Nortel BWA Type Acceptance Radio Transceiver Test Report Addendum

Product Description:	28 GHz Base Station (BTR) and Customer Premise (CTR) Radio Transceivers
Model:	BTR2800 and CTR 2800
Nortel BWA File #	N9UBTRCTR2800

CHARLIE BISHOP PI ENGINEER **DATE APRIL 5, 1999**

WINNIPEG,

DECLARATION BY Nortel Networks BWA

The tests were performed from March 29 through April 1,1999 at the Nortel Networks BWA's Laboratory in Winnipeg and is an addendum to the Test Report CTVG14AG submitted earlier.

The following personnel collaborated to this project:

Mitch Hebert, Tech.
Charlie Bishop, PI Engineer

Testing was performed and supervised by the undersigned. The test supervisor attests to the accuracy of the test data recorded in this report.

Performed by: Mitch Hebert	Date April 5, 1999
Supervised by: Charlie Bishop	Date April 5, 1999

Total number of pages: 5

The results presented in this report refer only to the product(s) described in section 1.

All equipment and instrumentation used during this test have been verified and/or calibrated. All calibration certificates are traceable to the National Research Council of Canada (CNRC) and/or to the American National Institute of Standards and Technology (NIST) standards and can be provided on request.

Nortel BWA is registered ISO 9002:1998, certificate # 766.2.

CO/ADJACENT CHANNEL TEST

Tested by:	Charlie Bishop and Mitch Hebert
Date:	Apr 1,1999

Test Conditions

Temperature	25C,
Primary Voltage	BTR -48 V and for CTR +18 V dc

Minimum Specifications

As specified in Part 101.105 and TIA Bulletin TSB-10, the protection criteria for 16QAM shall be at least 10.5dB for adjacent channel and 20.9dB for co-channel.

Adjacent Channel Test Method

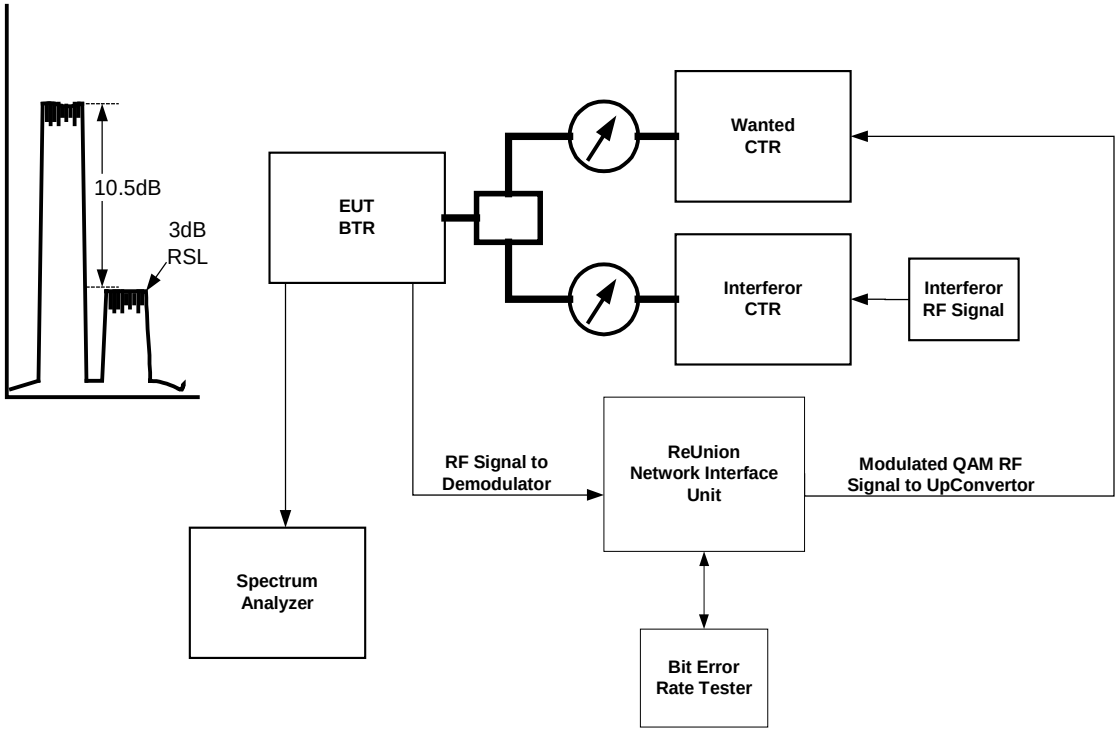
Nortel translation equipment (CTR) is stimulated with digitally modulated 16 QAM RF signals. The two signals (wanted and interferor) are combined, up-converted and fed into the microwave receive of the EUT (BTR). The wanted CTR output is adjusted such that a quality QAM signal is present. An inline vane attenuator is adjusted until a payload BER of 10^{-6} is achieved. The level is then increased by 3dB. The interfering signal is applied and adjusted such that the BER of 10^{-6} is achieved. The power density of the wanted and interfering carrier are recorded. It should be noted that the vane attenuation reading is noted and it is removed so that accurate measurements are easily made at the microwave flange of the receiver.

Co-Channel Test Method

Nortel translation equipment (CTR) is stimulated with digitally modulated 16 QAM signals. The two signals (wanted and interferor) are combined and fed into the microwave receiver of the EUT (BTR). The wanted CTR output is adjusted such that a quality QAM signal is present. An inline vane attenuator is adjusted until a payload BER of 10^{-6} is achieved. The wanted output is then increased by 3dB and the level is recorded. The interfering signal is then applied at maximum in-line attenuation. The interfering signal is adjusted until the payload BER reaches $10^{-6.}$ The interfering signal is removed. The power density of the wanted carrier is measured and recorded. The wanted carrier is then removed and the interfering signal is measured and recorded. The two measurements should be at least 20.9 dB. It should be noted that the vane attenuation reading is noted and it is removed so that accurate measurements are easily made at the microwave flange of the receiver.

Test System Test Configuration

The figure below represents a simplified block diagram of the adjacent and co-channel interference test set-up. 5.6Msps carriers were used giving a bandwidth of 7MHz.



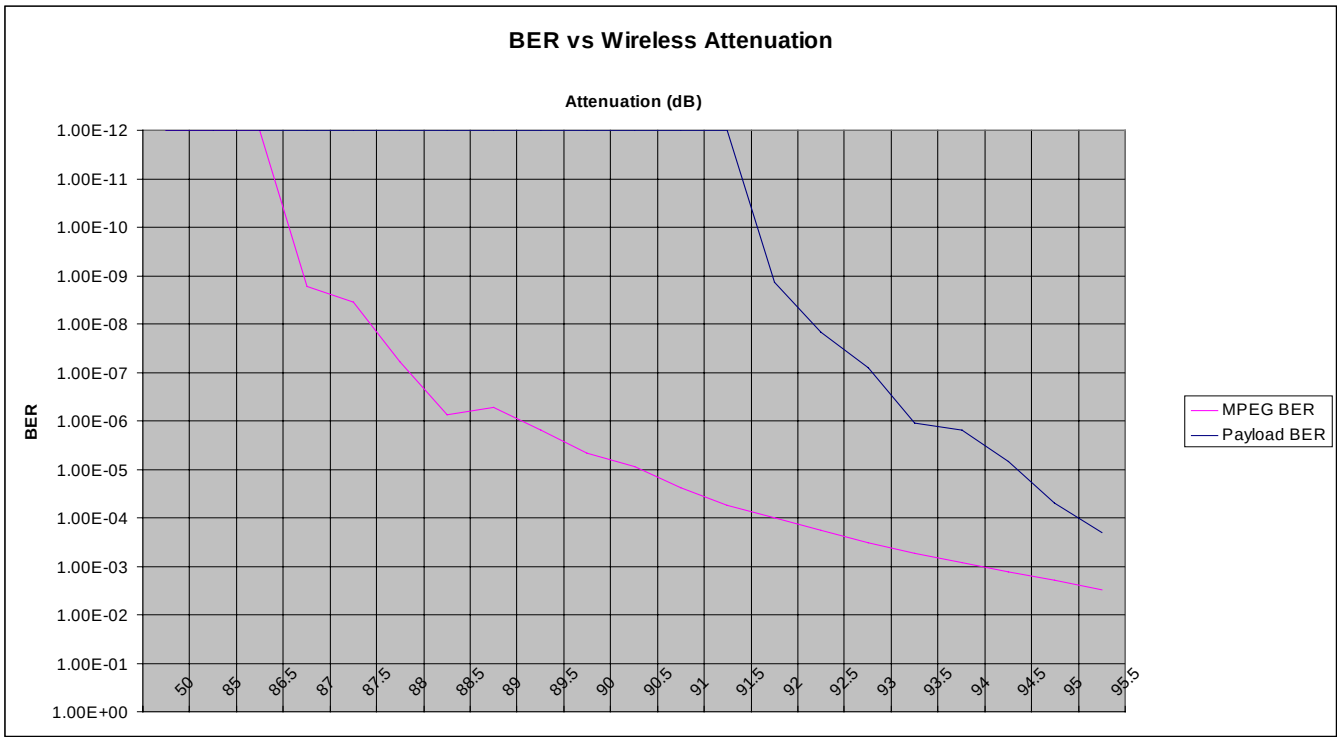
Adjacent Channel Test Results

	Wanted	Hi-Side Interferor	Low-Side Interferor
	550 MHz (dBm)	557MHz (dBm)	543MHz (dBm)
Measurement Result	-111.43	-99.03	-99.5
Channel Power	-92.10	-80.1	-82.6
Limit (10.5dB)	----	> -100.93	> -100.93
Margin	----	1.9	1.43

Co-Channel Test Results

Frequency 550MHz	Wanted (dBm)	Interferor (dBm)
Measurement Result	-113.0	-128.1
Limit (20.9dB)	----	> -133.9
Margin	----	5.8

The chart below shows the BER rate as seen on the output of the demodulator and shows the effects of Forward Error Correction



BER Chart Data

50	1.00E-12	1.00E-12
85	1.00E-12	1.00E-12
86.5	1.00E-12	1.00E-12
87	1.70E-09	1.00E-12
87.5	3.60E-09	1.00E-12
88	5.90E-08	1.00E-12
88.5	7.60E-07	1.00E-12
89	5.30E-07	1.00E-12
89.5	1.60E-06	1.00E-12
90	4.60E-06	1.00E-12
90.5	9.00E-06	1.00E-12
91	2.40E-05	1.00E-12
91.5	5.50E-05	1.00E-12
92	1.00E-04	1.40E-09
92.5	1.80E-04	1.50E-08
93	3.27E-04	8.10E-08
93.5	5.40E-04	1.10E-06
94	8.60E-04	1.60E-06
94.5	1.30E-03	6.80E-06

95 2.00E-03 5.00E-05