MET Laboratories, Inc. *Safety Certification - EMI - Telecom Environmental Simulation*
914 WEST PATAPSCO AVENUE ● BALTIMORE, MARYLAND 21230-3432 ● PHONE (410) 354-3300 ● FAX (410) 354-3313
33439 WESTERN AVENUE ● UNION CITY, CALIFORNIA 94587 ● PHONE (510) 489-6300 ● FAX (510) 489-6372
3162 BELICK STREET ● SANTA CLARA, CALIFORNIA 95054 ● PHONE (408 748-3585 ● FAX (510) 489-6372

September 7, 2010

InfiNet Malta Ltd.
222 Merchants Street
Valletta VLT1170 Malta

Dear Andrey Koynov,

Enclosed is the EMC Wireless test report for Class II Permissive Change compliance testing of the InfiNet Malta Ltd., Wireless R5000-Ome/58.300.2x63 as tested to the requirements of Title 47 of the CFR, Ch. 1 (10-1-06 ed.), FCC Part 15 Subpart C for Intentional Radiators.

Thank you for using the services of MET Laboratories, Inc. If you have any questions regarding these results or if MET can be of further service to you, please feel free to contact me.

Sincerely yours,
MET LABORATORIES, INC.

Jennifer Warnell
Documentation Department

Reference: (\InfiNet Malta Ltd.\EMC29262-FCC247 CIIPC Rev. 1)

Electromagnetic Compatibility Criteria
Test Report

for the

InfiNet Malta Ltd.
Wireless R5000-Ome/58.300.2x63

Tested under
the FCC Certification Rules
contained in
Title 47 of the CFR, 15.247 Subpart C
for Intentional Radiators

MET Report: EMC29262-FCC247 CIIPC Rev. 1

September 7, 2010

Prepared For:

InfiNet Malta Ltd.
222 Merchants Street
Valletta VLT1170 Malta

Prepared By:
MET Laboratories, Inc.
914 W. Patapsco. Ave.
Baltimore, MD 21230

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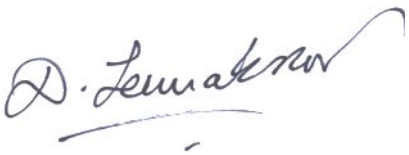

Dusmantha Tennakoon, Project Engineer
Electromagnetic Compatibility Lab

Jennifer Warnell
Documentation Department

Engineering Statement: The measurements shown in this report were made in accordance with the procedures indicated, and the emissions from this equipment were found to be within the limits applicable. I assume full responsibility for the accuracy and completeness of these measurements, and for the qualifications of all persons taking them. It is further stated that upon the basis of the measurements made, the equipment tested is capable of operation in accordance with the requirements of the FCC Rules Part 15.247 under normal use and maintenance.

Shawn McMillen,
Wireless Manager, Electromagnetic Compatibility Lab

Report Status Sheet

Revision	Report Date	Reason for Revision
∅	August 18, 2010	Initial Issue.
1	September 7, 2010	Revised power table.

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List of Terms and Abbreviations

AC	**A**lternating **C**urrent
ACF	**A**ntenna **C**orrection **F**actor
Cal	**Cal**ibration
d	**M**easurement **D**istance
dB	**D**eci**b**els
dBµA	**D**eci**b**els above one **micro**amp
dBµV	**D**eci**b**els above one **micro**volt
dBµA/m	**D**eci**b**els above one **micro**amp **per m**eter
dBµV/m	**D**eci**b**els above one **micro**volt **per m**eter
DC	**D**irect **C**urrent
E	**E**lectric Field
DSL	**D**igital **S**ubscriber **L**ine
ESD	**E**lectro**s**tatic **D**ischarge
EUT	**E**quipment **U**nder **T**est
f	**F**requency
FCC	**F**ederal **C**ommunications **C**ommission
GRP	**G**round **R**eference **P**lane
H	Magnetic Field
HCP	**H**orizontal **C**oupling **P**lane
Hz	**H**ert**z**
IEC	**I**nternational **E**lectrotechnical **C**ommission
kHz	**k**ilo**h**ert**z**
kPa	**k**ilo**pa**scal
kV	**k**ilo**v**olt
LISN	**L**ine **I**mpedance **S**tabilization **N**etwork
MHz	**M**ega**h**ertz
µH	**microh**enry
µF	**microf**arad
µs	**micros**econds
NEBS	**N**etwork **E**quipment-**B**uilding **S**ystem
PRF	**P**ulse **R**epetition **F**requency
RF	**R**adio **F**requency
RMS	**R**oot-**M**ean-**S**quare
TWT	**T**raveling **W**ave **T**ube
V/m	**V**olts **per m**eter
VCP	**V**ertical **C**oupling **P**lane

I. Executive Summary

A. Purpose of Test

An EMC evaluation was performed to determine compliance of the InfiNet Malta Ltd. Wireless R5000-Ome/58.300.2x63, with the requirements of Part 15, §15.247. All references are to the most current version of Title 47 of the Code of Federal Regulations in effect. In accordance with §2.1033, the following data is presented in support of the Certification of the Wireless R5000-Ome/58.300.2x63. InfiNet Malta Ltd. should retain a copy of this document which should be kept on file for at least two years after the manufacturing of the Wireless R5000-Ome/58.300.2x63, has been **permanently** discontinued

B. Executive Summary

The following tests were conducted on a sample of the equipment for the purpose of demonstrating compliance with Part 15, §15.247, in accordance with InfiNet Malta Ltd., quote number 1INF1404R3. All tests were conducted using measurement procedure ANSI C63.4-2003.

FCC Reference	IC Reference	Description	Compliance
Title 47 of the CFR, Part 15 §15.203	N/A	Antenna Requirement	Compliant
Title 47 of the CFR, Part 15 §15.247(b)	RSS-210(A8.4)	RF Output Power	Compliant
Title 47 of the CFR, Part 15 §15.209, §15.247(d)	RSS-210(A8.5)	Radiated Spurious Emissions	Compliant
Title 47 of the CFR, Part 15 §15.205	RSS-210(A8.5)	Emissions at Restricted Band	Compliant

Table 1. Executive Summary of EMC Part 15.247 ComplianceTesting

II. Equipment Configuration

A. Overview

MET Laboratories, Inc. was contracted by InfiNet Malta Ltd. to perform testing on the Wireless R5000-Ome/58.300.2x63, under InfiNet Malta Ltd.'s quote number 1INF1404R3.

This document describes the test setups, test methods, required test equipment, and the test limit criteria used to perform compliance testing of the InfiNet Malta Ltd., Wireless R5000-Ome/58.300.2x63.

The results obtained relate only to the item(s) tested.

Model(s) Tested:	Wireless R5000-Ome/58.300.2x63				
Model(s) Covered:	Wireless R5000-Ome/58.300.2x63				
EUT Specifications:	Primary Power: 90-250 VAC				
	FCC ID: X8Q-OME-5X18				
	Type of Modulations:	OFDM			
	Equipment Code:	5 MHz	10 MHz	20 MHz	40 MHz
	Frequency Ranges:	5730 – 5845 MHz	5730 – 5845 MHz	5740 – 5840 MHz	5750 – 5830 MHz
Analysis:	The results obtained relate only to the item(s) tested.				
Environmental Test Conditions:	Temperature: 15-35º C				
	Relative Humidity: 30-60%				
	Barometric Pressure: 860-1060 mbar				
Evaluated by:	Dusmantha Tennakoon				
Report Date(s):	September 7, 2010				

Table 2. EUT Summary Table

B. References

CFR 47, Part 15, Subpart C	Federal Communication Commission, Code of Federal Regulations, Title 47, Part 15: General Rules and Regulations, Allocation, Assignment, and Use of Radio Frequencies
RSS-210, Issue 7, June 2007	Low-power License-exempt Radiocommunications Devices (All Frequency Bands): Category I Equipment
CFR 47, Part 15, Subpart B	Electromagnetic Compatibility: Criteria for Radio Frequency Devices
ICES-003, Issue 4 February 2004	Electromagnetic Compatibility: Criteria for Radio Frequency Devices
ANSI C63.4:2003	Methods and Measurements of Radio-Noise Emissions from Low-Voltage Electrical And Electronic Equipment in the Range of 9 kHz to 40 GHz
ANSI/NCSL Z540-1-1994	Calibration Laboratories and Measuring and Test Equipment - General Requirements
ANSI/ISO/IEC 17025:2000	General Requirements for the Competence of Testing and Calibration Laboratories
ANSI C63.10-2009	American National Standard for Testing Unlicensed Wireless Devices

Table 3. References

C. Test Site

All testing was performed at MET Laboratories, Inc., 914 W. Patapsco Ave., Baltimore, MD 21230. All equipment used in making physical determinations is accurate and bears recent traceability to the National Institute of Standards and Technology.

Radiated Emissions measurements were performed in a 3 meter semi-anechoic chamber (equivalent to an Open Area Test Site). In accordance with §2.948(a)(3), a complete site description is contained at MET Laboratories.

D. Description of Test Sample

The InfiNet Malta Ltd. Wireless R5000-Ome/58.300.2x63, Equipment Under Test (EUT), is a high performance broadband wireless system that supports 802.11n. The EUT is a 2x2 MIMO used for point-to-point and point-to-multipoint applications.

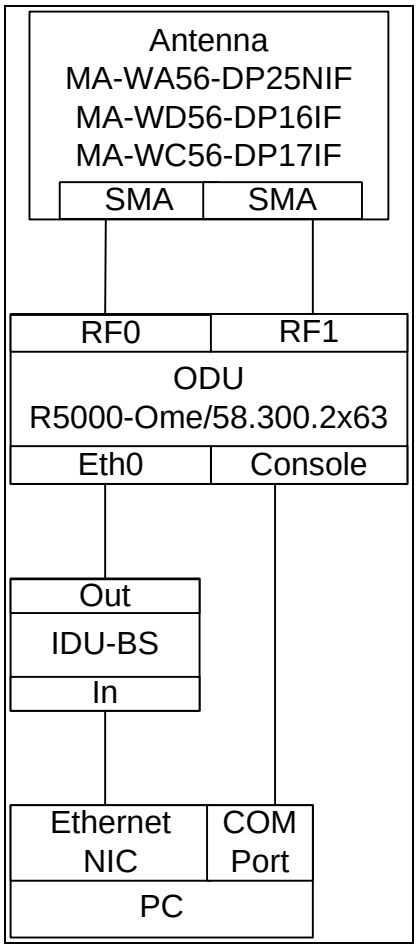


Figure 1. Block Diagram of EUT

E. Equipment Configuration

The EUT was set up as outlined in Figure 1, Block Diagram of Test Setup. All cards, racks, etc., incorporated as part of the EUT is included in the following list.

Ref. ID	Name / Description	Model Number	Serial Number
1	Outdoor unit	R5000-Ome/58.300.2x63	40304
2	Antenna 23 dBi	MA-WA56-DP25NIF	N/A
3	Antenna 16 dBi	MA-WD56-DP16IF	N/A
4	Antenna 17 dBi	MA-WC56-DP17IF	N/A
5	Indoor unit (power supply)	IDU-BS	N/A

Table 4. Equipment Configuration

F. Support Equipment

Ref. ID	Name / Description	Manufacturer	Model Number	Serial Number
1	ODU mount kit	InfiNet Wireless	MOUNT-KIT-85	N/A

Table 5. Support Equipment

G. Ports and Cabling Information

Ref. ID	Port name on EUT	Cable Description or reason for no cable	Qty.	Length (m)	Shielded? (Y/N)	Termination Box ID & Port ID
1	Eth0	RJ-45 cable	1	10	Y	ODU R5000-Ome/58.300.2x63
2	Console	Console cable	1	1.5	N	ODU R5000-Ome/58.300.2x63
3	RF0	RF cable	1	1	Y	ODU R5000-Ome/58.300.2x63
4	RF1	RF cable	1	1	Y	ODU R5000-Ome/58.300.2x63
5	In	RJ-45 cable	1	1	N	IDU-BS
6	Out	RJ-45 cable	1	10	Y	IDU-BS
7	SMA	RF cable	2	1	Y	Antenna

Table 6. Ports and Cabling Information

H. Mode of Operation

The EUT was placed in a continuous transmit mode for testing purposes.

I. Modifications

a) Modifications to EUT

No modifications were made to the EUT.

b) Modifications to Test Standard

No modifications were made to the test standard.

J. Disposition of EUT

The test sample including all support equipment submitted to the Electro-Magnetic Compatibility Lab for testing was returned to InfiNet Malta Ltd. upon completion of testing.

III. Electromagnetic Compatibility Criteria for Intentional Radiators

Electromagnetic Compatibility Criteria for Intentional Radiators

§ 15.203 Antenna Requirement

Test Requirement: **§ 15.203:** An intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device. The use of a permanently attached antenna or of an antenna that uses a unique coupling to the intentional radiator shall be considered sufficient to comply with the provisions of this section. The manufacturer may design the unit so that a broken antenna can be replaced by the user, but the use of a standard antenna jack or electrical connector is prohibited.

The structure and application of the EUT were analyzed to determine compliance with Section 15.203 of the Rules. Section 15.203 states that the subject device must meet at least one of the following criteria:

a.) Antenna must be permanently attached to the unit.

b.) Antenna must use a unique type of connector to attach to the EUT.

c.) Unit must be professionally installed. Installer shall be responsible for verifying that the correct antenna is employed with the unit.

Results: The EUT as tested is compliant the criteria of §15.203. Three antennas, 16, 17 and 23 dBi panel, are professionally installed. The 16 and 17 dBi panel antenna are for point to multipoint applications and the 23 dBi antenna is for point to point applications.

Test Engineer(s): Dusmantha Tennakoon

Test Date(s): 07/23/10

Electromagnetic Compatibility Criteria for Intentional Radiators

§ 15.247(b) Peak Power Output and RF Exposure

Test Requirements: **§15.247(b):** The maximum peak output power of the intentional radiator shall not exceed the following:

Digital Transmission Systems (MHz)	Output Limit (Watts)
902-928	1.000
2400–2483.5	1.000
5725– 5850	1.000

Table 7. Output Power Requirements from §15.247

§15.247(c): if transmitting antennas of directional gain greater than 6 dBi are used the peak output power from the intentional radiator shall be reduced below the stated values in the Table 7, as appropriate, by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

Systems operating in the 2400 – 2483.5 MHz band may employ transmitting antennas with directional gain greater than 6 dBi provided the maximum peak output power of the intentional radiator is reduced by 1 dB for every 3 dB that the directional gain of the antenna exceeds 6 dBi.

Systems operating in the 5725 – 5850 MHz band that are used exclusively for fixed, point-to-point operations may employ transmitting antennas with directional gain greater than 6 dBi without any corresponding reduction in transmitter peak output power.

Fixed, point-to-point operation excludes the use of point-to-multipoint systems, omni-directional applications, and multiple co-located intentional radiators transmitting the same information. The operator of the spread spectrum intentional radiator or, if the equipment is professionally installed, the installer is responsible for ensuring that the system is used exclusively for fixed, point-to-point operations. The instruction manual furnished with the intentional radiator shall contain language in the installation instructions informing the operator and the installer of this responsibility.

Test Procedure: The transmitter was connected to a calibrated spectrum analyzer. The EUT was measured at the low, mid and high channels of each band at the maximum power level.

Test Results: The EUT was compliant with the Peak Power Output limits of **§15.247(b)**. For the 16 dBi and 17 dBi point to multipoint antennas, the power has to be reduced from the original grant values as shown in Table 8 and Table 9. For the 23 dBi antenna no reduction in power is necessary since it is point-to-point.

Test Engineer(s): Dusmantha Tennakoon

Test Date(s): 08/03/10

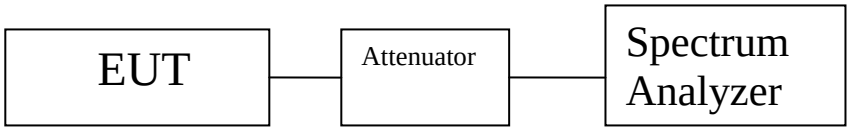


Figure 2. Peak Power Output Test Setup

Bandwidth (MHz)	Channel (MHz)	Port 1 Power		Port 2 Power		Combined Power		Limit (mW)
		dBm	mW	dBm	mW	dBm	mW	
5	5730	15.91	39.0	16.06	40.4	19.0	79.4	100.0
	5785	15.71	37.2	16.27	42.3	19.0	79.5	100.0
	5845	15.48	35.3	16.04	40.2	18.8	75.5	100.0
10	5730	16.16	41.3	16.13	41.0	19.2	82.3	100.0
	5785	15.62	36.5	16.36	43.2	19.0	79.7	100.0
	5845	15.83	38.2	16.35	43.1	19.1	81.3	100.0
20	5740	16.17	41.4	16.17	41.4	19.2	82.8	100.0
	5780	15.62	36.5	16.46	44.2	19.1	80.7	100.0
	5840	15.69	37.1	16.34	43.1	19.0	80.2	100.0
40	5750	16.76	47.4	16.43	44.0	19.6	91.4	100.0
	5790	16.84	48.3	16.57	45.4	19.7	93.7	100.0
	5830	16.67	46.4	16.83	48.2	19.8	94.6	100.0

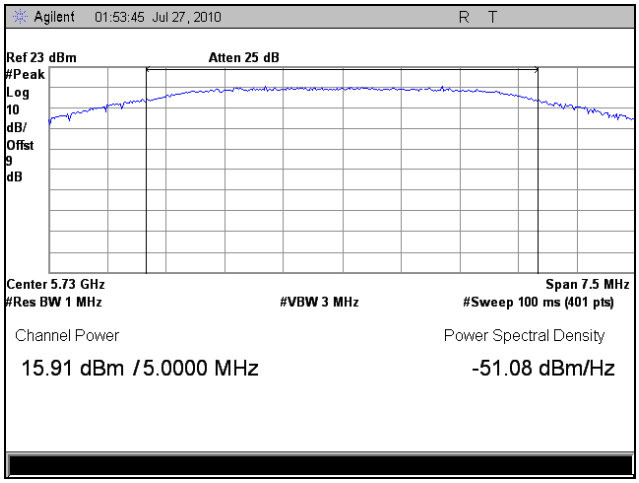
Table 8. Output Power, Test Results, 16 dBi Panel (Point to Multipoint)

Bandwidth (MHz)	Channel (MHz)	Port 1 Power		Port 2 Power		Combined Power		Limit (mW)
		dBm	mW	dBm	mW	dBm	mW	
5	5730	14.91	31.0	14.54	28.4	17.7	59.4	79.0
	5785	14.65	29.2	14.46	28.0	17.6	57.2	79.0
	5845	14.33	27.1	14.12	25.8	17.2	52.9	79.0
10	5730	15.06	32.1	14.51	28.2	17.8	60.3	79.0
	5785	14.82	30.3	14.56	28.6	17.7	58.9	79.0
	5845	14.73	29.7	14.58	28.7	17.7	58.4	79.0
20	5740	15.12	32.5	14.6	29.0	17.9	61.5	79.0
	5780	14.63	29.0	14.57	28.6	17.6	57.6	79.0
	5840	14.59	29.0	14.65	29.2	17.6	58.2	79.0
40	5750	15.54	36.0	15.48	35.3	18.5	71.3	79.0
	5790	15.57	36.1	15.39	34.6	18.5	70.7	79.0
	5830	15.4	34.7	15.31	34.0	18.4	68.7	79.0

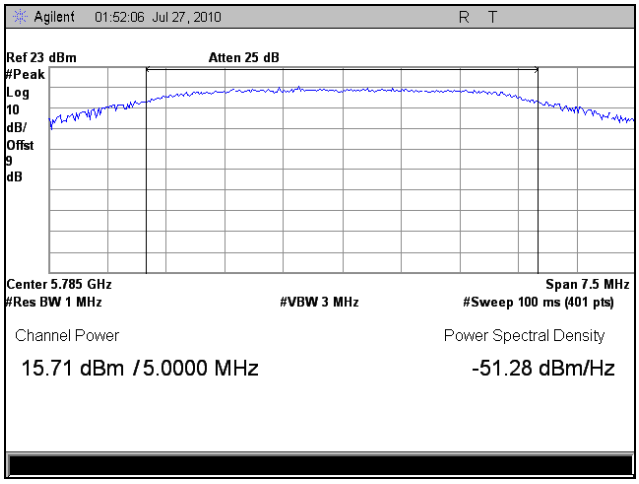
Table 9. Output Power, Test Results, 17 dBi Panel (Point to Multipoint)

Note: The product internal GUI power setting for the 16 dBi antenna is 11. For the 17 dBi antenna the power setting is 10.

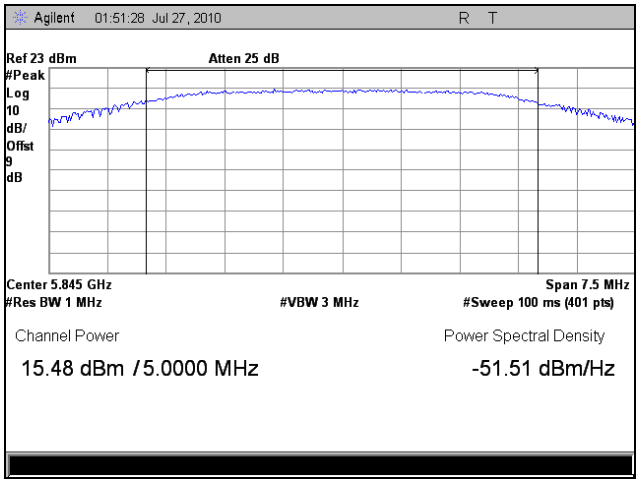
Output Power, 5 MHz, Port 1, 16 dBi Panel



Plot 1. Output Power, Low Channel (5730 MHz), 5 MHz, Port 1, 16 dBi Panel

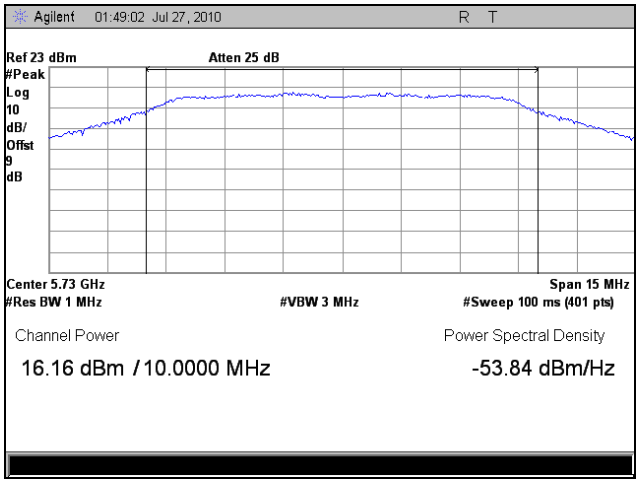


Plot 2. Output Power, Mid Channel (5785 MHz), 5 MHz, Port 1, 16 dBi Panel

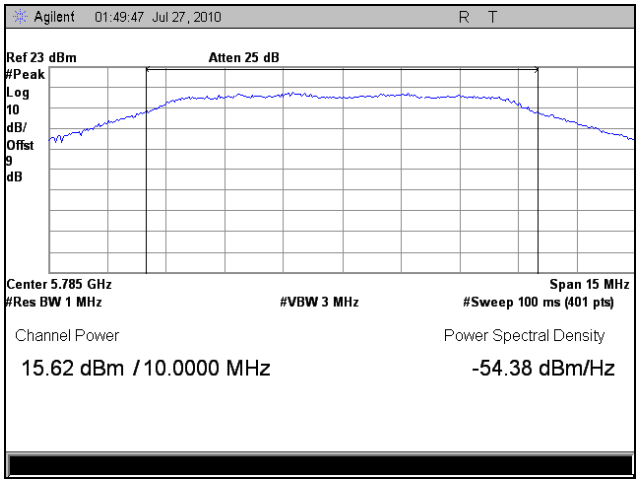


Plot 3. Output Power, High Channel (5845 MHz), 5 MHz, Port 1, 16 dBi Panel

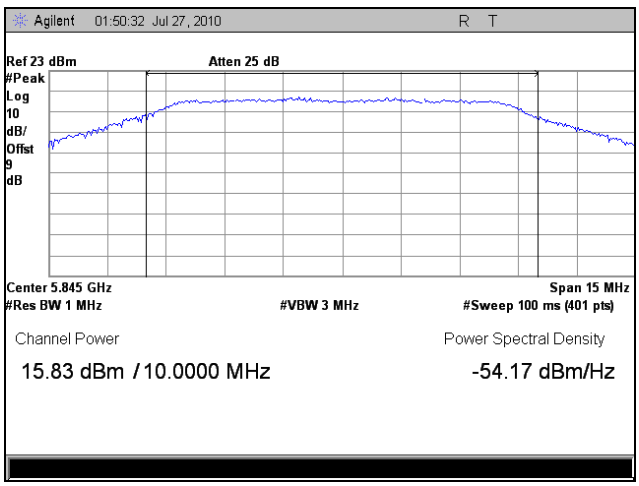
Output Power, 10 MHz, Port 1, 16 dBi Panel



Plot 4. Output Power, Low Channel (5730 MHz), 10 MHz, Port 1, 16 dBi Panel

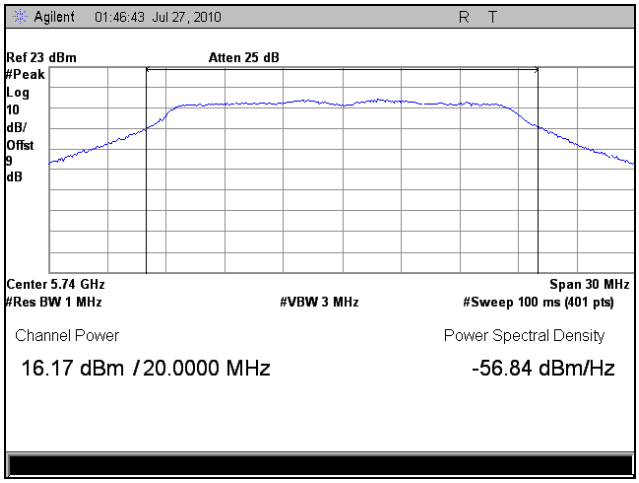


Plot 5. Output Power, Mid Channel (5785 MHz), 10 MHz, Port 1, 16 dBi Panel

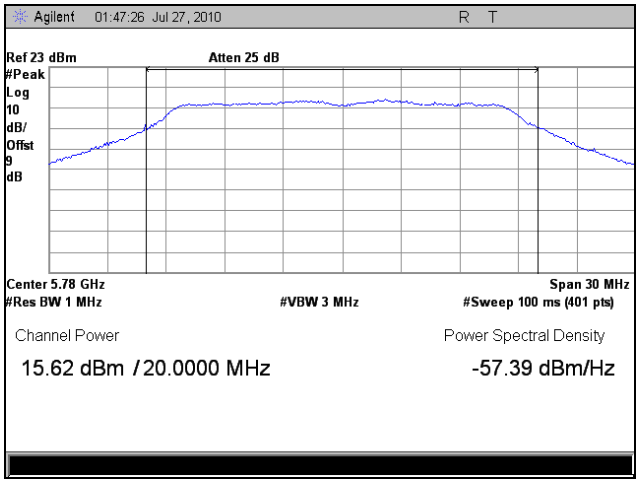


Plot 6. Output Power, High Channel (5845 MHz), 10 MHz, Port 1, 16 dBi Panel

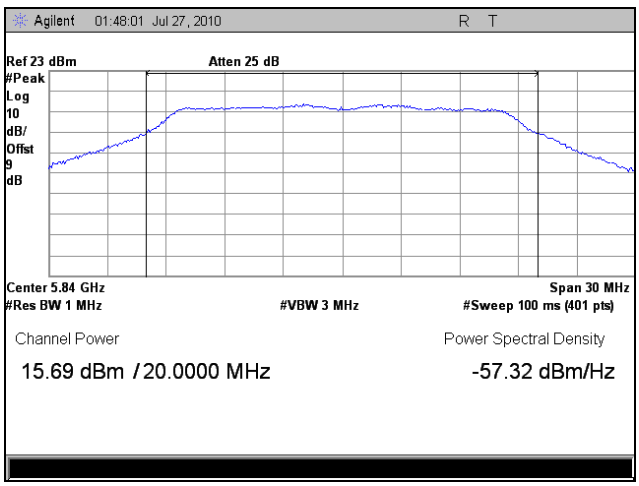
Output Power, 20 MHz, Port 1, 16 dBi Panel



Plot 7. Output Power, Low Channel (5740 MHz), 20 MHz, Port 1, 16 dBi Panel

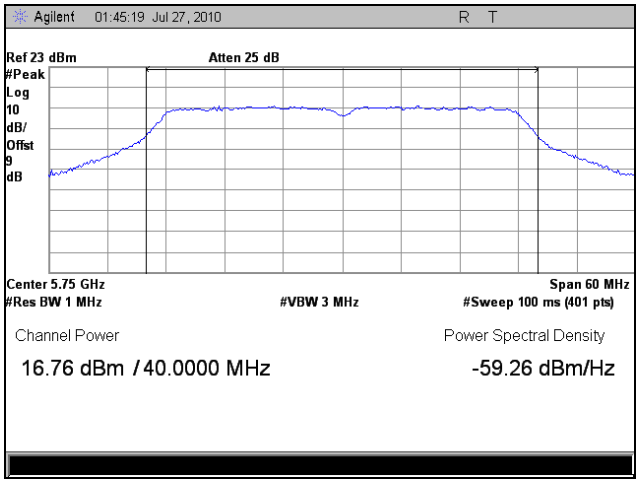


Plot 8. Output Power, Mid Channel (5780 MHz), 20 MHz, Port 1, 16 dBi Panel

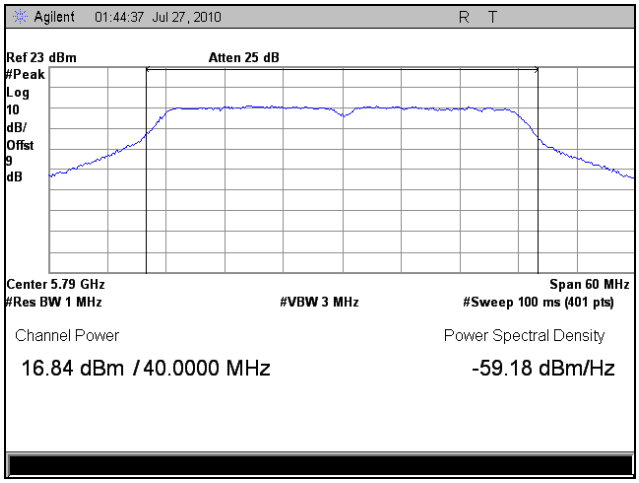


Plot 9. Output Power, High Channel (5840 MHz), 20 MHz, Port 1, 16 dBi Panel

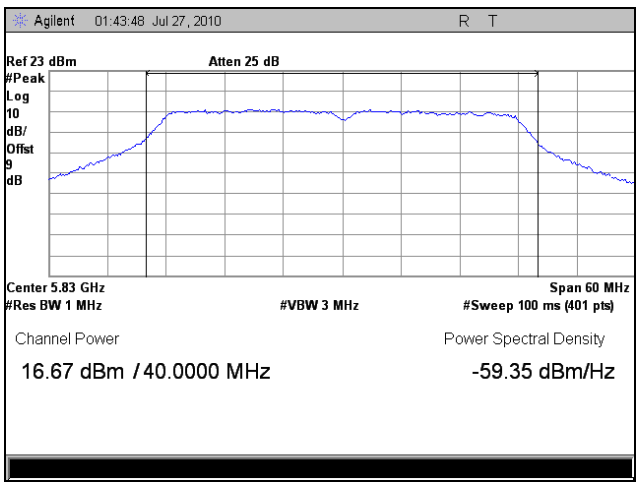
Output Power, 40 MHz, Port 1, 16 dBi Panel



Plot 10. Output Power, Low Channel (5750 MHz), 40 MHz, Port 1, 16 dBi Panel

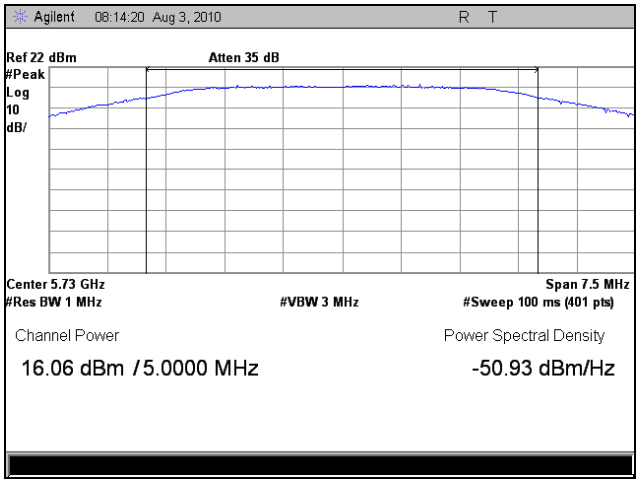


Plot 11. Output Power, Mid Channel (5790 MHz), 40 MHz, Port 1, 16 dBi Panel

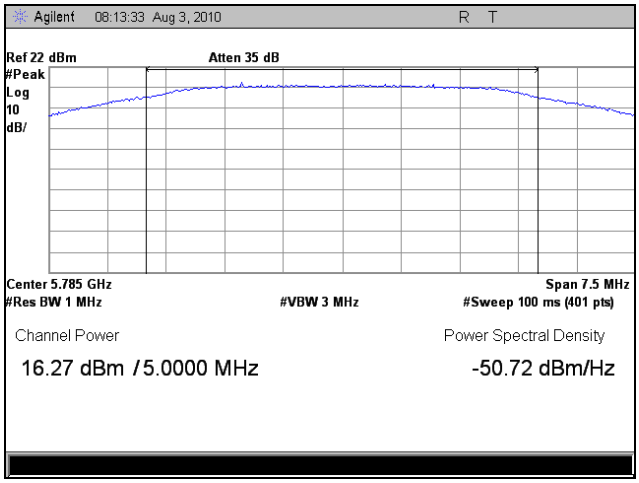


Plot 12. Output Power, High Channel (5830 MHz), 40 MHz, Port 1, 16 dBi Panel

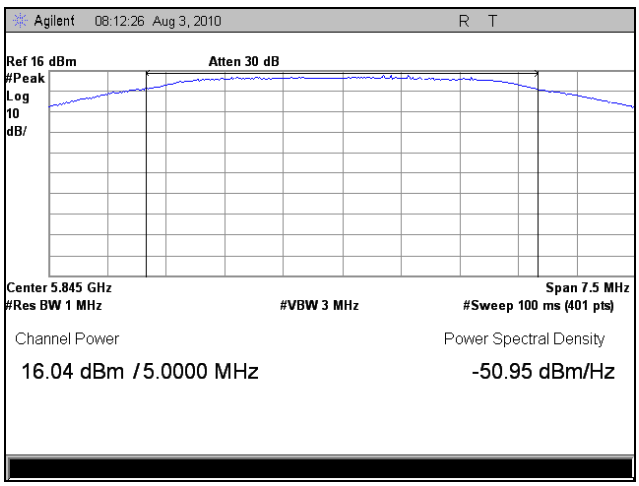
Output Power, 5 MHz, Port 2, 16 dBi Panel



Plot 13. Output Power, Low Channel (5730 MHz), 5 MHz, Port 2, 16 dBi Panel

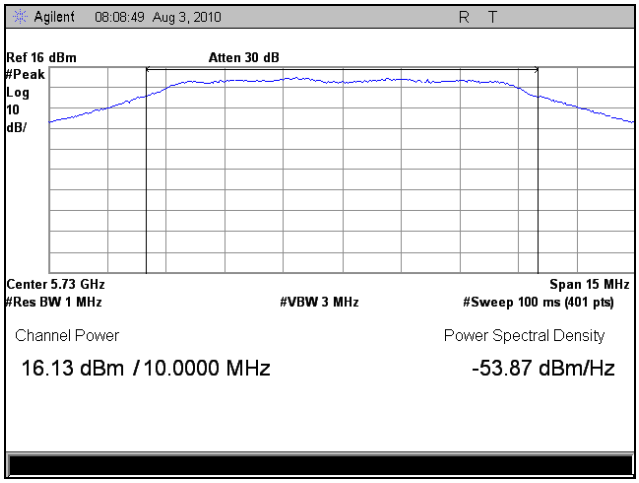


Plot 14. Output Power, Mid Channel (5785 MHz), 5 MHz, Port 2, 16 dBi Panel

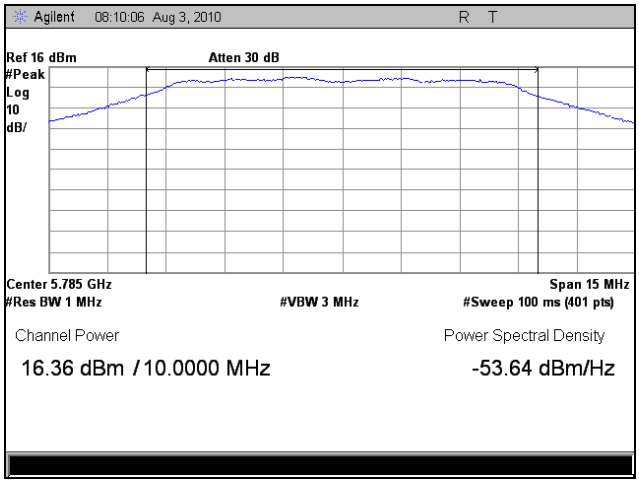


Plot 15. Output Power, High Channel (5845 MHz), 5 MHz, Port 2, 16 dBi Panel

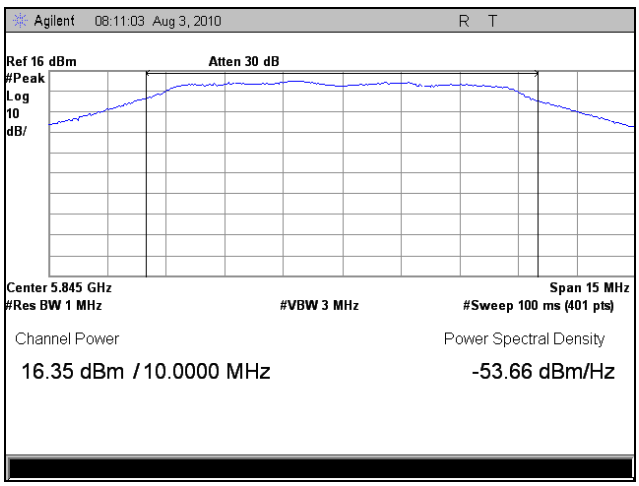
Output Power, 10 MHz, Port 2, 16 dBi Panel



Plot 16. Output Power, Low Channel (5730 MHz), 10 MHz, Port 2, 16 dBi Panel

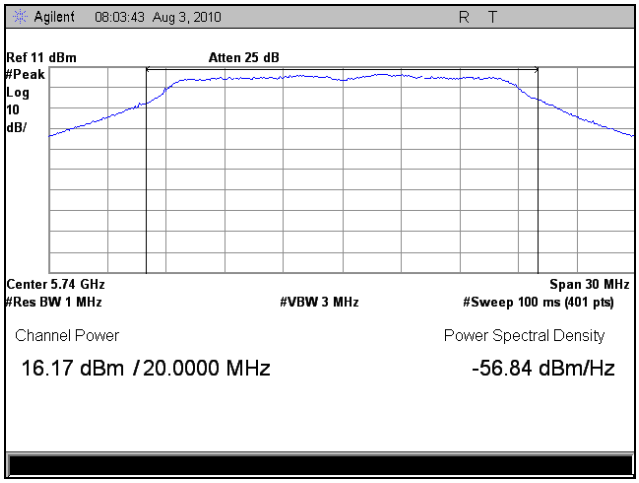


Plot 17. Output Power, Mid Channel (5785 MHz), 10 MHz, Port 2, 16 dBi Panel

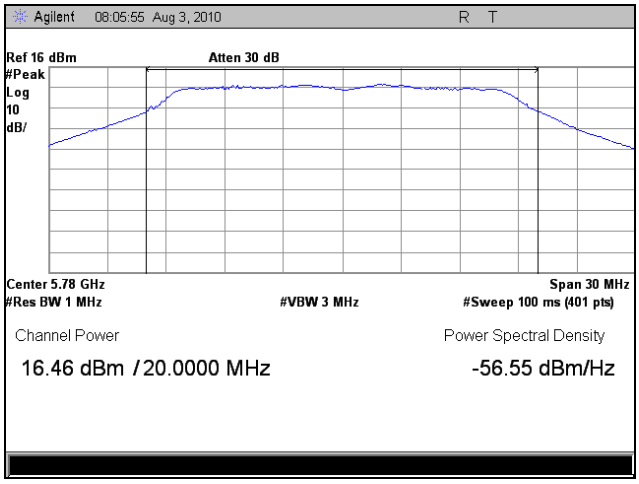


Plot 18. Output Power, High Channel (5845 MHz), 10 MHz, Port 2, 16 dBi Panel

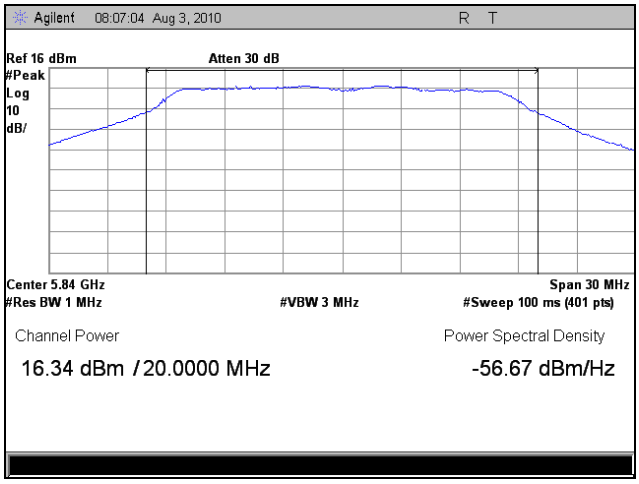
Output Power, 20 MHz, Port 2, 16 dBi Panel



Plot 19. Output Power, Low Channel (5740 MHz), 20 MHz, Port 2, 16 dBi Panel

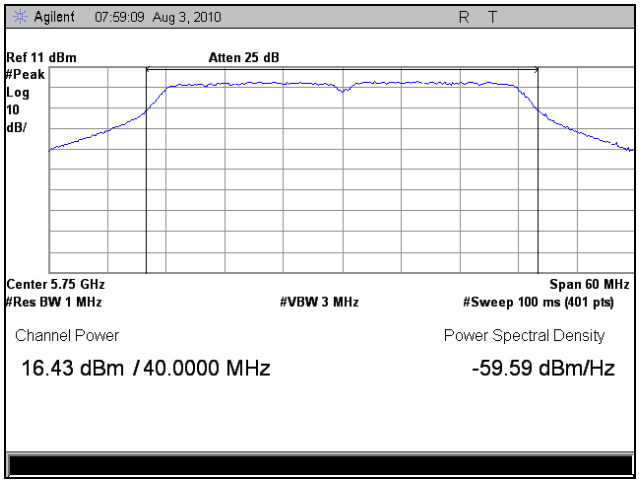


Plot 20. Output Power, Mid Channel (5780 MHz), 20 MHz, Port 2, 16 dBi Panel

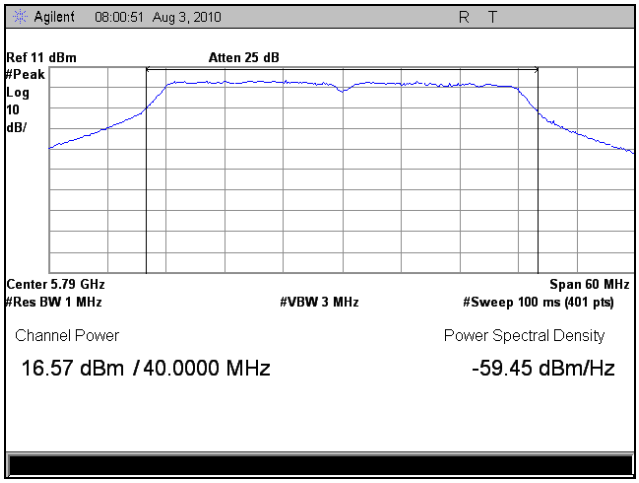


Plot 21. Output Power, High Channel (5840 MHz), 20 MHz, Port 2, 16 dBi Panel

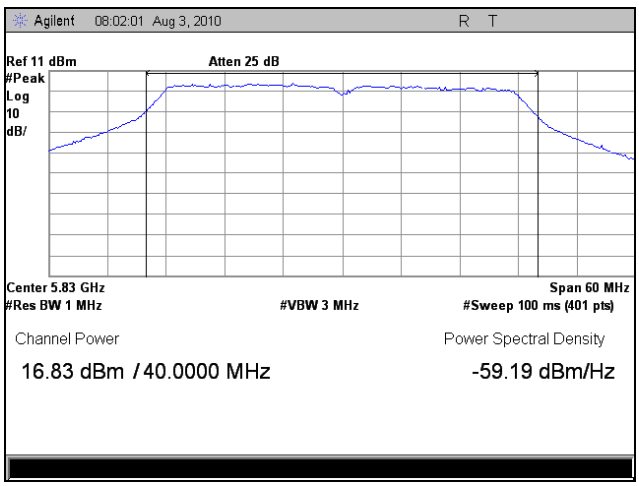
Output Power, 40 MHz, Port 2, 16 dBi Panel



Plot 22. Output Power, Low Channel (5750 MHz), 40 MHz, Port 2, 16 dBi Panel

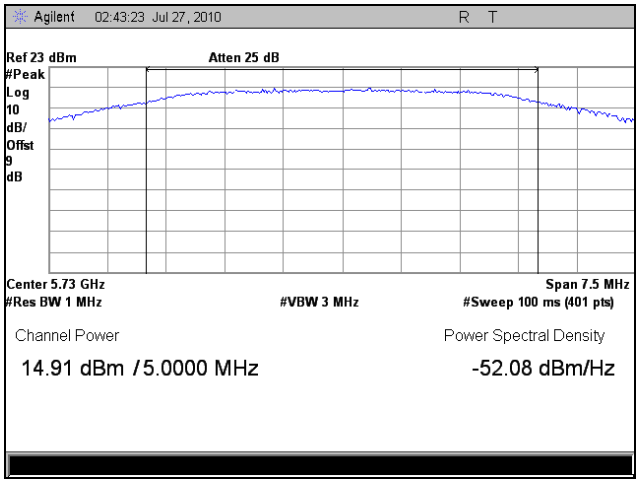


Plot 23. Output Power, Mid Channel (5790 MHz), 40 MHz, Port 2, 16 dBi Panel

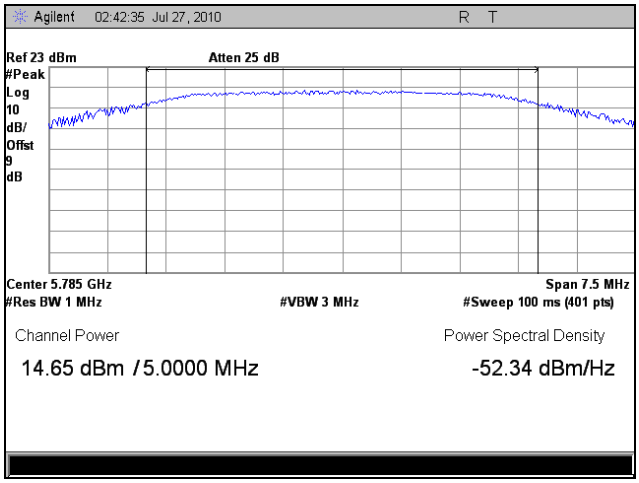


Plot 24. Output Power, High Channel (5830 MHz), 40 MHz, Port 2, 16 dBi Panel

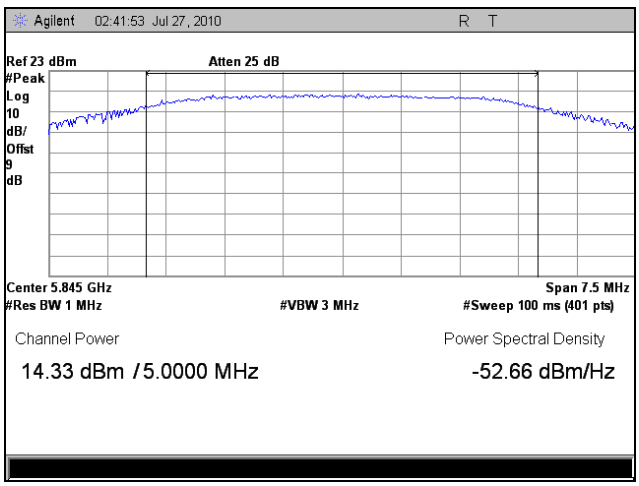
Output Power, 5 MHz, Port 1, 17 dBi Panel



Plot 25. Output Power, Low Channel (5730 MHz), 5 MHz, Port 1, 17 dBi Panel

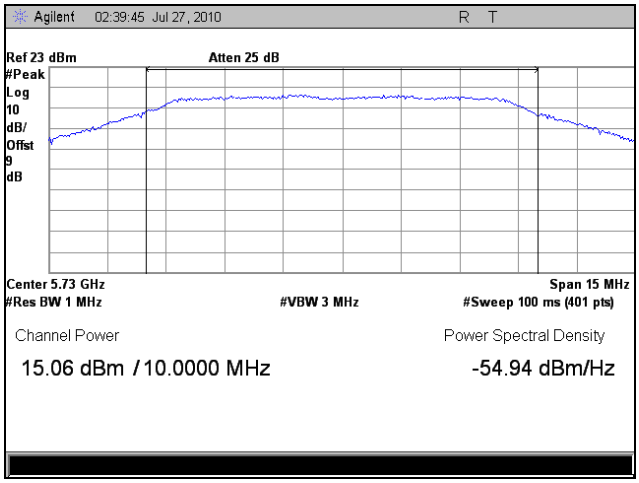


Plot 26. Output Power, Mid Channel (5785 MHz), 5 MHz, Port 1, 17 dBi Panel

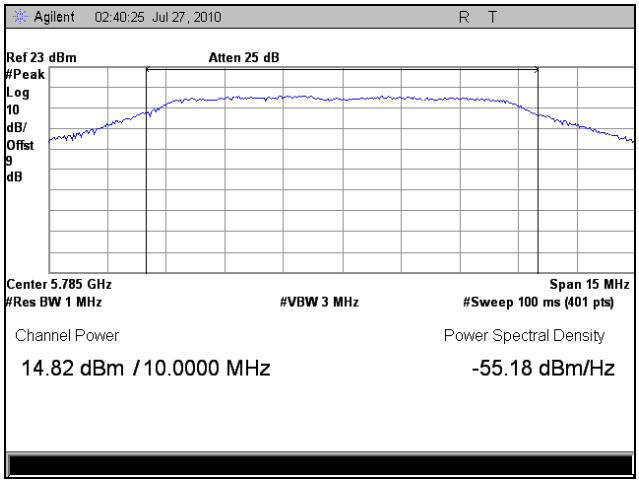


Plot 27. Output Power, High Channel (5845 MHz), 5 MHz, Port 1, 17 dBi Panel

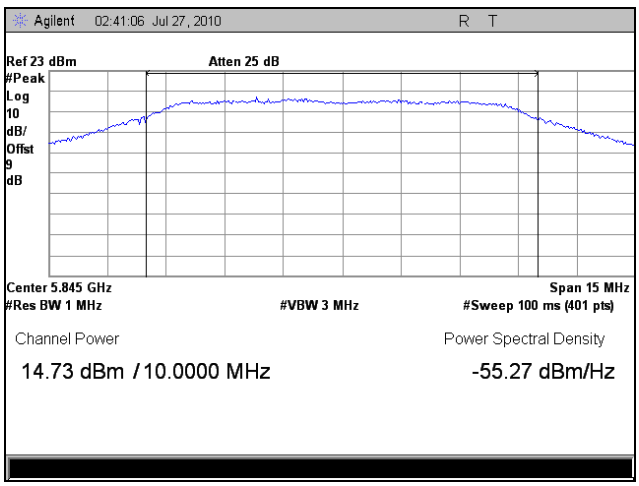
Output Power, 10 MHz, Port 1, 17 dBi Panel



Plot 28. Output Power, Low Channel (5730 MHz), 10 MHz, Port 1, 17 dBi Panel

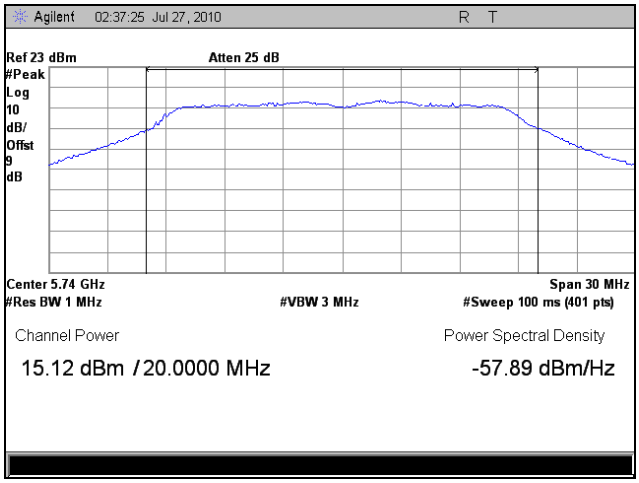


Plot 29. Output Power, Mid Channel (5785 MHz), 10 MHz, Port 1, 17 dBi Panel

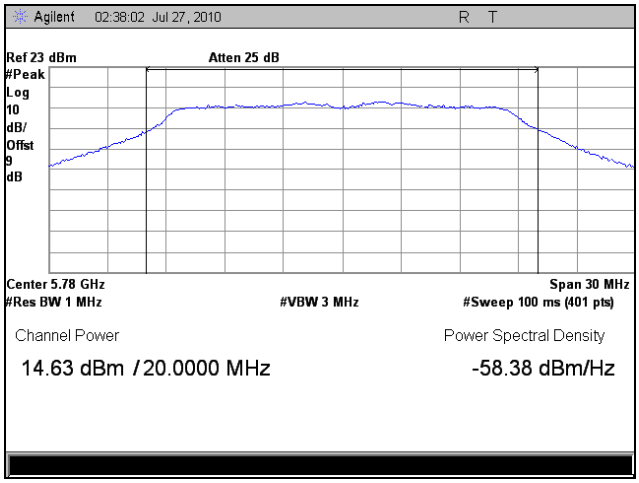


Plot 30. Output Power, High Channel (5845 MHz), 10 MHz, Port 1, 17 dBi Panel

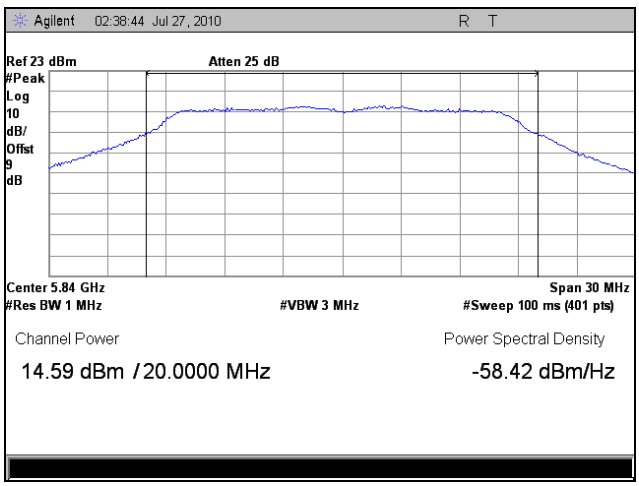
Output Power, 20 MHz, Port 1, 17 dBi Panel



Plot 31. Output Power, Low Channel (5740 MHz), 20 MHz, Port 1, 17 dBi Panel

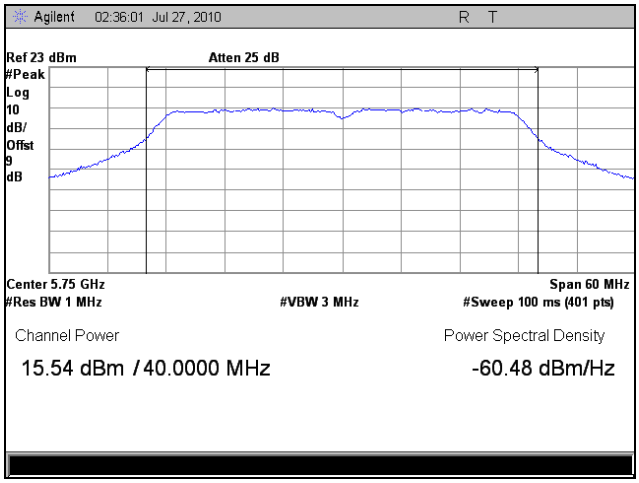


Plot 32. Output Power, Mid Channel (5780 MHz), 20 MHz, Port 1, 17 dBi Panel

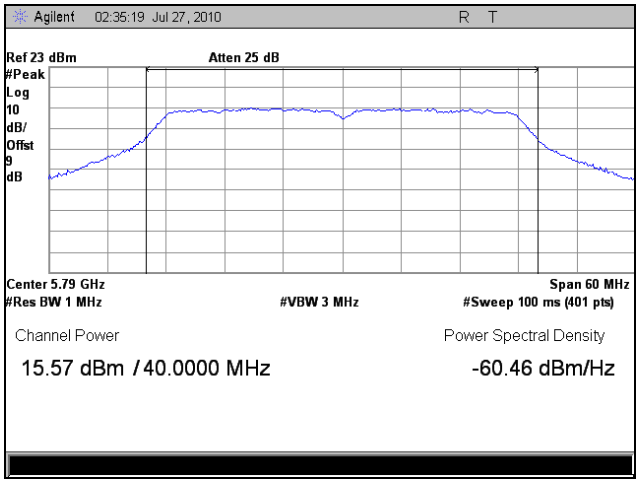


Plot 33. Output Power, High Channel (5840 MHz), 20 MHz, Port 1, 17 dBi Panel

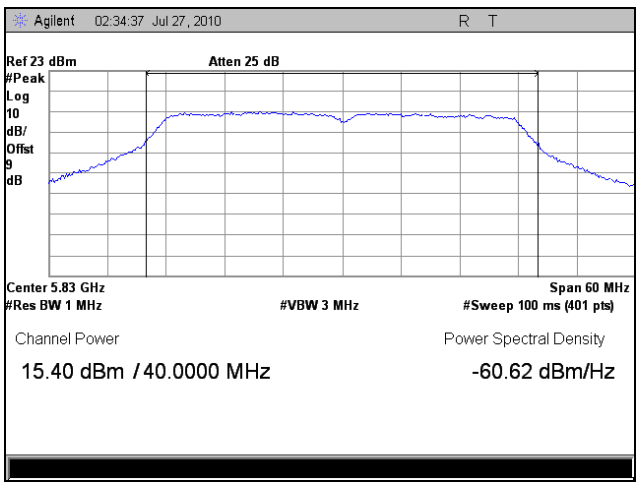
Output Power, 40 MHz, Port 1, 17 dBi Panel



Plot 34. Output Power, Low Channel (5750 MHz), 40 MHz, Port 1, 17 dBi Panel

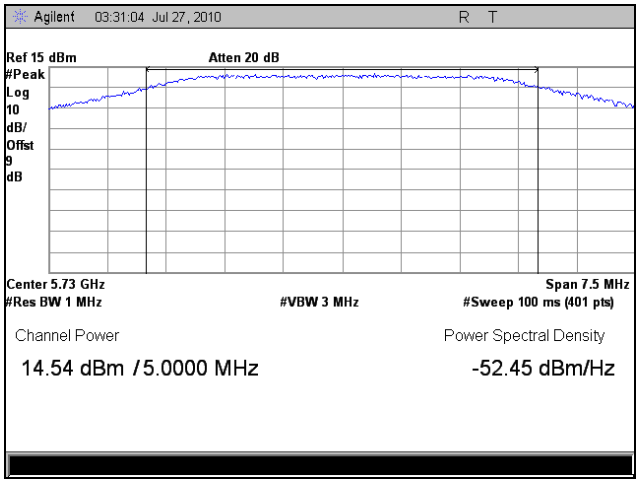


Plot 35. Output Power, Mid Channel (5790 MHz), 40 MHz, Port 1, 17 dBi Panel

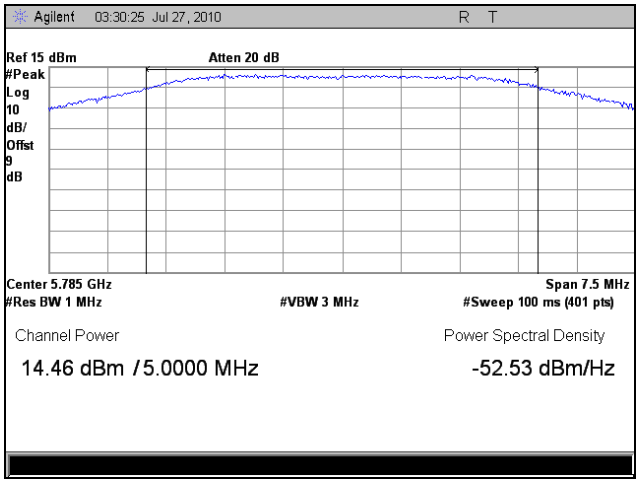


Plot 36. Output Power, High Channel (5830 MHz), 40 MHz, Port 1, 17 dBi Panel

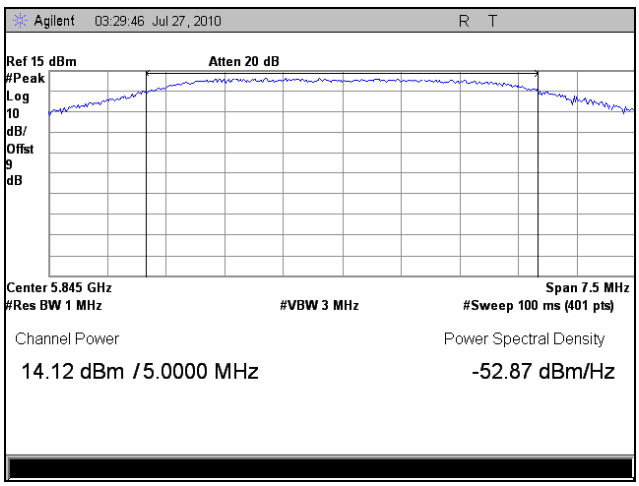
Output Power, 5 MHz, Port 2, 17 dBi Panel



Plot 37. Output Power, Low Channel (5730 MHz), 5 MHz, Port 2, 17 dBi Panel

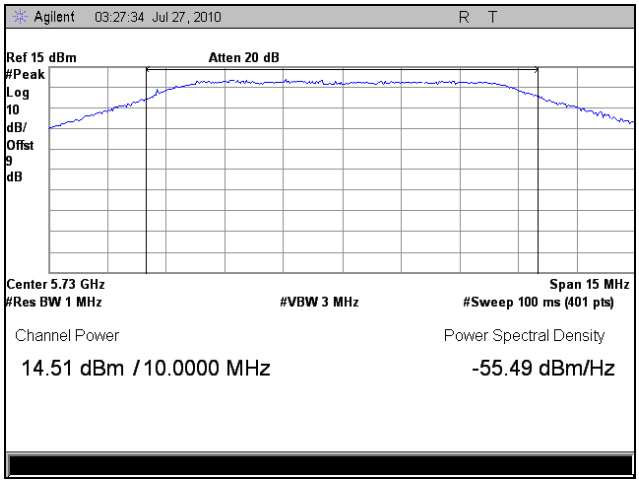


Plot 38. Output Power, Mid Channel (5785 MHz), 5 MHz, Port 2, 17 dBi Panel

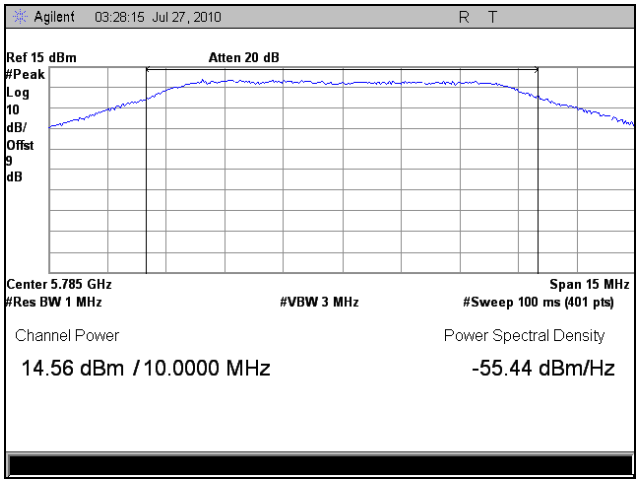


Plot 39. Output Power, High Channel (5845 MHz), 5 MHz, Port 2, 17 dBi Panel

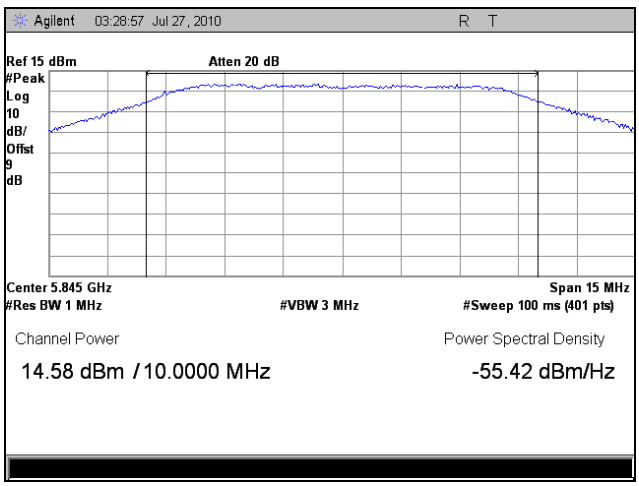
Output Power, 10 MHz, Port 2, 17 dBi Panel



Plot 40. Output Power, Low Channel (5730 MHz), 10 MHz, Port 2, 17 dBi Panel

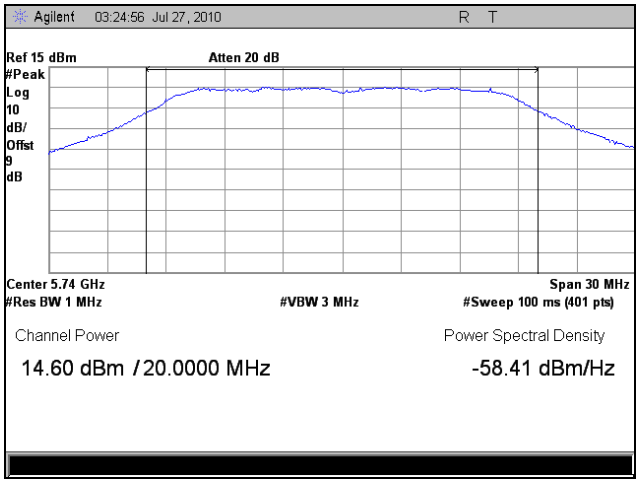


Plot 41. Output Power, Mid Channel (5785 MHz), 10 MHz, Port 2, 17 dBi Panel

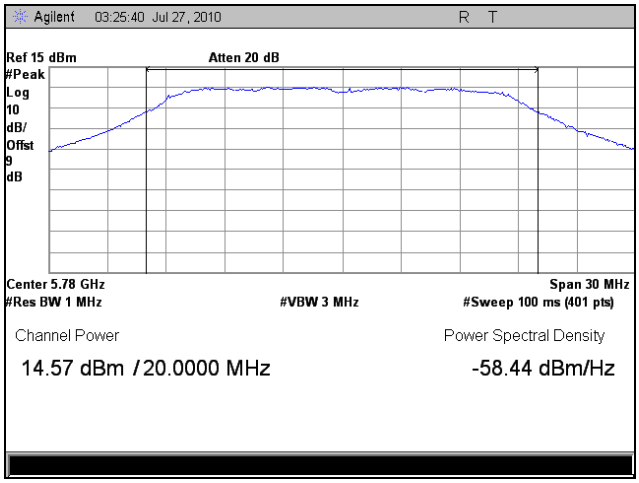


Plot 42. Output Power, High Channel (5845 MHz), 10 MHz, Port 2, 17 dBi Panel

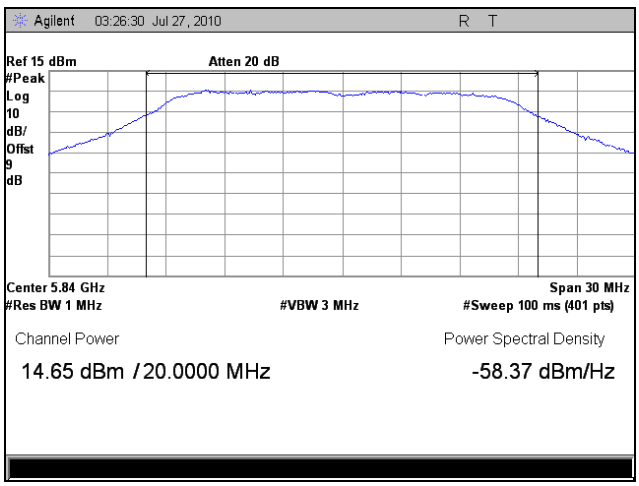
Output Power, 20 MHz, Port 2, 17 dBi Panel



Plot 43. Output Power, Low Channel (5740 MHz), 20 MHz, Port 2, 17 dBi Panel

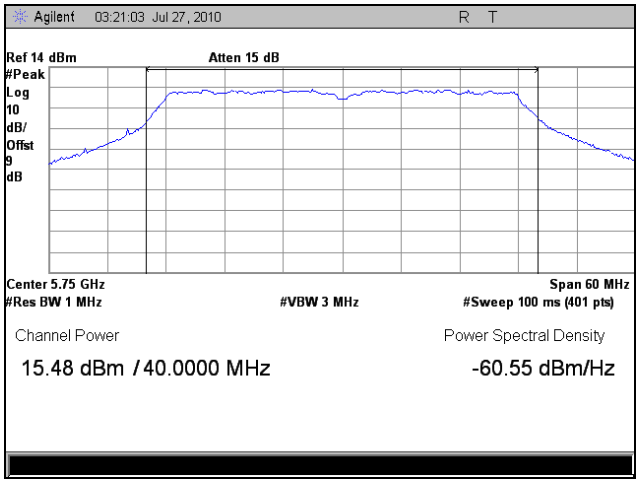


Plot 44. Output Power, Mid Channel (5780 MHz), 20 MHz, Port 2, 17 dBi Panel

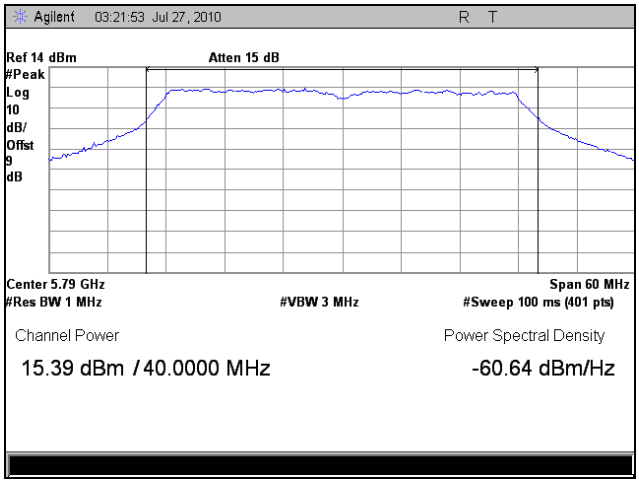


Plot 45. Output Power, High Channel (5840 MHz), 20 MHz, Port 2, 17 dBi Panel

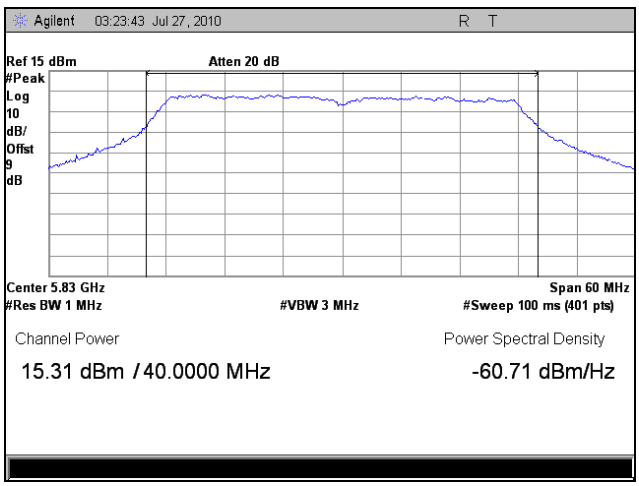
Output Power, 40 MHz, Port 2, 17 dBi Panel



Plot 46. Output Power, Low Channel (5750 MHz), 40 MHz, Port 2, 17 dBi Panel



Plot 47. Output Power, Mid Channel (5790 MHz), 40 MHz, Port 2, 17 dBi Panel



Plot 48. Output Power, High Channel (5830 MHz), 40 MHz, Port 2, 17 dBi Panel

Electromagnetic Compatibility Criteria for Intentional Radiators

Radiated Spurious Emissions Requirements and Band Edge

Test Requirement(s): **§ 15.209 (a):** Except as provided elsewhere in this subpart, the emissions from an intentional radiator shall not exceed the field strength levels specified in Table 10.

Frequency (MHz)	§ 15.209(a),Radiated Emission Limits (dBµV) @ 3m
30 - 88	40.00
88 - 216	43.50
216 - 960	46.00
Above 960	54.00

Table 10. Radiated Emissions Limits Calculated from FCC Part 15, § 15.209 (a)

§15.205(a): Except as shown in paragraph (d) of this section, only spurious emissions are permitted in any of the frequency bands listed below:

MHz	MHz	MHz	GHz
0.090–0.110----------	16.42–16.423	399.9–410	4.5–5.15
[1] 0.495–0.505----------	16.69475–16.69525	608–614	5.35–5.46
2.1735–2.1905----------	16.80425–16.80475	960–1240	7.25–7.75
4.125–4.128----------	25.5–25.67	1300–1427	8.025–8.5
4.17725–4.17775----------	37.5–38.25	1435–1626.5	9.0–9.2
4.20725–4.20775----------	73–74.6	1645.5–1646.5	9.3–9.5
6.215–6.218----------	74.8–75.2	1660–1710	10.6–12.7
6.26775–6.26825----------	108–121.94	1718.8–1722.2	13.25–13.4
6.31175–6.31225----------	123–138	2200–2300	14.47–14.5
8.291–8.294----------	149.9–150.05	2310–2390	15.35–16.2
8.362–8.366----------	156.52475–156.52525	2483.5–2500	17.7–21.4
8.37625–8.38675----------	156.7–156.9	2655–2900	22.01–23.12
8.41425–8.41475----------	162.0125–167.17	3260–3267	23.6–24.0
12.29–12.293----------	167.72–173.2	3332–3339	31.2–31.8
12.51975–12.52025----------	240–285	3345.8–3358 36.	43–36.5
12.57675–12.57725----------	322–335.4	3600–4400	([2])

Table 11. Restricted Bands of Operation

[1] Until February 1, 1999, this restricted band shall be 0.490 – 0.510 MHz.
[2] Above 38.6

Test Procedures: The transmitter was turned on. Measurements were performed of the low, mid and high Channels. The EUT was rotated orthogonally through all three axes.

Test Results: The EUT was compliant with the Radiated Spurious Emission limits of this section. The emissions seen below 1 GHz is from the digital portion of the EUT. Emissions above 1 GHz were only seen from the 17 dBi panel antenna. Only noise floor of the SA was seen above 18 GHz.

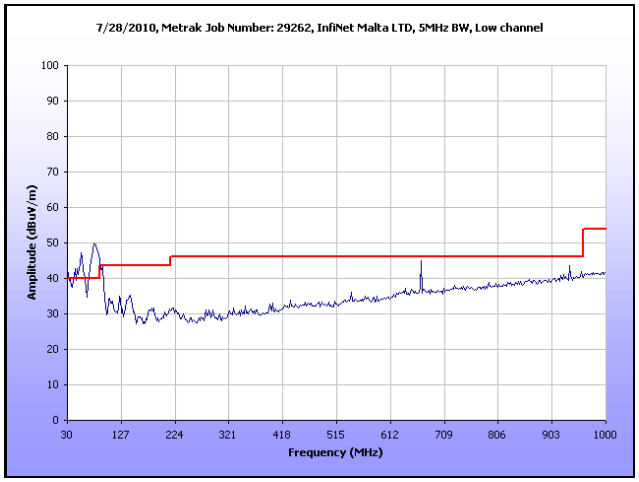
Test Engineer(s): Dusmantha Tennakoon

Test Date(s): 08/03/10

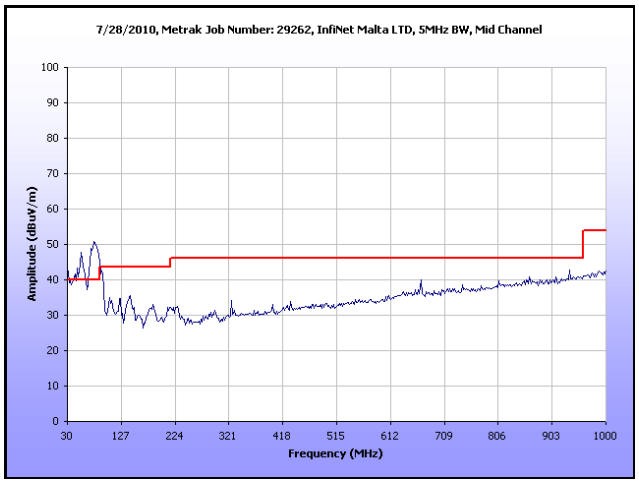
Bandwidth	Fundamental Frequency (MHz)	Emission Frequency (MHz)	Peak Amplitude (dBuV/m @ 3m)	Ristricted Band	Peak Limit (dBuV/m @ 3m)	Pass
5	5730	7637	45.09	Yes	74	Yes
	5785	7705	46.5	Yes	74	Yes
	5845	7790	46.9	No	<20 dBc	Yes
10	5730	7637	44.76	Yes	74	Yes
	5785	7705	45.34	Yes	74	Yes
	5845	7790	46.57	No	<20 dBc	Yes
20	5740	7660	44..28	Yes	74	Yes
	5780	7705	45.7	Yes	74	Yes
	5840	7790	46.7	No	<20 dBc	Yes
40	5750	7660	49.42	Yes	74	Yes
	5790	7727	52.84	Yes	74	Yes
	5830	7772	53.83	No	<20 dBc	Yes

Table 12. Radiated Emissions, Test Results, 17 dBi Panel

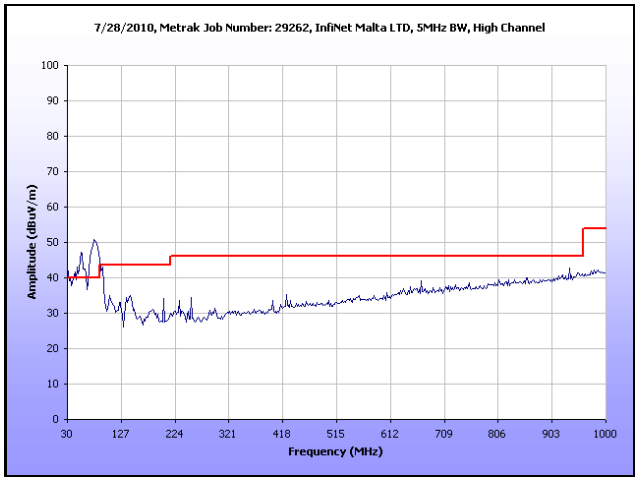
Radiated Spurious Emissions, Below 1 GHz, 5 MHz, 16 dBi Panel



Plot 49. Radiated Emissions, Below 1 GHz, Low Channel (5730 MHz), 5 MHz, 16 dBi Panel

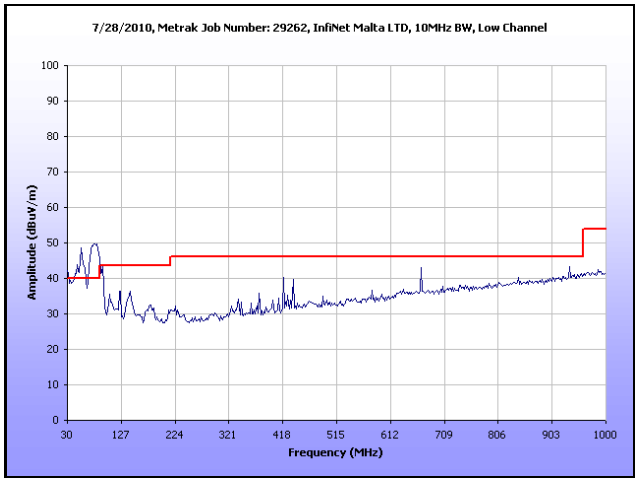


Plot 50. Radiated Emissions, Below 1 GHz, Mid Channel (5785 MHz), 5 MHz, 16 dBi Panel

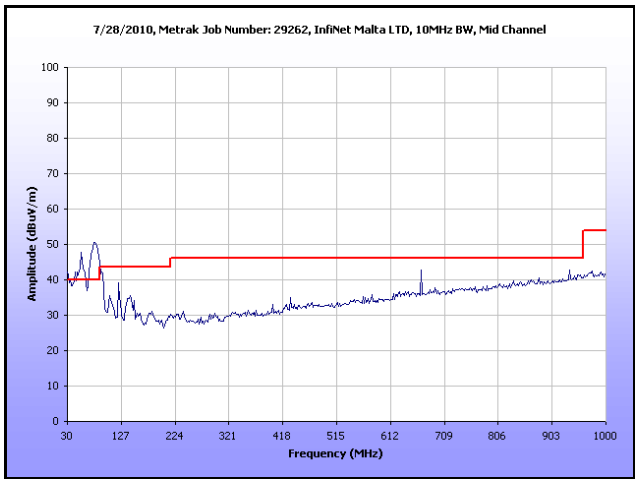


Plot 51. Radiated Emissions, Below 1 GHz, High Channel (5845 MHz), 5 MHz, 16 dBi Panel

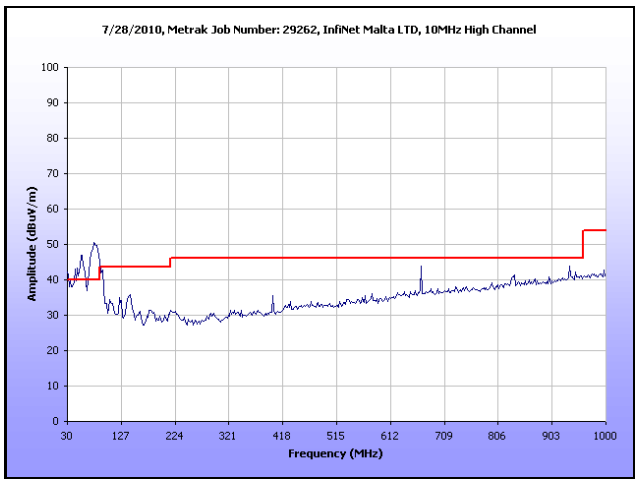
Radiated Spurious Emissions, Below 1 GHz, 10 MHz, 16 dBi Panel



Plot 52. Radiated Emissions, Below 1 GHz, Low Channel (5730 MHz), 10 MHz, 16 dBi Panel

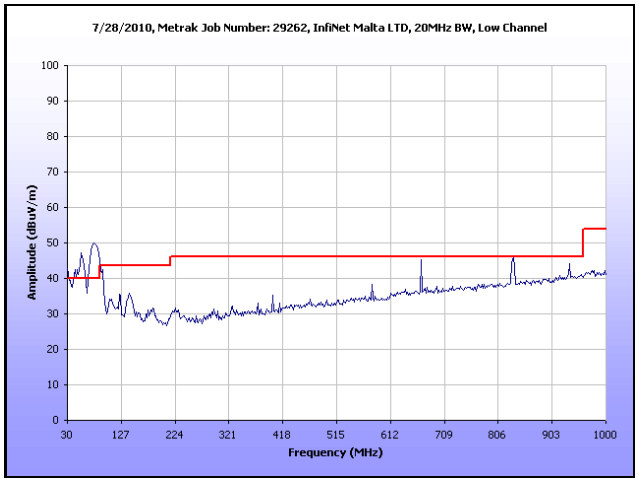


Plot 53. Radiated Emissions, Below 1 GHz, Mid Channel (5785 MHz), 10 MHz, 16 dBi Panel

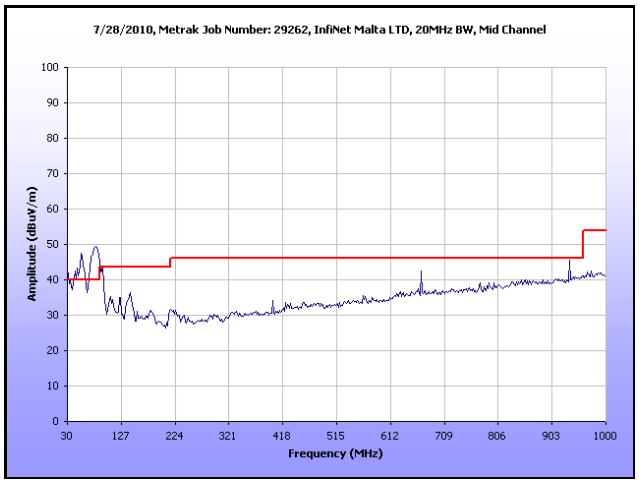


Plot 54. Radiated Emissions, Below 1 GHz, High Channel (5845 MHz), 10 MHz, 16 dBi Panel

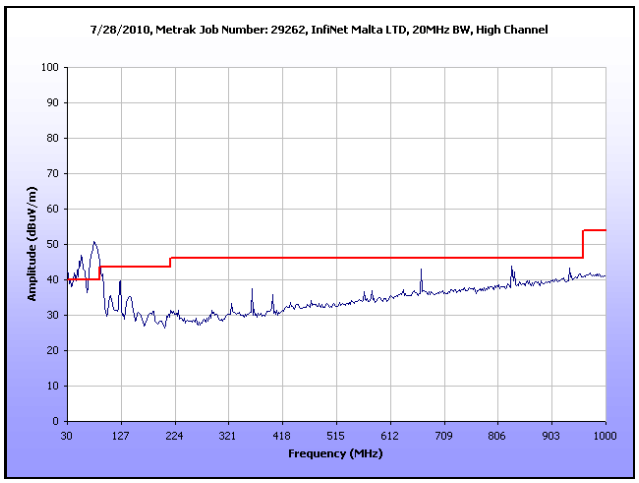
Radiated Spurious Emissions, Below 1 GHz, 20 MHz, 16 dBi Panel



Plot 55. Radiated Emissions, Below 1 GHz, Low Channel (5740 MHz), 20 MHz, 16 dBi Panel

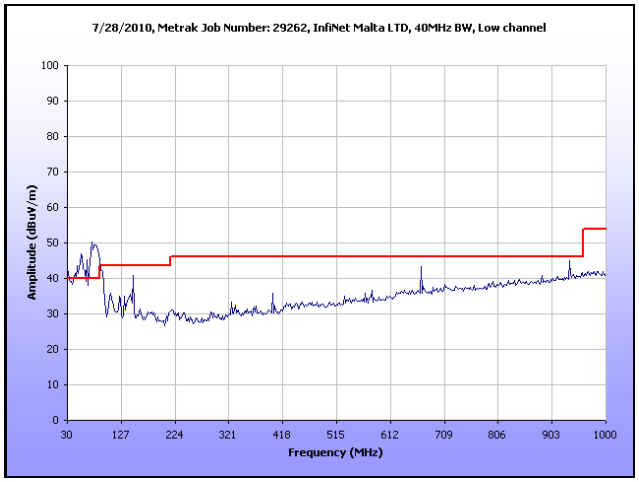


Plot 56. Radiated Emissions, Below 1 GHz, Mid Channel (5780 MHz), 20 MHz, 16 dBi Panel

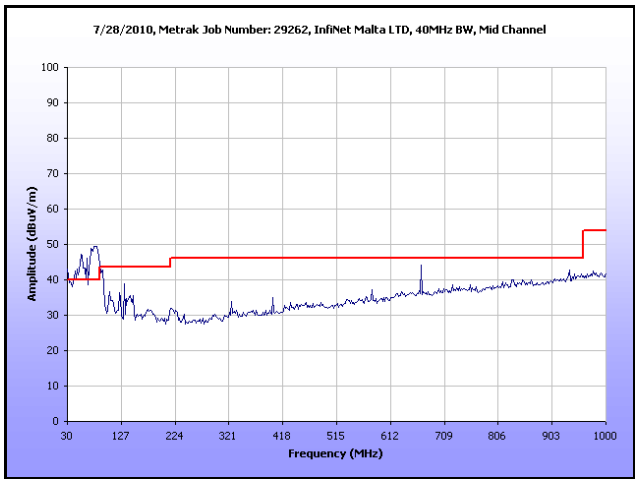


Plot 57. Radiated Emissions, Below 1 GHz, High Channel (5840 MHz), 20 MHz, 16 dBi Panel

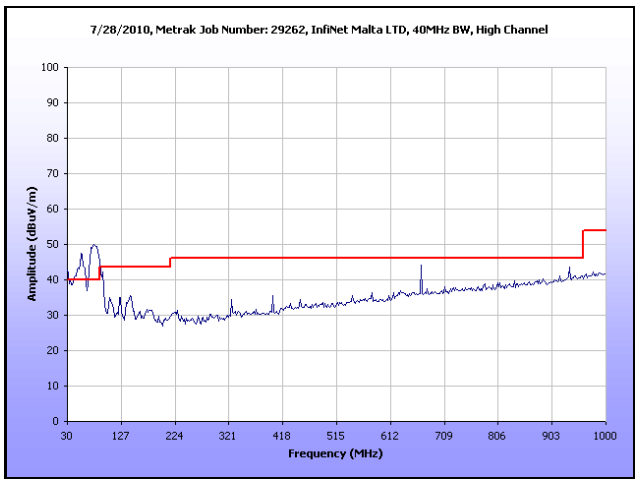
Radiated Spurious Emissions, Below 1 GHz, 40 MHz, 16 dBi Panel



Plot 58. Radiated Emissions, Below 1 GHz, Low Channel (5750 MHz), 40 MHz, 16 dBi Panel

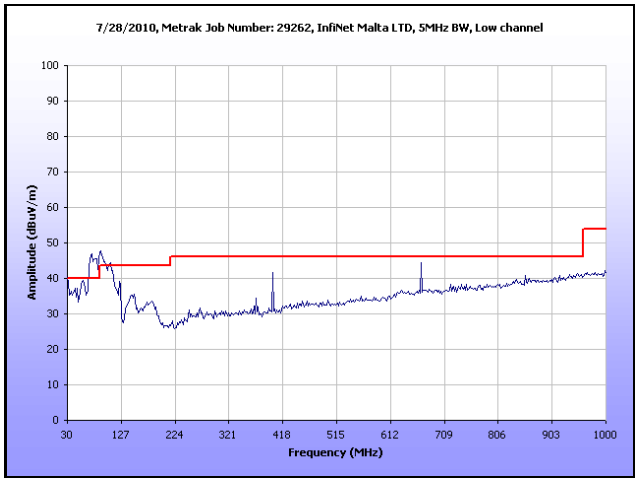


Plot 59. Radiated Emissions, Below 1 GHz, Mid Channel (5790 MHz), 40 MHz, 16 dBi Panel

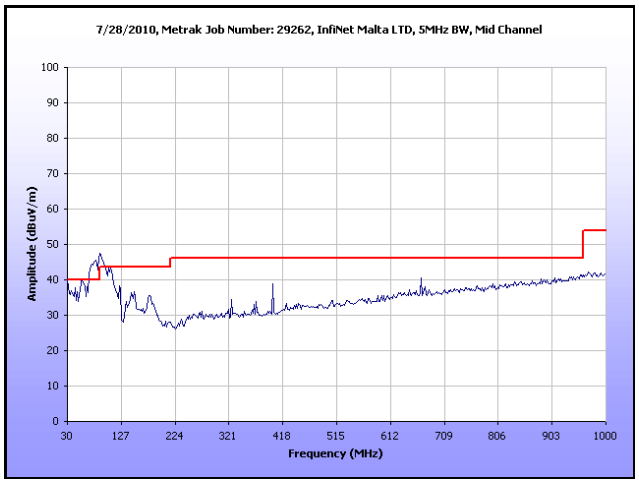


Plot 60. Radiated Emissions, Below 1 GHz, High Channel (5830 MHz), 40 MHz, 16 dBi Panel

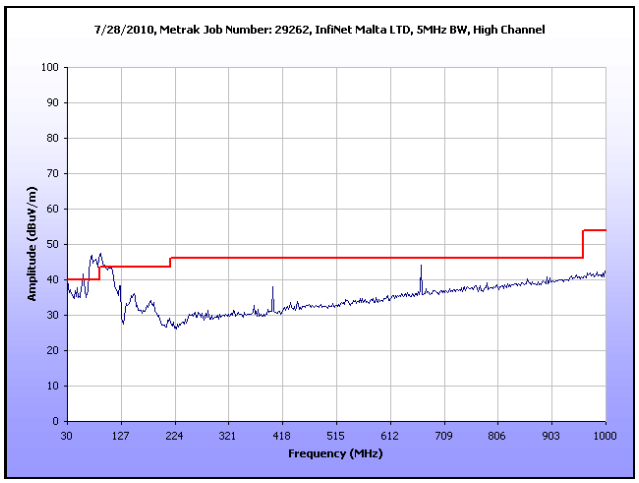
Radiated Spurious Emissions, Below 1 GHz, 5 MHz, 17 dBi Panel



Plot 61. Radiated Emissions, Below 1 GHz, Low Channel (5730 MHz), 5 MHz, 17 dBi Panel

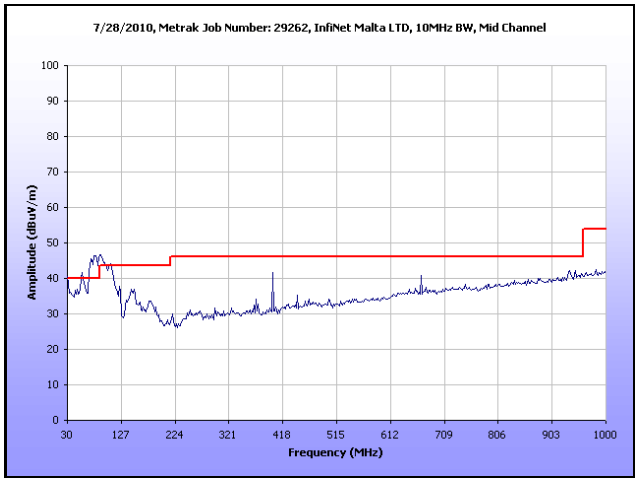


Plot 62. Radiated Emissions, Below 1 GHz, Mid Channel (5785 MHz), 5 MHz, 17 dBi Panel

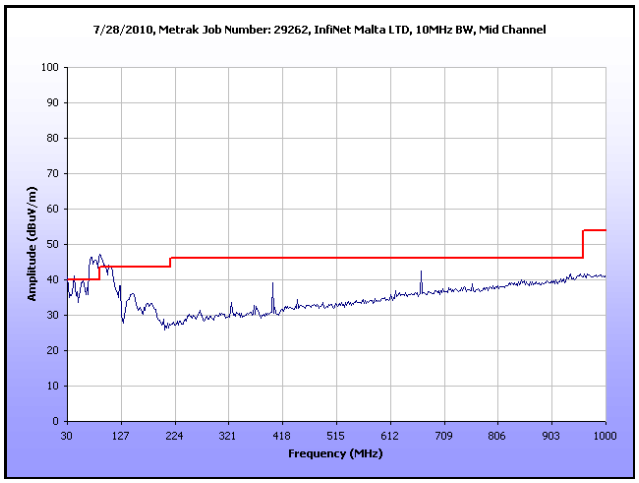


Plot 63. Radiated Emissions, Below 1 GHz, High Channel (5845 MHz), 5 MHz, 17 dBi Panel

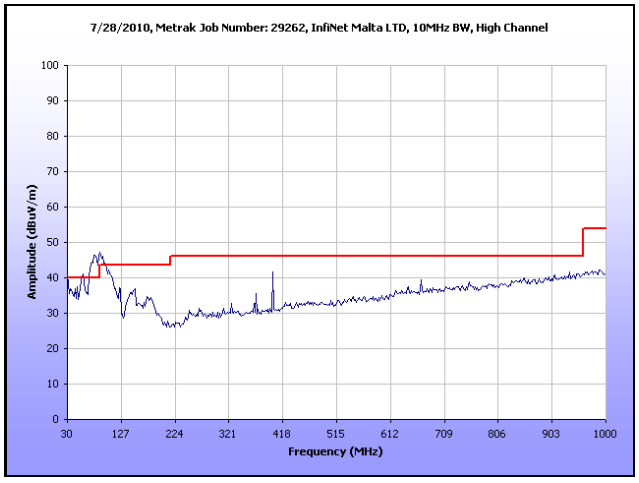
Radiated Spurious Emissions, Below 1 GHz, 10 MHz, 17 dBi Panel



Plot 64. Radiated Emissions, Below 1 GHz, Low Channel (5730 MHz), 10 MHz, 17 dBi Panel

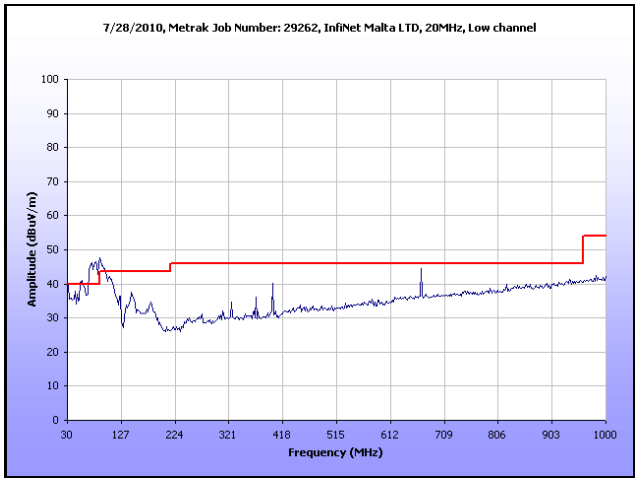


Plot 65. Radiated Emissions, Below 1 GHz, Mid Channel (5785 MHz), 10 MHz, 17 dBi Panel

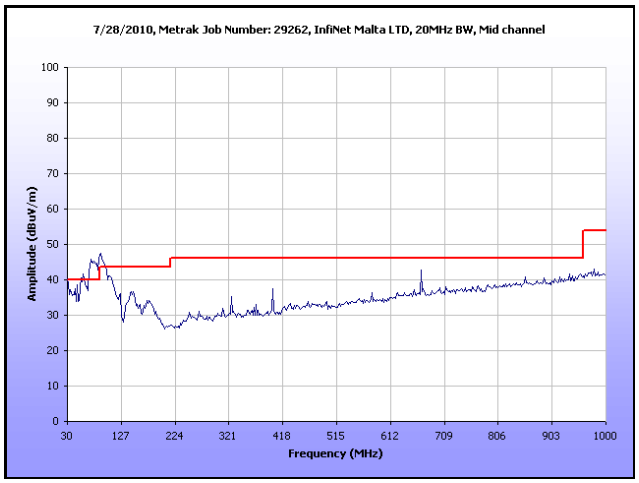


Plot 66. Radiated Emissions, Below 1 GHz, High Channel (5845 MHz), 10 MHz, 17 dBi Panel

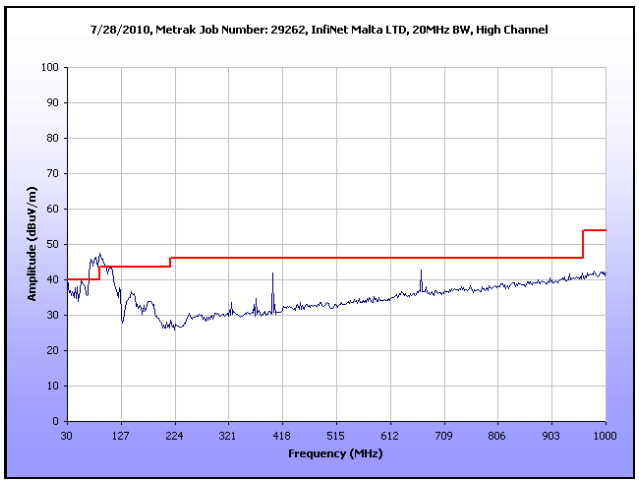
Radiated Spurious Emissions, Below 1 GHz, 20 MHz, 17 dBi Panel



Plot 67. Radiated Emissions, Below 1 GHz, Low Channel (5740 MHz), 20 MHz, 17 dBi Panel

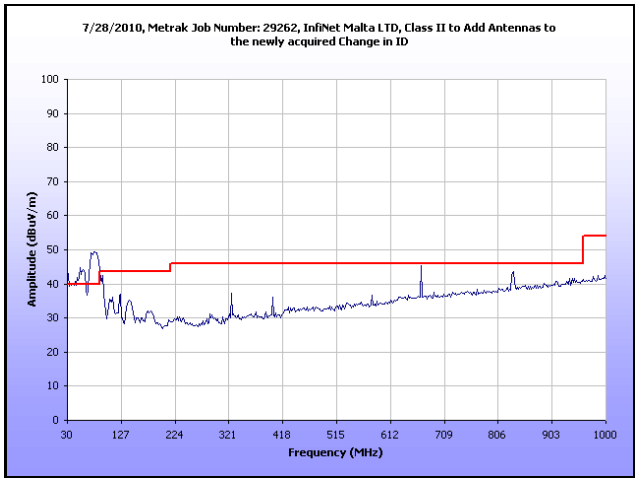


Plot 68. Radiated Emissions, Below 1 GHz, Mid Channel (5780 MHz), 20 MHz, 17 dBi Panel

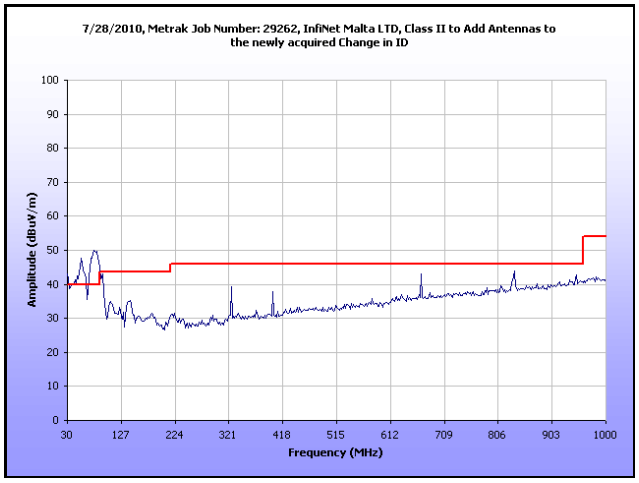


Plot 69. Radiated Emissions, Below 1 GHz, High Channel (5840 MHz), 20 MHz, 17 dBi Panel

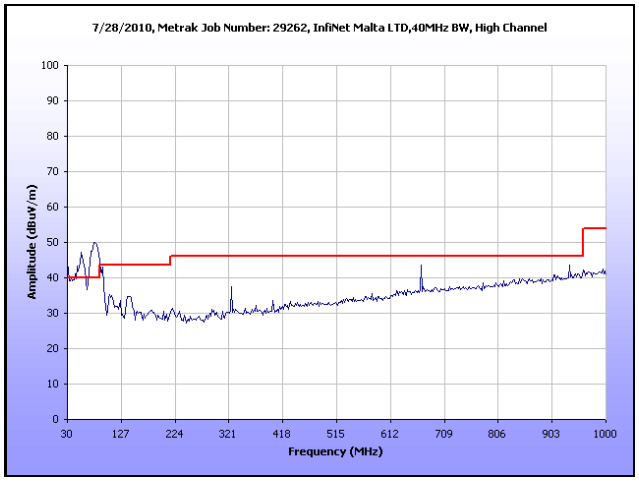
Radiated Spurious Emissions, Below 1 GHz, 40 MHz, 17 dBi Panel



Plot 70. Radiated Emissions, Below 1 GHz, Low Channel (5750 MHz), 40 MHz, 17 dBi Panel

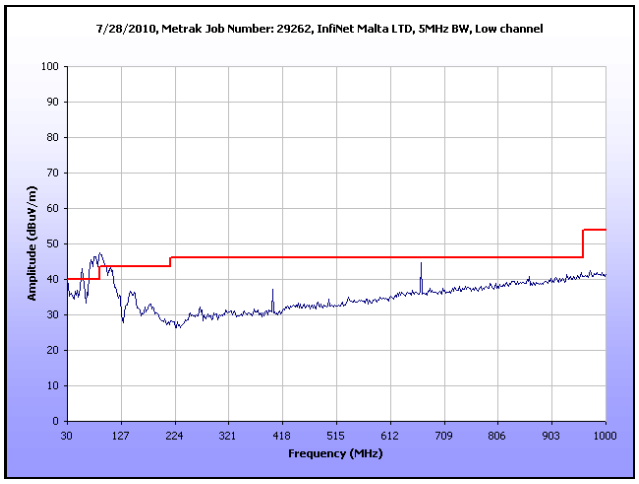


Plot 71. Radiated Emissions, Below 1 GHz, Mid Channel (5790 MHz), 40 MHz, 17 dBi Panel

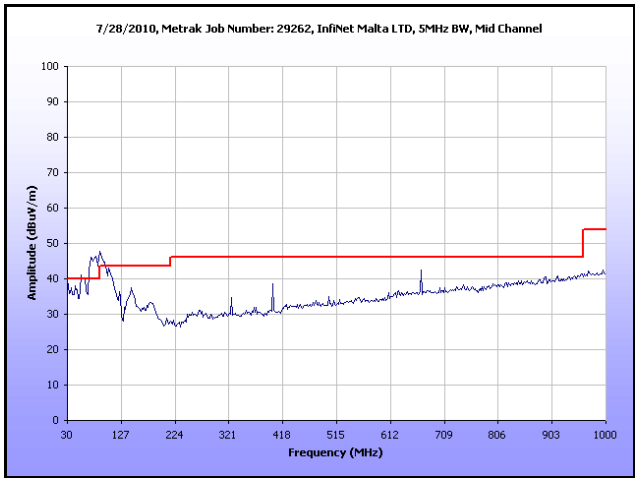


Plot 72. Radiated Emissions, Below 1 GHz, High Channel (5830 MHz), 40 MHz, 17 dBi Panel

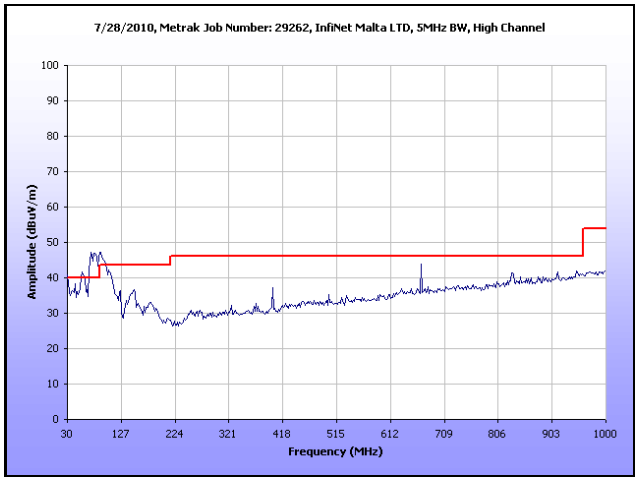
Radiated Spurious Emissions, Below 1 GHz, 5 MHz, 23 dBi Panel



Plot 73. Radiated Emissions, Below 1 GHz, Low Channel (5730 MHz), 5 MHz, 23 dBi Panel

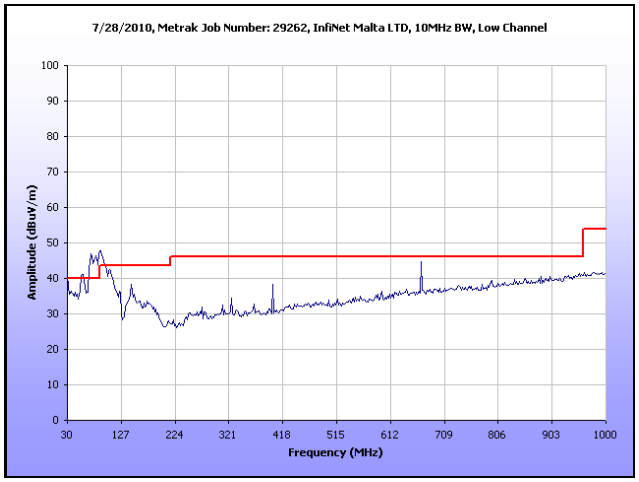


Plot 74. Radiated Emissions, Below 1 GHz, Mid Channel (5785 MHz), 5 MHz, 23 dBi Panel

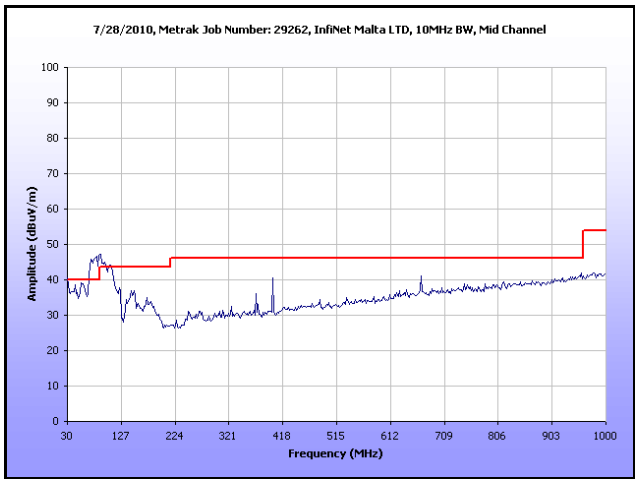


Plot 75. Radiated Emissions, Below 1 GHz, High Channel (5845 MHz), 5 MHz, 23 dBi Panel

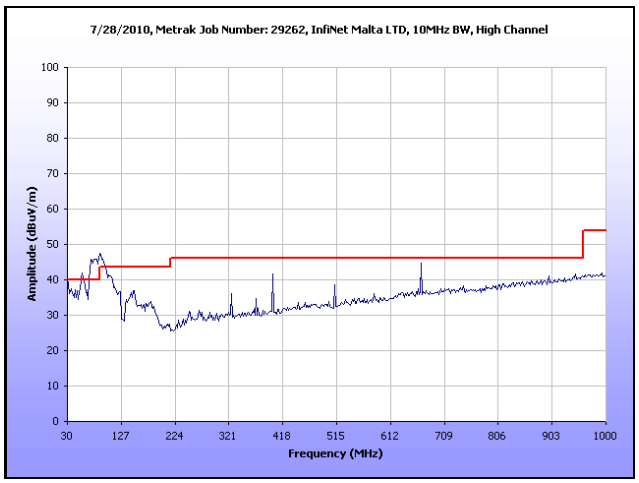
Radiated Spurious Emissions, Below 1 GHz, 10 MHz, 23 dBi Panel



Plot 76. Radiated Emissions, Below 1 GHz, Low Channel (5730 MHz), 10 MHz, 23 dBi Panel

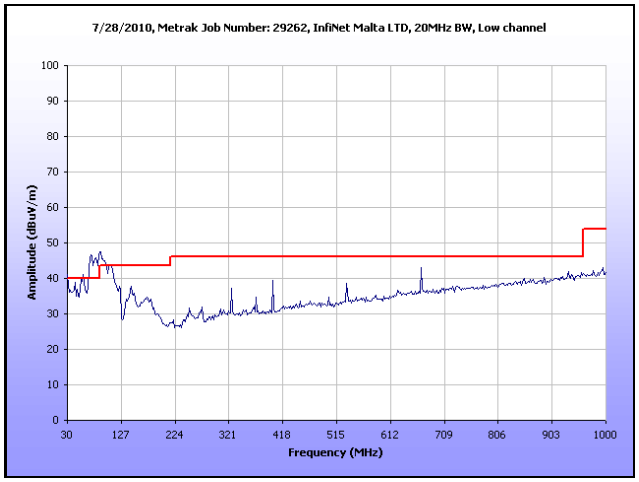


Plot 77. Radiated Emissions, Below 1 GHz, Mid Channel (5785 MHz), 10 MHz, 23 dBi Panel

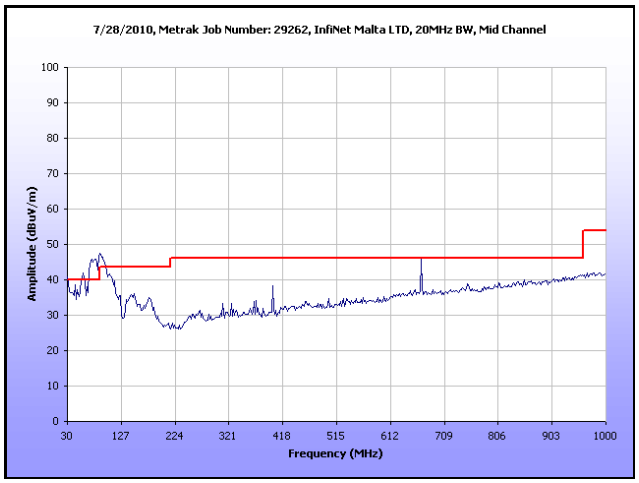


Plot 78. Radiated Emissions, Below 1 GHz, High Channel (5845 MHz), 10 MHz, 23 dBi Panel

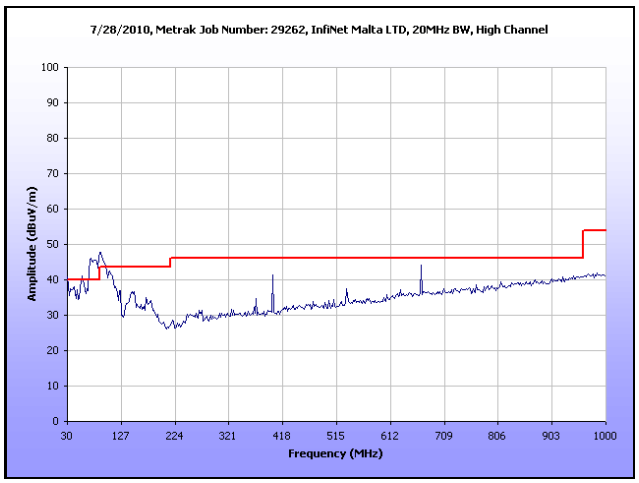
Radiated Spurious Emissions, Below 1 GHz, 20 MHz, 23 dBi Panel



Plot 79. Radiated Emissions, Below 1 GHz, Low Channel (5740 MHz), 20 MHz, 23 dBi Panel

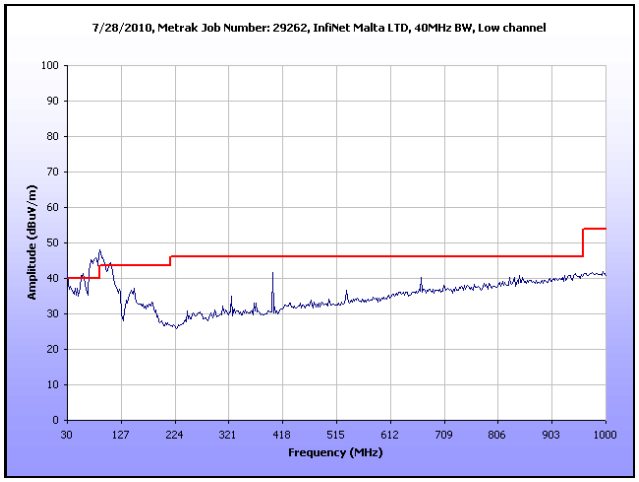


Plot 80. Radiated Emissions, Below 1 GHz, Mid Channel (5780 MHz), 20 MHz, 23 dBi Panel

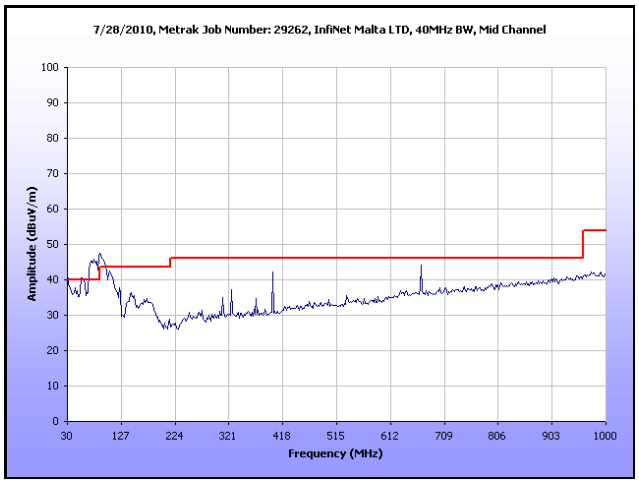


Plot 81. Radiated Emissions, Below 1 GHz, High Channel (5840 MHz), 20 MHz, 23 dBi Panel

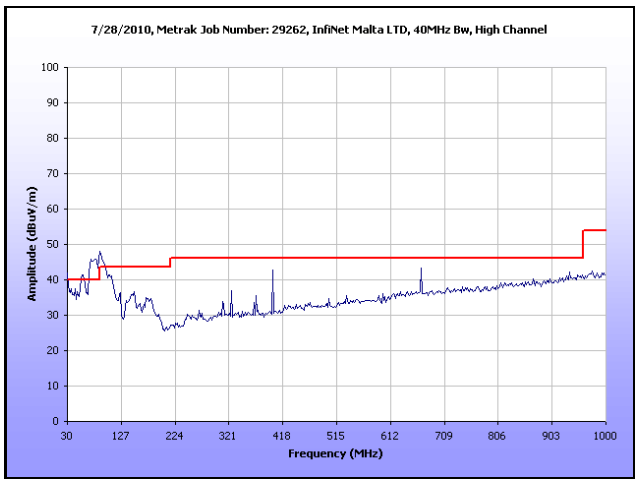
Radiated Spurious Emissions, Below 1 GHz, 40 MHz, 23 dBi Panel



Plot 82. Radiated Emissions, Below 1 GHz, Low Channel (5750 MHz), 40 MHz, 23 dBi Panel

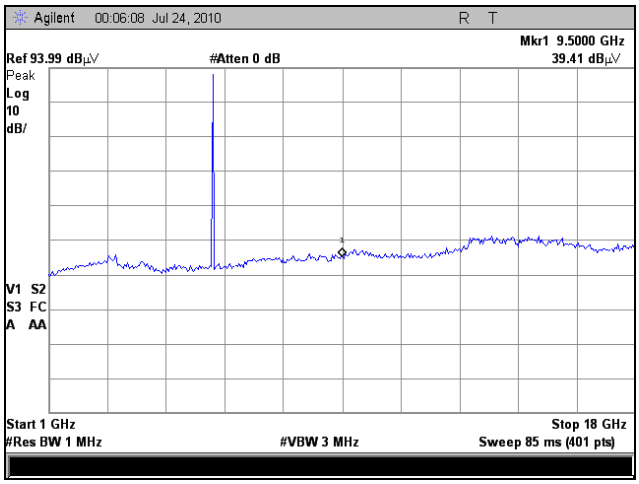


Plot 83. Radiated Emissions, Below 1 GHz,Mid Channel (5790 MHz), 40 MHz, 23 dBi Panel

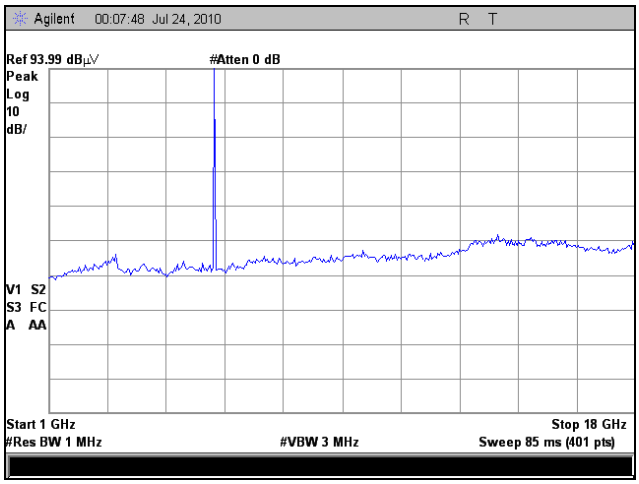


Plot 84. Radiated Emissions, Below 1 GHz, High Channel (5830 MHz), 40 MHz, 23 dBi Panel

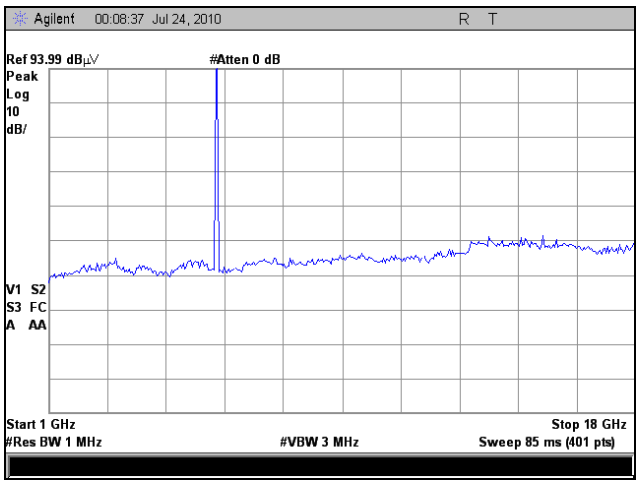
Radiated Spurious Emissions, Above 1 GHz, 5 MHz, 16 dBi Panel



Plot 85. Radiated Emissions, Above 1 GHz, Low Channel (5730 MHz), 5 MHz, 16 dBi Panel

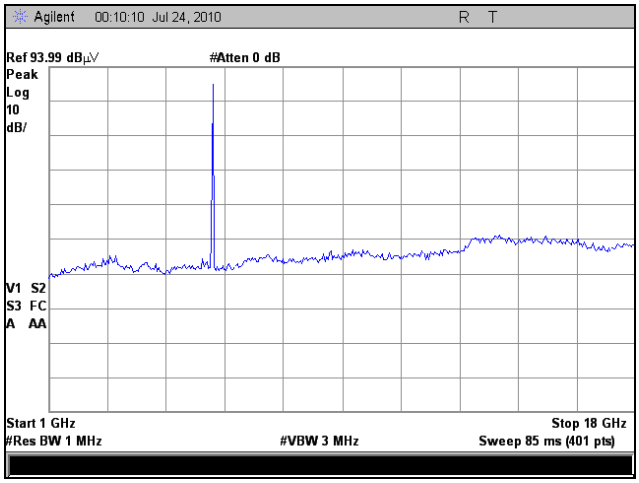


Plot 86. Radiated Emissions, Above 1 GHz, Mid Channel (5785 MHz), 5 MHz, 16 dBi Panel

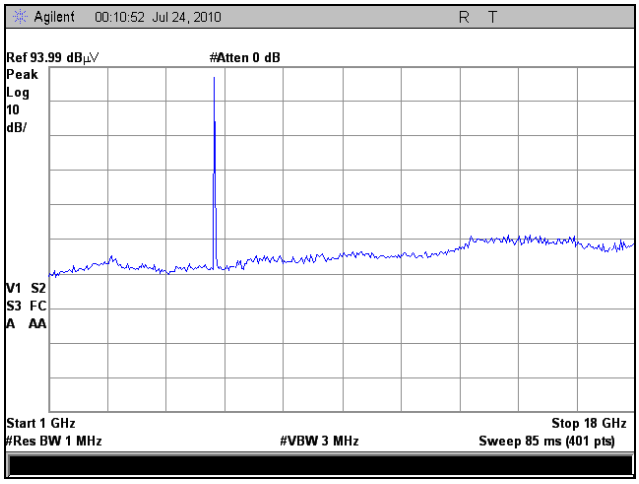


Plot 87. Radiated Emissions, Above 1 GHz, High Channel (5845 MHz), 5 MHz, 16 dBi Panel

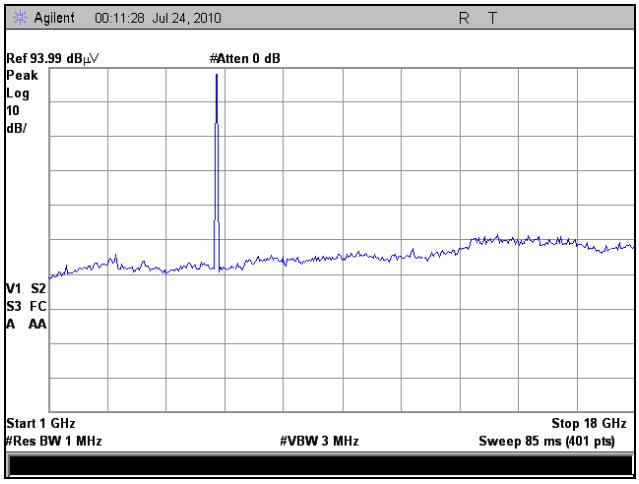
Radiated Spurious Emissions, Above 1 GHz, 10 MHz, 16 dBi Panel



Plot 88. Radiated Emissions, Above 1 GHz, Low Channel (5730 MHz), 10 MHz, 16 dBi Panel

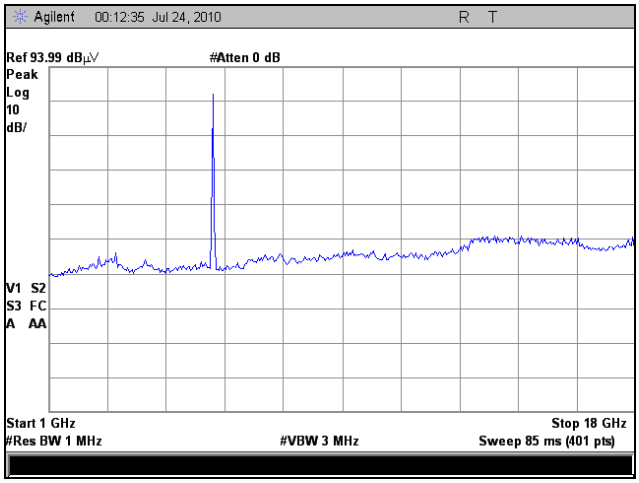


Plot 89. Radiated Emissions, Above 1 GHz, Mid Channel (5785 MHz), 10 MHz, 16 dBi Panel

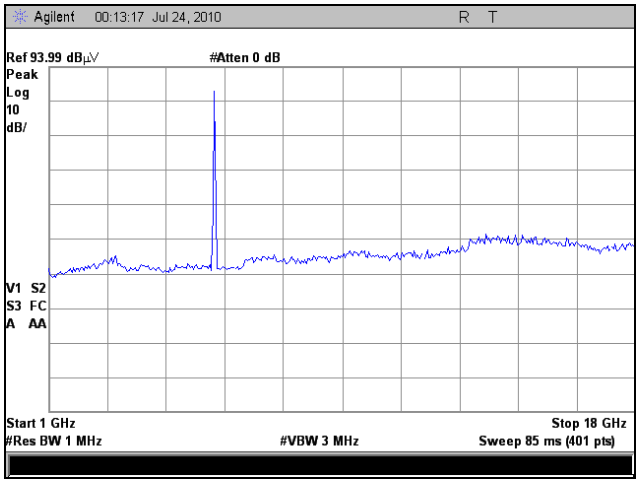


Plot 90. Radiated Emissions, Above 1 GHz, High Channel (5845 MHz), 10 MHz, 16 dBi Panel

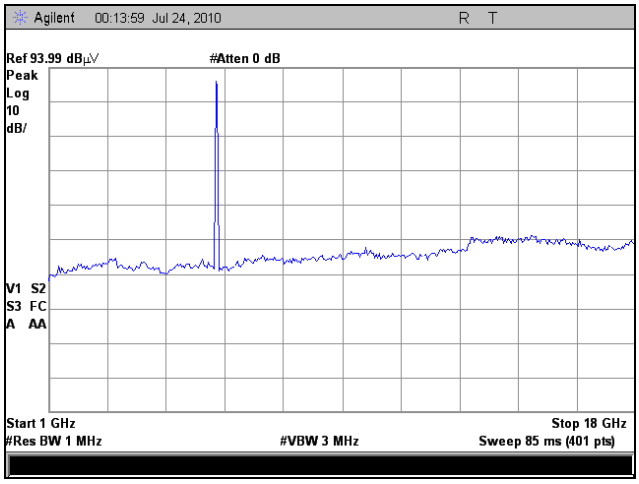
Radiated Spurious Emissions, Above 1 GHz, 20 MHz, 16 dBi Panel



Plot 91. Radiated Emissions, Above 1 GHz, Low Channel (5740 MHz), 20 MHz, 16 dBi Panel

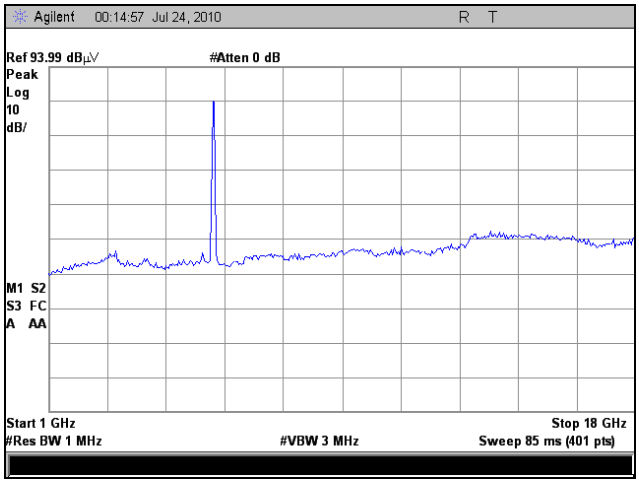


Plot 92. Radiated Emissions, Above 1 GHz, Mid Channel (5780 MHz), 20 MHz, 16 dBi Panel

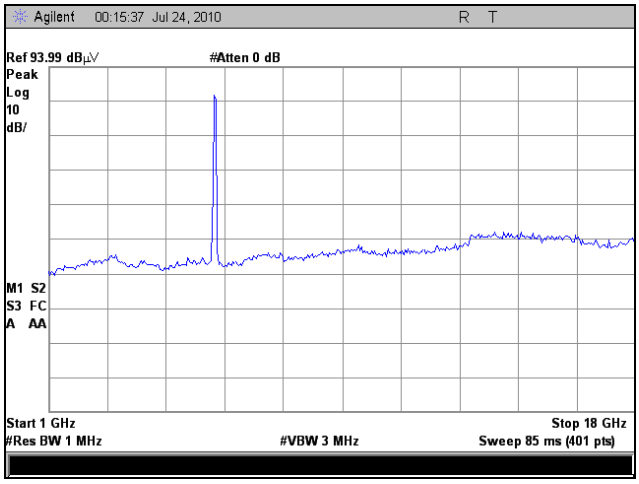


Plot 93. Radiated Emissions, Above 1 GHz, High Channel (5840 MHz), 20 MHz, 16 dBi Panel

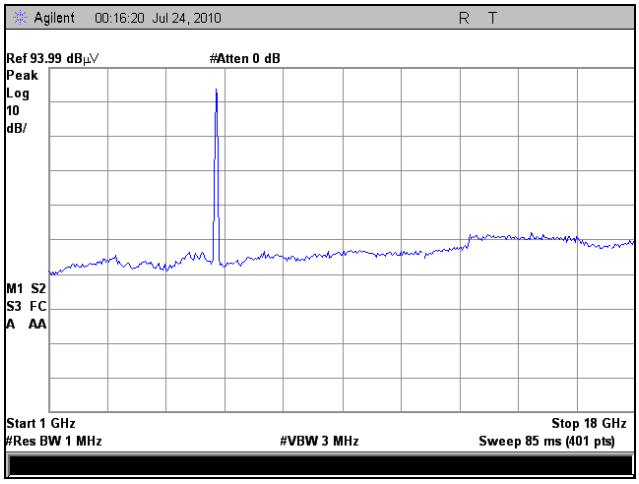
Radiated Spurious Emissions, Above 1 GHz, 40 MHz, 16 dBi Panel



Plot 94. Radiated Emissions, Above 1 GHz, Low Channel (5750 MHz), 40 MHz, 16 dBi Panel

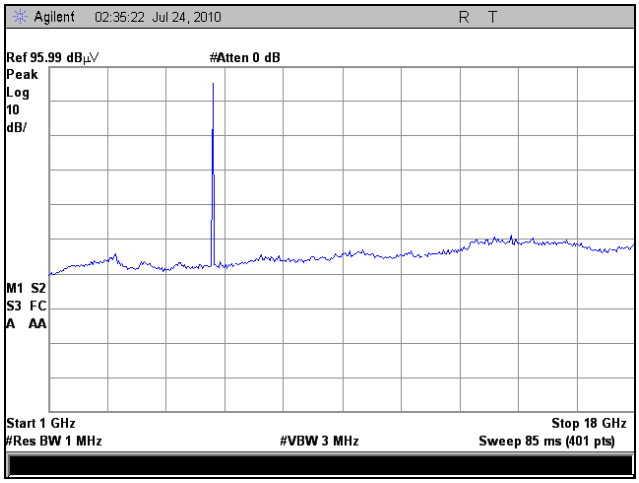


Plot 95. Radiated Emissions, Above 1 GHz, Mid Channel (5790 MHz), 40 MHz, 16 dBi Panel

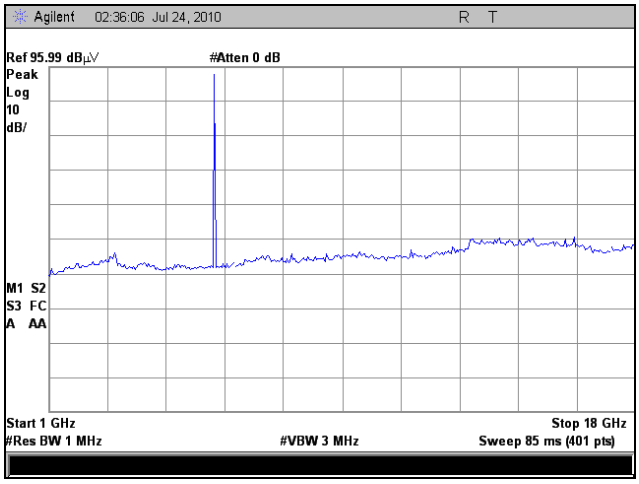


Plot 96. Radiated Emissions, Above 1 GHz, High Channel (5830 MHz), 40 MHz, 16 dBi Panel

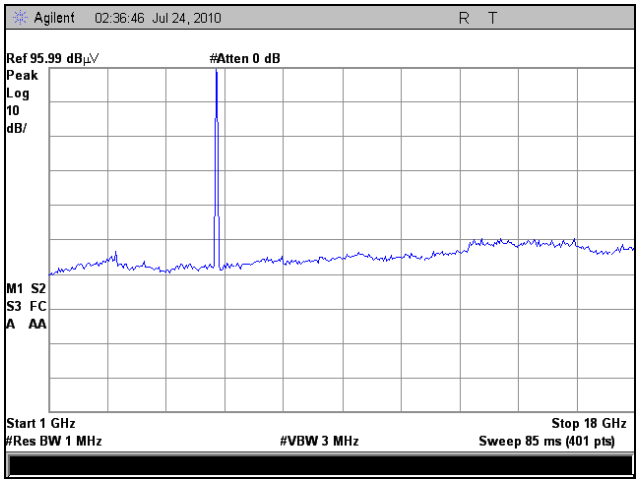
Radiated Spurious Emissions, Above 1 GHz, 5 MHz, 17 dBi Panel



Plot 97. Radiated Emissions, Above 1 GHz, Low Channel (5730 MHz), 5 MHz, 17 dBi Panel

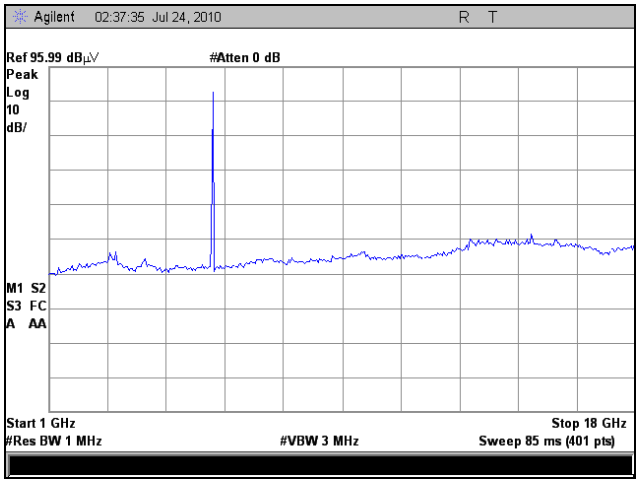


Plot 98. Radiated Emissions, Above 1 GHz, Mid Channel (5785 MHz), 5 MHz, 17 dBi Panel

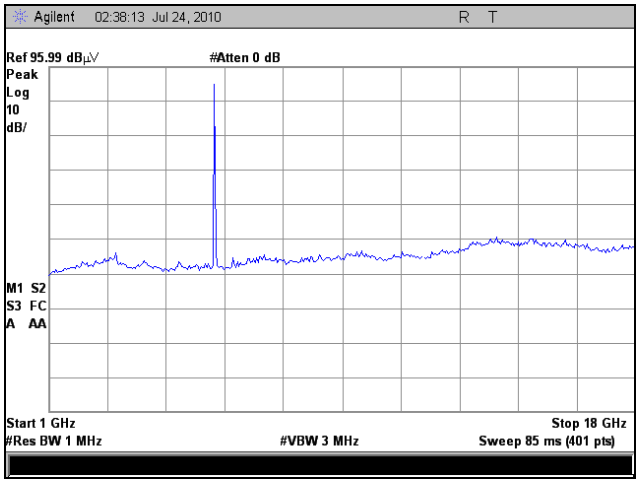


Plot 99. Radiated Emissions, Above 1 GHz, High Channel (5845 MHz), 5 MHz, 17 dBi Panel

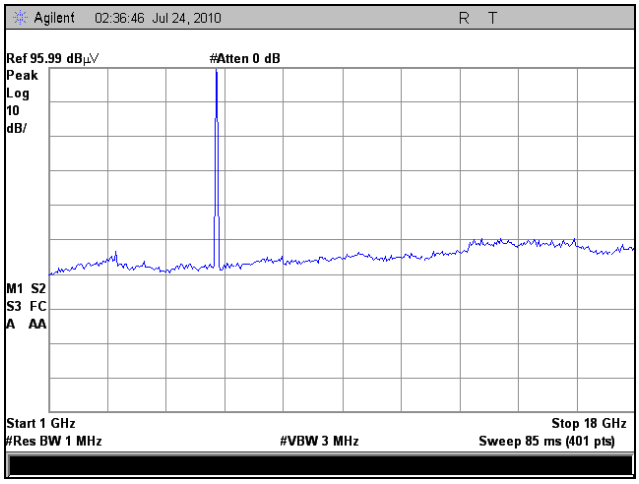
Radiated Spurious Emissions, Above 1 GHz, 10 MHz, 17 dBi Panel



Plot 100. Radiated Emissions, Above 1 GHz, Low Channel (5730 MHz), 10 MHz, 17 dBi Panel

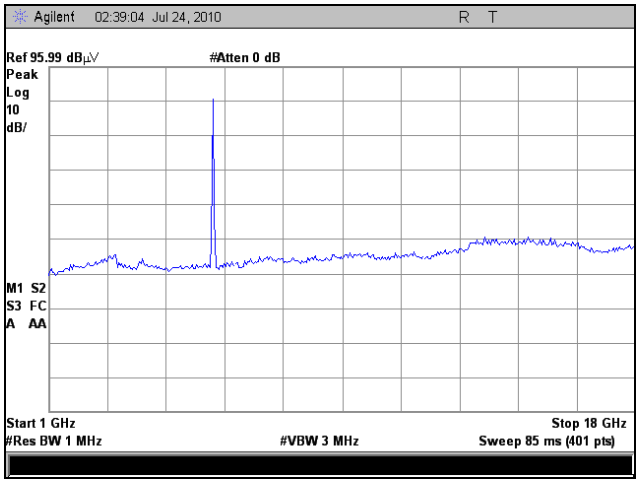


Plot 101. Radiated Emissions, Above 1 GHz, Mid Channel (5785 MHz), 10 MHz, 17 dBi Panel

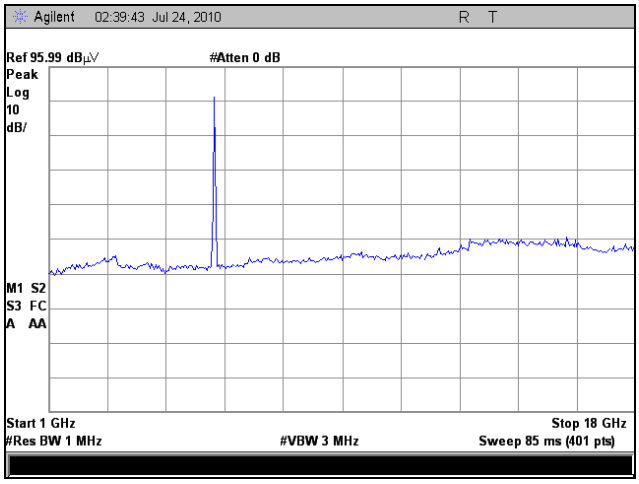


Plot 102. Radiated Emissions, Above 1 GHz, High Channel (5845 MHz), 10 MHz, 17 dBi Panel

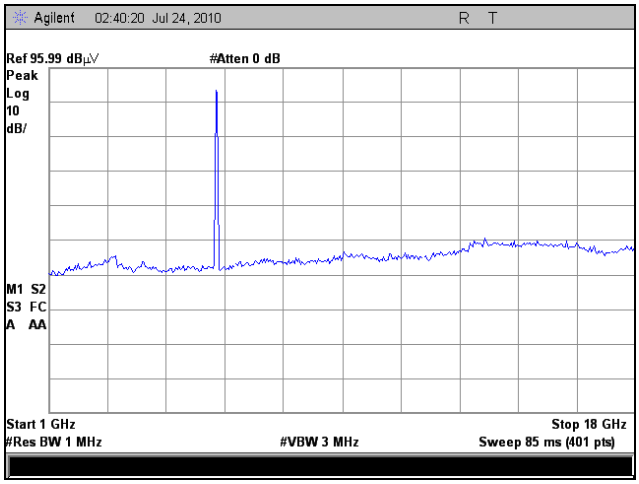
Radiated Spurious Emissions, Above 1 GHz, 20 MHz, 17 dBi Panel



Plot 103. Radiated Emissions, Above 1 GHz, Low Channel (5740 MHz), 20 MHz, 17 dBi Panel

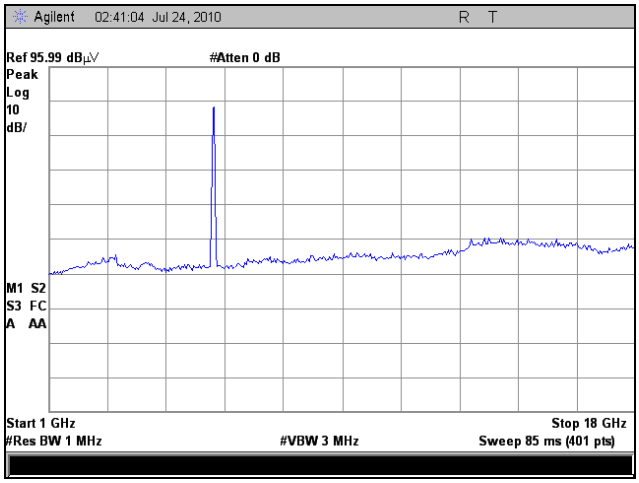


Plot 104. Radiated Emissions, Above 1 GHz, Mid Channel (5780 MHz), 20 MHz, 17 dBi Panel

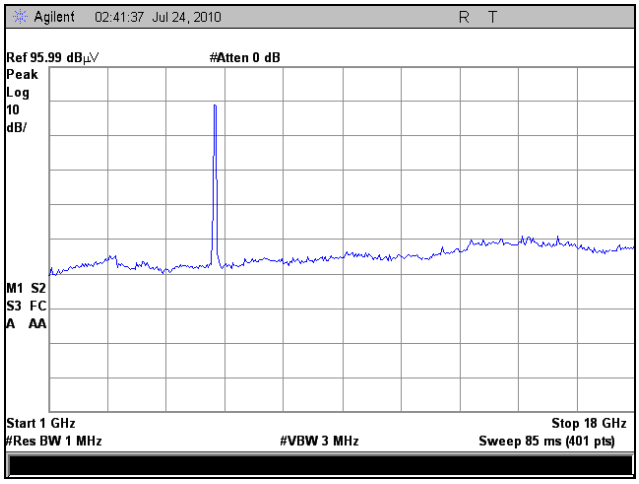


Plot 105. Radiated Emissions, Above 1 GHz, High Channel (5840 MHz), 20 MHz, 17 dBi Panel

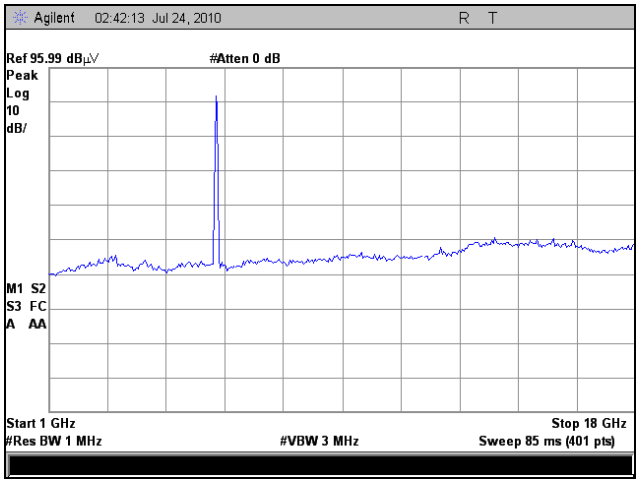
Radiated Spurious Emissions, Above 1 GHz, 40 MHz, 17 dBi Panel



Plot 106. Radiated Emissions, Above 1 GHz, Low Channel (5750 MHz), 40 MHz, 17 dBi Panel

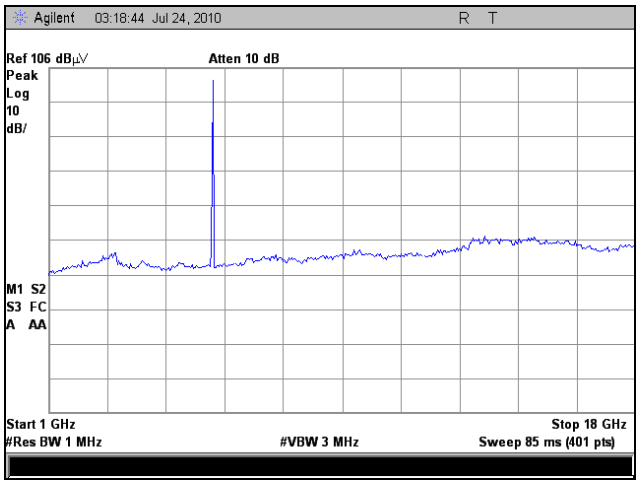


Plot 107. Radiated Emissions, Above 1 GHz, Mid Channel (5790 MHz), 40 MHz, 17 dBi Panel

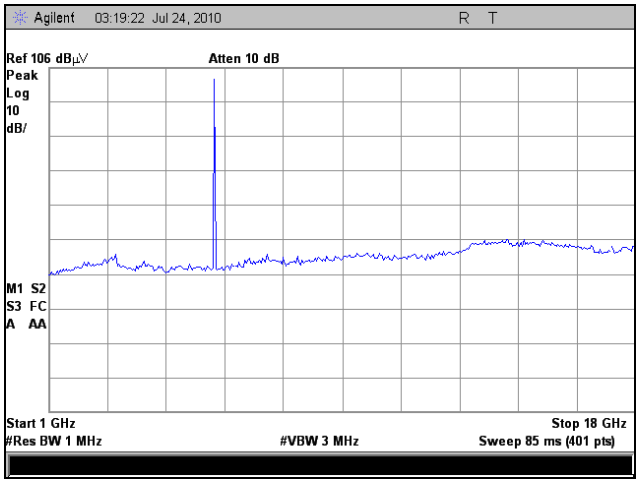


Plot 108. Radiated Emissions, Above 1 GHz, High Channel (5830 MHz), 40 MHz, 17 dBi Panel

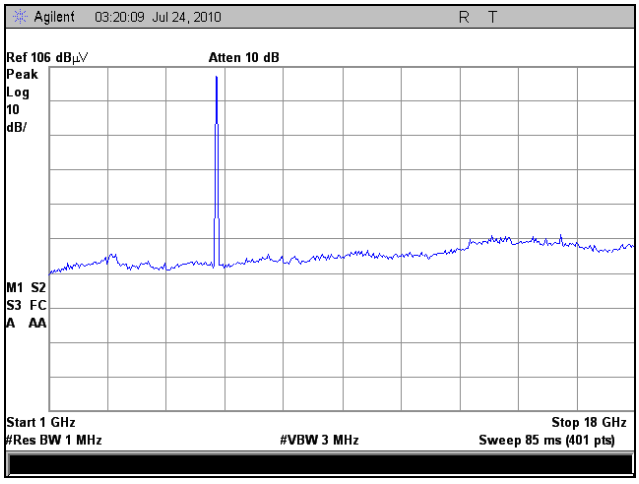
Radiated Spurious Emissions, Above 1 GHz, 5 MHz, 23 dBi Panel



Plot 109. Radiated Emissions, Above 1 GHz, Low Channel (5730 MHz), 5 MHz, 23 dBi Panel

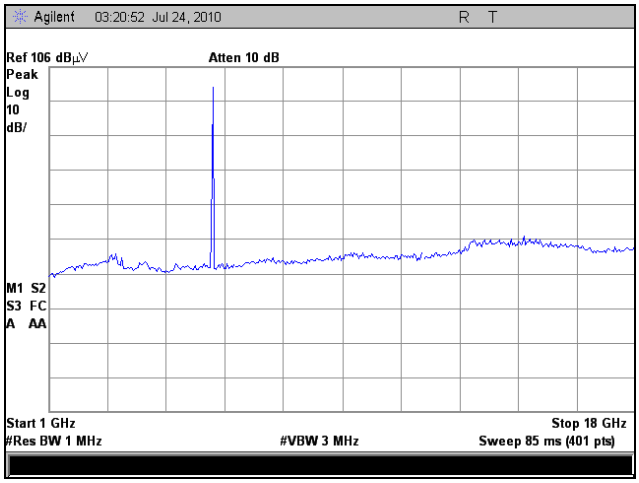


Plot 110. Radiated Emissions, Above 1 GHz, Mid Channel (5785 MHz), 5 MHz, 23 dBi Panel

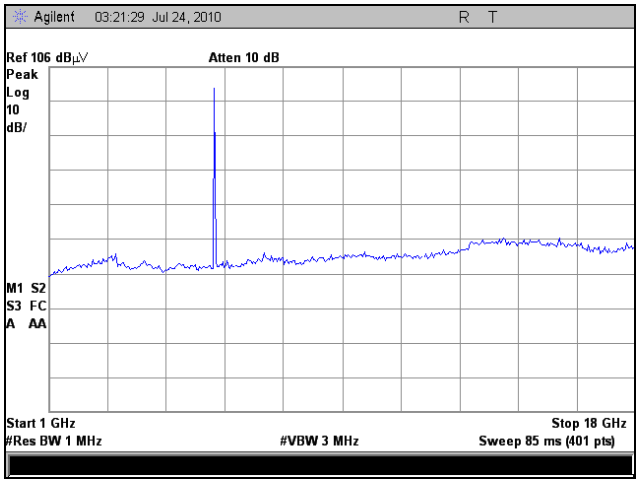


Plot 111. Radiated Emissions, Above 1 GHz, High Channel (5845 MHz), 5 MHz, 23 dBi Panel

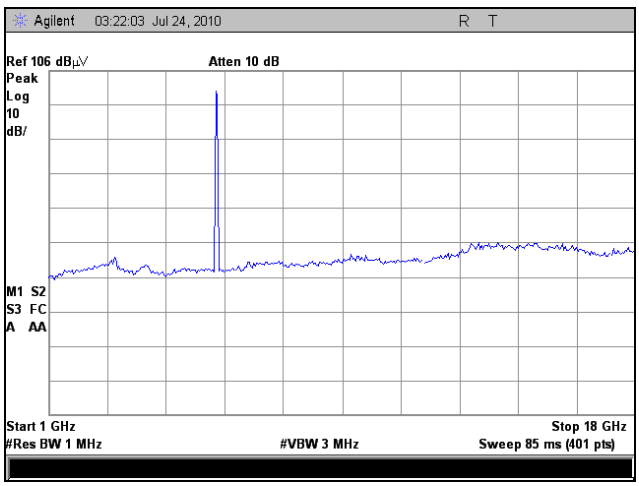
Radiated Spurious Emissions, Above 1 GHz, 10 MHz, 23 dBi Panel



Plot 112. Radiated Emissions, Above 1 GHz, Low Channel (5730 MHz), 10 MHz, 23 dBi Panel

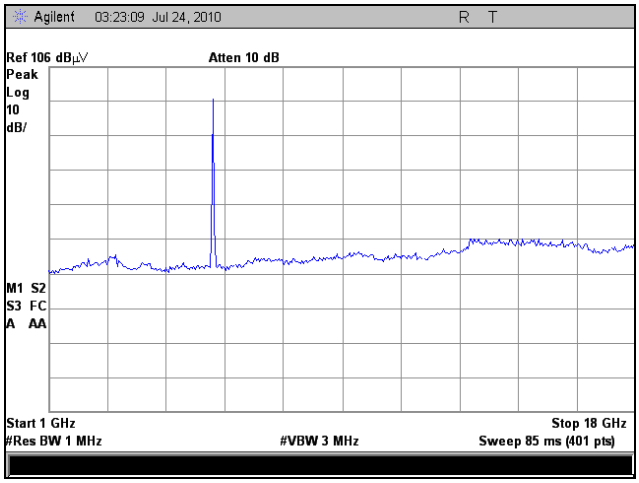


Plot 113. Radiated Emissions, Above 1 GHz, Mid Channel (5785 MHz), 10 MHz, 23 dBi Panel

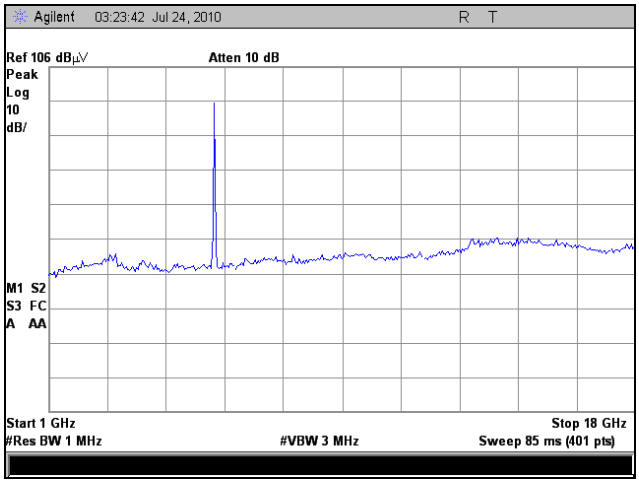


Plot 114. Radiated Emissions, Above 1 GHz, High Channel (5845 MHz), 10 MHz, 23 dBi Panel

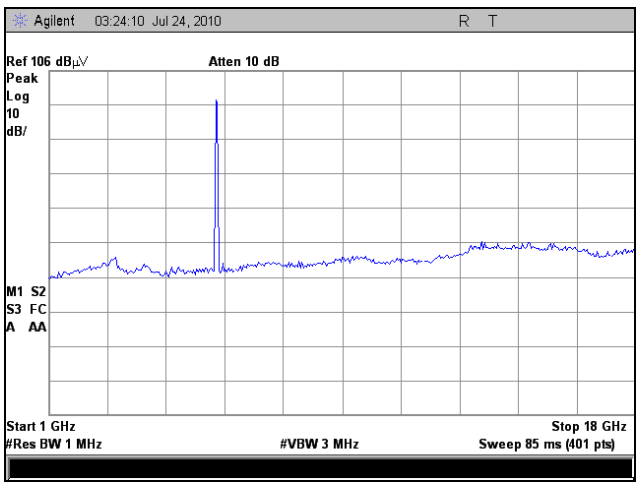
Radiated Spurious Emissions, Above 1 GHz, 20 MHz, 23 dBi Panel



Plot 115. Radiated Emissions, Above 1 GHz, Low Channel (5740 MHz), 20 MHz, 23 dBi Panel

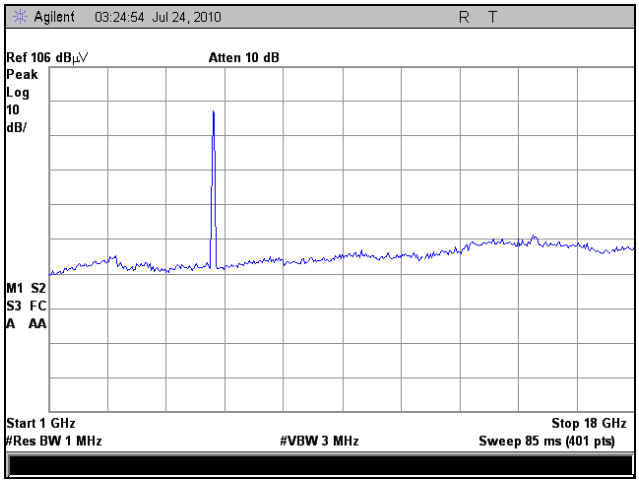


Plot 116. Radiated Emissions, Above 1 GHz, Mid Channel (5780 MHz), 20 MHz, 23 dBi Panel

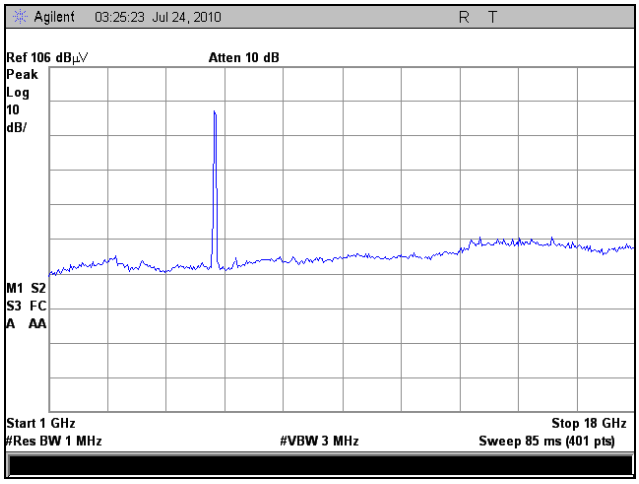


Plot 117. Radiated Emissions, Above 1 GHz, High Channel (5840 MHz), 20 MHz, 23 dBi Panel

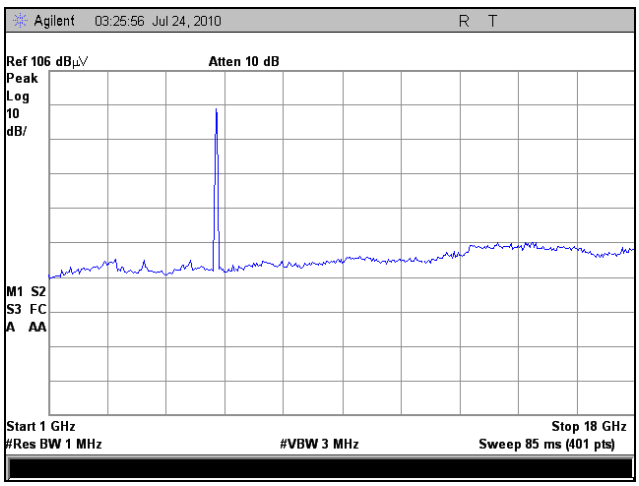
Radiated Spurious Emissions, Above 1 GHz, 40 MHz, 23 dBi Panel



Plot 118. Radiated Emissions, Above 1 GHz, Low Channel (5750 MHz), 40 MHz, 23 dBi Panel



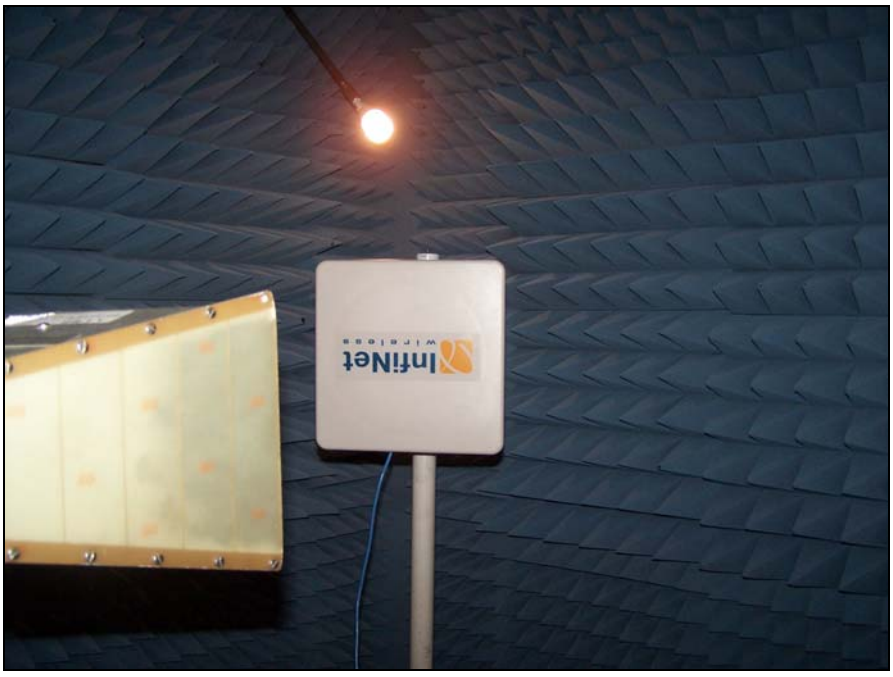
Plot 119. Radiated Emissions, Above 1 GHz, Mid Channel (5790 MHz), 40 MHz, 23 dBi Panel



Plot 120. Radiated Emissions, Above 1 GHz, High Channel (5830 MHz), 40 MHz, 23 dBi Panel

Test Setup

Photograph 1. Radiated Spurious Emissions, Below 1 GHz, Test Setup



Photograph 2. Radiated Spurious Emissions, Above 1 GHz, Test Setup

IV. Test Equipment

Test Equipment

Calibrated test equipment utilized during testing was maintained in a current state of calibration per the requirements of ANSI/NCSL Z540-1-1994 and ANSI/ISO/IEC 17025:2000.

MET Asset #	Nomenclature	Manufacturer	Model	Last Cal Date	Cal Due Date
1T4300	SEMI-ANECHOIC CHAMBER # 1	EMC TEST SYSTEMS	NONE	08/24/2007	08/24/2010
1T2511	ANTENNA; HORN	EMCO	3115	08/21/2009	08/21/2010
1T4612	ESA-E SERIES SPECTRUM ANALYZER	AGILENT	E4407B	09/09/2009	09/09/2010
1T4354	SIGNAL GENERATOR	HEWLETT PACKARD	83752A	03/11/2010	03/11/2011
1T4303	ANTENNA; BILOG	SCHAFNER - CHASE EMC	CBL6140A	07/29/2009	07/29/2010
1T4323	HARMONIC MIXER 18 TO 26.5 GHZ	HEWLETT PACKARD	11970K	08/14/2009	08/14/2010
1T4688	HORN ANTENNA	CUSTOM MICROWAVE, INC.	HO42S	SEE NOTE	
1T4668	HARMONIC MIXER	HEWLETT PACKARD	11970A	06/02/2010	06/02/2011
1T4689	HORN ANTENNA	CUSTOM MICROWAVE, INC.	HO28S	SEE NOTE	
1T4592	RF FILTER KIT	VARIOUS	N/A	SEE NOTE	
1T4442	PRE-AMPLIFIER, MICROWAVE	MITEQ	AFS42-01001800-30-10P	SEE NOTE	

Note: Functionally tested equipment is verified using calibrated instrumentation at the time of testing.

V. Certification & User's Manual Information

Certification & User's Manual Information

A. Certification Information

The following is extracted from Title 47 of the Code of Federal Regulations, Part 2, Subpart I — Marketing of Radio frequency devices:

§ 2.801 Radio-frequency device defined.

As used in this part, a radio-frequency device is any device which in its operation is capable of Emitting radio-frequency energy by radiation, conduction, or other means. Radio- frequency devices include, but are not limited to:

(a) The various types of radio communication transmitting devices described throughout this chapter.

(b) The incidental, unintentional and intentional radiators defined in Part 15 of this chapter.

(c) The industrial, scientific, and medical equipment described in Part 18 of this chapter.

(d) Any part or component thereof which in use emits radio-frequency energy by radiation, conduction, or other means.

§ 2.803 Marketing of radio frequency devices prior to equipment authorization.

(a) Except as provided elsewhere in this chapter, no person shall sell or lease, or offer for sale or lease (including advertising for sale or lease), or import, ship or distribute for the purpose of selling or leasing or offering for sale or lease, any radio frequency device unless:

(1) In the case of a device subject to certification, such device has been authorized by the Commission in accordance with the rules in this chapter and is properly identified and labeled as required by §2.925 and other relevant sections in this chapter; or

(2) In the case of a device that is not required to have a grant of equipment authorization issued by the Commission, but which must comply with the specified technical standards prior to use, such device also complies with all applicable administrative (including verification of the equipment or authorization under a Declaration of Conformity, where required), technical, labeling and identification requirements specified in this chapter.

(d) Notwithstanding the provisions of paragraph (a) of this section, the offer for sale solely to business, commercial, industrial, scientific or medical users (but not an offer for sale to other parties or to end users located in a residential environment) of a radio frequency device that is in the conceptual, developmental, design or pre-production stage is permitted prior to equipment authorization or, for devices not subject to the equipment authorization requirements, prior to a determination of compliance with the applicable technical requirements *provided* that the prospective buyer is advised in writing at the time of the offer for sale that the equipment is subject to the FCC rules and that the equipment will comply with the appropriate rules before delivery to the buyer or to centers of distribution.

(e)(1) Notwithstanding the provisions of paragraph (a) of this section, prior to equipment authorization or determination of compliance with the applicable technical requirements any radio frequency device may be operated, but not marketed, for the following purposes and under the following conditions:

(i) Compliance testing;

(ii) Demonstrations at a trade show provided the notice contained in paragraph (c) of this section is displayed in a conspicuous location on, or immediately adjacent to, the device;

(iii) Demonstrations at an exhibition conducted at a business, commercial, industrial, scientific or medical location, but excluding locations in a residential environment, provided the notice contained in paragraphs (c) or (d) of this section, as appropriate, is displayed in a conspicuous location on, or immediately adjacent to, the device;

(iv) Evaluation of product performance and determination of customer acceptability, provided such operation takes place at the manufacturer's facilities during developmental, design or pre-production states; or

(v) Evaluation of product performance and determination of customer acceptability where customer acceptability of a radio frequency device cannot be determined at the manufacturer's facilities because of size or unique capability of the device, provided the device is operated at a business, commercial, industrial, scientific or medical user's site, but not at a residential site, during the development, design or pre-production stages.

(e)(2) For the purpose of paragraphs (e)(1)(iv) and (e)(1)(v) of this section, the term *manufacturer's facilities* includes the facilities of the party responsible for compliance with the regulations and the manufacturer's premises, as well as the facilities of other entities working under the authorization of the responsible party in connection with the development and manufacture, but not the marketing, of the equipment.

(f) For radio frequency devices subject to verification and sold solely to business, commercial, industrial, scientific and medical users (excluding products sold to other parties or for operation in a residential environment), parties responsible for verification of the devices shall have the option of ensuring compliance with the applicable technical specifications of this chapter at each end user's location after installation, provided that the purchase or lease agreement includes a proviso that such a determination of compliance be made and is the responsibility of the party responsible for verification of the equipment.

Certification & User's Manual Information

The following is extracted from Title 47 of the Code of Federal Regulations, Part 2, Subpart J — Equipment Authorization Procedures:

§ 2.901 Basis and Purpose

(a) In order to carry out its responsibilities under the Communications Act and the various treaties and international regulations, and in order to promote efficient use of the radio spectrum, the Commission has developed technical standards for radio frequency equipment and parts or components thereof. The technical standards applicable to individual types of equipment are found in that part of the rules governing the service wherein the equipment is to be operated.[1] *In addition to the technical standards provided, the rules governing the service may require that such equipment be verified by the manufacturer or importer*, be authorized under a Declaration of Conformity, or receive an equipment authorization from the Commission by one of the following procedures: certification or registration.

(b) The following sections describe the verification procedure, the procedure for a Declaration of Conformity, and the procedures to be followed in obtaining certification from the Commission and the conditions attendant to such a grant.

§ 2.907 Certification.

(a) Certification is an equipment authorization issued by the Commission, based on representation and test data submitted by the applicant.

(b) Certification attaches to all units subsequently marketed by the grantee which are identical (see Section 2.908) to the sample tested except for permissive changes or other variations authorized by the Commission pursuant to Section 2.1043.

[1] In this case, the equipment is subject to the rules of Part 15. More specifically, the equipment falls under Subpart B (of Part 15), which deals with unintentional radiators.

Certification & User's Manual Information

§ 2.948 Description of measurement facilities.

(a) Each party making measurements of equipment that is subject to an equipment authorization under Part 15 or Part 18 of this chapter, regardless of whether the measurements are filed with the Commission or kept on file by the party responsible for compliance of equipment marketed within the U.S. or its possessions, shall compile a description of the measurement facilities employed.

(1) If the measured equipment is subject to the verification procedure, the description of the measurement facilities shall be retained by the party responsible for verification of the equipment.

(i) If the equipment is verified through measurements performed by an independent laboratory, it is acceptable for the party responsible for verification of the equipment to rely upon the description of the measurement facilities retained by or placed on file with the Commission by that laboratory. In this situation, the party responsible for the verification of the equipment is not required to retain a duplicate copy of the description of the measurement facilities.

(ii) If the equipment is verified based on measurements performed at the installation site of the equipment, no specific site calibration data is required. It is acceptable to retain the description of the measurement facilities at the site at which the measurements were performed.

(2) If the equipment is to be authorized by the Commission under the certification procedure, the description of the measurement facilities shall be filed with the Commission's Laboratory in Columbia, Maryland. The data describing the measurement facilities need only be filed once but must be updated as changes are made to the measurement facilities or as otherwise described in this section. At least every three years, the organization responsible for filing the data with the Commission shall certify that the data on file is current.

Certification & User's Manual Information

Label and User's Manual Information

The following is extracted from Title 47 of the Code of Federal Regulations, Part 15, Subpart A — General:

§ 15.19 Labeling requirements.

(a) In addition to the requirements in Part 2 of this chapter, a device subject to certification or verification shall be labeled as follows:

(1) Receivers associated with the operation of a licensed radio service, e.g., FM broadcast under Part 73 of this chapter, land mobile operation under Part 90, etc., shall bear the following statement in a conspicuous location on the device:

This device complies with Part 15 of the FCC Rules. Operation is subject to the condition that this device does not cause harmful interference.

(2) A stand-alone cable input selector switch, shall bear the following statement in a conspicuous location on the device:

This device is verified to comply with Part 15 of the FCC Rules for use with cable television service.

(3) All other devices shall bear the following statement in a conspicuous location on the device:

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

(4) Where a device is constructed in two or more sections connected by wires and marketed together, the statement specified under paragraph (a) of this section is required to be affixed only to the main control unit.

(5) When the device is so small or for such use that it is not practicable to place the statement specified under paragraph (a) of this section on it, the information required by this paragraph shall be placed in a prominent location in the instruction manual or pamphlet supplied to the user or, alternatively, shall be placed on the container in which the device is marketed. However, the FCC identifier or the unique identifier, as appropriate, must be displayed on the device.

§ 15.21 Information to user.

The users manual or instruction manual for an intentional or unintentional radiator shall caution the user that changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

Verification & User's Manual Information

The following is extracted from Title 47 of the Code of Federal Regulations, Part 15, Subpart B — Unintentional Radiators:

§ 15.105 Information to the user.

(a) For a Class A digital device or peripheral, the instructions furnished the user shall include the following or similar statement, placed in a prominent location in the text of the manual:

Note: This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at own expense.

(b) For a Class B digital device or peripheral, the instructions furnished the user shall include the following or similar statement, placed in a prominent location in the text of the manual:

Note: This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a residential environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

– Reorient or relocate the receiving antenna.

– Increase the separation between the equipment and receiver.

– Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.

– Consult the dealer or an experienced radio/TV technician for help.

End of Report

