TEST REPORT
FROM
RFI GLOBAL SERVICES LTD

Test of: GE865

To: FCC Part 22: 2008 Subpart H, RSS-Gen Issue 2 June 2007 and
RSS 132 Issue 2 September 2005

Test Report Serial No:
RFI/RPT2/RP74296JD04A

Supersedes Test Report Serial No:
RFI/RPT1/RP74296JD04A

This Test Report Is Issued Under The Authority Of Brian Watson, Operations Director: 	
Checked By:	A.HENRIQUES
Signature: 	
Date of Issue:	04 June 2009

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1. Customer Information

Company Name:	Telit Communications S.p.A.
Address:	Telit Communications S.p.A. Via Stazione di Prosecco, 5/B I - 34010 Sgonico (Trieste), Italy

2. Summary of Testing

2.1. General Information

Specification Reference:	47CFR22
Specification Title:	Code of Federal Regulations Volume 47 (Telecommunications) 2008: Part 22 Subpart H (Public Mobile Services)
Specification Reference:	RSS-GEN Issue 2 June 2007
Specification Title:	General Requirements and Information for the Certification of Radiocommunication Equipment
Specification Reference:	RSS-132 Issue 2 Sep 2005
Specification Title:	Cellular Telephones Employing New Technologies Operating in the Bands 824-849 MHz and 869-894 MHz
Specification Reference:	SRSP-503 Issue 7 Sep 2008
Specification Title:	Technical Requirements for Cellular Radiotelephone Systems Operating in the Bands 824 – 849 MHz and 869 – 894 MHz
Site Registration:	FCC: 209735 Industry Canada: 3245B-2
Location of Testing:	RFI Global Services Ltd, Wade Road, Basingstoke, Hampshire, RG24 8AH.
Test Dates:	14 April to 17 April 2009

2.2. Summary of Test Results

FCC Reference (47CFR)	IC Reference	Measurement	Port Type	Result
Part 15.109	RSS-Gen 4.10/6 RSS-132 4.6	Receiver/Idle Mode Radiated Spurious Emissions	Enclosure	✓
Part 2.1046(a)	RSS-132 4.4 SRSP-503 5.1.3	Transmitter Carrier Output Power	Antenna Terminals	✓
Part 22.355	RSS-132 4.3 RSS Gen 4.7	Transmitter Frequency Stability (Temperature & Voltage Variation)	Antenna	✓
Part 2.1049	RSS-Gen 4.6.1	Transmitter Occupied Bandwidth	Antenna	✓
Part 2.1053/22.917	RSS-132 4.5	Transmitter Out of Band Radiated Emissions	Antenna	✓
Part 2.1053/22.917	RSS-132 4.5	Transmitter Band Edge Radiated Emissions	Antenna	✓

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 (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.

2.4. 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:	Telit
Model Name or Number:	GE865
IMEI Number:	357938029002359
Hardware Version Num:	1
Software Version:	10.00.000-B006
Industry Canada ID Number:	5131A-GE865
FCC ID Number:	RI7GE865

3.2. Description of EUT

The equipment under test is a quad band GSM/GPRS modem mounted on a Telit EVK2 development board. The EUT is mounted to the development board on four support posts and connected by two 40 pin connectors.

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:	GSM 850		
Type of Radio Device:	Transceiver		
Mode:	GSM/GPRS		
Modulation Type:	GMSK		
Channel Spacing:	200 kHz		
Power Supply Requirement(s):	Nominal	3.23 V	
	Minimum	3.80 V	
	Maximum	4.37 V	
Maximum Output Power (ERP):	GSM	33.7 dBm	
	GPRS	33.5 dBm	
Transmit Frequency Range:	824 to 849 MHz		
Transmit Channels Tested:	**Channel ID**	**Channel Number**	**Channel Frequency (MHz)**
	Bottom	128	824.2
	Middle	190	836.4
	Top	251	848.8
Receive Frequency Range:	869 to 894 MHz		
Receive Channels Tested:	**Channel ID**	**Channel Number**	**Channel Frequency (MHz)**
	Bottom	128	824.2
	Middle	190	836.4
	Top	251	848.8

3.5. Support Equipment

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

Description:	Development board
Model Name or Number:	EVK2
Serial Number:	113920002257

Description:	Monopole antenna with magnetic base
Model Name or Number:	Not stated
Serial Number:	Not stated
Cable Length and Type:	2.5 metres / RG174 coaxial terminated with SMA male
Connected to Port:	RF output port on EUT

4. Operation and Monitoring of the EUT during Testing

4.1. Operating Modes

The EUT was tested in the following operating modes, unless otherwise stated:

- Receiver/Idle mode.
- Constantly transmitting at full power on bottom, centre and top channels as required.
- Occupied bandwidth, output power and band edge tests were performed with the EUT in GSM single timeslot circuit switched and GPRS Multislot Class 10 with the unit transmitting on two timeslots in the uplink.
- Transmitter radiated spurious emissions pre-scans were performed with the EUT transmitting in circuit switched mode. Final measurements were performed with the EUT in circuit switched and GPRS modes.

4.2. Configuration and Peripherals

The EUT was tested in the following configuration unless otherwise stated:

- Connected to a GSM/GPRS system simulator, operating in transceiver mode.
- Powered from a bench power supply connected to the 3.8V IN port on the development board.
- A ¼ wave antenna on a magnetic base was supplied by the Client. The coaxial cable from the antenna was connected to the EUT RF port (SMA connector). The antenna and associated magnetic base were placed onto a flat metal plate measuring 150mm x 150mm, all radiated tests were performed in this configuration. Tests were performed with the antenna mounted vertically and horizontally to maximise radiated emissions.
- There is no integral antenna on the EUT.

5. Measurements, Examinations and Derived Results

5.1. General Comments

Measurement uncertainties are evaluated in accordance with current best practice. Our reported expanded uncertainties are based on standard uncertainties, which are multiplied by an appropriate coverage factor to provide a statistical confidence level of approximately 95%. Please refer to *Section 6. Measurement Uncertainty* for details.

5.2. Test Results

5.3. 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:

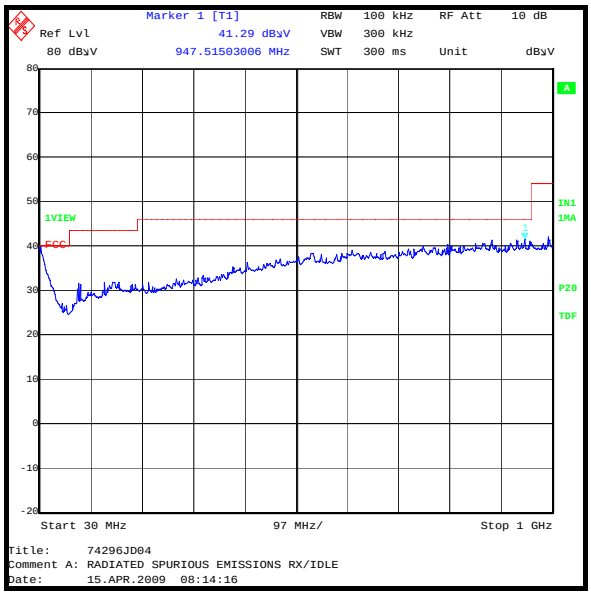
Temperature (°C):	25
Relative Humidity (%):	29

Results:

Frequency (MHz)	Antenna Polarity	Level (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Result
947.515	Horizontal	41.3	46.0	4.7	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.



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:

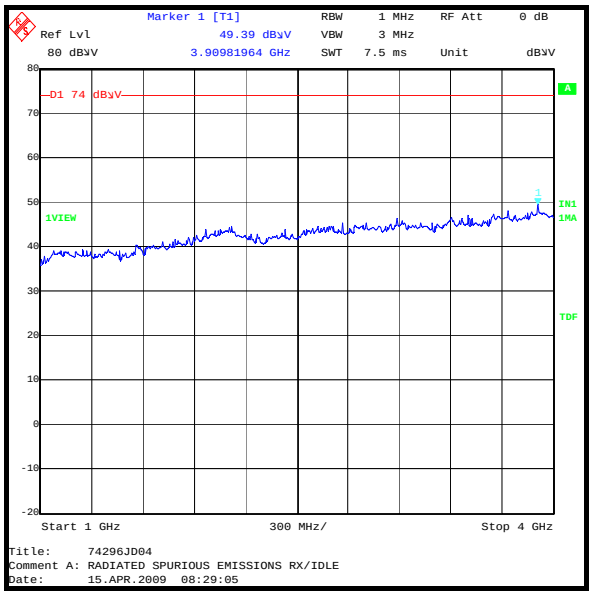
Temperature (°C):	25
Relative Humidity (%):	29

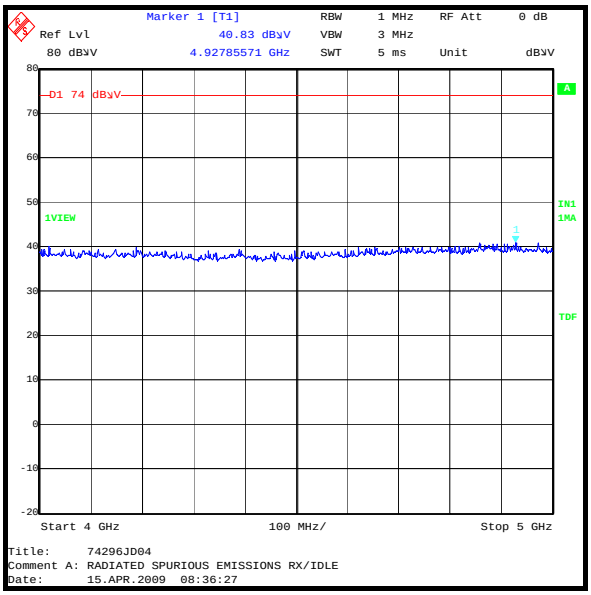
Results: Highest Peak Level

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	43.9	5.5	49.4	54.0	4.6	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.





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

5.4. Transmitter Carrier Output Power

Test Summary:

FCC Part:	2.1046(a)
Test Method Used:	As detailed in ANSI TIA-603-C-2004 Section 2.2.1 referencing FCC CFR Part 2.1046(a)

Environmental Conditions:

Temperature (°C):	25
Relative Humidity (%):	32

Results: GSM Circuit Switched

Channel	Measured Frequency (MHz)	Maximum Antenna Gain (dB)	Conducted RF O/P Power (dBm)	Calculated ERP (dBm)	Limit ERP (dBm)	Margin (dB)	Result
Bottom	824.2	3.0	31.8	34.8	38.5	3.7	Complied
Middle	836.4	3.0	31.6	34.6	38.5	3.9	Complied
Top	848.8	3.0	31.6	34.6	38.5	3.9	Complied

Results: GPRS

Channel	Measured Frequency (MHz)	Maximum Antenna Gain (dB)	Conducted RF O/P Power (dBm)	Calculated ERP (dBm)	Limit ERP (dBm)	Margin (dB)	Result
Bottom	824.2	3.0	31.7	34.7	38.5	3.8	Complied
Middle	836.4	3.0	31.5	34.5	38.5	4.0	Complied
Top	848.8	3.0	31.6	34.6	38.5	3.9	Complied

Note(s):

1. The conducted output power was added to the maximum allowable gain stated by the client and compared against the FCC Part 22 ERP limit.

5.5. 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):	25
Relative Humidity (%):	32

Results: Middle Channel (836.4 MHz)

Temperature (°C)	Measured Frequency (MHz)	Frequency Error (Hz)	Frequency Error (ppm)	Limit (ppm)	Margin (ppm)	Result
-30	836.400031	31	0.0371	2.5	2.4629	Complied
-20	836.400029	29	0.0347	2.5	2.4653	Complied
-10	836.400026	26	0.0311	2.5	2.4689	Complied
0	836.400024	24	0.0287	2.5	2.4713	Complied
10	836.400023	23	0.0275	2.5	2.4725	Complied
20	836.400023	23	0.0275	2.5	2.4725	Complied
30	836.400021	21	0.0251	2.5	2.4749	Complied
40	836.400016	16	0.0191	2.5	2.4809	Complied
50	836.400020	20	0.0239	2.5	2.4761	Complied

5.6. 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):	28
Relative Humidity (%):	29

Results: Middle Channel (836.4 MHz)

Supply Voltage (V)	Measured Frequency (MHz)	Frequency Error (Hz)	Frequency Error (ppm)	Limit (ppm)	Margin (ppm)	Result
3.23	836.400041	41	0.0490	2.5	2.4510	Complied
4.37	836.400021	21	0.0251	2.5	2.4749	Complied

5.7. Transmitter Occupied Bandwidth

Test Summary:

FCC Part:	2.1049
Test Method Used:	As detailed in ANSI C63.4 Section13.1.7 and relevant annexes referencing FCC CFR Part 2.1049 (see note below)

Environmental Conditions:

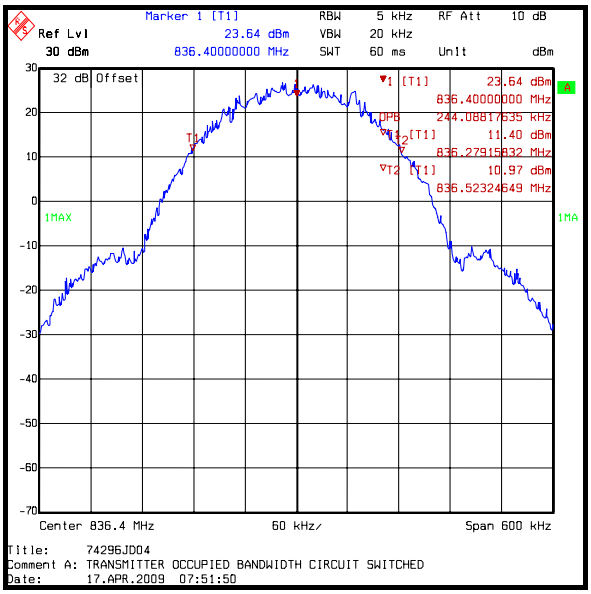
Temperature (°C):	24
Relative Humidity (%):	34

Results: GSM Circuit Switched

Channel	Frequency (MHz)	Occupied Bandwidth (kHz)
Middle	836.4	244.088

Note(s):

1. 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.



Transmitter Occupied Bandwidth (continued)

Test Summary:

FCC Part:	2.1049
Test Method Used:	As detailed in ANSI C63.4 Section13.1.7 and relevant annexes referencing FCC CFR Part 2.1049 (see note below)

Environmental Conditions:

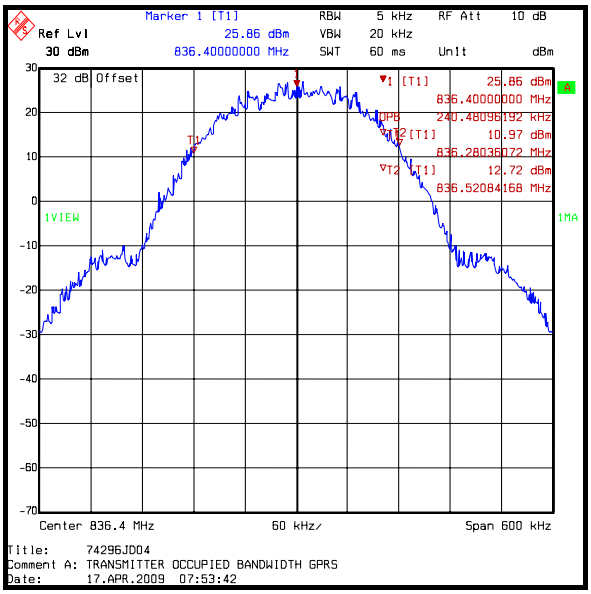
Temperature (°C):	24
Relative Humidity (%):	34

Results: GPRS

Channel	Frequency (MHz)	Occupied Bandwidth (kHz)
Middle	836.4	240.481

Note(s):

1. 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.



5.8. Transmitter Out of Band Radiated Emissions

Test Summary:

FCC Part:	2.1053 & 22.917
Frequency Range:	30 MHz to 10 GHz
Test Method Used:	As detailed in ANSI TIA-603-C-2004 Section 2.2.12 referencing FCC CFR Part 2.1053

Environmental Conditions:

Temperature (°C):	26
Relative Humidity (%):	27

Results: Bottom Channel GSM Circuit Switched

Frequency (MHz)	Peak Emission Level (dBm)	Limit (dBm)	Margin (dB)	Result
1648.595	-39.1	-13.0	26.1	Complied
4945.110	-49.2	-13.0	36.2	Complied
5768.930	-43.5	-13.0	30.5	Complied
6593.451	-43.8	-13.0	30.8	Complied
7417.471	-33.1	-13.0	20.1	Complied

Results: Middle Channel GSM Circuit Switched

Frequency (MHz)	Peak Emission Level (dBm)	Limit (dBm)	Margin (dB)	Result
1672.736	-38.9	-13.0	25.9	Complied
5018.851	-48.4	-13.0	35.4	Complied
5855.032	-41.6	-13.0	28.6	Complied
6690.629	-41.0	-13.0	28.0	Complied
7527.513	-32.7	-13.0	19.7	Complied

Results: Top Channel GSM Circuit Switched

Frequency (MHz)	Peak Emission Level (dBm)	Limit (dBm)	Margin (dB)	Result
1697.445	-41.1	-13.0	28.1	Complied
5092.996	-46.9	-13.0	33.9	Complied
5941.876	-41.7	-13.0	28.7	Complied
6791.014	-41.7	-13.0	28.7	Complied
7638.569	-33.7	-13.0	20.7	Complied

Transmitter Out of Band Radiated Emissions (Continued)

Results: Bottom Channel GPRS

Frequency (MHz)	Peak Emission Level (dBm)	Limit (dBm)	Margin (dB)	Result
1648.655	-38.9	-13.0	25.9	Complied
4945.352	-45.1	-13.0	32.1	Complied
5769.092	-44.2	-13.0	31.2	Complied
6594.012	-45.4	-13.0	32.4	Complied
7418.052	-32.9	-13.0	19.9	Complied

Results: Middle Channel GPRS

Frequency (MHz)	Peak Emission Level (dBm)	Limit (dBm)	Margin (dB)	Result
1672.659	-39.8	-13.0	26.8	Complied
5018.752	-47.9	-13.0	34.9	Complied
5854.391	-41.7	-13.0	28.7	Complied
6691.631	-41.0	-13.0	28.0	Complied
7526.848	-33.0	-13.0	20.0	Complied

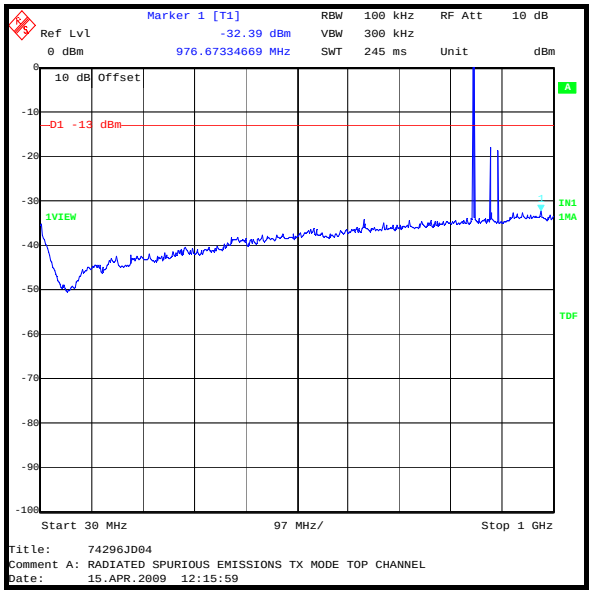
Results: Top Channel GPRS

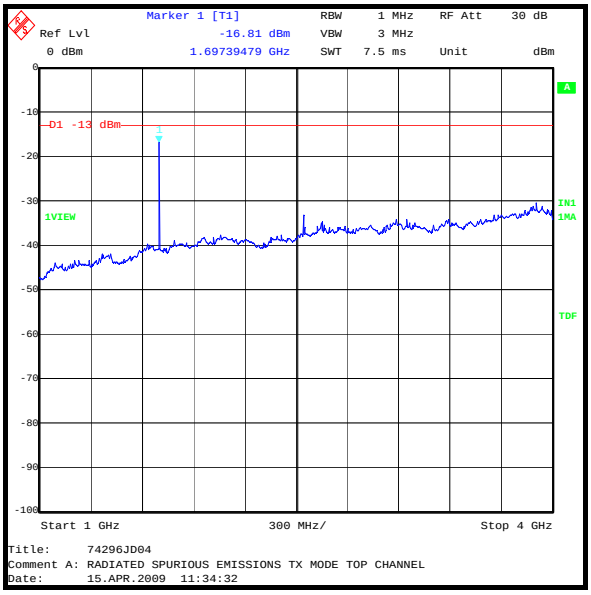
Frequency (MHz)	Peak Emission Level (dBm)	Limit (dBm)	Margin (dB)	Result
1697.685	-41.0	-13.0	28.0	Complied
5093.257	-46.1	-13.0	33.1	Complied
5941.110	-41.7	-13.0	28.7	Complied
6790.589	-41.8	-13.0	28.8	Complied
7639.914	-34.0	-13.0	21.0	Complied

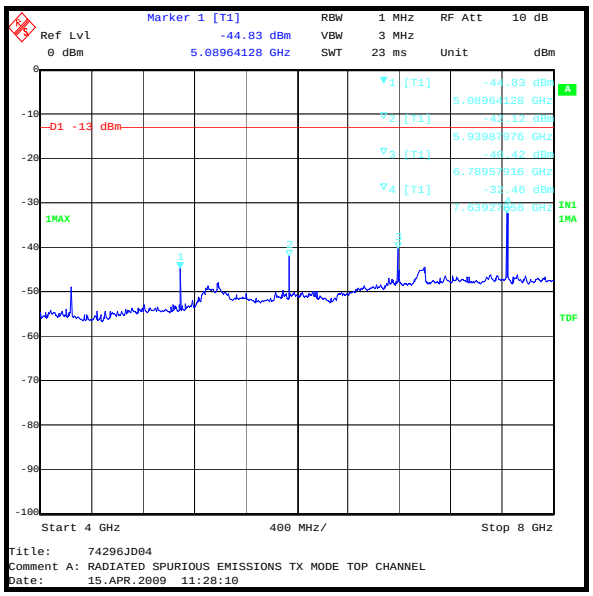
Note(s):

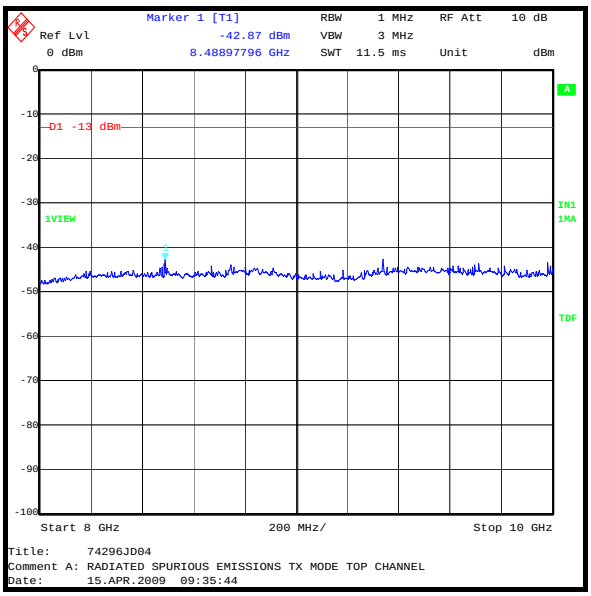
1. Pre-scans were performed with the EUT transmitting in circuit switched mode at maximum power on the top channel.
2. The transmitter fundamental is shown on the 30 MHz to 1 GHz plot at approximately 848 MHz. The downlink control channel and downlink traffic channel are shown at approximately 881 MHz and 894 MHz respectively. No other emissions were observed on this plot, therefore the marker was placed on the highest level of the noise floor.

Transmitter Out of Band Radiated Emissions (continued)









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

5.9. Transmitter Radiated Emissions at Band Edges

Test Summary:

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

Environmental Conditions:

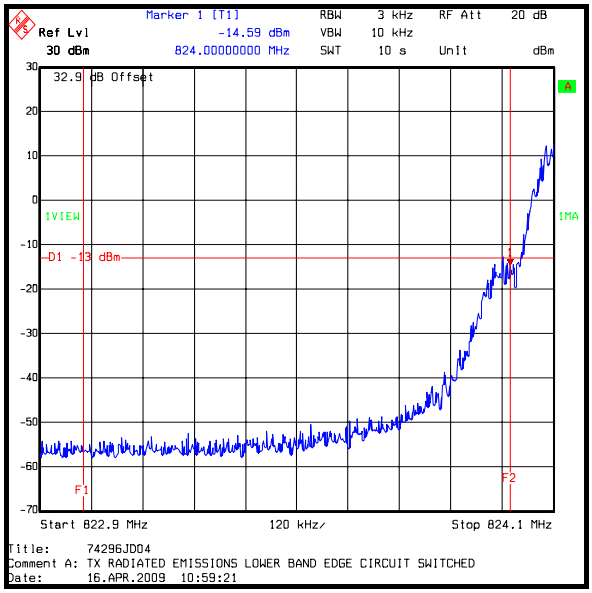
Temperature (°C):	25
Relative Humidity (%):	32

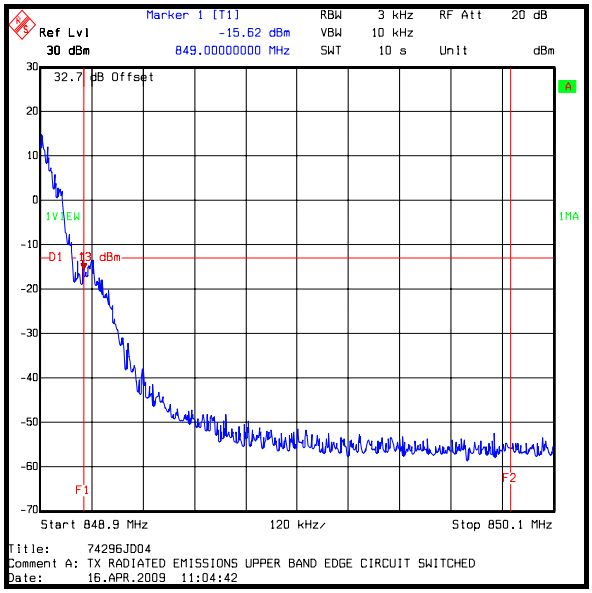
Results: GSM - Lower Band Edge

Frequency (MHz)	Peak Emission Level (dBm)	Limit (dBm)	Margin (dB)	Result
824	-14.6	-13.0	1.6	Complied

Results: GSM - Top Band Edge

Frequency (MHz)	Peak Emission Level (dBm)	Limit (dBm)	Margin (dB)	Result
849	-15.6	-13.0	2.6	Complied





Transmitter Radiated Emissions at Band Edges (continued)

Test Summary:

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

Environmental Conditions:

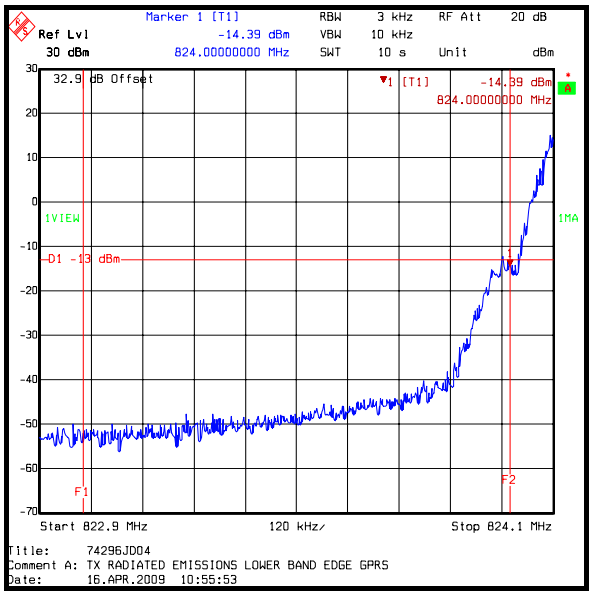
Temperature (°C):	25
Relative Humidity (%):	32

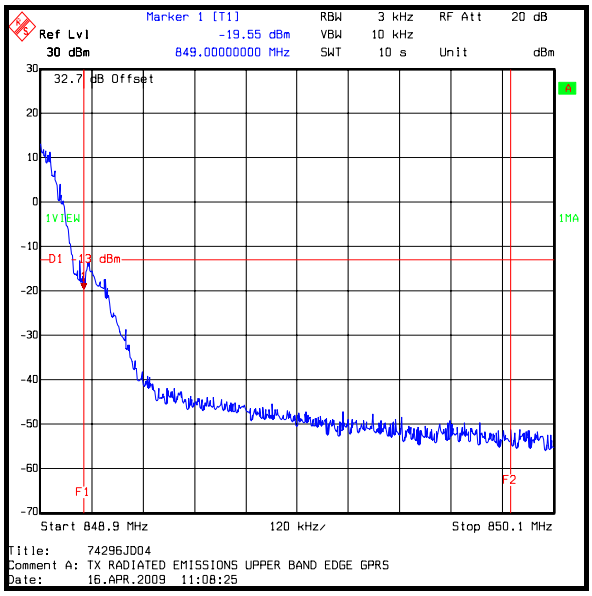
Results: GPRS - Lower Band Edge

Frequency (MHz)	Peak Emission Level (dBm)	Limit (dBm)	Margin (dB)	Result
824	-14.4	-13.0	1.4	Complied

Results: GPRS - Top Band Edge

Frequency (MHz)	Peak Emission Level (dBm)	Limit (dBm)	Margin (dB)	Result
849	-19.6	-13.0	6.6	Complied





6. Measurement Uncertainty

No measurement or test can ever be perfect and the imperfections give rise to error of measurement in the results. Consequently the result of a measurement is only an approximation to the value of the measurand (the specific quantity subject to measurement) and is only complete when accompanied by a statement of the uncertainty of the approximation.

The expression of uncertainty of a measurement result allows realistic comparison of results with reference values and limits given in specifications and standards.

The uncertainty of the result may need to be taken into account when interpreting the measurement results.

The reported expanded uncertainties below are based on a standard uncertainty multiplied by an appropriate coverage factor such that a confidence level of approximately 95% is maintained. For the purposes of this document “approximately” is interpreted as meaning “effectively” or “for most practical purposes”.

Measurement Type	Range	Confidence Level (%)	Calculated Uncertainty
Conducted Output Power	Not applicable	95%	±0.28 dB
Frequency Stability	Not applicable	95%	±0.92 ppm
Occupied Bandwidth	Not applicable	95%	±0.92 ppm
Radiated Spurious Emissions	30 MHz 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)
A1299	Antenna	Schaffner	CBL6143	5094	28 Jul 2008	12
A1368	Directional Coupler	Pasternack Enterprises	PE2214-10	None	Calibrated before use	-
A1391	Attenuator	Huber + Suhner	757987	6810.17.B	Calibrated before use	-
A1392	Attenuator	Huber + Suhner	757456	6820.17.B	Calibrated before use	-
A1534	Pre Amplifier	Hewlett Packard	8449B OPT H02	3008A00405	Calibrated before use	-
A1818	Antenna	EMCO	3115	00075692	25 Oct 2008	12
A1933	High Pass Filter	AtlanTEC RF	AFH-03000	30R-JFBN07-001	14 Oct 2008	12
A244	Attenuator	Schaffner	6820-17-B	None	Calibrated before use	
A436	Antenna	Flann	20240-20	330	24 Apr 2006	36
E013	Environmental Chamber	Sanyo	ATMOS chamber	None	Calibrated before use	-
K0001	5m SA Chamber	Rainford EMC	N/A	N/A	13 Aug 2008	12
K0002	3m RSE Chamber	Rainford EMC	N/A	N/A	26 Aug 2008	12
L0990	Comms Test Set	R&S	CMU 200	S220447	18 Feb 2009	12
M1068	Thermometer	Iso-Tech	RS55	93102884	09 Jul 2008	12
M1124	Spectrum Analyser	Rohde & Schwarz	ESIB26	100046K	09 Mar 2009	12
M1242	Spectrum Analyser	Rohde & Schwarz	FSEM30	845986/022	09 Dec 2008	12
M1269	Multimeter	Fluke	179	90250210	09 Apr 2009	12

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