TEST REPORT
FROM
RFI GLOBAL SERVICES LTD

Test of: PowerScan M8300 910 MHz Barcode Base Unit
Incorporating Star Module Plus 910

To: FCC Part 15.249: 2009 Subpart C, RSS-210 Issue 7 June 2007
and RSS-Gen Issue 2 June 2007

Test Report Serial No:
RFI/RPT/RP77263JD01A

This Test Report Is Issued Under The Authority Of Brian Watson, COO Payments and Consultancy:	
Checked By:	Tony Henriques
Signature:	
Date of Issue:	19 May 2010

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1. Customer Information

Company Name:	Datalogic Scanning group S.r.l
Address:	13 Via San Vitalino Calderara di Reno Bologna 40012 Italy

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:	47CFR15.107 and 47CFR15.109
Specification Title:	Code of Federal Regulations Volume 47 (Telecommunications) 2009: Part 15 Subpart B (Radio Frequency Devices) - Sections 15.107 and 15.109
Specification Reference:	RSS-210 Issue 7 June 2007
Specification Title:	Low-power Licence-exempt Radio communication Devices (All Frequency Bands): Category I Equipment.
Specification Reference:	RSS-GEN Issue 2 June 2007
Specification Title:	General Requirements and Information for the Certification of Radio communication Equipment
Site Registration:	FCC: 209735; Industry Canada: 3245B-2
Location of Testing:	RFI Global Services Ltd, Wade Road, Basingstoke, Hampshire, RG24 8AH.
Test Dates:	12 April 2010 to 22 April 2010

2.2. Summary of Test Results

FCC Reference (47CFR)	Industry Canada Reference	Measurement	Result
Part 15.107	RSS-Gen 7.2.2	Receiver Mode AC Conducted Emissions	✓
Part 15.109	RSS-Gen 4.10 RSS-Gen 6.0	Receiver Mode Radiated Spurious Emissions	✓
Part 15.207	RSS-Gen 7.2.2	Transmitter Mode AC Conducted Emissions	✓
Part 15.249(a)	RSS-Gen 4.8 RSS-210 A2.9	Transmitter Fundamental Field Strength	✓
Part 2.1049	RSS-Gen 4.6.1	Transmitter 20 dB Bandwidth	✓
Part 15.249(a)(d)(e) & 15.209	RSS-Gen 4.9 RSS-210 A2.9	Transmitter Radiated Spurious Emissions	✓
Part 15.249(d) & 15.209	RSS-Gen 4.9 RSS-210 A2.9	Transmitter Band Edge Radiated Emissions	✓

Key to Results

✓ = Complied ✗ = Did not comply

2.3. Methods and Procedures

Reference:	ANSI C63.4 (2003)
Title:	American National Standard Methods of Measurement of Electromagnetic Emissions from Low Voltage Electrical and Electronic Equipment in the Range of 9 kHz to 40 GHz.

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:	PowerScan
Model Name or Number:	M8300 910MHz BC-8060
Serial Number:	E098N33273
Industry Canada Certification Number:	3862D-003
FCC ID Number:	U4F0020

3.2. Description of EUT

The equipment under test was a mobile barcode imager base unit incorporating a 910 MHz transceiver.

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:	910 MHz
Type of Equipment	Transceiver
Transmit Channels Tested:	910 MHz
Receive Channels Tested:	910 MHz
Power Supply Requirement:	12 V DC Nominal via 120 V AC/DC power supply

3.5. Accessories

Description:	AC/DC Power Supply
Brand Name:	Phihong
Model Name or Number:	PSAA18U-120
Serial Number:	093400032A1

4. Operation and Monitoring of the EUT during Testing

4.1. Operating Modes

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

- Continuous transmit at maximum output power.
- Receive Mode.

4.2. Configuration and Peripherals

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

- During conducted AC emissions tests, the EUT was tested with the bar code reader. A test mode was enabled on the EUT to allow continuous transmissions or continuous receiving mode.
- For all tests the EUT was tested standalone. A test mode was enabled on the EUT to allow continuous transmissions or continuous receiving mode.

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 AC Conducted Spurious Emissions

Test Summary:

FCC Part:	15.107
Test Method Used:	As detailed in ANSI C63.4 Section 7 and relevant annexes

Environmental Conditions:

Temperature (°C):	24
Relative Humidity (%):	30

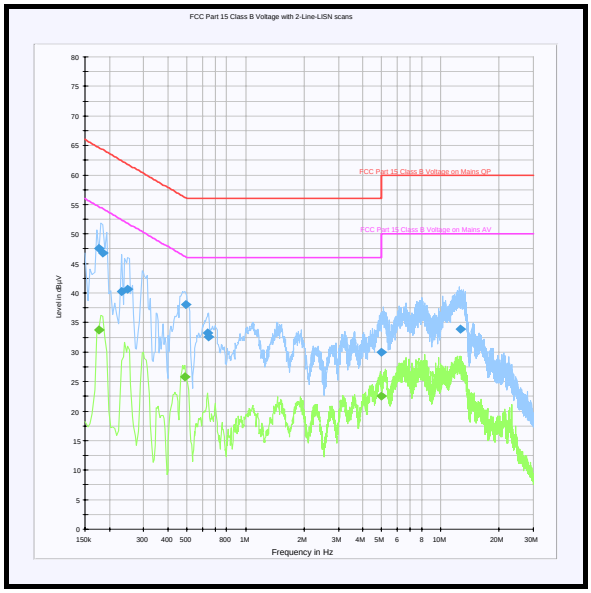
Results: Quasi Peak Detector Measurements

Frequency (MHz)	Line	Quasi Peak Level (dBμV)	Limit (dBμV)	Margin (dB)	Result
0.177000	Live	47.5	64.6	17.1	Complied
0.186000	Live	46.8	64.2	17.4	Complied
0.231000	Live	40.3	62.4	22.1	Complied
0.249000	Live	40.7	61.8	21.1	Complied
0.492000	Live	38.1	56.1	18.0	Complied
0.640500	Live	33.2	56.0	22.8	Complied
0.645000	Live	32.6	56.0	23.4	Complied
4.978500	Neutral	30.0	56.0	26.0	Complied
12.597000	Live	33.8	60.0	26.2	Complied

Results: Average Detector Measurements

Frequency (MHz)	Line	Average Level (dBμV)	Limit (dBμV)	Margin (dB)	Result
0.177000	Neutral	33.8	54.6	20.8	Complied
0.487500	Live	25.8	46.2	20.4	Complied
4.956000	Neutral	22.6	46.0	23.4	Complied

Receiver AC Conducted Spurious Emissions (continued)



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

5.2.2.Receiver Radiated Spurious Emissions

Test Summary:

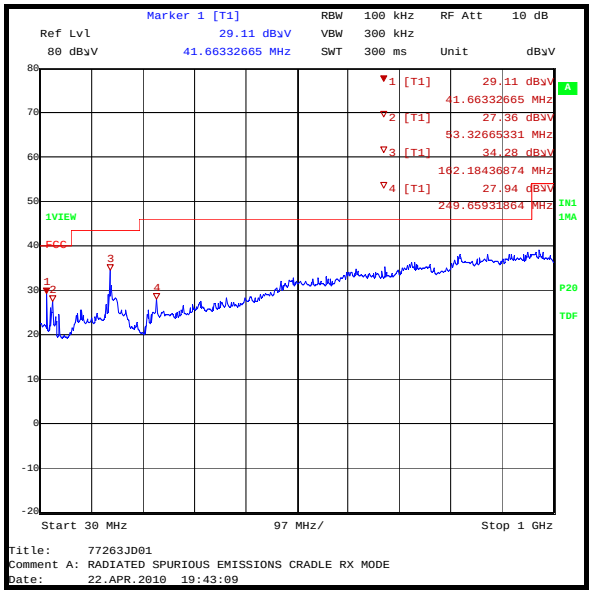
FCC Part:	15.109
Test Method Used:	As detailed in ANSI C63.4 Section 8 and relevant annexes
Frequency Range:	30 MHz to 1000 MHz

Environmental Conditions:

Temperature (°C):	26
Relative Humidity (%):	17

Results:

Frequency (MHz)	Antenna Polarity	Level (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Result
98.161	Horizontal	23.3	40.0	16.7	Complied
162.232	Vertical	28.3	43.5	15.2	Complied
177.992	Vertical	28.4	43.5	15.1	Complied
490.648	Vertical	26.7	46.0	19.3	Complied



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

Receiver Radiated Spurious Emissions (continued)

Test Summary:

FCC Part:	15.109
Test Method Used:	As detailed in ANSI C63.4 Section 8 and relevant annexes
Frequency Range:	1 GHz to 5 GHz

Environmental Conditions:

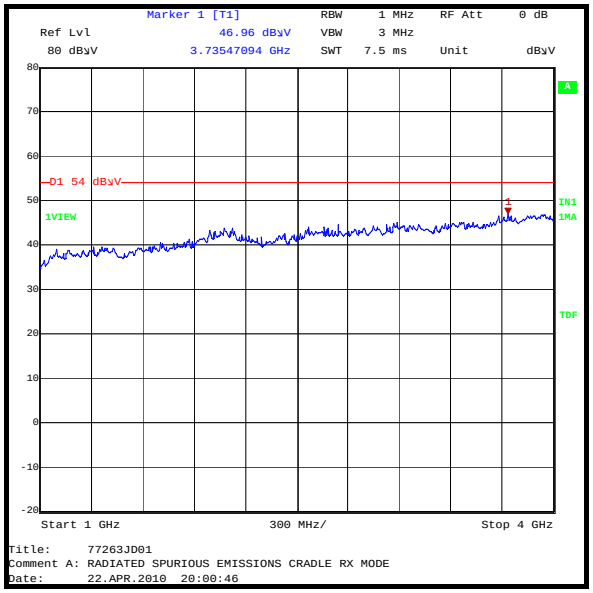
Temperature (°C):	26
Relative Humidity (%):	17

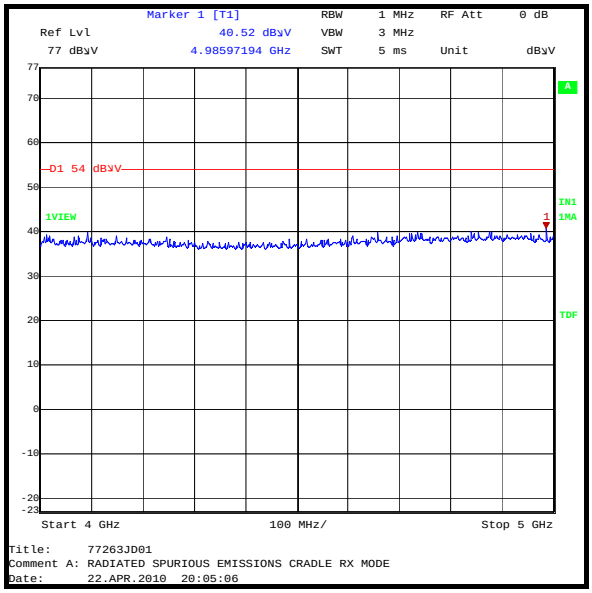
Results:

Frequency (MHz)	Antenna Polarity	Detector Level (dBµV/m)	Transducer Factor (dB)	Peak Level (dBµV/m)	Average Limit (dBµV/m)	Margin (dB)	Result
3735.471	Vertical	4.6	42.4	47.0	54.0	7.0	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.





5.2.3. Transmitter AC Conducted Spurious Emissions

Test Summary:

FCC Part:	15.207
Test Method Used:	As detailed in ANSI C63.4 Section 7 and relevant annexes

Environmental Conditions:

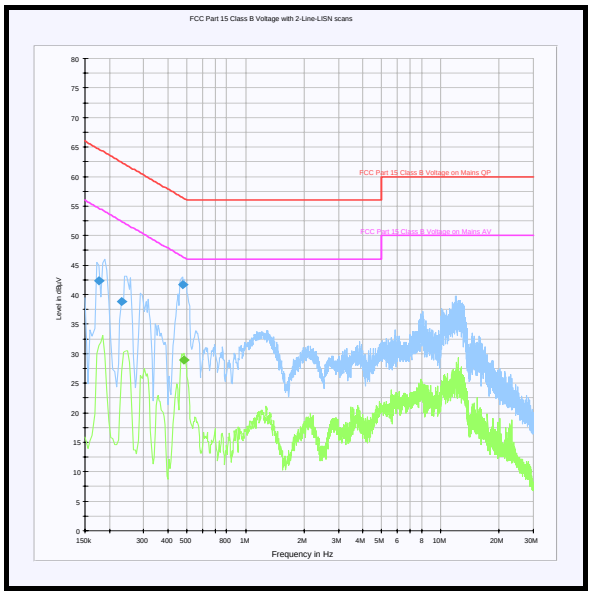
Temperature (°C):	24
Relative Humidity (%):	30

Results: Quasi Peak Detector Measurements

Frequency (MHz)	Line	Quasi Peak Level (dBµV)	Limit (dBµV)	Margin (dB)	Result
0.177000	Live	42.3	64.6	22.3	Complied
0.231000	Live	38.9	62.4	23.5	Complied
0.474000	Live	41.7	56.4	14.7	Complied

Results: Average Detector Measurements

Frequency (MHz)	Line	Average Level (dBµV)	Limit (dBµV)	Margin (dB)	Result
0.483000	Live	28.9	46.3	17.4	Complied



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

5.2.4. Transmitter Fundamental Field Strength

Test Summary:

FCC Part:	15.249(a)
Test Method Used:	As detailed in ANSI C63.4 Section 8 and relevant annexes

Environmental Conditions:

Temperature (°C):	26
Relative Humidity (%):	17

Results:

Frequency (MHz)	Antenna Polarity	Level (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Result
910	Vertical	88.2	94.0	5.8	Complied

5.2.5. Transmitter 20 dB Bandwidth

Test Summary:

FCC Part:	2.1049
Test Method Used:	As detailed in ANSI C63.4 Section 13.1.7 and relevant annexes (see note below)

Environmental Conditions:

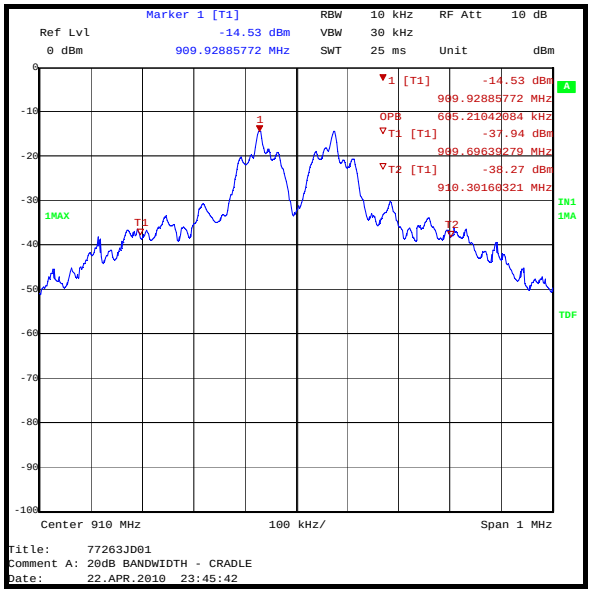
Temperature (°C):	23
Relative Humidity (%):	34

Results:

20 dB Bandwidth (MHz)
0.605

Note(s):

1. In lieu of the test method detailed in ANSI C63.4 Section 13.1.7 the 99% occupied bandwidth was measured using the Occupied Bandwidth function of the spectrum analyser



5.2.6. Transmitter Radiated Spurious Emissions

Test Summary:

FCC Part:	15.249(a)(d)(e) & 15.209
Test Method Used:	As detailed in ANSI C63.4 Section 8 and relevant annexes
Frequency Range:	30 MHz to 1000 MHz

Environmental Conditions:

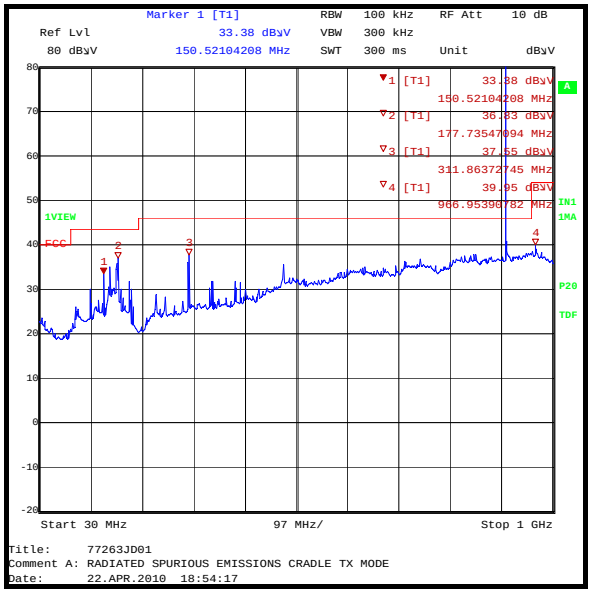
Temperature (°C):	26
Relative Humidity (%):	17

Results:

Frequency (MHz)	Antenna Polarity	Level (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Result
98.161	Horizontal	23.3	40.0	16.7	Complied
162.232	Vertical	28.3	43.5	15.2	Complied
177.992	Vertical	28.4	43.5	15.1	Complied
490.648	Vertical	26.7	46.0	19.3	Complied

Note(s):

1. The emission shown at approximately 910 MHz on the 30 MHz to 1 GHz plot is the carrier.
2. All other emissions was investigated and found to be ambient and still present with the EUT removed from the test chamber.



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

Transmitter Radiated Spurious Emissions (continued)

Test Summary:

FCC Part:	15.249(a)(d)(e) & 15.209
Test Method Used:	As detailed in ANSI C63.4 Section 8 and relevant annexes
Frequency Range:	1 GHz to 10 GHz

Environmental Conditions:

Temperature (°C):	23
Relative Humidity (%):	24

Results:

Highest Peak Level

Frequency (MHz)	Antenna Polarity	Detector Level (dBµV/m)	Transducer Factor (dB)	Actual Level (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Result
1819.779	Vertical	54.4	-2.2	52.2	74.0	23.8	Complied
2730.054	Vertical	48.8	1.3	50.1	74.0	23.9	Complied

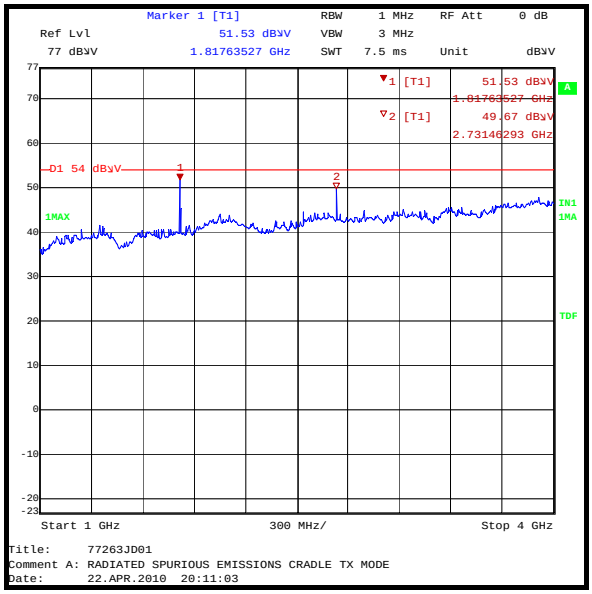
Highest Average Level

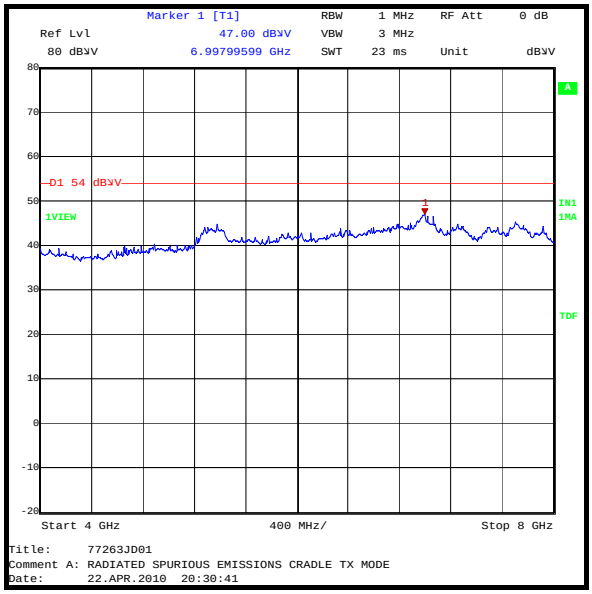
Frequency (MHz)	Antenna Polarity	Detector Level (dBµV/m)	Transducer Factor (dB)	Actual Level (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Result
1819.779	Vertical	52.5	-2.2	50.3	54.0	3.7	Complied
2730.054	Vertical	45.4	1.3	46.7	54.0	7.3	Complied

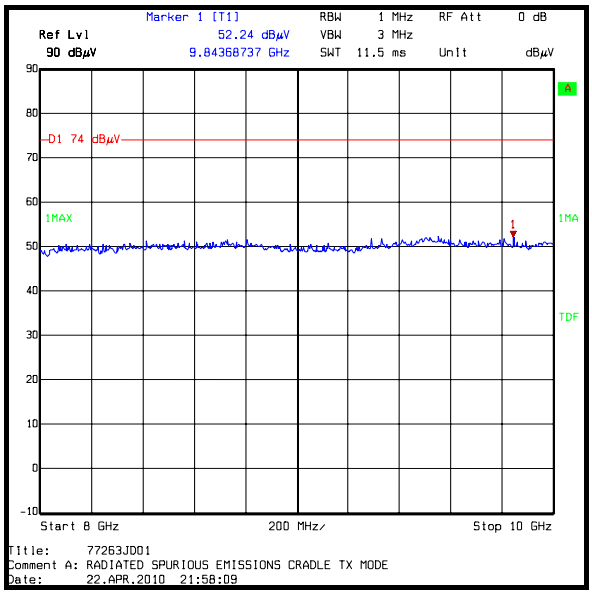
Note(s):

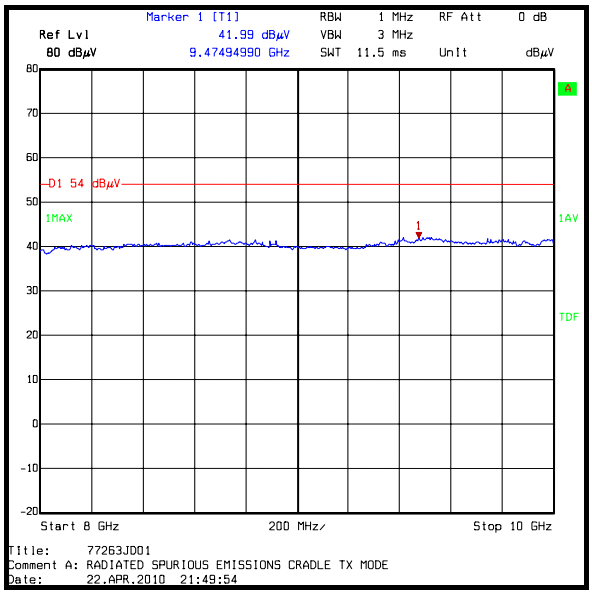
1. All pre-scans were performed with a peak detector against average limits apart from measurements made in the range of 8 to 10 GHz where pre-scans were performed with peak and average detectors and the applicable limit applied. This was due to the noise floor exceeding the average limit when using a peak detector.

Transmitter Radiated Spurious Emissions (continued)









Peak Detector **Average Detector**

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

5.2.7. Transmitter Radiated Emissions at Band Edges

Test Summary:

FCC Part:	15.249(d) & 15.209
Test Method Used:	As detailed in ANSI C63.4 Section 8 and relevant annexes

Environmental Conditions:

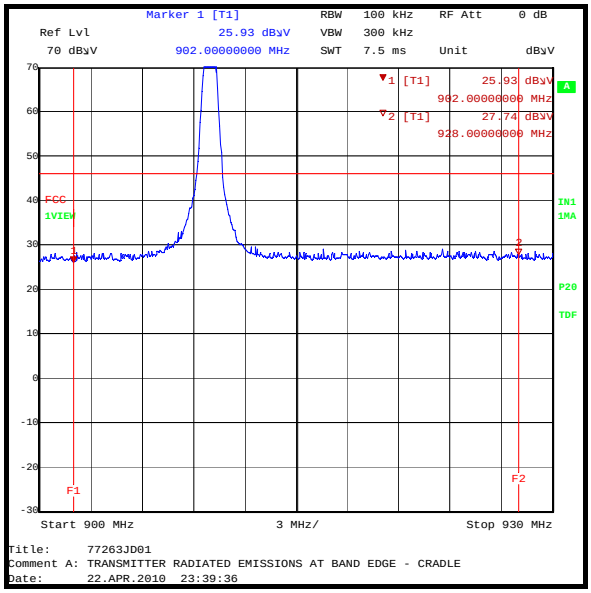
Temperature (°C):	23
Relative Humidity (%):	24

Results: Bottom Band Edge

Frequency (MHz)	Level (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Result
902	25.9	46.0	20.1	Complied

Results: Top Band Edge

Frequency (MHz)	Level (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Result
928	27.7	46.0	18.3	Complied



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
AC Conducted Spurious Emissions	0.15 MHz to 30 MHz	95%	±3.25 dB
20 dB Bandwidth	N/A	95%	±0.92 ppm
Radiated Spurious Emissions	30 MHz to 10 GHz	95%	±2.94 dB
Transmitter Fundamental Field Strength	30 MHz to 1000 MHz	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 Last Calibrated	Cal. Interval (Months)
A067	LISN	Rohde & Schwarz	ESH3-Z5	890603/002	03 Jun 2009	12
A1534	Pre Amplifier	Hewlett Packard	8449B OPT H02	3008A00405	Calibrated before use	-
A1818	Antenna	EMCO	3115	00075692	27 Nov 2009	12
A1830	Pulse Limiter	Rhode & Schwarz	ESH3-Z2	100668	01 Mar 2010	12
A288	Antenna	Chase	CBL6111A	1589	16 Mar 2010	12
K0002	3m RSE Chamber	Rainford EMC	N/A	N/A	01 Sep 2009	12
M1242	Spectrum Analyser	Rohde & Schwarz	FSEM30	845986/022	18 Mar 2010	12
M1273	Test Receiver	Rhode & Schwarz	ESIB 26	100275	08 Apr 2010	12
M1379	Test Receiver	Rhode & Schwarz	ESIB7	100330	20 Aug 2009	12

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