TEST REPORT
FROM
RFI GLOBAL SERVICES LTD

Test of: Enfora EDG0480-40

To: FCC Part 22: 2007 (Subpart H), FCC Part 24: 2007 (Subpart E),
RSS 132 Issue 2 September 2005 and RSS-133 Issue 4 February 2008

Test Report Serial No:
RFI/RPT2/RP73525JD07A

Test Report Serial No:
RFI/RPT1/RP73525JD07A

This Test Report Is Issued Under The Authority Of Steve Flooks, Service Leader:  **pp**	
Checked By: Nigel Davison 	**Report Copy No: PDF01**
Issue Date: 07 November 2008	**Test Dates: 01 July 2008 to 05 July 2008 and 07 November 2008**

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Registered in England and Wales. Company number:2117901

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1. Customer Information

Company Name:	Enfora Inc.
Address:	251 Renner Parkway Richardson Texas TX 75080
Contact Name:	Mr R Holden

2. Equipment Under Test (EUT)

The following information (with the exception of the Date of Receipt) has been supplied by the client:

2.1. Identification of Equipment Under Test (EUT)

Description:	GSM/GPRS/EDGE Module mounted on development board
Brand Name:	Sandia Pipe
Model Name or Number:	EDG0480-40
IMEI:	001036000160021
Serial Number:	002
FCC ID Number:	MIVEDG0408
Industry Canada ID Number:	4160A-EDG0408
Country of Manufacture:	None Stated
Date of Receipt:	01 July 2008

Description:	AC-DC PSU
Model Name:	Switch-Mode Power Supply
Model Number:	EPA-101MU-05A
Part Number:	DPS050250UM-P7-SZ
Cable Length and Type:	2.0 metre / 2-Core
Connected to Port	DC input

2.2. Description of EUT

The equipment under test was a GSM/GPRS/EDGE Module mounted on a development board.

2.3. Modifications Incorporated in EUT

During the course of testing the EUT was not modified.

2.4. Support Equipment

A development board was used to mount the EUT during testing. The development board used an integral antenna with a stated max gain of 0.5dBi for GSM850 and 3.0 dBi for GSM1900 and was used to communicate via a wireless link to a GSM system simulator.

2.5. Additional Information Related to Testing

Power Supply Requirement:	VAC-Norm 110 V, V-Min 93.5 V, V-Max 126.5 V VDC Norm 3.6 V, V-Min 3.3 V, V-Max 4.5 V

FCC Part 22

Transmit Frequency Range:	824 MHz to 849 MHz		
Transmit Channels Tested:	**Channel ID**	**Channel Number**	**Channel Frequency (MHz)**
	Bottom	128	824.2
	Middle	189	836.4
	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	189	881.4
	Top	251	893.8
Maximum Power Output (ERP):	30.9 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	1959.8
	Top	810	1989.8
Maximum Power Output (EIRP):	28.5 dBm		

3. Test Specification, Methods and Procedures

Reference:	FCC Part 22: 2007 Subpart H (Cellular Radiotelephone Service)
Title:	Code of Federal Regulations, Part 22 (47CFR22) Personal Communication Services.

Reference:	FCC Part 24: 2007 Subpart E (Broadband PCS)
Title:	Code of Federal Regulations, Part 24 (47CFR24) Personal Communication Services.

Reference:	RSS-GEN Issue 2 June 2007
Title:	General Requirements and Information for the Certification of Radiocommunication Equipment

Reference:	RSS-132 Issue 2 Sep 2005
Title:	Cellular Telephones Employing New Technologies Operating in the Bands 824-849 MHz and 869-894 MHz

Reference:	RSS-133 Issue 4 Feb 2008
Title:	2 GHz Personal Communications Services

Reference:	SRSP-510 Issue 4 Feb 2008
Title:	Technical Requirements for Personal Communications Services in the Bands 1850-1915 MHz and 1930-1995 MHz

Reference:	SRSP-503 Issue 6 Jun 2003
Title:	Technical Requirements for Cellular Radiotelephone Systems Operating in the Bands 824 – 849 MHz and 869 – 894 MHz

3.1. Methods and Procedures

The methods and procedures used were as detailed in:

ANSI/TIA-603-B-2003
Land Mobile Communications Equipment, Measurements and performance Standards

ANSI C63.2 (1987)
Title: American National Standard for Instrumentation - Electromagnetic noise and field strength.

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.

ANSI C63.5 (1988)
Title: American National Standard for the Calibration of antennas used for Radiated Emission measurements in Electromagnetic Interference (EMI) control.

ANSI C63.7 (1988)
Title: American National Standard Guide for Construction of Open Area Test Sites for performing Radiated Emission Measurements.

CISPR 16-1: (1999)
Title: Specification For Radio Disturbance and Immunity Measuring Apparatus and Methods. Part 1: Radio Disturbance and Immunity Measuring Apparatus.

3.2. Definition of Measurement Equipment

The measurement equipment used complied with the requirements of the standards referenced in the methods & procedures Section above. Appendix 1 contains a list of the test equipment used.

4. Deviations from the Test Specification

There were no deviations from the test specification.

5. Operation of the EUT during Testing

5.1. Operating Modes

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

- Connected to a GSM test system simulator, operating in GSM/GPRS or EDGE transceiver mode.
- Transmitter Modes:
  Testing was performed at full power on the top, middle and bottom channels of the assigned frequency block.
- Output power, Occupied bandwidth and Band edge emissions was performed on all channels using all modulation schemes to improve compliance confidence.
- Receiver/Idle Modes:
  Testing was performed with call terminated from the GSM test system simulator and the equipment left in its Idle mode.

5.2. Configuration and Peripherals

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

- Tests were performed with the EUT powered using AC-DC PSU model EPA-101MU-05A. The frequency tolerance over voltage variations was performed by varying the DC voltage directly to the module.

6. Summary of Test Results

FCC Part 22 and RS 132

Range of Measurements	FCC Reference	IC RSS Reference	Port Type	Result
Receiver/Idle AC Conducted Spurious Emissions (150 kHz to 30 MHz)	15.107	RSS-Gen 7.2.2	AC Mains Input	Complied
Receiver/Idle Radiated Emissions	15.109	RSS-Gen 4.10/6.0 RSS-132 4.6	Enclosure	Complied
Transmitter Effective Radiated Power (ERP)	22.913(a)	RSS-132 4.4 SRSP-503 5.1.3	Antenna	Complied
Transmitter Frequency Stability (Temperature Variation)	22.355	RSS-132 4.3 RSS Gen 4.7	*Antenna Terminals	Complied
Transmitter Frequency Stability (Voltage Variation)	22.355	RSS-132 4.3 RSS Gen 4.7	*Antenna Terminals	Complied
Transmitter Occupied Bandwidth	2.1049	RSS-Gen 4.6.1	*Antenna Terminals	Complied
Transmitter Out of Band Radiated Emissions	2.1053/22.917	RSS-132 4.5	Antenna	Complied
Transmitter Band Edge Radiated Emissions	2.1053/22.917	RSS-132 4.5	Antenna	Complied

***Note: This is an access point on the EUT provided by the manufacturer for the purpose of this test.**

Summary of Test Results (Continued)

FCC Part 24 and RSS-133

Range of Measurements	FCC Reference	IC RSS Reference	Port Type	Result
Idle Mode AC Conducted Spurious Emissions (150 kHz to 30 MHz)	15.107	RSS-Gen 7.2.2	AC Mains Input	Complied
Idle Mode Radiated Spurious Emissions	15.109	RSS-Gen 4.10/6.0 RSS-133 6.6	Enclosure	Complied
Transmitter Effective Isotropic Radiated Power (EIRP)	24.232	RSS-133 6.4 SRSP-510 5.1.2	Antenna	Complied
Transmitter Frequency Stability (Temperature Variation)	24.235	RSS-133 6.3 RSS Gen 4.7	*Antenna Terminals	Complied
Transmitter Frequency Stability (Voltage Variation)	24.235	RSS-133 6.3 RSS Gen 4.7	*Antenna Terminals	Complied
Transmitter Occupied Bandwidth	24.238	RSS-Gen 4.6.1	*Antenna Terminals	Complied
Transmitter Out of Band Radiated Emissions	2.1053/24.238	RSS-133 6.5	Antenna	Complied
Transmitter Band Edge Radiated Emissions	2.1053/24.238	RSS-133 6.5	Antenna	Complied

***Note: This is an access point on the EUT provided by the manufacturer for the purpose of this test.**

6.1. Location of Tests

All the measurements described in this report were performed at the premises of
RFI Global Services Ltd, Ewhurst Park, Ramsdell, Basingstoke, Hampshire, RG26 5RQ.

6.2. Site Registration Numbers

FCC: 90895
IC: 3485

7. Measurements, Examinations and Derived Results

7.1. General Comments

This Section contains test results only.

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 8 for details of measurement uncertainties.

7.2. Test Results – FCC Part 22 (Subpart H) and RSS-132

7.2.1. Receiver/Idle Mode AC Conducted Spurious Emissions - Class B: Section 15.107

Ambient Temperature: 23ºC Relative Humidity: 53%

Tests were performed using the test methods detailed in ANSI C63.4 Section 7.

Results:

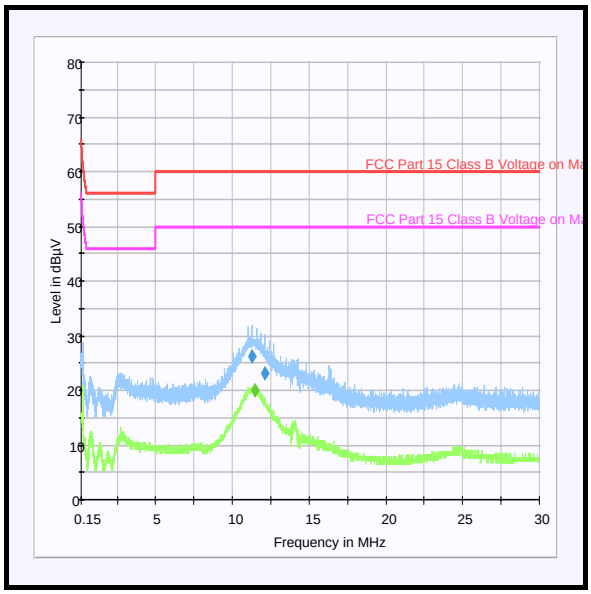
Quasi-Peak Detector Measurements on Live and Neutral Lines

Frequency (MHz)	Line	Level (dBμV)	Limit (dBμV)	Margin (dB)	Result
11.302000	Live	26.1	60.0	33.9	Complied
12.138000	Live	23.1	60.0	36.9	Complied

Average Detector Measurements on Live and Neutral Lines

Frequency (MHz)	Line	Level (dBμV)	Limit (dBμV)	Margin (dB)	Result
11.442000	Live	20.0	50.0	30.0	Complied

Receiver/Idle Mode AC Conducted Spurious Emissions – Class B: Section 15.107 (Continued)



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

7.2.2. Receiver/Idle Mode Radiated Spurious Emissions – Class B Section 15.109

Ambient Temperature: 23ºC Relative Humidity: 53%

Tests were performed using the test methods detailed in ANSI C63.4 Section 8.

Results:

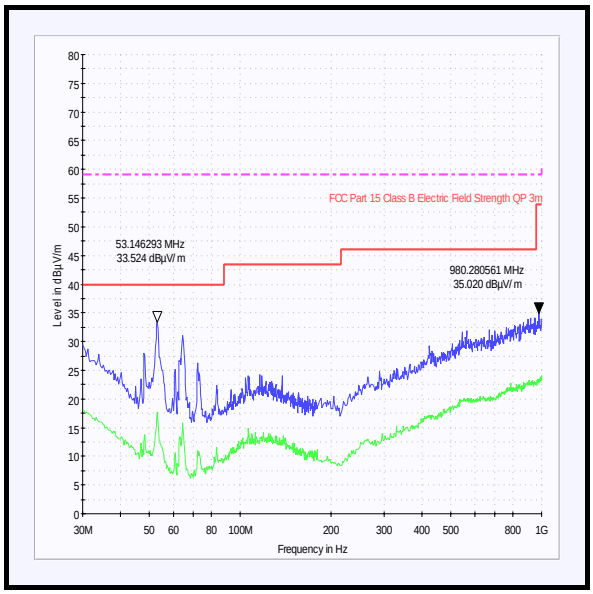
Electric Field Strength Measurements (Frequency Range: 30 to 1000 MHz)

Frequency (MHz)	Antenna Polarity	Quasi Peak Level (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Result
Refer to Note 1					Complied

Note(s):

1. No other spurious emissions were detected within 20dB of the limit.

Receiver/Idle Mode Radiated Spurious Emissions – Class B Section 15.109 (Continued)



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

7.2.3. Receiver/Idle Mode Radiated Spurious Emissions – Class B Section 15.109

Ambient Temperature: 21ºC to 23ºC Relative Humidity: 41% to 53%

Results:

Electric Field Strength Measurements (Frequency Range: 1 to 6 GHz)

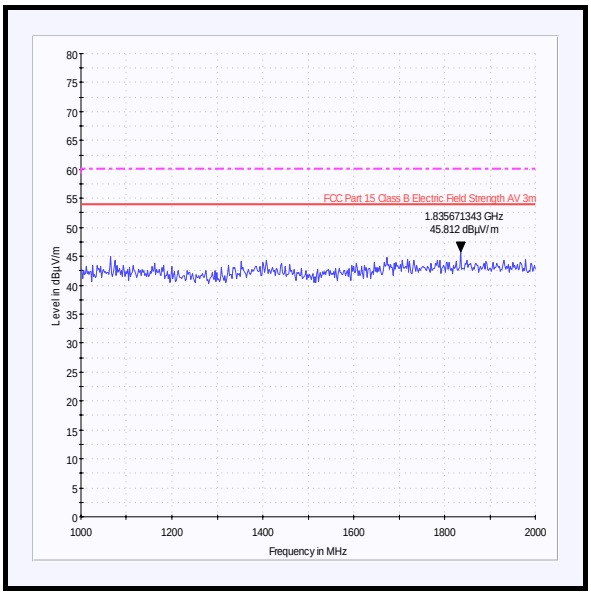
Highest Peak Level

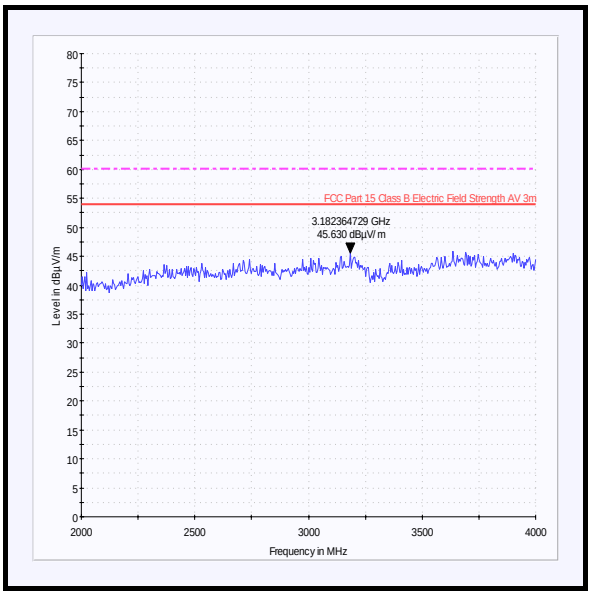
Frequency (GHz)	Antenna Polarity	Detector Level (dBμV)	Transducer Factor (dB)	Actual Level (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Result
1835.671	Vertical	52.3	-6.5	45.8	54.0	8.2	Complied

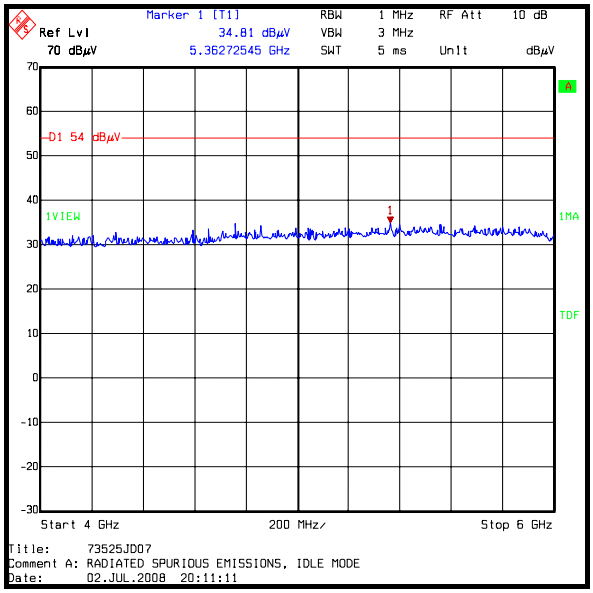
Note(s):

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 – Class B: Section 15.109 (Continued)







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

7.2.4. Transmitter Effective Radiated Power (ERP): Section 22.913(a)(2)

Ambient Temperature: 25ºC Relative Humidity: 32%

Tests were performed using the test methods detailed in ANSI TIA-603-C-2004 referencing FCC CFR Part 2.

Results: GSM

Channel	Frequency (MHz)	Level (dBm)	Limit (dBm)	Margin (dB)	Result
Bottom	824.2	30.1	38.4	8.3	Complied
Middle	836.4	30.3	38.4	8.1	Complied
Top	848.8	30.9	38.4	7.5	Complied

Results: GPRS

Channel	Frequency (MHz)	Level (dBm)	Limit (dBm)	Margin (dB)	Result
Bottom	824.2	30.1	38.4	8.3	Complied
Middle	836.4	30.3	38.4	8.1	Complied
Top	848.8	30.9	38.4	7.5	Complied

Results: EDGE

Channel	Frequency (MHz)	Level (dBm)	Limit (dBm)	Margin (dB)	Result
Bottom	824.2	27.5	38.4	10.9	Complied
Middle	836.4	27.6	38.4	10.8	Complied
Top	848.8	27.4	38.4	11.0	Complied

7.2.5. Transmitter Frequency Stability (Temperature Variation) – Section 22.355

Ambient Temperature: 26ºC Relative Humidity: 38%

Tests were performed using the test methods detailed in ANSI TIA-603-C-2004 referencing FCC CFR Part 2.

Results:

Bottom Channel (824.2 MHz)

Temperature (°C)	Measured Frequency (MHz)	Frequency Error (Hz)	Frequency Error (ppm)	Limit (ppm)	Margin (ppm)	Result
-30	824.200010	10	0.01	2.5	2.49	Complied
-20	824.200008	8	0.01	2.5	2.49	Complied
-10	824.200006	6	0.01	2.5	2.49	Complied
0	824.200007	7	0.01	2.5	2.49	Complied
10	824.200008	8	0.01	2.5	2.49	Complied
20	824.200012	12	0.01	2.5	2.49	Complied
30	824.200016	16	0.02	2.5	2.48	Complied
40	824.200013	13	0.02	2.5	2.48	Complied
50	824.200015	15	0.02	2.5	2.48	Complied

Top Channel (848.8 MHz)

Temperature (°C)	Measured Frequency (MHz)	Frequency Error (Hz)	Frequency Error (ppm)	Limit (ppm)	Margin (ppm)	Result
-30	848.800013	13	0.02	2.5	2.48	Complied
-20	848.800017	17	0.02	2.5	2.48	Complied
-10	848.800014	14	0.02	2.5	2.48	Complied
0	848.800018	18	0.02	2.5	2.48	Complied
10	848.800020	20	0.02	2.5	2.48	Complied
20	848.800018	18	0.02	2.5	2.48	Complied
30	848.800019	19	0.02	2.5	2.48	Complied
40	848.800021	21	0.02	2.5	2.48	Complied
50	848.800024	24	0.02	2.5	2.48	Complied

7.2.6. Transmitter Frequency Stability (Voltage Variation) – Section 22.355

Ambient Temperature: 26ºC Relative Humidity: 38%

Tests were performed using the test methods detailed in ANSI TIA-603-C-2004 referencing FCC CFR Part 2.

Results:

Bottom Channel (824.2 MHz)

Supply Voltage (V)	Measured Frequency (MHz)	Frequency Error (Hz)	Frequency Error (ppm)	Limit (ppm)	Margin (ppm)	Result
3.3	824.200015	15	0.02	2.5	2.48	Complied
4.5	824.200024	24	0.02	2.5	2.48	Complied

Top Channel (848.8 MHz)

Supply Voltage (V)	Measured Frequency (MHz)	Frequency Error (Hz)	Frequency Error (ppm)	Limit (ppm)	Margin (ppm)	Result
3.3	848.800023	23	0.02	2.5	2.48	Complied
4.5	848.800018	18	0.02	2.5	2.48	Complied

7.2.7. Transmitter Occupied Bandwidth: Section 2.1049

Ambient Temperature: 24ºC Relative Humidity: 30%

The 99% occupied bandwidth was measured using the channel bandwidth function of the R&S spectrum analyser referencing FCC CFR Part 2.

Results: GPRS

Mode/Channel	Frequency (MHz)	Resolution Bandwidth (kHz)	Video Bandwidth (kHz)	Occupied Bandwidth (kHz)
Bottom	824.2	5.0	20.0	238.076
Middle	836.4	5.0	20.0	239.279
Top	848.8	5.0	20.0	239.279

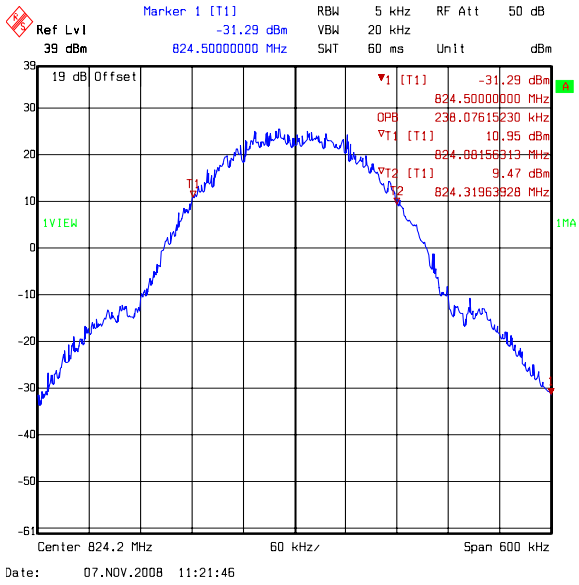
RESULT: GSM

Mode/Channel	Frequency (MHz)	Resolution Bandwidth (kHz)	Video Bandwidth (kHz)	Occupied Bandwidth (kHz)
Bottom	824.2	5.0	20.0	240.481
Middle	836.4	5.0	20.0	240.481
Top	848.8	5.0	20.0	240.481

Results: EDGE

Mode/Channel	Frequency (MHz)	Resolution Bandwidth (kHz)	Video Bandwidth (kHz)	Occupied Bandwidth (kHz)
Bottom	824.2	5.0	20.0	239.278
Middle	836.4	5.0	20.0	239.278
Top	848.8	5.0	20.0	235.671

Mode - GPRS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39 dBm
824.50000000 MHz
SWT 60 ms
Unit dBm
19 dB Offset
T1 [T1] -31.29 dBm
824.50000000 MHz
OPB 238.07615230 kHz
T1 [T1] 10.95 dBm
824.08156313 MHz
T2 [T1] 9.47 dBm
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1VIEW
1MA
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60 kHz/
Span 600 kHz
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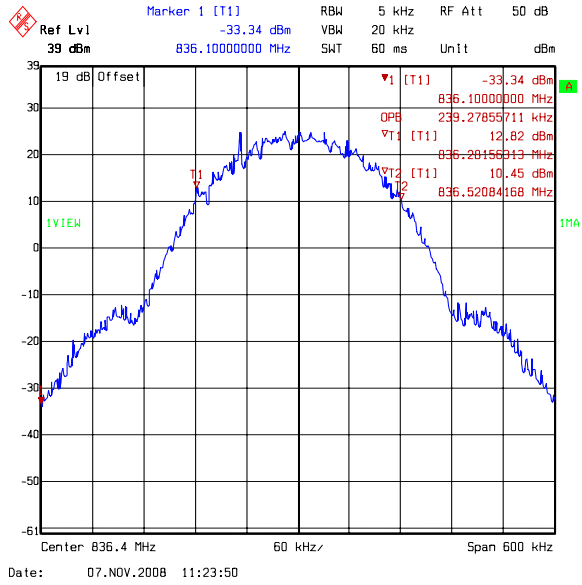
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39 dBm
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SWT 60 ms
Unit dBm
19 dB Offset
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836.10000000 MHz
OPB 239.27855711 kHz
T1 [T1] 12.82 dBm
836.28156313 MHz
T2 [T1] 10.45 dBm
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Span 600 kHz
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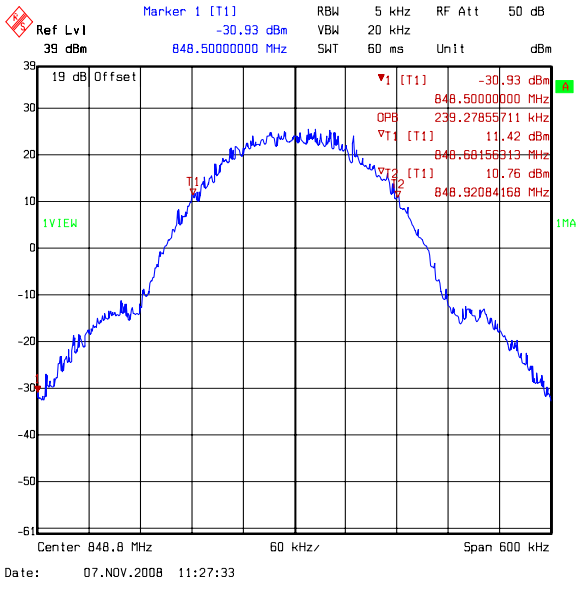
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Unit dBm
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OPB 239.27855711 kHz
T1 [T1] 11.42 dBm
848.68156313 MHz
T2 [T1] 10.76 dBm
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1VIEW
1MA
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60 kHz/
Span 600 kHz
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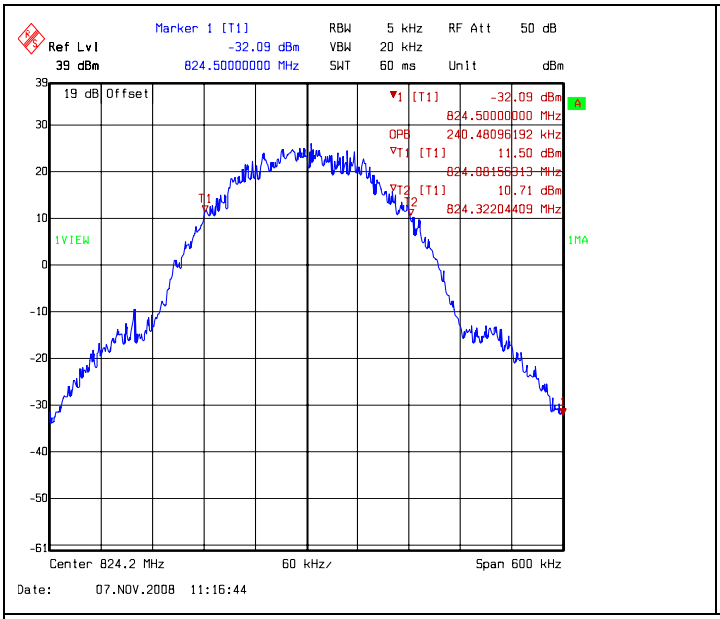
Mode - GSM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OPB 240.48096192 kHz
T1 [T1] 11.50 dBm
824.08156313 MHz
T2 [T1] 10.71 dBm
824.32204409 MHz
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1MA
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60 kHz/
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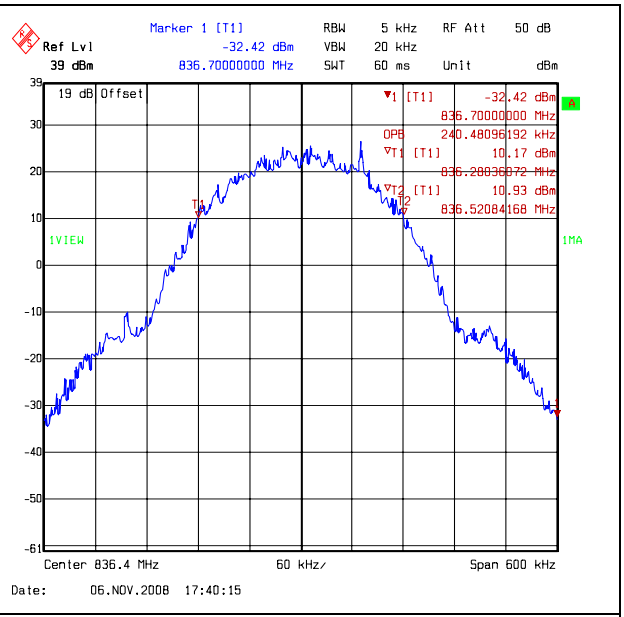
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VBW 20 kHz
39 dBm
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SWT 60 ms
Unit dBm
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OPB 240.48096192 kHz
T1 [T1] 10.17 dBm
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1VIEW
1MA
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60 kHz/
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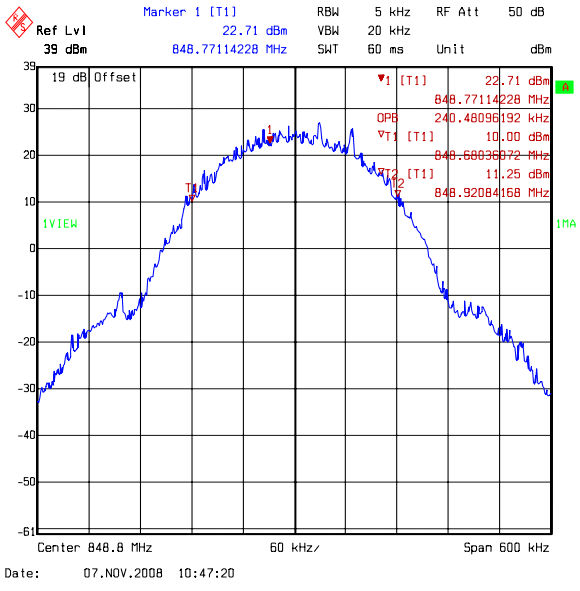
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VBW 20 kHz
39 dBm
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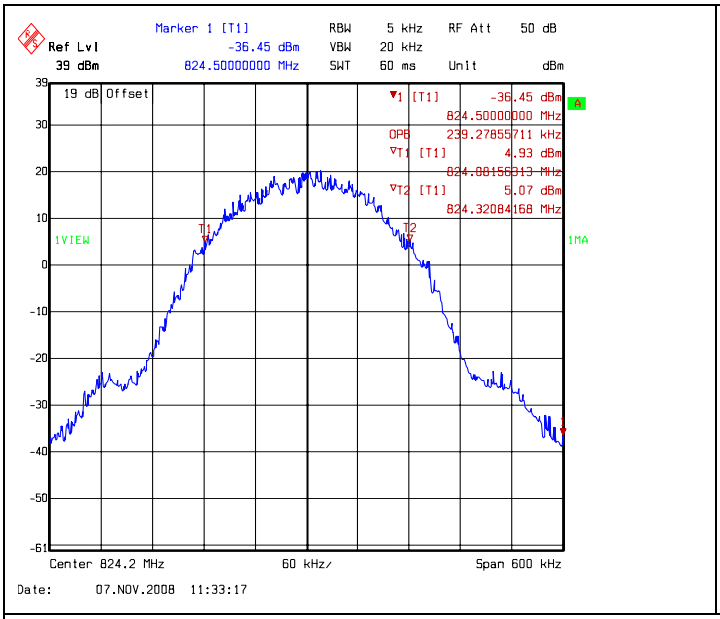
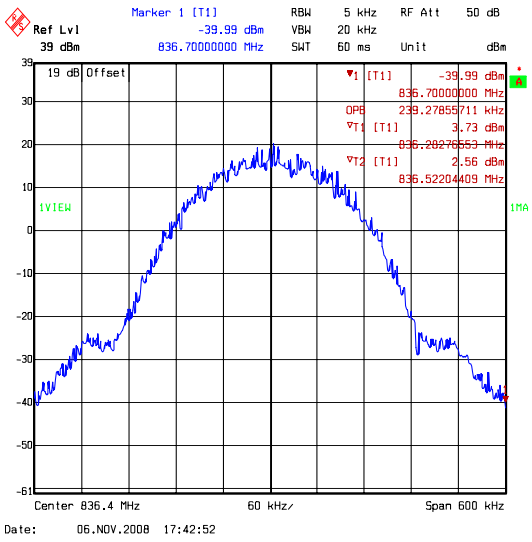
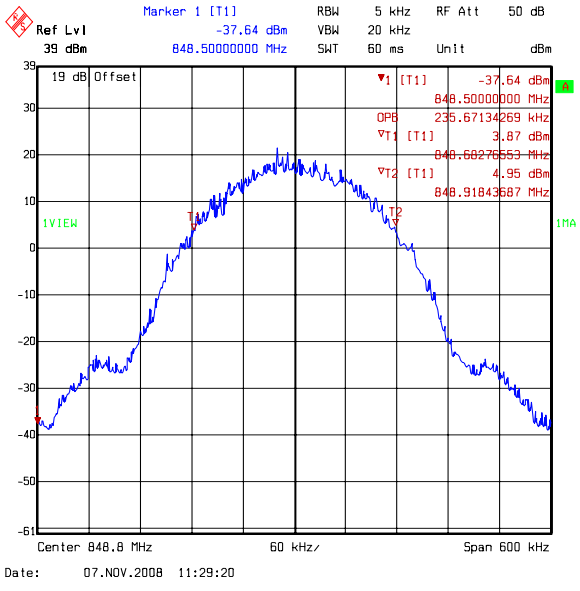
SWT 60 ms
Unit dBm
19 dB Offset
T1 [T1] 22.71 dBm
848.77114228 MHz
OPB 240.48096192 kHz
T1 [T1] 10.00 dBm
848.68036872 MHz
T2 [T1] 11.25 dBm
848.92084168 MHz
1VIEW
1MA
Center 848.8 MHz
60 kHz/
Span 600 kHz
Date: 07.NOV.2008 10:47:20

Test of: Enfora EDG0480-40
To: FCC Part 22: 2007 (Subpart H), FCC Part 24: 2007 (Subpart E), RSS 132 Issue 2 September 2005 and RSS-133 Issue 4 February 2008

Mode - EDGE







7.2.8. Transmitter Out of Band Radiated Emissions: Section 2.1053/22.917

Ambient Temperature: 23ºC to 24ºC Relative Humidity: 45% to 53%

Tests were performed using the test methods detailed in ANSI TIA-603-C-2004 referencing FCC CFR Part 2.

Results:

Bottom Channel

Frequency (MHz)	Peak Emission Level (dBm)	Limit (dBm)	Margin (dB)	Result
1648.4	-42.0	-13.0	29.0	Complied

Middle Channel

Frequency (MHz)	Peak Emission Level (dBm)	Limit (dBm)	Margin (dB)	Result
1672.8	-42.3	-13.0	29.3	Complied

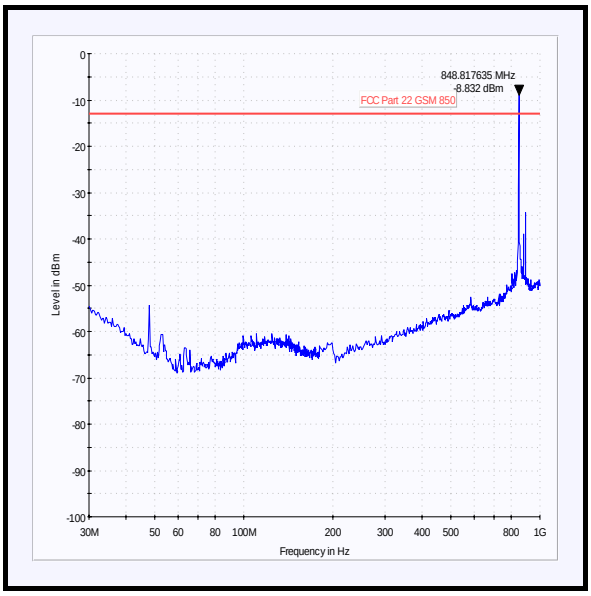
Top Channel

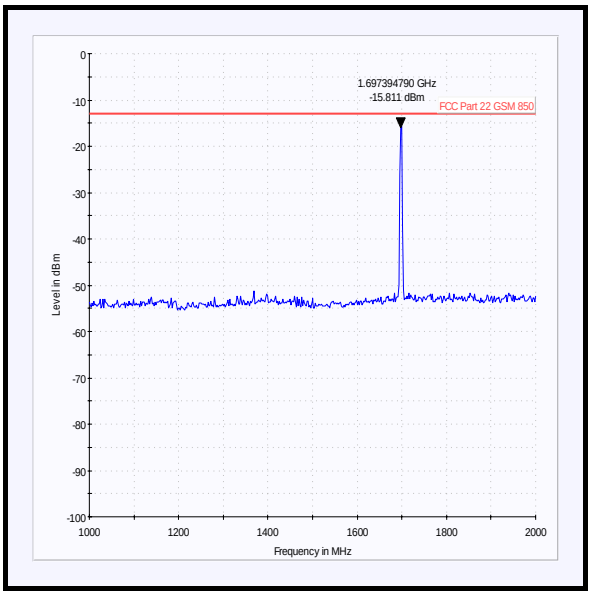
Frequency (MHz)	Peak Emission Level (dBm)	Limit (dBm)	Margin (dB)	Result
1697.6	-40.2	-13.0	27.2	Complied

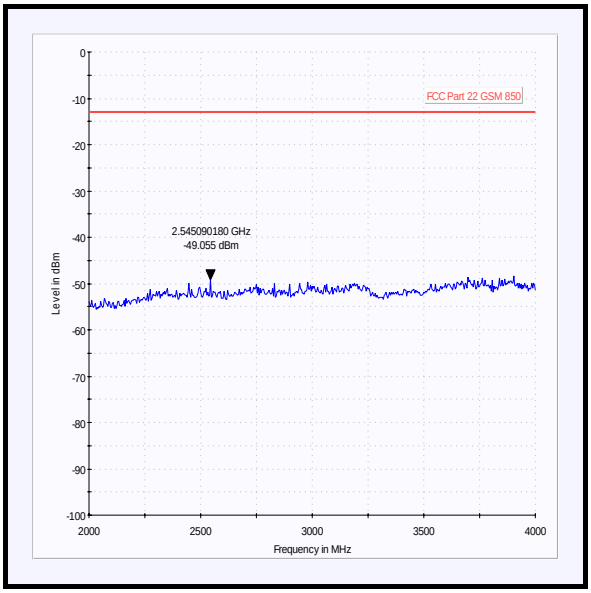
Note(s):

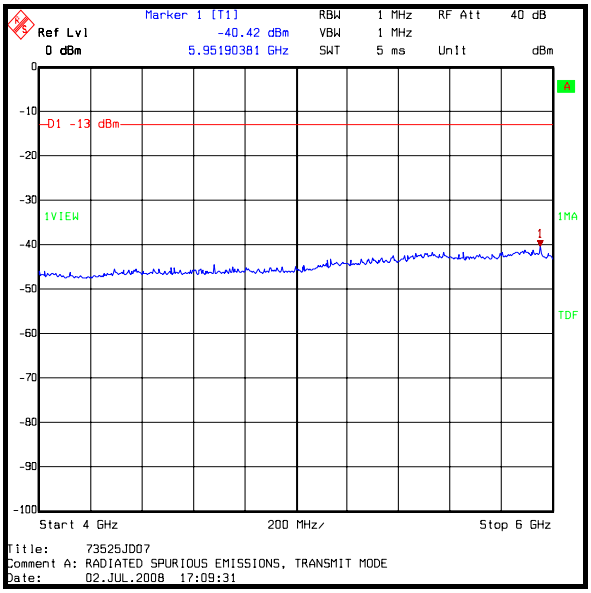
1. No other spurious emissions were detected within 20dB of the limit.

Transmitter Out of Band Radiated Emissions (Continued)

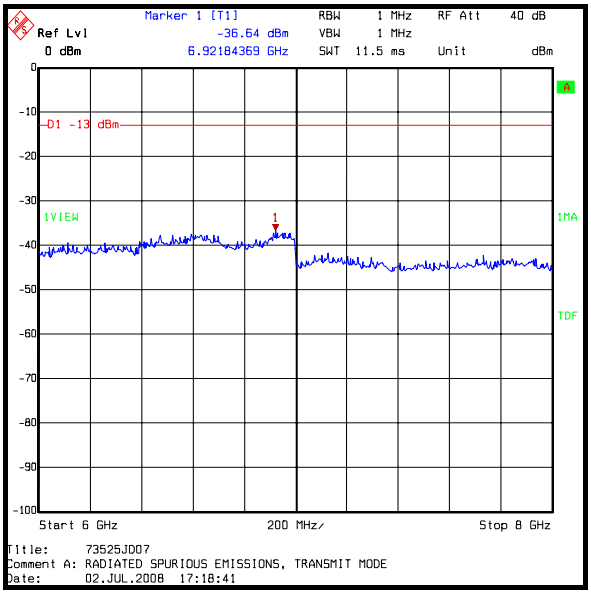


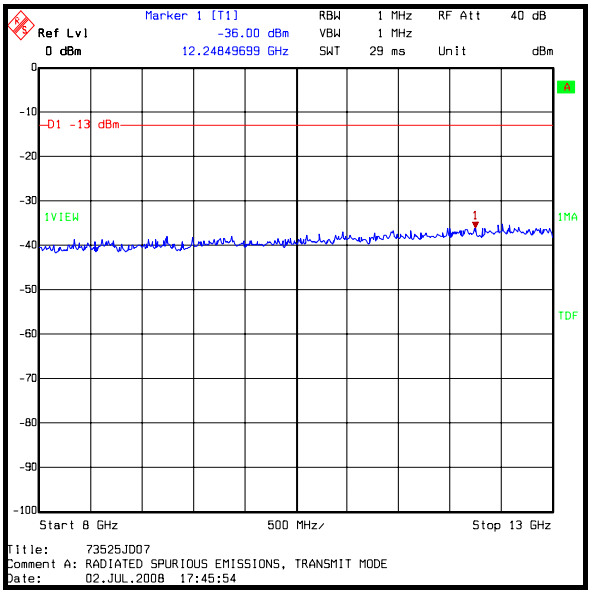






Transmitter Out of Band Radiated Emissions (Continued)





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

7.2.9. Transmitter Radiated Emissions at Band Edges: Section 2.1053/22.917

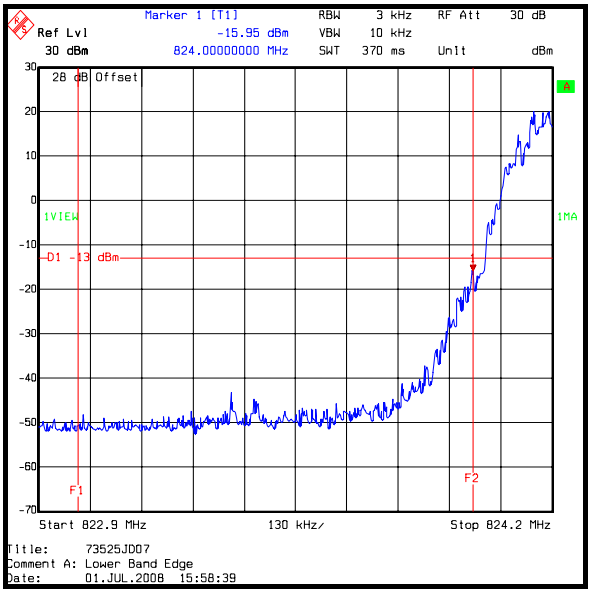
Ambient Temperature: 25ºC Relative Humidity: 30%

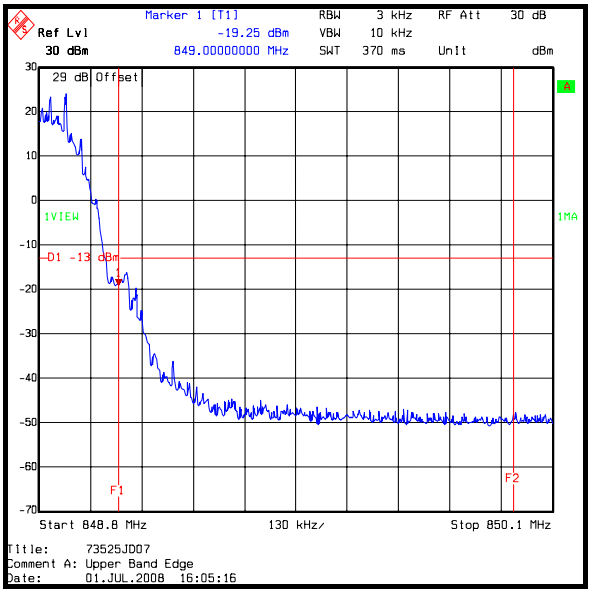
Tests were performed using the test methods detailed in ANSI TIA-603-C-2004 referencing FCC CFR Parts 2 and 22.917.

Results:

Bottom & Top Band Edges - GSM

Frequency (MHz)	Peak Emission Level (dBm)	Limit (dBm)	Margin (dB)	Result
824	-15.9	-13.0	2.9	Complied
849	-19.2	-13.0	6.2	Complied





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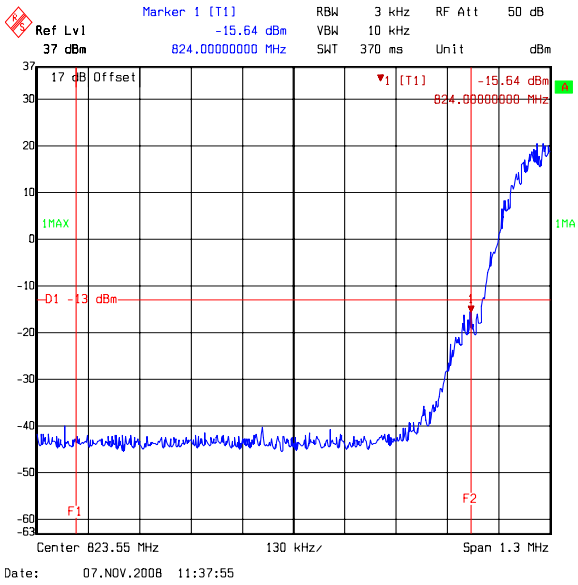
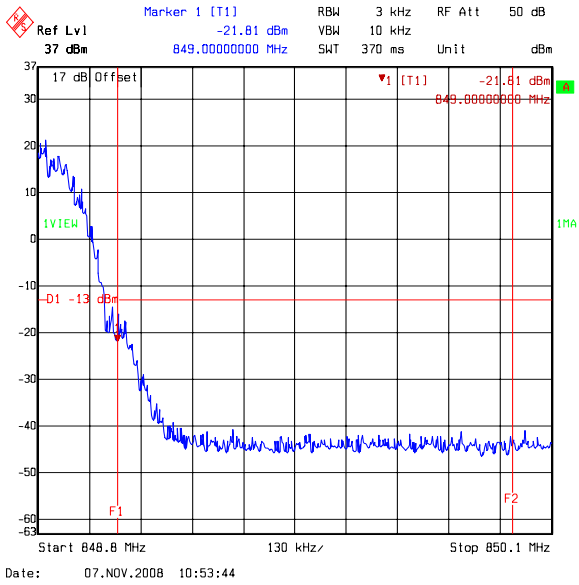
Bottom & Top Band Edges - GPRS

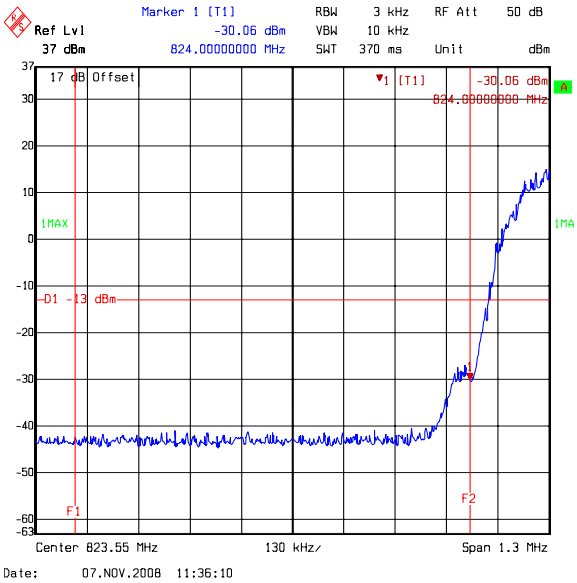
Frequency (MHz)	Peak Emission Level (dBm)	Limit (dBm)	Margin (dB)	Result
824	-15.6	-13.0	2.6	Complied
849	-21.8	-13.0	8.8	Complied

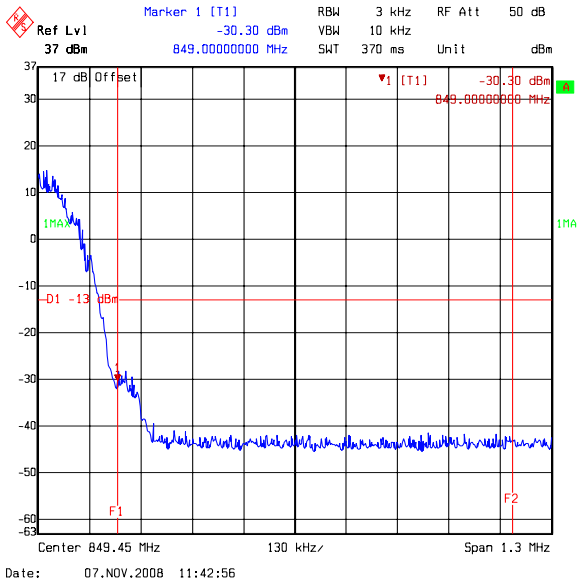




Bottom & Top Band Edges - EDGE

Frequency (MHz)	Peak Emission Level (dBm)	Limit (dBm)	Margin (dB)	Result
824	-30.1	-13.0	17.1	Complied
849	-30.3	-13.0	17.3	Complied





7.3. Test Results – FCC Part 24 (Subpart E) and RSS-133

7.3.1. Idle Mode AC Conducted Spurious Emissions – Class B: Section 15.107

Ambient Temperature: 23ºC Relative Humidity: 53%

Tests were performed using the test methods detailed in ANSI C63.4 Section 7.

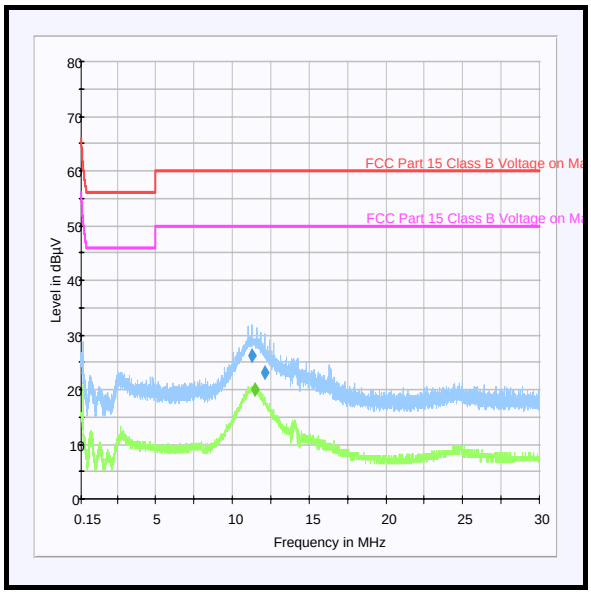
Results:

Quasi-Peak Detector Measurements on Live and Neutral Lines

Frequency (MHz)	Line	Level (dBµV)	Limit (dBµV)	Margin (dB)	Result
11.302000	Live	26.1	60.0	33.9	Complied
12.138000	Live	23.1	60.0	36.9	Complied

Average Detector Measurements on Live and Neutral Lines

Frequency (MHz)	Line	Level (dBµV)	Limit (dBµV)	Margin (dB)	Result
11.442000	Live	20.0	50.0	30.0	Complied



7.3.2.Idle Mode Radiated Spurious Emissions – Class B: Section 15.109

Ambient Temperature: 23ºC Relative Humidity: 53%

Tests were performed using the test methods detailed in ANSI C63.4 Section 8.

Results:

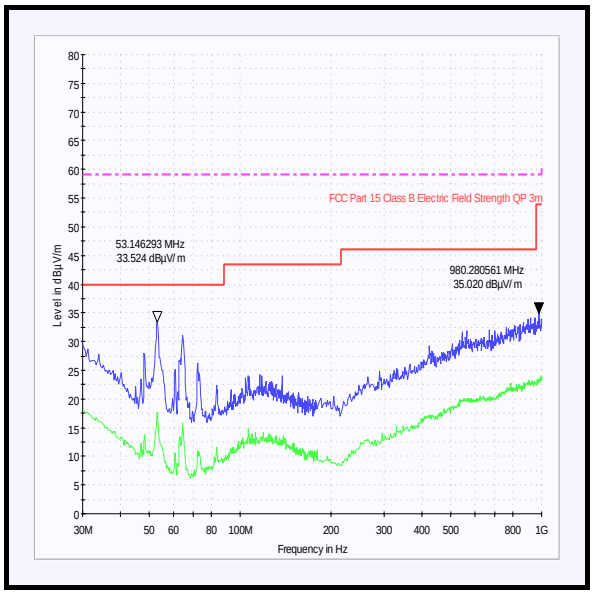
Electric Field Strength Measurements (Frequency Range: 30 to 1000 MHz)

Frequency (MHz)	Antenna Polarity	Quasi Peak Level (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Result
Refer to Note 1					Complied

Note(s):

1. No other spurious emissions were detected within 20dB of the limit.

Idle Mode Radiated Spurious Emissions (Continued)



7.3.3. Idle Mode Radiated Spurious Emissions (Continued)

Ambient Temperature: 22ºC to 23ºC Relative Humidity: 41% to 53%

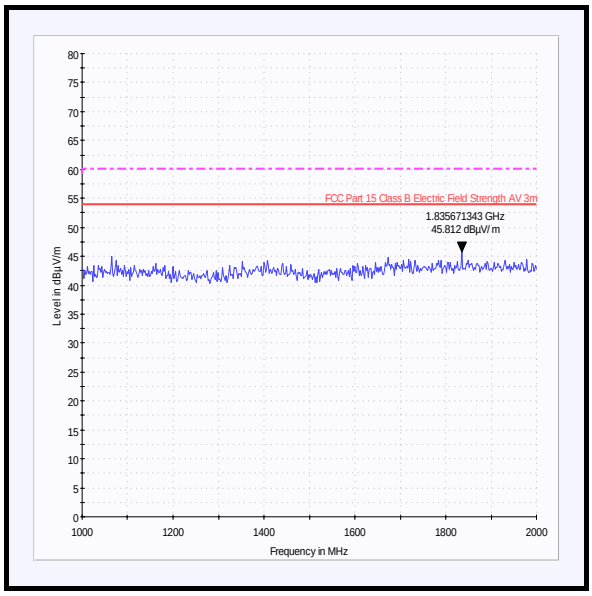
Results:

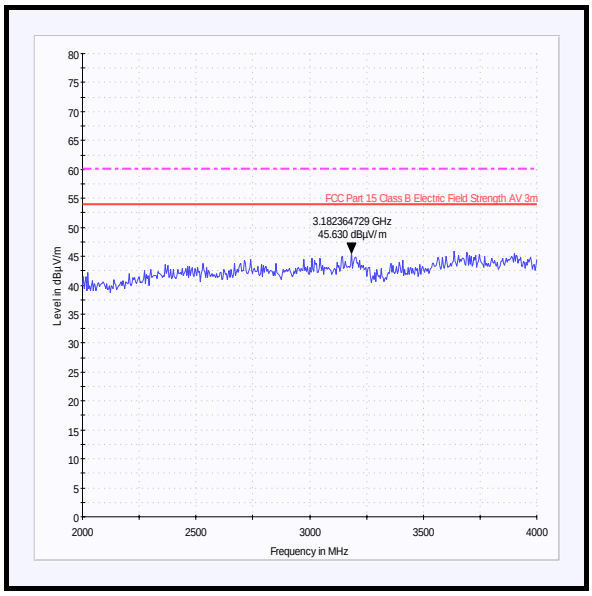
Electric Field Strength Measurements (Frequency Range: 1 to 6 GHz)

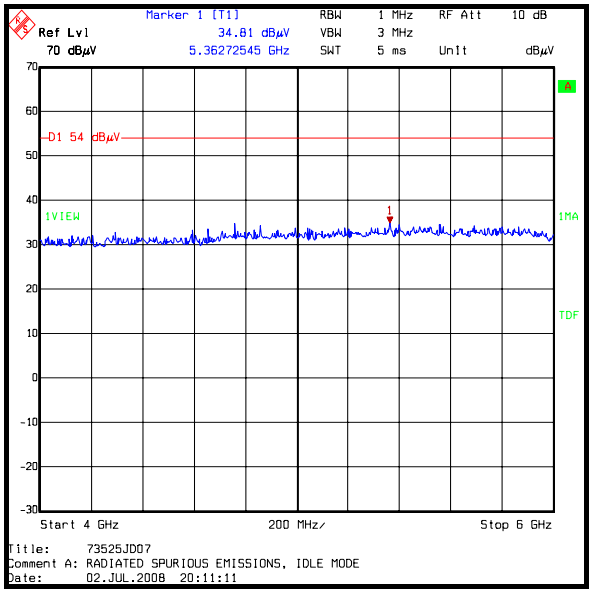
Highest Peak Level:

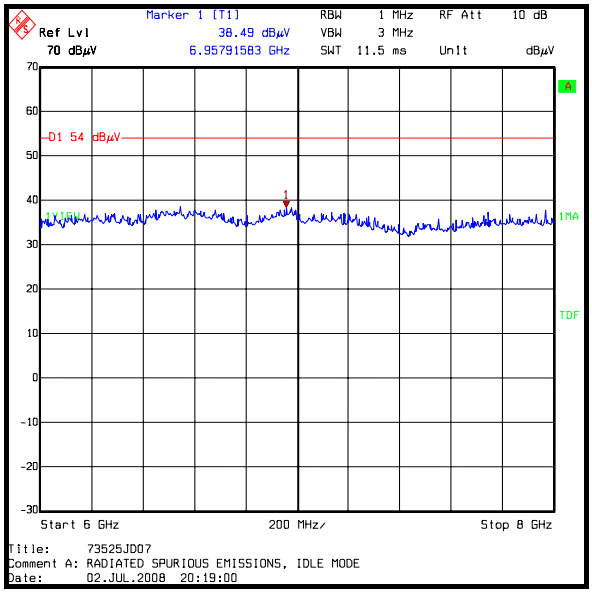
Frequency (GHz)	Antenna Polarity	Detector Level (dBμV)	Transducer Factor (dB)	Actual Level (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Result
1835.671	Vertical	52.3	-6.5	45.8	54.0	8.2	Complied

Idle Mode Radiated Spurious Emissions (Continued)

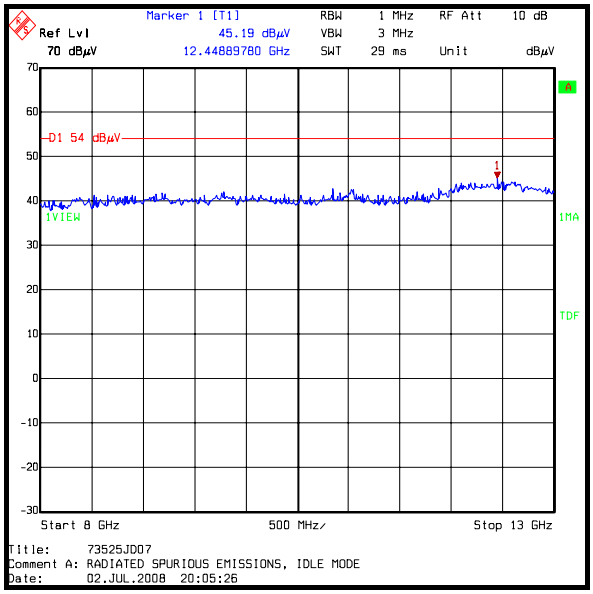








Idle Mode Radiated Spurious Emissions (Continued)



7.3.4. Transmitter Effective Isotropic Radiated Power (EIRP) : Section 24.232

Ambient Temperature: 25ºC Relative Humidity: 32%

Tests were performed using the test methods detailed in ANSI TIA-603-C-2004 referencing FCC CFR Part 2.

Results:- GSM

Channel	Frequency (MHz)	Level (dBm)	Limit (dBm)	Margin (dB)	Result
Bottom	1850.2	28.1	33.0	4.9	Complied
Middle	1879.8	28.5	33.0	4.5	Complied
Top	1909.8	28.3	33.0	4.3	Complied

Results: GPRS

Channel	Frequency (MHz)	Level (dBm)	Limit (dBm)	Margin (dB)	Result
Bottom	1850.2	28.0	33.0	5.0	Complied
Middle	1879.8	28.1	33.0	4.9	Complied
Top	1909.8	28.0	33.0	5.0	Complied

Results: EDGE

Channel	Frequency (MHz)	Level (dBm)	Limit (dBm)	Margin (dB)	Result
Bottom	1850.2	27.8	33.0	5.2	Complied
Middle	1879.8	27.1	33.0	5.9	Complied
Top	1909.8	26.4	33.0	6.6	Complied

7.3.5. Transmitter Frequency Stability (Temperature Variation) : Section 24.235

Ambient Temperature: 24ºC Relative Humidity: 40%

Tests were performed using the test methods detailed in ANSI TIA-603-C-2004 referencing FCC CFR Part 2.

Results:

Bottom Channel (1850.2 MHz)

Temperature (ºC)	Frequency Error (Hz)	Measured Frequency (MHz)	Lower Band Edge Limit (MHz)	Margin (MHz)	Result
-30	37	1850.200037	1850.0	0.200037	Complied
-20	22	1850.200022	1850.0	0.200022	Complied
-10	25	1850.200025	1850.0	0.200025	Complied
0	30	1850.200030	1850.0	0.200030	Complied
10	40	1850.200040	1850.0	0.200040	Complied
20	23	1850.200023	1850.0	0.200023	Complied
30	33	1850.200033	1850.0	0.200033	Complied
40	30	1850.200030	1850.0	0.200030	Complied
50	43	1850.200043	1850.0	0.200043	Complied

Top Channel (1909.8 MHz)

Temperature (ºC)	Frequency Error (Hz)	Measured Frequency (MHz)	Upper Band Edge Limit (MHz)	Margin (MHz)	Result
-30	64	1909.800064	1910.0	0.199936	Complied
-20	59	1909.800059	1910.0	0.199941	Complied
-10	43	1909.800043	1910.0	0.199957	Complied
0	60	1909.800060	1910.0	0.199940	Complied
10	59	1909.800059	1910.0	0.199941	Complied
20	37	1909.800037	1910.0	0.199963	Complied
30	58	1909.800058	1910.0	0.199942	Complied
40	42	1909.800042	1910.0	0.199958	Complied
50	57	1909.800057	1910.0	0.199943	Complied

7.3.6. Transmitter Frequency Stability (Voltage Variation): Section 24.235

Ambient Temperature: 24ºC Relative Humidity: 40%

Tests were performed using the test methods detailed in ANSI TIA-603-C-2004 referencing FCC CFR Part 2.

Results:

Bottom Channel (1850.2 MHz)

Supply Voltage (V)	Frequency Error (Hz)	Measured Frequency (MHz)	Lower Band Edge Limit (MHz)	Margin (MHz)	Result
3.1	26	1850.200026	1850	0.200026	Complied
4.2	28	1850.200028	1850	0.200026	Complied

Top Channel (1909.8 MHz)

Supply Voltage (V)	Frequency Error (Hz)	Measured Frequency (MHz)	Lower Band Edge Limit (MHz)	Margin (MHz)	Result
3.1	47	1909.800047	1910	0.199953	Complied
4.2	45	1909.800045	1910	0.199955	Complied

7.3.7. Transmitter Occupied Bandwidth: Section 2.1049

Ambient Temperature: 25ºC Relative Humidity: 32%

The 99% occupied bandwidth was measured using the channel bandwidth function of the R&S spectrum analyser referencing FCC CFR Part 2.

Results: GSM

Channel	Frequency (MHz)	Resolution Bandwidth (kHz)	Video Bandwidth (kHz)	Occupied Bandwidth (kHz)
Bottom	1850.2	5.0	20.0	241.683
Middle	1879.8	5.0	20.0	241.683
Top	1909.8	5.0	20.0	241.683

Results: GPRS

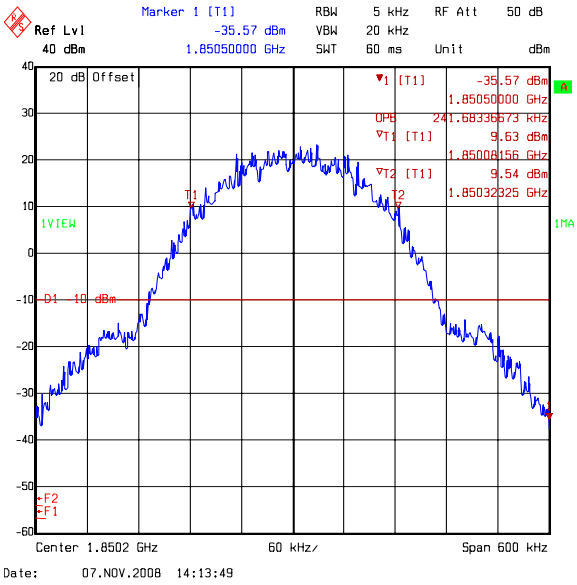
Channel	Frequency (MHz)	Resolution Bandwidth (kHz)	Video Bandwidth (kHz)	Occupied Bandwidth (kHz)
Bottom	1850.2	5.0	20.0	240.481
Middle	1879.8	5.0	20.0	240.481
Top	1909.8	5.0	20.0	240.481

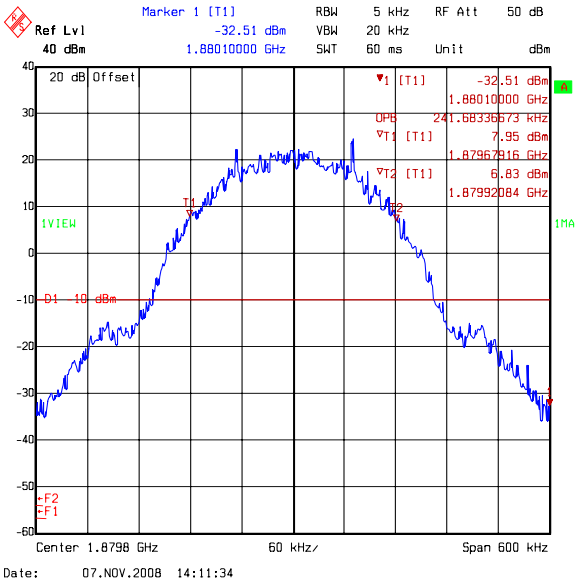
Results: EDGE

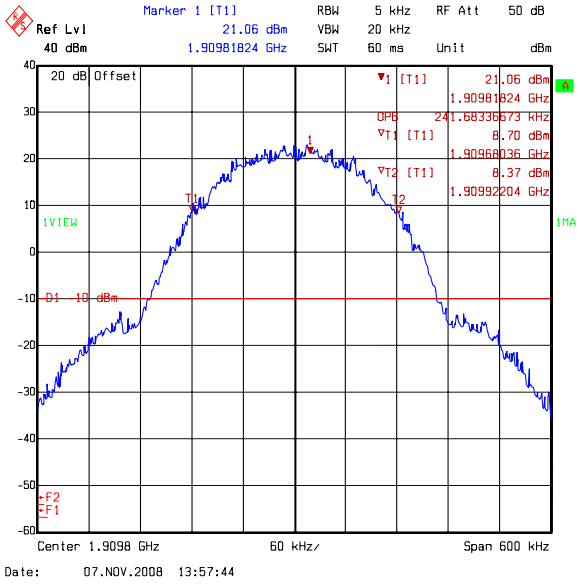
Channel	Frequency (MHz)	Resolution Bandwidth (kHz)	Video Bandwidth (kHz)	Occupied Bandwidth (kHz)
Bottom	1850.2	5.0	20.0	238.076
Middle	1879.8	5.0	20.0	238.076
Top	1909.8	5.0	20.0	238.076

Transmitter Occupied Bandwidth (Continued)

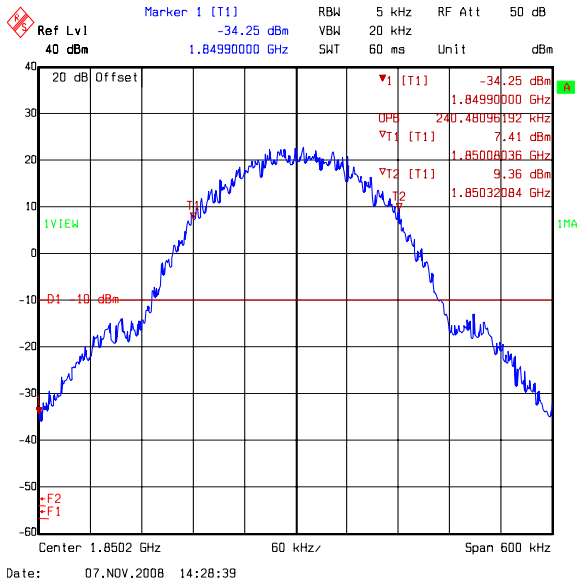
Mode - GSM

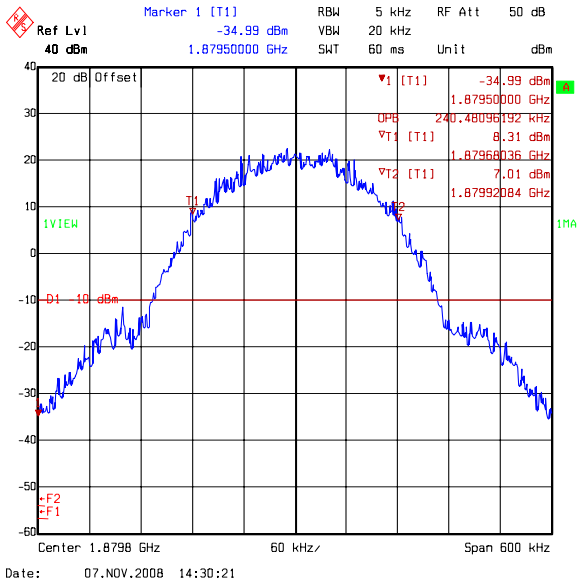


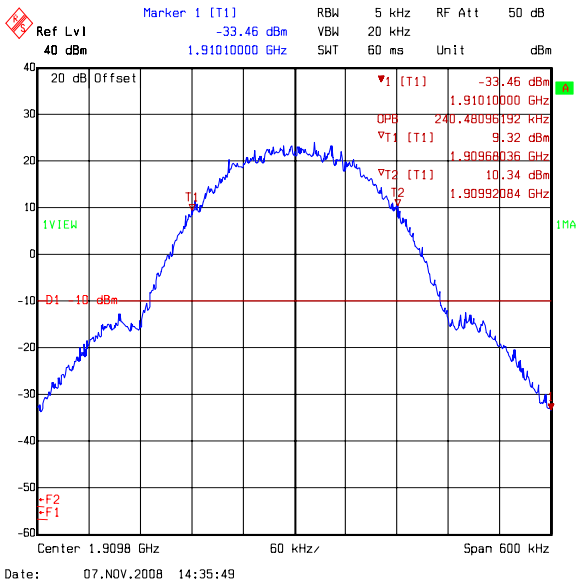




Mode - GPRS

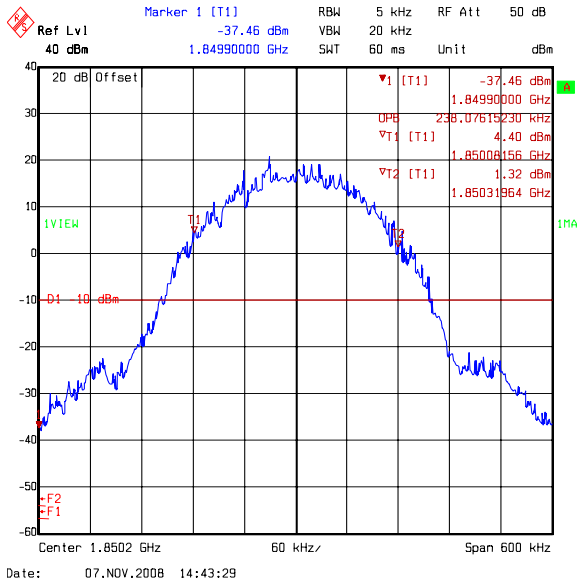

Marker 1 [T1]
RBW 5 kHz
RF Att 50 dB
Ref Lvl
-34.25 dBm
VBW 20 kHz
40 dBm
1.84990000 GHz
SWT 60 ms
Unit dBm
20 dB Offset
▼1 [T1] -34.25 dBm
1.84990000 GHz
OPB 240.48096192 kHz
▽T1 [T1] 7.41 dBm
1.85008036 GHz
▽T2 [T1] 9.36 dBm
1.85032084 GHz
1VIEW
1MA
D1 10 dBm
F2
F1
Center 1.8502 GHz
60 kHz/
Span 600 kHz
Date: 07.NOV.2008 14:28:39

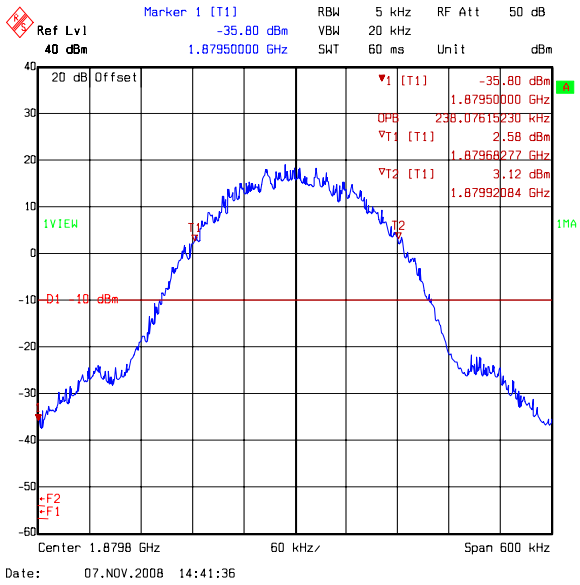

Marker 1 [T1]
RBW 5 kHz
RF Att 50 dB
Ref Lvl
-34.99 dBm
VBW 20 kHz
40 dBm
1.87950000 GHz
SWT 60 ms
Unit dBm
20 dB Offset
▼1 [T1] -34.99 dBm
1.87950000 GHz
OPB 240.48096192 kHz
▽T1 [T1] 8.31 dBm
1.87968036 GHz
▽T2 [T1] 7.01 dBm
1.87992084 GHz
1VIEW
1MA
D1 10 dBm
F2
F1
Center 1.8798 GHz
60 kHz/
Span 600 kHz
Date: 07.NOV.2008 14:30:21

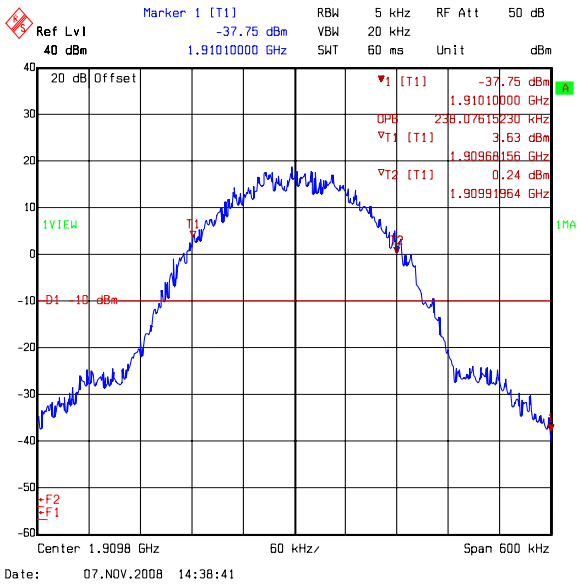

Marker 1 [T1]
RBW 5 kHz
RF Att 50 dB
Ref Lvl
-33.46 dBm
VBW 20 kHz
40 dBm
1.91010000 GHz
SWT 60 ms
Unit dBm
20 dB Offset
▼1 [T1] -33.46 dBm
1.91010000 GHz
OPB 240.48096192 kHz
▽T1 [T1] 9.32 dBm
1.90968036 GHz
▽T2 [T1] 10.34 dBm
1.90992084 GHz
1VIEW
1MA
D1 10 dBm
F2
F1
Center 1.9098 GHz
60 kHz/
Span 600 kHz
Date: 07.NOV.2008 14:35:49

Test of: **Enfora EDG0480-40**
To: **FCC Part 22: 2007 (Subpart H), FCC Part 24: 2007 (Subpart E), RSS 132 Issue 2 September 2005 and RSS-133 Issue 4 February 2008**

Mode - EDGE







7.3.8. Transmitter Out of Band Radiated Emissions: Section 2.1053/24.238

Ambient Temperature: 22ºC to 23ºC Relative Humidity: 41% to 53%

Tests were performed using the test methods detailed in ANSI TIA-603-C-2004 referencing FCC CFR Parts 2 and 24.238.

Results:

Bottom Channel

Frequency (MHz)	Peak Emission Level (dBm)	Limit (dBm)	Margin (dB)	Result
3700.4	-30.0	-13.0	17.0	Complied

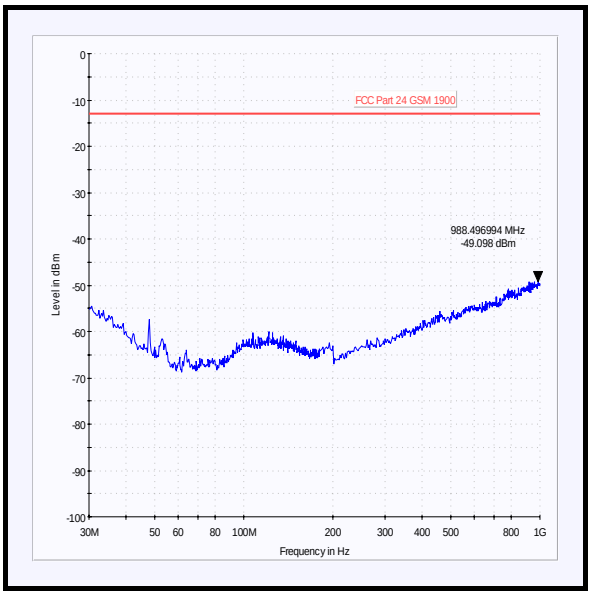
Middle Channel

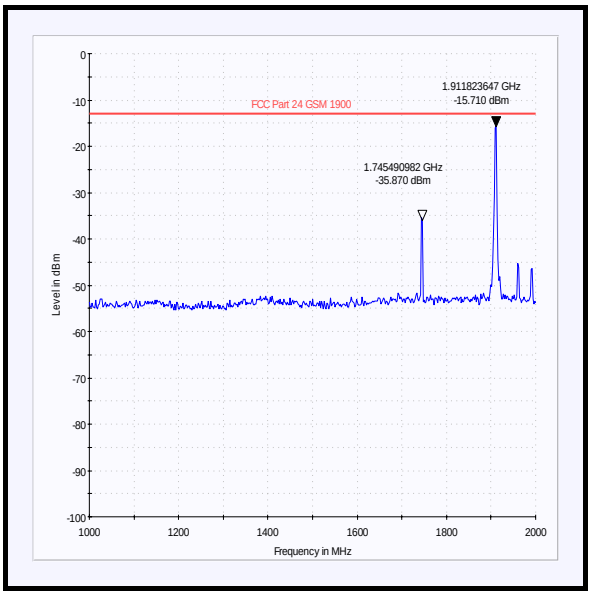
Frequency (MHz)	Peak Emission Level (dBm)	Limit (dBm)	Margin (dB)	Result
3759.6	-28.0	-13.0	15.0	Complied

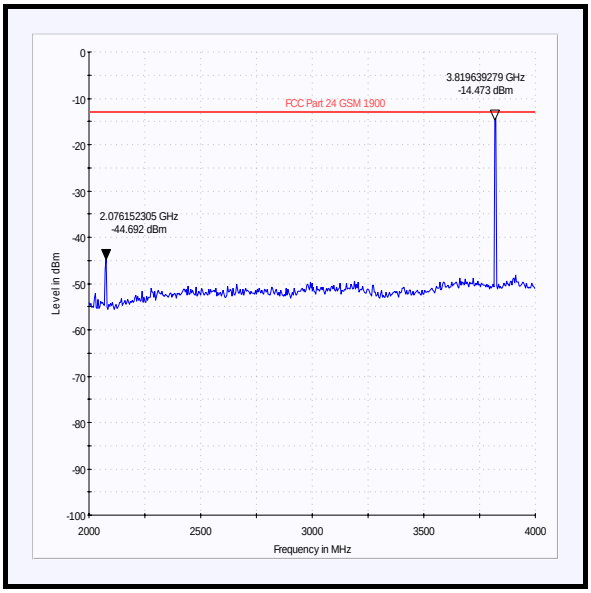
Top Channel

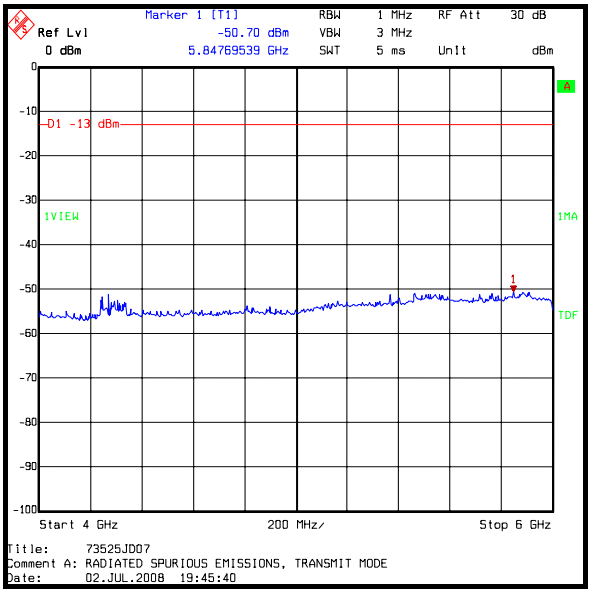
Frequency (MHz)	Peak Emission Level (dBm)	Limit (dBm)	Margin (dB)	Result
3819.6	-30.4	-13.0	17.4	Complied

Transmitter Out of Band Radiated Emissions (Continued) : Section 2.1053/24.238

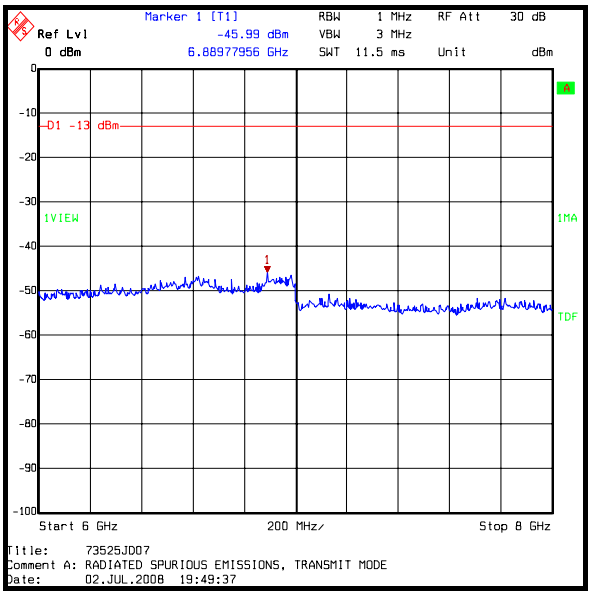


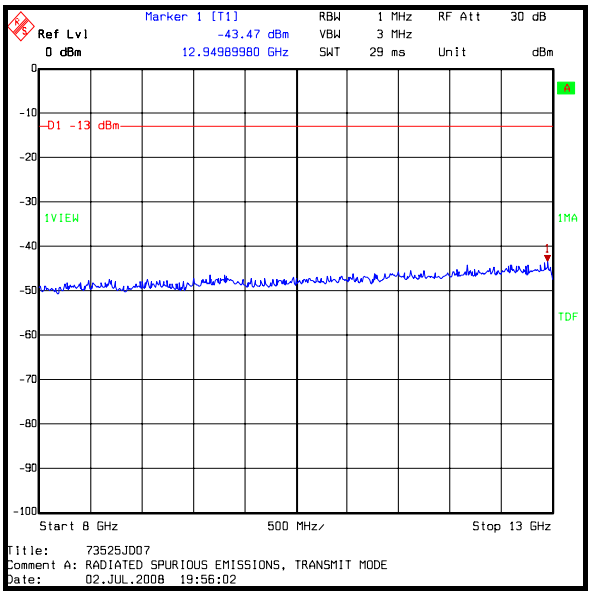


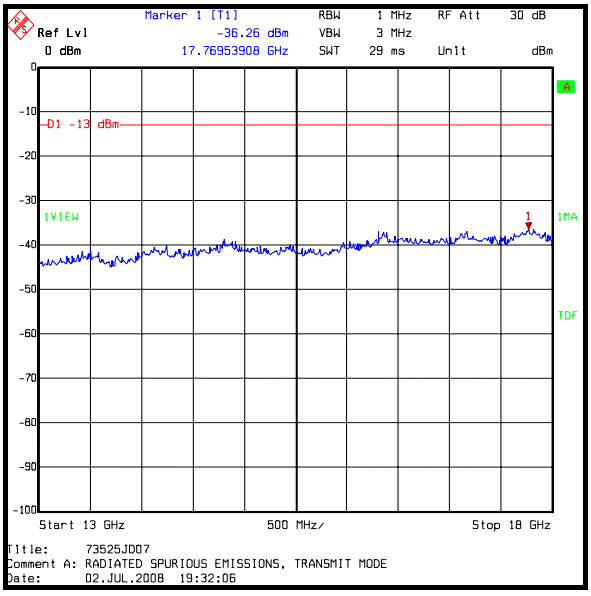


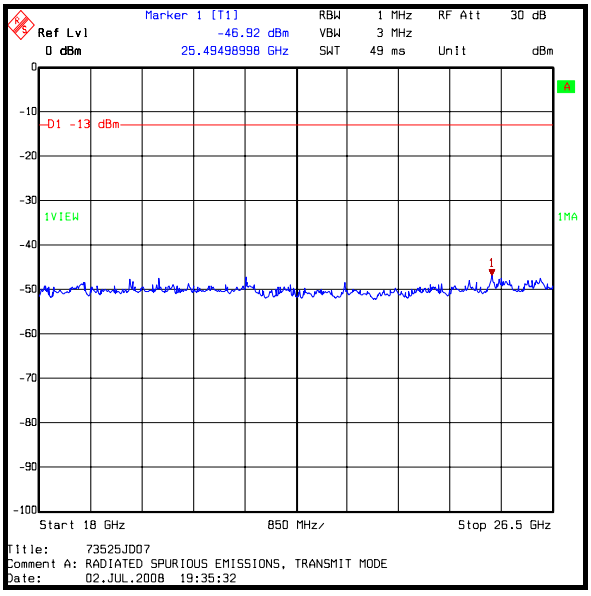


Transmitter Out of Band Radiated Emissions (Continued)









7.3.9. Transmitter Radiated Emissions at Band Edges: Section 2.1053/24.238

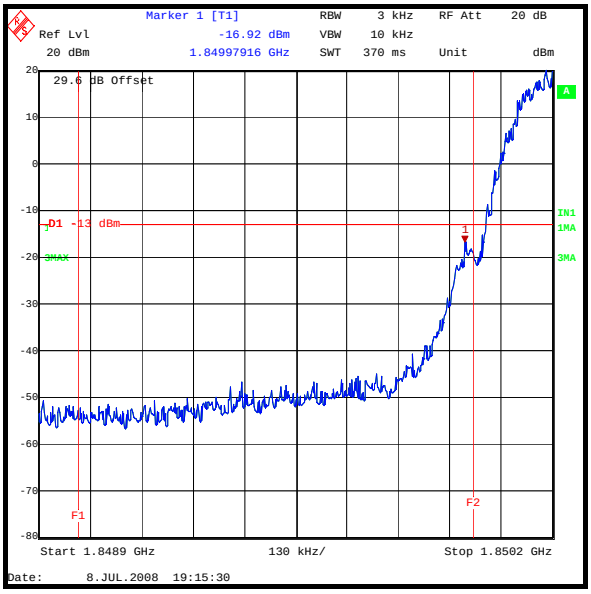
Ambient Temperature: 20ºC Relative Humidity: 50%

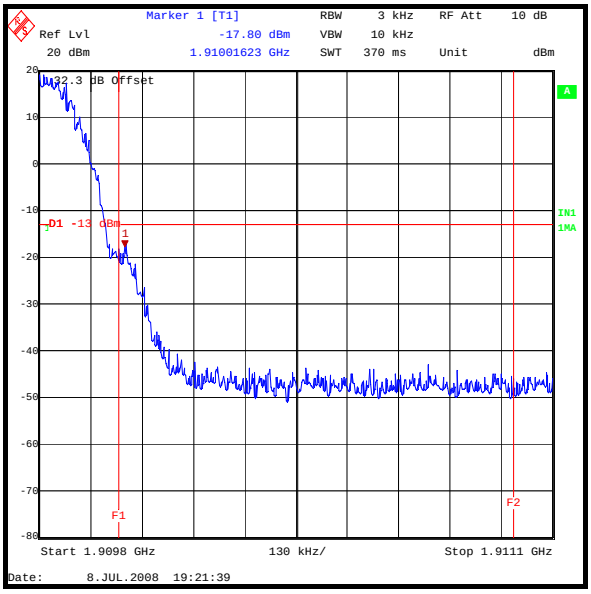
Tests were performed using the test methods detailed in ANSI TIA-603-C-2004 referencing FCC CFR Parts 2 and 24.238.

Results:

Bottom & Top Band Edges - GSM

Frequency (MHz)	Spurious Emission (dBm)	Limit (dBm)	Margin (dB)	Result
1850	-16.9	-13.0	3.9	Complied
1910	-17.8	-13.0	4.8	Complied





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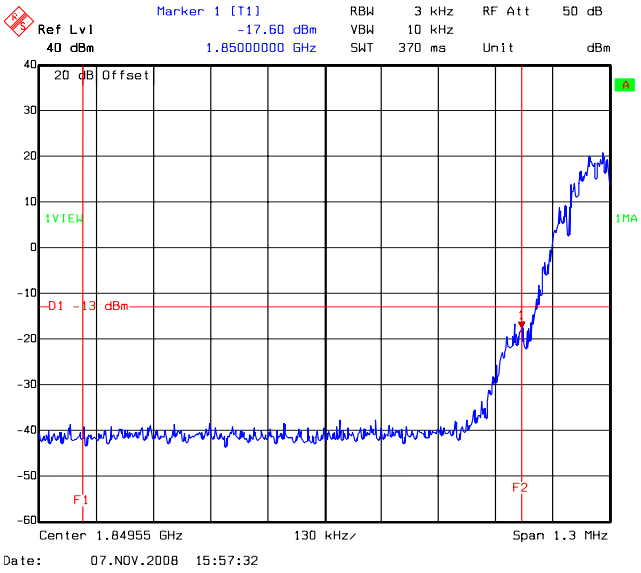
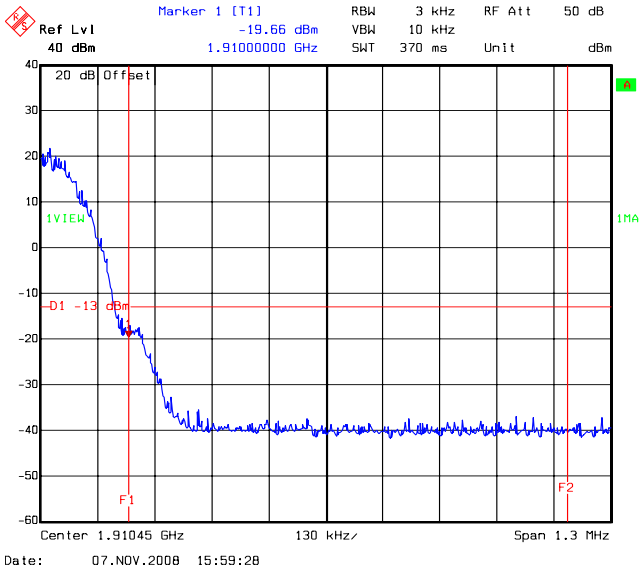
Bottom & Top Band Edges - GPRS

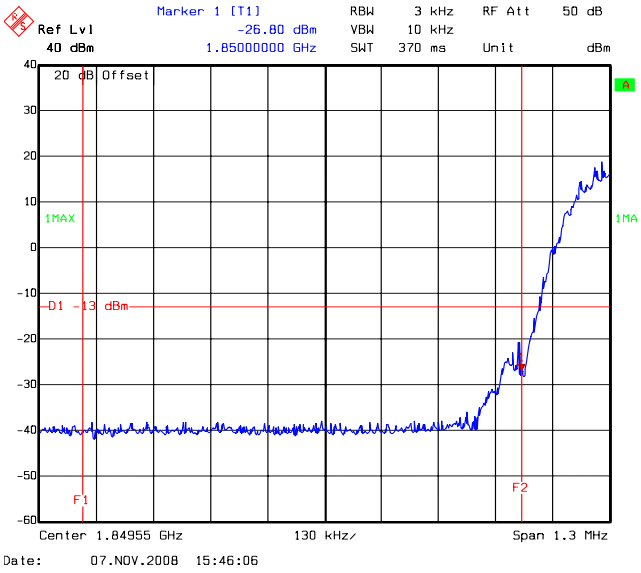
Frequency (MHz)	Spurious Emission (dBm)	Limit (dBm)	Margin (dB)	Result
1850	-17.6	-13.0	4.6	Complied
1910	-19.7	-13.0	6.7	Complied

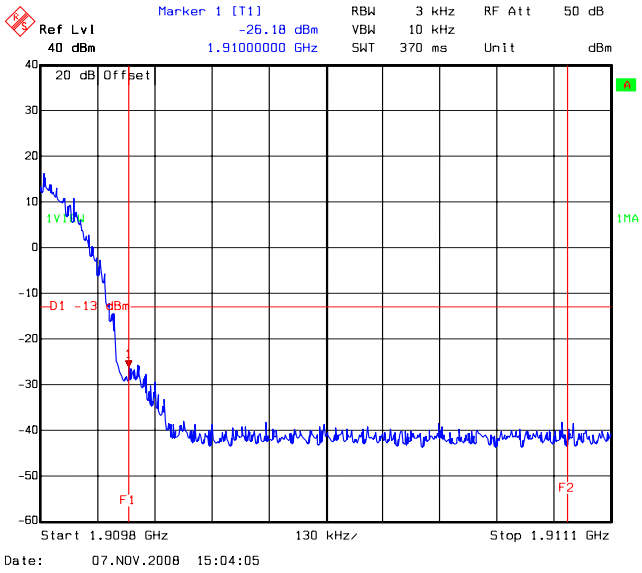




Bottom & Top Band Edges - EDGE

Frequency (MHz)	Spurious Emission (dBm)	Limit (dBm)	Margin (dB)	Result
1850	-26.8	-13.0	13.8	Complied
1910	-26.2	-13.0	13.2	Complied





8. Measurement Uncertainty

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

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

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

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

Measurement Type	Range	Confidence Level (%)	Calculated Uncertainty
AC Conducted Spurious Emissions	0.15 MHz to 30 MHz	95%	+/- 3.25 dB
Effective Radiated Power (ERP)	Not applicable	95%	+/- 1.78 dB
Frequency Stability	Not applicable	95%	+/- 20 Hz
Minimum Bandwidth	Not applicable	95%	+/- 0.12 %
Occupied Bandwidth	824 to 849 MHz	95%	+/- 0.12 %
Radiated Spurious Emissions	30 MHz to 1000 MHz	95%	+/- 5.26 dB
Radiated Spurious Emissions	1 GHz to 26 GHz	95%	+/- 1.78 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)
A020	Tripod	THURLEY	TRI-74-S	None	Calibration not required	-
A028	Antenna	Eaton	91888-2	304	08 Jun 2006	36
A031	Antenna	Eaton	91889-2	557	08 Jun 2006	36
A059	Antenna	EMCO	3146	8902-2378	07 Feb 2008	12
A1036	Oscilloscope probe	RS Components	489-734	Not stated	Calibration not required	-
A1069	Single Phase LISN	Rohde & Schwarz	ESH3-Z5	837469/012	07 Mar 2008	12
A1531	Antenna	AARONIA AG	7025	02458	Calibration not required	-
A1534	Pre Amplifier	Hewlett Packard	8449B OPT H02	3008A00405	Calibrated before use	-
A1830	Pulse Limiter	Rhode & Schwarz	ESH3-Z2	100668	16 Jan 2008	12
A253	Antenna	Flann Microwave	12240-20	128	17 Nov 2006	36
A254	Antenna	Flann Microwave	14240-20	139	17 Nov 2006	36
A255	Antenna	Flann Microwave	16240-20	519	17 Nov 2006	36
A256	Antenna	Flann Microwave	18240-20	400	17 Nov 2006	36
A436	Antenna	Flann	20240-20	330	24 Apr 2006	36
C1002	Cable	Rosenberger	FA210A1010M50509	001	Calibrated before use	-
C1166	Cable	Rosenberger Micro-Coax	FA210A1020007070	43189-02	Calibrated before use	-
C1268	Cable	Rosenberger	FA210A0075008080	49356-1	Calibrated before use	-
C151	Cable	Rosenberger	UFA210A-1-1181-70x70	None	Calibrated before use	-

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RFI No.	Instrument	Manufacturer	Type No.	Serial No.	Date Last Calibrated	Cal. Interval (months)
C160	Cable	Rosenberger	UFA210A-1-1181-70x70	None	Calibrated before use	-
C348	Cable	Rosenberger	UFA210A-1-1181-70x70	2993	Calibrated before use	-
C363	Cable	Rosenberger	RG142	None	Calibrated before use	-
E0513	Environmental Chamber	TAS	LT600 Series 3	23900506	Calibration not required	-
M1093	Communications Test Set	Will tek	4202S	0513018	Calibration not required	-
M1124	Spectrum Analyser	Rohde & Schwarz	ESIB26	100046K	19 Feb 2008	12
M1140	Radio Communications Analyser	Anritsu	MT8820A	6K0000647	Calibration not required	-
M1242	Spectrum Analyser	Rohde & Schwarz, Inc.	FSEM30	845986/022	29 Nov 2007	12
M1249	Thermometer	Fluke	52II	88800049	09 Jul 2008	12
M1251	Digital Multimeter	Fluke	175	89170179	21 Dec 2007	12
M1263	Test Receiver	Rohde & Schwarz	ESIB7	100265	06 Feb 2008	12
M166	Thermometer/Barometer/Hygrometer	EuroCom	None	None	18 Jun 2008	12
M295	Spectrum Analyser	Hewlett Packard	8564E	3846A01561	13 Nov 2007	12
S202	Site 2	RFI	2	S202-15011990	28 Jan 2008	12
S212	Emissions Screened Room	RFI	12	None	Verified before use	-

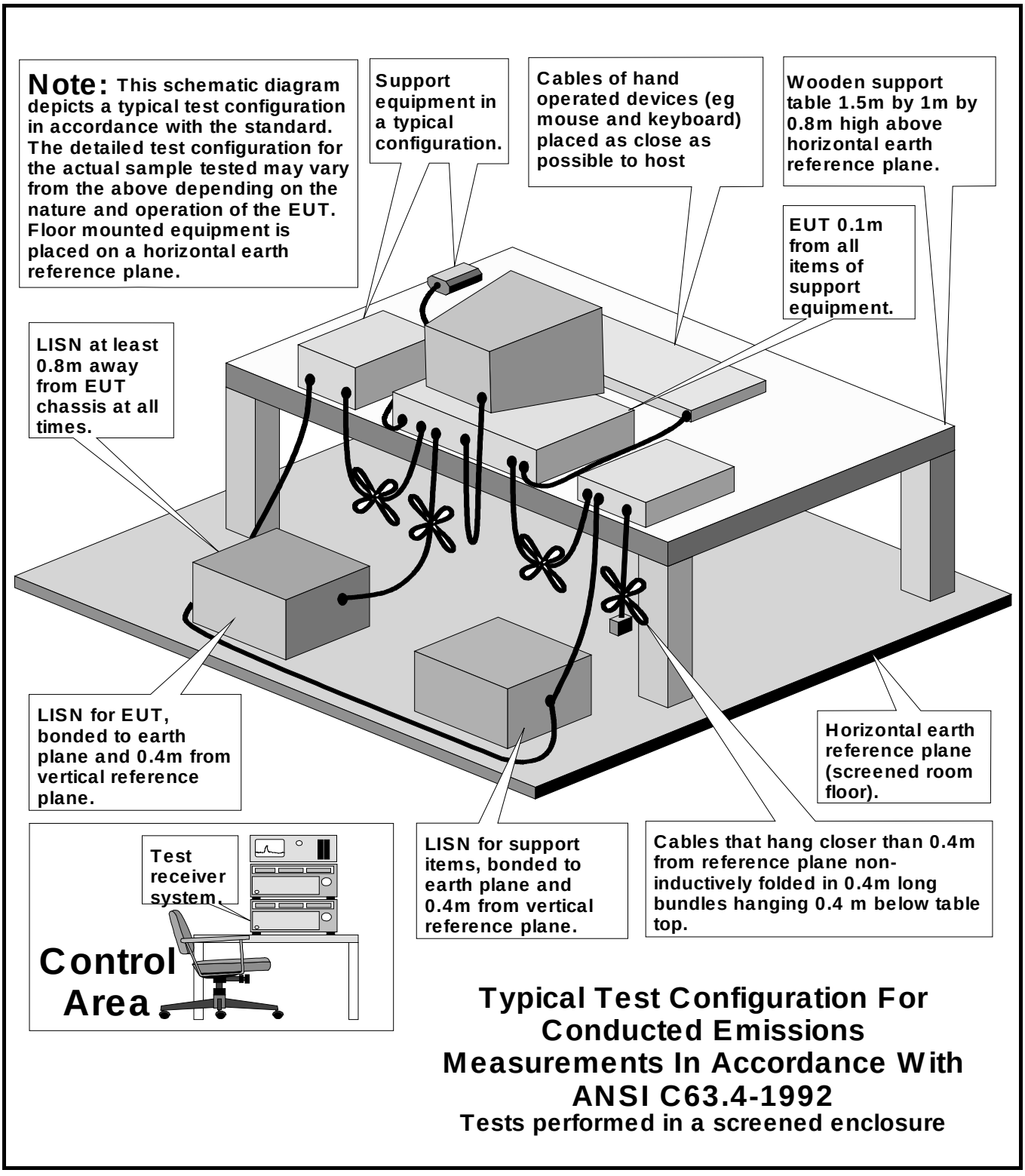
NB In accordance with UKAS requirements, all the measurement equipment is on a calibration schedule.

Appendix 2. Test Configuration Drawings

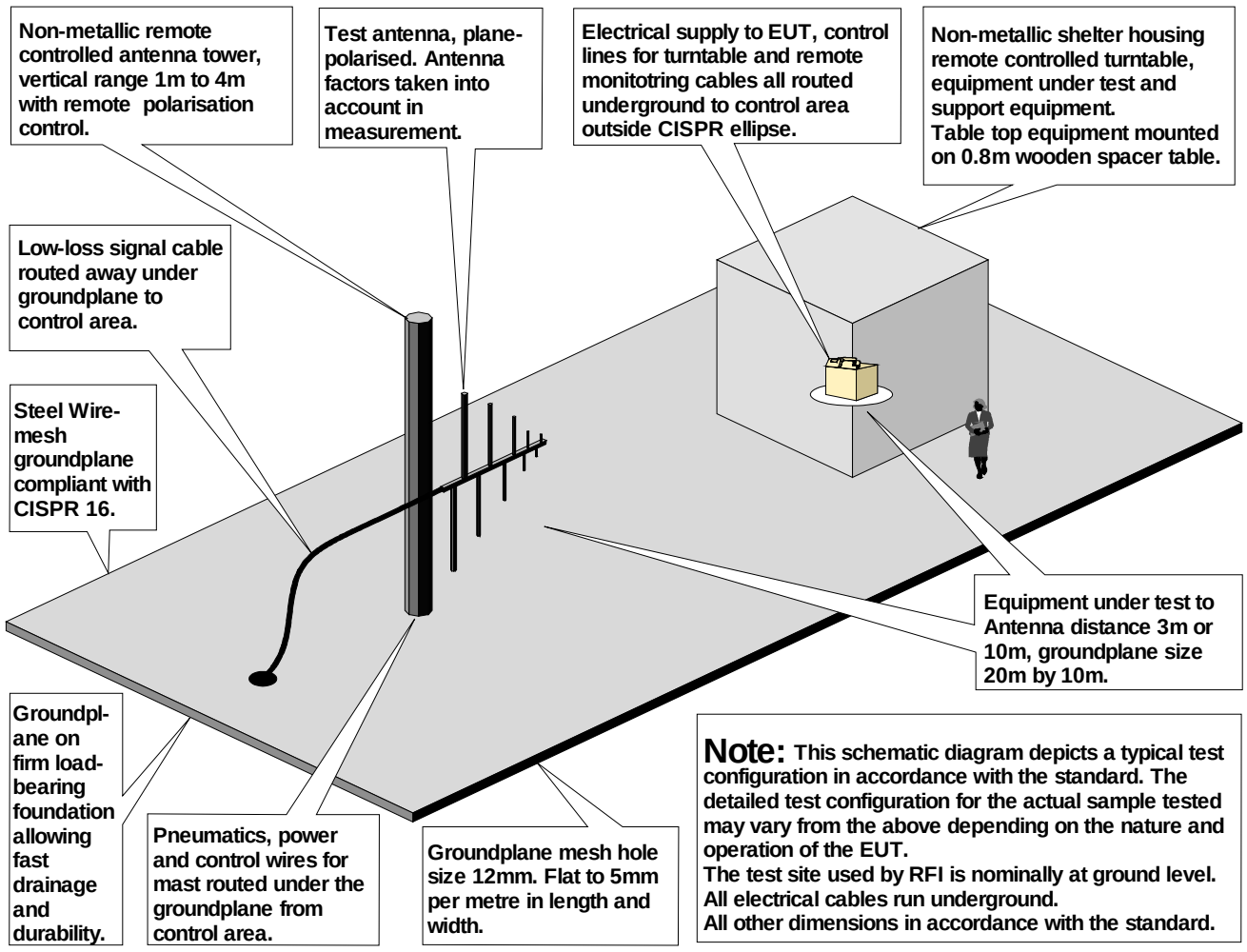
This appendix contains the following drawings:

Drawing Reference Number	Title
DRG\73525JD07\EMICON	Test configuration for measurement of conducted emissions.
DRG\73525JD07\EMIRAD	Test configuration for measurement of radiated emissions.

DRG\73525JD07\EMICON



DRG\73525JD07\EMIRAD



Note: This schematic diagram depicts a typical test configuration in accordance with the standard. The detailed test configuration for the actual sample tested may vary from the above depending on the nature and operation of the EUT.
The test site used by RFI is nominally at ground level.
All electrical cables run underground.
All other dimensions in accordance with the standard.

Test Configuration For Radiated Emissions Measurements

Reflection-free area: >60m by 52m (CISPR ellipse)

Groundplane Earthed

Control room outside CISPR ellipse