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Report On

FCC Testing of the
ip.access Ltd
217C 3G Enterprise Access Point

COMMERCIAL-IN-CONFIDENCE

FCC ID: QGGIPA217C

Document 75909058 Report 02 Issue 2

July 2010



Product Service

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COMMERCIAL-IN-CONFIDENCE

REPORT ON

FCC Testing of the
ip.access Ltd
217C 3G Enterprise Access Point

Document 75909058 Report 02 Issue 2

July 2010

PREPARED FOR

ip.access Ltd
Building 2020
Cambourne Business Park
Cambourne
CB23 6DW

PREPARED BY

N Bennett
Senior Administrator

APPROVED BY

C Gould
Authorised Signatory

M Jenkins
Authorised Signatory

DATED

02 July 2010

This report has been up issued to include missing AC Conducted Emissions results

ENGINEERING STATEMENT

The measurements shown in this report were made in accordance with the procedures described on test pages. All reported testing was carried out on a sample equipment to demonstrate limited compliance with FCC CFR 47: Parts 27. The sample tested was found to comply with the requirements defined in the applied rules.

Test Engineer(s);

G Lawler

S Bennett





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SECTION 1

REPORT SUMMARY

FCC Testing of the
ip.access Ltd
217C 3G Enterprise Access Point



1.1 INTRODUCTION

The information contained in this report is intended to show verification of the ip.access Ltd, 217C 3G Enterprise Access Point to the requirements of FCC CFR 47 Part 27.

Objective	To perform FCC Testing to determine the Equipment Under Test's (EUT's) compliance with the Test Specification, for the series of tests carried out.
Manufacturer	ip.access Ltd
Model Number(s)	nano3G 217C
Part Number	217C
Serial Number(s)	000295-0000022519 000295-0000022654
Software Version	SR1.1.1_461.0
Hardware Version	XB
Number of Samples Tested	1
Test Specification/Issue/Date	FCC CFR 47 Part 27: 2009 FCC CFR 47 Part 15C:2009
Incoming Release Date	Application Form 07 May 2010
Disposal Reference Number Date	Held Pending Disposal Not Applicable Not Applicable
Order Number Date	PO23742 19 February 2010
Start of Test	10 May 2010
Finish of Test	11 May 2010
Name of Engineer(s)	G Lawler S Bennett
Related Document(s)	ANSI C63.4 : 2003



1.2 BRIEF SUMMARY OF RESULTS

A brief summary of results in accordance with FCC CFR 47 Part 27, is shown below.

Configuration 1 - Test Configuration 1 (PoE)					
Section	Spec Clause	Test Description	Mode	Mod State	Result
2.1	2.1053/ 27.53(h)	Emissions for Broadband PCS Equipment	Transmitting Bottom Channel	0	Pass
			Transmitting Middle Channel	0	Pass
			Transmitting Top Channel	0	Pass
2.2	2.1046/27.50(d)	EIRP Peak Power	Transmitting Bottom Channel	0	Pass
			Transmitting Middle Channel	0	Pass
			Transmitting Top Channel	0	Pass

Configuration 2 - Test Configuration 2 (AC/DC Adaptor)					
Section	Spec Clause	Test Description	Mode	Mod State	Result
2.1	2.1053/ 27.53(h)	Emissions for Broadband PCS Equipment	Transmitting Bottom Channel	-	N/T
			Transmitting Middle Channel	0	Pass
			Transmitting Top Channel	-	N/T
2.2	2.1046/27.50(d)	EIRP Peak Power	Transmitting Bottom Channel	-	N/T
			Transmitting Middle Channel	0	Pass
			Transmitting Top Channel	-	N/T
2.3	2.1046/27.50(d)(2)	Carrier Power	Transmitting Bottom Channel	0	Pass
			Transmitting Middle Channel	0	Pass
			Transmitting Top Channel	0	Pass
2.4	27.50(d)(5)	Carrier Power – CCDF	Transmitting Bottom Channel	0	Pass
			Transmitting Middle Channel	0	Pass
			Transmitting Top Channel	0	Pass
2.5	2.1049/27.53(h)(1)	26dB Bandwidth	Transmitting Bottom Channel	0	Pass
			Transmitting Middle Channel	0	Pass
			Transmitting Top Channel	0	Pass
2.6	27.54 / 2.1055(d)(1)	Frequency Stability Under Voltage Variations	Transmitting Bottom Channel	-	N/A
			Transmitting Middle Channel	0	Pass
			Transmitting Top Channel	-	N/A
2.7	27.54 / 2.1055	Frequency Stability Under Temperature Variations	Transmitting Bottom Channel	-	N/A
			Transmitting Middle Channel	0	Pass
			Transmitting Top Channel	-	N/A



Product Service

Configuration 2 - Test Configuration 2 (AC/DC Adaptor)					
Section	Spec Clause	Test Description	Mode	Mod State	Result
2.8	2.1051/ 27.53(h)(1)	Conducted Emissions – Block Edge	Transmitting Bottom Channel	0	Pass
			Transmitting Middle Channel	-	N/A
			Transmitting Top Channel	0	Pass
2.9	2.1051/ 27.53/2.1053	Spurious Conducted Emissions	Transmitting Bottom Channel	0	Pass
			Transmitting Middle Channel	0	Pass
			Transmitting Top Channel	0	Pass

N/A – Not Applicable

N/T – Not Tested

A brief summary of results for each configuration, in accordance with FCC CFR 47 Part 15C is shown below.

Configuration 1 - Test Configuration 1 (PoE)					
Section	Spec Clause	Test Description	Mode	Mod State	Result
2.10	15.207	Conducted Emissions (AC Power Port)	Transmitting Bottom Channel	0	Pass
			Transmitting Middle Channel	0	Pass
			Transmitting Top Channel	0	Pass

Configuration 2 - Test Configuration 2 (AC/DC Adaptor)					
Section	Spec Clause	Test Description	Mode	Mod State	Result
2.10	15.207	Conducted Emissions (AC Power Port)	Transmitting Bottom Channel	0	Pass
			Transmitting Middle Channel	0	Pass
			Transmitting Top Channel	0	Pass

N/A – Not Applicable



Product Service

1.3 APPLICATION FORM

APPLICANT'S DETAILS			
COMPANY NAME :		ip.access Ltd	
ADDRESS :		2020 Cambourne Business, Cambourne, Cambridge, CB23 6DW	
NAME FOR CONTACT PURPOSES : Costa Panayi			
TELEPHONE NO: 01954 713721	FAX NO:	01954 713799	
		E-MAIL:	costa.panayi@ipaccess.com

EQUIPMENT INFORMATION			
<u>Equipment designator:</u>			
Model name/number	nano3G 217C	Identification number	
<u>Supply Voltage:</u>			
☒ []	AC mains	State AC voltage 110 ... V	and AC frequency Hz
☒ []	PoE DC (external)	State DC voltage 48 ... V	and DC current0.25 A
[] []	DC (internal)	State DC voltage V	and Battery type
<u>Frequency characteristics:</u>			
Frequency range	2110...MHz to ...2155. MHz	Channel spacing ...5MHz.....	(if channelized)
Designated test frequencies:			
Bottom:2112.5..... MHz	Middle:2132.5..... MHz	Top:2152.5 MHz	
<u>Power characteristics:</u>			
Maximum transmitter power	0.25... W	Minimum transmitter power	 W
		(if variable)	
☒ []	Continuous transmission		
[] []	Intermittent transmission	State duty cycle	
If intermittent, can transmitter be set to continuous transmit test mode? Y/N			
<u>Antenna characteristics:</u>			
[] []	Antenna connector	State impedance	ohm
[] []	Temporary antenna connector	State impedance	ohm
☒ []	Integral antenna	State gain	0 dBi
<u>Modulation characteristics:</u>			
[] []	Amplitude	[] []	Other
[] []	Frequency	Details:	
☒ []	Phase		
Can the transmitter operate un-modulated?		No	
ITU Class of emission: 5M00D1W....			
<u>Extreme conditions:</u>			
Maximum temperature	40 °C	Minimum temperature	...0... °C
Maximum supply voltage	 V	Minimum supply voltage	 V

I hereby declare that I am entitled to sign on behalf of the applicant and that the information supplied is correct and complete.

Signature : Held on file at TÜV Product Service Ltd
 Name : A Pearce
 Position held : Hardware Development Manager
 Date : 07 May 2010

TÜV Product Service Ltd formally certifies that the manufacturer's declaration as typed out in this report, is a true and accurate record of the original received from the applicant.



Product Service

1.4 PRODUCT INFORMATION

1.4.1 Technical Description

The Equipment Under Test (EUT) was a IP-Access Ltd 217C 3G Enterprise Access Point as shown in the photograph below. A full technical description can be found in the manufacturer's documentation.



Equipment Under Test



1.4.2 Test Configuration

Configuration 1: Test Configuration 1

The EUT was configured in accordance with FCC CFR 47 Part 27 and FCC CFR 47 Part 15C.

The EUT was powered using the Power Over Ethernet Inserter (PoE).

Configuration 2: Test Configuration 2

The EUT was configured in accordance with FCC CFR 47 Part 27 and FCC CFR 47 Part 15C.

The EUT was powered using the AC/DC adaptor.

1.4.3 EUT Cable / Port Identification

Port	Max Cable Length specified	Usage	Type	Screened
AC Power (for POE Inserter)	2m	Mains Lead	3 core	No
Signal	<100m (total length from source)	Signal/Power Lead	Cat 5	No
DC Power POE	<100m (total length from source)	Signal/Power Lead	Cat 5	No
DC Power	<3m	Power Cable	2 core	No

1.4.4 Modes of Operation

Modes of operation of each EUT during testing were as follows:

Mode 1 – Transmitting Bottom Channel

Mode 2 – Transmitting Middle Channel

Mode 3 – Transmitting Top Channel

Information on the specific test modes utilised are detailed in the test procedure for each individual test.



Product Service

1.5 TEST CONDITIONS

For all tests the EUT was set up in accordance with the relevant test standard and to represent typical operating conditions. Tests were applied with the EUT situated in a shielded enclosure, test laboratories or an open test area as appropriate.

The EUT was powered from a 120V, 60Hz AC Power supply or via a PoE Inserter.

FCC Accreditation
90987 Octagon House, Fareham Test Laboratory

1.6 DEVIATIONS FROM THE STANDARD

No deviations from the applicable test standards or test plan were made during testing.

1.7 MODIFICATION RECORD

No modifications were made to the EUT during testing.



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SECTION 2

TEST DETAILS

FCC Testing of the
ip.access Ltd
217C 3G Enterprise Access Point



Product Service

2.1 EMISSIONS FOR BROADBAND PCS EQUIPMENT

2.1.1 Specification Reference

FCC CFR 47 Part 27, Clause 27.53(h)

2.1.2 Equipment Under Test

217C 3G Enterprise Access Point, S/N: 000295-0000022654

2.1.3 Date of Test and Modification State

11 May 2010 - Modification State 0

2.1.4 Test Equipment Used

The major items of test equipment used for the above tests are identified in Section 3.1.

2.1.5 Test Method and Operating Modes

The test was applied in accordance with the test method requirements of FCC CFR 47 Part 27.

The test was performed with the EUT in the following configurations and modes of operation:

Configuration 1 - Mode 1
 - Mode 2
 - Mode 3
Configuration 2 - Mode 2

2.1.6 Environmental Conditions

11 May 2010

Ambient Temperature 17.6°C

Relative Humidity 33%

Atmospheric Pressure 1009mbar



2.1.7 Test Results

For the period of test the EUT met the requirements of FCC CFR 47 Part 27 for Emissions for Broadband PCS Equipment.

The test results are shown below.

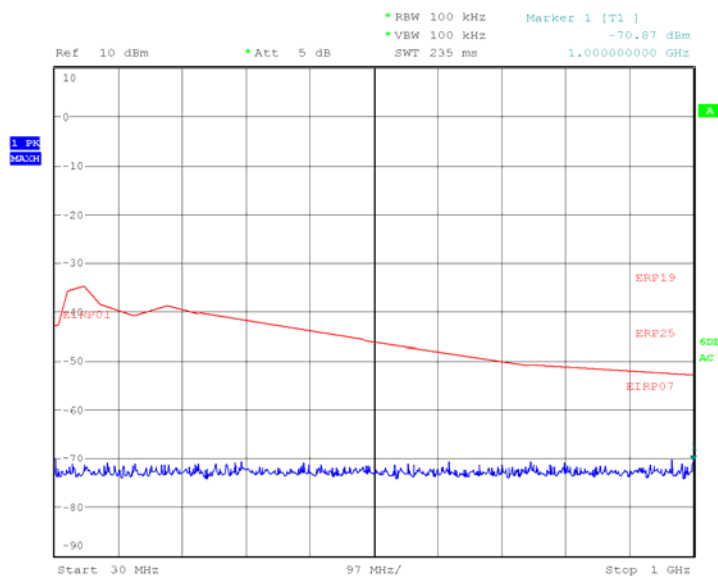
Configuration 1 - Mode 1

The highest emissions recorded are as below: -

Frequency GHz	Antenna Polarisation	Antenna Height cm	EUT Arc degrees	Result Peak dBm	EIRP Limit dBm	Margin dB	Result
4.305	Vertical	110	260	-29.4	-13.0	-16.4	Pass

30MHz to 1GHz

Vertical

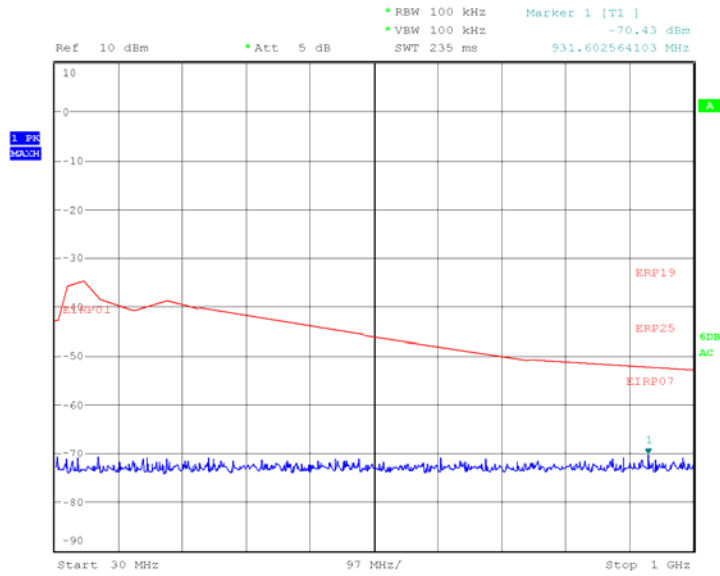


Date: 11.MAY.2010 22:58:09



Product Service

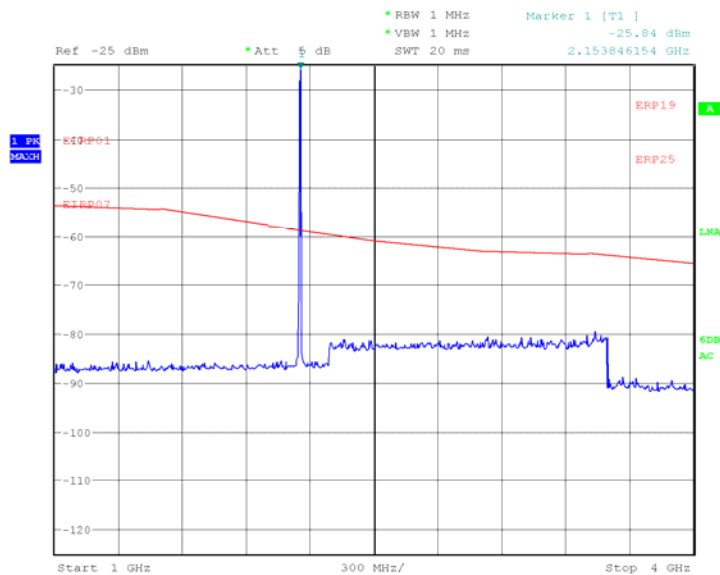
Horizontal



Date: 11.MAY.2010 22:58:56

1GHz to 4GHz

Vertical

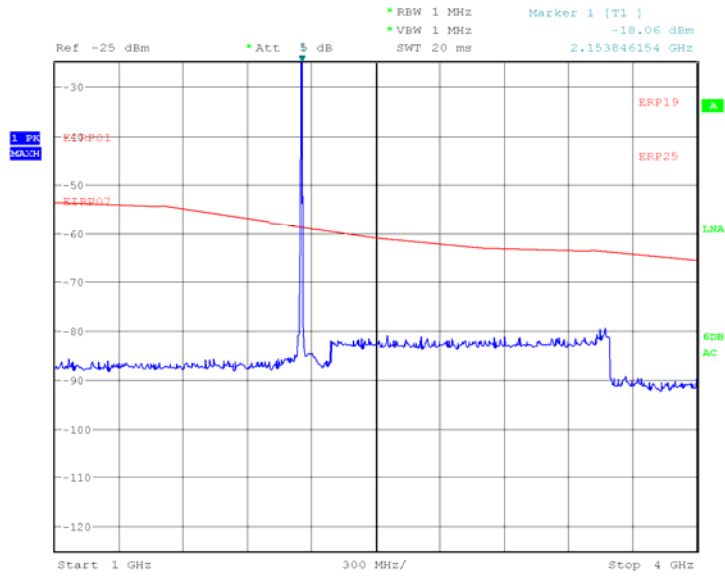


Date: 11.MAY.2010 21:11:44



Product Service

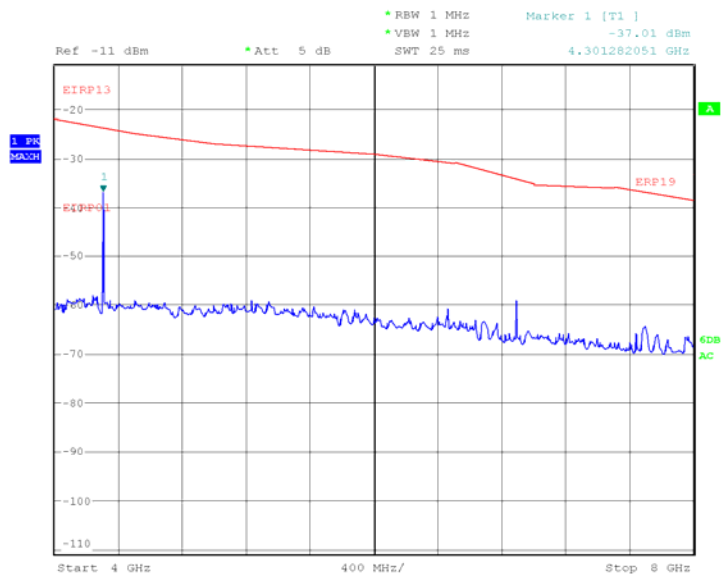
Horizontal



Date: 11.MAY.2010 21:22:48

4GHz to 8GHz

Vertical

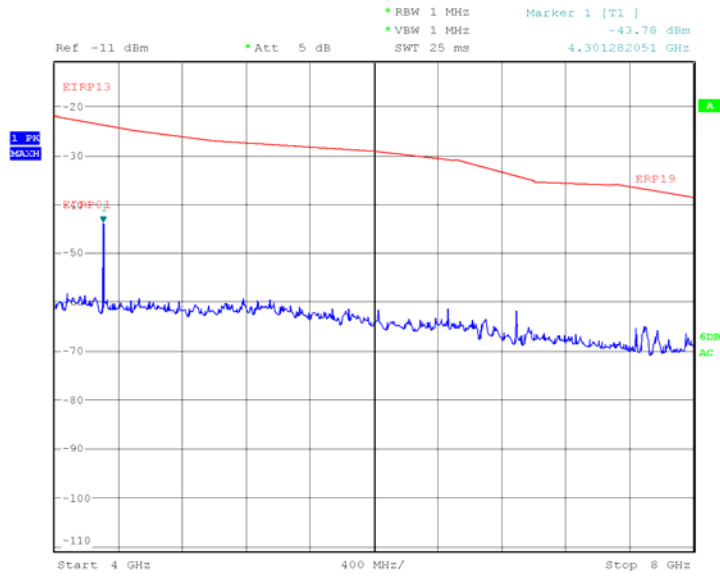


Date: 11.MAY.2010 19:03:46



Product Service

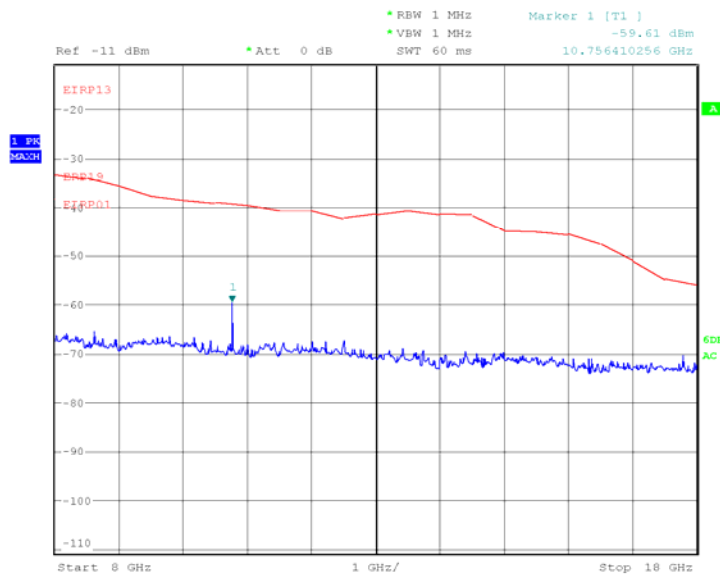
Horizontal



Date: 11.MAY.2010 19:08:38

8GHz to 18GHz

Vertical

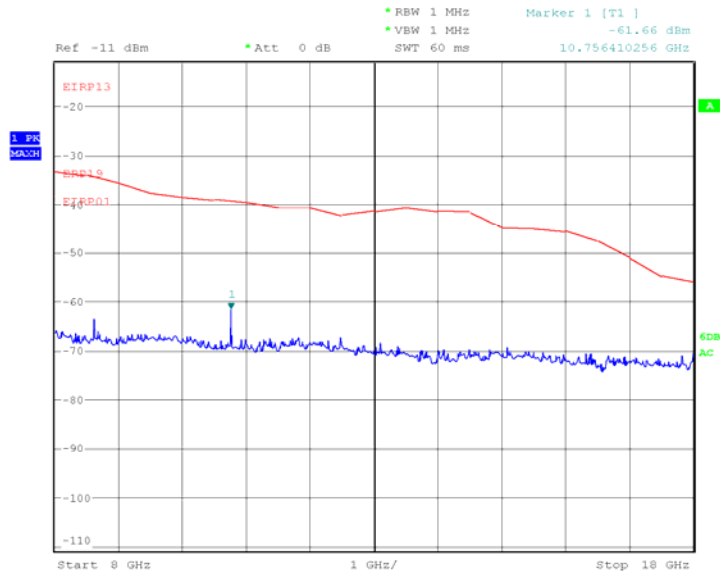


Date: 11.MAY.2010 19:57:04



Product Service

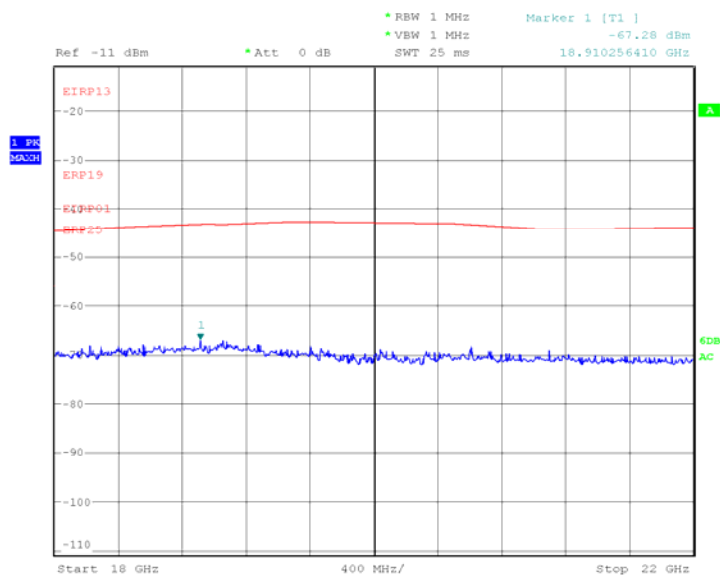
Horizontal



Date: 11.MAY.2010 19:58:58

18GHz to 22GHz

Vertical

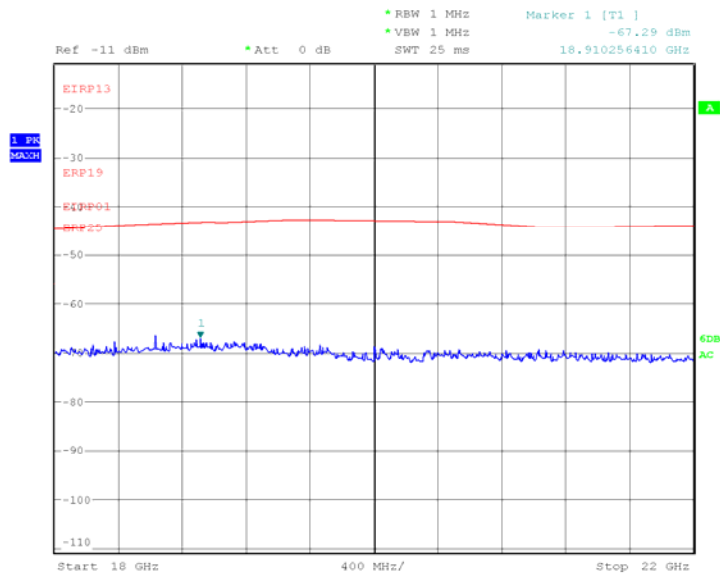


Date: 11.MAY.2010 20:06:38



Product Service

Horizontal



Date: 11.MAY.2010 20:08:52



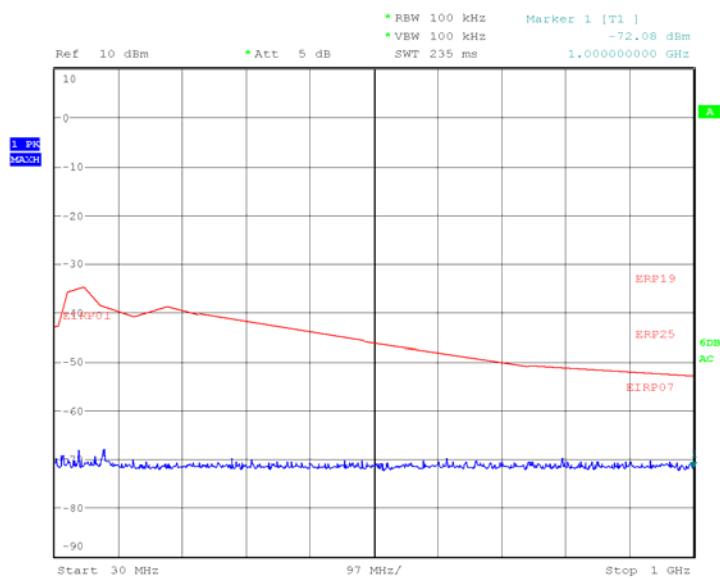
Configuration 1 - Mode 2

The highest emissions recorded are as below: -

Frequency GHz	Antenna Polarisation	Antenna Height cm	EUT Arc degrees	Result Peak dBm	EIRP Limit dBm	Margin dB	Result
4.265	Vertical	124	261	-32.2	-13.0	-19.2	Pass

30MHz to 1GHz

Vertical

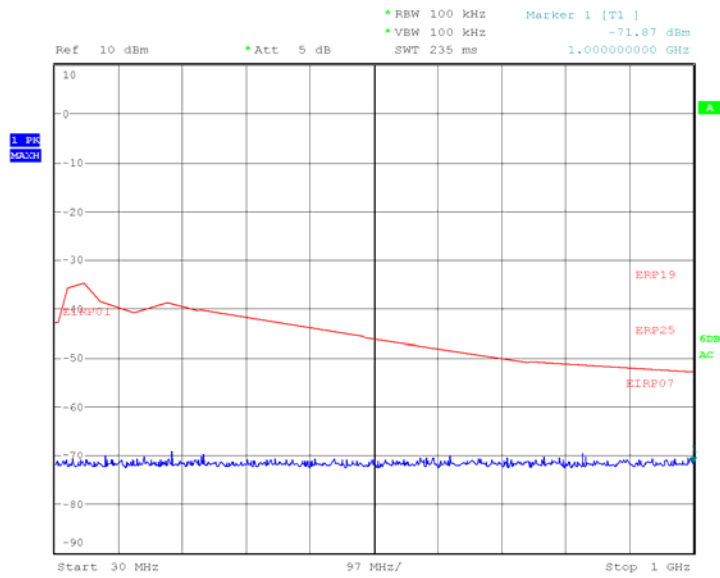


Date: 11.MAY.2010 22:28:56



Product Service

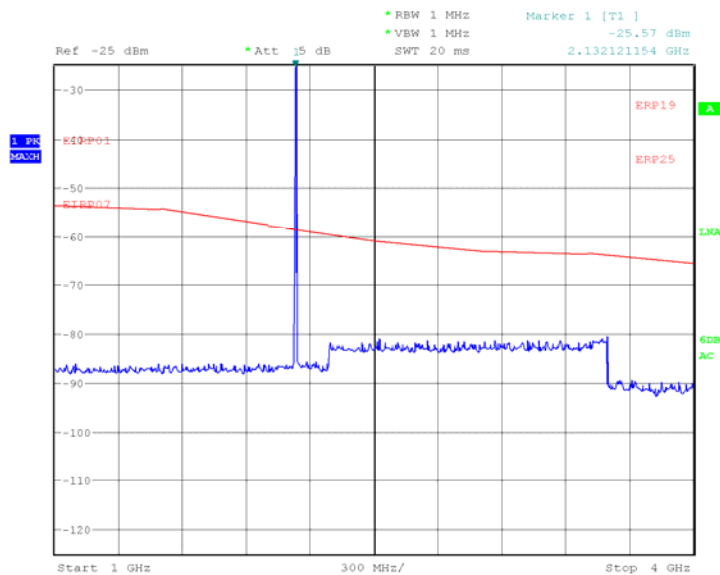
Horizontal



Date: 11.MAY.2010 22:31:03

1GHz to 4GHz

Vertical

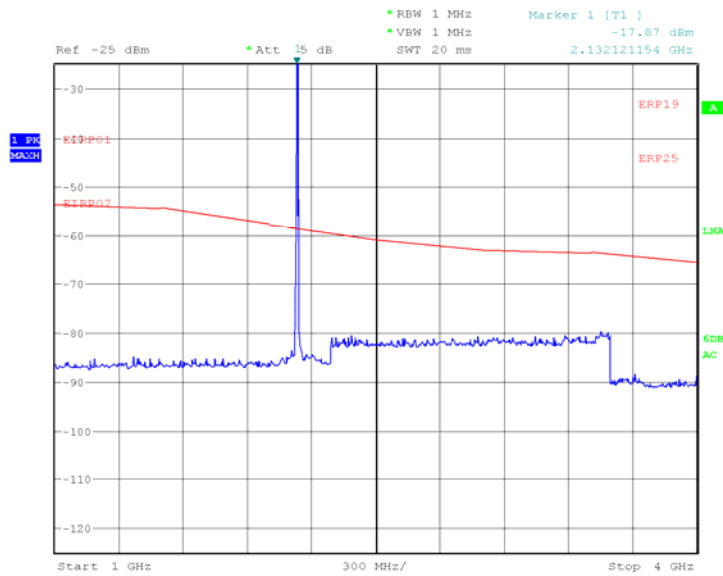


Date: 11.MAY.2010 21:08:52



Product Service

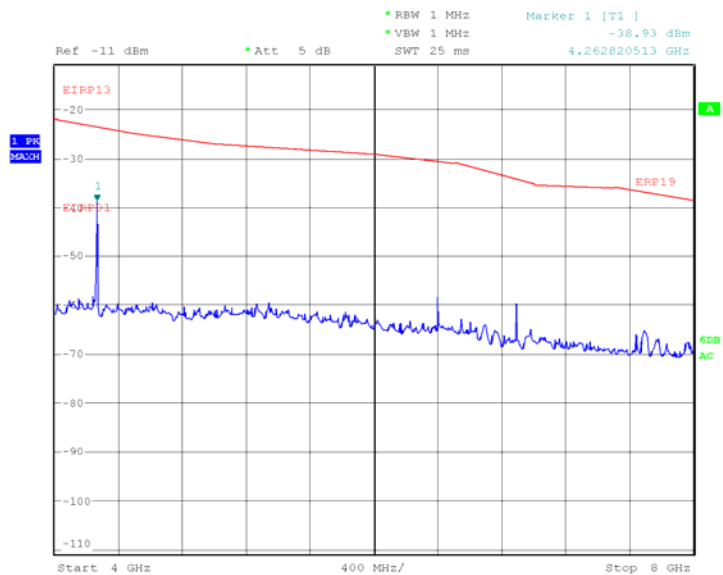
Horizontal



Date: 11.MAY.2010 21:07:15

4GHz to 8GHz

Vertical

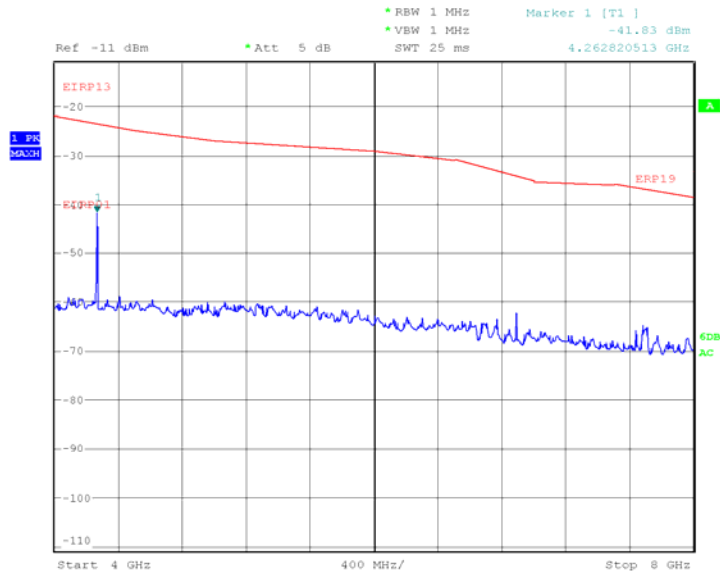


Date: 11.MAY.2010 18:54:10



Product Service

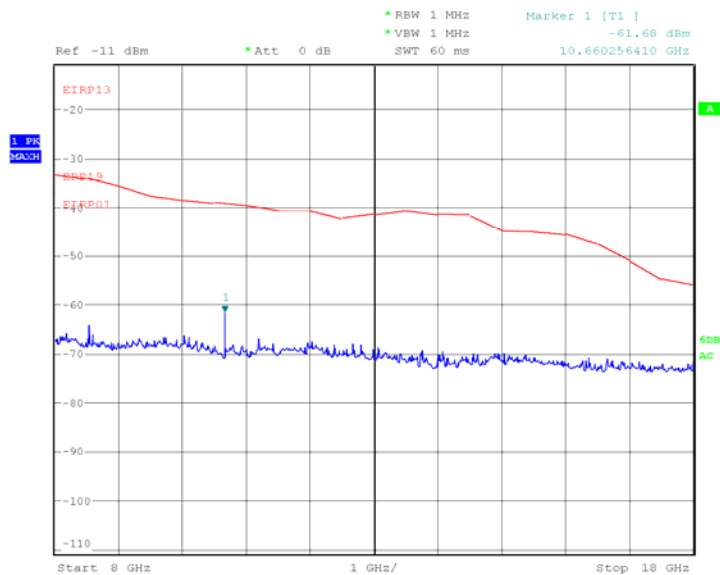
Horizontal



Date: 11.MAY.2010 18:52:53

8GHz to 18GHz

Vertical

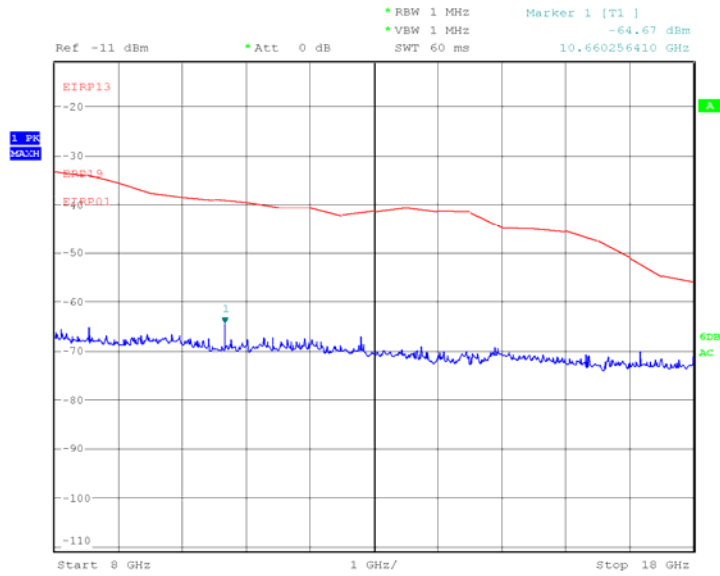


Date: 11.MAY.2010 19:55:32



Product Service

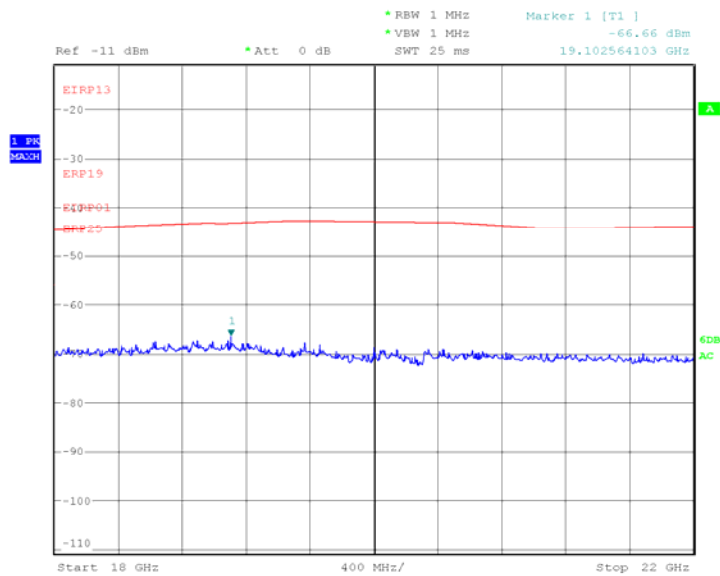
Horizontal



Date: 11.MAY.2010 19:54:19

18GHz to 22GHz

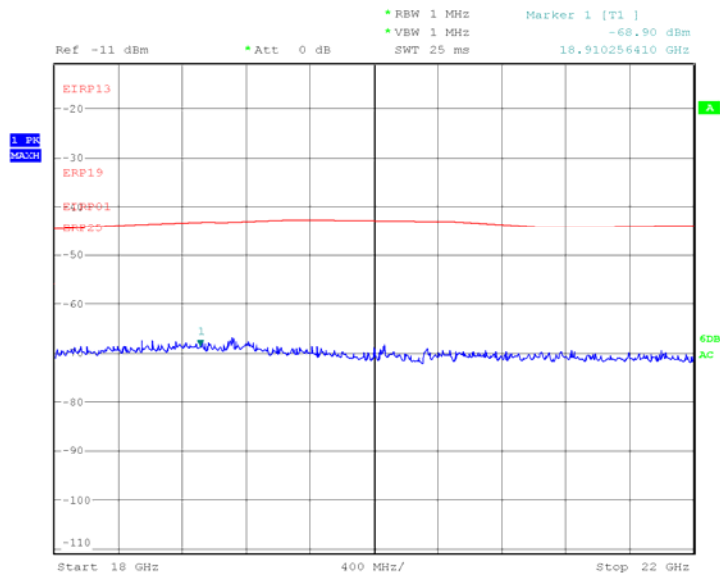
Vertical



Date: 11.MAY.2010 20:12:41



Product Service

Horizontal

Date: 11.MAY.2010 20:10:41

Configuration 1 - Mode 3

The highest emissions recorded are as below: -

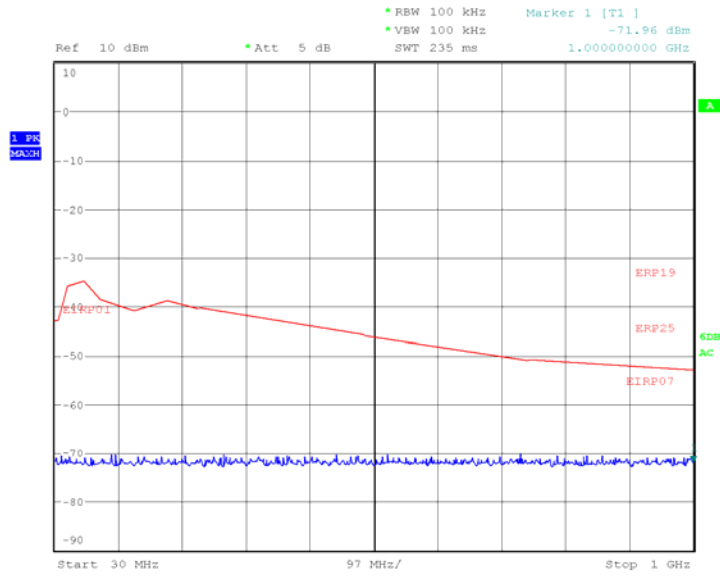
Frequency GHz	Antenna Polarisation	Antenna Height cm	EUT Arc degrees	Result Peak dBm	EIRP Limit dBm	Margin dB	Result
4.225	Vertical	100	285	-35.1	-13.0	-22.1	Pass



Product Service

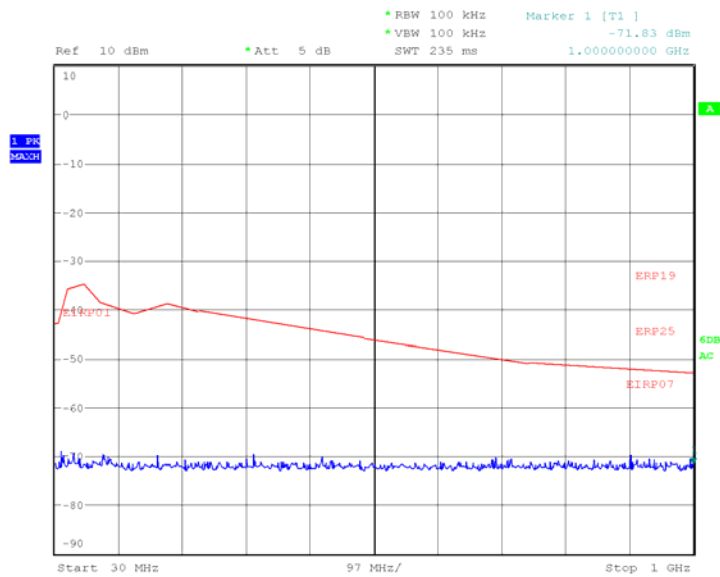
30MHz to 1GHz

Vertical

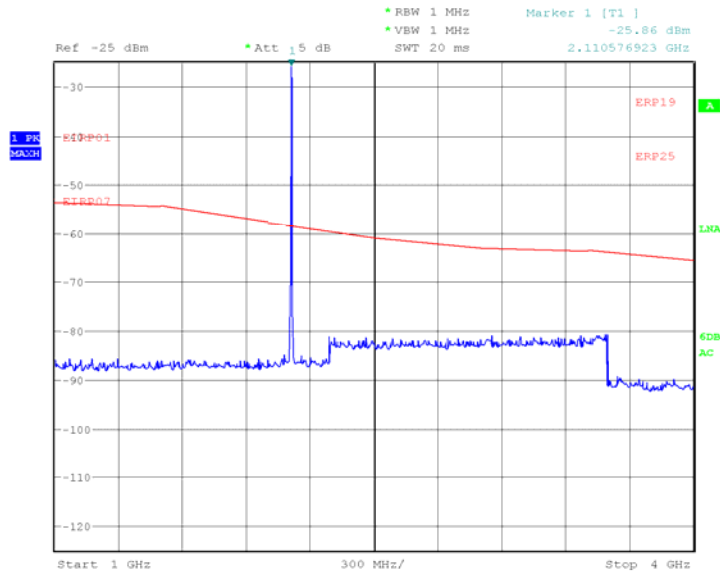


Date: 11.MAY.2010 22:23:30

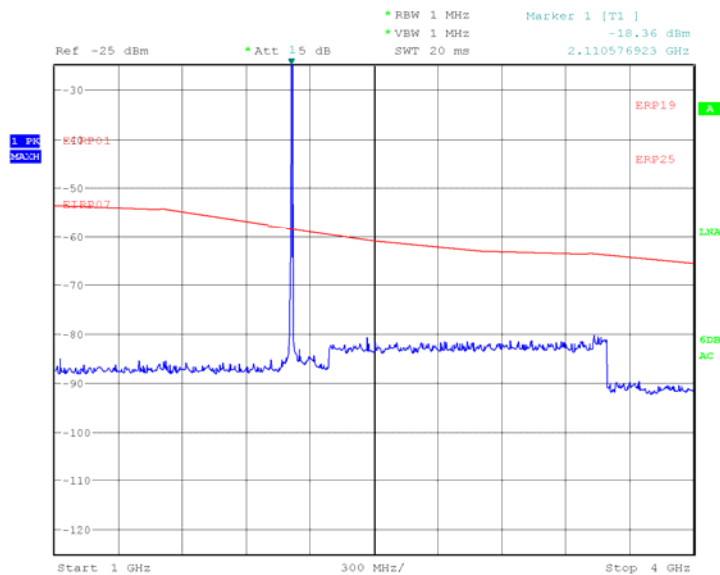
Horizontal



Date: 11.MAY.2010 22:24:30

1GHz to 4GHzVertical

Date: 11.MAY.2010 20:22:42

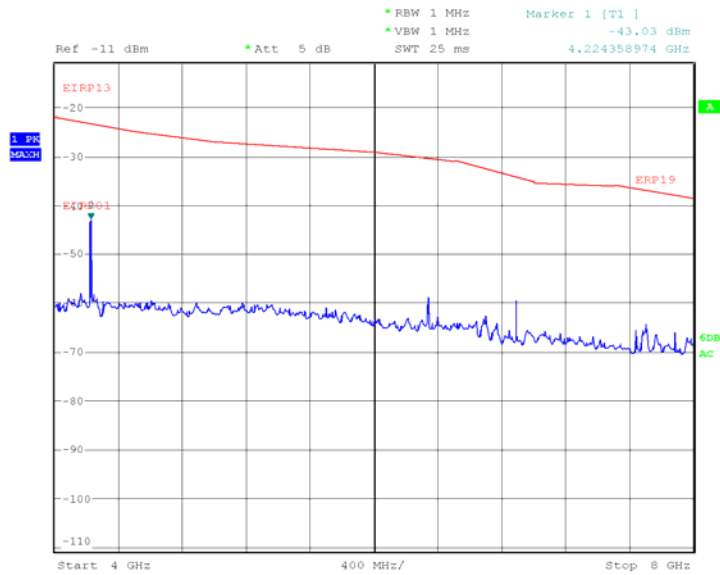
Horizontal

Date: 11.MAY.2010 20:24:27



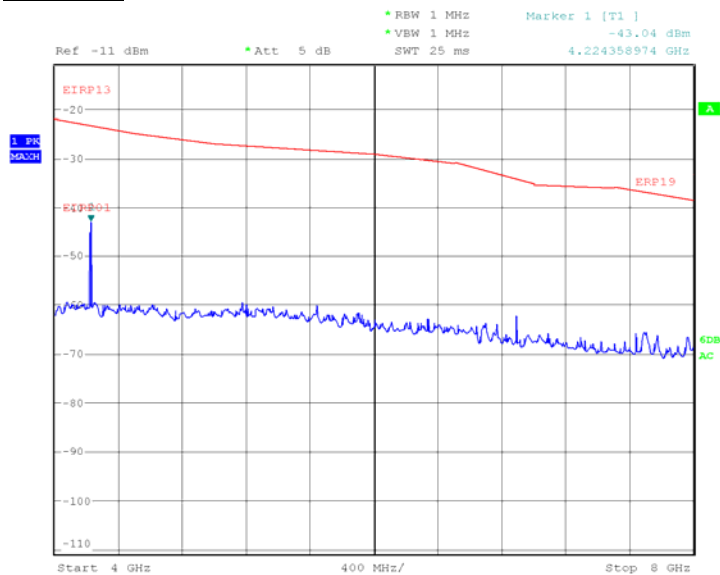
4GHz to 8GHz

Vertical



Date: 11.MAY.2010 18:49:58

Horizontal



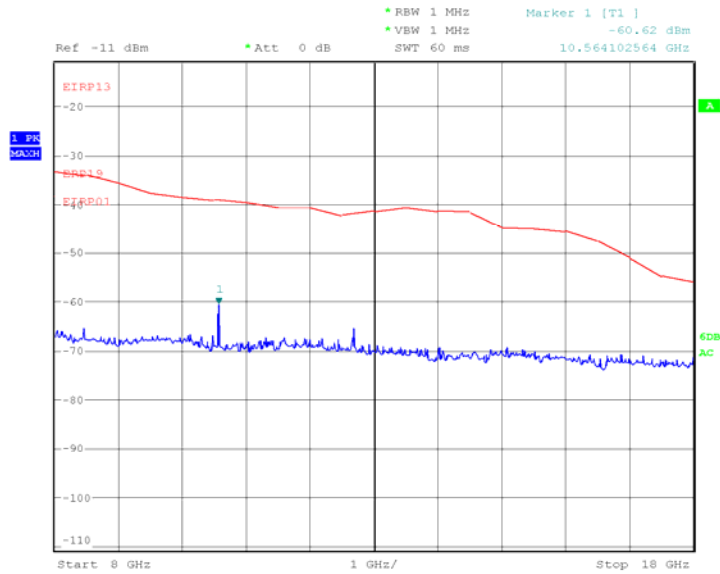
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Product Service

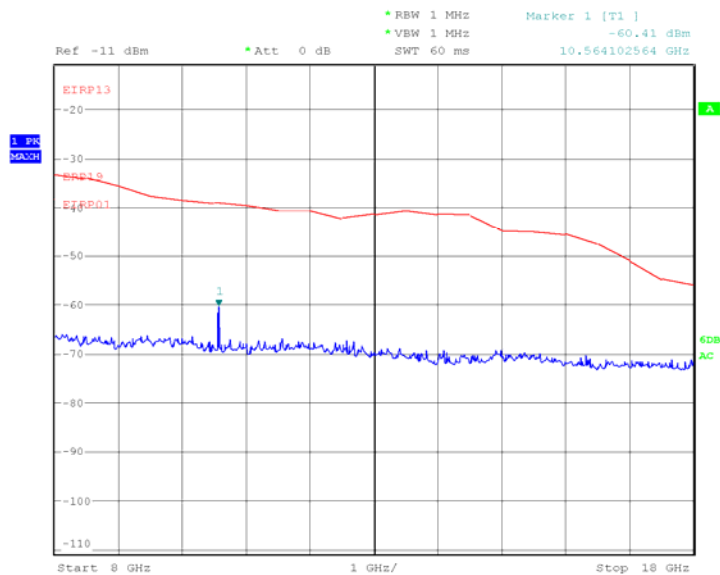
8GHz to 18GHz

Vertical



Date: 11.MAY.2010 19:42:31

Horizontal



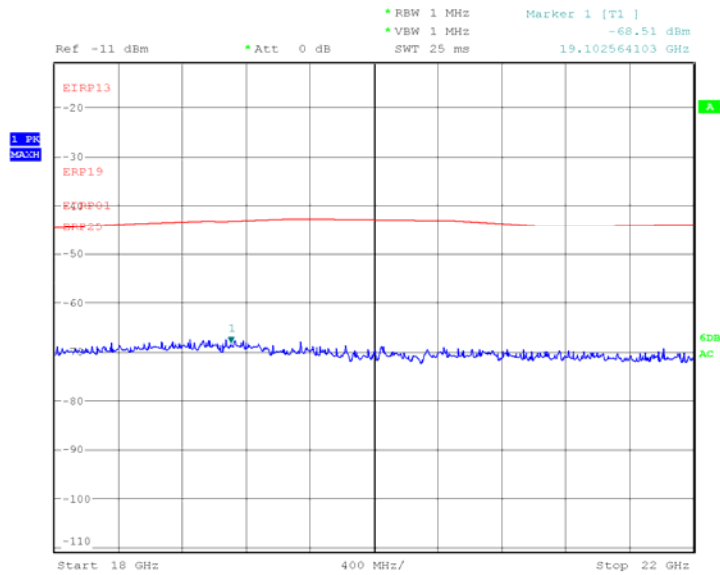
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Product Service

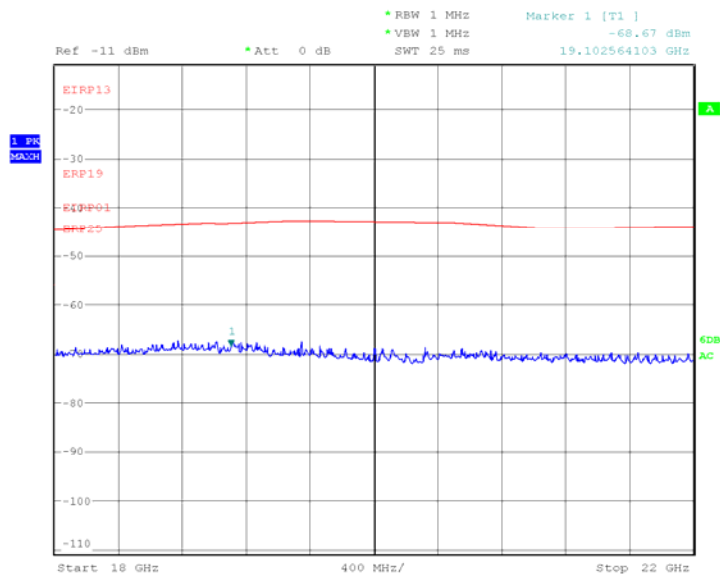
18GHz to 22GHz

Vertical



Date: 11.MAY.2010 20:14:06

Horizontal



Date: 11.MAY.2010 20:16:04



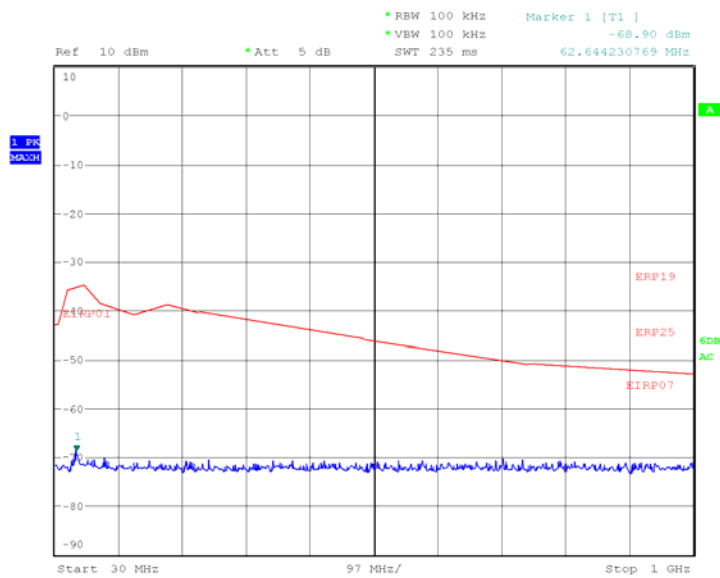
Configuration 2 - Mode 2

The highest emissions recorded are as below: -

Frequency GHz	Antenna Polarisation	Antenna Height cm	EUT Arc degrees	Result Peak dBm	EIRP Limit dBm	Margin dB	Result
4.265	Vertical	100	267	-31.7	-13.0	-18.7	Pass

30MHz to 1GHz

Vertical

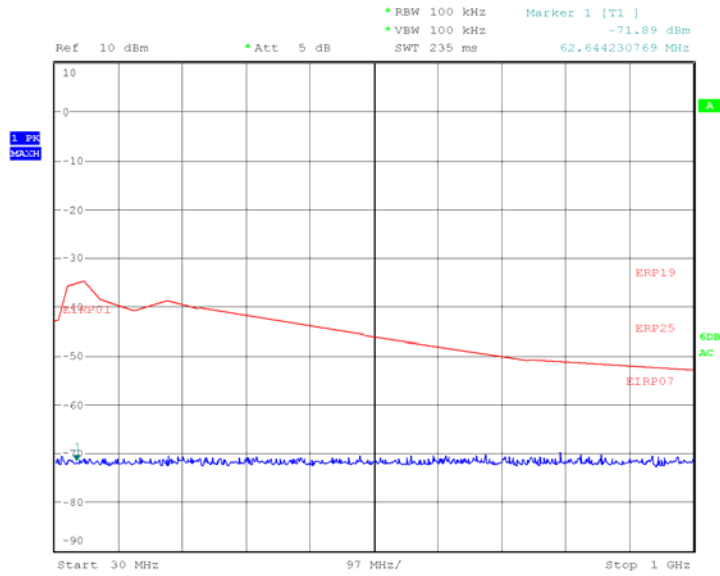


Date: 11.MAY.2010 23:15:08



Product Service

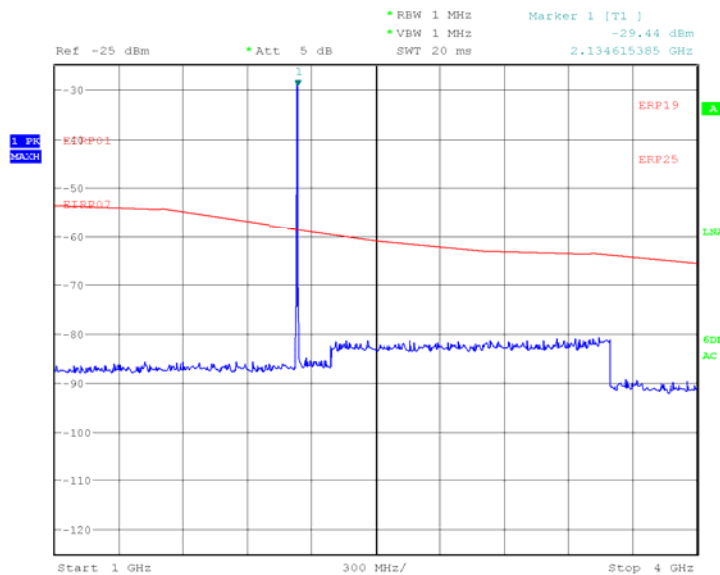
Horizontal



Date: 11.MAY.2010 23:16:43

1GHz to 4GHz

Vertical

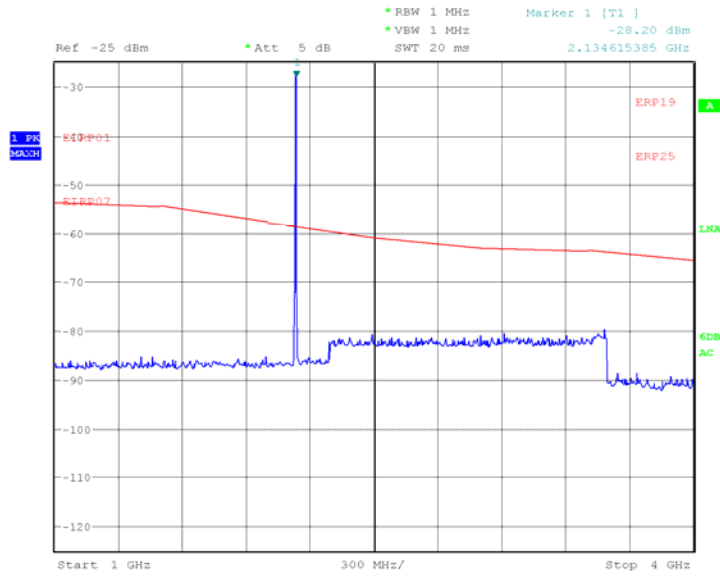


Date: 11.MAY.2010 23:34:39



Product Service

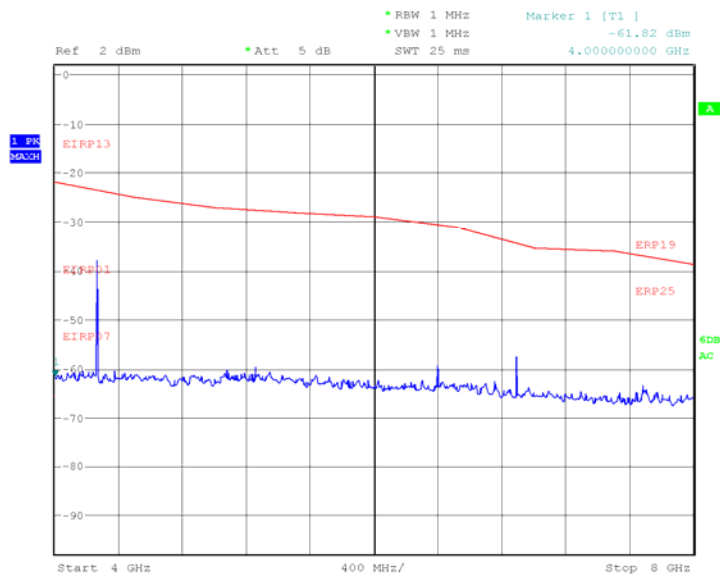
Horizontal



Date: 11.MAY.2010 23:37:26

4GHz to 8GHz

Vertical

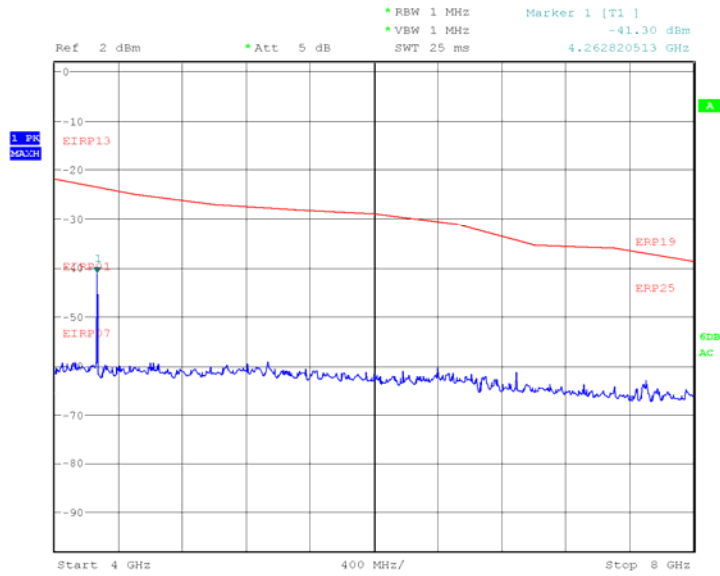


Date: 12.MAY.2010 00:22:12



Product Service

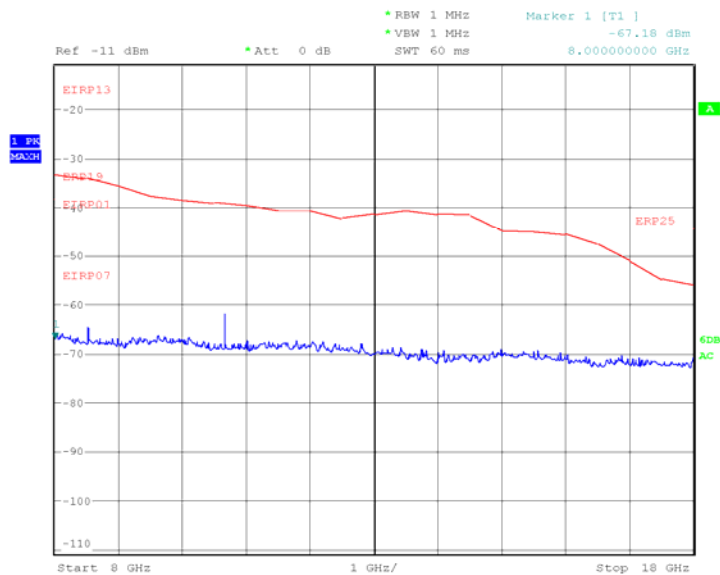
Horizontal



Date: 12.MAY.2010 00:32:48

8GHz to 18GHz

Vertical

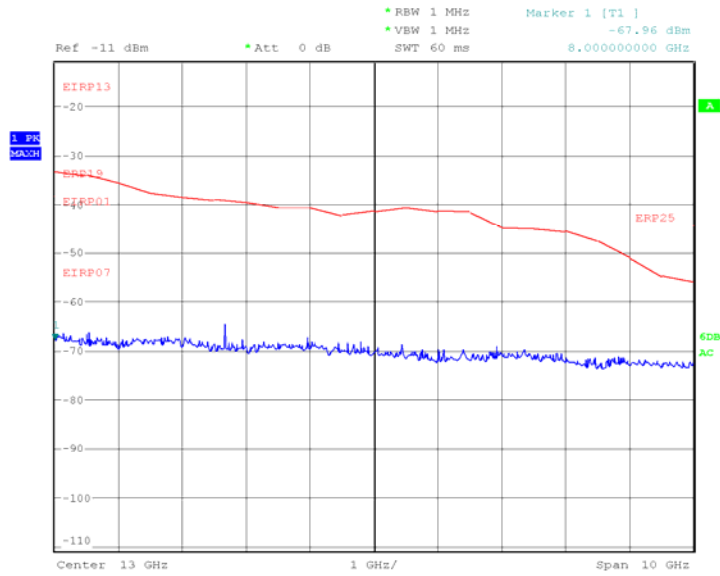


Date: 12.MAY.2010 00:39:42



Product Service

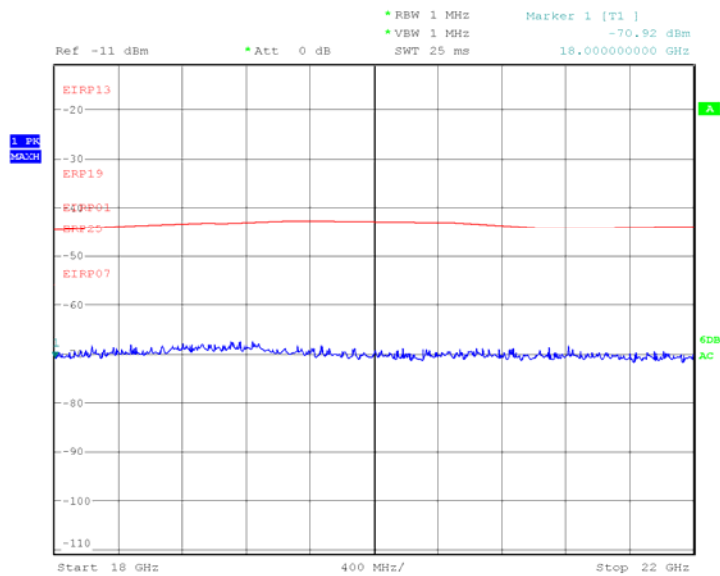
Horizontal



Date: 12.MAY.2010 00:40:52

18GHz to 22GHz

Vertical

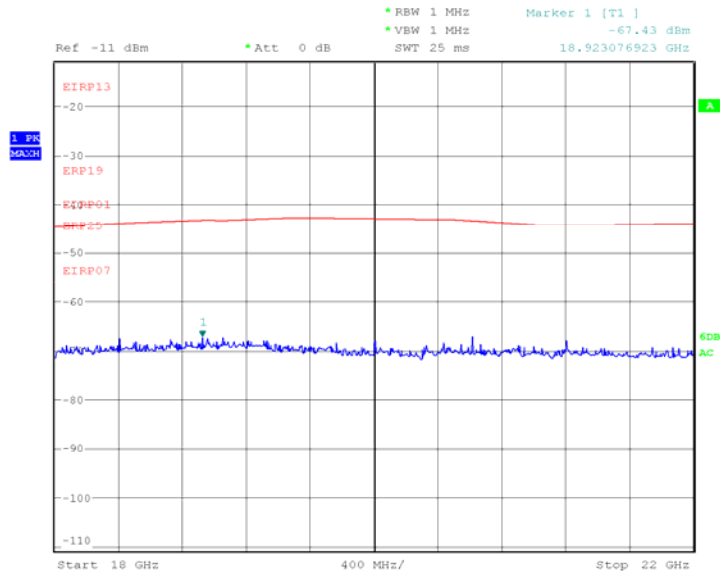


Date: 12.MAY.2010 00:45:46



Product Service

Horizontal



Date: 12.MAY.2010 00:46:46



Product Service

2.2 EIRP PEAK POWER

2.2.1 Specification Reference

FCC CFR 47 Part 27, Clause 27.50(d)

2.2.2 Equipment Under Test

217C 3G Enterprise Access Point, S/N: 000295-0000022654

2.2.3 Date of Test and Modification State

11 May 2010 - Modification State 0

2.2.4 Test Equipment Used

The major items of test equipment used for the above tests are identified in Section 3.1.

2.2.5 Test Method and Operating Modes

The test was applied in accordance with the test method requirements of FCC CFR 47 Part 27.

The test was performed with the EUT in the following configurations and modes of operation:

Configuration 1 - Mode 1
 - Mode 2
 - Mode 3
Configuration 2 - Mode 2

2.2.6 Environmental Conditions

	11 May 2010
Ambient Temperature	17.6°C
Relative Humidity	33%
Atmospheric Pressure	1009mbar



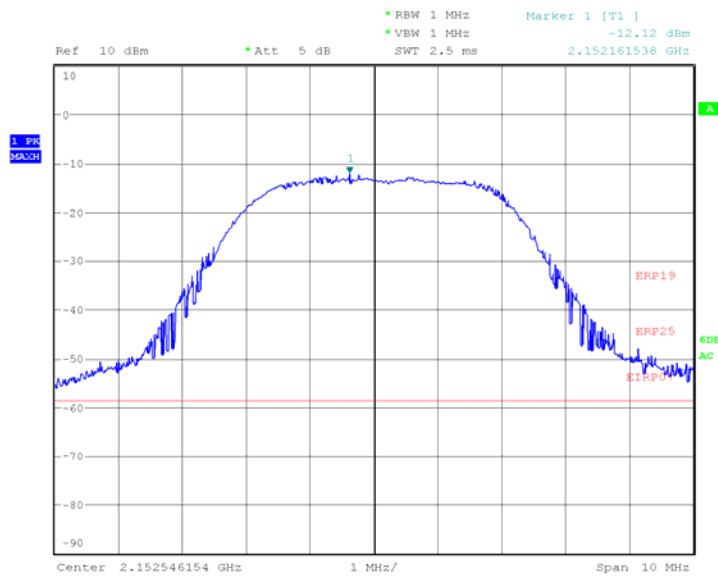
2.2.7 Test Results

For the period of test the EUT met the requirements of FCC CFR 47 Part 27 for EIRP Peak Power.

The test results are shown below.

Configuration 1 - Mode 1

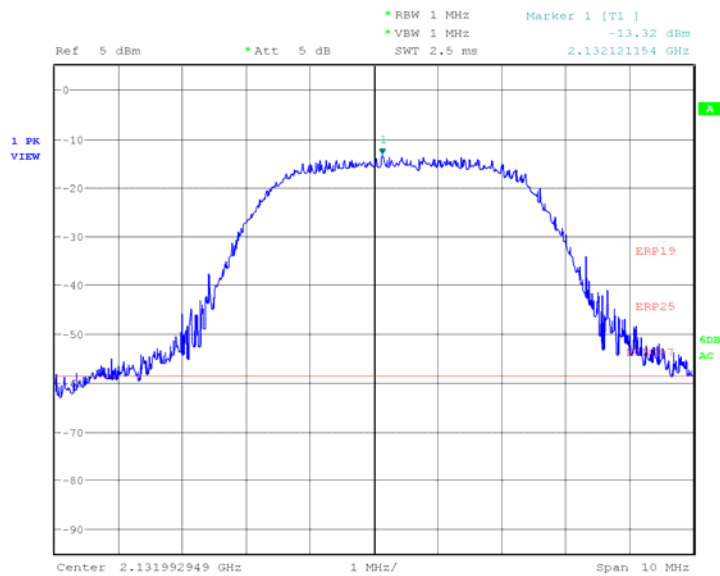
Frequency	Result (dBm)	Limit (dBm)	Result (W)	Limit (W)
2.152 GHz	27.5	62.15	0.562	1640



Date: 11.MAY.2010 21:26:57

Configuration 1 - Mode 2

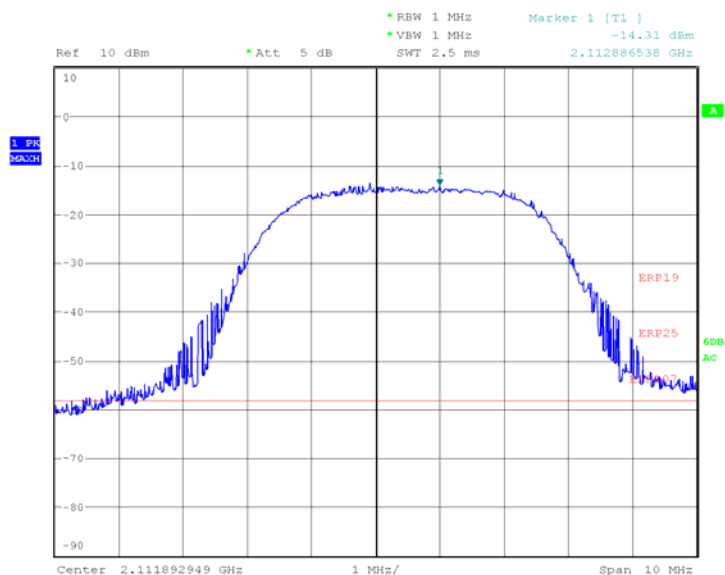
Frequency	Result (dBm)	Limit (dBm)	Result (W)	Limit (W)
2.132GHz	28.6	62.15	0.724	1640



Date: 11.MAY.2010 20:57:27

Configuration 1 - Mode 3

Frequency	Result (dBm)	Limit (dBm)	Result (W)	Limit (W)
2.112GHz	28.6	62.15	0.724	1640

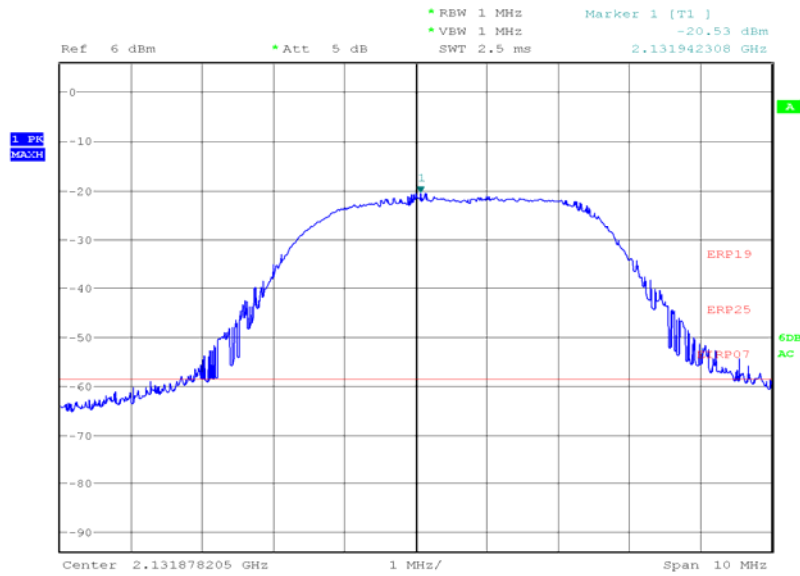


Date: 11.MAY.2010 20:49:44



Configuration 2 - Mode 2

Frequency	Result (dBm)	Limit (dBm)	Result (W)	Limit (W)
2.132GHz	28.6	62.15	0.724	1640



Date: 12.MAY.2010 00:05:40



Product Service

2.3 CARRIER POWER

2.3.1 Specification Reference

FCC CFR 47 Part 27, Clause 27.50(d)(2)

2.3.2 Equipment Under Test

217C 3G Enterprise Access Point, S/N: 000295-0000022519

2.3.3 Date of Test and Modification State

10 May 2010 - Modification State 0

2.3.4 Test Equipment Used

The major items of test equipment used for the above tests are identified in Section 3.1.

2.3.5 Test Method and Operating Modes

The test was applied in accordance with the test method requirements of FCC CFR 47 Part 27.

The EUT was connected to a spectrum analyser via a 20dB attenuator. The path loss between the EUT and the spectrum analyser was measured and entered as a reference level offset. The detector was set to rms and the trace set to the max hold. The carrier power was then measured in two ways, on bottom, middle and top channels at maximum power:

- Power in a 1MHz bandwidth using a spectrum analyser.
- Wideband power using a peak power analyser.

Both average and peak reading were recorded in a 1MHz bandwidth and wideband power measurement.

The test was performed with the EUT in the following configurations and modes of operation:

- Configuration 2 - Mode 1
 - Mode 2
 - Mode 3

2.3.6 Environmental Conditions

10 May 2010

Ambient Temperature 24°C

Relative Humidity 28%



2.3.7 Test Results

For the period of test the EUT met the requirements of FCC CFR 47 Part 27 for Carrier Power.

The test results are shown below.

Configuration 2 – Modes 1, 2 and 3

Channel Number / Frequency (MHz)	1 MHz RBW, 10MHz VBW				Wideband Power			
	Average		Peak		Average		Peak	
	dBm	mW	dBm	mW	dBm	mW	dBm	mW
1537 / 2112.4 MHz	18.46	70.15	25.45	350.75	23.74	236.59	28.47	703.07
1637 / 2132.4 MHz	18.51	70.96	26.03	400.87	23.84	242.10	28.21	662.22
1738 / 2152.6 MHz	18.16	65.46	26.01	399.02	23.49	223.36	28.39	690.24

Limit

≤ 1640W/MHz



Product Service

2.4 CARRIER POWER - CCDF

2.4.1 Specification Reference

FCC CFR 47 Part 27, Clause 27.50(d)(5)

2.4.2 Equipment Under Test

217C 3G Enterprise Access Point, S/N: 000295-0000022519

2.4.3 Date of Test and Modification State

10 May 2010 - Modification State 0

2.4.4 Test Equipment Used

The major items of test equipment used for the above tests are identified in Section 3.1.

2.4.5 Test Method and Operating Modes

The test was applied in accordance with the test method requirements of FCC CFR 47 Part 27.

To demonstrate compliance with the PAR (Peak to Average Ratio) of 13dB defined in 27.50(d)(5) the CCDF function of the spectrum analyser was used. The following plots show the CCDF statistics and compliance with the 13dB PAR.

The test was performed with the EUT in the following configurations and modes of operation:

Configuration 2 - Mode 1
- Mode 2
- Mode 3

2.4.6 Environmental Conditions

10 May 2010

Ambient Temperature 24°C

Relative Humidity 26%



Product Service

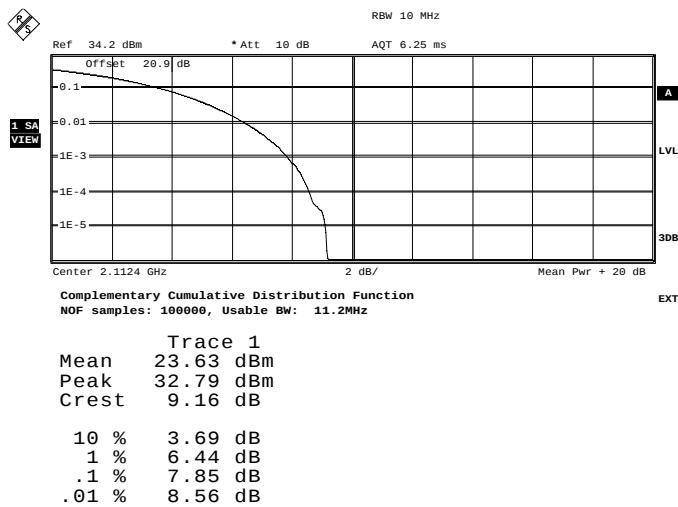
2.4.7 Test Results

For the period of test the EUT met the requirements of FCC CFR 47 Part 27 for Carrier Power - CCDF.

The test results are shown below.

Configuration 2 – Modes 1, 2 and 3

2112.4MHz



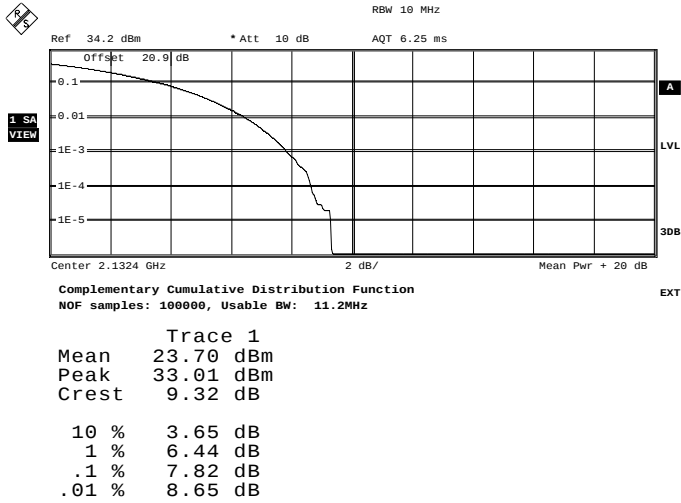
OBW1
Date: 10.MAY.2010 15:20:49

Peak to Average Ratio: 9.16dB



Product Service

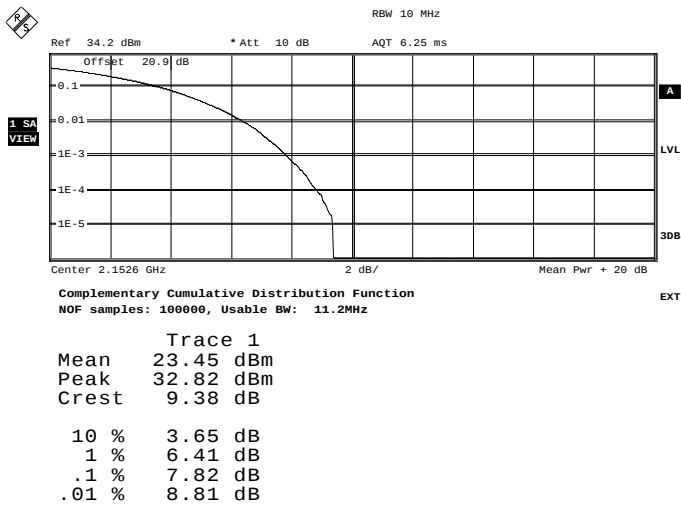
2132.4MHz



OBW1
Date: 10.MAY.2010 15:19:59

Peak to Average Ratio: 9.32dB

2152.6MHz



OBW1
Date: 10.MAY.2010 15:21:33

Peak to Average Ratio: 9.38dB

Limit

≤ 13dB



Product Service

2.5 26dB BANDWIDTH**2.5.1 Specification Reference**

FCC CFR 47 Part 27, Clause 27.53(h)(1)

2.5.2 Equipment Under Test

217C 3G Enterprise Access Point, S/N: 000295-0000022519

2.5.3 Date of Test and Modification State

10 May 2010 - Modification State 0

2.5.4 Test Equipment Used

The major items of test equipment used for the above tests are identified in Section 3.1.

2.5.5 Test Method and Operating Modes

The test was applied in accordance with the test method requirements of FCC CFR 47 Part 27.

The EUT was connected to a spectrum analyser via an attenuator and cable. The EUT was configured to transmit Test Model 1 on bottom, middle and top channels. The trace was set to max hold and using the markers, the 26dB bandwidth was established. The plots are shown on the following pages.

The test was performed with the EUT in the following configurations and modes of operation:

Configuration 2 - Mode 1
- Mode 2
- Mode 3

2.5.6 Environmental Conditions

10 May 2010

Ambient Temperature 24°C

Relative Humidity 25%



Product Service

2.5.7 Test Results

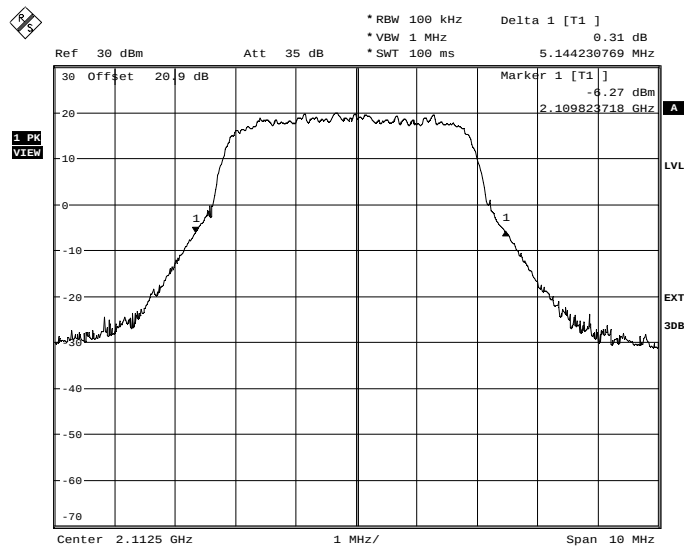
For the period of test the EUT met the requirements of FCC CFR 47 Part 27 for 26dB Bandwidth.

The test results are shown below.

Configuration 2 – Modes 1, 2 and 3

	Channel 1887 2112.5MHz	Channel 1987 2132.5MHz	Channel 2087 2152.5MHz
26dB Bandwidth	5.14	5.18	5.14

Channel 1537 - 2112.4MHz

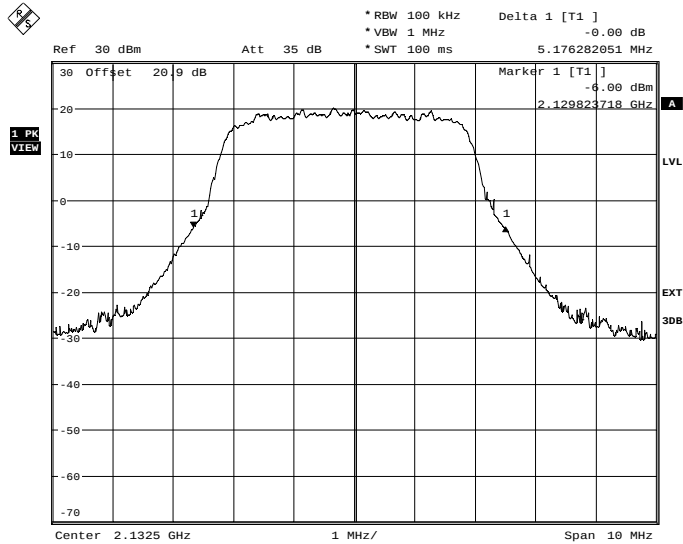


OBW1

Date: 10.MAY.2010 11:31:52

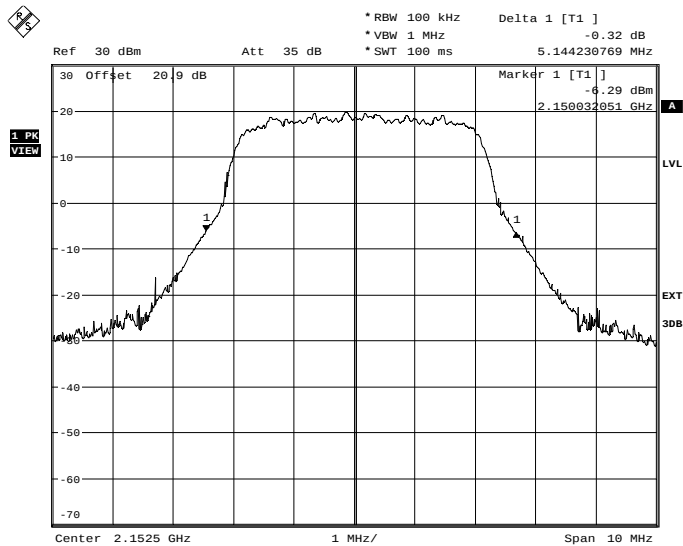


Product Service

Channel 1637 - 2132.4MHz

OBW1

Date: 10.MAY.2010 11:47:01

Channel 1738 - 2152.6MHz

OBW1

Date: 10.MAY.2010 11:51:06



Product Service

2.6 FREQUENCY STABILITY UNDER VOLTAGE VARIATIONS

2.6.1 Specification Reference

FCC CFR 47 Part 27, Clause 27.54 / 2.1055(d)(1)

2.6.2 Equipment Under Test

217C 3G Enterprise Access Point, S/N: 000295-0000022519

2.6.3 Date of Test and Modification State

10 May 2010 - Modification State 0

2.6.4 Test Equipment Used

The major items of test equipment used for the above tests are identified in Section 3.1.

2.6.5 Test Procedure

The test was applied in accordance with the test method requirements of FCC CFR 47 Part 27.

The EUT was set to transmit on maximum power with test model 1. In accordance with 2.1055 (d)(1) the primary supply voltage was varied by $\pm 15\%$ and the frequency error recorded. The results were then reviewed and the block edge measurements examined to ensure that the fundamental remained within the authorised bands of operation.

The test was performed with the EUT in the following configurations and modes of operation:

Configuration 2 - Mode 2

2.6.6 Environmental Conditions

	10 May 2010
Ambient Temperature	24°C
Relative Humidity	24%



Product Service

2.6.7 Test Results

For the period of test the EUT met the requirements of FCC CFR 47 Part 27 for Frequency Stability Under Voltage Variations.

The test results are shown below.

Configuration 2 – Mode 2

Channel: 1637 - 2132.4MHz

AC Voltage	Deviation (Hz)
97.75 V AC / 60Hz	+17.75
115.00 V AC / 60Hz	+27.63
132.25V AC / 60Hz	+29.10

Limit:

The fundamental must remain within the authorised frequency block.



Product Service

2.7 FREQUENCY STABILITY UNDER TEMPERATURE VARIATIONS

2.7.1 Specification Reference

FCC CFR 47 Part 27, Clause 27.540/2.1055

2.7.2 Equipment Under Test

217C 3G Enterprise Access Point, S/N: 000295-0000022519

2.7.3 Date of Test and Modification State

10 and 11 May 2010 - Modification State 0

2.7.4 Test Equipment Used

The major items of test equipment used for the above tests are identified in Section 3.1.

2.7.5 Test Procedure

The test was applied in accordance with the test method requirements of FCC CFR 47 Part 27.

The EUT was set to transmit on maximum power with test model 1 in accordance with 2.1055. The temperature was varied from -30°C to +50° in 10° steps. Middle channel only 2132.4MHz, Channel 1637.

The test was performed with the EUT in the following configurations and modes of operation:

Configuration 2 - Mode 2

2.7.6 Environmental Conditions

	10 and 11 May 2010
Ambient Temperature	24°C
Relative Humidity	23%



2.7.7 Test Results

For the period of test the EUT met the requirements of FCC CFR 47 Part 27 for Frequency Stability Under Temperature Variations.

The test results are shown below.

Configuration 2 – Mode 2

Channel: 1637 - 2132.4MHz

Temperature Interval °C	Frequency Error (Hz)
-30	+31.74
-20	+29.09
-10	+25.69
0	+23.69
+10	+21.14
+20	+19.21
+30	+18.43
+40	+5.66
+50	+16.81

Limit:

The fundamental must remain within the authorised frequency block.
--



2.8 CONDUCTED EMISSIONS – BLOCK EDGE

2.8.1 Specification Reference

FCC CFR 47 Part 27, Clause 27.53(h)(1)

2.8.2 Equipment Under Test

217C 3G Enterprise Access Point, S/N: 000295-0000022519

2.8.3 Date of Test and Modification State

10 May 2010 - Modification State 0

2.8.4 Test Equipment Used

The major items of test equipment used for the above tests are identified in Section 3.1.

2.8.5 Test Method and Operating Modes

The test was applied in accordance with the test method requirements of FCC CFR 47 Part 27.

Using a spectrum analyser and attenuator the emissions were made between the block edge frequency up to 1MHz away to ensure compliance with the 43 +10 log P limit.

Measurements were performed using an rms detector with the trace display set to average. An RBW of at least 1% of the measurement 26dB bandwidth was used, in this case 100kHz RBW and 300kHz VBW. The measured path loss was entered as a reference level offset to the spectrum analyser.

The test was performed with the EUT in the following configurations and modes of operation:

Configuration 2 - Mode 1
- Mode 3

2.8.6 Environmental Conditions

10 May 2010

Ambient Temperature 23°C

Relative Humidity 24%



Product Service

2.8.7 Test Results

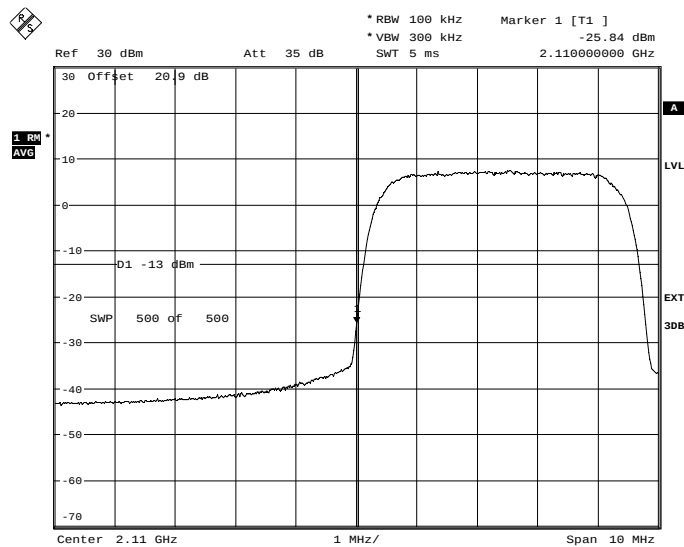
For the period of test the EUT met the requirements of FCC CFR 47 Part 27 for Conducted Emissions – Block Edge.

The test results are shown below.

Configuration 2 – Mode 1 and 3

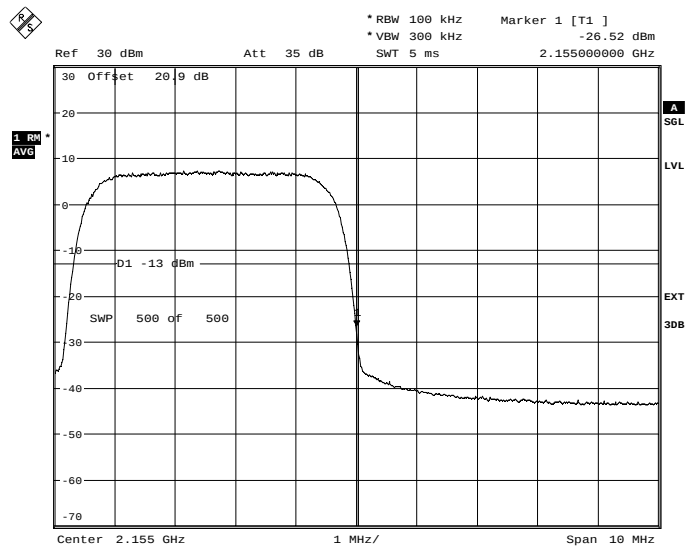
Frequency Block	Block Edge Test Channel/Frequency
2100MHz	Channel 1537 – 2112.4MHz
2155MHz	Channel 1738 – 2152.6MHz

2100MHz



OBW1
Date: 10.MAY.2010 12:20:41

2155MHz



OBW1

Date: 10.MAY.2010 12:14:01

Limit:

At block A and F (2110MHz and 2155MHz)	$\leq -13\text{dBm}$
--	----------------------



Product Service

2.9 SPURIOUS CONDUCTED EMISSIONS

2.9.1 Specification Reference

FCC CFR 47 Part 27, Clause 27.53/2.1053

2.9.2 Equipment Under Test

217C 3G Enterprise Access Point, S/N: 000295-0000022519

2.9.3 Date of Test and Modification State

10 May 2010 - Modification State 0

2.9.4 Test Equipment Used

The major items of test equipment used for the above tests are identified in Section 3.1.

2.9.5 Test Method and Operating Modes

The test was applied in accordance with the test method requirements of FCC CFR 47 Part 27.

The EUT was set up to transmit on max power with test model 1 in accordance with 2.1051. Emissions were searched for from 9kHz to 4GHz via a 20dB attenuator, from 4GHz to 18GHz via a 10dB attenuator and a 4GHz high pass filter and 18GHz to 22GHz waveguide. Plots were taken on bottom, middle and top channels. Path losses of each set up were offset in the analyser.

The test was performed with the EUT in the following configurations and modes of operation:

Configuration 2 - Mode 1
- Mode 2
- Mode 3

2.9.6 Environmental Conditions

10 May 2010

Ambient Temperature 23°C

Relative Humidity 26%



2.9.7 Test Results

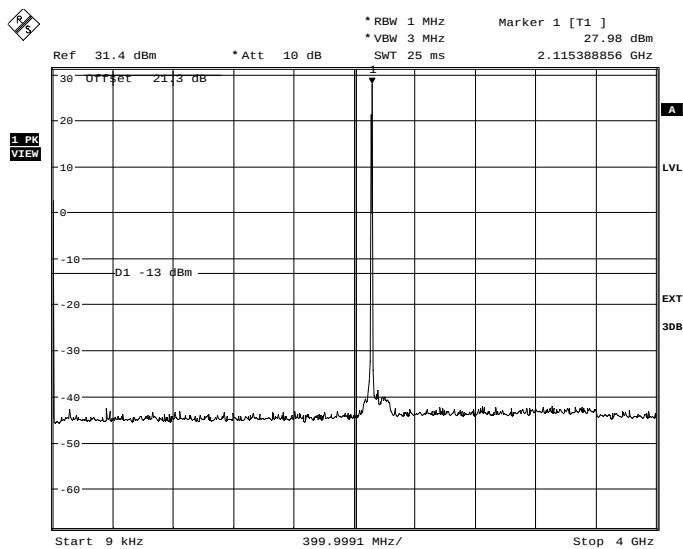
For the period of test the EUT met the requirements of FCC CFR 47 Part 27 for Spurious Conducted Emissions.

The test results are shown below.

Configuration 2 – Mode 1

Channel 1357 – Frequency 2112.4MHz

9kHz to 4GHz



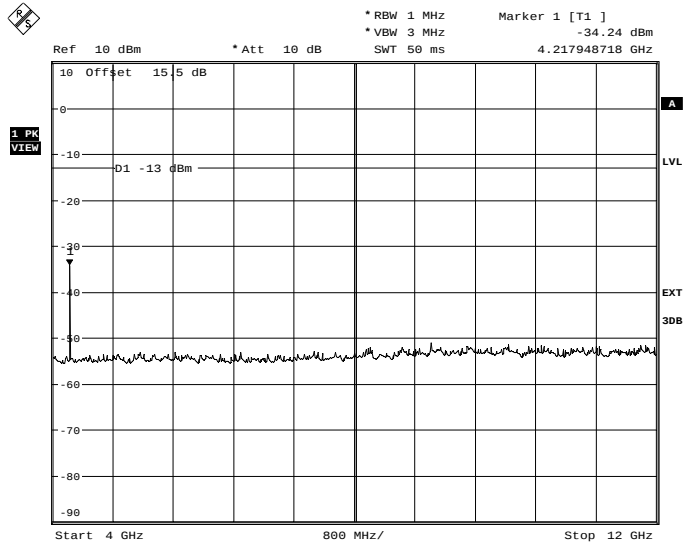
OBW1

Date: 10.MAY.2010 12:45:42



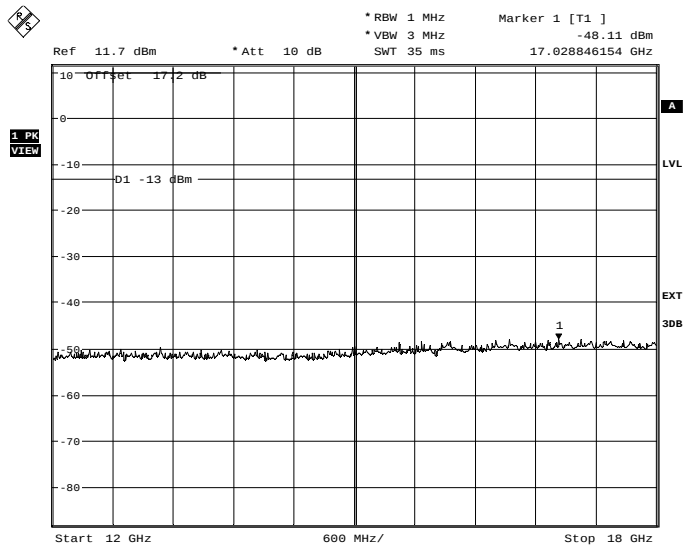
Product Service

4GHz to 12GHz



OBW1
Date: 10.MAY.2010 13:56:30

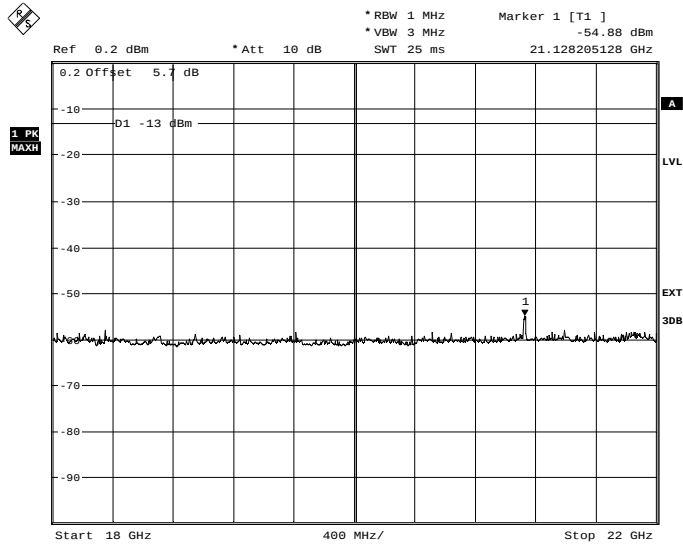
12GHz to 18GHz



OBW1
Date: 10.MAY.2010 13:59:44

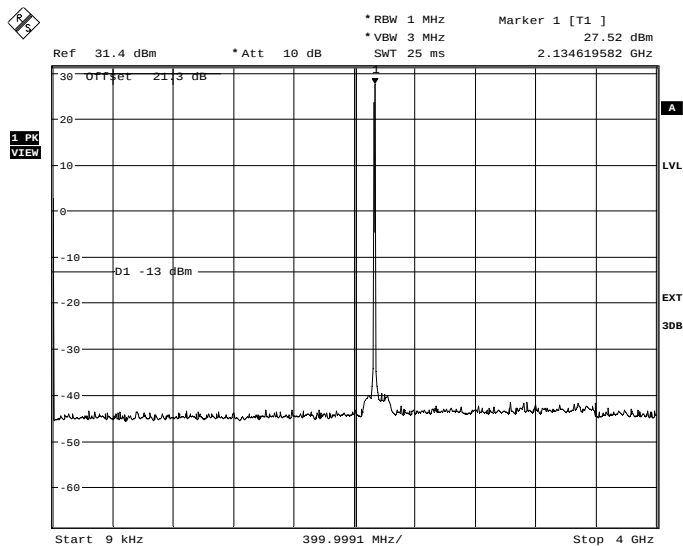


Product Service

18GHz to 22GHz

OBW1

Date: 10.MAY.2010 14:21:37

Configuration 1 – Mode 2Channel 1637 – Frequency 2132.4MHz9kHz to 4GHz

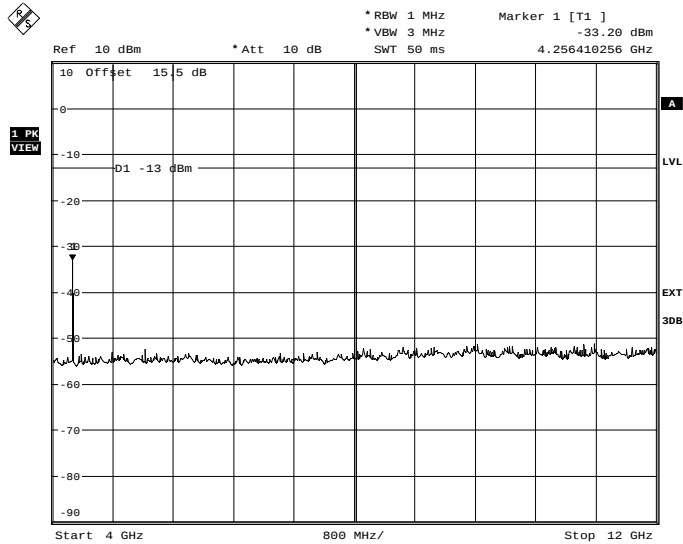
OBW1

Date: 10.MAY.2010 12:47:26



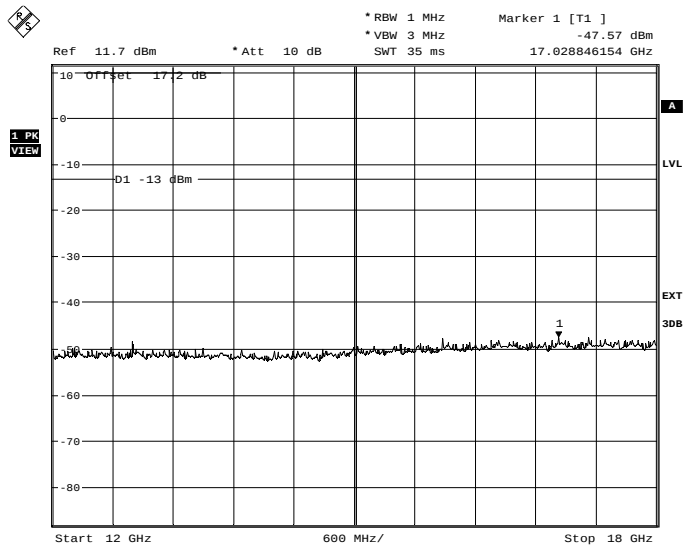
Product Service

4GHz to 12GHz



OBW1
Date: 10.MAY.2010 13:52:40

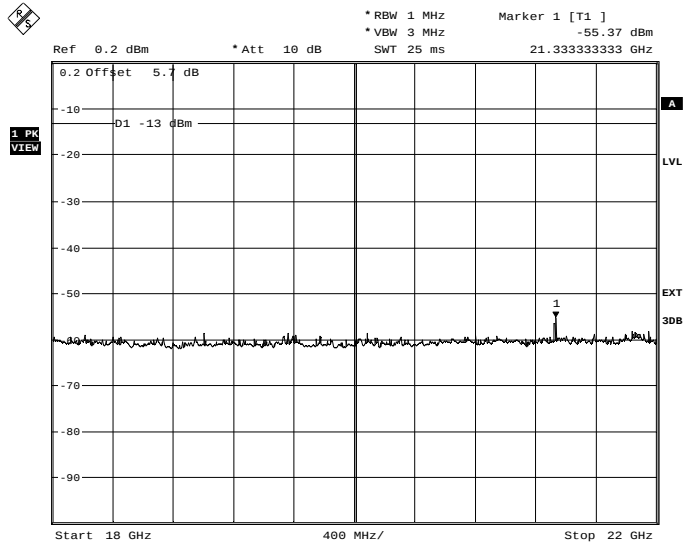
12GHz to 18GHz



OBW1
Date: 10.MAY.2010 14:01:52

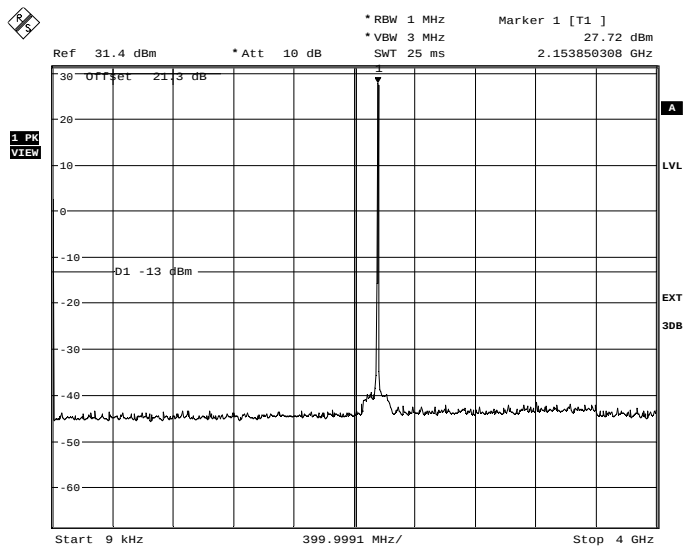


Product Service

18GHz to 22GHz

OBW1

Date: 10.MAY.2010 14:23:26

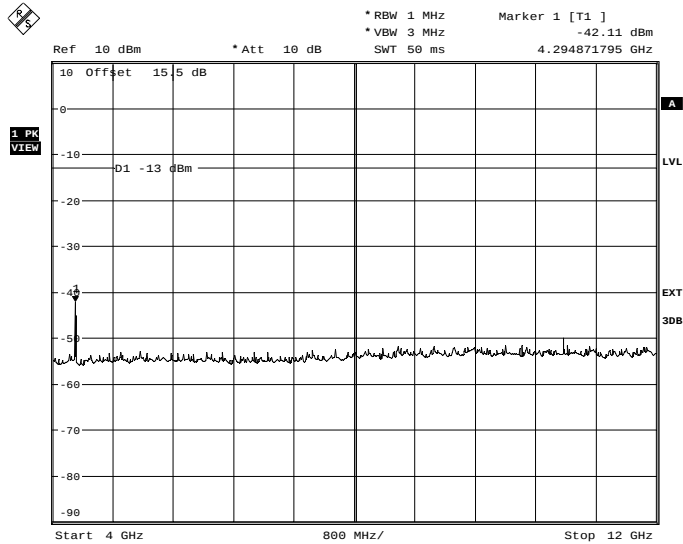
Configuration 2 – Mode 3Channel 1738 – Frequency 2152.6MHz9kHz to 4GHz

OBW1

Date: 10.MAY.2010 12:48:57

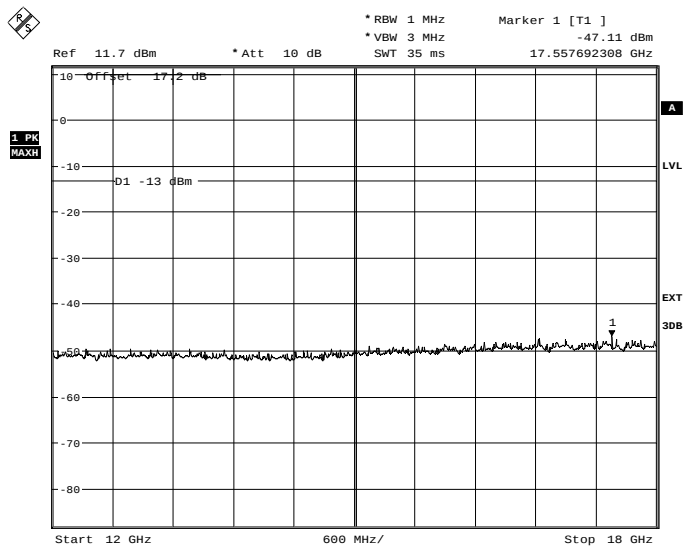


Product Service

4GHz to 12GHz

OBW1

Date: 10.MAY.2010 13:54:22

12GHz to 18GHz

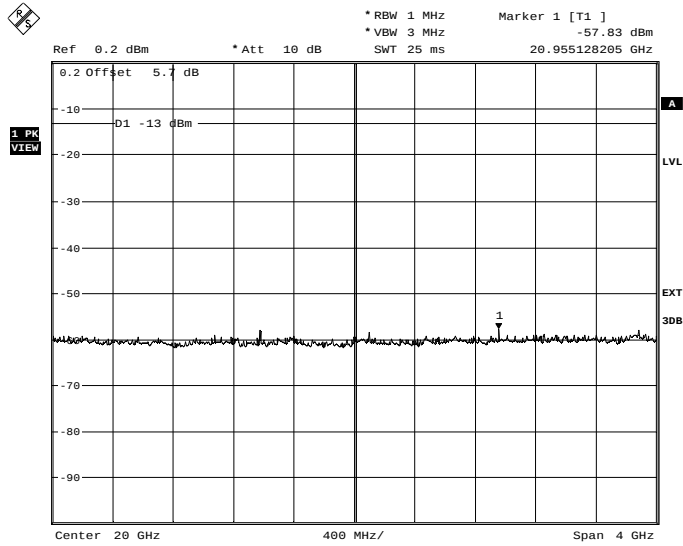
OBW1

Date: 10.MAY.2010 14:03:59



Product Service

18GHz to 22GHz



OBW1

Date: 10.MAY.2010 14:25:40



Product Service

2.10 CONDUCTED EMISSIONS (AC POWER PORT)**2.10.1 Specification Reference**

FCC CFR 47 Part 15C, Clause 15.207

2.10.2 Equipment Under Test

217C 3G Enterprise Access Point, S/N: 000295-0000022654

2.10.3 Date of Test and Modification State

12 May 2010 - Modification State 0

2.10.4 Test Equipment Used

The major items of test equipment used for the above tests are identified in Section 3.1.

2.10.5 Test Method and Operating Modes

The test was applied in accordance with the test method requirements of ANSI C63.4.

The test was performed with the EUT in the following configurations and modes of operation:

- Configuration 1
 - Mode 1
 - Mode 2
 - Mode 3
- Configuration 2
 - Mode 1
 - Mode 2
 - Mode 3

2.10.6 Environmental Conditions

	11 May 2010
Ambient Temperature	17.6°C
Relative Humidity	33%
Atmospheric Pressure	1009mbar



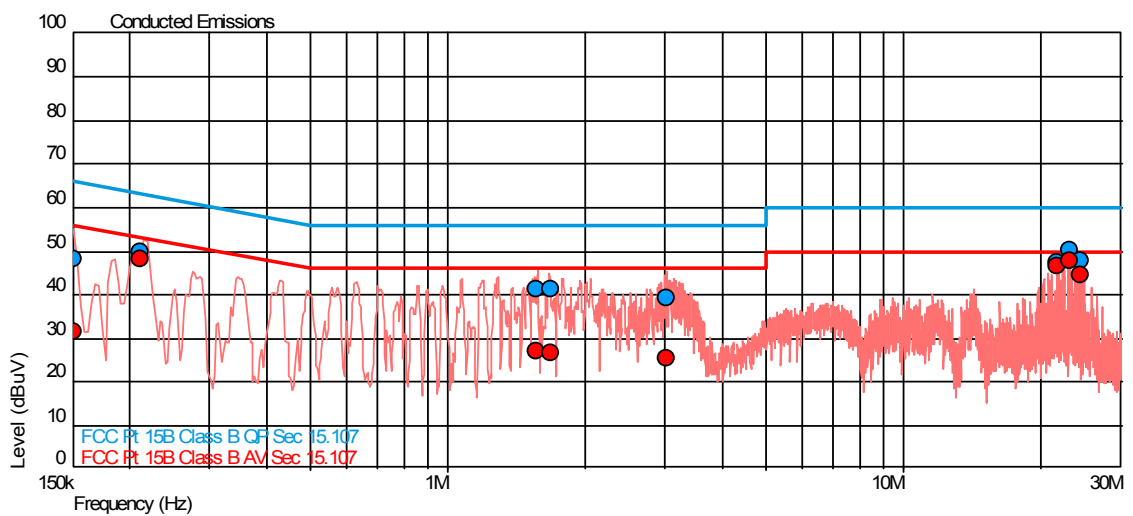
2.10.7 Test Results

For the period of test the EUT met the requirements of FCC CFR 47 Part 15.207 for Conducted Emission (AC Power Port).

The test results are shown below.

Configuration 1 - Mode 1

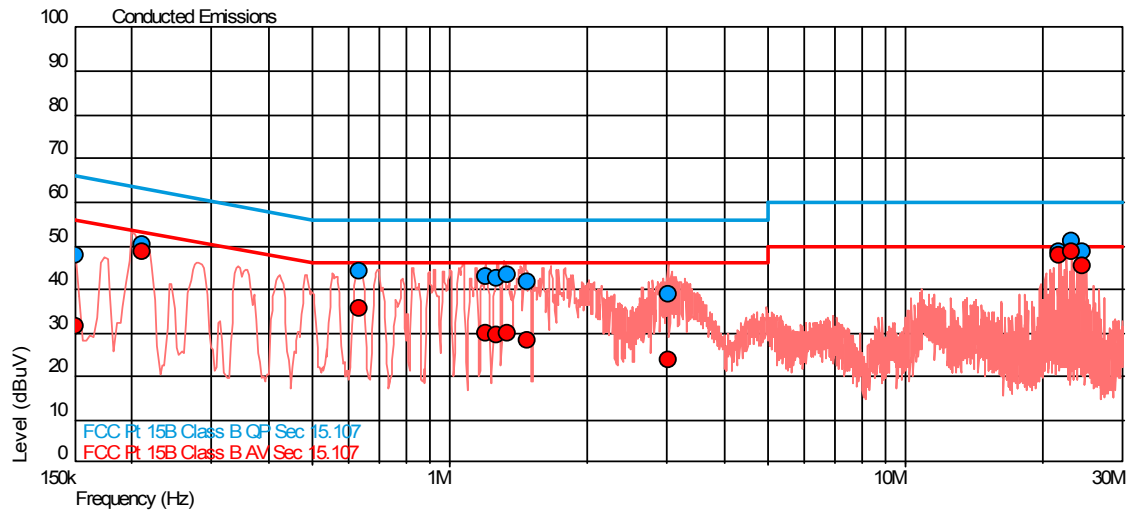
Live Line



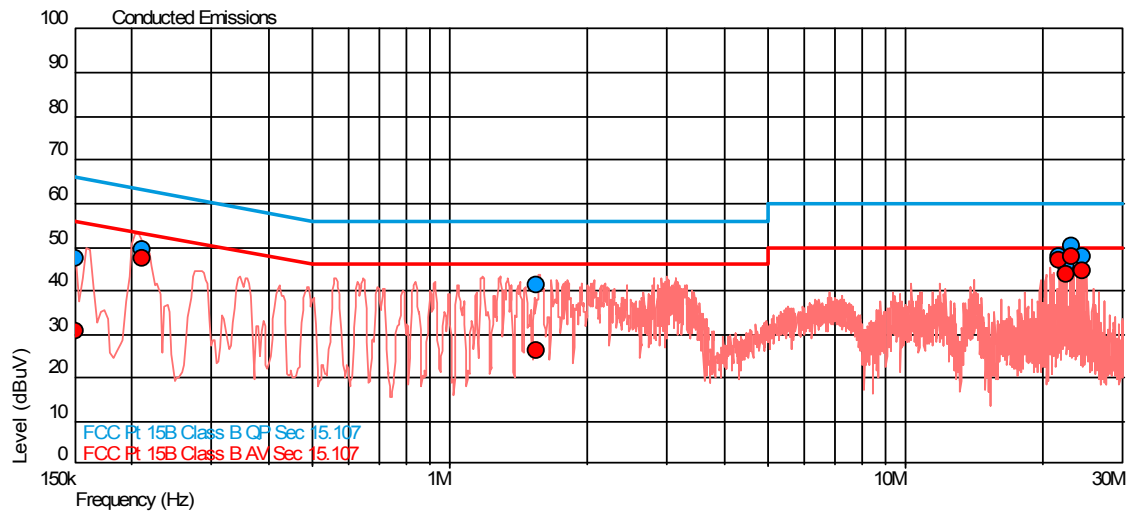
Frequency (MHz)	QP Level (dBUV)	QP Limit (dBUV)	QP Margin (dBUV)	AV Level (dBUV)	AV Limit (dBUV)	AV Margin (dBUV)
0.150	48.0	66.0	-18.0	31.6	56.0	-24.4
0.212	49.6	63.1	-13.5	48.0	53.1	-5.1
1.559	41.4	56.0	-14.6	27.1	46.0	-18.9
1.676	41.4	56.0	-14.6	26.5	46.0	-19.5
3.006	39.2	56.0	-16.8	25.5	46.0	-20.5
21.662	47.5	60.0	-12.5	46.7	50.0	-3.3
23.129	50.1	60.0	-9.9	47.6	50.0	-2.4
24.350	47.6	60.0	-12.4	44.4	50.0	-5.6



Neutral Line



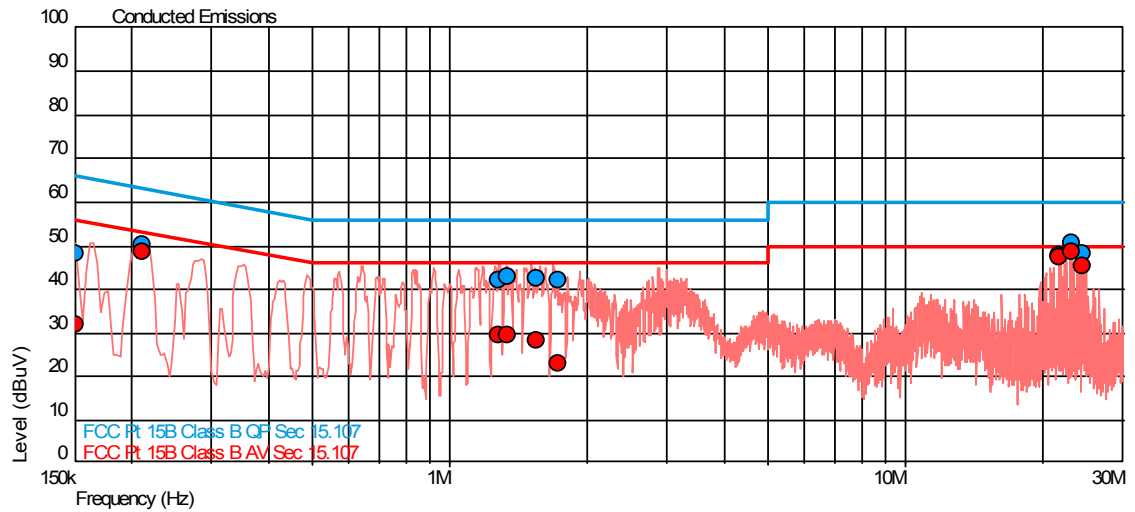
Frequency (MHz)	QP Level (dBuV)	QP Limit (dBuV)	QP Margin (dBuV)	AV Level (dBuV)	AV Limit (dBuV)	AV Margin (dBuV)
0.150	47.8	66.0	-18.2	31.4	56.0	-24.6
0.211	50.3	63.2	-12.8	48.7	53.2	-4.5
0.635	44.1	56.0	-11.9	35.7	46.0	-10.3
1.195	42.8	56.0	-13.2	29.9	46.0	-16.1
1.268	42.4	56.0	-13.6	29.6	46.0	-16.4
1.339	43.1	56.0	-12.9	29.8	46.0	-16.2
1.474	41.5	56.0	-14.5	28.2	46.0	-17.8
3.003	39.0	56.0	-17.0	23.6	46.0	-22.4
21.663	48.6	60.0	-11.4	47.9	50.0	-2.1
23.129	51.0	60.0	-9.0	48.6	50.0	-1.4
24.349	48.5	60.0	-11.5	45.3	50.0	-4.7

Configuration 1 - Mode 2Live Line

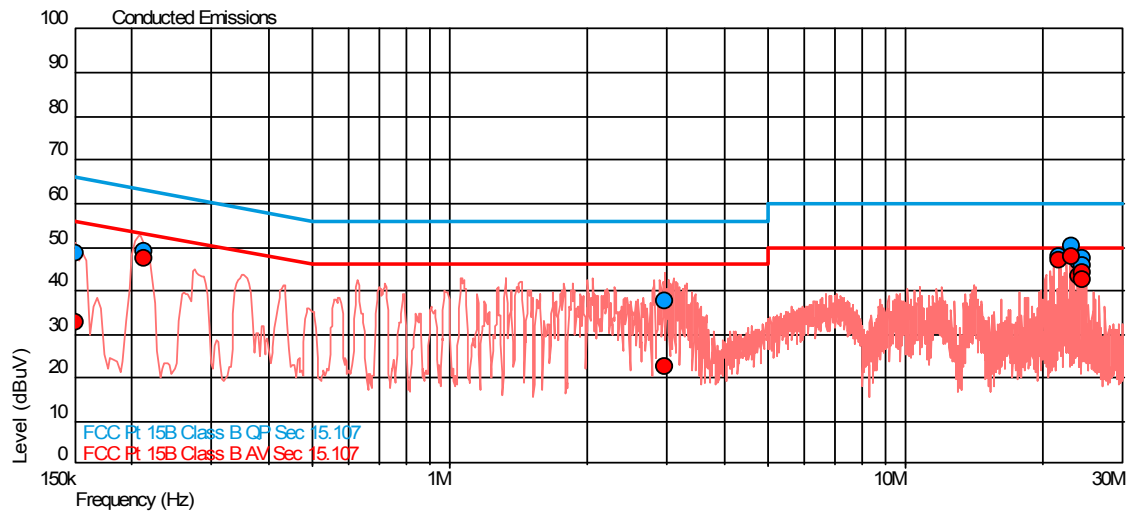
Frequency (MHz)	QP Level (dBuV)	QP Limit (dBuV)	QP Margin (dBuV)	AV Level (dBuV)	AV Limit (dBuV)	AV Margin (dBuV)
0.150	47.2	66.0	-18.8	30.8	56.0	-25.2
0.211	49.4	63.2	-13.8	47.5	53.2	-5.6
1.550	41.1	56.0	-14.9	26.2	46.0	-19.8
21.663	47.8	60.0	-12.2	47.0	50.0	-3.0
22.457	45.6	60.0	-14.4	43.9	50.0	-6.1
23.129	50.4	60.0	-9.6	47.9	50.0	-2.1
24.350	47.8	60.0	-12.2	44.5	50.0	-5.5



Neutral Line



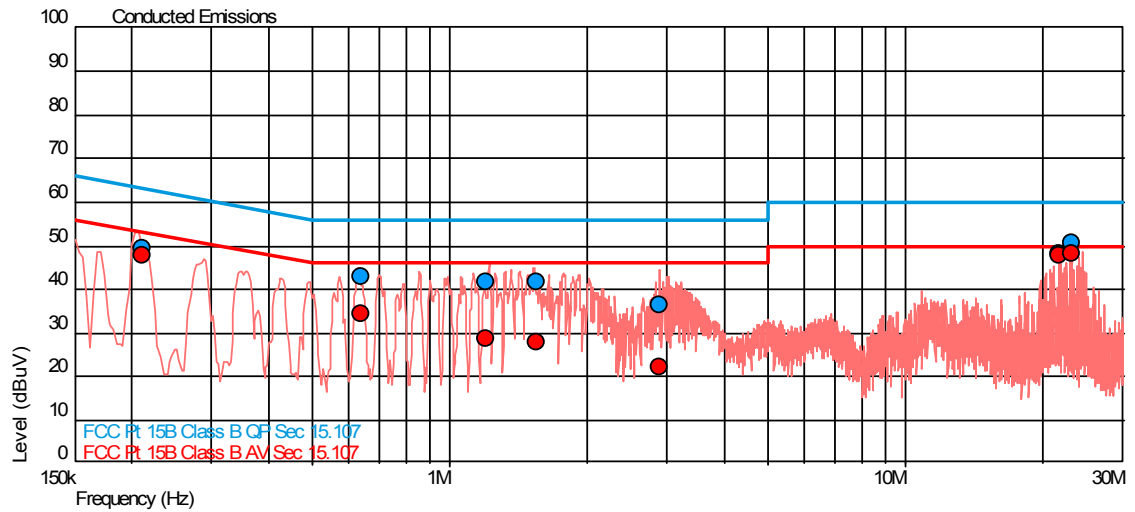
Frequency (MHz)	QP Level (dBuV)	QP Limit (dBuV)	QP Margin (dBuV)	AV Level (dBuV)	AV Limit (dBuV)	AV Margin (dBuV)
0.150	48.0	66.0	-18.0	32.1	56.0	-23.9
0.212	50.1	63.1	-13.0	48.5	53.1	-4.6
1.275	42.1	56.0	-13.9	29.5	46.0	-16.5
1.337	42.9	56.0	-13.1	29.6	46.0	-16.4
1.550	42.7	56.0	-13.3	28.4	46.0	-17.6
1.721	42.0	56.0	-14.0	22.9	46.0	-23.1
21.661	47.6	60.0	-12.4	47.3	50.0	-2.7
23.129	50.7	60.0	-9.3	48.6	50.0	-1.4
24.349	48.2	60.0	-11.8	45.3	50.0	-4.7

Configuration 1 - Mode 3Live Line

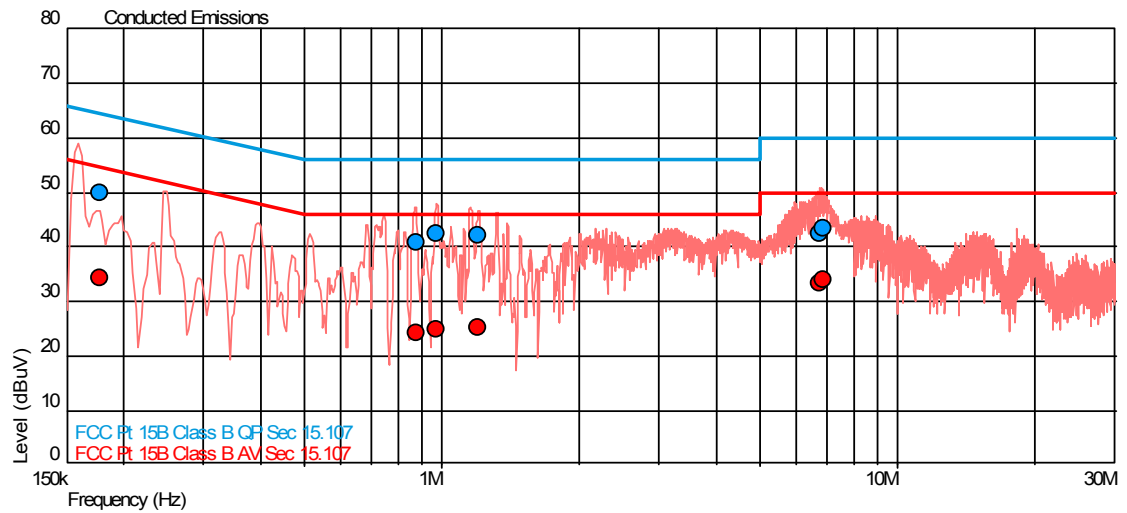
Frequency (MHz)	QP Level (dBuV)	QP Limit (dBuV)	QP Margin (dBuV)	AV Level (dBuV)	AV Limit (dBuV)	AV Margin (dBuV)
0.150	48.4	66.0	-17.6	32.9	56.0	-23.1
0.212	48.9	63.1	-14.2	47.2	53.1	-5.9
2.949	37.5	56.0	-18.5	22.7	46.0	-23.3
21.662	47.6	60.0	-12.4	46.8	50.0	-3.2
23.127	50.3	60.0	-9.7	47.7	50.0	-2.3
24.044	46.5	60.0	-13.5	43.1	50.0	-6.9
24.348	47.3	60.0	-12.7	44.0	50.0	-6.0
24.533	45.7	60.0	-14.3	42.3	50.0	-7.7



Neutral Line



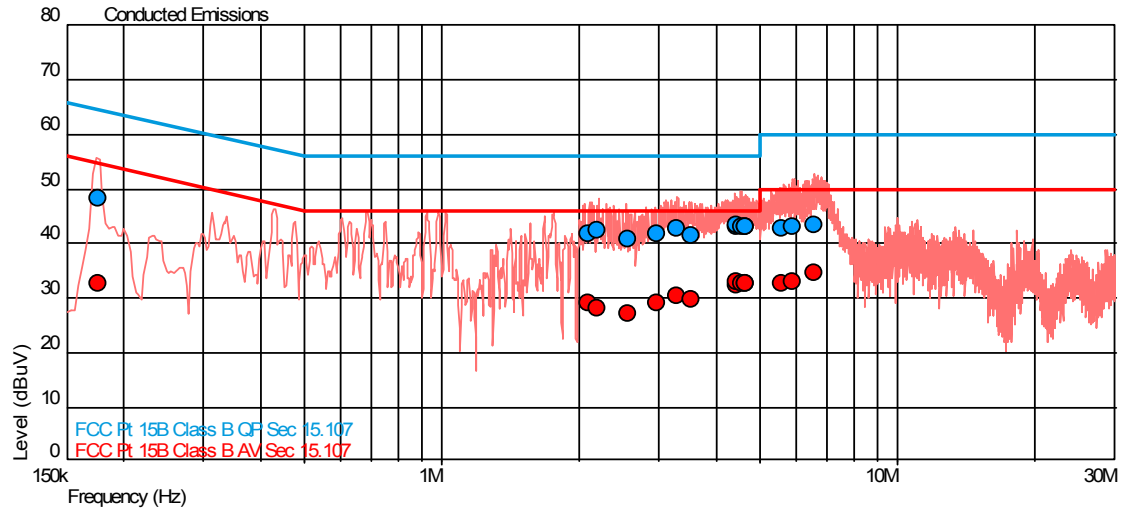
Frequency (MHz)	QP Level (dBuV)	QP Limit (dBuV)	QP Margin (dBuV)	AV Level (dBuV)	AV Limit (dBuV)	AV Margin (dBuV)
0.212	49.5	63.1	-13.7	47.7	53.1	-5.5
0.638	42.9	56.0	-13.1	34.5	46.0	-11.5
1.203	41.8	56.0	-14.2	28.5	46.0	-17.5
1.543	41.6	56.0	-14.4	27.7	46.0	-18.3
2.870	36.3	56.0	-19.7	22.3	46.0	-23.7
21.662	48.3	60.0	-11.7	47.6	50.0	-2.4
23.127	50.5	60.0	-9.5	48.0	50.0	-2.0

Configuration 2- Mode 1Live Line

Frequency (MHz)	QP Level (dBUV)	QP Limit (dBUV)	QP Margin (dBUV)	AV Level (dBUV)	AV Limit (dBUV)	AV Margin (dBUV)
0.178	49.8	64.6	-14.8	34.3	54.6	-20.2
0.876	40.8	56.0	-15.2	24.3	46.0	-21.7
0.969	42.6	56.0	-13.4	24.8	46.0	-21.2
1.195	42.2	56.0	-13.8	25.3	46.0	-20.7
6.752	42.6	60.0	-17.4	33.3	50.0	-16.7
6.844	43.3	60.0	-16.7	34.0	50.0	-16.0



Neutral Line

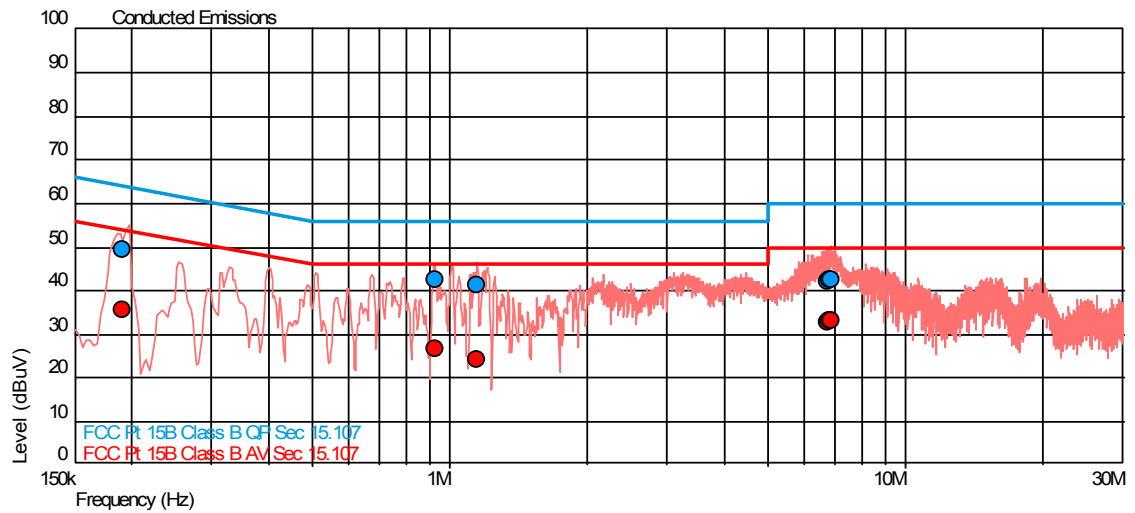


Frequency (MHz)	QP Level (dBUV)	QP Limit (dBUV)	QP Margin (dBUV)	AV Level (dBUV)	AV Limit (dBUV)	AV Margin (dBUV)
0.176	48.2	64.7	-16.5	32.8	54.7	-21.8
2.094	41.7	56.0	-14.3	29.2	46.0	-16.8
2.196	42.5	56.0	-13.5	28.0	46.0	-18.0
2.550	40.7	56.0	-15.3	27.3	46.0	-18.7
2.962	41.8	56.0	-14.2	29.1	46.0	-16.9
3.266	42.6	56.0	-13.4	30.4	46.0	-15.6
3.516	41.5	56.0	-14.5	29.7	46.0	-16.3
4.417	43.1	56.0	-12.9	32.5	46.0	-13.5
4.431	43.4	56.0	-12.6	33.0	46.0	-13.0
4.551	43.0	56.0	-13.0	32.6	46.0	-13.4
4.635	42.9	56.0	-13.1	32.7	46.0	-13.3
4.640	43.1	56.0	-12.9	32.7	46.0	-13.3
5.545	42.8	60.0	-17.2	32.7	50.0	-17.3
5.875	43.2	60.0	-16.8	32.9	50.0	-17.1
6.535	43.5	60.0	-16.5	34.7	50.0	-15.3

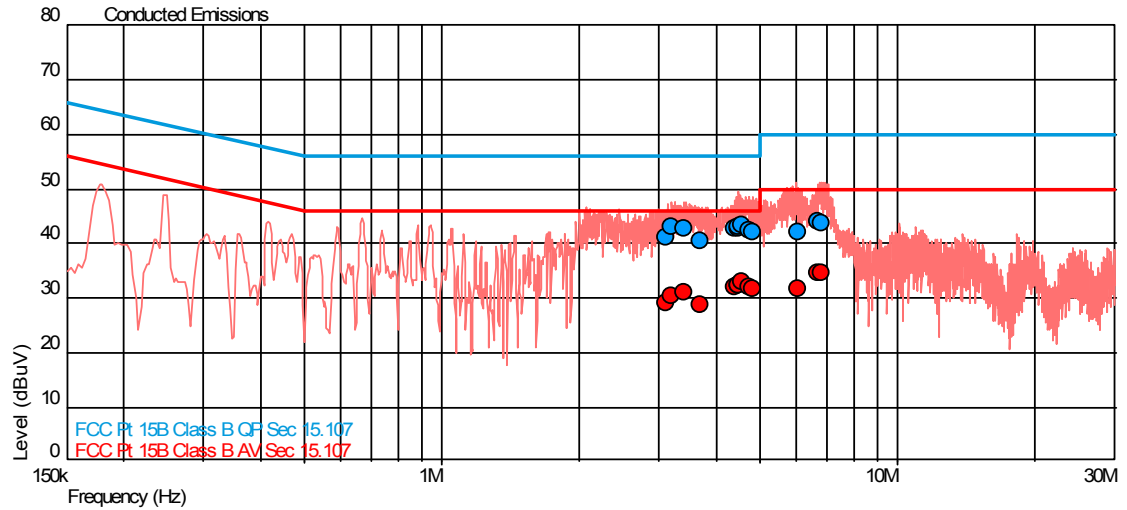


Configuration 2 - Mode 2

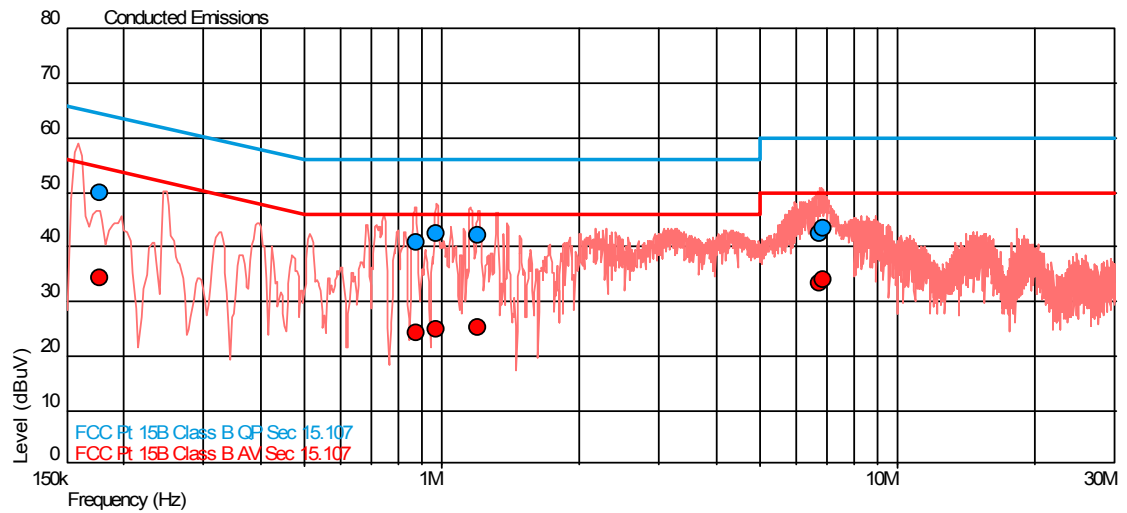
Live Line



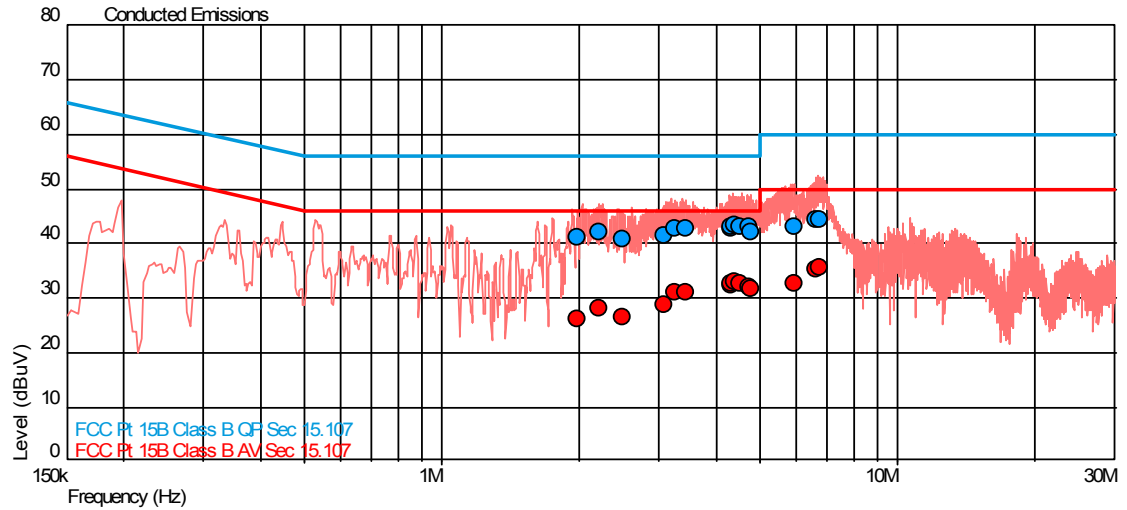
Frequency (MHz)	QP Level (dBUV)	QP Limit (dBUV)	QP Margin (dBUV)	AV Level (dBUV)	AV Limit (dBUV)	AV Margin (dBUV)
0.191	49.5	64.0	-14.5	35.5	54.0	-18.4
0.928	42.6	56.0	-13.4	26.7	46.0	-19.3
1.146	41.1	56.0	-14.9	24.0	46.0	-22.0
6.758	42.1	60.0	-17.9	32.8	50.0	-17.2
6.824	42.6	60.0	-17.4	33.3	50.0	-16.7
6.853	42.6	60.0	-17.4	33.2	50.0	-16.8

Neutral Line

Frequency (MHz)	QP Level (dBUV)	QP Limit (dBUV)	QP Margin (dBUV)	AV Level (dBUV)	AV Limit (dBUV)	AV Margin (dBUV)
3.092	41.2	56.0	-14.8	29.2	46.0	-16.8
3.192	43.0	56.0	-13.0	30.4	46.0	-15.6
3.386	42.7	56.0	-13.3	31.2	46.0	-14.8
3.690	40.6	56.0	-15.4	28.9	46.0	-17.1
4.385	42.6	56.0	-13.4	32.2	46.0	-13.8
4.454	42.9	56.0	-13.1	32.4	46.0	-13.6
4.455	43.0	56.0	-13.0	32.5	46.0	-13.5
4.531	43.3	56.0	-12.7	32.9	46.0	-13.1
4.716	42.3	56.0	-13.7	32.0	46.0	-14.0
4.788	42.1	56.0	-13.9	31.6	46.0	-14.4
6.042	42.2	60.0	-17.8	31.8	50.0	-18.2
6.698	44.1	60.0	-15.9	34.7	50.0	-15.3
6.811	43.9	60.0	-16.1	34.6	50.0	-15.4

Configuration 2 - Mode 3Live Line

Frequency (MHz)	QP Level (dBUV)	QP Limit (dBUV)	QP Margin (dBUV)	AV Level (dBUV)	AV Limit (dBUV)	AV Margin (dBUV)
0.178	49.8	64.6	-14.8	34.3	54.6	-20.2
0.876	40.8	56.0	-15.2	24.3	46.0	-21.7
0.969	42.6	56.0	-13.4	24.8	46.0	-21.2
1.195	42.2	56.0	-13.8	25.3	46.0	-20.7
6.752	42.6	60.0	-17.4	33.3	50.0	-16.7
6.844	43.3	60.0	-16.7	34.0	50.0	-16.0

Neutral Line

Frequency (MHz)	QP Level (dBUV)	QP Limit (dBUV)	QP Margin (dBUV)	AV Level (dBUV)	AV Limit (dBUV)	AV Margin (dBUV)
1.980	41.0	56.0	-15.0	26.2	46.0	-19.8
2.215	42.3	56.0	-13.7	28.2	46.0	-17.8
2.482	40.8	56.0	-15.2	26.6	46.0	-19.4
3.059	41.4	56.0	-14.6	28.8	46.0	-17.2
3.232	42.9	56.0	-13.1	31.2	46.0	-14.8
3.440	42.9	56.0	-13.1	31.0	46.0	-15.0
4.298	42.9	56.0	-13.1	32.3	46.0	-13.7
4.307	43.2	56.0	-12.8	32.5	46.0	-13.5
4.381	43.5	56.0	-12.5	32.8	46.0	-13.2
4.522	43.2	56.0	-12.8	32.5	46.0	-13.5
4.720	43.1	56.0	-12.9	31.9	46.0	-14.1
4.768	42.0	56.0	-14.0	31.7	46.0	-14.3
5.902	43.2	60.0	-16.8	32.8	50.0	-17.2
6.588	44.2	60.0	-15.8	35.4	50.0	-14.6
6.708	44.5	60.0	-15.5	35.7	50.0	-14.3



Product Service

SECTION 3

TEST EQUIPMENT USED



3.1 TEST EQUIPMENT USED

List of absolute measuring and other principal items of test equipment.

Instrument	Manufacturer	Type No.	TE No.	Calibration Period (months)	Calibration Due
Section 2.1 and 2.2 - Emissions for Broadband PCS Equipment and EIRP Peak Power					
Antenna (Double Ridge Guide, 1GHz-18GHz)	EMCO	3115	234	12	12-Oct-2010
Antenna (Double Ridge Guide, 1GHz-18GHz)	EMCO	3115	235	12	12-Oct-2010
Antenna (Double Ridge Guide)	Q-Par Angus Ltd	QSH 180K	1511	24	17-Jul-2010
Pre-Amplifier	Phase One	PS04-0085	1532	12	16-Sep-2010
Pre-Amplifier	Phase One	PS04-0086	1533	12	17-Sep-2010
Pre-Amplifier	Phase One	PS04-0087	1534	12	22-Sep-2010
Mast Controller	Inn-Co GmbH	CO 1000	1606	-	TU
Turntable/Mast Controller	EMCO	2090	1607	-	TU
4GHz HPF	Sematron	F-100-4000-5-R	2245	-	TU
Antenna (Bilog)	Chase	CBL6143	2904	24	4-Dec-2011
Signal Generator (10MHz to 40GHz)	Rohde & Schwarz	SMR40	3171	12	4-Aug-2010
EMI Test Receiver	Rohde & Schwarz	ESU40	3506	12	1-Sep-2010
Section 2.3 and 2.4 – Carrier Power and Carrier Power - CCDF					
Peak Power Analyser	Hewlett Packard	8990A	107	12	10-Feb-2011
GPS Frequency Standard	Rapco	GPS-804/3	1312	6	8-Sep-2010
Programmable Power Supply	California Inst	2001RP	1898	-	TU
Multimeter	Iso-tech	IDM101	2421	12	26-Oct-2010
Power Sensor	Hewlett Packard	84812A	2743	-	TU
Attenuator (20dB, 50W)	Aeroflex / Weinschel	47-20-34	3165	12	9-Jun-2010
Hygrometer	Rotronic	I-1000	3220	12	27-Apr-2011
Signal Analyser	Rohde & Schwarz	FSQ 26	3545	12	3-Jun-2010
Network Analyser	Rohde & Schwarz	ZVA 40	3548	12	25-Feb-2011
'3.5mm' - '3.5mm' RF Cable (2m)	Rhophase	3PS-1803-2000-3PS	3702	12	26-Jan-2011
Section 2.5 – 26dB Bandwidth					
GPS Frequency Standard	Rapco	GPS-804/3	1312	6	8-Sep-2010
Programmable Power Supply	California Inst	2001RP	1898	-	TU
Multimeter	Iso-tech	IDM101	2421	12	26-Oct-2010
Attenuator (20dB, 50W)	Aeroflex / Weinschel	47-20-34	3165	12	9-Jun-2010
Hygrometer	Rotronic	I-1000	3220	12	27-Apr-2011
Signal Analyser	Rohde & Schwarz	FSQ 26	3545	12	3-Jun-2010
Network Analyser	Rohde & Schwarz	ZVA 40	3548	12	25-Feb-2011
'3.5mm' - '3.5mm' RF Cable (2m)	Rhophase	3PS-1803-2000-3PS	3702	12	26-Jan-2011



Instrument	Manufacturer	Type No.	TE No.	Calibration Period (months)	Calibration Due
Section 2.6 and 2.7 - Frequency Stability Under Voltage Variations and Temperature Variations					
Temperature Chamber	Montford	2F3	467	-	O/P Mon
GPS Frequency Standard	Rapco	GPS-804/3	1312	6	8-Sep-2010
Programmable Power Supply	California Inst	2001RP	1898	-	TU
Multimeter	Iso-tech	IDM101	2421	12	26-Oct-2010
Attenuator (20dB, 50W)	Aeroflex / Weinschel	47-20-34	3165	12	9-Jun-2010
Thermocouple Thermometer	Fluke	51	3172	12	3-Jul-2010
Hygrometer	Rotronic	I-1000	3220	12	27-Apr-2011
Signal Analyser	Rohde & Schwarz	FSQ 26	3545	12	3-Jun-2010
Network Analyser	Rohde & Schwarz	ZVA 40	3548	12	25-Feb-2011
'3.5mm' - '3.5mm' RF Cable (2m)	Rhophase	3PS-1803-2000-3PS	3702	12	26-Jan-2011
Section 2.8 – Conducted Emissions - Block Edge					
GPS Frequency Standard	Rapco	GPS-804/3	1312	6	8-Sep-2010
Programmable Power Supply	California Inst	2001RP	1898	-	TU
Multimeter	Iso-tech	IDM101	2421	12	26-Oct-2010
Attenuator (20dB, 50W)	Aeroflex / Weinschel	47-20-34	3165	12	9-Jun-2010
Hygrometer	Rotronic	I-1000	3220	12	27-Apr-2011
Signal Analyser	Rohde & Schwarz	FSQ 26	3545	12	3-Jun-2010
Network Analyser	Rohde & Schwarz	ZVA 40	3548	12	25-Feb-2011
'3.5mm' - '3.5mm' RF Cable (2m)	Rhophase	3PS-1803-2000-3PS	3702	12	26-Jan-2011
Section 2.9 – Spurious Conducted Emissions					
GPS Frequency Standard	Rapco	GPS-804/3	1312	6	8-Sep-2010
Programmable Power Supply	California Inst	2001RP	1898	-	TU
Cable (1m, sma(m) - sma(m))	Reynolds	262-0248-1000	2406	12	15-Oct-2010
Multimeter	Iso-tech	IDM101	2421	12	26-Oct-2010
High Pass Filter (4GHz)	RLC Electronics	F-100-4000-5-R	2773	12	8-Sep-2010
Attenuator (20dB, 50W)	Aeroflex / Weinschel	47-20-34	3165	12	9-Jun-2010
Attenuator (10dB, 50W)	Aeroflex / Weinschel	47-10-34	3166	12	4-Jun-2010
Hygrometer	Rotronic	I-1000	3220	12	27-Apr-2011
Signal Analyser	Rohde & Schwarz	FSQ 26	3545	12	3-Jun-2010
'3.5mm' - '3.5mm' RF Cable (2m)	Rhophase	3PS-1803-2000-3PS	3702	12	26-Jan-2011
Waveguide	Flann Microwave	Not Serialised	-	-	TU
Section 2.10 – Spurious Conducted Emissions					
LISN (1 Phase)	Chase	MN 2050	336	12	25-Mar-2011
Screened Room (5)	Rainford	Rainford	1545	36	11-Feb-2011
Transient Limiter	Hewlett Packard	11947A	2378	12	22-Jun-2010
EMI Test Receiver	Rohde & Schwarz	ESU40	3506	12	1-Sep-2010

TU – Traceability Unscheduled

O/P Mon – Output monitored using calibrated equipment



3.2 MEASUREMENT UNCERTAINTY

For a 95% confidence level, the measurement uncertainties for defined systems are:-

Test Discipline	Frequency / Parameter	MU
Radiated Emissions, Bilog Antenna, AOATS	30MHz to 1GHz Amplitude	5.1dB*
Radiated Emissions, Horn Antenna, AOATS	1GHz to 40GHz Amplitude	6.3dB*
Conducted Emissions, LISN	150kHz to 30MHz Amplitude	3.2dB*
Conducted Emissions, ISN	150kHz to 30MHz Amplitude	2.1dB
Substitution Antenna, Radiated Field	30MHz to 18GHz Amplitude	2.6dB
Discontinuous Interference	150kHz to 30MHz Amplitude	3.0dB*
Interference Power	30MHz to 300MHz Amplitude	3.0dB*
Radiated E-Field Susceptibility	26MHz to 2.5GHz Test Amplitude	1.4dB†
Conducted Susceptibility	100kHz to 250MHz Amplitude	1.8dB†
DC Input Ripple Immunity	Current Voltage	0.45% 0.91%
Power Frequency Magnetic Field	50Hz/60Hz Amplitude	0.45%
Magnetic Emissions	9kHz to 30MHz Amplitude	3.4dB*
Magnetic Field/Flux iaw EN 50366	10Hz to 400kHz	2.64%
Harmonics and Flicker	The test was applied using proprietary equipment that meets the requirements of EN 61000-3-2 and EN 61000-3-3	—
Mains Voltage Variations and Interrupts	The test was applied using proprietary equipment that meets the requirements of EN 61000-4-11	—
Fast Transient Burst	The test was applied using proprietary equipment that meets the requirements of EN 61000-4-4	—
Electrostatic Discharge	The test was applied using proprietary equipment that meets the requirements of EN 61000-4-2	—
Surge	The test was applied using proprietary equipment that meets the requirements of EN 61000-4-5	—
Vehicle Transients	The test was applied using proprietary equipment that meets the requirements of ISO 7637-1 and 2	—
Compass Safe Distance	Azimuth Accuracy	0.10°

Worst case error for both Time and Frequency measurement 12 parts in 10⁶.

* In accordance with CISPR 16-4

† In accordance with UKAS Lab 34



Product Service

SECTION 4

ACCREDITATION, DISCLAIMERS AND COPYRIGHT



Product Service

4.1 ACCREDITATION, DISCLAIMERS AND COPYRIGHT



This report relates only to the actual item/items tested.

Our UKAS Accreditation does not cover opinions and interpretations and any expressed are outside the scope of our UKAS Accreditation.

Results of tests not covered by our UKAS Accreditation Schedule are marked NUA
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