

# TEST REPORT FROM RFI GLOBAL SERVICES LTD



Test of: NTT docomo EB-4056

FCC ID: UCE212054A

To: FCC Part 15.225: 2011 Subpart C

**Test Report Serial No.:**  
RFI-RPT-RP87471JD12A V4.0

**Version 4.0 supersedes all previous versions**

<b>This Test Report Is Issued Under The Authority Of John Newell, Group Quality Manager:</b>		
<b>Checked By:</b>	Ian Watch	
<b>Signature:</b>		
<b>Date of Issue:</b>	19 June 2012	

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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 United Kingdom

## **2. Summary of Testing**

### **2.1. General Information**

<b>Specification Reference:</b>	47CFR15.225
<b>Specification Title:</b>	Code of Federal Regulations Volume 47 (Telecommunications) 2011: Part 15 Subpart C (Radio Frequency Devices) - Section 15.225
<b>Specification Reference:</b>	47CFR15.107 and 47CFR15.109
<b>Specification Title:</b>	Code of Federal Regulations Volume 47 (Telecommunications) 2011: Part 15 Subpart B (Radio Frequency Devices) - Sections 15.107 and 15.109
<b>Specification Reference:</b>	47CFR15.209
<b>Specification Title:</b>	Code of Federal Regulations Volume 47 (Telecommunications) 2011: Part 15 Subpart C (Intentional Radiators) - Section 15.209
<b>Site Registration:</b>	209735
<b>Location of Testing:</b>	RFI Global Services Ltd., Wade Road, Basingstoke, Hampshire, RG24 8AH.
<b>Test Dates:</b>	03 May 2012 to 13 June 2012

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

<b>FCC Reference (47CFR)</b>	<b>Measurement</b>	<b>Result</b>
Part 15.107(a)	Receiver/Idle Mode AC Conducted Spurious Emissions	
Part 15.109	Receiver/Idle Mode Radiated Spurious Emissions	
Part 15.207	Transmitter AC Conducted Emissions	
Part 15.225(a)(b)(c)(d)	Transmitter Fundamental Field Strength	
Part 15.209(a), 15.225(d)	Transmitter Radiated Spurious Emissions	
Part 15.209(a), 15.225(c)(d)	Transmitter Band Edge Radiated Emissions	
Part 2.1049	Transmitter 20 dB Bandwidth	
Part 15.225(e)	Transmitter Frequency Stability (Temperature & Voltage Variation)	
<b>Key to Results</b>		
 = Complied  = Did not comply		

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

<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
<b>Reference:</b>	ANSI C63.10 (2009)
<b>Title:</b>	American National Standard for Testing Unlicensed Wireless Devices

### **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>	EB-4056
<b>IMEI:</b>	351808050018796 ( <i>Radiated sample #1</i> )
<b>Hardware Version Number:</b>	Rev C
<b>Software Version Number:</b>	ACPU: nemo-ics-09-0507 CCPU: R1C_0_EC12_00_D00
<b>FCC ID:</b>	UCE212054A

<b>Brand Name:</b>	NTT docomo
<b>Model Name or Number:</b>	EB-4056
<b>IMEI:</b>	351808050018804 ( <i>Radiated sample #2</i> )
<b>Hardware Version Number:</b>	Rev C
<b>Software Version Number:</b>	ACPU: nemo-ics-09-0433 CCPU: R1C_0_EC10_00_D00
<b>FCC ID:</b>	UCE212054A

<b>Brand Name:</b>	NTT docomo
<b>Model Name or Number:</b>	EB-4056
<b>IMEI:</b>	351808050018804 ( <i>Radiated sample #2</i> )
<b>Hardware Version Number:</b>	Rev C
<b>Software Version Number:</b>	ACPU: nemo-ics-09-0507 CCPU: R1C_0_EC12_00_D00
<b>FCC ID:</b>	UCE212054A

<b>Brand Name:</b>	NTT docomo
<b>Description:</b>	AC Charger (with USB Data/Charge Cable)
<b>Model Name or Number:</b>	03

<b>Brand Name:</b>	NTT docomo
<b>Description:</b>	Charge/USB Data cable
<b>Model Name or Number:</b>	Not marked or stated

<b>Brand Name:</b>	NTT docomo
<b>Description:</b>	Personal Hands-Free
<b>Model Name or Number:</b>	Part Number 549266

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

The equipment under test was a Dual Mode UMTS/GSM Mobile Phone with WLAN, *Bluetooth* and RFID.

### **3.3. Modifications Incorporated in the EUT**

The Customer changed the Software Version on the sample with IMEI 351808050018804 from  
ACPU: nemo-ics-09-0433 CCPU: R1C\_0\_EC10\_00\_D00 to  
ACPU: nemo-ics-09-0507 CCPU: R1C\_0\_EC12\_00\_D00 on 10 May 2012.

The Customer declared that the software update was to fix GPRS/EGPRS connectivity problems only and the software change did not affect any other parameters.

### **3.4. Additional Information Related to Testing**

<b>Tested Technology:</b>	RFID	
<b>Category of Equipment:</b>	Transceiver	
<b>Channel Spacing:</b>	Single channel device	
<b>Transmit Frequency Range:</b>	13.56 MHz	
<b>Receive Frequency Range:</b>	13.56 MHz	
<b>Power Supply Requirement:</b>	Nominal	3.8 V
	Minimum	3.4 V
	Maximum	4.35 V
<b>Tested Temperature Range:</b>	Minimum	-20°C
	Maximum	50°C

### **3.5. Support Equipment**

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

<b>Description:</b>	2 GB Micro SD Card
<b>Brand Name:</b>	Not marked or stated
<b>Model Name or Number:</b>	MMAGR02GUECA

<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 with a modulated carrier in RFID test mode.

### **4.2. Configuration and Peripherals**

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

- The RFID transmitter test mode was enabled by means of bespoke software provided by the Customer.
- Receiver Idle/standby mode radiated spurious emission 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.
- Transmitter radiated spurious emission tests were performed with the Charge/USB Data cable and Personal Hands Free connected to the EUT as this was found to be the worst case during pre-scans. All appropriate accessories were individually connected and measurements made during pre-scans to determine the worst case combination.
- AC conducted emissions tests were performed with the EUT connected to the AC charger. The AC charger was connected to a 120 VAC 60 Hz single phase supply via a LISN.

## **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 Uncertainties* for details.

**5.2. Test Results****5.2.1. Receiver/Idle Mode AC Conducted Spurious Emissions****Test Summary:**

<b>Test Engineer:</b>	Mark Percival	<b>Test Date:</b>	15 May 2012
<b>Test Sample IMEI:</b>	351808050018796		

<b>FCC Part:</b>	15.107(a)
<b>Test Method Used:</b>	As detailed in ANSI C63.10 Section 6.2 referencing ANSI C63.4

**Environmental Conditions:**

<b>Temperature (°C):</b>	21
<b>Relative Humidity (%):</b>	39

**Results: Live / Quasi Peak**

Frequency (MHz)	Line	Level (dB $\mu$ V)	Limit (dB $\mu$ V)	Margin (dB)	Result
0.537000	Live	32.7	56.0	23.3	Complied
0.546000	Live	32.5	56.0	23.5	Complied
0.564000	Live	32.2	56.0	23.8	Complied
0.582000	Live	32.6	56.0	23.4	Complied
1.212000	Live	32.0	56.0	24.0	Complied
1.734000	Live	37.7	56.0	18.3	Complied

**Results: Live / Average**

Frequency (MHz)	Line	Level (dB $\mu$ V)	Limit (dB $\mu$ V)	Margin (dB)	Result
0.348000	Live	25.7	49.0	23.3	Complied
1.702500	Live	23.4	46.0	22.6	Complied
1.729500	Live	23.4	46.0	22.6	Complied

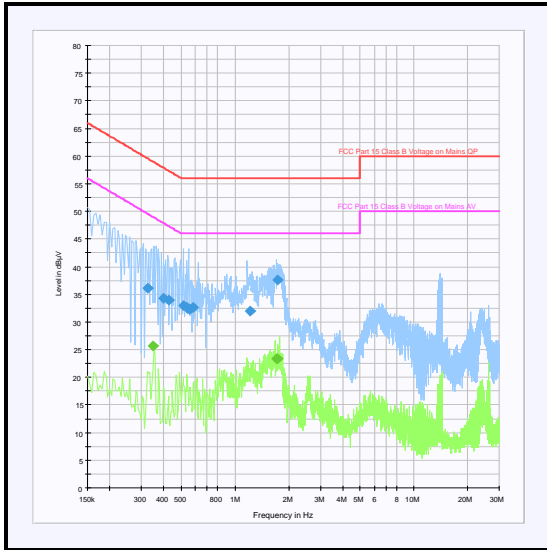
**Receiver/Idle Mode AC Conducted Spurious Emissions (continued)****Results: Neutral / Quasi Peak**

Frequency (MHz)	Line	Level (dB $\mu$ V)	Limit (dB $\mu$ V)	Margin (dB)	Result
0.478500	Neutral	35.0	56.4	21.4	Complied
0.532500	Neutral	34.5	56.0	21.5	Complied
0.609000	Neutral	33.9	56.0	22.1	Complied
0.649500	Neutral	33.3	56.0	22.7	Complied
0.694500	Neutral	33.4	56.0	22.6	Complied
1.752000	Neutral	48.2	56.0	7.8	Complied

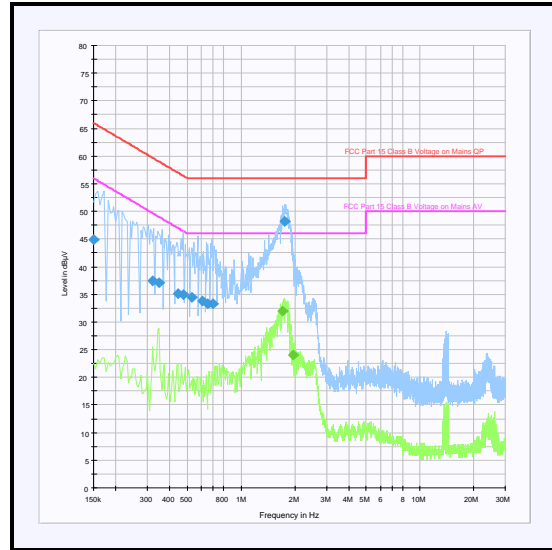
**Results: Neutral / Average**

Frequency (MHz)	Line	Level (dB $\mu$ V)	Limit (dB $\mu$ V)	Margin (dB)	Result
1.716000	Neutral	31.9	46.0	14.1	Complied
1.954500	Neutral	24.1	46.0	21.9	Complied

**Idle Mode AC Conducted Spurious Emissions (continued)**



Live



Neutral

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

**5.2.2. Receiver/Idle Mode Radiated Spurious Emissions****Test Summary:**

<b>Test Engineers:</b>	Patrick Jones & David Doyle	<b>Test Dates:</b>	03 May 2012 & 14 May 2012
<b>Test Sample IMEI:</b>	351808050018804		

<b>FCC Part:</b>	15.109
<b>Test Method Used:</b>	As detailed in ANSI C63.10 Sections 6.3, 6.4 and 6.5 referencing ANSI C63.4
<b>Frequency Range:</b>	9 kHz to 1000 MHz

**Environmental Conditions:**

<b>Temperature (°C):</b>	26
<b>Relative Humidity (%):</b>	31

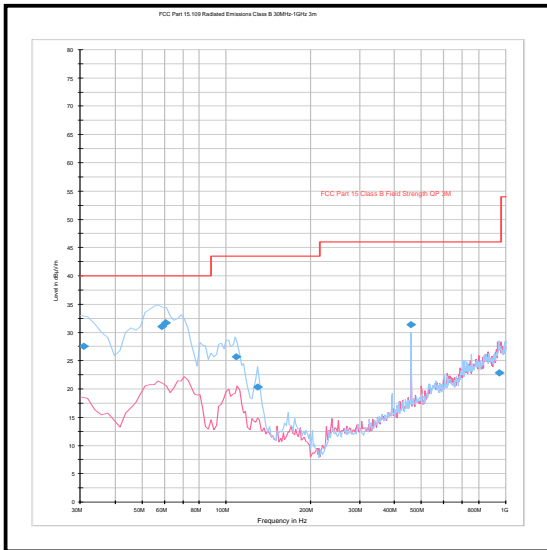
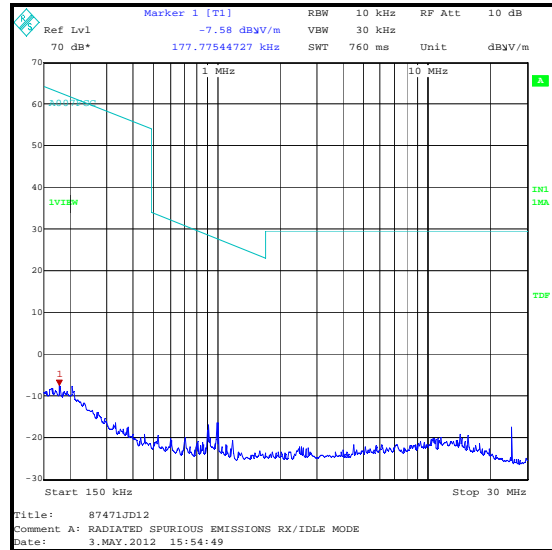
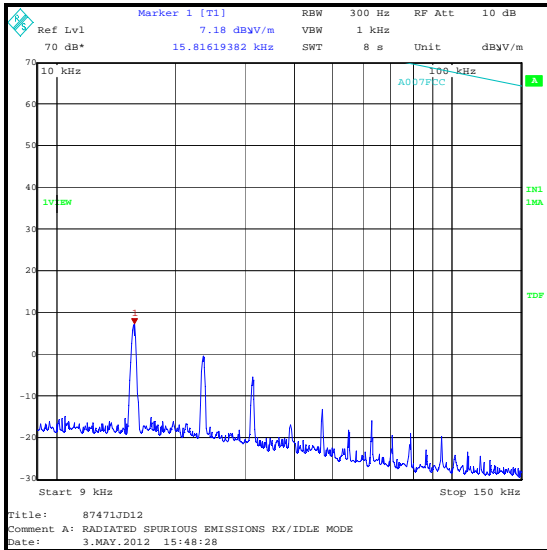
**Results: Quasi Peak**

Frequency (MHz)	Antenna Polarity	Level (dB $\mu$ V/m)	Limit (dB $\mu$ V/m)	Margin (dB)	Result
30.909	Horizontal	27.6	40.0	12.4	Complied
58.672	Horizontal	31.1	40.0	8.9	Complied
60.895	Horizontal	31.7	40.0	8.3	Complied
108.424	Horizontal	25.6	43.5	17.9	Complied
129.576	Horizontal	20.4	43.5	23.1	Complied
458.806	Horizontal	31.3	46.0	14.7	Complied
944.903	Horizontal	27.8	46.0	23.2	Complied

**Note(s):**

- Limits below 30 MHz are specified at a test distance of 30 metres, whilst below 0.49 MHz they are specified at a test distance of 300 metres. However, as specified by FCC Section 15.31 (f)(2), measurements may be performed at a closer distance and the measured level corrected to the specified measurement distance by using the square of an inverse linear distance extrapolation factor (40dB/decade).
- A transducer factor on the measuring instrument was used to extrapolate the results at 3 metres to a distance of 30 metres where required. A distance extrapolation factor of 40 dB was used.
- Final measurement values include corrections for antenna factor and cable losses.
- All emissions on the 9 kHz to 150 kHz plot were investigated and found to be radiating from the test site turntable.
- All other emissions shown on the pre-scan plots were investigated and found to be >20 dB below the applicable limit or below the measurement system noise floor.
- Measurements in the range 30 MHz to 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: These plots are pre-scans and for indication purposes only. For final measurements, see accompanying table.

**5.2.3. Transmitter AC Conducted Spurious Emissions****Test Summary:**

<b>Test Engineer:</b>	Mark Percival	<b>Test Date:</b>	13 June 2012
<b>Test Sample IMEI:</b>	351808050018804		

<b>FCC Part:</b>	15.107(a)
<b>Test Method Used:</b>	As detailed in ANSI C63.10 Section 6.2 referencing ANSI C63.4

**Environmental Conditions:**

<b>Temperature (°C):</b>	24
<b>Relative Humidity (%):</b>	39

**Results: Live / Quasi Peak**

Frequency (MHz)	Line	Level (dB $\mu$ V)	Limit (dB $\mu$ V)	Margin (dB)	Result
1.536000	Live	43.0	56.0	13.0	Complied
1.590000	Live	42.4	56.0	13.6	Complied
1.617000	Live	42.0	56.0	14.0	Complied
1.644000	Live	41.2	56.0	14.8	Complied
13.560000	Live	54.9	60.0	5.1	Complied

**Results: Live / Average**

Frequency (MHz)	Line	Level (dB $\mu$ V)	Limit (dB $\mu$ V)	Margin (dB)	Result
1.180500	Live	34.1	46.0	11.9	Complied
1.207500	Live	33.9	46.0	12.1	Complied
1.234500	Live	33.4	46.0	12.6	Complied
1.482000	Live	33.5	46.0	12.5	Complied
1.594500	Live	33.4	46.0	12.6	Complied
2.553000	Live	32.4	46.0	13.6	Complied
13.560000	Live	49.4	50.0	0.6	Complied



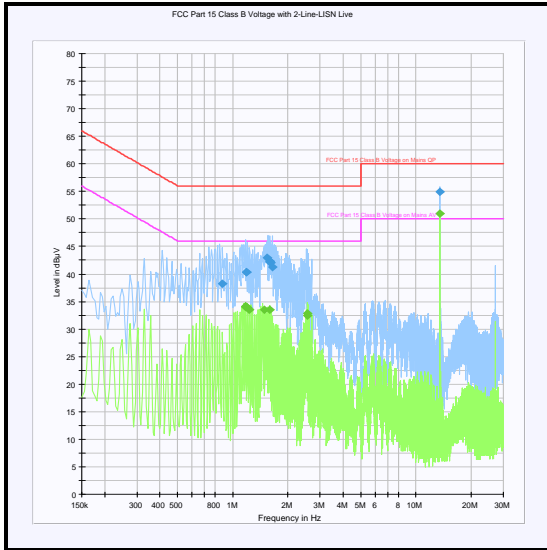
**Transmitter AC Conducted Spurious Emissions (continued)****Results: Neutral / Quasi Peak**

Frequency (MHz)	Line	Level (dB $\mu$ V)	Limit (dB $\mu$ V)	Margin (dB)	Result
1.653000	Neutral	42.2	56.0	13.8	Complied
1.675500	Neutral	42.5	56.0	13.5	Complied
1.729500	Neutral	42.4	56.0	13.6	Complied
1.734000	Neutral	42.2	56.0	13.8	Complied
1.981500	Neutral	41.8	56.0	14.2	Complied
2.008500	Neutral	41.5	56.0	14.5	Complied
2.035500	Neutral	40.6	56.0	15.4	Complied

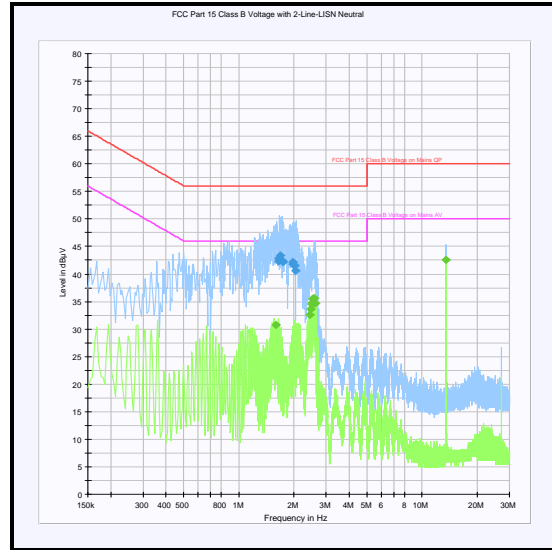
**Results: Neutral / Average**

Frequency (MHz)	Line	Level (dB $\mu$ V)	Limit (dB $\mu$ V)	Margin (dB)	Result
1.599000	Neutral	30.7	46.0	15.3	Complied
2.445000	Neutral	32.6	46.0	13.4	Complied
2.472000	Neutral	33.7	46.0	12.3	Complied
2.499000	Neutral	34.6	46.0	11.4	Complied
2.526000	Neutral	35.5	46.0	10.5	Complied
2.530500	Neutral	34.8	46.0	11.2	Complied
2.553000	Neutral	35.4	46.0	10.6	Complied
2.580000	Neutral	35.5	46.0	10.5	Complied
2.607000	Neutral	34.7	46.0	11.3	Complied
13.560000	Neutral	42.6	50.0	7.4	Complied

**Transmitter AC Conducted Spurious Emissions (continued)**



Live



Neutral

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

**5.2.4. Transmitter Fundamental Field Strength**

**Test Summary:**

<b>Test Engineer:</b>	Patrick Jones	<b>Test Date:</b>	03 May 2012
<b>Test Sample IMEI:</b>	351808050018804		

<b>FCC Part:</b>	15.225(a)(b)(c)(d)
<b>Test Method Used:</b>	ANSI C63.10 Section 6.4

**Environmental Conditions:**

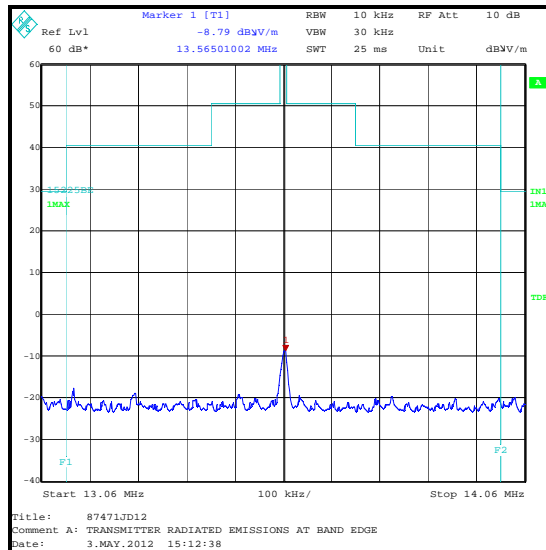
<b>Temperature (°C):</b>	26
<b>Relative Humidity (%):</b>	31

**Results: Quasi Peak**

Frequency (MHz)	Antenna Polarity	Level (dB $\mu$ V/m)	Limit at 30 m (dB $\mu$ V/m)	Margin (dB)	Result
13.56	90° to EUT	-9.5	84.0	93.5	Complied

**Note(s):**

1. The limit is specified at a test distance of 30 metres. However, as specified by FCC Section 15.31 (f)(2), measurements may be performed at a closer distance and the measured level corrected to the specified measurement distance by using the square of an inverse linear distance extrapolation factor (40dB/decade).
2. A transducer factor on the measuring instrument was used to extrapolate the results at 3 metres to a distance of 30 metres. A distance extrapolation factor of 40 dB was used.



**5.2.5. Transmitter Radiated Spurious Emissions****Test Summary:**

<b>Test Engineers:</b>	Patrick Jones & David Doyle	<b>Test Dates:</b>	03 May 2012 & 14 May 2012
<b>Test Sample IMEI:</b>	351808050018804		

<b>FCC Part:</b>	15.225(d) & 15.209(a)
<b>Test Method Used:</b>	As detailed in ANSI C63.10 Sections 6.3, 6.4 and 6.5 referencing ANSI C63.4
<b>Frequency Range:</b>	9 kHz to 1000 MHz

**Environmental Conditions:**

<b>Temperature (°C):</b>	25
<b>Relative Humidity (%):</b>	32

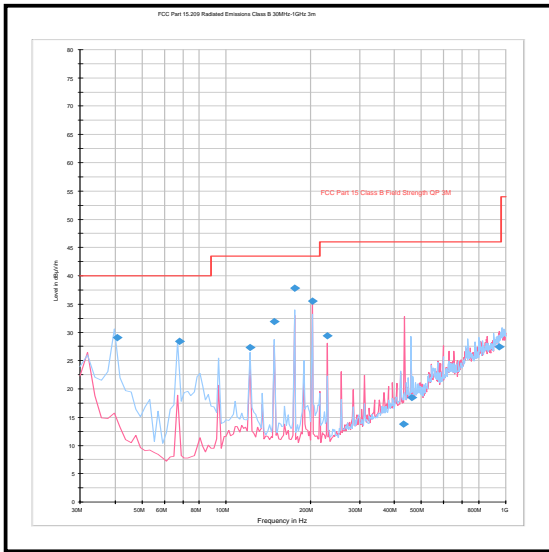
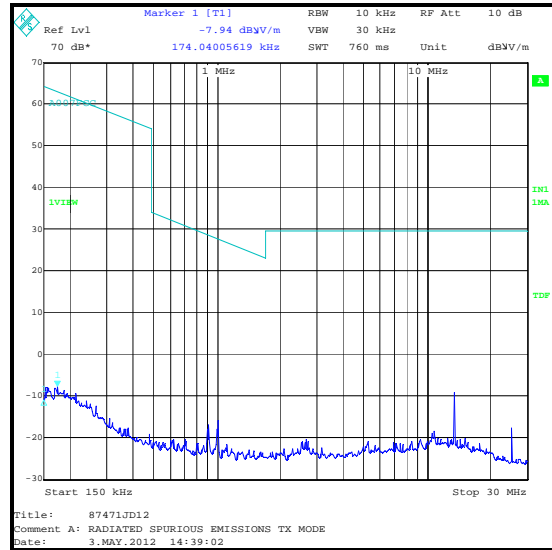
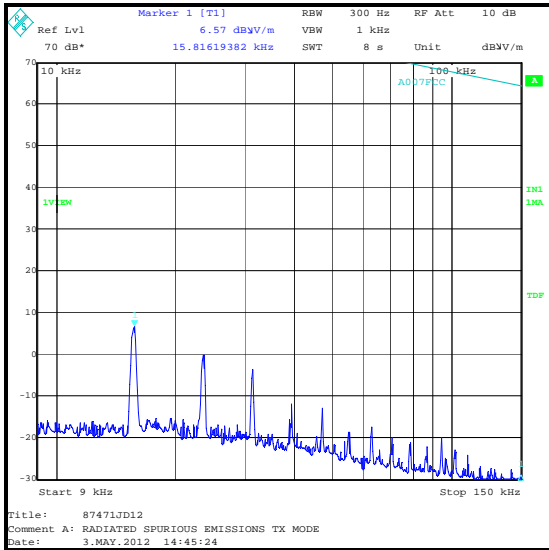
**Results: Quasi Peak**

<b>Frequency (MHz)</b>	<b>Antenna Polarity</b>	<b>Level (dB<math>\mu</math>V/m)</b>	<b>Limit (dB<math>\mu</math>V/m)</b>	<b>Margin (dB)</b>	<b>Result</b>
40.677	Horizontal	29.1	40.0	10.9	Complied
67.804	Horizontal	28.4	40.0	11.6	Complied
122.060	Horizontal	27.3	43.5	16.2	Complied
149.159	Horizontal	31.9	43.5	11.6	Complied
176.287	Horizontal	37.8	43.5	5.7	Complied
203.405	Vertical	35.5	43.5	8.0	Complied
230.523	Vertical	29.4	46.0	16.6	Complied
432.160	Vertical	13.8	46.0	32.2	Complied
461.057	Horizontal	18.5	46.0	27.5	Complied
949.166	Vertical	27.5	46.0	18.5	Complied

**Transmitter Radiated Spurious Emissions (continued)****Note(s):**

1. Limits below 30 MHz are specified at a test distance of 30 metres, whilst below 0.49 MHz they are specified at a test distance of 300 metres. However, as specified by FCC Section 15.31 (f)(2), measurements may be performed at a closer distance and the measured level corrected to the specified measurement distance by using the square of an inverse linear distance extrapolation factor (40dB/decade).
2. A transducer factor on the measuring instrument was used to extrapolate the results at 3 metres to a distance of 30 metres where required. A distance extrapolation factor of 40 dB was used.
3. Final measurement values include corrections for antenna factor and cable losses.
4. The emission shown at approximately 13.56 MHz is the fundamental.
5. All emissions on the 9 kHz to 150 kHz plot were investigated and found to be radiating from the test site turntable.
6. All other emissions shown on the pre-scan plots were investigated and found to be >20 dB below the applicable limit or below the measurement system noise floor.
7. Measurements in the range 30 MHz to 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 Radiated Spurious Emissions (continued)



**5.2.6. Transmitter Band Edge Radiated Emissions**

**Test Summary:**

<b>Test Engineer:</b>	Patrick Jones	<b>Test Date:</b>	03 May 2012
<b>Test Sample IMEI:</b>	351808050018804		

<b>FCC Part:</b>	15.225(c)(d) & 15.209(a)
<b>Test Method Used:</b>	As detailed in ANSI C63.10 Section 6.9.2

**Environmental Conditions:**

<b>Temperature (°C):</b>	26
<b>Relative Humidity (%):</b>	31

**Results: Quasi Peak Lower Band Edge**

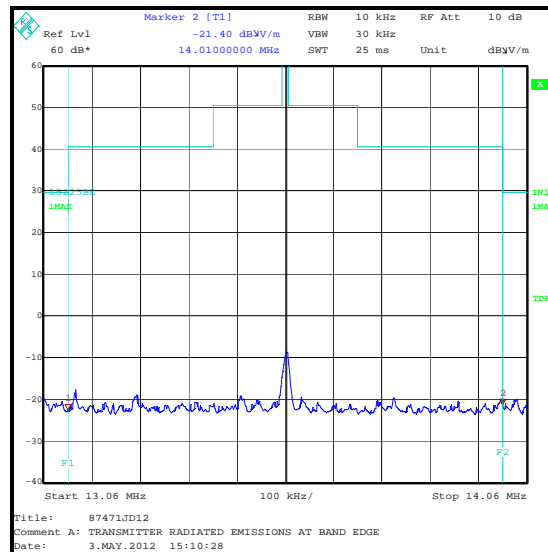
Frequency (MHz)	Level (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Result
13.11	-31.9	29.5	61.4	Complied

**Results: Quasi Peak Upper Band Edge**

Frequency (MHz)	Level (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Result
14.01	-32.2	29.5	61.7	Complied

**Note(s):**

1. A transducer factor on the measuring instrument was used to extrapolate the results at 3 metres to a distance of 30 metres where required.
2. A transducer factor on the measuring instrument was used to extrapolate the results at 3 metres to a distance of 30 metres where required. A distance extrapolation factor of 40 dB was used.



**5.2.7. Transmitter 20 dB Bandwidth**

**Test Summary:**

<b>Test Engineer:</b>	Patrick Jones	<b>Test Date:</b>	04 May 2012
<b>Test Sample IMEI:</b>	351808050018804		

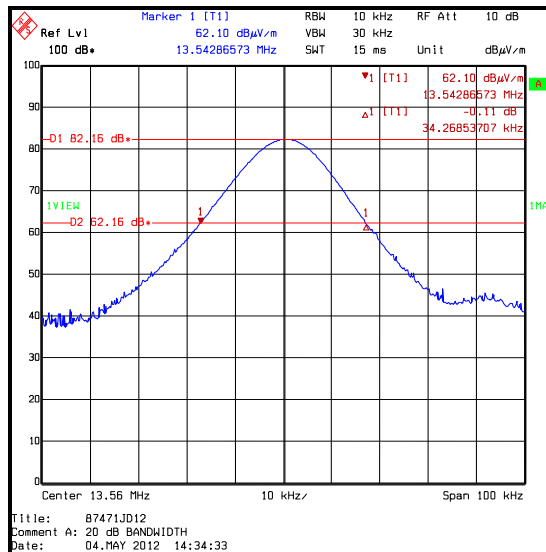
<b>FCC Part:</b>	2.1049
<b>Test Method Used:</b>	As detailed in ANSI C63.10 Section 6.9.1

**Environmental Conditions:**

<b>Temperature (°C):</b>	22
<b>Relative Humidity (%):</b>	33

**Results:**

<b>20 dB Bandwidth (kHz)</b>
34.269





**5.2.8. Transmitter Frequency Stability (Temperature & Voltage Variation)****Test Summary:**

<b>Test Engineer:</b>	Patrick Jones	<b>Test Date:</b>	04 May 2012
<b>Test Sample IMEI:</b>	351808050018804		

<b>FCC Part:</b>	15.225(e)
<b>Test Method Used:</b>	As detailed in ANSI C63.10 Section 6.8.1 and 6.8.2

**Environmental Conditions:**

<b>Ambient Temperature (°C):</b>	22
<b>Ambient Relative Humidity (%):</b>	33

**Results: Maximum frequency error of the EUT with variations in ambient temperature**

Temperature (°C)	Time after Start-up			
	0 minutes	2 minutes	5 minutes	10 minutes
-20	13.560094 MHz	13.560099 MHz	13.560097 MHz	13.560096 MHz
20	13.560093 MHz	13.560091 MHz	13.560089 MHz	13.560085 MHz
50	13.559873 MHz	13.559872 MHz	13.559869 MHz	13.559867 MHz

Frequency with Worst Case Deviation (MHz)	Frequency Error (Hz)	Frequency Error (%)	Limit (%)	Margin (%)	Result
13.559867	133	0.000981	0.01	0.009019	Complied

**Results: Maximum frequency error of the EUT with variations in nominal operating voltage at an ambient temperature of 20°C**

Supply Voltage (V)	Nominal Frequency (MHz)	Measured Frequency (MHz)	Frequency Error (Hz)	Frequency Error (%)	Limit (%)	Margin (%)	Result
3.4	13.56	13.559939	61	0.000450	0.01	0.009550	Complied
3.8	13.56	13.559943	57	0.000420	0.01	0.009580	Complied
4.35	13.56	13.559933	67	0.000494	0.01	0.009506	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
20 dB Bandwidth	13 MHz to 14 MHz	95%	±0.92 ppm
Frequency Stability	13 MHz to 14 MHz	95%	±0.92 ppm
Radiated Spurious Emissions	9 kHz to 30 MHz	95%	±3.53 dB
Radiated Spurious Emissions	30 MHz to 1000 MHz	95%	±2.94 dB
Transmitter Fundamental Field Strength	13 MHz to 14 MHz	95%	±3.53 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>
A004	LISN	Rohde & Schwarz	ESH3-Z5	890604/027	14 Sep 2012	12
A067	LISN	Rohde & Schwarz	ESH3-Z5	890603/002	02 Jun 2012	12
A1830	Pulse Limiter	Rohde & Schwarz	ESH3-Z2	100668	25 Feb 2013	12
A1834	Attenuator	Hewlett Packard	8491B	10444	29 Jan 2013	12
A553	Antenna	Chase	CBL6111A	1593	15 Feb 2013	12
E0513	Environmental Chamber	TAS	LT600 Series 3	23900506	Calibrated Before Use	-
G0543	Amplifier	Sonoma	310N	230801	13 Jul 2012	3
K0001	5m RSE Chamber	Rainford EMC	N/A	N/A	29 May 2012	12
M1229	Digital Multimeter	Fluke	179	87640015	21 Jun 2012	12
M1249	Thermometer	Fluke	52II	88800049	30 Mar 2013	12
M1273	Test Receiver	Rohde & Schwarz	ESIB 26	100275	03 Feb 2013	12
M1379	Test Receiver	Rohde & Schwarz	ESIB7	100330	20 Sep 2012	12
M1568	Magnetic Loop	Rohde & Schwarz	HFH2-Z2	879284/2	08 Feb 2013	12
S0520	DC Power Supply Unit	GW instek	GPC-3030	E835141	Calibrated Before Use	-

**NB** In accordance with UKAS requirements all the measurement equipment is on a calibration schedule. All test equipment was within the current or previous calibration period on the date of testing.