



Test Report: 3W06901

Applicant: Wavecom Electronics Inc.
250 Cardinal Place
Saskatoon, SK S7L 6H7

**Equipment Under Test:
(EUT)** TRI5758 Broadband Wireless Transceiver
5.7-5.8GHz

In Accordance With: **FCC Part 15, Subpart E
U-NII Devices**

Tested By: Nemko Canada Inc.
303 River Road, R.R. 5
Ottawa, Ontario K1V 1H2



Authorized By: Kevin Carr, EMC Specialist

Date: 18 June 2003

Total Number of Pages: 49

Table of Contents

Section 1. Summary of Test Results3

Section 2. General Equipment Specification.....5

Section 3. Powerline Conducted Emissions.....8

Section 4. Emission Bandwidth15

Section 5. Peak Conducted Transmit Power.....22

Section 6. Peak Power spectral density29

Section 7. Peak Excursion Measurement36

Section 8. Undesirable Emissions.....43

Section 9. Block Diagrams47

Section 10. Test Equipment List49

EQUIPMENT: TRI5758

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 Part 15, Subpart E, for U-NII devices. Radiated tests were conducted in accordance with ANSI C63.4-1992. Radiated emissions are made on an open area test site. A description of the test facility is on file with the FCC.

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

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

See "Summary of Test Data".



TESTED BY: _____
Glen Westwell, Wireless Technologist

DATE: 17 June 2003

Nemko Canada Inc. authorizes the above named company to reproduce this report provided it is reproduced in its entirety and for use by the company's employees only.

Any use which a third party makes of this report, or any reliance on or decisions to be made based on it, are the responsibility of such third parties. Nemko Canada Inc. accepts no responsibility for damages, if any, suffered by any third party as a result of decisions made or actions based on this report.

This report applies only to the items tested.

EQUIPMENT: TRI5758

Summary Of Test Data

Name Of Test	Para. No.	Result
Powerline Conducted Emissions	15.207(a)	Complies
Emission Bandwidth	15.403(c)	Complies
Peak Conducted Transmit Power	15.407(a)(3)	Complies
Peak Power Spectral Density	15.407(a)(3)	Complies
Peak Excursion Measurement	15.407(a)(6)	Complies
Undesirable Emissions	15.407(b)(3)(5)	Complies

Test Conditions:**Indoor**

Temperature: 22°C

Humidity: 40%

Outdoor

Temperature: 22°C

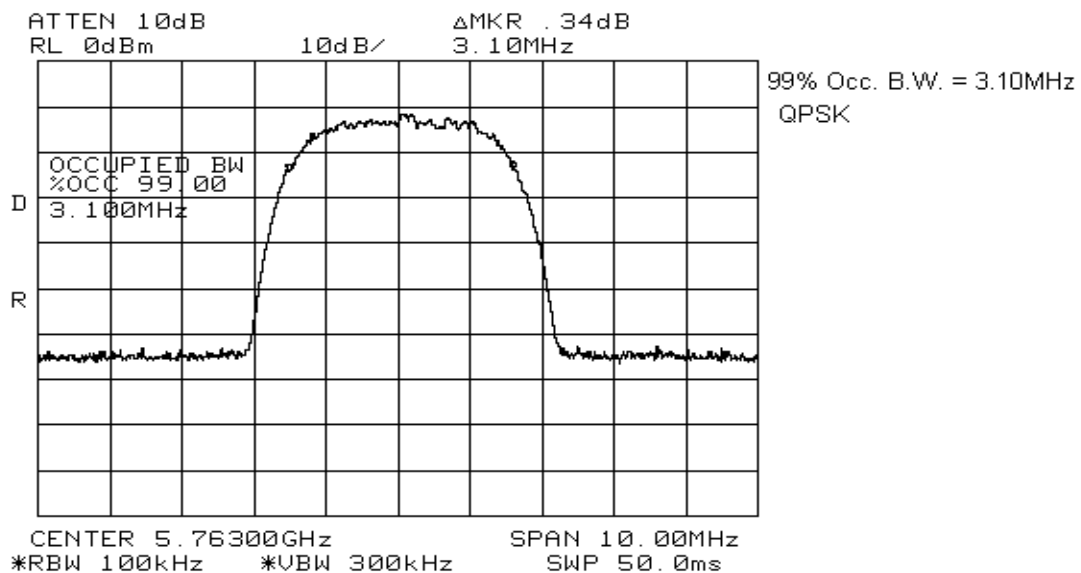
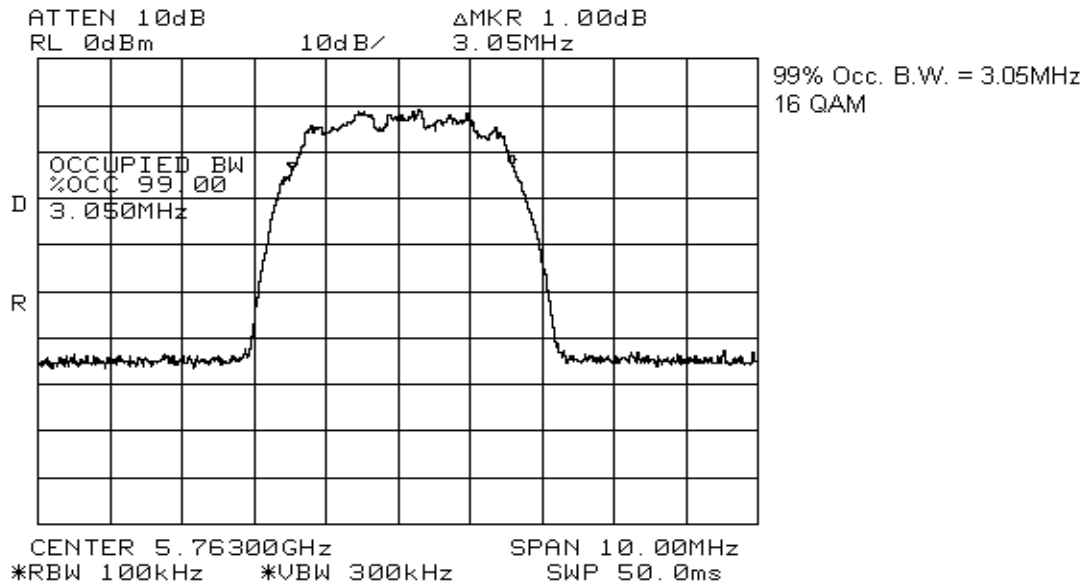
Humidity: 40%

EQUIPMENT: TRI5758

Section 2. General Equipment Specification

Manufacturer:	Wavecom Electronics Inc.
Model No.:	TRI5758
Serial No.:	282823
Date Received In Laboratory:	9 May 2003
Nemko Identification No.:	#1
Frequency Band:	5.725-5.825GHz
Operating Frequency(ies) of DUT:	TX: 5.751-5.775GHz RX: 5.799-5.823GHz
Transmit Power (Rated):	+5dBm @ 2560 ksym/s +2dBm @ 1280 ksym/s -1dBm @ 640 ksym/s -4dBm @ 320 ksym/s -7dBm @ 160 ksym/s
Antenna Gain (integral):	23dBi
Modulation:	16 QAM QPSK
Emission Designator:	3M10D1W 3M10G1W

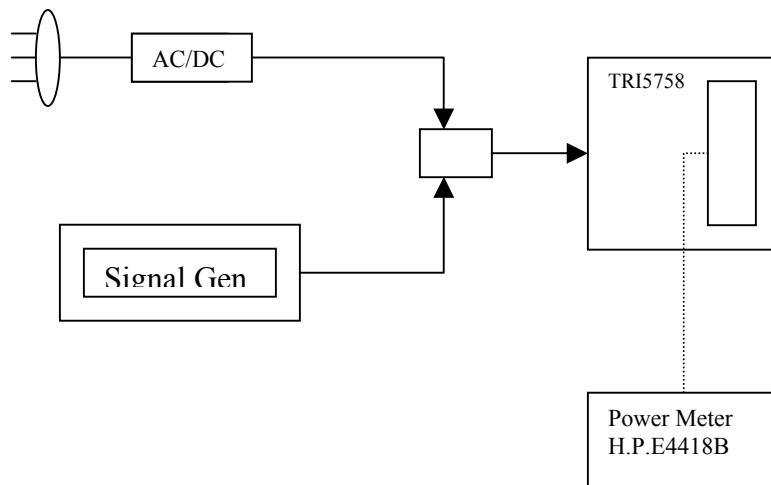
EQUIPMENT: TRI5758



EQUIPMENT: TRI5758

Transmitter Characterization Table & Set up

Average Power at Antenna Port							
Data Rate (ksym/s)	Rated Power	16 QAM (dBm)			QPSK (dBm)		
		Low	Mid	High	Low	Mid	High
2560	+5dBm	5.0	4.9	4.8	5.0	4.8	4.8
1280	+2dBm	2.0	2.0	1.6	2.0	2.0	1.8
640	-1dBm	-1.0	-1.0	-1.3	-1.0	-1.0	-1.4
320	-4dBm	-4.0	-4.0	-4.3	-4.0	-4.0	-4.3
160	-7dBm	-7.0	-7.0	-7.3	-7.0	-7.0	-7.3



EQUIPMENT: TRI5758

Section 3. Powerline Conducted Emissions

Para. No.: 15.207 (a)

Test Performed By: Glen Westwell	Date of Test: 28 May 2003
---	----------------------------------

Test Results: Complies.

Measurement Data: See attached table & graph(s).



EQUIPMENT: TRI5758

Comments:					Project Number:		3w06901	
LISN:			EMCO FA001545		Date:		May 28, 2003	
Class B Mains limits (Phase)								
No.	Frequency of Emission (MHz)	Detector	Emission Level (dBuV)	LISN Loss (dB)	Cable Loss (dB)	Result (dBuV)	Limit (dBuV)	Margin (dB)
1	0.1518	Quasi-Peak	49.4	0.1	0	49.5	65.9	16.4
		Average	17.1	0.1	0	17.2	55.9	38.7
2	0.1617	Quasi-Peak	49	0.1	0.2	49.3	65.4	16.1
		Average	16.7	0.1	0.2	17	55.4	38.4
3	0.1897	Quasi-Peak	47.8	0.1	0.4	48.3	64.0	15.7
		Average	15.6	0.1	0.4	16.1	54.0	37.9
4	0.2247	Quasi-Peak	46.7	0	0	46.7	62.6	15.9
		Average	14.4	0	0	14.4	52.6	38.2
5	0.2649	Quasi-Peak	45.6	0	0.2	45.8	61.3	15.5
		Average	13.3	0	0.2	13.5	51.3	37.8
6	0.3938	Quasi-Peak	41.6	0	0	41.6	58.0	16.4
		Average	9.3	0	0	9.3	48.0	38.7

EQUIPMENT: TRI5758

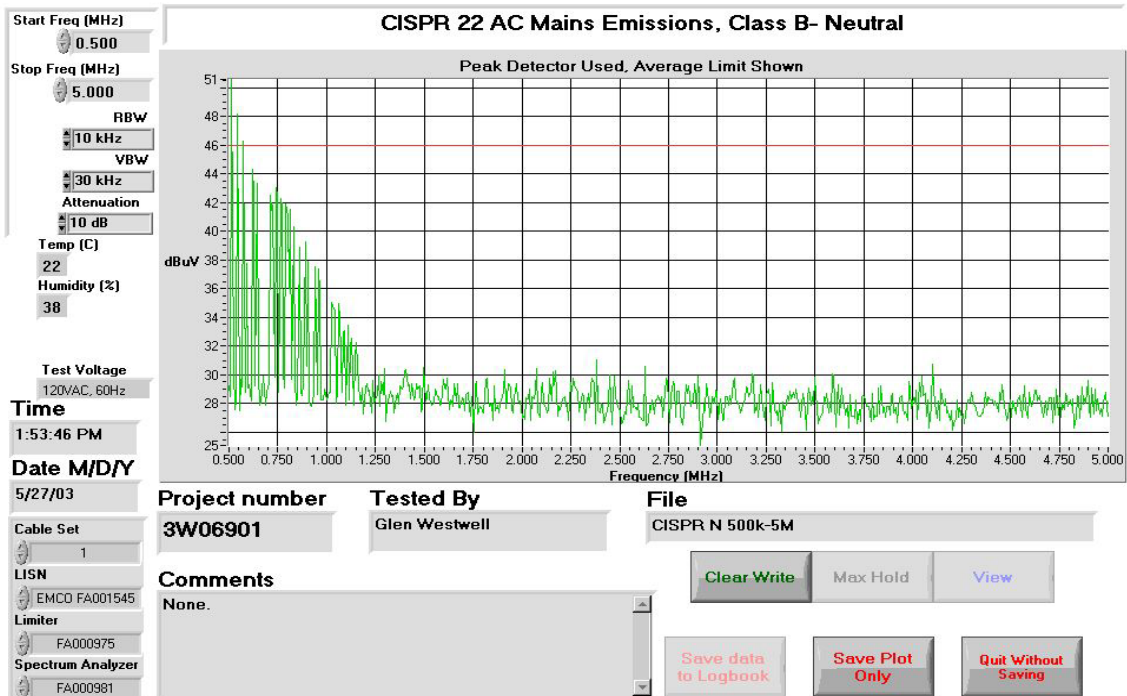
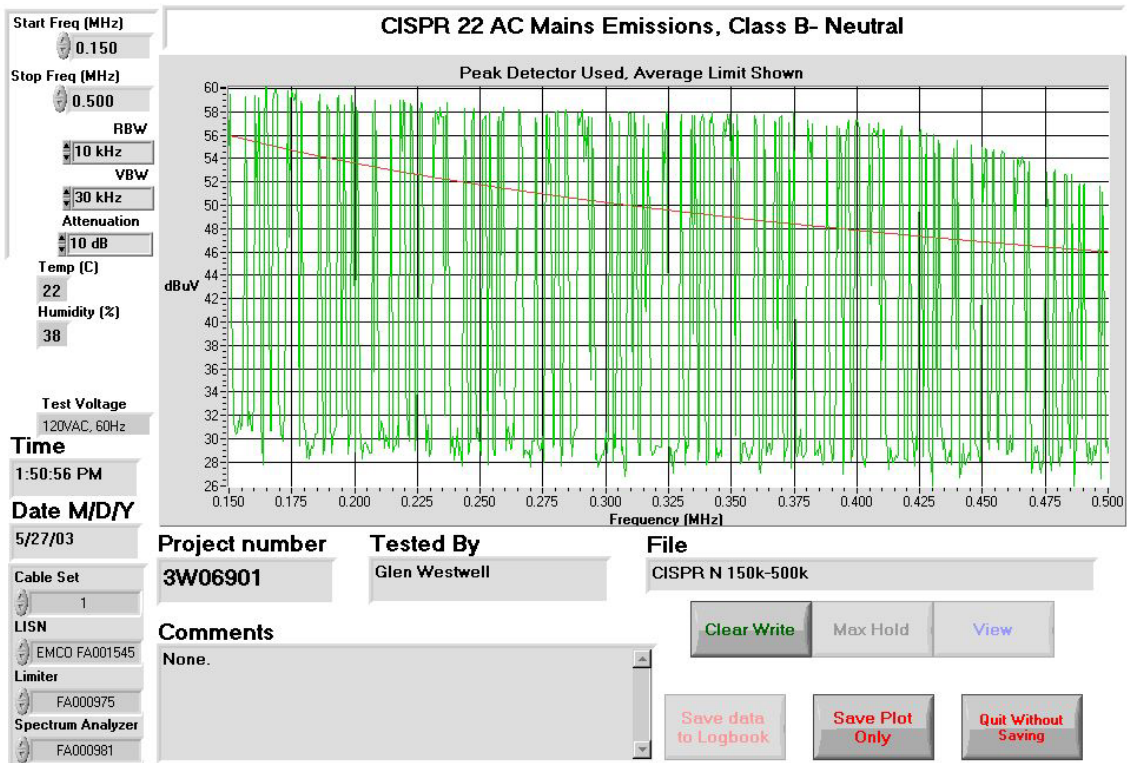
Comments:

LISN:EMCO FA001545

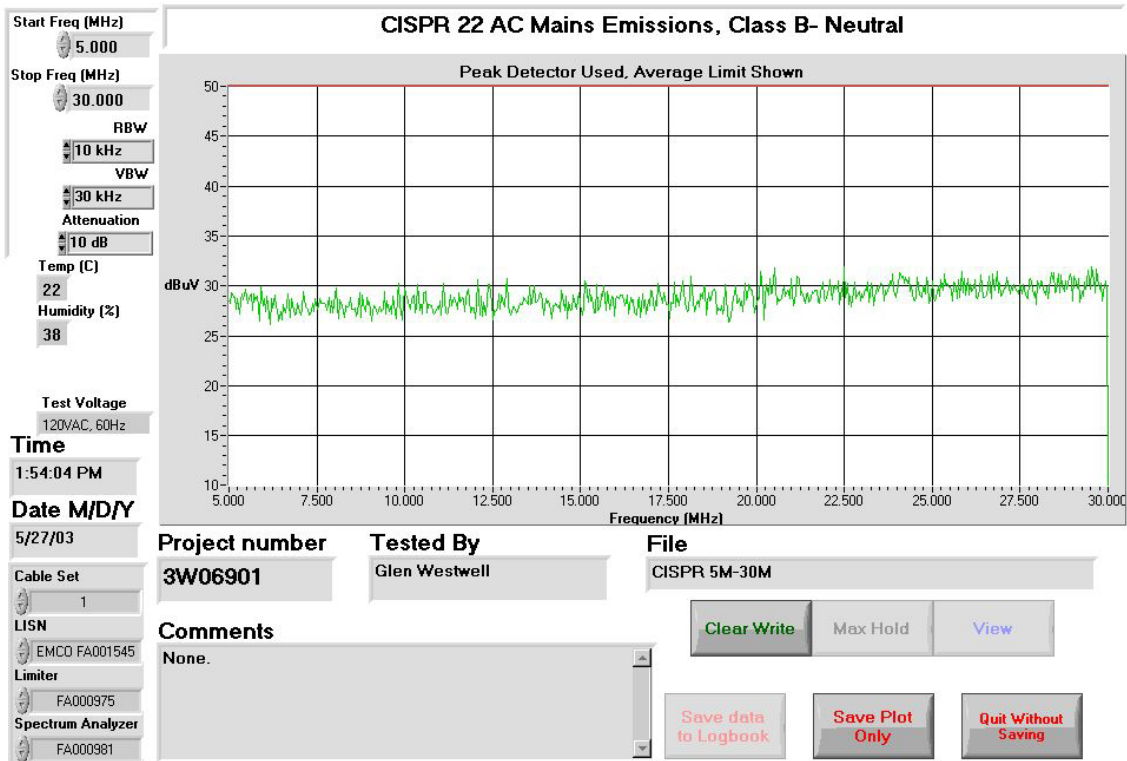
Class B Mains limits (Neutral)

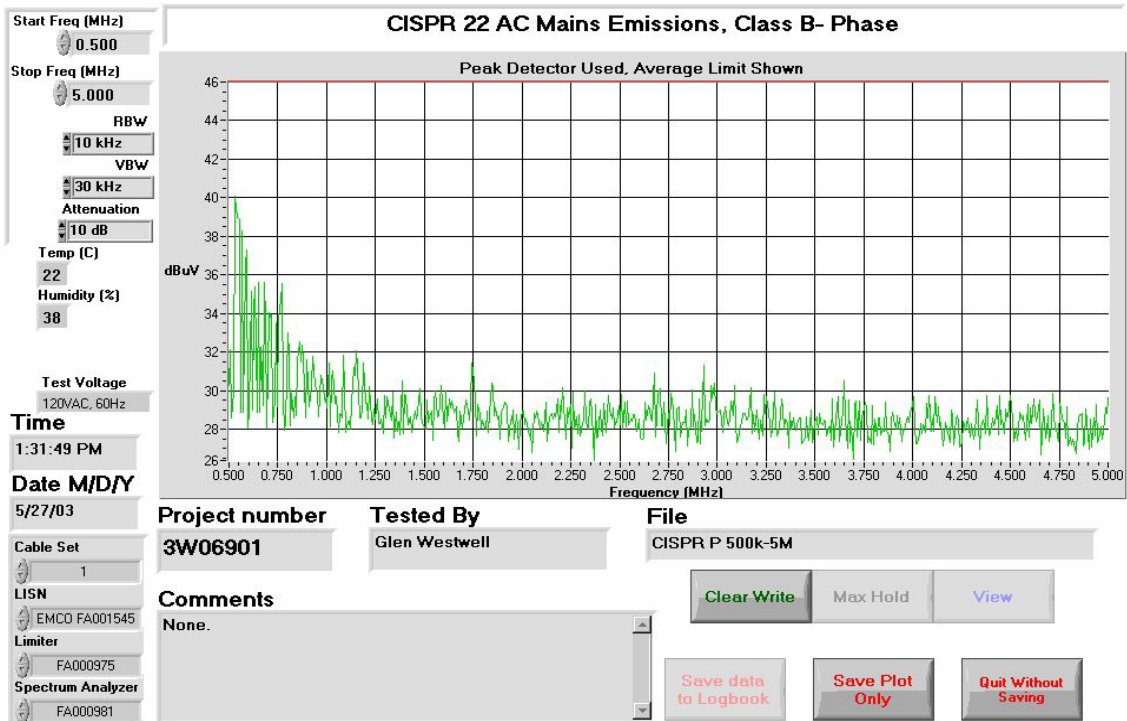
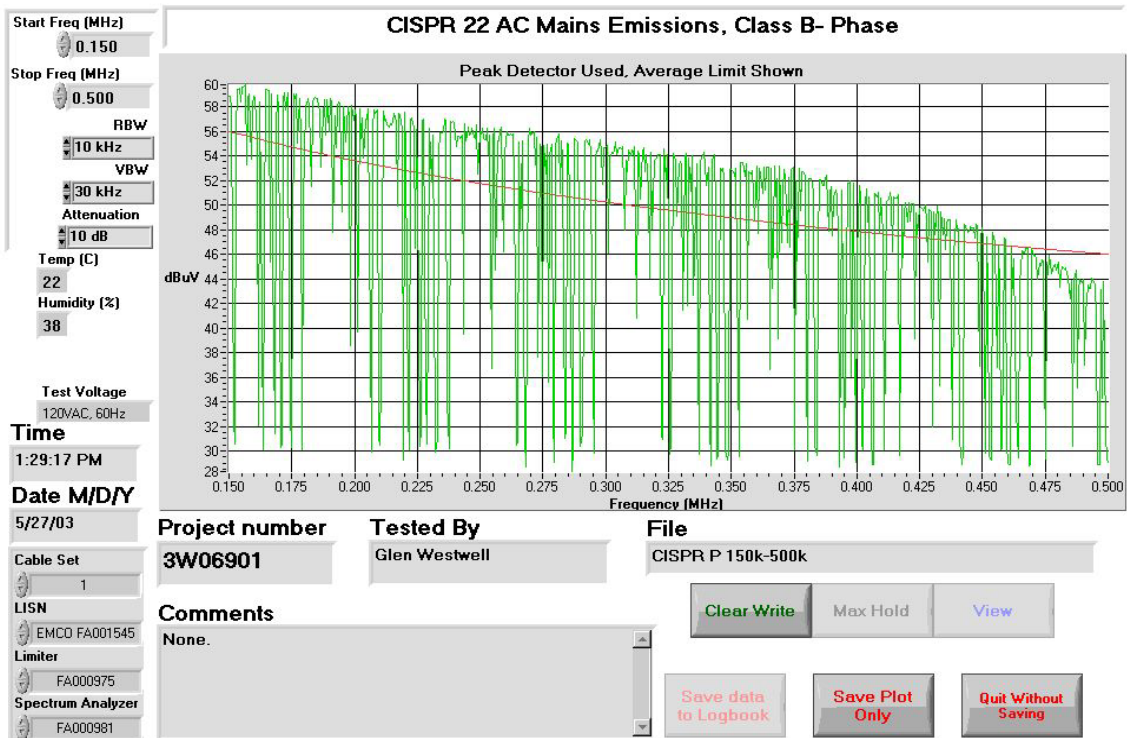
No.	Frequency of Emission (MHz)	Detector	Emission Level (dBuV)	LISN Loss (dB)	Cable Loss (dB)	Result (dBuV)	Limit (dBuV)	Margin (dB)
1	0.1698	Quasi-Peak	48.9	0.1	0	49	65.0	16.0
		Average	16.3	0.1	0	16.4	55.0	38.6
2	0.1722	Quasi-Peak	48.8	0.1	0	48.9	64.9	16.0
		Average	16.5	0.1	0	16.6	54.9	38.3
3	0.2416	Quasi-Peak	47.6	0.1	0	47.7	62.0	14.3
		Average	15.2	0.1	0	15.3	52.0	36.7
4	0.2608	Quasi-Peak	47.4	0.1	0.2	47.7	61.4	13.7
		Average	15.1	0.1	0.2	15.4	51.4	36.0
5	0.2953	Quasi-Peak	47.2	0.1	0	47.3	60.4	13.1
		Average	14.8	0.1	0	14.9	50.4	35.5
6	0.4014	Quasi-Peak	46.5	0.1	0.2	46.8	57.8	11.0
		Average	14.2	0.1	0.2	14.5	47.8	33.3
7	0.5080	Quasi-Peak	40.3	0.1	0.2	40.6	56.0	15.4
		Average	8.3	0.1	0.2	8.6	46.0	37.4
8	0.5300	Quasi-Peak	38.8	0.1	0.2	39.1	56.0	16.9
		Average	6.4	0.1	0.2	6.7	46.0	39.3
9	0.6950	Quasi-Peak	32.4	0.1	0	32.5	56.0	23.5
		Average	0.2	0.1	0	0.3	46.0	45.7

EQUIPMENT: TRI5758

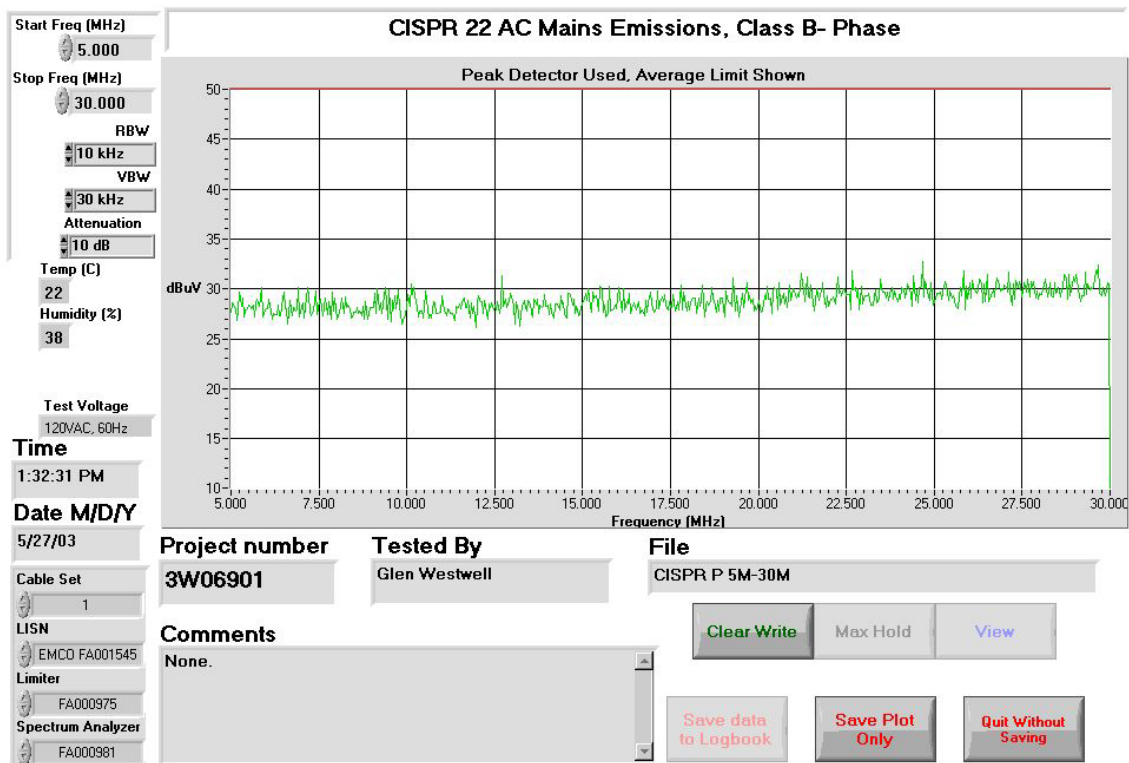


EQUIPMENT: TRI5758



EQUIPMENT: TRI5758

EQUIPMENT: TRI5758



EQUIPMENT: TRI5758

Section 4. Emission Bandwidth

Para. No.: 15.403(c)

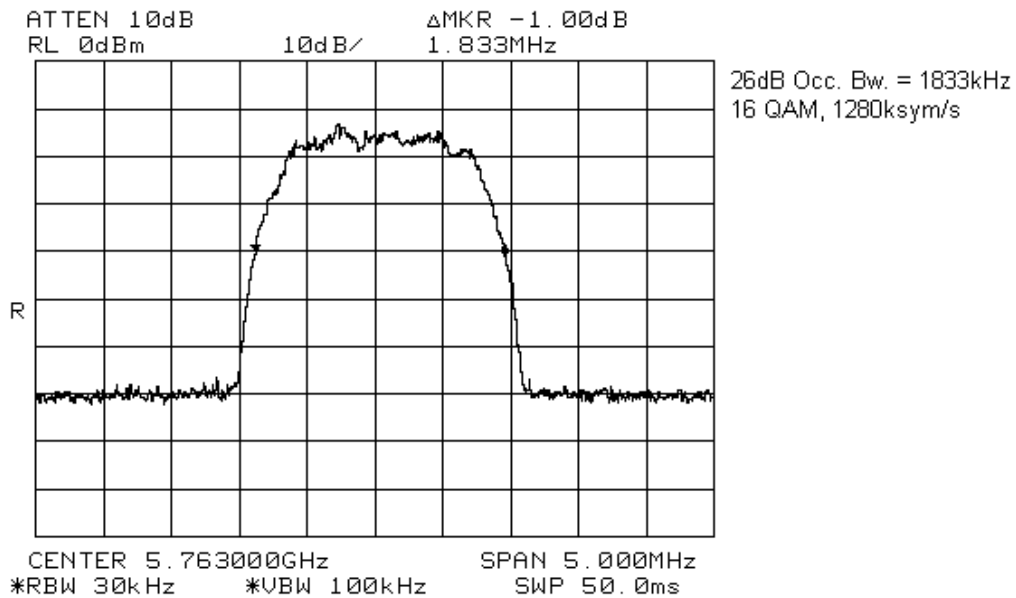
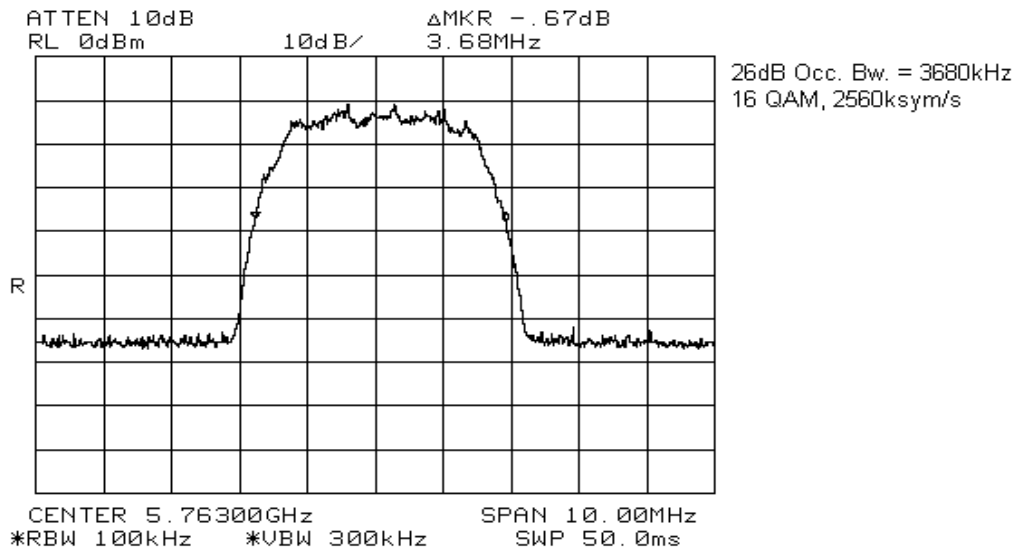
Test Performed By: Glen Westwell	Date of Test: 26 May 2003
---	----------------------------------

Test Results: Complies.

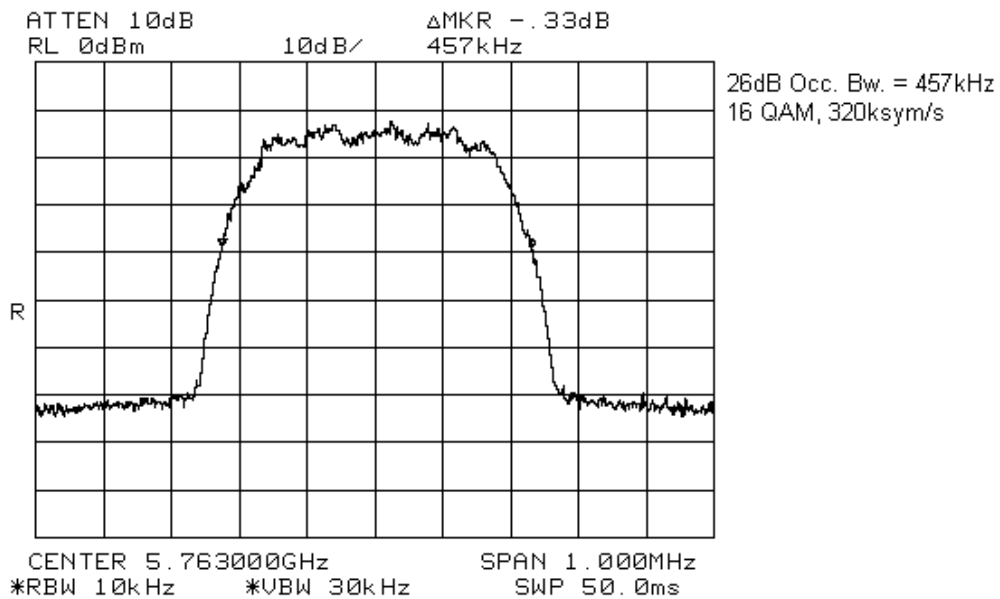
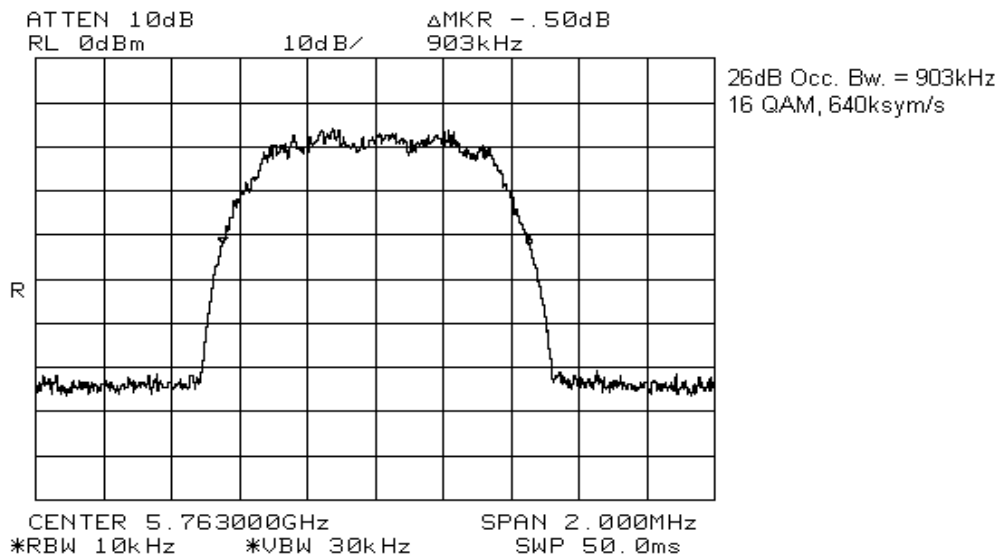
Measurement Data: See attached data.

26dB Occ. Bw. (kHz)		
Data rate (ksym/s)	16 QAM	QPSK
2560	3680	3700
1280	1833	1817
640	903	903
320	457	450
160	225.8	223.3

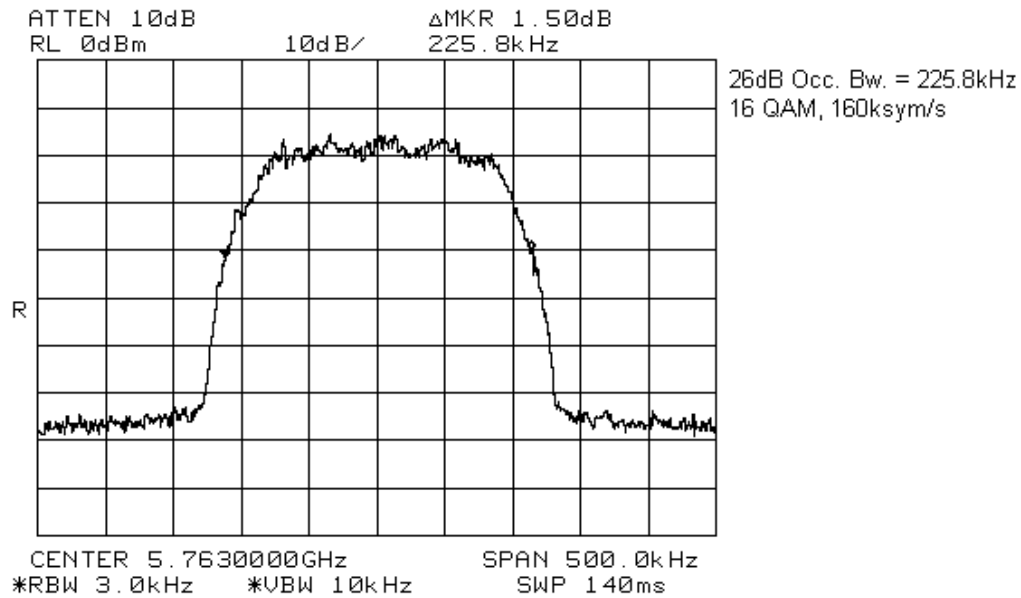
EQUIPMENT: TRI5758



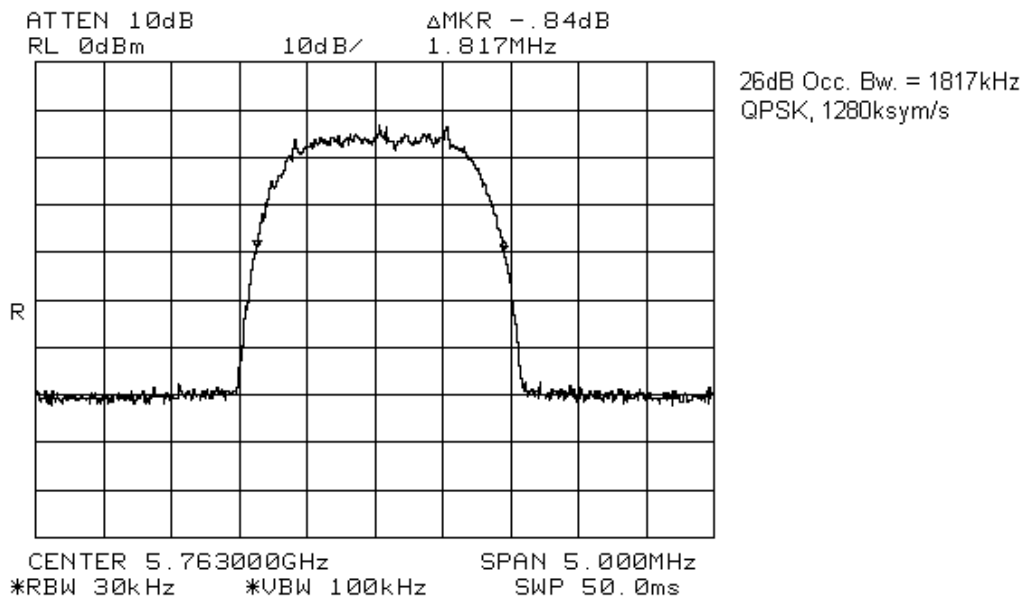
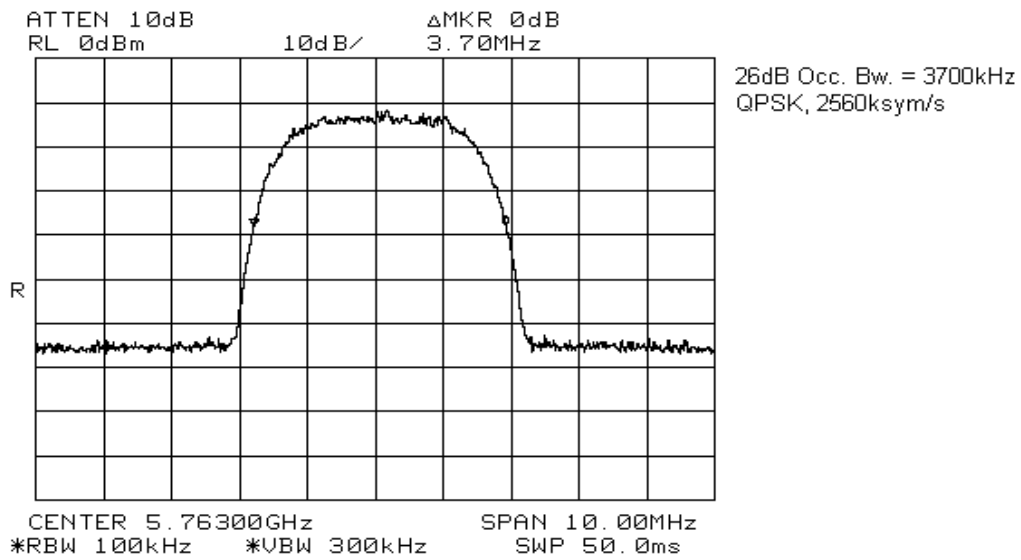
EQUIPMENT: TRI5758



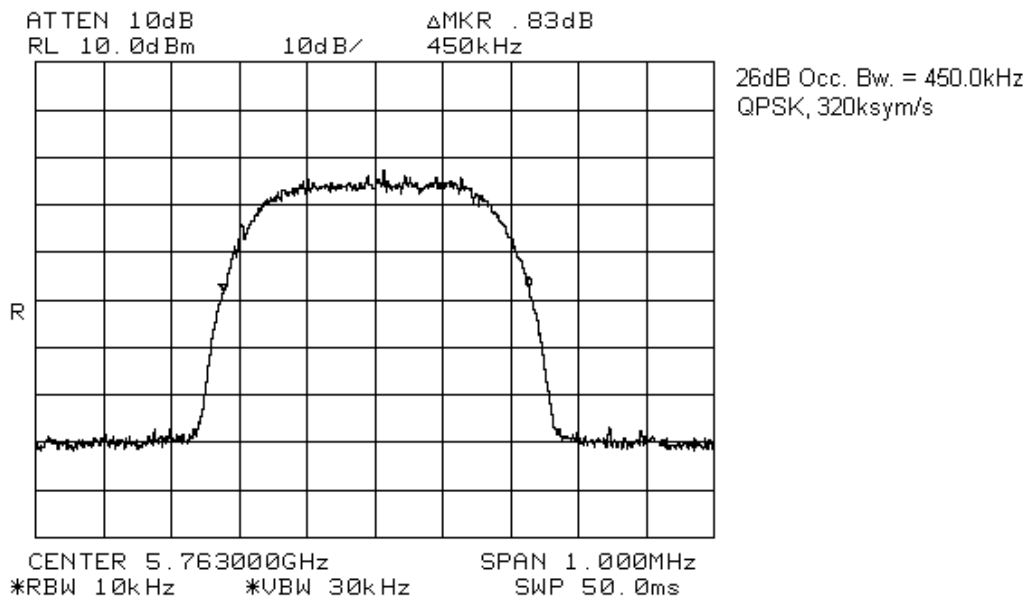
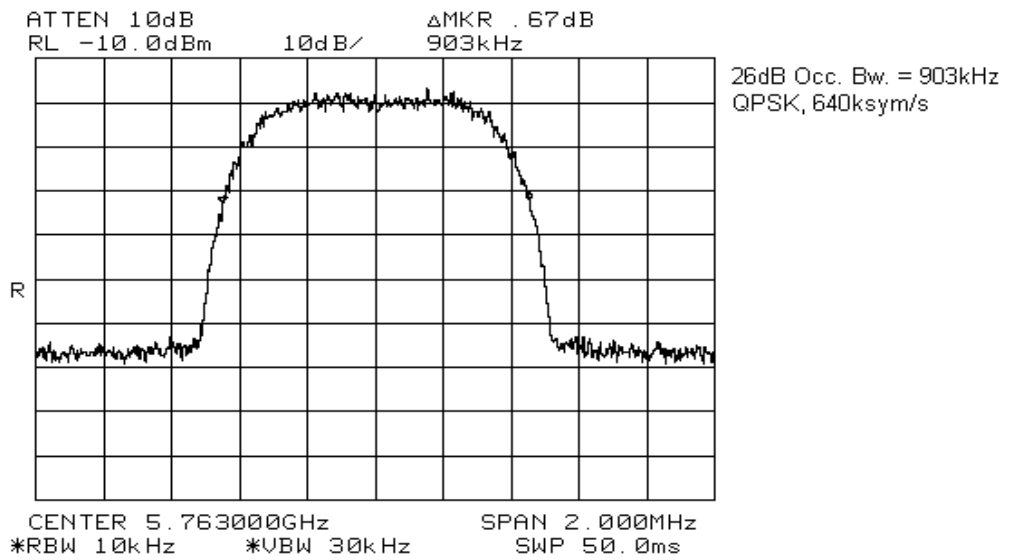
EQUIPMENT: TRI5758



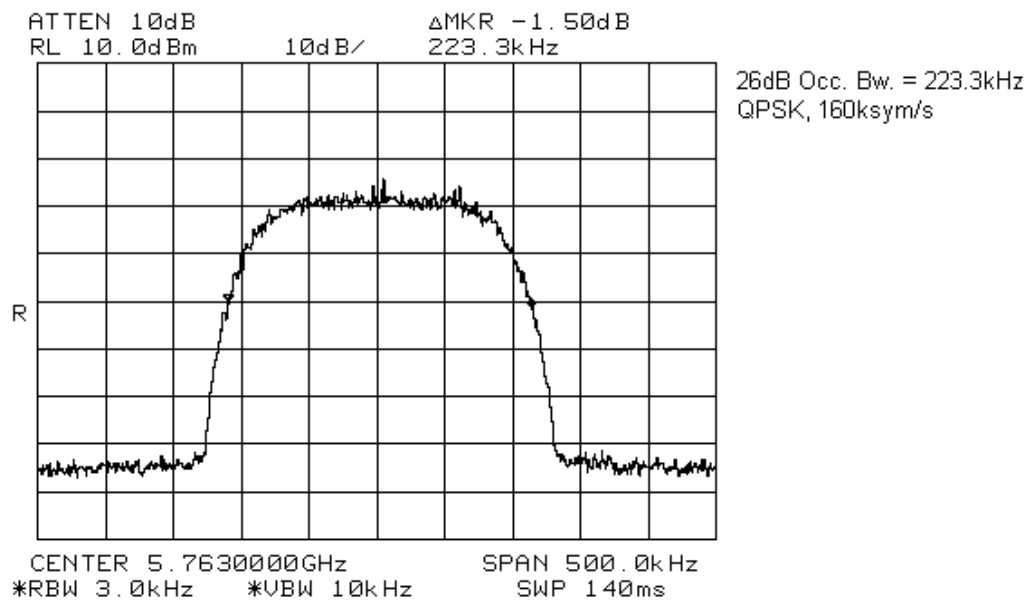
EQUIPMENT: TRI5758



EQUIPMENT: TRI5758



EQUIPMENT: TRI5758



EQUIPMENT: TRI5758

Section 5. Peak Conducted Transmit Power**Para. No.: 15.407(a)(3)**

Test Performed By: Glen Westwell	Date of Test: 27 May 2003
---	----------------------------------

Test Results: Complies**Measurement Data:** See attached data.

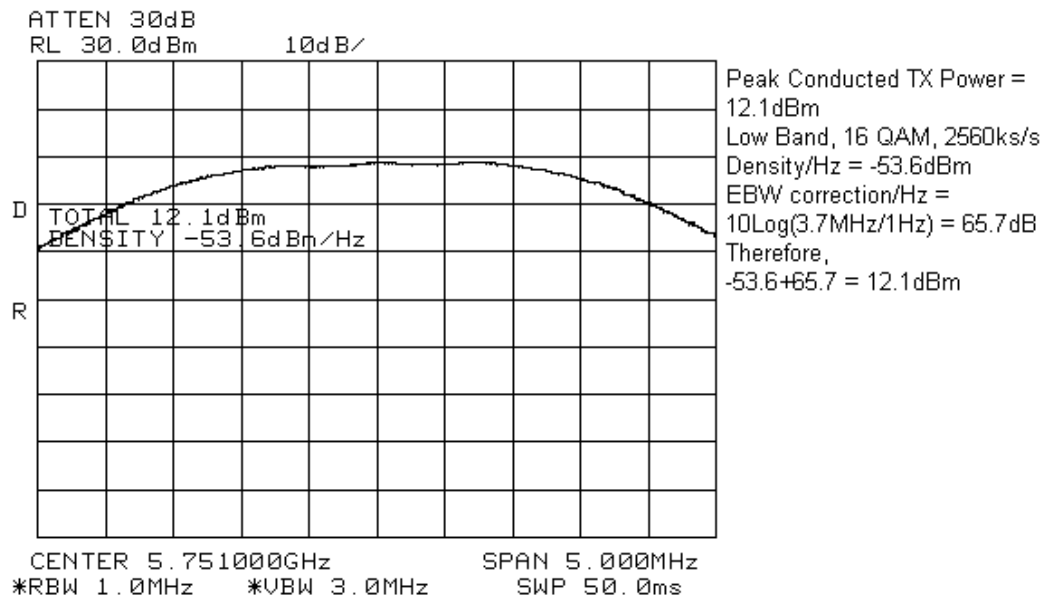
Worst case data has been presented for maximum data rate and power.

Ref. DA 02-2138, 30 Aug. 2002

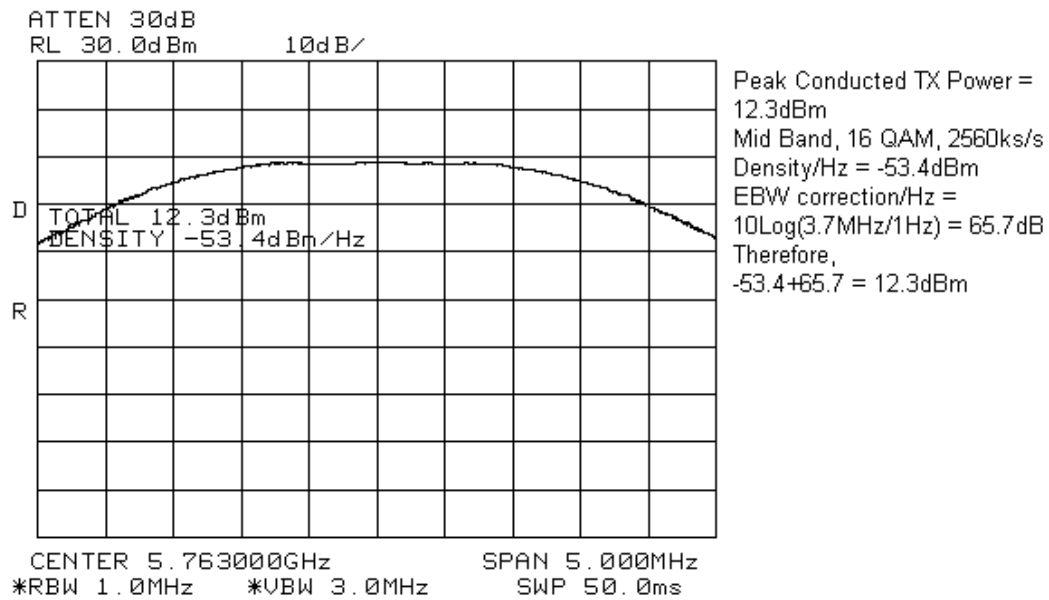
Peak Conducted Transmit Power (method 3)			
	Low band (dBm)	Mid Band (dBm)	High Band (dBm)
QPSK	10.2	9.9	9.8
16 QAM	12.1	12.3	12.0

$$\text{Limit} = 17 + 10\log(26\text{dB, BMHz})$$
$$17 + 10\log(3.7) = 22.7\text{dB}$$

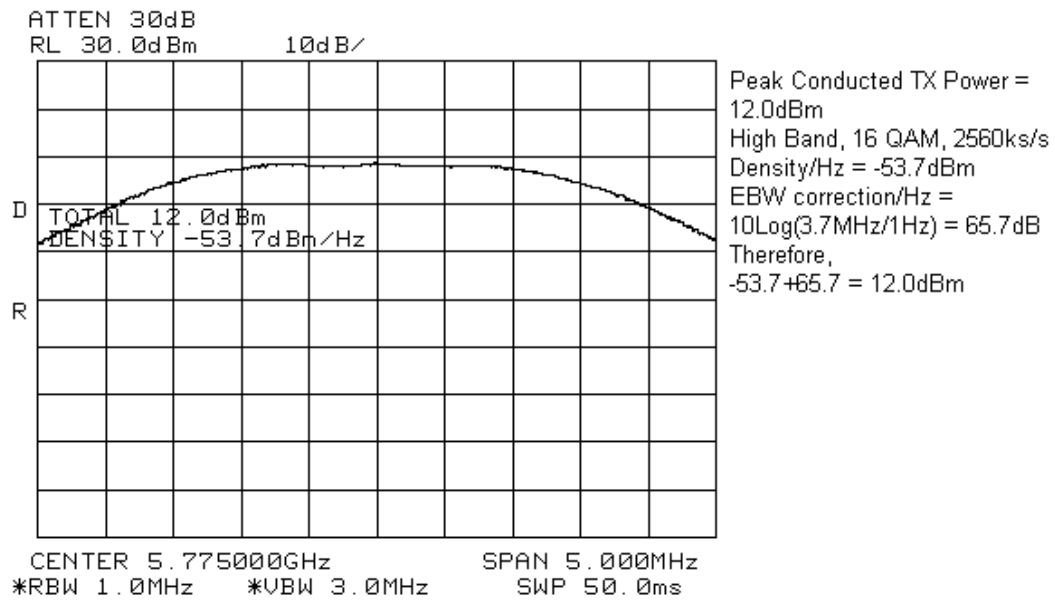
EQUIPMENT: TRI5758



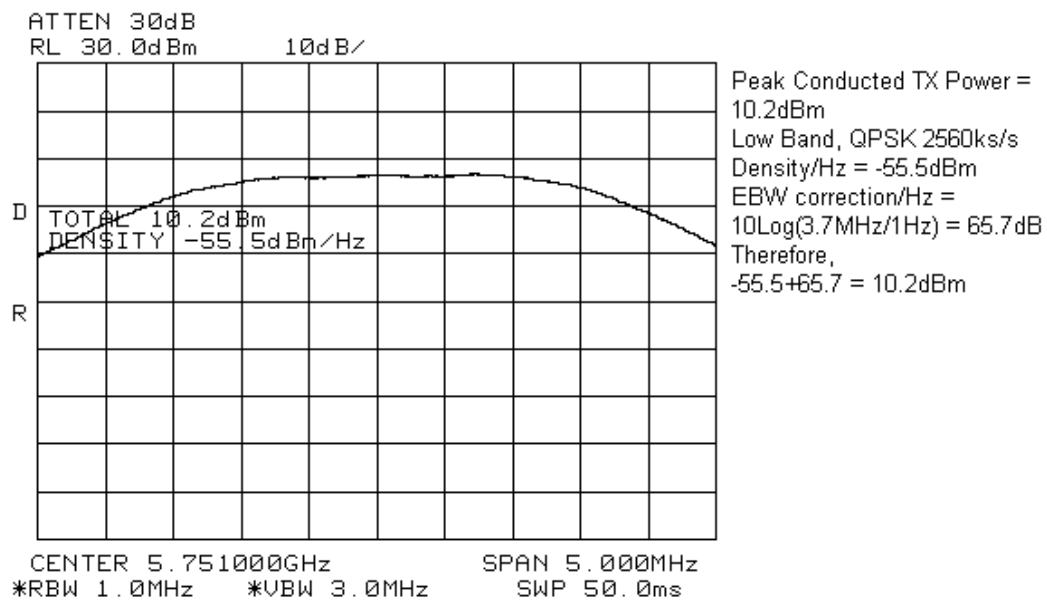
EQUIPMENT: TRI5758



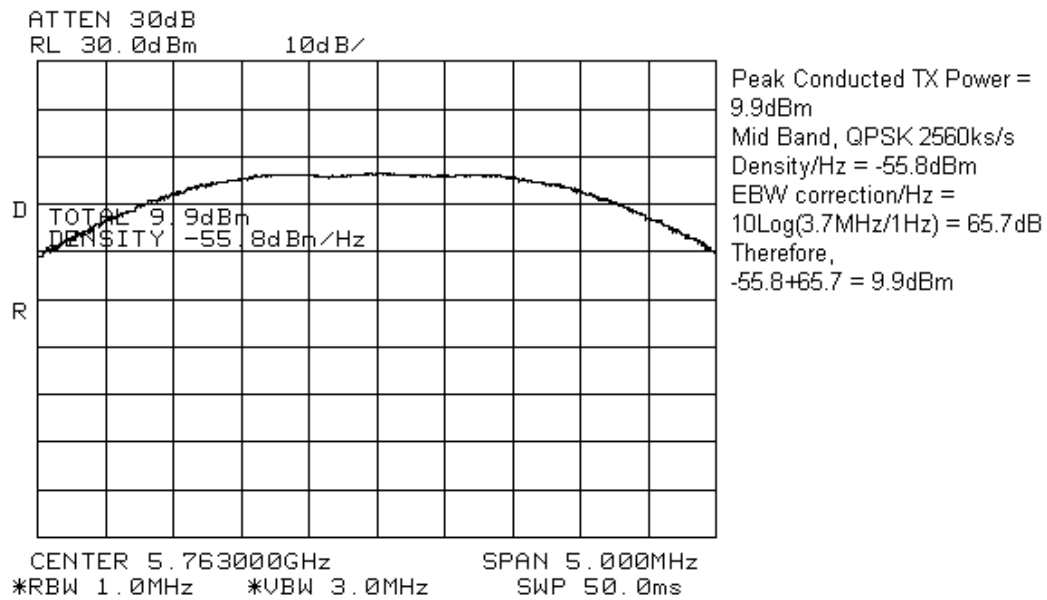
EQUIPMENT: TRI5758



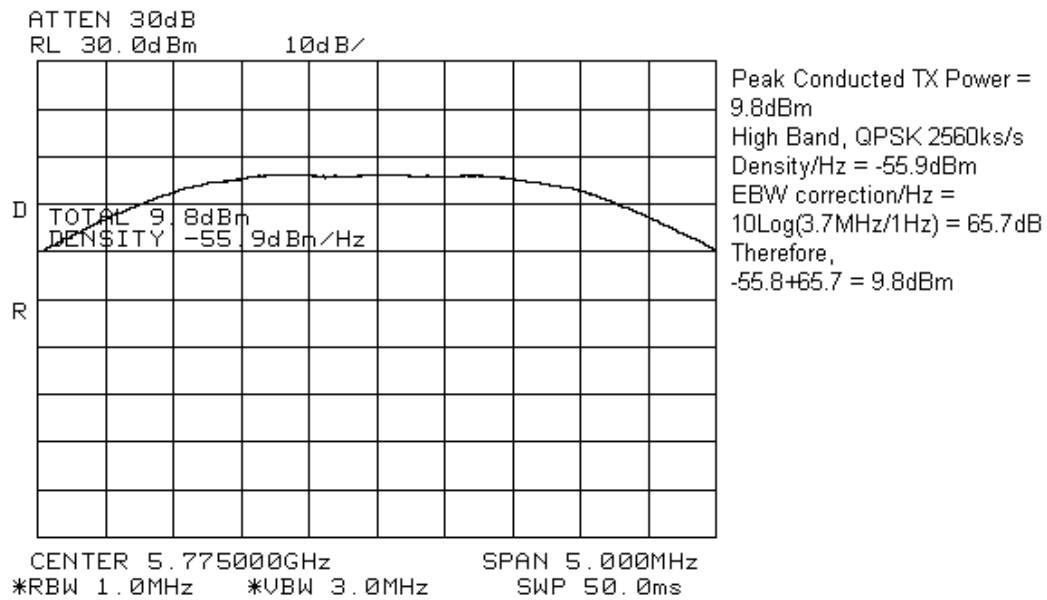
EQUIPMENT: TRI5758



EQUIPMENT: TRI5758



EQUIPMENT: TRI5758



EQUIPMENT: TRI5758

Section 6. Peak Power Spectral Density**Para. No.: 15.407(a)(3)**

Test Performed By: Glen Westwell	Date of Test: 27 May 2003
---	----------------------------------

Test Results: Complies.**Measurement Data:** See attached data.

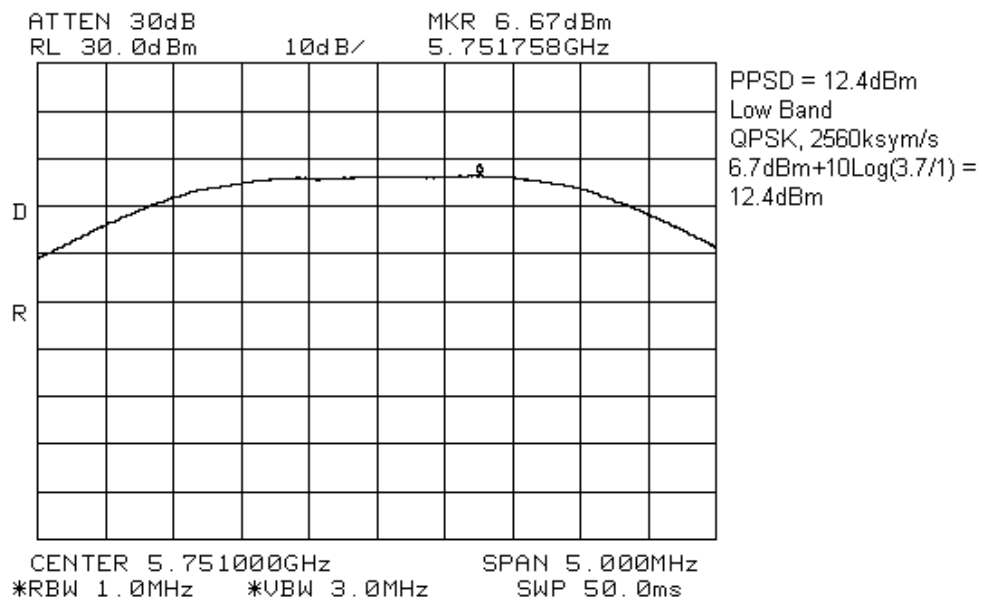
Worst case data has been presented for maximum data rate and power.

Ref. DA 02-2138, 30 Aug. 2002

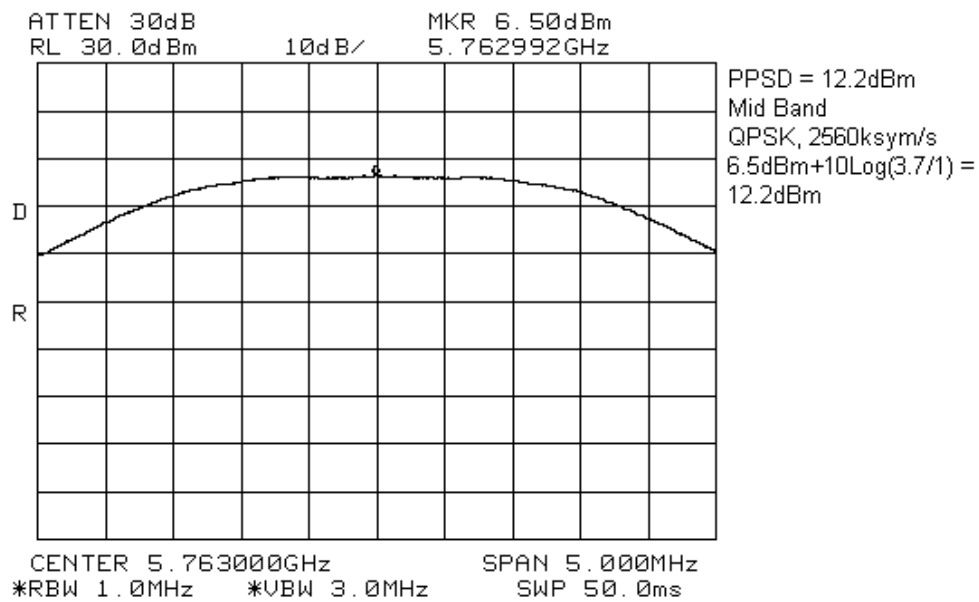
PPSD Measurements (method 1)			
	Low(dBm)	Mid(dBm)	High(dBm)
QPSK	12.4	12.2	11.9
16 QAM	14.5	14.5	14.2

Limit = +17dBm

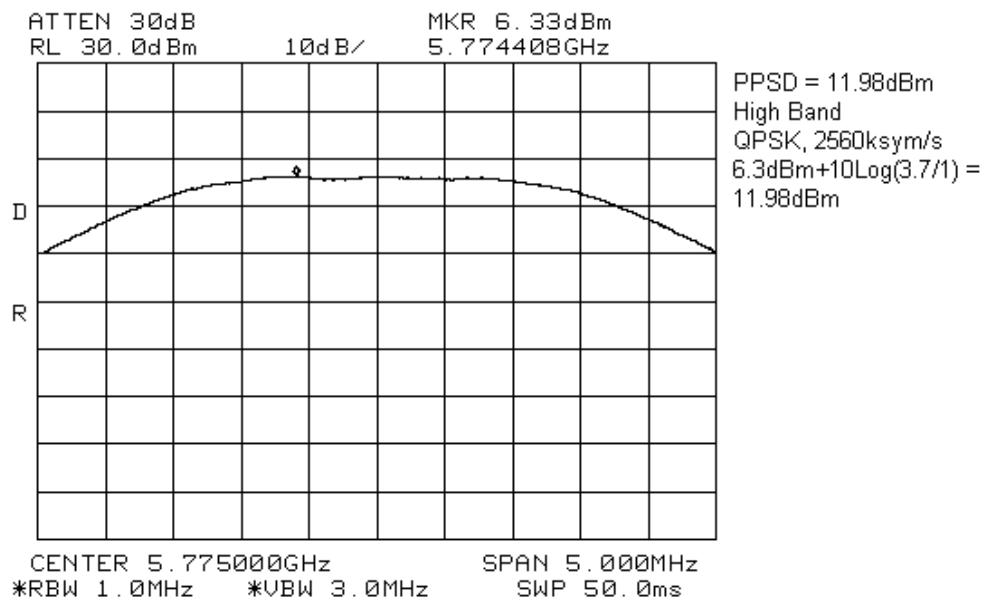
EQUIPMENT: TRI5758



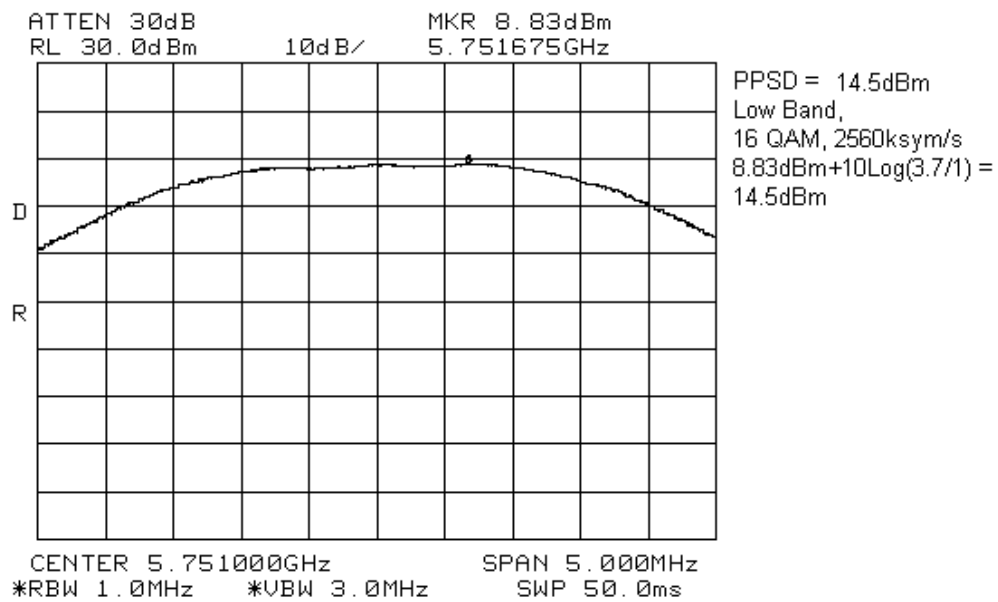
EQUIPMENT: TRI5758



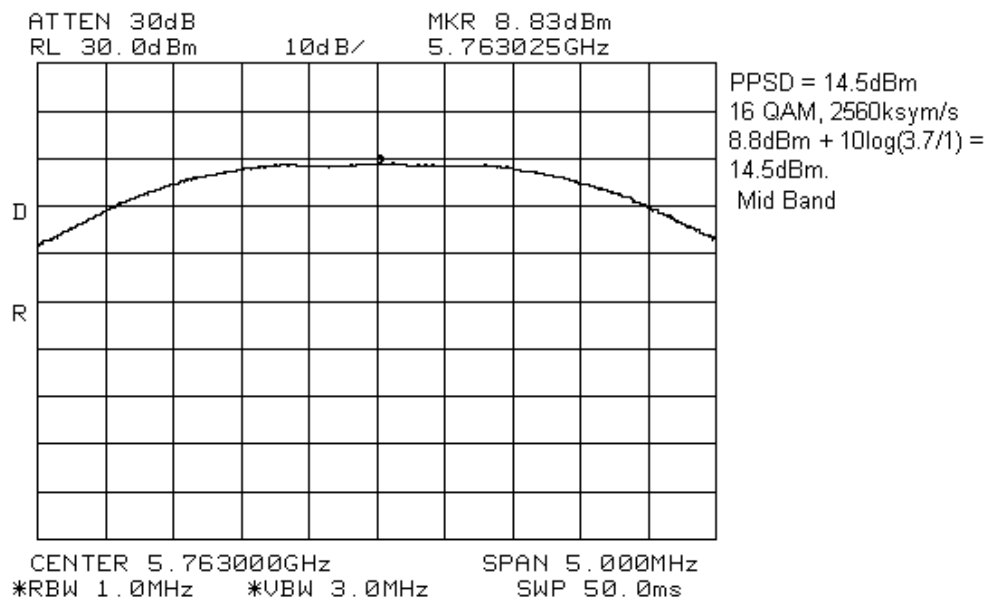
EQUIPMENT: TRI5758



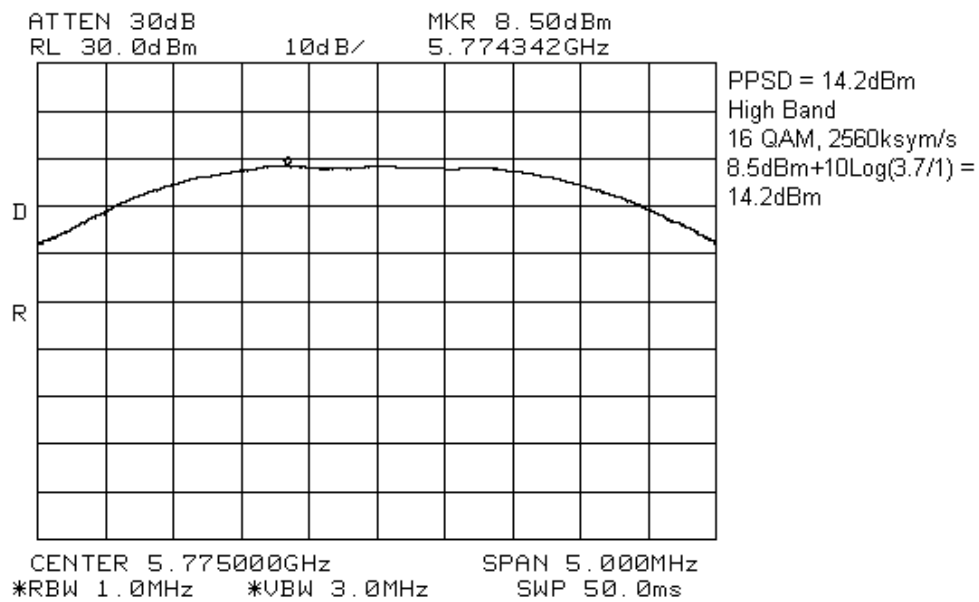
EQUIPMENT: TRI5758



EQUIPMENT: TRI5758



EQUIPMENT: TRI5758



EQUIPMENT: TRI5758

Section 7. Peak Excursion Measurement

Para. No.: 15.407(a)(6)

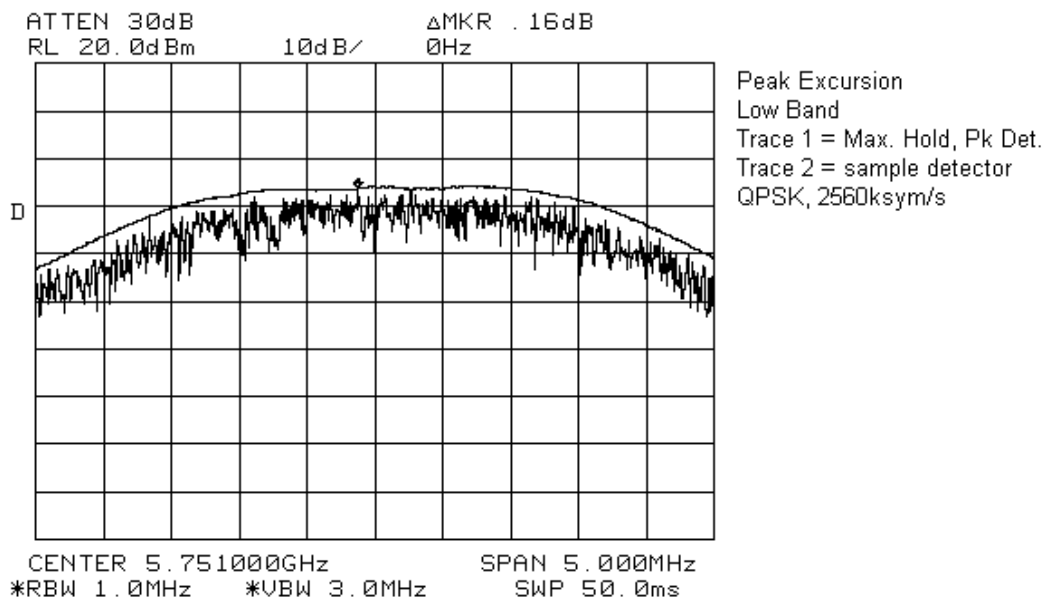
Test Performed By: Glen Westwell	Date of Test: 27 May 2003
---	----------------------------------

Test Results: Complies.

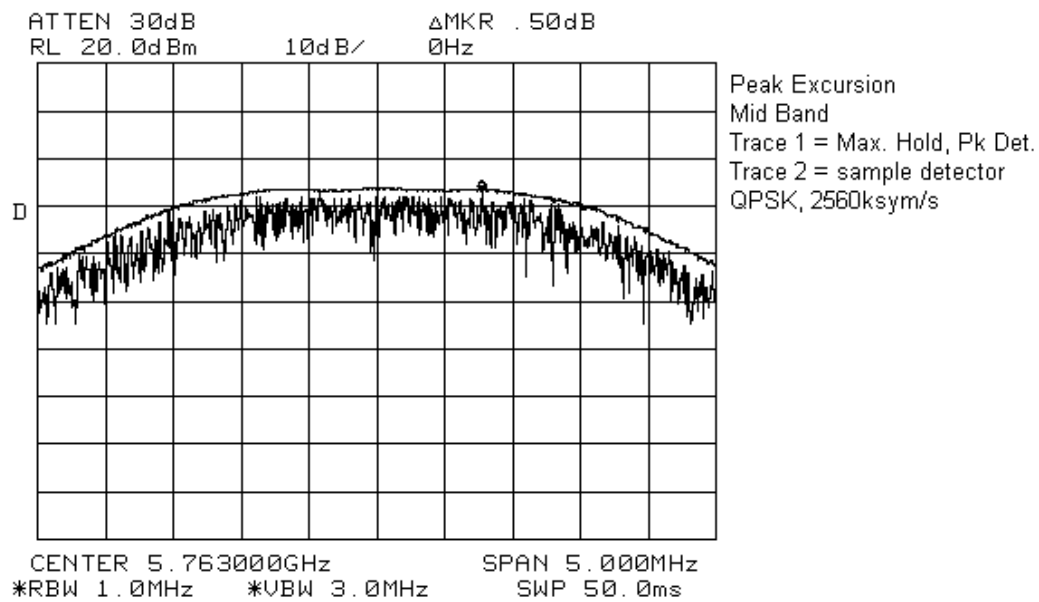
Measurement Data: See attached data.

Maximum Peak Excursion = 2.16dB
Limit = 13dB/MHz

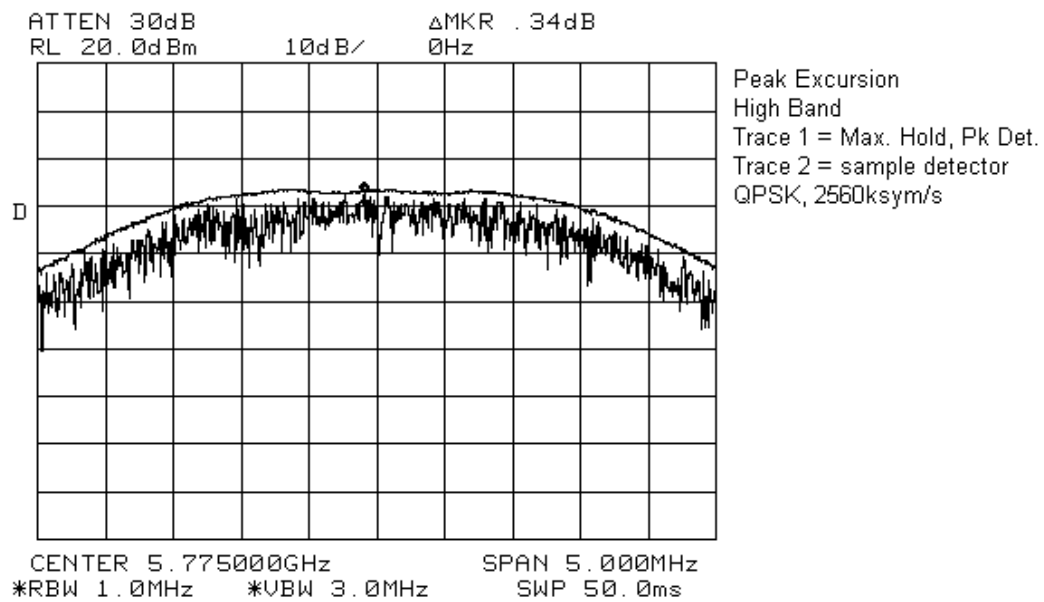
EQUIPMENT: TRI5758



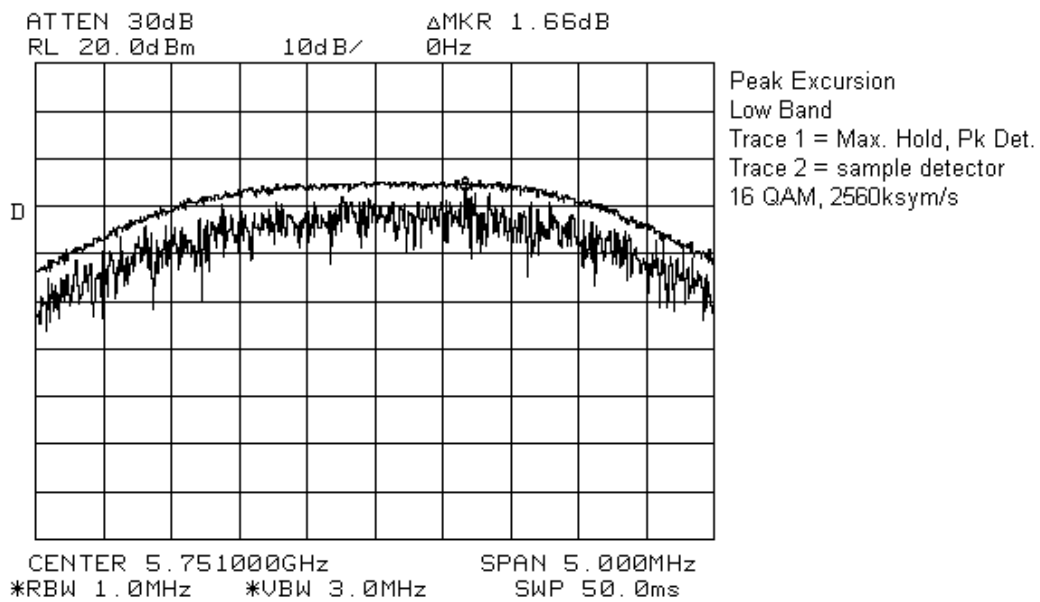
EQUIPMENT: TRI5758



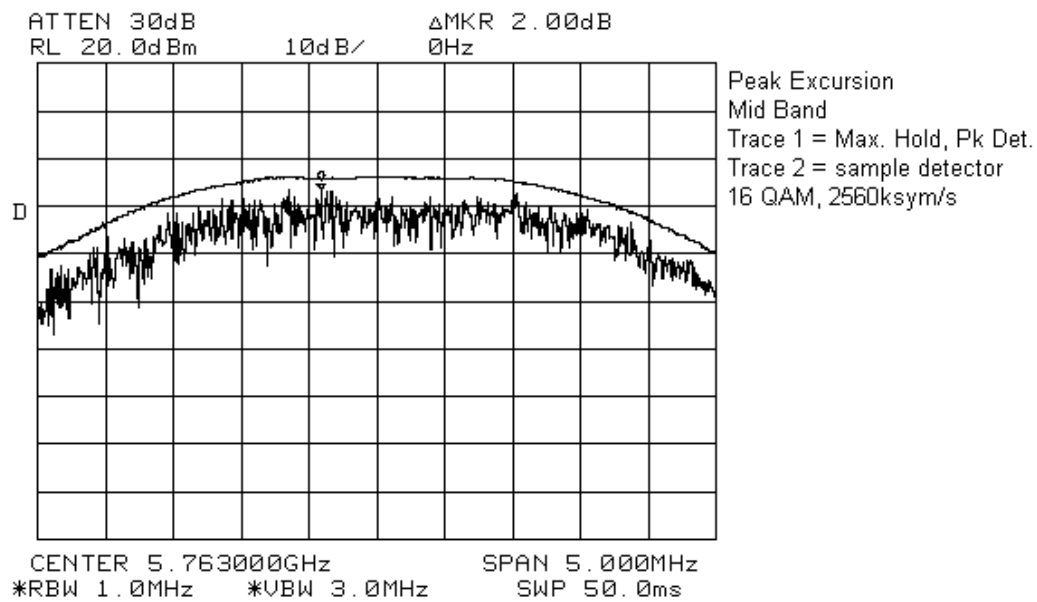
EQUIPMENT: TRI5758



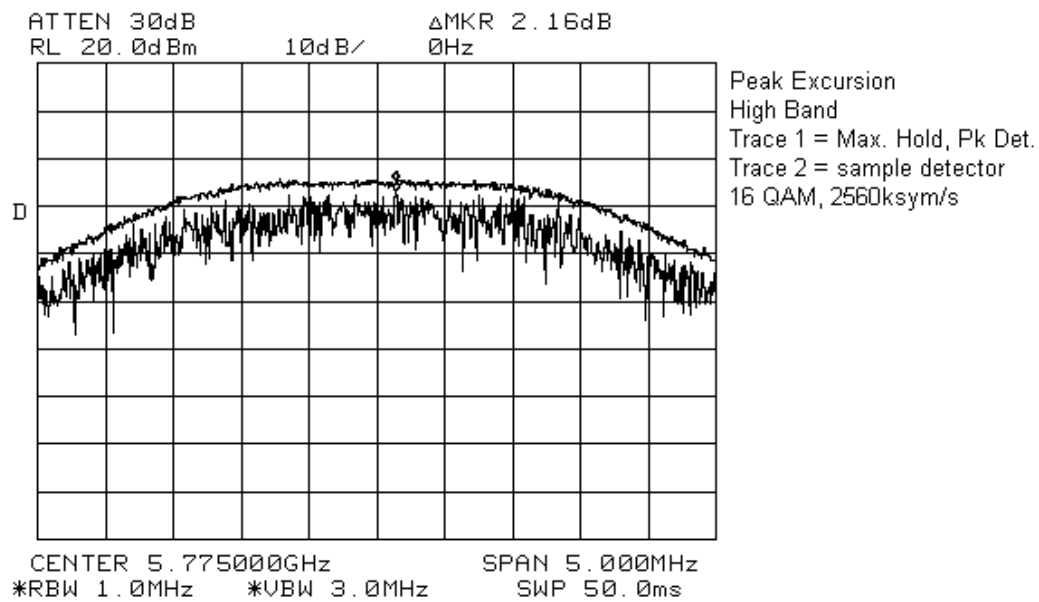
EQUIPMENT: TRI5758



EQUIPMENT: TRI5758



EQUIPMENT: TRI5758



*EQUIPMENT: TRI5758***Section 8. Undesirable Emissions****Para. No.: 15.407(b)(3)(5)**

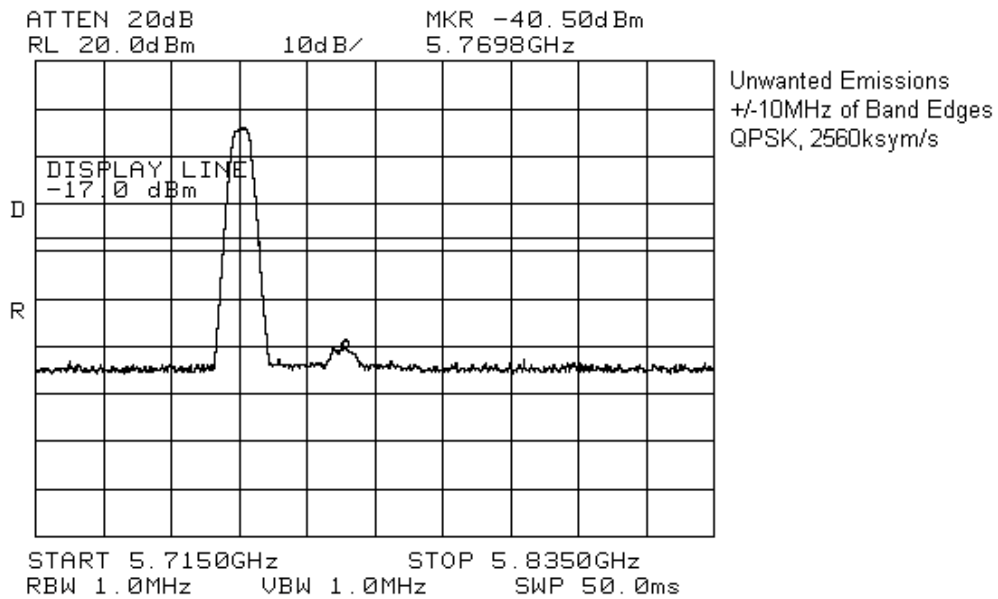
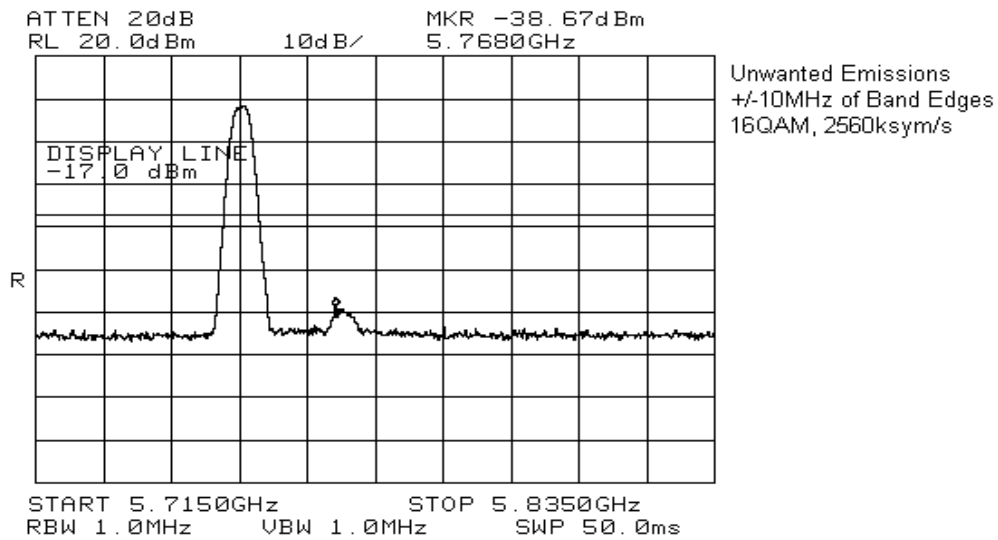
Test Performed By: Glen Westwell	Date of Test: 29 May 2003
---	----------------------------------

Test Results: Complies.**Measurement Data:** See attached data.

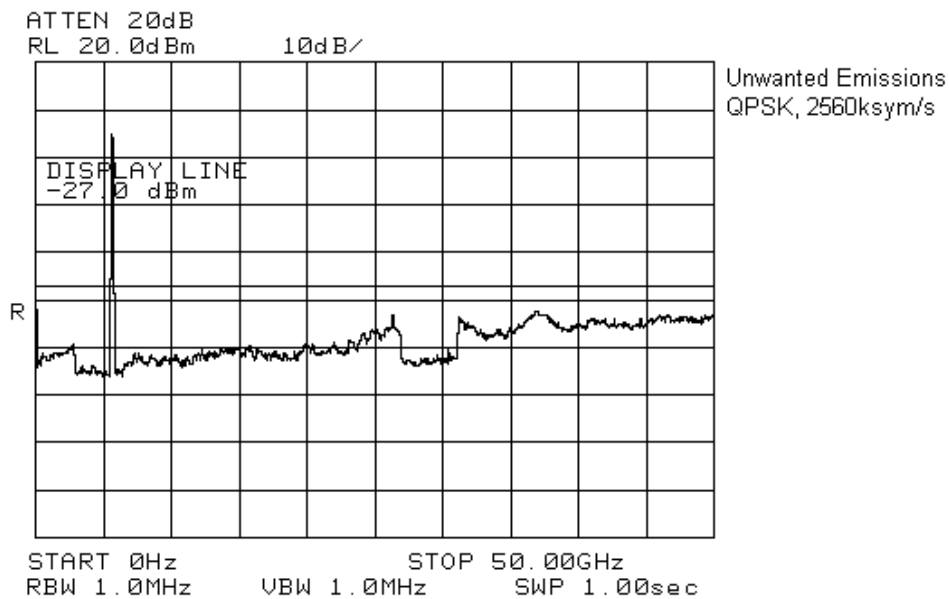
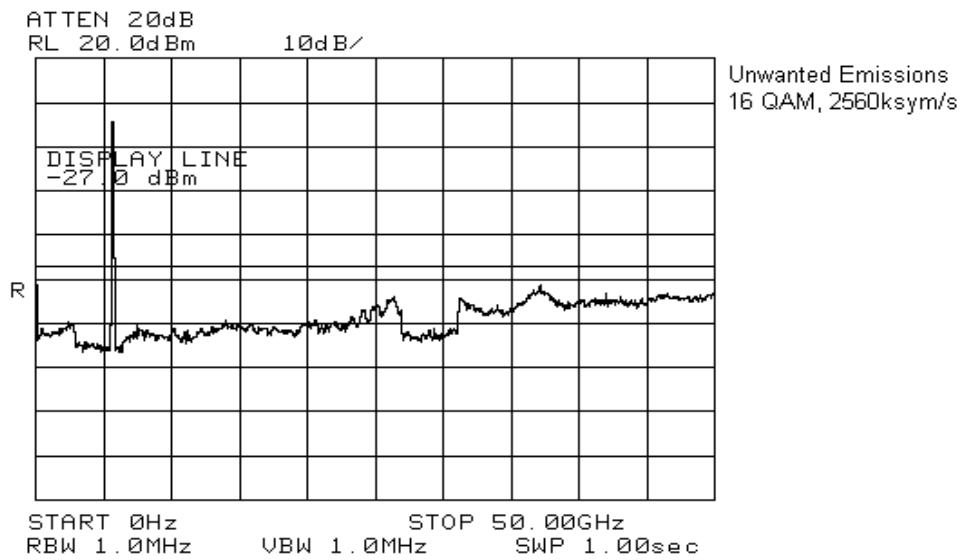
- All emissions were searched from 30MHz to 60GHz.
- Where necessary, emissions were searched at 3m and 1m with an in-line amplifier.
- All emissions within 20dB of the limit were reported.
- This device operates 26MHz above the lower band edge of 5725MHz & 50MHz below the upper band edge of 5825MHz.
- The DUT was searched on 3 orthogonal axis.
- The supply voltage was varied +/- 15% to verify maximum emission level(s).

Radiated Emissions – Signal Substitution. RBW=1MHz								
Frequency (MHz)	Antenna	Polarity	RCV (dBuV)	Sig.Sub. Factor	Cable Loss (dB)	Emission Level (dBm)	Limit (dBm)	Margin (dB)
1761.00	Horn 2	V	49.2	-119.5	3.9	-66.4	-27	39.4
1761.00	Horn 2	H	49.5	-120.1	3.9	-66.6	-27	39.6
5283.00	Horn 2	V	81.6	-119.0	8.9	-28.5	-27	1.5
5383.00	Horn 2	H	80.2	-117.1	8.9	-28.0	-27	1.0

EQUIPMENT: TRI5758

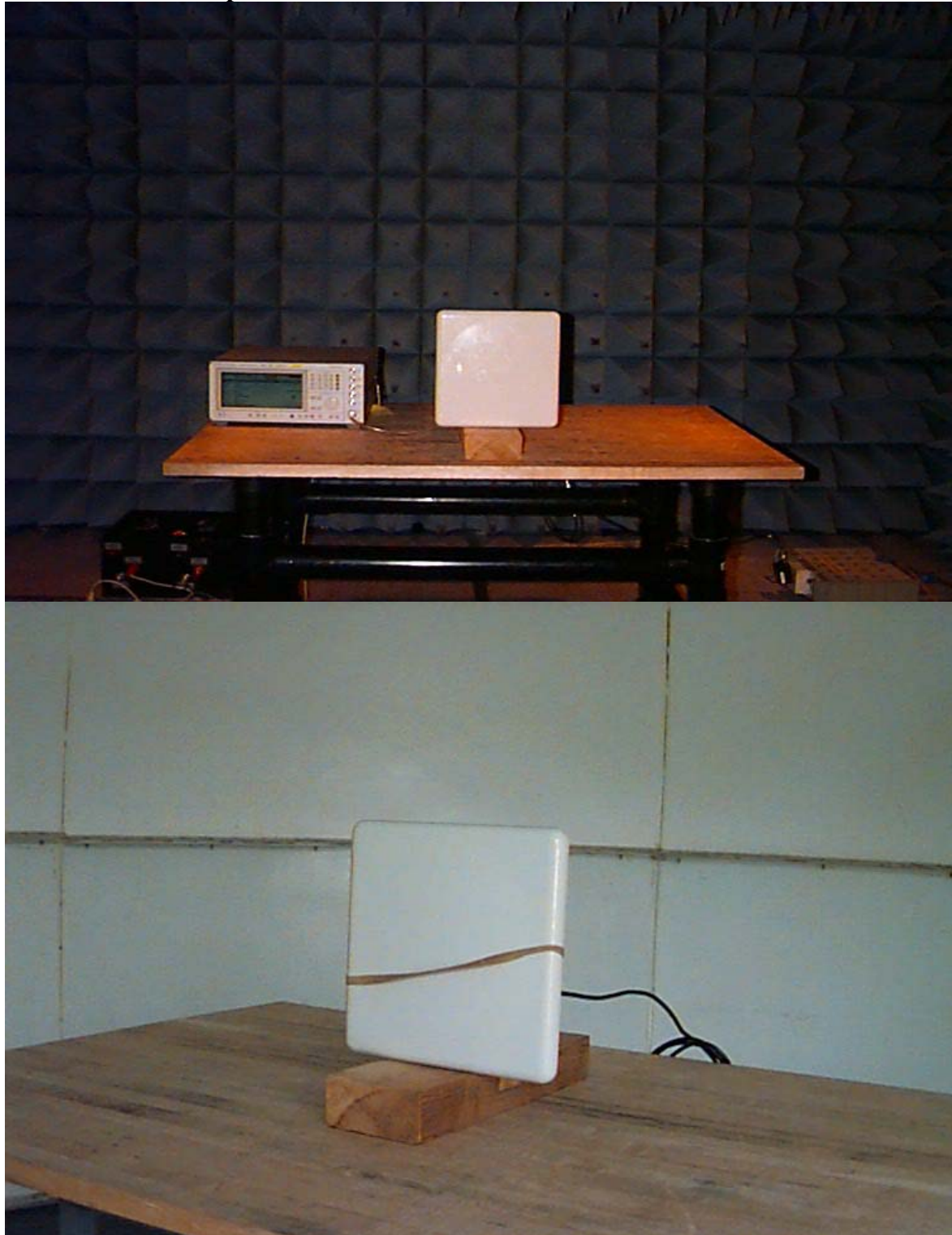


EQUIPMENT: TRI5758



EQUIPMENT: TRI5758

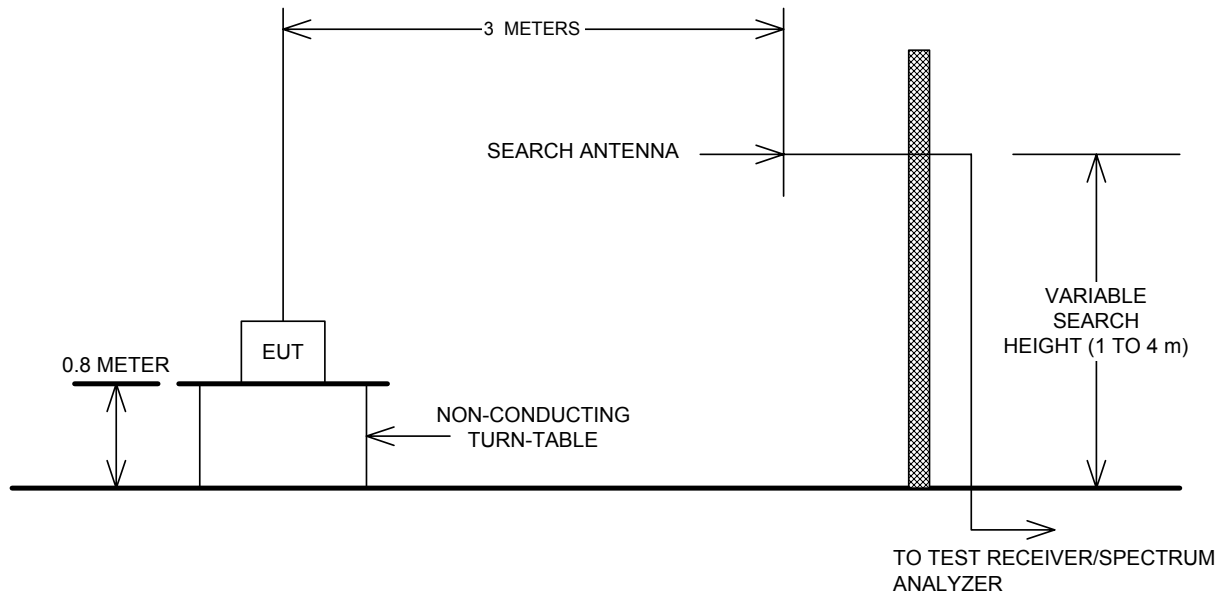
Radiated Test Set Up



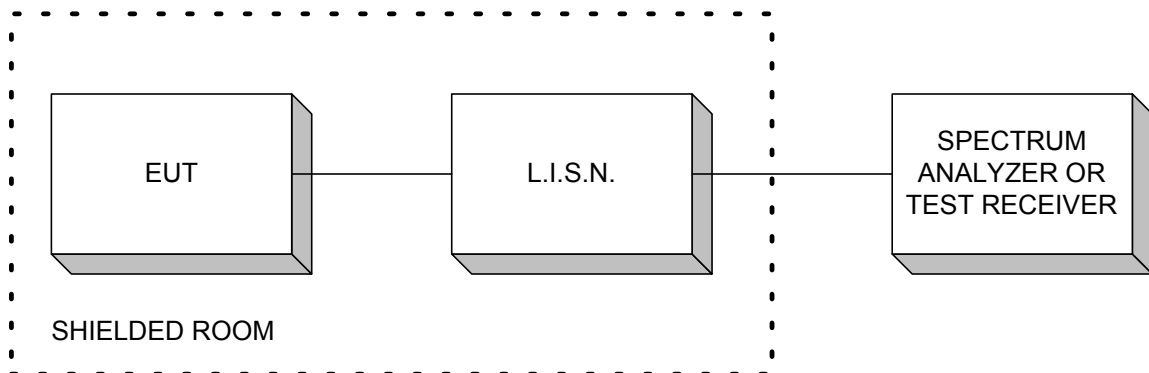
EQUIPMENT: TRI5758

Section 9. Block Diagrams

Test Site For Radiated Emissions



Conducted Emissions



EQUIPMENT: TRI5758

Peak Power At Antenna Terminals

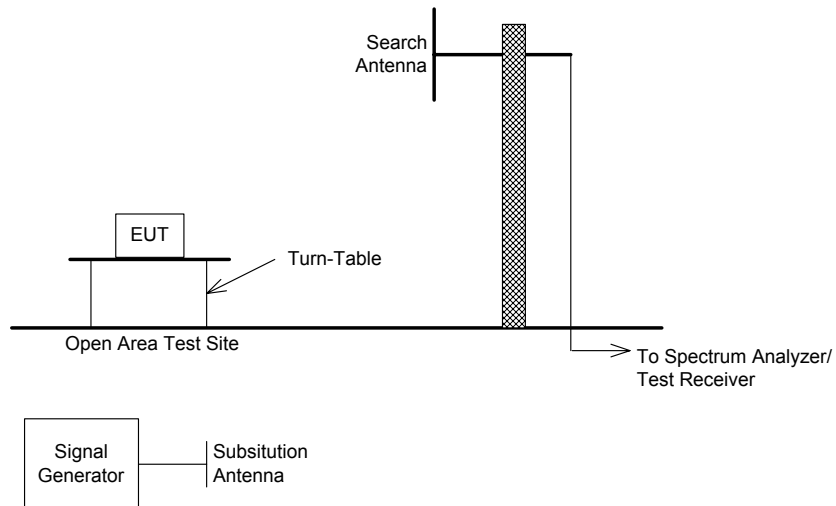


Signal Substitution

TIA/EIA 603

Effective Radiated Power

Spurious Emissions



*EQUIPMENT: TRI5758***Section 10. Test Equipment List**

CAL CYCLE	EQUIPMENT	MANUFACTURER	MODEL	SERIAL	LAST CAL.	NEXT CAL.
1 Year	Spectrum Analyzer	Hewlett Packard	8565E	FA000981	15 Jul 02	15 Jul 03
1 Year	Power Meter	Hewlett Packard	E4418B	FA001678	01 Apr 03	01 Apr 04
1 Year	Power Sensor	Hewlett Packard	8487A	FA001741	28 Mar 03	28 Mar 04
1 Year	Signal Generator	Rhode & Schwarz	SM1Q03E	FA001269	06 Dec 02	06 Dec 03
1 Year	RF AMP	Narda	5 - 18GHz	FA001409	COU	COU
1 Year	RF AMP	Narda	18 - 26.5GHz	FA001550	COU	COU
1 Year	RF AMP	Narda	26.5 - 40GHz	FA001556	COU	COU
1 Year	RF AMP	JCA	1-2 GHz	FA001498	04 June 02	04 June 03
1 Year	RF AMP	JCA	4-8 GHz	FA001497	04 June 02	04 June 03
1 Year	Harmonic Mixer	H.P.	50-75Ghz	FA001027	COU	COU
1 Year	Horn Antenna	EMCO #2	3115	FA000825	09 Dec 02	09 Dec 03
1 Year	Horn Antenna	EMCO #5	3116	FA001847	13 Feb 03	13 Feb 04
1 Year	Log Periodic Antenna #1	EMCO	LPA-25	FA000477	Aug. 23/02	Aug. 23/03
1 Year	Biconical (1) Antenna	EMCO	3109	FA000805	April. 15/03	April. 15/04
1 Year	LISN	EMCO	4825/2	FA001545	Oct. 25/02	Oct. 25/03
1 Year	Receiver	Rohde & Schwarz	ESH3	FA000872	Oct. 09/02	Oct. 09/03
1 Year (Rental)	Spectrum Analyzer	Agilent	8564E	3943A01794	April. 14/03	April. 14/04
1 Year	Transient Limiter	Hewlett-Packard	1194 7A	FA000975	Aug. 30/02	Aug. 30/03
NCR	Bilog	Schaffner	CBL6112B	FA001504	NCR	NCR

NA: Not Applicable
NCR: No Cal Required
COU: CAL On Use