Standards Council of Canada
Accredited Laboratory
Scope of Accreditation 75

Conseil canadien des normes
Laboratoire accrédité
Portée d'accréditation 75

TM

Test Report:	5W51401
Applicant:	Dekolink Wireless Ltd 16 Bazel St, Qiryat-Arieh, Petah-Tikva 49510 Israel
Apparatus:	MW-CCSR-800AB-1W80-XX-YY
FCC ID:	OIWCCSR8001W80
In Accordance With:	FCC Part 22, Boosters Public Mobile Services
Tested By:	Nemko Canada Inc. 303 River Road Ottawa, Ontario K1V 1H2
Authorized By:	Jin Xu, Wireless Specialist
Date:	21 September 2005
Total Number of Pages:	32

Report Summary

These tests were conducted on a sample of the equipment for the purpose of demonstrating compliance with Part 22. Conducted measurements were performed in accordance with ANSI TIA-603-B-2002. Radiated tests were conducted is accordance with ANSI C63.4-2003. Radiated emissions are made on an open area test site. A description of the test facility is on file with the FCC.

The assessment summary is as follows:

Apparatus Assessed:	MW-CCSR-800AB-1W80-XX-YY
Specification:	FCC Part 22 Public Mobile Services
Compliance Status:	Complies
Exclusions:	None
Non-compliances:	None
Report Release History:	Original Release

Author: Jason Nixon, Telecom Specialist

Note that the results contained in this report relate only to the items tested and were obtained in the period between the date of initial receipt of samples and the date of issue of the report.

This test report has been completed in accordance with the requirements of ISO/IEC 17025.

TABLE OF CONTENTS

Section 1 : Equipment Under Test

1.1 Product Identification

The Equipment Under Test was identified as follows:

MW-CCSR-800AB-1W80-XX-YY

1.2 Samples Submitted for Assessment

The following samples of the apparatus have been submitted for type assessment:

Sample No.	Description	Serial No.
1	DEKO2408 (M/N: MW-CCSR-800AB-1W80-25-11-1.5)	0509D9055

The first samples were received on: September 7, 2005

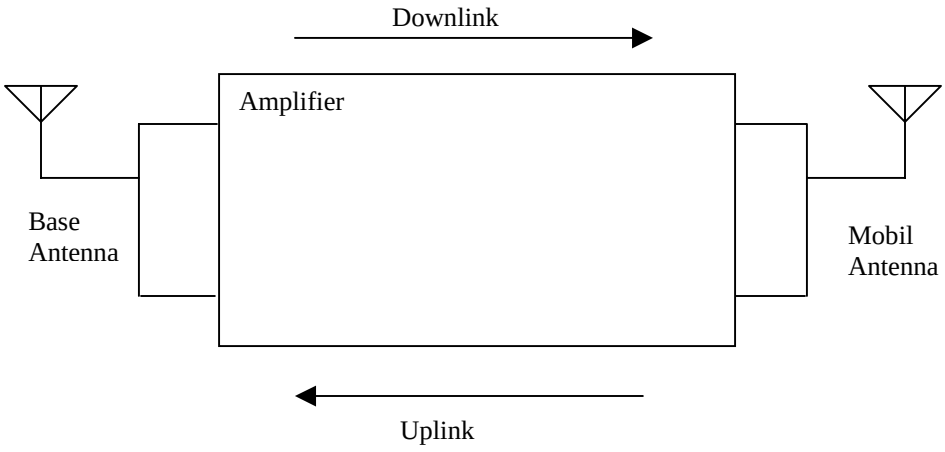
1.3 Theory of Operation

The High selectivity Mini Repeater functional operation is based on a duplexed path configuration. In each path, the signal is down-converted to an Intermediate Frequency (IF); filtered by a Surface Acoustic Wave (SAW) filter and up-converted back. This configuration gives sharp out of band attenuation for improved isolation between the receiving and transmitting paths.

1.4 Technical Specifications of the EUT

Manufacturer:	Dekolink Wireless Ltd
Operating Frequency:	Downlink: 869 – 894MHz Uplink: 824 – 849MHz
Emission Designator:	F9W, DXW, F1D, F8W
Rated Power:	Downlink: 1/4W (24dBm) Uplink: 1/4W (24dBm)
Rated Gain:	Downlink: 80dB Uplink: 80dB
Measured Power:	Downlink: 23.56dBm Uplink: 23.99dBm
Modulation:	CDMA, TDMA, AMPS
Power Source:	220/110Vac

1.5 Block Diagram of the EUT



Section 2 : Test Conditions

2.1 Specifications

The apparatus was assessed against the following specifications:

FCC Part 2 Subpart J, Equipment Authorization Procedures
FCC Part 22, Public Mobile Services
FCC 2-11-04/EAB/RF Amplifier, Booster, and Repeater Reminder Sheet

2.2 Deviations From Laboratory Test Procedures

No deviations were made from laboratory test procedures.

2.3 Test Environment

All tests were performed under the following environmental conditions:

Temperature range	:	15 – 30 ^{o}C
Humidity range	:	20 - 75 %
Pressure range	:	86 - 106 kPa
Power supply range	:	+/- 5% of rated voltages

2.4 Test Equipment

Equipment	Manufacturer	Model No.	Asset/Serial No.	Last Cal.	Next Cal.
Spectrum Analyzer	Rohde & Schwarz	FSP	FA001920	March 22/05	March 22/06
Spectrum Analyzer	Hewlett-Packard	8566B	FA001309	May 18/05	May 18/06
Spectrum Analyzer Display	Hewlett-Packard	85662A	FA001309	May 18/05	May 18/06
Bilog	Schaffner	CBL6112B	FA001504	NCR	NCR
Horn Antenna #2	EMCO	3115	FA000825	Dec. 14/04	Dec. 14/05
0.1 – 1300 MHz Amplifier	Hewlett Packard	8447D	FA001909	Jan. 13/05	Jan. 13/06
1.0 – 2.0 GHz Amplifier	JCA	12-400	FA001498	July 14/05	July 14/06
2.0 – 4.0 GHz Amplifier	JCA	24-600	FA001496	July 14/05	July 14/06
4.0 – 8.0 GHz Amplifier	JCA	48-600	FA001497	July 14/05	July 14/06
5.0 – 18.0 GHz Amplifier	NARDA	DWT-186N23U40	FA001409	COU	COU
Biconical (1) Antenna	EMCO	3109	FA000805	April 22/05	April 22/06
Receiver	Rohde & Schwarz	ESVS-30	FA001437	July 27/05	July 27/06
Signal Generator	Rohde & Schwarz	SMIQ03E	FA001269	March 02/05	March 02/06
20dB Attenuator	NARDA	776B-20	FA001153	COU	COU
Signal Generator	Rohde & Schwarz	SMIQ06B	FA001878	June 10/05	June 10/06
Power Meter	Hewlett-Packard	E4418B	FA001678	Mar 8/05	Mar 8/05
Power Sensor	Hewlett-Packard	8487A	FA001741	May 26/05	May 26/05

NCR – No Cal. Required
COU – Cal. On Use

Section 3 : Observations

3.1 Modifications Performed During Assessment

No modifications were performed during assessment.

3.2 Record Of Technical Judgements

No technical judgements were made during the assessment.

3.3 EUT Parameters Affecting Compliance

The user of the apparatus could not alter parameters that would affect compliance.

3.4 Test Deleted

No Tests were deleted from this assessment.

3.5 Additional Observations

There were no additional observations made during this assessment.

Section 4 : Results Summary

This section contains the following:

FCC Part 22 : Test Results

The column headed 'Required' indicates whether the associated clauses were invoked for the apparatus under test. The following abbreviations are used:

N	No : not applicable / not relevant.
Y	Yes : Mandatory i.e. the apparatus shall conform to these tests.
N/T	Not Tested, mandatory but not assessed. (See section 3.4 Test deleted)

The results contained in this section are representative of the operation of the apparatus as originally submitted.

4.1 FCC Part 22 : Test Results

Clause	Test Method	Test Description	Required	Result
22.355	2.1055	Frequency stability	N (1)	
22.383	—	In-building radiation systems	Y	PASS
22.913	2.1046	Output power	Y	PASS
22.917	2.1051	Conducted spurious emissions	Y	PASS
22.917	2.1053	Radiated spurious emissions	Y	PASS
2-11-04/EAB/RF	2.1049	Occupied bandwidth	Y	PASS
2-11-04/EAB/RF	—	Out of band rejection	Y	PASS

Notes:

(1) The apparatus did not have any frequency translating circuitry.

Appendix A : Test Results

Clause 22.913 Output Power

(a) Maximum ERP. In general, the effective radiated power (ERP) of base transmitters and cellular repeaters must not exceed 500 Watts.

Test Conditions:

Sample Number:	1	**Temperature:**	24°C
Date:	September 19, 2005	**Humidity:**	50%
Modification State:	0	**Tester:**	Jason Nixon
		Laboratory:	Wireless

Test Results:

	Measured Power (dBm)	Rated Power (dBm)
Uplink CDMA	23.60	24
Uplink TDMA	23.87	24
Uplink AMPS	23.99	24
Downlink CDMA	23.41	24
Downlink TDMA	23.42	24
Downlink AMPS	23.56	24

The Output power was measured using two carriers set to 3dB below the rated.

Clause 22.917 Conducted Spurious Emissions

a) Out of band emissions. The power of any emission outside of the authorized operating frequency ranges must be attenuated below the transmitting power (P) by a factor of at least 43 + 10 log(P) dB.

Test Conditions:

Sample Number:	1	**Temperature:**	24°C
Date:	September 19, 2005	**Humidity:**	50%
Modification State:	0	**Tester:**	Jason Nixon
		Laboratory:	Wireless

Test Results:

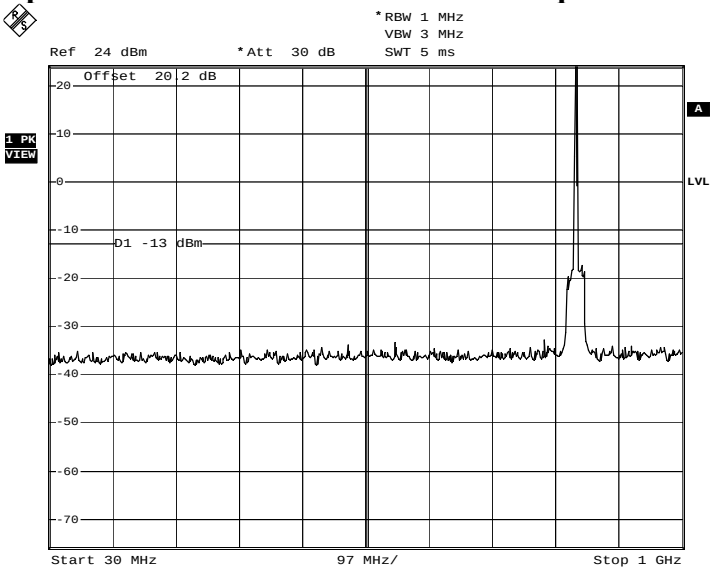
See Attached Plots.

Additional Observations:

Conducted Emissions were measured on a High, Middle and Low channel, with all different modulations, in both directions and only the worst case in each direction is included.

The spectrum was searched from 30MHz to 9GHz.

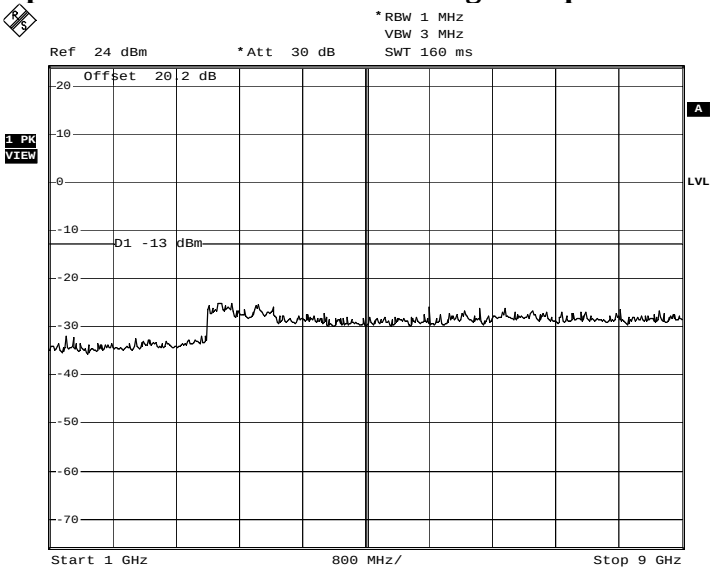
Uplink Conducted Emissions – Low Frequencies



Uplink - Conducted Emissions TDMA 30MHz to 1GHz

Date: 19.SEP.2005 19:14:25

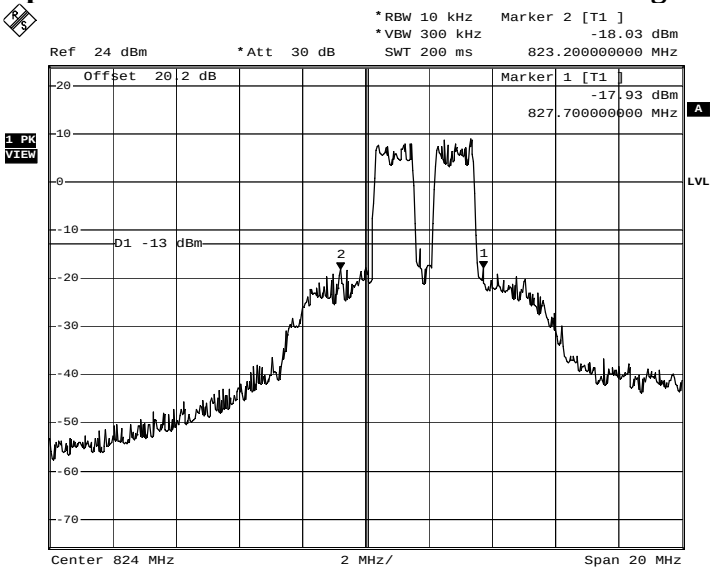
Uplink Conducted Emissions – High Frequencies



Uplink - Conducted Emissions TDMA 1GHz to 9GHz

Date: 19.SEP.2005 19:13:38

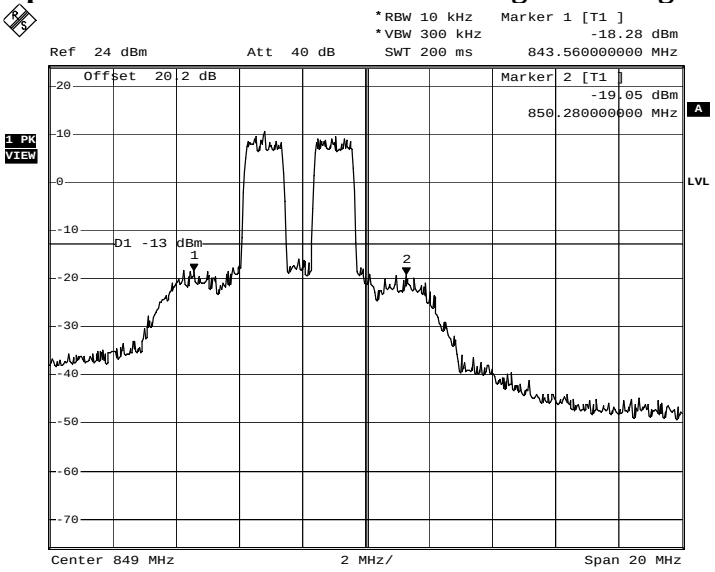
Uplink 3rd Order Intermodulation Low Bandedge – CDMA



Uplink - 3rd Order Intermodulation CDMA

Date: 19.SEP.2005 19:25:39

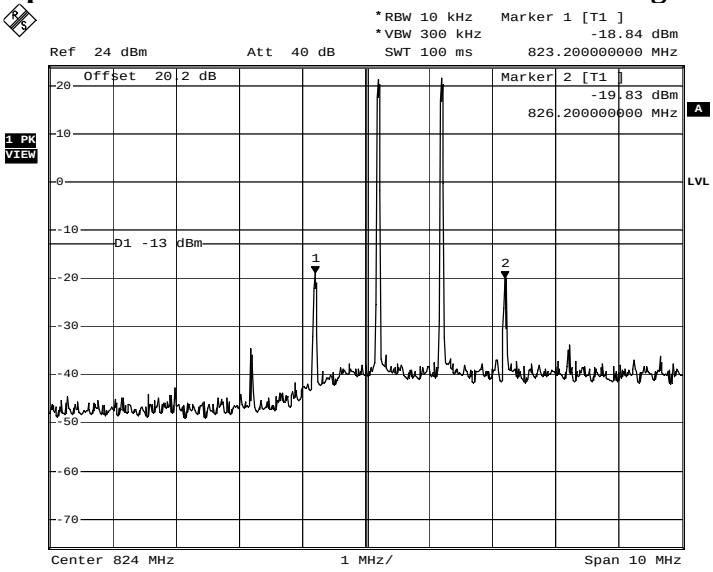
Uplink 3rd Order Intermodulation High Bandedge – CDMA



Uplink - 3rd Order Intermodulation CDMA

Date: 19.SEP.2005 17:14:32

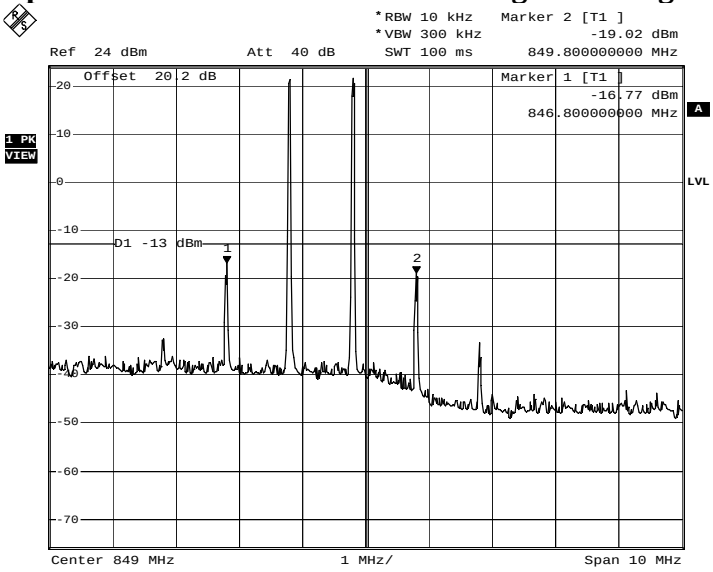
Uplink 3rd Order Intermodulation Low Bandedge – TDMA



Uplink - 3rd Order Intermodulation TDMA

Date: 19.SEP.2005 17:08:28

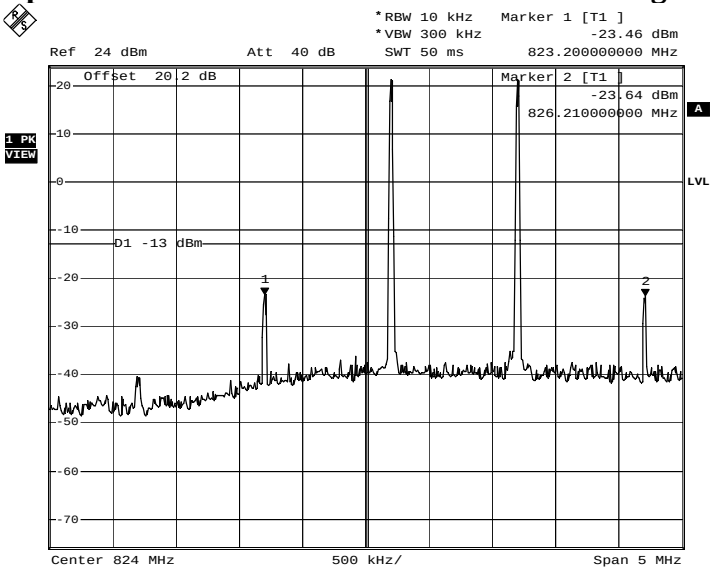
Uplink 3rd Order Intermodulation High Bandedge – TDMA



Uplink - 3rd Order Intermodulation TDMA

Date: 19.SEP.2005 17:10:47

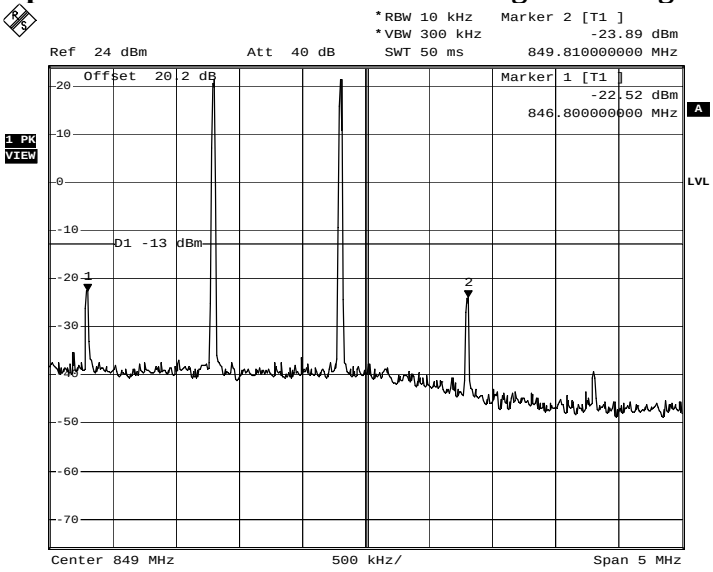
Uplink 3rd Order Intermodulation Low Bandedge – AMPS



Uplink - 3rd Order Intermodulation AMPS

Date: 19.SEP.2005 17:32:01

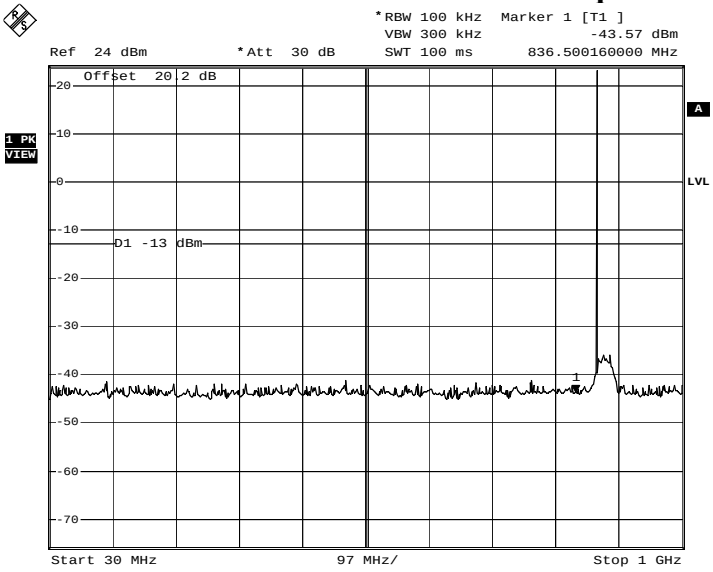
Uplink 3rd Order Intermodulation High Bandedge –AMPS



Uplink - 3rd Order Intermodulation AMPS

Date: 19.SEP.2005 17:34:42

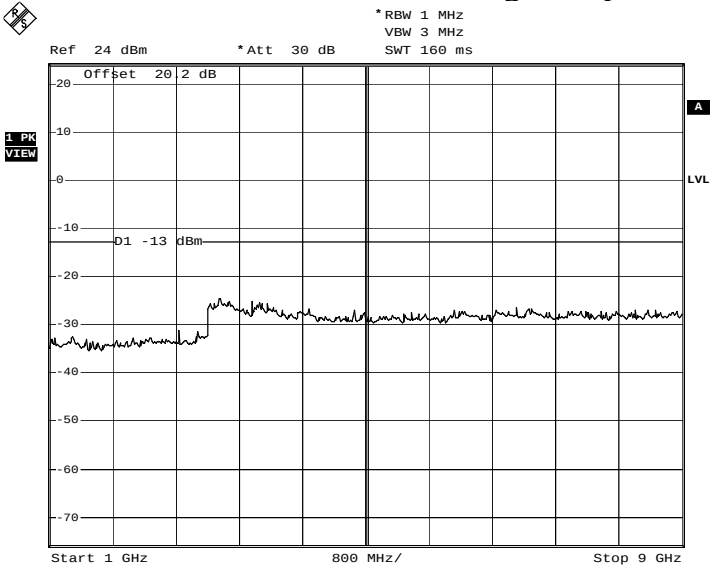
Downlink Conducted Emissions – Low Frequencies



Downlink - Conducted Emissions AMPS 30MHz to 1GHz

Date: 19.SEP.2005 21:28:48

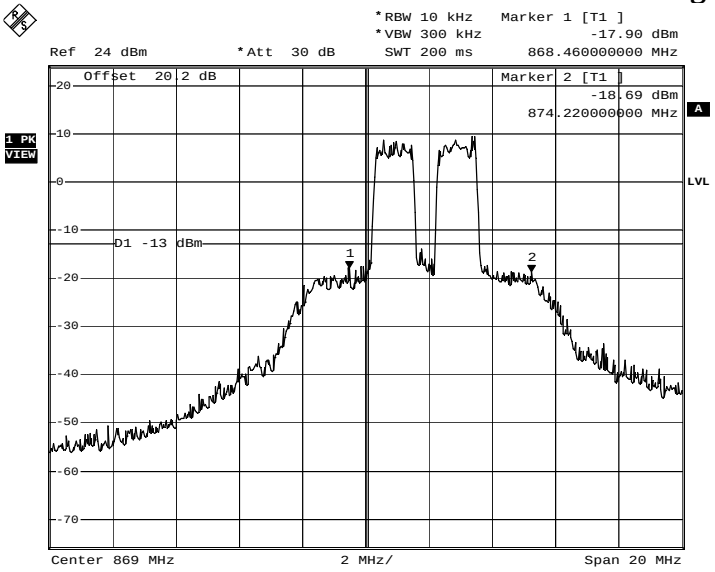
Downlink Conducted Emissions – High Frequencies



Downlink - Conducted Emissions AMPS 1GHz to 9GHz

Date: 19.SEP.2005 21:29:34

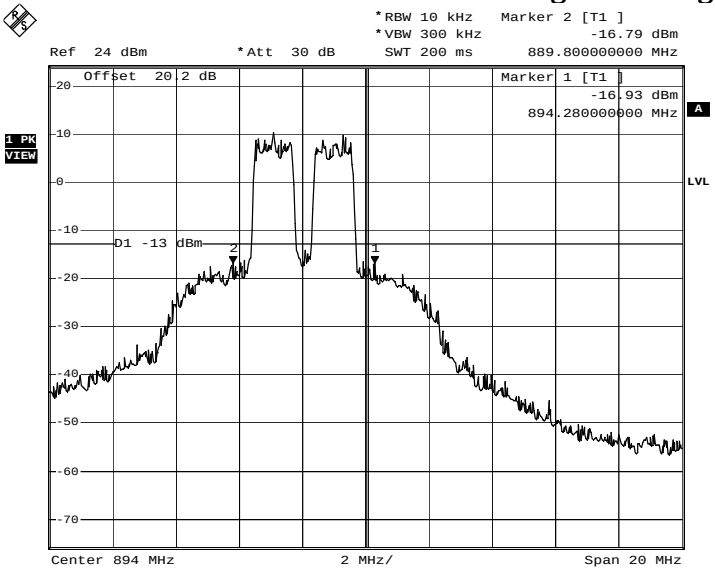
Downlink 3rd Order Intermodulation Low Bandedge – CDMA



Downlink - 3rd Order Intermodulation CDMA

Date: 19.SEP.2005 20:18:37

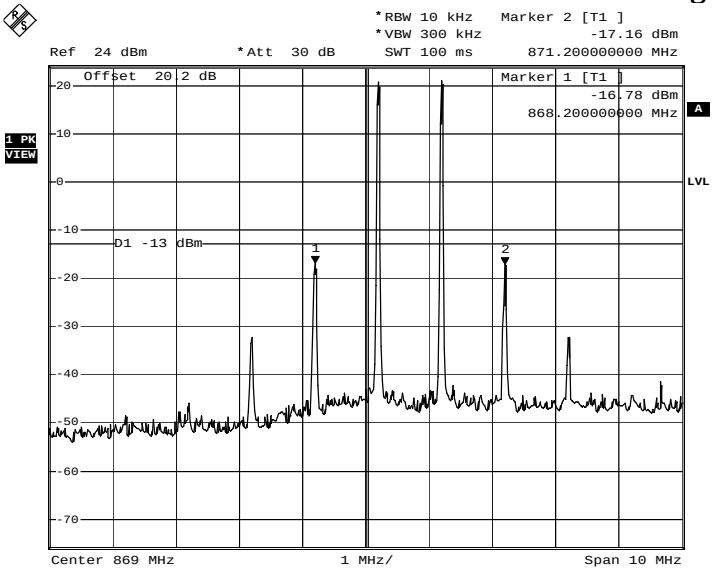
Downlink 3rd Order Intermodulation High Bandedge – CDMA



Downlink - 3rd Order Intermodulation CDMA

Date: 19.SEP.2005 20:21:55

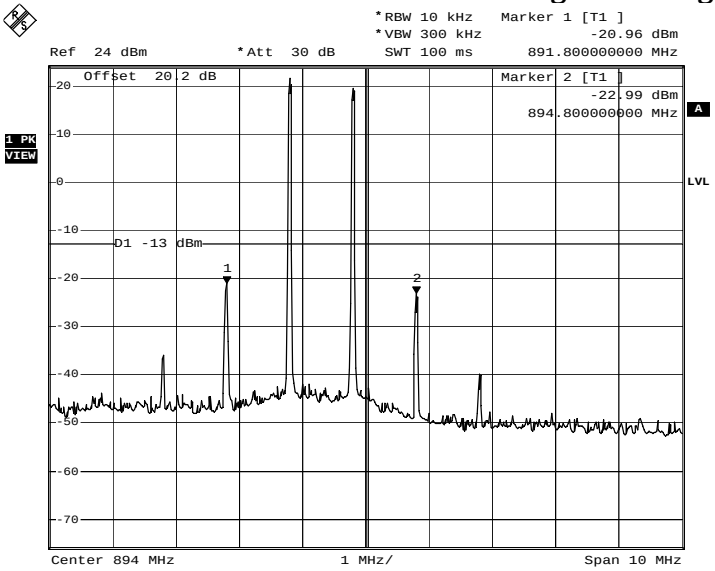
Downlink 3rd Order Intermodulation Low Bandedge – TDMA



Downlink - 3rd Order Intermodulation TDMA

Date: 19.SEP.2005 20:26:16

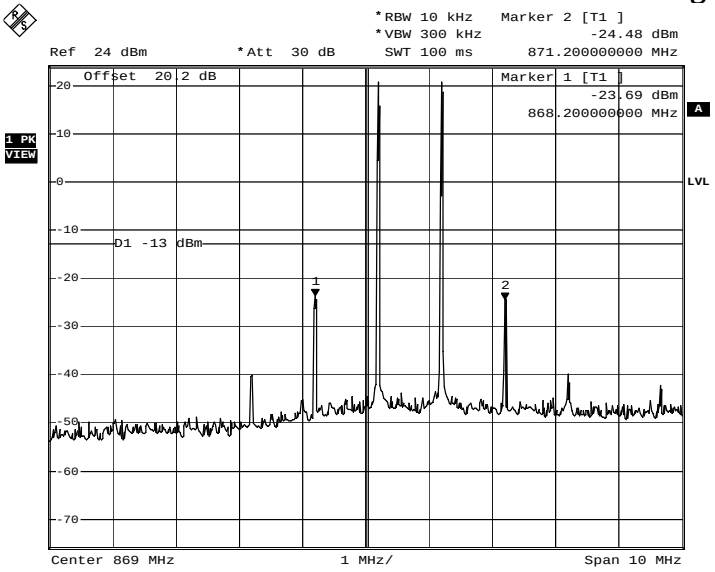
Downlink 3rd Order Intermodulation High Bandedge – TDMA



Downlink - 3rd Order Intermodulation TDMA

Date: 19.SEP.2005 20:24:13

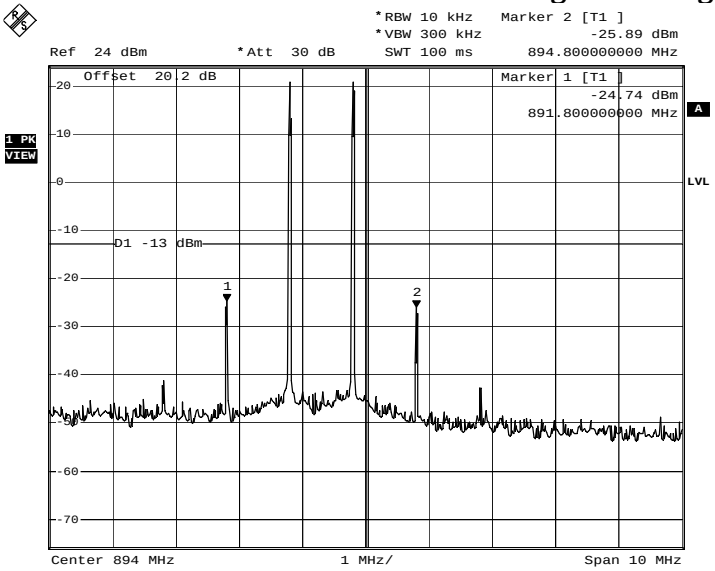
Downlink 3rd Order Intermodulation Low Bandedge –AMPS



Downlink - 3rd Order Intermodulation AMPS

Date: 19.SEP.2005 20:37:49

Downlink 3rd Order Intermodulation High Bandedge –AMPS



Downlink - 3rd Order Intermodulation AMPS

Date: 19.SEP.2005 20:40:10

Clause 22.917 Radiated Spurious Emissions

a) Out of band emissions. The power of any emission outside of the authorized operating frequency ranges must be attenuated below the transmitting power (P) by a factor of at least 43 + 10 log(P) dB.

Test Conditions:

Sample Number:	1	**Temperature:**	24°C
Date:	September 20, 2005	**Humidity:**	50%
Modification State:	0	**Tester:**	Jason Nixon
		Laboratory:	OATS

Test Results:

See Attached Table for Results

Additional Observations:

The Spectrum was searched from 30MHz to the 9GHz.

The apparatus was pre-scanned on a High, Mid and Low channel for both the Uplink and Downlink and only the worst case were tested.

All measurements were performed using a Peak Detector with 100kHz RBW below 1GHz and a 1MHz RBW above 1GHz at a distance of 3 meters.

Freq. (MHz)	Ant	Pol. V/H	RCVD Signal (dBµV)	Signal Sub Factor (dB)	Level (dBuV)	Limit (dBuV)	Margin (dB)
Downlink							
1763.0000	Horn2	V	52.4	-117.5	-65.0	-13.0	52.0
1763.0000	Horn2	H	52.0	-117.1	-65.1	-13.0	52.1
30.4198	BC1	V	21.9	-85.8	-63.9	-13.0	50.9
30.4198	BC1	H	10.3	-79.5	-69.2	-13.0	56.2
37.8154	BC1	V	33.6	-87.1	-53.5	-13.0	40.5
37.8154	BC1	H	17.1	-80.0	-62.9	-13.0	49.9
47.8952	BC1	V	24.9	-88.3	-63.4	-13.0	50.4
47.8952	BC1	H	21.8	-83.3	-61.5	-13.0	48.5
123.8736	BC1	V	27.5	-83.6	-56.1	-13.0	43.1
123.8736	BC1	H	28.2	-88.3	-60.1	-13.0	47.1
146.2519	BC1	V	28.1	-80.7	-52.6	-13.0	39.6
146.2519	BC1	H	28.3	-84.9	-56.6	-13.0	43.6

Note 1: Antenna Legend: BC = Biconical, BL = Bilog, LP = Log-Periodic, Horn = Horn, ED = EMCO Dipole

All measurements were done using the signal substitution method and reported in ERP.
The Sig. Sub. Factor is the value required to generate 0dBuV.
Therefore, RCVD Signal + Sig. Sub. Factor = Emission Level (ERP)

Clause 2-11-04/EAB/RF Occupied Bandwidth

Using an RBW of 300Hz or 1% of the emission bandwidth, The spectral shape of the output should look similar to the input for all modulations.

Test Conditions:

Sample Number:	1	**Temperature:**	24°C
Date:	September 19, 2005	**Humidity:**	50%
Modification State:	0	**Tester:**	Jason Nixon
		Laboratory:	Wireless

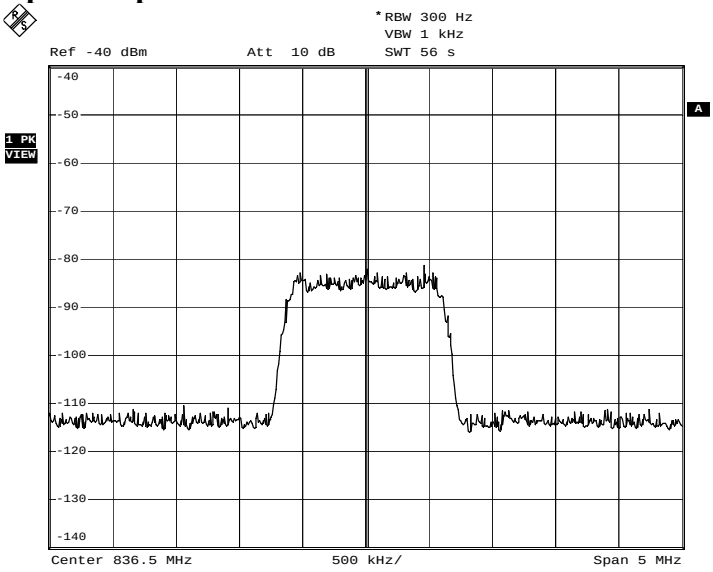
Test Results:

See Attached Plots.

Additional Observations:

None

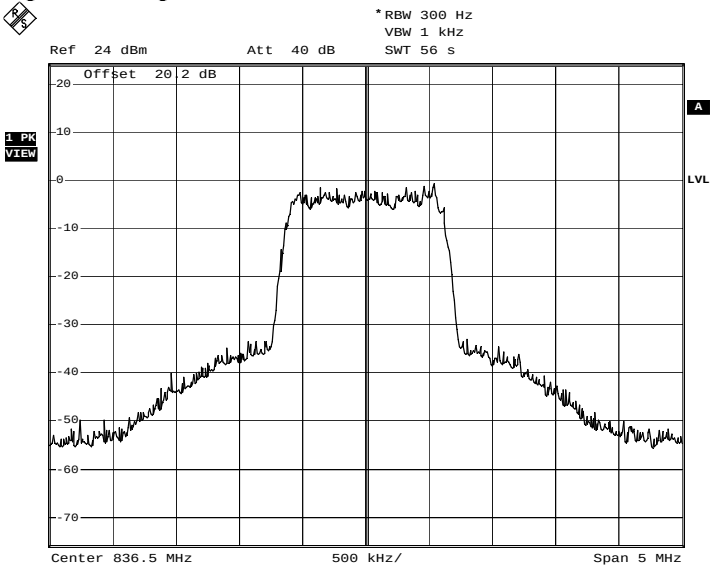
Uplink Input – CDMA



Uplink - CDMA Input

Date: 19.SEP.2005 16:37:36

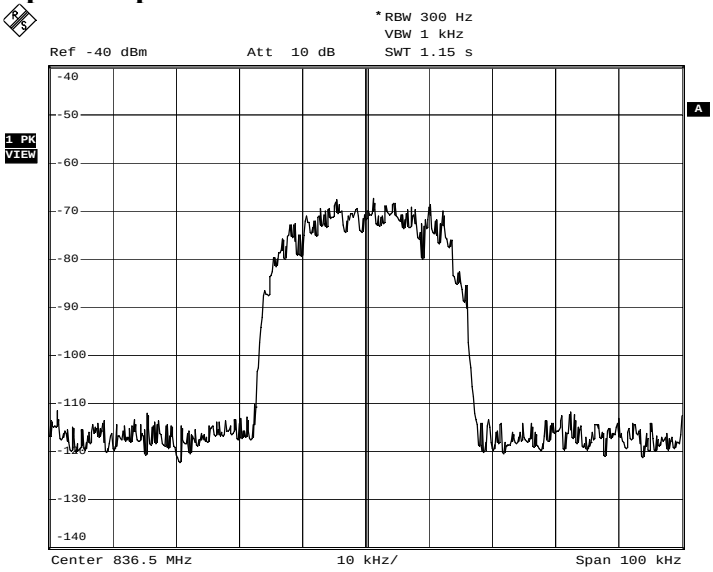
Uplink Output – CDMA



Uplink - CDMA Output

Date: 19.SEP.2005 16:43:26

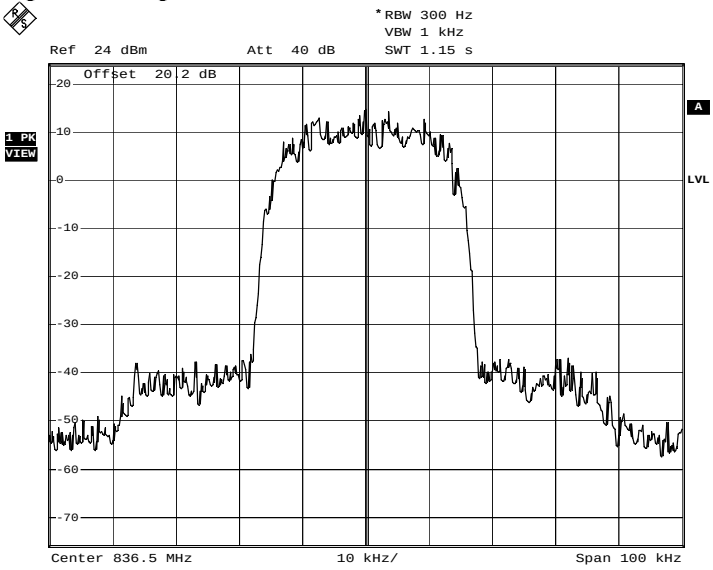
Uplink Input – TDMA



Uplink - TDMA Input

Date: 19.SEP.2005 16:34:18

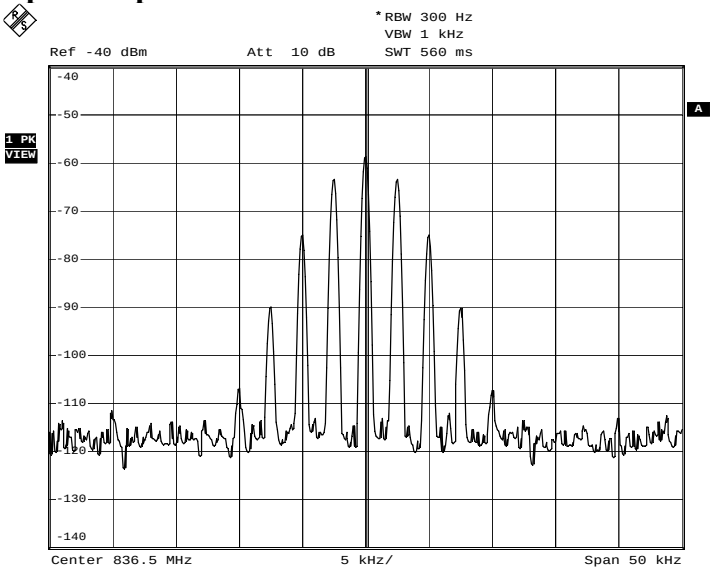
Uplink Output – TDMA



Uplink - TDMA Output

Date: 19.SEP.2005 16:44:54

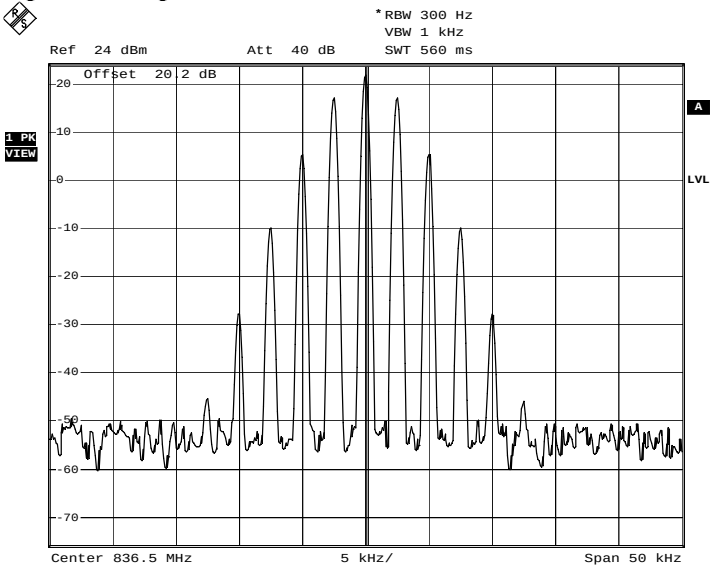
Uplink Input – AMPS



Uplink - AMPS Input

Date: 19.SEP.2005 16:39:05

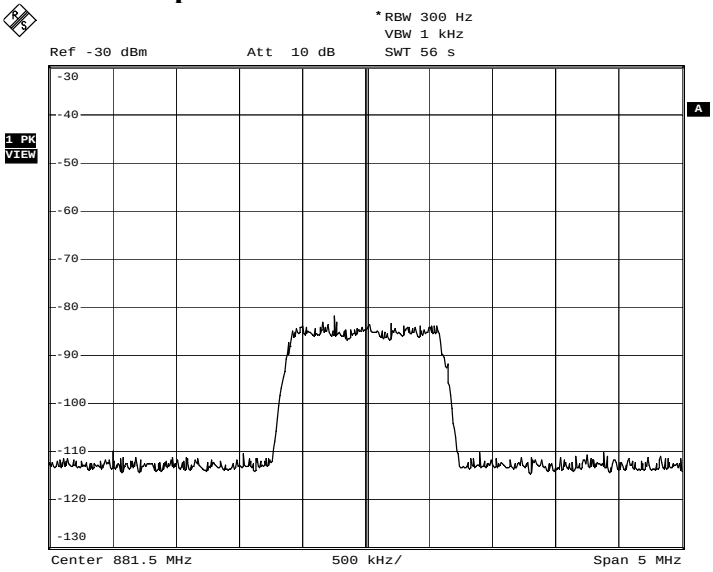
Uplink Output – AMPS



Uplink - AMPS Output

Date: 19.SEP.2005 16:40:29

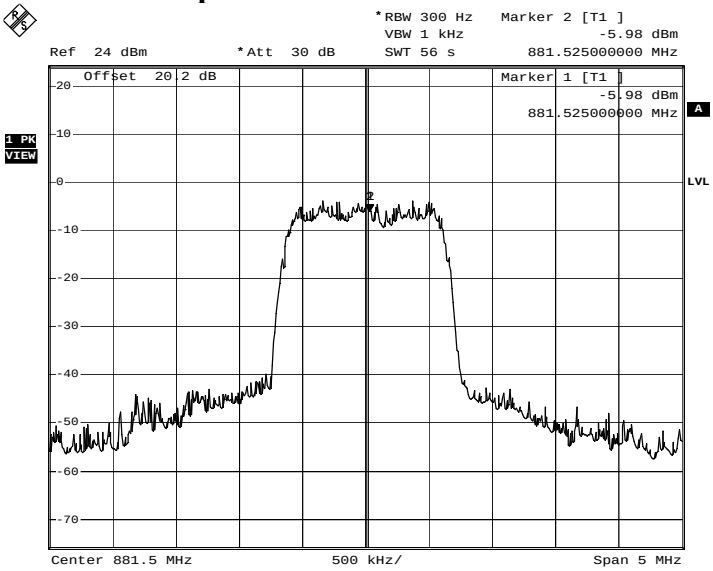
Downlink Input – CDMA



Downlink - CDMA Input

Date: 19.SEP.2005 21:13:36

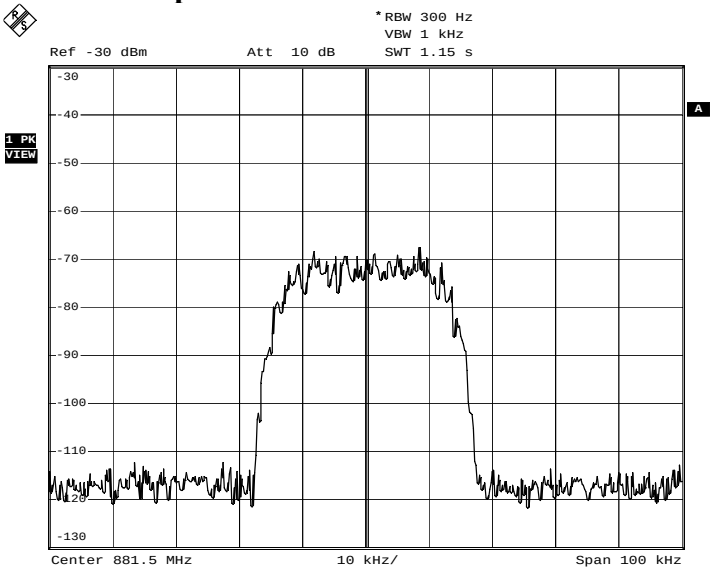
Downlink Output – CDMA



Downlink - CDMA Output

Date: 19.SEP.2005 21:00:55

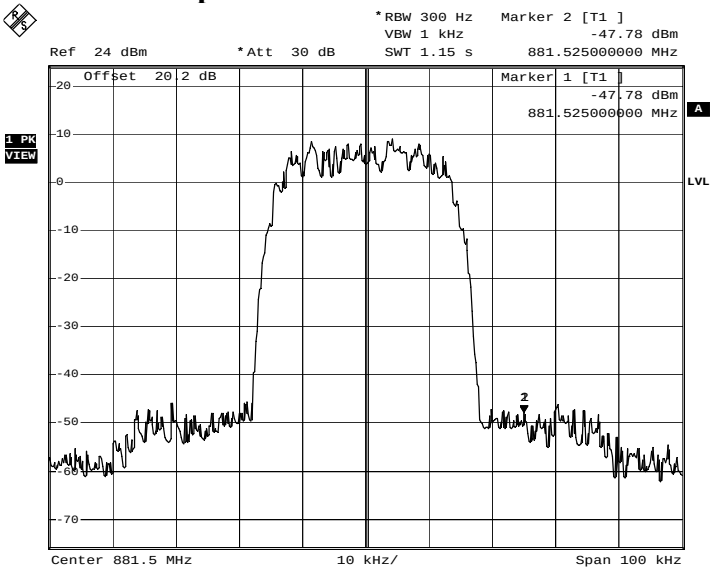
Downlink Input – TDMA



Downlink - TDMA Input

Date: 19.SEP.2005 21:14:32

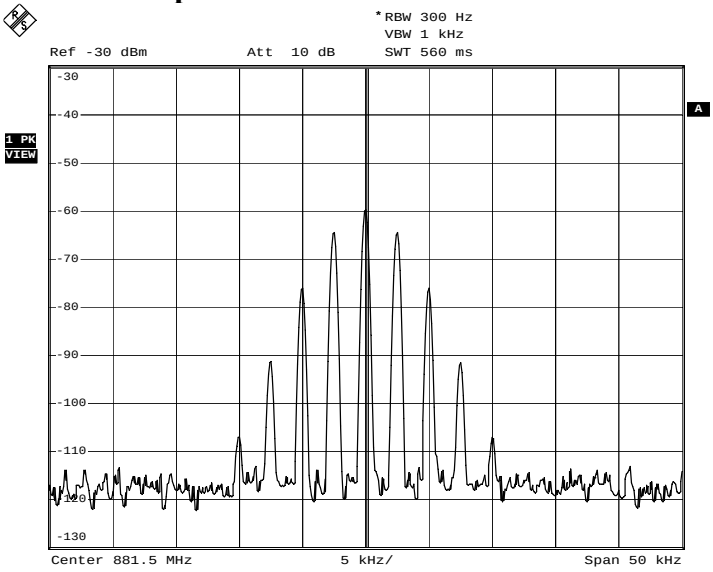
Downlink Output – TDMA



Downlink - TDMA Output

Date: 19.SEP.2005 20:50:50

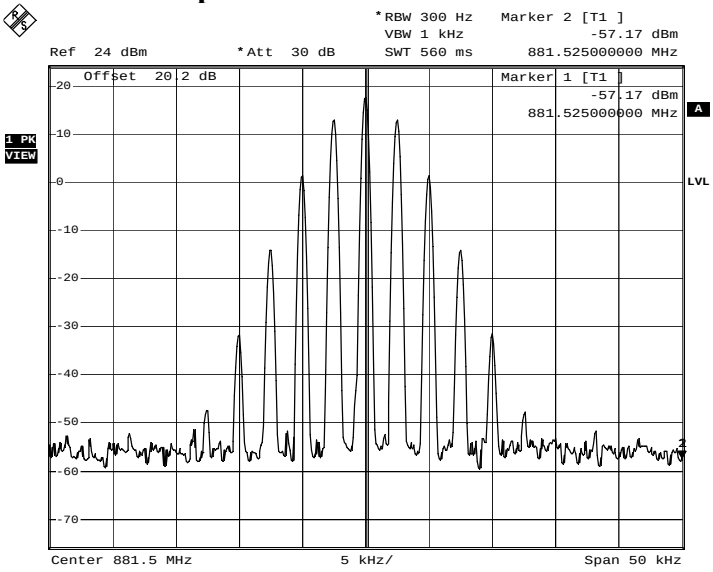
Downlink Input – AMPS



Downlink - AMPS Input

Date: 19.SEP.2005 21:15:19

Downlink Output – AMPS



Downlink - AMPS Output

Date: 19.SEP.2005 20:49:41

Clause 2-11-04/EAB/RF Out of Band Rejection

Plots showing the filter frequency response.

Test Conditions:

Sample Number:	1	**Temperature:**	24°C
Date:	September 19, 2005	**Humidity:**	50%
Modification State:	0	**Tester:**	Jason Nixon
		Laboratory:	Wireless

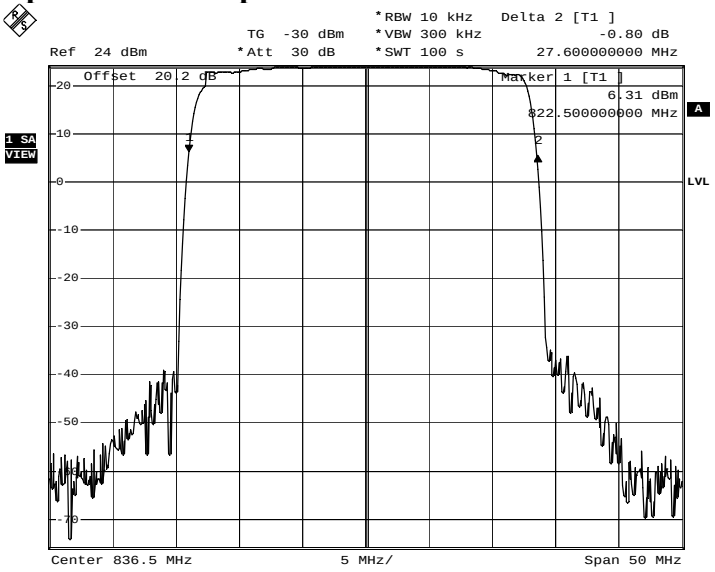
Test Results:

See Attached Plots.

Additional Observations:

None

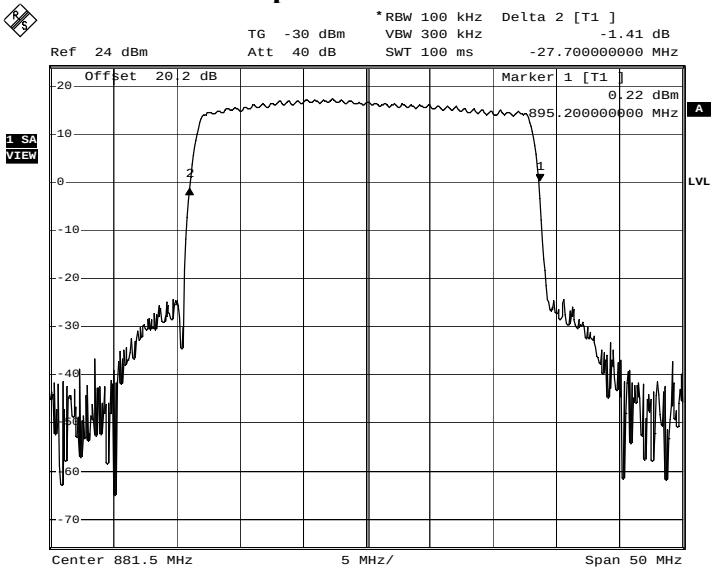
Uplink Filter Response



Uplink - 20dB Bandwidth

Date: 19.SEP.2005 19:35:28

Downlink Filter Response

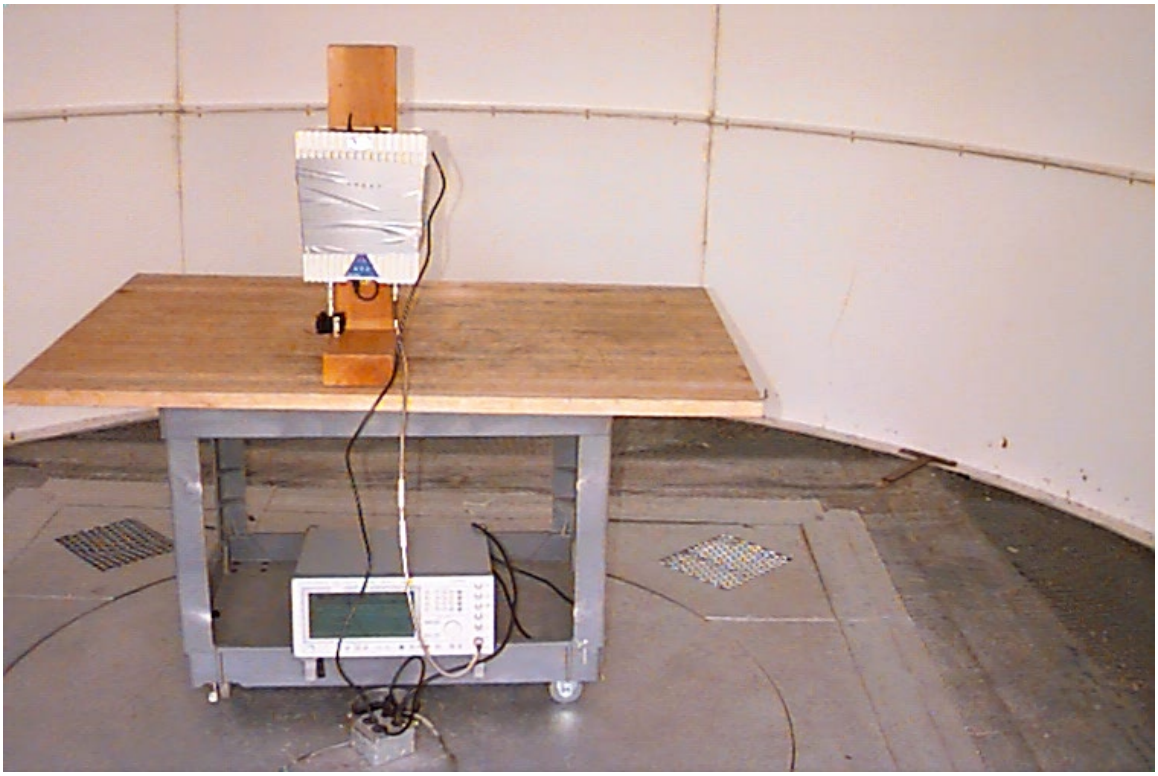


Downlink - Filter Response

Date: 20.SEP.2005 19:19:05

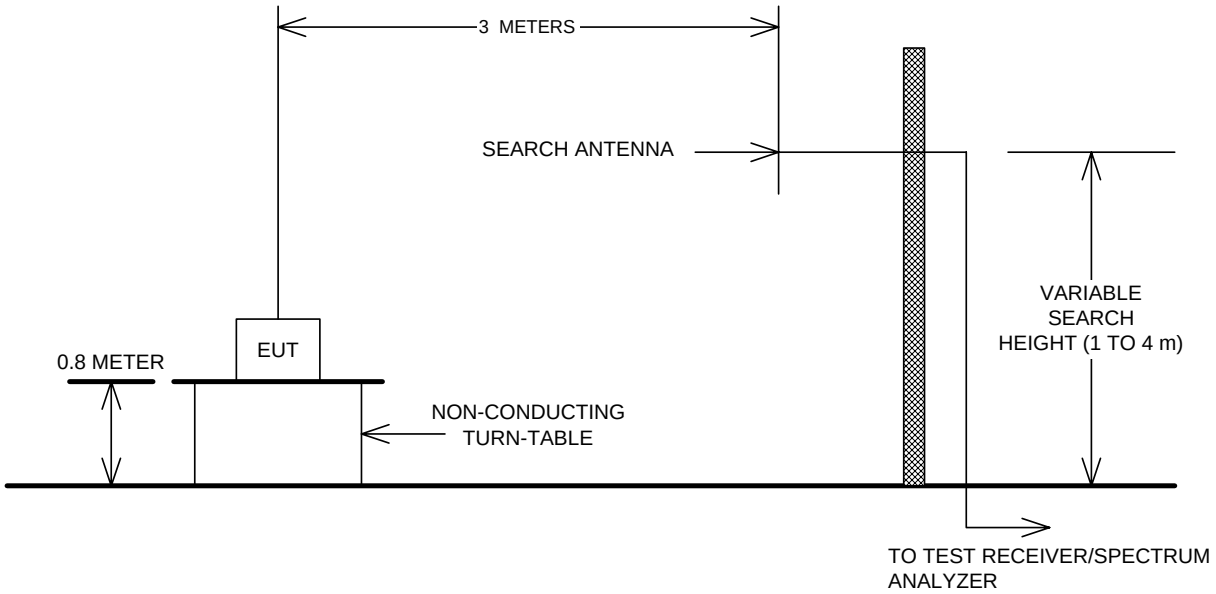
Appendix B : Setup Photographs

Radiated Spurious Emissions Setup:



Appendix C : Block Diagram of Test Setups

Test Site For Radiated Emissions



Conducted Emissions, Output power, Occupied Bandwidth and Out of Band Rejection