



TEST REPORT FROM RFI GLOBAL SERVICES LTD

Test of: NTT DoCoMo P-02D

FCC ID: UCE211042A

To: FCC Part 22: 2010 Subpart H, Part 24: 2010 Subpart E,

Test Report Serial No:
RFI-RPT-RP83529JD05A

This Test Report Is Issued Under The Authority Of Chris Guy, Head of Global Approvals:		
Checked By:	Ian Watch	
Signature:		
Date of Issue:	03 October 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:	47CFR24
Specification Title:	Code of Federal Regulations Volume 47 (Telecommunications) 2010: Part 24 Subpart E (Personal Communication 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:	01 September 2011 to 30 September 2011

2.2. Summary of Test Results

FCC Reference (47CFR)	Measurement	Result
Part 22		
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 Output 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	
Part 24		
Part 15.107(a)	Receiver/Idle Mode AC Conducted Spurious Emissions	
Part 15.109	Receiver/Idle Mode Radiated Spurious Emissions	
Part 24.232	Transmitter Output Power (EIRP)	
Part 2.1046	Transmitter Conducted Output Power	Note 1
Part 2.1055/24.235	Transmitter Frequency Stability (Temperature and Voltage Variation)	
Part 2.1049	Transmitter Occupied Bandwidth	
Part 2.1053/24.238	Transmitter Out of Band Radiated Emissions	
Part 2.1053/24.238	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-02D
IMEI:	357867040012099 (<i>Radiated sample</i>)
Hardware Version Number:	Revision C
Software Version Number:	ACPU: totoro-ginger-dcm-07-0317, CCPU: R1D
FCC ID:	UCE211042A

Brand Name:	NTT DoCoMo
Model Name or Number:	P-02D
IMEI:	357867040012198 (<i>Conducted RF port sample</i>)
Hardware Version Number:	Revision C
Software Version Number:	ACPU: totoro-ginger-dcm-07-0363, CCPU: R1D
FCC ID:	UCE211042A

Brand Name:	NTT DoCoMo
Description:	Battery
Model Name or Number:	P26

Brand Name:	NTT DoCoMo
Description:	AC Charger
Model Name or Number:	P01

Brand Name:	NTT DoCoMo
Description:	Desktop charger
Model Name or Number:	P48

Brand Name:	NTT DoCoMo
Description:	Charge/USB Data cable
Model Name or Number:	P01

Brand Name:	NTT DoCoMo
Description:	Personal Hands-Free
Model Name or Number:	L0ZZ00000027

3.2. Description of EUT

The equipment under test was a dual mode UMTS/GSM cellular handset with BT, WLAN & RFID.

3.3. Modifications Incorporated in the EUT

The Customer stated that the final software version is ACPU: totoro-ginger-dcm-07-0363 CCPU: R1D.

Initial software version ACPU: totoro-ginger-dcm-07-0317 CCPU: R1D was installed in the sample with IMEI 357867040012099. The Customer stated this version was to enable operation of WLAN therefore allowing WLAN test cases to be performed. Otherwise this software is identical to the final software version and has no impact on the test results contained within this test report.

3.4. Additional Information Related to Testing

Type of Radio Device:	Transceiver		
Modulation Type:	GMSK / 8PSK		
Channel Spacing:	200 kHz		
Power Supply Requirement(s):	Nominal	3.7 V	
	Minimum	3.4 V	
	Maximum	4.2 V	
Technology Tested:	GSM850		
Maximum Output Power (ERP):	GSM	31.3 dBm	
	GPRS	31.5 dBm	
	EGPRS	29.0 dBm	
Transmit Frequency Range:	824 to 849 MHz		
Transmit Channels Tested:	Channel ID	Channel Number	Channel Frequency (MHz)
	Bottom	128	824.2
	Middle	190	836.6
	Top	251	848.8
Receive Frequency Range:	869 to 894 MHz		
Receive Channels Tested:	Channel ID	Channel Number	Channel Frequency (MHz)
	Bottom	128	869.2
	Middle	190	881.6
	Top	251	893.8
Technology Tested:	PCS1900		
Maximum Output Power (EIRP):	GSM	29.3 dBm	
	GPRS	29.5 dBm	
	EGPRS	29.4 dBm	
Transmit Frequency Range:	1850 to 1910 MHz		
Transmit Channels Tested:	Channel ID	Channel Number	Channel Frequency (MHz)
	Bottom	512	1850.2
	Middle	660	1879.8
	Top	810	1909.8
Receive Frequency Range:	1930 to 1990 MHz		
Receive Channels Tested:	Channel ID	Channel Number	Channel Frequency (MHz)
	Bottom	512	1930.2
	Middle	660	1959.8
	Top	810	1989.8

3.5. Support Equipment

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

Brand Name:	Not Stated
Description:	Micro SD Memory Card
Model Name or Number:	Not Stated

Brand Name:	Not Stated
Description:	Dummy Battery
Model Name or Number:	Not Stated

Brand Name:	Buffalo
Description:	USB Hub
Model Name or Number:	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.
- ERP/EIRP , Occupied bandwidth and band edge tests were performed with the EUT in:
 - GSM single timeslot circuit switched
 - GPRS/ Multislot Class 12 with the unit transmitting on one timeslots in the uplink.
 - EGPRS/ Multislot Class 12 using MCS5 with the unit transmitting on one timeslot in the uplink unless otherwise stated.
- Transmitter radiated spurious emissions were checked in all modes during pre-scans. Circuit switched voice was found to be the worst case and all final measurements were performed with the EUT in this mode.

4.2. Configuration and Peripherals

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

- The sample with IMEI 357867040012198 was used for frequency stability, occupied bandwidth and conducted power measurements. The sample with IMEI 357867040012099 was used for all other measurements.
- Idle mode and transmitter mode radiated spurious emissions tests were performed with the Desktop 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.
- Connected to a GSM/GPRS system simulator, operating in transceiver mode.

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 - Part 22**5.2.1. Receiver/Idle Mode AC Conducted Spurious Emissions****Test Summary:**

Test Engineer:	Andrew Edwards	Test Date:	15 September 2011
Test Sample IMEI:	357867040012099		

FCC Part:	15.107
Test Method Used:	As detailed in ANSI C63.10 Section 6.2 referencing ANSI C63.4

Environmental Conditions:

Temperature (°C):	26
Relative Humidity (%):	22

Results: Live / Quasi Peak

Frequency (MHz)	Line	Level (dBμV)	Limit (dBμV)	Margin (dB)	Result
1.230000	Live	30.7	56.0	25.3	Complied
1.522500	Live	23.5	56.0	32.5	Complied
1.585500	Live	24.7	56.0	31.3	Complied
1.905000	Live	22.8	56.0	33.2	Complied
1.968000	Live	22.8	56.0	33.2	Complied
1.990500	Live	22.0	56.0	34.0	Complied
2.017500	Live	21.2	56.0	34.8	Complied
2.031000	Live	22.7	56.0	33.3	Complied
2.076000	Live	20.6	56.0	35.4	Complied
2.139000	Live	20.4	56.0	35.6	Complied

Results: Live / Average

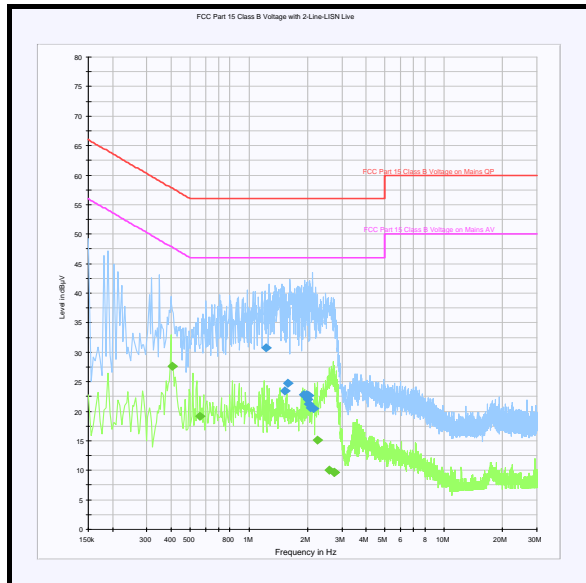
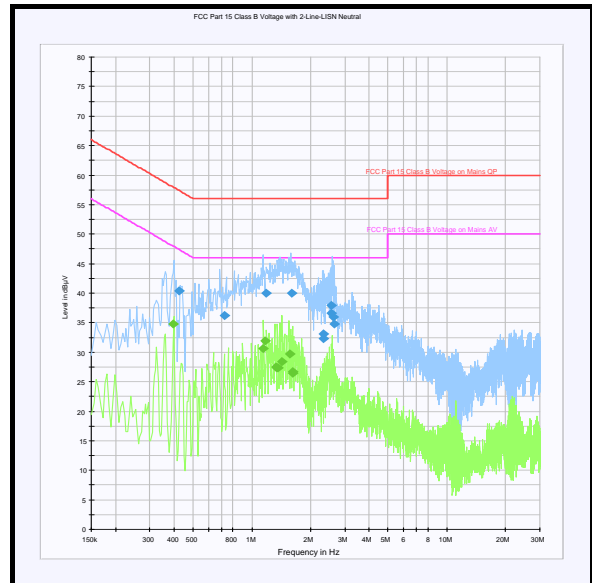
Frequency (MHz)	Line	Level (dBμV)	Limit (dBμV)	Margin (dB)	Result
0.406500	Live	27.6	47.7	20.1	Complied
0.559500	Live	19.2	46.0	26.8	Complied
2.260500	Live	15.1	46.0	30.9	Complied
2.593500	Live	10.0	46.0	36.0	Complied
2.737500	Live	9.6	46.0	36.4	Complied
2.746500	Live	9.6	46.0	36.4	Complied

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

Frequency (MHz)	Line	Level (dBμV)	Limit (dBμV)	Margin (dB)	Result
0.424500	Neutral	40.4	57.4	17.0	Complied
0.721500	Neutral	36.3	56.0	19.7	Complied
1.185000	Neutral	39.9	56.0	16.1	Complied
1.594500	Neutral	40.0	56.0	16.0	Complied
2.332500	Neutral	32.3	56.0	23.7	Complied
2.332500	Neutral	33.2	56.0	22.8	Complied
2.553000	Neutral	37.9	56.0	18.1	Complied
2.562000	Neutral	36.7	56.0	19.3	Complied
2.625000	Neutral	36.0	56.0	20.0	Complied
2.643000	Neutral	34.8	56.0	21.2	Complied

Results: Neutral / Average

Frequency (MHz)	Line	Level (dBμV)	Limit (dBμV)	Margin (dB)	Result
0.393000	Neutral	34.8	48.0	13.2	Complied
1.144500	Neutral	30.6	46.0	15.4	Complied
1.176000	Neutral	31.9	46.0	14.1	Complied
1.329000	Neutral	27.5	46.0	18.5	Complied
1.342500	Neutral	27.4	46.0	18.6	Complied
1.365000	Neutral	27.3	46.0	18.7	Complied
1.419000	Neutral	28.5	46.0	17.5	Complied
1.572000	Neutral	29.7	46.0	16.3	Complied
1.621500	Neutral	26.4	46.0	19.6	Complied
1.621500	Neutral	26.7	46.0	19.3	Complied

Receiver/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:**

Test Engineer:	Andrew Edwards	Test Date:	16 September 2011
Test Sample IMEI:	357867040012099		

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

Environmental Conditions:

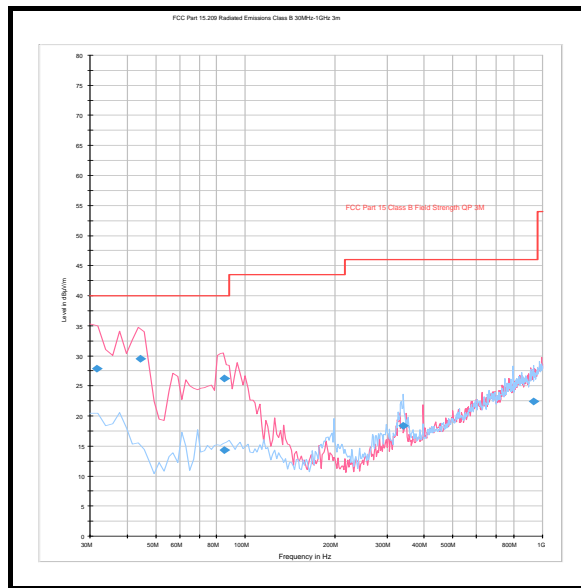
Temperature (°C):	30
Relative Humidity (%):	31

Results:

Frequency (MHz)	Antenna Polarity	Level (dB μ V/m)	Limit (dB μ V/m)	Margin (dB)	Result
31.640	Vertical	27.8	40.0	12.2	Complied
44.496	Vertical	29.5	40.0	10.5	Complied
84.886	Vertical	26.2	40.0	13.8	Complied
85.087	Vertical	14.3	40.0	25.7	Complied
340.382	Horizontal	18.3	46.0	27.7	Complied
933.555	Horizontal	22.4	46.0	23.6	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:	Andrew Edwards	Test Date:	08 September 2011
Test Sample IMEI:	357867040012099		

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):	26
Relative Humidity (%):	32

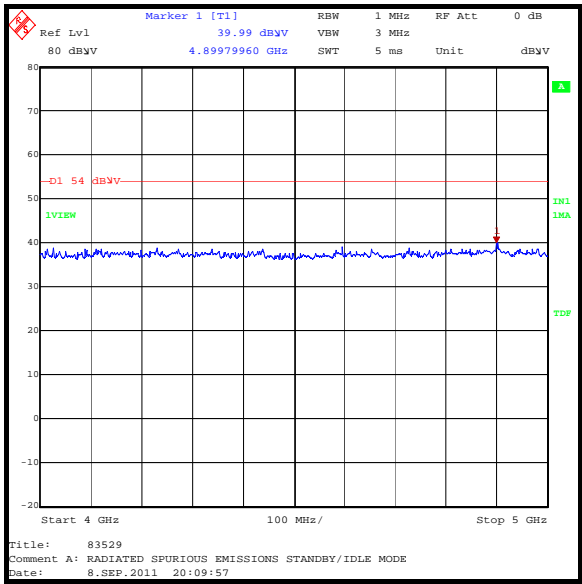
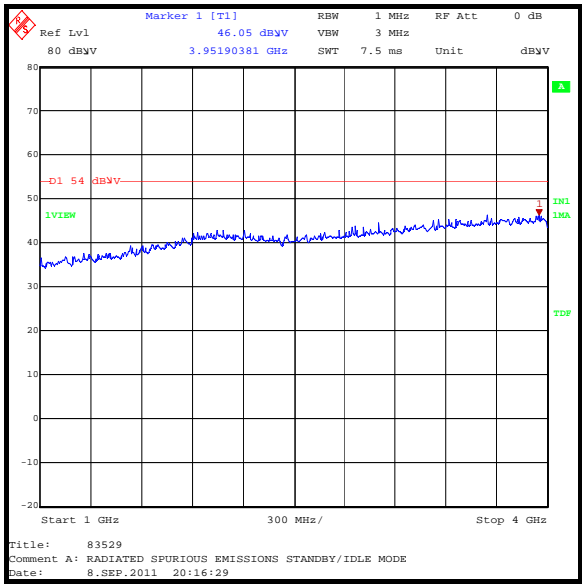
Results:

Frequency (MHz)	Antenna Polarity	Peak Level (dBμV/m)	Average Limit (dBμV/m)	Margin (dB)	Result
3951.904	Horizontal	46.1	54.0	7.9	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. 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.
3. 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.

Receiver/Idle Mode Radiated Spurious Emissions (continued)



5.2.3. Transmitter Output Power (ERP)**Test Summary:**

Test Engineer:	Sarah Williams & Crawford Lindsay	Test Date:	08 September 2011, 20 September 2011 & 30 September 2011
Test Sample IMEI:	357867040012099		

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):	25
Relative Humidity (%):	30

Results: GSM Circuit Switched

Channel	Frequency (MHz)	Antenna Polarity	ERP (dBm)	ERP Limit (dBm)	Margin (dB)	Result
Bottom	824.2	Horizontal	31.3	38.45	7.15	Complied
Middle	836.6	Horizontal	29.7	38.45	8.75	Complied
Top	848.8	Horizontal	30.6	38.45	7.85	Complied

Results: GPRS

Channel	Frequency (MHz)	Antenna Polarity	ERP (dBm)	ERP Limit (dBm)	Margin (dB)	Result
Bottom	824.2	Horizontal	31.5	38.45	6.95	Complied
Middle	836.6	Horizontal	30.0	38.45	8.45	Complied
Top	848.8	Horizontal	30.2	38.45	8.25	Complied

Results: EGPRS / MCS5

Channel	Frequency (MHz)	Antenna Polarity	ERP (dBm)	ERP Limit (dBm)	Margin (dB)	Result
Bottom	824.2	Horizontal	28.2	38.45	10.25	Complied
Middle	836.6	Horizontal	28.8	38.45	9.65	Complied
Top	848.8	Horizontal	29.0	38.45	9.45	Complied

5.2.4. Transmitter Conducted Output Power**Test Summary:**

Test Engineer:	Andrew Edwards & Crawford Lindsay	Test Date:	16 September 2011 & 30 September 2011
Test Sample IMEI:	357867040012198		

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):	30
Relative Humidity (%):	31

Results: GSM Circuit Switched

Channel	Frequency (MHz)	Maximum Peak Conducted Power (dBm)	Maximum Average Conducted Power (dBm)
Bottom	824.2	32.6	32.5
Middle	836.6	32.7	32.5
Top	848.8	32.6	32.4

Results: GPRS

Channel	Frequency (MHz)	Maximum Average Power / 4 timeslots (dBm)	Maximum Average Power / 3 timeslots (dBm)	Maximum Average Power / 2 timeslots (dBm)	Maximum Average Power / 1 timeslot (dBm)
Bottom	824.2	27.0	28.1	29.9	32.4
Middle	836.6	27.0	28.2	29.9	32.3
Top	848.8	26.9	28.1	29.9	32.4

Results: EGPRS / MCS4 / GMSK

Channel	Frequency (MHz)	Maximum Average Power / 4 timeslots (dBm)	Maximum Average Power / 3 timeslots (dBm)	Maximum Average Power / 2 timeslots (dBm)	Maximum Average Power / 1 timeslot (dBm)
Bottom	824.2	27.1	28.1	29.9	32.5
Middle	836.6	27.1	28.2	29.9	32.3
Top	848.8	27.0	28.1	29.9	32.3

Note(s):

1. Conducted power tests were performed to support SAR tests.

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

Test Engineer:	Crawford Lindsay	Test Date:	21 September 2011
Test Sample IMEI:	357867040012198		

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):	29
Ambient Relative Humidity (%):	28

Results: Middle Channel (836.6 MHz)

Temperature (°C)	Measured Frequency (MHz)	Frequency Error (Hz)	Frequency Error (ppm)	Limit (ppm)	Margin (ppm)	Result
-30	836.600027	27	0.0322	2.5	2.4678	Complied
-20	836.600025	25	0.0299	2.5	2.4701	Complied
-10	836.600020	20	0.0239	2.5	2.4761	Complied
0	836.599972	28	0.0335	2.5	2.4665	Complied
10	836.599969	31	0.0371	2.5	2.4629	Complied
20	836.599970	30	0.0359	2.5	2.4641	Complied
30	836.600026	26	0.0311	2.5	2.4689	Complied
40	836.599981	19	0.0227	2.5	2.4773	Complied
50	836.600017	17	0.0203	2.5	2.4797	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 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 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:	Crawford Lindsay	Test Date:	21 September 2011
Test Sample IMEI:	357867040012198		

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):	29
Relative Humidity (%):	28

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	836.599968	32	0.0383	2.5	2.4617	Complied
4.2	836.599971	29	0.0347	2.5	2.4653	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 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:	Crawford Lindsay	Test Date:	30 September 2011
Test Sample IMEI:	357867040012198		

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):	28
Relative Humidity (%):	30

Results: GSM Circuit Switched

Channel	Frequency (MHz)	Occupied Bandwidth (kHz)
Bottom	824.2	242.485
Middle	836.6	242.485
Top	848.8	246.493

Results: GPRS

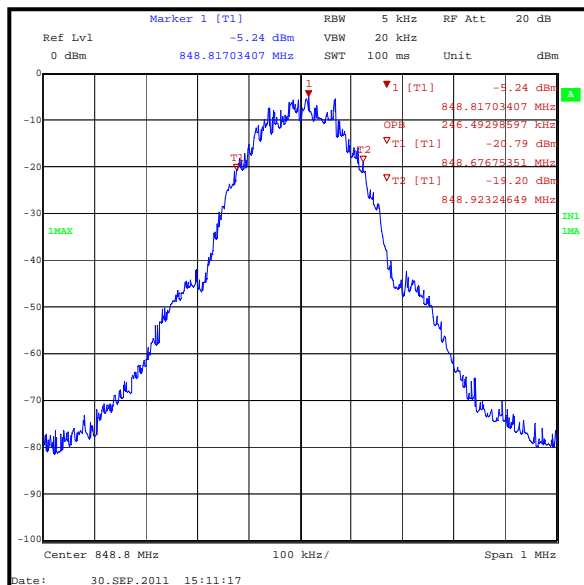
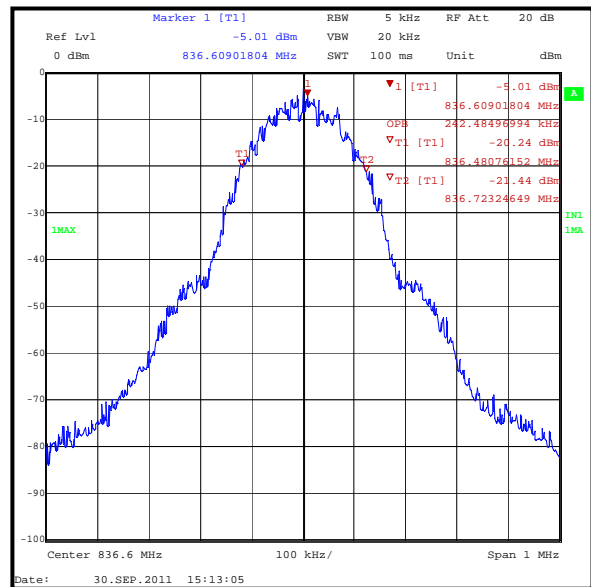
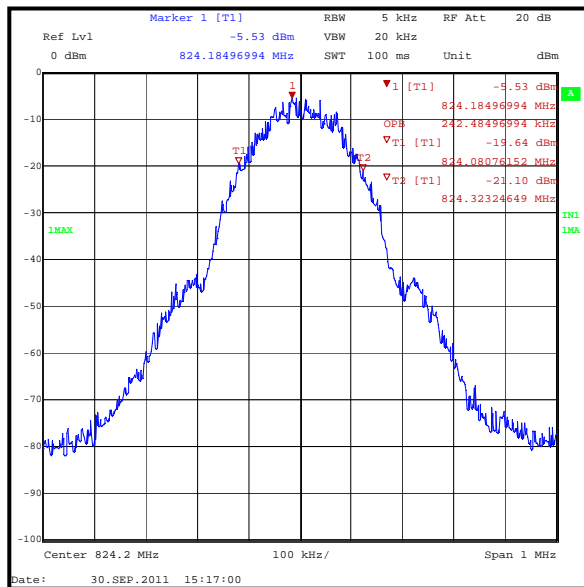
Channel	Frequency (MHz)	Occupied Bandwidth (kHz)
Bottom	824.2	240.481
Middle	836.6	242.485
Top	848.8	236.473

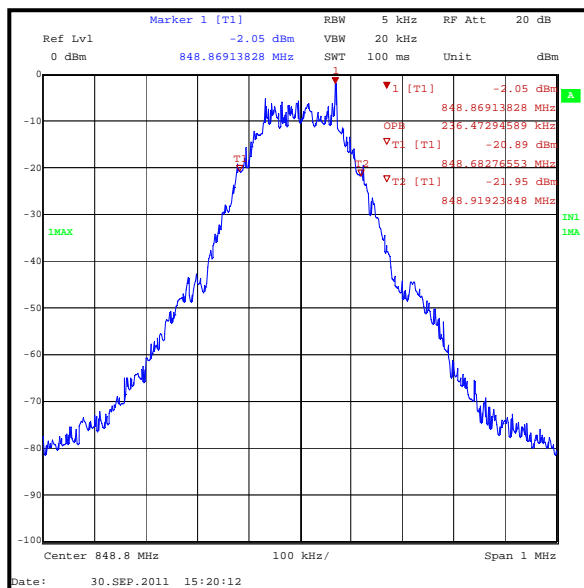
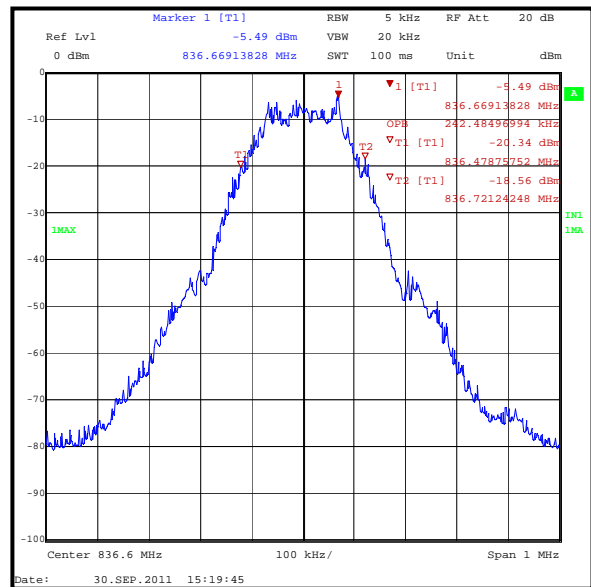
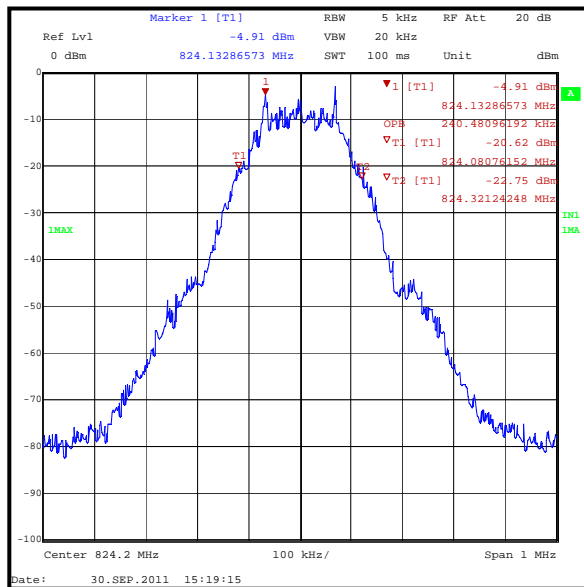
Results: EGPRS/ MCS5

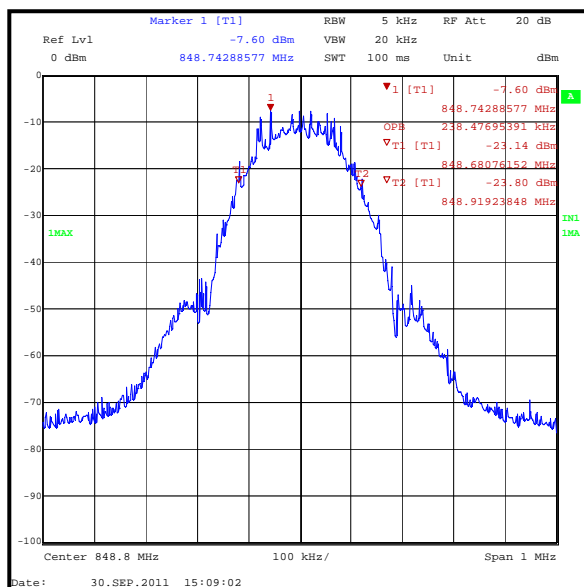
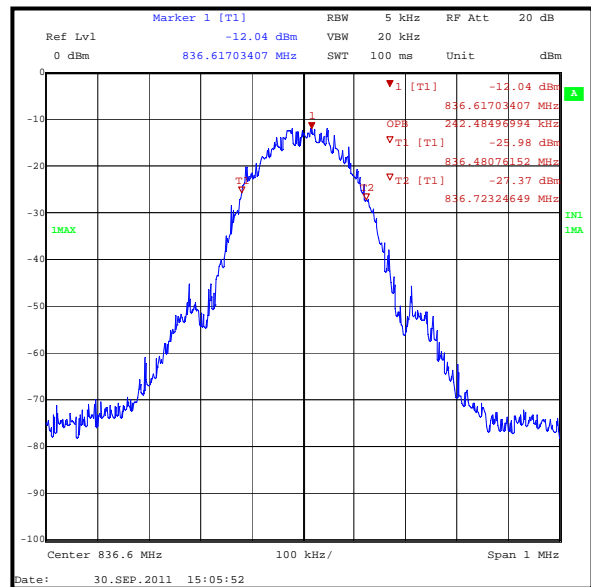
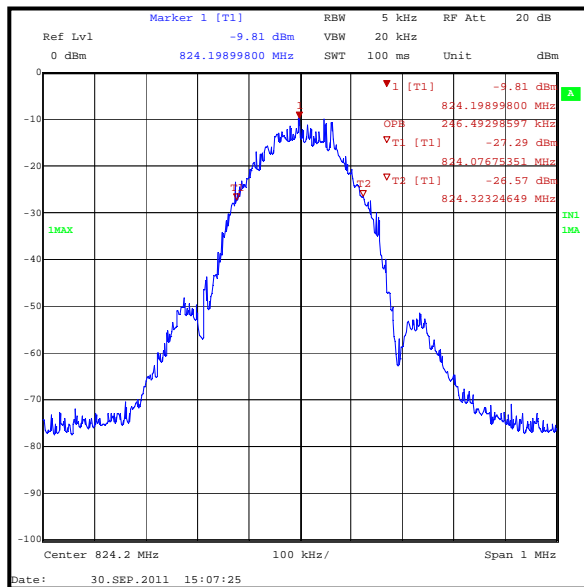
Channel	Frequency (MHz)	Occupied Bandwidth (kHz)
Bottom	824.2	246.493
Middle	836.6	242.485
Top	848.8	238.477

Note(s):

1. 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)**GSM Circuit Switched**

Transmitter Occupied Bandwidth (continued)**GPRS**

Transmitter Occupied Bandwidth (continued)**EGPRS/ MCS5**

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

Test Engineer:	Andrew Edwards & Crawford Lindsay	Test Date:	02 September 2011, 08 September 2011 & 30 September 2011
Test Sample IMEI:	357867040012099		

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:	GSM Circuit Switched

Environmental Conditions:

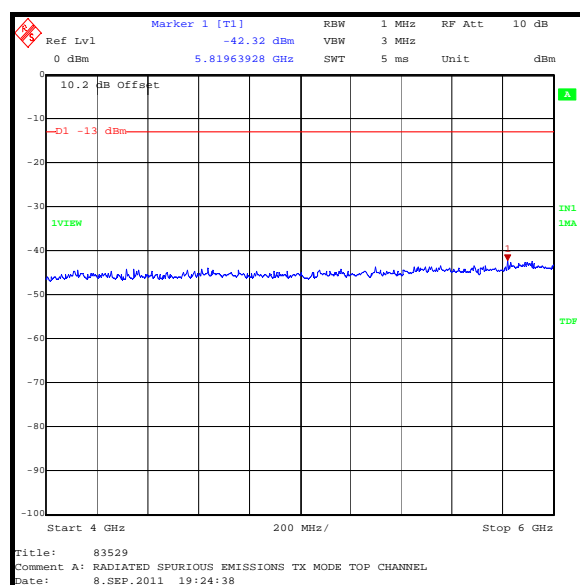
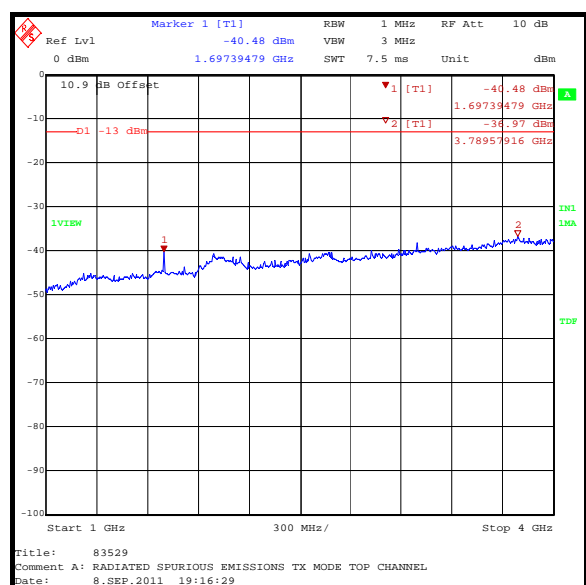
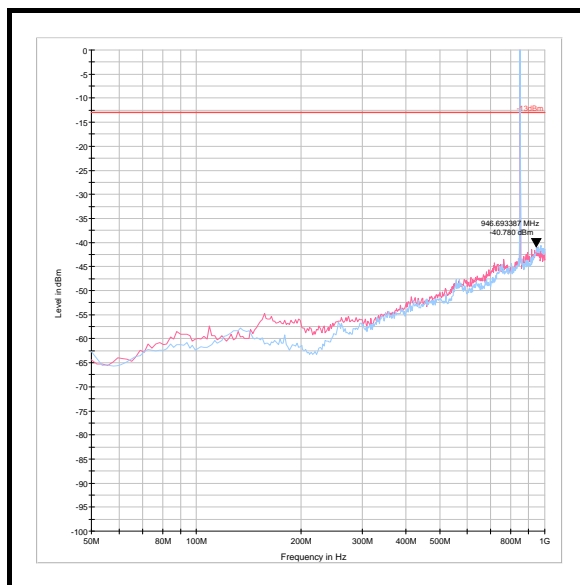
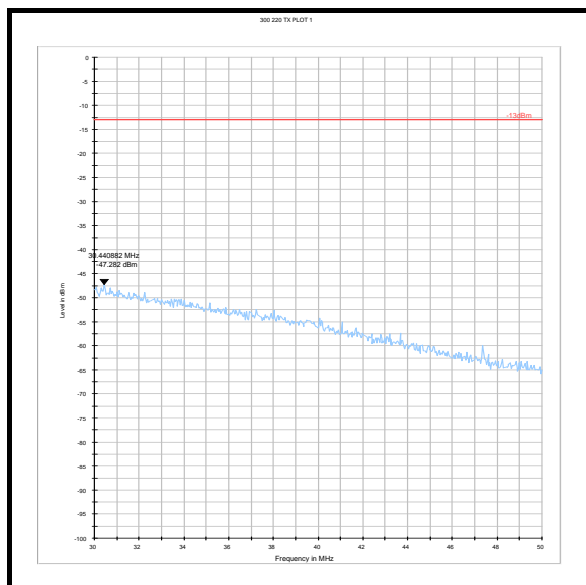
Temperature (°C):	27
Relative Humidity (%):	33

Results: Bottom Channel

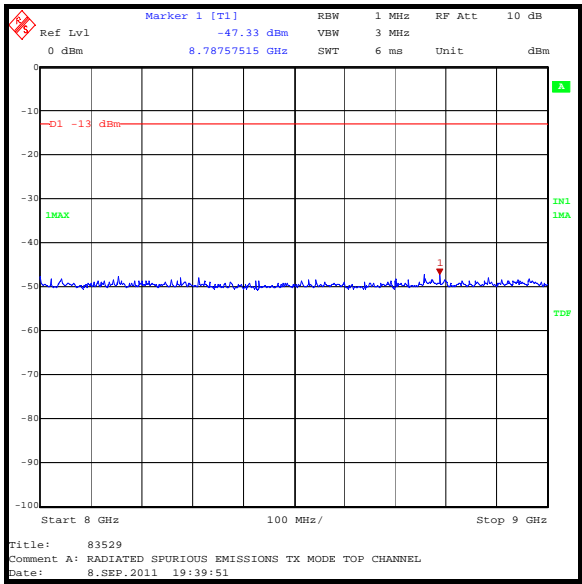
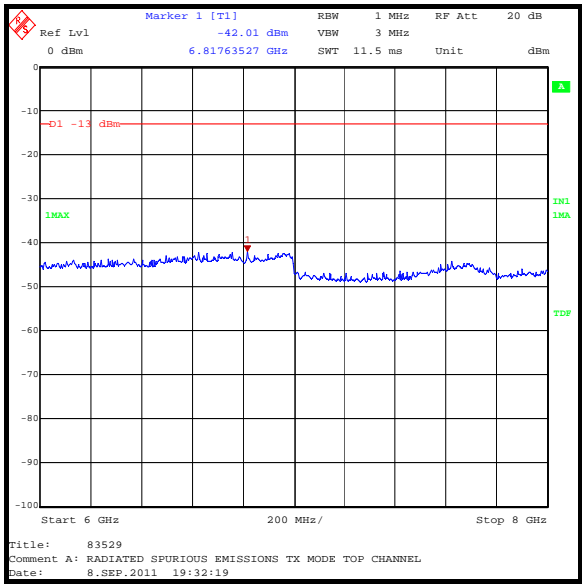
Frequency (MHz)	Peak Level (dBm)	Limit (dBm)	Margin (dB)	Result
3789.579	-37.0	-13.0	24.0	Complied

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.
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:	Andrew Edwards & Crawford Lindsay	Test Date:	08 September 2011 & 23 September 2011
Test Sample IMEI:	357867040012099		

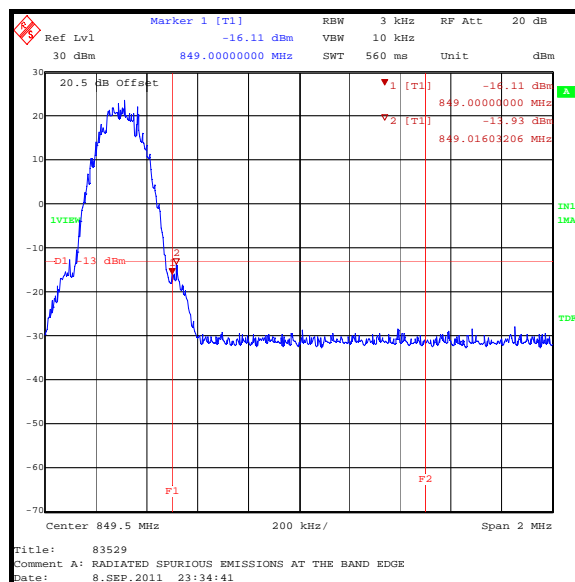
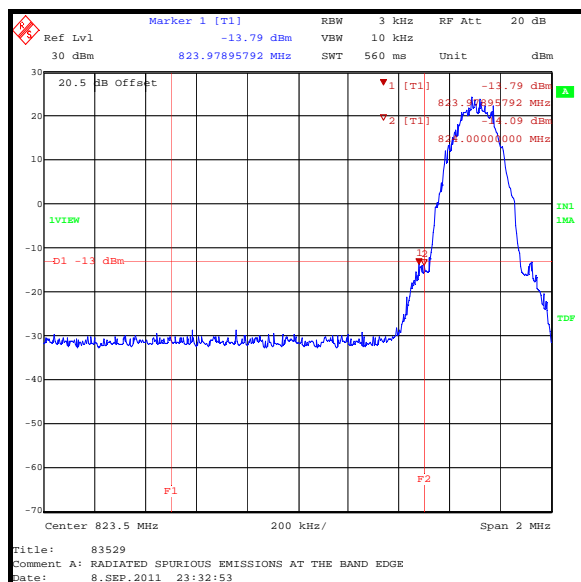
FCC Part:	2.1053 & 22.917
Test Method Used:	As detailed in ANSI TIA-603-C-2004 Section 2.2.12 referencing FCC CFR Part 22.917

Environmental Conditions:

Temperature (°C):	25
Relative Humidity (%):	36

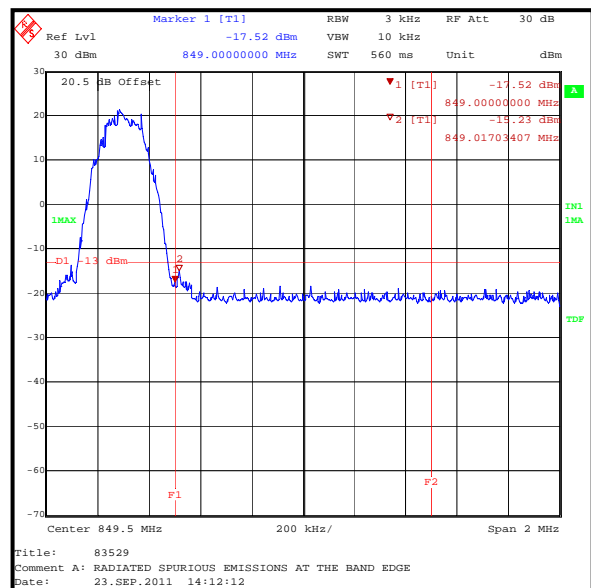
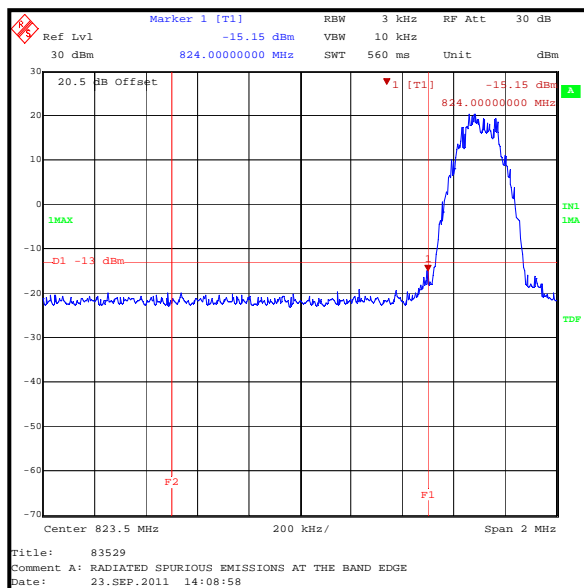
Results: GSM Circuit Switched

Frequency (MHz)	Peak Level (dBm)	Limit (dBm)	Margin (dB)	Result
823.979	-13.8	-13.0	0.8	Complied
824	-14.1	-13.0	1.1	Complied
849	-16.1	-13.0	3.1	Complied
849.016	-13.9	-13.0	0.9	Complied



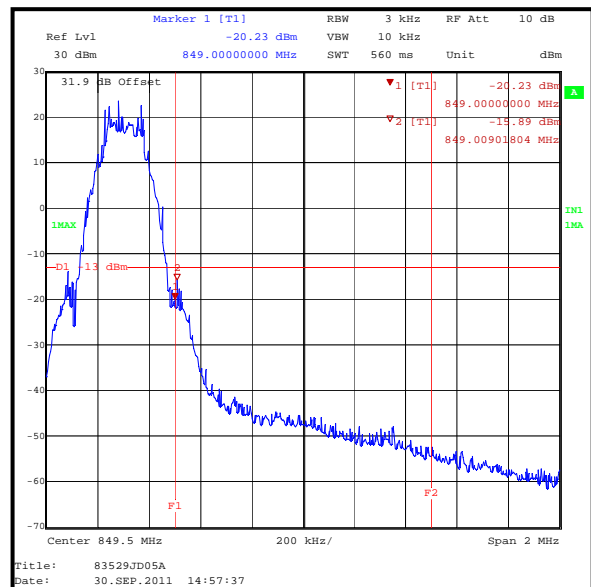
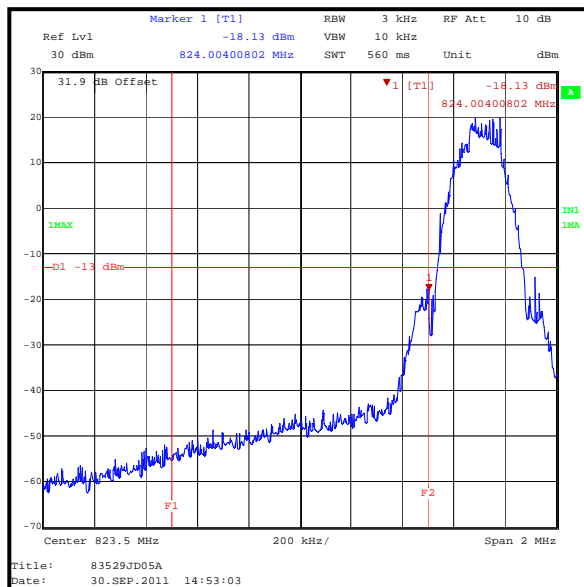
Transmitter Band Edge Radiated Emissions (continued)**Results: GPRS**

Frequency (MHz)	Peak Level (dBm)	Limit (dBm)	Margin (dB)	Result
824	-15.2	-13.0	2.2	Complied
849	-17.5	-13.0	4.5	Complied
849.017	-15.2	-13.0	2.2	Complied



Transmitter Band Edge Radiated Emissions (continued)**Results: EGPRS / MCS5**

Frequency (MHz)	Peak Level (dBm)	Limit (dBm)	Margin (dB)	Result
824	-18.1	-13.0	4.9	Complied
849	-20.2	-13.0	7.2	Complied
849.021	-15.9	-13.0	2.9	Complied



5.3. Test Results - Part 24**5.3.1. Receiver/Idle Mode AC Conducted Spurious Emissions****Test Summary:**

Test Engineer:	Andrew Edwards	Test Date:	15 September 2011
Test Sample IMEI:	357867040012099		

FCC Part:	15.107
Test Method Used:	As detailed in ANSI C63.10 Section 6.2 referencing ANSI C63.4

Environmental Conditions:

Temperature (°C):	26
Relative Humidity (%):	22

Results: Live / Quasi Peak

Frequency (MHz)	Line	Level (dBμV)	Limit (dBμV)	Margin (dB)	Result
1.230000	Live	30.7	56.0	25.3	Complied
1.522500	Live	23.5	56.0	32.5	Complied
1.585500	Live	24.7	56.0	31.3	Complied
1.905000	Live	22.8	56.0	33.2	Complied
1.968000	Live	22.8	56.0	33.2	Complied
1.990500	Live	22.0	56.0	34.0	Complied
2.017500	Live	21.2	56.0	34.8	Complied
2.031000	Live	22.7	56.0	33.3	Complied
2.076000	Live	20.6	56.0	35.4	Complied
2.139000	Live	20.4	56.0	35.6	Complied

Results: Live / Average

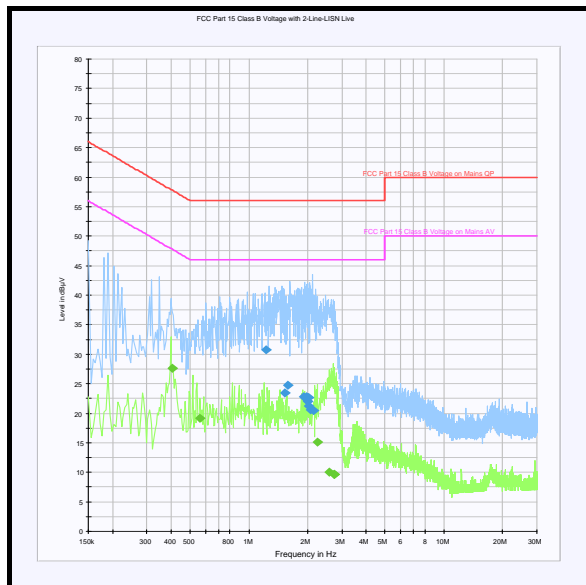
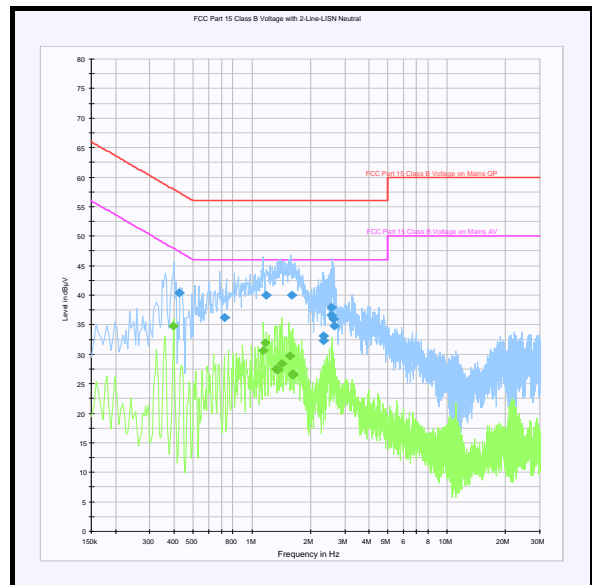
Frequency (MHz)	Line	Level (dBμV)	Limit (dBμV)	Margin (dB)	Result
0.406500	Live	27.6	47.7	20.1	Complied
0.559500	Live	19.2	46.0	26.8	Complied
2.260500	Live	15.1	46.0	30.9	Complied
2.593500	Live	10.0	46.0	36.0	Complied
2.737500	Live	9.6	46.0	36.4	Complied
2.746500	Live	9.6	46.0	36.4	Complied

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

Frequency (MHz)	Line	Level (dB μ V)	Limit (dB μ V)	Margin (dB)	Result
0.424500	Neutral	40.4	57.4	17.0	Complied
0.721500	Neutral	36.3	56.0	19.7	Complied
1.185000	Neutral	39.9	56.0	16.1	Complied
1.594500	Neutral	40.0	56.0	16.0	Complied
2.332500	Neutral	32.3	56.0	23.7	Complied
2.332500	Neutral	33.2	56.0	22.8	Complied
2.553000	Neutral	37.9	56.0	18.1	Complied
2.562000	Neutral	36.7	56.0	19.3	Complied
2.625000	Neutral	36.0	56.0	20.0	Complied
2.643000	Neutral	34.8	56.0	21.2	Complied

Results: Neutral / Average

Frequency (MHz)	Line	Level (dB μ V)	Limit (dB μ V)	Margin (dB)	Result
0.393000	Neutral	34.8	48.0	13.2	Complied
1.144500	Neutral	30.6	46.0	15.4	Complied
1.176000	Neutral	31.9	46.0	14.1	Complied
1.329000	Neutral	27.5	46.0	18.5	Complied
1.342500	Neutral	27.4	46.0	18.6	Complied
1.365000	Neutral	27.3	46.0	18.7	Complied
1.419000	Neutral	28.5	46.0	17.5	Complied
1.572000	Neutral	29.7	46.0	16.3	Complied
1.621500	Neutral	26.4	46.0	19.6	Complied
1.621500	Neutral	26.7	46.0	19.3	Complied

Receiver/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.

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

Test Engineer:	Andrew Edwards	Test Date:	16 September 2011
Test Sample IMEI:	357867040012099		

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

Environmental Conditions:

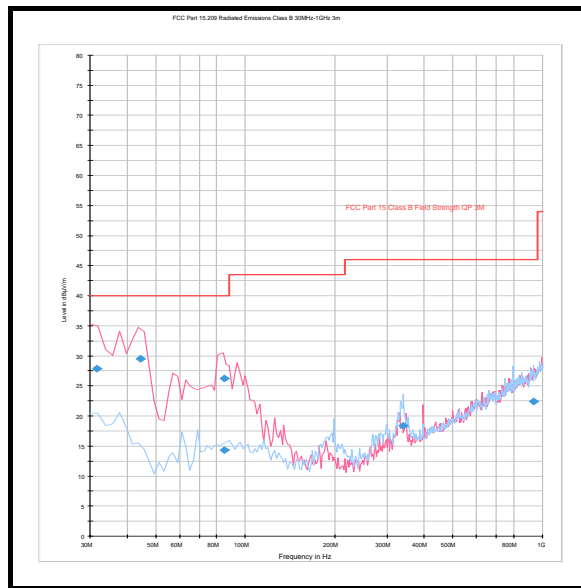
Temperature (°C):	30
Relative Humidity (%):	31

Results:

Frequency (MHz)	Antenna Polarity	Level (dB μ V/m)	Limit (dB μ V/m)	Margin (dB)	Result
31.640	Vertical	27.8	40.0	12.2	Complied
44.496	Vertical	29.5	40.0	10.5	Complied
84.886	Vertical	26.2	40.0	13.8	Complied
85.087	Vertical	14.3	40.0	25.7	Complied
340.382	Horizontal	18.3	46.0	27.7	Complied
933.555	Horizontal	22.4	46.0	23.6	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:	Andrew Edwards	Test Date:	08 September 2011
Test Sample IMEI:	357867040012099		

FCC Part:	15.109
Test Method Used:	As detailed in ANSI C63.4 Section 8
Frequency Range:	1 GHz to 10 GHz

Environmental Conditions:

Temperature (°C):	26
Relative Humidity (%):	32

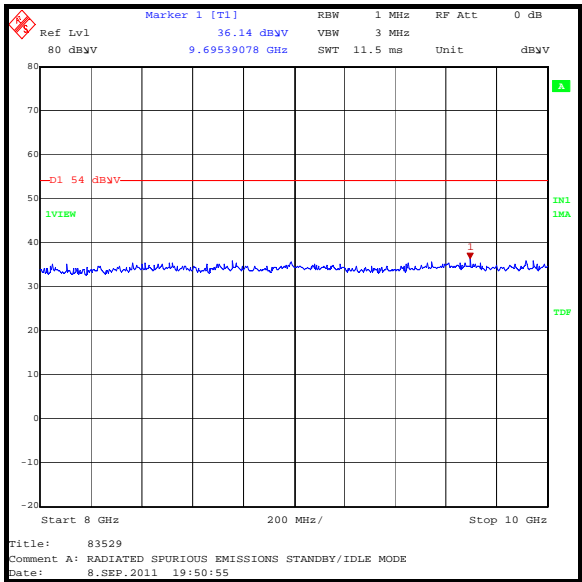
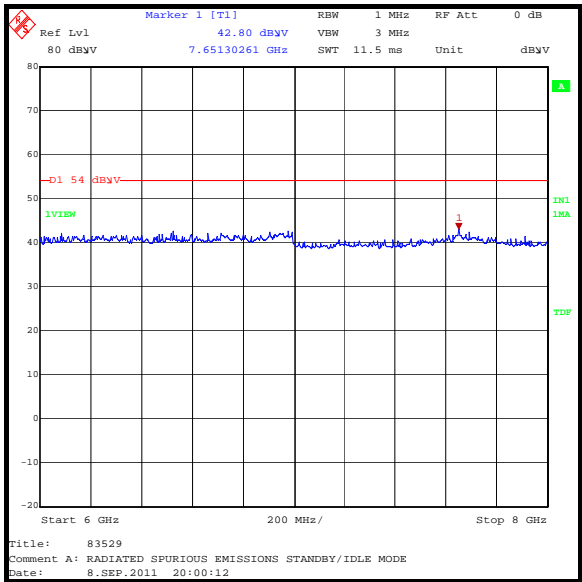
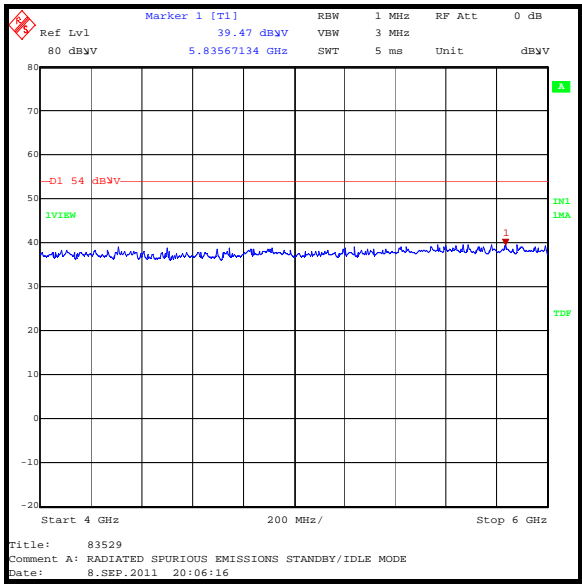
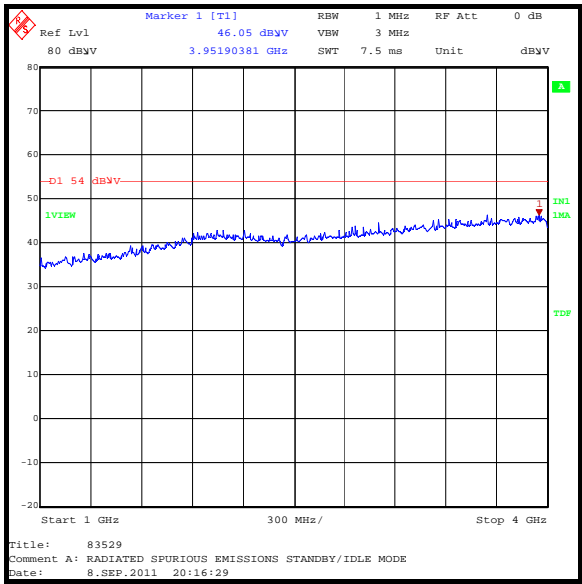
Results:

Frequency (MHz)	Antenna Polarity	Peak Level (dBμV/m)	Average Limit (dBμV/m)	Margin (dB)	Result
3951.904	Horizontal	46.1	54.0	7.9	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. 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.
3. 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.

Receiver/Idle Mode Radiated Spurious Emissions (continued)



5.3.3. Transmitter Output Power (EIRP)**Test Summary:**

Test Engineer:	Sarah Williams & Crawford Lindsay	Test Date:	08 September 2011 & 30 September 2011
Test Sample IMEI:	357867040012099		

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

Environmental Conditions:

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

Results: GSM Circuit Switched

Channel	Frequency (MHz)	Antenna Polarity	EIRP (dBm)	Limit (dBm)	Margin (dB)	Result
Bottom	1850.2	Horizontal	29.3	33.0	3.7	Complied
Middle	1879.8	Horizontal	28.6	33.0	4.4	Complied
Top	1909.8	Horizontal	28.7	33.0	4.3	Complied

Results: GPRS

Channel	Frequency (MHz)	Antenna Polarity	EIRP (dBm)	Limit (dBm)	Margin (dB)	Result
Bottom	1850.2	Horizontal	29.5	33.0	3.5	Complied
Middle	1879.8	Horizontal	28.7	33.0	4.3	Complied
Top	1909.8	Horizontal	28.8	33.0	4.2	Complied

Results: EGPRS / MCS5

Channel	Frequency (MHz)	Antenna Polarity	EIRP (dBm)	Limit (dBm)	Margin (dB)	Result
Bottom	1850.2	Horizontal	28.4	33.0	4.6	Complied
Middle	1879.8	Horizontal	28.8	33.0	4.2	Complied
Top	1909.8	Horizontal	29.4	33.0	3.6	Complied

5.3.4. Transmitter Conducted Output Power**Test Summary:**

Test Engineer:	Andrew Edwards & Crawford Lindsay	Test Date:	16 September 2011 & 30 September 2011
Test Sample IMEI:	357867040012198		

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):	29
Relative Humidity (%):	29

Results: GSM Circuit Switched

Channel	Frequency (MHz)	Maximum Peak Conducted Power (dBm)	Maximum Average Conducted Power (dBm)
Bottom	1850.2	29.2	29.0
Middle	1879.8	29.2	29.1
Top	1909.8	29.2	29.1

Results: GPRS

Channel	Frequency (MHz)	Maximum Average Power / 4 timeslots (dBm)	Maximum Average Power / 3 timeslots (dBm)	Maximum Average Power / 2 timeslots (dBm)	Maximum Average Power / 1 timeslot (dBm)
Bottom	1850.2	23.8	25.0	26.8	28.9
Middle	1879.8	23.8	25.0	26.8	28.9
Top	1909.8	23.8	25.0	26.8	28.9

Results: EGPRS / MCS4 / GMSK

Channel	Frequency (MHz)	Maximum Average Power / 4 timeslots (dBm)	Maximum Average Power / 3 timeslots (dBm)	Maximum Average Power / 2 timeslots (dBm)	Maximum Average Power / 1 timeslot (dBm)
Bottom	1850.2	23.8	25.0	26.8	29.0
Middle	1879.8	23.8	25.0	26.8	29.0
Top	1909.8	23.8	25.0	26.8	29.0

Note(s):

1. Conducted power tests were performed to support SAR tests.

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

Test Engineer:	Crawford Lindsay	Test Date:	21 September 2011
Test Sample IMEI:	357867040012198		

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

Environmental Conditions:

Ambient Temperature (°C):	29
Ambient Relative Humidity (%):	28

Results: Bottom Channel (1850.2 MHz)

Temperature (°C)	Frequency Error (Hz)	Measured Frequency (MHz)	Lower Band Edge Limit (MHz)	Margin (MHz)	Result
-30	44	1850.200044	1850.0	0.200044	Complied
-20	38	1850.200038	1850.0	0.200038	Complied
-10	32	1850.200032	1850.0	0.200032	Complied
0	57	1850.199943	1850.0	0.199943	Complied
10	61	1850.199939	1850.0	0.199939	Complied
20	62	1850.199938	1850.0	0.199938	Complied
30	53	1850.199947	1850.0	0.199947	Complied
40	69	1850.199931	1850.0	0.199931	Complied
50	81	1850.199919	1850.0	0.199919	Complied

Results: Top Channel (1909.8 MHz)

Temperature (°C)	Frequency Error (Hz)	Measured Frequency (MHz)	Upper Band Edge Limit (MHz)	Margin (MHz)	Result
-30	57	1909.800057	1910.0	0.199943	Complied
-20	52	1909.799948	1910.0	0.200052	Complied
-10	34	1909.799966	1910.0	0.200034	Complied
0	66	1909.799934	1910.0	0.200066	Complied
10	55	1909.799945	1910.0	0.200055	Complied
20	79	1909.799921	1910.0	0.200079	Complied
30	47	1909.799953	1910.0	0.200047	Complied
40	34	1909.799966	1910.0	0.200034	Complied
50	65	1909.799935	1910.0	0.200065	Complied

Transmitter Frequency Stability (continued)**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 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 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.

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

Test Engineer:	Crawford Lindsay	Test Date:	21 September 2011
Test Sample IMEI:	357867040012198		

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

Environmental Conditions:

Temperature (°C):	29
Relative Humidity (%):	28

Results: Bottom Channel (1850.2 MHz)

Supply Voltage (V)	Frequency Error (Hz)	Measured Frequency (MHz)	Lower Band Edge Limit (MHz)	Margin (MHz)	Result
3.4	64	1850.199936	1850.0	0.199936	Complied
4.2	66	1850.199934	1850.0	0.199934	Complied

Results: Top Channel (1909.8 MHz)

Supply Voltage (V)	Frequency Error (Hz)	Measured Frequency (MHz)	Upper Band Edge Limit (MHz)	Margin (MHz)	Result
3.4	70	1909.799930	1910.0	0.200070	Complied
4.2	72	1909.799928	1910.0	0.200072	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 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 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.

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

Test Engineer:	Crawford Lindsay	Test Date:	30 September 2011
Test Sample IMEI:	357867040012198		

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):	28
Relative Humidity (%):	31

Results: GSM Circuit Switched

Channel	Frequency (MHz)	Occupied Bandwidth (kHz)
Bottom	1850.2	242.485
Middle	1879.8	244.489
Top	1909.8	240.481

Results: GPRS

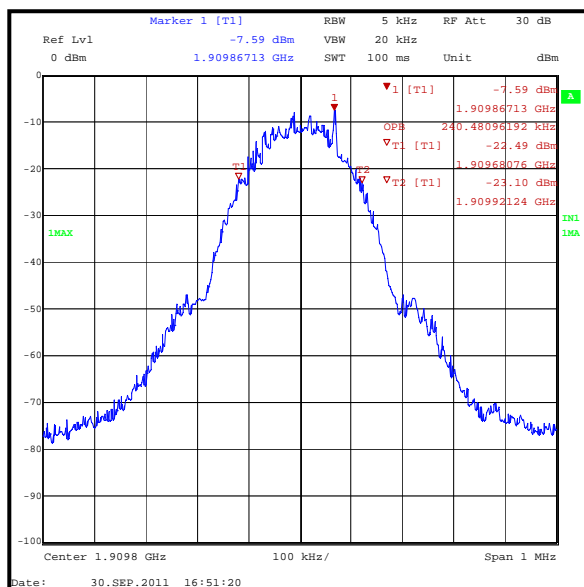
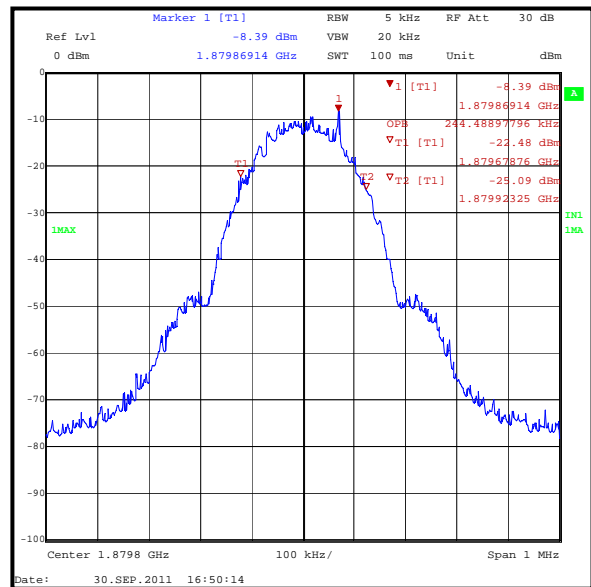
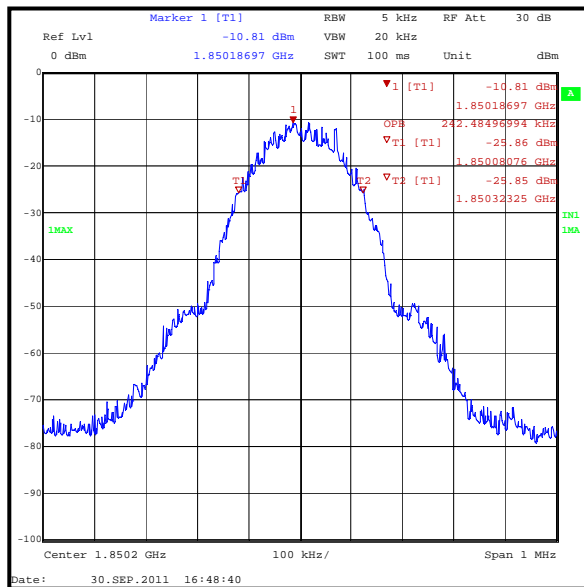
Channel	Frequency (MHz)	Occupied Bandwidth (kHz)
Bottom	1850.2	246.493
Middle	1879.8	250.501
Top	1909.8	240.481

Results: EGPRS / MCS5

Channel	Frequency (MHz)	Occupied Bandwidth (kHz)
Bottom	1850.2	246.493
Middle	1879.8	232.465
Top	1909.8	236.473

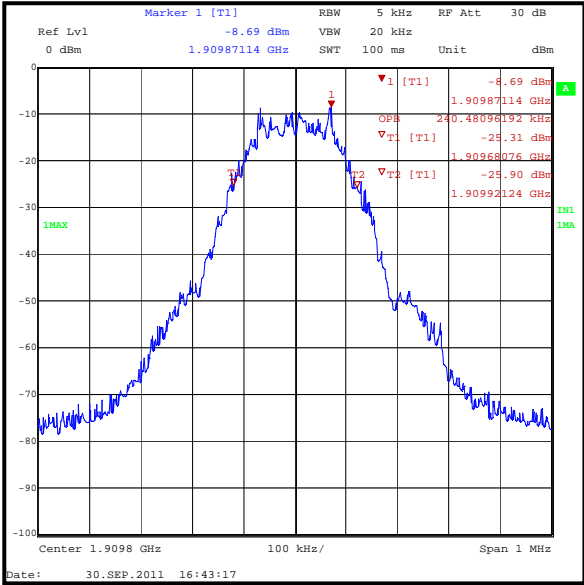
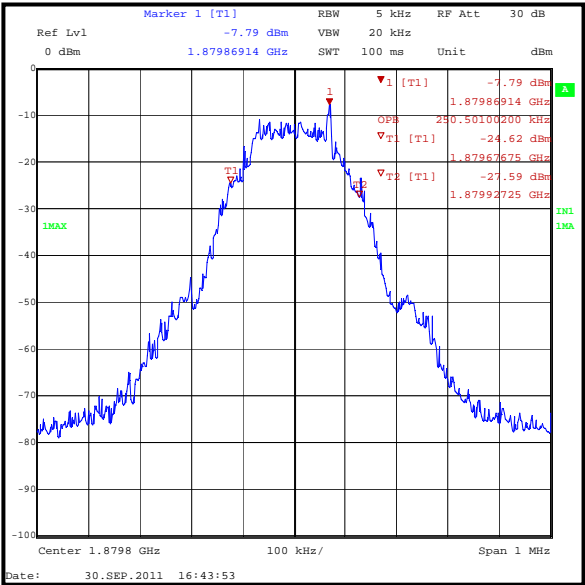
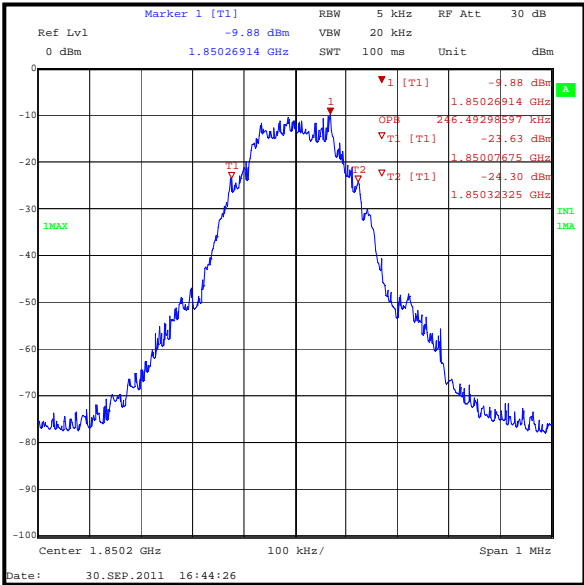
Note(s):

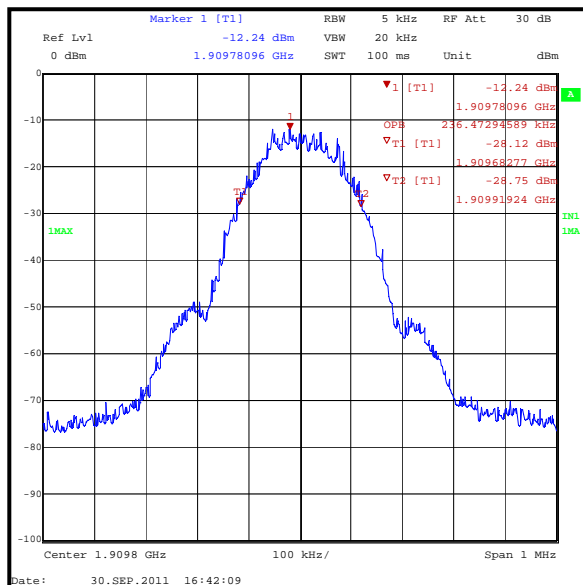
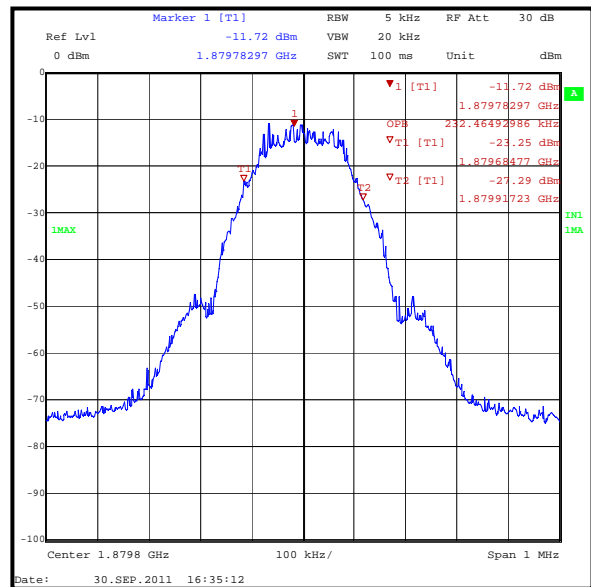
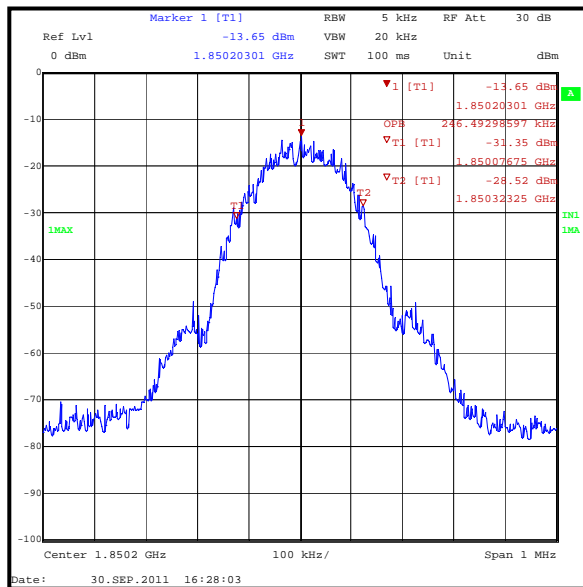
1. In lieu of the test method detailed in ANSI C63.4 Section 13.7, the 99% occupied bandwidth was measured using the Occupied Bandwidth function of the spectrum analyser.

Transmitter Occupied Bandwidth (continued)**GSM Circuit Switched**

Transmitter Occupied Bandwidth (continued)

GPRS



Transmitter Occupied Bandwidth (continued)**EGPRS / MCS5**

5.3.8. Transmitter Out of Band Radiated Emissions

Test Summary:

Test Engineer:	Andrew Edwards	Test Date:	01 September 2011 & 08 September 2011
Test Sample IMEI:	357867040012099		

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

Environmental Conditions:

Temperature (°C):	29
Relative Humidity (%):	37

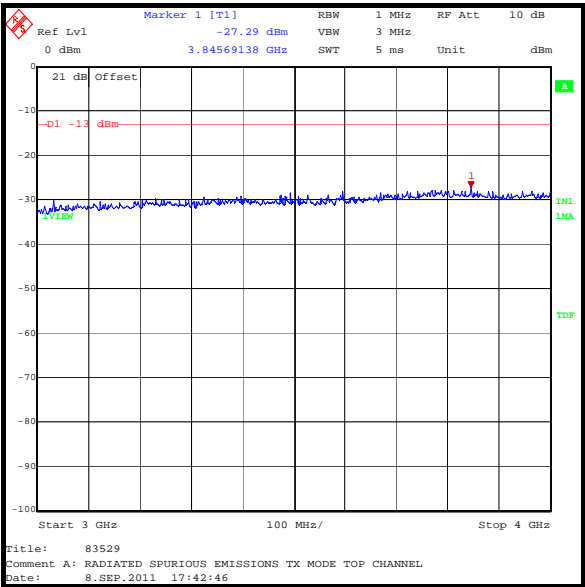
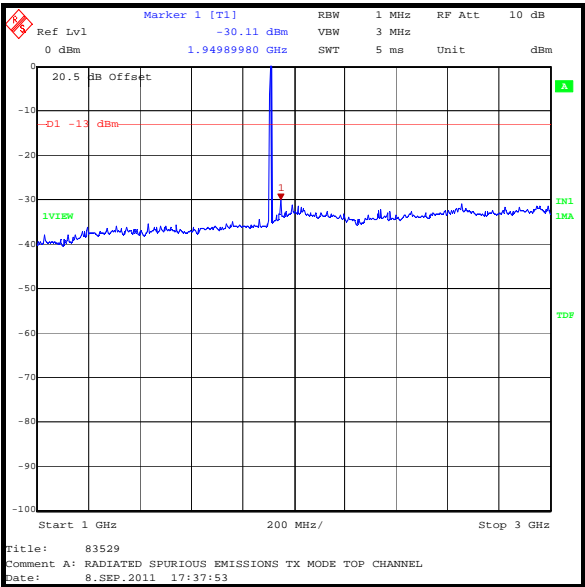
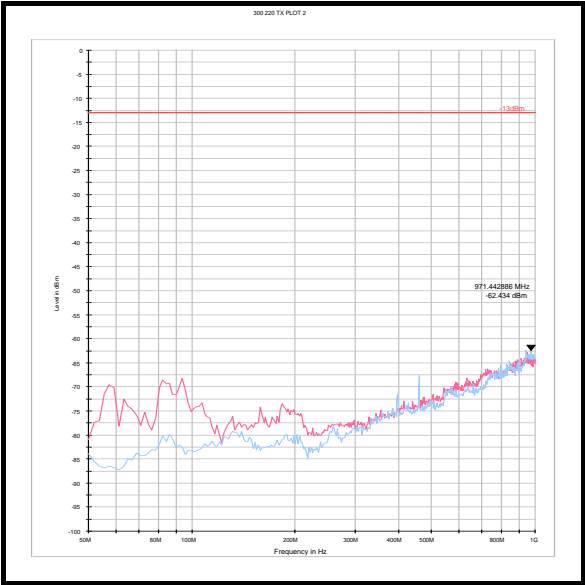
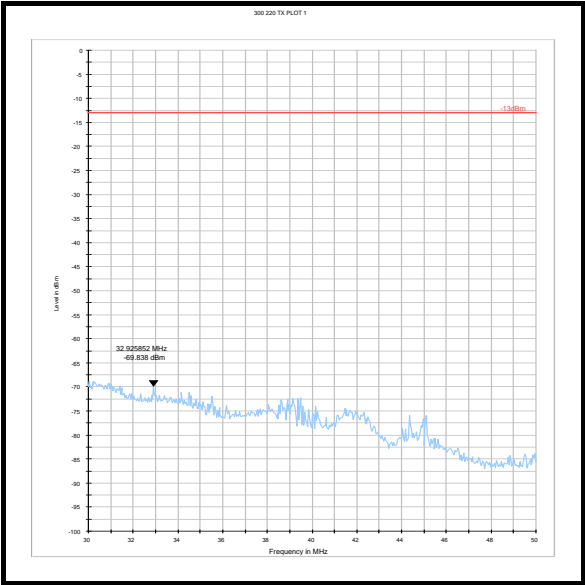
Results:

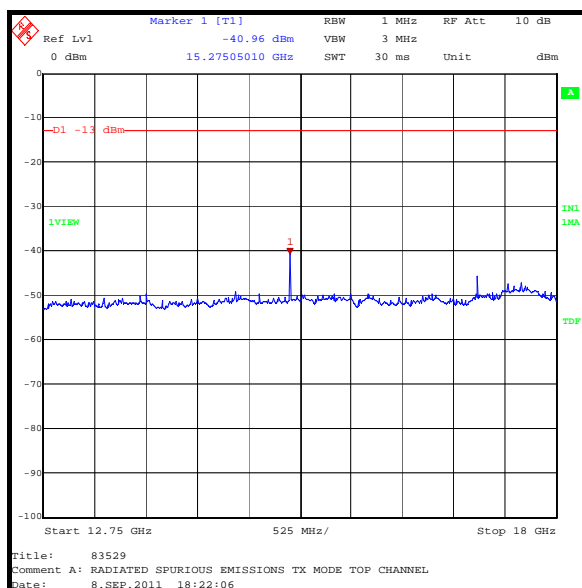
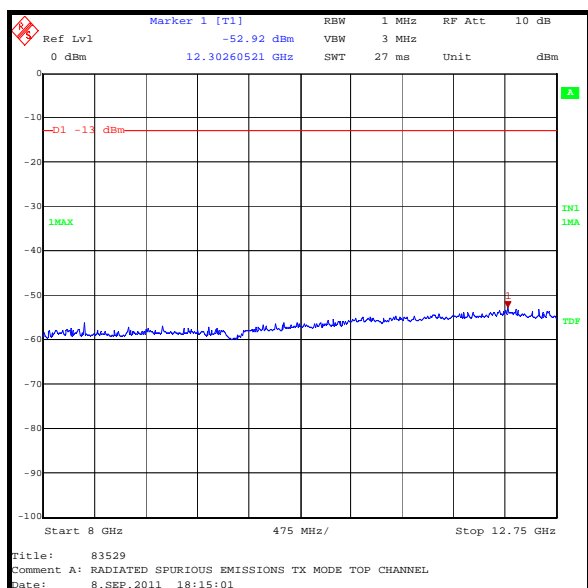
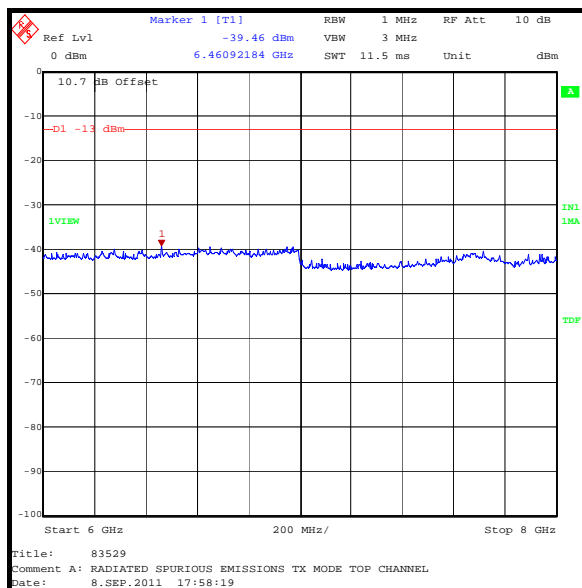
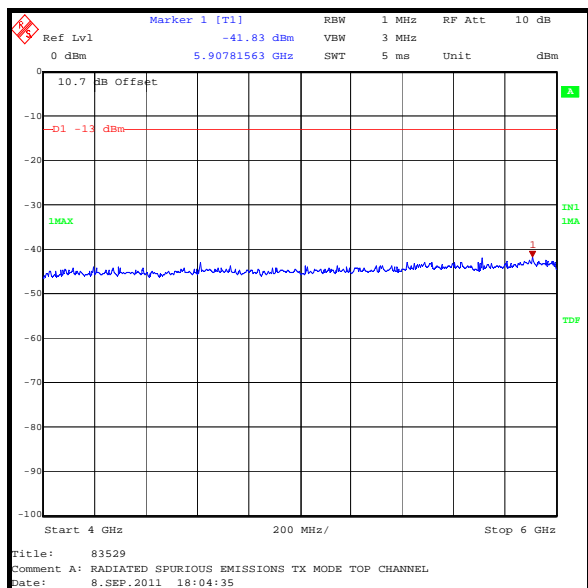
Frequency (MHz)	Peak Level (dBm)	Limit (dBm)	Margin (dB)	Result
3845.691	-27.3	-13.0	14.3	Complied

Note(s):

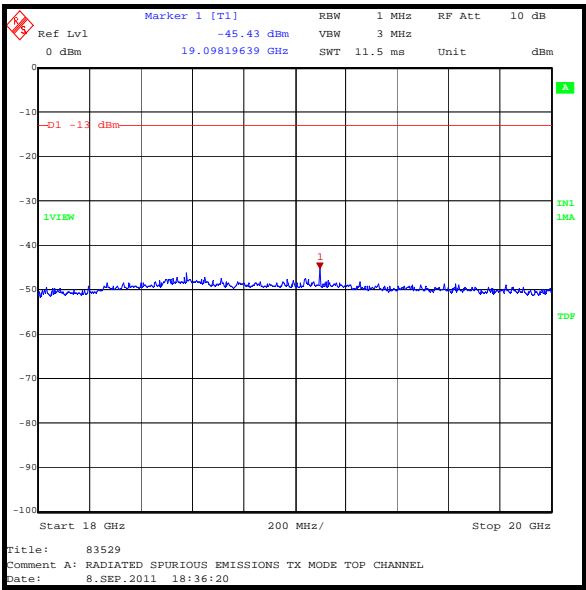
1. No spurious emissions were detected above the noise floor of the measuring receiver; the highest peak noise floor reading of the measuring receiver was recorded.
2. The uplink and downlink traffic channels are shown on the 1 GHz to 4 GHz plot.
3. All emissions shown on the pre-scan plots were investigated and found to be >20 dB below the limit, below the measurement system noise floor or ambient.
4. Final measurements were made using appropriate RF filters and attenuators where required.
5. 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.
6. 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)

Transmitter Out of Band Radiated Emissions (continued)



5.3.9. Transmitter Band Edge Radiated Emissions**Test Summary:**

Test Engineer:	Andrew Edwards & Crawford Lindsay	Test Date:	08 September 2011, 15 September 2011 & 30 September 2011
Test Sample IMEI:	357867040012099		

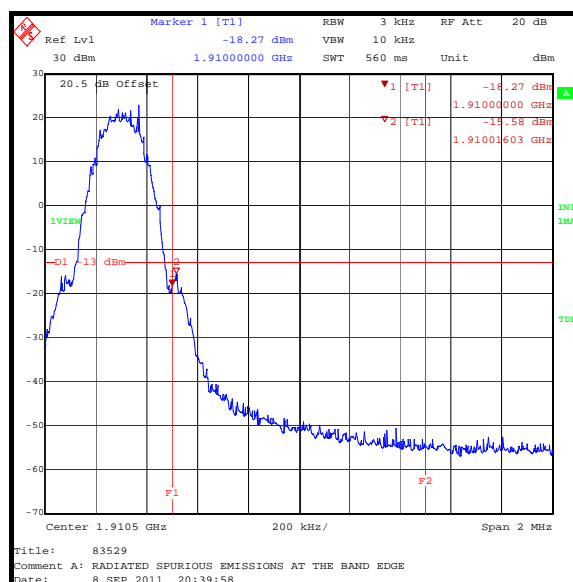
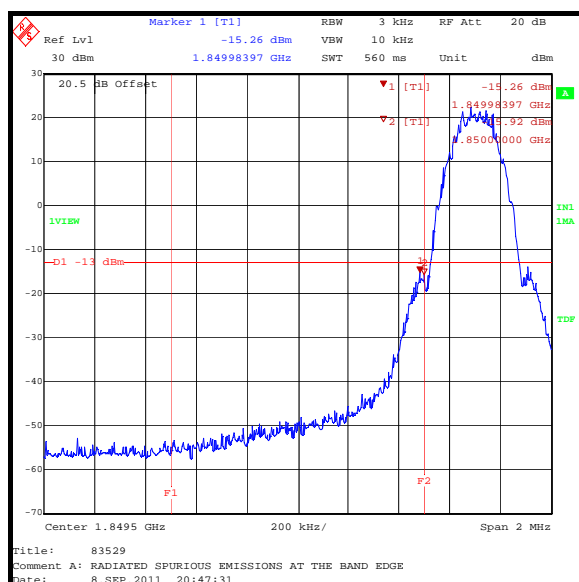
FCC Part:	2.1053 & 24.238
Test Method Used:	As detailed in ANSI TIA-603-C-2004 Section 2.2.12 referencing FCC CFR Parts 2.1053 and 24.238

Environmental Conditions:

Temperature (°C):	26 to 27
Relative Humidity (%):	23 to 35

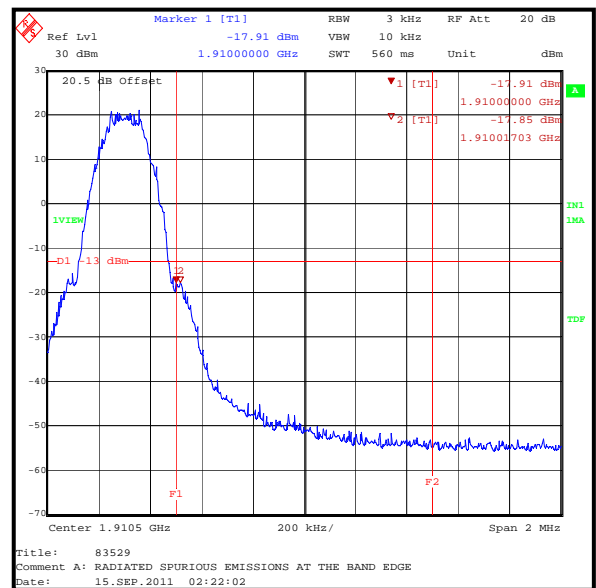
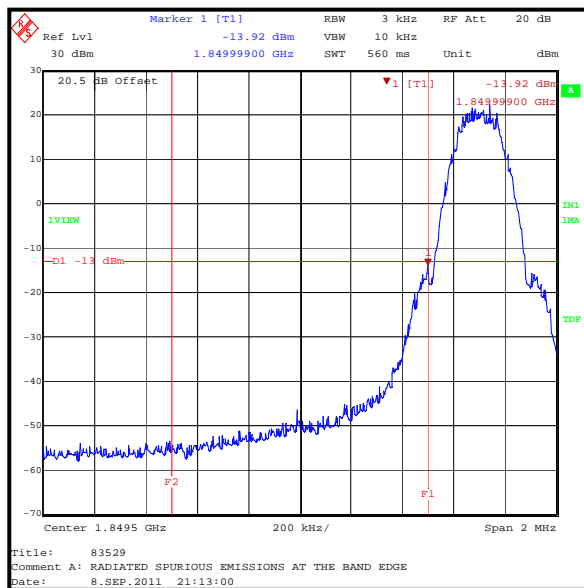
Results: GSM Circuit Switched

Frequency (MHz)	Peak Level (dBm)	Limit (dBm)	Margin (dB)	Result
1849.984	-15.3	-13.0	2.3	Complied
1850	-15.9	-13.0	2.9	Complied
1910	-18.3	-13.0	5.3	Complied
1910.016	-15.6	-13.0	2.6	Complied



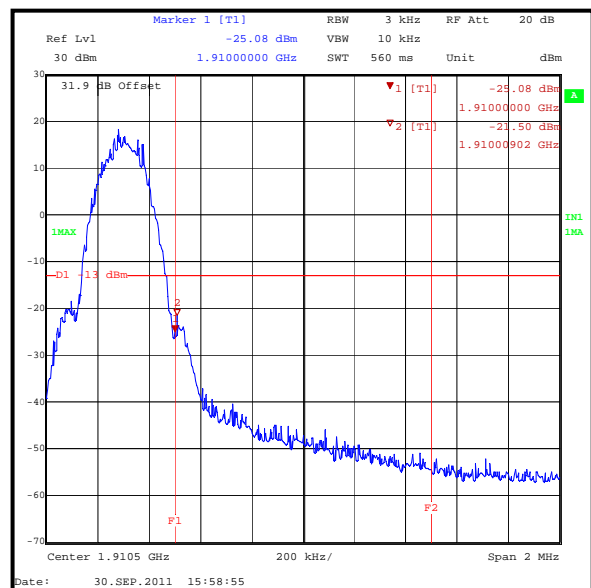
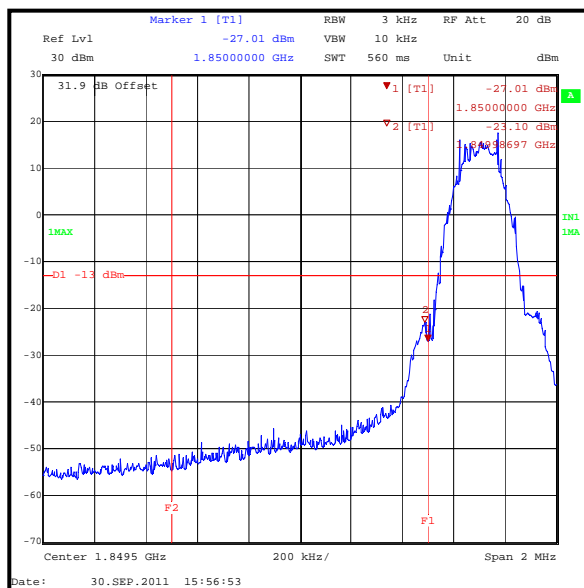
Transmitter Band Edge Radiated Emissions (continued)**Results: GPRS**

Frequency (MHz)	Peak Level (dBm)	Limit (dBm)	Margin (dB)	Result
1850	-13.9	-13.0	0.9	Complied
1910	-17.9	-13.0	4.9	Complied
1910.017	-17.9	-13.0	4.9	Complied



Transmitter Band Edge Radiated Emissions (continued)**Results: EGPRS / MCS5**

Frequency (MHz)	Peak Level (dBm)	Limit (dBm)	Margin (dB)	Result
1849.987	-23.1	-13.0	10.1	Complied
1850	-23.8	-13.0	10.8	Complied
1910	-25.1	-13.0	12.1	Complied
1910.009	-21.5	-13.0	8.5	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
Effective Isotropic Radiated Power (EIRP)	1850 to 1910 MHz	95%	±2.94 dB
Conducted Output Power	824 to 849 MHz / 1850 to 1910 MHz	95%	±0.27 dB
Frequency Stability	824 to 849 MHz / 1850 to 1910 MHz	95%	±0.92 ppm
Occupied Bandwidth	824 to 849 MHz / 1850 to 1910 MHz	95%	±0.92 ppm
Radiated Spurious Emissions	30 MHz to 20 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)
A067	LISN	Rohde & Schwarz	ESH3-Z5	890603/002	02 Jun 2012	12
A1393	Attenuator	Huber & Suhner	757456	6820.17.B	08 Jul 2012	12
A1396	Attenuator	Huber & Suhner	757987	6810.17.B	08 Jul 2012	12
A1534	Pre Amplifier	Hewlett Packard	8449B	3008A00405	20 Jun 2012	12
A1818	Antenna	EMCO	3115	00075692	Calibrated before use	-
A1830	Pulse Limiter	Rohde & Schwarz	ESH3-Z2	100668	05 Mar 2012	12
A1834	Attenuator	Hewlett Packard	8491B	10444	26 Jul 2012	12
A1974	High Pass Filter	AtlanTecRF	AFH-01000	090000283	29 Dec 2011	12
A1975	High Pass Filter	AtlanTecRF	AFH-03000	090424010	29 Dec 2011	12
A1998	Attenuator	Huber & Suhner	6820.17.B	07101	09 Feb 2012	12
A2001	Attenuator	Huber & Suhner	6830.17.B	07031	09 Feb 2012	12
A253	Antenna	Flann Microwave	12240-20	128	Calibrated before use	-
A254	Antenna	Flann Microwave	14240-20	139	Calibrated before use	-
A255	Antenna	Flann Microwave	16240-20	519	Calibrated before use	-
A256	Antenna	Flann Microwave	18240-20	400	Calibrated before use	-
A288	Antenna	Chase	CBL6111A	1589	25 Aug 2012	12
A436	Antenna	Flann	20240-20	330	Calibrated before use	-
A553	Antenna	Chase	CBL6111A	1593	26 Mar 2012	12
E013	Environmental Chamber	Sanyo	ATMOS chamber	None	Calibrated before use	-

RFI No.	Instrument	Manufacturer	Type No.	Serial No.	Date Calibration Due	Cal. Interval (Months)
K0002	3m RSE Chamber	Rainford EMC	N/A	N/A	13 Oct 2011	12
L1021	Comms Test er	Rohde & Schwarz	CMU 200	111379	11 Jan 2012	12
M1068	Thermometer	Iso-Tech	RS55	93102884	10 Nov 2011	12
M1124	Spectrum Analyser	Rohde & Schwarz	ESI26	100046K	29 Jun 2012	12
M1242	Spectrum Analyser	Rohde & Schwarz	FSEM30	845986/022	03 Dec 2011	12
M1263	Test Receiver	Rohde & Schwarz	ESIB7	100265	13 Jul 2012	12
M1269	Multimeter	Fluke	179	90250210	20 Jul 2012	12
M1273	Test Receiver	Rohde & Schwarz	ESIB 26	100275	04 Feb 2012	12

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