TEST REPORT
FROM
RFI GLOBAL SERVICES LTD

Test of: Motorola Point to Point Fixed Wireless Solutions Group
Motorola PTP49400

To: FCC Part 90: 2005 (Subpart I)

Test Report Serial No:
RFI/MPTE1/RP48412JD01A

This Test Report Is Issued Under The Authority Of Andrew Brown, Operations Manager: 	
Tested By: Steven Wong 	**Checked By: Nigel Davison** 
Report Copy No: PDF01	
Issue Date: 15 September 2006	**Test Dates: 01 August 2006 to 09 August 2006**

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RFI Global Services Ltd
Pavilion A, Ashwood Park, Ashwood Way, Basingstoke, Hampshire RG23 8BG
Telephone: +44 (0)1256 312000 Facsimile: +44 (0)1256 312001
Email: info@rfi-global.com Website: www.rfi-global.com

Registered in England and Wales. Company number:2117901

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1. Client Information

Company Name:	Motorola Point to Point Fixed Wireless Solutions Group
Address:	Unit A, Linhay Business Park Eastern Road Ashburton Devon TQ13 7UP
Contact Name:	Mr C Fisher

2. Equipment Under Test (EUT)

The following information (with the exception of the Date of Receipt) has been supplied by the client:

2.1. Identification of Equipment Under Test (EUT)

Brand Name:	Motorola Point to Point
Model Name or Number:	PTP49400
Serial Number:	00.39.87
Hardware Version:	Rev 1
Software Version:	XX400
Software Version Number:	08.00
FCC ID Number:	QWP49XX
Country of Manufacture:	United Kingdom
Date of Receipt:	01 August 2006

Brand Name:	PTP49400
Model Name or Number:	E066105C
Serial Number:	0540203217
Hardware Version:	01
Country of Manufacture:	United Kingdom
Date of Receipt:	01 August 2006

2.2. Description of EUT

The equipment under test is a Wireless Ethernet Bridge operating in the 4.9 GHz Band. Connects IP networks via Ethernet interfaces and then a radio link in Point to Point links.

2.3. Modifications Incorporated in EUT

During the course of testing the EUT was not modified.

2.4. Additional Information Related to Testing

Power Supply Requirement:	Nominal 115 V 60 Hz AC Mains supply		
Intended Operating Environment:	Commercial		
Equipment Category:	Broadband Radio Access network, Fixed Link		
Type of Unit:	Base station (Fixed Use)		
Transmit Frequency Range:	4945 MHz to 4985 MHz		
Transmit Channels Tested:	**Channel ID**	**Channel Number**	**Channel Frequency (MHz)**
	Bottom	1	4945
	Middle	3	4965
	Top	5	4985
Receive Frequency Range:	4945 MHz to 4985 MHz		
Receive Channels Tested:	**Channel ID**	**Channel Number**	**Channel Frequency (MHz)**
	Bottom	1	4945
	Middle	3	4965
	Top	5	4985
Maximum Power Output (ERP)	23dBm		

2.5. Port Identification

Port	Description	Type/Length
1	Antenna Vertical (connectorised version)	N/A
2	Antenna Horizontal (connectorised version)	N/A
3	Mains input to Indoor Unit	AC supply cable, 1.5m
4	Indoor-Outdoor unit	Cat 5, 1.0m
5	Indoor Unit to customer equipment (Ethernet)	Cat5, 1.0m

2.6. Support Equipment

The following support equipment was used to exercise the EUT during testing:

Description:	Laptop
Brand Name:	ACER
Model Name or Number:	Travelmate 4020. ZL3
Serial Number:	LXTAH0508353100905EM00
Cable Length and Type:	None Stated
Connected to Port:	None Stated

Description:	DC- 18 GHz, 30dB Attenuator
Brand Name:	Midwest microwave
Model Name or Number:	ATT-0219-30-NNN-02
Serial Number:	None Stated
Cable Length and Type:	None Stated
Connected to Port:	None Stated

Description:	Outdoor Unit
Brand Name:	Motorola Point to Point
Model Name or Number:	PTP49400
Serial Number:	None Stated
Cable Length and Type:	None Stated
Connected to Port:	None Stated

Support Equipment (Continued)

Description:	Power Indoor Unit Plus
Brand Name:	PTP49400
Model Name or Number:	E066105C
Serial Number:	0538196218
Cable Length and Type:	None Stated
Connected to Port:	None Stated

Description:	DC- 8 GHz, 10dB Attenuator
Brand Name:	Midwest Microwave
Model Name or Number:	ATT-0398-10-NNN-07
Serial Number:	None Stated
Cable Length and Type:	None Stated
Connected to Port:	None Stated

3. Test Results

Reference:	FCC Part 90: 2005 (Subpart I)
Title:	Code Of Federal Regulations, Part 90 (47CFR90) Private Land Mobile Radio Services.

3.1. Methods and Procedures

The methods and procedures used were as detailed in:

ANSI/TIA-603-B-2003
Land Mobile Communications Equipment, Measurements and performance Standards

ANSI C63.2 (1987)
Title: American National Standard for Instrumentation - Electromagnetic noise and field strength.

ANSI C63.4 (2003)
Title: American National Standard Methods of Measurement of Electromagnetic Emissions from Low Voltage Electrical and Electronic Equipment in the Range of 9 kHz to 40 GHz.

ANSI C63.5 (1988)
Title: American National Standard for the Calibration of antennas used for Radiated Emission measurements in Electromagnetic Interference (EMI) control.

ANSI C63.7 (1988)
Title: American National Standard Guide for Construction of Open Area Test Sites for performing Radiated Emission Measurements.

CISPR 16-1: (1999)
Title: Specification For Radio Disturbance and Immunity Measuring Apparatus and Methods. Part 1: Radio Disturbance and Immunity Measuring Apparatus.

3.2. Definition of Measurement Equipment

The measurement equipment used complied with the requirements of the standards referenced in the methods & procedures section above. Appendix 1 contains a list of the test equipment used.

4. Operation of the EUT during Testing

4.1. Operating Modes

The EUT was tested in the following operating modes, unless otherwise stated.
All conducted measurements were performed with the EUT set to continuously transmit at maximum power with BPSK, QPSK, 16 QAM, 64 QAM and Acquisition mode, at bottom, middle and top channels.
For all radiated measurements, the EUT was set to continuously transmit on bottom, middle and top channels in acquisition mode only.

4.2. Configuration and Peripherals

The EUT was tested in the following configuration unless otherwise stated:
For all conducted measurements, the EUT was configured with the ODU and IDU connected via the CAT 5 interface. The ODU was powered by an IDU via an external AC mains supply. The laptop PC was connected to the IDU Ethernet port to exercise the equipment. An RF link was created with a second ODU and IDU via the RF antenna port, in order to exercise the BPSK, QPSK, 16 QAM and 64 QAM modulations.
For all radiated measurements, the EUT was configured with the ODU and IDU connected via the CAT interface. The ODU was powered by and IDU via an external AC mains supply. The laptop PC was connected to the IDU Ethernet port to exercise the equipment, No RF link was established.

5. Summary of Tests

Range of Measurements	Specification Reference	Port Type	Compliancy Status
Transmitter AC Conducted Emissions (150 kHz to 30 MHz)	C.F.R. 47 FCC Part 15: 2004 Section 15.207	AC Mains	Complied
Transmitter Peak Carrier Output Power (Conducted)	C.F.R. 47 FCC Part 90: 2004 Sections 90.205/90.1215/2.1046	Antenna Terminals	Complied
Transmitter Peak Power Spectral Density (Conducted)	C.F.R. 47 FCC Part 90: 2004 Sections 90.205/90.1215/2.1046	Antenna Terminals	Complied
Transmitter Occupied Bandwidth	C.F.R. 47 FCC Part 90: 2004 Sections 90.210(m)/2.1049	Antenna Terminals	See Emission Mask Section
Transmitter Conducted Emissions Masks	C.F.R. 47 FCC Part 90: 2004 Sections 90.210(m)/2.1051	Antenna Terminals	Complied
Transmitter Conducted Emissions (Out of Band) (9 kHz to 40 GHz)	C.F.R. 47 FCC Part 90: 2004 Sections 90.210(m)	Antenna Terminals	Complied
Transmitter Radiated Emissions (Out of Band) (30 MHz to 40 GHz)	C.F.R. 47 FCC Part 15.209	Cabinet Radiation	Complied
Transmitter Frequency Stability (Temperature & Voltage Variation)	C.F.R. 47 FCC Part 90: 2004 Sections 90.213/2.1055	Antenna Terminals	See Note 1

Note(s):

1. *No limit has been specified for equipment operating at 2.450 GHz and above. The standard only states 'frequency stability to be specified in the station authorisation'. Therefore, no compliance statement will be applied for this test and these results are provided for information purpose only.*

6. Measurements, Examinations and Derived Results

6.1. General Comments

6.1.1. This section contains test results only.

6.1.2. Measurement uncertainties are evaluated in accordance with current best practice. Our reported expanded uncertainties are based on standard uncertainties, which are multiplied by an appropriate coverage factor to provide a statistical confidence level of approximately 95%.
Please refer to Section 8 for details of measurement uncertainties.

6.2. Test Results

6.2.1. Transmitter AC Conducted Spurious Emissions: Section 15.207

Results:

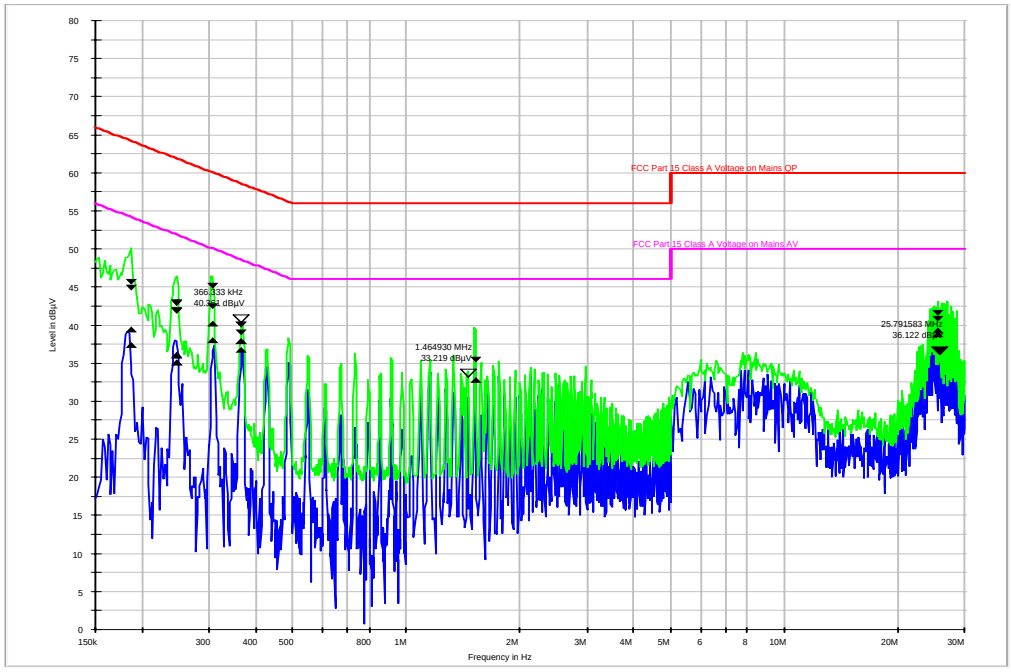
Quasi-Peak Detector Measurements on Live and Neutral Lines

Frequency (MHz)	Line	Level (dBμV)	Limit (dBμV)	Margin (dB)	Result
0.186	Live	45.75	64.2	18.45	Complied
0.246	Live	43.02	61.9	18.88	Complied
0.306	Live	45.25	60.1	14.85	Complied
0.366	Neutral	37.87	58.6	20.73	Complied
1.526	Live	34.45	56.0	20.55	Complied
25.478	Live	41.65	60.0	18.35	Complied

Average Detector Measurements on Live and Neutral Lines

Frequency (MHz)	Line	Level (dBμV)	Limit (dBμV)	Margin (dB)	Result
0.246	Live	36.08	51.9	15.82	Complied
0.186	Live	39.46	54.2	17.74	Complied
0.306	Live	40.15	50.1	9.95	Complied
0.366	Neutral	40.08	48.6	8.52	Complied
1.526	Neutral	34.49	46.0	11.51	Complied
25.478	Live	39.29	50.0	10.71	Complied

Transmitter AC Conducted Spurious Emissions: Section 15.207 (Continued)



6.2.2. Transmitter Peak Carrier Output Power (Conducted): Sections 90.205/90.1215/2.1046

Results: Port H (Maximum Output Power)

BPSK Modulation

Channel	Frequency (MHz)	Conducted RF O/P Power (dBm)	Limit (dBm)	Margin (dB)	Result
Bottom	4945	25.5	30.0	4.5	Complied
Middle	4965	25.6	30.0	4.4	Complied
Top	4985	25.4	30.0	4.6	Complied

QPSK Modulation

Channel	Frequency (MHz)	Conducted RF O/P Power (dBm)	Limit (dBm)	Margin (dB)	Result
Bottom	4945	25.8	30.0	4.2	Complied
Middle	4965	26.0	30.0	4.0	Complied
Top	4985	25.8	30.0	4.2	Complied

16QAM Modulation

Channel	Frequency (MHz)	Conducted RF O/P Power (dBm)	Limit (dBm)	Margin (dB)	Result
Bottom	4945	25.4	30.0	4.6	Complied
Middle	4965	25.7	30.0	4.3	Complied
Top	4985	25.5	30.0	4.5	Complied

Transmitter Peak Carrier Output Power (Conducted): Sections 90.205/90.1215/2.1046 (Continued)

64QAM Modulation

Channel	Frequency (MHz)	Conducted RF O/P Power (dBm)	Limit (dBm)	Margin (dB)	Result
Bottom	4945	25.6	30.0	4.4	Complied
Middle	4965	25.9	30.0	4.1	Complied
Top	4985	25.6	30.0	4.4	Complied

Acquisition Mode

Channel	Frequency (MHz)	Conducted RF O/P Power (dBm)	Limit (dBm)	Margin (dB)	Result
Bottom	4945	25.7	30.0	4.3	Complied
Middle	4965	25.7	30.0	4.3	Complied
Top	4985	25.4	30.0	4.6	Complied

Transmitter Peak Carrier Output Power (Conducted) Continued

Results: Port V (Maximum Output Power)

BPSK Modulation

Channel	Frequency (MHz)	Conducted RF O/P Power (dBm)	Limit (dBm)	Margin (dB)	Result
Bottom	4945	25.2	30.0	4.8	Complied
Middle	4965	25.4	30.0	4.6	Complied
Top	4985	25.3	30.0	4.7	Complied

QPSK Modulation

Channel	Frequency (MHz)	Conducted RF O/P Power (dBm)	Limit (dBm)	Margin (dB)	Result
Bottom	4945	25.5	30.0	4.5	Complied
Middle	4965	25.8	30.0	4.2	Complied
Top	4985	25.6	30.0	4.4	Complied

16QAM Modulation

Channel	Frequency (MHz)	Conducted RF O/P Power (dBm)	Limit (dBm)	Margin (dB)	Result
Bottom	4945	25.0	30.0	5.0	Complied
Middle	4965	25.3	30.0	4.7	Complied
Top	4985	25.3	30.0	4.7	Complied

Transmitter Peak Carrier Output Power (Conducted) (Continued)

64QAM Modulation

Channel	Frequency (MHz)	Conducted RF O/P Power (dBm)	Limit (dBm)	Margin (dB)	Result
Bottom	4945	25.6	30.0	4.4	Complied
Middle	4965	25.7	30.0	4.3	Complied
Top	4985	25.4	30.0	4.6	Complied

Acquisition Mode

Channel	Frequency (MHz)	Conducted RF O/P Power (dBm)	Limit (dBm)	Margin (dB)	Result
Bottom	4945	25.4	30.0	4.6	Complied
Middle	4965	25.5	30.0	4.5	Complied
Top	4985	25.3	30.0	4.7	Complied

6.2.3. Transmitter Peak Carrier Output Power (Conducted): Sections 90.205/90.1215/2.1046

Results: Port Horizontal and Port Vertical Aggregated (Maximum Output Power)

BPSK Modulation

Channel	Frequency (MHz)	Conducted RF O/P Power (dBm)	Limit (dBm)	Margin (dB)	Result
Bottom	4945	28.4	30.0	1.6	Complied
Middle	4965	28.5	30.0	1.5	Complied
Top	4985	28.4	30.0	1.6	Complied

QPSK Modulation

Channel	Frequency (MHz)	Conducted RF O/P Power (dBm)	Limit (dBm)	Margin (dB)	Result
Bottom	4945	28.7	30.0	1.3	Complied
Middle	4965	28.9	30.0	1.1	Complied
Top	4985	28.7	30.0	1.3	Complied

16QAM Modulation

Channel	Frequency (MHz)	Conducted RF O/P Power (dBm)	Limit (dBm)	Margin (dB)	Result
Bottom	4945	28.2	30.0	1.8	Complied
Middle	4965	28.5	30.0	1.5	Complied
Top	4985	28.4	30.0	1.6	Complied

Transmitter Peak Carrier Output Power (Conducted) (Continued)

64QAM Modulation

Channel	Frequency (MHz)	Conducted RF O/P Power (dBm)	Limit (dBm)	Margin (dB)	Result
Bottom	4945	28.6	30.0	1.4	Complied
Middle	4965	28.8	30.0	1.2	Complied
Top	4985	28.5	30.0	1.5	Complied

Acquisition Mode

Channel	Frequency (MHz)	Conducted RF O/P Power (dBm)	Limit (dBm)	Margin (dB)	Result
Bottom	4945	28.6	30.0	1.4	Complied
Middle	4965	28.6	30.0	1.4	Complied
Top	4985	28.4	30.0	1.6	Complied

6.2.4. Transmitter Power Spectral Density (Conducted): Sections 90.205/90.1215/2.1046

Results: Port H (Maximum Output Power)

This test was performed with a spectrum analyser set up using a sample detector with trace averaging.

BPSK Modulation

Channel	Frequency (MHz)	Conducted RF O/P Power (dBm/MHz)	Limit (dBm/MHz)	Margin (dB)	Result
Bottom	4945	13.9	21.0	7.1	Complied
Middle	4965	13.9	21.0	7.1	Complied
Top	4985	13.8	21.0	7.2	Complied

QPSK Modulation

Channel	Frequency (MHz)	Conducted RF O/P Power (dBm/MHz)	Limit (dBm/MHz)	Margin (dB)	Result
Bottom	4945	12.7	21.0	8.3	Complied
Middle	4965	12.9	21.0	8.1	Complied
Top	4985	13.4	21.0	7.6	Complied

16QAM Modulation

Channel	Frequency (MHz)	Conducted RF O/P Power (dBm/MHz)	Limit (dBm/MHz)	Margin (dB)	Result
Bottom	4945	9.2	21.0	11.8	Complied
Middle	4965	9.2	21.0	11.8	Complied
Top	4985	9.4	21.0	11.6	Complied

Transmitter Power Spectral Density (Conducted): Sections 90.205/90.1215/2.1046 (Continued)

64QAM Modulation

Channel	Frequency (MHz)	Conducted RF O/P Power (dBm/MHz)	Limit (dBm/MHz)	Margin (dB)	Result
Bottom	4945	8.0	21.0	13.0	Complied
Middle	4965	8.0	21.0	13.0	Complied
Top	4985	8.1	21.0	12.9	Complied

Acquisition Mode

Channel	Frequency (MHz)	Conducted RF O/P Power (dBm/MHz)	Limit (dBm/MHz)	Margin (dB)	Result
Bottom	4945	13.8	21.0	7.2	Complied
Middle	4965	13.9	21.0	7.1	Complied
Top	4985	14.4	21.0	6.6	Complied

6.2.5. Transmitter Power Spectral Density (Conducted): Sections 90.205/90.1215/2.1046

Results: Port V (Maximum Output Power)

BPSK Modulation

Channel	Frequency (MHz)	Conducted RF O/P Power (dBm/MHz)	Limit (dBm/MHz)	Margin (dB)	Result
Bottom	4945	13.8	21.0	7.2	Complied
Middle	4965	14.0	21.0	7.0	Complied
Top	4985	14.0	21.0	7.0	Complied

QPSK Modulation

Channel	Frequency (MHz)	Conducted RF O/P Power (dBm/MHz)	Limit (dBm/MHz)	Margin (dB)	Result
Bottom	4945	13.2	21.0	7.8	Complied
Middle	4965	14.0	21.0	7.0	Complied
Top	4985	13.7	21.0	7.3	Complied

16QAM Modulation

Channel	Frequency (MHz)	Conducted RF O/P Power (dBm/MHz)	Limit (dBm/MHz)	Margin (dB)	Result
Bottom	4945	8.6	21.0	12.4	Complied
Middle	4965	8.9	21.0	12.1	Complied
Top	4985	9.3	21.0	11.7	Complied

Transmitter Power Spectral Density (Conducted): Sections 90.205/90.1215/2.1046 (Continued)

64QAM Modulation

Channel	Frequency (MHz)	Conducted RF O/P Power (dBm/MHz)	Limit (dBm/MHz)	Margin (dB)	Result
Bottom	4945	7.8	21.0	13.2	Complied
Middle	4965	7.9	21.0	13.1	Complied
Top	4985	7.9	21.0	13.1	Complied

Acquisition Mode

Channel	Frequency (MHz)	Conducted RF O/P Power (dBm/MHz)	Limit (dBm/MHz)	Margin (dB)	Result
Bottom	4945	13.7	21.0	7.3	Complied
Middle	4965	14.0	21.0	7.0	Complied
Top	4985	14.1	21.0	6.9	Complied

6.2.6. Transmitter Power Spectral Density (Conducted): Sections 90.205/90.1215/2.1046

Results: Port Horizontal and Port Vertical Aggregated (Maximum Output Power)

BPSK Modulation

Channel	Frequency (MHz)	Conducted RF O/P Power (dBm/MHz)	Limit (dBm/MHz)	Margin (dB)	Result
Bottom	4945	16.9	21.0	4.1	Complied
Middle	4965	17.0	21.0	4.0	Complied
Top	4985	16.9	21.0	4.1	Complied

QPSK Modulation

Channel	Frequency (MHz)	Conducted RF O/P Power (dBm/MHz)	Limit (dBm/MHz)	Margin (dB)	Result
Bottom	4945	16.0	21.0	5.0	Complied
Middle	4965	16.5	21.0	4.5	Complied
Top	4985	16.5	21.0	4.4	Complied

16QAM Modulation

Channel	Frequency (MHz)	Conducted RF O/P Power (dBm/MHz)	Limit (dBm/MHz)	Margin (dB)	Result
Bottom	4945	11.9	21.0	9.1	Complied
Middle	4965	12.1	21.0	8.9	Complied
Top	4985	12.4	21.0	8.6	Complied

Transmitter Power Spectral Density (Conducted): Sections 90.205/90.1215/2.1046 (Continued)

64QAM Modulation

Channel	Frequency (MHz)	Conducted RF O/P Power (dBm/MHz)	Limit (dBm/MHz)	Margin (dB)	Result
Bottom	4945	10.9	21.0	10.1	Complied
Middle	4965	11.0	21.0	10.0	Complied
Top	4985	11.0	21.0	10.0	Complied

Acquisition Mode

Channel	Frequency (MHz)	Conducted RF O/P Power (dBm/MHz)	Limit (dBm/MHz)	Margin (dB)	Result
Bottom	4945	16.8	21.0	4.2	Complied
Middle	4965	17.0	21.0	4.0	Complied
Top	4985	17.3	21.0	3.7	Complied

Note(s):

1. *For high power point-to-point or point-to-multipoint operation may employ transmitting antennas with directional gain up to 26 dBi without any corresponding reduction in the transmitter power or spectral density limit.*
2. *The equipment under test was set to the maximum declared output power as stated in the customer application form.*

6.2.7. Transmitter Emission Mask: Sections 90.210M

Results: Port H (Maximum Output Power)

BPSK Modulation

Channel	Frequency (MHz)	RBW (kHz)	VBW (kHz)	Emission Mask Plot
Bottom	4945	300	30	Mask Bottom Channel BPSK
Middle	4965	300	30	Mask Middle Channel BPSK
Top	4985	300	30	Mask Top Channel BPSK

QPSK Modulation

Channel	Frequency (MHz)	RBW (kHz)	VBW (kHz)	Emission Mask Plot
Bottom	4945	300	30	Mask Bottom Channel QPSK
Middle	4965	300	30	Mask Middle Channel QPSK
Top	4985	300	30	Mask Top Channel QPSK

16QAM Modulation

Channel	Frequency (MHz)	RBW (kHz)	VBW (kHz)	Emission Mask Plot
Bottom	4945	300	30	Mask Bottom Channel 16QAM
Middle	4965	300	30	Mask Middle Channel 16QAM
Top	4985	300	30	Mask Top Channel 16QAM

Transmitter Emission Masks (Continued)

64QAM Modulation

Channel	Frequency (MHz)	RBW (kHz)	VBW (kHz)	Emission Mask Plot
Bottom	4945	300	30	Mask Bottom Channel 64QAM
Middle	4965	300	30	Mask Middle Channel 64QAM
Top	4985	300	30	Mask Top Channel 64QAM

Acquisition Mode

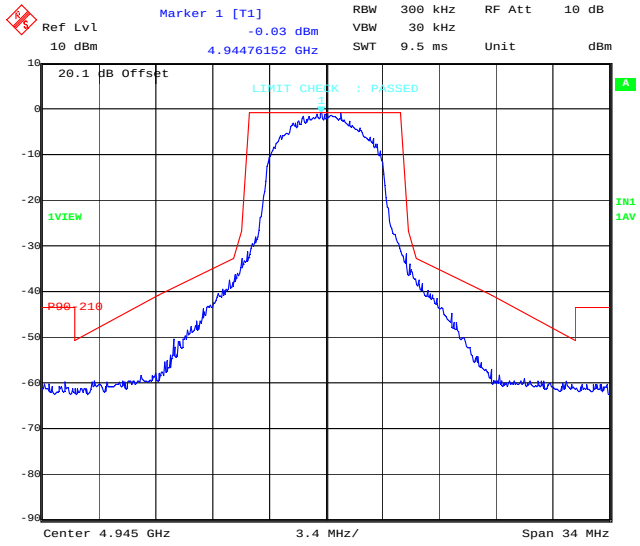
Channel	Frequency (MHz)	RBW (kHz)	VBW (kHz)	Emission Mask Plot
Bottom	4945	300	30	Mask Bottom Channel ACQ MODE
Middle	4965	300	30	Mask Middle Channel ACQ MODE
Top	4985	300	30	Mask Top Channel ACQ MODE

Note(s):

1. *For high power point-to-point or point-to-multipoint operation may employ transmitting antennas with directional gain up to 26 dBi without any corresponding reduction in the transmitter power or spectral density limit.*

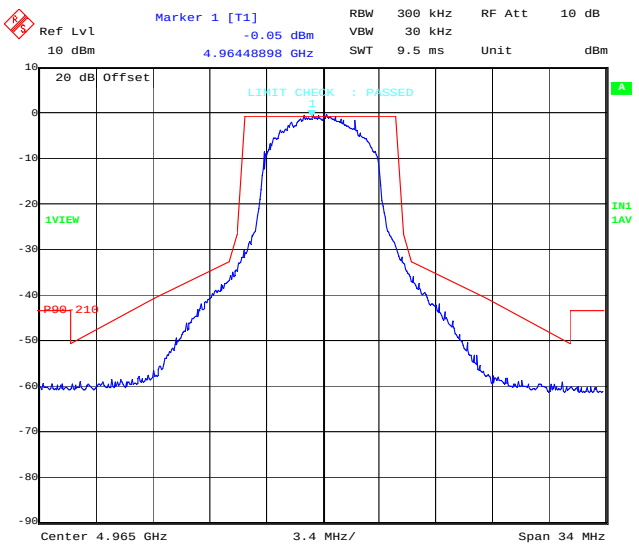
Transmitter Emission Masks BPSK (Continued)

Bottom Channel



Title: Port H +23dBm Output Power
Comment A: Job No 48412JD01 Conducted Emissions FCC Part 90.210M
Date: 8.AUG.2006 18:28:24

Middle Channel



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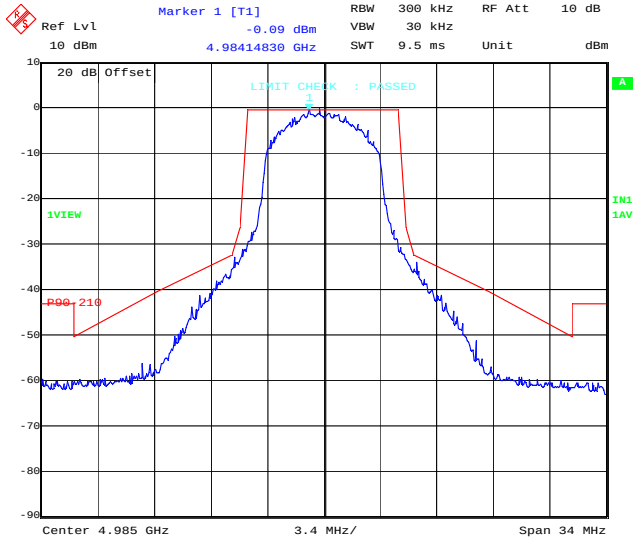
Date: 8.AUG.2006 17:31:07

Top Channel



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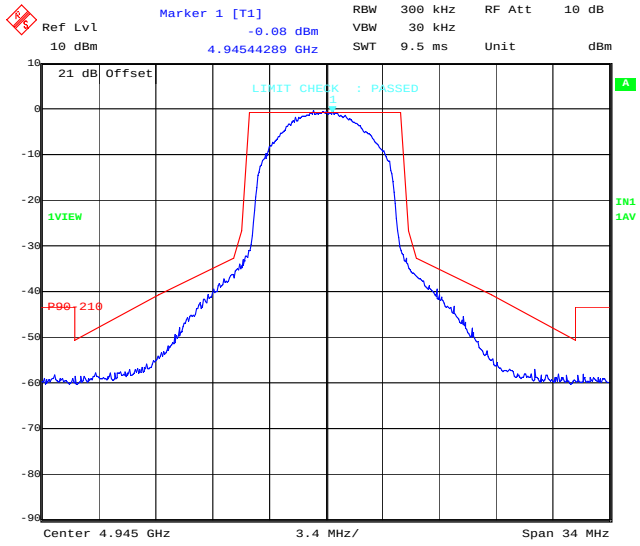
Date: 8.AUG.2006 17:27:57

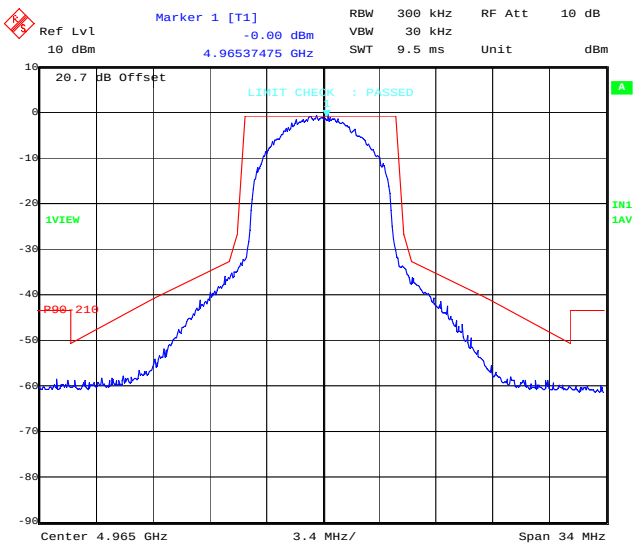
Transmitter Emission Masks QPSK (Continued)

Bottom Channel



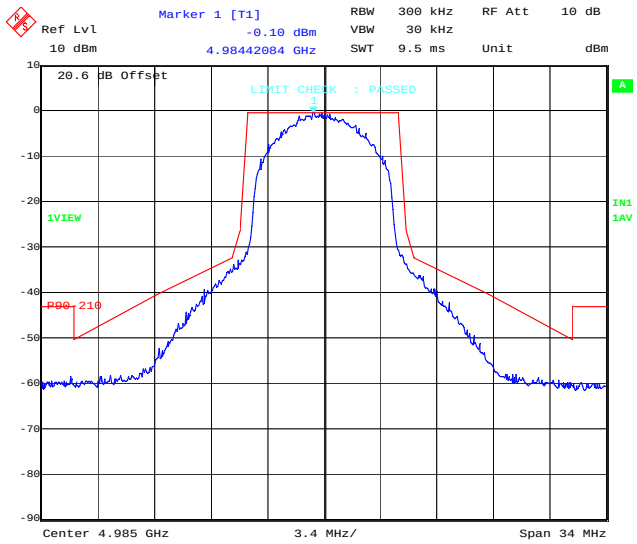
Title: Port H +23dBm Output Power
Comment A: Job No 48412JD01 Conducted Emissions FCC Part 90.210M
Date: 8.AUG.2006 18:21:38

Middle Channel



Title: Port H +23dBm Output Power
Comment A: Job No 48412JD01 Conducted Emissions FCC Part 90.210M
Date: 8.AUG.2006 17:32:13

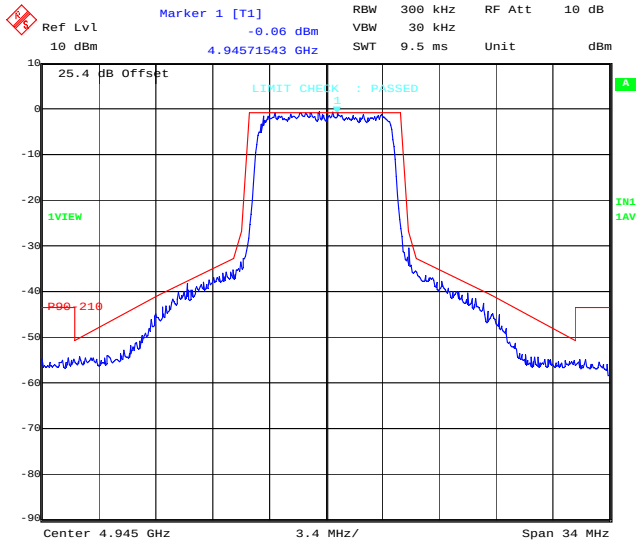
Top Channel



Title: Port H +23dBm Output Power
Comment A: Job No 48412JD01 Conducted Emissions FCC Part 90.210M
Date: 8.AUG.2006 17:26:18

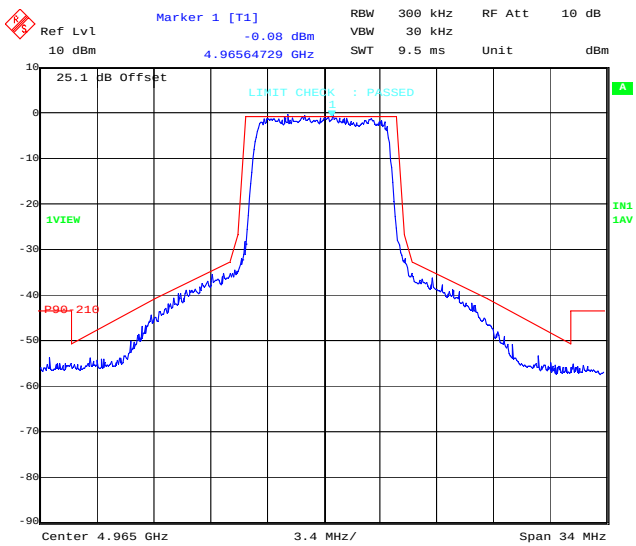
Transmitter Emission Masks 16QAM (Continued)

Bottom Channel



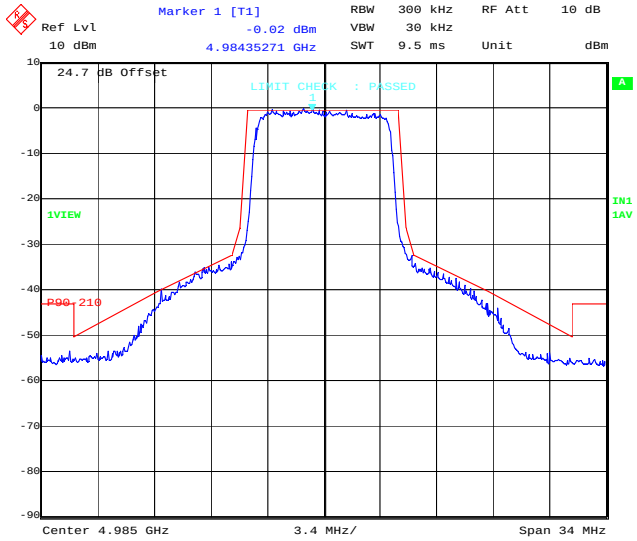
Title: Port H +23dBm Output Power
Comment A: Job No 48412JD01 Conducted Emissions FCC Part 90.210M
Date: 8.AUG.2006 18:17:55

Middle Channel



Title: Port H +23dBm Output Power
Comment A: Job No 48412JD01 Conducted Emissions FCC Part 90.210M
Date: 8.AUG.2006 17:33:18

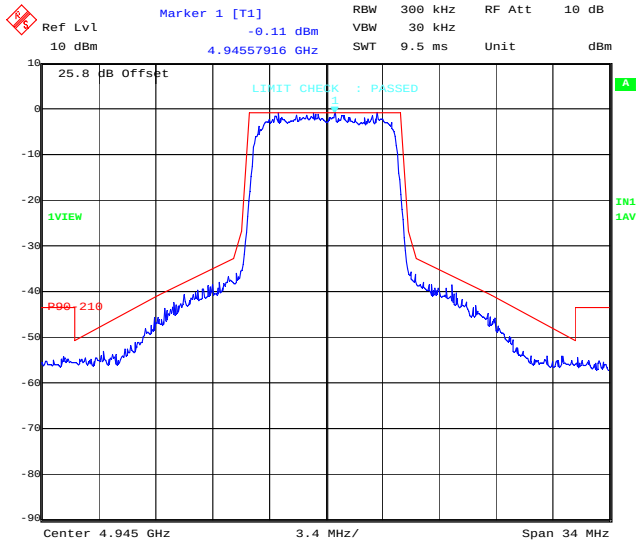
Top Channel



Title: Port H +23dBm Output Power
Comment A: Job No 48412JD01 Conducted Emissions FCC Part 90.210M
Date: 8.AUG.2006 17:23:13

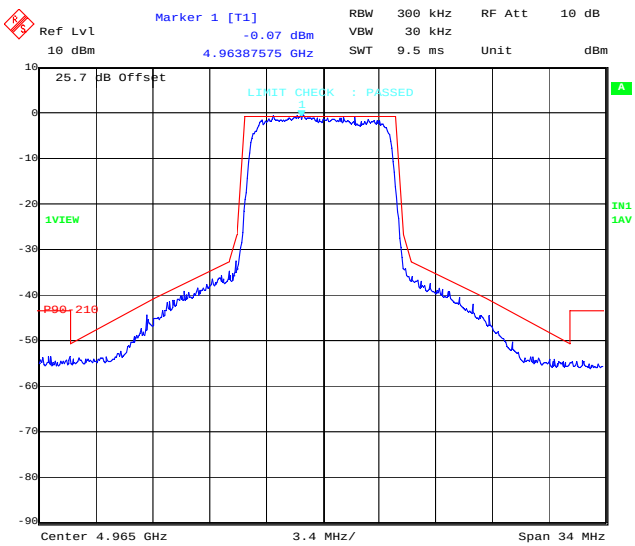
Transmitter Emission Masks 64QAM (Continued)

Bottom Channel



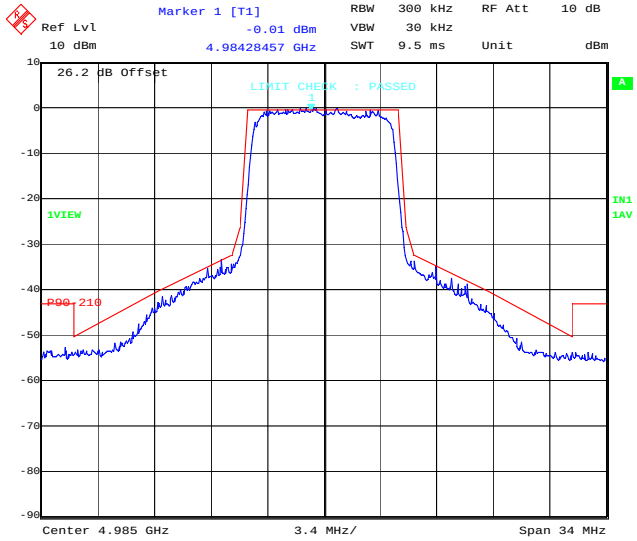
Title: Port H +23dBm Output Power
Comment A: Job No 48412JD01 Conducted Emissions FCC Part 90.210M
Date: 8.AUG.2006 17:59:56

Middle Channel



Title: Port H +23dBm Output Power
Comment A: Job No 48412JD01 Conducted Emissions FCC Part 90.210M
Date: 8.AUG.2006 17:35:20

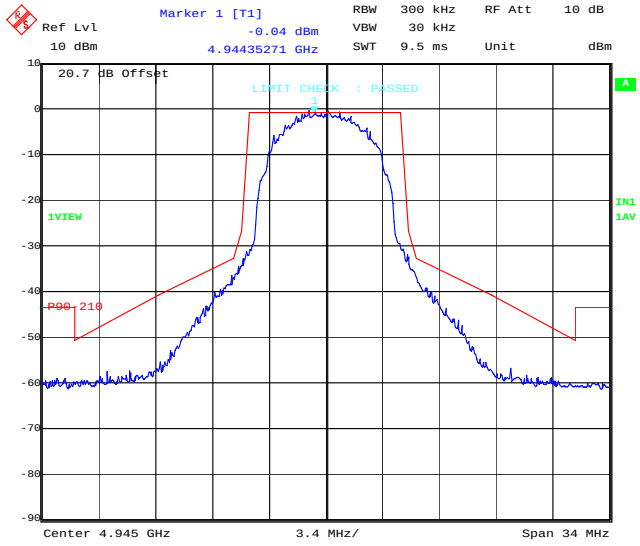
Top Channel



Title: Port H +23dBm Output Power
Comment A: Job No 48412JD01 Conducted Emissions FCC Part 90.210M
Date: 8.AUG.2006 17:20:26

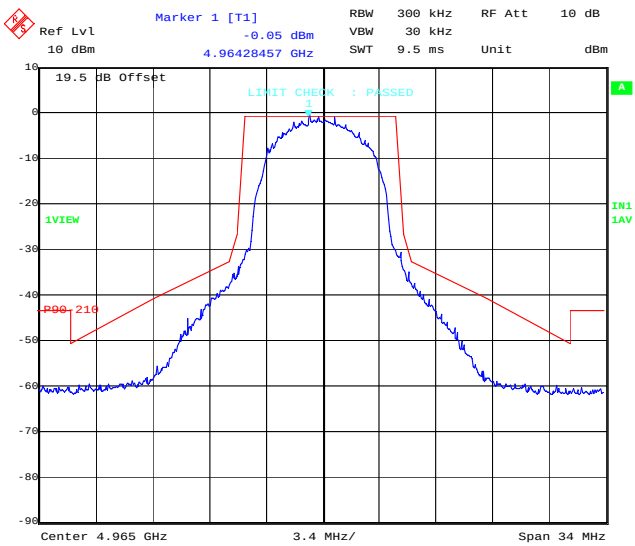
Transmitter Emission Masks Acquisition Mode (Continued)

Bottom Channel



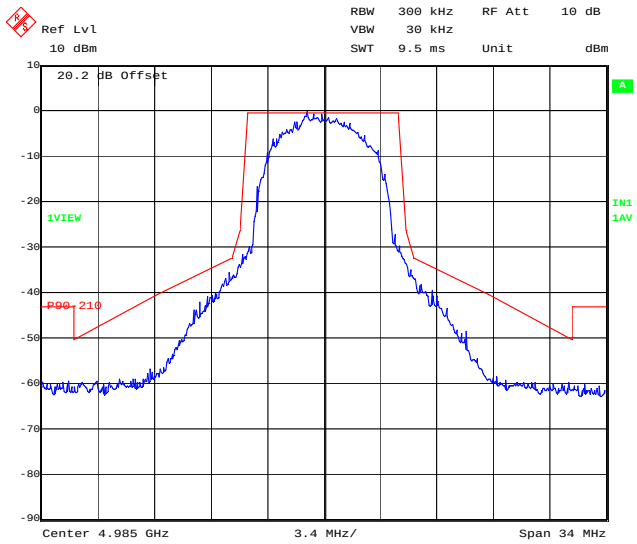
Title: Port H +23dBm Output Power
Comment A: Job No 48412JD01 Conducted Emissions FCC Part 90.210M
Date: 8.AUG.2006 17:39:55

Middle Channel



Title: Port H +23dBm Output Power
Comment A: Job No 48412JD01 Conducted Emissions FCC Part 90.210M
Date: 8.AUG.2006 17:36:54

Top Channel



Title: Port H +23dBm Output Power
Comment A: Job No 48412JD01 Conducted Emissions FCC Part 90.210M
Date: 8.AUG.2006 17:10:39

Transmitter Emissions Mask: Sections 90.210M (Continued)

Results: Port V (Maximum Output Power)

BPSK Modulation

Channel	Frequency (MHz)	RBW (kHz)	VBW (kHz)	Emission Mask Plot
Bottom	4945	300	30	Mask Bottom Channel BPSK
Middle	4965	300	30	Mask Middle Channel BPSK
Top	4985	300	30	Mask Top Channel BPSK

QPSK Modulation

Channel	Frequency (MHz)	RBW (kHz)	VBW (kHz)	Emission Mask Plot
Bottom	4945	300	30	Mask Bottom Channel QPSK
Middle	4965	300	30	Mask Middle Channel QPSK
Top	4985	300	30	Mask Top Channel QPSK

16QAM Modulation

Channel	Frequency (MHz)	RBW (kHz)	VBW (kHz)	Emission Mask Plot
Bottom	4945	300	30	Mask Bottom Channel 16QAM
Middle	4965	300	30	Mask Middle Channel 16QAM
Top	4985	300	30	Mask Top Channel 16QAM

Transmitter Emissions Mask (Continued)

64QAM Modulation

Channel	Frequency (MHz)	RBW (kHz)	VBW (kHz)	Emission Mask Plot
Bottom	4945	300	30	Mask Bottom Channel 64QAM
Middle	4965	300	30	Mask Middle Channel 64QAM
Top	4985	300	30	Mask Top Channel 64QAM

Acquisition Mode

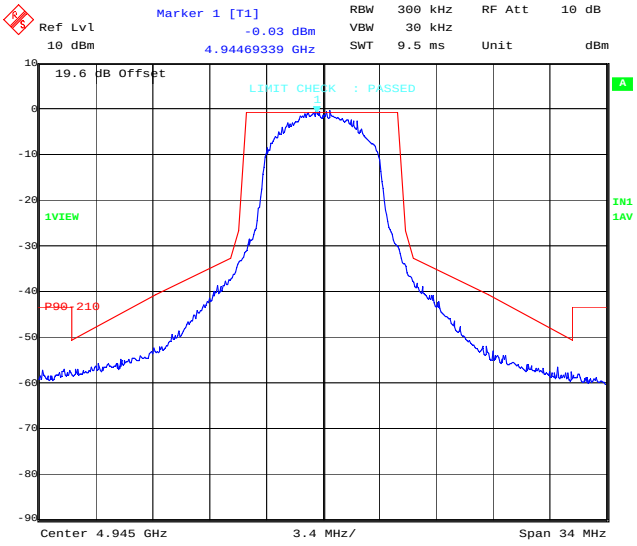
Channel	Frequency (MHz)	RBW (kHz)	VBW (kHz)	Emission Mask Plot
Bottom	4945	300	30	Mask Bottom Channel ACQ MODE
Middle	4965	300	30	Mask Middle Channel ACQ MODE
Top	4985	300	30	Mask Top Channel ACQ MODE

Note(s):

1. *The transmitter emission mask tests were performed at both power settings using 300kHz RBW, 30kHz VBW, Average Detector and Peak Hold.*
2. *Client company name changed during testing from Orthogon to Motorola, so some graphs or plots may reference Orthogon.*

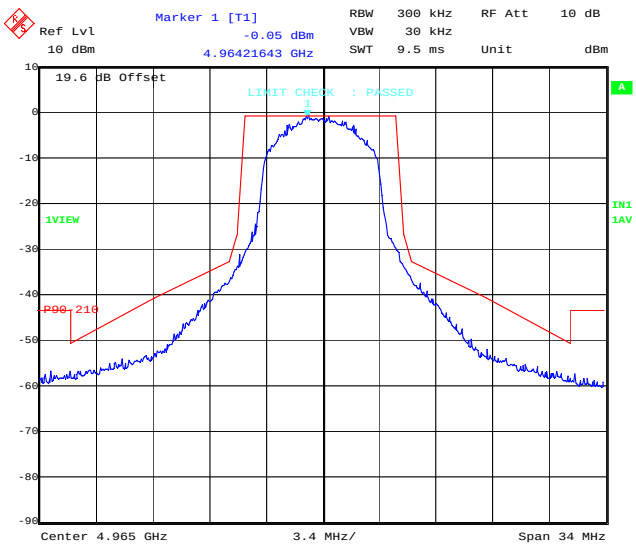
Transmitter Emissions Mask: BPSK (Continued)

Bottom Channel



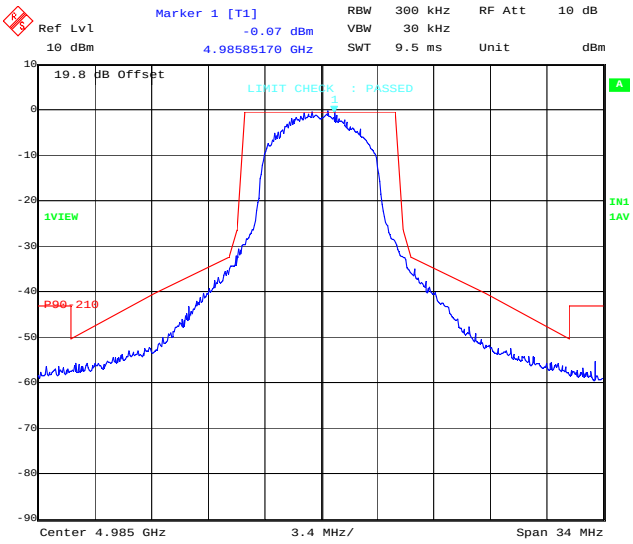
Date: 9.AUG.2006 10:07:41

Middle Channel



Date: 9.AUG.2006 10:14:15

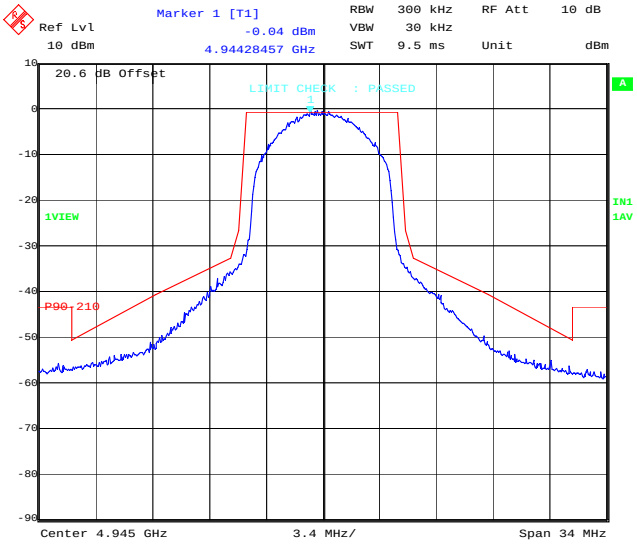
Top Channel



Date: 9.AUG.2006 10:37:56

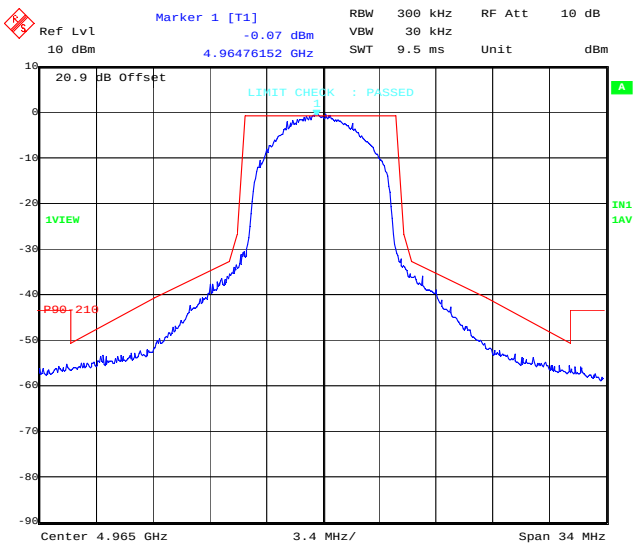
Transmitter Emissions Mask: QPSK (Continued)

Bottom Channel



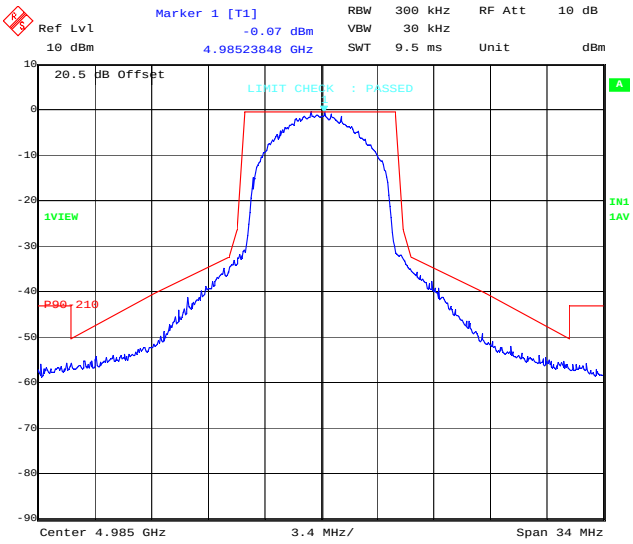
Date: 9.AUG.2006 10:06:13

Middle Channel



Date: 9.AUG.2006 10:15:54

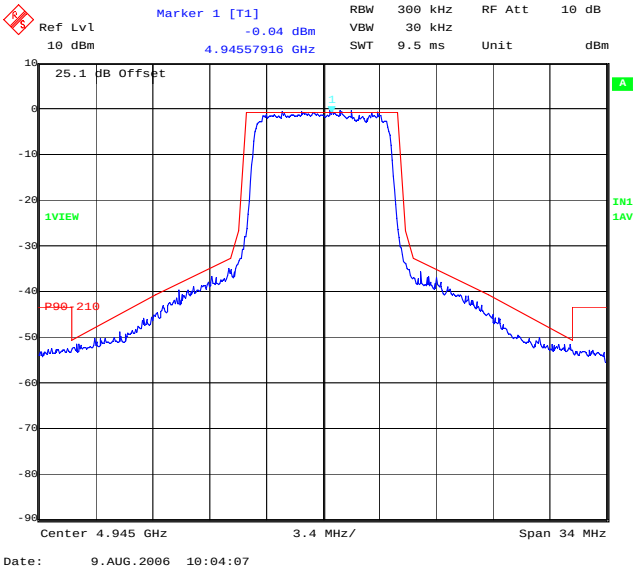
Top Channel



Date: 9.AUG.2006 10:36:48

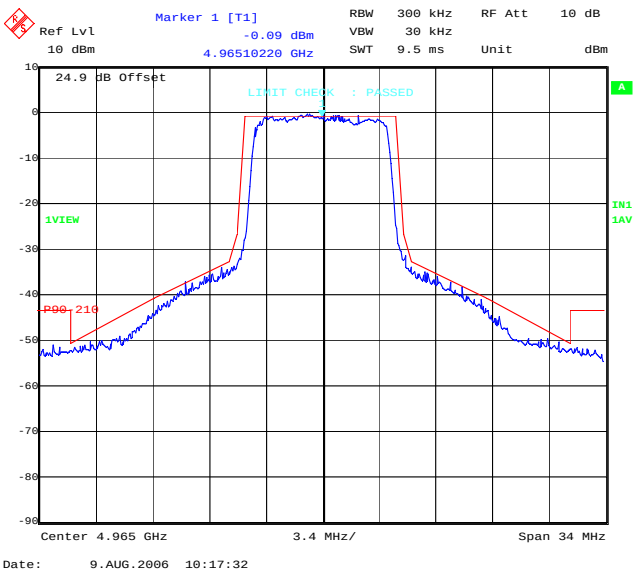
Transmitter Emissions Mask: 16QAM (Continued)

Bottom Channel



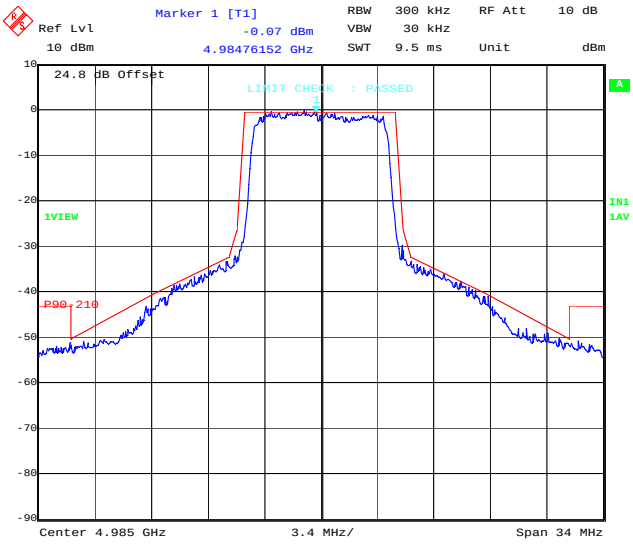
Date: 9.AUG.2006 10:04:07

Middle Channel



Date: 9.AUG.2006 10:17:32

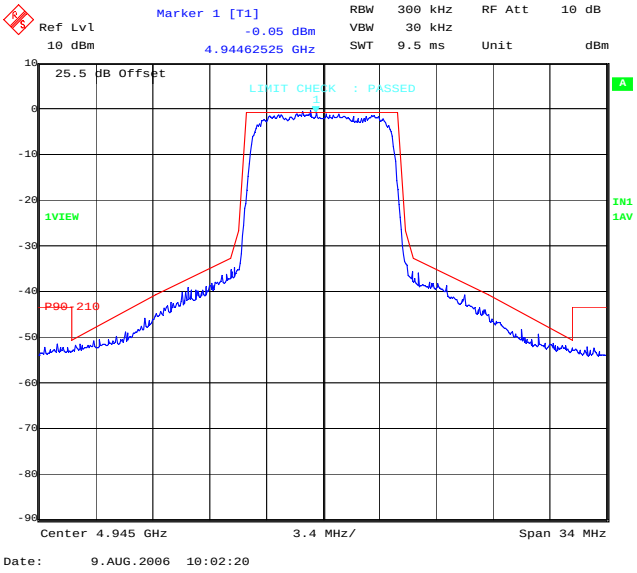
Top Channel



Date: 9.AUG.2006 10:23:41

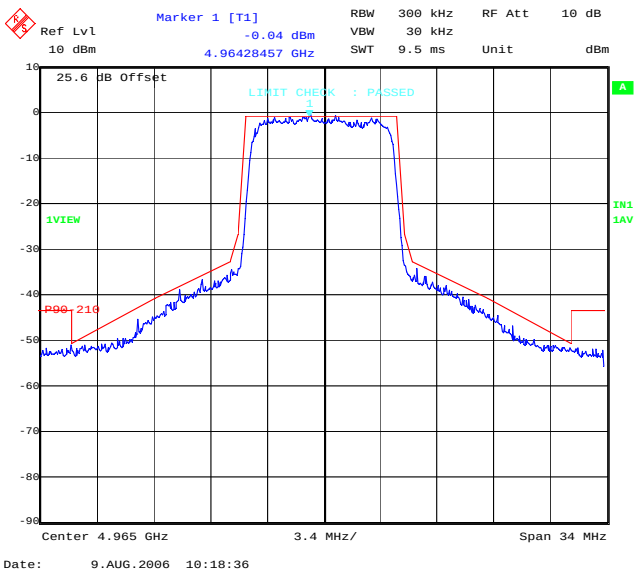
Transmitter Emissions Mask: 64QAM (Continued)

Bottom Channel



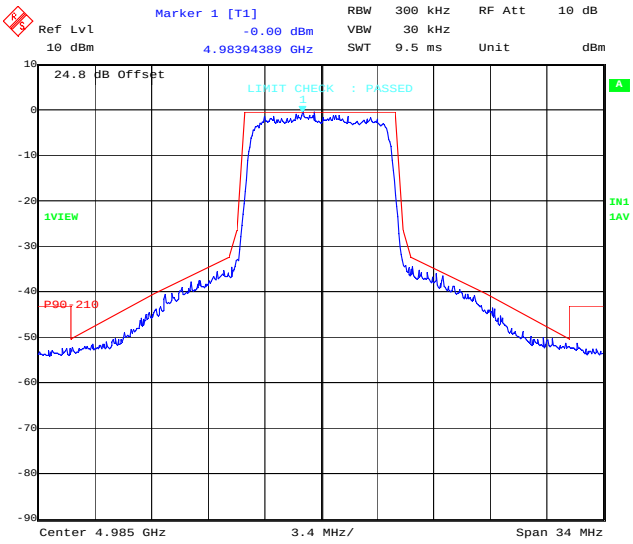
Date: 9.AUG.2006 10:02:20

Middle Channel



Date: 9.AUG.2006 10:18:36

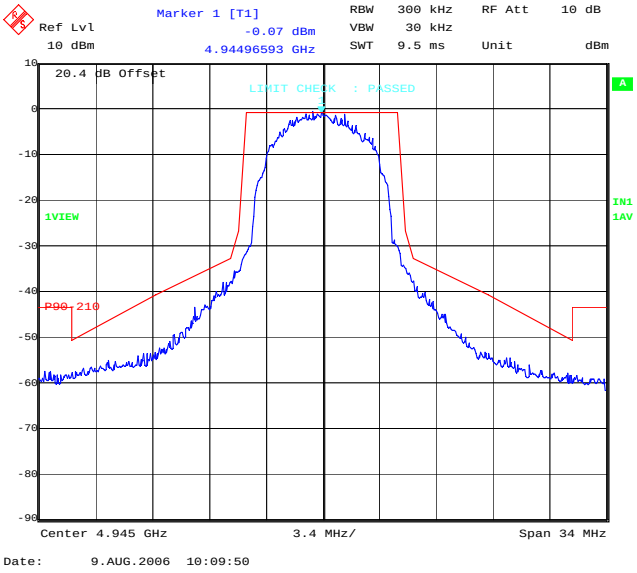
Top Channel



Date: 9.AUG.2006 10:21:35

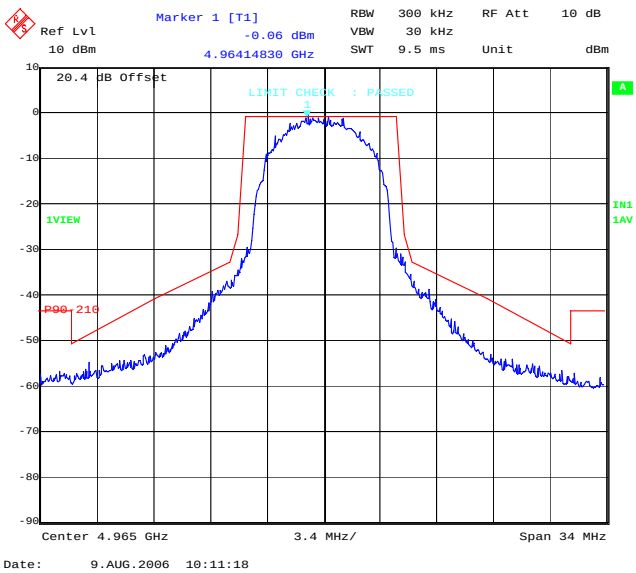
Transmitter Emissions Mask: Acquisition Mode (Continued)

Bottom Channel



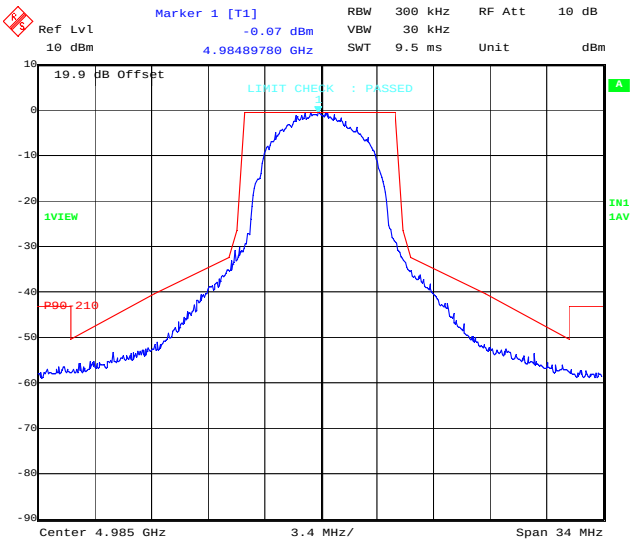
Date: 9.AUG.2006 10:09:50

Middle Channel



Date: 9.AUG.2006 10:11:18

Top Channel



Date: 9.AUG.2006 10:40:30

6.2.8. Transmitter Conducted Emissions (Out of Band): Section 90.210(m)/2.1051

Results: Port H, BPSK Modulation, Maximum Power

10 MHz Channel Bandwidth

Bottom Channel

Frequency (MHz)	Peak Emission Level (dBm/MHz)	Peak Emission Level (dBc)	Limit (dBc)	Margin (dB)	Result
4930.000	-41.6	-55.5	-38.9	16.6	Complied
4960.000	-36.7	-50.6	-38.9	11.7	Complied
14835.080	-35.3	-49.2	-38.9	10.3	Complied

Middle Channel

Frequency (MHz)	Peak Emission Level (dBm/MHz)	Peak Emission Level (dBc)	Limit (dBc)	Margin (dB)	Result
4950.000	-38.8	-52.7	-38.9	13.8	Complied
4980.000	-38.2	-52.1	-38.9	13.2	Complied

Top Channel

Frequency (MHz)	Peak Emission Level (dBm/MHz)	Peak Emission Level (dBc)	Limit (dBc)	Margin (dB)	Result
1014.188	-40.2	-54.0	-38.8	15.2	Complied
4970.000	-40.7	-54.5	-38.8	15.7	Complied
5000.000	-39.4	-53.2	-38.8	14.4	Complied

Note(s):

1. *Client company name changed during testing from Orthogon to Motorola, so some graphs or plots may reference Orthogon.*

Transmitter Conducted Emissions (Out of Band): Section 90.210(m)/2.1051 (Continued)

Results:

It should be noted that QPSK mode exhibited the highest carrier power and as such, the pre-scan plot for QPSK are shown in this report. All emissions were recorded in all modulation modes and can be seen below.

Results: Port H, QPSK Modulation, Maximum Power

10 MHz Channel Bandwidth

Bottom Channel

Frequency (MHz)	Peak Emission Level (dBm/MHz)	Peak Emission Level (dBc)	Limit (dBc)	Margin (dB)	Result
4930.000	-41.9	-54.6	-37.7	16.9	Complied
4960.000	-36.2	-48.9	-37.7	11.2	Complied
14834.780	-33.6	-46.3	-37.7	8.6	Complied

Middle Channel

Frequency (MHz)	Peak Emission Level (dBm/MHz)	Peak Emission Level (dBc)	Limit (dBc)	Margin (dB)	Result
4950.000	-40.4	-53.3	-37.9	15.4	Complied
4980.000	-37.8	-50.7	-37.9	12.8	Complied

Top Channel

Frequency (MHz)	Peak Emission Level (dBm/MHz)	Peak Emission Level (dBc)	Limit (dBc)	Margin (dB)	Result
1014.349	-41.2	-54.6	-38.4	16.2	Complied
4970.000	-41.3	-54.7	-38.4	16.3	Complied
5000.000	-38.3	-51.7	-38.4	13.3	Complied

Note(s):

1. *Client company name changed during testing from Orthogon to Motorola, so some graphs or plots may reference Orthogon.*

Transmitter Conducted Emissions (Out of Band): Section 90.210(m)/2.1051 (Continued)

Results: Port H, 16 QAM Modulation, Maximum Power

10 MHz Channel Bandwidth

Bottom Channel

Frequency (MHz)	Peak Emission Level (dBm/MHz)	Peak Emission Level (dBc)	Limit (dBc)	Margin (dB)	Result
4930.000	-41.5	-50.7	-34.2	16.5	Complied
4960.000	-33.9	-43.1	-34.2	8.9	Complied
14833.577	-46.1	-55.3	-34.2	21.1	Complied

Middle Channel

Frequency (MHz)	Peak Emission Level (dBm/MHz)	Peak Emission Level (dBc)	Limit (dBc)	Margin (dB)	Result
4950.000	-40.4	-49.6	-34.2	15.4	Complied
4980.000	-37.3	-46.5	-34.2	12.3	Complied

Top Channel

Frequency (MHz)	Peak Emission Level (dBm/MHz)	Peak Emission Level (dBc)	Limit (dBc)	Margin (dB)	Result
4970.000	-41.3	-50.7	-34.4	16.3	Complied
5000.000	-37.8	-47.2	-34.4	12.8	Complied

Note(s):

1. *Client company name changed during testing from Orthogon to Motorola, so some graphs or plots may reference Orthogon.*

Transmitter Conducted Emissions (Out of Band): Section 90.210(m)/2.1051 (Continued)

Results: Port H, 64 QAM Modulation, Maximum Power

10 MHz Channel Bandwidth

Bottom Channel

Frequency (MHz)	Peak Emission Level (dBm/MHz)	Peak Emission Level (dBc)	Limit (dBc)	Margin (dB)	Result
4930.000	-38.6	-46.6	-33.0	13.6	Complied
4960.000	-36.6	-44.6	-33.0	11.6	Complied
14832.856	-41.7	-49.7	-33.0	16.7	Complied

Middle Channel

Frequency (MHz)	Peak Emission Level (dBm/MHz)	Peak Emission Level (dBc)	Limit (dBc)	Margin (dB)	Result
4950.000	-40.3	-48.3	-33.0	15.3	Complied
4980.000	-37.5	-45.5	-33.0	12.5	Complied

Top Channel

Frequency (MHz)	Peak Emission Level (dBm/MHz)	Peak Emission Level (dBc)	Limit (dBc)	Margin (dB)	Result
4970.000	-39.1	-47.2	-33.1	14.1	Complied
5000.000	-38.2	-46.3	-33.1	13.2	Complied

Note(s):

1. *Client company name changed during testing from Orthogon to Motorola, so some graphs or plots may reference Orthogon.*

Transmitter Conducted Emissions (Out of Band): Section 90.210(m)/2.1051 (Continued)

Results: Port H, Acquisition Mode, Maximum Power

10 MHz Channel Bandwidth

Bottom Channel

Frequency (MHz)	Peak Emission Level (dBm/MHz)	Peak Emission Level (dBc)	Limit (dBc)	Margin (dB)	Result
4930.000	-38.7	-52.5	-38.8	13.7	Complied
4960.000	-36.7	-50.5	-38.8	11.7	Complied
14835.720	-37.1	-50.9	-38.8	12.1	Complied

Middle Channel

Frequency (MHz)	Peak Emission Level (dBm/MHz)	Peak Emission Level (dBc)	Limit (dBc)	Margin (dB)	Result
4950.000	-41.2	-55.1	-38.9	16.2	Complied
4980.000	-38.9	-52.8	-38.9	13.9	Complied

Top Channel

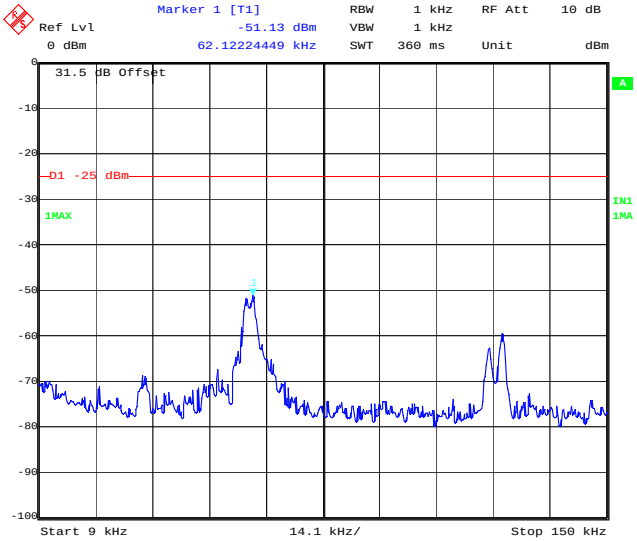
Frequency (MHz)	Peak Emission Level (dBm/MHz)	Peak Emission Level (dBc)	Limit (dBc)	Margin (dB)	Result
1013.878	-41.5	-55.9	-39.4	16.5	Complied
4970.000	-38.8	-53.2	-39.4	13.8	Complied
5000.000	-39.3	-53.7	-39.4	14.3	Complied

Note(s):

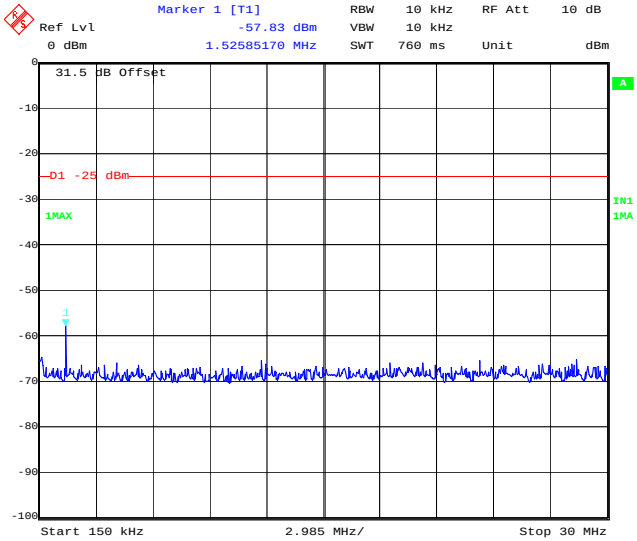
1. *Client company name changed during testing from Orthogon to Motorola, so some graphs or plots may reference Orthogon.*

Transmitter Conducted Emissions (Out of Band): Section 90.210(m)/2.1051 (Continued)

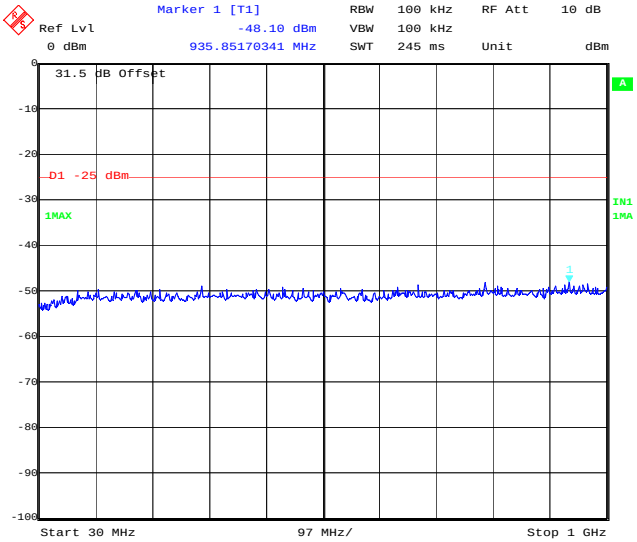
Pre-Scans – Worse case mode shown (QPSK).



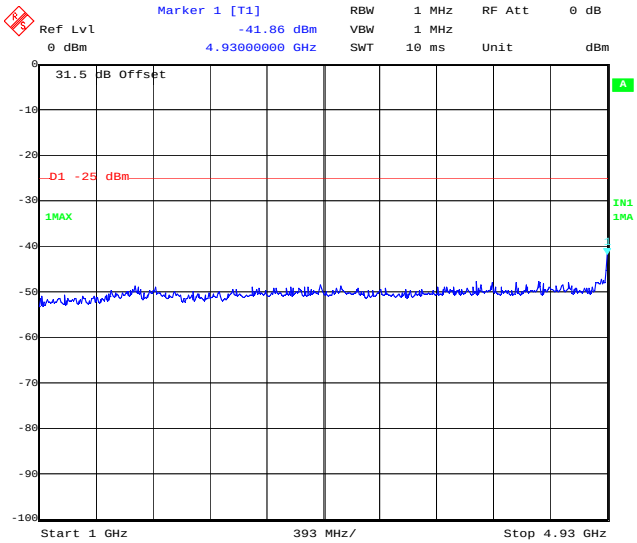
Title: Port H +23dBm Output Power, Bottom Channel
Comment A: Job No 48412JD01 Conducted Emissions FCC Part 90.210M
Date: 8.AUG.2006 18:59:15



Title: Port H +23dBm Output Power, Bottom Channel
Comment A: Job No 48412JD01 Conducted Emissions FCC Part 90.210M
Date: 8.AUG.2006 18:59:43

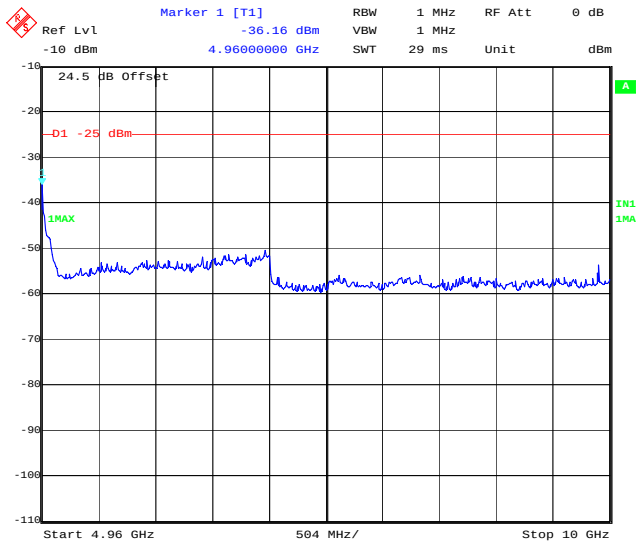


Title: Port H +23dBm Output Power, Bottom Channel
Comment A: Job No 48412JD01 Conducted Emissions FCC Part 90.210M
Date: 8.AUG.2006 19:00:02

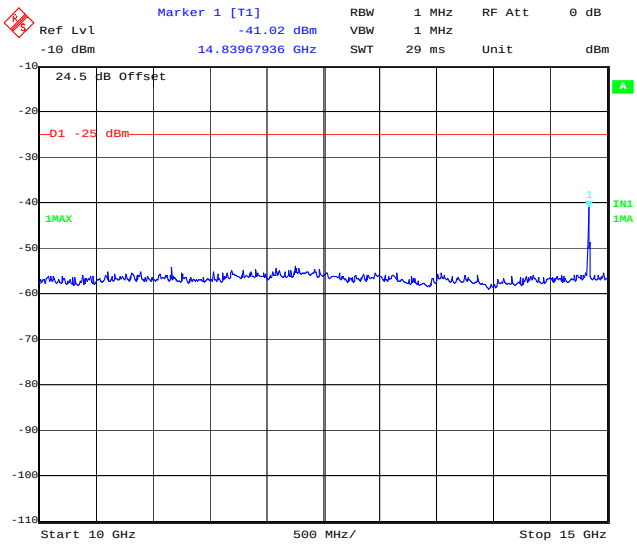


Title: Port H +23dBm Output Power, Bottom Channel
Comment A: Job No 48412JD01 Conducted Emissions FCC Part 90.210M
Date: 8.AUG.2006 19:00:25

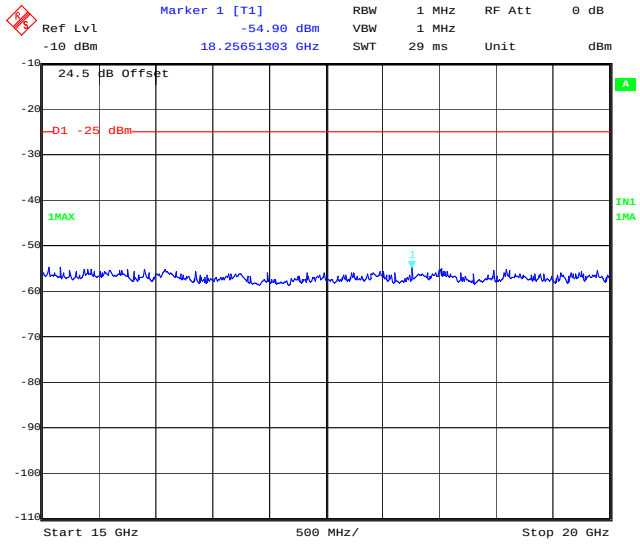
Transmitter Conducted Emissions (Out of Band): Section 90.210(m)/2.1051 (Continued)



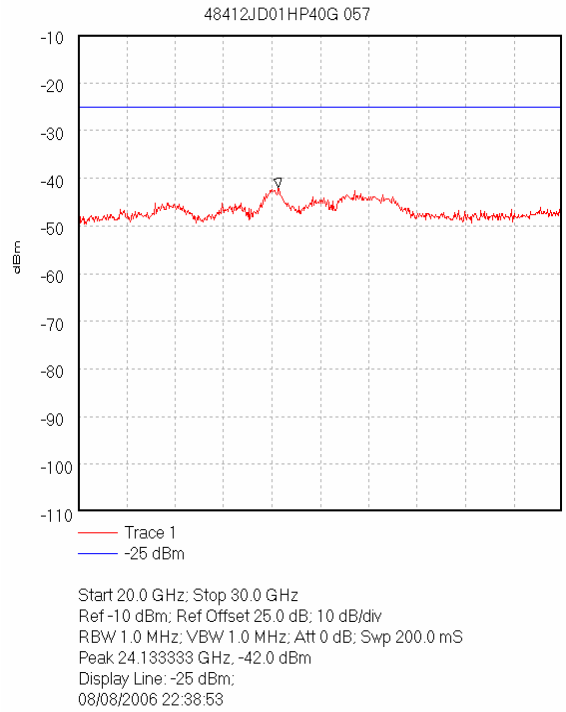
Title: Port H +23dBm Output Power, Bottom Channel
Comment A: Job No 48412JD01 Conducted Emissions FCC Part 90.210M
Date: 8.AUG.2006 19:19:22



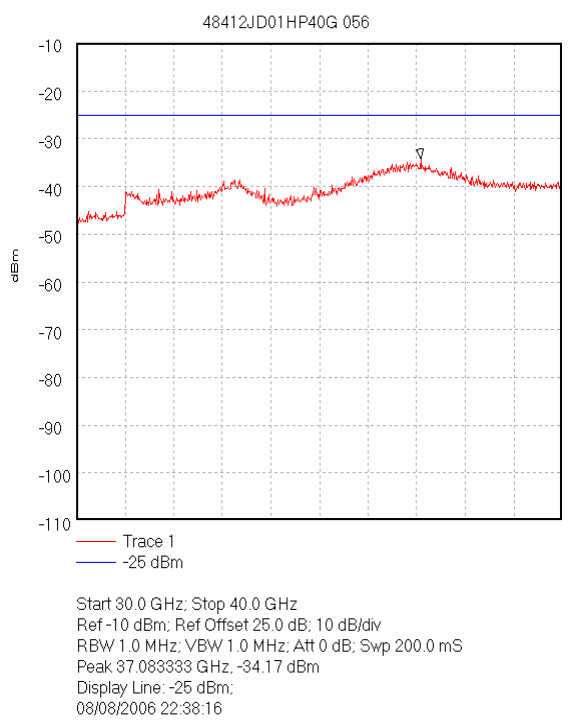
Title: Port H +23dBm Output Power, Bottom Channel
Comment A: Job No 48412JD01 Conducted Emissions FCC Part 90.210M
Date: 8.AUG.2006 19:20:00



Title: Port H +23dBm Output Power, Bottom Channel
Comment A: Job No 48412JD01 Conducted Emissions FCC Part 90.210M
Date: 8.AUG.2006 19:21:08



Transmitter Conducted Emissions (Out of Band): Section 90.210(m)/2.1051 (Continued)



Transmitter Conducted Emissions (Out of Band): Section 90.210(m)/2.1051

Results: Port V, BPSK Modulation, Maximum Power

10 MHz Channel Bandwidth

Bottom Channel

Frequency (MHz)	Peak Emission Level (dBm/MHz)	Peak Emission Level (dBc)	Limit (dBc)	Margin (dB)	Result
4930.000	-37.0	-50.8	-38.8	12.0	Complied
4960.000	32.7	-46.5	-38.8	7.7	Complied
14834.780	-29.8	-43.6	-38.8	4.8	Complied

Middle Channel

Frequency (MHz)	Peak Emission Level (dBm/MHz)	Peak Emission Level (dBc)	Limit (dBc)	Margin (dB)	Result
4950.000	-35.6	-49.6	-39.0	10.6	Complied
4980.000	-32.8	-46.8	-39.0	7.8	Complied

Top Channel

Frequency (MHz)	Peak Emission Level (dBm/MHz)	Peak Emission Level (dBc)	Limit (dBc)	Margin (dB)	Result
1014.359	-41.1	-55.1	-39.0	16.1	Complied
4970.000	-35.2	-49.2	-39.0	10.2	Complied
5000.000	-30.2	-44.2	-39.0	5.2	Complied

Note(s):

2. *Client company name changed during testing from Orthogon to Motorola, so some graphs or plots may reference Orthogon.*
3. *Plots up to 20 GHz, for bottom and middle channels have incorrectly titled 'Port H'. However it was confirmed that the measurement was performed on Port V.*

Transmitter Conducted Emissions (Out of Band): Section 90.210(m)/2.1051 (Continued)

Results: Port V, QPSK Modulation, Maximum Power

10 MHz Channel Bandwidth

Bottom Channel

Frequency (MHz)	Peak Emission Level (dBm/MHz)	Peak Emission Level (dBc)	Limit (dBc)	Margin (dB)	Result
14834.419	-26.0	-39.2	-38.2	1.0	Complied
4930.000	-37.3	-50.5	-38.2	12.3	Complied
4960.000	-30.8	-44.0	-38.2	5.8	Complied

Middle Channel

Frequency (MHz)	Peak Emission Level (dBm/MHz)	Peak Emission Level (dBc)	Limit (dBc)	Margin (dB)	Result
4950.000	-35.0	-49.0	-39.0	10.0	Complied
4980.000	-32.2	-46.2	-39.0	7.2	Complied

Top Channel

Frequency (MHz)	Peak Emission Level (dBm/MHz)	Peak Emission Level (dBc)	Limit (dBc)	Margin (dB)	Result
1014.349	-41.3	-55.0	-38.7	16.3	Complied
4970.000	-35.7	49.4	-38.7	10.7	Complied
5000.000	-27.5	-41.2	-38.7	2.5	Complied

Note(s):

1. *Client company name changed during testing from Orthogon to Motorola, so some graphs or plots may reference Orthogon.*
2. *Plots up to 20 GHz, for bottom and middle channels have incorrectly titled 'Port H'. However it was confirmed that the measurement was performed on Port V.*

Transmitter Conducted Emissions (Out of Band): Section 90.210(m)/2.1051 (Continued)

Results: Port V, 16 QAM Modulation, Maximum Power

10 MHz Channel Bandwidth

Bottom Channel

Frequency (MHz)	Peak Emission Level (dBm/MHz)	Peak Emission Level (dBc)	Limit (dBc)	Margin (dB)	Result
9890.251	-41.9	-50.5	-33.6	16.9	Complied
14835.020	-36.4	-45.0	-33.6	11.4	Complied
4930.000	-35.4	-44.0	-33.6	10.4	Complied
4960.000	-30.7	-39.3	-33.6	5.7	Complied

Middle Channel

Frequency (MHz)	Peak Emission Level (dBm/MHz)	Peak Emission Level (dBc)	Limit (dBc)	Margin (dB)	Result
4950.000	-35.6	-44.5	-33.9	10.6	Complied
4980.000	-30.7	-39.6	-33.9	5.7	Complied

Top Channel

Frequency (MHz)	Peak Emission Level (dBm/MHz)	Peak Emission Level (dBc)	Limit (dBc)	Margin (dB)	Result
4970.000	-34.2	-43.5	-34.3	9.2	Complied
5000.000	-30.0	-39.3	-34.3	5.0	Complied

Note(s):

2. *Client company name changed during testing from Orthogon to Motorola, so some graphs or plots may reference Orthogon.*
3. *Plots up to 20 GHz, for bottom and middle channels have incorrectly titled 'Port H'. However it was confirmed that the measurement was performed on Port V.*

Transmitter Conducted Emissions (Out of Band): Section 90.210(m)/2.1051 (Continued)

Results: Port V, 64 QAM Modulation, Maximum Power

10 MHz Channel Bandwidth

Bottom Channel

Frequency (MHz)	Peak Emission Level (dBm/MHz)	Peak Emission Level (dBc)	Limit (dBc)	Margin (dB)	Result
14837.725	-32.0	-39.8	-32.8	7.0	Complied
4930.000	-36.7	-44.5	-32.8	11.7	Complied
4960.000	-31.8	-39.6	-32.8	6.8	Complied

Middle Channel

Frequency (MHz)	Peak Emission Level (dBm/MHz)	Peak Emission Level (dBc)	Limit (dBc)	Margin (dB)	Result
4950.000	-35.2	-43.1	-32.9	10.2	Complied
4980.000	-31.6	-39.5	-32.9	6.6	Complied

Top Channel

Frequency (MHz)	Peak Emission Level (dBm/MHz)	Peak Emission Level (dBc)	Limit (dBc)	Margin (dB)	Result
4970.000	-33.8	-41.7	-32.9	8.8	Complied
5000.000	-31.9	-39.8	-32.9	6.9	Complied

Note(s):

2. *Client company name changed during testing from Orthogon to Motorola, so some graphs or plots may reference Orthogon.*
3. *Plots up to 20 GHz, for bottom and middle channels have incorrectly titled 'Port H'. However it was confirmed that the measurement was performed on Port V.*

Transmitter Conducted Emissions (Out of Band): Section 90.210(m)/2.1051 (Continued)

Results: Port V, Acquisition Mode, Maximum Power

10 MHz Channel Bandwidth

Bottom Channel

Frequency (MHz)	Peak Emission Level (dBm/MHz)	Peak Emission Level (dBc)	Limit (dBc)	Margin (dB)	Result
9890.251	-43.3	-57.0	-38.7	18.3	Complied
14834.840	-28.8	-42.5	-38.7	3.8	Complied
4930.000	-35.5	-49.2	-38.7	10.5	Complied
4960.000	-34.3	-48.0	-38.7	9..3	Complied

Middle Channel

Frequency (MHz)	Peak Emission Level (dBm/MHz)	Peak Emission Level (dBc)	Limit (dBc)	Margin (dB)	Result
4950.000	-35.6	-49.6	-39.0	10.6	Complied
4980.000	-34.5	-48.5	-39.0	9.5	Complied

Top Channel

Frequency (MHz)	Peak Emission Level (dBm/MHz)	Peak Emission Level (dBc)	Limit (dBc)	Margin (dB)	Result
1013.778	-41.1	-55.2	-39.1	16.1	Complied
4970.000	-36.8	-50.9	-39.1	11.8	Complied
5000.000	-34.7	-48.8	-39.1	9.7	Complied

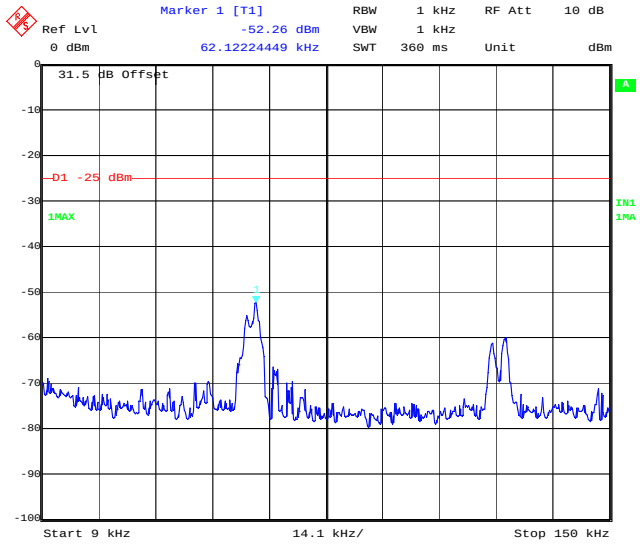
Note(s):

2. *Client company name changed during testing from Orthogon to Motorola, so some graphs or plots may reference Orthogon.*
3. *Plots up to 20 GHz, for bottom and middle channels have incorrectly titled 'Port H'. However it was confirmed that the measurement was performed on Port V.*

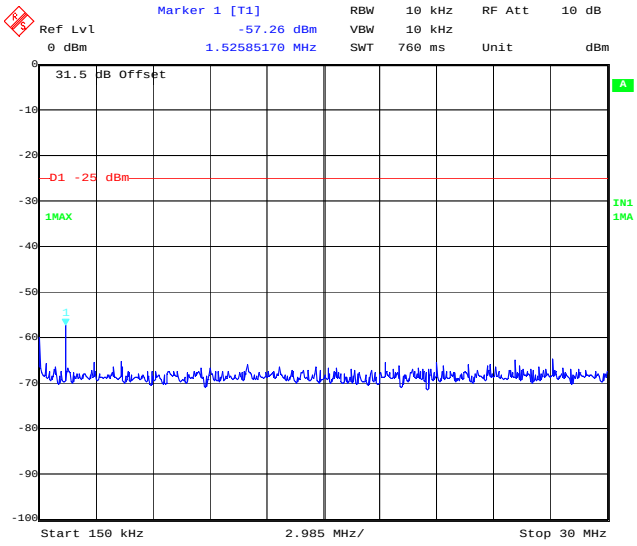
Test of: Motorola Point to Point Fixed Wireless Solutions Group
Motorola PTP49400
To: FCC Part 90: 2005 (Subpart I)

Transmitter Conducted Emissions (Out of Band): Section 90.210(m)/2.1051 (Continued)

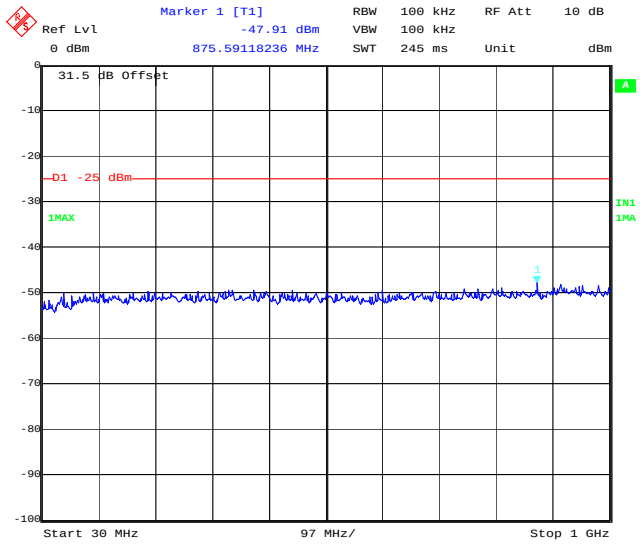
Pre-Scans – Worse case mode shown (QPSK).



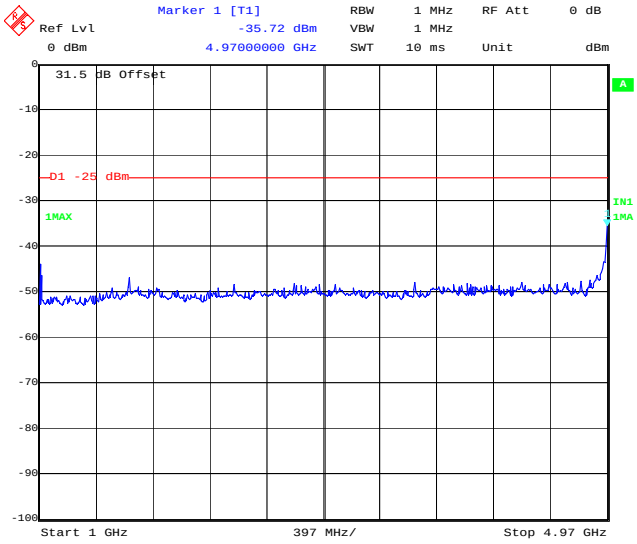
Title: +23dBm Output Power, Top Channel
Comment A: Job No 48412JD01 Conducted Emissions FCC Part 90.210M
Date: 8.AUG.2006 21:42:08



Title: +23dBm Output Power, Top Channel
Comment A: Job No 48412JD01 Conducted Emissions FCC Part 90.210M
Date: 8.AUG.2006 21:42:30

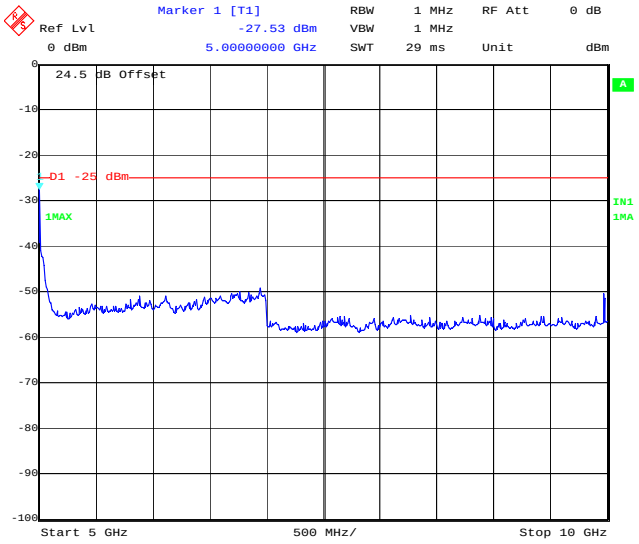


Title: +23dBm Output Power, Top Channel
Comment A: Job No 48412JD01 Conducted Emissions FCC Part 90.210M
Date: 8.AUG.2006 21:42:42

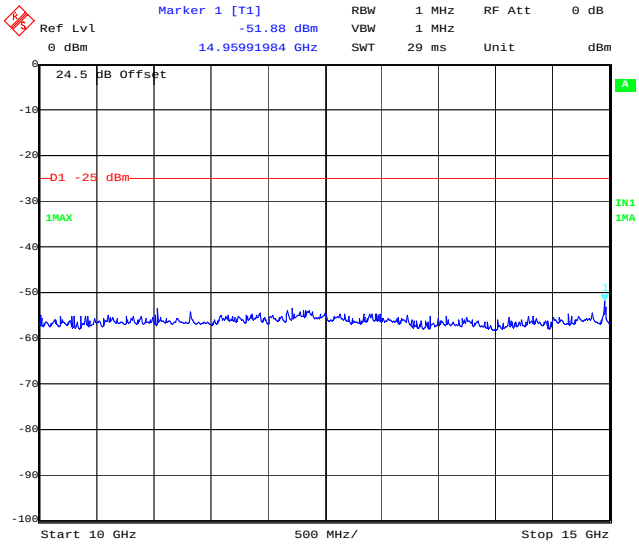


Title: +23dBm Output Power, Top Channel
Comment A: Job No 48412JD01 Conducted Emissions FCC Part 90.210M
Date: 8.AUG.2006 21:42:58

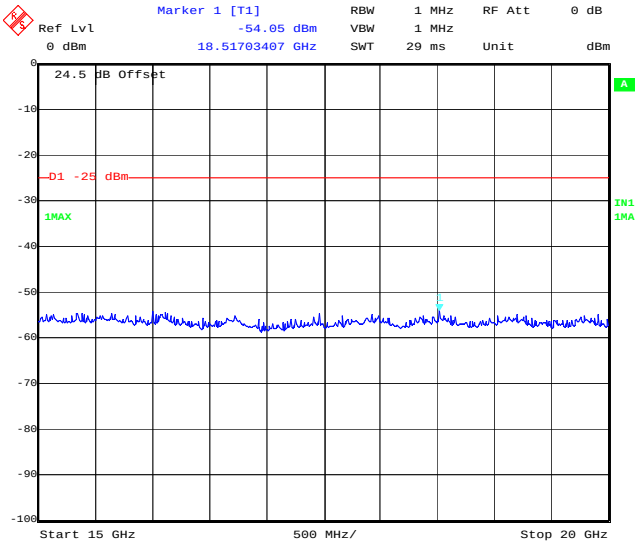
Transmitter Conducted Emissions (Out of Band): Section 90.210(m)/2.1051 (Continued)



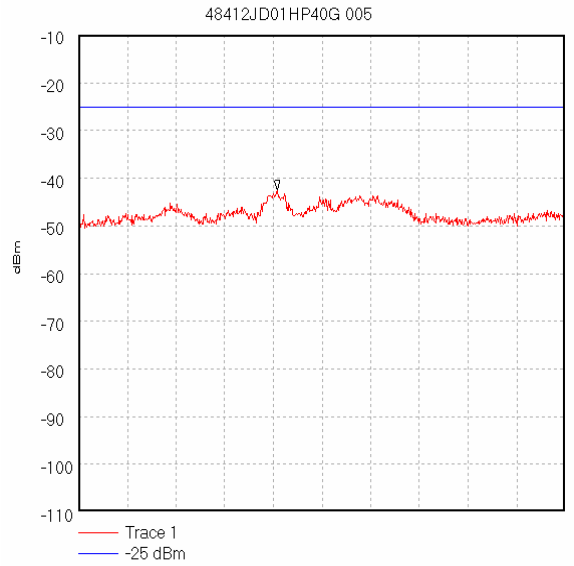
Title: +23dBm Output Power, Top Channel
Comment A: Job No 48412JD01 Conducted Emissions FCC Part 90.210M
Date: 8.AUG.2006 21:18:38



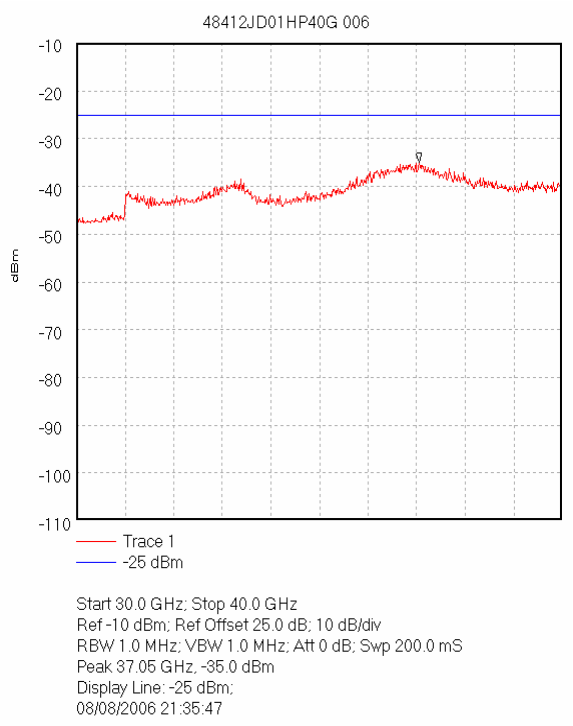
Title: +23dBm Output Power, Top Channel
Comment A: Job No 48412JD01 Conducted Emissions FCC Part 90.210M
Date: 8.AUG.2006 21:18:57



Title: +23dBm Output Power, Top Channel
Comment A: Job No 48412JD01 Conducted Emissions FCC Part 90.210M
Date: 8.AUG.2006 21:19:08



Transmitter Conducted Emissions (Out of Band): Section 90.210(m)/2.1051 (Continued)



6.2.9. Transmitter Radiated Emissions: Section 15.209(a)

Results: Maximum power

Electric Field Strength Measurements: 30 to 1000 MHz
(emissions outside the restricted bands)

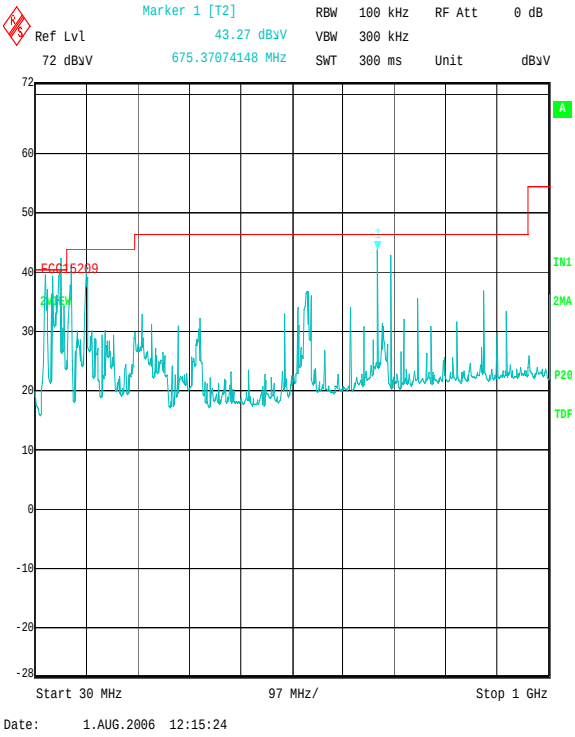
Top Channel – Acquisition Mode

Frequency (MHz)	Antenna Polarity	Q-P Level (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Result
699.974	Horizontal	-32.5	46.0	13.5	Complied
824.995	Horizontal	-31.5	46.0	14.5	Complied
875.025	Horizontal	-34.0	46.0	12.0	Complied
918.001	Horizontal	-32.1	46.0	13.9	Complied

Note(s):

1. *At the clients request, cabinet transmitter radiated emissions were measured in acquisition mode only.*

Transmitter Radiated Emissions: Section 15.209(a) (Continued)



Transmitter Radiated Emissions: Section 15.247(d) and 15.209(a) (Continued)

Electric Field Strength Measurements: 1 to 40 GHz
(emissions outside the restricted bands)

Results:

Highest Peak Level: Bottom Channel

Frequency (MHz)	Antenna Polarity	Detector Level (dBµV/m)	Transducer Factor (dB)	Actual Level (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Result
1499.873	Vertical	45.0	-12.8	32.2	74.0	41.8	Complied
2753.507	Vertical	47.5	-11.1	36.4	74.0	37.6	Complied

Highest Average Level: Bottom Channel

Frequency (MHz)	Antenna Polarity	Detector Level (dBµV/m)	Transducer Factor (dB)	Actual Level (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Result
1499.873	Vertical	42.0	-12.8	29.2	54.0	24.8	Complied
2753.507	Vertical	43.8	-11.1	32.7	54.0	21.3	Complied

Highest Peak Level: Middle Channel

Frequency (MHz)	Antenna Polarity	Detector Level (dBµV/m)	Transducer Factor (dB)	Actual Level (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Result
1499.873	Vertical	49.1	-12.8	36.3	74.0	37.7	Complied
2753.507	Vertical	47.9	-11.1	36.8	74.0	37.2	Complied

Transmitter Radiated Emissions: Section 15.247(d) and 15.209(a) (Continued)

Highest Average Level: Middle Channel

Frequency (MHz)	Antenna Polarity	Detector Level (dBµV/m)	Transducer Factor (dB)	Actual Level (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Result
1499.873	Vertical	44.5	-12.8	31.7	54.0	22.3	Complied
2753.507	Vertical	44.0	-11.1	32.9	54.0	21.1	Complied

Highest Peak Level: Top Channel

Frequency (MHz)	Antenna Polarity	Detector Level (dBµV/m)	Transducer Factor (dB)	Actual Level (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Result
1499.873	Vertical	47.2	-12.8	34.4	74.0	39.6	Complied
2753.507	Vertical	47.0	-11.1	35.9	74.0	38.1	Complied

Highest Average Level: Top Channel

Frequency (MHz)	Antenna Polarity	Detector Level (dBµV/m)	Transducer Factor (dB)	Actual Level (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Result
1499.873	Vertical	42.9	-12.8	30.1	54.0	23.9	Complied
2753.507	Vertical	43.7	-11.1	32.6	54.0	21.4	Complied

Transmitter Radiated Emissions: Section 15.209(a) (Continued)

Electric Field Strength Measurements: 1 to 40 GHz (emissions outside the restricted bands)

Results:

Highest Peak Level: Bottom Channel

Frequency (MHz)	Antenna Polarity	Detector Level (dBµV/m)	Transducer Factor (dB)	Actual Level (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Result
2500.090	Vertical	50.6	-11.0	36.9	74.0	34.4	Complied
2900.155	Vertical	46.4	-11.0	35.4	74.0	38.6	Complied
3141.769	Vertical	49.5	-11.1	38.4	74.0	35.6	Complied
3148.511	Vertical	49.4	-11.1	38.3	74.0	35.7	Complied
4063.000	Vertical	61.3	-8.0	53.3	74.0	20.7	Complied
6289.930	Vertical	45.9	-3.5	42.4	74.0	31.6	Complied

Highest Average Level: Bottom Channel

Frequency (MHz)	Antenna Polarity	Detector Level (dBµV/m)	Transducer Factor (dB)	Actual Level (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Result
2500.090	Vertical	46.9	-11.0	35.9	54.0	18.1	Complied
2900.155	Vertical	41.3	-11.0	30.3	54.0	23.7	Complied
3141.769	Vertical	35.9	-11.1	34.8	54.0	19.2	Complied
3148.511	Vertical	36.1	-11.1	35.0	54.0	19.0	Complied
4063.000	Vertical	56.8	-8.0	48.8	54.0	5.2	Complied
6289.930	Vertical	38.1	-3.5	34.6	54.0	19.4	Complied

Transmitter Radiated Emissions: Section 15.209(a) (Continued)

Highest Peak Level: Middle Channel

Frequency (MHz)	Antenna Polarity	Detector Level (dBµV/m)	Transducer Factor (dB)	Actual Level (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Result
2500.090	Vertical	51.2	-11.0	40.2	74.0	33.8	Complied
2900.155	Vertical	46.4	-11.0	35.4	74.0	38.6	Complied
3141.769	Vertical	48.3	-11.1	37.2	74.0	36.8	Complied
3148.511	Vertical	47.7	-11.1	36.6	74.0	37.4	Complied
4083.000	Vertical	59.7	-8.0	51.7	74.0	22.3	Complied
6330.001	Vertical	50.9	-3.5	47.4	74.0	26.6	Complied

Highest Average Level: Middle Channel

Frequency (MHz)	Antenna Polarity	Detector Level (dBµV/m)	Transducer Factor (dB)	Actual Level (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Result
2500.090	Vertical	47.8	-11.0	36.8	54.0	17.2	Complied
2900.155	Vertical	40.7	-11.0	29.7	54.0	24.3	Complied
3141.769	Vertical	45.2	-11.1	34.1	54.0	19.9	Complied
3148.511	Vertical	44.6	-11.1	33.5	54.0	20.5	Complied
4063.000	Vertical	56.2	-8.0	48.2	54.0	5.8	Complied
6330.001	Vertical	47.3	-3.5	43.8	54.0	10.2	Complied

Transmitter Radiated Emissions: Section 15.209(a) (Continued)

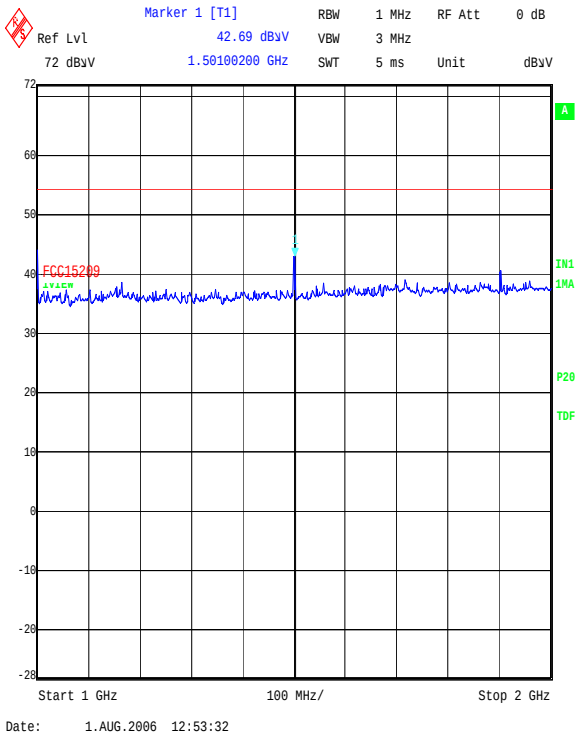
Highest Peak Level: Top Channel

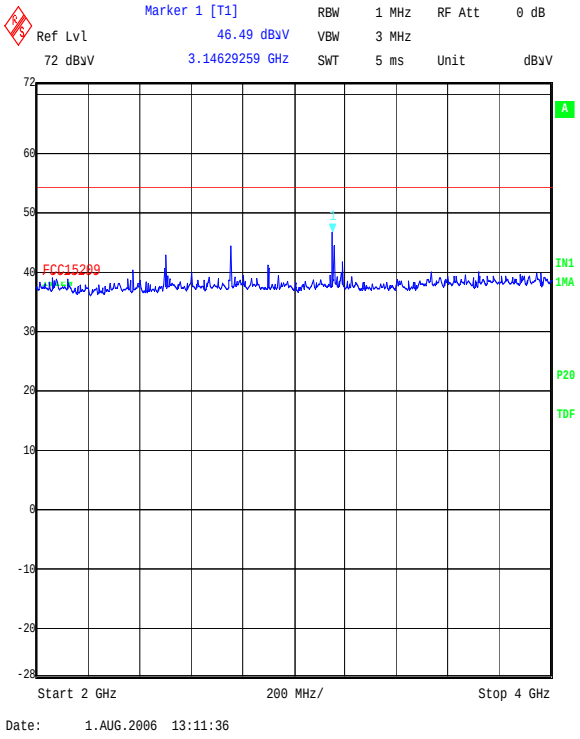
Frequency (MHz)	Antenna Polarity	Detector Level (dBµV/m)	Transducer Factor (dB)	Actual Level (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Result
2500.090	Vertical	52.0	-11.0	41.0	74.0	33.0	Complied
2900.155	Vertical	46.6	-11.0	35.6	74.0	38.4	Complied
3141.769	Vertical	48.1	-11.1	37.0	74.0	37.0	Complied
3148.511	Vertical	48.5	-11.1	37.4	74.0	36.6	Complied
4103.000	Vertical	58.1	-8.0	50.1	74.0	23.9	Complied
6370.010	Vertical	48.5	-3.5	45.0	74.0	29.0	Complied

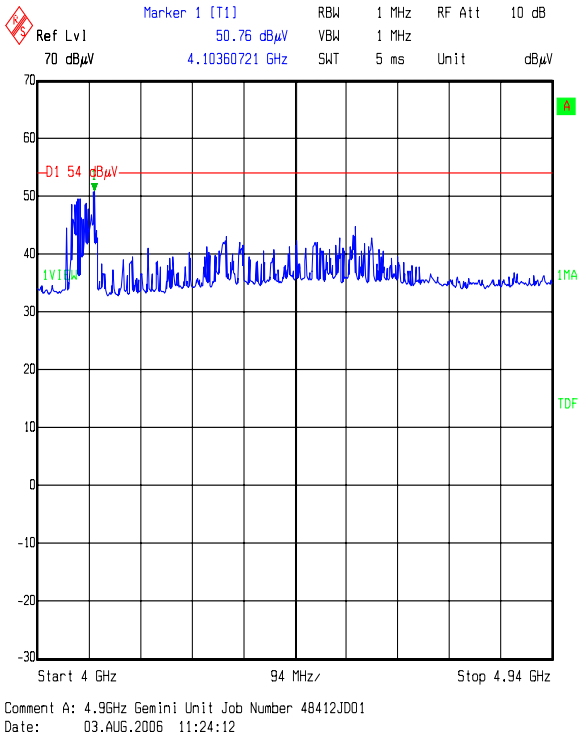
Highest Average Level: Top Channel

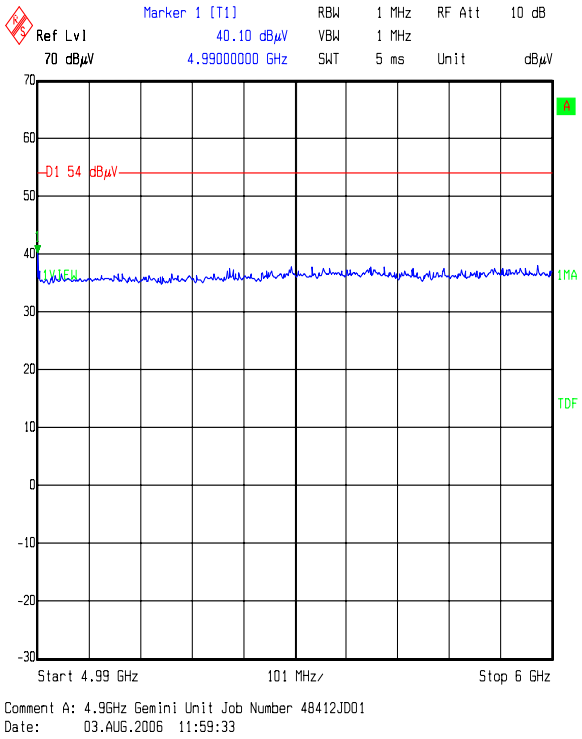
Frequency (MHz)	Antenna Polarity	Detector Level (dBµV/m)	Transducer Factor (dB)	Actual Level (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Result
2500.090	Vertical	47.6	-11.0	36.6	54.0	17.4	Complied
2900.155	Vertical	41.0	-11.0	30.0	54.0	24.0	Complied
3141.769	Vertical	45.9	-11.1	34.8	54.0	19.2	Complied
3148.511	Vertical	44.9	-11.1	33.8	54.0	20.2	Complied
4103.000	Vertical	53.6	-8.0	45.6	54.0	8.4	Complied
6370.010	Vertical	44.6	-3.5	41.1	54.0	12.9	Complied

Transmitter Radiated Emissions: Section 15.209(a) (Continued)

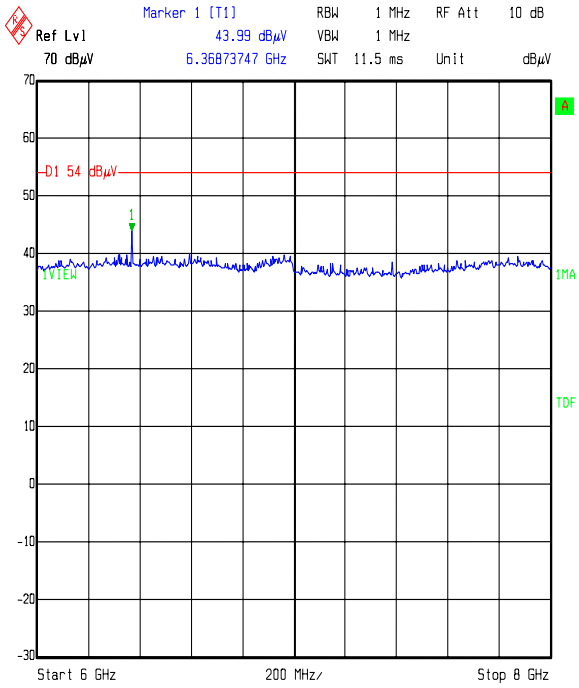




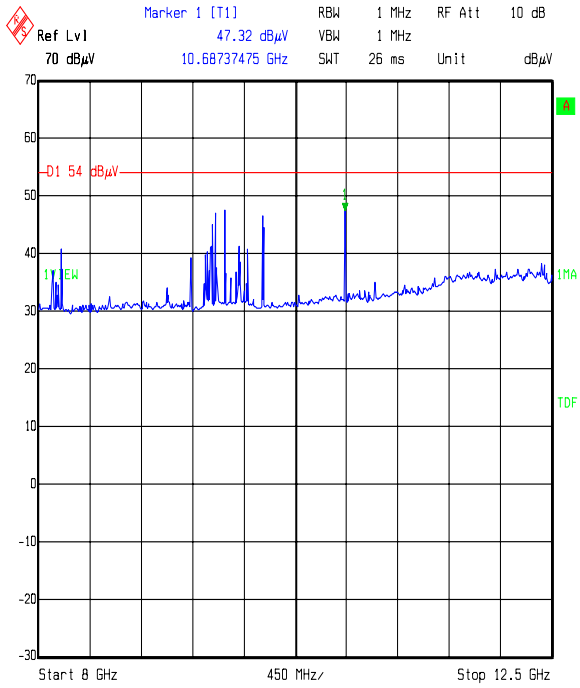




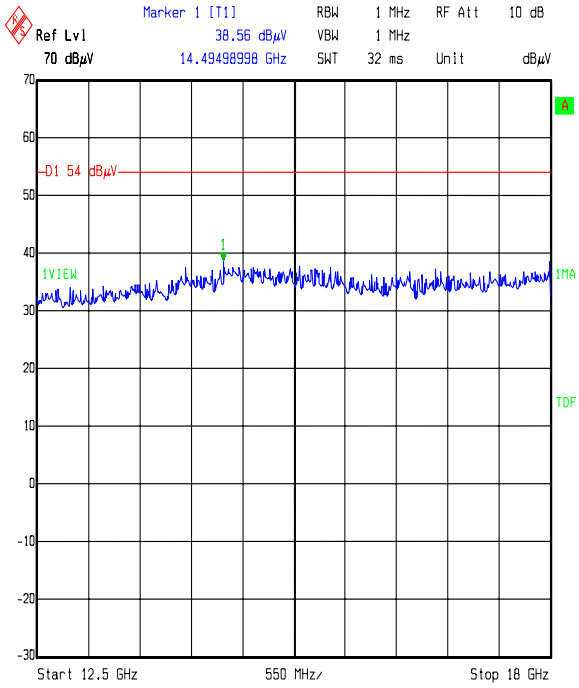
Transmitter Radiated Emissions: Section 15.209(a) (Continued)



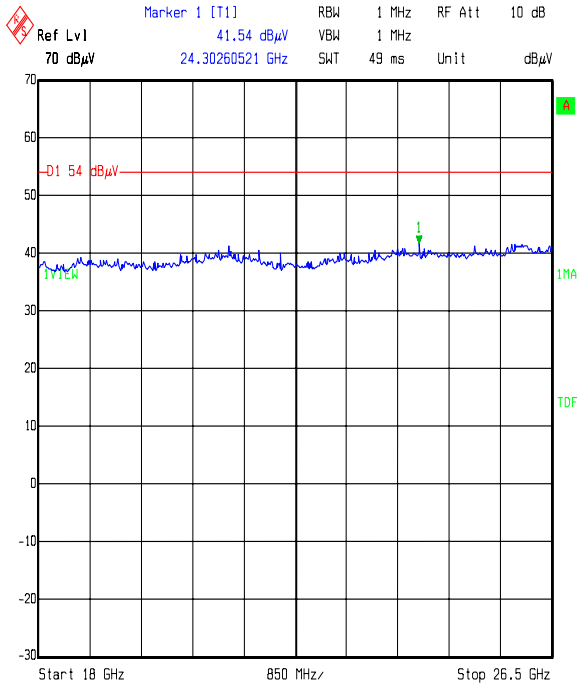
Comment A: 4.9GHz Gemini Unit Job Number 48412JD01
Date: 03.AUG.2006 12:38:04



Comment A: 4.9GHz Gemini Unit Job Number 48412JD01
Date: 03.AUG.2006 13:27:11

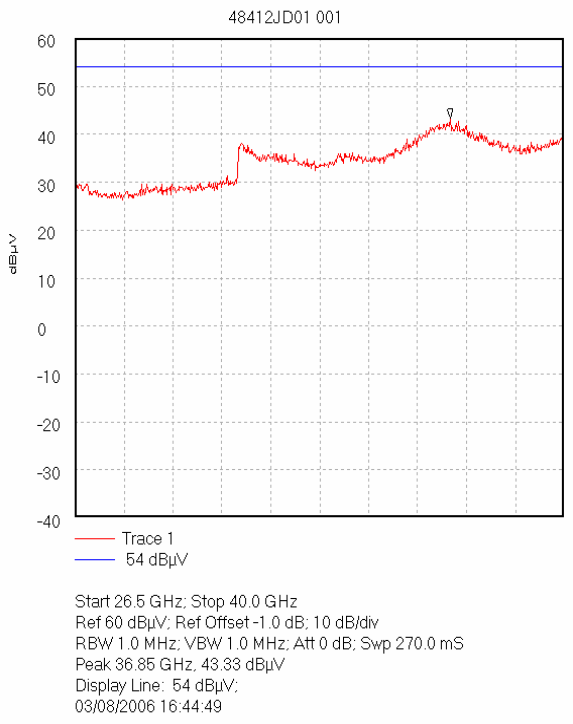


Comment A: 4.9GHz Gemini Unit Job Number 48412JD01
Date: 03.AUG.2006 15:08:11



Comment A: 4.9GHz Gemini Unit Job Number 48412JD01
Date: 03.AUG.2006 15:17:48

Transmitter Radiated Emissions: Section 15.209(a) (Continued)



6.2.10. Transmitter Band Edge Radiated Cabinet Emissions: Section 15.247(d) & 15.209(a) Results: 64 QAM Modulation

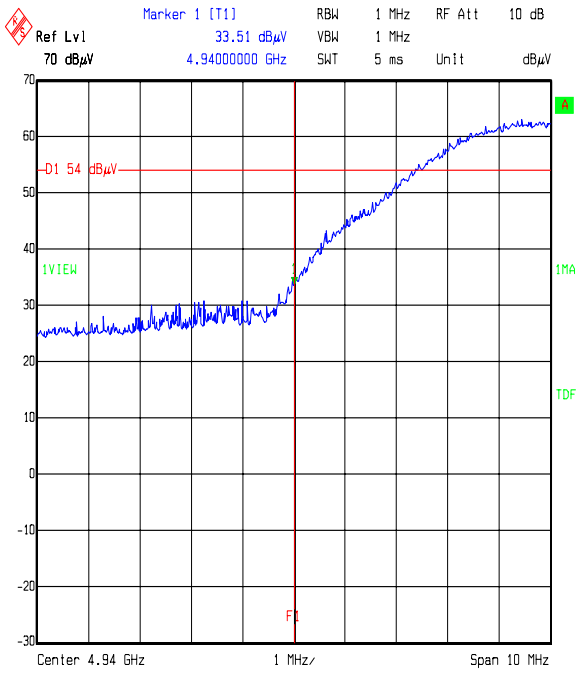
RMS Averaging Power Level:

Frequency (MHz)	Antenna Polarity	Detector Level (dBµV/m)	Transducer Factor (dB)	Actual Level (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Result
4940	Vertical	39.5	-6.0	33.5	54.0	20.5	Complied
4990	Vertical	42.7	-5.8	36.9	54.0	17.1	Complied

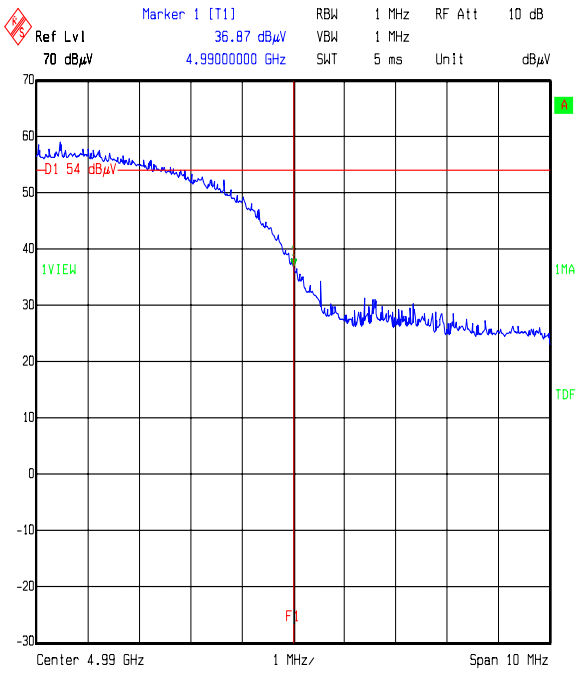
Note(s):

1. *The EUT was configured with no antenna fitted but with conducted link established (as diagram opposite). The cabinet band edge radiated spurious was measured at the bottom edge (4.94 GHz) using the worst case modulation result (64QAM) plot taken on bottom channel 4945 MHz. The above was repeated for top band edge using top channel 4985 MHz with 64 QAM being worst case plot taken.*

Transmitter Band Edge Radiated Cabinet Emissions: Section 15.247(d) & 15.209(a) (Continued)



Title: Lower Band Edge Radiated Spurious 64 QAM
Comment A: 4.9GHz Gemini Unit Job Number 48412JD01
Date: 04.AUG.2006 11:52:11



Title: Top Band Edge Radiated Spurious 64 QAM
Comment A: 4.9GHz Gemini Unit Job Number 48412JD01
Date: 04.AUG.2006 11:56:13

6.2.11. Transmitter Frequency Stability (Temperature Variation): Sections 90.213/2.1055(a)(1)

Results: Port H

10MHz Channel Bandwidth

Bottom Channel (4945 MHz)

Temperature (°C)	Measured Frequency (MHz)	Frequency Error (Hz)	Frequency Error (ppm)
-40	4945.044190	44190	8.9
-30	4945.041182	41182	8.3
-20	4945.039178	39178	7.9
-10	4945.036774	36774	7.4
0	4945.033567	33567	6.8
10	4945.026553	26553	5.4
20	4945.016733	16733	3.4
30	4945.010721	10721	2.2
40	4945.006112	6112	1.2
50	4944.998697	1303	0.3

Middle Channel (4965 MHz)

Temperature (°C)	Measured Frequency (MHz)	Frequency Error (Hz)	Frequency Error (ppm)
-40	4965.044390	44390	8.9
-30	4965.040982	40982	8.3
-20	4965.039579	39579	8.0
-10	4965.036774	36774	7.4
0	4965.033166	33166	6.7
10	4965.026553	26553	5.3
20	4965.016735	16733	3.4
30	4965.010922	10922	2.2
40	4965.006112	6112	1.2
50	4964.998697	1303	0.3

Transmitter Frequency Stability (Temperature Variation) (Continued)

Top Channel (4985 MHz)

Temperature (°C)	Measured Frequency (MHz)	Frequency Error (Hz)	Frequency Error (ppm)
-40	4985.044390	44390	8.9
-30	4985.041182	41182	8.3
-20	4985.039579	39579	7.9
-10	4985.036974	36974	7.4
0	4985.033166	33166	6.7
10	4985.026553	26553	5.3
20	4985.016934	16934	3.4
30	4985.011323	11323	2.3
40	4985.006112	6112	1.2
50	4984.998697	1303	0.3

Note(s):

1. *Note: No limit has been specified for equipment operating at 2.450 GHz and above. The standard only states "frequency stability to be specified in the station authorization". Therefore, no compliance statement will be applied for this test and these results are provided for information purpose only.*
2. *Measurements for the frequency stability tests were performed on a pilot tone, which has an offset from the nominal frequency by 11.718 KHz. All measurements were then recorded at the measured frequency – 11.718 KHz, as per client's request.*

Transmitter Frequency Stability (Temperature Variation): Sections 90.213/2.1055(a)(1) (Continued)

Results: Port V

10MHz Channel Bandwidth

Bottom Channel (4945 MHz)

Temperature (°C)	Measured Frequency (MHz)	Frequency Error (Hz)	Frequency Error (ppm)
-40	4945.044390	44390	9.0
-30	4945.041182	41182	8.3
-20	4945.039178	39178	7.9
-10	4945.036774	36774	7.4
0	4945.033567	33567	6.8
10	4945.026954	26954	5.5
20	4945.016533	16533	3.3
30	4945.010521	10521	2.1
40	4945.06313	6313	1.3
50	4944.998497	-1503	0.3

Middle Channel (4965 MHz)

Temperature (°C)	Measured Frequency (MHz)	Frequency Error (Hz)	Frequency Error (ppm)
-40	4965.044390	44390	8.9
-30	4965.040982	40982	8.3
-20	4965.039379	39379	7.9
-10	4965.036774	36774	7.4
0	4965.033768	33768	6.8
10	4965.027154	27154	5.5
20	4965.016333	16333	3.3
30	4965.010321	10321	2.1
40	4965.006513	6513	1.3
50	4964.998497	-1503	0.3

Transmitter Frequency Stability (Temperature Variation) (Continued)

Top Channel (4985 MHz)

Temperature (°C)	Measured Frequency (MHz)	Frequency Error (Hz)	Frequency Error (ppm)
-40	4985.044790	44790	9.0
-30	4985.041182	41182	8.3
-20	4985.039579	39579	7.9
-10	4985.036974	36974	7.4
0	4985.034168	34168	6.9
10	4985.027756	27756	5.6
20	4985.016533	16533	3.3
30	4985.010321	10321	2.1
40	4985.006313	6313	1.3
50	4984.998497	-1503	0.3

Note(s):

1. *Note: No limit has been specified for equipment operating at 2.450 GHz and above. The standard only states "frequency stability to be specified in the station authorization". Therefore, no compliance statement will be applied for this test and these results are provided for information purpose on.*
2. *Measurements for the frequency stability tests were performed on a pilot tone, which has an offset from the nominal frequency by 11.718 KHz. All measurements were then recorded at the measured frequency – 11.718 KHz, as per client's request.*

6.2.12. Transmitter Frequency Stability (Voltage Variation): Sections 90.213/2.1055

Results: Port H

10 MHz Channel Bandwidth

Bottom Channel (4945 MHz)

Supply Voltage (V)	Measured Frequency (MHz)	Frequency Error (Hz)	Frequency Error (ppm)
93.5	4945.016333	16333	3.3
110.0	4945.016733	16733	3.4
126.0	4945.016733	16733	3.4

Middle Channel (4965 MHz)

Supply Voltage (V)	Measured Frequency (MHz)	Frequency Error (Hz)	Frequency Error (ppm)
93.5	4965.016733	16733	3.4
110.0	4965.016733	16733	3.4
126.5	4965.016533	16533	3.3

Top Channel (4985 MHz)

Supply Voltage (V)	Measured Frequency (MHz)	Frequency Error (Hz)	Frequency Error (ppm)
93.5	4985.016733	16733	3.4
110.0	4985.016934	16934	3.4
126.5	4985.016934	16934	3.4

Note(s):

1. *Note: No limit has been specified for equipment operating at 2.450 GHz and above. The standard only states "frequency stability to be specified in the station authorization". Therefore, no compliance statement will be applied for this test and these results are provided for information purpose on.*
2. *Measurements for the frequency stability tests were performed on a pilot tone, which has an offset from the nominal frequency by 11.718 KHz. All measurements were then recorded at the measured frequency – 11.718 KHz, as per client's request.*

Transmitter Frequency Stability (Voltage Variation): Sections 90.213/2.1055 (Continued)

Results: Port V

10 MHz Channel Bandwidth

Bottom Channel (4945 MHz)

Supply Voltage (V)	Measured Frequency (MHz)	Frequency Error (Hz)	Frequency Error (ppm)
93.5	4945.016533	16533	3.3
110.0	4945.016533	16533	3.3
126.5	4945.016333	16333	3.3

Middle Channel (4965 MHz)

Supply Voltage (V)	Measured Frequency (MHz)	Frequency Error (Hz)	Frequency Error (ppm)
93.5	4965.016132	16132	3.2
110.0	4965.016333	16333	3.3
126.5	4965.016333	16333	3.3

Top Channel (4985 MHz)

Supply Voltage (V)	Measured Frequency (MHz)	Frequency Error (Hz)	Frequency Error (ppm)
93.5	4985.016132	16132	3.2
110.0	4985.016533	16533	3.3
126.5	4985.016333	16333	3.3

Note(s):

1. *Note: No limit has been specified for equipment operating at 2.450 GHz and above. The standard only states "frequency stability to be specified in the station authorization". Therefore, no compliance statement will be applied for this test and these results are provided for information purpose on.*
2. *Measurements for the frequency stability tests were performed on a pilot tone, which has an offset from the nominal frequency by 11.718 KHz. All measurements were then recorded at the measured frequency – 11.718 KHz, as per client's request.*

7. Measurement Uncertainty

No measurement or test can ever be perfect and the imperfections give rise to error of measurement in the results. Consequently, the result of a measurement is only an approximation to the value of the measurand (the specific quantity subject to measurement) and is only complete when accompanied by a statement of the uncertainty of the approximation.

The expression of uncertainty of a measurement result allows realistic comparison of results with reference values and limits given in specifications and standards.

The uncertainty of the result may need to be taken into account when interpreting the measurement results.

The reported expanded uncertainties below are based on a standard uncertainty multiplied by an appropriate coverage factor, such that a confidence level of approximately 95% is maintained. For the purposes of this document “approximately” is interpreted as meaning “effectively” or “for most practical purposes”.

Measurement Type	Range	Confidence Level (%)	Calculated Uncertainty
AC Conducted Spurious Emissions	0.15 MHz to 30.0 MHz	95%	+/- 3.25 dB
Radiated Spurious Emissions	9 kHz to 30 MHz	95%	+/- 3.53 dB
Radiated Spurious Emissions	30 MHz to 1000 MHz	95%	+/- 5.26 dB
Radiated Spurious Emissions	1 GHz to 40 GHz	95%	+/- 2.94 dB
Conducted Carrier Output Power	9 kHz to 26.5 GHz	95%	+/- 0.28 dB
Carrier Output Power (EIRP)	30 MHz to 26.5 GHz	95%	+/- 2.94 dB
Emission Masks	N/A	95%	+/- 0.12%
Conducted Emissions Antenna Port	9 kHz to 40 GHz	95%	+/- 2.62 dB
Frequency Stability	Not applicable	95%	+/- 11.37 ppm

The methods used to calculate the above uncertainties are in line with those recommended within the various measurement specifications. Where measurement specifications do not include guidelines for the evaluation of measurement uncertainty, the published guidance of the appropriate accreditation body is followed.

8. Measurement Methods

8.1. AC Mains Conducted Emissions

AC mains conducted emissions measurements were performed in accordance with the standard, against appropriate limits for each detector function.

The test was performed in a shielded enclosure with the equipment arranged as detailed in the standard on a wooden bench using the floor of the screened enclosure as the ground reference plane. The EUT was powered with 110V 60 Hz AC mains supplied via a Line Impedance Stabilisation Network (LISN).

Initial measurements in the form of swept scans covering the entire measurement band were performed in order to identify frequencies on which the EUT was generating interference. In order to minimise the time taken for these swept measurements, a Peak detector was used in conjunction with the appropriate detector IF measuring bandwidths (see table below). Repetitive scans were performed to allow for emissions with low repetition rates, and the duty cycle of the EUT. The test configuration was the same for the initial scans as for the final measurements.

Following the initial scans, a graph was produced giving an overview of the emissions from the EUT plotted against the appropriate specification limit. A tolerance line was set 6 dB below the specification limit and levels above the tolerance line were re-tested (at individual frequencies) using the appropriate detector function.

The test equipment settings for conducted emissions measurements were as follows:

Receiver Function	**Initial Scan**	**Final Measurements**
Detector Type:	Peak	Quasi-Peak (CISPR)/Average
Mode:	Max Hold	Not applicable
Bandwidth:	10 kHz	9 kHz
Amplitude Range:	60 dB	20 dB
Measurement Time:	Not applicable	> 1 s
Observation Time:	Not applicable	> 15 s
Step Size:	Continuous sweep	Not applicable
Sweep Time:	Coupled	Not applicable

8.2. Transmitter Peak Carrier Output Power

The EUT and wideband peak power meter were configured as per ANSI TIA-603-B, Land Mobile FM or PM Communications Equipment; Measurement and Performance Standards.

A wideband peak power meter was connected to the antenna port of the EUT via a suitable cable and attenuators. Prior to testing being performed the cable and attenuators were calibrated for loss at the required frequency. For each frequency the calibrated level of cable and attenuators loss was noted and then added to the indicated result on the wideband peak power meter to compensate for the losses in the measurement set up.

To determine the transmitter peak output power, the EUT was operated at its maximum rated output power and the result was read from the peak power display of the wideband peak power meter for each antenna output (vertical and horizontal). The aggregate total output power was calculated from the sum of the vertical and horizontal values.

8.3. Transmitter Peak Spectral Density Power

A E4407B client supplied spectrum analyser was used. The analyser was validated against an RFI reference spectrum analyser. The analyser was set to 50 MHz span, the detector was set to sample with a RBW of 1MHz and a VBW 3MHz. The trigger was set to EXT, Sweep time was to 1msec, the number of samples used in the trace was 101 points. The analyser was then set to Power mode average with 100 sweeps. The peak of the response was recorded as the highest power spectral density.

8.4. Transmitter Conducted Emissions

The EUT and spectrum analyser were configured as per ANSI TIA-603-B, Land Mobile FM or PM Communications Equipment; Measurement and Performance Standards.

Spurious emission measurements at the antenna port were performed from the lowest declared frequency to 10 times the highest EUT fundamental frequency.

A spectrum analyser was connected to the antenna port of the EUT via a suitable cable and RF attenuator. The total loss of both the cable and the attenuator was measured and entered as a reference level offset into the measuring receiver to correct for the losses.

The EUT was set to all modulation schemes and the carrier power observed. The mode that exhibited the highest output power was then used for the emissions testing.

The frequency band described above was investigated with the transmitter operating at full power on the bottom, middle and top channels. Any spurious emissions noted were then measured.

The limits were set in accordance with FCC Mask shown in Part 90.210 (m).

8.5. Transmitter Radiated Emissions

The EUT and spectrum analyser were configured as per ANSI TIA-603-B, Land Mobile FM or PM Communications Equipment; Measurement and Performance Standards.

Radiated emissions measurements were performed in accordance with FCC Part 15.209 against appropriate limits for each detector function.

Initial pre-scans covering the entire measurement band from the lowest generated frequency declared up to 10 times the highest fundamental frequency were performed in order to identify frequencies on which the EUT was generating spurious emissions. This determined the frequencies from the EUT that required further examination. Repetitive scans were performed to allow for emissions with low repetition rates, and for the duty cycle of the EUT.

The initial scans were performed using an antenna height of 1.5 m and a measurement distance of 3 m, below 4 GHz; above 4 GHz a 1 m measurement distance may have been used with appropriate correction factors used. A limit line was set to the specification limit. Levels within 20 dB of this limit were measured where possible, on occasion; the receiver noise floor came within the 20 dB boundary. On these occasions, the system noise floor may have been recorded.

For the final measurements the EUT was arranged on a non-conducting turn table on a standard test site compliant with ANSI C63.4 – 2001 Clause 5.4.

An open area test site using the appropriate test distance and spectrum analyser with an peak detector was used for final measurements. All measurements on the open area test site were performed using broadband antennas.

On the open area test site, at each frequency where a signal was found, the levels were maximised by initially rotating the turntable through 360° and then varying the antenna height between 1 m and 4 m in the horizontal polarisation. At this point, any signals found to be between the limit and a level 6 dB below it were further maximised by changing the configuration of the EUT, e.g. re-routing cables to peripherals and moving peripherals with respect to the EUT. The procedure was repeated for the vertical polarisation.

The limits used we those shown in FCC 15.209. These limits were employed as opposed to the spectrum mask limits shown in FCC 90.210(m) at the client's request. It was also shown that the general FCC Part 15 limits were tighter than 90.210(m) and deemed acceptable.

8.6. Transmitter Frequency Stability

The EUT and communications analyser were configured as per ANSI TIA-603-B, Land Mobile FM or PM Communications Equipment; Measurement and Performance Standards.

The EUT was situated within an environmental test chamber and monitored on the communications analyser via direct connection.

Measurements were performed with the EUT operating under extremes of temperature in 10 degree increments within the range -40°C to 50°C, as per client's request.

Measurements were also performed at voltage extremes between the declared nominal supply voltage and at the declared endpoint voltage (for hand carried battery operated equipment) or by varying the primary supply voltage from 85% to 115% of the nominal value for all other equipment types.

The requirement was to determine the frequency stability of the device under specified environmental operating conditions.

The EUT was switched off for a minimum of 30 minutes between each stage of testing while the environmental chamber stabilised at the next temperature within the stated temperature range.

Once the environmental chamber had reached thermal equilibrium, the nominal frequency of the EUT was measured and recorded. The recorded frequency was compared to the declared nominal operating frequency of the channel being tested.

The frequency error measured was converted to an error in ppm using the following formula as defined by TIA_EIA_603A :-

$$\text{ppm error} = \left(\frac{MCF_{MHz}}{ACF_{MHz}} - 1\right) * 10^6$$

where MCF_{MHz} is the measured carrier frequency in MHz
ACF_{MHz} is the assigned carrier frequency in MHz

The measured ppm is documented for information purpose only.

Appendix 1. Test Equipment Used

RFI No.	Instrument	Manufacturer	Type No.	Serial No.	Date Last Calibrated	Cal. Interval
A028	Horn Antenna	Eaton	91888-2	304	08 June 2006	36
A1037	Chase Bilog Antenna	Chase EMC Ltd	CBL6112B	2413	26 Jan 2006	12
A1059	WG22 to K-Type Coaxial Adapter	Flann Microwave	22094-KF20	2017	Cal before use	0
A1141	HP 11691D	Hewlett Packerd	11691D	1212A02494	19 Sept 2005	0
A1362	Eaton	Stoddart Aircraft Radio Co., Inc.	91889-1	N/A	08 June 2006	12
A1534	Preamplifier 1-26.5 GHz	Hewlett Packard	8449B OPT H02	3008A00405	Cal before use	12
A255	WG 16 Microwave Horn	Flann Microwave	16240-20	519	06 Oct 2003	36
A256	WG 18 Microwave Horn	Flann Microwave	18240-20	400	06 Oct 2003	36
A276	OATS Positioning Controller	Rohde & Schwarz	HCC		N/A	12
A427	WG 14 horn	Flann	14240-20	150	06 Oct 2003	36
A435	WG 22 horn	Flann	22240-20	400	21 July 2006	36
A436	WG 20 horn	Flann	20240-20	330	24 April 2006	36
A453	Battery Checker	RS	None	None	N/A	12

Test Equipment Used (Continued)

RFI No.	Instrument	Manufacturer	Type No.	Serial No.	Date Last Calibrated	Cal. Interval
L0799	AC Power Supply	Kikusui	PCR 1000LA	JA002944	07 Sept 2005	12
L0816	Unitemp Environmental Chamber	Unitemp	None	None	03 Oct 2005	12
M003	Spectrum Monitor	Rohde & Schwarz	EZM	883 580/008	Cal not reqd.	12
M023	ESVP Receiver	Rohde & Schwarz	ESVP	872 991/027	10 April 2006	12
M1068	Thermometer Digital	Iso-Tech	RS55	93102884	09 June 2006	12
M1122	40GHz Peak Power Sensor	Boonton Electronics	57340	3297	17 May 2006	12
M1123	RF Power Meter	Boonton	4531	138201	17 May 2006	12
M1124	ESIB Spectrum Analyser	Rohde & Schwarz	ESIB26	100046K	23 Nov 2005	12
M1178	Thermo-Hygro	RS	212-124	N/A	11 Feb 2006	12
M1229	Digital Multimeter	Fluke	179	87640015	01 Mar 2006	12
M1242	FSEM30 Spectrum Analyser	Rohde & Schwarz, Inc.	FSEM30	845986_022	25 Aug 2005	12
M1253	HP 8564E Spectrum Analyser	HP	8564E	3442A00262	12 Sept 2005	12
M1263	ESIB7	Rohde & Schwarz	ESIB7	100265	12 Jan 2006	12
M1266	Thermo Hygro	RS	212-124	0	18 Feb 2006	12
M295	HP 8564E	Hewlett Packard	8564E	3846A01561	19 Dec 2005	12
S201	Site 1	RFI	1		18 July 2006	12
S202	Site 2	RFI	2	S202-15011990	Cal before use	-
S207	Site 7	RFI	7		Not Applicable	-
S212	Site 12	RFI	12		Cal before use	-

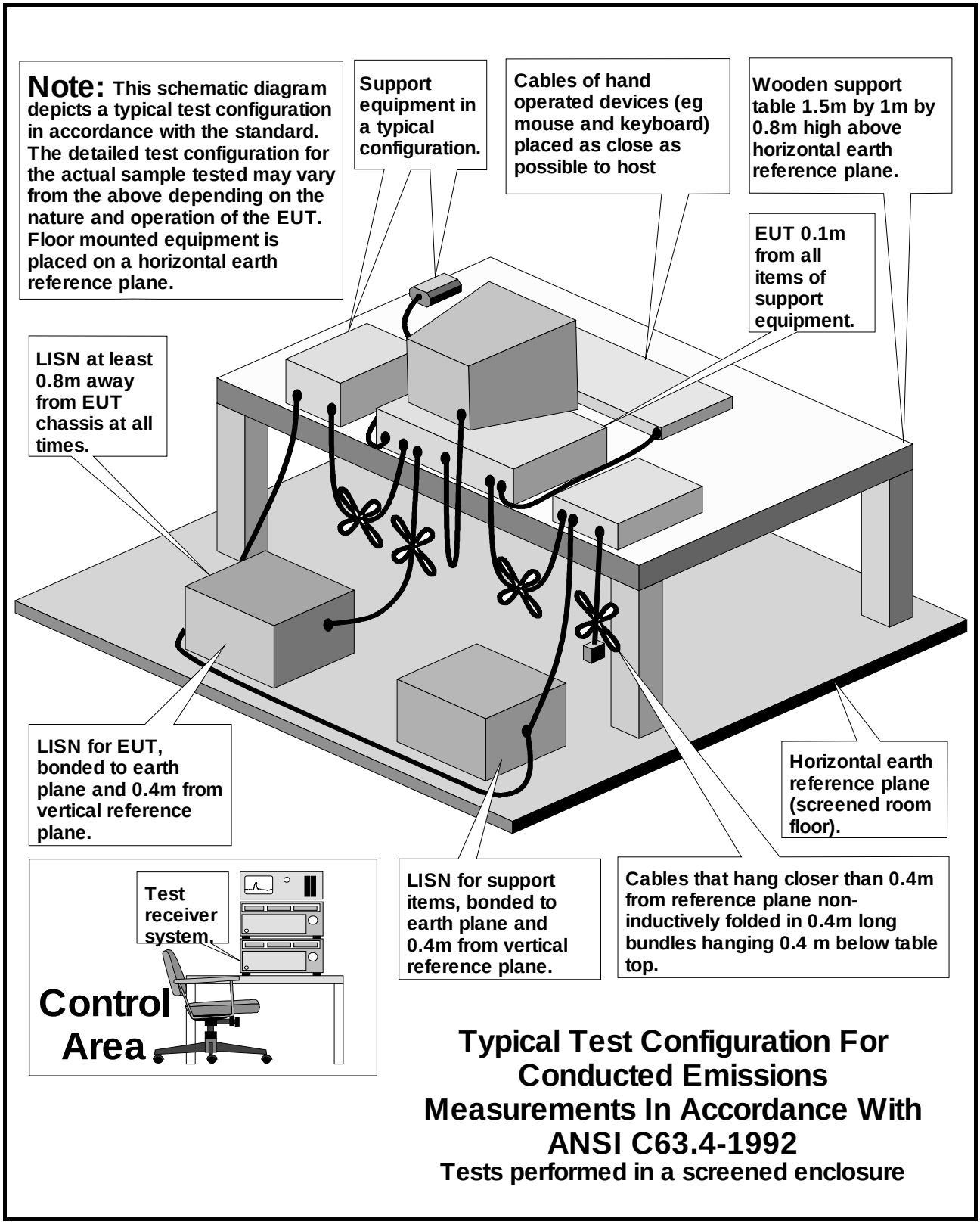
NB In accordance with UKAS requirements, all the measurement equipment is on a calibration schedule.

Appendix 2. Test Configuration Drawings

This appendix contains the following drawings:

Drawing Reference Number	Title
DRG\48412JD01\EMICON	Test configuration for measurement of conducted emissions.
DRG\48412JD01\EMIRAD	Test configuration for measurement of radiated emissions.

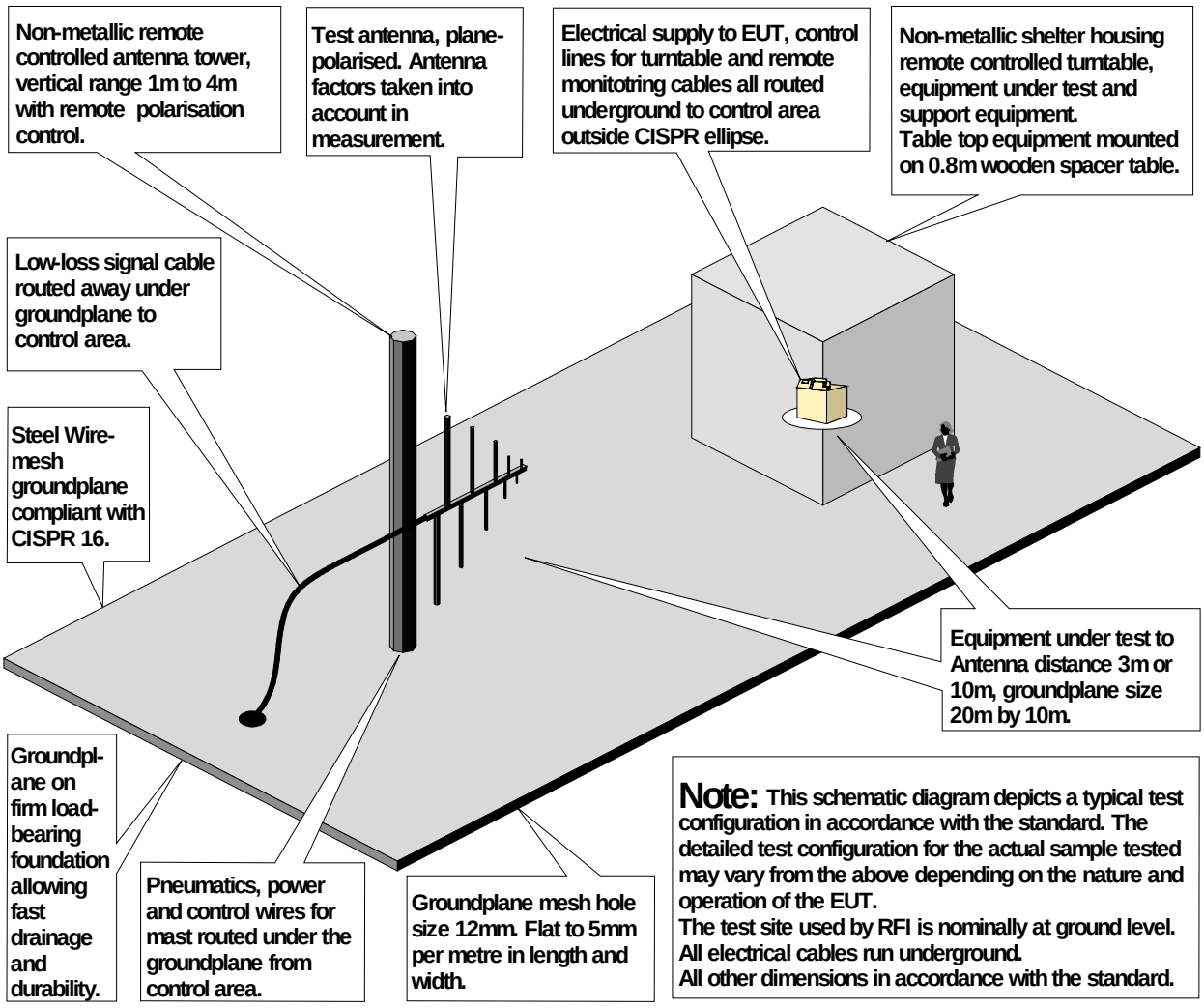
DRG\48412JD01\EMICON



Typical Test Configuration For Conducted Emissions Measurements In Accordance With ANSI C63.4-1992

Tests performed in a screened enclosure

DRG\48412JD01\EMIRAD



Note: This schematic diagram depicts a typical test configuration in accordance with the standard. The detailed test configuration for the actual sample tested may vary from the above depending on the nature and operation of the EUT.
The test site used by RFI is nominally at ground level.
All electrical cables run underground.
All other dimensions in accordance with the standard.

Test Configuration For Radiated Emissions Measurements

Reflection-free area: >60m by 52m (CISPR ellipse)

Groundplane Earthed

Control room outside CISPR ellipse