FCC
MEASUREMENT AND TEST REPORT

For

ZTE Corporation

ZTE Plaza, Hi-tech Park, Nanshan District, Shenzhen,

Guangdong, China 518057

FCC ID: Q78-C806

July14, 2011

This Report Concerns: ☒ Original Report	**Equipment Type:** CDMA Remote Radio Unit
Test Engineer:	Bloom
Report No.:	FCC-2011-031
Test Date:	Apr 06 – July10, 2011
Reviewed By:	Xie Yuming
Prepared By:	ZTE Corporation
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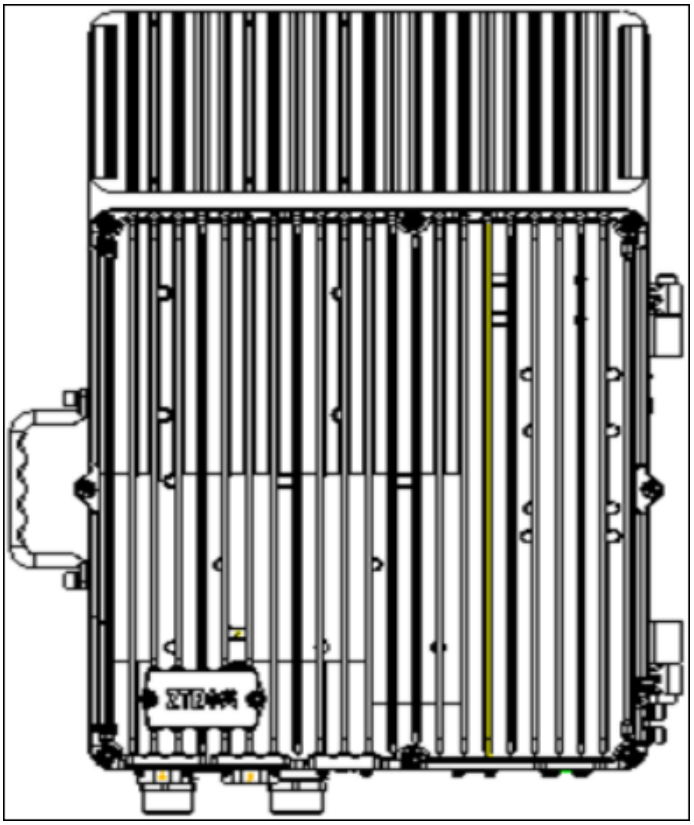
2 GENERAL INFORMATION

Product Description for Equipment Under Test (EUT)

The ZTE Corporation's product, model number: ZXSDR R8860 C806or the "EUT" as referred to in this report is a CDMA Remote Radio Unit.

Technical specification:

Size: 500 mm × 320 mm × 172 mm(H x W x D)
Input voltage: -57 ~ - 40Vdc
Frequency range: 869MHz to 889MHz
(Bottom frequency is about 869.82MHz, Middle frequency is about 879.03MHz, and Top frequency is about 888.24MHz).
Max RF output power: 47.8dBm
Gain of the antenna: 13dBi
Modulation type of emission: CDMA
Appearance of EUT:



Objective

This Type approval report is prepared on behalf of ZTE Corporation in accordance with Part 2、Part 15、Part 22 of the Federal Communication Commissions rules.

Related Submittal(s)/Grant(s)

No related submittal(s).

Test Methodology

All tests and measurements indicated in this document were performed in accordance with the Code of federal Regulations Title 47 Part 2. as well as the following parts:
Part 24 Wireless Communication Services
Applicable Standards: TIA EIA 137-A, TIA EIA 97-D, TIA/EIA 603-C, Land Mobile FM or PM Communications Equipment Measurement and Performance Standards.
All radiated and conducted measurement was performed at ZTE Corporation Reliability Testing Center. The radiated testing was performed at an antenna-to-EUT distance of 3 meters.

Test Facility

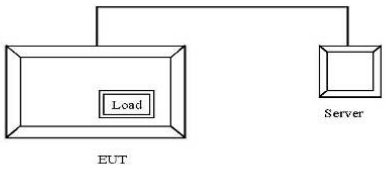
The Test site used by ZTE Corporation to collect test data is located in the 1/F,B2 Wing, ZTE Plaza, Keji Road South, Shenzhen, Guangdong, 518057, P.R. China, Tel: +86-755-26771609,Fax: +86-755-26770347. Test site at ZTE Corporation has been fully described in reports submitted to the Federal Communication Commission (FCC). The details of these reports have been found to be in compliance with the requirements of Section 2.948 of the FCC Rules. The facility also complies with the radiated and AC line conducted test site criteria set forth in ANSI C63.4-2009.
The Federal Communications Commission has the reports on file and is listed under FCC Registration No.: 373926. The test site has been approved by the FCC for public use and is listed in the FCC Public Access Link (PAL) database.

3 SYSTEM TEST CONFIGURATION

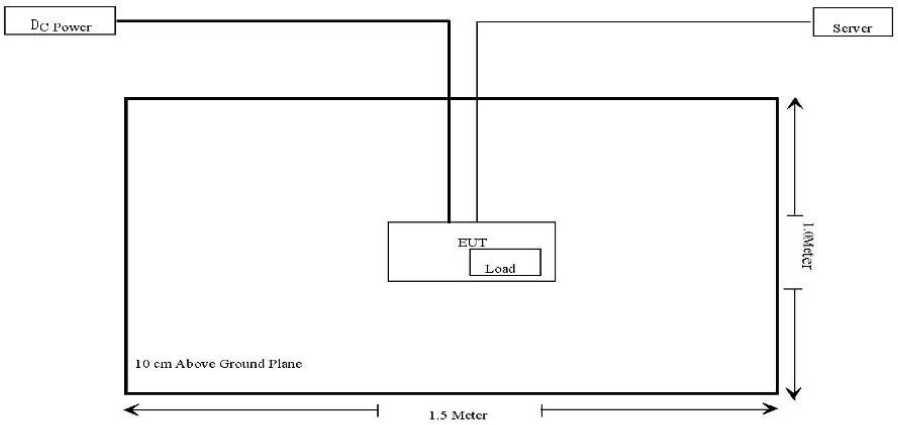
Description of Test Configuration

Justification
The EUT was configured for testing according to TIA/EIA-603C.
The final qualification test was performed with EUT operating at normal mode.
Equipment Modifications
ZTE Corporation has not done any modification on the EUT.

Configuration of Test Setup



Block Diagram of Test Setup



4 SUMMARY OF TEST RESULTS

FCC RULES	DESCRIPTION OF TEST	RESULT
§2.1046 ,§22.913	Transmitter output Power	Compliant
§2.1091 ,§1.1037	RF Exposure	Compliant
§2.1047 §2.1053, §22.917	Modulation Characteristic Spurious Radiated Emissions	Compliant Compliant
§2.1051, §22.917	Spurious Emissions AT Antenna Terminals	Compliant
§2.1049 §22.917	Occupied Bandwidth	Compliant
§2.1051, §22.917	Band Edge	Compliant
§2.1055, §22.355	Frequency stability	Compliant

5 TRANSMITTER OUTPUT POWER

Applicable Standard

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

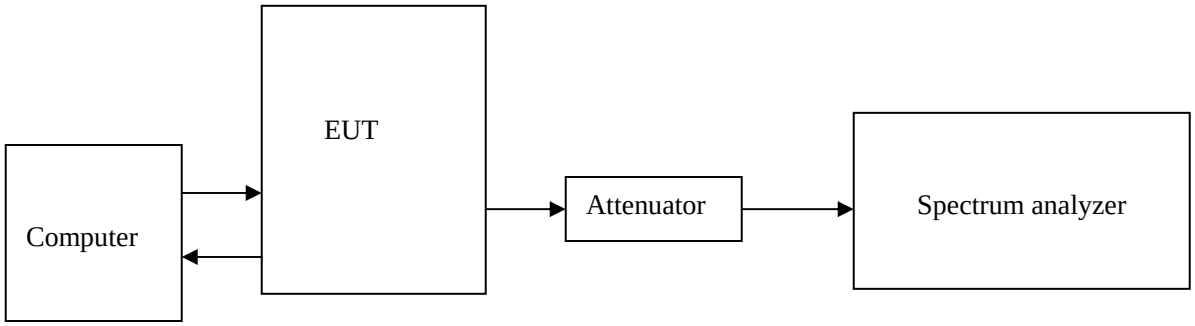
Note: ERP= Max output Power+ Antenna gain-Cable loss-2.15

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
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 attests that all calibration has 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 3 dB.

Environmental Conditions

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

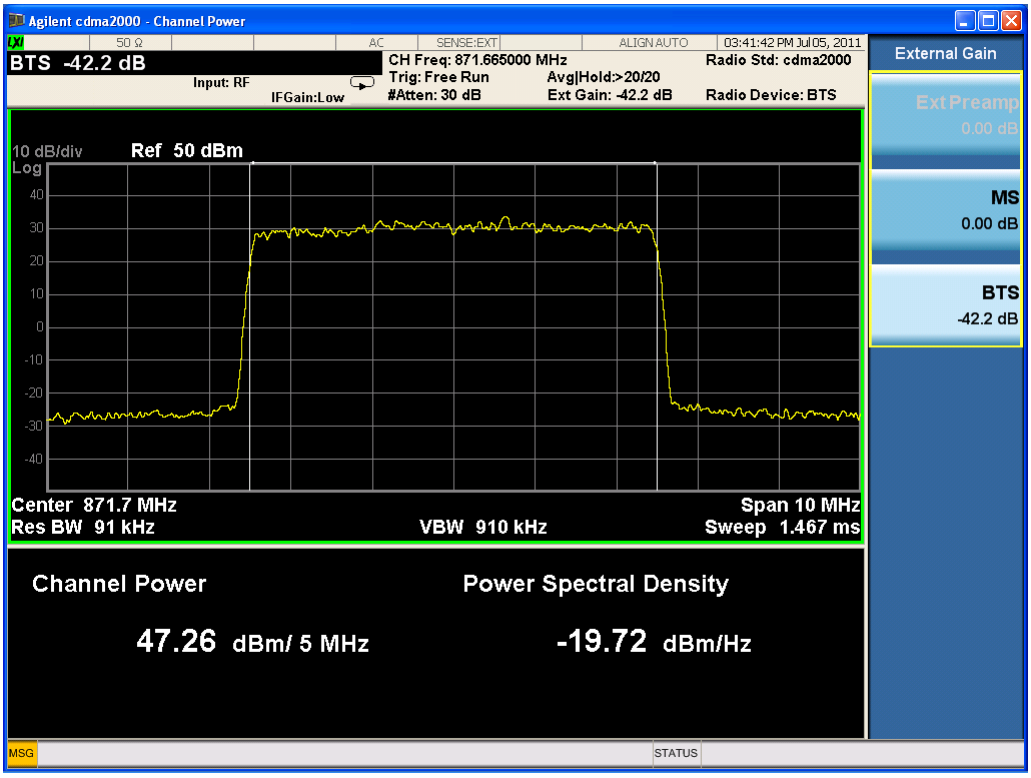
Test Results

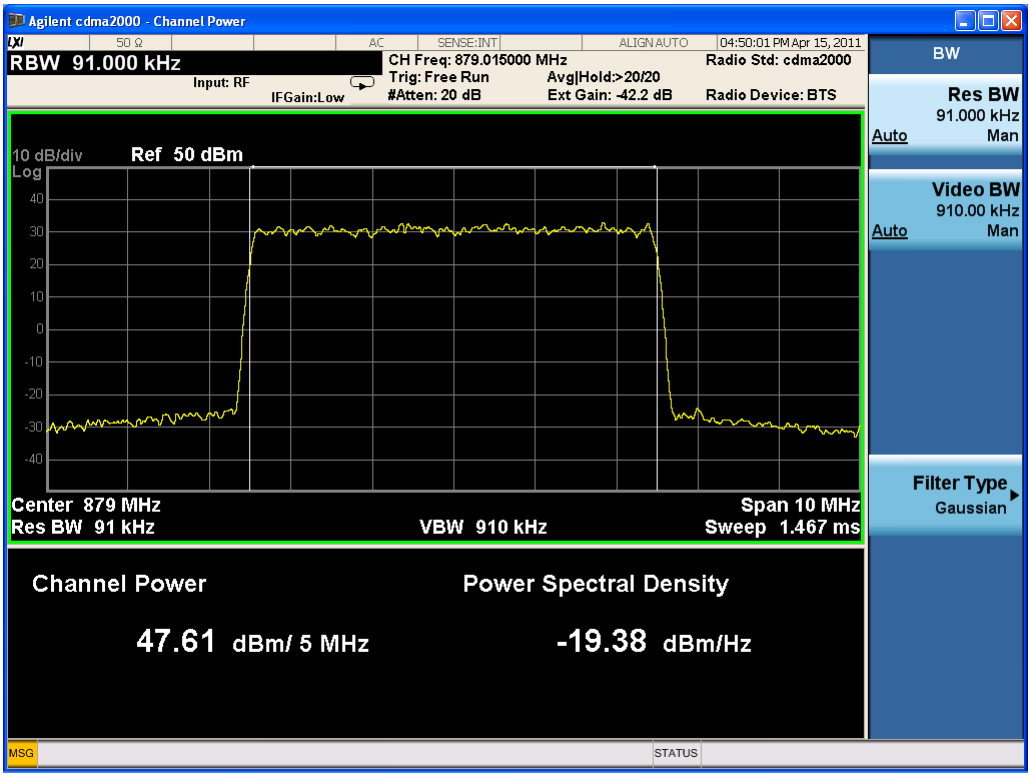
Pass.

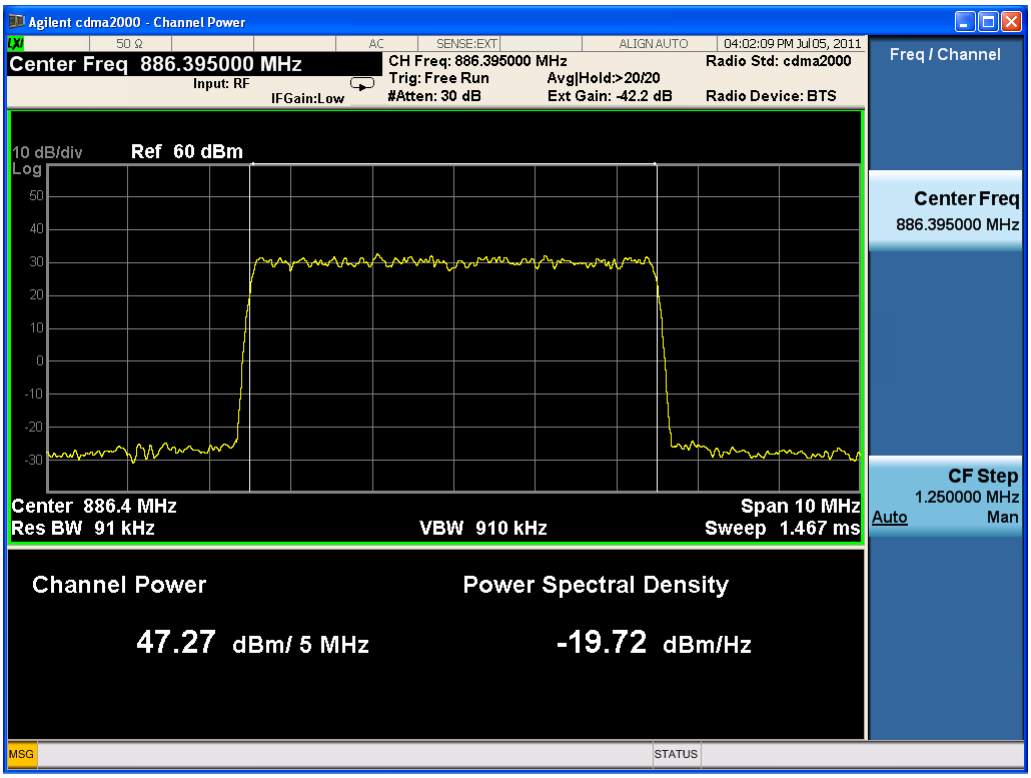
Test Mode: Transmitting CDMA

Four Carriers (near top frequency and bottom frequency)

Center Freq. (MHz)	Frequency (MHz)	Max Output Power (dBm)	Antenna Gain (dBi)	Cable Loss (dB)	Dipole Antenna (dB)	ERP (dBm)	Total Power (Watt)
871.665	869.82/871.05/872.28/873.51	47.26	13	3	2.15	55.11	324
879.015	877.17/878.4/879.63/880.86	47.61	13	3	2.15	55.46	352
886.395	884.55/885.78/887.01/888.24	47.27	13	3	2.15	55.12	325

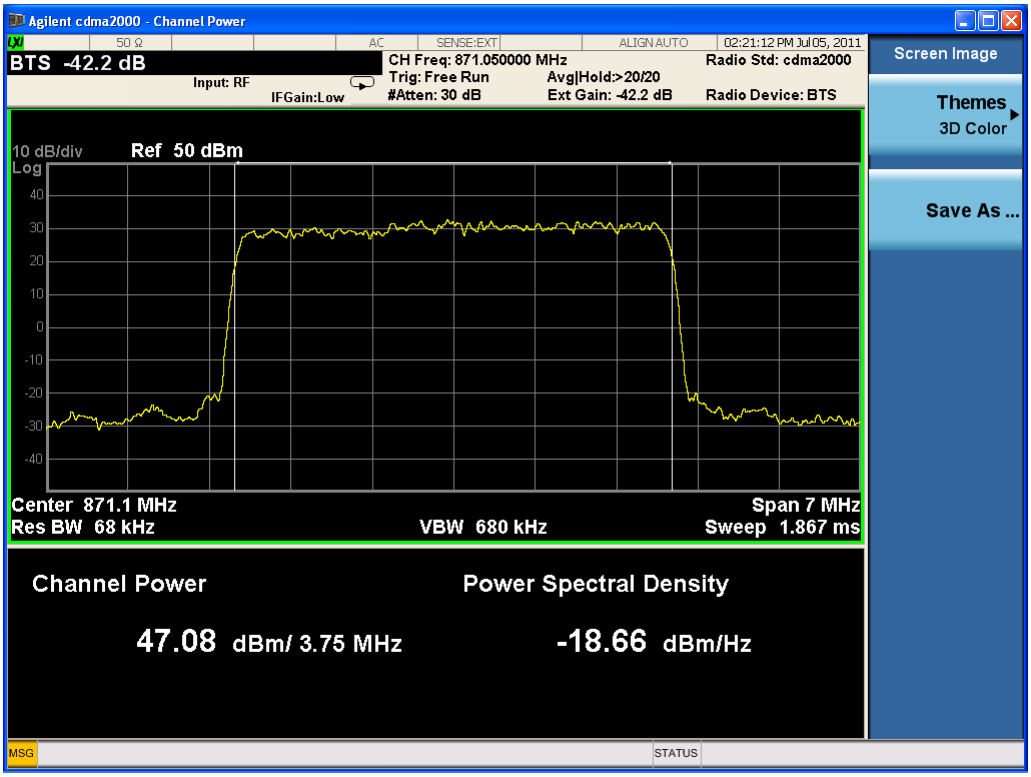


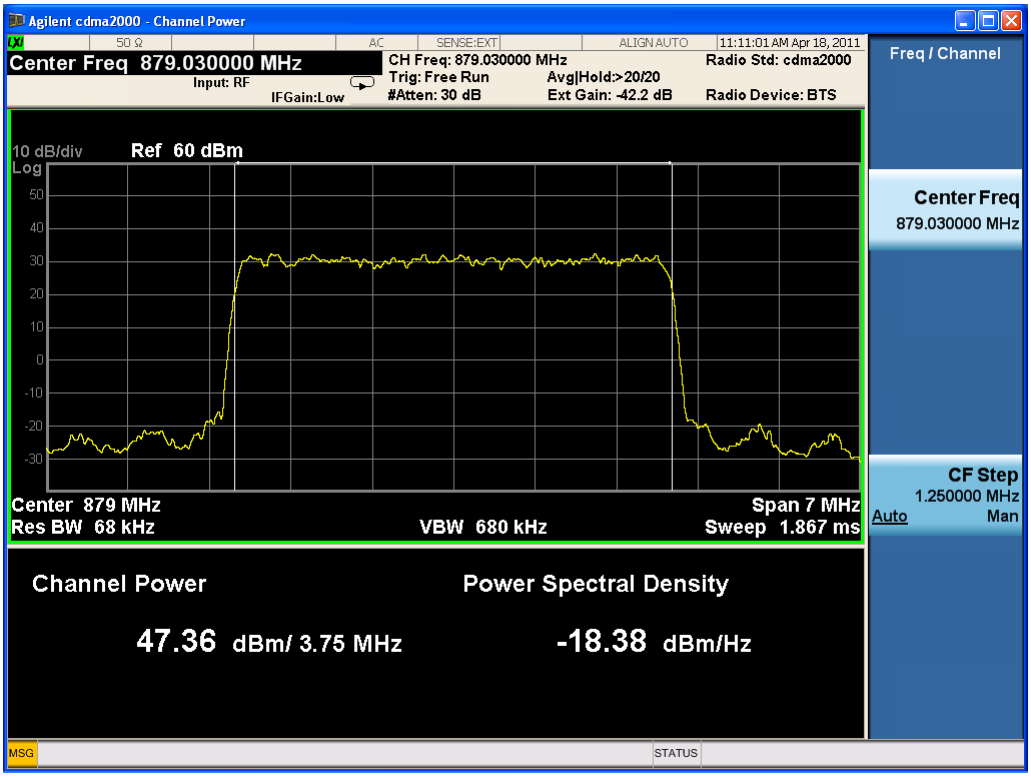

Agilent cdma2000 - Channel Power
50 Ω
AC
SENSE:INT
ALIGN AUTO
04:50:01 PM Apr 15, 2011
RBW 91.000 kHz
Input: RF
IFGain:Low
CH Freq: 879.015000 MHz
Trig: Free Run
#Atten: 20 dB
Avg|Hold:>20/20
Ext Gain: -42.2 dB
Radio Std: cdma2000
Radio Device: BTS
BW
Res BW
91.000 kHz
Auto
Man
Video BW
910.00 kHz
Auto
Man
Filter Type
Gaussian
10 dB/div
Log
Ref 50 dBm
40
30
20
10
0
-10
-20
-30
-40
Center 879 MHz
Res BW 91 kHz
VBW 910 kHz
Span 10 MHz
Sweep 1.467 ms
Channel Power
47.61 dBm/ 5 MHz
Power Spectral Density
-19.38 dBm/Hz
MSG
STATUS

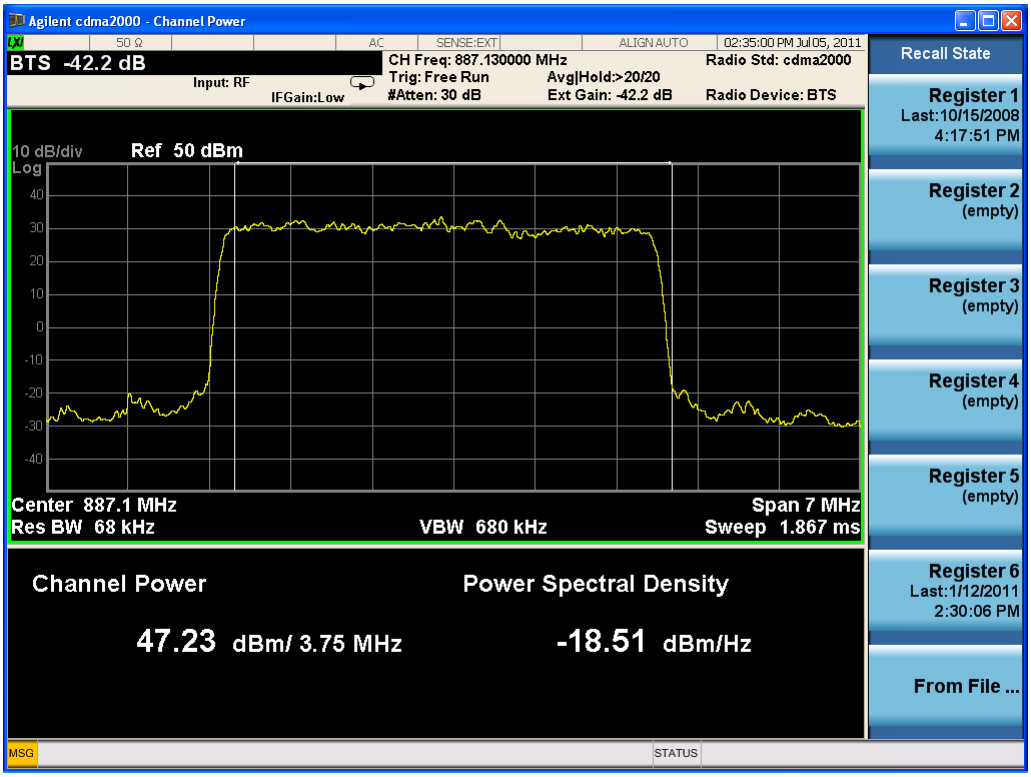

Agilent cdma2000 - Channel Power
50 Ω
AC
SENSE:EXT
ALIGN AUTO
04:02:09 PM Jul 05, 2011
Center Freq 886.395000 MHz
Input: RF
IFGain:Low
CH Freq: 886.395000 MHz
Trig: Free Run
#Atten: 30 dB
Avg|Hold:>20/20
Ext Gain: -42.2 dB
Radio Std: cdma2000
Radio Device: BTS
Freq / Channel
Center Freq
886.395000 MHz
CF Step
1.250000 MHz
Auto
Man
10 dB/div
Log
Ref 60 dBm
50
40
30
20
10
0
-10
-20
-30
Center 886.4 MHz
Res BW 91 kHz
VBW 910 kHz
Span 10 MHz
Sweep 1.467 ms
Channel Power
47.27 dBm/ 5 MHz
Power Spectral Density
-19.72 dBm/Hz
MSG
STATUS

Three carriers

Center Freq. (MHz)	Frequency (MHz)	Max Output Power (dBm)	Antenna Gain (dBi)	Cable Loss (dB)	Dipole Antenna (dB)	ERP (dBm)	Total Power (Watt)
871.05	869.82/871.05/872.28	47.08	13	3	2.15	54.93	311
879.03	877.8/879.03/888.26	47.36	13	3	2.15	55.21	332
887.13	885.78/887.01/888.24	47.23	13	3	2.15	55.08	322

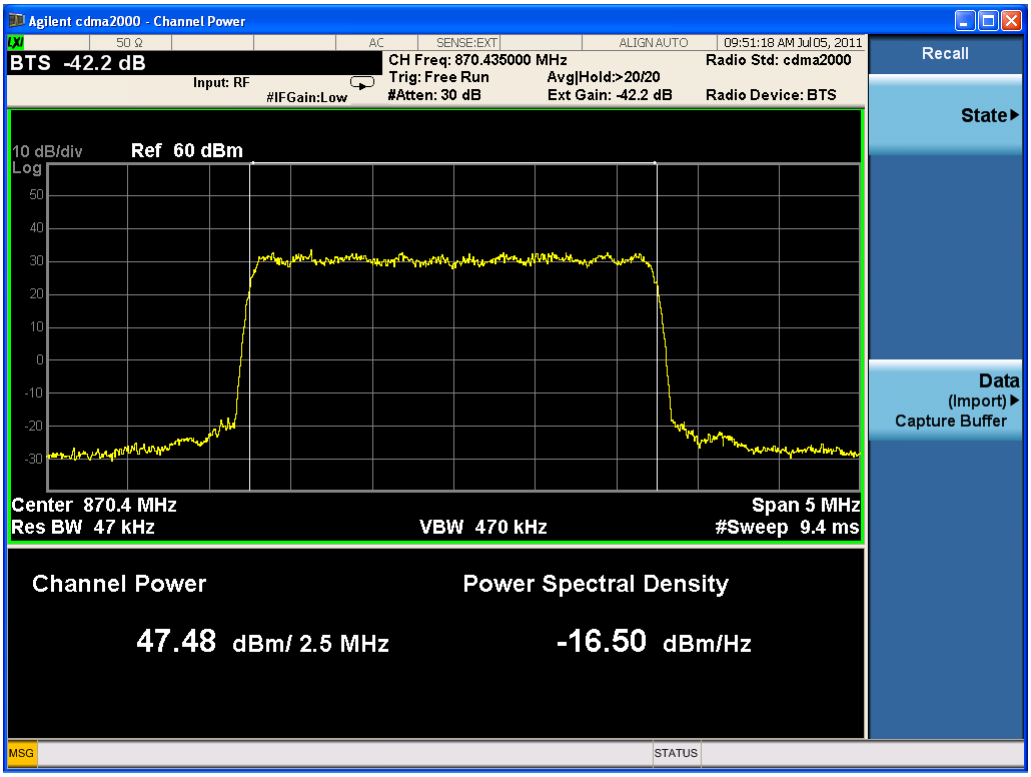


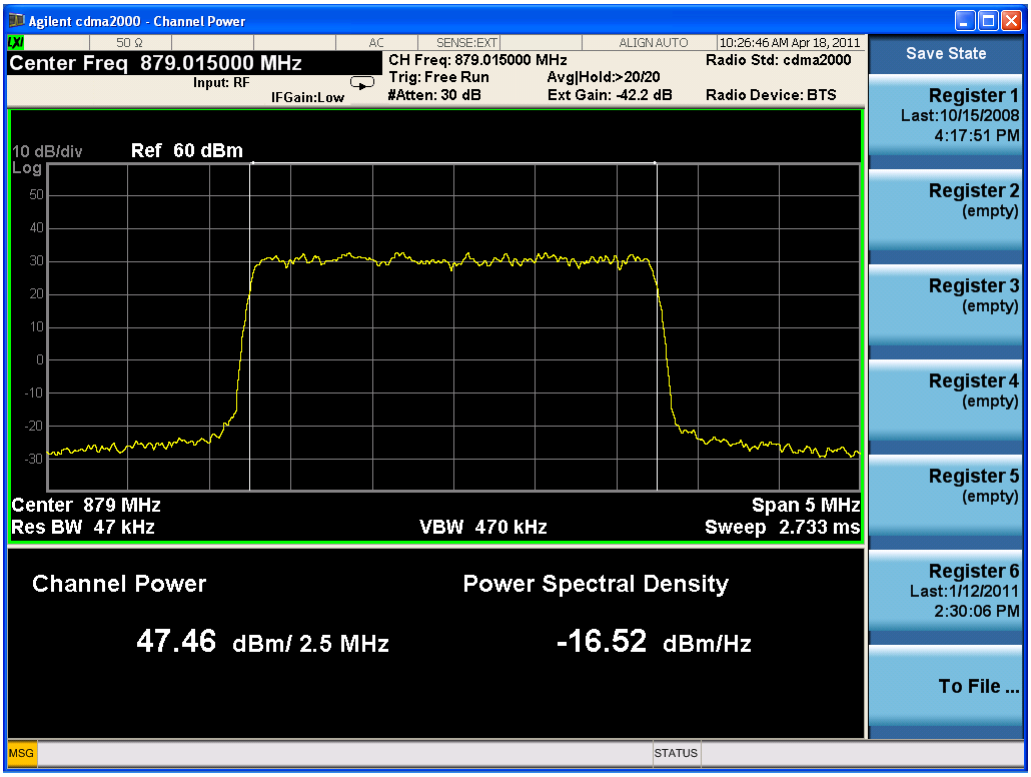

Agilent cdma2000 - Channel Power
50 Ω
AC
SENSE:EXT
ALIGN AUTO
11:11:01 AM Apr 18, 2011
Center Freq 879.030000 MHz
Input: RF
IFGain:Low
CH Freq: 879.030000 MHz
Trig: Free Run
Avg|Hold:>20/20
#Atten: 30 dB
Ext Gain: -42.2 dB
Radio Std: cdma2000
Radio Device: BTS
Freq / Channel
10 dB/div
Log
Ref 60 dBm
50
40
30
20
10
0
-10
-20
-30
Center Freq
879.030000 MHz
Center 879 MHz
Res BW 68 kHz
VBW 680 kHz
Span 7 MHz
Sweep 1.867 ms
CF Step
1.250000 MHz
Auto
Man
Channel Power
47.36 dBm/ 3.75 MHz
Power Spectral Density
-18.38 dBm/Hz
MSG
STATUS

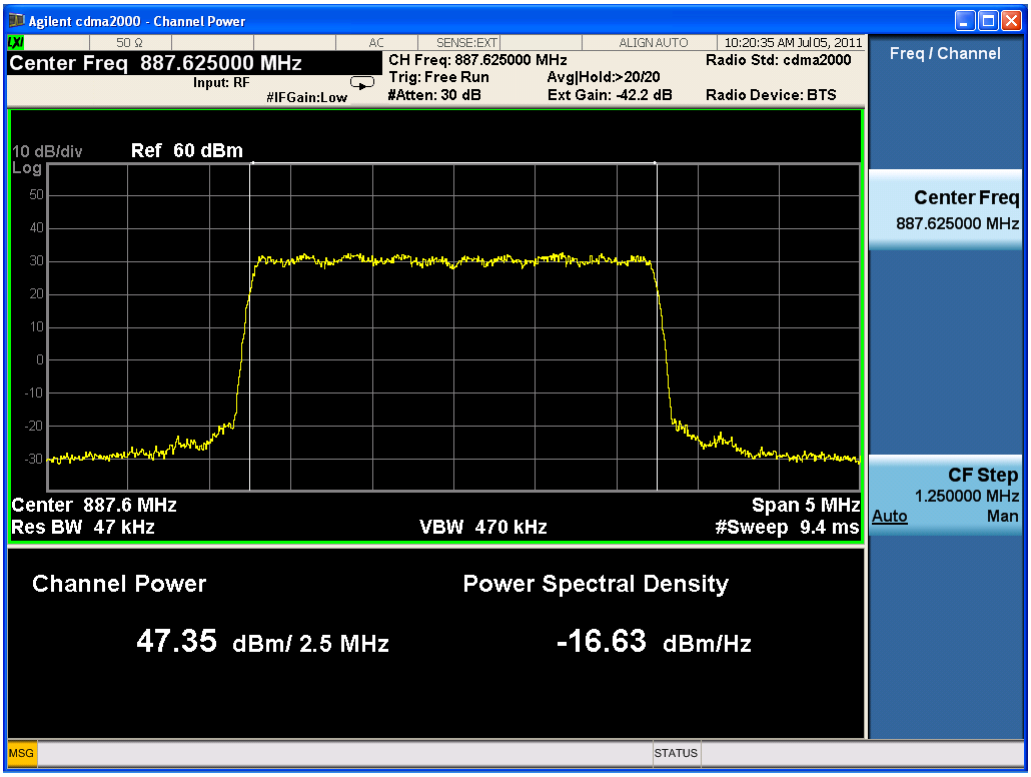

Agilent cdma2000 - Channel Power
50 Ω
AC
SENSE:EXT
ALIGN AUTO
02:35:00 PM Jul 05, 2011
BTS -42.2 dB
Input: RF
IFGain:Low
CH Freq: 887.130000 MHz
Trig: Free Run
Avg|Hold:>20/20
#Atten: 30 dB
Ext Gain: -42.2 dB
Radio Std: cdma2000
Radio Device: BTS
Recall State
10 dB/div
Log
Ref 50 dBm
40
30
20
10
0
-10
-20
-30
-40
Register 1
Last:10/15/2008
4:17:51 PM
Register 2
(empty)
Register 3
(empty)
Register 4
(empty)
Register 5
(empty)
Center 887.1 MHz
Res BW 68 kHz
VBW 680 kHz
Span 7 MHz
Sweep 1.867 ms
Channel Power
47.23 dBm/ 3.75 MHz
Power Spectral Density
-18.51 dBm/Hz
Register 6
Last:1/12/2011
2:30:06 PM
From File ...
MSG
STATUS

Two carriers

Center Freq. (MHz)	Frequency (MHz)	Max Output Power (dBm)	Antenna Gain (dBi)	Cable Loss (dB)	Dipole Antenna (dB)	ERP (dBm)	Total Power (Watt)
870.435	869.82 871.05	47.48	13	3	2.15	55.33	341
879.015	878.4/879.63	47.46	13	3	2.15	55.31	340
887.625	887.01 888.24	47.35	13	3	2.15	55.2	331

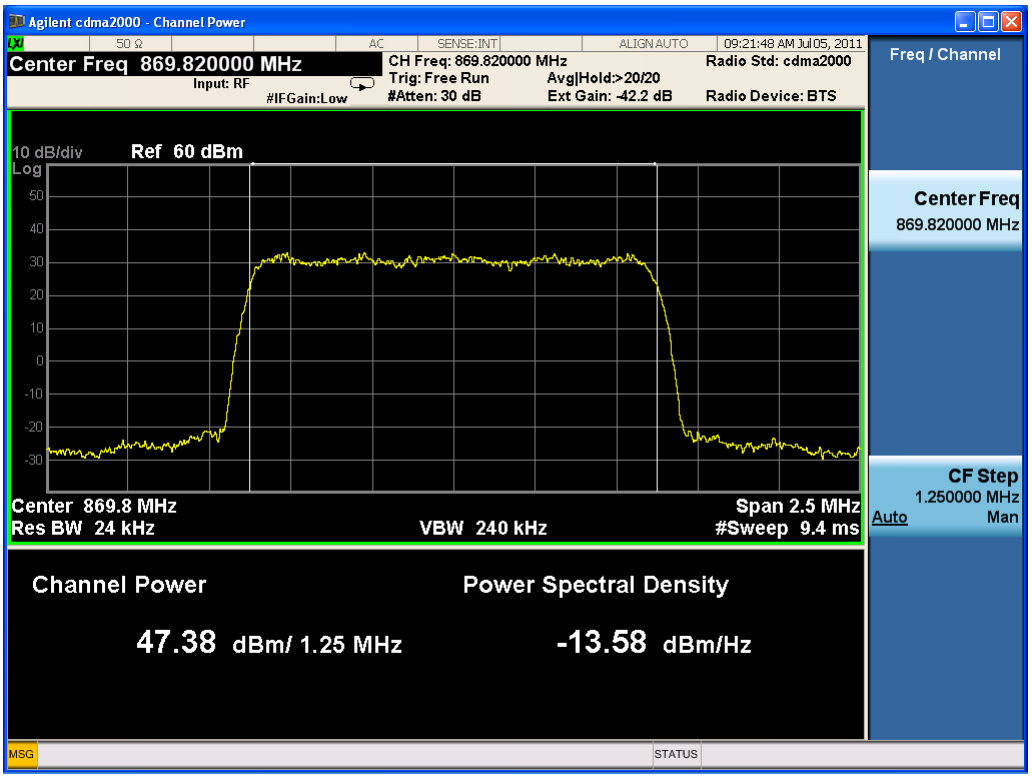


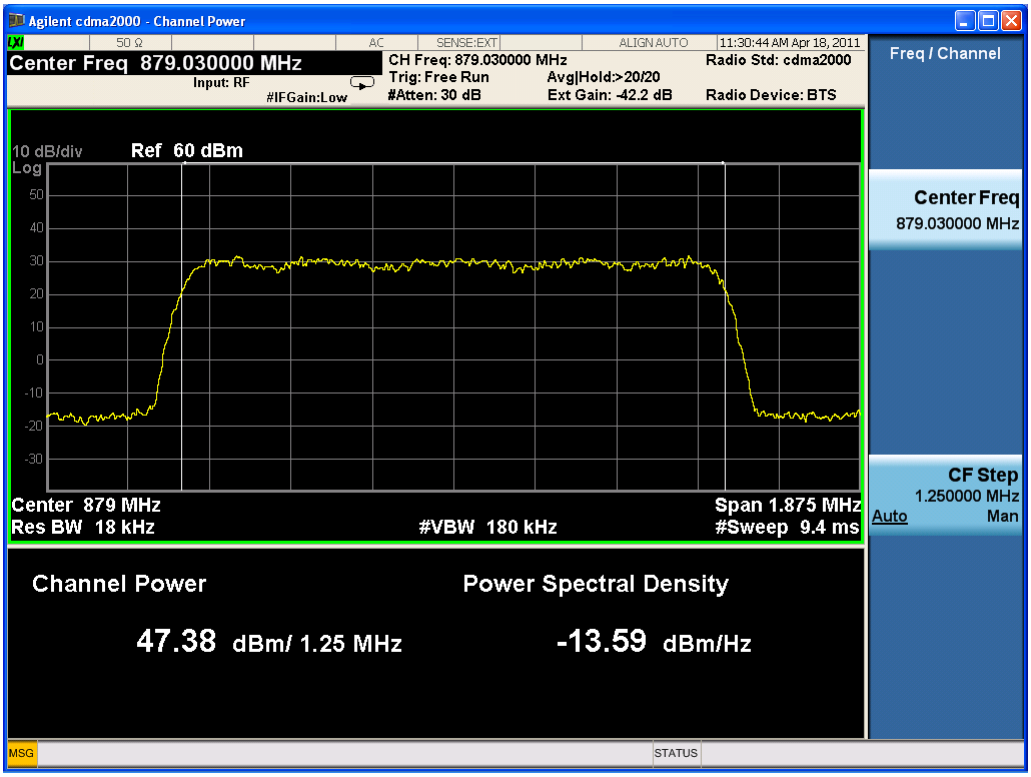

Agilent cdma2000 - Channel Power
50 Ω
AC
SENSE:EXT
ALIGN AUTO
10:26:46 AM Apr 18, 2011
Center Freq 879.015000 MHz
Input: RF
IFGain:Low
CH Freq: 879.015000 MHz
Trig: Free Run
#Atten: 30 dB
Avg|Hold:>20/20
Ext Gain: -42.2 dB
Radio Std: cdma2000
Radio Device: BTS
Save State
Register 1
Last:10/15/2008
4:17:51 PM
Register 2
(empty)
Register 3
(empty)
Register 4
(empty)
Register 5
(empty)
Register 6
Last:1/12/2011
2:30:06 PM
To File ...
10 dB/div
Log
Ref 60 dBm
50
40
30
20
10
0
-10
-20
-30
Center 879 MHz
Res BW 47 kHz
VBW 470 kHz
Span 5 MHz
Sweep 2.733 ms
Channel Power
47.46 dBm/ 2.5 MHz
Power Spectral Density
-16.52 dBm/Hz
MSG
STATUS

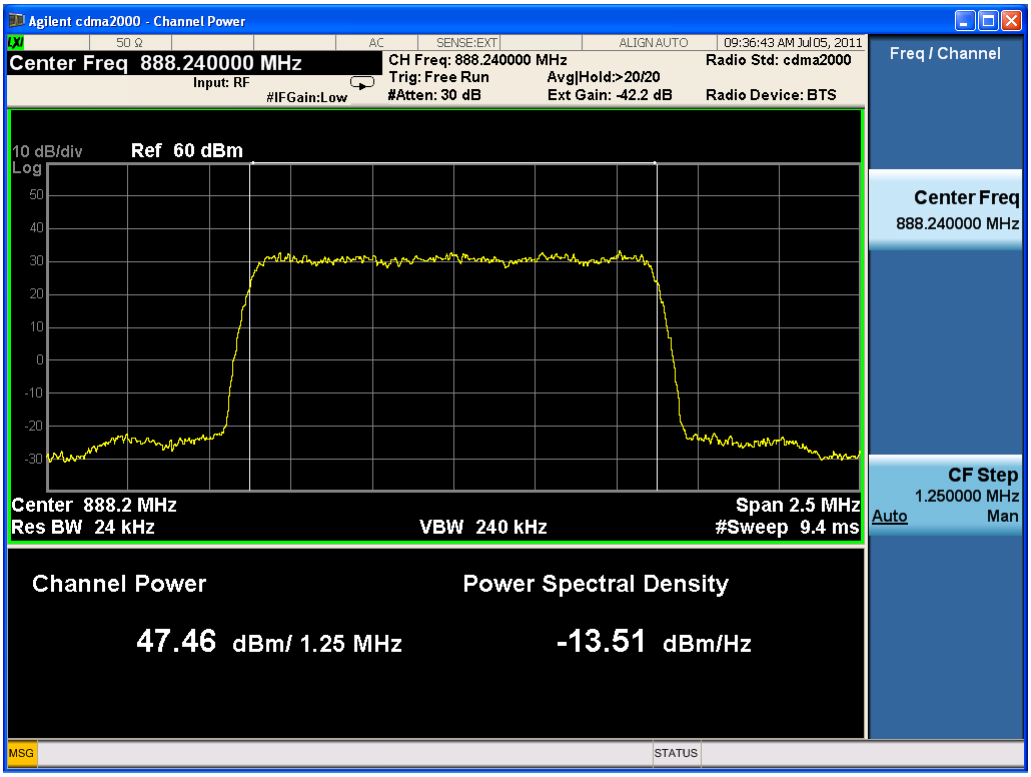

Agilent cdma2000 - Channel Power
50 Ω
AC
SENSE:EXT
ALIGN AUTO
10:20:35 AM Jul 05, 2011
Center Freq 887.625000 MHz
Input: RF
#IFGain:Low
CH Freq: 887.625000 MHz
Trig: Free Run
#Atten: 30 dB
Avg|Hold:>20/20
Ext Gain: -42.2 dB
Radio Std: cdma2000
Radio Device: BTS
Freq / Channel
Center Freq
887.625000 MHz
CF Step
1.250000 MHz
Auto
Man
10 dB/div
Log
Ref 60 dBm
50
40
30
20
10
0
-10
-20
-30
Center 887.6 MHz
Res BW 47 kHz
VBW 470 kHz
Span 5 MHz
#Sweep 9.4 ms
Channel Power
47.35 dBm/ 2.5 MHz
Power Spectral Density
-16.63 dBm/Hz
MSG
STATUS

One carrier

Center Freq. (MHz)	Frequency (MHz)	Max Output Power (dBm)	Antenna Gain (dBi)	Cable Loss (dB)	Dipole Antenna (dB)	ERP (dBm)	Total Power (Watt)
869.82	869.82	47.38	13	3	2.15	55.23	333
879.03	879.03	47.38	13	3	2.15	55.23	333
888.24	888.24	47.46	13	3	2.15	55.31	340




Agilent cdma2000 - Channel Power
50 Ω
AC
SENSE:EXT
ALIGN AUTO
11:30:44 AM Apr 18, 2011
Center Freq 879.030000 MHz
Input: RF
#IFGain:Low
CH Freq: 879.030000 MHz
Trig: Free Run
#Atten: 30 dB
Avg|Hold:>20/20
Ext Gain: -42.2 dB
Radio Std: cdma2000
Radio Device: BTS
Freq / Channel
10 dB/div
Log
Ref 60 dBm
50
40
30
20
10
0
-10
-20
-30
Center Freq
879.030000 MHz
Center 879 MHz
Res BW 18 kHz
#VBW 180 kHz
Span 1.875 MHz
#Sweep 9.4 ms
CF Step
1.250000 MHz
Auto
Man
Channel Power
47.38 dBm/ 1.25 MHz
Power Spectral Density
-13.59 dBm/Hz
MSG
STATUS


Agilent cdma2000 - Channel Power
50 Ω
AC
SENSE:EXT
ALIGN AUTO
09:36:43 AM Jul 05, 2011
Center Freq 888.240000 MHz
Input: RF
#IFGain:Low
CH Freq: 888.240000 MHz
Trig: Free Run
#Atten: 30 dB
Avg|Hold:>20/20
Ext Gain: -42.2 dB
Radio Std: cdma2000
Radio Device: BTS
Freq / Channel
10 dB/div
Log
Ref 60 dBm
50
40
30
20
10
0
-10
-20
-30
Center Freq
888.240000 MHz
Center 888.2 MHz
Res BW 24 kHz
VBW 240 kHz
Span 2.5 MHz
#Sweep 9.4 ms
CF Step
1.250000 MHz
Auto
Man
Channel Power
47.46 dBm/ 1.25 MHz
Power Spectral Density
-13.51 dBm/Hz
MSG
STATUS

6 RF EXPOSURE

Applicable standard

FCC §2.1091, §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 OET Bulletin 65, Edition 97-01

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

Where: S = power density
P = power input to antenna
G = power gain of the antenna in the direction of interest relative to an isotropic radiator
R = distance to the center of radiation of the antenna

Maximum peak output power at antenna input terminal: 47.61(dBm), Maximum peak output power at antenna input terminals: 57.6 (W), the cable loss is 3 dB
Prediction distance: 400 (cm)
Predication frequency: 879.015 (MHz)
Antenna Gain (typical): 13 (dBi)
Power density at predication frequency at 400 cm: 0.286(mW/cm^2)
MPE limit for uncontrolled exposure at prediction frequency: 0.586 (mW/cm^2)

Test Result: pass

7 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	2011-4-8	2012-4-7
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 has been performed per the NVLAP requirements, traceable to NIST.

Test Procedure

CDMA digital mode is used by EUT.

Test Data Environmental Conditions

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

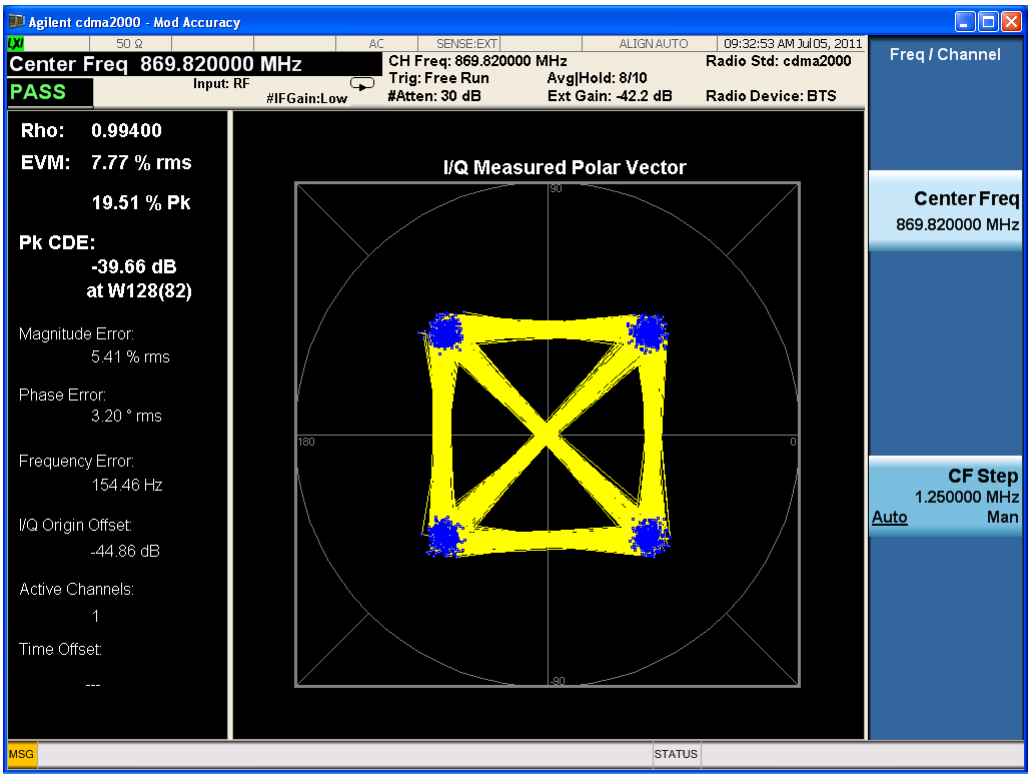
Test Result

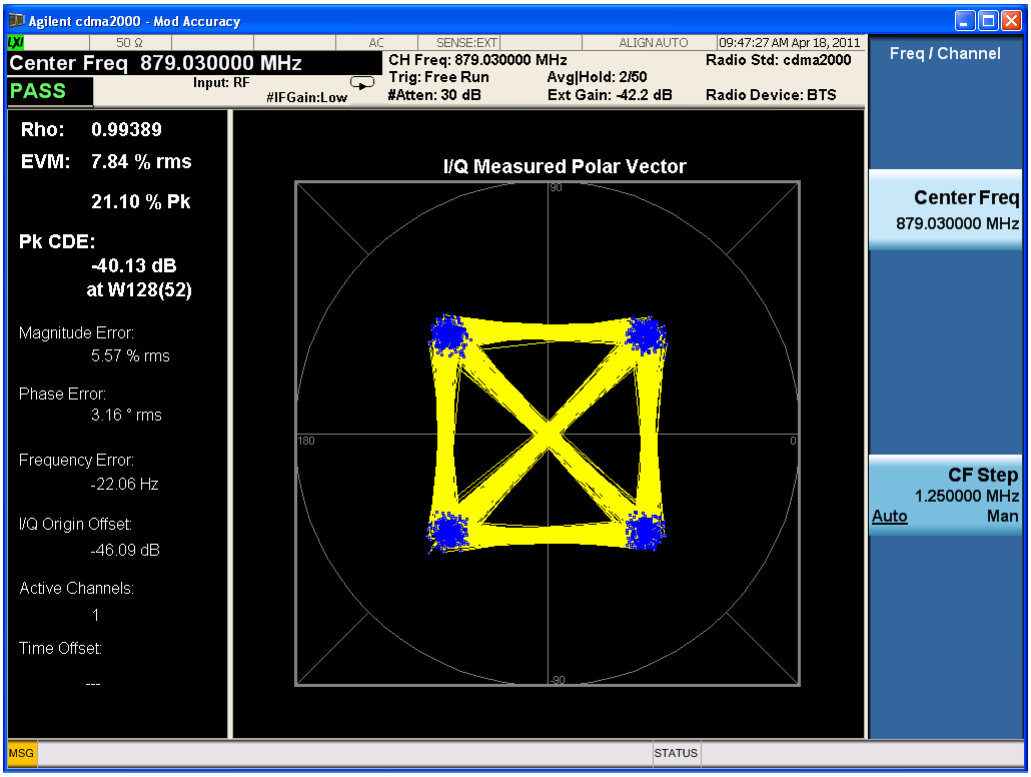
Pass

Test Mode: Transmitting CDMA

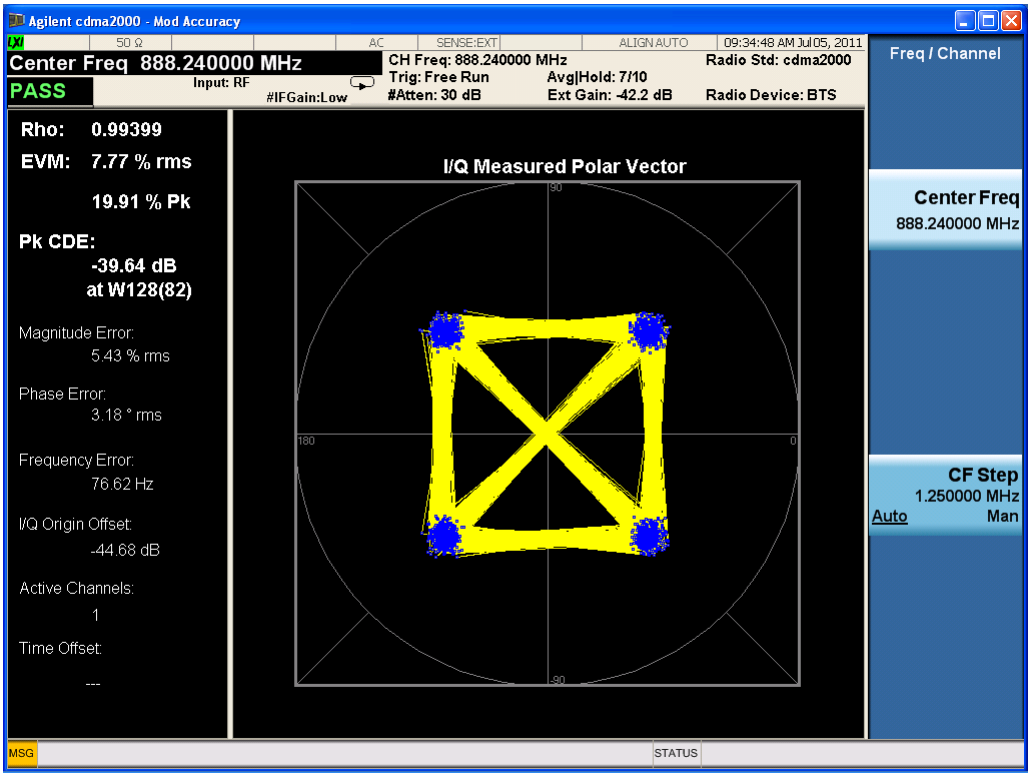
Test Data:

Frequency (MHz)	Rho
869.82	0.99400
879.03	0.99389
888.24	0.99399




Agilent cdma2000 - Mod Accuracy
50 Ω
AC
SENSE:EXT
ALIGN AUTO
09:47:27 AM Apr 18, 2011
Center Freq 879.030000 MHz
PASS
Input: RF
#IFGain:Low
CH Freq: 879.030000 MHz
Trig: Free Run
#Atten: 30 dB
Avg|Hold: 2/50
Ext Gain: -42.2 dB
Radio Std: cdma2000
Radio Device: BTS
Freq / Channel
Rho: 0.99389
EVM: 7.84 % rms
21.10 % Pk
Pk CDE:
-40.13 dB
at W128(52)
Magnitude Error:
5.57 % rms
Phase Error:
3.16 ° rms
Frequency Error:
-22.06 Hz
I/Q Origin Offset:
-46.09 dB
Active Channels:
1
Time Offset:

I/Q Measured Polar Vector
90
180
0
-90
Center Freq
879.030000 MHz
CF Step
1.250000 MHz
Auto
Man
MSG
STATUS


Agilent cdma2000 - Mod Accuracy
50 Ω
AC
SENSE:EXT
ALIGN AUTO
09:34:48 AM Jul 05, 2011
Center Freq 888.240000 MHz
PASS
Input: RF
#IFGain:Low
CH Freq: 888.240000 MHz
Trig: Free Run
#Atten: 30 dB
Avg|Hold: 7/10
Ext Gain: -42.2 dB
Radio Std: cdma2000
Radio Device: BTS
Freq / Channel
Rho: 0.99399
EVM: 7.77 % rms
19.91 % Pk
Pk CDE:
-39.64 dB
at W128(82)
Magnitude Error:
5.43 % rms
Phase Error:
3.18 ° rms
Frequency Error:
76.62 Hz
I/Q Origin Offset:
-44.68 dB
Active Channels:
1
Time Offset:

I/Q Measured Polar Vector
90
180
0
-90
Center Freq
888.240000 MHz
CF Step
1.250000 MHz
Auto
Man
MSG
STATUS

8 SPURIOUS RADIATED EMISSIONS

Applicable Standard

FCC CFR 47, §2.1053

Test Equipment List and Details

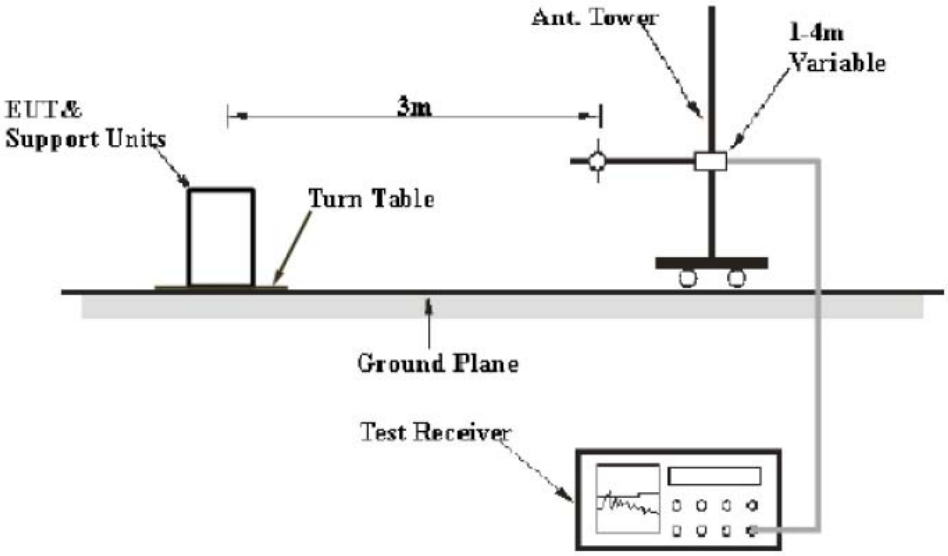
Manufacturer	Equipment	Model	Serial Number	Last Cal.	Cal. Interval
Albatross	3m Anechoic Chamber	/	A00017354	2010-6-30	1 year
R & S	EMI Test Receiver	ESIB 26	100058	2010-10-29	1 year
R & S	Ultra Breitband Antennas	HL562	100022	2010-8-5	1 year
R & S	Double-Ridged Waveguide Horn Antenna	HF906	100032	2010-8-5	1 year
R & S	Double-Ridged Waveguide Horn Antenna	HF906	100446	2010-8-5	1 year
SCHWARZ-BECK	Biconical Antenna	VUBA9117	9117-122	2010-8-5	1 year
R & S	Signal Generator	SMR20	A00017351	2010-10-29	1 year

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 NIS81, The Treatment of Uncertainty in EMC Measurements, the best estimate of the uncertainty of a radiated emissions measurement at the EMC lab. is 3.6dB.

EUT Setup and Test Procedure



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.

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 1g (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 1 percent as specified for 30MHz to 1GHz scanning, set at 1MHz for 1GHz to 20 GHz scanning.

Test Results

PASS

Environmental Conditions

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

Indicated		Test Antenna Polar (H/V)	Substituted		Cable Loss (dB)	ERP （dBm）	Dipole Antenna (dB)	Absolute Level (dBm)	Limit (dBm)	Margin (dB)
Frequency (MHz)	Amp. (dBμV)		Level (dBm)	Antenna Gain Correction						
33.108974	16.35	V	-45.23	-42.03	0.3	-87.56	2.15	-89.71	-13	76.71
182.339744	20.12	V	-73.92	-0.97	1.1	-75.99	2.15	-78.14	-13	65.14
469.919872	18.92	V	-75.18	-1.35	1.8	-78.33	2.15	-80.48	-13	67.48
888.076923	53.02	V	-44.17	-1.54	2.5	-48.21	2.15	-50.36	-13	37.36
1775.64103	49.8	V	-56.72	6.55	3.5	-53.67	2.15	-55.82	-13	42.82
2900.64103	55.28	V	-47.68	7.95	4.5	-44.23	2.15	-46.38	-13	33.38
34.663462	16.3	H	-42.78	-40.23	0.3	-83.31	2.15	-85.46	-13	72.46
179.230769	25.33	H	-68.71	-1.65	1.1	-71.46	2.15	-73.61	-13	60.61
471.474359	18.14	H	-75.96	-1.3	1.8	-79.06	2.15	-81.21	-13	68.21
889.63141	51.2	H	-45.99	-1.54	2.5	-50.03	2.15	-52.18	-13	39.18
1775.64103	47.66	H	-58.86	6.55	3.5	-55.81	2.15	-57.96	-13	44.96
2788.46154	55.61	H	-46.64	7.95	4.5	-43.19	2.15	-45.34	-13	32.34

Radiation emission spurious below 3 GHz

Indicated		Test Antenna Polar (H/V)	Substituted		Cable Loss (dB)	ERP （dBm）	Dipole Antenna (dB)	Absolute Level (dBm)	Limit (dBm)	Margin (dB)
Frequency (MHz)	Amp. (dBμV)		Level (dBm)	Antenna Gain Correction						
4730.76923	43.76	V	-63.84	9.15	5.8	-60.49	2.15	-62.64	-13	49.64
6000	46.94	V	-56.54	9.05	6.8	-54.29	2.15	-56.44	-13	43.44
6987.17949	48.01	V	-60.16	9.25	7.3	-58.21	2.15	-60.36	-13	47.36
7718.75	49.27	V	-63.08	9.25	7.7	-61.53	2.15	-63.68	-13	50.68
9847.35577	55.2	V	-53.62	9.95	8.9	-52.57	2.15	-54.72	-13	41.72
12676.2821	55.02	V	-56.16	12.15	9.9	-53.91	2.15	-56.06	-13	43.06
4775.64103	44.01	H	-56.89	9.15	5.9	-53.64	2.15	-55.79	-13	42.79
5993.58974	46.14	H	-57.25	9.05	6.7	-54.9	2.15	-57.05	-13	44.05
6948.71795	48.68	H	-56.74	9.25	7.3	-54.79	2.15	-56.94	-13	43.94
7820.11218	49.54	H	-51.76	9.25	7.8	-50.31	2.15	-52.46	-13	39.46
9838.14103	54.44	H	-54.5	9.95	8.9	-53.45	2.15	-55.6	-13	42.6
12372.1955	54.69	H	-57.46	12.05	9.9	-55.31	2.15	-57.46	-13	44.46

Radiation emission spurious above 3 GHz

9 SPURIOUS EMISSIONS AT ANTENNA TERMINALS

Applicable Standard

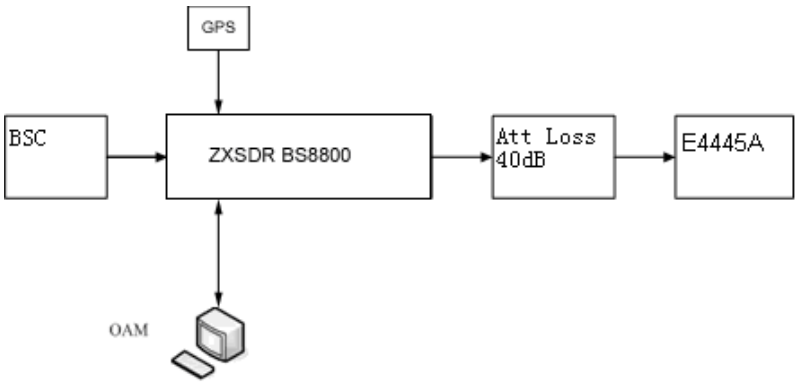
FCC§2.1051, §22.917, the spectrum was to be investigated to the tenth harmonics of the highest fundamental frequency as specified.

Test Equipment List and Details

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
Agilent	MXA Series Spectrum Analyzer	N9020A	MY48011941	2011-4-8	2012-4-7
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 attests that all calibration has been performed per the NVLAP requirements, traceable to NIST.

EUT Setup and Test Procedure



REMARKS: Attenuator loss (dB) = 40 dB, Cable Loss (dB) = 3 dB.

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 30 kHz for 9 kHz to 30 MHz band, set at 100 kHz for 30 MHz to 1GHz band, set at 1MHz for 1 GHz to 10GHz band. 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

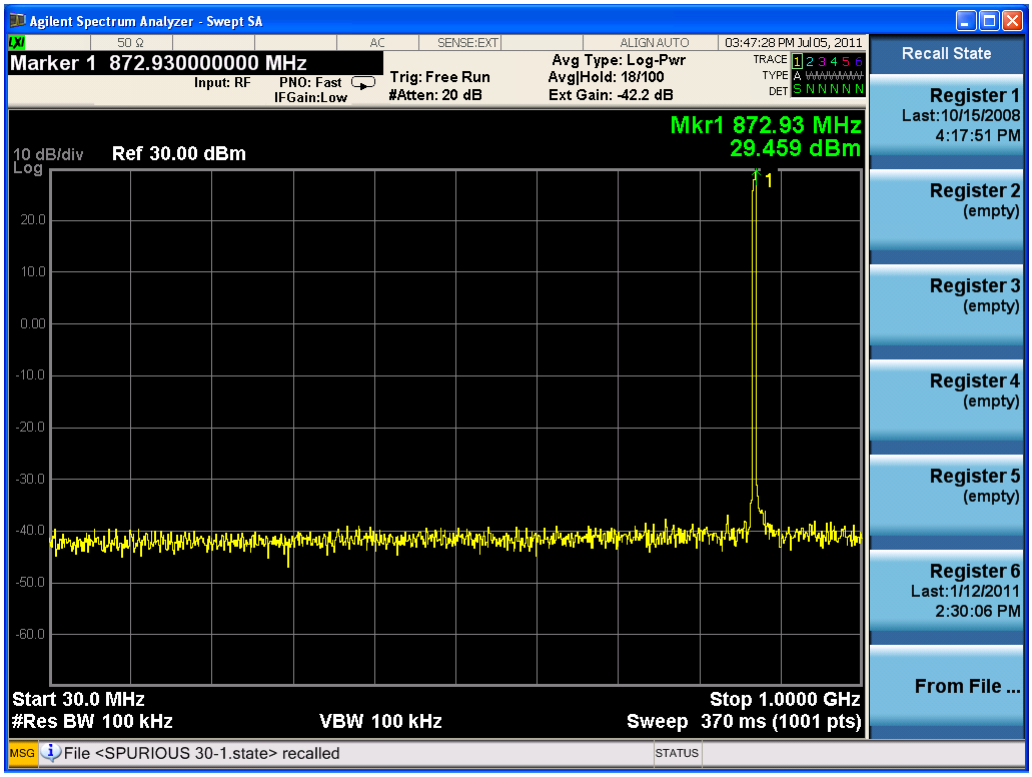
Test Result

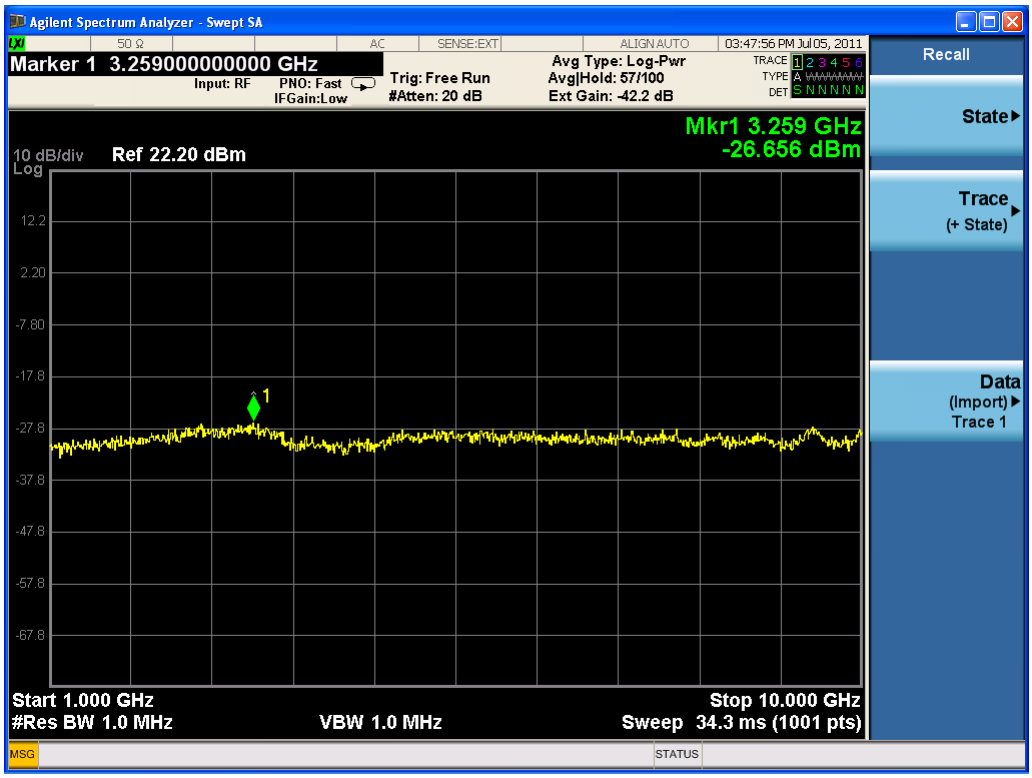
Pass

Test Mode: Transmitting CDMA

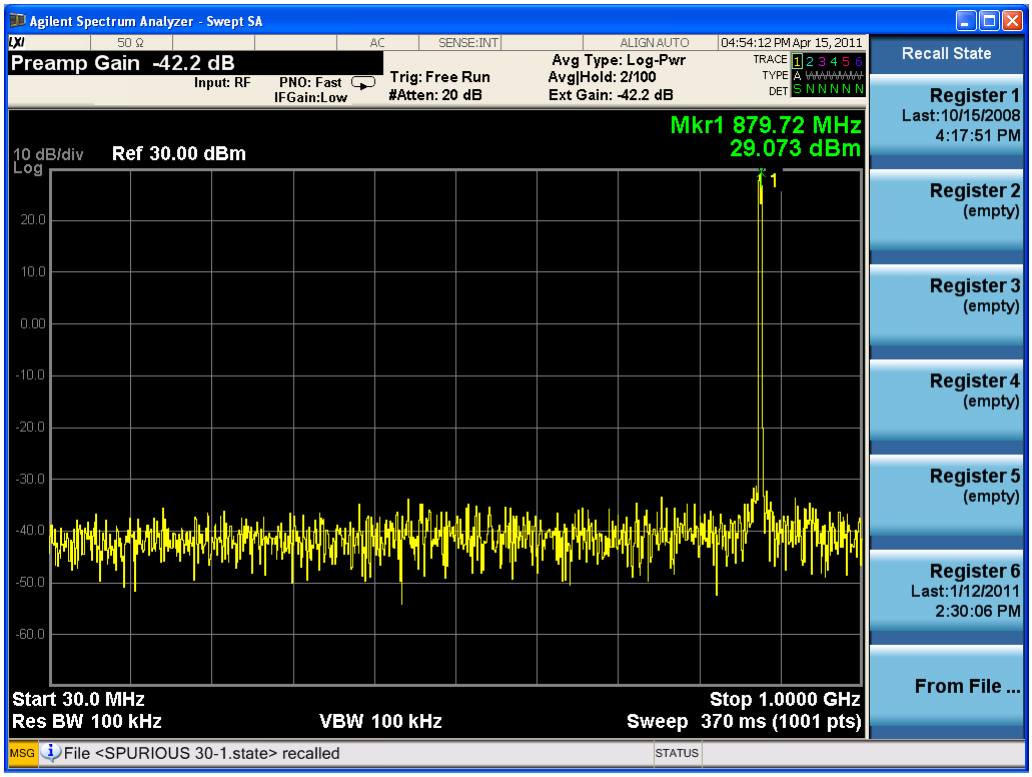
Test Data:

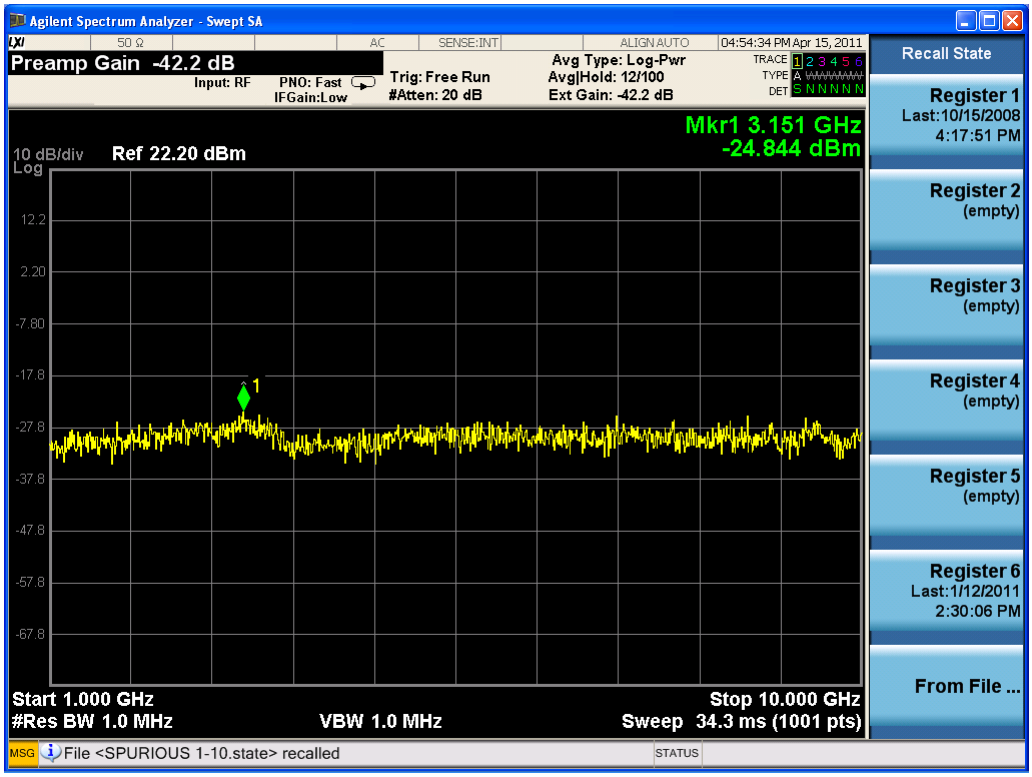
Four Carriers (working in bottom frequency)



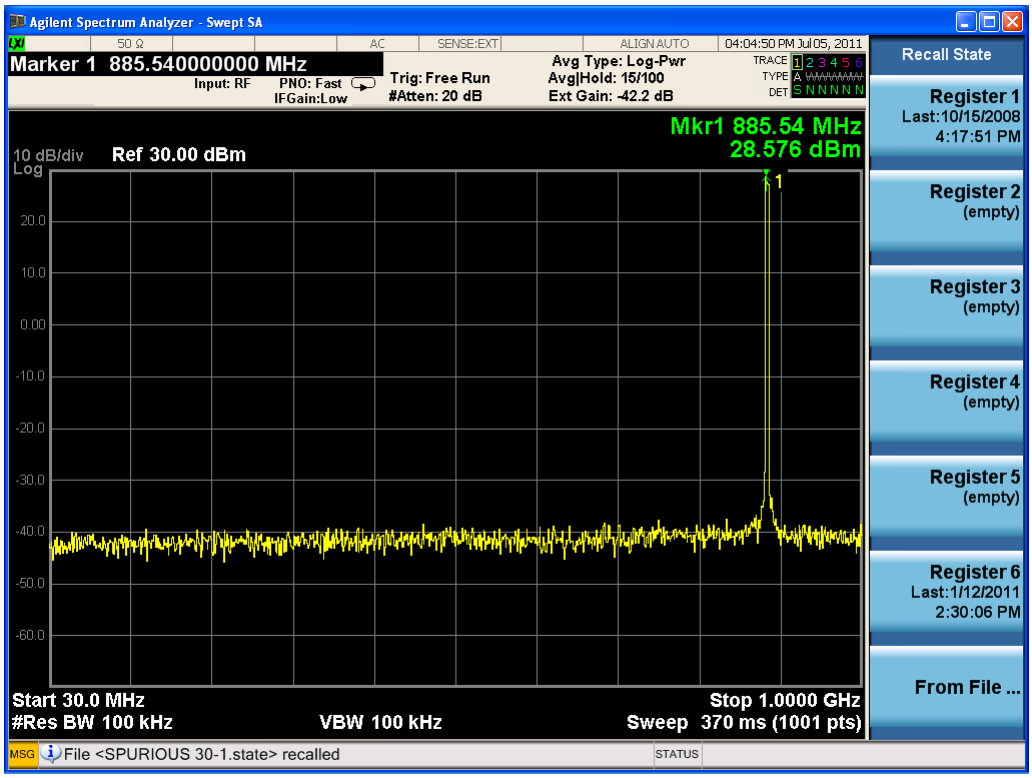


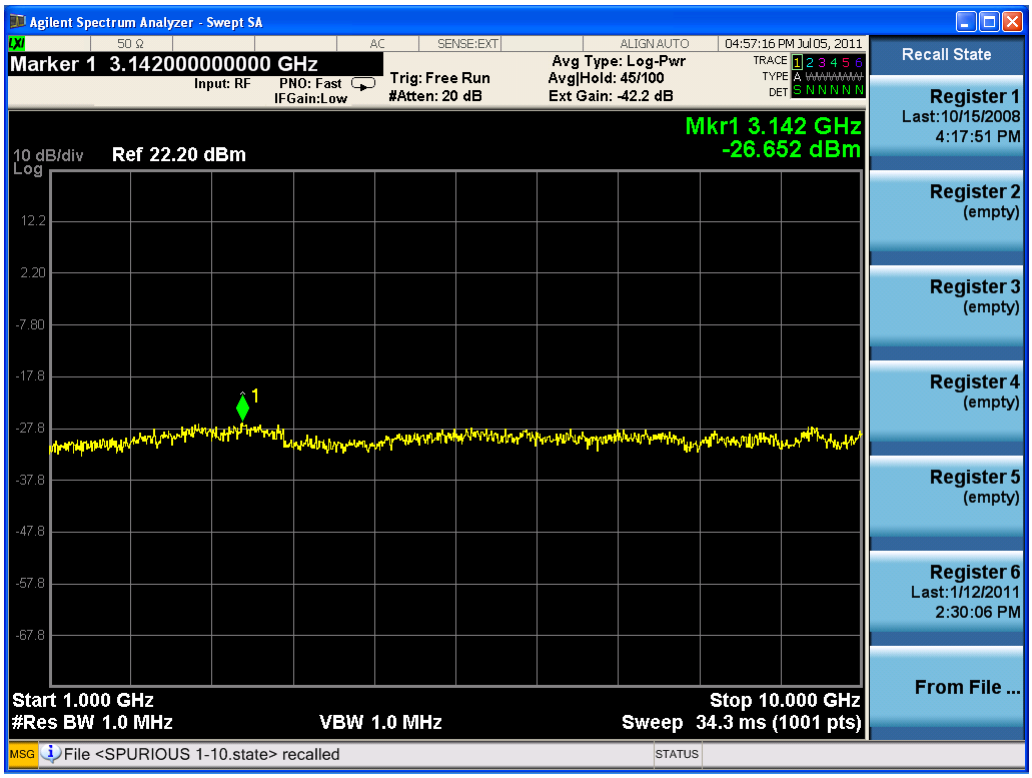
Four carriers (working in middle frequency)



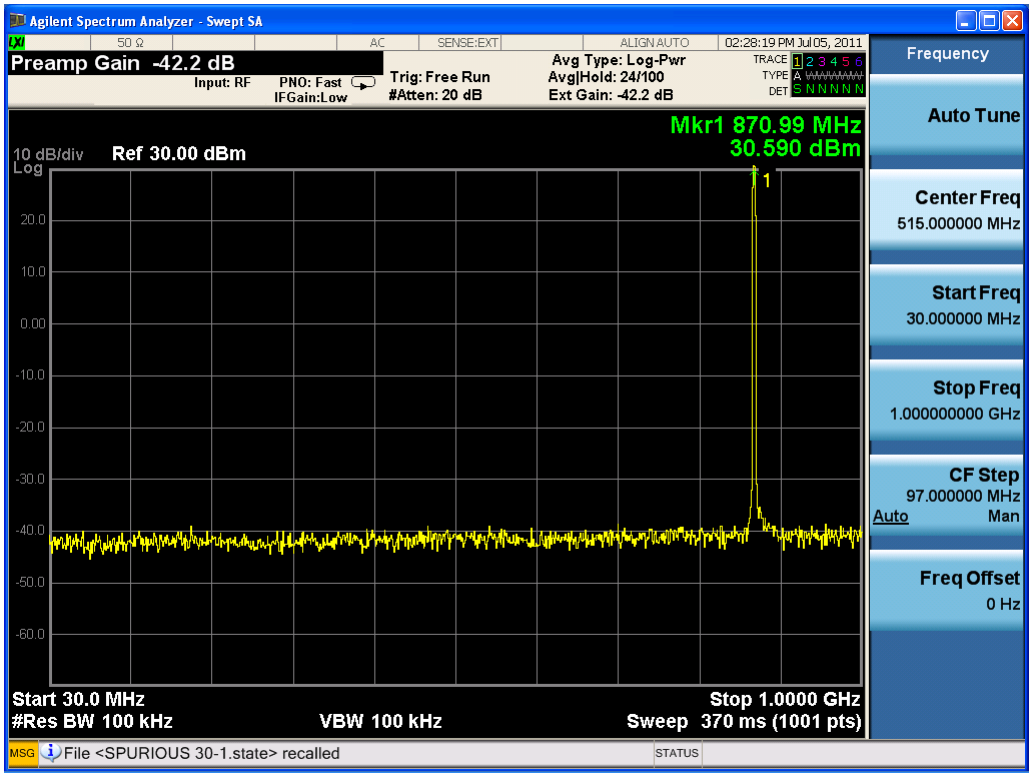


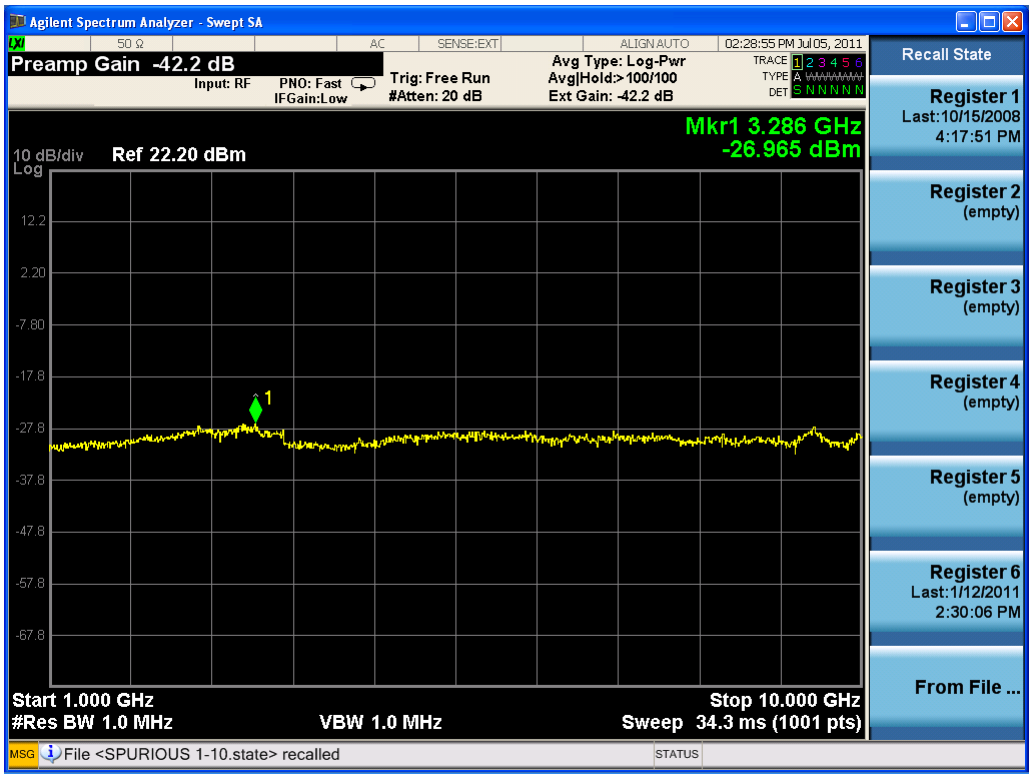
Four carriers (working in top frequency)



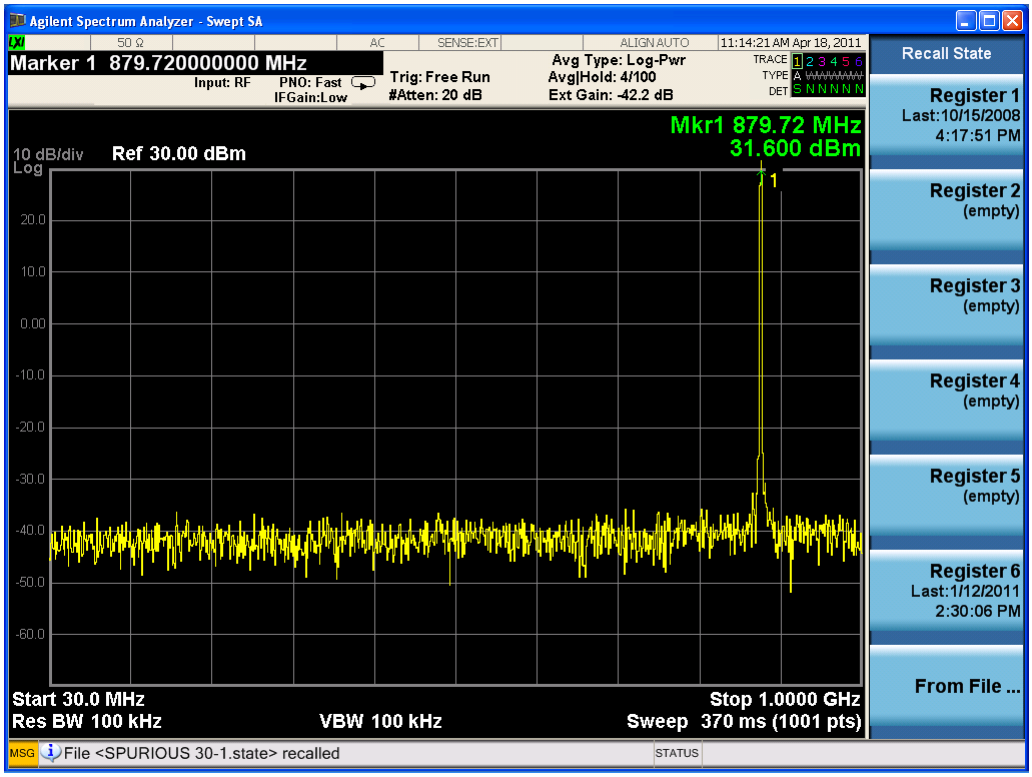


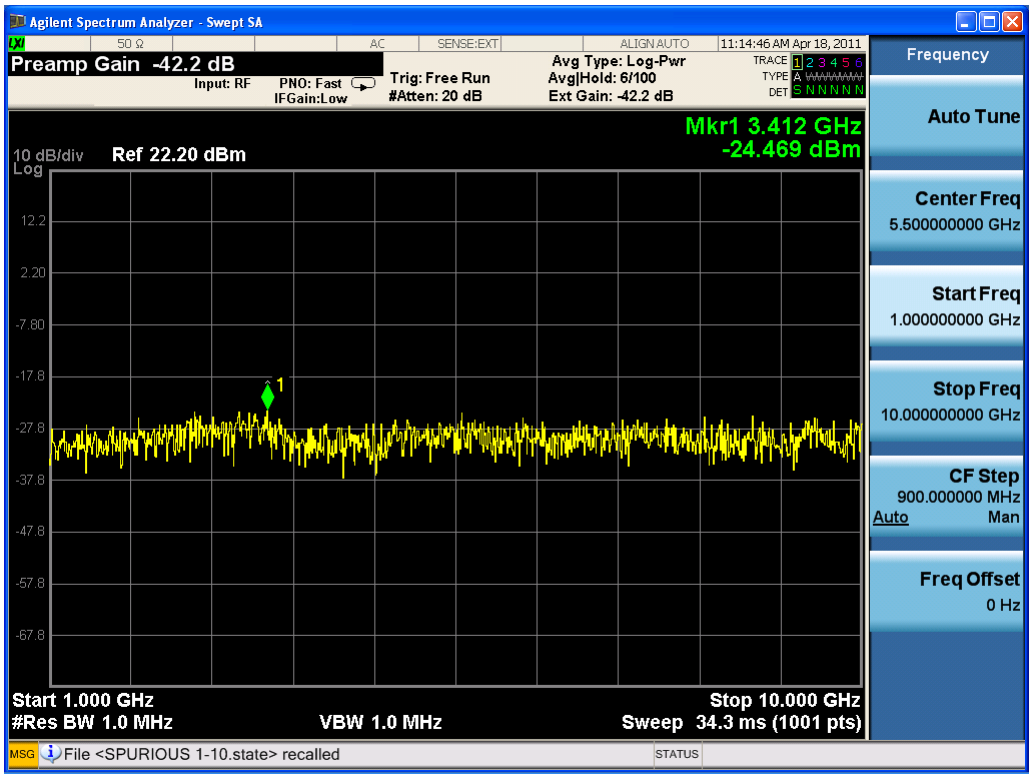
Three carriers (working in bottom frequency)



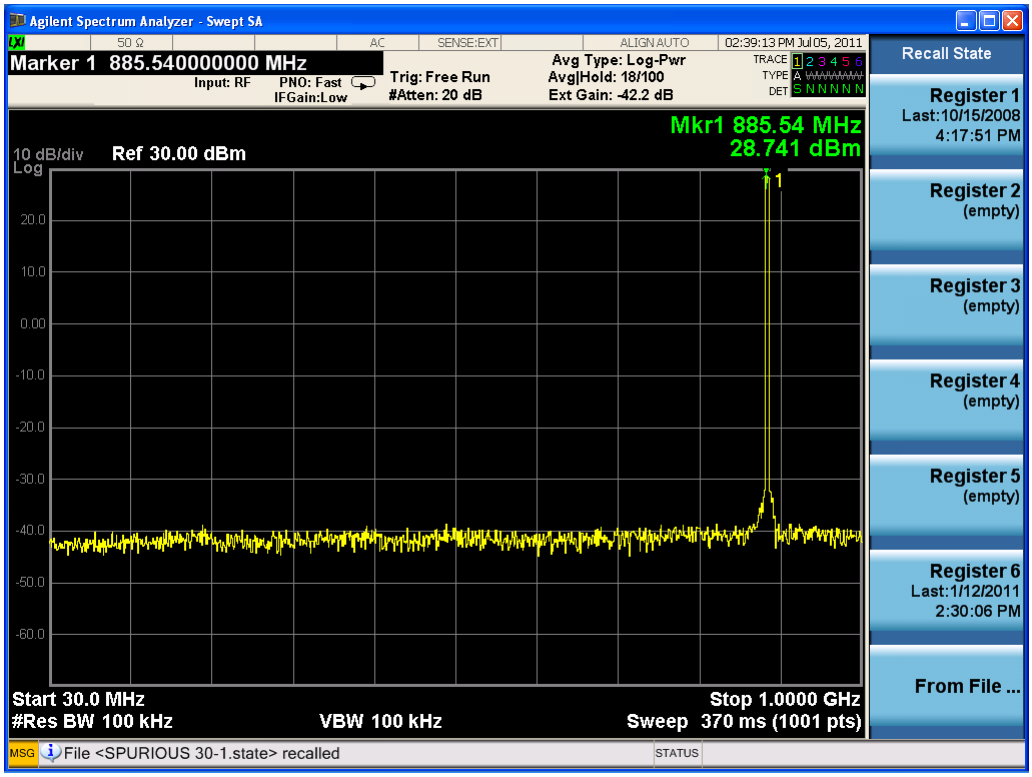


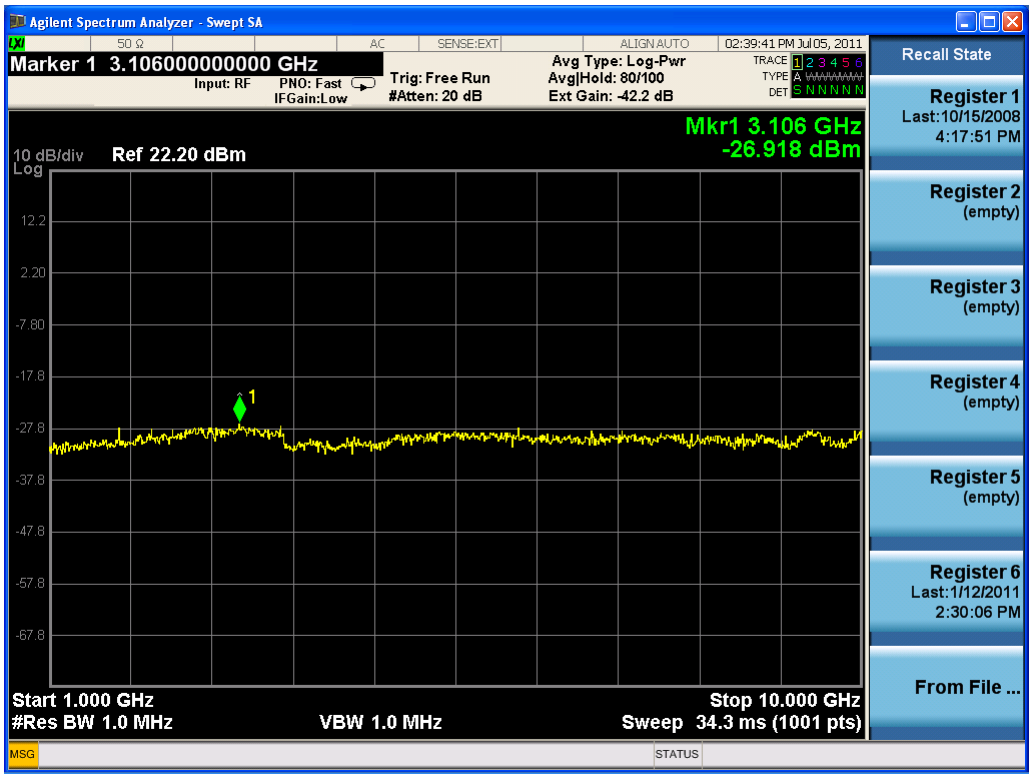
Three carriers (working in middle frequency)



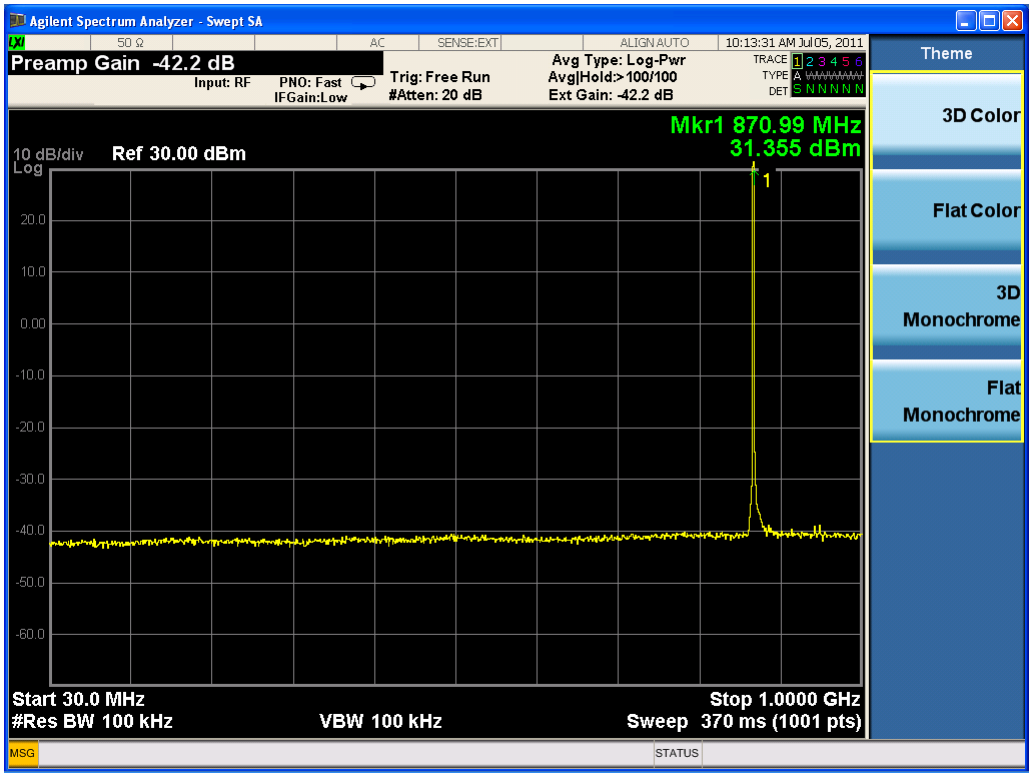


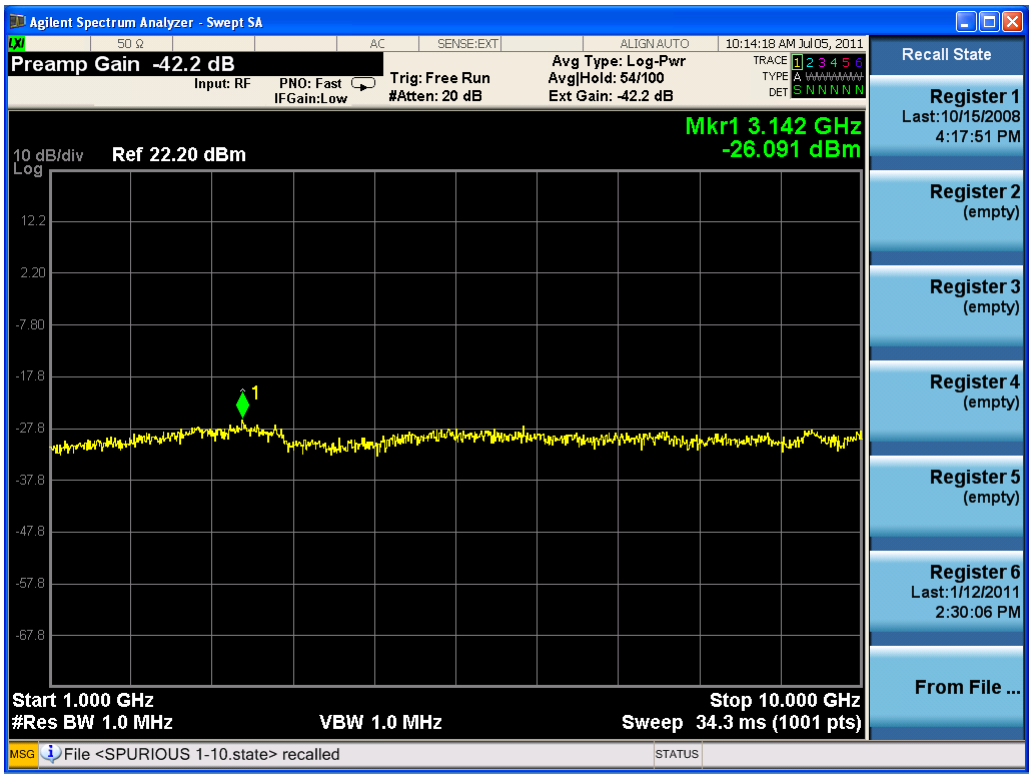
Three carriers (working in top frequency)



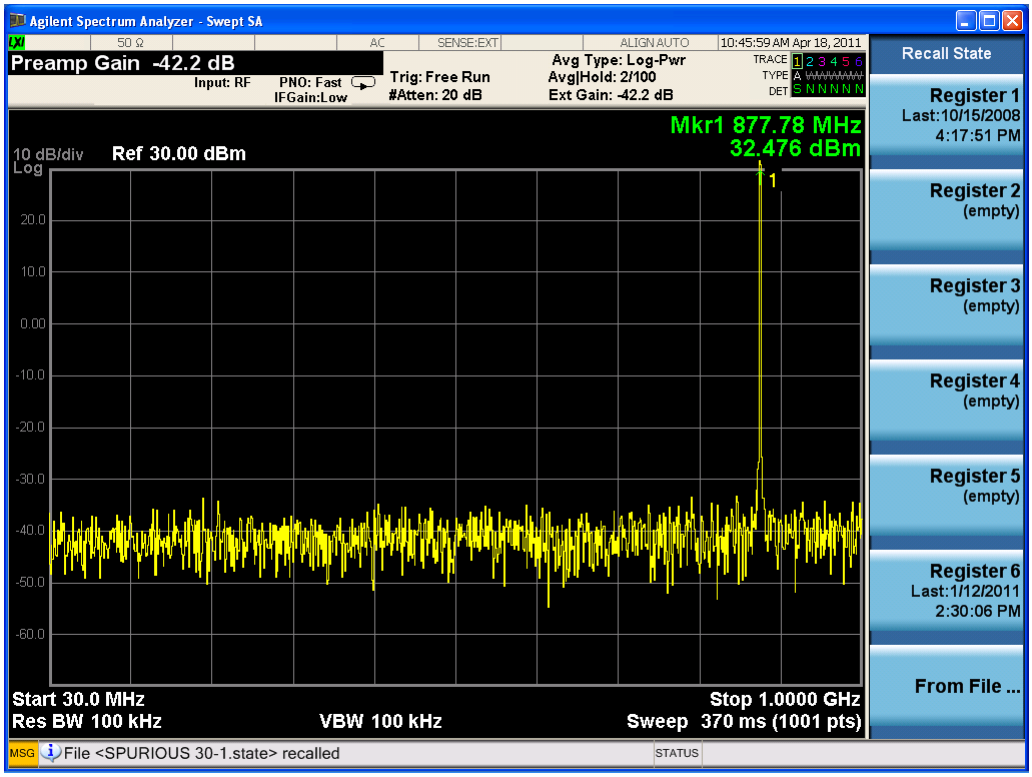


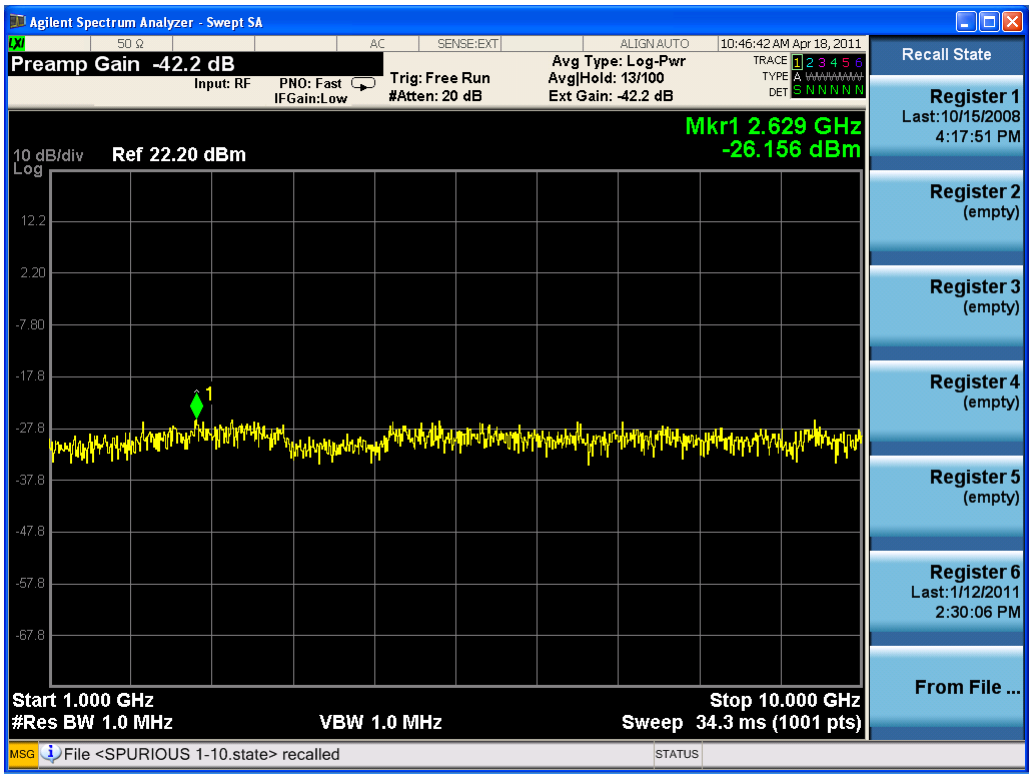
Two carriers (working in bottom frequency)



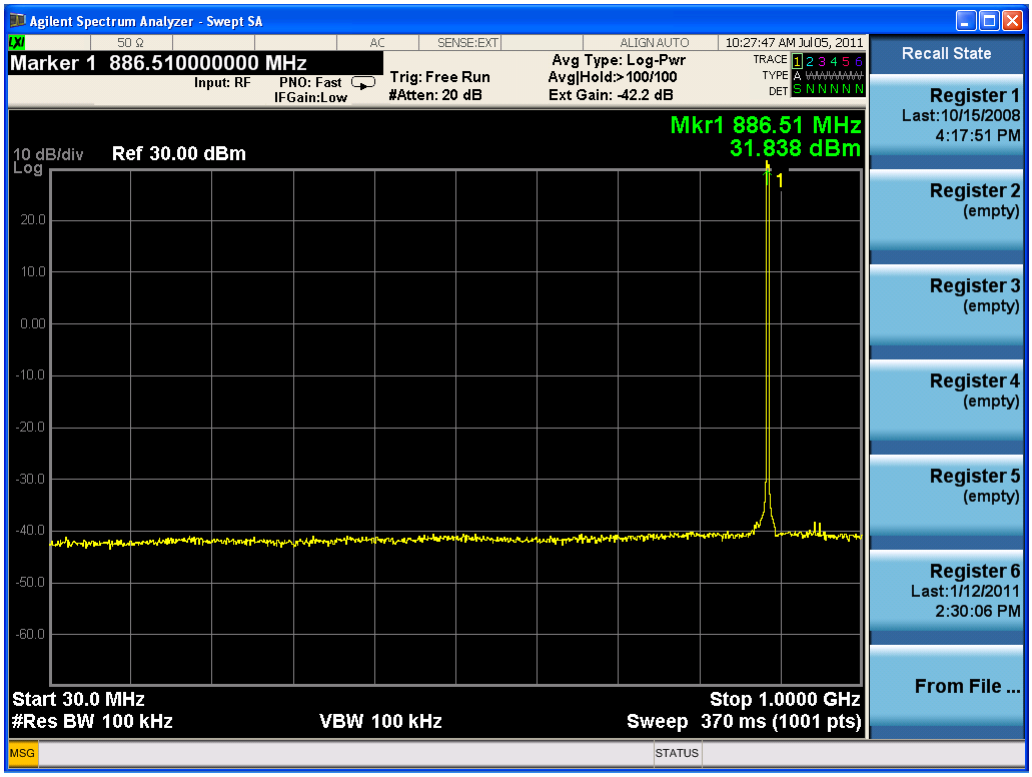


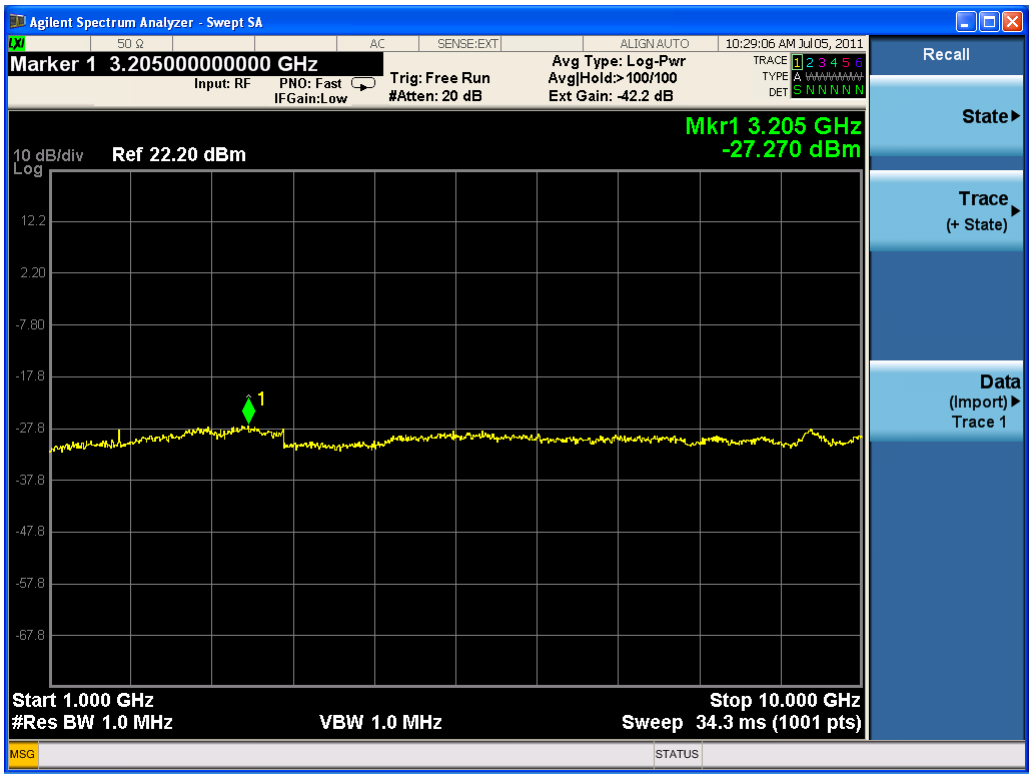
Two carriers (working in middle frequency)



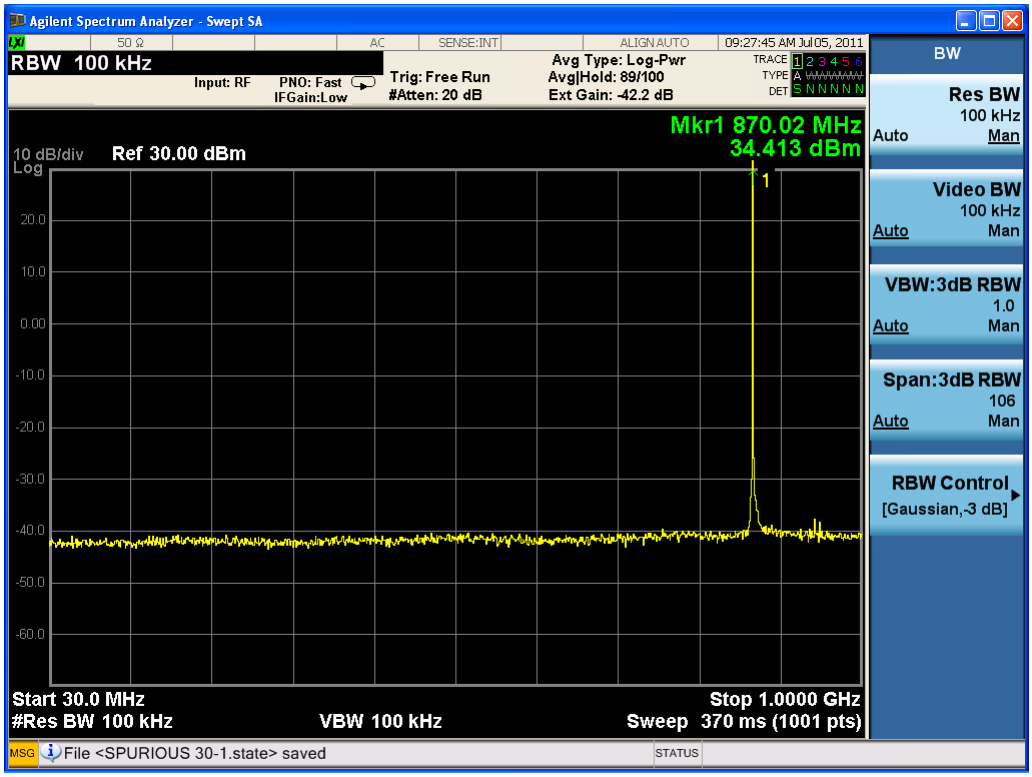


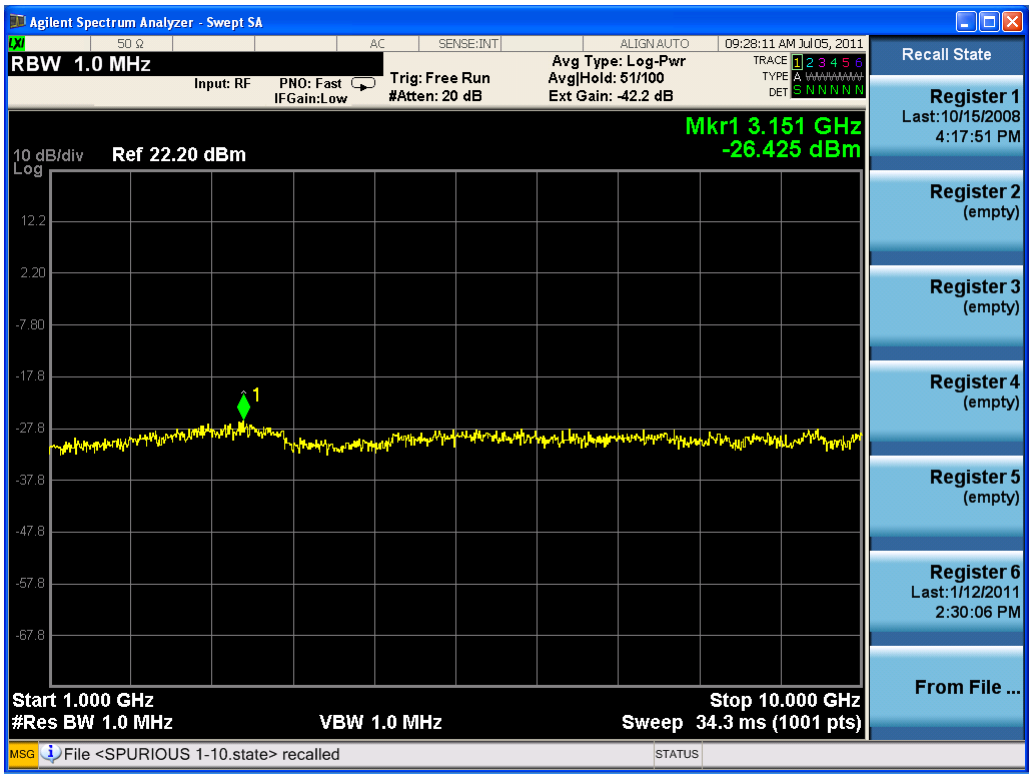
Two carriers (working in top frequency)



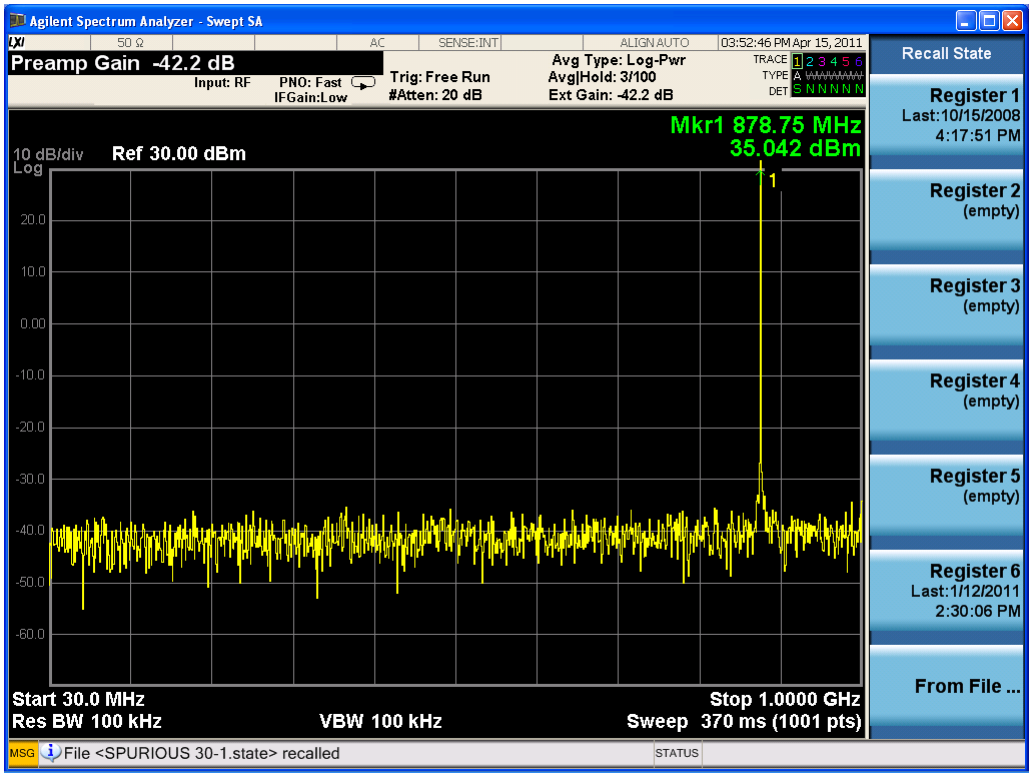


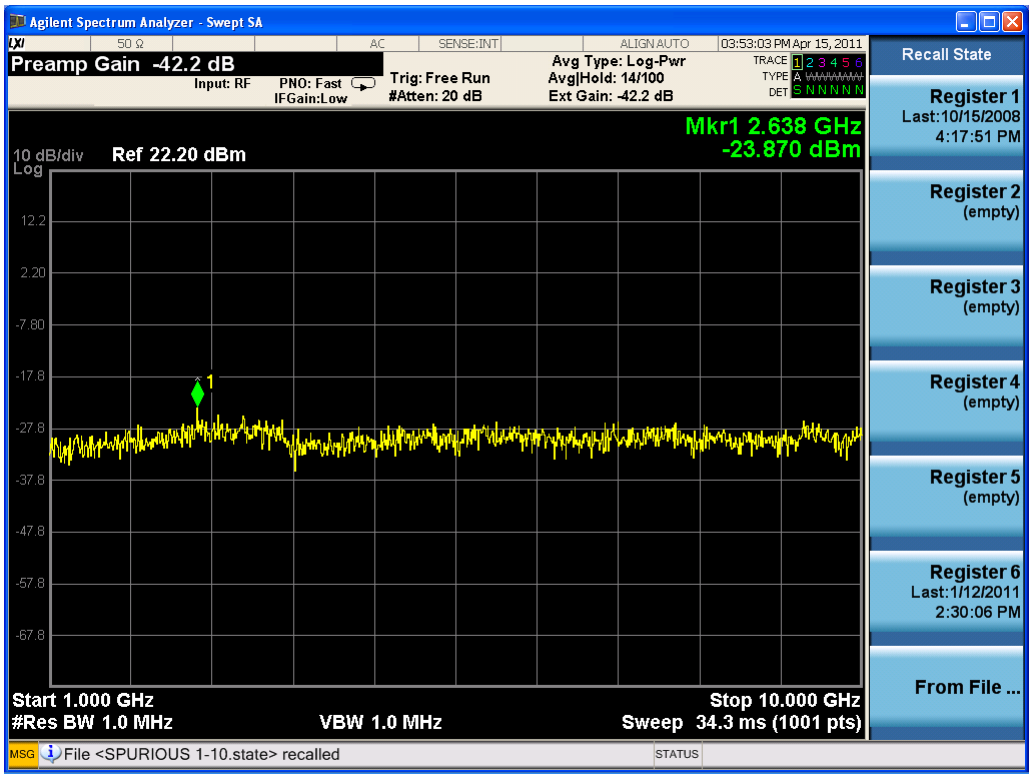
One carrier (working in bottom frequency)



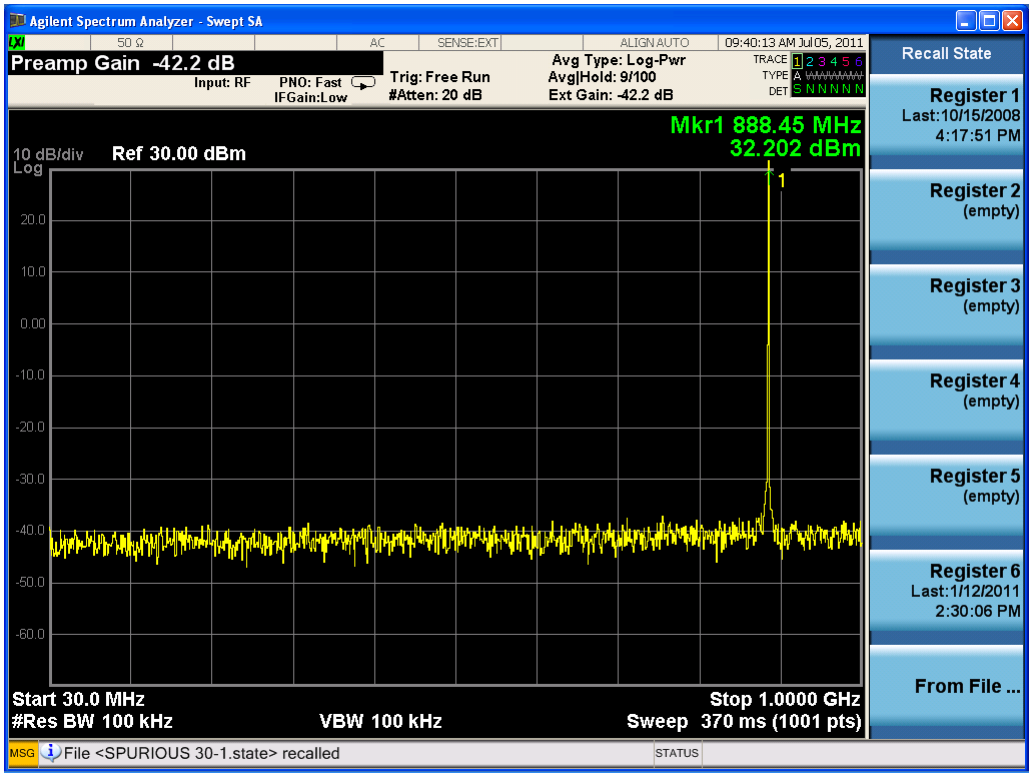


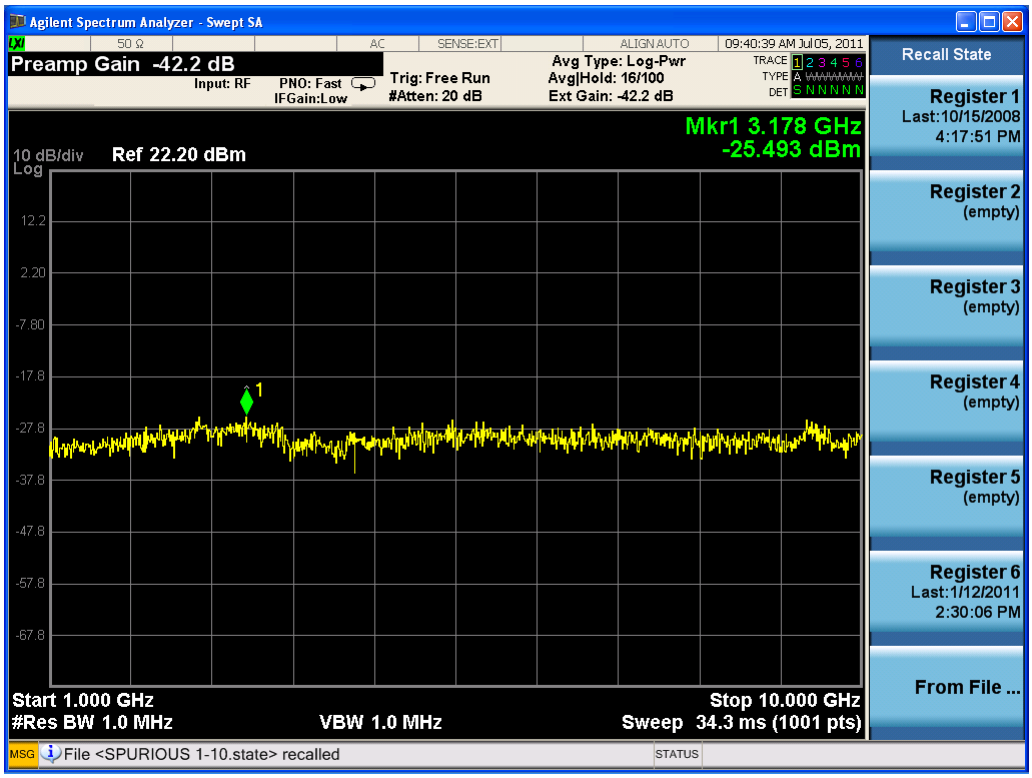
One carrier (working in middle frequency)





One carrier (working in top frequency)




Agilent Spectrum Analyzer - Swept SA
50 Ω
AC
SENSE:EXT
ALIGN AUTO
09:40:39 AM Jul 05, 2011
Preamp Gain -42.2 dB
Input: RF
PNO: Fast
IFGain:Low
Trig: Free Run
#Atten: 20 dB
Avg Type: Log-Pwr
Avg|Hold: 16/100
Ext Gain: -42.2 dB
TRACE 1 2 3 4 5 6
TYPE A WWWWW
DET S N N N N N
Mkr1 3.178 GHz
-25.493 dBm
10 dB/div
Log
Ref 22.20 dBm
12.2
2.20
-7.80
-17.8
-27.8
-37.8
-47.8
-57.8
-67.8
1
Start 1.000 GHz
#Res BW 1.0 MHz
VBW 1.0 MHz
Stop 10.000 GHz
Sweep 34.3 ms (1001 pts)
Recall State
Register 1
Last:10/15/2008
4:17:51 PM
Register 2
(empty)
Register 3
(empty)
Register 4
(empty)
Register 5
(empty)
Register 6
Last:1/12/2011
2:30:06 PM
From File ...
MSG
File <SPURIOUS 1-10.state> recalled
STATUS

10 OCCUPIED BANDWIDTH

Applicable Standard

FCC §2.1049 and §22.917

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
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 attests that all calibration has 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. 99%Power bandwidth was recorded.

Environmental Conditions

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

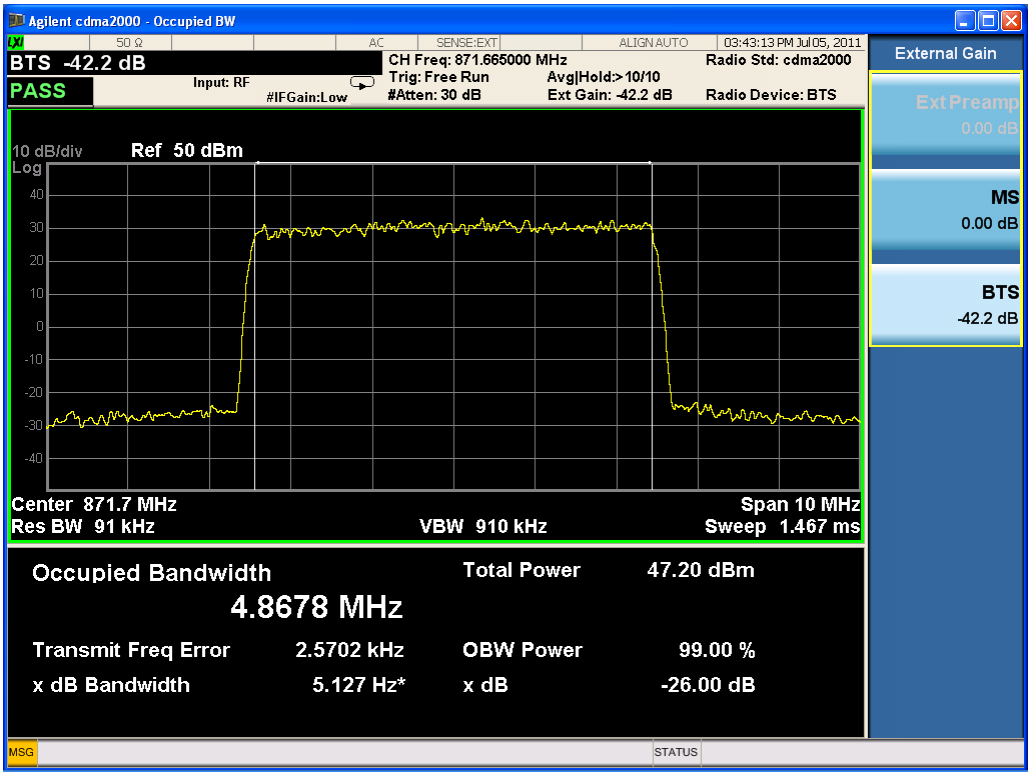
Test Result

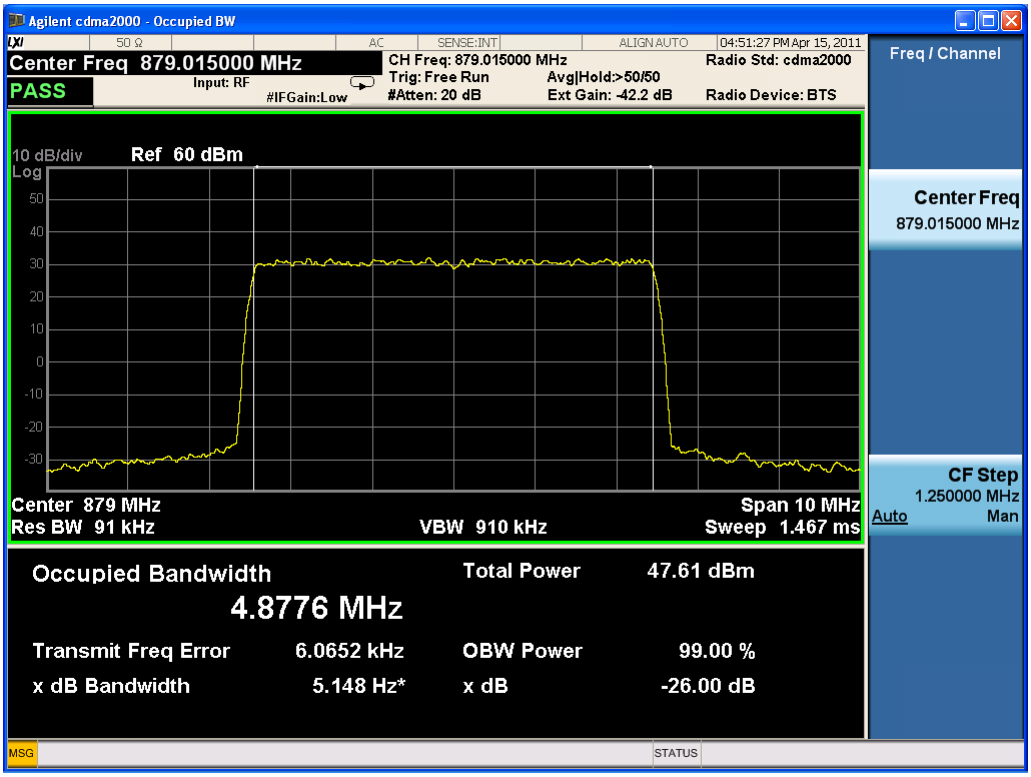
Pass

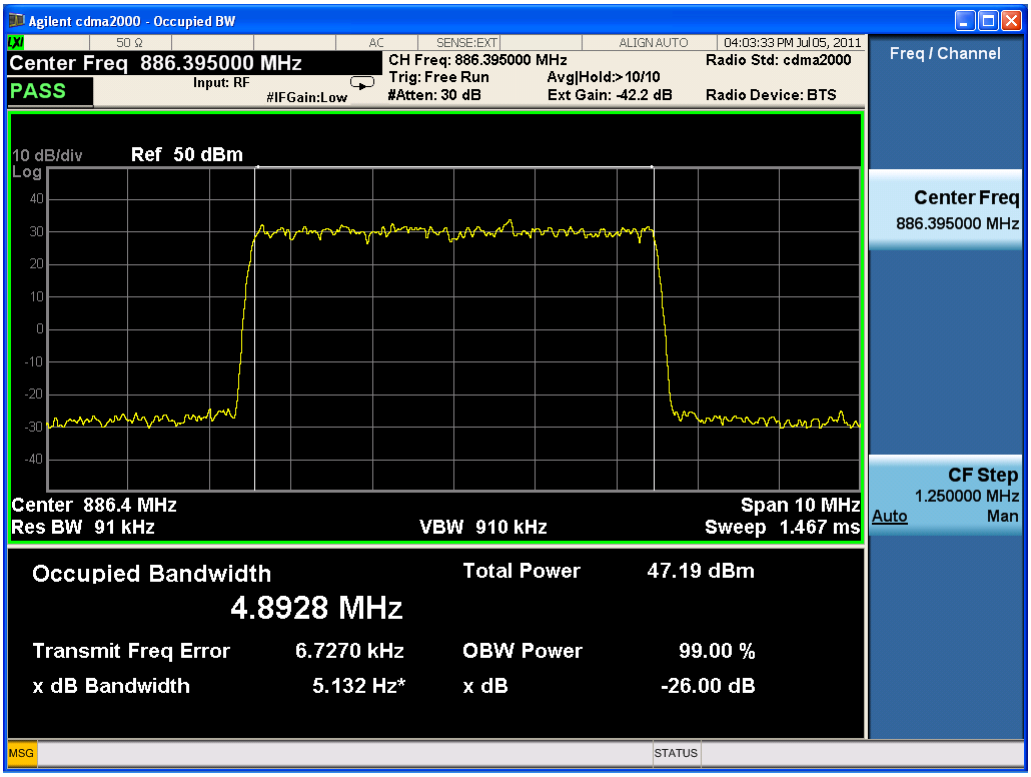
Test Mode: Transmitting CDMA

For four carries:

Frequency (MHz)	99% Power Bandwidth (MHz)	Limit (MHz)
871.665	4.8678	< 5.00
879.015	4.8776	< 5.00
886.395	4.8928	< 5.00

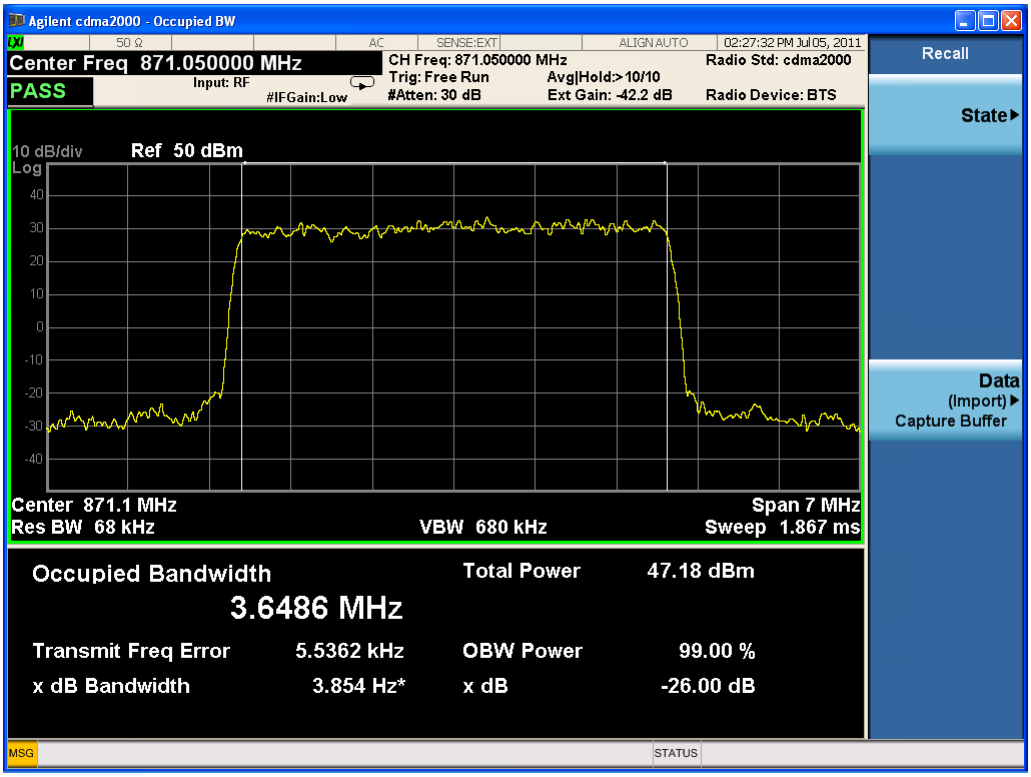


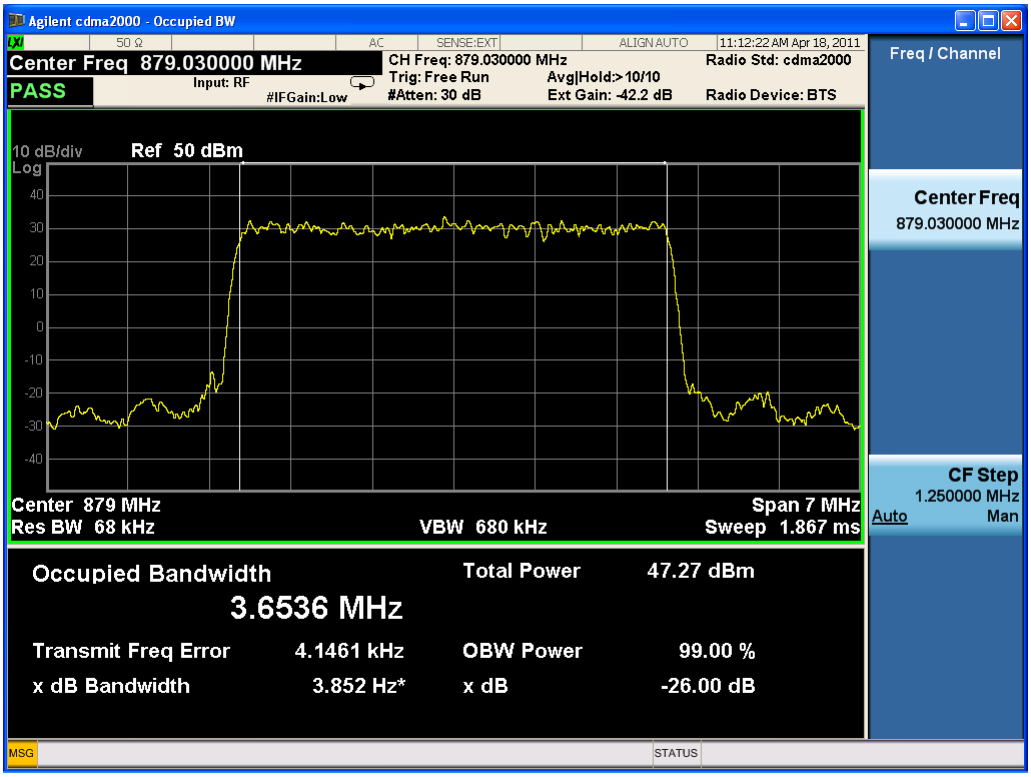

Agilent cdma2000 - Occupied BW
50 Ω
AC
SENSE:INT
ALIGN AUTO
04:51:27 PM Apr 15, 2011
Center Freq 879.015000 MHz
PASS
Input: RF
#IFGain:Low
CH Freq: 879.015000 MHz
Trig: Free Run
#Atten: 20 dB
Avg|Hold:>50/50
Ext Gain: -42.2 dB
Radio Std: cdma2000
Radio Device: BTS
Freq / Channel
10 dB/div
Log
Ref 60 dBm
50
40
30
20
10
0
-10
-20
-30
Center Freq
879.015000 MHz
Center 879 MHz
Res BW 91 kHz
VBW 910 kHz
Span 10 MHz
Sweep 1.467 ms
CF Step
1.250000 MHz
Auto
Man
Occupied Bandwidth
4.8776 MHz
Total Power
47.61 dBm
Transmit Freq Error
6.0652 kHz
OBW Power
99.00 %
x dB Bandwidth
5.148 Hz*
x dB
-26.00 dB
MSG
STATUS

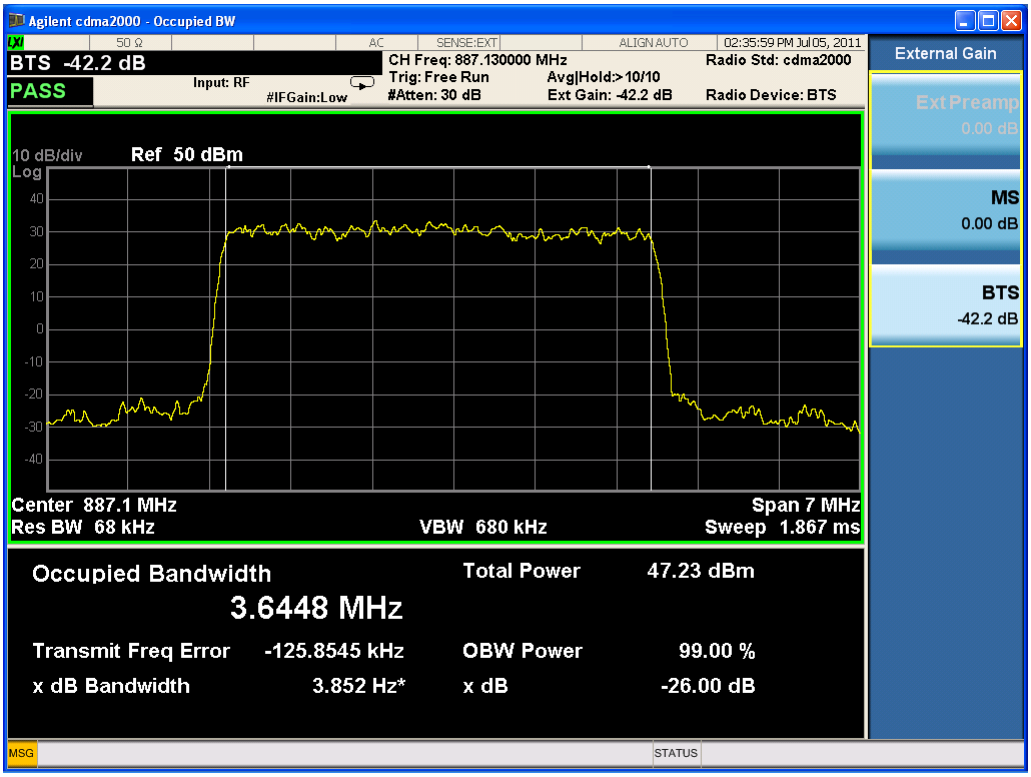

Agilent cdma2000 - Occupied BW
50 Ω
AC
SENSE:EXT
ALIGN AUTO
04:03:33 PM Jul 05, 2011
Center Freq 886.395000 MHz
PASS
Input: RF
#IFGain:Low
CH Freq: 886.395000 MHz
Trig: Free Run
#Atten: 30 dB
Avg|Hold:>10/10
Ext Gain: -42.2 dB
Radio Std: cdma2000
Radio Device: BTS
Freq / Channel
10 dB/div
Log
Ref 50 dBm
40
30
20
10
0
-10
-20
-30
-40
Center Freq
886.395000 MHz
Center 886.4 MHz
Res BW 91 kHz
VBW 910 kHz
Span 10 MHz
Sweep 1.467 ms
CF Step
1.250000 MHz
Auto
Man
Occupied Bandwidth
4.8928 MHz
Total Power
47.19 dBm
Transmit Freq Error
6.7270 kHz
OBW Power
99.00 %
x dB Bandwidth
5.132 Hz*
x dB
-26.00 dB
MSG
STATUS

For three carries:

Frequency (MHz)	99% Power Bandwidth (MHz)	Limit (MHz)
871.05	3.6486	< 3.75
879.03	3.6536	< 3.75
887.13	3.6448	< 3.75

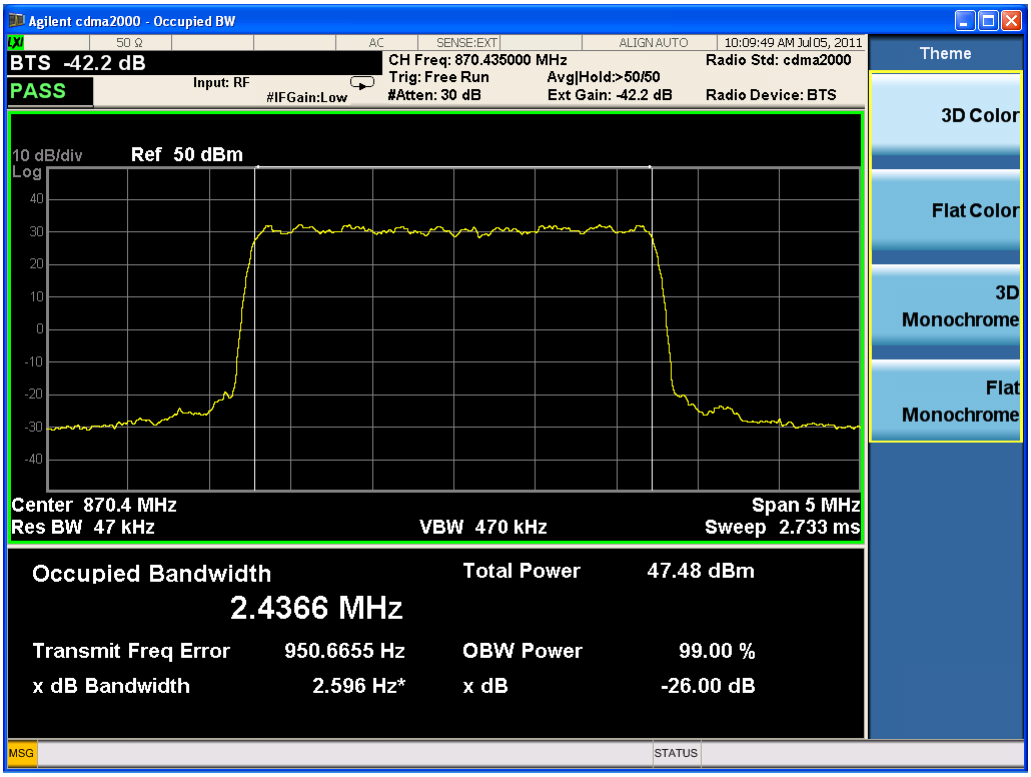


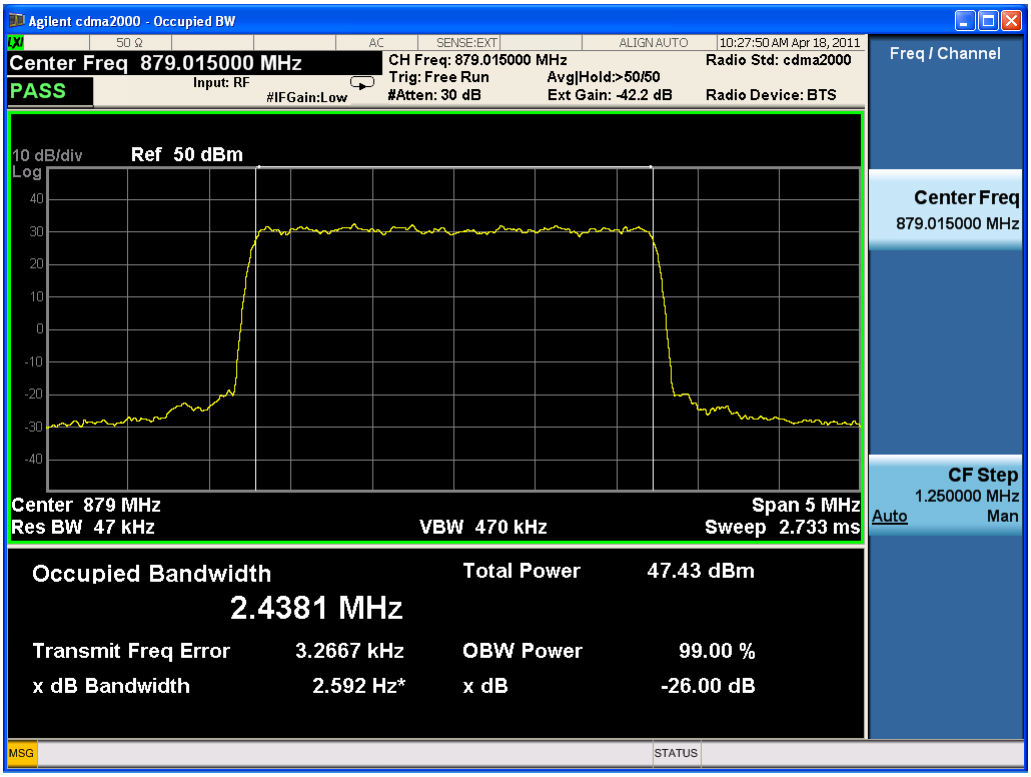

Agilent cdma2000 - Occupied BW
50 Ω
AC
SENSE:EXT
ALIGN AUTO
11:12:22 AM Apr 18, 2011
Center Freq 879.030000 MHz
PASS
Input: RF
#IFGain:Low
CH Freq: 879.030000 MHz
Trig: Free Run
#Atten: 30 dB
Avg|Hold:>10/10
Ext Gain: -42.2 dB
Radio Std: cdma2000
Radio Device: BTS
Freq / Channel
10 dB/div
Log
Ref 50 dBm
40
30
20
10
0
-10
-20
-30
-40
Center Freq
879.030000 MHz
Center 879 MHz
Res BW 68 kHz
VBW 680 kHz
Span 7 MHz
Sweep 1.867 ms
CF Step
1.250000 MHz
Auto
Man
Occupied Bandwidth
3.6536 MHz
Total Power
47.27 dBm
Transmit Freq Error
4.1461 kHz
OBW Power
99.00 %
x dB Bandwidth
3.852 Hz*
x dB
-26.00 dB
MSG
STATUS

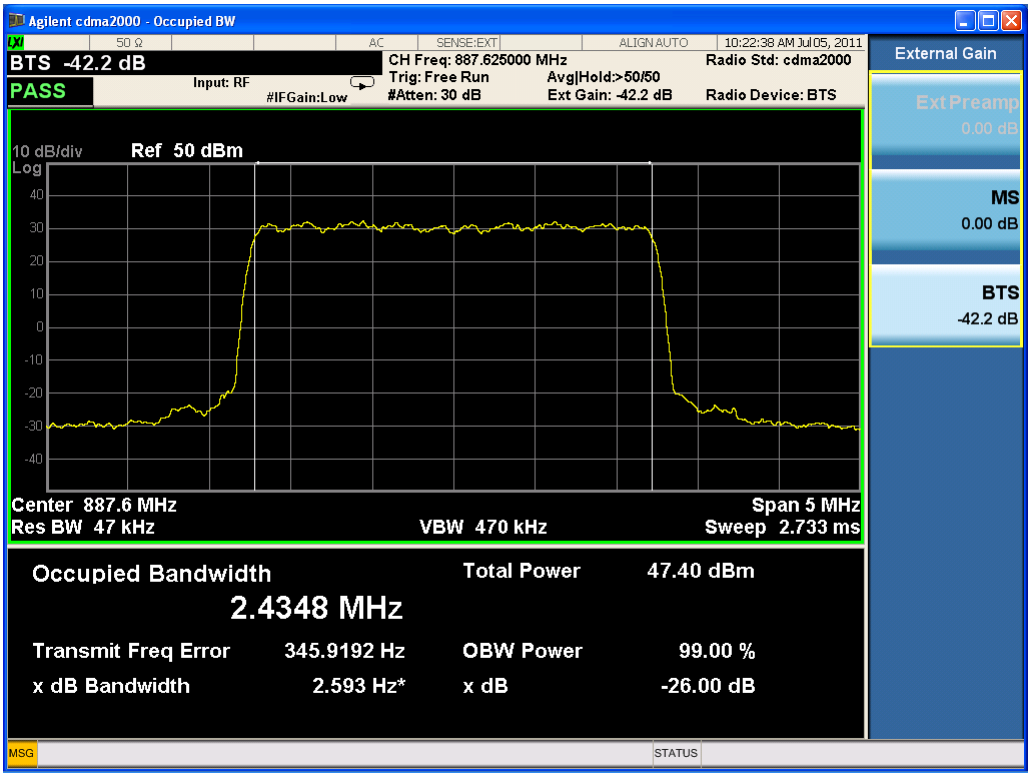

Agilent cdma2000 - Occupied BW
50 Ω
AC
SENSE:EXT
ALIGN AUTO
02:35:59 PM Jul 05, 2011
BTS -42.2 dB
PASS
Input: RF
#IFGain:Low
CH Freq: 887.130000 MHz
Trig: Free Run
#Atten: 30 dB
Avg|Hold:>10/10
Ext Gain: -42.2 dB
Radio Std: cdma2000
Radio Device: BTS
External Gain
Ext Preamp
0.00 dB
MS
0.00 dB
BTS
-42.2 dB
10 dB/div
Log
Ref 50 dBm
40
30
20
10
0
-10
-20
-30
-40
Center 887.1 MHz
Res BW 68 kHz
VBW 680 kHz
Span 7 MHz
Sweep 1.867 ms
Occupied Bandwidth
3.6448 MHz
Total Power
47.23 dBm
Transmit Freq Error
-125.8545 kHz
OBW Power
99.00 %
x dB Bandwidth
3.852 Hz*
x dB
-26.00 dB
MSG
STATUS

For two carries:

Frequency (MHz)	99% Power Bandwidth (MHz)	Limit (MHz)
870.435	2.4366	< 2.50
879.015	2.4381	< 2.50
887.625	2.4348	< 2.50

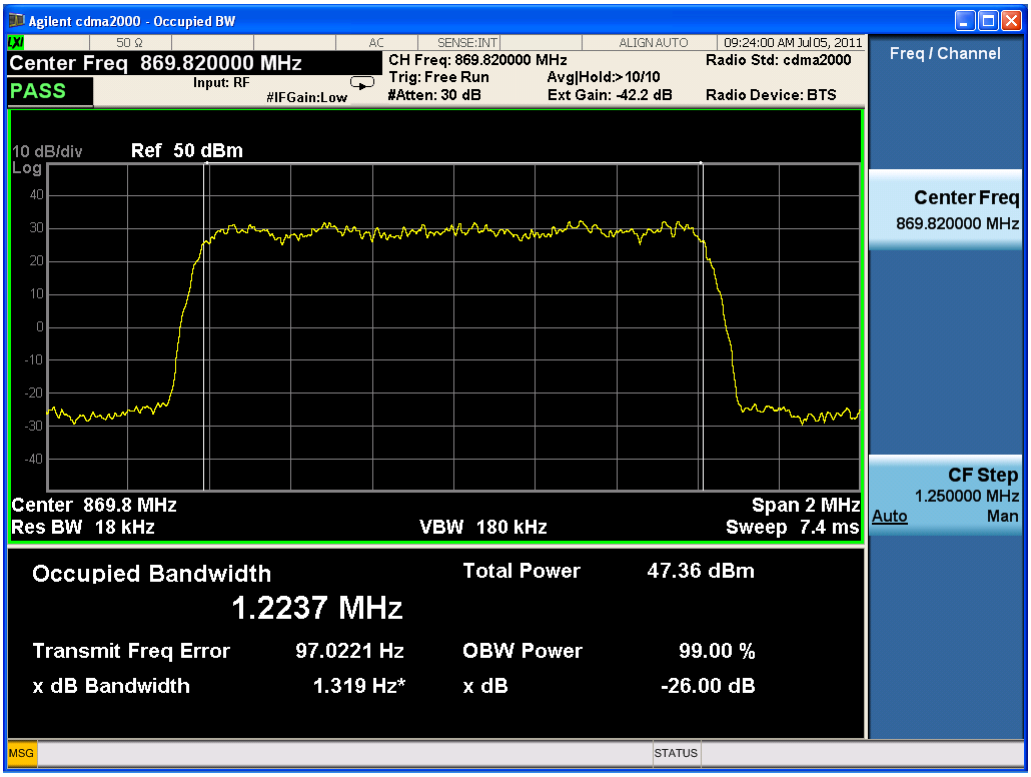


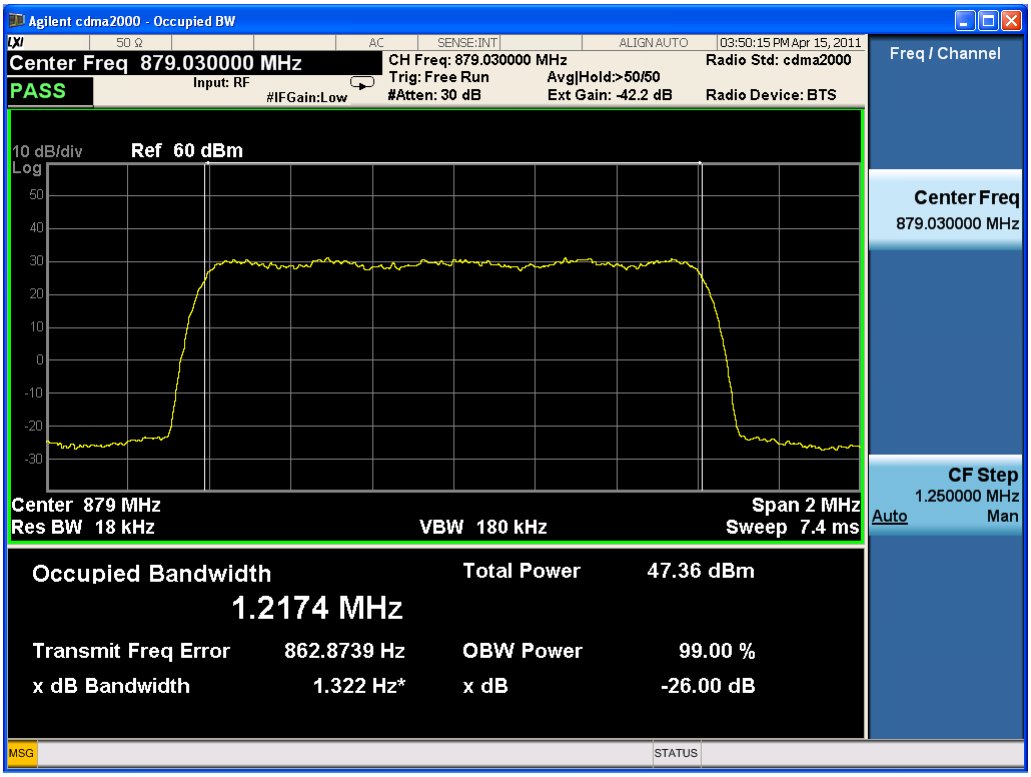

Agilent cdma2000 - Occupied BW
50 Ω
AC
SENSE:EXT
ALIGN AUTO
10:27:50 AM Apr 18, 2011
Center Freq 879.015000 MHz
PASS
Input: RF
#IFGain:Low
CH Freq: 879.015000 MHz
Trig: Free Run
#Atten: 30 dB
Avg|Hold:>50/50
Ext Gain: -42.2 dB
Radio Std: cdma2000
Radio Device: BTS
Freq / Channel
10 dB/div
Log
Ref 50 dBm
40
30
20
10
0
-10
-20
-30
-40
Center Freq
879.015000 MHz
Center 879 MHz
Res BW 47 kHz
VBW 470 kHz
Span 5 MHz
Sweep 2.733 ms
CF Step
1.250000 MHz
Auto
Man
Occupied Bandwidth
2.4381 MHz
Total Power
47.43 dBm
Transmit Freq Error
3.2667 kHz
OBW Power
99.00 %
x dB Bandwidth
2.592 Hz*
x dB
-26.00 dB
MSG
STATUS

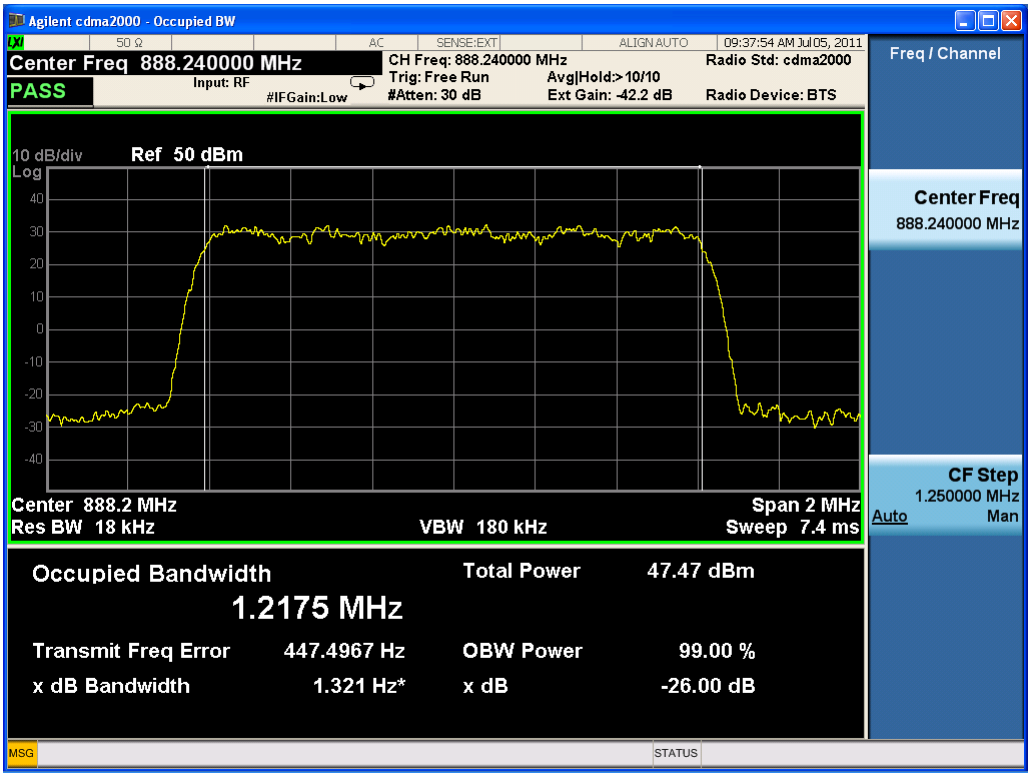

Agilent cdma2000 - Occupied BW
50 Ω
AC
SENSE:EXT
ALIGN AUTO
10:22:38 AM Jul 05, 2011
BTS -42.2 dB
PASS
Input: RF
#IFGain:Low
CH Freq: 887.625000 MHz
Trig: Free Run
#Atten: 30 dB
Avg|Hold:>50/50
Ext Gain: -42.2 dB
Radio Std: cdma2000
Radio Device: BTS
External Gain
Ext Preamp
0.00 dB
MS
0.00 dB
BTS
-42.2 dB
10 dB/div
Log
Ref 50 dBm
40
30
20
10
0
-10
-20
-30
-40
Center 887.6 MHz
Res BW 47 kHz
VBW 470 kHz
Span 5 MHz
Sweep 2.733 ms
Occupied Bandwidth
2.4348 MHz
Total Power
47.40 dBm
Transmit Freq Error
345.9192 Hz
OBW Power
99.00 %
x dB Bandwidth
2.593 Hz*
x dB
-26.00 dB
MSG
STATUS

For one carrier

Frequency (MHz)	99% Power Bandwidth (MHz)	Limit (MHz)
869.82	1.2237	< 1.25
879.03	1.2174	< 1.25
888.24	1.2175	< 1.25




Agilent cdma2000 - Occupied BW
50 Ω
AC
SENSE:INT
ALIGN AUTO
03:50:15 PM Apr 15, 2011
Center Freq 879.030000 MHz
PASS
Input: RF
#IFGain:Low
CH Freq: 879.030000 MHz
Trig: Free Run
#Atten: 30 dB
Avg|Hold:>50/50
Ext Gain: -42.2 dB
Radio Std: cdma2000
Radio Device: BTS
Freq / Channel
10 dB/div
Log
Ref 60 dBm
50
40
30
20
10
0
-10
-20
-30
Center Freq
879.030000 MHz
Center 879 MHz
Res BW 18 kHz
VBW 180 kHz
Span 2 MHz
Sweep 7.4 ms
CF Step
1.250000 MHz
Auto
Man
Occupied Bandwidth
1.2174 MHz
Total Power
47.36 dBm
Transmit Freq Error
862.8739 Hz
OBW Power
99.00 %
x dB Bandwidth
1.322 Hz*
x dB
-26.00 dB
MSG
STATUS


Agilent cdma2000 - Occupied BW
50 Ω
AC
SENSE:EXT
ALIGN AUTO
09:37:54 AM Jul 05, 2011
Center Freq 888.240000 MHz
PASS
Input: RF
#IFGain:Low
CH Freq: 888.240000 MHz
Trig: Free Run
#Atten: 30 dB
Avg|Hold:>10/10
Ext Gain: -42.2 dB
Radio Std: cdma2000
Radio Device: BTS
Freq / Channel
10 dB/div
Log
Ref 50 dBm
40
30
20
10
0
-10
-20
-30
-40
Center Freq
888.240000 MHz
Center 888.2 MHz
Res BW 18 kHz
VBW 180 kHz
Span 2 MHz
Sweep 7.4 ms
CF Step
1.250000 MHz
Auto
Man
Occupied Bandwidth
1.2175 MHz
Total Power
47.47 dBm
Transmit Freq Error
447.4967 Hz
OBW Power
99.00 %
x dB Bandwidth
1.321 Hz*
x dB
-26.00 dB
MSG
STATUS

11 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+10log(P)) = -13 dBm.

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
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 attests that all calibration has 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:	1009 mbar

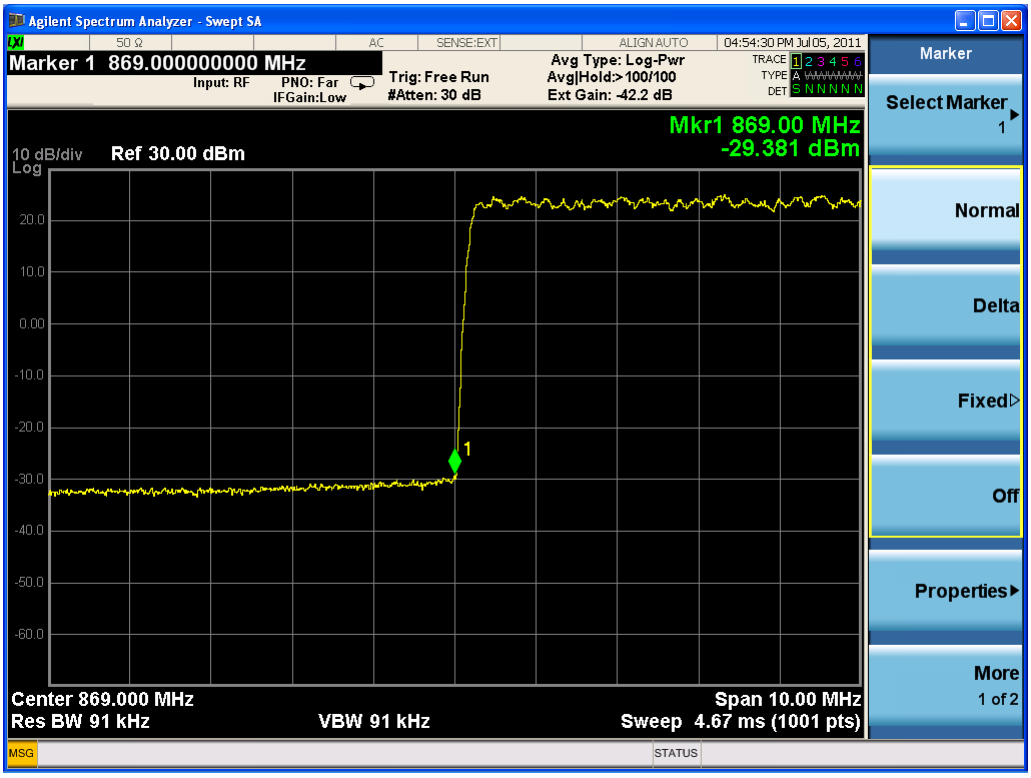
Test Result

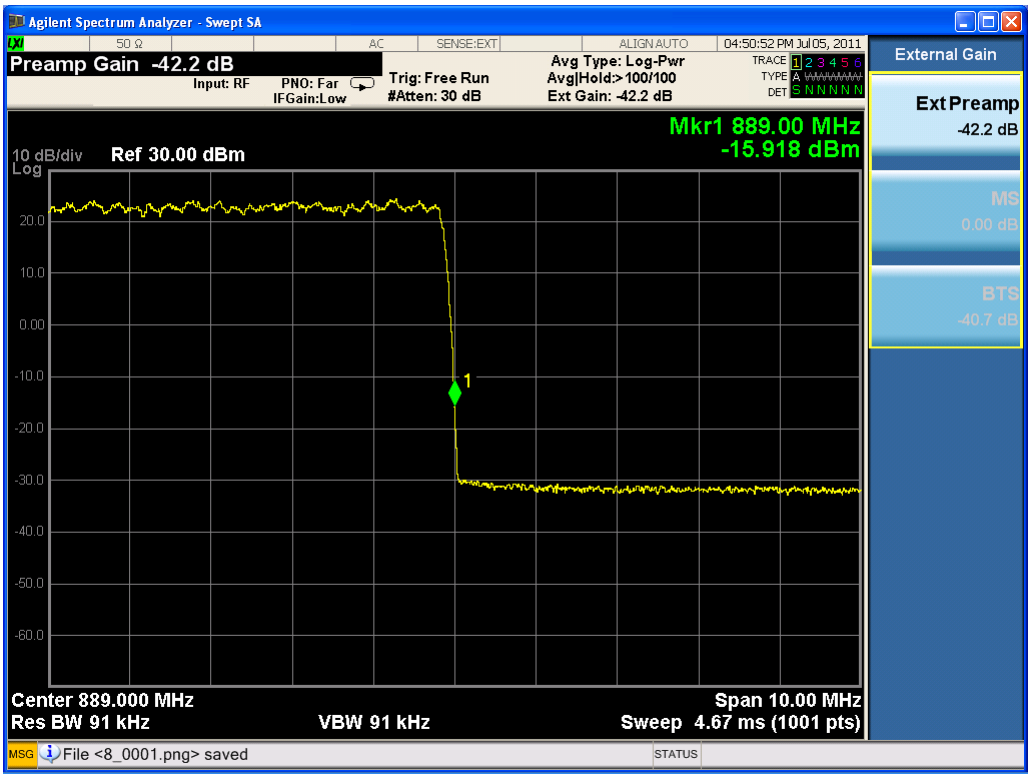
Pass

Test Mode: Transmitting CDMA

Four carriers

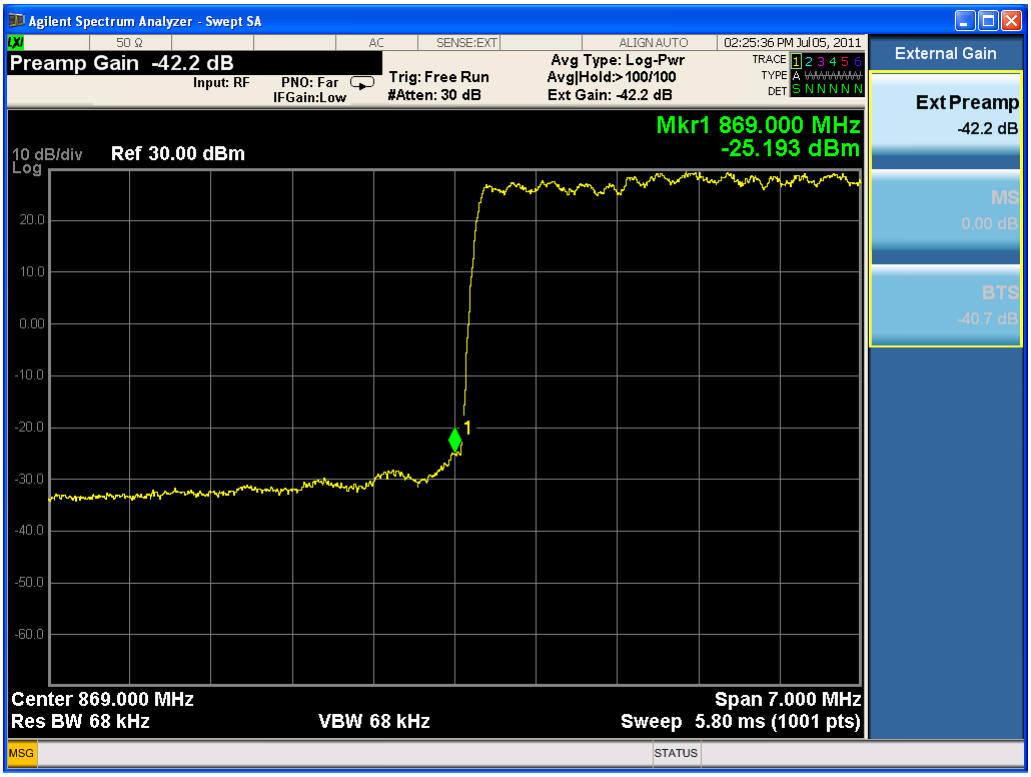
Frequency Channel (MHz)	Max band edge Emission (dBm)	Limit (dBm)
869.82/871.05/872.28/873.51	-29.381	-13.00
884.55/885.78/887.01/888.24	-15.918	-13.00

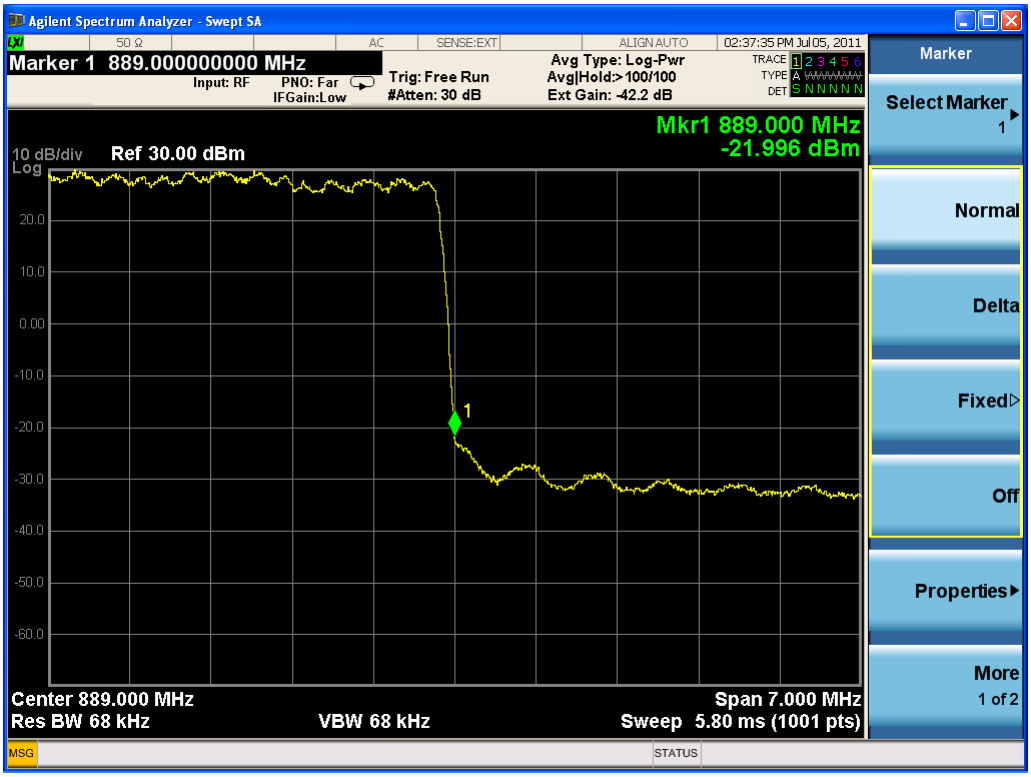




Three carriers

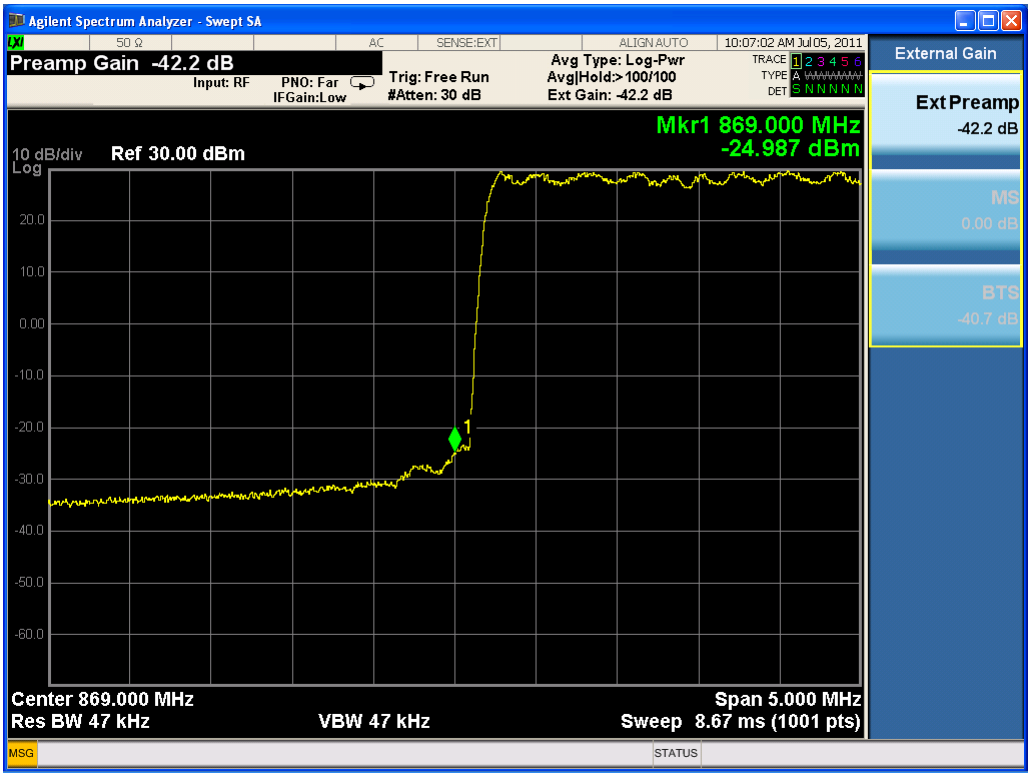
Frequency Channel (MHz)	Max band edge Emission (dBm)	Limit (dBm)
869.82/871.05/872.28	-25.193	-13.00
885.78/887.01/888.24	-21.996	-13.00

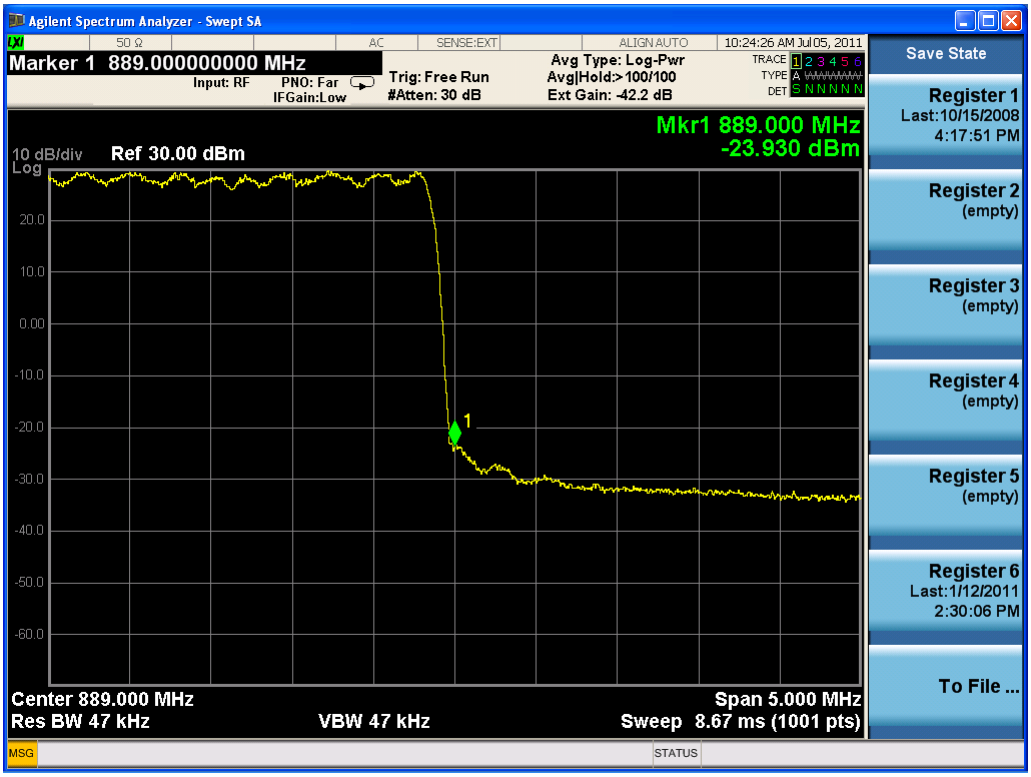

Agilent Spectrum Analyzer - Swept SA
50 Ω
AC
SENSE:EXT
ALIGN AUTO
02:25:36 PM Jul 05, 2011
Preamp Gain -42.2 dB
Input: RF
PNO: Far
IFGain:Low
Trig: Free Run
#Atten: 30 dB
Avg Type: Log-Pwr
Avg|Hold:>100/100
Ext Gain: -42.2 dB
TRACE 1 2 3 4 5 6
TYPE A WWWWW
DET S N N N N N
Mkr1 869.000 MHz
-25.193 dBm
10 dB/div
Log
Ref 30.00 dBm
20.0
10.0
0.00
-10.0
-20.0
-30.0
-40.0
-50.0
-60.0
Center 869.000 MHz
Res BW 68 kHz
VBW 68 kHz
Span 7.000 MHz
Sweep 5.80 ms (1001 pts)
MSG
STATUS
External Gain
Ext Preamp
-42.2 dB
MS
0.00 dB
BTS
-40.7 dB


Agilent Spectrum Analyzer - Swept SA
50 Ω
AC
SENSE:EXT
ALIGN AUTO
02:37:35 PM Jul 05, 2011
Marker 1 889.000000000 MHz
Input: RF
PNO: Far
IFGain:Low
Trig: Free Run
#Atten: 30 dB
Avg Type: Log-Pwr
Avg|Hold:>100/100
Ext Gain: -42.2 dB
TRACE 1 2 3 4 5 6
TYPE A WWWWW
DET S N N N N N
Mkr1 889.000 MHz
-21.996 dBm
10 dB/div
Log
Ref 30.00 dBm
20.0
10.0
0.00
-10.0
-20.0
-30.0
-40.0
-50.0
-60.0
Center 889.000 MHz
Res BW 68 kHz
VBW 68 kHz
Span 7.000 MHz
Sweep 5.80 ms (1001 pts)
MSG
STATUS
Marker
Select Marker
1
Normal
Delta
Fixed
Off
Properties
More
1 of 2

Two carriers

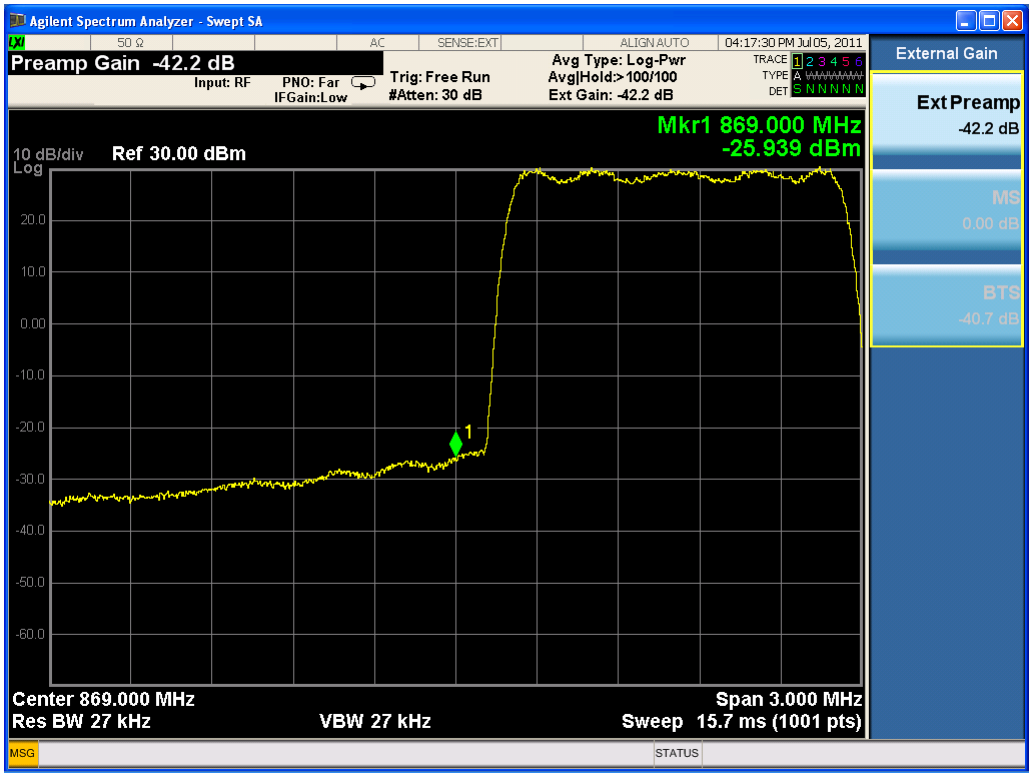
Frequency Channel (MHz)	Max band edge Emission (dBm)	Limit (dBm)
869.82/871.05	-24.987	-13.00
887.01/888.24	-23.930	-13.00

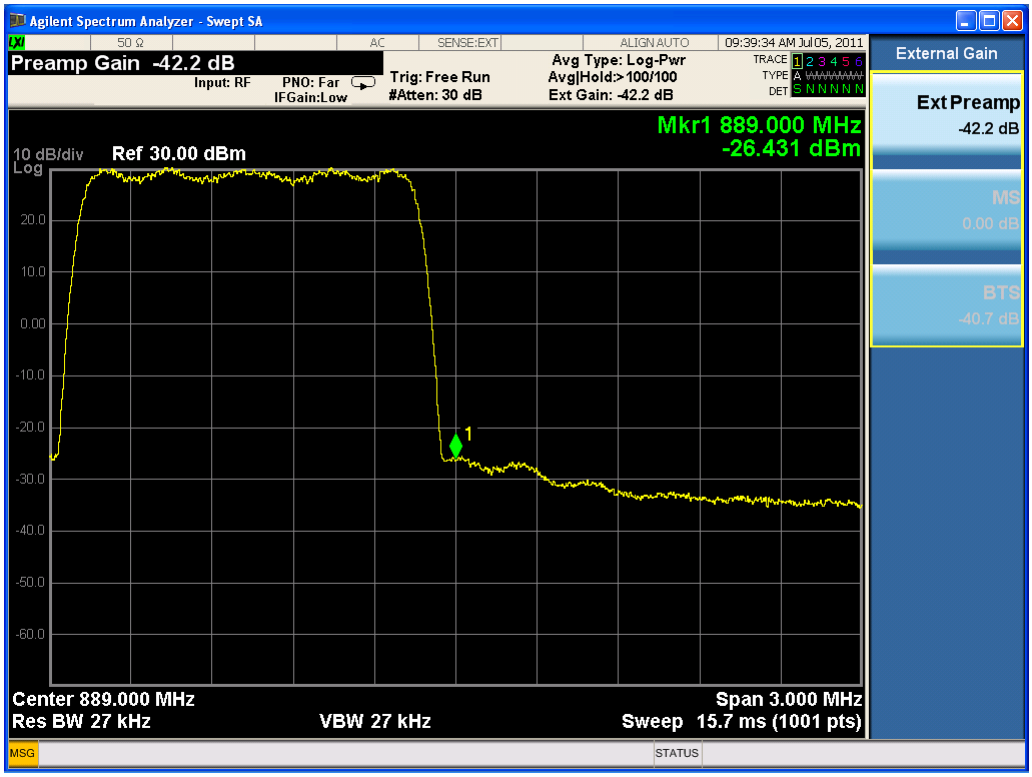




One carrier

Frequency Channel (MHz)	Max band edge Emission (dBm)	Limit (dBm)
869.82	-25.939	-13.00
888.24	-26.431	-13.00


Agilent Spectrum Analyzer - Swept SA
50 Ω
AC
SENSE:EXT
ALIGN AUTO
04:17:30 PM Jul 05, 2011
Preamp Gain -42.2 dB
Input: RF
PNO: Far
IFGain:Low
Trig: Free Run
#Atten: 30 dB
Avg Type: Log-Pwr
Avg|Hold:>100/100
Ext Gain: -42.2 dB
TRACE 1 2 3 4 5 6
TYPE A WWWWW
DET S N N N N N
External Gain
Ext Preamp
-42.2 dB
MS
0.00 dB
BTS
-40.7 dB
Mkr1 869.000 MHz
-25.939 dBm
10 dB/div
Log
Ref 30.00 dBm
20.0
10.0
0.00
-10.0
-20.0
-30.0
-40.0
-50.0
-60.0
Center 869.000 MHz
Res BW 27 kHz
VBW 27 kHz
Span 3.000 MHz
Sweep 15.7 ms (1001 pts)
MSG
STATUS


Agilent Spectrum Analyzer - Swept SA
50 Ω
AC
SENSE:EXT
ALIGN AUTO
09:39:34 AM Jul 05, 2011
Preamp Gain -42.2 dB
Input: RF
PNO: Far
IFGain:Low
Trig: Free Run
#Atten: 30 dB
Avg Type: Log-Pwr
Avg|Hold:>100/100
Ext Gain: -42.2 dB
TRACE 1 2 3 4 5 6
TYPE A WWWWW
DET S N N N N N
External Gain
Ext Preamp
-42.2 dB
MS
0.00 dB
BTS
-40.7 dB
Mkr1 889.000 MHz
-26.431 dBm
10 dB/div
Log
Ref 30.00 dBm
20.0
10.0
0.00
-10.0
-20.0
-30.0
-40.0
-50.0
-60.0
Center 889.000 MHz
Res BW 27 kHz
VBW 27 kHz
Span 3.000 MHz
Sweep 15.7 ms (1001 pts)
MSG
STATUS

12 FREQUENCY STABILITY

Applicable Standard

FCC §2.1055, §22.355, 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	2011-1-26	2012-1-26
Agilent	MXA Series Spectrum Analyzer	N9020A	MY48011941	2011-4-8	2012-4-7
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 attests that all calibration has 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.

Test Data Environmental Conditions

Temperature:	25 °C
Relative Humidity:	54 %
ATM Pressure:	1011 mbar

Environmental Con

Test Result

Pass

Frequency Stability versus Temperature

Frequency Stability vs Temperature					
Temperature (^{O}C)	Power Supplied (V_{DC})	Frequency Measure Error (Hz)	Error (ppm)	Limit (ppm)	Result
f=879.03 MHz					
-40	-48	-10.48	-0.012	1.5	PASS
-30	-48	-9.35	-0.011	1.5	PASS
-20	-48	-9.58	-0.011	1.5	PASS
-10	-48	-10.55	-0.012	1.5	PASS
0	-48	-9.82	-0.011	1.5	PASS
10	-48	-10.21	-0.012	1.5	PASS
20	-48	-9.16	-0.010	1.5	PASS
30	-48	-9.63	-0.011	1.5	PASS
40	-48	-10.62	-0.012	1.5	PASS
50	-48	-10.34	-0.012	1.5	PASS
55	-48	-10.32	-0.012	1.5	PASS

Frequency Stability versus Voltage

Frequency Stability vs Voltage					
Temperature (^{O}C)	Power Supplied (V_{DC})	Frequency Measure Error (Hz)	Error (ppm)	Limit (ppm)	Result
f=879.03 MHz					
20	-40	-10.45	-0.012	1.5	PASS
20	-44	-10.22	-0.012	1.5	PASS
20	-47	-10.35	-0.012	1.5	PASS
20	-50	-9.73	-0.011	1.5	PASS
20	-53	-10.35	-0.012	1.5	PASS
20	-56	-9.47	-0.011	1.5	PASS
20	-57	-10.23	-0.012	1.5	PASS

******* END OF REPORT *******