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Justification measurements on WCDMA Base Station Radio Units (3 appendices)

See appendix 1 for general information

Summary

Standard	Appendix
FCC CFR 47	
2.1046 RF power output	2
2.1049 Occupied bandwidth	3

No change in bandwidth or output power were observed between different data traffic settings.

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Appendix 1

Purpose of test

The purpose of the tests was to show that the RF output power and RF output spectrum are not changed for different data traffic settings.

Operation mode during measurements**Test models**

All measurements were performed with the test object transmitting the Test models 1 and 5 defined in 3GPP TS 25.141. Test model 1 uses the QPSK modulation only, and Test model 5 includes the 16QAM modulation.

Config. A: Test model 1: 64 DPCHs at 30 ksps (SF=128)

Config. B: Test model 1: 32 DPCHs at 30 ksps (SF=128)

Config. C: Test model 1: 16 DPCHs at 30 ksps (SF=128)

Config. D: Test model 5: 30 DHCPs at 30 ksps (SF=128) and 8 HS-PDSCHs at 240 ksps (SF=16)

Config. E: Test model 5: 14 DHCPs at 30 ksps (SF=128) and 4 HS-PDSCHs at 240 ksps (SF=16)

Config. F: Test model 5: 6 DHCPs at 30 ksps (SF=128) and 2 HS-PDSCHs at 240 ksps (SF=16)

The RU units were installed in a RBS 3206 powered with -48 VDC for the measurements.

KRC 118 22/1 was used for the measurements on 871.4 MHz.

KRC 118 19/1 was used for the measurements on 1932.4 MHz.

KRC 118 29/2 was used for the measurements on 2112.4 MHz.

Appendix 2

RF power output measurements according to 47 CFR 2.1046

Date 2006-06-21	Temperature 22 °C ± 3 °C	Humidity 44 % ± 5 %
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Test set-up and procedure

The output was connected to a Peak power analyzer. The transmitter was set up according to Test model 1 and Test model 5 during the measurements.

Measurement equipment	Calibration Due	SP number
Boonton RF Peak power meter/analyzer	2007-08	503 144
Boonton Power sensor 56518-S/4	2007-08	503 145
Multimeter Fluke 87	2006-11	502 190
Testo 610, Temperature and humidity meter	2006-12	502 658

Measurement uncertainty: 0.5 dB

Results

QPSK

Test conditions T_{nom} 22 °C/ V_{nom} -48 V DC	Transmitter power (dBm) Average		
	Config. A	Config. B	Config. C
871.4 MHz	46.2	46.2	46.2
1932.4 MHz	45.7	45.7	45.7
2112.4 MHz.	45.9	45.9	45.9

16QAM

Test conditions T_{nom} 22 °C/ V_{nom} -48 V DC	Transmitter power (dBm) Average		
	Config. D	Config. E	Config. F
871.4 MHz	46.2	46.2	46.2
1932.4 MHz	45.7	45.7	45.7
2112.4 MHz	45.9	45.9	45.9

No change in output power were observed between the settings.

Appendix 3

Occupied bandwidth measurements according to 47 CFR 2.1049

Date 2006-06-21	Temperature 22 °C ± 3 °C	Humidity 44 % ± 5 %
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Test set-up and procedure

The measurements were made per definition in §2.1049. The output was connected to a spectrum analyzer. The spectrum analyzer was connected to an external 10 MHz reference standard during the measurements. The transmitter was set up according to Test model 1 and Test model 5 during the measurements.

Measurement equipment	Calibration Due	SP number
R&S FSIQ	2006-07	503 738
Testo 610, Temperature and humidity meter	2006-12	502 658

Measurement uncertainty: 3.7 dB

Results

The results are shown in appendix 3.1

QPSK

	Frequency	
Diagram 1	871.4 MHz	Config. A+B+C
Diagram 2	1932.4 MHz	Config. A+B+C
Diagram 3	2112.4 MHz	Config. A+B+C

16QAM

	Frequency	
Diagram 4	871.4 MHz	Config. D+E+F
Diagram 5	1932.4 MHz	Config. D+E+F
Diagram 6	2112.4 MHz	Config. D+E+F

No change in bandwidth were observed between the settings.

Appendix 3.1

Diagram 1

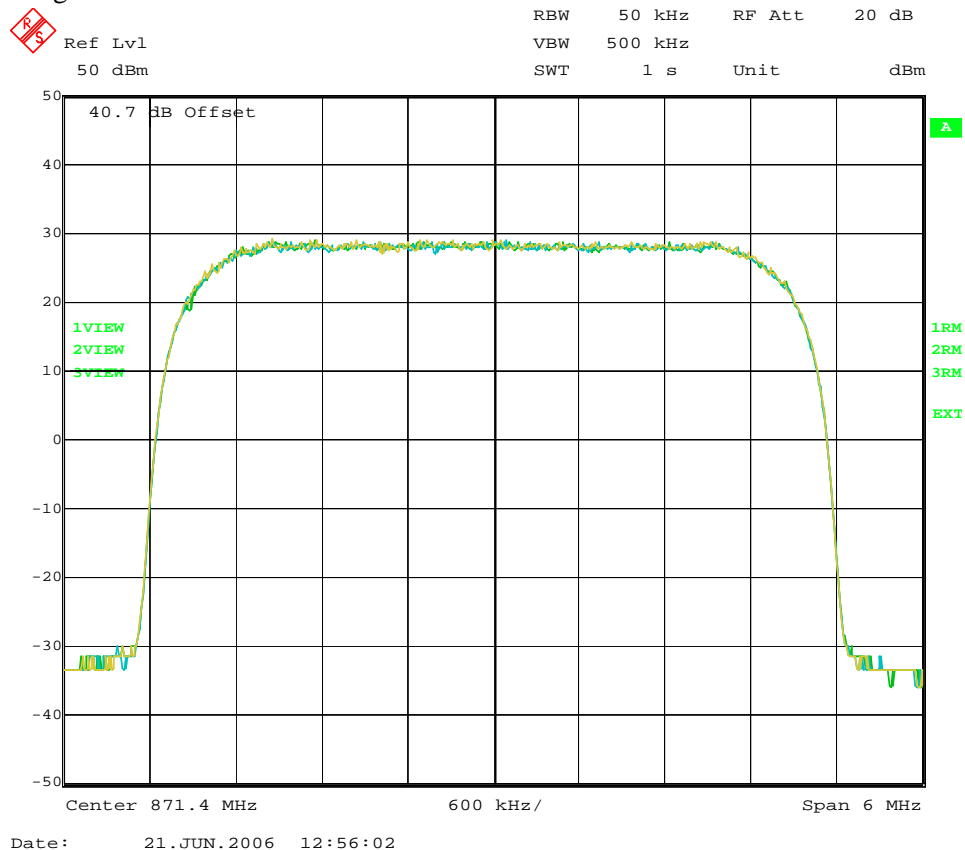
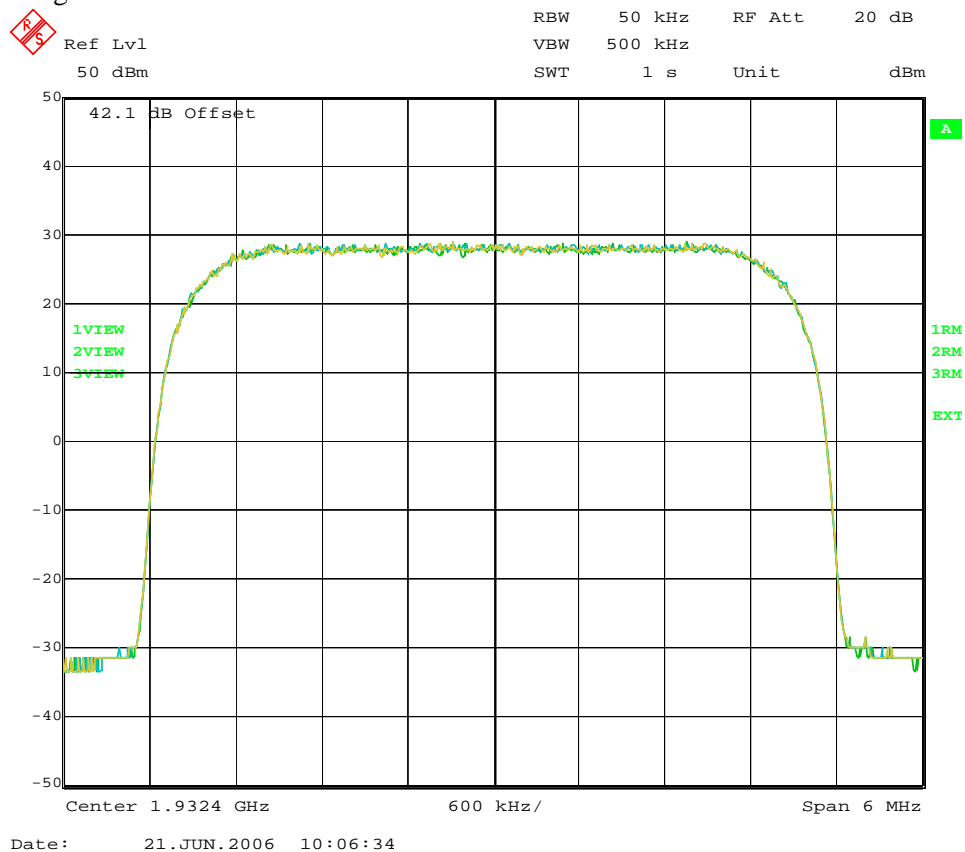


Diagram 2



Appendix 3.1

Diagram 3

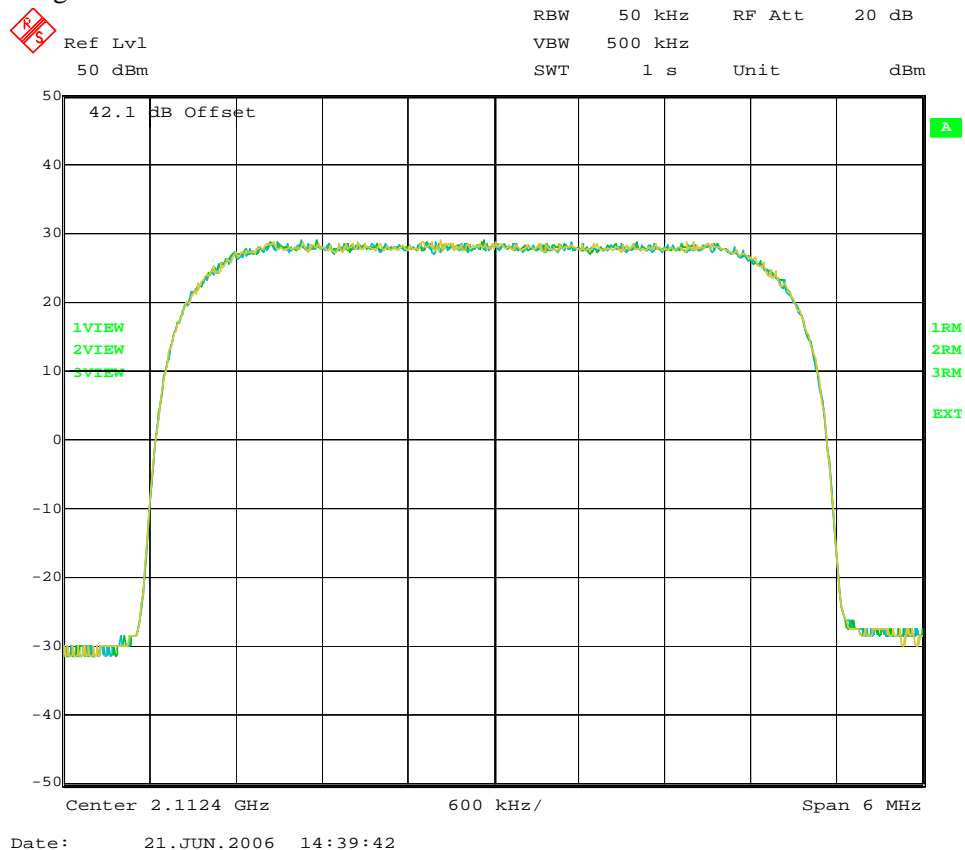
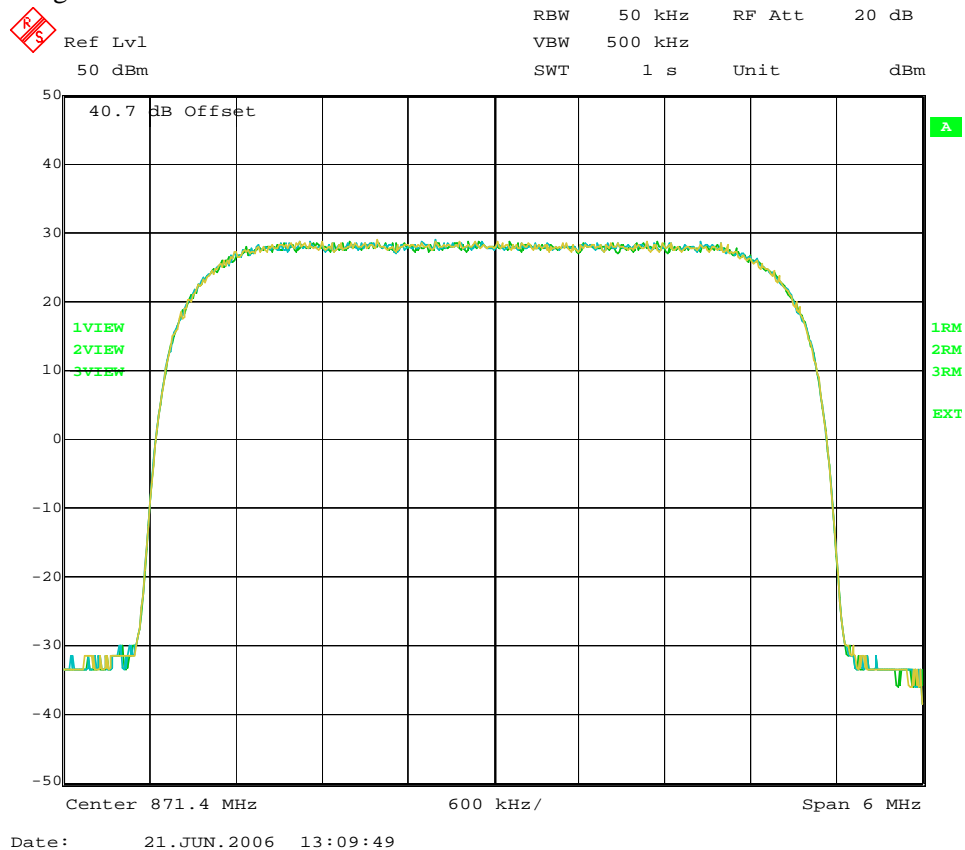


Diagram 4



Appendix 3.1

Diagram 5

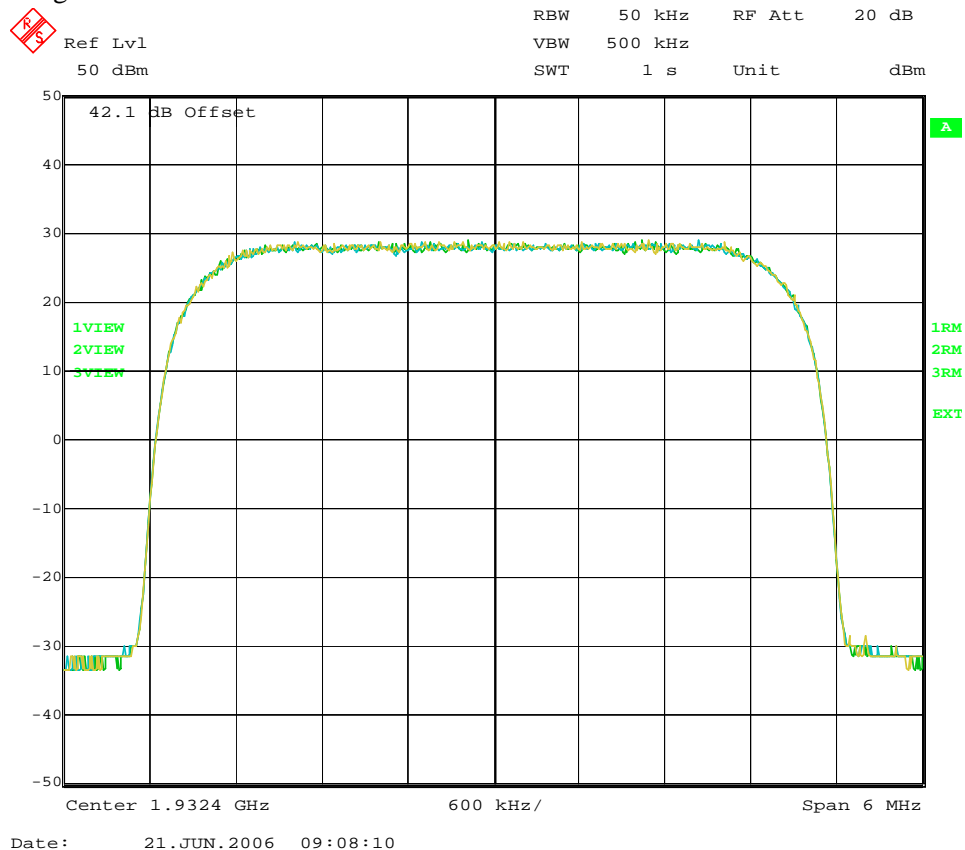


Diagram 6

