TEST REPORT
FROM
RFI GLOBAL SERVICES LTD

Test of: NTT docomo P-02B

To: FCC Part 22: 2009 Subpart H, FCC Part 24: 2009 Subpart E

Supersedes Test Report Serial No:
RFI/RPT5/RP76606JD05A

Test Report Serial No:
RFI/RPT4/RP76606JD05A

This Test Report Is Issued Under The Authority Of Brian Watson, Operations Director: 	
Checked By:	Nigel Davison
Signature: 	
Date of Issue:	12 January 2010

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1. Customer Information

Company Name:	Panasonic Mobile Comms Dev of Europe Ltd
Address:	Panasonic House Willoughby Road Bracknell Berkshire RG12 8FP

2. Summary of Testing

2.1. General Information – FCC Part 22

Specification Reference:	47CFR22
Specification Title:	Code of Federal Regulations Volume 47 (Telecommunications) 2009: 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:	11 December 2009 to 14 December 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 22: Section 22.913(a)	Transmitter Effective Radiated Power (ERP)	Antenna	✓
Part 2.1046	Transmitter Conducted Average Output Power	Note 1	N/A
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

Note 1: A temporary direct antenna connection to the EUT was made available in order to perform these measurements. The measurement was performed to support SAR applications.

2.3. General Information – FCC Part 24

Specification Reference:	47CFR24
Specification Title:	Code of Federal Regulations Volume 47 (Telecommunications) 2009: 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:	07 December 2009 to 14 December 2009

2.4. Summary of Test Results – 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	✓
Part 2.1046	Transmitter Conducted Average Output Power	Note 1	N/A
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

Note 1: A temporary direct antenna connection to the EUT was made available in order to perform these measurements. The measurement was performed to support SAR applications.

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:	Dual mode UMTS/GSM cellular handset with *Bluetooth* and RFID
Brand Name:	NTT docomo
Model Name or Number:	P-02B
Serial Number:	None Stated (Sample C6)
IMEI Number:	353155030017714
Hardware Version Number:	Rev C
Software Version Number:	B-D92SL1-01.01.003.srec D92WP1_Cv18181911_nand.srec
FCC ID Number:	UCE209022A

Description:	Dual mode UMTS/GSM cellular handset with *Bluetooth* and RFID
Brand Name:	NTT docomo
Model Name or Number:	P-02B
Serial Number:	None Stated (Sample C3)
IMEI Number:	353155030017177
Hardware Version Number:	Rev C
Software Version Number:	B-D92SL1-01.01.003.srec D92WP1_Cv18181911_nand.srec
FCC ID Number:	UCE209022A

Description:	AC Charger
Brand Name:	NTT docomo
Model Name or Number:	FOMA AC Adapter 01 for Global use / MAS-BH0008-A 002

Description:	DC Charger
Brand Name:	NTT docomo
Model Name or Number:	FOMA DC Adapter 02

Description:	USB Data Cable
Brand Name:	NTT docomo
Model Name or Number:	FOMA USB Cable with Charge Function 02

Description:	Personal Hands-free
Brand Name:	NTT docomo
Model Name or Number:	Stereo Earphone Set 01

Description:	Battery
Brand Name:	NTT docomo
Model Name or Number:	P20

Description:	Micro SD memory card

3.2. Description of EUT

The equipment under test was a dual mode cellular mobile telephone with PCS, UMTS FDD V with UMTS Release 5 HSDPA capabilities, incorporating *Bluetooth* and RFID. The Cellular Mobile Telephone also operates on RFID 13.5 MHz Band.

3.3. Modifications Incorporated in the EUT

No modifications were applied to the EUT during testing.

3.4. Additional Information Related to Testing

FCC Part 22

Technology Tested:	UMTS		
Type of Radio Device:	Transceiver		
Mode:	UMTS FDD V and UMTS Release 5 HSDPA		
Modulation Type:	QPSK (UMTS / HSDPA)		
Channel Spacing:	5 MHz		
Power Supply Requirement(s):	Nominal	3.7 V	
	Minimum	3.4 V	
	Maximum	4.2 V	
Maximum Output Power (ERP):	Voice (RMC 12.2kbps)	18.8 dBm	
	HSDPA Set 2	17.9 dBm	
Transmit Frequency Range:	824 to 849 MHz		
Transmit Channels Tested:	**Channel ID**	**Channel Number**	**Channel Frequency (MHz)**
	Bottom	4132	826.4
	Middle	4182	836.4
	Top	4233	846.6
Receive Frequency Range:	869 to 894 MHz		
Receive Channels Tested:	**Channel ID**	**Channel Number**	**Channel Frequency (MHz)**
	Bottom	4357	871.4
	Middle	4407	881.4
	Top	4458	891.6

FCC Part 24

Technology Tested:	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	3.4 V	
	Maximum	4.2 V	
Maximum Output Power (EIRP):	GSM	27.7 dBm	
	GPRS	25.7 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:

Description:	Test USIM
Brand Name:	Rohde & Schwarz
Model Name or Number:	R&S CRT-Z3 V2.0.0
Serial Number:	8952535250010000346F

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:- FCC Part 22

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

- Receiver/Idle mode.
- Constantly transmitting at full power on bottom, middle and top channels where required.
- Occupied bandwidth, ERP and band edge tests were performed with the EUT in Voice (RMC/12.2 kbps) or HSDPA (Sets 1 to 4) modes.
- Transmitter radiated spurious emissions were checked in all modes during pre-scans. HSDPA Set 1 was found to be the worst case and all final measurements were performed with the EUT in this mode.

4.2. Configuration and Peripherals:- FCC Part 22

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

- Connected to a UMTS Band V system simulator, operating in transceiver mode.
- Idle mode and transmitter mode radiated spurious emissions tests were performed with the personal hands free connected to the EUT, with the TV antenna extended as this was found to be the worst case during prescans. All accessories were individually connected with the TV antenna extended and retracted during prescan measurements to determine the worst case combination.

4.3. Operating Modes:- FCC Part 24

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

- Idle mode.
- Constantly transmitting at full power on bottom, centre and top channels as required.
- Occupied bandwidth, EIRP 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 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.

4.4. Configuration and Peripherals:- FCC Part 24

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

- Connected to a GSM/GPRS system simulator, operating in transceiver mode.
- Idle mode and transmitter mode radiated spurious emissions tests were performed with the mains charger connected to the EUT via 120 VAC supply with the TV antenna extended as this was found to be the worst case during prescans. All accessories were individually connected with the TV antenna extended and retracted during prescan measurements 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 – 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 (%):	29

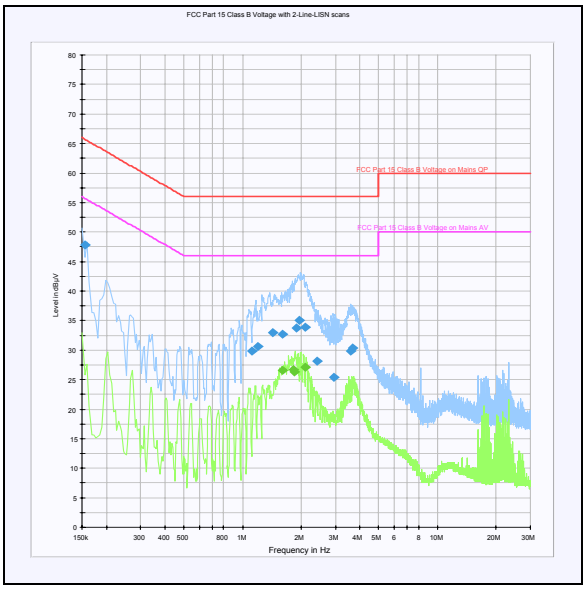
Results: Quasi Peak Detector Measurements

Frequency (MHz)	Line	Quasi Peak Level (dBμV)	Limit (dBμV)	Margin (dB)	Result
0.154500	Neutral	47.8	65.8	18.0	Complied
1.113000	L1	29.8	56.0	26.2	Complied
1.203000	L1	30.6	56.0	25.4	Complied
1.428000	L1	33.0	56.0	23.0	Complied
1.612500	Neutral	32.7	56.0	23.3	Complied
1.887000	Neutral	33.8	56.0	22.2	Complied
1.945500	L1	35.0	56.0	21.0	Complied
2.085000	L1	33.9	56.0	22.1	Complied
2.418000	L1	28.1	56.0	27.9	Complied
2.958000	L1	25.4	56.0	30.6	Complied
3.601500	L1	29.9	56.0	26.1	Complied
3.673500	L1	30.3	56.0	25.7	Complied

Results: Average Detector Measurements

Frequency (MHz)	Line	Average Level (dBμV)	Limit (dBμV)	Margin (dB)	Result
1.594500	Neutral	26.5	46.0	19.5	Complied
1.833000	Neutral	26.8	46.0	19.2	Complied
1.846500	Neutral	26.3	46.0	19.7	Complied
2.089500	L1	27.1	46.0	18.9	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:

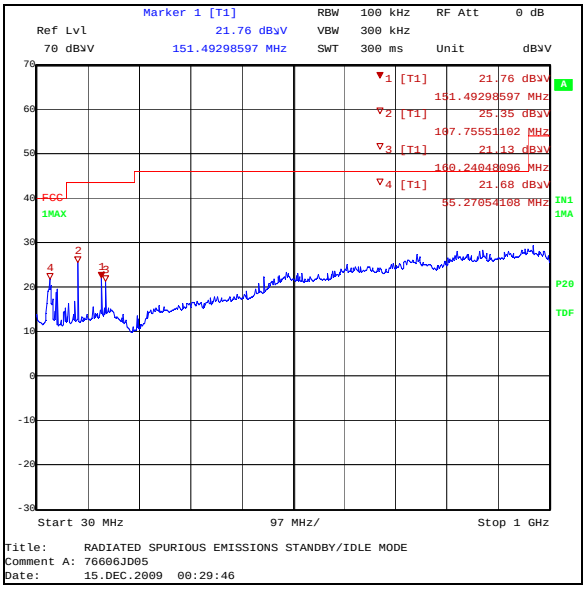
Temperature (°C):	24
Relative Humidity (%):	25

Results:

Frequency (MHz)	Antenna Polarity	Level (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Result
151.492	Horizontal	21.8	43.5	21.7	Complied
107.756	Vertical	25.4	43.5	18.1	Complied
160.240	Horizontal	21.1	43.5	22.4	Complied
55.271	Vertical	21.7	40.0	18.3	Complied

Note(s):

1. Peak Detector was used for final measurements as this was worst case and the spurious emissions were well within limit.



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):	24
Relative Humidity (%):	25

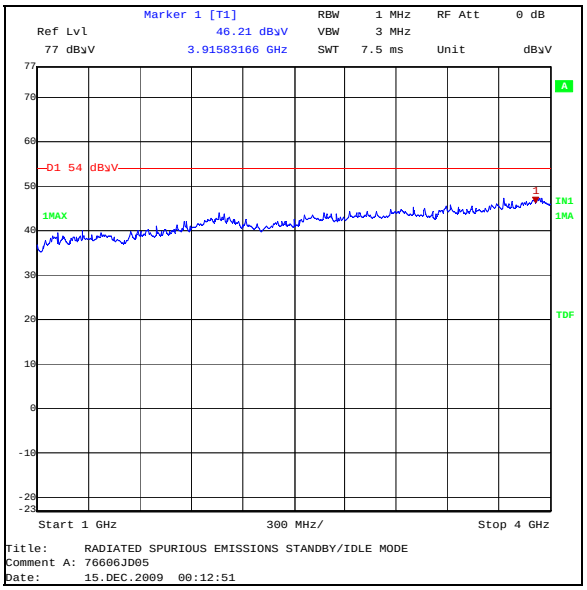
Results: Highest Peak Level

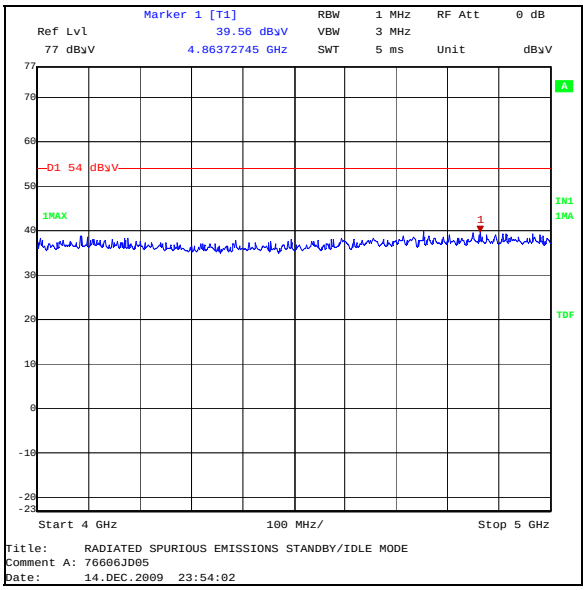
Frequency (GHz)	Antenna Polarity	Detector Level (dBµV/m)	Transducer Factor (dB)	Peak Level (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Result
3.916	Horizontal	31.1	13.1	44.2	54.0	9.8	Complied

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. 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):	24
Relative Humidity (%):	29

Results:

Modes		**HSDPA**				**Voice**			
Sets		**1**	**2**	**3**	**4**	**RMC 12.2kbps**			
Band	**Channel**	**Power (dBm)**	**Power (dBm)**	**Power (dBm)**	**Power (dBm)**	**Power (dBm)**	**Limit (dBm)**	**Margin**	**Result**
850	4132	17.9	16.4	15.8	15.6	18.8	38.5	19.7	Complied
	4183	17.6	15.9	15.6	15.7	18.8	38.5	19.7	Complied
	4233	17.9	16.6	15.6	15.7	18.5	38.5	20.0	Complied
ßc		2	12	15	15				
ßd		15	15	8	4				
ΔACK, ΔNACK, ΔCQI		8	8	8	8				

Note(s):

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

5.2.4. Conducted Average Power Measurement

Modes		HSDPA				WCDMA
Sets		1	2	3	4	Voice / RMC12.2kbps
Band	Channel	Power (dBm) Avg.	Power (dBm) Avg.	Power (dBm) Avg.	Power (dBm) Avg.	Power (dBm) Avg.
850	4132	23.0	20.8	20.0	20.0	23.0
	4183	22.9	20.8	20.0	20.0	23.0
	4233	22.6	20.3	19.6	19.9	23.0
ßc		2	12	15	15	
ßd		15	15	8	4	
ΔACK, ΔNACK, ΔCQI		8	8	8	8	

Note(s):

1. All conducted measurements were performed with the EUT with EMI 353155030017177/Sample (C3)

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 Part 2.1055

Environmental Conditions:

Temperature (°C):	22
Relative Humidity (%):	29

Results: Middle Channel

Temperature (°C)	Measured Frequency (MHz)	Frequency Error (Hz)	Frequency Error (ppm)	Limit (ppm)	Margin (ppm)	Result
-30	836.400034	34	0.04	2.5	2.46	Complied
-20	836.400037	37	0.04	2.5	2.46	Complied
-10	836.400036	36	0.04	2.5	2.46	Complied
0	836.400032	32	0.04	2.5	2.46	Complied
10	836.400028	28	0.03	2.5	2.47	Complied
20	836.399982	-18	0.02	2.5	2.48	Complied
30	836.399966	-34	0.04	2.5	2.46	Complied
40	836.399965	-35	0.04	2.5	2.46	Complied
50	836.399967	-33	0.04	2.5	2.46	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 Part 2.1055

Environmental Conditions:

Temperature (°C):	23
Relative Humidity (%):	35

Results:

Supply Voltage (V)	Measured Frequency (MHz)	Frequency Error (Hz)	Frequency Error (ppm)	Limit (ppm)	Margin (ppm)	Result
3.4	836.399986	-32	0.04	2.5	2.46	Complied
4.2	836.399974	-26	0.03	2.5	2.47	Complied

5.2.7. 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 Part 2.1049

Environmental Conditions:

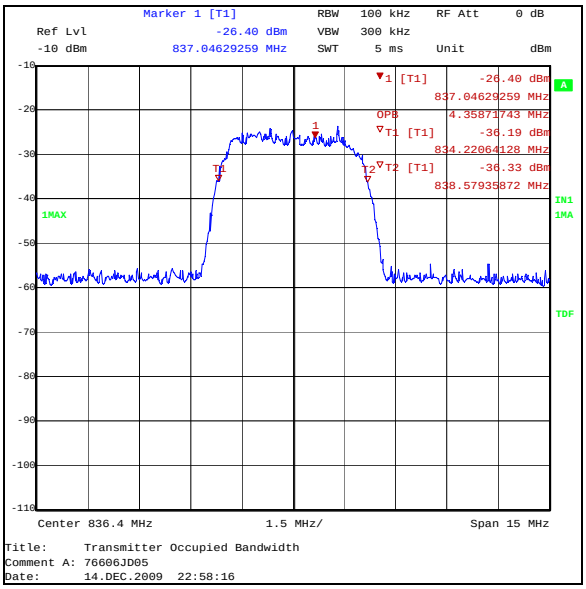
Temperature (°C):	24
Relative Humidity (%):	25

Results: RMC/Voice

Channel	Frequency (MHz)	Occupied Bandwidth (kHz)
Middle	836.4	4388.778

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 Part 2.1049

Environmental Conditions:

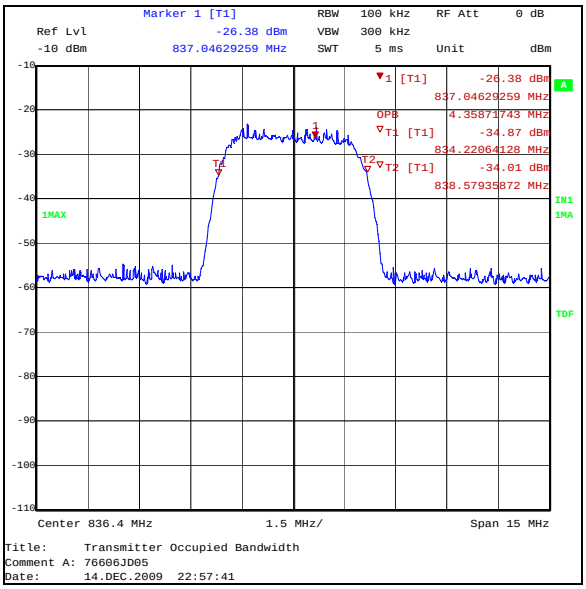
Temperature (°C):	24
Relative Humidity (%):	25

Results: HSDPA 1

Channel	Frequency (MHz)	Occupied Bandwidth (kHz)
Middle	836.4	4358.717

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 Part 2.1049

Environmental Conditions:

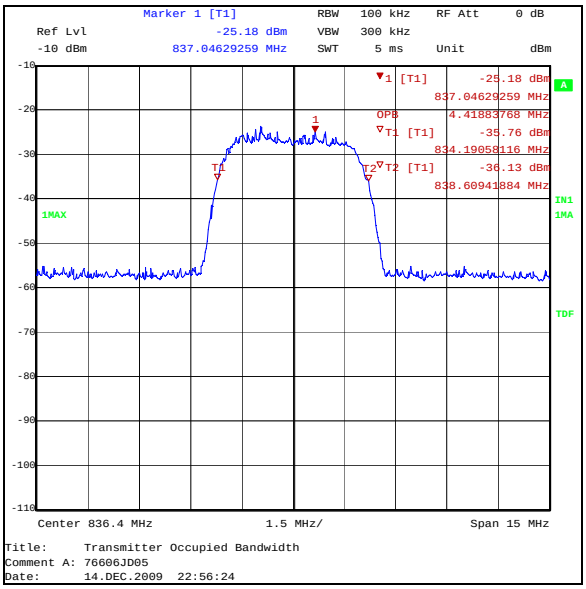
Temperature (°C):	24
Relative Humidity (%):	25

Results: HSDPA 2

Channel	Frequency (MHz)	Occupied Bandwidth (kHz)
Middle	836.4	4418.838

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 Part 2.1049

Environmental Conditions:

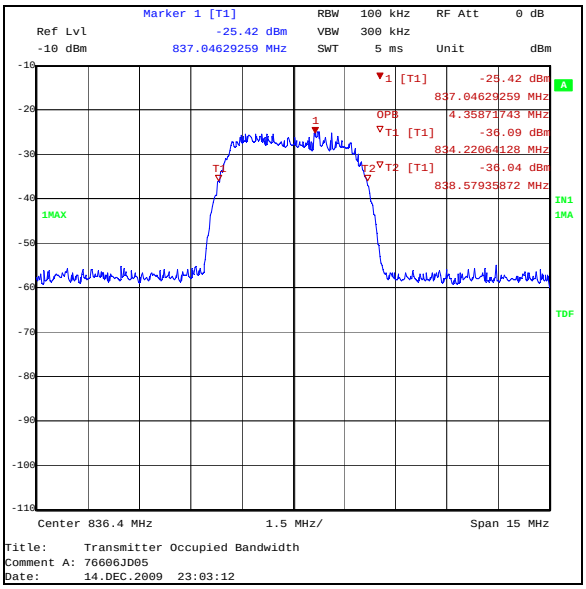
Temperature (°C):	24
Relative Humidity (%):	25

Results: HSDPA 3

Channel	Frequency (MHz)	Occupied Bandwidth (kHz)
Middle	836.4	4358.717

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 Part 2.1049

Environmental Conditions:

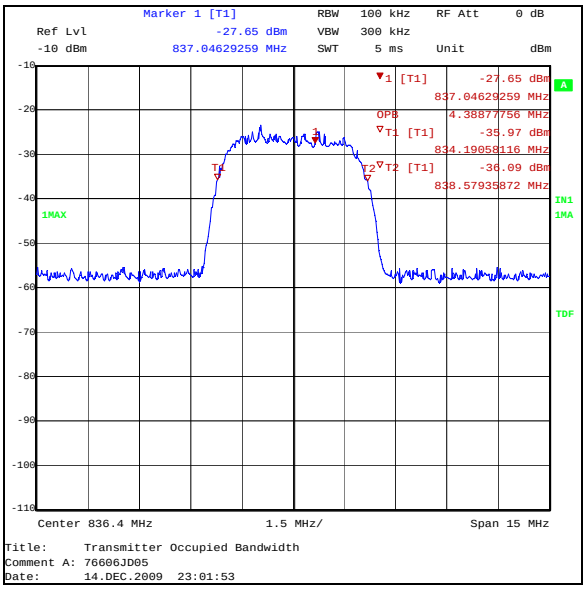
Temperature (°C):	24
Relative Humidity (%):	25

Results: HSDPA 4

Channel	Frequency (MHz)	Occupied Bandwidth (kHz)
Middle	836.4	4388.778

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



5.2.8. 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 Part 2.1049

Environmental Conditions:

Temperature (°C):	24
Relative Humidity (%):	25

Results: Bottom Channel

Frequency (MHz)	Peak Emission Level (dBm)	Limit (dBm)	Margin (dB)	Result
Refer to Note 1				

Results: Middle Channel

Frequency (MHz)	Peak Emission Level (dBm)	Limit (dBm)	Margin (dB)	Result
Refer to Note 1				

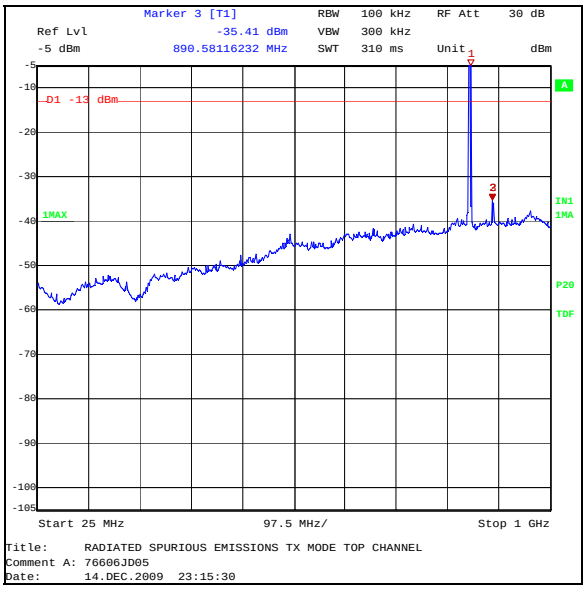
Results: Top Channel

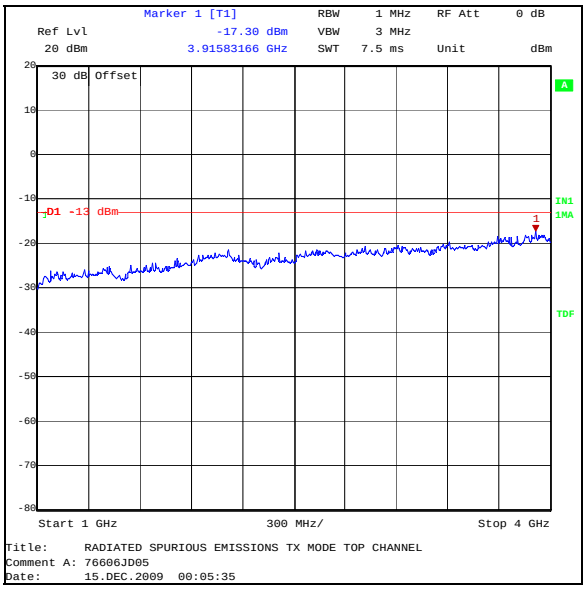
Frequency (MHz)	Peak Emission Level (dBm)	Limit (dBm)	Margin (dB)	Result
Refer to Note 1				

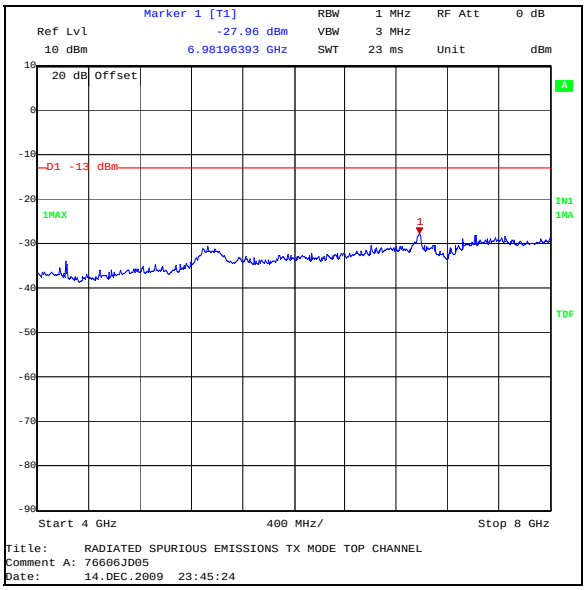
Note(s):

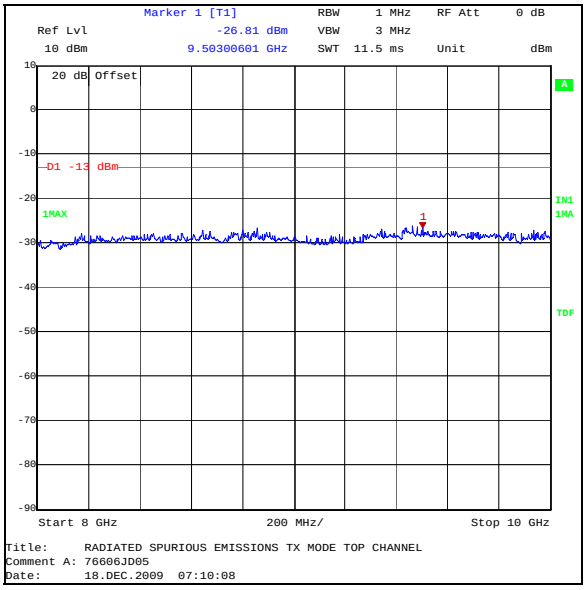
1. No spurious emissions were detected above the noise floor of the measuring receiver; the highest peak noise floor reading of the measuring receiver was recorded.
2. The uplink and downlink traffic channels are shown on the 30 MHz to 1 GHz plot

Transmitter Out of Band Radiated Emissions (continued)









5.2.9. 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 Parts 2.1053 and 22.917
Modulation:	RMC/Voice

Environmental Conditions:

Temperature (°C):	28
Relative Humidity (%):	30

Results: Bottom Band Edge

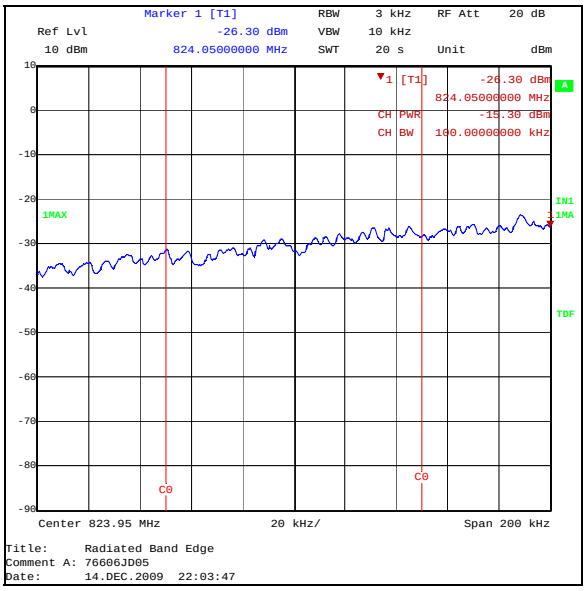
Frequency (MHz)	Peak Emission Level (dBm)	Limit (dBm)	Margin (dBm)	Result
824	-15.3	-13.0	2.3	Complied

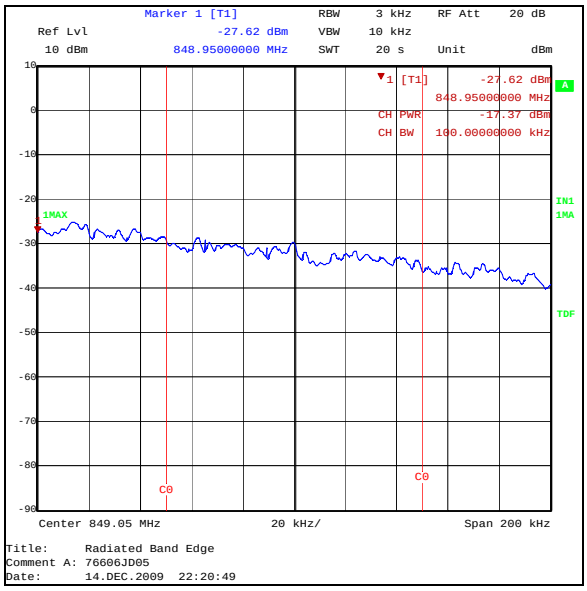
Results: Top Band Edge

Frequency (MHz)	Peak Emission Level (dBm)	Limit (dBm)	Margin (dBm)	Result
849	-17.4	-13.0	4.4	Complied

Note(s):

1. The band edge result was obtained by integrating the100 kHz strip immediately adjacent to the band edge using a channel power function of the measurement analyser.





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 Parts 2.1053 and 22.917
Modulation:	HSDPA 1

Environmental Conditions:

Temperature (°C):	28
Relative Humidity (%):	30

Results: Bottom Band Edge

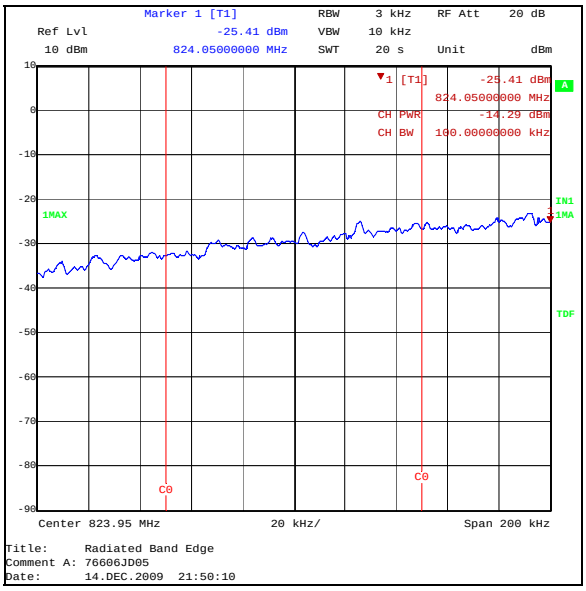
Frequency (MHz)	Peak Emission Level (dBm)	Limit (dBm)	Margin (dBm)	Result
824	-14.3	-13.0	1.3	Complied

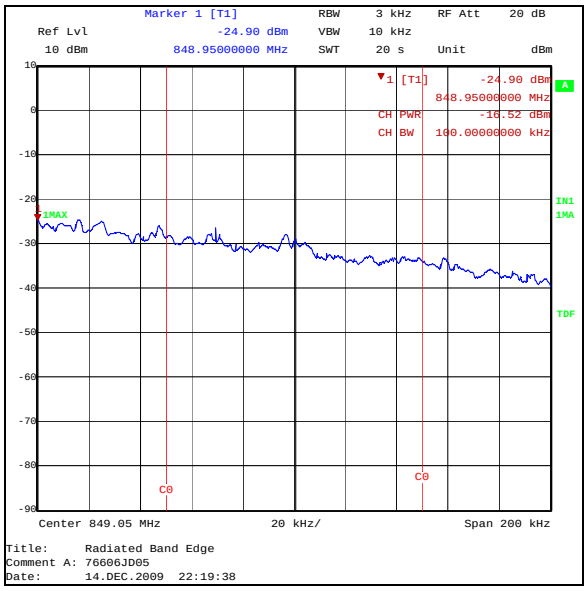
Results: Top Band Edge

Frequency (MHz)	Peak Emission Level (dBm)	Limit (dBm)	Margin (dBm)	Result
849	-16.5	-13.0	3.5	Complied

Note(s):

1. The band edge result was obtained by integrating the100 kHz strip immediately adjacent to the band edge using a channel power function of the measurement analyser.





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 Parts 2.1053 and 22.917
Modulation:	HSDPA 2

Environmental Conditions:

Temperature (°C):	28
Relative Humidity (%):	30

Results: Bottom Band Edge

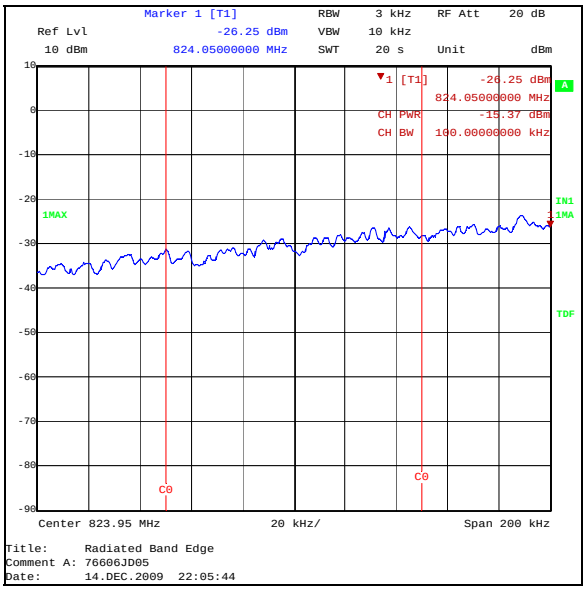
Frequency (MHz)	Peak Emission Level (dBm)	Limit (dBm)	Margin (dBm)	Result
824	-15.4	-13.0	2.4	Complied

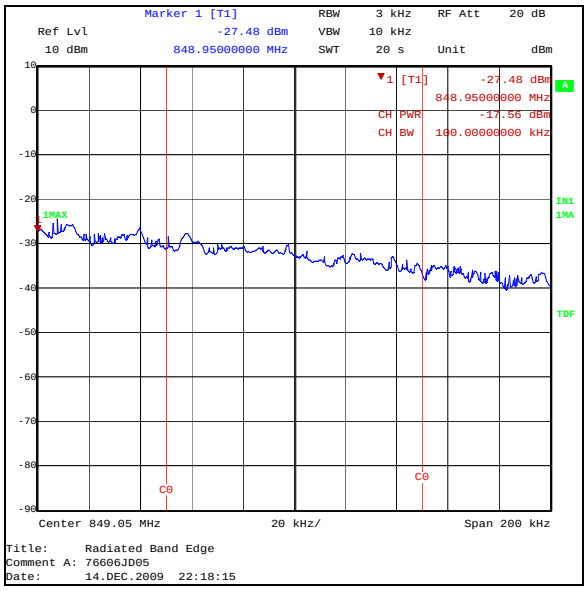
Results: Top Band Edge

Frequency (MHz)	Peak Emission Level (dBm)	Limit (dBm)	Margin (dBm)	Result
849	-17.4	-13.0	4.4	Complied

Note(s):

1. The band edge result was obtained by integrating the100 kHz strip immediately adjacent to the band edge using a channel power function of the measurement analyser.





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 Parts 2.1053 and 22.917
Modulation:	HSDPA 3

Environmental Conditions:

Temperature (°C):	28
Relative Humidity (%):	30

Results: Bottom Band Edge

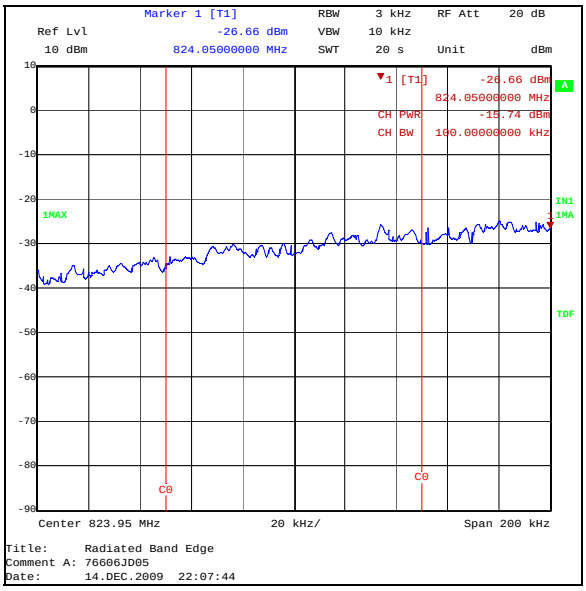
Frequency (MHz)	Peak Emission Level (dBm)	Limit (dBm)	Margin (dBm)	Result
824	-15.7	-13.0	2.7	Complied

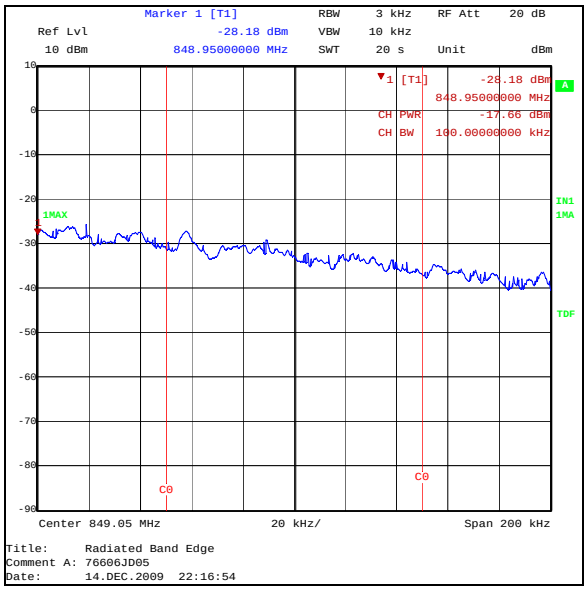
Results: Top Band Edge

Frequency (MHz)	Peak Emission Level (dBm)	Limit (dBm)	Margin (dBm)	Result
849	-17.7	-13.0	4.7	Complied

Note(s):

1. The band edge result was obtained by integrating the100 kHz strip immediately adjacent to the band edge using a channel power function of the measurement analyser.





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 Parts 2.1053 and 22.917
Modulation:	HSDPA 4

Environmental Conditions:

Temperature (°C):	28
Relative Humidity (%):	30

Results: Bottom Band Edge

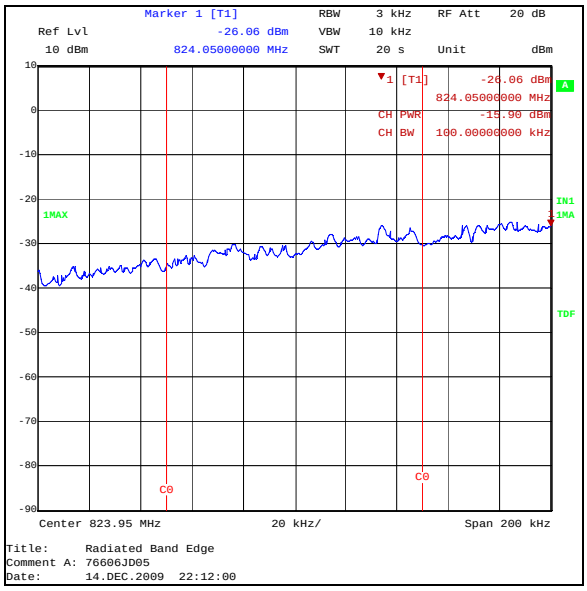
Frequency (MHz)	Peak Emission Level (dBm)	Limit (dBm)	Margin (dBm)	Result
824	-15.9	-13.0	2.9	Complied

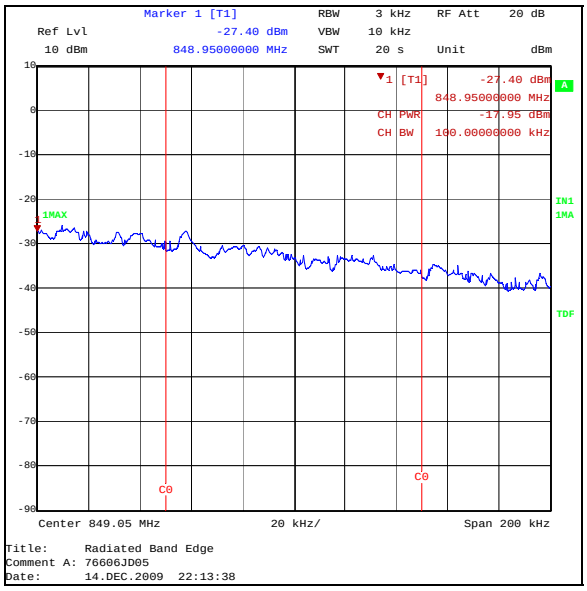
Results: Top Band Edge

Frequency (MHz)	Peak Emission Level (dBm)	Limit (dBm)	Margin (dBm)	Result
849	-18.0	-13.0	5.0	Complied

Note(s):

1. The band edge result was obtained by integrating the100 kHz strip immediately adjacent to the band edge using a channel power function of the measurement analyser.





5.3. Test Results – 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 (%):	29

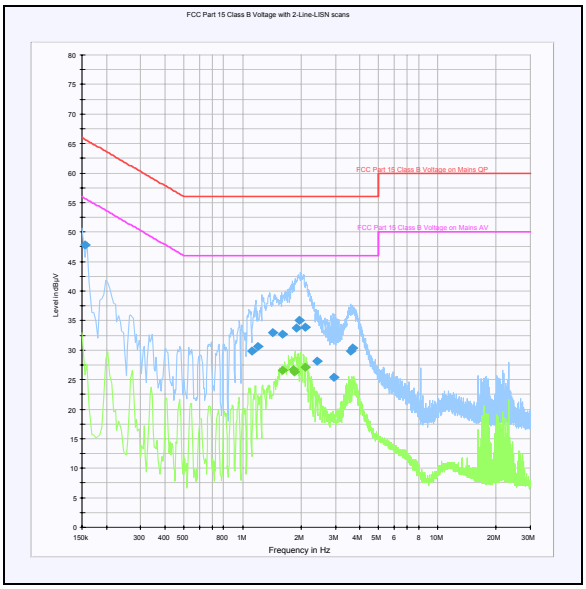
Results: Quasi Peak Detector Measurements

Frequency (MHz)	Line	Quasi Peak Level (dBμV)	Limit (dBμV)	Margin (dB)	Result
0.154500	Neutral	47.8	65.8	18.0	Complied
1.113000	L1	29.8	56.0	26.2	Complied
1.203000	L1	30.6	56.0	25.4	Complied
1.428000	L1	33.0	56.0	23.0	Complied
1.612500	Neutral	32.7	56.0	23.3	Complied
1.887000	Neutral	33.8	56.0	22.2	Complied
1.945500	L1	35.0	56.0	21.0	Complied
2.085000	L1	33.9	56.0	22.1	Complied
2.418000	L1	28.1	56.0	27.9	Complied
2.958000	L1	25.4	56.0	30.6	Complied
3.601500	L1	29.9	56.0	26.1	Complied
3.673500	L1	30.3	56.0	25.7	Complied

Results: Average Detector Measurements

Frequency (MHz)	Line	Average Level (dBμV)	Limit (dBμV)	Margin (dB)	Result
1.594500	Neutral	26.5	46.0	19.5	Complied
1.833000	Neutral	26.8	46.0	19.2	Complied
1.846500	Neutral	26.3	46.0	19.7	Complied
2.089500	L1	27.1	46.0	18.9	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:

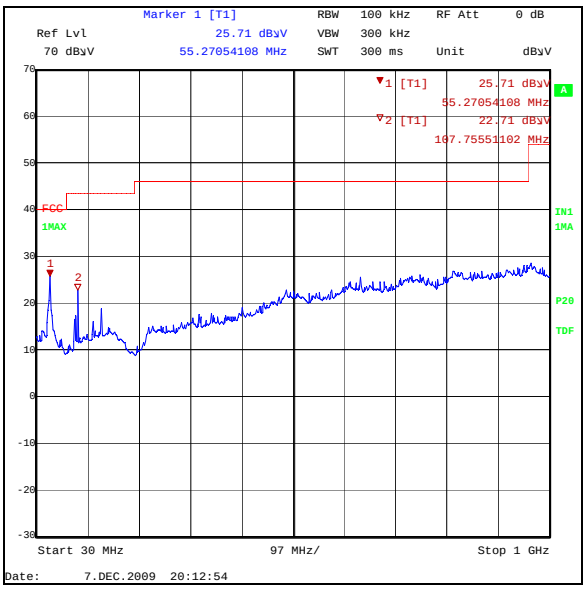
Temperature (°C):	24
Relative Humidity (%):	31

Results:

Frequency (MHz)	Antenna Polarity	Level (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Result
55.269	Vertical	26.0	40.0	14.0	Complied
108.042	Vertical	24.9	43.5	18.6	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.



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):	24
Relative Humidity (%):	31

Results Peak Detector :

Frequency (MHz)	Antenna Polarity	Level (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Result
12531.062	Vertical	53.1	74.0	20.9	Complied

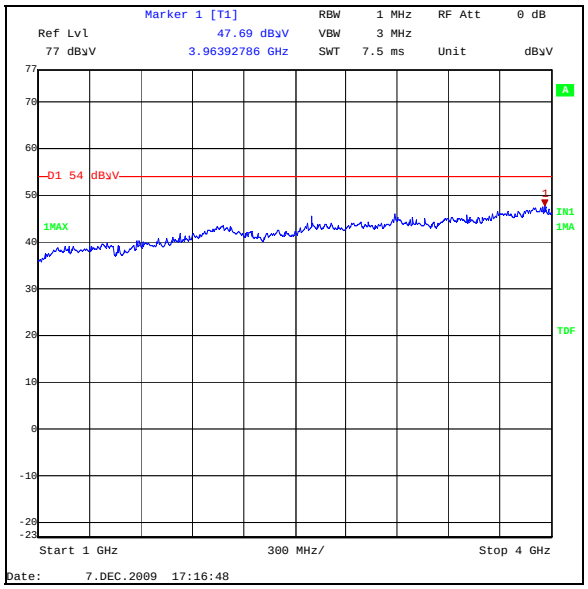
Results Average Detector:

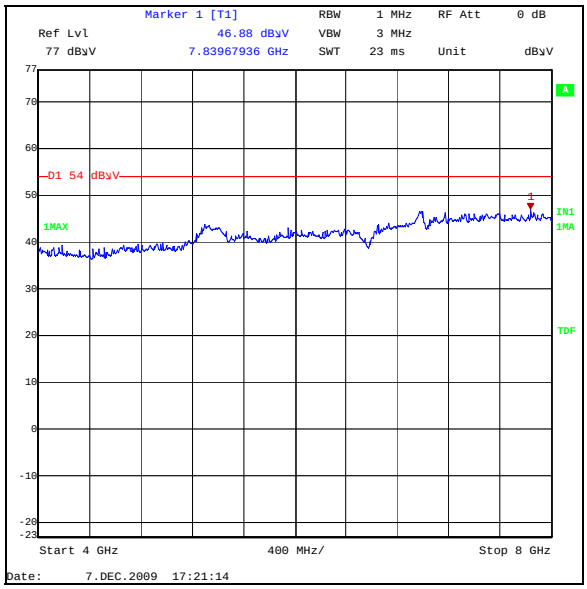
Frequency (MHz)	Antenna Polarity	Level (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Result
12531.062	Vertical	41.2	54.0	12.8	Complied

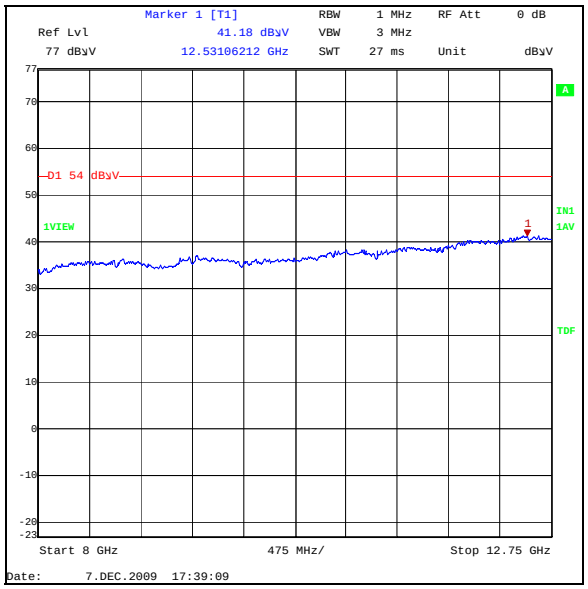
Note(s):

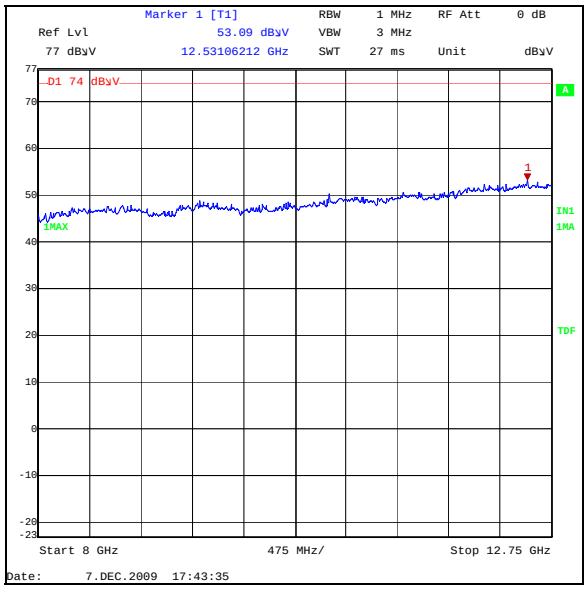
1. No spurious emissions were detected above the noise floor of the measuring receiver; therefore, the highest peak noise and average noise floor reading of the measuring receiver were recorded as shown in the tables above. The peak level was compared to the average limit as opposed to being compared to the peak limit because this is the more onerous limit, if the peak noise floor was above the average level the plot was saved and compared to the peak limit. The plot was then repeated with the average detector and compared to the average 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):	24
Relative Humidity (%):	36

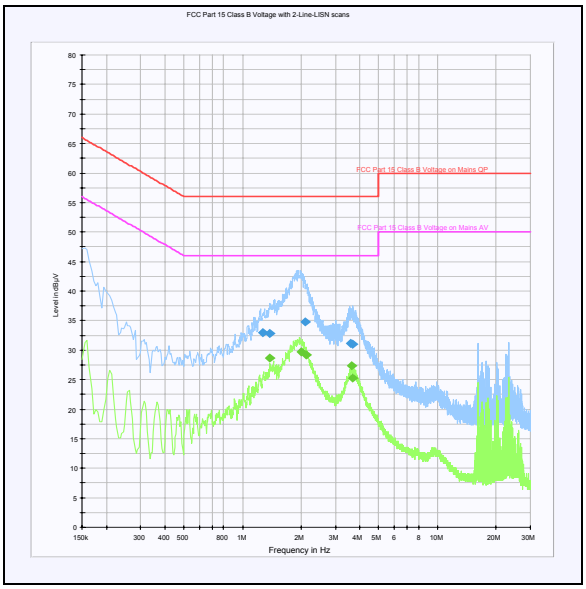
Results: Quasi Peak Detector Measurements

Frequency (MHz)	Line	Quasi Peak Level (dBμV)	Limit (dBμV)	Margin (dB)	Result
1.270500	Neutral	33.0	56.0	23.0	Complied
1.378500	Neutral	32.8	56.0	23.2	Complied
2.103000	Neutral	34.8	56.0	21.2	Complied
3.574500	Neutral	31.1	56.0	24.9	Complied
3.660000	Neutral	31.1	56.0	24.9	Complied

Results: Average Detector Measurements

Frequency (MHz)	Line	Average Level (dBμV)	Limit (dBμV)	Margin (dB)	Result
1.369500	Neutral	28.7	46.0	17.3	Complied
1.990500	Neutral	29.6	46.0	16.4	Complied
2.125500	Neutral	29.2	46.0	16.8	Complied
3.637500	Neutral	27.3	46.0	18.7	Complied
3.660000	Neutral	25.3	46.0	20.7	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):	23
Relative Humidity (%):	32

Results: GSM

Channel	Measured Frequency (MHz)	Antenna Polarity	Maximum Transmitter (dBm)	Limit (dBm)	Margin (dB)	Result
Bottom	1850.2	Horizontal	27.0	33.0	6.0	Complied
Middle	1879.8	Horizontal	27.2	33.0	5.8	Complied
Top	1909.8	Horizontal	27.7	33.0	5.3	Complied

Results: GPRS

Channel	Measured Frequency (MHz)	Antenna Polarity	Maximum Transmitter (dBm)	Limit (dBm)	Margin (dB)	Result
Bottom	1850.2	Horizontal	24.9	33.0	8.1	Complied
Middle	1879.8	Horizontal	25.2	33.0	7.8	Complied
Top	1909.8	Horizontal	25.7	33.0	7.3	Complied

5.3.5. Conducted Average Power Measurement

Results: GSM

Channel Number	Frequency (MHZ)	GSM – TX Power before Test (dBm)	Note
512	1850.2	28.9	Conducted
660	1879.8	29.3	Conducted
810	1909.8	28.7	Conducted

Results: GPRS

Channel Number	Frequency (MHZ)	GPRS – TX Power before Test (dBm)	Note
512	1850.2	26.5	Conducted
660	1879.8	27.0	Conducted
810	1909.8	27.2	Conducted

Note(s):

1. All conducted measurements were performed with the EUT with EMI 353155030017177

5.3.6. 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 Part 2.1055

Environmental Conditions:

Temperature (°C):	23
Relative Humidity (%):	29

Results: Bottom Channel

Temperature (°C)	Frequency Error (Hz)	Measured Frequency (MHz)	Lower Band Edge Limit (MHz)	Margin (MHz)	Result
-30	-32	1850.199968	1850.0	0.199968	Complied
-20	-51	1850.199949	1850.0	0.199949	Complied
-10	-31	1850.199969	1850.0	0.199969	Complied
0	-23	1850.199977	1850.0	0.199977	Complied
10	-21	1850.199979	1850.0	0.199979	Complied
20	-26	1850.199974	1850.0	0.199974	Complied
30	-30	1850.199970	1850.0	0.199970	Complied
40	-37	1850.199963	1850.0	0.199963	Complied
50	-41	1850.199959	1850.0	0.199959	Complied

Results: Top Channel

Temperature (°C)	Frequency Error (Hz)	Measured Frequency (MHz)	Upper Band Edge Limit (MHz)	Margin (MHz)	Result
-30	-41	1909.799959	1910.0	0.200041	Complied
-20	-35	1909.799965	1910.0	0.200035	Complied
-10	-47	1909.799953	1910.0	0.200047	Complied
0	-21	1909.799979	1910.0	0.200021	Complied
10	-29	1909.799971	1910.0	0.200029	Complied
20	-40	1909.799960	1910.0	0.200040	Complied
30	-36	1909.799964	1910.0	0.200036	Complied
40	-51	1909.799949	1910.0	0.200051	Complied
50	-47	1909.799953	1910.0	0.200047	Complied

5.3.7. 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 Part 2.1055

Environmental Conditions:

Temperature (°C):	23
Relative Humidity (%):	29

Results: Bottom Channel

Supply Voltage (V)	Frequency Error (Hz)	Measured Frequency (MHz)	Lower Band Edge Limit (MHz)	Margin (MHz)	Result
3.4	-32	1850.199968	1850.0	0.199968	Complied
4.2	-42	1850.199958	1850.0	0.199958	Complied

Results: Top Channel

Supply Voltage (V)	Frequency Error (Hz)	Measured Frequency (MHz)	Upper Band Edge Limit (MHz)	Margin (MHz)	Result
3.4	-45	1909.799955	1910.0	0.200045	Complied
4.2	-40	1909.799960	1910.0	0.200040	Complied

5.3.8. Transmitter Occupied Bandwidth

Test Summary:

FCC Part:	24.238
Test Method Used:	As detailed in ANSI C63.4 Section13.1.7 and relevant annexes referencing FCC Part 2.1049 (see note below)

Environmental Conditions:

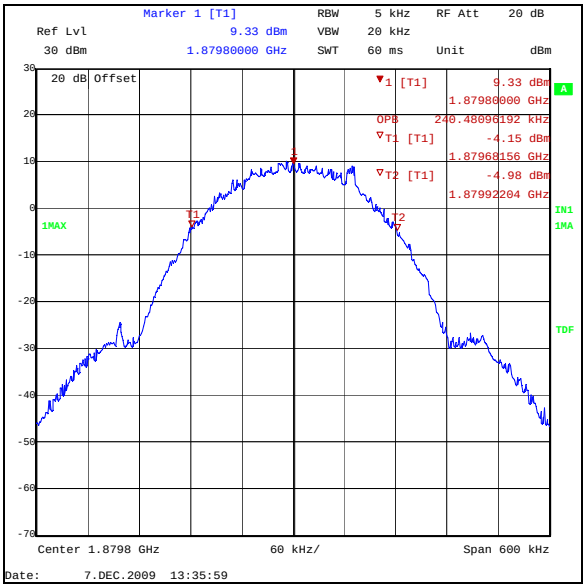
Temperature (°C):	23
Relative Humidity (%):	32

Results: GSM

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



Transmitter Occupied Bandwidth (continued)

Test Summary:

FCC Part:	24.238
Test Method Used:	As detailed in ANSI C63.4 Section13.1.7 and relevant annexes referencing FCC Part 2.1049 (see note below)

Environmental Conditions:

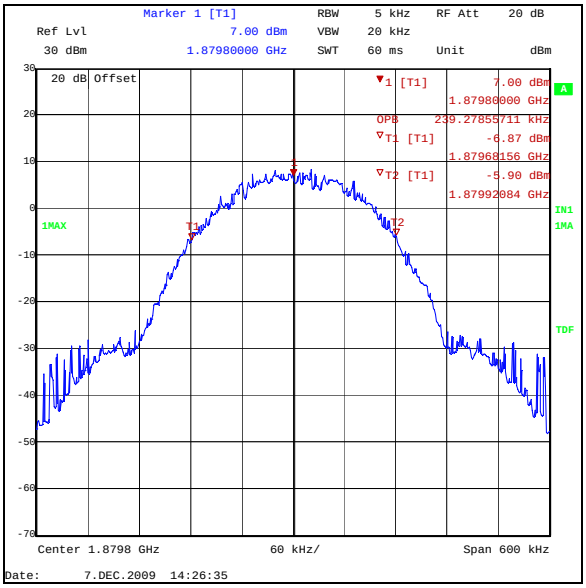
Temperature (°C):	23
Relative Humidity (%):	32

Results: GPRS

Channel	Frequency (MHz)	Occupied Bandwidth (kHz)
Middle	1879.8	239.279

Note(s):

1. In lieu of the test method detailed in ANSI C63.4 Section13.1.7 the 99% occupied bandwidth was measured using the Occupied Bandwidth function of the spectrum analyser.



5.3.9. 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 Parts 2.1053 and 24.238

Environmental Conditions:

Temperature (°C):	24
Relative Humidity (%):	31

Results: Bottom Channel

Frequency (MHz)	Peak Emission Level (dBm)	Limit (dBm)	Margin (dB)	Result
3700.297	-23.0	-13.0	10.0	Complied
5550.694	-24.8	-13.0	11.8	Complied
7400.831	-22.8	-13.0	10.2	Complied
9251.381	-22.5	-13.0	10.5	Complied

Results: Middle Channel

Frequency (MHz)	Peak Emission Level (dBm)	Limit (dBm)	Margin (dB)	Result
3759.624	-21.8	-13.0	8.8	Complied
5639.243	-23.9	-13.0	10.9	Complied
7519.043	-22.3	-13.0	9.3	Complied
9398.805	-20.6	-13.0	7.6	Complied

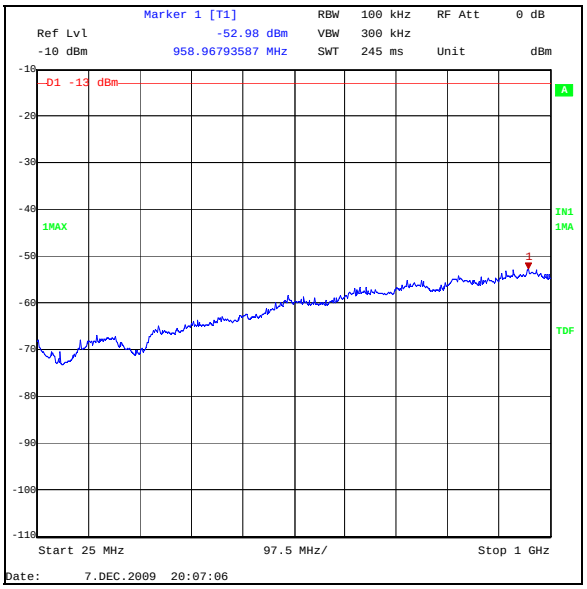
Results: Top Channel

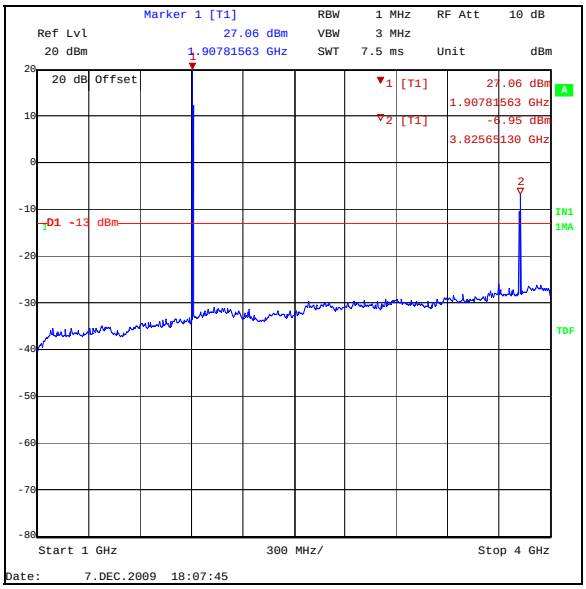
Frequency (MHz)	Peak Emission Level (dBm)	Limit (dBm)	Margin (dB)	Result
3819.557	-20.5	-13.0	7.5	Complied
5729.772	-23.1	-13.0	10.1	Complied
7638.918	-24.4	-13.0	11.4	Complied
9548.787	-19.4	-13.0	6.4	Complied

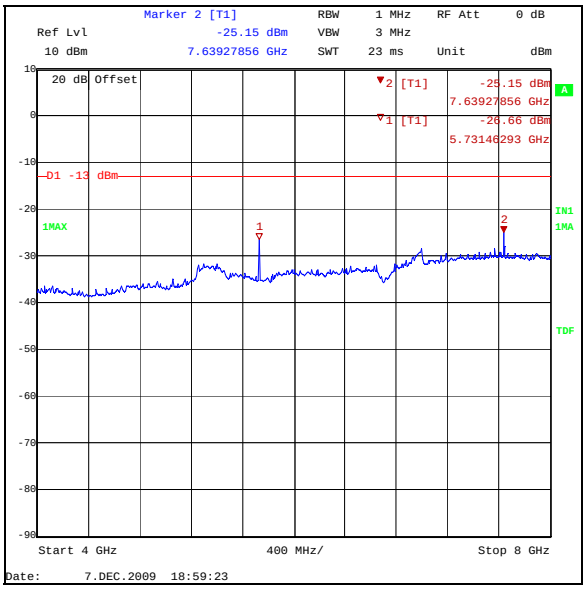
Note(s):

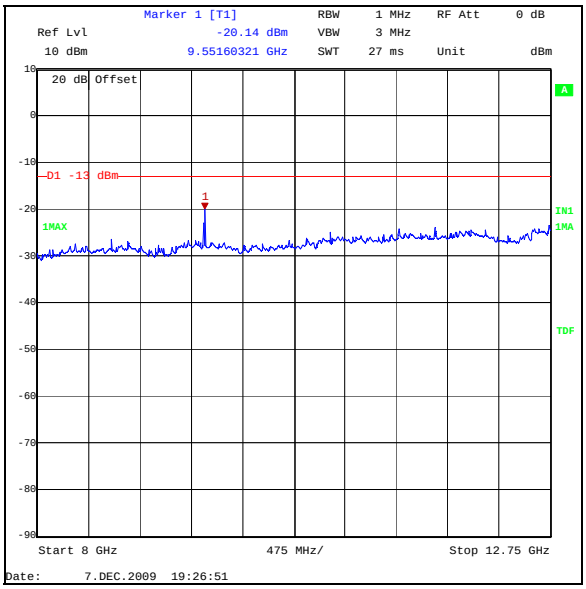
1. The transmitter fundamental is shown on the 1 GHz to 4 GHz plot at approximately 1907 MHz

Transmitter Out of Band Radiated Emissions (continued)

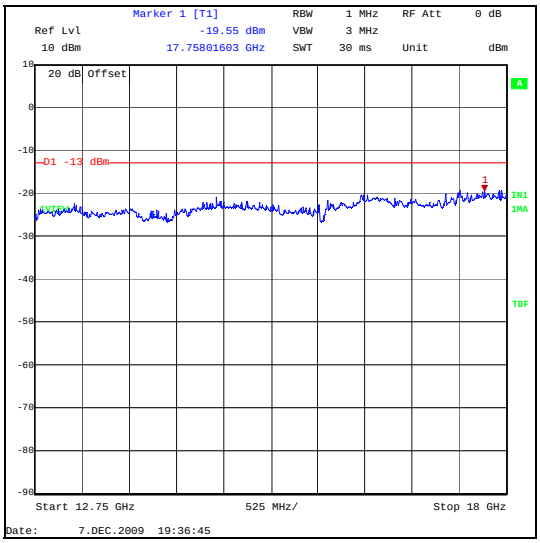


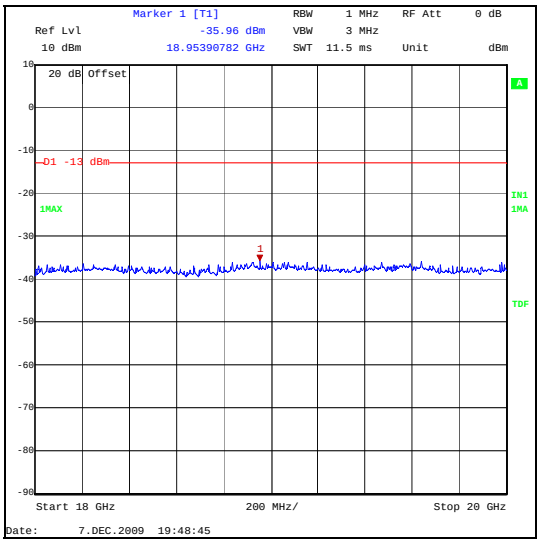






Transmitter Out of Band Radiated Emissions (continued)





5.3.10. 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 Parts 2.1053 and 24.238

Environmental Conditions:

Temperature (°C):	23
Relative Humidity (%):	32

Results: GSM - Bottom Band Edge

Frequency (MHz)	Peak Emission Level (dBm)	Limit (dBm)	Margin (dB)	Result
1850.0	-16.9	-13.0	3.9	Complied

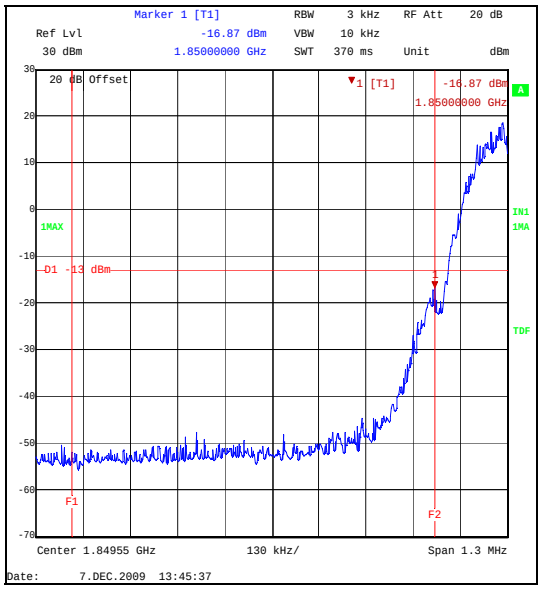
Results: GSM - Top Band Edge

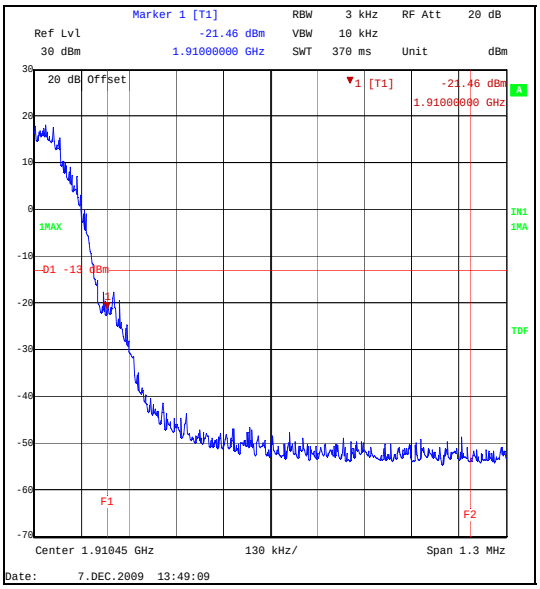
Frequency (MHz)	Peak Emission Level (dBm)	Limit (dBm)	Margin (dB)	Result
1910.0	-21.5	-13.0	8.5	Complied

Note(s):

1. The band edge result was obtained by integrating the100 kHz strip immediately adjacent to the band edge using a channel power function of the measurement analyser.

Transmitter Radiated Emissions at Band Edges (continued)





Transmitter Radiated Emissions at Band Edges (continued)

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):	24
Relative Humidity (%):	31

Results: GPRS - Bottom Band Edge

Frequency (MHz)	Peak Emission Level (dBm)	Limit (dBm)	Margin (dB)	Result
1850.0	-24.4	-13.0	11.4	Complied

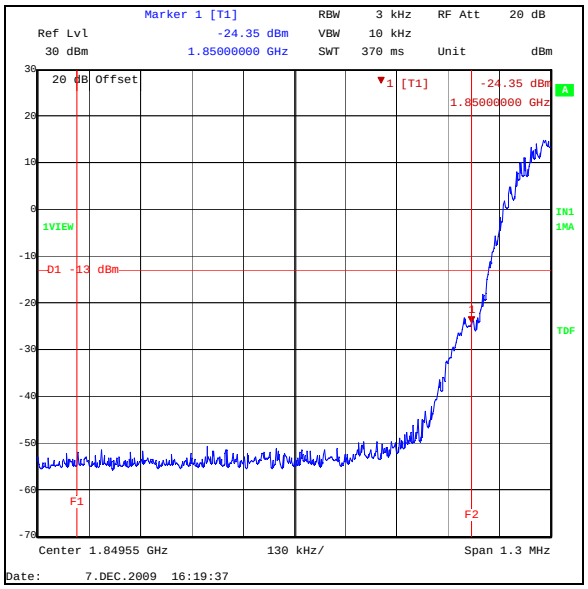
Results: GPRS - Top Band Edge

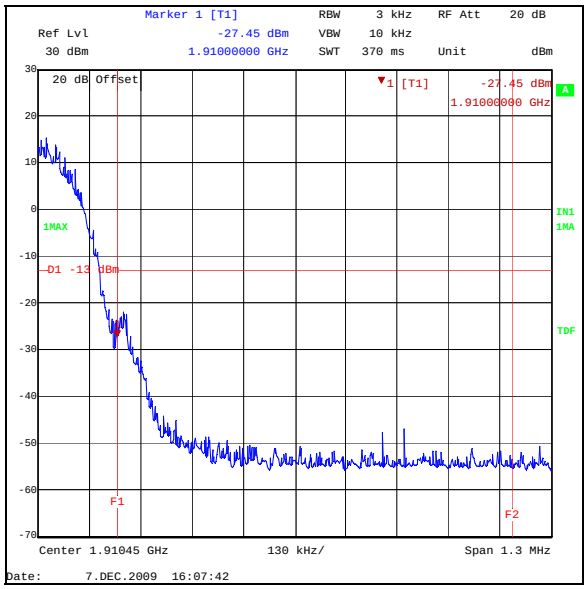
Frequency (MHz)	Peak Emission Level (dBm)	Limit (dBm)	Margin (dB)	Result
1910.0	-27.5	-13.0	14.5	Complied

Note(s):

1. The band edge result was obtained by integrating the100 kHz strip immediately adjacent to the band edge using a channel power function of the measurement analyser.

Transmitter Radiated Emissions at Band Edges (continued)





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)
A1393	Attenuator	HUBER + SUHNER AG	757456	6820.17.B	Calibrated before use	-
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	-
A1574	Waveguide Transition	Marconi Instruments	6237/1	1245	Calibrated before use	-
A1818	Antenna	EMCO	3115	00075692	27 Nov 2009	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	25 Oct 2009	12
A288	Antenna	Chase	CBL6111A	1589	13 Mar 2009	12
A436	Antenna	Flann	20240-20	330	24 Apr 2006	36
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	Calibration not required	-
E0516	Environmental Chamber	TAS	LT1000	23880706	Calibration not required	-
K0002	3m RSE Chamber	Rainford EMC	N/A	N/A	01 Sep 2009	12
K0004	Bench Test Site	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	-
L0990	R&S CMU 200	R&S	CMU 200	S220447	18 Feb 2009	12
M1068	Thermometer	Iso-Tech	RS55	93102884	01 Oct 2009	12
M1124	Spectrum Analyser	Rohde & Schwarz	ESIB26	100046K	09 Mar 2009	12
M1149	Bluetooth Test Set	Anritsu	MT8852A	6K00001529	Calibration not required	-
M1179	Thermometer/Hygrometer	RS	212-124	N/A	21 Jul 2009	12
M1379	Test Receiver	Rohde and Schwarz	ESIB7	100330	20 Aug 2009	12
S021	Dual DC Power Supply Unit	Thurlby Thandar Instruments	CPX200	061034	Calibration not required	-

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