



TEST REPORT FROM RFI GLOBAL SERVICES LTD

Test of: NTT docomo P-04C
FCC ID: UCE111037A
To: FCC Part 22: 2010 Subpart H

Test Report Serial No:
RFI-RPT-RP80807JD07A V2.0

Version 2.0 supersedes all previous versions

This Test Report Is Issued Under The Authority Of Chris Guy, Head of Global Approvals:	
	
Checked By:	A. Henriques
Signature:	
Date of Issue:	08 March 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:	16 February 2011 to 03 March 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-04C
IMEI:	355098040018090 (<i>Radiated sample</i>)
Hardware Version Number:	Rev C
Software Version Number:	B-D11SW1-01.01.004 D11SW1_Cv48091406
FCC ID:	UCE111037A

Brand Name:	NTT docomo
Model Name or Number:	P-04C
IMEI:	355098040018033 (<i>Conducted RF port sample</i>)
Hardware Version Number:	Rev C
Software Version Number:	B-D11SW1-01.01.004 D11SW1_Cv48091406
FCC ID:	UCE111037A

Brand Name:	NTT docomo
Description:	Battery
Model Name or Number:	P23

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 UMTS 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:	UMTS		
Type of Radio Device:	Transceiver		
Mode:	UMTS FDD V and UMTS Release 5 HSDPA		
Modulation Type:	QPSK		
Channel Spacing:	5 MHz		
Power Supply Requirement(s):	Nominal	3.7 V	
	Minimum	3.4 V	
	Maximum	4.2 V	
Maximum Output Power (ERP):	Voice (12.2 kbps)	24.9 dBm	
	HSDPA Sub-Test 1	24.9 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	4408	881.6
	Top	4458	891.6

3.5. Support Equipment

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

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

Brand Name:	Not marked or stated
Description:	Dummy Battery
Model Name or Number:	P-04C Dummy battery #02

Brand Name:	Buffalo
Description:	USB Hub
Model Name or Number:	Not marked or sated

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. Voice (12.2 kbps) 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 355098040018033 was used for frequency stability, occupied bandwidth and conducted power measurements. The sample with IMEI 355098040018090 was used for all other measurements.
- 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. Measurement results 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:	Ian Watch	Test Date:	17 February 2011
Test Sample IMEI:	355098040018090		

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

Environmental Conditions:

Temperature (°C):	20
Relative Humidity (%):	33

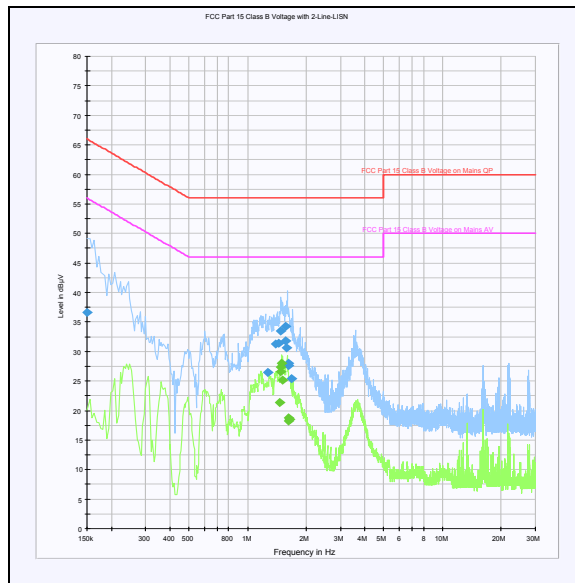
Results: Quasi Peak

Frequency (MHz)	Line	Level (dB μ V)	Limit (dB μ V)	Margin (dB)	Result
0.150000	Live	36.6	66.0	29.4	Complied
1.270500	Neutral	26.5	56.0	29.5	Complied
1.401000	Live	31.2	56.0	24.8	Complied
1.441500	Live	31.4	56.0	24.6	Complied
1.482000	Live	33.5	56.0	22.5	Complied
1.563000	Live	34.2	56.0	21.8	Complied
1.572000	Live	31.8	56.0	24.2	Complied
1.585500	Live	30.6	56.0	25.4	Complied
1.621500	Live	28.0	56.0	28.0	Complied
1.626000	Live	27.6	56.0	28.4	Complied
1.671000	Live	25.3	56.0	30.7	Complied

Results: Average

Frequency (MHz)	Line	Level (dB μ V)	Limit (dB μ V)	Margin (dB)	Result
1.459500	Live	21.3	46.0	24.7	Complied
1.473000	Live	26.6	46.0	19.4	Complied
1.477500	Live	27.4	46.0	18.6	Complied
1.500000	Live	28.0	46.0	18.0	Complied
1.518000	Live	25.2	46.0	20.8	Complied
1.617000	Live	18.8	46.0	27.2	Complied
1.621500	Live	18.3	46.0	27.7	Complied
1.635000	Live	18.4	46.0	27.6	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:	Nick Steele	Test Date:	25 February 2011
Test Sample IMEI:	355098040018090		

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):	23
Relative Humidity (%):	33

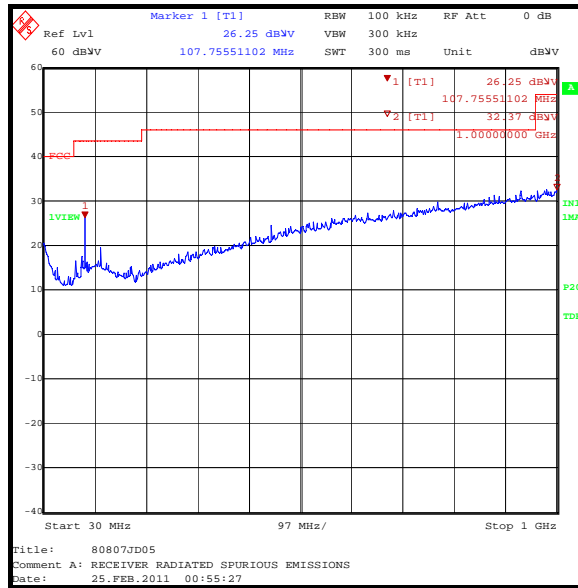
Results:

Frequency (MHz)	Antenna Polarity	Level (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Result
107.603	Horizontal	25.6	43.5	17.9	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:	Ian Watch	Test Date:	28 February 2011
Test Sample IMEI:	355098040018090		

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):	22
Relative Humidity (%):	25

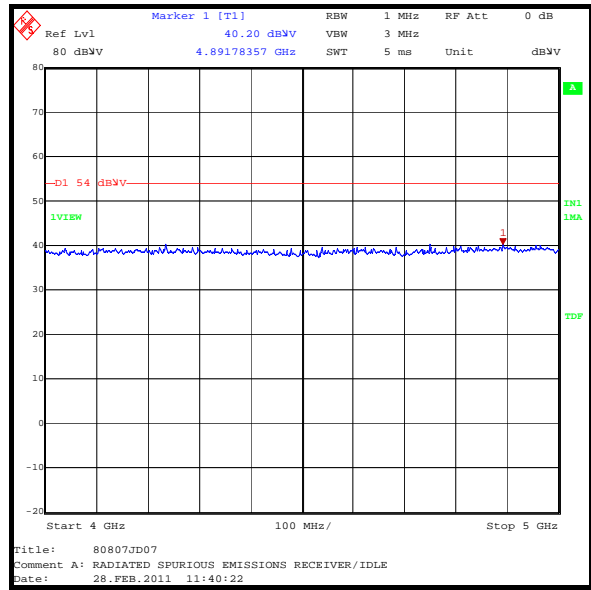
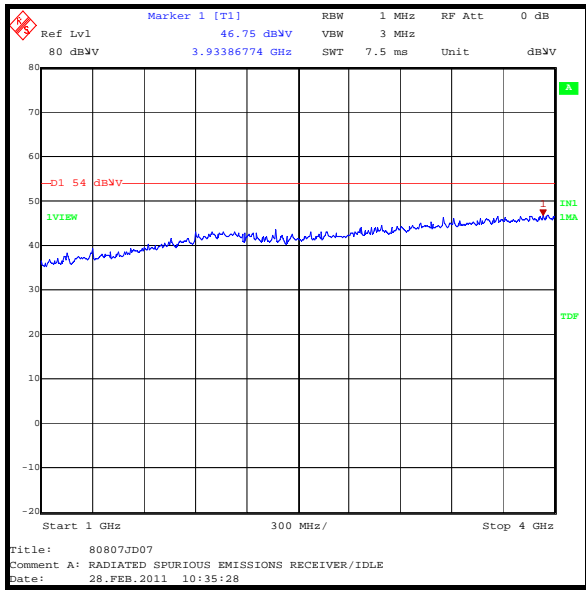
Results:

Frequency (MHz)	Antenna Polarity	Peak Level (dBμV/m)	Average Limit (dBμV/m)	Margin (dB)	Result
3933.868	Vertical	46.8	54.0	7.2	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)



5.2.3. Transmitter Effective Radiated Power (ERP)**Test Summary:**

Test Engineer:	Ian Watch	Test Date:	28 February 2011
Test Sample IMEI:	355098040018090		

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):	24
Relative Humidity (%):	22

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	23.7	23.1	23.1	22.6	23.7	38.5	14.8	Complied
	4183	24.6	23.9	23.3	23.5	24.6	38.5	13.9	Complied
	4233	24.9	24.4	23.7	23.8	24.9	38.5	13.6	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	21.2	18.7	18.7	17.4	21.2	38.5	17.3	Complied
	4183	21.7	18.9	17.7	17.9	21.7	38.5	16.8	Complied
	4233	22.2	19.7	18.4	18.4	22.2	38.5	16.3	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:	Jack Suter	Test Date:	28 February 2011
Test Sample IMEI:	355098040018033		

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):	20
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	25.4	24.8	24.8	24.3	25.4
	4183	25.3	24.6	24.0	24.2	25.3
	4233	25.3	24.8	24.1	24.2	25.3
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	22.8	20.2	19.0	18.9	22.8
	4183	22.7	20.1	18.8	18.8	22.8
	4233	22.8	20.2	19.0	19.0	22.8
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:	Ian Watch	Test Date:	25 February 2011
Test Sample IMEI:	355098040018033		

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):	20
Ambient Relative Humidity (%):	23

Results: Middle Channel (836.6 MHz)

Temperature (°C)	Measured Frequency (MHz)	Frequency Error (Hz)	Frequency Error (ppm)	Limit (ppm)	Margin (ppm)	Result
-30	836.600037	37	0.0442	2.5	2.4558	Complied
-20	836.600030	30	0.0359	2.5	2.4641	Complied
-10	836.600032	32	0.0383	2.5	2.4617	Complied
0	836.600029	29	0.0347	2.5	2.4653	Complied
10	836.600025	25	0.0299	2.5	2.4701	Complied
20	836.599977	23	0.0275	2.5	2.4725	Complied
30	836.599972	28	0.0335	2.5	2.4665	Complied
40	836.600025	25	0.0299	2.5	2.4701	Complied
50	836.600033	33	0.0394	2.5	2.4606	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:	Ian Watch	Test Date:	25 February 2011
Test Sample IMEI:	355098040018033		

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):	20
Relative Humidity (%):	33

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	836.599977	23	0.0275	2.5	2.4725	Complied
4.2	836.599973	27	0.0323	2.5	2.4677	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:	Patrick Jones	Test Date:	02 March 2011
Test Sample IMEI:	355098040018033		

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

Environmental Conditions:

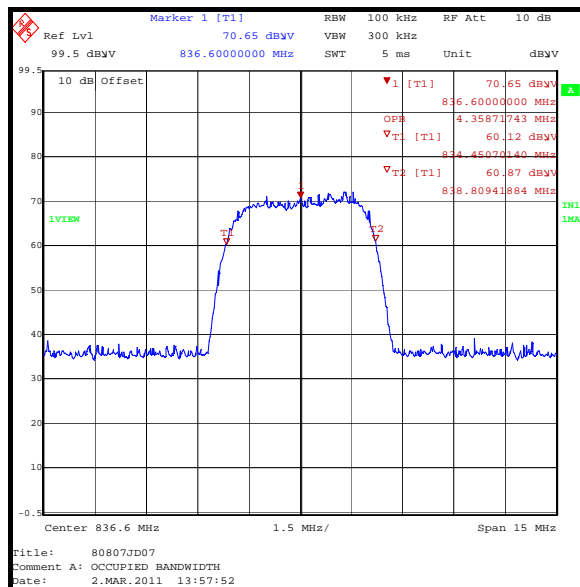
Temperature (°C):	25
Relative Humidity (%):	21

Results: Voice / 12.2 kbps

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.



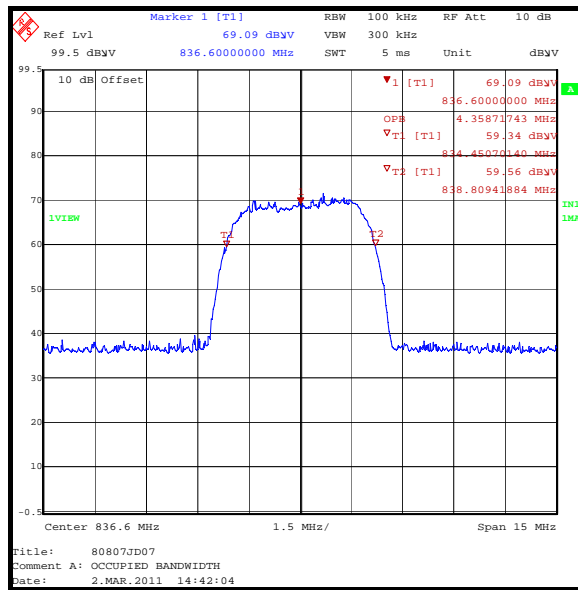
Transmitter Occupied Bandwidth (continued)

Results: HSDPA Sub-Test 1

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.



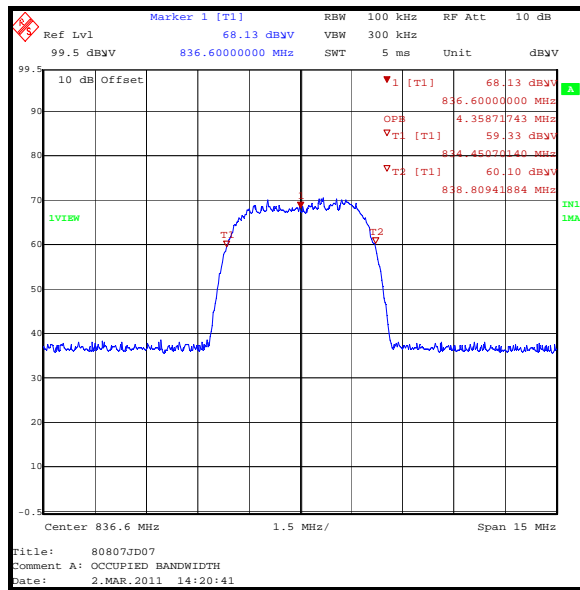
Transmitter Occupied Bandwidth (continued)

Results: HSDPA Sub-Test 2

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.



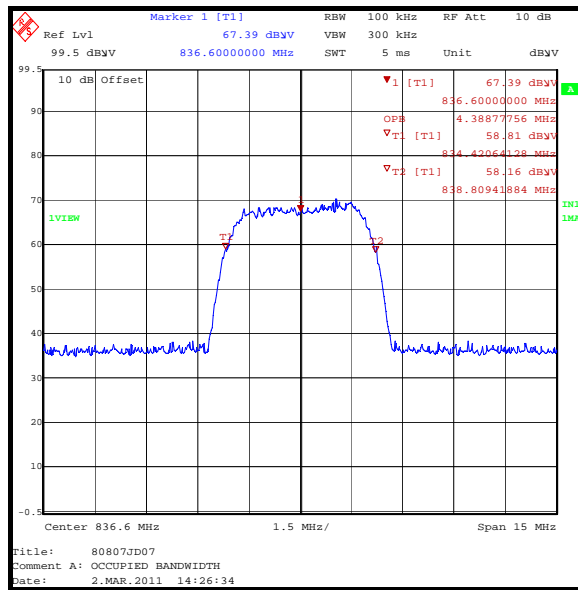
Transmitter Occupied Bandwidth (continued)

Results: HSDPA Sub-Test 3

Channel	Frequency (MHz)	Occupied Bandwidth (kHz)
Middle	836.6	4388.778

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.



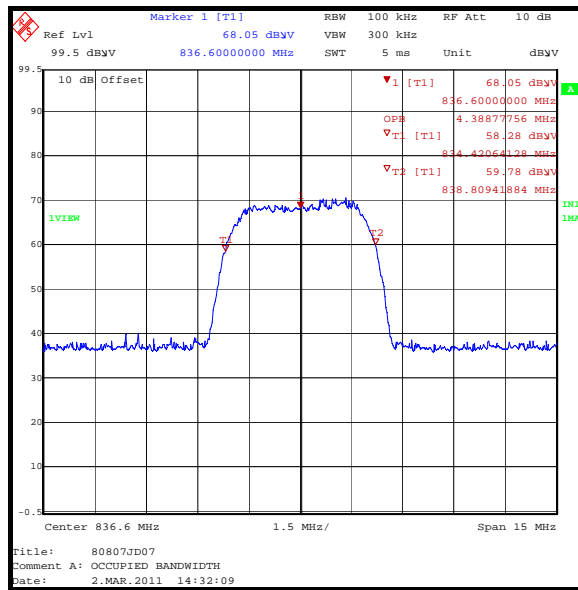
Transmitter Occupied Bandwidth (continued)

Results: HSDPA Sub-Test 4

Channel	Frequency (MHz)	Occupied Bandwidth (kHz)
Middle	836.6	4388.778

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	Test Date:	01 March 2011
Test Sample IMEI:	355098040018090		

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:	Voice / 12.2 kbps

Environmental Conditions:

Temperature (°C):	21
Relative Humidity (%):	32

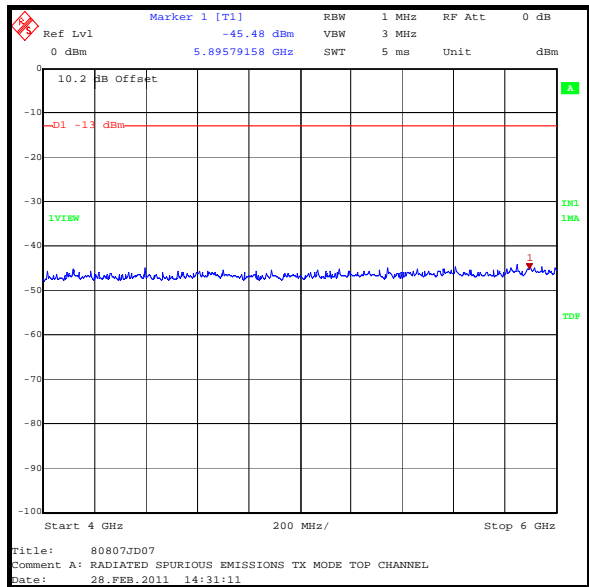
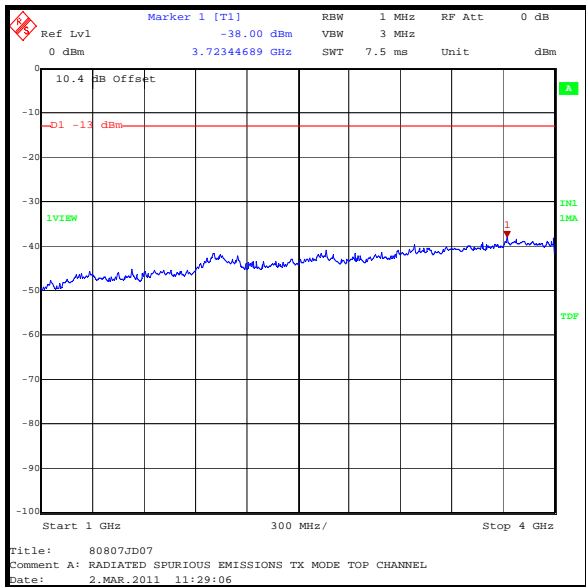
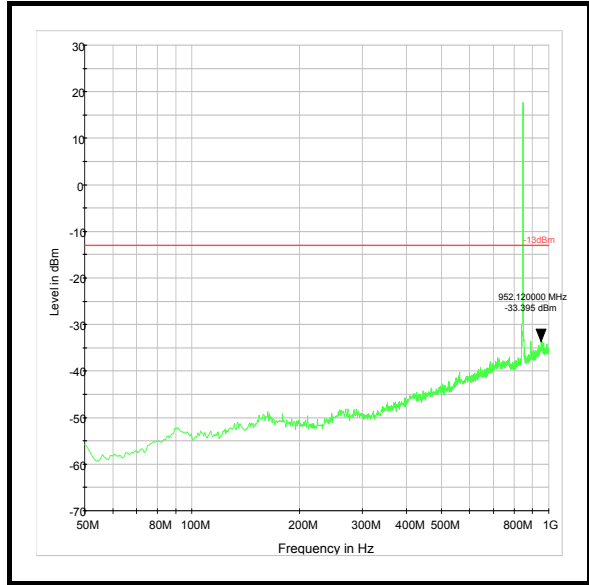
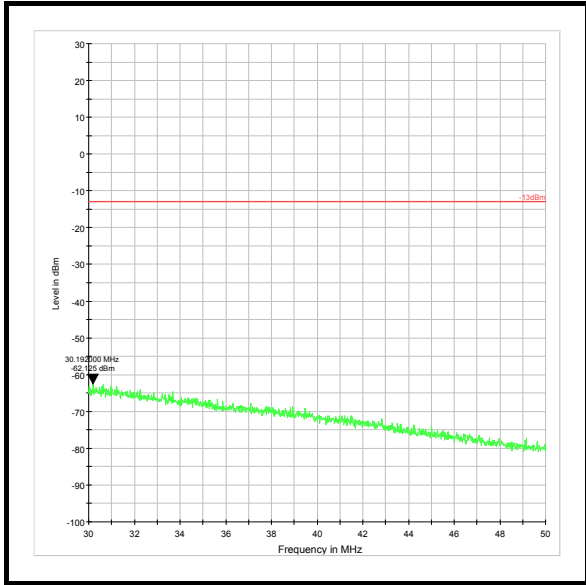
Results: Voice / 12.2 kbps

Frequency (MHz)	Peak Level (dBm)	Limit (dBm)	Margin (dB)	Result
952.120	-33.4	-13.0	20.4	Complied

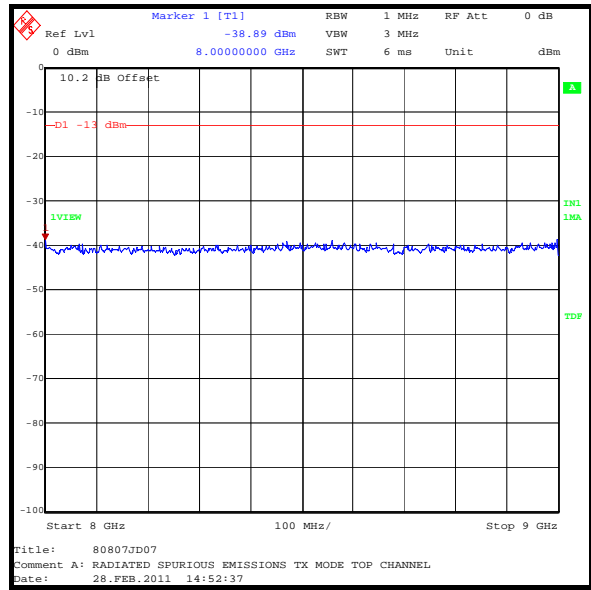
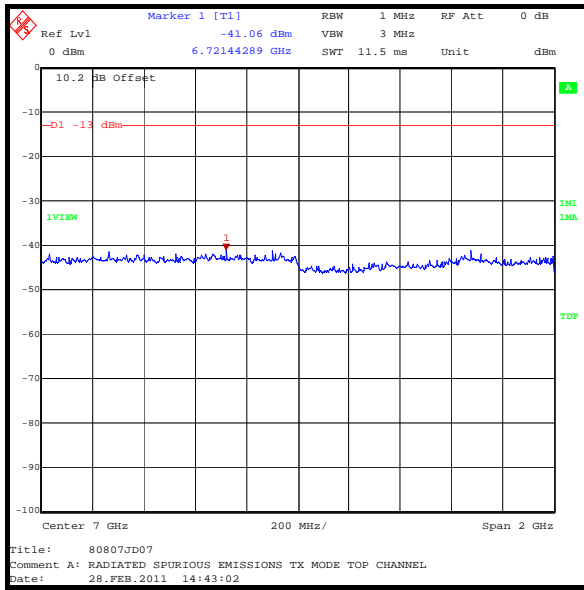
Note(s):

1. Pre-scans were performed with the EUT transmitting at full power on the top channel
2. 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.
3. The uplink and downlink traffic channels are shown on the 50 MHz to 1 GHz plot.
4. 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.
5. 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:	Ian Watch	Test Date:	03 March 2011
Test Sample IMEI:	355098040018090		

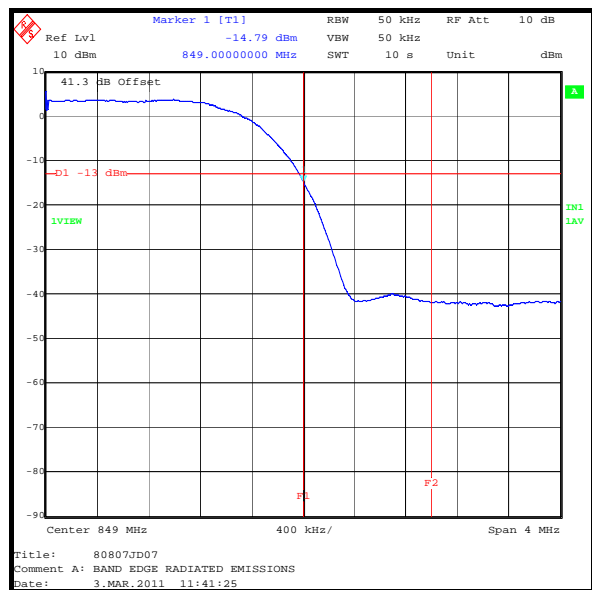
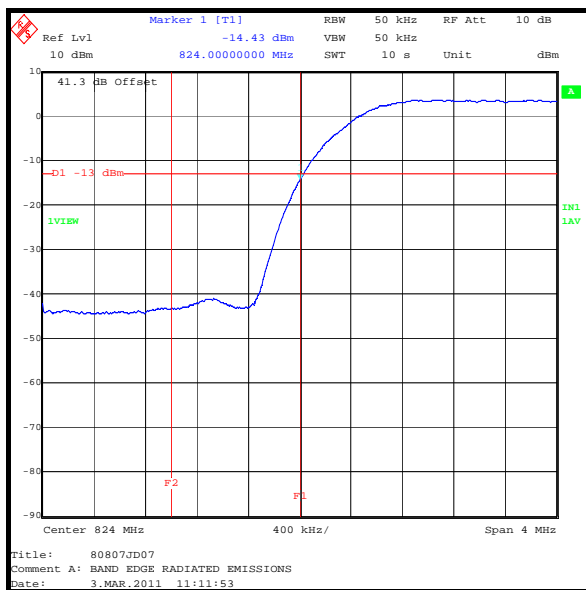
FCC Part:	2.1053 & 22.917
Test Method Used:	As detailed in ANSI TIA-603-C-2004 Section 2.2.12 referencing FCC CFR Part 22.917

Environmental Conditions:

Temperature (°C):	25
Relative Humidity (%):	22

Results: Voice / 12.2 kbps

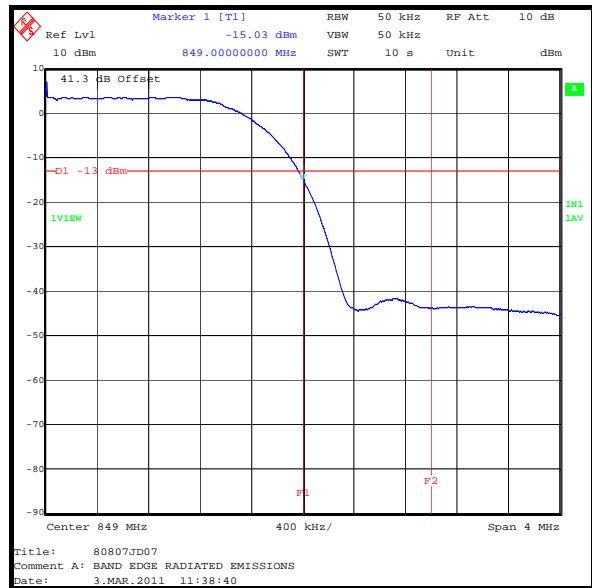
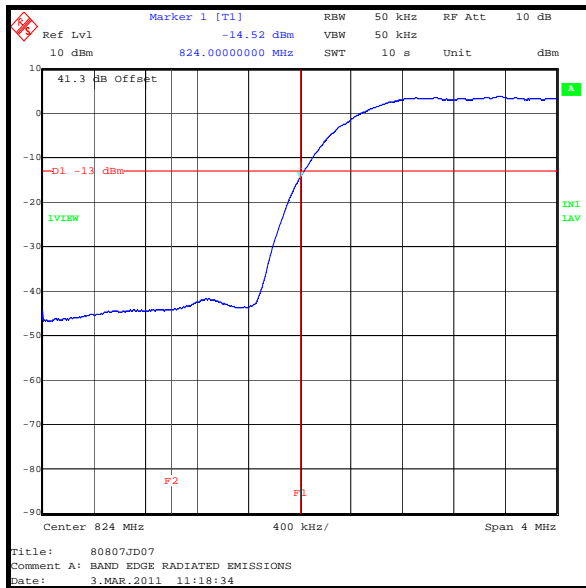
Frequency (MHz)	Level (dBm)	Limit (dBm)	Margin (dB)	Result
824	-14.4	-13.0	1.4	Complied
849	-14.8	-13.0	1.8	Complied



Transmitter Radiated Emissions at Band Edges (continued)

Results: HSDPA Sub-Test 1

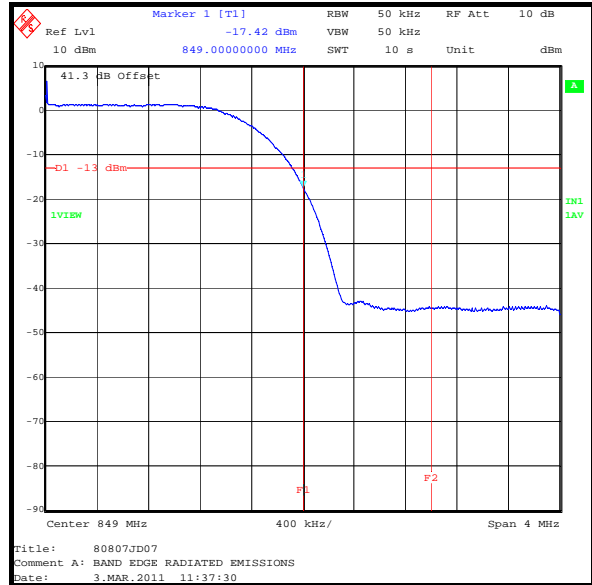
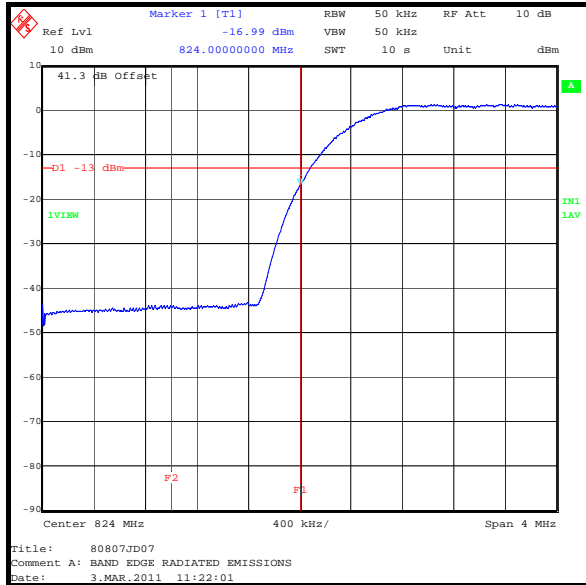
Frequency (MHz)	Level (dBm)	Limit (dBm)	Margin (dB)	Result
824	-14.5	-13.0	1.5	Complied
849	-15.0	-13.0	2.0	Complied



Transmitter Radiated Emissions at Band Edges (continued)

Results: HSDPA Sub-Test 2

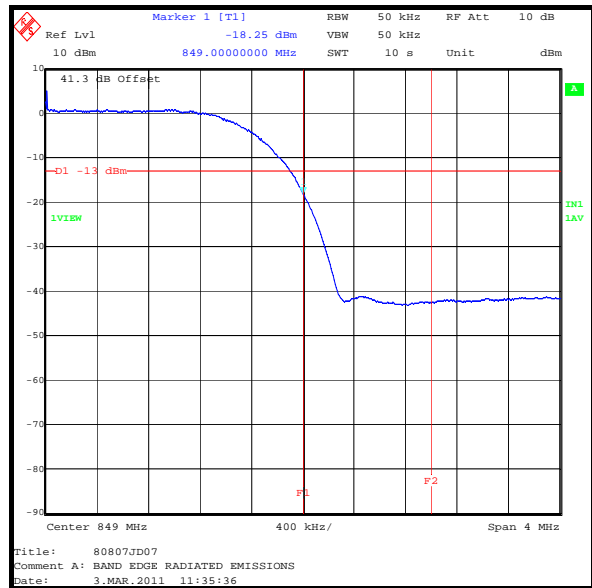
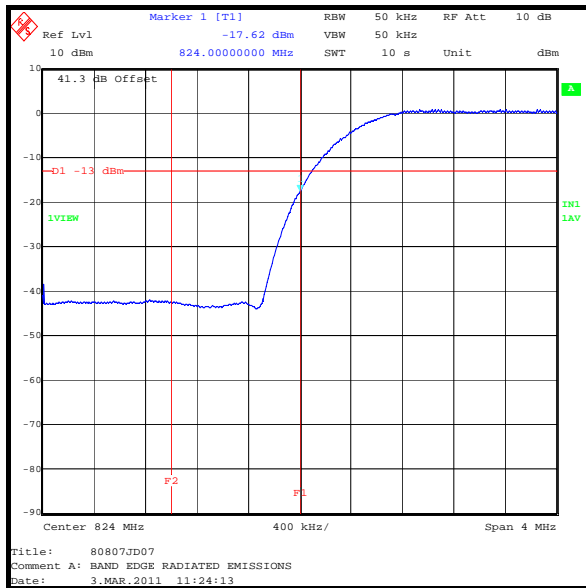
Frequency (MHz)	Level (dBm)	Limit (dBm)	Margin (dB)	Result
824	-17.0	-13.0	4.0	Complied
849	-17.4	-13.0	4.4	Complied



Transmitter Radiated Emissions at Band Edges (continued)

Results: HSDPA Sub-Test 3

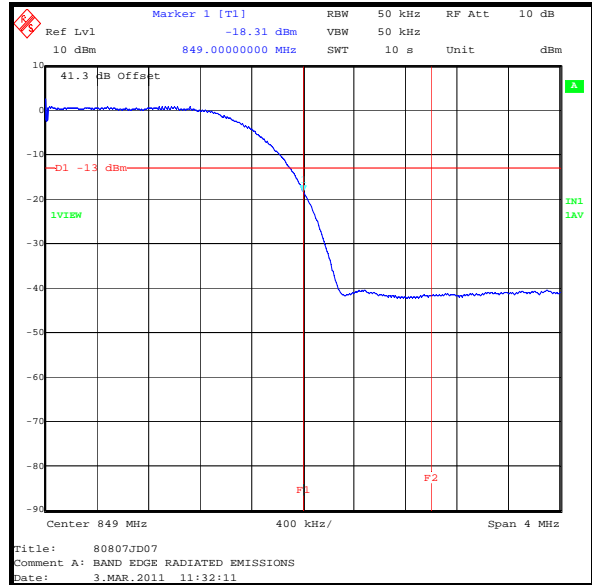
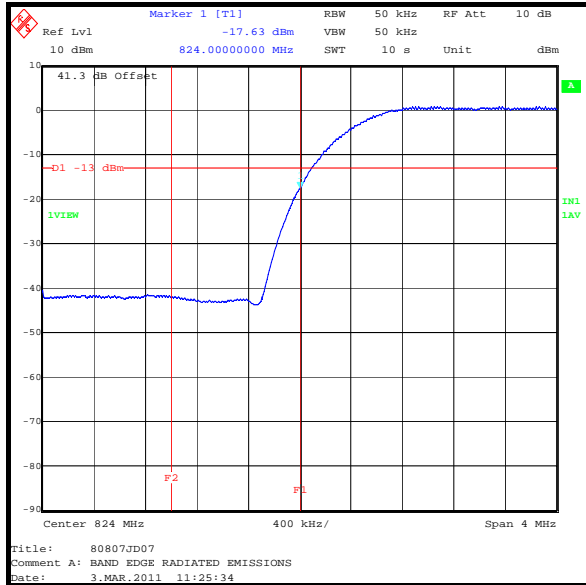
Frequency (MHz)	Level (dBm)	Limit (dBm)	Margin (dB)	Result
824	-17.6	-13.0	4.6	Complied
849	-18.3	-13.0	5.3	Complied



Transmitter Radiated Emissions at Band Edges (continued)

Results: HSDPA Sub-Test 4

Frequency (MHz)	Level (dBm)	Limit (dBm)	Margin (dB)	Result
824	-17.6	-13.0	4.6	Complied
849	-18.3	-13.0	5.3	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 (mths)
A1069	LISN	Rohde & Schwarz	ESH3-Z5	837469/012	13 Apr 2011	12
A1396	Attenuator	Huber + Suhner	757987	6810.17.B	06 Jul 2011	12
A1534	Pre Amplifier	Hewlett Packard	8449B	3008A00405	06 Jun 2011	12
A1538	Directional Coupler	Hewlett Packard	775D	07065	Calibrated before use	-
A1818	Antenna	EMCO	3115	00075692	05 Sep 2011	12
A1830	Pulse Limiter	Rhode & Schwarz	ESH3-Z2	100668	01 Mar 2011	12
A1974	High Pass Filter	AtlanTecRF	AFH-01000	090000283	29 Dec 2011	12
A1997	Attenuator	Huber + Suhner	6810.17.B	301749	09 Feb 2012	12
A244	Attenuator	Schaffner	6820-17-B	None	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	16 Mar 2011	12
E013	Environmental Chamber	Sanyo	ATMOS chamber	None	Calibrated before use	-
G001	Signal Generator	Rohde & Schwarz	SMX	883 184/075	16 Jun 2012	24
K0001	5m Semi-Anechoic 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
L1001	Test Receiver	Rohde & Schwarz	ESU26	100239	16 Mar 2011	12
L1021	Comms Test Set	Rohde & Schwarz	CMU 200	111379	11 Jan 2012	12
M1068	Thermometer	Iso-Tech	RS55	93102884	10 Nov 2011	12
M1124	Test Receiver	Rohde & Schwarz	ESI26	100046K	22 Apr 2011	12
M122	Digital Voltmeter	Fluke	77	64910017	14 Jul 2011	12
M1242	Spectrum Analyser	Rohde & Schwarz	FSEM30	845986/022	06 Dec 2011	12
M1263	Test Receiver	Rohde & Schwarz	ESIB7	100265	28 Jun 2011	12
M1273	Test Receiver	Rohde & Schwarz	ESIB26	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.