



TEST REPORT FROM RFI GLOBAL SERVICES LTD

Test of: IPWireless
2.5 GHz TD-CDMA PCI Express Mini Module:
AAU

To: FCC Part 27: 2007 (Subpart C)

Test Report Serial No:
RFI/RPT1/RP73252JD01C

This Test Report Is Issued Under The Authority Of Steve Flocks, Service Leader: 	
Checked By: Steve Flocks 	Report Copy No: PDF01
Issue Date: 03 October 2008	Test Dates: 11 August 2008 to 26 August 2008

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RFI GLOBAL SERVICES LTD

TEST REPORT

S.No: RFI/RPT1/RP73252JD01C

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Issue Date: 03 October 2008

Test Of: IPWireless

2.5 GHz TD-CDMA PCI Express Mini Module: AAU

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2.5 GHz TD-CDMA PCI Express Mini Module: AAU
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2.5 GHz TD-CDMA PCI Express Mini Module: AAU

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1. Customer Information

Company Name:	IPWireless (UK) Ltd
Address:	Unit 7 Greenways Business Park Bellinger Close Chippenham Wilts SN15 1BN
Contact Name:	Mr P Warburg

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2. Equipment Under Test (EUT)

The following information has been supplied by the customer:

2.1. Identification of Equipment Under Test (EUT)

Description:	TD-CDMA PCI-E® Mini Module
Brand Name:	IPWireless
Model Number:	AAU
Serial Number:	AAUA831000823
IMEI Number:	357163020190075
FCC ID Number:	PKTPEMAAU
Hardware Version:	Pass 2
Software Version:	None Stated
Country of Manufacture:	United Kingdom
Date of Receipt:	11 August 2008

2.2. Description of EUT

The unit under test was a PCI-E mini module.

2.3. Modifications Incorporated in EUT

During the course of testing the EUT was not modified.

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2.4. Additional Information Related to Testing

Power Supply Requirement:	3.3VDC \pm 9%		
Equipment Category:	Module		
Type of Unit:	PCI Express mini module		
Declared Channel Bandwidth:	11 MHz		
Highest generated frequency:	5 GHz		
Transmit Frequency Range:	2501.4 MHz to 2684.6 MHz		
Transmit Channels Tested:	Channel ID	Channel Number	Channel Frequency (MHz)
	Bottom	12507	2501.4
	Middle	12965	2593.0
	Top	13420	2684.6
Receive Frequency Range:	2501.4 MHz to 2684.6 MHz		
Receive Channels Tested:	Channel ID	Channel Number	Channel Frequency (MHz)
	Bottom	12507	2501.4
	Middle	12965	2593.0
	Top	13420	2684.6

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2.5. Support Equipment

The following support equipment was supplied by the applicant and used to exercise the EUT during testing:

Description:	Adaptor board
Brand Name:	IPWireless
Model Name or Number:	AAF
Serial Number:	EEMS 022630 0009
Hardware Version:	Pass 2
Software Version:	N/A
Country of Manufacture:	United Kingdom
Date of Receipt:	11 August 2008

Description:	Adaptor board
Brand Name:	IPWireless
Model Name or Number:	AAF
Serial Number:	EEMS 022630 0004
Hardware Version:	Pass 2
Software Version:	N/A
Country of Manufacture:	United Kingdom
Date of Receipt:	11 August 2008

Description:	Laptop PC
Brand Name:	Toshiba
Model Name or Number:	PSAAPE-00H00KEN
Serial Number:	670709710
Cable Length and Type:	1.5 metres / USB
Connected to Port:	USB

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Support Equipment (Continued)

Description:	USB cable
Cable Length and Type:	1.8 metre / multi core
Connected to Port:	USB

Description:	Bench power supply
Brand Name:	TTI
Model Name or Number:	CPX200
Serial Number:	163296
Cable Length and Type:	3 metres / 2 core
Connected to Port:	Power

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3. Test Specification, Methods and Procedures

3.1. Test Specification

Reference:	FCC Part 15: 2007 Class B
Title:	Code of Federal Regulations, Part 15 (47CFR) Radio Frequency Devices: Digital Devices.

Reference:	FCC Part 27: 2007 (Subpart C)
Title:	Code of Federal Regulations, Part 27 (47CFR) Subpart C Satellite Communications and Miscellaneous Wireless Communications Services.

3.2. 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 (1996)

Title: American National Standard for Instrumentation - Electromagnetic noise and field strength.

ANSI C63.4 (2003)

Title: American National Standard for Methods of Measurement of Radio-Noise Emissions from Low Voltage Electrical and Electronic Equipment in the Range of 9 kHz to 40 GHz.

ANSI C63.5 (1998)

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.

3.3. 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.

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4. Deviations from the Test Specification

Testing at voltage extremes was carried out at V_{nom} and $V_{nom} \pm 9\%$ at the request of the Customer and not V_{nom} and $V_{nom} \pm 15\%$ as required by the Standard. This is because the EUT complies with the PCI Express Standard which specifies the $\pm 9\%$ tolerance. A breakout point for the power supply was provided by the Customer on adapter board (Serial No. EEMS 022630 0004) in order to vary the supply to the EUT as this is normally provided from the PCI Express interface on the standard adapter board (Serial No. EEMS 022630 0009).

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5. Operation of the EUT During Testing

5.1. Operating Modes

The EUT was tested in the following operating modes:

- The EUT operates across the FCC Part 27 band from 2496 MHz to 2690 MHz.
- The EUT was tested in the following operating modes, unless otherwise stated:
- TD-CDMA idle mode. Both RF ports terminated with antennas and RF cables supplied by the Customer.
- TD-CDMA traffic mode. Both RF ports terminated with antennas supplied by the Customer.
- The EUT was mounted in and powered by the adapter board, the adapter board was powered from a bench supply at a nominal voltage of 12VDC for radiated emission testing.
- No AC conducted tests were performed as the EUT is a DC powered module.
- The Customer configured the EUT so that residual carrier breakthrough was present at the centre of the carrier in order to make frequency measurements.

5.2. Configuration and Peripherals

The EUT was tested in the following configuration:

- The EUT was mounted on an adaptor board and all the testing was performed in this configuration.
- The adaptor board was powered from a bench power supply supplied by the Customer
- Connected to a laptop PC via the USB or Ethernet port on the adaptor board. A bespoke application on the laptop PC was used to configure the EUT during the testing via the adaptor board.

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6. Summary of Test Results

FCC Part 15 - Receive/Idle Mode

Range Of Measurements	Specification Reference	Port Type	Result
Receive/Idle Mode Spurious Emissions	FCC Part 15 Section 15.109	Antenna Terminals	Complied
Receive/Idle Mode Conducted Spurious Emissions Main RF Port	FCC Part 2.1051	Antenna Terminals	Complied
Receive/Idle Mode Conducted Spurious Emissions Diversity RF Port	FCC Part 2.1051	Antenna Terminals	Complied

FCC Part 27 - Traffic Mode

Range Of Measurements	Specification Reference	Port Type	Result
Transmitter Conducted Carrier Output Power	FCC Part 2.1046, FCC Part 27.50	Antenna Terminals	Complied
Frequency Stability (Temperature Variation)	FCC Part 27.54	Antenna Terminals	Complied
Frequency Stability (Voltage Variation)	FCC Part 27.54	Antenna Terminals	Complied
Occupied Bandwidth	FCC Part 2.1049	Antenna Terminals	Complied
Conducted Emissions	FCC Part 2.1051, FCC Part 27.53	Antenna Terminals	Complied
Radiated Spurious Emissions	FCC Part 2.1051, FCC Part 27.53	Enclosure	Complied

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 and Unit 3 Horizon, Kingsland Business Park, Basingstoke, Hampshire RG24 8LH.

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7. Measurements, Examinations and Derived Results

7.1. General Comments

This section contains test results only. Details of the test methods and procedures can be found in Appendix 2 of this report.

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.

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7.2. Test Results

7.2.1. Receiver/Idle Radiated Emissions: 30 MHz to 1.0 GHz

Ambient Temperature: 23°C

Relative Humidity: 43%

Tests were performed using the test methods detailed in ANSI C63.4 Section 8.

TD-CDMA Results:

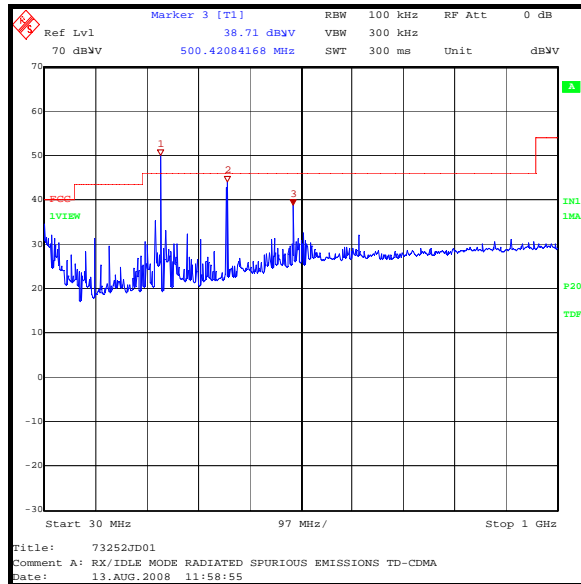
Frequency (MHz)	Antenna Polarity	Level (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Result
500.00917	Vertical	40.7	46.0	5.3	Complied

Note(s):

1. EUT S. No.: AAUA 831000823.

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Receiver/Idle Radiated Emissions: 30 MHz to 1.0 GHz (Continued)



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7.2.2. Receiver/Idle Radiated Emissions: 1 GHz to 26.5 GHz

Ambient Temperature: 23°C

Relative Humidity: 43%

Tests were performed using the test methods detailed in ANSI C63.4 Section 8.

TD-CDMA Results:

Highest Average Level:

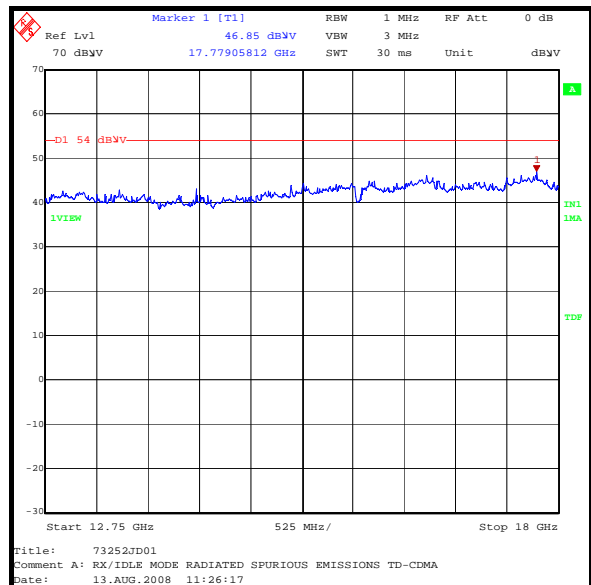
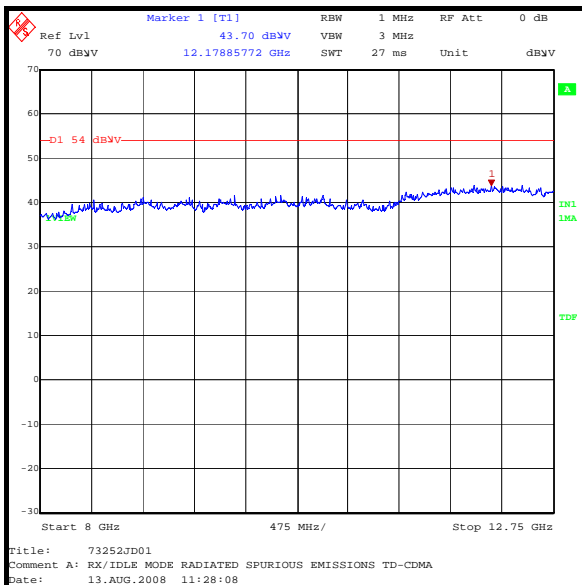
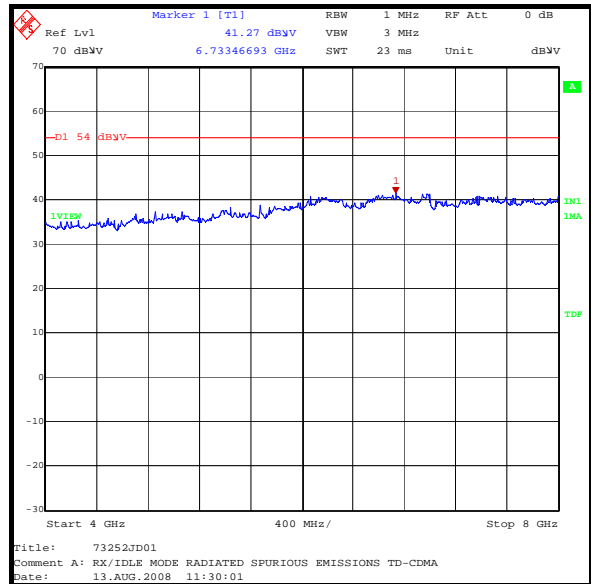
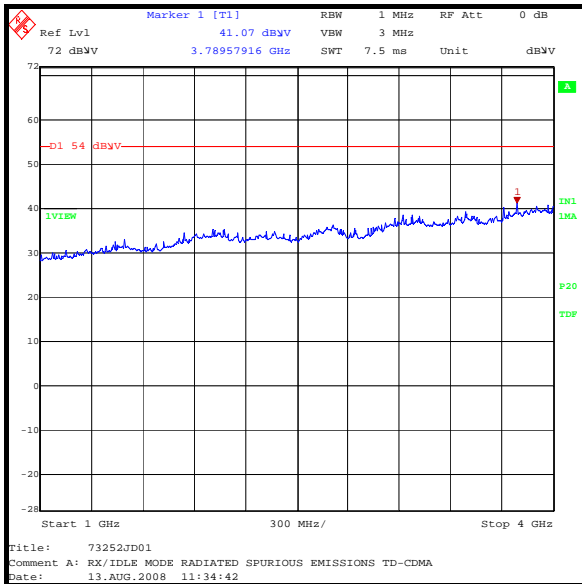
Frequency (GHz)	Antenna Polarity	Detector level (dB μ V)	Antenna factor (dB)	Actual Level (dB μ V/m)	Limit (dB μ V/m)	Margin (dB)	Result
17.779	Vertical	33.9	13.0	46.9	54.0	7.1	Complied

Note(s):

- No spurious emissions were detected above the noise floor of the measuring receiver; therefore, the highest peak noise floor reading of the measuring receiver was recorded as shown in the table above. The peak level was compared to the average limit as opposed to being compared to the peak limit because this is the more onerous limit.
- EUT S. No.: AAUA 831000823.

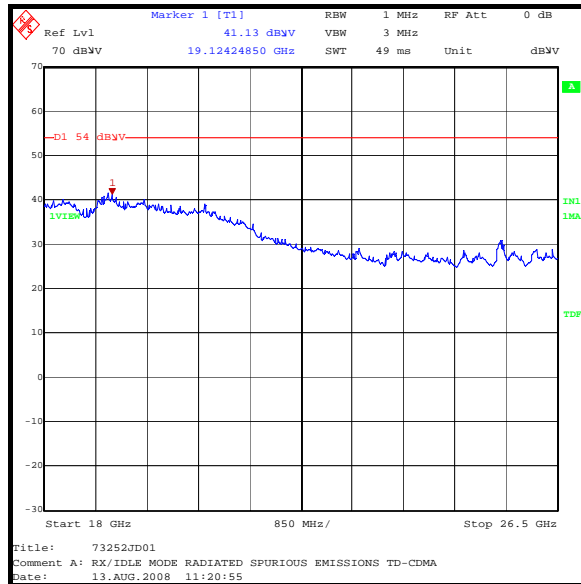
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Receiver/Idle Radiated Emissions: 1 GHz to 26.5 GHz (Continued)



Test Of: IPWireless
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Receiver/Idle Radiated Emissions: 1 GHz to 26.5 GHz (Continued)



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7.2.3. Receiver/Idle Conducted Emissions: 9 kHz to 26.5 GHz

Ambient Temperature: 19°C

Relative Humidity: 49%

Tests were performed using the test methods detailed in ANSI TIA-603-C-2004.

Results

Main RF Port Results:

Highest Average Level:

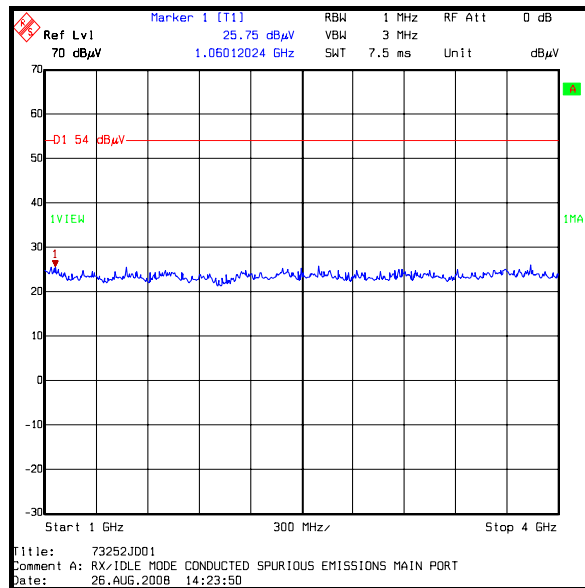
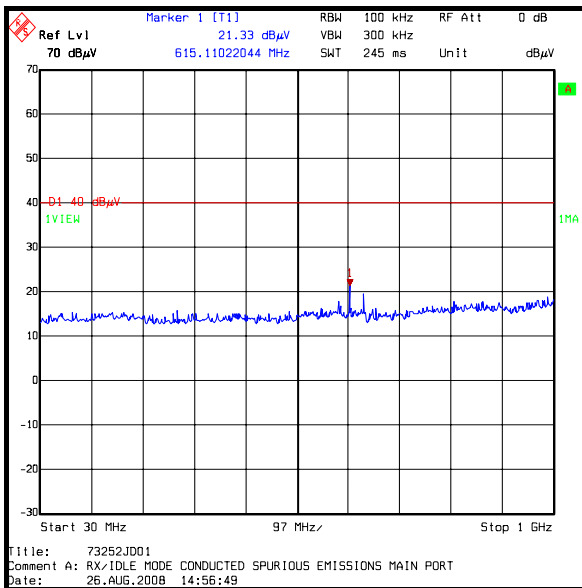
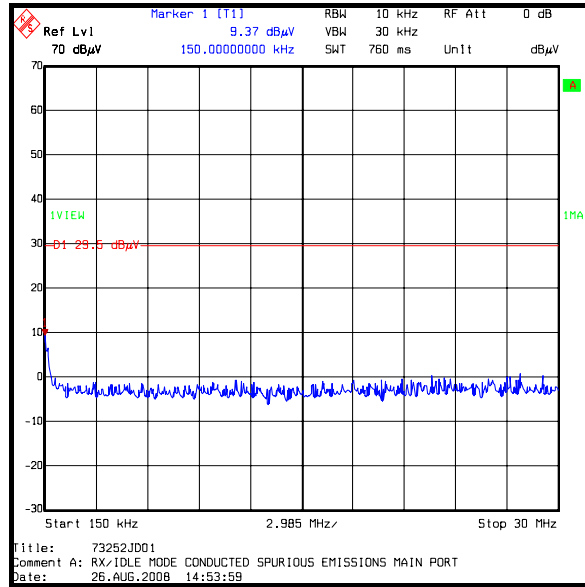
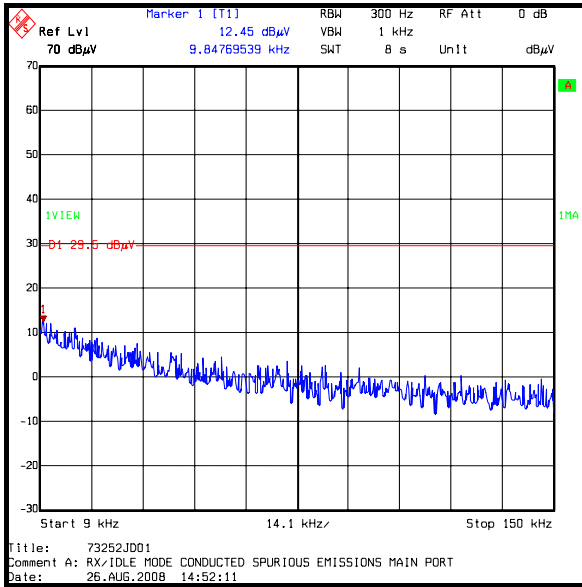
Frequency (GHz)	Actual Level (dBm)	Limit (dBm)	Margin (dB)	Result
10.738396	-54.3	-41.2	13.1	Complied

Note(s):

1. EUT Serial. No.: AAUA831000823.
2. Limits have been taken from FCC 15.109 and converted to dBm by subtracting 95.2 dB

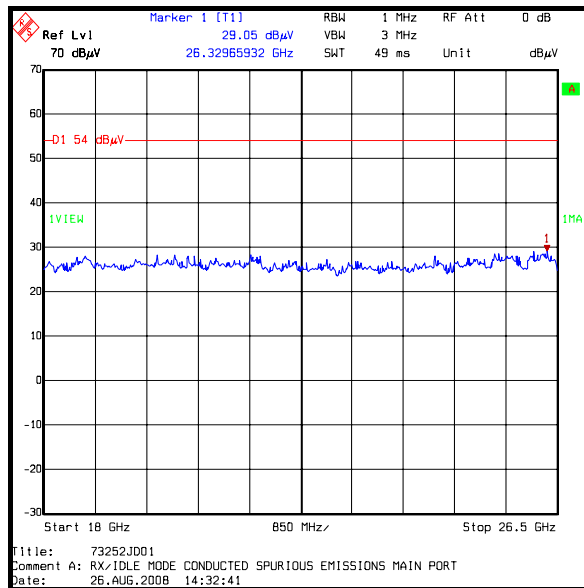
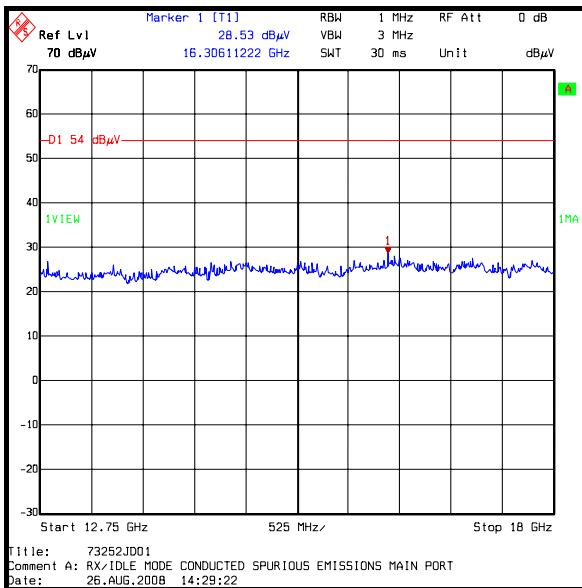
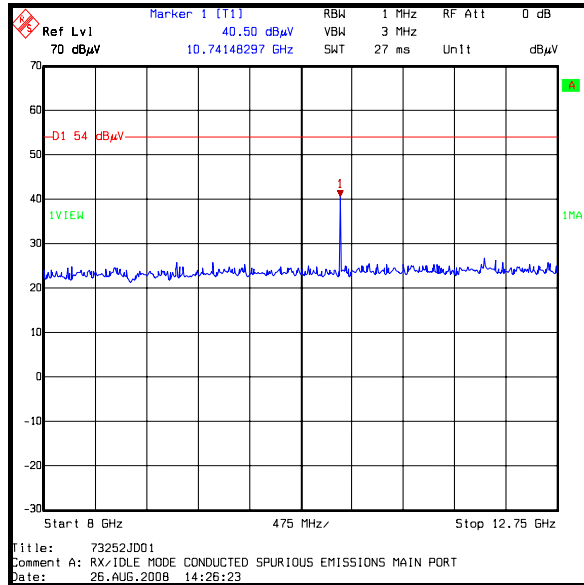
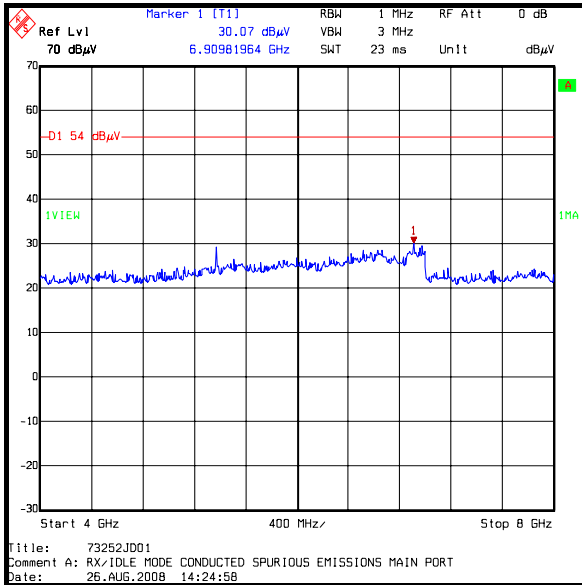
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Receiver/Idle Conducted Emissions: 9 kHz to 26.5 GHz (Continued)



Test Of: IPWireless
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Receiver/Idle Conducted Emissions: 9 kHz to 26.5 GHz (Continued)



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7.2.4. Receiver/Idle Conducted Emissions: 9 kHz to 26.5 GHz (Continued)

Ambient Temperature: 19°C

Relative Humidity: 49%

Tests were performed using the test methods detailed in ANSI TIA-603-C-2004

Diversity RF Port Results:**Highest Average Level:**

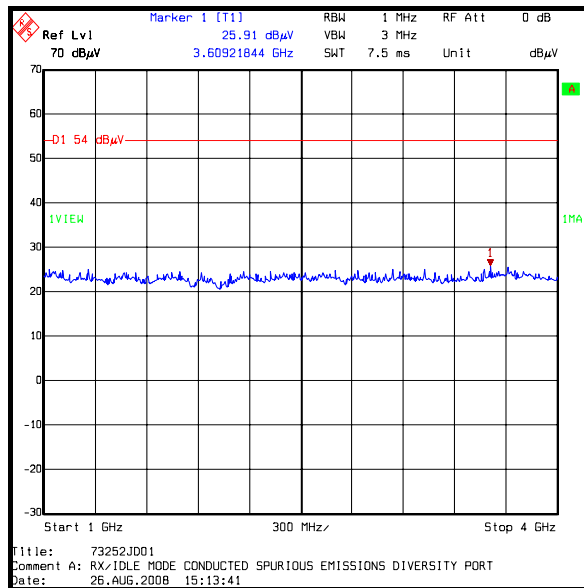
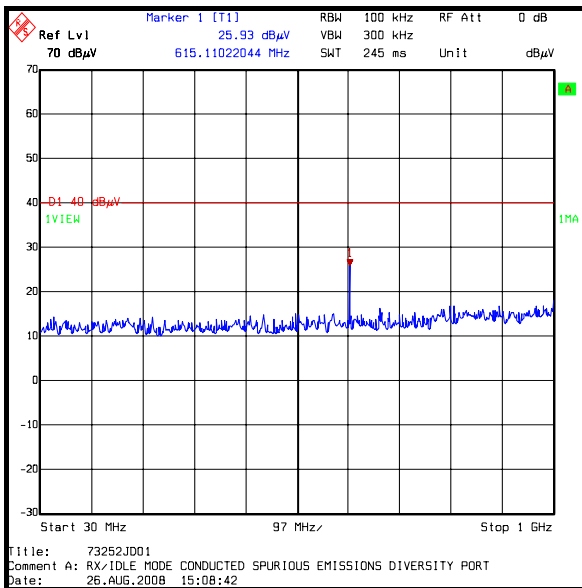
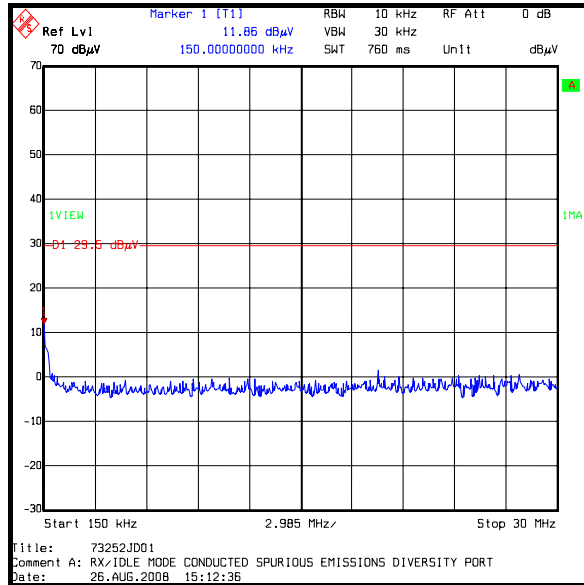
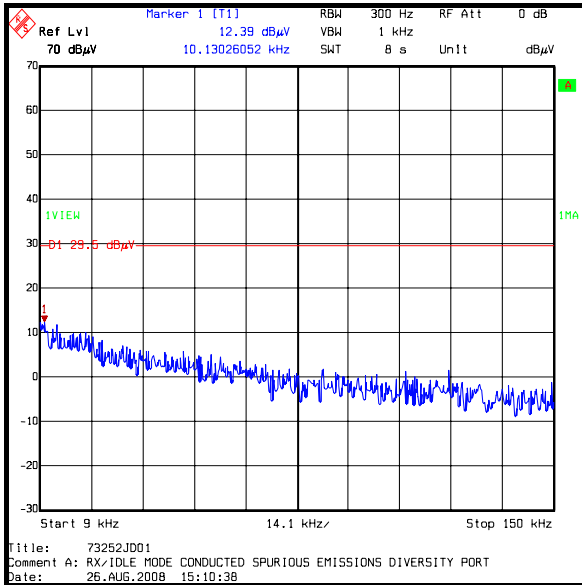
Frequency (GHz)	Actual Level (dBm)	Limit (dBm)	Margin (dB)	Result
10.738396	-62.6	-41.2	21.4	Complied

Note(s):

1. EUT Serial. No.: AAUA831000823.
2. Limits have been taken from FCC 15.109 and converted to dBm by subtracting 95.2 dB

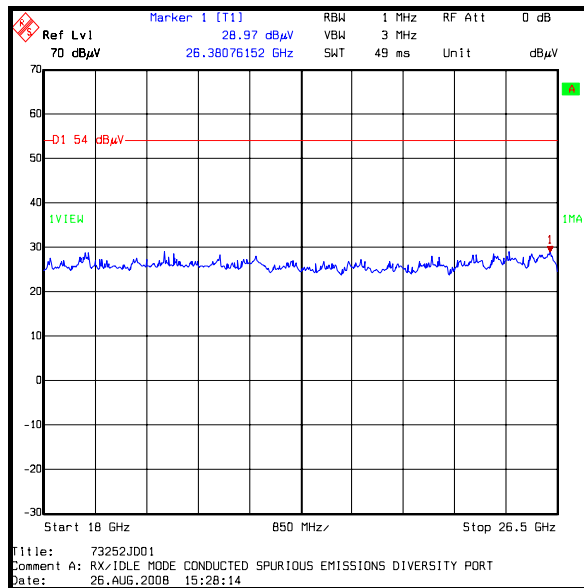
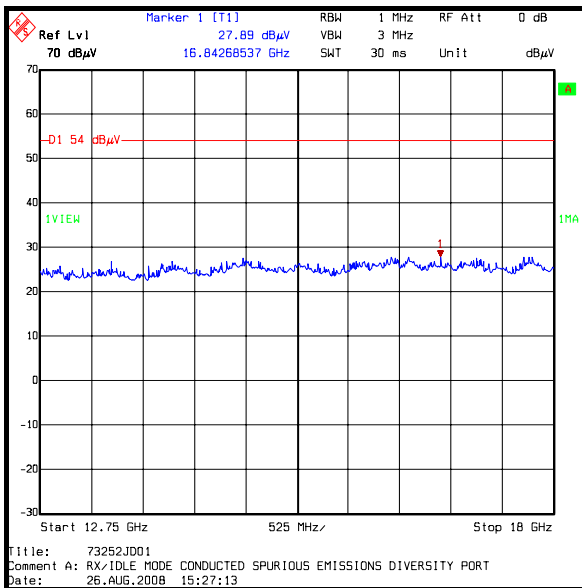
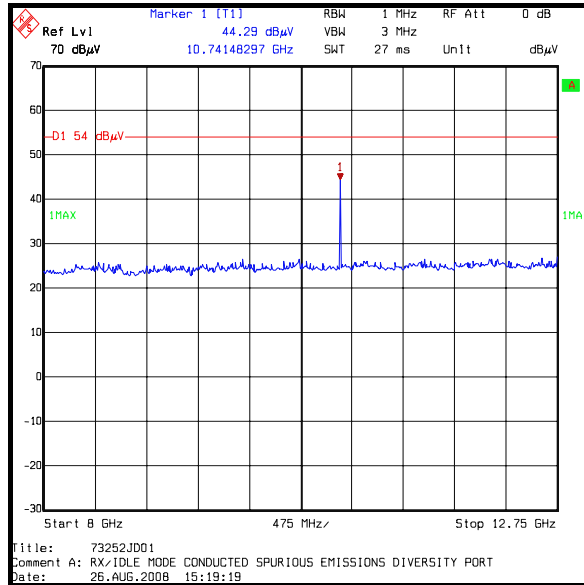
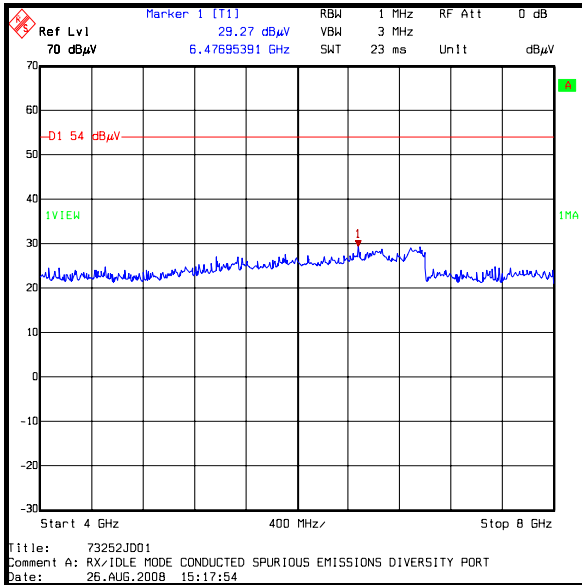
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Receiver/Idle Conducted Emissions: 9 kHz to 26.5 GHz (Continued)



Test Of: IPWireless
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Receiver/Idle Conducted Emissions: 9 kHz to 26.5 GHz (Continued)



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7.2.5. Transmitter Conducted Carrier Output Power

Ambient Temperature: 22°C

Relative Humidity: 44%

Tests were performed using the test methods detailed in ANSI TIA-603-C-2004.

Results:

Channel	Frequency (MHz)	Conducted RF O/P Power (dBm)	Stated Antenna Gain (dBi)	EIRP (dBm)	EIRP Limit (dBm)	Margin (dB)	Result
12507	2501.4	24.0	0.0	24.0	33.0	9.0	Complied
12965	2593.0	23.8	0.0	23.8	33.0	9.2	Complied
13420	2684.0	23.5	0.0	23.5	33.0	9.5	Complied

Note(s):

1. The customer did not supply the antenna details, therefore the gain of the antenna, associated RF cable and connectors were assumed to be 0 dBi. The power calculations shown in the above table were based on this value.
2. EUT Serial. No.: AAUA831000823.

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7.2.6. Transmitter Frequency Stability: (Temperature Variation)

Ambient Temperature: 19°C

Relative Humidity: 49%

Tests were performed using the test methods detailed in ANSI TIA-603-C-2004

Results:

2501.4 MHz

Temp (°C)	Measured Frequency (MHz)	Frequency Error (kHz)
-30	2501.403210	3.210
-20	2501.403366	3.366
-10	2501.402427	2.427
0	2501.402427	2.427
10	2501.402896	2.896
20	2501.402580	2.580
30	2501.403210	3.210
40	2501.403210	3.210
50	2501.403210	3.210

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7.2.7. Transmitter Frequency Stability: (Temperature Variation) (Continued)

Ambient Temperature: 19°C

Relative Humidity: 49%

Tests were performed using the test methods detailed in ANSI TIA-603-C-2004

Results:

2593 MHz

Temp (°C)	Measured Frequency (MHz)	Frequency Error (kHz)
-30	2593.003523	3.523
-20	2593.003050	3.050
-10	2593.003053	3.053
0	2593.003053	3.053
10	2593.003053	3.053
20	2593.002740	2.740
30	2593.003050	3.050
40	2593.003366	3.366
50	2593.003523	3.523

2684.6 MHz

Temp (°C)	Measured Frequency (MHz)	Frequency Error (kHz)
-30	2684.603366	3.366
-20	2684.603366	3.366
-10	2684.603210	3.210
0	2684.602583	2.583
10	2684.603366	3.366
20	2684.602896	2.896
30	2684.602427	2.427
40	2684.603053	3.053
50	2684.603366	3.366

Note(s):

1. Tested at 12V DC from a bench PSU applied to the power connector on the adaptor board. The adaptor board voltage regulator reduces this to 3.3V which is the normal supply voltage to the EUT.
2. EUT Serial. No.: AAUA 831000823.

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7.2.8. Transmitter Frequency Stability: (Voltage Variation)

Ambient Temperature: 23°C

Relative Humidity: 41%

Tests were performed using the test methods detailed in ANSI TIA-603-C-2004

Results:

2501.4 MHz

Supply Voltage (VDC)	Measured Frequency (MHz)	Frequency Error (kHz)
3.0	2501.402740	2.740
3.3	2501.403053	3.053
3.6	2501.402427	2.427

2593 MHz

Supply Voltage (VDC)	Measured Frequency (MHz)	Frequency Error (kHz)
3.0	2593.002896	2.896
3.3	2593.003053	3.053
3.6	2593.002270	2.270

2684.6 MHz

Supply Voltage (VDC)	Measured Frequency (MHz)	Frequency Error (kHz)
3.0	2684.603210	3.210
3.3	2684.603210	3.210
3.6	2684.603836	3.836

Note(s):

1. Tested over the range 3V to 3.6 VDC supplied from a bench PSU applied to two power cables connected directly to the EUT power supply input.
2. EUT Serial. No.: AAUA 831000823.

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7.2.9. Transmitter Occupied Bandwidth

Ambient Temperature: 22°C

Relative Humidity: 41%

The 99% occupied bandwidth was measured using the channel bandwidth function of the R&S spectrum analyser referencing FCC CFR Part 2.

Results:

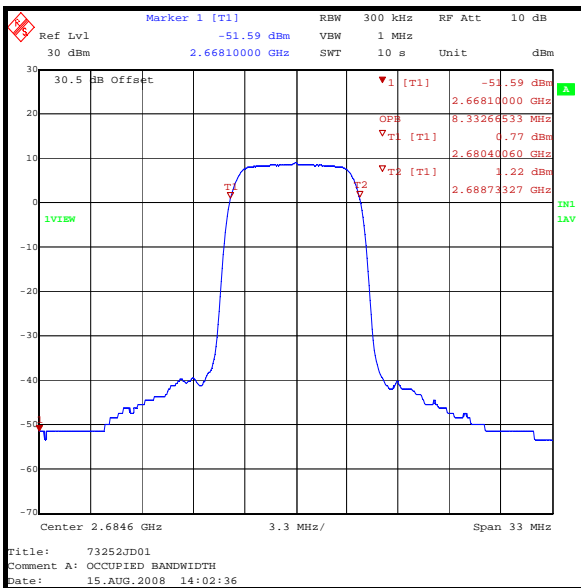
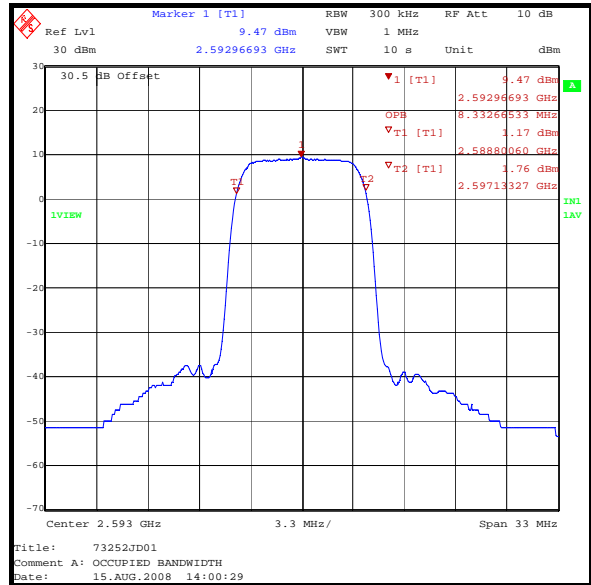
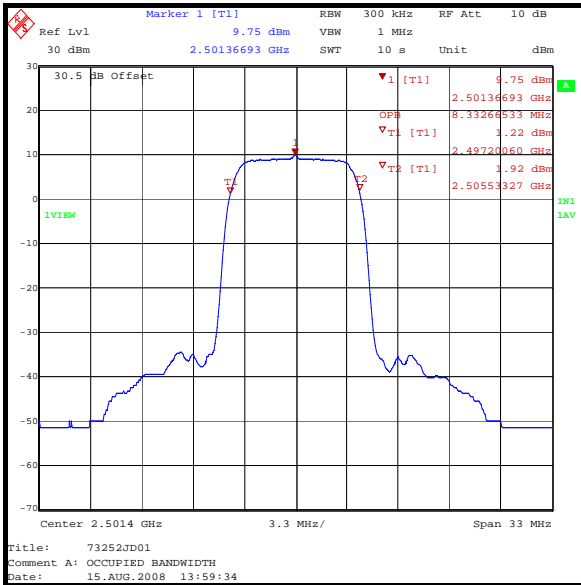
Channel Number	Frequency (MHz)	Resolution Bandwidth (kHz)	Video Bandwidth (kHz)	Occupied Bandwidth (MHz)
12507	2501.4	300	1000	8.332
12965	2593.0	300	1000	8.332
13423	2684.6	300	1000	8.332

Note(s):

1. EUT Serial. No.: AAUA831000823.

Test Of: IPWireless
 2.5 GHz TD-CDMA PCI Express Mini Module: AAU
 To: FCC Part 27: 2007 (Subpart C)

Transmitter Occupied Bandwidth (Continued)



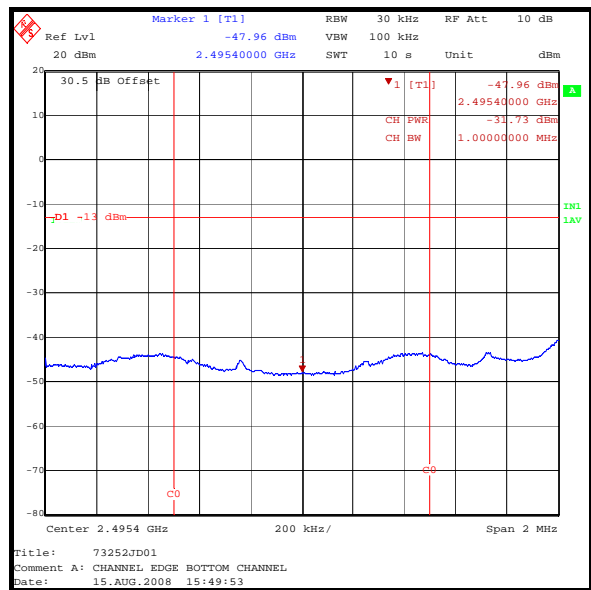
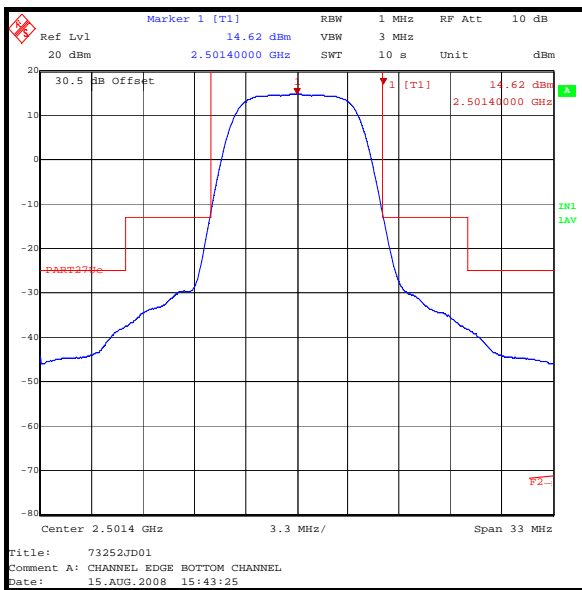
Test Of: IPWireless
 2.5 GHz TD-CDMA PCI Express Mini Module: AAU
 To: FCC Part 27: 2007 (Subpart C)

7.2.10. Transmitter Conducted Emissions - Channel Edge

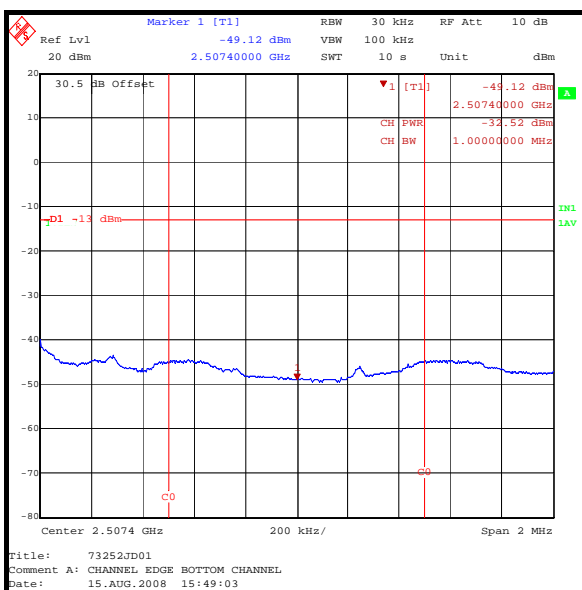
Ambient Temperature: 22°C

Relative Humidity: 41%

Part 27 Bottom Channel:



1 MHz strip below channel centre freq -5.5 MHz measured using the spectrum analyser Channel Power function.



1 MHz strip above channel centre freq +5.5 MHz measured using the spectrum analyser Channel Power function.

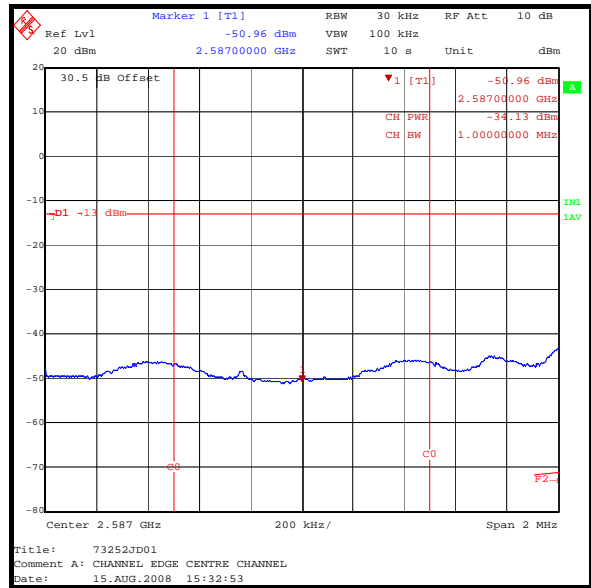
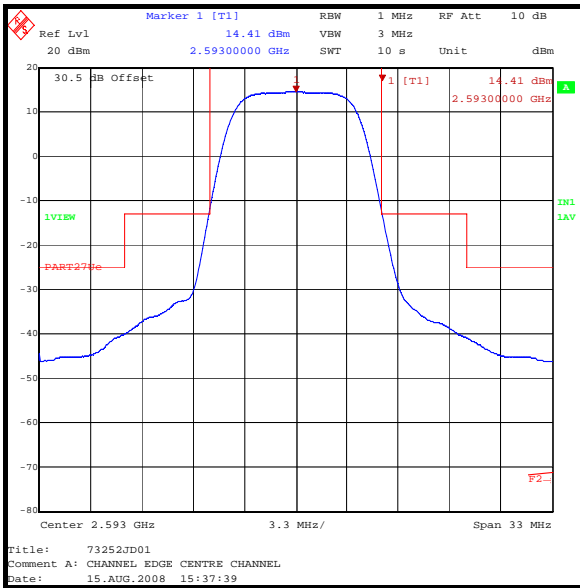
Test Of: IPWireless
 2.5 GHz TD-CDMA PCI Express Mini Module: AAU
 To: FCC Part 27: 2007 (Subpart C)

Transmitter Conducted Emissions - Channel Edge (Continued)

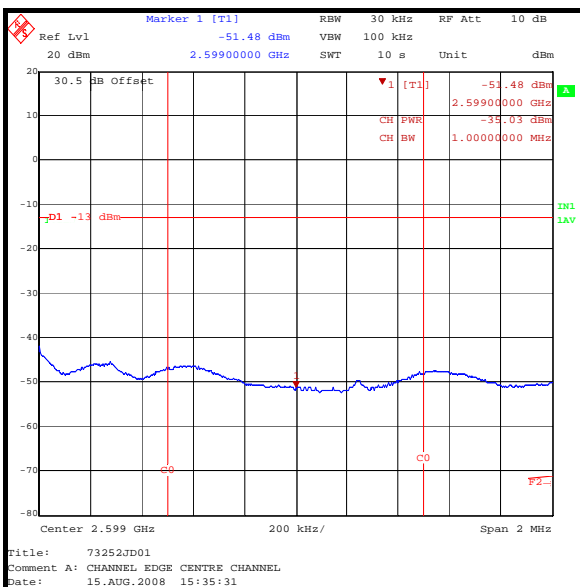
Ambient Temperature: 22°C

Relative Humidity: 41%

Part 27 Centre Channel:



1 MHz strip below channel centre freq -5.5 MHz measured using the spectrum analyser Channel Power function.



1 MHz strip above channel centre freq +5.5 MHz measured using the spectrum analyser Channel Power function.

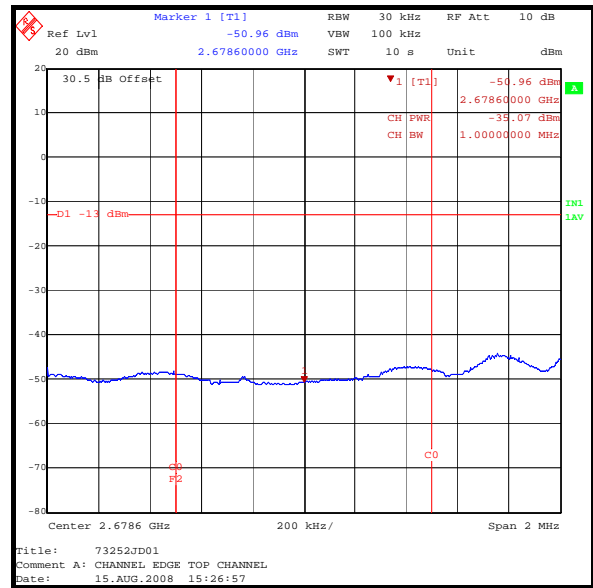
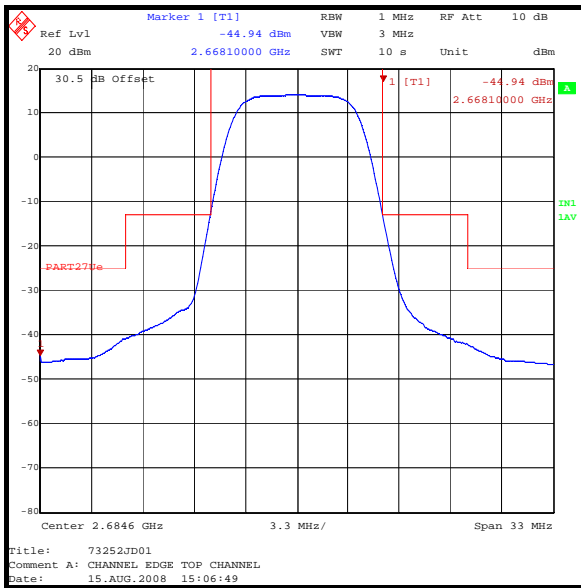
Test Of: IPWireless
 2.5 GHz TD-CDMA PCI Express Mini Module: AAU
 To: FCC Part 27: 2007 (Subpart C)

Transmitter Conducted Emissions - Channel Edge (Continued)

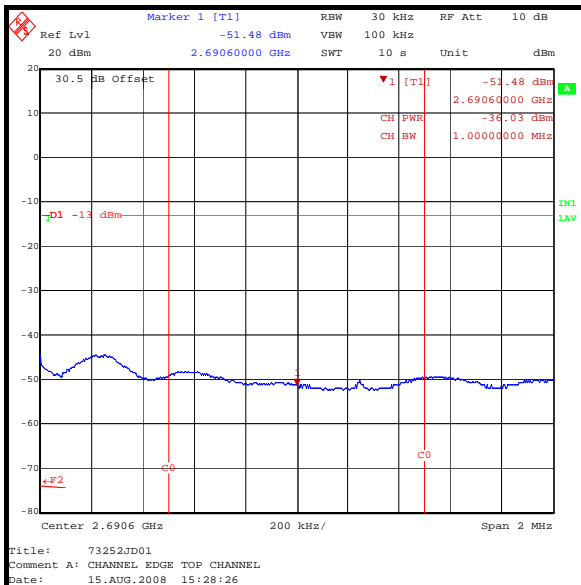
Ambient Temperature: 22°C

Relative Humidity: 41%

Part 27 Top Channel:



1 MHz strip below channel centre freq -5.5 MHz measured using the spectrum analyser Channel Power function.



1 MHz strip above channel centre freq +5.5 MHz measured using the spectrum analyser Channel Power function.

Test Of: IPWireless
 2.5 GHz TD-CDMA PCI Express Mini Module: AAU
 To: FCC Part 27: 2007 (Subpart C)

7.2.11. Transmitter Conducted Emissions (Continued)

Ambient Temperature: 19°C to 22°C

Relative Humidity: 41% to 49%

Tests were performed using the test methods detailed in ANSI TIA-603-C-2004 referencing FCC CFR Part 2.

Results:

Bottom Channel 2501.4 MHz:

Frequency (MHz)	Emission Level (dBm)	Limit (dBm)	Margin (dB)	Result
2130.661	-34.4	-25.0	9.4	Complied
2871.114	-41.7	-25.0	16.7	Complied

Centre Channel 2593 MHz:

Frequency (MHz)	Emission Level (dBm)	Limit (dBm)	Margin (dB)	Result
2049.449	-41.9	-25.0	16.9	Complied
3144.168	-36.8	-25.0	11.8	Complied

Top Channel 2684 MHz:

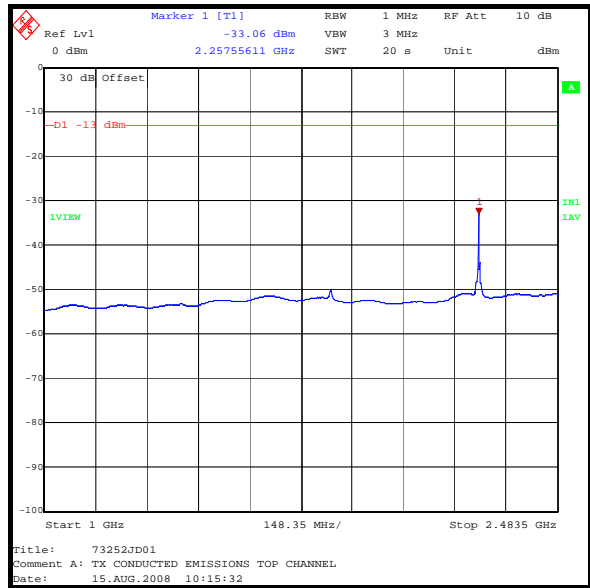
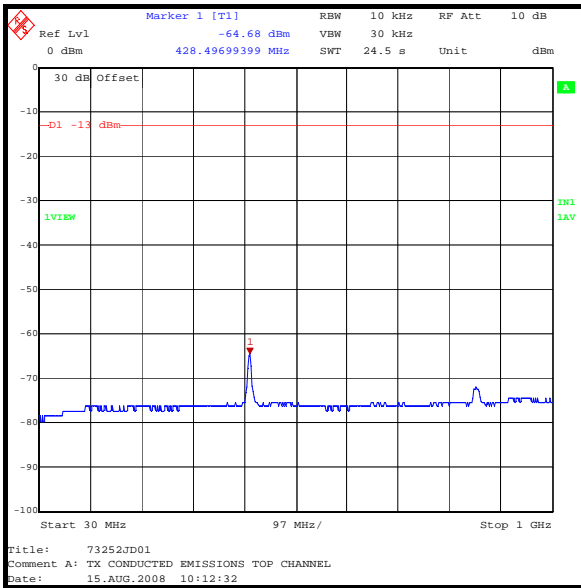
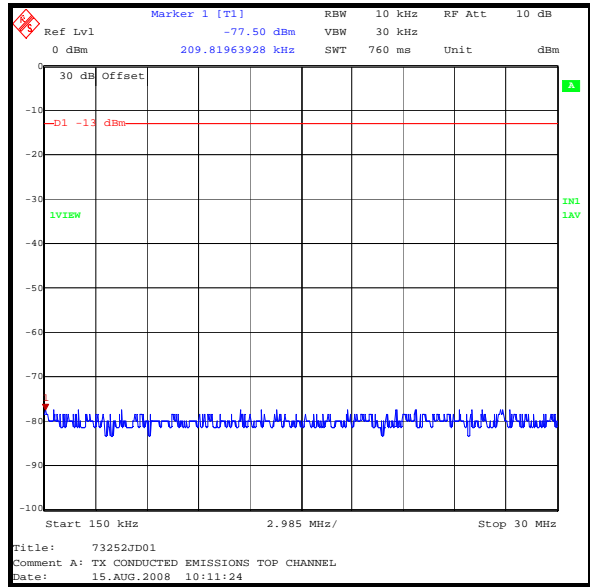
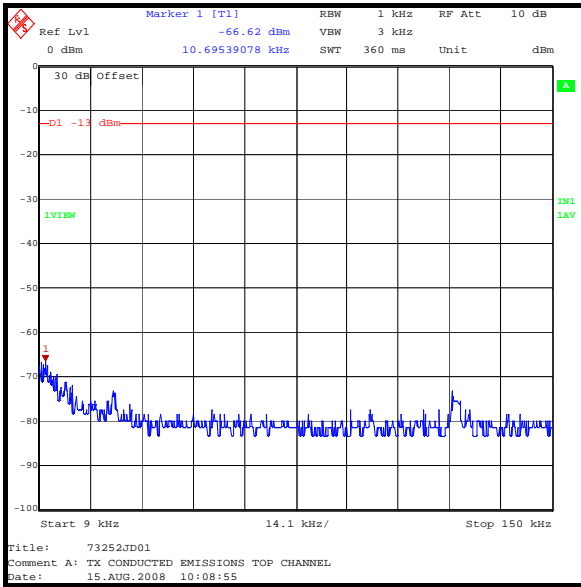
Frequency (MHz)	Emission Level (dBm)	Limit (dBm)	Margin (dB)	Result
2257.556	-27.5	-25.0	2.5	Complied
3111.933	-39.7	-25.0	14.7	Complied

Note(s):

1. Prescans were performed on the top channel only.
2. The prescan measurement was made in a 1 MHz bandwidth on the top channel only. The prescans were performed using a 1 MHz measurement bandwidth. The plots incorrectly show a -13 dBm limit across the measurement range. Final measurements were performed using the applicable bandwidths and limits.
3. EUT Serial. No.: AAUA 831000823.

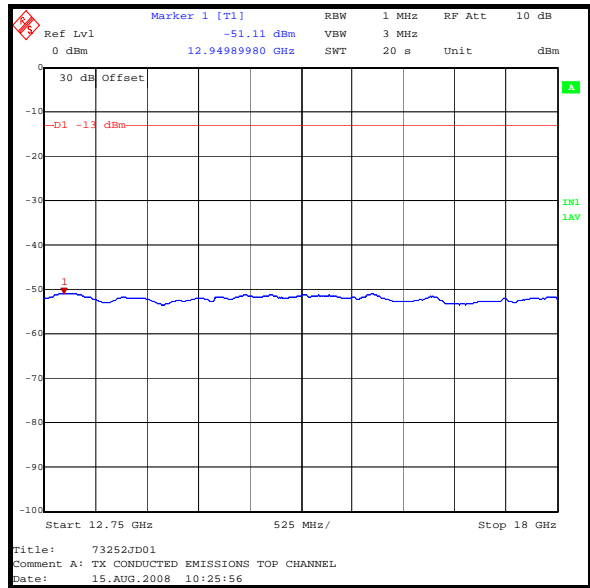
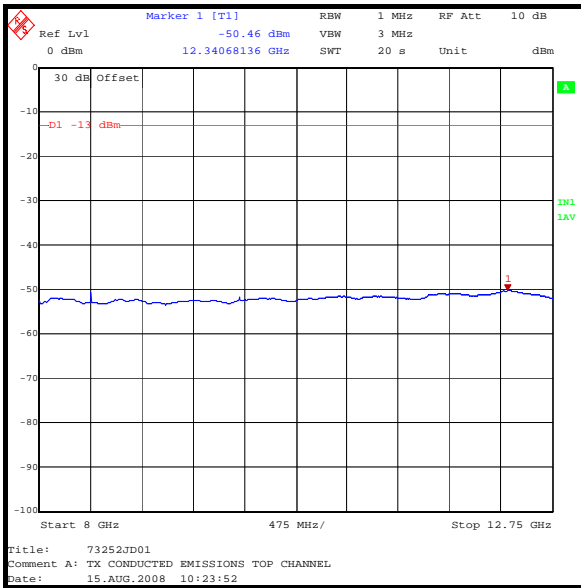
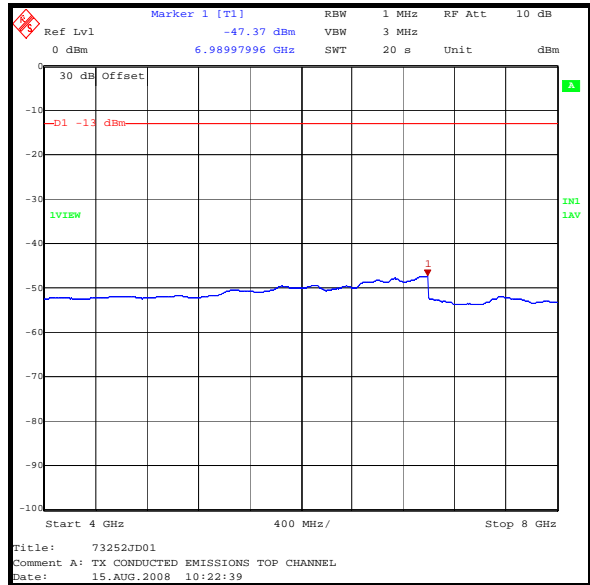
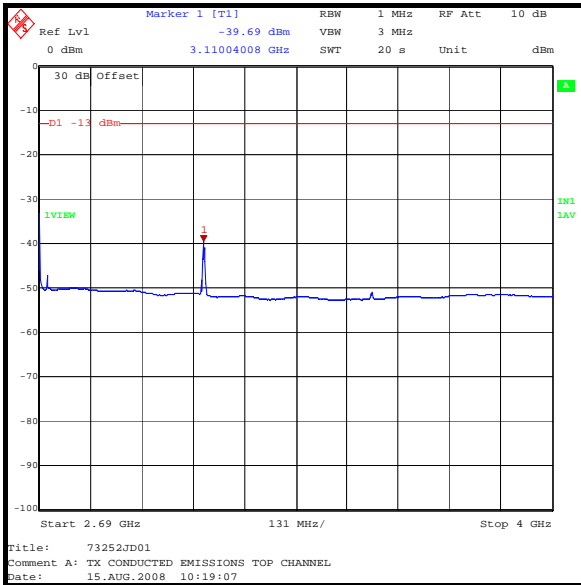
Test Of: IPWireless
2.5 GHz TD-CDMA PCI Express Mini Module: AAU
To: FCC Part 27: 2007 (Subpart C)

Transmitter Conducted Emissions (Continued)



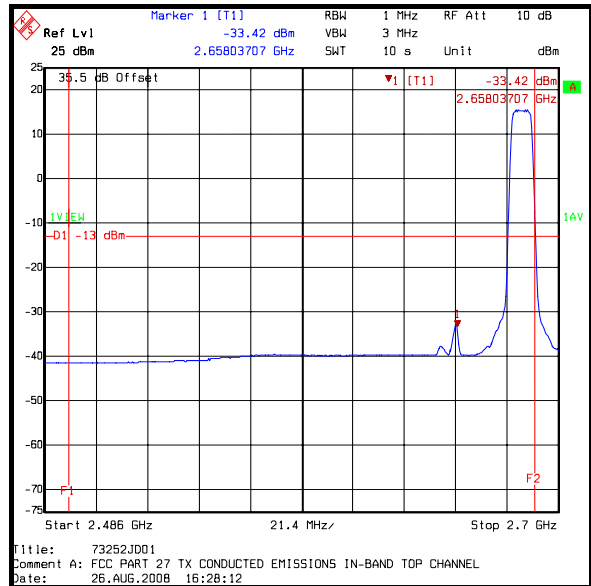
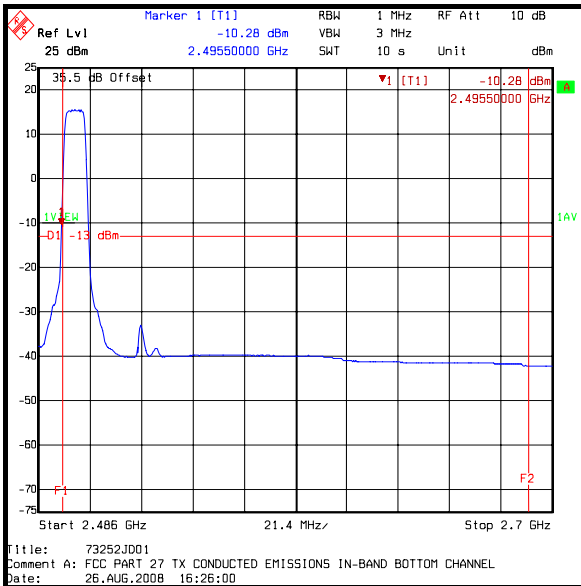
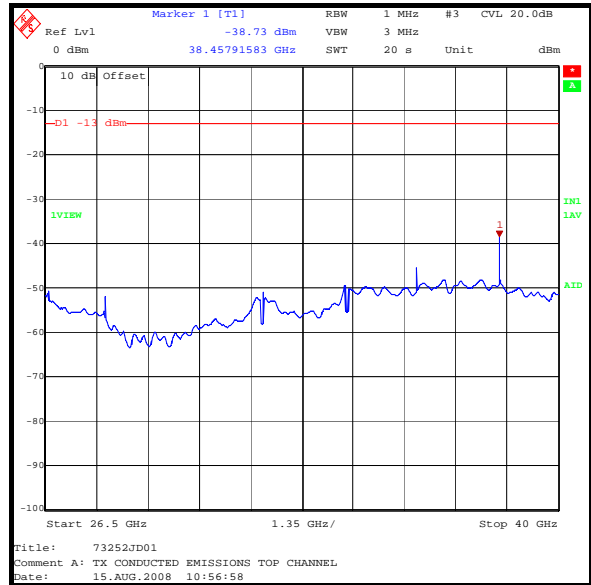
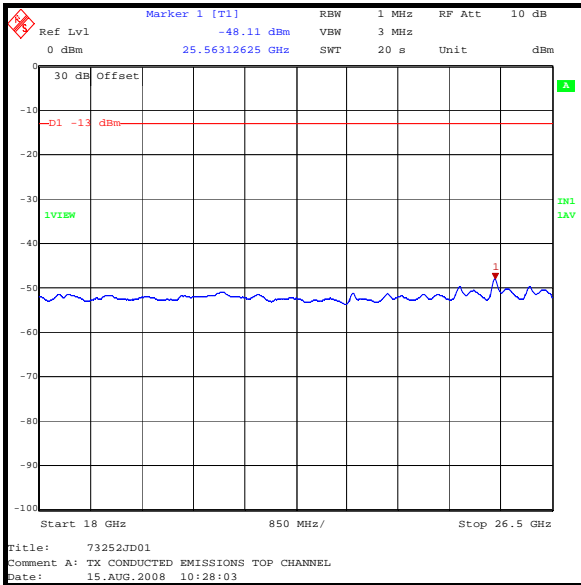
Test Of: IPWireless
2.5 GHz TD-CDMA PCI Express Mini Module: AAU
To: FCC Part 27: 2007 (Subpart C)

Transmitter Conducted Emissions (Continued)



Test Of: IPWireless
2.5 GHz TD-CDMA PCI Express Mini Module: AAU
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Transmitter Conducted Emissions (Continued)



Test Of: IPWireless
 2.5 GHz TD-CDMA PCI Express Mini Module: AAU
 To: FCC Part 27: 2007 (Subpart C)

7.2.12. Transmitter Conducted Emissions at Band Edges

Ambient Temperature: 19°C

Relative Humidity: 48%

Tests were performed using the test methods detailed in ANSI TIA-603-C-2004 referencing FCC CFR Parts 2.

Results:

Measured with a 1 MHz resolution bandwidth and also using the channel power function of the spectrum analyser.

1 MHz strip below the lower band edge

Frequency (MHz)	Emission Level (dBm)	Limit (dBm)	Margin (dB)	Result
2495 to 2496	-26.5	-13.0	13.5	Complied

1 MHz strip above the upper band edge

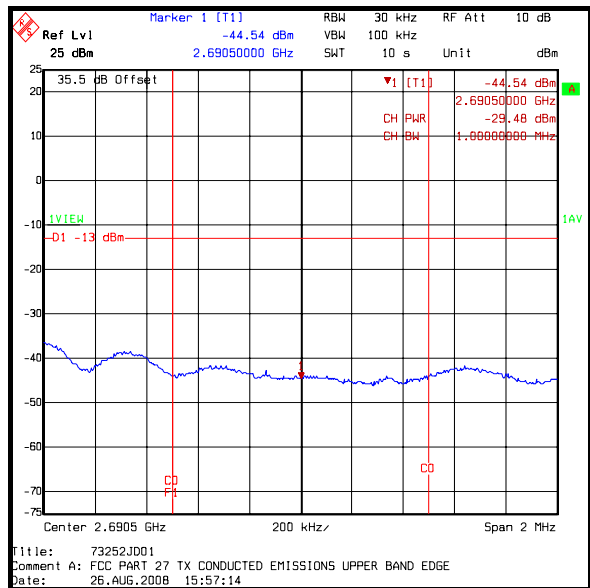
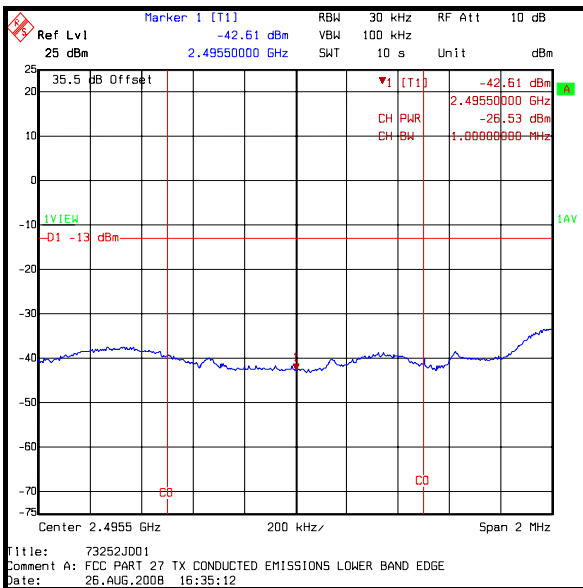
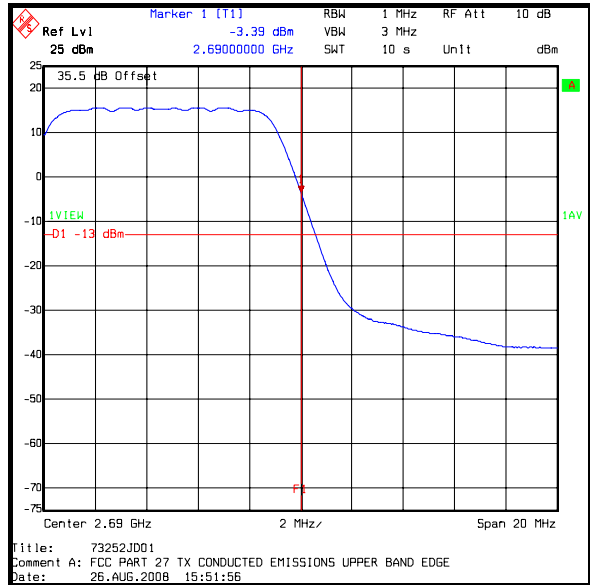
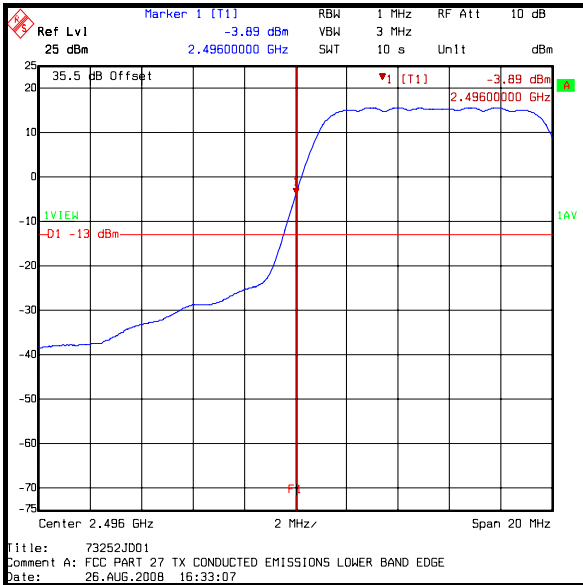
Frequency (MHz)	Emission Level (dBm)	Limit (dBm)	Margin (dB)	Result
2690 to 2691	-29.5	-13.0	16.5	Complied

Note(s):

1. EUT Serial. No.: AAUA 831000823.

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2.5 GHz TD-CDMA PCI Express Mini Module: AAU
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Transmitter Conducted Emissions at Band Edges (Continued)



Test Of: IPWireless
 2.5 GHz TD-CDMA PCI Express Mini Module: AAU
 To: FCC Part 27: 2007 (Subpart C)

7.2.13. Transmitter Radiated Emissions

Ambient Temperature: 20°C to 23°C

Relative Humidity: 43% to 56%

Tests were performed using the test methods detailed in ANSI TIA-603-C-2004.

Results:

Part 27 Bottom Channel:

Frequency (MHz)	Emission Level (dBm)	Limit (dBm)	Margin (dB)	Result
4998.947	-52.3	-25.0	27.3	Complied
8479.488	-29.8	-25.0	4.8	Complied
10981.963	-53.7	-25.0	28.7	Complied

Part 27 Centre Channel:

Frequency (MHz)	Emission Level (dBm)	Limit (dBm)	Margin (dB)	Result
5190.380	-55.1	-25.0	30.1	Complied
8479.348	-29.2	-25.0	4.2	Complied
11072.320	-49.9	-25.0	24.9	Complied

Part 27 Top Channel:

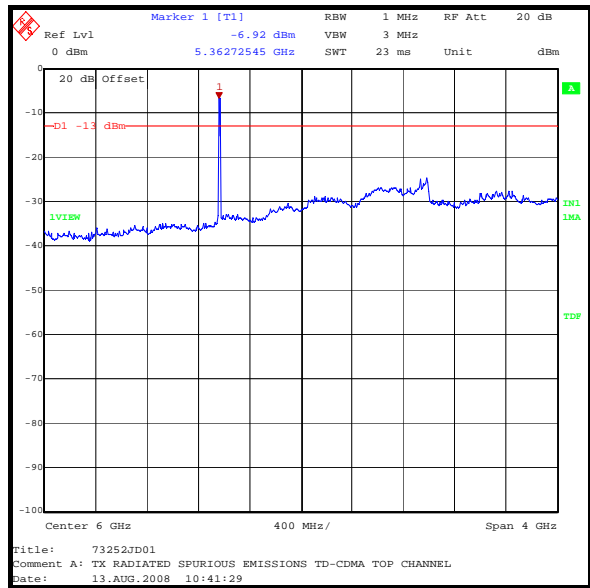
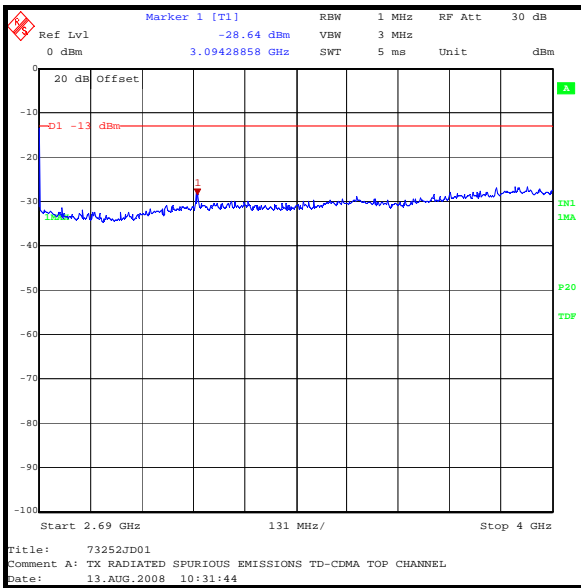
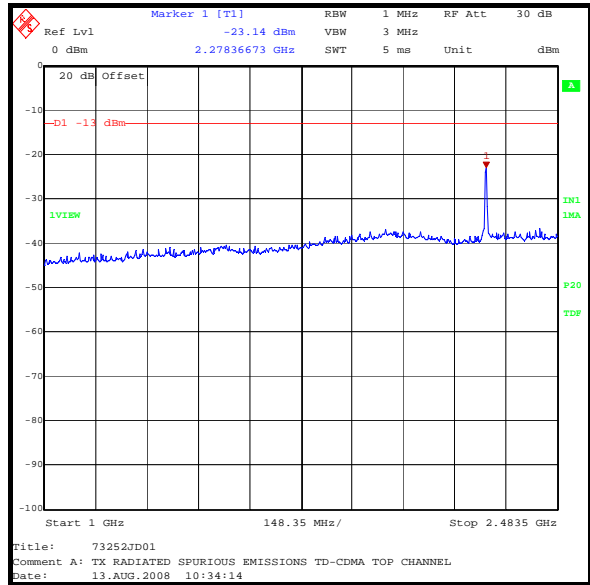
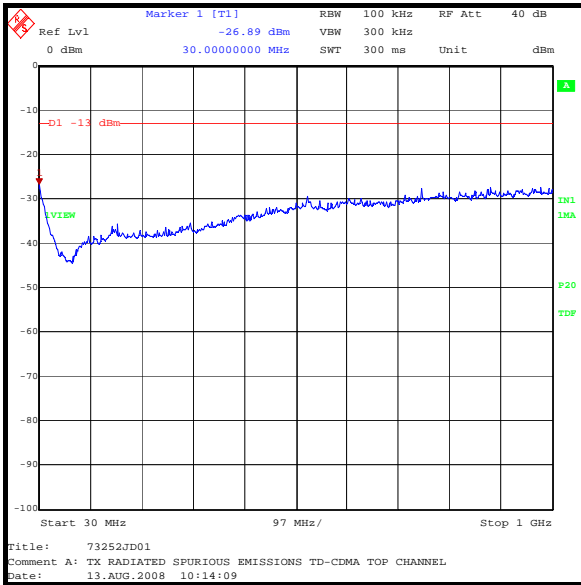
Frequency (MHz)	Emission Level (dBm)	Limit (dBm)	Margin (dB)	Result
5372.899	-53.9	-25.0	28.9	Complied
8048.302	-50.4	-25.0	25.4	Complied
8474.737	-31.2	-25.0	6.2	Complied
11163.687	-50.5	-25.0	25.5	Complied

Note(s):

1. Prescans were performed on the top channel only.
2. EUT Serial. No.: AAUA 831000823.

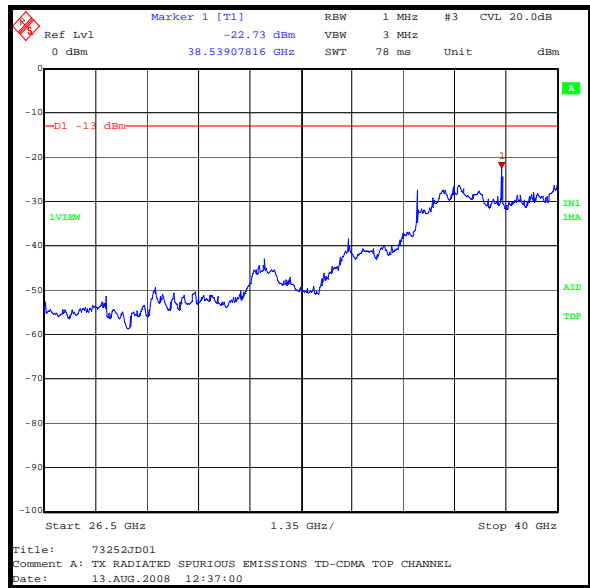
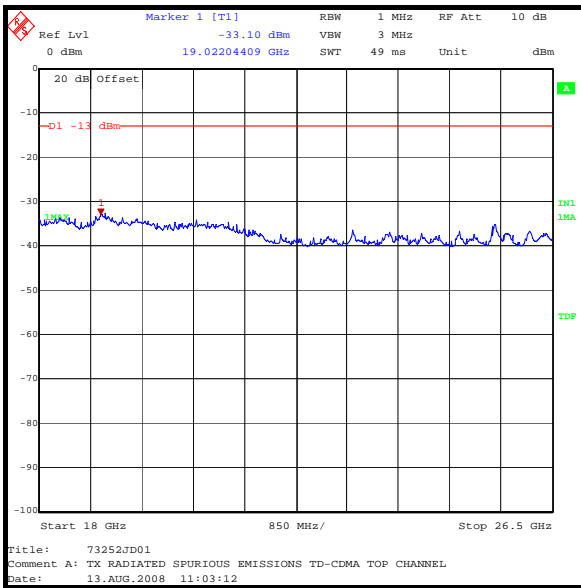
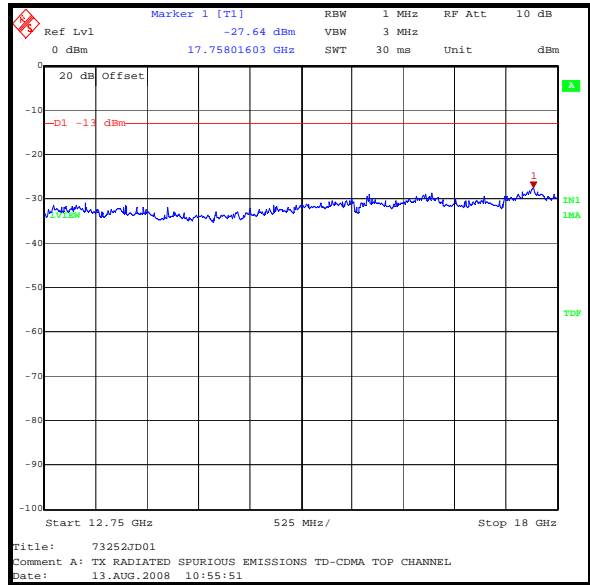
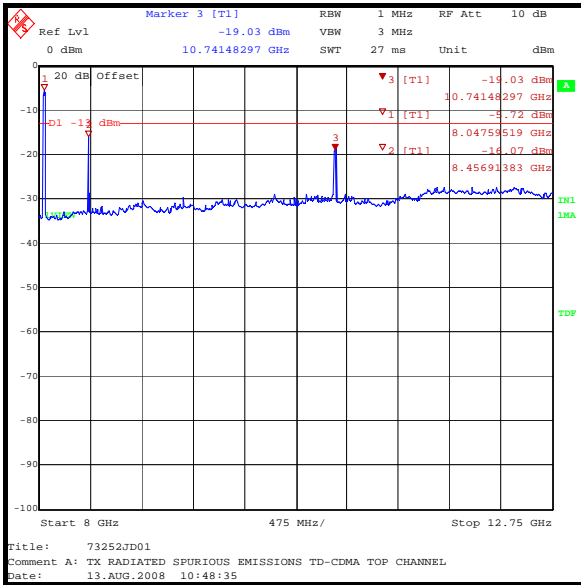
Test Of: IPWireless
2.5 GHz TD-CDMA PCI Express Mini Module: AAU
To: FCC Part 27: 2007 (Subpart C)

Transmitter Radiated Emissions (Continued)



Test Of: IPWireless
 2.5 GHz TD-CDMA PCI Express Mini Module: AAU
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Transmitter Radiated Emissions (Continued)



Test Of: IPWireless
 2.5 GHz TD-CDMA PCI Express Mini Module: AAU
 To: FCC Part 27: 2007 (Subpart C)

7.2.14. Transmitter Radiated Emissions at Band Edges

Ambient Temperature: 19°C

Relative Humidity: 48%

Tests were performed using the test methods detailed in ANSI TIA-603-C-2004 referencing FCC CFR Parts 2.

Results:

Measured with a 1 MHz resolution bandwidth and also using the channel power function of the spectrum analyser.

1 MHz strip below the lower band edge

Frequency (MHz)	Spurious Emission (dBm)	Limit (dBm)	Margin (dB)	Result
2495 to 2496	-29.0	-13.0	16.0	Complied

1 MHz strip above the upper band edge

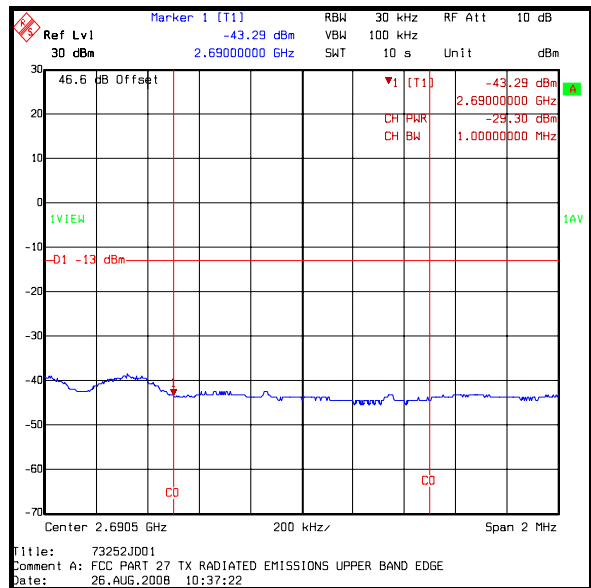
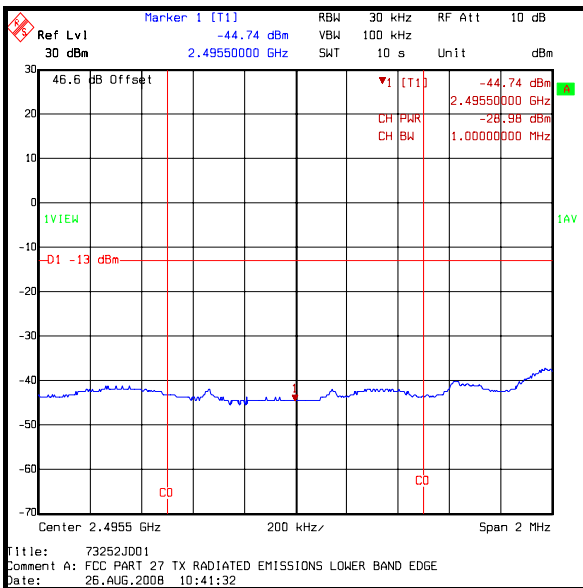
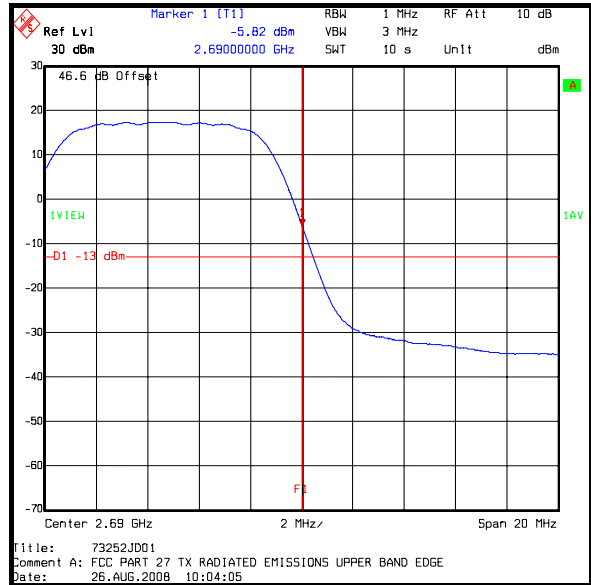
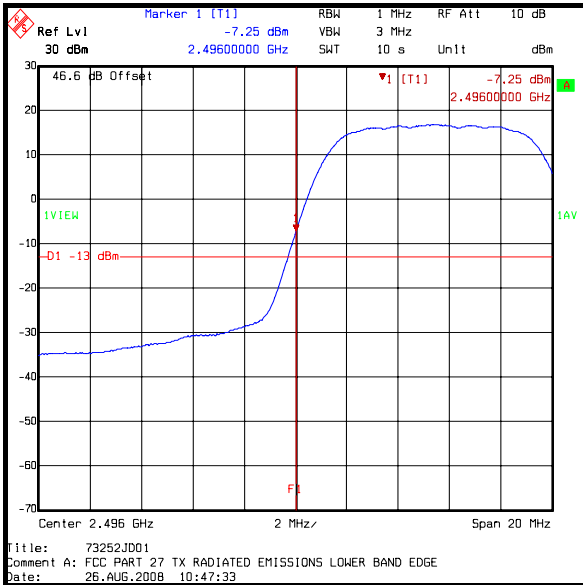
Frequency (MHz)	Peak Emission Level (dBm)	Limit (dBm)	Margin (dB)	Result
2690 to 2691	-29.3	-13.0	16.3	Complied

Note(s):

1. EUT Serial. No.: AAUA 831000823.

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Transmitter Radiated Emissions at Band Edges (Continued)



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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
Occupied Bandwidth	Not applicable	95%	± 0.12 %
Conducted Emissions	9 kHz to 26 GHz	95%	± 1.2 dB
Effective Isotropic Radiated Power (EIRP)	Not applicable	95%	±2.94 dB
Occupied Bandwidth	824 to 849 MHz	95%	±11.4 ppm
Radiated Spurious Emissions	30 MHz to 1000 MHz	95%	± 5.26 dB
Radiated Spurious Emissions	1 GHz to 26 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.

Test Of: IPWireless

2.5 GHz TD-CDMA PCI Express Mini Module: AAU

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Appendix 1. Test Equipment Used

RFI No.	Instrument	Manufacturer	Type No.	Serial No.	Date Last Calibrated	Cal. Interval (Months)
A031	Antenna	Eaton	91889-2	557	08 Jun 2006	36
A1299	Antenna	Schaffner	CBL6143	5094	28 Jul 2008	12
A1390	Sony Ericsson	Sony Ericsson	HBH30	000AD924BA8 E	Calibration not required	-
A1392	Attenuator	HUBER + SUHNER AG	757456	6820.17.B	Calibrated before use	-
A1490	Attenuator	Weinschel Corp	23-30-34	BH9156	Calibrated before use	-
A1510	Attenuator	Narda	4002	0579	Calibrated as part of system	-
A1785	Low Noise Amplifier	Farran Technology	FLNA-28-30	FTL 6483	Calibrated before use	-
A1793	Pre Amplifier	A.H.Systems Inc.	PAM-0118	183	03 Jul 2008	12
A203	Antenna	Flann Microwave Ltd	22240-20	343	21 Jul 2006	36
A436	Antenna	Flann	20240-20	330	24 Apr 2006	36
A553	Antenna	Chase	CBL6111A	1593	04 Jun 2008	12
C1155	Cable	Huber & Suhner	Sucoflex 104PA	1522/4PA	Calibrated before use	-
C1163	Cable	Rosenberger Micro-Coax	FA210A1010007 070	43187-1	Calibrated before use	-
C1247	Cable	Unknown	None	T3841	Calibrated before use	-
C1296	3m Cable	Rosenberger	FA210A0030005 050	58940-02	Calibrated before use	-
C1298	10m Cable	Rosenberger	FA210A0100005 050	58941-02	Calibrated before use	-
C341	Cable	Andrews	None	None	Calibrated before use	-
C461	Cable	Rosenberger	UFA210A-1-1182-704704	98H0305	Calibrated before use	-
E013	Environmental Chamber	Sanyo	ATMOS chamber	None	Calibration not required	-
M003	Spectrum Monitor	Rohde & Schwarz	EZM	883 580/008	Calibration not required	-
M024	Spectrum Monitor	Rohde & Schwarz	EZM	873 952/006	Calibrated before use	-
M1124	Spectrum Analyser	Rohde & Schwarz	ESIB26	100046K	19 Feb 2008	12
M1229	Digital Multimeter	Fluke	179	87640015	09 May 2008	12

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RFI No.	Instrument	Manufacturer	Type No.	Serial No.	Date Last Calibrated	Cal. Interval (Months)
M1242	Spectrum Analyser	Rohde & Schwarz, Inc.	FSEM30	845986/022	29 Nov 2007	12
M1249	Thermometer	Fluke	52II	88800049	09 Jul 2008	12
S201	Open Area Test Site	RFI	1	None	09 May 2008	12
S202	Site 2	RFI	2	S202-15011990	28 Jan 2008	12
S203	Conducted Immunity Screened Room	RFI	3	None	Not Required	-

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

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2.5 GHz TD-CDMA PCI Express Mini Module: AAU
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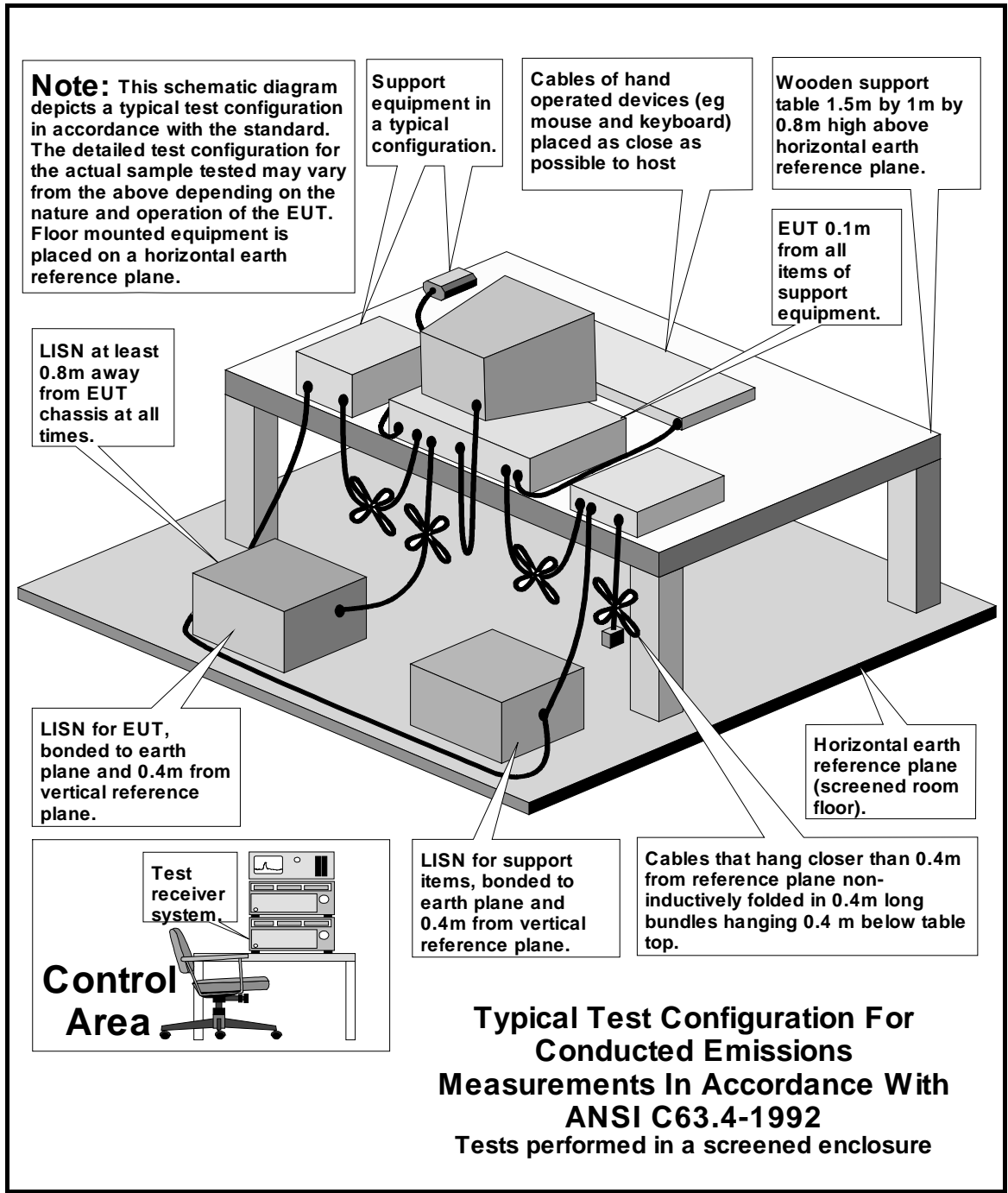
Appendix 2. Test Configuration Drawings

This Appendix contains the following drawings:

Drawing Reference Number	Title
DRG\73252JD01\EMICON	Test configuration for measurement of conducted emissions
DRG\73252JD01\EMIRAD	Test configuration for measurement of radiated emissions

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DRG\73252JD01\EMICON



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

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DRG\73252JD01\EMIRAD

