TEST REPORT
FROM
RFI GLOBAL SERVICES LTD

Test of: NTT docomo P-03B

To: FCC Part 24: 2008 Subpart E

Test Report Serial No:
RFI/RPT2/RP76408JD03A

Supersedes Test Report Serial No:
RFI/RPT1/RP76408JD03A

This Test Report Is Issued Under The Authority Of Brian Watson, Operations Director: 	
Checked By:	A. Henriques
Signature: 	
Date of Issue:	04 December 2009

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1. Customer Information

Company Name:	Panasonic Mobile Communications Development of Europe Ltd
Address:	Panasonic House Willoughby Road Bracknell Berkshire RG12 8FP United Kingdom

2. Summary of Testing

2.1. General Information

Specification Reference:	47CFR24
Specification Title:	Code of Federal Regulations Volume 47 (Telecommunications) 2008: Part 24 Subpart E (Personal Communication Services)
Site Registration:	FCC: 209735
Location of Testing:	RFI Global Services Ltd, Wade Road, Basingstoke, Hampshire, RG24 8AH.
Test Dates:	23 November 2009 to 27 November 2009

2.2. Summary of Test Results

FCC Reference (CFR 47)	Measurement	Port Type	Result
Part 15.107	Idle Mode AC Conducted Spurious Emissions	AC Mains	✓
Part 15.109	Idle Mode Radiated Spurious Emissions	Enclosure	✓
Part 15.207	Transmitter AC Conducted Spurious Emissions	AC Mains	✓
Part 24.232	Transmitter Effective Isotropic Radiated Power (EIRP)	Antenna	✓
Part 24.235	Transmitter Frequency Stability (Temperature & Voltage Variation)	Antenna	✓
Part 2.1049/24.238	Transmitter Occupied Bandwidth	Antenna	✓
Part 2.1053/24.238	Transmitter Out of Band Radiated Emissions	Antenna	✓
Part 2.1053/24.238	Transmitter Band Edge Radiated Emissions	Antenna	✓

Key to Results

✓ = Complied ✗ = Did not comply

2.3. Methods and Procedures

Reference:	ANSI/TIA-603-C-2004
Title:	Land Mobile Communications Equipment, Measurements and performance Standards
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:	NTT docomo
Model Name or Number:	P-03B
IMEI Number:	353154030008237
Hardware Version Number:	Rev D
Software Version Number:	B-D92CS1-001.02.003 D92CS1-Cv38161807
FCC ID Number:	UCE209024A

Description:	AC Charger
Brand Name:	NTT docomo
Model Name or Number:	FOMA AC Adapter 01 for Global use / MAS-BH0008-A 002

Description:	DC Charger
Brand Name:	NTT docomo
Model Name or Number:	FOMA DC Adapter 02

Description:	Charge/USB Data cable
Brand Name:	NTT docomo
Model Name or Number:	FOMA USB Cable with Charge Function 02

Description:	Personal Hands-Free
Brand Name:	NTT docomo
Model Name or Number:	Stereo Earphone Set 01

Description:	Battery
Brand Name:	NTT docomo
Model Name or Number:	P21

Description:	Micro SD memory card
Brand Name:	Not Stated
Model Name or Number:	Not Stated

3.2. Description of EUT

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

3.3. Modifications Incorporated in the EUT

No modifications were applied to the EUT during testing.

3.4. Additional Information Related to Testing

Technology Tested:	PCS1900		
Type of Radio Device:	Transceiver		
Mode:	GSM/GPRS		
Modulation Type:	GMSK		
Channel Spacing:	200 kHz		
Power Supply Requirement(s):	Nominal	3.7 V	
	Minimum	3.4 V	
	Maximum	4.2 V	
Maximum Output Power (EIRP):	GSM	27.9 dBm	
	GPRS	25.8 dBm	
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:	1930 to 1990 MHz		
Receive Channels Tested:	**Channel ID**	**Channel Number**	**Channel Frequency (MHz)**
	Bottom	512	1930.2
	Middle	660	1959.8
	Top	810	1989.8

3.5. Support Equipment

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

Description:	Dummy battery
Model Name or Number:	Not stated
Serial Number:	Not stated

4. Operation and Monitoring of the EUT during Testing

4.1. Operating Modes

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

- Idle mode.
- Constantly transmitting at full power on bottom, centre and top channels as required.
- Occupied bandwidth, EIRP and band edge tests were performed with the EUT in GSM single timeslot circuit switched and GPRS Multislot Class 10 with the unit transmitting on two timeslots in the uplink.
- Transmitter radiated spurious emissions were checked in all modes during prescans. Circuit switched voice was found to be the worst case and all final measurements were performed with the EUT in this mode.

4.2. Configuration and Peripherals

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

- Connected to a GSM/GPRS system simulator, operating in transceiver mode
- Idle mode and transmitter mode radiated spurious emissions tests were performed with the mains charger connected to the EUT and 120 V AC supply as this was found to be the worst case during prescans. All accessories were individually connected and measurements made during prescans to determine the worst case combination.

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. 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 (°C):	26
Relative Humidity (%):	30

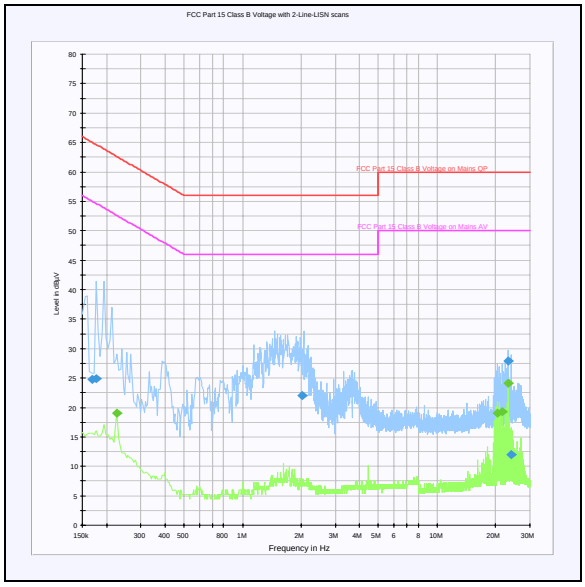
Results: Quasi Peak Detector Measurements

Frequency (MHz)	Line	Quasi Peak Level (dBμV)	Limit (dBμV)	Margin (dB)	Result
0.168000	Live	24.7	65.1	40.4	Complied
0.177000	Live	24.9	64.6	39.7	Complied
2.017500	Neutral	22.0	56.0	34.0	Complied
23.127000	Live	27.9	60.0	32.1	Complied
24.000000	Neutral	12.0	60.0	48.0	Complied

Results: Average Detector Measurements

Frequency (MHz)	Line	Average Level (dBμV)	Limit (dBμV)	Margin (dB)	Result
0.226500	Live	19.1	52.6	33.5	Complied
20.319000	Neutral	19.0	50.0	31.0	Complied
21.664500	Live	19.3	50.0	30.7	Complied
23.127000	Live	24.1	50.0	25.9	Complied

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. Idle Mode Radiated Spurious Emissions

Test Summary:

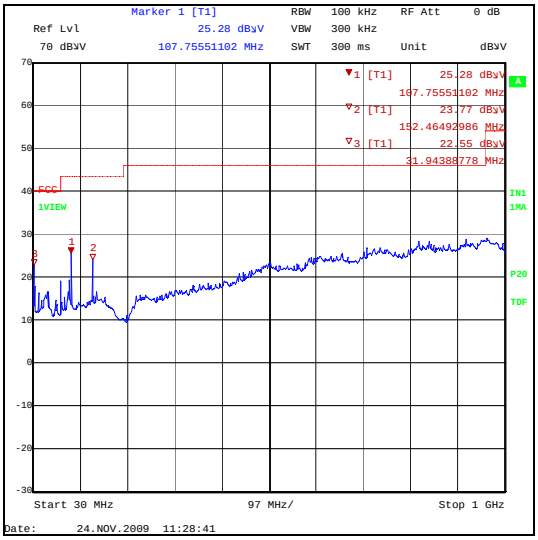
FCC Part:	15.109
Frequency Range:	30 MHz to 1000 MHz
Test Method Used:	As detailed in ANSI C63.4 Section 8 and relevant annexes

Environmental Conditions:

Temperature (°C):	23
Relative Humidity (%):	36

Results:

Frequency (MHz)	Antenna Polarity	Level (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Result
32.944	Horizontal	28.3	40.0	11.7	Complied
107.563	Vertical	26.5	43.5	17.0	Complied
153.314	Horizontal	23.5	43.5	20.0	Complied



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

Idle Mode Radiated Spurious Emissions (continued)

Test Summary:

FCC Part:	15.109
Frequency Range:	1 GHz to 12.75 GHz
Test Method Used:	As detailed in ANSI C63.4 Section 8 and relevant annexes

Environmental Conditions:

Temperature (°C):	24
Relative Humidity (%):	35

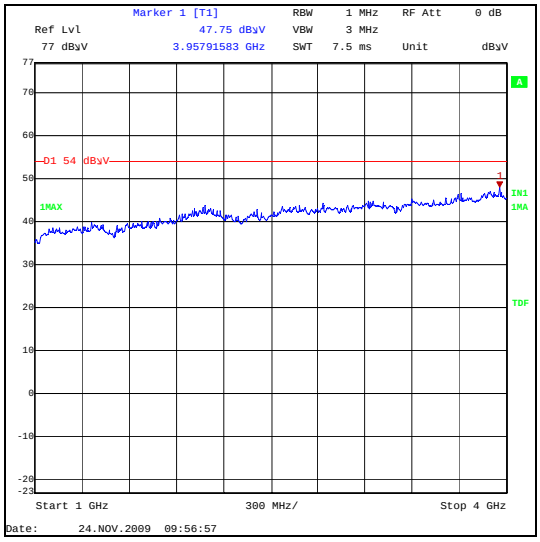
Results:

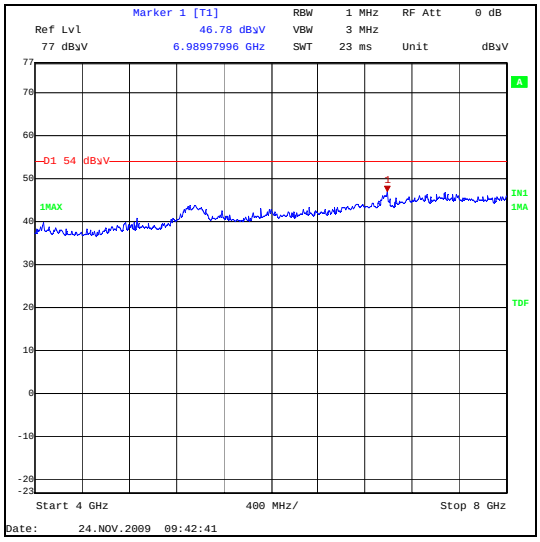
Frequency (MHz)	Antenna Polarity	Peak Level (dBµV/m)	Average Limit (dBµV/m)	Margin (dB)	Result
3957.916	Horizontal	47.8	54.0	6.2	Complied

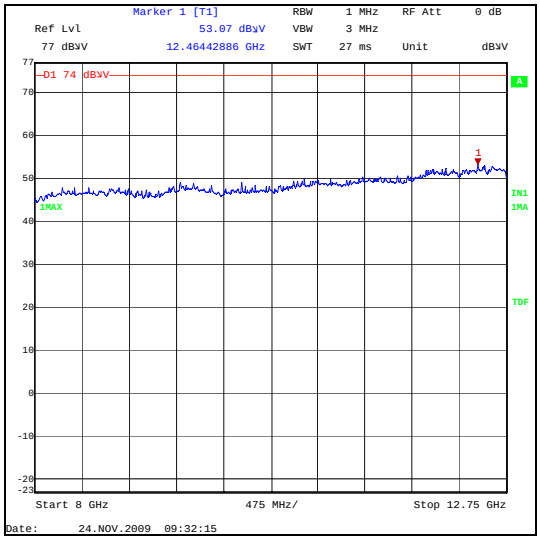
Note(s):

1. No spurious emissions were detected above the noise floor of the measuring receiver; therefore, the 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 a peak detector against the average limit apart from measurements made in the range of 8 to 12.75 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.

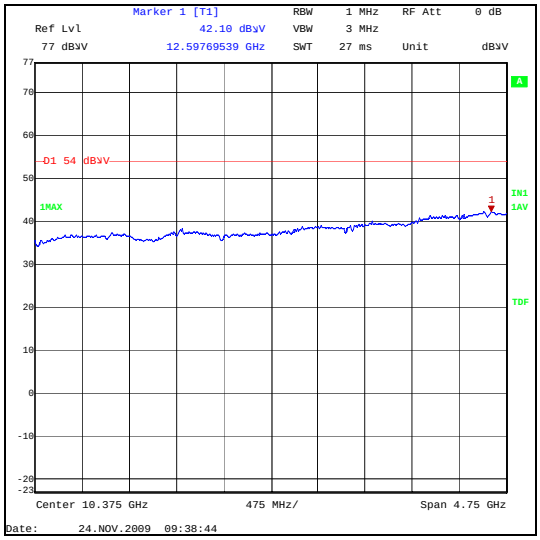
Idle Mode Radiated Spurious Emissions (continued)







8 GHz to 12.75 GHz Peak detector



8 GHz to 12.75 GHz Avg detector

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

Environmental Conditions:

Temperature (°C):	26
Relative Humidity (%):	30

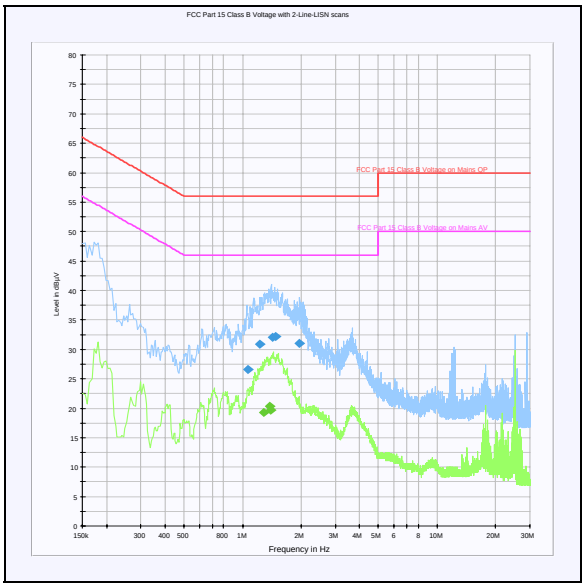
Results: Quasi Peak Detector Measurements

Frequency (MHz)	Line	Quasi Peak Level (dBμV)	Limit (dBμV)	Margin (dB)	Result
1.063500	Neutral	26.6	56.0	29.4	Complied
1.225500	Neutral	30.9	56.0	25.1	Complied
1.419000	Neutral	32.0	56.0	24.0	Complied
1.482000	Neutral	32.2	56.0	23.8	Complied
1.954500	Neutral	31.0	56.0	25.0	Complied

Results: Average Detector Measurements

Frequency (MHz)	Line	Average Level (dBμV)	Limit (dBμV)	Margin (dB)	Result
1.288500	Neutral	19.3	46.0	26.7	Complied
1.378500	Neutral	20.4	46.0	25.6	Complied
1.396500	Neutral	19.6	46.0	26.4	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 Effective Isotropic Radiated Power (EIRP)

Test Summary:

FCC Part:	24.232
Test Method Used:	As detailed in ANSI TIA-603-C-2004 Section 2.2.17.2

Environmental Conditions:

Temperature (°C):	22
Relative Humidity (%):	38

Results: GSM

Channel	Frequency (MHz)	Antenna Polarity	EIRP (dBm)	Limit (dBm)	Margin (dBm)	Result
Bottom	1850.2	Horizontal	25.3	33.0	7.7	Complied
Middle	1879.8	Horizontal	27.9	33.0	5.1	Complied
Top	1909.8	Horizontal	25.9	33.0	7.1	Complied

Results: GPRS

Channel	Frequency (MHz)	Antenna Polarity	EIRP (dBm)	Limit (dBm)	Margin (dBm)	Result
Bottom	1850.2	Horizontal	23.5	33.0	9.5	Complied
Middle	1879.8	Horizontal	25.8	33.0	7.2	Complied
Top	1909.8	Horizontal	24.5	33.0	8.5	Complied

5.2.5. Transmitter Frequency Stability (Temperature)

Test Summary:

FCC Part:	24.235
Test Method Used:	As detailed in ANSI TIA-603-C-2004 Section 2.2.2 referencing FCC CFR Part 2.1055

Environmental Conditions:

Temperature (°C):	25
Relative Humidity (%):	29

Results: Bottom Channel (1850.2 MHz)

Temperature (°C)	Frequency Error (Hz)	Measured Frequency (MHz)	Lower Band Edge Limit (MHz)	Margin (MHz)	Result
-30	-31	1850.199969	1850.0	0.199969	Complied
-20	-21	1850.199979	1850.0	0.199979	Complied
-10	17	1850.200017	1850.0	0.200017	Complied
0	-16	1850.199984	1850.0	0.199984	Complied
10	-42	1850.199958	1850.0	0.199958	Complied
20	-37	1850.199963	1850.0	0.199963	Complied
30	-37	1850.199963	1850.0	0.199963	Complied
40	20	1850.200020	1850.0	0.200020	Complied
50	-54	1850.199946	1850.0	0.199946	Complied

Results: Top Channel (1909.8 MHz)

Temperature (°C)	Frequency Error (Hz)	Measured Frequency (MHz)	Upper Band Edge Limit (MHz)	Margin (MHz)	Result
-30	-29	1909.799971	1910.0	0.200029	Complied
-20	-34	1909.799966	1910.0	0.200034	Complied
-10	-14	1909.799986	1910.0	0.200014	Complied
0	-19	1909.799981	1910.0	0.200019	Complied
10	-24	1909.799976	1910.0	0.200024	Complied
20	31	1909.800031	1910.0	0.199969	Complied
30	-18	1909.799982	1910.0	0.200018	Complied
40	-33	1909.799967	1910.0	0.200033	Complied
50	22	1909.800022	1910.0	0.199978	Complied

5.2.6. Transmitter Frequency Stability (Voltage Variation)

Test Summary:

FCC Part:	24.235
Test Method Used:	As detailed in ANSI TIA-603-C-2004 Section 2.2.2 referencing FCC CFR Part 2.1055

Environmental Conditions:

Temperature (°C):	24
Relative Humidity (%):	34

Results: Bottom Channel (1850.2 MHz)

Supply Voltage (V)	Frequency Error (Hz)	Measured Frequency (MHz)	Lower Band Edge Limit (MHz)	Margin (MHz)	Result
3.4	-34	1850.199966	1850.0	0.199966	Complied
4.2	-32	1850.199968	1850.0	0.199968	Complied

Results: Top Channel (1909.8 MHz)

Supply Voltage (V)	Frequency Error (Hz)	Measured Frequency (MHz)	Upper Band Edge Limit (MHz)	Margin (MHz)	Result
3.4	-27	1909.799973	1910.0	0.200027	Complied
4.2	-35	1909.799965	1910.0	0.200035	Complied

5.2.7. Transmitter Occupied Bandwidth

Test Summary:

FCC Part:	24.238
Test Method Used:	As detailed in ANSI C63.4 Section13.1.7 and relevant annexes referencing FCC CFR Part 2.1049 (see note below)

Environmental Conditions:

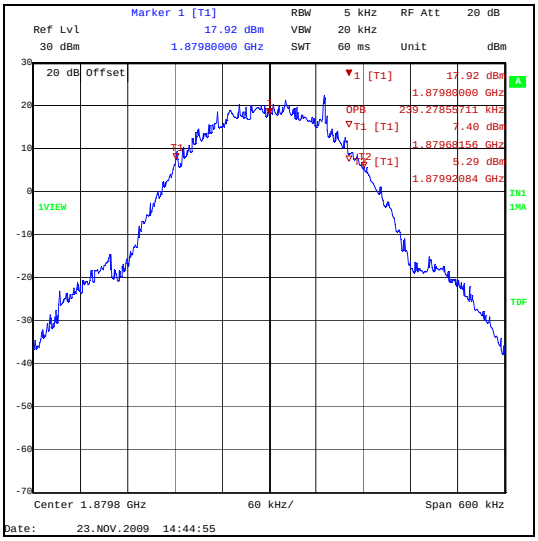
Temperature (°C):	24
Relative Humidity (%):	35

Results: GSM

Channel	Frequency (MHz)	Occupied Bandwidth (kHz)
Middle	1879.8	239.279

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.



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

Transmitter Occupied Bandwidth (continued)

Test Summary:

FCC Part:	24.238
Test Method Used:	As detailed in ANSI C63.4 Section13.1.7 and relevant annexes referencing FCC CFR Part 2.1049 (see note below)

Environmental Conditions:

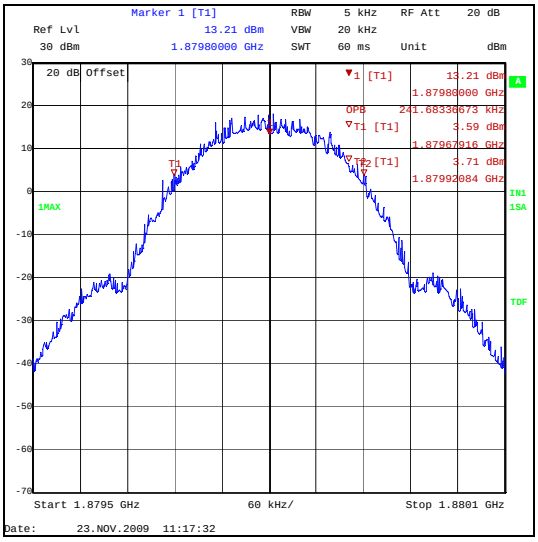
Temperature (°C):	23
Relative Humidity (%):	38

Results: GPRS

Channel	Frequency (MHz)	Occupied Bandwidth (kHz)
Middle	1879.8	241.683

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.



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

5.2.8. Transmitter Out of Band Radiated Emissions

Test Summary:

FCC Part:	2.1053 & 24.238
Frequency Range:	30 MHz to 20 GHz
Test Method Used:	As detailed in ANSI TIA-603-C-2004 Section 2.2.12 referencing FCC CFR Parts 2.1053 and 24.238

Environmental Conditions:

Temperature (°C):	23
Relative Humidity (%):	36

Results: Bottom Channel

Frequency (MHz)	Peak Emission Level (dBm)	Limit (dBm)	Margin (dBm)	Result
3700.009	-29.8	-13.0	16.8	Complied

Results: Middle Channel

Frequency (MHz)	Peak Emission Level (dBm)	Limit (dBm)	Margin (dBm)	Result
3759.519	-29.9	-13.0	16.9	Complied

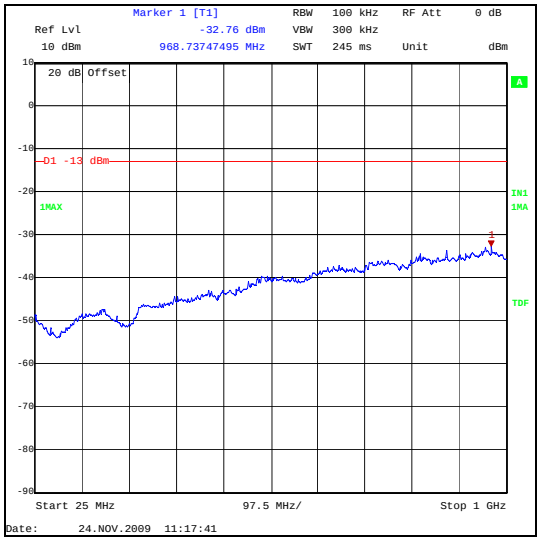
Results: Top Channel

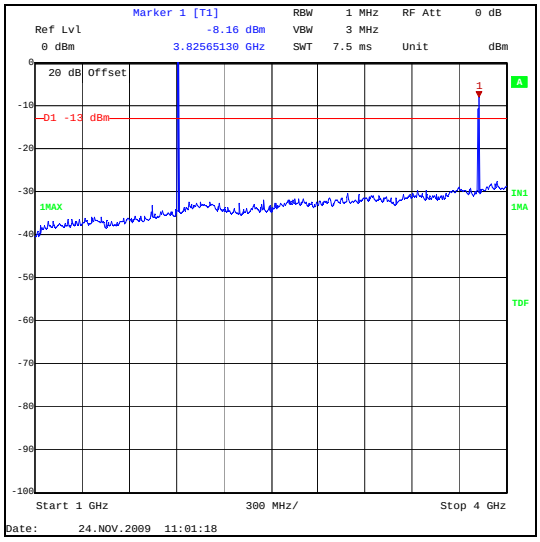
Frequency (MHz)	Peak Emission Level (dBm)	Limit (dBm)	Margin (dBm)	Result
3819.195	-28.6	-13.0	15.6	Complied

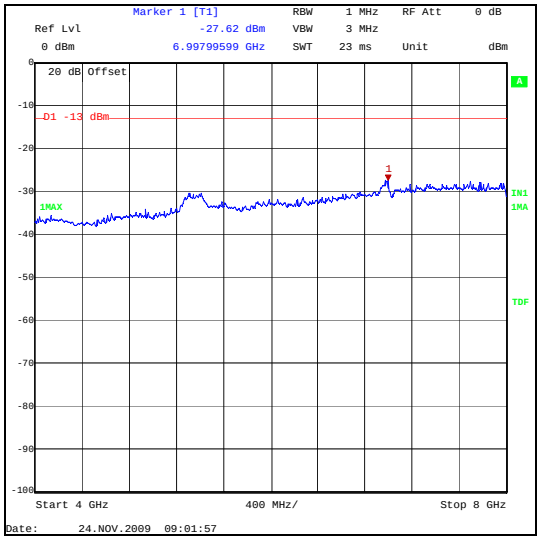
Note(s):

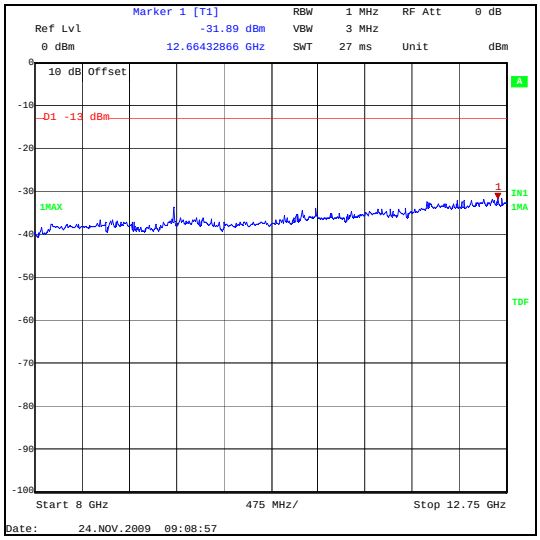
1. The transmitter fundamental is shown on the 1 GHz to 4 GHz plot at approximately 1909 MHz.
2. The high level of the 2nd harmonic (at 3.8256 GHz on the 1 GHz to 4 GHz plot) is caused by distortion in the preamplifier used during pre-scans. The final measurement of this harmonic emission was measured using an appropriate filter.

Transmitter Out of Band Radiated Emissions (continued)



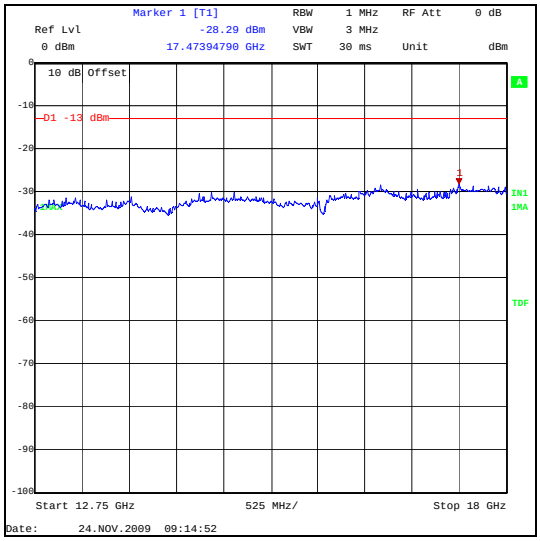


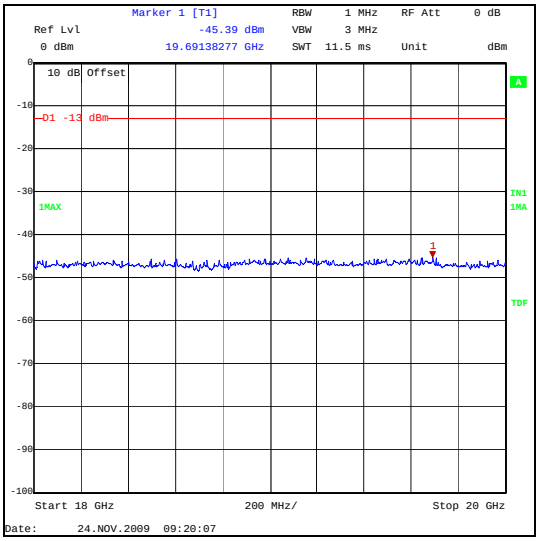




Note: These plots are pre-scans and for indication purposes only. For final measurements, see accompanying tables.

Transmitter Out of Band Radiated Emissions (continued)





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

5.2.9. Transmitter Radiated Emissions at Band Edges

Test Summary:

FCC Part:	2.1053 & 24.238
Test Method Used:	As detailed in ANSI TIA-603-C-2004 Section 2.2.12 referencing FCC CFR Parts 2.1053 and 24.238

Environmental Conditions:

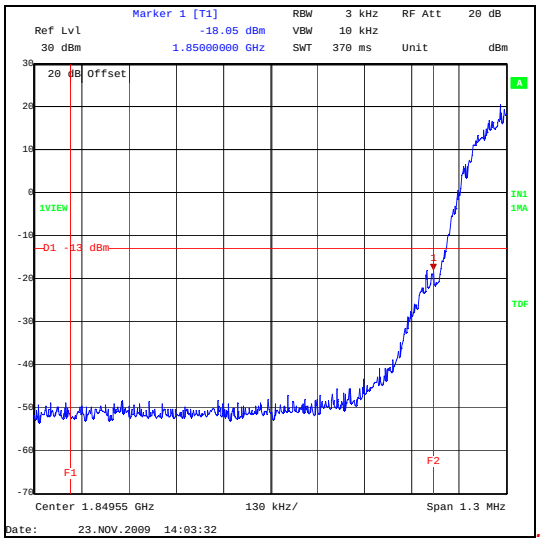
Temperature (°C):	23
Relative Humidity (%):	36

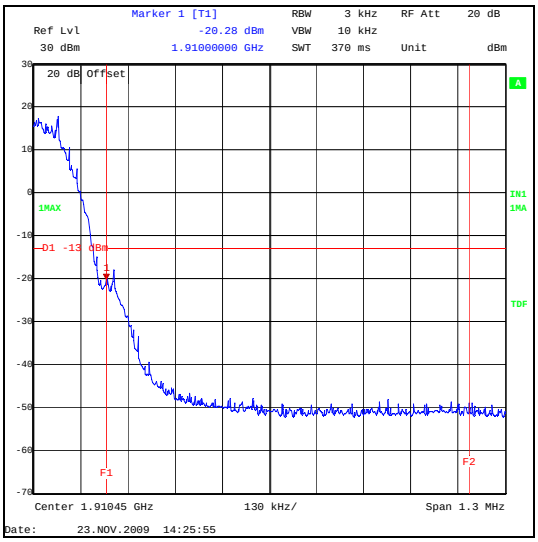
Results: GSM - Bottom Band Edge

Frequency (MHz)	Peak Emission Level (dBm)	Limit (dBm)	Margin (dBm)	Result
1850	-18.1	-13.0	4.9	Complied

Results: GSM - Top Band Edge

Frequency (MHz)	Peak Emission Level (dBm)	Limit (dBm)	Margin (dBm)	Result
1910	-20.3	-13.0	7.3	Complied





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

Transmitter Radiated Emissions at Band Edges (continued)

Test Summary:

FCC Part:	2.1053 & 24.238
Test Method Used:	As detailed in ANSI TIA-603-C-2004 Section 2.2.12 referencing FCC CFR Parts 2.1053 and 24.238

Environmental Conditions:

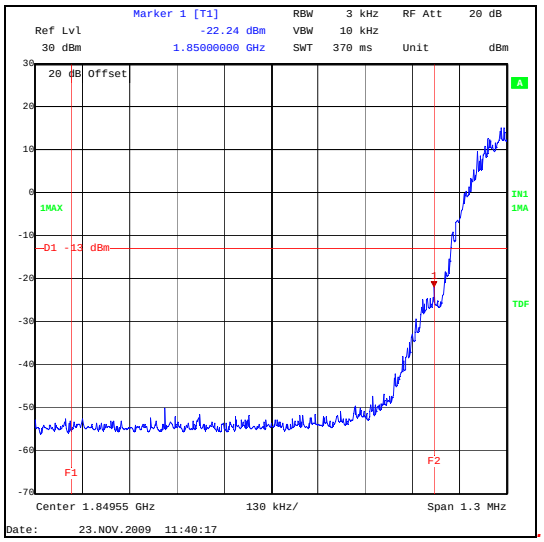
Temperature (°C):	23
Relative Humidity (%):	36

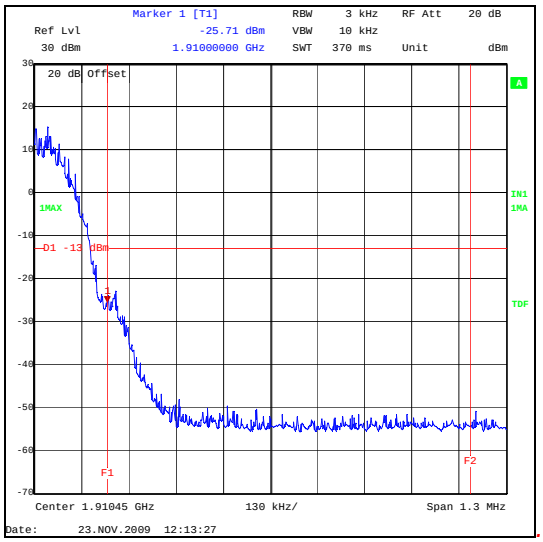
Results: GPRS - Bottom Band Edge

Frequency (MHz)	Peak Emission Level (dBm)	Limit (dBm)	Margin (dBm)	Result
1850	-22.2	-13.0	9.2	Complied

Results: GPRS - Top Band Edge

Frequency (MHz)	Peak Emission Level (dBm)	Limit (dBm)	Margin (dBm)	Result
1910	-25.7	-13	12.7	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%	±3.72 dB
Effective Isotropic Radiated Power (EIRP)	Not applicable	95%	±2.94 dB
Frequency Stability	Not applicable	95%	±0.92 ppm
Occupied Bandwidth	Not applicable	95%	±0.92 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
A1392	Attenuator	Huber + Suhner	757456	6820.17.B	Calibrated before use	12
A1396	Attenuator	Huber + Suhner	757987	6810.17.B	Calibrated before use	12
A1534	Pre Amplifier	Hewlett Packard	8449B OPT H02	3008A00405	Calibrated before use	12
A1818	Antenna	EMCO	3115	00075692	27 Nov 2009	12
A1830	Pulse Limiter	Rhode & Schwarz	ESH3-Z2	100668	05 Jan 2009	12
A288	Antenna	Chase	CBL6111A	1589	13 Mar 2009	12
A649	LISN	Rohde & Schwarz	ESH3-Z5	825562/008	19 Mar 2009	12
E0516	Environmental Chamber	TAS	LT1000	23880706	Calibrated before use	12
K0002	3m RSE Chamber	Rainford EMC	N/A	N/A	01 Sep 2009	12
M1124	Spectrum Analyser	Rohde & Schwarz	ESIB26	100046K	09 Mar 2009	12
M1138	Comms Test Set	Rohde & Schwarz	CMU200	836202/093	Calibration not required	-
M1263	Test Receiver	Rohde & Schwarz	ESIB7	100265	22 Apr 2009	12
M1379	Test Receiver	Rohde & Schwarz	ESIB7	100330	20 Aug 2009	12

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