



## TEST REPORT FROM RFI GLOBAL SERVICES LTD

Test of: NTT docomo P-07B

To: FCC Part 22: 2009 Subpart H

**Test Report Serial No:**  
RFI-RPT-RP78096JD03A

<b>This Test Report Is Issued Under The Authority Of Scott D'Adamo, Operations Manager Global Approvals:</b>		
<b>Checked By:</b>	Ian Watch	
<b>Signature:</b>		
<b>Date of Issue:</b>	25 June 2010	

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**1. Customer Information**










<b>Company Name:</b>	Panasonic Mobile Communications Development of Europe Ltd
<b>Address:</b>	Panasonic House Willoughby Road Bracknell Berkshire RG12 8FP

## **2. Summary of Testing**

### **2.1. General Information**

<b>Specification Reference:</b>	47CFR22
<b>Specification Title:</b>	Code of Federal Regulations Volume 47 (Telecommunications) 2009: Part 22 Subpart H (Public Mobile Services)
<b>Site Registration:</b>	209735
<b>Location of Testing:</b>	RFI Global Services Ltd, Wade Road, Basingstoke, Hampshire, RG24 8AH, United Kingdom
<b>Test Dates:</b>	16 June 2010 to 17 June 2010

### **2.2. Summary of Test Results**

<b>FCC Reference (47CFR)</b>	<b>Measurement</b>	<b>Result</b>
Part 15.107	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 Average Output Power	Note 1
Part 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	
<b>Key to Results</b>  = Complied  = Did not comply		

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

### **2.3. Methods and Procedures**

<b>Reference:</b>	ANSI/TIA-603-C-2004
<b>Title:</b>	Land Mobile Communications Equipment, Measurements and performance Standards
<b>Reference:</b>	ANSI C63.4 (2009)
<b>Title:</b>	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)**

<b>Brand Name:</b>	NTT docomo
<b>Model Name or Number:</b>	P-07B
<b>IMEI:</b>	359783030009078 ( <i>radiated sample</i> ) 359783030008047 ( <i>conducted sample</i> )
<b>Hardware Version Number:</b>	Rev C
<b>Software Version Number:</b>	B-D01CS2-00.00.017 D01CS2_Cv78032403
<b>FCC ID Number:</b>	UCE110031A

<b>Description:</b>	Battery
<b>Brand Name:</b>	NTT docomo
<b>Model Name or Number:</b>	P20*

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

<b>Description:</b>	DC Charger
<b>Brand Name:</b>	NTT docomo
<b>Model Name or Number:</b>	FOMA DC Adapter 02

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

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

<b>Description:</b>	Micro SD memory card
<b>Brand Name:</b>	Not stated
<b>Model Name or Number:</b>	Not stated

### **3.2. Description of EUT**

The equipment under test was a UMTS Cellular handset.

### **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 (RMC 12.2kbps)	19.9 dBm	
	HSDPA Set 1	19.9 dBm	
Transmit Frequency Range:	824 to 849 MHz		
Transmit Channels Tested:	Channel ID	Channel Number	Channel Frequency (MHz)
	Bottom	4132	826.4
	Middle	4182	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:

<b>Description:</b>	Dummy battery
<b>Brand Name:</b>	Not Stated
<b>Serial Number:</b>	Not Stated

<b>Description:</b>	USB Hub
<b>Brand Name:</b>	Buffalo
<b>Model Name or Number:</b>	BSH3U01



## **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 (RMC/12.2 kbps) or HSDPA (Sets 1 to 4) modes.
- Transmitter radiated spurious emissions were checked in all modes during pre-scans. Voice (RMC/12.2 kbps) with the AC Charger fitted 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.
- 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 was 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:

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

#### Environmental Conditions:

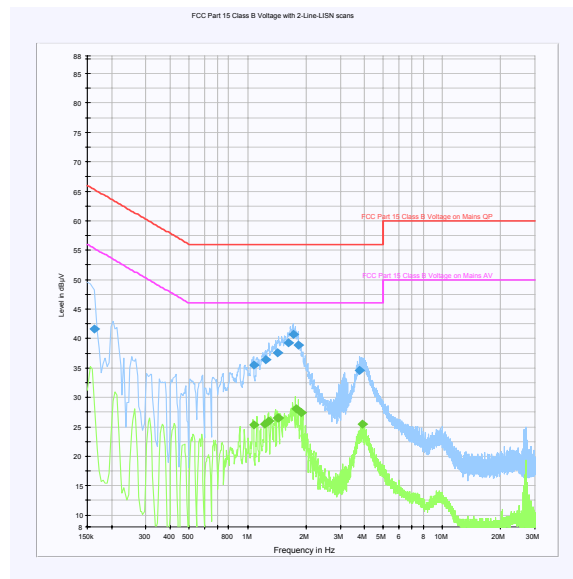
Temperature (°C):	29
Relative Humidity (%):	20

#### Results: Quasi Peak Detector Measurements

Frequency (MHz)	Line	Quasi Peak Level (dBμV)	Limit (dBμV)	Margin (dB)	Result
0.163500	Live	41.6	65.3	23.7	Complied
1.077000	Neutral	35.5	56.0	20.5	Complied
1.239000	Neutral	36.4	56.0	19.6	Complied
1.419000	Neutral	37.6	56.0	18.4	Complied
1.621500	Neutral	39.2	56.0	16.8	Complied
1.720500	Neutral	40.7	56.0	15.3	Complied
1.828500	Neutral	38.9	56.0	17.1	Complied
3.763500	Neutral	34.5	56.0	21.5	Complied

#### Results: Average Detector Measurements

Frequency (MHz)	Line	Average Level (dBμV)	Limit (dBμV)	Margin (dB)	Result
1.072500	Neutral	25.3	46.0	20.7	Complied
1.230000	Neutral	25.5	46.0	20.5	Complied
1.284000	Neutral	26.0	46.0	20.0	Complied
1.428000	Neutral	26.5	46.0	19.5	Complied
1.446000	Neutral	26.5	46.0	19.5	Complied
1.774500	Neutral	28.0	46.0	18.0	Complied
1.882500	Neutral	27.5	46.0	18.5	Complied
3.871500	Neutral	25.4	46.0	20.6	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:**

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:**

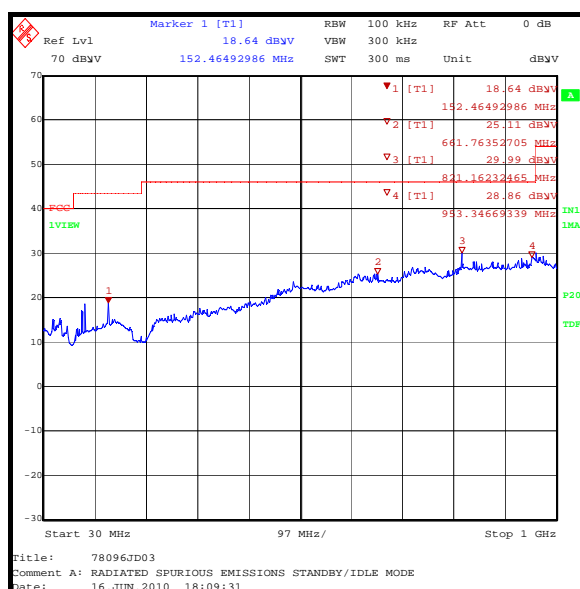
Temperature (°C):	30
Relative Humidity (%):	20

**Results:**

Frequency (MHz)	Antenna Polarity	Level (dB $\mu$ V/m)	Limit (dB $\mu$ V/m)	Margin (dB)	Result
153.322	Vertical	20.4	43.5	23.1	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 plots were investigated and found to be ambient or below the level of the measurement system noise floor.



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

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

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

**Environmental Conditions:**

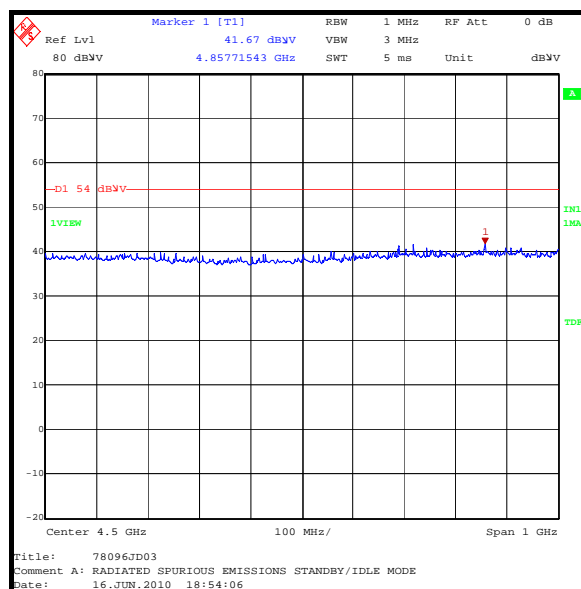
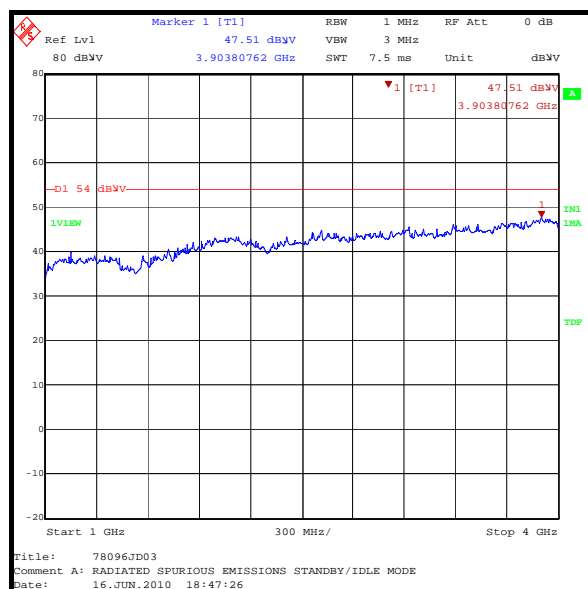
Temperature (°C):	30
Relative Humidity (%):	20

**Results:**

Frequency (GHz)	Antenna Polarity	Peak Level (dB $\mu$ V/m)	Average Limit (dB $\mu$ V/m)	Margin (dB)	Result
3903.808	Vertical	47.5	54.0	6.5	Complied

**Note(s):**

1. 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. The final measured value, for the given emission, in the table above incorporates the calibrated antenna factor and cable loss.



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

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

**Environmental Conditions:**

<b>Temperature (°C):</b>	28
<b>Relative Humidity (%):</b>	21

**Peak ERP Results:**

Modes		HSDPA				Voice			
Sets		1	2	3	4	RMC 12.2kbps			
Band	Channel	Power (dBm)	Power (dBm)	Power (dBm)	Power (dBm)	Power (dBm)	Limit (dBm)	Margin	Result
850	4132	18.3	17.9	17.2	17.2	18.3	38.0	19.7	Complied
	4183	18.6	18.3	17.6	17.5	18.6	38.0	19.4	Complied
	4233	19.9	19.1	18.7	18.7	19.9	38.0	18.1	Complied
$\beta_c$		2	12	15	15				
$\beta_d$		15	15	8	4				
$\Delta ACK, \Delta NACK, \Delta CQI$		8	8	8	8				

**RMS ERP Results:**

Modes		HSDPA				Voice			
Sets		1	2	3	4	RMC 12.2kbps			
Band	Channel	Power (dBm)	Power (dBm)	Power (dBm)	Power (dBm)	Power (dBm)	Limit (dBm)	Margin	Result
850	4132	15.9	13.6	13.0	13.0	15.9	38.0	22.1	Complied
	4183	16.0	13.8	13.1	13.1	16.0	38.0	22.0	Complied
	4233	16.9	14.4	14.0	14.0	16.9	38.0	21.1	Complied
$\beta_c$		2	12	15	15				
$\beta_d$		15	15	8	4				
$\Delta ACK, \Delta NACK, \Delta CQI$		8	8	8	8				

**Note(s):**

1. 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 Average Output Power****Test Summary:**

<b>FCC Part:</b>	2.1046
<b>Test Method Used:</b>	As detailed in ANSI TIA-603-C-2004 Section 2.2.1

**Environmental Conditions:**

<b>Temperature (°C):</b>	28
<b>Relative Humidity (%):</b>	31

**Conducted Peak Power Measurement:**

Modes		HSDPA				WCDMA
Sets		1	2	3	4	Voice / RMC12.2kbps
Band	Channel	Power (dBm) Peak.	Power (dBm) Peak.	Power (dBm) Peak.	Power (dBm) Peak.	Power (dBm) Peak.
850	4132	26.0	25.6	24.9	24.9	26.0
	4183	26.1	25.8	25.1	25.0	26.1
	4233	26.0	25.2	24.8	24.8	26.0
βc		2	12	15	15	
βd		15	15	8	4	
ΔACK, ΔNACK, ΔCQI		8	8	8	8	

**Conducted Average Power Measurement:**

Modes		HSDPA				WCDMA
Sets		1	2	3	4	Voice / RMC12.2kbps
Band	Channel	Power (dBm) Avg.	Power (dBm) Avg.	Power (dBm) Avg.	Power (dBm) Avg.	Power (dBm) Avg.
850	4132	23.2	20.9	20.3	20.3	23.2
	4183	23.3	21.1	20.4	20.4	23.3
	4233	23.1	20.6	20.2	20.2	23.1
βc		2	12	15	15	
βd		15	15	8	4	
ΔACK, ΔNACK, ΔCQI		8	8	8	8	



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

Sub-test	$\beta_c$	$\beta_d$	$B_d$ (SF)	$\beta_c/\beta_d$	$\beta_{hs}^{(1)}$	SM (dB) <sup>(2)</sup>
1	2/15	15/15	64	2/15	4/15	0.0
2	12/15 <sup>(3)</sup>	15/15 <sup>(3)</sup>	64	12/15 <sup>(3)</sup>	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:  $\Delta_{ACK}$ ,  $\Delta_{NACK}$  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  $\beta_c/\beta_d$  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:**

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

**Environmental Conditions:**

<b>Ambient Temperature (°C):</b>	32
<b>Ambient Relative Humidity (%):</b>	27

**Results: Middle Channel (836.6 MHz)**

Temperature (°C)	Measured Frequency (MHz)	Frequency Error (Hz)	Frequency Error (ppm)	Limit (ppm)	Margin (ppm)	Result
-30	836.599965	35	0.04	2.5	2.46	Complied
-20	836.600032	32	0.04	2.5	2.46	Complied
-10	836.600016	16	0.02	2.5	2.48	Complied
0	836.599991	9	0.01	2.5	2.29	Complied
10	836.600029	29	0.03	2.5	2.47	Complied
20	836.600022	22	0.03	2.5	2.47	Complied
30	836.599989	11	0.01	2.5	2.49	Complied
40	836.599985	15	0.02	2.5	2.48	Complied
50	836.599987	13	0.02	2.5	2.48	Complied

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

<b>FCC Part:</b>	22.355
<b>Test Method Used:</b>	ANSI/TIA-603-C-2004 Section 2

**Environmental Conditions:**

<b>Temperature (°C):</b>	20
<b>Relative Humidity (%):</b>	22

**Results: Middle Channel (836.6 MHz)**

<b>Supply Voltage (V)</b>	<b>Measured Frequency (MHz)</b>	<b>Frequency Error (Hz)</b>	<b>Frequency Error (ppm)</b>	<b>Limit (ppm)</b>	<b>Margin (ppm)</b>	<b>Result</b>
3.4	836.600015	15	0.02	2.5	2.48	Complied
4.2	836.600021	21	0.03	2.5	2.47	Complied

**5.2.7. Transmitter Occupied Bandwidth****Test Summary:**

<b>FCC Part:</b>	2.1049
<b>Test Method Used:</b>	As detailed in ANSI C63.4 Section 13.7 and relevant annexes referencing CFR 47 Part 2.1049 (see note below)

**Environmental Conditions:**

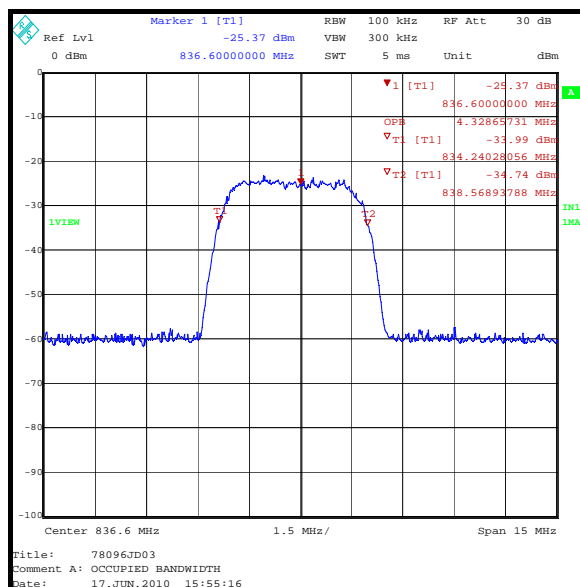
<b>Temperature (°C):</b>	28
<b>Relative Humidity (%):</b>	21

**Results: RMC/Voice**

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

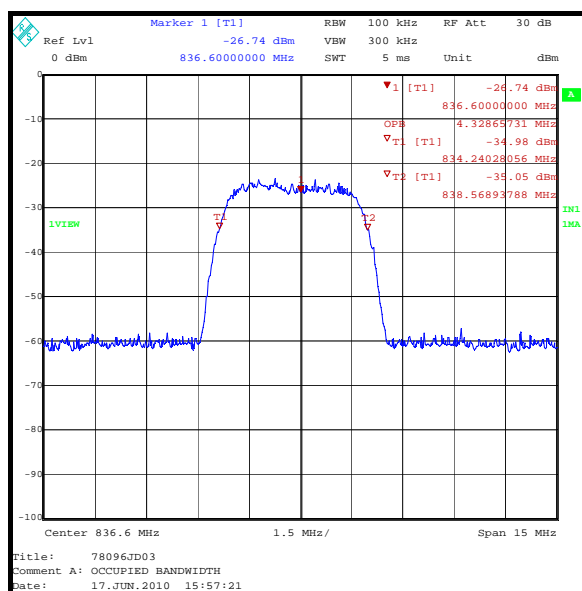
**Note(s):**

- 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.



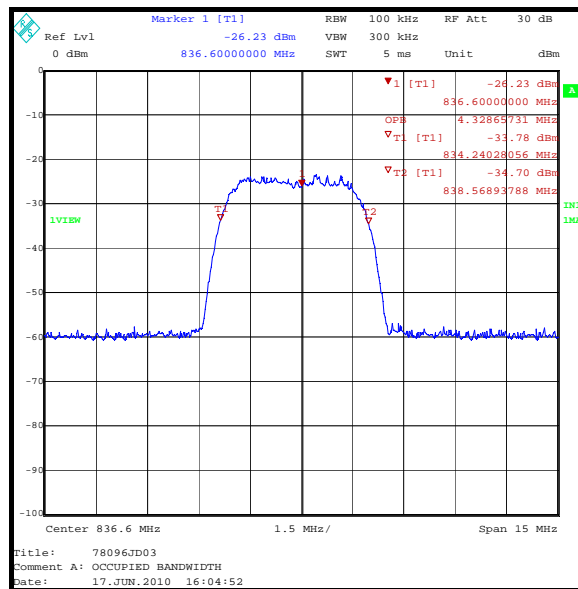
**Transmitter Occupied Bandwidth (continued)****Results: HSDPA 1**

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



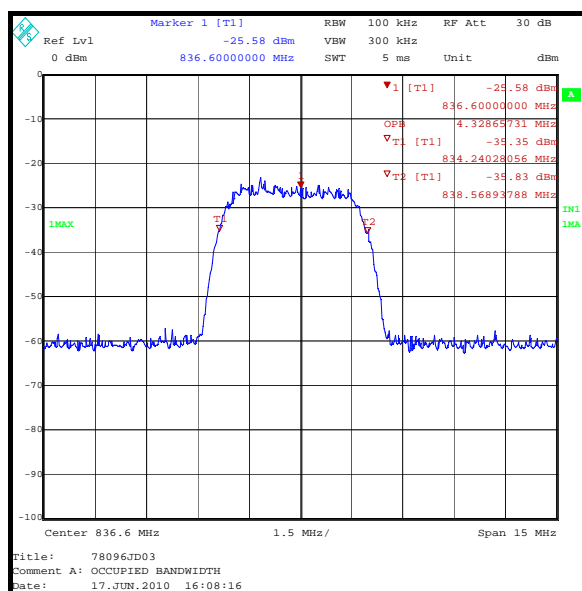
**Transmitter Occupied Bandwidth (continued)****Results: HSDPA 2**

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



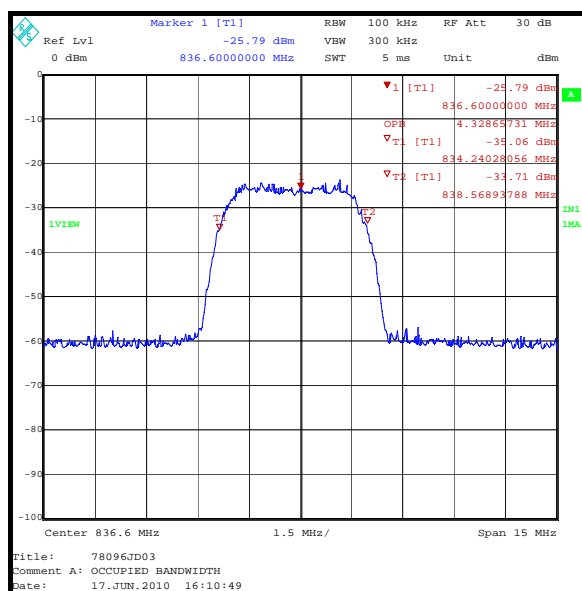
**Transmitter Occupied Bandwidth (continued)****Results: HSDPA 3**

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



**Transmitter Occupied Bandwidth (continued)****Results: HSDPA 4**

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





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

<b>FCC Part:</b>	2.1053 & 22.917
<b>Frequency Range:</b>	30 MHz to 10 GHz
<b>Test Method Used:</b>	As detailed in ANSI TIA-603-C-2004 Section 2.2.12 referencing FCC CFR Part 2.1053
<b>Configuration:</b>	Voice / RMC 12.2 kbps

**Environmental Conditions:**

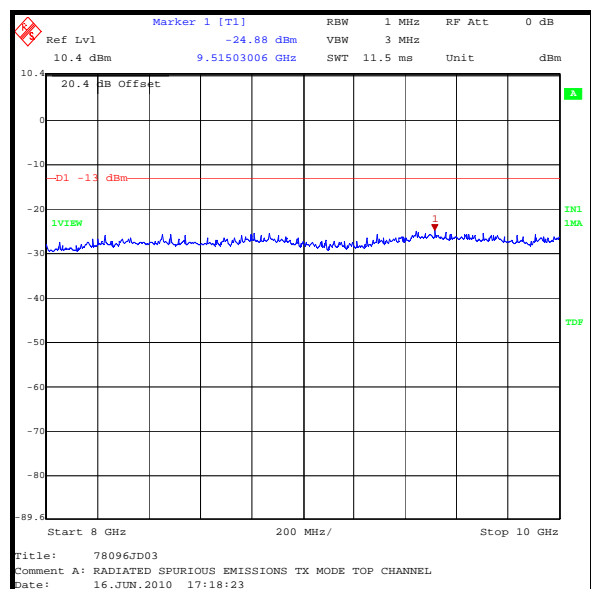
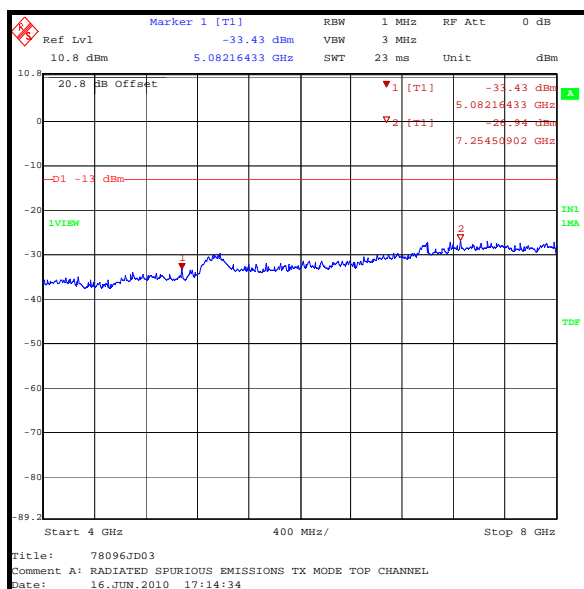
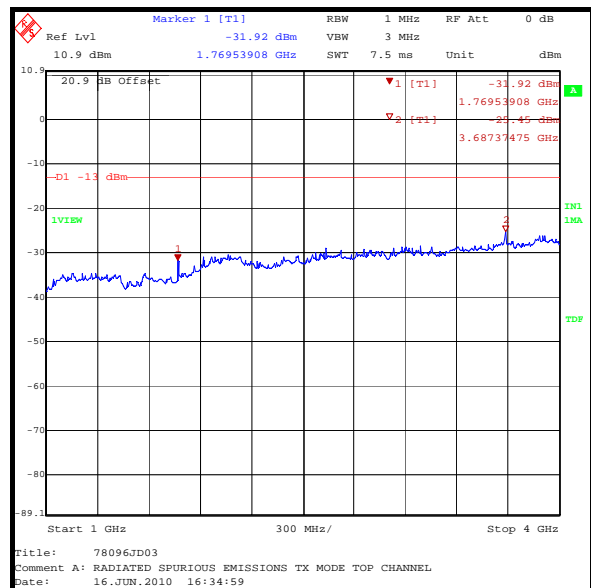
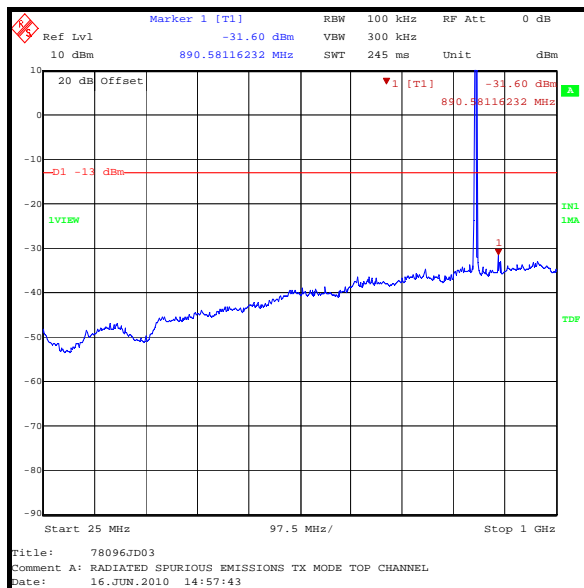
<b>Temperature (°C):</b>	29
<b>Relative Humidity (%):</b>	20

**Results:**

<b>Frequency (MHz)</b>	<b>Peak Emission Level (dBm)</b>	<b>Limit (dBm)</b>	<b>Margin (dBm)</b>	<b>Result</b>
9515.030	-24.9	-13.0	-11.9	Complied

**Note(s):**

1. 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.
2. The uplink and downlink traffic channels are shown on the 30 MHz to 1 GHz plot.
3. All emissions shown on the pre-scan plots were investigated and found to be below the measurement system noise floor or ambient.

**Transmitter Out of Band Radiated Emissions (continued)**

**5.2.9. Transmitter Radiated Emissions at Band Edges****Test Summary:**

<b>FCC Part:</b>	2.1053 & 22.917
<b>Test Method Used:</b>	As detailed in ANSI C63.4 Section 8 and relevant annexes

**Environmental Conditions:**

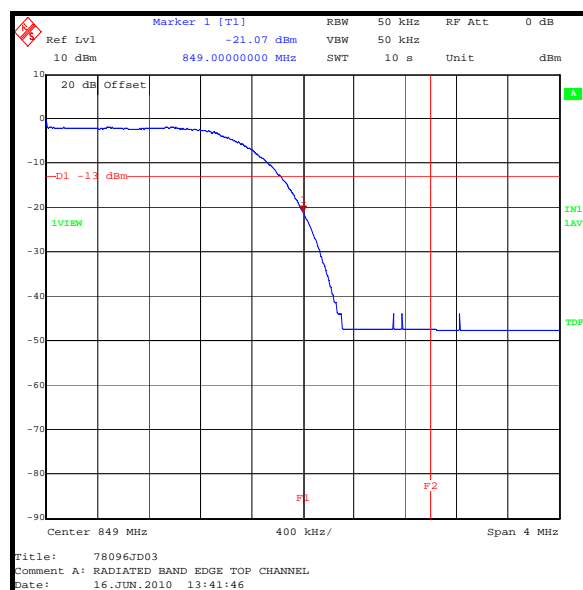
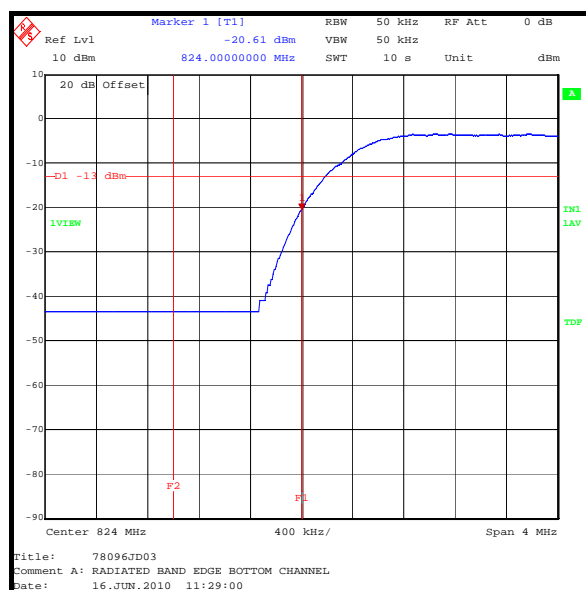
<b>Temperature (°C):</b>	28
<b>Relative Humidity (%):</b>	22

**Results: RMC/Voice - Bottom Band Edge**

Frequency (MHz)	Peak Emission Level (dBm)	Limit (dBm)	Margin (dBm)	Result
824	-20.6	-13.0	7.6	Complied

**Results: RMC/Voice - Top Band Edge**

Frequency (MHz)	Peak Emission Level (dBm)	Limit (dBm)	Margin (dBm)	Result
849	-21.1	-13.0	8.1	Complied

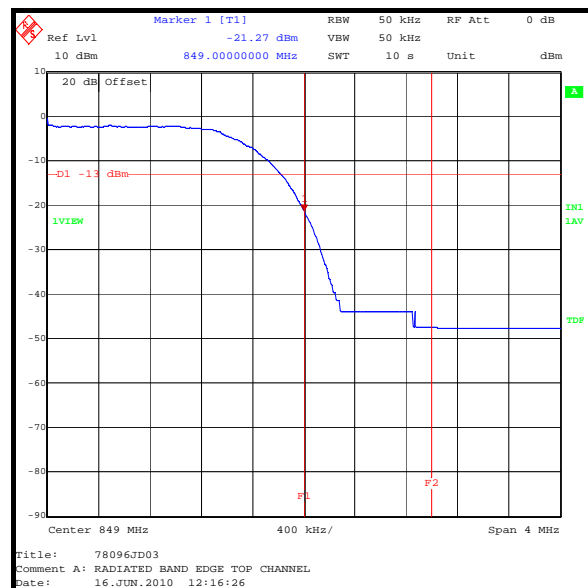
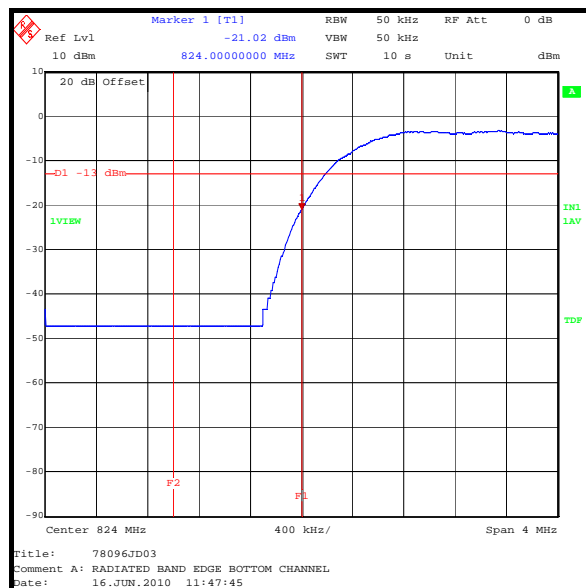


**Transmitter Radiated Emissions at Band Edges (continued)****Results: HSDPA 1 - Bottom Band Edge**

Frequency (MHz)	Peak Emission Level (dBm)	Limit (dBm)	Margin (dBm)	Result
824	-21.0	-13.0	8.0	Complied

**Results: HSDPA 1 - Top Band Edge**

Frequency (MHz)	Peak Emission Level (dBm)	Limit (dBm)	Margin (dBm)	Result
849	-21.3	-13.0	8.3	Complied

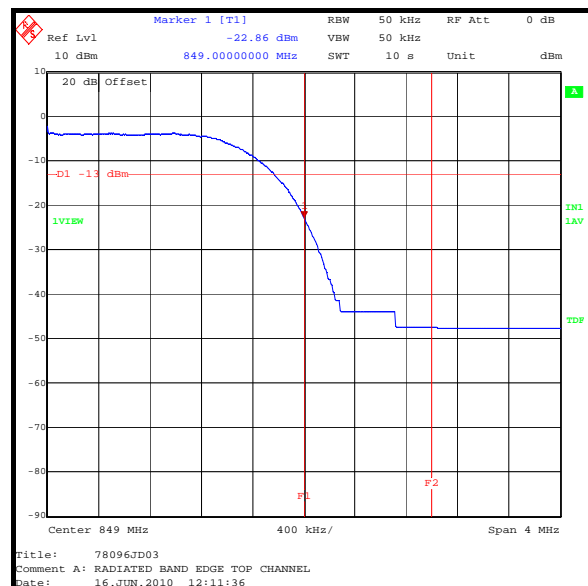
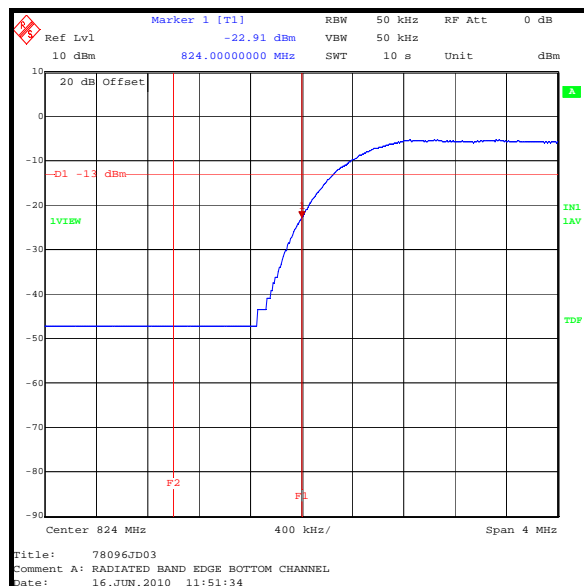


**Transmitter Radiated Emissions at Band Edges (continued)****Results: HSDPA 2 - Bottom Band Edge**

Frequency (MHz)	Peak Emission Level (dBm)	Limit (dBm)	Margin (dBm)	Result
824	-22.9	-13.0	9.9	Complied

**Results: HSDPA 2 - Top Band Edge**

Frequency (MHz)	Peak Emission Level (dBm)	Limit (dBm)	Margin (dBm)	Result
849	-22.9	-13.0	9.9	Complied

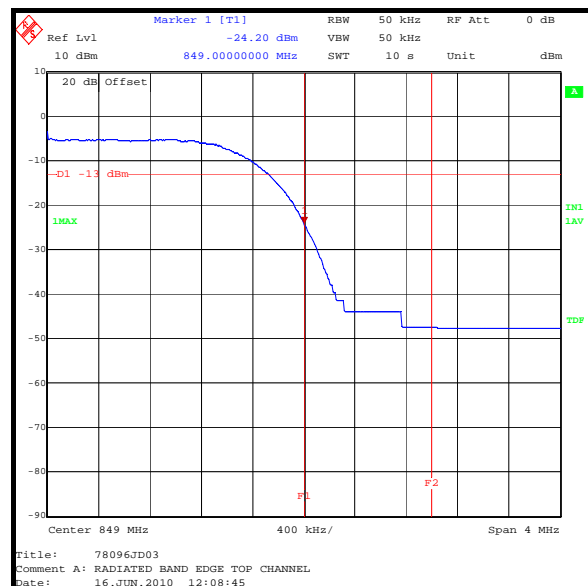
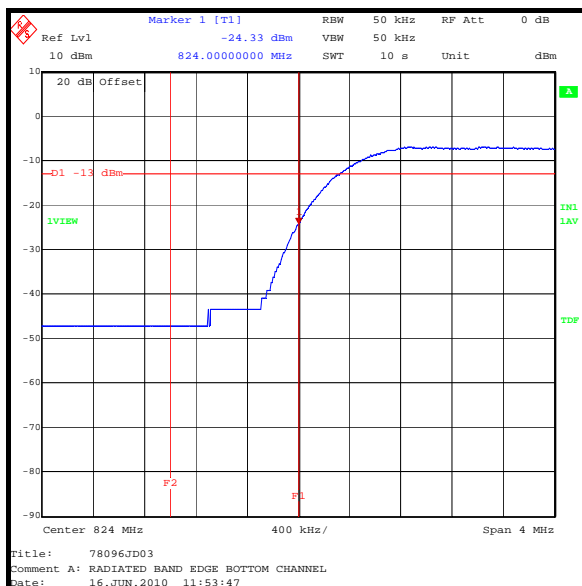


**Transmitter Radiated Emissions at Band Edges (continued)****Results: HSDPA 3 - Bottom Band Edge**

Frequency (MHz)	Peak Emission Level (dBm)	Limit (dBm)	Margin (dBm)	Result
824	-24.3	-13.0	11.3	Complied

**Results: HSDPA 3 - Top Band Edge**

Frequency (MHz)	Peak Emission Level (dBm)	Limit (dBm)	Margin (dBm)	Result
849	-24.2	-13.0	11.2	Complied

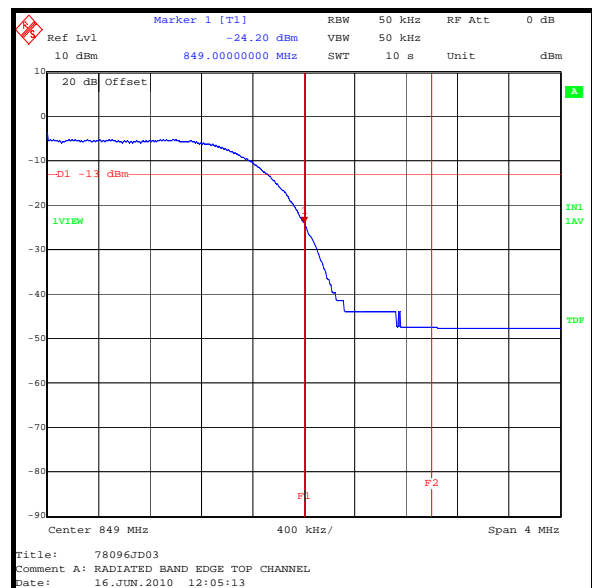
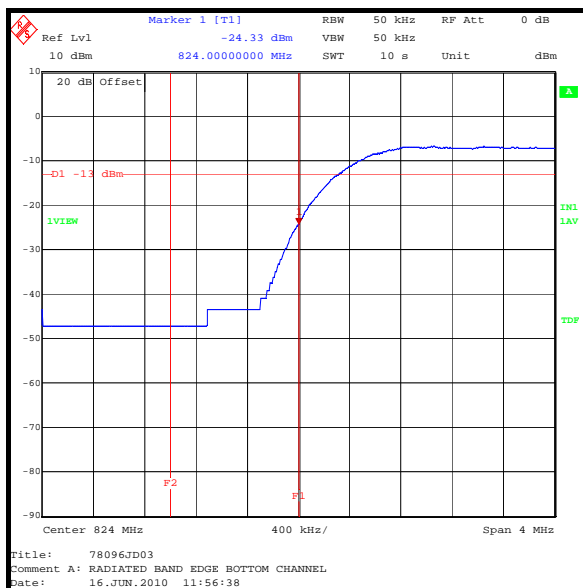


**Transmitter Radiated Emissions at Band Edges (continued)****Results: HSDPA 4 - Bottom Band Edge**

Frequency (MHz)	Peak Emission Level (dBm)	Limit (dBm)	Margin (dBm)	Result
824	-24.3	-13.0	11.3	Complied

**Results: HSDPA 4 - Top Band Edge**

Frequency (MHz)	Peak Emission Level (dBm)	Limit (dBm)	Margin (dBm)	Result
849	-24.2	-13.0	11.2	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”.

<b>Measurement Type</b>	<b>Range</b>	<b>Confidence Level (%)</b>	<b>Calculated Uncertainty</b>
AC Conducted Spurious Emissions	0.15 MHz to 30 MHz	95%	±3.25 dB
Effective Radiated Power (ERP)	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 10 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**

<b>RFI No.</b>	<b>Instrument</b>	<b>Manufacturer</b>	<b>Type No.</b>	<b>Serial No.</b>	<b>Date Calibration Due</b>	<b>Cal. Interval (Months)</b>
A1069	LISN	Rohde & Schwarz	ESH3-Z5	837469/012	13 Apr 2011	12
A1393	Attenuator	Huber & Suhner	757456	6820.17.B	Calibrated before use	-
A1396	Attenuator	Huber & Suhner	757987	6810.17.B	Calibrated before use	-
A1534	Pre Amplifier	Hewlett Packard	8449B	3008A00405	Calibrated before use	-
A1538	Directional Coupler	Hewlett Packard	775D	07065	Calibrated before use	-
A1818	Antenna	EMCO	3115	00075692	27 Nov 2010	12
A1830	Pulse Limiter	Rhode & Schwarz	ESH3-Z2	100668	01 Mar 2011	12
A1932	High Pass Filter	AtlanTecRF	AFH-02000	20r-JFBD04-002	Calibrated before use	12
A1974	High Pass Filter	AtlanTecRF	AFH-01000	090000283	Calibrated before use	-
A288	Antenna	Chase	CBL6111A	1589	16 Mar 2011	12
E013	Environmental Chamber	Sanyo	ATMOS chamber	None	Calibrated before use	-
K0002	3m RSE Chamber	Rainford EMC	N/A	N/A	01 Sep 2010	12
L1005	Comms Test Set	Rohde & Schwarz	CMU200	116284	23 Mar 2011	12
M1124	Test Receiver	Rohde & Schwarz	ESI26	100046K	22 Apr 2011	12
M1249	Thermometer	Fluke	52II	88800049	01 Jul 2010	12
M1263	Test Receiver	Rohde & Schwarz	ESIB7	100265	28 Jun 2011	12
M517	Digital Multimeter	Fluke	JF77 Series	63150434R	25 Jun 2010	12
S0537	DC Power Supply	TTI	EL302D	249928	Calibrated before use	-

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