Powerwave Technologies

TEST REPORT FOR

Nexus Dual Band Repeater, RH304022/13B

Tested to the following standards:

FCC Part 22 Subpart H

Report No.: 87766-21

Date of issue: July 16, 2010

ACCREDITED

TESTING
CERT #803.01, 803.02, 803.05, 803.06

This test report bears the accreditation symbol indicating that the testing performed herein meets the test and reporting requirements of ISO/IEC 17025 under the applicable scope of EMC testing for CKC Laboratories, Inc.

We strive to create long-term, trust based relationships by providing sound, adaptive, customer first testing services. We embrace each of our customers' unique EMC challenges, not as an interruption to set processes, but rather as the reason we are in business.

TABLE OF CONTENTS

ADMINISTRATIVE INFORMATION

Test Report Information

REPORT PREPARED FOR:

Powerwave Technologies
1801 E. St. Andrew Place
Santa Ana, CA 92705

REPRESENTATIVE: Sean Doan
Customer Reference Number:

REPORT PREPARED BY:

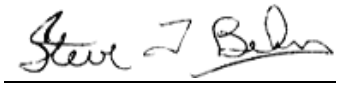
Joyce Walker
CKC Laboratories, Inc.
5046 Sierra Pines Drive
Mariposa, CA 95338

Project Number: 87766
137069

DATE OF EQUIPMENT RECEIPT: July 13, 2010
DATE(S) OF TESTING: July 13 - 15, 2010

Report Authorization

The test data contained in this report documents the observed testing parameters pertaining to and are relevant for only the sample equipment tested in the agreed upon operational mode(s) and configuration(s) as identified herein. Compliance assessment remains the client's responsibility. This report may not be used to claim product endorsement by A2LA or any government agencies. This test report has been authorized for release under quality control from CKC Laboratories, Inc.



Steve Behm
Director of Quality Assurance & Engineering Services
CKC Laboratories, Inc.

Test Facility Information

Our laboratories are configured to effectively test a wide variety of product types. CKC utilizes first class test equipment, anechoic chambers, data acquisition and information services to create accurate, repeatable and affordable test results.

TEST LOCATION(S):
CKC Laboratories, Inc.
110 Olinda Place
Brea, CA 92823

Site Registration & Accreditation Information

Location	JAPAN	CANADA	FCC
Brea A	R-301, C-314 & T-1572	3082D-1	90473

SUMMARY OF RESULTS

Standard / Specification: FCC Part 22 Subpart H

Description	Test Procedure/Method	Results
RF Power Output	FCC 2.1033(c)(14)/2.1046/22.913(a)	Pass
Occupied Bandwidth	FCC 2.1033(c)(14)/2.1049(i)	Pass
Spurious Emissions at Antenna Terminal	FCC 2.1033(c)(14)/2.1051/22.917(a)	Pass
Field Strength of Spurious Radiation	FCC 2.1033(c)(14)/2.1053/22.917(a)	Pass
Block Edge	22.917(a)	Pass
Out of Band Rejection	02-11-04/EAB/RF	Pass

Conditions During Testing

This list is a summary of the conditions noted for or modifications made to the equipment during testing.

Summary of Conditions
None

EQUIPMENT UNDER TEST (EUT)

The EUT is a RF amplifier/repeater. The manufacturer does not provide an antenna for sale with the product.

Nexus Dual Band Repeater
Manuf: Powerwave Technologies, Inc.
Model: RH304022/13B
Serial: NA

PERIPHERAL DEVICES

The EUT was tested with the following peripheral device(s):

Pre Amp
Manuf: Minicircuit
Model: ZHL4240_SAM
Serial: D092397-19

Optical Converter Module
Manuf: Powerwave Technologies, Inc
Model: Na
Serial: NA

Signal Generator
Manuf: Aeroflex
Model: IFR343B3
Serial: 3410051078

Spectrum Analyzer
Manuf: Agilent
Model: 8561EC
Serial: 3946A00167

FCC PART 22 H

This report contains EMC emissions test results under United States Federal Communications Commission (FCC) requirements for licensed devices.

2.1033(c)(14)/2.1046/22.913(a) - RF Power Output

Engineer Name: E. Wong

Test Equipment				
Name	**Serial**	**Cal Date**	**Cal Due**	**Asset**
RF Power meter	GB37170458	012610	012612	02778
Power Sensor	MY41502826	012610	012612	03072

Test Setup

The EUT is placed on the wooden table. The RF Output port is connected to a load string. The optical in port is connected to a support Optical converter. The support optical converter receives RF signal, converts the signal to optic and sends to the EUT. The EUT decodes the optical signal, and generates an RF signal.

The insertion loss of the RF attenuator was measured and entered as a measurement offset of the power meter.

RF output port Service 2
Operating range: 869-894MHz.

Test Data

Modulation: GSM

Frequency	Measured power (W)
869.5	20
881.0	20
893.5	20

Modulation :WCDMA(3GPP)

Frequency	Measured power (W)
872.0	20
881.0	20
891.0	20

Test Setup Photos

2.1033(c)(14)/2.1049(i) - Occupied Bandwidth

Engineer Name: E. Wong

Test Equipment				
Name	**Serial**	**Cal Date**	**Cal Due**	**Asset**
Spectrum Analyzer	US44300438	072308	072310	02672
36" 40GHz cable	NA	102809	102811	03174

Test Setup

The EUT is placed on the wooden table. The RF Output port is connected to a load string. The optical in port is connected to a support Optical converter. The support optical converter receives RF signal, converts the signal to optic and sends to the EUT. The EUT decodes the optical signal, and generates an RF signal.

Power = 43dBm=20 watt

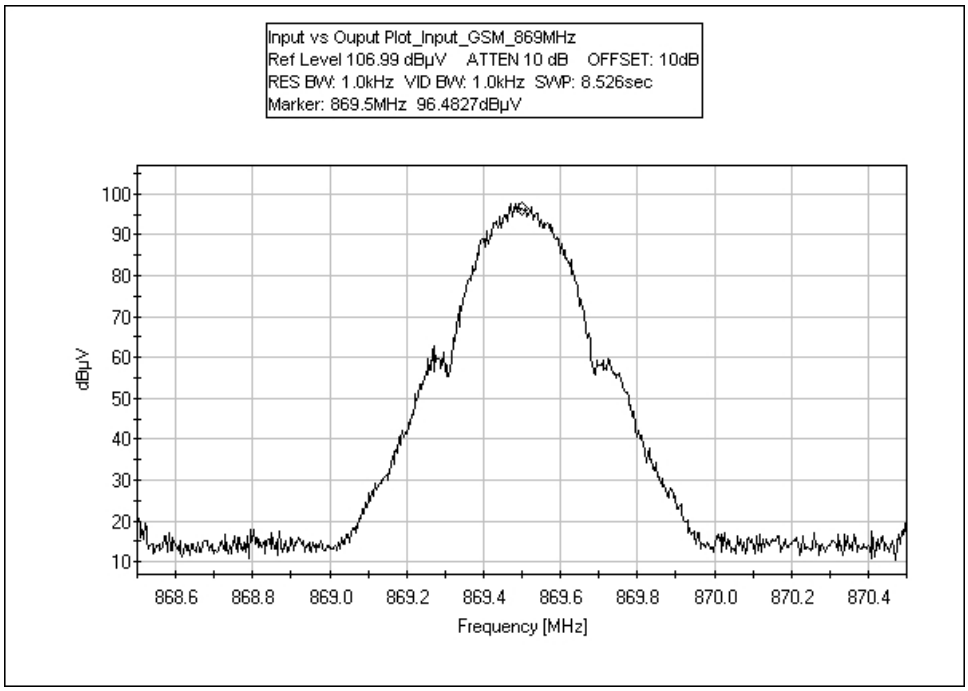
RF output port Service 2

Operating range: 869-894MHz.
Modulation: GSM
Freq = 869.5, 881, 893.5 MHz

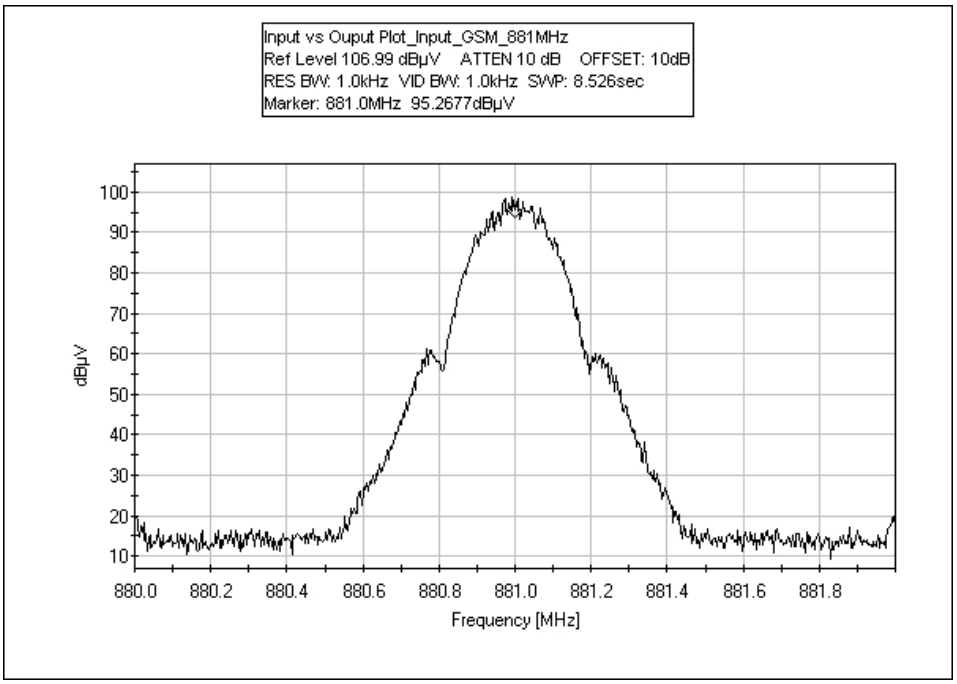
Modulation :WCDMA(3GPP)
Freq= 872MHz, 881MHz, 891MHz

Output waveform is recorded with a spectrum analyzer at the Antenna port of the device. Input waveform is recorded with a spectrum analyzer at the RF out of the support ESG.

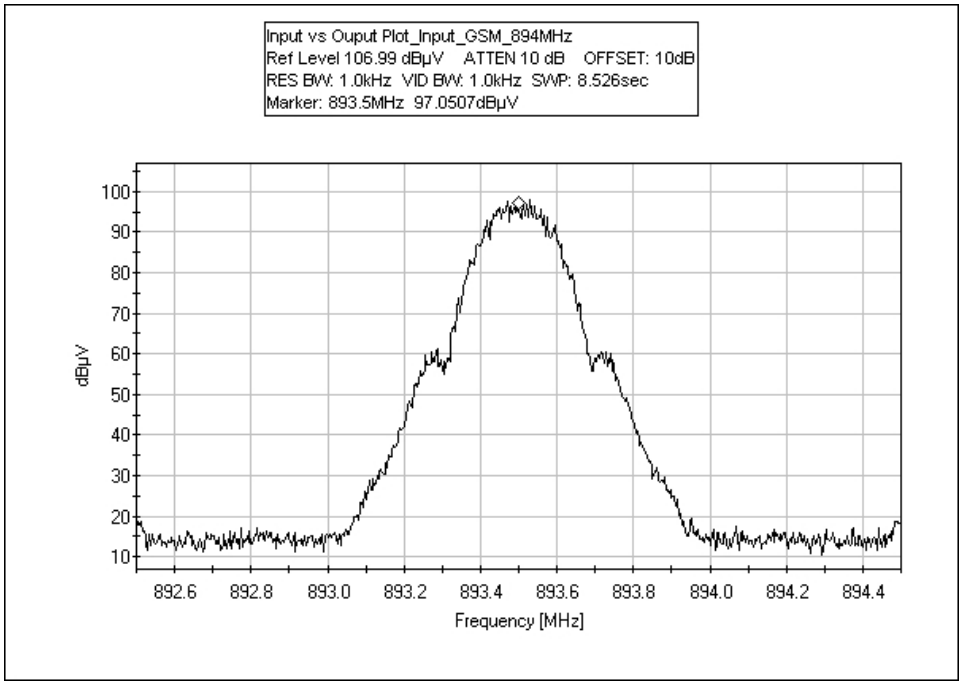
Test Data



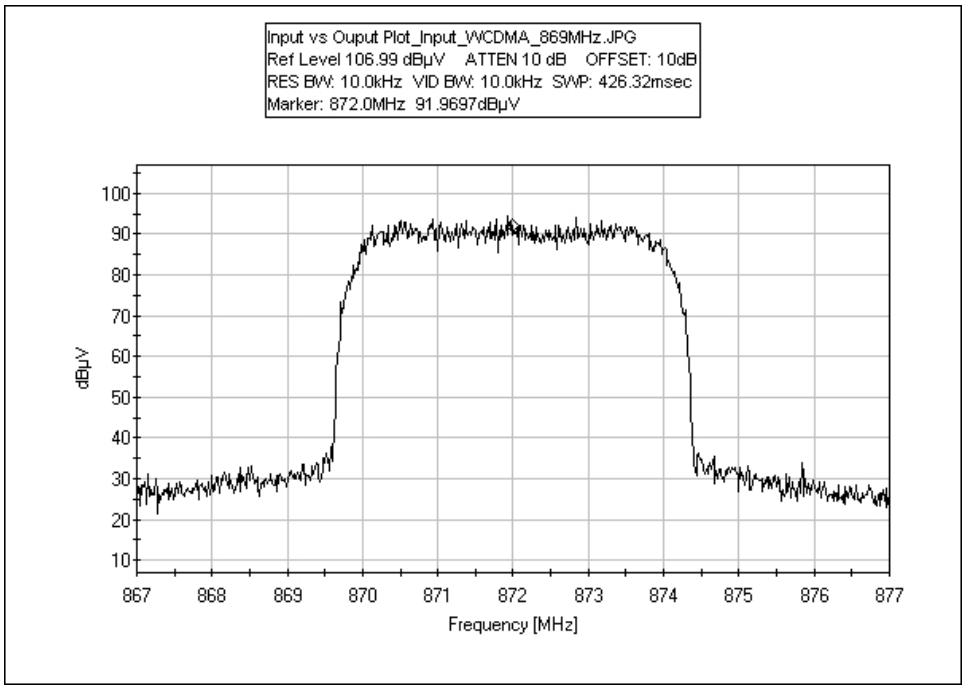
GSM – 869 MHz Input



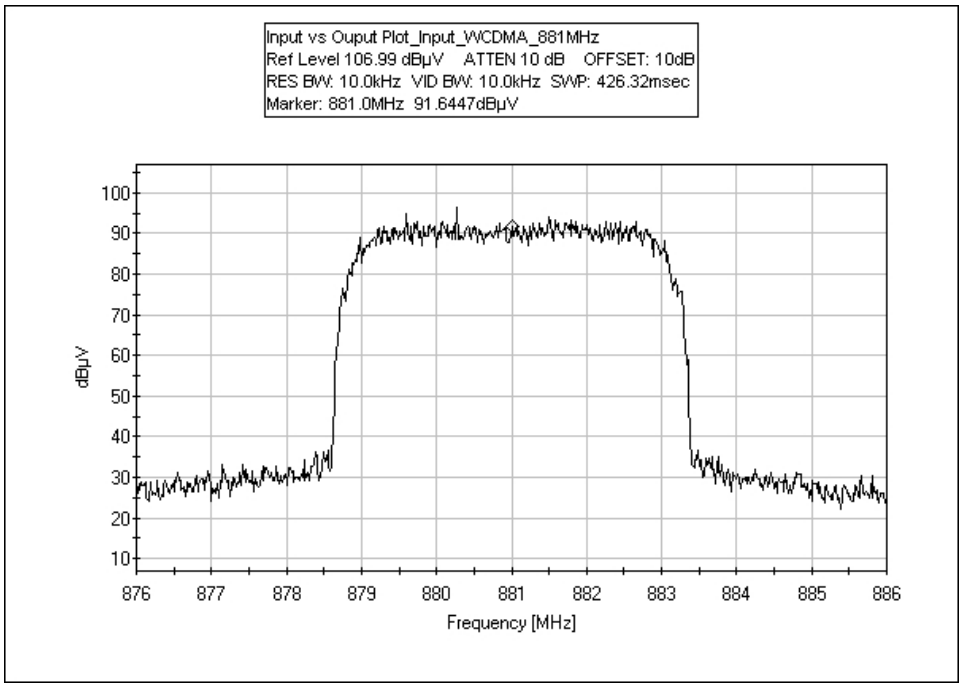
GSM – 881 MHz Input



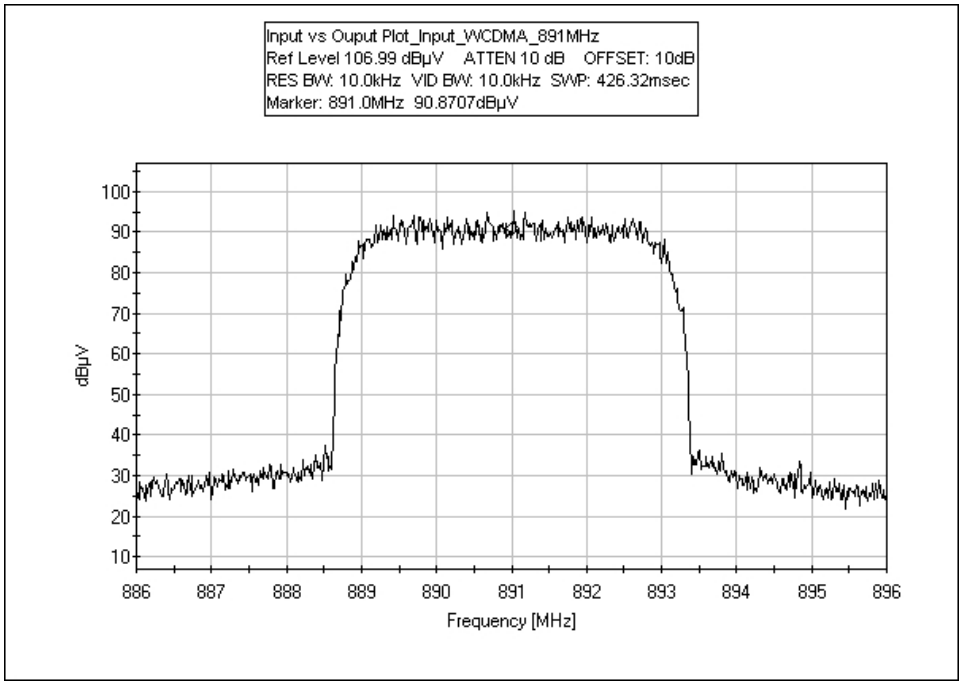
GSM – 894 MHz Input



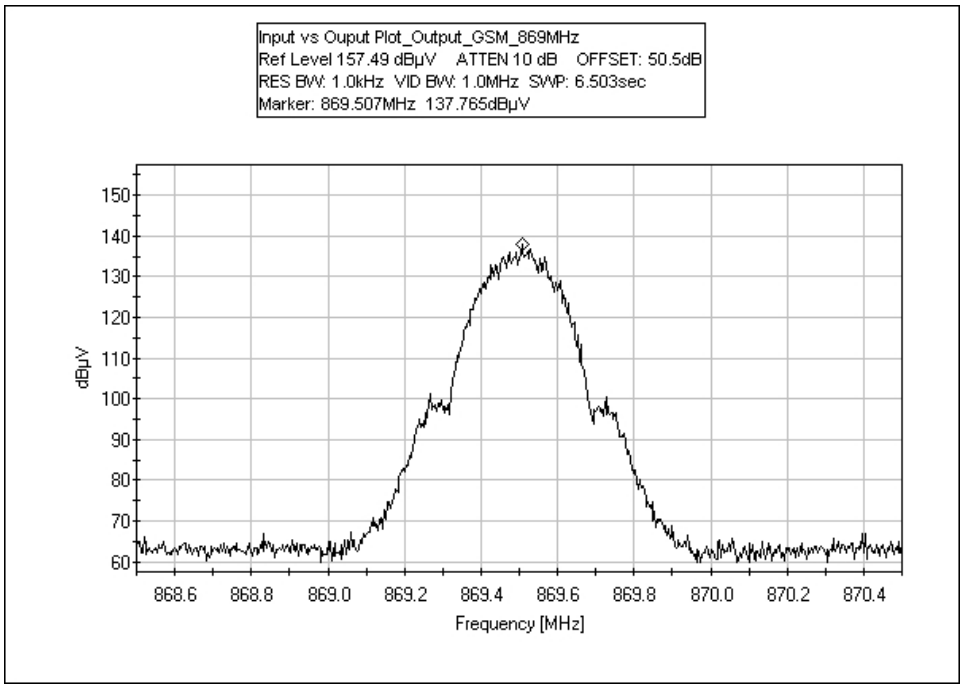
WCDMA – 869 MHz Input



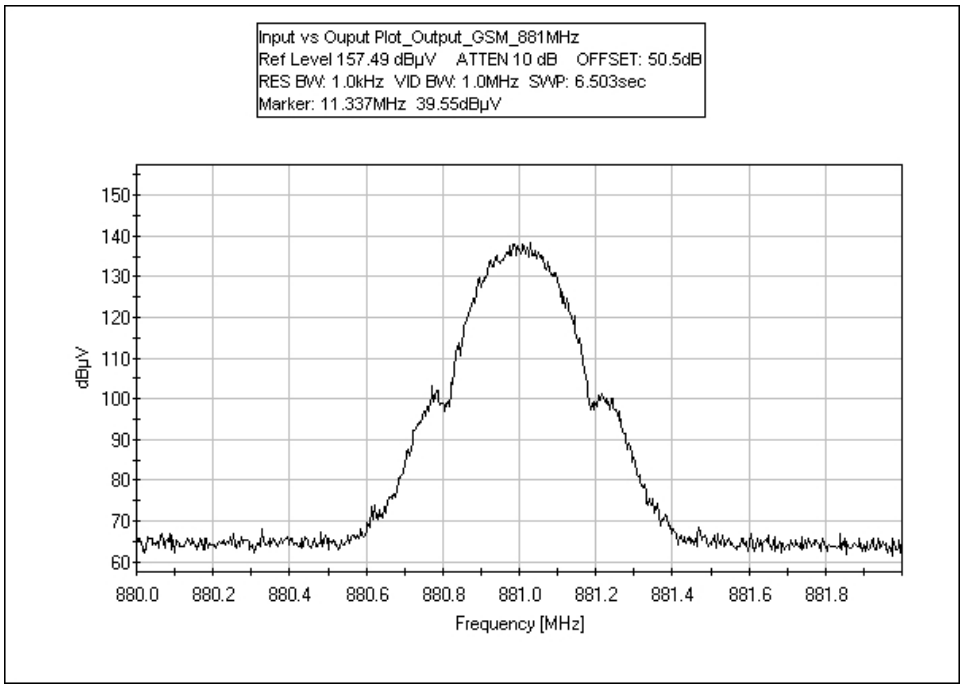
WCDMA – 881 MHz Input



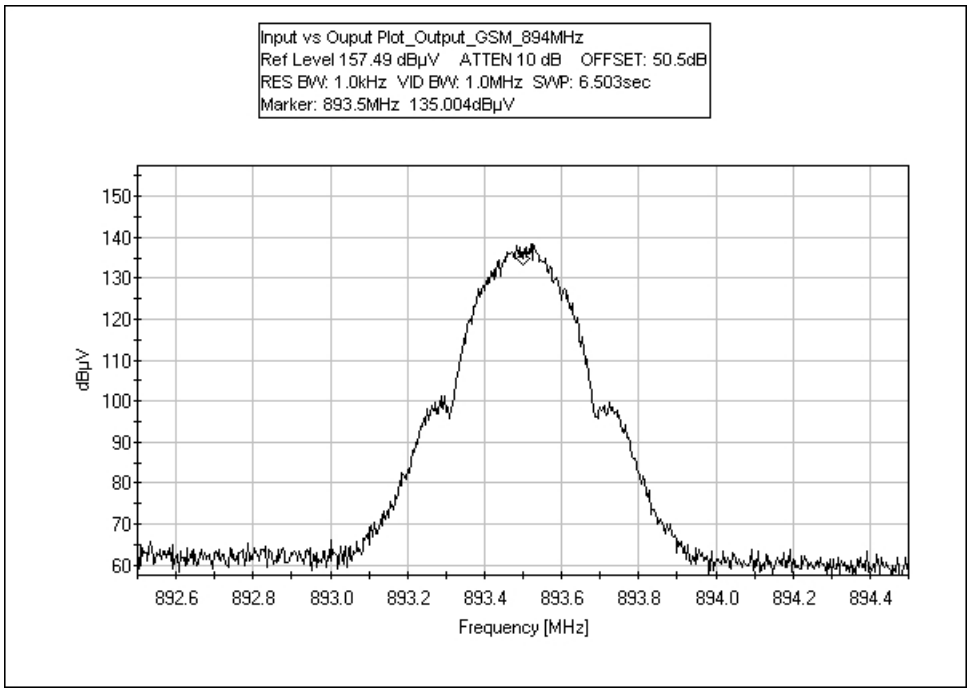
WCDMA – 894 MHz Input



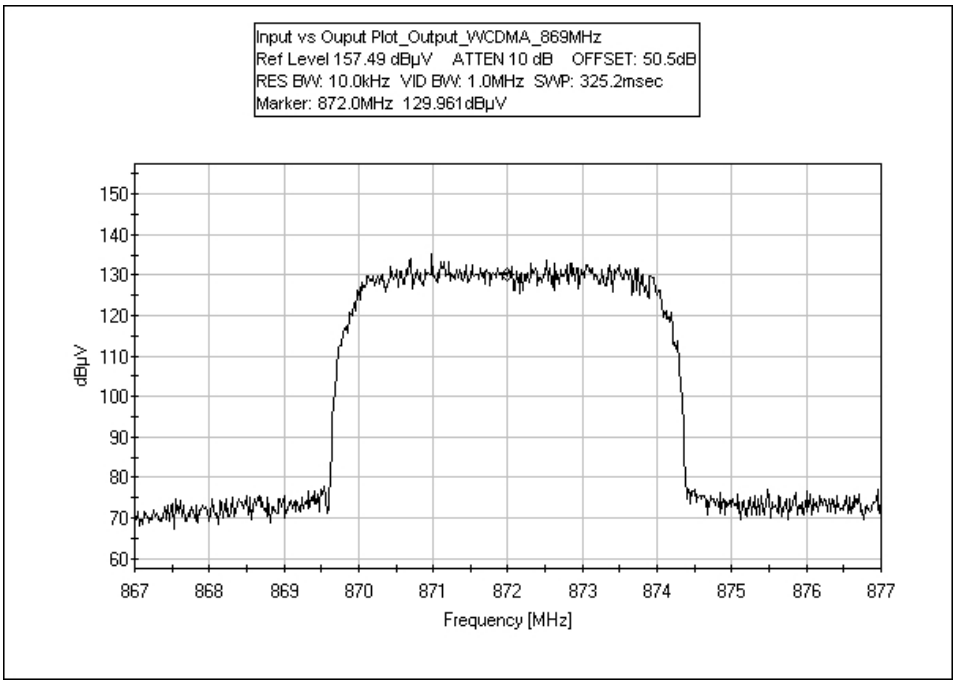
GSM – 869 MHz Output



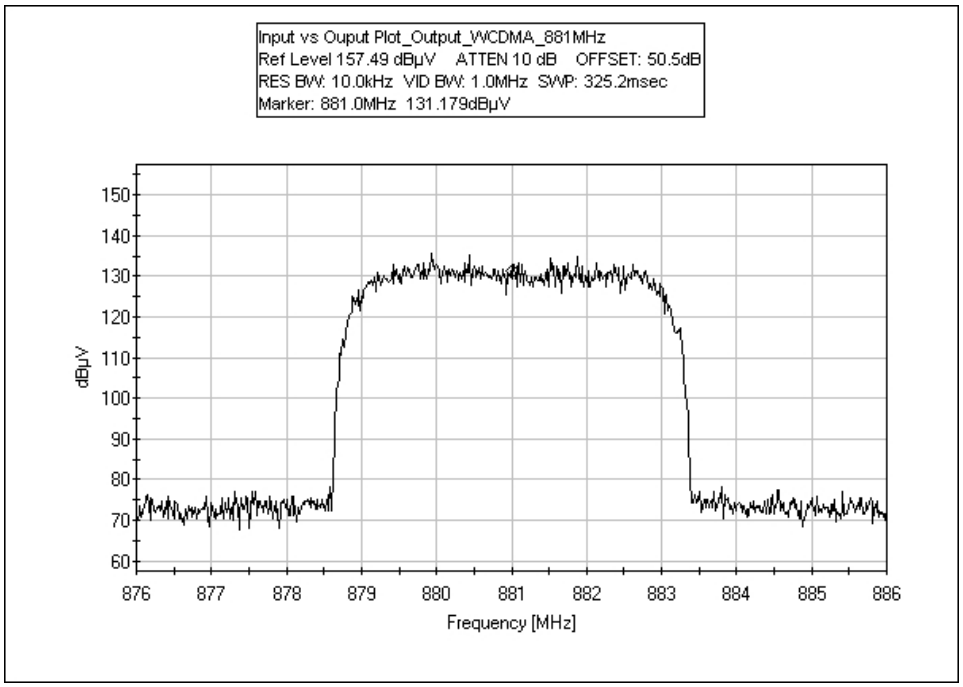
GSM – 881 MHz Output



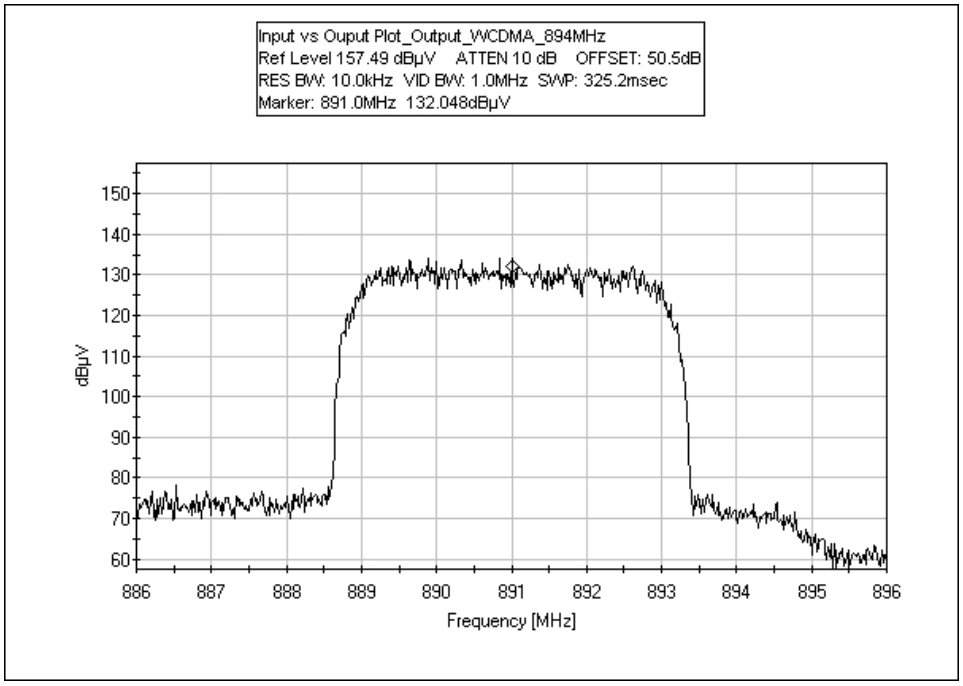
GSM – 894 MHz Output



WCDMA – 869 MHz Output



WCDMA – 881 MHz Output



WCDMA – 894 MHz Output

Test Setup Photos

2.1033(c)(14)/2.1051/22.917(a) - Spurious Emissions at Antenna Terminal

Limit Line for Spurious Conducted Emission

Required Attenuation = 43+10 Log P dB

Limit line (dBuV) = V_{dBuv} - Attenuation

$$V_{dBuV} = 20 \text{ Log } \frac{V}{1 \text{ x } 10^{-6}}$$

$$= 20\left(\text{Log } V - \text{Log } 1 \text{ x } 10^{-6}\right)$$

$$= 20 \text{ Log } V - 20 \text{ Log} 1 \text{ x } 10^{-6}$$

$$= 20 \text{ Log } V - 20(-6)$$

$$= 20 \text{ Log } V + 120$$

$$\text{Attenuation} = 43 + 10 \text{ Log } P$$

$$= 43 + 10 \text{ Log } \frac{V^2}{R}$$

$$= 43 + 10\left(\text{Log } V^2 - \text{Log } R\right)$$

$$= 43 + 10\left(2 \text{ Log } V - \text{Log } R\right)$$

$$= 43 + 20 \text{ Log } V - 10 \text{ Log } R$$

Limit line = V_{dBuv} - Attenuation

= 20 Log V + 120 – (43 + 20 Log V – 10Log R)

= 20 Log V + 120 – 43 – 20 Log V + 10Log R

= 20 Log V + 120 – 43 – 20 Log V + 10Log R

= 120 – 43 + 10 Log 50 Note : R = 50 Ω

= 120 –43 + 16.897

= 94 dBuV at any power level

Test Data

Test Location: CKC Laboratories, Inc • 110 N. Olinda Place • Brea, CA 92823 • (714) 993-6112

Customer: **Powerwave Technologies**
Specification: **FCC Part 22.917(a) Radiated Spurious Emissions**
Work Order #: **87766** Date: 7/13/2010
Test Type: **Radiated Scan** Time: 15:41:20
Equipment: **Nexus Dual Band Repeater** Sequence#: 1
Manufacturer: Powerwave Technologies, Inc. Tested By: E. Wong
Model: RH304022/13B
S/N: NA

***Test Equipment*:**

ID	Asset #	Description	Model	Calibration Date	Cal Due Date
	AN02672	Spectrum Analyzer	E4446A	7/23/2008	7/23/2010
	AN01995	Biconilog Antenna	CBL6111C	3/8/2010	3/8/2012
	AN00309	Preamp	8447D	5/7/2010	5/7/2012
	ANP05050	Cable	RG223/U	4/16/2009	4/16/2011
	ANP05198	Cable	8268	1/5/2009	1/5/2011
	AN00786	Preamp	83017A	7/28/2008	7/28/2010
	AN00849	Horn Antenna	3115	4/23/2010	4/23/2012
	AN02948	Cable	32022-2-2909K-24TC	9/21/2009	9/21/2011
	ANP05565	Cable	ANDL-1-PNMN-54	9/4/2008	9/4/2010
	AN03169	High Pass Filter	HM1155-11SS	9/14/2009	9/14/2011
	AN00314	Loop Antenna	6502	6/30/2010	6/30/2012

***Equipment Under Test* (* = EUT):**

Function	Manufacturer	Model #	S/N
Nexus Dual Band Repeater*	Powerwave Technologies, Inc.	RH304022/13B	NA

Support Devices:

Function	Manufacturer	Model #	S/N
Pre Amp	Minicircuit	ZHL4240_SAM	D092397-19
Optical Converter Module	Powerwave Technologies, Inc	Na	NA
Signal generator	Aeroflex	IFR343B3	3410051078
Spectrum Analyzer	Agilent	8561EC	3946A00167

Test Conditions / Notes:

The EUT is placed on the wooden table. The RF Output port is connected to a load string. The optical in port is connected to a support Optical converter. The support optical converter receives RF signal, converts the signal to optic and sends to the EUT. The EUT decodes the optical signal, and generates an RF signal.
Power = 43dBm=20 watt
RF output port Service 2
Operating range: 869-894MHz.
Modulation: GSM
Freq = 869.5MHz, 881MHz, 893.5 MHz
24ºC, 45% relative humidity
Frequency range of measurement = 9 kHz- 9 GHz.
Frequency 9 kHz - 150 kHz RBW=200 Hz, VBW=200 Hz; 150 kHz- 30 MHz RBW=9 kHz, VBW=9 kHz; 30 MHz- 1000 MHz RBW=120 kHz, VBW=120 kHz; 1000 MHz-9,000 MHz RBW=1 MHz, VBW=1 MHz

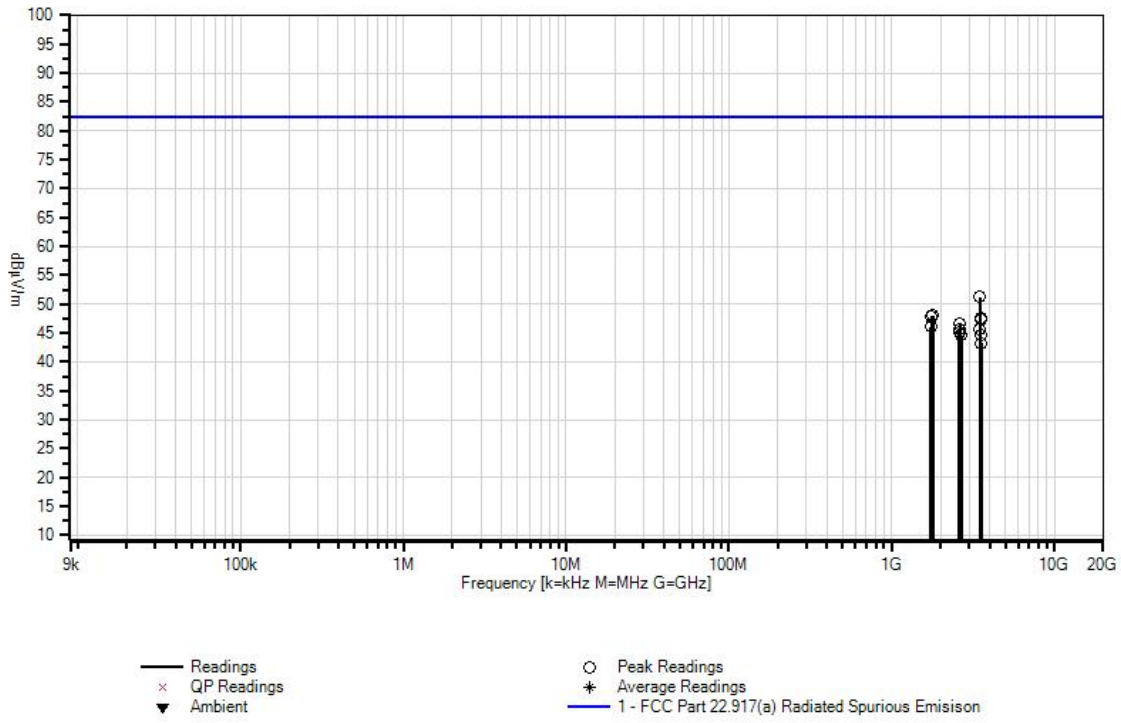
Ext Attn: 0 dB

Measurement Data: Reading listed by margin. Test Distance: 3 Meters

#	Freq MHz	Rdng dBµV	dB	dB	dB	dB	Dist Table	Corr dBµV/m	Spec dBµV/m	Margin dB	Polar Ant
1	3478.000M	51.3					+0.0	51.3	82.3	-31.0	Horiz
2	1787.000M	48.0					+0.0	48.0	82.3	-34.3	Vert
3	1762.000M	47.9					+0.0	47.9	82.3	-34.4	Vert
4	3524.000M	47.5					+0.0	47.5	82.3	-34.8	Horiz
5	3524.000M	47.4					+0.0	47.4	82.3	-34.9	Vert
6	2643.000M	46.6					+0.0	46.6	82.3	-35.7	Horiz
7	1739.000M	46.1					+0.0	46.1	82.3	-36.2	Horiz
8	2643.000M	45.7					+0.0	45.7	82.3	-36.6	Vert
9	3477.833M	45.6					+0.0	45.6	82.3	-36.7	Vert
10	2608.500M	45.6					+0.0	45.6	82.3	-36.7	Horiz
11	2605.500M	45.1					+0.0	45.1	82.3	-37.2	Vert

12	2680.500M	44.6	+0.0	44.6	82.3	-37.7	Horiz
13	3524.000M	44.6	+0.0	44.6	82.3	-37.7	Horiz
14	3574.000M	43.3	+0.0	43.3	82.3	-39.0	Vert
15	3574.000M	43.1	+0.0	43.1	82.3	-39.2	Horiz

CKC Laboratories, Inc Date: 7/13/2010 Time: 15:41:20 Powerwave Technologies WO#: 87766
FCC Part 22.917(a) Radiated Spurious Emisison Test Distance: 3 Meters Sequence#: 1 Ext ATTN: 0 dB



Test Setup Photos

2.1033(c)(14)/2.1053/22.917(a) - Field Strength of Spurious Radiation

Limit Line for Spurious Conducted Emission

Required Attenuation = 43+10 Log P (dB)

For radiated spurious emission measured at 3 meter test distance,

Required attenuation = 43+10 Log $P_{t\ at\ 3\ meter}$ dB
Limit line (dBuV) = E_{dBuv} - Attenuation

E_{dBuv} = Measured field strength at 3 meter in dBuV/m

Power Density (Isotropic)

$$P_D = \frac{P_t}{4\pi r^2}$$

P_D = Power Density in Watts /m^2
Pt = Average Transmit Power
r = Test distance

Field Intensity E (V/m)

$$E = \sqrt{P_D \times 377}$$

$$E = \frac{\sqrt{P_t \times 377}}{4\pi r^2}$$

$$E = \sqrt{\frac{P_t \times 30}{r^2}}$$

$$P_t = \left(\frac{E^2 \times r^2}{30}\right)$$

10 Log P_t = 10 Log E^2 (V/m)+ 10 Log r^2 – 10 Log 30

10 Log P_t = 20 Log E (V/m) + 20 Log r – 10 Log 30

At 3 meter, r = 3 m

$10 \text{ Log } P_t = 20 \text{ Log E (V/m)} + 20 \text{ Log } 3 - 10 \text{ Log } 30$

$10 \text{ Log } P_t = 20 \text{ Log E (V/m)} + 9.54 - 14.77$

$10 \text{ Log } P_t = 20 \text{ Log E (V/m)} - 5.23$

*Since 20 Log E (V/m) = 20 Log E (**u**V/m) –120*

$10 \text{ Log } P_t = 20 \text{ Log E (uV/m)} - 120 - 5.23$

$10 \text{ Log } P_t = 20 \text{ Log E (uV/m)} - 125.23$

Limit line (dBuV) at 3 meter = E_{dBuv} – Attenuation

= E_{dBuv} - (43+10 Log $P_{t \text{ at 3 meter}}$)

= E_{dBuv} - 43 - 10 Log $P_{t \text{ at 3 meter}}$

= E_{dBuv} - 43 – (20 Log E (uV/m) –125.23)

= E_{dBuv} - 43 - 20 Log E (uV/m) + 125.23

= E_{dBuv} - 20 Log E (uV/m) + 82.23

Since 20 Log E (uV/m) = E in dBuV/m

= ~~E_{dBuv}~~ - ~~E_{dBuv}~~ + 82.23

Radiated Emission limit 3 meter = 82.23 dBuV at any power level measured in dBuV

Test Data

Test Location: CKC Laboratories, Inc • 110 N. Olinda Place • Brea, CA 92823 • (714) 993-6112

Customer:	**Powerwave Technologies**		
Specification:	**FCC Part 22.917(a) Radiated Spurious Emission**		
Work Order #:	**87766**	Date:	7/13/2010
Test Type:	**Radiated Scan**	Time:	15:41:20
Equipment:	**Nexus Dual Band Repeater**	Sequence#:	1
Manufacturer:	Powerwave Technologies, Inc.	Tested By:	E. Wong
Model:	RH304022/13B		
S/N:	NA		

***Test Equipment*:**

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	AN02672	Spectrum Analyzer	E4446A	7/23/2008	7/23/2010
	AN01995	Biconilog Antenna	CBL6111C	3/8/2010	3/8/2012
	AN00309	Preamp	8447D	5/7/2010	5/7/2012
	ANP05050	Cable	RG223/U	4/16/2009	4/16/2011
	ANP05198	Cable	8268	1/5/2009	1/5/2011
	AN00786	Preamp	83017A	7/28/2008	7/28/2010
	AN00849	Horn Antenna	3115	4/23/2010	4/23/2012
	AN02948	Cable	32022-2-2909K-24TC	9/21/2009	9/21/2011
	ANP05565	Cable	ANDL-1-PNMN-54	9/4/2008	9/4/2010
	AN03169	High Pass Filter	HM1155-11SS	9/14/2009	9/14/2011
	AN00314	Loop Antenna	6502	6/30/2010	6/30/2012

***Equipment Under Test* (* = EUT):**

Function	Manufacturer	Model #	S/N
Nexus Dual Band Repeater*	Powerwave Technologies, Inc.	RH304022/13B	NA

Support Devices:

Function	Manufacturer	Model #	S/N
Pre Amp	Minicircuit	ZHL4240_SAM	D092397-19
Optical Converter Module	Powerwave Technologies, Inc	Na	NA
Signal generator	Aeroflex	IFR343B3	3410051078
Spectrum Analyzer	Agilent	8561EC	3946A00167

Test Conditions / Notes:

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Power = 43dBm=20 watt
RF output port Service 2
Operating range: 869-894MHz.
Modulation: GSM
Freq = 869.5MHz, 881MHz, 893.5 MHz
24ºC, 45% relative humidity
Frequency range of measurement = 9 kHz- 9 GHz.
Frequency 9 kHz - 150 kHz RBW=200 Hz, VBW=200 Hz; 150 kHz- 30 MHz RBW=9 kHz, VBW=9 kHz; 30 MHz- 1000 MHz RBW=120 kHz, VBW=120 kHz; 1000 MHz-9,000 MHz RBW=1 MHz, VBW=1 MHz.

Ext Attn: 0 dB

Measurement Data: Reading listed by margin. Test Distance: 3 Meters

#	Freq MHz	Rdng dBµV	dB	dB	dB	dB	Dist Table	Corr dBµV/m	Spec dBµV/m	Margin dB	Polar Ant
1	3478.000M	51.3					+0.0	51.3	82.3	-31.0	Horiz
2	1787.000M	48.0					+0.0	48.0	82.3	-34.3	Vert
3	1762.000M	47.9					+0.0	47.9	82.3	-34.4	Vert
4	3524.000M	47.5					+0.0	47.5	82.3	-34.8	Horiz
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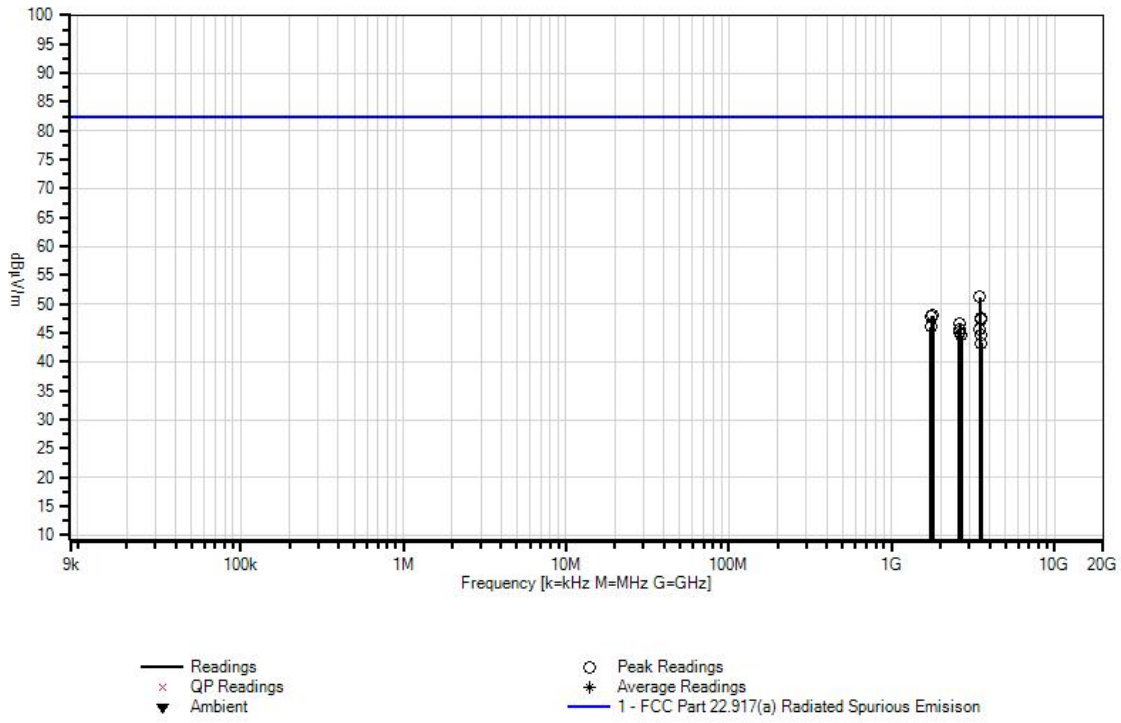
11	2605.500M	45.1					+0.0	45.1	82.3	-37.2	Vert

12	2680.500M	44.6	+0.0	44.6	82.3	-37.7	Horiz
13	3524.000M	44.6	+0.0	44.6	82.3	-37.7	Horiz
14	3574.000M	43.3	+0.0	43.3	82.3	-39.0	Vert
15	3574.000M	43.1	+0.0	43.1	82.3	-39.2	Horiz

CKC Laboratories, Inc Date: 7/13/2010 Time: 15:41:20 Powerwave Technologies WO#: 87766
FCC Part 22.917(a) Radiated Spurious Emisison Test Distance: 3 Meters Sequence#: 1 Ext ATTN: 0 dB



Test Setup Photos

22.97(a) – Block Edge

Engineer Name: E. Wong

Test Equipment				
Name	**Serial**	**Cal Date**	**Cal Due**	**Asset**
Spectrum Analyzer	US44300438	072308	072310	02672
36" 40GHz cable	NA	102809	102811	03174

Test Setup

The EUT is placed on the wooden table. The RF Output port is connected to a load string. The optical in port is connected to a support Optical converter. The support optical converter receives RF signal, converts the signal to optic and sends to the EUT. The EUT decodes the optical signal, and generates an RF signal.

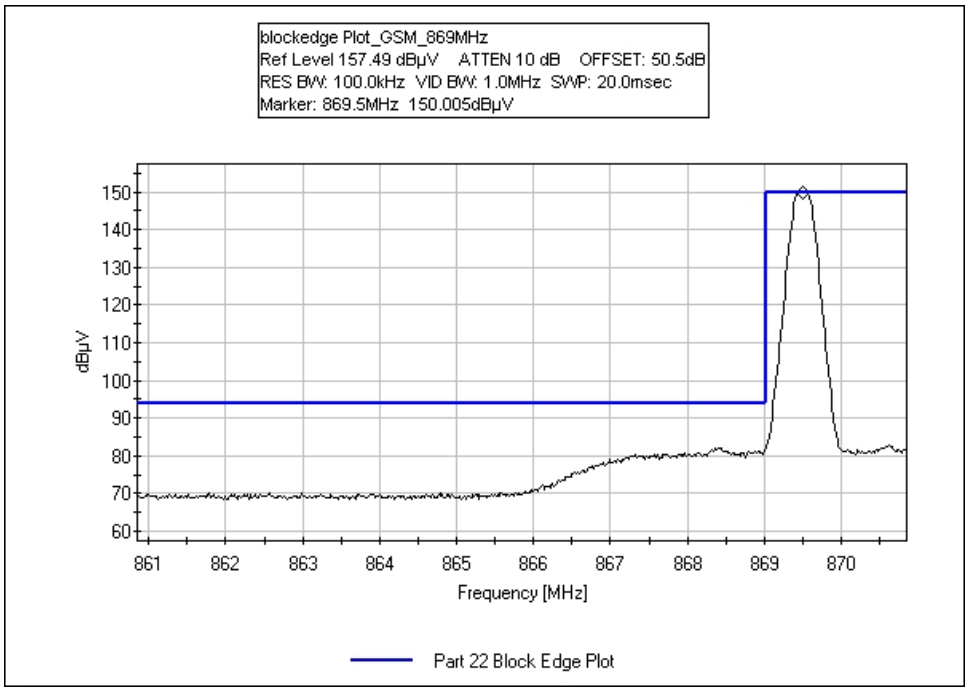
Block edge plot is recorded with a spectrum analyzer at the Antenna port of the device. The insertion loss of the RF attenuator was measured and compensated as measurement offset of the spectrum analyzer.

RF output port Service 2
Operating range: 869-894MHz.

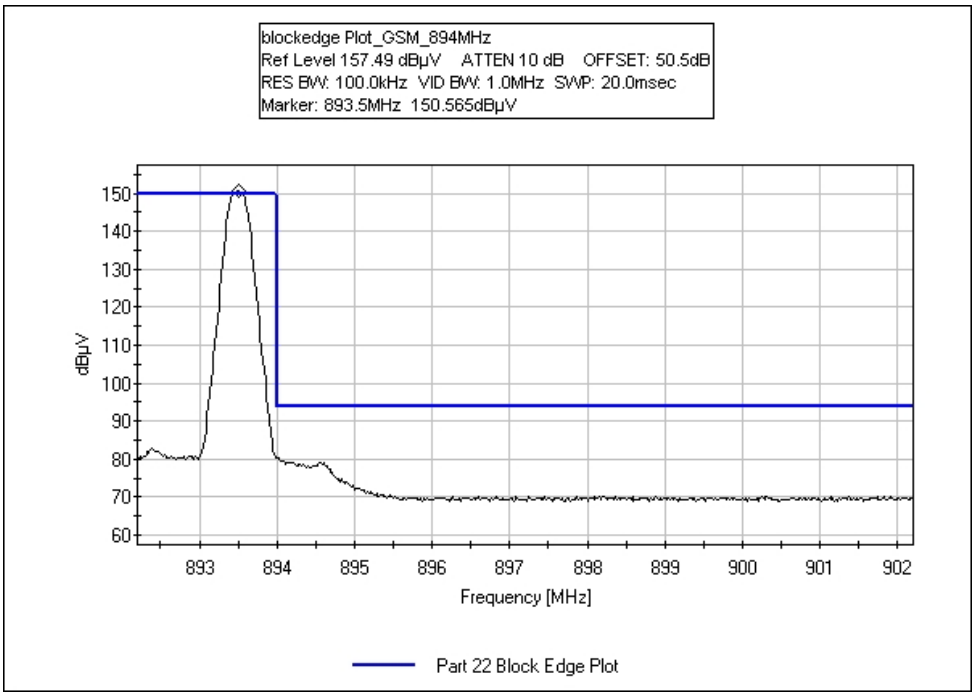
Modulation: GSM
Freq = 869.1, 881, 893.5 MHz

Modulation: WCDMA (3GPP)
Freq = 872MHz, 881MHz, 891 MHz

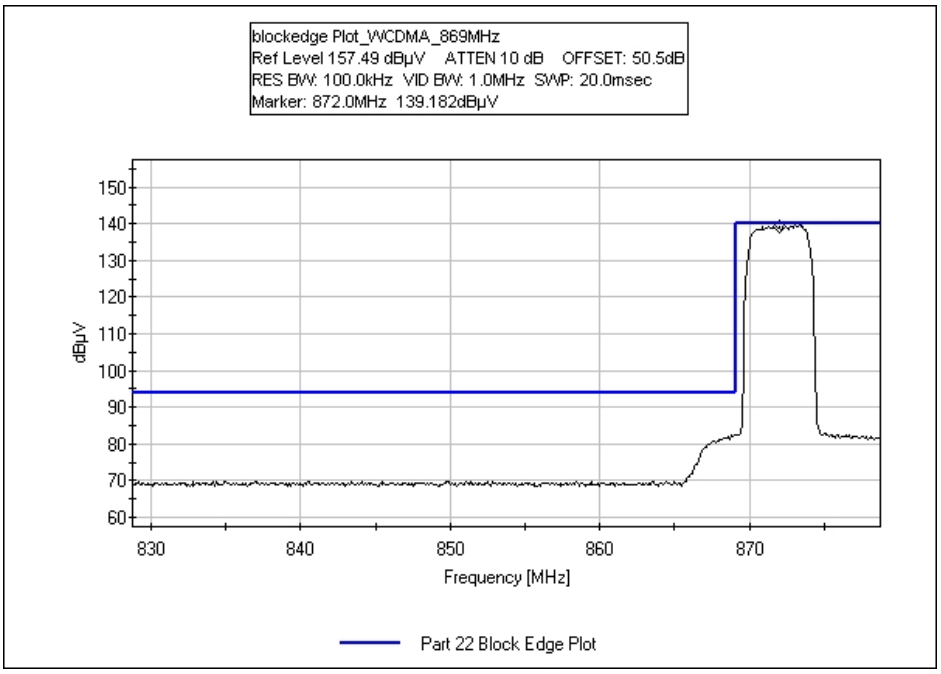
Test Data



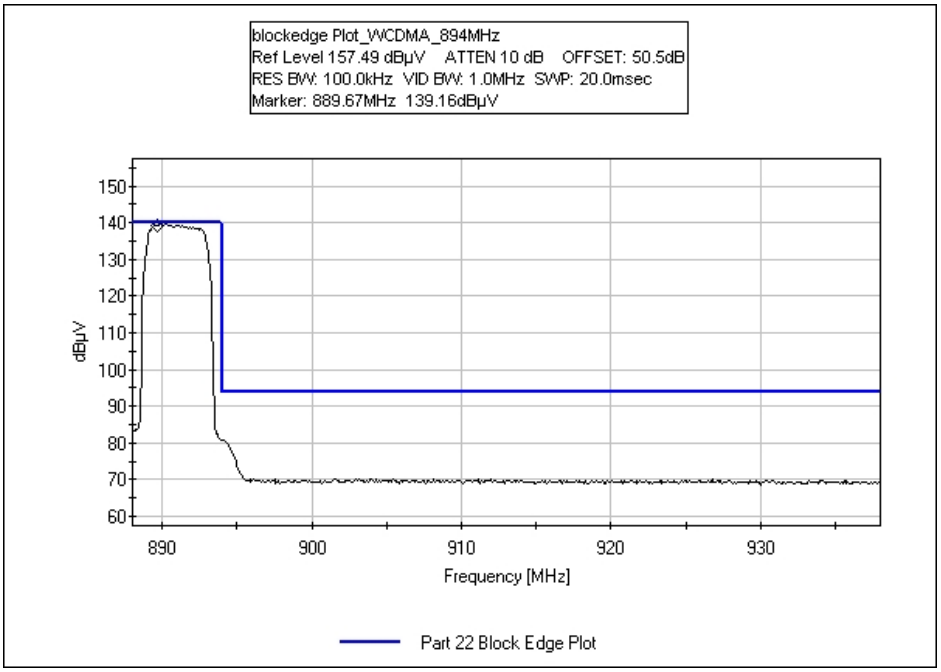
GSM – 869 MHz



GSM – 894 MHz



WCDMA – 869 MHz



WCDMA – 894 MHz

Test Setup Photos

2-11-01/EAB/RF – Out of Band Rejection

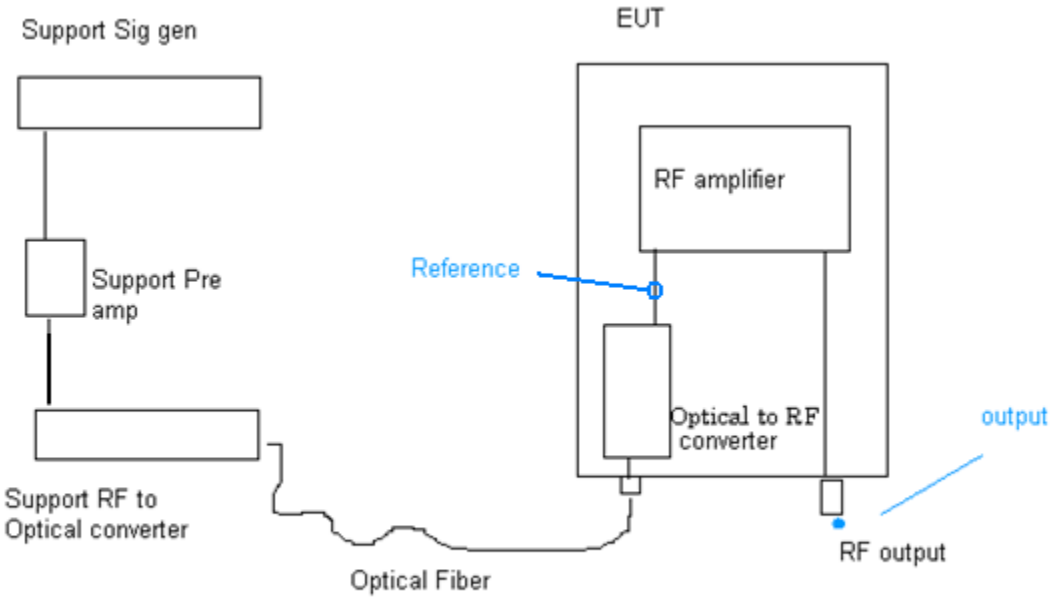
Engineer Name: E. Wong

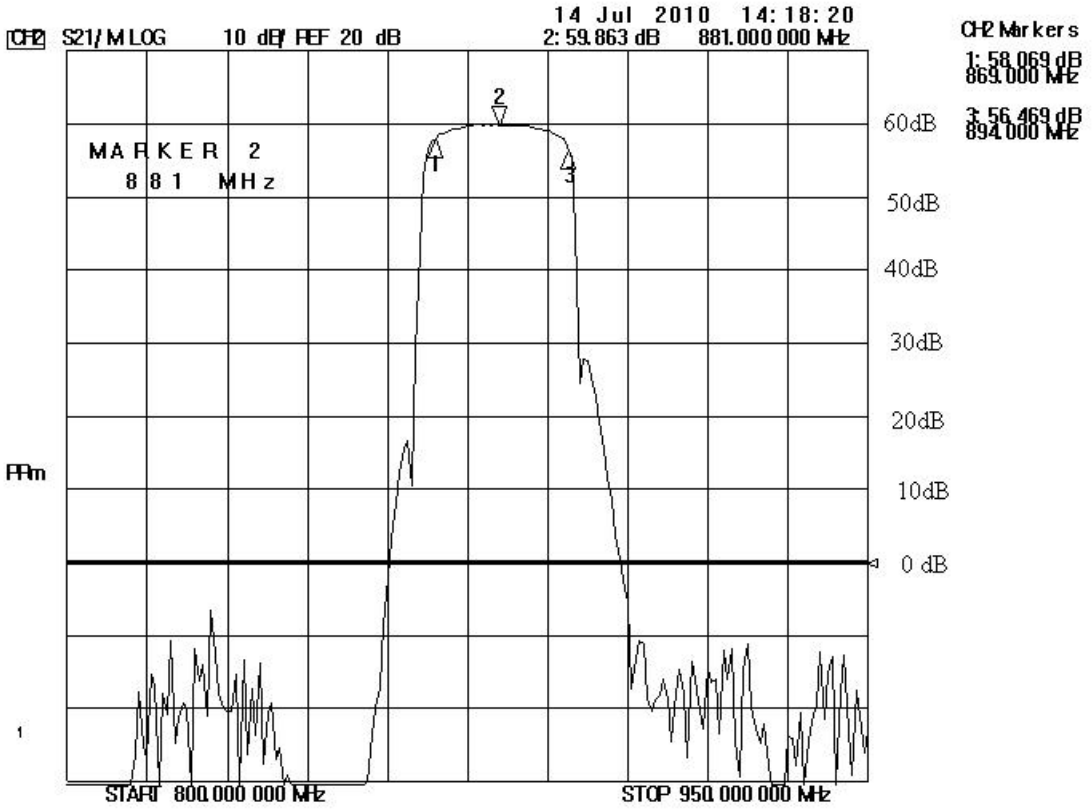
Test Equipment				
Name	**Serial**	**Cal Date**	**Cal Due**	**Asset**
Network analyzer	Us38432770	091208	091210	C00012

Test Setup

To measure the System RF gain, the reference was established at the input of the RF amplifier section, by- passing the optical convertor. The Out of band Rejection plot is captured with a Network Analyzer. To measure the System RF gain, the reference was established at the input of the RF amplifier section, by- passing the optical convertor. The Out of band Rejection plot is captured with a Network Analyzer.

Test Data


Support Sig gen
EUT
RF amplifier
Support Pre amp
Reference
Optical to RF converter
output
Support RF to Optical converter
Optical Fiber
RF output


14 Jul 2010 14:18:20
CH2 S21/M LOG 10 dB/ REF 20 dB
2: 59.863 dB 881.000 000 MHz
CH2 Markers
1: 58.069 dB
869.000 MHz
3: 56.469 dB
894.000 MHz
MARKER 2
881 MHz
60dB
50dB
40dB
30dB
20dB
10dB
0 dB
PRm
START 800.000 000 MHz
STOP 950.000 000 MHz

Test Setup Photos

SUPPLEMENTAL INFORMATION

Measurement Uncertainty

Uncertainty Value	Parameter
4.73 dB	Radiated Emissions
3.34 dB	Mains Conducted Emissions
3.30 dB	Disturbance Power

The reported measurement uncertainties are calculated based on the worst case of all laboratory environments from CKC Laboratories, Inc. test sites. Only those parameters which require estimation of measurement uncertainty are reported. The reported worst case measurement uncertainty is less than the maximum values derived in CISPR 16-4-2. Reported uncertainties represent expanded uncertainties expressed at approximately the 95% confidence level using a coverage factor of k=2. Compliance is deemed to occur provided measurements are below the specified limits.

Emissions Test Details

TESTING PARAMETERS

The cables were routed consistent with the typical application by varying the configuration of the test sample. Interface cables were connected to the available ports of the test unit. The effect of varying the position of the cables was investigated to find the configuration that produced maximum emissions. Cables were of the type and length specified in the individual requirements. The length of cable that produced maximum emissions was selected.

The equipment under test (EUT) was set up in a manner that represented its normal use, as shown in the setup photographs. Any special conditions required for the EUT to operate normally are identified in the comments that accompany the emissions tables.

The emissions data was taken with a spectrum analyzer or receiver. Incorporating the applicable correction factors for distance, antenna, cable loss and amplifier gain, the data was reduced as shown in the table below. The corrected data was then compared to the applicable emission limits. Preliminary and final measurements were taken in order to ensure that all emissions from the EUT were found and maximized.

CORRECTION FACTORS

The basic spectrum analyzer reading was converted using correction factors as shown in the highest emissions readings in the tables. For radiated emissions in dBµV/m, the spectrum analyzer reading in dBµV was corrected by using the following formula. This reading was then compared to the applicable specification limit.

SAMPLE CALCULATIONS		
	Meter reading	(dBµV)
+	Antenna Factor	(dB)
+	Cable Loss	(dB)
-	Distance Correction	(dB)
-	Preamplifier Gain	(dB)
=	Corrected Reading	(dBµV/m)

TEST INSTRUMENTATION AND ANALYZER SETTINGS

The test instrumentation and equipment listed were used to collect the emissions data. A spectrum analyzer or receiver was used for all measurements. For testing emissions, an appropriate reference level and a vertical scale size of 10 dB per division were used.

SPECTRUM ANALYZER/RECEIVER DETECTOR FUNCTIONS

The notes that accompany the measurements contained in the emissions tables indicate the type of detector function used to obtain the given readings. Unless otherwise noted, all readings were made in the "Peak" mode. Whenever a "Quasi-Peak" or "Average" reading is listed as one of the highest readings, this is indicated as a "QP" or an "Ave" on the appropriate rows of the data sheets. The following paragraphs describe in more detail the detector functions and when they were used to obtain the emissions data.

Peak

In this mode, the spectrum analyzer/receiver readings recorded all emissions at their peak value as the frequency band selected was scanned. By combining this function with another feature of the measuring device called "peak hold," the measuring device had the ability to measure transients or low duty cycle transient emission peak levels. In this mode the measuring device made a slow scan across the frequency band selected and measured the peak emission value found at each frequency across the band.

Quasi-Peak

When the true peak values exceeded or were within 2 dB of the specification limit, quasi-peak measurements were taken using the quasi-peak detector.

Average

For certain frequencies, average measurements may be made using the spectrum analyzer/receiver. To make these measurements, the test engineer reduces the video bandwidth on the measuring device until the modulation of the signal is filtered out. At this point the measuring device is set into the linear mode and the scan time is reduced.