



TEST REPORT FROM RFI GLOBAL SERVICES LTD

Test of: Gryphon™ BC4030-BK-910

To: FCC Part 15.249: 2008 Subpart C, RSS-210 Issue 7 June 2007
& RSS-Gen Issue 2 June 2007

Test Report Serial No:
RFI/RPT1/RP74494JD01A

This Test Report Is Issued Under The Authority Of Brian Watson, Operations Director:	pp 
Checked By:	Robert Graham
Signature:	
Date of Issue:	28 August 2009

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1. Customer Information










Company Name:	Datalogic Scanning Group S.r.l.
Address:	Via San Vitalino 13 Lippo Di Calderara Reno, 40012 Bologna Italy

2. Summary of Testing

2.1. General Information

Specification Reference:	47CFR15.249
Specification Title:	Code of Federal Regulations Volume 47 (Telecommunications) 2008: Part 15 Subpart C (Radio Frequency Devices) - Section 15.249
Site Registration:	FCC: 209735
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:	Industry Canada: 3245B-2
Location of Testing:	RFI Global Services Ltd, Wade Road, Basingstoke, Hampshire, RG24 8AH.
Test Dates:	25 August 2009 and 26 August 2009

2.2. Summary of Test Results

FCC Reference (47CFR)	IC Reference	Measurement	Port Type	Result
FCC Part 15.107(a)	RSS-Gen 7.2.2	Receiver/Idle Mode AC Conducted Emissions	AC Mains	
Part 15.109	RSS-Gen 4.10/6	Receiver/Idle Mode Radiated Spurious Emissions	Antenna	
FCC Part 15.207(a)	RSS-Gen 7.2.2	Transmitter Mode AC Conducted Emissions	AC Mains	
Part 15.249(a)	RSS-Gen 4.8 RSS-210 A2.9	Transmitter Fundamental Field Strength	Antenna	
Part 2.1049	RSS-Gen 4.6.1	Transmitter 20 dB Bandwidth	Antenna	
Part 15.249(a)(d)(e) & 15.209	RSS-Gen 4.9 RSS-210 A2.9	Transmitter Radiated Spurious Emissions	Antenna	
Part 15.249(d) & 15.209	RSS-Gen 4.9 RSS-210 A2.9	Transmitter Band Edge Radiated Emissions	Antenna	
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)

Description:	Mobile Barcode Imager Base Unit
Brand Name:	Datalogic Scanning Inc.
Model Name or Number:	Gryphon™
Type:	BC4030-BK-910
Serial Number:	E09P00009
IMEI Number:	Not applicable
FCC ID Number:	U4F0019
IC ID Number:	3862D-004

3.2. Accessories

The following accessories were supplied with the EUT:

Description:	AC/DC Power Supply
Brand Name:	CUI INC
Model Number:	HK-CP13-A05
Serial Number:	None stated
Cable Length and Type:	2m 2 core and 2.5m 2 core
Connected to Port:	DC connector to AC supply

3.3. Description of EUT

The equipment under test was a mobile barcode base unit, with 910 MHz transceiver.

3.4. Modifications Incorporated in the EUT

No modifications were applied to the EUT during testing.

3.5. Additional Information Related to Testing

Tested Technology:	910 MHz transceiver	
Channel Spacing:	Single Channel	
Transmit Frequency:	910 MHz	
Receive Frequency:	910 MHz	
Power Supply Requirement:	Nominal	120 V AC / 5.0 V DC

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):

- 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/Idle Mode AC Conducted Spurious Emissions****Test Summary:**

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

Environmental Conditions:

Temperature Range (°C):	28
Relative Humidity Range (%):	35

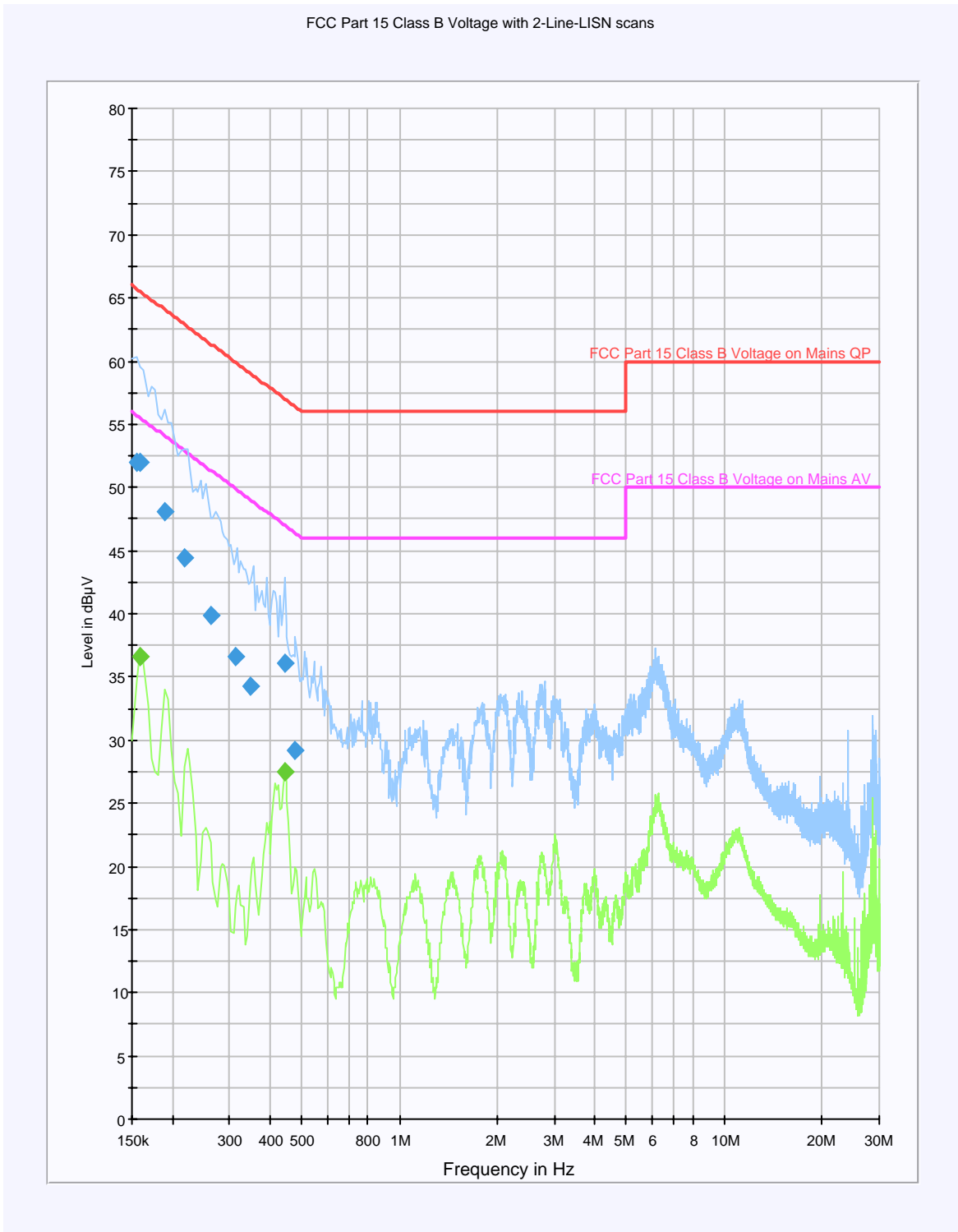
Results: Quasi Peak Detector Measurements

Frequency (MHz)	Line	Quasi Peak Level (dB μ V)	Limit (dB μ V)	Margin (dB)	Result
0.154500	Neutral	52.0	65.8	13.8	Complied
0.159000	Neutral	52.0	65.5	13.5	Complied
0.190500	Neutral	48.0	64.0	16.0	Complied
0.217500	Neutral	44.4	62.9	18.5	Complied
0.262500	Neutral	39.9	61.4	21.5	Complied
0.312000	Neutral	36.6	59.9	23.3	Complied
0.348000	Neutral	34.3	59.0	24.7	Complied
0.442500	Live L1	36.1	57.0	20.9	Complied
0.474000	Live L1	29.2	56.4	27.2	Complied

Results: Average Detector Measurements

Frequency (MHz)	Line	Average Level (dB μ V)	Limit (dB μ V)	Margin (dB)	Result
0.159000	Neutral	36.6	55.5	18.9	Complied
0.442500	Neutral	27.5	47.0	19.5	Complied

Receiver/Idle Mode AC Conducted Spurious Emissions (continued)



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

5.2.2. Receiver/Idle 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 1 GHz

Environmental Conditions:

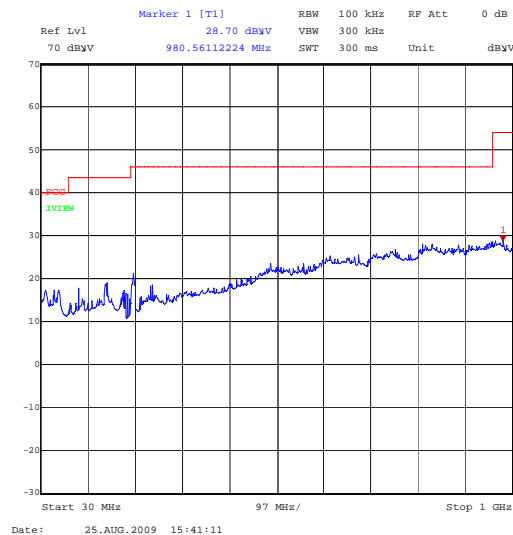
Temperature Range (°C):	27
Relative Humidity Range (%):	31

Results:

Frequency (MHz)	Antenna Polarity	Q-P Level (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Result
980.561122	Vertical	28.7	46.0	17.3	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.



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

Receiver/Idle 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 Range (°C):	28
Relative Humidity Range (%):	35

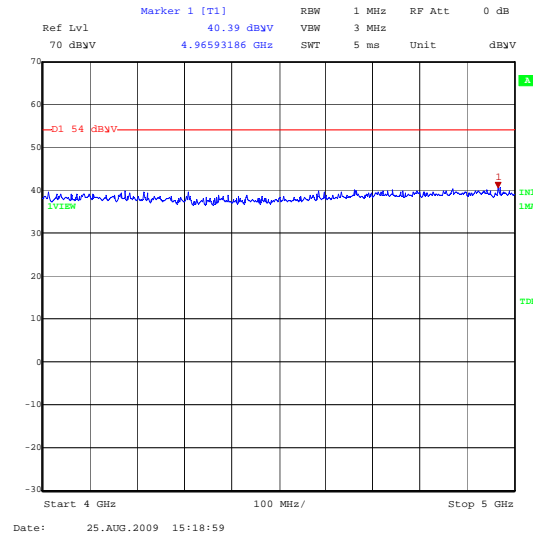
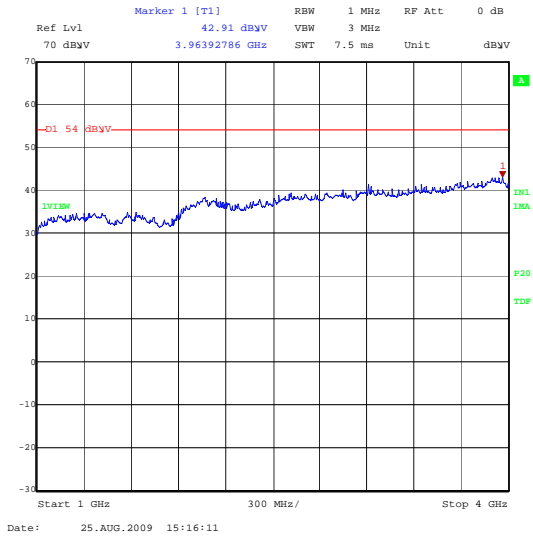
Results: Highest Peak Level:

Frequency (MHz)	Antenna Polarity	Detector Level (dBμV)	Antenna Factor (dB)	Actual Level (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Result
3963.928	Vertical	37.7	5.2	42.9	54.0	11.1	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.

Receiver/Idle Radiated Spurious Emissions (continued)



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

5.2.3. Transmitter AC Conducted Spurious Emissions**Test Summary:**

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

Environmental Conditions:

Temperature Range (°C):	28
Relative Humidity Range (%):	35

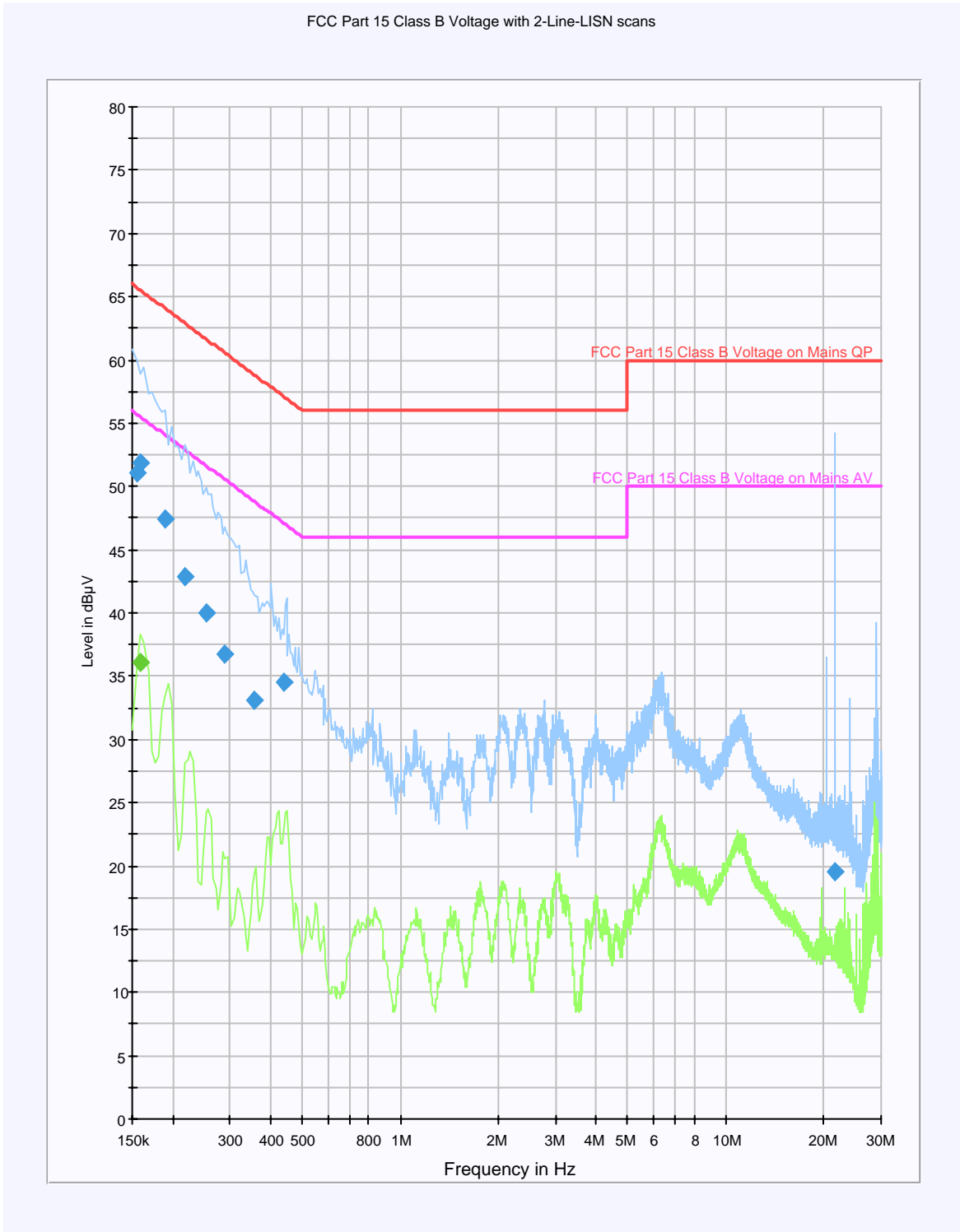
Results: Quasi Peak Detector Measurements

Frequency (MHz)	Line	Quasi Peak Level (dB μ V)	Limit (dB μ V)	Margin (dB)	Result
0.154500	Neutral	51.1	65.8	14.8	Complied
0.159000	Neutral	51.8	65.5	13.7	Complied
0.190500	Neutral	47.5	64.0	16.5	Complied
0.217500	Live 1	42.9	62.9	20.0	Complied
0.253500	Live 1	40.0	61.6	21.6	Complied
0.289500	Neutral	36.8	60.5	23.7	Complied
0.357000	Neutral	33.1	58.8	25.7	Complied
0.438000	Live 1	34.5	57.1	22.6	Complied
21.664500	Live 1	19.5	60.0	40.5	Complied

Results: Average Detector Measurements

Frequency (MHz)	Line	Average Level (dB μ V)	Limit (dB μ V)	Margin (dB)	Result
0.159000	Neutral	36.1	55.5	19.4	Complied

Transmitter AC Conducted Spurious Emissions (continued)



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

5.2.4. Transmitter Fundamental Field Strength**Test Summary:**

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

Environmental Conditions:

Temperature Range (°C):	27
Relative Humidity Range (%):	31

Results:

Frequency (MHz)	Antenna Polarity	Q-P Level (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Result
910	Horizontal	83.9	94.0	10.1	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):	27
Relative Humidity (%):	31

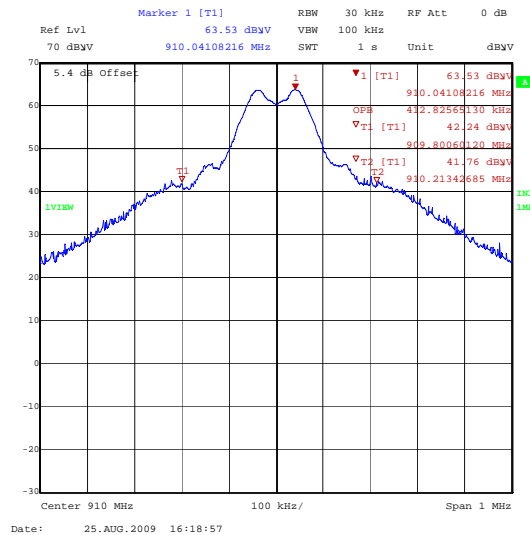
Results:

Transmitter 20 dB Bandwidth (MHz)	Limit (MHz)	Margin (MHz)	Result
0.413	26.0	25.587	Complied

Designated Frequency Band	
Band (MHz)	Bandwidth (MHz)
902-928	26.0

Note(s):

- 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:

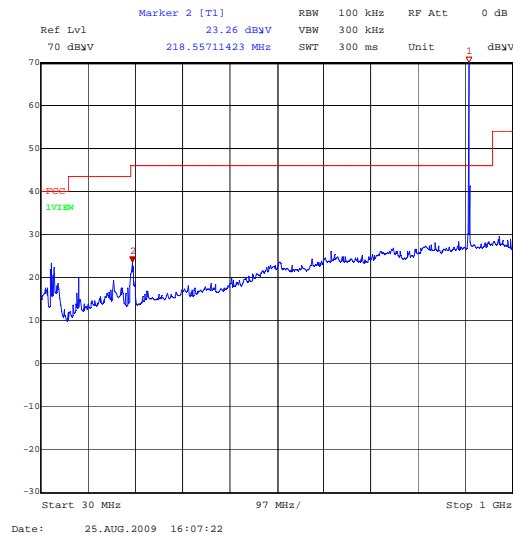
Temperature (°C):	27
Relative Humidity (%):	31

Results:

Frequency (MHz)	Antenna Polarity	Level (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Result
218.557114	Vertical	23.3	46.0	22.7	Complied

Note(s):

1. The emission shown at approximately 910 MHz on the 30 MHz to 1 GHz plot is the carrier.
2. All emissions were investigated and found to be at least 20 dB below the specified limit; therefore, the highest peak noise floor reading of the measuring receiver was recorded as shown in the table above.



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

5.2.7. 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:	1 GHz to 10 GHz

Environmental Conditions:

Temperature (°C):	27
Relative Humidity (%):	31

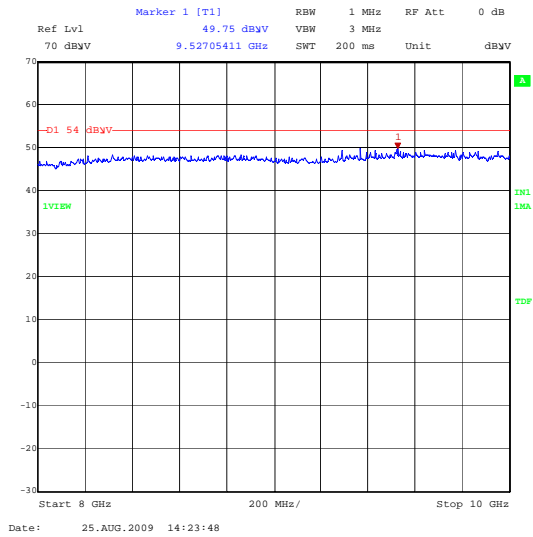
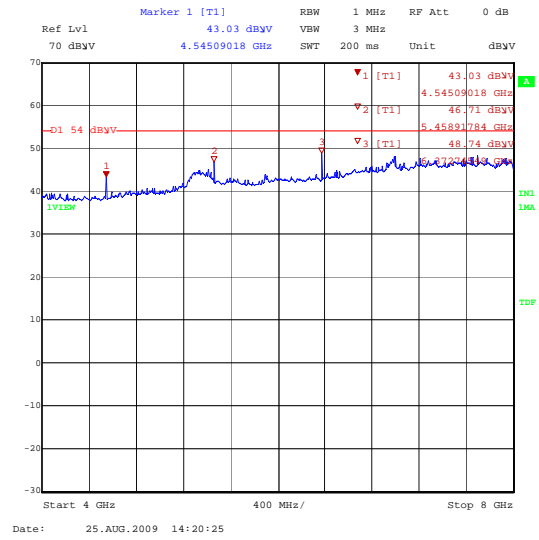
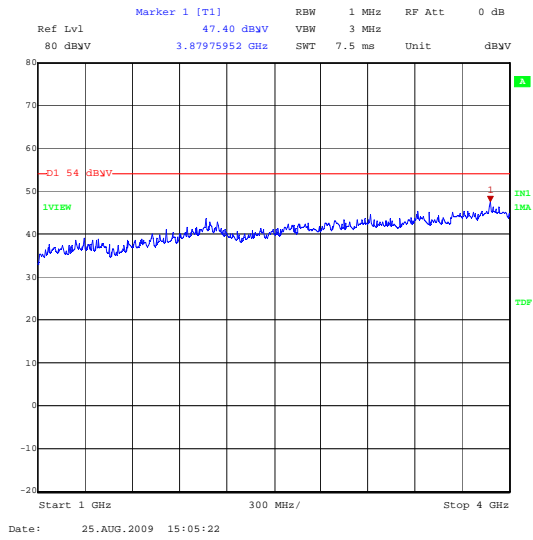
Results: Highest Peak Level

Frequency (GHz)	Antenna Polarity	Detector Level (dB μ V)	Transducer Factor (dB)	Actual Level (dB μ V/m)	Limit (dB μ V/m)	Margin (dB)	Result
4550.018790	Vertical	47.5	-3.0	44.5	74.0	29.5	Complied
5460.015780	Vertical	47.5	1.5	49.0	74.0	25.0	Complied
6370.005860	Vertical	49.0	1.8	50.8	74.0	23.2	Complied

Results: Highest Average Level

Frequency (GHz)	Antenna Polarity	Detector Level (dB μ V)	Transducer Factor (dB)	Actual Level (dB μ V/m)	Limit (dB μ V/m)	Margin (dB)	Result
4550.018790	Vertical	41.2	-3.0	38.2	54.0	15.8	Complied
5460.015780	Vertical	42.0	1.5	43.5	54.0	10.5	Complied
6370.005860	Vertical	44.8	1.8	46.6	54.0	7.4	Complied

Transmitter Radiated Spurious Emissions (continued)



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

5.2.8. 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:

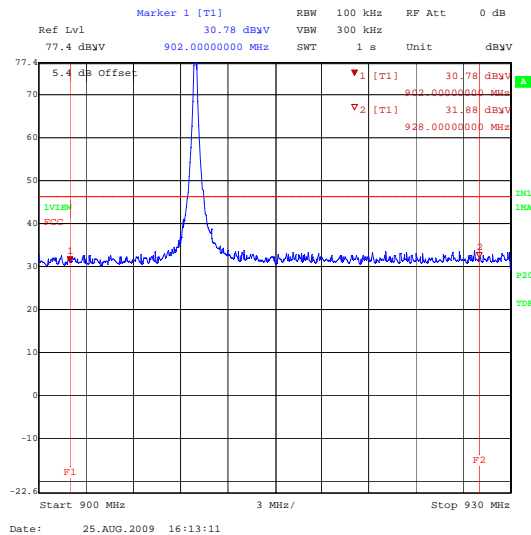
Temperature (°C):	27
Relative Humidity (%):	31

Results: Bottom Band Edge

Frequency (MHz)	Level (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Result
902	30.8	46.0	15.2	Complied

Results: Top Band Edge

Frequency (MHz)	Level (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Result
928	31.9	46.0	14.1	Complied



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

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	9 kHz to 30 MHz	95%	±3.53 dB
Radiated Spurious Emissions	30 MHz to 1000 MHz	95%	±2.94 dB
Transmitter Fundamental Field Strength	30 MHz to 1000 MHz	95%	±4.64 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)
A1534	Pre Amplifier	Hewlett Packard	8449B OPT H02	3008A00405	Calibrated before use	-
A1818	Antenna	EMCO	3115	00075692	25 Oct 2008	12
A1830	Pulse Limiter	Rohde & Schwarz	ESH3-Z2	100668	05 Jan 2009	12
A1975	High Pass Filter	AtlanTecRF	AFH-03000	090424010	Calibrated before use	-
A288	Antenna	Chase	CBL6111A	1589	13 Mar 2009	12
A649	Single Phase LISN	Rohde & Schwarz	ESH3-Z5	825562/008	19 Mar 2009	12
K0002	Site Reference 4421	Rainford EMC	N/A	N/A	26 Aug 2008	12
K0008	Site Reference 4422	Rainford EMC	N/A	N/A	26 Aug 2008	12
M1124	Spectrum Analyser	Rohde & Schwarz	ESIB26	100046K	09 Mar 2009	12
M1263	Test Receiver	Rohde & Schwarz	ESIB7	100265	22 April 2009	12

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