



TEST REPORT FROM RFI GLOBAL SERVICES LTD

Test of: BlueTag V5

To: FCC Part 22: 2008 Subpart H and FCC Part 24: 2008 Subpart E

Test Report Serial No:
RFI/RPT1/RP75379JD01A

This Test Report Is Issued Under The Authority Of Brian Watson, Operations Director:	
	
Checked By:	Nigel Davison
Signature:	
Date of Issue:	03 August 2009

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1. Customer Information












Company Name:	Satellite Tracking of People LLC
Address:	1212 North Post Oak Road Suite 100 Houston Texas 77055

2. Summary of Testing

2.1. General Information – FCC Part 22

Specification Reference:	47CFR22
Specification Title:	Code of Federal Regulations Volume 47 (Telecommunications) 2008: Part 22 Subpart H (Public Mobile Services)
Site Registration:	FCC: 209735
Location of Testing:	RFI Global Services Ltd, Wade Road, Basingstoke, Hampshire, RG24 8AH.
Test Dates:	09 July 2009 to 23 July 2009











2.2. Summary of Test Results – FCC Part 22

FCC Reference (47CFR)	Measurement	Port Type	Result
FCC Part 15: Section 15.107	Receiver/Idle Mode AC Conducted Spurious Emissions	AC Mains Input	
FCC Part 15: Section 15.109	Receiver/Idle Mode Radiated Spurious Emissions	Enclosure	
FCC Part 15: Section 15.207	Transmitter AC Conducted Spurious Emissions	AC Mains	
FCC Part 22: Section 22.913(a)	Transmitter Effective Radiated Power (ERP)	Antenna	
FCC Part 22: Section 22.355	Transmitter Frequency Stability (Temperature Variation)	Antenna	
FCC Part 22: Section 22.355	Transmitter Frequency Stability (Voltage Variation)	Antenna	
FCC Part 22: Section 2.1049	Transmitter Occupied Bandwidth	Antenna	
FCC Part 22: Section 2.1053/22.917	Transmitter Out of Band Radiated Emissions	Antenna	
FCC Part 22: Section 2.1053/22.917	Transmitter Band Edge Radiated Emissions	Antenna	
Key to Results			
 = Complied  = Did not comply			

2.3. General Information – FCC Part 24

Specification Reference:	47CFR24
Specification Title:	Code of Federal Regulations Volume 47 (Telecommunications) 2008: Part 24 Subpart E (Personal Communication Services)
Site Registration:	FCC: 209735
Location of Testing:	RFI Global Services Ltd, Wade Road, Basingstoke, Hampshire, RG24 8AH.
Test Dates:	10 July 2009 to 23 July 2009

2.4. Summary of Test Results – FCC Part 24

FCC Reference (47CFR)	Measurement	Port Type	Result
FCC Part 15: Section 15.107	Idle Mode AC Conducted Spurious Emissions	AC Mains	
FCC Part 15: Section 15.109	Idle Mode Radiated Spurious Emissions	Enclosure	
FCC Part 15: Section 15.207	Transmitter AC Conducted Spurious Emissions	AC Mains	
FCC Part 24: Section 24.232	Transmitter Equivalent Isotropic Radiated Power (EIRP)	Antenna	
FCC Part 24: Section 24.235	Transmitter Frequency Stability (Temperature & Voltage Variation)	Antenna	
FCC Part 24: Section 2.1049/24.238	Transmitter Occupied Bandwidth	Antenna	
FCC Part 24: Section 2.1053/24.238	Transmitter Out of Band Radiated Emissions	Antenna	
FCC Part 2: Section 2.1053/24.238	Transmitter Band Edge Radiated Emissions	Antenna	
Key to Results			
 = Complied  = Did not comply			

2.5. Methods and Procedures

Reference:	ANSI/TIA-603-C-2004
Title:	Land Mobile Communications Equipment, Measurements and performance Standards
Reference:	ANSI C63.4 (2003)
Title:	American National Standard Methods of Measurement of Electromagnetic Emissions from Low Voltage Electrical and Electronic Equipment in the Range of 9 kHz to 40 GHz.

2.6. 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)

Description:	Body Worn Tracking Device
Brand Name:	BlueTag
Model Name or Number:	V5
Serial Number:	02-40030 and 02-400033
IMEI Number:	352023007665876
Hardware Version Number:	BB11_EE58
Software Version Number:	5_100
FCC ID Number:	S5E0906BT5

Description:	AC Charger for BlueTag
Brand Name:	BlueTag Charger
Model Name or Number:	CUI INC
Serial Number:	None Stated

3.2. Description of EUT

The equipment under test was an ankle worn GSM/GPRS/GPS tracker fitted with an inductive transmitter and a 915 MHz transmitter.

3.3. Modifications Incorporated in the EUT

No modifications were applied to the EUT during testing.

3.4. Additional Information Related to Testing

Technology Tested:	GSM850 / PCS1900	
Type of Radio Device:	Transceiver	
Mode:	GSM/GPRS	
Modulation Type:	GMSK	
Channel Spacing:	200 kHz	
Power Supply Requirement(s):	Nominal	3.7 V
	Minimum	3.650 V (Cut-off)
	Maximum	4.255 V

FCC Part 22

Transmit Frequency Range:	824 MHz to 850 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 MHz 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
Maximum Power Output (ERP):	17.1 dBm		

FCC Part 24

Transmit Frequency Range:	1850 MHz 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 MHz to 1990 MHz		
Receive Channels Tested:	Channel ID	Channel Number	Channel Frequency (MHz)
	Bottom	512	1930.2
	Middle	660	1859.8
	Top	810	1989.8
Maximum Power Output (EIRP):	29.8 dBm		

4. Operation and Monitoring of the EUT during Testing

4.1. Operating Modes

The EUT was tested in the following operating mode(s):

- Idle Mode
- Constantly transmitting at full power on bottom, middle and top channels as required in GPRS mode. The EUT is not capable of transmitting in GSM mode.
- All tests were performed with the EUT in GPRS Multislot Class 10 with the unit transmitting on two timeslot in the uplink. GSM circuit switched mode was not tested as the EUT was not capable of transmitting in this mode.

4.2. Configuration and Peripherals

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

- Connected to GSM/GPRS systems simulator, operating in transceiver mode.
- Idle mode and transmitter mode radiated spurious emissions tests were performed with the mains charger connected to the EUT as 120VAC as this was found to be the worst case during prescans. All accessories were individually connected and measurements made during the prescans to determine the worst case combination.

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

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

Environmental Conditions:

Temperature (°C):	26
Relative Humidity (%):	35

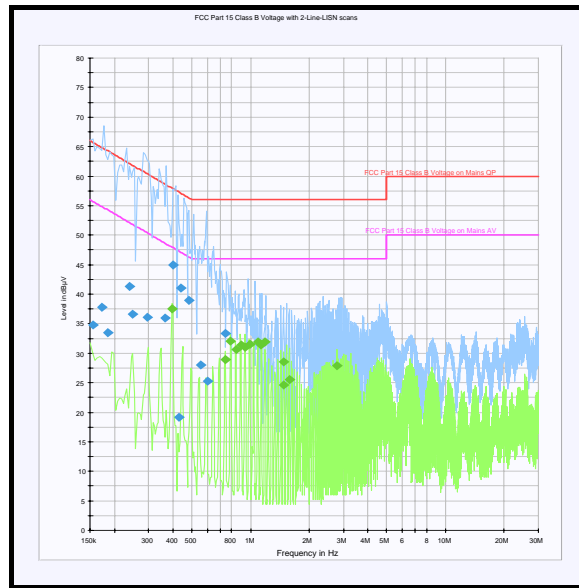
Results: Quasi Peak Detector Measurements

Frequency (MHz)	Line	Quasi Peak Level (dB μ V)	Limit (dB μ V)	Margin (dB)	Result
0.154500	Live 1	34.8	65.8	31.0	Complied
0.172500	Neutral	37.8	64.8	27.0	Complied
0.186000	Neutral	33.5	64.2	30.7	Complied
0.240000	Live 1	41.4	62.1	20.7	Complied
0.249000	Neutral	36.6	61.8	25.2	Complied
0.294000	Neutral	36.1	60.4	24.4	Complied
0.366000	Live 1	36.0	58.6	22.6	Complied
0.397500	Neutral	45.0	57.9	12.9	Complied
0.429000	Neutral	19.1	57.3	38.2	Complied
0.438000	Neutral	41.0	57.1	16.1	Complied
0.483000	Live 1	39.0	56.3	17.3	Complied
0.555000	Live 1	28.0	56.0	28.0	Complied
0.600000	Live 1	25.3	56.0	30.7	Complied
0.744000	Neutral	33.4	56.0	22.6	Complied

Receiver/Idle Mode AC Conducted Spurious Emissions (continued)**Results: Average Detector Measurements**

Frequency (MHz)	Line	Average Level (dB μ V)	Limit (dB μ V)	Margin (dB)	Result
0.393000	Neutral	37.6	48.0	10.4	Complied
0.744000	Neutral	28.9	46.0	17.1	Complied
0.789000	Neutral	32.0	46.0	14.0	Complied
0.843000	Neutral	30.7	46.0	15.3	Complied
0.892500	Neutral	31.4	46.0	14.6	Complied
0.942000	Neutral	31.0	46.0	15.0	Complied
0.991500	Neutral	31.6	46.0	14.4	Complied
1.086000	Neutral	31.9	46.0	14.1	Complied
1.135500	Neutral	31.4	46.0	14.6	Complied
1.185000	Neutral	32.0	46.0	14.0	Complied
1.477500	Neutral	24.6	46.0	21.4	Complied
1.482000	Neutral	28.5	46.0	17.5	Complied
1.576500	Neutral	25.6	46.0	20.4	Complied
2.769000	Neutral	27.9	46.0	18.1	Complied

Receiver/Idle Mode AC Conducted Spurious Emissions (continued)



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

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

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

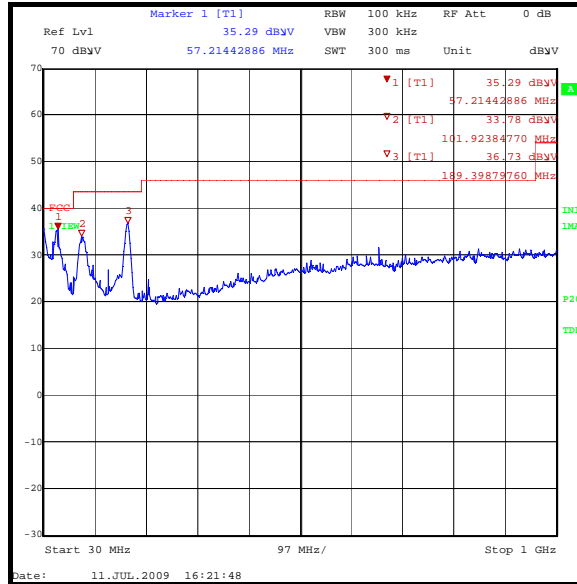
Environmental Conditions:

Temperature (°C):	26
Relative Humidity (%):	35

Results:

Frequency (MHz)	Antenna Polarity	Level (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Result
57.443011	Vertical	32.0	40.0	8.0	Complied
102.493673	Vertical	30.7	43.0	12.3	Complied
189.618092	Horizontal	36.3	46.0	9.7	Complied

Receiver/Idle Mode Radiated Spurious Emissions (continued)



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

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

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

Environmental Conditions:

Temperature (°C):	26
Relative Humidity (%):	35

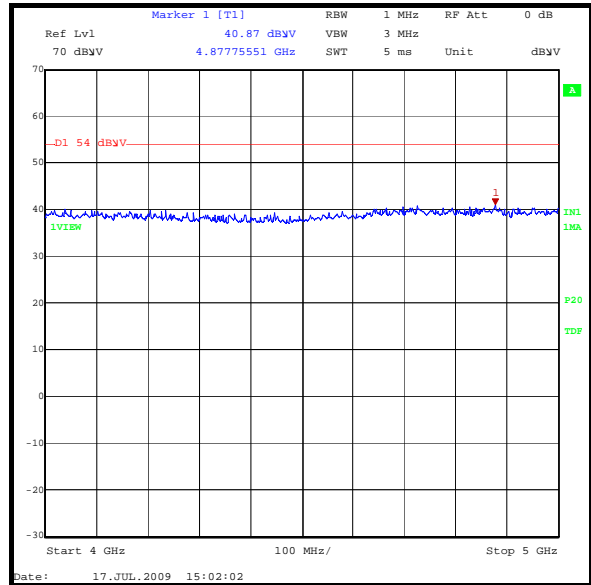
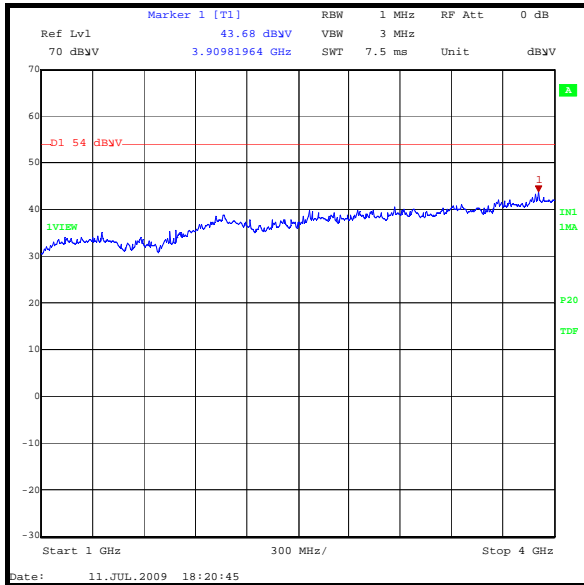
Results: Highest Peak Level

Frequency (GHz)	Antenna Polarity	Detector Level (dBμV/m)	Transducer Factor (dB)	Peak Level (dBμV/m)	Average Limit (dBμV/m)	Margin (dB)	Result
3.910	Vertical	38.1	5.6	43.7	54.0	10.3	Complied

Note(s):

1. No spurious emissions were detected above the noise floor of the measuring receiver; therefore, the highest peak noise floor reading of the measuring receiver was recorded as shown in the table above. The peak level was compared to the average limit as opposed to being compared to the peak limit because this is the more onerous limit.

Receiver/Idle Mode Radiated Spurious Emissions (continued)



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

5.2.3. Transmit Mode AC Conducted Spurious Emissions**Test Summary:**

FCC Part:	15.207(a)
Test Method Used:	As detailed in ANSI C63.4 Section 7 and relevant annexes

Environmental Conditions:

Temperature (°C):	26
Relative Humidity (%):	35

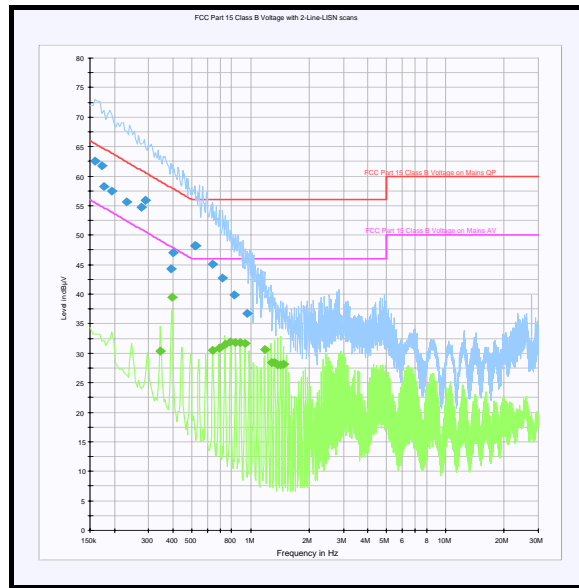
Results: Quasi Peak Detector Measurements

Frequency (MHz)	Line	Quasi Peak Level (dB μ V)	Limit (dB μ V)	Margin (dB)	Result
0.159000	Neutral	62.6	65.5	2.9	Complied
0.172500	Neutral	61.7	64.8	3.1	Complied
0.177000	Neutral	58.3	64.6	6.3	Complied
0.195000	Neutral	57.4	63.8	6.4	Complied
0.231000	Neutral	55.6	62.4	6.8	Complied
0.276000	Neutral	54.7	60.9	6.2	Complied
0.289500	Neutral	55.9	60.5	4.6	Complied
0.388500	Neutral	44.4	58.1	13.7	Complied
0.402000	Neutral	47.1	57.8	10.7	Complied
0.519000	Neutral	48.2	56.0	7.8	Complied
0.523500	Neutral	48.2	56.0	7.8	Complied
0.636000	Neutral	45.1	56.0	10.9	Complied
0.717000	Neutral	42.8	56.0	13.2	Complied
0.825000	Neutral	39.9	56.0	16.1	Complied
0.960000	Neutral	36.7	56.0	19.3	Complied

Transmit Mode AC Conducted Spurious Emissions (continued)**Results: Average Detector Measurements**

Frequency (MHz)	Line	Average Level (dB μ V)	Limit (dB μ V)	Margin (dB)	Result
0.343500	Neutral	30.3	49.1	18.8	Complied
0.393000	Neutral	39.5	48.0	8.5	Complied
0.640500	Neutral	30.5	46.0	15.5	Complied
0.690000	Neutral	30.9	46.0	15.1	Complied
0.739500	Neutral	31.6	46.0	14.4	Complied
0.789000	Neutral	31.9	46.0	14.1	Complied
0.838500	Neutral	31.8	46.0	14.2	Complied
0.888000	Neutral	31.7	46.0	14.3	Complied
0.937500	Neutral	31.6	46.0	14.4	Complied
1.185000	Neutral	30.6	46.0	15.4	Complied
1.284000	Neutral	28.3	46.0	17.7	Complied
1.333500	Neutral	28.4	46.0	17.6	Complied
1.383000	Neutral	28.0	46.0	18.0	Complied
1.432500	Neutral	28.1	46.0	17.9	Complied
1.477500	Neutral	28.2	46.0	17.8	Complied

Receiver/Idle Mode AC Conducted Spurious Emissions (continued)



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

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

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):	26
Relative Humidity (%):	35

Results: GPRS

Channel	Measured Frequency (MHz)	Antenna Polarity	Maximum Transmitter (dBm)	Limit (dBm)	Margin (dB)	Result
Bottom	824.2	Vertical	17.1	38.5	21.4	Complied
Middle	836.6	Vertical	16.8	38.5	21.7	Complied
Top	848.8	Horizontal	16.3	38.5	22.2	Complied

Note(s):

1. All modes were compared on each channel and the highest power recorded was subtracted from the limit to show the margin.

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

FCC Part:	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):	26
Relative Humidity (%):	30

Results: Middle Channel (836.6 MHz)

Temperature (°C)	Measured Frequency (MHz)	Frequency Error (Hz)	Frequency Error (ppm)	Limit (ppm)	Margin (ppm)	Result
-30	836.599963	-37	0.04	2.5	2.46	Complied
-20	836.600046	46	0.05	2.5	2.45	Complied
-10	836.600054	54	0.06	2.5	2.44	Complied
0	836.600045	45	0.06	2.5	2.44	Complied
10	836.600040	40	0.05	2.5	2.45	Complied
20	836.600039	39	0.05	2.5	2.45	Complied
30	836.600047	47	0.05	2.5	2.45	Complied
40	836.600038	38	0.05	2.5	2.45	Complied
50	836.600040	40	0.05	2.5	2.45	Complied

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

FCC Part:	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 (%):	30

Results: Middle Channel (836.6 MHz)

Supply Voltage (V)	Measured Frequency (MHz)	Frequency Error (Hz)	Frequency Error (ppm)	Limit (ppm)	Margin (ppm)	Result
3.650 (Cut-off)	836.600066	66	0.08	2.5	2.42	Complied
4.255	836.600073	73	0.09	2.5	2.41	Complied

5.2.7. Transmitter Occupied Bandwidth

Test Summary:

FCC Part:	2.1049
Test Method Used:	As detailed in ANSI C63.4 Section 13.1.7 and relevant annexes referencing FCC CFR Part 2.1049

Environmental Conditions:

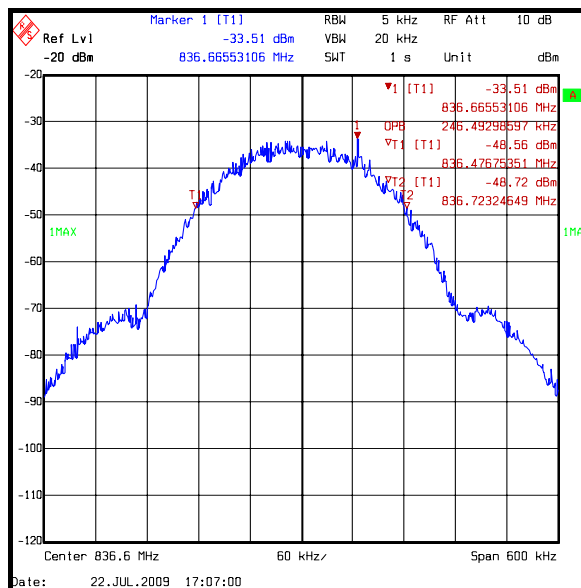
Temperature (°C):	26
Relative Humidity (%):	31

Results: GPRS

Channel	Frequency (MHz)	Occupied Bandwidth (kHz)
Middle	836.6	246.493

Note(s):

- Occupied bandwidth was measured using the spectrum analyser Occupied Bandwidth function.



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

FCC Part:	2.1053 & 22.917
Test Method Used:	As detailed in ANSI C63.4 Section8 and relevant annexes referencing FCC CFR Part 2.1049

Environmental Conditions:

Temperature (°C):	26
Relative Humidity (%):	35

Results: Bottom Channel

Frequency (MHz)	Peak Emission Level (dBm)	Limit (dBm)	Margin (dB)	Result
1648.44208	-19.6	-13.0	6.6	Complied
2472.64208	-21.4	-13.0	8.4	Complied
3296.78747	-31.9	-13.0	18.9	Complied

Results: Middle Channel

Frequency (MHz)	Peak Emission Level (dBm)	Limit (dBm)	Margin (dB)	Result
1673.14188	-21.3	-13.0	8.3	Complied
2510.09058	-22.3	-13.0	9.3	Complied
3346.52275	-28.5	-13.0	15.5	Complied

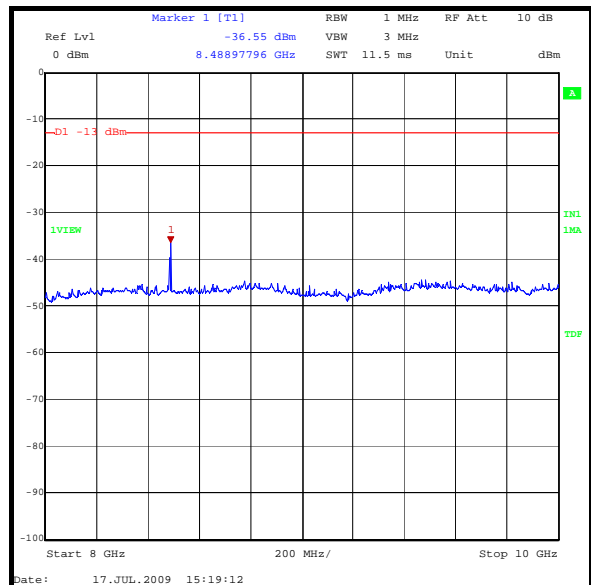
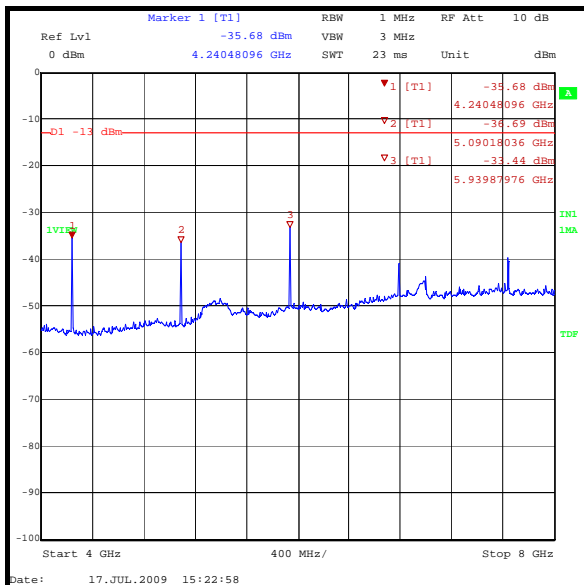
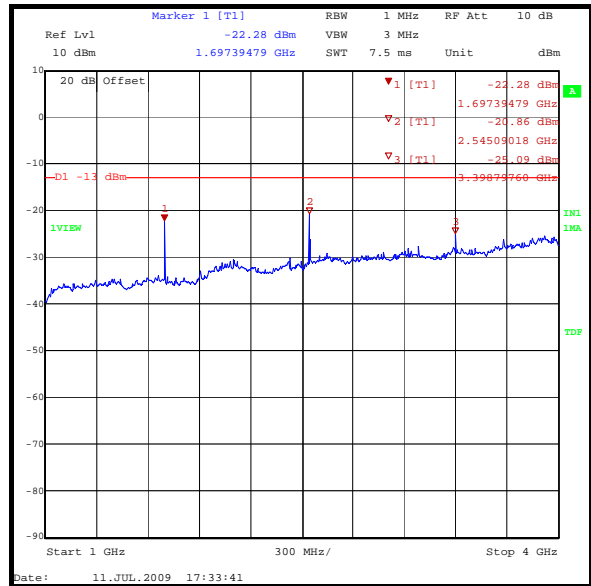
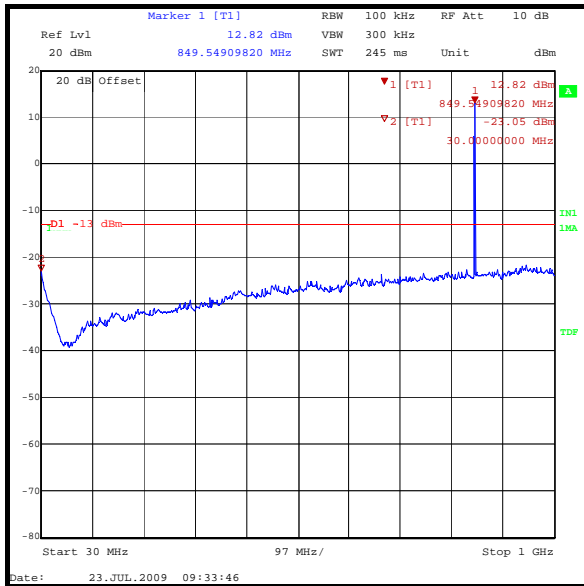
Results: Top Channel

Frequency (MHz)	Peak Emission Level (dBm)	Limit (dBm)	Margin (dB)	Result
1697.40957	-21.7	-13.0	8.7	Complied
2546.40531	-22.3	-13.0	9.3	Complied
3394.90942	-30.6	-13.0	17.6	Complied

Note(s):

1. The uplink and downlink traffic channels are shown on the 30 MHz to 1 GHz plot.
2. All other emissions were more than 20dB below the limit.

Transmitter Out of Band Radiated Emissions (continued)



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

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

FCC Part:	2.1053 & 22.917
Test Method Used:	As detailed in ANSI C63.4 Section13 and relevant annexes referencing FCC CFR Part 2.1049

Environmental Conditions:

Temperature (°C):	25
Relative Humidity (%):	34

Results: GPRS - Bottom Band Edge

Frequency (MHz)	Peak Emission Level (dBm)	Limit (dBm)	Margin (dB)	Result
824	-15.9	-13.0	2.9	Complied

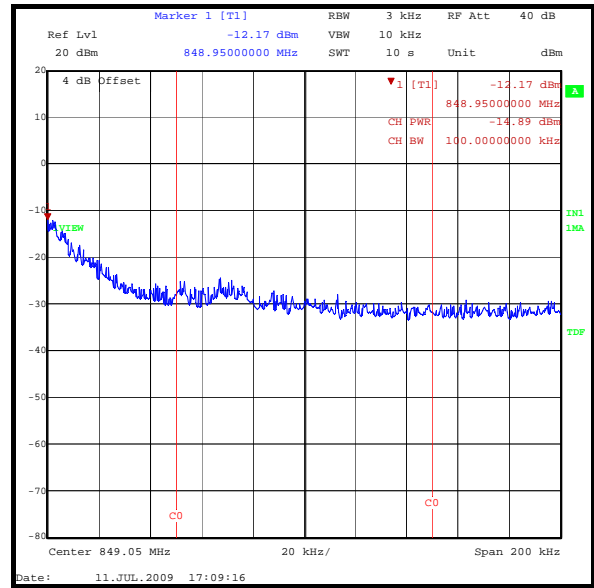
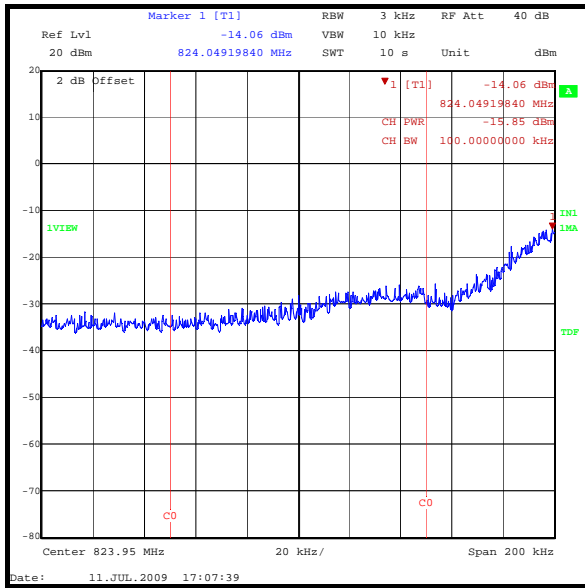
Results: GPRS - Top Band Edge

Frequency (MHz)	Peak Emission Level (dBm)	Limit (dBm)	Margin (dB)	Result
849	-14.9	-13.0	1.9	Complied

Note(s):

1. The band edge result was obtained by integrating the 100 kHz strip immediately adjacent to the band edge using a channel power function of the measurement analyser.

Transmitter Radiated Emissions at Band Edges (continued)



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

5.3. Test Results – FCC Part 24**5.3.1. Idle Mode AC Conducted Spurious Emissions****Test Summary:**

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

Environmental Conditions:

Temperature (°C):	26
Relative Humidity (%):	36

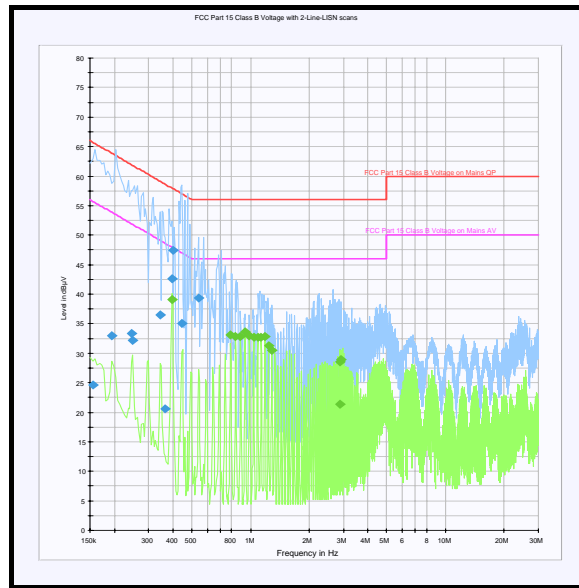
Results: Quasi Peak Detector Measurements

Frequency (MHz)	Line	Quasi Peak Level (dBμV)	Limit (dBμV)	Margin (dB)	Result
0.154500	Live 1	24.6	65.8	41.2	Complied
0.195000	Live 1	33.0	63.8	30.8	Complied
0.244500	Live 1	33.3	61.9	28.6	Complied
0.249000	Live 1	32.2	61.8	29.6	Complied
0.343500	Live 1	36.5	59.1	22.6	Complied
0.366000	Live 1	20.6	58.6	38.0	Complied
0.393000	Live 1	42.6	58.0	15.4	Complied
0.397500	Live 1	47.4	57.9	10.5	Complied
0.442500	Live 1	35.0	57.0	22.0	Complied
0.541500	Neutral	39.4	56.0	16.6	Complied

Idle Mode AC Conducted Spurious Emissions (continued)**Results: Average Detector Measurements**

Frequency (MHz)	Line	Average Level (dB μ V)	Limit (dB μ V)	Margin (dB)	Result
0.393000	Neutral	39.1	48.0	8.9	Complied
0.789000	Neutral	33.1	46.0	12.9	Complied
0.838500	Neutral	32.8	46.0	13.2	Complied
0.888000	Neutral	32.8	46.0	13.2	Complied
0.937500	Neutral	33.6	46.0	12.4	Complied
0.987000	Neutral	33.0	46.0	13.0	Complied
1.036500	Neutral	32.8	46.0	13.2	Complied
1.086000	Neutral	32.7	46.0	13.3	Complied
1.135500	Neutral	32.7	46.0	13.3	Complied
1.185000	Neutral	32.8	46.0	13.2	Complied
1.234500	Neutral	31.2	46.0	14.8	Complied
1.284000	Neutral	30.4	46.0	15.6	Complied
2.863500	Neutral	28.5	46.0	17.5	Complied
2.868000	Neutral	21.3	46.0	24.7	Complied
2.917500	Neutral	28.9	46.0	17.1	Complied

Idle Mode AC Conducted Spurious Emissions (continued)



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

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

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

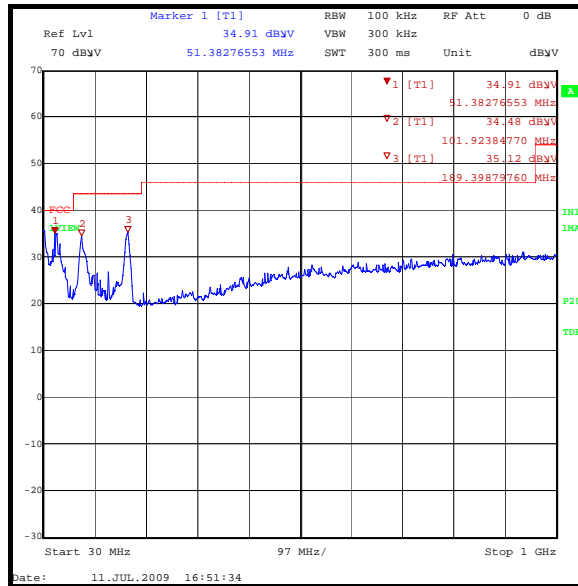
Environmental Conditions:

Temperature (°C):	26
Relative Humidity (%):	35

Results:

Frequency (MHz)	Antenna Polarity	Level (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Result
57.443011	Vertical	32.0	40.0	8.0	Complied
102.493673	Vertical	30.7	43.0	12.3	Complied
189.618092	Horizontal	36.3	46.0	9.7	Complied

Idle Mode Radiated Spurious Emissions (continued)



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

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

FCC Part:	15.109
Frequency Range:	1 GHz to 12.75 GHz
Test Method Used:	As detailed in ANSI C63.4 Section 8 and relevant annexes

Environmental Conditions:

Temperature (°C):	26
Relative Humidity (%):	35

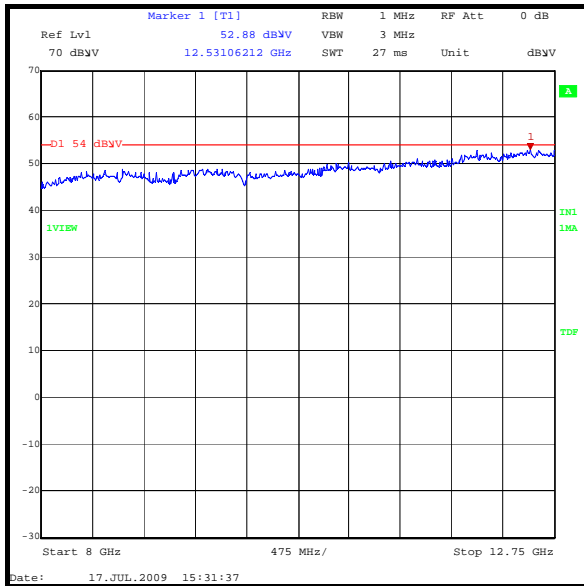
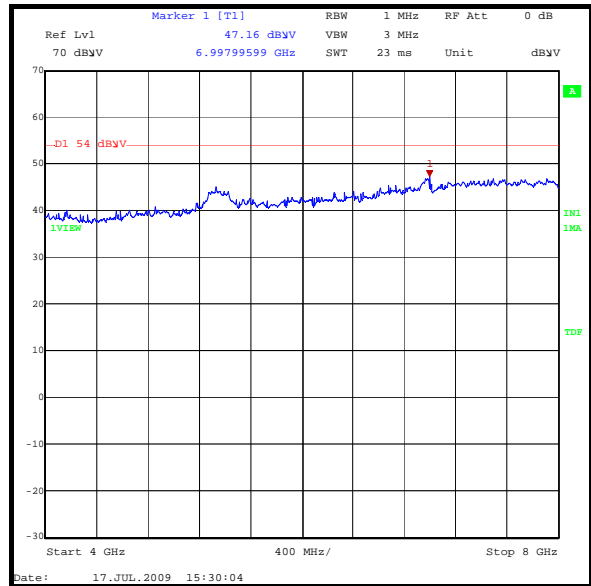
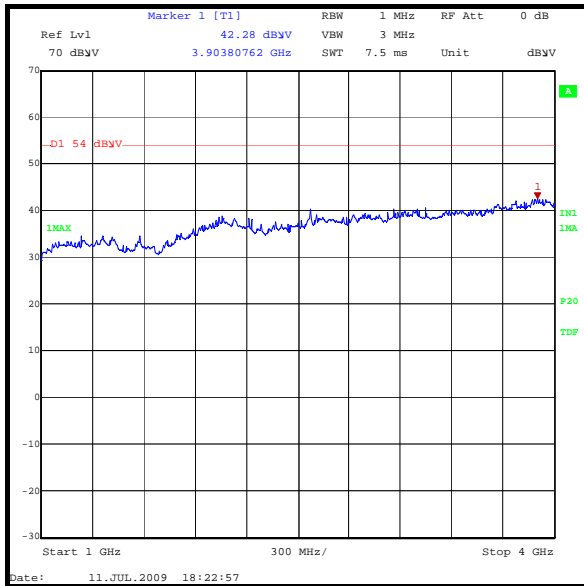
Results:

Frequency (GHz)	Antenna Polarity	Level (dBμV/m)	Average Limit (dBμV/m)	Margin (dB)	Result
12.531	Vertical	52.9	54.0	1.1	Complied

Note(s):

1. No spurious emissions were detected above the noise floor of the measuring receiver; therefore, the highest peak noise floor reading of the measuring receiver was recorded as shown in the table above. The peak level was compared to the average limit as opposed to being compared to the peak limit because this is the more onerous limit.

Idle Mode Radiated Spurious Emissions (continued)



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

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

FCC Part:	15.207(a)
Test Method Used:	As detailed in ANSI C63.4 Section 7 and relevant annexes

Environmental Conditions:

Temperature (°C):	26
Relative Humidity (%):	35

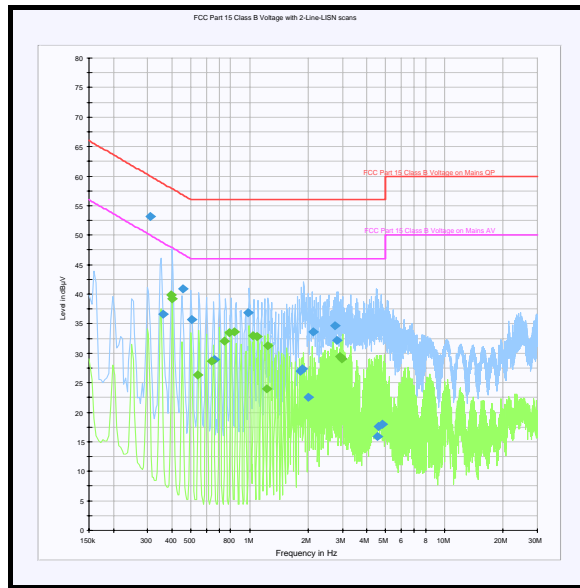
Results: Quasi Peak Detector Measurements

Frequency (MHz)	Line	Quasi Peak Level (dB μ V)	Limit (dB μ V)	Margin (dB)	Result
0.307500	Live 1	53.1	60.0	6.9	Complied
0.361500	Neutral	36.7	58.7	22.0	Complied
0.456000	Live 1	41.0	56.8	15.8	Complied
0.505500	Neutral	35.7	56.0	20.3	Complied
0.658500	Neutral	29.0	56.0	27.0	Complied
0.982500	Neutral	36.8	56.0	19.2	Complied
1.833000	Neutral	27.0	56.0	29.0	Complied
1.864500	Live 1	27.4	56.0	28.6	Complied
2.008500	Live 1	22.6	56.0	33.4	Complied
2.121000	Neutral	33.6	56.0	22.4	Complied
2.751000	Live 1	34.6	56.0	21.4	Complied
2.800500	Live 1	32.2	56.0	23.8	Complied
4.510500	Live 1	15.9	56.0	40.1	Complied
4.560000	Live 1	17.6	56.0	38.4	Complied
4.803000	Live 1	18.0	56.0	38.0	Complied

Transmitter AC Conducted Spurious Emissions (continued)**Results: Average Detector Measurements**

Frequency (MHz)	Line	Average Level (dBμV)	Limit (dBμV)	Margin (dB)	Result
0.393000	Neutral	39.9	48.0	8.1	Complied
0.397500	Neutral	39.3	47.9	8.6	Complied
0.541500	Neutral	26.4	46.0	19.6	Complied
0.640500	Neutral	28.7	46.0	17.3	Complied
0.739500	Neutral	32.0	46.0	14.0	Complied
0.789000	Neutral	33.5	46.0	12.5	Complied
0.838500	Neutral	33.6	46.0	12.4	Complied
1.036500	Neutral	32.9	46.0	13.1	Complied
1.086000	Neutral	32.9	46.0	13.1	Complied
1.230000	Neutral	24.0	46.0	22.0	Complied
1.234500	Neutral	31.3	46.0	14.7	Complied
2.917500	Neutral	29.4	46.0	16.6	Complied
2.962500	Neutral	29.1	46.0	16.9	Complied

Transmitter AC Conducted Spurious Emissions (continued)



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

5.3.4. Transmitter Equivalent Isotropic Radiated Power (EIRP)**Test Summary:**

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 (%):	35

Results: GPRS

Channel	Measured Frequency (MHz)	Antenna Polarity	Maximum Transmitter (dBm)	Limit (dBm)	Margin (dB)	Result
Bottom	1850.2	Vertical	29.2	33.0	3.8	Complied
Middle	1879.8	Horizontal	29.8	33.0	3.2	Complied
Top	1909.8	Horizontal	27.9	33.0	5.1	Complied

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

FCC Part:	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):	26
Relative Humidity (%):	30

Results: Bottom Channel

Temperature (°C)	Frequency Error (Hz)	Measured Frequency (MHz)	Lower Band Edge Limit (MHz)	Margin (MHz)	Result
-30	-130	1850.199870	1850	0.199870	Complied
-20	-120	1850.199880	1850	0.199880	Complied
-10	-120	1850.199880	1850	0.199880	Complied
0	-120	1850.199880	1850	0.199880	Complied
10	-122	1850.199878	1850	0.199898	Complied
20	-105	1850.199895	1850	0.199895	Complied
30	-118	1850.199882	1850	0.199882	Complied
40	-105	1850.199895	1850	0.199895	Complied
50	-106	1850.199894	1850	0.199989	Complied

Results: Top Channel

Temperature (°C)	Frequency Error (Hz)	Measured Frequency (MHz)	Upper Band Edge Limit (MHz)	Margin (MHz)	Result
-30	-26	1909.799974	1910	0.200026	Complied
-20	27	1909.800027	1910	0.199973	Complied
-10	26	1909.800026	1910	0.199974	Complied
0	27	1909.800027	1910	0.199973	Complied
10	33	1909.800033	1910	0.199967	Complied
20	43	1909.800043	1910	0.199957	Complied
30	40	1909.800040	1910	0.199960	Complied
40	43	1909.800043	1910	0.199957	Complied
50	60	1909.800060	1910	0.199940	Complied

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

FCC Part:	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):	26
Relative Humidity (%):	30

Results: Bottom Channel (1850.2 MHz)

Supply Voltage (V)	Frequency Error (Hz)	Measured Frequency (MHz)	Lower Band Edge Limit (MHz)	Margin (MHz)	Result
3.650 (Cut-off)	-122	1850.199878	1850	0.199878	Complied
4.255	-108	1850.199892	1850	0.199892	Complied

Results: Top Channel (1909.8 MHz)

Supply Voltage (V)	Frequency Error (Hz)	Measured Frequency (MHz)	Upper Band Edge Limit (MHz)	Margin (MHz)	Result
3.650 (Cut-off)	42	1909.800042	1910	0.199958	Complied
4.255	30	1909.800030	1910	0.199970	Complied

5.3.7. Transmitter Occupied Bandwidth

Test Summary:

FCC Part:	24.238
Test Method Used:	As detailed in ANSI C63.4 Section 13.1.7 and relevant annexes referencing FCC CFR Part 2.1049 (see note below)

Environmental Conditions:

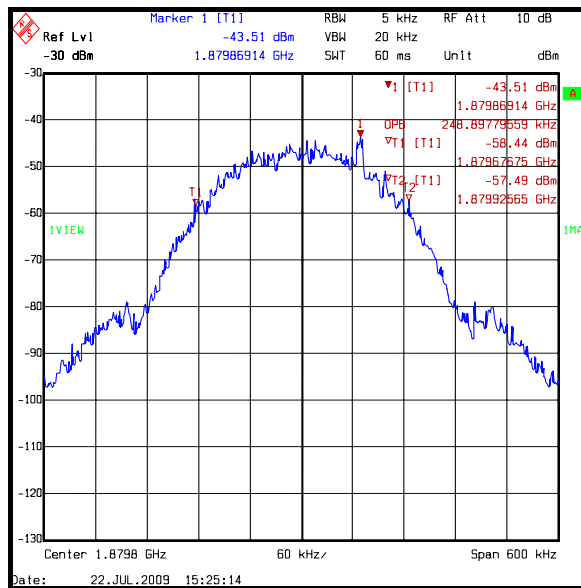
Temperature (°C):	26
Relative Humidity (%):	32

Results: GPRS

Channel	Frequency (MHz)	Occupied Bandwidth (kHz)
Middle	1879.8	248.898

Note(s):

- In lieu of the test method detailed in ANSI C63.4 Section 13.1.7 the 99% occupied bandwidth was measured using the Occupied Bandwidth function of the spectrum analyser.



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

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):	25
Relative Humidity (%):	35

Results: Bottom Channel

Frequency (MHz)	Peak Emission Level (dBm)	Limit (dBm)	Margin (dB)	Result
3700.242690	-16.2	-13.0	3.2	Complied
5550.610020	-34.1	-13.0	21.1	Complied
7400.57756	-24.1	-13.0	11.1	Complied

Results: Middle Channel

Frequency (MHz)	Peak Emission Level (dBm)	Limit (dBm)	Margin (dB)	Result
3759.550900	-16.6	-13.0	3.6	Complied
5639.365930	-31.6	-13.0	18.6	Complied
7518.985570	-24.6	-13.0	11.6	Complied

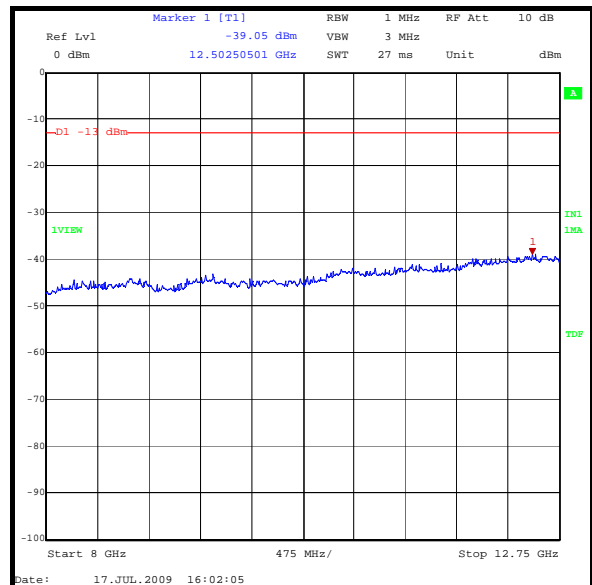
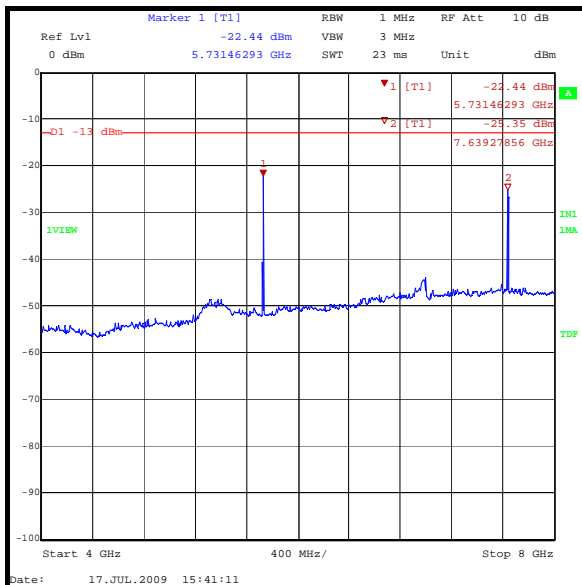
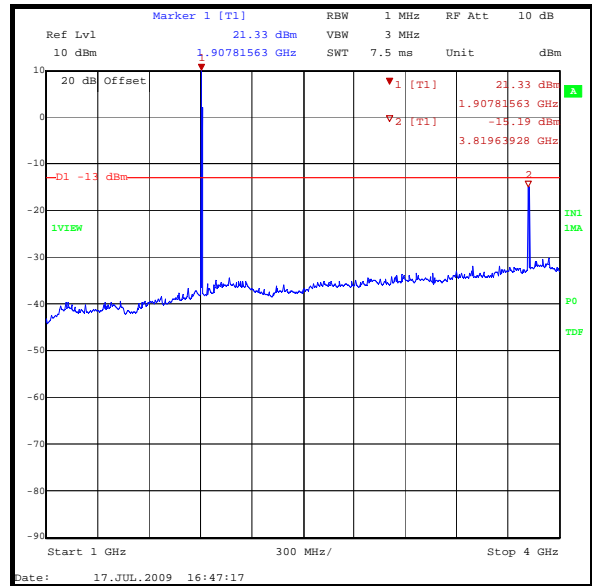
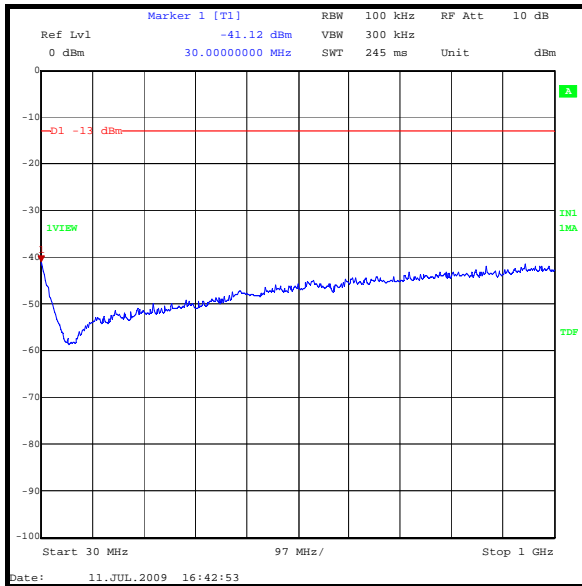
Results: Top Channel

Frequency (MHz)	Peak Emission Level (dBm)	Limit (dBm)	Margin (dB)	Result
3819.557920	-16.3	-13.0	3.3	Complied
5729.164580	-23.3	-13.0	10.3	Complied
7639.095690	-23.0	-13.0	10.0	Complied

Note(s):

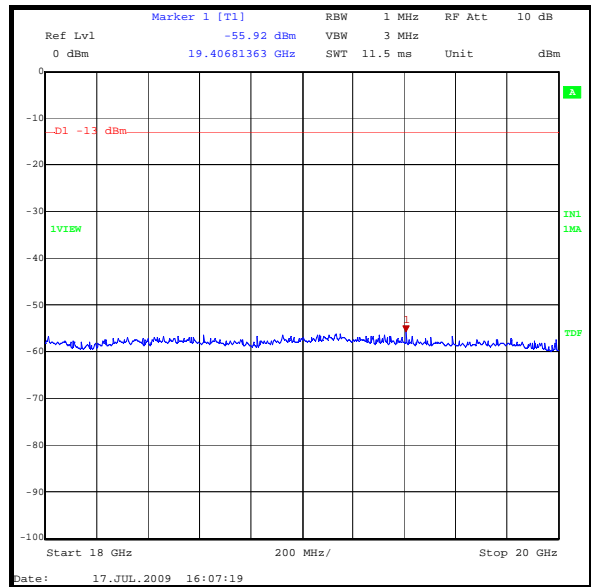
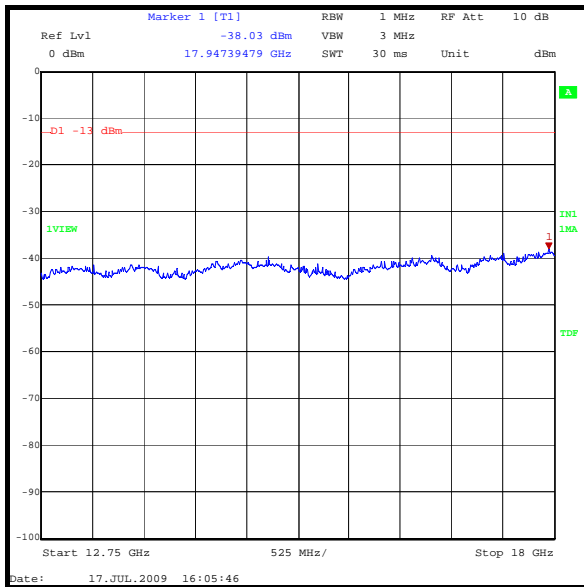
1. The transmitter fundamental is shown on the 1 GHz to 4 GHz plot at 1907.8 MHz

Transmitter Out of Band Radiated Emissions (continued)



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

Transmitter Out of Band Radiated Emissions (continued)



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

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

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
Relative Humidity (%):	35

Results: GPRS - Bottom Band Edge

Frequency (MHz)	Peak Emission Level (dBm)	Limit (dBm)	Margin (dB)	Result
1850	-15.0	-13.0	2.0	Complied

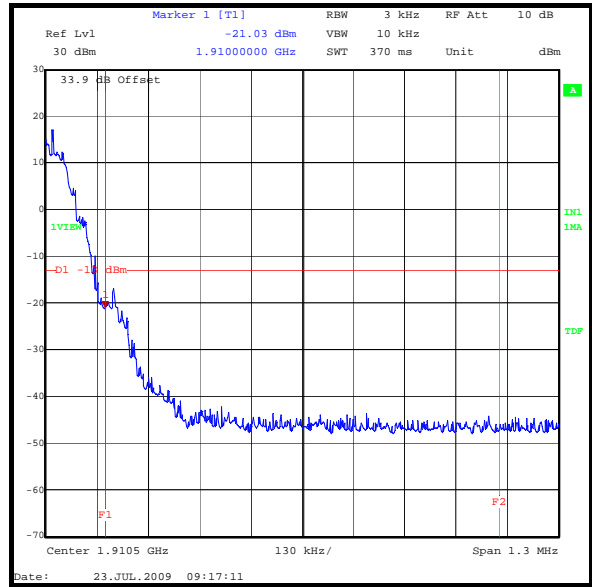
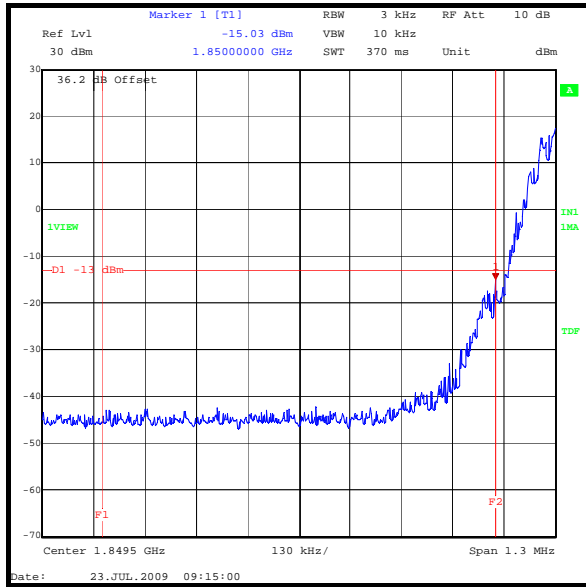
Results: GPRS - Top Band Edge

Frequency (MHz)	Peak Emission Level (dBm)	Limit (dBm)	Margin (dB)	Result
1910	-21.0	-13.0	8.0	Complied

Note(s):

1. The band edge result was obtained by integrating the 100 kHz strip immediately adjacent to the band edge using a channel power function of the measurement analyser.

Transmitter Radiated Emissions at Band Edges (continued)



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

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%	±3.72 dB
Effective Radiated Power (ERP)	Not applicable	95%	±2.94 dB
Equivalent Isotropic Radiated Power (EIRP)	Not applicable	95%	±2.94 dB
Frequency Stability	Not applicable	95%	±0.92 ppm
Occupied Bandwidth	824 to 849 MHz	95%	±0.92 ppm
Radiated Spurious Emissions	30 MHz to 1000 MHz	95%	±4.64 dB
Radiated Spurious Emissions	1 GHz to 26 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 Last Calibrated	Cal. Interval (Months)
A057	High Pass Filter	AERIAL FACILITIES LTD	HP-950-5N	4389B	Calibration not required	-
A1299	Antenna	Schaffner	CBL6143	5094	28 Jul 2008	12
A1516	Universal Radio Communications Tester	Rohde & Schwarz	CMU200	835687/011	Calibration not required	-
A1534	Pre Amplifier	Hewlett Packard	8449B OPT H02	3008A00405	Calibrated before use	-
A1818	Antenna	EMCO	3115	00075692	25 Oct 2008	12
A1830	Pulse Limiter	Rhode & Schwarz	ESH3-Z2	100668	05 Jan 2009	12
A1933	3 GHz High Pass Filter	AtlanTEC RF	AFH-03000	30R-JFBN07-001	14 October 2009	12
A649	Single Phase LISN	Rohde & Schwarz	ESH3-Z5	825562/008	19 Mar 2009	12
C363	Cable	Rosenberger	RG142	None	29 Mar 2009	12
E013	Environmental Chamber	Sanyo	ATMOS chamber	None	Calibrated before use	-
K0002	Site Reference 4421	Rainford EMC	N/A	N/A	26 August 2008	12
K0004	Site Reference 4428	RFI Global Services Ltd	N/A	N/A	Calibration not required	-
K0008	Site Reference 4422	RFI Global Services Ltd	N/A	N/A	Calibration not required	-
M1124	Spectrum Analyser	Rohde & Schwarz	ESIB26	100046K	09 Mar 2009	12
M1242	Spectrum Analyser	Rohde & Schwarz, Inc.	FSEM30	845986/022	09 Dec 2008	12
M1263	Test Receiver	Rohde & Schwarz	ESIB7	100265	22 Apr 2009	12
M1379	Test Receiver	Rohde and Schwarz	ESIB7	100330	14 Aug 2008	12
S505	Power Supply Unit	Weir	4000	964214/164	Calibration not required	-

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