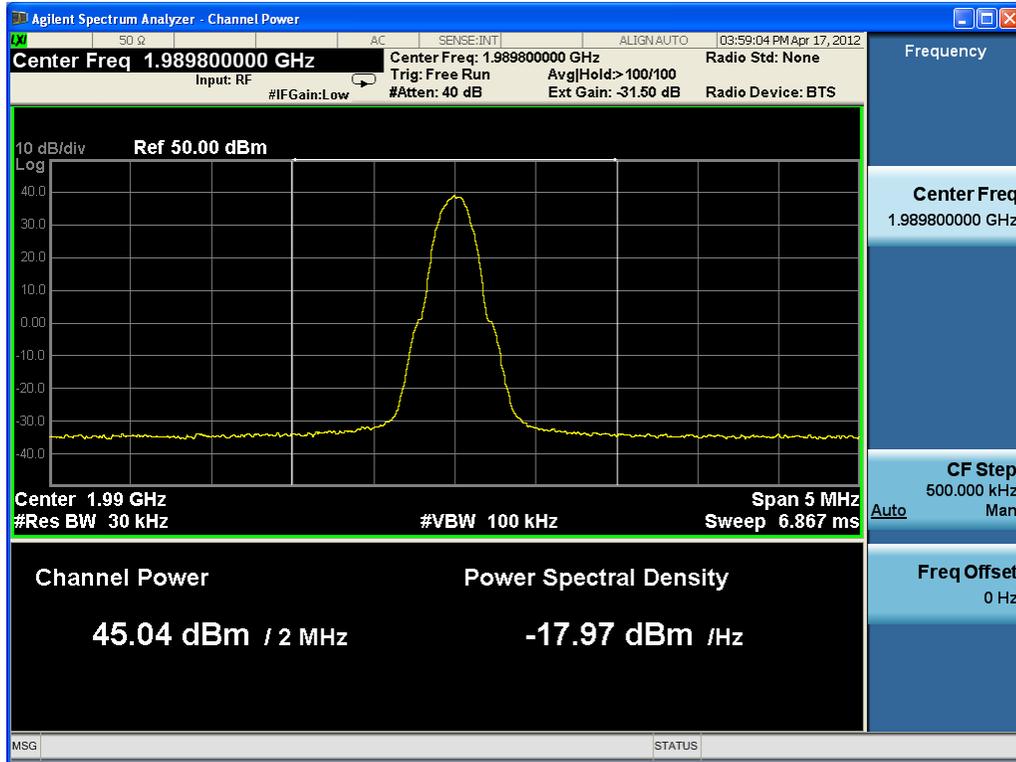




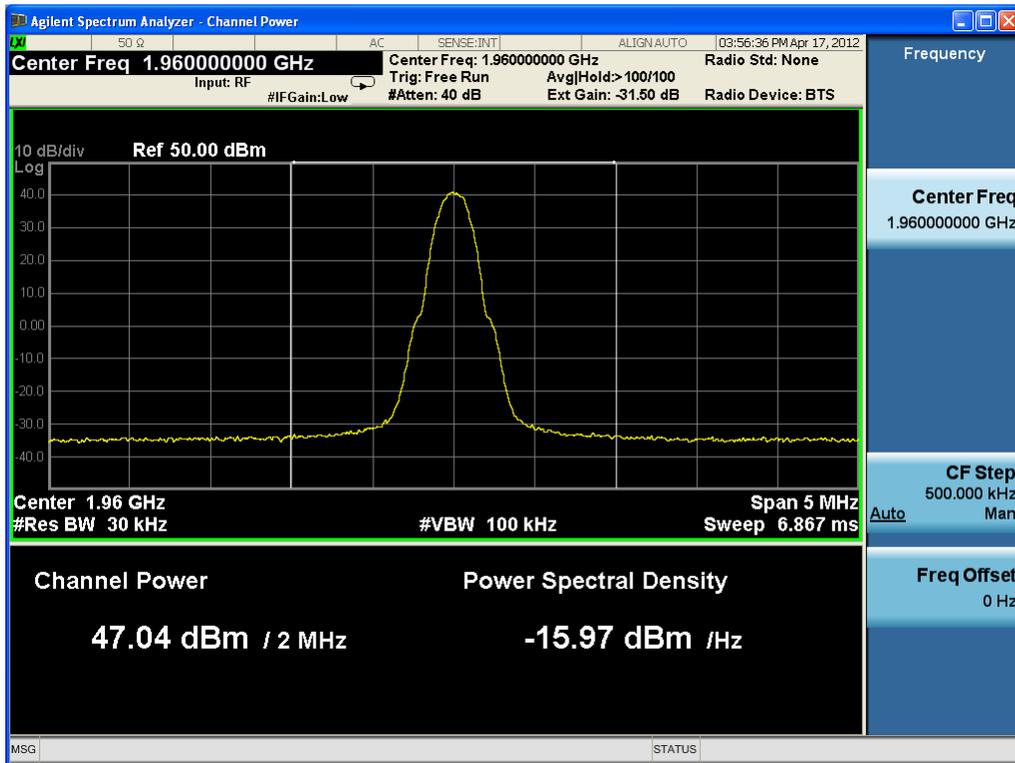
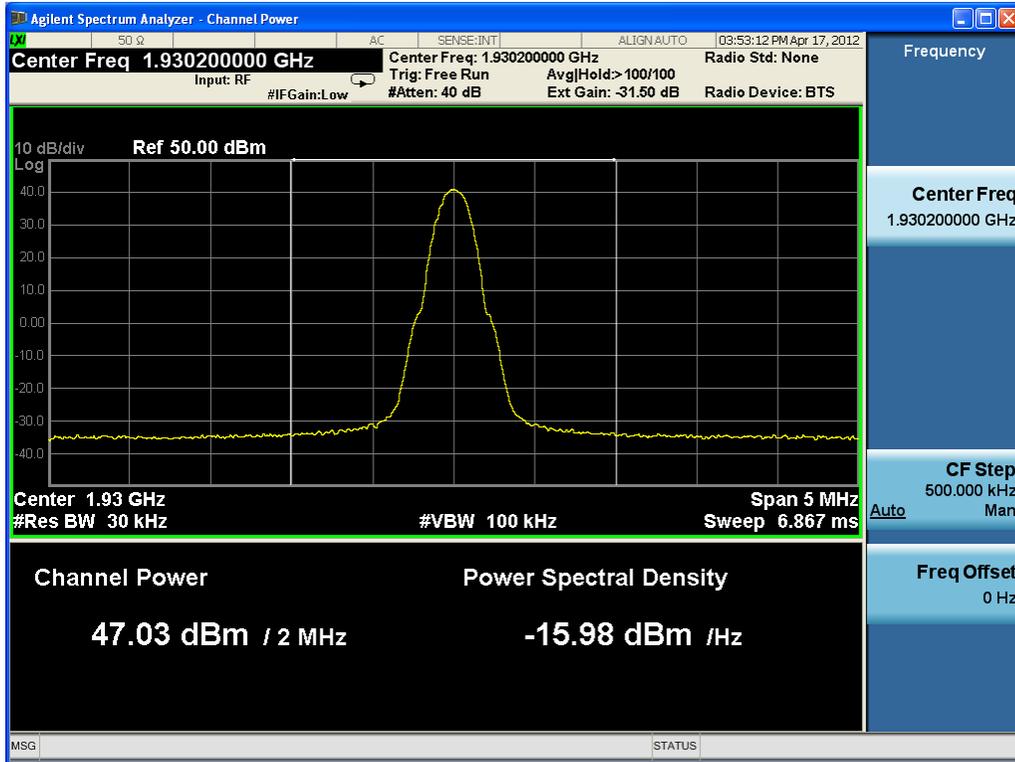
One carrier

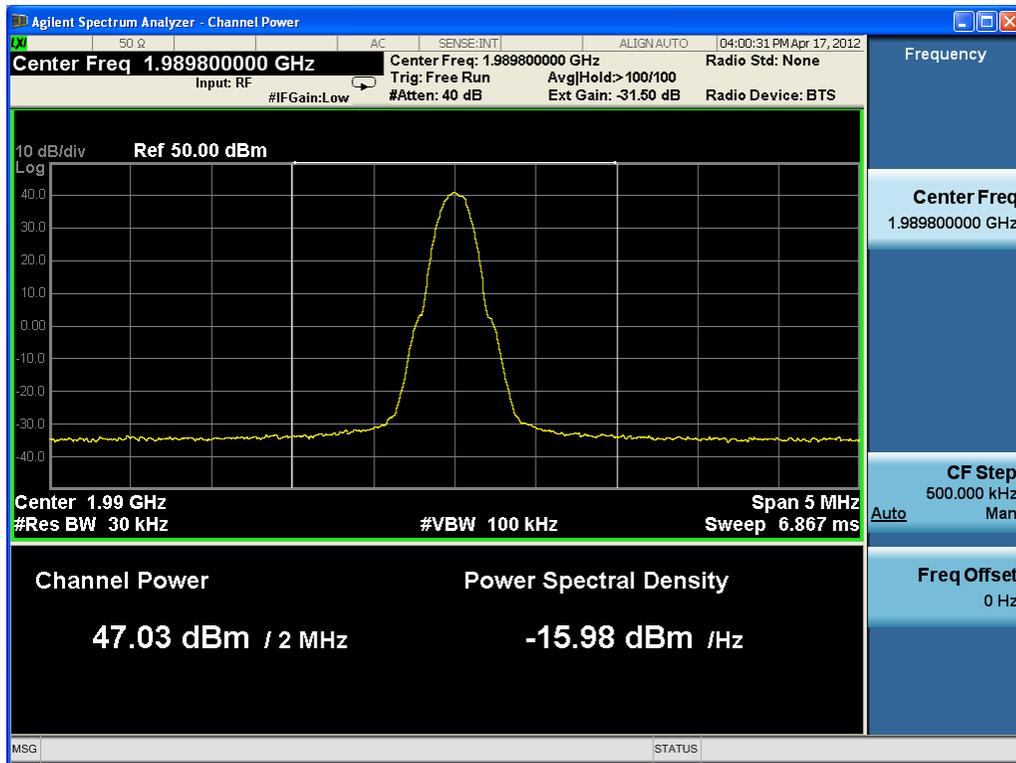
| Modulation | Center Freq. (MHz) | Frequency (MHz) | Max output Power in dBm |
|------------|--------------------|-----------------|-------------------------|
| 8PSK | 1930.2 | 1930.2 | 45.02 |
| | 1960 | 1960 | 45.02 |
| | 1989.8 | 1989.8 | 45.04 |





| Modulation | Center Freq. (MHz) | Frequency (MHz) | Max output Power in dBm |
|------------|--------------------|-----------------|-------------------------|
| 8PSK | 1930.2 | 1930.2 | 47.03 |
| | 1960 | 1960 | 47.04 |
| | 1989.8 | 1989.8 | 47.03 |





5.2 RF EXPOSURE

Applicable standard: FCC §2.1091 and §1.1037

Limit

According to §1.1307(b)(1), systems operating under the provisions of this section shall be operated in a manner that ensures that the public is not exposed to radio frequency energy level in excess of the Commission’s guidelines.

According to §1.1310 and §2.1091 RF exposure is calculated. Limits for Maximum Permissible Exposure (MPE)

| (B) Limits for General Population/Uncontrolled Exposure | | | | |
|--|-----------------------------------|-----------------------------------|---|---|
| Frequency Range (MHz) | Electric Field Strength (E) (V/m) | Magnetic Field Strength (H) (A/m) | Power Density (S) (mW/cm ²) | Averaging Time E ² , H ² or S (minutes) |
| 0.3-1.34 | 614 | 1.63 | (100)* | 30 |
| 1.34-30 | 824/f | 2.19/f | (180/f ²)* | 30 |
| 30-300 | 27.5 | 0.073 | 0.2 | 30 |
| 300-1500 | -- | -- | f/1500 | 30 |
| 1500-100,000 | -- | -- | 1.0 | 30 |

Test Data

Predication of MPE limit at a given distance

Equation from page 18 of OET Bulletin 65, Edition 97-01

$$S = EIRP / 4\pi R^2$$

Where: S = power density

EIRP= equivalent isotropically radiated power=ERP+2.15dB

R = distance to the center of radiation of the antenna= [(ERP+2.15dB)/4πS]^{1/2}

Maximum EIRP, In general, the equivalent isotropically radiated power (EIRP) of base transmitters and cellular repeaters must not exceed 1640 Watts.

Frequency is between 1500MHz and 100000MHz, and the Maximum S=1.0mW/cm²
R=3.61m.

This equipment should be installed and operated with minimum distance 3.61m between the radiator& your body .

Test Result: pass

5.3 MODULATION CHARACTERISTIC

Applicable Standard: FCC §2.1047

Test Equipment List and Details

| Manufacturer | Description | Model | Serial Number | Calibration Date | Calibration Due Date |
|--------------|------------------------------|--------------|----------------|------------------|----------------------|
| Agilent | MXA Series Spectrum Analyzer | N9020A | MY48011941 | 2012-4-9 | 2013-4-8 |
| Atten | 30dB Attenuator | ATSI150-4-30 | 11300110201221 | 2011-7-11 | 2012-7-11 |
| Forstar | Forstar RF Cable | 002 | 1034 | 2012-4-9 | 2013-4-8 |

***statement of traceability:** ZTE Corporation Reliability Testing Center attest that all calibration have been performed per the NVLAP requirements , traceable to NIST.

Test Procedure

GSM digital mode is used by EUT.

Test Data Environmental Conditions

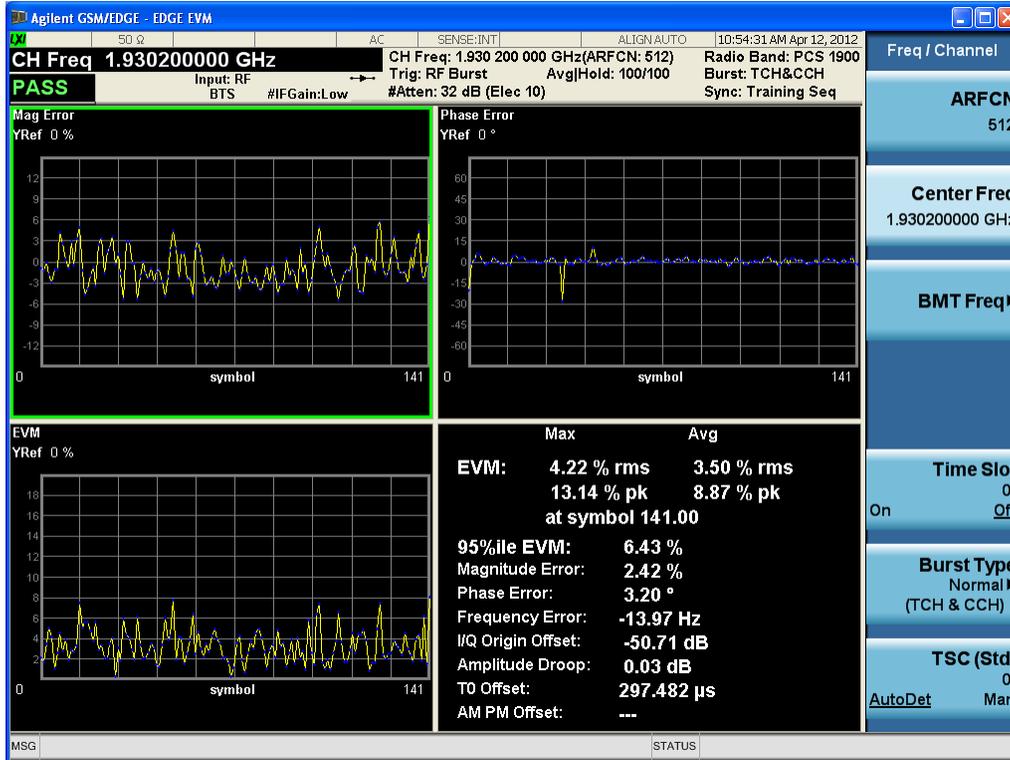
| | |
|--------------------|-----------|
| Temperature: | 20 °C |
| Relative Humidity: | 53 % |
| ATM Pressure: | 1009 mbar |

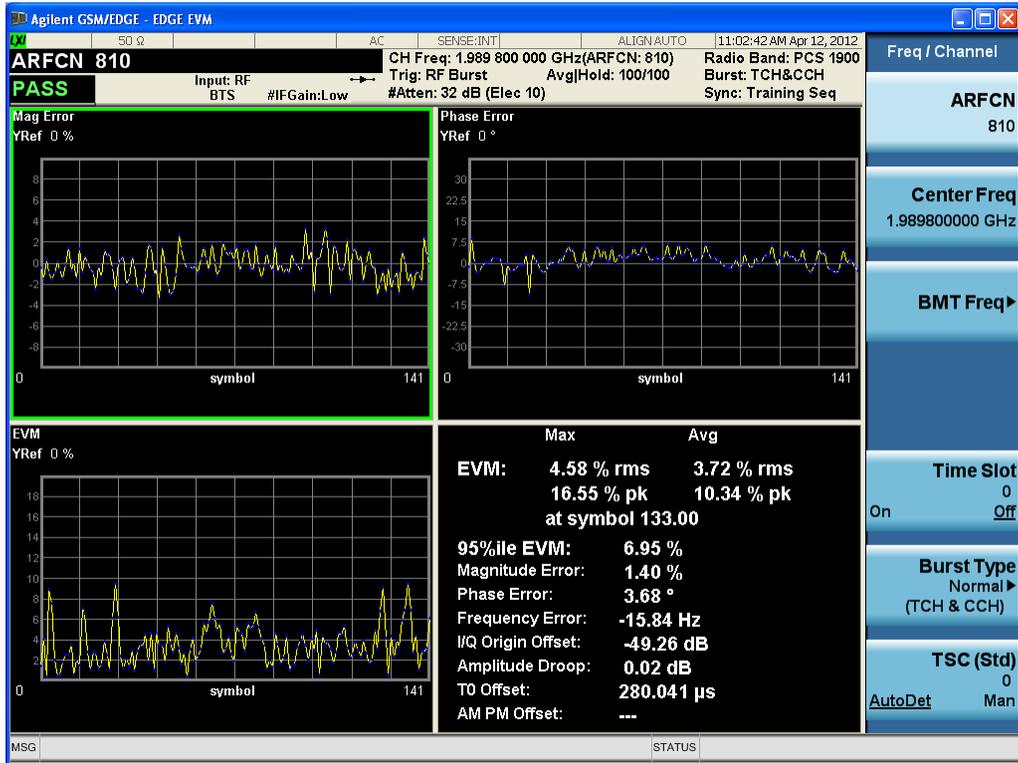
Test Result: Pass

Test Mode: Transmitting GSM

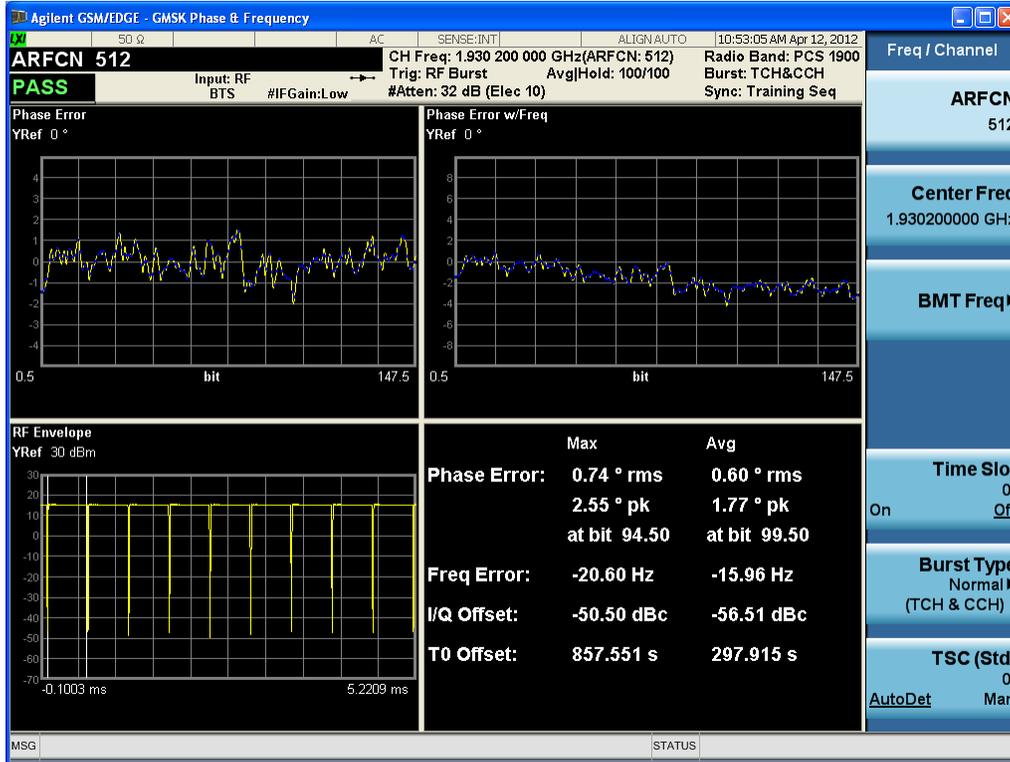
Test Data:

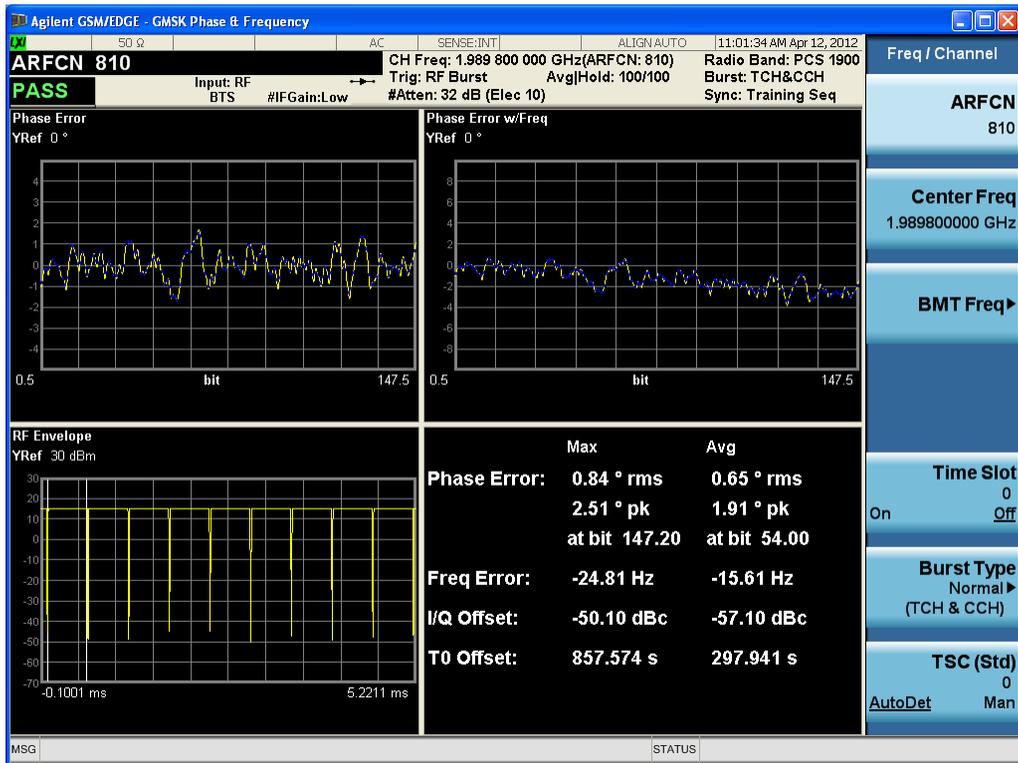
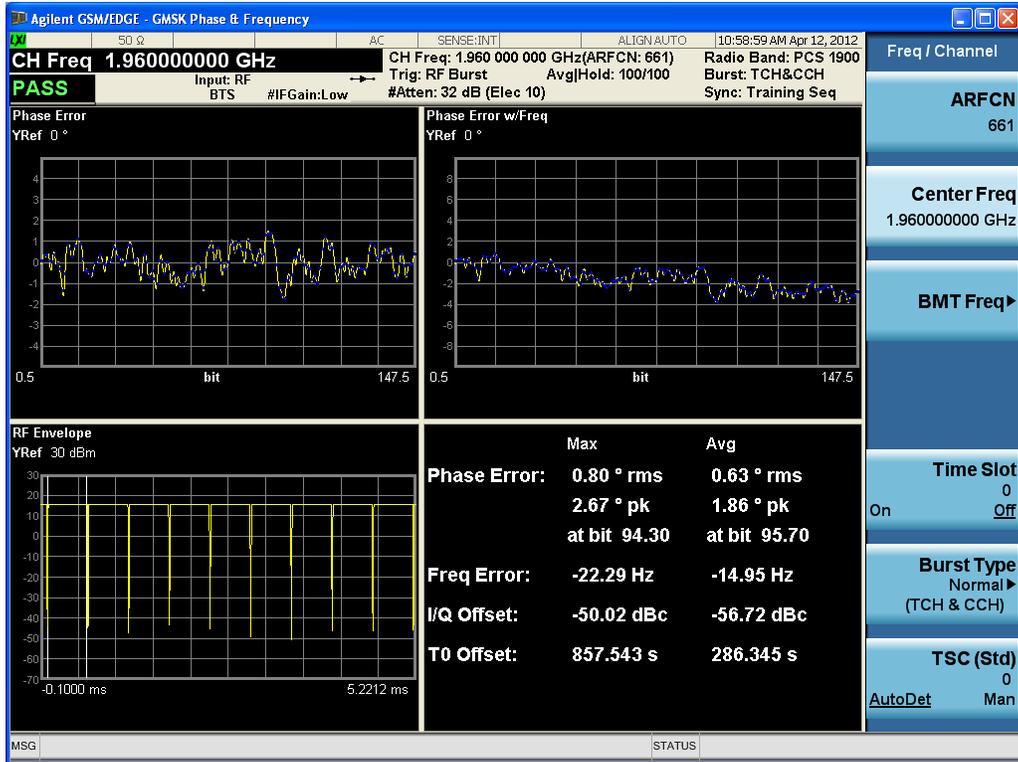
| Modulation | Frequency (MHz) | Phase Error(°) | Frequency Error(Hz) |
|------------|-----------------|----------------|---------------------|
| 8PSK | 1930.2 | 3.20 | -13.97 |
| | 1960 | 3.41 | -13.50 |
| | 1989.8 | 3.68 | -15.84 |





| Modulation | Frequency (MHz) | Phase Error(°) | Frequency Error(Hz) |
|------------|-----------------|-----------------|---------------------|
| GMSK | 1930.2 | 0.60 | -15.96 |
| | 1960 | 0.63 | -14.95 |
| | 1989.8 | 0.65 | -15.61 |





5.4 SPURIOUS RADIATED EMISSIONS

Applicable Standard: FCC CFR 47, §2.1053

Test Equipment List and Details

| Manufacturer | Equipment | Model | Serial Number | Last Cal. | Cal. Interval |
|--------------|--------------------------------------|----------|---------------|------------|---------------|
| R&S | SIGNAL GENERATOR | SMR20 | A00017351 | 2012-9-26 | 1 year |
| Albatross | Anechoic Chamber | 3m Site | A00017354 | 2012-10-29 | 1 year |
| R&S | EMI Test Receiver | ESIB26 | 100058 | 2012-10-29 | 1 year |
| R&S | Ultra Breitband Antennas | HL562 | 100022 | 2012-7-29 | 1 year |
| R&S | Double-Ridged Waveguide Horn Antenna | HF906 | 100032 | 2012-7-29 | 1 year |
| R&S | Double-Ridged Waveguide Horn Antenna | HF906 | 100446 | 2012-7-29 | 1 year |
| SCHWARZ-BECK | Biconical Antenna | VUBA9117 | 9117-122 | 2012-7-29 | 1 year |

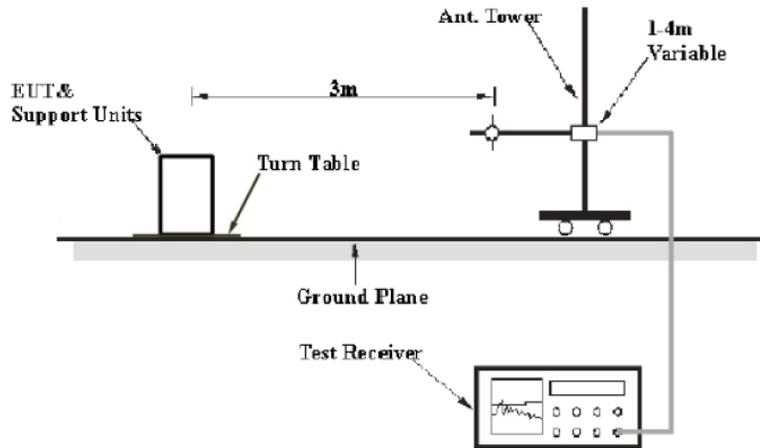
***statement of traceability:** ZTE Corporation Testing lab attest that all calibration have been performed per the NVLAP requirements, traceable to NIST.

Measurement Uncertainty

All measurements involve certain levels of uncertainties, especially in field of EMC. The factors contributing to uncertainties are spectrum analyzer, cable loss, antenna factor calibration, antenna directivity, antenna factor variation with height, antenna phase center variation, antenna factor frequency interpolation, measurement distance variation, site imperfections, mismatch (average), and system repeatability.

Based on NIS 81, The Treatment of Uncertainty in EMC Measurements, the best estimate of the uncertainty of a radiated emissions measurement at the EMC lab of ZTE Corp. is 3.6dB.

EUT Setup



The radiated emission tests were performed in the 3-meter Chamber, using the setup accordance with the FCC part 2.1053. The specification used was the FCC 2.1053 limits.

Test Procedure

The transmitter was placed on a wooden turntable, and it was transmitting into a non-radiating load, which was also placed on the turntable.

The measurement antenna was placed at a distance of 3 meters from the EUT. During the tests, the antenna height and polarization as well as EUT azimuth were varied in order to identify the maximum level of emissions from the EUT. The test was performed by placing the EUT on 3-orthogonal axis.

The frequency range up to tenth harmonic of the fundamental frequency was investigated.

Remove the EUT and replace it with substitution antenna. A signal generator was connected to the substitution antenna by a non-radiating cable. The absolute levels of the spurious emissions were measured by the substitution.

Spurious emissions in dB = 10 lg (TX pwr in Watts/0.001)-the absolute level

Spurious attenuation limit in dB = 43+10 Lg P (power out in Watts)

The resolution bandwidth of the spectrum analyzer was set at 100KHz for 30MHz to 1GHz scanning, set at 1MHz or 3MHz for 1GHz to 20GHz scanning.

Test Results Summary: PASS

Environmental Conditions

| | |
|--------------------|-----------|
| Temperature: | 26°C |
| Relative Humidity: | 60 % |
| ATM Pressure: | 1009 mbar |

Test data

| Indicated | | Test Antenna | Substituted | | Cable Loss(dB) | Effective radiated power (dBm) | Dipole Antenna | Absolute Level (dBm) | Limit (dBm) | Margin (dB) |
|-----------------|-------------------|--------------|-------------|-------------------------|----------------|--------------------------------|----------------|----------------------|-------------|-------------|
| Frequency (GHz) | Amp. (dB μ V) | Polar H/V | Level (dBm) | Antenna Gain Correction | | | | | | |
| 63.046092 | 26.01 | V | -70.11 | -27.24 | 0.6 | -97.95 | 2.15 | -100.1 | -13 | 87.1 |
| 634.549098 | 26.43 | V | -69.98 | -1.09 | 2.1 | -73.17 | 2.15 | -75.32 | -13 | 62.32 |
| 974.729459 | 31.16 | V | -71.53 | -2.82 | 2.6 | -76.95 | 2.15 | -79.1 | -13 | 66.1 |
| 1384.76954 | 46.62 | V | -60.29 | 4.25 | 3.1 | -59.14 | 2.15 | -61.29 | -13 | 48.29 |
| 2991.98397 | 58.48 | V | -51.69 | 7.95 | 4.6 | -48.34 | 2.15 | -50.49 | -13 | 37.49 |
| 169.95992 | 23.09 | H | -80.47 | -3.24 | 1.1 | -84.81 | 2.15 | -86.96 | -13 | 73.96 |
| 607.334669 | 27.78 | H | -73.42 | -1.39 | 2 | -76.81 | 2.15 | -78.96 | -13 | 65.96 |
| 992.224449 | 31.09 | H | -72.38 | -2.59 | 2.7 | -77.67 | 2.15 | -79.82 | -13 | 66.82 |
| 1388.77756 | 46.41 | H | -63.62 | 4.25 | 3.1 | -62.47 | 2.15 | -64.62 | -13 | 51.62 |
| 1981.96393 | 90.64 | H | -18.63 | 6.55 | 3.8 | -15.88 | 2.15 | -18.03 | -13 | 5.03 |
| 2963.92786 | 57.49 | H | -48.77 | 7.95 | 4.6 | -45.42 | 2.15 | -47.57 | -13 | 34.57 |

Radiation emission spurious below 3GHz

| Indicated | | Test Antenna | Substituted | | Cable Loss(dB) | Effective radiated power (dBm) | Dipole Antenna | Absolute Level (dBm) | Limit (dBm) | Margin (dB) |
|-----------------|-------------------|--------------|-------------|-------------------------|----------------|--------------------------------|----------------|----------------------|-------------|-------------|
| Frequency (GHz) | Amp. (dB μ V) | Polar H/V | Level (dBm) | Antenna Gain Correction | | | | | | |
| 3953.90782 | 49.47 | V | -46.44 | 7.75 | 5.3 | -43.99 | 2.15 | -46.14 | -13 | 33.14 |
| 5276.55311 | 45.53 | V | -51.65 | 8.55 | 6.2 | -49.3 | 2.15 | -51.45 | -13 | 38.45 |
| 5941.88377 | 58.8 | V | -45.69 | 9.05 | 6.6 | -43.24 | 2.15 | -45.39 | -13 | 32.39 |
| 9755.51102 | 54.47 | V | -54.65 | 9.95 | 9 | -53.7 | 2.15 | -55.85 | -13 | 42.85 |
| 13282.5651 | 59.36 | V | -42.18 | 11.85 | 10.2 | -40.53 | 2.15 | -42.68 | -13 | 29.68 |
| 17933.8677 | 72.31 | V | -39.36 | 8.95 | 12.2 | -42.61 | 2.15 | -44.76 | -13 | 31.76 |
| 3961.92385 | 50.92 | H | -52.24 | 7.75 | 5.3 | -49.79 | 2.15 | -51.94 | -13 | 38.94 |
| 5268.53707 | 45.53 | H | -55.87 | 8.55 | 6.2 | -53.52 | 2.15 | -55.67 | -13 | 42.67 |
| 5941.88377 | 54.63 | H | -49.66 | 9.05 | 6.6 | -47.21 | 2.15 | -49.36 | -13 | 36.36 |
| 9843.68738 | 53.43 | H | -55.72 | 9.95 | 8.9 | -54.67 | 2.15 | -56.82 | -13 | 43.82 |
| 13348.6974 | 58.86 | H | -53.58 | 11.85 | 10.2 | -51.93 | 2.15 | -54.08 | -13 | 41.08 |
| 17867.7355 | 72.1 | H | -34.59 | 8.95 | 12.2 | -37.84 | 2.15 | -39.99 | -13 | 26.99 |

Radiation emission spurious above 3GHz

5.5 SPURIOUS EMISSIONS AT ANTENNA TERMINALS

Applicable Standard: FCC§2.1051, §24.238

The spectrum was to be investigated to the tenth harmonics of the highest fundamental frequency as specified .

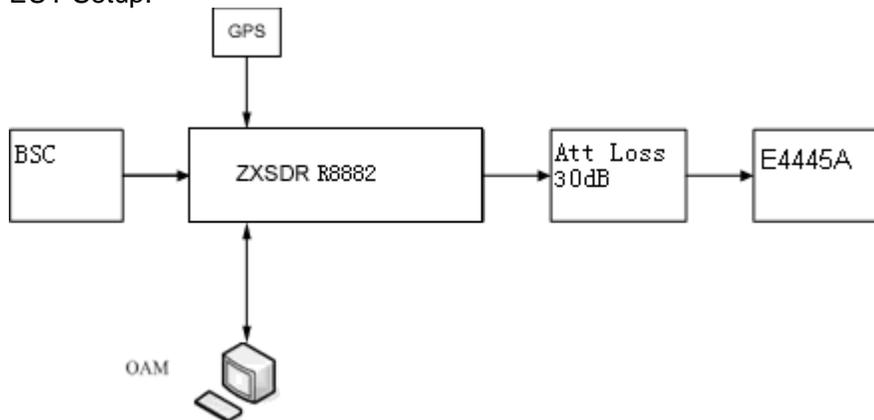
Test Equipment List and Details

| Manufacturer | Description | Model | Serial Number | Calibration Date | Calibration Due Date |
|--------------|------------------------------|--------------|----------------|------------------|----------------------|
| Agilent | MXA Series Spectrum Analyzer | N9020A | MY48011941 | 2012-4-9 | 2013-4-8 |
| Atten | 30dB Attenuator | ATSI150-4-30 | 11300110201221 | 2011-7-11 | 2012-7-11 |
| Forstar | Forstar RF Cable | 002 | 1034 | 2012-4-9 | 2013-4-8 |

***statement of traceability:** ZTE Corporation Reliability Testing Center attest that all calibration have been performed per the NVLAP requirements , traceable to NIST.

Test Procedure

EUT Setup:



REMARKS: Attenuator loss (dB)=30dB, Cable Loss (dB)=2dB.

The RF output of the transceiver was connected to a spectrum analyzer through appropriate attenuation. The resolution bandwidth of the spectrum analyzer was set at 1MHz for 30MHz to 1GHz scanning, set at 1MHz for 1GHz to 20GHz scanning. Sufficient scans were taken to

show any out of band emissions up to 10th harmonic.

Test Data Environmental Conditions

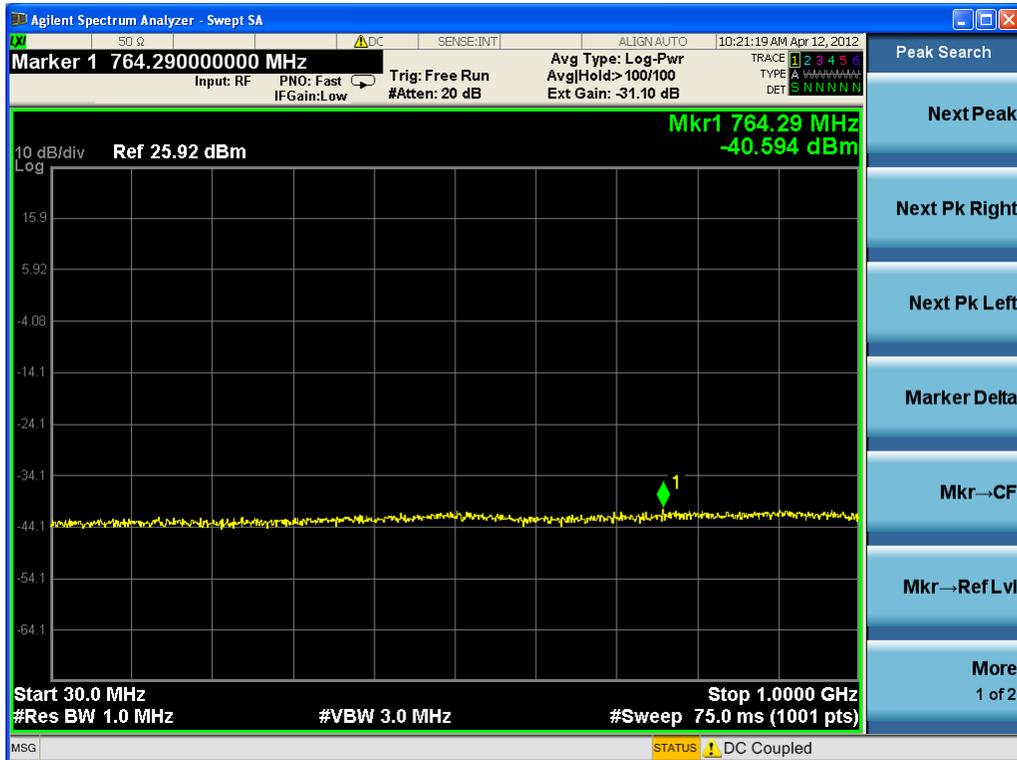
| | |
|--------------------|-----------|
| Temperature: | 20 °C |
| Relative Humidity: | 53 % |
| ATM Pressure: | 1009 mbar |

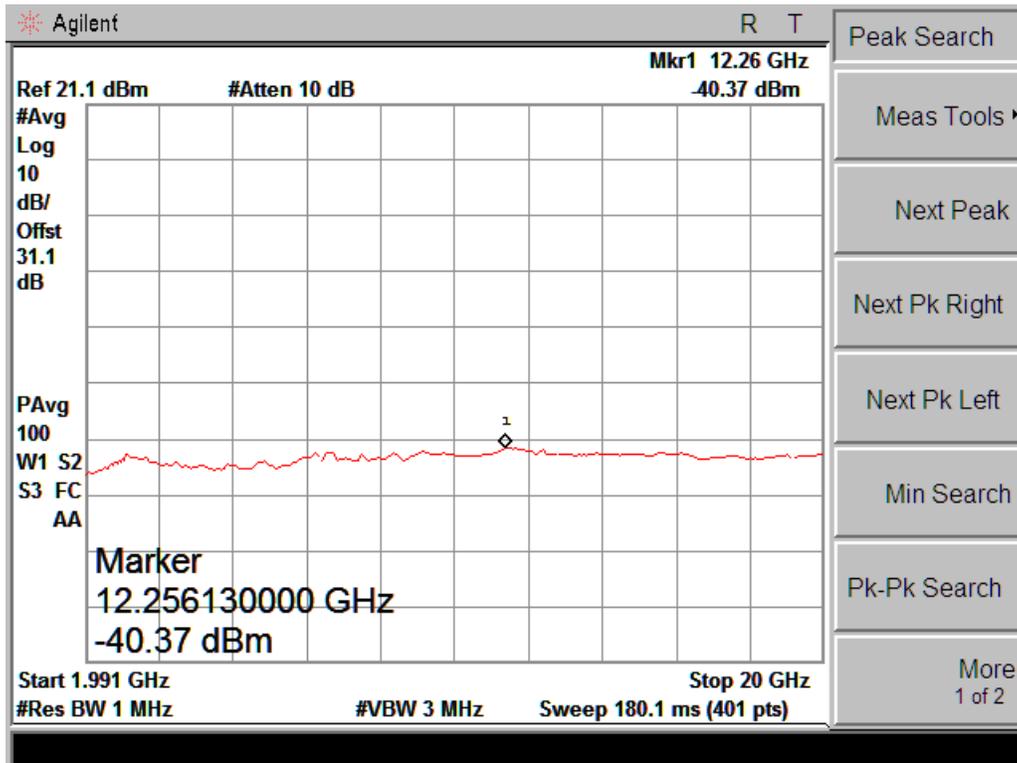
Test Result: Pass

Test Mode: Transmitting GSM

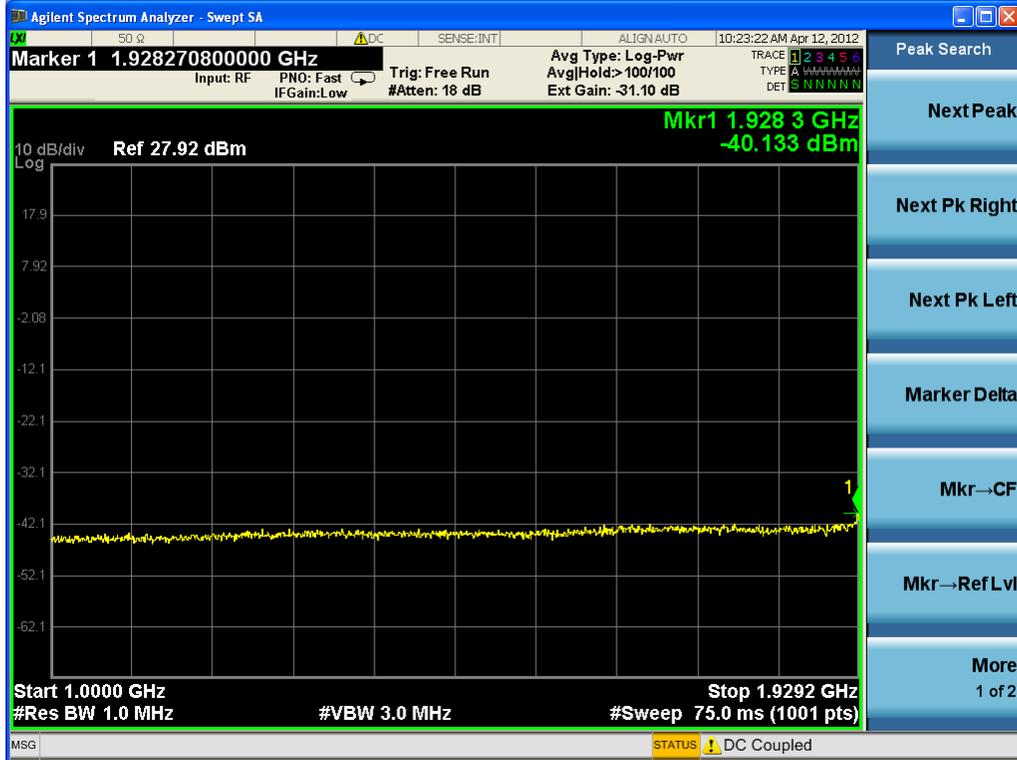
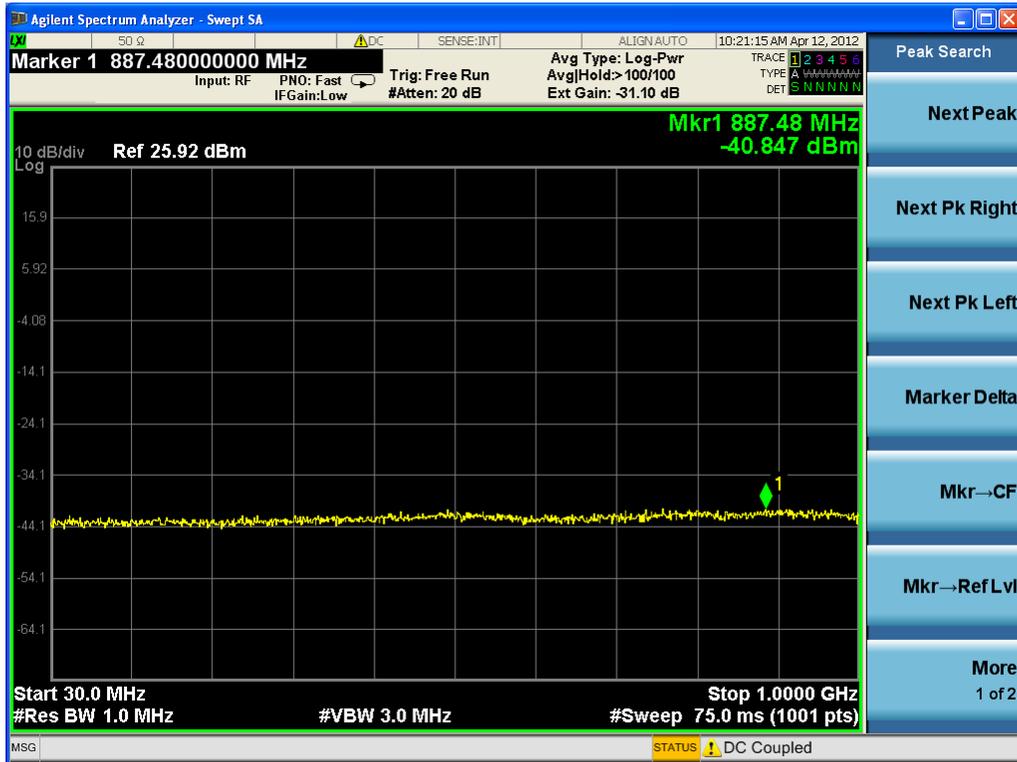
Test Data:

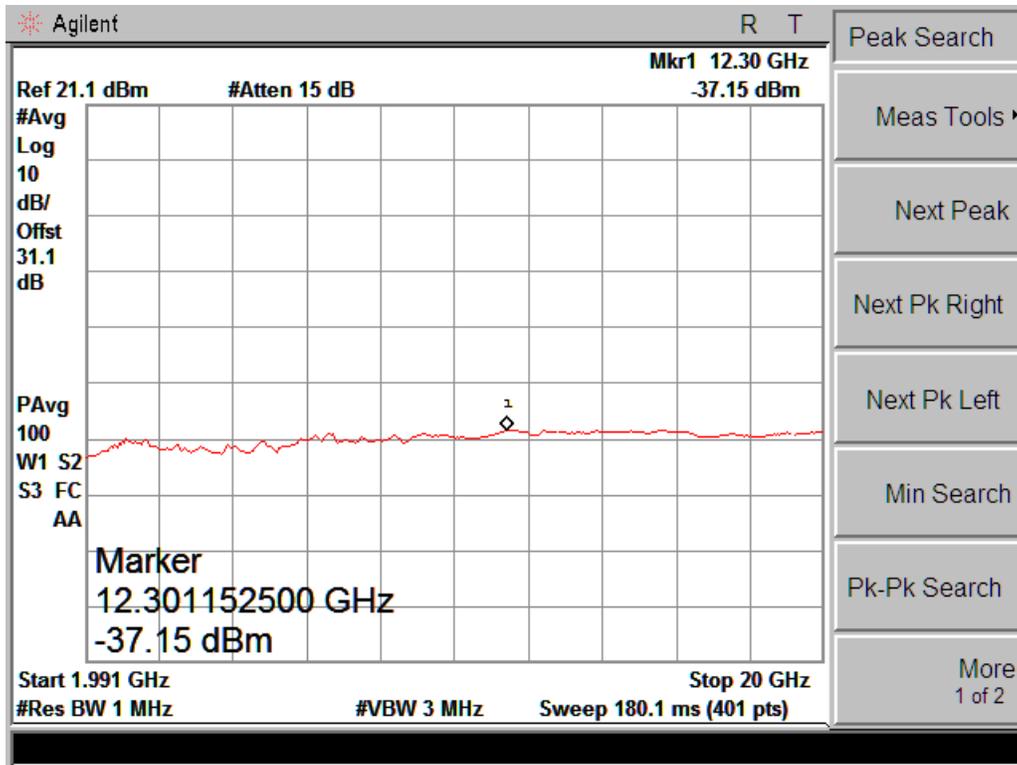
Six Carriers



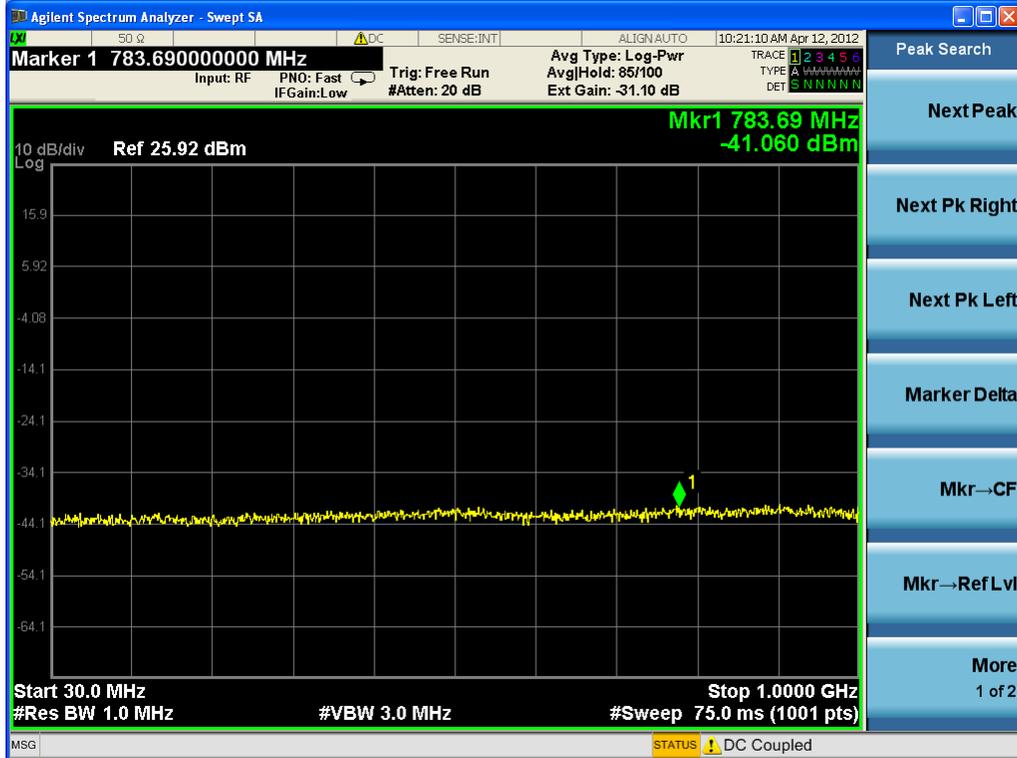


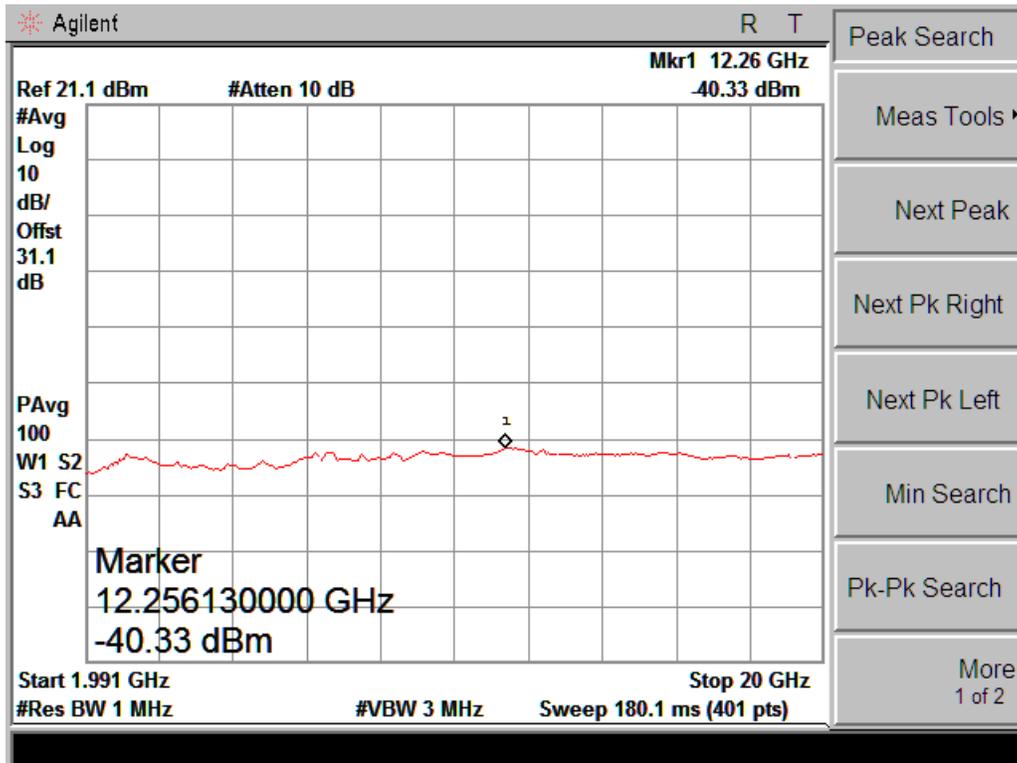
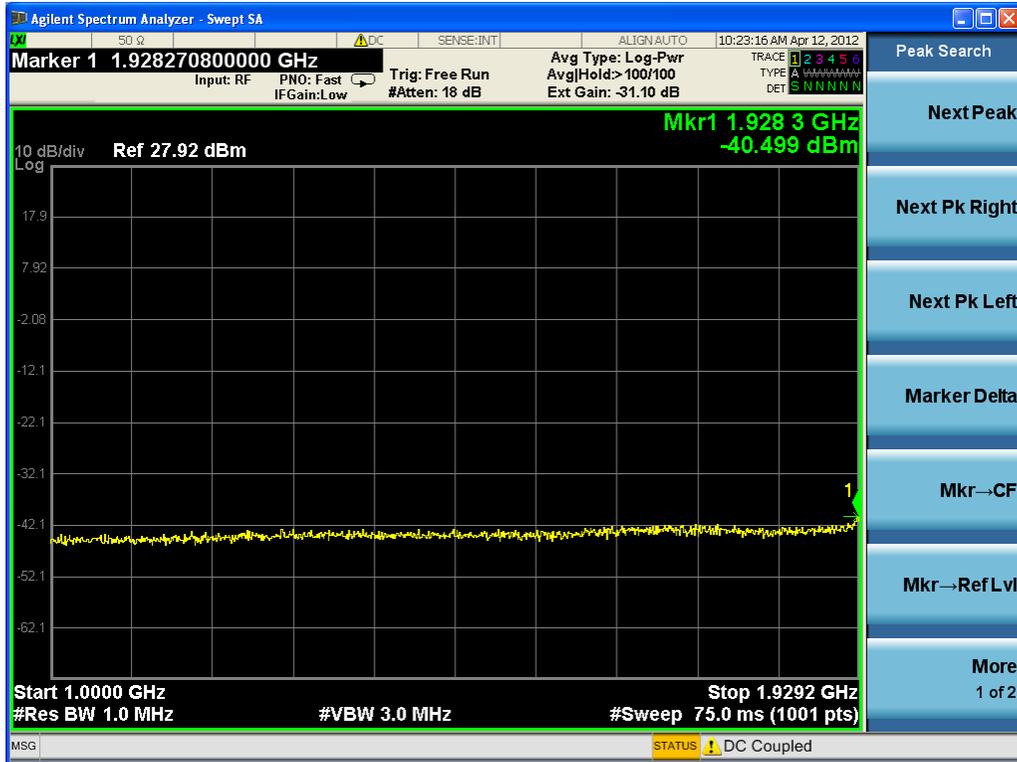
Five carriers



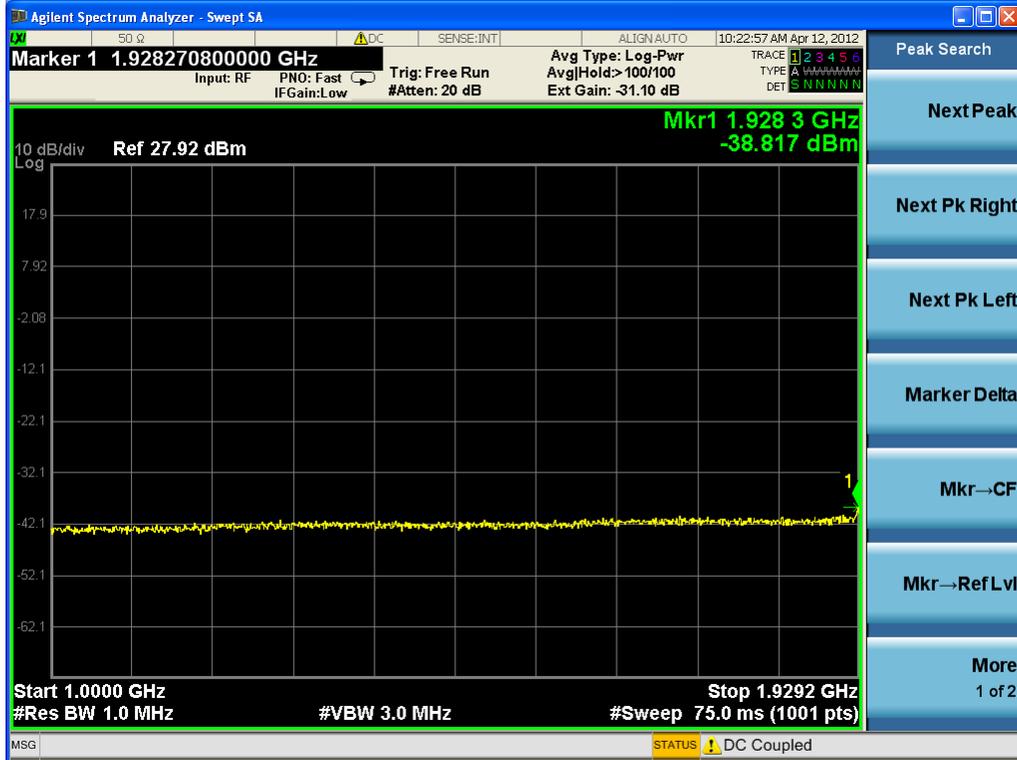


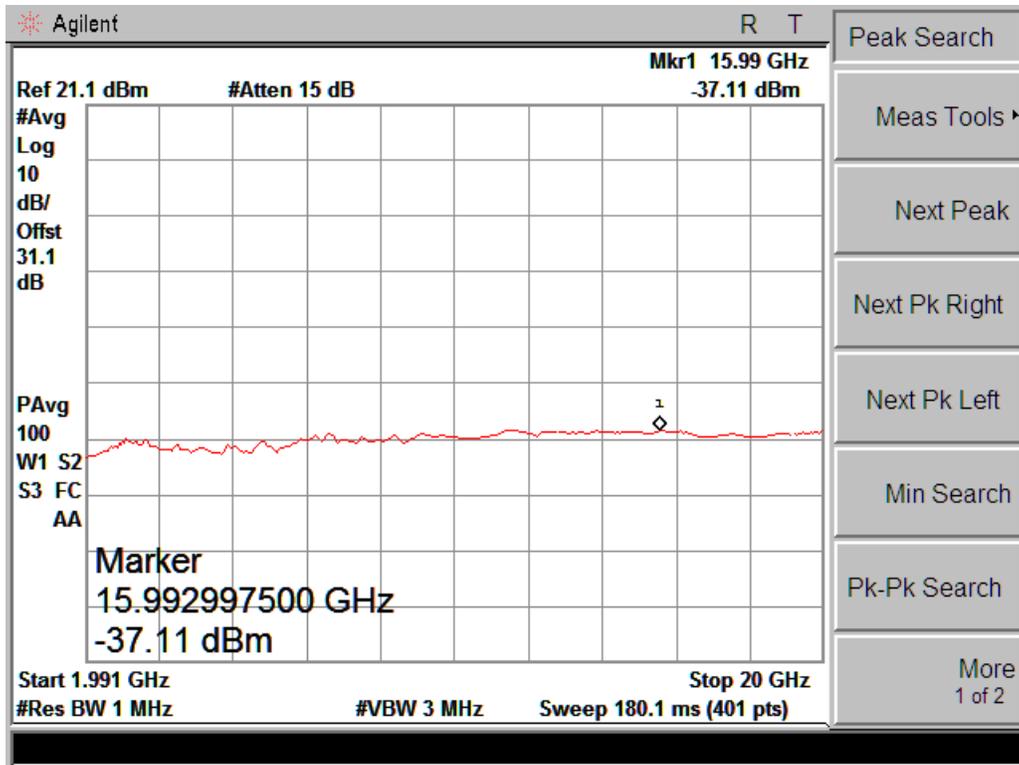
Four Carriers





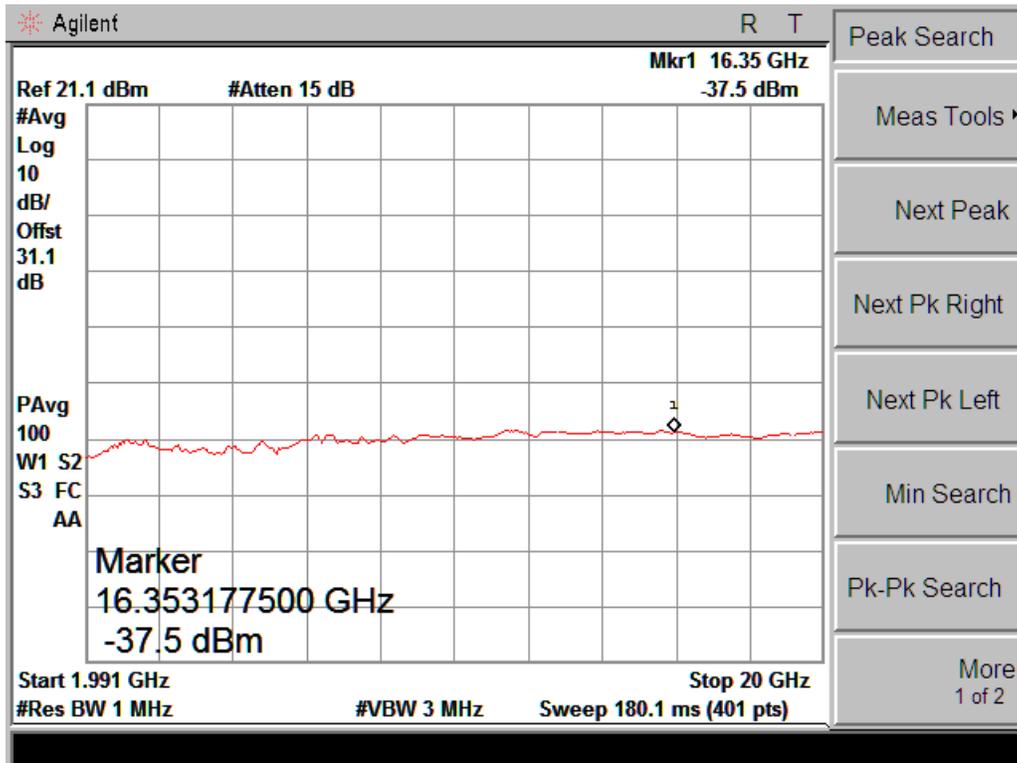
Three carriers



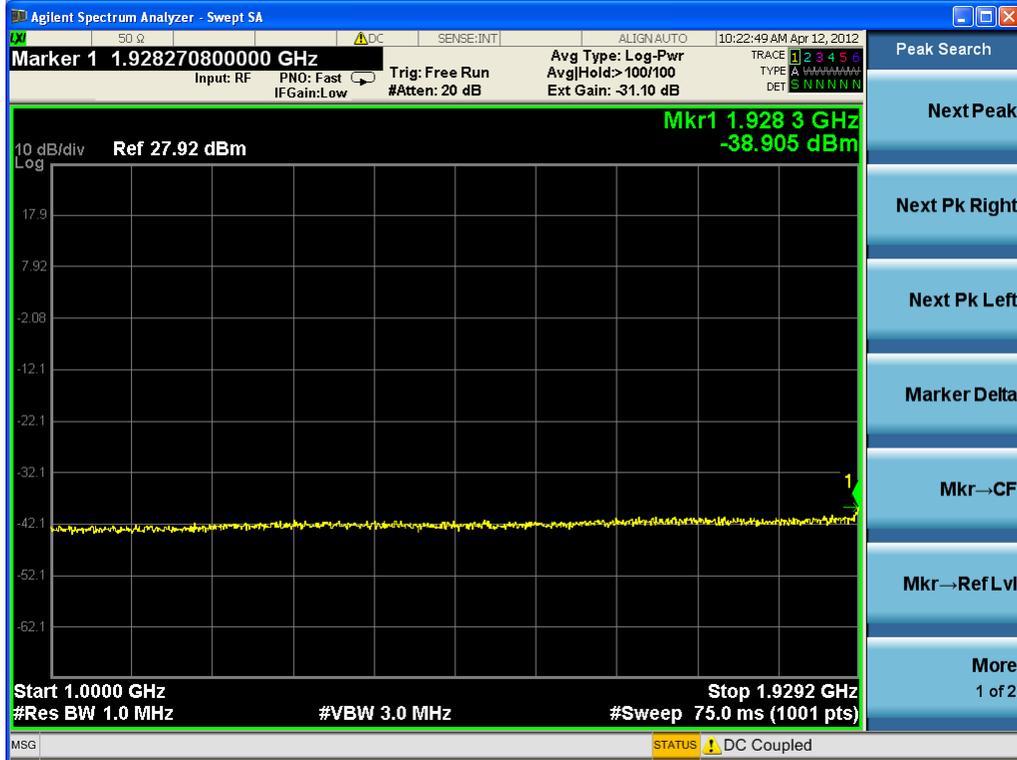


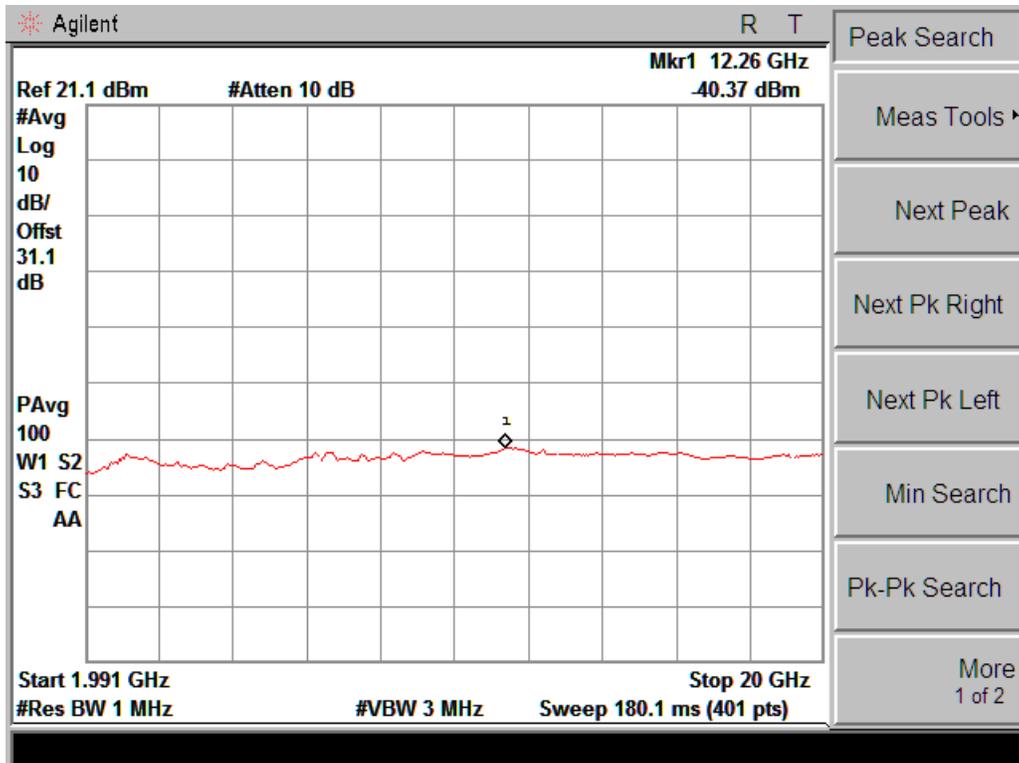
Two carriers





One carrier





5.6 OCCUPIED BANDWIDTH

Applicable Standard: FCC§2.1049, §24.229, §24.238

Test Equipment List and Details:

| Manufacturer | Description | Model | Serial Number | Calibration Date | Calibration Due Date |
|--------------|------------------------------|--------------|----------------|------------------|----------------------|
| Agilent | MXA Series Spectrum Analyzer | N9020A | MY48011941 | 2012-4-9 | 2013-4-8 |
| Atten | 30dB Attenuator | ATSI150-4-30 | 11300110201221 | 2011-7-11 | 2012-7-11 |
| Forstar | Forstar RF Cable | 002 | 1034 | 2012-4-9 | 2013-4-8 |

***statement of traceability:** ZTE Corporation Reliability Testing Center attest that all calibration have been performed per the NVLAP requirements, traceable to NIST.

Test Procedure

The RF out of the transmitter was connected to the input of the spectrum analyzer through sufficient attenuation. The resolution bandwidth of the spectrum analyzer was set at 1% of the span or higher and 99%Power bandwidth was recorded.

Environmental Conditions

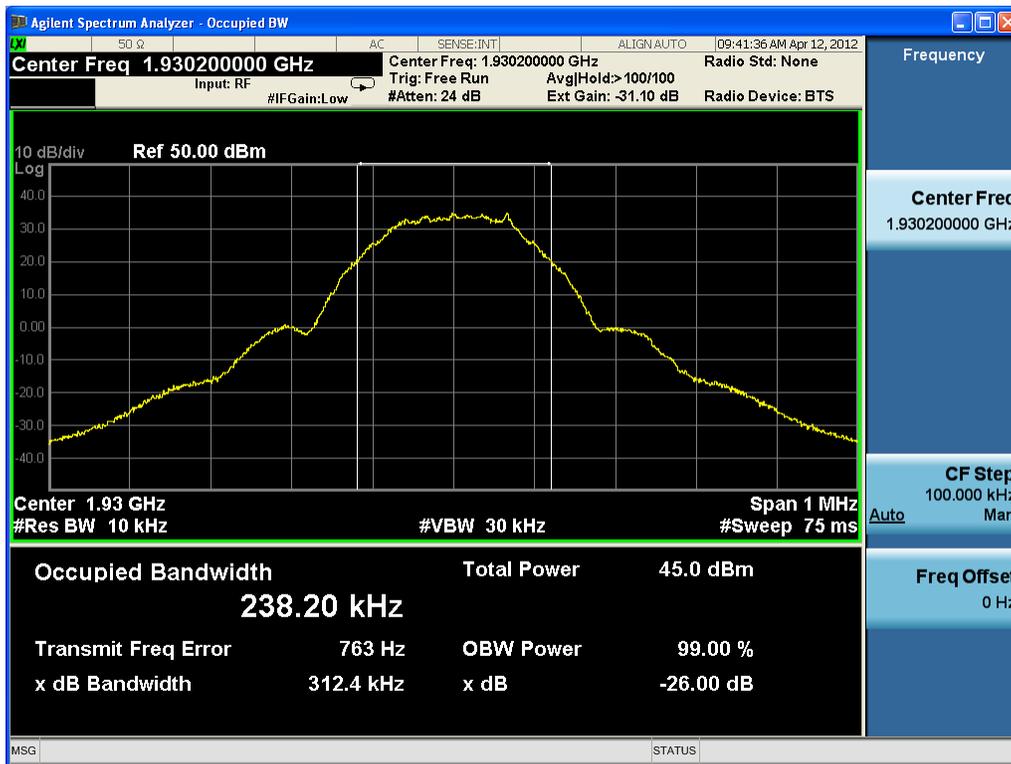
| | |
|--------------------|----------|
| Temperature: | 20 ° C |
| Relative Humidity: | 53% |
| ATM Pressure: | 1009mbar |

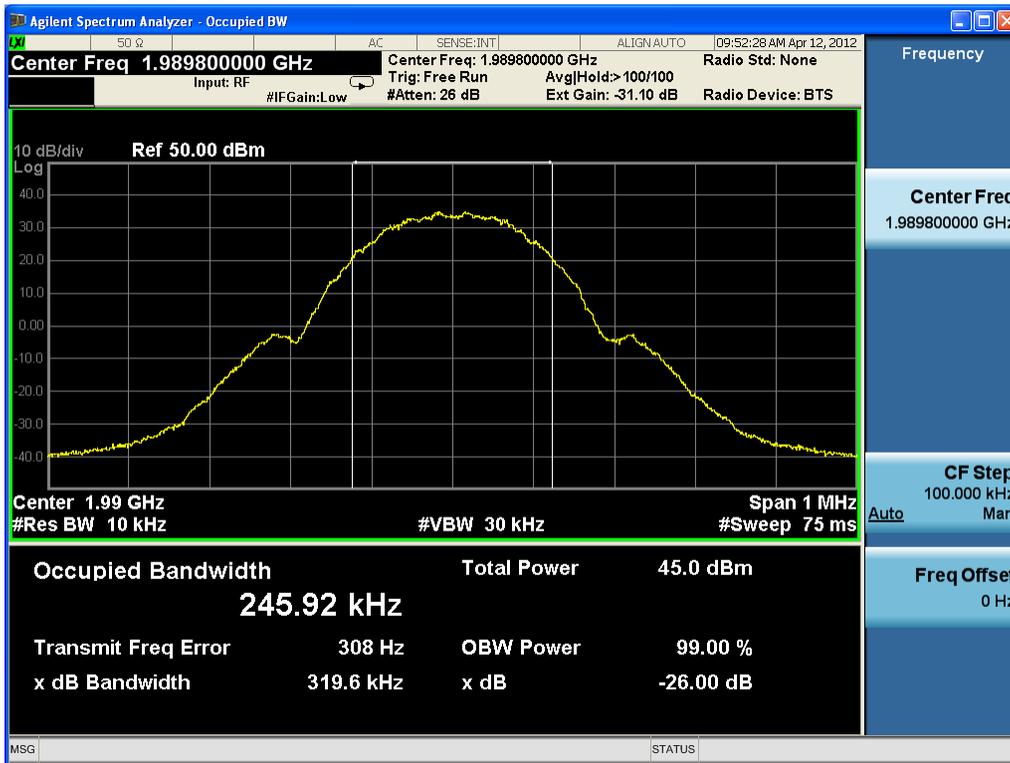
Test Result: Pass

Test Mode: Transmitting GSM

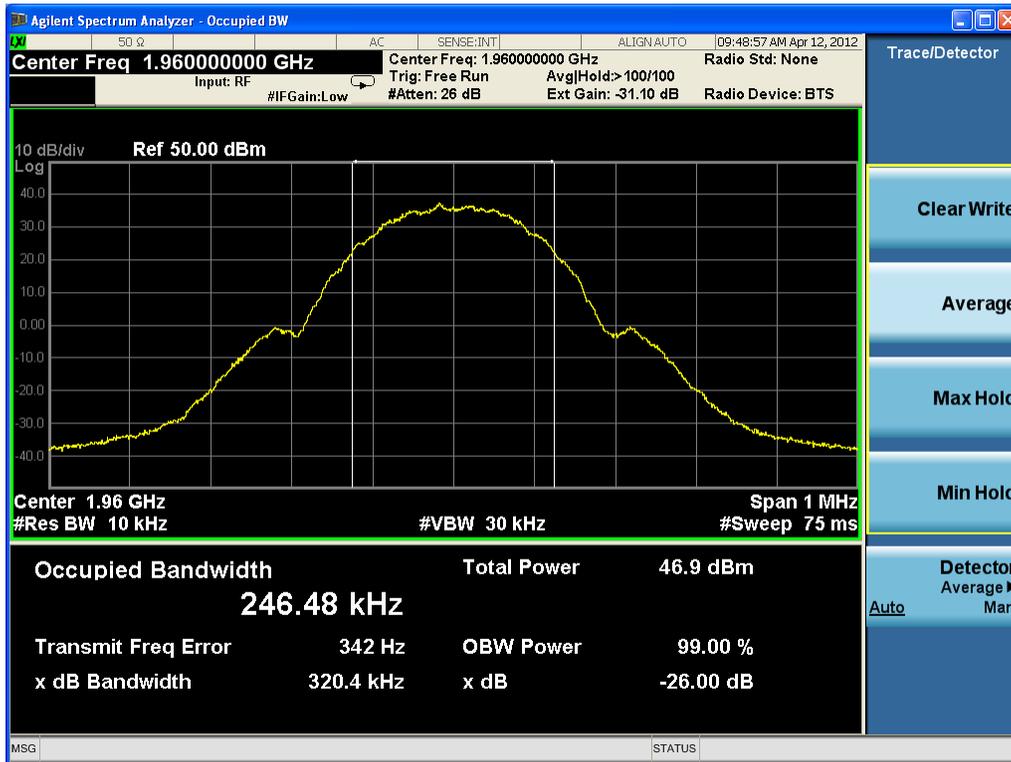
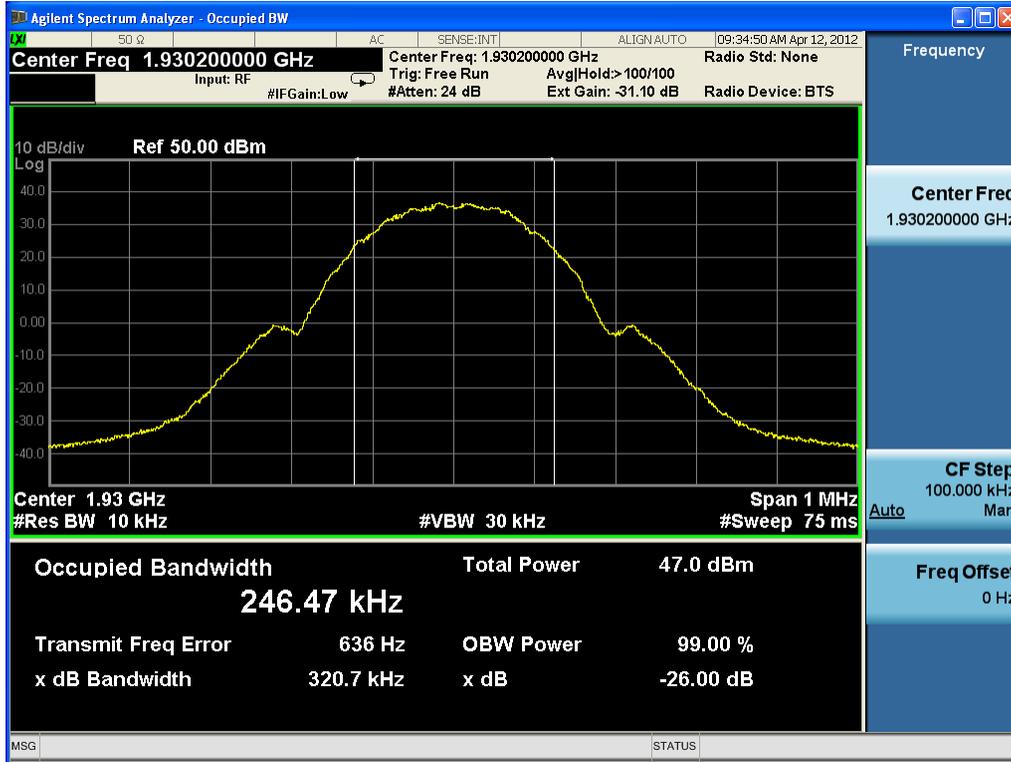
Test Data

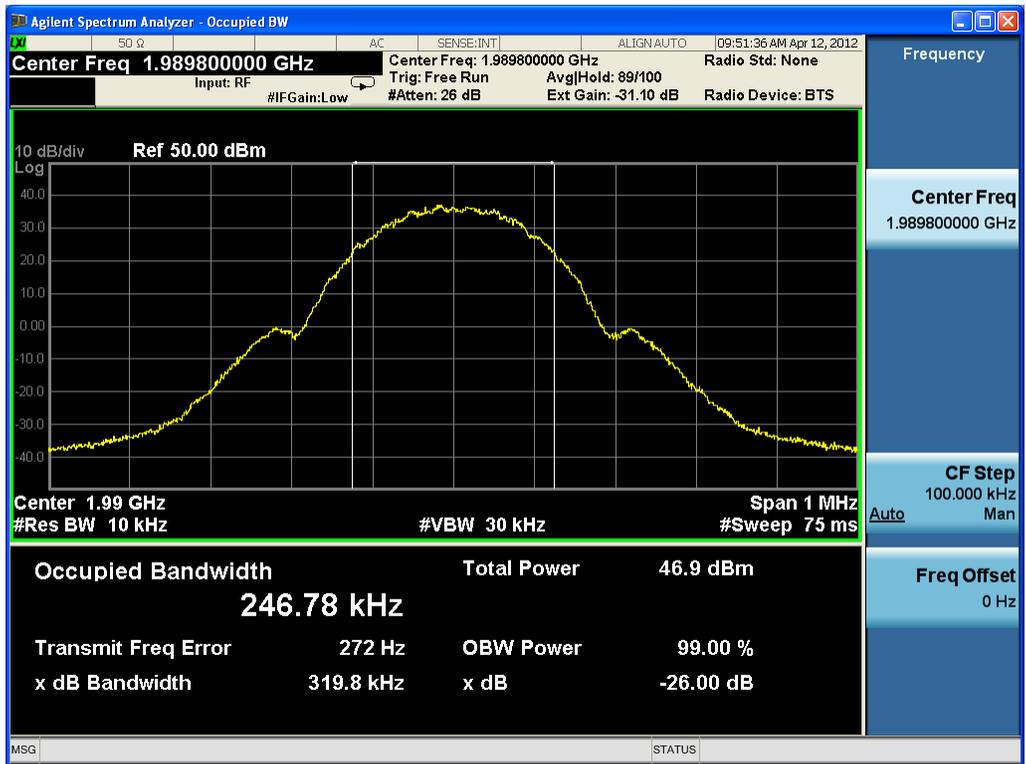
| Modulation | Frequency (MHz) | 99% Power Bandwidth (kHz) | Limit (kHz) |
|------------|--------------------|---------------------------|-------------|
| 8PSK | 1930.2/1960/1989.8 | 238.20/239.57/245.92 | 250 |





| Modulation | Frequency (MHz) | 99% Power Bandwidth (kHz) | Limit (kHz) |
|------------|--------------------|---------------------------|-------------|
| GMSK | 1930.2/1960/1989.8 | 246.47/246.48/246.78 | 250 |





5.7 BAND EDGES

Applicable Standard: FCC §2.1051 §24.238

According to §2.1051 and §24.238, 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 limit (dBm) should $< P - (43 + 10 \log(P)) = -13 \text{dBm}$.

Test Equipment List and Details

| Manufacturer | Description | Model | Serial Number | Calibration Date | Calibration Due Date |
|--------------|------------------------------|--------------|----------------|------------------|----------------------|
| Agilent | MXA Series Spectrum Analyzer | N9020A | MY48011941 | 2012-4-9 | 2013-4-8 |
| Atten | 30dB Attenuator | ATSI150-4-30 | 11300110201221 | 2011-7-11 | 2012-7-11 |
| Forstar | Forstar RF Cable | 002 | 1034 | 2012-4-9 | 2013-4-8 |

***statement of traceability:** ZTE Corporation Reliability Testing Center attest that all calibration have been performed per the NVLAP requirements , traceable to NIST.

Test Procedure

The RF output of the transmitter was connected to the input of the spectrum analyzer through sufficient attenuation.
The center of the spectrum analyzer was set to block edge frequency.

Test Data Environmental Conditions

| | |
|--------------------|----------|
| Temperature: | 20 °C |
| Relative Humidity: | 53% |
| ATM Pressure: | 1009mbar |

Test Result: Pass

Test Mode: Transmitting GSM

Test Data

Six carriers

| Frequency channel | Max bandedge Emission (dBm) | Limit (dBm) |
|---|-----------------------------|-------------|
| 1930.2/1930.8/1931.4/1932/1932.6/1933.2 | -14.961 | -13.00 |
| 1986.8/1987.4/1988/1988.6/1989.2/1989.8 | -15.699 | -13.00 |





Five carriers

| Frequency channel | Max bandedge Emission (dBm) | Limit (dBm) |
|----------------------------------|-----------------------------|-------------|
| 1930.2/1930.8/1931.4/1932/1932.6 | -15.425 | -13.00 |
| 1987.4/1988/1988.6/1989.2/1989.8 | -16.277 | -13.00 |



Four carriers

| Frequency channel | Max bandedge Emission (dBm) | Limit (dBm) |
|---------------------------|-----------------------------|-------------|
| 1930.2/1930.8/1931.4/1932 | -13.928 | -13.00 |
| 1988/1988.6/1989.2/1989.8 | -15.890 | -13.00 |





Three carriers

| Frequency channel | Max bandedge Emission (dBm) | Limit (dBm) |
|----------------------|-----------------------------|-------------|
| 1930.2/1930.8/1931.4 | -14.118 | -13.00 |
| 1988.6/1989.2/1989.8 | -15.661 | -13.00 |



Two carriers

| Frequency channel | Max bandedge Emission (dBm) | Limit (dBm) |
|-------------------|-----------------------------|-------------|
| 1930.2/1930.8 | -14.202 | -13.00 |
| 1989.2/1989.8 | -16.951 | -13.00 |





One carrier

| Frequency channel | Max bandedge Emission (dBm) | Limit (dBm) |
|-------------------|-----------------------------|-------------|
| 1930.2 | -14.514 | -13.00 |
| 1989.8 | -17.049 | -13.00 |



5.8 FREQUENCY STABILITY

Applicable Standard: FCC § 2.1055

Requirements: FCC § 2.1055 (a)(d), The frequency stability shall be sufficient to ensure that the fundamental emissions stay within the authorized bands of operation.

Test Equipment List and Details

| Manufacturer | Description | Model | Serial Number | Calibration Date | Calibration Due Date |
|--------------|------------------------------|--------------|----------------|------------------|----------------------|
| GZ-ESPEC | Temperature Chamber | EW0470 | 06113028 | 2012-1-26 | 2013-1-26 |
| Agilent | MXA Series Spectrum Analyzer | N9020A | MY48011941 | 2012-4-10 | 2013-4-9 |
| Atten | 40dB Attenuator | ATSI150-4-30 | 11300110201221 | 2011-7-11 | 2012-7-11 |
| Forstar | Forstar RF Cable | 002 | 1034 | 2012-4-9 | 2013-4-8 |

***statement of traceability:** ZTE Corporation Reliability Testing Center attest that all calibration have been performed per the NVLAP requirements , traceable to NIST.

Test Procedure

Frequency Stability vs. Temperature: The equipment under test was connected to an external DC power supply and the RF output was connected to a Spectrum Analyzer via feed-through attenuators. The EUT was placed inside the temperature chamber. The DC leads and RF output cable exited the chamber through an opening made for the purpose.

After the temperature stabilized for approximately 150 minutes, the frequency output was recorded from the counter.

Frequency Stability vs. Voltage: An external variable DC power supply Source. The voltage was set to 115% of the nominal value and was then decreased until the transmitter light no longer illuminated; i.e., the end point. The output frequency was recorded for each voltage.

Environmental Conditions

| | |
|-------------------|-------|
| Normal condition: | 25° C |
|-------------------|-------|

| | |
|--------------------|-----------|
| Relative Humidity: | 54% |
| ATM Pressure: | 1011 mbar |

Test Result: Pass

Test Mode: Transmitting GSM

Test Data

Frequency Stability Versus Temperature

| Frequency Stability vs. Temperature | | | | | |
|-------------------------------------|--------------------|----------------------------|-----------|-----------|--------|
| B(1930.2M) | | | | | |
| Temperature | Power Supplied Vdc | Frequency Measure Error Hz | Error ppm | Limit ppm | Result |
| -40 | -48 | -0.39 | -0.00020 | 0.02 | PASS |
| -30 | -48 | 1.07 | 0.00055 | 0.02 | PASS |
| -20 | -48 | -0.26 | -0.00013 | 0.02 | PASS |
| -10 | -48 | -0.54 | -0.00028 | 0.02 | PASS |
| 0 | -48 | -0.21 | -0.00011 | 0.02 | PASS |
| 10 | -48 | 0.88 | 0.00046 | 0.02 | PASS |
| 20 | -48 | 0.75 | 0.00039 | 0.02 | PASS |
| 30 | -48 | 0.68 | 0.00035 | 0.02 | PASS |
| 40 | -48 | -0.46 | -0.00024 | 0.02 | PASS |
| 50 | -48 | -1.15 | -0.00060 | 0.02 | PASS |
| 55 | -48 | -0.86 | -0.00045 | 0.02 | PASS |
| M(1960M) | | | | | |
| -40 | -48 | 0.78 | 0.00040 | 0.02 | PASS |
| -30 | -48 | 0.96 | 0.00049 | 0.02 | PASS |
| -20 | -48 | -0.59 | -0.00030 | 0.02 | PASS |
| -10 | -48 | 0.15 | 0.00008 | 0.02 | PASS |
| 0 | -48 | -1.12 | -0.00057 | 0.02 | PASS |
| 10 | -48 | 1.88 | 0.00096 | 0.02 | PASS |
| 20 | -48 | 0.68 | 0.00035 | 0.02 | PASS |
| 30 | -48 | -1.55 | -0.00079 | 0.02 | PASS |

| | | | | | |
|-------------------|-----|-------|----------|------|------|
| 40 | -48 | -0.36 | -0.00018 | 0.02 | PASS |
| 50 | -48 | 2.16 | 0.00110 | 0.02 | PASS |
| 55 | -48 | 2.23 | 0.00114 | 0.02 | PASS |
| T(1989.8M) | | | | | |
| -40 | -48 | 0.99 | 0.00050 | 0.02 | PASS |
| -30 | -48 | 0.87 | 0.00044 | 0.02 | PASS |
| -20 | -48 | -0.58 | -0.00029 | 0.02 | PASS |
| -10 | -48 | -0.45 | -0.00023 | 0.02 | PASS |
| 0 | -48 | 1.48 | 0.00074 | 0.02 | PASS |
| 10 | -48 | -1.11 | -0.00056 | 0.02 | PASS |
| 20 | -48 | -0.13 | -0.00007 | 0.02 | PASS |
| 30 | -48 | 0.77 | 0.00039 | 0.02 | PASS |
| 40 | -48 | -0.47 | -0.00024 | 0.02 | PASS |
| 50 | -48 | 0.94 | 0.00047 | 0.02 | PASS |
| 55 | -48 | 0.92 | 0.00046 | 0.02 | PASS |

Frequency Stability Versus Voltage

| Frequency Stability vs. Voltage | | | | | |
|--|--------------------|-----------------------------------|------------------|------------------|---------------|
| B(1930.2M) | | | | | |
| Voltage Vdc | Temperature | Frequency Measure Error Hz | Error ppm | Limit ppm | Result |
| -37 | 20 | 0.76 | 0.00039 | 0.02 | PASS |
| -39 | 20 | -0.48 | -0.00025 | 0.02 | PASS |
| -41 | 20 | 0.84 | 0.00044 | 0.02 | PASS |
| -43 | 20 | -1.38 | -0.00071 | 0.02 | PASS |
| -45 | 20 | -0.66 | -0.00034 | 0.02 | PASS |
| -47 | 20 | -0.23 | -0.00012 | 0.02 | PASS |
| -49 | 20 | -1.21 | -0.00063 | 0.02 | PASS |
| -51 | 20 | -0.47 | -0.00024 | 0.02 | PASS |
| -53 | 20 | -0.28 | -0.00015 | 0.02 | PASS |
| -55 | 20 | 1.76 | 0.00091 | 0.02 | PASS |
| -57 | 20 | 0.99 | 0.00051 | 0.02 | PASS |
| -59 | 20 | -0.18 | -0.00009 | 0.02 | PASS |
| -61 | 20 | -0.58 | -0.00030 | 0.02 | PASS |
| -62 | 20 | -0.21 | -0.00011 | 0.02 | PASS |
| M(1960M) | | | | | |
| -37 | 20 | -1.69 | -0.00086 | 0.02 | PASS |
| -39 | 20 | 1.86 | 0.00095 | 0.02 | PASS |
| -41 | 20 | -1.59 | -0.00081 | 0.02 | PASS |

| | | | | | |
|-------------------|----|-------|----------|------|------|
| -43 | 20 | -1.15 | -0.00059 | 0.02 | PASS |
| -45 | 20 | -1.06 | -0.00054 | 0.02 | PASS |
| -47 | 20 | 1.98 | 0.00101 | 0.02 | PASS |
| -49 | 20 | 1.86 | 0.00095 | 0.02 | PASS |
| -51 | 20 | 0.88 | 0.00045 | 0.02 | PASS |
| -53 | 20 | 1.26 | 0.00064 | 0.02 | PASS |
| -55 | 20 | -1.39 | -0.00071 | 0.02 | PASS |
| -57 | 20 | -1.64 | -0.00084 | 0.02 | PASS |
| -59 | 20 | -1.48 | -0.00076 | 0.02 | PASS |
| -61 | 20 | 0.95 | 0.00048 | 0.02 | PASS |
| -62 | 20 | -1.51 | -0.00077 | 0.02 | PASS |
| T(1989.8M) | | | | | |
| -37 | 20 | 0.75 | 0.00038 | 0.02 | PASS |
| -39 | 20 | -0.26 | -0.00013 | 0.02 | PASS |
| -41 | 20 | -0.39 | -0.00020 | 0.02 | PASS |
| -43 | 20 | 1.52 | 0.00076 | 0.02 | PASS |
| -45 | 20 | -0.05 | -0.00003 | 0.02 | PASS |
| -47 | 20 | -0.19 | -0.00010 | 0.02 | PASS |
| -49 | 20 | -0.39 | -0.00020 | 0.02 | PASS |
| -51 | 20 | 1.35 | 0.00068 | 0.02 | PASS |
| -53 | 20 | -0.38 | -0.00019 | 0.02 | PASS |
| -55 | 20 | -0.53 | -0.00027 | 0.02 | PASS |
| -57 | 20 | -0.61 | -0.00031 | 0.02 | PASS |
| -59 | 20 | 1.58 | 0.00079 | 0.02 | PASS |
| -61 | 20 | 1.04 | 0.00052 | 0.02 | PASS |
| -62 | 20 | -0.38 | -0.00019 | 0.02 | PASS |

6 DUAL-MODE OF TEST RESULTS

| FCC RULES | DESCRIPTION OF TEST | RESULT |
|-------------------------|---|-----------|
| §2.1046 §24.232 | Transmitter output Power | Compliant |
| §2.1091 §1.1037 | RF Exposure | Compliant |
| §2.1053 | Spurious Radiated Emissions | Compliant |
| §2.1051, §24.238 | Spurious Emissions AT Antenna Terminals | Compliant |
| §2.1051, §24.238 | Band edges | Compliant |
| §2.1049 §24.229 §24.238 | Occupied Bandwidth | Compliant |

6.1 TRANSMITTER OUTPUT POWER

According to FCC §2.1046 & 24.232, the EIRP (equivalent isotropically radiated power) must not exceed 1640 Watts.

According to RSS-133, SRSP 510 5.1.1 the EIRP (equivalent isotropically radiated power) must not exceed 3280 Watts/MHz for base station transmitters operating in the band of 1930 MHz to 1995 MHz with the antenna height above average terrain up to 300 meters. If used in urban area, the limit should be 1640 Watts/MHz.

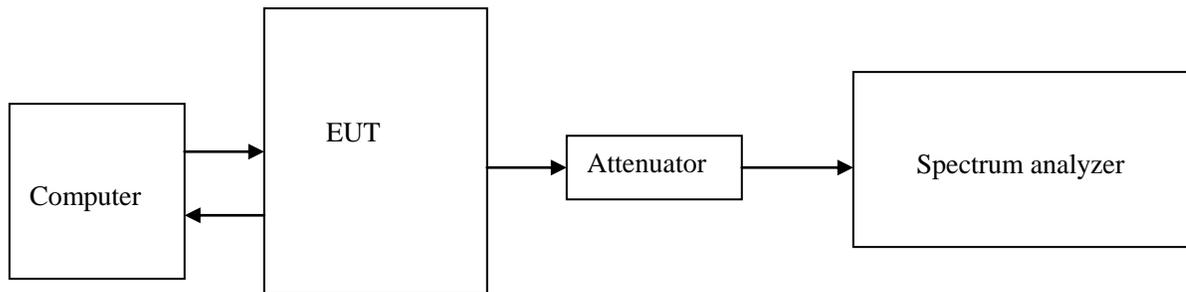
Applicable Standard: FCC §2.1046 §24.232

Test Equipment List and Details

| Manufacturer | Description | Model | Serial Number | Calibration Date | Calibration Due Date |
|--------------|------------------------------|--------------|----------------|------------------|----------------------|
| Agilent | MXA Series Spectrum Analyzer | N9020A | MY48011941 | 2012-4-9 | 2013-4-8 |
| Atten | 30dB Attenuator | ATSI150-4-30 | 11300110201221 | 2011-7-11 | 2012-7-11 |
| Forstar | Forstar RF Cable | 002 | 1034 | 2012-4-9 | 2013-4-8 |

***statement of traceability:** ZTE Corporation Reliability Testing Center attest that all calibration have been performed per the NVLAP requirements , traceable to NIST.

Test Procedure



The RF output of the transmitter was connected to the input of the spectrum analyzer through sufficient attenuation. External attenuation Loss is 30dB, Cable Loss is about 2dB

Environmental Conditions

| | |
|--------------------|-----------|
| Temperature: | 20 °C |
| Relative Humidity: | 53 % |
| ATM Pressure: | 1009 mbar |

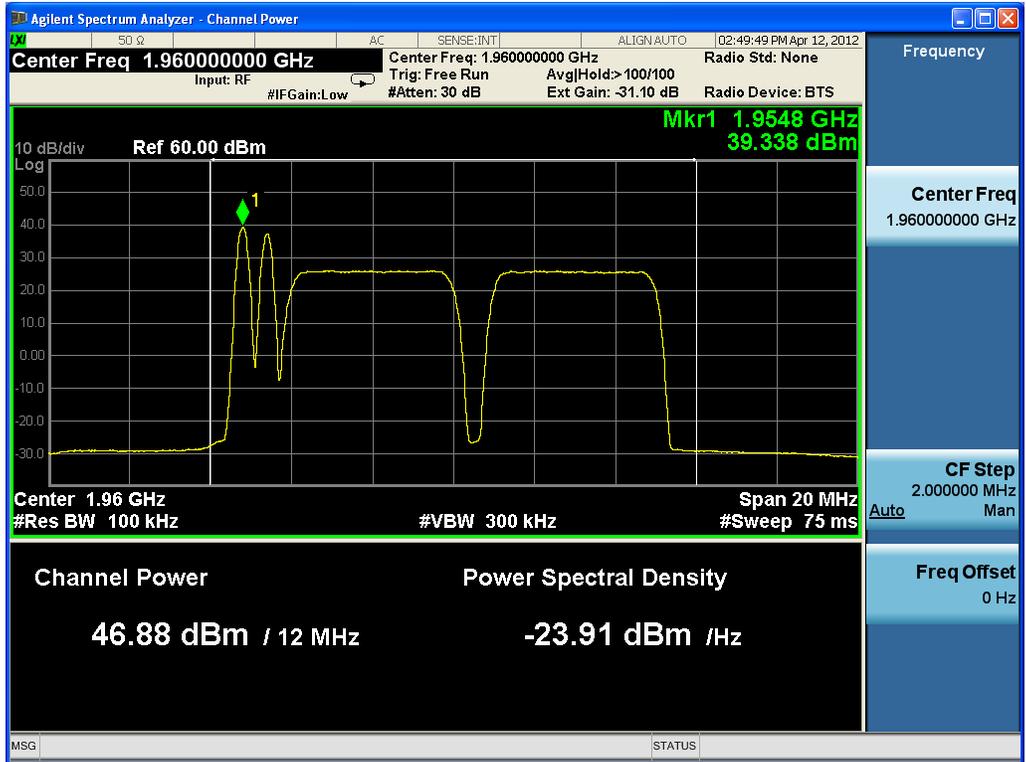
Test Result: Pass

Test Mode: Transmitting 2GSMTRX and 2UMTS carriers and 4GSM TRX and 1UMTS carriers

Test Data:

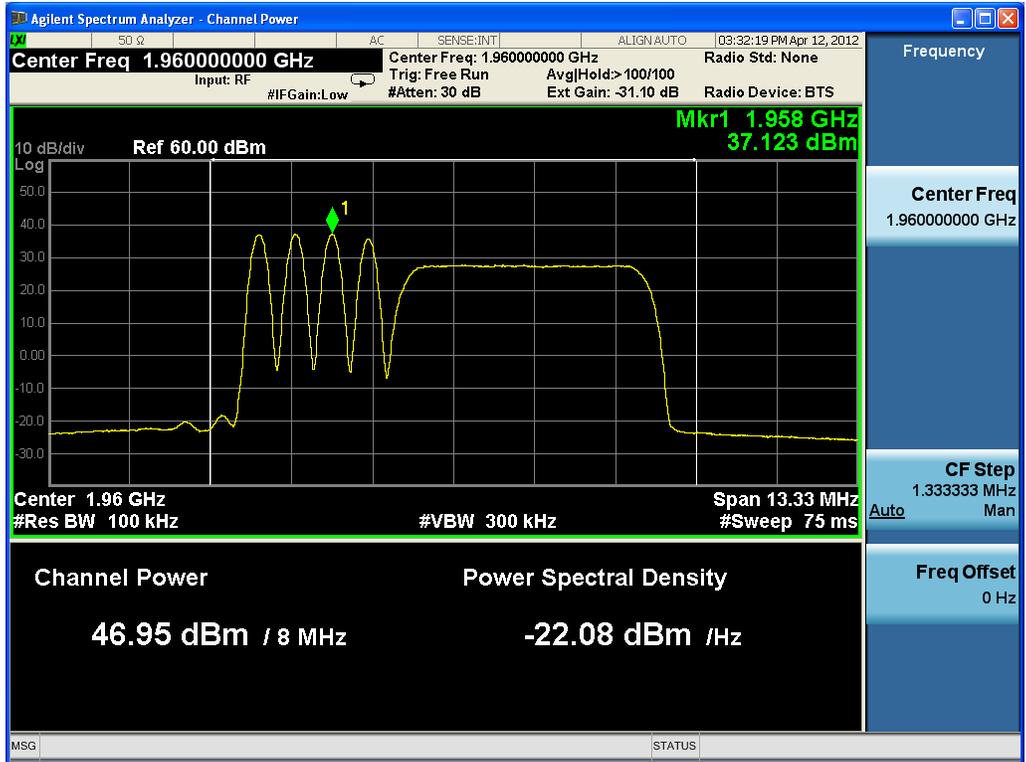
2GSMTRX and 2UMTS carriers

| Center Freq. (MHz) | Frequency (MHz) | Max output Power in dBm |
|-----------------------|-----------------|----------------------------|
| 1960 | 1960 | 46.88 |



4GSM TRX and 1UMTS carriers

| Center Freq. (MHz) | Frequency (MHz) | Max output Power in dBm |
|--------------------|-----------------|-------------------------|
| 1960 | 1960 | 46.95 |



6.2 RF EXPOSURE

Applicable standard: FCC §2.1091 and §1.1037

Limit

According to §1.1307(b)(1), systems operating under the provisions of this section shall be operated in a manner that ensures that the public is not exposed to radio frequency energy level in excess of the Commission’s guidelines.

According to §1.1310 and §2.1091 RF exposure is calculated. Limits for Maximum Permissible Exposure (MPE)

| (B) Limits for General Population/Uncontrolled Exposure | | | | |
|--|-----------------------------------|-----------------------------------|---|---|
| Frequency Range (MHz) | Electric Field Strength (E) (V/m) | Magnetic Field Strength (H) (A/m) | Power Density (S) (mW/cm ²) | Averaging Time E ² , H ² or S (minutes) |
| 0.3-1.34 | 614 | 1.63 | (100)* | 30 |
| 1.34-30 | 824/f | 2.19/f | (180/f ²)* | 30 |
| 30-300 | 27.5 | 0.073 | 0.2 | 30 |
| 300-1500 | -- | -- | f/1500 | 30 |
| 1500-100,000 | -- | -- | 1.0 | 30 |

Test Data

Predication of MPE limit at a given distance

Equation from page 18 of OET Bulletin 65, Edition 97-01

$$S = EIRP / 4\pi R^2$$

Where: S = power density

EIRP= equivalent isotropically radiated power=ERP+2.15dB

R = distance to the center of radiation of the antenna= [(ERP+2.15dB)/4πS]^{1/2}

Maximum EIRP, In general, the equivalent isotropically radiated power (EIRP) of base transmitters and cellular repeaters must not exceed 1640 Watts.

Frequency is between 1500MHz and 100000MHz, and the Maximum S=1.0mW/cm²
R=3.61m.

This equipment should be installed and operated with minimum distance 3.61m between the radiator& your body.

Test Result: pass

6.3 SPURIOUS RADIATED EMISSIONS

Applicable Standard: FCC CFR 47, §2.1053

Test Equipment List and Details

| Manufacturer | Equipment | Model | Serial Number | Last Cal. | Cal. Interval |
|--------------|--------------------------------------|----------|---------------|------------|---------------|
| R&S | SIGNAL GENERATOR | SMR20 | A00017351 | 2012-9-26 | 1 year |
| Albatross | Anechoic Chamber | 3m Site | A00017354 | 2012-10-29 | 1 year |
| R&S | EMI Test Receiver | ESIB26 | 100058 | 2012-10-29 | 1 year |
| R&S | Ultra Breitband Antennas | HL562 | 100022 | 2012-7-29 | 1 year |
| R&S | Double-Ridged Waveguide Horn Antenna | HF906 | 100032 | 2012-7-29 | 1 year |
| R&S | Double-Ridged Waveguide Horn Antenna | HF906 | 100446 | 2012-7-29 | 1 year |
| SCHWARZ-BECK | Biconical Antenna | VUBA9117 | 9117-122 | 2012-7-29 | 1 year |

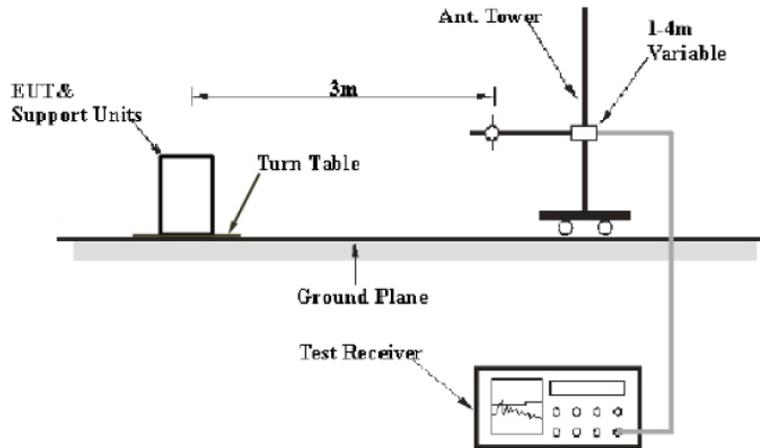
***statement of traceability:** ZTE Corporation Testing lab attest that all calibration have been performed per the NVLAP requirements , traceable to NIST.

Measurement Uncertainty

All measurements involve certain levels of uncertainties, especially in field of EMC. The factors contributing to uncertainties are spectrum analyzer, cable loss, antenna factor calibration, antenna directivity, antenna factor variation with height, antenna phase center variation, antenna factor frequency interpolation, measurement distance variation, site imperfections, mismatch (average), and system repeatability.

Based on NIS 81, The Treatment of Uncertainty in EMC Measurements, the best estimate of the uncertainty of a radiated emissions measurement at the EMC lab of ZTE Corp. is 3.6dB.

EUT Setup



The radiated emission tests were performed in the 3-meter Chamber, using the setup accordance with the FCC part 2.1053. The specification used was the FCC 2.1053 limits.

Test Procedure

The transmitter was placed on a wooden turntable, and it was transmitting into a non-radiating load, which was also placed on the turntable.

The measurement antenna was placed at a distance of 3 meters from the EUT. During the tests, the antenna height and polarization as well as EUT azimuth were varied in order to identify the maximum level of emissions from the EUT. The test was performed by placing the EUT on 3-orthogonal axis.

The frequency range up to tenth harmonic of the fundamental frequency was investigated.

Remove the EUT and replace it with substitution antenna. A signal generator was connected to the substitution antenna by a non-radiating cable. The absolute levels of the spurious emissions were measured by the substitution.

Spurious emissions in dB = 10 lg (TX pwr in Watts/0.001)-the absolute level

Spurious attenuation limit in dB = 43+10 lg P (power out in Watts)

The resolution bandwidth of the spectrum analyzer was set at 100KHz for 30MHz to 1GHz scanning, set at 1MHz or 3MHz for 1GHz to 20GHz scanning.

Test Results Summary: PASS

Environmental Conditions

| | |
|--------------------|-----------|
| Temperature: | 26°C |
| Relative Humidity: | 60 % |
| ATM Pressure: | 1009 mbar |

Test data

| Indicated | | Test Antenna | Substituted | | Cable Loss(dB) | Effective radiated power (dBm) | Dipole Antenna | Absolute Level (dBm) | Limit (dBm) | Margin (dB) |
|-----------------|-------------------|--------------|-------------|-------------------------|----------------|--------------------------------|----------------|----------------------|-------------|-------------|
| Frequency (GHz) | Amp. (dB μ V) | Polar H/V | Level (dBm) | Antenna Gain Correction | | | | | | |
| 63.046092 | 26.01 | V | -70.18 | -27.24 | 0.6 | -98.02 | 2.15 | -100.17 | -13 | 87.17 |
| 634.549098 | 26.43 | V | -70.08 | -1.09 | 2.1 | -73.27 | 2.15 | -75.42 | -13 | 62.42 |
| 974.729459 | 31.16 | V | -70.73 | -2.82 | 2.6 | -76.15 | 2.15 | -78.3 | -13 | 65.3 |
| 1384.76954 | 46.62 | V | -61.34 | 4.25 | 3.1 | -60.19 | 2.15 | -62.34 | -13 | 49.34 |
| 2991.98397 | 58.48 | V | -52.49 | 7.95 | 4.6 | -49.14 | 2.15 | -51.29 | -13 | 38.29 |
| 169.95992 | 23.09 | H | -81.07 | -3.24 | 1.1 | -85.41 | 2.15 | -87.56 | -13 | 74.56 |
| 607.334669 | 27.78 | H | -73.62 | -1.39 | 2 | -77.01 | 2.15 | -79.16 | -13 | 66.16 |
| 992.224449 | 31.09 | H | -72.58 | -2.59 | 2.7 | -77.87 | 2.15 | -80.02 | -13 | 67.02 |
| 1388.77756 | 46.41 | H | -64.12 | 4.25 | 3.1 | -62.97 | 2.15 | -65.12 | -13 | 52.12 |
| 1981.96393 | 90.64 | H | -18.93 | 6.55 | 3.8 | -16.18 | 2.15 | -18.33 | -13 | 5.33 |
| 2963.92786 | 57.49 | H | -47.97 | 7.95 | 4.6 | -44.62 | 2.15 | -46.77 | -13 | 33.77 |

Radiation emission spurious below 3GHz

| Indicated | | Test Antenna | Substituted | | Cable Loss(dB) | Effective radiated power (dBm) | Dipole Antenna | Absolute Level (dBm) | Limit (dBm) | Margin (dB) |
|-----------------|-------------------|--------------|-------------|-------------------------|----------------|--------------------------------|----------------|----------------------|-------------|-------------|
| Frequency (GHz) | Amp. (dB μ V) | Polar H/V | Level (dBm) | Antenna Gain Correction | | | | | | |
| 3953.90782 | 49.47 | V | -46.39 | 7.75 | 5.3 | -43.94 | 2.15 | -46.09 | -13 | 33.09 |
| 5276.55311 | 45.53 | V | -52.05 | 8.55 | 6.2 | -49.7 | 2.15 | -51.85 | -13 | 38.85 |
| 5941.88377 | 58.8 | V | -46.04 | 9.05 | 6.6 | -43.59 | 2.15 | -45.74 | -13 | 32.74 |
| 9755.51102 | 54.47 | V | -54.37 | 9.95 | 9 | -53.42 | 2.15 | -55.57 | -13 | 42.57 |
| 13282.5651 | 59.36 | V | -41.87 | 11.85 | 10.2 | -40.22 | 2.15 | -42.37 | -13 | 29.37 |
| 17933.8677 | 72.31 | V | -39.56 | 8.95 | 12.2 | -42.81 | 2.15 | -44.96 | -13 | 31.96 |
| 3961.92385 | 50.92 | H | -51.89 | 7.75 | 5.3 | -49.44 | 2.15 | -51.59 | -13 | 38.59 |
| 5268.53707 | 45.53 | H | -54.97 | 8.55 | 6.2 | -52.62 | 2.15 | -54.77 | -13 | 41.77 |
| 5941.88377 | 54.63 | H | -50.01 | 9.05 | 6.6 | -47.56 | 2.15 | -49.71 | -13 | 36.71 |
| 9843.68738 | 53.43 | H | -55.98 | 9.95 | 8.9 | -54.93 | 2.15 | -57.08 | -13 | 44.08 |
| 13348.6974 | 58.86 | H | -53.49 | 11.85 | 10.2 | -51.84 | 2.15 | -53.99 | -13 | 40.99 |
| 17867.7355 | 72.1 | H | -35.07 | 8.95 | 12.2 | -38.32 | 2.15 | -40.47 | -13 | 27.47 |

Radiation emission spurious above 3GHz

6.4 SPURIOUS EMISSIONS AT ANTENNA TERMINALS

Applicable Standard: FCC§2.1051, §24.238

The spectrum was to be investigated to the tenth harmonics of the highest fundamental frequency as specified .

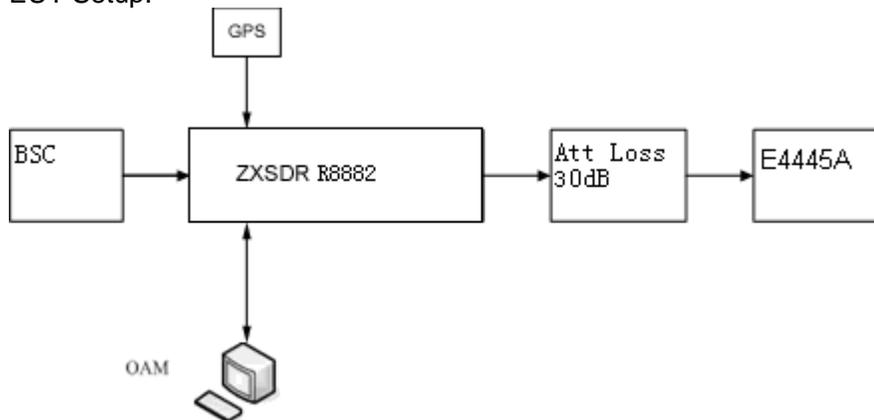
Test Equipment List and Details

| Manufacturer | Description | Model | Serial Number | Calibration Date | Calibration Due Date |
|--------------|------------------------------|--------------|----------------|------------------|----------------------|
| Agilent | MXA Series Spectrum Analyzer | N9020A | MY48011941 | 2012-4-9 | 2013-4-8 |
| Atten | 30dB Attenuator | ATSI150-4-30 | 11300110201221 | 2011-7-11 | 2012-7-11 |
| Forstar | Forstar RF Cable | 002 | 1034 | 2012-4-9 | 2013-4-8 |

***statement of traceability:** ZTE Corporation Reliability Testing Center attest that all calibration have been performed per the NVLAP requirements, traceable to NIST.

Test Procedure

EUT Setup:



REMARKS: Attenuator loss (dB)=30dB, Cable Loss (dB)=2dB.

The RF output of the transceiver was connected to a spectrum analyzer through appropriate attenuation. The resolution bandwidth of the spectrum analyzer was set at 1MHz for 30MHz to 1GHz scanning, set at 1MHz for 1GHz to 20GHz scanning. Sufficient scans were taken to

show any out of band emissions up to 10th harmonic.

Test Data Environmental Conditions

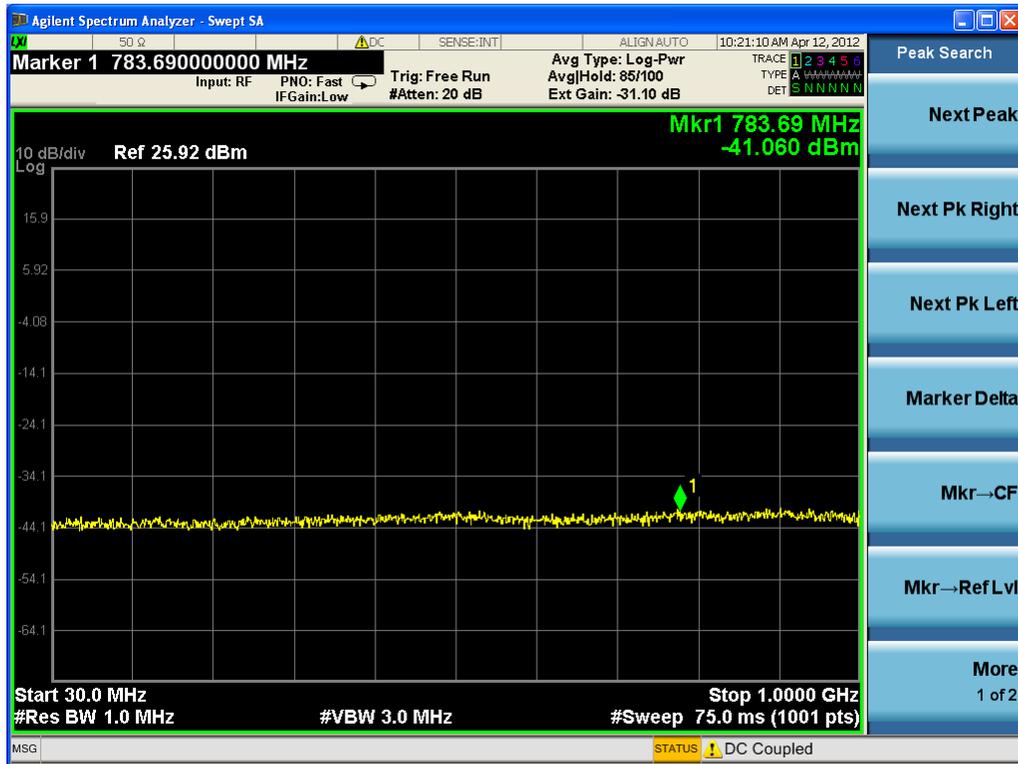
| | |
|--------------------|-----------|
| Temperature: | 20 °C |
| Relative Humidity: | 53 % |
| ATM Pressure: | 1009 mbar |

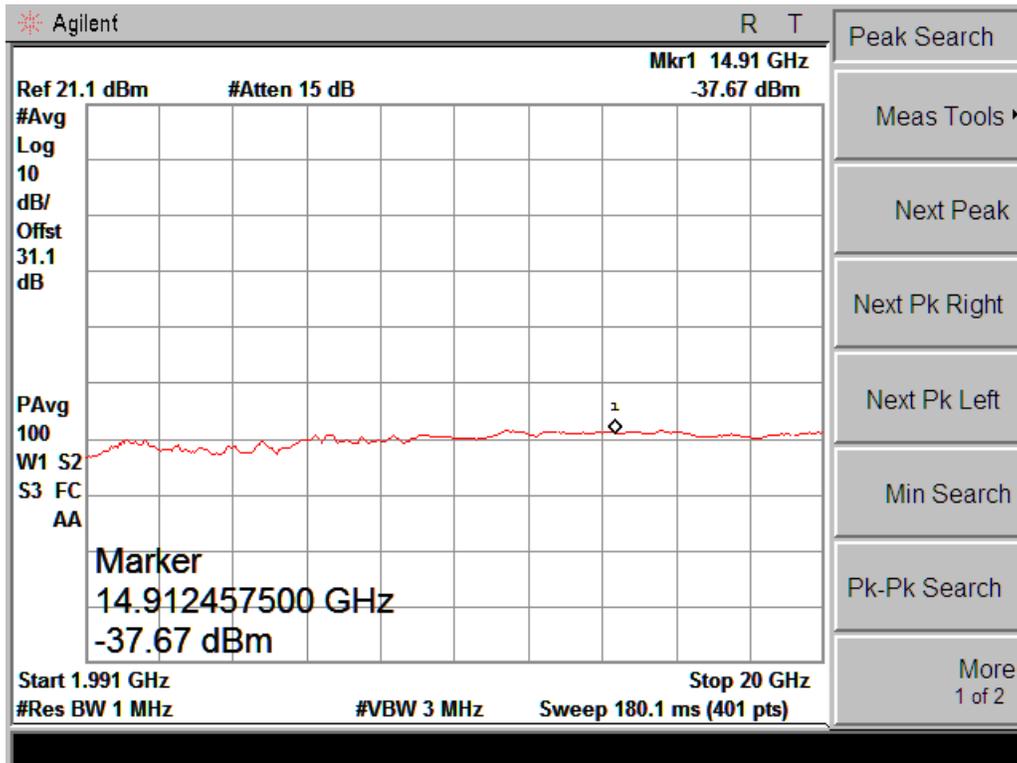
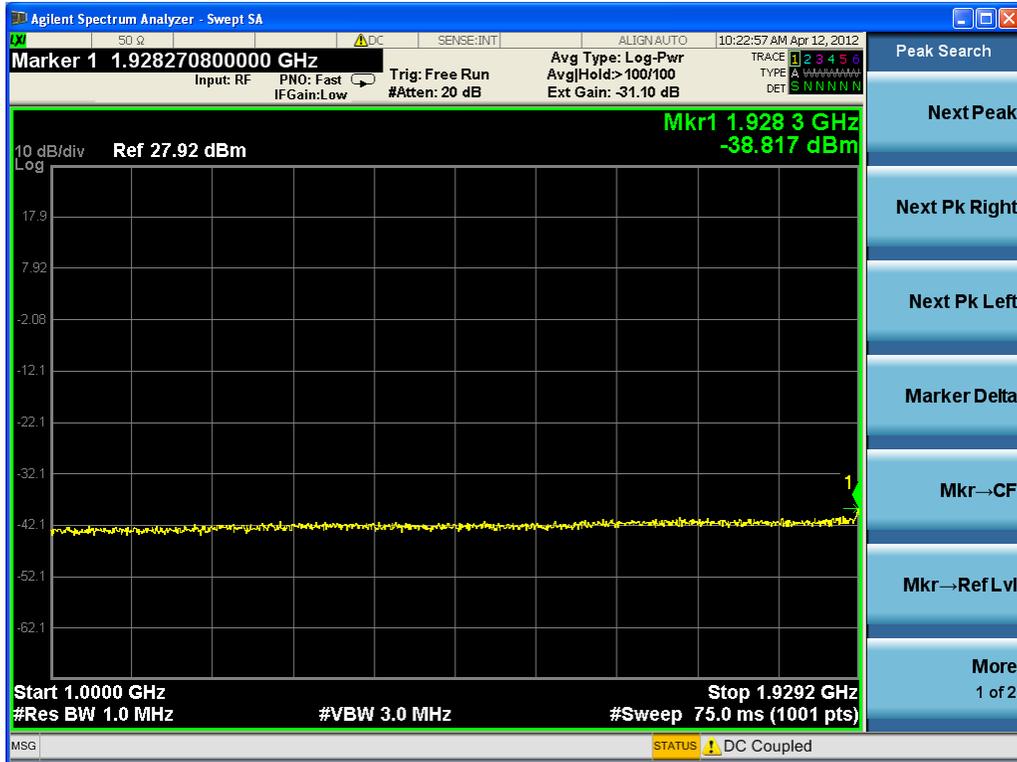
Test Result: Pass

Test Mode: Transmitting 2GSMTRX and 2UMTS carriers and 4GSM TRX and 1UMTS carriers

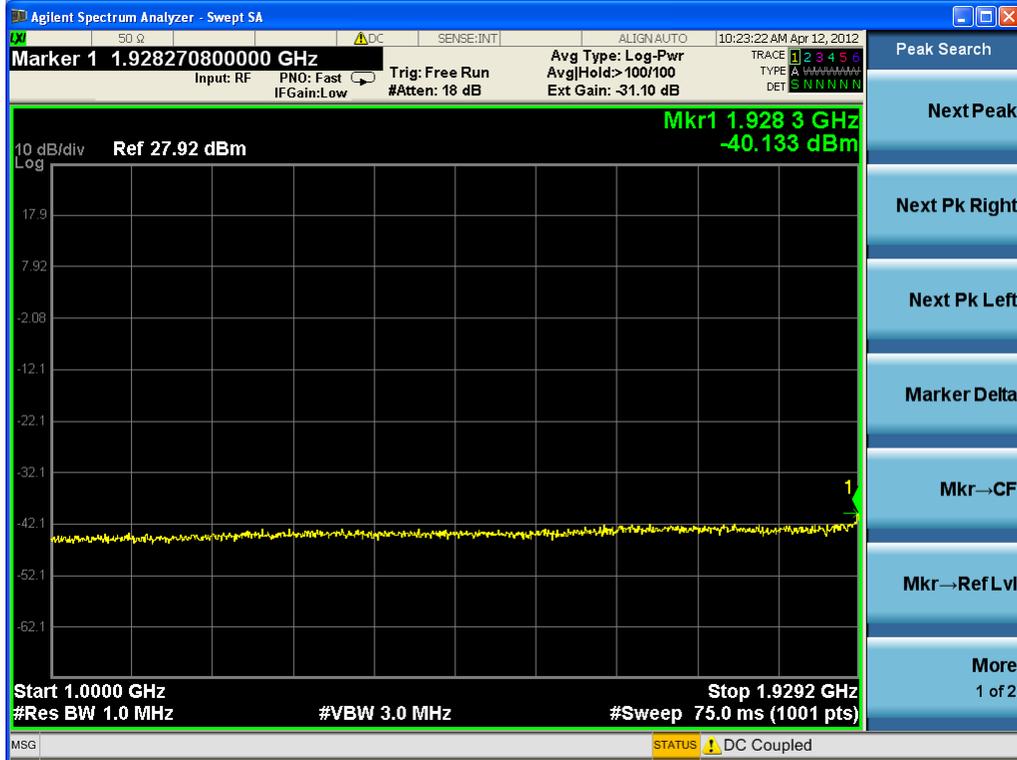
Test Data:

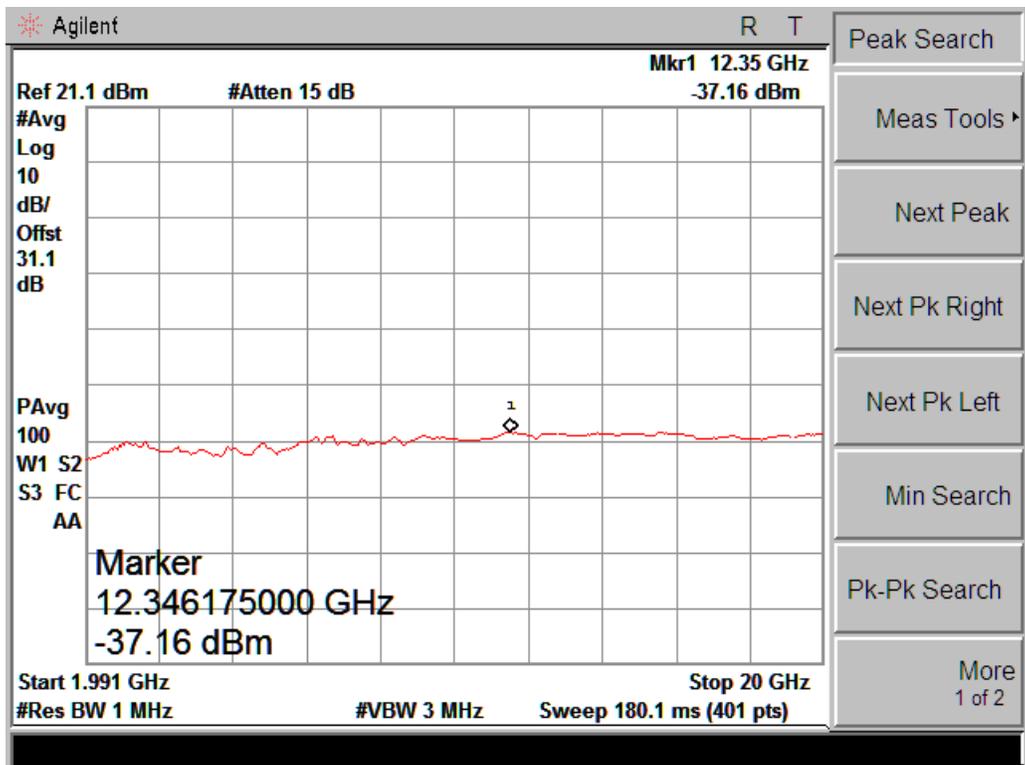
2GSMTRX and 2UMTS carriers





4GSM TRX and 1UMTS carriers





6.5 BAND EDGES

Applicable Standard: FCC §2.1051, §24.238

According to §2.1051, 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 limit (dBm) should $< P - (43 + 10 \log(P)) = -13 \text{dBm}$.

Test Equipment List and Details

| Manufacturer | Description | Model | Serial Number | Calibration Date | Calibration Due Date |
|--------------|------------------------------|--------------|----------------|------------------|----------------------|
| Agilent | MXA Series Spectrum Analyzer | N9020A | MY48011941 | 2012-4-9 | 2013-4-8 |
| Atten | 30dB Attenuator | ATSI150-4-30 | 11300110201221 | 2011-7-11 | 2012-7-11 |
| Forstar | Forstar RF Cable | 002 | 1034 | 2012-4-9 | 2013-4-8 |

***statement of traceability:** ZTE Corporation Reliability Testing Center attest that all calibration have been performed per the NVLAP requirements, traceable to NIST.

Test Procedure

The RF output of the transmitter was connected to the input of the spectrum analyzer through sufficient attenuation.

The center of the spectrum analyzer was set to block edge frequency.

Test Data Environmental Conditions

| | |
|--------------------|----------|
| Temperature: | 20 °C |
| Relative Humidity: | 53% |
| ATM Pressure: | 1009mbar |

Test Result: Pass

Test Mode: Transmitting 2GSMTRX and 2UMTS carriers and 4GSM TRX and 1UMTS carriers

Test Data

2GSMTRX and 2UMTS carriers

| Frequency channel | Max bandedge Emission (dBm) | Limit (dBm) |
|-------------------|-----------------------------|-------------|
| 1929-1930 | -13.628 | -13.00 |
| 1990-1991 | -15.380 | -13.00 |





4GSM TRX and 1UMTS carriers

| Frequency | Max bandedge Emission (dBm) | Limit (dBm) |
|-----------|-----------------------------|-------------|
| 1929-1930 | -14.348 | -13.00 |
| 1990-1991 | -16.858 | -13.00 |



6.6 OCCUPIED BANDWIDTH

Applicable Standard: FCC §2.1049 §24.229 §24.238

Test Equipment List and Details:

| Manufacturer | Description | Model | Serial Number | Calibration Date | Calibration Due Date |
|--------------|------------------------------|--------------|----------------|------------------|----------------------|
| Agilent | MXA Series Spectrum Analyzer | N9020A | MY48011941 | 2011-4-8 | 2012-4-7 |
| Atten | 30dB Attenuator | ATSI150-4-30 | 11300110201221 | 2011-7-11 | 2012-7-11 |
| Forstar | Forstar RF Cable | 002 | 1034 | 2012-4-9 | 2013-4-8 |

***statement of traceability:** ZTE Corporation Reliability Testing Center attest that all calibration have been performed per the NVLAP requirements , traceable to NIST.

Test Procedure

The RF out of the transmitter was connected to the input of the spectrum analyzer through sufficient attenuation. The resolution bandwidth of the spectrum analyzer was set at 1% of the span or higher and 99%Power bandwidth was recorded.

Environmental Conditions

| | |
|--------------------|----------|
| Temperature: | 20 ° C |
| Relative Humidity: | 53% |
| ATM Pressure: | 1009mbar |

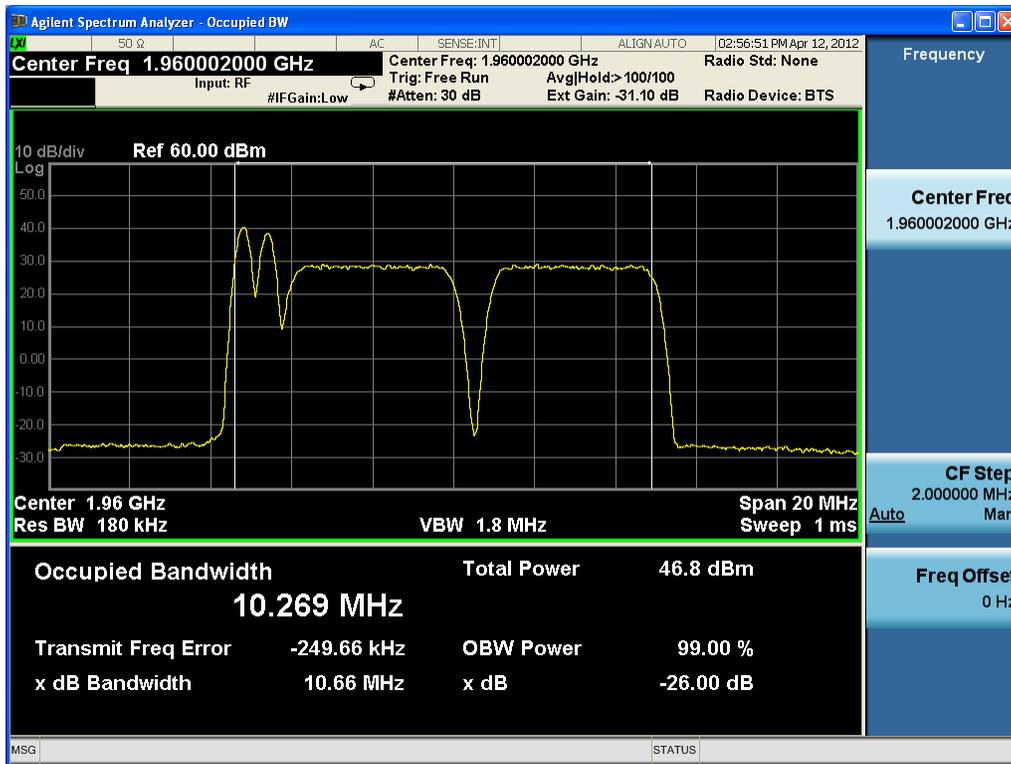
Test Result: Pass

Test Mode: Transmitting 2GSMTRX and 2UMTS carriers and 4GSM TRX and 1UMTS carriers

Test Data

2GSMTRX and 2UMTS carriers

| Frequency (MHz) | 99% Power Bandwidth (MHz) |
|-----------------|---------------------------|
| 1960 | 10.269 |



4GSM TRX and 1UMTS carriers

| | |
|-----------------|---------------------------|
| Frequency (MHz) | 99% Power Bandwidth (MHz) |
| 1960 | 6.4756 |

