



TEST REPORT FROM RFI GLOBAL SERVICES LTD



Test of: NTT docomo P-05C

FCC ID: UCE211039A

To: FCC Part 22: 2010 Subpart H

Test Report Serial No:
RFI-RPT-RP81001JD10A V2.0

Version 2.0 Supersedes All Previous Versions

This Test Report Is Issued Under The Authority Of Chris Guy, Head of Global Approvals:		
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Signature:		
Date of Issue:	18 April 2011	

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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:	47CFR22
Specification Title:	Code of Federal Regulations Volume 47 (Telecommunications) 2010: Part 22 Subpart H (Public Mobile Services)
Specification Reference:	47CFR15.107 and 47CFR15.109
Specification Title:	Code of Federal Regulations Volume 47 (Telecommunications) 2010: Part 15 Subpart B (Unintentional Radiators) - Sections 15.107 and 15.109
Site Registration:	209735
Location of Testing:	RFI Global Services Ltd, Wade Road, Basingstoke, Hampshire, RG24 8AH.
Test Dates:	13 March 2011 to 05 April 2011

2.2. Summary of Test Results

FCC Reference (47CFR)	Measurement	Result
Part 15.107(a)	Receiver/Idle Mode AC Conducted Spurious Emissions	
Part 15.109	Receiver/Idle Mode Radiated Spurious Emissions	
Part 22.913(a)	Transmitter Effective Radiated Power (ERP)	
Part 2.1046	Transmitter Conducted Output Power	Note 1
Part 2.1055/22.355	Transmitter Frequency Stability (Temperature and Voltage Variation)	
Part 2.1049	Transmitter Occupied Bandwidth	
Part 2.1053/22.917	Transmitter Out of Band Radiated Emissions	
Part 2.1053/22.917	Transmitter Band Edge Radiated Emissions	
Key to Results		
 = Complied  = Did not comply		

Note 1: The measurement was performed to support SAR tests.

2.3. Methods and Procedures

Reference:	ANSI/TIA-603-C-2004
Title:	Land Mobile Communications Equipment, Measurements and performance Standards
Reference:	ANSI C63.4 (2009)
Title:	American National Standard for Methods of Measurement of Radio-Noise 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-05C
IMEI:	355320040013412 (<i>Radiated sample #1</i>) 355320040013420 (<i>Radiated sample #2</i>) 355320040012406 (<i>Conducted sample</i>)
Hardware Version Number:	Rev C
Software Version Number:	B-D11SL1-00.01.037 D11SL1_Cv58091405
FCC ID:	UCE211039A

Brand Name:	NTT
Description:	Battery
Model Name or Number:	P20*

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

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

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

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

3.2. Description of EUT

The equipment under test was a dual mode UMTS/GSM cellular handset with Bluetooth, WLAN and 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:	UMTS		
Type of Radio Device:	Transceiver		
Mode:	UMTS FDD V and UMTS Release 5 HSDPA		
Modulation Type:	QPSK		
Channel Spacing:	5 MHz		
Antenna Gain:	-4.1 dBd		
Power Supply Requirement(s):	Nominal	3.7 V	
	Minimum	3.4 V	
	Maximum	4.2 V	
Maximum Output Power (ERP):	Voice (12.2 kbps)	25.6 dBm	
	HSDPA Sub-Test 3	26.7 dBm	
Transmit Frequency Range:	824 to 849 MHz		
Transmit Channels Tested:	Channel ID	Channel Number	Channel Frequency (MHz)
	Bottom	4132	826.4
	Middle	4183	836.6
	Top	4233	846.6
Receive Frequency Range:	869 to 894 MHz		
Receive Channels Tested:	Channel ID	Channel Number	Channel Frequency (MHz)
	Bottom	4357	871.4
	Middle	4407	881.6
	Top	4458	891.6

3.5. Support Equipment

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

Brand Name:	Panasonic
Description:	Micro SD Memory Card
Model Name or Number:	2 GB

Brand Name:	Buffalo
Description:	USB Hub
Model Name or Number:	BSH4U01

4. Operation and Monitoring of the EUT during Testing

4.1. Operating Modes

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

- Receiver/Idle mode.
- Constantly transmitting at full power on bottom, middle and top channels as required.
- Occupied bandwidth, ERP and band edge tests were performed with the EUT in Voice (12.2 kbps) or HSDPA (Sub-tests 1 to 4) modes.
- Transmitter radiated spurious emissions were checked in all modes during pre-scans. HSDPA (Sub-tests 3) mode 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 Rohde & Schwarz CMU 200 Universal Radio Communications Tester, operating in UMTS Band V mode.
- The sample with IMEI 355320040013420 was used for receiver/idle mode radiated spurious emissions tests below 1 GHz and AC conducted emissions tests. The sample with IMEI 355320040013412 was used for ERP, transmitter radiated spurious emissions and receiver/idle mode radiated spurious emissions above 1 GHz. The sample with IMEI 355320040012406 was used for all other tests.
- The SDRAM card was present in the EUT during all testing.
- The dummy battery was fitted for frequency stability measurements.
- Idle mode and transmitter mode radiated spurious emissions tests were performed with the AC charger connected to the EUT 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.
- Conducted power measurements were performed with the EUT connected directly to a calibrated Rohde & Schwarz CMU 200. Peak and average power displayed by the CMU 200 were recorded.

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:**

Test Engineer:	Patrick Jones	Test Date:	16 March 2011
Test Sample IMEI:	355320040013420		

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

Environmental Conditions:

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

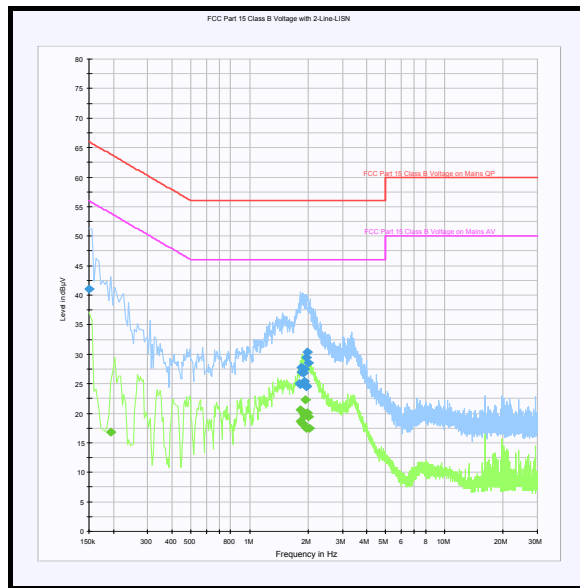
Results: Quasi Peak

Frequency (MHz)	Line	Level (dB μ V)	Limit (dB μ V)	Margin (dB)	Result
0.150000	Neutral	41.0	66.0	25.0	Complied
1.806000	Live	25.0	56.0	31.0	Complied
1.833000	Live	24.9	56.0	31.1	Complied
1.842000	Live	27.0	56.0	29.0	Complied
1.851000	Live	27.8	56.0	28.2	Complied
1.878000	Live	27.4	56.0	28.6	Complied
1.891500	Live	26.9	56.0	29.1	Complied
1.900500	Live	25.4	56.0	30.6	Complied
1.918500	Live	27.4	56.0	28.6	Complied
1.923000	Live	24.7	56.0	31.3	Complied
1.945500	Live	24.7	56.0	31.3	Complied
1.954500	Live	29.5	56.0	26.5	Complied
1.963500	Live	24.5	56.0	31.5	Complied
1.986000	Live	30.4	56.0	25.6	Complied
1.999500	Live	28.6	56.0	27.4	Complied

Receiver/Idle Mode AC Conducted Spurious Emissions (continued)**Results: Average**

Frequency (MHz)	Line	Level (dBμV)	Limit (dBμV)	Margin (dB)	Result
0.195000	Neutral	16.8	53.8	37.0	Complied
1.824000	Live	18.6	46.0	27.4	Complied
1.828500	Live	20.6	46.0	25.4	Complied
1.860000	Live	18.2	46.0	27.8	Complied
1.864500	Live	18.2	46.0	27.8	Complied
1.896000	Live	20.0	46.0	26.0	Complied
1.905000	Live	19.5	46.0	26.5	Complied
1.941000	Live	22.2	46.0	23.8	Complied
1.963500	Live	17.5	46.0	28.5	Complied
1.968000	Live	20.1	46.0	25.9	Complied
1.995000	Live	19.4	46.0	26.6	Complied
2.026500	Live	17.5	46.0	28.5	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 Mode Radiated Spurious Emissions**Test Summary:**

Test Engineer:	Andrew Edwards	Test Date:	13 March 2011
Test Sample IMEI:	355320040013412		

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

Environmental Conditions:

Temperature (°C):	26
Relative Humidity (%):	29

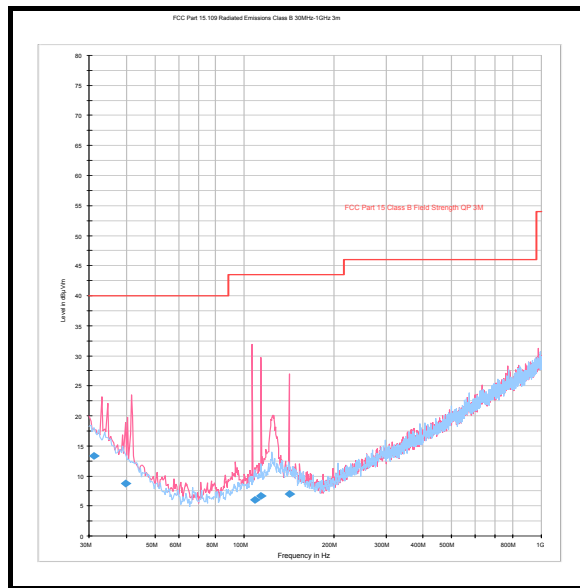
Results: Quasi Peak

Frequency (MHz)	Antenna Polarity	Level (dB μ V/m)	Limit (dB μ V/m)	Margin (dB)	Result
31.096	Vertical	13.4	40.0	26.6	Complied
39.935	Vertical	8.8	40.0	31.2	Complied
108.644	Vertical	6.0	43.5	37.5	Complied
114.099	Vertical	6.6	43.5	36.9	Complied
141.440	Vertical	7.0	43.5	36.5	Complied

Note(s):

1. The final measured value, for the given emission, in the table above incorporates the calibrated antenna factor and cable loss.
2. All other emissions shown on the pre-scan plot were investigated and found to be ambient or >20 dB below the applicable limit or below the measurement system noise floor.
3. Measurements below 1 GHz were performed in a semi-anechoic chamber (RFI Asset Number K0001) at a distance of 3 metres. The EUT was placed at a height of 80 cm above the reference ground plane in the centre of the chamber turntable. Maximum emission levels were determined by height searching the measurement antenna over the range 1 metre to 4 metres.

Receiver/Idle Mode Radiated Spurious Emissions (continued)



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

Receiver/Idle Mode Radiated Spurious Emissions (continued)**Test Summary:**

Test Engineer:	Patrick Jones	Test Date:	21 March 2011
Test Sample IMEI:	355320040013420		

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

Environmental Conditions:

Temperature (°C):	23
Relative Humidity (%):	22

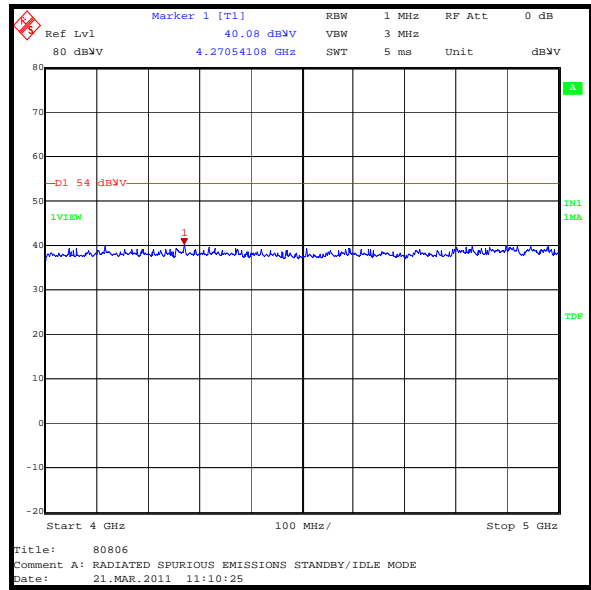
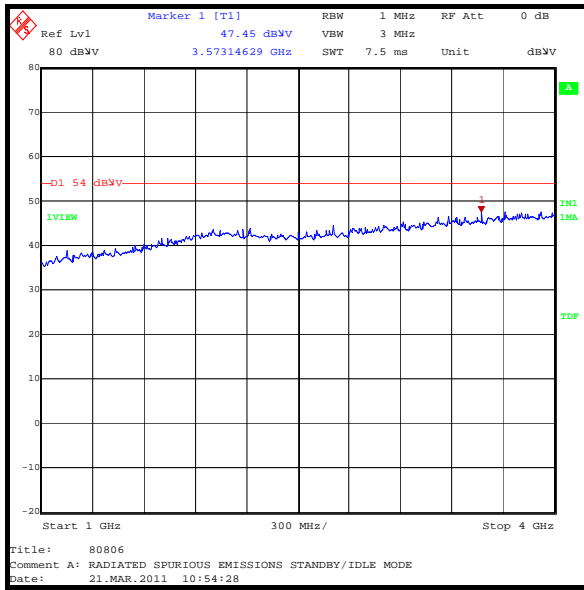
Results:

Frequency (MHz)	Antenna Polarity	Peak Level (dBμV/m)	Average Limit (dBμV/m)	Margin (dB)	Result
3573.146	Vertical	47.5	54.0	6.5	Complied

Note(s):

1. The final measured value, for the given emission, in the table above incorporates the calibrated antenna factor and cable loss.
2. Pre-scans above 1 GHz were performed in a fully anechoic chamber (RFI Asset Number K0002) at a distance of 3 metres. The EUT was placed at a height of 1.5 metres above the test chamber floor in the centre of the chamber turntable. All measurement antennas were placed at a fixed height of 1.5 metres above the test chamber floor, in line with the EUT. Final measurements above 1 GHz were performed in a semi-anechoic chamber (RFI Asset Number K0001) at a distance of 3 metres. The EUT was placed at a height of 80 cm above the reference ground plane in the centre of the chamber turntable. Maximum emission levels were determined by height searching the measurement antenna over the range 1 metre to 4 metres.
3. 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 Mode 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 Effective Radiated Power (ERP)**Test Summary:**

Test Engineer:	Andrew Edwards	Test Date:	01 April 2011
Test Sample IMEI:	355320040013412		

FCC Part:	22.913(a)
Test Method Used:	As detailed in ANSI TIA-603-C-2004 Section 2.2.17.2

Environmental Conditions:

Temperature (°C):	26
Relative Humidity (%):	24

Results: Peak ERP

Modes		HSDPA				Voice			
Sub-test		1	2	3	4	12.2 kbps			
Band	Channel	Power (dBm)	Power (dBm)	Power (dBm)	Power (dBm)	Power (dBm)	Limit (dBm)	Margin (dB)	Result
850	4132	25.3	26.2	26.6	26.6	25.1	38.5	11.9	Complied
	4183	25.7	26.2	26.5	26.5	25.5	38.5	12.0	Complied
	4233	25.8	26.3	26.6	26.4	25.6	38.5	11.9	Complied
β_c		2	12	15	15				
β_d		15	15	8	4				
$\Delta ACK, \Delta NACK, \Delta CQI$		8	8	8	8				

Results: RMS ERP

Modes		HSDPA				Voice			
Sub-test		1	2	3	4	12.2 kbps			
Band	Channel	Power (dBm)	Power (dBm)	Power (dBm)	Power (dBm)	Power (dBm)	Limit (dBm)	Margin (dB)	Result
850	4132	22.1	22.0	22.1	22.1	22.2	38.5	16.3	Complied
	4183	22.6	22.2	22.2	22.1	22.6	38.5	15.9	Complied
	4233	22.6	22.3	22.3	21.9	22.7	38.5	15.8	Complied
β_c		2	12	15	15				
β_d		15	15	8	4				
$\Delta ACK, \Delta NACK, \Delta CQI$		8	8	8	8				

Note(s):

- All modes were compared on each channel and the highest power recorded was subtracted from the limit to show the margin.

5.2.4. Transmitter Conducted Output Power

Test Engineer:	Andrew Edwards & Naseer Mirza	Test Date:	15 March 2011 & 01 April 2011
Test Sample IMEI:	355320040012406		

FCC Part:	2.1046
Test Method Used:	As detailed in ANSI TIA-603-C-2004 Section 2.2.1 referencing FCC CFR Part 2.1046(a)

Environmental Conditions:

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

Results: Conducted Peak Power

Modes		HSDPA				Voice
Sub-test		1	2	3	4	12.2 kbps
Band	Channel	Peak Power (dBm).	Peak Power (dBm)	Peak Power (dBm)	Peak Power (dBm)	Peak Power (dBm)
850	4132	25.7	26.6	27.0	27.0	25.6
	4183	25.8	26.3	26.6	26.6	25.7
	4233	25.9	26.4	26.7	26.5	25.5
βc		2	12	15	15	
βd		15	15	8	4	
ΔACK, ΔNACK, ΔCQI		8	8	8	8	

Results: Conducted Average Power

Modes		HSDPA				Voice
Sub-test		1	2	3	4	12.2 kbps
Band	Channel	Avg Power (dBm)	Avg Power (dBm)	Avg Power (dBm)	Avg Power (dBm)	Avg Power (dBm)
850	4132	22.7	20.0	18.7	18.7	22.7
	4183	22.7	19.8	18.5	18.5	22.7
	4233	22.5	19.7	18.3	18.3	22.5
βc		2	12	15	15	
βd		15	15	8	4	
ΔACK, ΔNACK, ΔCQI		8	8	8	8	

Transmitter Conducted Output Power (continued)**Sub-test Setup for Release 5 HSDPA**

Sub-test	β_c	β_d	B_d (SF)	β_c/β_d	$\beta_{hs}^{(1)}$	SM (dB) ⁽²⁾
1	2/15	15/15	64	2/15	4/15	0.0
2	12/15 ⁽³⁾	15/15 ⁽³⁾	64	12/15 ⁽³⁾	24/15	1.0
3	15/15	8/15	64	15/8	30/15	1.5
4	15/15	4/15	64	15/4	30/15	1.5

Note 1: Δ_{ACK} , Δ_{NACK} and $\Delta_{CQI} = 8 \Leftrightarrow A_{hs} = \beta_{hs}/\beta_c = 30/15 \Leftrightarrow \beta_{hs} = 30/15 * \beta_c$

Note 2: CM = 1 for $\beta_c/\beta_d = 12/15$, $B_{hs}/\beta_c = 24/15$

Note 3: For subtest 2 the β_c/β_d ratio of 12/15 for the TFC during the measurement period (TF1, TF0) is achieved by setting the signalled gain factors for the reference TFC (TF1, TF1) to $\beta_c = 11/15$ and $\beta_d = 15/15$

5.2.5. Transmitter Frequency Stability (Temperature Variation)**Test Summary:**

Test Engineer:	Andrew Edwards	Test Date:	01 April 2011
Test Sample IMEI:	355320040012406		

FCC Part:	2.1055 & 22.355
Test Method Used:	As detailed in ANSI TIA-603-C-2004 Section 2.2.2 referencing FCC CFR Part 2.1055

Environmental Conditions:

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

Results: Middle Channel (836.6 MHz)

Temperature (°C)	Measured Frequency (MHz)	Frequency Error (Hz)	Frequency Error (ppm)	Limit (ppm)	Margin (ppm)	Result
-30	836.599972	28	0.0335	2.5	2.4665	Complied
-20	836.600036	36	0.0430	2.5	2.4570	Complied
-10	836.600036	36	0.0430	2.5	2.4570	Complied
0	836.600035	35	0.0418	2.5	2.4582	Complied
10	836.600035	35	0.0418	2.5	2.4582	Complied
20	836.600032	32	0.0383	2.5	2.4617	Complied
30	836.600036	36	0.0430	2.5	2.4570	Complied
40	836.599985	15	0.0179	2.5	2.4821	Complied
50	836.599995	5	0.0060	2.5	2.4940	Complied

Note(s):

1. A dummy battery was placed on the EUT and the dummy battery cables connected to a bench power supply.
2. Frequency error was measured using the UMTS Band V modulation test on a calibrated Rohde & Schwarz CMU 200 Universal Radio Communications Tester in accordance with current Rohde & Schwarz application notes. The EUT was placed in a temperature chamber and connected by suitable RF cables to the CMU 200 outside the chamber. A bidirectional communications link was established on the centre channel between the EUT and the CMU 200. The frequency meter value was recorded.
3. Temperature was monitored throughout the test with a calibrated digital thermometer.

5.2.6. Transmitter Frequency Stability (Voltage Variation)**Test Summary:**

Test Engineer:	Andrew Edwards	Test Date:	01 April 2011
Test Sample IMEI:	355320040012406		

FCC Part:	2.1055 & 22.355
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 (%):	27

Results: Middle Channel (836.6 MHz)

Supply Voltage (V)	Measured Frequency (MHz)	Frequency Error (Hz)	Frequency Error (ppm)	Limit (ppm)	Margin (ppm)	Result
3.4	836.600032	32	0.0383	2.5	2.4617	Complied
4.2	836.600032	32	0.0383	2.5	2.4617	Complied

Note(s):

1. A dummy battery was placed on the EUT and the dummy battery cables connected to a bench power supply.
2. Frequency error was measured using the UMTS Band V modulation test on a calibrated Rohde & Schwarz CMU 200 Universal Radio Communications Tester in accordance with current Rohde & Schwarz application notes. The EUT was connected by suitable RF cables to the CMU 200. A bidirectional communications link was established on the centre channel between the EUT and the CMU 200. The frequency meter value was recorded.
3. Voltage was monitored throughout the test with a calibrated digital voltmeter.

5.2.7. Transmitter Occupied Bandwidth

Test Summary:

Test Engineer:	Andrew Edwards	Test Date:	05 April 2011
Test Sample IMEI:	355320040012406		

FCC Part:	2.1049
Test Method Used:	As detailed in ANSI C63.4 Section 13.7 referencing FCC CFR Part 2.1049

Environmental Conditions:

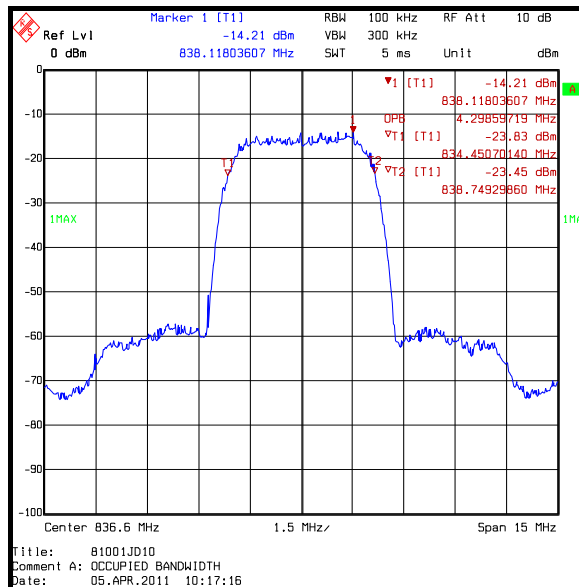
Temperature (°C):	24
Relative Humidity (%):	24

Results: Voice / 12.2 kbps

Channel	Frequency (MHz)	Occupied Bandwidth (kHz)
Middle	836.6	4298.597

Note(s):

- In lieu of the test method detailed in ANSI C63.4 Section 13.7, the 99% occupied bandwidth was measured using the Occupied Bandwidth function of the spectrum analyser.



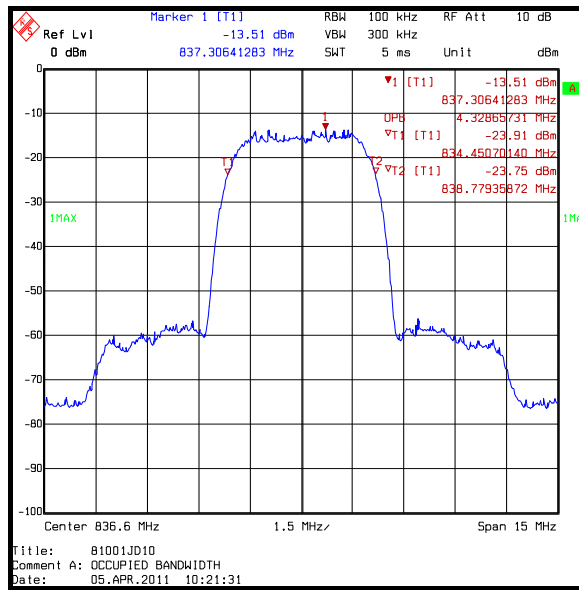
Transmitter Occupied Bandwidth (continued)

Results: HSDPA Sub-Test 1

Channel	Frequency (MHz)	Occupied Bandwidth (kHz)
Middle	836.6	4328.657

Note(s):

- In lieu of the test method detailed in ANSI C63.4 Section 13.7, the 99% occupied bandwidth was measured using the Occupied Bandwidth function of the spectrum analyser.



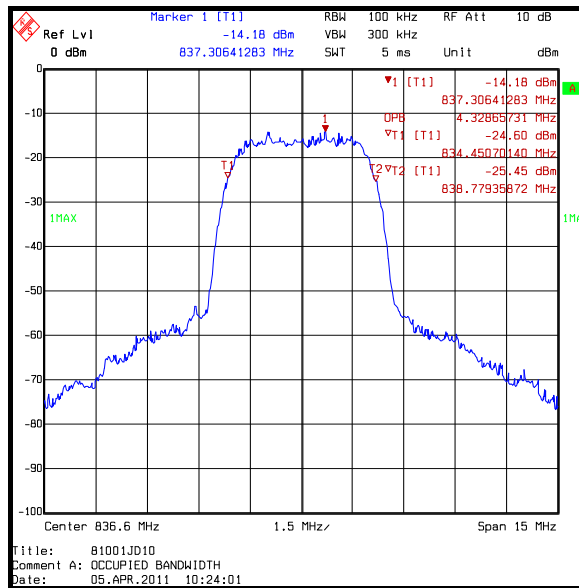
Transmitter Occupied Bandwidth (continued)

Results: HSDPA Sub-Test 2

Channel	Frequency (MHz)	Occupied Bandwidth (kHz)
Middle	836.6	4328.657

Note(s):

- In lieu of the test method detailed in ANSI C63.4 Section 13.7, the 99% occupied bandwidth was measured using the Occupied Bandwidth function of the spectrum analyser.



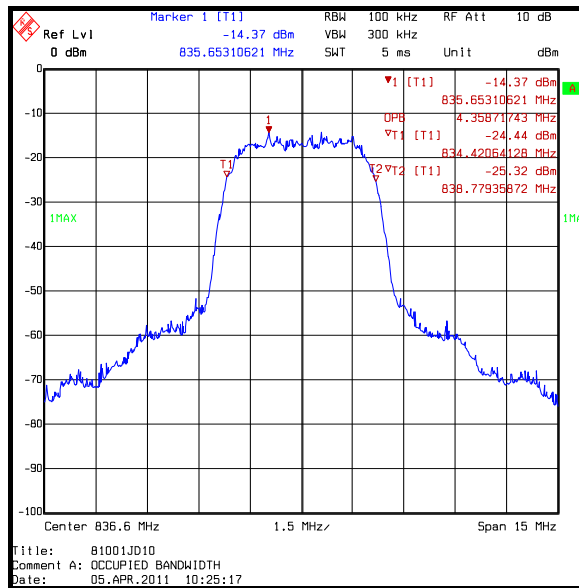
Transmitter Occupied Bandwidth (continued)

Results: HSDPA Sub-Test 3

Channel	Frequency (MHz)	Occupied Bandwidth (kHz)
Middle	836.6	4358.717

Note(s):

- In lieu of the test method detailed in ANSI C63.4 Section 13.7, the 99% occupied bandwidth was measured using the Occupied Bandwidth function of the spectrum analyser.



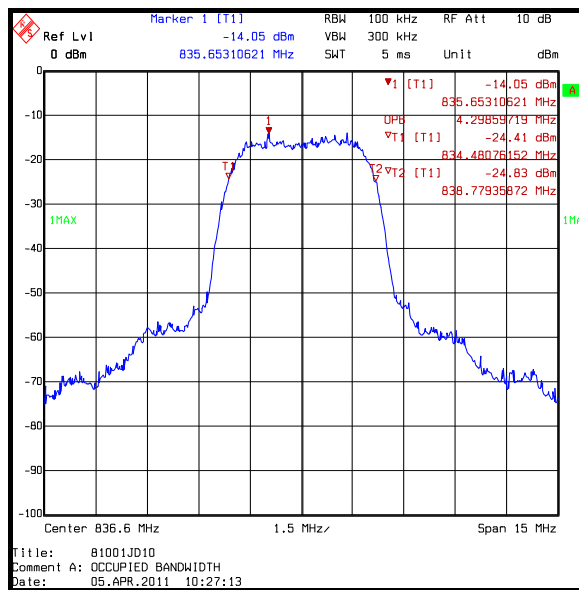
Transmitter Occupied Bandwidth (continued)

Results: HSDPA Sub-Test 4

Channel	Frequency (MHz)	Occupied Bandwidth (kHz)
Middle	836.6	4298.597

Note(s):

- In lieu of the test method detailed in ANSI C63.4 Section 13.7, the 99% occupied bandwidth was measured using the Occupied Bandwidth function of the spectrum analyser.



5.2.8. Transmitter Out of Band Radiated Emissions**Test Summary:**

Test Engineer:	Patrick Jones & Andrew Edwards	Test Date:	21 March 2011 & 04 April 2011
Test Sample IMEI:	355320040013412		

FCC Part:	2.1053 & 22.917
Test Method Used:	As detailed in ANSI TIA-603-C-2004 Section 2.2.12 referencing FCC CFR Part 2.1053
Frequency Range:	30 MHz to 9 GHz
Configuration:	HSDPA Sub-Test 3

Environmental Conditions:

Temperature (°C):	26
Relative Humidity (%):	21

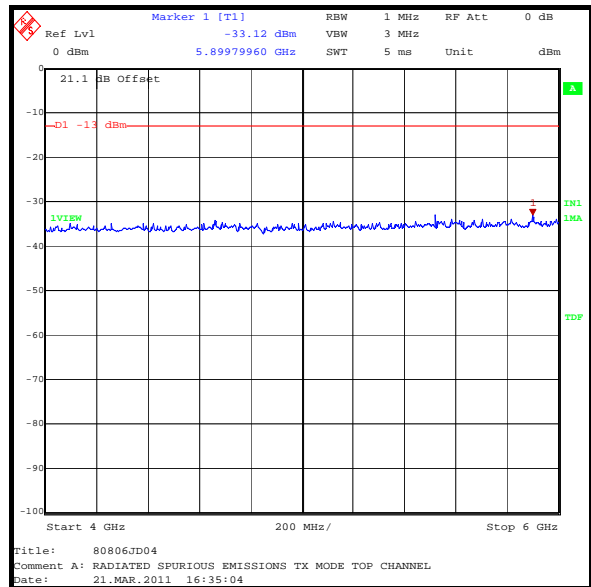
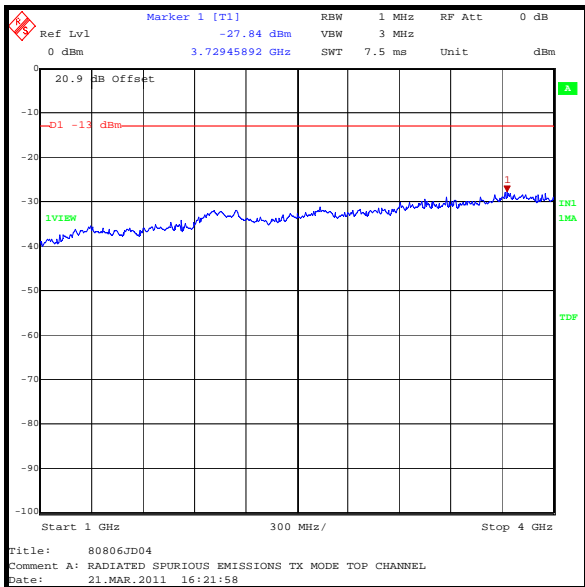
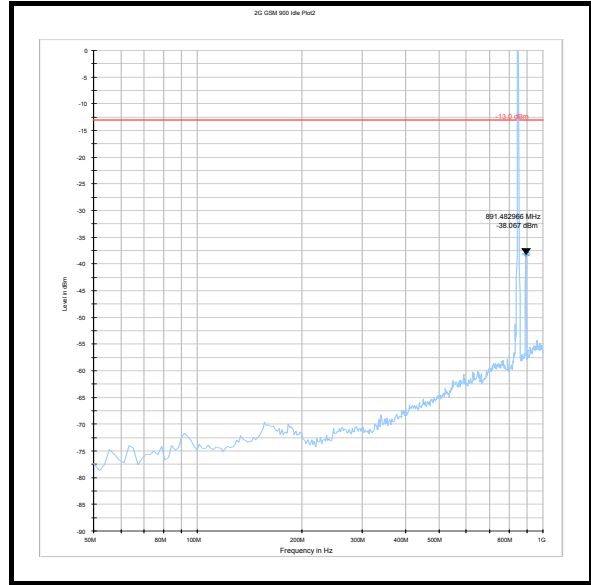
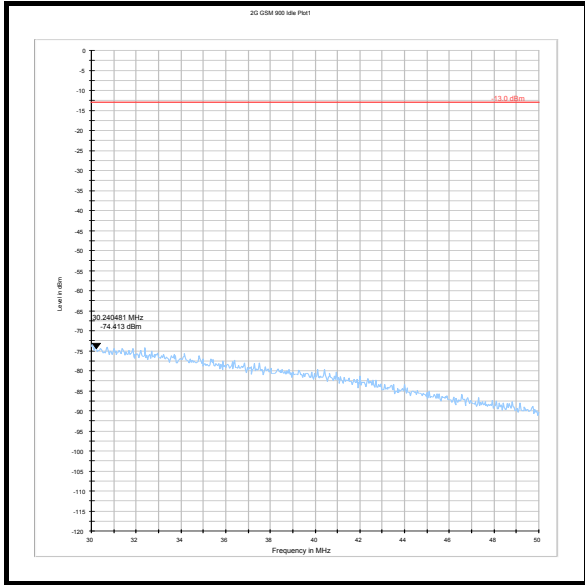
Results: HSDPA Sub test 3:- Top Channel

Frequency (MHz)	Peak Level (dBm)	Limit (dBm)	Margin (dB)	Result
3729.459	-27.8	-13.0	14.8	Complied

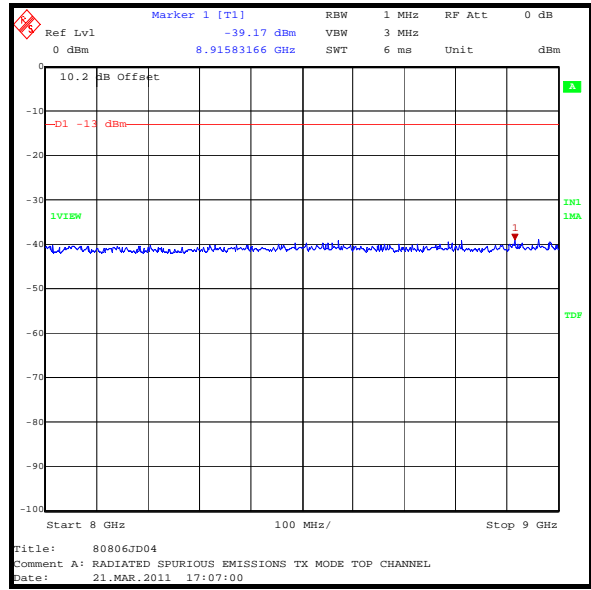
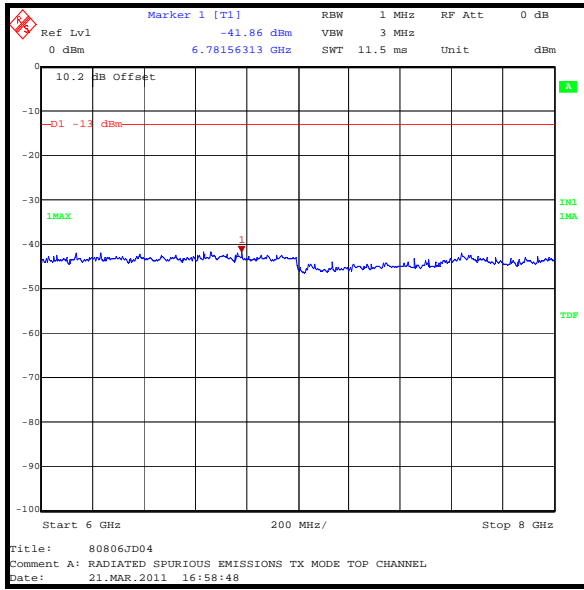
Note(s):

- No spurious emissions were detected above the noise floor of the measuring receiver; the highest peak noise floor reading of the measuring receiver was recorded.
- The uplink and downlink traffic channels are shown on the 50 MHz to 1 GHz plot.
- All emissions shown on the pre-scan plots were investigated and found to be below the measurement system noise floor or ambient.
- Measurements below 1 GHz were performed in a semi-anechoic chamber (RFI Asset Number K0001) at a distance of 3 metres. The EUT was placed at a height of 80 cm above the reference ground plane in the centre of the chamber turntable. Maximum emission levels were determined by height searching the measurement antenna over the range 1 metre to 4 metres.
- Pre-scans above 1 GHz were performed in a fully anechoic chamber (RFI Asset Number K0002) at a distance of 3 metres. The EUT was placed at a height of 1.5 metres above the test chamber floor in the centre of the chamber turntable. All measurement antennas were placed at a fixed height of 1.5 metres above the test chamber floor, in line with the EUT. Final measurements above 1 GHz were performed in a semi-anechoic chamber (RFI Asset Number K0001) at a distance of 3 metres. The EUT was placed at a height of 80 cm above the reference ground plane in the centre of the chamber turntable. Maximum emission levels were determined by height searching the measurement antenna over the range 1 metre to 4 metres.

Transmitter Out of Band Radiated Emissions (continued)



Transmitter Out of Band Radiated Emissions (continued)



5.2.9. Transmitter Radiated Emissions at Band Edges

Test Summary:

Test Engineer:	Andrew Edwards	Test Date:	05 April 2011
Test Sample IMEI:	355320040012406		

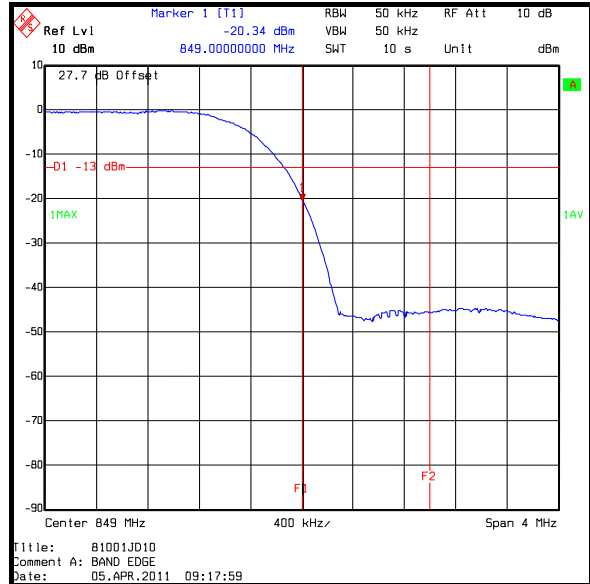
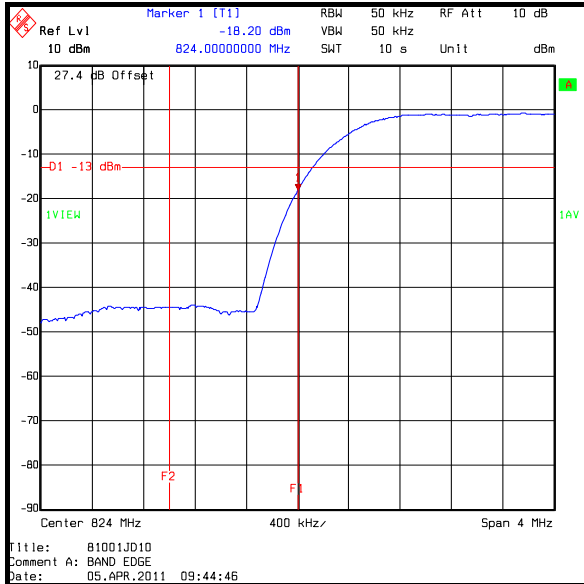
FCC Part:	2.1053 & 22.917
Test Method Used:	As detailed in ANSI TIA-603-C-2004 Section 2.2.12 referencing FCC CFR Part 22.917

Environmental Conditions:

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

Results: Voice / 12.2 kbps

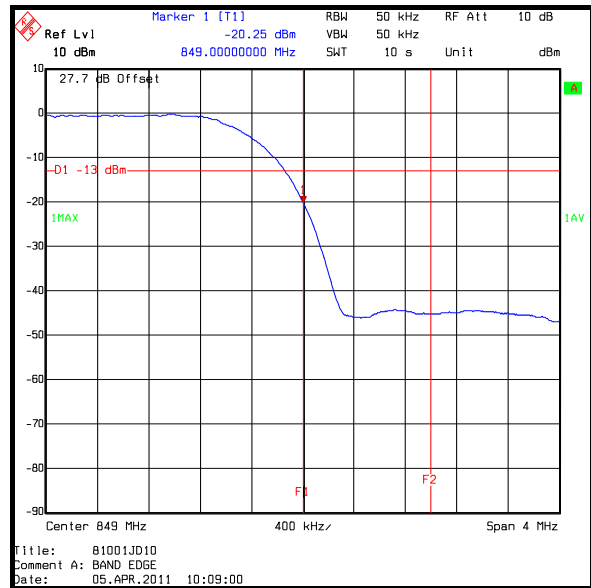
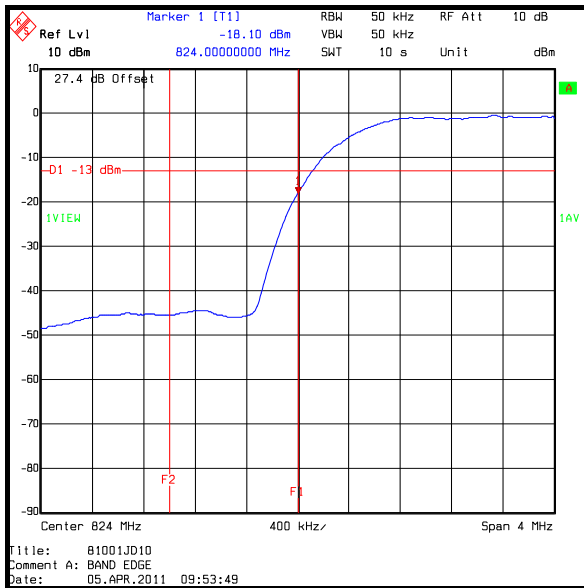
Frequency (MHz)	Peak Level (dBm)	Limit (dBm)	Margin (dB)	Result
824	-18.2	-13.0	5.2	Complied
849	-20.3	-13.0	7.3	Complied



Transmitter Radiated Emissions at Band Edges (continued)

Results: HSDPA Sub-Test 1

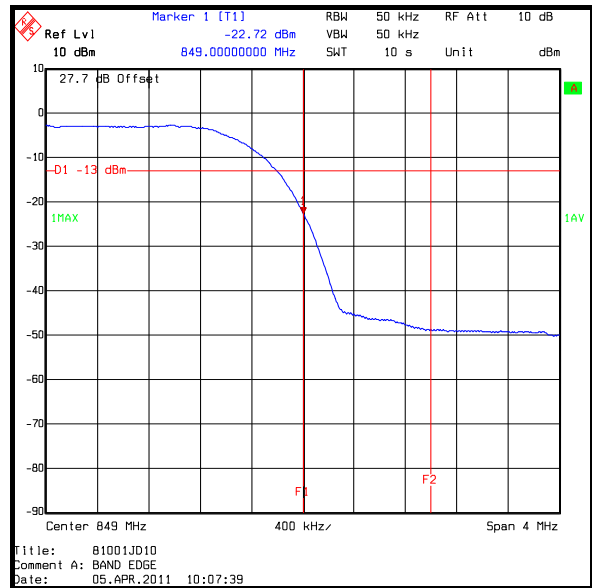
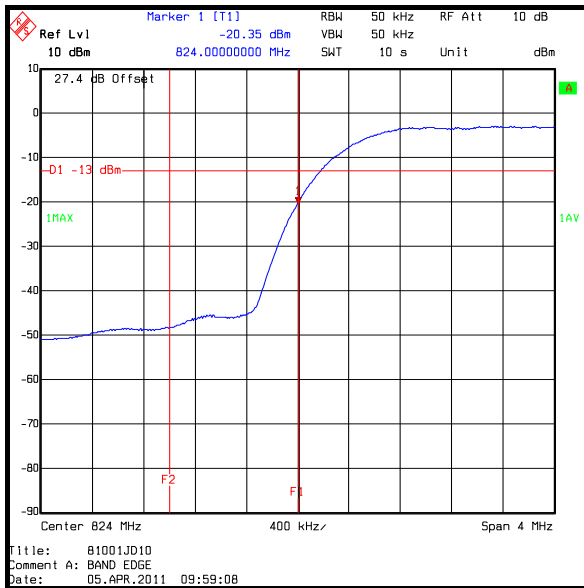
Frequency (MHz)	Peak Level (dBm)	Limit (dBm)	Margin (dB)	Result
824	-18.1	-13.0	5.1	Complied
849	-20.3	-13.0	7.3	Complied



Transmitter Radiated Emissions at Band Edges (continued)

Results: HSDPA Sub-Test 2

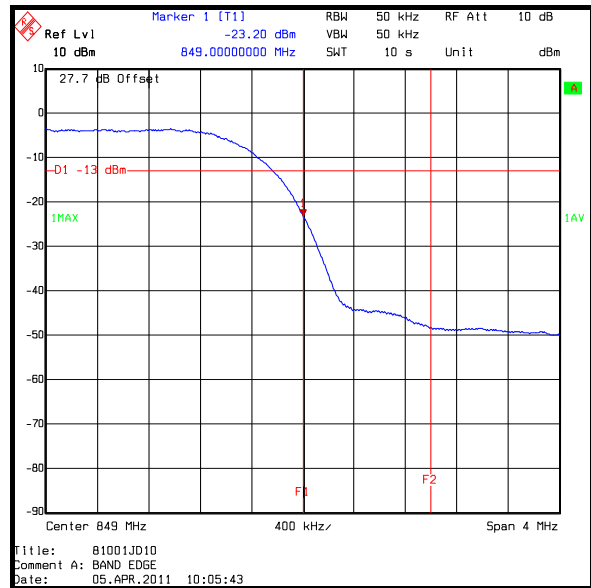
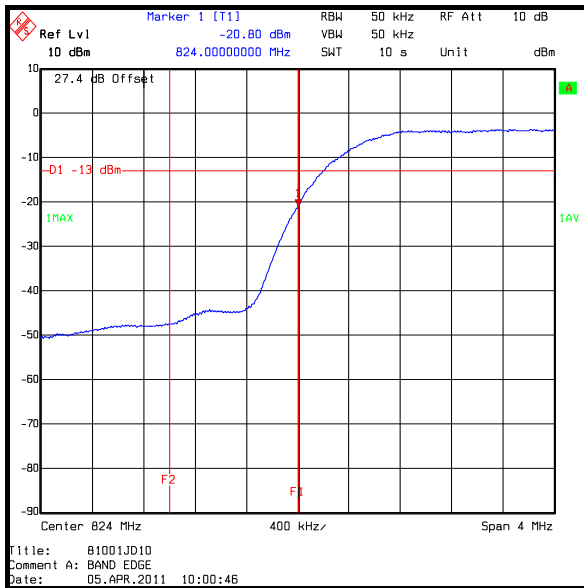
Frequency (MHz)	Peak Level (dBm)	Limit (dBm)	Margin (dB)	Result
824	-20.4	-13.0	7.4	Complied
849	-22.7	-13.0	9.7	Complied



Transmitter Radiated Emissions at Band Edges (continued)

Results: HSDPA Sub-Test 3

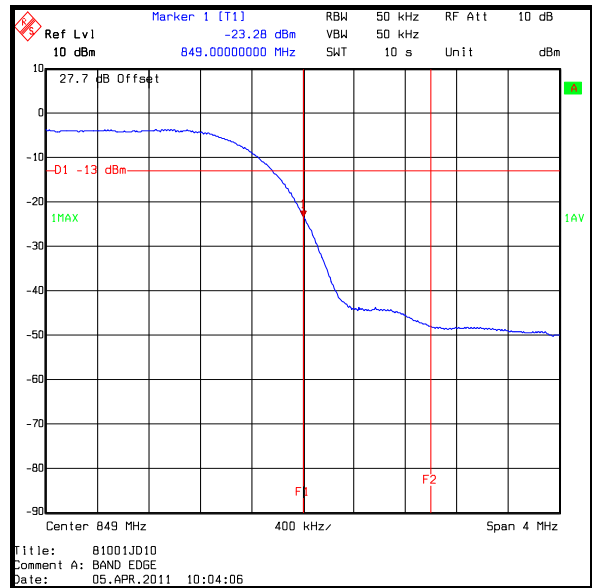
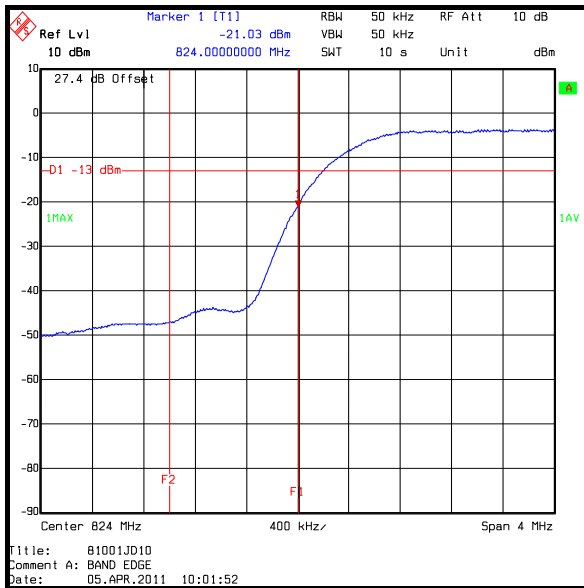
Frequency (MHz)	Peak Level (dBm)	Limit (dBm)	Margin (dB)	Result
824	-20.8	-13.0	7.8	Complied
849	-23.2	-13.0	10.2	Complied



Transmitter Radiated Emissions at Band Edges (continued)

Results: HSDPA Sub-Test 4

Frequency (MHz)	Peak Level (dBm)	Limit (dBm)	Margin (dB)	Result
824	-21.0	-13.0	8.0	Complied
849	-23.3	-13.0	10.3	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
Effective Radiated Power (ERP)	824 to 849 MHz	95%	±2.94 dB
Conducted Output Power	824 to 849 MHz	95%	±0.27 dB
Frequency Stability	824 to 849 MHz	95%	±0.92 ppm
Occupied Bandwidth	824 to 849 MHz	95%	±0.92 ppm
Radiated Spurious Emissions	30 MHz to 9 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 Calibration Due	Cal. Interval (Months)
A1069	LISN	Rohde & Schwarz	ESH3-Z5	837469/012	13 Apr 2011	12
A1534	Pre Amplifier	Hewlett Packard	8449B	3008A00405	06 Jun 2011	12
A1537	Directional Coupler	Hewlett Packard	778D	1144A05122	Calibrated before use	-
A1818	Antenna	EMCO	3115	00075692	05 Sep 2011	12
A1830	Pulse Limiter	Rohde & Schwarz	ESH3-Z2	100668	05 Mar 2012	12
A1834	Attenuator	Hewlett Packard	8491B	10444	30 Jun 2011	12
A1974	RF Filter	AtlanTec	AFH-01000	090000283	29 Dec 2011	12
A1996	Attenuator	Huber & Suhner	6810.17.B	301749	09 Feb 2012	12
A1997	Attenuator	Huber & Suhner	6810.17.B	301749	09 Feb 2012	12
A1998	Attenuator	Huber & Suhner	6820.17.B	07101	09 Feb 2012	12
A253	Antenna	Flann Microwave	12240-20	128	05 Sep 2011	12
A254	Antenna	Flann Microwave	14240-20	139	05 Sep 2011	12
A255	Antenna	Flann Microwave	16240-20	519	05 Sep 2011	12
A288	Antenna	Chase	CBL6111A	1589	05 Sep 2011	12
A553	Antenna	Chase	CBL6111A	1593	26 Mar 2012	12
G0543	Amplifier	Sonoma	310N	230801	30 Jun 2011	12
K0001	5m RSE Chamber	Rainford EMC	N/A	N/A	25 Apr 2011	12
K0002	3m RSE Chamber	Rainford EMC	N/A	N/A	05 Sep 2011	12
L1021	Comms Tester	Rohde & Schwarz	CMU 200	111379	11 Jan 2012	12
M1124	Spectrum Analyser	Rohde & Schwarz	ESI26	100046K	22 Apr 2011	12
M1223	Environmental Chamber	Votsch	VT4002	58566072720 010	Calibrated before use	-
M1249	Thermometer	Fluke	52II	88800049	05 Jul 2011	12
M1263	Test Receiver	Rohde & Schwarz	ESIB7	100265	28 Jun 2011	12
M1269	Multimeter	Fluke	179	90250210	15 Jul 2011	12
M1273	Test Receiver	Rohde & Schwarz	ESIB 26	100275	04 Feb 2012	12
S0537	Power Supply	TTI	EL302D	249928	Calibrated before use	-

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