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REPORT
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The test site complies with RSS 212, Issue 1, file no: IC 3482

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Date 2006-12-18 | Reference F617858 | Page 1 (2)

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PDU RBS WCDMA
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Permissible change measurement on WCDMA Base Station 2100 MHz Radio Unit with FCC ID: TA8AKRC11829-2

(3 appendices)

Test object

Radio Unit KRC 118 29/2

Summary

Standard	Compliant	Appendix	Remarks
FCC CFR 47			
2.1051 Spurious emission at antenna terminals	Yes	2	-
2.1053 Field strength of spurious radiation	Yes	3	Note

Note The measurement was performed up to 1000 MHz.

SP Swedish National Testing and Research Institute
Electronics - EMC

Jan Welinder
Technical Manager

Jonas Bremholt
Technical Officer

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Description – Test object

Equipment: WCDMA Radio Unit (RU) 2100 MHz, single and multi carrier with FU unit KRC 118 28/1.

Tx Frequency range: 2112.4-2152.6 MHz

Modulations: QPSK and 16QAM

Maximum output power: Single carrier: 1x46 dBm (40W)
Multi carrier: 2x43 dBm (2x20W)

Nominal power voltage: -48 VDC

Purpose of test

The purpose of the tests is to verify compliance to the performance characteristics specified in FCC CFR 47 of Radio unit KRC 118 29/2 with FSK modem option activated in the Filter unit KRC 118 28/1. The FSK modem is used to communicate with antenna mast mounted equipment (ASC, Antenna System Controller) on the feeder cable.

Operation mode during measurements

Test models

The radiated measurements were performed with the test object transmitting the Test models 1 and 5 defined in 3GPP TS 25.141. Test model 1 use the QPSK modulation only, and Test model 5 includes the 16QAM modulation. The communication between the FU unit and the ASC unit was activated during the measurements.

Conducted measurements

All RF conducted measurements were performed with the test object installed in a RBS 3206 cabinet powered with -48 VDC. Measurements were done at the output connector (Ant A) of the Filter Unit (FU) and on the output connector (Ant A) of the ASC unit. The communication between the FU unit and the ASC unit was activated during the measurements.

Radiated measurements

All radiated measurements were performed with the test object installed in a RBS 3206 cabinet powered with -48 VDC.

The RU units were activated for maximum transmit power. The RU units were activated as Single Carrier 3x2 (6 RU, 1x46 dBm). The RF output power ports were terminated with 50 ohm loads. The communication between the FU units and the ASC units were activated during the measurements.

The RU units were allocated to the following UARFCN:

RU	1	2	3	4	5	6
Cell	1	2	3	4	5	6
Downlink	1537 (2112.4 MHz)	1587 (2122.4 MHz)	1612 (2127.4 MHz)	1662 (2137.4 MHz)	1688 (2142.6 MHz)	1738 (2152.6 MHz)
Uplink	1312 (1712.4 MHz)	1362 (1722.4 MHz)	1387 (1727.4 MHz)	1437 (1737.4 MHz)	1463 (1742.6 MHz)	1513 (1752.6 MHz)
Test model	5	1	5	1	5	1

Test model 1: 16 DPCHs at 30 ksps (SF=128)
Test model 5: 6 DHCPs at 30 ksps (SF=128) and 2 HS-PDSCHs at 240 ksps (SF=16)

References

Measurements were done according to relevant parts of the following standards:
ANSI/TIA/EIA-603-B-2002
3GPP TS 25.141

Reservation

The test results in this report apply only to the particular test object as declared in the report.

Delivery of test object

The test object was delivered: 2006-09-11

Manufacturer's representative

Larry Lindström, Ericsson AB

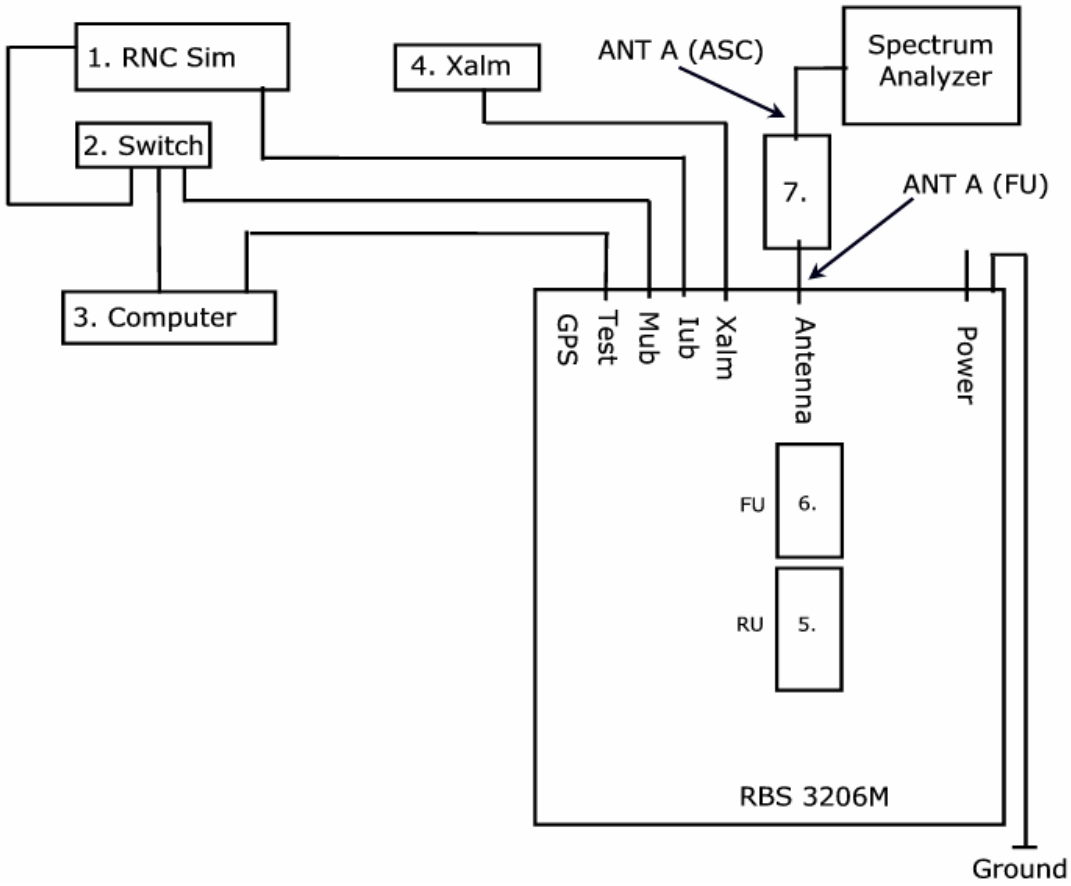
Test engineers

Jörgen Wassholm and Jonas Bremholt.

Test witnesses

Larry Lindström and Mats Iregren, Ericsson AB

Test set-up, conducted measurements

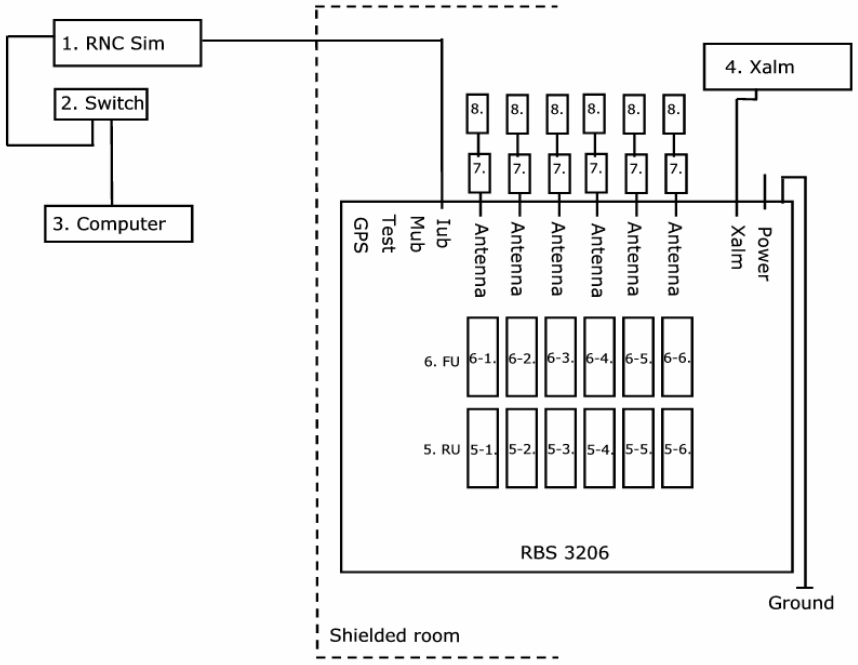


RBS 3206: Product number: 2/BFE 401 1012 R1J, Serial No: AB20037139 with software CXP 901 1610 rev. P3ED. More information about the RBS hardware units are shown in SP document F617858-H.

1. RNC Sim CES 4780DA Mini-sim#33, Ericsson no.: ETE-203565
2. Switch, Netgear Ethernet switch FS108
3. Computer, SUN Microsystems, Asset ID.: ETE-203521
4. Xalm connection unit ZHA 901 01/3 R1A
5. RU KRC 118 29/2 Rev. R1A, Serial No: AE52711843 (FCC id: TA8AKRC11829-2)
6. FU KRC 118 28/1 Rev. R1B, Serial No: A400384919
7. ASC KRY 112 134/1 Rev. R1B, Serial No: A400385784

Interfaces:	**Type of port:**
Power, -48 VDC	DC power
Coaxial cable with N connector and adaptor to 7/16”	Antenna
Iub, configured as T1 by CBU, shielded multi-wire with RJ-45 connector	Telecom
Mub, shielded multi-wire with RJ-45 connector	Test purpose
Test, serial interface, shielded multi-wire with RJ-45 connector	Test purpose
Xalm, shielded multi-wire with RJ-45 connector	Signal
GPS, not supported	Signal

Test set-up, radiated measurements RBS 3206



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1. RNC Sim CES 4780DA Mini-sim#33, Ericsson no.: ETE-203565
2. Switch, Netgear Ethernet switch FS108
3. Computer, SUN Microsystems, Ericsson no.: ETE-203521
4. Xalm connection unit ZHA 901 01/3 R1A with 2 m alarm cables
5. RU KRC 118 29/2 Rev. R1A (FCC id: TA8AKRC11829-2)

5-1. Serial No: AE52711843
5-2. Serial No: AE52762083
5-3. Serial No: AE52759168
5-4. Serial No: AE52800009
5-5. Serial No: AE52762093
5-6. Serial No: AE52754617

6. FU KRC 118 28/1 Rev. R1B

6-1. Serial No: A400384919
6-2. Serial No: A400387411
6-3. Serial No: A400384921
6-4. Serial No: A400387410
6-5. Serial No: A400387408
6-6. Serial No: A400387412

7. ASC unit
8. 50 ohm Termination

Interfaces:	**Type of port:**
Power, -48 VDC	DC Power
Coaxial cable with N connector and adaptor to 7/16”	Antenna
Iub, configured as T1 by CBU, shielded multi-wire with RJ-45 connector	Telecom
Mub, no cable attached	Test purpose
Test, no cable attached	Test purpose
Xalm, shielded multi-wire with RJ-45 connector	Signal
GPS, Not supported	Signal

FCC ID: TA8AKRC11829-2 Appendix 2

Conducted spurious emission measurements according to 47 CFR 2.1051

Date	Temperature	Humidity
2006-09-21	21 °C ± 3 °C	54 % ± 5 %

Test set-up and procedure

The measurements were made per definition in §27.53. The measurement was performed to show that the communication between the FU unit and the ASC unit is not transmitted on the antenna port of the ASC unit. The output was connected to a spectrum analyzer with the Peak detector activated. The spectrum analyzer was connected to an external 10 MHz reference standard during the measurements.

Measurement equipment	Calibration Due	SP number
R&S FSIQ	2007-07	503 738
Testo 610, Temperature and humidity meter	2006-12	502 658

Measurement uncertainty: 3.7 dB

Results

The results are shown in appendix 2.1

Diagram 1: ANT A FU unit
Diagram 2: ANT A ASC unit

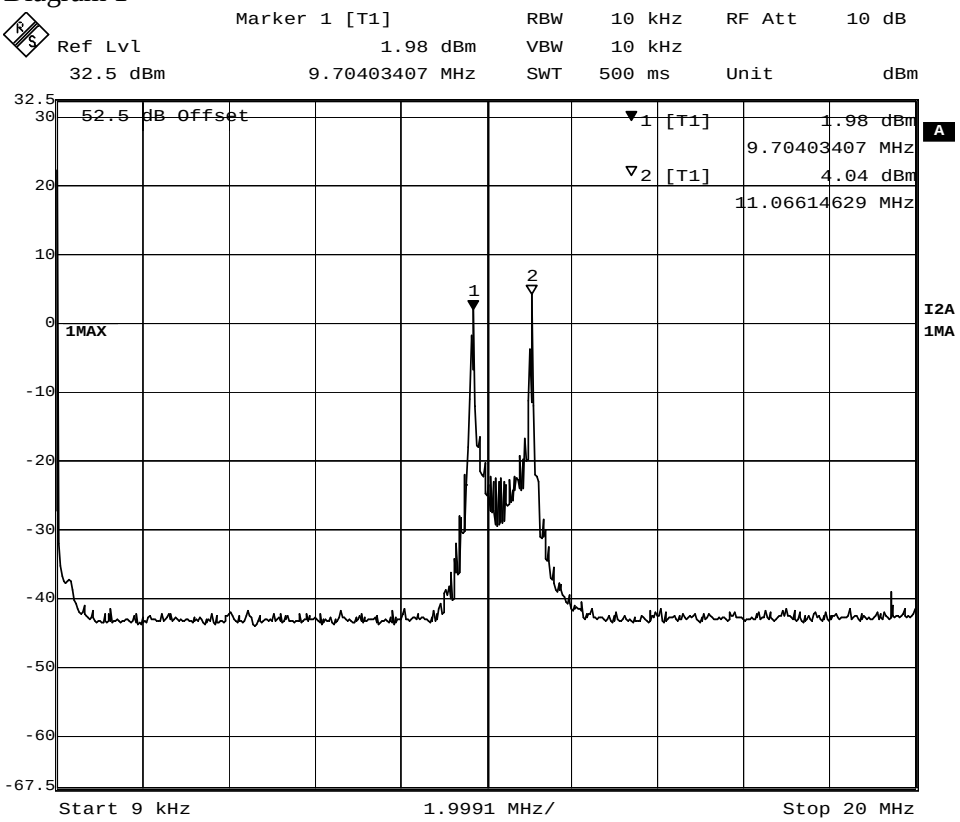
Limits

The power of any emission outside the frequency band shall be attenuated below the transmitter power (P) by at least 43 + 10 log P dB.

Complies?	Yes

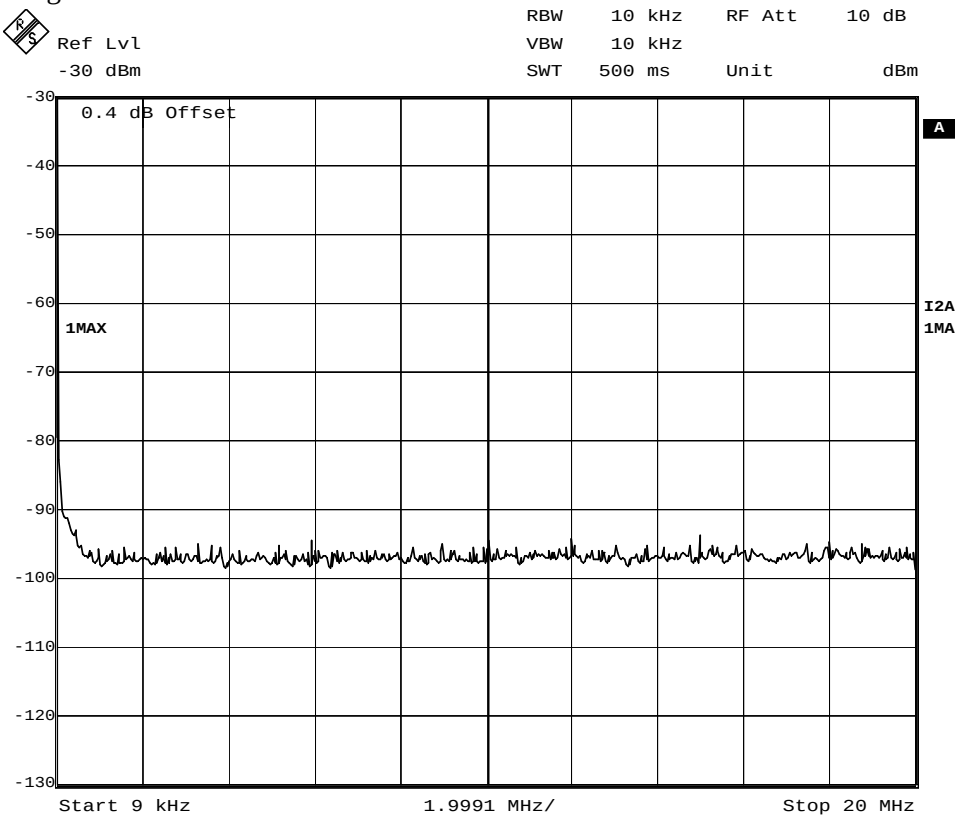
FCC ID: TA8AKRC11829-2 Appendix 2.1

Diagram 1



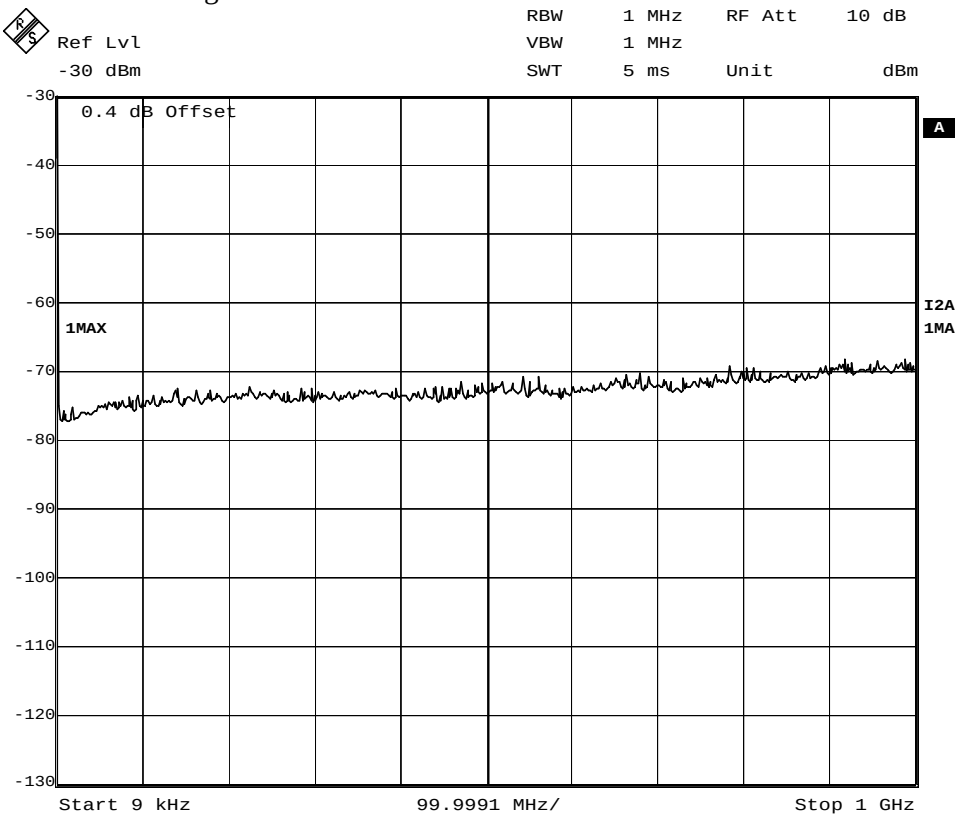
Note: The emission at 9 kHz was related to the spectrum analyzer LO feedthrough.

Diagram 2



Date: 21.SEP.2006 10:36:22

Note: The emission at 9 kHz was related to the spectrum analyzer LO feedthrough.



Date: 21.SEP.2006 10:39:56

FCC ID: TA8AKRC11829-2 Appendix 3

Field strength of spurious radiation measurements according to 47 CFR 2.1053

Date	Temperature	Humidity
2006-09-19	21 °C ± 3 °C	48 % ± 5 %

Test set-up and procedure

The test site is listed at FCC, Columbia with registration number: 93866. The test site also complies with RSS 212, Issue 1, Industry Canada file no.:IC 3482.
The transmitter was modulated with pseudorandom data during the measurements. The antenna ports were terminated with 50 ohm loads.

The measurements were performed with both horizontal and vertical polarisation of the antenna. The antenna distance was 3 m in the frequency range 9 kHz – 1000 MHz.

A pre-measurement was first performed:
In the frequency range 30 - 1000 MHz the measurement was performed in power with a RBW of 1 MHz and the CISPR bandwidths were used in the frequency range 9 kHz to 30 MHz. A propagation loss in free space was calculated. The used formula was,

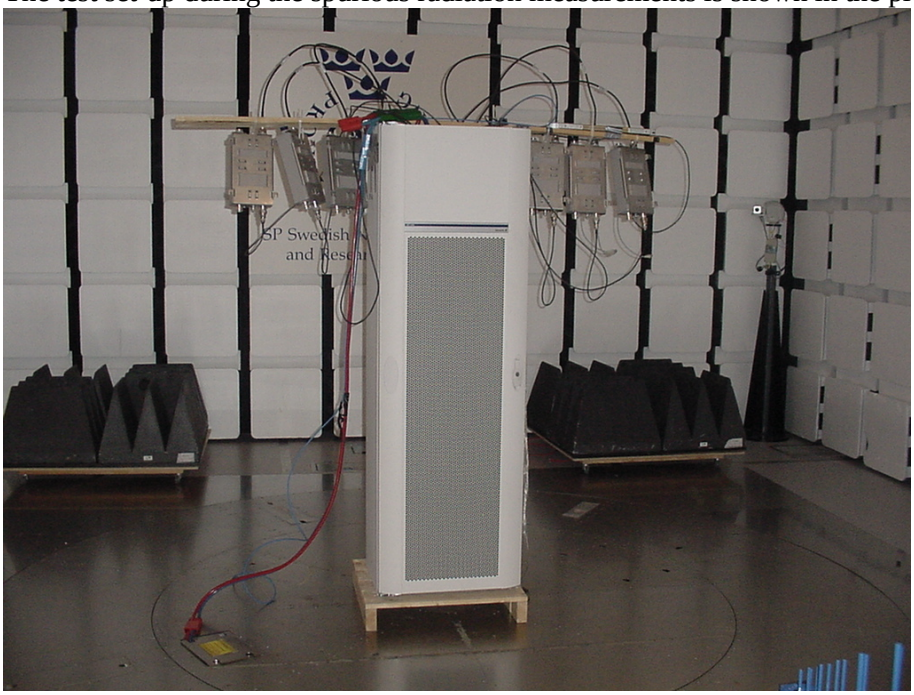
$\gamma = 20\log\left(\frac{4\pi D}{\lambda}\right)$, γ is the propagation loss and D is the antenna distance.

The measurement procedure was as the following:

1. The pre-measurement was first performed with peak detector. The EUT was measured in eight directions and with the antenna at three heights, 1.0 m, 1.5 m and 2.0 m.
2. Spurious radiation on frequencies closer than 20 dB to the limit is scanned 0-360 degrees and the antenna is scanned 1-4 m for maximum response. The emission is then measured with the average detector and the average value is reported, frequencies closer than 10 dB to the limit measured with the average detector was measured with the substitution method according to the standard.

Measurement equipment	Calibration Due	SP number
Test site	2008-11	503 881
R&S ESI 26	2007-08	503 292
Control computer	-	503 479
Software: R&S ES-K1, ver. 1.60	-	-
Chase Bilog antenna CBL 6111A	2008-11	503 182
EMCO loop antenna 3115	2007-11	502 175
MITEQ Low Noise Amplifier	2007-08	503 285
Testo 615, Temperature and humidity meter	2007-09	503 505

The test set-up during the spurious radiation measurements is shown in the picture below.



Results

Frequency (MHz)	Spurious emission level (dBm)	
	Vertical	Horizontal
0.009-1000	All emission > 20 dB below limit	All emission > 20 dB below limit
Measurement uncertainty		4.7 dB

Limits

The power of any emission outside the frequency band shall be attenuated below the transmitter power (P) by at least 43 + 10 log P dB.

Complies?	Yes