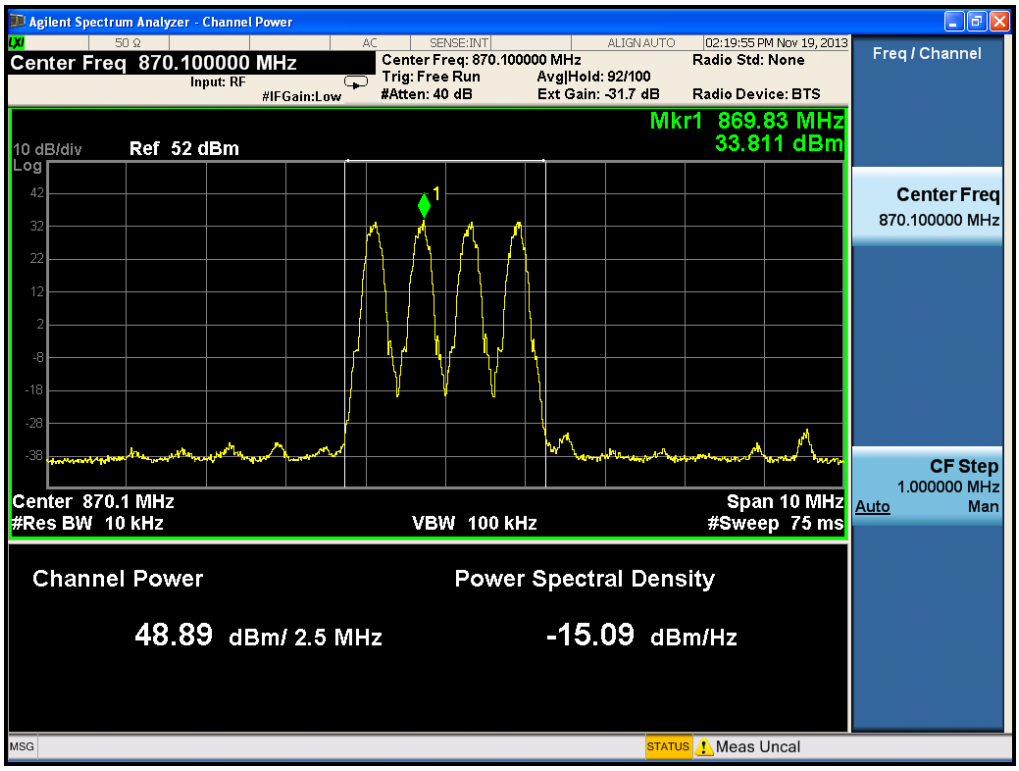
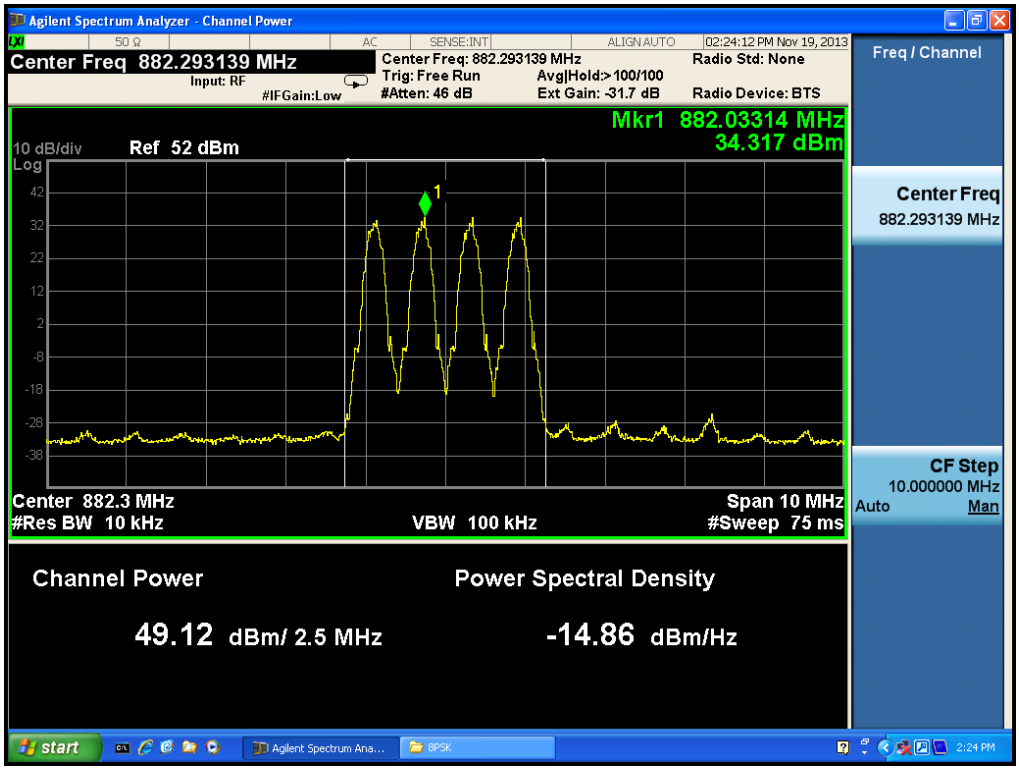
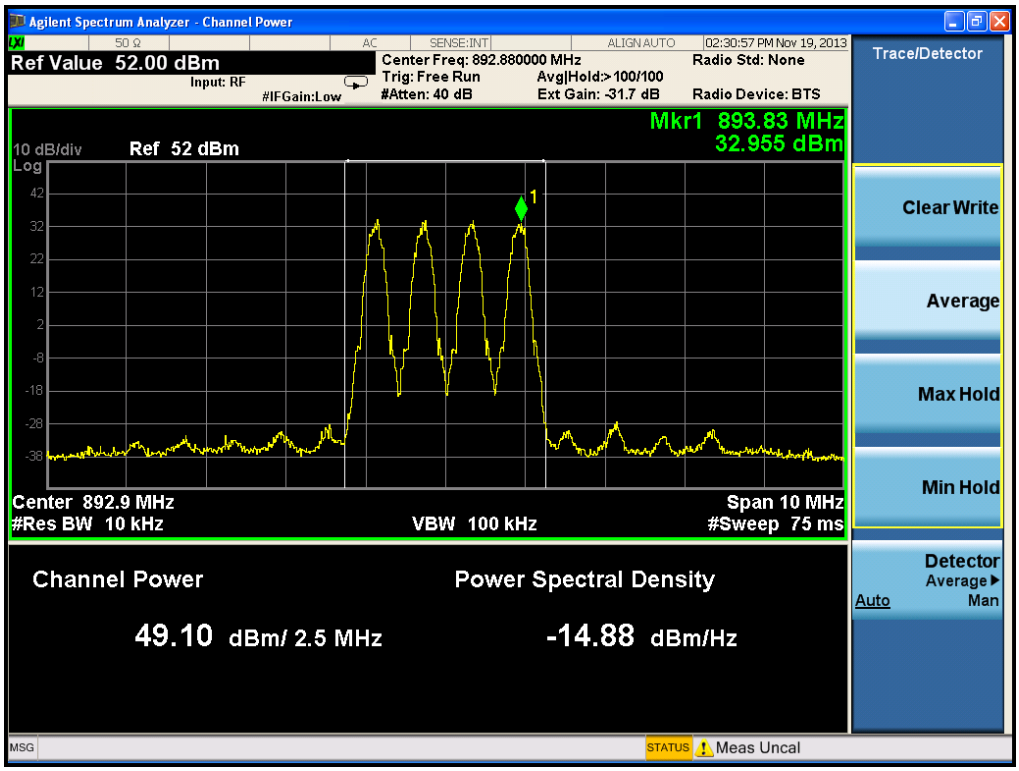
modulation	Center Freq. (MHz)	Frequency (MHz)	Max output Power in dBm
GMSK	870.1	869.2/869.8/ 870.4 /871	48.89
	882.3	881.4/882/882.6/883.2	49.12
	892.9	892/892.6/893.2/893.8	49.10

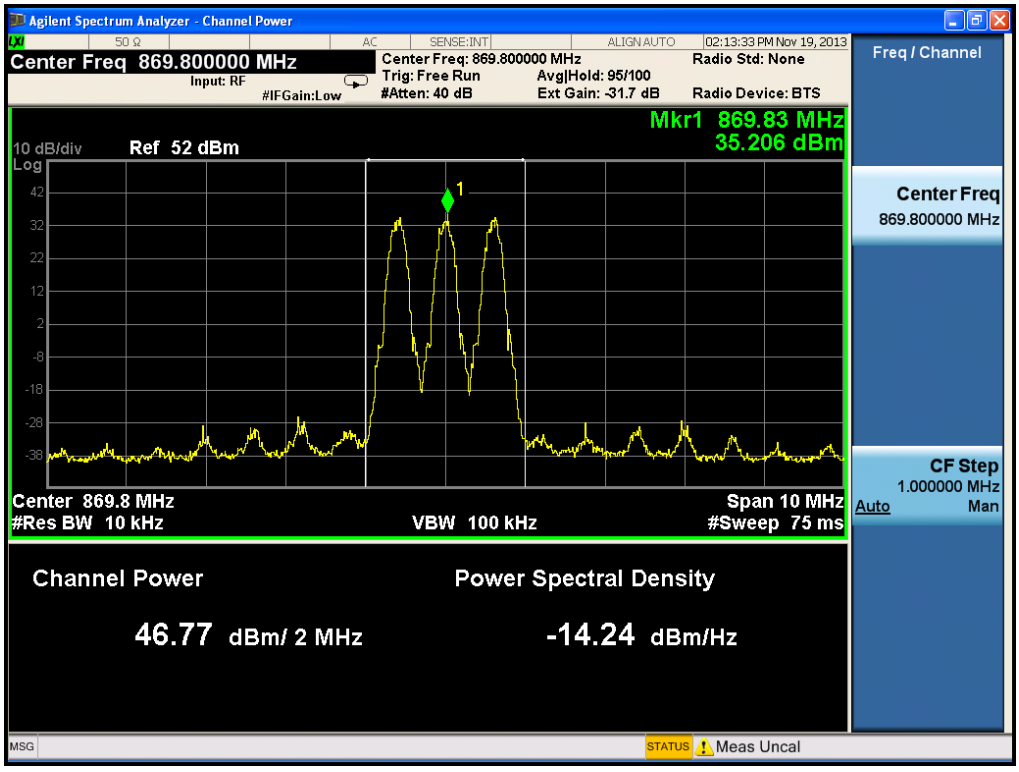


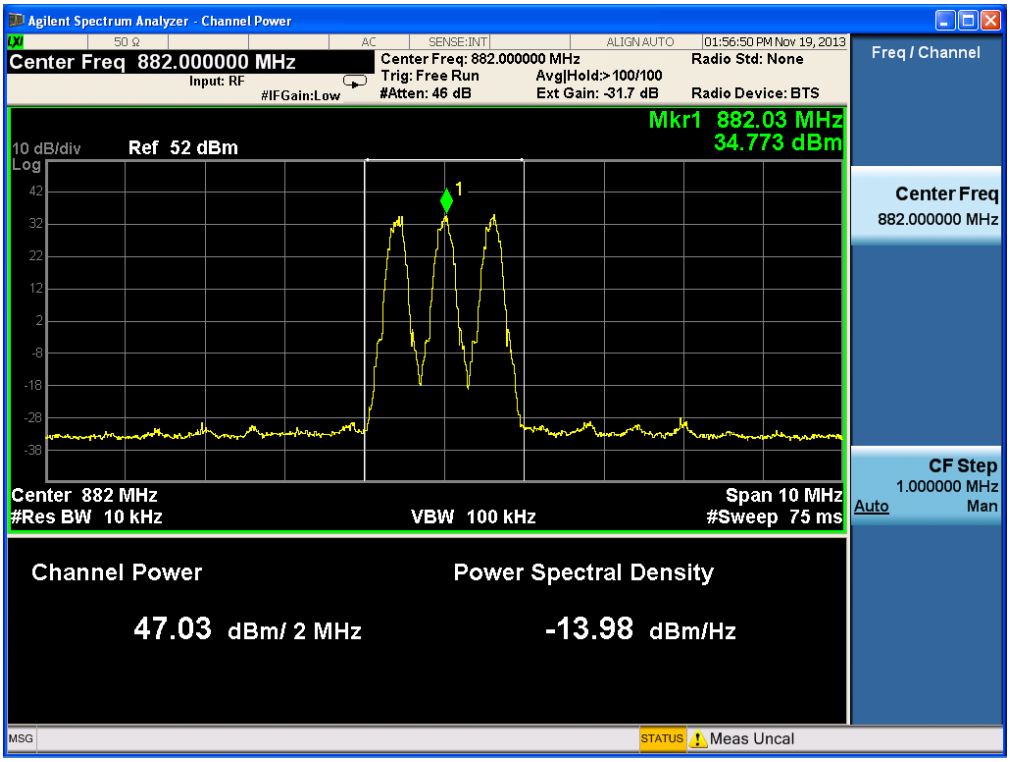

Agilent Spectrum Analyzer - Channel Power
Center Freq 882.293139 MHz
Input: RF
#IFGain:Low
Center Freq: 882.293139 MHz
Trig: Free Run
#Atten: 46 dB
Avg|Hold:>100/100
Ext Gain: -31.7 dB
Radio Std: None
Radio Device: BTS
02:24:12 PM Nov 19, 2013
Freq / Channel
Mkr1 882.03314 MHz
34.317 dBm
10 dB/div
Log
Ref 52 dBm
Center Freq
882.293139 MHz
CF Step
10.000000 MHz
Auto
Man
Center 882.3 MHz
#Res BW 10 kHz
VBW 100 kHz
Span 10 MHz
#Sweep 75 ms
Channel Power
49.12 dBm/ 2.5 MHz
Power Spectral Density
-14.86 dBm/Hz
start
Agilent Spectrum Ana...
8PSK
2:24 PM

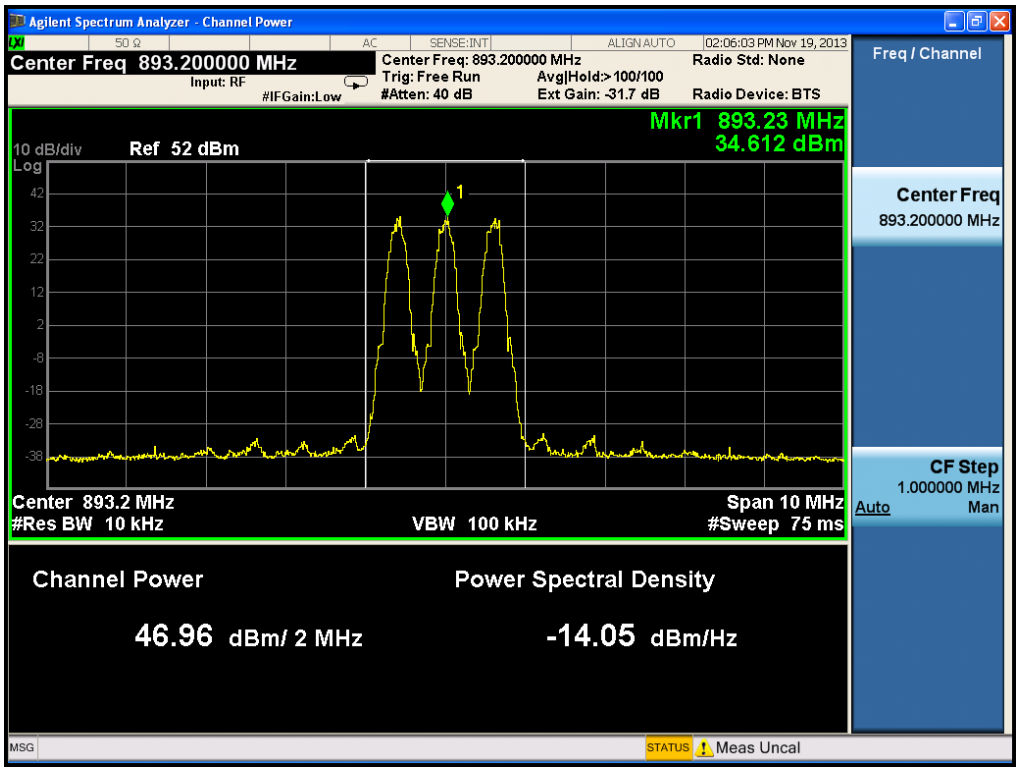

Agilent Spectrum Analyzer - Channel Power
Ref Value 52.00 dBm
Input: RF
#IFGain:Low
Center Freq: 892.880000 MHz
Trig: Free Run
#Atten: 40 dB
Avg|Hold:>100/100
Ext Gain: -31.7 dB
Radio Std: None
Radio Device: BTS
02:30:57 PM Nov 19, 2013
Trace/Detector
Mkr1 893.83 MHz
32.955 dBm
10 dB/div
Log
Ref 52 dBm
Clear Write
Average
Max Hold
Min Hold
Center 892.9 MHz
#Res BW 10 kHz
VBW 100 kHz
Span 10 MHz
#Sweep 75 ms
Channel Power
49.10 dBm/ 2.5 MHz
Power Spectral Density
-14.88 dBm/Hz
Detector
Average
Auto
Man
MSG
STATUS
Meas Uncal

Three carriers

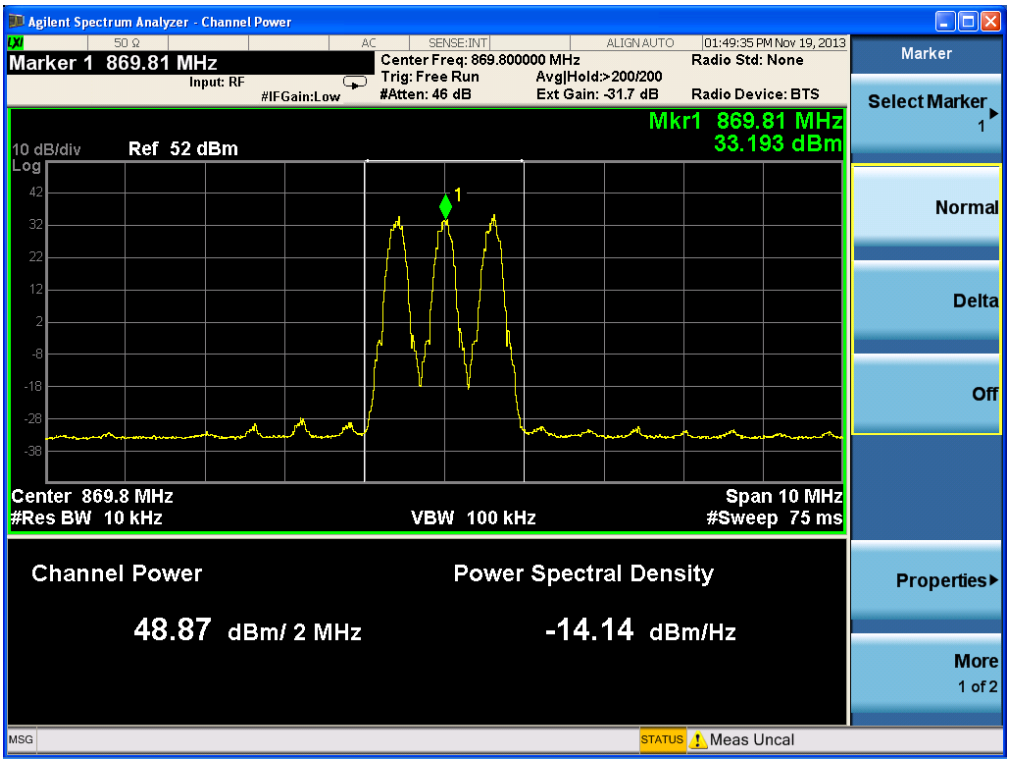
modulation	Center Freq. (MHz)	Frequency (MHz)	Max output Power in dBm
8PSK	869.8	869.2/869.8/ 870.4	46.77
	882	881.4/882/882.6	47.03
	893.2	892.6/893.2/893.8	46.96

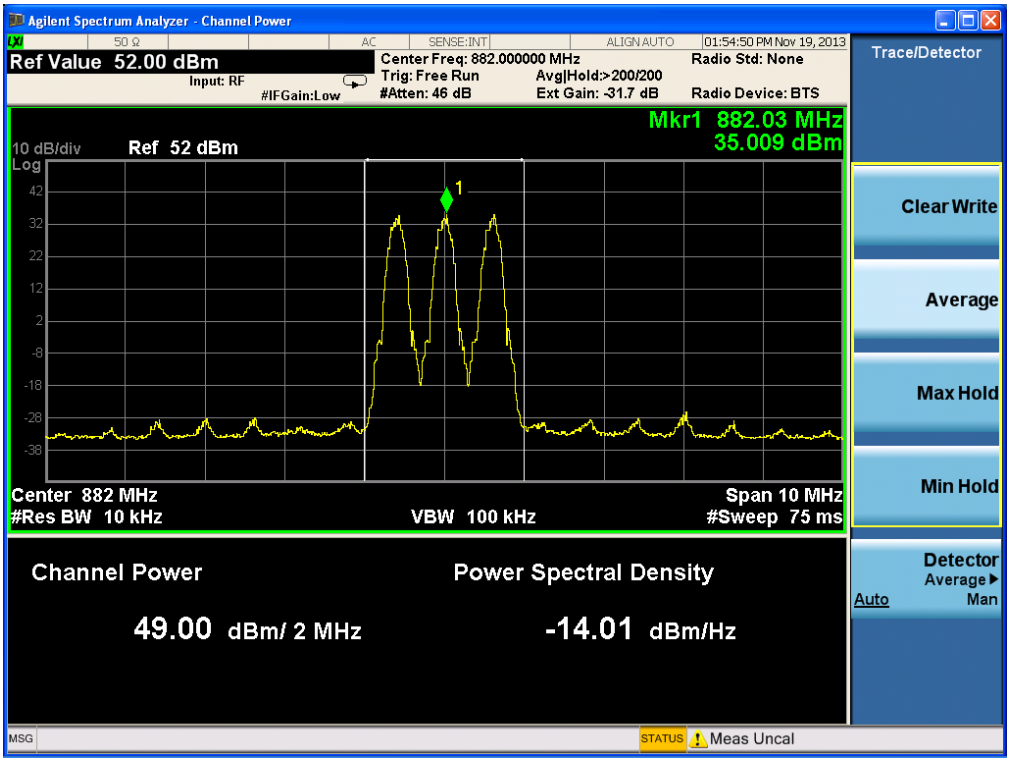


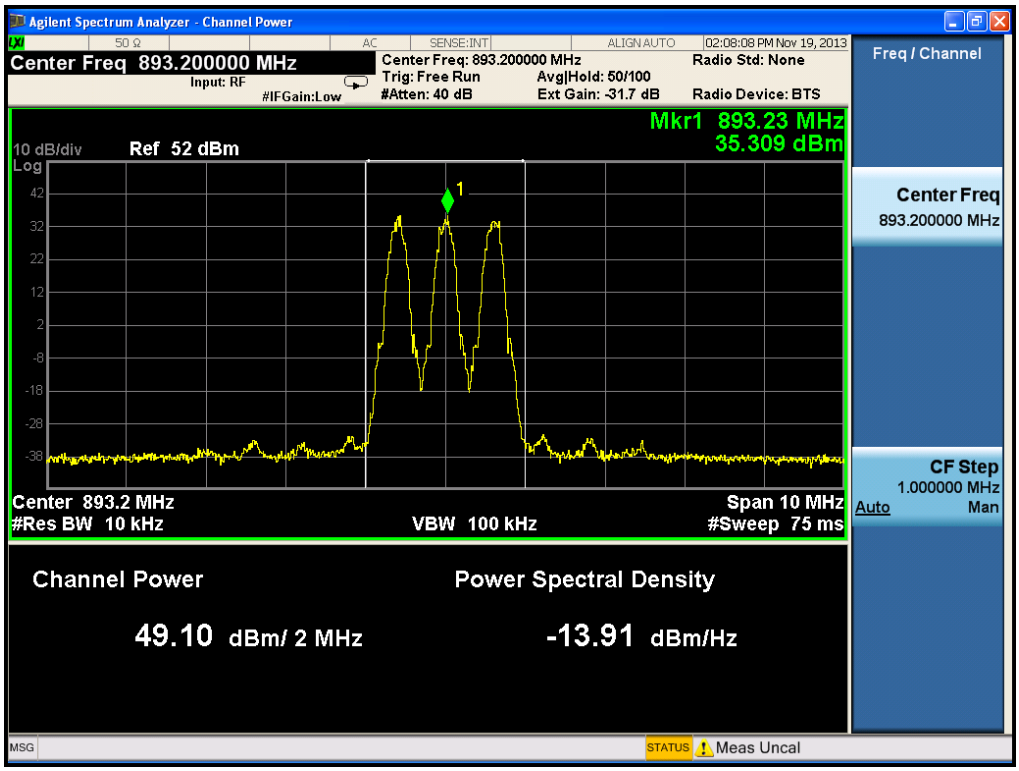

Agilent Spectrum Analyzer - Channel Power
Center Freq 882.000000 MHz
Input: RF
#IFGain:Low
Center Freq: 882.000000 MHz
Trig: Free Run
#Atten: 46 dB
Avg|Hold:>100/100
Ext Gain: -31.7 dB
Radio Std: None
Radio Device: BTS
01:56:50 PM Nov 19, 2013
Freq / Channel
Mkr1 882.03 MHz
34.773 dBm
10 dB/div
Log
Ref 52 dBm
Center Freq
882.000000 MHz
CF Step
1.000000 MHz
Auto
Man
Center 882 MHz
#Res BW 10 kHz
VBW 100 kHz
Span 10 MHz
#Sweep 75 ms
Channel Power
47.03 dBm/ 2 MHz
Power Spectral Density
-13.98 dBm/Hz
MSG
STATUS
Meas Uncal


Agilent Spectrum Analyzer - Channel Power
Center Freq 893.200000 MHz
Input: RF
#IFGain:Low
Center Freq: 893.200000 MHz
Trig: Free Run
#Atten: 40 dB
Avg|Hold:>100/100
Ext Gain: -31.7 dB
Radio Std: None
Radio Device: BTS
02:06:03 PM Nov 19, 2013
Freq / Channel
Mkr1 893.23 MHz
34.612 dBm
10 dB/div
Log
Ref 52 dBm
Center Freq
893.200000 MHz
CF Step
1.000000 MHz
Auto
Man
Center 893.2 MHz
#Res BW 10 kHz
VBW 100 kHz
Span 10 MHz
#Sweep 75 ms
Channel Power
46.96 dBm/ 2 MHz
Power Spectral Density
-14.05 dBm/Hz
MSG
STATUS
Meas Uncal

modulation	Center Freq. (MHz)	Frequency (MHz)	Max output Power in dBm
GMSK	869.8	869.2/869.8/ 870.4	48.87
	882	881.4/882/882.6	49
	893.2	892.6/893.2/893.8	49.1

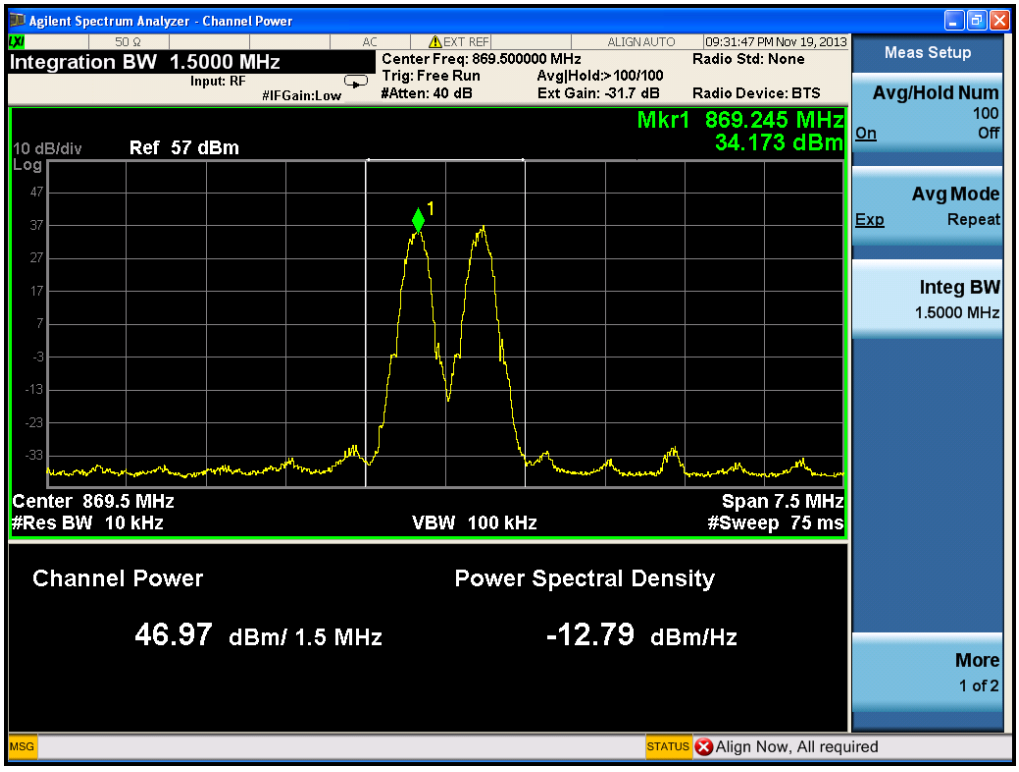


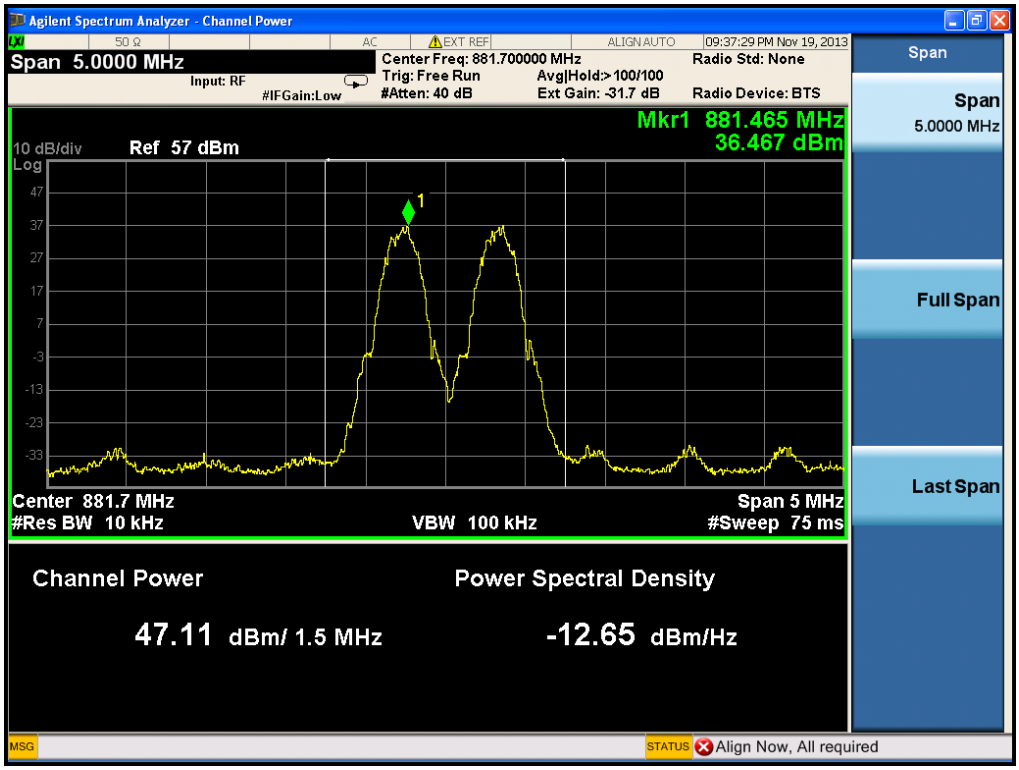

Agilent Spectrum Analyzer - Channel Power
Ref Value 52.00 dBm
Input: RF
#IFGain:Low
Center Freq: 882.000000 MHz
Trig: Free Run
#Atten: 46 dB
Avg|Hold:>200/200
Ext Gain: -31.7 dB
Radio Std: None
Radio Device: BTS
01:54:50 PM Nov 19, 2013
Trace/Detector
Mkr1 882.03 MHz
35.009 dBm
10 dB/div
Log
Ref 52 dBm
Center 882 MHz
#Res BW 10 kHz
VBW 100 kHz
Span 10 MHz
#Sweep 75 ms
Channel Power
49.00 dBm/ 2 MHz
Power Spectral Density
-14.01 dBm/Hz
Clear Write
Average
Max Hold
Min Hold
Detector
Average
Auto
Man
MSG
STATUS
Meas Uncal

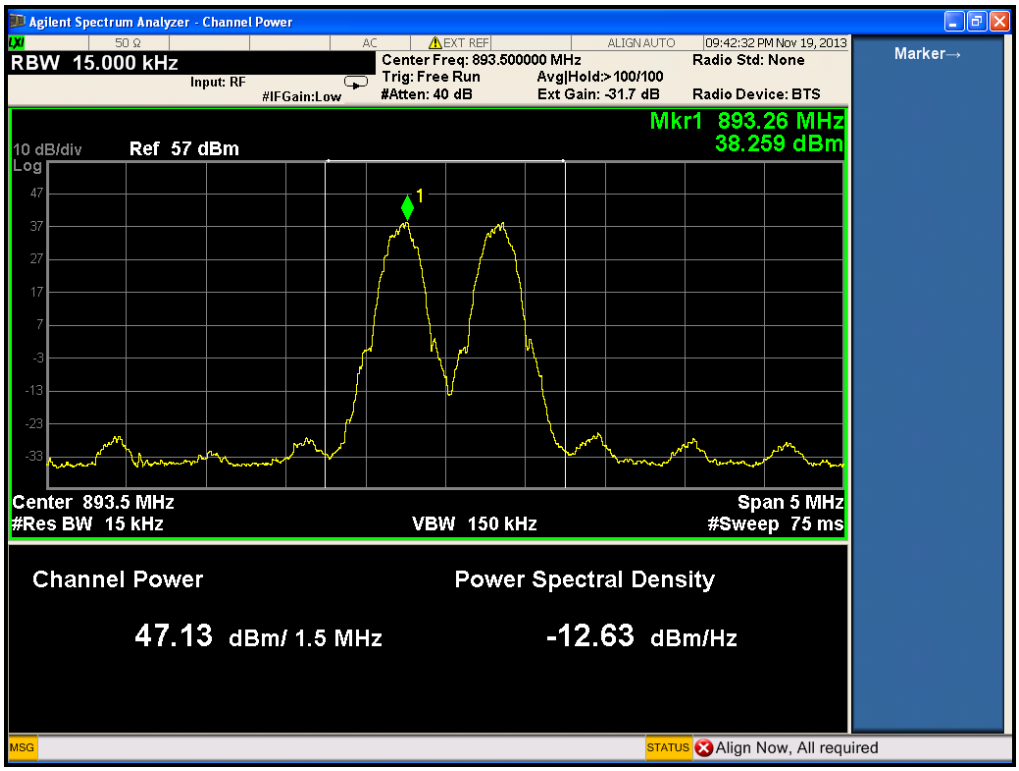

Agilent Spectrum Analyzer - Channel Power
Center Freq 893.200000 MHz
Input: RF
#IFGain:Low
Center Freq: 893.200000 MHz
Trig: Free Run
#Atten: 40 dB
Avg|Hold: 50/100
Ext Gain: -31.7 dB
Radio Std: None
Radio Device: BTS
02:08:08 PM Nov 19, 2013
Freq / Channel
Mkr1 893.23 MHz
35.309 dBm
10 dB/div
Log
Ref 52 dBm
Center 893.2 MHz
#Res BW 10 kHz
VBW 100 kHz
Span 10 MHz
#Sweep 75 ms
Channel Power
49.10 dBm/ 2 MHz
Power Spectral Density
-13.91 dBm/Hz
Center Freq
893.200000 MHz
CF Step
1.000000 MHz
Auto
Man
MSG
STATUS
Meas Uncal

Two carriers

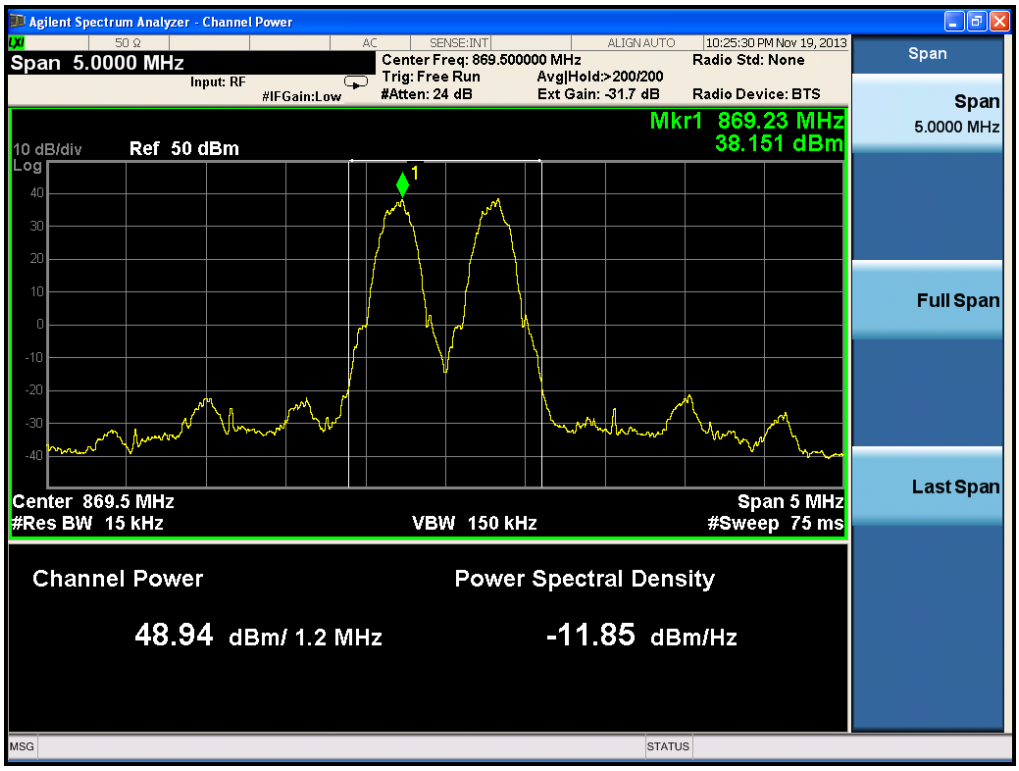
modulation	Center Freq. (MHz)	Frequency (MHz)	Max output Power in dBm
8PSK	869.5	869.2/869.8	46.97
	881.7	881.4/882	47.11
	893.5	893.2/893.8	47.13

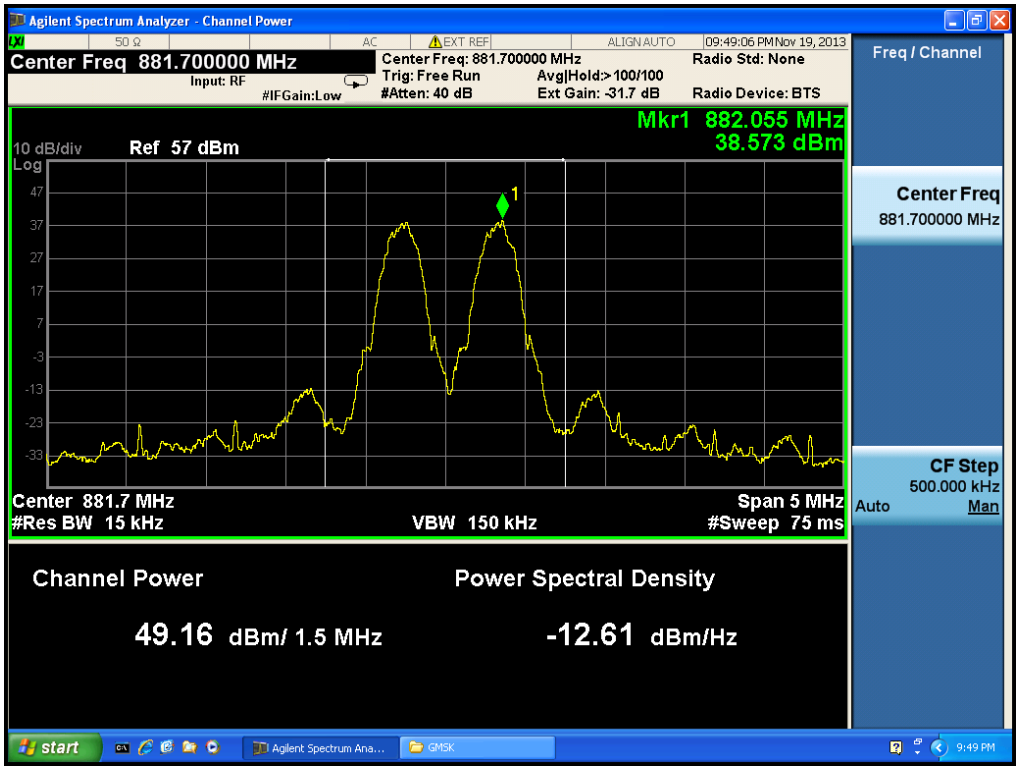


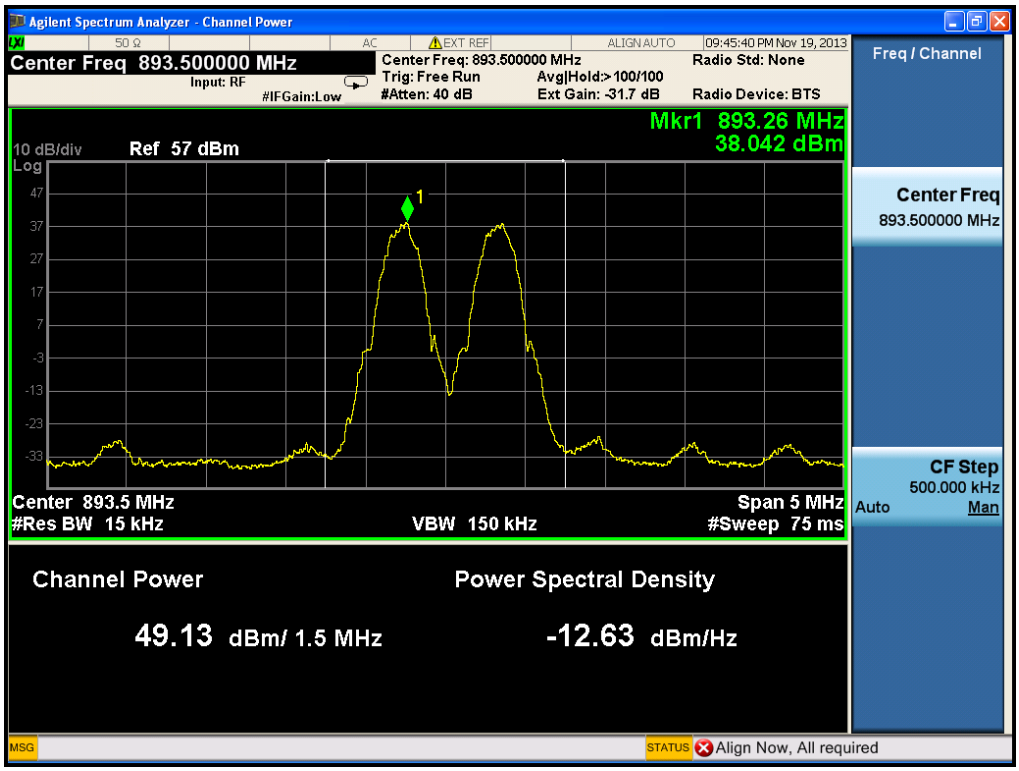

Agilent Spectrum Analyzer - Channel Power
50 Ω
AC
EXT REF
ALIGN AUTO
09:37:29 PM Nov 19, 2013
Span 5.0000 MHz
Input: RF
#IFGain:Low
Center Freq: 881.700000 MHz
Trig: Free Run
Avg|Hold:>100/100
#Atten: 40 dB
Ext Gain: -31.7 dB
Radio Std: None
Radio Device: BTS
Mkr1 881.465 MHz
36.467 dBm
10 dB/div
Log
Ref 57 dBm
47
37
27
17
7
-3
-13
-23
-33
Center 881.7 MHz
#Res BW 10 kHz
VBW 100 kHz
Span 5 MHz
#Sweep 75 ms
Channel Power
47.11 dBm/ 1.5 MHz
Power Spectral Density
-12.65 dBm/Hz
MSG
STATUS
Align Now, All required
Span
Span
5.0000 MHz
Full Span
Last Span


Agilent Spectrum Analyzer - Channel Power
50 Ω
AC
EXT REF
ALIGN AUTO
09:42:32 PM Nov 19, 2013
RBW 15.000 kHz
Input: RF
#IFGain:Low
Center Freq: 893.500000 MHz
Trig: Free Run
Avg|Hold:>100/100
#Atten: 40 dB
Ext Gain: -31.7 dB
Radio Std: None
Radio Device: BTS
Mkr1 893.26 MHz
38.259 dBm
10 dB/div
Log
Ref 57 dBm
47
37
27
17
7
-3
-13
-23
-33
Center 893.5 MHz
#Res BW 15 kHz
VBW 150 kHz
Span 5 MHz
#Sweep 75 ms
Channel Power
47.13 dBm/ 1.5 MHz
Power Spectral Density
-12.63 dBm/Hz
MSG
STATUS
Align Now, All required
Marker→

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

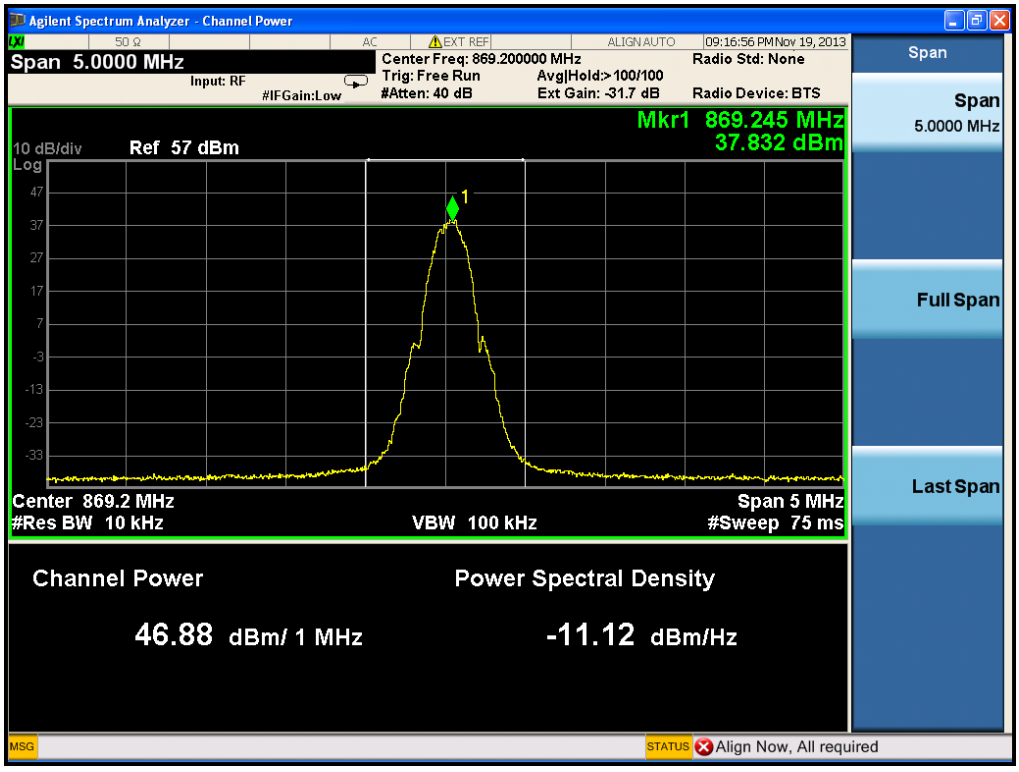


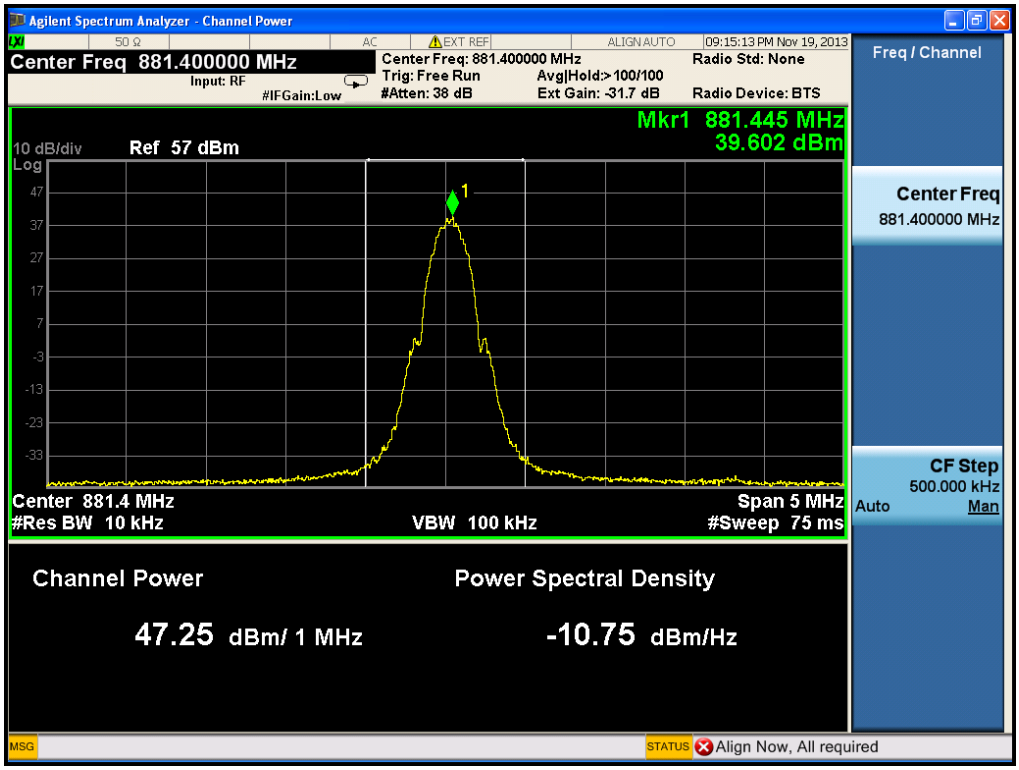

Agilent Spectrum Analyzer - Channel Power
Center Freq 881.700000 MHz
Input: RF
#IFGain:Low
Center Freq: 881.700000 MHz
Trig: Free Run
#Atten: 40 dB
Avg|Hold:>100/100
Ext Gain: -31.7 dB
Radio Std: None
Radio Device: BTS
09:49:06 PM Nov 19, 2013
Freq / Channel
Mkr1 882.055 MHz
38.573 dBm
10 dB/div
Log
Ref 57 dBm
Center Freq
881.700000 MHz
CF Step
500.000 kHz
Auto
Man
Center 881.7 MHz
#Res BW 15 kHz
VBW 150 kHz
Span 5 MHz
#Sweep 75 ms
Channel Power
49.16 dBm/ 1.5 MHz
Power Spectral Density
-12.61 dBm/Hz
start
9:49 PM

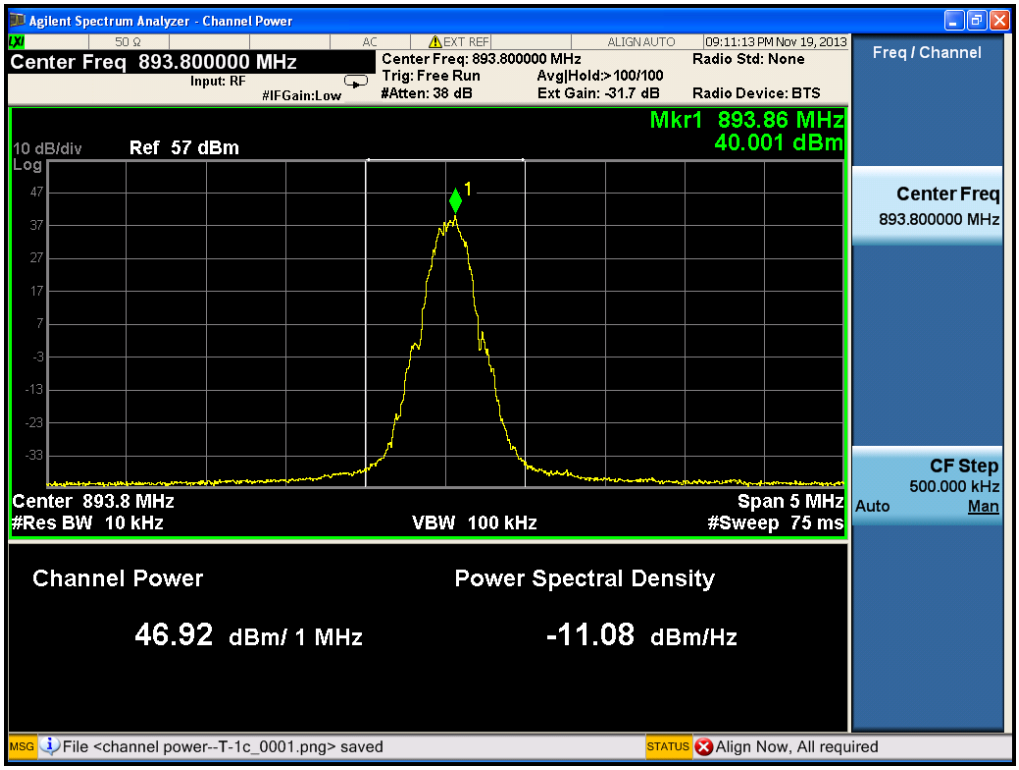

Agilent Spectrum Analyzer - Channel Power
Center Freq 893.500000 MHz
Input: RF
#IFGain:Low
Center Freq: 893.500000 MHz
Trig: Free Run
#Atten: 40 dB
Avg|Hold:>100/100
Ext Gain: -31.7 dB
Radio Std: None
Radio Device: BTS
09:45:40 PM Nov 19, 2013
Freq / Channel
Mkr1 893.26 MHz
38.042 dBm
10 dB/div
Log
Ref 57 dBm
Center Freq
893.500000 MHz
CF Step
500.000 kHz
Auto
Man
Center 893.5 MHz
#Res BW 15 kHz
VBW 150 kHz
Span 5 MHz
#Sweep 75 ms
Channel Power
49.13 dBm/ 1.5 MHz
Power Spectral Density
-12.63 dBm/Hz
MSG
STATUS
Align Now, All required

One carrier

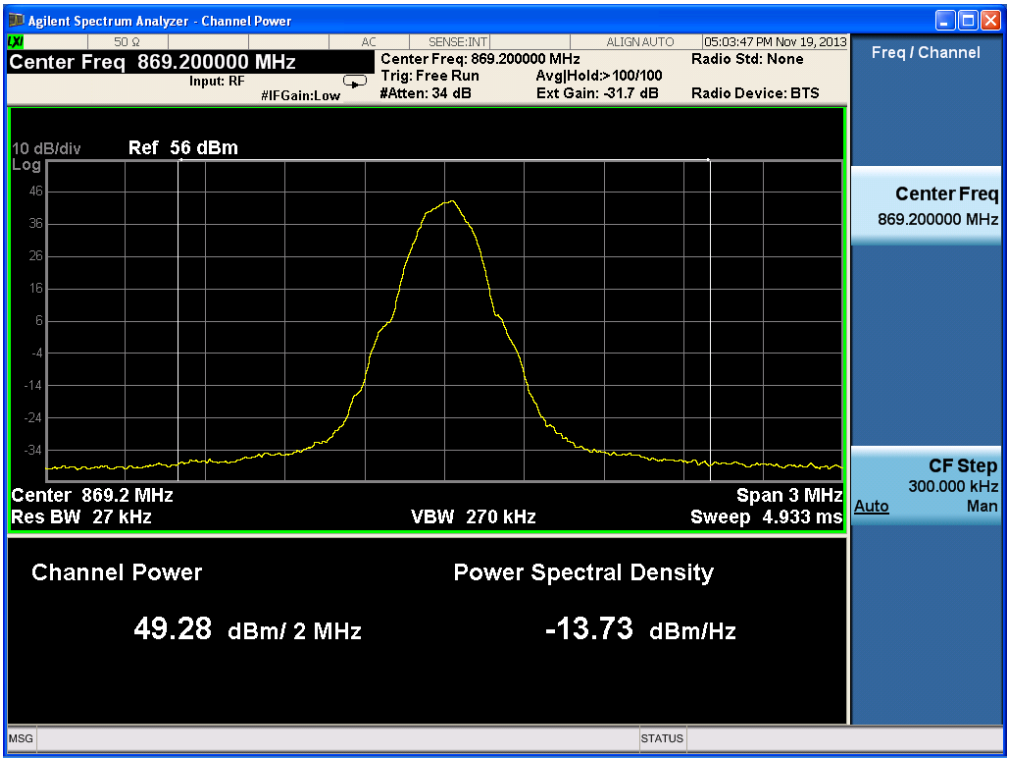
modulation	Center Freq. (MHz)	Frequency (MHz)	Max output Power in dBm
8PSK	869.2	869.2	46.88
	881.4	881.4	47.25
	893.8	893.8	46.92

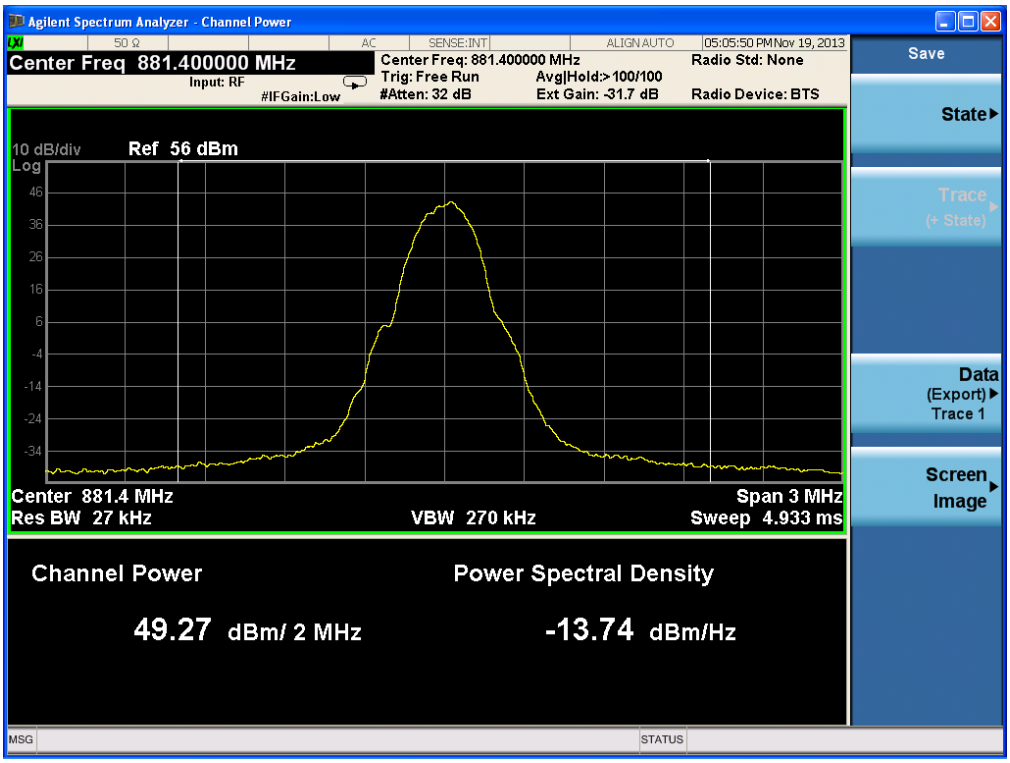


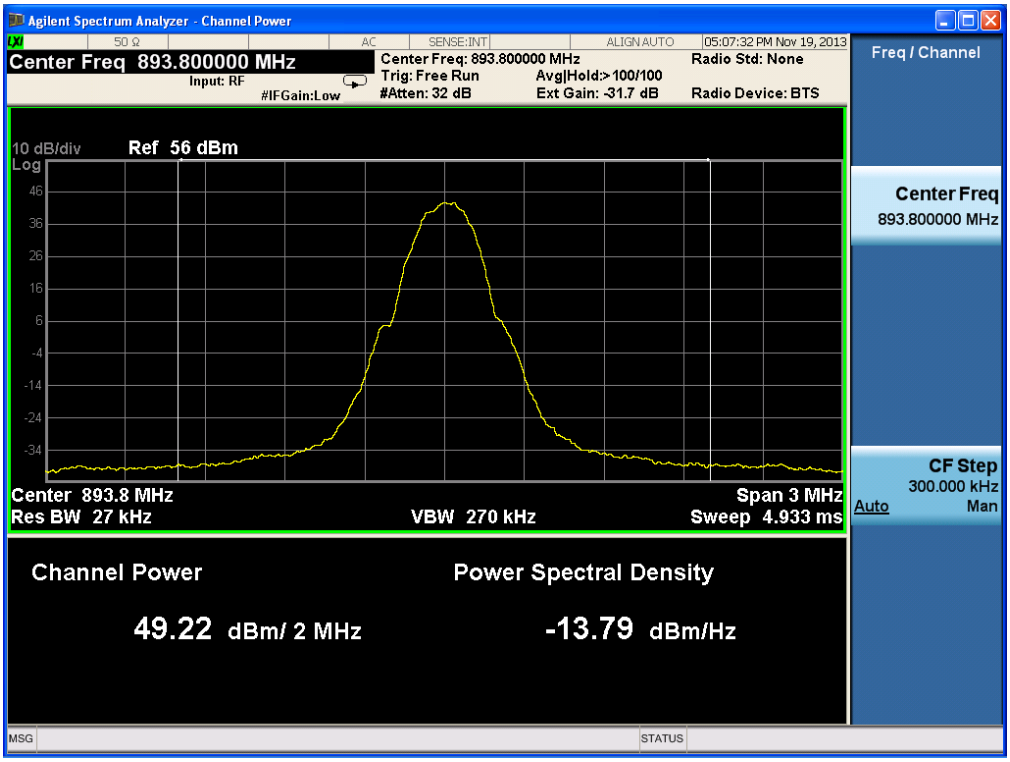

Agilent Spectrum Analyzer - Channel Power
50 Ω
AC
EXT REF
ALIGN AUTO
09:15:13 PM Nov 19, 2013
Center Freq 881.400000 MHz
Input: RF
#IFGain:Low
Center Freq: 881.400000 MHz
Trig: Free Run
#Atten: 38 dB
Avg|Hold:>100/100
Ext Gain: -31.7 dB
Radio Std: None
Radio Device: BTS
Freq / Channel
Mkr1 881.445 MHz
39.602 dBm
10 dB/div
Log
Ref 57 dBm
47
37
27
17
7
-3
-13
-23
-33
1
Center Freq
881.400000 MHz
CF Step
500.000 kHz
Auto
Man
Center 881.4 MHz
#Res BW 10 kHz
VBW 100 kHz
Span 5 MHz
#Sweep 75 ms
Channel Power
47.25 dBm/ 1 MHz
Power Spectral Density
-10.75 dBm/Hz
MSG
STATUS
Align Now, All required



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


Agilent Spectrum Analyzer - Channel Power
Center Freq 869.200000 MHz
Input: RF
#IFGain:Low
Center Freq: 869.200000 MHz
Trig: Free Run
#Atten: 34 dB
Avg|Hold:>100/100
Ext Gain: -31.7 dB
Radio Std: None
Radio Device: BTS
05:03:47 PM Nov 19, 2013
Freq / Channel
10 dB/div
Log
Ref 56 dBm
Center Freq
869.200000 MHz
Center 869.2 MHz
Res BW 27 kHz
VBW 270 kHz
Span 3 MHz
Sweep 4.933 ms
CF Step
300.000 kHz
Auto
Man
Channel Power
49.28 dBm/ 2 MHz
Power Spectral Density
-13.73 dBm/Hz
MSG
STATUS


Agilent Spectrum Analyzer - Channel Power
Center Freq 881.400000 MHz
Input: RF
#IFGain:Low
Center Freq: 881.400000 MHz
Trig: Free Run
#Atten: 32 dB
Avg|Hold:>100/100
Ext Gain: -31.7 dB
Radio Std: None
Radio Device: BTS
05:05:50 PM Nov 19, 2013
Save
10 dB/div
Log
Ref 56 dBm
State
Trace
(+ State)
Data
(Export)
Trace 1
Screen
Image
Center 881.4 MHz
Res BW 27 kHz
VBW 270 kHz
Span 3 MHz
Sweep 4.933 ms
Channel Power
49.27 dBm/ 2 MHz
Power Spectral Density
-13.74 dBm/Hz
MSG
STATUS


Agilent Spectrum Analyzer - Channel Power
50 Ω
AC
SENSE:INT
ALIGN AUTO
05:07:32 PM Nov 19, 2013
Center Freq 893.800000 MHz
Input: RF
#IFGain:Low
Center Freq: 893.800000 MHz
Trig: Free Run
#Atten: 32 dB
Avg|Hold:>100/100
Ext Gain: -31.7 dB
Radio Std: None
Radio Device: BTS
Freq / Channel
10 dB/div
Log
Ref 56 dBm
46
36
26
16
6
-4
-14
-24
-34
Center Freq
893.800000 MHz
CF Step
300.000 kHz
Auto
Man
Center 893.8 MHz
Res BW 27 kHz
VBW 270 kHz
Span 3 MHz
Sweep 4.933 ms
Channel Power
49.22 dBm/ 2 MHz
Power Spectral Density
-13.79 dBm/Hz
MSG
STATUS

4.2 RF EXPOSURE

Applicable standard: FCC §2.1091 §1.1310

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
$S=894/1500=0.596mW/cm^2$, R=3.31m.
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	MY51160170	2014-6-16	2015-6-16
Atten	40dB Attenuator	ATSI150-4-40	11300100204204	2014-4-8	2015-4-8
Forstar	Forstar RF Cable	002	1034	2014-4-8	2015-4-8

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

Test Procedure

CDMA digital mode is used by EUT.

Test Data Environmental Conditions

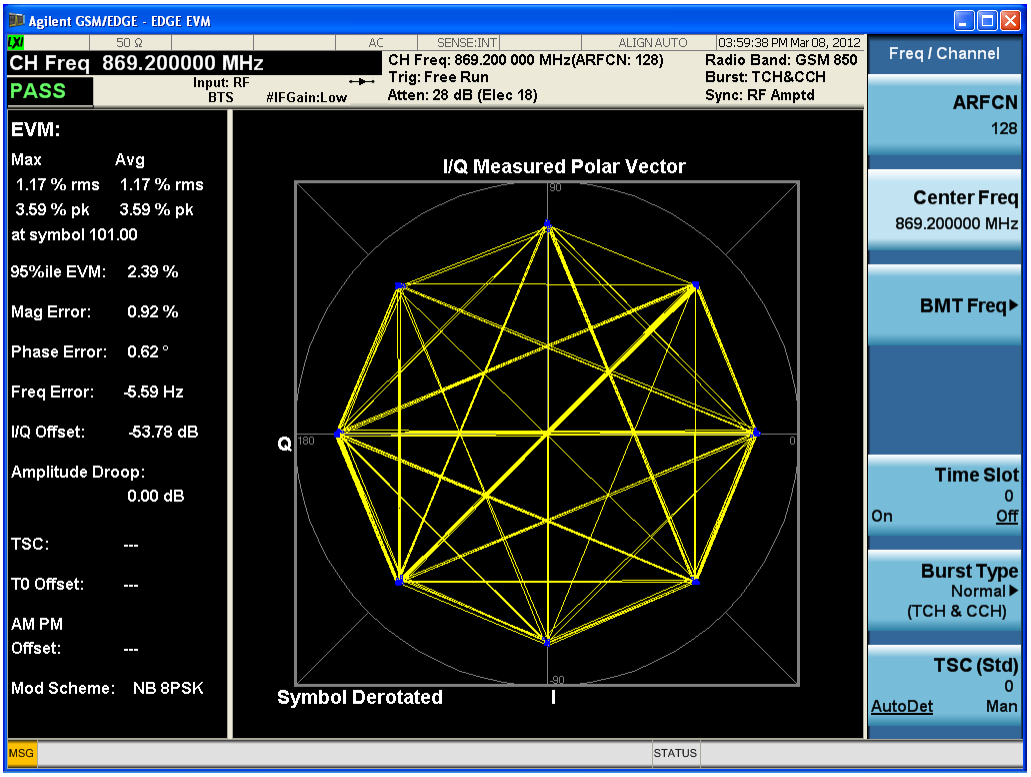
Temperature:	20 °C
Relative Humidity:	53 %
ATM Pressure:	1009 mbar

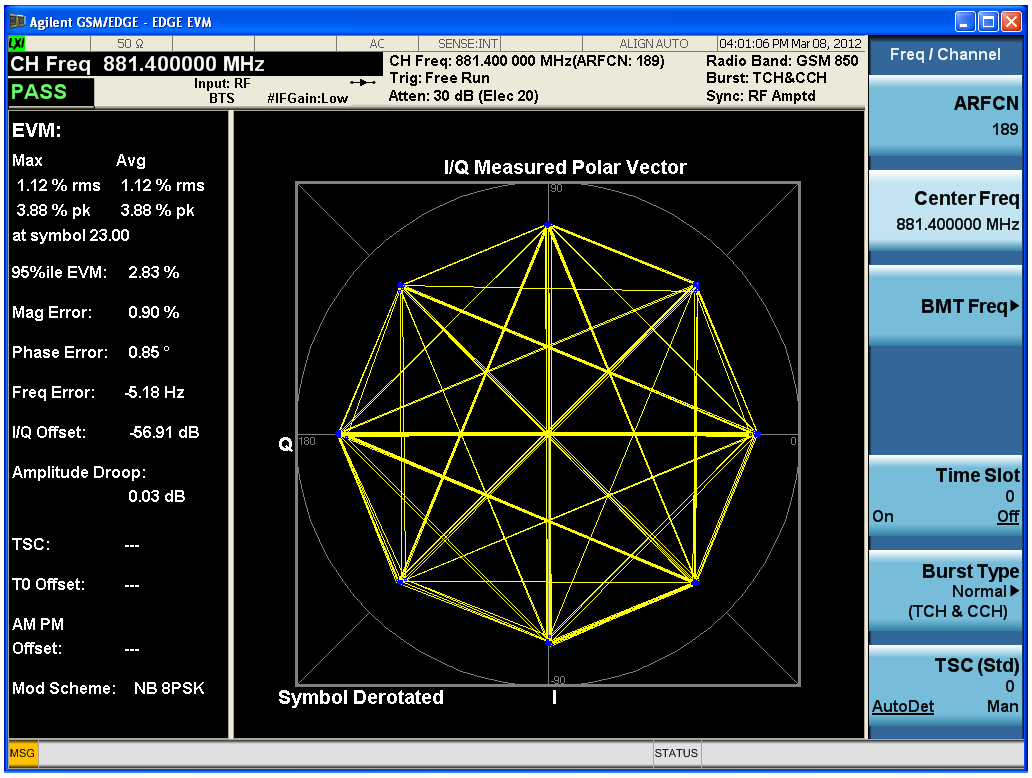
Test Result: Pass

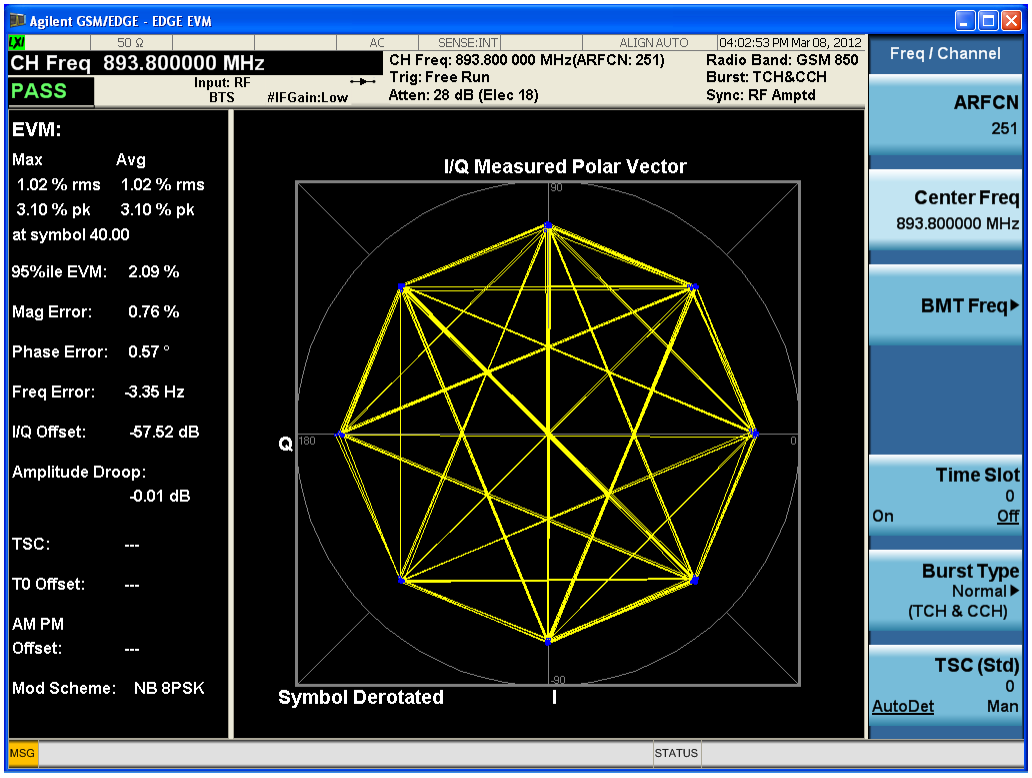
Test Mode: Transmitting GSM

Test Data:

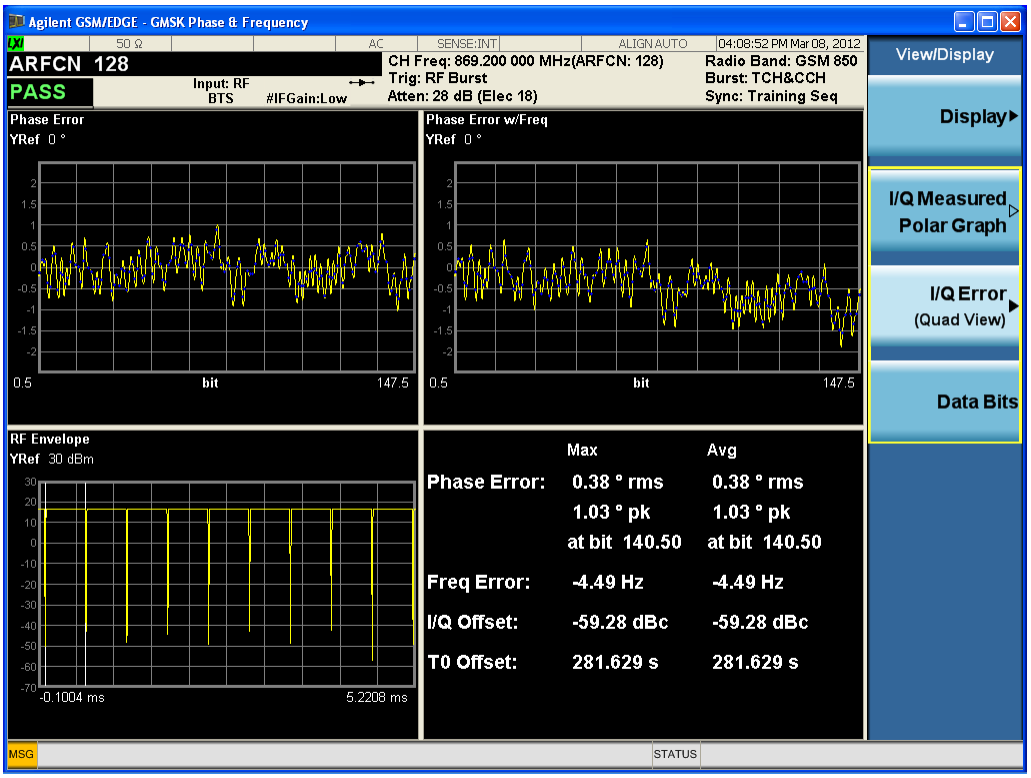
Modulation	Frequency (MHz)	EVM
8PSK	869.2	2.39%
	881.4	2.83%
	893.8	2.09%

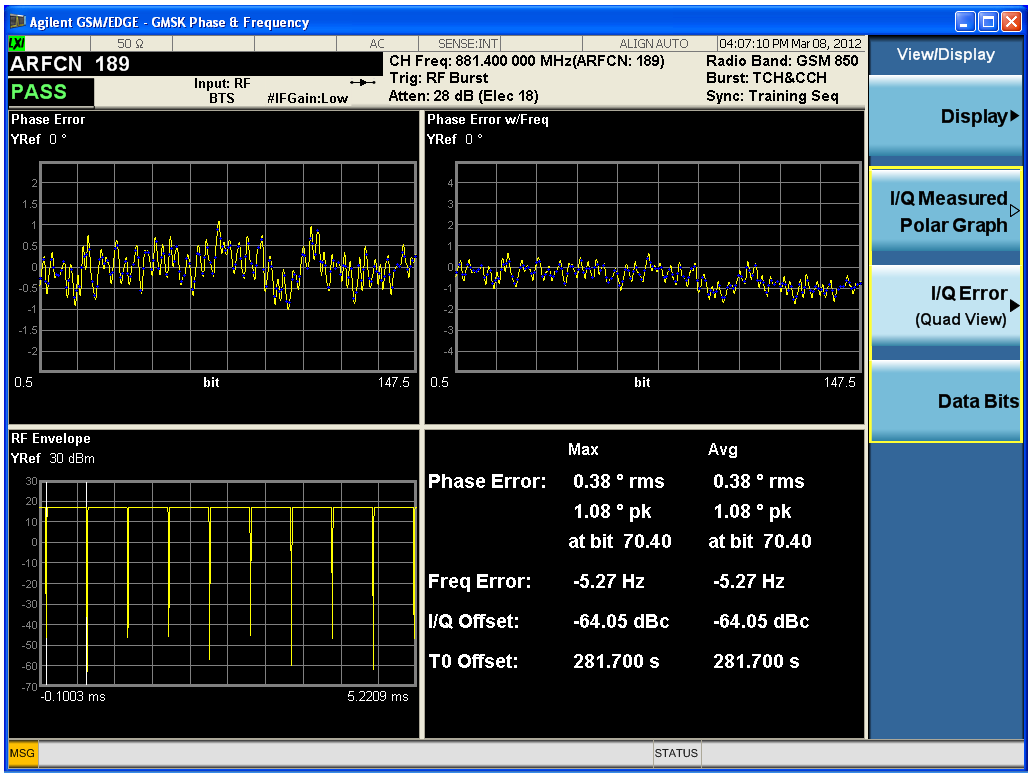


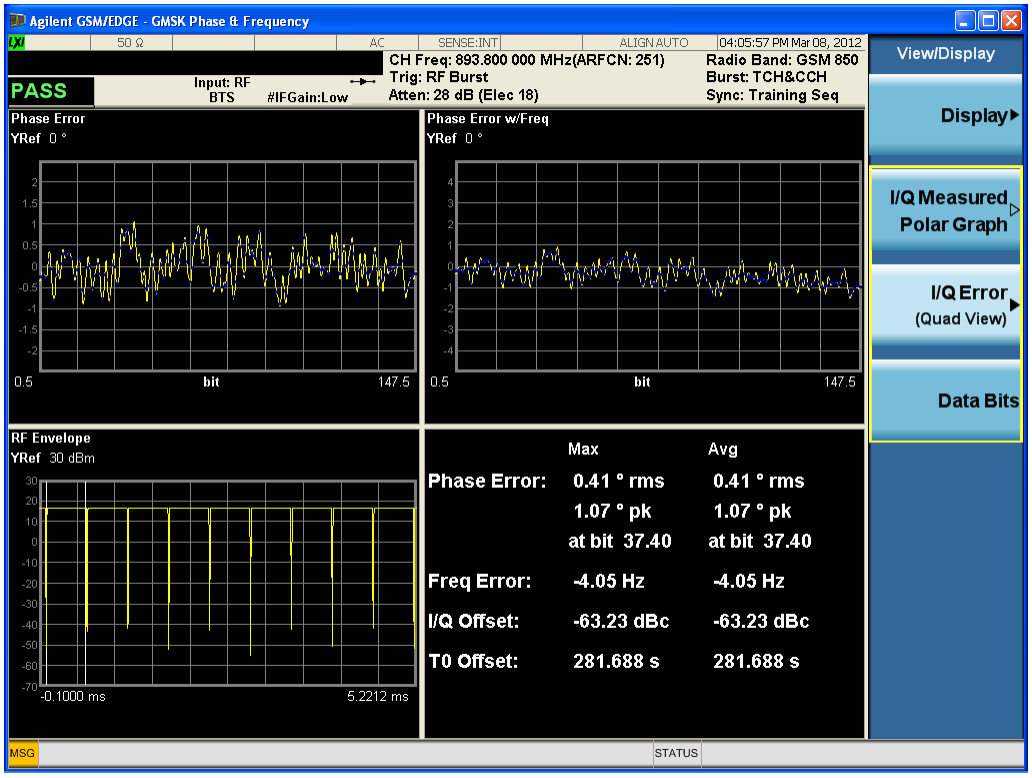

Agilent GSM/EDGE - EDGE EVM
50 Ω
AC
SENSE:INT
ALIGN AUTO
04:01:06 PM Mar 08, 2012
CH Freq 881.400000 MHz
PASS
Input: RF
BTS
#IFGain:Low
CH Freq: 881.400 000 MHz(ARFCN: 189)
Trig: Free Run
Atten: 30 dB (Elec 20)
Radio Band: GSM 850
Burst: TCH&CCH
Sync: RF Amptd
EVM:
Max
Avg
1.12 % rms
1.12 % rms
3.88 % pk
3.88 % pk
at symbol 23.00
95%ile EVM: 2.83 %
Mag Error: 0.90 %
Phase Error: 0.85 °
Freq Error: -5.18 Hz
I/Q Offset: -56.91 dB
Amplitude Droop:
0.03 dB
TSC: ---
T0 Offset: ---
AM PM
Offset: ---
Mod Scheme: NB 8PSK
I/Q Measured Polar Vector
90
180
0
-90
Q
Symbol Derotated
I
Freq / Channel
ARFCN
189
Center Freq
881.400000 MHz
BMT Freq
Time Slot
0
On
Off
Burst Type
Normal
(TCH & CCH)
TSC (Std)
0
AutoDet
Man
MSG
STATUS


Agilent GSM/EDGE - EDGE EVM
50 Ω
AC
SENSE:INT
ALIGN AUTO
04:02:53 PM Mar 08, 2012
CH Freq 893.800000 MHz
PASS
Input: RF
BTS
#IFGain:Low
CH Freq: 893.800 000 MHz(ARFCN: 251)
Trig: Free Run
Atten: 28 dB (Elec 18)
Radio Band: GSM 850
Burst: TCH&CCH
Sync: RF Amptd
EVM:
Max
Avg
1.02 % rms
1.02 % rms
3.10 % pk
3.10 % pk
at symbol 40.00
95%ile EVM: 2.09 %
Mag Error: 0.76 %
Phase Error: 0.57 °
Freq Error: -3.35 Hz
I/Q Offset: -57.52 dB
Amplitude Droop:
-0.01 dB
TSC: ---
T0 Offset: ---
AM PM
Offset: ---
Mod Scheme: NB 8PSK
I/Q Measured Polar Vector
90
180
0
-90
Q
Symbol Derotated
I
Freq / Channel
ARFCN
251
Center Freq
893.800000 MHz
BMT Freq
Time Slot
0
On
Off
Burst Type
Normal
(TCH & CCH)
TSC (Std)
0
AutoDet
Man
MSG
STATUS

Modulation	Frequency (MHz)	Phase Error(°)	Frequency Error(Hz)
GMSK	869.2	0.38	-4.49
	881.4	0.38	-5.27
	893.8	0.41	-4.05




Agilent GSM/EDGE - GMSK Phase & Frequency
50 Ω
AC
SENSE:INT
ALIGN AUTO
04:07:10 PM Mar 08, 2012
ARFCN 189
PASS
Input: RF
BTS
#IFGain:Low
CH Freq: 881.400 000 MHz(ARFCN: 189)
Trig: RF Burst
Atten: 28 dB (Elec 18)
Radio Band: GSM 850
Burst: TCH&CCH
Sync: Training Seq
View/Display
Display
I/Q Measured Polar Graph
I/Q Error (Quad View)
Data Bits
Phase Error
YRef 0 °
Phase Error w/Freq
YRef 0 °
0.5
bit
147.5
RF Envelope
YRef 30 dBm
-0.1003 ms
5.2209 ms
Max
Avg
Phase Error:
0.38 ° rms
0.38 ° rms
1.08 ° pk
1.08 ° pk
at bit 70.40
at bit 70.40
Freq Error:
-5.27 Hz
-5.27 Hz
I/Q Offset:
-64.05 dBc
-64.05 dBc
T0 Offset:
281.700 s
281.700 s
MSG
STATUS


Agilent GSM/EDGE - GMSK Phase & Frequency
50 Ω
AC
SENSE:INT
ALIGN AUTO
04:05:57 PM Mar 08, 2012
PASS
Input: RF
BTS
#IFGain:Low
CH Freq: 893.800 000 MHz(ARFCN: 251)
Trig: RF Burst
Atten: 28 dB (Elec 18)
Radio Band: GSM 850
Burst: TCH&CCH
Sync: Training Seq
View/Display
Display
I/Q Measured Polar Graph
I/Q Error (Quad View)
Data Bits
Phase Error
YRef 0 °
Phase Error w/Freq
YRef 0 °
0.5
bit
147.5
RF Envelope
YRef 30 dBm
-0.1000 ms
5.2212 ms
Max
Avg
Phase Error:
0.41 ° rms
0.41 ° rms
1.07 ° pk
1.07 ° pk
at bit 37.40
at bit 37.40
Freq Error:
-4.05 Hz
-4.05 Hz
I/Q Offset:
-63.23 dBc
-63.23 dBc
T0 Offset:
281.688 s
281.688 s
MSG
STATUS

4.4 SPURIOUS RADIATED EMISSIONS

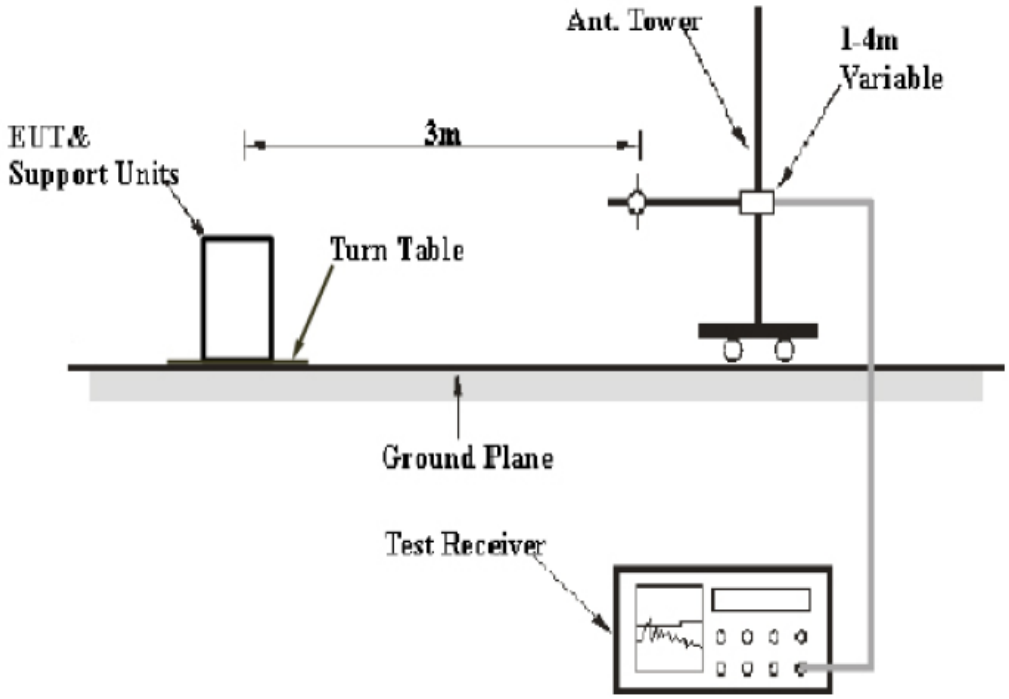
Applicable Standard: FCC CFR 47, §2.1053

Test Equipment List and Details

Manufacturer	Equipment	Model	Serial Number	Last Cal.	Cal. Interval
R&S	SIGNAL GENERATOR	SMR20	A00017351	2014-09-09	1 year
Albatross	Anechoic Chamber	3m Site	A00017354	2014-12-01	1 year
R&S	EMI Test Receiver	ESIB26	100058	2014-10-13	1 year
R&S	Ultra Breitband Antennas	HL562	100022	2014-07-29	1 year
R&S	Double-Ridged Waveguide Horn Antenna	HF906	100032	2014-07-14	1 year
R&S	Double-Ridged Waveguide Horn Antenna	HF906	100446	2014-07-14	1 year
SCHWARZ-BECK	Biconical Antenna	VUBA9117	9117-122	2014-07-14	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 NIS 81, 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



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

Test Procedure

The transmitter was placed on a wooden turntable, and it was transmitting into a non-radiating load, which was also placed on the turntable.
The measurement antenna was placed at a distance of 3 meters from the EUT. During the tests, the antenna height and polarization as well as EUT azimuth were varied in order to identify the maximum level of emissions from the EUT. The test was performed by placing the EUT on 3-orthogonal axis.
The frequency range up to 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 scaning, set at 1MHz for 1GHz to 20GHz scaning.

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.

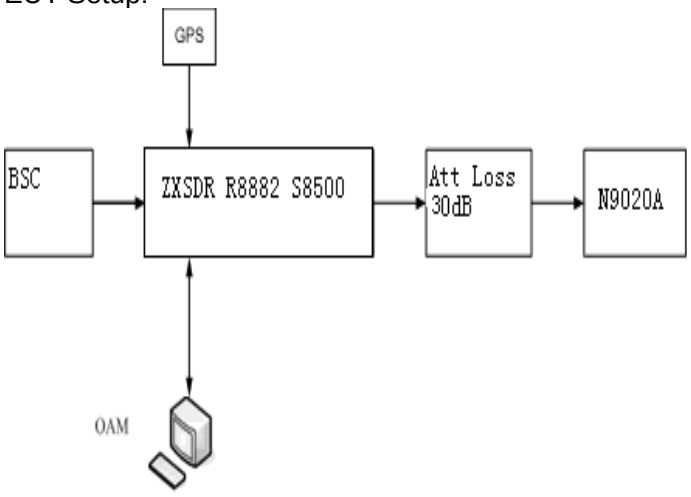
Test Equipment List and Details

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
Agilent	MXA Series Spectrum Analyzer	N9020A	MY51160170	2014-6-16	2015-6-16
Atten	40dB Attenuator	ATSI150-4-40	11300100204204	2014-4-8	2015-4-8
Forstar	Forstar RF Cable	002	1034	2014-4-8	2015-4-8

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

Test Procedure

EUT Setup:



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

The RF output of the transceiver was connected to a spectrum analyzer through appropriate

attenuation. The resolution bandwidth of the spectrum analyzer was set at 100KHz for 30MHz to 1GHz band, set at 1MHz for 1GHz to 10GHz band. Sufficient scans were taken to show any out of band emissions up to 10th harmonic.

Test Data Environmental Conditions

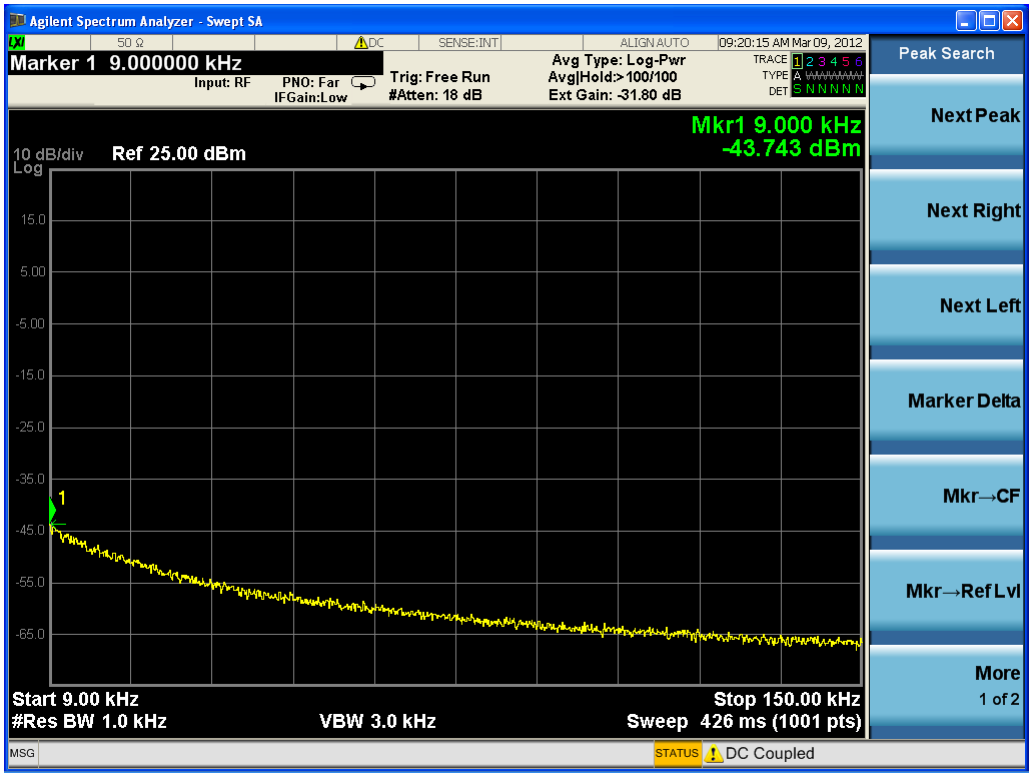
Temperature:	20 °C
Relative Humidity:	53 %
ATM Pressure:	1009 mbar

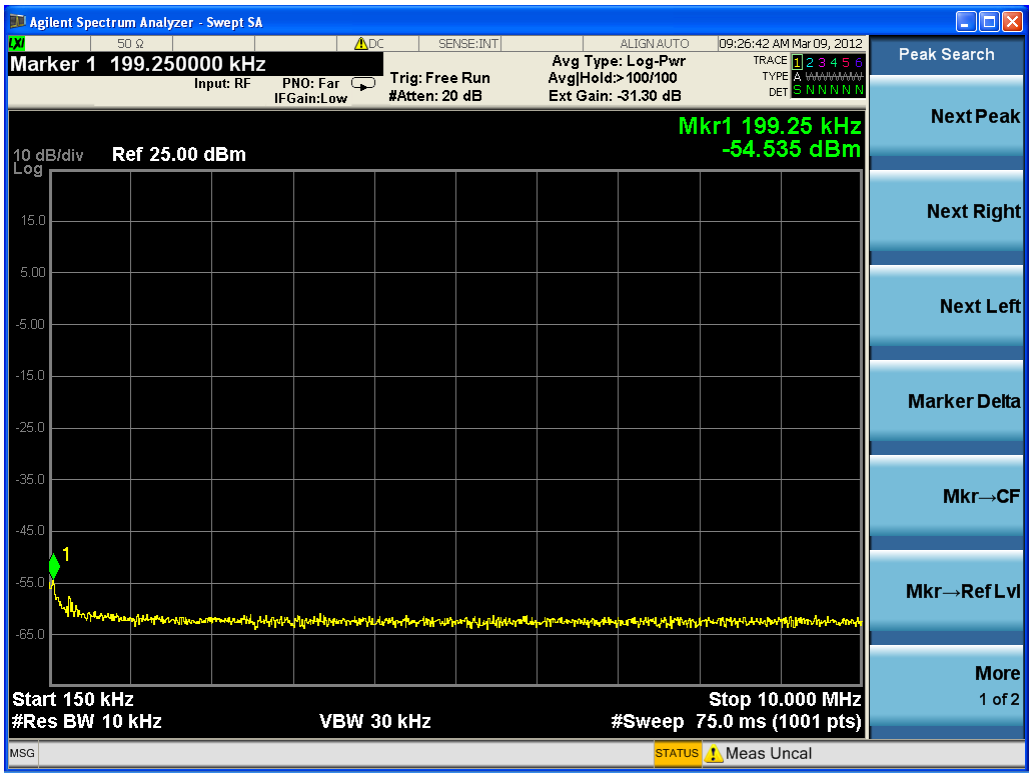
Test Result: Pass

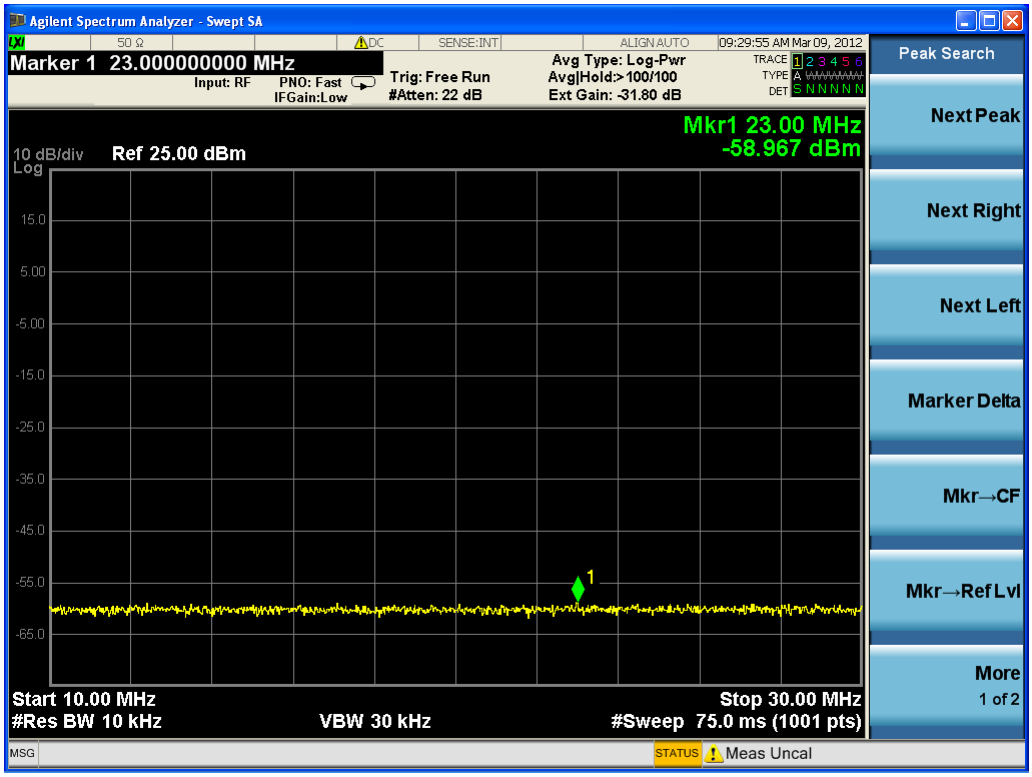
Test Mode: Transmitting GSM

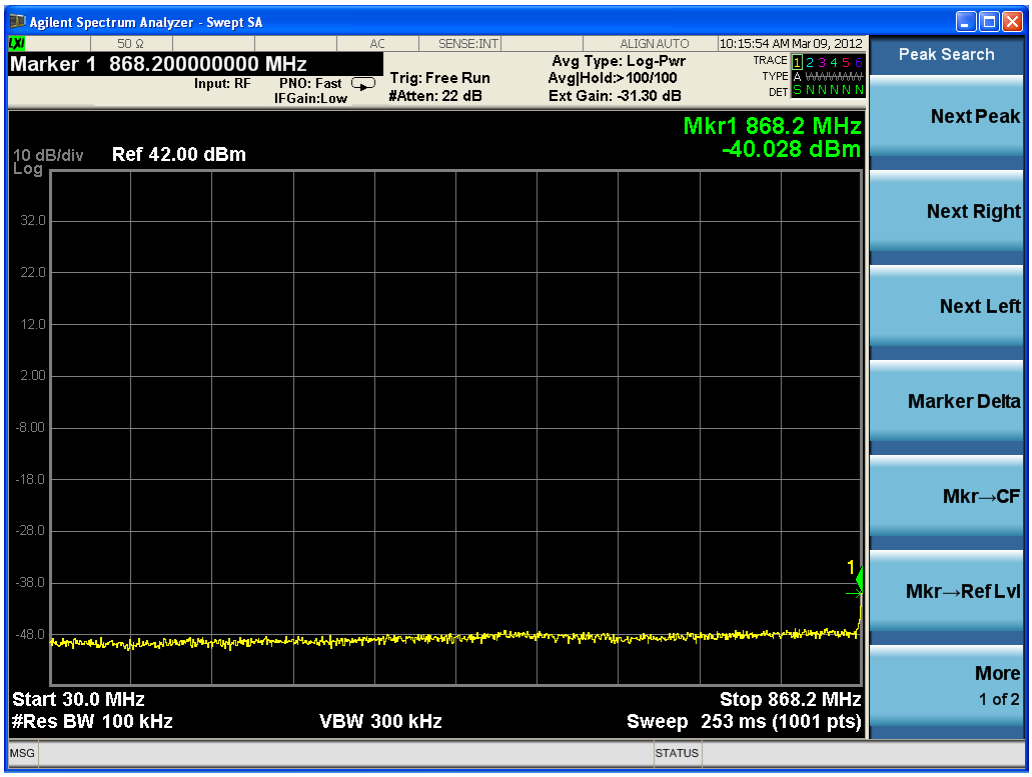
Test Data:

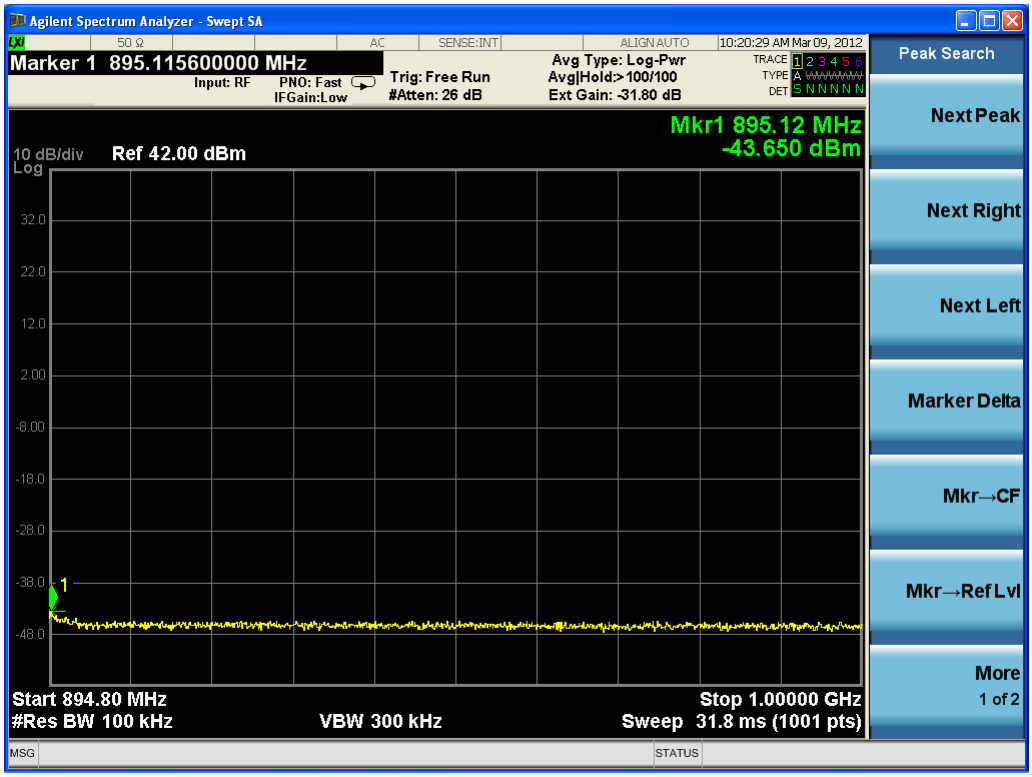
Six carriers

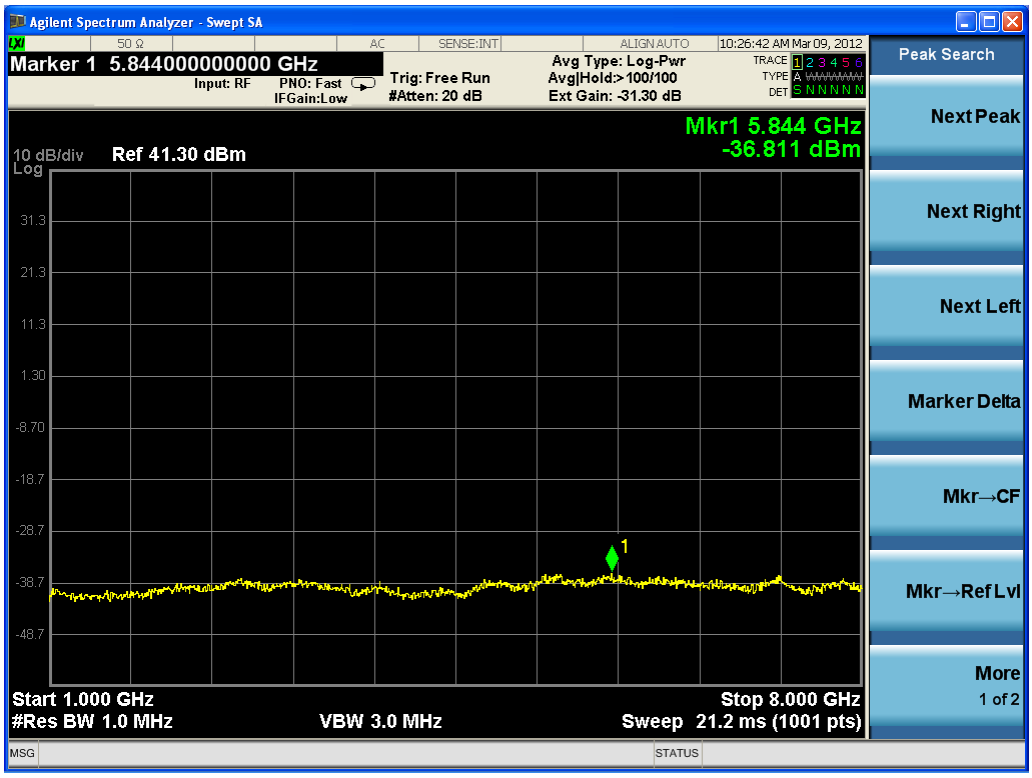



Agilent Spectrum Analyzer - Swept SA
Marker 1 199.250000 kHz
Input: RF PNO: Far IFGain:Low
Trig: Free Run #Atten: 20 dB
Avg Type: Log-Pwr Avg|Hold:>100/100 Ext Gain: -31.30 dB
09:26:42 AM Mar 09, 2012
Mkr1 199.25 kHz -54.535 dBm
10 dB/div Log
Ref 25.00 dBm
Start 150 kHz
#Res BW 10 kHz
VBW 30 kHz
Stop 10.000 MHz
#Sweep 75.0 ms (1001 pts)
Peak Search
Next Peak
Next Right
Next Left
Marker Delta
Mkr→CF
Mkr→Ref Lvl
More 1 of 2
Meas Uncal

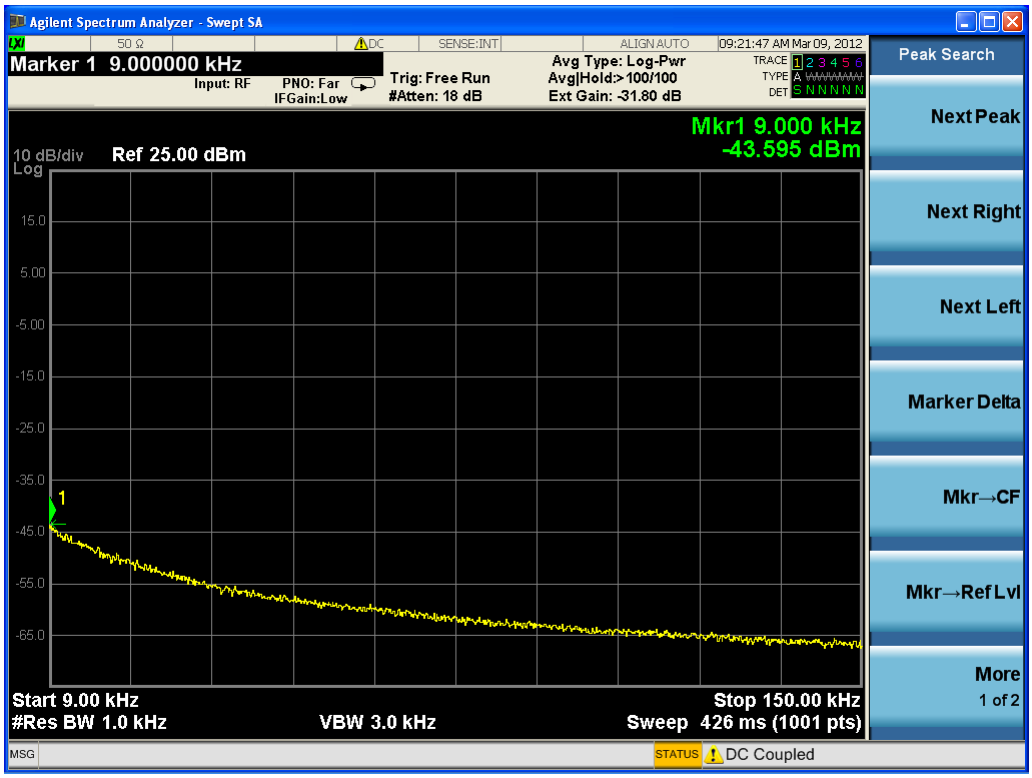

Agilent Spectrum Analyzer - Swept SA
Marker 1 23.000000000 MHz
Input: RF PNO: Fast IFGain:Low
Trig: Free Run #Atten: 22 dB
Avg Type: Log-Pwr Avg|Hold:>100/100 Ext Gain: -31.80 dB
09:29:55 AM Mar 09, 2012
Mkr1 23.00 MHz -58.967 dBm
10 dB/div Log
Ref 25.00 dBm
Start 10.00 MHz
#Res BW 10 kHz
VBW 30 kHz
Stop 30.00 MHz
#Sweep 75.0 ms (1001 pts)
Peak Search
Next Peak
Next Right
Next Left
Marker Delta
Mkr→CF
Mkr→Ref Lvl
More 1 of 2
Meas Uncal

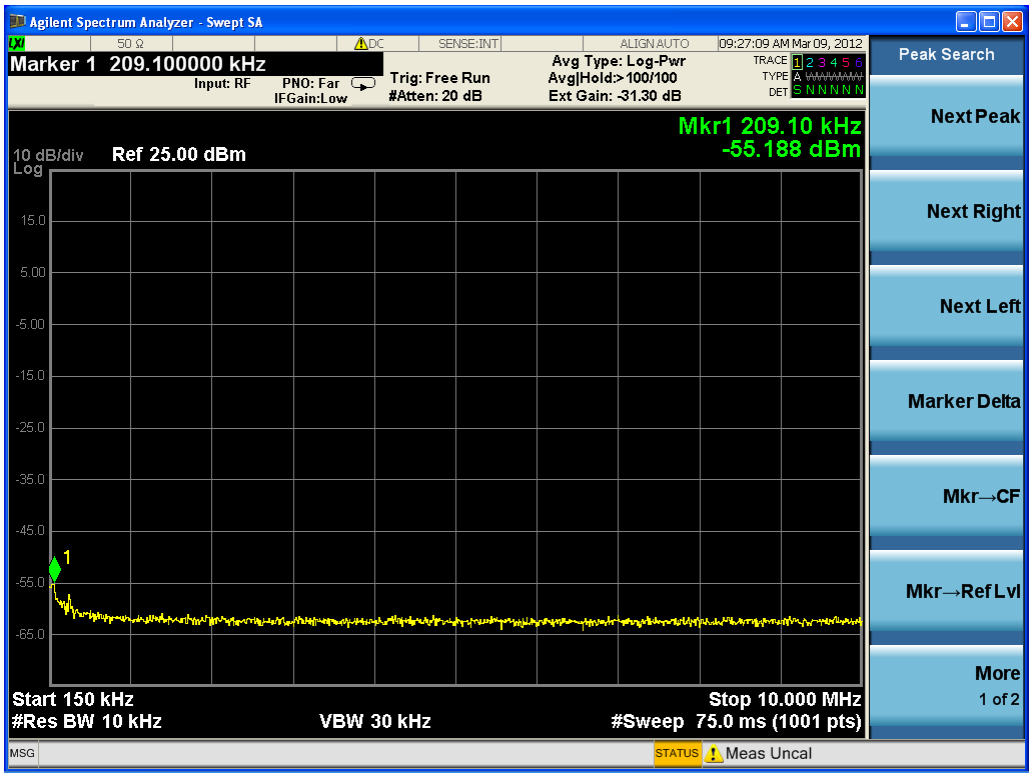

Agilent Spectrum Analyzer - Swept SA
50 Ω
AC
SENSE:INT
ALIGN AUTO
10:15:54 AM Mar 09, 2012
Marker 1 868.200000000 MHz
Input: RF
PNO: Fast
IFGain:Low
Trig: Free Run
#Atten: 22 dB
Avg Type: Log-Pwr
Avg|Hold:>100/100
Ext Gain: -31.30 dB
TRACE 1 2 3 4 5 6
TYPE A WWWWW
DET S N N N N N
Mkr1 868.2 MHz
-40.028 dBm
10 dB/div
Log
Ref 42.00 dBm
32.0
22.0
12.0
2.00
-8.00
-18.0
-28.0
-38.0
-48.0
1
Start 30.0 MHz
#Res BW 100 kHz
VBW 300 kHz
Stop 868.2 MHz
Sweep 253 ms (1001 pts)
MSG
STATUS
Peak Search
Next Peak
Next Right
Next Left
Marker Delta
Mkr→CF
Mkr→Ref Lvl
More
1 of 2

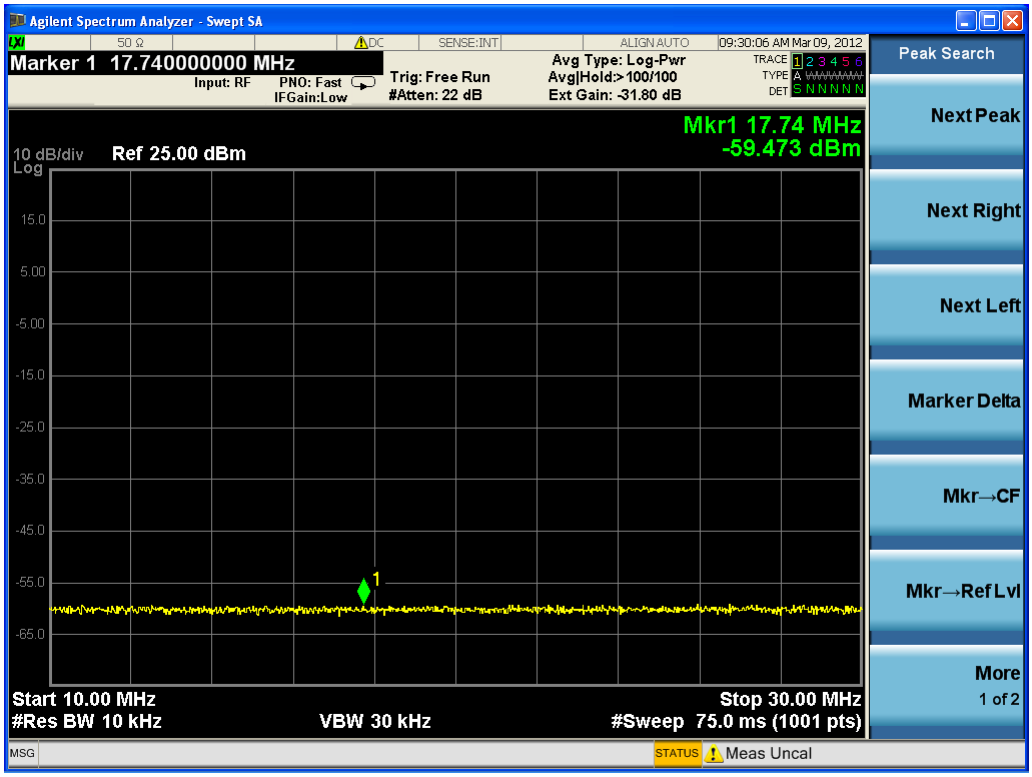

Agilent Spectrum Analyzer - Swept SA
50 Ω
AC
SENSE:INT
ALIGN AUTO
10:20:29 AM Mar 09, 2012
Marker 1 895.115600000 MHz
Input: RF
PNO: Fast
IFGain:Low
Trig: Free Run
#Atten: 26 dB
Avg Type: Log-Pwr
Avg|Hold:>100/100
Ext Gain: -31.80 dB
TRACE 1 2 3 4 5 6
TYPE A WWWWW
DET S N N N N N
Mkr1 895.12 MHz
-43.650 dBm
10 dB/div
Log
Ref 42.00 dBm
32.0
22.0
12.0
2.00
-8.00
-18.0
-28.0
-38.0
-48.0
1
Start 894.80 MHz
#Res BW 100 kHz
VBW 300 kHz
Stop 1.00000 GHz
Sweep 31.8 ms (1001 pts)
MSG
STATUS
Peak Search
Next Peak
Next Right
Next Left
Marker Delta
Mkr→CF
Mkr→Ref Lvl
More
1 of 2

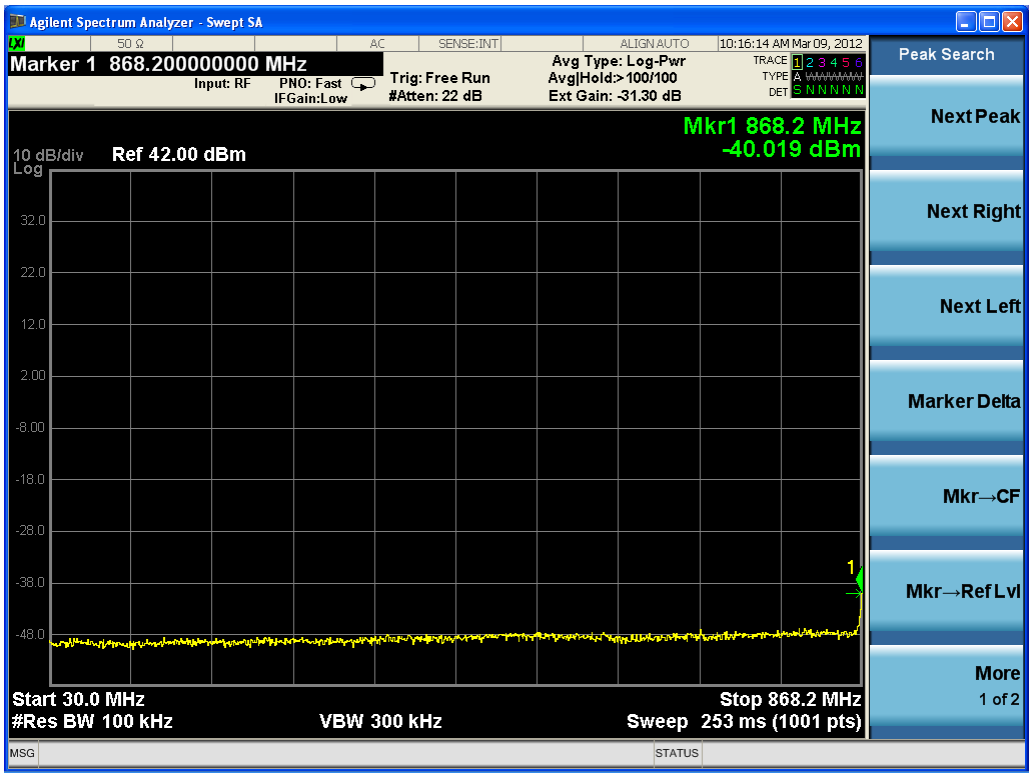


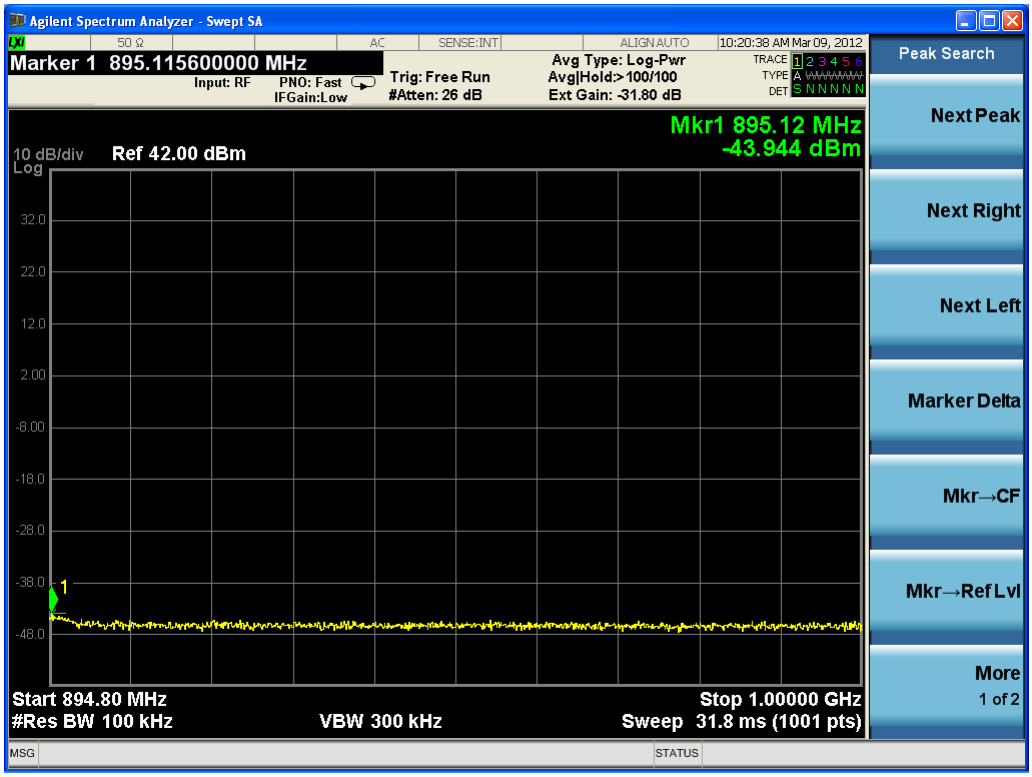
Five carriers

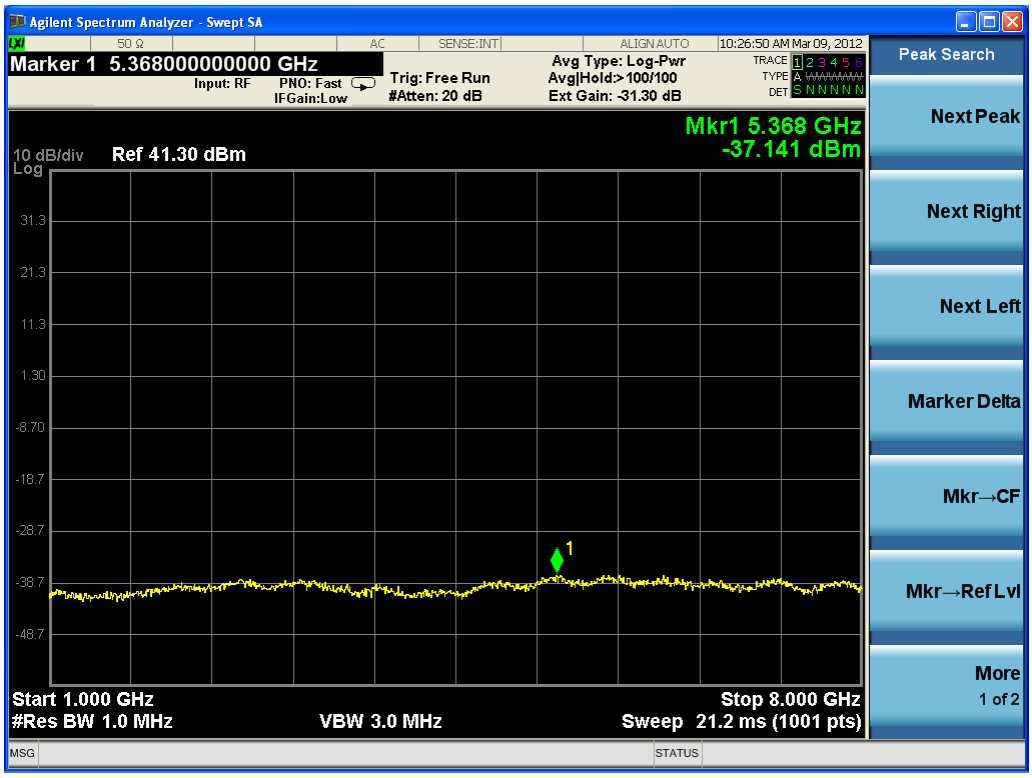



Agilent Spectrum Analyzer - Swept SA
Marker 1 209.100000 kHz
Input: RF PNO: Far IFGain:Low
Trig: Free Run #Atten: 20 dB
Avg Type: Log-Pwr Avg|Hold:>100/100 Ext Gain: -31.30 dB
09:27:09 AM Mar 09, 2012
Mkr1 209.10 kHz -55.188 dBm
10 dB/div Log
Ref 25.00 dBm
Start 150 kHz
#Res BW 10 kHz
VBW 30 kHz
Stop 10.000 MHz
#Sweep 75.0 ms (1001 pts)
Peak Search
Next Peak
Next Right
Next Left
Marker Delta
Mkr→CF
Mkr→Ref Lvl
More 1 of 2
Meas Uncal

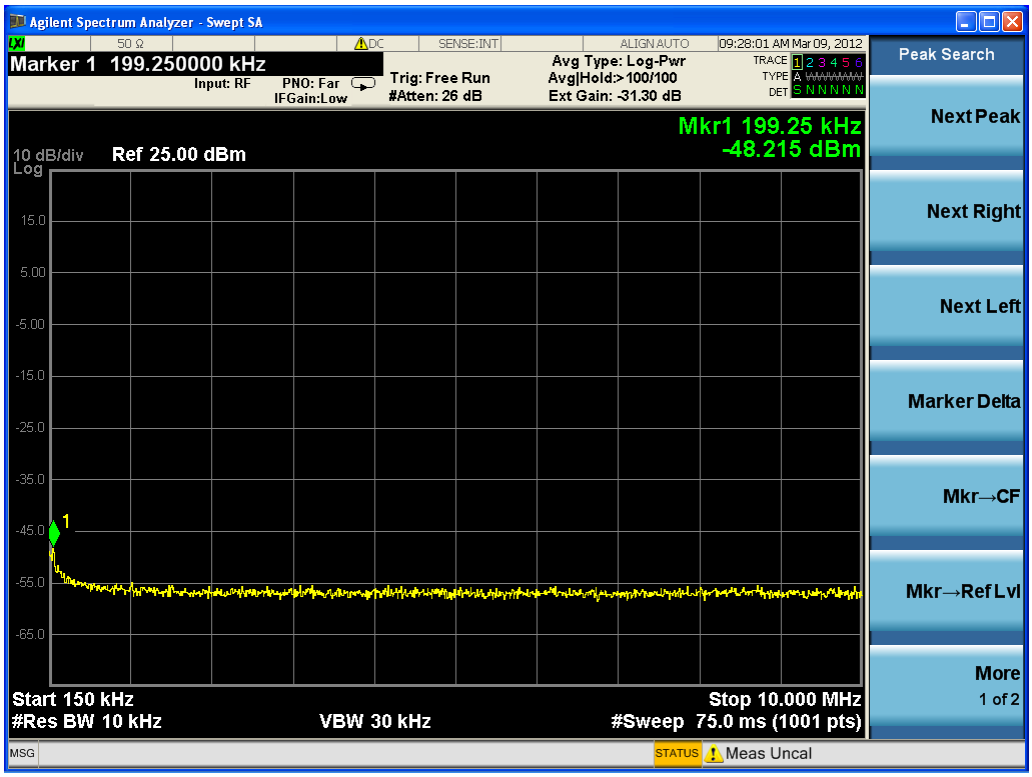

Agilent Spectrum Analyzer - Swept SA
Marker 1 17.740000000 MHz
Input: RF PNO: Fast IFGain:Low
Trig: Free Run #Atten: 22 dB
Avg Type: Log-Pwr Avg|Hold:>100/100 Ext Gain: -31.80 dB
09:30:06 AM Mar 09, 2012
Mkr1 17.74 MHz -59.473 dBm
10 dB/div Log
Ref 25.00 dBm
Start 10.00 MHz
#Res BW 10 kHz
VBW 30 kHz
Stop 30.00 MHz
#Sweep 75.0 ms (1001 pts)
Peak Search
Next Peak
Next Right
Next Left
Marker Delta
Mkr→CF
Mkr→Ref Lvl
More 1 of 2
Meas Uncal

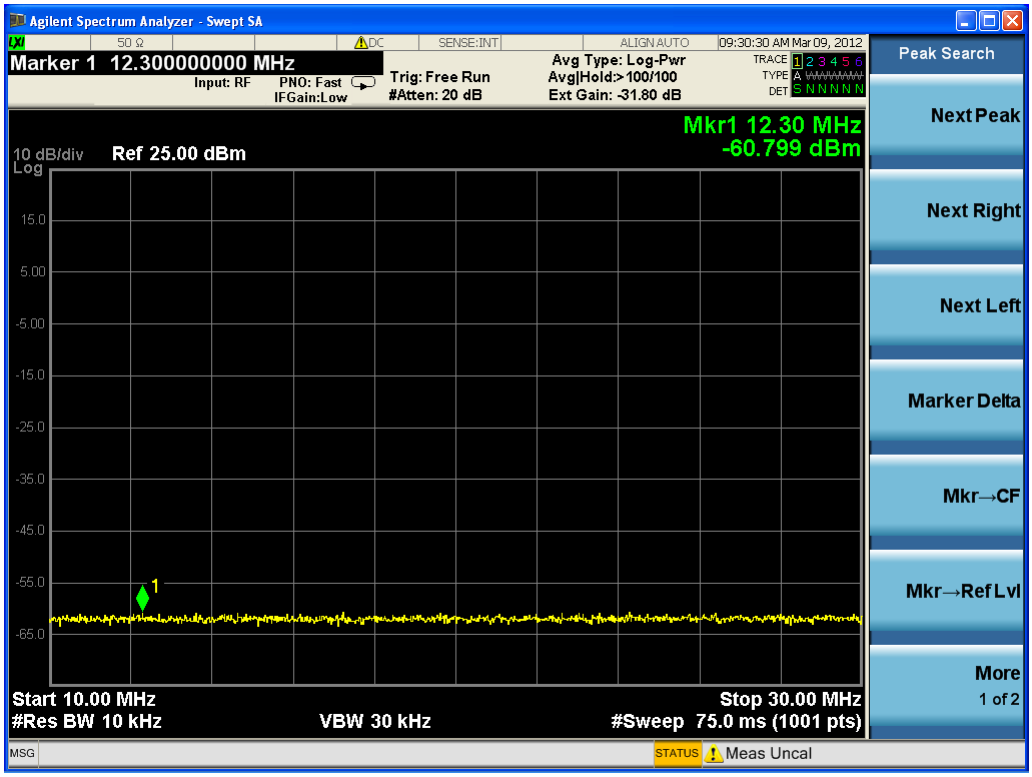

Agilent Spectrum Analyzer - Swept SA
Marker 1 868.200000000 MHz
Input: RF PNO: Fast IFGain:Low
Trig: Free Run #Atten: 22 dB
Avg Type: Log-Pwr Avg|Hold:>100/100 Ext Gain: -31.30 dB
10:16:14 AM Mar 09, 2012
Mkr1 868.2 MHz -40.019 dBm
10 dB/div Log
Ref 42.00 dBm
Start 30.0 MHz
#Res BW 100 kHz
VBW 300 kHz
Stop 868.2 MHz
Sweep 253 ms (1001 pts)
Peak Search
Next Peak
Next Right
Next Left
Marker Delta
Mkr→CF
Mkr→Ref Lvl
More 1 of 2

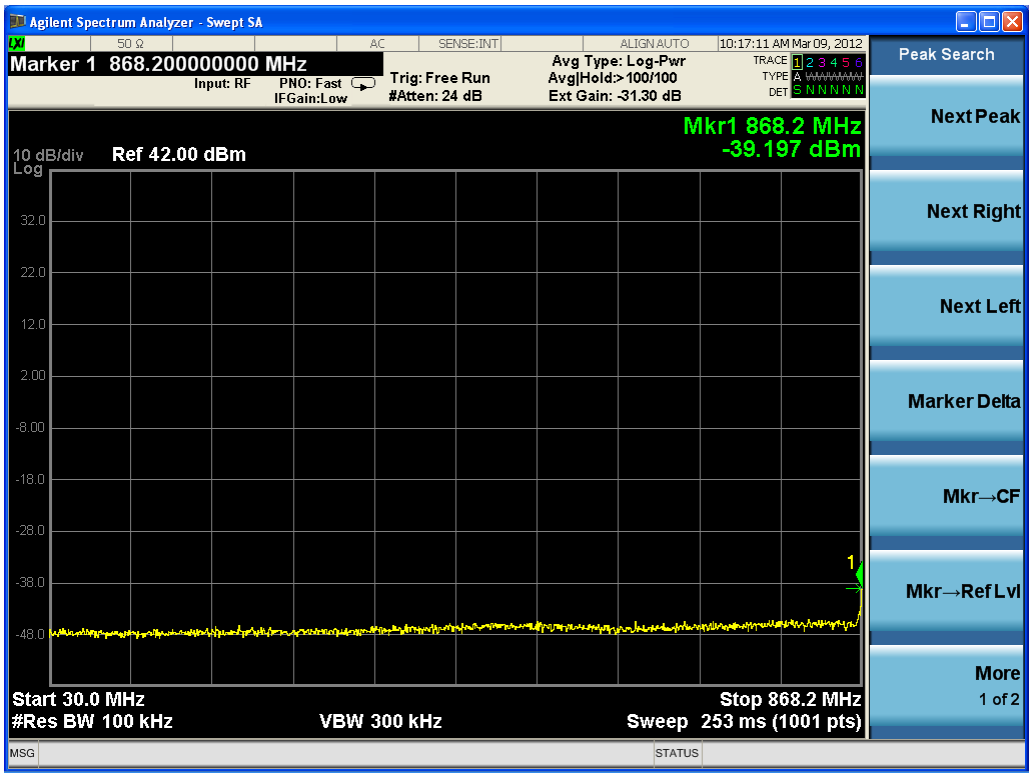

Agilent Spectrum Analyzer - Swept SA
Marker 1 895.115600000 MHz
Input: RF PNO: Fast IFGain:Low
Trig: Free Run #Atten: 26 dB
Avg Type: Log-Pwr Avg|Hold:>100/100 Ext Gain: -31.80 dB
10:20:38 AM Mar 09, 2012
Mkr1 895.12 MHz -43.944 dBm
10 dB/div Log
Ref 42.00 dBm
Start 894.80 MHz
#Res BW 100 kHz
VBW 300 kHz
Stop 1.00000 GHz
Sweep 31.8 ms (1001 pts)
Peak Search
Next Peak
Next Right
Next Left
Marker Delta
Mkr→CF
Mkr→Ref Lvl
More 1 of 2

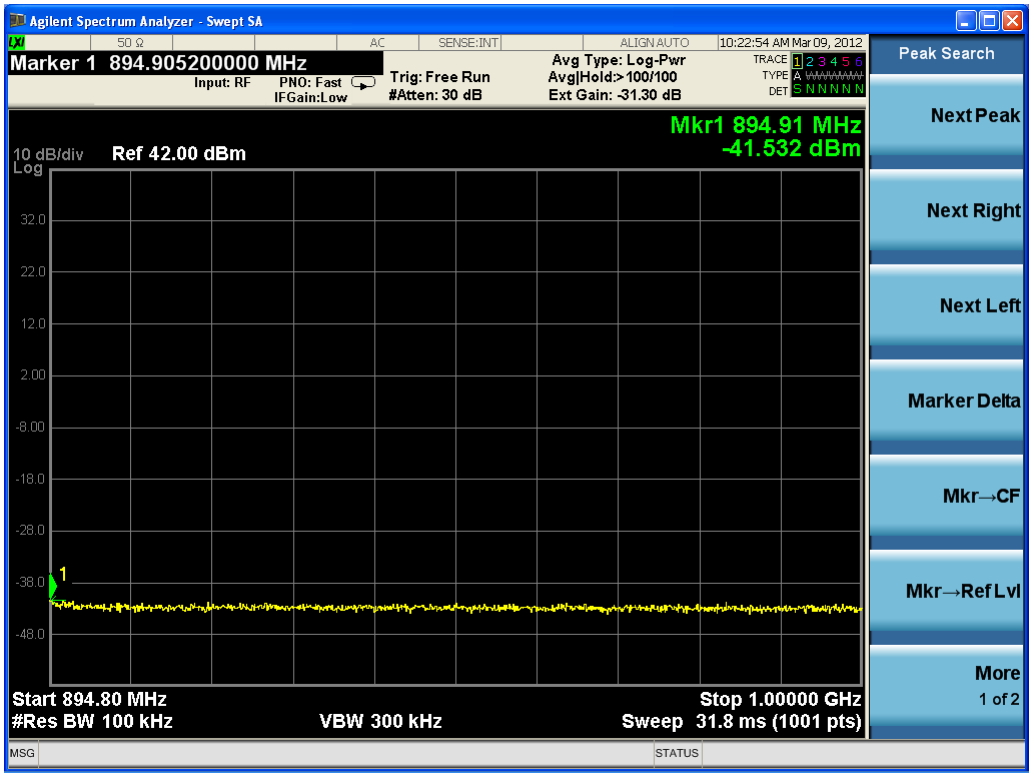


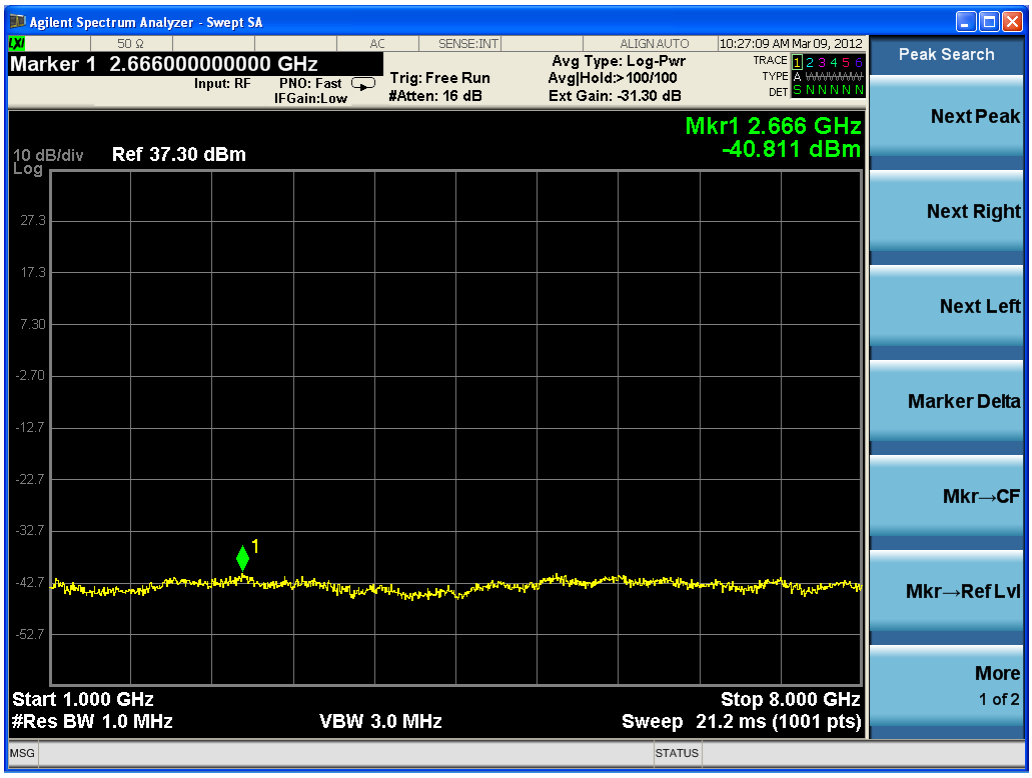
Four carriers


Agilent Spectrum Analyzer - Swept SA
Marker 1 199.250000 kHz
Input: RF PNO: Far IFGain:Low
Trig: Free Run #Atten: 26 dB
Avg Type: Log-Pwr Avg|Hold:>100/100 Ext Gain: -31.30 dB
09:28:01 AM Mar 09, 2012
Mkr1 199.25 kHz -48.215 dBm
10 dB/div Log
Ref 25.00 dBm
Start 150 kHz
#Res BW 10 kHz
VBW 30 kHz
Stop 10.000 MHz
#Sweep 75.0 ms (1001 pts)
Peak Search
Next Peak
Next Right
Next Left
Marker Delta
Mkr→CF
Mkr→Ref Lvl
More 1 of 2
Meas Uncal

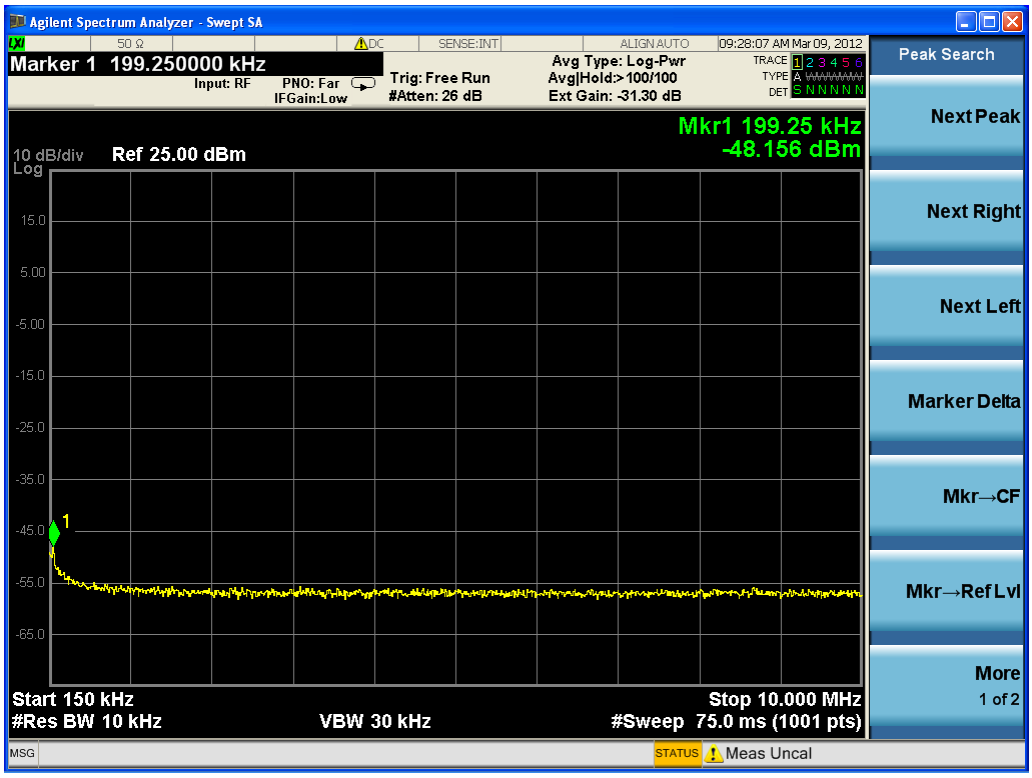

Agilent Spectrum Analyzer - Swept SA
Marker 1 12.300000000 MHz
Input: RF PNO: Fast IFGain:Low
Trig: Free Run #Atten: 20 dB
Avg Type: Log-Pwr Avg|Hold:>100/100 Ext Gain: -31.80 dB
09:30:30 AM Mar 09, 2012
Mkr1 12.30 MHz -60.799 dBm
10 dB/div Log
Ref 25.00 dBm
Start 10.00 MHz
#Res BW 10 kHz
VBW 30 kHz
Stop 30.00 MHz
#Sweep 75.0 ms (1001 pts)
Peak Search
Next Peak
Next Right
Next Left
Marker Delta
Mkr→CF
Mkr→Ref Lvl
More 1 of 2
Meas Uncal

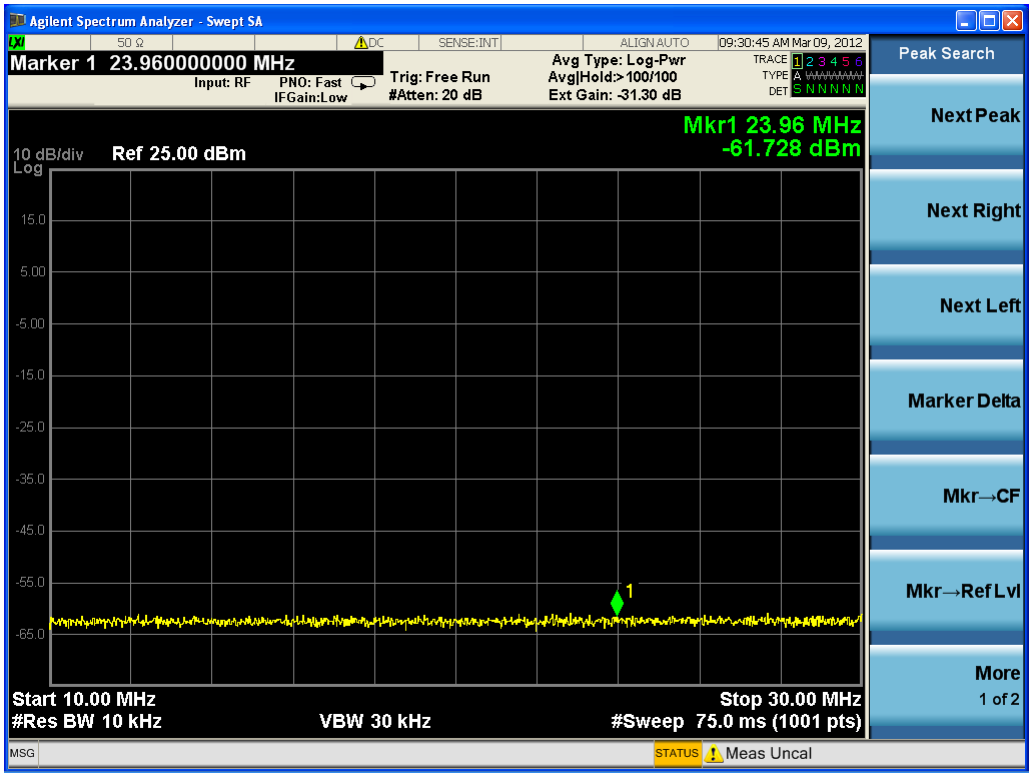

Agilent Spectrum Analyzer - Swept SA
Marker 1 868.200000000 MHz
Input: RF PNO: Fast IFGain:Low
Trig: Free Run #Atten: 24 dB
Avg Type: Log-Pwr Avg|Hold:>100/100 Ext Gain: -31.30 dB
10:17:11 AM Mar 09, 2012
Mkr1 868.2 MHz -39.197 dBm
10 dB/div Log
Ref 42.00 dBm
Start 30.0 MHz
#Res BW 100 kHz
VBW 300 kHz
Stop 868.2 MHz
Sweep 253 ms (1001 pts)
Peak Search
Next Peak
Next Right
Next Left
Marker Delta
Mkr→CF
Mkr→Ref Lvl
More 1 of 2

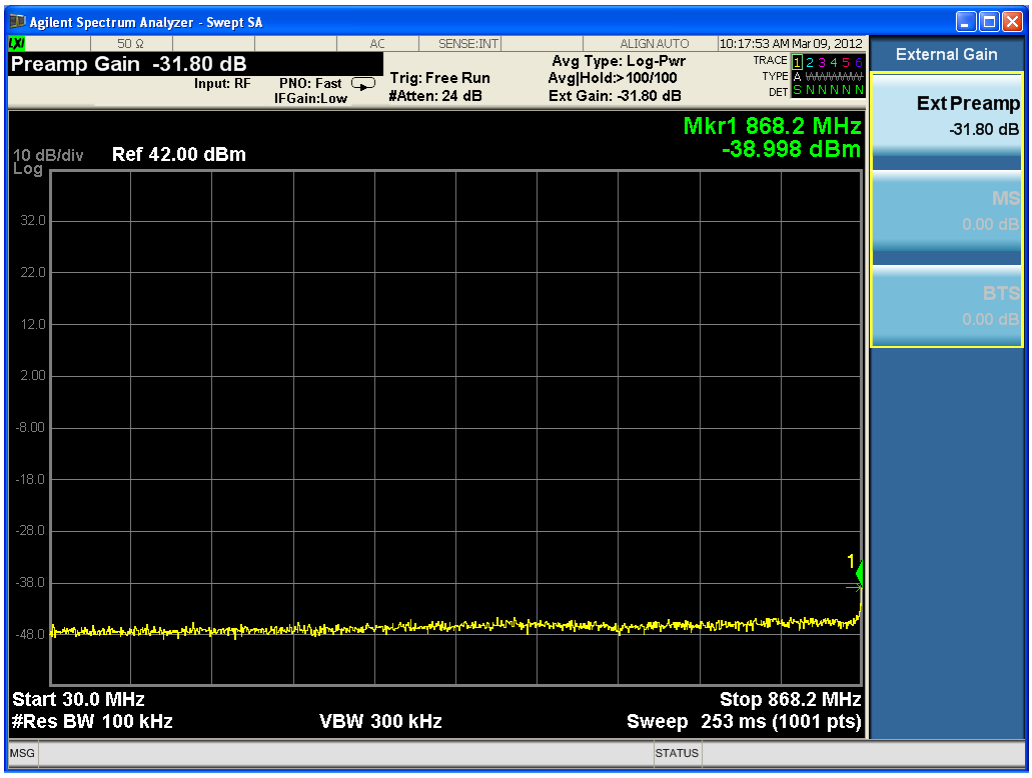

Agilent Spectrum Analyzer - Swept SA
Marker 1 894.905200000 MHz
Input: RF PNO: Fast IFGain:Low
Trig: Free Run #Atten: 30 dB
Avg Type: Log-Pwr Avg|Hold:>100/100 Ext Gain: -31.30 dB
10:22:54 AM Mar 09, 2012
Mkr1 894.91 MHz -41.532 dBm
10 dB/div Log
Ref 42.00 dBm
Start 894.80 MHz
#Res BW 100 kHz
VBW 300 kHz
Stop 1.00000 GHz
Sweep 31.8 ms (1001 pts)
Peak Search
Next Peak
Next Right
Next Left
Marker Delta
Mkr→CF
Mkr→Ref Lvl
More 1 of 2

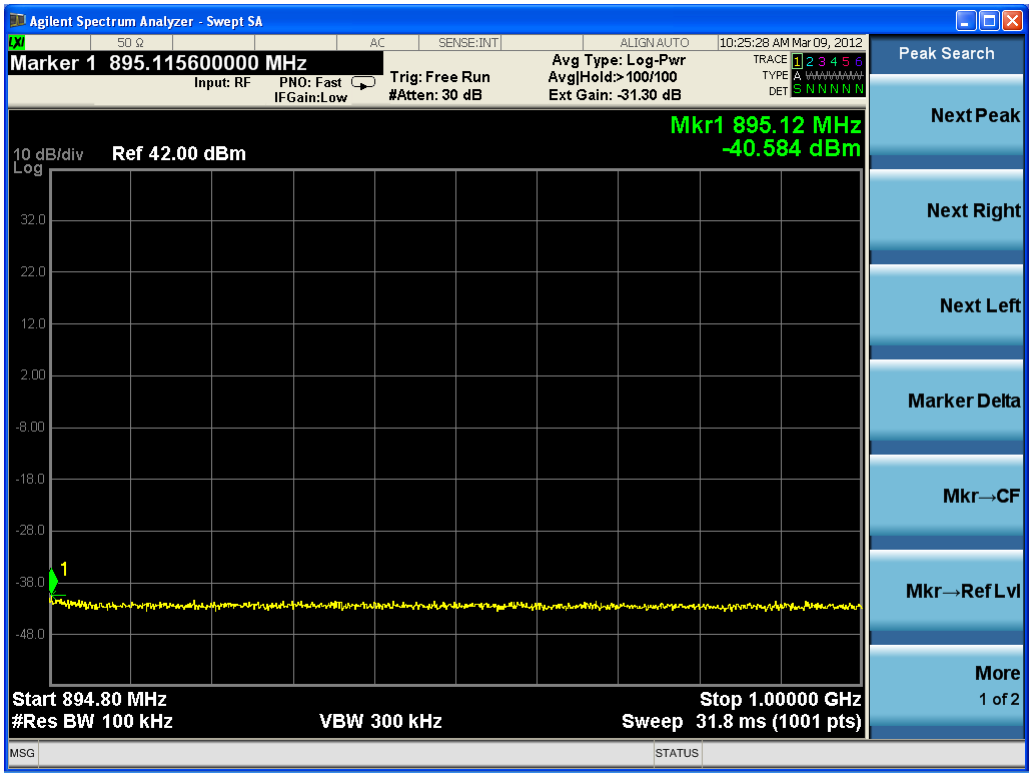


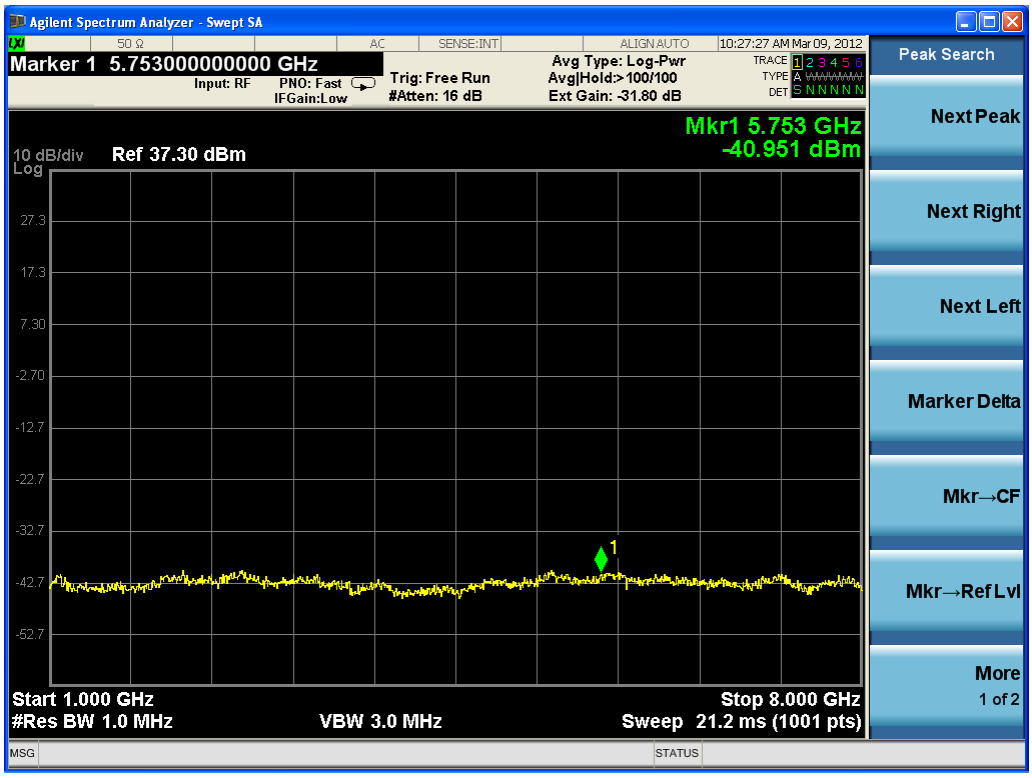
Three carriers


Agilent Spectrum Analyzer - Swept SA
50 Ω
DC
SENSE:INT
ALIGN AUTO
09:28:07 AM Mar 09, 2012
Marker 1 199.250000 kHz
Input: RF
PNO: Far
IFGain:Low
Trig: Free Run
#Atten: 26 dB
Avg Type: Log-Pwr
Avg|Hold:>100/100
Ext Gain: -31.30 dB
TRACE 1 2 3 4 5 6
TYPE A WWWWW
DET S N N N N N
Mkr1 199.25 kHz
-48.156 dBm
10 dB/div
Log
Ref 25.00 dBm
15.0
5.00
-5.00
-15.0
-25.0
-35.0
-45.0
-55.0
-65.0
1
Start 150 kHz
#Res BW 10 kHz
VBW 30 kHz
Stop 10.000 MHz
#Sweep 75.0 ms (1001 pts)
MSG
STATUS
Meas Uncal
Peak Search
Next Peak
Next Right
Next Left
Marker Delta
Mkr→CF
Mkr→Ref Lvl
More
1 of 2

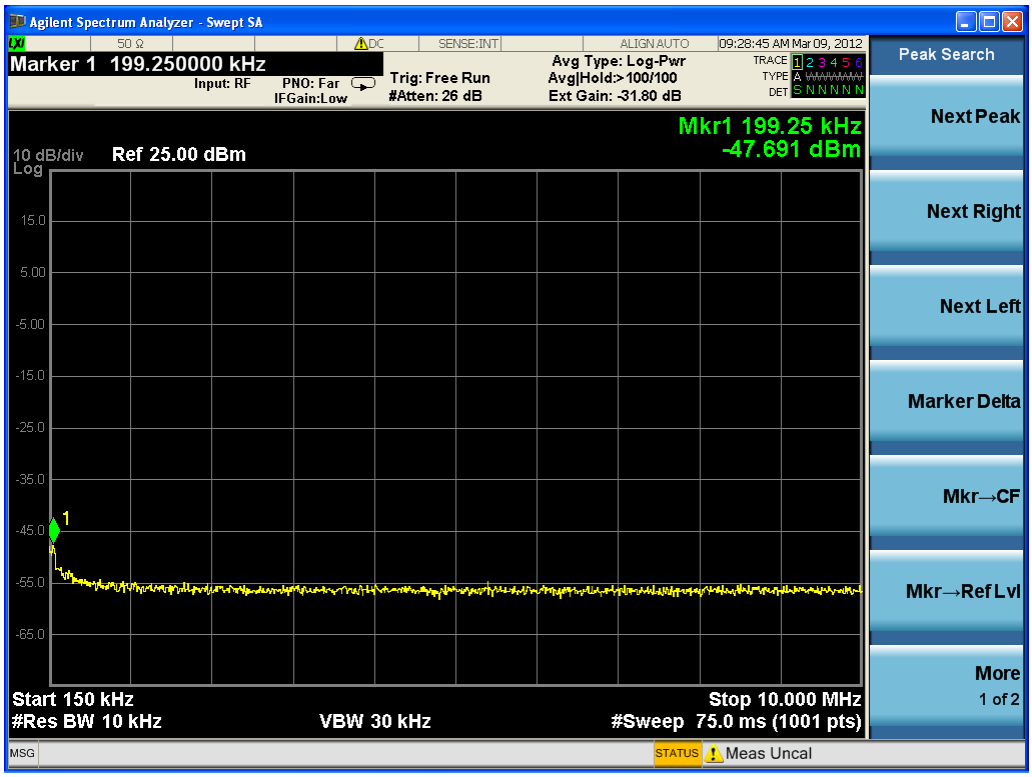

Agilent Spectrum Analyzer - Swept SA
50 Ω
DC
SENSE:INT
ALIGN AUTO
09:30:45 AM Mar 09, 2012
Marker 1 23.960000000 MHz
Input: RF
PNO: Fast
IFGain:Low
Trig: Free Run
#Atten: 20 dB
Avg Type: Log-Pwr
Avg|Hold:>100/100
Ext Gain: -31.30 dB
TRACE 1 2 3 4 5 6
TYPE A WWWWW
DET S N N N N N
Mkr1 23.96 MHz
-61.728 dBm
10 dB/div
Log
Ref 25.00 dBm
15.0
5.00
-5.00
-15.0
-25.0
-35.0
-45.0
-55.0
-65.0
1
Start 10.00 MHz
#Res BW 10 kHz
VBW 30 kHz
Stop 30.00 MHz
#Sweep 75.0 ms (1001 pts)
MSG
STATUS
Meas Uncal
Peak Search
Next Peak
Next Right
Next Left
Marker Delta
Mkr→CF
Mkr→Ref Lvl
More
1 of 2

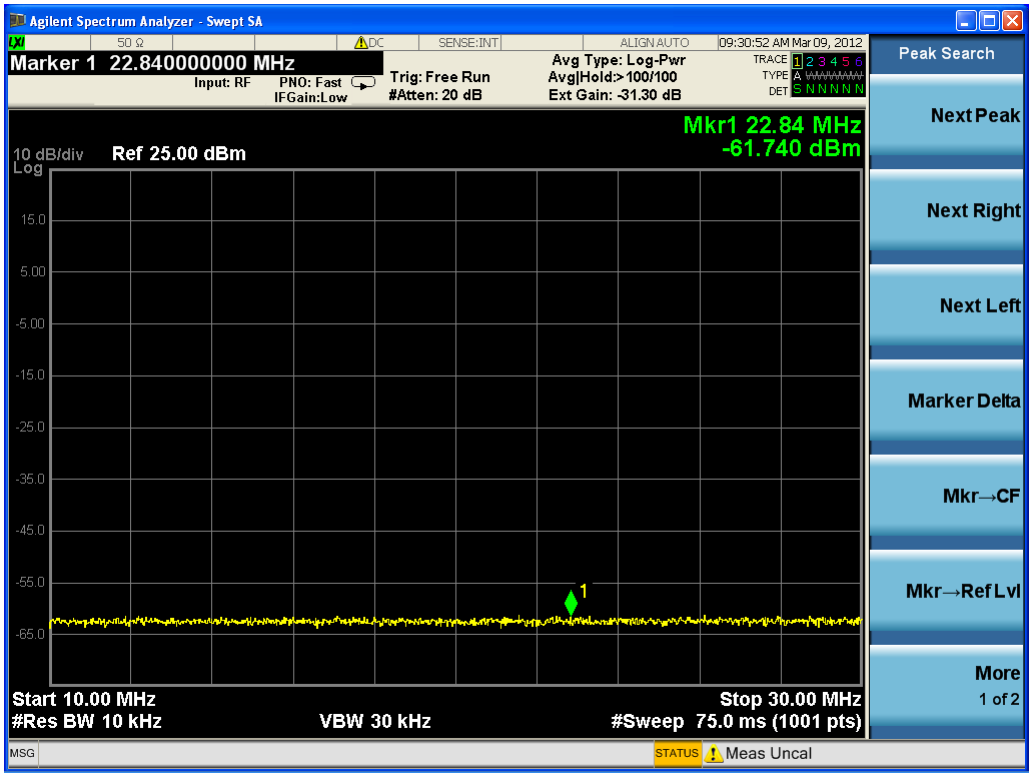

Agilent Spectrum Analyzer - Swept SA
50 Ω
AC
SENSE:INT
ALIGN AUTO
10:17:53 AM Mar 09, 2012
Preamp Gain -31.80 dB
Input: RF
PNO: Fast
IFGain:Low
Trig: Free Run
#Atten: 24 dB
Avg Type: Log-Pwr
Avg|Hold:>100/100
Ext Gain: -31.80 dB
TRACE 1 2 3 4 5 6
TYPE A WWWWW
DET S N N N N N
Mkr1 868.2 MHz
-38.998 dBm
10 dB/div
Log
Ref 42.00 dBm
32.0
22.0
12.0
2.00
-8.00
-18.0
-28.0
-38.0
-48.0
Start 30.0 MHz
#Res BW 100 kHz
VBW 300 kHz
Stop 868.2 MHz
Sweep 253 ms (1001 pts)
MSG
STATUS
External Gain
Ext Preamp
-31.80 dB
MS
0.00 dB
BTS
0.00 dB

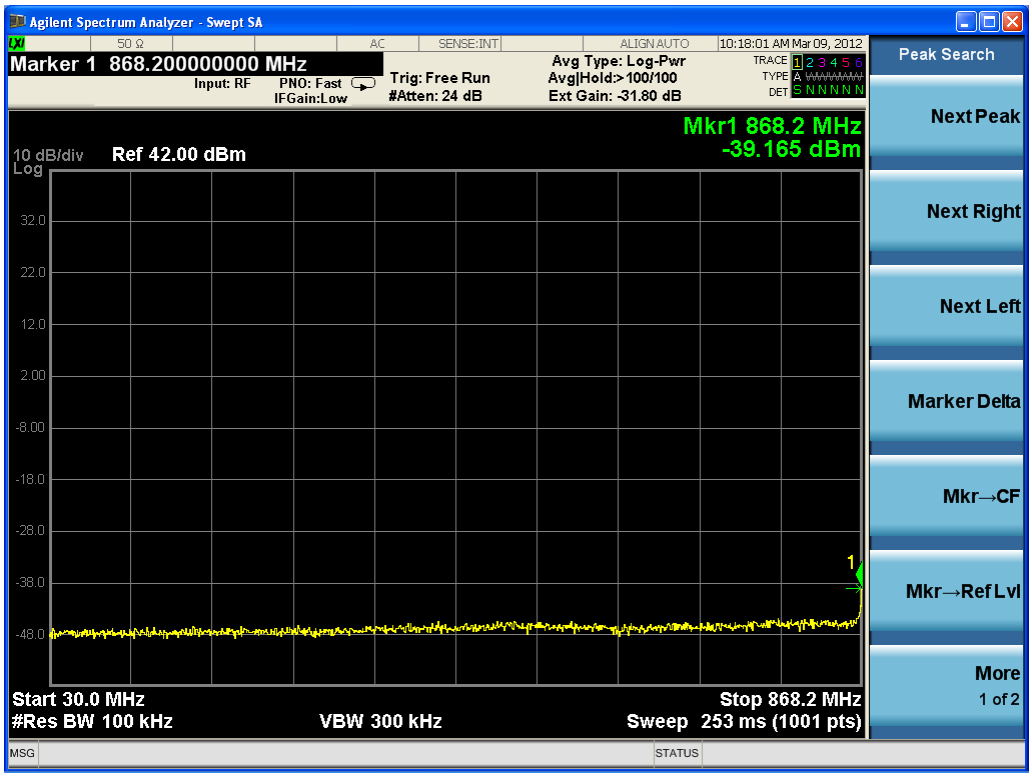

Agilent Spectrum Analyzer - Swept SA
50 Ω
AC
SENSE:INT
ALIGN AUTO
10:25:28 AM Mar 09, 2012
Marker 1 895.115600000 MHz
Input: RF
PNO: Fast
IFGain:Low
Trig: Free Run
#Atten: 30 dB
Avg Type: Log-Pwr
Avg|Hold:>100/100
Ext Gain: -31.30 dB
TRACE 1 2 3 4 5 6
TYPE A WWWWW
DET S N N N N N
Mkr1 895.12 MHz
-40.584 dBm
10 dB/div
Log
Ref 42.00 dBm
32.0
22.0
12.0
2.00
-8.00
-18.0
-28.0
-38.0
-48.0
Start 894.80 MHz
#Res BW 100 kHz
VBW 300 kHz
Stop 1.00000 GHz
Sweep 31.8 ms (1001 pts)
MSG
STATUS
Peak Search
Next Peak
Next Right
Next Left
Marker Delta
Mkr→CF
Mkr→Ref Lvl
More
1 of 2

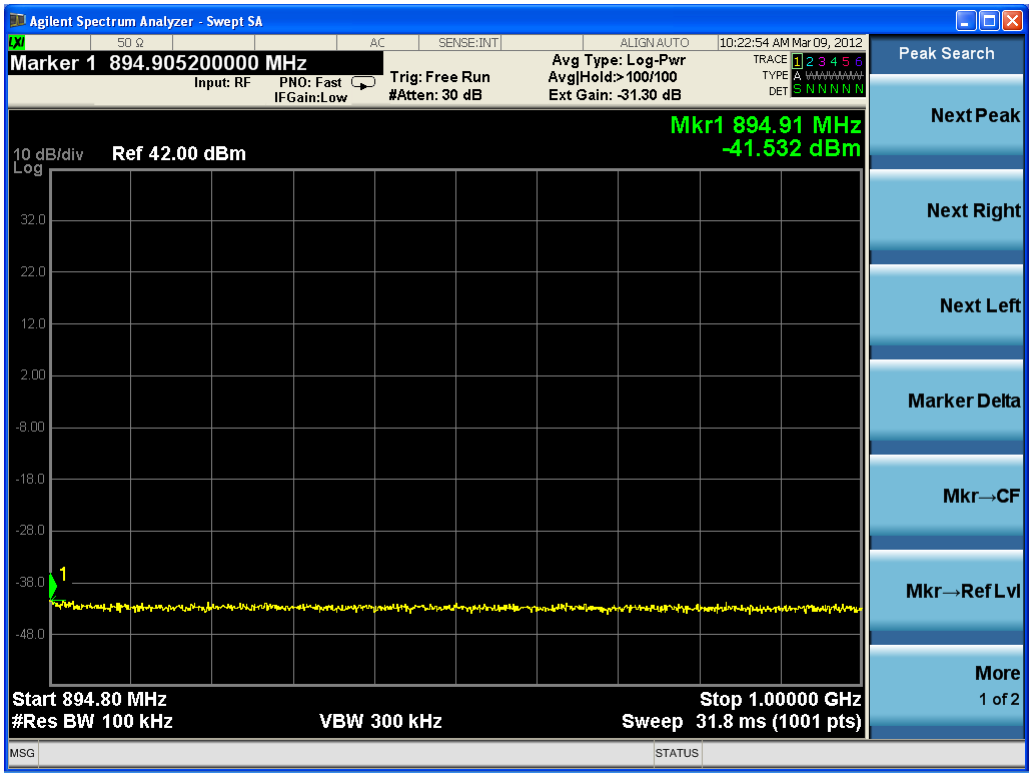


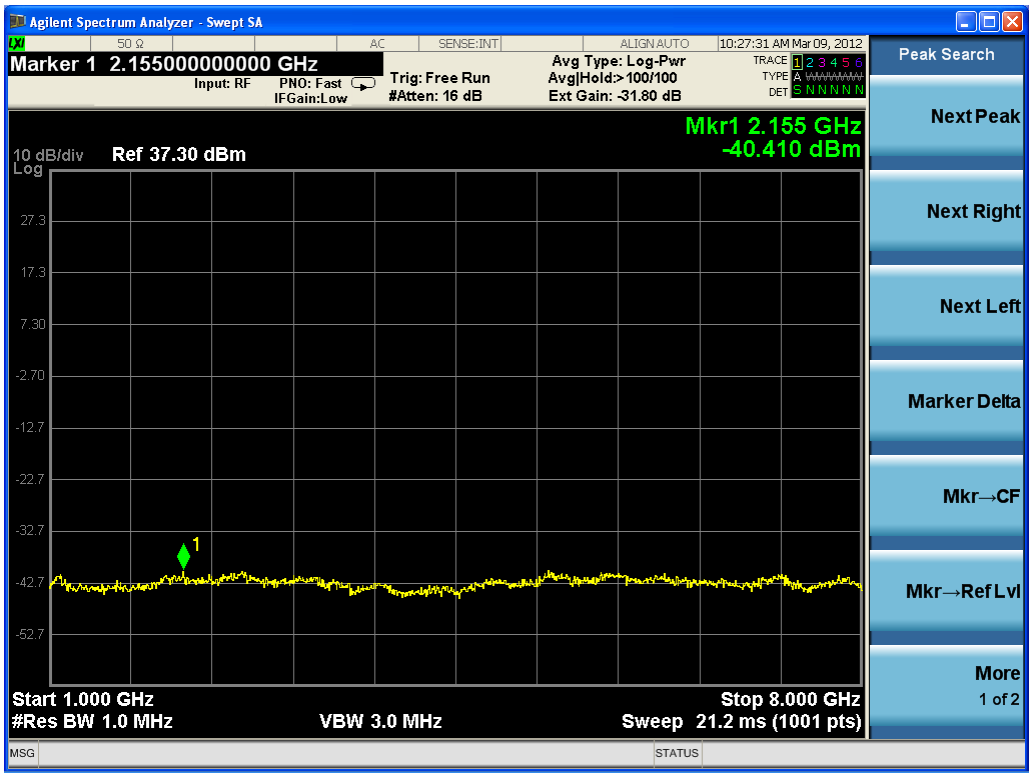
Two carriers


Agilent Spectrum Analyzer - Swept SA
50 Ω
DC
SENSE:INT
ALIGN AUTO
09:28:45 AM Mar 09, 2012
Marker 1 199.250000 kHz
Input: RF
PNO: Far
IFGain:Low
Trig: Free Run
#Atten: 26 dB
Avg Type: Log-Pwr
Avg|Hold:>100/100
Ext Gain: -31.80 dB
TRACE 1 2 3 4 5 6
TYPE A WWWWW
DET S N N N N N
Mkr1 199.25 kHz
-47.691 dBm
10 dB/div
Log
Ref 25.00 dBm
15.0
5.00
-5.00
-15.0
-25.0
-35.0
-45.0
-55.0
-65.0
1
Start 150 kHz
#Res BW 10 kHz
VBW 30 kHz
Stop 10.000 MHz
#Sweep 75.0 ms (1001 pts)
Peak Search
Next Peak
Next Right
Next Left
Marker Delta
Mkr→CF
Mkr→Ref Lvl
More
1 of 2
MSG
STATUS
Meas Uncal


Agilent Spectrum Analyzer - Swept SA
50 Ω
DC
SENSE:INT
ALIGN AUTO
09:30:52 AM Mar 09, 2012
Marker 1 22.840000000 MHz
Input: RF
PNO: Fast
IFGain:Low
Trig: Free Run
#Atten: 20 dB
Avg Type: Log-Pwr
Avg|Hold:>100/100
Ext Gain: -31.30 dB
TRACE 1 2 3 4 5 6
TYPE A WWWWW
DET S N N N N N
Mkr1 22.84 MHz
-61.740 dBm
10 dB/div
Log
Ref 25.00 dBm
15.0
5.00
-5.00
-15.0
-25.0
-35.0
-45.0
-55.0
-65.0
1
Start 10.00 MHz
#Res BW 10 kHz
VBW 30 kHz
Stop 30.00 MHz
#Sweep 75.0 ms (1001 pts)
Peak Search
Next Peak
Next Right
Next Left
Marker Delta
Mkr→CF
Mkr→Ref Lvl
More
1 of 2
MSG
STATUS
Meas Uncal

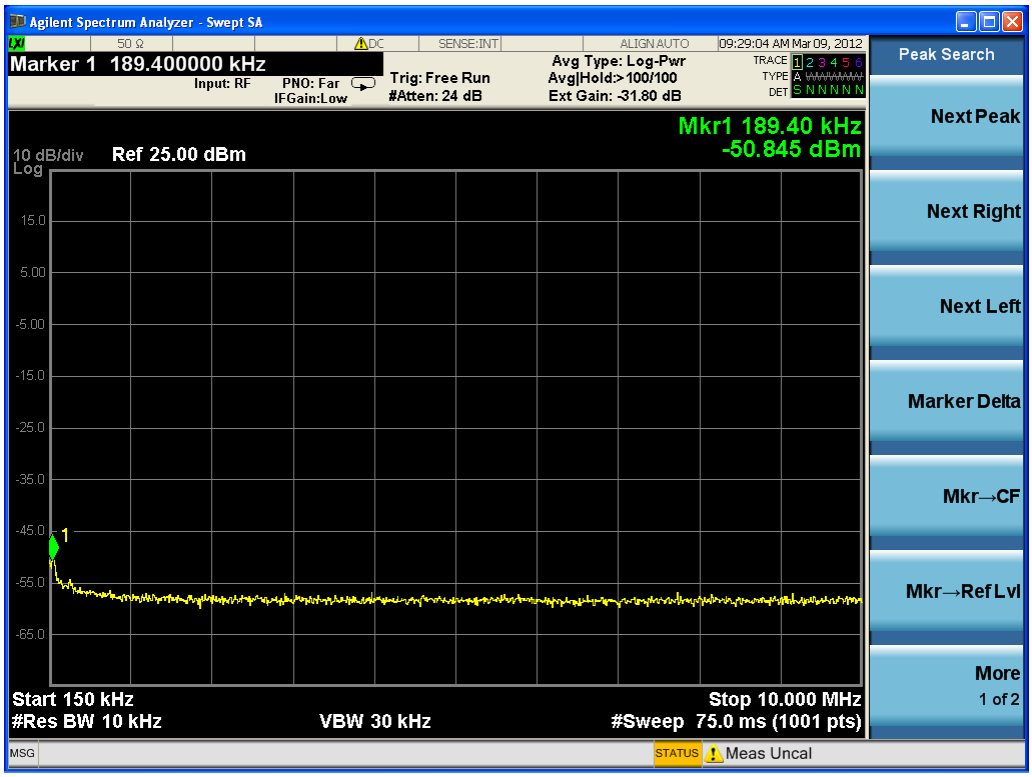

Agilent Spectrum Analyzer - Swept SA
Marker 1 868.200000000 MHz
Input: RF PNO: Fast IFGain:Low
Trig: Free Run #Atten: 24 dB
Avg Type: Log-Pwr Avg|Hold:>100/100 Ext Gain: -31.80 dB
10:18:01 AM Mar 09, 2012
Mkr1 868.2 MHz -39.165 dBm
10 dB/div Log
Ref 42.00 dBm
Start 30.0 MHz
#Res BW 100 kHz
VBW 300 kHz
Stop 868.2 MHz
Sweep 253 ms (1001 pts)
Peak Search
Next Peak
Next Right
Next Left
Marker Delta
Mkr→CF
Mkr→Ref Lvl
More 1 of 2

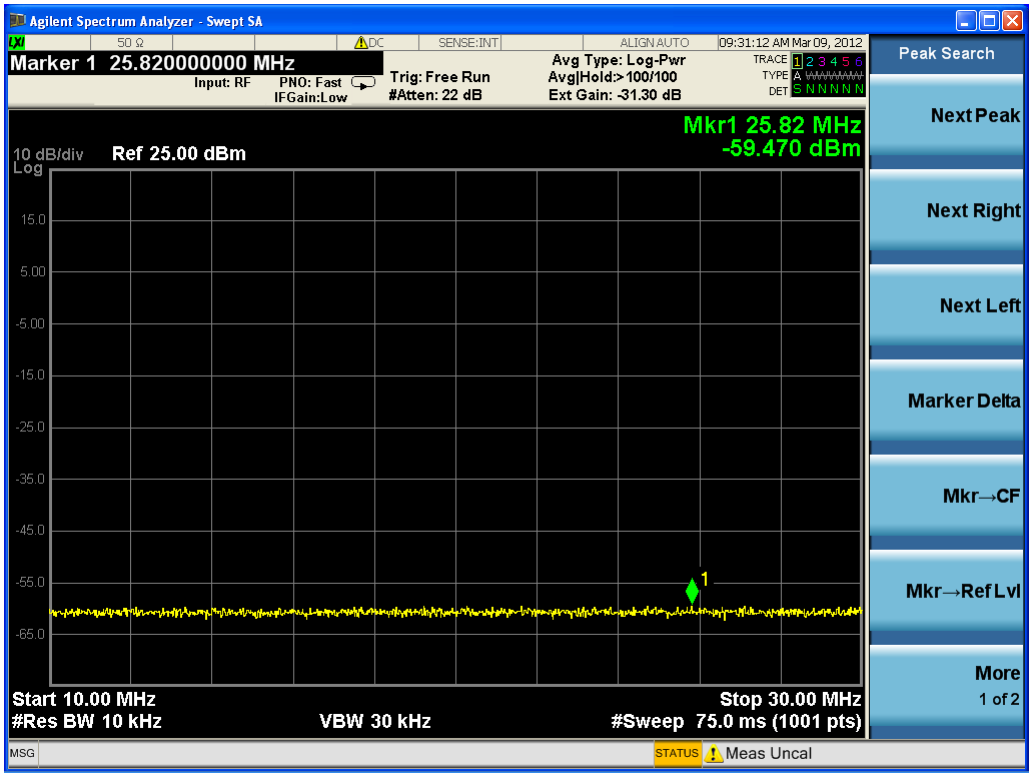

Agilent Spectrum Analyzer - Swept SA
Marker 1 894.905200000 MHz
Input: RF PNO: Fast IFGain:Low
Trig: Free Run #Atten: 30 dB
Avg Type: Log-Pwr Avg|Hold:>100/100 Ext Gain: -31.30 dB
10:22:54 AM Mar 09, 2012
Mkr1 894.91 MHz -41.532 dBm
10 dB/div Log
Ref 42.00 dBm
Start 894.80 MHz
#Res BW 100 kHz
VBW 300 kHz
Stop 1.00000 GHz
Sweep 31.8 ms (1001 pts)
Peak Search
Next Peak
Next Right
Next Left
Marker Delta
Mkr→CF
Mkr→Ref Lvl
More 1 of 2

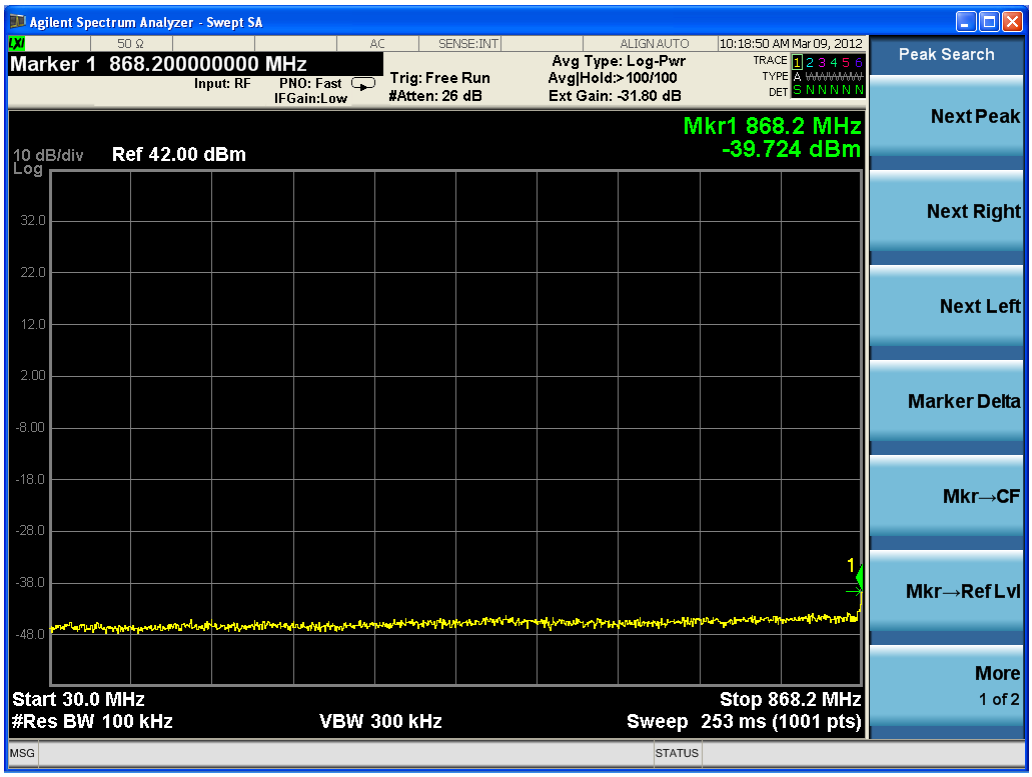

Agilent Spectrum Analyzer - Swept SA
Marker 1 2.155000000000 GHz
Input: RF PNO: Fast IFGain:Low
Trig: Free Run #Atten: 16 dB
Avg Type: Log-Pwr Avg|Hold:>100/100 Ext Gain: -31.80 dB
10:27:31 AM Mar 09, 2012
Mkr1 2.155 GHz -40.410 dBm
10 dB/div Log
Ref 37.30 dBm
27.3
17.3
7.30
-2.70
-12.7
-22.7
-32.7
-42.7
-52.7
Start 1.000 GHz
#Res BW 1.0 MHz
VBW 3.0 MHz
Stop 8.000 GHz
Sweep 21.2 ms (1001 pts)
Peak Search
Next Peak
Next Right
Next Left
Marker Delta
Mkr→CF
Mkr→Ref Lvl
More 1 of 2
MSG
STATUS

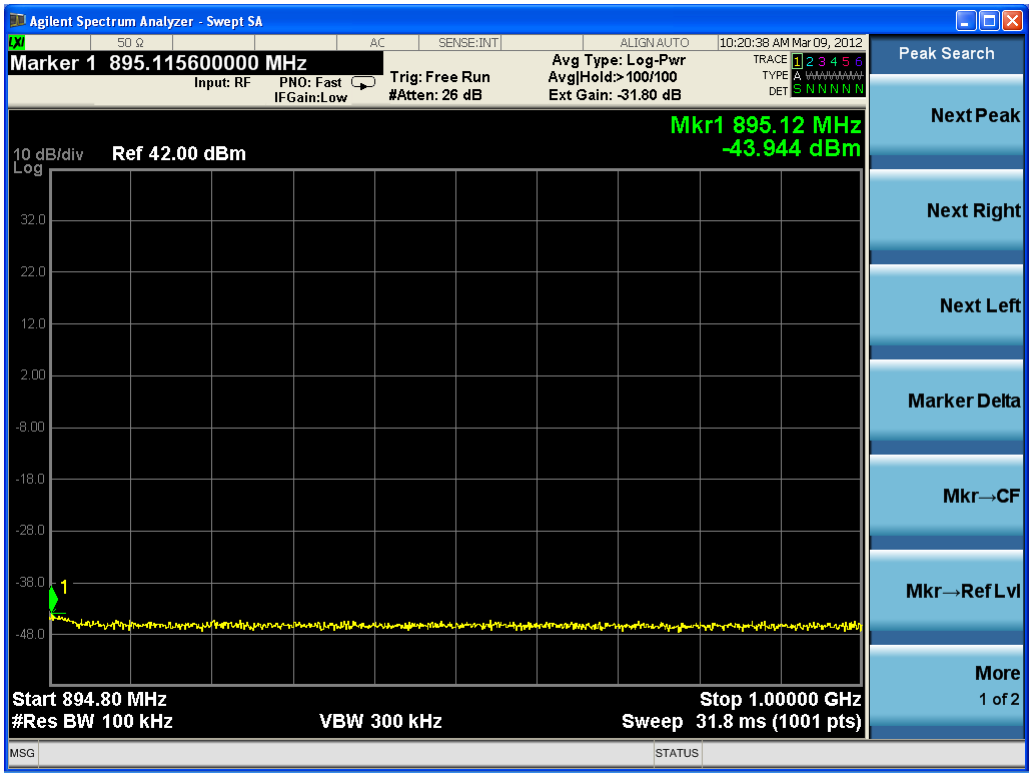
One carrier

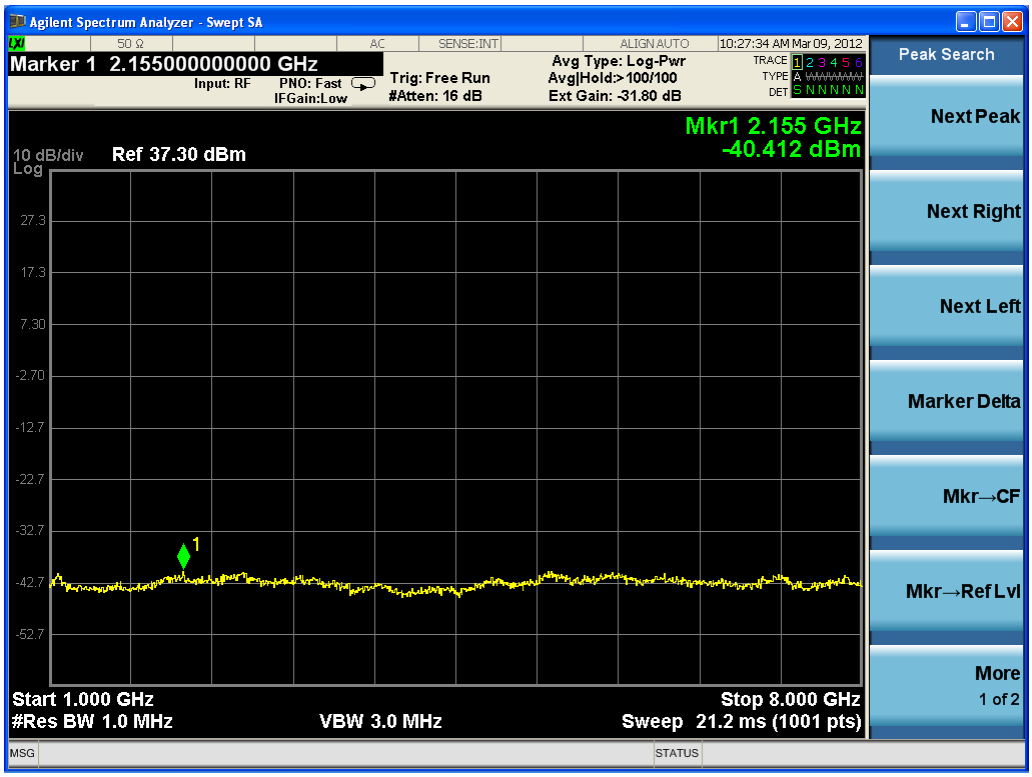

Agilent Spectrum Analyzer - Swept SA
Marker 1 9.282000 kHz
Input: RF PNO: Far IFGain:Low
Trig: Free Run #Atten: 20 dB
Avg Type: Log-Pwr Avg|Hold:>100/100 Ext Gain: -31.30 dB
09:26:11 AM Mar 09, 2012
Mkr1 9.282 kHz -42.781 dBm
10 dB/div Log
Ref 25.00 dBm
15.0
5.00
-5.00
-15.0
-25.0
-35.0
-45.0
-55.0
-65.0
Start 9.00 kHz
#Res BW 1.0 kHz
VBW 3.0 kHz
Stop 150.00 kHz
#Sweep 75.0 ms (1001 pts)
Peak Search
Next Peak
Next Right
Next Left
Marker Delta
Mkr→CF
Mkr→Ref Lvl
More 1 of 2
MSG
STATUS
Meas Uncal


Agilent Spectrum Analyzer - Swept SA
Marker 1 189.400000 kHz
Input: RF PNO: Far IFGain:Low
Trig: Free Run #Atten: 24 dB
Avg Type: Log-Pwr Avg|Hold:>100/100 Ext Gain: -31.80 dB
09:29:04 AM Mar 09, 2012
Mkr1 189.40 kHz -50.845 dBm
10 dB/div Log
Ref 25.00 dBm
Start 150 kHz
#Res BW 10 kHz
VBW 30 kHz
Stop 10.000 MHz
#Sweep 75.0 ms (1001 pts)
Peak Search
Next Peak
Next Right
Next Left
Marker Delta
Mkr→CF
Mkr→Ref Lvl
More 1 of 2
Meas Uncal


Agilent Spectrum Analyzer - Swept SA
Marker 1 25.820000000 MHz
Input: RF PNO: Fast IFGain:Low
Trig: Free Run #Atten: 22 dB
Avg Type: Log-Pwr Avg|Hold:>100/100 Ext Gain: -31.30 dB
09:31:12 AM Mar 09, 2012
Mkr1 25.82 MHz -59.470 dBm
10 dB/div Log
Ref 25.00 dBm
Start 10.00 MHz
#Res BW 10 kHz
VBW 30 kHz
Stop 30.00 MHz
#Sweep 75.0 ms (1001 pts)
Peak Search
Next Peak
Next Right
Next Left
Marker Delta
Mkr→CF
Mkr→Ref Lvl
More 1 of 2
Meas Uncal


Agilent Spectrum Analyzer - Swept SA
50 Ω
AC
SENSE:INT
ALIGN AUTO
10:18:50 AM Mar 09, 2012
Marker 1 868.200000000 MHz
Input: RF
PNO: Fast
IFGain:Low
Trig: Free Run
#Atten: 26 dB
Avg Type: Log-Pwr
Avg|Hold:>100/100
Ext Gain: -31.80 dB
TRACE 1 2 3 4 5 6
TYPE A WWWWW
DET S N N N N N
Mkr1 868.2 MHz
-39.724 dBm
10 dB/div
Log
Ref 42.00 dBm
32.0
22.0
12.0
2.00
-8.00
-18.0
-28.0
-38.0
-48.0
1
Start 30.0 MHz
#Res BW 100 kHz
VBW 300 kHz
Stop 868.2 MHz
Sweep 253 ms (1001 pts)
MSG
STATUS
Peak Search
Next Peak
Next Right
Next Left
Marker Delta
Mkr→CF
Mkr→Ref Lvl
More
1 of 2


Agilent Spectrum Analyzer - Swept SA
50 Ω
AC
SENSE:INT
ALIGN AUTO
10:20:38 AM Mar 09, 2012
Marker 1 895.115600000 MHz
Input: RF
PNO: Fast
IFGain:Low
Trig: Free Run
#Atten: 26 dB
Avg Type: Log-Pwr
Avg|Hold:>100/100
Ext Gain: -31.80 dB
TRACE 1 2 3 4 5 6
TYPE A WWWWW
DET S N N N N N
Mkr1 895.12 MHz
-43.944 dBm
10 dB/div
Log
Ref 42.00 dBm
32.0
22.0
12.0
2.00
-8.00
-18.0
-28.0
-38.0
-48.0
1
Start 894.80 MHz
#Res BW 100 kHz
VBW 300 kHz
Stop 1.00000 GHz
Sweep 31.8 ms (1001 pts)
MSG
STATUS
Peak Search
Next Peak
Next Right
Next Left
Marker Delta
Mkr→CF
Mkr→Ref Lvl
More
1 of 2


Agilent Spectrum Analyzer - Swept SA
50 Ω
AC
SENSE:INT
ALIGN AUTO
10:27:34 AM Mar 09, 2012
Marker 1 2.155000000000 GHz
Input: RF
PNO: Fast
IFGain:Low
Trig: Free Run
#Atten: 16 dB
Avg Type: Log-Pwr
Avg|Hold:>100/100
Ext Gain: -31.80 dB
TRACE 1 2 3 4 5 6
TYPE A WWWWW
DET S N N N N N
Mkr1 2.155 GHz
-40.412 dBm
10 dB/div
Log
Ref 37.30 dBm
27.3
17.3
7.30
-2.70
-12.7
-22.7
-32.7
-42.7
-52.7
1
Start 1.000 GHz
#Res BW 1.0 MHz
VBW 3.0 MHz
Stop 8.000 GHz
Sweep 21.2 ms (1001 pts)
MSG
STATUS
Peak Search
Next Peak
Next Right
Next Left
Marker Delta
Mkr→CF
Mkr→Ref Lvl
More
1 of 2

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	MY51160170	2014-6-16	2015-6-16
Atten	40dB Attenuator	ATSI150-4-40	11300100204204	2014-4-8	2015-4-8
Forstar	Forstar RF Cable	002	1034	2014-4-8	2015-4-8

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

Test Procedure

The RF out of the transmitter was connected to the input of the spectrum analyzer through sufficient attenuation. 99%Power bandwidth was recorded.

Environmental Conditions

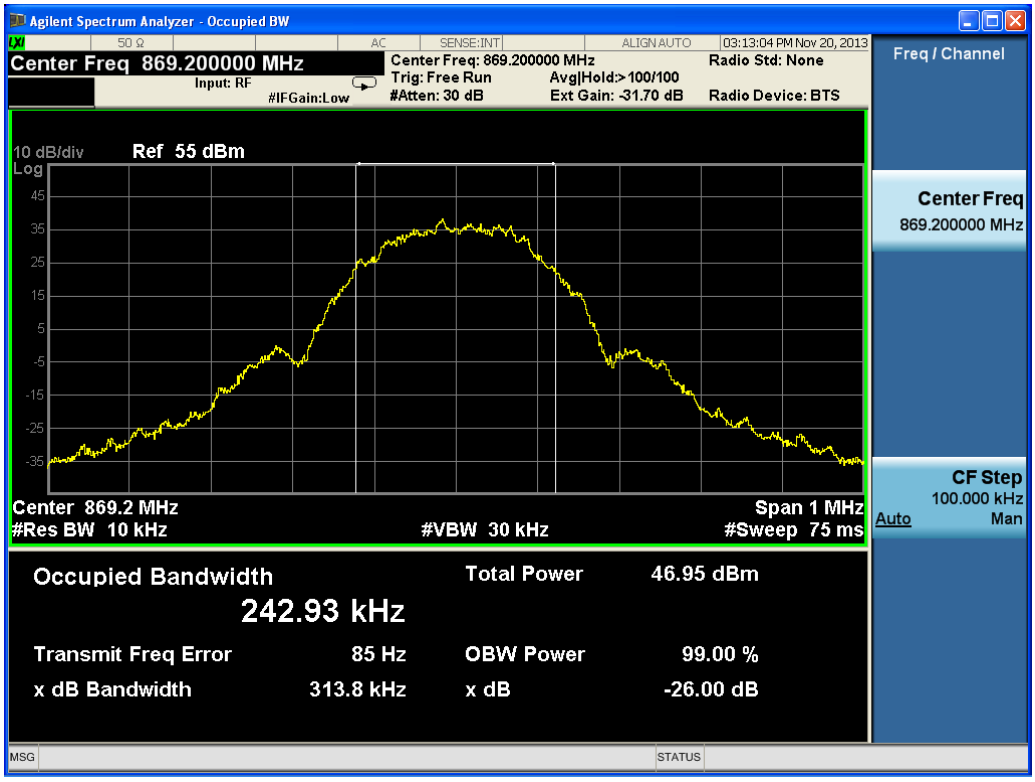
Temperature:	20 ° C
Relative Humidity:	53%
ATM Pressure:	1009mbar

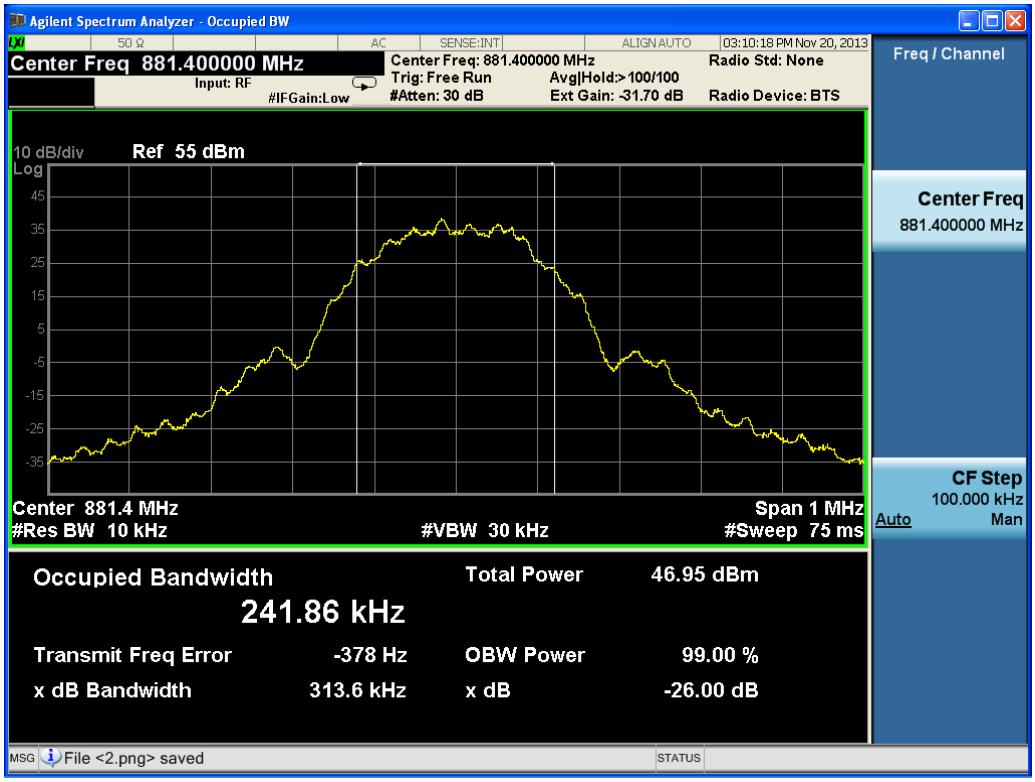
Test Result: Pass

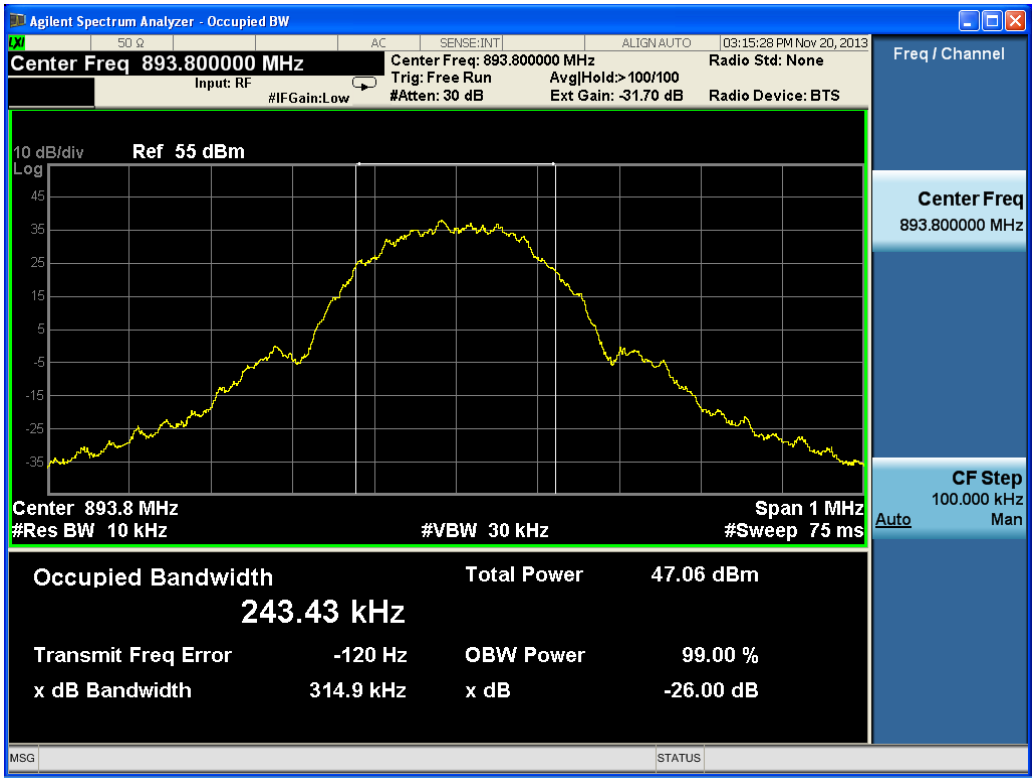
Test Mode: Transmitting GSM

Test Data

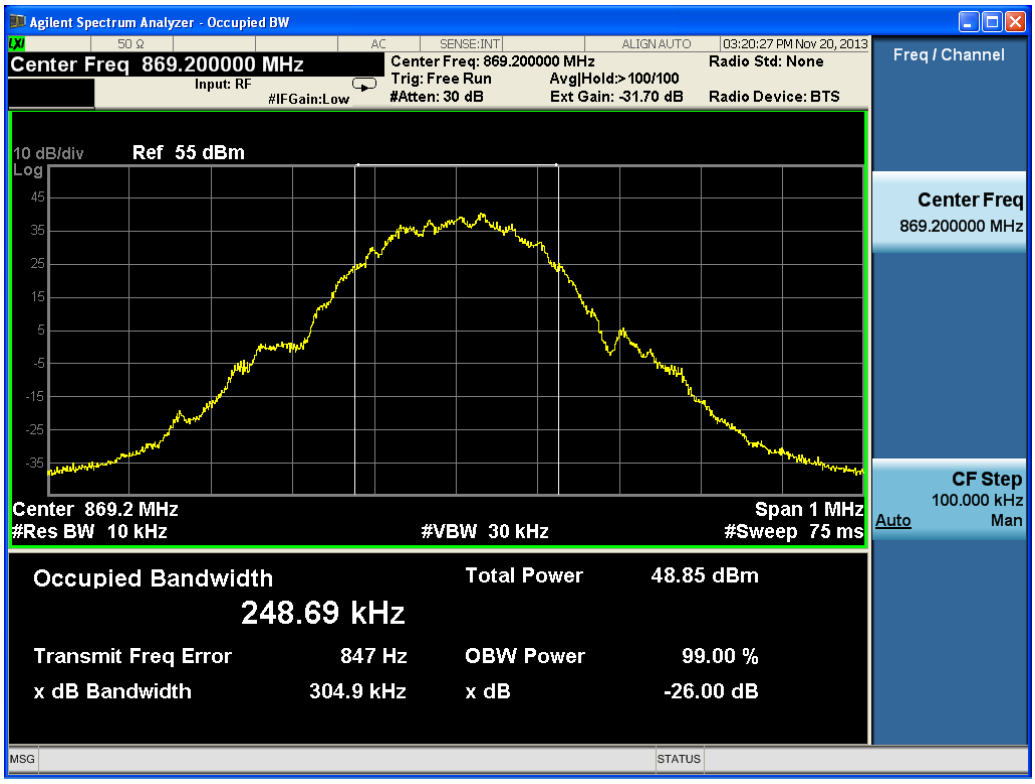
Modulation	Frequency (MHz)	99% Power Bandwidth (kHz)	Limit (kHz)
8PSK	869.2/881.4/893.8	242.93/241.86/243.43	250

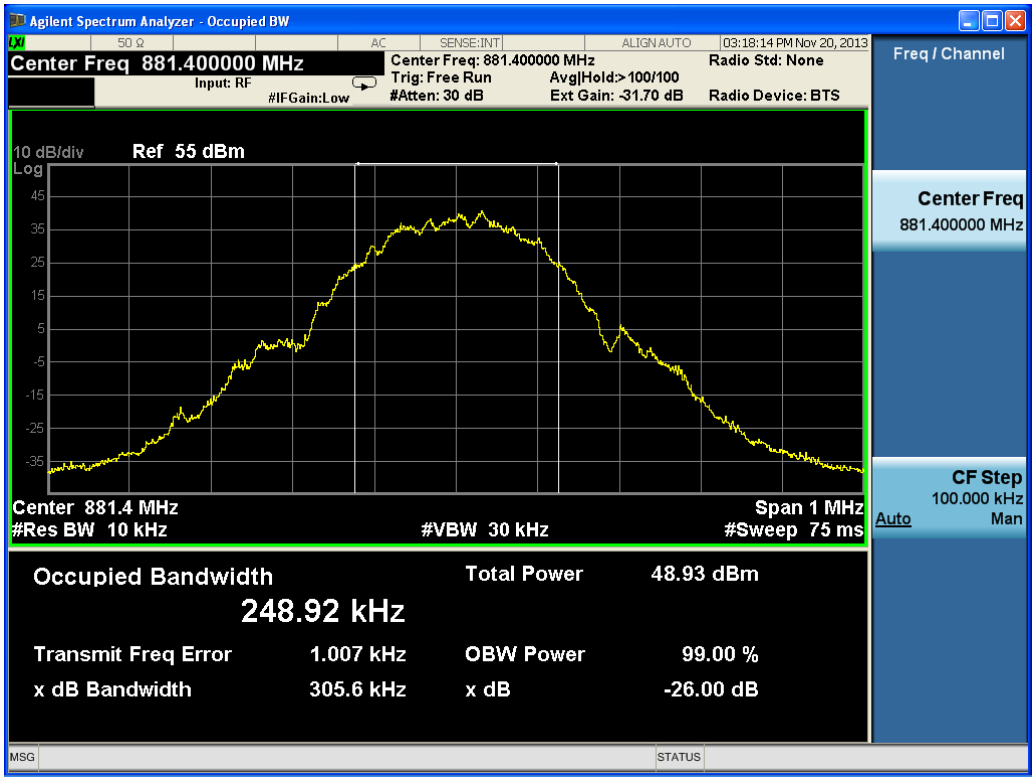


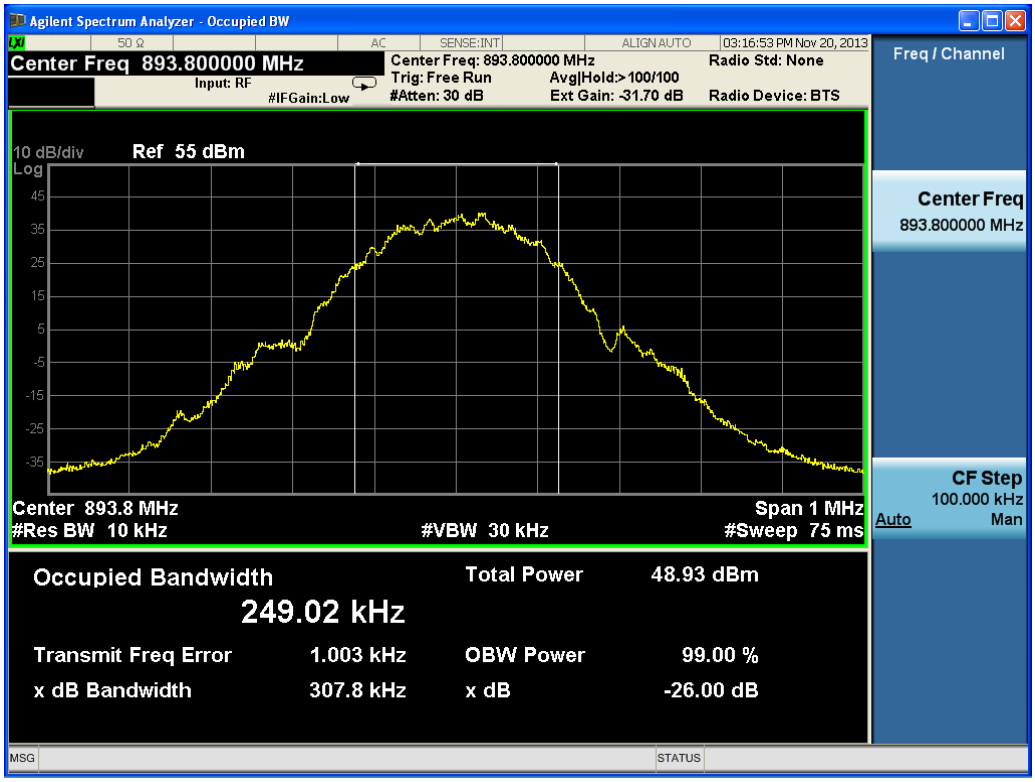

Agilent Spectrum Analyzer - Occupied BW
50 Ω
AC
SENSE:INT
ALIGN AUTO
03:10:18 PM Nov 20, 2013
Center Freq 881.400000 MHz
Input: RF
#IFGain:Low
Center Freq: 881.400000 MHz
Trig: Free Run
#Atten: 30 dB
Avg|Hold:>100/100
Ext Gain: -31.70 dB
Radio Std: None
Radio Device: BTS
Freq / Channel
10 dB/div
Log
Ref 55 dBm
45
35
25
15
5
-5
-15
-25
-35
Center Freq
881.400000 MHz
Center 881.4 MHz
#Res BW 10 kHz
#VBW 30 kHz
Span 1 MHz
#Sweep 75 ms
CF Step
100.000 kHz
Auto
Man
Occupied Bandwidth
241.86 kHz
Total Power
46.95 dBm
Transmit Freq Error
-378 Hz
OBW Power
99.00 %
x dB Bandwidth
313.6 kHz
x dB
-26.00 dB
MSG
File <2.png> saved
STATUS


Agilent Spectrum Analyzer - Occupied BW
50 Ω
AC
SENSE:INT
ALIGN AUTO
03:15:28 PM Nov 20, 2013
Center Freq 893.800000 MHz
Input: RF
#IFGain:Low
Center Freq: 893.800000 MHz
Trig: Free Run
#Atten: 30 dB
Avg|Hold:>100/100
Ext Gain: -31.70 dB
Radio Std: None
Radio Device: BTS
Freq / Channel
10 dB/div
Log
Ref 55 dBm
45
35
25
15
5
-5
-15
-25
-35
Center Freq
893.800000 MHz
Center 893.8 MHz
#Res BW 10 kHz
#VBW 30 kHz
Span 1 MHz
#Sweep 75 ms
CF Step
100.000 kHz
Auto
Man
Occupied Bandwidth
243.43 kHz
Total Power
47.06 dBm
Transmit Freq Error
-120 Hz
OBW Power
99.00 %
x dB Bandwidth
314.9 kHz
x dB
-26.00 dB
MSG
STATUS

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






Agilent Spectrum Analyzer - Occupied BW
50 Ω
AC
SENSE:INT
ALIGN AUTO
03:16:53 PM Nov 20, 2013
Center Freq 893.800000 MHz
Input: RF
#IFGain:Low
Center Freq: 893.800000 MHz
Trig: Free Run
#Atten: 30 dB
Avg|Hold:>100/100
Ext Gain: -31.70 dB
Radio Std: None
Radio Device: BTS
Freq / Channel
10 dB/div
Log
Ref 55 dBm
45
35
25
15
5
-5
-15
-25
-35
Center Freq
893.800000 MHz
Center 893.8 MHz
#Res BW 10 kHz
#VBW 30 kHz
Span 1 MHz
#Sweep 75 ms
CF Step
100.000 kHz
Auto
Man
Occupied Bandwidth
249.02 kHz
Total Power
48.93 dBm
Transmit Freq Error
1.003 kHz
OBW Power
99.00 %
x dB Bandwidth
307.8 kHz
x dB
-26.00 dB
MSG
STATUS

4.7 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)) = -13dBm.

Test Equipment List and Details

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
Agilent	MXA Series Spectrum Analyzer	N9020A	MY51160170	2014-6-16	2015-6-16
Atten	40dB Attenuator	ATSI150-4-40	11300100204204	2014-4-8	2015-4-8
Forstar	Forstar RF Cable	002	1034	2014-4-8	2015-4-8

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

Test Procedure

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

Test Data Environmental Conditions

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

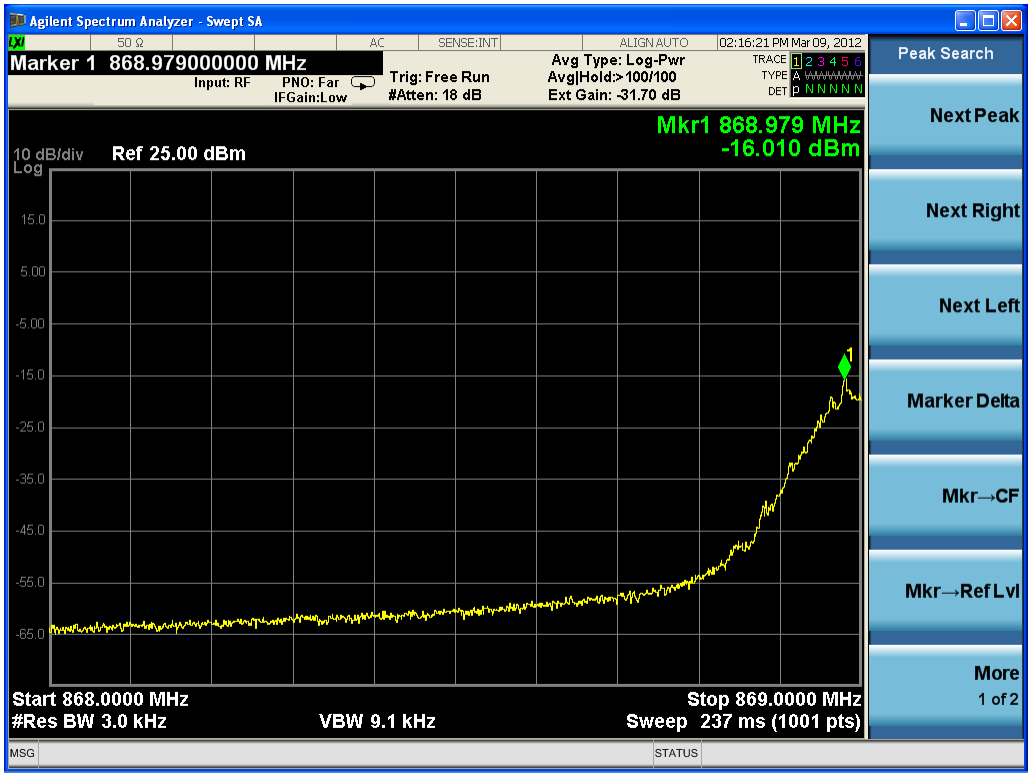
Test Result: Pass

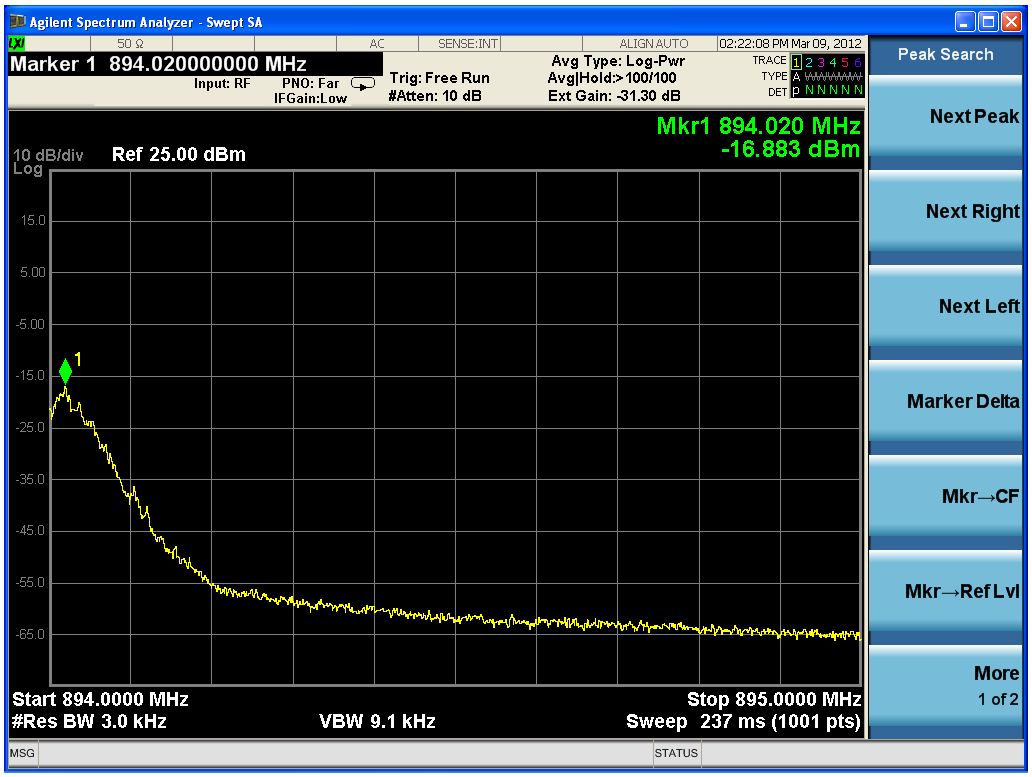
Test Mode: Transmitting GSM

Test Data

For six carriers

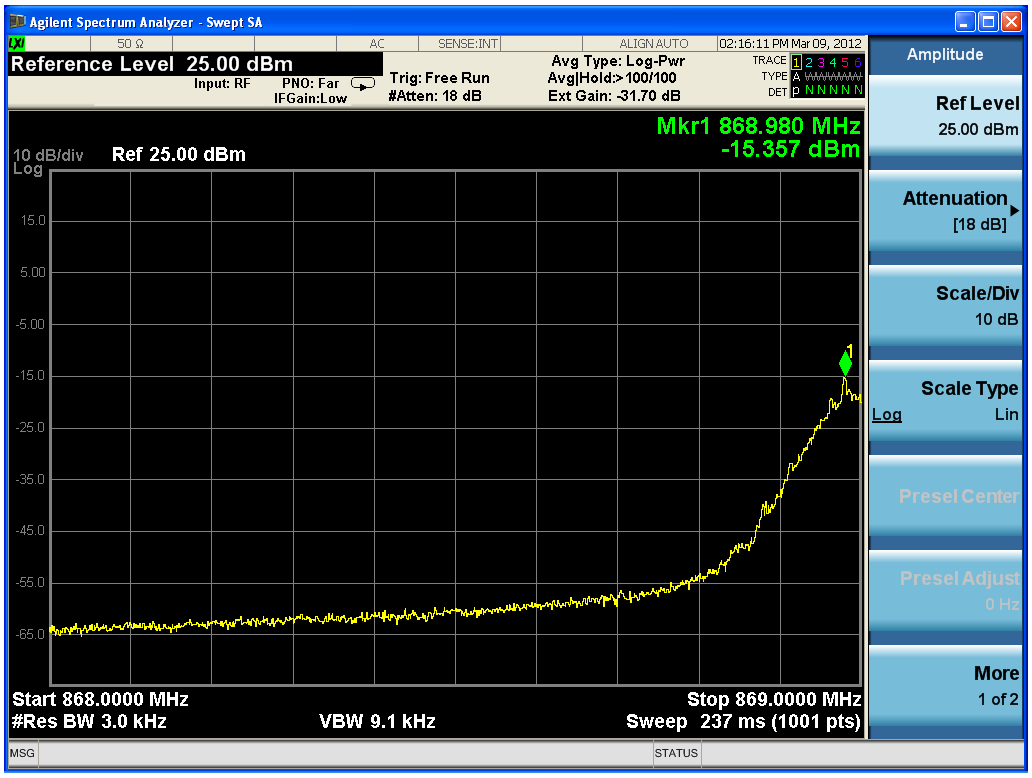
Frequency channel	Max bandedge Emission (dBm)	Limit (dBm)
869.2/869.8/ 870.4 /871 /871.6/ 872.2	-16.010	-13.00
890.8/891.4/892/892.6/893.2/893.8	-16.883	-13.00

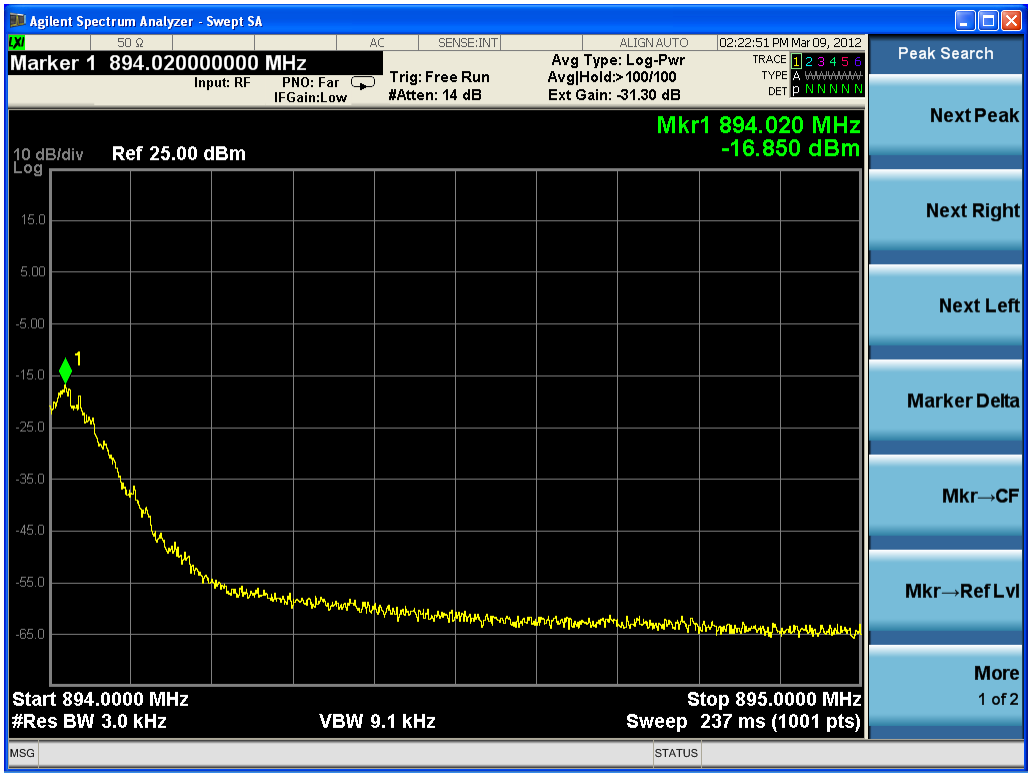




For five carriers

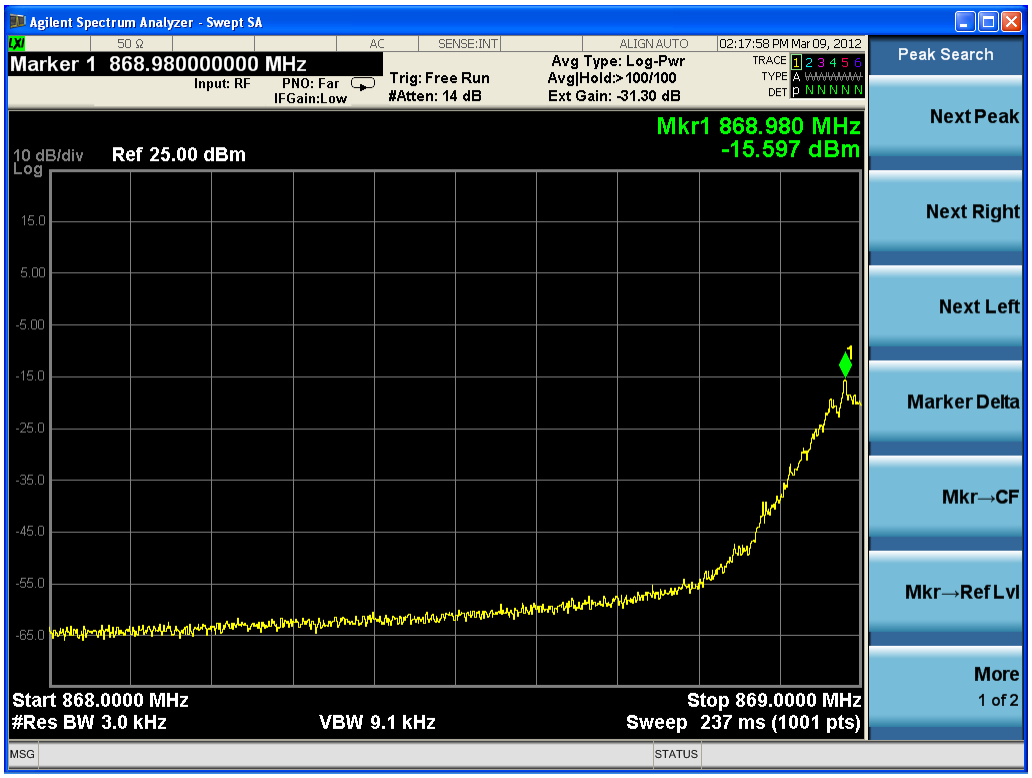
Frequency channel	Max bandedge Emission (dBm)	Limit (dBm)
869.2/869.8/ 870.4 /871 /871.6	-15.357	-13.00
891.4/892/892.6/893.2/893.8	-16.850	-13.00

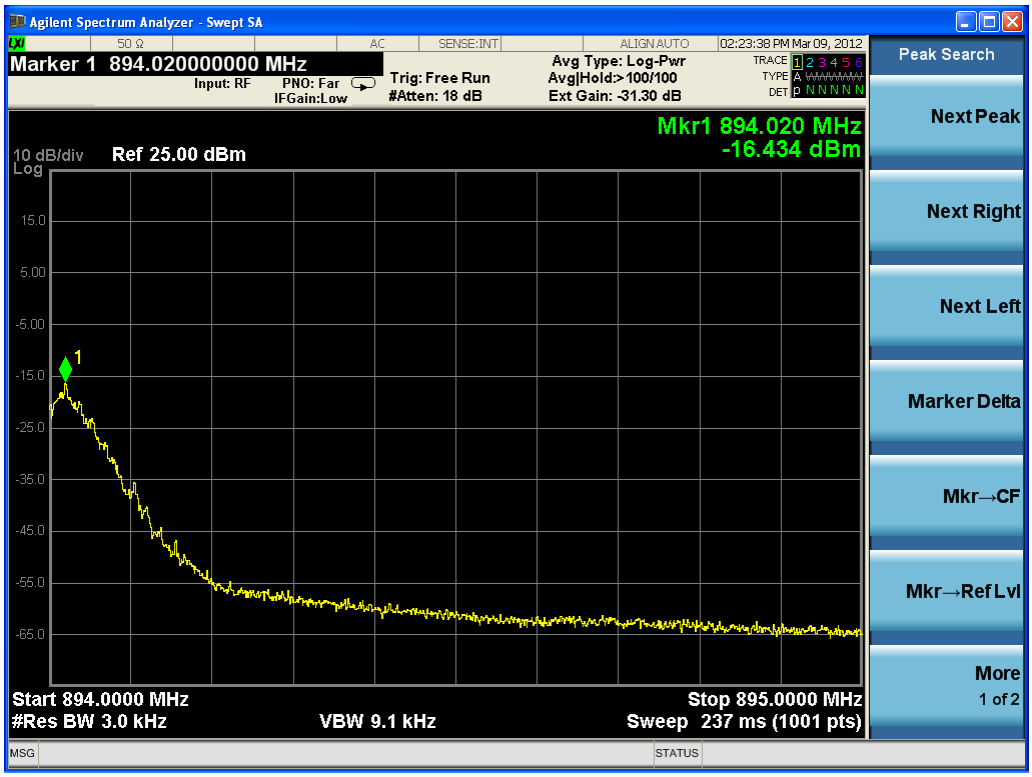

Agilent Spectrum Analyzer - Swept SA
50 Ω
AC
SENSE:INT
ALIGN AUTO
02:16:11 PM Mar 09, 2012
Reference Level 25.00 dBm
Input: RF
PNO: Far
IFGain:Low
Trig: Free Run
#Atten: 18 dB
Avg Type: Log-Pwr
Avg|Hold:>100/100
Ext Gain: -31.70 dB
TRACE 1 2 3 4 5 6
TYPE A WWWWW
DET P N N N N N
Mkr1 868.980 MHz
-15.357 dBm
10 dB/div
Log
Ref 25.00 dBm
15.0
5.00
-5.00
-15.0
-25.0
-35.0
-45.0
-55.0
-65.0
Start 868.0000 MHz
#Res BW 3.0 kHz
VBW 9.1 kHz
Stop 869.0000 MHz
Sweep 237 ms (1001 pts)
MSG
STATUS
Amplitude
Ref Level
25.00 dBm
Attenuation
[18 dB]
Scale/Div
10 dB
Scale Type
Log
Lin
Presel Center
Presel Adjust
0 Hz
More
1 of 2


Agilent Spectrum Analyzer - Swept SA
50 Ω
AC
SENSE:INT
ALIGN AUTO
02:22:51 PM Mar 09, 2012
Marker 1 894.020000000 MHz
Input: RF
PNO: Far
IFGain:Low
Trig: Free Run
#Atten: 14 dB
Avg Type: Log-Pwr
Avg|Hold:>100/100
Ext Gain: -31.30 dB
TRACE 1 2 3 4 5 6
TYPE A WWWWW
DET P N N N N N
Mkr1 894.020 MHz
-16.850 dBm
10 dB/div
Log
Ref 25.00 dBm
15.0
5.00
-5.00
-15.0
-25.0
-35.0
-45.0
-55.0
-65.0
Start 894.0000 MHz
#Res BW 3.0 kHz
VBW 9.1 kHz
Stop 895.0000 MHz
Sweep 237 ms (1001 pts)
MSG
STATUS
Peak Search
Next Peak
Next Right
Next Left
Marker Delta
Mkr→CF
Mkr→Ref Lvl
More
1 of 2

For four carriers

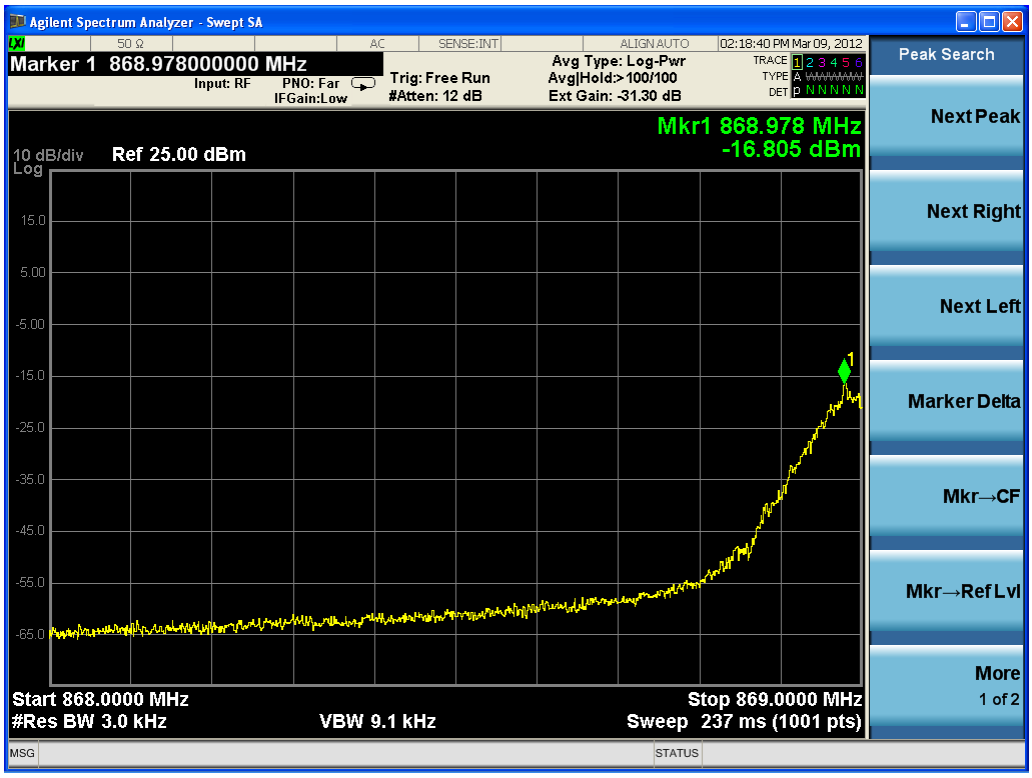
Frequency channel	Max bandedge Emission (dBm)	Limit (dBm)
869.2/869.8/ 870.4 /871	-15.597	-13.00
892/892.6/893.2/893.8	-16.434	-13.00

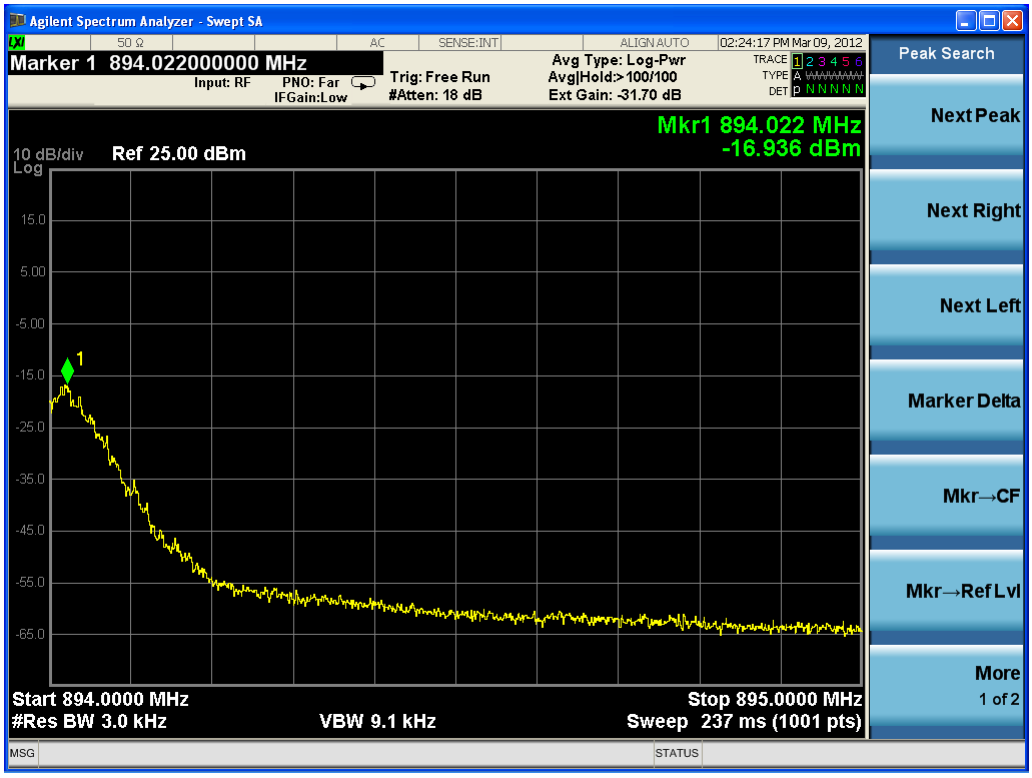




For three carriers

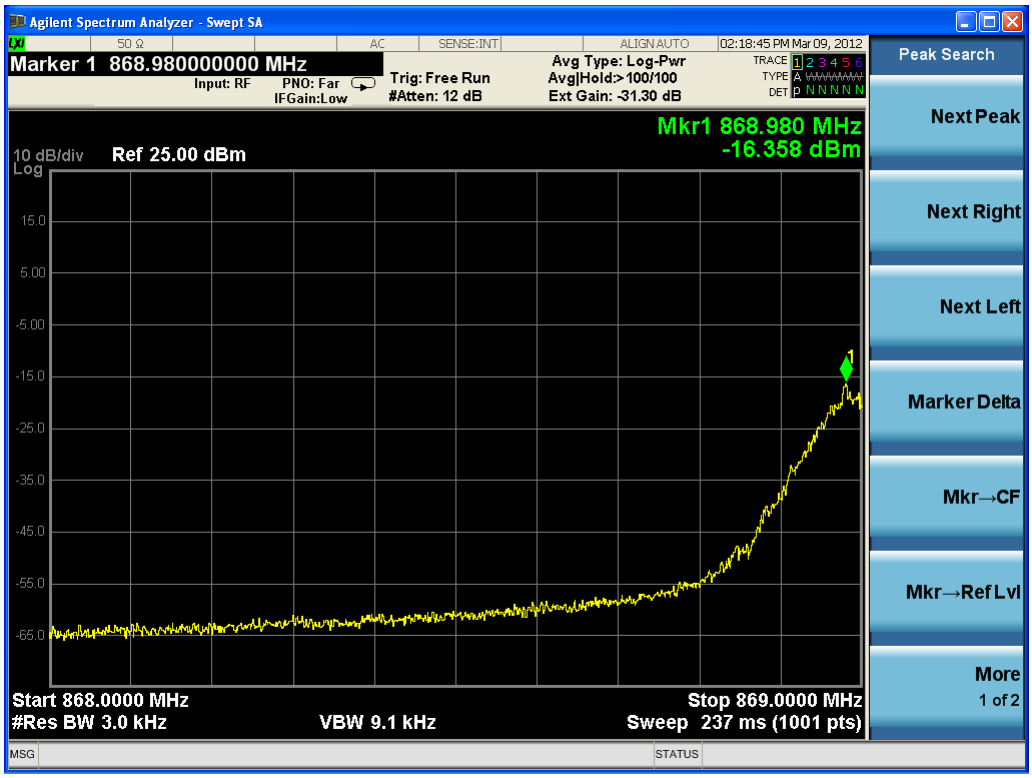
Frequency channel	Max bandedge Emission (dBm)	Limit (dBm)
869.2/869.8/ 870.4	-16.805	-13.00
892.6/893.2/893.8	-16.936	-13.00

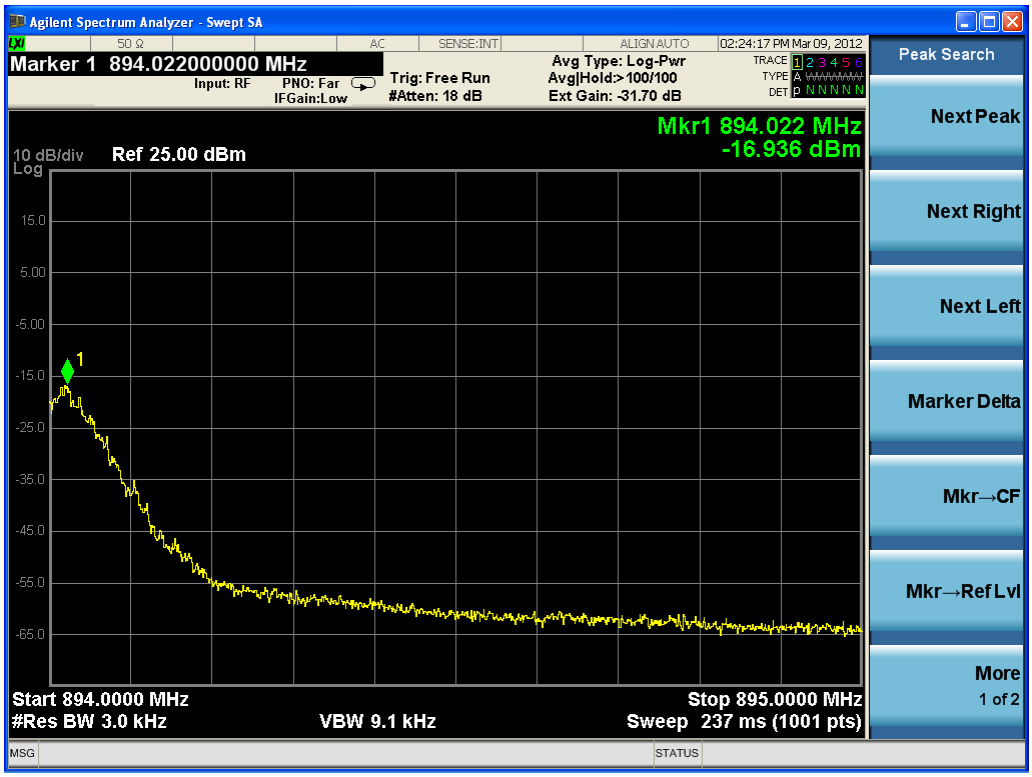

Agilent Spectrum Analyzer - Swept SA
Marker 1 868.978000000 MHz
Input: RF PNO: Far IFGain:Low
Trig: Free Run #Atten: 12 dB
Avg Type: Log-Pwr Avg|Hold:>100/100 Ext Gain: -31.30 dB
02:18:40 PM Mar 09, 2012
Mkr1 868.978 MHz -16.805 dBm
10 dB/div Log
Ref 25.00 dBm
Start 868.0000 MHz
#Res BW 3.0 kHz
VBW 9.1 kHz
Stop 869.0000 MHz
Sweep 237 ms (1001 pts)
Peak Search
Next Peak
Next Right
Next Left
Marker Delta
Mkr→CF
Mkr→Ref Lvl
More 1 of 2


Agilent Spectrum Analyzer - Swept SA
Marker 1 894.022000000 MHz
Input: RF PNO: Far IFGain:Low
Trig: Free Run #Atten: 18 dB
Avg Type: Log-Pwr Avg|Hold:>100/100 Ext Gain: -31.70 dB
02:24:17 PM Mar 09, 2012
Mkr1 894.022 MHz -16.936 dBm
10 dB/div Log
Ref 25.00 dBm
Start 894.0000 MHz
#Res BW 3.0 kHz
VBW 9.1 kHz
Stop 895.0000 MHz
Sweep 237 ms (1001 pts)
Peak Search
Next Peak
Next Right
Next Left
Marker Delta
Mkr→CF
Mkr→Ref Lvl
More 1 of 2

For two carriers

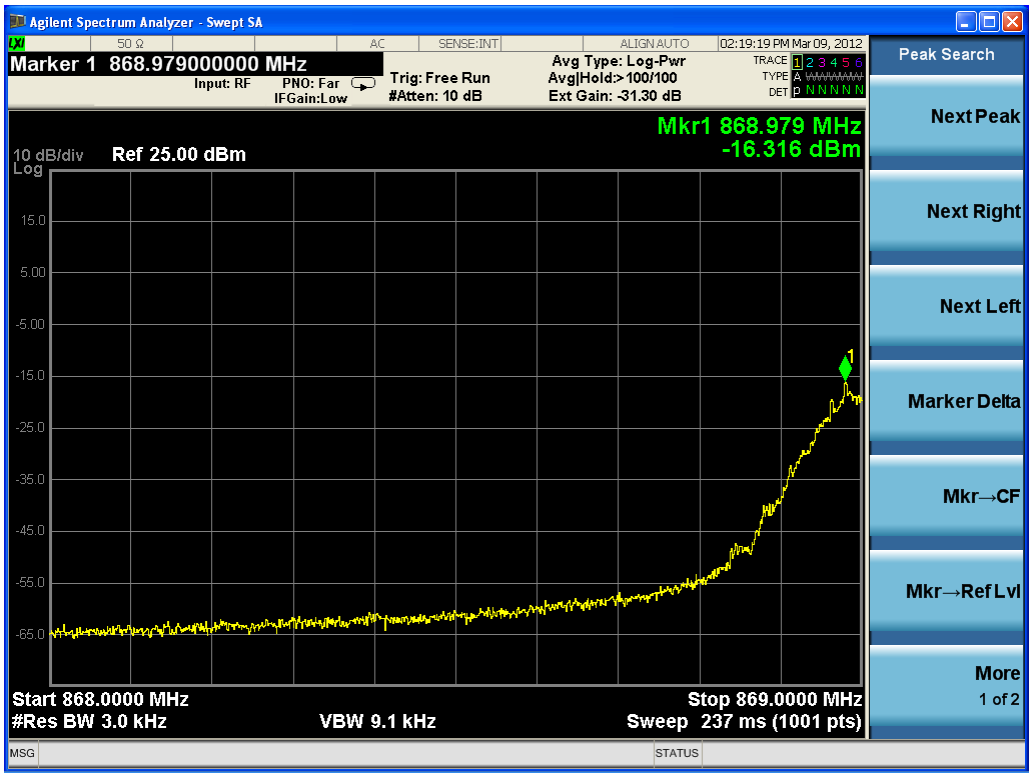
Frequency channel	Max bandedge Emission (dBm)	Limit (dBm)
869.2/869.8	-16.358	-13.00
893.2/893.8	-16.936	-13.00





For One carrier

Frequency channel	Max bandedge Emission (dBm)	Limit (dBm)
869.2	-16.316	-13.00
893.8	-16.670	-13.00


Agilent Spectrum Analyzer - Swept SA
Marker 1 868.979000000 MHz
Input: RF PNO: Far IFGain:Low
Trig: Free Run #Atten: 10 dB
Avg Type: Log-Pwr Avg|Hold:>100/100 Ext Gain: -31.30 dB
02:19:19 PM Mar 09, 2012
Mkr1 868.979 MHz -16.316 dBm
10 dB/div Log
Ref 25.00 dBm
Start 868.0000 MHz
#Res BW 3.0 kHz
VBW 9.1 kHz
Stop 869.0000 MHz
Sweep 237 ms (1001 pts)
Peak Search
Next Peak
Next Right
Next Left
Marker Delta
Mkr→CF
Mkr→Ref Lvl
More 1 of 2


Agilent Spectrum Analyzer - Swept SA
Marker 1 894.021000000 MHz
Input: RF PNO: Far IFGain:Low
Trig: Free Run #Atten: 10 dB
Avg Type: Log-Pwr Avg|Hold:>100/100 Ext Gain: -31.70 dB
02:25:27 PM Mar 09, 2012
Mkr1 894.021 MHz -16.670 dBm
10 dB/div Log
Ref 25.00 dBm
Start 894.0000 MHz
#Res BW 3.0 kHz
VBW 9.1 kHz
Stop 895.0000 MHz
Sweep 237 ms (1001 pts)
Peak Search
Next Peak
Next Right
Next Left
Marker Delta
Mkr→CF
Mkr→Ref Lvl
More 1 of 2

4.8 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	2014-6-25	2015-6-25
Agilent	MXA Series Spectrum Analyzer	N9020A	MY51160170	2014-6-16	2015-6-16
Atten	40dB Attenuator	ATSI150-4-40	11300100204204	2014-4-8	2015-4-8
Forstar	Forstar RF Cable	002	1034	2014-4-8	2015-4-8

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

Test Procedure

Frequency Stability vs. Temperature: The equipment under test was connected to an external DC power supply and the RF output was connected to a Spectrum Analyzer via feed-through attenuators. The EUT was placed inside the temperature chamber. The DC leads and RF output cable exited the chamber through an opening made for the purpose.
After the temperature stabilized for approximately 150 minutes, the frequency output was recorded from the counter.
Frequency Stability vs. Voltage: An external variable DC power supply Source. The voltage was set to 115% of the nominal value and was then decreased until the transmitter light no longer illuminated; i.e., the end point. The output frequency was recorded for each voltage.

Environmental Conditions

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

Test Result: Pass

Test Mode: Transmitting GSM

Test Data

Frequency Stability Versus Temperature

Frequency Stability vs Temperature					
Temperature (℃)	**Power Supplied (V_{dc})**	**Frequency Measure Error (Hz)**	**Error (ppm)**	**Limit (ppm)**	**Result**
B(869.2MHz)					
-40	-48	-0.69	-0.00079	0.02	PASS
-30	-48	0.77	0.00089	0.02	PASS
-20	-48	-0.56	-0.00064	0.02	PASS
-10	-48	-0.54	-0.00062	0.02	PASS
0	-48	-0.45	-0.00052	0.02	PASS
10	-48	0.44	0.00051	0.02	PASS
20	-48	0.47	0.00054	0.02	PASS
30	-48	0.37	0.00043	0.02	PASS
40	-48	-0.69	-0.00079	0.02	PASS
50	-48	-1.06	-0.00122	0.02	PASS
55	-48	-1.16	-0.00133	0.02	PASS
M(881.4M)					
-40	-48	0.48	0.00054	0.02	PASS
-30	-48	0.69	0.00078	0.02	PASS
-20	-48	-0.55	-0.00062	0.02	PASS
-10	-48	-0.79	-0.00090	0.02	PASS
0	-48	-1.42	-0.00161	0.02	PASS
10	-48	1.58	0.00179	0.02	PASS
20	-48	0.38	0.00043	0.02	PASS
30	-48	1.35	0.00153	0.02	PASS

40	-48	-0.42	-0.00048	0.02	PASS
50	-48	1.86	0.00211	0.02	PASS
55	-48	1.93	0.00219	0.02	PASS
T(893.8M)					
-40	-48	0.69	0.00077	0.02	PASS
-30	-48	0.57	0.00064	0.02	PASS
-20	-48	-0.64	-0.00072	0.02	PASS
-10	-48	-0.75	-0.00084	0.02	PASS
0	-48	1.18	0.00132	0.02	PASS
10	-48	-1.41	-0.00158	0.02	PASS
20	-48	-0.43	-0.00048	0.02	PASS
30	-48	0.47	0.00053	0.02	PASS
40	-48	-0.77	-0.00086	0.02	PASS
50	-48	-1.24	-0.00139	0.02	PASS
55	-48	0.62	0.00069	0.02	PASS

Frequency Stability Versus Voltage

Frequency Stability vs. Voltage					
VoltageV_{dc}	**Temperature ℃**	**Frequency Measure Error Hz**	**Error ppm**	**Limit ppm**	**Result**
B(869.2MHz)					
40	20	0.46	0.00053	0.02	PASS
43	20	-0.78	-0.00090	0.02	PASS
45	20	0.54	0.00062	0.02	PASS
47	20	-1.68	-0.00193	0.02	PASS
49	20	-0.96	-0.00110	0.02	PASS
51	20	-0.53	-0.00061	0.02	PASS
53	20	-1.51	-0.00174	0.02	PASS
55	20	-0.77	-0.00089	0.02	PASS
57	20	-0.58	-0.00067	0.02	PASS
M(881.4M)					
40	20	-1.89	-0.00214	0.02	PASS
43	20	-1.45	-0.00165	0.02	PASS
45	20	-1.36	-0.00154	0.02	PASS
47	20	1.68	0.00191	0.02	PASS

49	20	1.56	0.00177	0.02	PASS
51	20	0.58	0.00066	0.02	PASS
53	20	0.96	0.00109	0.02	PASS
55	20	-1.69	-0.00192	0.02	PASS
57	20	-1.94	-0.00220	0.02	PASS
T(893.8M)					
40	20	-0.69	-0.00077	0.02	PASS
43	20	1.22	0.00136	0.02	PASS
45	20	-0.35	-0.00039	0.02	PASS
47	20	-0.49	-0.00055	0.02	PASS
49	20	-0.69	-0.00077	0.02	PASS
51	20	1.05	0.00117	0.02	PASS
53	20	-0.68	-0.00076	0.02	PASS
55	20	-0.83	-0.00093	0.02	PASS
57	20	-0.91	-0.00102	0.02	PASS

5 DUAL-MODE OF TEST RESULTS

FCC RULES	DESCRIPTION OF TEST	RESULT
§2.1046 ,§22.913	Transmitter output Power	Compliant
§2.1091 ,§1.1310	RF Exposure	Compliant
§2.1047	Modulation Characteristic	Compliant
§2.1053, §22.917	Spurious Radiated Emissions	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

5.1 TRANSMITTER OUTPUT POWER

Applicable Standard： FCC §2.1046 §22.913

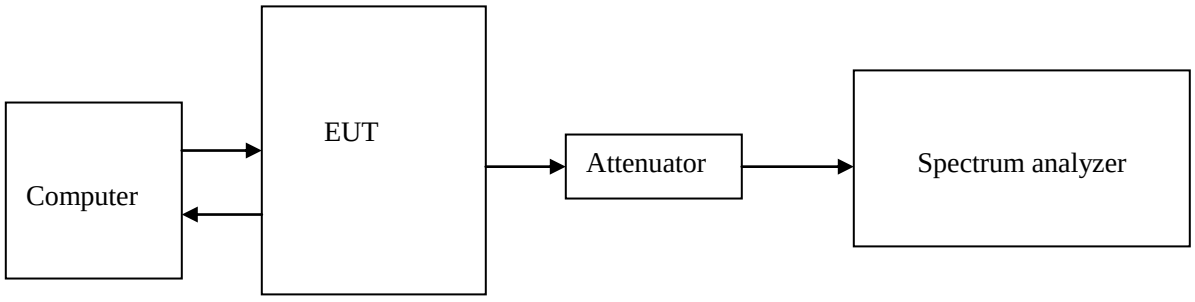
According to FCC §2.1046 &22.913, the ERP(equivalent radiated power) must not exceed 500 Watts.

Test Equipment List and Details

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
Agilent	MXA Series Spectrum Analyzer	N9020A	MY51160170	2014-6-16	2015-6-16
Atten	50dB Attenuator	ATSI150-4-40	11300100204204	2014-4-8	2015-4-8
Forstar	Forstar RF Cable	002	1034	2014-4-8	2015-4-8

*__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 50dB, Cable Loss is about 3dB

Environmental Conditions

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

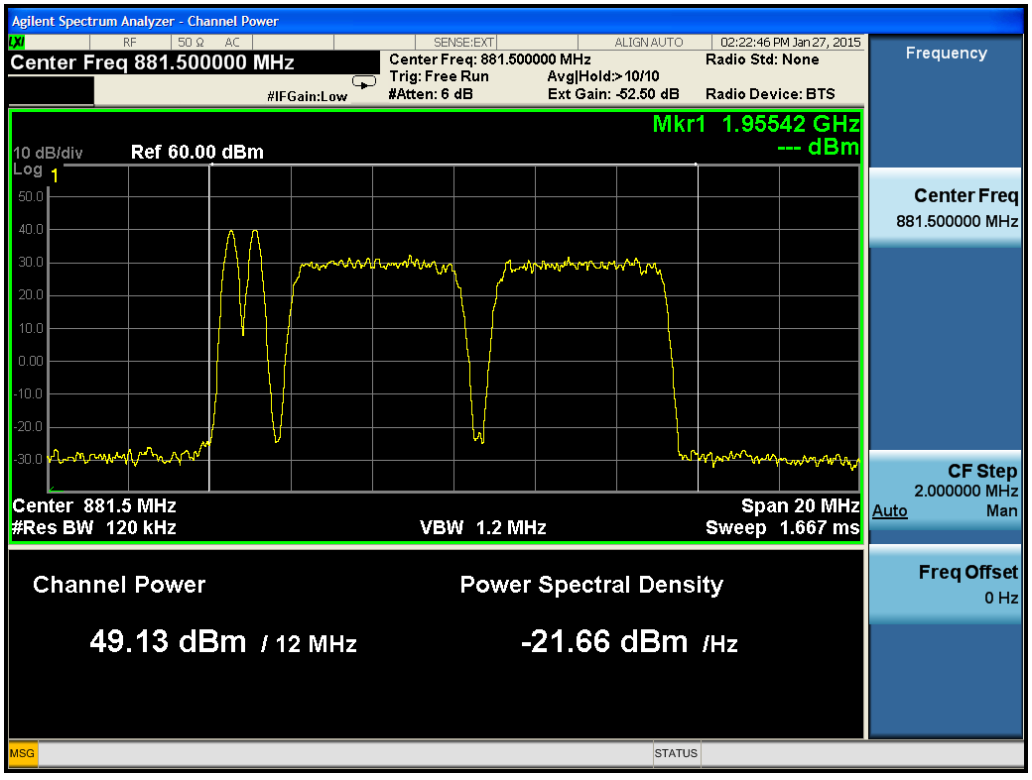
Test Result: Pass

Test Mode: Transmitting 2GSMTRX and 2UMTS carriers / 4GSMTRX and 1UMTS carriers

Test Data:

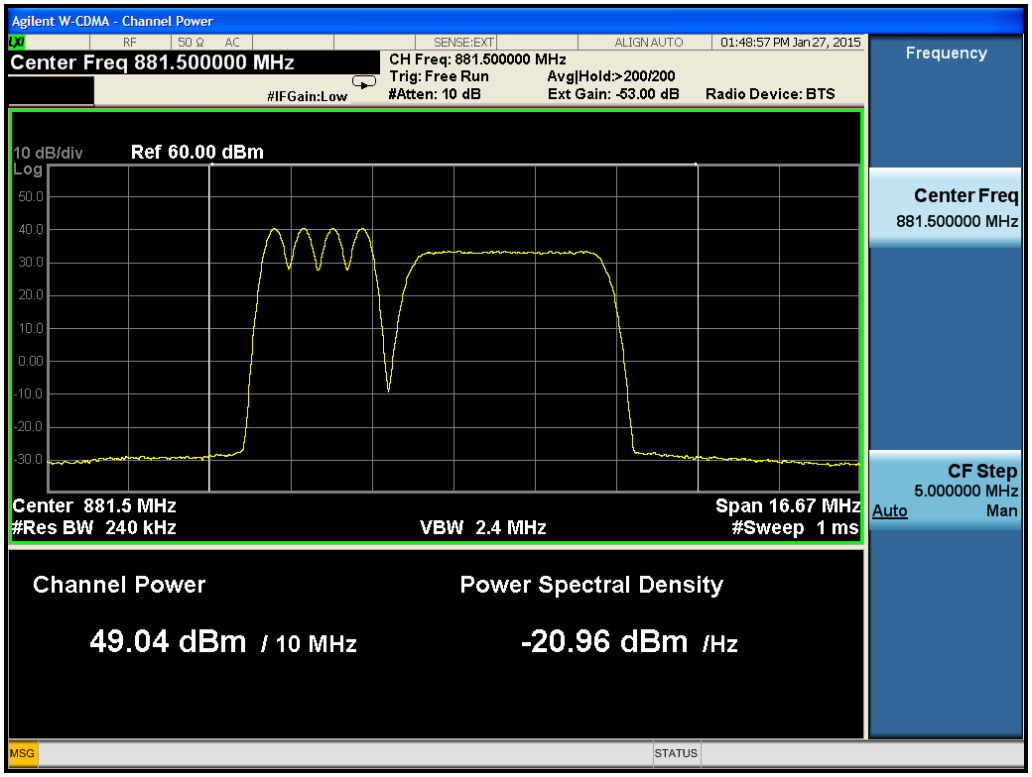
2GSMTRX and 2UMTS carriers

Center Freq. (MHz)	Frequency (MHz)	Max output Power (dBm)
881.5	881.5	49.13



4GSMTRX and 1UMTS carriers

Center Freq. (MHz)	Frequency (MHz)	Max output Power (dBm)
881.5	881.5	49.04



5.2 RF EXPOSURE

Applicable standard: FCC §2.1091 §1.1310

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 $S=894/1500=0.596mW/cm^2$, R=3.31m.
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

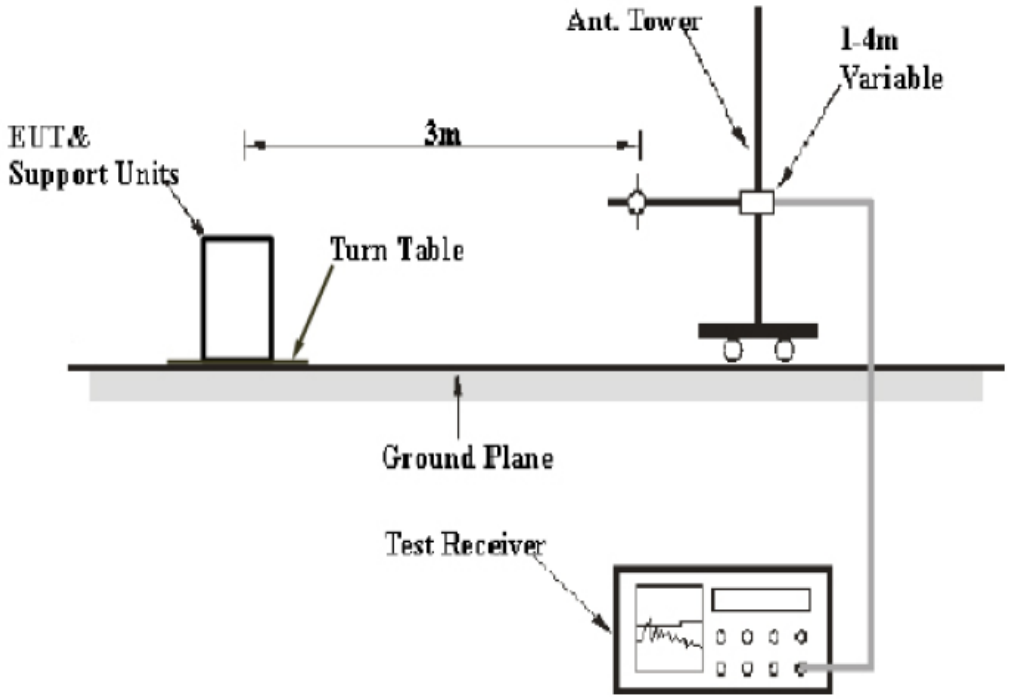
Applicable Standard: FCC CFR 47, §2.1053

Test Equipment List and Details

Manufacturer	Equipment	Model	Serial Number	Last Cal.	Cal. Interval
R&S	SIGNAL GENERATOR	SMR20	A00017351	2014-09-09	1 year
Albatross	Anechoic Chamber	3m Site	A00017354	2014-12-01	1 year
R&S	EMI Test Receiver	ESIB26	100058	2014-10-13	1 year
R&S	Ultra Breitband Antennas	HL562	100022	2014-07-29	1 year
R&S	Double-Ridged Waveguide Horn Antenna	HF906	100032	2014-07-14	1 year
R&S	Double-Ridged Waveguide Horn Antenna	HF906	100446	2014-07-14	1 year
SCHWARZ-BECK	Biconical Antenna	VUBA9117	9117-122	2014-07-14	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 NIS 81, 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



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

Test Procedure

The transmitter was placed on a wooden turntable, and it was transmitting into a non-radiating load, which was also placed on the turntable.
The measurement antenna was placed at a distance of 3 meters from the EUT. During the tests, the antenna height and polarization as well as EUT azimuth were varied in order to identify the maximum level of emissions from the EUT. The test was performed by placing the EUT on 3-orthogonal axis.
The frequency range up to 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 scaning, set at 1MHz for 1GHz to 20GHz scaning.

Test Results Summary: PASS

Environmental Conditions

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

Test data

Indicated		Test Antenna	Substituted		Cable Loss(dB)	Effective radiated power（dBm）	Dipole Antenna	Absolute Level (dBm)	Limit (dBm)	Margin (dB)
Frequency (GHz)	Amp. (dB μ V)	Polar H/V	Level (dBm)	Antenna Gain Correction						
30	24.6	V	-33.1	-43.49	0.3	-76.89	2.15	-79.04	-13	66.04
125.250501	25.32	V	-60.58	-10.46	0.8	-71.84	2.15	-73.99	-13	60.99
220.501002	36.13	V	-56.67	1.42	1.2	-56.45	2.15	-58.6	-13	45.6
638.436874	29.04	V	-64.96	-1.09	2.1	-68.15	2.15	-70.3	-13	57.3
871.703407	72.29	V	-21.21	-1.32	2.5	-25.03	2.15	-27.18	-13	14.18
96.092184	25.38	H	-55.52	-16.61	0.8	-72.93	2.15	-75.08	-13	62.08
220.501002	38.83	H	-61.17	1.42	1.2	-60.95	2.15	-63.1	-13	50.1
276.873747	29.77	H	-67.73	0.79	1.3	-68.24	2.15	-70.39	-13	57.39
630.661323	29.7	H	-66.8	-1.09	2.1	-69.99	2.15	-72.14	-13	59.14
871.703407	67.85	H	-27.85	-1.32	2.5	-31.67	2.15	-33.82	-13	20.82

Radiation emission spurious below 3GHz

Indicated		Test Antenna	Substituted		Cable Loss(dB)	Effective radiated power（dBm）	Dipole Antenna	Absolute Level (dBm)	Limit (dBm)	Margin (dB)
Frequency (GHz)	Amp. (dB μ V)	Polar H/V	Level (dBm)	Antenna Gain Correction						
3801.60321	41.82	V	-51.88	9.9	5.2	-47.18	2.15	-49.33	-13	36.33
4723.44689	42.83	V	-53.07	11.3	5.8	-47.57	2.15	-49.72	-13	36.72
5797.59519	44.05	V	-49.75	11.2	6.5	-45.05	2.15	-47.2	-13	34.2
6943.88778	46.42	V	-45.48	11.4	7.3	-41.38	2.15	-43.53	-13	30.53
9131.76353	47.64	V	-46.86	11.9	8.5	-43.46	2.15	-45.61	-13	32.61
12335.1703	49.94	V	-47.36	14.2	9.9	-43.06	2.15	-45.21	-13	32.21
3488.97796	43.31	H	-50.19	9.9	5	-45.29	2.15	-47.44	-13	34.44
4002.00401	41.53	H	-53.47	10.1	5.3	-48.67	2.15	-50.82	-13	37.82
6126.25251	44.37	H	-43.23	11.2	6.8	-38.83	2.15	-40.98	-13	27.98
6831.66333	45.86	H	-42.94	11.4	7.2	-38.74	2.15	-40.89	-13	27.89
8555.61122	46.67	H	-42.63	11.8	8.3	-39.13	2.15	-41.28	-13	28.28
11735.9719	48.37	H	-43.23	14	9.6	-38.83	2.15	-40.98	-13	27.98

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.

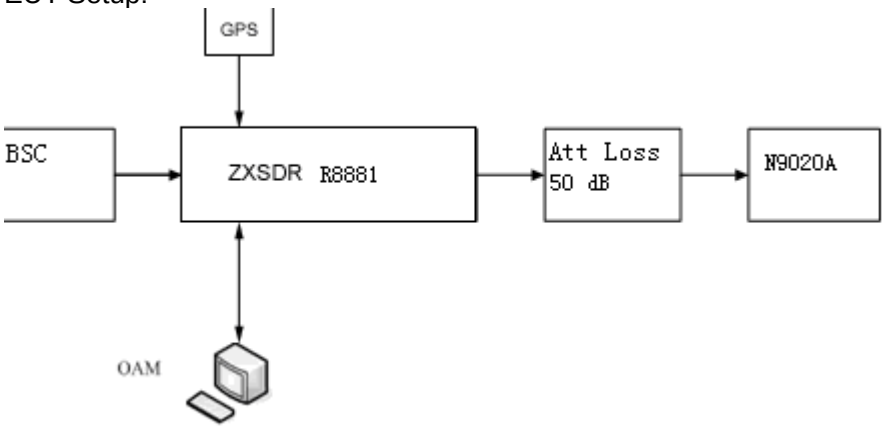
Test Equipment List and Details

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
Agilent	MXA Series Spectrum Analyzer	N9020A	MY51160170	2014-6-16	2015-6-16
Atten	40dB Attenuator	ATSI150-4-40	11300100204204	2014-4-8	2015-4-8
Forstar	Forstar RF Cable	002	1034	2014-4-8	2015-4-8

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

Test Procedure

EUT Setup:



REMARKS: Attenuator loss (dB)=50dB, 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 100KHz for 30MHz to 1GHz band, set at 1MHz for 1GHz to 10GHz band. Sufficient scans were taken to

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

Test Data Environmental Conditions

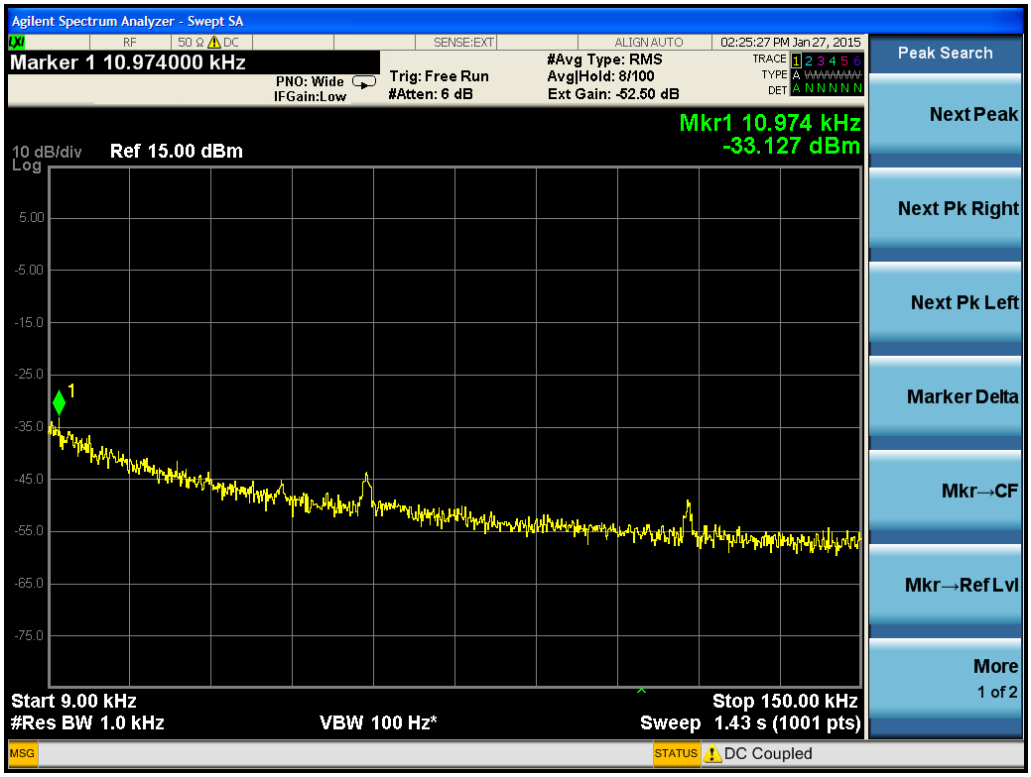
Temperature:	20 °C
Relative Humidity:	53 %
ATM Pressure:	1009 mbar

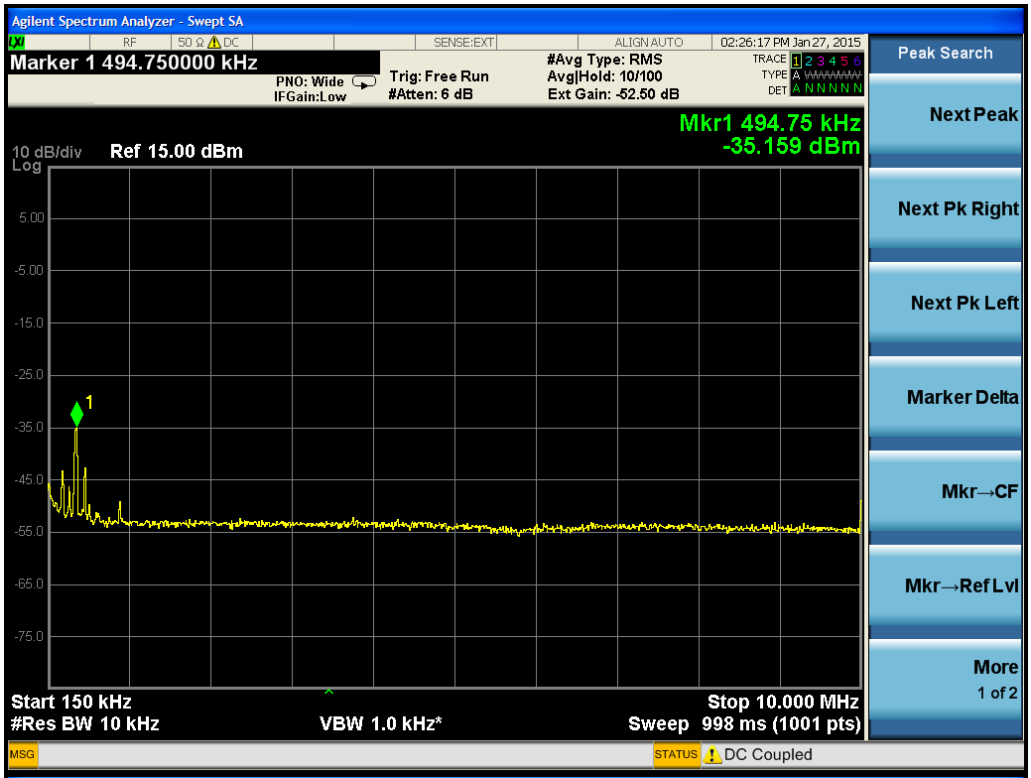
Test Result: Pass

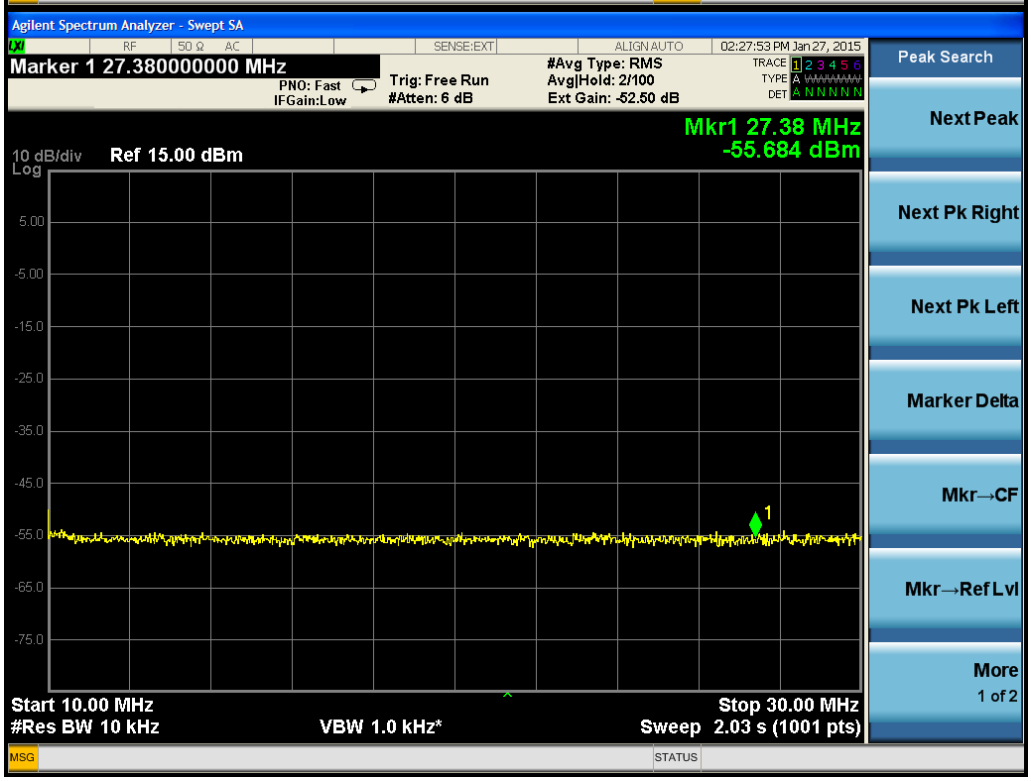
Test Mode: Transmitting 2GSMTRX and 2UMTS carriers / 4GSMTRX and 1UMTS carriers

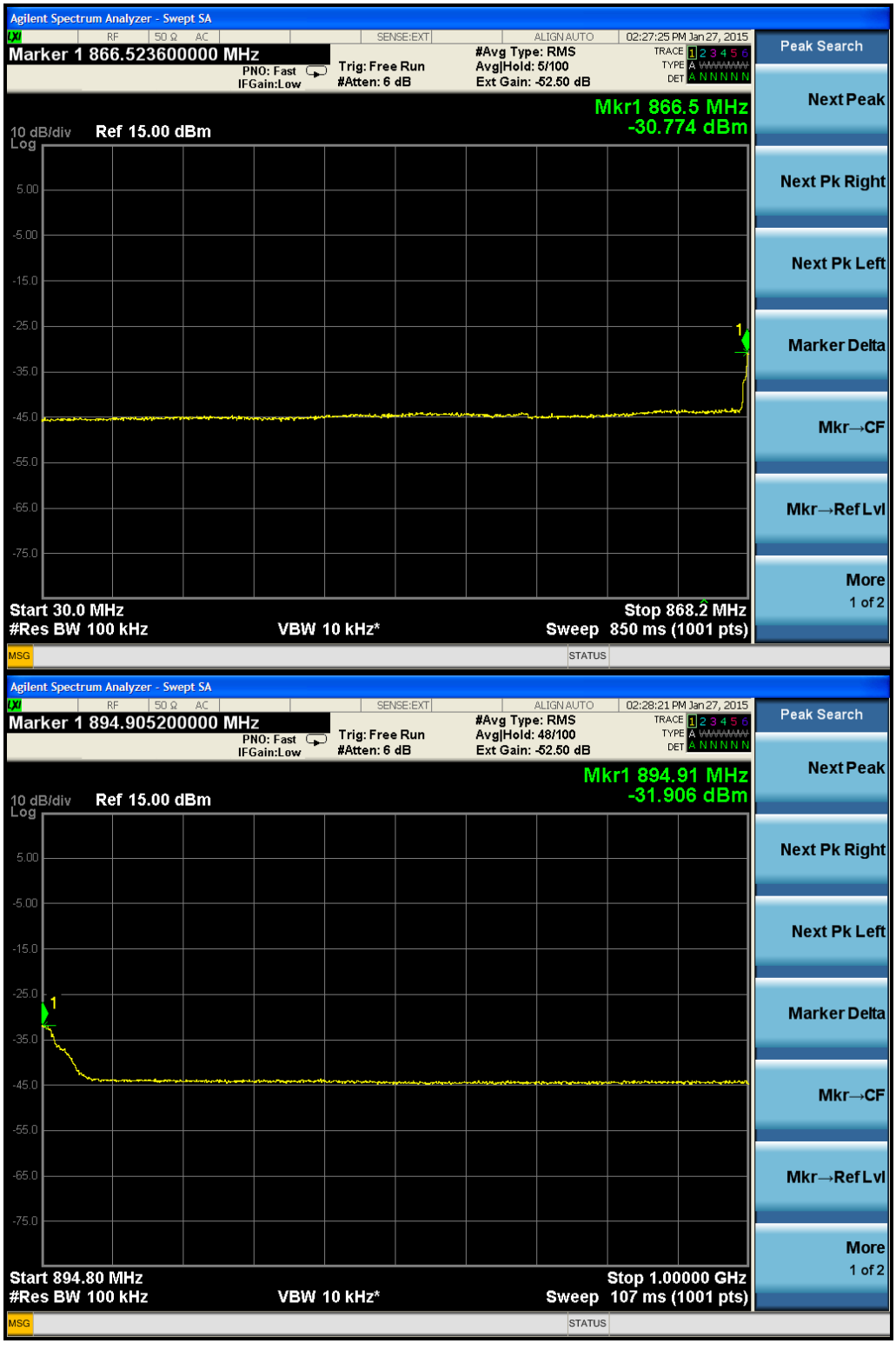
Test Data:

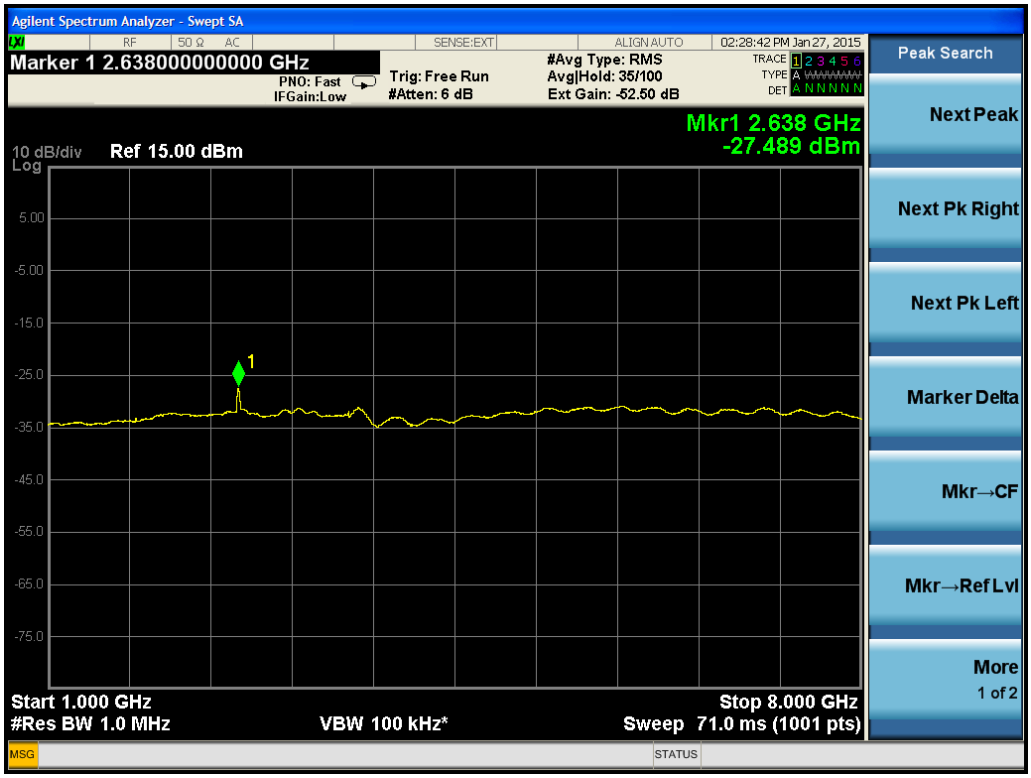
2GSMTRX and 2UMTS carriers



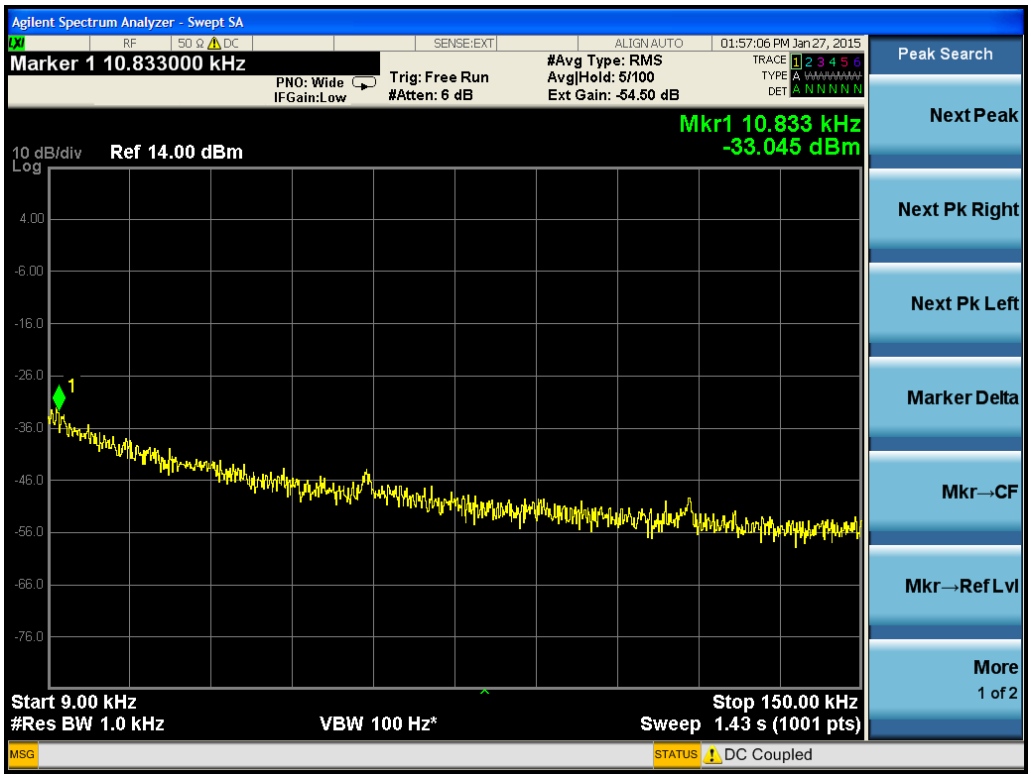

Agilent Spectrum Analyzer - Swept SA
RF 50 Ω DC
SENSE:EXT
ALIGN AUTO
02:26:17 PM Jan 27, 2015
Marker 1 494.750000 kHz
PNO: Wide
IFGain:Low
Trig: Free Run
#Atten: 6 dB
#Avg Type: RMS
Avg|Hold: 10/100
Ext Gain: -52.50 dB
TRACE 1 2 3 4 5 6
TYPE A
DET A N N N N N
Mkr1 494.75 kHz
-35.159 dBm
10 dB/div
Log
Ref 15.00 dBm
5.00
-5.00
-15.0
-25.0
-35.0
-45.0
-55.0
-65.0
-75.0
Start 150 kHz
#Res BW 10 kHz
VBW 1.0 kHz*
Stop 10.000 MHz
Sweep 998 ms (1001 pts)
MSG
STATUS
DC Coupled
Peak Search
Next Peak
Next Pk Right
Next Pk Left
Marker Delta
Mkr→CF
Mkr→Ref Lvl
More
1 of 2

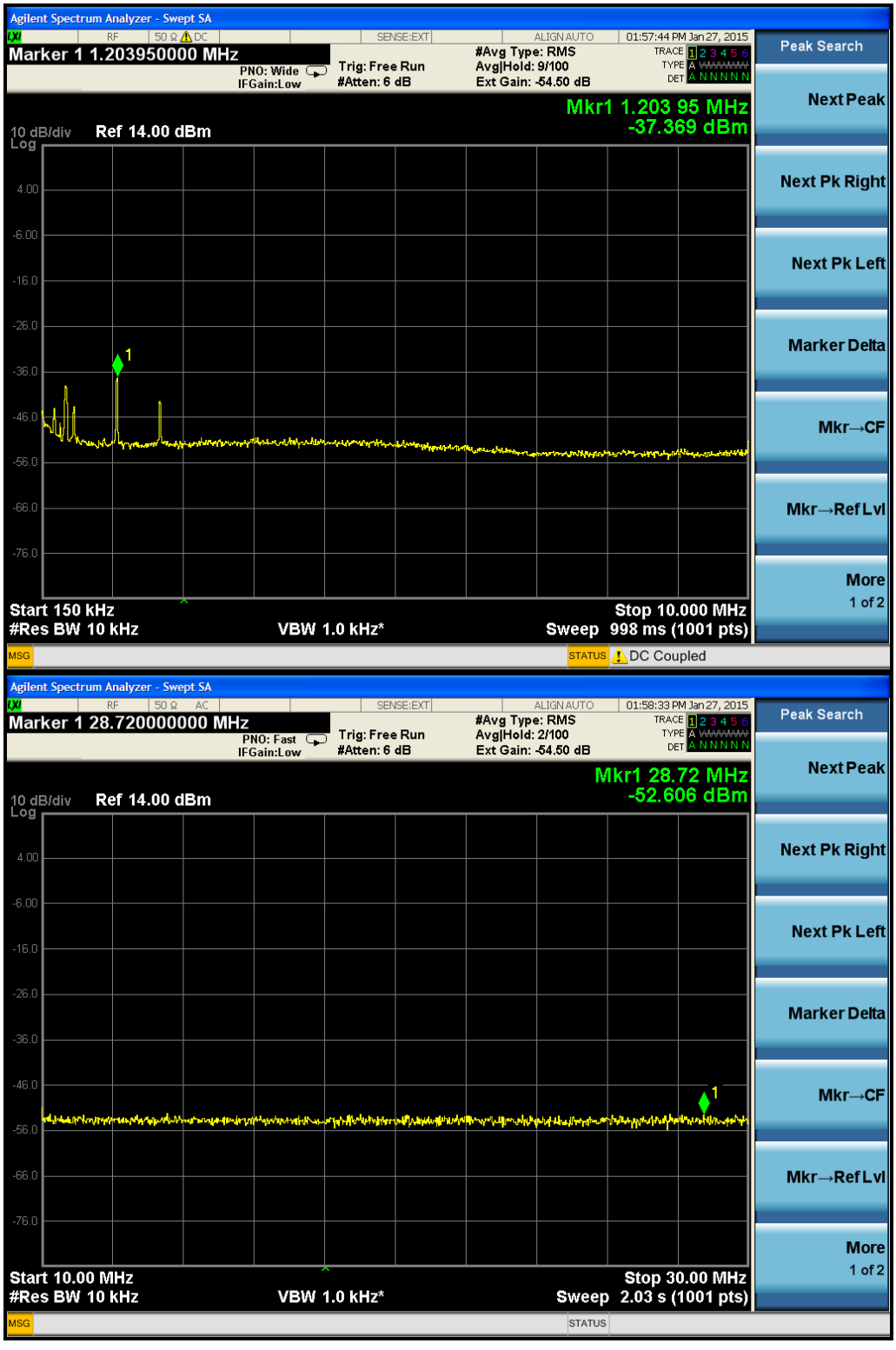

Agilent Spectrum Analyzer - Swept SA
RF 50 Ω AC
SENSE:EXT
ALIGN AUTO
02:27:53 PM Jan 27, 2015
Marker 1 27.380000000 MHz
PNO: Fast
IFGain:Low
Trig: Free Run
#Atten: 6 dB
#Avg Type: RMS
Avg|Hold: 2/100
Ext Gain: -52.50 dB
TRACE 1 2 3 4 5 6
TYPE A
DET A N N N N N
Mkr1 27.38 MHz
-55.684 dBm
10 dB/div
Log
Ref 15.00 dBm
5.00
-5.00
-15.0
-25.0
-35.0
-45.0
-55.0
-65.0
-75.0
Start 10.00 MHz
#Res BW 10 kHz
VBW 1.0 kHz*
Stop 30.00 MHz
Sweep 2.03 s (1001 pts)
MSG
STATUS
Peak Search
Next Peak
Next Pk Right
Next Pk Left
Marker Delta
Mkr→CF
Mkr→Ref Lvl
More
1 of 2


Agilent Spectrum Analyzer - Swept SA
RF 50 Ω AC
SENSE:EXT
ALIGN AUTO
02:27:25 PM Jan 27, 2015
Marker 1 866.523600000 MHz
PNO: Fast
IFGain:Low
Trig: Free Run
#Atten: 6 dB
#Avg Type: RMS
Avg|Hold: 5/100
Ext Gain: -52.50 dB
TRACE 1 2 3 4 5 6
TYPE A
DET A N N N N N
Mkr1 866.5 MHz
-30.774 dBm
10 dB/div
Log
Ref 15.00 dBm
5.00
-5.00
-15.0
-25.0
-35.0
-45.0
-55.0
-65.0
-75.0
1
Start 30.0 MHz
#Res BW 100 kHz
VBW 10 kHz*
Stop 868.2 MHz
Sweep 850 ms (1001 pts)
Peak Search
Next Peak
Next Pk Right
Next Pk Left
Marker Delta
Mkr→CF
Mkr→Ref Lvl
More
1 of 2
MSG
STATUS
Agilent Spectrum Analyzer - Swept SA
RF 50 Ω AC
SENSE:EXT
ALIGN AUTO
02:28:21 PM Jan 27, 2015
Marker 1 894.905200000 MHz
PNO: Fast
IFGain:Low
Trig: Free Run
#Atten: 6 dB
#Avg Type: RMS
Avg|Hold: 48/100
Ext Gain: -52.50 dB
TRACE 1 2 3 4 5 6
TYPE A
DET A N N N N N
Mkr1 894.91 MHz
-31.906 dBm
10 dB/div
Log
Ref 15.00 dBm
5.00
-5.00
-15.0
-25.0
-35.0
-45.0
-55.0
-65.0
-75.0
1
Start 894.80 MHz
#Res BW 100 kHz
VBW 10 kHz*
Stop 1.00000 GHz
Sweep 107 ms (1001 pts)
Peak Search
Next Peak
Next Pk Right
Next Pk Left
Marker Delta
Mkr→CF
Mkr→Ref Lvl
More
1 of 2
MSG
STATUS

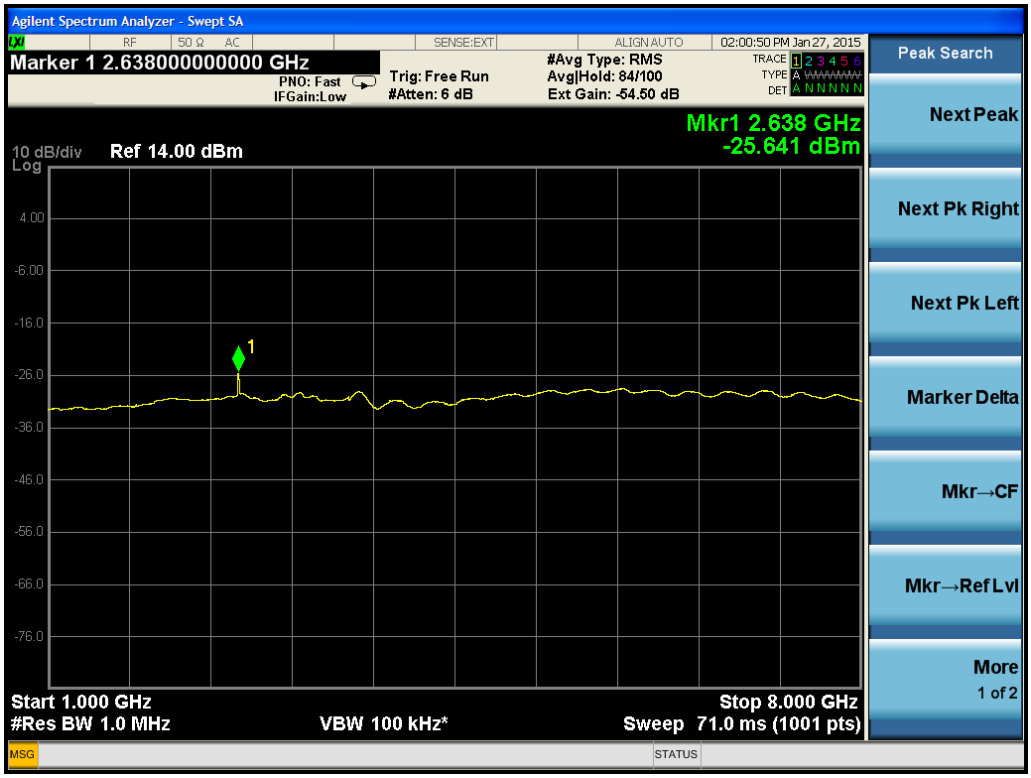


4GSMTRX and 1UMTS carriers




Agilent Spectrum Analyzer - Swept SA
RF 50 Ω DC
SENSE:EXT
ALIGN AUTO
01:57:44 PM Jan 27, 2015
Marker 1 1.203950000 MHz
PNO: Wide
IFGain:Low
Trig: Free Run
#Atten: 6 dB
#Avg Type: RMS
Avg|Hold: 9/100
Ext Gain: -54.50 dB
TRACE 1 2 3 4 5 6
TYPE A
DET A N N N N N
Mkr1 1.203 95 MHz
-37.369 dBm
10 dB/div
Log
Ref 14.00 dBm
4.00
-6.00
-16.0
-26.0
-36.0
-46.0
-56.0
-66.0
-76.0
Start 150 kHz
#Res BW 10 kHz
VBW 1.0 kHz*
Stop 10.000 MHz
Sweep 998 ms (1001 pts)
MSG
STATUS
DC Coupled
Peak Search
Next Peak
Next Pk Right
Next Pk Left
Marker Delta
Mkr→CF
Mkr→Ref Lvl
More
1 of 2
Agilent Spectrum Analyzer - Swept SA
RF 50 Ω AC
SENSE:EXT
ALIGN AUTO
01:58:33 PM Jan 27, 2015
Marker 1 28.720000000 MHz
PNO: Fast
IFGain:Low
Trig: Free Run
#Atten: 6 dB
#Avg Type: RMS
Avg|Hold: 2/100
Ext Gain: -54.50 dB
Mkr1 28.72 MHz
-52.606 dBm
10 dB/div
Log
Ref 14.00 dBm
Start 10.00 MHz
#Res BW 10 kHz
VBW 1.0 kHz*
Stop 30.00 MHz
Sweep 2.03 s (1001 pts)
MSG
STATUS
Peak Search
Next Peak
Next Pk Right
Next Pk Left
Marker Delta
Mkr→CF
Mkr→Ref Lvl
More
1 of 2


Agilent Spectrum Analyzer - Swept SA
RF 50 Ω AC
SENSE:EXT
ALIGN AUTO
01:59:31 PM Jan 27, 2015
Marker 1 868.200000000 MHz
PNO: Fast
IFGain:Low
Trig: Free Run
#Atten: 6 dB
#Avg Type: RMS
Avg|Hold: 6/100
Ext Gain: -54.50 dB
TRACE 1 2 3 4 5 6
TYPE A
DET A N N N N N
Mkr1 868.2 MHz
-36.492 dBm
10 dB/div
Log
Ref 14.00 dBm
4.00
-6.00
-16.0
-26.0
-36.0
-46.0
-56.0
-66.0
-76.0
1
Start 30.0 MHz
#Res BW 100 kHz
VBW 10 kHz*
Stop 868.2 MHz
Sweep 850 ms (1001 pts)
Peak Search
Next Peak
Next Pk Right
Next Pk Left
Marker Delta
Mkr→CF
Mkr→Ref Lvl
More
1 of 2
MSG
STATUS
Agilent Spectrum Analyzer - Swept SA
RF 50 Ω AC
SENSE:EXT
ALIGN AUTO
02:00:08 PM Jan 27, 2015
Marker 1 896.062400000 MHz
PNO: Fast
IFGain:Low
Trig: Free Run
#Atten: 6 dB
#Avg Type: RMS
Avg|Hold:>100/100
Ext Gain: -54.50 dB
TRACE 1 2 3 4 5 6
TYPE A
DET A N N N N N
Mkr1 896.06 MHz
-36.540 dBm
10 dB/div
Log
Ref 14.00 dBm
4.00
-6.00
-16.0
-26.0
-36.0
-46.0
-56.0
-66.0
-76.0
1
Start 894.80 MHz
#Res BW 100 kHz
VBW 10 kHz*
Stop 1.00000 GHz
Sweep 107 ms (1001 pts)
Peak Search
Next Peak
Next Pk Right
Next Pk Left
Marker Delta
Mkr→CF
Mkr→Ref Lvl
More
1 of 2
MSG
STATUS


Agilent Spectrum Analyzer - Swept SA
RF
50 Ω AC
SENSE:EXT
ALIGN AUTO
02:00:50 PM Jan 27, 2015
Marker 1 2.638000000000 GHz
PNO: Fast
IFGain:Low
Trig: Free Run
#Atten: 6 dB
#Avg Type: RMS
Avg|Hold: 84/100
Ext Gain: -54.50 dB
TRACE 1 2 3 4 5 6
TYPE A
DET A N N N N N
Mkr1 2.638 GHz
-25.641 dBm
10 dB/div
Log
Ref 14.00 dBm
4.00
-6.00
-16.0
-26.0
-36.0
-46.0
-56.0
-66.0
-76.0
1
Start 1.000 GHz
#Res BW 1.0 MHz
VBW 100 kHz*
Stop 8.000 GHz
Sweep 71.0 ms (1001 pts)
Peak Search
Next Peak
Next Pk Right
Next Pk Left
Marker Delta
Mkr→CF
Mkr→Ref Lvl
More
1 of 2
MSG
STATUS

5.5 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	MY51160170	2014-6-16	2015-6-16
Atten	40dB Attenuator	ATSI150-4-40	11300100204204	2014-4-8	2015-4-8
Forstar	Forstar RF Cable	002	1034	2014-4-8	2015-4-8

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

Test Procedure

The RF out of the transmitter was connected to the input of the spectrum analyzer through sufficient attenuation. 99%Power bandwidth was recorded.

Environmental Conditions

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

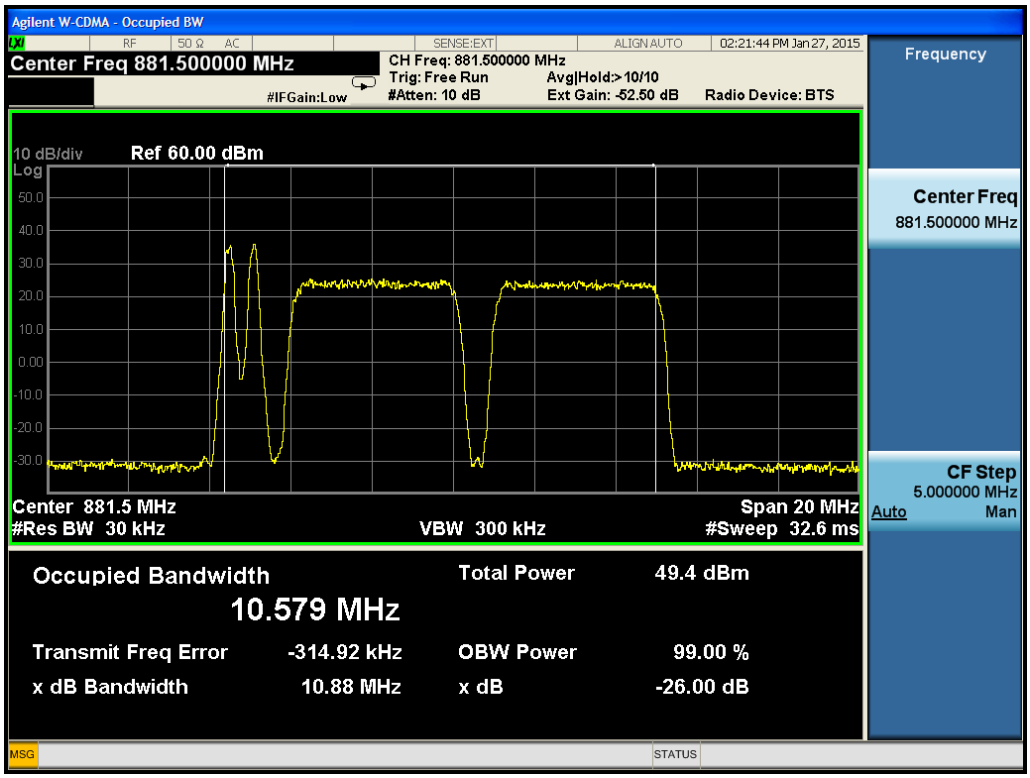
Test Result: Pass

Test Mode: Transmitting 2GSMTRX and 2UMTS carriers / 4GSMTRX and 1UMTS carriers

Test Data

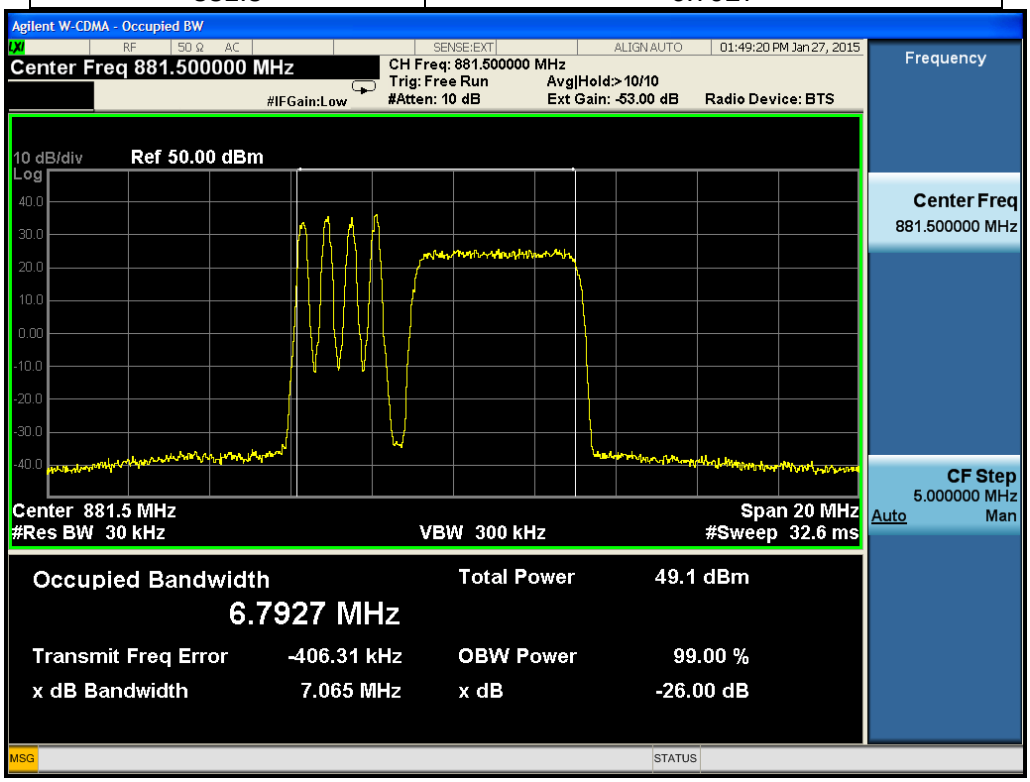
2GSMTRX and 2UMTS carriers

Frequency (MHz)	99% Power Bandwidth (MHz)
881.5	10.579



4GSMTRX and 1UMTS carrier

Frequency (MHz)	99% Power Bandwidth (MHz)
881.5	6.7927



5.6 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)) = -13dBm.

Test Equipment List and Details

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
Agilent	MXA Series Spectrum Analyzer	N9020A	MY51160170	2014-6-16	2015-6-16
Atten	40dB Attenuator	ATSI150-4-40	11300100204204	2014-4-8	2015-4-8
Forstar	Forstar RF Cable	002	1034	2014-4-8	2015-4-8

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

Test Procedure

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

Test Data Environmental Conditions

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

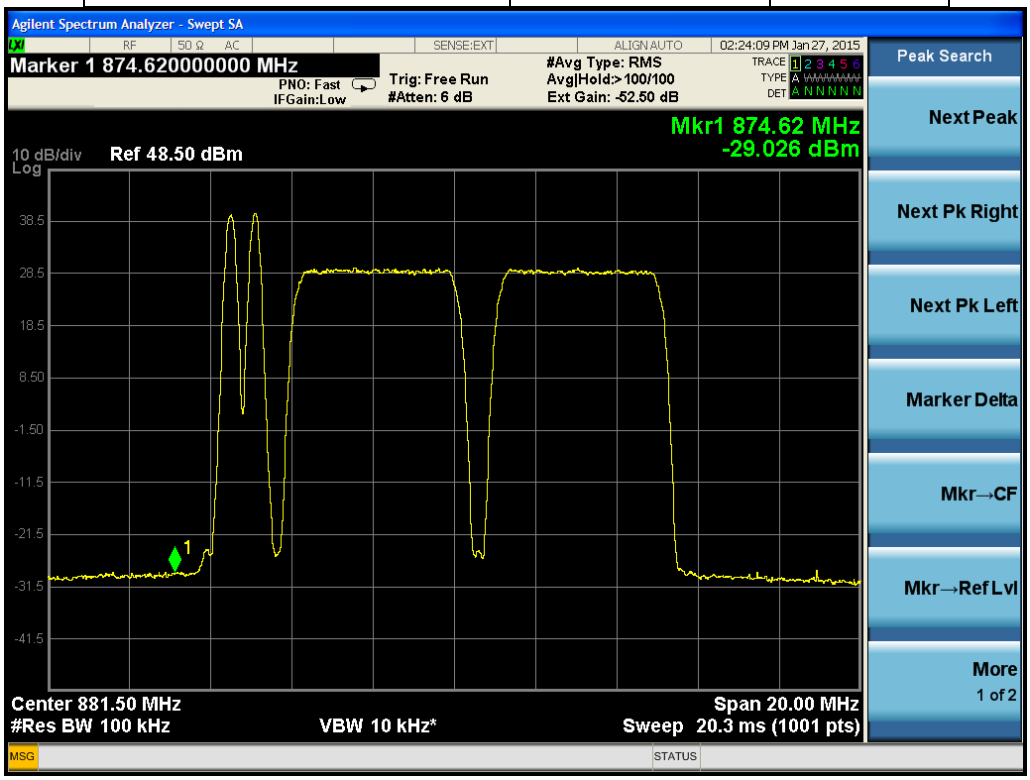
Test Result: Pass

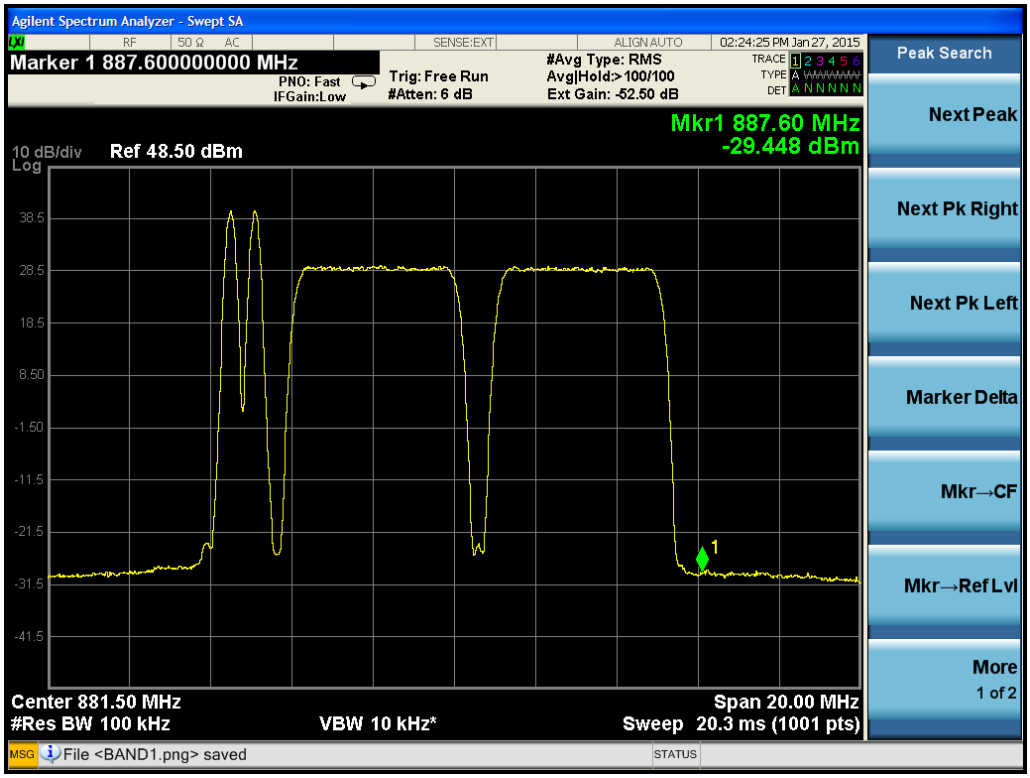
Test Mode: Transmitting 2GSMTRX and 2UMTS carriers / 4GSMTRX and 1UMTS carriers

Test Data

2GSMTRX and 2UMTS carriers

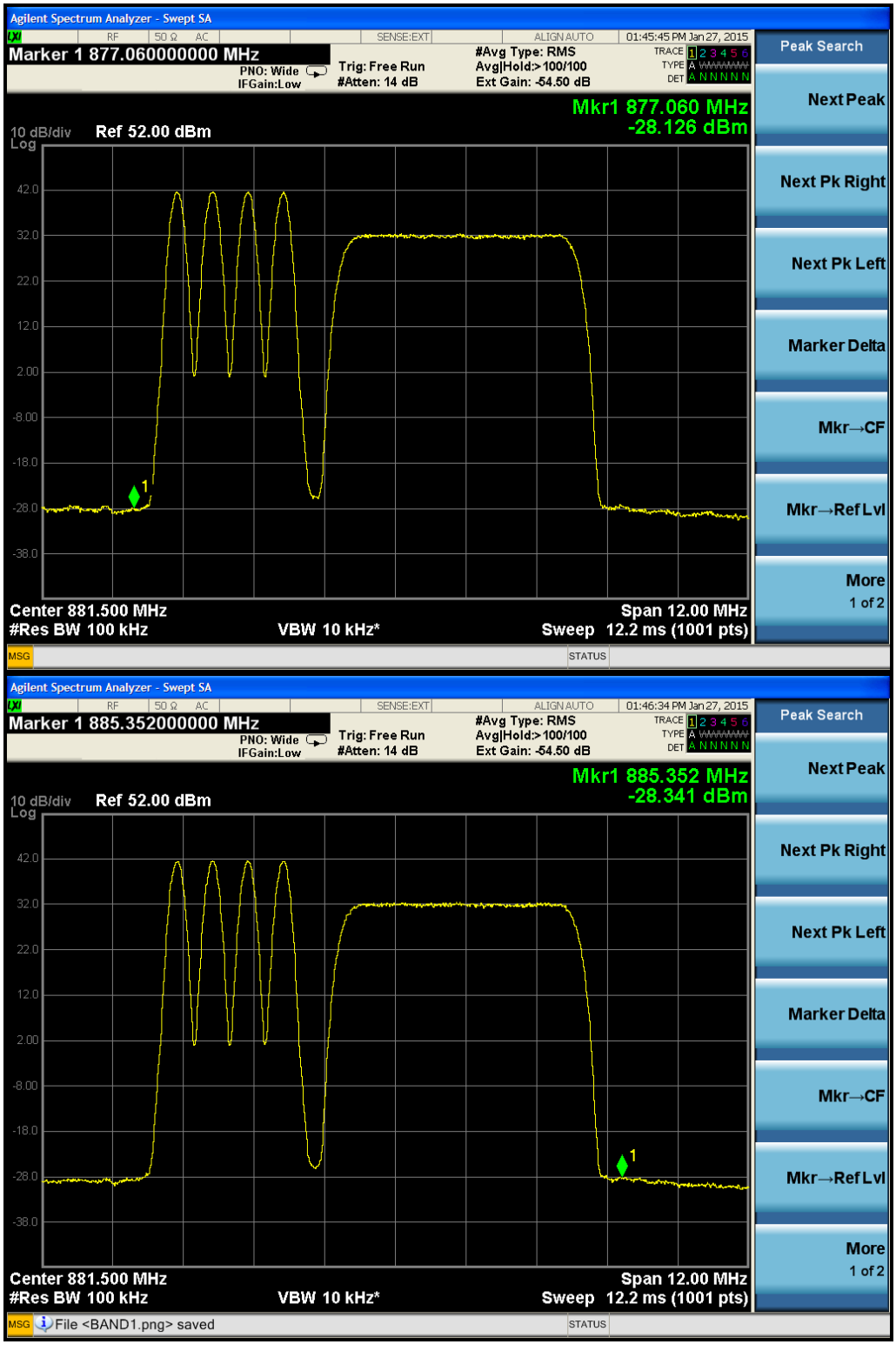
Frequency channel	Max bandedge Emission (dBm)	Limit (dBm)
881.5	-29.026	-13.00
881.5	-29.448	-13.00





4GSMTRX and 1UMTS carrier

Frequency channel	Max bandedge Emission (dBm)	Limit (dBm)
881.5	-28.126	-13.00
881.5	-28.341	-13.00


Agilent Spectrum Analyzer - Swept SA
RF 50 Ω AC
SENSE:EXT
ALIGN AUTO
01:45:45 PM Jan 27, 2015
Marker 1 877.060000000 MHz
PNO: Wide
IFGain:Low
Trig: Free Run
#Atten: 14 dB
#Avg Type: RMS
Avg|Hold:>100/100
Ext Gain: -54.50 dB
TRACE 1 2 3 4 5 6
TYPE A WWWWW
DET A N N N N N
Mkr1 877.060 MHz
-28.126 dBm
10 dB/div
Log
Ref 52.00 dBm
42.0
32.0
22.0
12.0
2.00
-8.00
-18.0
-28.0
-38.0
Center 881.500 MHz
#Res BW 100 kHz
VBW 10 kHz*
Span 12.00 MHz
Sweep 12.2 ms (1001 pts)
Peak Search
Next Peak
Next Pk Right
Next Pk Left
Marker Delta
Mkr→CF
Mkr→Ref Lvl
More
1 of 2
MSG
STATUS
Agilent Spectrum Analyzer - Swept SA
RF 50 Ω AC
SENSE:EXT
ALIGN AUTO
01:46:34 PM Jan 27, 2015
Marker 1 885.352000000 MHz
PNO: Wide
IFGain:Low
Trig: Free Run
#Atten: 14 dB
#Avg Type: RMS
Avg|Hold:>100/100
Ext Gain: -54.50 dB
TRACE 1 2 3 4 5 6
TYPE A WWWWW
DET A N N N N N
Mkr1 885.352 MHz
-28.341 dBm
10 dB/div
Log
Ref 52.00 dBm
42.0
32.0
22.0
12.0
2.00
-8.00
-18.0
-28.0
-38.0
Center 881.500 MHz
#Res BW 100 kHz
VBW 10 kHz*
Span 12.00 MHz
Sweep 12.2 ms (1001 pts)
Peak Search
Next Peak
Next Pk Right
Next Pk Left
Marker Delta
Mkr→CF
Mkr→Ref Lvl
More
1 of 2
MSG
File <BAND1.png> saved
STATUS