Nemko USA, Inc.
Phone (858) 755-5525 Fax (858) 452-1810
11696 Sorrento Valley Rd., Suite F
San Diego, CA 92121-1024

Test Report:	2006 100883 FCC
Applicant:	Broadcast Microwave Services 12367 Crosthwaite Circle Dock 10 Poway, CA 92064 (858) 391-3050 x147 (858) 391-3049 - fax
Equipment Under Test:	Model: Carry Coder II Portable COFDM Digital Wireless Camera System with 1Watt Power Amplifier
FCC ID:	CNVCCII-4H
In Accordance With:	FCC PART 2 and PART 90 Subpart Y
Tested By:	Nemko USA Inc. 11696 Sorrento Valley Road San Diego, CA 92121-1024
Date:	February 28, 2007
Total Number of Pages:	34

DOCUMENT HISTORY

REVISION	DATE	COMMENTS
-	February 28, 2007	Prepared By: F.S.Custodio
-	February 28, 2007	Initial Release: M. T. Krumweide

NOTE: Nemko USA, Inc. hereby makes the following statements so as to conform to Chapter 10 (Test Reports) Requirements of ANSI C63.4: 2003 “Methods and Measurement of Radio-Noise Emissions from Low-Voltage Electrical and Electronic Equipment in the Range of 9 kHz to 40 GHz”:

- The unit described in this report was received at Nemko USA, Inc.'s facilities on October 23, 2006. Testing was performed on the unit described in this report on October 23, 2006 to January 5, 2006.
- The Test Results reported herein apply only to the Unit actually tested, and to substantially identical Units.
- This report does not imply the endorsement of the Federal Communications Commission (FCC), NVLAP or any other government agency.

Table of Contents

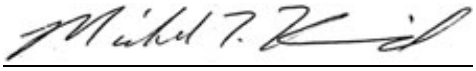
CERTIFICATION

Nemko USA, Inc., an independent Electromagnetic Compatibility (EMC) Test Laboratory, produced this Test Report and performed the Radio Frequency Interference (RFI) testing and data evaluation contained herein.

Nemko USA, Inc.'s measurement facility is currently registered with the United States Federal Communications Commission (FCC) in accordance with the provisions of 47 United States Code (CFR) Part 2, Subpart I, Section 2.948(a). A current description of Nemko USA, Inc.'s measurement facility is on file with the FCC. Nemko USA Inc. has additionally satisfied the FCC that it complies with the requirements set forth in 47 CFR Part 2, Subpart I, Section 2.948(d) regarding the accreditation of EMC laboratories. As a result, the FCC has placed Nemko USA Inc. on its list of EMC laboratories approved to perform Declaration of Conformity (DOC) procedure testing.

The RFI testing, test data collection and test data evaluation were accomplished in accordance with the ANSI C63.4: 2003 Standard, and in accordance with the applicable sections of the FCC rules (47 CFR Parts 2 and 18)." digital devices.

I hereby certify that the test data, test data evaluation, and equipment configurations used to compile this test report are a true and accurate representation of the test sample's radio frequency interference characteristics as of the test date(s), and, for the design of the test sample.



Mike T. Krumweide, EMC Test Supervisor

Section 1. Summary of Test Results

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 2 and PART 90 Subpart Y.

Summary Of Test Data

Name Of Test	Para. No.	Result
RF Power Output	90.1215	PASS
Modulation Characteristics	2.1047	AS REPORTED*
Occupied Bandwidth	90.1213	PASS
Spurious Emissions at Antenna Terminals	2.1051/90.210	PASS
Field Strength of Spurious Emissions	2.1053	PASS
Frequency Stability	2.1055/90.213	AS REPORTED

***** *EUT is a digitally modulated transmitter. Part 90 do not express limits or pass/fail criteria for Modulation Characteristics.*

Test Conditions:

Indoor	Temperature:	19--25 °C
	Humidity:	40-50 %
Outdoor	Temperature:	18--23 °C
	Humidity:	40-60 %

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Section 2. General Equipment Specification

Manufacturer:	Broadcast Microwave Services
Model No.:	Portable COFDM Digital Wireless Camera System
Serial No.:	469 and 470 –Carry Coder II 240 – Linear Power Amplifier
Test Voltage:	15VDC to Carry-Coder II 28VDC to Linear Power Amplifier
Frequency Range:	4949MHz to 4990MHz
Date Received In Laboratory:	October 23, 2006
Nemko Identification No.:	26-883-BRO

Section 3. RF Power Output

Para. No.: 2.1046(c)

Test Performed By: F. S. Custodio	**Date of Test: February 28, 2007**

Minimum Standard: Subpart Y—Regulations Governing Licensing and Use of Frequencies in the 4940-4990 MHz Band Sec. 90.1215 Power Limits

The transmitting power of stations operating in the 4940-4990 MHz band must not exceed the maximum limits in this section.

(a) The peak transmit power should not exceed:

Channel Bandwidth (MHz)	*Low power peak transmitter power (dBm)*	*High power peak transmitter power (dBm)*
1	*7*	*20*
5	*14*	*27*
10	*17*	*30*
15	*18.8*	*31.8*
20	*20*	*33*

High power devices are also limited to a peak power spectral density of 21 dBm per one MHz. ***High power devices using channel bandwidths other than those listed above are permitted; however, they are limited to a peak power spectral density of 21 dBm/MHz.*** *If transmitting antennas of directional gain greater than 9 dBi are used, both the peak transmit power and the peak power spectral density should be reduced by the amount in decibels that the directional gain of the antenna exceeds 9 dBi. However, high power point-to-point or point-to-multipoint operation (both fixed and temporary-fixed rapid deployment) may employ transmitting antennas with directional gain up to 26 dBi without any corresponding reduction in the transmitter power or spectral density. Corresponding reduction in the peak transmit power and peak power spectral density should be the amount in decibels that the directional gain of the antenna exceeds 26 dBi.*

(c) The peak transmit power is measured as a conducted emission over any interval of continuous transmission calibrated in rms of an RMS- equivalent voltage. If the device cannot be connected directly, alternative techniques acceptable to the Commission may be used. The measurement results shall be properly adjusted for any instrument limitations, such as detector response times, limited resolution bandwidth capability when compared to the emission bandwidth, sensitivity, etc., so as to obtain a true peak measurement conforming to the definitions in this paragraph for the emission in question.

(d) The peak power spectral density is measured as conducted emission by direct connection of a calibrated test instrument to the equipment under test. If the device cannot be connected directly, alternative techniques acceptable to the Commission may be used. Measurements are made over a bandwidth of one MHz or the 26 dB emission bandwidth of the device, whichever is less. A resolution bandwidth less than the measurement bandwidth can be used, provided that the measured power is integrated to show total power over the measurement bandwidth. If the resolution bandwidth is approximately equal to the measurement bandwidth, and much less than the emission bandwidth of the equipment under test, the measured results shall be corrected to account for any difference between the resolution bandwidth of the test instrument and its actual noise bandwidth.

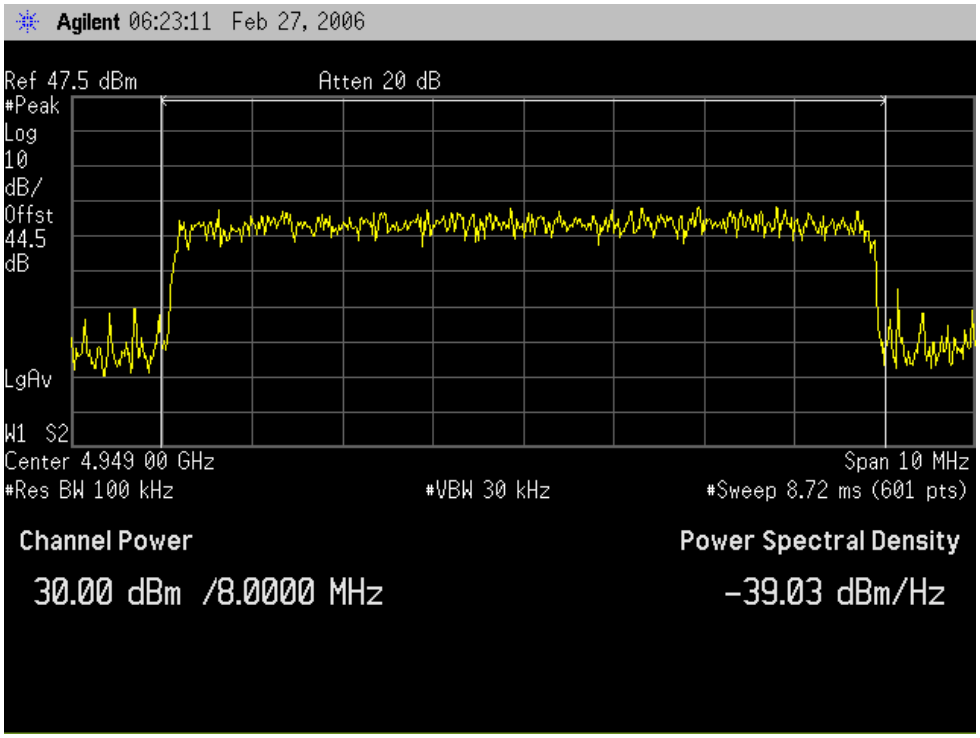
Test Results: EUT complies

Test Conditions:
Tested using Agilent E4440A PSA Series Spectrum Analyzer thru a 44.5 dB attenuator at antenna terminal. Spectrum Analyzer set to Channel Power measurement mode with Reference Level optimized and RBW set to 100KHz and VBW to 30KHz. EUT RF Power Output setting set to Max with 8MHz bandwidth. Tested on all modes of operation (QPSK, 64QAM and 16QAM).

Measurement Data:

	Low Channel 4949MHz		Mid Channel 4969.5MHz		High Channel 4990MHz	
Modulation	**PSD**	**Power**	**PSD**	**Power**	**PSD**	**Power**
QPSK	20.54	0.91	19.38	0.69	18.92	0.62
64QAM	20.97	1.00	19.34	0.69	19.06	0.64
16QAM	20.4	0.88	19.36	0.69	19.04	0.64

Note: PSD (Peak Power Spectral Density) unit is dBm/MHz
Power unit is Watts



Section 4. Modulation Characteristics

Para. No.: 2.1047

Test Performed By: Ferdinand S. Custodio	**Date of Test: Oct. 23, 2006**

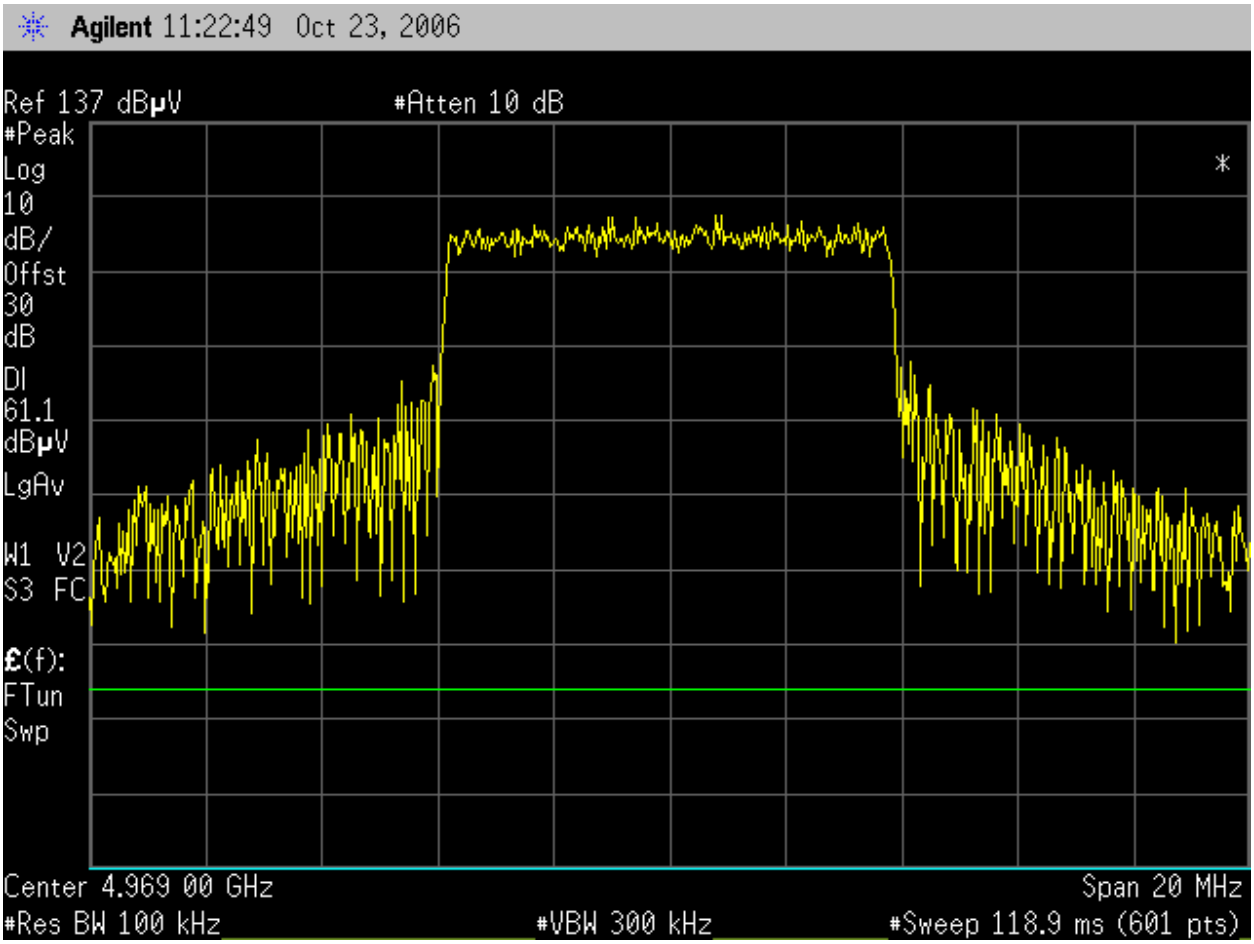
Minimum Standard: Part 90

Test Results: As Reported. Conducted emission plots captured on the Spectrum Analyzer thru a 30 dB attenuator.

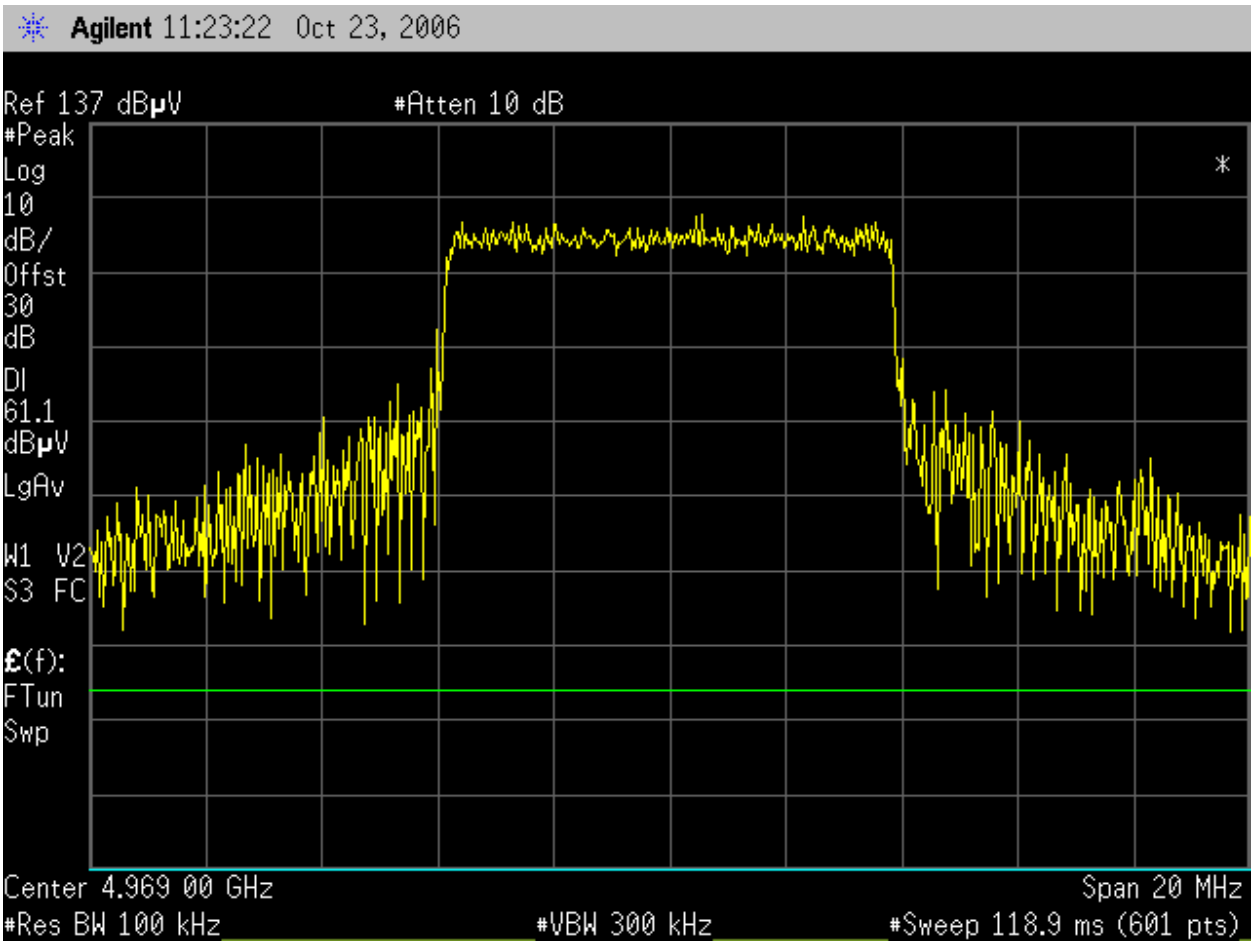
Measurement Data: See attached plots to exemplify the three modes of modulation:

Modulation modes are QPSK, 16QAM and 64QAM

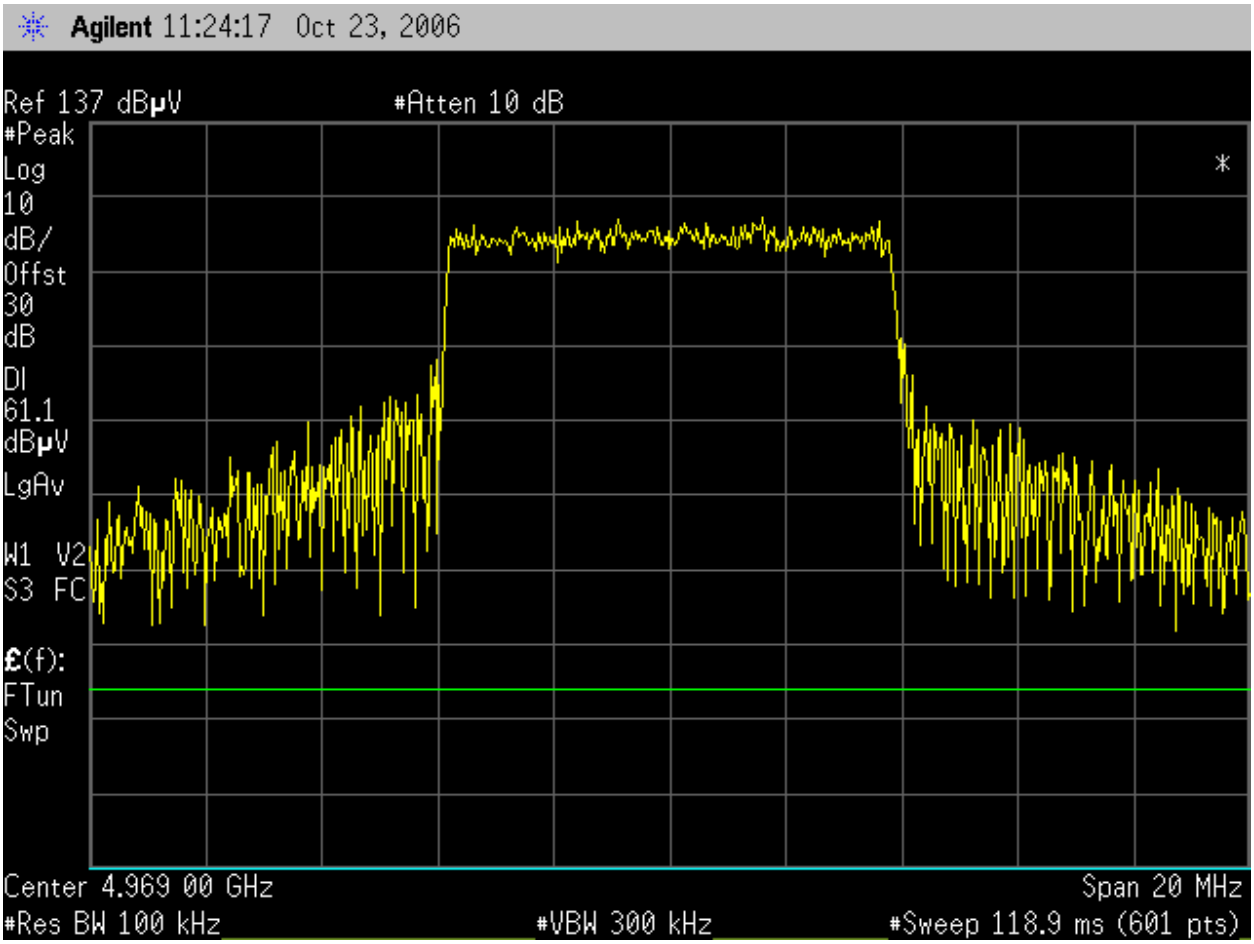
Modulation Mode: 64QAM



Modulation Mode: 16QAM



Modulation Mode: QPSK



Section 5. Occupied Bandwidth

Para. No.: 2.1049

Test Performed By: Ferdinand Custodio Date of Test: October 25, 2006

Minimum Standard: Subpart Y—Regulations Governing Licensing and Use of Frequencies in the 4940-4990 MHz Band Sec. 90.1215 Power Limits

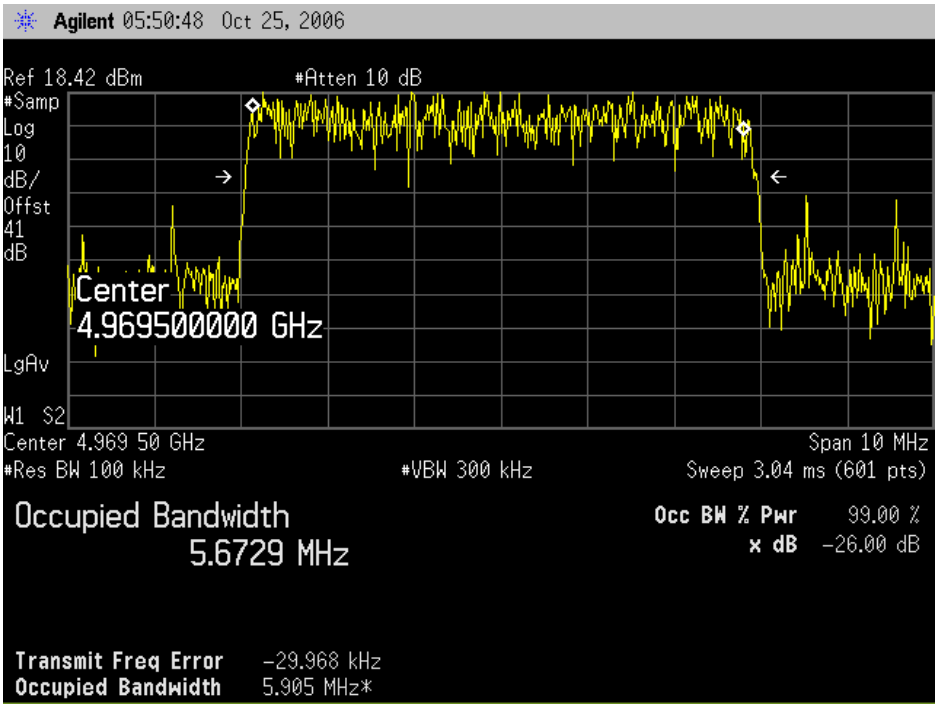
The transmitting power of stations operating in the 4940–4990 MHz band must not exceed the maximum limits in this section.(a) The peak transmit power should not exceed:

Channel Bandwidth (Mhz)	Low Power Peak Transmitter Power (dBm)	High Power Peak Transmitter Power (dBm)
1	7	20
5	14	27
10	17	30
15	18.8	31.8
20	20	33

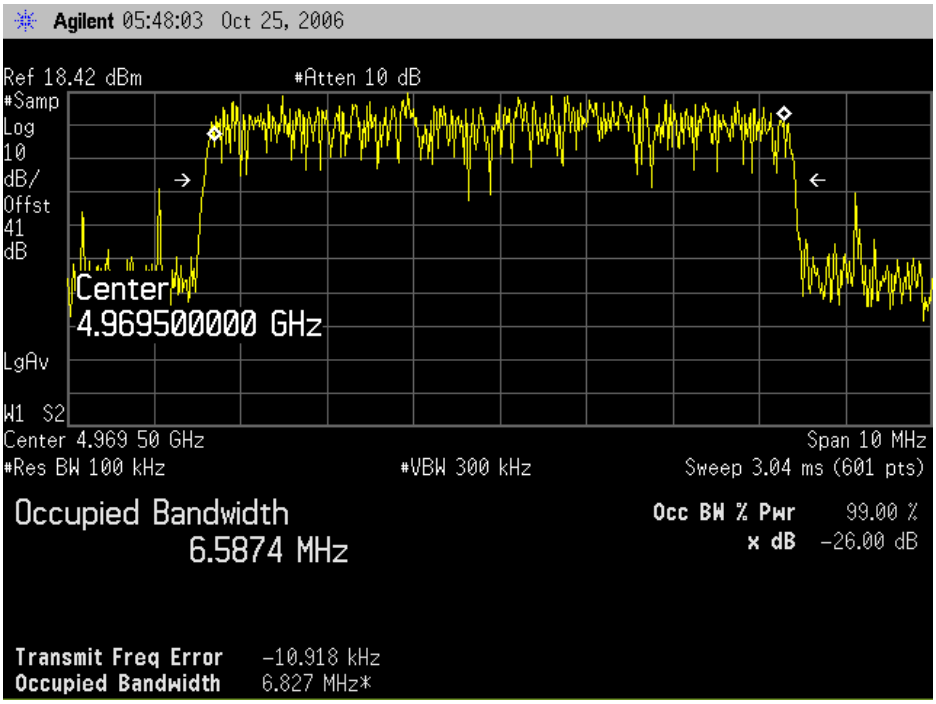
High power devices are also limited to a peak power spectral density of 21 dBm per one MHz. ***High power devices using channel bandwidths other than those listed above are permitted***; however, they are limited to a peak power spectral density of 21 dBm/MHz.

Test Results: EUT Complies. Conductive emission plots captured on the Spectrum Analyzer thru a 41 dB attenuator. EUT has a user selectable bandwidth setting of 6, 7 or 8 MHz.

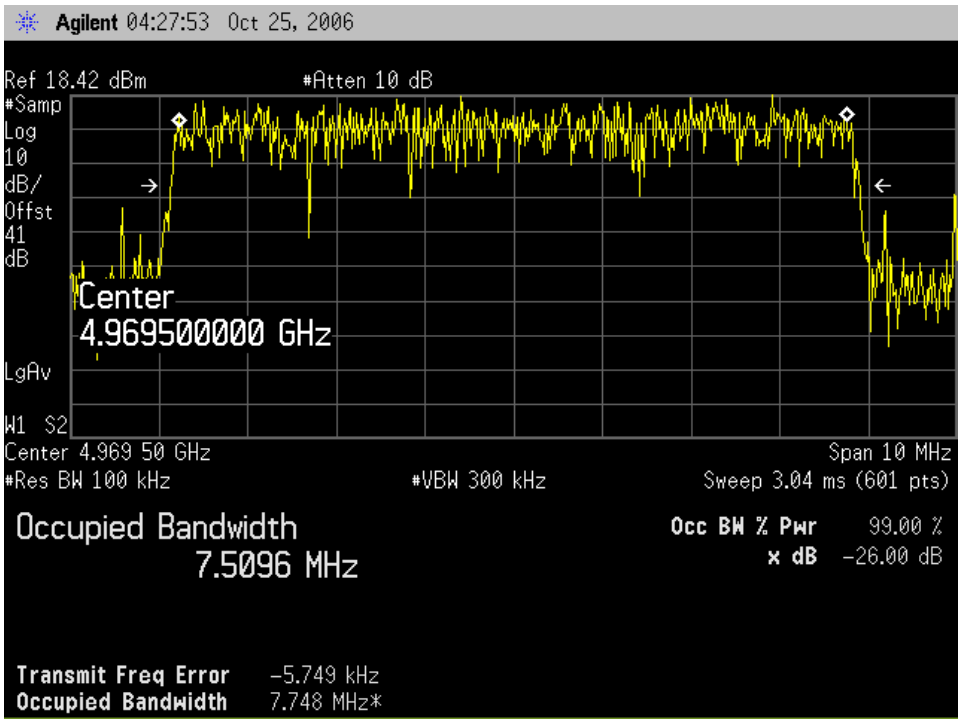
Test Data: See attached plots. All modulation modes were examined and all of them do not diverge from what is presented in this report.



Mid Channel 64QAM 6MHz Bandwidth



Mid Channel 64QAM 7MHz Bandwidth



Mid Channel 64QAM 8MHz Bandwidth

Section 6. Spurious Emissions At Antenna Terminals

Para. No.: 2.1051

Test Performed By: Ferdinand Custodio	**Date of Test: August 4, 2006**

Minimum Standard: Part 90.210 Emissions Masks

Except as indicated elsewhere in this part, transmitters used in the radio services governed by this part must comply with the emission masks outlined in this section. Unless otherwise stated, per paragraphs (d)(4), (e)(4), and (m) of this section, measurements of emission power can be expressed in either peak or average values provided that emission powers are expressed with the same parameters used to specify the unmodulated transmitter carrier power. For transmitters that do not produce a full power unmodulated carrier, reference to the unmodulated transmitter carrier power refers to the total power contained in the channel bandwidth. Unless indicated elsewhere in this part, the table in this section specifies the emission masks for equipment operating in the frequency bands governed under this part.

Applicable Emission Masks

Frequency band (MHz)	Mask for equipment with Audio low pass filter	Mask for equipment without Audio low pass filter
Below 25 \1\	A or B	A or C
25-50	B	C
72-76	B	C
150-174 \2\	B, D, or E	C, D, or E
150 Paging-only	B	C
220-222	F	F
421-512 \2\	B, D, or E	C, D, or E
450 Paging-only	B	G
806-809/851-854	B	H
809-824/854-869 \3\	B	G
896-901/935-940	I	J
902-928	K	K
929-930	B	G
4940-4990 MHz	L or M	L or M
5850-5925 \4\		
All other bands	B	C

(m) *Emission Mask M.* For high power transmitters (greater that 20 dBm) operating in the 4940–4990 MHz frequency band, the power spectral density of the emissions must be attenuated below the output power of the transmitter as follows:

(1) On any frequency removed from the assigned frequency between 0–45% of the authorized bandwidth (BW): 0 dB.

(2) On any frequency removed from the assigned frequency between 45–50% of the authorized bandwidth: 568 log (% of (BW)/45) dB.

(3) On any frequency removed from the assigned frequency between 50–55% of the authorized bandwidth: 26 + 145 log (% of BW/50) dB.

(4) On any frequency removed from the assigned frequency between 55–100% of the authorized bandwidth: 32 + 31 log (% of (BW)/55) dB.

(5) On any frequency removed from the assigned frequency between 100–150% of the authorized bandwidth: 40 + 57 log (% of (BW)/100) dB.

(6) On any frequency removed from the assigned frequency between above 150% of the authorized bandwidth: 50 dB or 55 + 10 log (P) dB, whichever is the lesser attenuation.

(7) The zero dB reference is measured relative to the highest average power of the fundamental emission measured across the designated channel bandwidth using a resolution bandwidth of at least one percent of the occupied bandwidth of the fundamental emission and a video bandwidth of 30 kHz. The power spectral density is the power measured within the resolution bandwidth of the measurement device divided by the resolution bandwidth of the measurement device. Emission levels are also based on the use of measurement instrumentation employing a resolution bandwidth of at least one percent of the occupied bandwidth.

Test Results: EUT Complies. Conductive emission plots captured on the Spectrum Analyzer thru a 42 dB attenuator.. Emissions were investigated from 30 MHz to 25 GHz .

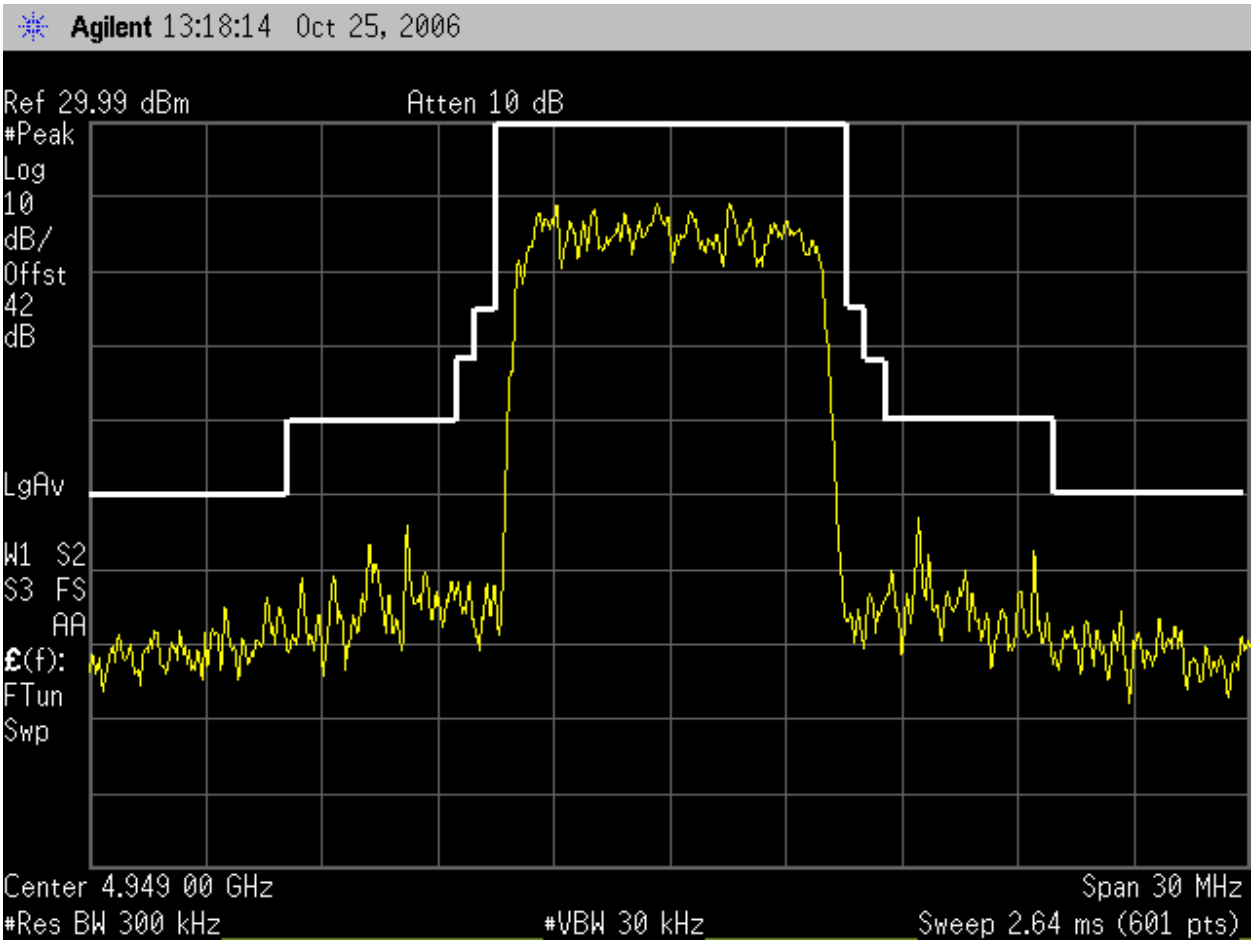
Test Data: See table and attached Plots

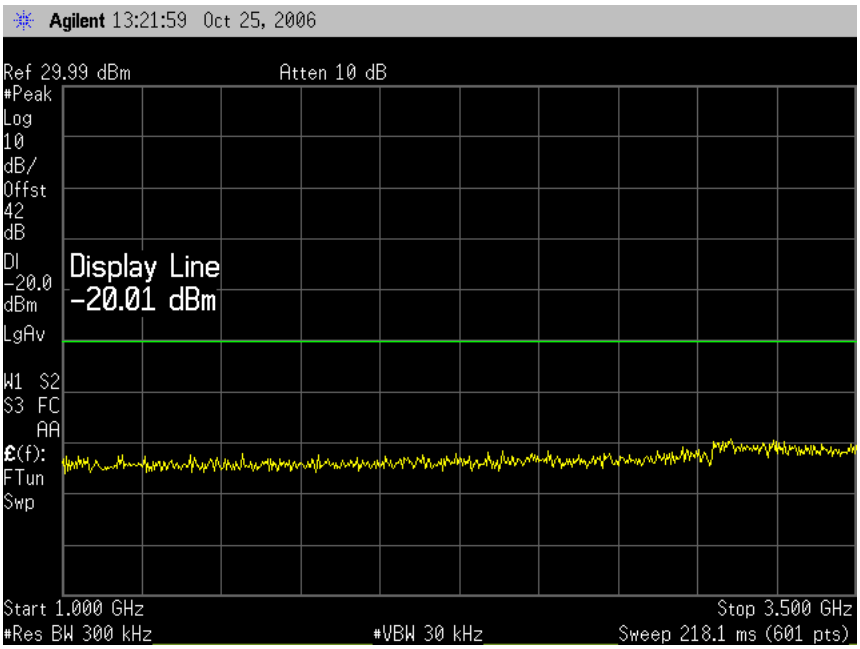
Frequency (GHz)	**Source Channel/Mode of Operation**	**Measured (dBm)**	**Limit (dBm)**	Margin (dBm)
4.54	low channel/64QAM	-33.95	-20.1	13.85
4.8	low channel/64QAM	-34.22	-20.1	14.12
4.824	low channel/64QAM	-34.07	-20.1	13.97
4.934	low channel/64QAM	-33.43	-20.1	13.33
4.9667	low channel/64QAM	-30.9	-20.1	10.8

The EUT was investigated for Spurious Emission in low, mid and high channels on all modes of operation (QPSK, 16QAM and 64QAM), Low channel/64QAM which is reported, and low channel/16QAM represents the worst case results during the investigation. Plots for low channel /16QAM and low channel /QPSK are located in the Appendix. The EUT was tested at a higher resolution bandwidth than what is required with no resulting emission issues.

Emission Mask Endpoints:
M Mask – For transmitters greater than 20dBm
Authorized Bandwidth = 10MHz
REF Level = Average Power
45% of BW (4.5MHz) = 0dB
50% of BW (5.0MHz) = 26dB down
55% of BW (5.5MHz) = 32dB down
100% of BW (10.0MHz) = 40dB down
150% of BW (15.0MHz) = 50dB down

Lo Channel/64QAM - 4949.0 MHz

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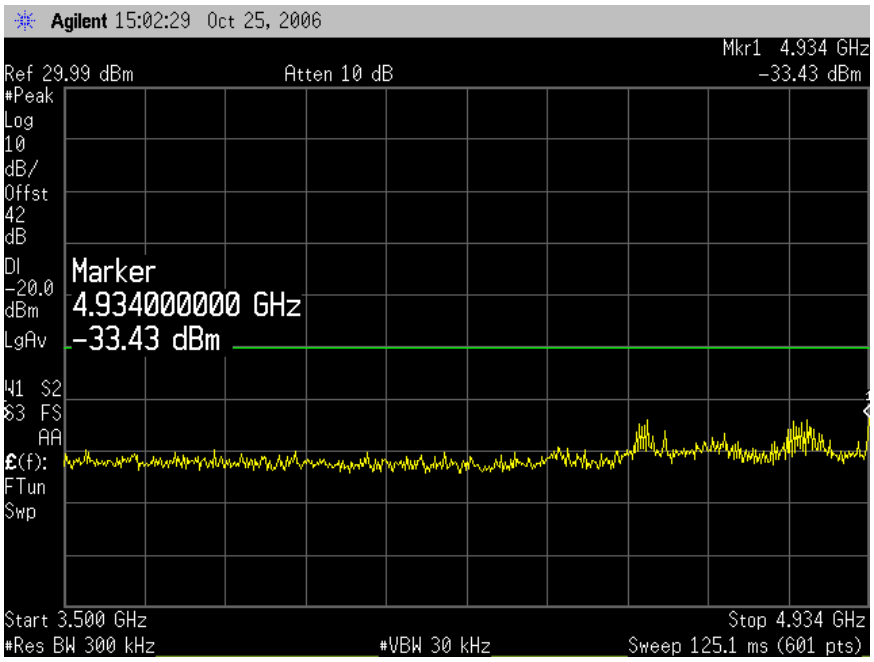
Ref 29.99 dBm
Atten 10 dB
#Peak
Log
10
dB/
Offst
42
dB
Dl
-20.0
dBm
LgAv
W1 S2
S3 FC
AA
£(f):
FTun
Swp
Display Line
-20.01 dBm
Start 1.000 GHz
#Res BW 300 kHz
#VBW 30 kHz
Stop 3.500 GHz
Sweep 218.1 ms (601 pts)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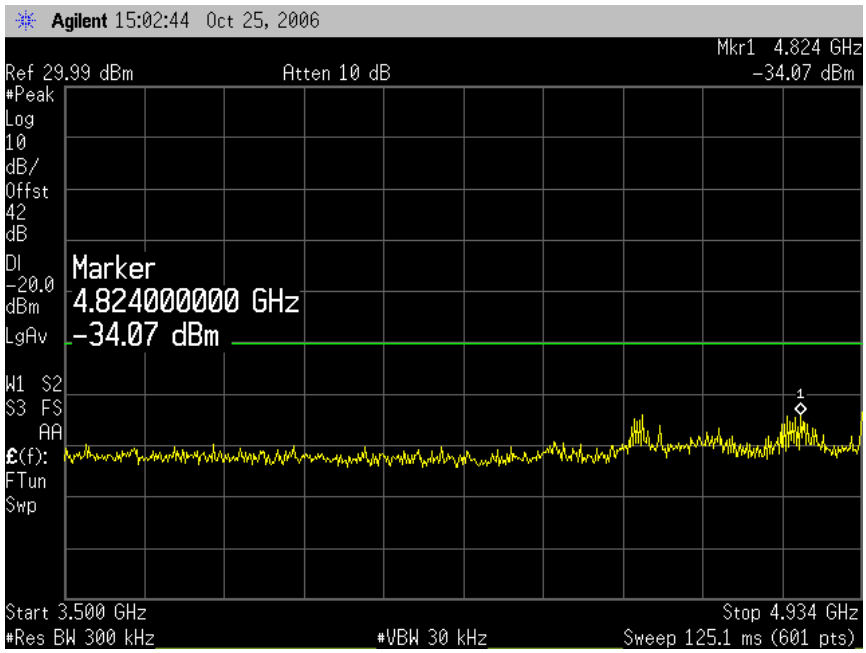
Mkr1 4.934 GHz
-33.43 dBm
Ref 29.99 dBm
Atten 10 dB
#Peak
Log
10
dB/
Offst
42
dB
Dl
-20.0
dBm
LgAv
W1 S2
S3 FS
AA
£(f):
FTun
Swp
Marker
4.934000000 GHz
-33.43 dBm
Start 3.500 GHz
#Res BW 300 kHz
#VBW 30 kHz
Stop 4.934 GHz
Sweep 125.1 ms (601 pts)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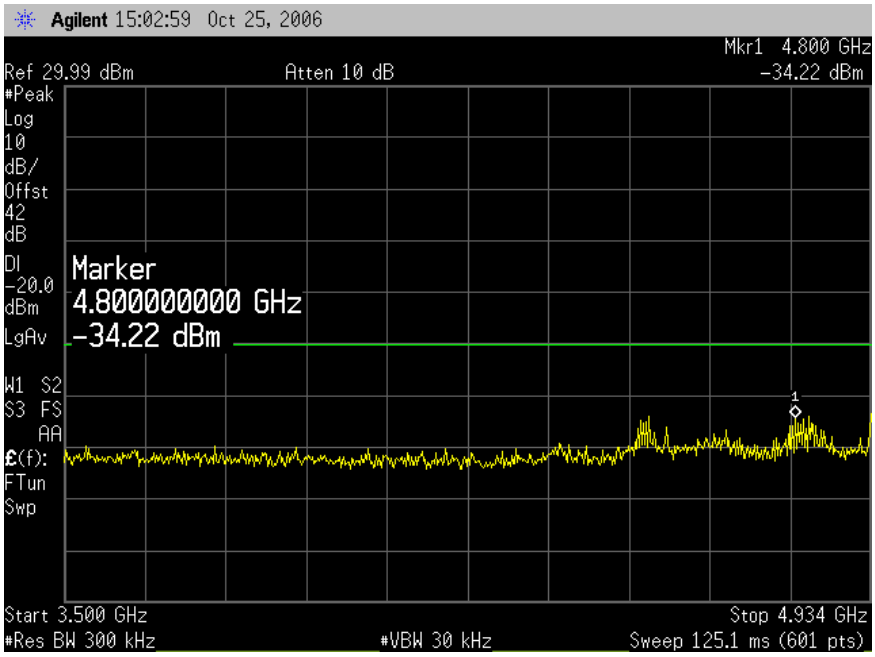
Mkr1 4.824 GHz
Ref 29.99 dBm
Atten 10 dB
-34.07 dBm
#Peak
Log
10
dB/
Offst
42
dB
Dl
-20.0
dBm
LgAv
Marker
4.824000000 GHz
-34.07 dBm
W1 S2
S3 FS
AA
£(f):
FTun
Swp
Start 3.500 GHz
Stop 4.934 GHz
#Res BW 300 kHz
#VBW 30 kHz
Sweep 125.1 ms (601 pts)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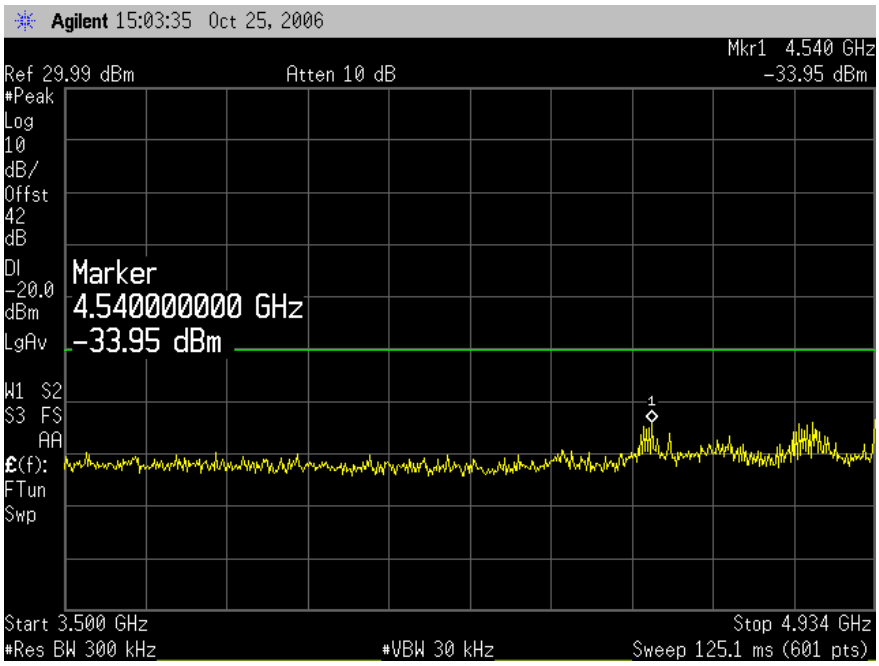
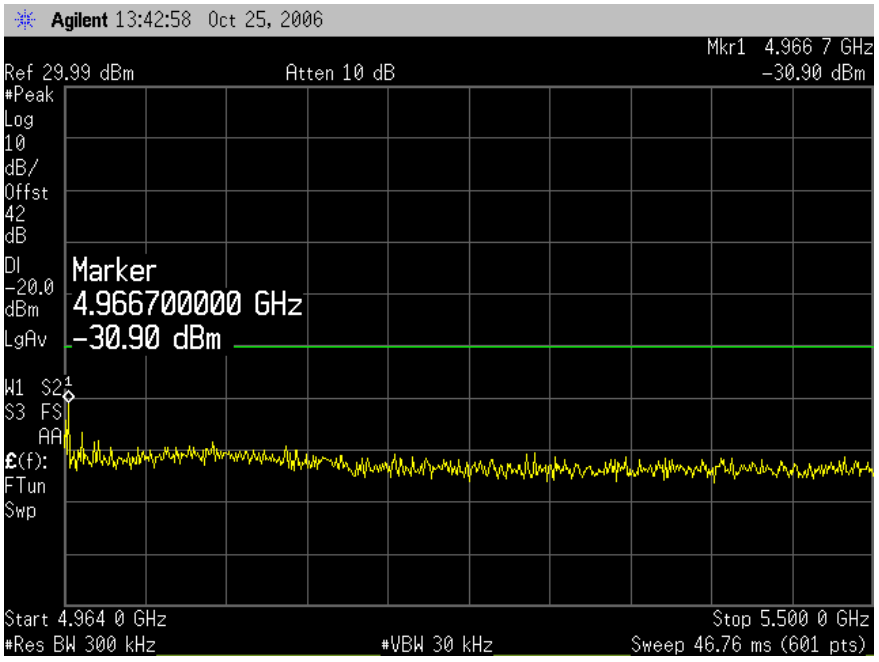
Mkr1 4.800 GHz
Ref 29.99 dBm
Atten 10 dB
-34.22 dBm
#Peak
Log
10
dB/
Offst
42
dB
Dl
-20.0
dBm
LgAv
Marker
4.800000000 GHz
-34.22 dBm
W1 S2
S3 FS
AA
£(f):
FTun
Swp
Start 3.500 GHz
Stop 4.934 GHz
#Res BW 300 kHz
#VBW 30 kHz
Sweep 125.1 ms (601 pts)


Agilent 15:03:35 Oct 25, 2006
Mkr1 4.540 GHz
Ref 29.99 dBm
Atten 10 dB
-33.95 dBm
#Peak
Log
10
dB/
Offst
42
dB
Marker
4.540000000 GHz
-33.95 dBm
Start 3.500 GHz
Stop 4.934 GHz
#Res BW 300 kHz
#VBW 30 kHz
Sweep 125.1 ms (601 pts)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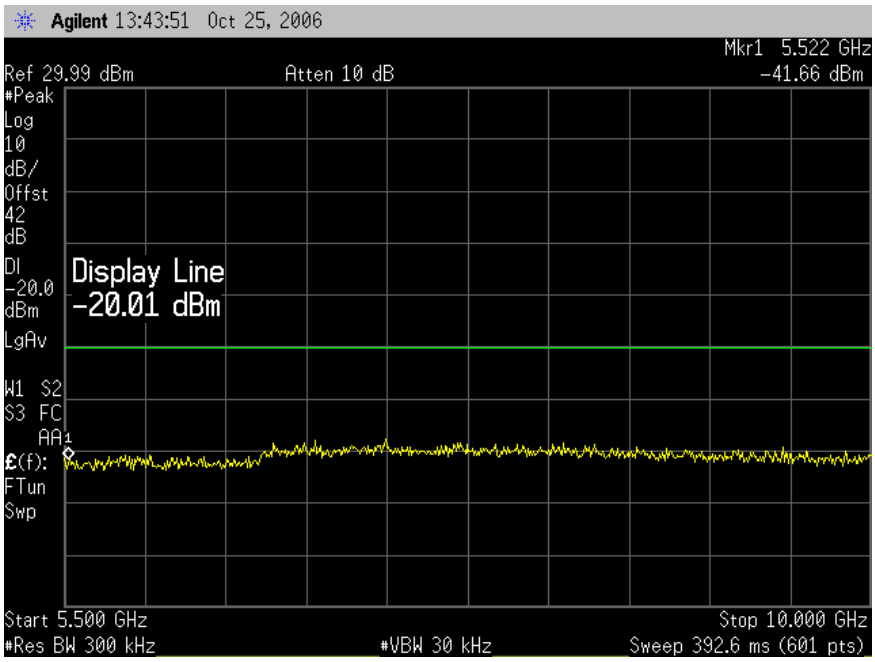
Mkr1 4.966 7 GHz
Ref 29.99 dBm
Atten 10 dB
-30.90 dBm
#Peak
Log
10
dB/
Offst
42
dB
Marker
4.966700000 GHz
-30.90 dBm
Start 4.964 0 GHz
Stop 5.500 0 GHz
#Res BW 300 kHz
#VBW 30 kHz
Sweep 46.76 ms (601 pts)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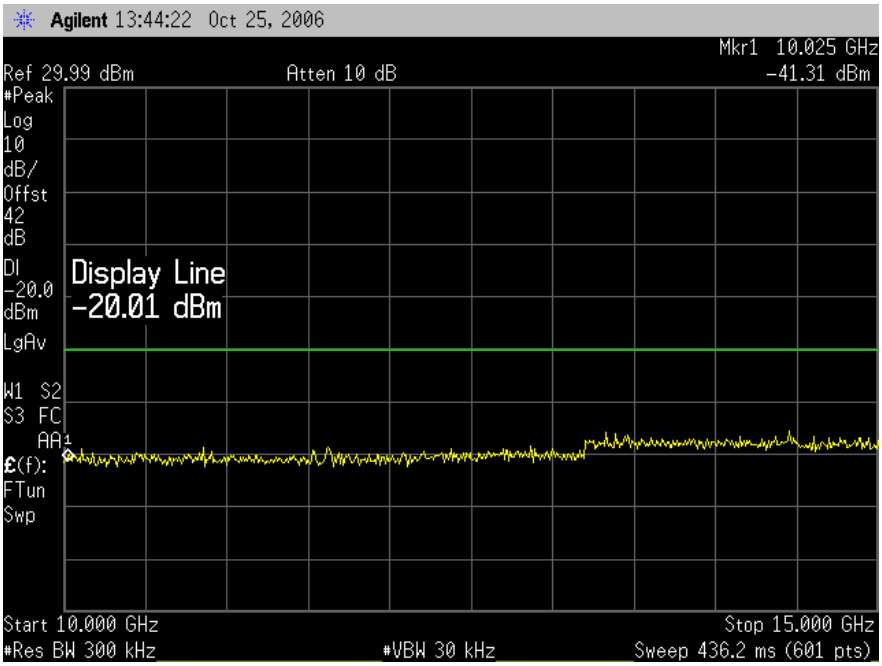
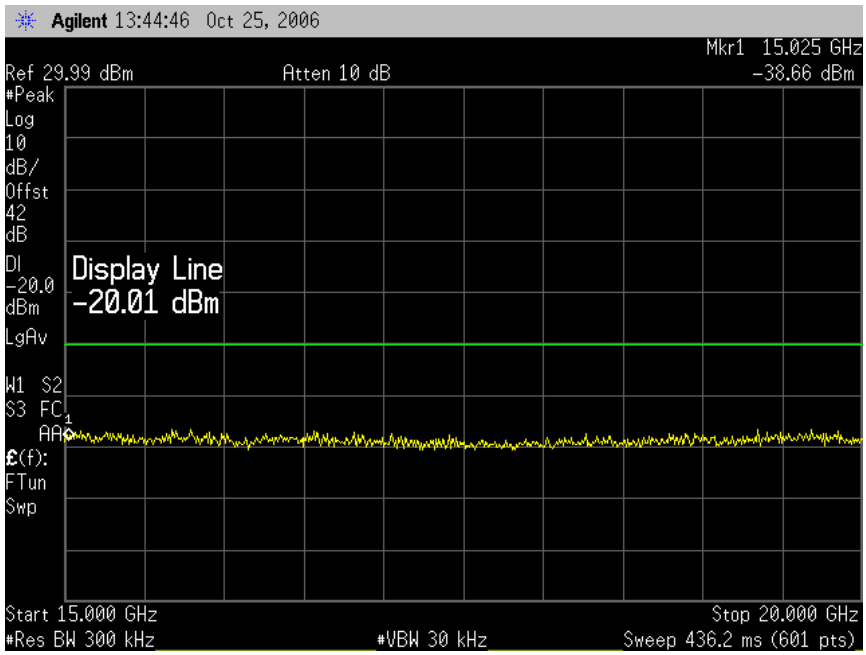
Mkr1 5.522 GHz
Ref 29.99 dBm
Atten 10 dB
-41.66 dBm
#Peak
Log
10
dB/
Offst
42
dB
Dl
-20.0
dBm
Display Line
-20.01 dBm
LgAv
W1 S2
S3 FC
AA1
£(f):
FTun
Swp
Start 5.500 GHz
Stop 10.000 GHz
#Res BW 300 kHz
#VBW 30 kHz
Sweep 392.6 ms (601 pts)


Agilent 13:44:22 Oct 25, 2006
Mkr1 10.025 GHz
Ref 29.99 dBm
Atten 10 dB
-41.31 dBm
#Peak
Log
10
dB/
Offst
42
dB
Dl
-20.0
dBm
Display Line
-20.01 dBm
LgAv
W1 S2
S3 FC
AA1
£(f):
FTun
Swp
Start 10.000 GHz
Stop 15.000 GHz
#Res BW 300 kHz
#VBW 30 kHz
Sweep 436.2 ms (601 pts)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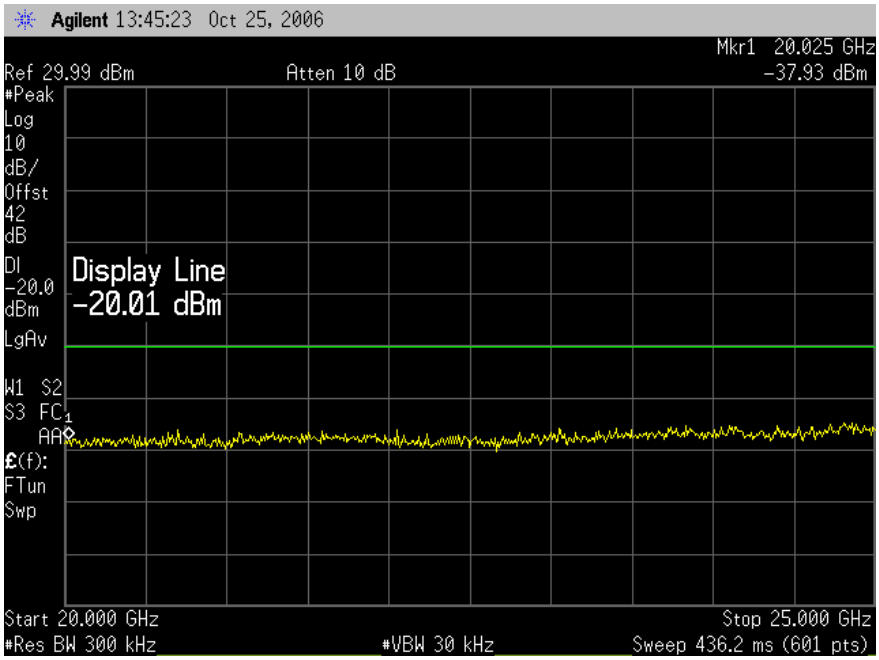
Mkr1 15.025 GHz
Ref 29.99 dBm
Atten 10 dB
-38.66 dBm
#Peak
Log
10
dB/
Offst
42
dB
Dl
-20.0
dBm
Display Line
-20.01 dBm
LgAv
W1 S2
S3 FC
AA
£(f):
FTun
Swp
Start 15.000 GHz
Stop 20.000 GHz
#Res BW 300 kHz
#VBW 30 kHz
Sweep 436.2 ms (601 pts)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Mkr1 20.025 GHz
Ref 29.99 dBm
Atten 10 dB
-37.93 dBm
#Peak
Log
10
dB/
Offst
42
dB
Dl
-20.0
dBm
Display Line
-20.01 dBm
LgAv
W1 S2
S3 FC
AA
£(f):
FTun
Swp
Start 20.000 GHz
Stop 25.000 GHz
#Res BW 300 kHz
#VBW 30 kHz
Sweep 436.2 ms (601 pts)

Section 7. Field Strength of Spurious

Para. No.: 2.1053

Test Performed By: Ferdinand Custodio Date of Test: October 30, 2006

Minimum Standard: Part 2.1053

(a) Measurements shall be made to detect spurious emissions that may be radiated directly from the cabinet, control circuits, power leads, or intermediate circuit elements under normal conditions of installation and operation. Curves or equivalent data shall be supplied showing the magnitude of each harmonic and other spurious emission. For this test, single sideband, independent sideband, and controlled carrier transmitters shall be modulated under the conditions specified in paragraph (c) of §2.1049, as appropriate. For equipment operating on frequencies below 890 MHz, an open field test is normally required, with the measuring instrument antenna located in the far-field at all test frequencies. In the event it is either impractical or impossible to make open field measurements (e.g. a broadcast transmitter installed in a building) measurements will be accepted of the equipment as installed. Such measurements must be accompanied by a description of the site where the measurements were made showing the location of any possible source of reflections which might distort the field strength measurements. Information submitted shall include the relative radiated power of each spurious emission with reference to the rated power output of the transmitter, assuming all emissions are radiated from halfwave dipole antennas.

(b) The measurements specified in paragraph (a) of this section shall be made for the following equipment:

(1) Those in which the spurious emissions are required to be 60 dB or more below the mean power of the transmitter.

(2) All equipment operating on frequencies higher than 25 MHz.

(3) All equipment where the antenna is an integral part of, and attached directly to the transmitter.

(4) Other types of equipment as required, when deemed necessary by the Commission.

Test Results: EUT Complies. Emissions were searched from 30 MHz to 25 GHz with the antenna port terminated into a 50 ohm load. No spurious emissions above 1 GHz at a level greater than 20dB below the limit were observed. Emissions between 30 MHz and 1 GHz were searched and four emissions were found and the results proved by substitution.

Test Data: See attached tables.

Quasi-peak measurements with a RBW =VBW = 100 kHz.

Measured Frequency (MHz)	Antenna Polarization (H/V)	Meter Reading (dBuV)
33.556	V	81.7
59.41	V	70.4
74.065	V	75.6
78.46	V	75.8
81.773	V	75.8

Results—Substitution

Target Frequency	Target Level (dBuV/m)	Antenna Gain (dipole)	Cable Loss	Signal Generator (dBm)	Total (EIRP) dBm	Specs (dBm)	Margin (dBm)
33.556	81.7	0	1.0	-32.5	-33.5	-20.1	-13.4
59.41	70.4	0	1.0	-53.2	-54.2	-20.1	-34.1
74.065	75.6	0	1.0	-46.8	-47.8	-20.1	-27.7
78.46	75.8	0	1.0	-49.0	-50.0	-20.1	-29.9
81.773	75.8	0	1.0	-48.8	-49.8	-20.1	-29.7

Location: North OATS, T = 24°C, 60% R.H. 3 meters
No other measurements within 20 dB of the limit noted.
Limits are from Part 90.210 Emissions Masks

Section 8. Frequency Stability

Para. No.: 2.1055

Test Performed By: F.S.Custodio	**Date of Test: Oct. 25, 2006**

Minimum Standard: 2.1055 Frequency Stability vs Temperature Variation and Power Supply Voltage Variation.

(a) The frequency stability shall be measured with variation of ambient temperature as follows:

(1) From -30[deg] to +50[deg] centigrade for all equipment except that specified in paragraphs (a) (2) and (3) of this section.

(3) From 0[deg] to +50[deg] centigrade for equipment to be licensed for use in the Radio Broadcast Services under part 73 of this chapter.

(b) Frequency measurements shall be made at the extremes of the specified temperature range and at intervals of not more than 10[deg] centigrade through the range. A period of time sufficient to stabilize all of the components of the oscillator circuit at each temperature level shall be allowed prior to frequency measurement. The short term transient effects on the frequency of the transmitter due to keying (except for broadcast transmitters) and any heating element cycling normally occurring at each ambient temperature level also shall be shown. Only the portion or portions of the transmitter containing the frequency determining and stabilizing circuitry need be subjected to the temperature variation test.

(d) The frequency stability shall be measured with variation of primary supply voltage as follows:

(1) Vary primary supply voltage from 85 to 115 percent of the nominal value for other than hand carried battery equipment.

(2) For hand carried, battery powered equipment, reduce primary supply voltage to the battery operating end point which shall be specified by the manufacturer.

(3) The supply voltage shall be measured at the input to the cable normally provided with the equipment, or at the power supply terminals if cables are not normally provided. Effects on frequency of transmitter keying (except for broadcast transmitters) and any heating element cycling at the nominal supply voltage and at each extreme also shall be shown.

(e) When deemed necessary, the Commission may require tests of frequency stability under conditions in addition to those specifically set out in paragraphs (a), (b), (c), and (d) of this section. (For example measurements showing the effect of proximity to large metal objects, or of various types of antennas, may be required for portable equipment.)

Minimum Standard: 90.213 Frequency Stability

For above 2450MHz, minimum frequency stability is not specified however a Note is provided:

(10) Except for DSRCS equipment in the 5850-5925 MHz band, frequency stability is to be specified in the station authorization. Frequency stability for DSRCS equipment in the 5850-5925 MHz band is specified in subpart M of this part.

Test Results: 11,290Hz difference which corresponds to 2.271 ppm
Reported Frequency Stability = **2.271 ppm**

Measurement Data:

Part 2.1055 (-30°C to +50°C)				
Spectrum Analyzer @ 500KHz RBW, 2KHZ RBW, 20MHz Span				**Mid Channel QPSK Modulation**
Worst case variation:		**11290.0 Hz (>Set freq.)**		**Set Frequency:** **4969.52004** MHz@25C
		4540.0 Hz (<Set freq.)		*Red are negative numbers
		85% of Vnom	**Vnom=28VDC**	**115% of Vnom**
Temp.Set Point Temp.Actual	Time	Frequency ? (MHz) Difference (MHz)	Frequency ? (MHz) Difference (MHz)	Frequency ? (MHz) Difference (MHz)
-30 -30.1	8:30AM	4969.522 0.001960000	4969.521 0.000960000	4969.522 0.001960000
-20 -19.4	9:30AM	4969.521 0.000960000	4969.522 0.001960000	4969.522 0.001960000
-10 -10.4	10:30AM	4969.5156 0.004440000	4969.5155 0.004540000	4969.5155 0.004540000
0 0.4	11:30AM	4969.5196 0.000440000	4969.5196 0.000440000	4969.5196 0.000440000
10 10.01	12:30PM	4969.5194 0.000640000	4969.5196 0.000440000	4969.5194 0.000640000
20 20.1	1:30PM	4969.52 0.000040000	4969.52 0.000040000	4969.5197 0.000340000
30 30	2:30PM	4969.5235 0.003460000	4969.5233 0.003260000	4969.5233 0.003260000
40 40.1	3:30PM	4969.528813 0.008773200	4969.528814 0.008774000	4969.528813 0.008773400
50 50.1	4:30PM	4969.53132 0.011280000	4969.53132 0.011280000	4969.53133 0.011290000

This report represents the Channel with the highest frequency variation. The other Channel Data are located in Appendix A.

Section 9. Test Equipment List

Nemko ID	Device	Manufacturer	Model	Serial Number	Cal Date	Cal Due Date
877	Antenna, DRG Horn, .7-18GHz	AH Systems	2882	688	6/20/06	6/20/07
110	Antenna, LPA	Electrometrics	LPA-25	1217	11/29/05	11/29/06
835	Spectrum Analyzer	Rohde & Schwarz	RHDFSEK	829058/005	1/18/2006	01/18/07
746	Signal Generator	HP	8648B	2007A00910	10/31/05	10/31/06
911	Spectrum Analyzer	Agilent	E4440A	US41421266	2/14/2007	2/14/2008
834	Peak Power Sensor	HP	HP84811A	2551A01194	3/31/2006	3/31/2007
833	Peak Power Meter	HP	HP8900D	2131A00861	3/31/2006	3/31/2007
N115	Digital Power Meter	Yokogawa	253421	12A319267B	5/22/2006	5/22/2007
N149	Environmental Chamber	Cincinnati Sub-Zero	ZPHS-32-2-2-H/AC	ZP0552665	5/11/2006	5/11/2007
765	Antenna Set, Dipole	EMCO	3121C	1214	6/27/06	6/27/07
	EPM Series Power Meter	HP	E4418B	737221	7/25/06	7/25/07

Appendix A.

Para. No.: 2.1055 Frequency Stability Data

Reported Frequency Stability = **0.2323 ppm**

Part 2.1055 (-30°C to +50°C)				
Spectrum Analyzer @ 500KHz RBW, 2KHZ RBW, 20MHz Span			**Lo Channel QPSK Modulation**	
Worst case variation:	**1150.0 Hz (>Set freq.)**		**Set Frequency:**	**4949.2004** MHz@25C
	295.0 Hz (<Set freq.)		*Red are negative numbers	
	85% of Vnom	**Vnom=28VDC**		**115% of Vnom**
Temp.Set Point	Time	Frequency ? (MHz)	Frequency ? (MHz)	Frequency ? (MHz)
Temp.Actual		Difference (MHz)	Difference (MHz)	Difference (MHz)
-30	8:30AM	4949.200105	4949.200105	4949.200105
-30.1		0.000295000	0.000295000	-0.000295000
-20	9:30AM	4949.20019	4949.20019	4949.20017
-19.4		0.000210000	0.000210000	0.000230000
-10	10:30AM	4949.20025	4949.20025	4949.20026
-10.4		0.000150000	0.000150000	0.000140000
0	11:30AM	4949.2003	4949.20031	4949.20031
0.4		0.000100000	0.000090000	0.000090000
10	12:30PM	4949.20033	4949.20033	4949.20032
10.01		0.000070000	0.000070000	0.000080000
20	1:30PM	4949.20033	4949.20034	4949.20034
20.1		0.000070000	0.000060000	0.000060000
30	2:30PM	4949.20042	4949.20042	4949.20042
30		0.000020000	0.000020000	0.000020000
40	3:30PM	4949.20088	4949.20088	4949.20088
40.1		0.000480000	0.000480000	0.000480000
50	4:30PM	4949.20155	4949.20155	4949.20155
50.1		0.001150000	0.001150000	0.001150000

Reported Frequency Stability = **1.973 ppm**

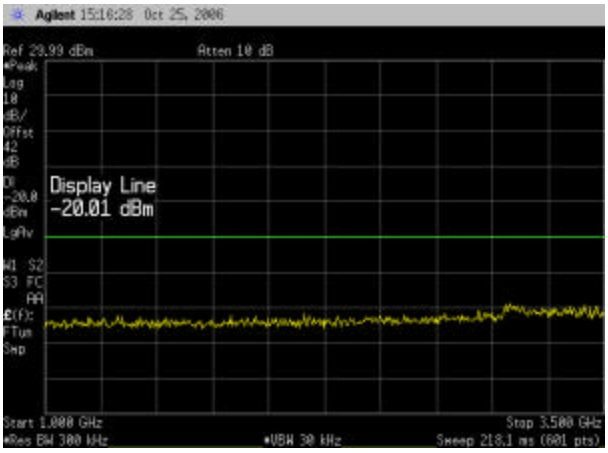
Part 2.1055 (-30°C to +50°C)				
Spectrum Analyzer @ 500KHz RBW, 2KHZ RBW, 20MHz Span			**Hi Channel QPSK Modulation**	
Worst case variation:	**9840.0**	**Hz (>Set freq.)**	**Set Frequency:**	**4989.97996** MHz@25C
	9850.0	**Hz (<Set freq.)**	*Red are negative numbers	

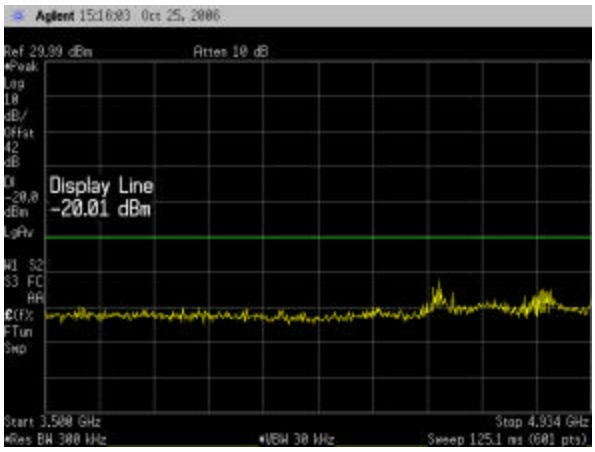
Temp.Set Point Temp.Actual	Time	**85% of Vnom** Frequency ? (MHz) Difference (MHz)	**Vnom=28VDC** Frequency ? (MHz) Difference (MHz)	**115% of Vnom** Frequency ? (MHz) Difference (MHz)
-30 -30.1	8:30AM	4989.971143 0.008817000	4989.971142 0.008818000	4989.971143 -0.008817000
-20 -19.4	9:30AM	4989.97242 0.007540000	4989.97243 0.007530000	4989.97243 0.007530000
-10 -10.4	10:30AM	4989.97543 0.004530000	4989.97543 0.004530000	4989.97543 0.004530000
0 0.4	11:30AM	4989.9769 0.003060000	4989.9769 0.003060000	4989.9768 0.003160000
10 10.01	12:30PM	4989.97012 0.009840000	4989.97012 0.009840000	4989.97011 0.009850000
20 20.1	1:30PM	4989.9766 0.003360000	4989.9765 0.003460000	4989.9765 0.003460000
30 30	2:30PM	4989.9846 0.004640000	4989.9845 0.004540000	4989.9846 0.004640000
40 40.1	3:30PM	4989.989 0.009040000	4989.989 0.009040000	4989.9898 0.009840000
50 50.1	4:30PM	4989.9891 0.009140000	4989.9891 0.009140000	4989.9892 0.009240000

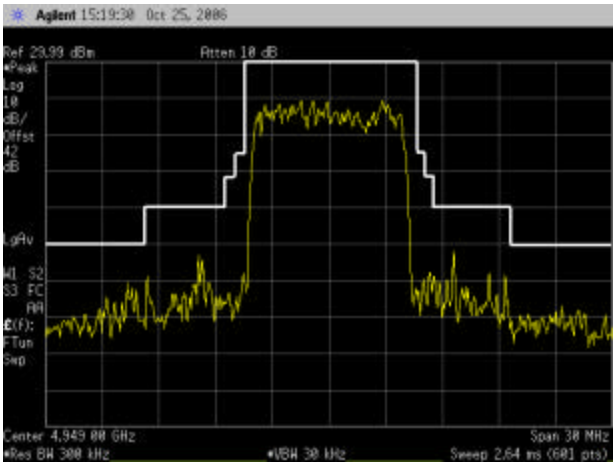
Appendix B.

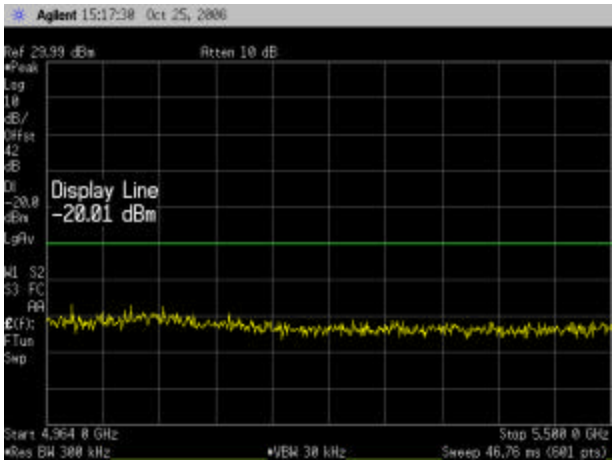
Section 6. Spurious Emissions At Antenna Terminals

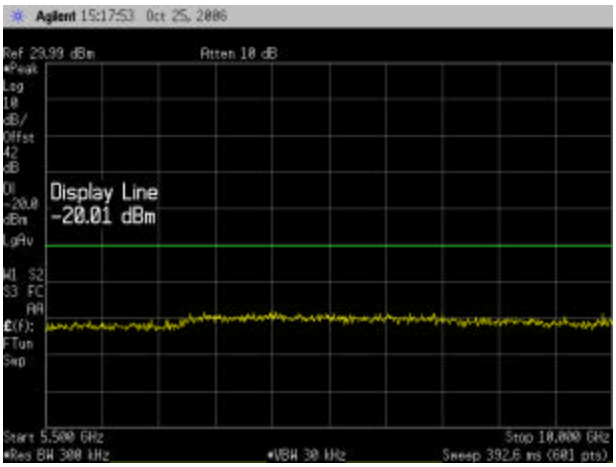
LO Channel/16QAM

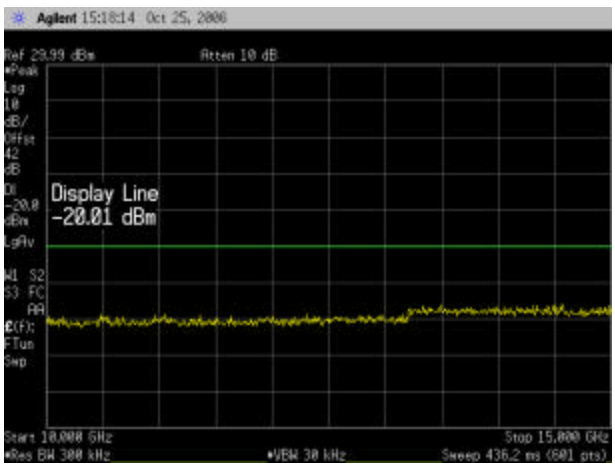


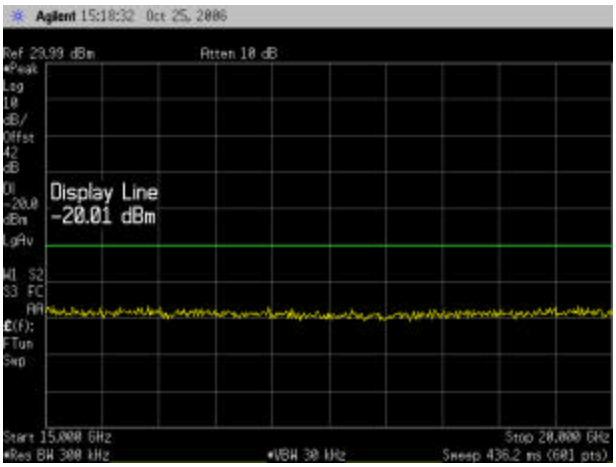


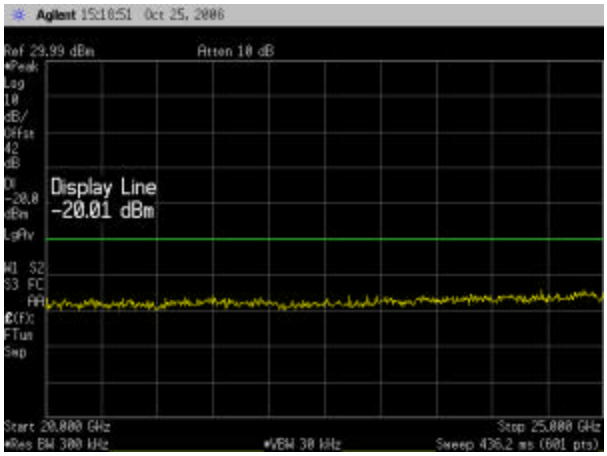




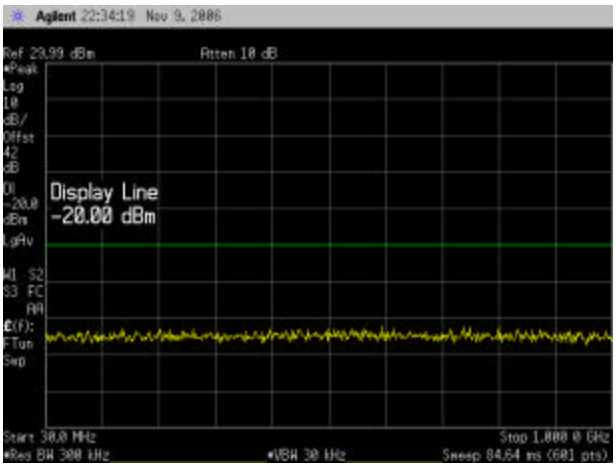


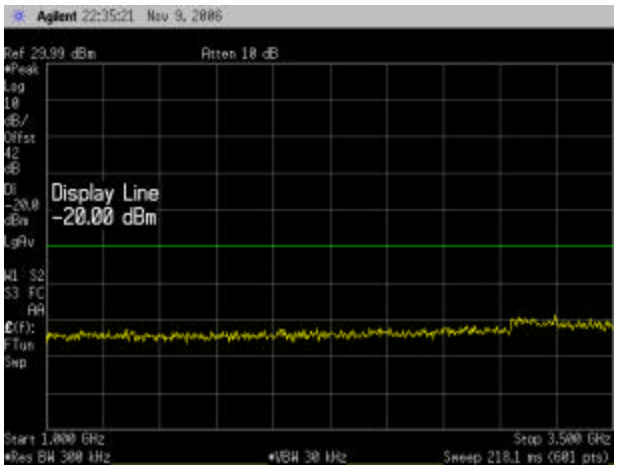


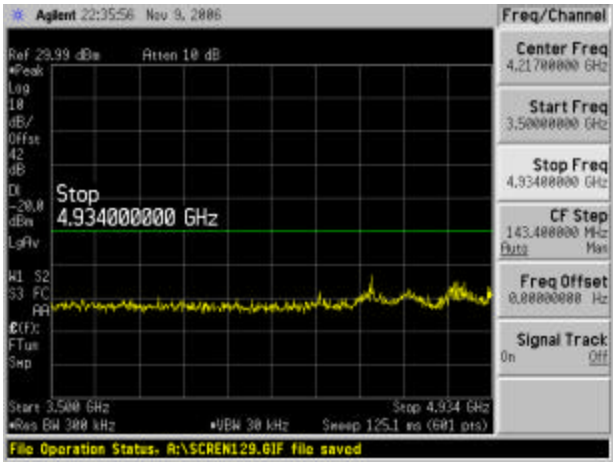

Agilent 15:18:32 Oct 25, 2006
Ref 29.99 dBm
Atten 10 dB
Display Line
-20.01 dBm
Start 15.000 GHz
#Res BW 300 kHz
#VBW 30 kHz
Stop 20.000 GHz
Sweep 436.2 ms (601 pts)

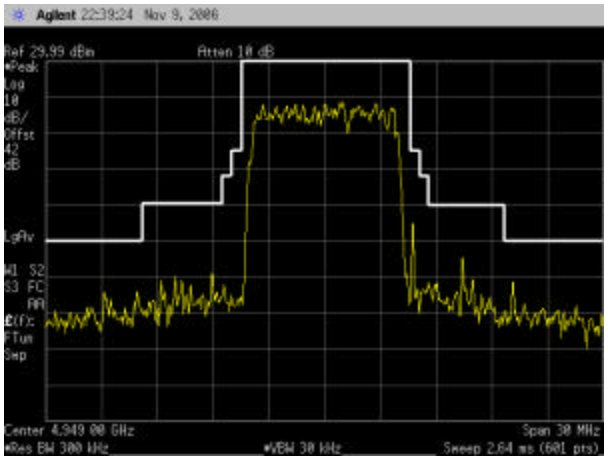

Agilent 15:18:51 Oct 25, 2006
Ref 29.99 dBm
Atten 10 dB
Display Line
-20.01 dBm
Start 20.000 GHz
#Res BW 300 kHz
#VBW 30 kHz
Stop 25.000 GHz
Sweep 436.2 ms (601 pts)

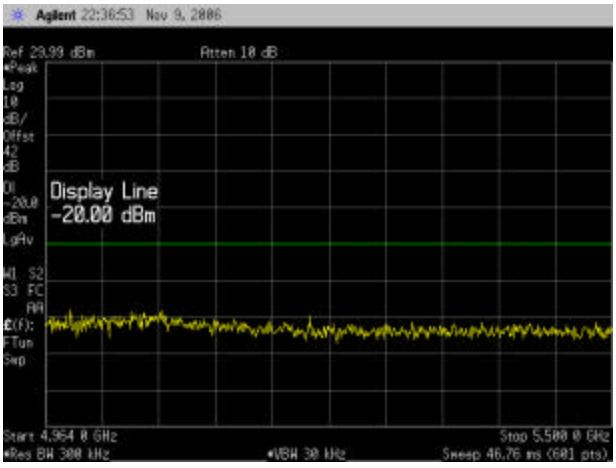
LO Channel/QPSK

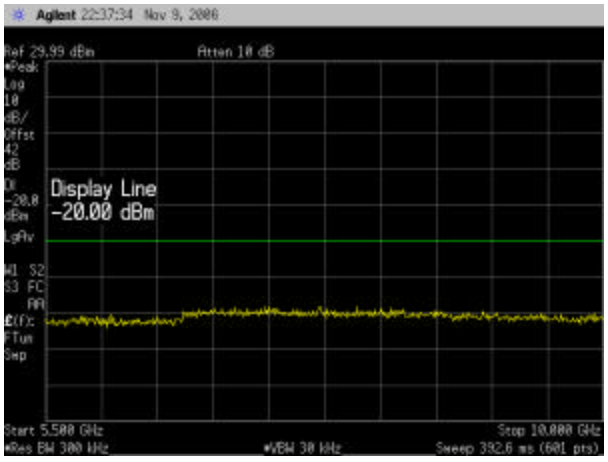


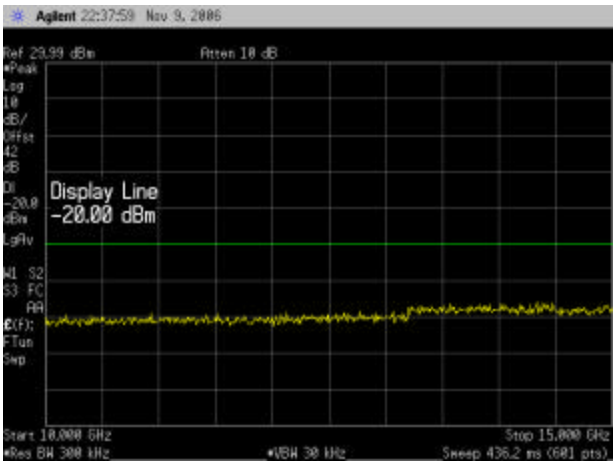








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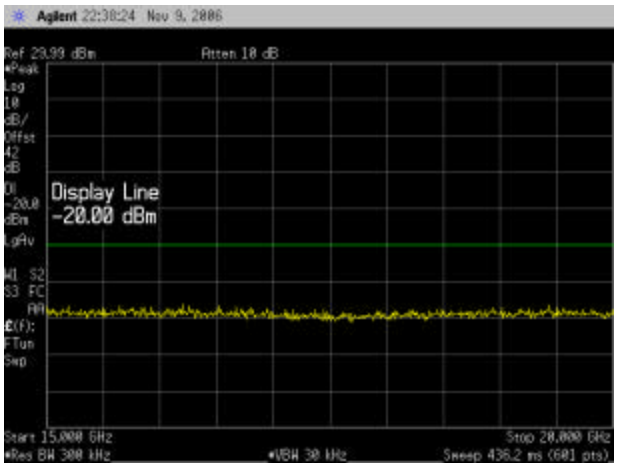
Ref 20.99 dBm
Atten 10 dB
Display Line
-20.00 dBm
Start 10.000 GHz
#Res BW 300 kHz
#VBW 30 kHz
Stop 15.000 GHz
Sweep 436.2 ms (601 pts)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Ref 20.99 dBm
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-20.00 dBm
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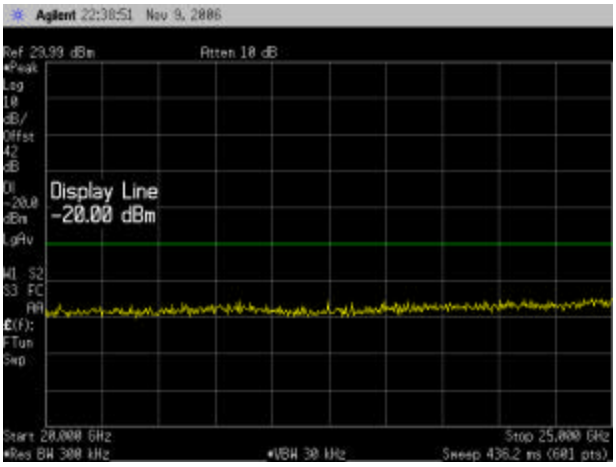
Stop 20.000 GHz
Sweep 436.2 ms (601 pts)


Agilent 22:38:51 Nov 9, 2006
Ref 20.99 dBm
Atten 10 dB
Display Line
-20.00 dBm
Start 20.000 GHz
#Res BW 300 kHz
#VBW 30 kHz
Stop 25.000 GHz
Sweep 436.2 ms (601 pts)