TEST REPORT
FROM
RFI GLOBAL SERVICES LTD

Test of: Panasonic Mobile Comms Dev of Europe Ltd
NTT docomo P-02A

To: FCC Part 15.225: 2008 (Subpart C)

Test Report Serial No:
RFI/RPT2/RP74300JD03A

Supersedes Test Report Serial No:
RFI/RPT1/RP74300JD03A

This Test Report Is Issued Under The Authority Of Steve Flooks, Service Leader: 	
Checked By: Steve Flooks 	**Report Copy No: PDF01**
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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

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1. Customer Information

Company Name:	Panasonic Mobile Comms Dev of Europe Ltd
Address:	Panasonic House Willoughby Road Bracknell Berkshire RG12 8FP

2. Equipment Under Test (EUT)

2.1. Identification of Equipment Under Test (EUT)

Brand Name:	NTT docomo
Model Name or Number:	P-02A
IMEI Number:	353713020007606
Hardware Version Num:	Rev C++
Software Version:	B-WN907D-01.02.002 08-2H_CPF_Cv061350C
FCC ID Number:	UCE208012A

Description:	128 MB Micro-SD Memory Card
Brand Name:	Not marked
Model Name or Number:	128MB MicroSD
Cable Length & Type:	N/A
Connected to Port:	Dedicated micro-SD card port

Description:	NTT
Brand Name:	Battery
Model Name or Number:	P19
Cable Length & Type:	N/A
Connected to Port:	N/A

Description:	AC charger
Brand Name:	NTT docomo
Model Name or Number:	FOMA AC Adapter 01 for Global use / MAS-BH0008-A 002
Cable Length & Type:	2.0m multicore
Connected to Port:	Charge/Data port

Description:	DC Charger
Brand Name:	NTT docomo
Model Name or Number:	FOMA DC Adapter 02
Cable Length & Type:	Spiral cord / 2.5 metre / Multicore
Connected to Port:	Audio/Charge/Data port

Description:	Personal Hands-Free
Brand Name:	NTT docomo
Model Name or Number:	Stereo Earphone Set 01
Cable Length & Type:	1.2 metre / multicore
Connected to Port:	Audio/Charge/Data port

Description:	Charge/USB Data cable
Brand Name:	NTT docomo
Model Name or Number:	FOMA USB Cable with Charge Function 02
Cable Length & Type:	0.3 metre / multicore
Connected to Port:	Audio/Charge/Data port

2.2. Description of EUT

The equipment under test was a Dual mode Cellular Mobile Telephone with PCS, UMTS FDD V and UMTS Release 5 HSDPA capabilities, incorporating Bluetooth and RFID. The Cellular Mobile Telephone operates on PCS/GPRS1900 MHz Band, UMTS/UMTS Release 5 HSDPA 850 MHz Band, Bluetooth 2400 MHz Band and RFID 13.5 MHz Band.

2.3. Modifications Incorporated in the EUT

During the course of testing the EUT was not modified.

2.4. Support Equipment

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

Description:	Dummy battery
Model Name or Number:	Panasonic
Serial Number:	Dummy battery #01
Cable Length and Type:	0.25 metre / 2 x single core
Connected to Port:	Battery

Description:	Laptop PC
Model Name or Number:	SONY Vaio PCG-VX7/BD
Serial Number:	Serial number has been partially erased and cannot be read
Cable Length and Type:	N/A
Connected to Port:	USB

2.5. Additional Information Related to Testing

Tested Technology:	RFID		
Channel Spacing:	Single channel device		
Transmit Frequency:	13.56 MHz		
Receive Frequency:	13.56 MHz		
Power Supply Requirement:	Nominal Voltage	3.7	(V)
	Minimum Voltage	3.4	(V)
	Maximum Voltage	4.2	(V)
Tested Temperature Range (°C**):**	Tmin	-20	
	Tmax	+55	

3. Test Specification, Methods and Procedures

3.1. Test Specifications

Reference:	FCC Part 15.225: 2008 Subpart C
Title:	Code of Federal Regulations, Part 15 (47CFR225)

Reference:	FCC Part 15.107 & FCC Part 15.109: 2008 Subpart B
Title:	Code of Federal Regulations (47CFR15) (Unintentional Radiators)

3.2. Methods and Procedures

The methods and procedures used were as detailed in:

ANSI C63.2 (1987)
Title: American National Standard for Instrumentation - Electromagnetic noise and field strength.

ANSI C63.4 (2001)
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.

ANSI C63.5 (1988)
Title: American National Standard for the Calibration of antennas used for Radiated Emission measurements in Electromagnetic Interference (EMI) control.

ANSI C63.7 (1988)
Title: American National Standard Guide for Construction of Open Area Test Sites for performing Radiated Emission Measurements.

CISPR 16-1: (1999)
Title: Specification For Radio Disturbance and Immunity Measuring Apparatus and Methods. Part 1: Radio Disturbance and Immunity Measuring Apparatus.

3.3. Definition of Measurement Equipment

The measurement equipment used complied with the requirements of the standards referenced in the Methods & Procedures section above. Appendix 1 contains a list of the test equipment used.

4. Deviations from the Test Specification

There were no deviations from the test specification.

5. Operation of the EUT During Testing

5.1. Operating Modes

The EUT was tested in the following RFID operating modes, unless otherwise stated:

- Receiver/Idle mode
- Constantly transmitting at full power with a modulated carrier

5.2. Configuration and Peripherals

The EUT was tested in the following configuration:

- The RFID transmitter was enabled using a bespoke application on a laptop PC supplied by the customer.
- A USIM was fitted to the EUT for all receiver tests. The USIM was removed for transmitter tests in order to place the EUT into test mode in accordance with the Client's instructions.
- The Micro SD card was installed during all tests.
- Receiver/idle radiated spurious emissions tests were performed with the mains charger connected to the EUT and 120VAC supply as this was found to be the worst case during pre-scans. All accessories were individually connected and measurements made during pre-scans to determine the worst case combination.
- As the EUT is not capable of transmitting while charging, no AC Mains Conducted Emissions (150 kHz to 30 MHz) test was performed in transmit mode.

6. Summary of Test Results

Range of Measurements	Specification Reference	Port Type	Result
Receiver/Idle Mode AC Conducted Emissions (150 kHz to 30 MHz)	C.F.R. 47 FCC Part 15: Section 15.107(a)	AC Mains	Complied
Receiver/Idle Mode Radiated Spurious Emissions	C.F.R. 47 FCC Part 15: Section 15.109 (a), 15.225(d)	Enclosure	Complied
Transmitter Fundamental Field Strength	C.F.R. 47 FCC Part 15: Section 15.225(a)(b)(c)(d)	Antenna	Complied
Transmitter Radiated Spurious Emissions	C.F.R. 47 FCC Part 15: Section 15.209(a), 15.225(d)	Enclosure	Complied
Transmitter Band Edge Radiated Emissions	C.F.R. 47 FCC Part 15: Section 15.209(a) 15.225(c)(d)	Antenna	Complied
Transmitter 20 dB Bandwidth	C.F.R. 47 FCC Part 2: Section 2.1049	Antenna	Complied
Transmitter Frequency Stability (Temperature & Voltage Variation)	C.F.R. 47 FCC Part 15: Section 15.225(e)	Antenna	Complied

6.1. Location of Tests

All the measurements described in this report were performed at the premises of RFI Global Services Ltd, Wade Road, Basingstoke, Hampshire, RG24 8AH.

6.2. Site Registration Numbers

FCC: 209735

7. Measurements, Examinations and Derived Results

7.1. General Comments

7.1.1. This section contains test results only.

7.1.2. 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 8 for details of measurement uncertainties.

7.2. Test Results

7.2.1. Receiver/Idle Mode AC Mains Conducted Emissions: Section 15.107(a)

Ambient Temperature: 22ºC Relative Humidity: 38%

Results:

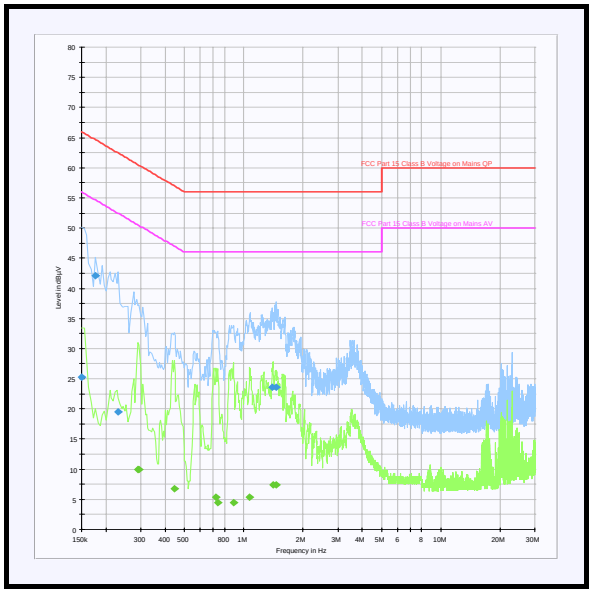
Quasi-Peak Detector Measurements on Live and Neutral Lines

Frequency (MHz)	Line	Level (dBμV)	Limit (dBμV)	Margin (dB)	Result
0.150000	Live	25.3	66.0	40.7	Complied
0.177000	Live	42.1	64.6	22.5	Complied
0.231000	Live	19.5	62.4	42.9	Complied
1.392000	Neutral	23.6	56.0	32.4	Complied
1.464000	Neutral	23.6	56.0	32.4	Complied

Average Detector Measurements on Live and Neutral Lines

Frequency (MHz)	Line	Level (dBμV)	Limit (dBμV)	Margin (dB)	Result
0.289500	Neutral	10.0	50.5	40.5	Complied
0.294000	Live	10.0	50.4	40.4	Complied
0.442500	Neutral	6.7	47.0	40.3	Complied
0.721500	Neutral	5.3	46.0	40.7	Complied
0.739500	Neutral	4.5	46.0	41.5	Complied
0.883500	Neutral	4.5	46.0	41.5	Complied
1.072500	Live	5.3	46.0	40.7	Complied
1.410000	Neutral	7.4	46.0	38.6	Complied
1.450500	Neutral	7.4	46.0	38.6	Complied

Receiver/Idle Mode AC Mains Conducted Emissions (Continued)



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

7.2.2. Receiver/Idle Mode Radiated Spurious Emissions: Section 15.109(a), 15.225(d)

Ambient Temperature: 28ºC to 24ºC Relative Humidity: 23% to 31%

7.2.3. Electric Field Strength Measurements (Frequency Range: 9 kHz to 1000 MHz)

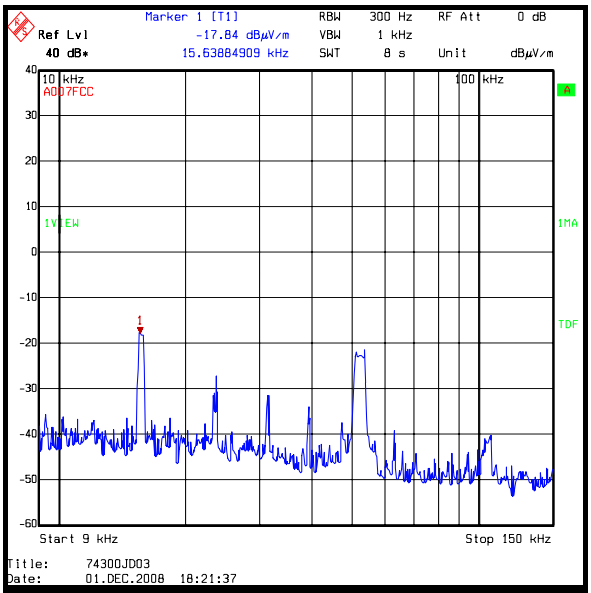
Results:

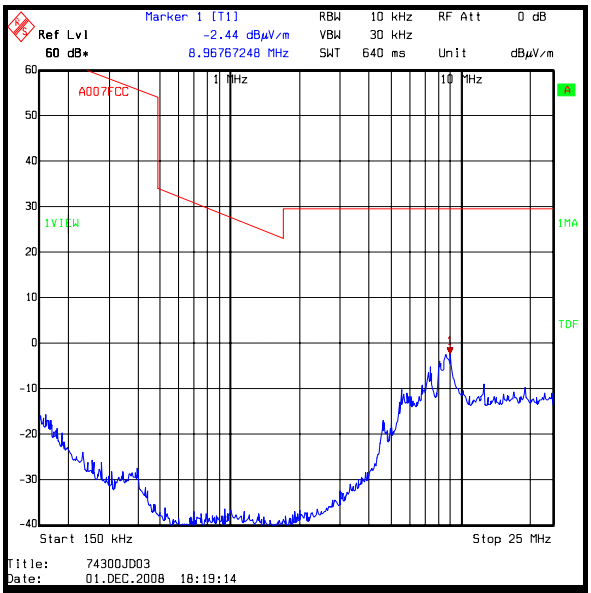
Frequency (MHz)	Antenna Polarity	Q-P Level (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Result
947.515	Horizontal	32.1	46.0	13.9	Complied

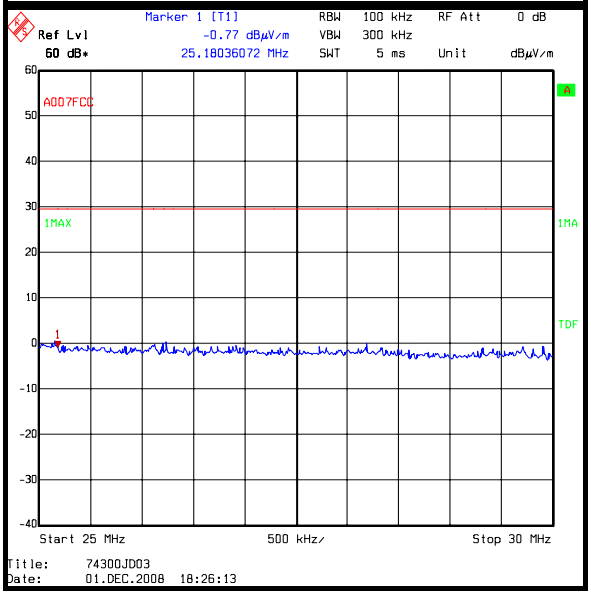
Note(s):

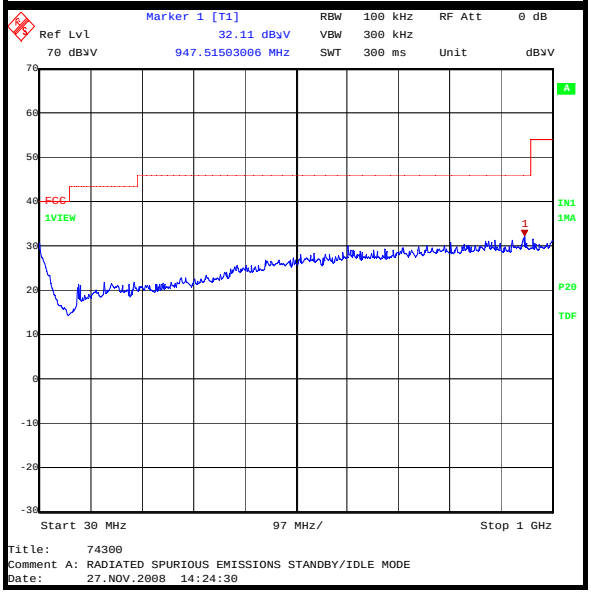
1. A transducer factor on the measuring instrument was used to extrapolate the results at 3 metres to a distance of 30 metres where required.
2. All emissions shown on the plots were investigated and found to be ambient. The highest level of the noise floor was recorded.

Receiver/Idle Mode Radiated Spurious Emissions (Continued)









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

7.2.4. Transmitter Fundamental Field Strength: Section 15.225 (a)(b)(c)(d)

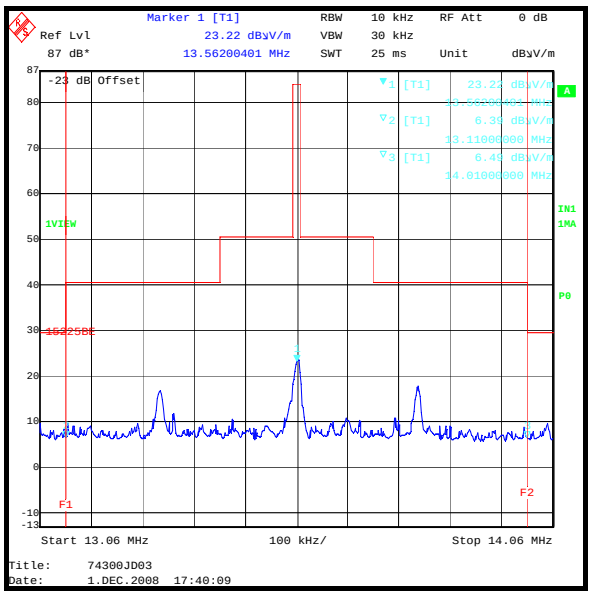
Ambient Temperature: 29ºC Relative Humidity: 24%

Results:

The limit is specified at a test distance of 30 metres. However, as specified by FCC Section 15.31 (f)(2), measurements may be performed at a closer distance and the measured level corrected to the specified measurement distance by making the measurements at a minimum of two distances on at least one radial to determine the proper extrapolation factor. An offset of -23 dB was set on the measurement equipment to compensate for a previously measured extrapolation factor between 30 metres and 3 metres.

Battery Powered Devices

Frequency (MHz)	Antenna Polarity	Q-P Level (dBµV/m)	Limit at 30 metres (dBµV/m)	Margin (dB)	Result
13.56	90˚ to EUT	23.2	84.0	60.8	Complied



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

7.2.5. Transmitter Radiated Spurious Emissions: Section 15.209 (a), 15.225(d)

Ambient Temperature: 29ºC to 21 ºC Relative Humidity: 24%

7.2.6. Electric Field Strength Measurements (Frequency Range: 9 kHz to 1000 MHz)

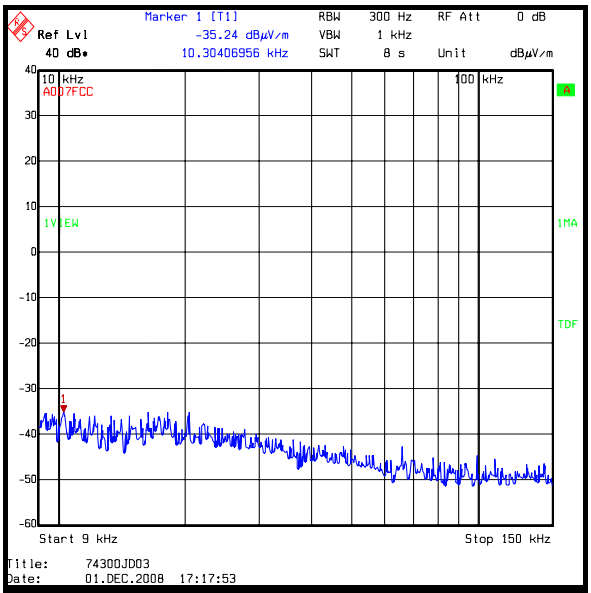
Results:

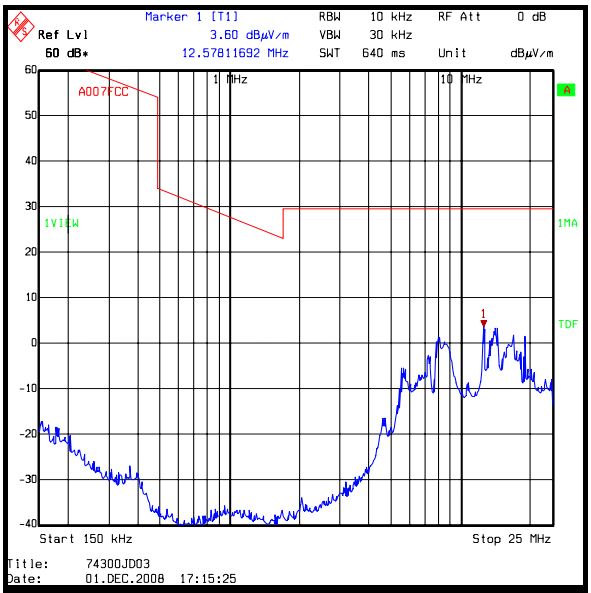
Frequency (MHz)	Antenna Polarity	Level (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Result
1000.0	Horizontal	32.0	54.0	22.0	Complied

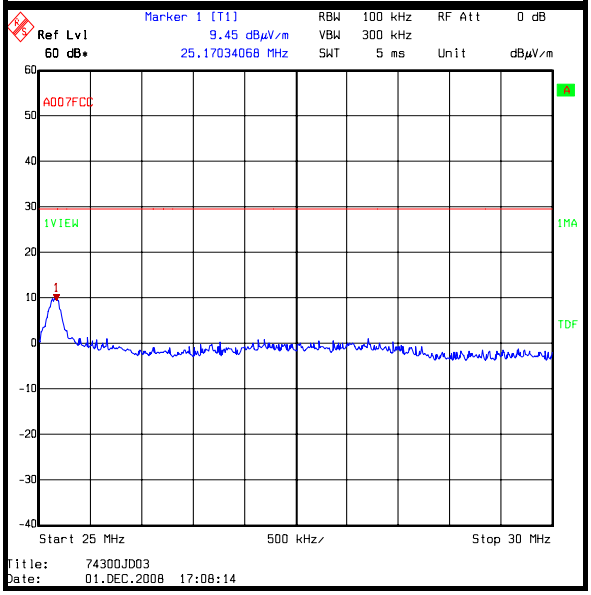
Note(s):

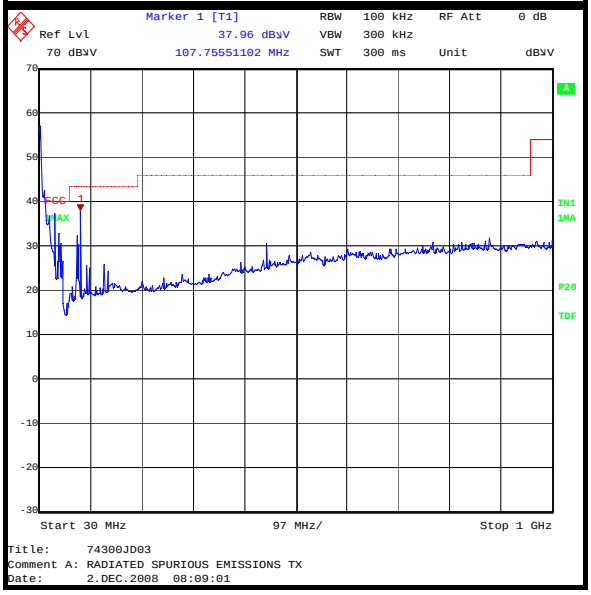
1. A transducer factor on the measuring instrument was used to extrapolate the results at 3 metres to a distance of 30 metres where required.
2. All emissions shown on the plots were investigated and found to be ambient. The highest level of the noise floor was recorded.

Transmitter Radiated Spurious Emissions: Section 15.209 (a), 15.225(d) (Continued)









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

7.2.7. Transmitter Radiated Emissions at Band Edges: Section 15.209(a) 15.225(c)(d)

Ambient Temperature: 28ºC Relative Humidity: 24%

Results:

Lower Band Edge

Frequency (MHz)	Q-P Level (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Result
13.11	6.4	40.5	34.1	Complied

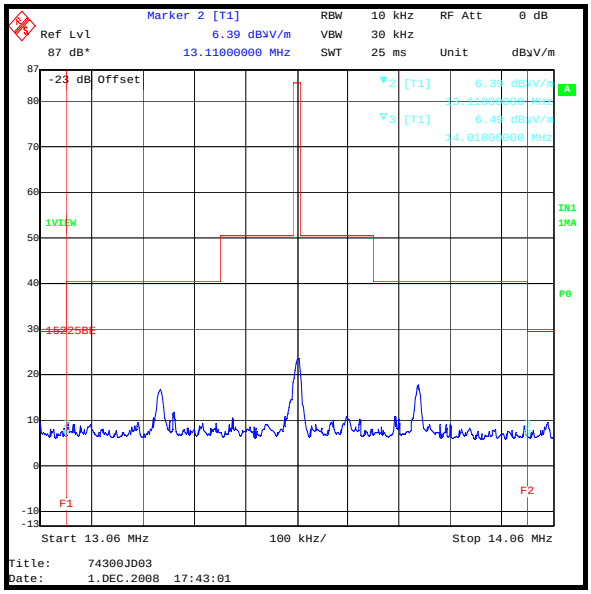
Upper Band Edge

Frequency (MHz)	Q-P Level (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Result
14.01	6.5	40.5	34.0	Complied

Note(s):

1. Measurements were performed at 3 metres and results extrapolated to 30 metres.
2. A transducer factor on the measuring instrument was used to extrapolate the results at 3 metres to a distance of 30 metres where required.

Transmitter Radiated Emissions at Band Edges: Section 15.209(a) 15.225(c)(d) (Continued)

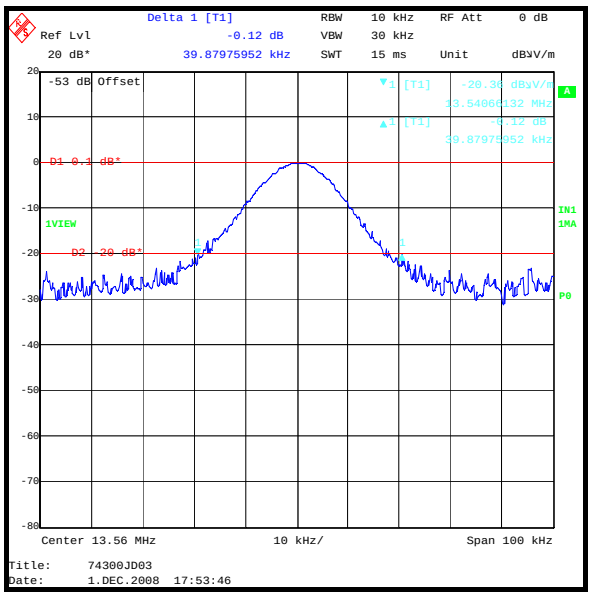


Note: This plot is a pre-scan and for indication purposes only. For final measurements, see accompanying tables.

7.2.8.Transmitter 20 dB Bandwidth: Section 2.1049

Ambient Temperature: 27ºC Relative Humidity: 23%

Transmitter 20 dB Bandwidth (Hz)
39.88



7.2.9. Transmitter Frequency Stability (Temperature & Voltage Variation): Section 15.225 (e)

Ambient Temperature: 21ºC Relative Humidity: 39%

Maximum frequency error of the EUT with variations in ambient temperature

Temp (°C)	Nominal Frequency	Measured Frequency	Frequency Error (Hz)	Frequency Error (%)	Limit (%)	Margin (%)	Result
-20	13.56	13.559924	76	0.000560	0.01	0.009440	Complied
20	13.56	13.559970	30	0.000221	0.01	0.009779	Complied
50	13.56	13.559894	106	0.000782	0.01	0.009218	Complied

Maximum frequency error of the EUT with variations in nominal operating voltage at an ambient temperature of 20°C

Supply Voltage (V)	Nominal Frequency	Measured Frequency	Frequency Error (Hz)	Frequency Error (%)	Limit (%)	Margin (%)	Result
3.4	13.56	13.559915	85	0.000627	0.01	0.009373	Complied
3.7	13.56	13.559970	30	0.000221	0.01	0.009779	Complied
4.2	13.56	13.559915	85	0.000627	0.01	0.009373	Complied

8. 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
Occupied Bandwidth	N/A	95%	±0.12 %
Frequency Stability	N/A	95%	±11.37 ppm
Radiated Spurious Emissions	9 kHz to 30 MHz	95%	±3.53 dB
Radiated Spurious Emissions	30 MHz to 1000 MHz	95%	±5.26 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)
A004	Line Impedance Stabilization Network	Rohde & Schwarz	ESH3-Z5	890604/027	19 May 2008	12
A007	Antenna	Rohde & Schwarz	HFH2-Z2	880 458/020	28 Feb 2008	12
A1299	Antenna	Schaffner	CBL6143	5094	28 Jul 2008	12
A1792	Pre Amplifier	A.H.Systems Inc	PAM-0118	182	28 Nov 2008	12
A1830	Pulse Limiter	Rhode & Schwarz	ESH3-Z2	100668	16 Jan 2008	12
C1002	Cable	Rosenberger	FA210A1010M50509	001	Calibrated before use	-
C1158	Cable	Rosenberger	FA210A1010005G5G	3305 42447-1	20 Apr 2008	12
C1164	Cable	Rosenberger Micro-Coax	FA210A1015007070	43188-1	20 Apr 2008	12
C1190	Cable	Rosenburg	FA210A1015M3030	27141-05	Calibrated before use	-
C1196	Coax cable	Utiflex	FA147A1015M2020	3502 27138-11	Calibrated before use	-
C1298	10m Cable	Rosenberger	FA210A0100005050	58941-02	Calibrated before use	-
C1302	3m Cable	Rosenberger	FA210A1030005050	59153-01	04 Aug 2008	12
C1303	8m Cable	Rosenberger	FA210A1080005050	59155-01	01 Aug 2008	12
C1306	15m Cable	Rosenberger	FA210A0015005050	59152-01	01 Aug 2008	12
C363	Cable	Rosenberger	RG142	None	20 Apr 2008	12
C508	Cable	Suhner	RG213	N/A	20 Apr 2008	12
E013	Environmental Chamber	Sanyo	ATMOS chamber	None	Calibration not required	-
K0001	Site Reference 4420	Rainford EMC	N/A	N/A	13 Aug 2008	12
K0002	Site Reference 4421	Rainford EMC	N/A	N/A	26 Aug 2008	12
K0004	Site Reference 4428	RFI Global Services Ltd	N/A	N/A	Calibration not required	-
M1068	Thermometer	Iso-Tech	RS55	93102884	09 Jul 2008	12
M1124	Spectrum Analyser	Rohde & Schwarz	ESIB26	100046K	19 Feb 2008	12

RFI No.	Instrument	Manufacturer	Type No.	Serial No.	Date Last Calibrated	Cal. Interval (Months)
M1229	Digital Multimeter	Fluke	179	87640015	09 May 2008	12
M1253	Spectrum Analyser	HP	8564E	3442A00262	21 Oct 2008	12
M127	Spectrum Analyser	Rohde & Schwarz	FSEB 30	842 659/016	21 Aug 2008	12
M1273	Test Receiver	Rhode & Schwarz	ESIB 26	100275	26 Feb 2008	12
S0520	DC Power Supply Unit	GW instek	GPC-3030	E835141	Calibrated before use	-

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