



TEST REPORT

Test Report No. : UL-RPT-RP90385JD17A

Manufacturer : Panasonic Mobile Communications Development of Europe Ltd
Model No. : NTT docomo EB-4063
FCC ID : UCE312057A
Technology : GSM850 / PCS1900
Test Standard(s) : FCC Parts 15.107, 15.109, 22 & 24

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2. The results in this report apply only to the sample(s) tested.
3. This sample tested is in compliance with the above standard(s).
4. The test results in this report are traceable to the national or international standards.
5. Version 1.0

Date of Issue: 07 December 2012

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This laboratory is accredited by UKAS.
The tests reported herein have been
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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) 2012: Part 22 Subpart H (Public Mobile Services)
Specification Reference:	47CFR24
Specification Title:	Code of Federal Regulations Volume 47 (Telecommunications) 2012: Part 24 Subpart E (Personal Communication Services)
Specification Reference:	47CFR15.107 and 47CFR15.109
Specification Title:	Code of Federal Regulations Volume 47 (Telecommunications) 2012: Part 15 Subpart B (Unintentional Radiators) - Sections 15.107 and 15.109
Site Registration:	209735
Location of Testing:	RFI Global Services Ltd trading as UL, Wade Road, Basingstoke, Hampshire, RG24 8AH
Test Dates:	12 November 2012 to 22 November 2012

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 2.1055/22.355	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 2.1055/24.235	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		

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.
Reference:	ANSI C63.10 (2009)
Title:	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)

Brand Name:	NTT docomo
Model Name or Number:	EB-4063
IMEI:	353740050011927 (<i>Radiated sample #1</i>)
Hardware Version Number:	Rev B-2
Software Version Number:	ACPU: rupy-jb-10-0336 CCPU: 101033_DCM_00.12
FCC ID:	UCE312057A

Brand Name:	NTT docomo
Model Name or Number:	EB-4063
IMEI:	353740050018443 (<i>Radiated sample #2</i>)
Hardware Version Number:	Rev C
Software Version Number:	ACPU: rupy-jb-10-0391 CCPU: 101035_DCM_00.13
FCC ID:	UCE312057A

Brand Name:	NTT docomo
Model Name or Number:	EB-4063
IMEI:	353740050010077 (<i>Conducted RF port sample</i>)
Hardware Version Number:	Rev B-2
Software Version Number:	ACPU: rupy-jb-10-0336 CCPU: 101033_DCM_00.12
FCC ID:	UCE312057A

Brand Name:	NTT docomo
Description:	AC Charger
Model Name or Number:	AC 04
Hardware Version Number:	Not marked or stated

Brand Name:	NTT docomo
Description:	Charge/USB Data cable
Model Name or Number:	Type 01

Brand Name:	NTT docomo
Description:	Personal Hands-Free
Model Name or Number:	Type 02

3.2. Description of EUT

The equipment under test was a Multi-Mode LTE/UMTS/GSM Mobile Phone with WLAN, Bluetooth and RFID.

3.3. Modifications Incorporated in the EUT

A REV C sample with IMEI 353740050018443 was used for Radiated testing; which included hardware and software modifications. Please refer to Annex A for details of these modifications.

3.4. Additional Information Related to Testing

Type of Radio Device:	Transceiver		
Mode:	GSM/GPRS/EGPRS		
Modulation Type:	GMSK / 8PSK		
Channel Spacing:	200 kHz		
Power Supply Requirement(s):	Nominal	3.8 V	
	Minimum	3.4 V	
	Maximum	4.35 V	
Technology Tested:	GSM850		
Maximum Output Power (ERP):	GSM	31.9 dBm	
	GPRS	31.8 dBm	
	EGPRS	31.6 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

Additional Information Related to Testing (continued)

Technology Tested:	PCS1900		
Maximum Output Power (EIRP):	GSM	29.6 dBm	
	GPRS	27.8 dBm	
	EGPRS	28.6 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:	2GB Micro SD Card
Model Name or Number:	Not stated
Serial Number:	Not stated

Brand Name:	Not stated
Description:	Dummy Battery
Model Name or Number:	Not stated
Serial Number:	Not stated

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/EIRP and band edge tests were performed with the EUT in GSM single timeslot circuit switched and GPRS/EGPRS Multislot Class 12 with the unit transmitting on one timeslot in the uplink. The EUT output power was initially checked when transmitting at maximum power on one, two, three and four timeslots. The highest power was observed when transmitting on one timeslot.
- EGPRS tests were performed with the EUT using MCS5 (8PSK modulation).
- 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):

- Connected to a GSM/GPRS/EGPRS system simulator, operating in transceiver mode.
- Receiver/Idle mode and transmitter mode radiated spurious emissions tests were performed with the AC charger and Personal Hands-Free connected to the EUT as this was found to be worst case during pre-scans. The micro SD card was fitted during all tests.
- The dummy battery was fitted for frequency stability measurements.
- 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.
- The conducted sample with IMEI 353740050010077 was used for frequency stability measurements.
- The radiated sample with IMEI 353740050011927 was used for receiver/idle mode AC conducted emissions.
- The radiated sample with IMEI 353740050018443 was used for all radiated measurements.

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.

In accordance with UKAS requirements all the measurement equipment is on a calibration schedule. All equipment was within the calibration period on the date of testing.

5.2. Test Results - Part 22**5.2.1. Receiver/Idle Mode AC Conducted Spurious Emissions**

Test Engineer:	David Doyle	Test Date:	15 November 2012
Test Sample IMEI:	353740050011927		

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

Environmental Conditions:

Temperature (°C):	21
Relative Humidity (%):	41

Results: Live / Quasi Peak

Frequency (MHz)	Line	Level (dB μ V)	Limit (dB μ V)	Margin (dB)	Result
0.479	Live	42.3	56.4	14.1	Complied
2.558	Live	34.6	56.0	21.4	Complied
4.259	Live	36.0	56.0	20.0	Complied
4.493	Live	37.9	56.0	18.1	Complied
5.325	Live	36.5	60.0	23.5	Complied
5.694	Live	36.2	60.0	23.8	Complied

Results: Live / Average

Frequency (MHz)	Line	Level (dB μ V)	Limit (dB μ V)	Margin (dB)	Result
0.474	Live	35.9	46.4	10.5	Complied
2.832	Live	33.4	46.0	12.6	Complied
4.335	Live	28.8	46.0	17.2	Complied
4.515	Live	30.6	46.0	15.4	Complied
5.357	Live	29.4	50.0	20.6	Complied
5.681	Live	29.9	50.0	20.1	Complied

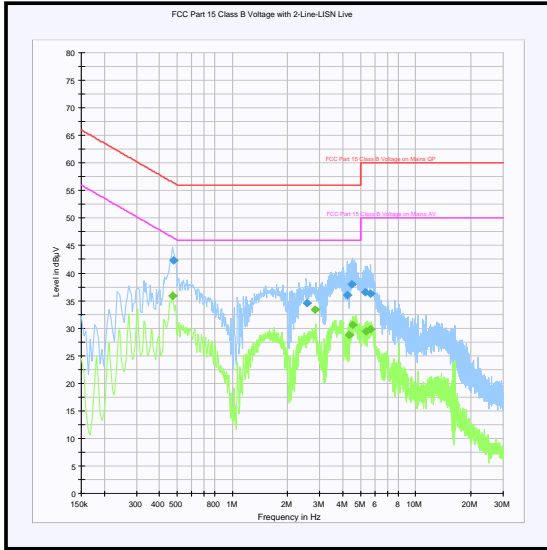
Receiver/Idle Mode AC Conducted Spurious Emissions (continued)**Results: Neutral / Quasi Peak**

Frequency (MHz)	Line	Level (dB μ V)	Limit (dB μ V)	Margin (dB)	Result
0.209	Neutral	34.6	63.3	28.7	Complied
2.004	Neutral	22.1	56.0	33.9	Complied
2.526	Neutral	23.7	56.0	32.3	Complied
3.539	Neutral	28.8	56.0	27.2	Complied
4.812	Neutral	36.7	56.0	19.3	Complied
5.240	Neutral	36.4	60.0	23.6	Complied
5.645	Neutral	36.2	60.0	23.8	Complied

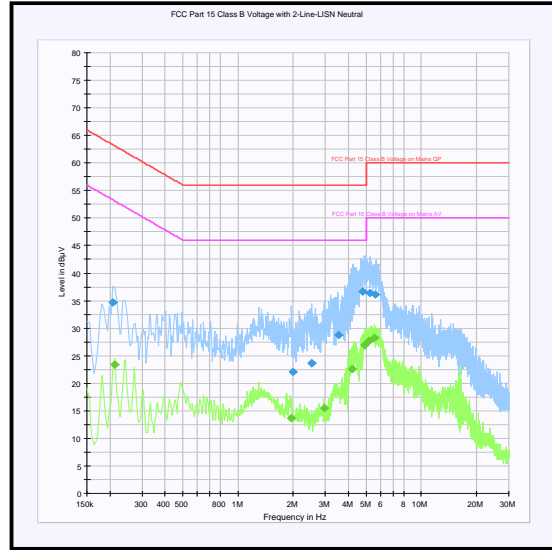
Results: Neutral / Average

Frequency (MHz)	Line	Level (dB μ V)	Limit (dB μ V)	Margin (dB)	Result
0.213	Neutral	23.4	53.1	29.7	Complied
1.950	Neutral	13.6	46.0	32.4	Complied
2.949	Neutral	15.6	46.0	30.4	Complied
4.205	Neutral	22.6	46.0	23.4	Complied
4.920	Neutral	26.9	46.0	19.1	Complied
5.177	Neutral	27.7	50.0	22.3	Complied
5.573	Neutral	28.3	50.0	21.7	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.

Test Equipment Used:

RFI No.	Instrument	Manufacturer	Type No.	Serial No.	Date Calibration Due	Cal. Interval (Months)
A649	LISN	Rohde & Schwarz	ESH3-Z5	825562/008	19 Feb 2013	12
A1830	Pulse Limiter	Rohde & Schwarz	ESH3-Z2	100668	25 Feb 2013	12
M1263	Test Receiver	Rohde & Schwarz	ESIB7	100265	09 Aug 2013	12

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

Test Engineer:	Nick Steele	Test Date:	21 November 2012
Test Sample IMEI:	353740050018443		

FCC Reference:	Part 15.109
Test Method Used:	As detailed in ANSI C63.10 Sections 6.3 and 6.5 referencing ANSI C63.4
Frequency Range:	30 MHz to 1000 MHz

Environmental Conditions:

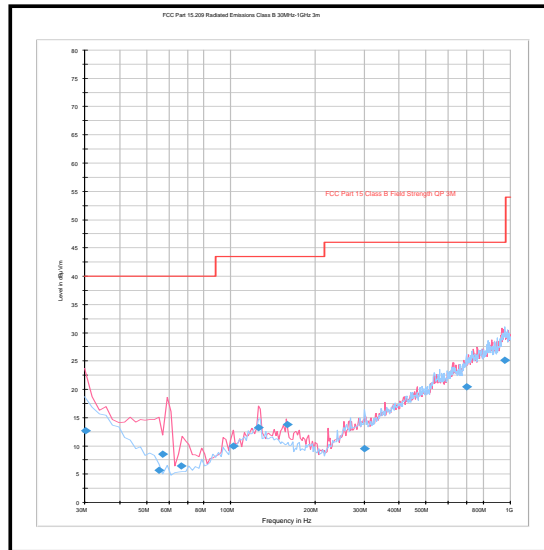
Temperature (°C):	22
Relative Humidity (%):	38

Note(s):

1. The final measured value, for the given emission, in the table below 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.

Results: Quasi Peak

Frequency (MHz)	Antenna Polarity	Level (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Result
956.315	Horizontal	25.2	46.0	20.8	Complied

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

RFI No.	Instrument	Manufacturer	Type No.	Serial No.	Date Calibration Due	Cal. Interval (Months)
A1834	Attenuator	Hewlett Packard	8491B	10444	29 Jan 2013	12
A553	Antenna	Chase	CBL6111A	1593	15 Feb 2013	12
G0543	Amplifier	Sonoma	310N	230801	02 Jan 2013	3
K0001	5m RSE Chamber	Rainford EMC	N/A	N/A	24 Oct 2013	12
M1273	Test Receiver	Rohde & Schwarz	ESIB 26	100275	03 Feb 2013	12

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

Test Engineer:	Nick Steele	Test Date:	19 November 2012
Test Sample IMEI:	353740050018443		

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

Environmental Conditions:

Temperature (°C):	23
Relative Humidity (%):	38

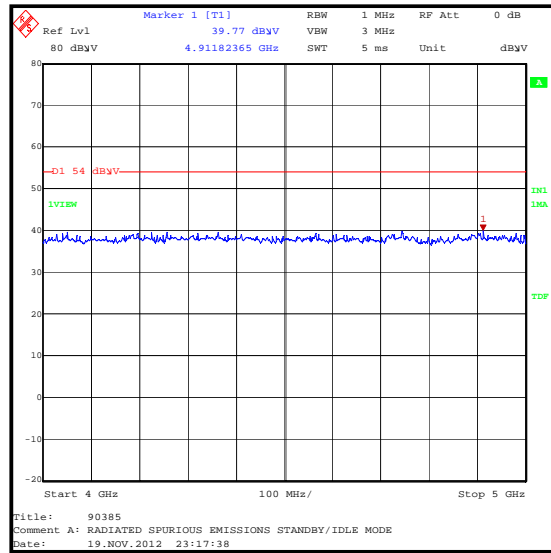
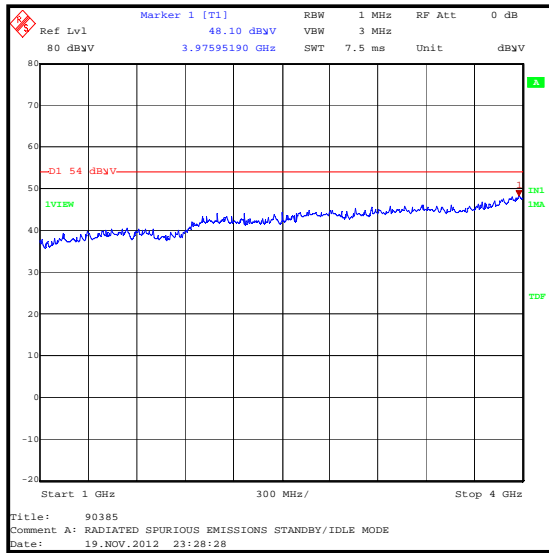
Note(s):

1. The final measured value, for the given emission, in the table below 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 below. The peak level was compared to the average limit as opposed to being compared to the peak 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.

Results:

Frequency (MHz)	Antenna Polarity	Peak Level (dBμV/m)	Average Limit (dBμV/m)	Margin (dB)	Result
3975.952	Vertical	48.1	54.0	5.9	Complied

Receiver/Idle Mode Radiated Spurious Emissions (continued)



Test Equipment Used:

RFI No.	Instrument	Manufacturer	Type No.	Serial No.	Date Calibration Due	Cal. Interval (Months)
K0002	3m RSE Chamber	Rainford EMC	N/A	N/A	04 Nov 2013	12
M1124	Test Receiver	Rohde & Schwarz	ESIB 26	N/A	14 Aug 2013	12
A1534	Pre Amplifier	Hewlett Packard	8449B	3008A00405	04 Nov 2013	12
A1818	Antenna	EMCO	3115	00075692	04 Nov 2013	12
A253	Antenna	Flann Microwave	12240-20	128	04 Nov 2013	12

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

Test Engineer:	David Doyle	Test Date:	22 November 2012
Test Sample IMEI:	353740050018443		

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

Environmental Conditions:

Temperature (°C):	24
Relative Humidity (%):	39

Results: GSM Circuit Switched

Channel	Frequency (MHz)	Antenna Polarity	ERP (dBm)	ERP Limit (dBm)	Margin (dB)	Result
Bottom	824.2	Vertical	31.6	38.45	6.85	Complied
Middle	836.6	Vertical	31.9	38.45	6.55	Complied
Top	848.8	Vertical	31.8	38.45	6.65	Complied

Results: GPRS

Channel	Frequency (MHz)	Antenna Polarity	ERP (dBm)	ERP Limit (dBm)	Margin (dB)	Result
Bottom	824.2	Vertical	31.5	38.45	6.95	Complied
Middle	836.6	Vertical	31.8	38.45	6.65	Complied
Top	848.8	Vertical	31.7	38.45	6.75	Complied

Results: EGPRS / MCS5

Channel	Frequency (MHz)	Antenna Polarity	ERP (dBm)	ERP Limit (dBm)	Margin (dB)	Result
Bottom	824.2	Vertical	30.3	38.45	8.15	Complied
Middle	836.6	Vertical	30.6	38.45	7.85	Complied
Top	848.8	Vertical	31.6	38.45	6.85	Complied

Test Equipment Used:

RFI No.	Instrument	Manufacturer	Type No.	Serial No.	Date Calibration Due	Cal. Interval (Months)
K0002	3m RSE Chamber	Rainford EMC	N/A	N/A	04 Nov 2013	12
M1124	Test Receiver	Rohde & Schwarz	ESIB 26	N/A	14 Aug 2013	12
A1534	Pre Amplifier	Hewlett Packard	8449B	3008A00405	04 Nov 2013	12
A1818	Antenna	EMCO	3115	00075692	04 Nov 2013	12
A1393	Attenuator	Huber & Suhner	6820.17.B	757456	06 July 2013	12

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

Test Engineer:	Andrew Edwards	Test Date:	12 November 2012
Test Sample IMEI:	353740050010077		

FCC Reference:	Parts 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):	25
Ambient Relative Humidity (%):	36

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 bi-directional communications link was established between the EUT and CMU 200. The frequency meter value was recorded.
3. Temperature was monitored throughout the test with a calibrated digital thermometer.

Results: Middle Channel (836.6 MHz)

Temperature (°C)	Measured Frequency (MHz)	Frequency Error (Hz)	Frequency Error (ppm)	Limit (ppm)	Margin (ppm)	Result
-30	836.600012	12	0.0143	2.5	2.4857	Complied
-20	836.600019	19	0.0227	2.5	2.4773	Complied
-10	836.600022	22	0.0263	2.5	2.4737	Complied
0	836.600017	17	0.0235	2.5	2.4765	Complied
10	836.600019	19	0.0227	2.5	2.4773	Complied
20	836.600006	8	0.0096	2.5	2.4904	Complied
30	836.599986	14	0.0167	2.5	2.4833	Complied
40	836.600009	9	0.0108	2.5	2.4892	Complied
50	836.599987	13	0.0155	2.5	2.4845	Complied

Transmitter Frequency Stability (Temperature Variation)**Test Equipment Used:**

RFI No.	Instrument	Manufacturer	Type No.	Serial No.	Date Calibration Due	Cal. Interval (Months)
E013	Environmental Chamber	Sanyo	MTH-4200PR	None	Calibrated Before Use	-
M1251	DMM	Fluke	175	89170179	30 Jul 2013	12
M1642	Thermometer	Fluke	52II	18890119	21 Feb 2013	12
M1662	Radio Comms. Tester	Rohde & Schwarz	CMU 200	109374	21 May 2013	12
S021	Dual DC Power Supply Unit	Thurlby Thandar Instruments	CPX200	061034	Calibrated Before Use	-

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

Test Engineer:	Andrew Edwards	Test Date:	12 November 2012
Test Sample IMEI:	353740050010077		

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

Environmental Conditions:

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

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 bi-directional communications link was established between the EUT and CMU 200. The frequency meter value was recorded.
3. Voltage was monitored throughout the test with a calibrated digital voltmeter.

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	836.599966	34	0.0406	2.5	2.4594	Complied
4.35	836.599985	15	0.0179	2.5	2.4821	Complied

Test Equipment Used:

RFI No.	Instrument	Manufacturer	Type No.	Serial No.	Date Calibration Due	Cal. Interval (Months)
E013	Environmental Chamber	Sanyo	MTH-4200PR	None	Calibrated Before Use	-
M1251	DMM	Fluke	175	89170179	30 Jul 2013	12
M1662	Radio Comms. Tester	Rohde & Schwarz	CMU 200	109374	21 May 2013	12
S021	Dual DC Power Supply Unit	Thurlby Thandar Instruments	CPX200	061034	Calibrated Before Use	-

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

Test Engineer:	David Doyle	Test Date:	22 November 2012
Test Sample IMEI:	353740050010077		

FCC Reference:	Part 2.1049
Test Method Used:	The 99% occupied bandwidth was measured using the Occupied Bandwidth function of a test receiver

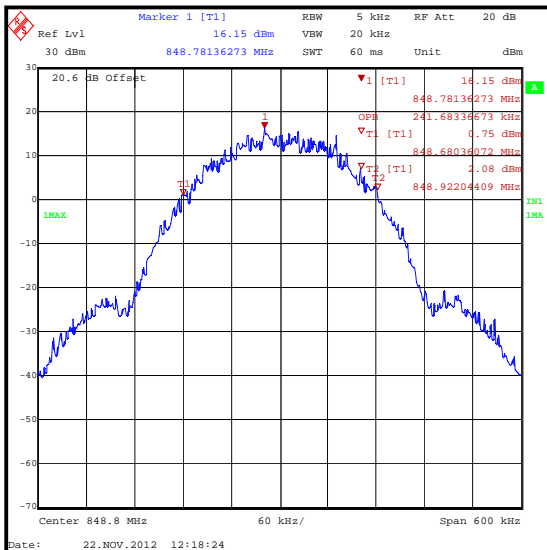
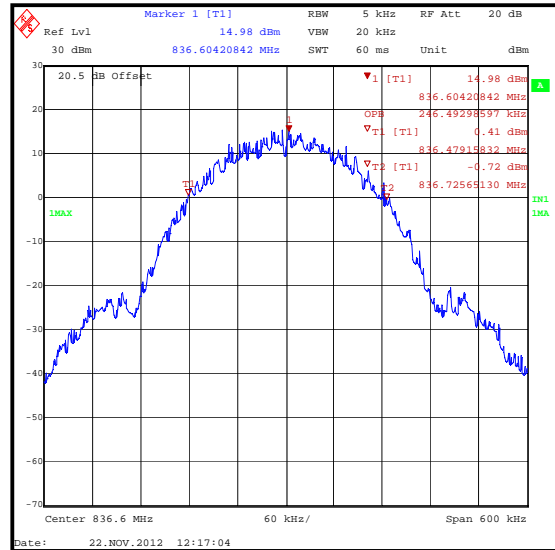
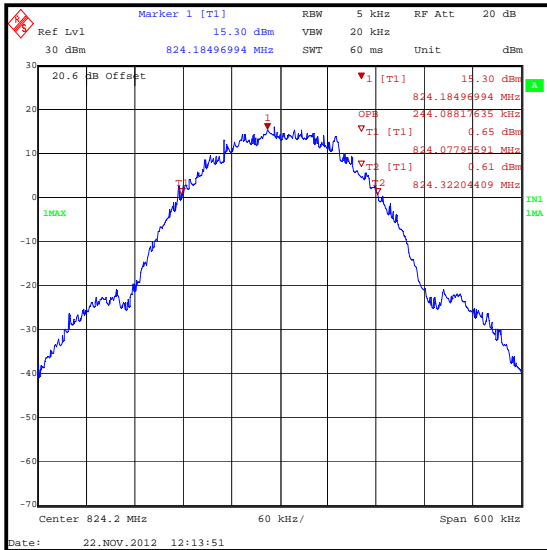
Environmental Conditions:

Temperature (°C):	24
Relative Humidity (%):	38

Transmitter Occupied Bandwidth (continued)

Results: GSM Circuit Switched

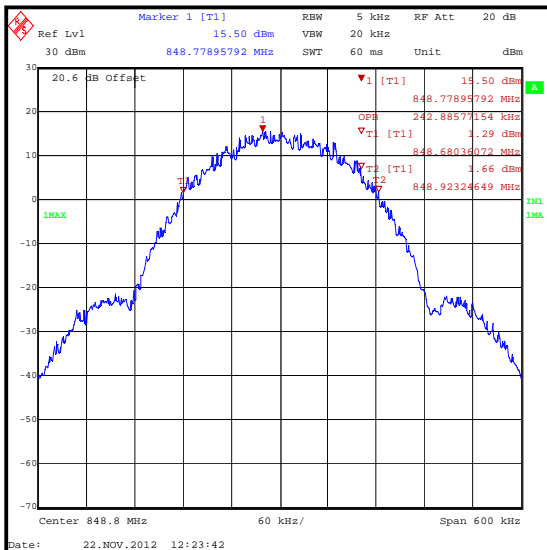
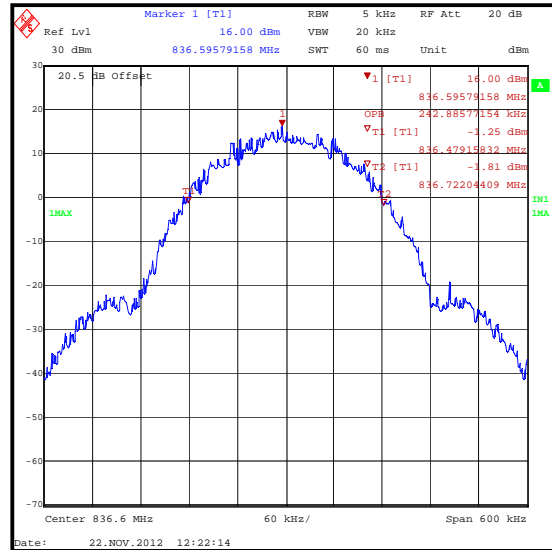
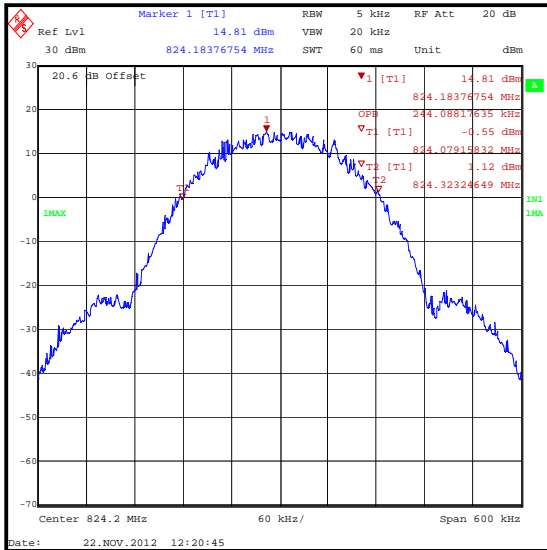
Channel	Frequency (MHz)	Occupied Bandwidth (kHz)
Bottom	824.2	244.088
Middle	836.6	246.493
Top	848.8	241.683



Transmitter Occupied Bandwidth (continued)

Results: GPRS

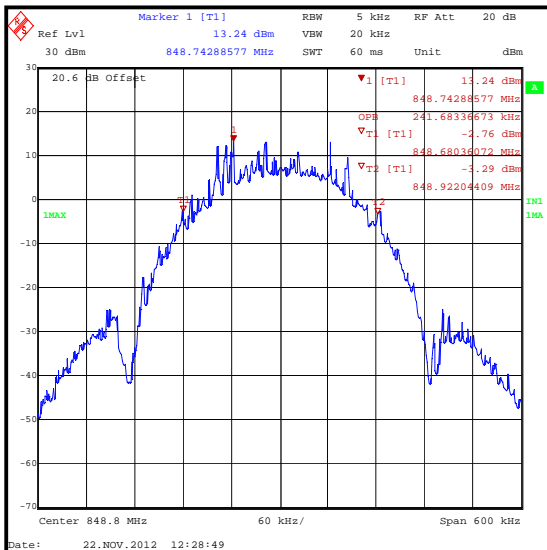
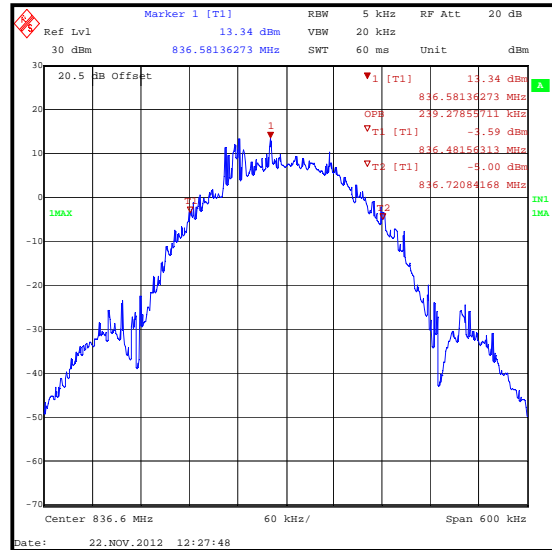
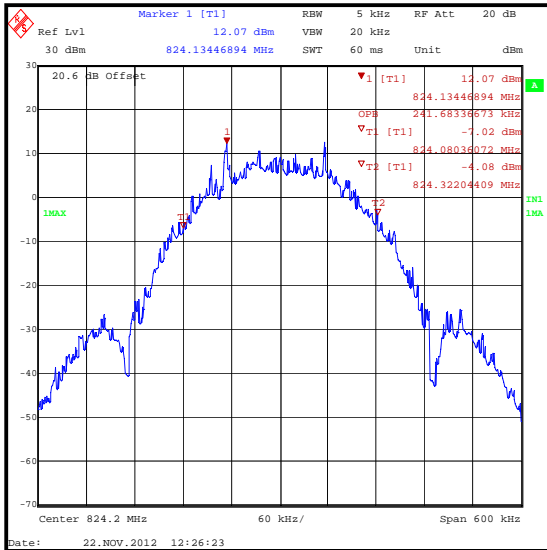
Channel	Frequency (MHz)	Occupied Bandwidth (kHz)
Bottom	824.2	244.088
Middle	836.6	242.886
Top	848.8	242.886



Transmitter Occupied Bandwidth (continued)

Results: EGPRS / MCS5

Channel	Frequency (MHz)	Occupied Bandwidth (kHz)
Bottom	824.2	241.683
Middle	836.6	239.279
Top	848.8	241.683



Transmitter Occupied Bandwidth (continued)**Test Equipment Used:**

RFI No.	Instrument	Manufacturer	Type No.	Serial No.	Date Calibration Due	Cal. Interval (Months)
A1368	Directional Coupler	Pasternack	PE2214-10	N/A	Calibrated Before Use	-
A1393	Attenuator	Huber & Suhner	6820.17.B	757456	06 July 2013	12
M1124	Test Receiver	Rohde & Schwarz	ESIB 26	N/A	14 Aug 2013	12

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

Test Engineer:	Nick Steele	Test Dates:	20 November 2012 & 21 November 2012
Test Sample IMEI:	353740050018443		

FCC Reference:	Parts 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):	23 to 27
Relative Humidity (%):	38 to 39

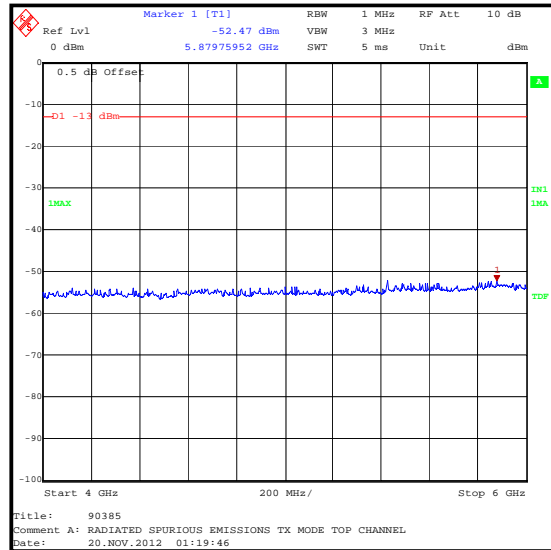
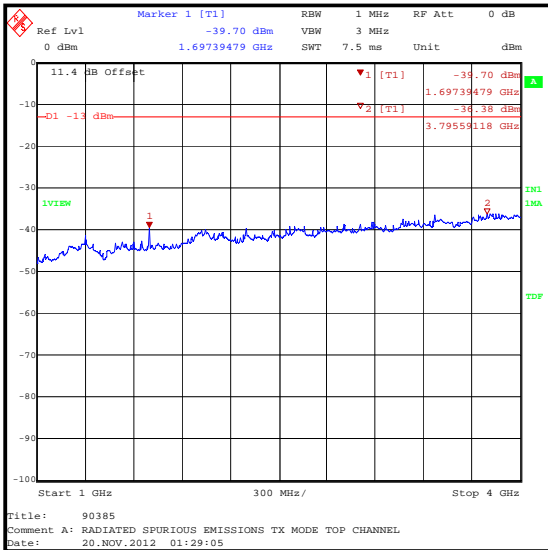
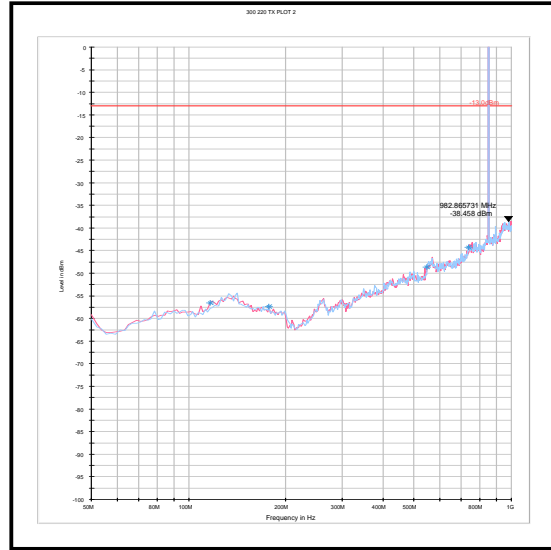
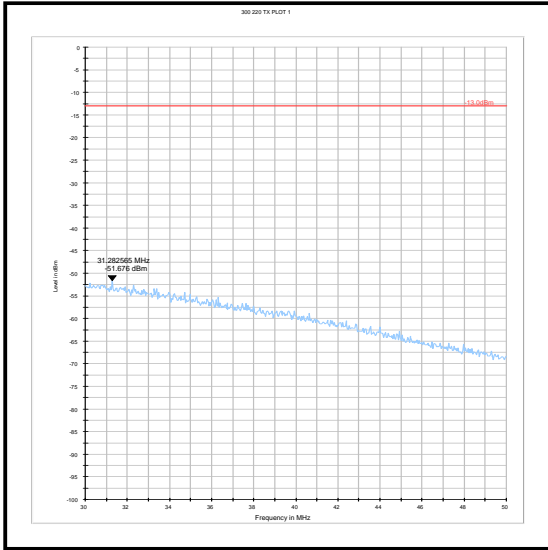
Note(s):

1. The uplink traffic channel is shown on the 30 MHz to 1 GHz plot.
2. All emissions shown on the pre-scan plots were investigated. Final measurements were made using appropriate RF filters and attenuators where required. All emissions shown on the pre-scan plots were found to be below the measurement system noise floor or ambient, therefore the highest peak noise floor reading of the measuring receiver was recorded in the table below.
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.
4. 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.

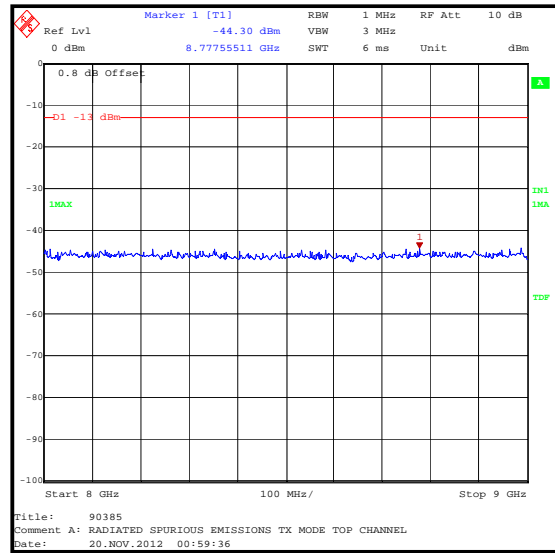
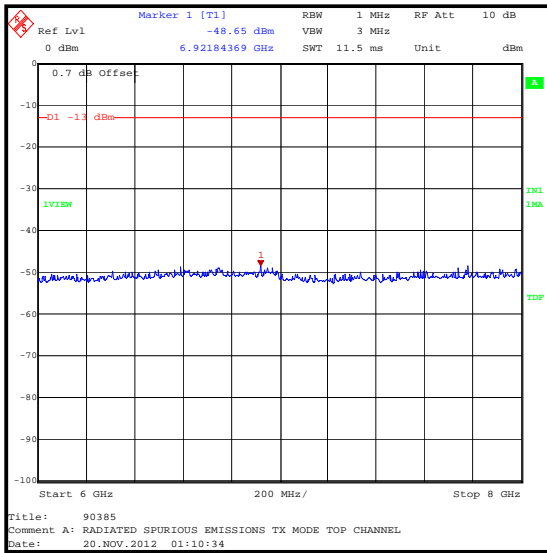
Results:

Frequency (MHz)	Peak Level (dBm)	Limit (dBm)	Margin (dB)	Result
1697.395	-39.7	-13.0	26.7	Complied

Transmitter Out of Band Radiated Emissions (continued)



Transmitter Out of Band Radiated Emissions (continued)



Transmitter Out of Band Radiated Emissions (continued)**Test Equipment Used:**

RFI No.	Instrument	Manufacturer	Type No.	Serial No.	Date Calibration Due	Cal. Interval (Months)
A1393	Attenuator	Huber & Suhner	6820.17.B	757456	06 Jul 2013	12
A1834	Attenuator	Hewlett Packard	8491B	10444	29 Jan 2013	12
A553	Antenna	Chase	CBL6111A	1593	15 Feb 2013	12
G0543	Amplifier	Sonoma	310N	230801	02 Jan 2013	3
K0001	5m RSE Chamber	Rainford EMC	N/A	N/A	24 Oct 2013	12
M1273	Test Receiver	Rohde & Schwarz	ESIB 26	100275	03 Feb 2013	12
K0002	3m RSE Chamber	Rainford EMC	N/A	N/A	04 Nov 2013	12
M1124	Test Receiver	Rohde & Schwarz	ESIB 26	N/A	14 Aug 2013	12
A1534	Pre Amplifier	Hewlett Packard	8449B	3008A00405	04 Nov 2013	12
A1818	Antenna	EMCO	3115	00075692	04 Nov 2013	12
A253	Antenna	Flann Microwave	12240-20	128	04 Nov 2013	12
A254	Antenna	Flann Microwave	14240-20	139	04 Nov 2013	12
A255	Antenna	Flann Microwave	16240-20	519	04 Nov 2013	12
A1932	High Pass Filter	AtlanTec RF	AFH-02000	20r-JBD04-002	15 Mar 2013	12
A1975	High Pass Filter	AtlanTec RF	AFH-01000	090000283	15 Mar 2013	12
A1396	Attenuator	Huber & Suhner	6810.17.B	757987	06 July 2013	12

5.2.8. Transmitter Radiated Emissions at Band Edges

Test Summary:

Test Engineer:	David Doyle	Test Date:	20 November 2012
Test Sample IMEI:	353740050018443		

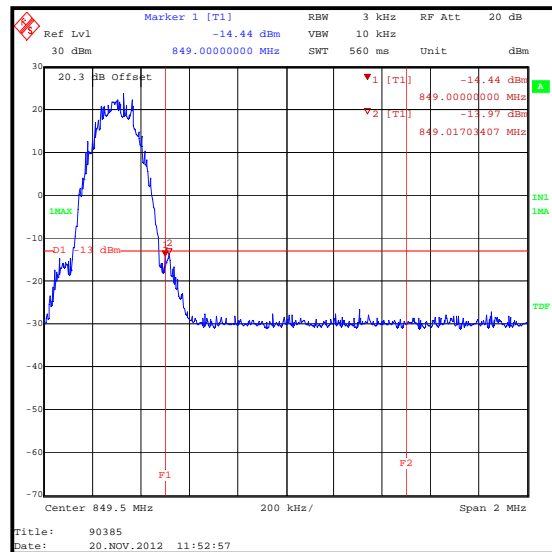
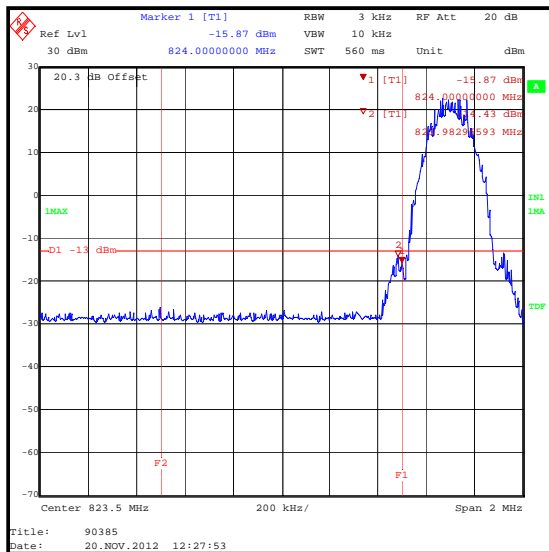
FCC Reference:	Parts 2.1053 & 22.917
Test Method Used:	As detailed in ANSI TIA-603-C-2004 Section 2.2.12 referencing FCC CFR Part 22.917

Environmental Conditions:

Temperature (°C):	26
Relative Humidity (%):	39

Results: GSM Circuit Switched

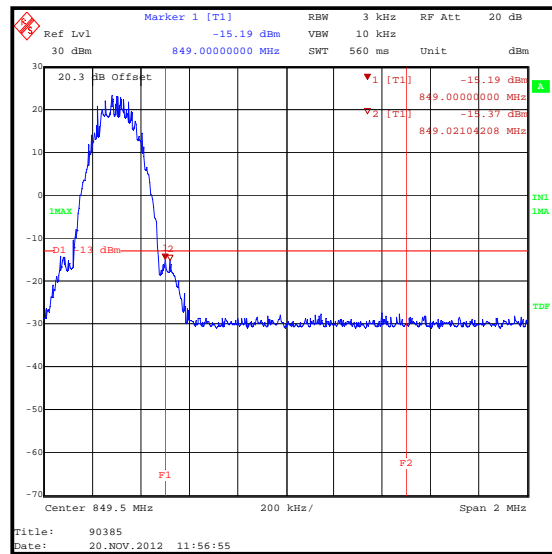
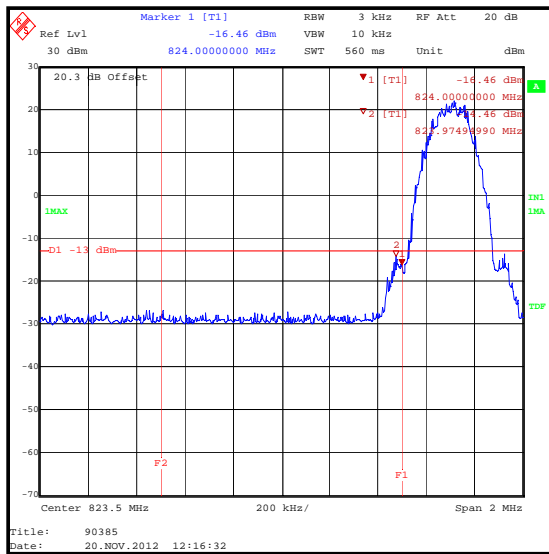
Frequency (MHz)	Peak Level (dBm)	Limit (dBm)	Margin (dB)	Result
823.983	-14.4	-13.0	1.4	Complied
824	-15.9	-13.0	2.9	Complied
849	-14.4	-13.0	1.4	Complied
849.017	-14.0	-13.0	1.0	Complied



Transmitter Band Edge Radiated Emissions (continued)

Results: GPRS

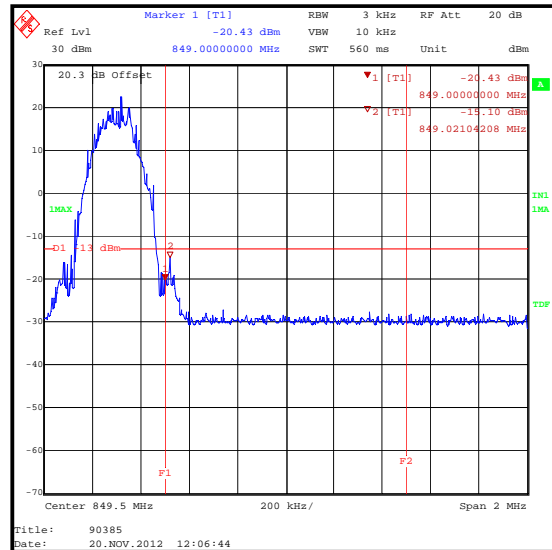
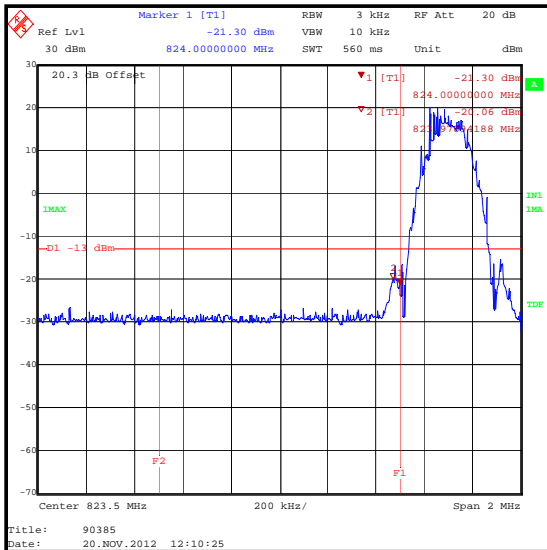
Frequency (MHz)	Peak Level (dBm)	Limit (dBm)	Margin (dB)	Result
823.975	-14.5	-13.0	1.5	Complied
824	-16.5	-13.0	3.5	Complied
849	-15.2	-13.0	2.2	Complied
849.021	-15.4	-13.0	2.4	Complied



Transmitter Band Edge Radiated Emissions (continued)

Results: EGPRS / MCS5

Frequency (MHz)	Peak Level (dBm)	Limit (dBm)	Margin (dB)	Result
823.971	-20.1	-13.0	7.1	Complied
824	-21.3	-13.0	8.3	Complied
849	-20.4	-13.0	7.4	Complied
849.021	-15.1	-13.0	2.1	Complied



Test Equipment Used:

RFI No.	Instrument	Manufacturer	Type No.	Serial No.	Date Calibration Due	Cal. Interval (Months)
K0002	3m RSE Chamber	Rainford EMC	N/A	N/A	04 Nov 2013	12
M1124	Test Receiver	Rohde & Schwarz	ESIB 26	N/A	14 Aug 2013	12
A1534	Pre Amplifier	Hewlett Packard	8449B	3008A00405	04 Nov 2013	12
A288	Antenna	Chase	CBL6111A	1589	15 Aug 2013	12
A1393	Attenuator	Huber & Suhner	6820.17.B	757456	06 July 2013	12
M1662	CMU 200	Rohde & Schwarz	CMU 200	109374	21 May 2013	12

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

Test Engineer:	David Doyle	Test Date:	15 November 2012
Test Sample IMEI:	353740050011927		

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

Environmental Conditions:

Temperature (°C):	21
Relative Humidity (%):	41

Results: Live / Quasi Peak

Frequency (MHz)	Line	Level (dB μ V)	Limit (dB μ V)	Margin (dB)	Result
0.479	Live	42.3	56.4	14.1	Complied
2.558	Live	34.6	56.0	21.4	Complied
4.259	Live	36.0	56.0	20.0	Complied
4.493	Live	37.9	56.0	18.1	Complied
5.325	Live	36.5	60.0	23.5	Complied
5.694	Live	36.2	60.0	23.8	Complied

Results: Live / Average

Frequency (MHz)	Line	Level (dB μ V)	Limit (dB μ V)	Margin (dB)	Result
0.474	Live	35.9	46.4	10.5	Complied
2.832	Live	33.4	46.0	12.6	Complied
4.335	Live	28.8	46.0	17.2	Complied
4.515	Live	30.6	46.0	15.4	Complied
5.357	Live	29.4	50.0	20.6	Complied
5.681	Live	29.9	50.0	20.1	Complied

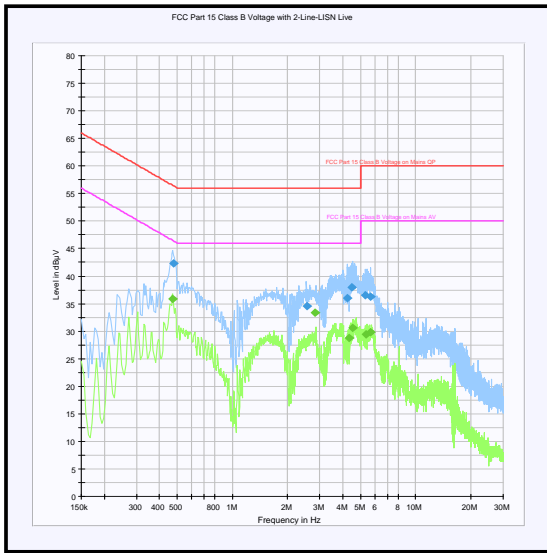
Receiver/Idle Mode AC Conducted Spurious Emissions (continued)**Results: Neutral / Quasi Peak**

Frequency (MHz)	Line	Level (dB μ V)	Limit (dB μ V)	Margin (dB)	Result
0.209	Neutral	34.6	63.3	28.7	Complied
2.004	Neutral	22.1	56.0	33.9	Complied
2.526	Neutral	23.7	56.0	32.3	Complied
3.539	Neutral	28.8	56.0	27.2	Complied
4.812	Neutral	36.7	56.0	19.3	Complied
5.240	Neutral	36.4	60.0	23.6	Complied
5.645	Neutral	36.2	60.0	23.8	Complied

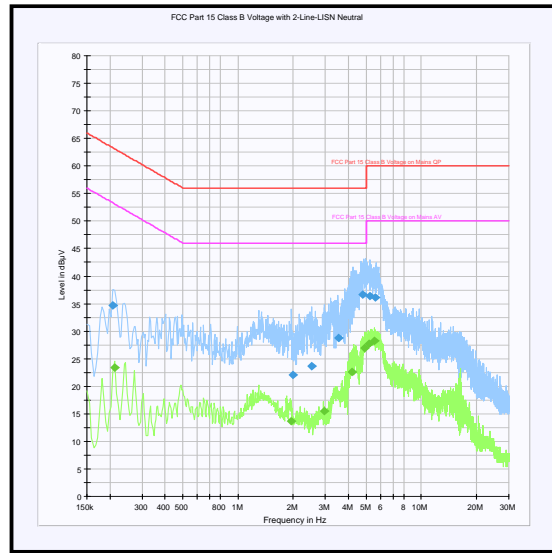
Results: Neutral / Average

Frequency (MHz)	Line	Level (dB μ V)	Limit (dB μ V)	Margin (dB)	Result
0.213	Neutral	23.4	53.1	29.7	Complied
1.950	Neutral	13.6	46.0	32.4	Complied
2.949	Neutral	15.6	46.0	30.4	Complied
4.205	Neutral	22.6	46.0	23.4	Complied
4.920	Neutral	26.9	46.0	19.1	Complied
5.177	Neutral	27.7	50.0	22.3	Complied
5.573	Neutral	28.3	50.0	21.7	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.

Test Equipment Used:

RFI No.	Instrument	Manufacturer	Type No.	Serial No.	Date Calibration Due	Cal. Interval (Months)
A649	LISN	Rohde & Schwarz	ESH3-Z5	825562/008	19 Feb 2013	12
A1830	Pulse Limiter	Rohde & Schwarz	ESH3-Z2	100668	25 Feb 2013	12
M1263	Test Receiver	Rohde & Schwarz	ESIB7	100265	09 Aug 2013	12

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

Test Engineer:	Nick Steele	Test Date:	21 November 2012
Test Sample IMEI:	353740050018443		

FCC Reference:	Part 15.109
Test Method Used:	As detailed in ANSI C63.10 Sections 6.3 and 6.5 referencing ANSI C63.4
Frequency Range:	30 MHz to 1000 MHz

Environmental Conditions:

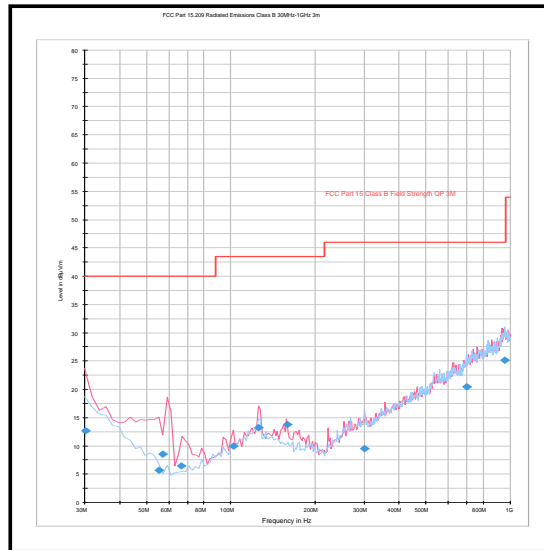
Temperature (°C):	22
Relative Humidity (%):	38

Note(s):

4. The final measured value, for the given emission, in the table below incorporates the calibrated antenna factor and cable loss.
5. 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.
6. 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.

Results: Quasi Peak

Frequency (MHz)	Antenna Polarity	Level (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Result
956.315	Horizontal	25.2	46.0	20.8	Complied

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

RFI No.	Instrument	Manufacturer	Type No.	Serial No.	Date Calibration Due	Cal. Interval (Months)
A1834	Attenuator	Hewlett Packard	8491B	10444	29 Jan 2013	12
A553	Antenna	Chase	CBL6111A	1593	15 Feb 2013	12
G0543	Amplifier	Sonoma	310N	230801	02 Jan 2013	3
K0001	5m RSE Chamber	Rainford EMC	N/A	N/A	24 Oct 2013	12
M1273	Test Receiver	Rohde & Schwarz	ESIB 26	100275	03 Feb 2013	12

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

Test Engineer:	Nick Steele	Test Date:	19 November 2012
Test Sample IMEI:	353740050018443		

FCC Reference:	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):	23
Relative Humidity (%):	38

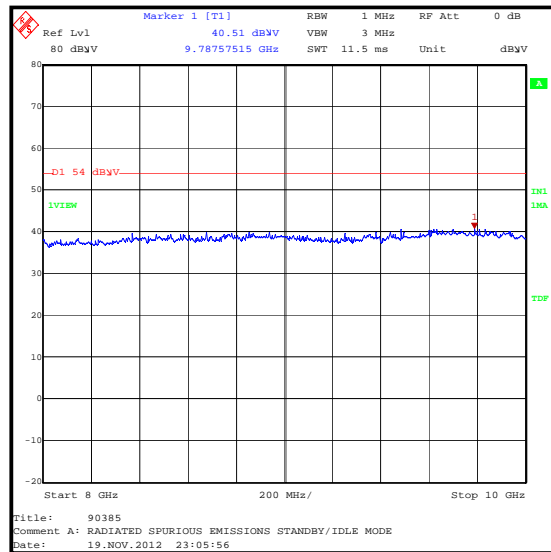
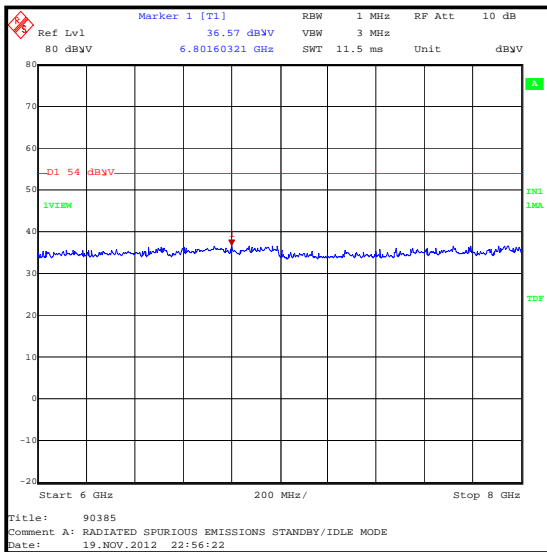
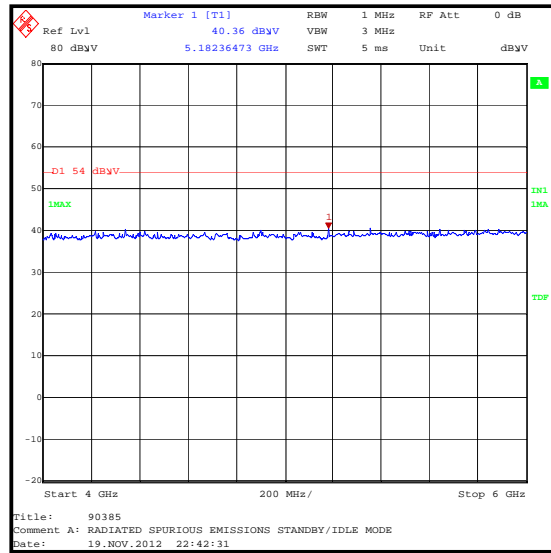
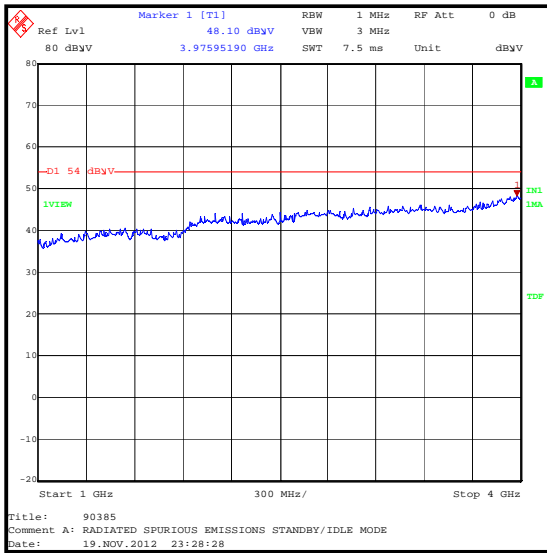
Note(s):

1. The final measured value, for the given emission, in the table below 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 below. The peak level was compared to the average limit as opposed to being compared to the peak 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.

Results:

Frequency (MHz)	Antenna Polarity	Peak Level (dBμV/m)	Average Limit (dBμV/m)	Margin (dB)	Result
3975.952	Vertical	48.1	54.0	5.9	Complied

Receiver/Idle Mode Radiated Spurious Emissions (continued)



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

RFI No.	Instrument	Manufacturer	Type No.	Serial No.	Date Calibration Due	Cal. Interval (Months)
K0002	3m RSE Chamber	Rainford EMC	N/A	N/A	04 Nov 2013	12
M1124	Test Receiver	Rohde & Schwarz	ESIB 26	N/A	14 Aug 2013	12
A1534	Pre Amplifier	Hewlett Packard	8449B	3008A004 05	04 Nov 2013	12
A1818	Antenna	EMCO	3115	00075692	04 Nov 2013	12
A253	Antenna	Flann Microwave	12240-20	128	04 Nov 2013	12
A254	Antenna	Flann Microwave	14240-20	139	04 Nov 2013	12
A255	Antenna	Flann Microwave	16240-20	519	04 Nov 2013	12

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

Test Engineer:	Nick Steele	Test Date:	21 November 2012
Test Sample IMEI:	353740050018443		

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

Environmental Conditions:

Temperature (°C):	24
Relative Humidity (%):	42

Results: GSM Circuit Switched

Channel	Frequency (MHz)	Antenna Polarity	EIRP (dBm)	Limit (dBm)	Margin (dB)	Result
Bottom	1850.2	Horizontal	28.5	33.0	4.5	Complied
Middle	1879.8	Horizontal	29.6	33.0	3.4	Complied
Top	1909.8	Horizontal	29.4	33.0	3.6	Complied

Results: GPRS

Channel	Frequency (MHz)	Antenna Polarity	EIRP (dBm)	Limit (dBm)	Margin (dB)	Result
Bottom	1850.2	Horizontal	28.5	33.0	4.5	Complied
Middle	1879.8	Horizontal	29.6	33.0	3.4	Complied
Top	1909.8	Horizontal	29.4	33.0	3.6	Complied

Results: EGPRS / MCS5

Channel	Frequency (MHz)	Antenna Polarity	EIRP (dBm)	Limit (dBm)	Margin (dB)	Result
Bottom	1850.2	Horizontal	27.2	33.0	5.8	Complied
Middle	1879.8	Horizontal	27.5	33.0	5.5	Complied
Top	1909.8	Horizontal	28.6	33.0	4.4	Complied

Test Equipment Used:

RFI No.	Instrument	Manufacturer	Type No.	Serial No.	Date Calibration Due	Cal. Interval (Months)
K0002	3m RSE Chamber	Rainford EMC	N/A	N/A	04 Nov 2013	12
M1124	Test Receiver	Rohde & Schwarz	ESIB 26	N/A	14 Aug 2013	12
A1534	Pre Amplifier	Hewlett Packard	8449B	3008A00405	04 Nov 2013	12
A1818	Antenna	EMCO	3115	00075692	04 Nov 2013	12
A1396	Attenuator	Huber & Suhner	6810.17.B	757987	06 July 2013	12

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

Test Engineer:	Andrew Edwards	Test Date:	12 November 2012
Test Sample IMEI:	353740050010077		

FCC Reference:	Parts 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):	25
Ambient Relative Humidity (%):	36

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 CMU 200. The frequency meter value was recorded.
3. Temperature was monitored throughout the test with a calibrated digital thermometer.

Results: Bottom Channel (1850.2 MHz)

Temperature (°C)	Frequency Error (Hz)	Measured Frequency (MHz)	Lower Band Edge Limit (MHz)	Margin (MHz)	Result
-30	12	1850.199988	1850.0	0.199988	Complied
-20	22	1850.200022	1850.0	0.200022	Complied
-10	18	1850.200018	1850.0	0.200018	Complied
0	11	1850.200011	1850.0	0.200011	Complied
10	12	1850.200012	1850.0	0.200012	Complied
20	9	1850.200009	1850.0	0.200009	Complied
30	16	1850.200016	1850.0	0.200016	Complied
40	10	1850.199990	1850.0	0.199990	Complied
50	35	1850.199965	1850.0	0.199965	Complied

Transmitter Frequency Stability (Temperature Variation) (continued)**Results: Top Channel (1909.8 MHz)**

Temperature (°C)	Frequency Error (Hz)	Measured Frequency (MHz)	Upper Band Edge Limit (MHz)	Margin (MHz)	Result
-30	7	1909.800007	1910.0	0.199993	Complied
-20	23	1909.800023	1910.0	0.199977	Complied
-10	20	1909.800020	1910.0	0.199980	Complied
0	16	1909.800016	1910.0	0.199984	Complied
10	17	1909.800017	1910.0	0.199983	Complied
20	44	1909.799956	1910.0	0.200044	Complied
30	25	1909.800025	1910.0	0.199975	Complied
40	11	1909.799989	1910.0	0.200011	Complied
50	42	1909.799958	1910.0	0.200042	Complied

Test Equipment Used:

RFI No.	Instrument	Manufacturer	Type No.	Serial No.	Date Calibration Due	Cal. Interval (Months)
E013	Environmental Chamber	Sanyo	MTH-4200PR	None	Calibrated Before Use	-
M1251	DMM	Fluke	175	89170179	30 Jul 2013	12
M1642	Thermometer	Fluke	52II	18890119	21 Feb 2013	12
M1662	Radio Comms. Tester	Rohde & Schwarz	CMU 200	109374	21 May 2013	12
S021	Dual DC Power Supply Unit	Thurlby Thandar Instruments	CPX200	061034	Calibrated Before Use	-

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

Test Engineer:	Andrew Edwards	Test Date:	12 November 2012
Test Sample IMEI:	353740050010077		

FCC Reference:	Parts 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):	25
Relative Humidity (%):	36

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 CMU 200. The frequency meter value was recorded.
3. Voltage was monitored throughout the test with a calibrated digital voltmeter.

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	41	1850.200041	1850.0	0.200041	Complied
4.35	30	1850.199970	1850.0	0.199970	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	22	1909.800022	1910.0	0.199978	Complied
4.35	67	1909.799933	1910.0	0.200067	Complied

Transmitter Frequency Stability (Voltage Variation)**Test Equipment Used:**

RFI No.	Instrument	Manufacturer	Type No.	Serial No.	Date Calibration Due	Cal. Interval (Months)
E013	Environmental Chamber	Sanyo	MTH-4200PR	None	Calibrated Before Use	-
M1251	DMM	Fluke	175	89170179	30 Jul 2013	12
M1642	Thermometer	Fluke	52II	18890119	21 Feb 2013	12
M1662	Universal Radio Communication Tester	Rohde & Schwarz	CMU 200	109374	21 May 2013	12
S021	Dual DC Power Supply Unit	Thurlby Thandar Instruments	CPX200	061034	Calibrated Before Use	-

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

Test Engineer:	David Doyle	Test Date:	22 November 2012
Test Sample IMEI:	353740050010077		

FCC Reference:	Part 2.1049
Test Method Used:	The 99% occupied bandwidth was measured using the Occupied Bandwidth function of a test receiver

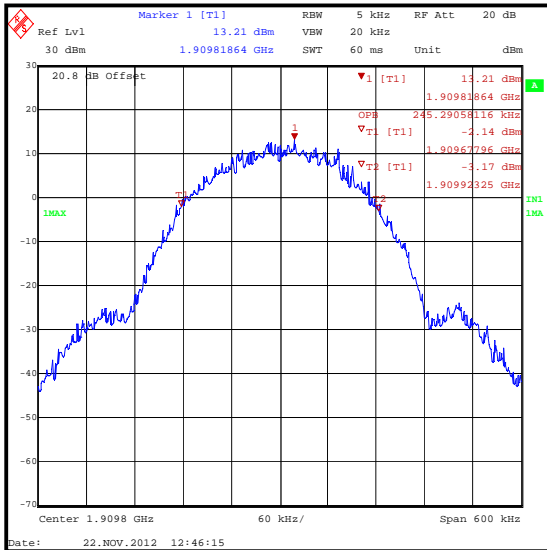
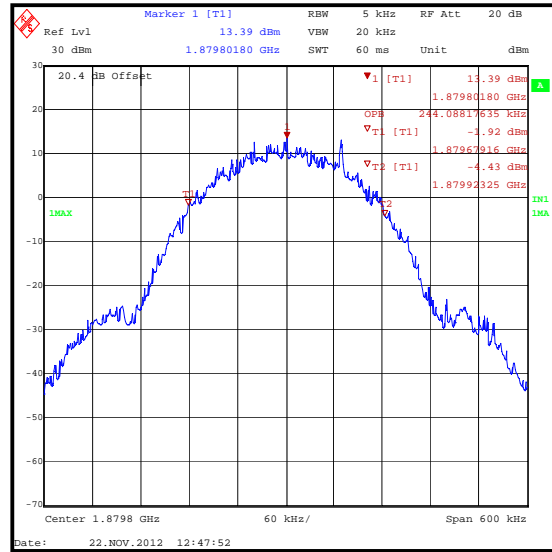
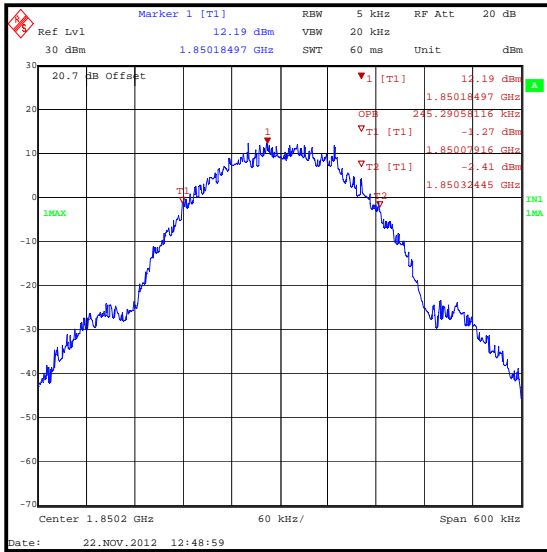
Environmental Conditions:

Temperature (°C):	24
Relative Humidity (%):	38

Transmitter Occupied Bandwidth (continued)

Results: GSM Circuit Switched

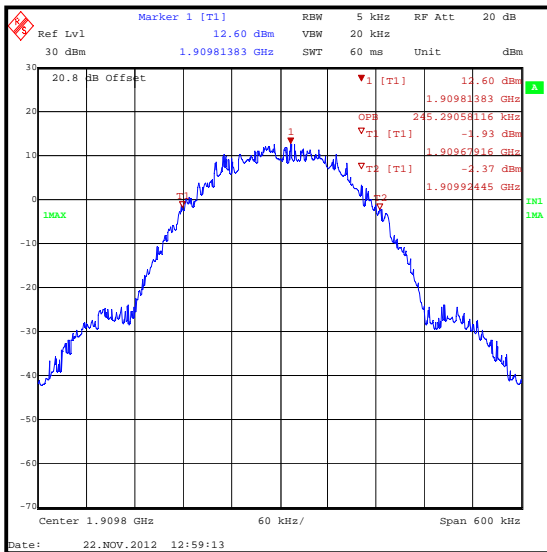
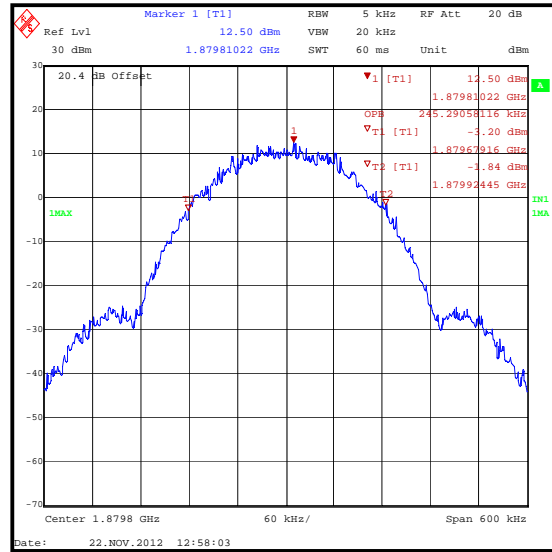
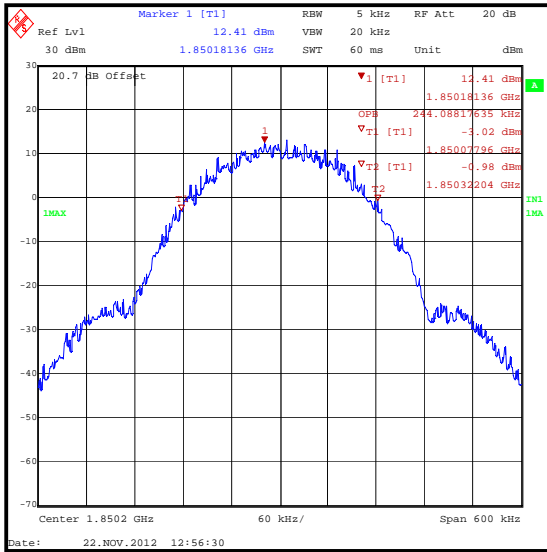
Channel	Frequency (MHz)	Occupied Bandwidth (kHz)
Bottom	1850.2	245.291
Middle	1879.8	244.088
Top	1909.8	245.291



Transmitter Occupied Bandwidth (continued)

Results: GPRS

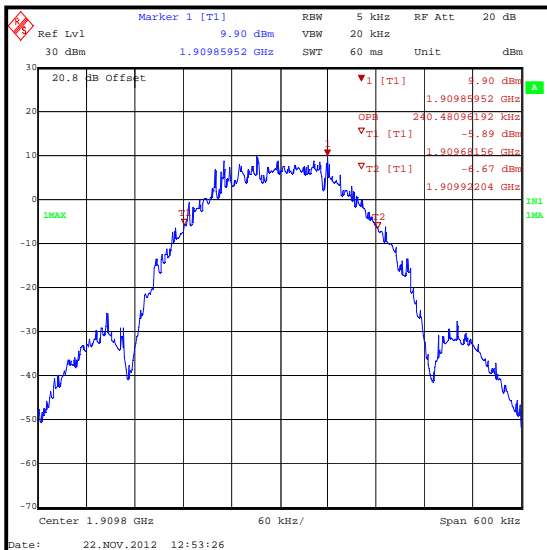
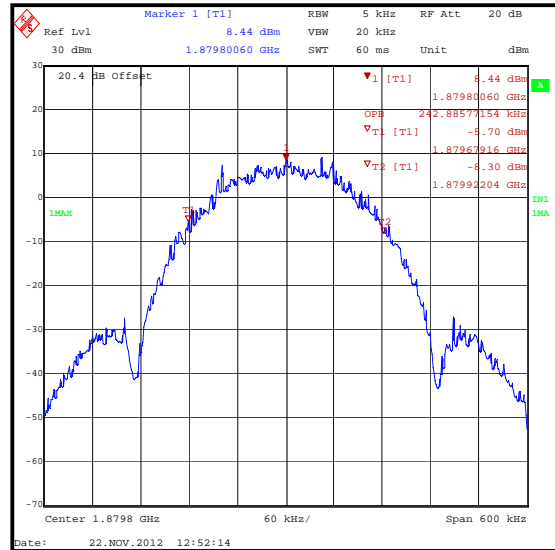
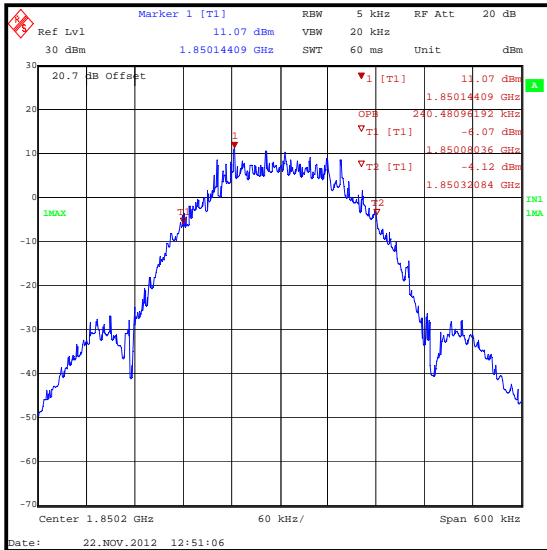
Channel	Frequency (MHz)	Occupied Bandwidth (kHz)
Bottom	1850.2	244.088
Middle	1879.8	245.291
Top	1909.8	245.291



Transmitter Occupied Bandwidth (continued)

Results: EGPRS / MCS5

Channel	Frequency (MHz)	Occupied Bandwidth (kHz)
Bottom	1850.2	240.481
Middle	1879.8	242.886
Top	1909.8	240.481



Transmitter Occupied Bandwidth (continued)**Test Equipment Used:**

RFI No.	Instrument	Manufacturer	Type No.	Serial No.	Date Calibration Due	Cal. Interval (Months)
A1368	Directional Coupler	Pasternack	PE2214-10	N/A	Calibrated Before Use	-
A1393	Attenuator	Huber & Suhner	6820.17.B	757456	06 July 2013	12
M1124	Test Receiver	Rohde & Schwarz	ESIB 26	N/A	14 Aug 2013	12
M1662	Radio Comms. Tester	Rohde & Schwarz	CMU 200	109374	21 May 2013	12

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

Test Engineer:	Nick Steele	Test Dates:	19 November 2012 & 20 November 2012
Test Sample IMEI:	353740050018443		

FCC Reference:	Parts 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):	23 to 27
Relative Humidity (%):	38 to 39

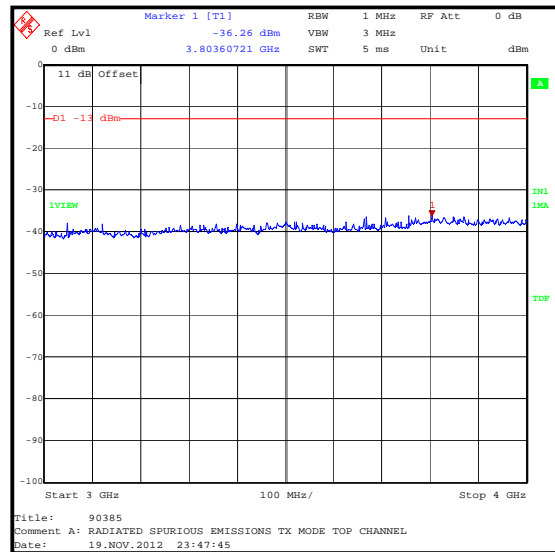
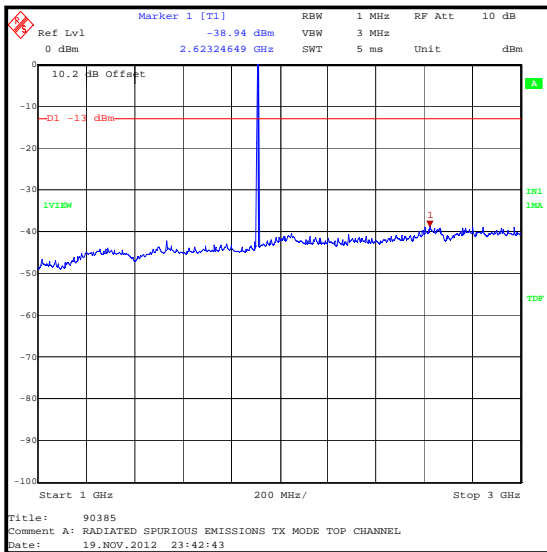
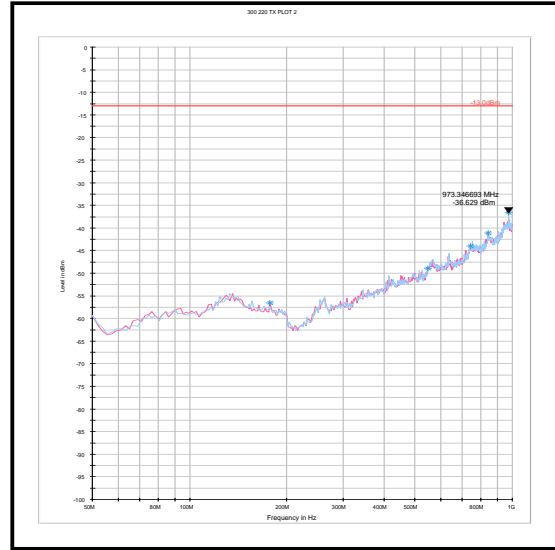
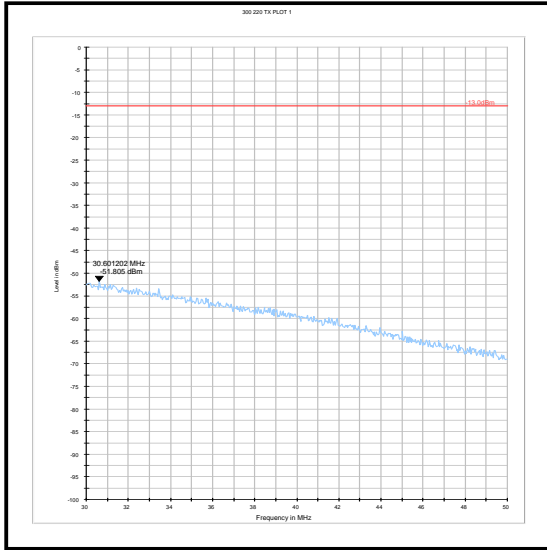
Note(s):

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 in the table below.
2. The uplink traffic channel is shown on the 1 GHz to 4 GHz plot.
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.
4. 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.

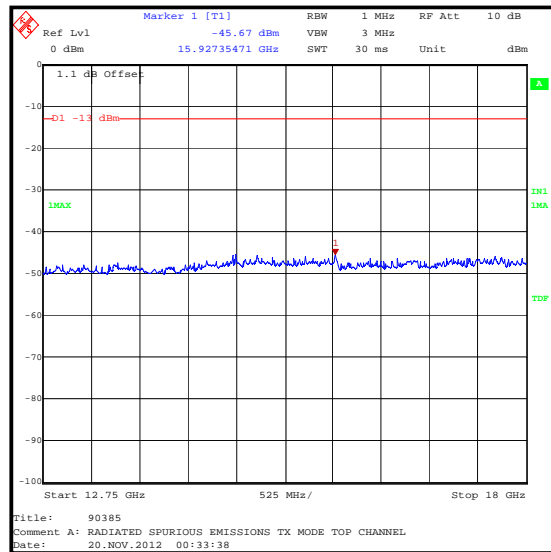
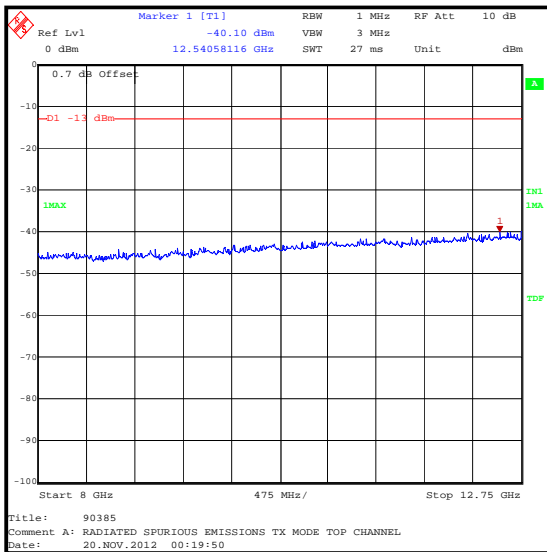
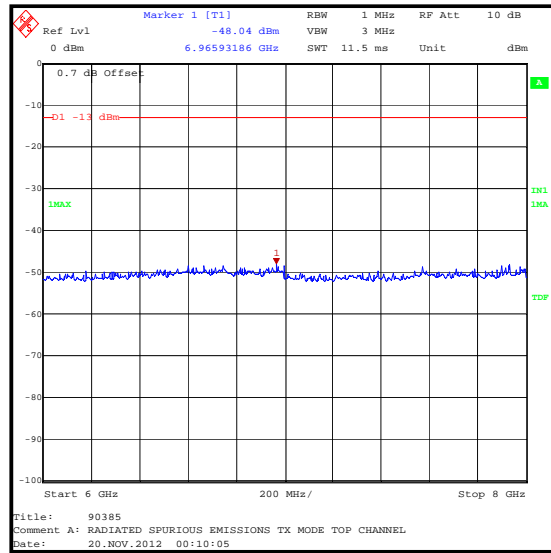
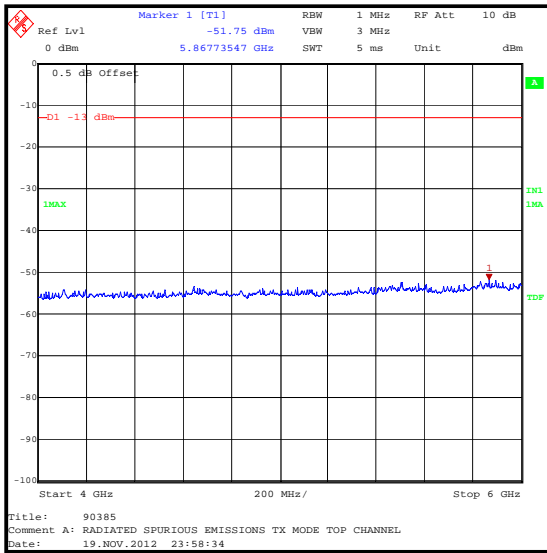
Results:

Frequency (MHz)	Peak Level (dBm)	Limit (dBm)	Margin (dB)	Result
3803.607	-36.3	-13.0	23.3	Complied

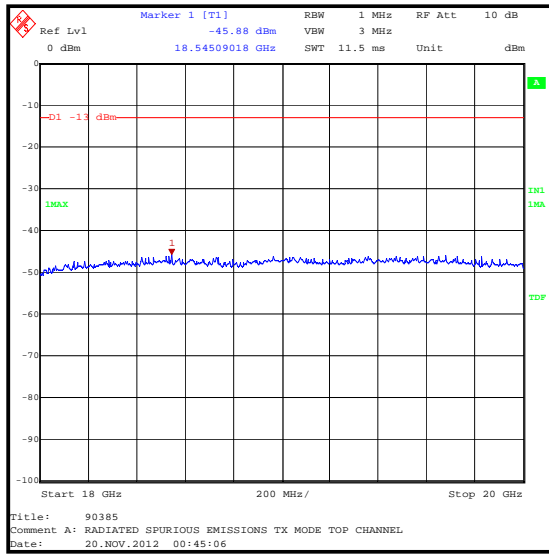
Transmitter Out of Band Radiated Emissions (continued)



Transmitter Out of Band Radiated Emissions (continued)



Transmitter Out of Band Radiated Emissions (continued)



Transmitter Out of Band Radiated Emissions (continued)**Test Equipment Used:**

RFI No.	Instrument	Manufacturer	Type No.	Serial No.	Date Calibration Due	Cal. Interval (Months)
A1393	Attenuator	Huber & Suhner	6820.17.B	757456	06 Jul 2013	12
A1834	Attenuator	Hewlett Packard	8491B	10444	29 Jan 2013	12
A553	Antenna	Chase	CBL6111A	1593	15 Feb 2013	12
G0543	Amplifier	Sonoma	310N	230801	02 Jan 2013	3
K0001	5m RSE Chamber	Rainford EMC	N/A	N/A	24 Oct 2013	12
M1273	Test Receiver	Rohde & Schwarz	ESIB 26	100275	03 Feb 2013	12
K0002	3m RSE Chamber	Rainford EMC	N/A	N/A	04 Nov 2013	12
M1124	Test Receiver	Rohde & Schwarz	ESIB 26	N/A	14 Aug 2013	12
A1534	Pre Amplifier	Hewlett Packard	8449B	3008A00405	04 Nov 2013	12
A1818	Antenna	EMCO	3115	00075692	04 Nov 2013	12
A253	Antenna	Flann Microwave	12240-20	128	04 Nov 2013	12
A254	Antenna	Flann Microwave	14240-20	139	04 Nov 2013	12
A255	Antenna	Flann Microwave	16240-20	519	04 Nov 2013	12
A256	Antenna	Flann Microwave	18240-20	400	04 Nov 2013	12
A436	Antenna	Flann Microwave	20240-20	330	04 Nov 2013	12
A1975	High Pass Filter	AtlanTecRF	AFH-03000	090424010	15 Mar 2013	12
A1396	Attenuator	Huber & Suhner	6810.17.B	757987	06 July 2013	12

5.3.8. Transmitter Band Edge Radiated Emissions

Test Summary:

Test Engineer:	David Doyle	Test Date:	22 November 2012
Test Sample IMEI:	353740050018443		

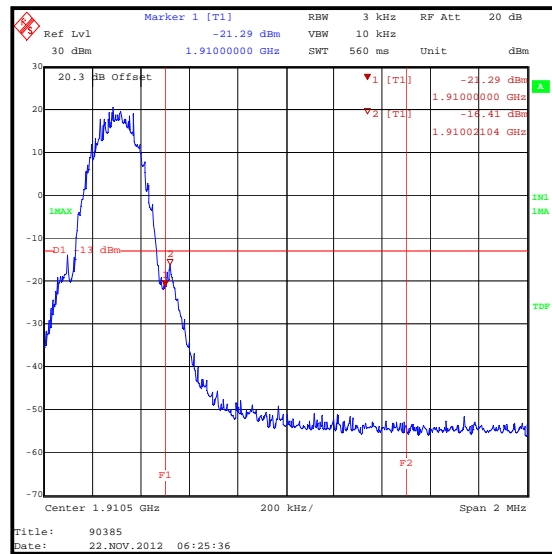
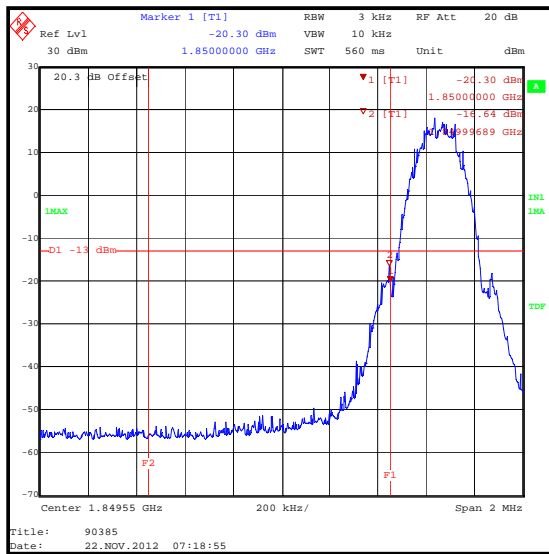
FCC Reference:	Parts 2.1053 & 24.238
Test Method Used:	As detailed in ANSI TIA-603-C-2004 Section 2.2.12 referencing FCC CFR Parts 2.1053 and 24.238

Environmental Conditions:

Temperature (°C):	23
Relative Humidity (%):	40

Results: GSM Circuit Switched

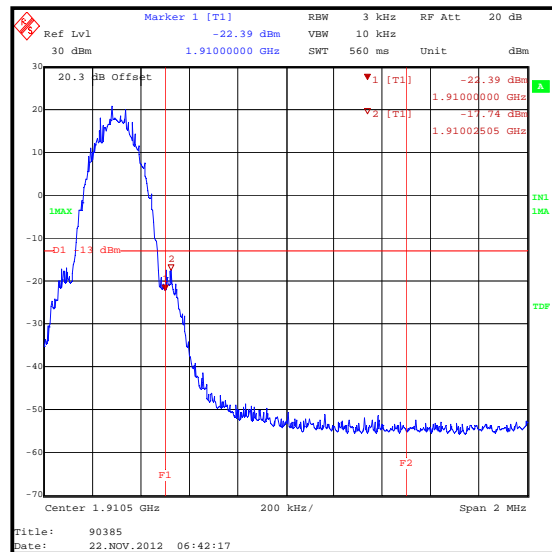
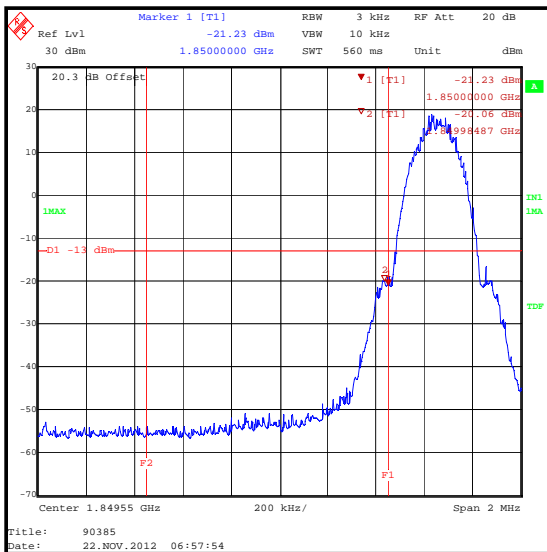
Frequency (MHz)	Peak Level (dBm)	Limit (dBm)	Margin (dB)	Result
1849.997	-16.6	-13.0	3.6	Complied
1850.0	-20.3	-13.0	7.3	Complied
1910.0	-21.3	-13.0	8.3	Complied
1910.021	-16.4	-13.0	3.4	Complied



Transmitter Band Edge Radiated Emissions (continued)

Results: GPRS

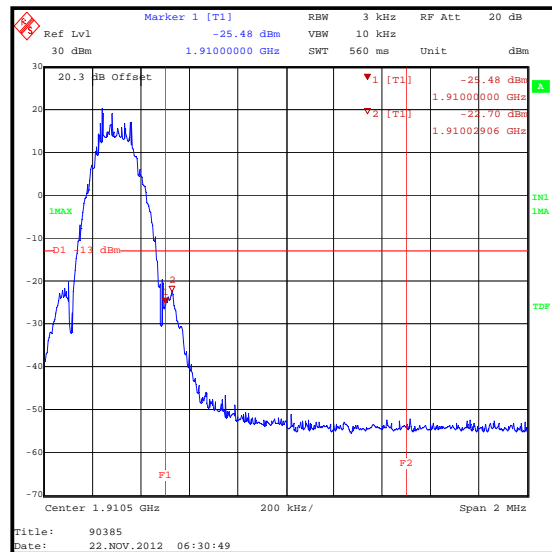
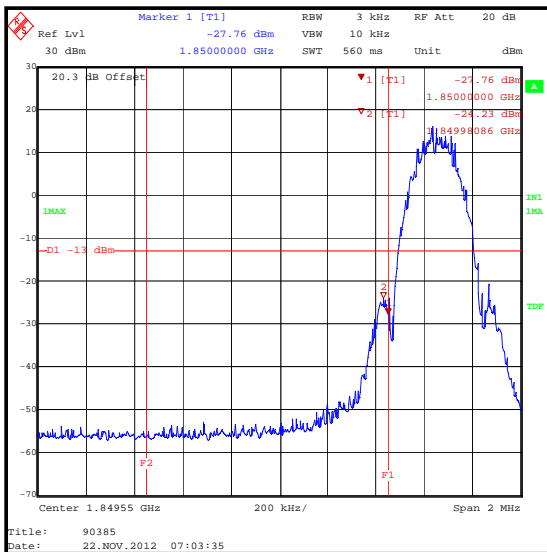
Frequency (MHz)	Peak Level (dBm)	Limit (dBm)	Margin (dB)	Result
1849.985	-20.1	-13.0	7.1	Complied
1850.0	-21.2	-13.0	8.2	Complied
1910.0	-22.4	-13.0	9.4	Complied
1910.025	-17.7	-13.0	4.7	Complied



Transmitter Band Edge Radiated Emissions (continued)

Results: EGPRS / MCS5

Frequency (MHz)	Peak Level (dBm)	Limit (dBm)	Margin (dB)	Result
1849.981	-24.2	-13.0	11.2	Complied
1850.0	-27.8	-13.0	14.8	Complied
1910.0	-25.5	-13.0	12.5	Complied
1910.029	-22.7	-13.0	9.7	Complied



Test Equipment Used:

RFI No.	Instrument	Manufacturer	Type No.	Serial No.	Date Calibration Due	Cal. Interval (Months)
K0002	3m RSE Chamber	Rainford EMC	N/A	N/A	04 Nov 2013	12
M1124	Test Receiver	Rohde & Schwarz	ESIB 26	N/A	14 Aug 2013	12
A1534	Pre Amplifier	Hewlett Packard	8449B	3008A00405	04 Nov 2013	12
A1818	Antenna	EMCO	3115	0075692	04 Nov 2013	12
A1393	Attenuator	Huber & Suhner	6820.17.B	757456	06 July 2013	12
M1662	Radio Comms. Tester	Rohde & Schwarz	CMU 200	109374	21 May 2013	12

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
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.

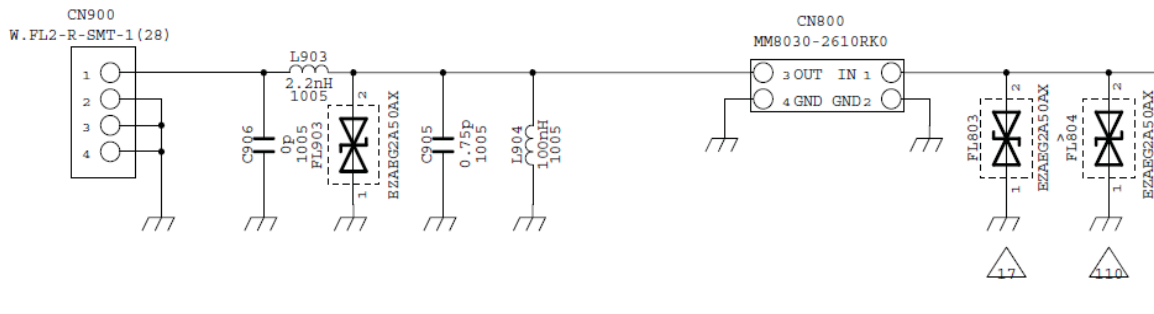
7. Report Revision History

Version Number	Revision Details		
	Page No(s)	Clause	Details
1.0	-	-	Initial Version

8. Annex A

H/W	Changes from previous version
Rev C	L904 changed from 100nH to 47nH to protect Cellular Antenna switch from ESD.

Main ANT



SW	Changes from previous version
rupy-jb-10-0391_NOA_r1 101035_DCM_00.13_NOA	Various MMI and Application based changes (for example FOTA, NEXTi, Camera). L2 Fill Bit fix. LTE Protocol Fixes.