

Advanced
Compliance

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**Electromagnetic
Emission
Compliance
Test Report**



**Equipment Under Test
(EUT)
Applicant**

BTS Link-104/108 Repeater
Shyam Telecom Inc.

In Accordance With

FCC Part 27 & Part 2

Test by

Advanced Compliance Laboratory, Inc.
6 Randolph Way
Hillsborough, New Jersey 08844

Authorized by

Wei Li
Lab Manager

Signature

Date

August 4, 2008

**AC Lab Report
Number**

0048-080702-01



Lab Code:200101-0

**The test result in this report is supported and
covered by the NVLAP accreditation.**

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Section 1. Summary of Test Results

Manufacturer: Shyam Telecom Inc.
Model No.: BTS Link-104/108 Repeater
Sample No.: MORFH012+RORFH020

General: **All measurements are traceable to national standards**

These tests were conducted on a sample of the equipment for the purpose of demonstrating compliance with FCC Part 27& Part 2.

New Submission Production Unit
 Class II Permissive Change Pre-Production Unit

THIS TEST REPORT RELATES ONLY TO THE ITEM(S) TESTED.

THE FOLLOWING DEVIATIONS FROM, ADDITIONS TO, OR EXCLUSIONS FROM THE TEST SPECIFICATIONS HAVE BEEN MADE.

“See Summary of Test Data”



NVLAP LAB CODE: 200101-0

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Summary of Test Data

RF Power Output	27.50 & 2.1046	100W EIRP	Complies**
Occupied Bandwidth (Voice & SAT)	2.1049(i)	Mask	N/A*
Occupies Bandwidth (Wideband Data)	2.1049(i)	Mask	N/A*
Occupied Bandwidth (Digital)	2.1049(i)	Mask	Complies
Spurious Emissions at Antenna Terminals	27.53(g)&2.1051	-13 dBm	Complies
Field Strength of Spurious Emissions	2.1053	-13 dBm E.I.R.P.	Complies
Frequency Stability	22.355 24.235	1.5 ppm	N/A*

* These items are NOT applied to the EUT.

The estimated uncertainty of the test result is given as following. The method of uncertainty calculation is provided in Advanced Compliance Lab. Doc. No. 0048-01-01.

	Prob. Dist.	Uncertainty(dB)	Uncertainty(dB)	Uncertainty(dB)
		30-1000MHz	1-6.5GHz	Conducted
Combined Std. Uncertainty u_c	norm.	± 2.36	± 2.99	± 1.83



Wei Li
Lab Manager
Advanced Compliance Lab

Date: August 4, 2008

Section 2. General Equipment Specification

Supply Voltage		100-240VAC 47/63Hz & -48VDC				
Frequency Range	DL	2110-2155MHz				
	UL	1710-1755MHz *Uplink path connecting to BTS via “ Non-Transmitting Host Unit” subject to Verification and is not part of this filing.				
	Modulation	WCDMA (F9W) <input checked="" type="checkbox"/>	GSM (GXW) <input type="checkbox"/>	EDGE (G7W) <input type="checkbox"/>	CDPD (F9W) <input type="checkbox"/>	AMPS (F8W, F1D) <input type="checkbox"/>
Output Impedance		50ohm				
Frequency Translation		F1-F1 <input checked="" type="checkbox"/>	F1-F2 <input type="checkbox"/>	N/A <input type="checkbox"/>		
		Software <input type="checkbox"/>	Duplexer Change <input type="checkbox"/>	Full Band Coverage <input checked="" type="checkbox"/>		

DC voltages and DC currents per 2.1033(c)(8)

The input supply to the transmitter was set at 27Volts DC. The RF power output was measured with the indicated voltage and current applied into the final RF amplifying device(s).

2100MHz SBROU40(AWS)

RF Output, DC Current and RF Input Power are all average values.

Measured Maximum RF DL output : 40.1dBm (rated); 40.47dBm (Over drive) w/ V=26.1V & I=2.61A

Measured Minimum RF DL output: 1.21dBm

Tune-up procedure per 2.1033(c) (9)

There are no user accessible adjustments or tuning in this portable cellular transceiver. All necessary adjustments and tuning are performed during manufacture of the product. Any adjustments or tuning after service or repair are done as part of that process as special equipment is required to perform such adjustments.

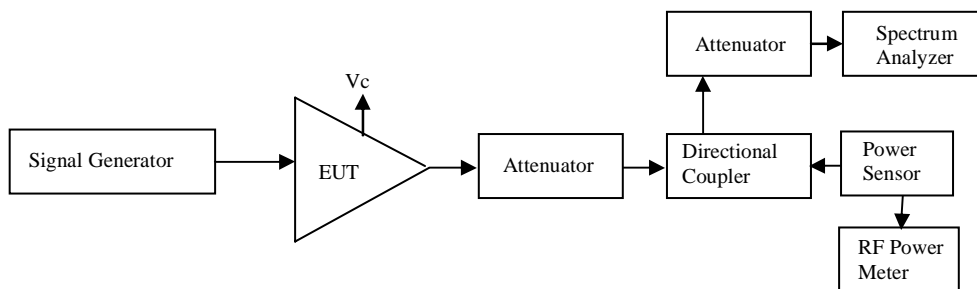
Description of Operation

This device is a single band repeater operating in both downlink and uplink spectrums of AWS band. This application is only for DL path, 2110MHz – 2155MHz.

System Diagram

See Attachment.

General EUT Setup



Testing Frequency/Channel/Port Selection:

Band I: L(owest), M(iddle), H(ighest) of DL band, 2110MHz-2155MHz.

Section 3. RF Output Power

Name of Test:	<i>RF Output Power</i>	Test Standard:	<i>27.50 & 2.1046</i>
Tested By:	WEI LI	Test Date:	07/02/2008-08/01/2008

Minimum Standard: Para. No. 27.50 & 2.1046. The maximum peak output power of base transmitters should not exceed 100 Watts EIRP (50dBm).

Method of Measurement: Detachable Antenna:
The average/peak power at antenna terminals is measured using power meter/spectrum analyzer at the low band edge, mid, and high band edge frequencies for all modulations listed on Page 5.

Integral Antenna:

If the antenna is not detachable from the circuit then the Peak Power Output is derived from the peak radiated field strength of the fundamental emission by using the plane wave relation

$$\frac{GP}{4\pi R^2} = \frac{E^2}{120\pi}$$

and proceeding as follows:

$$P = \frac{E^2 R^2}{30G} = \frac{E^2 3^2}{30G}$$

where,

P = the equivalent isotropic radiated power in watts

E = the maximum measured field strength in V/m

R = the measurement range (3 meters)

G = the numeric gain of the transmit antenna in relation to an isotropic radiator

Test Result:

Complies

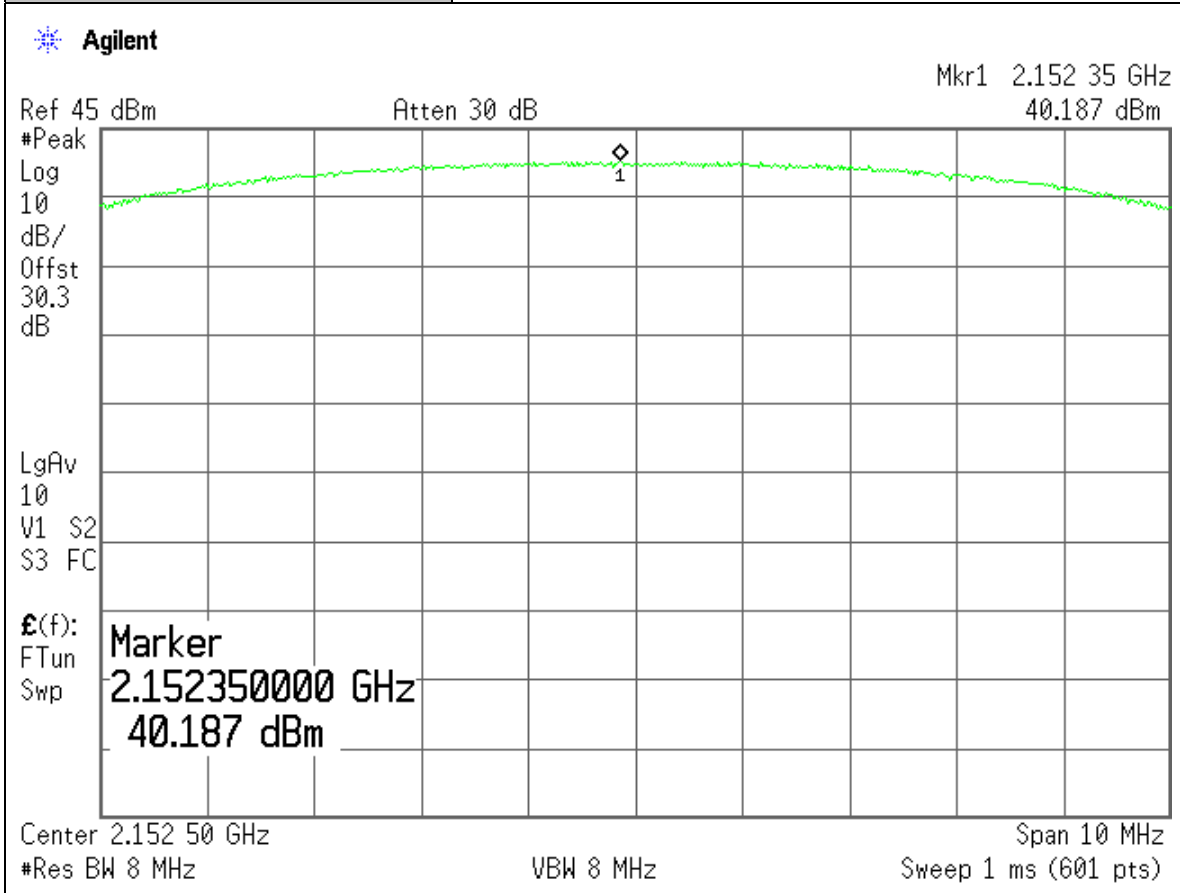
Test Data:

AWS Bands	Channel	Modulation	Power Output (dBm)*	Limit (dBm)	Margin
Downlink	Hi	WCDMA	40.19	57	-16.81
	Mid	WCDMA	40.47	57	-16.53
	Low	WCDMA	40.45	57	-16.55
Input Power (dBm)	-5.6dBm				
Ref Offset	Ref offset=Cable Factor +Attenuation=30.3dB				

* Over-drive condition with output power limited by internal AGC.

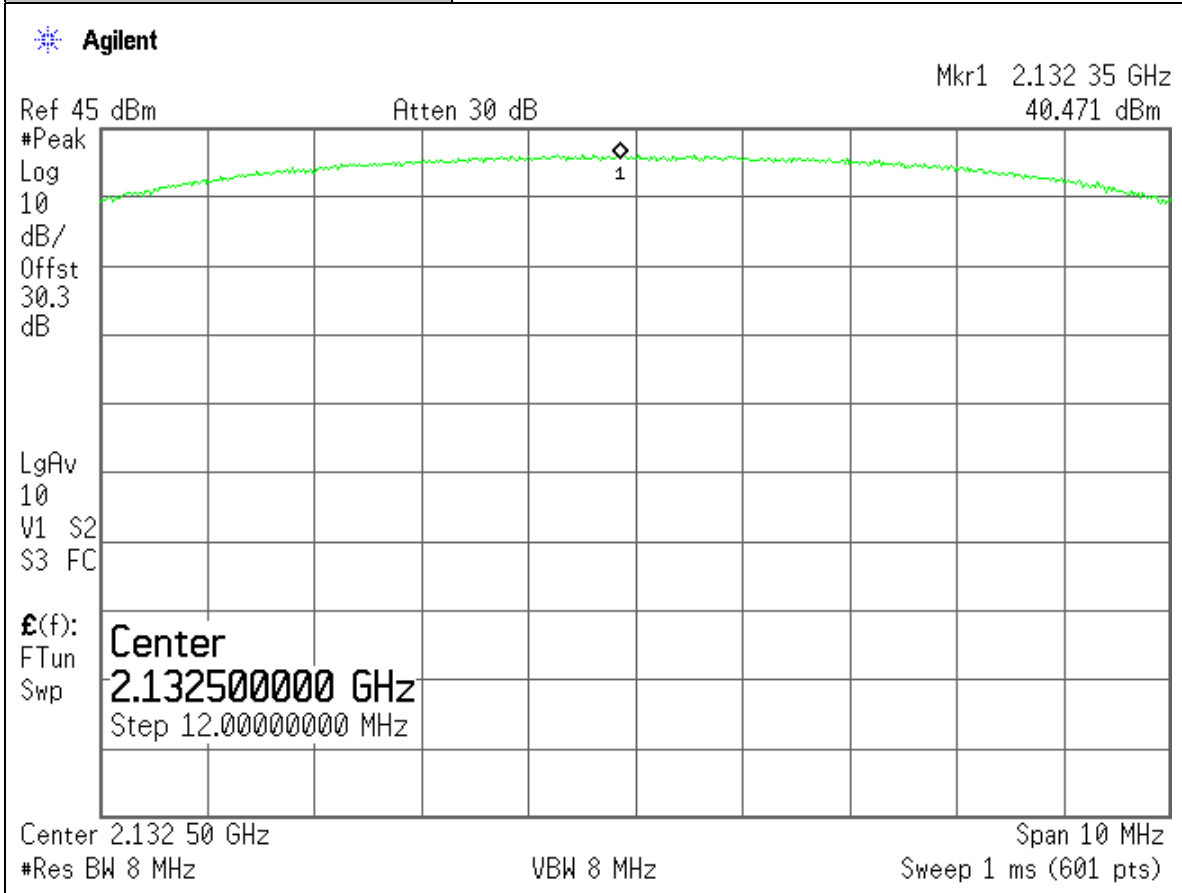
Project Number:	0048-080702-01
EUT:	Shyam BTS Link-104/108 Repeater
SN:	MORFH012+RORFH020
Tested By:	Wei Li
Temperature:	70°F
Humidity:	30%

Section:	Output Power: AWS Bands
Plot Name:	Downlink, Hi-Channel, WCDMA Modulation
Configuration:	SG Input: -5.6dBm, Output Port: EUT Mobile



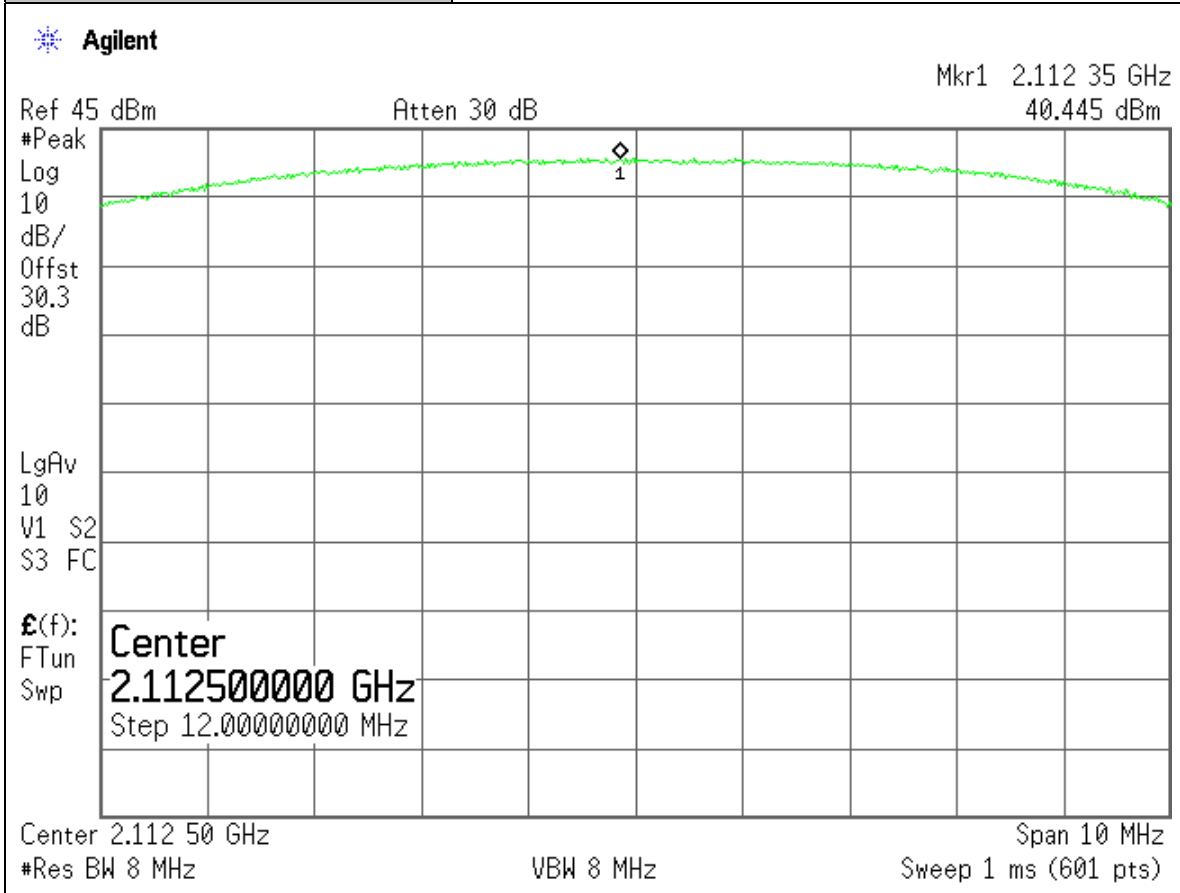
Project Number:	0048-080702-01
EUT:	Shyam BTS Link-104/108 Repeater
SN:	MORFH012+RORFH020
Tested By:	Wei Li
Temperature:	70°F
Humidity:	30%

Section:	Output Power: AWS Bands
Plot Name:	Downlink, Mid-Channel, WCDMA Modulation
Configuration:	SG Input: -5.6dBm, Output Port: EUT Mobile



Project Number:	0048-080702-01
EUT:	Shyam BTS Link-104/108 Repeater
SN:	MORFH012+RORFH020
Tested By:	Wei Li
Temperature:	70°F
Humidity:	30%

Section:	Output Power: AWS Bands
Plot Name:	Downlink, Low-Channel, WCDMA Modulation
Configuration:	SG Input: -5.6dBm, Output Port: EUT Mobile



Section 4. Occupied Bandwidth

Name of Test:	<i>Occupied Bandwidth</i>	Test Standard:	<i>2.1049(i)</i>
Tested By:	WEI LI	Test Date:	07/02/2008-08/01/2008

Minimum Standard: Not defined by FCC. Input vs. Output.

Method of Measurement: Spectrum Analyzer Settings:
 RBW: WCDMA (100KHz), CDMA (30 kHz), GSM (3kHz), EDGE (3KHz),NADC (1 kHz) and CDPD (1 kHz)
 VBW: \geq RBW
 Span: As required
 Sweep: Auto
 Input Signal Characteristics:
 RF level: Maximum Gain recommended by manufacturer

Test Result:

Complies

Test Data:

Attached Plots

Project Number:	0048-080702-01
EUT:	Shyam BTS Link-104/108 Repeater
SN:	MORFH012+RORFH020
Tested By:	Wei Li
Temperature:	70°F
Humidity:	30%

Section:	Occupied Bandwidth: AWS Bands
Plot Name:	Downlink, Hi-Channel, WCDMA Modulation
Configuration:	SG Input: -6dBm, Output Port: EUT MOBILE

Agilent

Ch Freq 2.1525 GHz **Trig** Free

Occupied Bandwidth

Center 2.152500000 GHz

Freq/Channel

Center Freq
2.15250000 GHz

Start Freq
2.15000000 GHz

Stop Freq
2.15500000 GHz

CF Step
12.0000000 MHz
Auto Man

Freq Offset
0.00000000 Hz

Signal Track
On Off

Ref 45 dBm Atten 30 dB

#Avg Log 10 dB/Offst 30.3 dB

Center 2.152 500 GHz Span 5 MHz

#Res BW 100 kHz VBW 100 kHz Sweep 1.92 ms (601 pts)

Occupied Bandwidth **Occ BW % Pwr** 99.00 %

4.0923 MHz **x dB** -26.00 dB

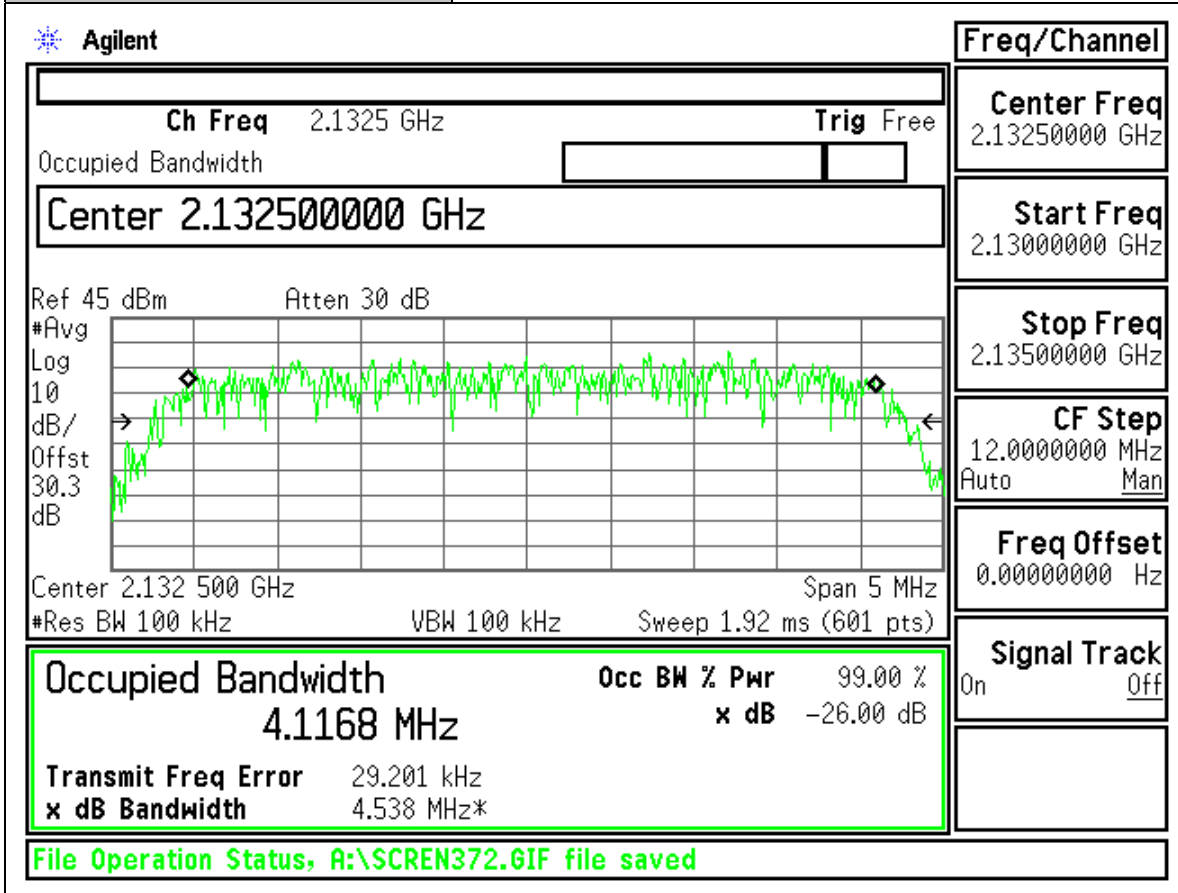
Transmit Freq Error -3.192 kHz

x dB Bandwidth 4.566 MHz*

File Operation Status, A:\SCREN373.GIF file saved

Project Number:	0048-080702-01
EUT:	Shyam BTS Link-104/108 Repeater
SN:	MORFH012+RORFH020
Tested By:	Wei Li
Temperature:	70°F
Humidity:	30%

Section:	Occupied Bandwidth: AWS Bands
Plot Name:	Downlink, Mid-Channel, WCDMA Modulation
Configuration:	SG Input: -6dBm, Output Port: SG



Project Number:	0048-080702-01
EUT:	Shyam BTS Link-104/108 Repeater
SN:	MORFH012+RORFH020
Tested By:	Wei Li
Temperature:	70°F
Humidity:	30%

Section:	Occupied Bandwidth: AWS Bands
Plot Name:	Downlink, Low-Channel, WCDMA Modulation
Configuration:	SG Input: -6dBm, Output Port: EUT MOBILE

Agilent

Display
 Full Screen
Display Line
 -5.92 dBm
 On Off

 Bottom

Ch Freq 2.1125 GHz
Trig Free

Occupied Bandwidth

Ref Level 45.00 dBm

Ref 45 dBm
Atten 30 dB

#Res BW 100 kHz
VBW 100 kHz
Sweep 1.92 ms (601 pts)

Occupied Bandwidth	Occ BW % Pwr 99.00 %
4.1408 MHz	x dB -26.00 dB
Transmit Freq Error 15.357 kHz	
x dB Bandwidth 4.574 MHz*	

File Operation Status, A:\SCREN371.GIF file saved

Section 5. Spurious Emissions at Antenna Terminals

Name of Test:	<i>Spurious Emissions at Antenna Terminals</i>	Test Standard:	<i>27.53(g)&2.1051(a)</i>
Tested By:	WEI LI EDWARD LEE	Test Date:	07/02/2008-08/01/2008

Minimum Standard: Para. No. 27.53(g)&2.1051(a). The magnitude of each spurious and harmonic emission that can be detected when the equipment is operated under conditions specified in the instruction manual and/or alignment procedure, shall not less than $43+10 \log$ (mean output power in watts) dBc below the mean power output outside a licensee's frequency block (-13dBm).

Method of Measurement: Spectrum Analyzer Settings:
 RBW: 100 kHz&1MHz. As required for digital modulations.
 VBW: >=RBW
 Start Frequency: 0 MHz or lowest EUT clock frequency.
 Stop Frequency: 22GHz (AWS 2100)
 Sweep: Auto

For Inter-modulation measurement: Two RF signals set as inputs. The frequencies of both RF signals shall be within the repeater's operating band. The spacing between both RF signals shall be the minimum possible spacing applied in a network. The level of both RF input signals shall be increased, until the maximum rated output power per channel, as declared by the manufacturer, is reached.

Frequencies: $f1=F_{(\text{Low CH/Mid CH/High CH})}$, $f2=f1\pm\Delta$
 Min. spacing $\Delta=2.5\text{MHz}$ for CDMA and 600KHz for GSM&EDGE
 Each RF Input Level:
 about -3dB comparing to the max. input level of single RF Input test

Test Result:

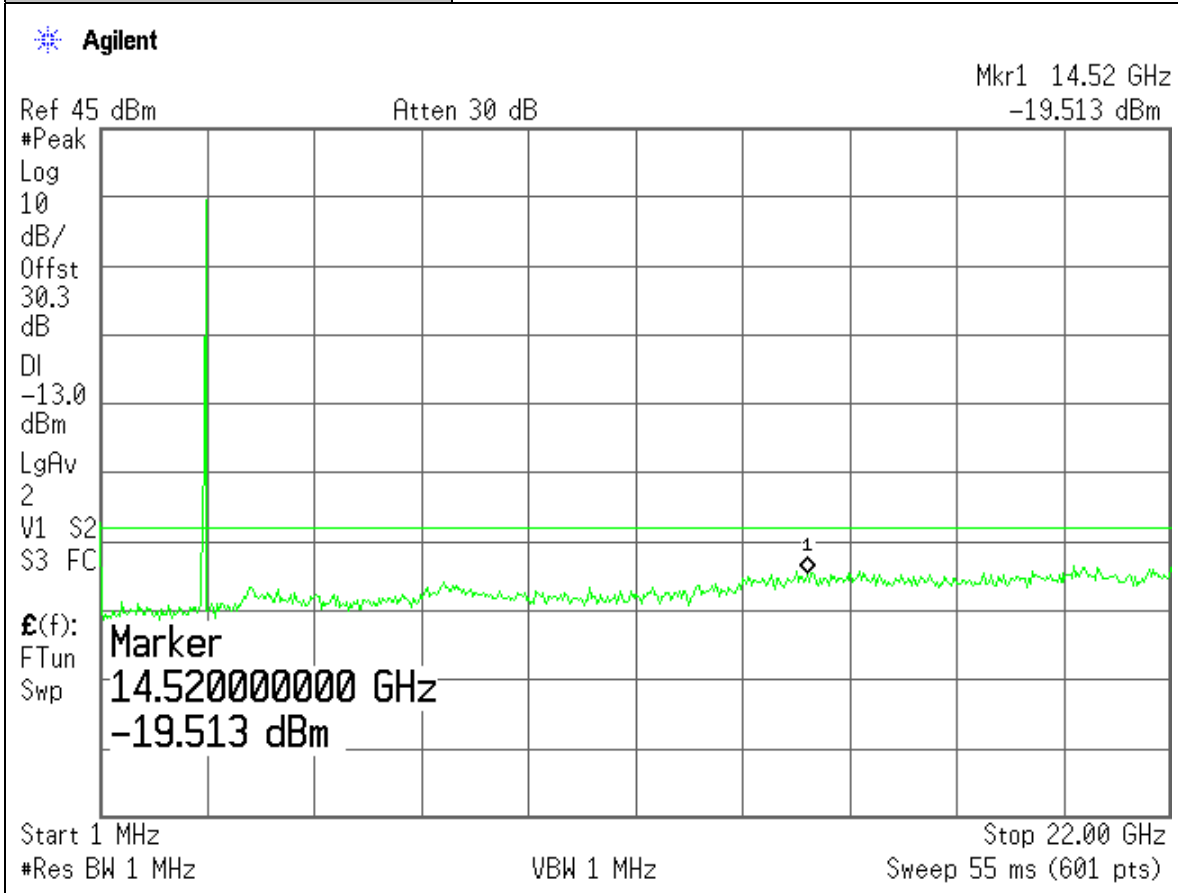
Complies

Test Data:

Attached Plots

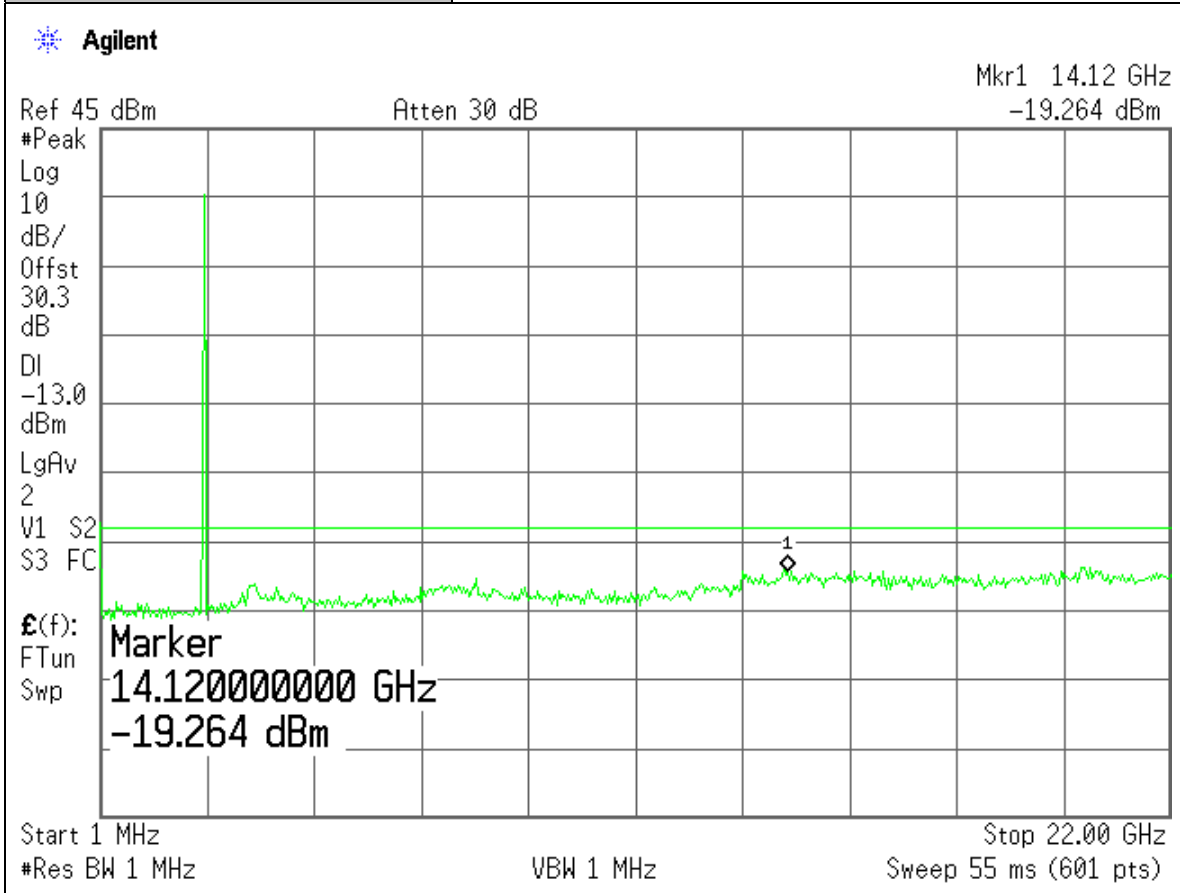
Project Number:	0048-080702-01
EUT:	Shyam BTS Link-104/108 Repeater
SN:	MORFH012+RORFH020
Tested By:	Wei Li
Temperature:	70°F
Humidity:	30%

Section:	Spurious Emissions at Antenna Terminals: AWS Bands / WCDMA Modulation
Plot Name:	Downlink, Hi-Channel
Configuration:	SG Input: -6dBm, Output Port: EUT MOBILE



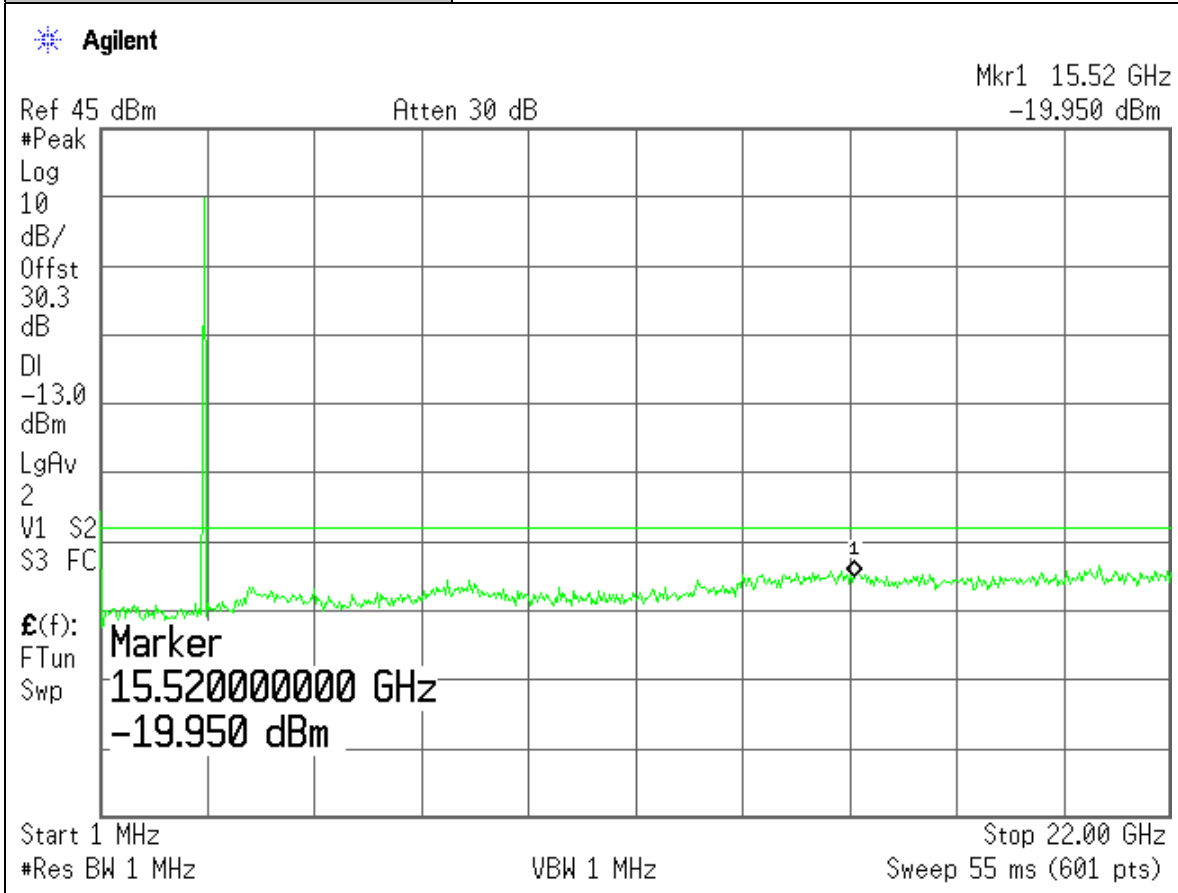
Project Number:	0048-080702-01
EUT:	Shyam BTS Link-104/108 Repeater
SN:	MORFH012+RORFH020
Tested By:	Wei Li
Temperature:	70°F
Humidity:	30%

Section:	Spurious Emissions at Antenna Terminals: AWS Bands / WCDMA Modulation
Plot Name:	Downlink, Mid-Channel
Configuration:	SG Input: -6dBm, Output Port: EUT MOBILE



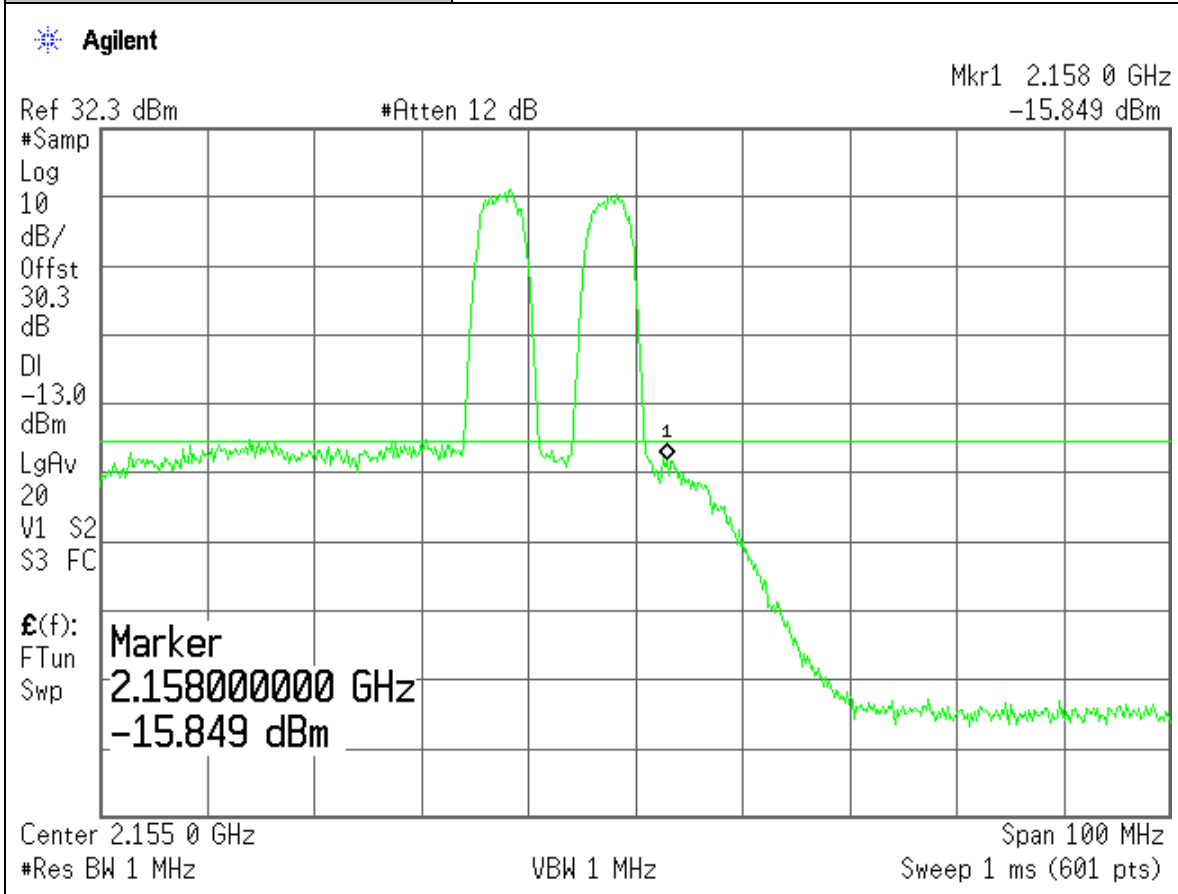
Project Number:	0048-080702-01
EUT:	Shyam BTS Link-104/108 Repeater
SN:	MORFH012+RORFH020
Tested By:	Wei Li
Temperature:	70°F
Humidity:	30%

Section:	Spurious Emissions at Antenna Terminals: AWS Bands / WCDMA Modulation
Plot Name:	Downlink, Low-Channel
Configuration:	SG Input: -6dBm, Output Port: EUT MOBILE



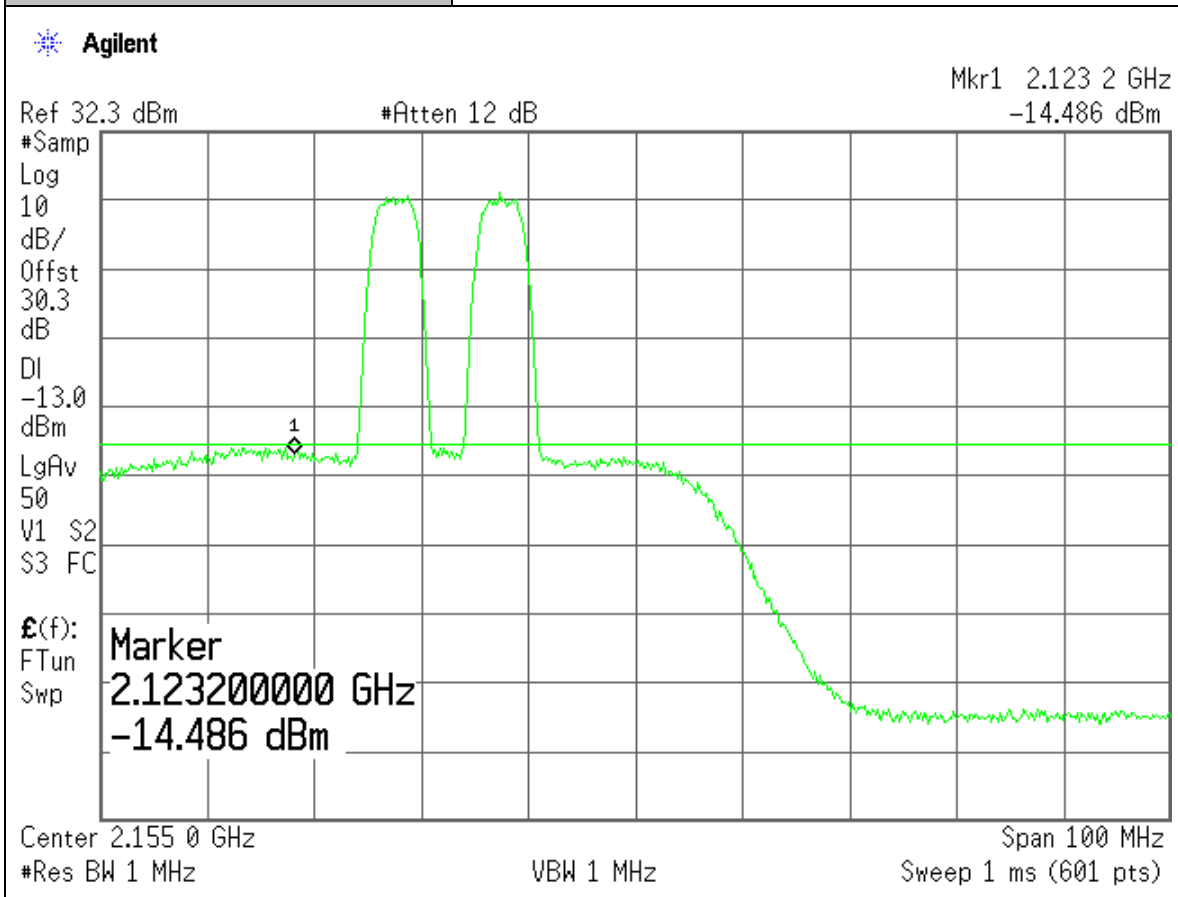
Project Number:	0048-080702-01
EUT:	Shyam BTS Link-104/108 Repeater
SN:	MORFH012+RORFH020
Tested By:	Wei Li
Temperature:	70°F
Humidity:	30%

Section:	Spurious Emissions at Antenna Terminals: AWS Bands / WCDMA Modulation
Plot Name:	DL, High-Chn, Intermodulation, Upper Bandedge
Configuration:	SG Input: -6dBm, Output Port: EUT MOBILE



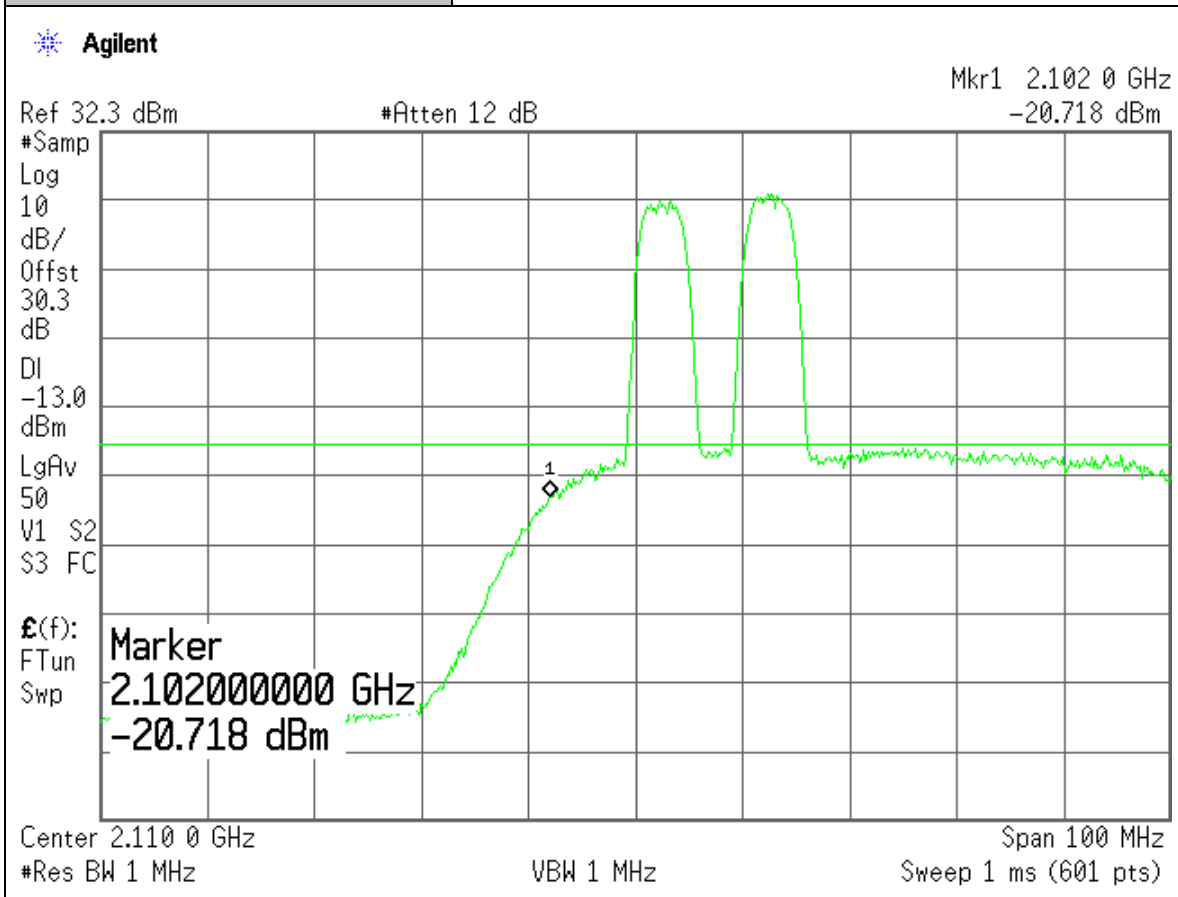
Project Number:	0048-080702-01
EUT:	Shyam BTS Link-104/108 Repeater
SN:	MORFH012+RORFH020
Tested By:	Wei Li
Temperature:	70°F
Humidity:	30%

Section:	Spurious Emissions at Antenna Terminals: AWS Bands / WCDMA Modulation
Plot Name:	DL, Mid-Chn, Intermodulation
Configuration:	SG Input: -6dBm, Output Port: EUT MOBILE



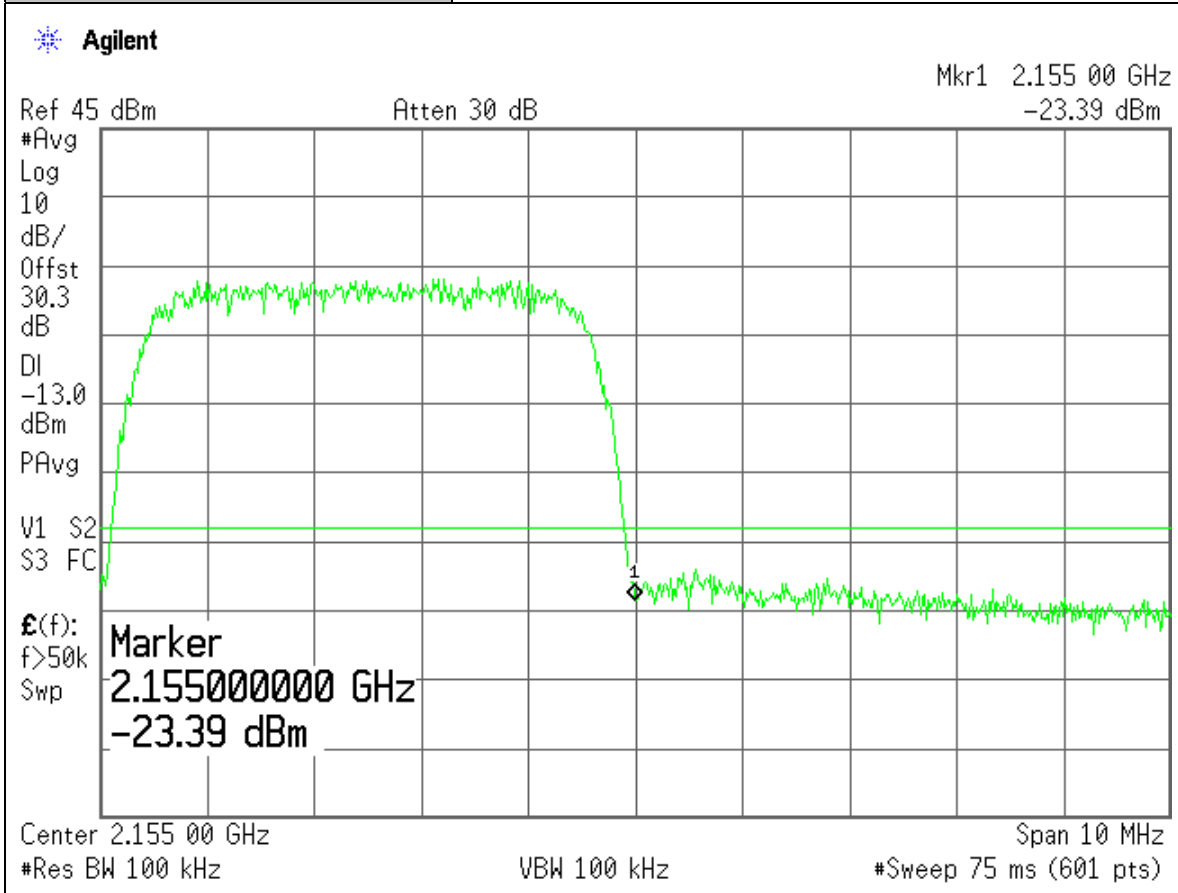
Project Number:	0048-080702-01
EUT:	Shyam BTS Link-104/108 Repeater
SN:	MORFH012+RORFH020
Tested By:	Wei Li
Temperature:	70°F
Humidity:	30%

Section:	Spurious Emissions at Antenna Terminals: AWS Bands / WCDMA Modulation
Plot Name:	DL, Low-Chn, Intermodulation, Lower Bandedge
Configuration:	SG Input: -6dBm, Output Port: EUT MOBILE



Project Number:	0048-080702-01
EUT:	Shyam BTS Link-104/108 Repeater
SN:	MORFH012+RORFH020
Tested By:	Edward Lee
Temperature:	70°F
Humidity:	30%

Section:	Spurious Emissions at Antenna Terminals: AWS Bands / WCDMA Modulation
Plot Name:	DL, Hi-Chn, Upper Band Edge+1MHz
Configuration:	SG Input: -6dBm, Output Port: EUT MOBILE



Section 6. Field Strength of Spurious

Name of Test:	<i>Field Strength of Spurious</i>	Test Standard:	<i>2.1053</i>
Tested By:	EDWARD LEE	Test Date:	07/02/2008-08/01/2008

Minimum Standard: Para. No. 2.1053(a). The magnitude of each spurious and harmonic emission that can be detected when the equipment is operated under conditions specified in the instruction manual and/or alignment procedure, shall not less than $43+10 \log$ (mean output power in watts) dBc below the mean power output outside a licensee's frequency block (-13dBm).

Method of Measurement: TIA/EIA-603-B-2002, Section 2.2.12
The antenna substitution method was used to determine the equivalent radiated power at spurious frequencies. The spurious emissions were measured at a distance of 3 meters. The EUT was then replaced with a reference substitution antenna with a known gain referenced to a dipole. This antenna was fed with a signal at the spurious frequency. The level of the signal was adjusted to repeat the previously measured level. The resulting ERP is the signal level fed to the reference antenna corrected for gain referenced to a dipole.

Test Result:

Complies

Test Data:

See Attached Table(s)

Configuration	AWS
Band	Downlink
Channel	Low

Freq. (MHz)	H,V	SA Reading (dBuV)	SG Reading (dBm)	CL (dB)	Gain (dBi)	ERP (dBm)	Limit (dBm)	Margin (dB)
4225	V	56.7	-55	1.9	10.0	-49.05	-13	-36.05
6337.5*	V	45.1	-72	2.4	11.0	-65.55	-13	-52.55
4225	H	55.0	-57	1.9	10.0	-51.05	-13	-38.05
6337.5*	H	46.0	-71	2.4	11.0	-64.55	-13	-51.55

NOTE:

* Measured noise floor above 3rd harmonics
D=1m

SA: Spectrum Analyzer

SG: Signal Generator

CL: SMA cable loss (6ft)

Worse case: Vertical

H=horizontal and V=vertical

ERP = SG reading - CL + Gain (dBi)-2.15

Margin = ERP - Limit

Configuration	AWS
Band	Downlink
Channel	Mid

Freq. (MHz)	H,V	SA Reading (dBuV)	SG Reading (dBm)	CL (dB)	Gain (dBi)	ERP (dBm)	Limit (dBm)	Margin (dB)
4265	V	57.0	-55	1.9	10.0	-49.05	-13	-36.05
6397.5*	V	45.4	-73	2.4	11.0	-66.55	-13	-53.55
4265	H	56.0	-56	1.9	10.0	-50.05	-13	-37.05
6397.5*	H	46.6	-71	2.4	11.0	-64.55	-13	-51.55

NOTE:

* Measured noise floor above 3rd harmonics
D=1m

SA: Spectrum Analyzer

SG: Signal Generator

CL: SMA cable loss (6ft)

Worse case: Vertical

H=horizontal and V=vertical

ERP = SG reading - CL + Gain (dBi)-2.15

Margin = ERP - Limit

Configuration	AWS
Band	Downlink
Channel	High

Freq. (MHz)	H,V	SA Reading (dBuV)	SG Reading (dBm)	CL (dB)	Gain (dBi)	ERP (dBm)	Limit (dBm)	Margin (dB)
4305	V	55.6	-56	2.1	10.0	-50.25	-13	-37.25
6457.5*	V	46.5	-71	2.6	11.0	-64.75	-13	-51.75
4305	H	55.2	-57	2.1	10.0	-51.25	-13	-38.25
6457.5*	H	46.0	-71	2.6	11.0	-64.55	-13	-51.55

All

NOTE:

* Measured noise floor above 3rd harmonics
D=1m

SA: Spectrum Analyzer

SG: Signal Generator

CL: SMA cable loss (6ft)

Worse case: Vertical

H=horizontal and V=vertical

ERP = SG reading - CL + Gain (dBi)-2.15

Margin = ERP - Limit

Section 7. Frequency Stability

Name of Test:	<i>Frequency Stability</i>	Test Standard:	<i>2.1055 22.355&24.235</i>
Tested By:	WEI LI	Test Date:	07/02/2008-08/01/2008

Minimum Standard: Para. No. 22.355. The transmitter carrier frequency shall remain within the tolerances given in Table C-1.

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

Para No. 24.235. The frequency stability shall be sufficient to ensure that the fundamental emission stays within the authorized frequency block.

Method of Measurement: Frequency Stability With Voltage Variation:
The E.U.T. is placed in an environmental chamber and allowed to stabilize at +20 degrees Celsius for at least 15 minutes. Set SA resolution bandwidth low enough (30Hz) to obtain the desired frequency resolution. (Using frequency counter method: The frequency counter and signal generator are phase locked with the same 10 MHz reference frequency by connecting the 10 MHz ref. out of the counter to the 10MHz ref, in of the signal generator). With the voltage input to the E.U.T. set to 85% S.T.V., the frequency is measured in 30 second intervals for a period of 5 minutes. This procedure is repeated at 100% S.T.V. and 115% S.T.V.

Frequency Stability With Temperature Variation:
The input voltage to the E.U.T. is set to S.T.V. and the temperature of the environmental chamber is varied in 10 degree steps from -30 degrees C to +50 degrees C. The E.U.T. is allowed to stabilize at each temperature and the frequency is measured in 30 second intervals for a period of 5 minutes.

Test Result:

Complies

Test Data:

See Attached Table(s)

Not Applicable

Section 8. Out of Band Rejection

Name of Test:	<i>Out of Band Rejection</i>	Test Standard:	
Tested By:	Edward Lee	Test Date:	07/02/2008-08/01/2008

Minimum Standard: The passband gain shall not exceed the nominal gain by more than 1.0 dB. The 20 dB bandwidth shall not exceed the nominal bandwidth that is stated by the manufacturer. Outside of the 20 dB bandwidth, the gain shall not exceed the gain at the 20 dB point.

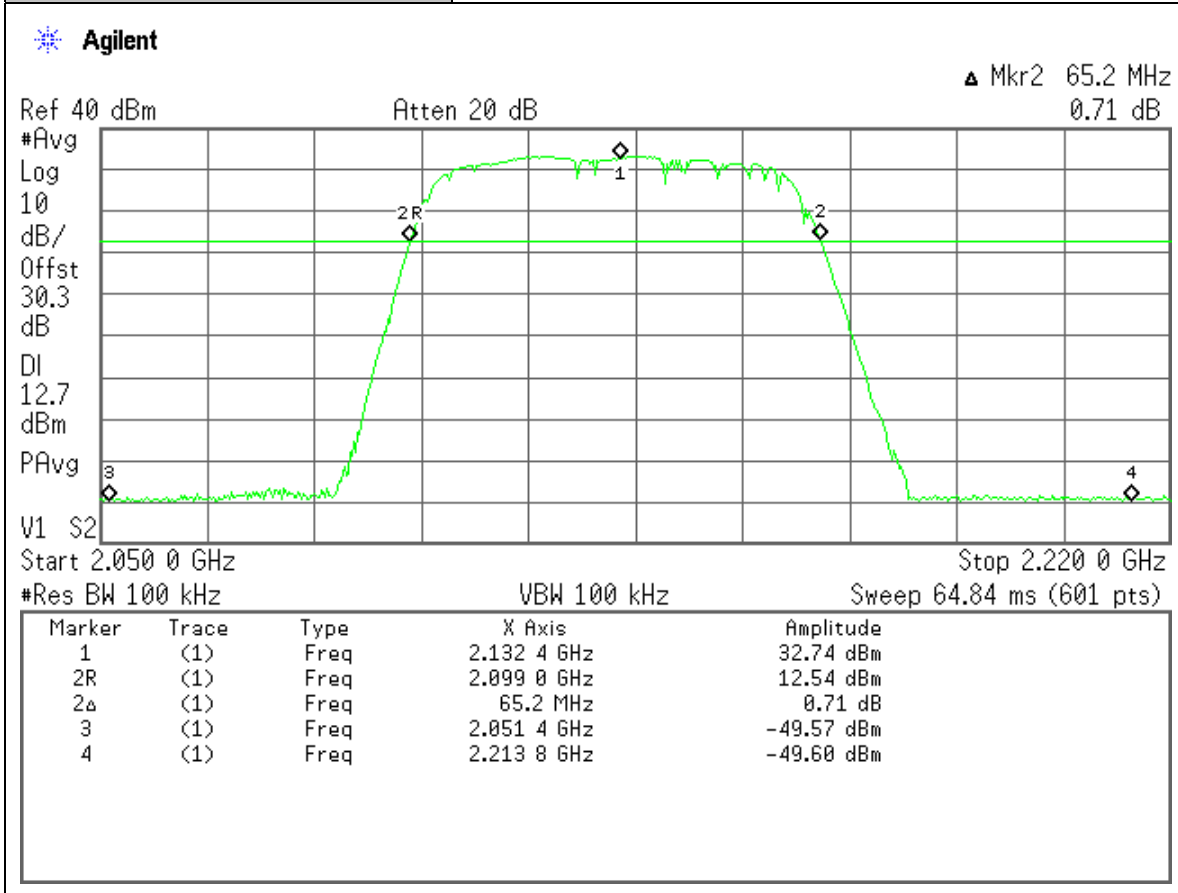
Method of Measurement: Adjust the internal gain control of the equipment under test to the nominal gain for which equipment certification is sought. With the aid of a signal generator and spectrum analyzer, measure the 20 dB bandwidth of the amplifier (i.e. at the point where the gain has fallen by 20 dB). Measure the gain-versus-frequency response of the amplifier from the midband frequency f_0 of the passband up to at least $f_0 \pm 250\%$ of the 20 dB bandwidth.

Test Result: **Complies**

Test Data: See Attached Table(s)

Project Number:	0048-080702-01
EUT:	Shyam BTS Link-104/108 Repeater
SN:	MORFH012+RORFH020
Test By:	Edward Lee
Temperature:	70°F
Humidity:	30%

Section:	Pass Band Gain & 20dB Bandwidth
Plot Name:	2100 AWS Downlink Full Band-250% Span
Configuration:	Donor Antenna Connector was connected to SG. Input: -6dBm



Section 9. Test Equipment List

Manufacture	Model	Serial No.	Description	Cal Due dd/mm/yy
HP	HP8546A	3448A00290	EMI Receiver	15/09/08
HP	E4432B	US38220355	250K-3GHz Signal Generator	15/07/09
EMCO	3104C	9307-4396	20-300MHz Biconical Antenna	15/09/08
EMCO	3146	9008-2860	200-1000MHz Log-Periodic Antenna	09/02/09
Fischer Custom	LIPARTS NO.-2	900-4-0008	Line Impedance Stabilization Networks	15/09/08
Fischer Custom	LIPARTS NO.-2	900-4-0009	Line Impedance Stabilization Networks	23/08/08
EMCO	6502	2665	10KHz-30MHz Active Loop Antenna	27/02/09
EMCO	3115	4945	Double Ridge Guide Horn Antenna	13/09/08
R&S	ESPI	100018	EMI Receiver	16/07/09
HP	8569B	2607A02802	1GHz-22GHz Spectrum Analyzer	10/02/09
Delta Design	5900C	0-67-26	Temperature Chamber	24/03/09
HP	E8254A	US42110367	Signal Generator	23/03/09
Electro-Metrics	RGA-15	8-95	Double Ridge Guide Horn Antenna	10/02/09
EMCO	3116	4943	Double Ridge Guide Horn Antenna	11/01/09
Scientific-Atlanta	12A-18	441	Wave Guide Horn Antenna	04/08/08
HP	4419A	US37292112	RF Power Meter w/ Sensor Probe	20/07/09
Chamber	GD-32-33	LN2	Temperature Chamber	28/07/09
HP	6032A	3323A-09526	System Power Supply	01/07/09
Agilent	E4438C	US41460731	ESG Vector Signal Generator	01/07/09
Agilent	E4438C	US41460771	ESG Vector Signal Generator	01/07/09
Agilent	E4438C	US41460400	ESG Vector Signal Generator	01/07/09
Agilent	E4440A	US40420700	3Hz-26.5GHz Spectrum Analyzer	12/05/09
Lorch Microwave	5NF- 800/1000-S	AC3	Notch Filter	
Lorch Microwave	5NF- 1800/2200-S	AE10	Notch Filter	
RES-NET	RFA500NFF 30	0108	30dB in-line Power Attenuator	