FCC PART 22 TYPE APPROVALS
EMI MEASUREMENT AND TEST REPORT

For

ZTE Corporation

ZTE Plaza, Hi-tech Park, Nanshan District,
Shenzhen, Guangdong, China 518057

FCC ID: Q78- ZTEC321
Model: ZTE C321

This Report Concerns: ☒ Original Report	**Product Type:** 800MHz CDMA 1X Digital Mobile Phone
Test Engineer:	*Guanbin* Bob Xiong
Report No.:	RZTE0805213
Test Date:	2008-05-15 to 2008-05-27
Report Date:	*2008-05-28*
Reviewed By:	Lab Manager Xie yuming
Prepared By:	ZTE Corporation Reliability Testing Center ZTE Plaza, Keji Road South, Hi-Tech Industrial Park, NanShan District, Shenzhen, Guangdong 518057，P.R. of China Tel: +86-755-26770345 Fax: +86-755-26770347

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GENERAL INFORMATION

Product Description for Equipment under Test (EUT)

The ZTE Corporation's product, FCC ID: Q78-ZTEC321 or the "EUT" as referred to in this report is a 800MHz CDMA 1X Digital Mobile Phone, which measures approximately107mm(L)*45mm(W)*17.5 mm(H).

The frequency range is UL 824~849 MHz, DL 869~894 MHz.

EUT Photo

Additional Photos in Exhibit C

Objective

This type approval report is prepared on behalf of *ZTE Corporation* in accordance with Part 2, Subpart J, Part 22 Subpart H of the Federal Communication Commissions rules.

The objective is to determine compliance with FCC rules for RF output power, modulation characteristic, occupied bandwidth, spurious emission at antenna terminal, field strength of spurious radiation, frequency stability, band edge, and conducted and radiated margin.

Related Submittal(s)/Grant(s)

No Related Submittals

Test Methodology

All tests and measurements indicated in this document were performed in accordance with the Code of Federal Regulations Title 47 Part 2, Sub-part J as well as the following parts:

Part 22 Subpart H - Public Mobile Services
Part 15 Subpart B – Unintentional radiators

Applicable Standards: TIA-98-E, TIA603-C, ANSI C63.4-2003.

All radiated and conducted emissions measurement was performed at Bay Area Compliance Laboratory, Corp. The radiated testing was performed at an antenna-to-EUT distance of 3 meters.

Test Facility

ZTE Corporation Reliability Testing Center
ZTE Plaza,Keji Road South,Hi-Tech Industrial Park,NanShan District, Shenzhen， Guangdong，
518057， P.R. of China
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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 on December 25, 2005. ZTE Corporation Lab's FCC Registration Number is 373926.

SYSTEM TEST CONFIGURATION

Justification

The EUT was configured for testing according to TIA/EIA-603 C.

The final qualification test was performed with the EUT operating at normal mode.

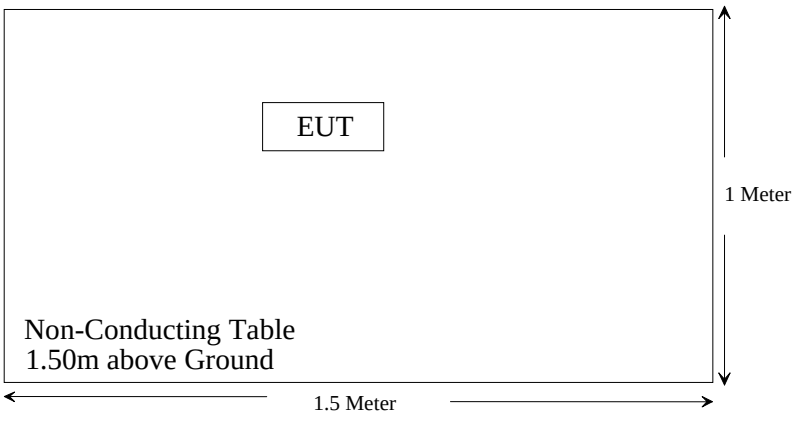
Equipment Modifications

No modifications were made to the EUT.

Local Support Equipment List and Details

Manufacturer	Equipment Description	Model	Serial Number
Agilent	Wireless communication test set	8960 E5515C	GB42431673

Test Setup Block Diagram



SUMMARY OF TEST RESULTS

FCC Rule	Description of Test	Result
§ 2.1047	Modulation Characteristics	N/A
§ 2.1053	Spurious Radiated Emissions	Compliant
§2.1093	RF Exposure	Compliant (SAR report)
§ 2.1046, § 22.912 (d)	RF Output Power	Compliant
§ 2.1049 § 22.917 § 22.905	Out of Band Emission, Occupied Bandwidth	Compliant
§ 2.1051, § 22.917	Spurious Emissions at Antenna Terminals	Compliant
§ 2.1055 (a) § 2.1055 (d) § 22.355	Frequency stability vs. temperature Frequency stability vs. voltage	Compliant
§ 22.917	Band Edge	Compliant

§2.1047 - MODULATION CHARACTERISTIC

Applicable Standard

Requirement: FCC § 2.1047(d). As part 22H has not specific requirement for CDMA modulation, therefore modulation characteristic is not presented.

Result: N/A

§2.1053 - SPURIOUS RADIATED EMISSIONS

Applicable Standard

Requirements: CFR 47, § 2.1053.

Test Procedure

TIA 603-C Section 2.2.12

The transmitter was placed on a wooden turntable, and it was transmitting into a 50 ohms load which was also placed on the turntable.

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

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

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

Spurious emissions in dB = 10 log (TXpwr in Watts/0.001) – the absolute level

Spurious attenuation limit in dB = 43 + 10 Log_{10} (power out in Watts)

Measurement bandwidth (RBW) for 30MHz to 1000 MHz:100 kHz.

Measurement bandwidth (RBW) for 1000 MHz to 12750 MHz:1MHz.

Test Equipment List and Details

Manufacturer	Equipment Description	Model	Serial Number	Cal. Date
R&S	EMI Test Receiver 20Hz～26.5GHz	ESI26	100058	2007-10-25
R&S	Log periodic Antenna 30～3000MHz	HL562	100022	2008-3-7
R&S	Double-Ridged Waveguide Horn Antenna 1～18GHz	HF906 RX	100032	2007-10-10
R&S	Filters	TS-FILT	N/A	N/A
R&S	Cable Set Up to 18Ghz	RF Cable	N/A	N/A
Albatross	Anechoic Chamber 3m Site	3m site	N/A	2008-5-14
R&S	Software	ES-K1	N/A	N/A
SCHWARZBECK	VHF-UHF Broad band Antenna 30-1000MHz	VUBA 9117	173	2008-4-11
R&S	Double-Ridged Waveguide Horn Antenna 1~18GHz	HF906 TX	100446	2007-9-20
R&S	Signal generator 10MHz~20GHz	SMR20	100098	2007-10-16
Agilent	Wireless communication test set	8960 E5515C	GB42431673	2008-01-18

*** Statement of Traceability: ZTE Corporation Reliability Testing Center** attests that all calibrations have been performed per the NVLAP requirements, traceable to the NIST.

Environmental Conditions

Temperature:	20° C
Relative Humidity:	55%
ATM Pressure:	1018mbar

** The testing was performed by Guan Bin on 2008-05-15*

Test Result

Worst case reading as follows:

Part22:

28.9dB at 2975.952 MHz

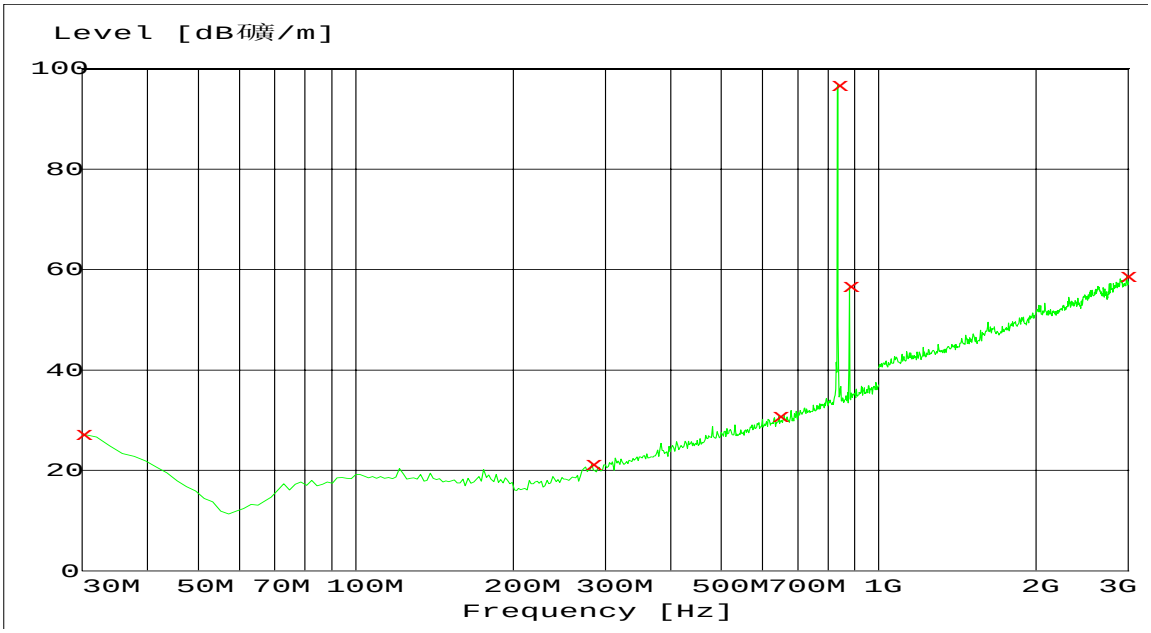
TX Spurious Emission scan 30 MHz – 12.75GHz (TX) Middle (283) channel (836.52MHz)

Indicated		Test Ant. Polar (H/V)	Substituted		Antenna Gain Correction (dBi)	Cable Loss (dB)	Absolute Level (dBm)	Part22 Limit (dBm)	Margin (dB)
Frequency (MHz)	Amp. (dBuV/m)		Frequency (MHz)	Level (dBm)					
879.479	56.37	H	879.479	-40.72	-1.24	2.5	-46.61	-13	33.61
2995.992	58.28	H	2995.992	-45.83	7.95	4.6	-44.63	-13	31.63
11689.88	59.4	H	11689.88	-46.8	11.85	9.6	-46.7	-13	33.7
644.2685	30.72	V	644.2685	-65.97	-1.09	2.1	-71.31	-13	58.31
879.479	56.68	V	879.479	-40.51	-1.24	2.5	-46.4	-13	33.4
2975.952	58.64	V	2975.952	-43.1	7.95	4.6	-41.9	-13	28.9
11689.88	59.4	V	11689.88	-46.8	11.85	9.6	-46.7	-13	33.7

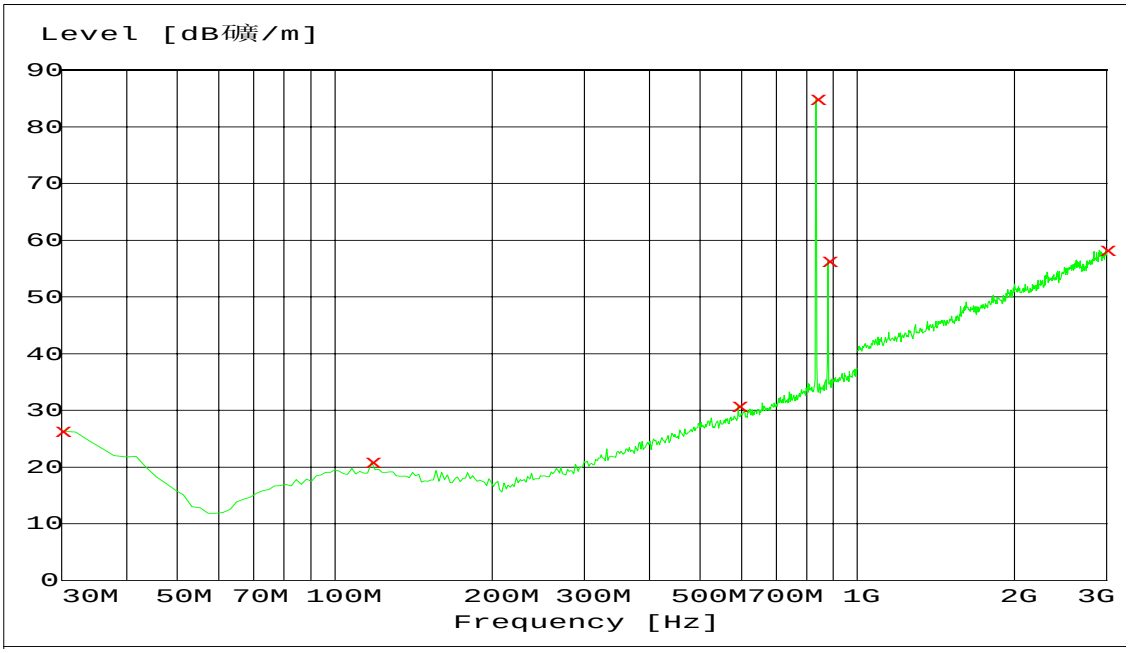
Conclusion

The equipment **PASSED** the requirement of this clause.
For measurement results refer to follows:

(30MHz~3GHz) Vertical

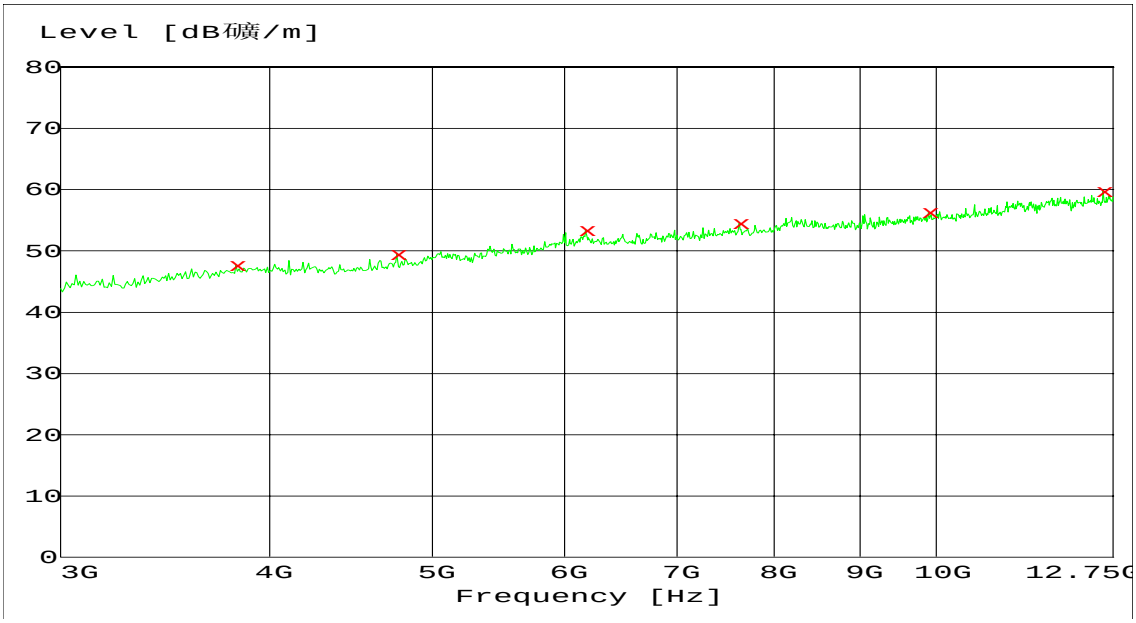


(30MHz~3GHz) Horizontal



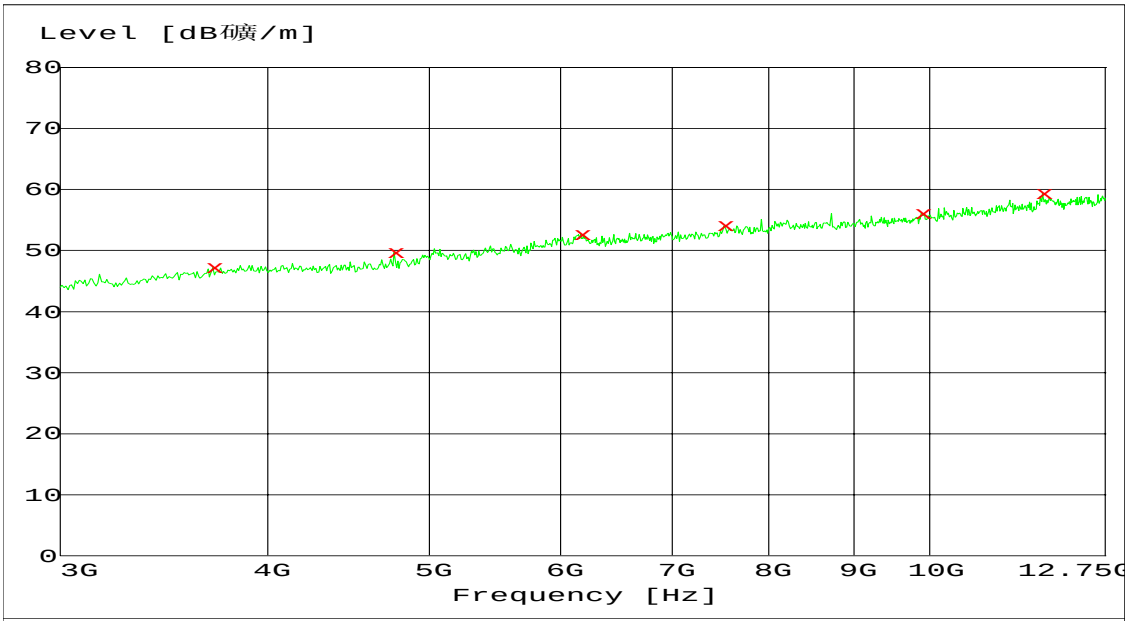
(3GHz~12.75GHz) Vertical

Level (dBμV/m)



(3GHz~12.75GHz) Horizontal

Level (dBμV/m)



§2.1046, §22.913(a) – RF OUTPUT POWER

Applicable Standard

According to FCC §2.1046 and §22.913 (a), the ERP of mobile transmitters and auxiliary test transmitters must not exceed 7 watts.

Test Procedure

Conducted:

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

Radiated:

TIA 603-C Section 2.2.17

Test Equipment List and Details

Manufacturer	Equipment Description	Model	Serial Number	Cal. Date
Agilent	Wireless communication test set	8960 E5515C	GB42431673	2008-01-18
Agilent	Spectrum Analysis	E4405B	MY41440292	2008-01-18
R&S	Double-Ridged Waveguide Horn Antenna 1～18GHz	HF906 RX	100032	2007-10-10
R&S	Cable Set Up to 18Ghz	RF Cable	N/A	N/A
Albatross	Anechoic Chamber 3m Site	3m site	N/A	2008-5-14
SCHWARZBECK	VHF-UHF Broad band Antenna 30-1000MHz	VUBA 9117	173	2008-4-11
R&S	Double-Ridged Waveguide Horn Antenna 1~18GHz	HF906 TX	100446	2007-9-20
R&S	Signal generator 10MHz~20GHz	SMR20	100098	2007-10-16

*** Statement of Traceability: ZTE Corporation Reliability Testing Center** attests that all calibrations have been performed per the NVLAP requirements, traceable to the NIST.

Environmental Conditions

Temperature:	20° C
Relative Humidity:	55%
ATM Pressure:	1018mbar

** The testing was performed by Bob Xiong on 2008-05-27*

Test Results

Antenna port Conducted RF Power:

Channel	Radio Configuration and Conducted Power (dBm)				
	RC1	RC2	RC3	RC4	RC5
Low	24.43	24.42	24.42	24.45	24.46
Mid	24.38	24.35	24.34	24.36	24.36
High	24.52	24.53	24.55	24.56	24.58
SO	SO2	SO9	SO55	SO55	SO55

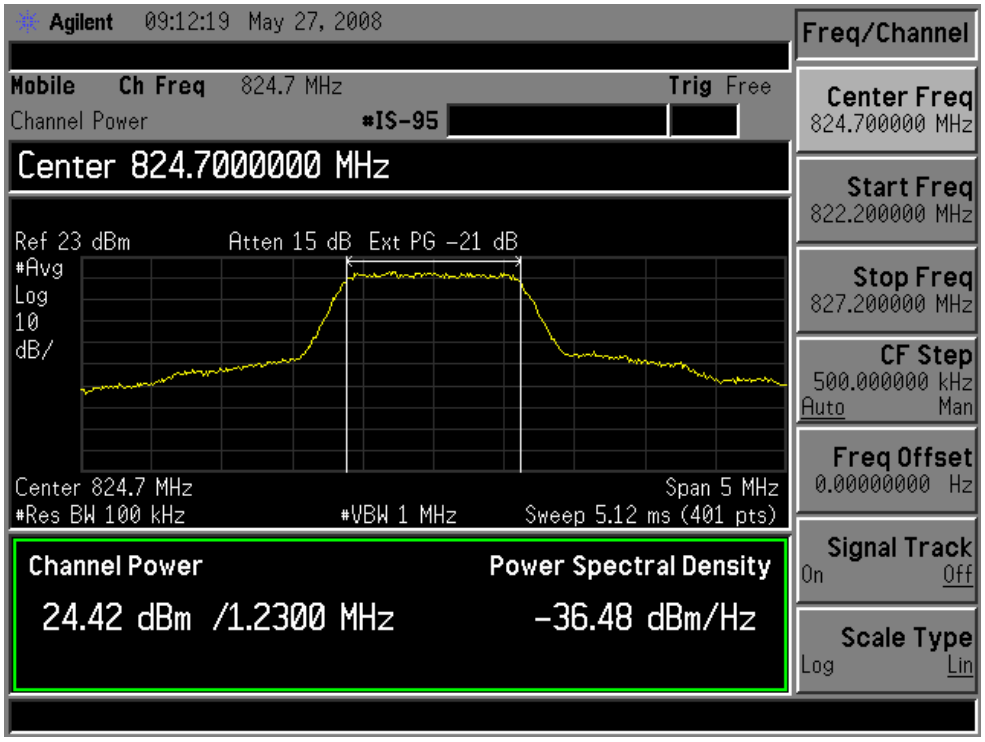
The EUT antenna is non-retractable antenna with 0dBi gain, VSWR<2.0 and vertical polarization.

ERP Test Results

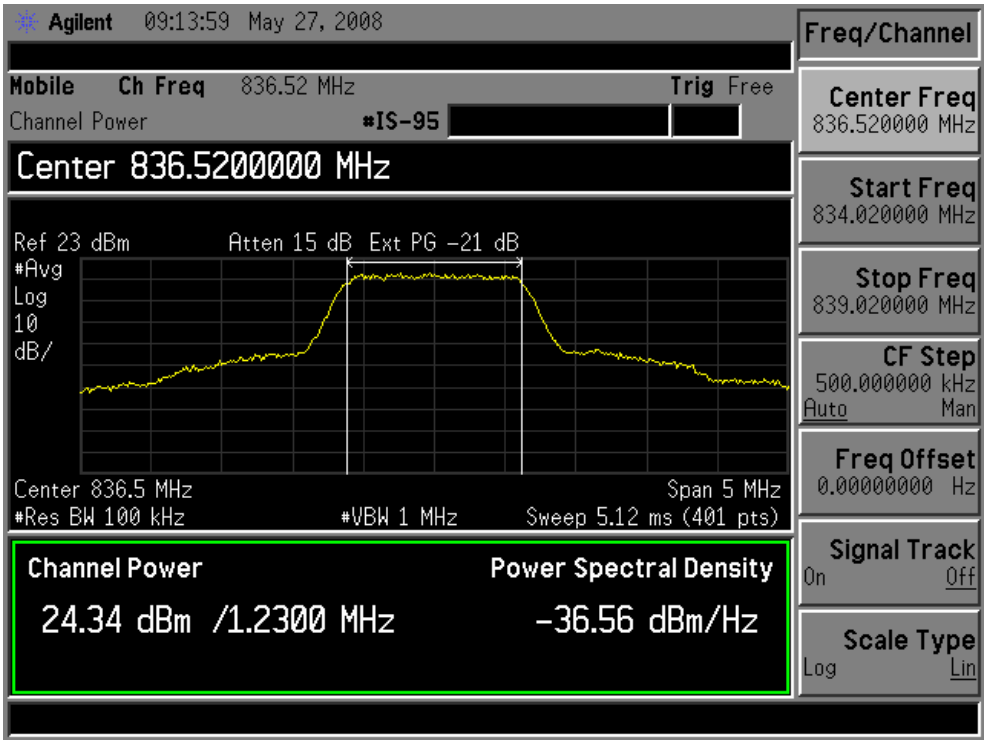
Frequency (MHz)	Substitution Reading (dBm)	Substitution Antenna Gain (dB)	Cable Loss (dB)	ERP (dBm)
863.52	24.43	0.0	2.30	22.13

Plots of Conducted Output RF Power for RC3

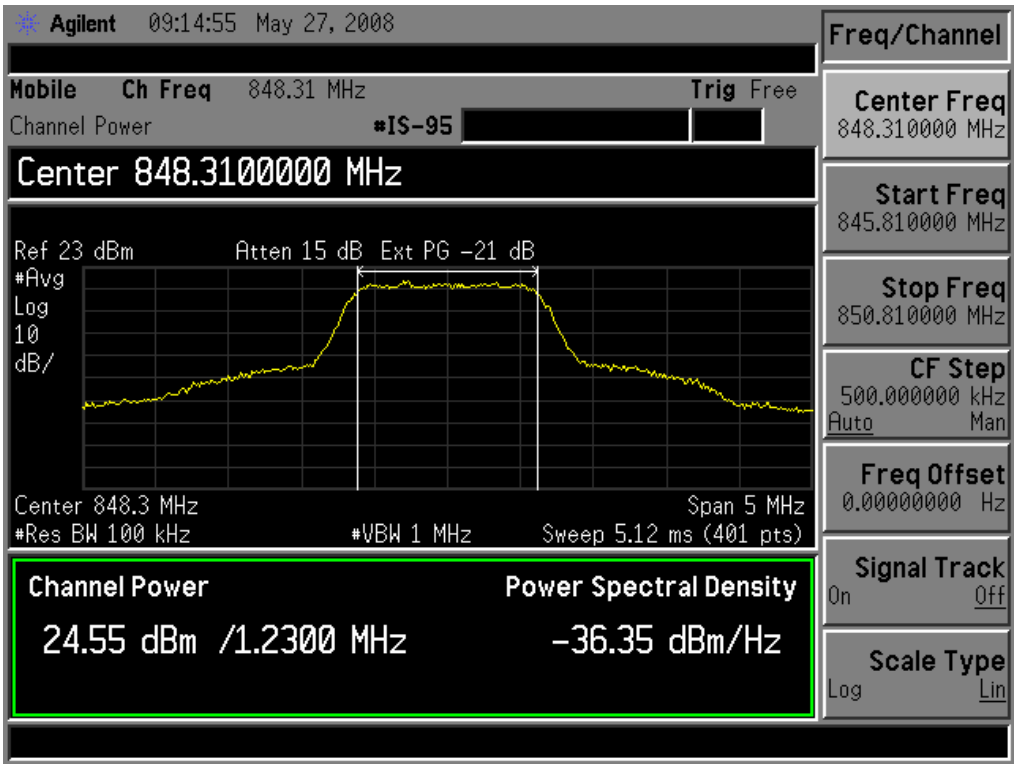
Low CH



Middle CH



High CH


Agilent 09:14:55 May 27, 2008
Mobile Ch Freq 848.31 MHz
Trig Free
Channel Power
#IS-95
Center 848.3100000 MHz
Ref 23 dBm
Atten 15 dB Ext PG -21 dB
#Avg
Log
10
dB/
Center 848.3 MHz
#Res BW 100 kHz
#VBW 1 MHz
Span 5 MHz
Sweep 5.12 ms (401 pts)
Channel Power
24.55 dBm /1.2300 MHz
Power Spectral Density
-36.35 dBm/Hz
Freq/Channel
Center Freq
848.310000 MHz
Start Freq
845.810000 MHz
Stop Freq
850.810000 MHz
CF Step
500.000000 kHz
Auto Man
Freq Offset
0.00000000 Hz
Signal Track
On Off
Scale Type
Log Lin

§2.1049, §22.917, §22.905 - OCCUPIED BANDWIDTH

Applicable Standard

Requirements: CFR 47, Section 2.1049, Section 22.901, Section 22.917.

Test Procedure

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

The resolution bandwidth of the spectrum analyzer was set at 30kHz and the 26 dB & 99% bandwidth was recorded.

Test Equipment List and Details

Manufacturer	Equipment Description	Model	Serial Number	Cal. Date
Agilent	Wireless communication test set	8960 E5515C	GB42431673	2008-01-18
Agilent	Spectrum Analysis	E4405B	MY41440292	2008-01-18

*** Statement of Traceability: ZTE Corporation Reliability Testing Center** attests that all calibrations have been performed per the NVLAP requirements, traceable to the NIST.

Environmental Conditions

Temperature:	20° C
Relative Humidity:	55%
ATM Pressure:	1018mbar

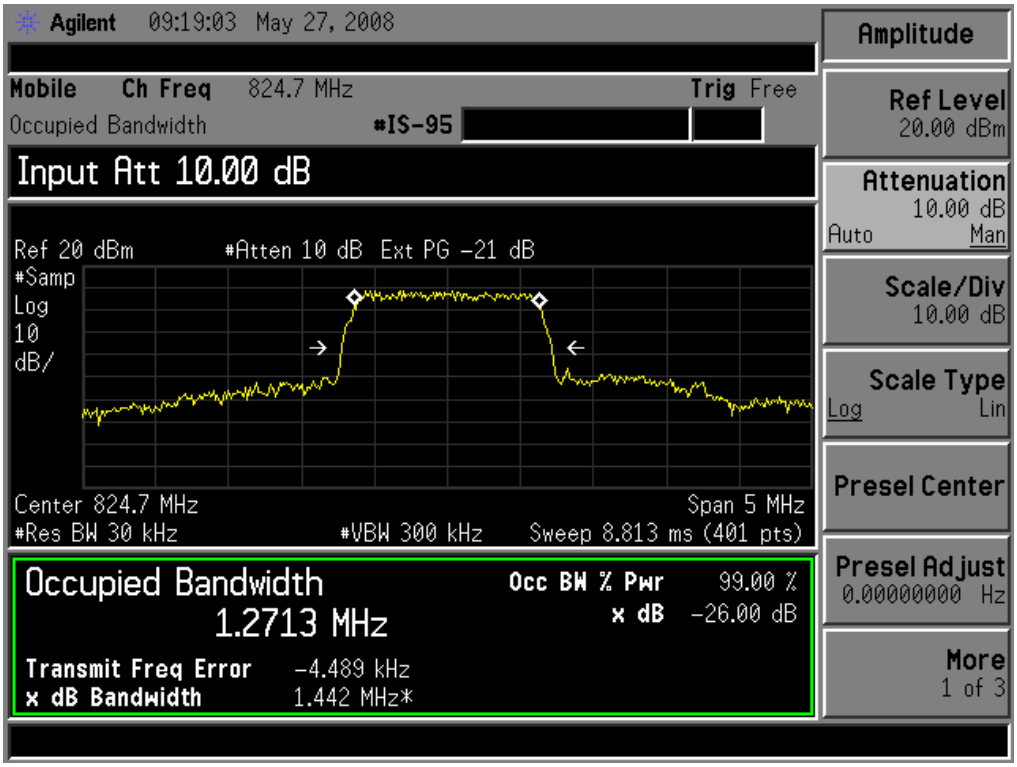
** The testing was performed by Bob Xiong on 2008-05-27*

Test Results

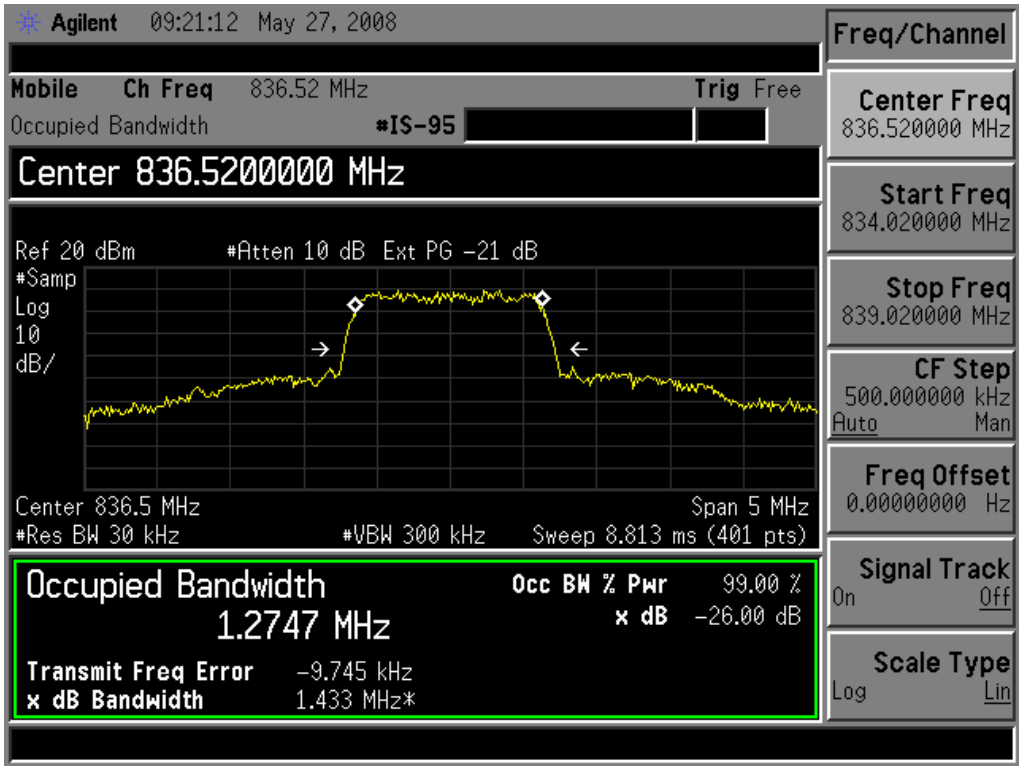
Channel	Frequency (MHz)	99% Bandwidth (MHz)	26 dB Bandwidth (MHz)
Low	824.7	1.2713	1.442
Mid	836.52	1.2747	1.433
High	848.31	1.2761	1.439

Please refer to the following plots.

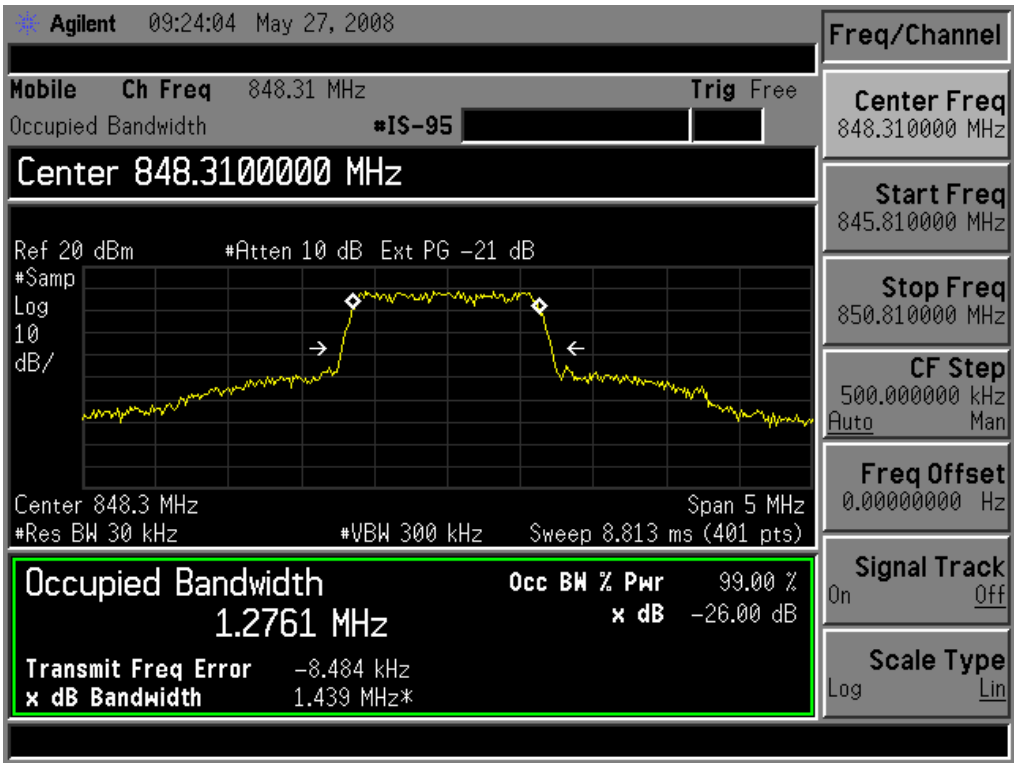
Low Channel



Mid Channel



High Channel



§2.1051, §22.917 - SPURIOUS EMISSIONS AT ANTENNA TERMINALS

Applicable Standard

Requirements: CFR 47, § 2.1051. § 22.917.

The spectrum was to be investigated to the tenth harmonics of the highest fundamental frequency as specified in § 2.1057.

Test Procedure

The RF output of the transceiver was connected to a spectrum analyzer and simulator through appropriate attenuation. The resolution bandwidth of the spectrum analyzer was set at 100 kHz. Sufficient scans were taken to show any out of band emissions up to 10^{th} harmonic.

Test Equipment List and Details

Manufacturer	Equipment Description	Model	Serial Number	Cal. Date
Agilent	Wireless communication test set	8960 E5515C	GB42431673	2008-01-18
Agilent	Spectrum Analysis	E4405B	MY41440292	2008-01-18

*** Statement of Traceability: ZTE Corporation Reliability Testing Center** attests that all calibrations have been performed per the NVLAP requirements, traceable to the NIST.

Environmental Conditions

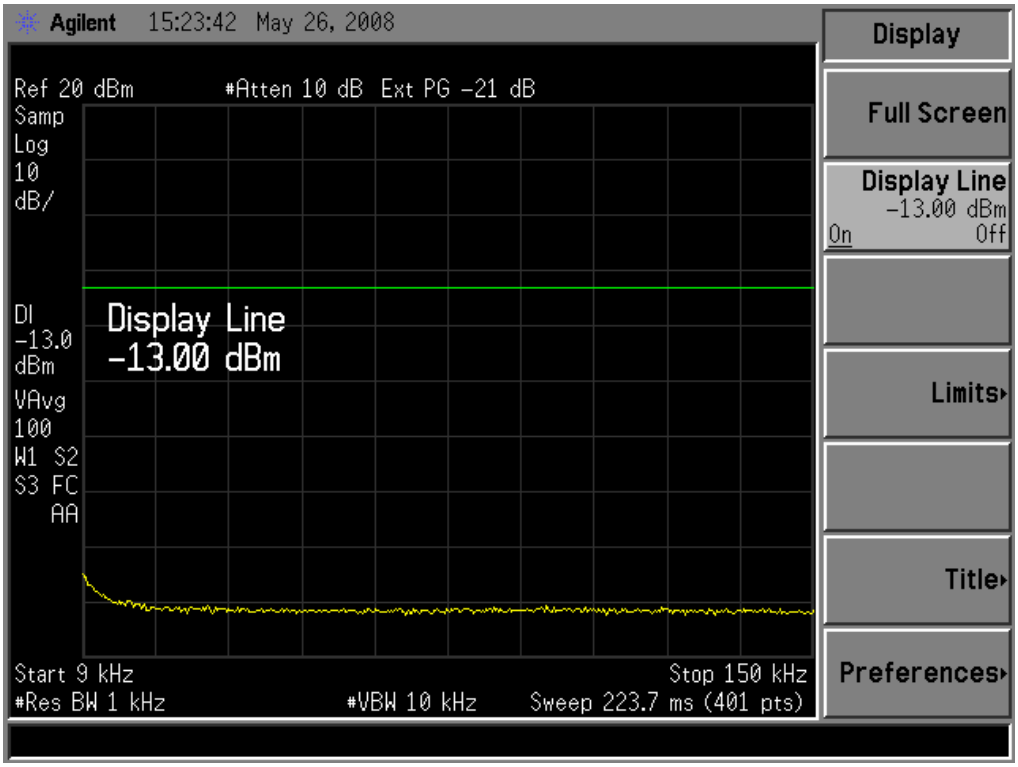
Temperature:	20° C
Relative Humidity:	55%
ATM Pressure:	1018mbar

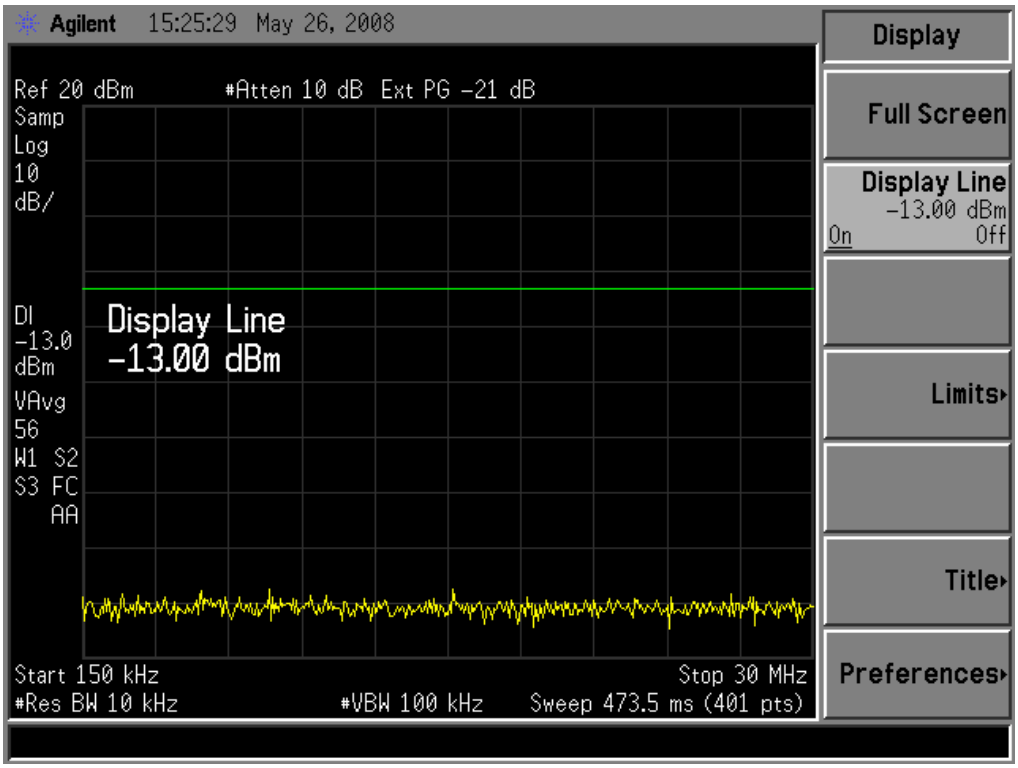
** The testing was performed by Bob Xiong on 2008-05-26*

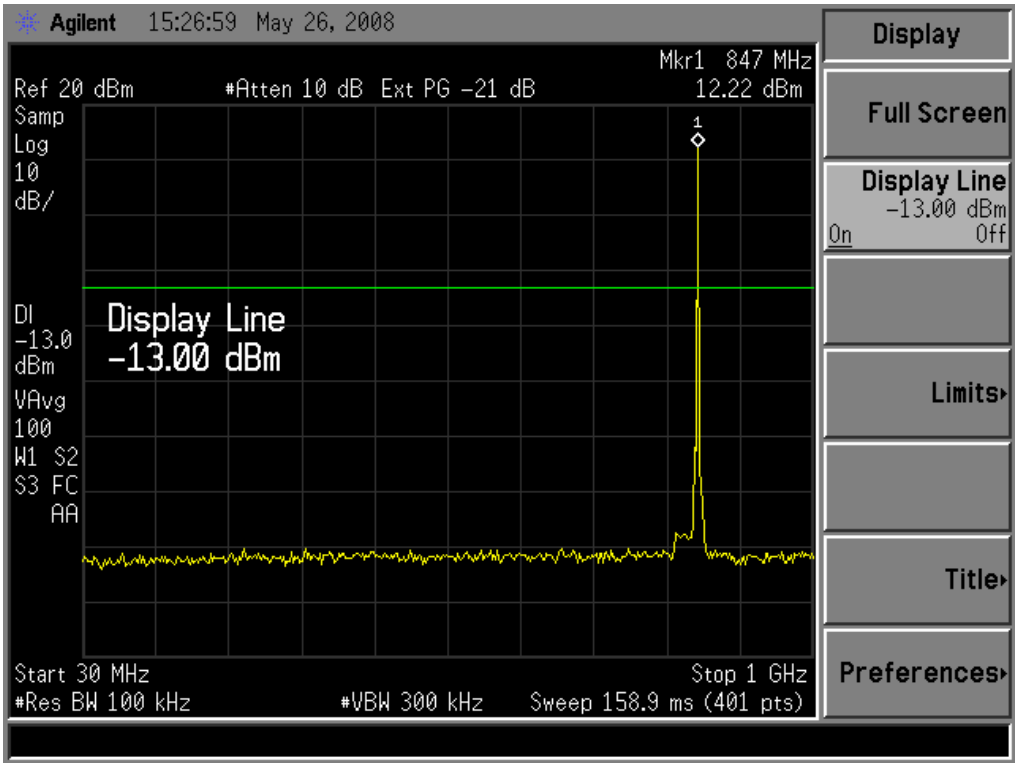
Test Results

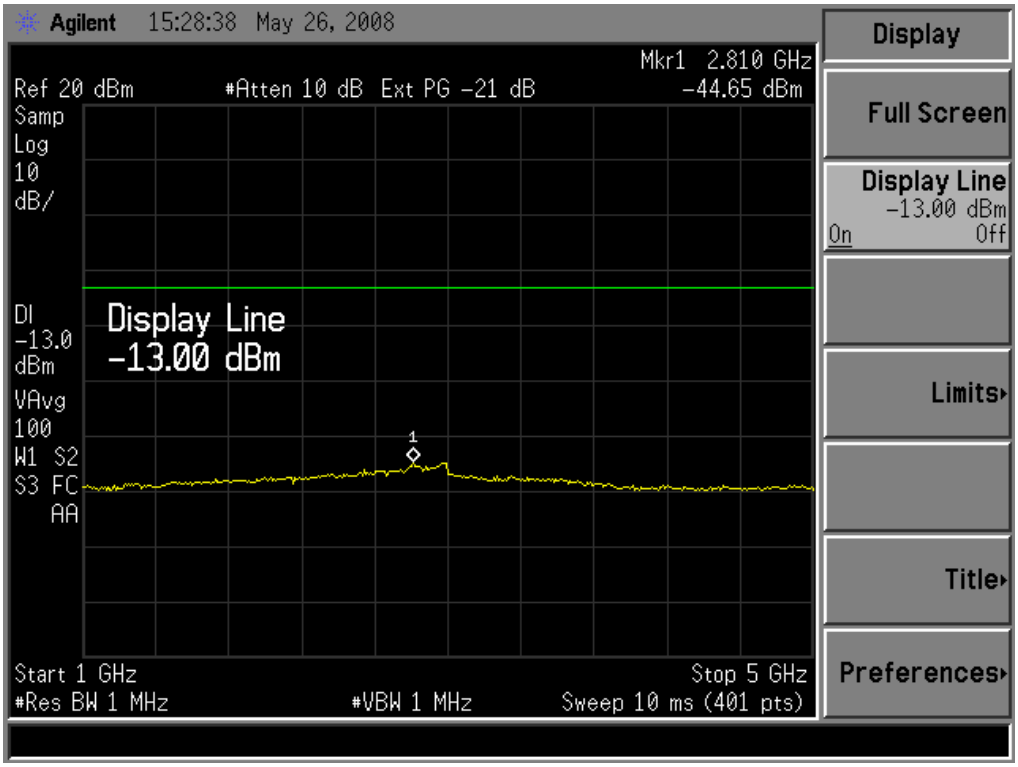
Please refer to the hereinafter plots.

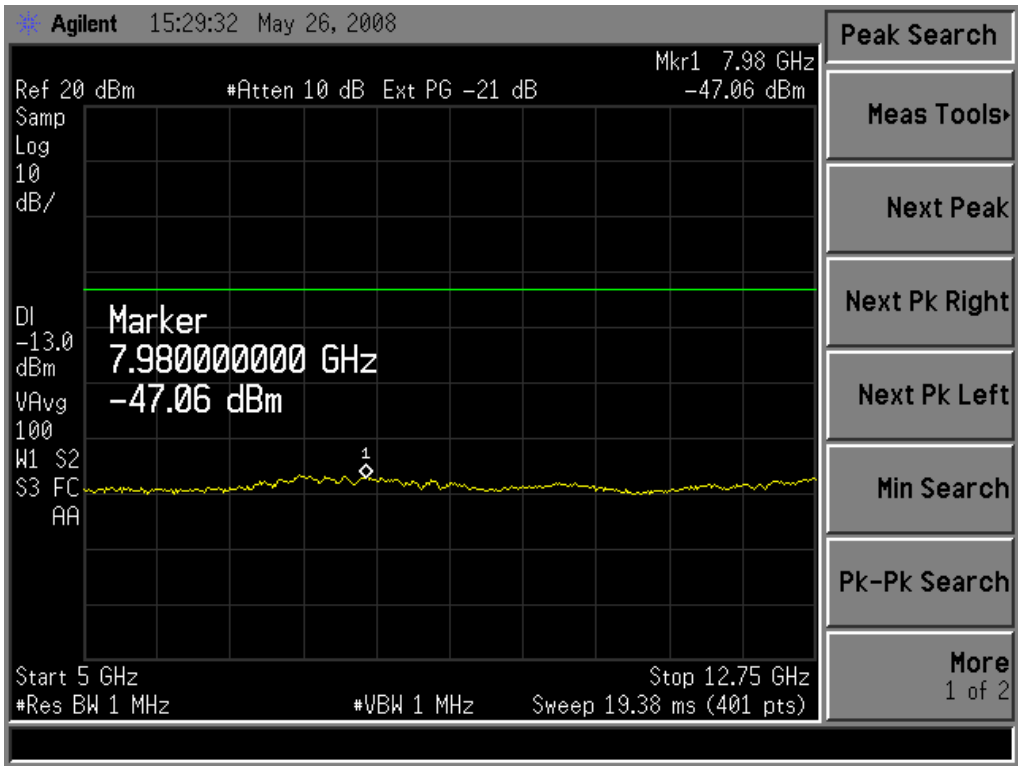
(Middle Channel)


Agilent 15:23:42 May 26, 2008
Ref 20 dBm
#Atten 10 dB Ext PG -21 dB
Samp
Log
10
dB/
Display Line
-13.00 dBm
Start 9 kHz
#Res BW 1 kHz
#VBW 10 kHz
Stop 150 kHz
Sweep 223.7 ms (401 pts)
Display
Full Screen
Display Line
-13.00 dBm
On
Off
Limits
Title
Preferences


Agilent 15:25:29 May 26, 2008
Ref 20 dBm
#Atten 10 dB Ext PG -21 dB
Samp
Log
10
dB/
Display Line
-13.00 dBm
Start 150 kHz
#Res BW 10 kHz
#VBW 100 kHz
Stop 30 MHz
Sweep 473.5 ms (401 pts)
Display
Full Screen
Display Line
-13.00 dBm
On
Off
Limits
Title
Preferences


Agilent 15:26:59 May 26, 2008
Mkr1 847 MHz
Ref 20 dBm #Atten 10 dB Ext PG -21 dB 12.22 dBm
Samp
Log
10
dB/
Dl
-13.0
dBm
Display Line
-13.00 dBm
VAvg
100
W1 S2
S3 FC
AA
Start 30 MHz
#Res BW 100 kHz
#VBW 300 kHz
Stop 1 GHz
Sweep 158.9 ms (401 pts)
Display
Full Screen
Display Line
-13.00 dBm
On Off
Limits
Title
Preferences


Agilent 15:28:38 May 26, 2008
Mkr1 2.810 GHz
Ref 20 dBm #Atten 10 dB Ext PG -21 dB -44.65 dBm
Samp
Log
10
dB/
Dl
-13.0
dBm
Display Line
-13.00 dBm
VAvg
100
W1 S2
S3 FC
AA
Start 1 GHz
#Res BW 1 MHz
#VBW 1 MHz
Stop 5 GHz
Sweep 10 ms (401 pts)
Display
Full Screen
Display Line
-13.00 dBm
On Off
Limits
Title
Preferences


Agilent 15:29:32 May 26, 2008
Mkr1 7.98 GHz
Ref 20 dBm #Atten 10 dB Ext PG -21 dB -47.06 dBm
Samp
Log
10
dB/
Marker
7.980000000 GHz
-47.06 dBm
Dl
-13.0
dBm
VAvg
100
W1 S2
S3 FC
AA
Start 5 GHz
#Res BW 1 MHz
#VBW 1 MHz
Stop 12.75 GHz
Sweep 19.38 ms (401 pts)
Peak Search
Meas Tools
Next Peak
Next Pk Right
Next Pk Left
Min Search
Pk-Pk Search
More
1 of 2

§2.1055 (a), §2.1055 (d), §22.355 - FREQUENCY STABILITY

Applicable Standard

Requirements: FCC § 2.1055 (a), § 2.1055 (d) & following:

According to §22.355, the carrier frequency of each transmitter in the Public Mobile Services must be maintained within the tolerances given in Table C-1 of this section.

Table C-1 Frequency Tolerance for Transmitters in the Public Mobile Services

Frequency Range (MHz)	Base, fixed (ppm)	Mobile ≤3 watts (ppm)	Mobile ≤3 watts (ppm)
25 to 50	20.0	20.0	50.0
50 to 450	5.0	5.0	50.0
450 to 512	2.5	5.0	5.0
821 to 896	1.5	2.5	2.5
928 to 929	5.0	n/a	n/a
929 to 960	1.5	n/a	n/a
2110 to 2220	10.0	n/a	n/a

According to §24.235, the frequency stability shall be sufficient to ensure that the fundamental emission stays within the authorized frequency block.

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 communication test set 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 20 minutes, the frequency output was recorded from the communication test set.

Test Equipment List and Details

Manufacturer	Equipment Description	Model	Serial Number	Cal. Date
Agilent	Wireless communication test set	8960 E5515C	GB42431673	2008-01-18
Agilent	Spectrum Analysis	E4405B	MY41440292	2008-01-18
Wuxi	Temperature Oven	GDW-0100	G30064	2008-01-18

*** Statement of Traceability: ZTE Corporation Reliability Testing Center** attests that all calibrations have been performed per the NVLAP requirements, traceable to the NIST.

Environmental Conditions

Temperature:	20° C
Relative Humidity:	55%
ATM Pressure:	1018mbar

** The testing was performed by Bob Xiong on 2008-05-27*

Test Results

Frequency Stability versus Temperature:

Reference Frequency: 836.52 MHz, Limit: 2.5ppm				
Test Environment		**Frequency Error (Hz)**	**Measurement Results**	
Temperature (°C)	**Power Supplied (Vdc)**		**Error (ppm)**	**Limit (ppm)**
50	3.7	4	0.0047817	2.5
40	3.7	2.8	0.00615080	2.5
30	3.7	3.8	0.00454263	2.5
20	3.7	0.6	0.00071725	2.5
10	3.7	0.5	0.00059771	2.5
0	3.7	3.8	0.00454263	2.5
-10	3.7	2.5	0.00298857	2.5
-20	3.7	4.6	0.00549897	2.5
-30	3.7	4.2	0.0050208	2.5

Frequency Stability versus Voltage:

Reference Frequency: 836.52 MHz, Limit: 2.5ppm				
Test Environment		**Frequency Error (Hz)**	**Measurement Results**	
Temperature (°C)	**Power Supplied (Vdc)**		**Error (ppm)**	**Limit (ppm)**
50	3.4	5.3	0.00633577	2.5
40	3.4	5.2	0.00621622	2.5
30	3.4	2.5	0.00298857	2.5
20	3.4	0.5	0.00059771	2.5
10	3.4	1.6	0.00285573	2.5
0	3.4	3.8	0.00454263	2.5
-10	3.4	2.8	0.00615080	2.5
-20	3.4	3.8	0.0033472	2.5
-30	3.4	2.7	0.00322766	2.5

§22.917 – BAND EDGE

Applicable Standard

According to § 22.917, 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.

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, RBW set to 10 kHz.

Test Equipment List and Details

Manufacturer	Equipment Description	Model	Serial Number	Cal. Date
Agilent	Wireless communication test set	8960 E5515C	GB42431673	2008-01-18
Agilent	Spectrum Analysis	E4405B	MY41440292	2008-01-18

*** Statement of Traceability: ZTE Corporation Reliability Testing Center** attests that all calibrations have been performed per the NVLAP requirements, traceable to the NIST.

Environmental Conditions

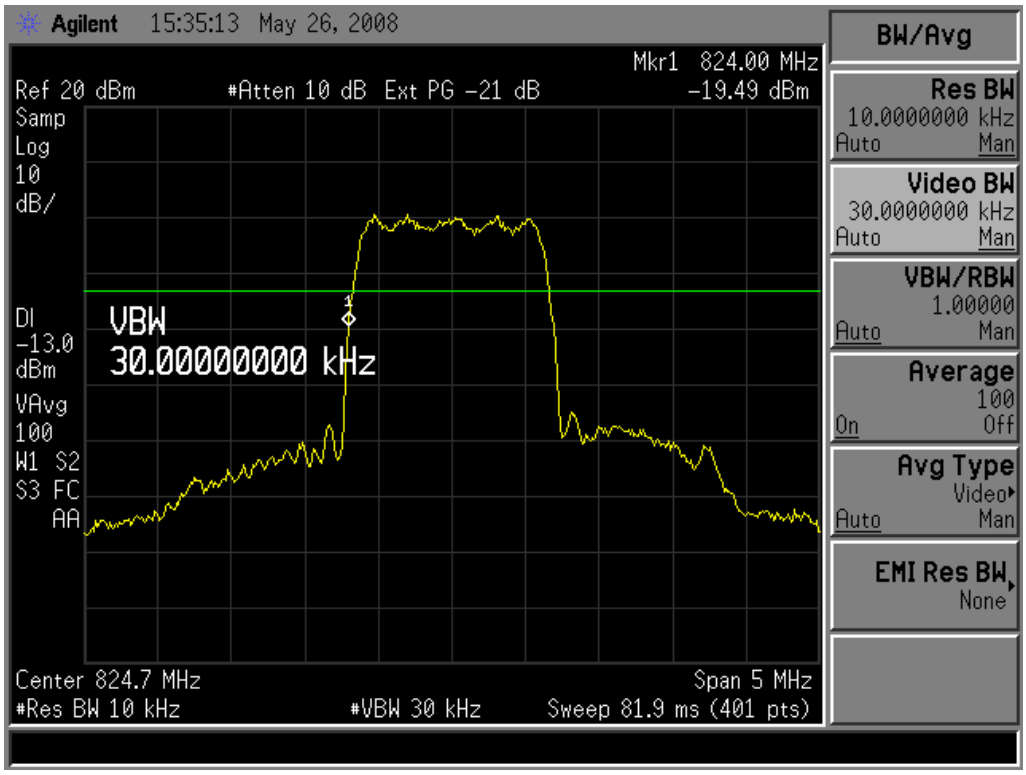
Temperature:	20° C
Relative Humidity:	55%
ATM Pressure:	1018mbar

** The testing was performed by Bob Xiong on 2008-05-26*

Test Results

Please refer to the following plots.

Lowest Channel



Highest Channel