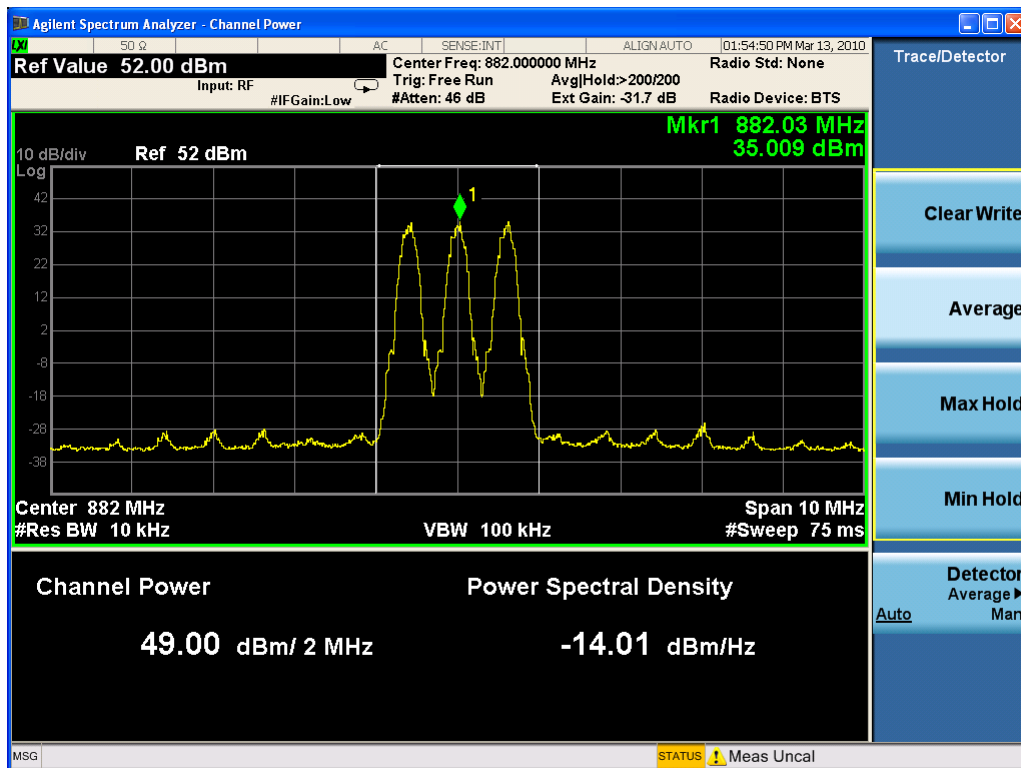
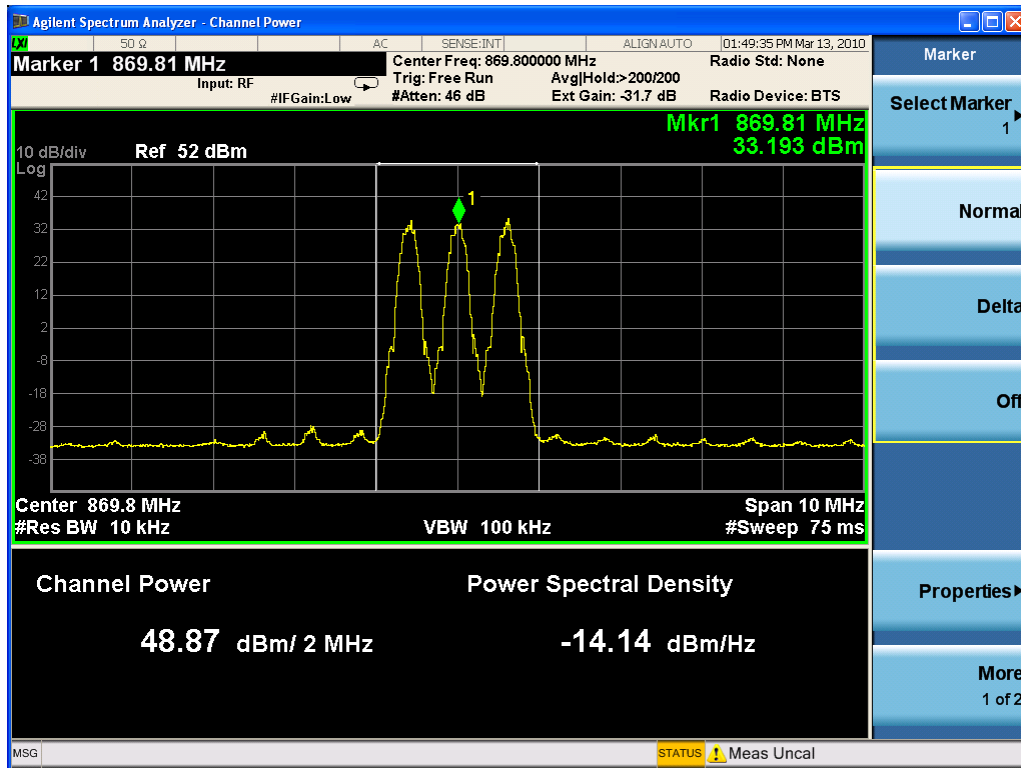
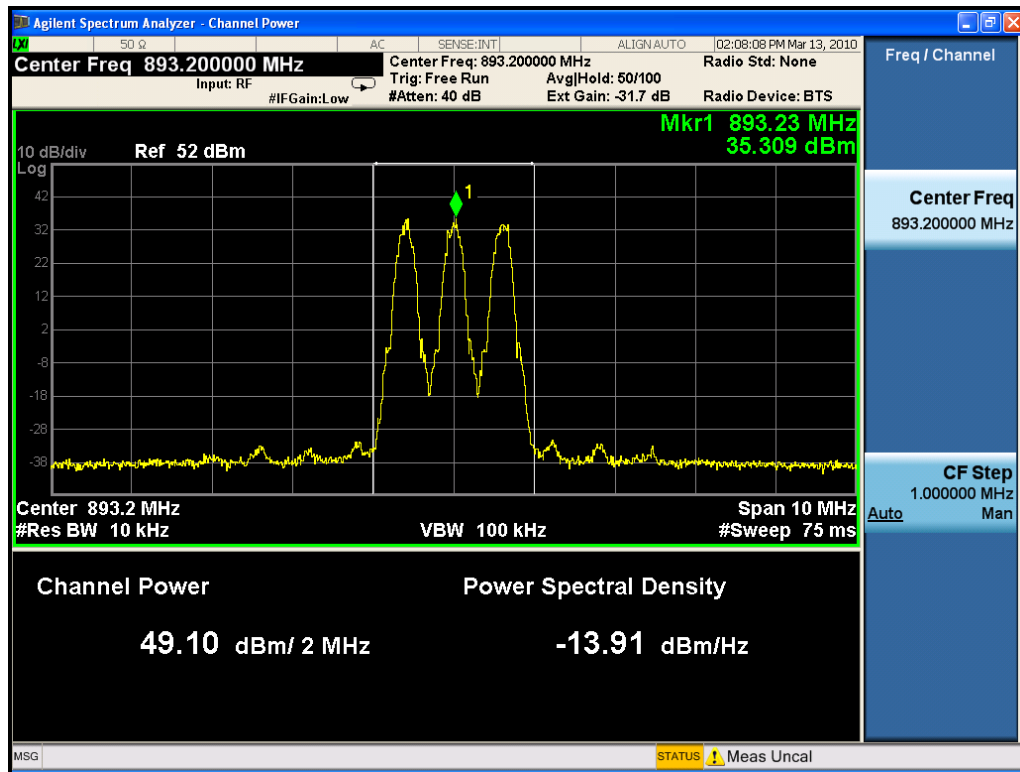
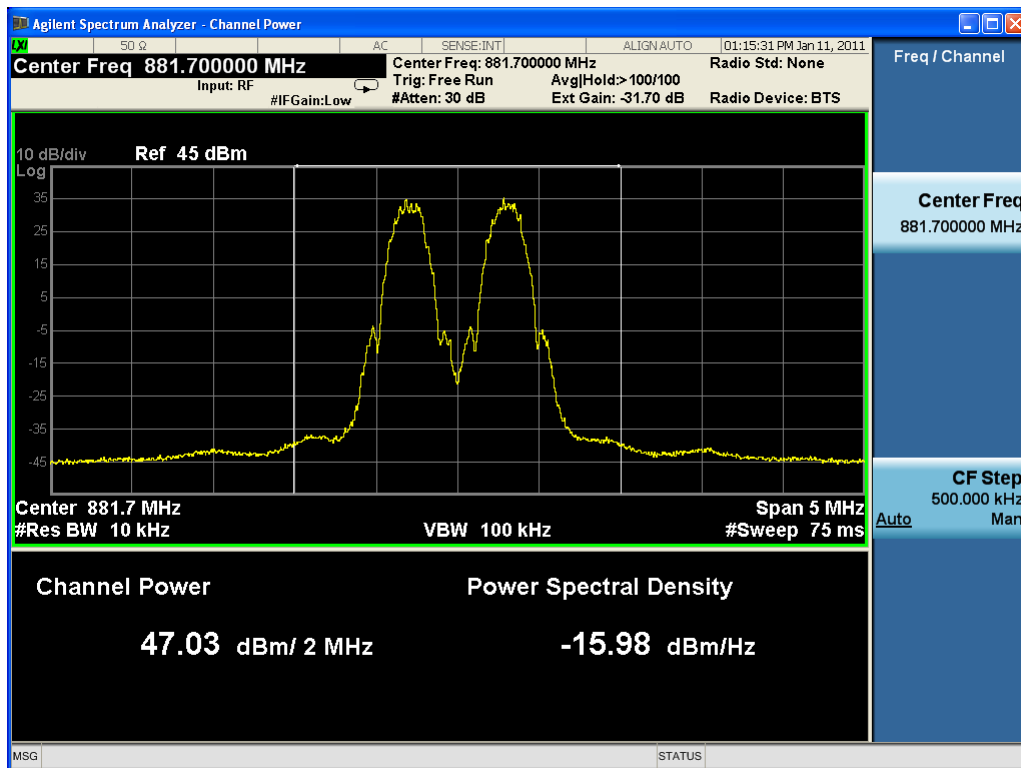
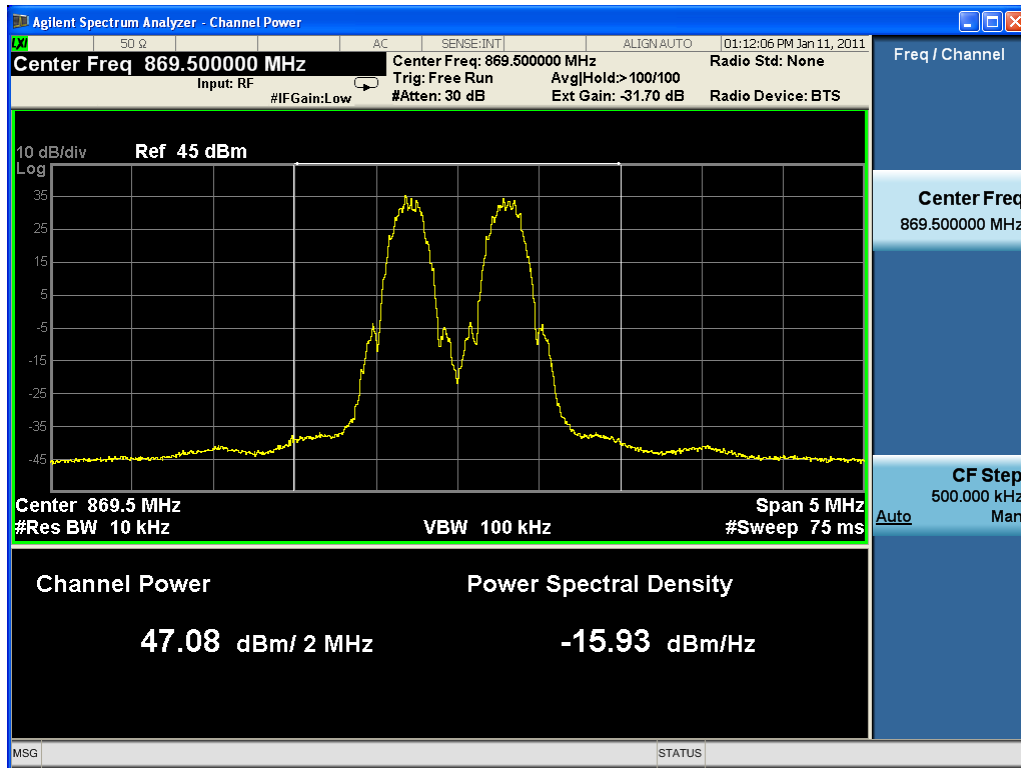


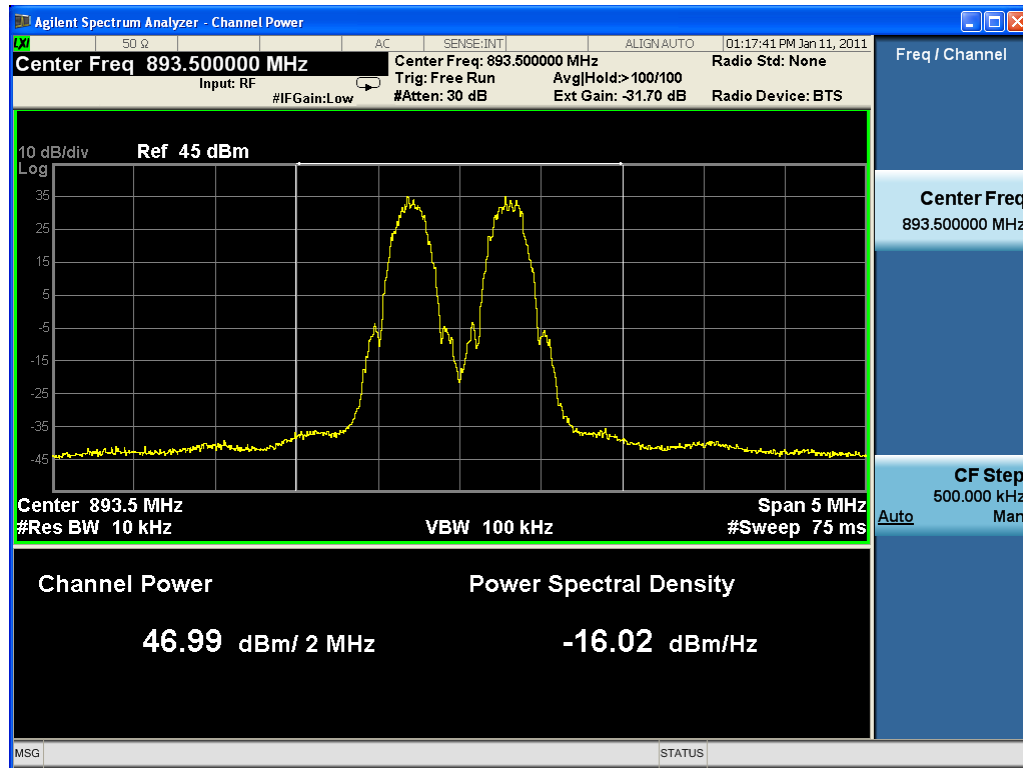




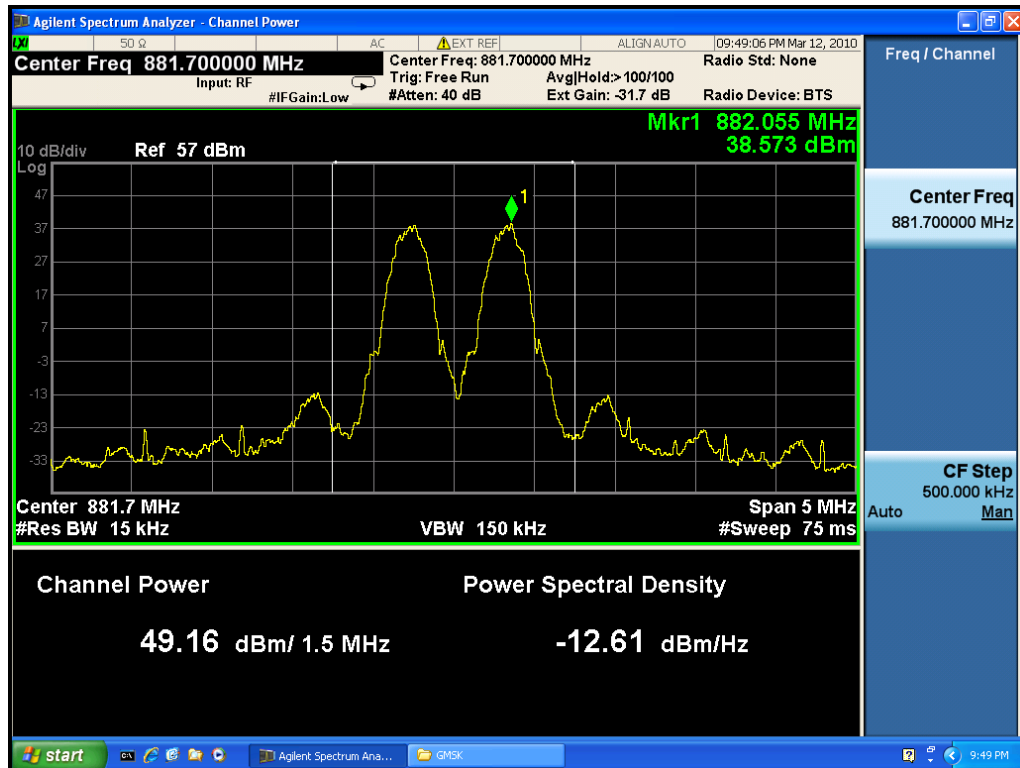
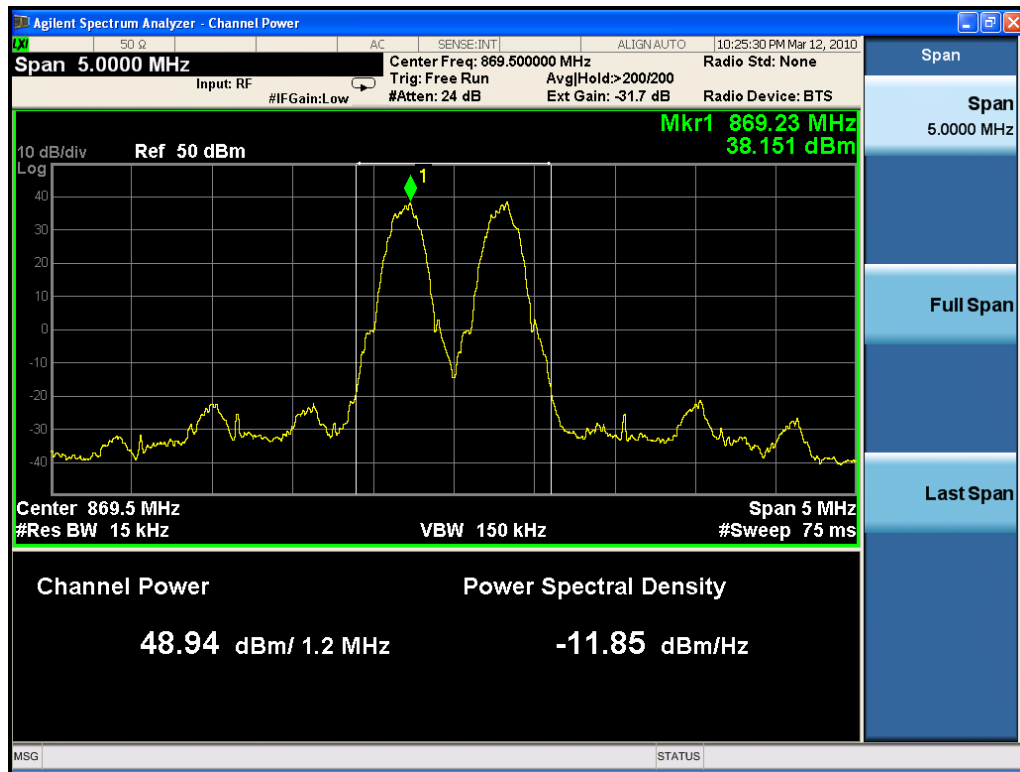
Two carriers

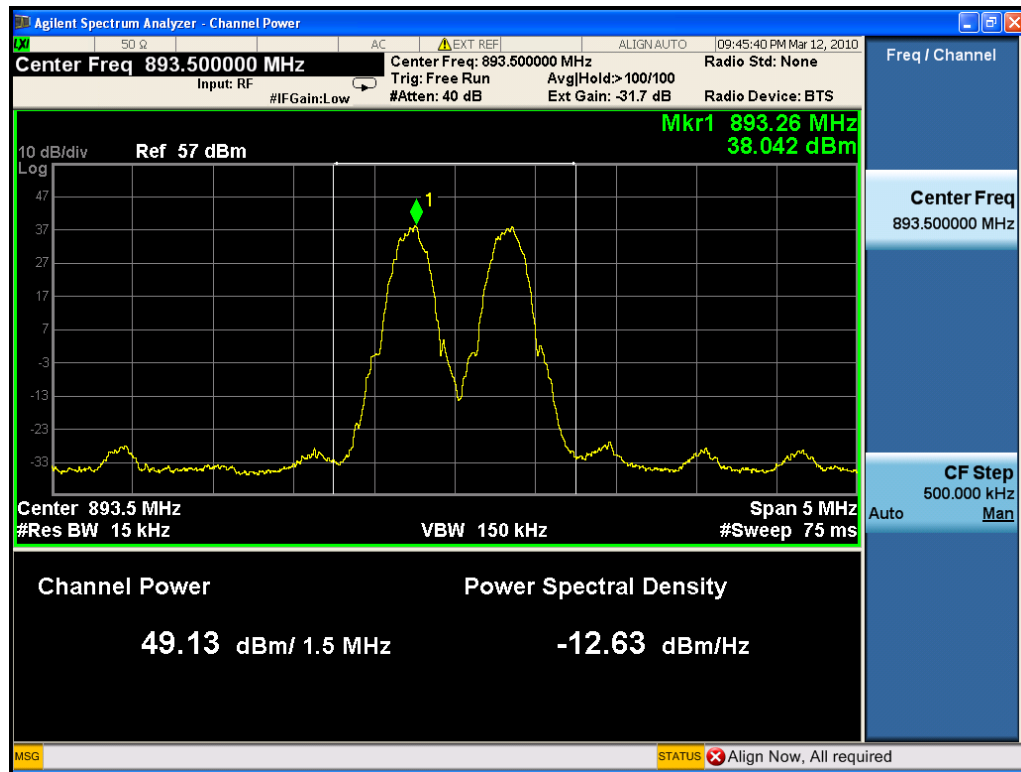
modulation	Center Freq. (MHz)	Frequency (MHz)	Max output Power in dBm
8PSK	869.5	869.2/869.8	47.08
	881.7	881.4/882	47.03
	893.5	893.2/893.8	46.99





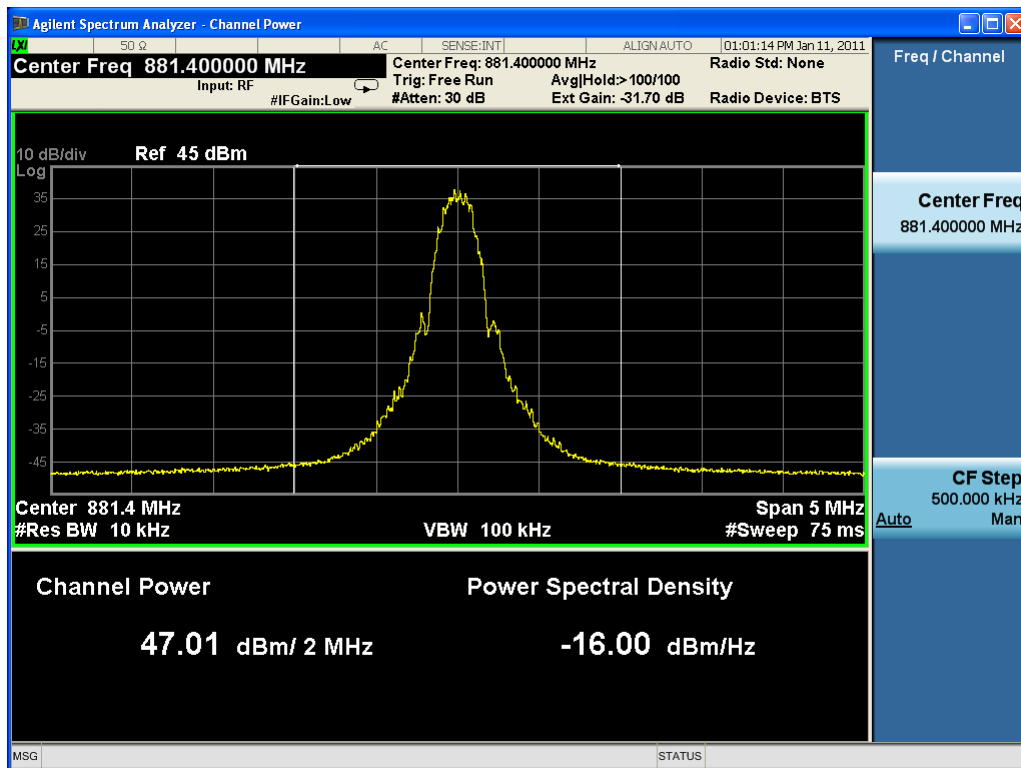
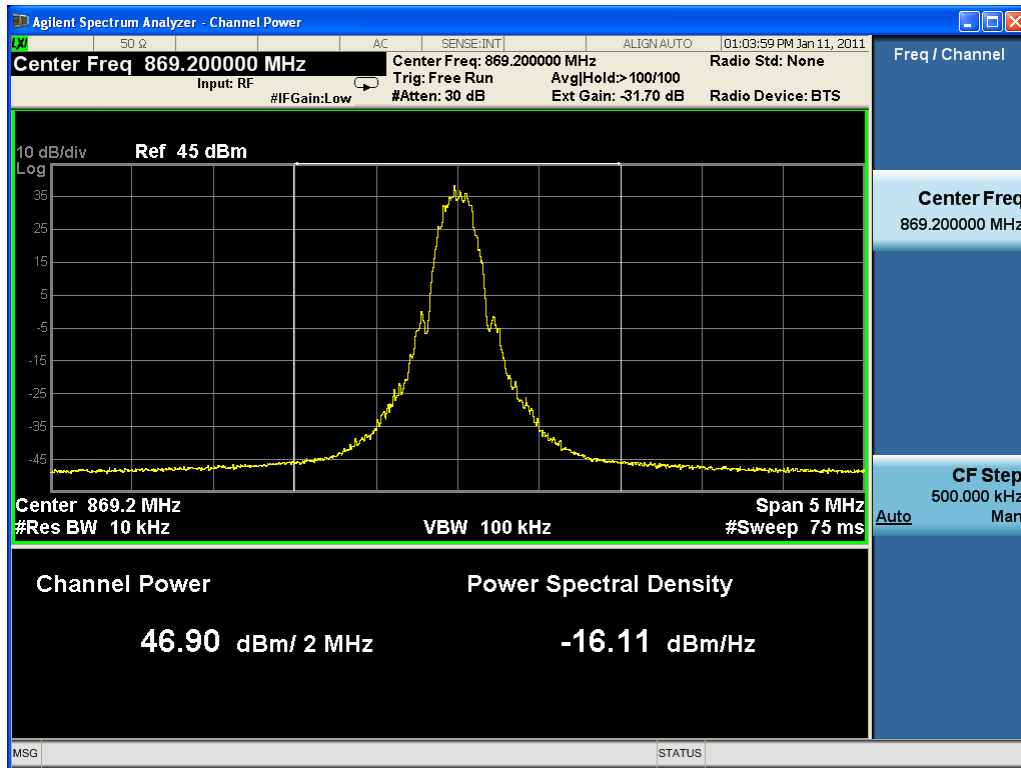
modulation	Center Freq. (MHz)	Frequency (MHz)	Max output Power in dBm
GMSK	869.5	869.2/869.8	48.94
	881.7	881.4/882	49.16
	893.5	893.2/893.8	49.13

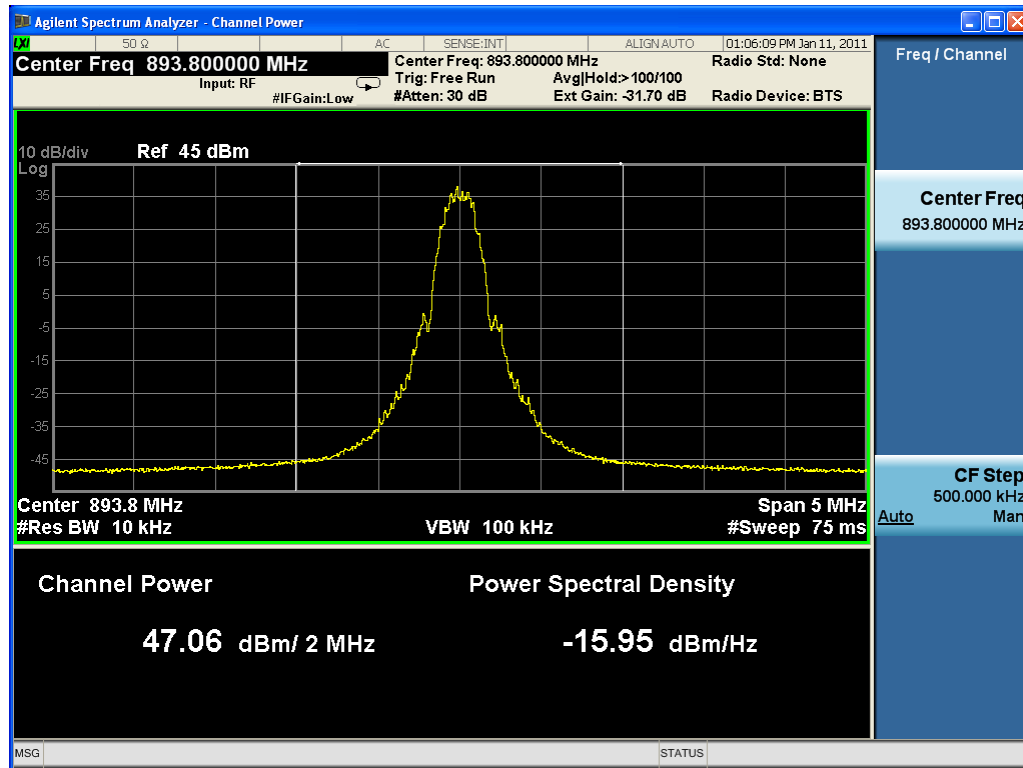




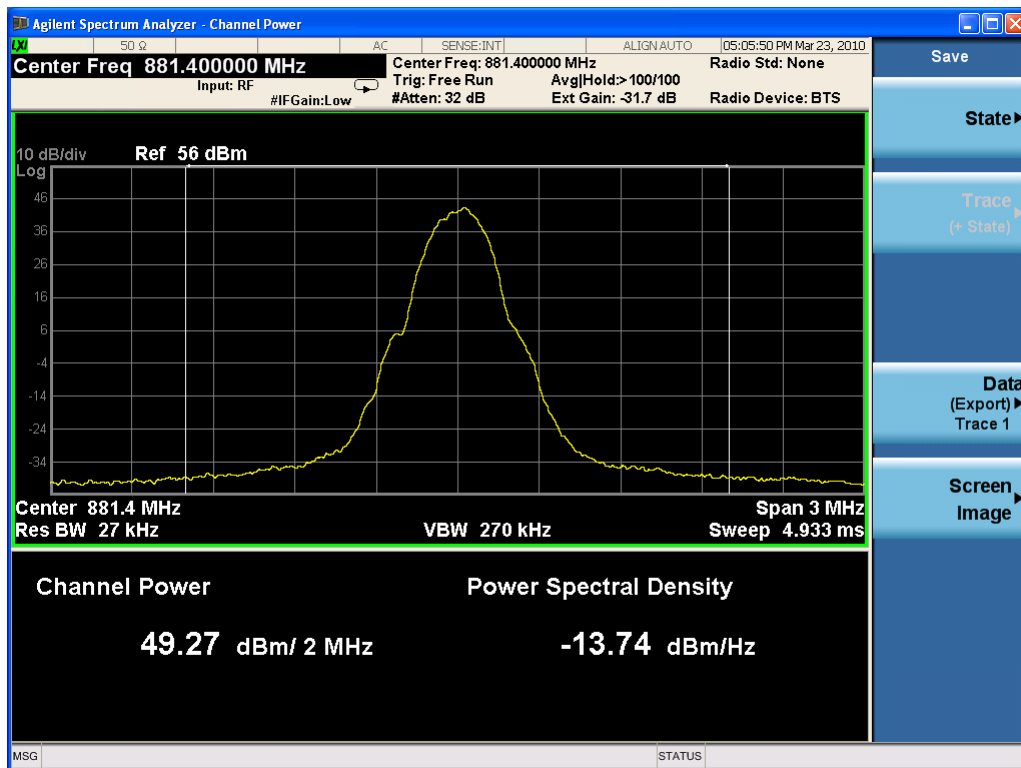
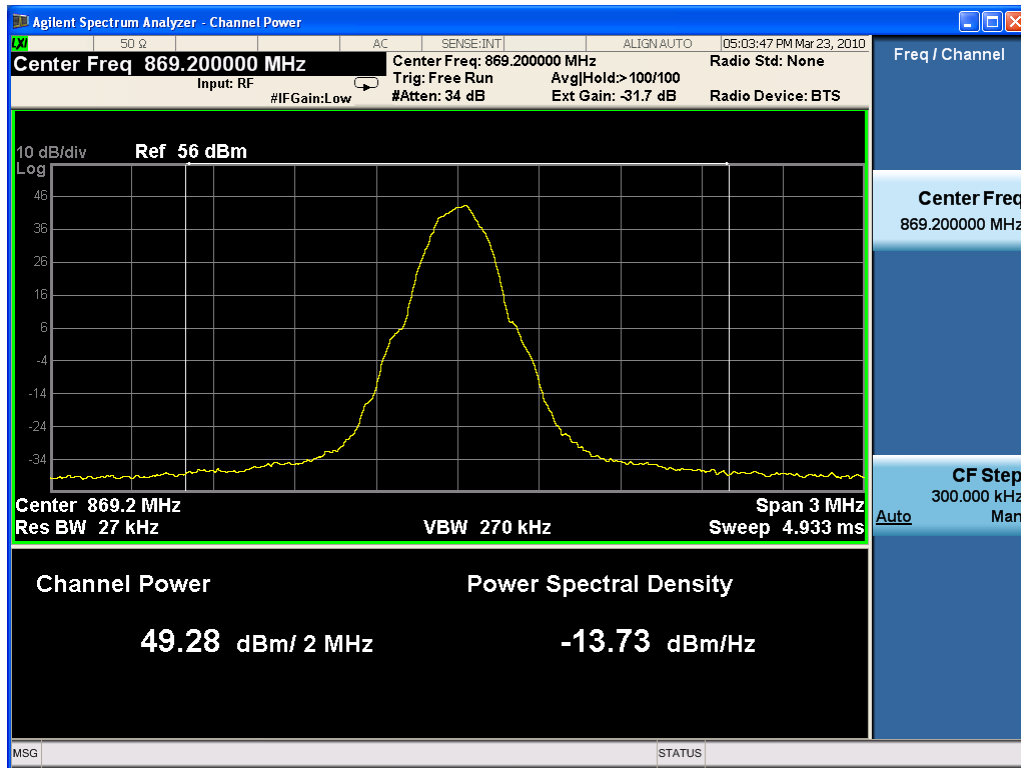
One carrier

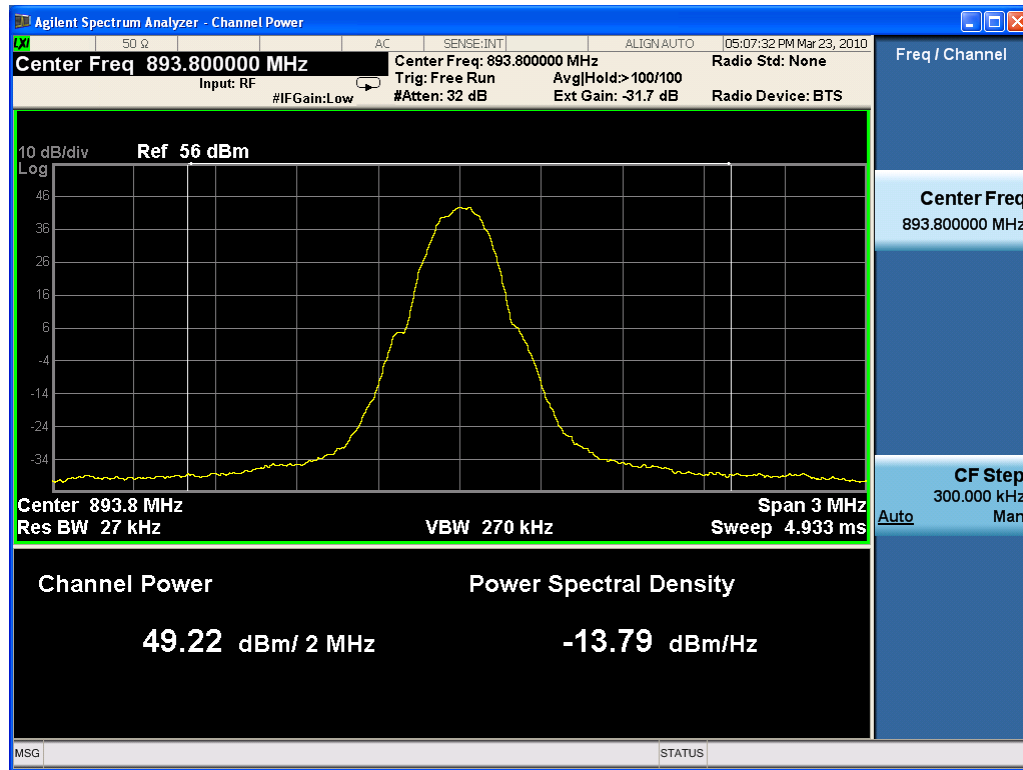
modulation	Center Freq. (MHz)	Frequency (MHz)	Max output Power in dBm
8PSK	869.2	869.2	46.90
	881.4	881.4	47.01
	893.8	893.8	47.06





modulation	Center Freq. (MHz)	Frequency (MHz)	Max output Power in dBm
GMSK	869.2	869.2	49.28
	881.4	881.4	49.27
	893.8	893.8	49.22





4.2 RF EXPLOSURE

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= $[(ERP+2.15dB)/4\pi S]^{1/2}$

Maximum ERP, In general, the effective radiated power (ERP) of base transmitters and cellular repeaters must not exceed 500 Watts.

Frequency is between 300MHz and 1500MHz, and the Maximum $S=894/1500=0.596\text{mW/cm}^2$
 $R=3.31\text{m}$.

This equipment should be installed and operated with minimum distance 3.31m between the radiator& your body .

Test Result: pass

4.3 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	2010-4-10	2011-4-9
DTS	DTS100 40dB Attenuator	DTS100-40dB-N	N/A	N/A	N/A
Hewlett Packard	Hewlett Packard RF Cable	8120-6192	01428251	N/A	N/A

***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

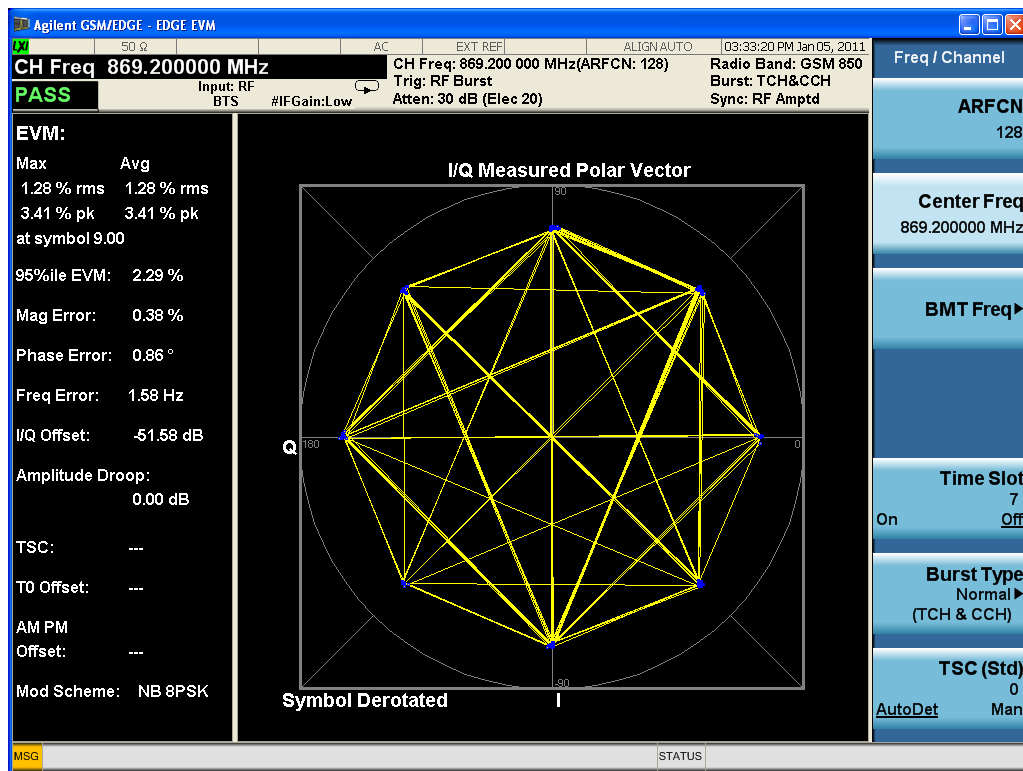
Temperature:	20 °C
Relative Humidity:	53 %
ATM Pressure:	1009 mbar

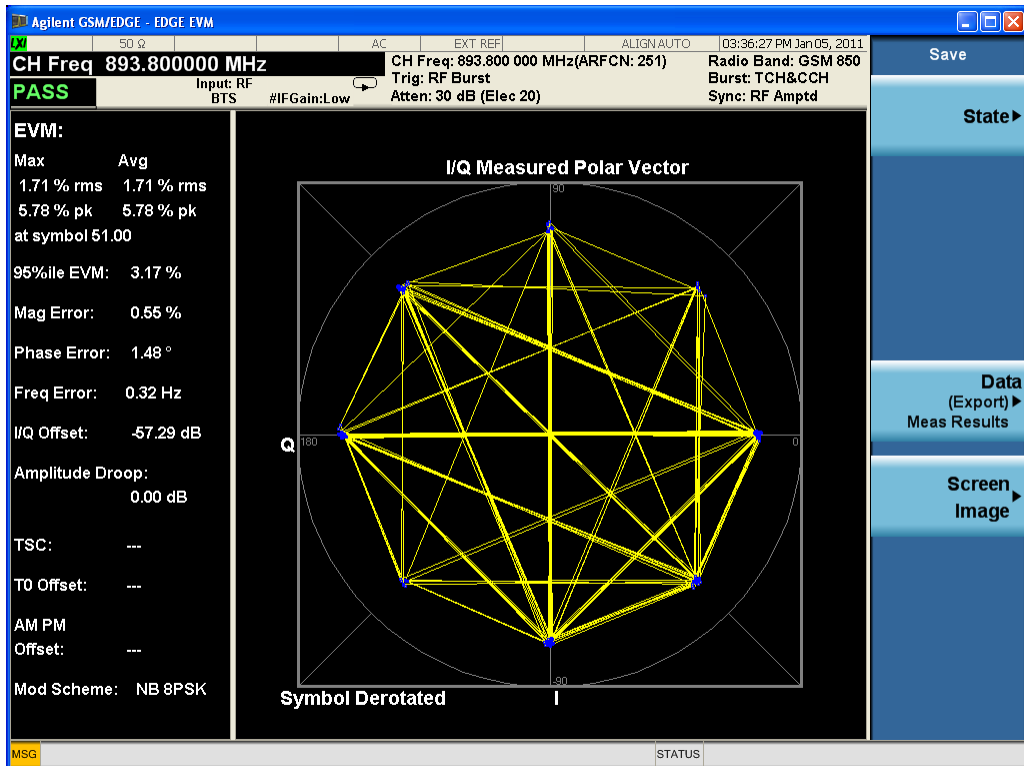
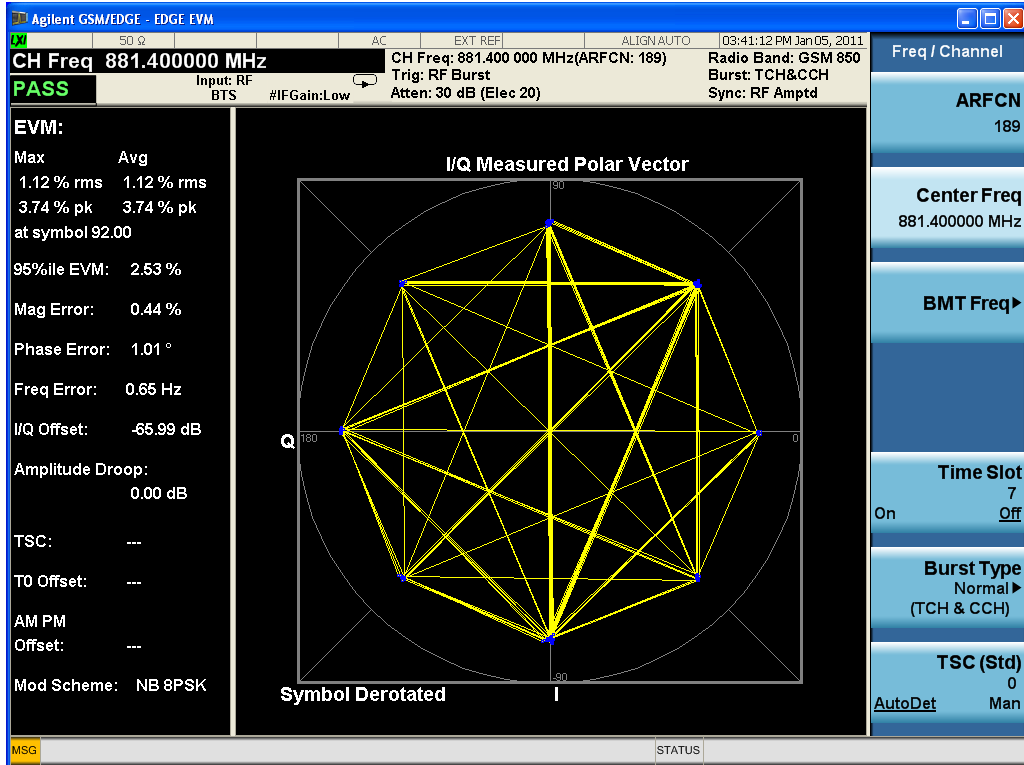
Test Result: Pass

Test Mode: Transmitting GSM

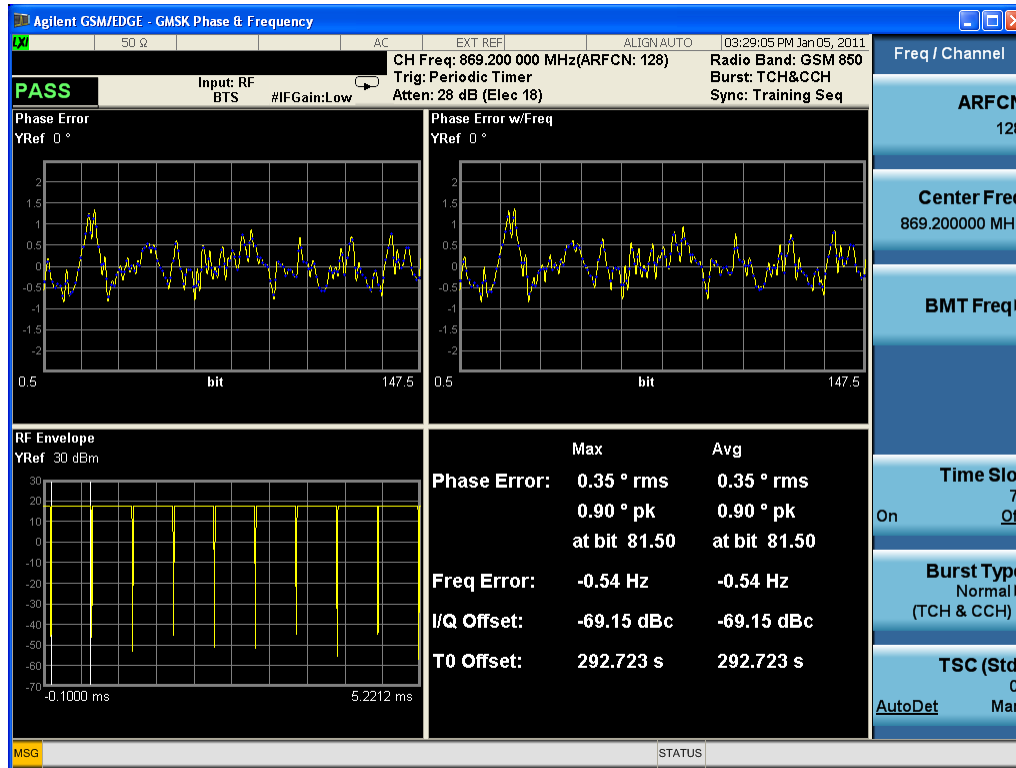
Test Data:

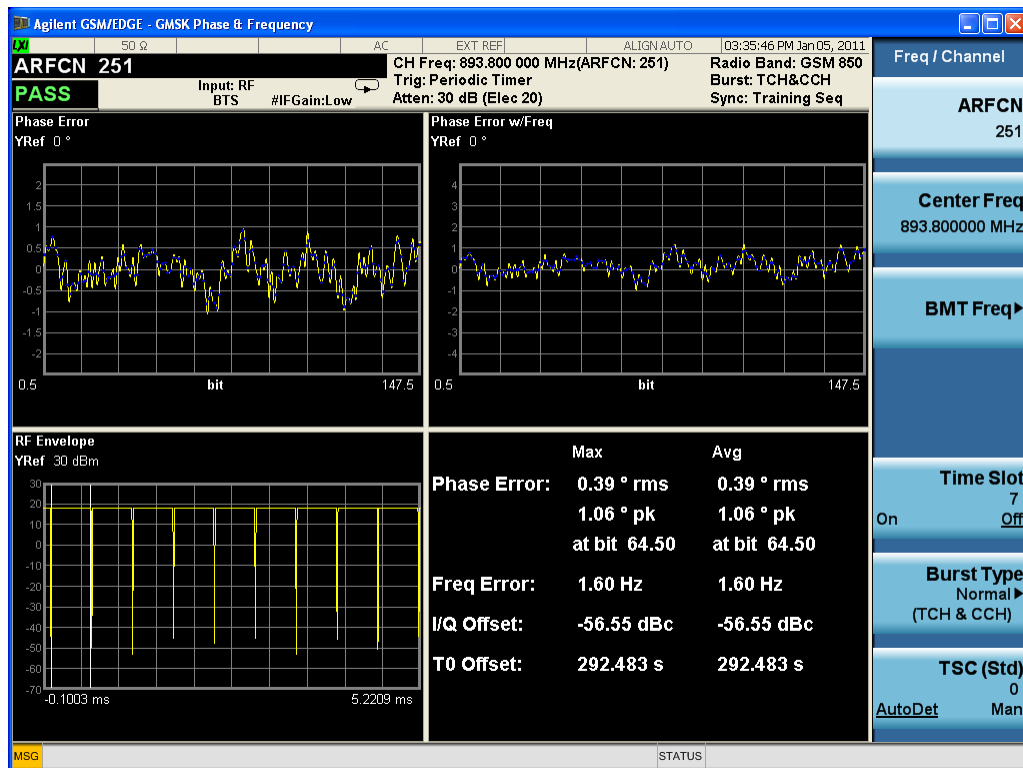
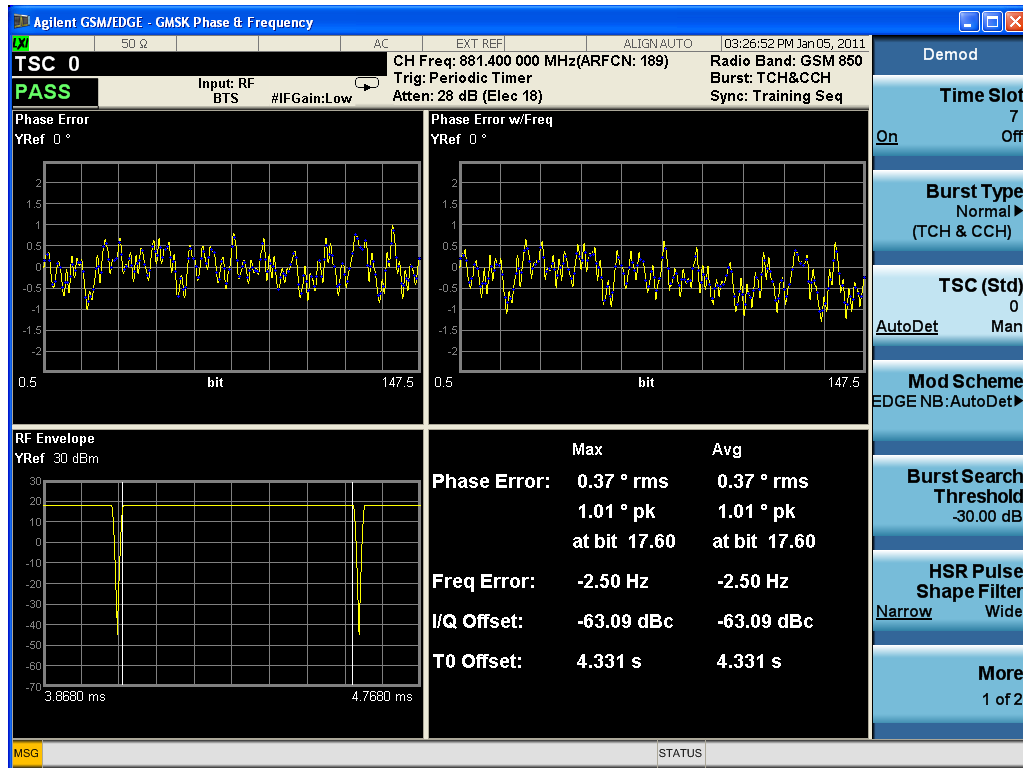
Modulation	Frequency (MHz)	EVM
8PSK	869.2	2.29%
	881.4	2.53%
	893.8	3.17%





Modulation	Frequency (MHz)	Phase Error(°)	Frequency Error(Hz)
GMSK	869.2	0.35	-0.54
	881.4	0.37	-2.5
	893.8	0.39	1.60





4.4 SPURIOUS RADIATED EMISSIONS

Applicable Standard: FCC CFR 47, §2.1053

Test Equipment List and Details

Manufacturer	Equipment	Model	Serial Number	Last Cal.	Cal. Interval
Albatross	Anechoic Chamber	3m Site	A00017354	2010-6-30	1 year
R&S	EMI Test Receiver	ES126	100058	2010-10-29	1 year
R&S	Log periodic Antenna	HL562	100022	2010-8-5	1 year
R&S	Double-Ridged Waveguide Horn Antenna	HF906 TX	100032	2010-8-5	1 year

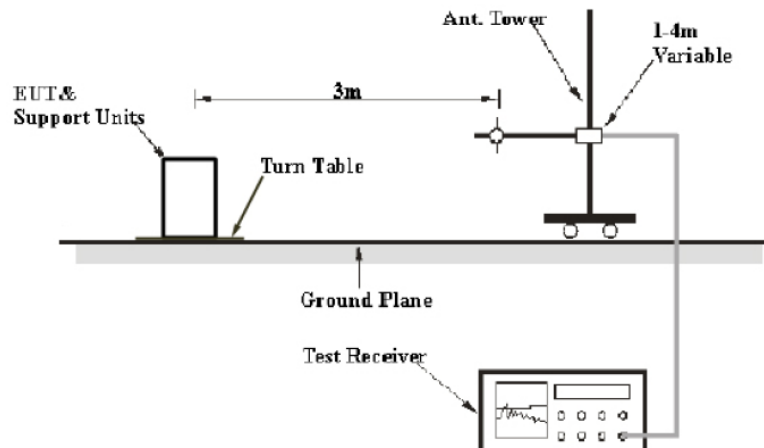
***statement of traceability:** ZTE Corporation Testing lab attest that all calibration have been performed per the NVLAP requirements, traceable to NIST.

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 15.109. The specification used were the FCC 15.109 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 teeth 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)	Absolute Level (dBm)	Limit (dBm)	Margin (dB)
Frequency (MHz)	Amp. (dBuV)	Polar H/V	Frequency (MHz)	Level (dBm)	Antenna Gain Correction				
119.418838	21.73	V	119.418838	-63.19	-12.48	0.8	-78.62	-36	42.62
249.659319	18.46	V	249.659319	-79.09	1.49	1.3	-81.05	-36	45.05
428.496994	23.56	V	428.496994	-70.95	-0.99	1.7	-75.79	-36	39.79
881.422846	90.44	V	881.422846	-6.75	-1.54	2.5	-12.94	-36	-23.06
1885.77154	47.11	V	1885.77154	-60.25	6.55	3.7	-59.55	-30	29.55
2647.29459	54.65	V	2647.29459	-52.88	7.95	4.3	-51.38	-30	21.38
119.418838	20.8	H	2647.29459	-65.36	-12.48	0.8	-80.79	-36	44.79
210.781563	20.45	H	119.418838	-78.8	1.23	1.2	-80.92	-36	44.92
471.262525	23.27	H	210.781563	-70.28	-1.3	1.8	-75.53	-36	39.53
881.422846	111.57	H	471.262525	14.48	-1.54	2.5	8.29	-36	-44.29
1853.70742	47.99	H	881.422846	-55.67	6.55	3.6	-54.87	-30	24.87
3000	54.33	H	1853.70742	-49.78	7.75	4.6	-48.78	-30	18.78

Radiation emission spurious below 3GHz

Indicated		Test Antenna	Substituted			Cable Loss (dB)	Absolute Level (dBm)	Limit (dBm)	Margin (dB)
Frequency (MHz)	Amp. (dBuV)	Polar H/V	Frequency (MHz)	Level (dBm)	Antenna Gain Correction				
3312.62525	42.69	V	3312.62525	-58.28	7.75	4.9	-57.58	-30	27.58
4731.46293	45.05	V	4731.46293	-62.55	9.15	5.8	-61.35	-30	31.35
6174.3487	48.86	V	6174.3487	-58.61	9.05	6.9	-58.61	-30	28.61
7610.72144	50.75	V	7610.72144	-61.6	9.25	7.8	-62.3	-30	32.3
9869.23848	56.18	V	9869.23848	-52.64	9.95	8.8	-53.64	-30	23.64
12312.1242	56.98	V	12312.1242	-53.74	12.05	9.9	-53.74	-30	23.74
3312.62525	44.78	H	3312.62525	-58.48	7.75	4.9	-57.78	-30	27.78
4050.1002	45.36	H	4050.1002	-59.29	7.95	5.3	-58.79	-30	28.79
6150.3006	48.51	H	6150.3006	-54.88	9.05	6.9	-54.88	-30	24.88
7633.76754	50.15	H	7633.76754	-58.48	9.25	7.8	-59.18	-30	29.18
9857.71543	55.7	H	9857.71543	-53.24	9.95	8.8	-54.24	-30	24.24
12300.6012	56.35	H	12300.6012	-50.62	12.05	9.9	-50.62	-30	20.62

Radiation emission spurious above 3GHz

4.5 SPURIOUS EMISSIONS AT ANTENNA TERMINALS

Applicable Standard: FCC§2.1051, §22.917

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

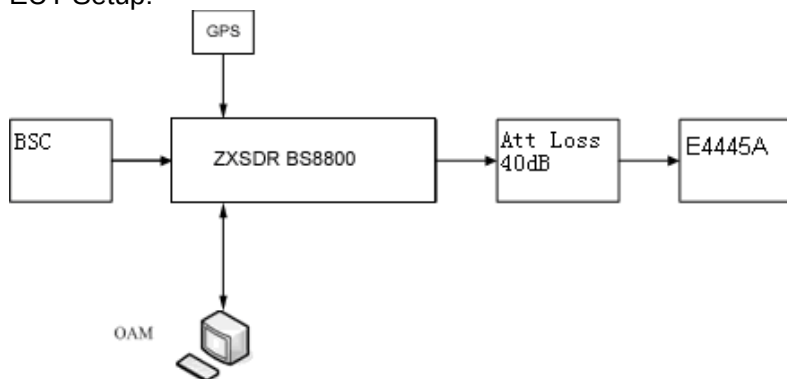
Test Equipment List and Details

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
Agilent	MXA Series Spectrum Analyzer	N9020A	MY48011941	2010-4-9	2011-4-9
DST	DST100 40dB Attenuator	DTS100-40dB-N	N/A	N/A	N/A
Hewlett Packard	Hewlett Packard RF Cable	8120-6192	01428251	N/A	N/A

***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)=40dB, Cable Loss (dB)=3dB.

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 1 kHz for 9KHz to 150KHz scanning, set at 10KHz for 150KHz to 30MHz scanning ,set at 100KHz for 30MHz to 1GHz scanning, set at 1MHz or 3MHz for 1GHz to 22GHz 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

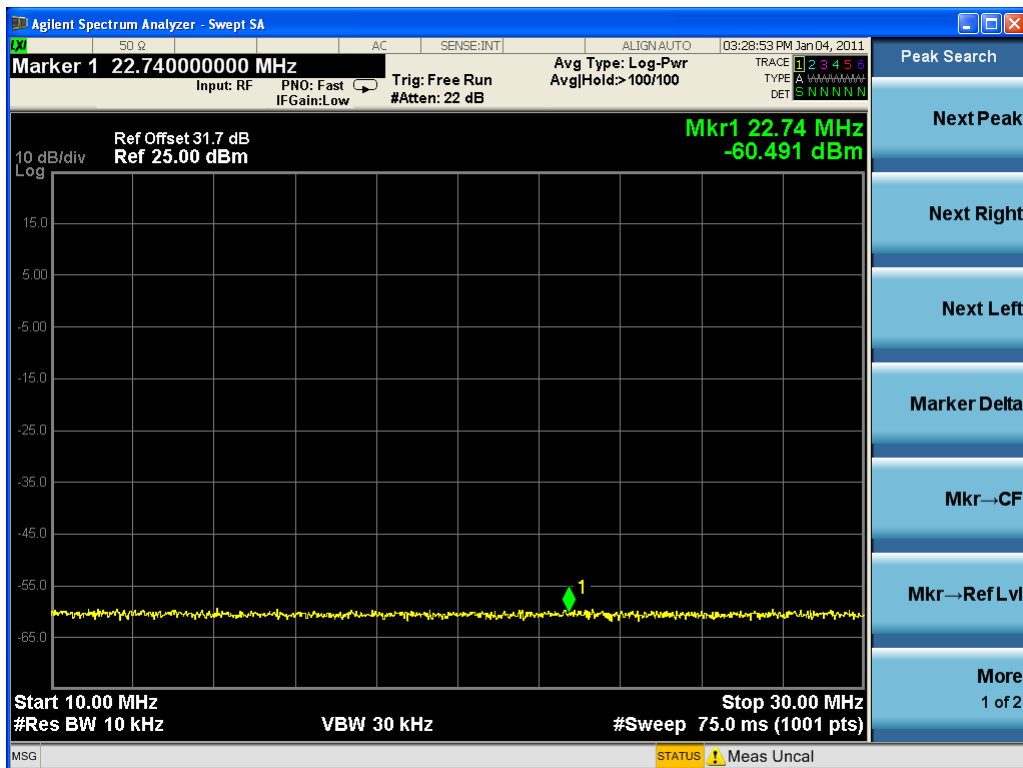
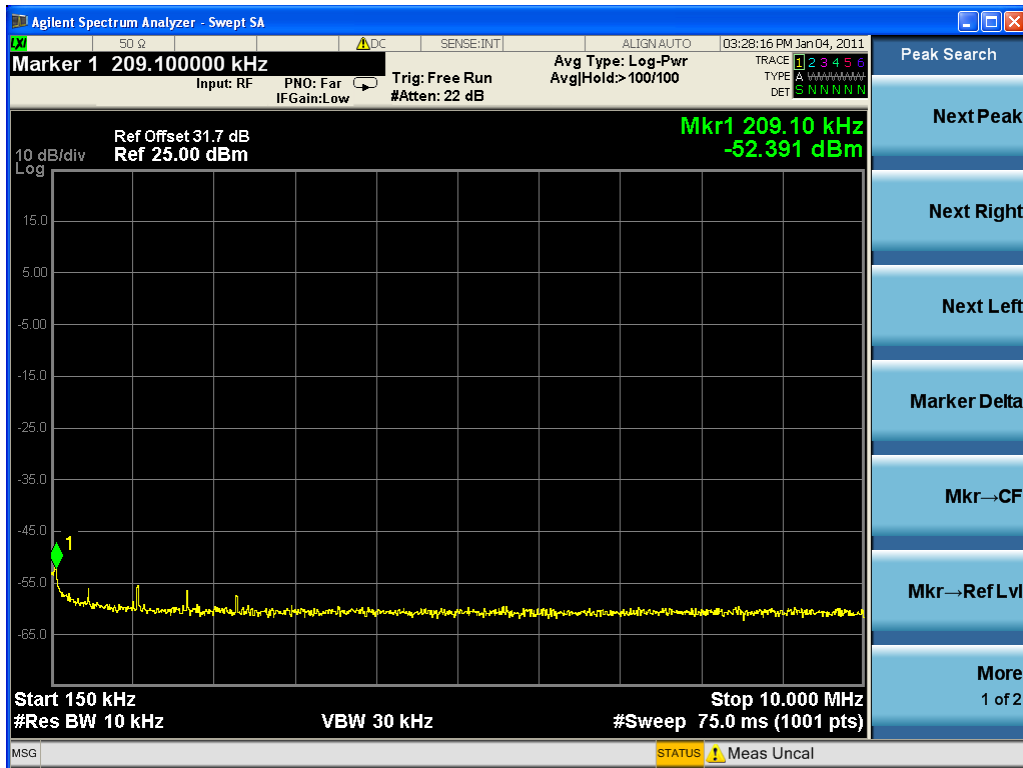
Test Result: Pass

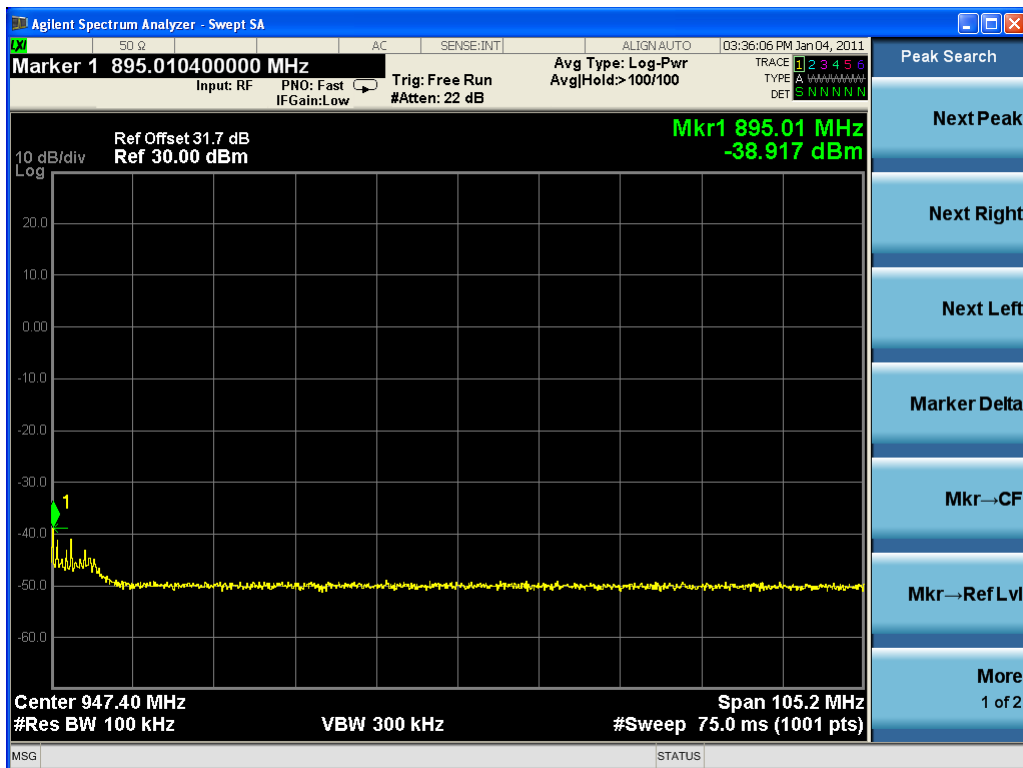
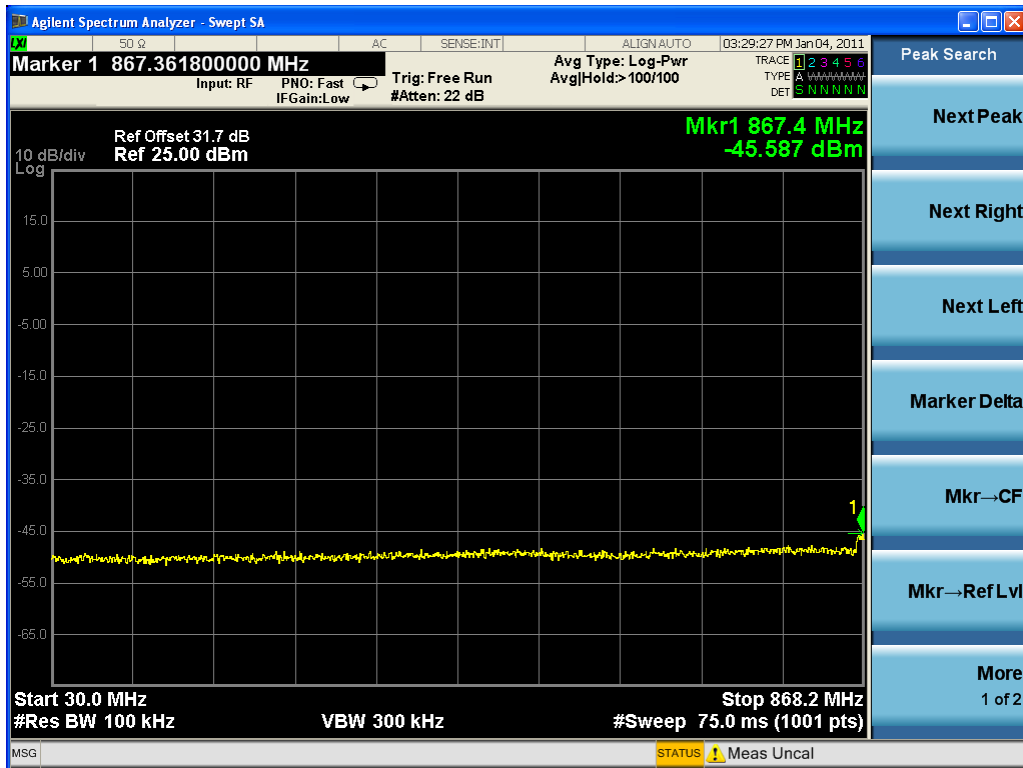
Test Mode: Transmitting GSM

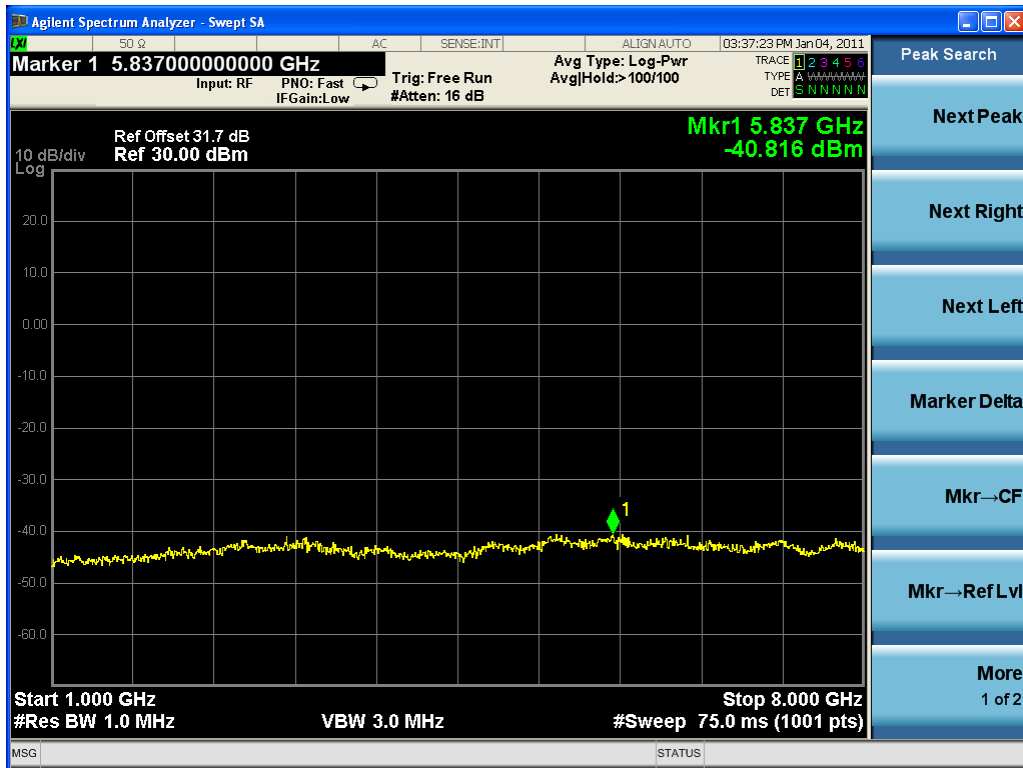
Test Data:

Six Carriers

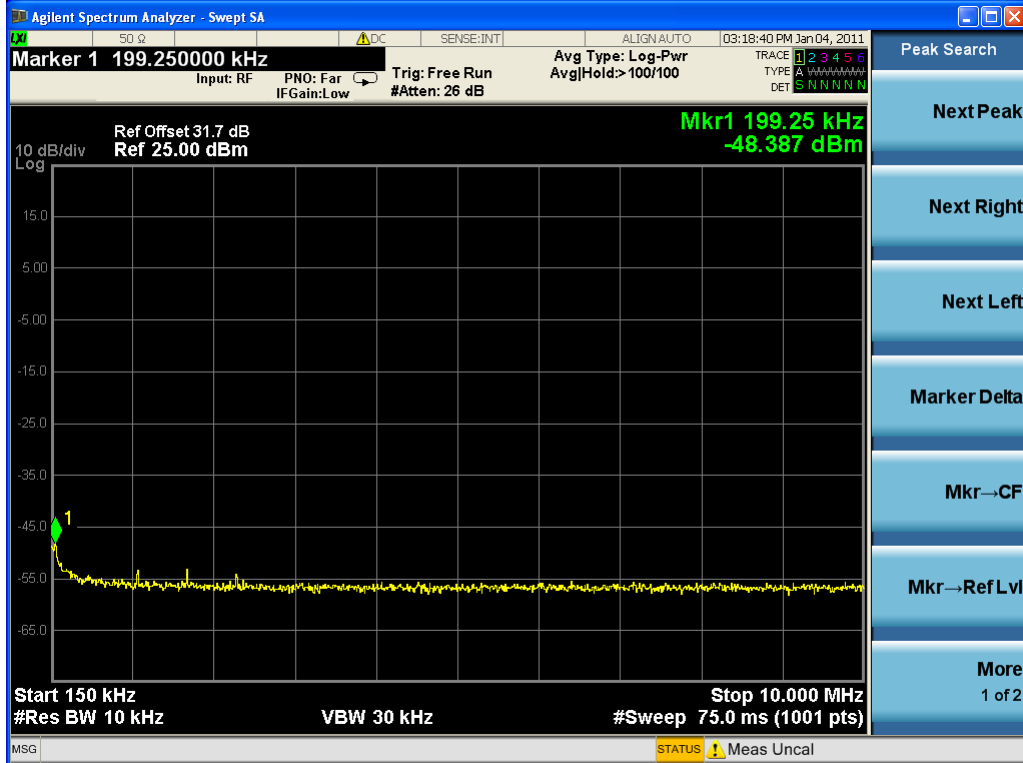


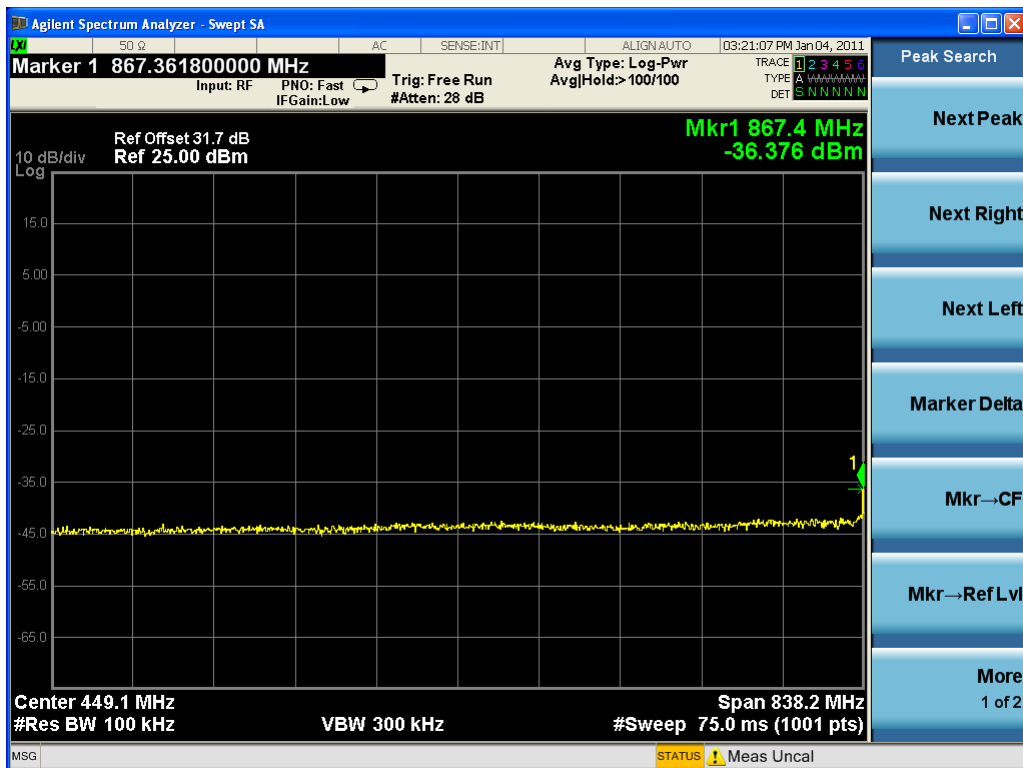
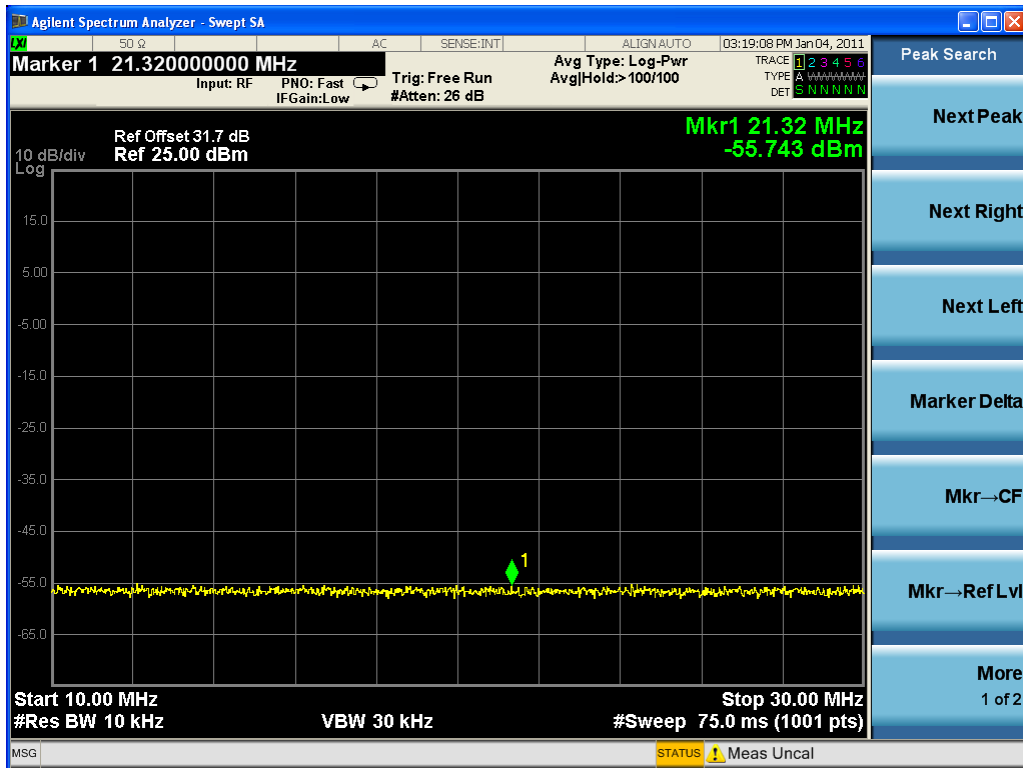


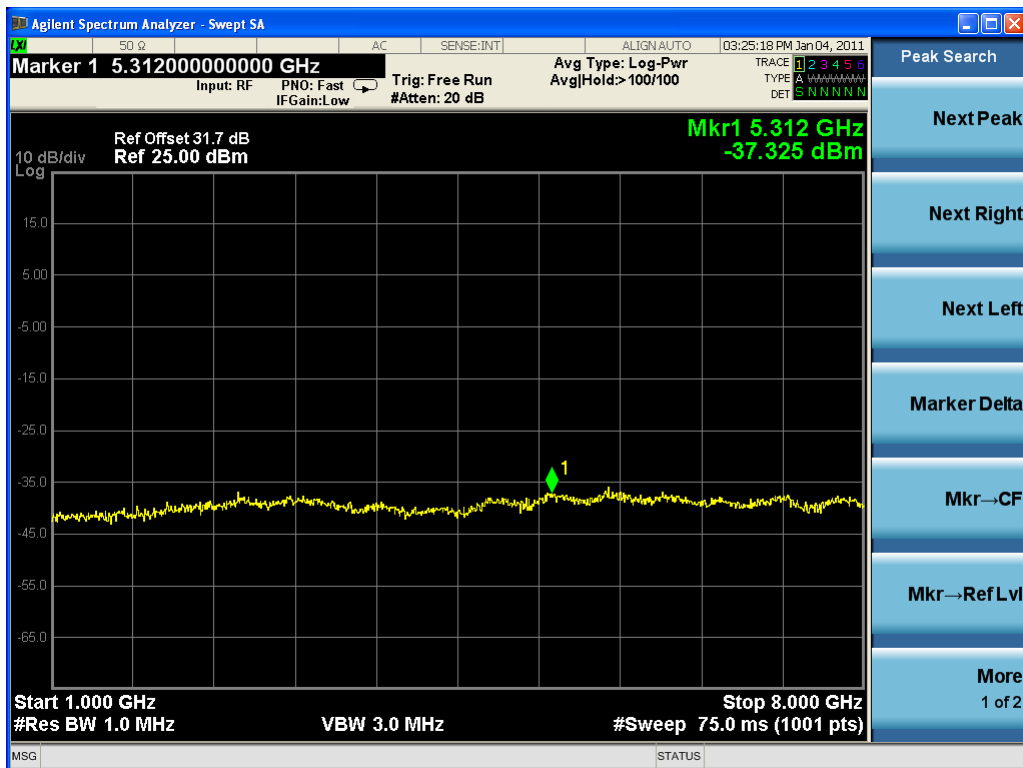
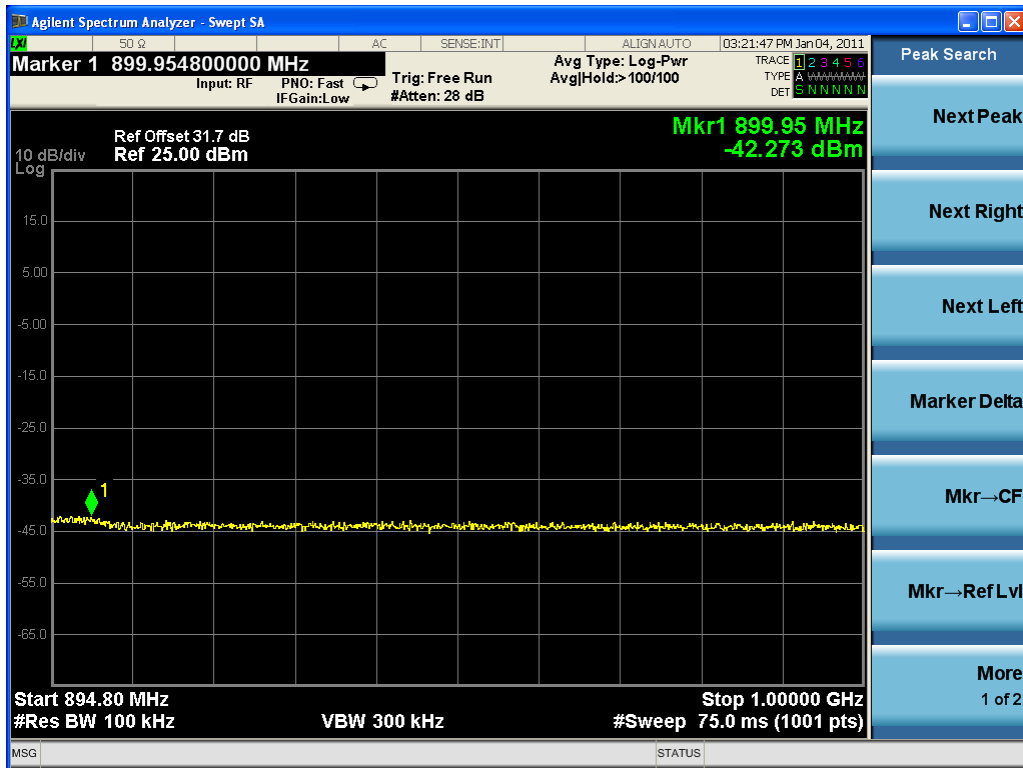




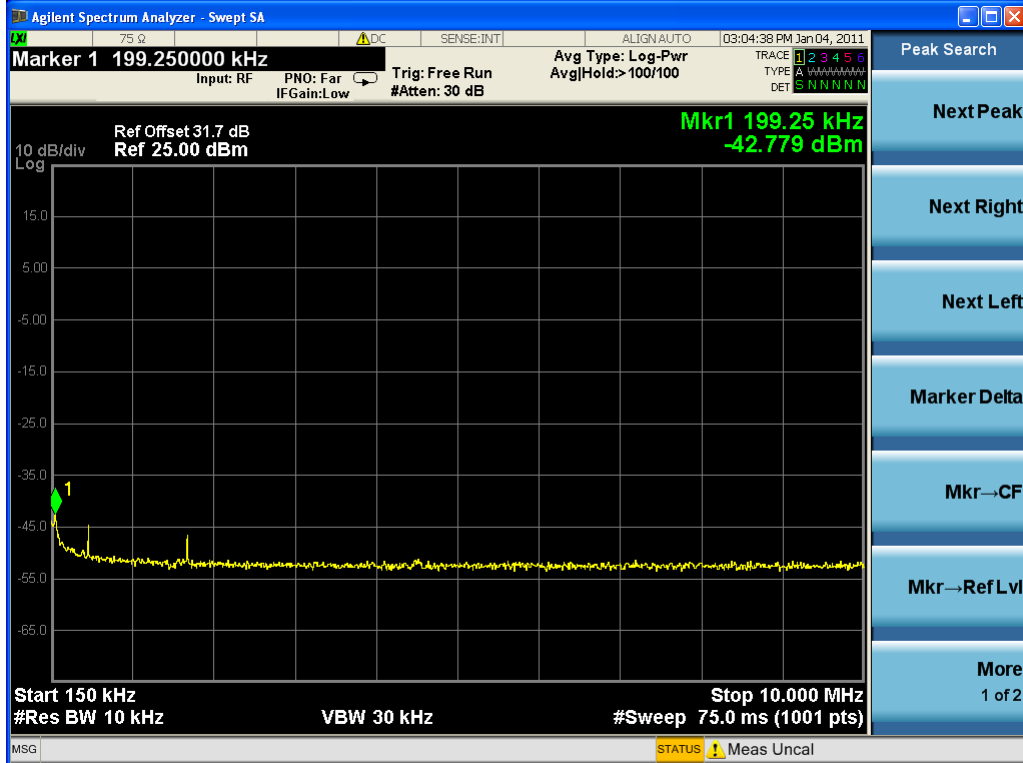
Five carriers

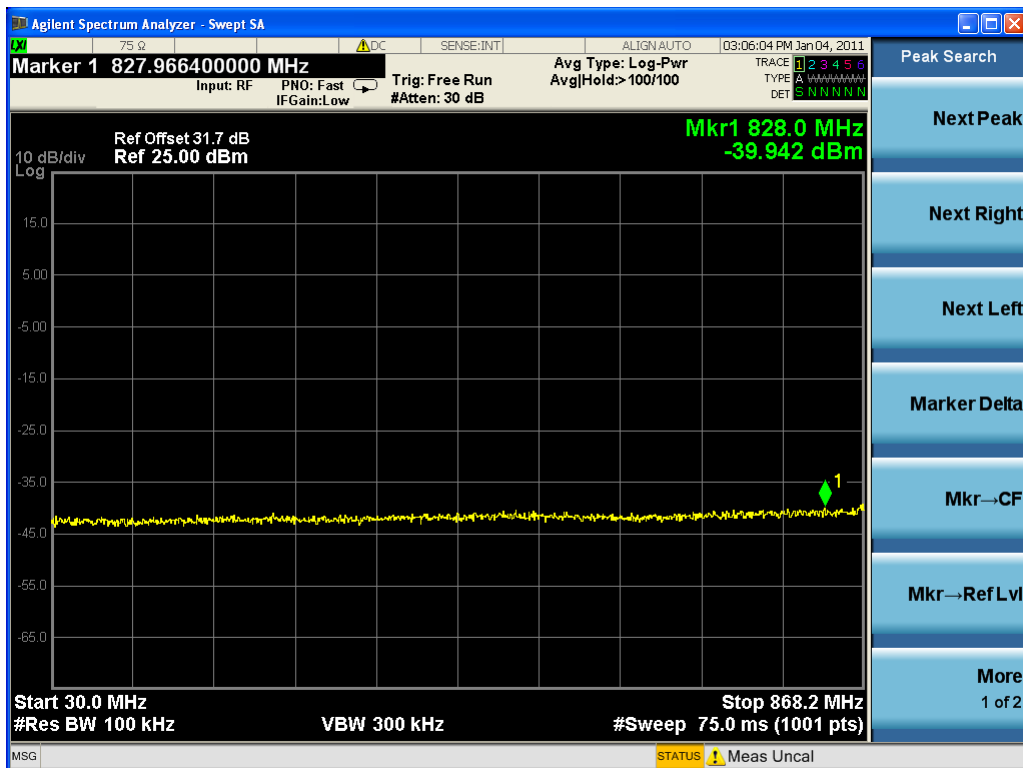
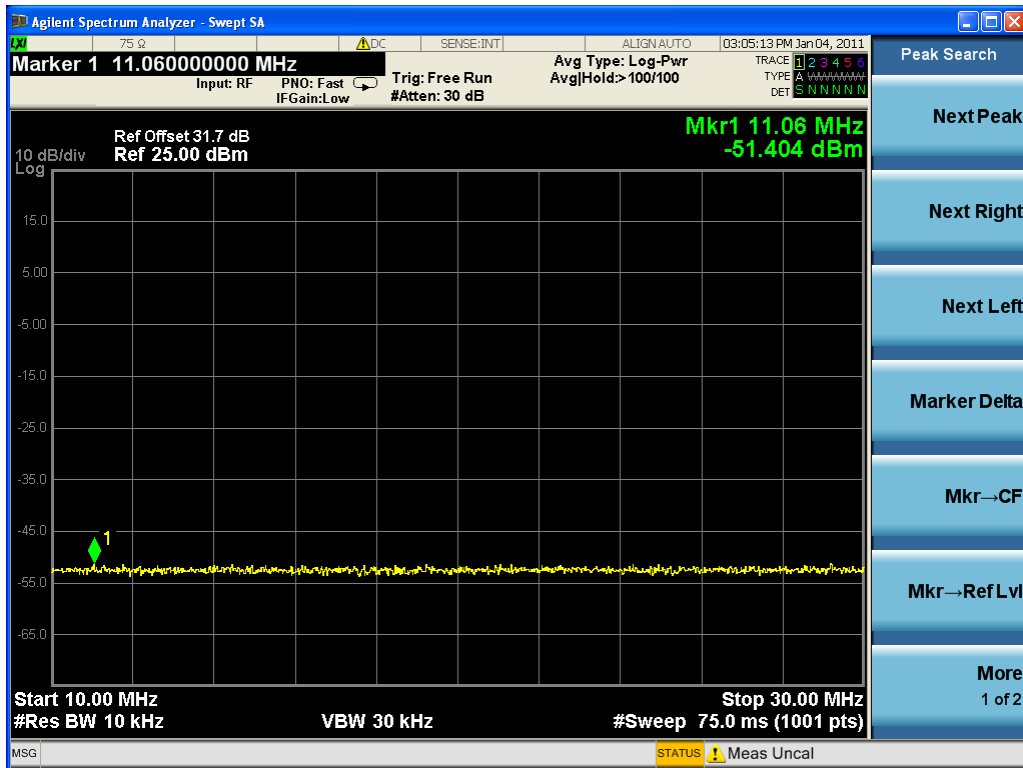


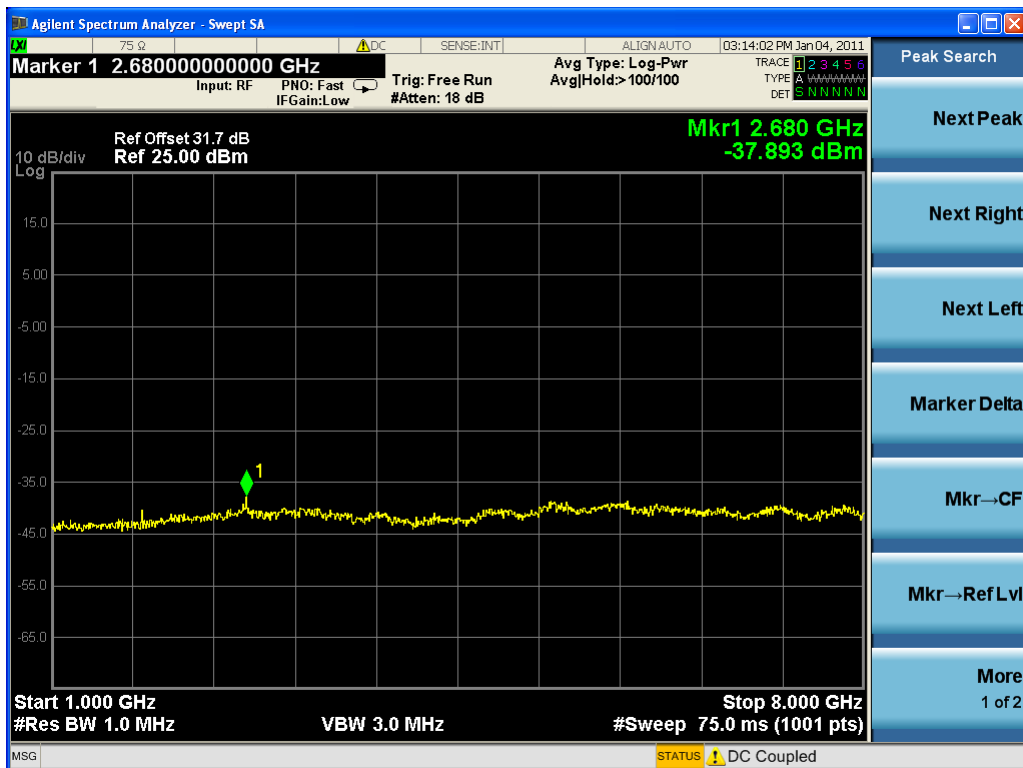
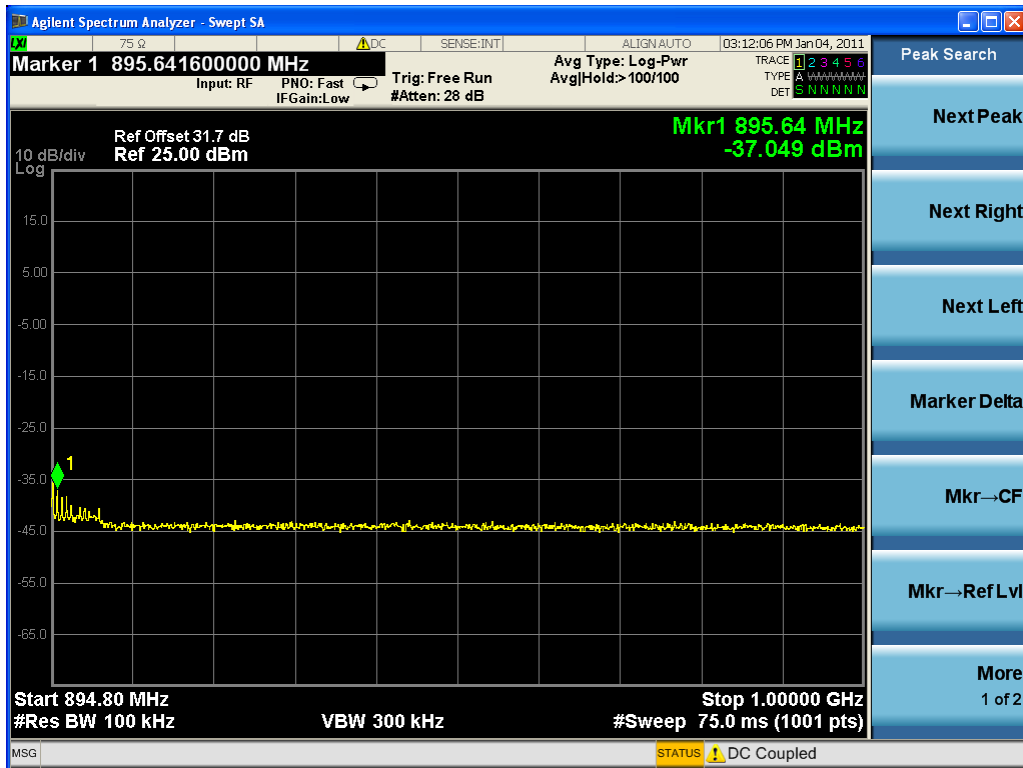




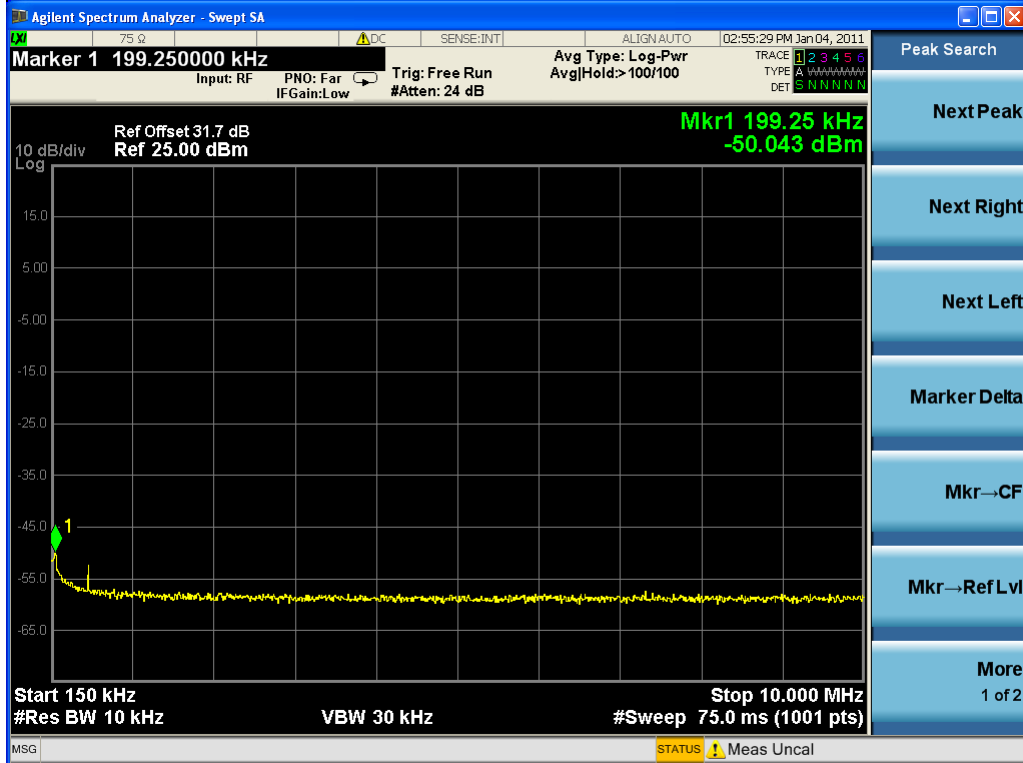
Four Carriers

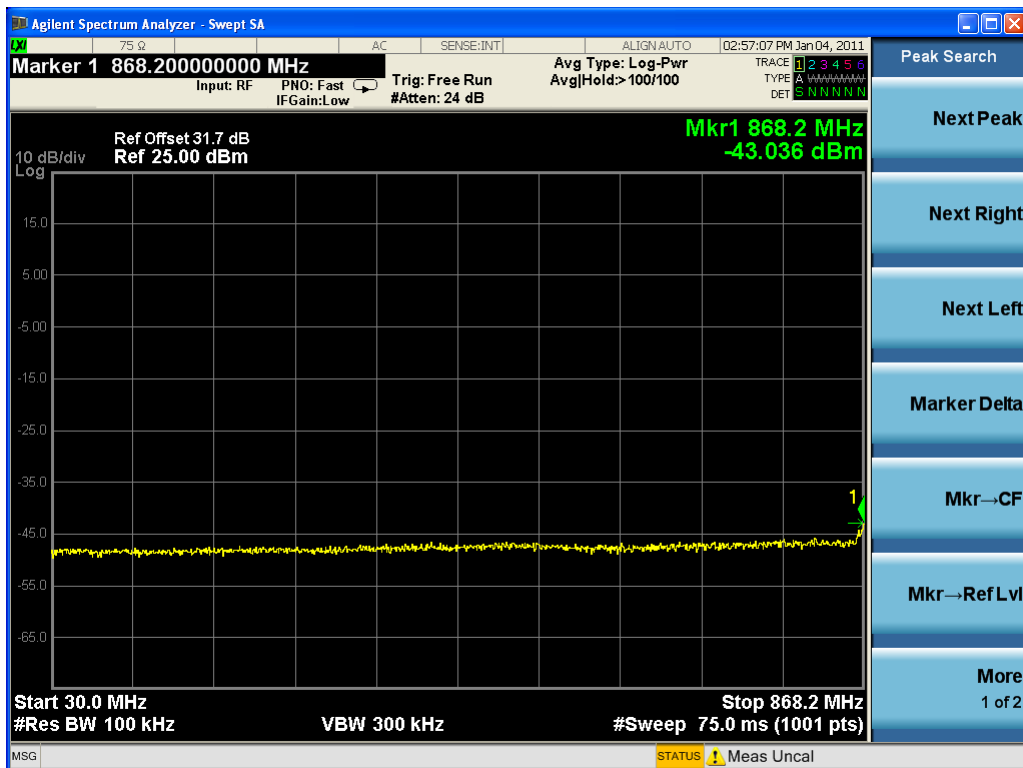
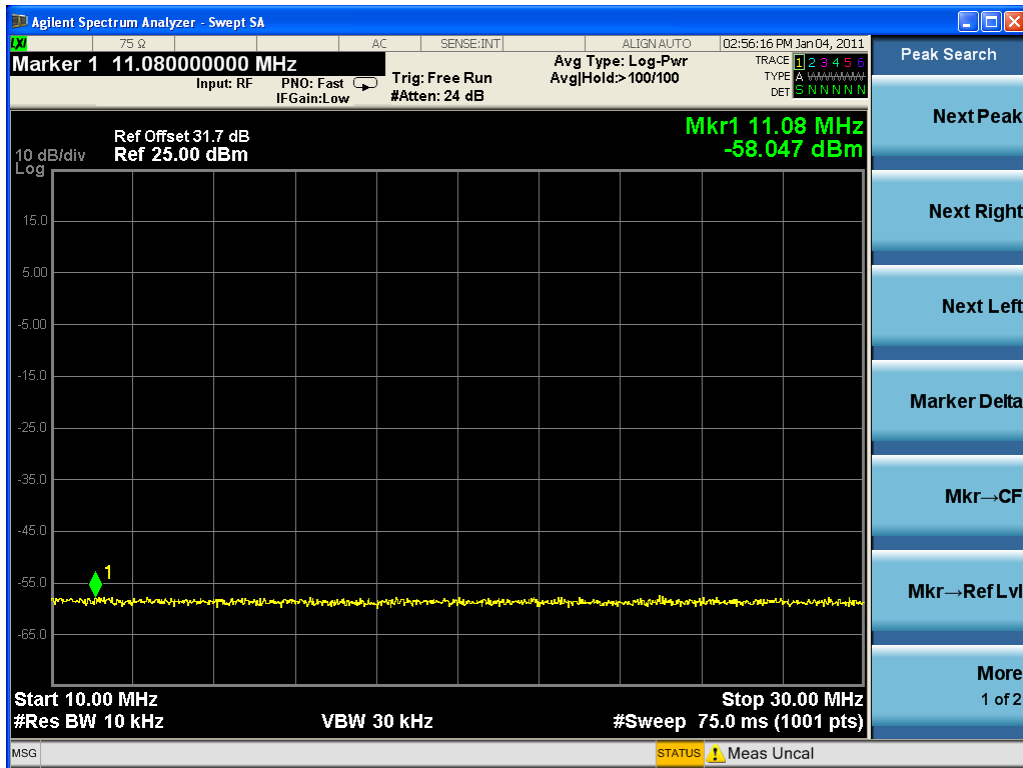


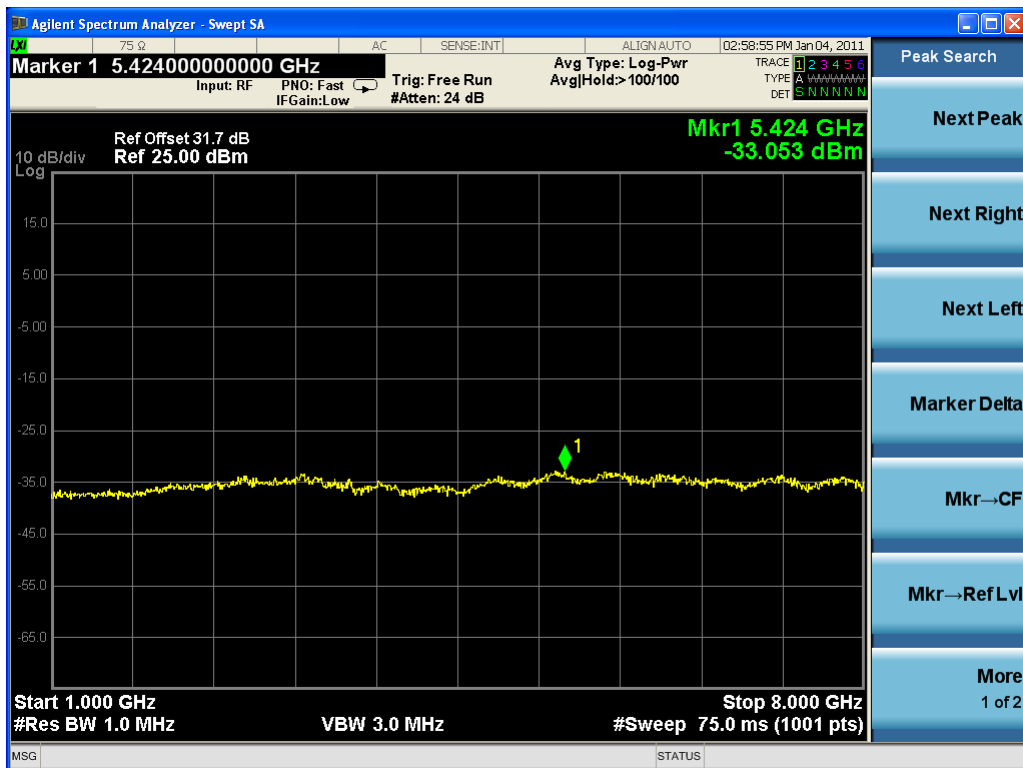
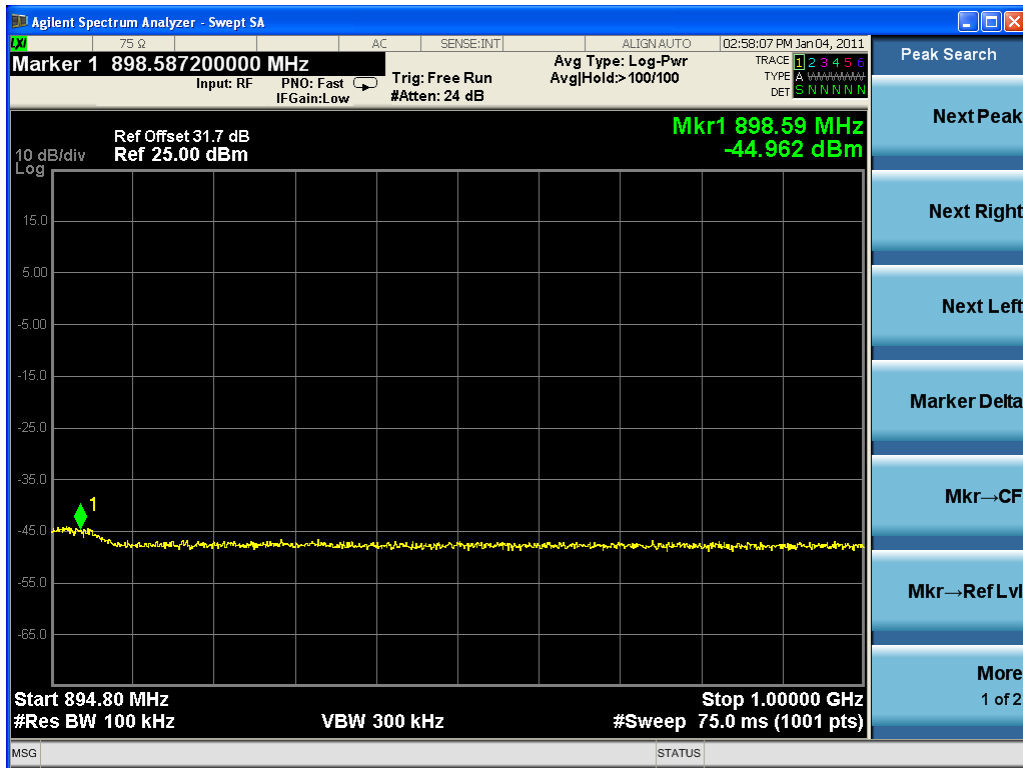




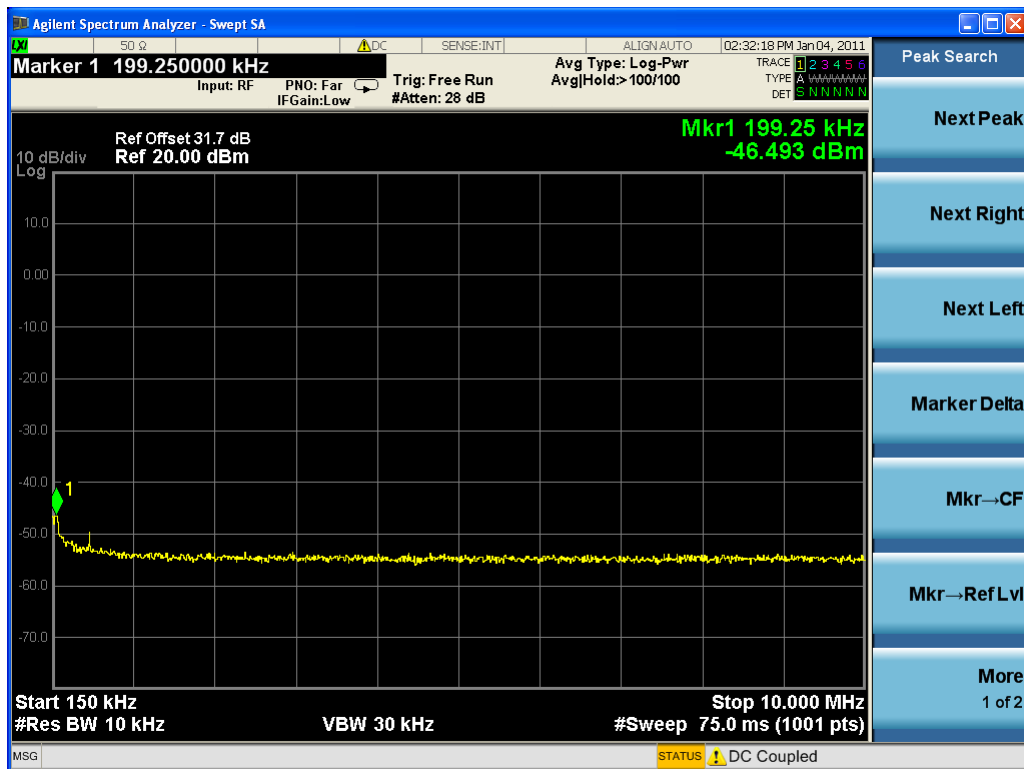
Three carriers

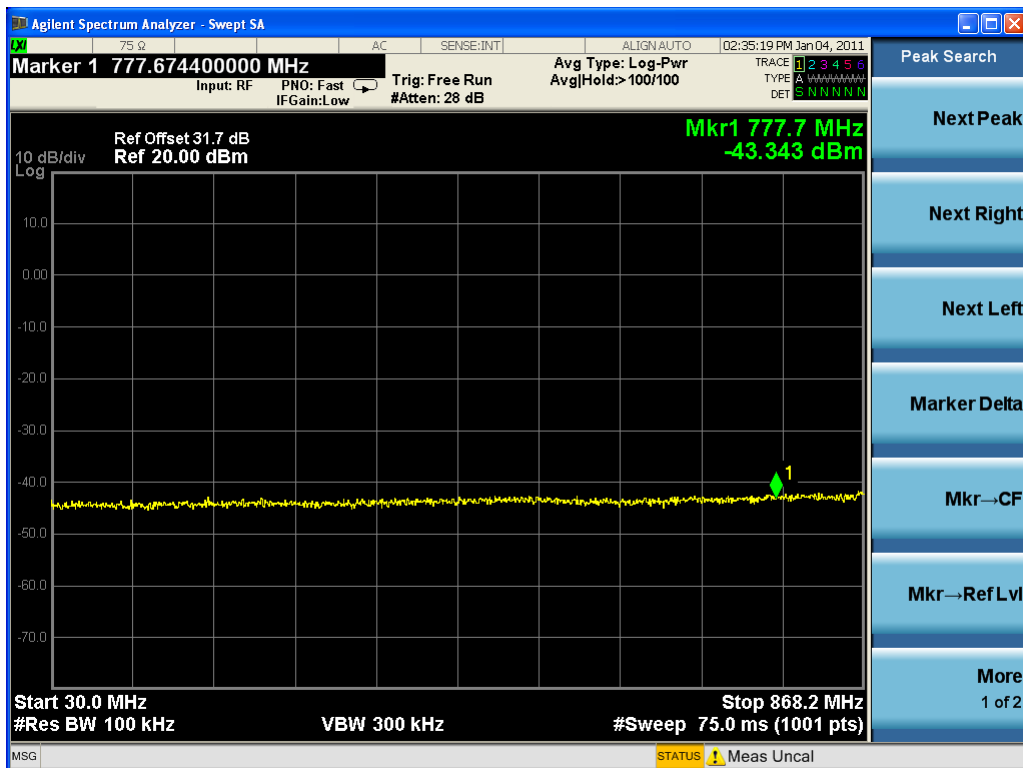
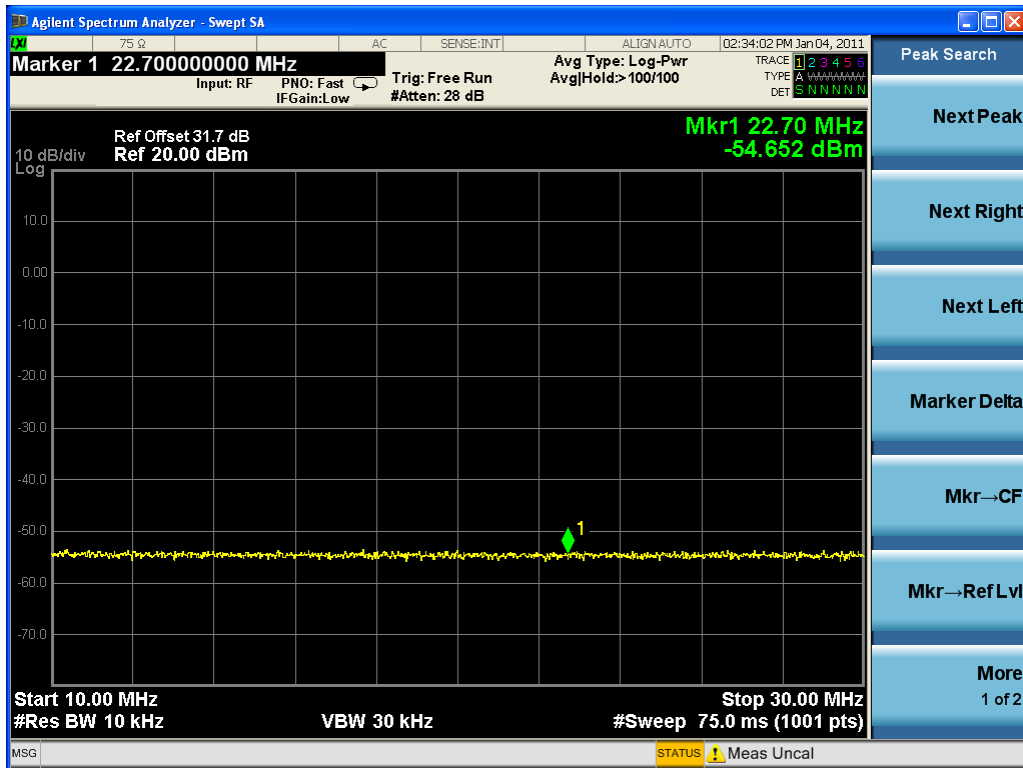


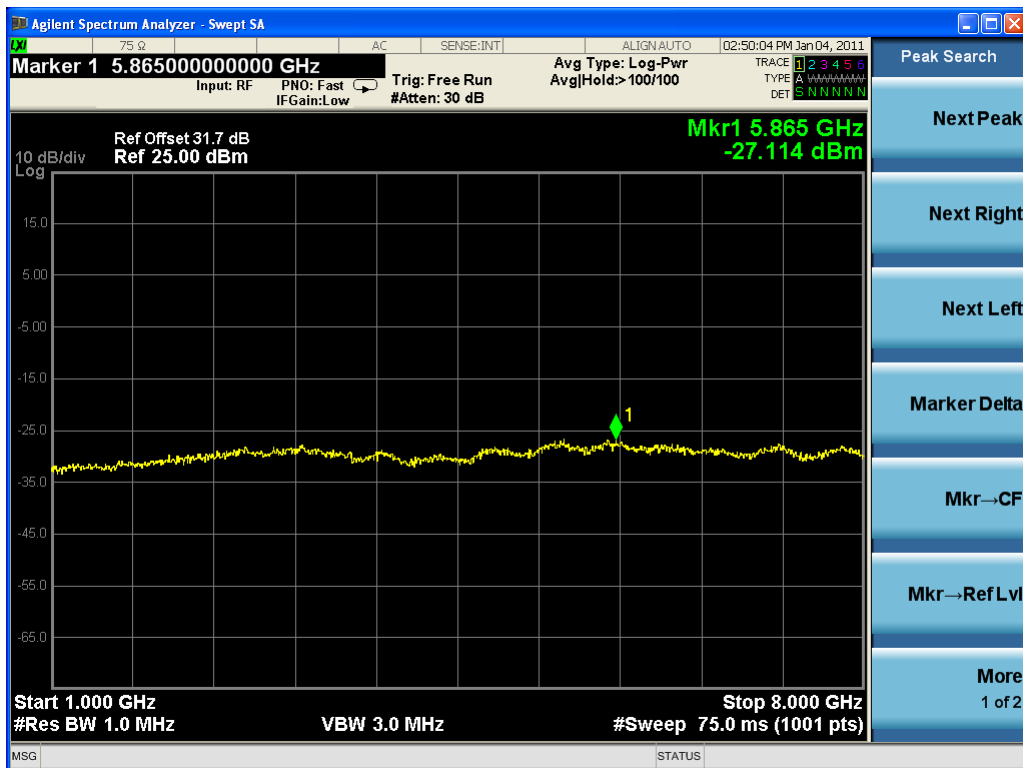
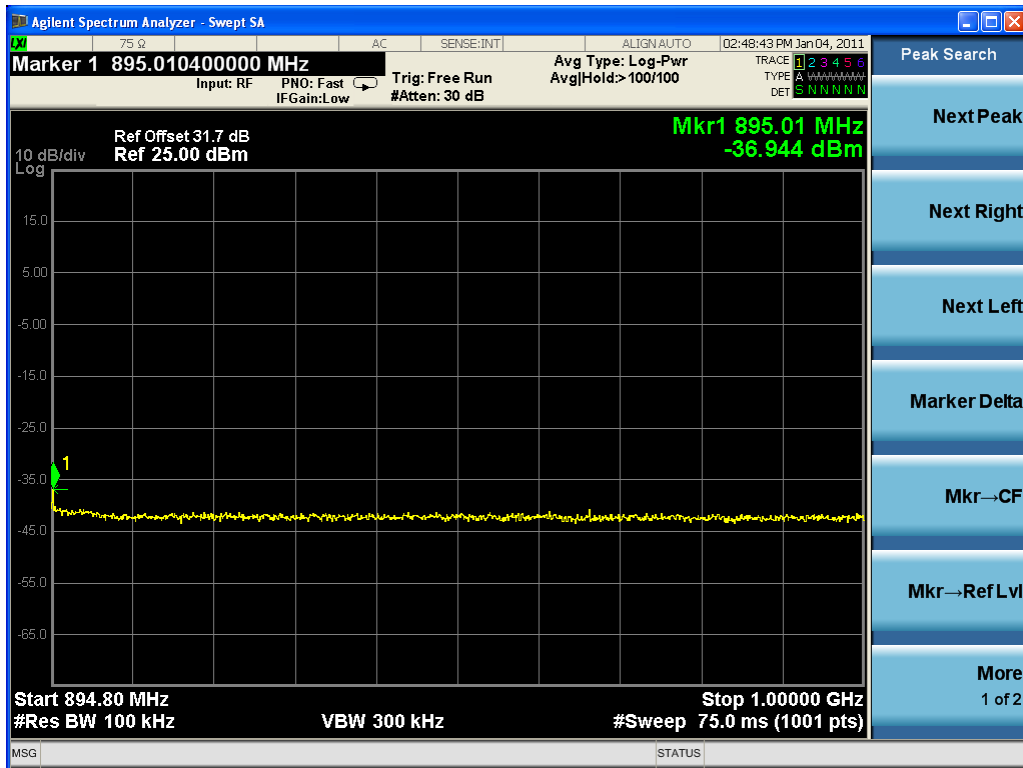




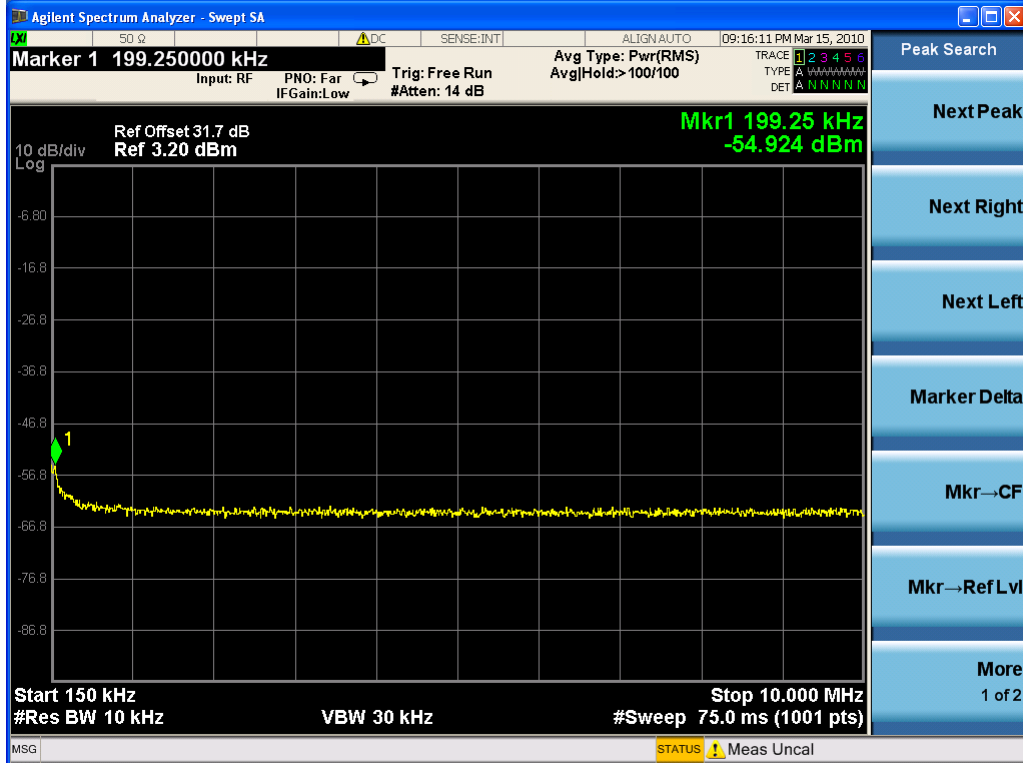
Two carriers

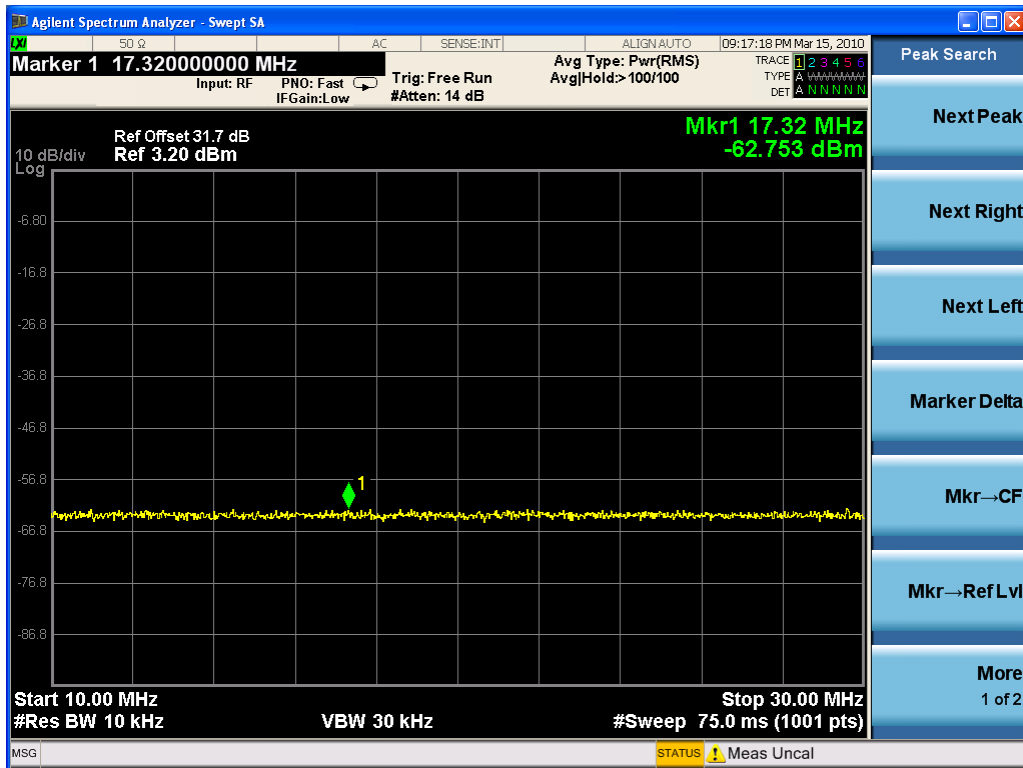


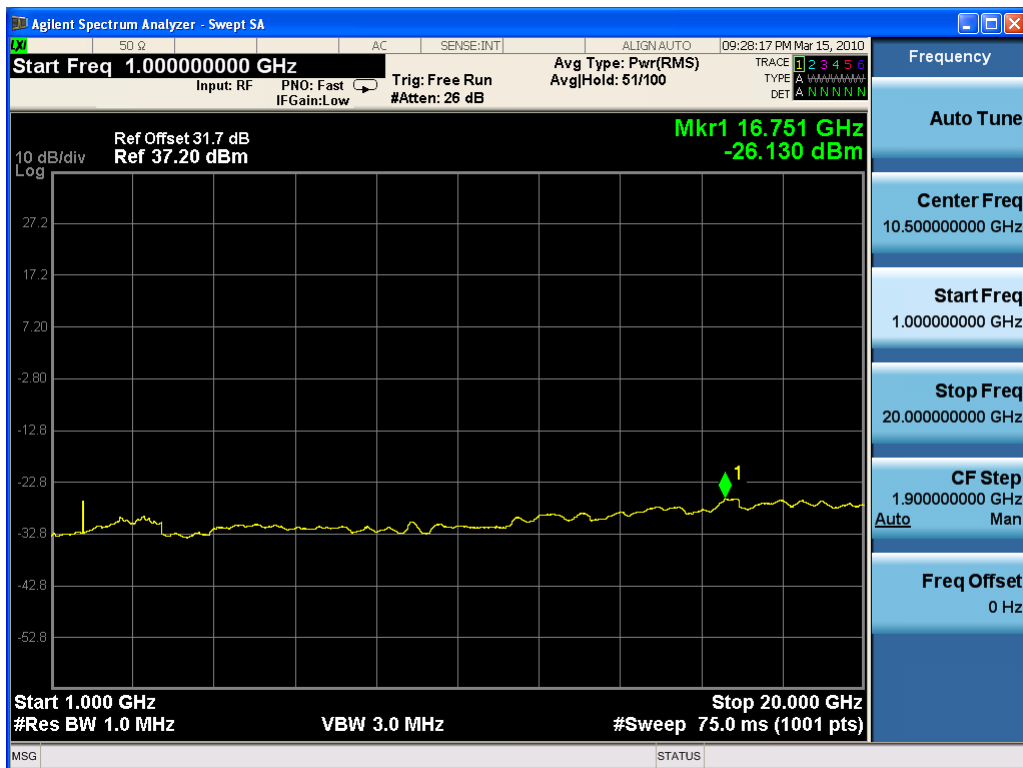
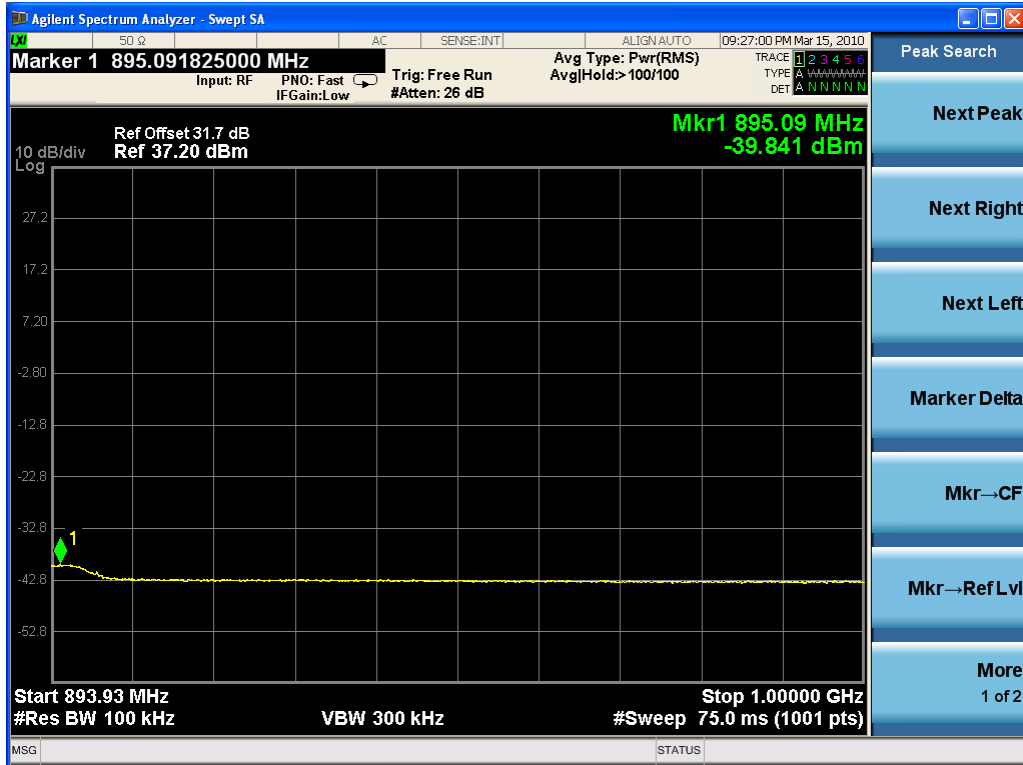




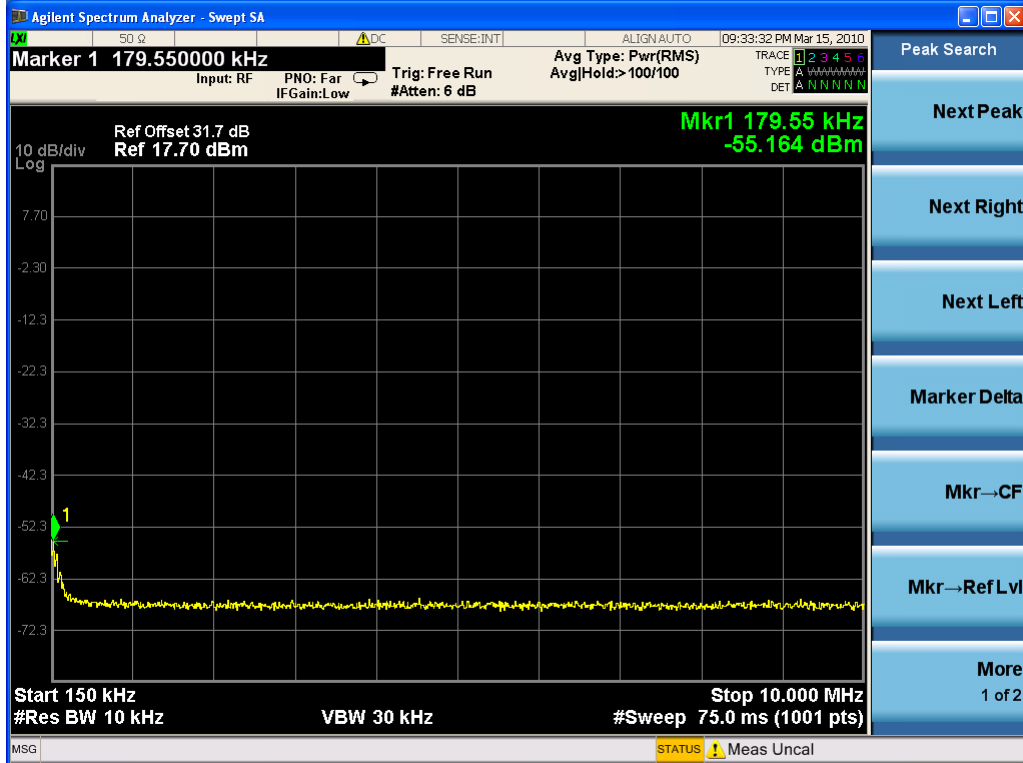
One carrier (working in bottom frequency)

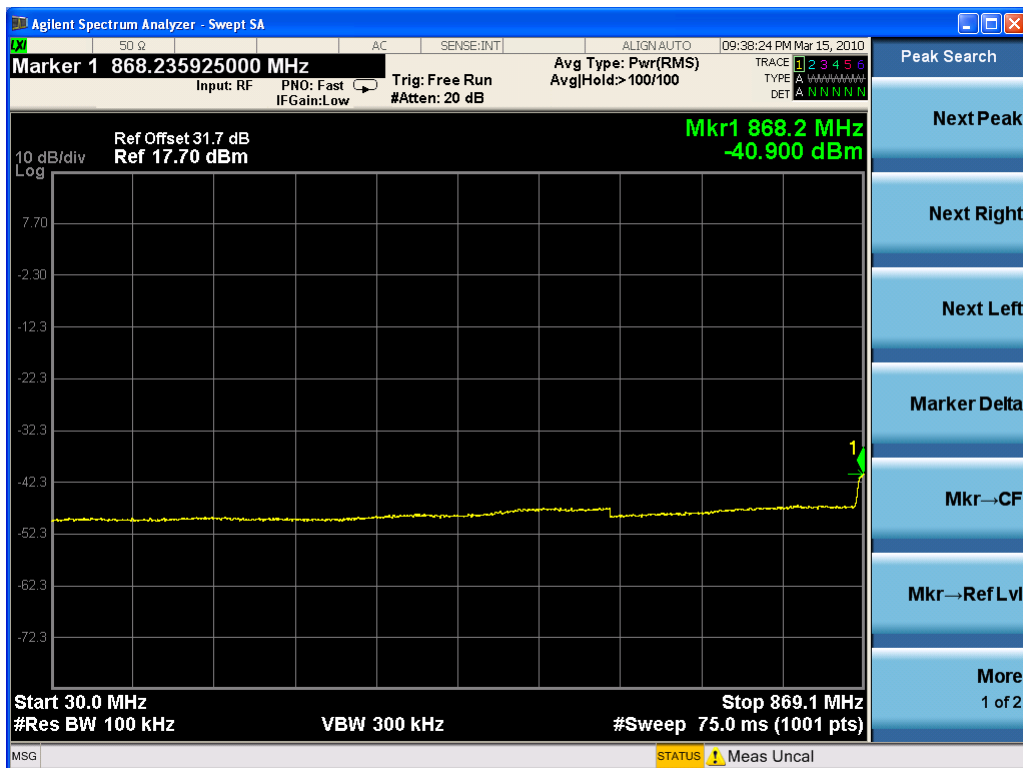
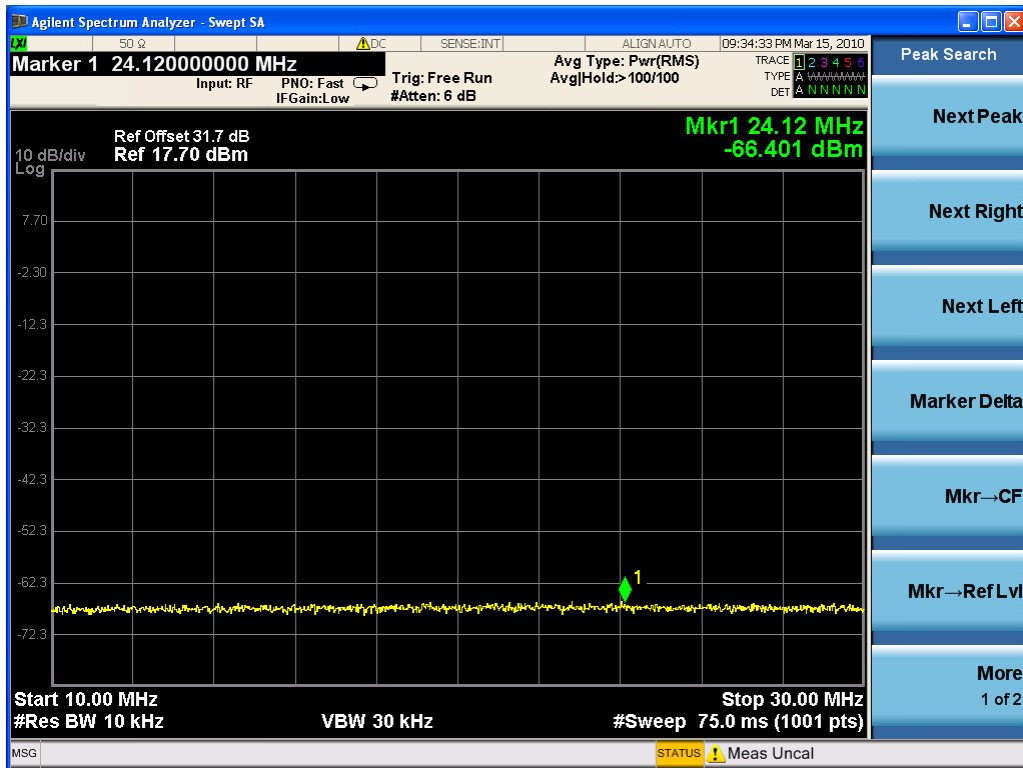


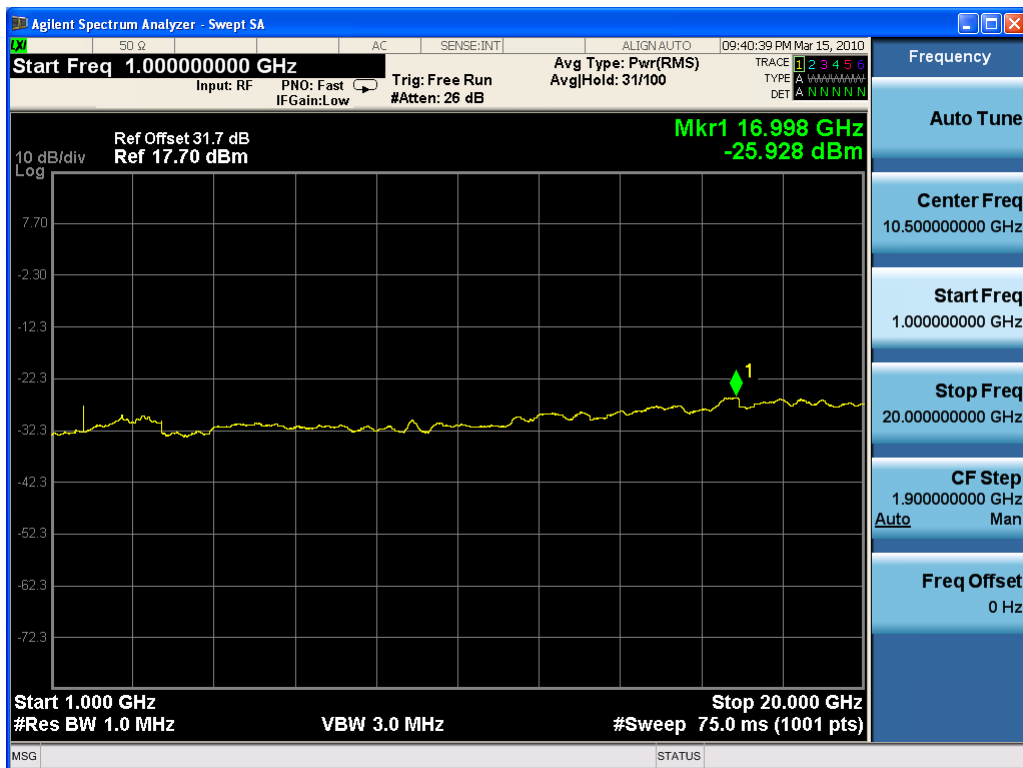
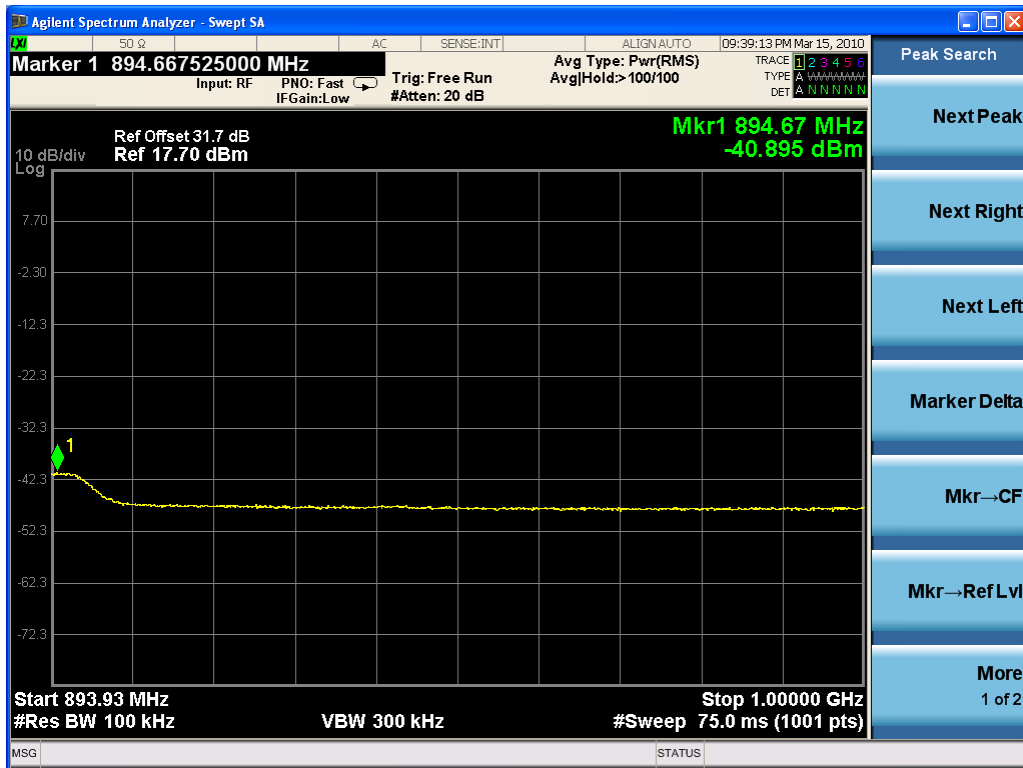




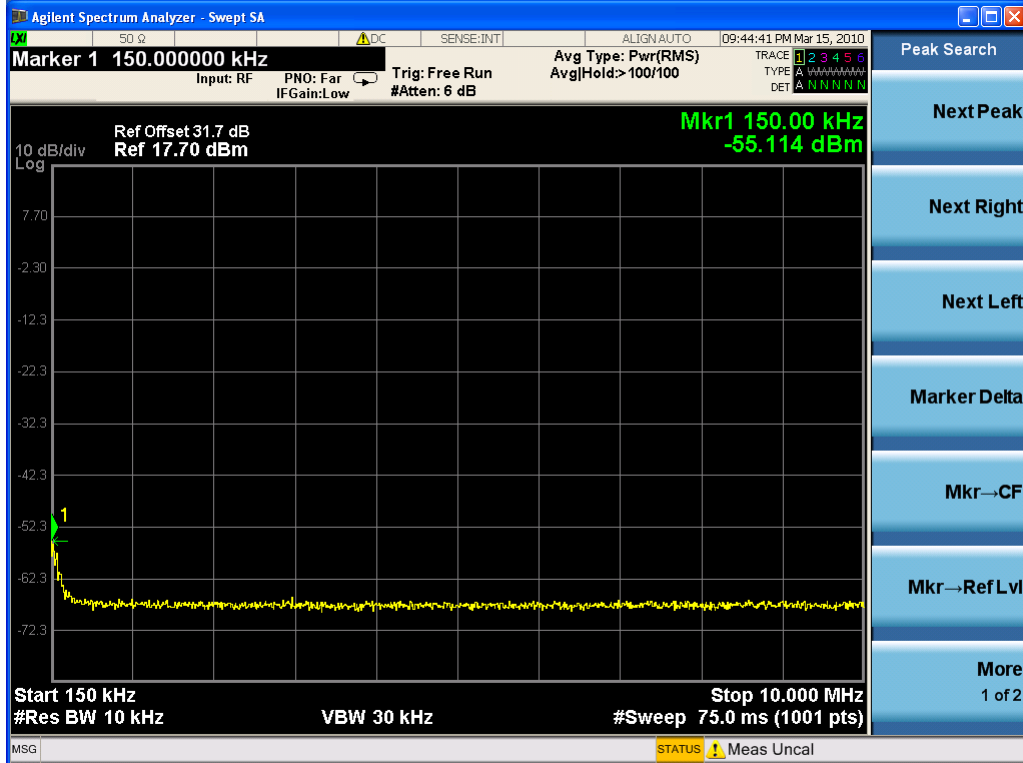
One carrier (working in middle frequency)

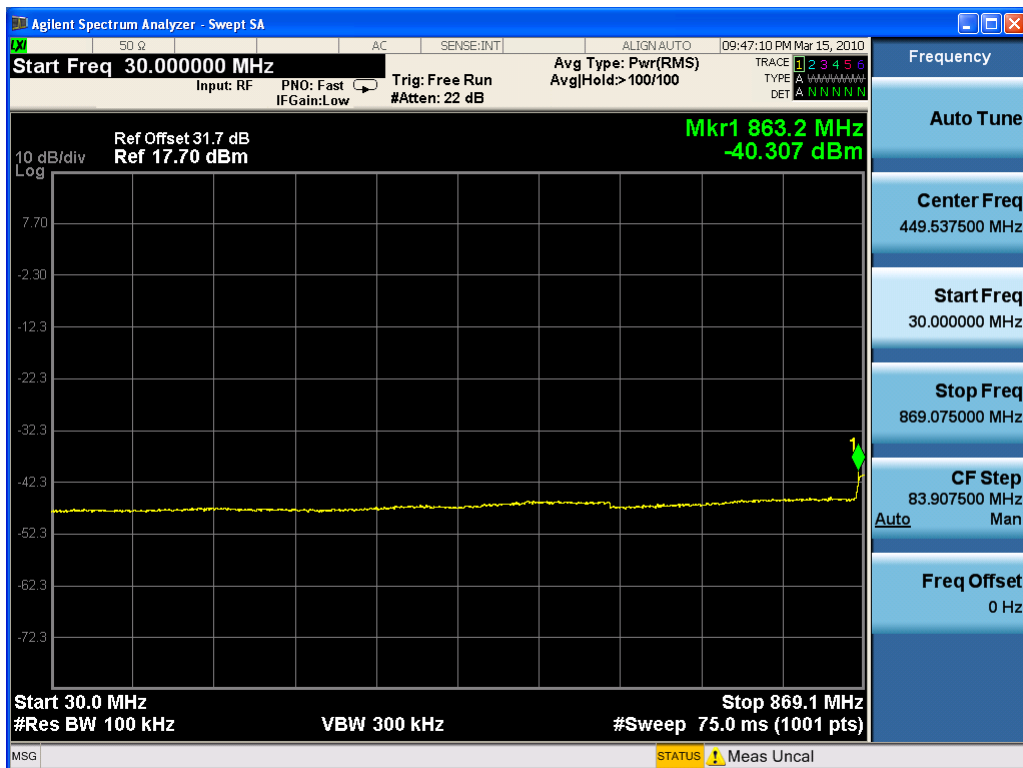
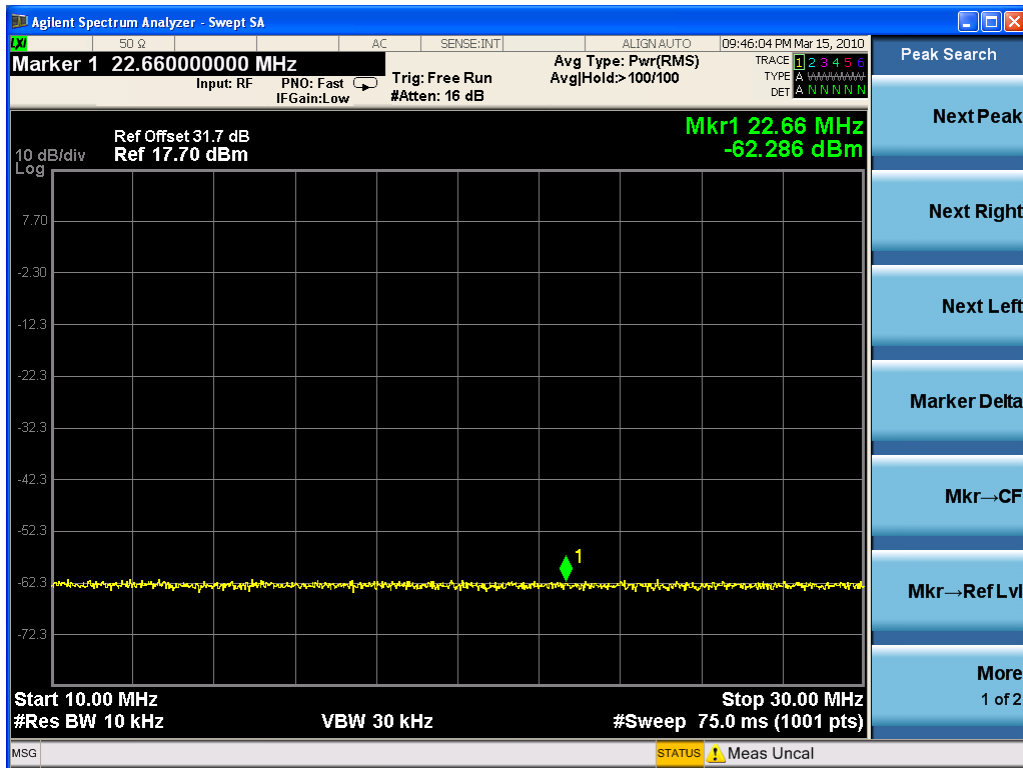


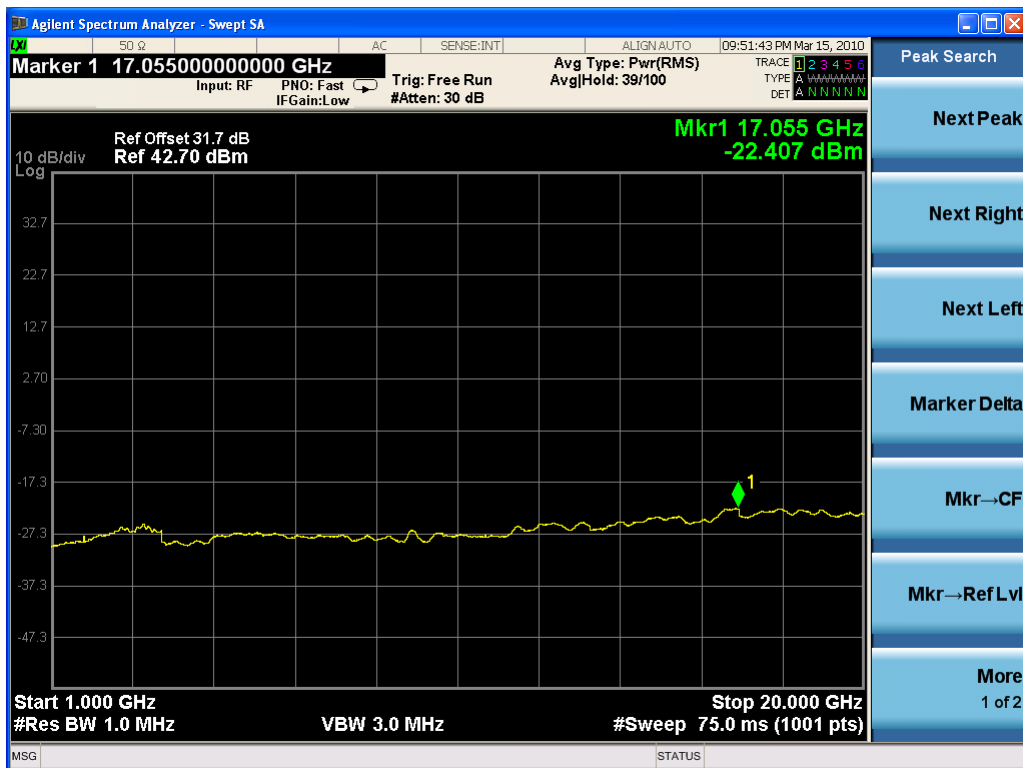
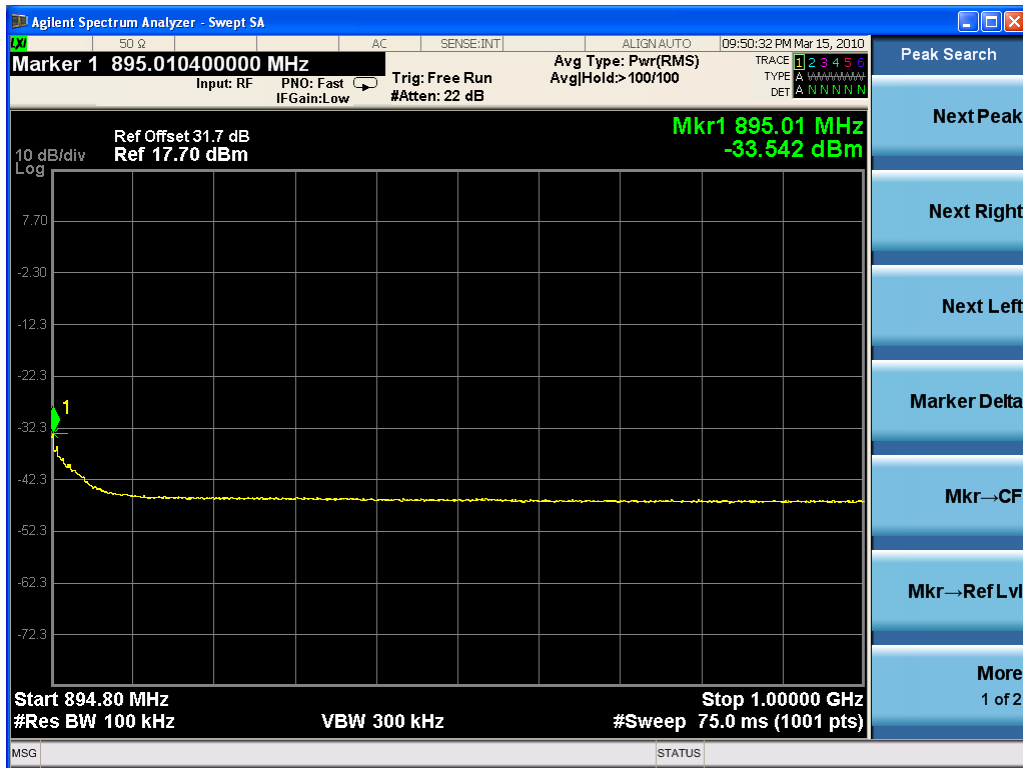




One carrier (working in top frequency)







4.6 OCCUPIED BANDWIDTH

Applicable Standard: FCC §2.1049 §22.917

Test Equipment List and Details :

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
Agilent	MXA Series Spectrum Analyzer	N9020A	MY48011941	2010-4-10	2011-4-9
DST	DST100 40dB Attenuator	DTS100-40dB-N	N/A	N/A	N/A
Hewlett Packard	Hewlett Packard RF Cable	8120-6192	01428251	N/A	N/A

***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

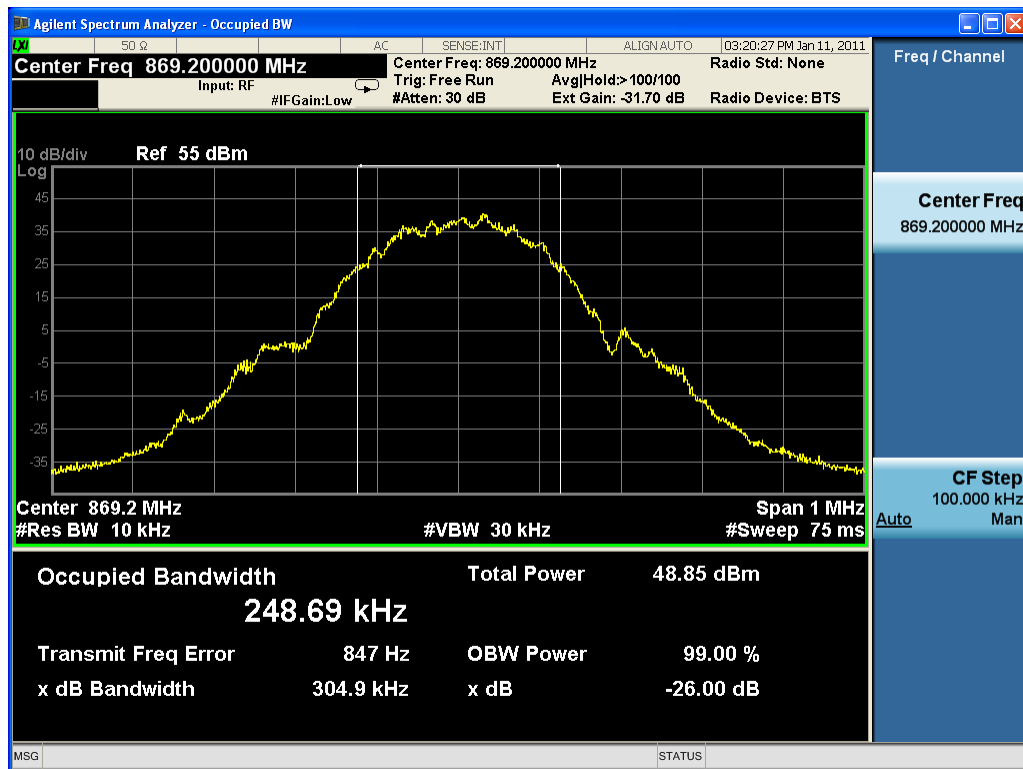
Temperature:	20 ° C
Relative Humidity:	53%
ATM Pressure:	1009mbar

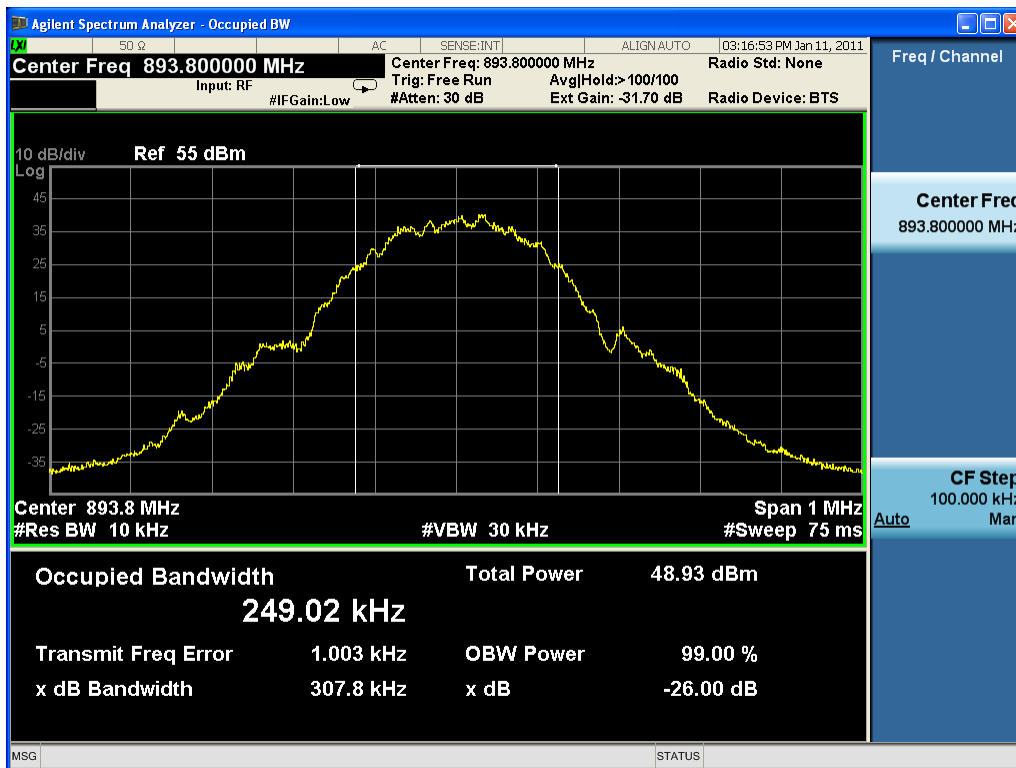
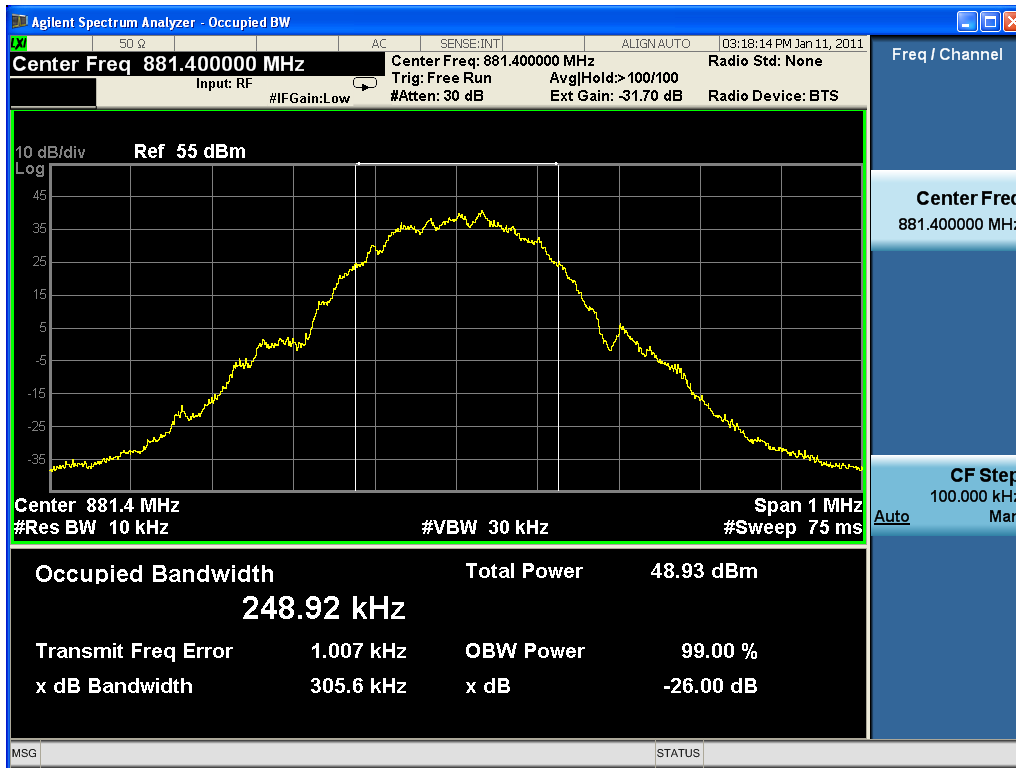
Test Result: Pass

Test Mode: Transmitting GSM

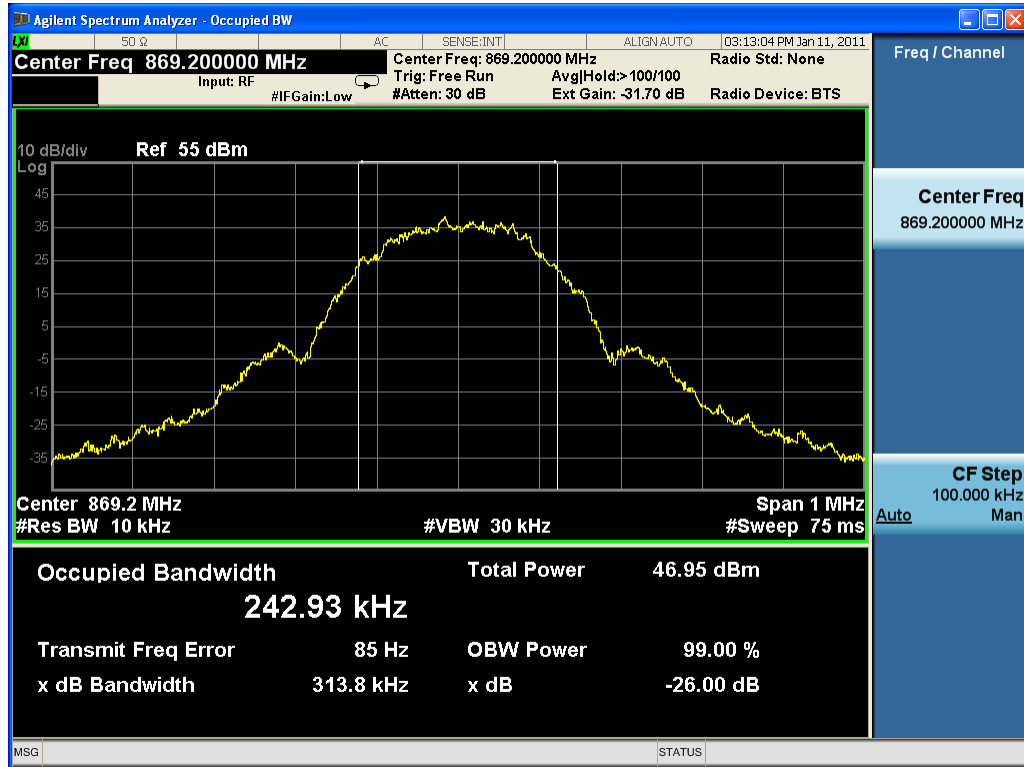
Test Data

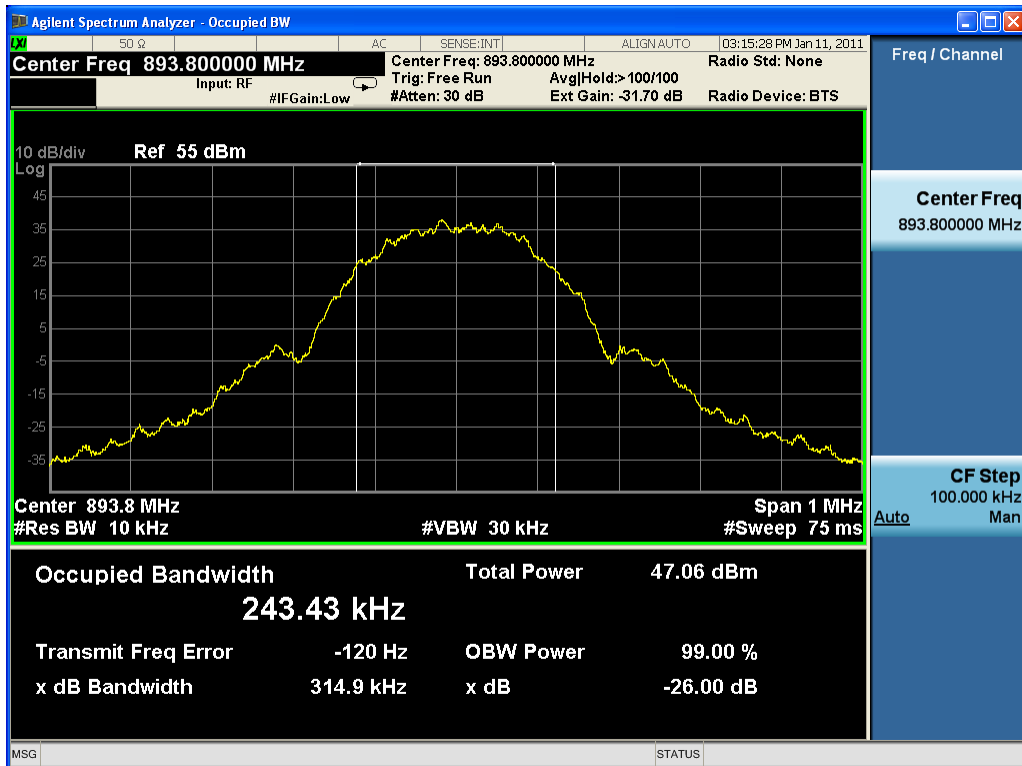
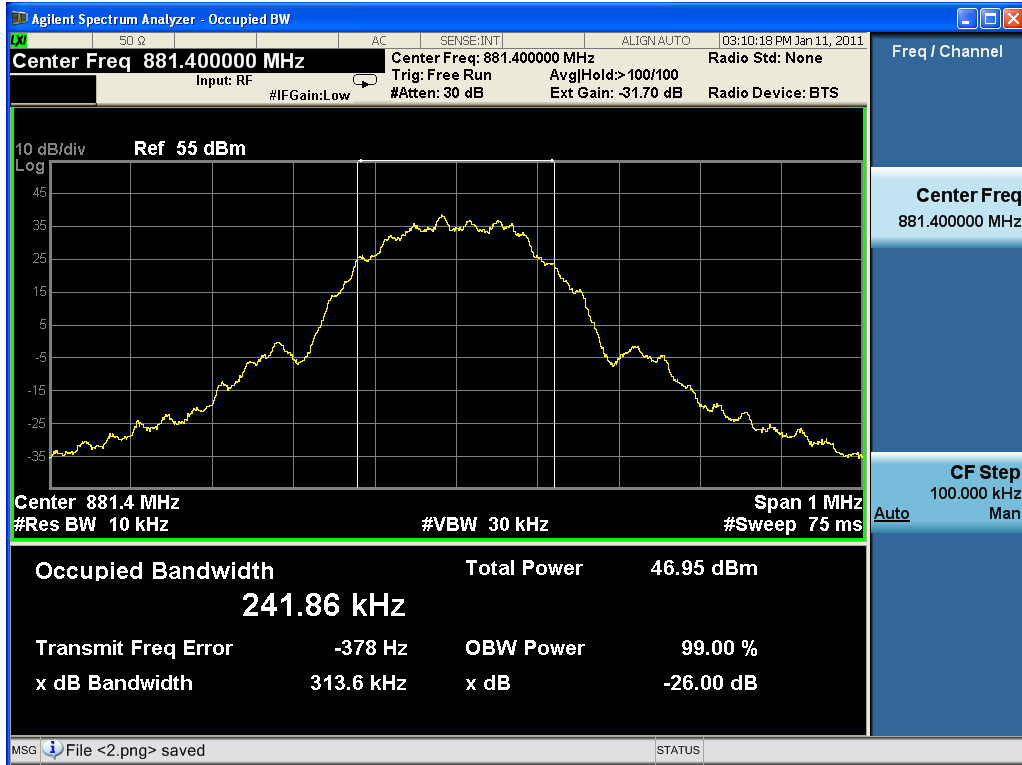
Modulation	Frequency (MHz)	99% Power Bandwidth (kHz)	Limit (kHz)
GMSK	869.2/881.4/893.8	248.69/248.92/249.02	250





Modulation	Frequency (MHz)	99% Power Bandwidth (kHz)	Limit (kHz)
8PSK	869.2/881.4/893.8	242.93/241.86/243.43	250





4.7 BAND EDGES

Applicable Standard: FCC §2.1051

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	2010-4-9	2011-4-9
DST	DST100 40dB Attenuator	DTS100-40dB-N	N/A	N/A	N/A
Hewlett Packard	Hewlett Packard RF Cable	8120-6192	01428251	N/A	N/A

***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

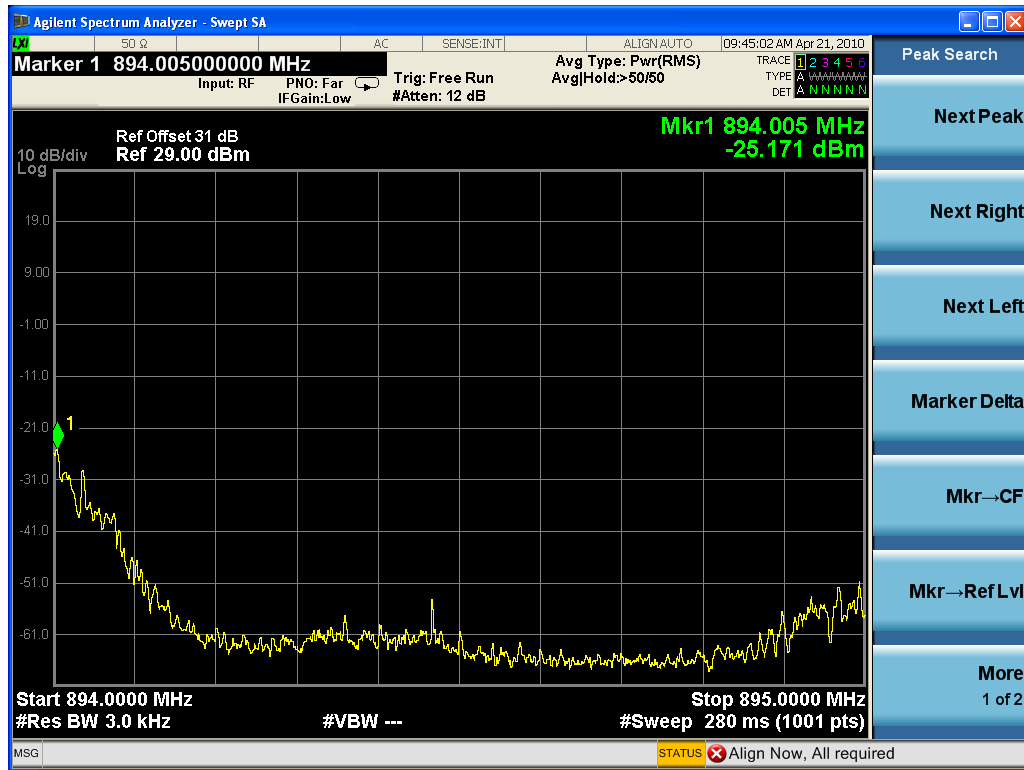
Test Mode: Transmitting GSM

Test Data

Six carriers

Frequency channel	Max bandedge Emission (dBm)	Limit (dBm)
869.2/869.8/ 870.4 /871 /871.6/ 872.2	-27.642	-13.00
890.8/891.4/892/892.6/893.2/893.8	-25.171	-13.00





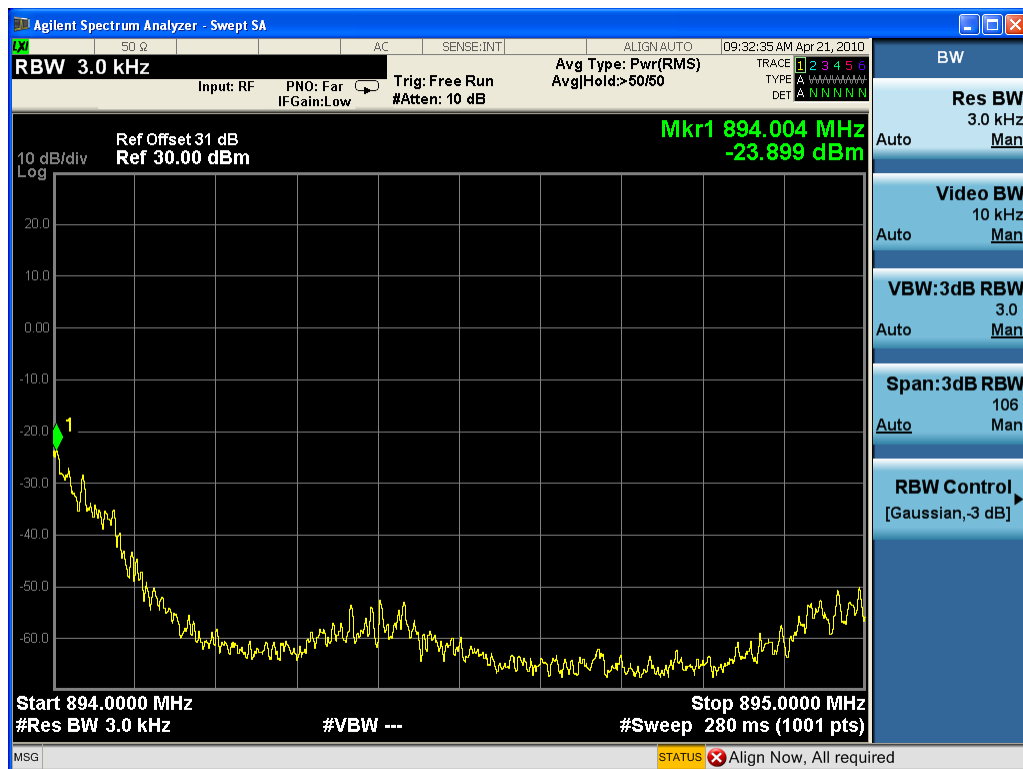
Five carriers

Frequency channel	Max bandedge Emission (dBm)	Limit (dBm)
869.2/869.8/ 870.4 /871 /871.6	-26.723	-13.00
891.4/892/892.6/893.2/893.8	-25.207	-13.00



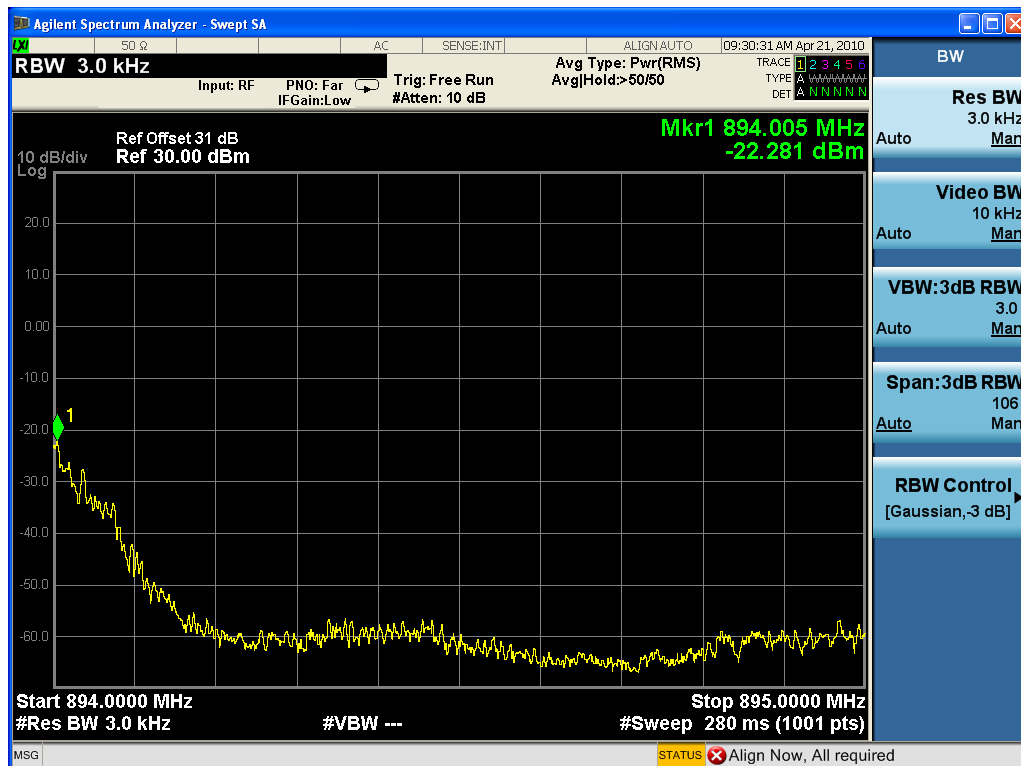
Four carrier

Frequency channel	Max bandedge Emission (dBm)	Limit (dBm)
869.2/869.8/ 870.4 /871	-25.461	-13.00
892/892.6/893.2/893.8	-23.899	-13.00



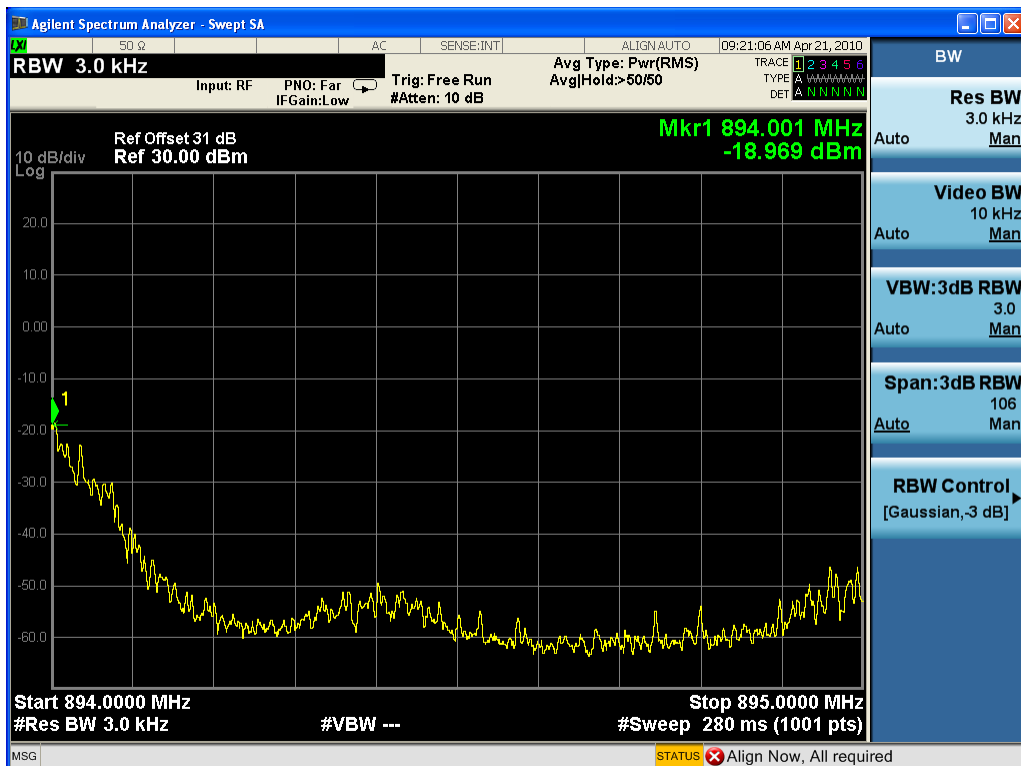
Three carriers

Frequency channel	Max bandedge Emission (dBm)	Limit (dBm)
869.2/869.8/ 870.4	-24.610	-13.00
892.6/893.2/893.8	-22.281	-13.00



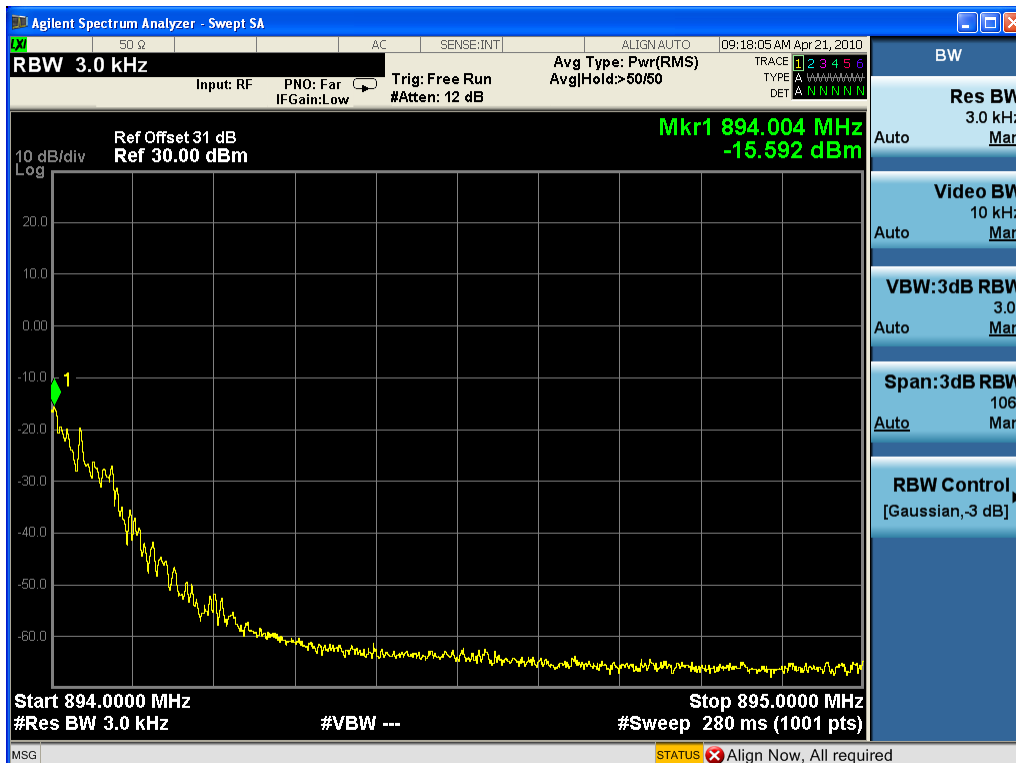
Two carriers

Frequency channel	Max bandedge Emission (dBm)	Limit (dBm)
869.2/869.8	-22.495	-13.00
893.2/893.8	-18.969	-13.00



One carrier

Frequency channel	Max bandedge Emission (dBm)	Limit (dBm)
869.2	-19.546	-13.00
893.8	-15.592	-13.00



4.8 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	GRW-120	00020268	2010-1-22	2011-1-22
Agilent	MXA Series Spectrum Analyzer	N9020A	MY48011941	2010-4-9	2011-4-9
DST	DST100 40dB Attenuator	DTS100-40dB-N	N/A	N/A	N/A
Hewlett Packard	Hewlett Packard RF Cable	8120-6192	01428251	N/A	N/A

***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					
Temperature °C	Power Supplied VDC	Frequency Measure Error Hz	Error ppm	Limit	Result
f=869.2MHz					
-40	-48	-6.19	-0.00712	0.02ppm	PASS
-30	-48	7.76	0.00893	0.02ppm	PASS
-20	-48	-5.58	-0.00642	0.02ppm	PASS
-10	-48	-5.41	-0.00622	0.02ppm	PASS
0	-48	-4.54	-0.00522	0.02ppm	PASS
10	-48	4.41	0.00507	0.02ppm	PASS
20	-48	4.77	0.00549	0.02ppm	PASS
30	-48	3.27	0.00376	0.02ppm	PASS
40	-48	-6.46	-0.00743	0.02ppm	PASS
50	-48	-4.06	-0.00467	0.02ppm	PASS
55	-48	-3.16	-0.00364	0.02ppm	PASS
f=881.4MHz					
-40	-48	4.78	0.00542	0.02ppm	PASS
-30	-48	6.92	0.00785	0.02ppm	PASS
-20	-48	-5.35	-0.00607	0.02ppm	PASS

-10	-48	-5.66	-0.00642	0.02ppm	PASS
0	-48	-4.27	-0.00484	0.02ppm	PASS
10	-48	5.83	0.00661	0.02ppm	PASS
20	-48	3.68	0.00418	0.02ppm	PASS
30	-48	3.55	0.00403	0.02ppm	PASS
40	-48	-4.02	-0.00456	0.02ppm	PASS
50	-48	2.86	0.00324	0.02ppm	PASS
55	-48	3.93	0.00446	0.02ppm	PASS
f=893.8MHz					
-40	-48	6.09	0.00681	0.02ppm	PASS
-30	-48	5.47	0.00612	0.02ppm	PASS
-20	-48	-6.42	-0.00718	0.02ppm	PASS
-10	-48	-7.25	-0.00811	0.02ppm	PASS
0	-48	4.18	0.00468	0.02ppm	PASS
10	-48	-3.91	-0.00437	0.02ppm	PASS
20	-48	-4.03	-0.00451	0.02ppm	PASS
30	-48	4.71	0.00527	0.02ppm	PASS
40	-48	-3.77	-0.00422	0.02ppm	PASS
50	-48	-3.24	-0.00362	0.02ppm	PASS
55	-48	3.62	0.00405	0.02ppm	PASS

Frequency Stability Versus Voltage

Frequency Stability vs. Voltage					
VoltageVDC	Temperature °C	Frequency Measure Error Hz	Error ppm	Limit	Result
f=869.2MHz					
-37	20	2.94	0.00338	0.02ppm	PASS
-41	20	3.35	0.00385	0.02ppm	PASS
-45	20	-3.67	-0.00422	0.02ppm	PASS
-47	20	-6.34	-0.00729	0.02ppm	PASS
-51	20	-6.89	-0.00793	0.02ppm	PASS
-53	20	-5.68	-0.00653	0.02ppm	PASS
-55	20	3.52	0.00405	0.02ppm	PASS
-57	20	-5.52	-0.00635	0.02ppm	PASS
-61	20	-3.45	-0.00397	0.02ppm	PASS
f=881.4MHz					
-37	20	-3.99	-0.00453	0.02ppm	PASS
-41	20	-4.67	-0.00530	0.02ppm	PASS
-45	20	-3.51	-0.00398	0.02ppm	PASS
-47	20	-5.31	-0.00602	0.02ppm	PASS
-51	20	5.32	0.00604	0.02ppm	PASS
-53	20	2.57	0.00292	0.02ppm	PASS
-55	20	4.82	0.00547	0.02ppm	PASS
-57	20	4.62	0.00524	0.02ppm	PASS
-61	20	-6.01	-0.00682	0.02ppm	PASS
f=893.8MHz					
-37	20	4.17	0.00467	0.02ppm	PASS
-41	20	-3.30	-0.00369	0.02ppm	PASS
-45	20	-4.32	-0.00483	0.02ppm	PASS
-47	20	4.26	0.00477	0.02ppm	PASS
-51	20	-5.03	-0.00563	0.02ppm	PASS
-53	20	3.74	0.00418	0.02ppm	PASS
-55	20	2.79	0.00312	0.02ppm	PASS
-57	20	-5.27	-0.00590	0.02ppm	PASS
-61	20	-2.04	-0.00228	0.02ppm	PASS

5 DUAL-MODE OF TEST RESULTS

FCC RULES	DESCRIPTION OF TEST	RESULT
§2.1046 §22.913	Transmitter output Power	Compliant
§2.1091 §1.1037	RF Exposure	Compliant
§2.1053	Spurious Radiated Emissions	Compliant
§2.1051, §22.917	Spurious Emissions AT Antenna Terminals	Compliant
§2.1049 §22.917	Occupied Bandwidth	Compliant
§2.1051	Band Edge	Compliant
§ 2.1055	Frequency stability	Compliant

5.1 TRANSMITTER OUTPUT POWER

According to FCC §2.1046 & 22.913, the ERP (equivalent isotropically radiated power) must not exceed 500 Watts.

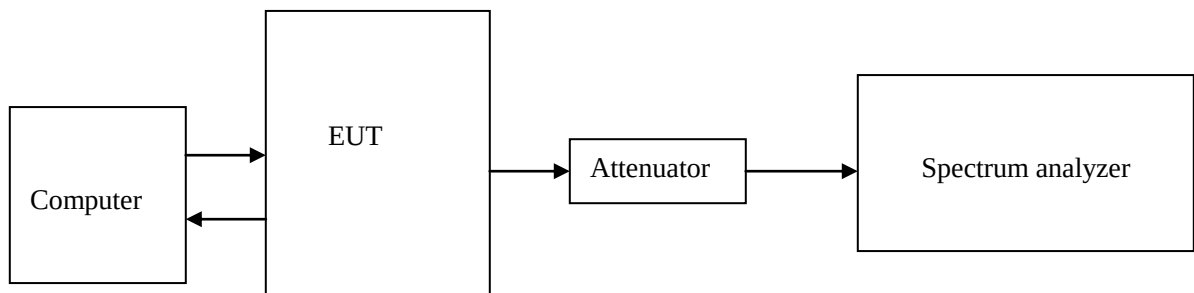
Applicable Standard: FCC §2.1046 §22.913

Test Equipment List and Details

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
Agilent	MXA Series Spectrum Analyzer	N9020A	MY48011941	2010-4-10	2011-4-9
DTS	DTS100 40dB Attenuator	DTS100-40dB-N	N/A	N/A	N/A
Hewlett Packard	Hewlett Packard RF Cable	8120-6192	01428251	N/A	N/A

***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 40dB, Cable Loss is about 3dB

Environmental Conditions

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

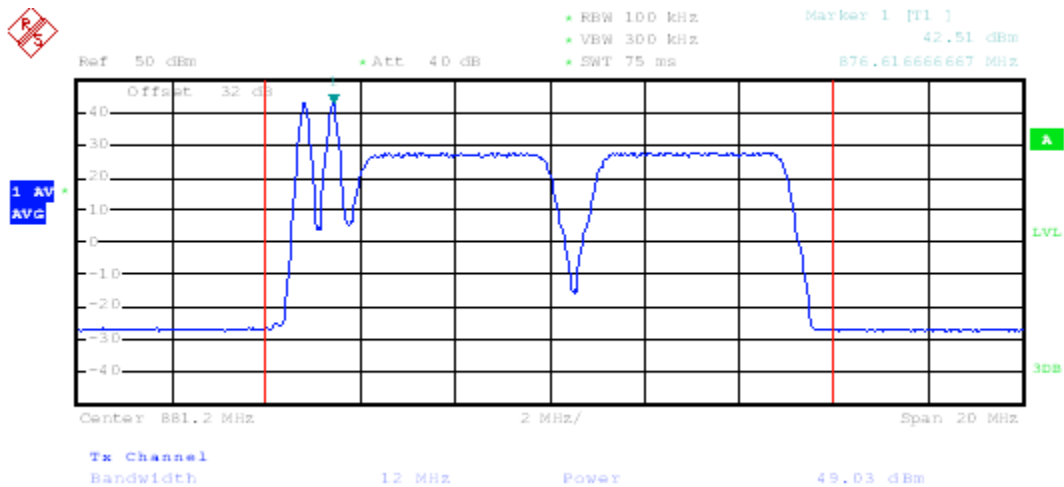
Test Result: Pass

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

Test Data:

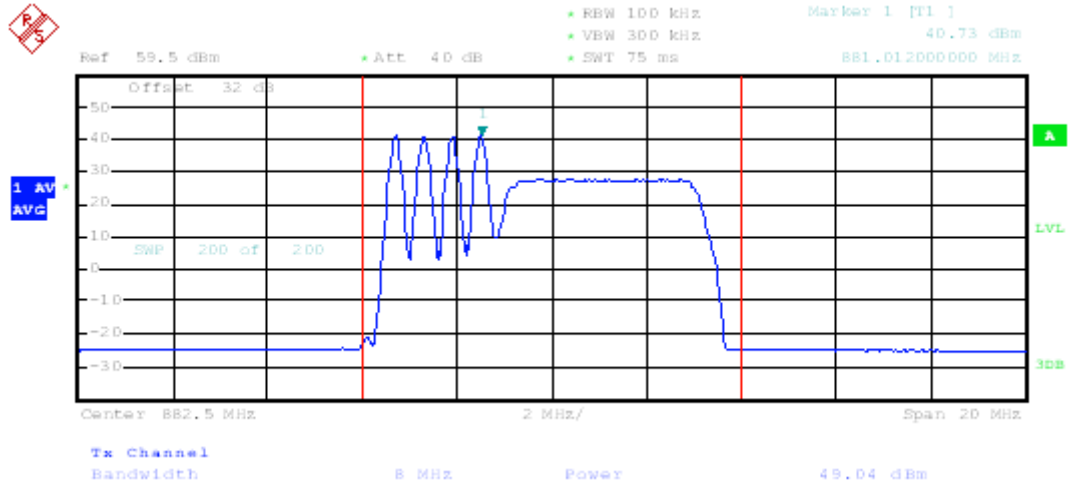
2GSMTRX and 2UMTS carriers

Center Freq. (MHz)	Frequency (MHz)	Max output Power in dBm
881.2	881.2	49.03



4GSM TRX and 1UMTS carriers

Center Freq. (MHz)	Frequency (MHz)	Max output Power in dBm
882.5	882.5	49.04



5.2 RF EXPLOSURE

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

$$S = \text{EIRP} / 4\pi R^2$$

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 ERP, In general, the effective radiated power (ERP) of base transmitters and cellular repeaters must not exceed 500 Watts.

Frequency is between 300MHz and 1500MHz, and the Maximum

$$S = 894 / 1500 = 0.596 \text{ mW/cm}^2$$

$$R = 3.31 \text{ m.}$$

This equipment should be installed and operated with minimum distance 3.31m between the radiator & your body .

Test Result: pass

5.3 SPURIOUS RADIATED EMISSIONS

Applicable Standard: FCC CFR 47, §2.1053

Test Equipment List and Details

Manufacturer	Equipment	Model	Serial Number	Last Cal.	Cal. Interval
Albatross	Anechoic Chamber	3m Site	A00017354	2010-6-30	1 year
R&S	EMI Test Receiver	ES126	100058	2010-10-29	1 year
R&S	Log periodic Antenna	HL562	100022	2010-8-5	1 year
R&S	Double-Ridged Waveguide Horn Antenna	HF906 TX	100032	2010-8-5	1 year

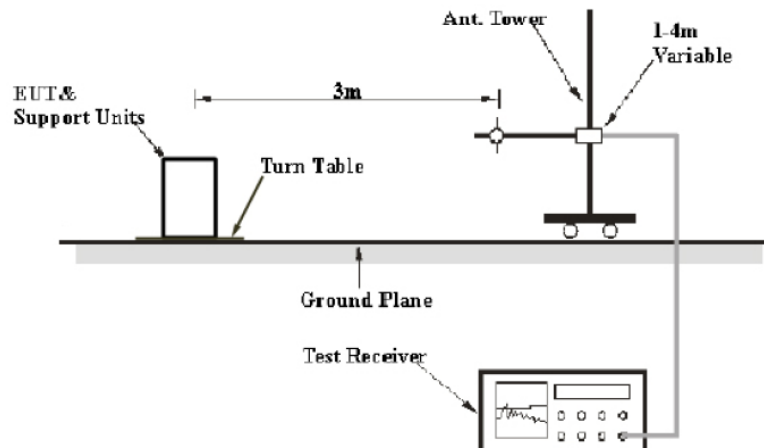
***statement of traceability:** ZTE Corporation Testing lab attest that all calibration have been performed per the NVLAP requirements , traceable to NIST.

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 15.109. The specification used were the FCC 15.109 limits and RSS 133 clause 6.5 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 teeth 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)	Absolute Level (dBm)	Limit (dBm)	Margin (dB)
Frequency (MHz)	Amp. (dBuV)	Height (M)	Polar H/V	Frequency (MHz)	Level (dBm)	Antenna Gain Correction				
57.980769	23.91	1	V	57.980769	-43.29	-29.52	0.5	-75.46	-13	62.46
65.753205	22.4	1	V	65.753205	-44.8	-25.3	0.6	-72.85	-13	59.85
205.657051	31.04	1	V	205.657051	-59.62	0.87	1.1	-62	-13	49
246.073718	23.1	1	V	246.073718	-74.45	1.49	1.3	-76.41	-13	63.41
874.086538	62.66	1	V	874.086538	-34.53	-1.32	2.5	-40.5	-13	27.5
2983.97436	56.37	2	V	2983.97436	-45.37	7.95	4.6	-44.17	-13	31.17
137.259615	19.11	2	H	137.259615	-72.93	-8.42	1	-84.5	-13	71.5
208.766026	29.73	2	H	208.766026	-69.52	0.87	1.1	-71.9	-13	58.9
246.073718	21.43	2	H	246.073718	-73.33	1.49	1.3	-75.29	-13	62.29
636.25	21.9	2	H	636.25	-78.99	-1.09	2.1	-84.33	-13	71.33
874.086538	62.64	2	H	874.086538	-34.45	-1.32	2.5	-40.42	-13	27.42
2842.94872	55.36	2	H	2842.94872	-48.75	7.95	4.5	-47.45	-13	34.45

Radiation emission spurious below 3GHz

Indicated		Test Antenna		Substituted			Cable Loss (dB)	Absolute Level (dBm)	Limit (dBm)	Margin (dB)
Frequency (MHz)	Amp. (dBuV)	Height (M)	Polar H/V	Frequency (MHz)	Level (dBm)	Antenna Gain Correction				
5613.22645	46.83	1	V	5613.22645	-59.8	9.05	6.5	-59.4	-13	46.4
7000	50	2	V	7000	-58.17	9.15	7.3	-58.47	-13	45.47
7729.45892	51.14	1	V	7729.45892	-61.21	9.25	7.7	-61.81	-13	48.81
10204.4088	58.71	2	V	10204.4088	-50.11	11.35	8.9	-49.81	-13	36.81
14503.006	62.57	2	V	14503.006	-46.95	9.15	11	-50.95	-13	37.95
20000	77	1	V	20000	-33.08	6.45	12.2	-40.98	-13	27.98
137.259615	19.11	2	H	137.259615	-72.93	-8.42	1	-84.5	-13	71.5
208.766026	29.73	2	H	208.766026	-69.52	0.87	1.1	-71.9	-13	58.9
246.073718	21.43	2	H	246.073718	-73.33	1.49	1.3	-75.29	-13	62.29
636.25	21.9	2	H	636.25	-78.99	-1.09	2.1	-84.33	-13	71.33
874.086538	62.64	2	H	874.086538	-34.45	-1.32	2.5	-40.42	-13	27.42
2842.94872	55.36	2	H	2842.94872	-48.75	7.95	4.5	-47.45	-13	34.45

Radiation emission spurious above 3GHz

5.4 SPURIOUS EMISSIONS AT ANTENNA TERMINALS

Applicable Standard: FCC§2.1051, §22.917

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

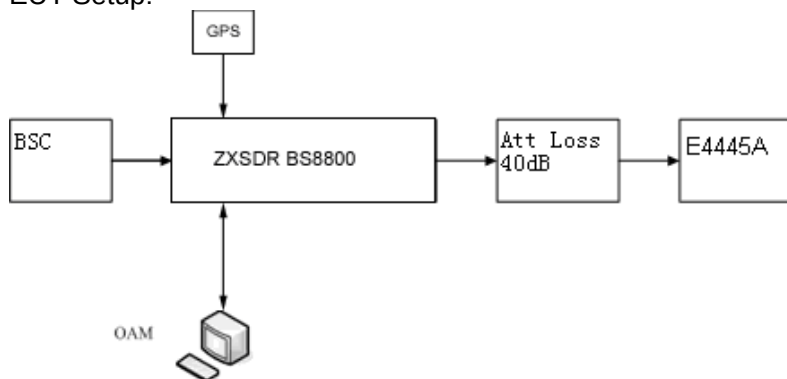
Test Equipment List and Details

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
Agilent	MXA Series Spectrum Analyzer	N9020A	MY48011941	2010-4-9	2011-4-9
DST	DST100 40dB Attenuator	DTS100-40dB-N	N/A	N/A	N/A
Hewlett Packard	Hewlett Packard RF Cable	8120-6192	01428251	N/A	N/A

***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)=40dB, Cable Loss (dB)=3dB.

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 1 kHz for 9KHz to 150KHz scanning, set at 10KHz for 150KHz to 30MHz scanning ,set at 100KHz for 30MHz to 1GHz scanning, set at 1MHz or 3MHz for 1GHz to 22GHz scanning. Sufficient scans were

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

Test Data Environmental Conditions

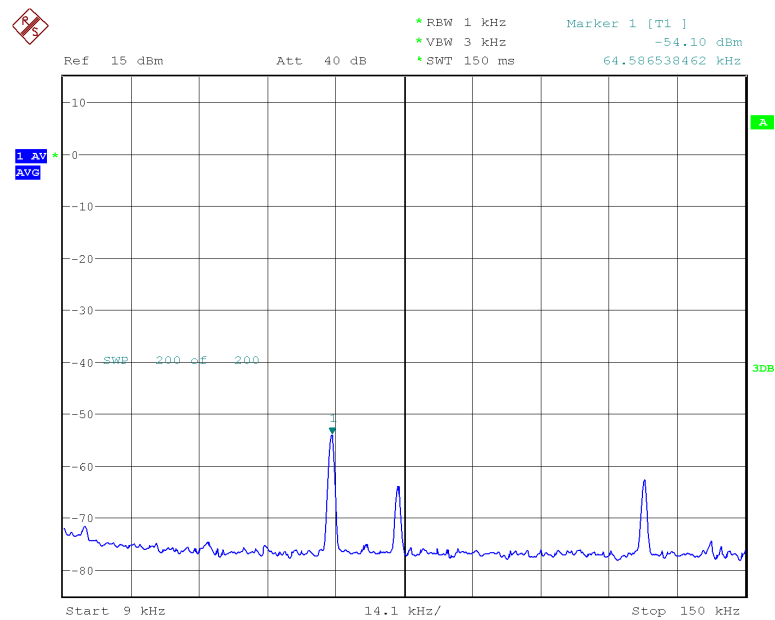
Temperature:	20 °C
Relative Humidity:	53 %
ATM Pressure:	1009 mbar

Test Result: Pass

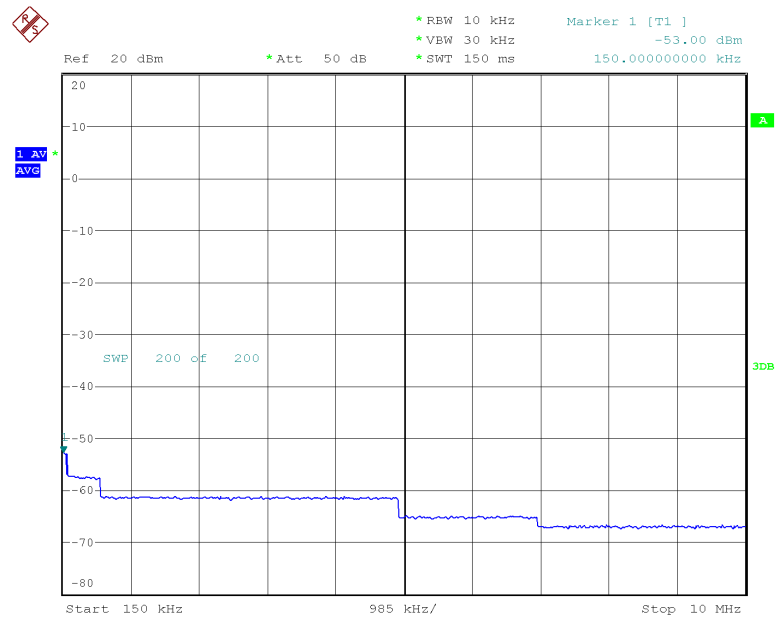
Test Mode: Transmitting UMTS

Test Data:

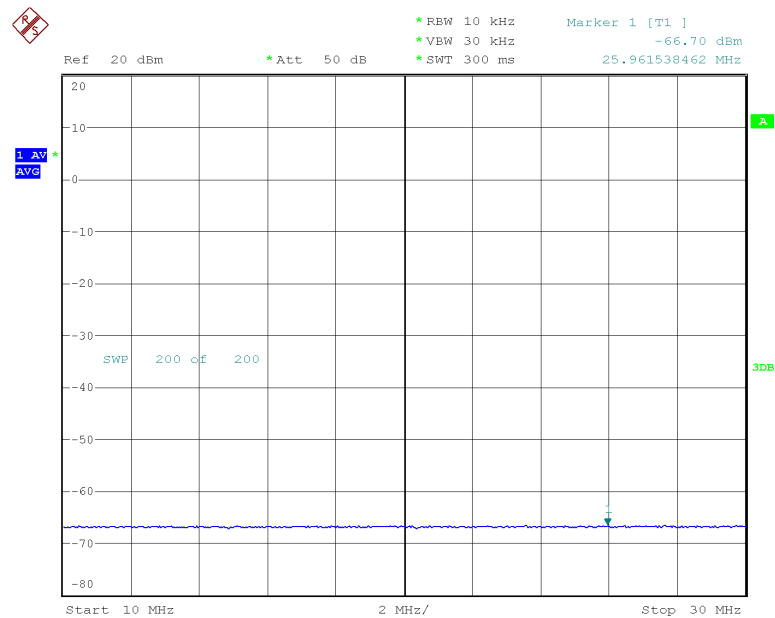
2GSMTRX and 2UMTS carriers



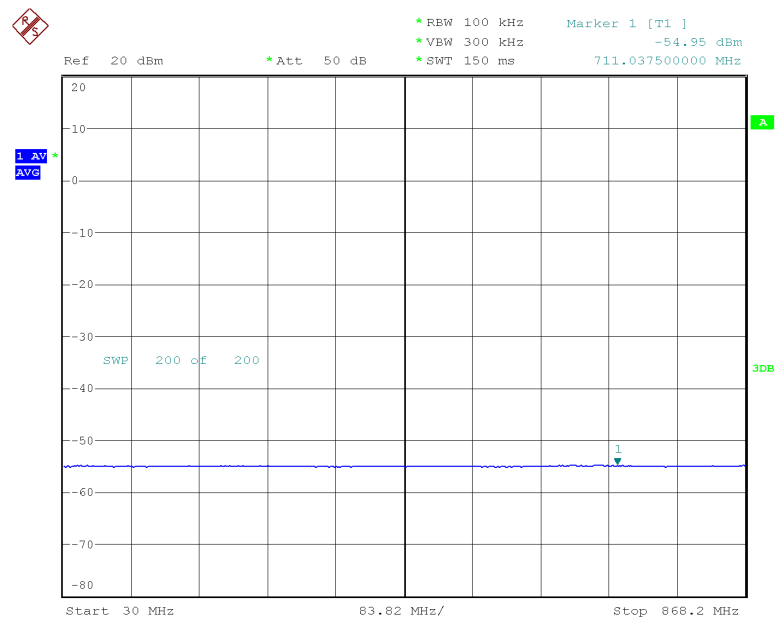
DEMO-BORD-46M-76DB
Date: 4.JAN.2011 09:52:57



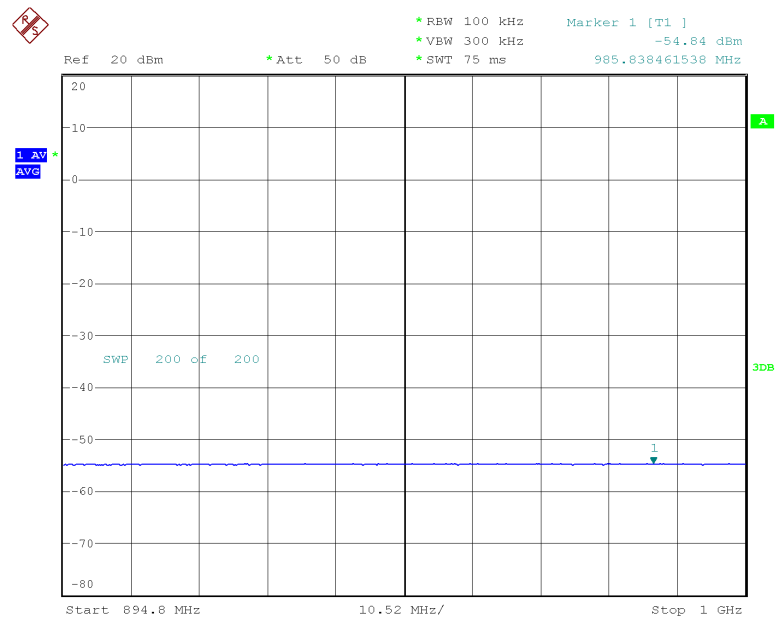
DEMO-BORD-46M-76DB
Date: 4.JAN.2011 09:54:57



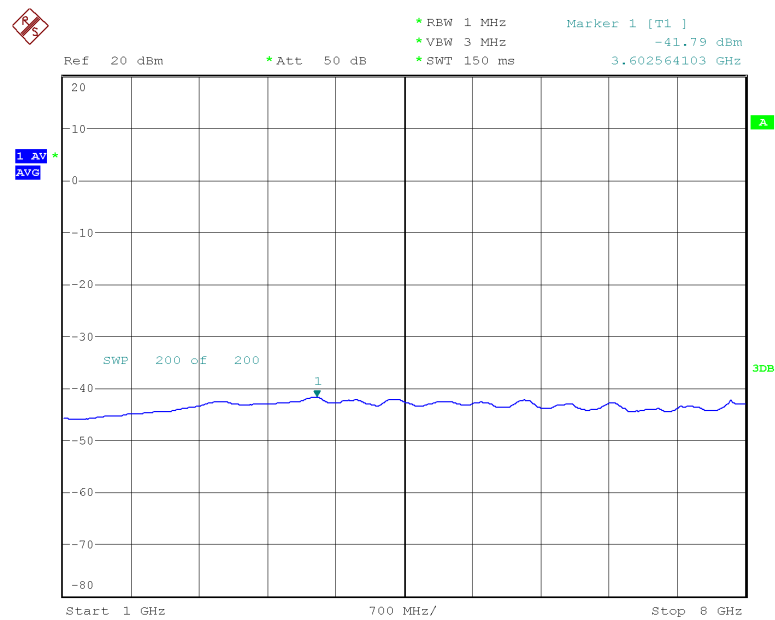
DEMO-BORD-46M-76DB
Date: 4.JAN.2011 09:57:05



DEMO-BORD-46M-76DB
Date: 4.JAN.2011 09:58:50

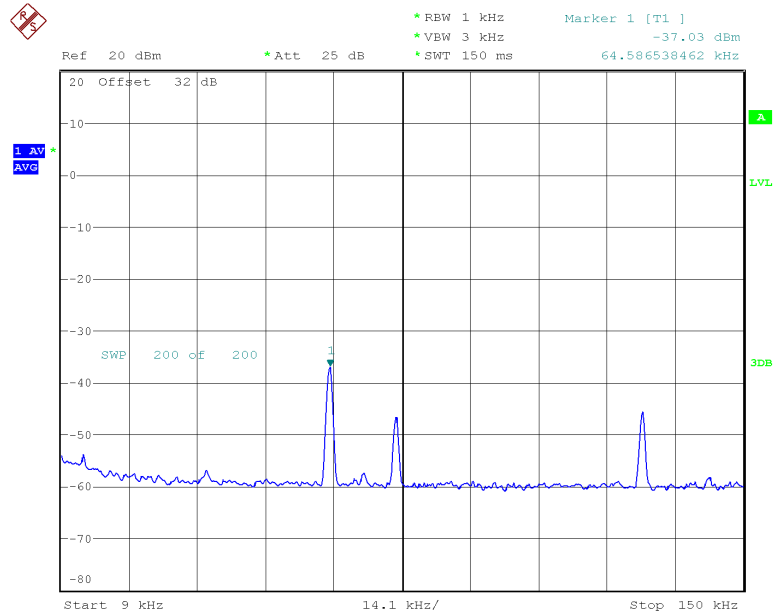


DEMO-BORD-46M-76DB
Date: 4.JAN.2011 09:59:50

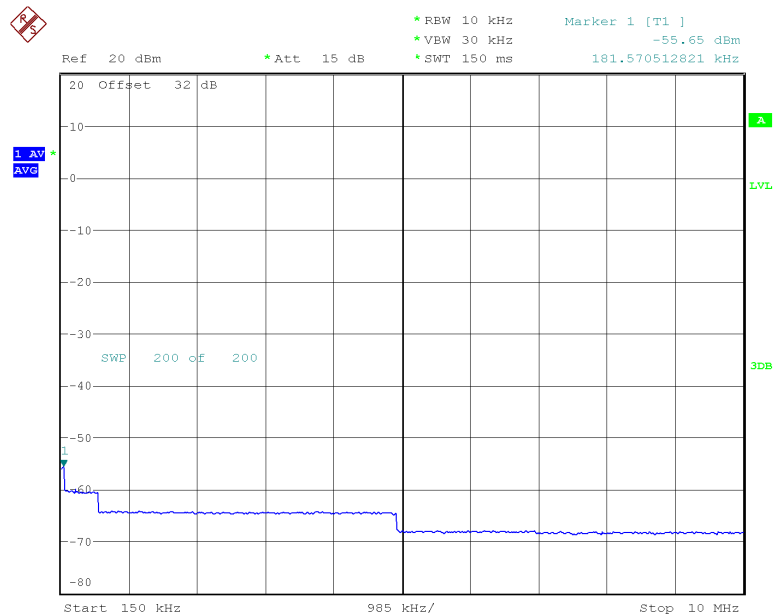


DEMO-BORD-46M-76DB
Date: 4.JAN.2011 10:09:03

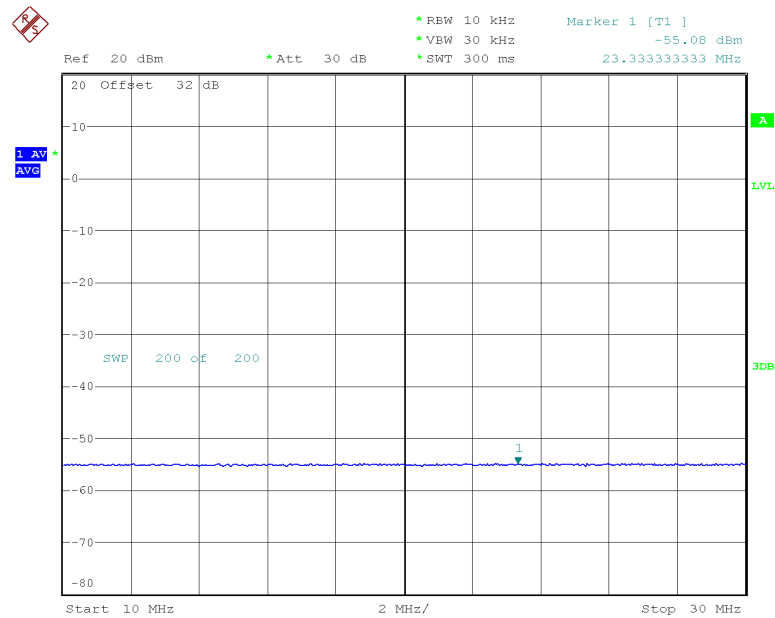
4GSM TRX and 1UMTS carriers



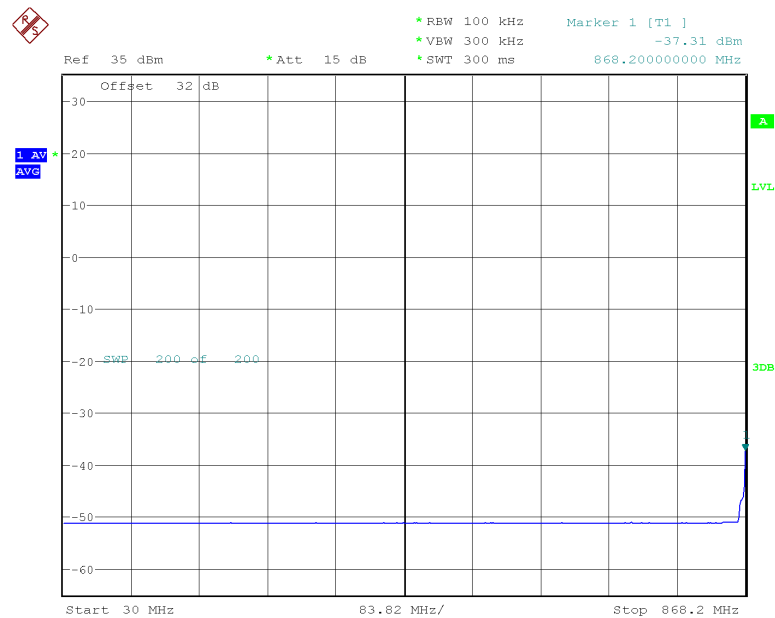
DEMO-BORD-46M-76DB
Date: 4.JAN.2011 09:29:38



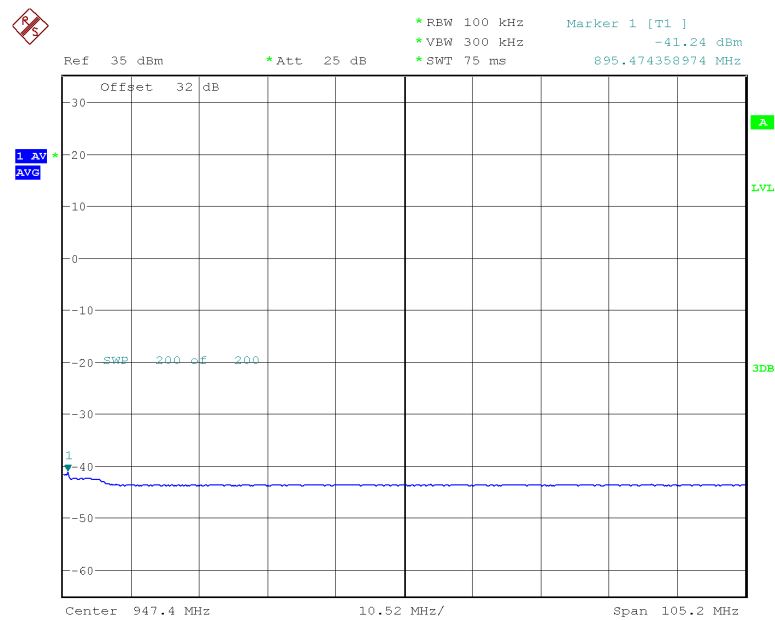
DEMO-BORD-46M-76DB
Date: 4.JAN.2011 09:33:05



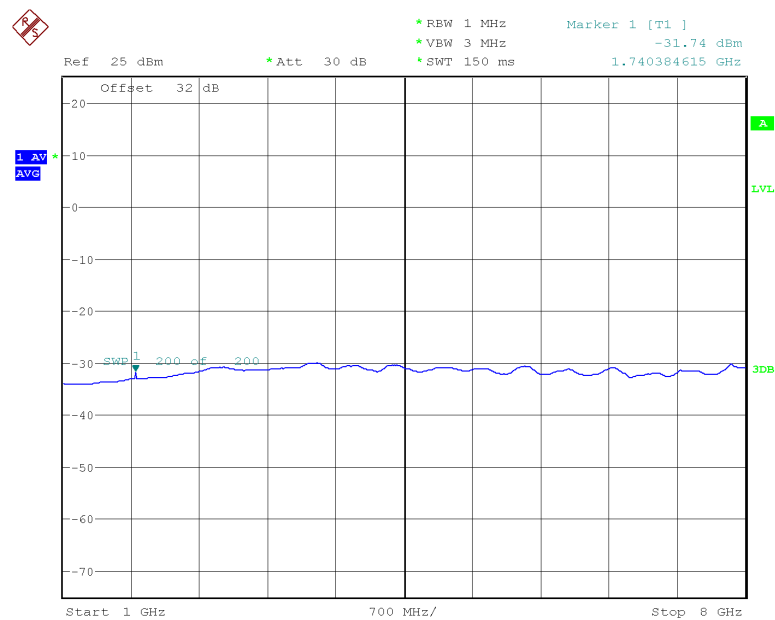
DEMO-BORD-46M-76DB
Date: 4.JAN.2011 09:36:16



DEMO-BORD-46M-76DB
Date: 4.JAN.2011 09:41:06



DEMO-BORD-46M-76DB
Date: 4.JAN.2011 09:44:52



DEMO-BORD-46M-76DB
Date: 4.JAN.2011 09:47:55

5.5 BAND EDGES

Applicable Standard: FCC §2.1051

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	2010-4-9	2011-4-9
DST	DST100 40dB Attenuator	DTS100-40dB-N	N/A	N/A	N/A
Hewlett Packard	Hewlett Packard RF Cable	8120-6192	01428251	N/A	N/A

***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

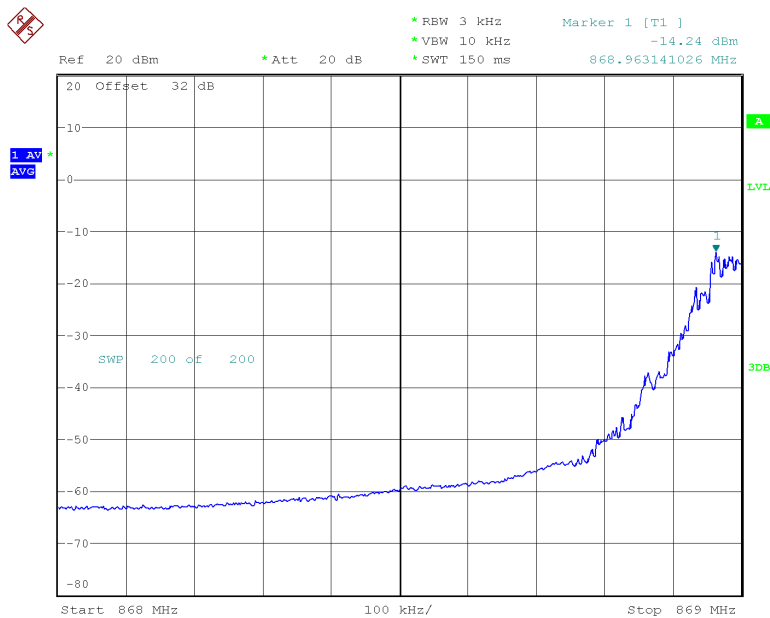
Test Result: Pass

Test Mode: Transmitting UMTS

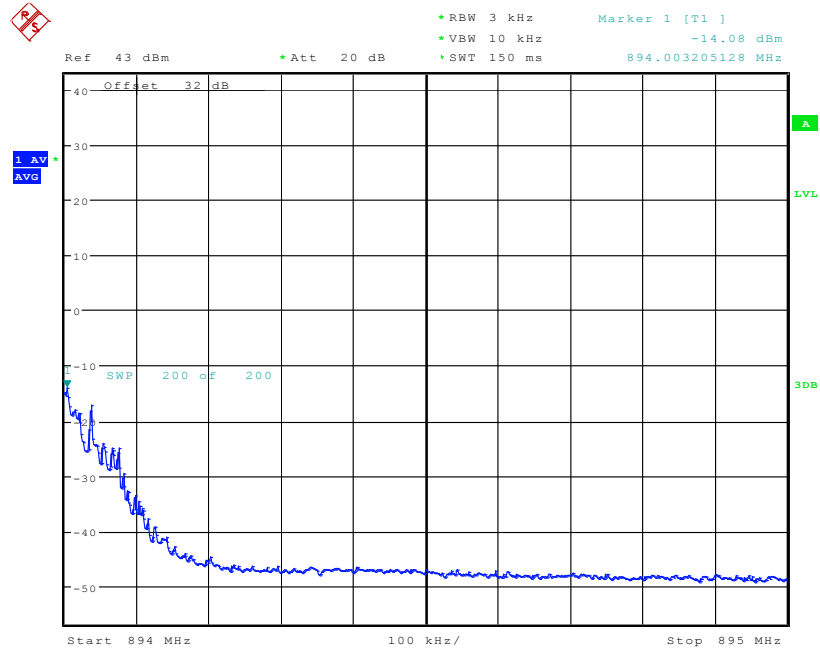
Test Data

2GSMTRX and 2UMTS carriers

Frequency channel	Max bandedge Emission (dBm)	Limit (dBm)
868~869MHz	-14.24	-13.00
894~895MHz	-14.08	-13.00



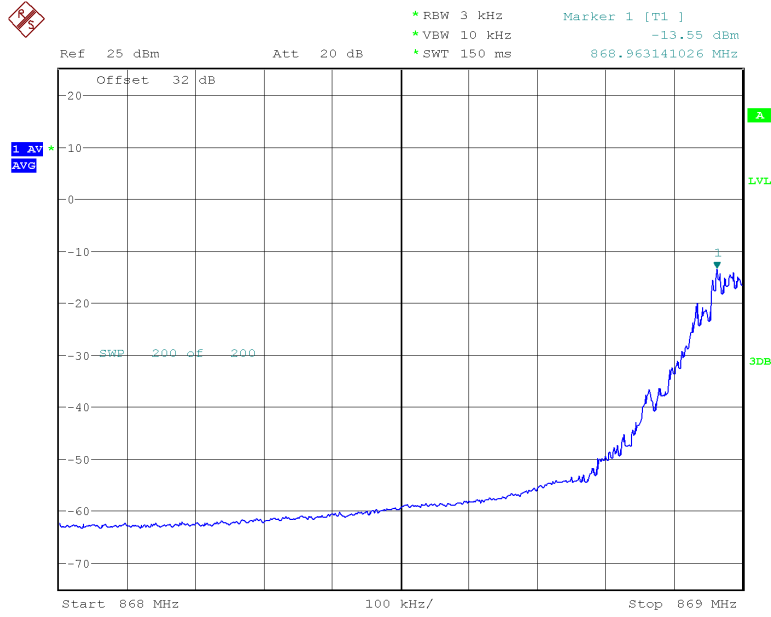
DEMO-BORD-46M-76DB
Date: 4.JAN.2011 09:16:45



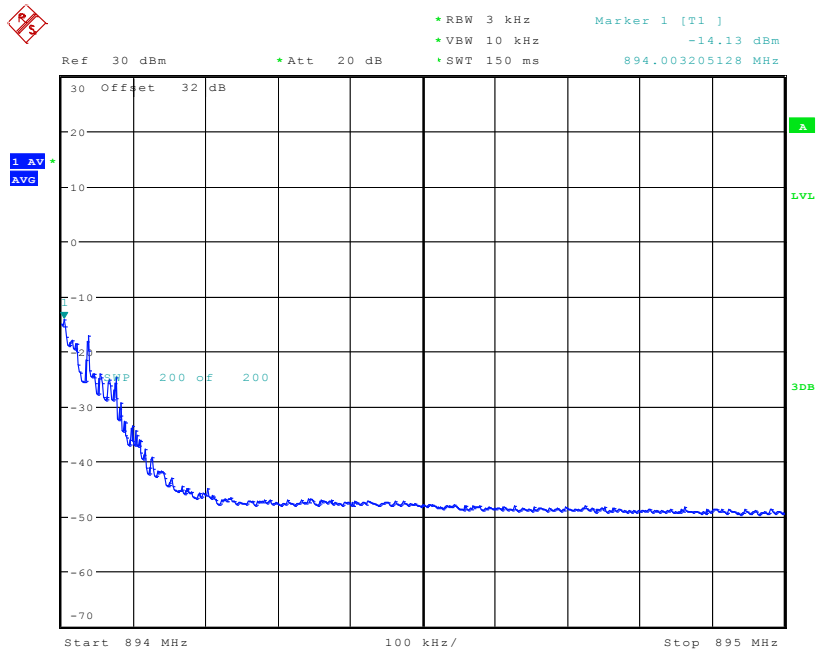
Date: 17.DEC.2010 15:59:28

4GSM TRX and 1UMTS carriers

Frequency	Max bandedge Emission (dBm)	Limit (dBm)
868~869 MHz	-13.55	-13.00
894~895 MHz	-14.13	-13.00



DEMO-BORD-46M-76DB
Date: 4.JAN.2011 09:12:58



Date: 17.DEC.2010 16:02:26

5.6 OCCUPIED BANDWIDTH

Applicable Standard: FCC §2.1049 §22.917

Test Equipment List and Details :

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
Agilent	MXA Series Spectrum Analyzer	N9020A	MY48011941	2010-4-10	2011-4-9
DST	DST100 40dB Attenuator	DTS100-40dB-N	N/A	N/A	N/A
Hewlett Packard	Hewlett Packard RF Cable	8120-6192	01428251	N/A	N/A

***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

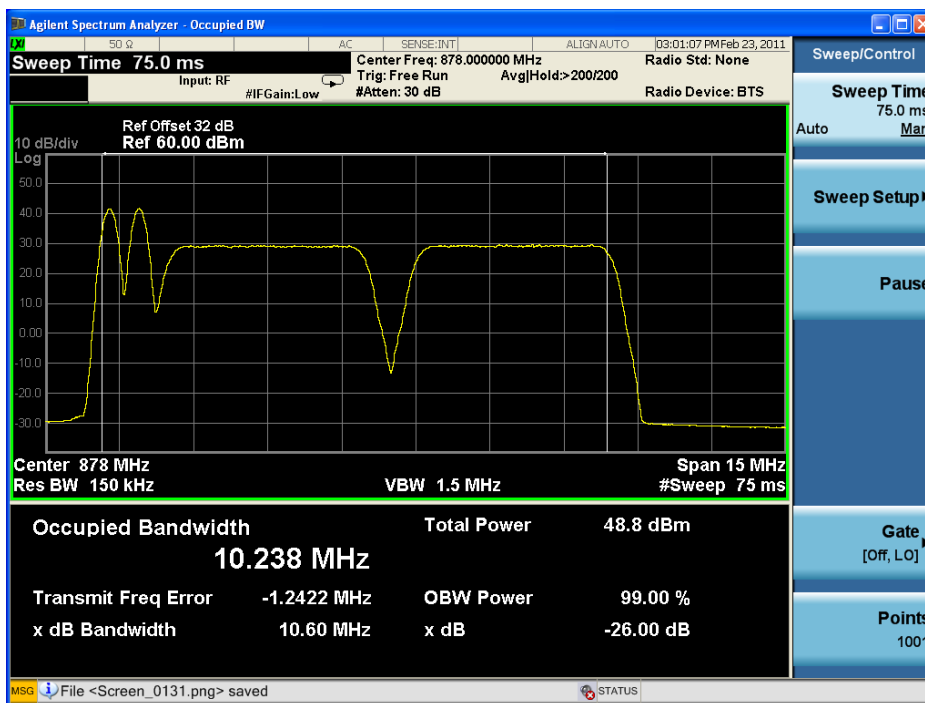
Test Result: Pass

Test Mode: Transmitting GSM/UMTS

Test Data

2GSMTRX and 2UMTS carriers

Frequency (MHz)	99% Power Bandwidth (MHz)
878	10.238



4GSMTRX and 1UMTS carriers

Frequency (MHz)	99% Power Bandwidth (MHz)
879	6.4045

