Report On

FCC Testing of the
Sepura Ltd STP8080
In accordance with FCC CFR 47 Part 15C

COMMERCIAL-IN-CONFIDENCE

FCC ID: XX6STP8080

Document 75915053 Report 03 Issue 1 October 2011

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REPORT ON

FCC Testing of the
Sepura Ltd STP8080
In accordance with FCC CFR 47 Part 15C

Document 75915053 Report 03 Issue 1

October 2011

PREPARED FOR

Sepura Ltd
Radio House
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Cambridge
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PREPARED BY

Natalie Bennett
Senior Administrator

APPROVED BY

Mark Jenkins
Authorised Signatory

DATED 12 October 2011

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 Part 15C. The sample tested was found to comply with the requirements defined in the applied rules.

Test Engineer(s);

A Guy

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SECTION 1

REPORT SUMMARY

FCC Testing of the
Sepura Ltd STP8080
In accordance with FCC CFR 47 Part 15C

1.1 INTRODUCTION

The information contained in this report is intended to show verification of the FCC Testing of the Sepura Ltd STP8080 to the requirements of FCC CFR 47 Part 15C.

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	Sepura Ltd
Model Number(s)	STP8080
Serial Number(s)	2PN601020G471E0
Number of Samples Tested	1
Test Specification/Issue/Date	FCC CFR 47 Part 15C (2010)
Incoming Release Date	Application Form 07 September 2011
Disposal Reference Number Date	Held Pending Disposal Not Applicable Not Applicable
Order Number Date	319138/T0201 10 August 2011
Start of Test	23 September 2011
Finish of Test	23 September 2011
Name of Engineer(s)	A Guy
Related Document(s)	ANSI C63.10: 2009

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1.2 BRIEF SUMMARY OF RESULTS

A brief summary of the tests carried out in accordance with FCC CFR 47 Part 15C is shown below.

Section	Spec Clause	Test Description	Result	Comments/Base Standard
Bluetooth				
2.1	15.247 (d)	Spurious and Band Edge Emissions	Pass	

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1.3 APPLICATION FORM

APPLICANT'S DETAILS	
COMPANY NAME :	**SEPURA plc**
ADDRESS :	**Radio House** **St Andrews Road** **Cambridge** **CB4 1GR**
NAME FOR CONTACT PURPOSES : **Bob Allen**	
TELEPHONE NO **01223 877291**	FAX NO: …… E-MAIL **bob.allen@sepura.com**

EQUIPMENT INFORMATION

Model name/number	**STP8000**	Identification/Part number	**STP8080**
Hardware Version	Revision B	Software Version	V10
Manufacturer	Plexus Melexs	Country of Origin	Romania Austria
FCC ID	**XX6STP8080**	Industry Canada ID	……..……

Technical description (a brief description of the intended use and operation)

Tetra hand portable for TMO, DMO and repeater use. Fitted with Bluetooth and GPS Modules

Supply Voltage:

[ ]	AC mains	State AC voltage …… V	and AC frequency …… Hz
[ ]	DC (external)	State DC voltage …… V	and DC current …… A
[X]	DC (internal)	State DC voltage **7.4 V**	and Battery type **LI Polymer**

Frequency characteristics:

Transmitter Frequency range **809 MHz to 824 MHz** Channel spacing **25KHz**
854 MHz to 869 MHz (if channelized)

Receiver Frequency range **854 MHz to 869 MHz** Channel spacing **25KHz**
(if different)
(if channelized)

Designated TX test frequencies:
Bottom: **809.025 MHz** Middle: **816.525 MHz** Top: **823.975 MHz**

Designated TX test frequencies:
Bottom: **854.025 MHz** Middle: **861.525 MHz** Top: **868.975 MHz**

Designated RX test frequencies:
Bottom: **854.025 MHz** Middle: **861.525 MHz** Top: **868.975 MHz**

Intermediate Frequencies : **69.25 MHz**
Highest Internally Generated Frequency : **3144.84 MHz on GPS Chip**

Power characteristics:
Maximum transmitter power **1.8W** Minimum transmitter power …… W
(if variable)

[ ] Continuous transmission
[X] Intermittent transmission (**Continuous transmission 1 slot in 4 transmission)**
If intermittent, can transmitter be set to continuous transmit test mode?
Yes with care at 4 slots in 4, for emission mask only

Antenna characteristics:

[X]	Antenna connector		State impedance **50 ohm**
[ ]	Temporary antenna connector		State impedance …… ohm
[ ]	Integral antenna		State gain …… dBi

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Modulation characteristics:			
[ ]	Amplitude	**[X]**	Other
[ ]	Frequency	Details:	**Pi/4DQPSK**
[ ]	Phase		(GMSK, QSPK etc)
Can the transmitter operate un-modulated?		**Yes simulated**	
ITU Class of emission: **25K0Q1D**			
Battery/Power Supply			
Model name/number	…….……	Identification/Part number	…….……
Manufacturer	…….……	Country of Origin	…….……
Ancillaries (if applicable)	**See Attached Sheet**		
Model name/number	…….……	Identification/Part number	…….……
Manufacturer	…….……	Country of Origin	…….……
Extreme conditions:			
Maximum temperature	**55ºC**	Minimum temperature	**-20ºC**
Maximum supply voltage	**7.4V**	Minimum supply voltage	**6.4 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 :

Name : Bob Allen

Position held : Test Authority

Date : 07 September 2011

1.4 PRODUCT INFORMATION

1.4.1 Technical Description

The Equipment Under Test (EUT) was a Sepura Ltd STP8080. A full technical description can be found in the manufacturer's documentation.

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.

The EUT was powered from a 7.4 V DC supply.

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

Modification 0 - No modifications were made to the test sample during testing.

SECTION 2

TEST DETAILS

FCC Testing of the
Sepura Ltd STP8080
In accordance with FCC CFR 47 Part 15C

2.1 SPURIOUS AND BAND EDGE EMISSIONS

2.1.1 Specification Reference

FCC CFR 47 Part 15C, Clause 15.247 (d)

2.1.2 Equipment Under Test and Modification State

STP8080 S/N: 2PN601020G471E0 - Modification State 0

2.1.3 Date of Test

23 September 2011

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 Procedure

The band edge measurements were performed in accordance with ANSI C63.10, Clause 6.9.3. The results were analysed to ensure compliance with restricted bands. The EUT was set to the lowest and highest operating frequencies.

2.1.6 Environmental Conditions

Ambient Temperature	20.0°C
Relative Humidity	46.0%

Product Service

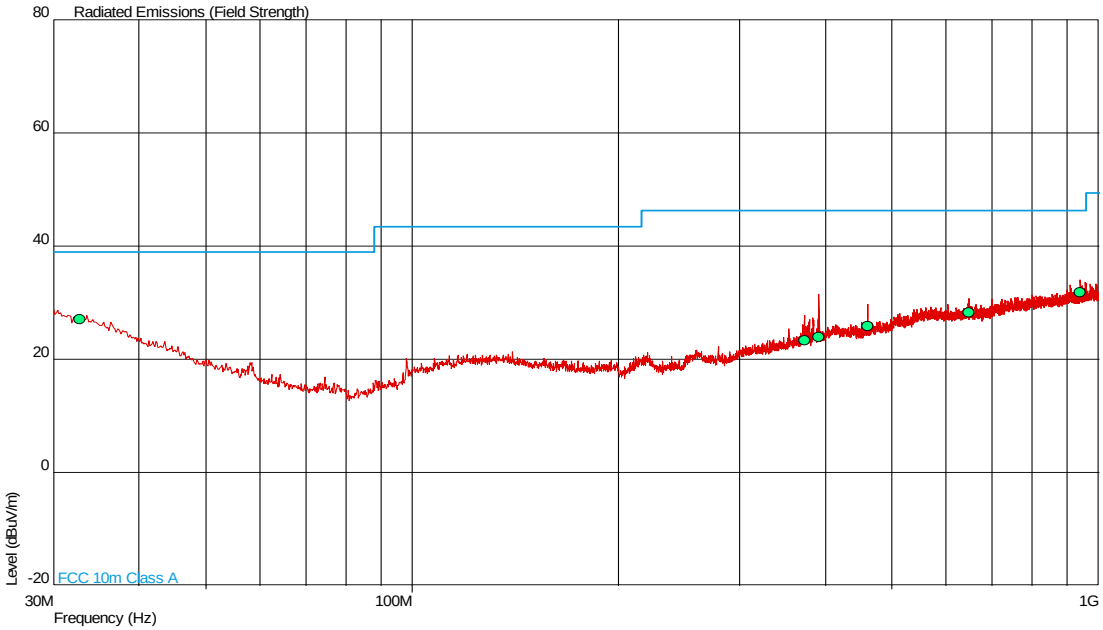
2.1.7 Test Results

7.4 V DC Supply

Spurious Radiated Emissions

2402 MHz

30 MHz to 1 GHz

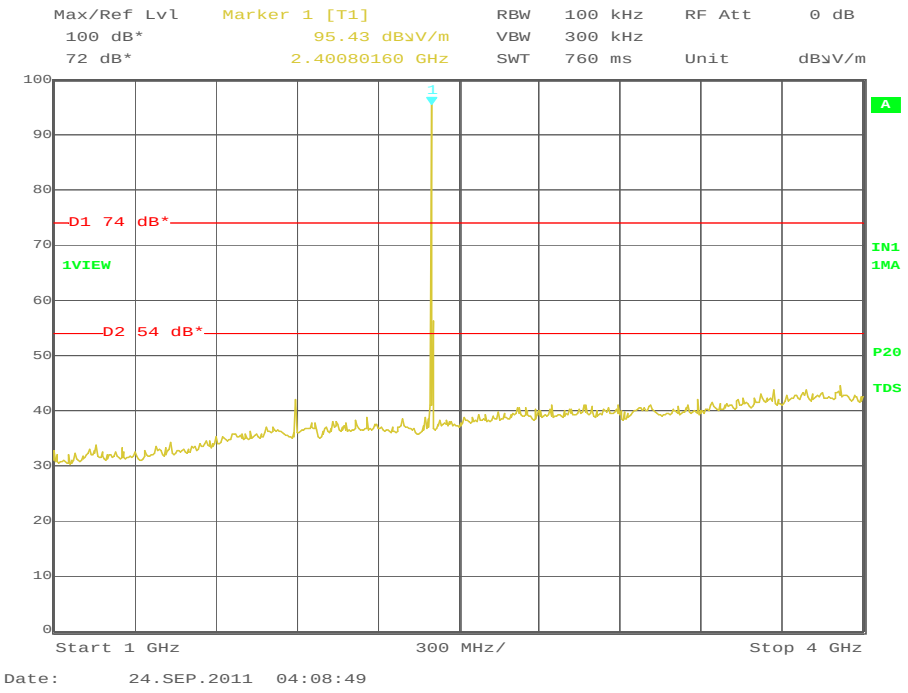


Frequency (MHz)	QP Level (dBµV/m)	QP Limit (dBµV/m)	QP Margin (dBµV/m)	Angle (Deg)	Height (m)	Polarity
32.844	27.1	39.1	-12.0	269	2.75	Vertical
372.619	23.4	46.4	-23.0	0	1.00	Horizontal
391.370	23.9	46.4	-22.5	356	1.00	Horizontal
460.542	26.0	46.4	-20.4	0	1.00	Horizontal
647.582	28.3	46.4	-18.1	344	1.00	Horizontal
940.847	31.8	46.4	-14.6	10	1.00	Horizontal

1 GHz to 25 GHz

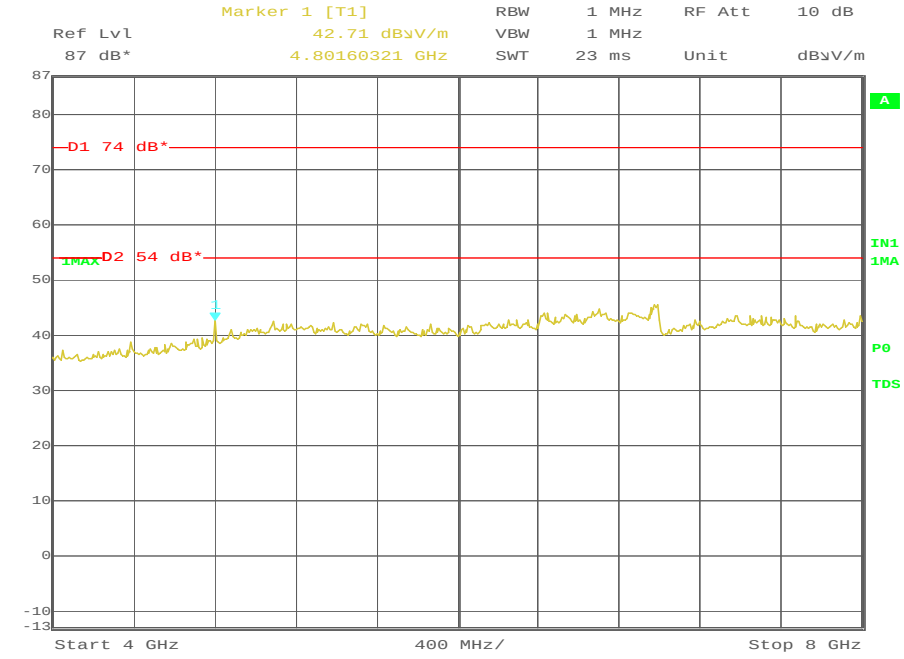
Frequency (GHz)	Antenna Polarisation	Antenna Height (cm)	EUT Arc (degrees)	Final Peak (dBµV/m)	Final Average (dBµV/m)
4.802	Vertical	158	111	46.61	33.29

1 GHz to 4 GHz

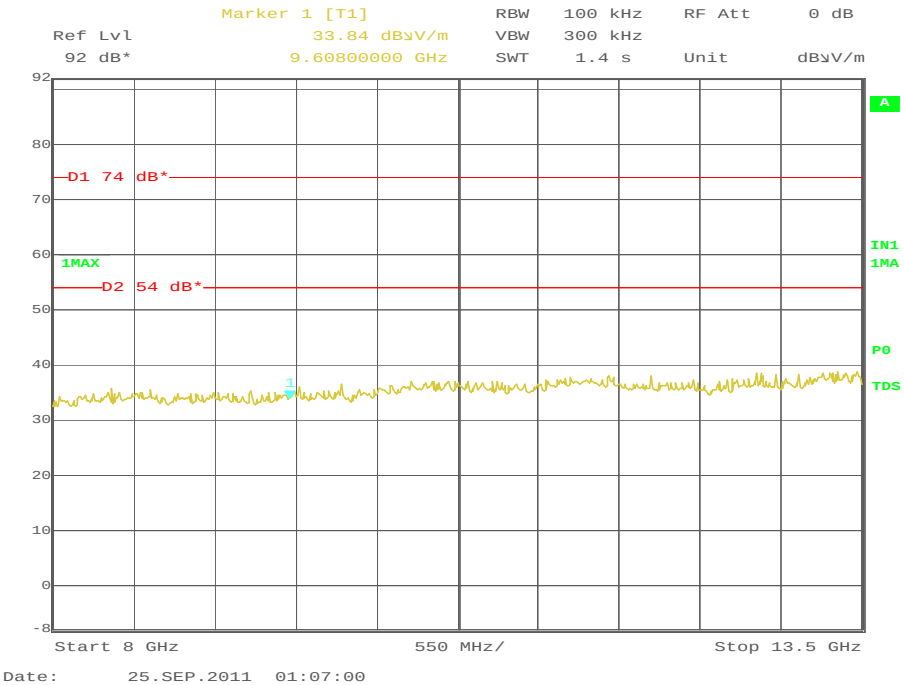


Product Service

4 GHz to 8 GHz

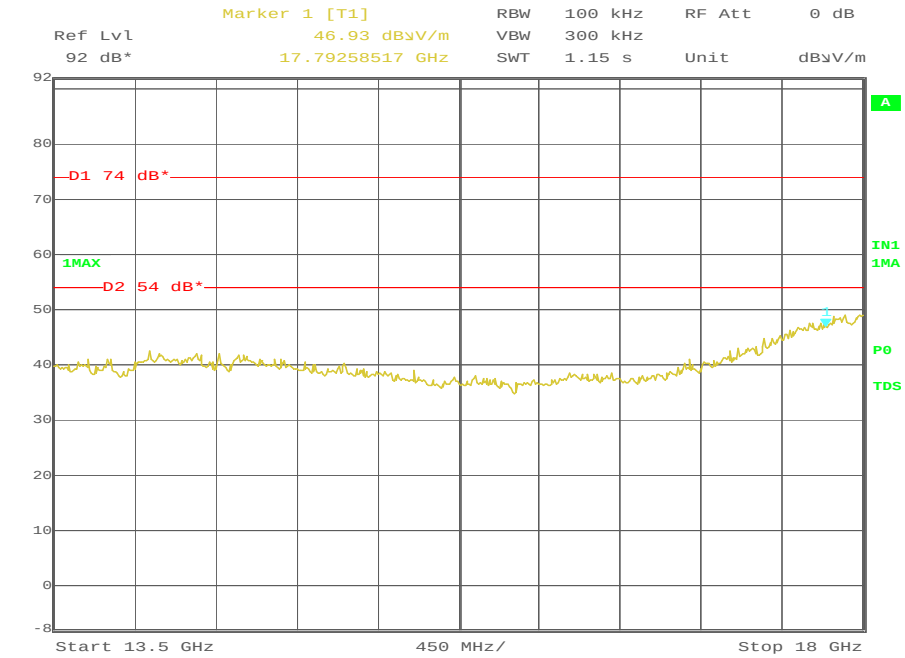


8 GHz to 13 GHz



Product Service

13 GHz to 18 GHz



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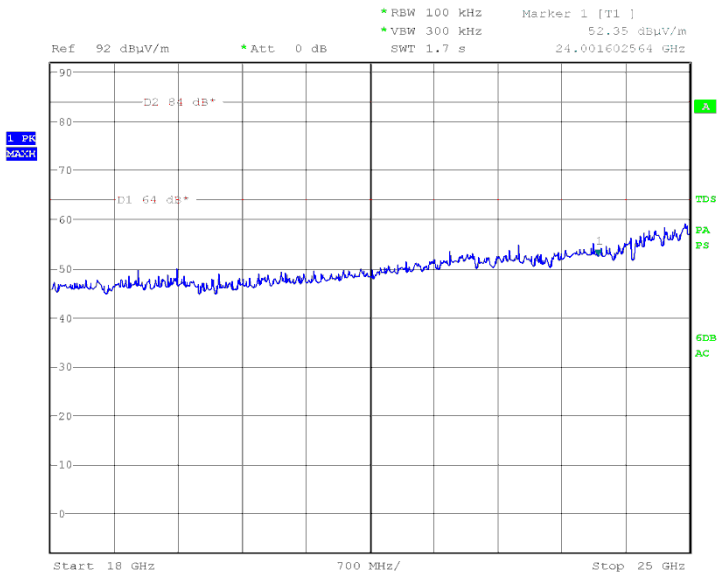
18 GHz to 25 GHz



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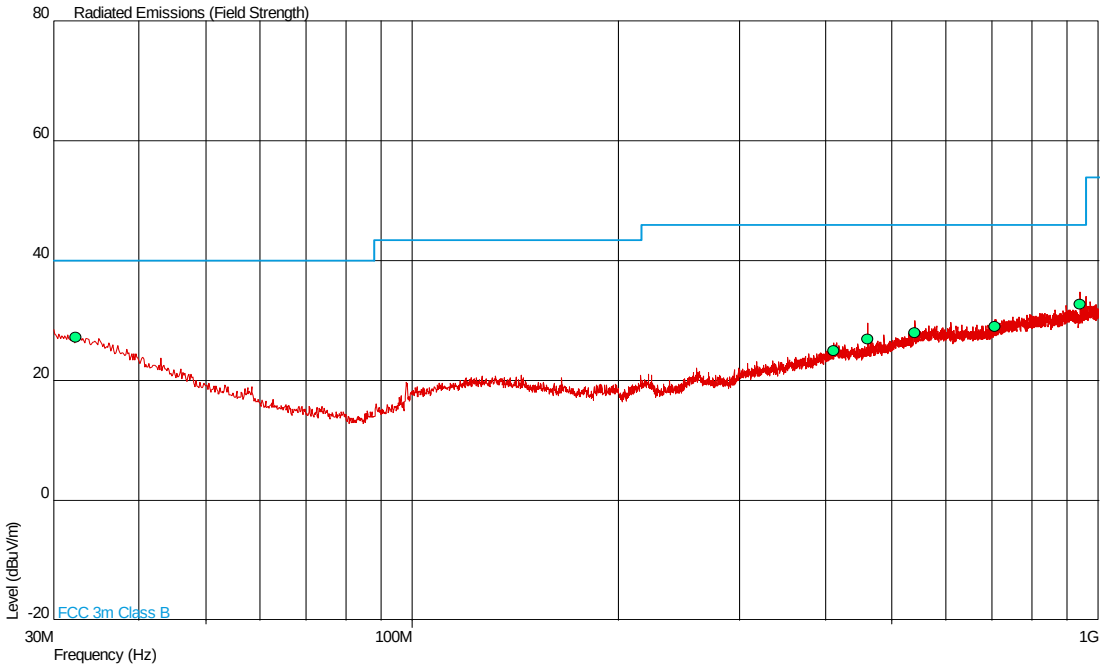
2441 MHz

30 MHz to 1 GHz

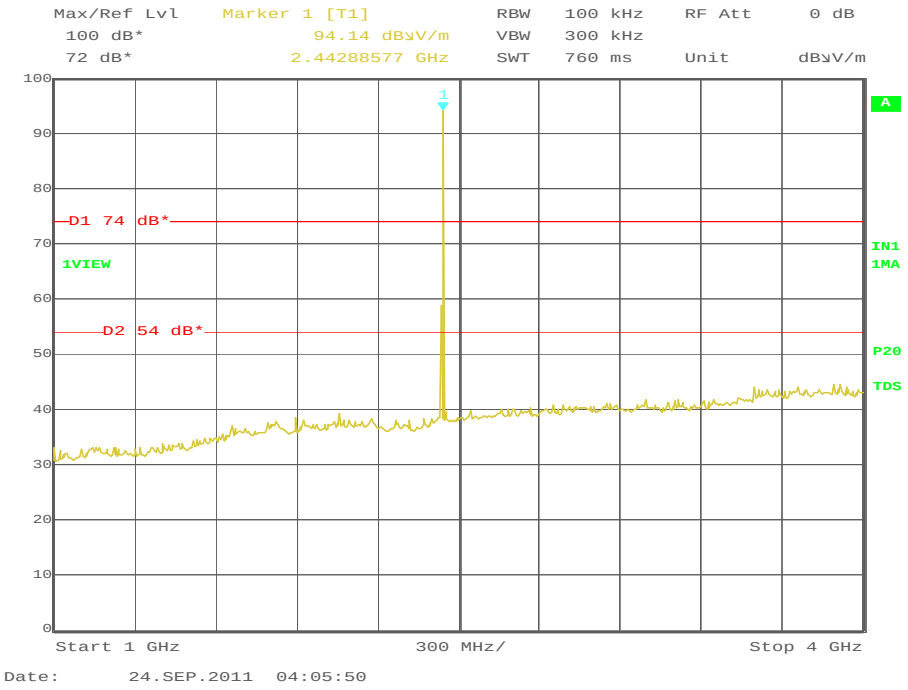


Frequency (MHz)	QP Level (dBµV/m)	QP Limit (dBµV/m)	QP Margin (dBµV/m)	Angle (Deg)	Height (m)	Polarity
32.402	27.2	40.0	-12.8	317	1.00	Vertical
411.771	25.0	46.0	-21.0	353	1.00	Vertical
460.657	27.0	46.0	-19.0	348	1.00	Horizontal
540.027	28.0	46.0	-18.0	312	1.00	Horizontal
706.657	29.0	46.0	-17.0	0	1.00	Horizontal
940.959	32.8	46.0	-13.2	301	1.00	Vertical

1 GHz to 25 GHz

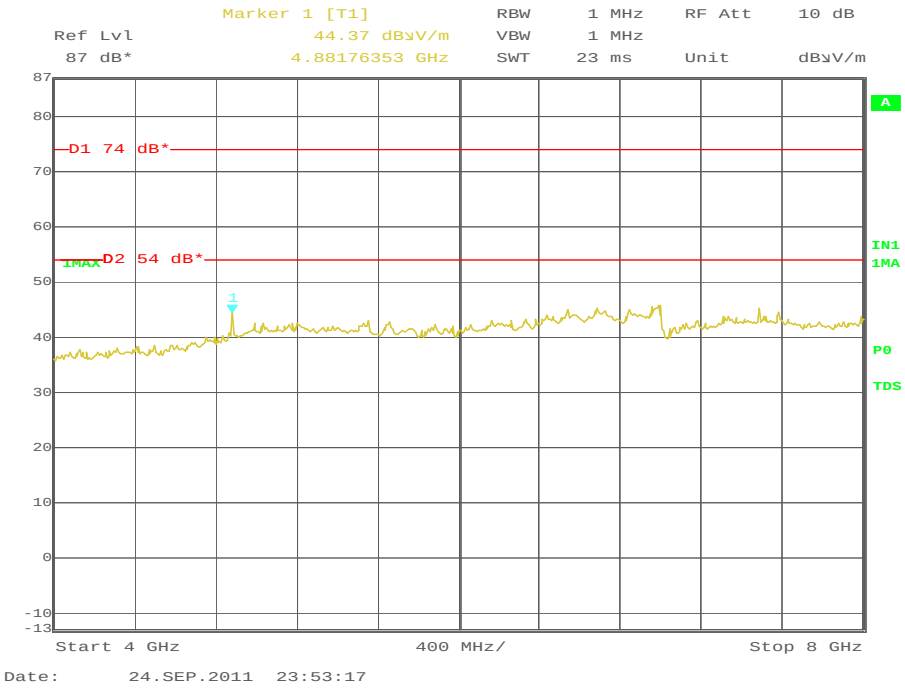
Frequency (GHz)	Antenna Polarisation	Antenna Height (cm)	EUT Arc (degrees)	Final Peak (dBµV/m)	Final Average (dBµV/m)
4.882	Vertical	100	180	46.15	33.58

1 GHz to 4 GHz

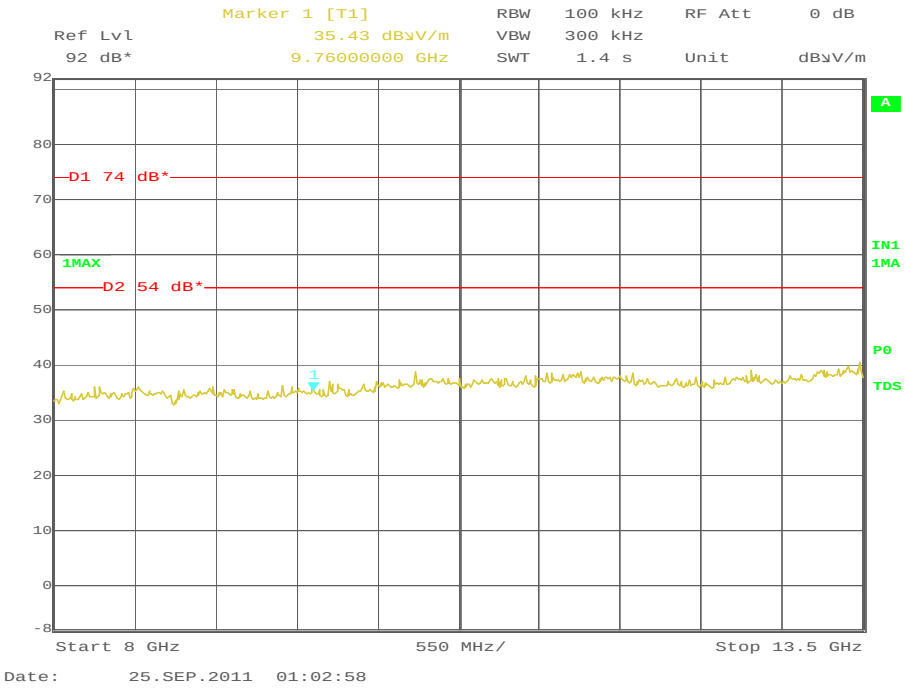


Product Service

4 GHz to 8 GHz

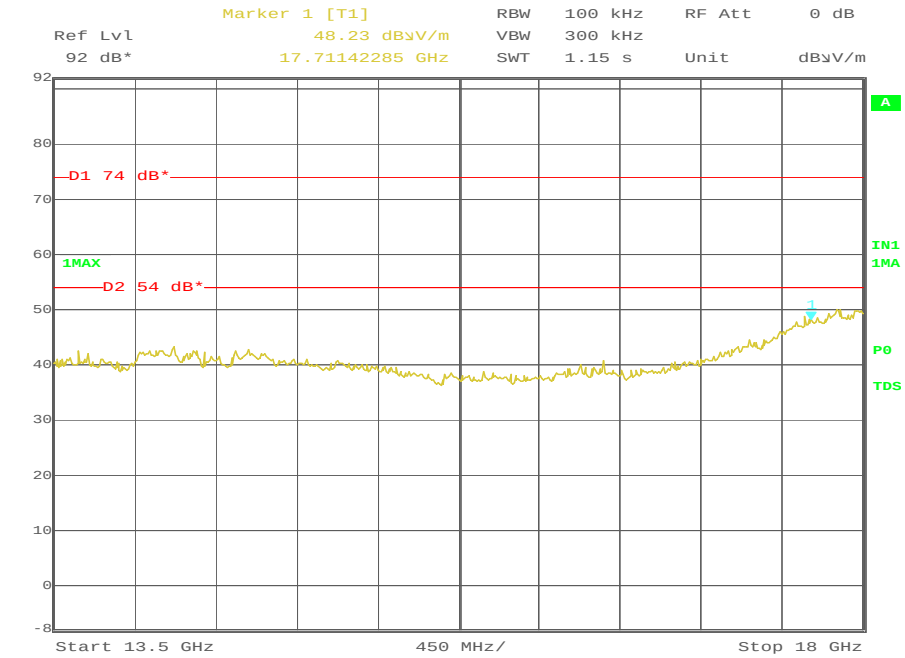


8 GHz to 13 GHz

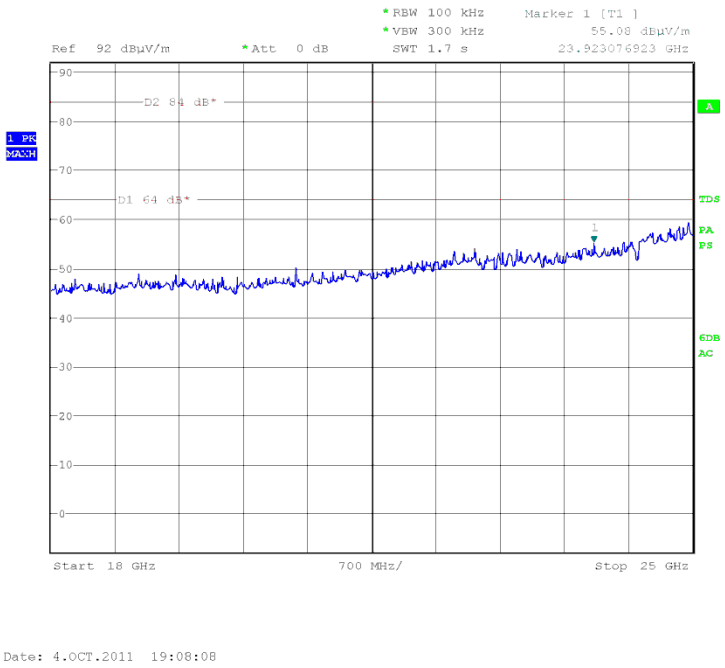


Product Service

13 GHz to 18 GHz

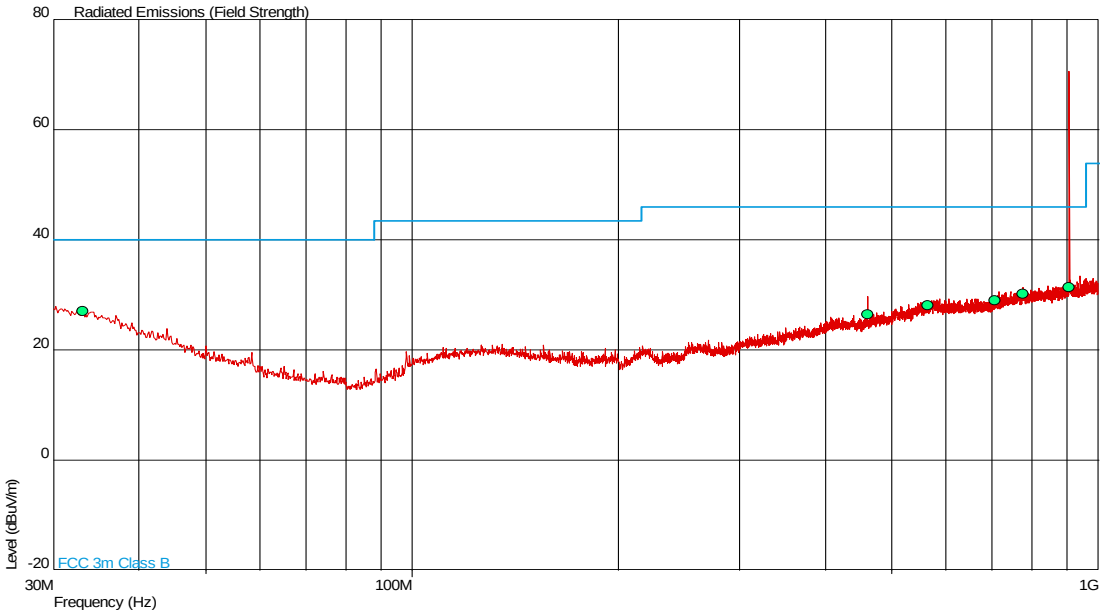


18 GHz to 25 GHz



2480 MHz

30 MHz to 1 GHz



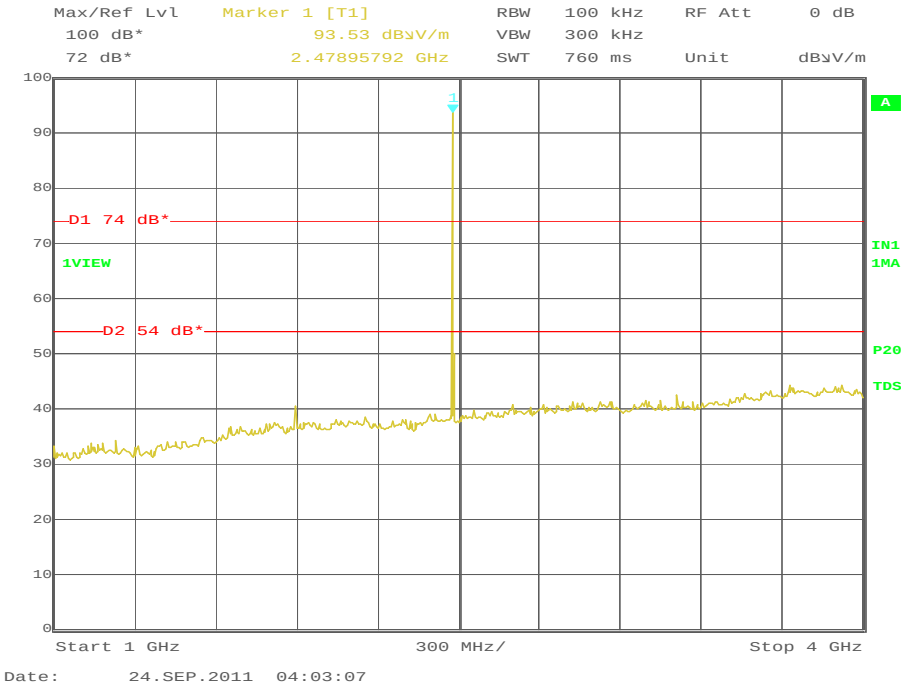
Frequency (MHz)	QP Level (dBµV/m)	QP Limit (dBµV/m)	QP Margin (dBµV/m)	Angle (Deg)	Height (m)	Polarity
33.153	27.0	40.0	-13.0	213	1.00	Vertical
460.664	26.5	46.0	-19.5	282	3.95	Vertical
564.156	28.1	46.0	-17.9	4	1.00	Horizontal
706.535	29.0	46.0	-17.0	142	3.20	Horizontal
775.389	30.2	46.0	-15.8	100	1.00	Vertical
905.427	31.4	46.0	-14.6	360	1.00	Vertical

1 GHz to 25 GHz

Frequency (GHz)	Antenna Polarisation	Antenna Height (cm)	EUT Arc (degrees)	Final Peak (dBµV/m)	Final Average (dBµV/m)
4.960	Vertical	105	154	45.52	32.59
9.920	Vertical	205	279	51.22	N/A*

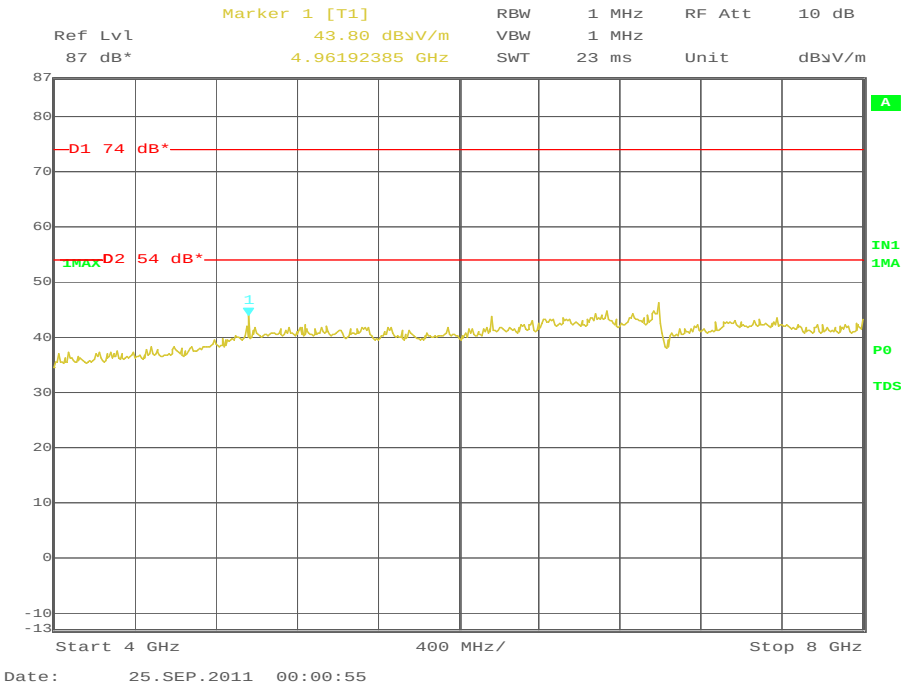
*Within non-restricted band.

1 GHz to 4 GHz

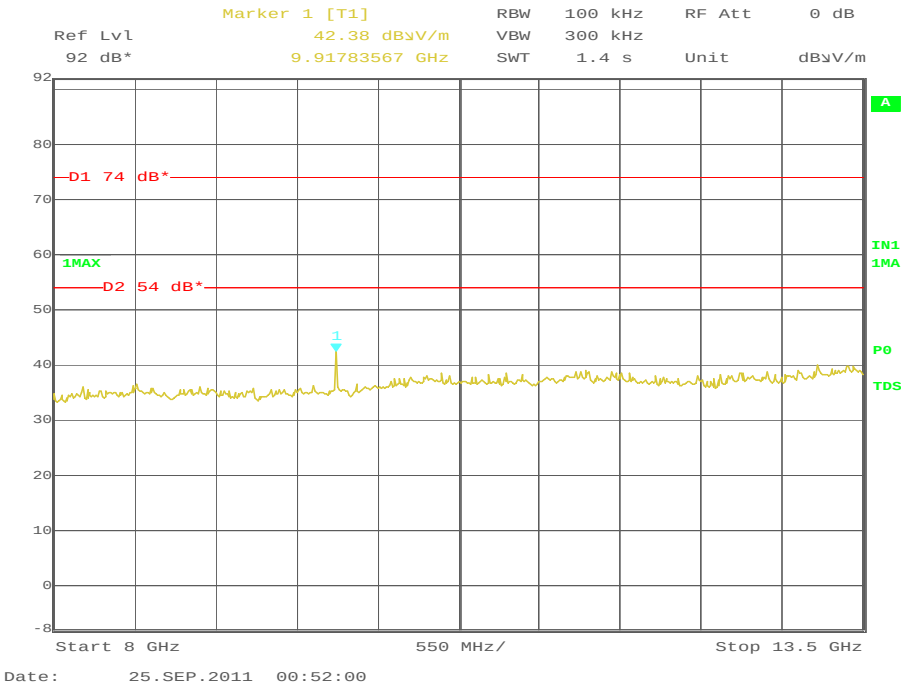


Product Service

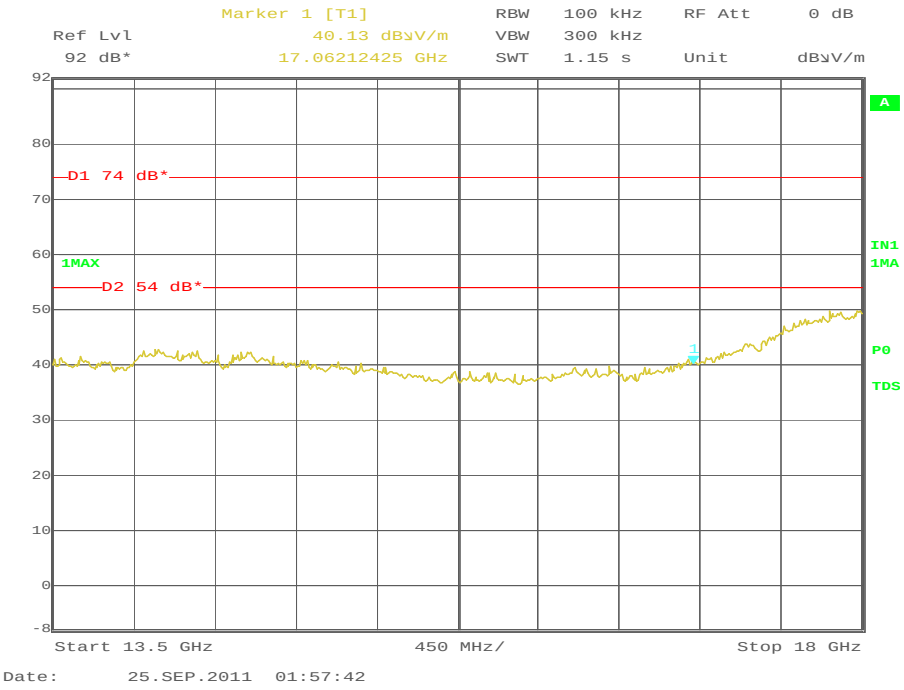
4 GHz to 8 GHz



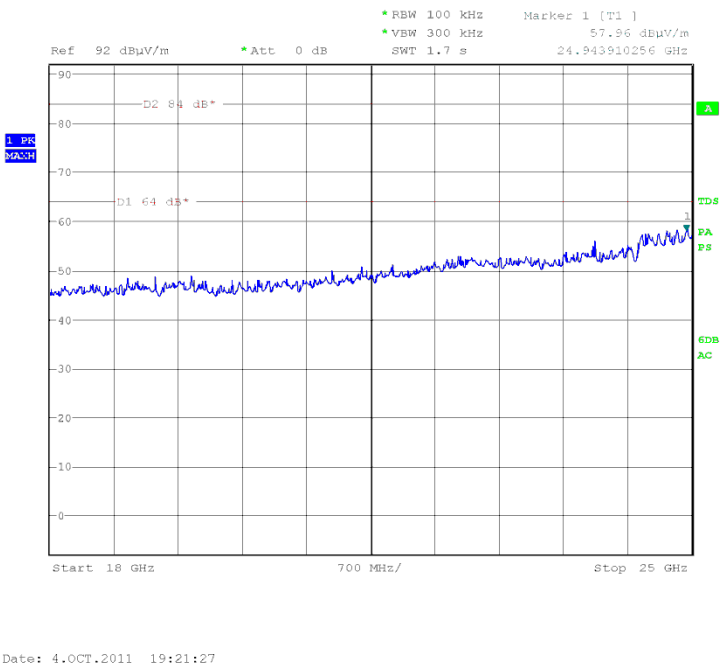
8 GHz to 13 GHz



13 GHz to 18 GHz



18 GHz to 25 GHz



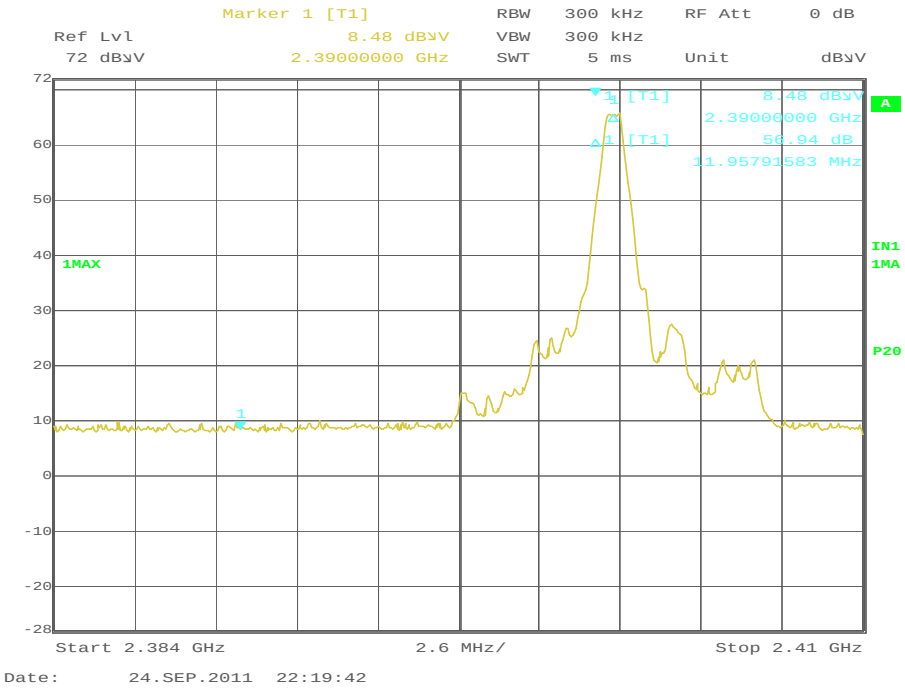
Limit

Peak (dBµV/m)	Average (dBµV/m)
74.0	54.0

Band Edge Emissions

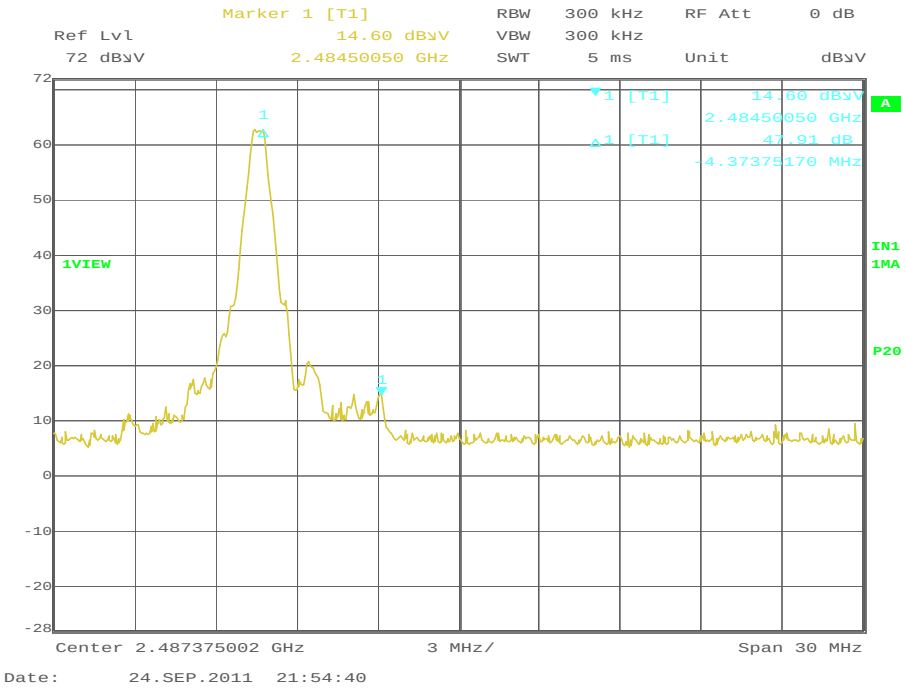
2402 MHz

Polarisation	Final Peak (dBµV/m)	Final Average (dBµV/m)
Horizontal	40.75	8.77



2480 MHz

Polarisation	Final Peak (dBµV/m)	Final Average (dBµV/m)
Horizontal	47.37	21.41



Limit

Peak (dBµV/m)	Average (dBµV/m)
74.0	54.0

Product Service

SECTION 3

TEST EQUIPMENT USED

Product Service

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 - Radiated Emissions					
Antenna (Double Ridge Guide, 1GHz-18GHz)	EMCO	3115	234	12	12-Nov-2011
Antenna (Double Ridge Guide, 1GHz-18GHz)	EMCO	3115	235	12	12-Nov-2011
Amplifier (Low Noise, 18GHz-40GHz)	Narda	NARDA DB02-0447	237	12	24-Jun-2012
Dual Power Supply Unit	Thurlby	PL320	288	-	TU
Antenna (Double Ridge Guide)	Q-Par Angus Ltd	QSH 180K	1511	24	2-Aug-2012
Mast Controller	Inn-Co GmbH	CO 1000	1606	-	TU
Test Receiver	Rohde & Schwarz	ESIB26	2085	12	14-Dec-2011
Antenna (Bilog)	Chase	CBL6143	2904	24	12-May-2013
Amplifier (8 - 18GHz)	Phase One	PS06-0061	3176	12	5-Jul-2012
High Pass Filter (3GHz)	RLC Electronics	F-100-3000-5-R	3349	12	27-May-2012
Signal Generator, 9kHz to 6GHz	Rohde & Schwarz	SMB 100A	3499	12	24-May-2012
Tilt Antenna Mast	maturo Gmbh	TAM 4.0-P	3916	-	TU
Mast Controller	maturo Gmbh	NCD	3917	-	TU
Low Noise Amplifier	Wright Technologies	APS04-0085	3969	12	8-Jul-2012

TU – Traceability Unscheduled
O/P MON – Output Monitored with Calibrated Equipment

Product Service

3.2 MEASUREMENT UNCERTAINTY

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

Test Discipline	MU
Spurious and Band Edge Emissions	30MHz to 1GHz: ± 5.1 dB 1GHz to 40GHz: ± 6.3 dB

Product Service

SECTION 4

ACCREDITATION, DISCLAIMERS AND COPYRIGHT

Product Service

4.1 ACCREDITATION, DISCLAIMERS AND COPYRIGHT

UKAS TESTING 0141

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 (Not UKAS Accredited).