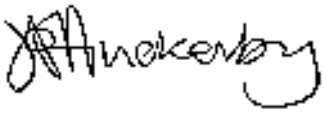
TEST REPORT
FROM
RFI GLOBAL SERVICES LTD

Test of: Ezurio Ltd
Datalogger

To: FCC Part 15.247: 2006 (Subpart C)

Test Report Serial No:
RFI/RPTE3/RP48939JD15A

Supersedes Test Report Serial No:
RFI/RPTE2/RP48939JD15A

This Test Report Is Issued Under The Authority Of Michael Derby, Radio Performance Service Leader: 	
Tested By: Jamie Huckerby 	**Checked By: Michael Derby** 
Report Copy No: PDF01	
Issue Date: 23 August 2007	**Test Dates: 10 June 2007 to 26 June 2007**

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Registered in England and Wales. Company number:2117901

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1. Client Information

Company Name:	Ezurio Ltd
Address:	Saturn House Mercury Park Wycome Lane Woodburn Green Bucks HP10 0HH UK
Contact Name:	Mr T Wheatley

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)

Description:	WLAN Datalogger for vehicle use
Brand Name:	Ezurio Ltd
Model Name or Number:	Datalogger
Serial Number:	Unit 23
Hardware Version:	Not stated
Software Version:	Not stated
FCC ID Number:	P1406WITS
Country of Manufacture:	UK
Date of Receipt:	04 June 2007

2.2. Accessories

The following accessories were supplied with the EUT:

Description:	Laptop
Brand Name:	Dell
Model Name or Number:	Latitude D160
Serial Number:	PC37INT (RFI)
Cable Length and Type:	1m, USB
Connected to Port:	Input / Output

2.3. Description of EUT

The equipment under test is used to collect vehicle data and relay it back to a point, via Wireless LAN or Bluetooth technology. Wireless LAN and the Bluetooth technology will not transmit at the same time, however both technologies are in receiver mode when set to idle.

The EUT also contains a GPS receiver.

2.4. Modifications Incorporated in EUT

During the course of testing the EUT was not modified.

2.5. Additional Information Related to Testing

Power Supply Requirement:	Car Battery 12 V		
Intended Operating Environment:	Vehicular Residential, Commercial, Light and Heavy Industry.		
Equipment Category:	IEEE 802.11, WLAN GPS Bluetooth		
RLAN Modulation types:	DSSS and OFDM		
Type of Unit:	Transceiver Receiver		
GPS Receive Frequency Band:	1.2 GHz to 1.6 GHz		
Bluetooth Receiver Frequency Range:	2402 MHz to 2480 MHz		
RLAN Transmit Frequency Range:	2412 MHz to 2462 MHz		
RLAN Transmit Channels Tested:	**Channel ID**	**Channel Number**	**Channel Frequency (MHz)**
	Bottom	1	2412
	Middle	6	2437
	Top	11	2462
RLAN Receive Frequency Range:	2412 MHz to 2462 MHz		
RLAN Receive Channels Tested:	**Channel ID**	**Channel Number**	**Channel Frequency (MHz)**
	Bottom	1	2412
	Middle	6	2437
	Top	11	2462
Maximum Peak Power Output (EIRP)	+22.1 dBm		

2.6. Support Equipment

No support equipment was used to exercise the EUT during testing.

3. Test Results

Reference:	FCC Part 15.247: 2006 Subpart C
Title:	Code of Federal Regulations, Part 15.247 (47CFR22) (Intentional Radiators operating within the bands 902-928 MHz, 2400-2483.5 MHz and 5725-5850 MHz)

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. Deviations from the Test Specification

There were no deviations from the test specifications.

5. Operation of the EUT during Testing

5.1. Operating Modes

The EUT was tested in the following operating modes, unless otherwise stated:

Transceiver mode for WLAN operation, transmitting on the bottom, middle or top channel, as required.

Standby mode.

Additional GPS and Bluetooth technology was in receive mode for all tests.

5.2. Configuration and Peripherals

The EUT was tested in the following configuration:

Powered by a 12 V DC vehicle battery and connected to a support laptop via USB.

The EUT has two antenna options for the 802.11 operation.
The two options are an integral antenna and an external antenna. The declared EIRP is the same for both antenna options.
Measurements of the EIRP and spurious emissions pre-scans were performed with both antenna options to verify similar levels.

Final radiated measurements were performed with the integral antenna configuration.
Conducted antenna port measurements were performed on the external antenna unit.

6. Summary of Test Results

Range of Measurements	Specification Reference	Port Type	Compliancy Status
Idle Mode Radiated Spurious Emissions	C.F.R. 47 FCC Part 15: 2005 Section 15.109	Antenna	Complied
Transmitter Minimum 6 dB Bandwidth	C.F.R. 47 FCC Part 15: 2006 Section 15.247(a)(2)	Antenna Terminals	Complied
Transmitter 20 dB Bandwidth	C.F.R. 47 FCC Part 15: 2006 Section 2.1049	Antenna Terminals	Complied
Transmitter Peak Power Spectral Density	C.F.R. 47 FCC Part 15: 2006 Section 15.247(e)	Antenna Terminals	Complied
Transmitter Maximum Peak Output Power	C.F.R. 47 FCC Part 15: 2006 Section 15.247(b)(3)	Antenna Terminals	Complied
Transmitter Conducted Emissions	C.F.R. 47 FCC Part 15: 2006 Section 15.247 (d)	Antenna Terminals	Complied
Transmitter Radiated Emissions	C.F.R. 47 FCC Part 15: 2006 Sections 15.247(d) & 15.209(a)	Antenna	Complied
Transmitter Band Edge Conducted Emissions	C.F.R. 47 FCC Part 15: 2006 Section 15.247(d)	Antenna Terminals	Complied
Transmitter Band Edge Radiated Emissions	C.F.R. 47 FCC Part 15: 2006 Sections 15.247(d) & 15.209(a)	Antenna	Complied

Note: The Idle Mode Radiated Spurious Emissions test to FCC part 15.109 is also a test of the GPS receiver because the receiver was active throughout all tests.

6.1. Location of Tests

All the measurements described in this report were performed at the premises of
RFI Global Services Ltd, Ewhurst Park, Ramsdell, Basingstoke, Hampshire, RG26 5RQ, UK.

7. Measurements, Examinations and Derived Results

7.1. General Comments

This section contains test results only.

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.

7.2. Test Results

7.2.1. Receiver Radiated Spurious Emissions: Section 15.109

The EUT was configured for radiated emission testing, as described in section 9 of this report.

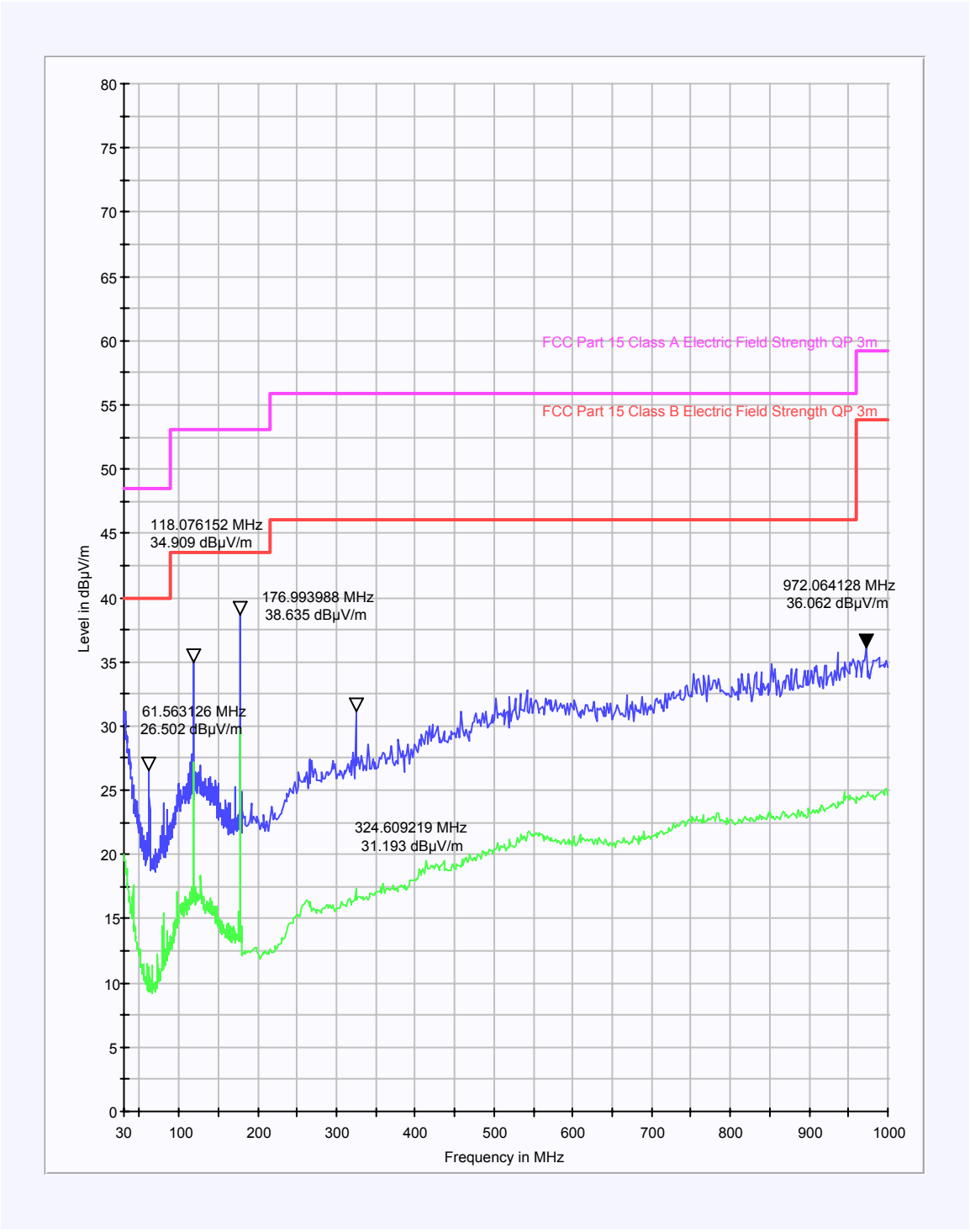
Tests were performed to identify the maximum receiver or standby radiated emission levels.

Results:

Electric Field Strength Measurements (Frequency Range: 30 MHz to 1000 MHz)

Frequency (MHz)	Antenna Polarity	Q-P Level (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Result
61.633	Vertical	21.9	40.0	18.1	Complied
117.976	Vertical	30.3	43.5	13.2	Complied
176.953	Vertical	27.5	43.5	16.0	Complied
324.400	Horizontal	30.1	46.0	15.9	Complied
984.208	Vertical	43.9	54.0	10.1	Complied

Receiver Radiated Spurious Emissions: Section 15.109 (Continued)



Note: This plot is a pre-scan and for indication purposes only. For final measurements, see accompanying tables.

7.2.2. Receiver Radiated Spurious Emissions: Section 15.109

Results:

Electric Field Strength Measurements (Frequency Range: 1 GHz to 26 GHz)

Highest Peak Level:

Frequency (GHz)	Antenna Polarity	Detector Level (dBμV)	Transducer Factor (dB)	Actual Level (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Result
16.256513	Vertical	44.4	4.8	49.2	74.0	24.8	Complied

Highest Average Level:

Frequency (GHz)	Antenna Polarity	Detector Level (dBμV)	Transducer Factor (dB)	Actual Level (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Result
16.256513	Vertical	44.4	4.8	49.2	54.0	4.8	Complied

Note(s):

1. *No emissions were observed above the system noise floor, therefore the highest level of noise floor was measured with a peak detector and is shown above, compared to the peak and average limits.*
2. *The emission observed on the plots below at 10.693 GHz is a known local ambient signal and is also below the specified limit.*

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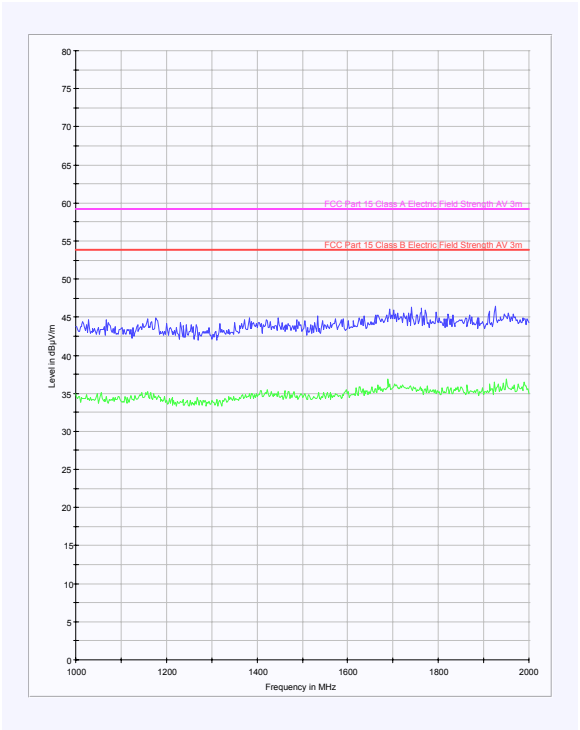
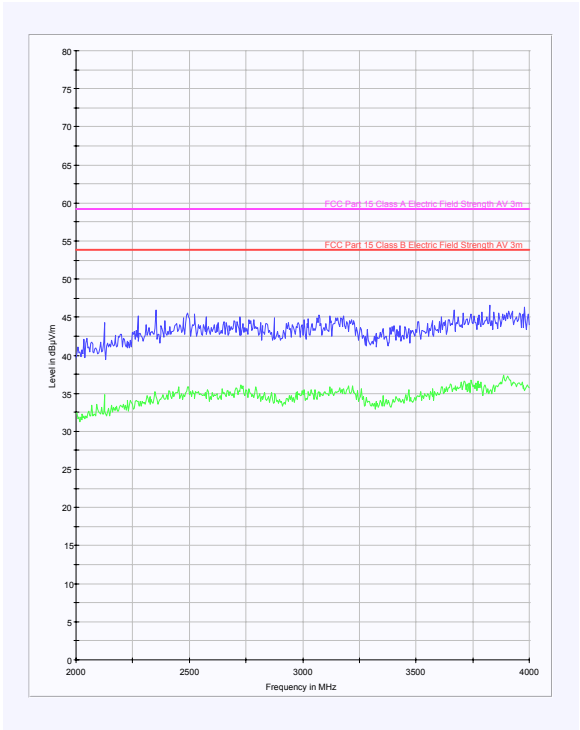
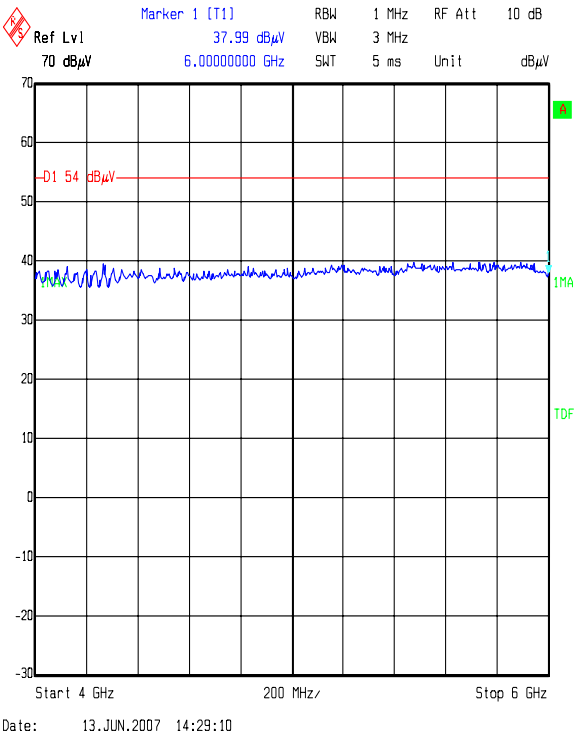
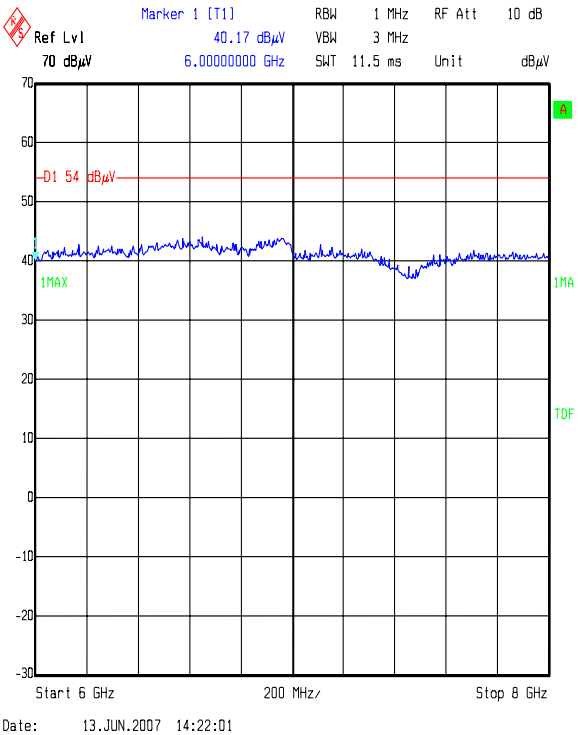
Receiver Radiated Spurious Emissions: Section 15.109 (Continued)





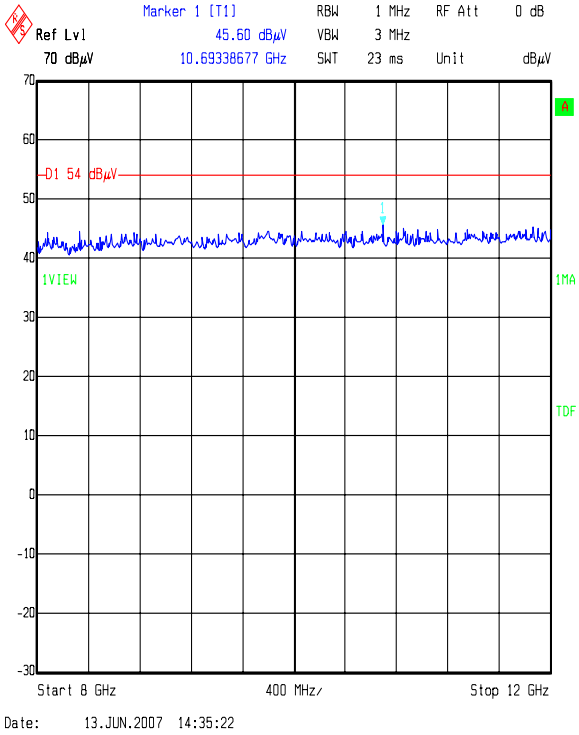


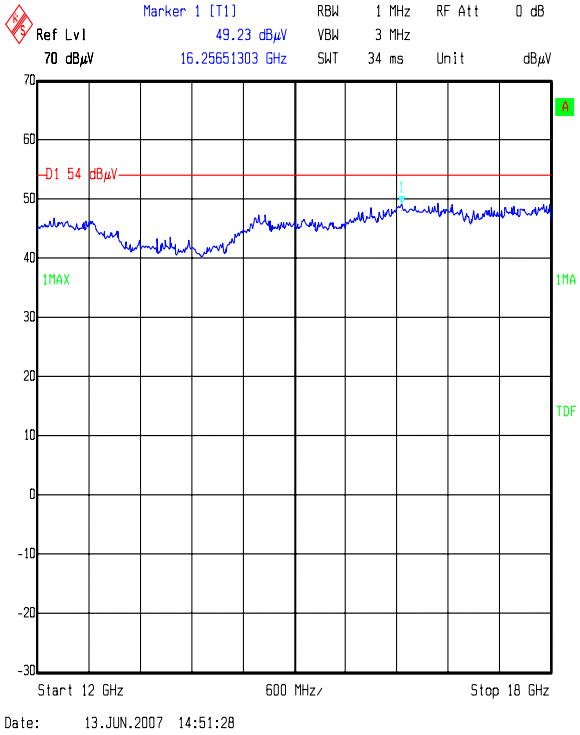


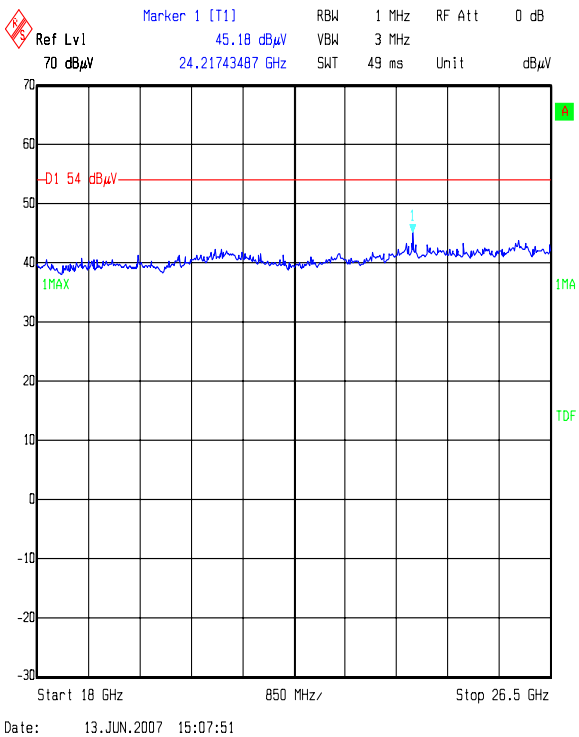
Note: These plots are pre-scans and for indication purposes only. For final measurements, see accompanying tables.

Test of: Ezurio Ltd
Datalogger
To: FCC Part 15.247: 2006 (Subpart C)

Receiver Radiated Spurious Emissions: Section 15.109 (Continued)







Note: These plots are pre-scans and for indication purposes only. For final measurements, see accompanying tables.

7.2.3. Transmitter Minimum 6 dB Bandwidth: Section 15.247(a)(2)

The EUT was configured for 6 dB bandwidth measurements, as described in section 9 of this report.

Tests were performed to identify the 6 dB bandwidth.

Results: - DSSS BPSK

Channel	Transmitter 6 dB Bandwidth (MHz)	Limit (MHz)	Margin (MHz)	Result
Bottom	10.030	≥0.5	9.530	Complied
Middle	10.100	≥0.5	9.400	Complied
Top	10.100	≥0.5	9.400	Complied

Results: - DSSS QPSK

Channel	Transmitter 6 dB Bandwidth (MHz)	Limit (MHz)	Margin (MHz)	Result
Bottom	9.890	≥ 0.5	9.390	Complied
Middle	9.890	≥ 0.5	9.390	Complied
Top	9.820	≥ 0.5	9.320	Complied

Results: - DSSS CCK

Channel	Transmitter 6 dB Bandwidth (MHz)	Limit (MHz)	Margin (MHz)	Result
Bottom	10.381	≥ 0.5	9.881	Complied
Middle	10.451	≥ 0.5	9.951	Complied
Top	10.381	≥ 0.5	9.881	Complied

Transmitter Minimum 6 dB Bandwidth: Section 15.247(a)(2) (Continued)

Results: - OFDM BPSK

Channel	Transmitter 6 dB Bandwidth (MHz)	Limit (MHz)	Margin (MHz)	Result
Bottom	16.483	≥ 0.5	15.983	Complied
Middle	16.483	≥ 0.5	15.983	Complied
Top	16.483	≥ 0.5	15.983	Complied

Results: - OFDM QPSK

Channel	Transmitter 6 dB Bandwidth (MHz)	Limit (MHz)	Margin (MHz)	Result
Bottom	16.553	≥ 0.5	16.053	Complied
Middle	16.483	≥ 0.5	15.983	Complied
Top	16.553	≥ 0.5	16.053	Complied

Results: - OFDM 16QAM

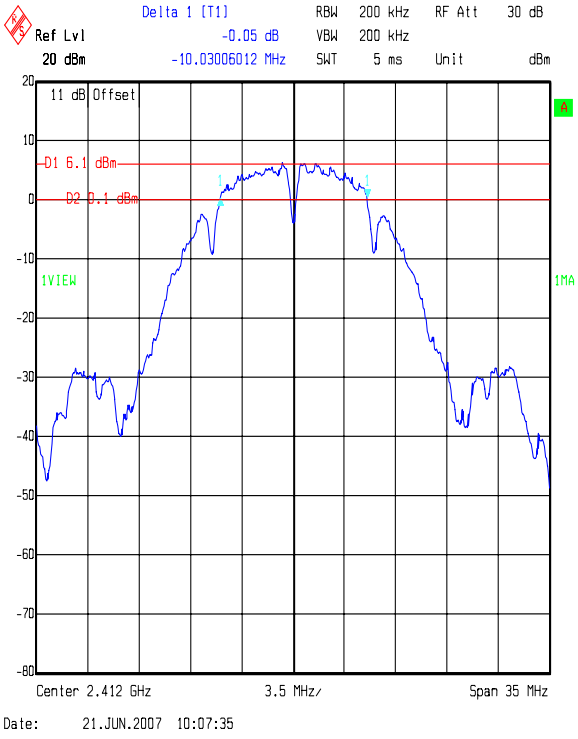
Channel	Transmitter 6 dB Bandwidth (MHz)	Limit (MHz)	Margin (MHz)	Result
Bottom	16.553	≥ 0.5	16.053	Complied
Middle	16.553	≥ 0.5	16.053	Complied
Top	16.553	≥ 0.5	16.053	Complied

Results: - OFDM 64QAM

Channel	Transmitter 6 dB Bandwidth (MHz)	Limit (MHz)	Margin (MHz)	Result
Bottom	16.553	≥ 0.5	16.053	Complied
Middle	16.553	≥ 0.5	16.053	Complied
Top	16.483	≥ 0.5	15.983	Complied

Transmitter Minimum 6 dB Bandwidth: Section 15.247(a)(2) (Continued)

DSSS BPSK – Bottom Channel



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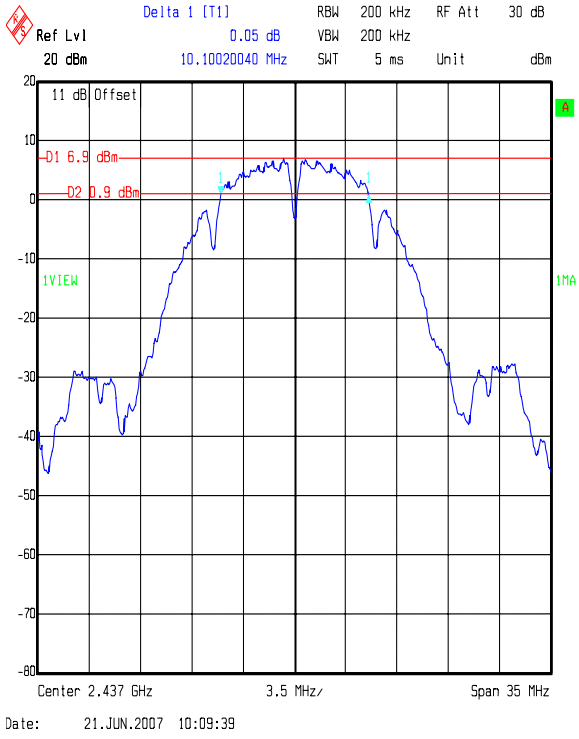
DSSS BPSK – Middle Channel



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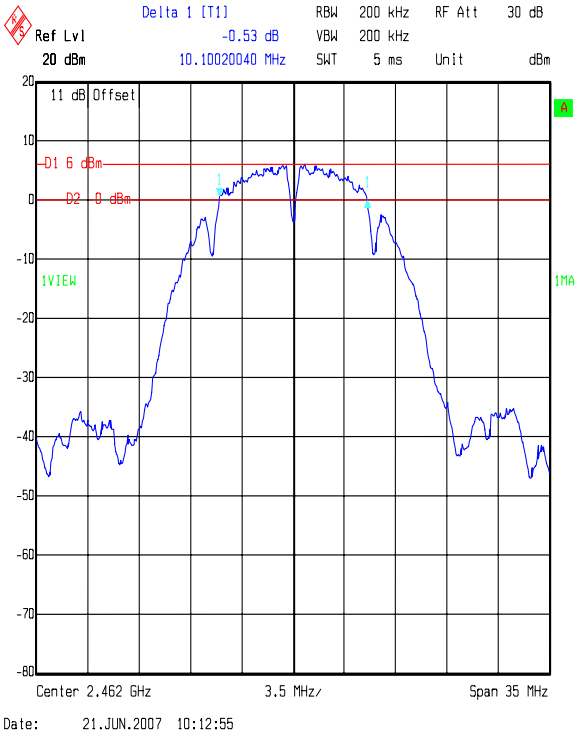
DSSS BPSK – Top Channel



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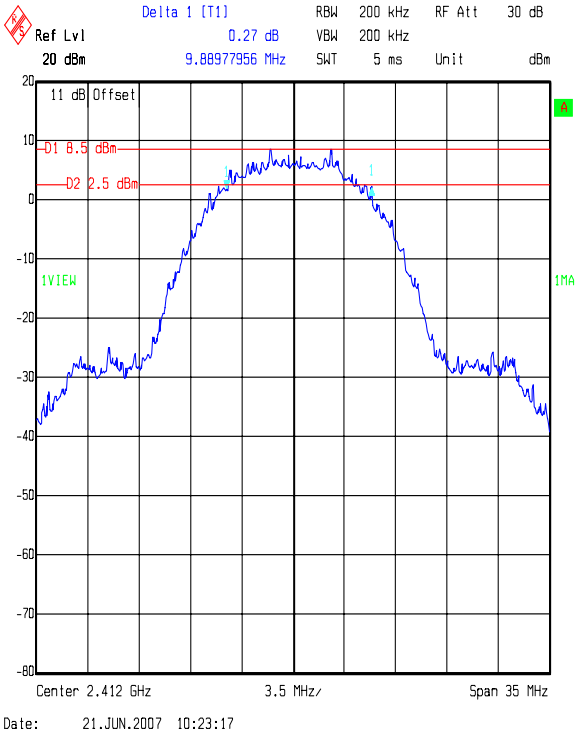
Transmitter Minimum 6 dB Bandwidth: Section 15.247(a)(2) (Continued)

DSSS QPSK – Bottom Channel



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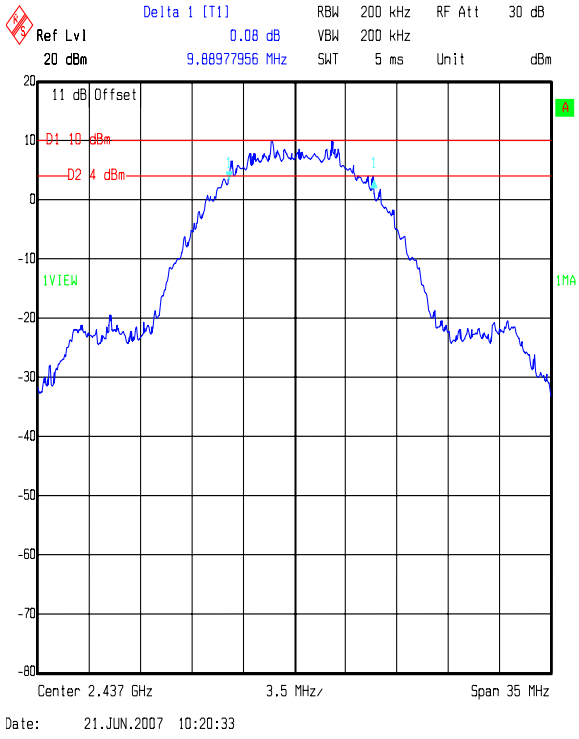
DSSS QPSK – Middle Channel



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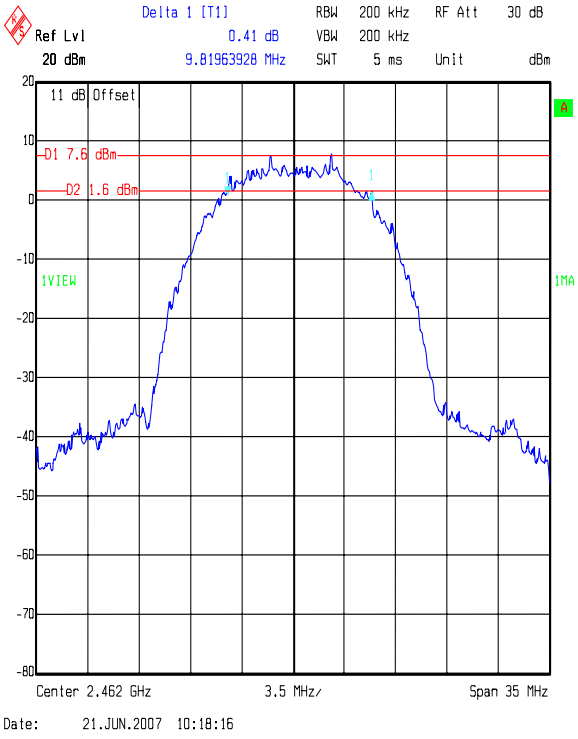

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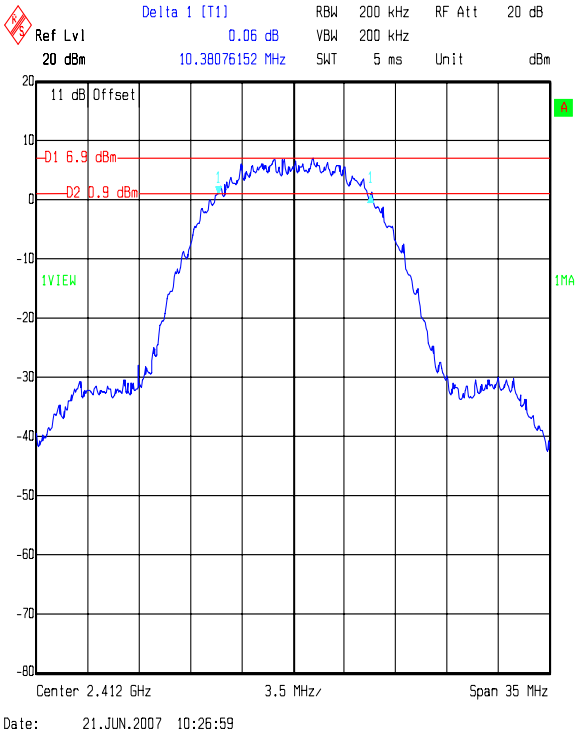
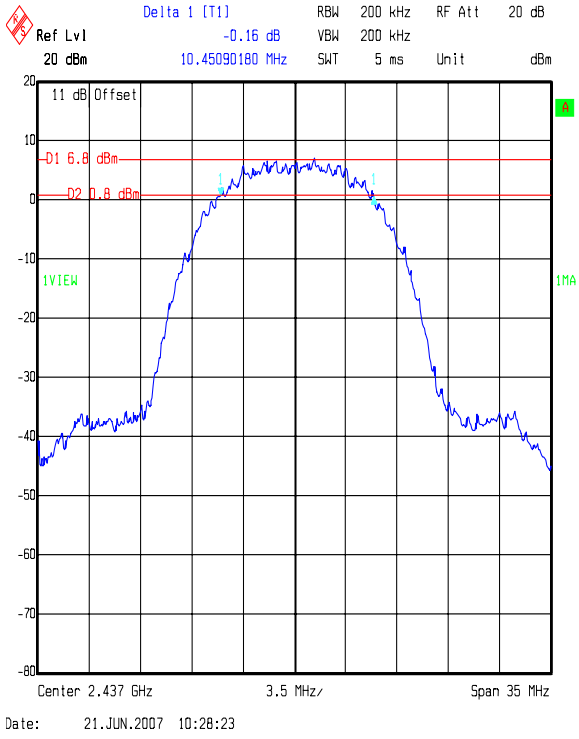
Transmitter Minimum 6 dB Bandwidth: Section 15.247(a)(2) (Continued)

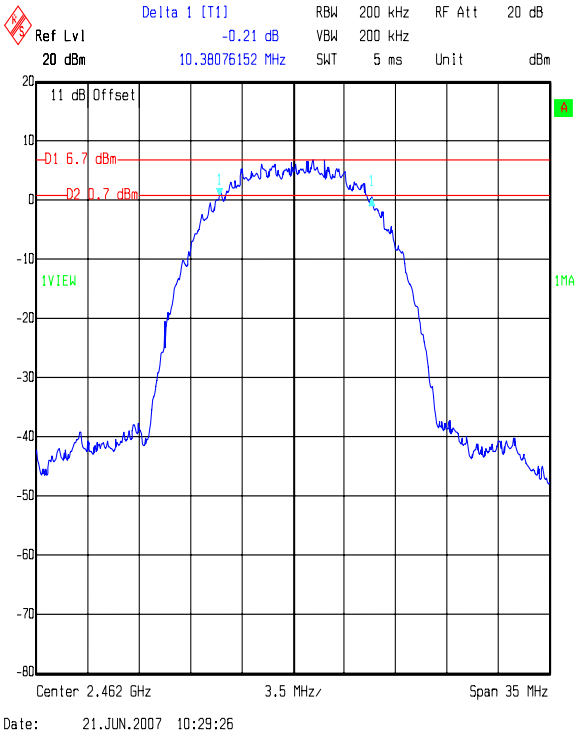
DSSS CCK – Bottom Channel



DSSS CCK – Middle Channel

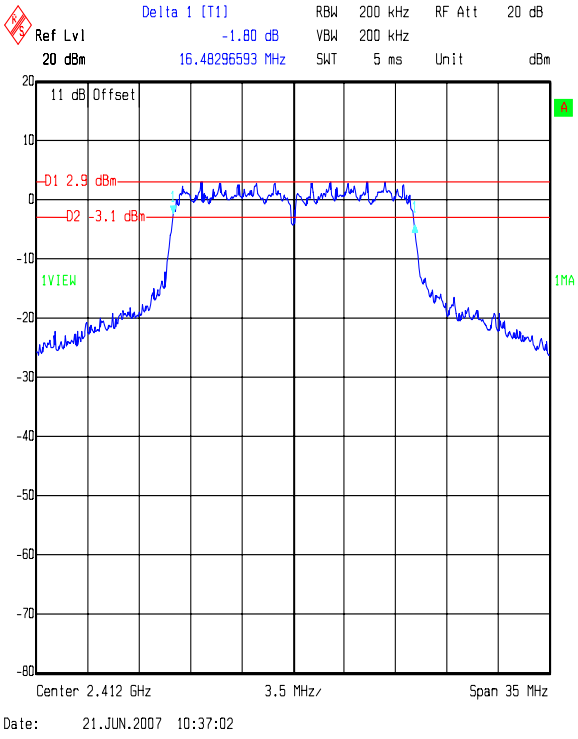


DSSS CCK – Top Channel

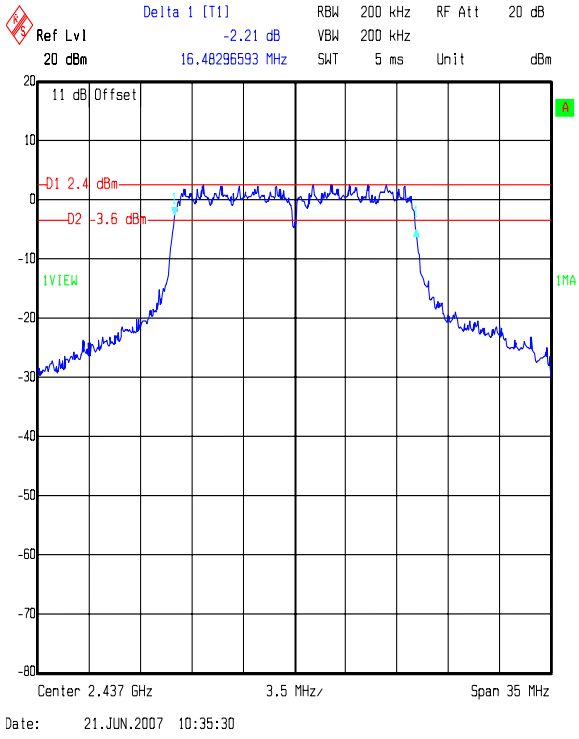


Transmitter Minimum 6 dB Bandwidth: Section 15.247(a)(2) (Continued)

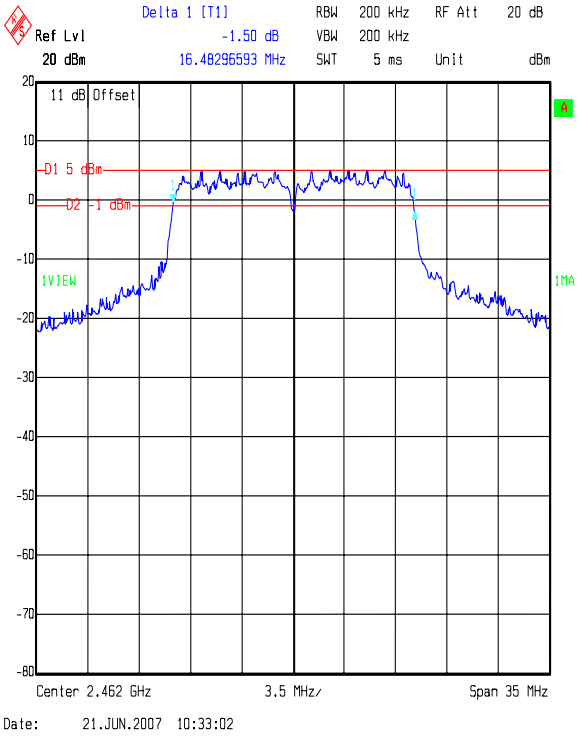
OFDM BPSK – Bottom Channel



OFDM BPSK – Middle Channel

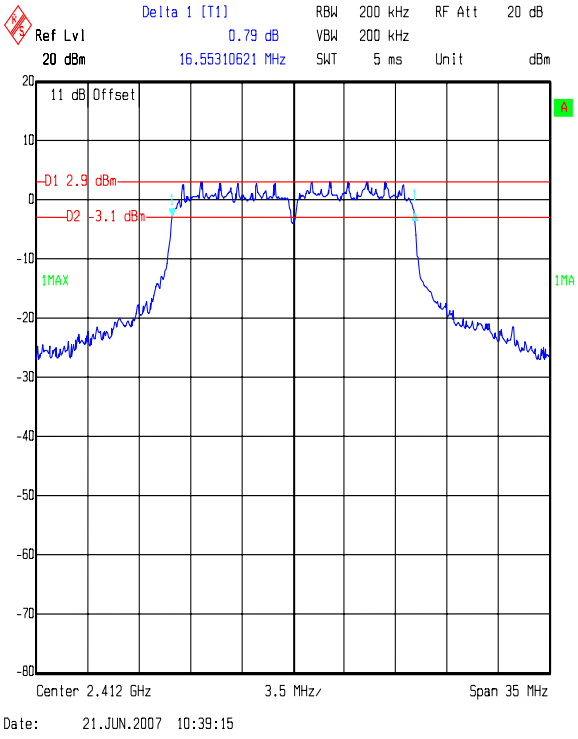


OFDM BPSK – Top Channel



Transmitter Minimum 6 dB Bandwidth: Section 15.247(a)(2) (Continued)

OFDM QPSK – Bottom Channel



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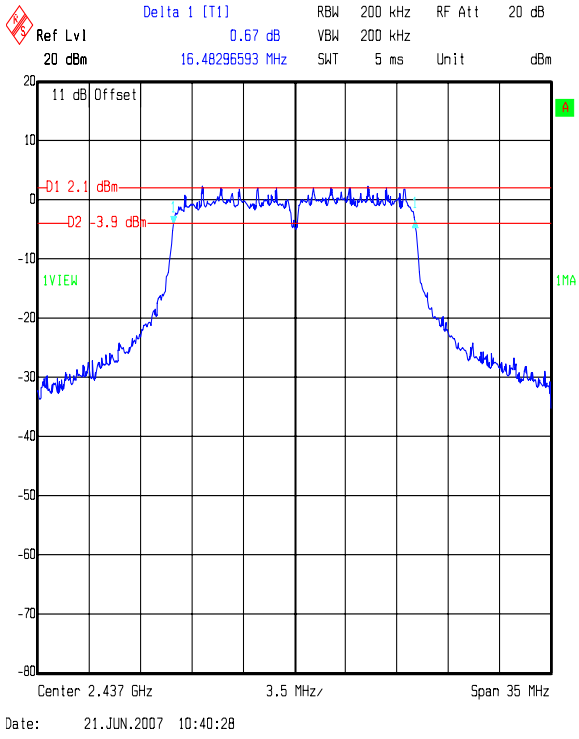
OFDM QPSK – Middle Channel



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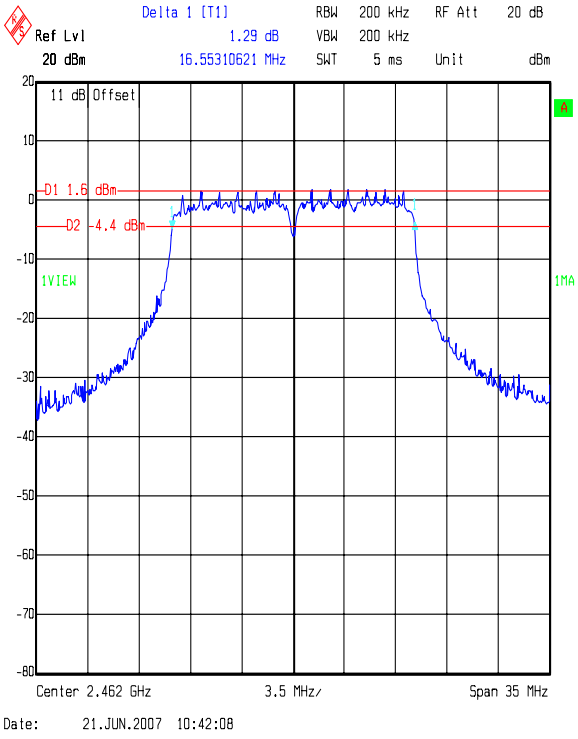
OFDM QPSK – Top Channel



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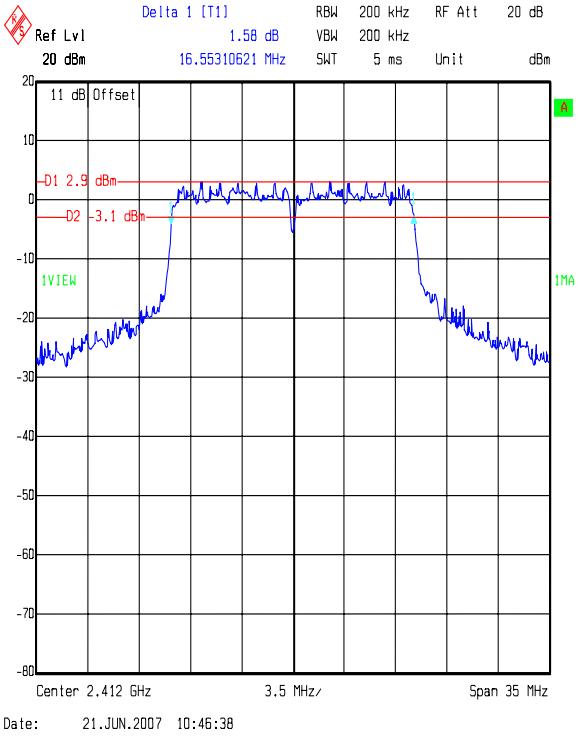
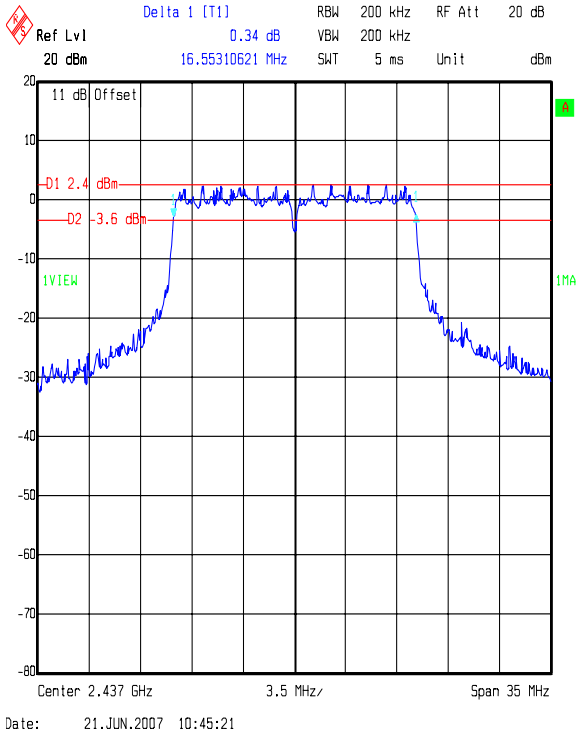
Transmitter Minimum 6 dB Bandwidth: Section 15.247(a)(2) (Continued)

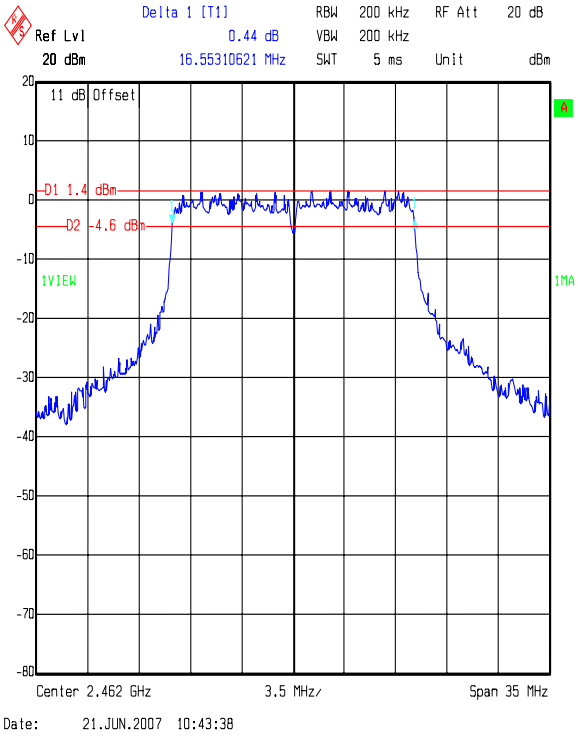
OFDM 16QAM – Bottom Channel



OFDM 16QAM – Middle Channel

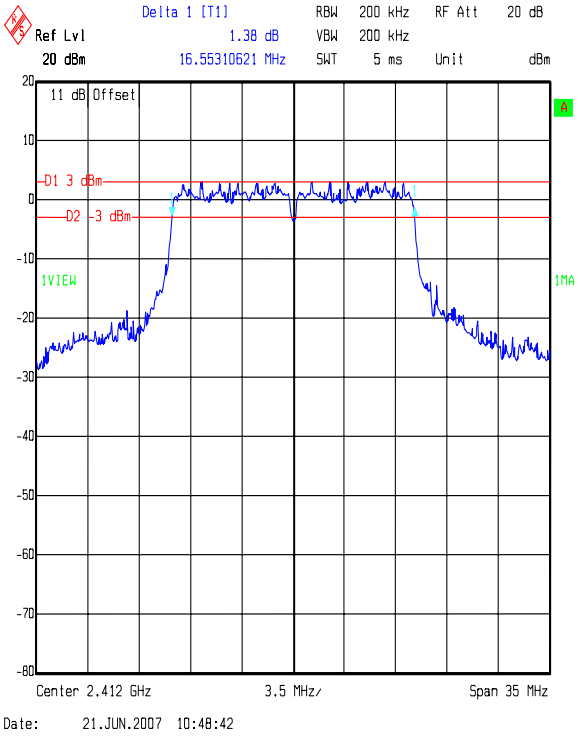


OFDM 16QAM – Top Channel

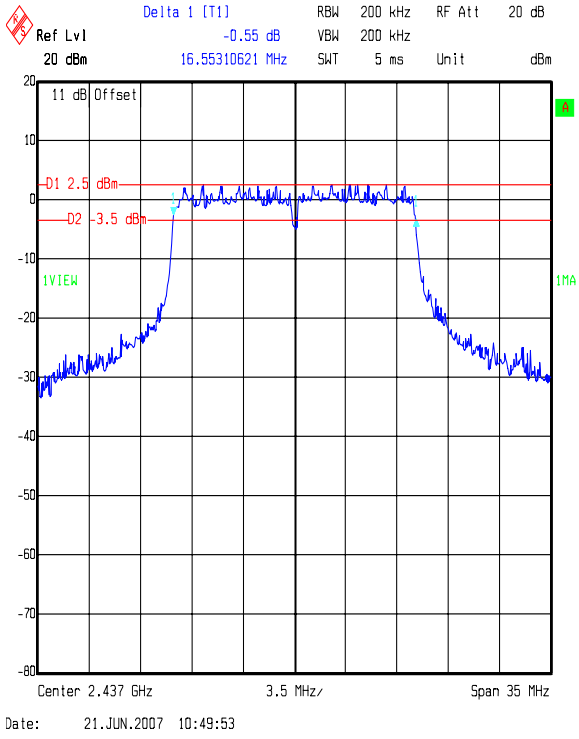


Transmitter Minimum 6 dB Bandwidth: Section 15.247(a)(2) (Continued)

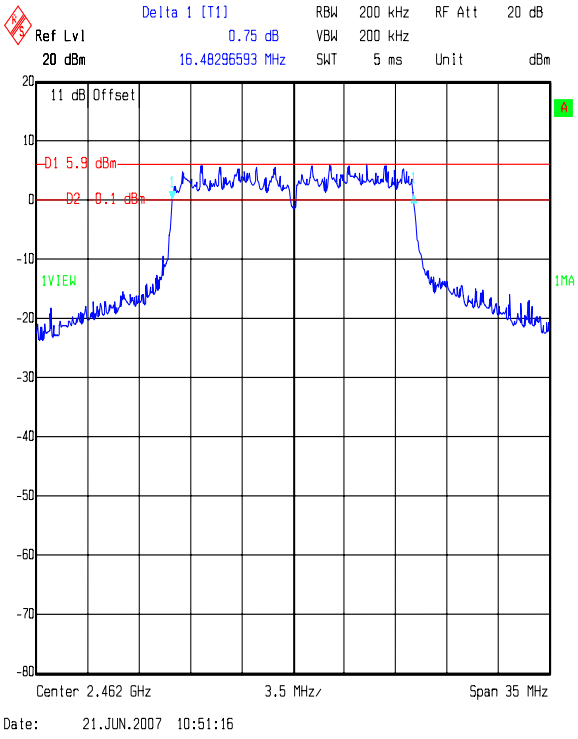
OFDM 64QAM – Bottom Channel



OFDM 64QAM – Middle Channel



OFDM 64QAM – Top Channel



7.2.4. Transmitter 20 dB Bandwidth: Section 2.1049

The EUT was configured for 20 dB bandwidth measurements as described in section 9 of this report.

Tests were performed to identify the 20 dB bandwidth.

Results: - DSSS BPSK

Transmitter 20 dB Bandwidth (kHz)
17394.790

Results: - DSSS QPSK

Transmitter 20 dB Bandwidth (kHz)
16412.826

Results: - DSSS CCK

Transmitter 20 dB Bandwidth (kHz)
15781.563

Transmitter 20 dB Bandwidth: Section 2.1049 (Continued)

Results: - OFDM BPSK

Transmitter 20 dB Bandwidth (kHz)
19078.156

Results: - OFDM QPSK

Transmitter 20 dB Bandwidth (kHz)
18867.736

Results: - OFDM 16QAM

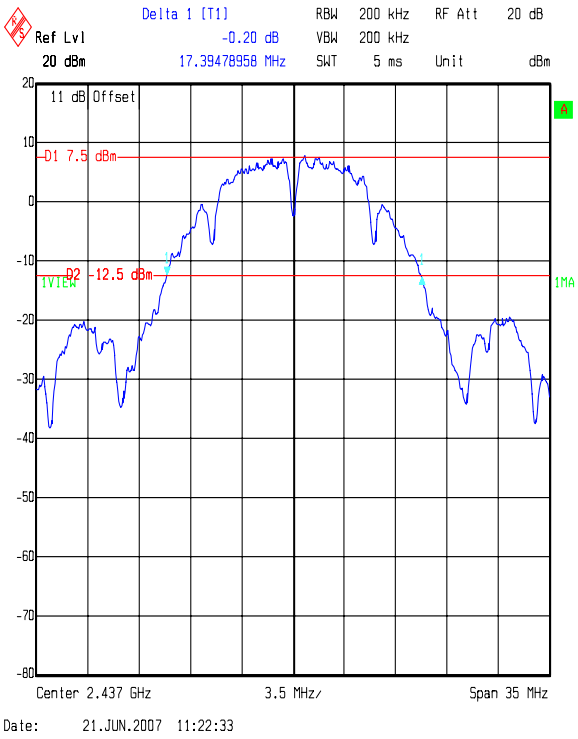
Transmitter 20 dB Bandwidth (kHz)
18867.736

Results: - OFDM 64QAM

Transmitter 20 dB Bandwidth (kHz)
18.587.174

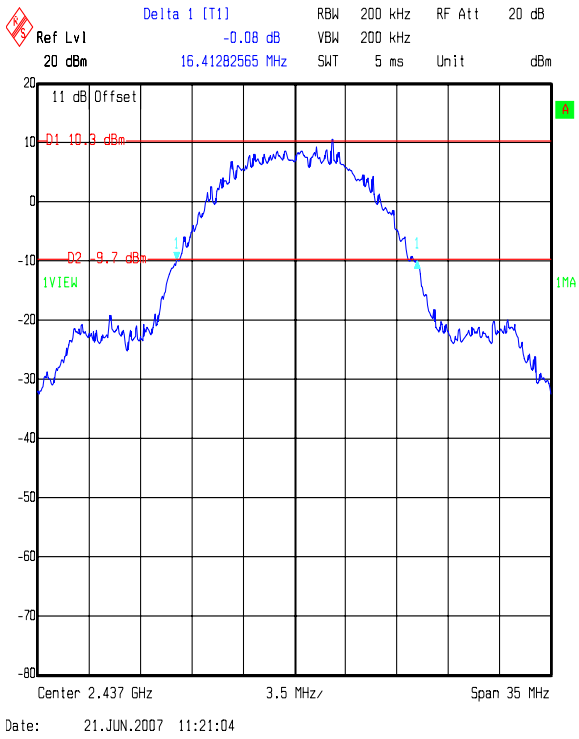
Transmitter 20 dB Bandwidth: Section 2.1049 (Continued)

DSSS BPSK



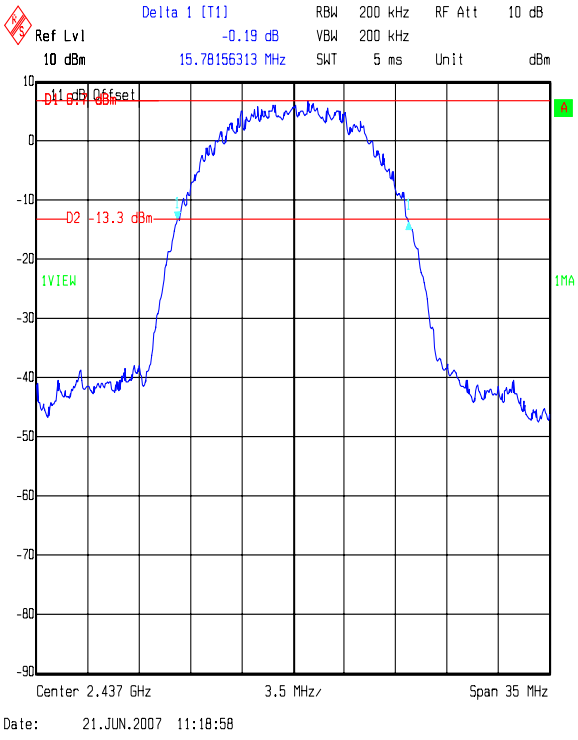
Date: 21.JUN.2007 11:22:33

DSSS QPSK



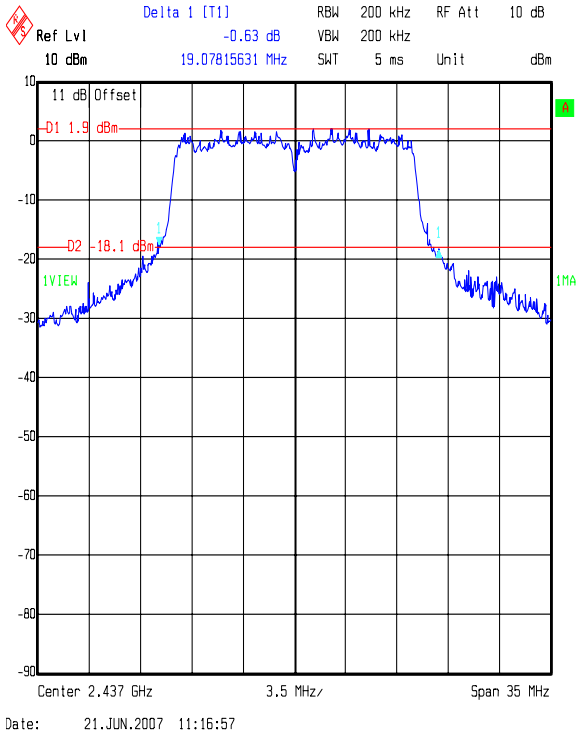
Date: 21.JUN.2007 11:21:04

DSSS CCK



Date: 21.JUN.2007 11:18:58

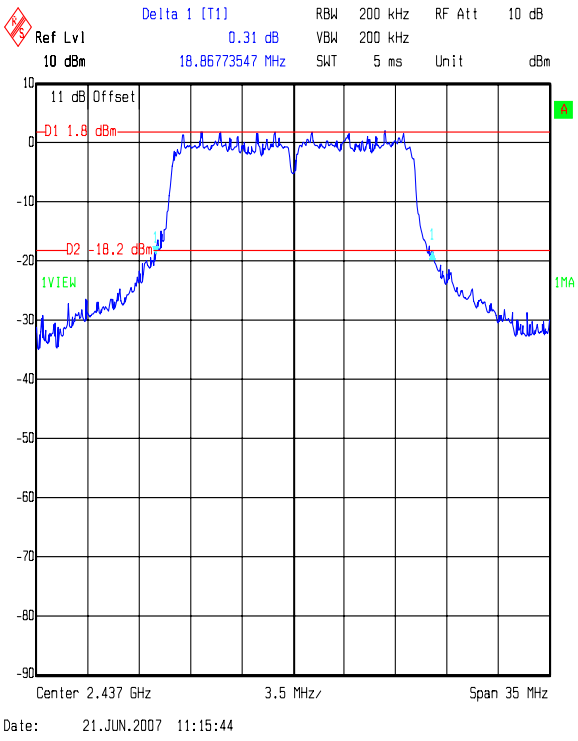
OFDM BPSK



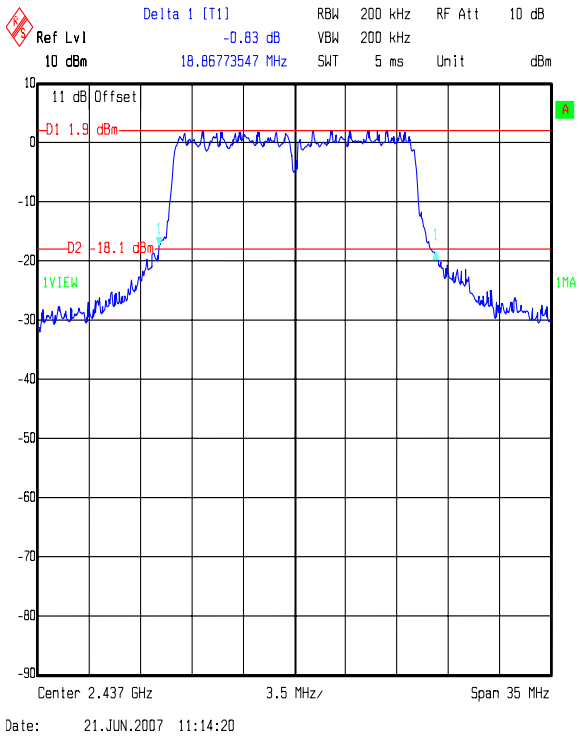
Date: 21.JUN.2007 11:16:57

Transmitter 20 dB Bandwidth: Section 2.1049 (Continued)

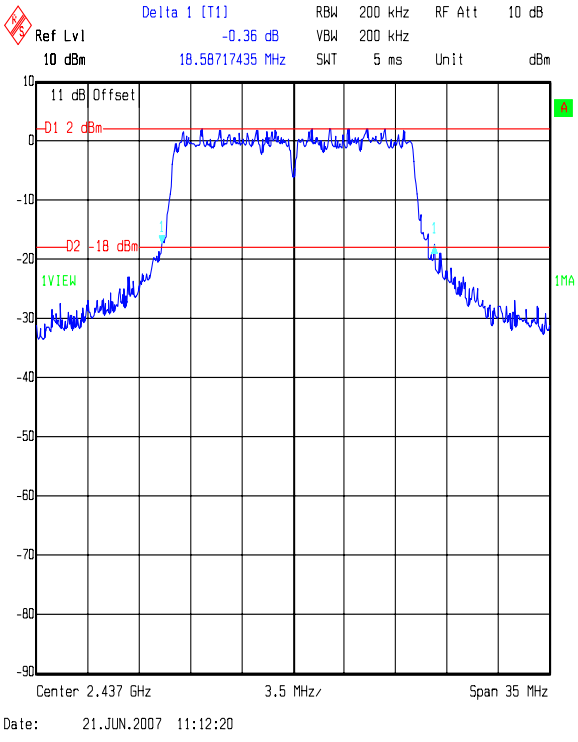
OFDM QPSK



OFDM 16QAM



OFDM 64QAM



7.2.5. Transmitter Peak Power Spectral Density: Section 15.247(e)

The EUT was configured for transmitter peak power spectral density measurements, as described in section 9 of this report.

Tests were performed to identify the transmitter peak power spectral density.

Results: - DSSS BPSK

Channel	Output Power (dBm/3 kHz)	Limit (dBm/3 kHz)	Margin (dB)	Result
Bottom	-8.1	10.0	18.1	Complied
Middle	-3.5	10.0	13.5	Complied
Top	-10.3	10.0	20.3	Complied

Results: - DSSS QPSK

Channel	Output Power (dBm/3 kHz)	Limit (dBm/3 kHz)	Margin (dB)	Result
Bottom	-8.8	10.0	18.8	Complied
Middle	-8.1	10.0	18.1	Complied
Top	-7.4	10.0	17.4	Complied

Results: - DSSS CCK

Channel	Output Power (dBm/3 kHz)	Limit (dBm/3 kHz)	Margin (dB)	Result
Bottom	-9.3	10.0	19.3	Complied
Middle	-4.4	10.0	14.4	Complied
Top	-9.5	10.0	19.5	Complied

Transmitter Peak Power Spectral Density: Section 15.247(e) (Continued)

Results: - OFDM BPSK

Channel	Output Power (dBm/3 kHz)	Limit (dBm/3 kHz)	Margin (dB)	Result
Bottom	-14.8	10.0	24.8	Complied
Middle	-14.3	10.0	24.3	Complied
Top	-16.2	10.0	26.2	Complied

Results: - OFDM QPSK

Channel	Output Power (dBm/3 kHz)	Limit (dBm/3 kHz)	Margin (dB)	Result
Bottom	-14.8	10.0	24.8	Complied
Middle	-14.8	10.0	24.8	Complied
Top	-15.6	10.0	25.6	Complied

Results: - OFDM 16QAM

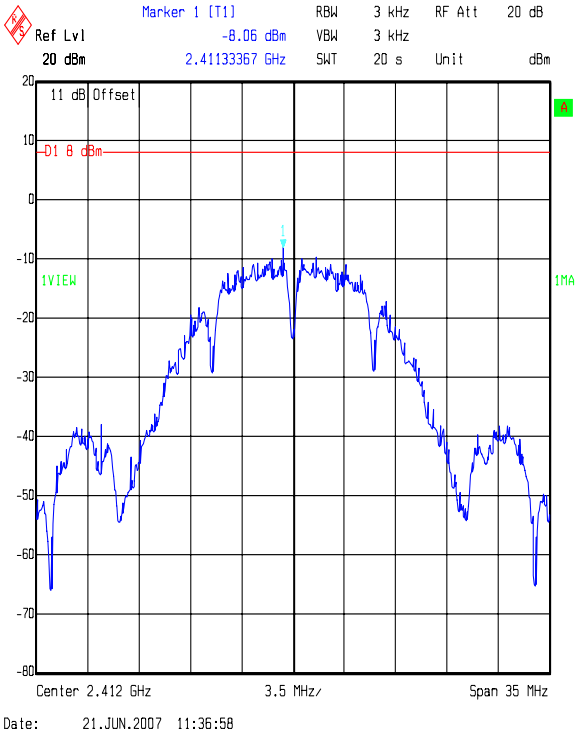
Channel	Output Power (dBm/3 kHz)	Limit (dBm/3 kHz)	Margin (dB)	Result
Bottom	-15.8	10.0	25.8	Complied
Middle	-16.1	10.0	26.1	Complied
Top	-16.8	10.0	26.8	Complied

Results: - OFDM 64QAM

Channel	Output Power (dBm/3 kHz)	Limit (dBm/3 kHz)	Margin (dB)	Result
Bottom	-20.2	10.0	30.2	Complied
Middle	-18.9	10.0	28.9	Complied
Top	-20.0	10.0	30.0	Complied

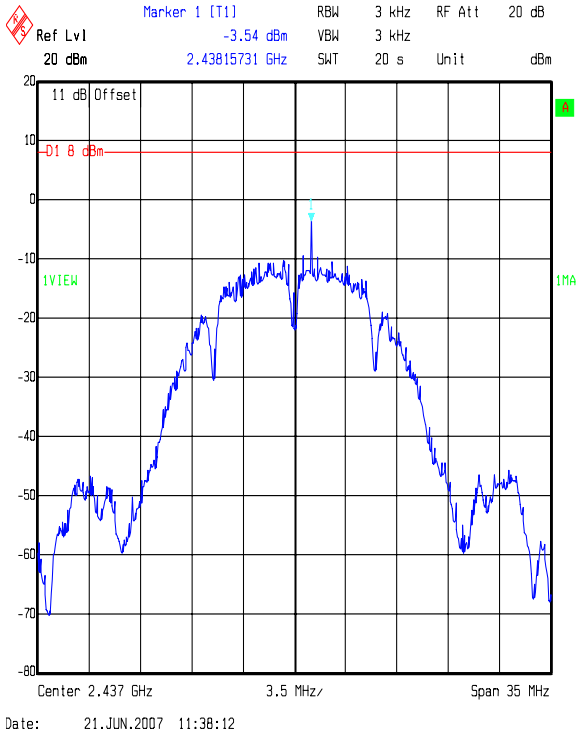
Transmitter Peak Power Spectral Density: Section 15.247(e) (Continued)

DSSS BPSK – Bottom Channel



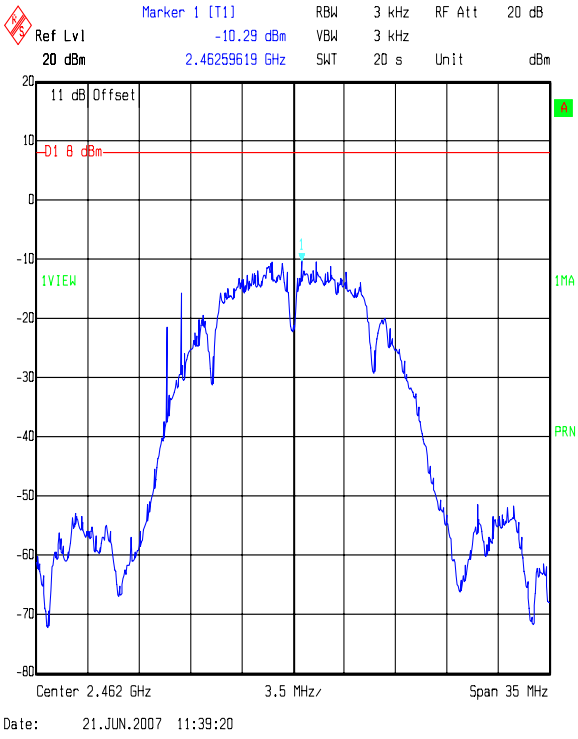
Date: 21.JUN.2007 11:36:58

DSSS BPSK – Middle Channel



Date: 21.JUN.2007 11:38:12

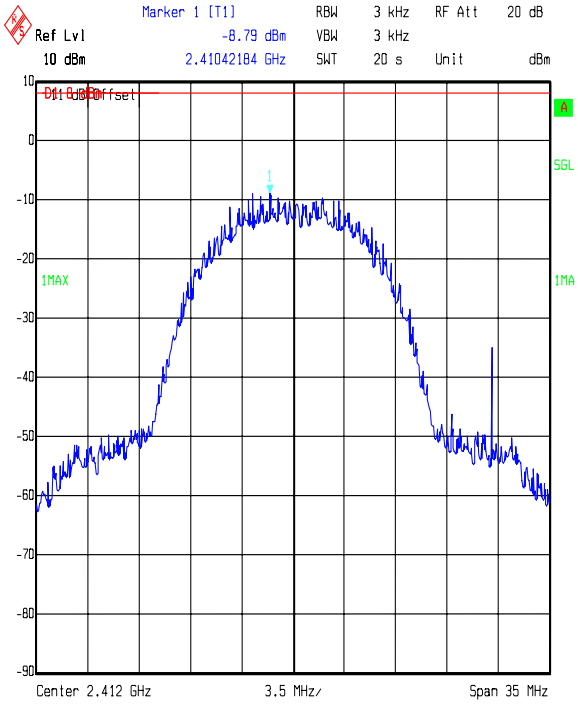
DSSS BPSK – Top Channel



Date: 21.JUN.2007 11:39:20

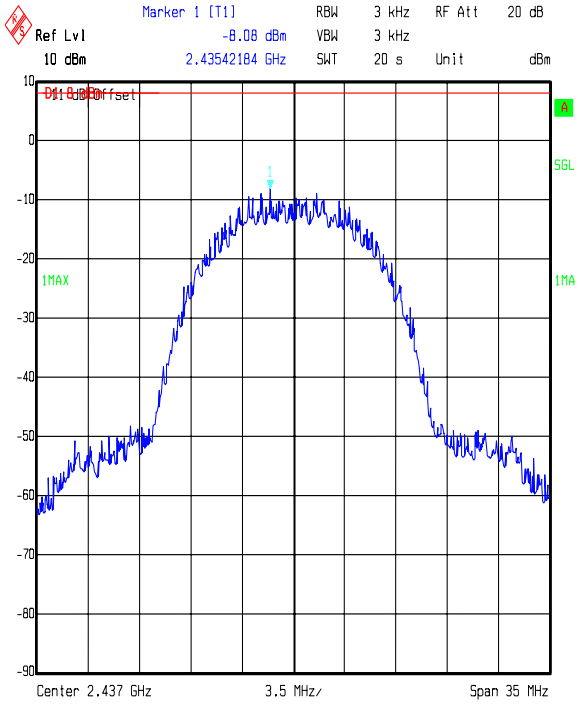
Transmitter Peak Power Spectral Density: Section 15.247(e) (Continued)

DSSS QPSK – Bottom Channel



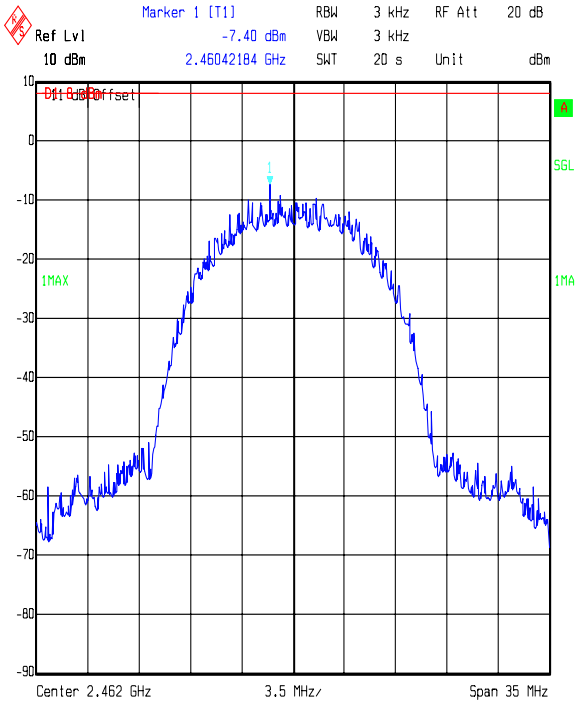
Date: 22.JUN.2007 09:06:16

DSSS QPSK – Middle Channel



Date: 22.JUN.2007 09:08:55

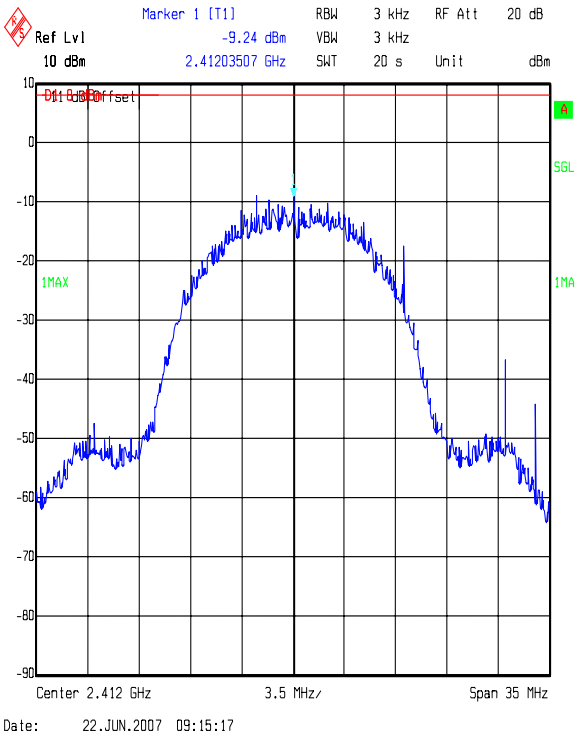
DSSS QPSK – Top Channel



Date: 22.JUN.2007 09:10:25

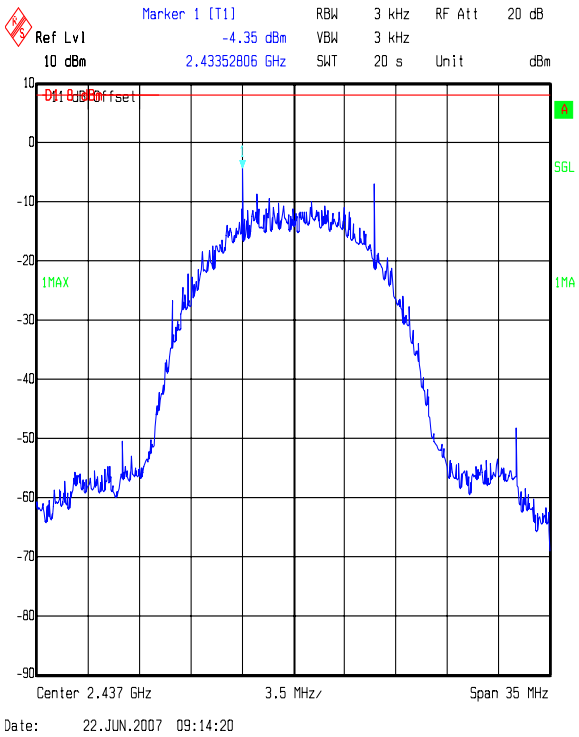
Transmitter Peak Power Spectral Density: Section 15.247(e) (Continued)

DSSS CCK – Bottom Channel



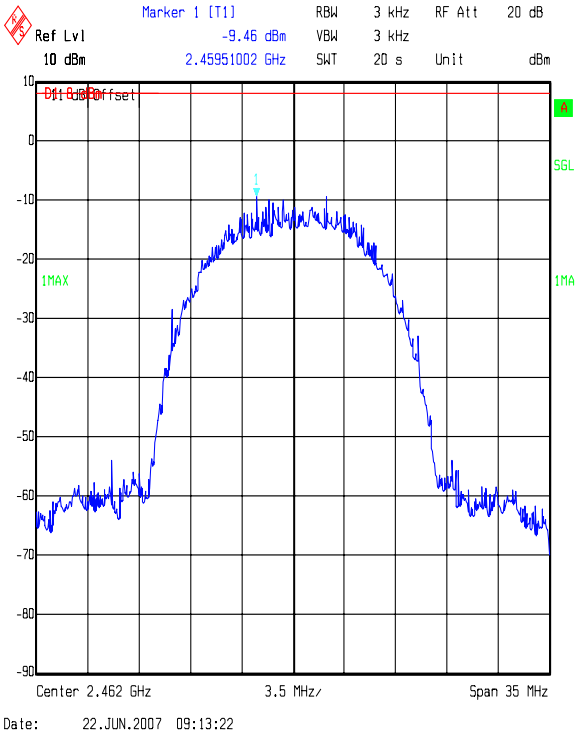
Date: 22.JUN.2007 09:15:17

DSSS CCK – Middle Channel



Date: 22.JUN.2007 09:14:20

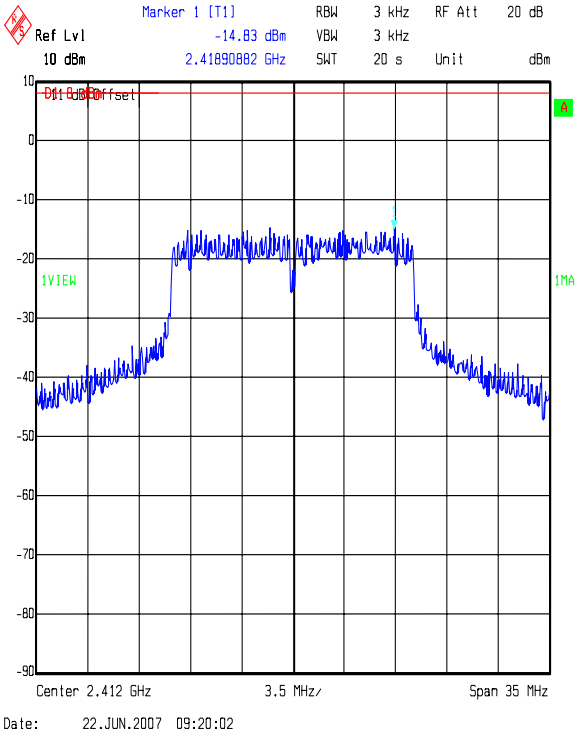
DSSS CCK – Top Channel



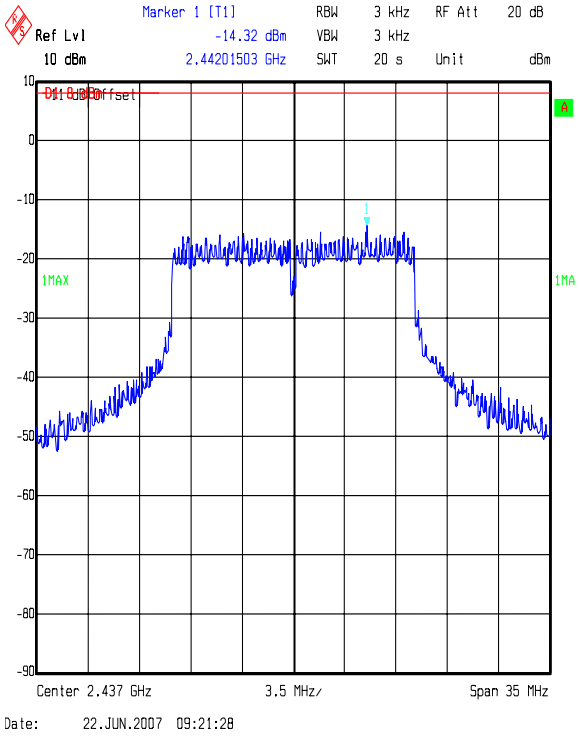
Date: 22.JUN.2007 09:13:22

Transmitter Peak Power Spectral Density: Section 15.247(e) (Continued)

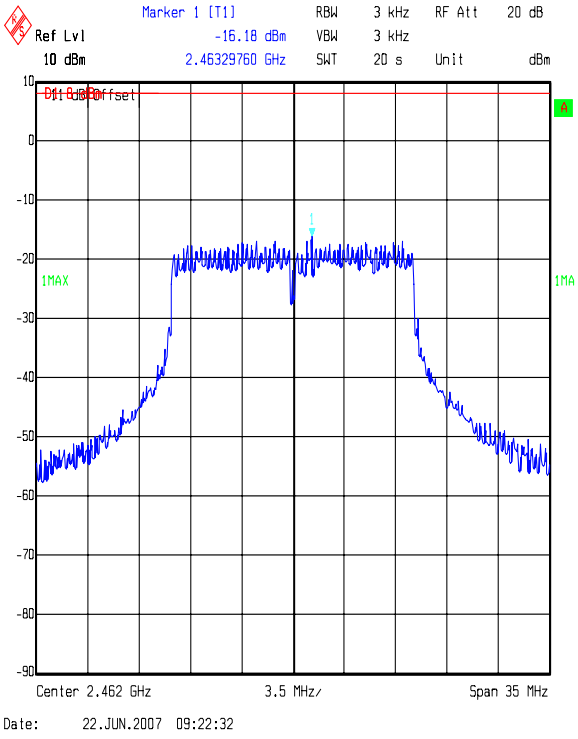
OFDM BPSK – Bottom Channel



OFDM BPSK – Middle Channel

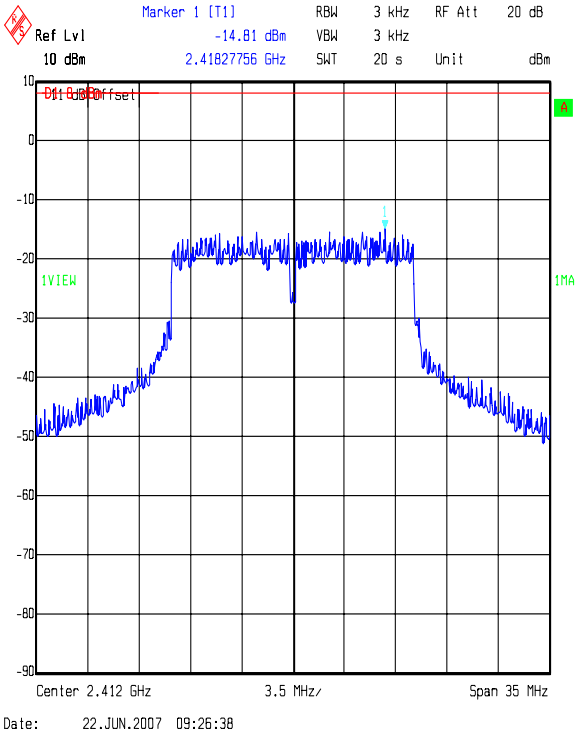


OFDM BPSK – Top Channel

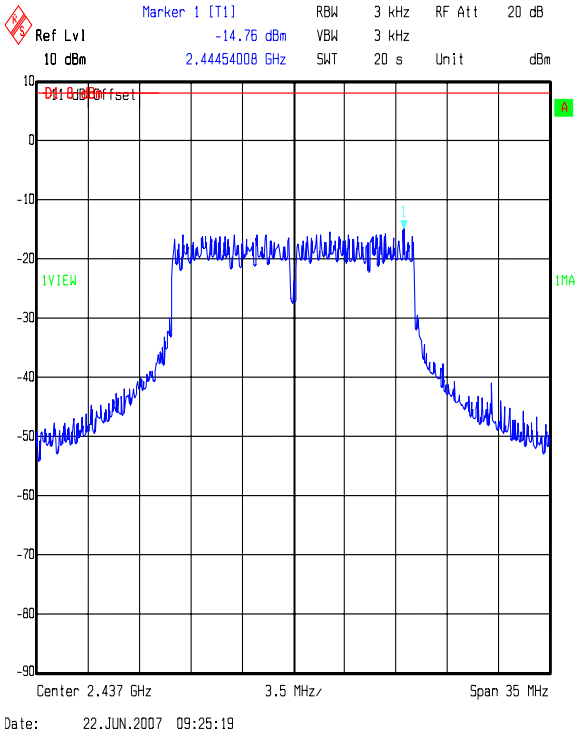


Transmitter Peak Power Spectral Density: Section 15.247(e) (Continued)

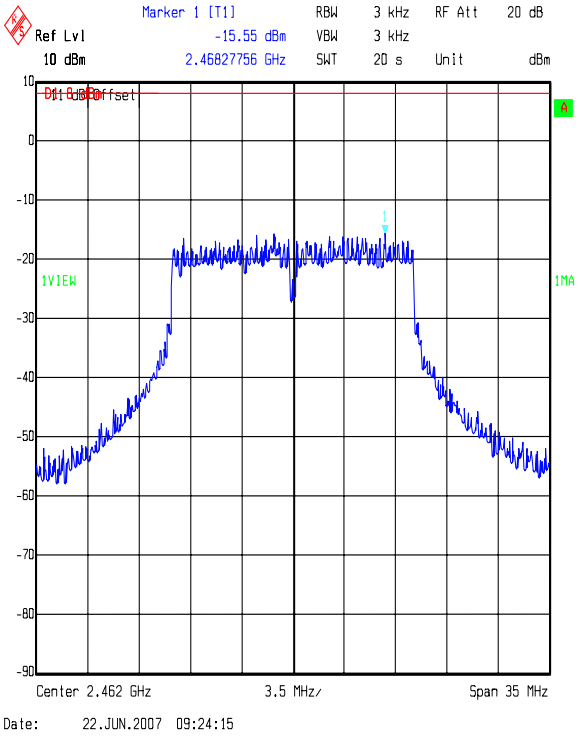
OFDM QPSK – Bottom Channel



OFDM QPSK – Middle Channel

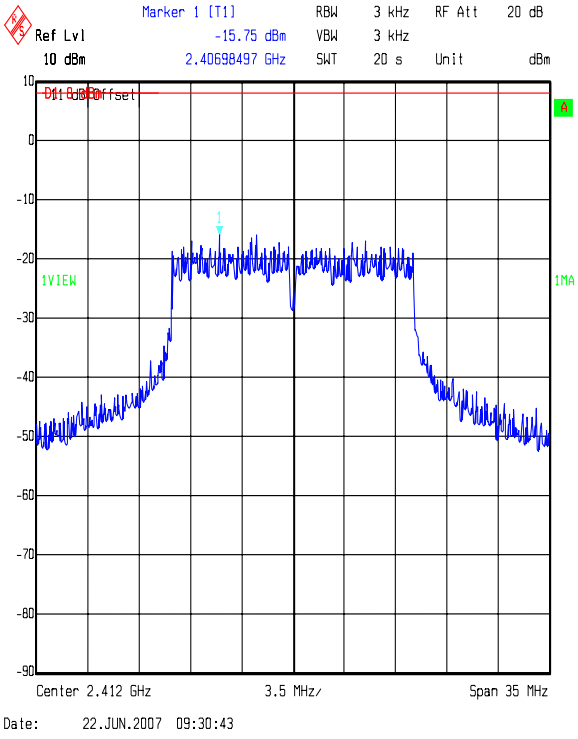


OFDM QPSK – Top Channel

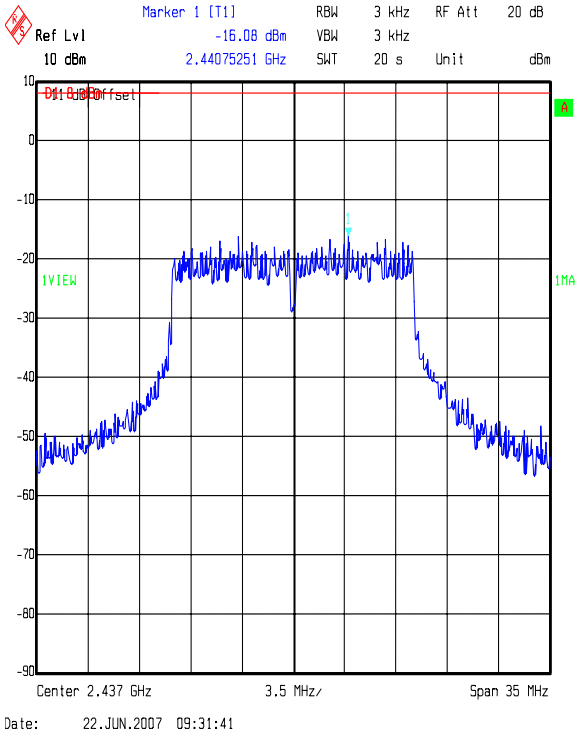


Transmitter Peak Power Spectral Density: Section 15.247(e) (Continued)

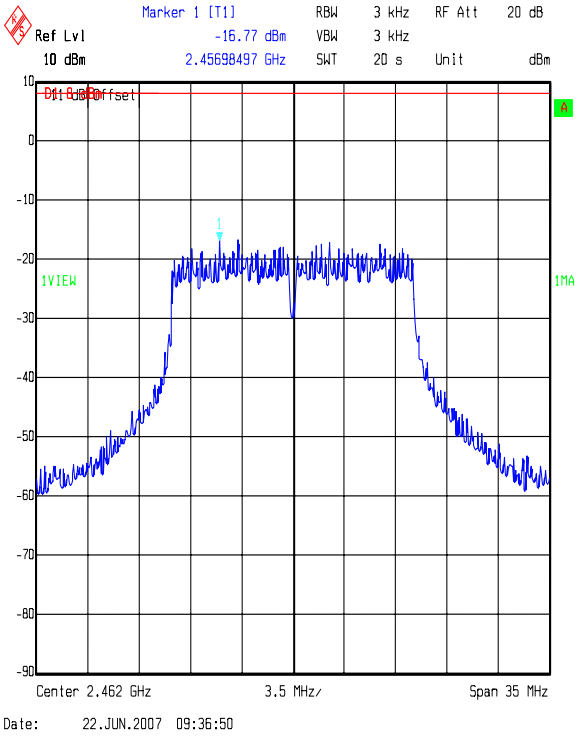
OFDM 16QAM – Bottom Channel



OFDM 16QAM – Middle Channel

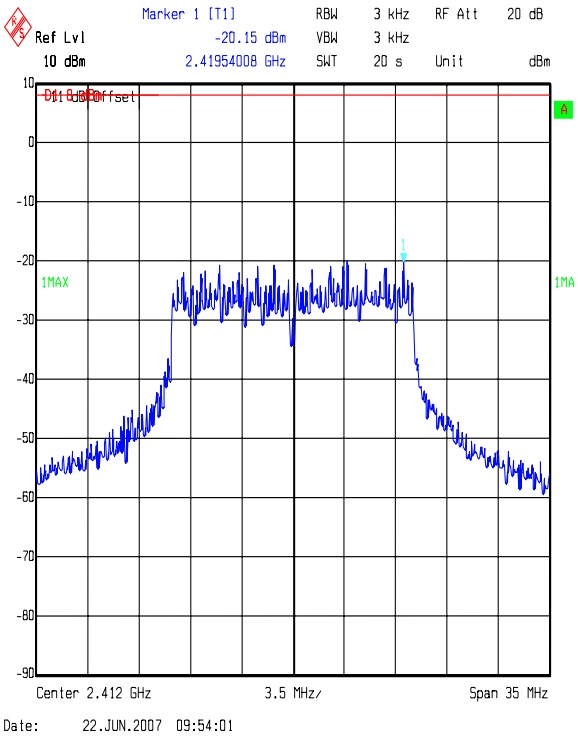


OFDM 16QAM – Top Channel

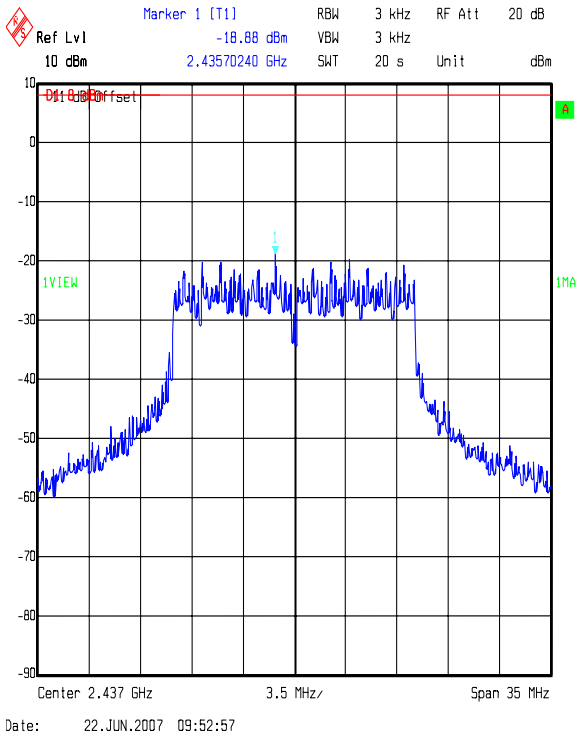


Transmitter Peak Power Spectral Density: Section 15.247(e) (Continued)

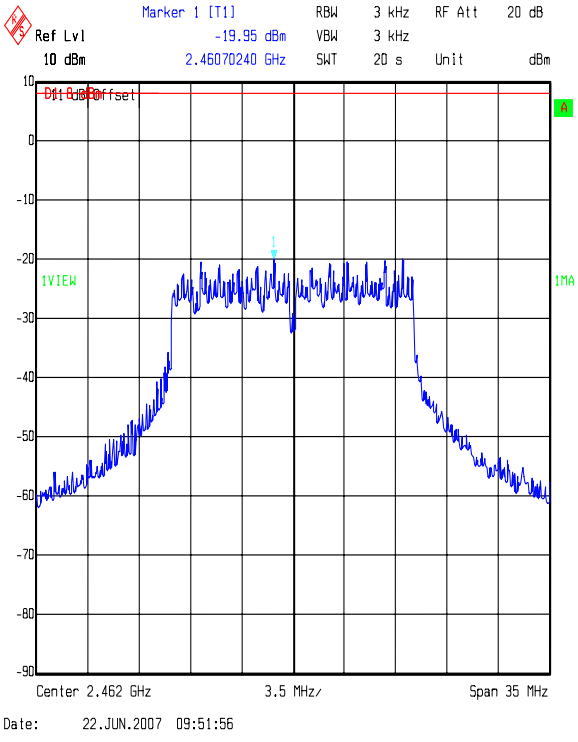
OFDM 64QAM – Bottom Channel



OFDM 64QAM – Middle Channel



OFDM 64QAM – Top Channel



7.2.6. Transmitter Maximum Peak Output Power: Section 15.247(b)(3)

The EUT was configured for transmitter peak output power measurements, as described in section 9 of this report.

Tests were performed to identify the transmitter maximum peak output power (ERP) of the EUT.

Results: - DSSS BPSK

Battery Powered Devices

Channel	Conducted RF O/P Power (dBm)	Stated Antenna Gain (dB)	EIRP (dBm)	Limit (dBm)	Margin (dB)	Result
Bottom	17.1	3.0	20.1	30.0	9.9	Complied
Middle	15.9	3.0	18.9	30.0	21.1	Complied
Top	16.7	3.0	19.7	30.0	20.3	Complied

Battery Powered Devices – DSSS QPSK

Channel	Conducted RF O/P Power (dBm)	Stated Antenna Gain (dB)	EIRP (dBm)	Limit (dBm)	Margin (dB)	Result
Bottom	16.7	3	19.7	30.0	20.3	Complied
Middle	16.4	3	19.4	30.0	20.6	Complied
Top	16.2	3	19.2	30.0	20.8	Complied

Battery Powered Devices – DSSS CCK

Channel	Conducted RF O/P Power (dBm)	Stated Antenna Gain (dB)	EIRP (dBm)	Limit (dBm)	Margin (dB)	Result
Bottom	17.1	3	20.1	30.0	9.9	Complied
Middle	17.0	3	20.0	30.0	10.0	Complied
Top	16.5	3	19.5	30.0	10.5	Complied

Transmitter Maximum Peak Output Power: Section 15.247(b)(3) (Continued)

Battery Powered Devices – OFDM BPSK

Channel	Conducted RF O/P Power (dBm)	Stated Antenna Gain (dB)	EIRP (dBm)	Limit (dBm)	Margin (dB)	Result
Bottom	18.5	3	21.5	30.0	8.5	Complied
Middle	18.8	3	21.8	30.0	8.2	Complied
Top	19.1	3	22.1	30.0	7.9	Complied

Battery Powered Devices – OFDM QPSK

Channel	Conducted RF O/P Power (dBm)	Stated Antenna Gain (dB)	EIRP (dBm)	Limit (dBm)	Margin (dB)	Result
Bottom	18.6	3	21.6	30.0	8.4	Complied
Middle	19.0	3	22.0	30.0	8.0	Complied
Top	18.8	3	21.8	30.0	8.2	Complied

Transmitter Maximum Peak Output Power: Section 15.247(b)(3) (Continued)

Battery Powered Devices – OFDM 16QAM

Channel	Conducted RF O/P Power (dBm)	Stated Antenna Gain (dB)	EIRP (dBm)	Limit (dBm)	Margin (dB)	Result
Bottom	18.7	3	21.7	30.0	8.3	Complied
Middle	19.0	3	22.0	30.0	8.0	Complied
Top	18.9	3	21.9	30.0	8.1	Complied

Battery Powered Devices – OFDM 64QAM

Channel	Conducted RF O/P Power (dBm)	Stated Antenna Gain (dB)	EIRP (dBm)	Limit (dBm)	Margin (dB)	Result
Bottom	18.6	3	21.6	30.0	8.4	Complied
Middle	19.1	3	22.1	30.0	8.0	Complied
Top	18.9	3	21.8	30.0	8.2	Complied

Note(s):

1. *As per the method stated in FCC section 15.247(b)(3), the standard antenna gain of the EUT is 3 dBi which, added to the highest (worst case) measured conducted output power of +19.1 dBm (from the table above) gives a de facto EIRP +22.1 dBm. This is in compliance with the requirements of section 15.247(b)(3) for de facto EIRP or ERP limitation i.e. 1 Watt (30 dBm).*

7.2.7. Transmitter Conducted Emissions: Section 15.247(d)

The EUT was configured for transmitter conducted emissions measurements, as described in section 9 of this report.

Tests were performed to identify the maximum transmitter conducted emission levels.

The limit lines shown in the plots below are set to a level 20 dB below the measured highest fundamental peak power.

Conducted Spurious Emissions was performed on only DSSS CCK and OFDM 64QAM. CCK is the highest order modulation for the DSSS range and 64QAM is the highest order modulation for the OFDM range. OFDM 64QAM demonstrated the highest value of peak output power, using a peak detector.

Results: - DSSS CCK

Bottom Channel

Frequency (MHz)	Peak Emission Level (dBm)	Peak Emission Level (dBc)	Limit (dBc)	Margin (dB)	Result
455.183	-51.7	-56.2	-20.0	36.2	Complied
2400.000	-30.3	-34.8	-20.0	14.8	Complied
2483.500	-46.5	-51.0	-20.0	31.0	Complied

Middle Channel

Frequency (MHz)	Peak Emission Level (dBm)	Peak Emission Level (dBc)	Limit (dBc)	Margin (dB)	Result
3.035	-61.3	-68.1	-20.0	48.1	Complied
481.050	-51.8	-58.6	-20.0	38.6	Complied
2358.000	-44.8	-51.6	-20.0	31.6	Complied
2492.969	-44.3	-51.1	-20.0	31.1	Complied

Top Channel

Frequency (MHz)	Peak Emission Level (dBm)	Peak Emission Level (dBc)	Limit (dBc)	Margin (dB)	Result
3.035	-65.5	-69.8	-20.0	49.8	Complied
505.300	-57.0	-61.3	-20.0	41.3	Complied
2390.667	-46.5	-50.8	-20.0	30.8	Complied
2487.804	-42.2	-46.5	-20.0	26.5	Complied

Conducted Spurious Emissions was performed on only DSSS CCK and OFDM 64QAM. CCK is the highest order modulation for the DSSS range and 64QAM is the highest order modulation for the OFDM range. OFDM 64QAM demonstrated the highest value of peak output power, using a peak detector.

Results: - OFDM 64QAM

Bottom Channel

Frequency (MHz)	Peak Emission Level (dBm)	Peak Emission Level (dBc)	Limit (dBc)	Margin (dB)	Result
2398.000	-24.8	-27.8	-20.0	7.8	Complied
2499.856	-44.3	-47.3	-20.0	27.3	Complied

Middle Channel

Frequency (MHz)	Peak Emission Level (dBm)	Peak Emission Level (dBc)	Limit (dBc)	Margin (dB)	Result
2393.000	-40.3	-42.6	-20.0	22.6	Complied
2483.500	-45.3	-47.6	-20.0	27.6	Complied

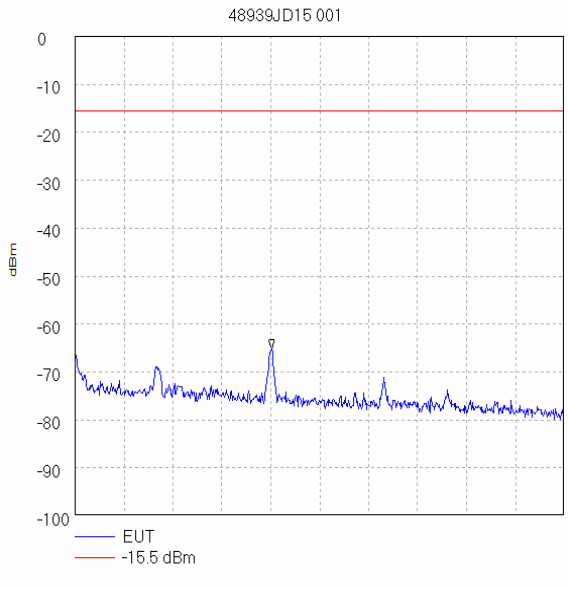
Top Channel

Frequency (MHz)	Peak Emission Level (dBm)	Peak Emission Level (dBc)	Limit (dBc)	Margin (dB)	Result
2362.667	-47.5	-49.1	-20.0	29.1	Complied
2485.222	-30.5	-32.1	-20.0	12.1	Complied

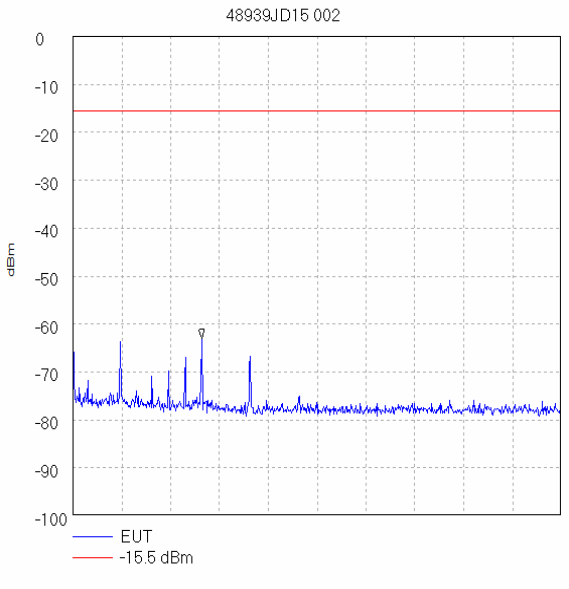
Note(s):

1. *All plots above 1 GHz were performed with a 1 MHz bandwidth unless required. This gives a worst case result with the required -20 dBc (100 kHz) limit.*

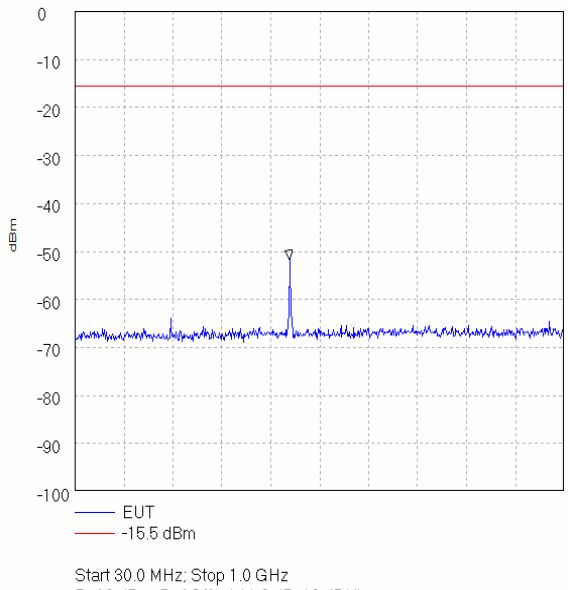
Transmitter Conducted Emissions: Section 15.247(d) (Continued)



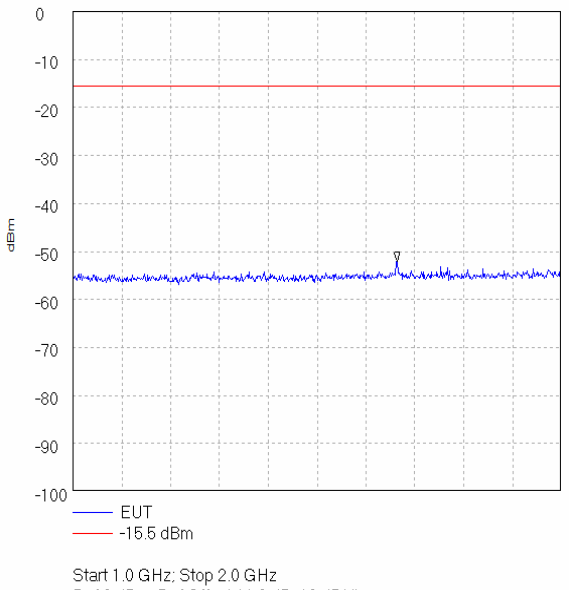
Start 9.0 kHz; Stop 150.0 kHz
Ref 0 dBm; Ref Offset 11.0 dB; 10 dB/div
RBW 1.0 kHz; VBW 1.0 kHz; Att 10 dB; Swp 360.0 mS
Peak 65.635 kHz, -65.17 dBm
Display Line: -15.5 dBm; ; Limit Test Passed
Tested by jxh 28/06/2007 10:39:12



Start 150.0 kHz; Stop 30.0 MHz
Ref 0 dBm; Ref Offset 11.0 dB; 10 dB/div
RBW 10.0 kHz; VBW 10.0 kHz; Att 10 dB; Swp 750.0 mS
Peak 8.0105 MHz, -63.0 dBm
Display Line: -15.5 dBm; ; Limit Test Passed
Tested by jxh 28/06/2007 10:39:50



Start 30.0 MHz; Stop 1.0 GHz
Ref 0 dBm; Ref Offset 11.0 dB; 10 dB/div
RBW 100.0 kHz; VBW 100.0 kHz; Att 10 dB; Swp 250.0 mS
Peak 455.183333 MHz, -51.67 dBm
Display Line: -15.5 dBm; ; Limit Test Passed
Tested by jxh 28/06/2007 10:40:28

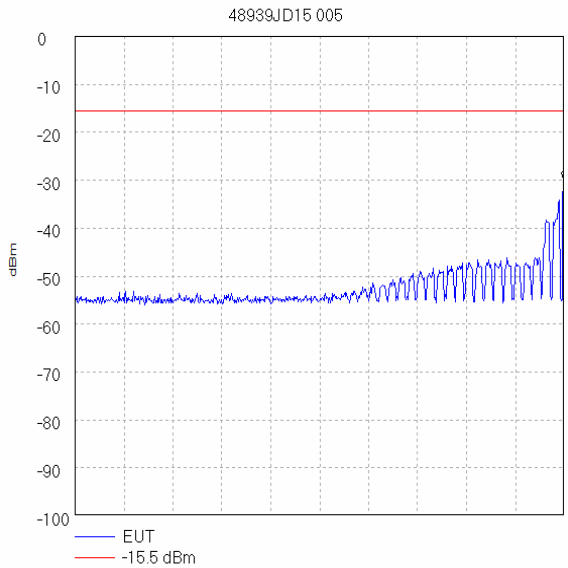


Start 1.0 GHz; Stop 2.0 GHz
Ref 0 dBm; Ref Offset 11.0 dB; 10 dB/div
RBW 1.0 MHz; VBW 1.0 MHz; Att 10 dB; Swp 50.0 mS
Peak 1.6633333 GHz, -52.0 dBm
Display Line: -15.5 dBm; ; Limit Test Passed
Tested by jxh 28/06/2007 10:41:20

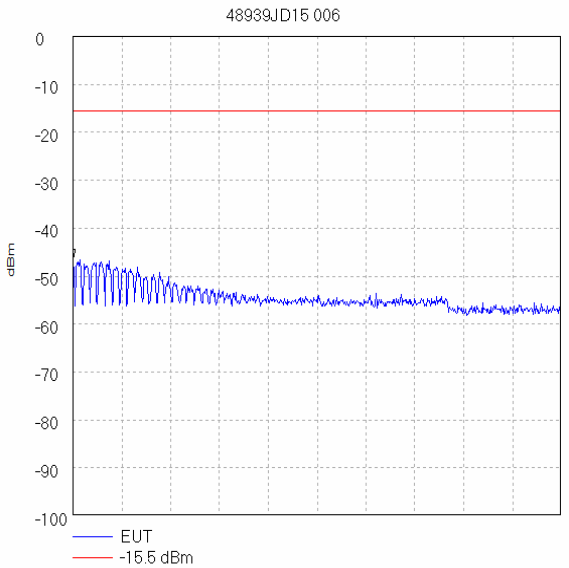
Note: These plots are pre-scans and for indication purposes only. For final measurements, see accompanying tables.

Test of: Ezurio Ltd
Datalogger
To: FCC Part 15.247: 2006 (Subpart C)

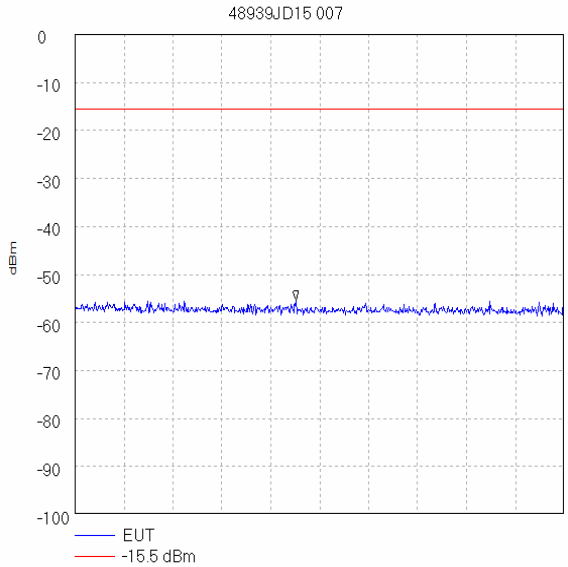
Transmitter Conducted Emissions: Section 15.247(d) (Continued)



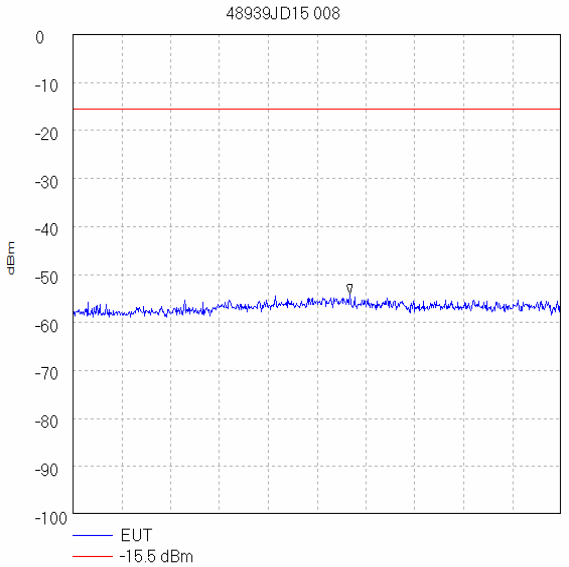
Start 2.0 GHz; Stop 2.4 GHz
Ref 0 dBm; Ref Offset 11.0 dB; 10 dB/div
RBW 1.0 MHz; VBW 1.0 MHz; Att 10 dB; Swp 50.0 mS
Peak 2.4 GHz, -30.33 dBm
Display Line: -15.5 dBm; ; Limit Test Passed
Tested by jxh 28/06/2007 10:41:59



Start 2.4835 GHz; Stop 3.0 GHz
Ref 0 dBm; Ref Offset 11.0 dB; 10 dB/div
RBW 1.0 MHz; VBW 1.0 MHz; Att 10 dB; Swp 50.0 mS
Peak 2.4835 GHz, -46.5 dBm
Display Line: -15.5 dBm; ; Limit Test Passed
Tested by jxh 28/06/2007 10:42:29



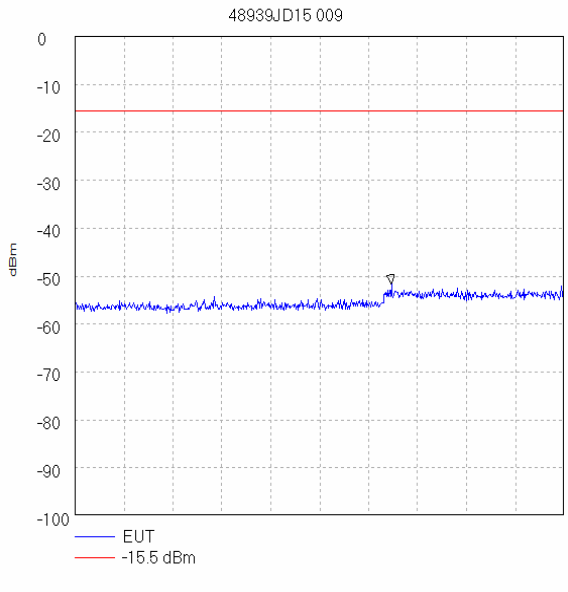
Start 3.0 GHz; Stop 5.0 GHz
Ref 0 dBm; Ref Offset 11.0 dB; 10 dB/div
RBW 1.0 MHz; VBW 1.0 MHz; Att 10 dB; Swp 50.0 mS
Peak 3.9033333 GHz, -55.33 dBm
Display Line: -15.5 dBm; ; Limit Test Passed
Tested by jxh 28/06/2007 10:42:53



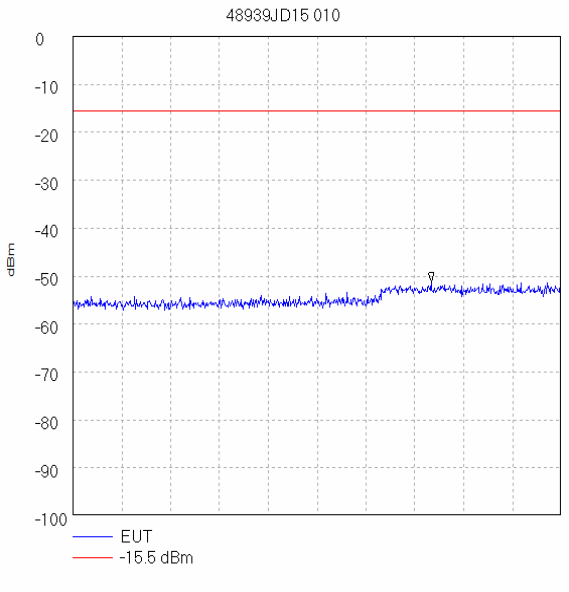
Start 5.0 GHz; Stop 10.0 GHz
Ref 0 dBm; Ref Offset 11.0 dB; 10 dB/div
RBW 1.0 MHz; VBW 1.0 MHz; Att 10 dB; Swp 100.0 mS
Peak 7.8333333 GHz, -54.0 dBm
Display Line: -15.5 dBm; ; Limit Test Passed
Tested by jxh 28/06/2007 10:43:13

Note: These plots are pre-scans and for indication purposes only. For final measurements, see accompanying tables.

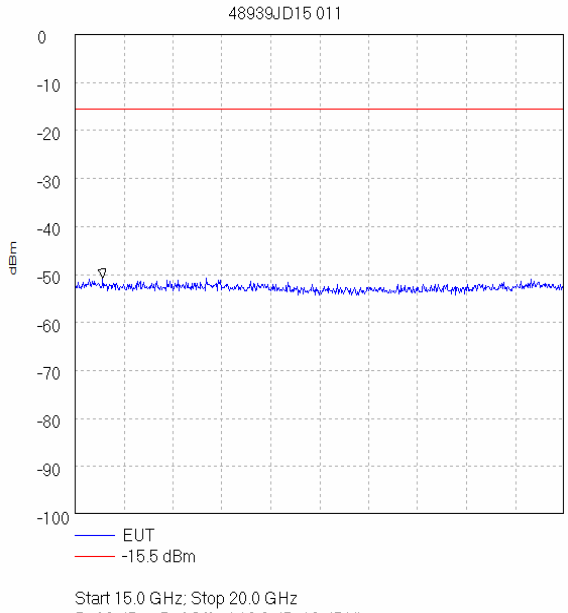
Transmitter Conducted Emissions: Section 15.247(d) (Continued)



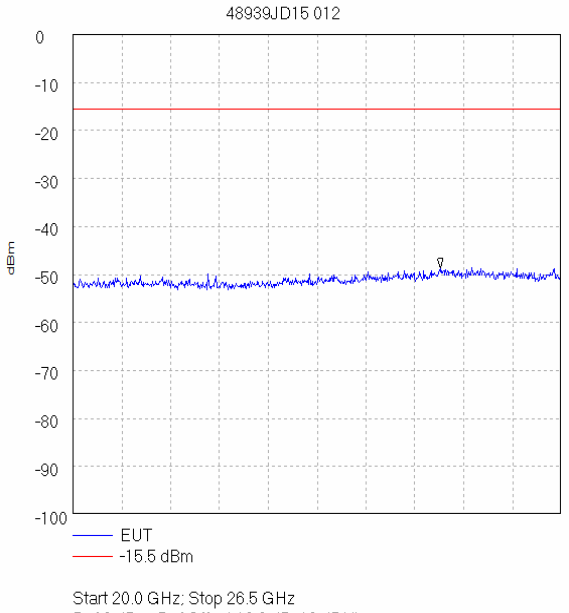
Start 10.0 GHz; Stop 15.0 GHz
Ref 0 dBm; Ref Offset 11.0 dB; 10 dB/div
RBW 1.0 MHz; VBW 1.0 MHz; Att 10 dB; Swp 100.0 mS
Peak 13.2333333 GHz, -51.67 dBm
Display Line: -15.5 dBm; ; Limit Test Passed
Tested by jxh 28/06/2007 10:43:46



Start 10.0 GHz; Stop 15.0 GHz
Ref 0 dBm; Ref Offset 13.0 dB; 10 dB/div
RBW 1.0 MHz; VBW 1.0 MHz; Att 10 dB; Swp 100.0 mS
Peak 13.6666667 GHz, -51.17 dBm
Display Line: -15.5 dBm; ; Limit Test Passed
Tested by jxh 28/06/2007 10:44:27



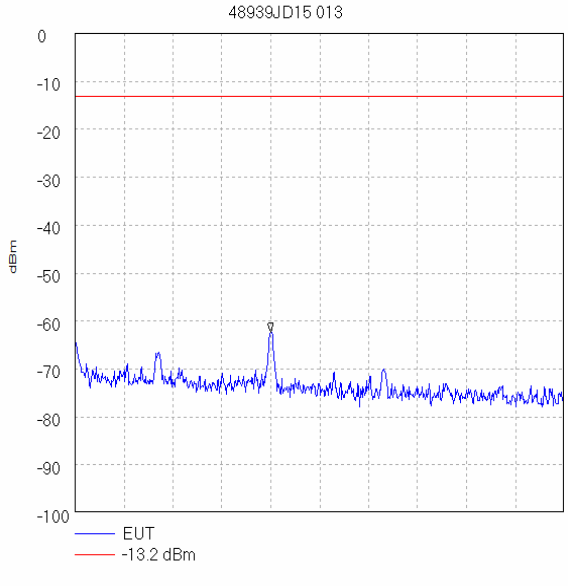
Start 15.0 GHz; Stop 20.0 GHz
Ref 0 dBm; Ref Offset 13.0 dB; 10 dB/div
RBW 1.0 MHz; VBW 1.0 MHz; Att 10 dB; Swp 100.0 mS
Peak 15.2833333 GHz, -50.83 dBm
Display Line: -15.5 dBm; ; Limit Test Passed
Tested by jxh 28/06/2007 10:44:49



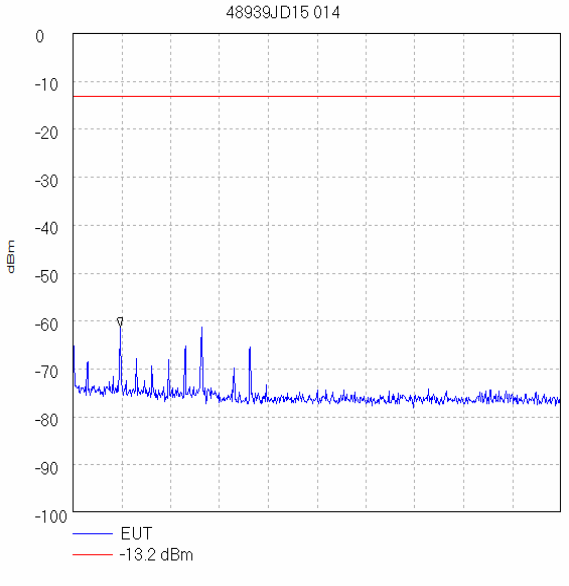
Start 20.0 GHz; Stop 26.5 GHz
Ref 0 dBm; Ref Offset 13.0 dB; 10 dB/div
RBW 1.0 MHz; VBW 1.0 MHz; Att 10 dB; Swp 130.0 mS
Peak 24.8966667 GHz, -48.67 dBm
Display Line: -15.5 dBm; ; Limit Test Passed
Tested by jxh 28/06/2007 10:45:11

Note: These plots are pre-scans and for indication purposes only. For final measurements, see accompanying tables.

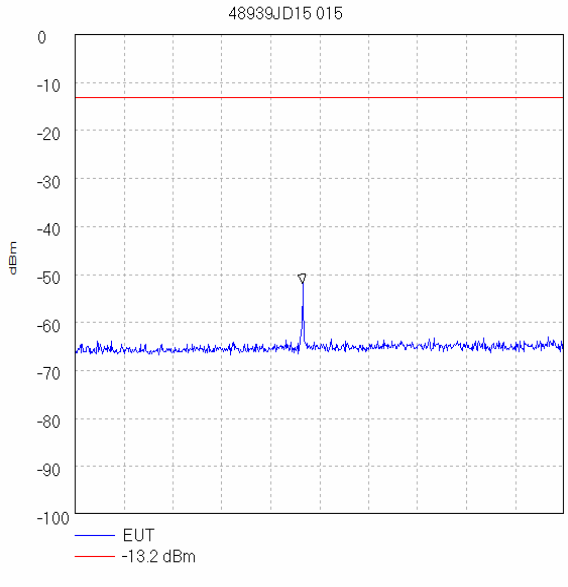
Transmitter Conducted Emissions: Section 15.247(d) (Continued)



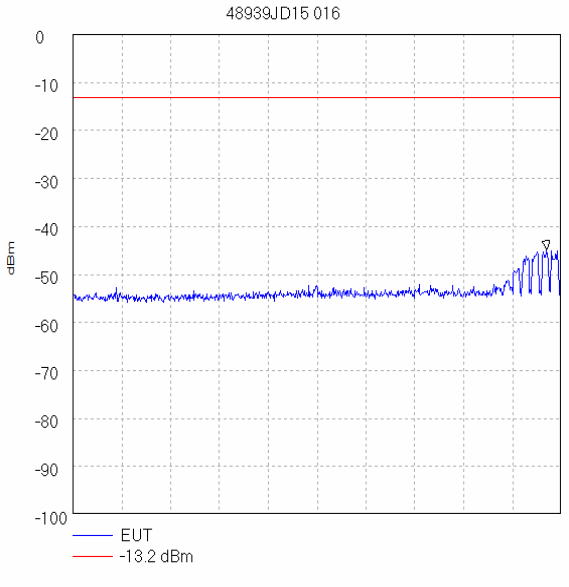
Start 9.0 kHz; Stop 150.0 kHz
Ref 0 dBm; Ref Offset 13.0 dB; 10 dB/div
RBW 1.0 kHz; VBW 1.0 kHz; Att 10 dB; Swp 360.0 mS
Peak 65.4 kHz, -62.33 dBm
Display Line: -13.2 dBm; ; Limit Test Passed
Tested by jxh 28/06/2007 10:48:43



Start 150.0 kHz; Stop 30.0 MHz
Ref 0 dBm; Ref Offset 13.0 dB; 10 dB/div
RBW 10.0 kHz; VBW 10.0 kHz; Att 10 dB; Swp 750.0 mS
Peak 3.0355 MHz, -61.33 dBm
Display Line: -13.2 dBm; ; Limit Test Passed
Tested by jxh 28/06/2007 10:49:26



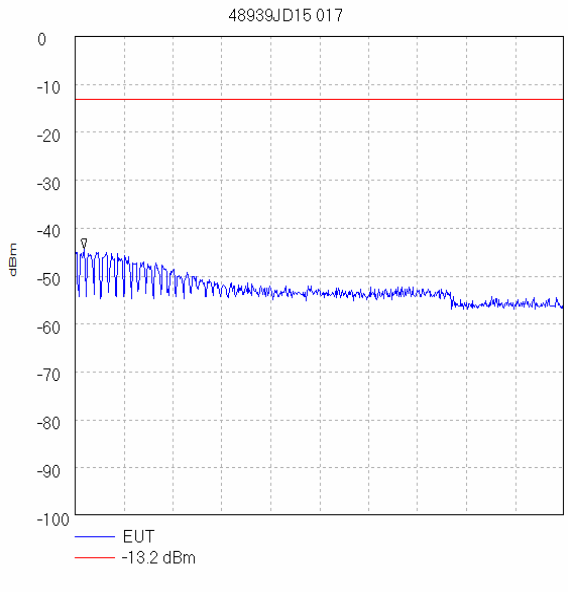
Start 30.0 MHz; Stop 1.0 GHz
Ref 0 dBm; Ref Offset 13.0 dB; 10 dB/div
RBW 100.0 kHz; VBW 100.0 kHz; Att 10 dB; Swp 250.0 mS
Peak 481.05 MHz, -51.83 dBm
Display Line: -13.2 dBm; ; Limit Test Passed
Tested by jxh 28/06/2007 10:50:03



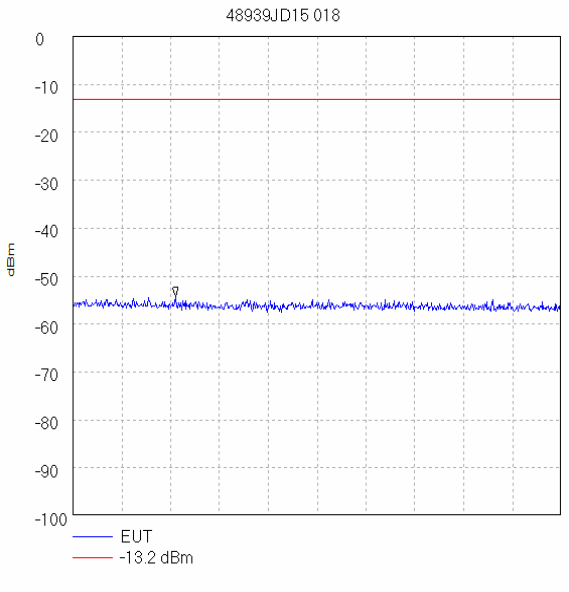
Start 1.0 GHz; Stop 2.4 GHz
Ref 0 dBm; Ref Offset 13.0 dB; 10 dB/div
RBW 1.0 MHz; VBW 1.0 MHz; Att 10 dB; Swp 50.0 mS
Peak 2.358 GHz, -44.83 dBm
Display Line: -13.2 dBm; ; Limit Test Passed
Tested by jxh 28/06/2007 10:50:29

Note: These plots are pre-scans and for indication purposes only. For final measurements, see accompanying tables.

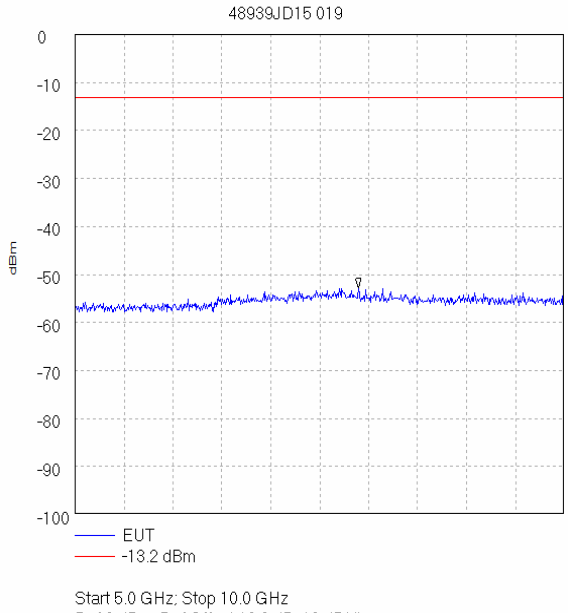
Transmitter Conducted Emissions: Section 15.247(d) (Continued)



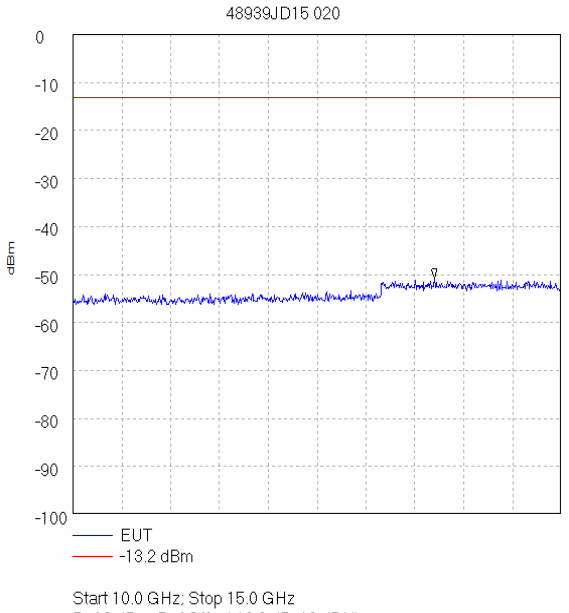
Start 2.4835 GHz; Stop 3.0 GHz
Ref 0 dBm; Ref Offset 13.0 dB; 10 dB/div
RBW 1.0 MHz; VBW 1.0 MHz; Att 10 dB; Swp 50.0 mS
Peak 2.4929692 GHz, -44.33 dBm
Display Line: -13.2 dBm; ; Limit Test Passed
Tested by jxh 28/06/2007 10:51:03



Start 3.0 GHz; Stop 5.0 GHz
Ref 0 dBm; Ref Offset 13.0 dB; 10 dB/div
RBW 1.0 MHz; VBW 1.0 MHz; Att 10 dB; Swp 50.0 mS
Peak 3.42 GHz, -54.33 dBm
Display Line: -13.2 dBm; ; Limit Test Passed
Tested by jxh 28/06/2007 10:51:35



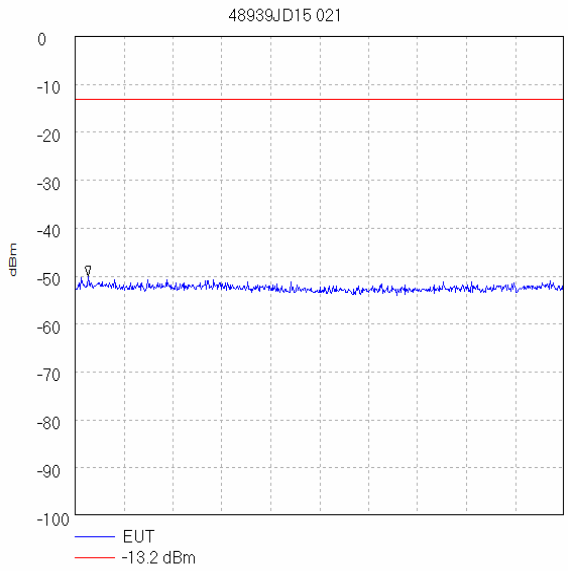
Start 5.0 GHz; Stop 10.0 GHz
Ref 0 dBm; Ref Offset 13.0 dB; 10 dB/div
RBW 1.0 MHz; VBW 1.0 MHz; Att 10 dB; Swp 100.0 mS
Peak 7.9 GHz, -52.83 dBm
Display Line: -13.2 dBm; ; Limit Test Passed
Tested by jxh 28/06/2007 10:52:21



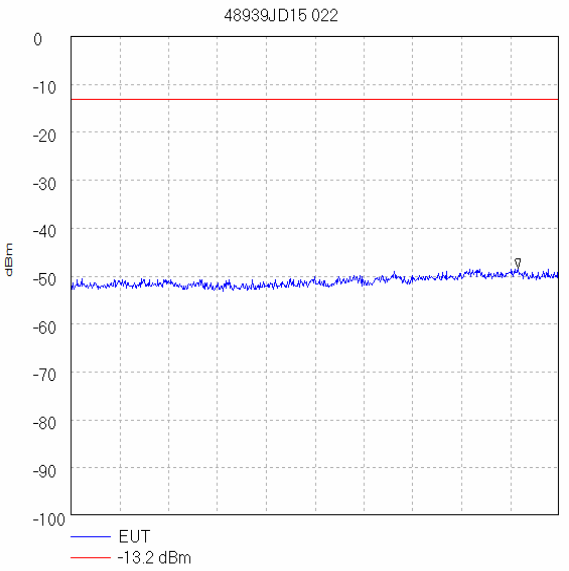
Start 10.0 GHz; Stop 15.0 GHz
Ref 0 dBm; Ref Offset 13.0 dB; 10 dB/div
RBW 1.0 MHz; VBW 1.0 MHz; Att 10 dB; Swp 100.0 mS
Peak 13.7 GHz, -50.83 dBm
Display Line: -13.2 dBm; ; Limit Test Passed
Tested by jxh 28/06/2007 10:52:57

Note: These plots are pre-scans and for indication purposes only. For final measurements, see accompanying tables.

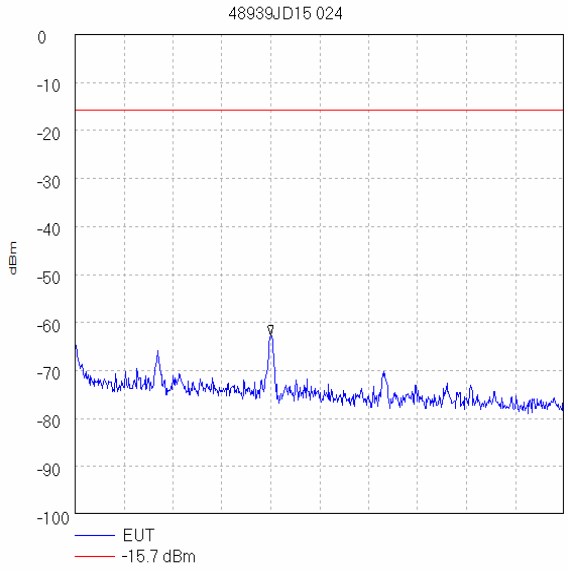
Transmitter Conducted Emissions: Section 15.247(d) (Continued)



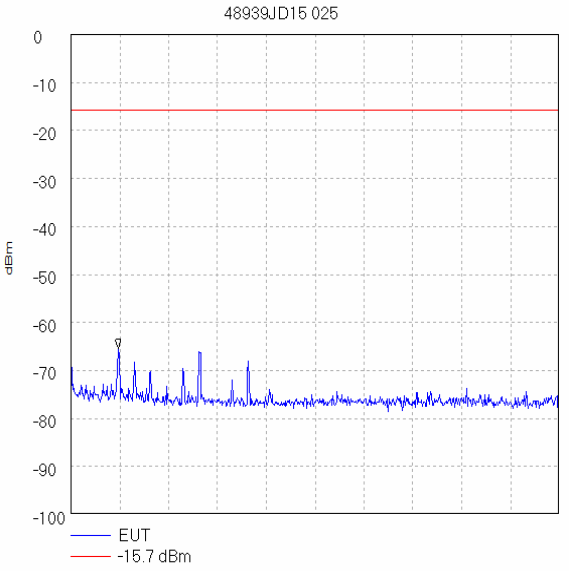
Start 15.0 GHz; Stop 20.0 GHz
Ref 0 dBm; Ref Offset 13.0 dB; 10 dB/div
RBW 1.0 MHz; VBW 1.0 MHz; Att 10 dB; Swp 100.0 mS
Peak 15.1333333 GHz, -50.0 dBm
Display Line: -13.2 dBm; ; Limit Test Passed
Tested by jxh 28/06/2007 10:53:27



Start 20.0 GHz; Stop 26.0 GHz
Ref 0 dBm; Ref Offset 13.0 dB; 10 dB/div
RBW 1.0 MHz; VBW 1.0 MHz; Att 10 dB; Swp 120.0 mS
Peak 25.49 GHz, -48.33 dBm
Display Line: -13.2 dBm; ; Limit Test Passed
Tested by jxh 28/06/2007 10:53:55



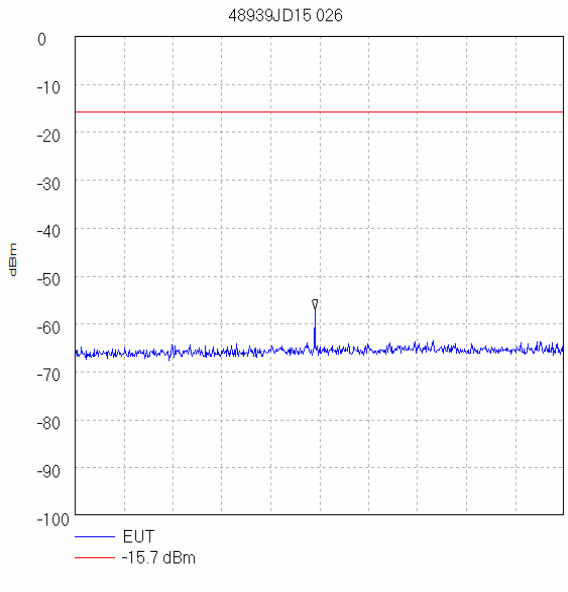
Start 9.0 kHz; Stop 150.0 kHz
Ref 0 dBm; Ref Offset 13.0 dB; 10 dB/div
RBW 1.0 kHz; VBW 1.0 kHz; Att 10 dB; Swp 360.0 mS
Peak 65.4 kHz, -62.67 dBm
Display Line: -15.7 dBm; ; Limit Test Passed
Tested by jxh 28/06/2007 10:56:03



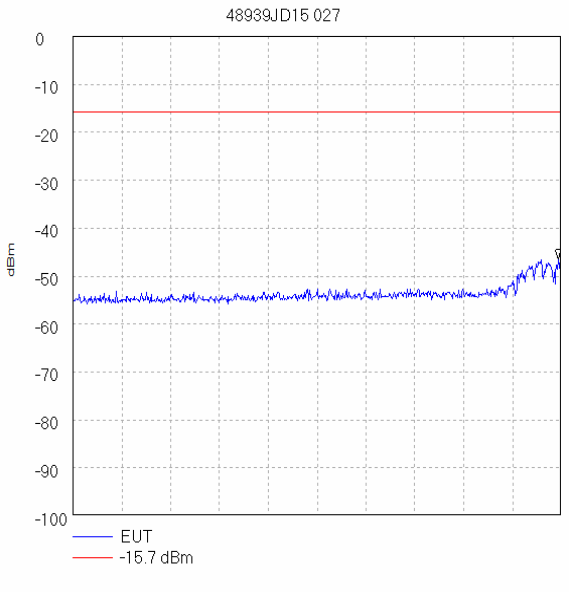
Start 150.0 kHz; Stop 30.0 MHz
Ref 0 dBm; Ref Offset 13.0 dB; 10 dB/div
RBW 10.0 kHz; VBW 10.0 kHz; Att 10 dB; Swp 750.0 mS
Peak 3.0355 MHz, -65.5 dBm
Display Line: -15.7 dBm; ; Limit Test Passed
Tested by jxh 28/06/2007 10:56:36

Note: These plots are pre-scans and for indication purposes only. For final measurements, see accompanying tables.

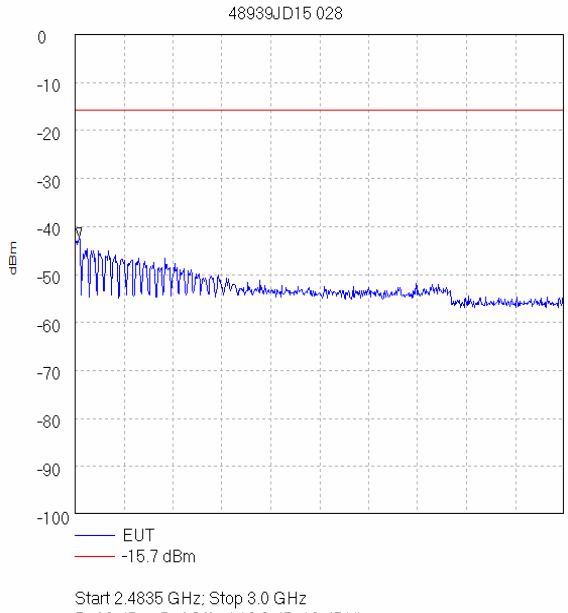
Transmitter Conducted Emissions: Section 15.247(d) (Continued)



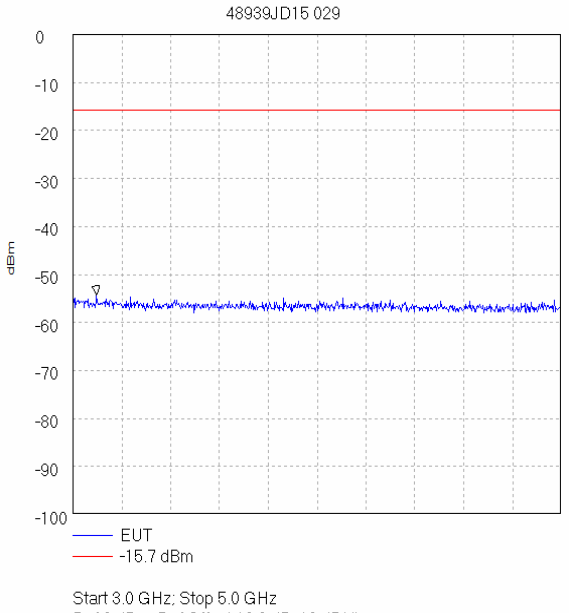
Start 30.0 MHz; Stop 1.0 GHz
Ref 0 dBm; Ref Offset 13.0 dB; 10 dB/div
RBW 100.0 kHz; VBW 100.0 kHz; Att 10 dB; Swp 250.0 mS
Peak 505.3 MHz, -57.0 dBm
Display Line: -15.7 dBm; ; Limit Test Passed
Tested by jxh 28/06/2007 10:57:02



Start 1.0 GHz; Stop 2.4 GHz
Ref 0 dBm; Ref Offset 13.0 dB; 10 dB/div
RBW 1.0 MHz; VBW 1.0 MHz; Att 10 dB; Swp 50.0 mS
Peak 2.3906667 GHz, -46.5 dBm
Display Line: -15.7 dBm; ; Limit Test Passed
Tested by jxh 28/06/2007 10:57:25



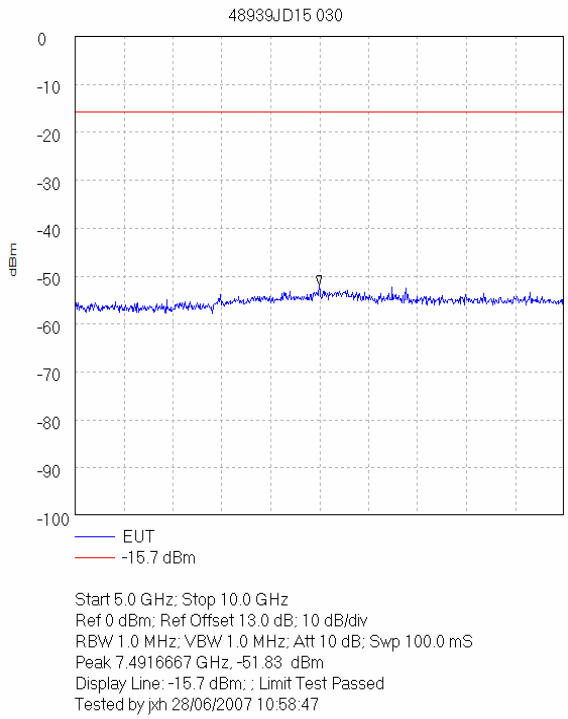
Start 2.4835 GHz; Stop 3.0 GHz
Ref 0 dBm; Ref Offset 13.0 dB; 10 dB/div
RBW 1.0 MHz; VBW 1.0 MHz; Att 10 dB; Swp 50.0 mS
Peak 2.4878042 GHz, -42.17 dBm
Display Line: -15.7 dBm; ; Limit Test Passed
Tested by jxh 28/06/2007 10:57:49



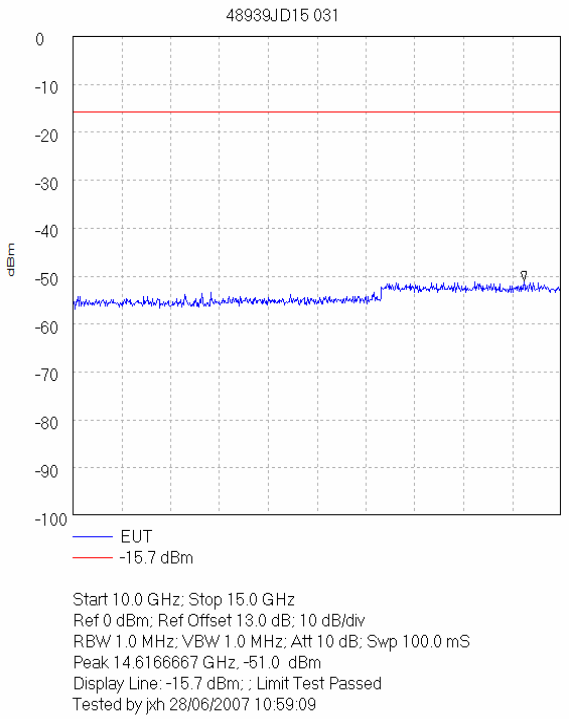
Start 3.0 GHz; Stop 5.0 GHz
Ref 0 dBm; Ref Offset 13.0 dB; 10 dB/div
RBW 1.0 MHz; VBW 1.0 MHz; Att 10 dB; Swp 50.0 mS
Peak 3.0966667 GHz, -54.33 dBm
Display Line: -15.7 dBm; ; Limit Test Passed
Tested by jxh 28/06/2007 10:58:08

Note: These plots are pre-scans and for indication purposes only. For final measurements, see accompanying tables

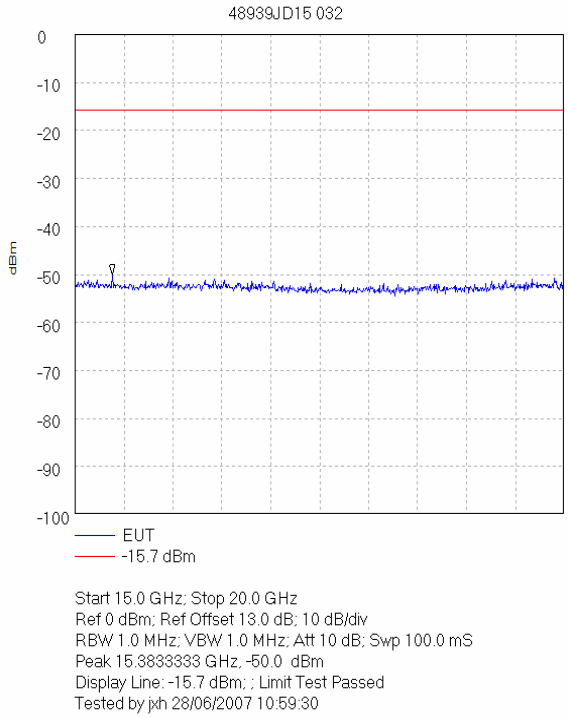
Transmitter Conducted Emissions: Section 15.247(d) (Continued)



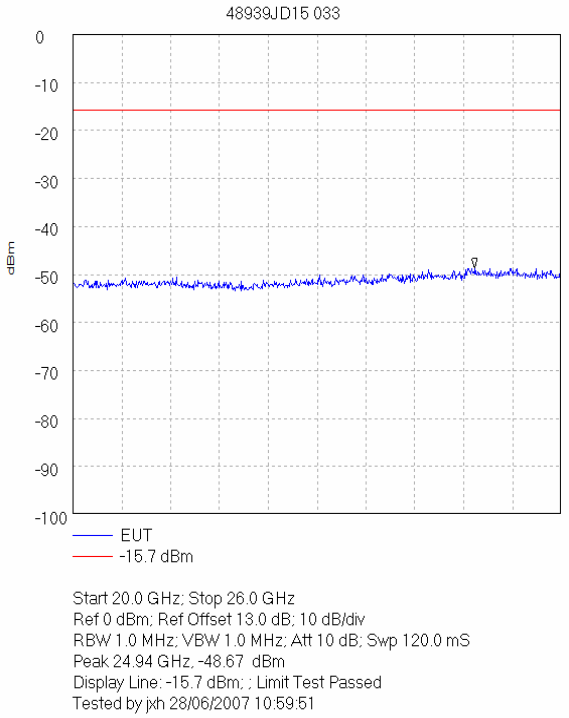
Start 5.0 GHz; Stop 10.0 GHz
Ref 0 dBm; Ref Offset 13.0 dB; 10 dB/div
RBW 1.0 MHz; VBW 1.0 MHz; Att 10 dB; Swp 100.0 mS
Peak 7.4916667 GHz, -51.83 dBm
Display Line: -15.7 dBm; ; Limit Test Passed
Tested by jxh 28/06/2007 10:58:47



Start 10.0 GHz; Stop 15.0 GHz
Ref 0 dBm; Ref Offset 13.0 dB; 10 dB/div
RBW 1.0 MHz; VBW 1.0 MHz; Att 10 dB; Swp 100.0 mS
Peak 14.6166667 GHz, -51.0 dBm
Display Line: -15.7 dBm; ; Limit Test Passed
Tested by jxh 28/06/2007 10:59:09



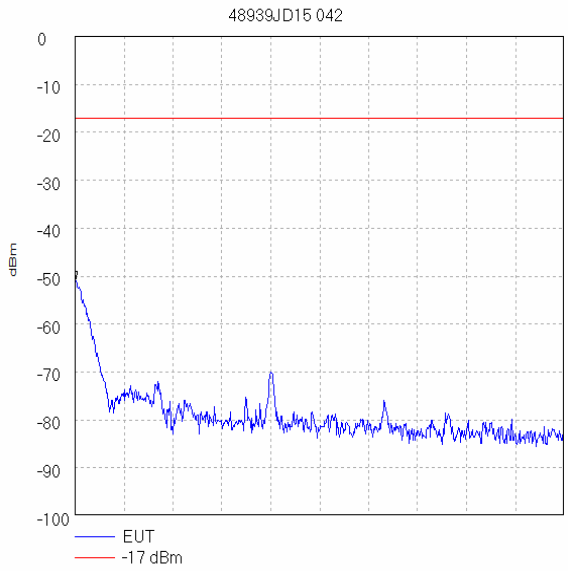
Start 15.0 GHz; Stop 20.0 GHz
Ref 0 dBm; Ref Offset 13.0 dB; 10 dB/div
RBW 1.0 MHz; VBW 1.0 MHz; Att 10 dB; Swp 100.0 mS
Peak 15.3833333 GHz, -50.0 dBm
Display Line: -15.7 dBm; ; Limit Test Passed
Tested by jxh 28/06/2007 10:59:30



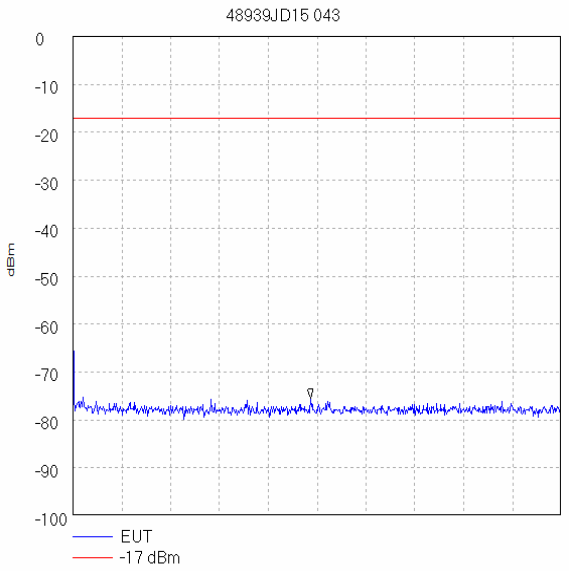
Start 20.0 GHz; Stop 26.0 GHz
Ref 0 dBm; Ref Offset 13.0 dB; 10 dB/div
RBW 1.0 MHz; VBW 1.0 MHz; Att 10 dB; Swp 120.0 mS
Peak 24.94 GHz, -48.67 dBm
Display Line: -15.7 dBm; ; Limit Test Passed
Tested by jxh 28/06/2007 10:59:51

Note: These plots are pre-scans and for indication purposes only. For final measurements, see accompanying tables

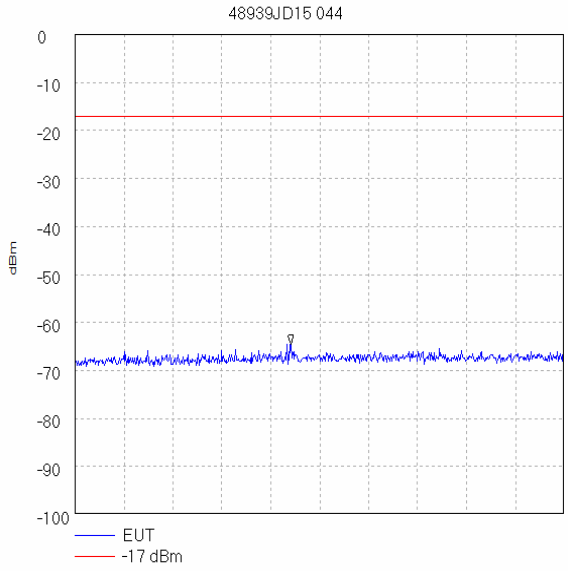
Transmitter Conducted Emissions: Section 15.247(d) (Continued)



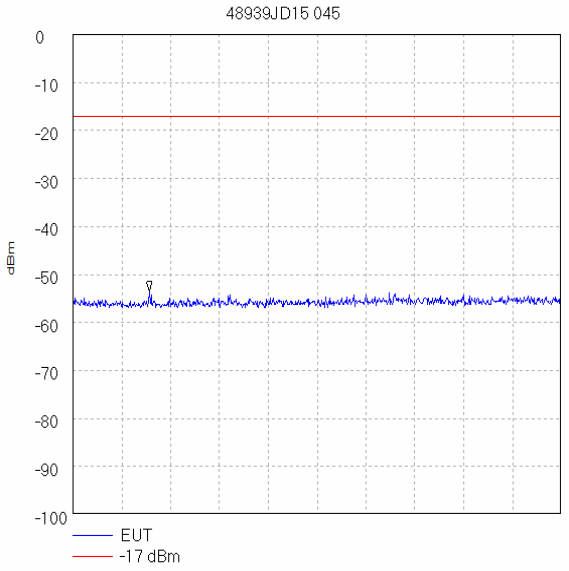
Start 9.0 kHz; Stop 150.0 kHz
Ref 0 dBm; Ref Offset 11.0 dB; 10 dB/div
RBW 1.0 kHz; VBW 1.0 kHz; Att 10 dB; Swp 360.0 mS
Peak 9.0 kHz, -51.0 dBm
Display Line: -17 dBm; ; Limit Test Passed
Tested by JXH 02/07/2007 08:59:33



Start 150.0 kHz; Stop 30.0 MHz
Ref 0 dBm; Ref Offset 11.0 dB; 10 dB/div
RBW 10.0 kHz; VBW 10.0 kHz; Att 10 dB; Swp 750.0 mS
Marker 14.677 MHz, -75.5 dBm
Display Line: -17 dBm; ; Limit Test Passed
Tested by JXH 02/07/2007 09:00:16



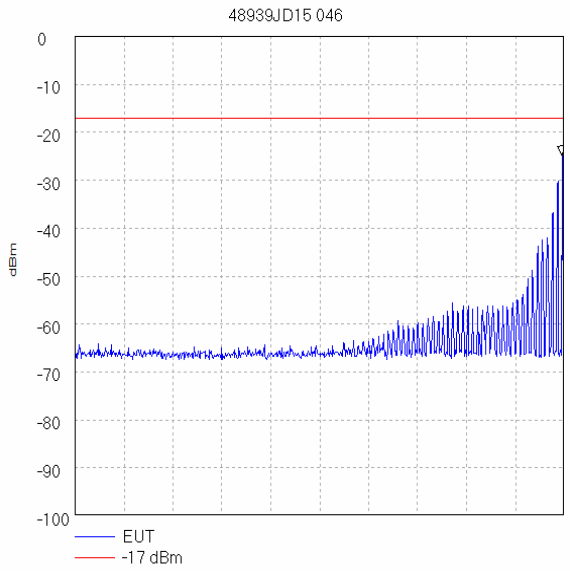
Start 30.0 MHz; Stop 1.0 GHz
Ref 0 dBm; Ref Offset 11.0 dB; 10 dB/div
RBW 100.0 kHz; VBW 100.0 kHz; Att 10 dB; Swp 250.0 mS
Peak 458.416667 MHz, -64.5 dBm
Display Line: -17 dBm; ; Limit Test Passed
Tested by JXH 02/07/2007 09:00:52



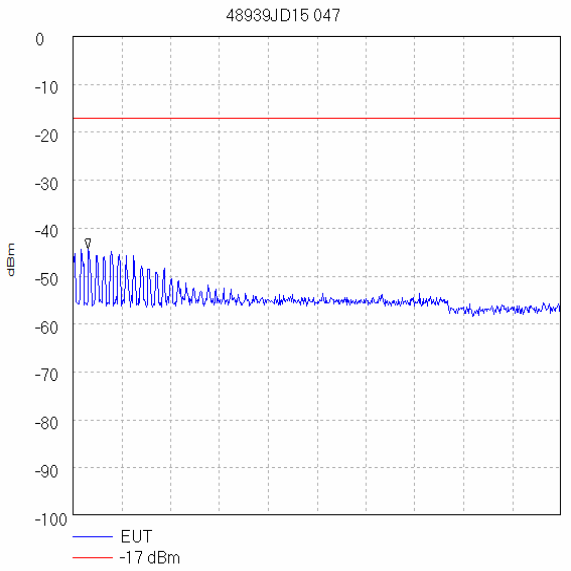
Start 1.0 GHz; Stop 2.0 GHz
Ref 0 dBm; Ref Offset 11.0 dB; 10 dB/div
RBW 1.0 MHz; VBW 1.0 MHz; Att 10 dB; Swp 50.0 mS
Peak 1.1666667 GHz, -53.5 dBm
Display Line: -17 dBm; ; Limit Test Passed
Tested by JXH 02/07/2007 09:01:25

Note: These plots are pre-scans and for indication purposes only. For final measurements, see accompanying tables

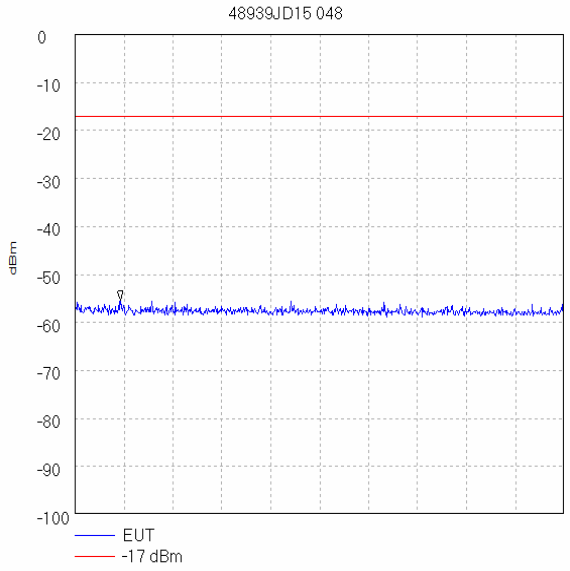
Transmitter Conducted Emissions: Section 15.247(d) (Continued)



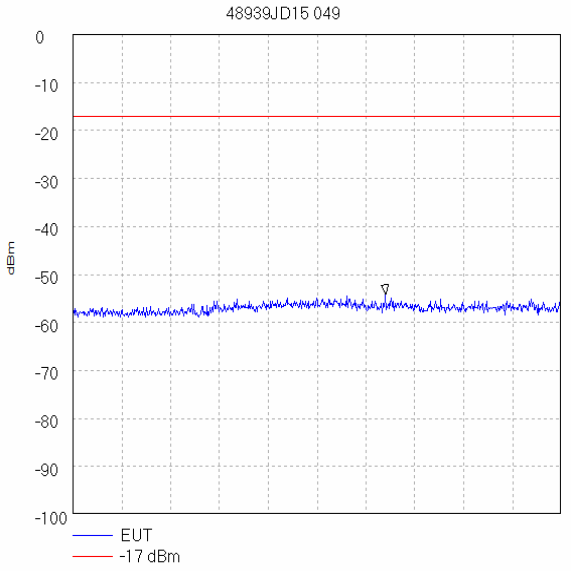
Start 2.0 GHz; Stop 2.4 GHz
Ref 0 dBm; Ref Offset 11.0 dB; 10 dB/div
RBW 100.0 kHz; VBW 100.0 kHz; Att 10 dB; Swp 100.0 mS
Peak 2.398 GHz, -24.83 dBm
Display Line: -17 dBm; ; Limit Test Passed
Tested by JXH 02/07/2007 09:03:03



Start 2.4835 GHz; Stop 3.0 GHz
Ref 0 dBm; Ref Offset 11.0 dB; 10 dB/div
RBW 1.0 MHz; VBW 1.0 MHz; Att 10 dB; Swp 50.0 mS
Peak 2.4998558 GHz, -44.33 dBm
Display Line: -17 dBm; ; Limit Test Passed
Tested by JXH 02/07/2007 09:03:42



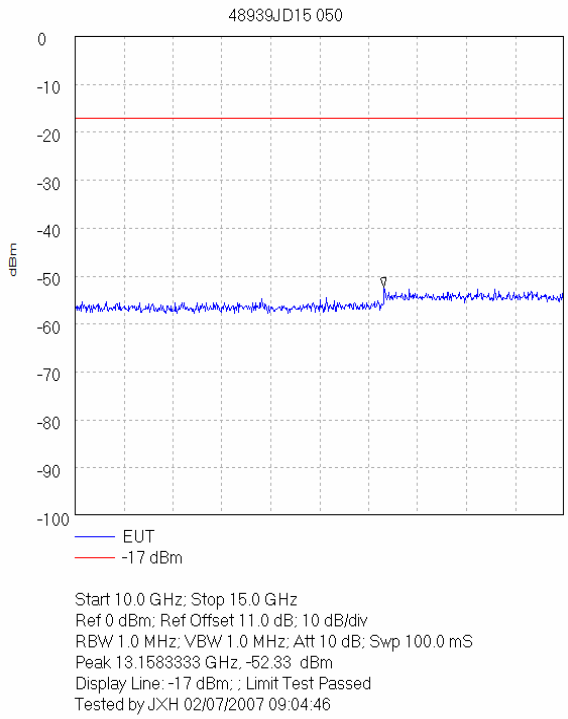
Start 3.0 GHz; Stop 5.0 GHz
Ref 0 dBm; Ref Offset 11.0 dB; 10 dB/div
RBW 1.0 MHz; VBW 1.0 MHz; Att 10 dB; Swp 50.0 mS
Peak 3.1866667 GHz, -55.33 dBm
Display Line: -17 dBm; ; Limit Test Passed
Tested by JXH 02/07/2007 09:04:03



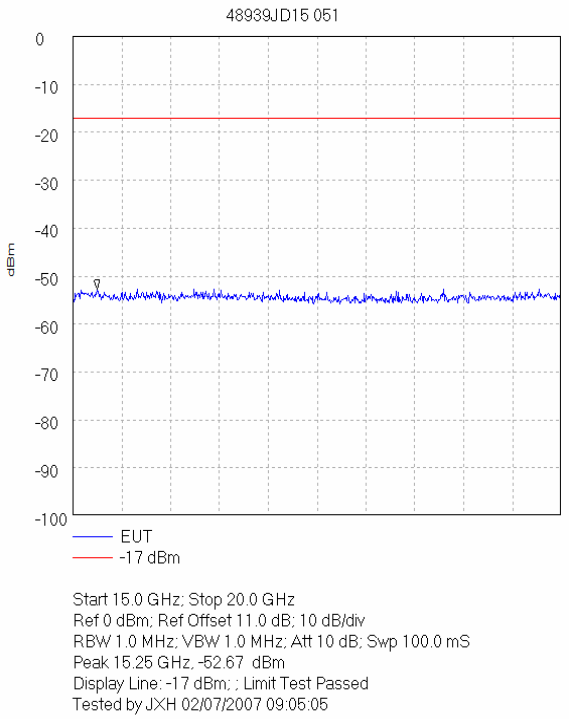
Start 5.0 GHz; Stop 10.0 GHz
Ref 0 dBm; Ref Offset 11.0 dB; 10 dB/div
RBW 1.0 MHz; VBW 1.0 MHz; Att 10 dB; Swp 100.0 mS
Peak 8.2 GHz, -54.17 dBm
Display Line: -17 dBm; ; Limit Test Passed
Tested by JXH 02/07/2007 09:04:20

Note: These plots are pre-scans and for indication purposes only. For final measurements, see accompanying tables

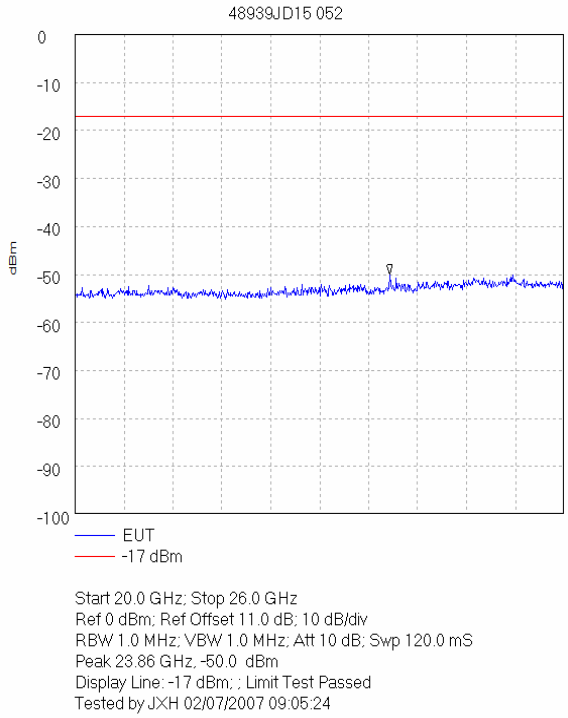
Transmitter Conducted Emissions: Section 15.247(d) (Continued)



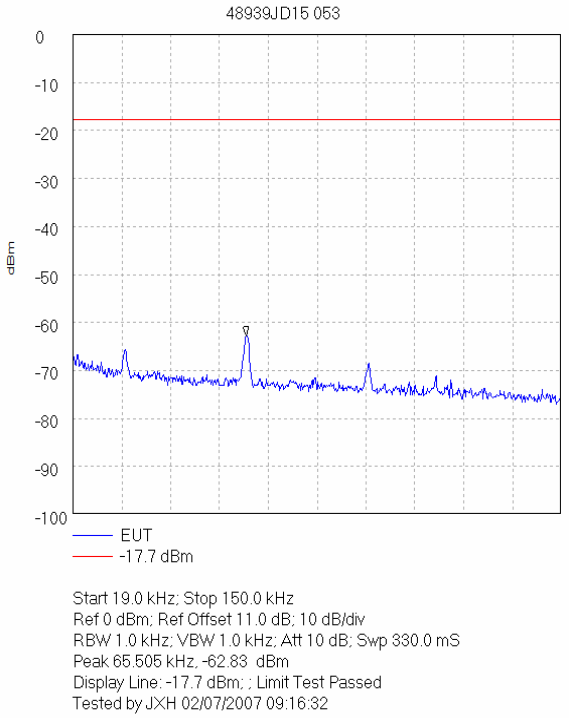
Start 10.0 GHz; Stop 15.0 GHz
Ref 0 dBm; Ref Offset 11.0 dB; 10 dB/div
RBW 1.0 MHz; VBW 1.0 MHz; Att 10 dB; Swp 100.0 mS
Peak 13.1583333 GHz, -52.33 dBm
Display Line: -17 dBm; ; Limit Test Passed
Tested by JXH 02/07/2007 09:04:46



Start 15.0 GHz; Stop 20.0 GHz
Ref 0 dBm; Ref Offset 11.0 dB; 10 dB/div
RBW 1.0 MHz; VBW 1.0 MHz; Att 10 dB; Swp 100.0 mS
Peak 15.25 GHz, -52.67 dBm
Display Line: -17 dBm; ; Limit Test Passed
Tested by JXH 02/07/2007 09:05:05



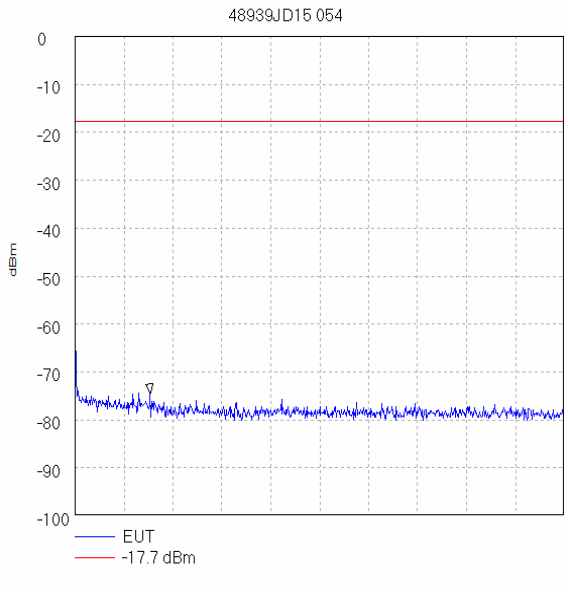
Start 20.0 GHz; Stop 26.0 GHz
Ref 0 dBm; Ref Offset 11.0 dB; 10 dB/div
RBW 1.0 MHz; VBW 1.0 MHz; Att 10 dB; Swp 120.0 mS
Peak 23.86 GHz, -50.0 dBm
Display Line: -17 dBm; ; Limit Test Passed
Tested by JXH 02/07/2007 09:05:24



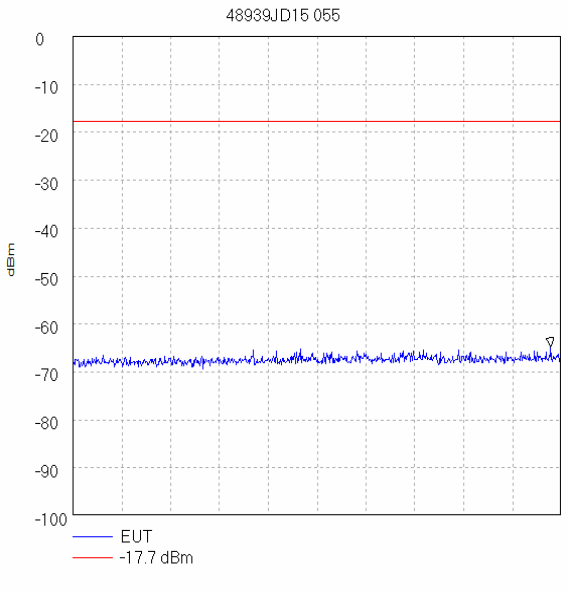
Start 19.0 kHz; Stop 150.0 kHz
Ref 0 dBm; Ref Offset 11.0 dB; 10 dB/div
RBW 1.0 kHz; VBW 1.0 kHz; Att 10 dB; Swp 330.0 mS
Peak 65.505 kHz, -62.83 dBm
Display Line: -17.7 dBm; ; Limit Test Passed
Tested by JXH 02/07/2007 09:16:32

Note: These plots are pre-scans and for indication purposes only. For final measurements, see accompanying tables

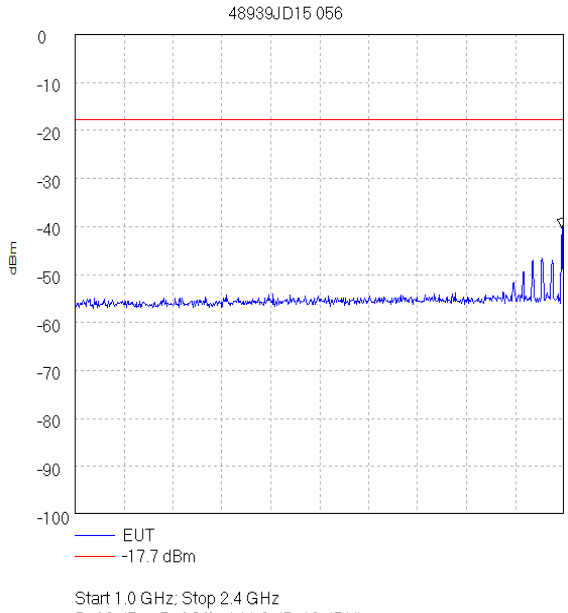
Transmitter Conducted Emissions: Section 15.247(d) (Continued)



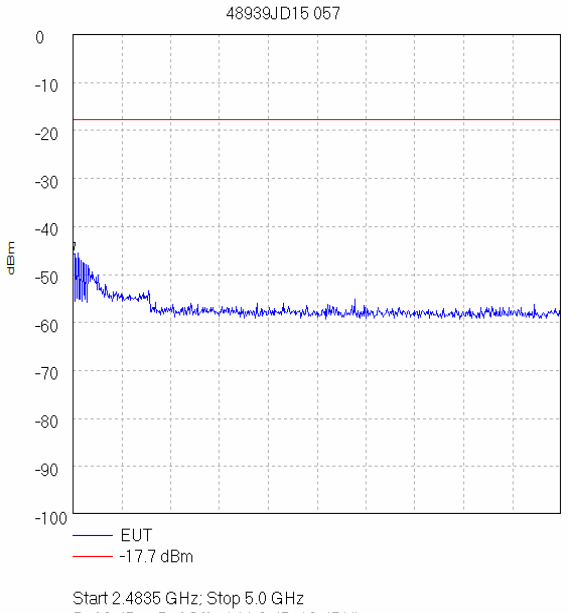
Start 150.0 kHz; Stop 30.0 MHz
Ref 0 dBm; Ref Offset 11.0 dB; 10 dB/div
RBW 10.0 kHz; VBW 10.0 kHz; Att 10 dB; Swp 750.0 mS
Marker 4.727 MHz, -74.5 dBm
Display Line: -17.7 dBm; ; Limit Test Passed
Tested by JXH 02/07/2007 09:16:57



Start 30.0 MHz; Stop 1.0 GHz
Ref 0 dBm; Ref Offset 11.0 dB; 10 dB/div
RBW 100.0 kHz; VBW 100.0 kHz; Att 10 dB; Swp 250.0 mS
Peak 978.983333 MHz, -64.83 dBm
Display Line: -17.7 dBm; ; Limit Test Passed
Tested by JXH 02/07/2007 09:17:26



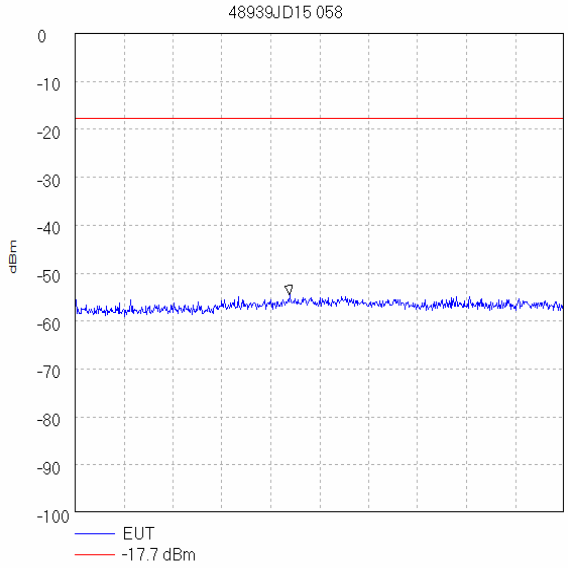
Start 1.0 GHz; Stop 2.4 GHz
Ref 0 dBm; Ref Offset 11.0 dB; 10 dB/div
RBW 1.0 MHz; VBW 1.0 MHz; Att 10 dB; Swp 50.0 mS
Peak 2.393 GHz, -40.33 dBm
Display Line: -17.7 dBm; ; Limit Test Passed
Tested by JXH 02/07/2007 09:17:50



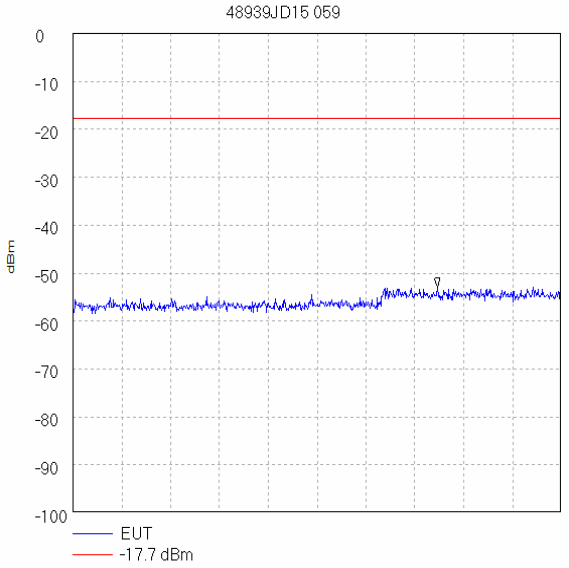
Start 2.4835 GHz; Stop 5.0 GHz
Ref 0 dBm; Ref Offset 11.0 dB; 10 dB/div
RBW 1.0 MHz; VBW 1.0 MHz; Att 10 dB; Swp 51.0 mS
Peak 2.4835 GHz, -45.33 dBm
Display Line: -17.7 dBm; ; Limit Test Passed
Tested by JXH 02/07/2007 09:18:22

Note: These plots are pre-scans and for indication purposes only. For final measurements, see accompanying tables

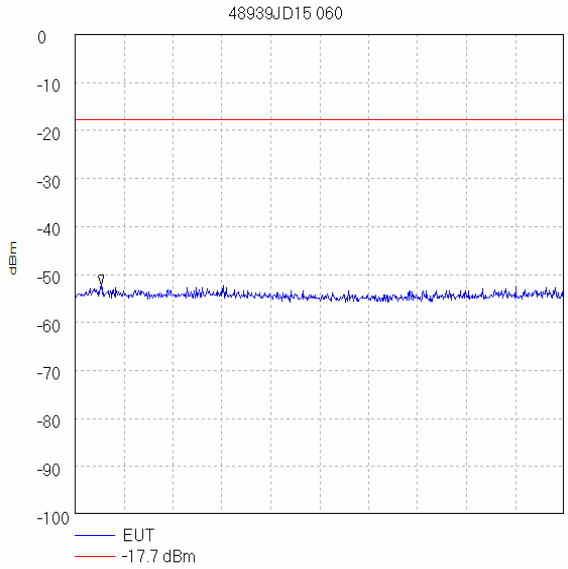
Transmitter Conducted Emissions: Section 15.247(d) (Continued)



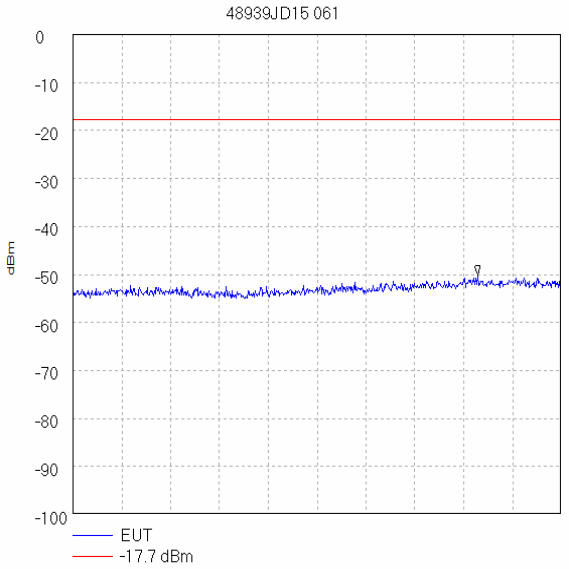
Start 5.0 GHz; Stop 10.0 GHz
Ref 0 dBm; Ref Offset 11.0 dB; 10 dB/div
RBW 1.0 MHz; VBW 1.0 MHz; Att 10 dB; Swp 100.0 mS
Peak 7.1916667 GHz, -54.5 dBm
Display Line: -17.7 dBm; ; Limit Test Passed
Tested by JXH 02/07/2007 09:18:42



Start 10.0 GHz; Stop 15.0 GHz
Ref 0 dBm; Ref Offset 11.0 dB; 10 dB/div
RBW 1.0 MHz; VBW 1.0 MHz; Att 10 dB; Swp 100.0 mS
Peak 13.7333333 GHz, -53.0 dBm
Display Line: -17.7 dBm; ; Limit Test Passed
Tested by JXH 02/07/2007 09:19:00



Start 15.0 GHz; Stop 20.0 GHz
Ref 0 dBm; Ref Offset 11.0 dB; 10 dB/div
RBW 1.0 MHz; VBW 1.0 MHz; Att 10 dB; Swp 100.0 mS
Peak 15.2666667 GHz, -52.17 dBm
Display Line: -17.7 dBm; ; Limit Test Passed
Tested by JXH 02/07/2007 09:19:17

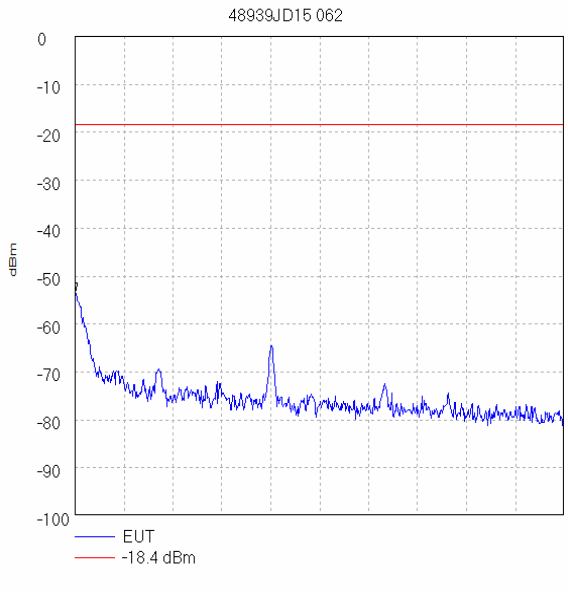


Start 20.0 GHz; Stop 26.0 GHz
Ref 0 dBm; Ref Offset 11.0 dB; 10 dB/div
RBW 1.0 MHz; VBW 1.0 MHz; Att 10 dB; Swp 120.0 mS
Peak 24.97 GHz, -50.17 dBm
Display Line: -17.7 dBm; ; Limit Test Passed
Tested by JXH 02/07/2007 09:19:35

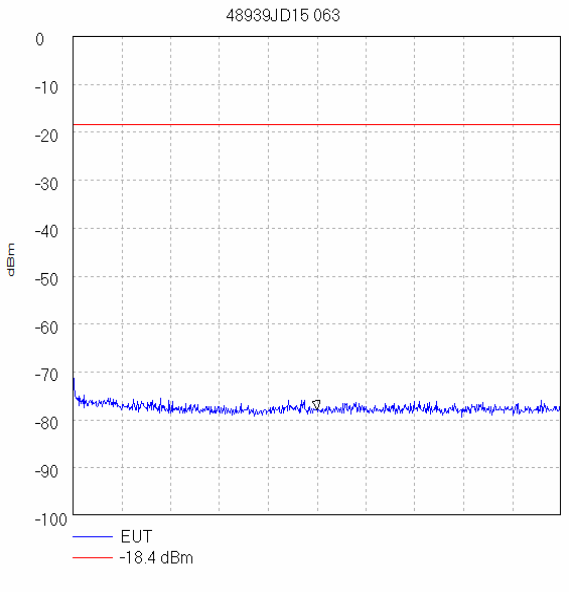
Note: These plots are pre-scans and for indication purposes only. For final measurements, see accompanying tables

Test of: **Ezurio Ltd**
Datalogger
To: **FCC Part 15.247: 2006 (Subpart C)**

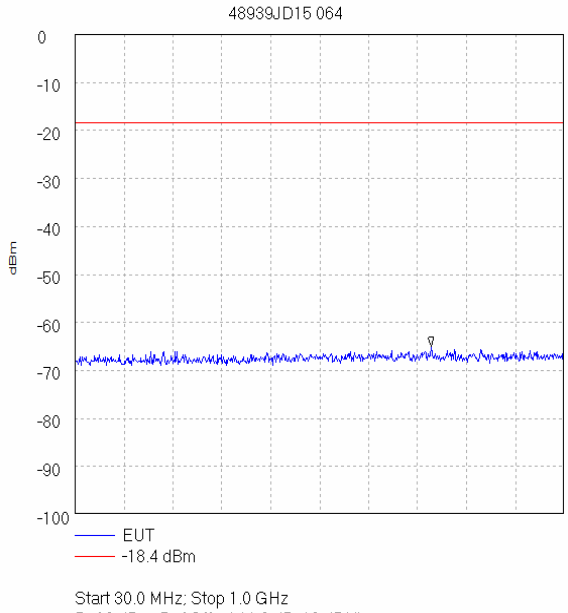
Transmitter Conducted Emissions: Section 15.247(d) (Continued)



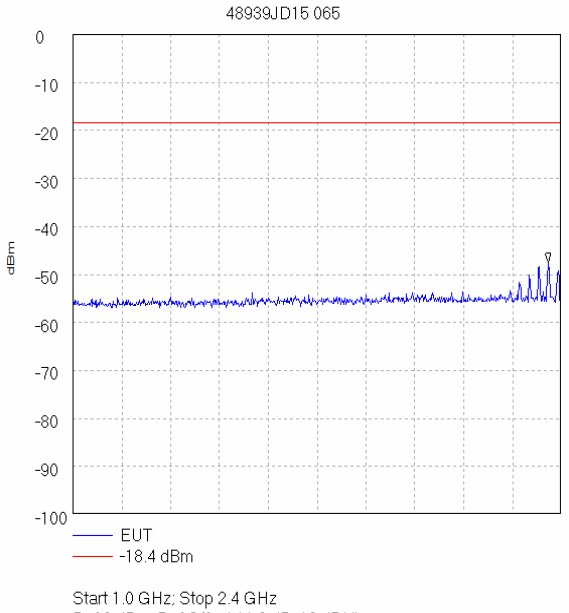
Start 9.0 kHz; Stop 150.0 kHz
Ref 0 dBm; Ref Offset 11.0 dB; 10 dB/div
RBW 1.0 kHz; VBW 1.0 kHz; Att 10 dB; Swp 360.0 mS
Peak 9.0 kHz, -53.33 dBm
Display Line: -18.4 dBm; ; Limit Test Passed
Tested by JXH 02/07/2007 09:21:02



Start 150.0 kHz; Stop 30.0 MHz
Ref 0 dBm; Ref Offset 11.0 dB; 10 dB/div
RBW 10.0 kHz; VBW 10.0 kHz; Att 10 dB; Swp 750.0 mS
Peak 15.075 MHz, -77.83 dBm
Display Line: -18.4 dBm; ; Limit Test Passed
Tested by JXH 02/07/2007 09:21:50



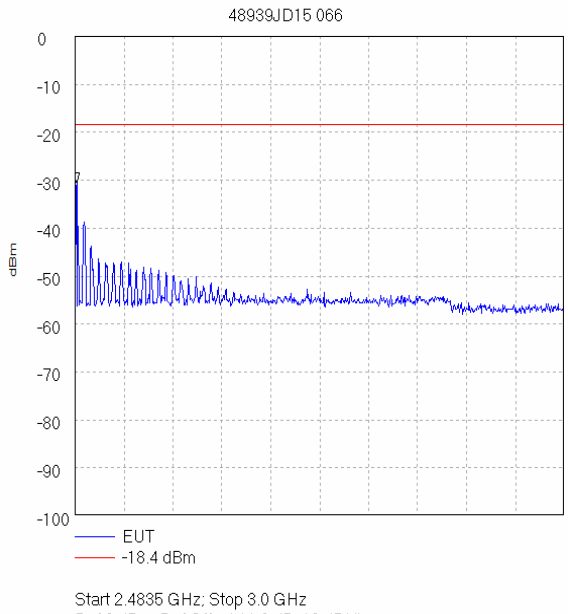
Start 30.0 MHz; Stop 1.0 GHz
Ref 0 dBm; Ref Offset 11.0 dB; 10 dB/div
RBW 100.0 kHz; VBW 100.0 kHz; Att 10 dB; Swp 250.0 mS
Peak 736.483333 MHz, -65.0 dBm
Display Line: -18.4 dBm; ; Limit Test Passed
Tested by JXH 02/07/2007 09:22:18



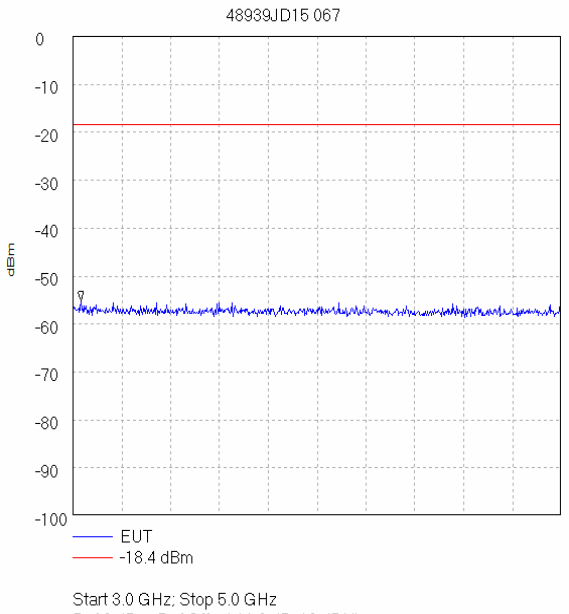
Start 1.0 GHz; Stop 2.4 GHz
Ref 0 dBm; Ref Offset 11.0 dB; 10 dB/div
RBW 1.0 MHz; VBW 1.0 MHz; Att 10 dB; Swp 50.0 mS
Peak 2.3626667 GHz, -47.5 dBm
Display Line: -18.4 dBm; ; Limit Test Passed
Tested by JXH 02/07/2007 09:22:43

Note: These plots are pre-scans and for indication purposes only. For final measurements, see accompanying tables

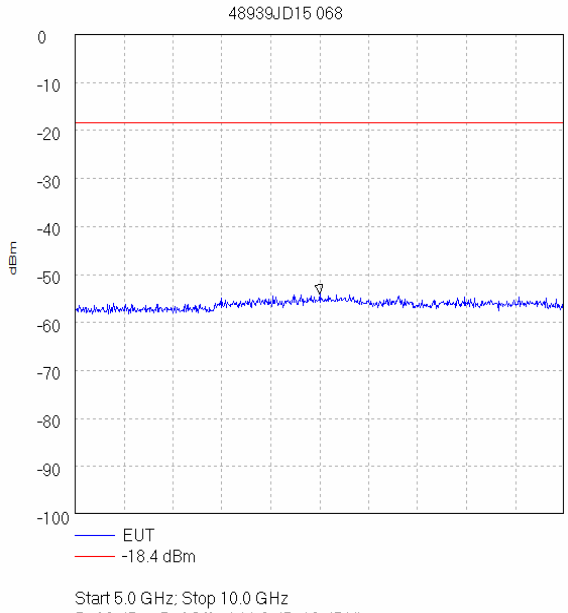
Transmitter Conducted Emissions: Section 15.247(d) (Continued)



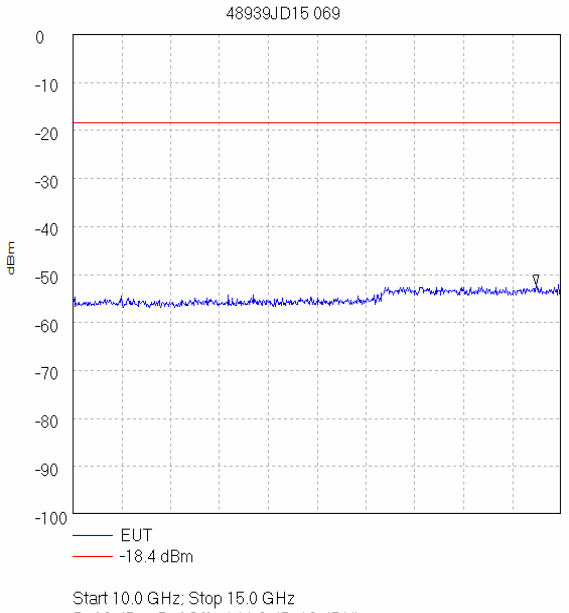
Start 2.4835 GHz; Stop 3.0 GHz
Ref 0 dBm; Ref Offset 11.0 dB; 10 dB/div
RBW 1.0 MHz; VBW 1.0 MHz; Att 10 dB; Swp 50.0 mS
Peak 2.4852217 GHz, -30.5 dBm
Display Line: -18.4 dBm; ; Limit Test Passed
Tested by JXH 02/07/2007 09:23:20



Start 3.0 GHz; Stop 5.0 GHz
Ref 0 dBm; Ref Offset 11.0 dB; 10 dB/div
RBW 1.0 MHz; VBW 1.0 MHz; Att 10 dB; Swp 50.0 mS
Peak 3.0333333 GHz, -55.17 dBm
Display Line: -18.4 dBm; ; Limit Test Passed
Tested by JXH 02/07/2007 09:23:41



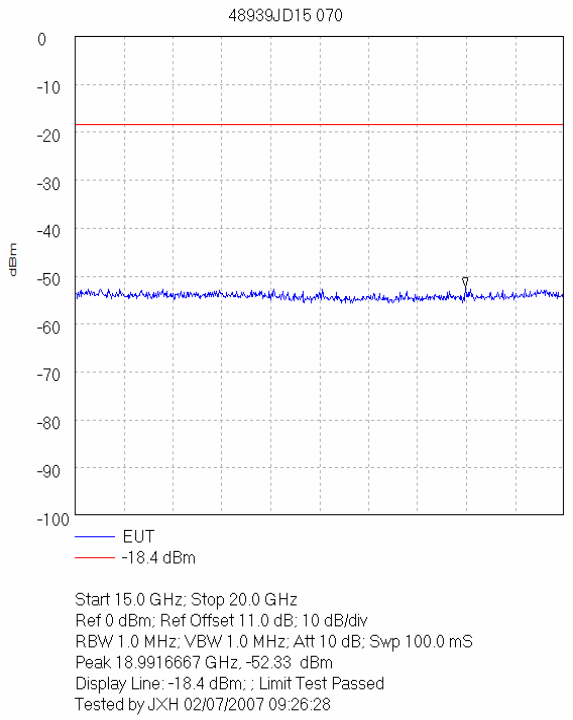
Start 5.0 GHz; Stop 10.0 GHz
Ref 0 dBm; Ref Offset 11.0 dB; 10 dB/div
RBW 1.0 MHz; VBW 1.0 MHz; Att 10 dB; Swp 100.0 mS
Peak 7.5 GHz, -54.0 dBm
Display Line: -18.4 dBm; ; Limit Test Passed
Tested by JXH 02/07/2007 09:24:24

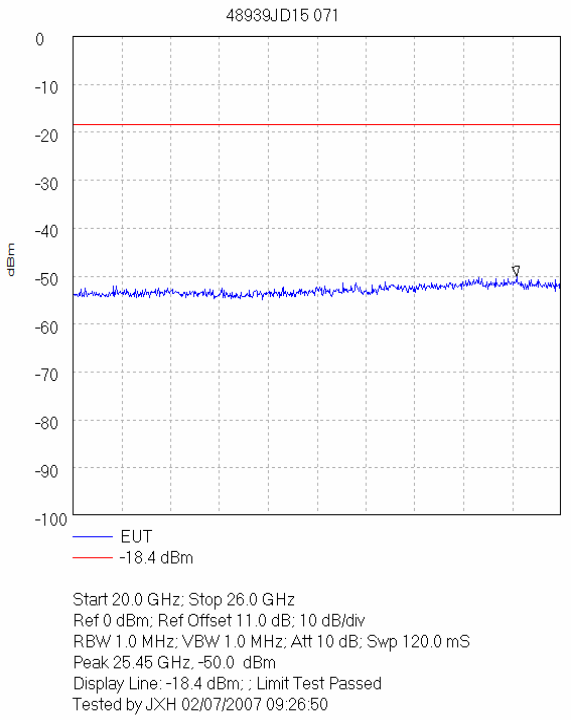


Start 10.0 GHz; Stop 15.0 GHz
Ref 0 dBm; Ref Offset 11.0 dB; 10 dB/div
RBW 1.0 MHz; VBW 1.0 MHz; Att 10 dB; Swp 100.0 mS
Peak 14.7416667 GHz, -52.17 dBm
Display Line: -18.4 dBm; ; Limit Test Passed
Tested by JXH 02/07/2007 09:25:54

Note: These plots are pre-scans and for indication purposes only. For final measurements, see accompanying tables

Transmitter Conducted Emissions: Section 15.247(d) (Continued)





Note: These plots are pre-scans and for indication purposes only. For final measurements, see accompanying tables

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

The EUT was configured for radiated emission testing, as described in section 9 of this report.

Tests were performed to identify the maximum transmitter radiated emission levels.

Radiated Spurious Emissions was performed on only OFDM 64QAM. OFDM 64QAM is the highest order modulation and demonstrated the highest value of peak output power, using a peak detector.

Results:

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

Top Channel

Frequency (MHz)	Antenna Polarity	Q-P Level (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Result
117.976	Vertical	30.5	43.5	13.0	Complied
126.954	Vertical	25.2	43.5	18.3	Complied
971.793	Vertical	42.9	54.0	11.1	Complied

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

The EUT was configured for radiated emission testing, as described in section 9 of this report.

Tests were performed to identify the maximum transmitter radiated emission levels.

Radiated Spurious Emissions was performed on only OFDM 64QAM. OFDM 64QAM is the highest order modulation and demonstrated the highest value of peak output power, using a peak detector.

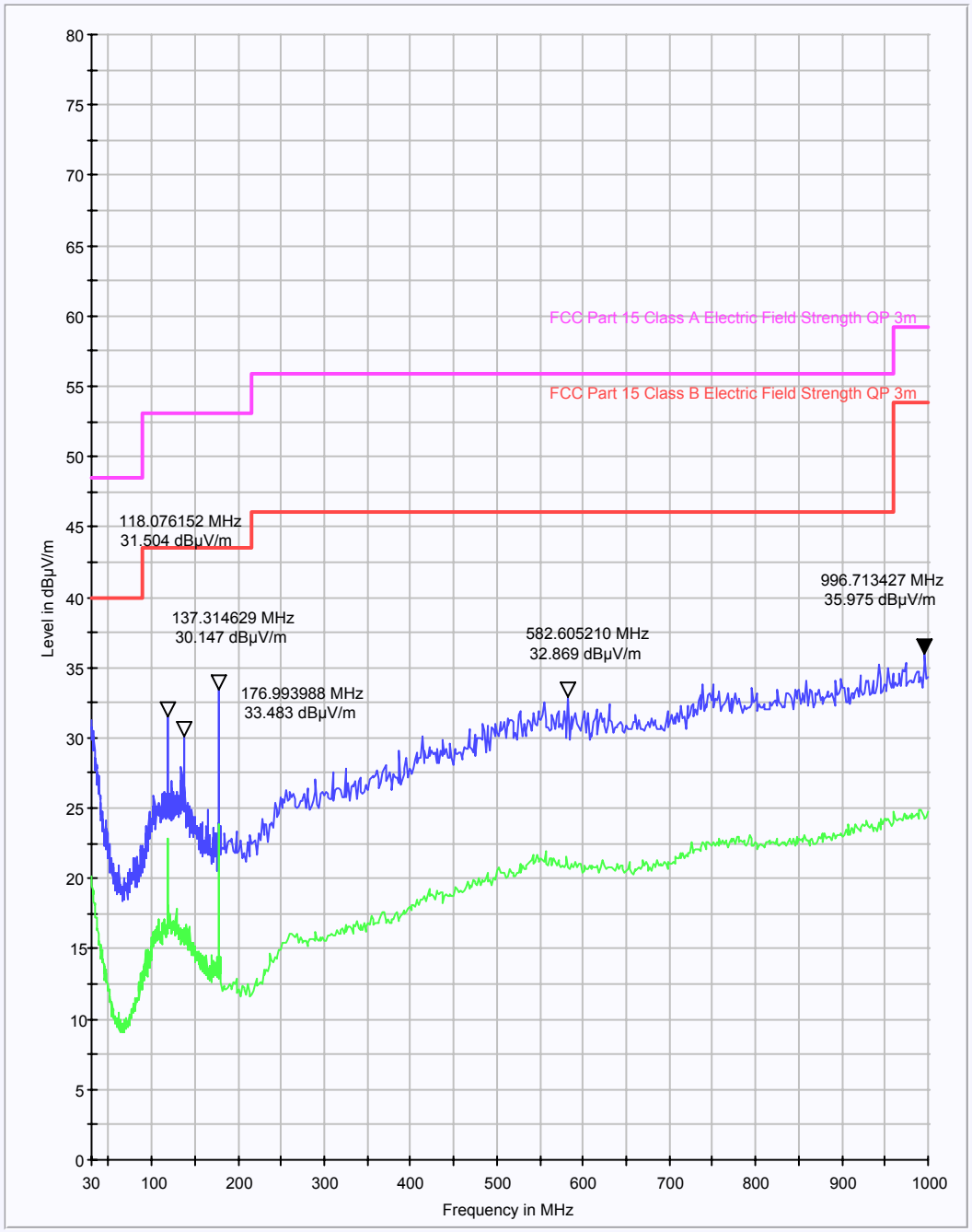
Results:

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

Top Channel

Frequency (MHz)	Antenna Polarity	Peak Level (dBμV/m)	-20 dBc Limit (dBμV/m)	Margin (dB)	Result
176.953	Vertical	27.7	44.7	17.0	Complied
593.988	Vertical	35.3	44.7	9.4	Complied

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



Note: These plots are pre-scans and for indication purposes only. For final measurements, see accompanying tables.

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

The EUT was configured for radiated emission testing, as described in section 9 of this report.

Tests were performed to identify the maximum transmitter radiated emission levels.

Radiated Spurious Emissions was performed on only OFDM 64QAM. OFDM 64QAM is the highest order modulation and demonstrated the highest value of peak output power, using a peak detector.

Results:

Electric Field Strength Measurements (Frequency Range: 1 to 26.0 GHz)
(emissions occurring in the restricted bands)

Highest Peak Level: Bottom Channel

Frequency (GHz)	Antenna Polarity	Detector Level (dBμV)	Transducer Factor (dB)	Actual Level (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Result
4825.651	Vertical	45.7	-3.3	42.4	74.0	31.6	Complied

Highest Average Level: Bottom Channel

Frequency (GHz)	Antenna Polarity	Detector Level (dBμV)	Transducer Factor (dB)	Actual Level (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Result
4825.651	Vertical	45.7	-3.3	42.4	54.0	11.6	See note

Highest Peak Level: Middle Channel

Frequency (GHz)	Antenna Polarity	Detector Level (dBμV)	Transducer Factor (dB)	Actual Level (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Result
4885.772	Vertical	47.4	-3.3	44.1	74.0	29.9	Complied

Highest Average Level: Middle Channel

Frequency (GHz)	Antenna Polarity	Detector Level (dBμV)	Transducer Factor (dB)	Actual Level (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Result
4885.772	Vertical	47.4	-3.3	44.1	54.0	9.9	See note

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

Results:

Highest Peak Level: Top Channel

Frequency (GHz)	Antenna Polarity	Detector Level (dBμV)	Transducer Factor (dB)	Actual Level (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Result
4945.892	Vertical	47.1	-3.3	43.8	74.0	30.2	Complied

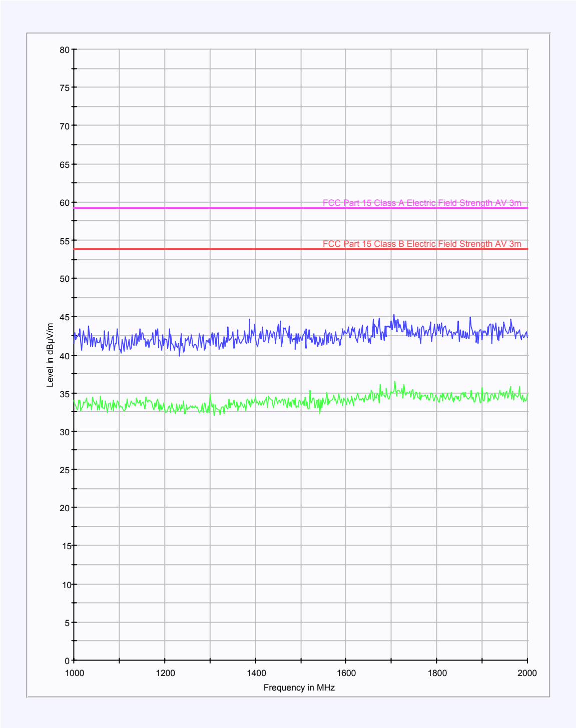
Highest Average Level: Top Channel

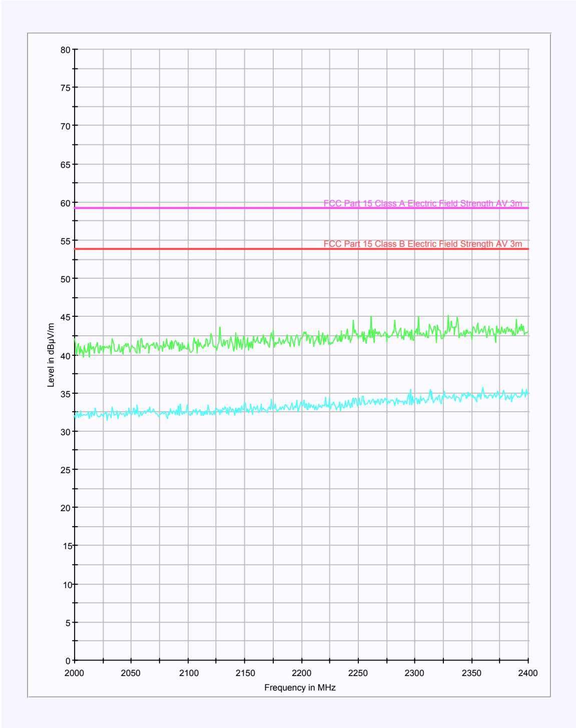
Frequency (GHz)	Antenna Polarity	Detector Level (dBμV)	Transducer Factor (dB)	Actual Level (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Result
4945.892	Vertical	47.1	-3.3	43.8	54.0	10.2	See note

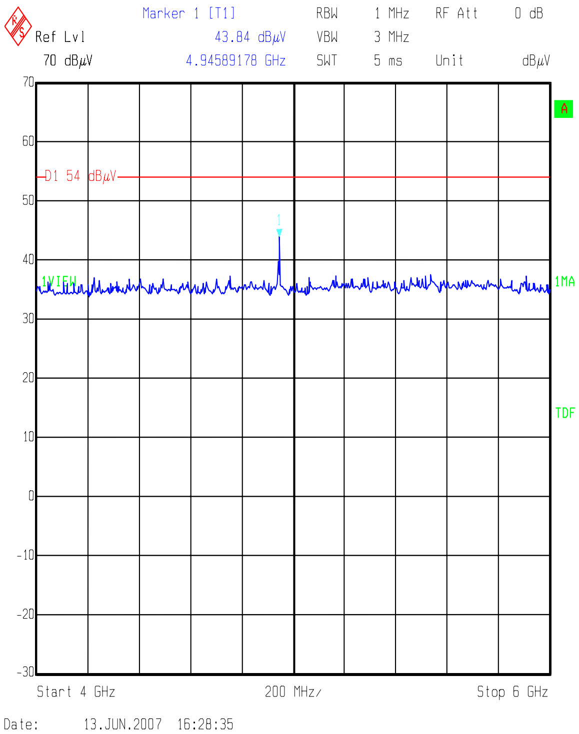
Note(s):

1. *In all cases, the peak level was measured and compared to the peak and average limits.*

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



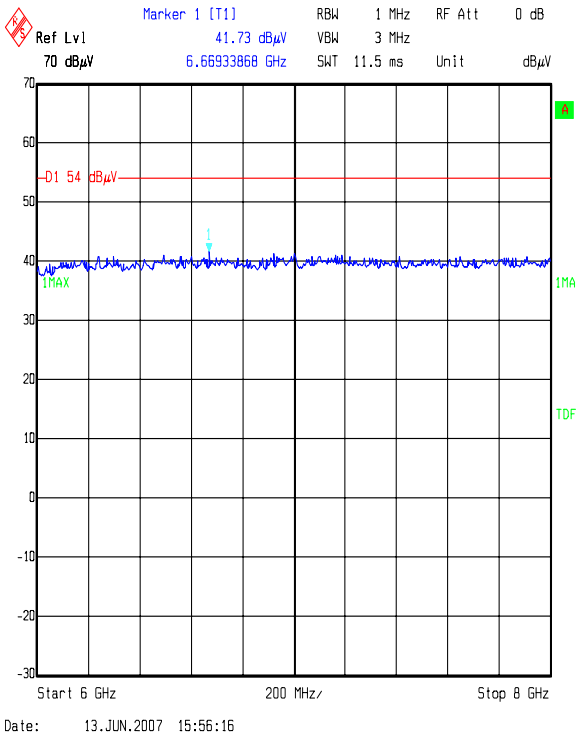


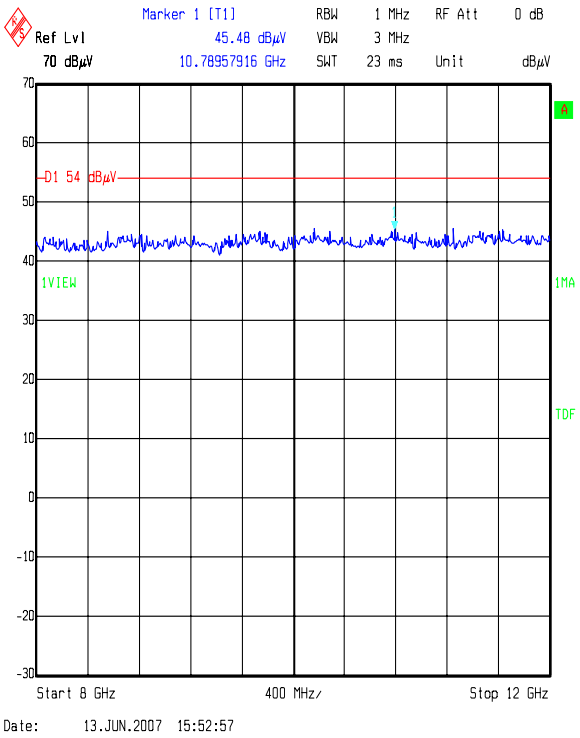


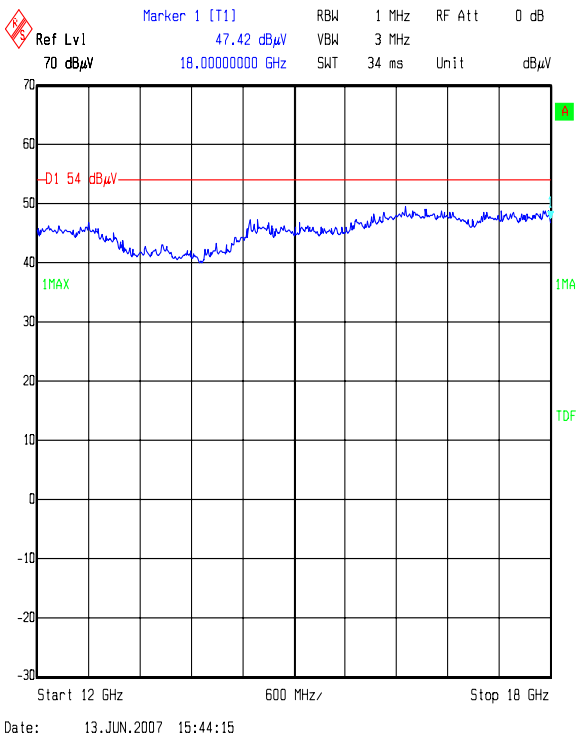
Note: These plots are pre-scans and for indication purposes only. For final measurements, see accompanying tables.

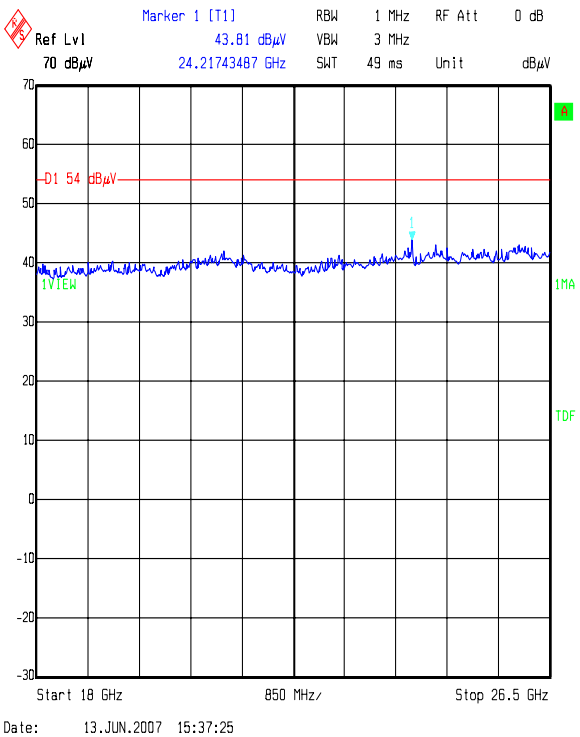
Test of: **Ezurio Ltd**
Datalogger
To: **FCC Part 15.247: 2006 (Subpart C)**

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









Note: These plots are pre-scans and for indication purposes only. For final measurements, see accompanying tables.

7.2.11. Transmitter Band Edge Conducted Emissions: Section 15.247(d)

The EUT was configured for transmitter conducted emissions measurements, as described in section 9 of this report.

Tests were performed to identify the maximum conducted band edge emission levels.

The limit lines shown in the plots below are set to a level 20 dB below the measured fundamental peak power of the channels closest to the lower and upper band edge.

Results: - DSSS BPSK

Peak Power Level:

Frequency (MHz)	Peak Emission Level (dBm)	Peak Emission Level (dBc)	Limit (dBc)	Margin (dB)	Result
2400	-40.3	-44.3	-20.0	24.3	Complied
2483.5	-51.7	-53.7	-20.0	33.7	Complied

Results: - DSSS QPSK

Peak Power Level:

Frequency (MHz)	Peak Emission Level (dBm)	Peak Emission Level (dBc)	Limit (dBc)	Margin (dB)	Result
2400	-35.2	-39.0	-20.0	19.0	Complied
2483.5	-51.8	-53.8	-20.0	33.8	Complied

Results: - DSSS CCK

Peak Power Level:

Frequency (MHz)	Peak Emission Level (dBm)	Peak Emission Level (dBc)	Limit (dBc)	Margin (dB)	Result
2400	-36.7	-40.7	-20.0	20.7	Complied
2483.5	-53.2	-55.2	-20.0	35.2	Complied

Transmitter Band Edge Conducted Emissions: Section 15.247(d) (Continued)

Results: - OFDM BPSK

Peak Power Level:

Frequency (MHz)	Peak Emission Level (dBm)	Peak Emission Level (dBc)	Limit (dBc)	Margin (dB)	Result
2400	-24.8	-25.8	-20.0	5.8	Complied
2483.5	-41.5	-40.5	-20.0	20.5	Complied

Results: - OFDM QPSK

Peak Power Level:

Frequency (MHz)	Peak Emission Level (dBm)	Peak Emission Level (dBc)	Limit (dBc)	Margin (dB)	Result
2400	-24.3	-25.3	-20.0	5.3	Complied
2483.5	-41.8	-40.8	-20.0	20.8	Complied

Results: - OFDM 16QAM

Peak Power Level:

Frequency (MHz)	Peak Emission Level (dBm)	Peak Emission Level (dBc)	Limit (dBc)	Margin (dB)	Result
2400	-26.8	-27.8	-20.0	7.8	Complied
2483.5	-40.7	-39.7	-20.0	19.7	Complied

Results: - OFDM 64QAM

Peak Power Level:

Frequency (MHz)	Peak Emission Level (dBm)	Peak Emission Level (dBc)	Limit (dBc)	Margin (dB)	Result
2400	-23.5	-24.5	-20.0	4.5	Complied
2483.5	-41.8	-40.8	-20.0	20.8	Complied

7.2.12. Transmitter Band Edge Radiated Emissions: Section 15.247(d) & 15.209(a)

The EUT was configured for band edge compliance of radiated emission measurements as described in section 9 of this report.

Tests were performed to identify the maximum radiated band edge emissions.

Results: - DSSS BPSK

Peak Level:

Frequency (MHz)	Antenna Polarity	Detector Level (dBμV)	Transducer Factor (dB)	Actual Level (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Result
2.4000	V	26.8	0	26.8	48.9	22.1	Pass
2.4835	V	34.9	22.5	57.4	74.0	16.6	Pass

Results: - DSSS QPSK

Peak Level:

Frequency (MHz)	Antenna Polarity	Detector Level (dBμV)	Transducer Factor (dB)	Actual Level (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Result
2.4000	V	25.8	0	27.0	51.3	24.3	Pass
2.4835	V	35.6	22.5	58.1	74.0	15.9	Pass

Results: - DSSS CCK

Peak Level:

Frequency (MHz)	Antenna Polarity	Detector Level (dBμV)	Transducer Factor (dB)	Actual Level (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Result
2.4000	V	25.8	0	25.8	48.8	23.0	Pass
2.4835	V	34.8	22.5	57.3	74.0	16.7	Pass

Results: - OFDM BPSK

Peak Level:

Frequency (MHz)	Antenna Polarity	Detector Level (dBμV)	Transducer Factor (dB)	Actual Level (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Result
2.4000	V	34.0	0	34.0	45.1	11.1	Pass
2.4835	V	47.6	22.5	69.8	74.0	4.2	Pass

Results: - OFDM QPSK

Peak Level:

Frequency (MHz)	Antenna Polarity	Detector Level (dBμV)	Transducer Factor (dB)	Actual Level (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Result
2.4000	V	34.2	0	34.2	44.7	10.5	Pass
2.4835	V	44.9	22.5	67.4	74.0	51.5	Pass

Results: - OFDM 16QAM

Peak Level:

Frequency (MHz)	Antenna Polarity	Detector Level (dBμV)	Transducer Factor (dB)	Actual Level (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Result
2.4000	V	33.8	0	33.8	45.2	11.4	Pass
2.4835	V	44.1	22.5	66.6	74.0	7.4	Pass

Results: - OFDM 64QAM

Peak Level:

Frequency (MHz)	Antenna Polarity	Detector Level (dBμV)	Transducer Factor (dB)	Actual Level (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Result
2.4000	V	32.2	0	32.2	45.2	13.0	Pass
2.4835	V	41.8	22.5	64.3	74.0	9.7	Pass

Note(s):

1. *The limit at 2.4 GHz is -20 dBc because this frequency is not within a restricted band.*
2. *The limit at 2.4835 GHz is the limit of FCC part 15.209 because it is within a restricted band.*
3. *No transducer factors were used at 2.4 GHz because it was a dBc measurement.*

7.2.13. Transmitter Band Edge Radiated Emissions: Section 15.247(d) & 15.209(a)

The EUT was configured for band edge compliance of radiated emission measurements, as described in section 9 of this report.

Tests were performed to identify the average radiated band edge emissions.

Results: - DSSS BPSK

Average Power Level:

Frequency (GHz)	Antenna Polarity	Detector Level (dBμV)	Transducer Factor (dB)	Actual Level (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Result
2.4835	V	23.1	22.5	45.6	54.0	8.4	Pass

Results: - DSSS QPSK

Average Power Level:

Frequency (GHz)	Antenna Polarity	Detector Level (dBμV)	Transducer Factor (dB)	Actual Level (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Result
2.4835	V	22.9	22.5	45.4	54.0	8.6	Pass

Results: - DSSS CCK

Average Power Level:

Frequency (GHz)	Antenna Polarity	Detector Level (dBμV)	Transducer Factor (dB)	Actual Level (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Result
2.4835	V	23.0	22.5	45.5	54.0	8.5	Pass

Results: - OFDM BPSK

Average Power Level:

Frequency (GHz)	Antenna Polarity	Detector Level (dBμV)	Transducer Factor (dB)	Actual Level (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Result
2.4835	V	27.8	22.5	50.3	54.0	3.7	Pass

Results: - OFDM QPSK

Average Power Level:

Frequency (GHz)	Antenna Polarity	Detector Level (dBμV)	Transducer Factor (dB)	Actual Level (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Result
2.4835	V	25.8	22.5	48.3	54.0	5.7	Pass

Results: - OFDM 16QAM

Average Power Level:

Frequency (GHz)	Antenna Polarity	Detector Level (dBμV)	Transducer Factor (dB)	Actual Level (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Result
2.4835	V	24.4	22.5	46.9	54.0	7.1	Pass

Results: - OFDM 64QAM

Average Power Level:

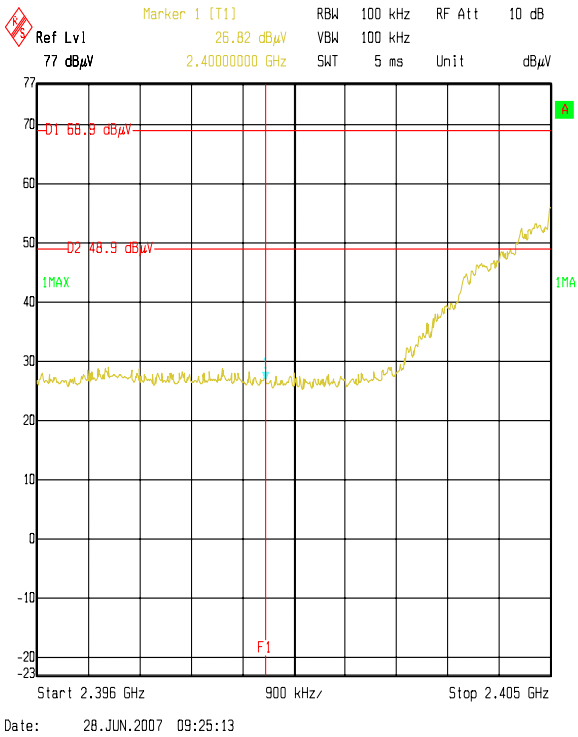
Frequency (GHz)	Antenna Polarity	Detector Level (dBμV)	Transducer Factor (dB)	Actual Level (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Result
2.4835	V	23.9	22.5	46.4	54.0	7.6	Pass

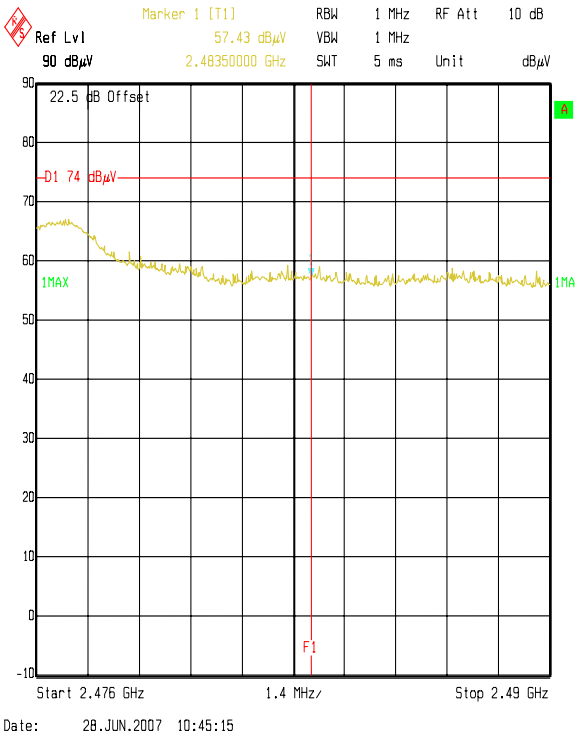
Note(s):

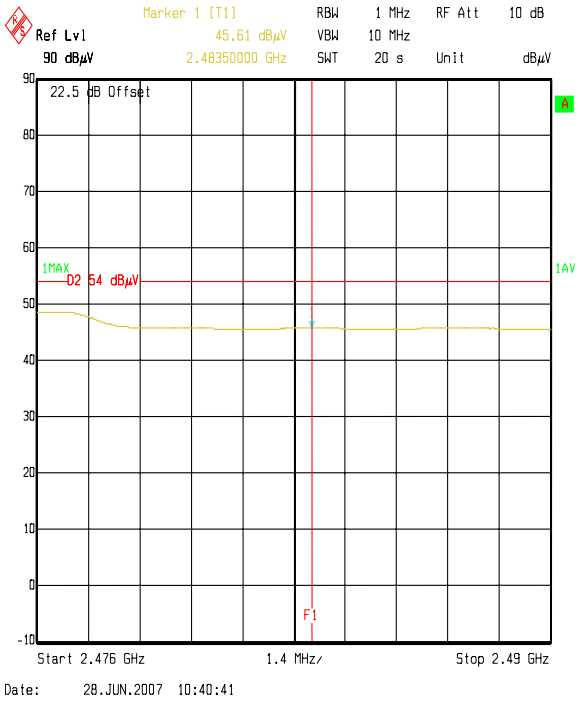
1. *The limit at 2.4835 GHz is the limit of FCC part 15.209 because it is within a restricted band.*

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

DSSS BPSK



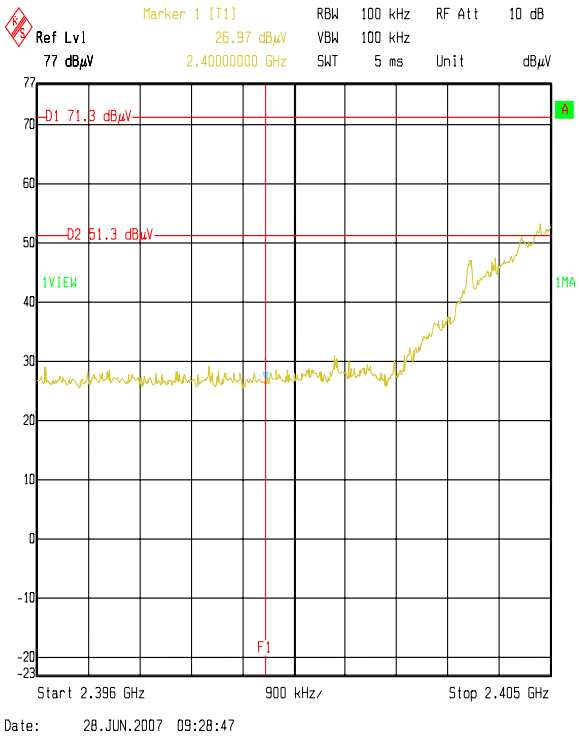


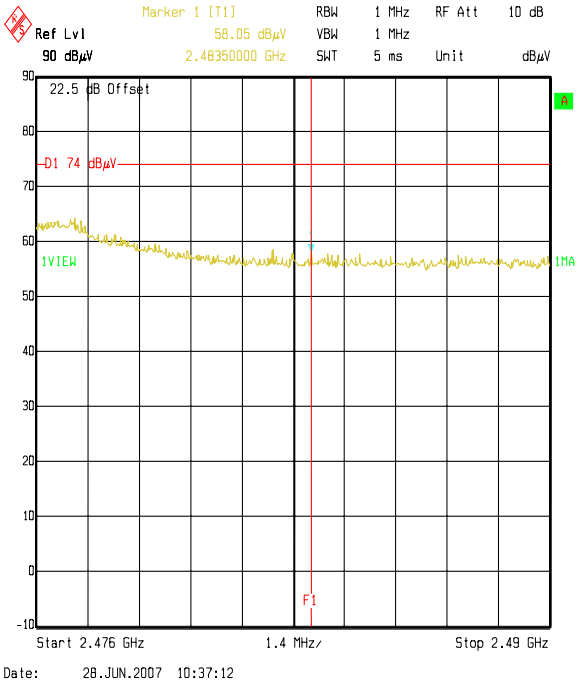


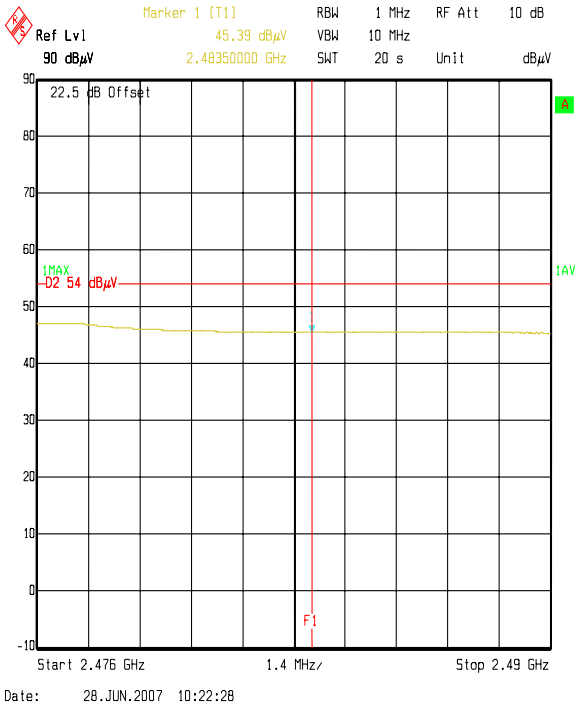
Test of: Ezurio Ltd
Datalogger
To: FCC Part 15.247: 2006 (Subpart C)

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

DSSS QPSK



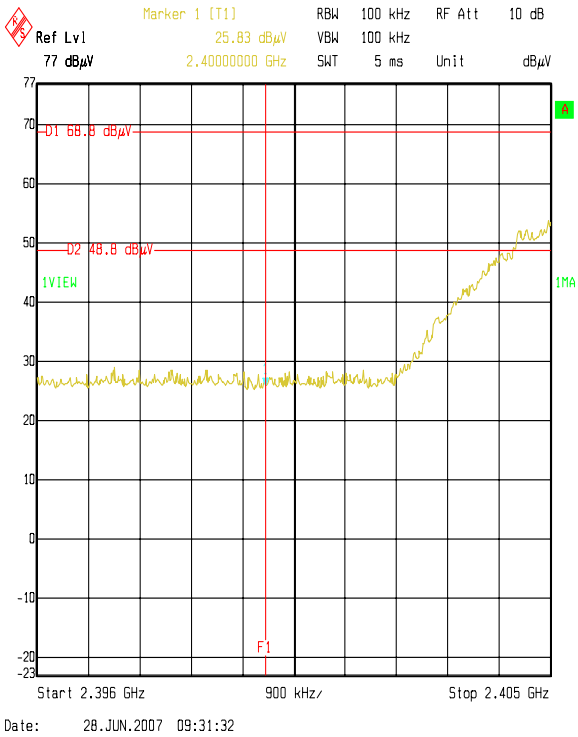


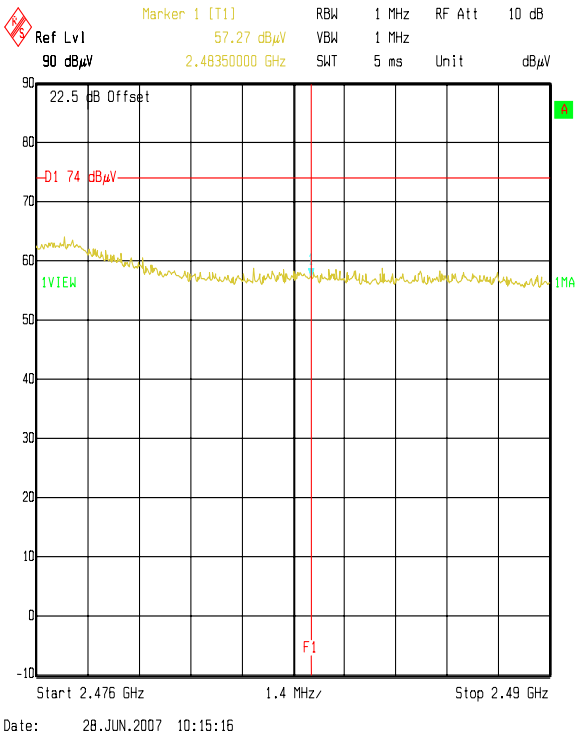


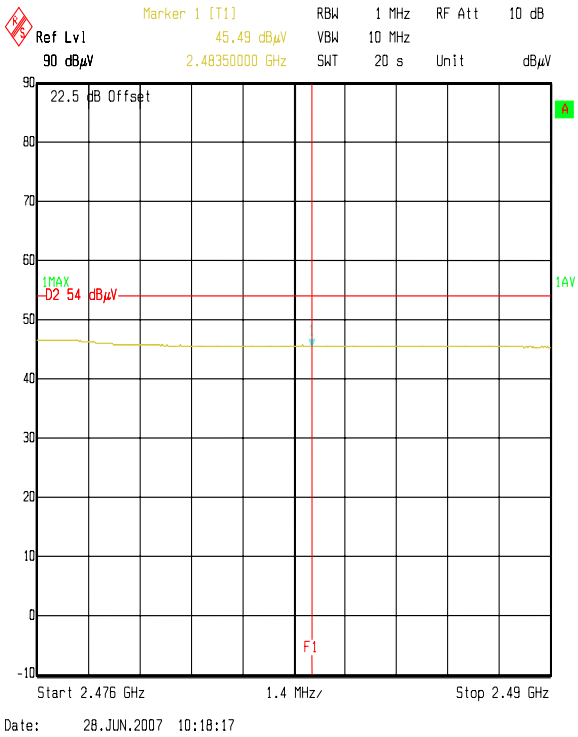
Test of: Ezurio Ltd
Datalogger
To: FCC Part 15.247: 2006 (Subpart C)

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

DSSS CCK

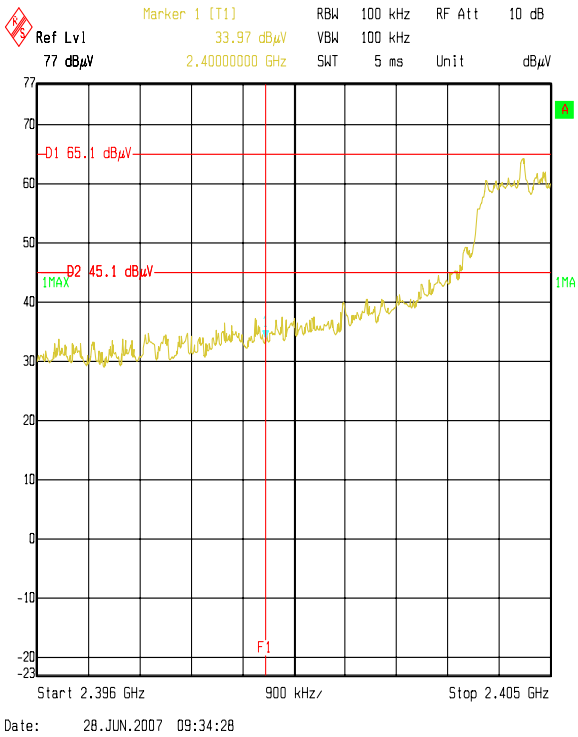


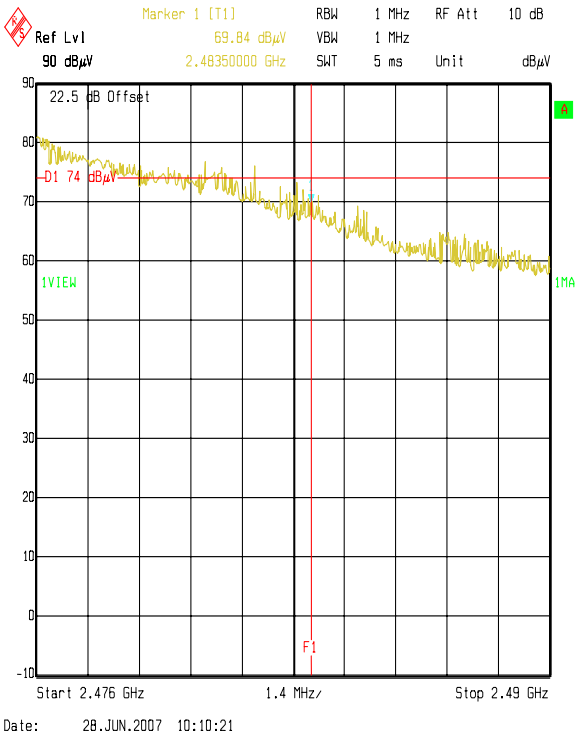


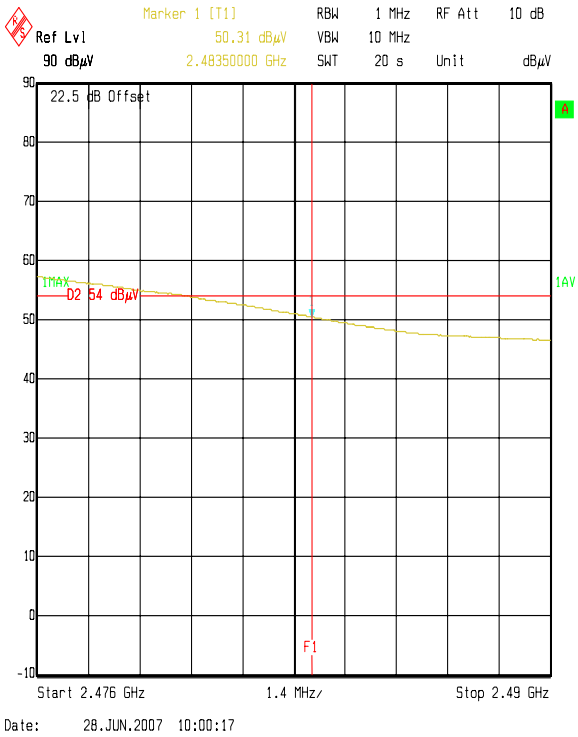


Transmitter Band Edge Radiated Emissions: Section 15.247(d) & 15.209(a) (Continued)

OFDM BPSK



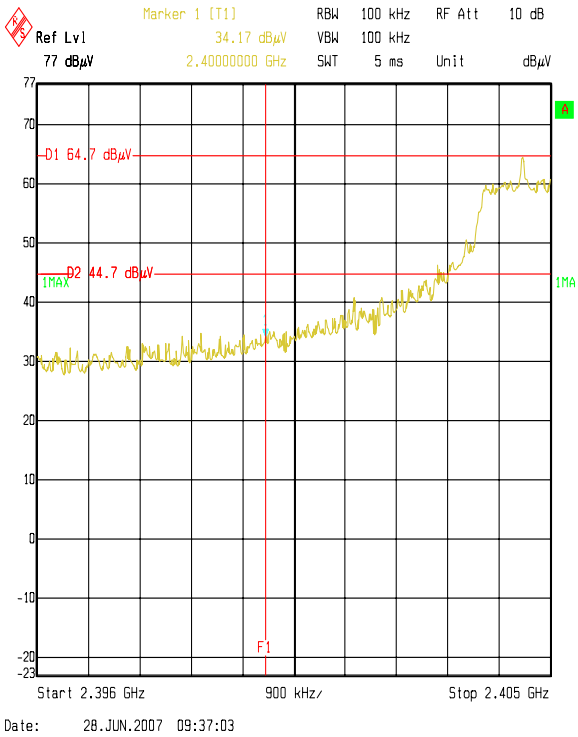


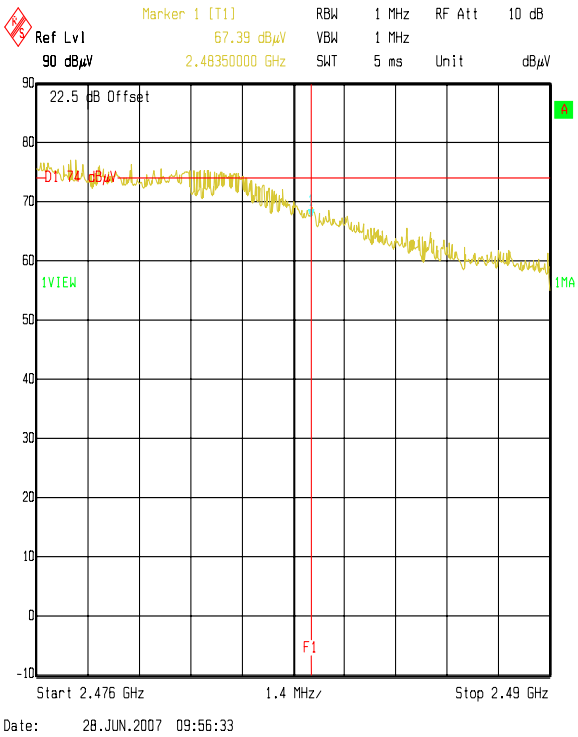


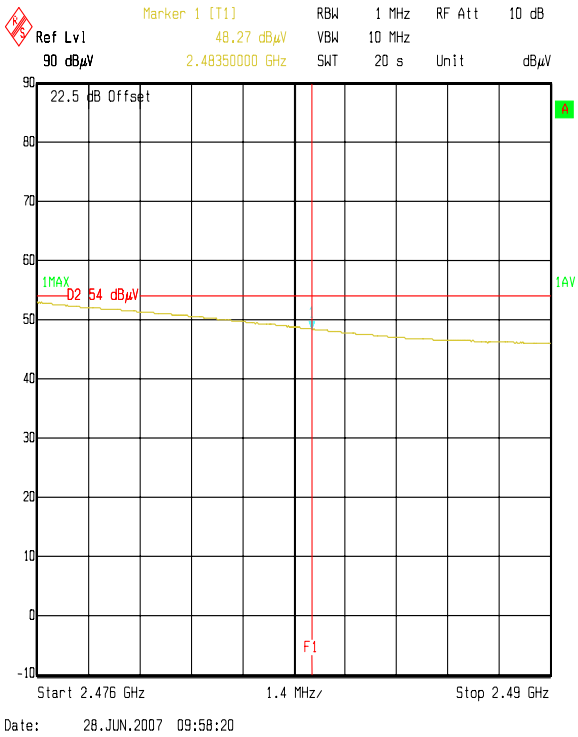
Test of: Ezurio Ltd
Datalogger
To: FCC Part 15.247: 2006 (Subpart C)

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

OFDM QPSK



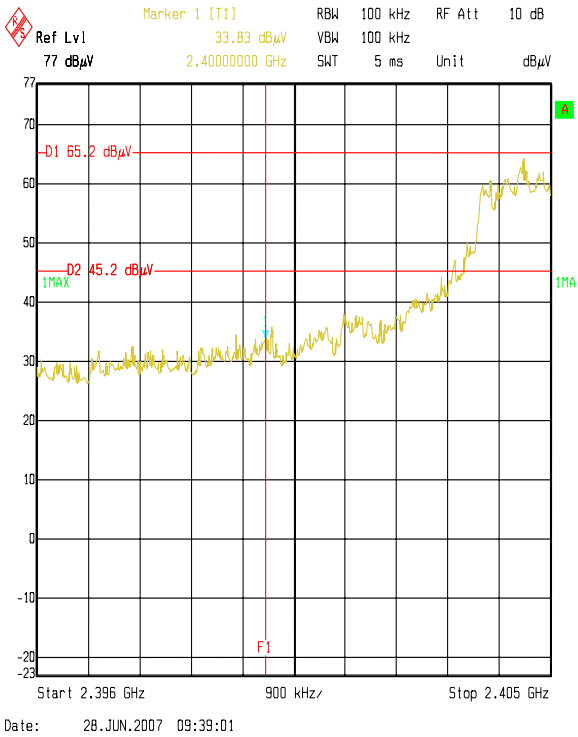


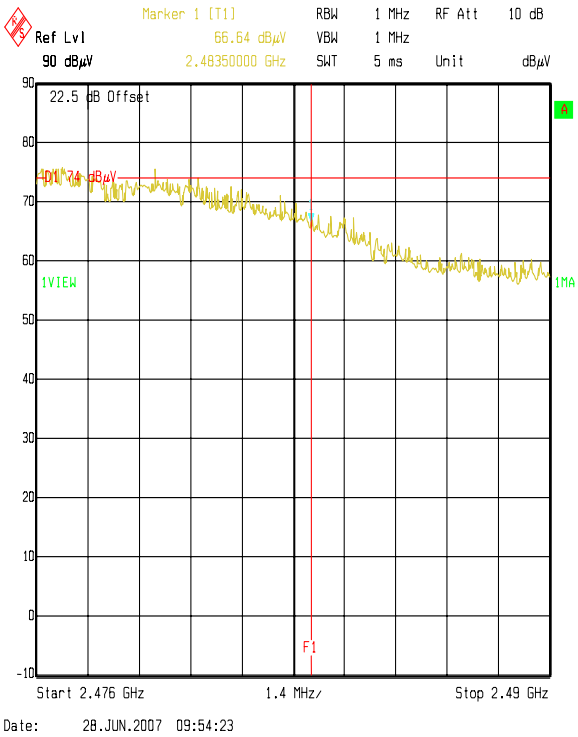


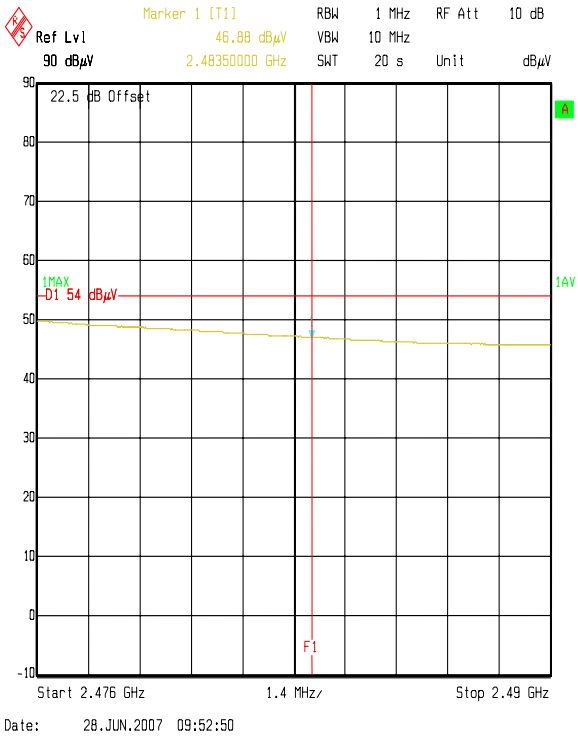
Test of: Ezurio Ltd
Datalogger
To: FCC Part 15.247: 2006 (Subpart C)

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

OFDM 16QAM



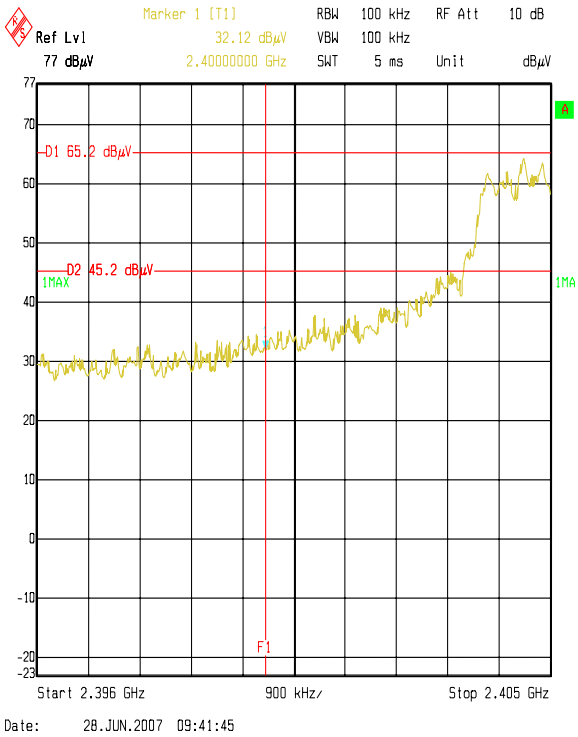


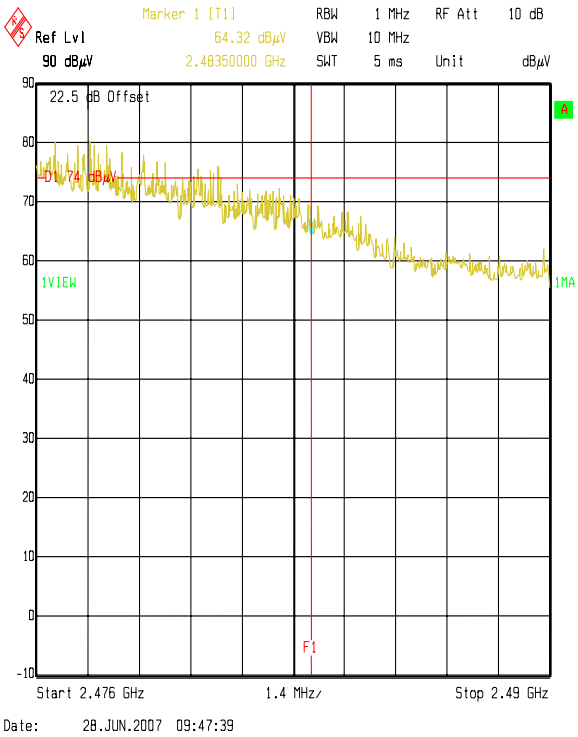


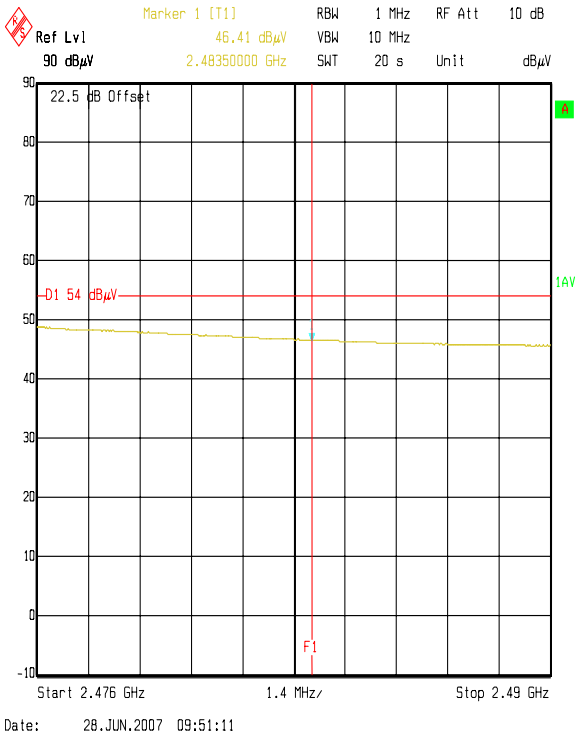
Test of: Ezurio Ltd
Datalogger
To: FCC Part 15.247: 2006 (Subpart C)

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

OFDM 64QAM







8. 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 MHz	95%	+/- 3.25 dB
Transmitter Maximum Peak Output Power	Not applicable	95%	+/- 0.46 dB
Conducted Emissions Antenna Port	30 MHz to 40 GHz	95%	+/- 1.2 dB
Spectral Power Density	Not applicable	95%	+/- 1.2 dB
6 dB/20 dB Bandwidth	Not applicable	95%	+/- 0.12 %
Radiated Spurious Emissions	30 MHz to 1000 MHz	95%	+/- 5.26 dB
Radiated Spurious Emissions	1 GHz to 40 GHz	95%	+/- 1.78 dB

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.

9. Measurement Methods

9.1. 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

9.2. Radiated Emissions

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

Initial measurements covering the entire measurement band in the form of swept scans in a shielded enclosure were performed in order to identify frequencies on which the EUT was generating interference. This determined the frequencies on which the EUT should be re-measured in full on the open area test site. In order to minimise the time taken for the swept measurements, a peak detector was used in conjunction with the appropriate detector IF measuring bandwidth (see table below). Repetitive scans were performed to allow for emissions with low repetition rates.

The initial scans were performed using an antenna height of 1.5 m and a measurement distance of 3 m. Following the initial scans, graphs were produced giving an overview of the emissions from the EUT plotted against the appropriate specification limit. Any emission within 20 dB of the limit were then measured on the open area test site, except in cases where the noise floor was within 20 dB of the limit, in these cases the highest point of the noise floor was measured.

Where an emission fell inside a restricted band, measurements were made at the appropriate test distance using a measuring receiver with a quasi peak detector for measurements below 1000 MHz and an average and peak detector for measurements above 1000 MHz. A peak detector was used for all other measurements.

For the final measurements the EUT was arranged on a non-conducting turn table on a standard test site compliant with ANSI C63.4 – 2003 Clause 5.4.

All measurements on the open area test site were performed using broadband antennas in both vertical and horizontal polarisations.

On the open area test site, at each frequency where a signal was to be measured, the trace was maximised by rotating a turntable through 360°. The angle at which the maximum signal was observed was locked out. For frequencies below 1000 MHz the test antenna was varied in height between 1 m and 4 m in order to further maximise the target emission.

For frequencies above 1000 MHz where a horn antenna was used, height searching was performed to locate the optimal height of the horn with respect to the EUT. At this point the horn was locked off and the turntable was again rotated through 360° to maximise the target signal. It should be noted that the received signal from the EUT would diminish very quickly after it exits the beam width of the horn antenna, for this reason it may not be necessary to fully height search with the horns.

Radiated Emissions (Continued)

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.

Scans were performed to the upper frequency limits as stated in section 15.33

The final field strength was determined as the indicated level in dBμV plus cable loss and antenna factor.

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

Receiver Function	Initial Scan	Final Measurements <1 GHz	Final Measurements ≥1 GHz
Detector Type:	Peak	Quasi-Peak (CISPR)	Peak / Average
Mode:	Max Hold	Not applicable	Max Hold
Bandwidth:	(120 kHz <1 GHz) (1 MHz ≥1 GHz)	120 kHz	1 MHz
Amplitude Range:	100 dB	100 dB	100 dB
Step Size:	Continuous sweep	Not applicable	Not applicable
Sweep Time:	Coupled	Not applicable	Not applicable

9.3. Conducted Antenna Port Emissions

Conducted antenna port emissions measurements were performed using a 100 kHz bandwidth in accordance with the standard against the appropriate limits.

Prior to testing being performed a suitable RF attenuator and cable, were calibrated for the required frequency range. For each measurement range the calibrated level of the attenuator and cable were entered as an offset into the spectrum analyser to compensate for the losses in the measurement set up.

Initial measurements covering the entire measurement band in the form of swept scans were performed in order to identify frequencies on which the EUT was generating interference. This determined the frequencies on which final measurements were necessary. To make the final measurements a peak detector was used in conjunction with the appropriate detector IF measuring bandwidth.

Repetitive scans were performed to allow for emissions with low repetition rates.

Scans were performed to the upper frequency limits as stated in 15.33(a)(1)

Minimum 6 dB Bandwidth

The EUT and spectrum analyser were configured as for conducted antenna port emissions measurements.

The 6 dB bandwidth was measured using the built in occupied bandwidth function of the Rohde and Schwarz FSEB or ESIB spectrum analyser. It was set to measure the bandwidth where 75% (6 dB) of the signal power was contained. The analyser settings were set as per those outlined in the spectrum analyser user manual for this measurement, i.e. RBW > 1% of occupied bandwidth.

Prior to testing being performed a suitable RF attenuator and cables were calibrated for the required frequencies. For each frequency the calibrated level of the attenuator and cable were entered as an offset into the spectrum analyser to compensate for the losses in the measurement set up.

To determine the 6 dB bandwidth, a resolution bandwidth and video bandwidth of 200 kHz was used. The analyser was set to a span of greater than twice the 6 dB bandwidth and for a maximum hold scan to capture the profile of the signal. The peak level was then determined, and a reference established 6 dB below the peak level. The bandwidth was determined at the points where the 6 dB reference crossed the profile of the emission.

9.4. Transmitter 20 dB Bandwidth

The EUT and spectrum analyser was configured as for transmitter conducted antenna port emissions measurements.

To determine the occupied bandwidth, a resolution bandwidth of 200 kHz was used, which is greater than 1% of the 20 dB bandwidth. A video bandwidth of a least the same value was used. The analyser was set for a maximum hold scan to capture the profile of the signal. The peak level was then determined, and a reference line was drawn 20 dB below the peak level. The bandwidth was determined at the points where the 20 dB reference crossed the profile of the emission.

9.5. Spectral Power Density

The EUT and spectrum analyser were configured as for conducted antenna port emissions measurements.

Prior to testing being performed a suitable RF attenuator and cables were calibrated for the required frequencies. For each frequency the calibrated level of the attenuator and cable were entered as an offset into the spectrum analyser to compensate for the losses in the measurement set up.

Prior to the measurement being taken the spectrum analyser was tuned to the fundamental frequency of the EUT.

A resolution bandwidth of 3 kHz was selected and the analyser was set to a span greater than twice the 6 dB bandwidth. The trace was max held and a reading was taken at the peak point of the trace.

9.6. Peak Output Power

The EUT and spectrum analyser were configured as for conducted antenna port emissions measurements.

Prior to testing being performed a suitable RF attenuator and cables were calibrated for the required frequencies. For each frequency to be measured, the calibrated level of the attenuator and cable were entered as an offset into a spectrum analyser to compensate for the measurement set up.

To determine the transmitter output power, the EUT was operated at maximum power and a result was obtained using a wideband peak power meter.

9.7. Band Edge Compliance of RF Radiated Emissions

The EUT and spectrum analyser were configured as for radiated measurements.

To determine band edge compliance, the analyser resolution bandwidth was set to >= 1% of the analyser span. The video bandwidth was set to be $\geq$ to the resolution bandwidth. The sweep was set to auto and the detector to peak. The trace was set to max hold and a trace was produced.

A plot of the lower band edge of the allocated frequency band was produced. A marker was set to the level of the highest in band emission with a limit line set to 20 dB below this. The marker was then placed on the highest out of band emission (the specification states that either the band edge level must be measured or the highest out of band emission, whichever is the greater). The plots show that the highest out of band emission complies with the 20 dBc Limit.

The above procedure was then repeated for the upper band edge except that, as the upper band edge fell on a restricted band edge (as defined in section 15.205(a)), the limit for the restricted band was applied instead of the 20 dBc limit i.e. the general limits defined in section 15.209(a).

Final measurements were performed on the worst-case configuration as described in part 15.31(i).

9.8. Effective Radiated Power (ERP)

ERP measurements were performed in accordance with the standard, against appropriate limits.

The ERP was measured with the EUT arranged on a non-conducting turn table on a standard test site compliant with ANSI C63.4 – 2003 Clause 5.4. The transmitter was fitted with an integral antenna; as such all radiated tests were performed with the unit operating into the integral antenna.

The level of the ERP was measured using a spectrum analyser.

The test antenna was positioned in the horizontal plane. The EUT was oriented in the X plane. The test antenna was then raised and lowered until a maximum peak was observed. The turntable was then rotated through 360 degrees and the maximum peak reading obtained. The height search was then repeated to take into consideration the new angular position of the turntable. The maximum reading observed was then recorded. This procedure was then repeated with the EUT oriented in the Y and Z planes. The highest reading taken in all 3 planes was recorded. The entire procedure was then repeated with the test antenna set in the vertical polarity.

Once the final amplitude (maximised) had been obtained, the EUT was substituted with a substitution antenna. For ERP measurements a dipole antenna was used. The centre of the substitution antenna was set to approximately the same centre location as the EUT. The substitution antenna was set to the horizontal polarity. The substitution antenna was matched into a signal generator using a 6 dB or greater PAD. The signal generator was tuned to the EUT's frequency under test.

The test antenna was then raised and lowered to obtain a maximum reading on the spectrum analyser. The level of the signal generator output was then adjusted until the maximum recorded EUT level was observed. The signal generator level was noted. This procedure was repeated with both test antenna and substitution antenna vertically polarised. The ERP was calculated as:-

ERP = Signal Generator Level - Cable Loss + Antenna Gain

Effective Radiated Power (ERP) (Continued)

Circumstances where the signal generator could not produce the desired power substitution was performed with the signal generator set to 0 dBm. The radiated signal was maximised as previously described. The level indicated on the measuring receiver was noted. The delta between this level and the maximum level for the EUT was calculated and also noted. The ERP of the signal generator was calculated using the above formulae. The recorded delta was added to the calculated ERP to obtain the substituted EUT ERP.

Delta (dB) = EUT – SG

Where :

EUT = spectrum analyser indicated EUT raw level

SG = spectrum analyser indicated signal generator raw level

The signal generator actual ERP is calculated as:

ERP SG= Signal Generator Level - Cable Loss + Antenna Gain

The EUT ERP is calculated as:

ERP EUT = ERP SG + Delta.

The test equipment settings for ERP measurements were as follows:

Receiver Function	Setting
Detector Type:	Peak
Mode:	Not applicable
Bandwidth:	≥ Emission Bandwidth
Amplitude Range:	100 dB
Sweep Time:	Coupled

Appendix 1. Test Equipment Used

RFI No.	Instrument	Manufacturer	Type No.	Serial No.	Date Last Calibrated	Cal. Interval (Months)
A028	Horn Antenna	Eaton	91888-2	304	08 Jun 2006	36
A1037	Bilog Antenna	Chase EMC Ltd	CBL6112B	2413	20 Sep 2006	12
A1534	Preamplifier	Hewlett Packard	8449B OPT H02	3008A00405	Cal before use	-
A1537	Directional Coupler	Hewlett Packard	778D	1144A05122	Cal before use	-
A253	Horn Antenna	Flann Microwave	12240-20	128	17 Nov 2006	36
A254	Horn Antenna	Flann Microwave	14240-20	139	17 Nov 2006	36
A255	Horn Antenna	Flann Microwave	16240-20	519	17 Nov 2006	36
A256	Horn Antenna	Flann Microwave	18240-20	400	17 Nov 2006	36
A259	Bilog Antenna	Chase	CBL6111	1513	13 Mar 2007	12
A436	Horn Antenna	Flann	20240-20	330	24 Apr 2006	36
C1065	Cable	Rosenberger	UFA210-1-7872	0985	06 Jun 2007	12
C1110	Cable	Semflex, Inc.	X116BFSX10040	None	30 May 2007	12
C1165	Cable	Rosenberger	FA210A1020007070	43189-1	05 Jun 2007	12
C151	Cable	Rosenberger	UFA210A-1-1181-70x70	None	Cal before use	-
C341	Cable	Andrews	None	None	Cal before use	-
C348	Cable	Rosenberger	UFA210A-1-1181-70x70	2993	Cal before use	-
C461	Cable	Rosenberger	UFA210A-1-1182-704704	98H0305	Cal before use	-
C468	Cable	Rosenberger	UFA210A-1-3937-504504	98L0440	Cal before use	-

Test Equipment Used (Continued)

RFI No.	Instrument	Manufacturer	Type No.	Serial No.	Date Last Calibrated	Cal. Interval (Months)
E0513	Environmental Chamber	TAS	LT600 Series 3	23900506	Cal during use	-
M024	Spectrum Monitor	Rohde & Schwarz	EZM	873 952/006	Not calibrated	-
M1172	Power Sensor	HP	8481B	CSC21296	02 Nov 2006	12
M1242	Spectrum Analyser	Rohde & Schwarz	FSEM30	845986_022	08 Sep 2006	12
M1263	EMI Test Receiver	Rohde & Schwarz	ESIB7	100265	25 Jan 2007	12
S201	3m & 10m OATS	RFI	1	None	25 May 2007	12
S202	3m OATS	RFI	2	S202-15011990	17 Nov 2006	12
S212	Screened Room	RFI	12	None	Not calibrated	-
S216	Microwave Lab.	RFI	16	None	Not calibrated	-

NB In accordance with UKAS requirements, all the measurement equipment is on a calibration schedule. All equipment was within calibration at the time of the test.

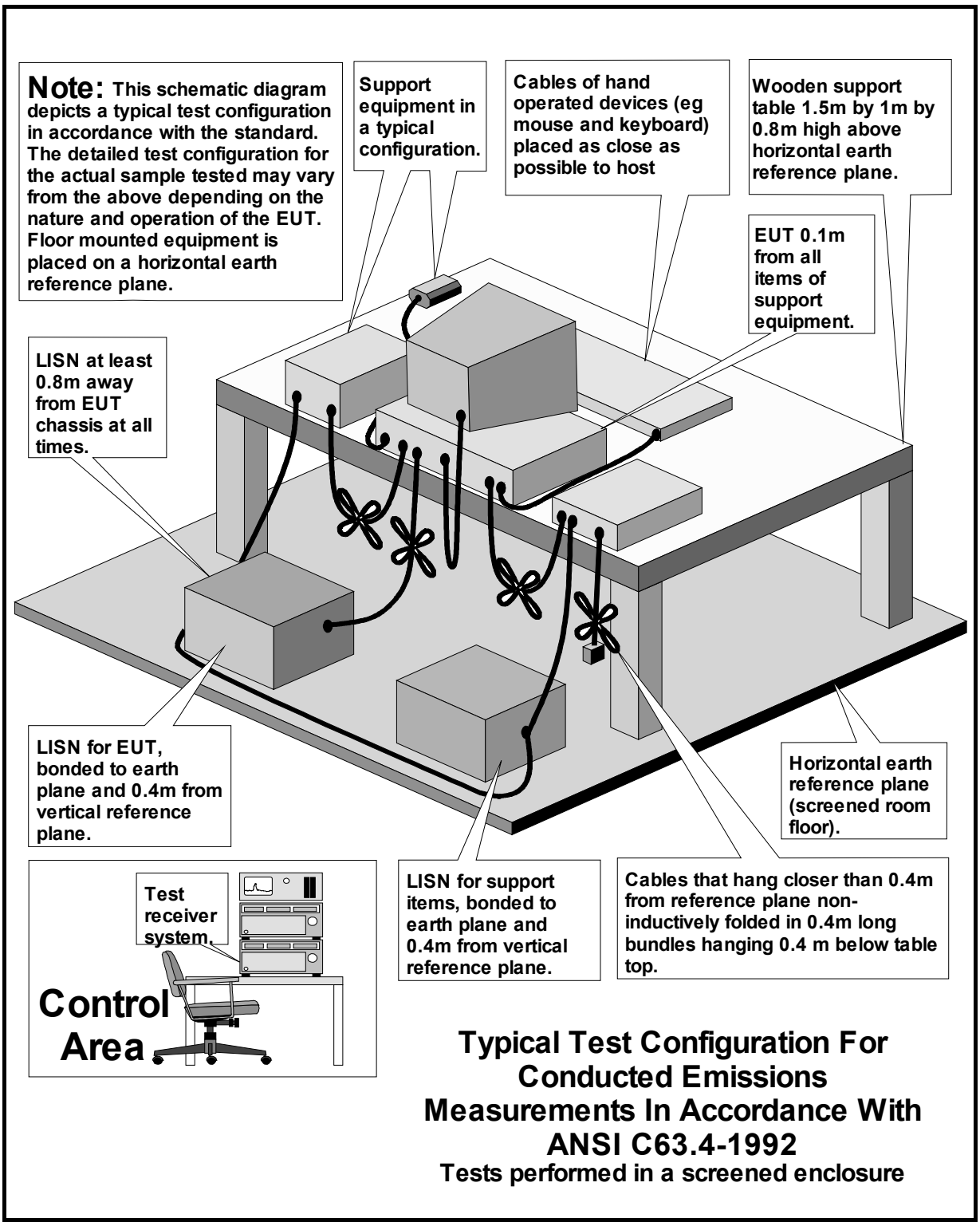
Appendix 2. Test Configuration Drawings

This appendix contains the following drawings:

Drawing Reference Number	Title
DRG\48939JD15A\EMICON	Test configuration for measurement of conducted emissions.
DRG\48939JD15A\EMIRAD	Test configuration for measurement of radiated emissions.

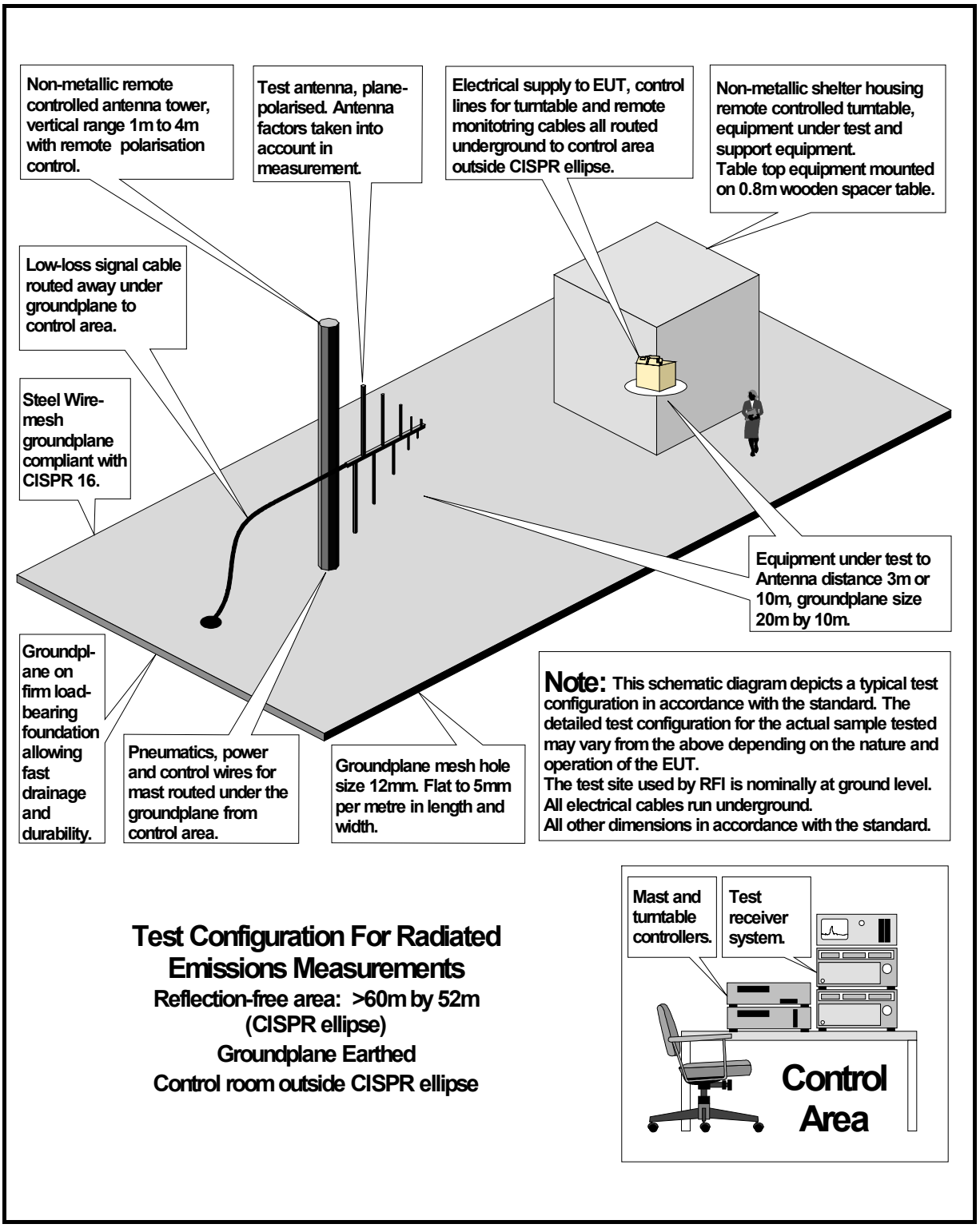
Test of: Ezurio Ltd
Datalogger
To: FCC Part 15.247: 2006 (Subpart C)

DRG\48939JD15A\EMICON



This diagram is still valid for the latest version of ANSI C63.4-2003

DRG\48939JD15A\EMIRAD



Test Configuration For Radiated Emissions Measurements

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

Groundplane Earthed

Control room outside CISPR ellipse