TEST REPORT
FROM
RFI GLOBAL SERVICES LTD

Test of: NTT docomo P04-A

To: FCC Part 24: 2008 (Subpart E)

Test Report Serial No:
RFI/RPT1/RP74358JD05A

This Test Report Is Issued Under The Authority Of Brian Watson, Operations Director:  **pp**	
Checked By: 	**Report Copy No: PDF01**
Issue Date: 09 January 2009	**Test Dates: 28 November to 16 December 2008**

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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-04A
IMEI Number:	353705020030067
Hardware Version Num:	Rev D
Software Version:	B-WN707F-03.01.006 08-2H_CPF_Cv031351E_deflate
FCC ID Number:	UCE208013A

Description:	128 MB Micro-SD Memory Card
Brand Name:	Not marked
Model Name or Number:	128MB MicroSD
Connected to Port:	Dedicated micro-SD card port

Description:	AC charger
Brand Name:	NTT docomo
Model Name or Number:	FOMA AC Adapter 01 for Global use / MAS-BH0008-A 002
Connected to Port:	Audio/Charge/Data port

Description:	DC charger
Brand Name:	NTT docomo
Model Name or Number:	FOMA DC Adapter 02
Connected to Port:	Audio/Charge/Data port

Description:	Personal Hands-Free
Brand Name:	NTT docomo
Model Name or Number:	Stereo Earphone Set 01
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
Connected to Port:	Audio/Charge/Data port

2.2. Description of EUT

The equipment under test was a dual mode GSM/GPRS cellular handset with RFID

2.3. Modifications Incorporated in EUT

During the course of testing the EUT was not modified.

2.4. Additional Information Related to Testing

Power Supply Requirement:	V-Nom	3.7V	V-Min	3.4V	V-Max	4.2V
Tested Temperature Range:	T-Min	-30°C		T-Max	+50°C	
Channel Spacing:	200 kHz					
Modulation Type:	GMSK					
Data Rate:	64 kbps					
Transmit Frequency Range:	1850 to 1910 MHz					
Transmit Channels Tested:	**Channel ID**		**Channel Number**		**Channel Frequency (MHz)**	
	Bottom		512		1850.2	
	Middle		660		1879.8	
	Top		810		1909.8	
Receive Frequency Range:	1850 to 1910 MHz					
Receive Channels Tested:	**Channel ID**		**Channel Number**		**Channel Frequency (MHz)**	
	Bottom		512		1850.2	
	Middle		660		1879.8	
	Top		810		1909.8	

2.5. 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 P-04A No.4
Cable Length and Type:	0.25 metre / 2 x single core
Connected to Port:	Battery

3. Test Specification, Methods and Procedures

3.1. Test Specification

Reference:	FCC Part 24 Subpart E: 2008 (Broadband PCS)
Title:	Code of Federal Regulations, Part 24 (47CFR24) Personal Communication Services.

3.2. Methods and Procedures

The methods and procedures used were as detailed in:

ANSI/TIA-603-B-2003
Land Mobile Communications Equipment, Measurements and performance Standards

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

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.

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 operating modes, unless otherwise stated:

- Transmitting at full power with a modulated carrier on GSM or GPRS as required
- Idle mode

5.2. Configuration and Peripherals

The EUT was tested in the following configuration unless otherwise stated:

- Transmitter radiated spurious emissions tests pre-scans were performed with and without the accessories. The highest emission levels were recorded with the 120VAC charger fitted to the accessory connector and the final measurements were performed in this configuration.
- 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
- The Micro SD card was present in the EUT during all tests.

6. Summary of Test Results

Devices with an External Antenna Connector

Range of Measurements	Specification Reference	Port Type	Result
Idle Mode AC Conducted Spurious Emissions (150 kHz to 30 MHz)	C.F.R. 47 FCC Part 15 Section 15.107	AC Mains Input	Complied
Idle Mode Radiated Spurious Emissions	C.F.R. 47 FCC Part 15 Section 15.109	Enclosure	Complied
Transmitter Effective Isotropic Radiated Power (EIRP)	C.F.R. 47 FCC Part 24 Section 24.232	Antenna	Complied
Transmitter Frequency Stability (Temperature Variation)	C.F.R. 47 FCC Part 24 Section 24.235	Antenna	Complied
Transmitter Frequency Stability (Voltage Variation)	C.F.R. 47 FCC Part 24 Section 24.235	Antenna	Complied
Transmitter Occupied Bandwidth	C.F.R. 47 FCC Part 24 Section 24.238	Antenna	Complied
Transmitter Out of Band Radiated Emissions	C.F.R. 47 FCC Part 24 Section 2.1053/24.238	Antenna	Complied
Transmitter Band Edge Radiated Emissions	C.F.R. 47 FCC Part 2 Section 2.1053/24.238	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

This section contains test results only.

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. Idle Mode AC Conducted Spurious Emissions: Section 15.107

Ambient Temperature: 22ºC Relative Humidity: 37%

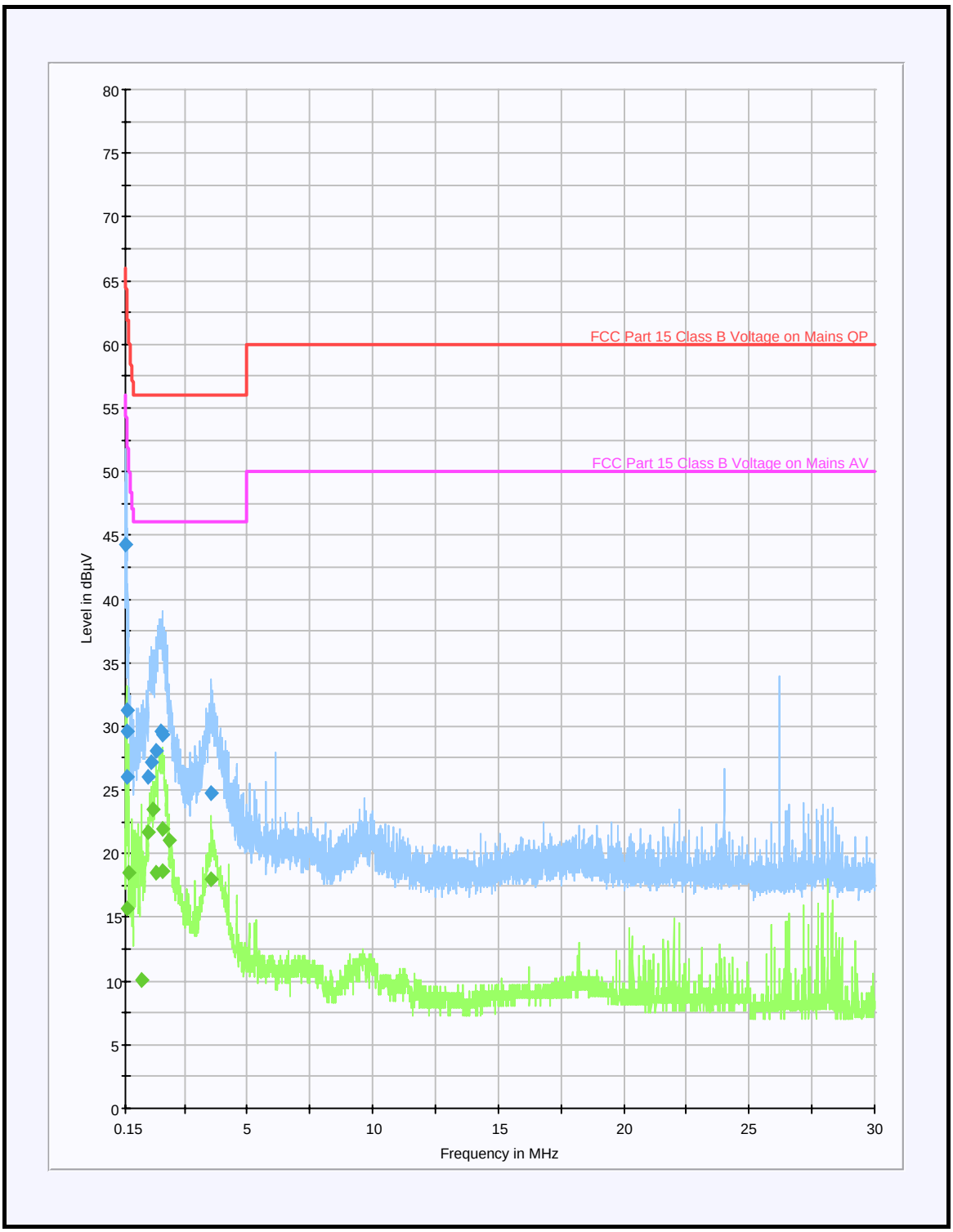
Quasi-Peak Detector Measurements on Live and Neutral Lines

Frequency (MHz)	Line	Level (dBμV)	Limit (dBμV)	Margin (dB)	Result
0.150000	Neutral	44.3	66.0	21.7	Complied
0.186000	Neutral	29.5	64.2	34.7	Complied
0.208500	Neutral	26.0	63.3	37.3	Complied
0.244500	Neutral	31.2	61.9	30.7	Complied
1.081500	Live	26.0	56.0	30.0	Complied
1.167000	Live	27.2	56.0	28.8	Complied
1.369500	Live	28.1	56.0	27.9	Complied
1.554000	Live	29.7	56.0	26.3	Complied
1.648500	Live	29.3	56.0	26.7	Complied
3.574500	Neutral	24.8	56.0	31.2	Complied

Average Detector Measurements on Live and Neutral Lines

Frequency (MHz)	Line	Level (dBμV)	Limit (dBμV)	Margin (dB)	Result
0.186000	Neutral	15.7	54.2	38.5	Complied
0.271500	Neutral	18.5	51.1	32.6	Complied
0.811500	Live	10.0	46.0	36.0	Complied
1.081500	Live	21.7	46.0	24.3	Complied
1.216500	Live	23.5	46.0	22.5	Complied
1.351500	Neutral	18.4	46.0	27.6	Complied
1.599000	Live	18.7	46.0	27.3	Complied
1.648500	Neutral	22.0	46.0	24.0	Complied
1.860000	Live	21.0	46.0	25.0	Complied
3.579000	Neutral	18.0	46.0	28.0	Complied

Receiver AC Conducted Spurious Emissions: Section 15.107 (Continued)



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

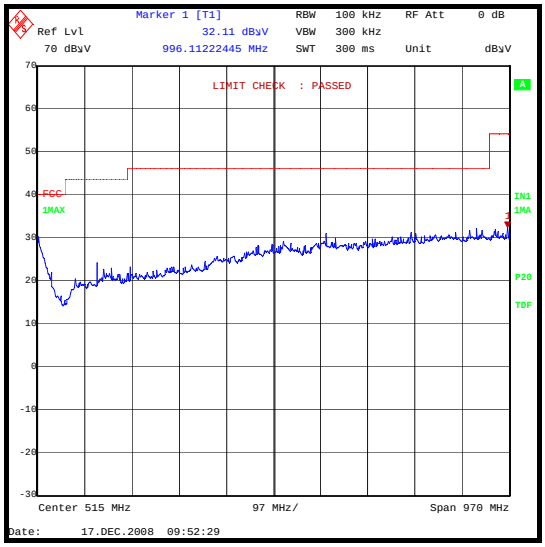
7.2.2. Idle Mode Radiated Spurious Emissions: Section 15.109

Ambient Temperature: 23ºC Relative Humidity: 35%

Electric Field Strength Measurements (Frequency Range: 30 to 1000 MHz)

Frequency (MHz)	Antenna Polarity	Quasi Peak Level (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Result
996.112	Vertical	32.1	54.0	21.9	Complied

Idle Mode Radiated Spurious Emissions: Section 15.109 (Continued)



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

7.2.3. Idle Mode Radiated Spurious Emissions: Section 15.109

Ambient Temperature: 23ºC Relative Humidity: 35%

Electric Field Strength Measurements (Frequency Range: 1 to 12.75 GHz)

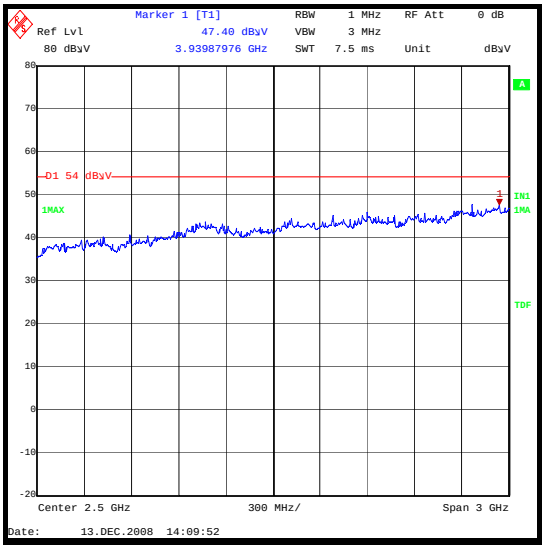
Peak Level:

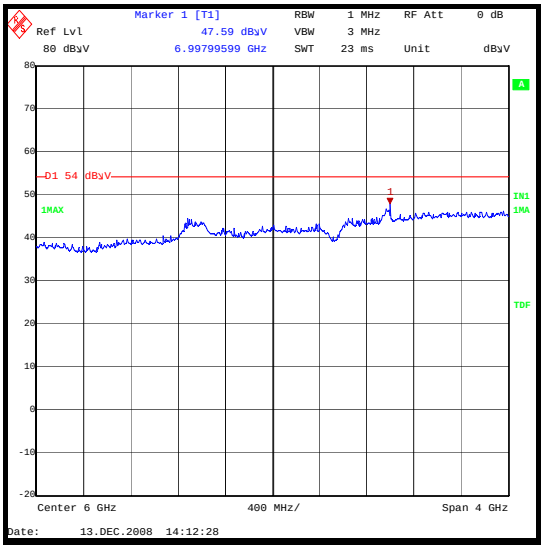
Frequency (GHz)	Antenna Polarity	Detector Level (dBμV)	Transducer Factor (dB)	Actual Level (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Result
6.9979	Vertical	29.9	17.7	47.6	74.0	26.4	Complied

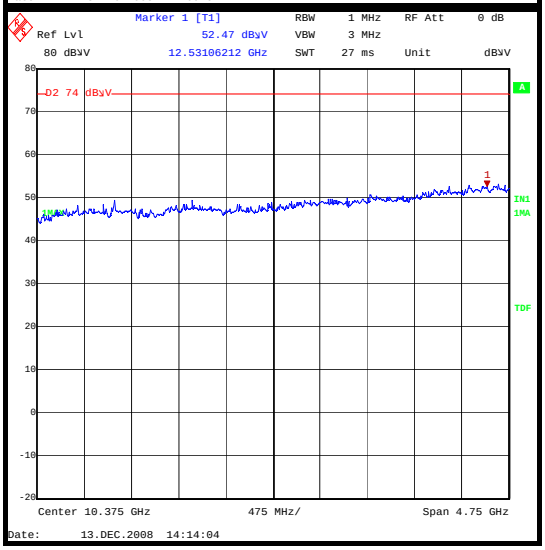
Average Level:

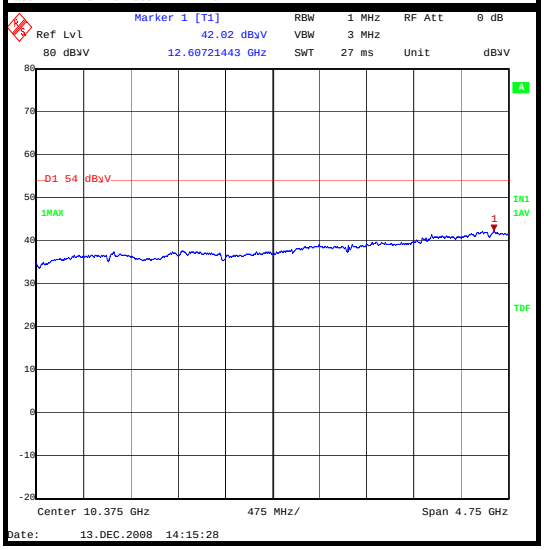
Frequency (GHz)	Antenna Polarity	Detector Level (dBμV)	Transducer Factor (dB)	Actual Level (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Result
6.9979	Vertical	29.9	17.7	47.6	54.0	6.4	Complied

Idle Mode Radiated Spurious Emissions: Section 15.109 (Continued)









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

7.2.4. Transmitter Equivalent Isotropic Radiated Power (EIRP): Section 24.232

Ambient Temperature: 25ºC Relative Humidity: 35%

GSM Results:

Channel	Measured Frequency (MHz)	Antenna Polarity	Maximum EIRP (dBm)	Limit EIRP (dBm)	Margin (dB)	Result
Bottom	1850.2	Horizontal	32.8	33.0	0.2	Complied
Middle	1879.8	Horizontal	31.7	33.0	1.3	Complied
Top	1909.8	Horizontal	32.8	33.0	0.2	Complied

GPRS Results:

Channel	Measured Frequency (MHz)	Antenna Polarity	Maximum EIRP (dBm)	Limit EIRP (dBm)	Margin (dB)	Result
Bottom	1850.2	Horizontal	31.8	33.0	1.2	Complied
Middle	1879.8	Horizontal	30.3	33.0	2.7	Complied
Top	1909.8	Horizontal	30.8	33.0	1.2	Complied

7.2.5. Transmitter Frequency Stability (Temperature Variation): Section 24.235

Ambient Temperature: 22ºC Relative Humidity: 35%

Bottom Channel (1850.2 MHz)

Temperature (ºC)	Frequency Error (Hz)	Measured Frequency (MHz)	Lower Band Edge Limit (MHz)	Margin (MHz)	Result
-30	-	-	-	-	Complied (Note 1)
-20	-53	1850.199947	1850.0	0.199947	Complied
-10	-68	1850.199932	1850.0	0.199932	Complied
0	-58	1850.199942	1850.0	0.199942	Complied
10	-68	1850.199932	1850.0	0.199932	Complied
20	-82	1850.199918	1850.0	0.199918	Complied
30	-147	1850.199853	1850.0	0.199853	Complied
40	-150	1850.199850	1850.0	0.199850	Complied
50	-161	1850.199839	1850.0	0.199839	Complied

Note(s):

1. The EUT would not operate in transmit mode at this temperature. It was confirmed that the EUT stayed within limits prior to shutting down.

Transmitter Frequency Stability (Temperature Variation): Section 24.235 (Continued)

Top Channel (1909.8 MHz)

Temperature (ºC)	Frequency Error (Hz)	Measured Frequency (MHz)	Upper Band Edge Limit (MHz)	Margin (MHz)	Result
-30	-	-	-	-	Complied (Note 1)
-20	-53	1909.799947	1910.0	0.200053	Complied
-10	-46	1909.799954	1910.0	0.200046	Complied
0	-58	1909.799942	1910.0	0.200058	Complied
10	-39	1909.799961	1910.0	0.200039	Complied
20	-46	1909.799954	1910.0	0.200046	Complied
30	-68	1909.799932	1910.0	0.200068	Complied
40	-63	1909.799937	1910.0	0.200063	Complied
50	-67	1909.799933	1910.0	0.200067	Complied

Note(s):

1. The EUT would not operate in transmit mode at this temperature. It was confirmed that the EUT stayed within limits prior to shutting down.

7.2.6. Transmitter Frequency Stability (Voltage Variation): Section 24.235

Ambient Temperature: 22ºC Relative Humidity: 35%

Bottom Channel (1850.2 MHz)

Supply Voltage (V)	Frequency Error (Hz)	Measured Frequency (MHz)	Lower Band Edge Limit (MHz)	Margin (MHz)	Result
3.7	-93	1850.199907	1850	0.199907	Complied
4.2	-77	1850.199923	1850	0.199923	Complied

Top Channel (1909.8 MHz)

Supply Voltage (V)	Frequency Error (Hz)	Measured Frequency (MHz)	Lower Band Edge Limit (MHz)	Margin (MHz)	Result
3.7	-37	1909.799963	1910	0.200037	Complied
4.2	-49	1909.799951	1910	0.200049	Complied

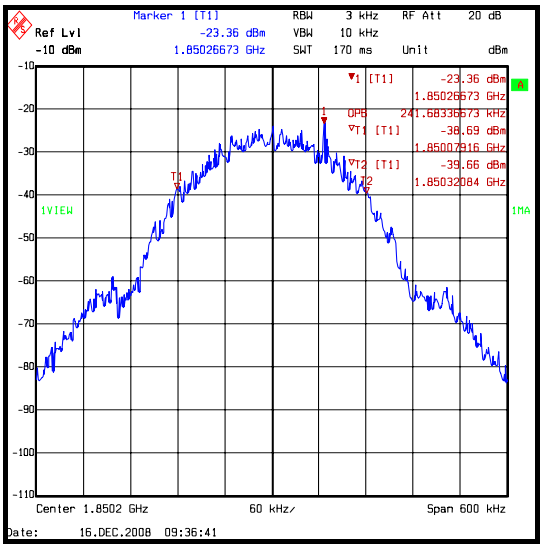
7.2.7. Transmitter Occupied Bandwidth: Section 24.238

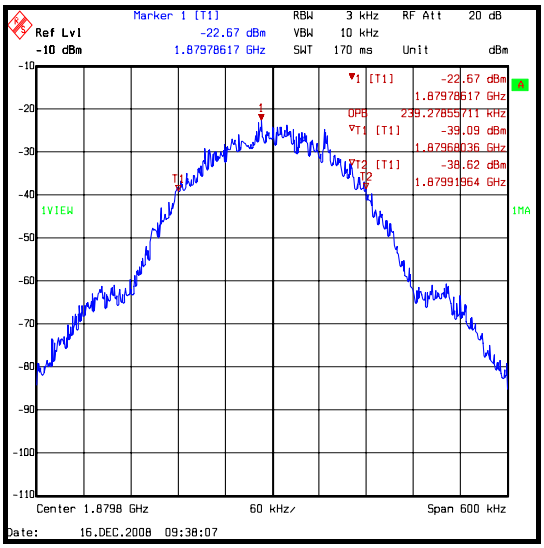
Ambient Temperature: 22ºC Relative Humidity: 35%

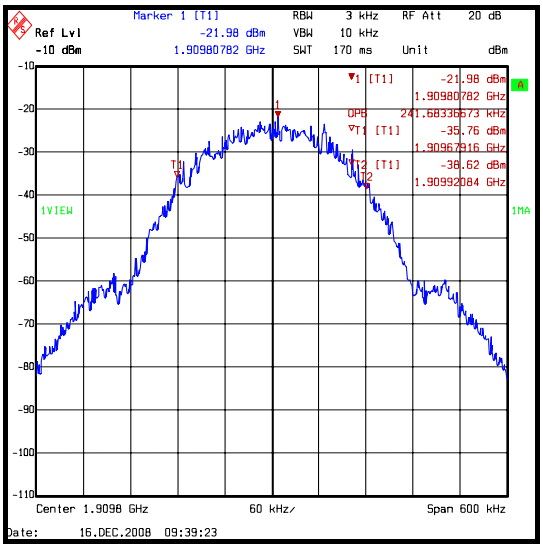
The 99% occupied bandwidth was measured using the channel bandwidth function of the R&S spectrum analyser referencing FCC CFR Part 2

Results: GSM

Channel	Frequency (MHz)	Resolution Bandwidth (kHz)	Video Bandwidth (kHz)	Occupied Bandwidth (kHz)
Bottom	1850.2	3.0	10.0	241.683
Middle	1879.8	3.0	10.0	239.279
Top	1909.8	3.0	10.0	241.683





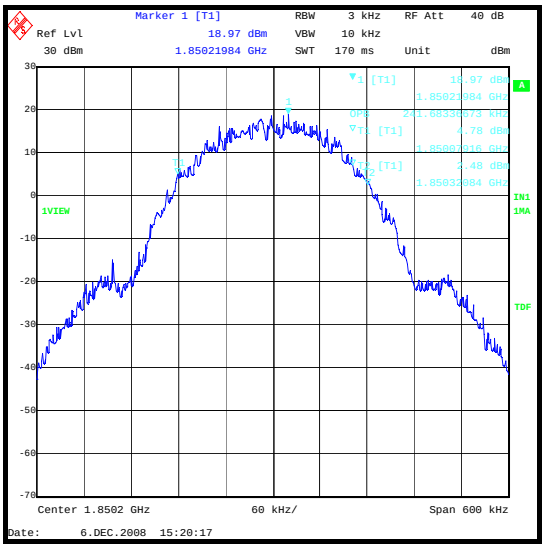


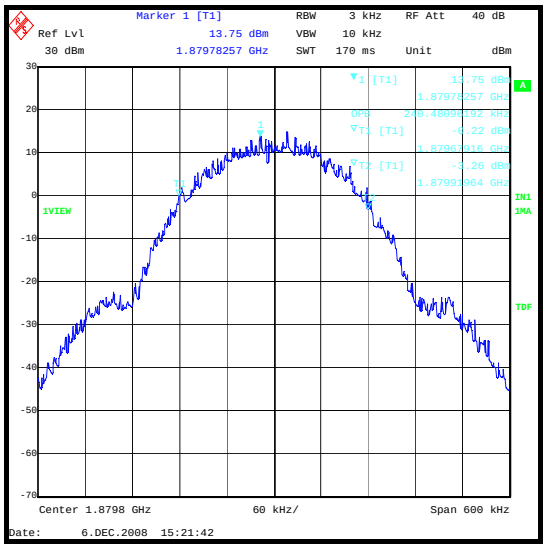
Transmitter Occupied Bandwidth: Section 24.238 (Continued)

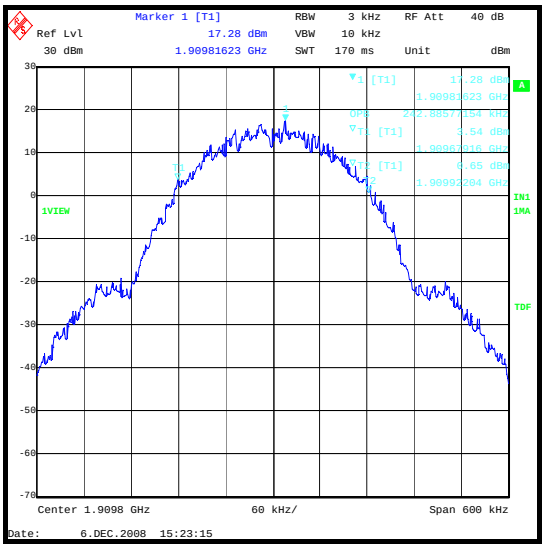
The 99% occupied bandwidth was measured using the channel bandwidth function of the R&S spectrum analyser referencing FCC CFR Part 2

Results: GPRS

Channel	Frequency (MHz)	Resolution Bandwidth (kHz)	Video Bandwidth (kHz)	Occupied Bandwidth (kHz)
Bottom	1850.2	3.0	10.0	241.683
Middle	1879.8	3.0	10.0	240.481
Top	1909.8	3.0	10.0	242.886







7.2.8. Transmitter Out of Band Radiated Emissions: Section 2.1051 & 24.238

Ambient Temperature: 24ºC Relative Humidity: 39%

Bottom Channel

Frequency (MHz)	Peak Emission Level (dBm)	Limit (dBm)	Margin (dB)	Result
7400.645	-30.2	-13.0	17.2	Complied
9250.532	-24.1	-13.0	11.1	Complied

Middle Channel

Frequency (MHz)	Peak Emission Level (dBm)	Limit (dBm)	Margin (dB)	Result
7519.395	-28.3	-13.0	15.3	Complied
9399.154	-22.4	-13.0	9.4	Complied

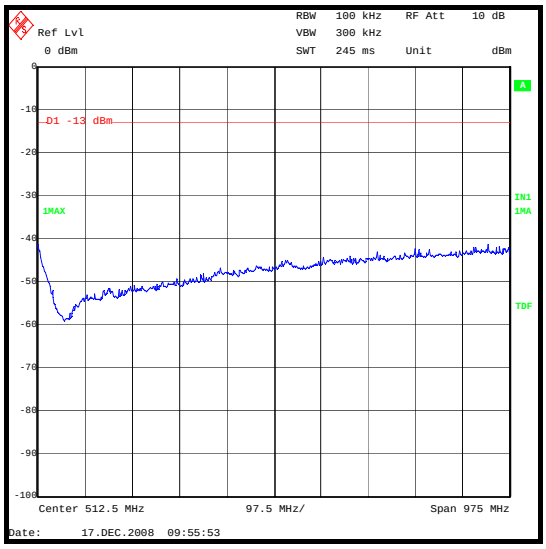
Top Channel

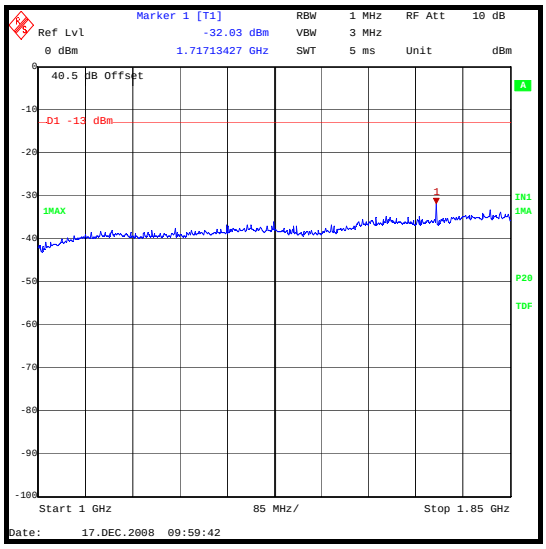
Frequency (MHz)	Peak Emission Level (dBm)	Limit (dBm)	Margin (dB)	Result
7639.197	-28.6	-13.0	15.6	Complied
9549.117	-24.1	-13.0	11.1	Complied

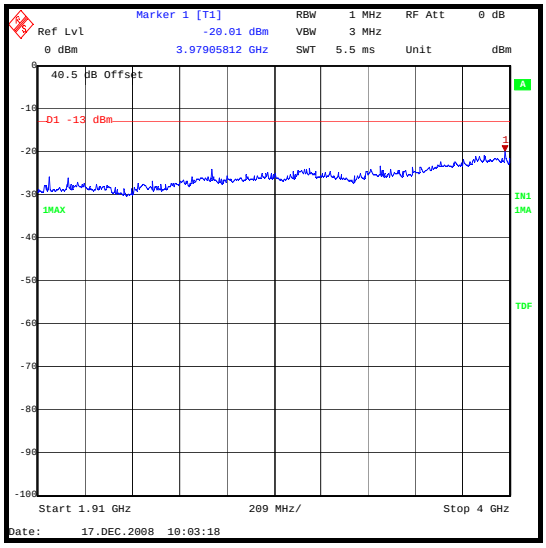
Note(s):

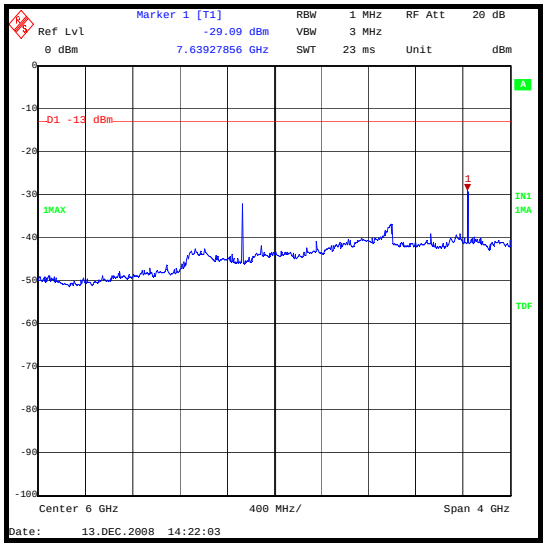
1. All other emissions were at least 20 dB below the limit

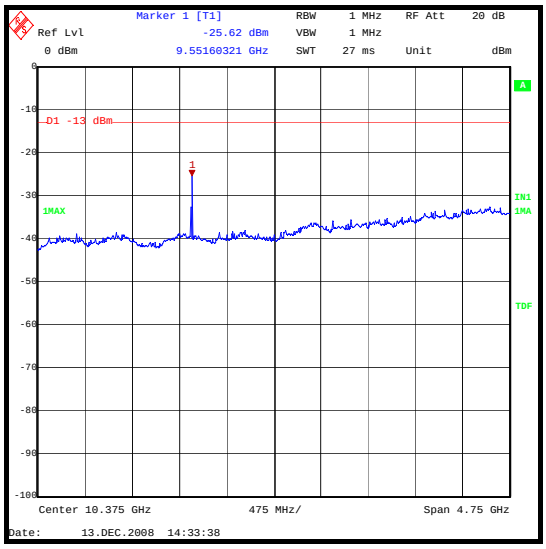
Transmitter Out of Band Radiated Emissions: Section 2.1051 & 24.238 (Continued)

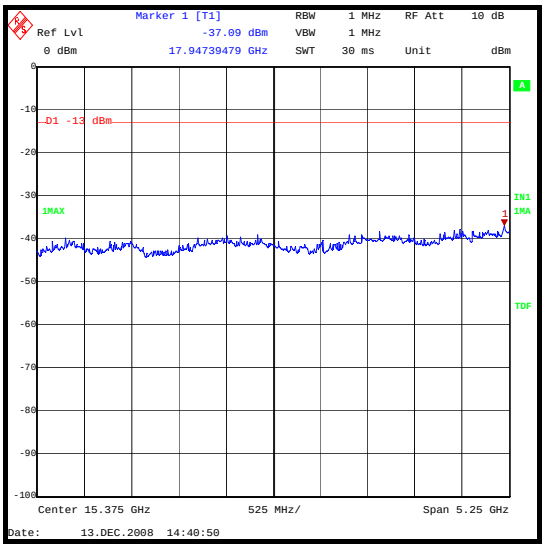


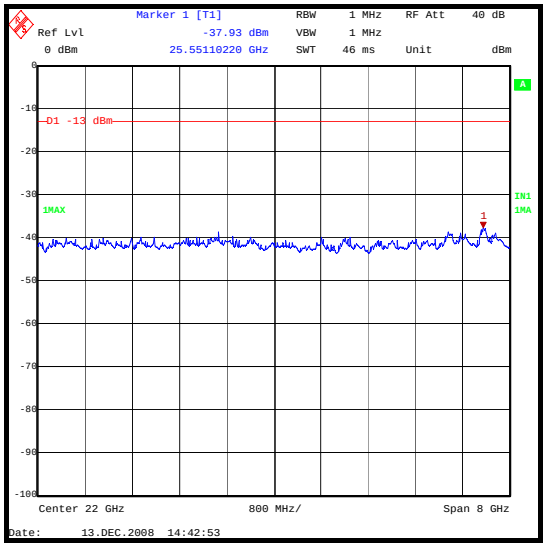












Note: These plots are pre-scans and for indication purposes only. For final measurements, see accompanying tables.

7.2.9. Transmitter Out of Band Radiated Emissions – Band Edge: Section 2.1053 & 24.238

Ambient Temperature: 24ºC Relative Humidity: 39%

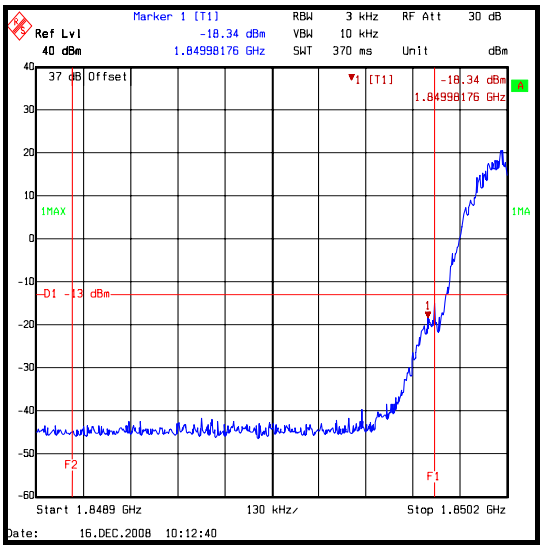
Results: GSM

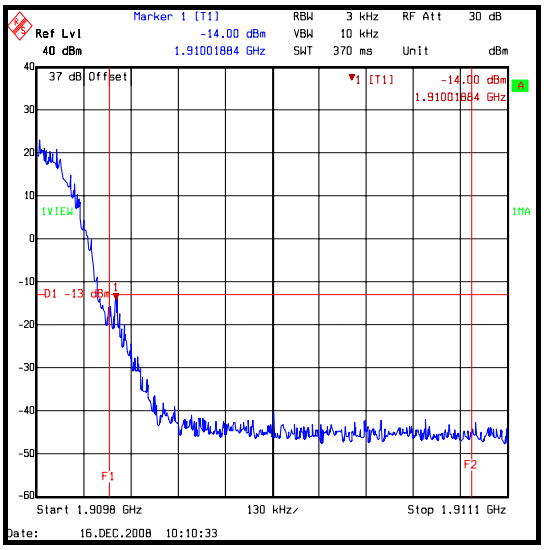
Bottom Channel

Frequency (MHz)	Peak Emission Level (dBm)	Limit (dBm)	Margin (dB)	Result
1850	-18.3	-13.0	5.3	Complied

Top Channel

Frequency (MHz)	Peak Emission Level (dBm)	Limit (dBm)	Margin (dB)	Result
1910	-14.0	-13.0	1.0	Complied





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

Transmitter Out of Band Radiated Emissions – Band Edge: Section 2.1053 & 24.238 (Continued)

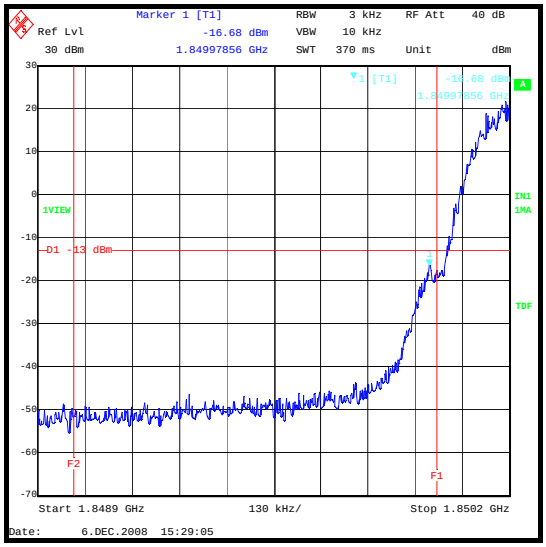
Results: GPRS

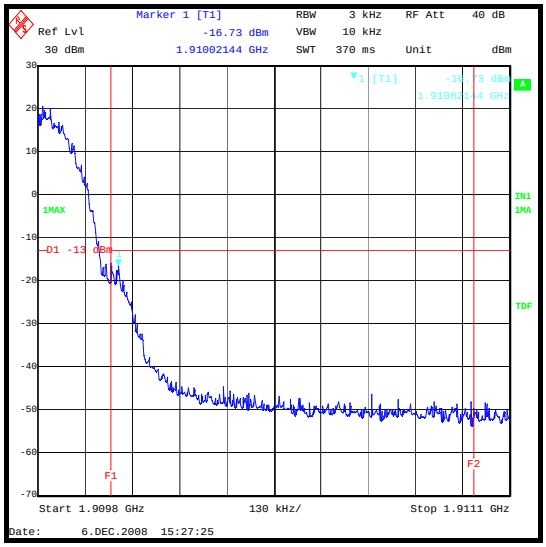
Bottom Band Edge

Frequency (MHz)	Peak Emission Level (dBm)	Limit (dBm)	Margin (dB)	Result
1850	-16.7	-13.0	3.7	Complied

Top Band Edge

Frequency (MHz)	Peak Emission Level (dBm)	Limit (dBm)	Margin (dB)	Result
1910	-16.7	-13.0	3.7	Complied





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

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%	±3.72 dB
Effective Isotropic Radiated Power (EIRP)	1 GHz to 26 GHz	95%	±2.54 dB
Frequency Stability	1 GHz to 2 GHz	95%	±11.4 ppm
Occupied Bandwidth	1 GHz to 2 GHz	95%	±11.4 ppm
Radiated Spurious Emissions	30 MHz to 1000 MHz	95%	±4.64 dB
Radiated Spurious Emissions	1 GHz to 26 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 Last Calibrated	Cal. Interval (Months)
A1299	Antenna	Schaffner	CBL6143	5094	28 Jul 2008	12
A1516	Universal Radio Communications Tester	Rohde & Schwarz	CMU200	835687/011	Calibration not required	-
A1818	Antenna	EMCO	3115	00075692	25 Oct 2008	12
C1164	Cable	Rosenberger Micro-Coax	FA210A10150070 70	43188-1	20 Apr 2008	12
C1198	Cable	Utiflex	FA147A1015M2020	3502 27138-4	Calibrated before use	-
E0513	Environmental Chamber	TAS	LT600 Series 3	23900506	Calibration not required	-
K0002	Site Reference 4421	Rainford EMC	N/A	N/A	-	12
K0008	Site Reference 4422	RFI Global Services Ltd	N/A	N/A	-	12
M1124	Spectrum Analyser	Rohde & Schwarz	ESIB26	100046K	19 Feb 2008	12
M1249	Thermometer	Fluke	52II	88800049	09 Jul 2008	12
M127	Spectrum Analyser	Rohde & Schwarz	FSEB 30	842 659/016	21 Aug 2008	12
M166	Thermometer/Barometer/ Hygrometer	EuroCom	None	None	18 Jun 2008	12

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