TEST REPORT
FROM
RFI GLOBAL SERVICES LTD

Test of: RPC3G-914-64-RPSMA

To: FCC Part 15.249: 2009 Subpart C

Test Report Serial No:
RFI-RPT-RP77759JD01A

This Test Report Is Issued Under The Authority Of Brian Watson, COO Payments and Consultancy:	pp R. Graham
Checked By:	R. Graham
Signature:	R. Graham
Date of Issue:	21 June 2010

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

Registered in England and Wales. Company number:2117901

This page has been left intentionally blank.

Table of Contents

1. Customer Information

Company Name:	Radiometrix Ltd
Address:	Hartcran House 231 Kenton Lane Harrow London HA3 8RP

2. Summary of Testing

2.1. General Information

Specification Reference:	47CFR15.249
Specification Title:	Code of Federal Regulations Volume 47 (Telecommunications) 2009: Part 15 Subpart C (Radio Frequency Devices) - Section 15.249
Specification Reference:	47CFR15.109
Specification Title:	Code of Federal Regulations Volume 47 (Telecommunications) 2009: Part 15 Subpart B (Unintentional Radiators) - Section 15.109
Site Registration:	FCC: 209735
Location of Testing:	RFI Global Services Ltd, Wade Road, Basingstoke, Hampshire, RG24 8AH.
Test Dates:	03 June 2010

2.2. Summary of Test Results

FCC Reference (47CFR)	Measurement	Result
Part 15.109	Receiver/Idle Mode Radiated Spurious Emissions	✓
Part 15.249(a)	Transmitter Fundamental Field Strength	✓
Part 2.1049	Transmitter 20 dB Bandwidth	✓
Part 15.249(a)(d)(e) & 15.209	Transmitter Radiated Spurious Emissions	✓
Part 15.249(d) & 15.209	Transmitter Band Edge Radiated Emissions	✓

Key to Results

✓ = Complied ✗ = Did not comply

2.3. Methods and Procedures

Reference:	ANSI C63.4 (2009)
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
Reference:	ANSI C63.10 (2009)
Title:	American National Standard for Testing Unlicensed Wireless Devices

2.4. Deviations from the Test Specification

For the measurements contained within this test report, there were no deviations from, additions to, or exclusions from the test specification identified above.

3. Equipment Under Test (EUT)

3.1. Identification of Equipment Under Test (EUT)

Brand Name:	Radiometrix
Model Name or Number:	RPC3G-914-64-RPSMA
Serial Number:	255-3
FCC ID:	TSKRPC3G914RPS

3.2. Description of EUT

The equipment under test was a 914.5 MHz radio module mounted on a development board via a 12 pin connector.

3.3. Modifications Incorporated in the EUT

No modifications were applied to the EUT during testing.

3.4. Additional Information Related to Testing

Tested Technology:	902 to 928 MHz ISM band
Type of Equipment	Transceiver
Power Supply Requirement:	5 VDC (via regulated supply from development board)
Transmit Channels Tested:	914.5 MHz
Receive Channels Tested:	914.5 MHz

3.5. Support Equipment

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

Description:	Development Board
Brand Name:	Radiometrix Ltd
Serial Number:	226-2

4. Operation and Monitoring of the EUT during Testing

4.1. Operating Modes

The EUT was tested in the following operating mode(s):

- Receive/Idle mode.
- Constantly transmitting with modulation at full power.

4.2. Configuration and Peripherals

The EUT was tested in the following configuration(s):

- EUT RF port (SMA connector) was connected to a proprietary antenna (RPSMA 1/4 wave) supplied by the customer.
- Powered via the development board which was external powered by a 9V alkaline battery (connected to the 7-12V port on the development board).

5. Measurements, Examinations and Derived Results

5.1. General Comments

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 6. Measurement Uncertainty* for details.

5.2. Test Results

5.2.1.Receiver/Idle Mode Radiated Spurious Emissions

Test Summary:

FCC Part:	15.109
Test Method Used:	As detailed in ANSI C63.10 Sections 6.3 and 6.5 referencing ANSI C63.4
Frequency Range:	30 MHz to 1000 MHz

Environmental Conditions:

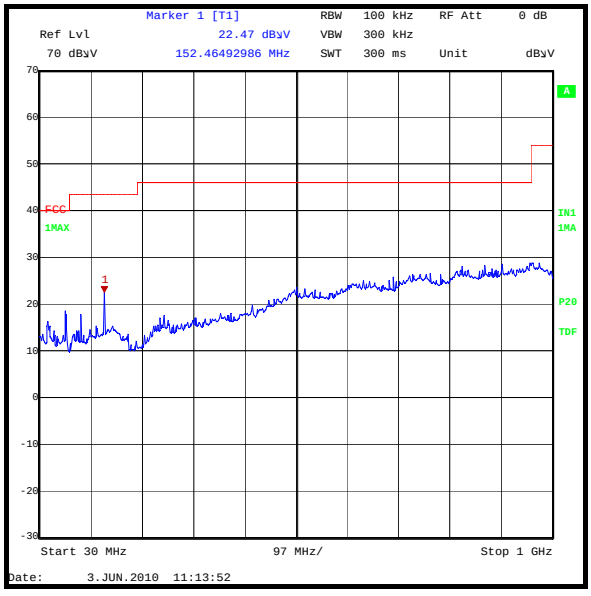
Temperature (°C):	27
Relative Humidity (%):	24

Results: Quasi Peak

Frequency (MHz)	Antenna Polarity	Level (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Result
153.321	Vertical	24.1	43.0	18.9	Complied

Note(s):

1. The final measured value, for the given emission, in the table above incorporates the calibrated antenna factor and cable loss.



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

Receiver/Idle Mode Radiated Spurious Emissions (continued)

Test Summary:

FCC Part:	15.109
Test Method Used:	As detailed in ANSI C63.10 Sections 6.3 and 6.6 referencing ANSI C63.
Frequency Range:	1 GHz to 10 GHz

Environmental Conditions:

Temperature (°C):	27
Relative Humidity (%):	23

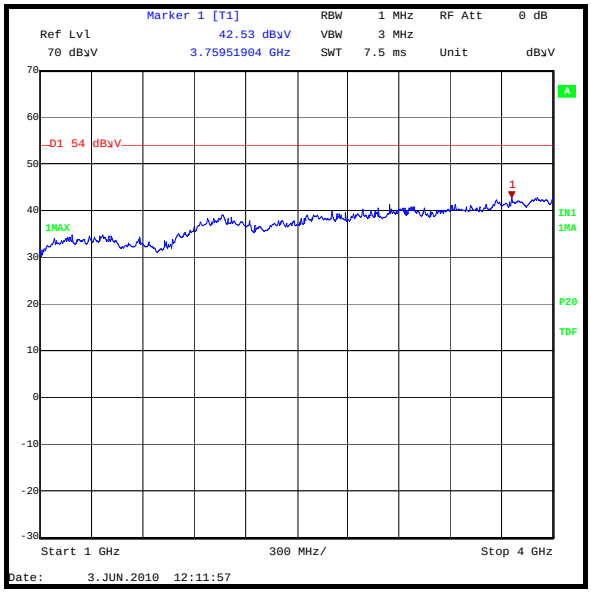
Results:

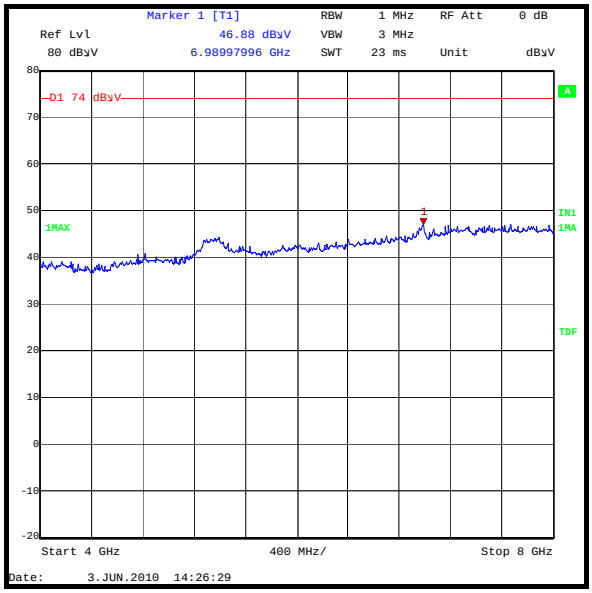
Frequency (MHz)	Antenna Polarity	Peak Level (dBµV/m)	Average Limit (dBµV/m)	Margin (dB)	Result
9635.271	Horizontal	48.7	54.0	5.3	Complied

Note(s):

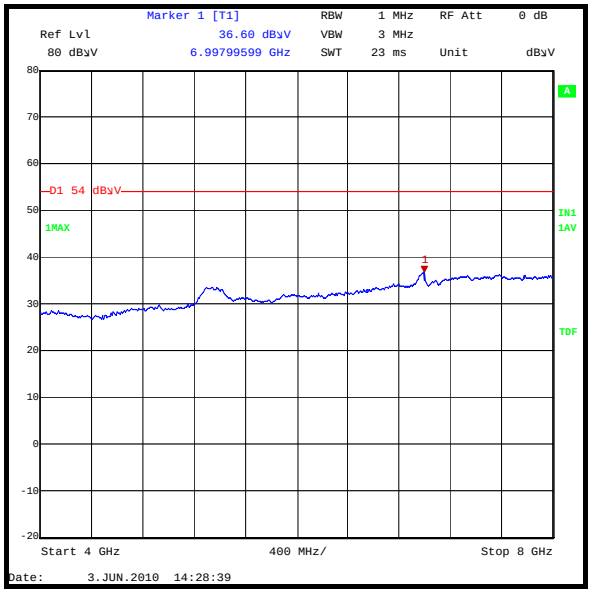
1. No spurious emissions were detected above the noise floor of the measuring receiver therefore the highest peak noise floor reading of the measuring receiver was recorded as shown in the table above. The peak level was compared to the average limit as opposed to being compared to the peak limit because this is the more onerous limit.
2. All pre-scans were performed with the peak detector against average limits apart from measurements made in the range 4 GHz to 10 GHz where pre-scans were performed with peak and average detector and the applicable limit applied. This was due to the noise floor being close to the average limit when using the peak detector.
3. The final measured value, for the given emission, in the table above incorporates the calibrated antenna factor and cable loss.

Receiver/Idle Mode Radiated Spurious Emissions (continued)

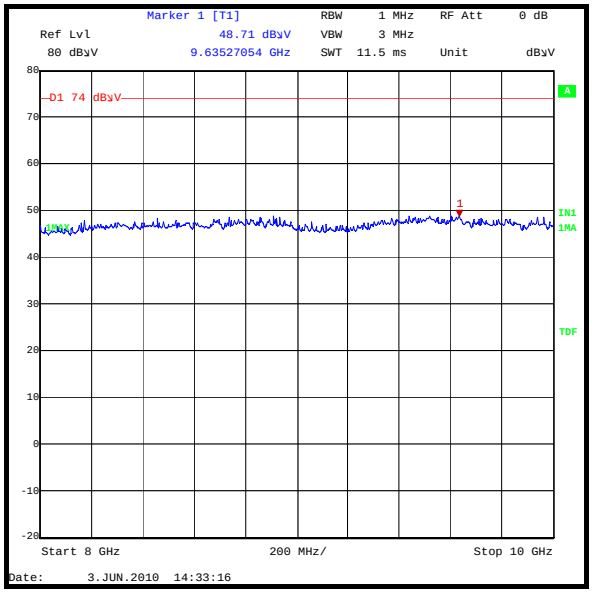




Peak Detector

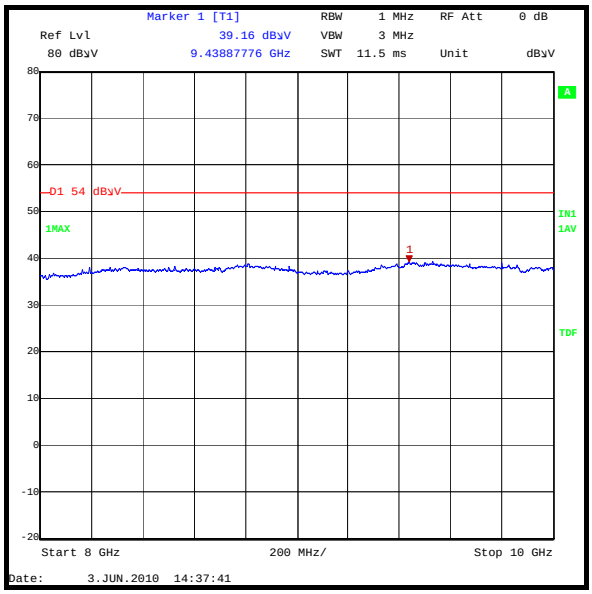


Average Detector



Peak Detector

Receiver/Idle Mode Radiated Spurious Emissions (continued)



Average Detector

5.2.2. Transmitter Fundamental Field Strength

Test Summary:

FCC Part:	15.249(a)
Test Method Used:	As detailed in ANSI C63.10 Sections 6.3 and 6.5 referencing ANSI C63.4

Environmental Conditions:

Temperature (°C):	27
Relative Humidity (%):	24

Results:

Frequency (MHz)	Antenna Polarity	Level (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Result
914.508	Horizontal	83.5	94.0	10.5	Complied

5.2.3. Transmitter 20 dB Bandwidth

Test Summary:

FCC Part:	2.1049
Test Method Used:	As detailed in ANSI C63.10 Section 6.9.1 (see note below)

Environmental Conditions:

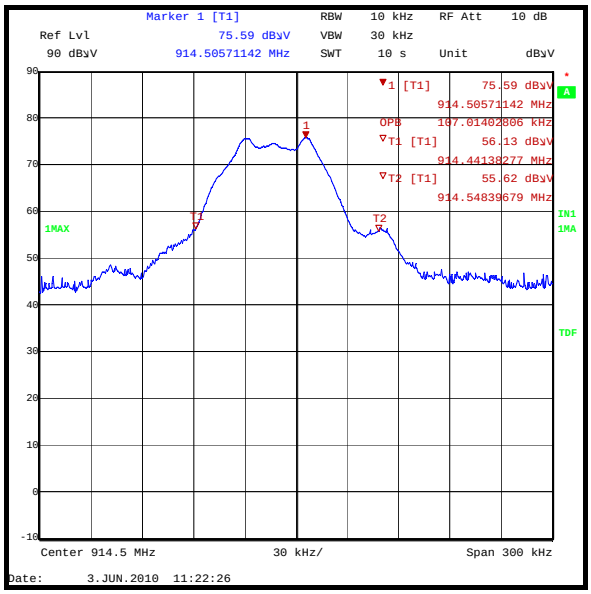
Temperature (°C):	27
Relative Humidity (%):	24

Results:

20 dB Bandwidth (kHz)
107.014

Note(s):

1. In lieu of the test method detailed in ANSI C63.10 Section 6.9.1 the 20 dB bandwidth was measured using the Occupied Bandwidth function of the spectrum analyser.



5.2.4. Transmitter Radiated Spurious Emissions

Test Summary:

FCC Part:	15.249(a)(d)(e) & 15.209
Test Method Used:	As detailed in ANSI C63.10 Sections 6.3 and 6.5 referencing ANSI C63.4
Frequency Range:	30 MHz to 1000 MHz

Environmental Conditions:

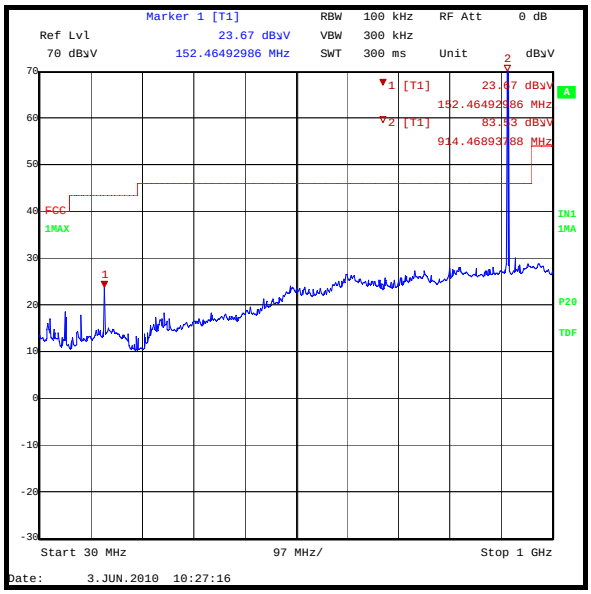
Temperature (°C):	27
Relative Humidity (%):	24

Results:

Frequency (MHz)	Antenna Polarity	Level (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Result
153.321	Horizontal	23.6	43.0	19.4	Complied

Note(s):

1. The final measured value, for the given emission, in the table above incorporates the calibrated antenna factor and cable loss
2. All other emissions were at least 20 dB below the appropriate limit.
3. The emission shown at approximately 914.469 MHz is the EUT carrier.



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

Transmitter Radiated Spurious Emissions (continued)

Test Summary:

FCC Part:	15.249(a)(d)(e) & 15.209
Test Method Used:	As detailed in ANSI C63.10 Sections 6.3 and 6.6 referencing ANSI C63.
Frequency Range:	1 GHz to 10 GHz

Environmental Conditions:

Temperature (°C):	27
Relative Humidity (%):	24

Results: Peak

Frequency (MHz)	Antenna Polarity	Peak Level (dBμV/m)	Peak Limit (dBμV/m)	Margin (dB)	Result
1828.827	Horizontal	50.1	74.0	23.9	Complied
2743.456	Horizontal	51.7	74.0	22.3	Complied
3657.927	Horizontal	49.7	74.0	24.3	Complied

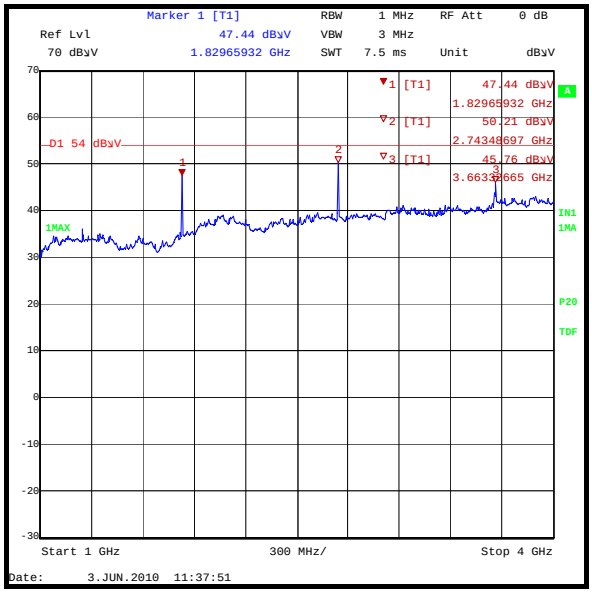
Results: Average

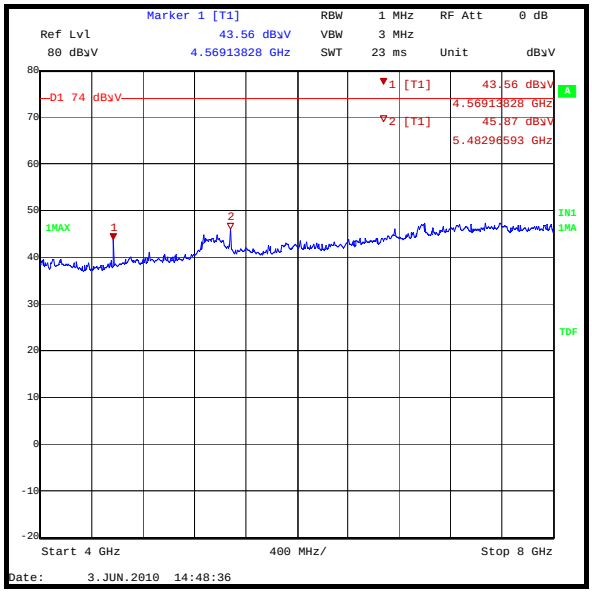
Frequency (MHz)	Antenna Polarity	Average Level (dBμV/m)	Average Limit (dBμV/m)	Margin (dB)	Result
1828.827	Horizontal	47.4	54.0	6.6	Complied
2743.456	Horizontal	48.3	54.0	5.7	Complied
3657.927	Horizontal	43.7	54.0	10.3	Complied

Note(s):

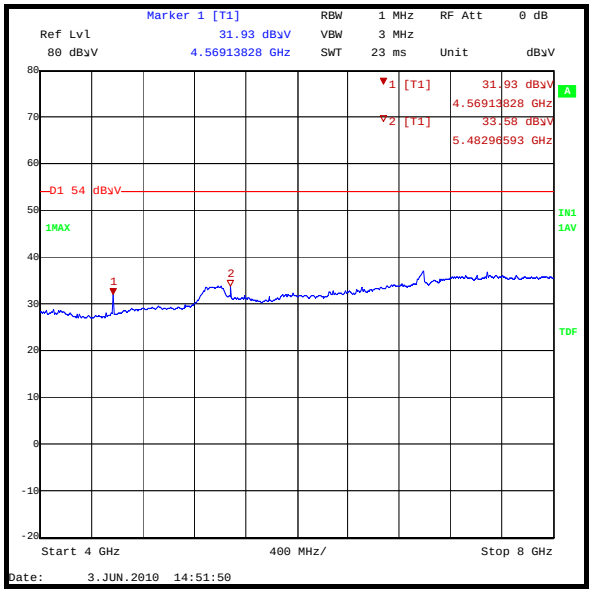
1. All pre-scans were performed with the peak detector against average limits apart from measurements made in the range 4 GHz to 10 GHz where pre-scans were performed with peak and average detector and the applicable limit applied. This was due to the noise floor being close to the average limit when using the peak detector.
2. The final measured value, for the given emission, in the table above incorporates the calibrated antenna factor and cable loss
3. All other emissions were at least 20 dB below the appropriate limit.

Transmitter Radiated Spurious Emissions (continued)

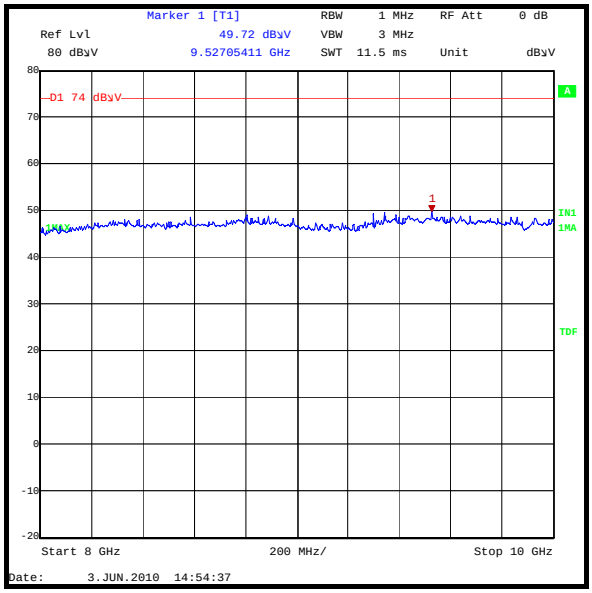




Peak Detector



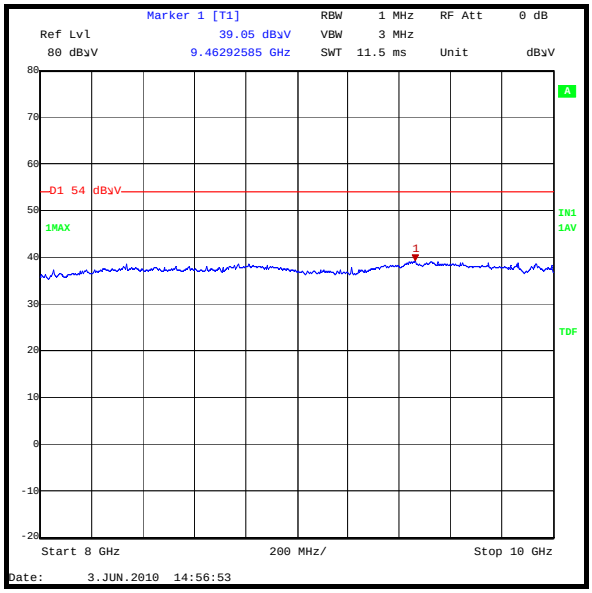
Average Detector



Peak Detector

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

Transmitter Radiated Spurious Emissions (continued)



Average Detector

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

5.2.5. Transmitter Radiated Emissions at Band Edges

Test Summary:

FCC Part:	15.249(d) & 15.209
Test Method Used:	As detailed in ANSI C63.10 Section 6.9.2

Environmental Conditions:

Temperature (°C):	27
Relative Humidity (%):	24

Results: Bottom Band Edge

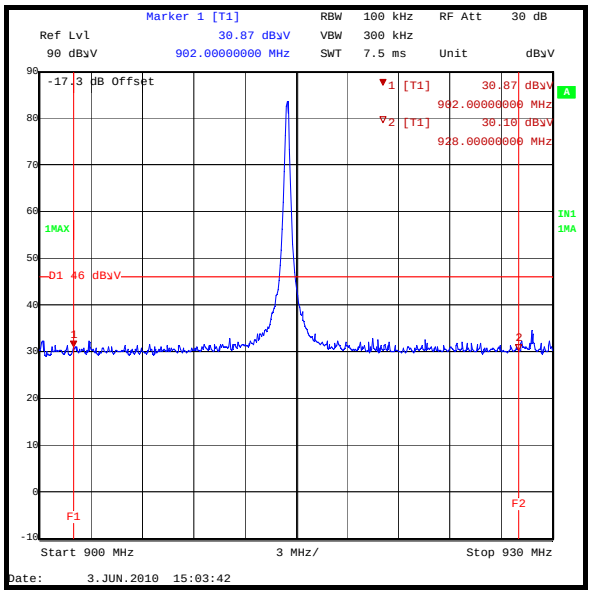
Frequency (MHz)	Level (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Result
902	30.9	46.0	15.1	Complied

Results: Top Band Edge

Frequency (MHz)	Level (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Result
928	30.1	46.0	15.9	Complied

Note(s):

1. The final measured value, for the given emission, in the table above incorporates the calibrated antenna factor and cable loss.



6. 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
20 dB Bandwidth	N/A	95%	±0.92 ppm
Radiated Spurious Emissions	30 MHz to 40 GHz	95%	±2.94 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.

Appendix 1. Test Equipment Used

RFI No.	Instrument	Manufacturer	Type No.	Serial No.	Date Calibration Due	Cal. Interval (Months)
A1534	Pre Amplifier	Hewlett Packard	8449B OPT H02	3008A00405	Calibrated before use	-
A1818	Antenna	EMCO	3115	00075692	27 Nov 2010	12
A1974	High Pass Filter	AtlanTecRF	AFH-01000	090000283	Calibrated before use	-
A288	Antenna	Chase	CBL6111A	1589	16 Mar 2011	12
K0002	3m RSE Chamber	Rainford EMC	N/A	N/A	01 Sep 2010	12
M1124	Spectrum Analyser	Rohde & Schwarz	ESI26	100046K	22 Apr 2011	12

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