Exhibit 6: Test Report

TEST REPORT FROM:

COMMUNICATION CERTIFICATION LABORATORY
1940 W. Alexander Street
Salt Lake City, UT 84119-2039
U.S.A.

Tel: (801) 972-6146
Fax: (801) 972-8432

TEST OF:
2MOD-6413-B402(450-460 MHz, 25 kHz channel spacing)
2MOD-6413-B411(450-460 MHz, 12.5 kHz channel spacing)
2MOD-6413-B502(460-470 MHz, 25 kHz channel spacing)

To Part 90 Subpart D and Part 2 Subpart J
of the FCC Rules and Regulations

Test Report Serial No: 73-6773

APPLICATION FOR CERTIFICATION:

Modular Transmitter

Applicant:

Canac Inc.
3950 Hickmore Avenue
Ville St. Laurent, Quebec
Canada H4T 1K2

Dates of Test: August 9 – September 2, 1999

Issue Date: September 20, 1999

Equipment Receipt Date: August 6, 1999

CERTIFICATION OF ENGINEERING REPORT

This report has been prepared by Communication Certification Laboratory to verify compliance of the device described below with the requirements to Part 2 Subpart J and Part 90 Subpart D of the FCC Rules and Regulations. This report may be reproduced in full, partial reproduction may only be made with the written consent of the laboratory. The results in this report apply only to the sample tested.

- Applicant: Canac Inc.
- Manufacturer: Canac Inc.
- Model Number: 2MOD-6413-xxxx
- FCC ID: OPQ2MOD-6413
- Brand Name: CANAC

On this 20th day of September 1999, I, individually, and for Communication Certification Laboratory, certify that the statements made in this engineering report are true, complete, and correct to the best of my knowledge, and are made in good faith.

COMMUNICATION CERTIFICATION LABORATORY

_____
Checked by: William S. Hurst, P.E.
Vice President

_____
Tested by: Roger J. Midgley
EMC Engineering Manager

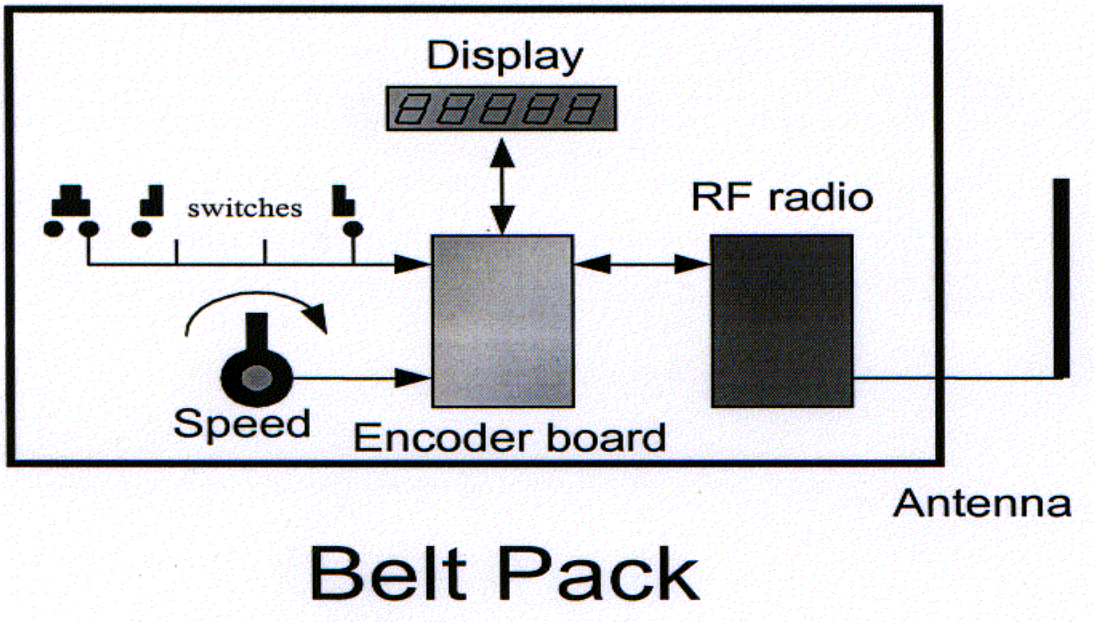
SECTION 1. Measurement Requirements

1.1 Introduction

The following data is submitted for Certification of a RF modular radio for Canac Inc., in accordance with Part 2, Subpart J and Part 90, Subpart D of FCC Rules and Regulations.

The 2MOD-6413-xxxx is the basic model number; the xxxx is replaced with B402, B411 or B502. All three units were tested and data is enclosed for all three units in this report. The 2MOD-6413-xxxx was tested as a stand-alone, but the main application is to transmit data from a CANAC communication board (encoder board) installed in an enclosure (OCU) to remotely control locomotives.

Shown below is a block diagram of the OCU.



1.2 Measurements Required for Certification

§ 2.1033 (c)(14) Measurement Data

The measurement data that is required by § 2.1046 through § 2.1057 is included in Section 2 of this report. The data was measured in accordance with the procedures set out in § 2.1041.

§ 90.203 (j)(3) Spectrum Efficiency

Application for part 90 certification of transmitters designed to operate on frequencies in the 150-174 and/or 421-512 MHz bands, received on or after February 14, 1997, must include a certification that the equipment meets a spectrum efficiency standard of one voice channel per 12.5 kHz of channel bandwidth. Additionally, if the equipment is capable of transmitting data, has transmitter output power greater than 500 mW, and has a channel bandwidth of more than 6.25 kHz, the equipment must be capable of supporting a minimum data rate of 4800 bits per second per 6.25 kHz of channel bandwidth.

§ 2.1046 RF Power Output - § 90.205

§ 2.1046

(a) For transmitters other than single sideband, independent sideband and controlled carrier radiotelephone, power output shall be measured at the RF output terminals when the transmitter is adjusted in accordance with the tune-up procedure to give the values of current and voltage on the circuit elements specified in § 2.983 (d)(5).

§ 90.205

Transmitter power shown on the radio station authorization is the maximum power the licensee is authorized to use.

§ 2.1047 Modulation Characteristics - § 90.211

The 2MOD-6413-xxxx uses FM modulation via a 3FSK modulator by means of a direct digital synthesizer (DDS) and transmits non-voice information; therefore, this section does not apply. Enclosed with the measurement data is the measured frequency deviation from the 2MOD-6413-xxxx with all available modulation patterns.

§ 2.1049 Occupied Bandwidth - § 90.209

§ 2.1049

The occupied bandwidth, that is the frequency bandwidth such that, below its lower and above its upper frequency limits, the mean powers radiated are each equal to 0.5 percent of the total mean power radiated by a given emission shall be measured under

the following conditions:

(h) Transmitters employing digital modulation techniques - when modulated by an input signal such that its amplitude and symbol rate represent the maximum rated conditions under which the equipment will be operated. The signal shall be applied through an filter networks, pseudo-random generators or other devices required in normal service. Additionally, the occupied bandwidth shall be shown for operation with any devices used for modifying the spectrum when such devices are optional at the discretion of the user.

(i) Transmitters designed for other types of modulation - when modulated by an appropriate signal of sufficient amplitude to be representative of the type of service in which used. A description of the input signal should be supplied.

§ 90.209

(a) each authorization licensed under this part will show an emission designator representing the class of emission authorized. The designator shall be prefixed by the specified necessary bandwidth. This figure does not necessarily indicate the bandwidth occupied by the emission at any instant. In those cases where § 2.202 of this chapter does not provide a formula for the computation of necessary bandwidth, the occupied bandwidth as defined in part 2 may be used in lieu of the necessary bandwidth.

Criteria

The necessary bandwidth for the 2MOD-6413-xxxx was calculated using the following formula:

Bn = 2M + 2DK, M = B/2, K = 1.2

Bn = Necessary bandwidth in hertz
B = Modulation rate in bauds (19.2 kHz)
D = Peak frequency deviation in hertz (2.5 kHz)

M = 19,200/2 = 9600

Bn = 2(9600) + 2(2500)(1.2) = 25,200

Necessary bandwidth = 25.2 kHz

§ 2.1051 Spurious Emissions at Antenna Terminals – § 90.210

§ 2.1051

The radio frequency voltage or powers generated within the equipment and appearing on a spurious frequency shall be checked at the equipment output terminal when properly loaded with a suitable artificial antenna.

§ 90.210 (c) 25 kHz Channels

The emissions must be attenuated according to the following schedule.

(1) On any frequency removed from the center of the authorized bandwidth by a displacement frequency (f_d in kHz) of more than 5 kHz but no more than 10 kHz: At least 83 log (f_d/5) dB.

(2) On any frequency removed from the center of the authorized bandwidth by a displacement frequency (f_d in kHz) of more than 10 kHz but no more than 250 percent of the authorized bandwidth: At least 29 log (f_d^2/11) dB or 50 dB, whichever is the lesser attenuation.

(3) On any frequency removed from the center of the authorized bandwidth by more than 250 percent of the authorized bandwidth: At least 43 + 10 log (P) dB.

§ 90.210 (d) 12.5 kHz Channels

The emissions must be attenuated according to the following schedule.

(1) On any frequency removed from the center of the authorized bandwidth f_o to 5.625 kHz removed from f_o: Zero dB.

(2) On any frequency removed from the center of the authorized bandwidth by a displacement frequency (f_d in kHz) of more than 5.625 kHz but no more than 12.5 kHz: At least 7.27(f_d – 2.88 kHz) dB.

(3) On any frequency removed from the center of the authorized bandwidth by a displacement frequency (f_d in kHz) of more than 12.5 kHz: At least 50 + 10 log (P) dB

or 70 dB, whichever is the lesser attenuation.

§ 2.1053 Field Strength of Spurious Radiation - § 90.210

§ 2.1053

Measurements shall be made to detect spurious emission that may be radiated directly from the cabinet, control circuits, power leads, or intermediate circuit elements under normal conditions of installation and operation.

§ 90.210 (c)(3) 25 kHz channels

The emissions must be attenuated according to the following schedule.

(3) On any frequency removed from the center of the authorized bandwidth by more than 250 percent of the authorized bandwidth: At least 43 + 10 log (P) dB.

§ 90.210 (d)(3) 12.5 kHz Channels

The emissions must be attenuated according to the following schedule.

(3) On any frequency removed from the center of the authorized bandwidth by a displacement frequency (f_d in kHz) of more than 12.5 kHz: At least 50 + 10 log (P) dB or 70 dB, whichever is the lesser attenuation.

Criteria (c)(3)

Field strength measurements of radiated spurious emission that may be radiated directly from the cabinet, control circuits, power leads, or intermediate circuit elements must not exceed 43 + 10 $\log_{10}$ (mean output power in watts) below the unmodulated carrier.

The reference level for spurious radiation was taken at an ideal dipole excited by the rated output power according to the following relationship:

$$E = \frac{\sqrt{(49.2)(Pt)}}{R}$$

Exhibit 6

Note: Reference Data for Radio Engineers, Pg. 676. International Telephone and Telephone Corporation, Fourth Edition.

Where E = electric Field Intensity in Volts/Meter
Pt = Transmitter Power in Watts
R = Measurements distance in Meters

Criteria (d)(3)

Field strength measurements of radiated spurious emission that may be radiated directly from the cabinet, control circuits, power leads, or intermediate circuit elements must not exceed 50 + 10 $\log_{10}$ (mean output power in watts) below the unmodulated carrier.

The reference level for spurious radiation was taken at an ideal dipole excited by the rated output power according to the following relationship:

$$E = \frac{\sqrt{(49.2)(Pt)}}{R}$$

Note: Reference Data for Radio Engineers, Pg. 676. International Telephone and Telephone Corporation, Fourth Edition.

Where E = electric Field Intensity in Volts/Meter
Pt = Transmitter Power in Watts
R = Measurements distance in Meters

Model: 2MOD-6413-B402
Field Strength Limit (0.813 Watts)

$$E = \frac{\sqrt{(49.2)(0.813)}}{3} = 2.1\ Volts/Meter = 126.5\ dBuV/m$$

In this case, the rated power of 0.813 watt requires a minimum attenuation of 43 + 10 log 0.813 = 42.1 dB below the reference level of 126.5 dBµV/m calculated above; therefore, the criteria is 84.4 dbµV/m (126.5 - 42.1).

Model: 2MOD-6413-B411
Field Strength Limit (0.832 Watts)

$$E = \frac{\sqrt{(49.2)(0.832)}}{3} = 2.2\ Volts/Meter = 126.6\ dBuV/m$$

In this case, the rated power of 0.832 watt requires a minimum attenuation of 43 + 10 log 0.832 = 42.2 dB below the reference level of 126.6 dBμV/m calculated above; therefore, the criteria is 84.4 dbμV/m (126.6 - 42.2).

Model: 2MOD-6413-B502
Field Strength Limit (0.759 Watts)

$$E = \frac{\sqrt{(49.2)(0.759)}}{3} = 2.0\ Volts/Meter = 126.2\ dBuV/m$$

In this case, the rated power of 0.759 watt requires a minimum attenuation of 43 + 10 log 0.759 = 41.8 dB below the reference level of 126.2 dBμV/m calculated above; therefore, the criteria is 84.4 dbμV/m (126.2 - 41.8).

§ 2.1055 Frequency Stability - § 90.213

§ 2.1055

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

(1) From -30^0 to $+50^0$ centigrade for all equipment except that specified in paragraphs (a)(2) and (3) of this section.

(b) Frequency measurements shall be made at the extremes of the specified temperature range and at intervals of not more than 10^0 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:

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

§ 90.213

(a) A licensee in the services governed by this part shall maintain the carrier frequency of each authorized transmitter within the following percentage of the assigned frequency (Mobile stations 2 Watts or less = 5 ppm for 25 kHz channel and 2.5 ppm for 12.5 kHz channel).

§ 90.214 Transient Frequency Behavior

In the 150-174 MHz and 421-512 MHz frequency bands, transient frequencies must be within the maximum frequency difference limits during the time intervals indicated in the table for equipment designed to operate on 25.0 kHz channels and 12.5 kHz channels. The transmitter output power is less than 6 watts; therefore, the frequency difference during time periods t_1 and t_3 do not apply.

Criteria 25 kHz channel

The 2MOD-6413-xxxx transmits at 450 - 470 MHz on 25.0 kHz channels therefore the maximum frequency difference at t_2 must be less than ±12.5 kHz 25 ms from t_2.

Criteria 12.5 kHz channel

The 2MOD-6413-xxxx transmits at 450 - 470 MHz on 12.5 kHz channels therefore the maximum frequency difference at t_2 must be less than ±6.25 kHz 25 ms from t_2.

SECTION 2. Measurement Data

2.1 Spectrum Efficiency

The 2MOD-6413-xxxx complies with this section, see letter below and documentation in Exhibit 10.

CANAC INC.
3950 Hickmore
Ville St-Laurent
H4T 1K2

September 16, 1999

Attention: Federal Communications Commission

Subject: Spectrum Efficiency Certification for our RF Transmitter 2MOD-6413

To Whom it May Concern,

As required by FCC Part 90.203 (J)(3), we certify that our RF transmitter OPQ 2MOD-6413 (FCC ID) meets a spectrum efficiency standard of a minimum data rate of 4800 bits per second per 6.25 KHz for channel spacing of 12.5 and 25 KHz.

To achieve this requirement, we used an FM modulation with 3 levels of encoding as described in our document. We submitted plots of a typical transmission which were verified by an independent Certification Laboratory, Communication Certification Laboratory CCL.

Yours truly,

Fred Horst – Eng.
Director – Product Design
CANAC Inc.

CANAC INC.
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Exhibit 6

2.2 RF Power Output

The 2MOD-6413-xxxx is designed to transmit a maximum of 1 watt maximum; the output power is variable in 4 steps.

Shown below is the RF power output at each of the four output levels, and transmitting at the upper and lower frequency band.

Model: 2MOD-6413-B402				
Transmitting at 450.0 MHz				
Output Level	Nominal ERP (W)	Nominal ERP (dBm)	Measured ERP (dBm)	Difference (dB)
1	0.001	0.0	3.9	3.9
2	0.01	10.0	14.8	4.8
3	0.1	20.0	24.7	4.7
4	1.0	30.0	29.1	-0.9

Model: 2MOD-6413-B402				
Transmitting at 460.0 MHz				
Output Level	Nominal ERP (W)	Nominal ERP (dBm)	Measured ERP (dBm)	Difference (dB)
1	0.001	0.0	3.4	3.4
2	0.01	10.0	14.5	4.5
3	0.1	20.0	24.1	4.1
4	1.0	30.0	29.1	-0.9

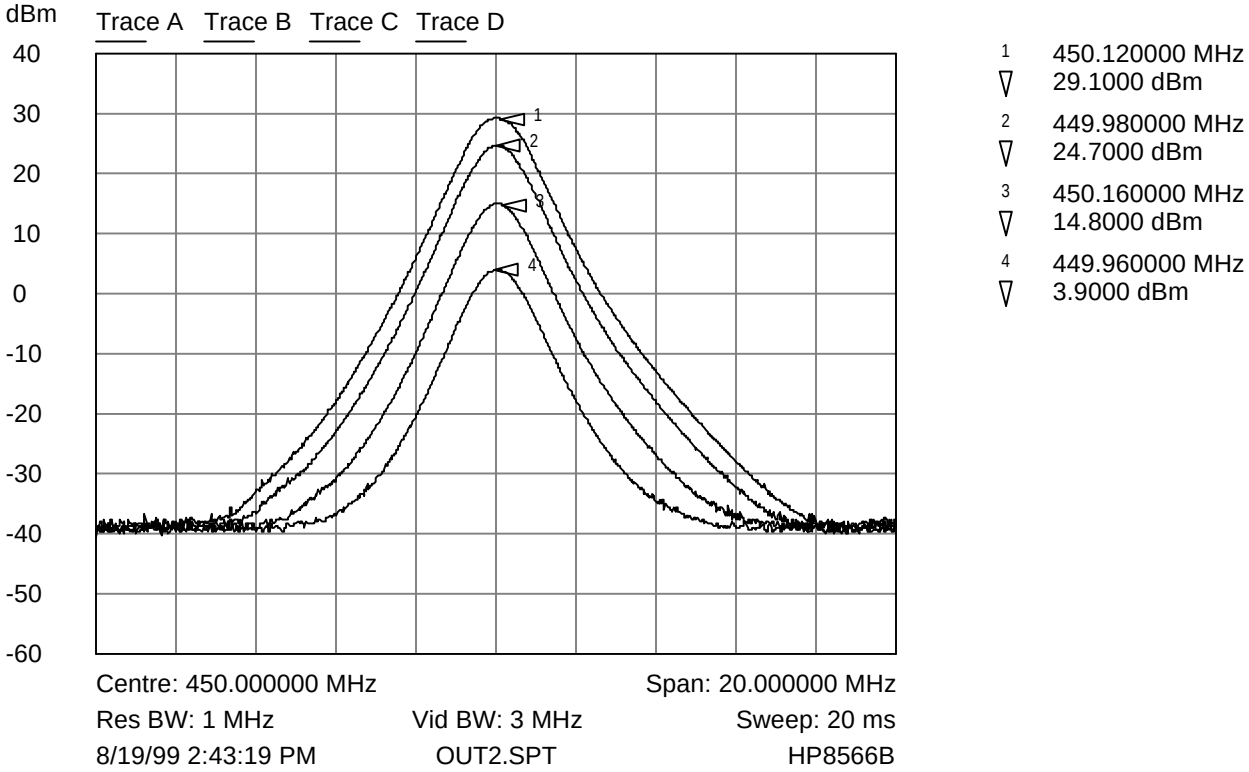
Model: 2MOD-6413-B411				
Transmitting at 450.0 MHz				
Output Level	Nominal ERP (W)	Nominal ERP (dBm)	Measured ERP (dBm)	Difference (dB)
1	0.001	0.0	4.0	4.0
2	0.01	10.0	15.0	5.0
3	0.1	20.0	24.8	4.8
4	1.0	30.0	29.2	-0.8

Model: 2MOD-6413-B411				
Transmitting at 460.0 MHz				
Output Level	Nominal ERP (W)	Nominal ERP (dBm)	Measured ERP (dBm)	Difference (dB)
1	0.001	0.0	1.2	1.2
2	0.01	10.0	11.8	1.8
3	0.1	20.0	21.6	1.6
4	1.0	30.0	29.0	-1.0

Model: 2MOD-6413-B502				
Transmitting at 460.0 MHz				
Output Level	Nominal ERP (W)	Nominal ERP (dBm)	Measured ERP (dBm)	Difference (dB)
1	0.001	0.0	0.2	0.2
2	0.01	10.0	11.3	1.3
3	0.1	20.0	21.2	1.2
4	1.0	30.0	28.8	-1.2

Model: 2MOD-6413-B502				
Transmitting at 470.0 MHz				
Output Level	Nominal ERP (W)	Nominal ERP (dBm)	Measured ERP (dBm)	Difference (dB)
1	0.001	0.0	-4.3	-4.3
2	0.01	10.0	6.4	-3.6
3	0.1	20.0	16.2	-3.8
4	1.0	30.0	28.6	-1.4

Model 2MOD-6413-B402 (25 kHz Channel)

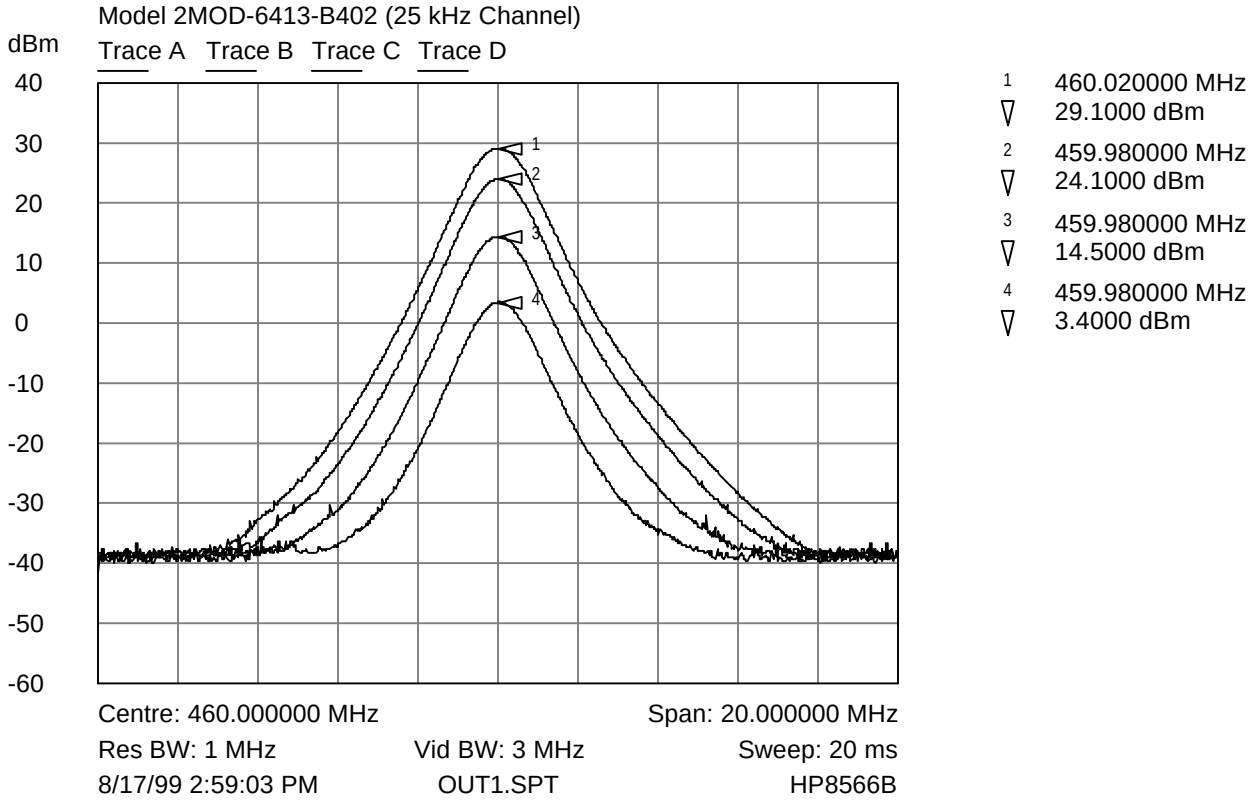


RF Output Power

Trace A 30.5 dB Offset (30dB Attenuator and Cable)

RF Output 2MOD-6413-B402 (450.0 MHz)

Exhibit 6

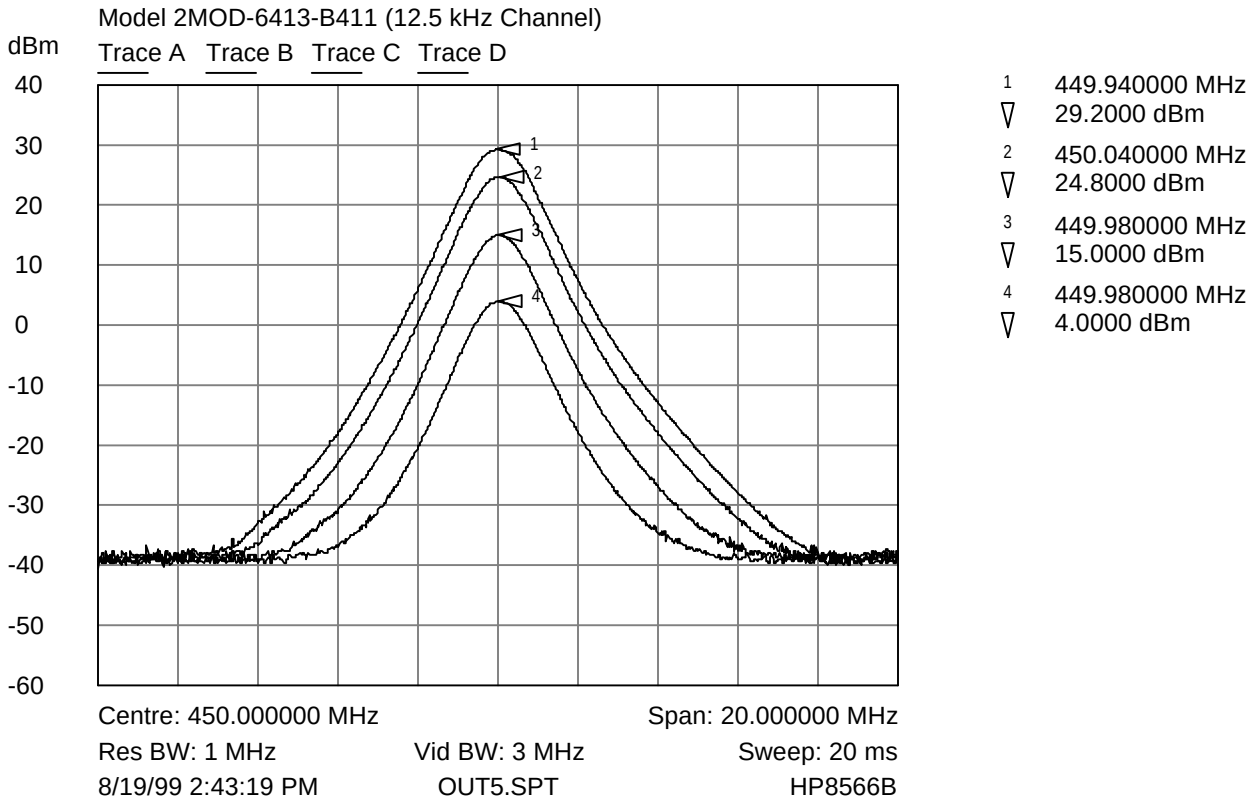


RF Output Power

Trace A 30.5 dB Offset (30dB Attenuator and Cable)

RF Output 2MOD-6413-B402 (460.0 MHz)

Exhibit 6

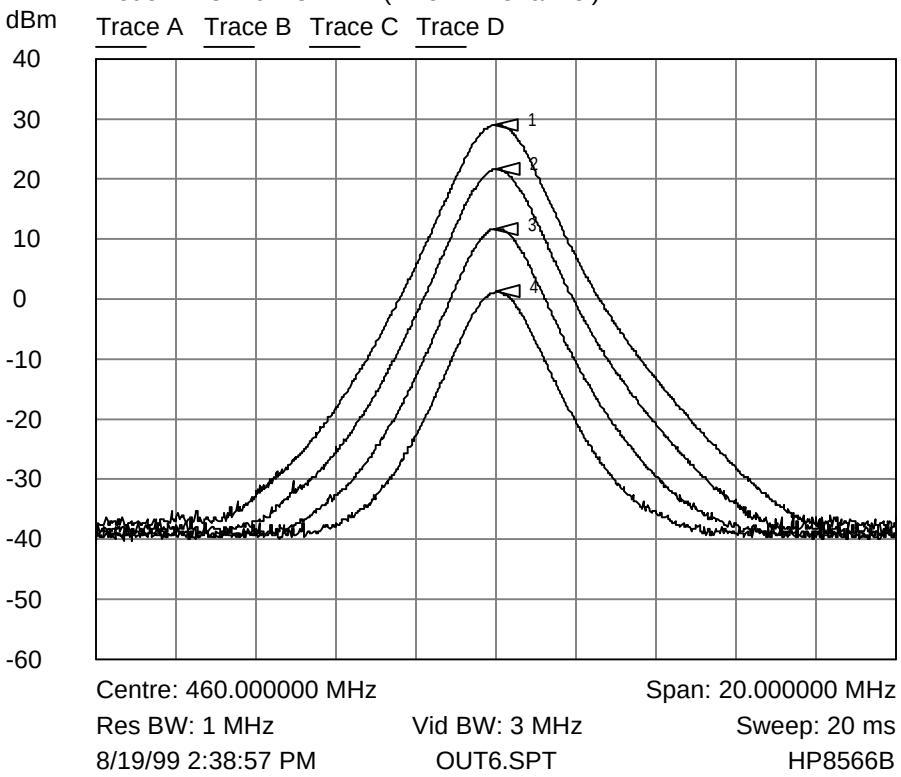


RF Output Power

Trace A 30.5 dB Offset (30dB Attenuator and Cable)

RF Output 2MOD-6413-B411 (450.0 MHz)

Model 2MOD-6413-B411 (12.5 kHz Channel)



1 459.940000 MHz
29.0000 dBm

2 459.980000 MHz
21.6000 dBm

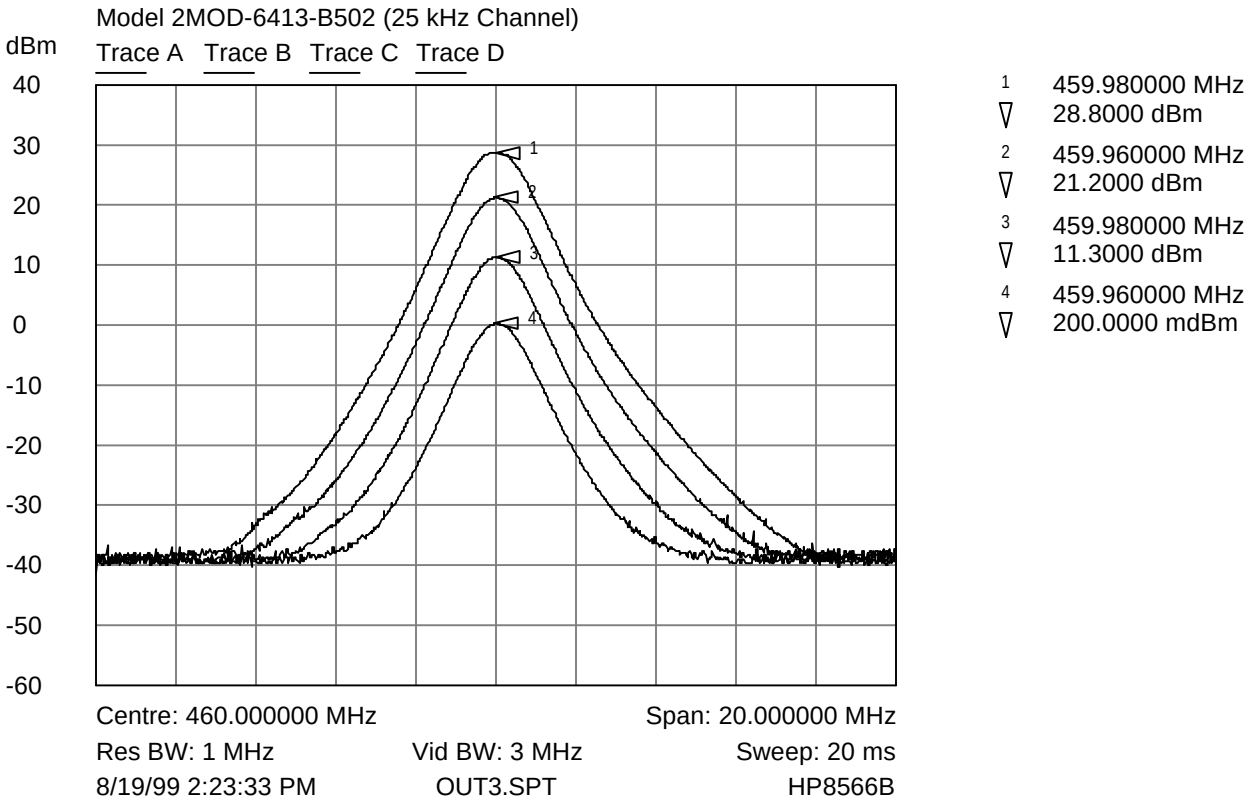
3 459.960000 MHz
11.8000 dBm

4 459.980000 MHz
1.2000 dBm

RF Output Power

Trace A 30.5 dB Offset (30dB Attenuator and Cable)

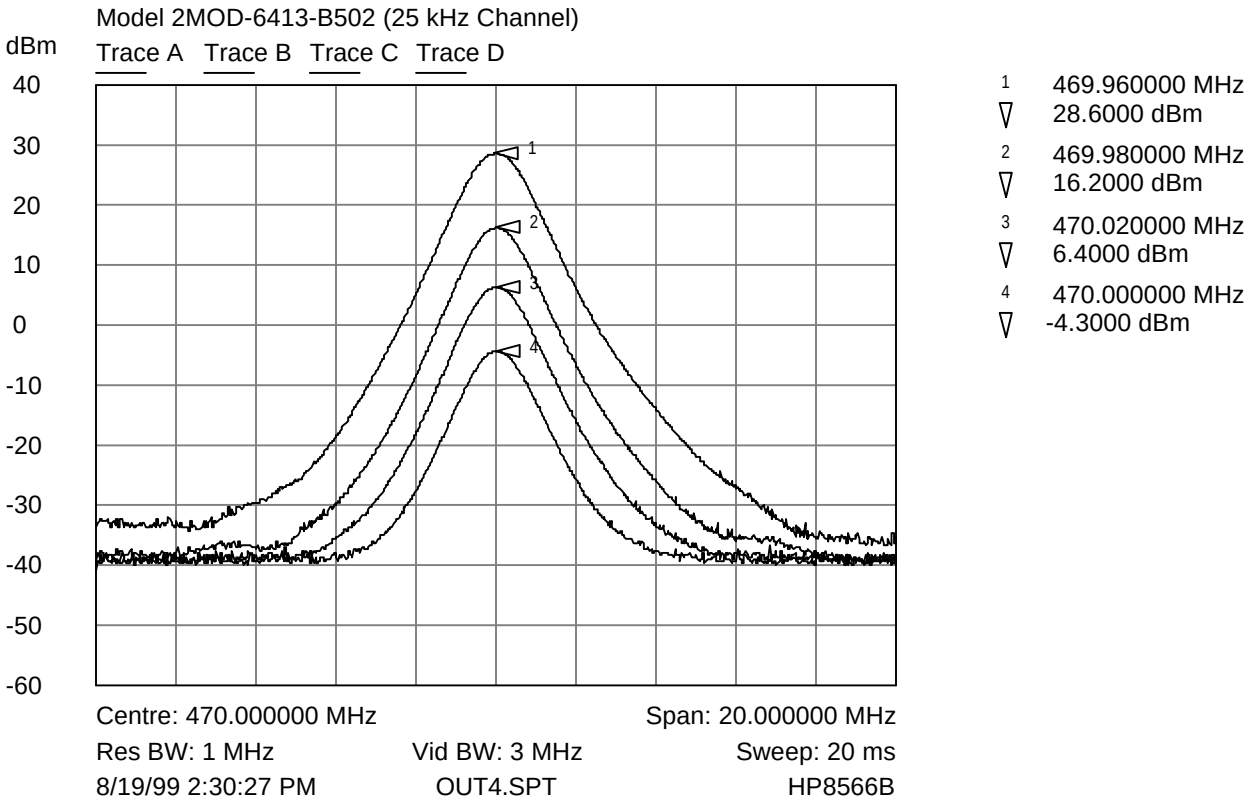
RF Output 2MOD-6413-B411 (460.0 MHz)



RF Output Power

Trace A 30.5 dB Offset (30dB Attenuator and Cable)

RF Output 2MOD-6413-B502 (460.0 MHz)



RF Output Power

Trace A 30.5 dB Offset (30dB Attenuator and Cable)

RF Output 2MOD-6413-B502 (470.0 MHz)

Exhibit 6

2.3 Modulation Characteristics

2MOD-6413-B402

Signal	Deviation ± (kHz)
Packets of all 0's	+ 1.96 - 6.23
Packets of all 1's	+ 2.38 - 4.25
8 bytes	+ 6.36 - 6.46
Eye Pattern	+ 6.34 - 6.25
Packets of 0 x 55	+ 6.43 - 6.38

2MOD-6413-B411

Signal	Deviation ± (kHz)
Packets of all 0's	+ 2.15 - 2.40
Packets of all 1's	+ 0.86 - 1.89
8 bytes	+ 2.48 - 2.56
Eye Pattern	+ 2.49 - 2.51
Packets of 0 x 55	+ 2.30 - 2.30

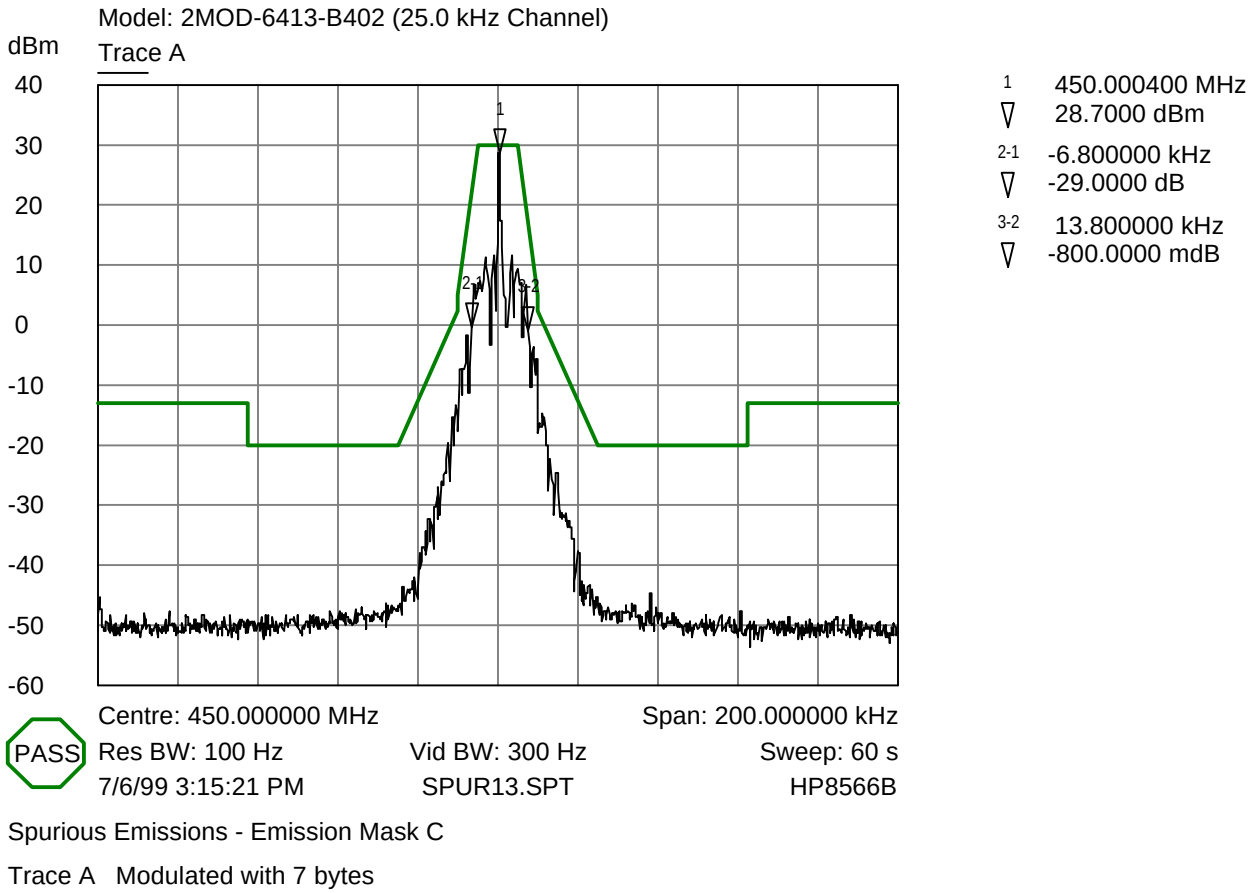
2MOD-6413-B502

Signal	Deviation ± (kHz)
Packets of all 0's	+ 1.76 - 6.45
Packets of all 1's	+ 2.29 - 4.53
8 bytes	+ 6.43 - 6.62
Eye Pattern	+ 6.44 - 6.48
Packets of 0 x 55	+ 6.13 - 6.18

2.4 Occupied Bandwidth

The occupied bandwidth test was performed with all the different modulation patterns (Packets of all 0's, Packets of all 1's, 8 bytes, Eye Pattern and Packet of 0 x 55), the worst case bandwidth were with the 2MOD-6413-xxxx modulated with the 8 bytes; therefore, this data was used to show compliance for all modulation patterns.

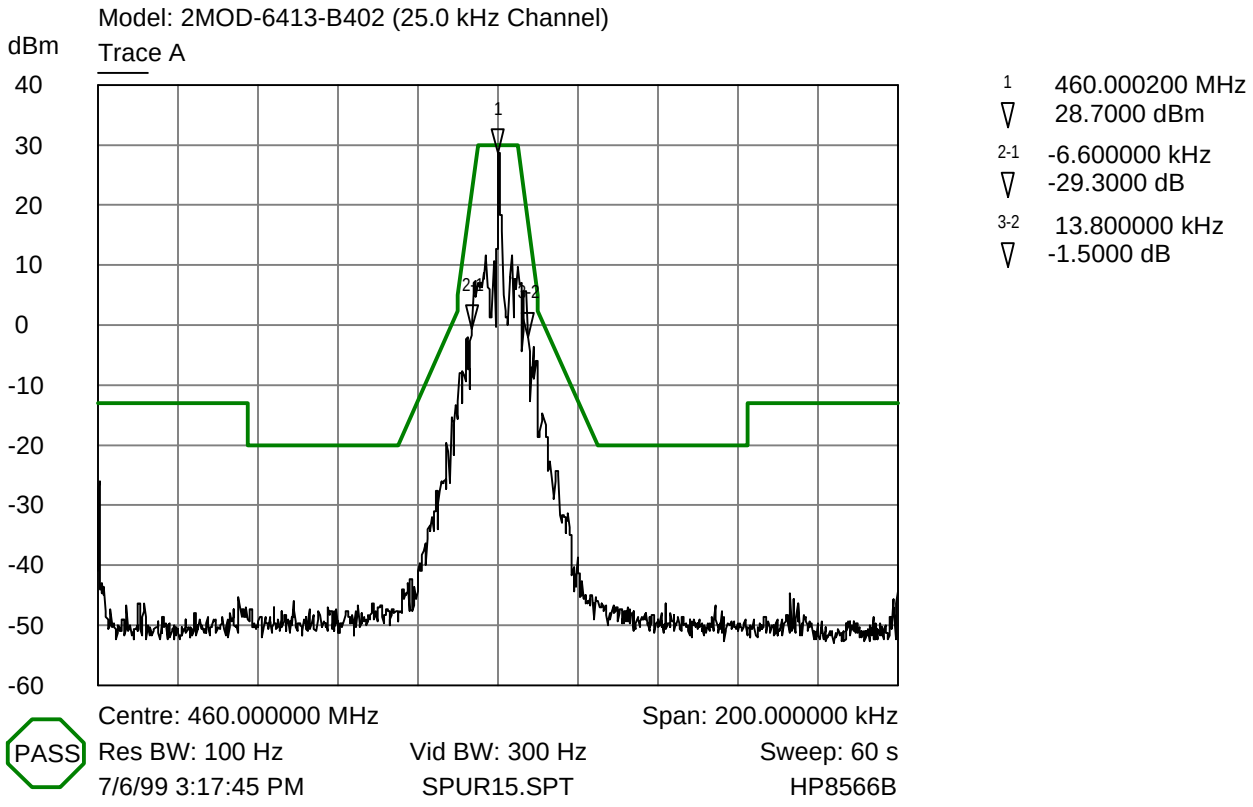
Shown below are occupied bandwidth plots showing the 2MOD-6413-xxxx modulated with the 8 bytes pattern.



Spurious Emissions - Emission Mask C

Trace A Modulated with 7 bytes

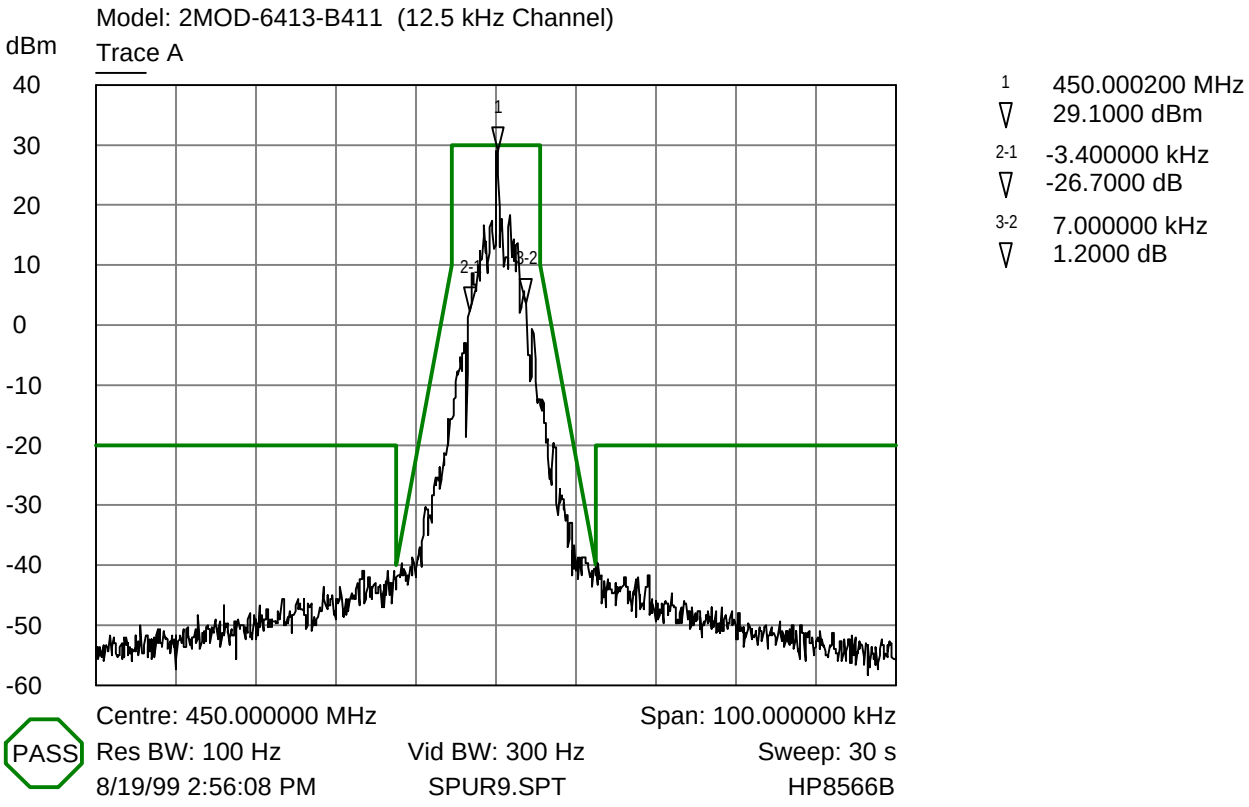
Occupied Bandwidth 2MOD-6413-B402 (450.0 MHz)



Spurious Emissions - Emission Mask C

Trace A Modulated with 7 bytes

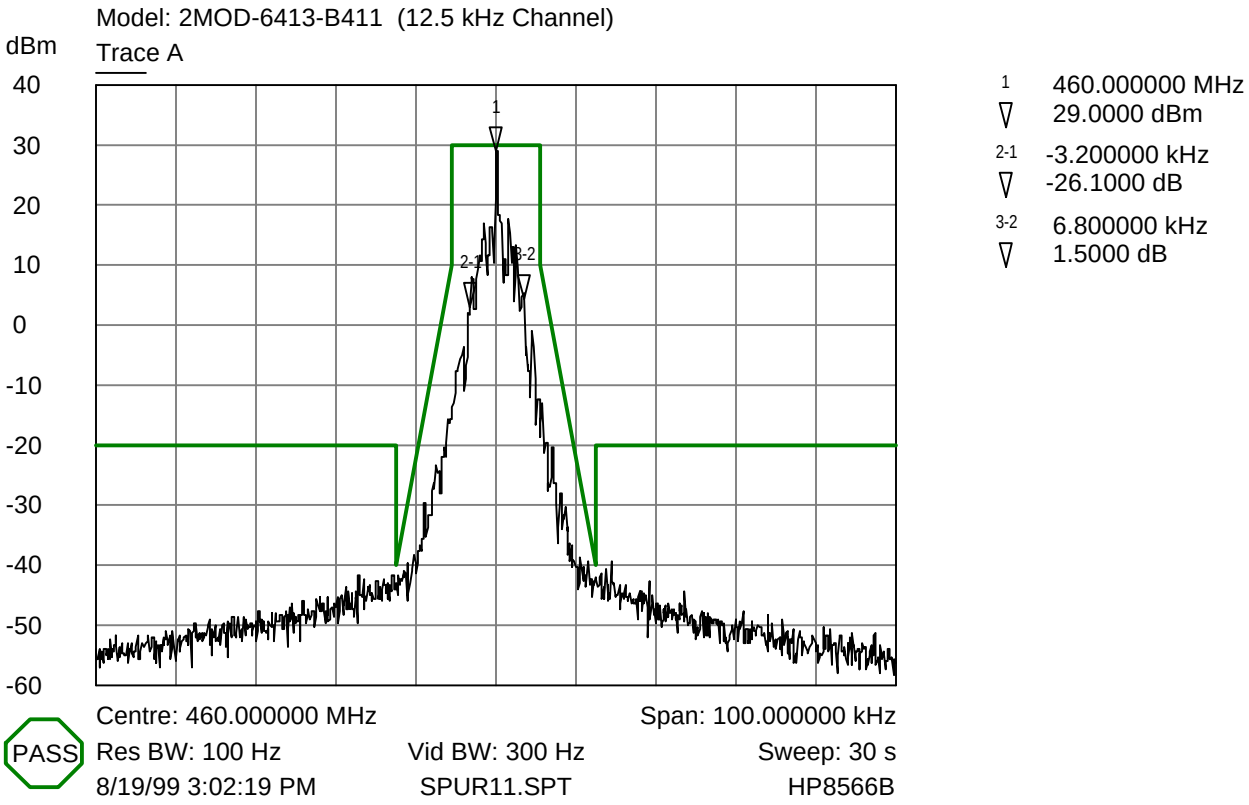
Occupied Bandwidth 2MOD-6413-B402 (460.0 MHz)



Spurious Emissions - Emission Mask D

Trace A Modulated with 8 bytes

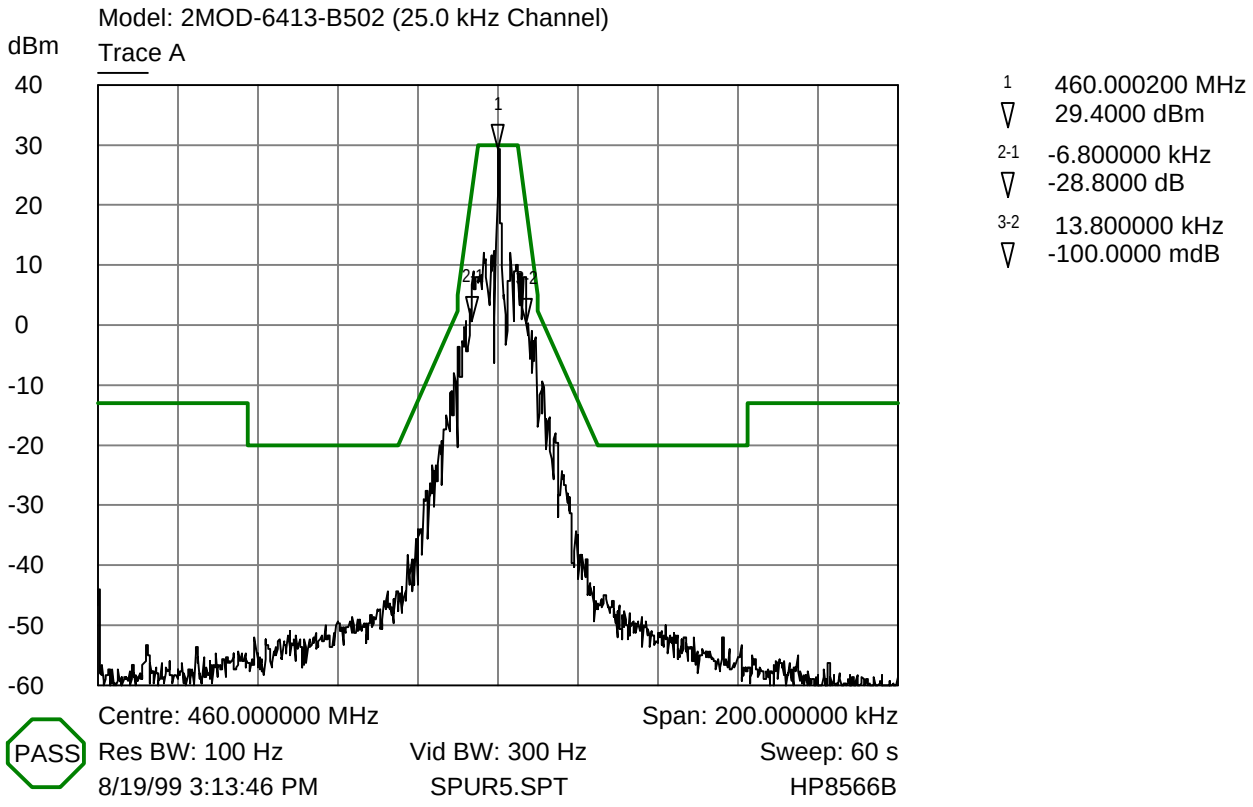
Occupied Bandwidth 2MOD-6413-B411 (450.0 MHz)



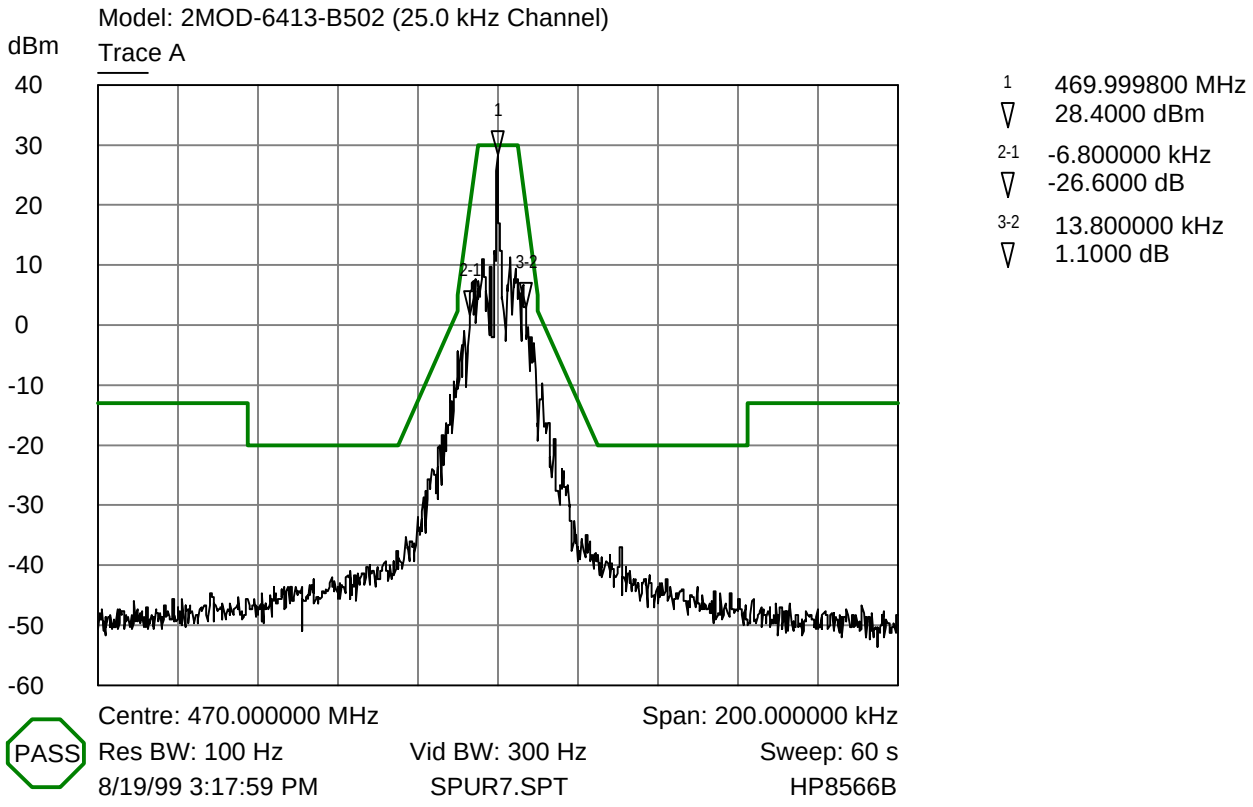
Spurious Emissions - Emission Mask D

Trace A Modulated with 8 bytes

Occupied Bandwidth 2MOD-6413-B411 (450.0 MHz)



Occupied Bandwidth 2MOD-6413-B502 (460.0 MHz)



Spurious Emissions - Emission Mask C

Trace A Modulated with 8 bytes

Occupied Bandwidth 2MOD-6413-B502 (470.0 MHz)

2.5 Conducted Spurious Emissions

The 2MOD-6413-xxxx was tested at all four power levels and all modulation patterns. The worst case emissions were with the 2MOD-6413-xxxx transmitting at the highest power level and with the 8 bytes modulation pattern. The data below represents the worst case configuration.

Tables 1 - 6 below show compliance for the spurious emissions removed from the carrier frequency by more than 1 MHz. See the spectrum analyzer plots in this section for compliance from 0 Hz to 1 MHz.

Table 1 2MOD-6413-B402

The emissions must be attenuated 43 + 10 log P dB where P = Mean power of the unmodulated carrier. The maximum power of the unmodulated carrier was measured to 0.813 W (29.1 dBm), therefore, the emissions must be attenuated 43 + 10 log (0.813) = 42.1 dB. The criteria is 29.1 dBm – 42.1 dB = -13.0 dBm.

Transmitting at 450.0 MHz			
Frequency Range MHz	Frequency MHz	Corrected Level dBm	Criteria dBm
30 - 200	192.4	-48.9	-13.0
200 – 449.0	448.3	-36.8	-13.0
451.0 - 800	451.5	-42.0	-13.0
800 - 1000	900.0	-20.7	-13.0
1000 - 1500	1350.0	-43.4	-13.0
1500 - 2000	1800.0	-39.0	-13.0
2000 - 2500	2250.0	-32.7	-13.0
2500 - 3000	2700.0	-62.0	-13.0
3000 - 3500	3150.0	-54.0	-13.0
3500 - 4000	3600.0	-48.8	-13.0
4000 - 4400	4050.0	-53.0	-13.0
4400 - 5000	4500.0	-58.1	-13.0
* Noise Floor			

RBW = 30 kHz VBW = 100 kHz

Table 2 2MOD-6413-B402

The emissions must be attenuated 43 + 10 log P dB where P = Mean power of the unmodulated carrier. The maximum power of the unmodulated carrier was measured to 0.813 W (29.1 dBm), therefore, the emissions must be attenuated 43 + 10 log (0.813) = 42.1 dB. The criteria is 29.1 dBm – 42.1 dB = -13.0 dBm.

Transmitting at 460.0 MHz			
Frequency Range MHz	Frequency MHz	Corrected Level dBm	Criteria dBm
30 - 200	69.3	-39.0	-13.0
200 – 459.0	458.3	-36.5	-13.0
461.0 - 800	461.4	-57.2	-13.0
800 - 1000	920.0	-24.3	-13.0
1000 - 1500	1380.0	-41.4	-13.0
1500 - 2000	1840.0	-37.2	-13.0
2000 - 2500	2300.0	-35.8	-13.0
2500 - 3000	2760.0	-65.5	-13.0
3000 - 3500	3220.0	-54.1	-13.0
3500 - 4000	3680.0	-53.1	-13.0
4000 - 4400	4140.0	-55.9	-13.0
4400 - 5000	4600.0	-60.0	-13.0
* Noise Floor			

RBW = 30 kHz VBW = 100 kHz

Table 3 2MOD-6413-B411

The emissions must be attenuated 43 + 10 log P dB where P = Mean power of the unmodulated carrier. The maximum power of the unmodulated carrier was measured to 0.832 W (29.2 dBm), therefore, the emissions must be attenuated 43 + 10 log (0.813) = 42.2 dB. The criteria is 29.2 dBm – 42.2 dB = -13.0 dBm.

Transmitting at 450.0 MHz			
Frequency Range MHz	Frequency MHz	Corrected Level dBm	Criteria dBm
30 - 200	164.0	-49.8	-13.0
200 – 449.0	444.3	-42.9	-13.0
451.0 - 800	464.3	-41.6	-13.0
800 - 1000	900.0	-22.8	-13.0
1000 - 1500	1350.0	-42.4	-13.0
1500 - 2000	1800.0	-44.1	-13.0
2000 - 2500	2250.0	-39.8	-13.0
2500 - 3000	2700.0	-40.5	-13.0
3000 - 3500	3150.0	-62.9	-13.0
3500 - 4000	3600.0	-65.0	-13.0
4000 - 4400	4050.0	-52.9	-13.0
4400 - 5000	4500.0	-63.8	-13.0
* Noise Floor			

RBW = 30 kHz VBW = 100 kHz

Table 4 2MOD-6413-B411

The emissions must be attenuated 43 + 10 log P dB where P = Mean power of the unmodulated carrier. The maximum power of the unmodulated carrier was measured to 0.794 W (29.0 dBm), therefore, the emissions must be attenuated 43 + 10 log (0.813) = 42.0 dB. The criteria is 29.0 dBm – 42.0 dB = -13.0 dBm.

Transmitting at 460.0 MHz			
Frequency Range MHz	Frequency MHz	Corrected Level dBm	Criteria dBm
30 - 200	192.4	-51.9	-13.0
200 – 459.0	449.3	-37.3	-13.0
461.0 - 800	460.8	-42.7	-13.0
800 - 1000	920.0	-22.8	-13.0
1000 - 1500	1380.0	-42.9	-13.0
1500 - 2000	1840.0	-42.4	-13.0
2000 - 2500	2300.0	-38.4	-13.0
2500 - 3000	2760.0	-57.2	-13.0
3000 - 3500	3220.0	-64.2	-13.0
3500 - 4000	3680.0	-57.3	-13.0
4000 - 4400	4140.0	-43.1	-13.0
4400 - 5000	4600.0	-60.6	-13.0
* Noise Floor			

RBW = 30 kHz VBW = 100 kHz

Table 5 2MOD-6413-B502

The emissions must be attenuated 43 + 10 log P dB where P = Mean power of the unmodulated carrier. The maximum power of the unmodulated carrier was measured to 0.759 W (28.8 dBm), therefore, the emissions must be attenuated 43 + 10 log (0.813) = 41.8 dB. The criteria is 28.8 dBm – 41.8 dB = -13.0 dBm.

Transmitting at 460.0 MHz			
Frequency Range MHz	Frequency MHz	Corrected Level dBm	Criteria dBm
30 - 200	192.4	-53.2	-13.0
200 – 459.0	449.3	-35.2	-13.0
461.0 - 800	469.5	-40.8	-13.0
800 - 1000	920.0	-21.5	-13.0
1000 - 1500	1380.0	-42.2	-13.0
1500 - 2000	1840.0	-39.6	-13.0
2000 - 2500	2300.0	-37.3	-13.0
2500 - 3000	2760.0	-67.2	-13.0
3000 - 3500	3220.0	-52.2	-13.0
3500 - 4000	3680.0	-46.8	-13.0
4000 - 4400	4140.0	-46.3	-13.0
4400 - 5000	4600.0	-60.0	-13.0
* Noise Floor			

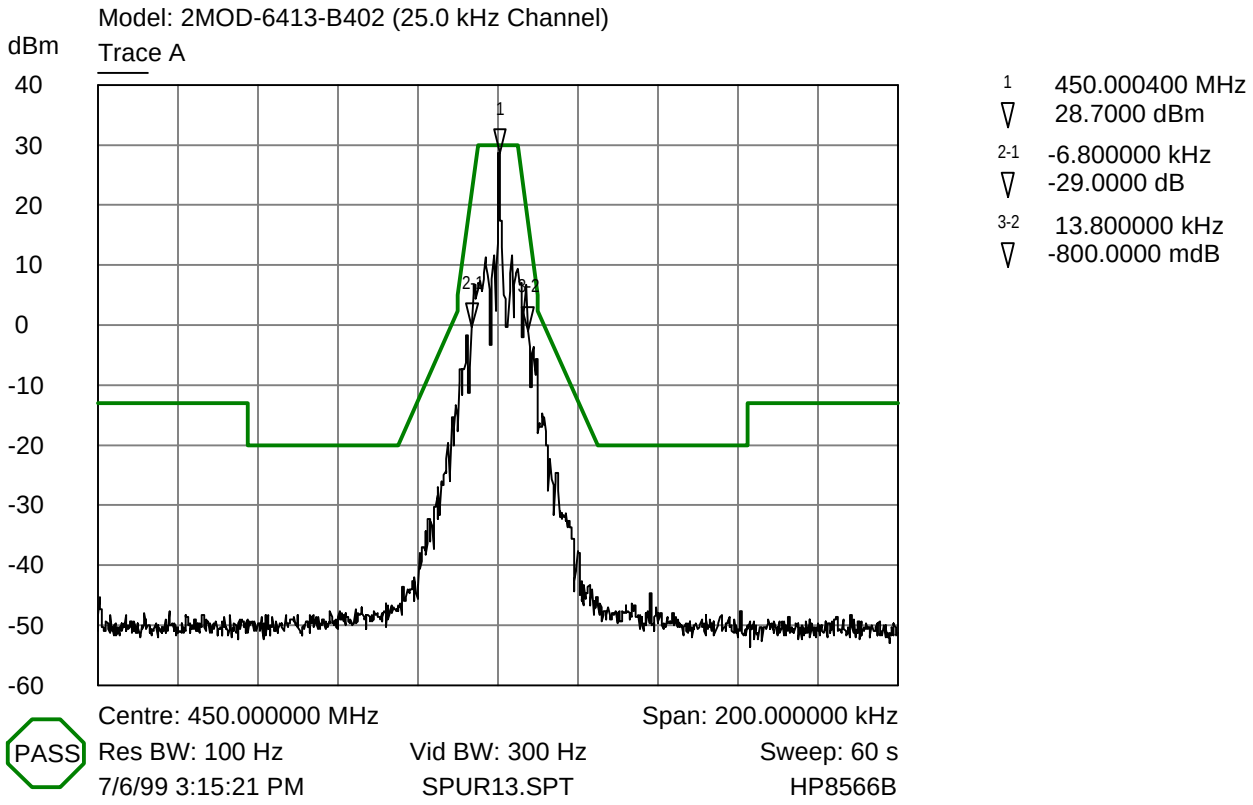
RBW = 30 kHz VBW = 100 kHz

Table 6 2MOD-6413-B502

The emissions must be attenuated 43 + 10 log P dB where P = Mean power of the unmodulated carrier. The maximum power of the unmodulated carrier was measured to 0.724 W (28.6 dBm), therefore, the emissions must be attenuated 43 + 10 log (0.813) = 41.6 dB. The criteria is 28.6 dBm – 41.6 dB = -13.0 dBm.

Transmitting at 470.0 MHz			
Frequency Range MHz	Frequency MHz	Corrected Level dBm	Criteria dBm
30 - 200	69.3	-45.8	-13.0
200 – 449.0	459.3	-33.7	-13.0
451.0 - 800	479.5	-39.9	-13.0
800 - 1000	940.0	-26.1	-13.0
1000 - 1500	1410.0	-44.9	-13.0
1500 - 2000	1880.0	-45.7	-13.0
2000 - 2500	2350.0	-44.1	-13.0
2500 - 3000	2820.0	-69.1	-13.0
3000 - 3500	3290.0	-55.6	-13.0
3500 - 4000	3760.0	-53.2	-13.0
4000 - 4400	4230.0	-57.6	-13.0
4400 - 5000	4700.0	-67.2	-13.0
* Noise Floor			

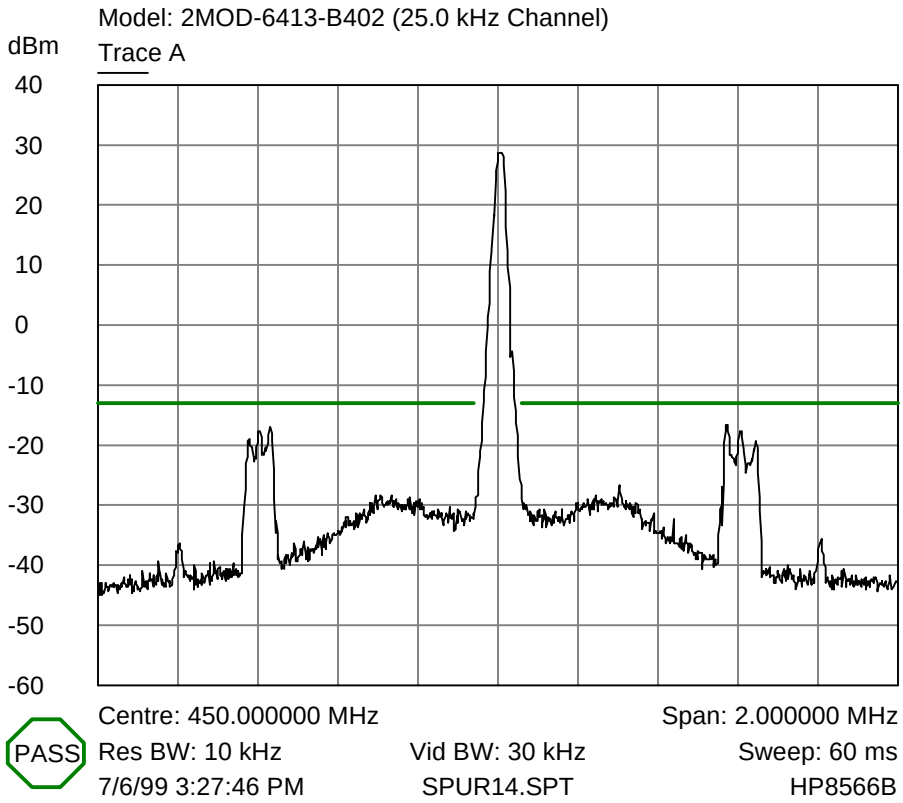
RBW = 30 kHz VBW = 100 kHz



Spurious Emissions - Emission Mask C

Trace A Modulated with 7 bytes

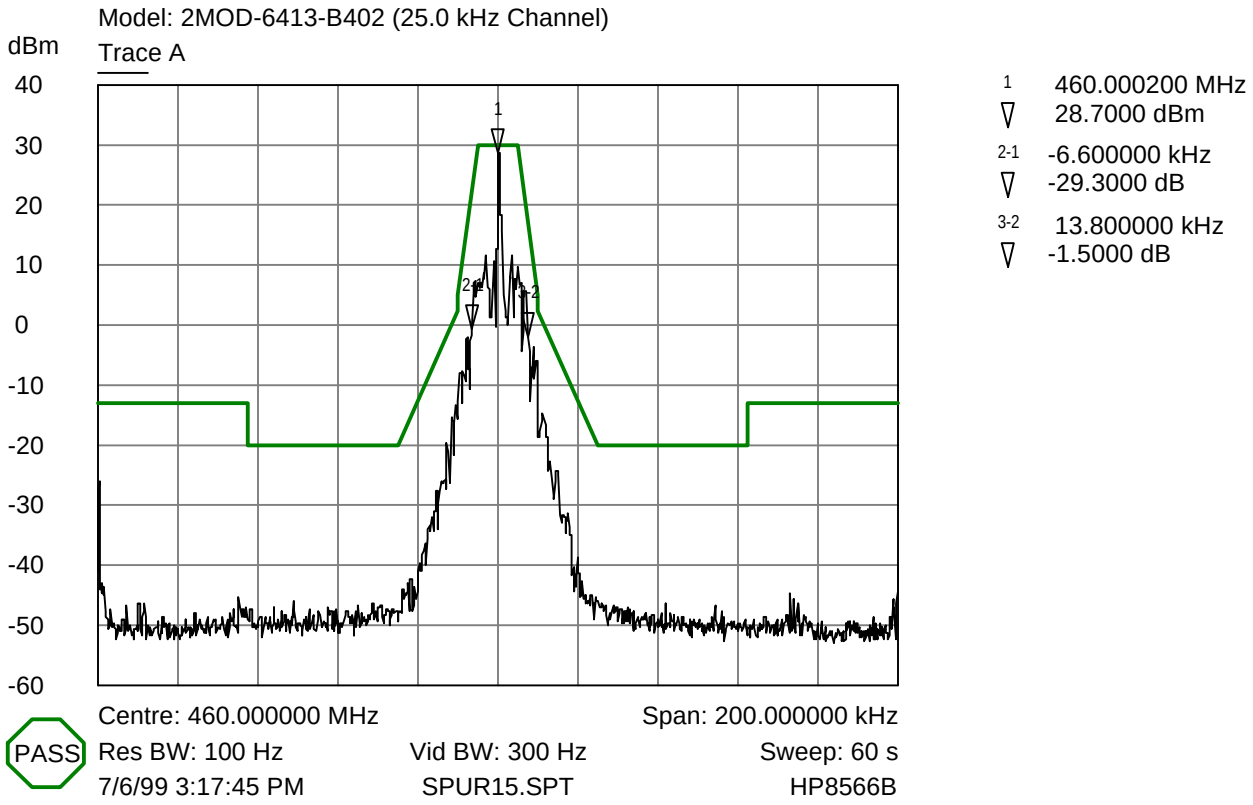
Conducted Spurious Emissions – 2MOD-6413-B402
(450 MHz 0 to 50 kHz)



Spurious Emissions - Emission Mask C

Trace A Modulated with 8 bytes

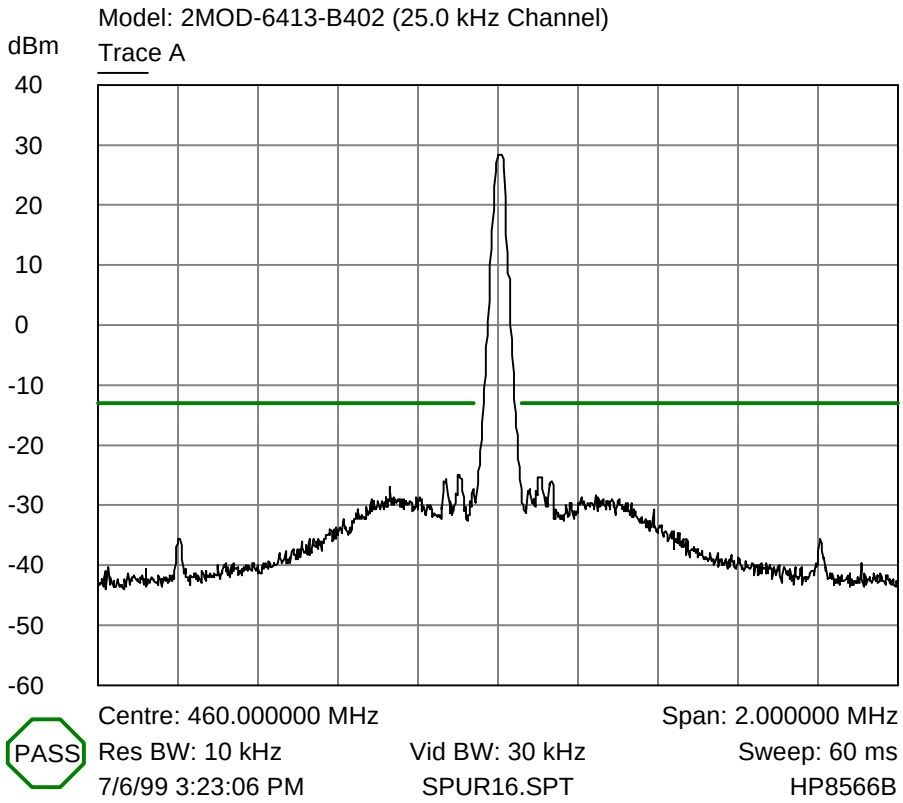
Conducted Spurious Emissions – 2MOD-6413-B402
(450 MHz 50 kHz to 1 MHz)



Spurious Emissions - Emission Mask C

Trace A Modulated with 7 bytes

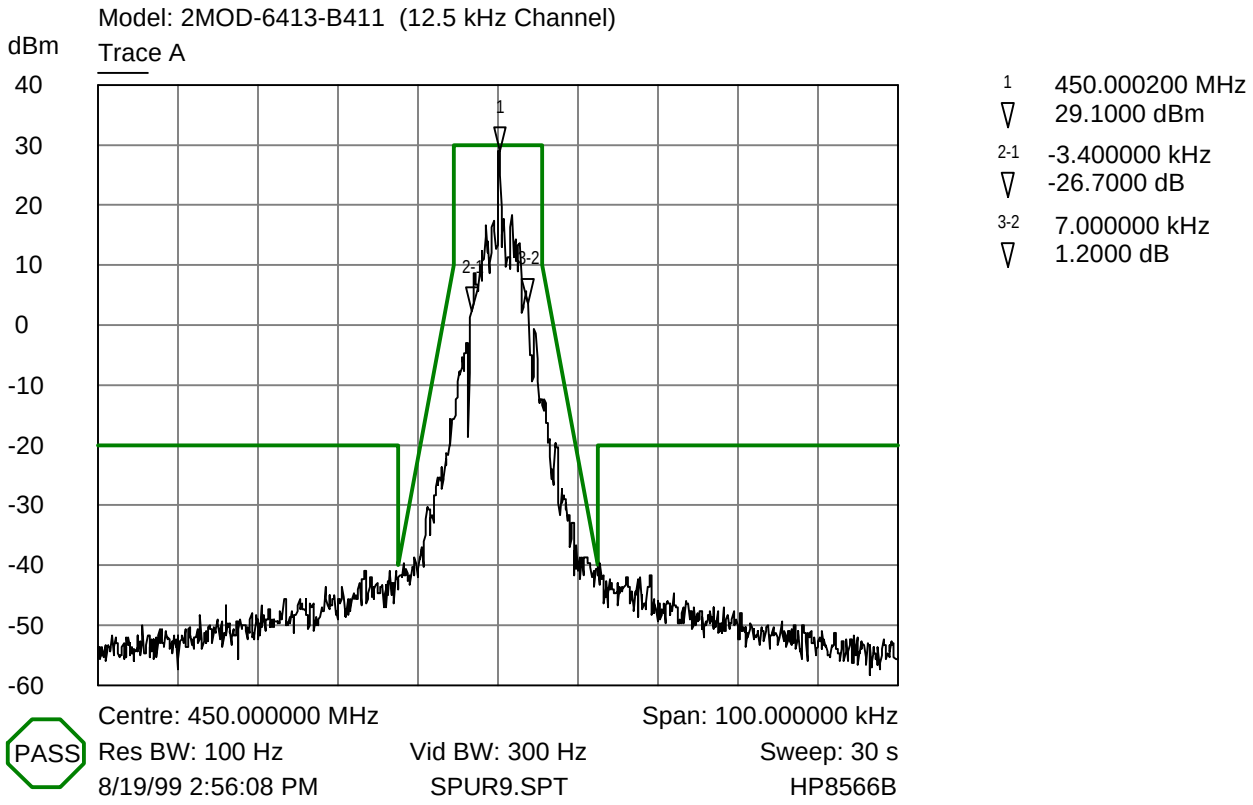
Conducted Spurious Emissions – 2MOD-6413-B402
(460 MHz 0 to 50 kHz)



Spurious Emissions - Emission Mask C

Trace A Modulated with 8 bytes

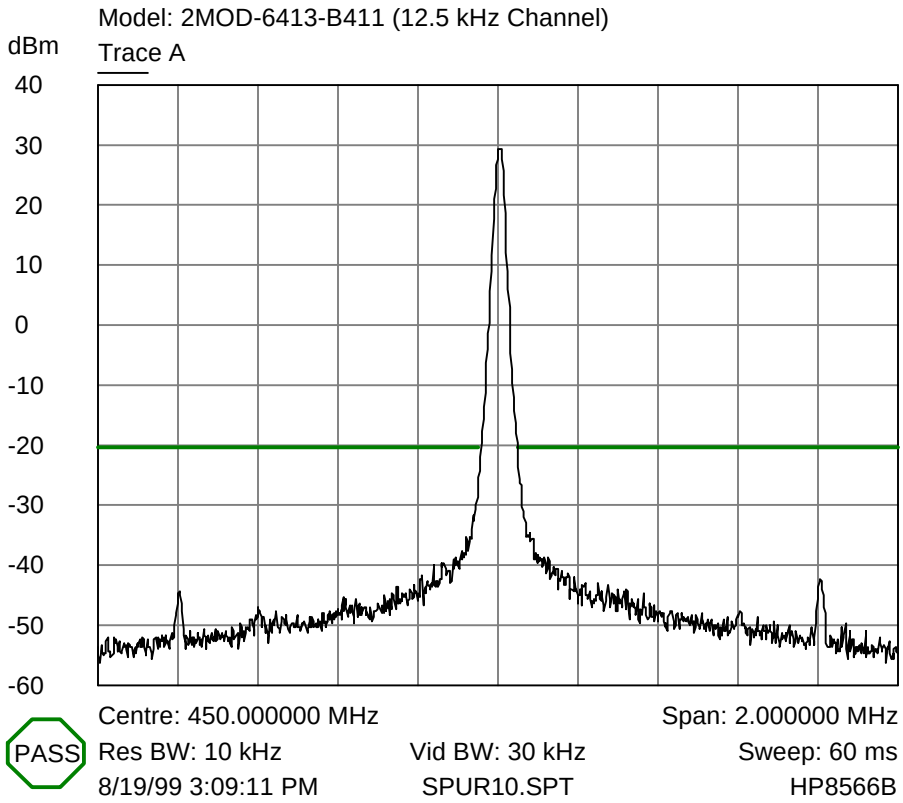
Conducted Spurious Emissions – 2MOD-6413-B402
(460 MHz 50 kHz to 1 MHz)



Spurious Emissions - Emission Mask D

Trace A Modulated with 8 bytes

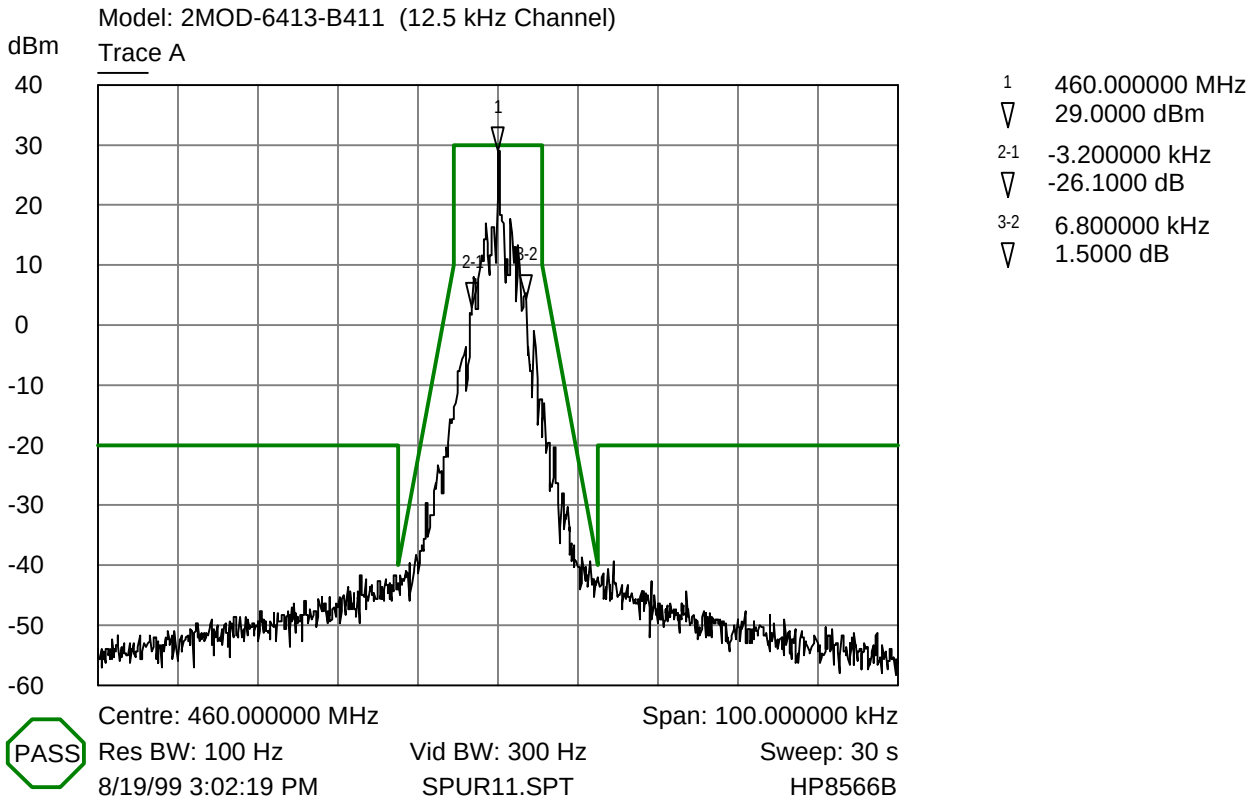
Conducted Spurious Emissions – 2MOD-6413-B411
(450 MHz 0 to 50 kHz)



Spurious Emissions - Emission Mask D

Trace A Modulated with 8 bytes

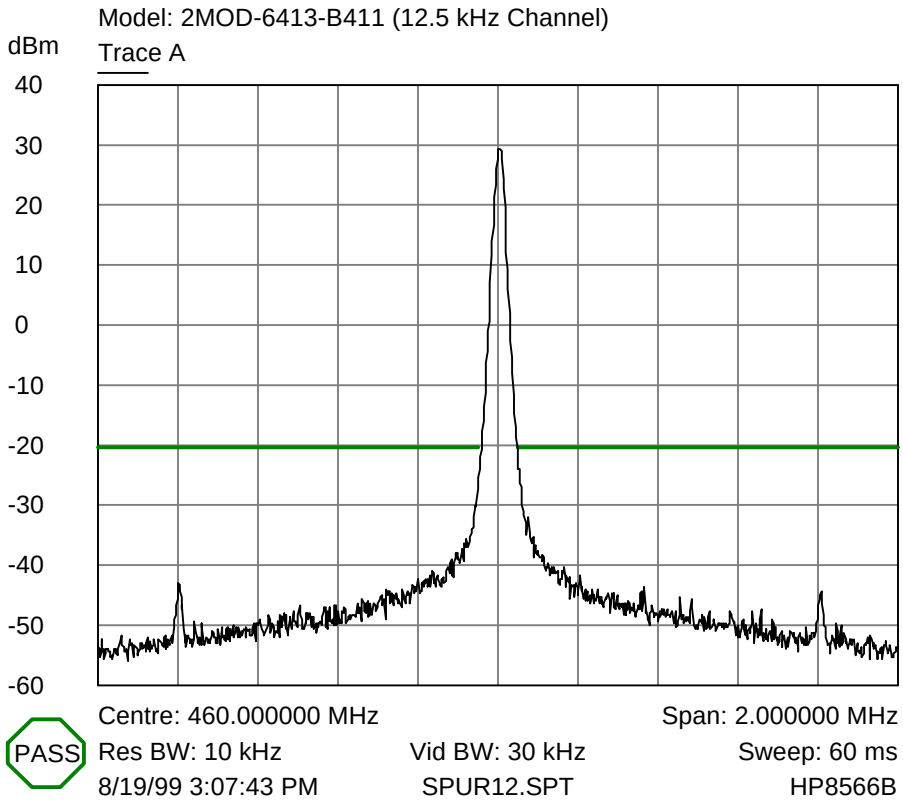
Conducted Spurious Emissions – 2MOD-6413-B411
(450 MHz 50 kHz to 1 MHz)



Spurious Emissions - Emission Mask D

Trace A Modulated with 8 bytes

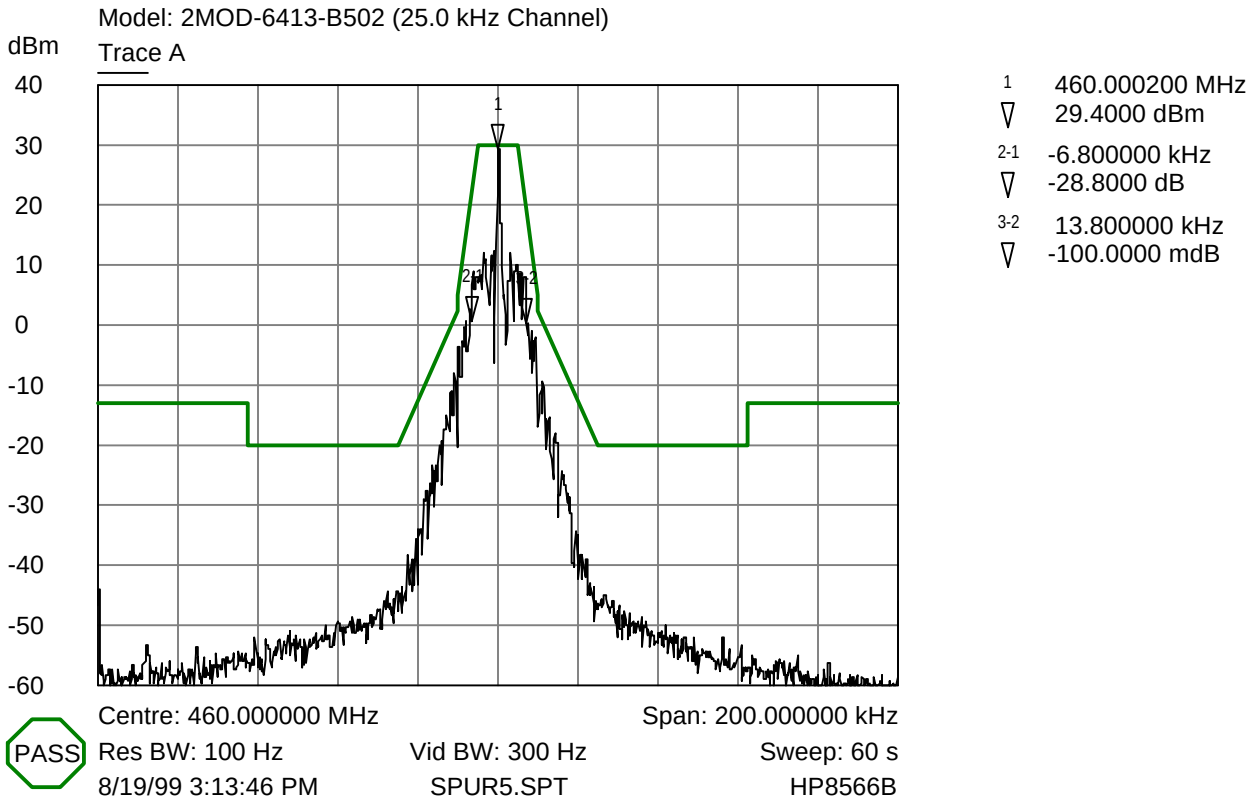
Conducted Spurious Emissions – 2MOD-6413-B411
(460 MHz 0 to 50 kHz)



Spurious Emissions - Emission Mask D

Trace A Modulated with 8 bytes

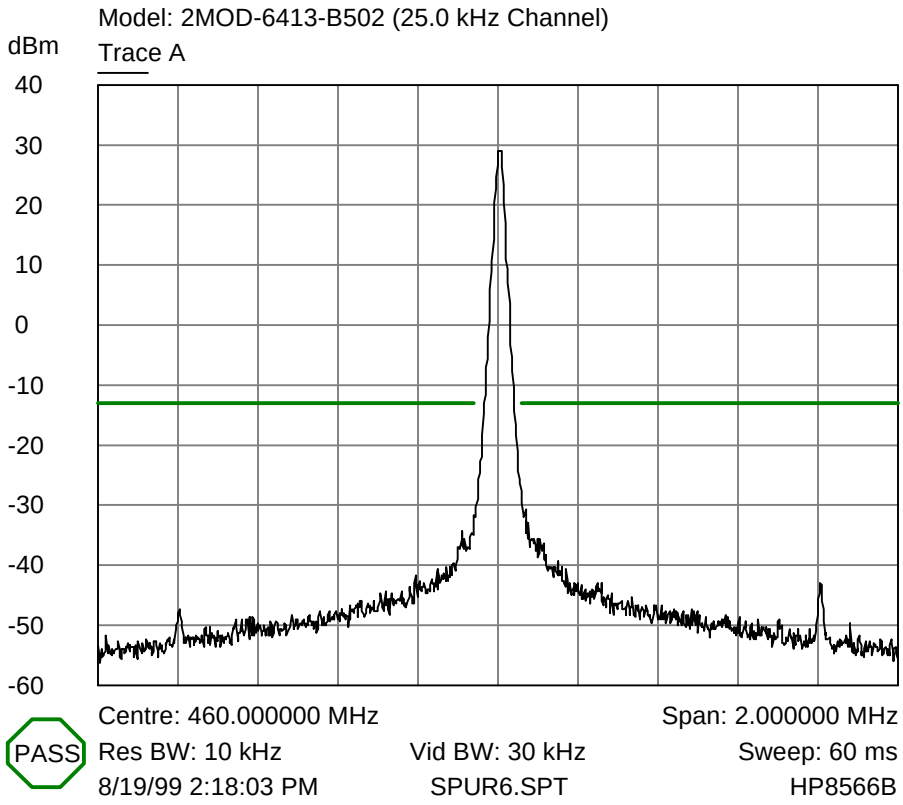
Conducted Spurious Emissions – 2MOD-6413-B411
(460 MHz 50 kHz to 1 MHz)



Spurious Emissions - Emission Mask C

Trace A Modulated with 8 bytes

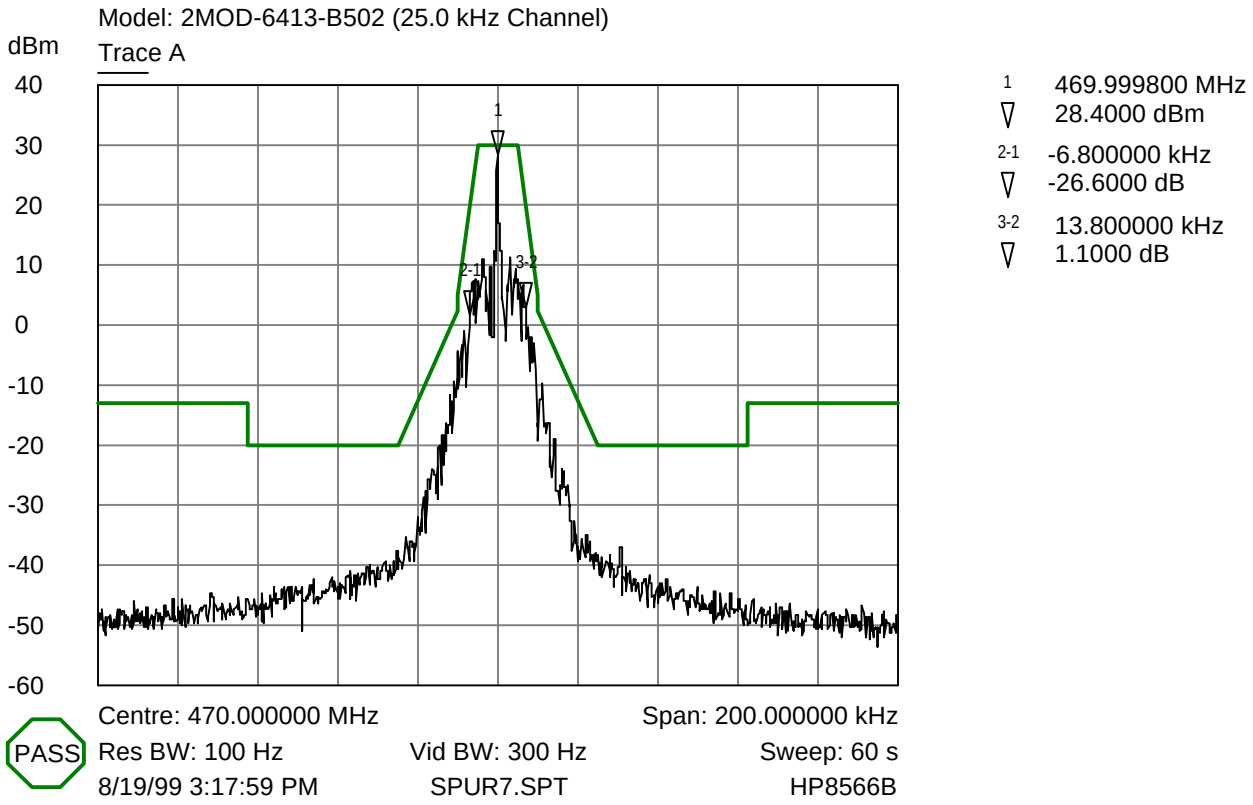
Conducted Spurious Emissions – 2MOD-6413-B502
(460 MHz 0 to 50 kHz)



Spurious Emissions - Emission Mask C

Trace A Modulated with 8 bytes

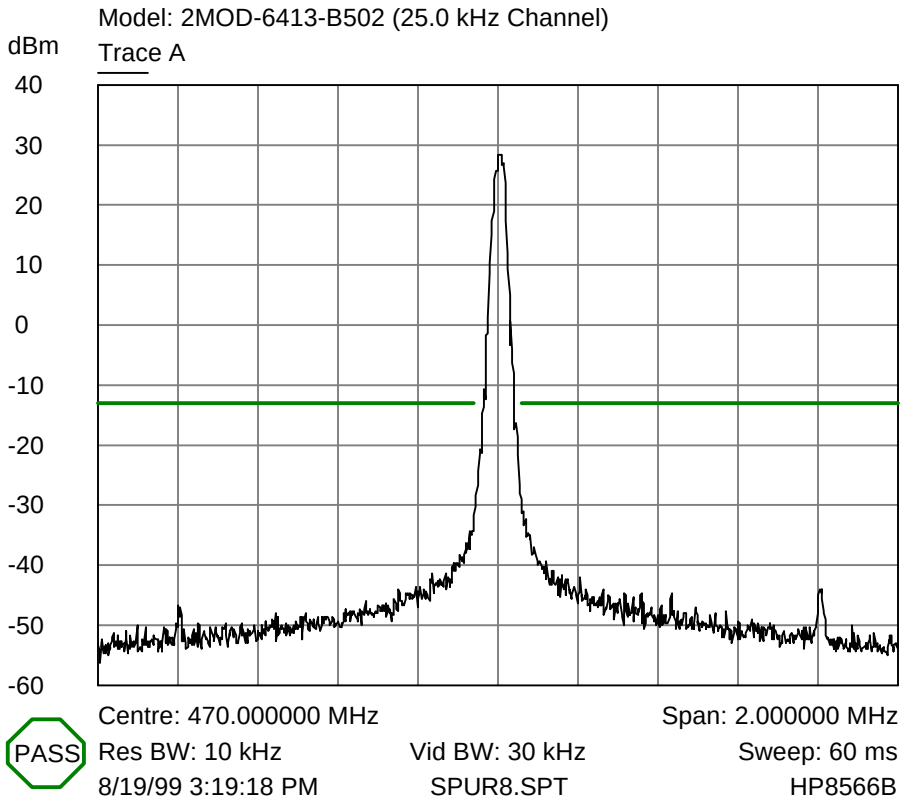
Conducted Spurious Emissions – 2MOD-6413-B502
(460 MHz 50 kHz to 1 MHz)



Spurious Emissions - Emission Mask C

Trace A Modulated with 8 bytes

Conducted Spurious Emissions – 2MOD-6413-B502
(470 MHz 0 to 50 kHz)



Spurious Emissions - Emission Mask C

Trace A Modulated with 8 bytes

Conducted Spurious Emissions – 2MOD-6413-B502
(470 MHz 50 kHz to 1 MHz)

2.6 Radiated Spurious Emissions

The 2MOD-6413-xxxx was tested at all four power levels and all modulation patterns. The worst case emissions were with the 2MOD-6413-xxxx transmitting at the highest power level and with the 8 bytes modulation pattern. The data below represents the worst case configuration.

2MOD-6413-B402 Transmitting at 450.0 MHz					
Antenna Polarity	Frequency (MHz)	Uncorr. Level ($dB\mu V$)	Correction Factor (dB)	Field Strength ($dB\mu V/m$)	Criteria ($dB\mu V/m$)
V	900.0	42.5	29.3	71.8	84.4
V	1350.0	22.1	28.5	50.6	84.4
V	1800.0	48.9	31.5	80.4	84.4
V	2250.0	40.6	33.3	73.9	84.4
V	2700.0	19.5	35.6	55.1	84.4
V	3150.0	13.4	35.8	49.2	84.4
V	3600.0	7.8	37.8	45.6	84.4
V	4050.0	12.6	39.7	52.3	84.4
V	4500.0	9.1	39.6	48.7	84.4
H	900.0	50.9	29.3	80.2	84.4
H	1350.0	20.5	28.5	49.0	84.4
H	1800.0	48.6	31.5	80.1	84.4
H	2250.0	35.4	33.3	68.7	84.4
H	2700.0	11.9	35.6	47.5	84.4
H	3150.0	13.4	35.8	49.2	84.4
H	3600.0	9.7	37.8	47.5	84.4
H	4050.0	14.8	39.7	54.5	84.4
H	4500.0	9.7	39.6	49.3	84.4

Note 1: * Noise Floor Measurements

Note 2: All emissions from 30 MHz to the first harmonic were more than 20 dB below the limit.

Exhibit 6

2MOD-6413-B402					
Transmitting at 460.0 MHz					
Antenna Polarity	Frequency (MHz)	Uncorr. Level ($dB\mu V$)	Correction Factor (dB)	Field Strength ($dB\mu V/m$)	Criteria ($dB\mu V/m$)
V	920.0	45.8	29.6	75.4	84.4
V	1380.0	26.4	28.9	55.3	84.4
V	1840.0	48.7	31.7	80.4	84.4
V	2300.0	47.6	34.0	81.6	84.4
V	2760.0	22.6	35.4	58.0	84.4
V	3220.0	14.6	36.1	50.7	84.4
V	3680.0	8.9	38.1	47.0	84.4
V	4140.0	18.6	39.4	58.0	84.4
V	4600.0	8.9	39.7	48.6	84.4
H	920.0	49.8	29.6	79.4	84.4
H	1380.0	30.5	28.9	59.4	84.4
H	1840.0	50.4	31.7	82.1	84.4
H	2300.0	45.6	34.0	79.6	84.4
H	2760.0	16.8	35.4	52.2	84.4
H	3220.0	10.8	36.1	46.9	84.4
H	3680.0	8.9	38.1	47.0	84.4
H	4140.0	15.6	39.4	55.0	84.4
H	4600.0	9.2	39.7	48.9	84.4
Note 1: * Noise Floor Measurements Note 2: All emissions from 30 MHz to the first harmonic were more than 20 dB below the limit.					

2MOD-6413-B411					
Transmitting at 450.0 MHz					
Antenna Polarity	Frequency (MHz)	Uncorr. Level ($dB\mu V$)	Correction Factor (dB)	Field Strength ($dB\mu V/m$)	Criteria ($dB\mu V/m$)
V	900.0	43.0	29.3	72.3	84.4
V	1350.0	21.2	28.5	49.7	84.4
V	1800.0	50.0	31.5	81.5	84.4
V	2250.0	41.6	33.3	74.9	84.4
V	2700.0	17.6	35.6	53.2	84.4
V	3150.0	12.3	35.8	48.1	84.4
V	3600.0	7.3	37.8	45.1	84.4
V	4050.0	14.4	39.7	54.1	84.4
V	4500.0	8.2	39.6	47.8	84.4
H	900.0	51.4	29.3	80.7	84.4
H	1350.0	18.4	28.5	46.9	84.4
H	1800.0	48.0	31.5	79.5	84.4
H	2250.0	36.2	33.3	69.5	84.4
H	2700.0	10.7	35.6	46.3	84.4
H	3150.0	11.5	35.8	47.3	84.4
H	3600.0	7.5	37.8	45.3	84.4
H	4050.0	12.8	39.7	52.5	84.4
H	4500.0	8.6	39.6	48.2	84.4

Note 1: * Noise Floor Measurements

Note 2: All emissions from 30 MHz to the first harmonic were more than 20 dB below the limit.

2MOD-6413-B411					
Transmitting at 460.0 MHz					
Antenna Polarity	Frequency (MHz)	Uncorr. Level ($dB\mu V$)	Correction Factor (dB)	Field Strength ($dB\mu V/m$)	Criteria ($dB\mu V/m$)
V	920.0	43.8	29.6	73.4	84.4
V	1380.0	23.2	28.9	52.1	84.4
V	1840.0	50.1	31.7	81.8	84.4
V	2300.0	48.6	34.0	82.6	84.4
V	2760.0	20.7	35.4	56.1	84.4
V	3220.0	12.4	36.1	48.5	84.4
V	3680.0	9.2	38.1	47.3	84.4
V	4140.0	20.9	39.4	60.3	84.4
V	4600.0	8.7	39.7	48.4	84.4
H	920.0	48.5	29.6	78.1	84.4
H	1380.0	28.3	28.9	57.2	84.4
H	1840.0	49.8	31.7	81.5	84.4
H	2300.0	44.5	34.0	78.5	84.4
H	2760.0	15.8	35.4	51.2	84.4
H	3220.0	11.7	36.1	47.8	84.4
H	3680.0	7.6	38.1	45.7	84.4
H	4140.0	19.5	39.4	58.9	84.4
H	4600.0	8.9	39.7	48.6	84.4

Note 1: * Noise Floor Measurements

Note 2: All emissions from 30 MHz to the first harmonic were more than 20 dB below the limit.

2MOD-6413-B502					
Transmitting at 460.0 MHz					
Antenna Polarity	Frequency (MHz)	Uncorr. Level ($dB\mu V$)	Correction Factor (dB)	Field Strength ($dB\mu V/m$)	Criteria ($dB\mu V/m$)
V	920.0	46.5	29.6	76.1	84.4
V	1380.0	21.6	28.9	50.5	84.4
V	1840.0	47.4	31.7	79.1	84.4
V	2300.0	41.5	34.0	75.5	84.4
V	2760.0	15.2	35.4	50.6	84.4
V	3220.0	13.1	36.1	49.2	84.4
V	3680.0	12.8	38.1	50.9	84.4
V	4140.0	18.0	39.4	57.4	84.4
V	4600.0	7.1	39.7	46.8	84.4
H	920.0	47.1	29.6	76.7	84.4
H	1380.0	22.9	28.9	51.8	84.4
H	1840.0	42.8	31.7	74.5	84.4
H	2300.0	39.2	34.0	73.2	84.4
H	2760.0	10.6	35.4	46.0	84.4
H	3220.0	11.4	36.1	47.5	84.4
H	3680.0	9.8	38.1	47.9	84.4
H	4140.0	13.2	39.4	52.6	84.4
H	4600.0	6.2	39.7	45.9	84.4

Note 1: * Noise Floor Measurements

Note 2: All emissions from 30 MHz to the first harmonic were more than 20 dB below the limit.

2MOD-6413-B502					
Transmitting at 470.0 MHz					
Antenna Polarity	Frequency (MHz)	Uncorr. Level ($dB\mu V$)	Correction Factor (dB)	Field Strength ($dB\mu V/m$)	Criteria ($dB\mu V/m$)
V	940.0	44.9	29.7	74.6	84.4
V	1410.0	17.5	29.1	46.6	84.4
V	1880.0	41.0	31.6	72.6	84.4
V	2350.0	43.3	34.2	77.5	84.4
V	2820.0	14.5	35.6	50.1	84.4
V	3290.0	9.2	36.5	45.7	84.4
V	3760.0	11.9	38.3	50.2	84.4
V	4230.0	10.9	39.5	50.4	84.4
V	4700.0	5.8	39.9	45.7	84.4
H	940.0	47.8	29.7	77.5	84.4
H	1410.0	20.9	29.1	50.0	84.4
H	1880.0	36.7	31.6	68.3	84.4
H	2350.0	42.6	34.2	76.8	84.4
H	2820.0	9.5	35.6	35.6	84.4
H	3290.0	8.4	36.5	44.9	84.4
H	3760.0	10.3	38.3	48.6	84.4
H	4230.0	7.7	39.5	47.2	84.4
H	4700.0	5.0	39.9	44.9	84.4

Note 1: * Noise Floor Measurements

Note 2: All emissions from 30 MHz to the first harmonic were more than 20 dB below the limit.

2.7 Frequency Stability

The 2MOD-6413-xxxx operates on 5 VDC supplied via the interface board; therefore, the 5 VDC was varied 85% and 115% at +20^0 C.

2MOD-6413-B402				
Transmitting at 450.0 MHz				
Ambient Temperature (^{0} C)	Assigned Frequency (MHz)	Measured Frequency (MHz)	Deviation (PPM)	Criteria (PPM)
-30	450.0	450.00033	0.73	5.0
-20	450.0	450.00022	0.49	5.0
-10	450.0	450.00029	0.64	5.0
0	450.0	450.00041	0.91	5.0
10	450.0	450.00017	0.38	5.0
20	450.0	450.00011	0.24	5.0
30	450.0	450.00001	0.02	5.0
40	450.0	449.99995	-0.11	5.0
50	450.0	450.00002	0.04	5.0

Voltage (DC)	Assigned Frequency (MHz)	Measured Frequency (MHz)	Deviation (PPM)	Criteria (PPM)
4.25	450.0	450.00018	0.40	5.0
5.0	450.0	450.00011	0.24	5.0
5.75	450.0	450.00006	0.13	5.0

2MOD-6413-B411				
Transmitting at 460.0 MHz				
Ambient Temperature (^{0} C)	Assigned Frequency (MHz)	Measured Frequency (MHz)	Deviation (PPM)	Criteria (PPM)
-30	460.0	460.00037	0.80	2.5
-20	460.0	460.00041	0.89	2.5
-10	460.0	460.00066	1.43	2.5
0	460.0	460.00066	1.43	2.5
10	460.0	460.00013	0.28	2.5
20	460.0	460.00024	0.52	2.5
30	460.0	460.00002	0.04	2.5
40	460.0	459.99994	-0.13	2.5
50	460.0	459.99996	-0.09	2.5

Voltage (DC)	Assigned Frequency (MHz)	Measured Frequency (MHz)	Deviation (PPM)	Criteria (PPM)
4.25	460.0	460.00020	0.43	2.5
5.0	460.0	460.00024	0.52	2.5
5.75	460.0	460.00032	0.70	2.5

2MOD-6413-B502				
Transmitting at 470.0 MHz				
Ambient Temperature (^{0} C)	Assigned Frequency (MHz)	Measured Frequency (MHz)	Deviation (PPM)	Criteria (PPM)
-30	470.0	470.00022	0.47	5.0
-20	470.0	470.00029	0.62	5.0
-10	470.0	470.00031	0.66	5.0
0	470.0	470.00012	0.26	5.0
10	470.0	469.99985	-0.32	5.0
20	470.0	469.99986	-0.30	5.0
30	470.0	469.99982	-0.38	5.0
40	470.0	469.99975	-0.53	5.0
50	470.0	469.99973	-0.57	5.0

Voltage (DC)	Assigned Frequency (MHz)	Measured Frequency (MHz)	Deviation (PPM)	Criteria (PPM)
4.25	470.0	469.99972	-0.60	5.0
5.0	470.0	469.99986	-0.30	5.0
5.75	470.0	469.99994	-0.13	5.0

Sample Calculation

$$\text{Deviation (PPM)} = \frac{\text{FM - TF}}{\text{TF}} * 10^6$$

FM = Frequency Measured
TF = Intended Transmit Frequency

2.8 Transient Frequency Behavior

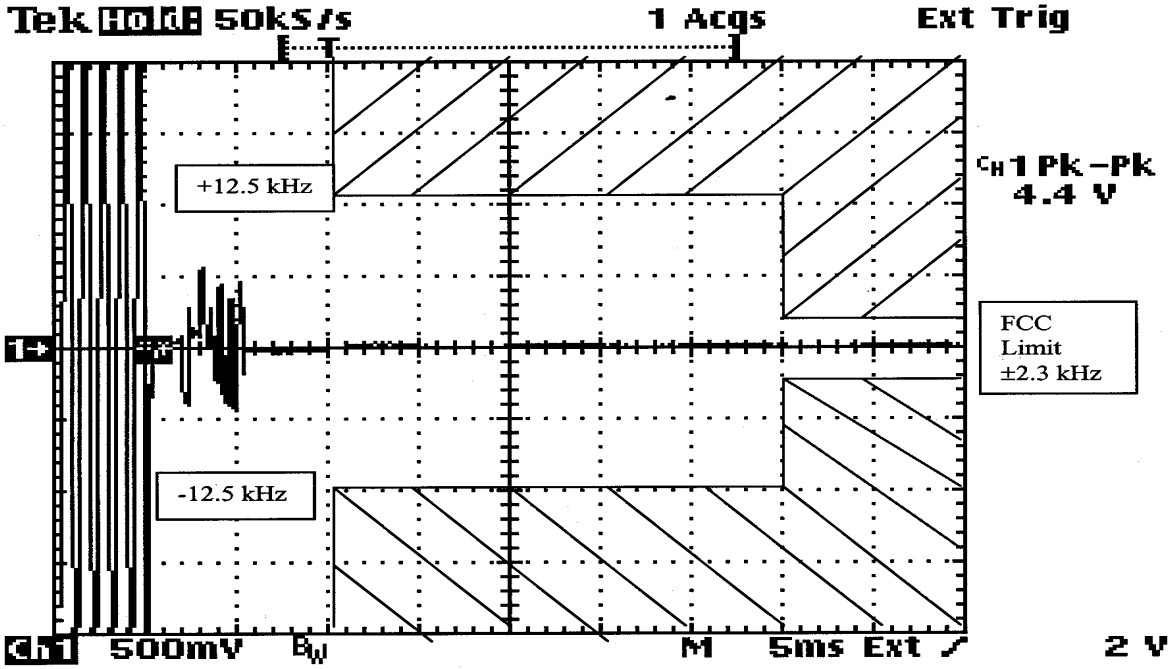
Criteria 25 kHz channel

The 2MOD-6413-B402 and 2MOD-6413-B502 transmits at 450 - 470 MHz on 25.0 kHz channels therefore the maximum frequency difference at t_1 must be less than $\pm$25.0 kHz 10 ms from t_{on}, t_2 must be less than $\pm$12.5 kHz 25 ms from t_2 and t_3 must be less than $\pm$25.0 kHz 10 ms from t_{off}.

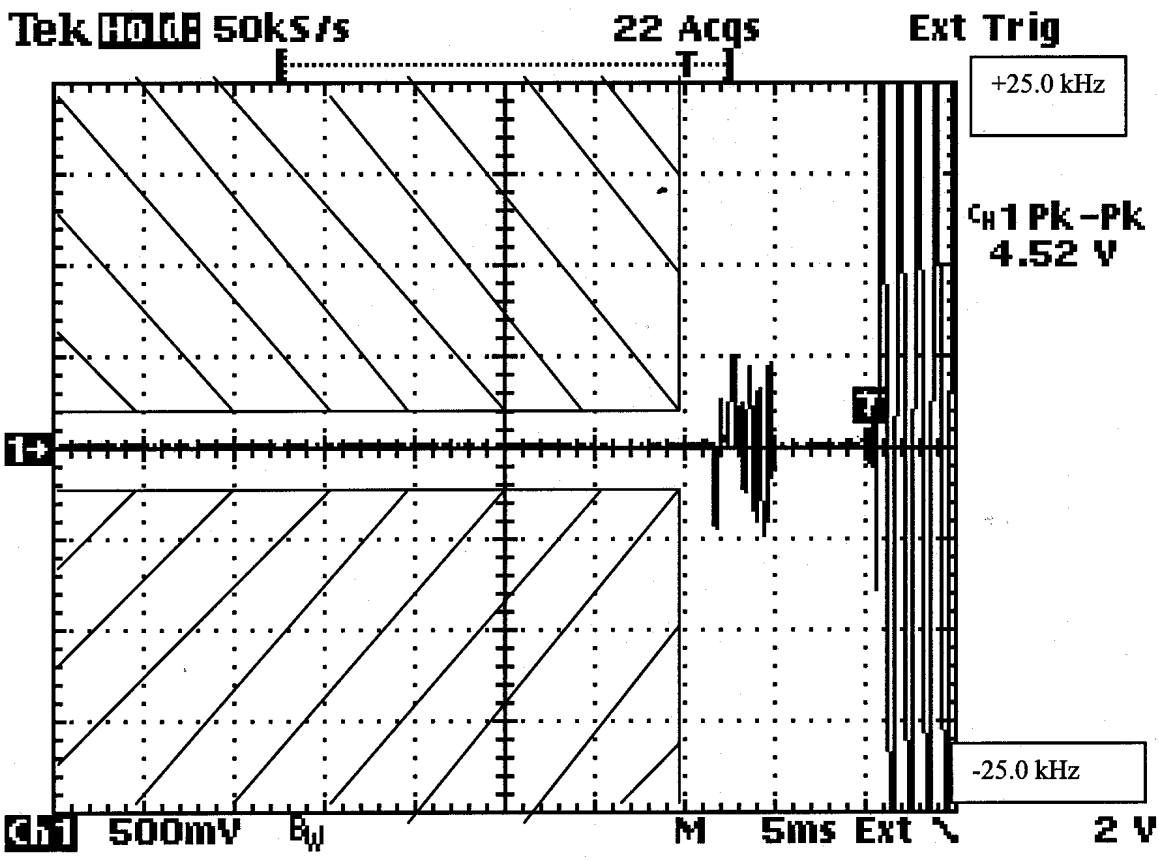
Criteria 12.5 kHz channel

The 2MOD-6413-B411 transmits at 450 - 460 MHz on 12.5 kHz channels therefore the maximum frequency difference at t_1 must be less than $\pm$12.5 kHz 10 ms from t_{on}, t_2 must be less than $\pm$6.25 kHz 25 ms from t_2 and t_3 must be less than $\pm$12.5 kHz 10 ms from t_{off}.

The transient frequency behavior was tested as per EIA/EIA TSB102.CAAA Digital C4FM/CQPSK transceiver measurement methods. Shown below are the plots showing compliance to § 90.214.

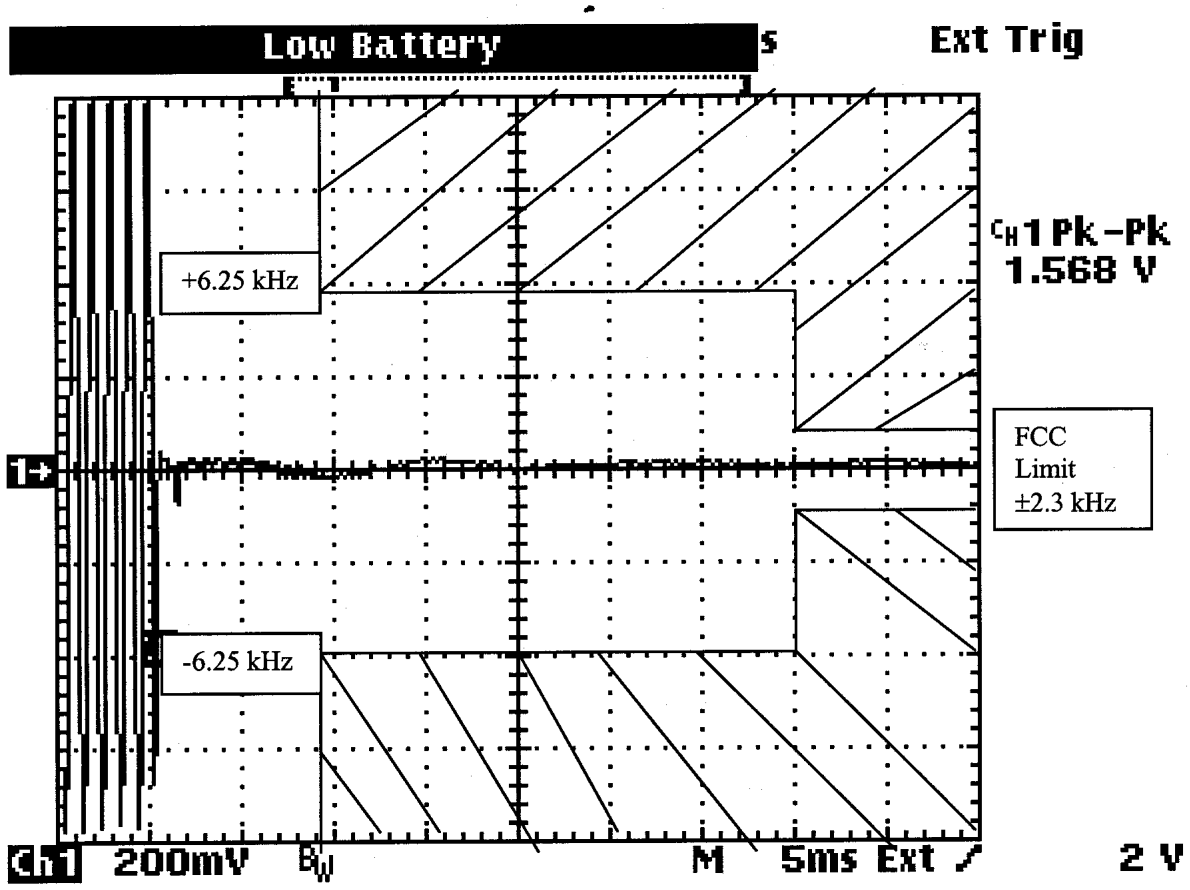


2MOD-6413-B402 (t_1 and t_2)
Exhibit 6

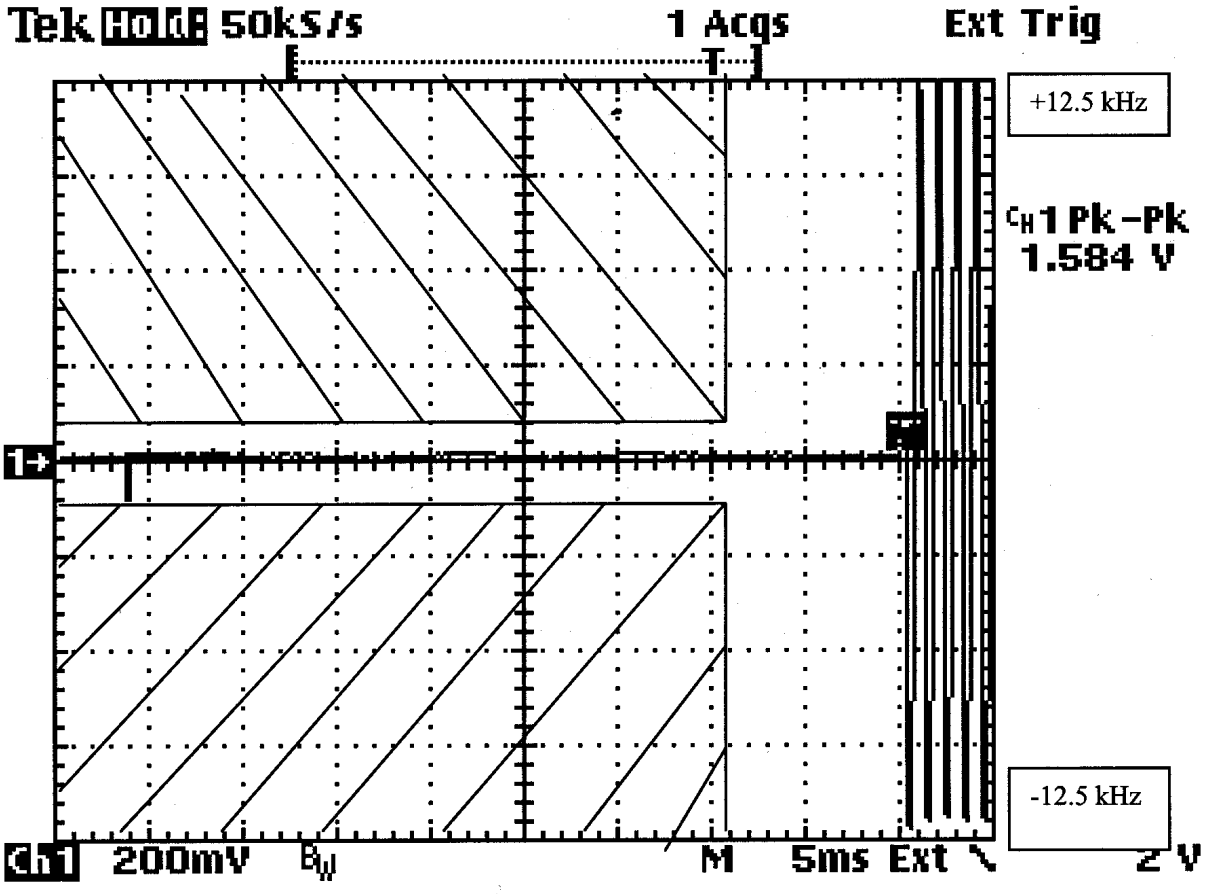


2MOD-6413-B402 (t_3)

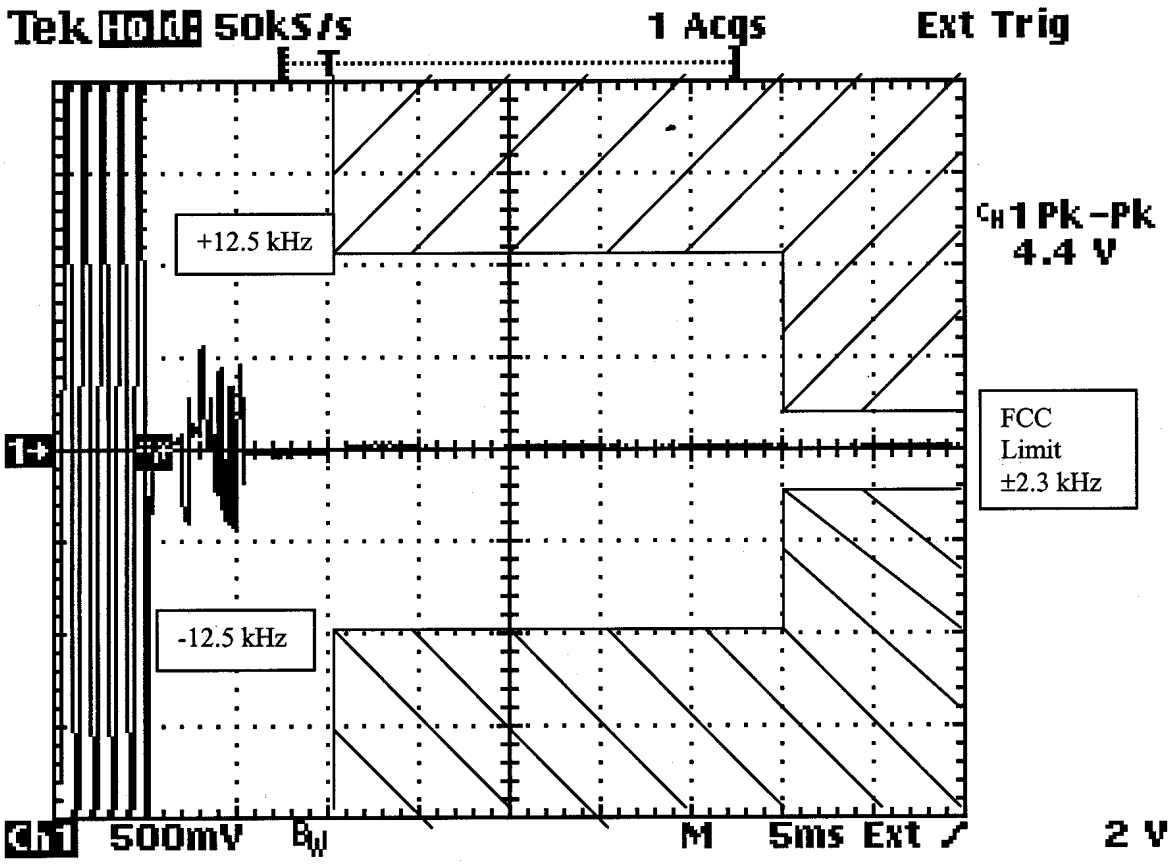
Exhibit 6



2MOD-6413-B411 (t_1 and t_2)

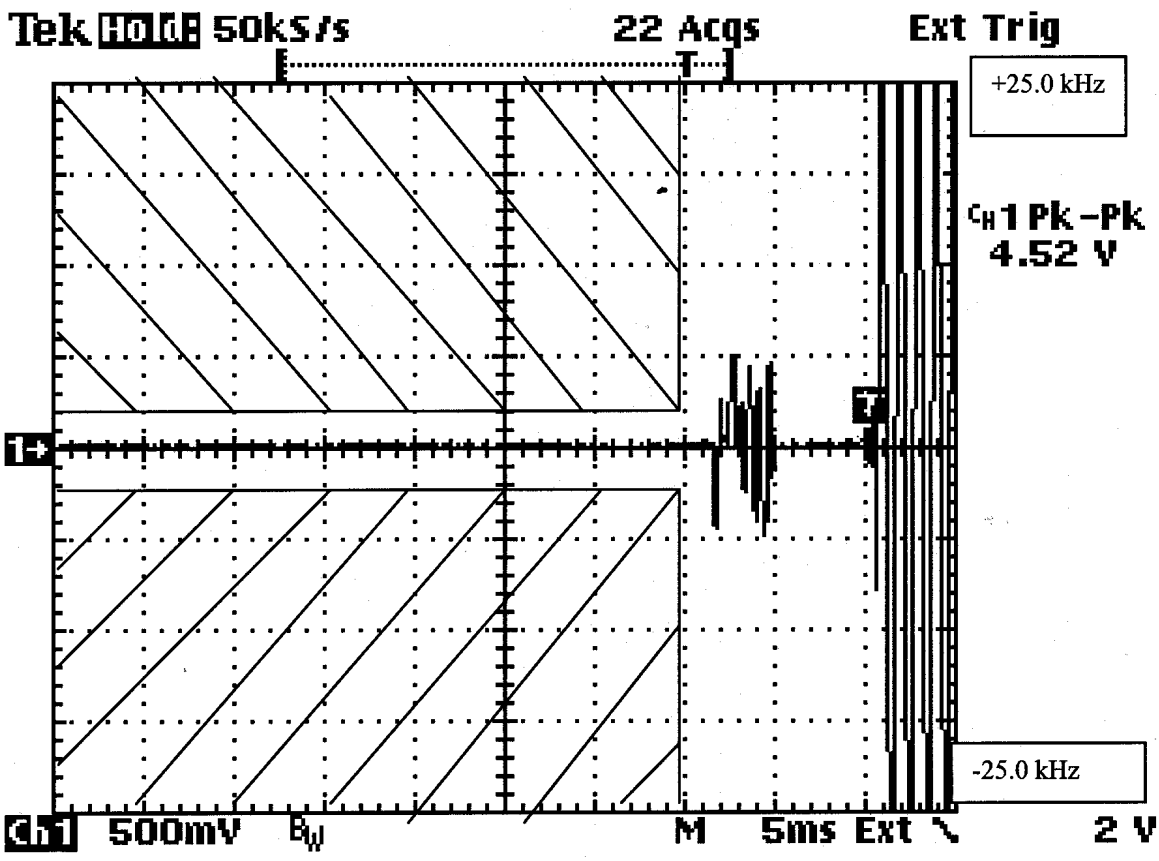


2MOD-6413-B402 (t_3)



2MOD-6413-B502 (t_1 and t_2)

Exhibit 6



2MOD-6413-B402 (t_3)

Exhibit 6

APPENDIX 1 TEST PROCEDURES AND TEST EQUIPMENT

Radiated Interference Emissions:

The radiated emission from the intentional radiator was measured using a spectrum analyzer with a quasi-peak adapter for peak and quasi-peak readings. A preamplifier with a fixed gain of 26 dB and a power amplifier with a fixed gain of 22 dB were used to increase the sensitivity of the measuring instrumentation. The quasi-peak adapter uses a bandwidth of 120 kHz, with the spectrum analyzer's resolution bandwidth set at 1 MHz, for readings in the 30 to 1000 MHz frequency ranges. For peak emissions above 1000 MHz the spectrum analyzer’s resolution bandwidth was set to 1 MHz and the video bandwidth was set to 3 MHz. For average emissions above 1000 MHz the spectrum analyzer’s resolution bandwidth was set to 1 MHz and the video bandwidth was set to 1 Hz.

A biconilog antenna was used to measure the frequency range of 30 to 1000 MHz and a Double Ridge Guide Horn antenna was used to measure the frequency range 1 GHz to 10 GHz, at a distance of 3 meters from the EUT. The readings obtained by these antennas are correlated to the levels obtained with a tuned dipole antenna by adding antenna factors.

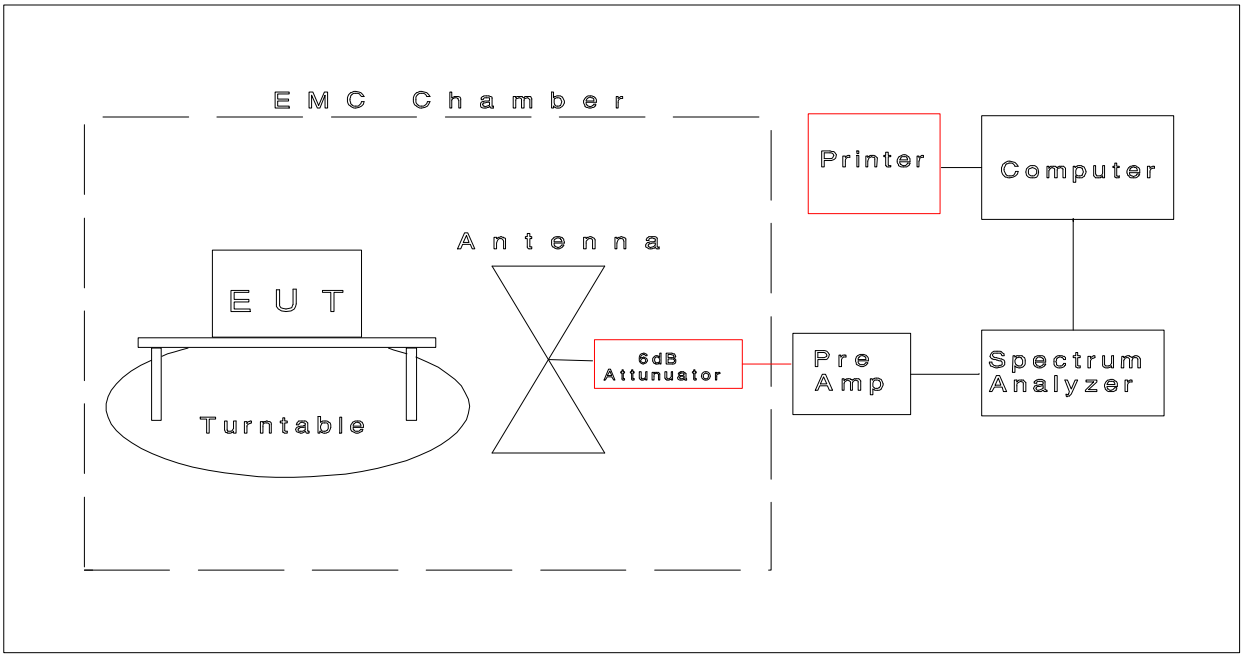
The configuration of the intentional radiator was varied to find the maximum radiated emission. The EUT was connected to the peripherals listed in Section 2.4 via the interconnecting cables listed in Section 2.5. These interconnecting cable were manipulated manually by a technician to obtain worst case radiated emissions. The intentional radiator was rotated 360 degrees, and the antenna height was varied from 1 to 4 meters to find the maximum radiated emission. Where there were multiple interface ports all of the same type, cables are either placed on all of the ports or cables added to these ports until the emissions do not increase by more than 2 dB.

Desktop intentional radiator is measured on a non-conducting table one meter above the ground plane. The table is placed on a turntable which is level with the ground plane. The turntable has slip rings, which supply AC power to the intentional radiator. For equipment normally placed on floors, the equipment shall be placed directly on the turntable.

Type of Equipment	Manufacturer	Model Number	Serial Number
Anechoic Chamber	CCL	N/A	N/A
Test Software	CCL	Radiated Emissions	Revision 1.3
Spectrum Analyzer	Hewlett Packard	8566B	2230A01711
Quasi-Peak Detector	Hewlett Packard	8565A	3107A01582
Biconilog Antenna	EMCO	3141	1045
Double Ridged Guide Antenna	EMCO	3115	9409-4355
Radiated Emissions Cable Anechoic Chamber	CCL	Cable B	N/A
Pre-Amplifier	Hewlett Packard	8447D	1937A03151
Power-Amplifier	Hewlett Packard	8447E	2434A01975
6 dB Attenuator	Hewlett Packard	8491A	32835

All the equipment listed above is calibrated every 12 months by an independent calibration laboratory or by CCL personal following outlined calibration procedures.

Radiated Emissions Test



Peak Transmit Power

The EUT was directly connected to the spectrum analyzer via the antenna output port as shown in the block diagram below. The measurements were performed with the device tuned to three different channels, one near the bottom of the spectrum and one near the top of the spectrum.

Testing was performed as per ANSI-C63.4 1992, Methods of Measurement of radio-noise emissions from low-voltage electrical and electronic equipment in the range of 9 kHz to 40 GHz.

The spectrum analyzer's resolution bandwidth and video bandwidth were set as follows:

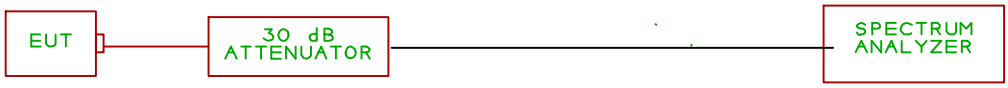
Peak Transmit Power

RBW = 100 kHz
VBW = 300 kHz

Type of Equipment	Manufacturer	Model Number	Serial Number
Spectrum Analyzer	Hewlett Packard	8566B	2230A01711
Quasi-Peak Detector	Hewlett Packard	8565A	3107A01582
30 dB Attenuator	Hewlett Packard	8498A	1801A05362
Low Loss Cable (1 dB)	N/A	N/A	N/A
Plotter	Hewlett Packard	7470A	2210A01469

All the equipment listed above is calibrated every 12 months by an independent calibration laboratory or by CCL personal following outlined calibration procedures.

Test Configuration Block Diagram



Conducted Spurious Emissions and Occupied Bandwidth

The EUT was directly connected to the spectrum analyzer via the antenna output port as shown in the block diagram below. The carrier was modulated with a 2500 Hz tone; this produced the worst case emissions. The measurements were performed with the phone at three different power levels and tuned to three channels, one near the bottom of the spectrum and one near the top of the spectrum.

Testing was performed as per ANSI-C63.4 1992, Methods of Measurement of radio-noise emissions from low-voltage electrical and electronic equipment in the range of 9 kHz to 40 GHz.

The spectrum analyzer’s resolution bandwidth and video bandwidth were set as follows:

Conducted Spurious Emissions

50 kHz above and below the carrier

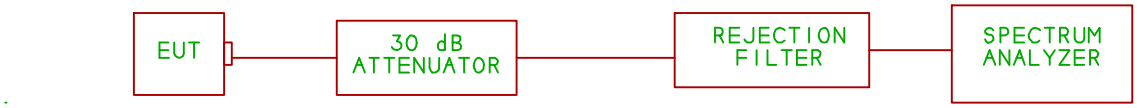
RBW = 300 Hz
VBW = 1 kHz

Greater than 50 kHz above and below the carrier

RBW = 30 kHz
VBW = 100 kHz

Type of Equipment	Manufacturer	Model Number	Serial Number
Spectrum Analyzer	Hewlett Packard	8566B	2230A01711
Quasi-Peak Detector	Hewlett Packard	8565A	3107A01582
30 dB Attenuator	Hewlett Packard	8498A	1801A05362
Tunable Notch Filter	Microwave Filter Co., Inc.	6367-5	1190
Low Loss Cable (1 dB)	N/A	N/A	N/A
Plotter	Hewlett Packard	7470A	2210A01469

Test Configuration Block Diagram



Carrier Frequency Stability

The EUT was placed inside of a temperature chamber and directly connected to the spectrum analyzer via the antenna output port as shown in the block diagram below. The measurements were performed from -30^0 C to $+60^0$ C in 10^0 increments.

The spectrum analyzer's was configured as follows:

RBW = 1 kHz

VBW = 3 kHz
Span = 20 kHz
Sweep = Auto

Type of Equipment	Manufacturer	Model Number	Serial Number
Spectrum Analyzer	Hewlett Packard	8566B	2230A01711
Quasi-Peak Detector	Hewlett Packard	8565A	3107A01582
30 dB Attenuator	Hewlett Packard	8498A	1801A05362
Low Loss Cable (1 dB)	N/A	N/A	N/A
Temperature Chamber	Tenney Engineering, Inc.	Tenney Jr.	11184-83

All the equipment listed above is calibrated every 12 months by an independent calibration laboratory or by CCL personal following outlined calibration procedures.

Test Configuration Block Diagram

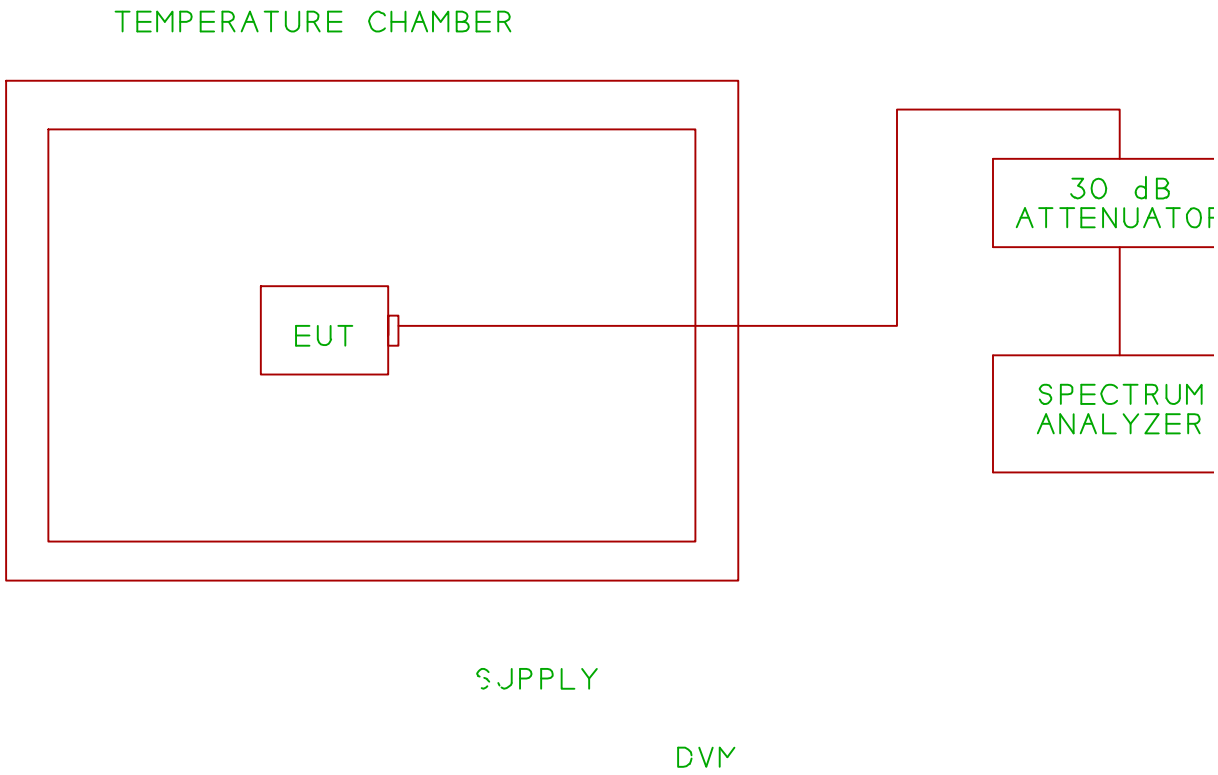

TEMPERATURE CHAMBER
EUT
30 dB
ATTENUATOR
SPECTRUM
ANALYZER
SUPPLY
DVM

Exhibit 6

FCC Section 90.214 Transient Frequency Behavior

The equipment was connected as shown in the block below. The transient frequency behavior was tested using the test procedures of TIA/EIA-603 and TIA/EIA TSB102. Since the unit operates on 12.5 kHz channels the signal generator was set to 154.6 MHz and modulated with a 1 kHz tone at ±12.5 kHz deviation.

Test Configuration Block Diagram 90.214

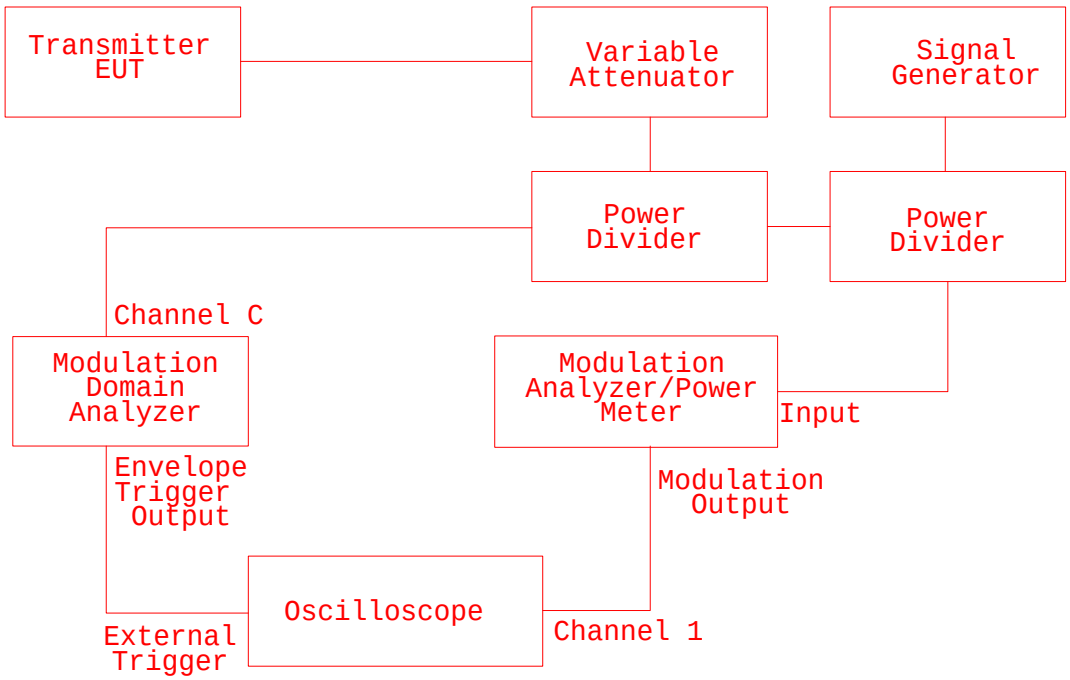


Exhibit 6