TESTING
CERT #803.01, 803.02, 803.05, 803.06

POWERWAVE TECHNOLOGIES, INC. TEST REPORT

FOR THE

WIDE BAND RADIO HEAD, RH700030/101

FCC PART 27

TESTING

DATE OF ISSUE: FEBRUARY 24, 2009

PREPARED FOR:

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

P.O. No.: 125203
W.O. No.: 88851

PREPARED BY:

Mary Ellen Clayton
CKC Laboratories, Inc.
5046 Sierra Pines Drive
Mariposa, CA 95338

Date of test: December 10, 2008 –
February 10, 2009

Report No.: FC09-012

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ADMINISTRATIVE INFORMATION

DATE OF TEST: December 10, 2008 - February 10, 2009

DATE OF RECEIPT: December 10, 2008

REPRESENTATIVE: Charlotte Yu

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

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

FREQUENCY RANGE TESTED: 10 kHz-10 GHz

TEST METHOD: FCC Part 27

PURPOSE OF TEST: To perform the testing of the Wide Band Radio Head, RH700030/101 with the requirements for FCC Part 27 devices.

APPROVALS

QUALITY ASSURANCE:

Steve Behm, Director of Engineering Services

TEST PERSONNEL:

Eddie Wong, Senior EMC Engineer

Septimiu Apahidean, EMC Engineer

SUMMARY OF RESULTS

Test	Specification/Method	Results
RF Power Output	FCC 27.50(b)	Pass
Occupied Bandwidth	FCC 27.53(d)	Pass
Spurious Emissions at Antenna Terminal	FCC 27.53(c)(d)	Pass
Field Strength of Spurious Radiation	FCC 27.53(c)(d)	Pass
Bandedge		Pass
Intermodulation		Pass
Out of Band Rejection		Pass
Site File No.	FCC 90473 IC 3082D-1	

CONDITIONS DURING TESTING

No modifications to the EUT were necessary during testing.

EQUIPMENT UNDER TEST (EUT) DESCRIPTION

The customer declares the EUT tested by CKC Laboratories was representative of a production unit.

The following model has been tested by CKC Laboratories: **RH700030/101**

The customer states that the following additional model is identical electrically to the one which was tested, or any differences between them do not affect their EMC characteristics, and therefore it meets the level of testing equivalent to the tested model: **RH007003/001**.

EQUIPMENT UNDER TEST

Wide Band Radio Head
Manuf: Powerwave Technologies, Inc.
Model: RH700030/101
Serial: NA
FCC ID: E675JS0108

PERIPHERAL DEVICES

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

Optical Converter
Manuf: Powerwave
Model: NA
Serial: NA

Power Meter
Manuf: Agilent
Model: E4419B
Serial: GB402019/12

Pre Amp
Manuf: Mini Circuit
Model: ZHL-4240
Serial: D040405

ESG
Manuf: Agilent
Model: E4433C
Serial: MY42082180

TEMPERATURE AND HUMIDITY DURING TESTING
The temperature during testing was within +15°C and + 35°C.
The relative humidity was between 20% and 75%.

FCC 2.1033(c)(3) USER'S MANUAL
The necessary information is contained in a separate document.

FCC 2.1033 (c)(4) TYPE OF EMISSIONS
G9W, D9W and F9W

FCC 2.1033 (c)(5) FREQUENCY RANGE
758 MHz – 763 MHz.

FCC 2.1033 (c)(6) OPERATING POWER
20 watts.

FCC 2.1033 (c)(7) MAXIMUM POWER RATING
1000 Watts.

FCC 2.1033 (c)(8) DC VOLTAGES
The necessary information is contained in a separate document.

FCC 2.1033 (c)(9) TUNE-UP PROCEDURE
The necessary information is contained in a separate document.

FCC 2.1033(c)(10) SCHEMATICS AND CIRCUITRY DESCRIPTION
The necessary information is contained in a separate document.

FCC 2.1033(c)(11) LABEL AND PLACEMENT
The necessary information is contained in a separate document.

FCC 2.1033(c)(12) SUBMITTAL PHOTOS
The necessary information is contained in a separate document.

FCC 2.1033 (c)(13) MODULATION INFORMATION
APC025_4CFM, APC025_CQPSK, LTE, WCDMA

FCC 2.1033(c)(14)/2.1046/27.50(b) - RF POWER OUTPUT

Test Equipment

RF Output Power

Equipment	Asset #	Manufacturer	Model #	Serial #	Cal Date	Cal Due
RF Power meter	02778	HP	EPM-441A	GB37170458	021508	021510
Power Sensor	02777	HP	E4412A	MY41499662	021508	021510

Peak to Average ratio

Equipment	Asset #	Manufacturer	Model #	Serial #	Cal Date	Cal Due
Spectrum Analyzer	02672	Agilent	E4446A	US44300438	072308	072310

Test Setup Photos

Test Data

27.50(b)(2) RF Power Output:
Effective radiated power limits

(2) Fixed and base stations transmitting a signal in the 746-757 MHz, 758-763 MHz, 776-787 MHz, and 788-793 MHz bands with an emission bandwidth of 1 MHz or less must not exceed an ERP of 1000 watts and an antenna height of 305 m HAAT, except that antenna heights greater than 305 m HAAT are permitted if power levels are reduced below 1000 watts ERP in accordance with Table 1 of this section.

Effective:
June 2,2008
1)Power measurements, for transmitters authorized under these sections, may be made either in accordance with a Commission- approved average power technique, or using peak power measurements.
2) If an average power technique is used, the peak-to-average ratio (PAR) of the transmission may not exceed 13 dB.

The EUT is a RF amplifier operating the 758-763 MHz band under Part 27. The manufacturer does not provide an antenna for sale with the product, hence EIRP is not measured nor calculated. The end user of this product is to exercise proper engineering judgment to select the appropriate antenna to comply with the EIRP limitation set forth by 27.50(b)(1)

The RF power of the EUT was measured with a power meter at the antenna port. The measurement satisfies the above requirement by demonstrating the measured power is below 1000 watts. The peak to Average ratio plots* for Part 27 device were captured with a spectrum analyzer.

Test setup: The EUT is placed on the wooden table. The RF Output port is connected to a load string. Optical in port is connected to a support Optical converter.

Support optical converter receives the RF signal, converts the signal to optic and sends it to the EUT. The EUT decodes the optical signal and generates a RF signal.

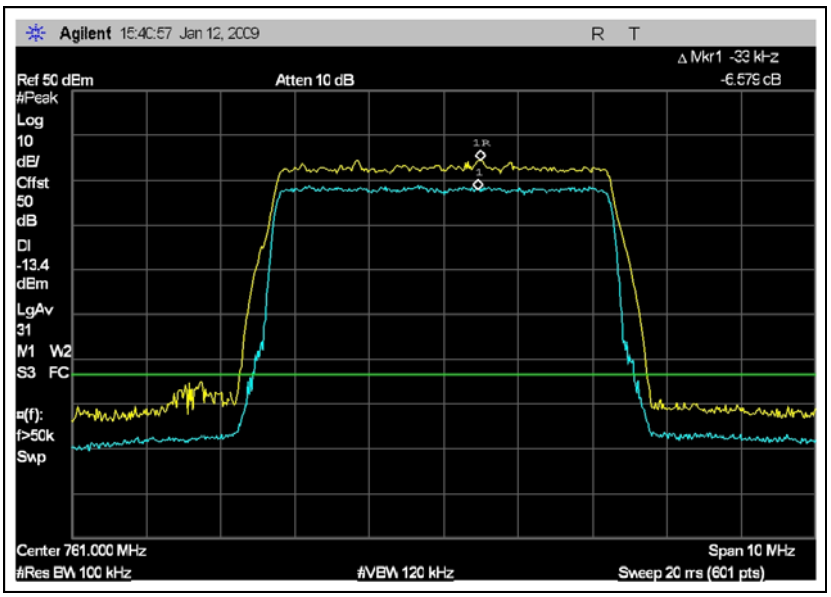
Operating range: 758-763MHz.

Modulation	Frequency	Power (dBm)	Power (Watts)
WCDMA	761.000MHz	43	20
LTE	761.000MHz	43	20
APCO25/4CFM	758.050MHz	43	20
APCO25/4CFM	761.000MHz	43	20
APCO25/4CFM	762.950MHz	43	20
APC025/CQPSK	758.025MHz	43	20
APC025/CQPSK	761.000MHz	43	20
APC025/CQPSK	762.975MHz	43	20

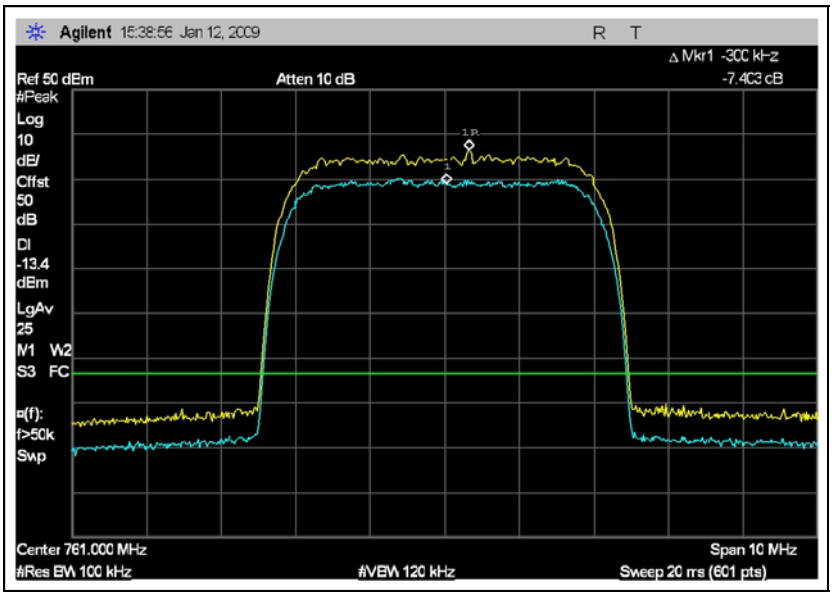
Conclusion: As indicated below, each single channel does not exceed the 1000 Watts peak power limit.

* Biennial Regulatory Review –Amendment of Parts 24, and **27**
–(FCC 08- 85)
NOTICE OF PROPOSED RULE MAKING AND ORDER:
Effective: June 2, 2008
1)Power measurements, for transmitters authorized under these sections, may be made either in a accordance with a Commission-approved average power technique, or using peak power measurements.
2)If an average power technique is used, the peak-to-average ratio (PAR) of the transmission may not exceed 13 dB.

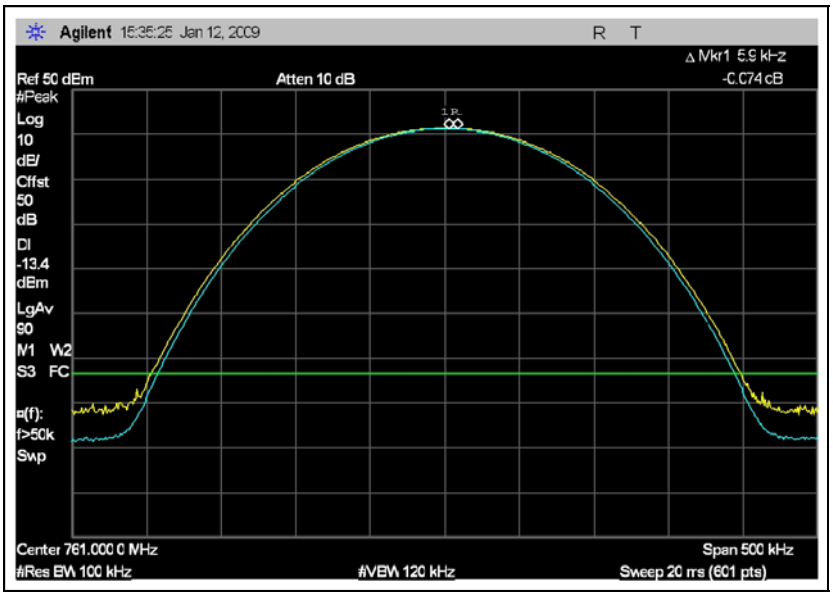
Peak to Average ratio plot



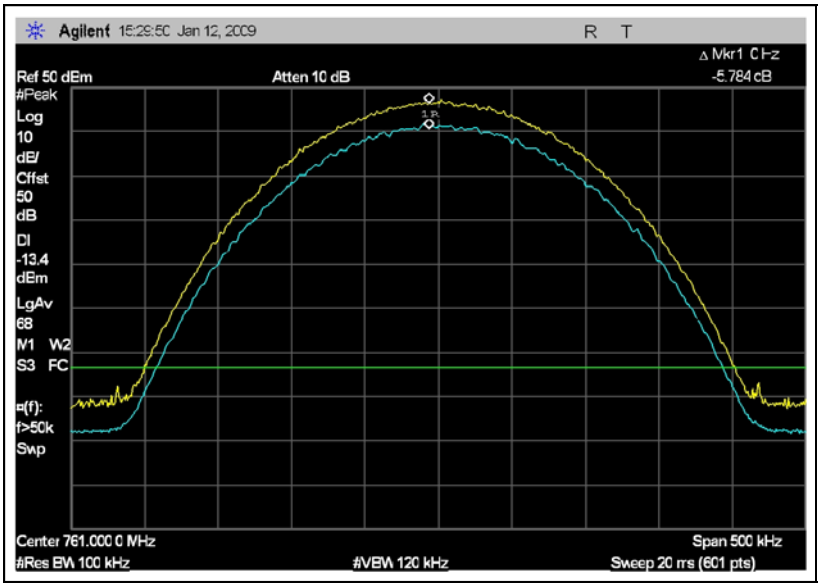
LTE



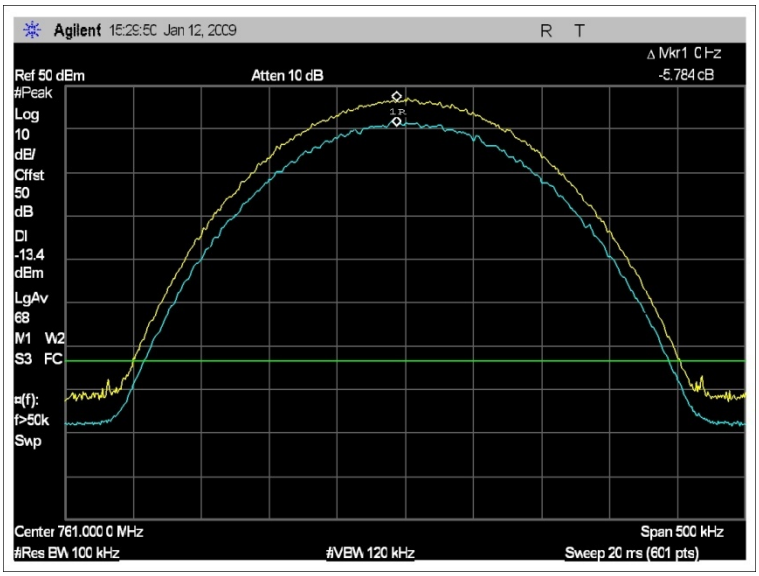
WCDMA



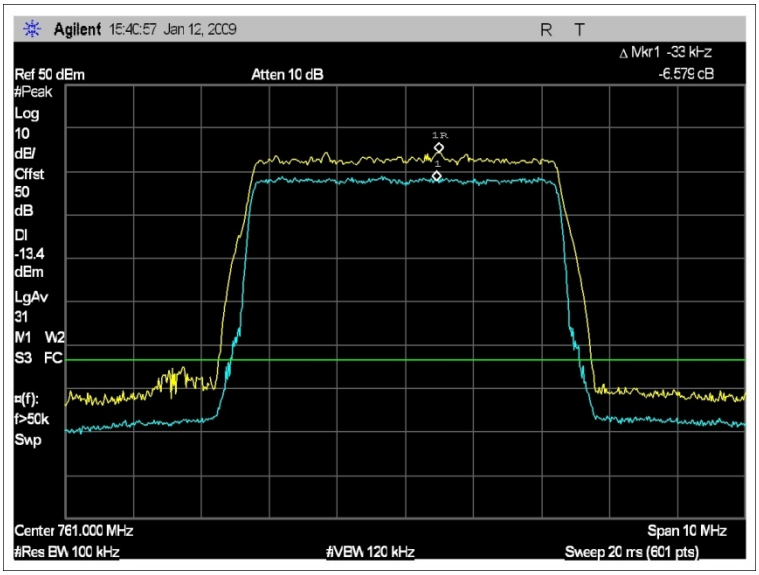
APCO25/4CFM



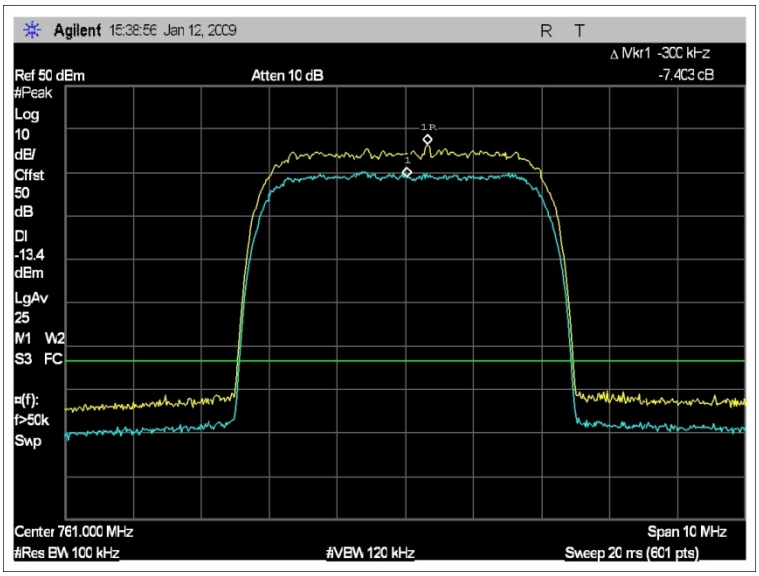
APC025/CQPSK


Agilent 15:29:50 Jan 12, 2009
R T
Δ Mkr1 0 Hz
-5.784 dB
Ref 50 dBm
Atten 10 dB
#Peak
Log
10
dB/
Offst
50
dB
Dl
-13.4
dBm
LgAv
68
W1 W2
S3 FC
¤(f):
f>50k
Swp
Center 761.000 0 MHz
#Res BW 100 kHz
#VBW 120 kHz
Span 500 kHz
Sweep 20 ms (601 pts)

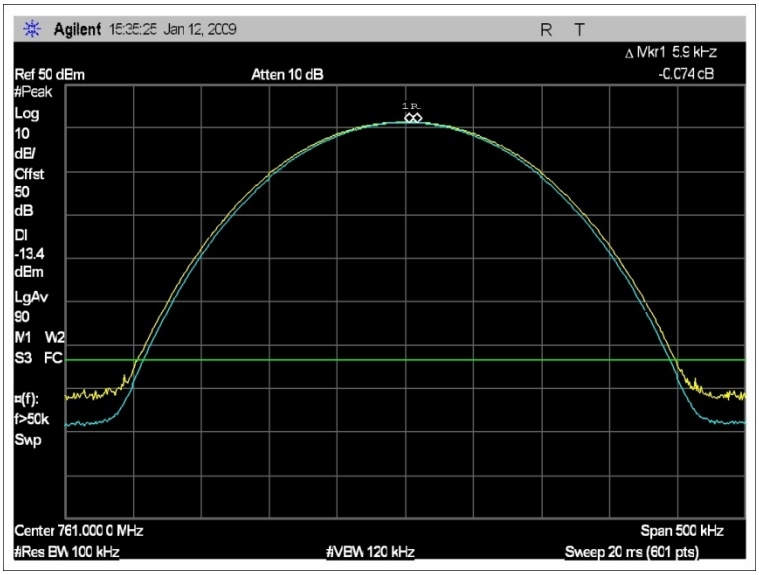
CQPSK_M


Agilent 15:40:57 Jan 12, 2009
R T
Δ Mkr1 -33 kHz
-6.579 dB
Ref 50 dBm
Atten 10 dB
#Peak
Log
10
dB/
Offst
50
dB
Dl
-13.4
dBm
LgAv
31
W1 W2
S3 FC
¤(f):
f>50k
Swp
Center 761.000 MHz
#Res BW 100 kHz
#VBW 120 kHz
Span 10 MHz
Sweep 20 ms (601 pts)

LTE_M


Agilent 15:38:56 Jan 12, 2009
R T
Δ Mkr1 -300 kHz
-7.403 dB
Ref 50 dBm
Atten 10 dB
#Peak
Log
10
dB/
Offst
50
dB
Dl
-13.4
dBm
LgAv
25
M1 W2
S3 FC
¤(f):
f>50k
Swp
Center 761.000 MHz
Span 10 MHz
#Res BW 100 kHz
#VBW 120 kHz
Sweep 20 ms (601 pts)

WCDMA


Agilent 15:36:26 Jan 12, 2009
R T
Δ Mkr1 5.9 kHz
-0.074 dB
Ref 50 dBm
Atten 10 dB
#Peak
Log
10
dB/
Offst
50
dB
Dl
-13.4
dBm
LgAv
90
M1 W2
S3 FC
¤(f):
f>50k
Swp
Center 761.000 0 MHz
Span 500 kHz
#Res BW 100 kHz
#VBW 120 kHz
Sweep 20 ms (601 pts)

4CFM_M

FCC 2.1033(c)(14)/2.1049(i)/27.53(d)- OCCUPIED BANDWIDTH

Test Equipment

Equipment	Asset #	Manufacturer	Model #	Serial #	Cal Date	Cal Due
Spectrum Analyzer	02672	Agilent	E4446A	US44300438	072308	072310
36" 40GHz cable	02945	Strolab	NA	NA	091807	091809

Test Conditions

2.1029 Occupied BW, Input vs Output port

The EUT is placed on the wooden table. The RF Output port is connected to a load string. Optical in port is connected to a support Optical converter.

Support optical converter receives the RF signal, converts the signal to optic and sends it to the EUT. The EUT decodes the optical signal and generates a RF signal.

Operating range: 758-763MHz.
Modulation: WCDMA, LTE
Frequency = 761 MHz

Modulation: APCO25/4CFM ,
Frequency = 758.05MHz , 761MHz, 763.95 MHz

Modulation: APC025/CQPSK
Frequency = 758.025MHz, 761MHz. 763.975MHz

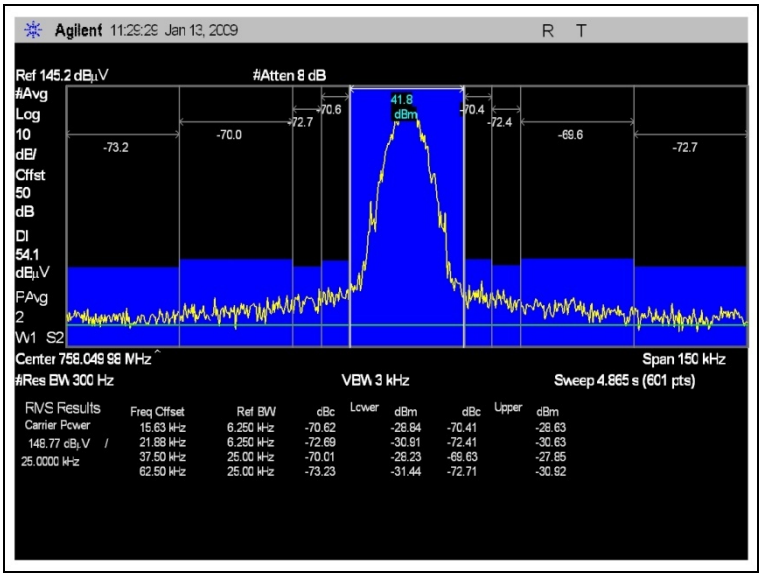
Output waveform is recorded with a spectrum analyzer at the Antenna port of the device. Input waveform is recorded with a spectrum analyzer at the RF out of the support ESG.

In addition, the Adjacent Channel power ratio for Narrow band signal was analyzed per FCC Requirement as requested by KDB 846944.

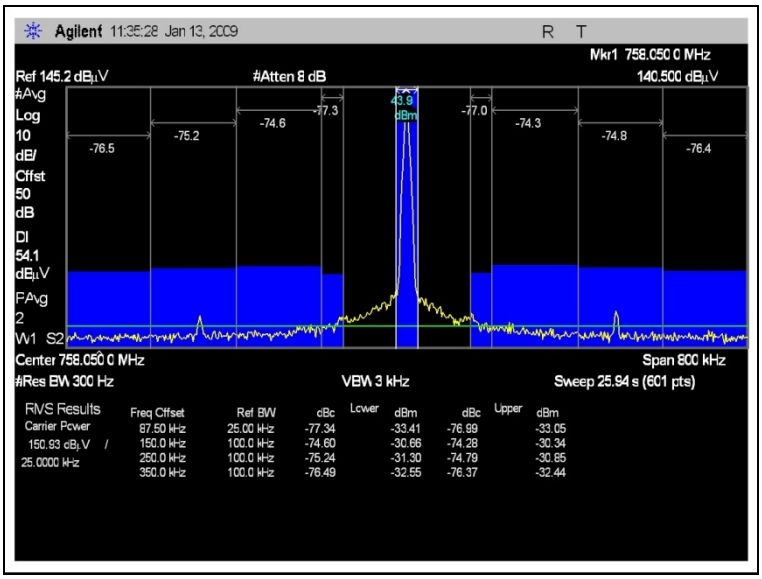
Test Setup Photos

Test Plots

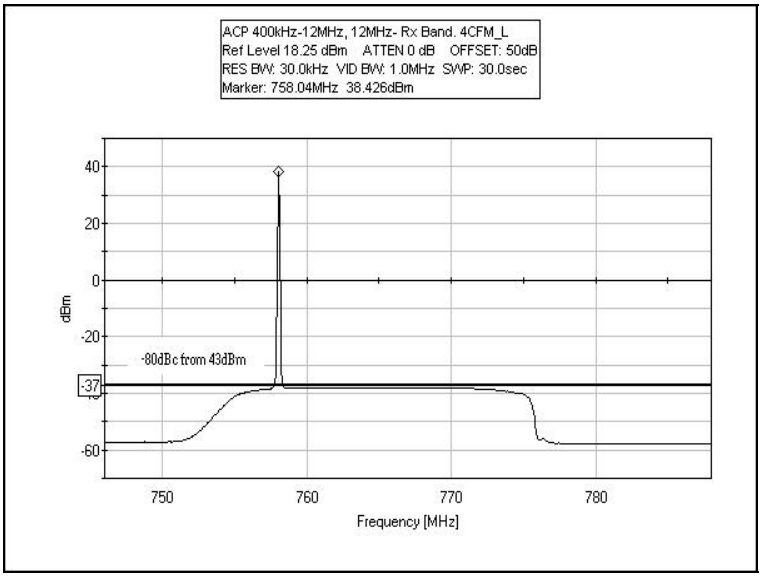
FCC 27.53(d) OCCUPIED BANDWIDTH - 4CFM – LOW CHANNEL PLOT 1



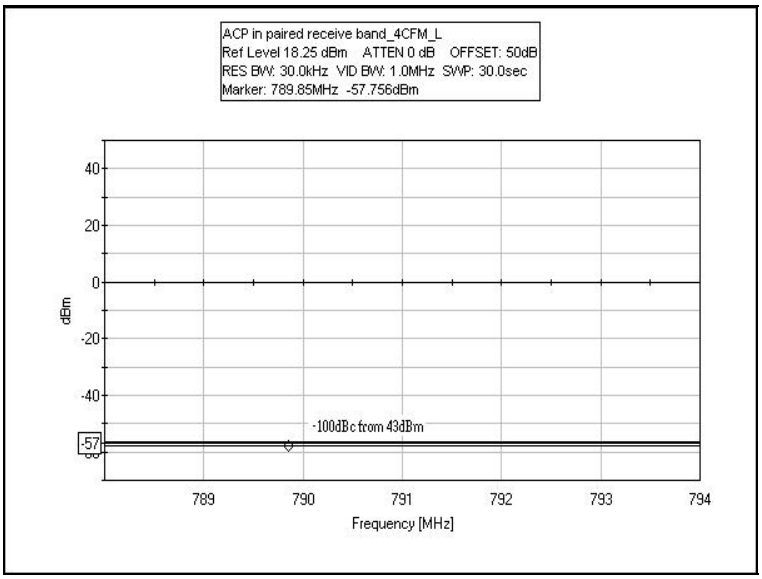
FCC 27.53(d) OCCUPIED BANDWIDTH - 4CFM – LOW CHANNEL PLOT 2



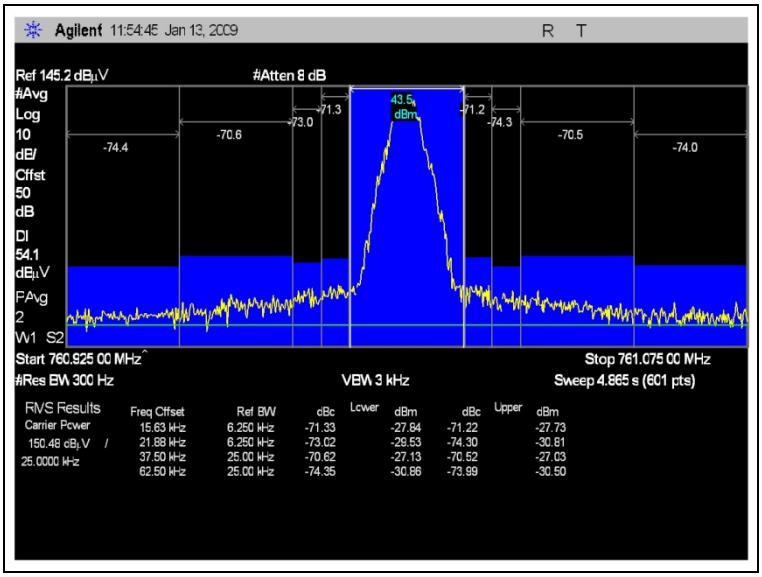
FCC 27.53(d) OCCUPIED BANDWIDTH - 4CFM – LOW CHANNEL PLOT 3



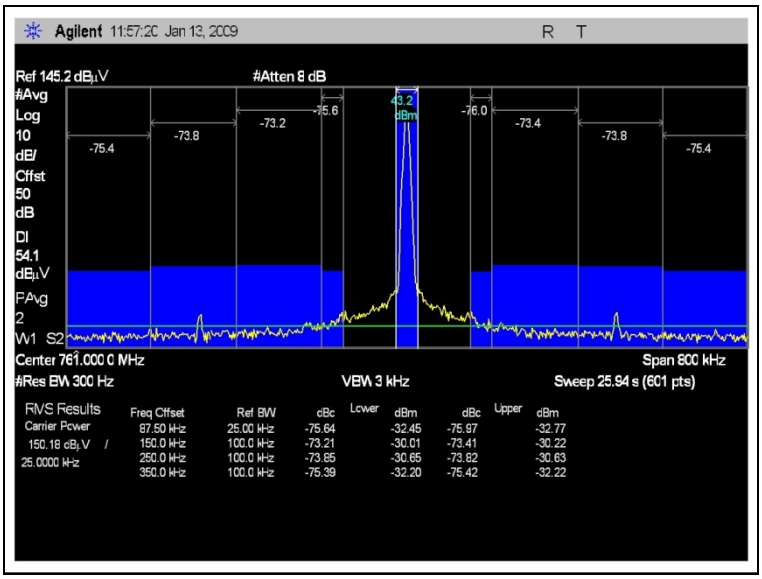
FCC 27.53(d) OCCUPIED BANDWIDTH - 4CFM – LOW CHANNEL PLOT 4



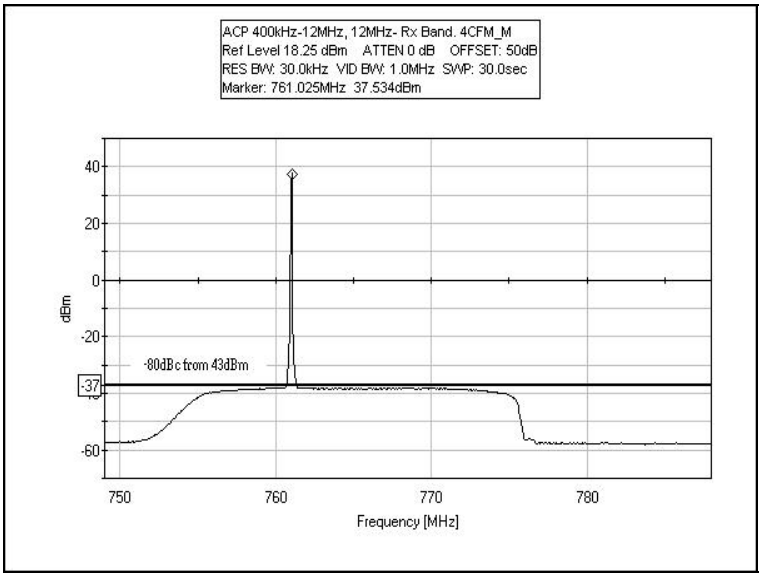
FCC 27.53(d) OCCUPIED BANDWIDTH - 4CFM – MID CHANNEL PLOT 1



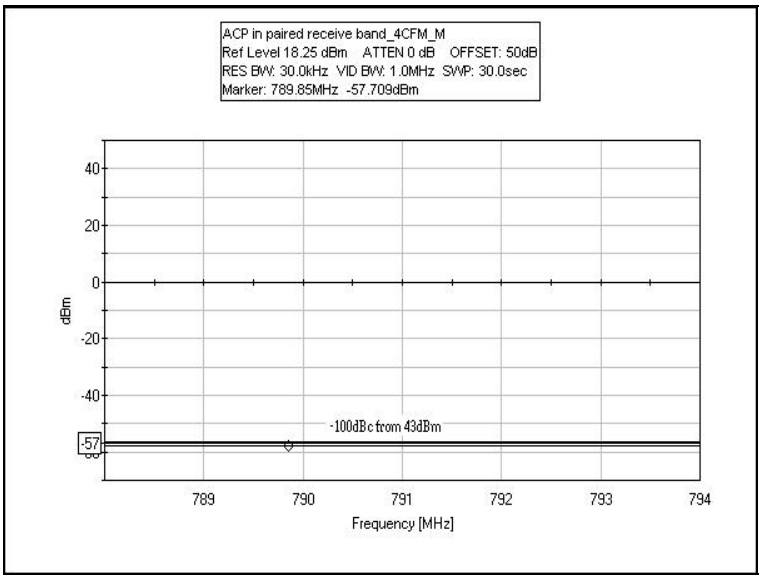
FCC 27.53(d) OCCUPIED BANDWIDTH - 4CFM – MID CHANNEL PLOT 2



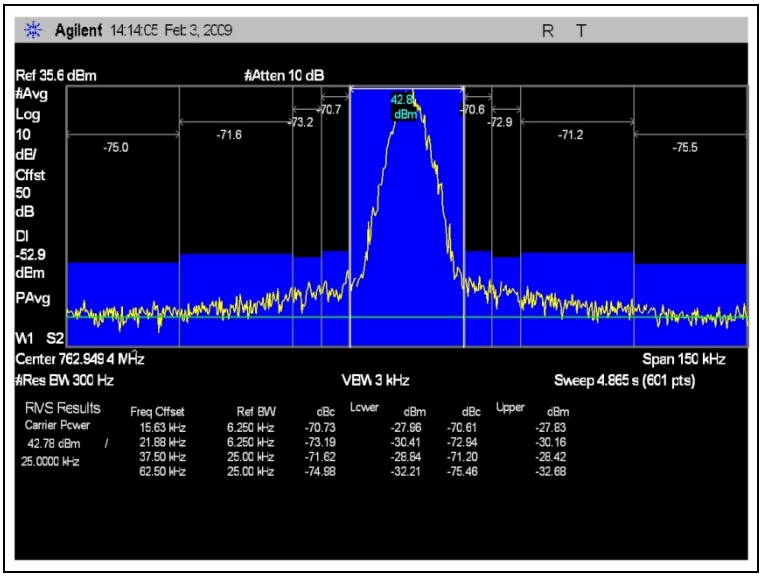
FCC 27.53(d) OCCUPIED BANDWIDTH - 4CFM – MID CHANNEL PLOT 3



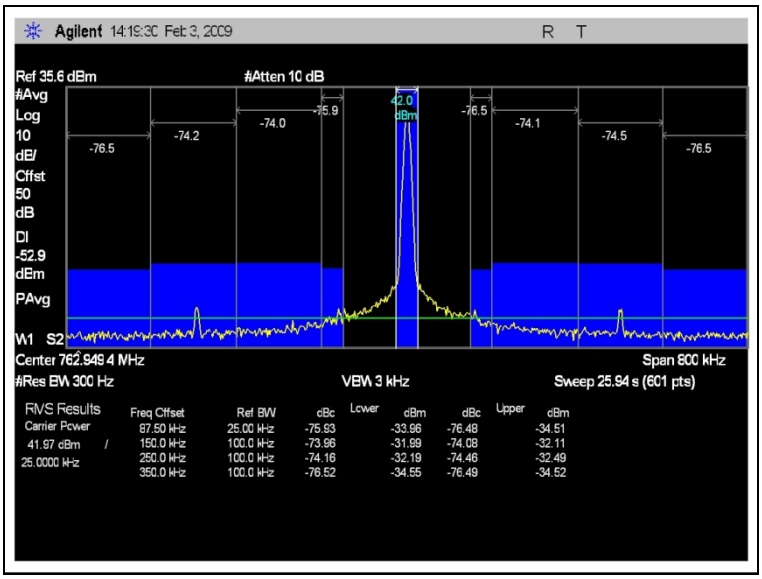
FCC 27.53(d) OCCUPIED BANDWIDTH - 4CFM – MID CHANNEL PLOT 4



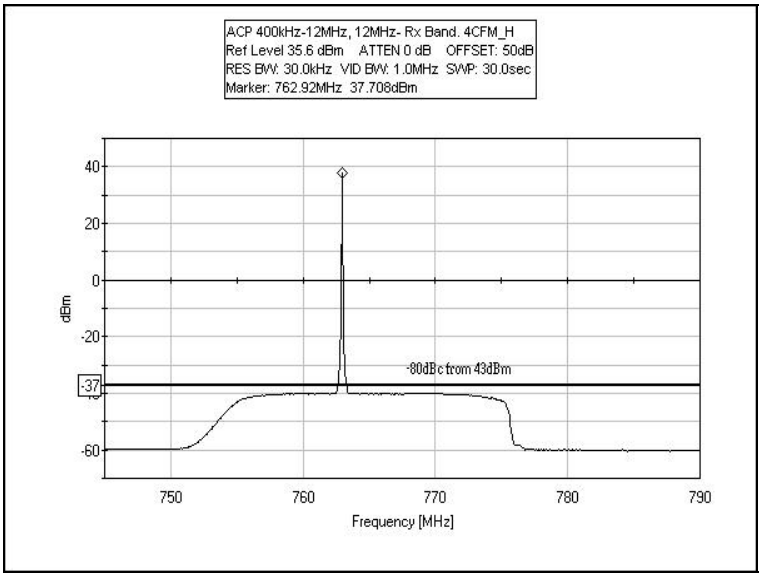
FCC 27.53(d) OCCUPIED BANDWIDTH - 4CFM – HIGH CHANNEL PLOT 1



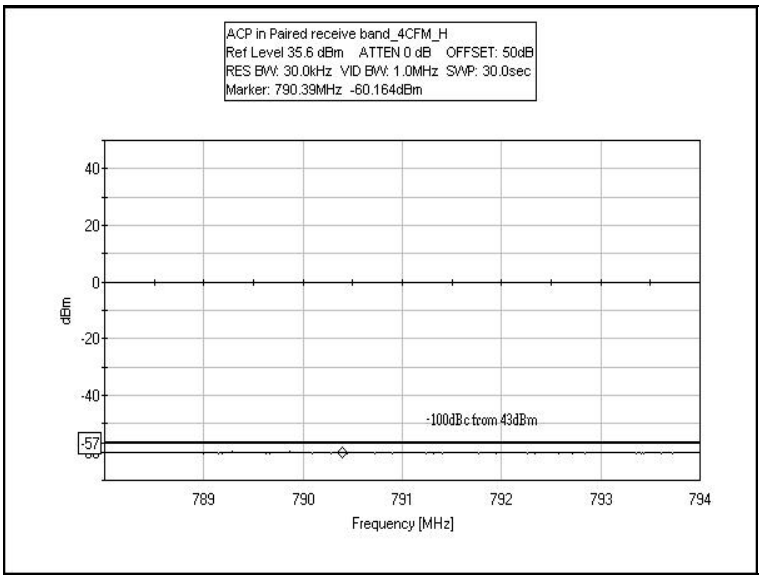
FCC 27.53(d) OCCUPIED BANDWIDTH - 4CFM – HIGH CHANNEL PLOT 2



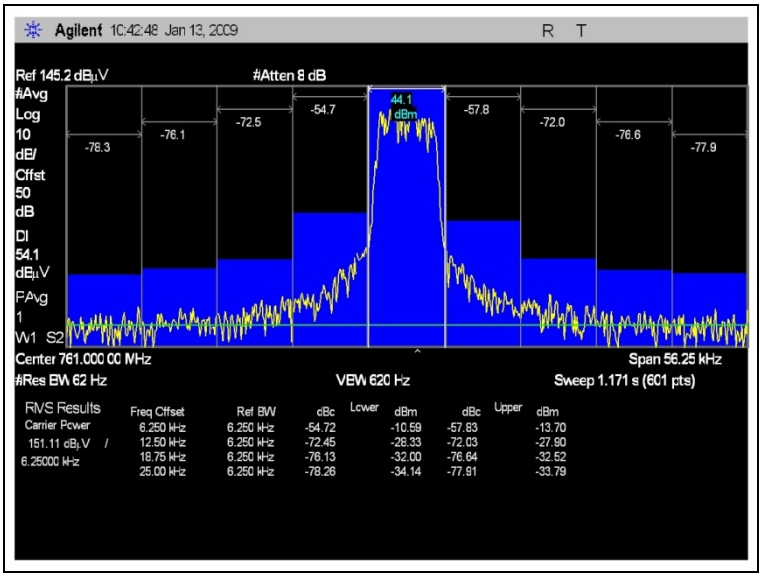
FCC 27.53(d) OCCUPIED BANDWIDTH - 4CFM – HIGH CHANNEL PLOT 3



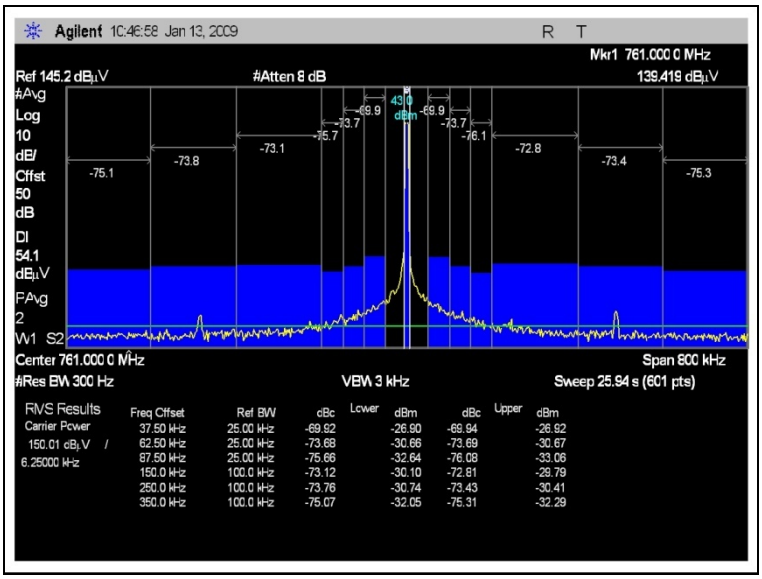
FCC 27.53(d) OCCUPIED BANDWIDTH - 4CFM – HIGH CHANNEL PLOT 4



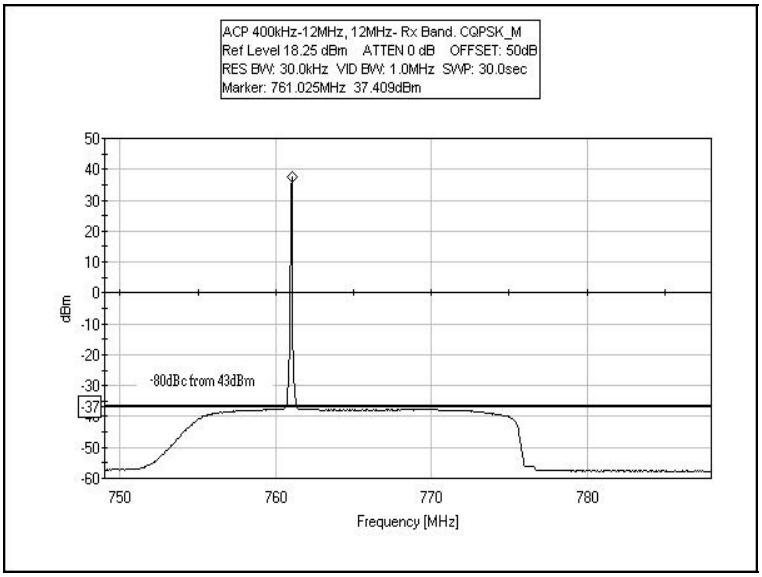
FCC 27.53(d) OCCUPIED BANDWIDTH - ACP_CQPSK – MID CHANNEL PLOT 1



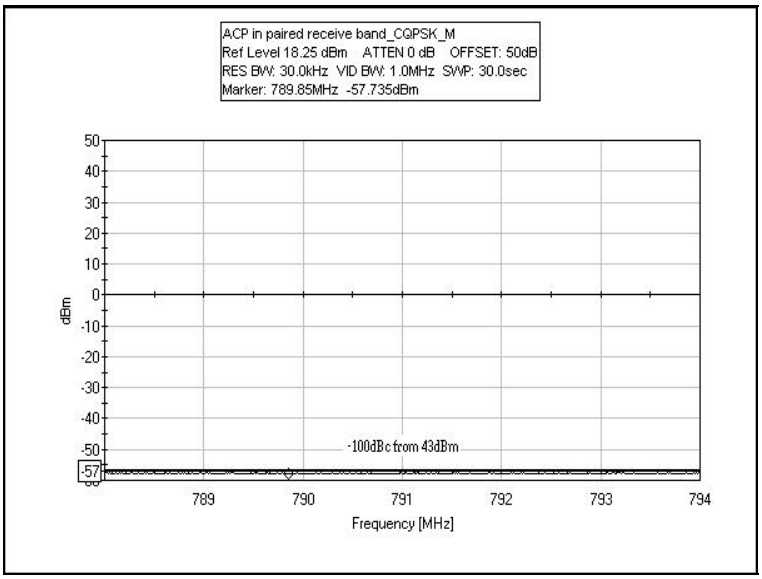
FCC 27.53(d) OCCUPIED BANDWIDTH - ACP_CQPSK – MID CHANNEL PLOT 2



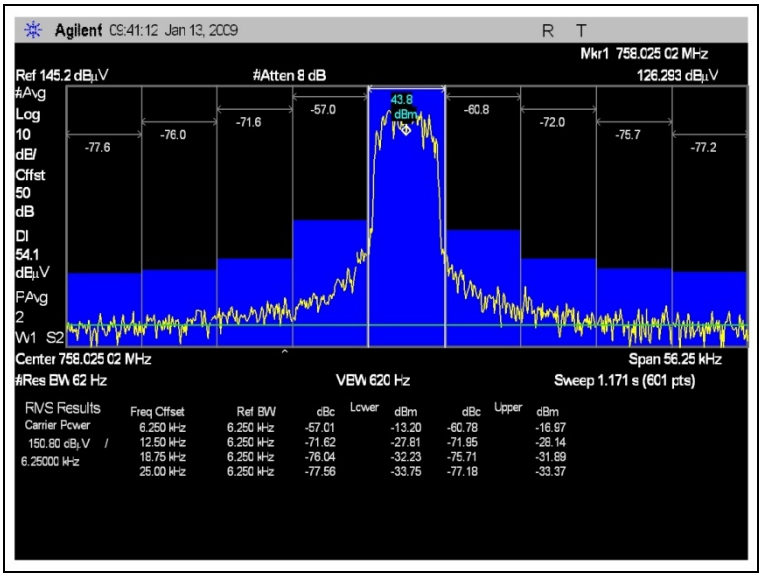
FCC 27.53(d) OCCUPIED BANDWIDTH - ACP_CQPSK – MID CHANNEL PLOT 3



FCC 27.53(d) OCCUPIED BANDWIDTH - ACP_CQPSK – MID CHANNEL PLOT 4



FCC 27.53(d) OCCUPIED BANDWIDTH - ACP_CQPSK – LOW CHANNEL PLOT 1



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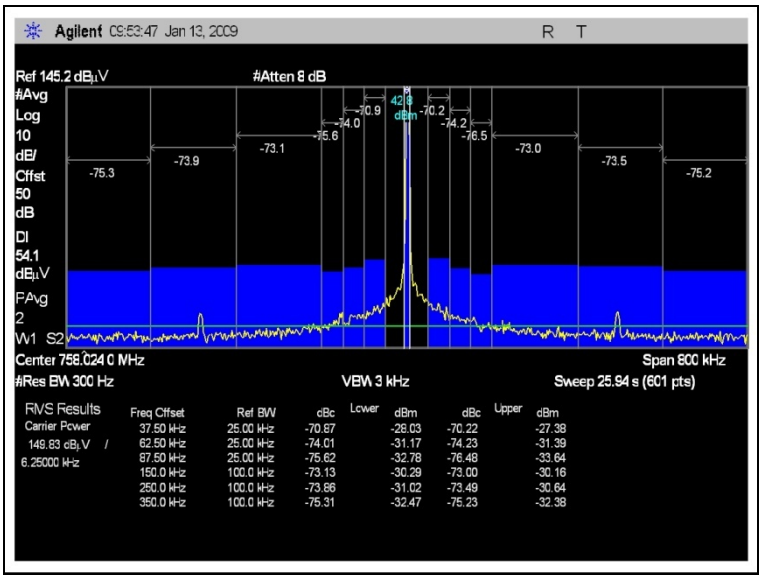
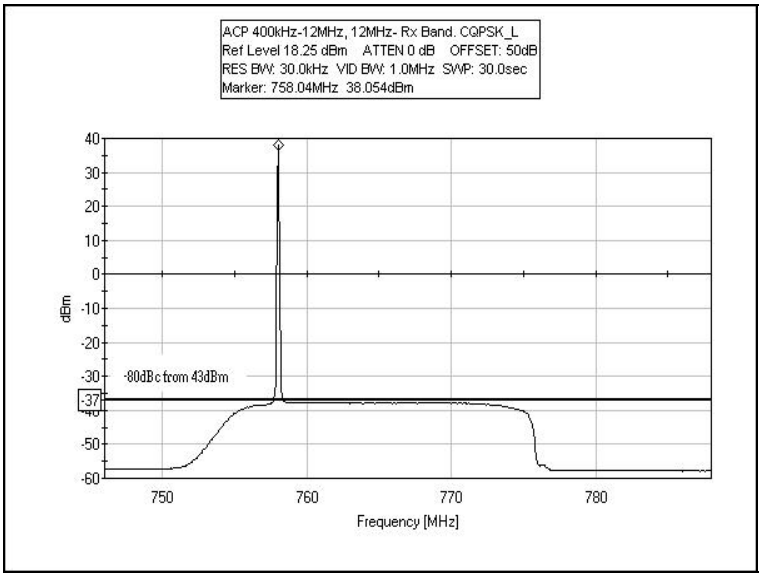
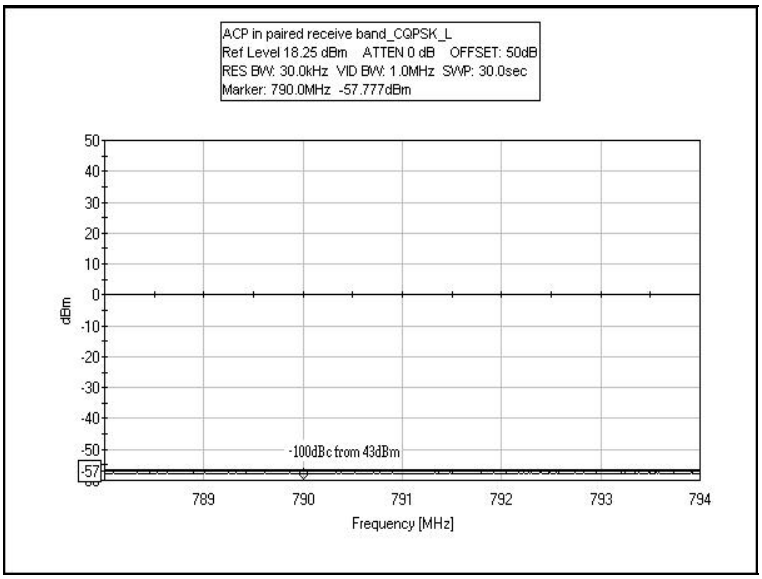


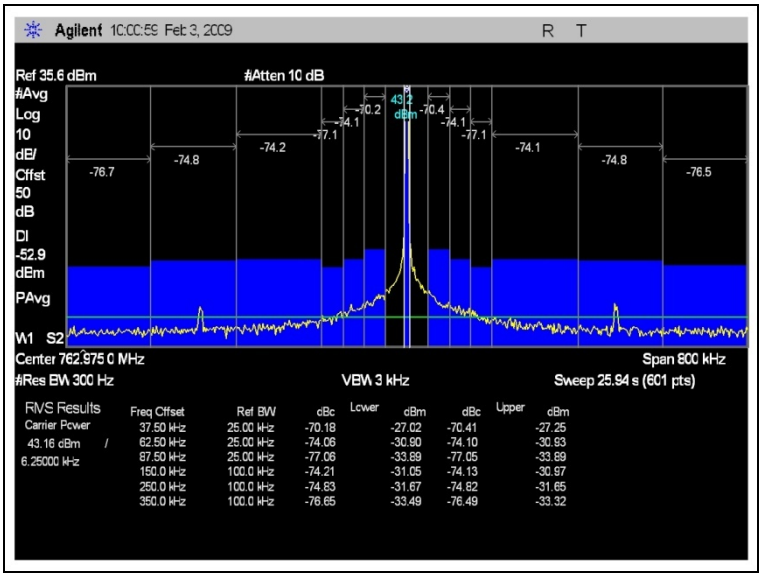
FCC 27.53(d) OCCUPIED BANDWIDTH - ACP_CQPSK – LOW CHANNEL PLOT 3



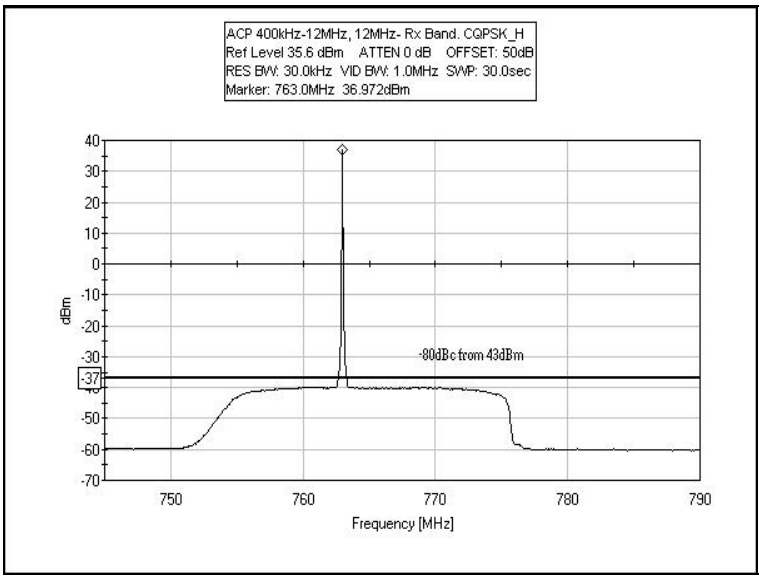
FCC 27.53(d) OCCUPIED BANDWIDTH - ACP_CQPSK – LOW CHANNEL PLOT 4



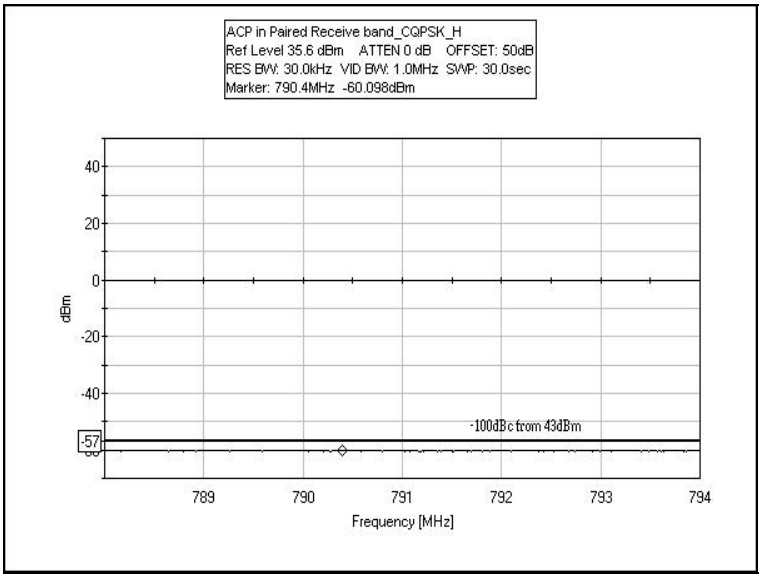
FCC 27.53(d) OCCUPIED BANDWIDTH - ACP_CQPSK – HIGH CHANNEL PLOT 2



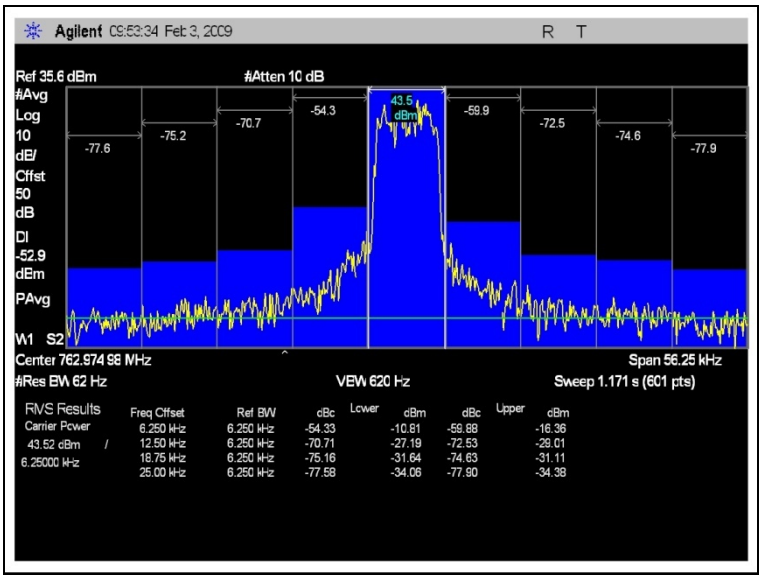
FCC 27.53(d) OCCUPIED BANDWIDTH - ACP_CQPSK – HIGH CHANNEL PLOT 3



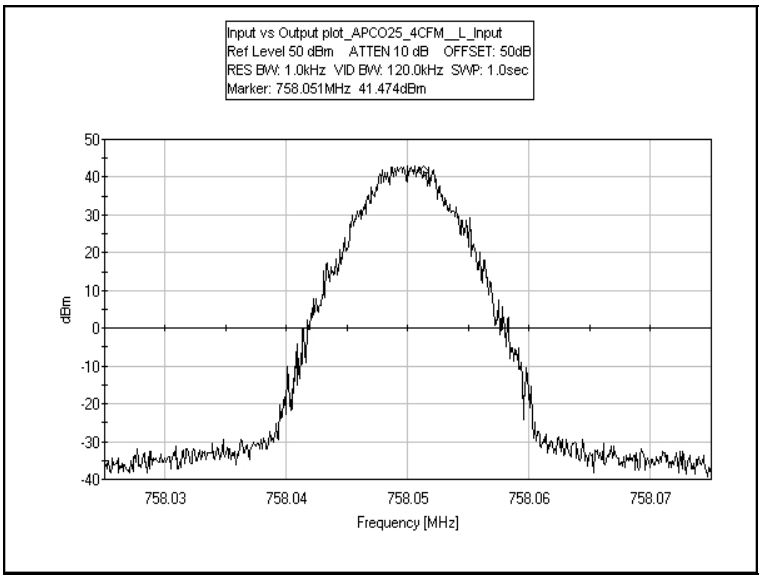
FCC 27.53(d) OCCUPIED BANDWIDTH - ACP_CQPSK – HIGH CHANNEL PLOT 4



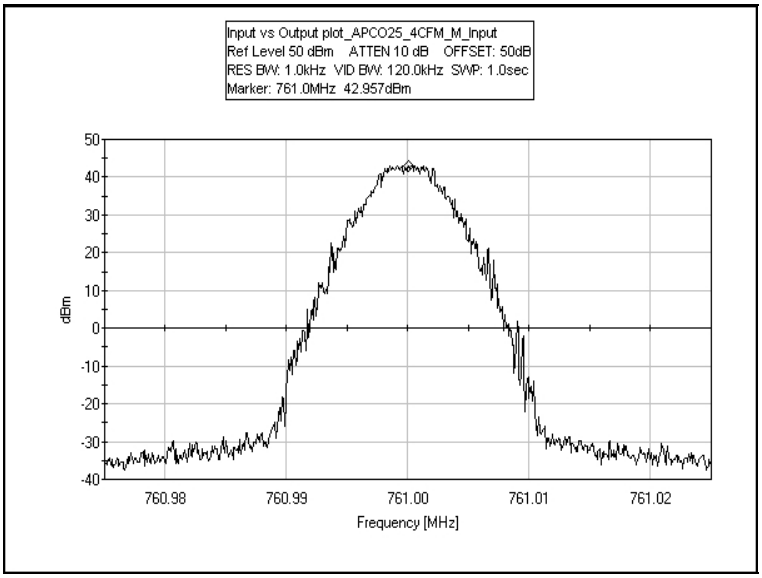
FCC 27.53(d) OCCUPIED BANDWIDTH - ACP_CQPSK – HIGH CHANNEL PLOT 1



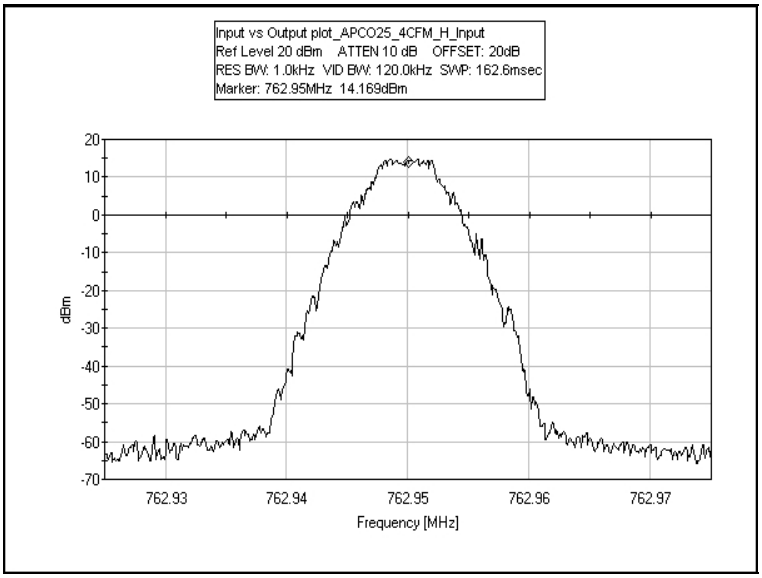
INPUT PLOT - APCO25_4CFM - LOW CHANNEL



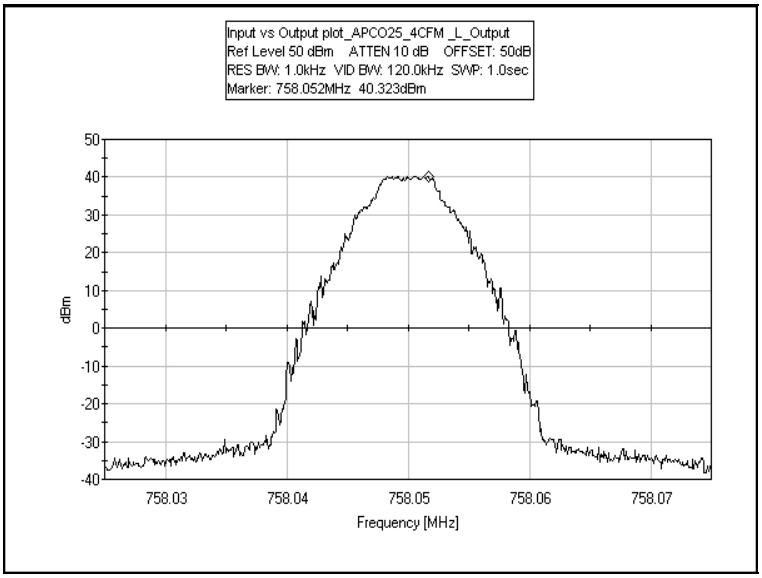
INPUT PLOT - APCO25_4CFM - MID CHANNEL



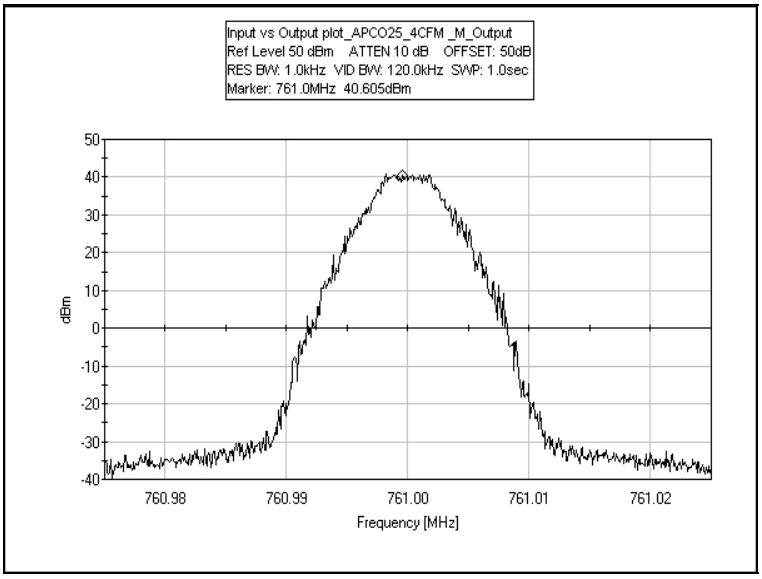
INPUT PLOT - APCO25_4CFM - HIGH CHANNEL



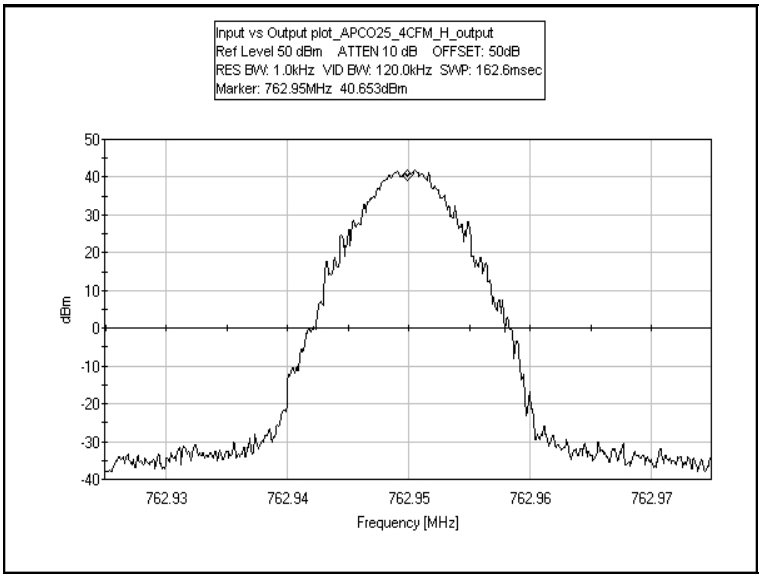
OUTPUT PLOT - APCO25_4CFM - LOW CHANNEL



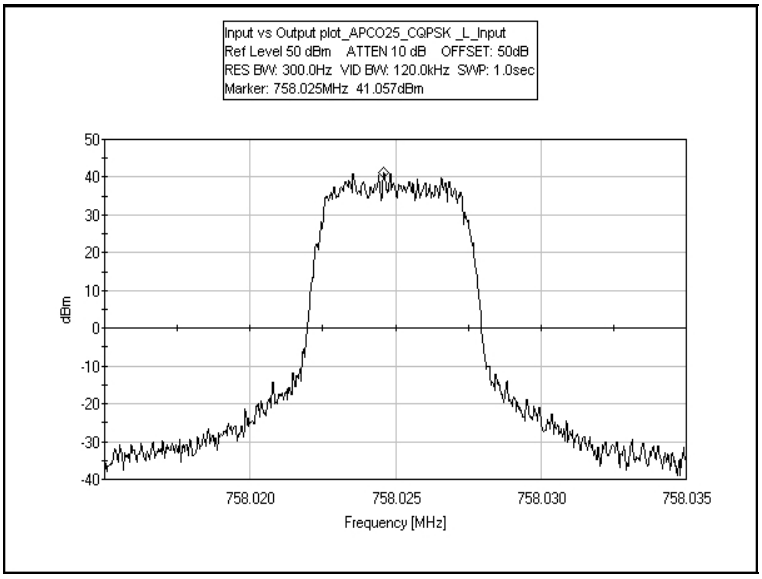
OUTPUT PLOT - APCO25_4CFM - MID CHANNEL



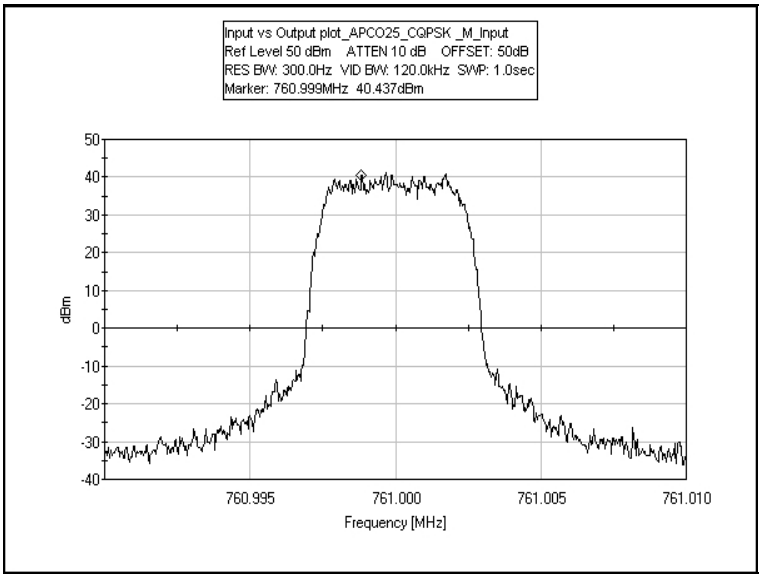
OUTPUT PLOT - APCO25_4CFM - HIGH CHANNEL



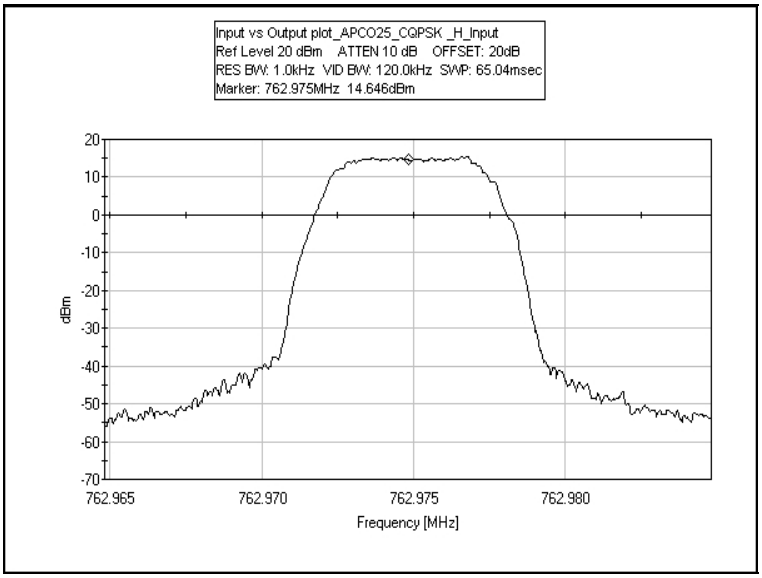
INPUT PLOT - APCO25_CQPSK - LOW CHANNEL



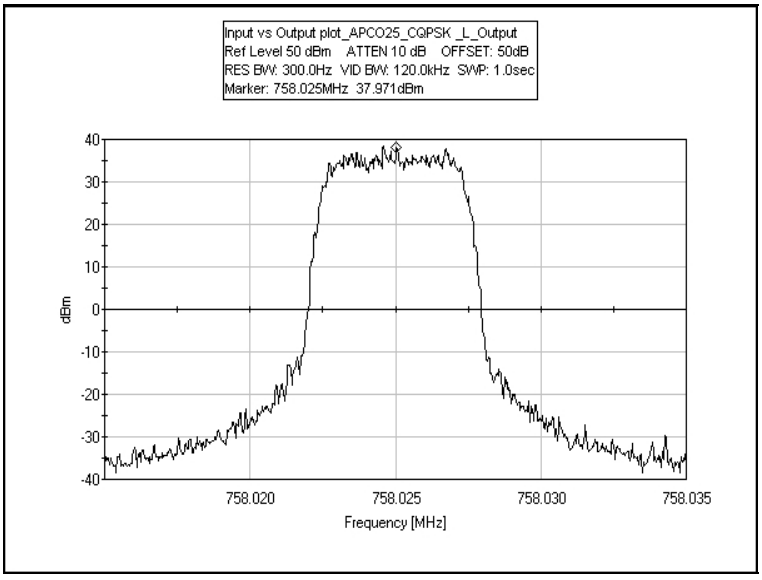
INPUT PLOT - APCO25_CQPSK - MID CHANNEL



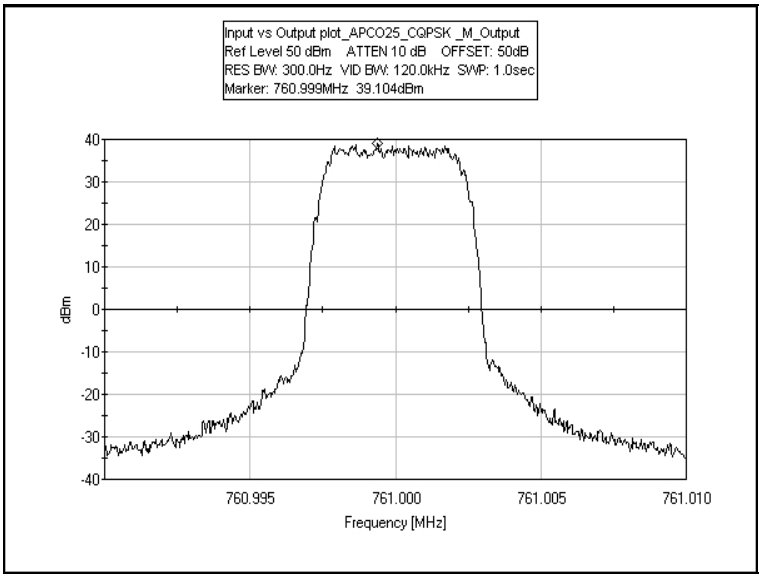
INPUT PLOT - APCO25_CQPSK - HIGH CHANNEL



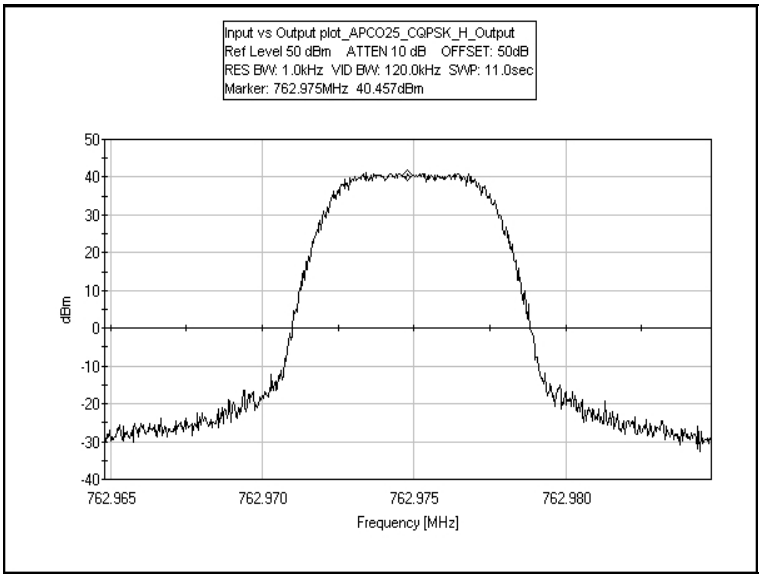
OUTPUT PLOT - APCO25_CQPSK - LOW CHANNEL



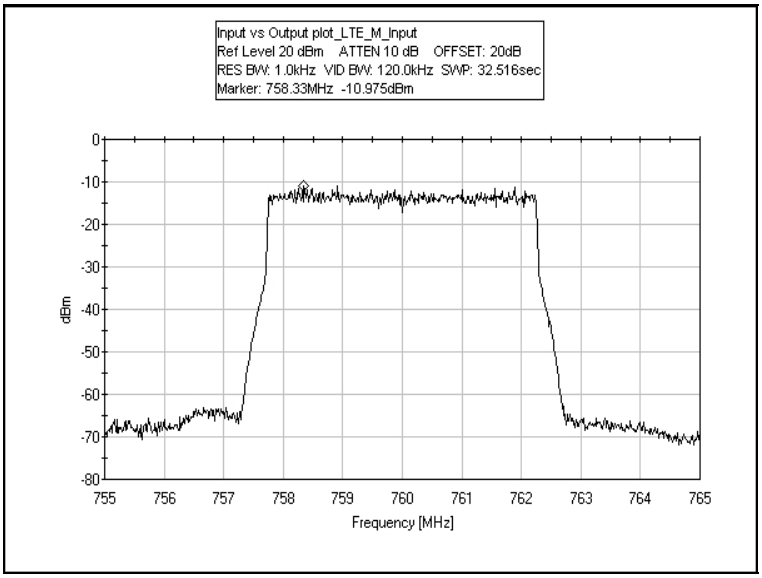
OUTPUT PLOT - APCO25_CQPSK - MID CHANNEL



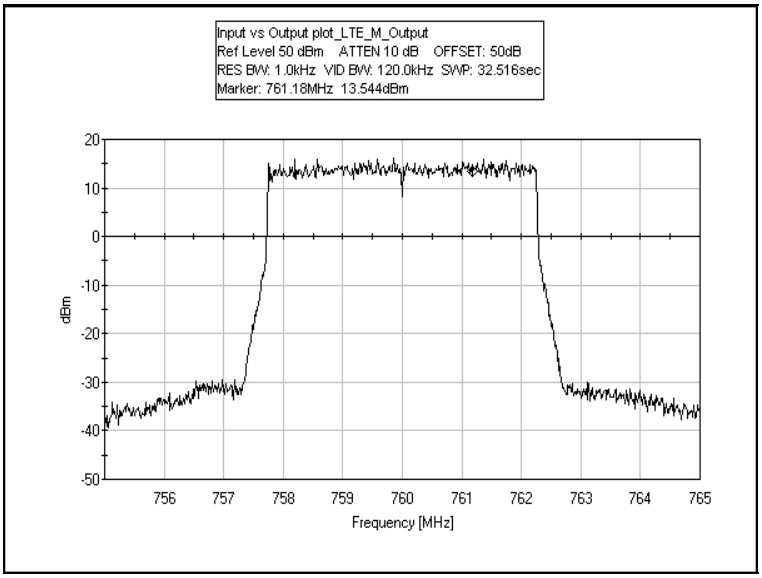
OUTPUT PLOT - APCO25_CQPSK - HIGH CHANNEL



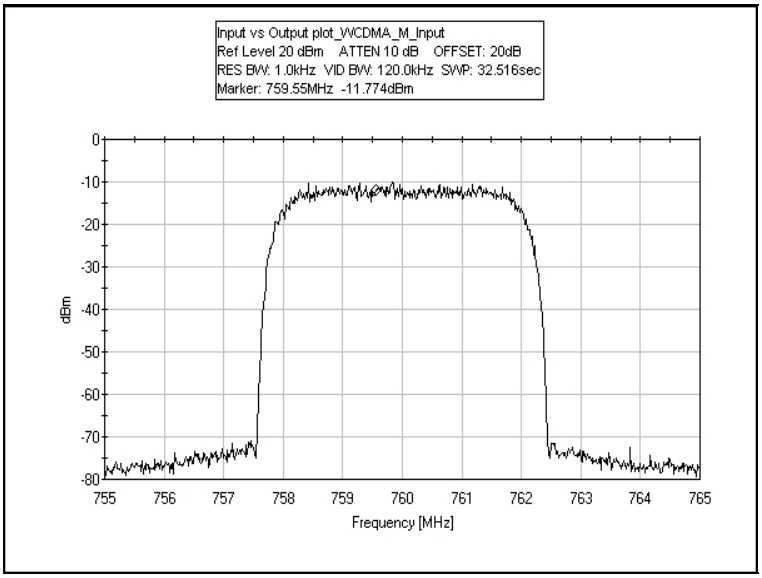
INPUT PLOT - LTE - MID CHANNEL



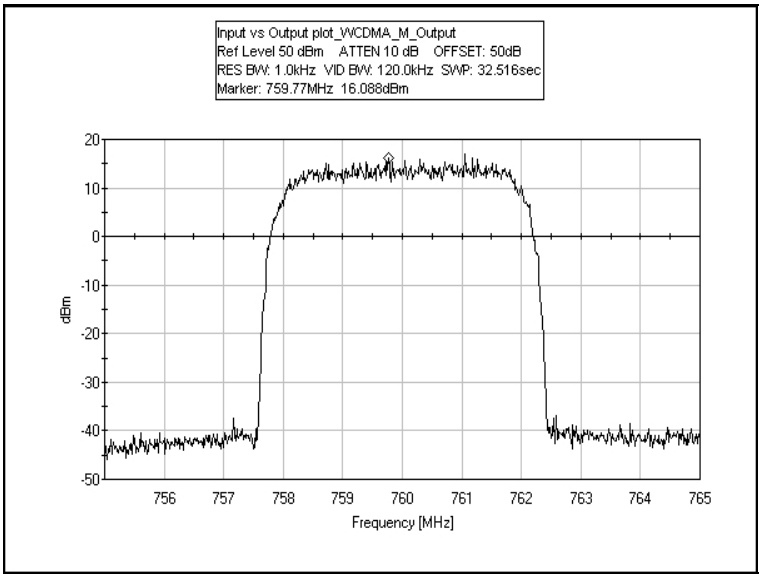
OUTPUT PLOT - LTE - MID CHANNEL



INPUT PLOT - WCDMA - MID CHANNEL



OUTPUT PLOT - WCDMA - MID CHANNEL



FCC 2.1033(c)(14)/2.1051/27.53(c)(d) - SPURIOUS EMISSIONS AT ANTENNA TERMINAL

Test Setup Photos

Test Data Sheets

Test Location:	CKC Laboratories, Inc. •110. N. Olinda Place. • Brea, CA 92821 • (714) 993-6112		
Customer:	**Powerwave Technologies, Inc.**		
Specification:	**FCC Part 27.53(c)(1)Conducted Spurious Emission**		
Work Order #:	**88851**	Date:	1/12/2009
Test Type:	**Conducted Emissions**	Time:	14:09:58
Equipment:	**Nexus FT 700MHz Repeater**	Sequence#:	30
Manufacturer:	Powerwave Technologies, Inc.	Tested By:	E. Wong
Model:	RH700030/101		110V 60Hz
S/N:	NA		

***Test Equipment*:**

Function	S/N	Calibration Date	Cal Due Date	Asset #
Spectrum Analyzer	US44300438	07/23/2008	07/23/2010	02672
3'-40GHz cable	NA	09/18/2007	09/18/2009	P02945

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

Function	Manufacturer	Model #	S/N
Nexus FT 700MHz Repeater*	Powerwave Technologies, Inc.	RH700030/101	NA

Support Devices:

Function	Manufacturer	Model #	S/N
Power Meter	Agilent	E4419B	GB402019/12
Pre Amp	Mini Circuit	ZHL-4240	D040405
Optical Converter	Powerwave	NA	NA
ESG	Agilent	E4438C	MY42082180

Test Conditions / Notes:

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

Operating range: 758-763MHz.
Power = 20 watts

Modulation: WCDMA, LTE
Frequency = 760 MHz

Modulation: APCO25/4CFM ,
Frequency = 758.05MHz , 761MHz, 762.95 MHz

Modulation: APC025/CQPSK
Frequency = 758.025MHz, 761MHz. 762.975MHz

20°C, 41% relative humidity.

Frequency range of measurement = 9 kHz - 8 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 - 10,000 MHz RBW=1 MHz, VBW=1 MHz.

No emission found. Detection was performed with reduced resolution bandwidth or with the aid of High Pass Filter at the required resolution bandwidth.

The manufacturer does not provide an antenna to be sold with the device, however additional investigation was performed in the band 1559-1610 MHz to comply with 27.53(e), no emission was found.

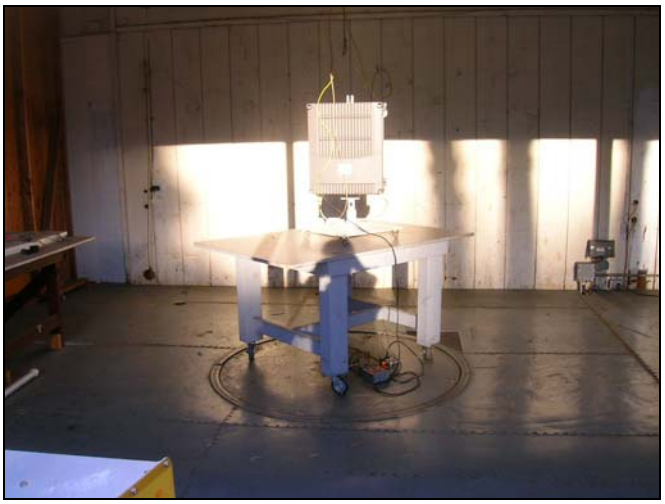
Transducer Legend:

Measurement Data: Reading listed by margin. Test Lead: Antenna Port

#	Freq	Rdng					Dist	Corr	Spec	Margin	Polar
	MHz	dBµV	dB	dB	dB	dB	Table	dBµV	dBµV	dB	Ant

FCC 2.1033(c)(14)/2.1053/27.53(c)(d) - FIELD STRENGTH OF SPURIOUS RADIATION

Test Setup Photos



Test Data Sheets

Test Location: CKC Laboratories, Inc. •110. N. Olinda Place. • Brea, CA 92821 • (714) 993-6112

Customer: **Powerwave Technologies, Inc.**
Specification: **FCC 27.53 (c)(1) Radiated Spurious Emission**
Work Order #: **88851** Date: 2/10/2009
Test Type: **Radiated Scan** Time: 13:50:29
Equipment: **Nexus FT 700MHz Repeater** Sequence#: 6
Manufacturer: Powerwave Technologies, Inc. Tested By: E. Wong
Model: RH700030/101
S/N: NA

***Test Equipment*:**

Function	S/N	Calibration Date	Cal Due Date	Asset #
Bilog Antenna	2451	01/21/2008	01/21/2010	01995
Pre Amp	1937A02548	05/02/2008	05/02/2010	00309
Pre amp to SA Cable	Cable #10	05/16/2007	05/16/2009	P05050
Cable	Cable15	01/05/2009	01/05/2011	P05198
Horn Antenna	6246	06/06/2008	06/06/2010	00849
Microwave Pre-amp	3123A00281	07/28/2008	07/28/2010	00786
2'-40GHz cable	NA	09/18/2007	09/18/2009	P2948
Heliax Antenna Cable	P5565	09/04/2008	09/04/2010	P05565
Loop Antenna	2014	06/16/2008	06/16/2010	00314
Spectrum Analyzer	US44300438	07/23/2008	07/23/2010	02672
1.0 GHz HPF	1	01/11/2008	01/11/2010	02749

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

Function	Manufacturer	Model #	S/N
Nexus FT 700MHz Repeater*	Powerwave Technologies, Inc.	RH700030/101	NA

Support Devices:

Function	Manufacturer	Model #	S/N
Power Meter	Agilent	E4419B	GB402019/12
Pre Amp	Mini Circuit	ZHL-4240	D040405
Optical Converter	Powerwave	NA	NA
ESG	Agilent	E4438C	MY42082180

Test Conditions / Notes:

The EUT is placed on the wooden table. The RF Output port is connected to a load string. Optical in port is connected to a support Optical converter.

Support optical converter receives the RF signal, converts the signal to optic and sends it to the EUT. The EUT decodes the optical signal and generates a RF signal.

Operating range: 758-763MHz.
Power = 20 watts
Frequency = 763MHz
Modulation: APC025W-C4FM

21°C, 26% relative humidity.

Frequency range of measurement = 9 kHz - 8 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 - 10,000 MHz RBW=1 MHz, VBW=1 MHz.

No emission found, recorded data represents noise floor level.
Detection was performed with reduced resolution bandwidth or with the aid of High Pass Filter at the required resolution bandwidth.

Transducer Legend:

T1=Bilog-AN01995 BILOG_012110	T2=Cable #10_P05050_ 051609
T3=Cable #15, Site A, 010511	T4=Pre_amp_HP8447D-AN00309-050210
T5=Heliax Cable 54' ANP05565 090410	T6=HF_pre AMP-1-26GHz_AN00786-072810.TRN
T7=Hi Freq_40GHz_2ft-ANP02948-091809	T8=Horn Ant AN00849 060610
T9=K&L 1GHz HPF AN02749_011110	

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

#	Freq	Rdng	T1 T5 T9	T2 T6	T3 T7	T4 T8	Dist	Corr	Spec	Margin	Polar
	MHz	dBµV	dB	dB	dB	dB	Table	dBµV/m	dBµV/m	dB	Ant
1	1526.000M	50.5	+0.0 +2.9 +0.6	+0.0 -38.4	+0.0 +0.3	+0.0 +25.1	+0.0	41.0	82.3	-41.3	Vert
2	1526.000M	46.3	+0.0 +2.9 +0.6	+0.0 -38.4	+0.0 +0.3	+0.0 +25.1	+0.0	36.8	82.3	-45.5	Horiz
3	237.940M	33.3	+11.8 +0.0	+0.3 +0.0	+2.7 +0.0	-27.8 +0.0	+0.0	20.3	82.3	-62.0	Horiz

Test Location: CKC Laboratories, Inc. •110. N. Olinda Place. • Brea, CA 92821 • (714) 993-6112

Customer:	**Powerwave Technologies, Inc.**		
Specification:	**FCC 27.53 (c)(1) Radiated Spurious Emission**		
Work Order #:	**88851**	Date:	1/9/2009
Test Type:	**Radiated Scan**	Time:	16:19:13
Equipment:	**Nexus FT 700MHz Repeater**	Sequence#:	1
Manufacturer:	Powerwave Technologies, Inc.	Tested By:	Sep Apahidean
Model:	RH700030/101		
S/N:	NA		

***Test Equipment*:**

Function	S/N	Calibration Date	Cal Due Date	Asset #
Spectrum Analyzer	MY46186290	02/12/2007	02/12/2009	02869
Bilog Antenna	2451	01/21/2008	01/21/2010	01995
Pre Amp	1937A02548	05/02/2008	05/02/2010	00309
Pre amp to SA Cable	Cable #10	05/16/2007	05/16/2009	P05050
Cable	Cable15	01/05/2009	01/05/2011	P05198
Horn Antenna	6246	06/06/2008	06/06/2010	00849
Microwave Pre-amp	3123A00281	07/28/2008	07/28/2010	00786
2'-40GHz cable	NA	09/18/2007	09/18/2009	P2948
Heliax Antenna Cable	P5565	09/04/2008	09/04/2010	P05565
Loop Antenna	2014	06/16/2008	06/16/2010	00314

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

Function	Manufacturer	Model #	S/N
Nexus FT 700MHz Repeater*	Powerwave Technologies, Inc.	RH700030/101	NA

Support Devices:

Function	Manufacturer	Model #	S/N
Power Meter	Agilent	E4419B	GB402019/12
Pre Amp	Mini Circuit	ZHL-4240	D040405
Optical Converter	Powerwave	NA	NA
ESG	Agilent	E4438C	MY42082180

Test Conditions / Notes:

The EUT is placed on the wooden table. The RF Output port is connected to a load string. Optical in port is connected to a support Optical converter.

Support optical converter receives the RF signal, converts the signal to optic and sends it to the EUT. The EUT decodes the optical signal and generates a RF signal.

Operating range: 758-763MHz.
Power = 20 watts
Frequency = 761 MHz
Modulation: WCDMA

20°C, 41% relative humidity.

Frequency range of measurement = 9 kHz - 8 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 - 10,000 MHz RBW=1 MHz, VBW=1 MHz.

Transducer Legend:

T1=Bilog-AN01995 BILOG_012110	T2=Cable #10_P05050_ 051609
T3=Cable #15, Site A, 010511	T4=Pre_amp_HP8447D-AN00309-050210
T5=Heliax Cable 54' ANP05565 090410	T6=HF_pre AMP-1-26GHz_AN00786-072810.TRN
T7=Hi Freq_40GHz_2ft-ANP02948-091809	T8=Horn Ant AN00849 060610

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

#	Freq	Rdng	T1	T2	T3	T4	Dist	Corr	Spec	Margin	Polar
			T5	T6	T7	T8					
	MHz	dBµV	dB	dB	dB	dB	Table	dBµV/m	dBµV/m	dB	Ant
1	711.000M	58.2	+20.9	+0.5	+4.9	-27.2	+0.0	57.3	82.3	-25.0	Horiz
			+0.0	+0.0	+0.0	+0.0					
2	3045.880M	46.1	+0.0	+0.0	+0.0	+0.0	+0.0	43.6	82.3	-38.7	Horiz
			+4.4	-37.7	+0.4	+30.4					
3	5326.070M	39.1	+0.0	+0.0	+0.0	+0.0	+0.0	42.8	82.3	-39.5	Vert
			+6.1	-36.6	+0.5	+33.7					
4	3804.070M	41.1	+0.0	+0.0	+0.0	+0.0	+0.0	41.1	82.3	-41.2	Vert
			+4.8	-37.3	+0.4	+32.1					
5	240.000M	51.5	+12.0	+0.3	+2.7	-27.8	+0.0	38.7	82.3	-43.6	Horiz
			+0.0	+0.0	+0.0	+0.0					
6	2282.070M	43.4	+0.0	+0.0	+0.0	+0.0	+0.0	37.5	82.3	-44.8	Vert
			+3.7	-37.9	+0.4	+27.9					
7	880.060M	34.9	+23.1	+0.5	+5.6	-27.1	+0.0	37.0	82.3	-45.3	Horiz
			+0.0	+0.0	+0.0	+0.0					
8	832.065M	34.9	+22.8	+0.6	+5.4	-27.1	+0.0	36.6	82.3	-45.7	Horiz
			+0.0	+0.0	+0.0	+0.0					
9	280.024M	48.1	+13.0	+0.3	+2.9	-27.8	+0.0	36.5	82.3	-45.8	Vert
			+0.0	+0.0	+0.0	+0.0					
10	480.020M	41.7	+17.8	+0.3	+4.0	-27.8	+0.0	36.0	82.3	-46.3	Vert
			+0.0	+0.0	+0.0	+0.0					
11	280.009M	47.6	+13.0	+0.3	+2.9	-27.8	+0.0	36.0	82.3	-46.3	Horiz
			+0.0	+0.0	+0.0	+0.0					
12	480.000M	41.5	+17.8	+0.3	+4.0	-27.8	+0.0	35.8	82.3	-46.5	Horiz
			+0.0	+0.0	+0.0	+0.0					
13	880.034M	32.9	+23.1	+0.5	+5.6	-27.1	+0.0	35.0	82.3	-47.3	Vert
			+0.0	+0.0	+0.0	+0.0					
14	1517.000M	44.3	+0.0	+0.0	+0.0	+0.0	+0.0	34.2	82.3	-48.1	Horiz
			+2.9	-38.4	+0.3	+25.1					
15	999.985M	28.1	+24.8	+0.7	+6.2	-27.4	+0.0	32.4	82.3	-49.9	Horiz
			+0.0	+0.0	+0.0	+0.0					
16	440.000M	34.7	+16.9	+0.4	+3.8	-27.8	+0.0	28.0	82.3	-54.3	Horiz
			+0.0	+0.0	+0.0	+0.0					

Test Location: CKC Laboratories, Inc. •110. N. Olinda Place. • Brea, CA 92821 • (714) 993-6112

Customer:	**Powerwave Technologies, Inc.**		
Specification:	**FCC 27.53 (c)(1) Radiated Spurious Emission**		
Work Order #:	**88851**	Date:	1/9/2009
Test Type:	**Radiated Scan**	Time:	16:16:17
Equipment:	**Nexus FT 700MHz Repeater**	Sequence#:	2
Manufacturer:	Powerwave Technologies, Inc.	Tested By:	Sep Apahidean
Model:	RH700030/101		
S/N:	NA		

***Test Equipment*:**

Function	S/N	Calibration Date	Cal Due Date	Asset #
Spectrum Analyzer	MY46186290	02/12/2007	02/12/2009	02869
Bilog Antenna	2451	01/21/2008	01/21/2010	01995
Pre Amp	1937A02548	05/02/2008	05/02/2010	00309
Pre amp to SA Cable	Cable #10	05/16/2007	05/16/2009	P05050
Cable	Cable15	01/05/2009	01/05/2011	P05198
Horn Antenna	6246	06/06/2008	06/06/2010	00849
Microwave Pre-amp	3123A00281	07/28/2008	07/28/2010	00786
2'-40GHz cable	NA	09/18/2007	09/18/2009	P2948
Heliax Antenna Cable	P5565	09/04/2008	09/04/2010	P05565
Loop Antenna	2014	06/16/2008	06/16/2010	00314

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

Function	Manufacturer	Model #	S/N
Nexus FT 700MHz Repeater*	Powerwave Technologies, Inc.	RH700030/101	NA

Support Devices:

Function	Manufacturer	Model #	S/N
Power Meter	Agilent	E4419B	GB402019/12
Pre Amp	Mini Circuit	ZHL-4240	D040405
Optical Converter	Powerwave	NA	NA
ESG	Agilent	E4438C	MY42082180

Test Conditions / Notes:

The EUT is placed on the wooden table. The RF Output port is connected to a load string. Optical in port is connected to a support Optical converter.

Support optical converter receives the RF signal, converts the signal to optic and sends it to the EUT. The EUT decodes the optical signal and generates a RF signal.

Operating range: 758-763MHz.
Power = 20 watts
Frequency = 761 MHz
Modulation: LTE

20°C, 41% relative humidity.

Frequency range of measurement = 9 kHz - 8 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 - 10,000 MHz RBW=1 MHz, VBW=1 MHz.

Transducer Legend:

T1=Bilog-AN01995 BILOG_012110	T2=Cable #10_P05050_ 051609
T3=Cable #15, Site A, 010511	T4=Pre_amp_HP8447D-AN00309-050210
T5=Heliax Cable 54' ANP05565 090410	T6=HF_pre AMP-1-26GHz_AN00786-072810.TRN
T7=Hi Freq_40GHz_2ft-ANP02948-091809	T8=Horn Ant AN00849 060610

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

#	Freq	Rdng	T1 T5	T2 T6	T3 T7	T4 T8	Dist	Corr	Spec	Margin	Polar
	MHz	dBµV	dB	dB	dB	dB	Table	dBµV/m	dBµV/m	dB	Ant
1	5387.400M	43.0	+0.0 +6.2	+0.0 -36.6	+0.0 +0.5	+0.0 +33.8	+0.0	46.9	82.3	-35.4	Horiz
2	6016.200M	42.1	+0.0 +6.3	+0.0 -36.3	+0.0 +0.6	+0.0 +33.9	+0.0	46.6	82.3	-35.7	Vert
3	4570.600M	43.9	+0.0 +5.5	+0.0 -36.8	+0.0 +0.5	+0.0 +32.7	+0.0	45.8	82.3	-36.5	Vert
4	3714.400M	44.6	+0.0 +4.8	+0.0 -37.2	+0.0 +0.4	+0.0 +31.8	+0.0	44.4	82.3	-37.9	Horiz
5	2992.600M	44.9	+0.0 +4.4	+0.0 -37.7	+0.0 +0.4	+0.0 +30.3	+0.0	42.3	82.3	-40.0	Horiz
6	240.005M	51.2	+12.0 +0.0	+0.3 +0.0	+2.7 +0.0	-27.8 +0.0	+0.0	38.4	82.3	-43.9	Vert
7	1500.200M	47.2	+0.0 +2.9	+0.0 -38.4	+0.0 +0.3	+0.0 +25.0	+0.0	37.0	82.3	-45.3	Horiz
8	480.025M	42.6	+17.8 +0.0	+0.3 +0.0	+4.0 +0.0	-27.8 +0.0	+0.0	36.9	82.3	-45.4	Vert
9	280.014M	47.7	+13.0 +0.0	+0.3 +0.0	+2.9 +0.0	-27.8 +0.0	+0.0	36.1	82.3	-46.2	Vert
10	832.051M	32.7	+22.8 +0.0	+0.6 +0.0	+5.4 +0.0	-27.1 +0.0	+0.0	34.4	82.3	-47.9	Vert
11	480.060M	39.5	+17.8 +0.0	+0.3 +0.0	+4.0 +0.0	-27.8 +0.0	+0.0	33.8	82.3	-48.5	Horiz
12	279.994M	43.6	+13.0 +0.0	+0.3 +0.0	+2.9 +0.0	-27.8 +0.0	+0.0	32.0	82.3	-50.3	Horiz
13	225.005M	43.9	+10.9 +0.0	+0.2 +0.0	+2.6 +0.0	-27.9 +0.0	+0.0	29.7	82.3	-52.6	Vert

Test Location: CKC Laboratories, Inc. •110. N. Olinda Place. • Brea, CA 92821 • (714) 993-6112

Customer:	**Powerwave Technologies, Inc.**		
Specification:	**FCC 27.53 (c)(1) Radiated Spurious Emission**		
Work Order #:	**88851**	Date:	1/9/2009
Test Type:	**Radiated Scan**	Time:	16:10:44
Equipment:	**Nexus FT 700MHz Repeater**	Sequence#:	6
Manufacturer:	Powerwave Technologies, Inc.	Tested By:	Sep Apahidean
Model:	RH700030/101		
S/N:	NA		

***Test Equipment*:**

Function	S/N	Calibration Date	Cal Due Date	Asset #
Spectrum Analyzer	MY46186290	02/12/2007	02/12/2009	02869
Bilog Antenna	2451	01/21/2008	01/21/2010	01995
Pre Amp	1937A02548	05/02/2008	05/02/2010	00309
Pre amp to SA Cable	Cable #10	05/16/2007	05/16/2009	P05050
Cable	Cable15	01/05/2009	01/05/2011	P05198
Horn Antenna	6246	06/06/2008	06/06/2010	00849
Microwave Pre-amp	3123A00281	07/28/2008	07/28/2010	00786
2'-40GHz cable	NA	09/18/2007	09/18/2009	P2948
Heliax Antenna Cable	P5565	09/04/2008	09/04/2010	P05565
Loop Antenna	2014	06/16/2008	06/16/2010	00314

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

Function	Manufacturer	Model #	S/N
Nexus FT 700MHz Repeater*	Powerwave Technologies, Inc.	RH700030/101	NA

Support Devices:

Function	Manufacturer	Model #	S/N
Power Meter	Agilent	E4419B	GB402019/12
Pre Amp	Mini Circuit	ZHL-4240	D040405
Optical Converter	Powerwave	NA	NA
ESG	Agilent	E4438C	MY42082180

Test Conditions / Notes:

The EUT is placed on the wooden table. The RF Output port is connected to a load string. Optical in port is connected to a support Optical converter.

Support optical converter receives the RF signal, converts the signal to optic and sends it to the EUT. The EUT decodes the optical signal and generates a RF signal.

Operating range: 758-763 MHz.
Power = 20 watts
Frequency = 761 MHz
Modulation: APC025W-C4FM

21°C, 26% relative humidity.

Frequency range of measurement = 9 kHz - 8 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 - 10,000 MHz RBW=1 MHz, VBW=1 MHz.

Transducer Legend:

T1=Bilog-AN01995 BILOG_012110	T2=Cable #10_P05050_ 051609
T3=Cable #15, Site A, 010511	T4=Pre_amp_HP8447D-AN00309-050210
T5=Heliax Cable 54' ANP05565 090410	T6=HF_pre AMP-1-26GHz_AN00786-072810.TRN
T7=Hi Freq_40GHz_2ft-ANP02948-091809	T8=Horn Ant AN00849 060610

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

#	Freq	Rdng	T1 T5	T2 T6	T3 T7	T4 T8	Dist	Corr	Spec	Margin	Polar
	MHz	dBµV	dB	dB	dB	dB	Table	dBµV/m	dBµV/m	dB	Ant
1	6089.000M	40.1	+0.0 +6.3	+0.0 -36.4	+0.0 +0.6	+0.0 +34.0	+0.0	44.6	82.3	-37.7	Horiz
2	5328.000M	40.1	+0.0 +6.1	+0.0 -36.6	+0.0 +0.5	+0.0 +33.7	+0.0	43.8	82.3	-38.5	Horiz
3	4561.250M	41.1	+0.0 +5.5	+0.0 -36.8	+0.0 +0.5	+0.0 +32.7	+0.0	43.0	82.3	-39.3	Vert
4	3805.250M	42.3	+0.0 +4.8	+0.0 -37.3	+0.0 +0.4	+0.0 +32.1	+0.0	42.3	82.3	-40.0	Horiz
5	2283.250M	44.4	+0.0 +3.7	+0.0 -37.9	+0.0 +0.4	+0.0 +27.9	+0.0	38.5	82.3	-43.8	Horiz
6	2278.250M	43.6	+0.0 +3.7	+0.0 -37.9	+0.0 +0.4	+0.0 +27.9	+0.0	37.7	82.3	-44.6	Vert
7	1522.250M	46.4	+0.0 +2.9	+0.0 -38.4	+0.0 +0.3	+0.0 +25.1	+0.0	36.3	82.3	-46.0	Horiz
8	480.035M	41.2	+17.8 +0.0	+0.3 +0.0	+4.0 +0.0	-27.8 +0.0	+0.0	35.5	82.3	-46.8	Vert
9	240.020M	47.3	+12.0 +0.0	+0.3 +0.0	+2.7 +0.0	-27.8 +0.0	+0.0	34.5	82.3	-47.8	Horiz
10	832.036M	32.5	+22.8 +0.0	+0.6 +0.0	+5.4 +0.0	-27.1 +0.0	+0.0	34.2	82.3	-48.1	Vert
11	240.040M	46.6	+12.0 +0.0	+0.3 +0.0	+2.7 +0.0	-27.8 +0.0	+0.0	33.8	82.3	-48.5	Vert
12	250.005M	44.7	+12.6 +0.0	+0.3 +0.0	+2.8 +0.0	-27.7 +0.0	+0.0	32.7	82.3	-49.6	Horiz
13	832.056M	30.7	+22.8 +0.0	+0.6 +0.0	+5.4 +0.0	-27.1 +0.0	+0.0	32.4	82.3	-49.9	Horiz

Test Location: CKC Laboratories, Inc. •110. N. Olinda Place. • Brea, CA 92821 • (714) 993-6112

Customer:	**Powerwave Technologies, Inc.**		
Specification:	**FCC 27.53 (c)(1) Radiated Spurious Emission**		
Work Order #:	**88851**	Date:	1/9/2009
Test Type:	**Radiated Scan**	Time:	16:12:40
Equipment:	**Nexus FT 700MHz Repeater**	Sequence#:	7
Manufacturer:	Powerwave Technologies, Inc.	Tested By:	Sep Apahidean
Model:	RH700030/101		
S/N:	NA		

***Test Equipment*:**

Function	S/N	Calibration Date	Cal Due Date	Asset #
Spectrum Analyzer	MY46186290	02/12/2007	02/12/2009	02869
Bilog Antenna	2451	01/21/2008	01/21/2010	01995
Pre Amp	1937A02548	05/02/2008	05/02/2010	00309
Pre amp to SA Cable	Cable #10	05/16/2007	05/16/2009	P05050
Cable	Cable15	01/05/2009	01/05/2011	P05198
Horn Antenna	6246	06/06/2008	06/06/2010	00849
Microwave Pre-amp	3123A00281	07/28/2008	07/28/2010	00786
2'-40GHz cable	NA	09/18/2007	09/18/2009	P2948
Heliax Antenna Cable	P5565	09/04/2008	09/04/2010	P05565
Loop Antenna	2014	06/16/2008	06/16/2010	00314

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

Function	Manufacturer	Model #	S/N
Nexus FT 700MHz Repeater*	Powerwave Technologies, Inc.	RH700030/101	NA

Support Devices:

Function	Manufacturer	Model #	S/N
Power Meter	Agilent	E4419B	GB402019/12
Pre Amp	Mini Circuit	ZHL-4240	D040405
Optical Converter	Powerwave	NA	NA
ESG	Agilent	E4438C	MY42082180

Test Conditions / Notes:

The EUT is placed on the wooden table. The RF Output port is connected to a load string. Optical in port is connected to a support Optical converter.

Support optical converter receives the RF signal, converts the signal to optic and sends it to the EUT. The EUT decodes the optical signal and generates a RF signal.

Operating range: 758-763 MHz.
Power = 20 watts
Frequency = 758 MHz
Modulation: APC025W-C4FM

21°C, 26% relative humidity.

Frequency range of measurement = 9 kHz - 8 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 - 10,000 MHz RBW=1 MHz, VBW=1 MHz.

Transducer Legend:

T1=Bilog-AN01995 BILOG_012110	T2=Cable #10_P05050_ 051609
T3=Cable #15, Site A, 010511	T4=Pre_amp_HP8447D-AN00309-050210
T5=Heliax Cable 54' ANP05565 090410	T6=HF_pre AMP-1-26GHz_AN00786-072810.TRN
T7=Hi Freq_40GHz_2ft-ANP02948-091809	T8=Horn Ant AN00849 060610

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

#	Freq	Rdng	T1	T2	T3	T4	Dist	Corr	Spec	Margin	Polar
			T5	T6	T7	T8					
	MHz	dBµV	dB	dB	dB	dB	Table	dBµV/m	dBµV/m	dB	Ant
1	5282.750M	42.4	+0.0	+0.0	+0.0	+0.0	+0.0	46.0	82.3	-36.3	Vert
			+6.1	-36.7	+0.5	+33.7					
2	6798.750M	39.8	+0.0	+0.0	+0.0	+0.0	+0.0	45.3	82.3	-37.0	Horiz
			+6.7	-36.6	+0.6	+34.8					
3	4524.750M	41.8	+0.0	+0.0	+0.0	+0.0	+0.0	43.6	82.3	-38.7	Horiz
			+5.4	-36.8	+0.5	+32.7					
4	3766.750M	43.3	+0.0	+0.0	+0.0	+0.0	+0.0	43.3	82.3	-39.0	Horiz
			+4.8	-37.2	+0.4	+32.0					
5	1500.150M	47.3	+0.0	+0.0	+0.0	+0.0	+0.0	37.1	82.3	-45.2	Vert
			+2.9	-38.4	+0.3	+25.0					
6	250.005M	46.6	+12.6	+0.3	+2.8	-27.7	+0.0	34.6	82.3	-47.7	Horiz
			+0.0	+0.0	+0.0	+0.0					
7	480.020M	40.3	+17.8	+0.3	+4.0	-27.8	+0.0	34.6	82.3	-47.7	Horiz
			+0.0	+0.0	+0.0	+0.0					
8	240.045M	46.8	+12.0	+0.3	+2.7	-27.8	+0.0	34.0	82.3	-48.3	Horiz
			+0.0	+0.0	+0.0	+0.0					
9	832.061M	31.4	+22.8	+0.6	+5.4	-27.1	+0.0	33.1	82.3	-49.2	Horiz
			+0.0	+0.0	+0.0	+0.0					
10	832.046M	30.9	+22.8	+0.6	+5.4	-27.1	+0.0	32.6	82.3	-49.7	Vert
			+0.0	+0.0	+0.0	+0.0					
11	250.040M	44.5	+12.6	+0.3	+2.8	-27.7	+0.0	32.5	82.3	-49.8	Vert
			+0.0	+0.0	+0.0	+0.0					
12	240.010M	44.8	+12.0	+0.3	+2.7	-27.8	+0.0	32.0	82.3	-50.3	Vert
			+0.0	+0.0	+0.0	+0.0					

Test Location:	CKC Laboratories, Inc. •110. N. Olinda Place. • Brea, CA 92821 • (714) 993-6112		
Customer:	**Powerwave Technologies, Inc.**		
Specification:	**FCC 27.53 (c)(1) Radiated Spurious Emission**		
Work Order #:	**88851**	Date:	1/9/2009
Test Type:	**Radiated Scan**	Time:	15:35:54
Equipment:	**Nexus FT 700MHz Repeater**	Sequence#:	11
Manufacturer:	Powerwave Technologies, Inc.	Tested By:	Sep Apahidean
Model:	RH700030/101		
S/N:	NA		

***Test Equipment*:**

Function	S/N	Calibration Date	Cal Due Date	Asset #
Spectrum Analyzer	MY46186290	02/12/2007	02/12/2009	02869
Bilog Antenna	2451	01/21/2008	01/21/2010	01995
Pre Amp	1937A02548	05/02/2008	05/02/2010	00309
Pre amp to SA Cable	Cable #10	05/16/2007	05/16/2009	P05050
Cable	Cable15	01/05/2009	01/05/2011	P05198
Horn Antenna	6246	06/06/2008	06/06/2010	00849
Microwave Pre-amp	3123A00281	07/28/2008	07/28/2010	00786
2'-40GHz cable	NA	09/18/2007	09/18/2009	P2948
Heliax Antenna Cable	P5565	09/04/2008	09/04/2010	P05565
Loop Antenna	2014	06/16/2008	06/16/2010	00314

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

Function	Manufacturer	Model #	S/N
Nexus FT 700MHz Repeater*	Powerwave Technologies, Inc.	RH700030/101	NA

Support Devices:

Function	Manufacturer	Model #	S/N
Power Meter	Agilent	E4419B	GB402019/12
Pre Amp	Mini Circuit	ZHL-4240	D040405
Optical Converter	Powerwave	NA	NA
ESG	Agilent	E4438C	MY42082180

Test Conditions / Notes:

The EUT is placed on the wooden table. The RF Output port is connected to a load string. Optical in port is connected to a support Optical converter.

Support optical converter receives the RF signal, converts the signal to optic and sends it to the EUT. The EUT decodes the optical signal and generates a RF signal.

Operating range: 758-763MHz.
Power = 20 watts
Frequency = 761 MHz
Modulation: APC025W-CQPSK

21°C, 25% relative humidity.
Frequency range of measurement = 9 kHz - 8 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 - 10,000 MHz RBW=1 MHz, VBW=1 MHz.

Transducer Legend:

T1=Bilog-AN01995 BILOG_012110	T2=Cable #10_P05050_ 051609
T3=Cable #15, Site A, 010511	T4=Pre_amp_HP8447D-AN00309-050210
T5=Heliax Cable 54' ANP05565 090410	T6=HF_pre AMP-1-26GHz_AN00786-072810.TRN
T7=Hi Freq_40GHz_2ft-ANP02948-091809	T8=Horn Ant AN00849 060610

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

#	Freq	Rdng	T1	T2	T3	T4	Dist	Corr	Spec	Margin	Polar
			T5	T6	T7	T8					
	MHz	dBµV	dB	dB	dB	dB	Table	dBµV/m	dBµV/m	dB	Ant
1	5870.000M	32.1	+0.0	+0.0	+0.0	+0.0	+0.0	36.2	82.3	-46.1	Vert
			+6.2	-36.5	+0.5	+33.9					
2	4692.000M	32.5	+0.0	+0.0	+0.0	+0.0	+0.0	34.7	82.3	-47.6	Vert
			+5.6	-36.9	+0.5	+33.0					
3	240.015M	47.4	+12.0	+0.3	+2.7	-27.8	+0.0	34.6	82.3	-47.7	Horiz
			+0.0	+0.0	+0.0	+0.0					
4	375.018M	41.6	+15.4	+0.4	+3.5	-27.8	+0.0	33.1	82.3	-49.2	Horiz
			+0.0	+0.0	+0.0	+0.0					
5	240.040M	45.2	+12.0	+0.3	+2.7	-27.8	+0.0	32.4	82.3	-49.9	Vert
			+0.0	+0.0	+0.0	+0.0					
6	400.018M	38.7	+16.0	+0.4	+3.6	-27.8	+0.0	30.9	82.3	-51.4	Horiz
			+0.0	+0.0	+0.0	+0.0					
7	399.998M	36.5	+16.0	+0.4	+3.6	-27.8	+0.0	28.7	82.3	-53.6	Vert
			+0.0	+0.0	+0.0	+0.0					
8	374.998M	36.8	+15.4	+0.4	+3.5	-27.8	+0.0	28.3	82.3	-54.0	Vert
			+0.0	+0.0	+0.0	+0.0					
9	1521.800M	34.1	+0.0	+0.0	+0.0	+0.0	+0.0	24.0	82.3	-58.3	Horiz
			+2.9	-38.4	+0.3	+25.1					
10	2282.800M	28.8	+0.0	+0.0	+0.0	+0.0	+0.0	22.9	82.3	-59.4	Horiz
			+3.7	-37.9	+0.4	+27.9					

Test Location: CKC Laboratories, Inc. •110. N. Olinda Place. • Brea, CA 92821 • (714) 993-6112

Customer:	**Powerwave Technologies, Inc.**		
Specification:	**FCC 27.53 (c)(1) Radiated Spurious Emission**		
Work Order #:	**88851**	Date:	1/9/2009
Test Type:	**Radiated Scan**	Time:	15:27:04
Equipment:	**Nexus FT 700MHz Repeater**	Sequence#:	12
Manufacturer:	Powerwave Technologies, Inc.	Tested By:	Sep Apahidean
Model:	RH700030/101		
S/N:	NA		

***Test Equipment*:**

Function	S/N	Calibration Date	Cal Due Date	Asset #
Spectrum Analyzer	MY46186290	02/12/2007	02/12/2009	02869
Bilog Antenna	2451	01/21/2008	01/21/2010	01995
Pre Amp	1937A02548	05/02/2008	05/02/2010	00309
Pre amp to SA Cable	Cable #10	05/16/2007	05/16/2009	P05050
Cable	Cable15	01/05/2009	01/05/2011	P05198
Horn Antenna	6246	06/06/2008	06/06/2010	00849
Microwave Pre-amp	3123A00281	07/28/2008	07/28/2010	00786
2'-40GHz cable	NA	09/18/2007	09/18/2009	P2948
Heliax Antenna Cable	P5565	09/04/2008	09/04/2010	P05565
Loop Antenna	2014	06/16/2008	06/16/2010	00314

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

Function	Manufacturer	Model #	S/N
Nexus FT 700MHz Repeater*	Powerwave Technologies, Inc.	RH700030/101	NA

Support Devices:

Function	Manufacturer	Model #	S/N
Power Meter	Agilent	E4419B	GB402019/12
Pre Amp	Mini Circuit	ZHL-4240	D040405
Optical Converter	Powerwave	NA	NA
ESG	Agilent	E4438C	MY42082180

Test Conditions / Notes:

The EUT is placed on the wooden table. The RF Output port is connected to a load string. Optical in port is connected to a support Optical converter.

Support optical converter receives the RF signal, converts the signal to optic and sends it to the EUT. The EUT decodes the optical signal and generates a RF signal.

Operating range: 758-763MHz.
Power = 20 watts
Frequency = 758 MHz
Modulation: APC025W-CQPSK

21°C, 25% relative humidity.

Frequency range of measurement = 9 kHz - 8 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 - 10,000 MHz RBW=1 MHz, VBW=1 MHz.

Transducer Legend:

T1=Bilog-AN01995 BILOG_012110	T2=Cable #10_P05050_ 051609
T3=Cable #15, Site A, 010511	T4=Pre_amp_HP8447D-AN00309-050210
T5=Heliax Cable 54' ANP05565 090410	T6=HF_pre AMP-1-26GHz_AN00786-072810.TRN
T7=Hi Freq_40GHz_2ft-ANP02948-091809	T8=Horn Ant AN00849 060610

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

#	Freq	Rdng	T1 T5	T2 T6	T3 T7	T4 T8	Dist	Corr	Spec	Margin	Polar
	MHz	dBµV	dB	dB	dB	dB	Table	dBµV/m	dBµV/m	dB	Ant
1	5273.000M	32.9	+0.0 +6.1	+0.0 -36.7	+0.0 +0.5	+0.0 +33.7	+0.0	36.5	82.3	-45.8	Vert
2	240.070M	48.1	+12.0 +0.0	+0.3 +0.0	+2.7 +0.0	-27.8 +0.0	+0.0	35.3	82.3	-47.0	Vert
3	900.018M	32.4	+23.3 +0.0	+0.4 +0.0	+5.7 +0.0	-27.2 +0.0	+0.0	34.6	82.3	-47.7	Vert
4	240.005M	44.9	+12.0 +0.0	+0.3 +0.0	+2.7 +0.0	-27.8 +0.0	+0.0	32.1	82.3	-50.2	Horiz
5	400.003M	39.3	+16.0 +0.0	+0.4 +0.0	+3.6 +0.0	-27.8 +0.0	+0.0	31.5	82.3	-50.8	Horiz
6	3789.965M	31.2	+0.0 +4.8	+0.0 -37.3	+0.0 +0.4	+0.0 +32.1	+0.0	31.2	82.3	-51.1	Horiz
7	5305.965M	27.5	+0.0 +6.1	+0.0 -36.6	+0.0 +0.5	+0.0 +33.7	+0.0	31.2	82.3	-51.1	Horiz
8	374.978M	38.2	+15.4 +0.0	+0.4 +0.0	+3.5 +0.0	-27.8 +0.0	+0.0	29.7	82.3	-52.6	Vert

Test Location: CKC Laboratories, Inc. •110. N. Olinda Place. • Brea, CA 92821 • (714) 993-6112

Customer: **Powerwave Technologies, Inc.**
Specification: **FCC 27.53 (c)(1) Radiated Spurious Emission**
Work Order #: **88851** Date: 2/10/2009
Test Type: **Radiated Scan** Time: 13:52:57
Equipment: **Nexus FT 700MHz Repeater** Sequence#: 5
Manufacturer: Powerwave Technologies, Inc. Tested By: E. Wong
Model: RH700030/101
S/N: NA

***Test Equipment*:**

Function	S/N	Calibration Date	Cal Due Date	Asset #
Bilog Antenna	2451	01/21/2008	01/21/2010	01995
Pre Amp	1937A02548	05/02/2008	05/02/2010	00309
Pre amp to SA Cable	Cable #10	05/16/2007	05/16/2009	P05050
Cable	Cable15	01/05/2009	01/05/2011	P05198
Horn Antenna	6246	06/06/2008	06/06/2010	00849
Microwave Pre-amp	3123A00281	07/28/2008	07/28/2010	00786
2'-40GHz cable	NA	09/18/2007	09/18/2009	P2948
Heliax Antenna Cable	P5565	09/04/2008	09/04/2010	P05565
Loop Antenna	2014	06/16/2008	06/16/2010	00314
Spectrum Analyzer	US44300438	07/23/2008	07/23/2010	02672
1.0 GHz HPF	1	01/11/2008	01/11/2010	02749

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

Function	Manufacturer	Model #	S/N
Nexus FT 700MHz Repeater*	Powerwave Technologies, Inc.	RH700030/101	NA

Support Devices:

Function	Manufacturer	Model #	S/N
Power Meter	Agilent	E4419B	GB402019/12
Pre Amp	Mini Circuit	ZHL-4240	D040405
Optical Converter	Powerwave	NA	NA
ESG	Agilent	E4438C	MY42082180

Test Conditions / Notes:

The EUT is placed on the wooden table. The RF Output port is connected to a load string. Optical in port is connected to a support Optical converter.

Support optical converter receives the RF signal, converts the signal to optic and sends it to the EUT. The EUT decodes the optical signal and generates a RF signal.

Operating range: 758-763MHz.
Power = 20 watts
Frequency = 763MHz
Modulation: APC025W-C4FM

21°C, 26% relative humidity.

Frequency range of measurement = 9 kHz - 8 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 - 10,000 MHz RBW=1 MHz, VBW=1 MHz.
No emission found, recorded data represents noise floor level.
Detection was performed with reduced resolution bandwidth or with the aid of High Pass Filter at the required resolution bandwidth.
No Emission found.

Transducer Legend:

T1=Bilog-AN01995 BILOG_012110	T2=Cable #10_P05050_ 051609
T3=Cable #15, Site A, 010511	T4=Pre_amp_HP8447D-AN00309-050210
T5=Heliax Cable 54' ANP05565 090410	T6=HF_pre AMP-1-26GHz_AN00786-072810.TRN
T7=Hi Freq_40GHz_2ft-ANP02948-091809	T8=Horn Ant AN00849 060610
T9=K&L 1GHz HPF AN02749_011110	

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

#	Freq	Rdng	T1 T5 T9	T2 T6	T3 T7	T4 T8	Dist	Corr	Spec	Margin	Polar
	MHz	dBµV	dB	dB	dB	dB	Table	dBµV/m	dBµV/m	dB	Ant
1	1526.000M	47.8	+0.0 +2.9 +0.6	+0.0 -38.4	+0.0 +0.3	+0.0 +25.1	+0.0	38.3	82.3	-44.0	Horiz
2	1526.000M	46.2	+0.0 +2.9 +0.6	+0.0 -38.4	+0.0 +0.3	+0.0 +25.1	+0.0	36.7	82.3	-45.6	Horiz
3	295.440M	32.5	+13.1 +0.0	+0.2 +0.0	+3.0 +0.0	-27.8 +0.0	+0.0	21.0	82.3	-61.3	Horiz

BANDEDGE

Test Equipment

Equipment	Asset #	Manufacturer	Model #	Serial #	Cal Date	Cal Due
Spectrum Analyzer	02672	Agilent	E4446A	US44300438	072308	072310
36" 40GHz cable	02945	Strolab	NA	NA	091807	091809

Test Conditions

The EUT is placed on the wooden table. The RF Output port is connected to a load string. Optical in port is connected to a support Optical converter.

Support optical converter receives the RF signal, converts the signal to optic and sends it to the EUT. The EUT decodes the optical signal and generates a RF signal.

Blockedge plot is recorded with a spectrum analyzer at the Antenna port of the device.

Operating range: 758-763MHz.
Power = 20 watts

Modulation: WCDMA, LTE
Frequency = 760 MHz

Modulation: APCO25/4CFM ,
Frequency = 758.05MHz , 762.95 MHz

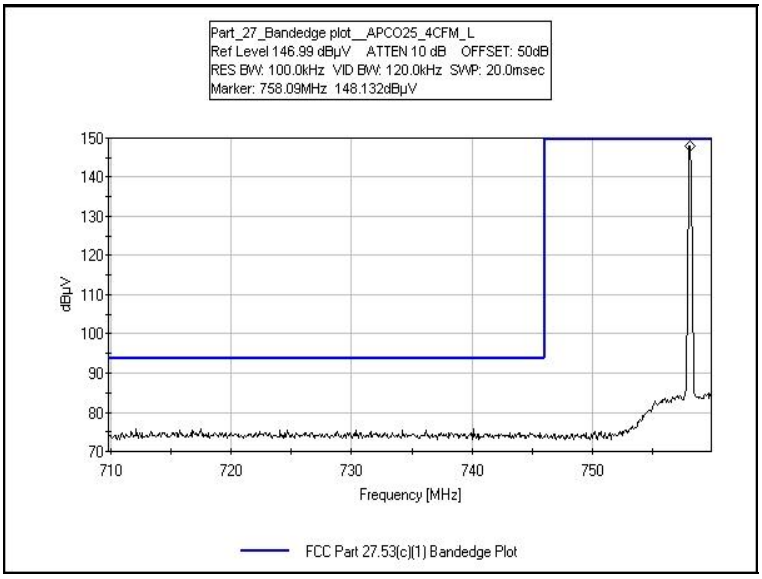
Modulation: APC025/CQPSK
Frequency = 758.025MHz, 762.975MHz

Due to the nature of the signal, a delta marker correction was applied to APCO25/4CFM and APC025/CQPSK modulation to eliminated erroneous trace reading due to larger resolution used.

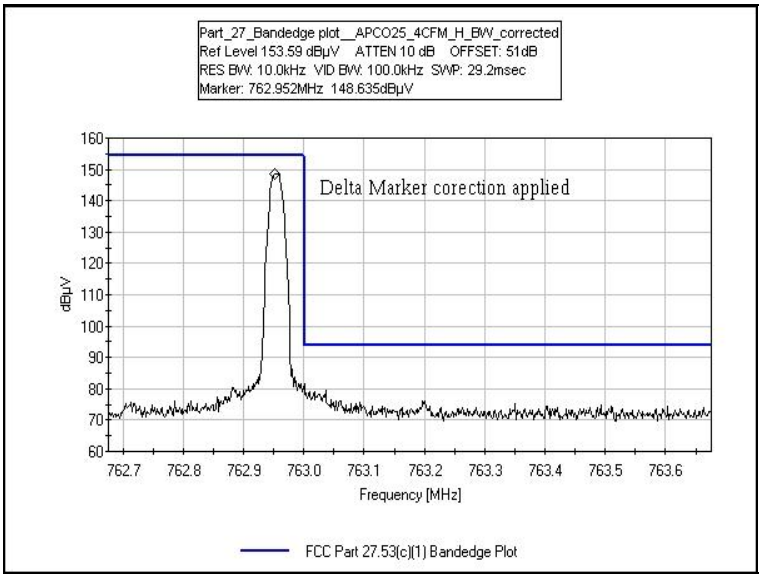
Test Setup Photos

Test Plots

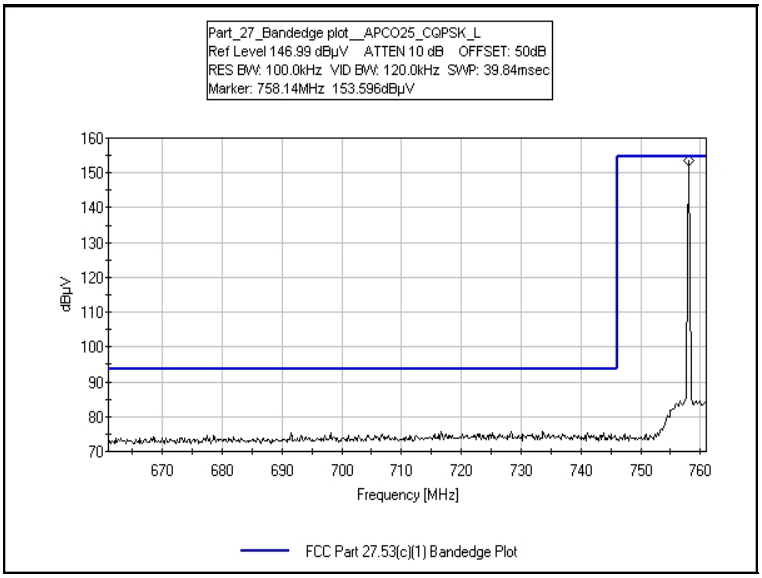
BANDEDGE - APCO25_4CFM - LOW CHANNEL



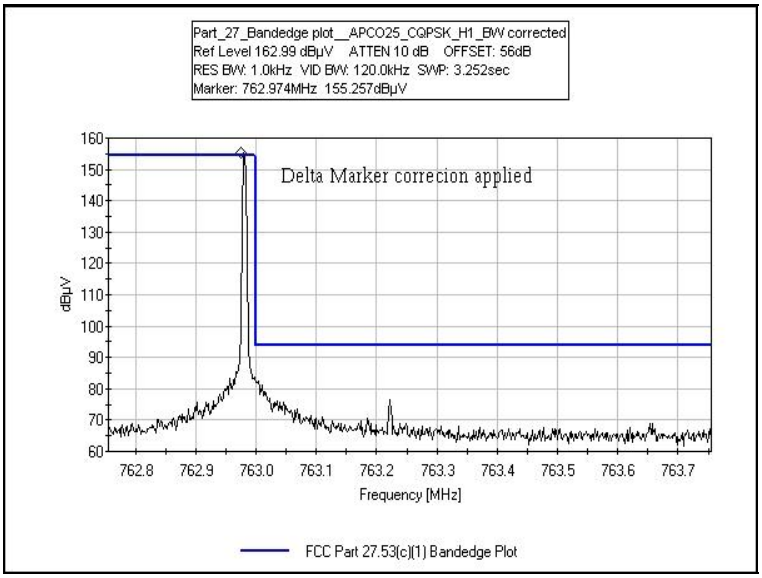
BANDEDGE - APC025_4CFM - HIGH CHANNEL



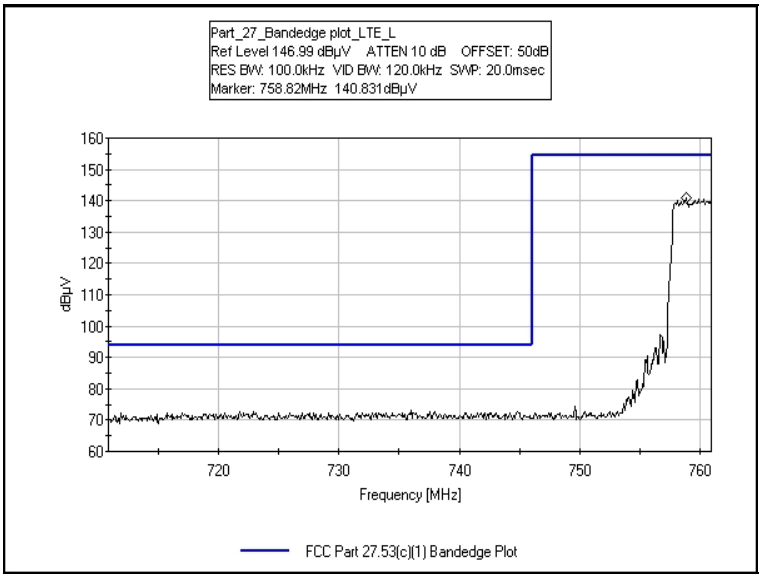
BANDEDGE - APCO25_CQPSK - LOW CHANNEL



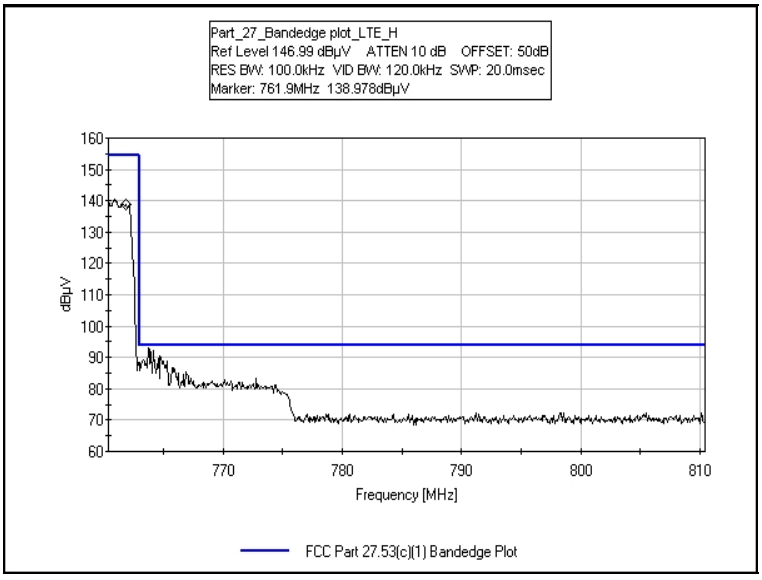
BANDEDGE - APCO25_CQPSK - HIGH CHANNEL



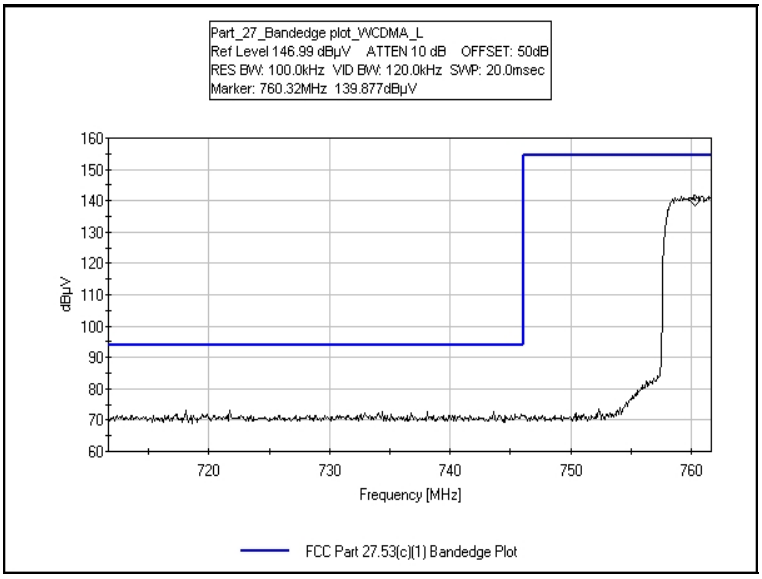
BANDEDGE - LTE - LOW CHANNEL



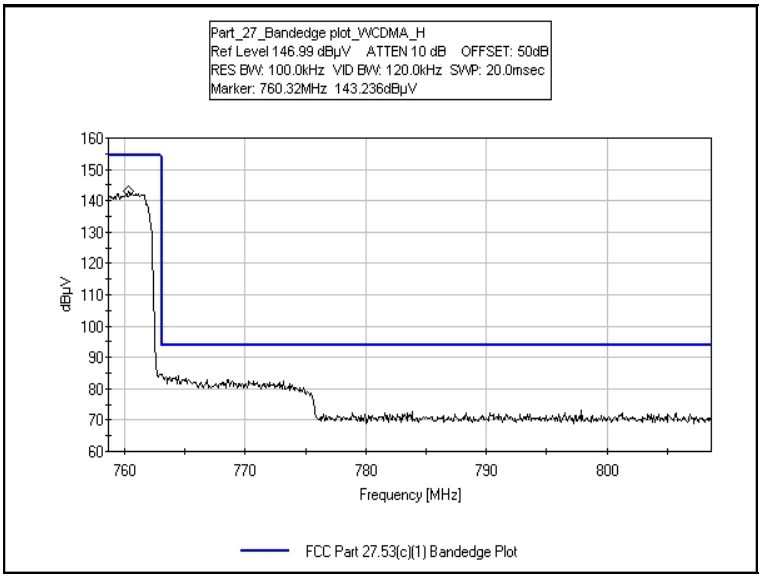
BANDEDGE - LTE - HIGH CHANNEL



BANDEDGE - WCDMA - LOW CHANNEL



BANDEDGE - WCDMA - HIGH CHANNEL



INTERMODULATION

Test Equipment

Equipment	Asset #	Manufacturer	Model #	Serial #	Cal Date	Cal Due
Spectrum Analyzer	02672	Agilent	E4446A	US44300438	072308	072310
36" 40GHz cable	02945	Strolab	NA	NA	091807	091809

Test Conditions

The EUT is placed on the wooden table. The RF Output port is connected to a load string. Optical in port is connected to a support Optical converter.

Support optical converter receives the RF signal, converts the signal to optic and sends it to the EUT. The EUT decodes the optical signal and generates a RF signal.

Operating range: 758-763MHz.
Power = 20 watts

Two modulated signal from the support ESG is injected into the device and the intermodulation product is measured at the RF antenna port under investigation.

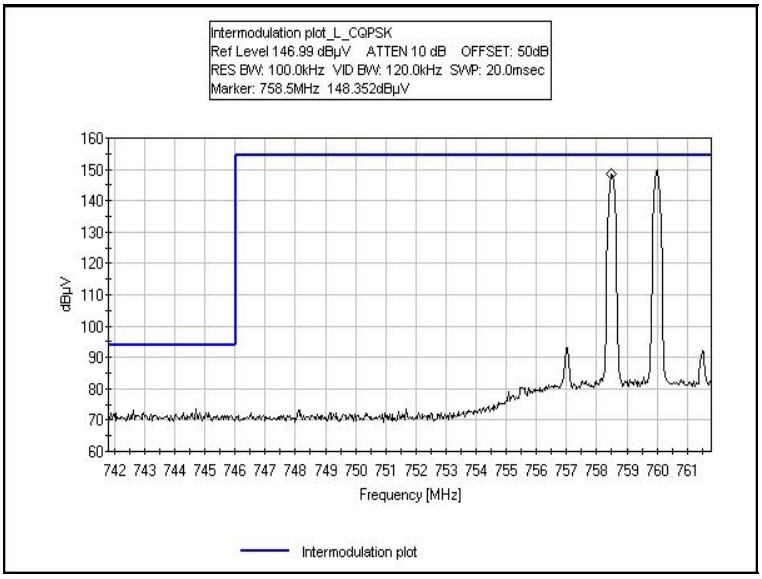
Operating range: 758-763MHz.
Power = 20 watts
Modulation: APCO25/4CFM ,
Modulation: APC025/CQPSK

Note: Only Narrow band signal APCO25/4CFM , APC025/CQPSK are allowed to operate in multichannel configuration for the device.

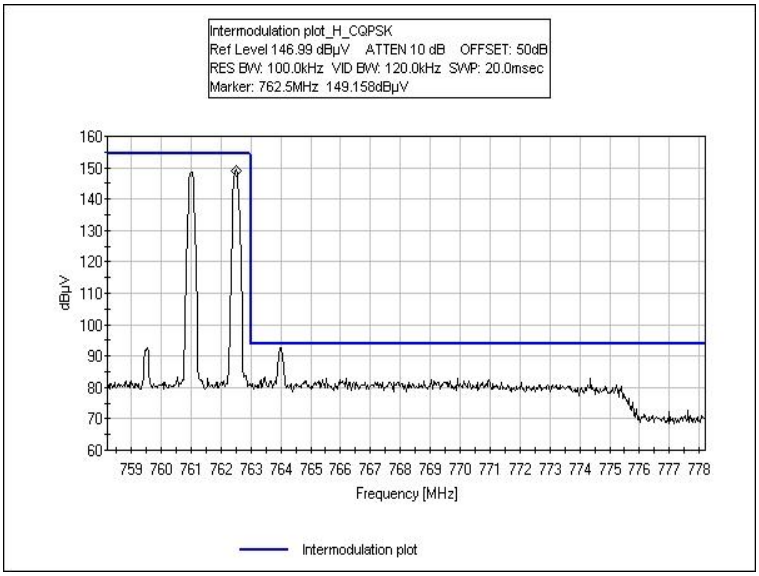
Test Setup Photos

Test Plots

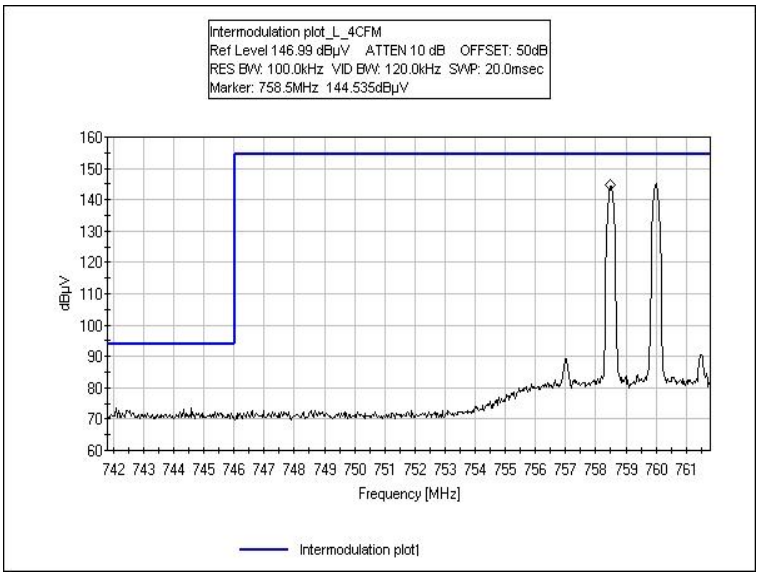
INTERMODULATION - CQPSK - LOW CHANNEL



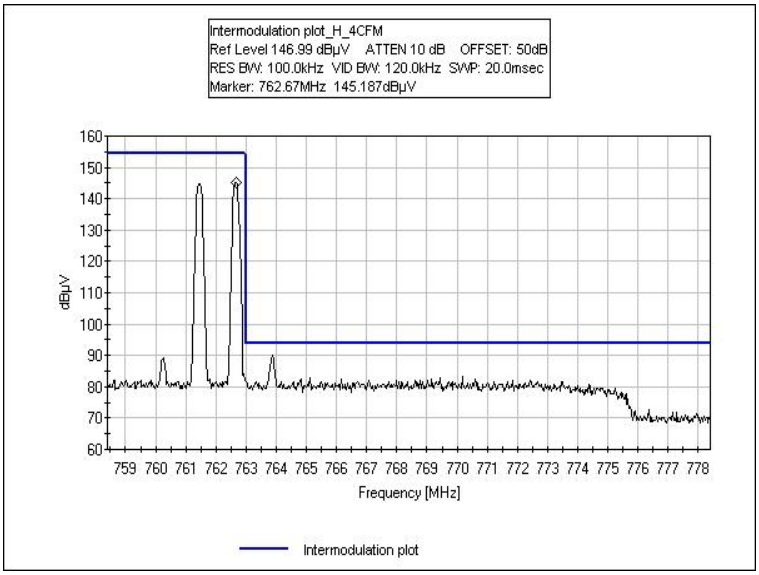
INTERMODULATION - CQPSK - HIGH CHANNEL



INTERMODULATION - 4CFM - LOW CHANNEL



INTERMODULATION - 4CFM - HIGH CHANNEL



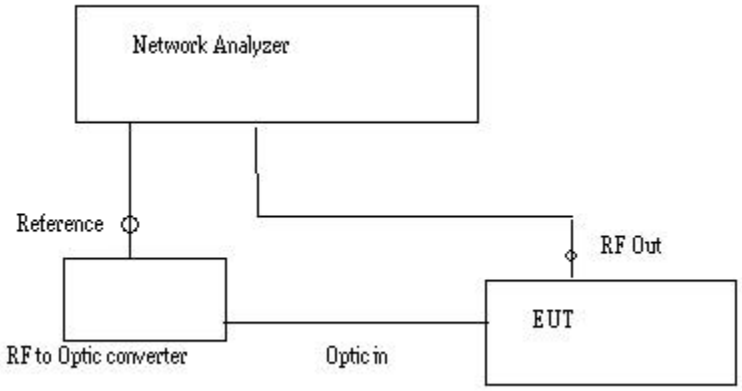
OUT OF BAND REJECTION

Test Equipment

Equipment	Asset #	Manufacturer	Model #	Serial #	Cal Date	Cal Due
Network analyzer	C00012	HP	8753E	Us38432770	091208	091210

Test Setup Photos

Test Data



Measured gain = Output – Reference (dB)

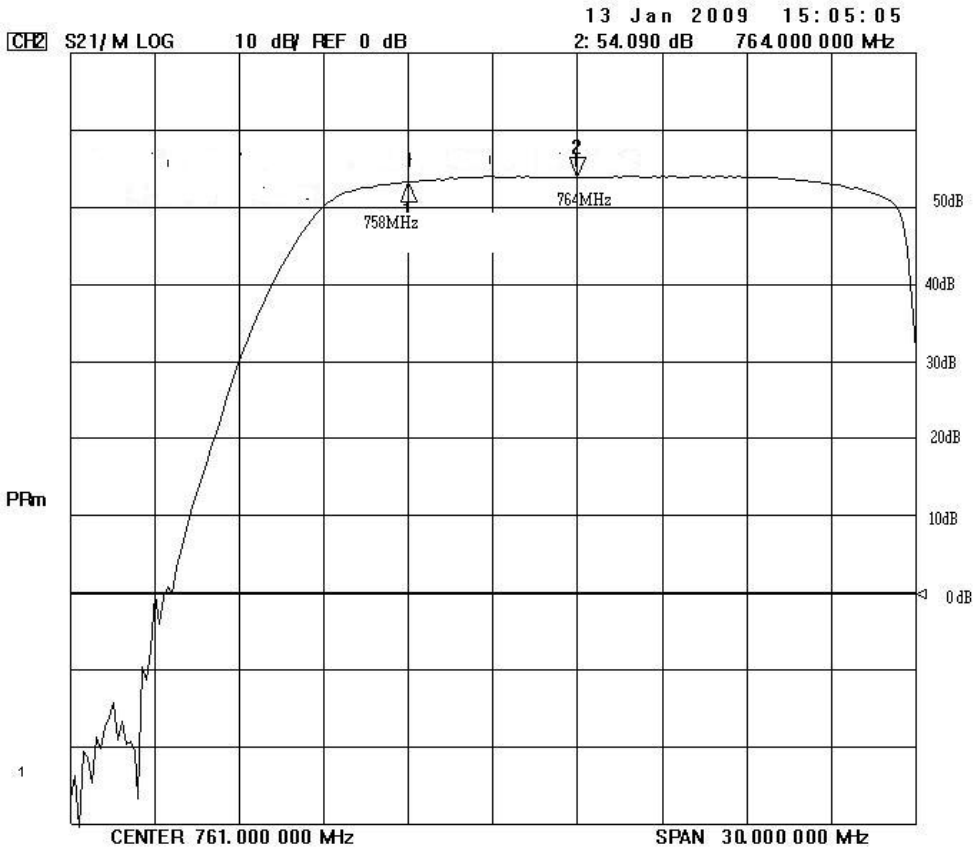
The nominal bandwidth and nominal pass band gain (dB) of the RF enhancer or translator shall be stated by the manufacturer or equipment certification applicant and indicated in the test report.

Manufacturer stated gain = 55 dB

The internal control is adjusted to the nominal gain for which equipment certification is sought.

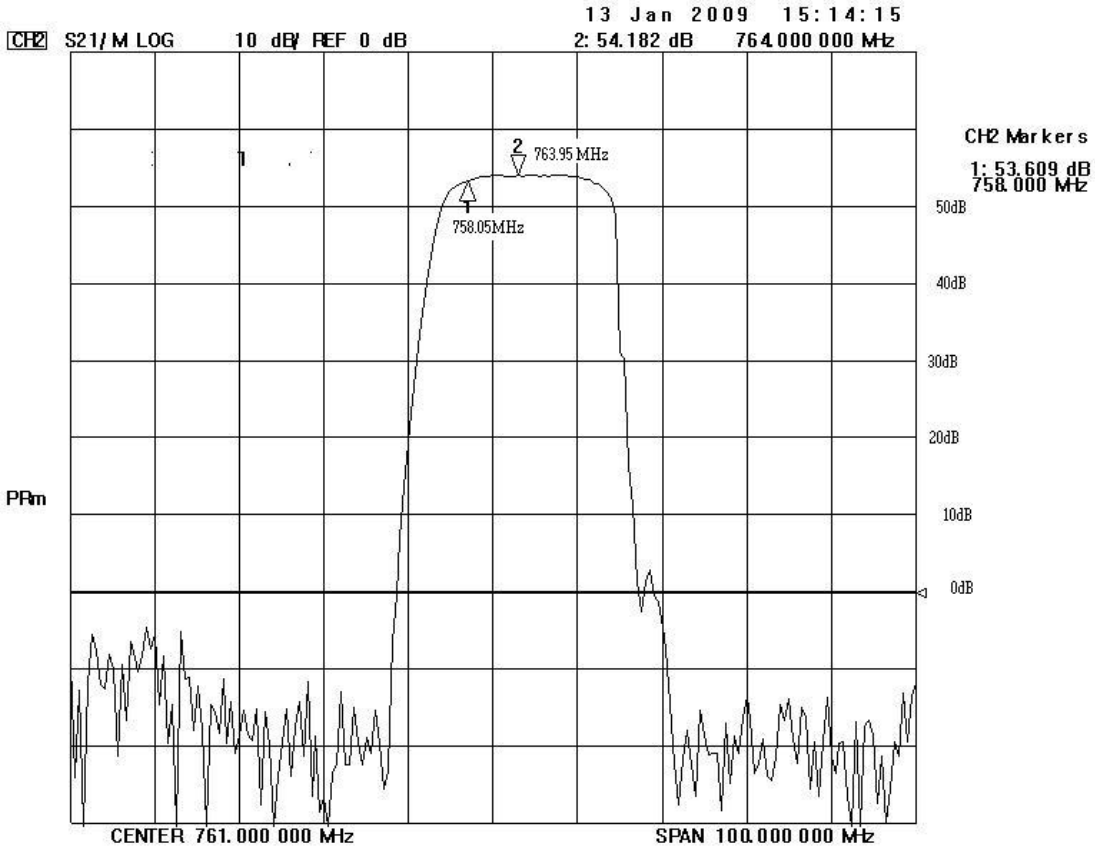
Maximum measured gain = 53 dB

With the aid of a Vector Network analyzer, the Out of band rejection ratio of the device was measured.



Out of band rejection plot

The device is designed to operate in frequency range of 758-775MHz. Operating frequency range under Pat 27 is 758-763MHz. Operating frequency range under Part 90 is 763-775MHz. (Note, marker 2 on the plot is set at 764MHz, however does not impact the presentation of the gain plot over the entire operating range of Part 27 and part 90).



Out of band rejection plot (wide span)