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Test Report:	99922TRFWL
Applicant:	Dekolink Wireless Ltd. 16 Bazel St. Qiriyat-Arieh, Petah-Tikva, Israel 49510
Apparatus:	MW-CSR-PCS-3080
FCC ID:	OIWCSRPCS3080
In Accordance With:	FCC Part 24, Personal Communications Services Subpart E Broadband PCS
Tested By:	Nemko Canada Inc. 303 River Road Ottawa, Ontario K1V 1H2
Authorized By:	 Jason Nixon, Wireless/Telecom Specialist
Date:	March 4, 2008
Total Number of Pages:	36

Report Summary

These tests were conducted on a sample of the equipment for the purpose of demonstrating compliance with Part 24. Conducted measurements were performed in accordance with ANSI TIA-603-B-2002. Radiated tests were conducted is accordance with TIA-603-B-2002. 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-CSR-PCS-3080

Specification: FCC Part 24 Subpart E Broadband PCS

Compliance Status: Complies

Exclusions: None

Non-compliances: None

Report Release History: Original Release

Author: Andrey Adelberg EMC/Wireless 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-CSR-PCS-3080

1.2 Samples Submitted for Assessment

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

Sample No.	Description	Serial No.
1	DEKO3019	0801D9148

The first samples were received on: January 22, 2008

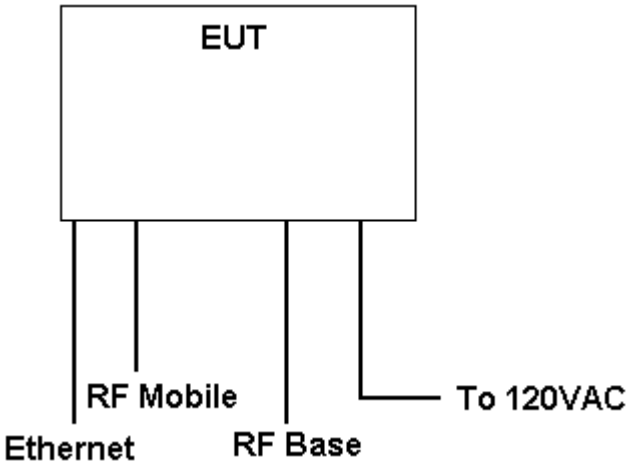
1.3 Theory of Operation

Deko3019 is a 1900MHz CDMA repeater with switchable and tunable IF-SAW filters. The repeater supports up to three contiguous and non-contiguous frequency blocks in the WPCS band (1800-1900 MHz), where each block is independently tunable across the entire CDMA (WPCS) band.

1.4 Technical Specifications of the EUT

Operating Frequency:	Uplink:	1850 – 1915 MHz
	Downlink:	1930 – 1995 MHz
Emission Designator:	GXW	
Rated Power:	Uplink:	+24 ± 1 dBm
	Downlink:	+30 ± 1 dBm
Measured Power:	Uplink:	25.28 dBm (0.337 W)
	Downlink:	30.26 dBm (1.062 W)
Modulation:	CDMA and 1xEV-DO	
Power Source:	110 – 240 VAC	

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 24, Subpart E Broadband PCS
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
Rated voltage	:	110-240 VAC
Power supply range	:	+/- 5% of rated voltages

2.4 Test Equipment

Equipment	Manufacturer	Model No.	Asset/Serial No.	Next Cal.
Signal Generator	Rohde & Schwarz	SMIQ06B	FA001878	Sept 4/08
Power Meter	Agilent	N1911A	FA001946	Jan 10/09
Power Sensor	Agilent	N1922A	FA001947	Jan 10/09
Attenuator	Narda	769-20	FA001394	COU
Signal Generator	Rohde & Schwarz	SMIQ03E	FA001269	Aug 13/08
Biconical	Sunol	BC2	FA002078	July 25/08
Log Periodic Antenna	Sunol	LP5	FA002077	July 25/08
Flush Mount Turntable	Sunol	FM2022	FA002082	NCR
Controller	Sunol	SC104V	FA002060	NCR
Mast	Sunol	TLT2	FA002061	NCR
50 Coax cable	HUBER + SUHNER	None	FA002022	Sept. 19/08
50 Coax cable	HUBER + SUHNER	None	FA002015	Sept. 19/08
Spectrum Analyzer	Rohde & Schwarz	FSP	FA001920	Mar. 19/08
Horn Antenna #1	EMCO	3115	FA000649	Feb 26/08
1.0 – 2.0 GHz Amplifier	JCA	12-400	FA001498	Aug. 21/08
2.0 – 4.0 GHz Amplifier	JCA	24-600	FA001496	Aug. 21/08
4.0 – 8.0 GHz Amplifier	JCA	48-600	FA001497	Aug. 21/08
5.0 – 18.0 GHz Amplifier	NARDA	DWT-186N23U40	FA001409	COU

COU – Calibrate on Use
NCR – No Calibration Required

2.5 Measurement Uncertainty

Nemko Canada measurement uncertainty has been calculated using guidance of UKAS LAB 34:2003 and TIA-603-B Nov 7, 2002. All calculations have been performed to provide a confidence level of 95% and can be found in Nemko Canada document MU-003.

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 24: 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 24 Subpart E: Test Results

Clause	Test Method	Test Description	Required	Result
24.235	2.1055	Frequency stability	Y	PASS (1)
24.232	2.1046	Output power	Y	PASS
24.238	2.1051	Conducted spurious emissions	Y	PASS
24.238	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 EUT does not band translate; however it does down convert and then up convert. A signal was transmitted through the booster in both directions and there was no offset observed.

Appendix A : Test Results

Clause 24.232 Output Power

((a) Base stations are limited to 1640 watts peak equivalent isotropically radiated power (EIRP) with an antenna height up to 300 meters HAAT, except as described in paragraph (b) below.

(b) Base stations that are located in counties with population densities of 100 persons or fewer per square mile, based upon the most recently available population statistics from the Bureau of the Census, are limited to 3280 watts peak equivalent isotropically radiated power (EIRP) with an antenna height up to 300 meters HAAT

(c) Mobile/portable stations are limited to 2 watts EIRP peak power and the equipment must employ means to limit the power to the minimum necessary for successful communications.

Test Conditions:

Sample Number:	1	**Temperature:**	24°C
Date:	January 21, 2008	**Humidity:**	40%
Modification State:	0	**Tester:**	Andrey Adelberg
		Laboratory:	Ottawa

Test Results:

See Attached Table.

Additional Observations: Testing was performed by means of a calibrated peak power meter, with a single carrier set to the 1 dB compression point.

Downlink:

Modulation	Measured Power (dBm)		
	1935MHz	1962.5MHz	1990MHz
CDMA	29.34	30.20	29.79
1x EV-DO	28.25	30.26	29.62

Uplink:

Modulation	Measured Power (dBm)		
	1855MHz	1882.5MHz	1910MHz
CDMA	25.26	25.14	22.64
1x EV-DO	25.31	25.28	22.53

Measurements were performed with the EUT filter set to 20MHz.

Clause 24.238 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.

(b) Measurement procedure. Compliance with these rules is based on the use of measurement instrumentation employing a resolution bandwidth of 1 MHz or greater. However, in the 1 MHz bands immediately outside and adjacent to the frequency block a resolution bandwidth of at least one percent of the emission bandwidth of the fundamental emission of the transmitter may be employed. A narrower resolution bandwidth is permitted in all cases to improve measurement accuracy provided the measured power is integrated over the full required measurement bandwidth (i.e. 1 MHz or 1 percent of emission bandwidth, as specified). The emission bandwidth is defined as the width of the signal between two points, one below the carrier center frequency and one above the carrier center frequency, outside of which all emissions are attenuated at least 26 dB below the transmitter power.

Test Conditions:

Sample Number:	1	**Temperature:**	24°C
Date:	January 25. 2008	**Humidity:**	40%
Modification State:	0	**Tester:**	Andrey Adelberg
		Laboratory:	Ottawa

Test Results:

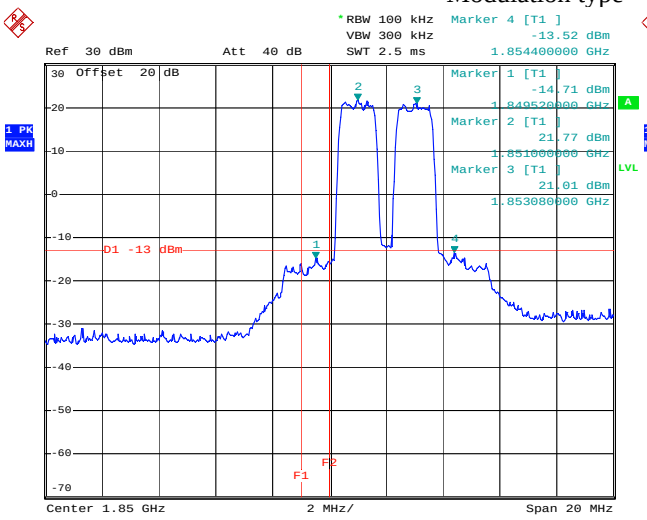
See Attached Plots.

Intermodulations, continued

3rd Order Intermodulation Products, Lower and Upper band edges check

UL/DL: Uplink

Modulation type CDMA



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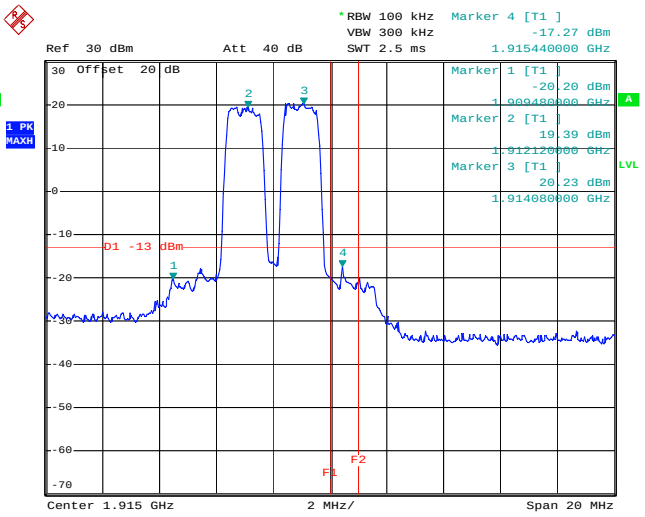

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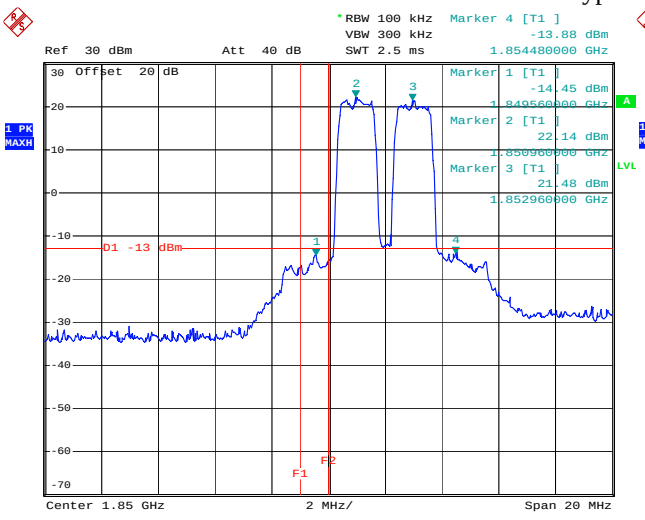
3rd Order Intermodulation Products, Lower and Upper band edges check

UL/DL: Uplink

Modulation type 1x EV-DO



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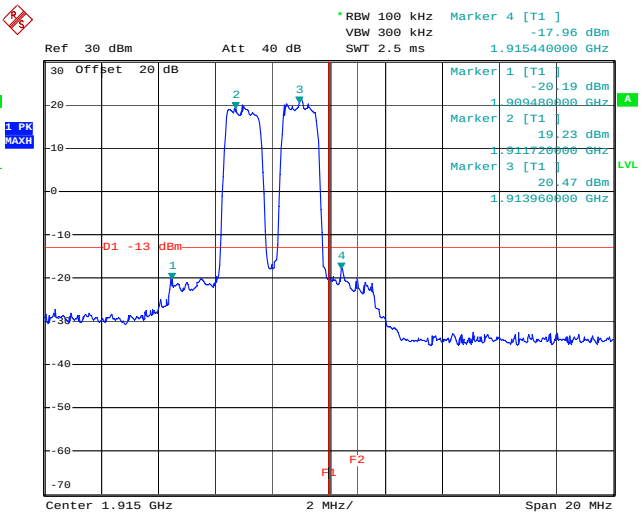

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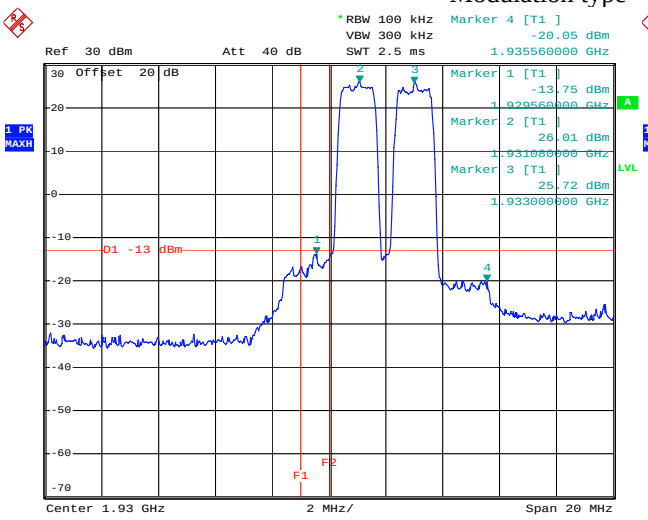
Intermodulations, continued

3rd Order Intermodulation Products, Lower and Upper band edges check

UL/DL: Downlink

Modulation type CDMA



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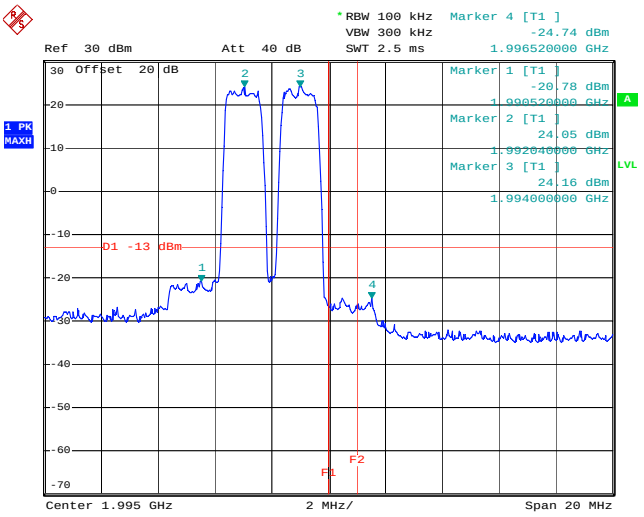

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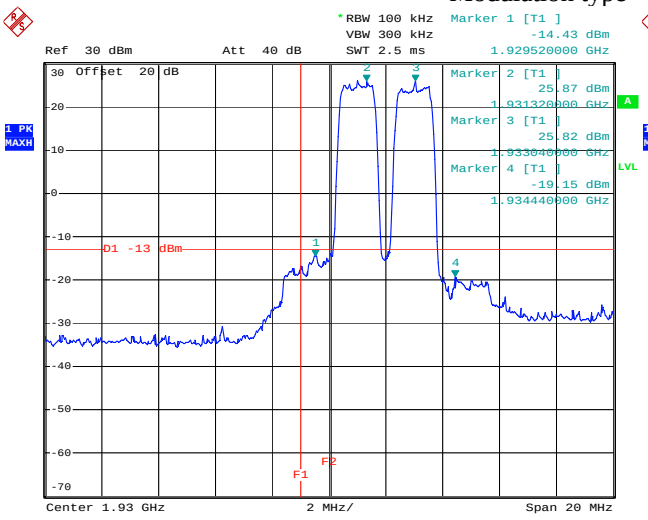
3rd Order Intermodulation Products, Lower and Upper band edges check

UL/DL: Downlink

Modulation type 1x EV-DO



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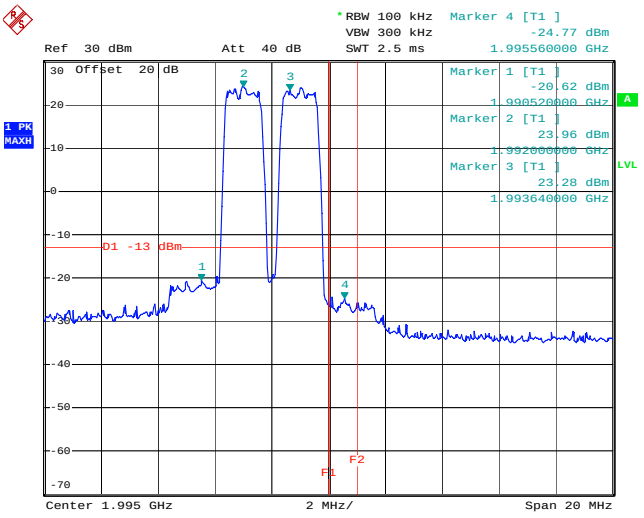

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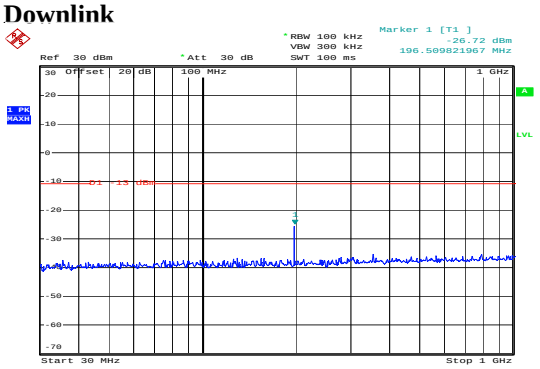
Conducted Spurious Emissions, continued

Downlink



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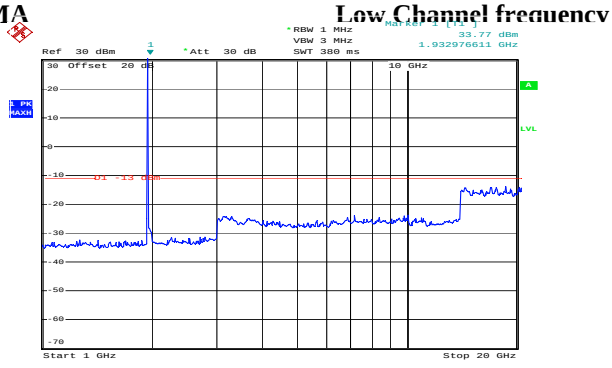
CDMA Low Channel frequency



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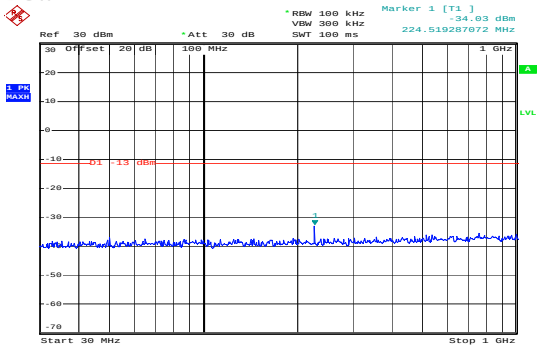

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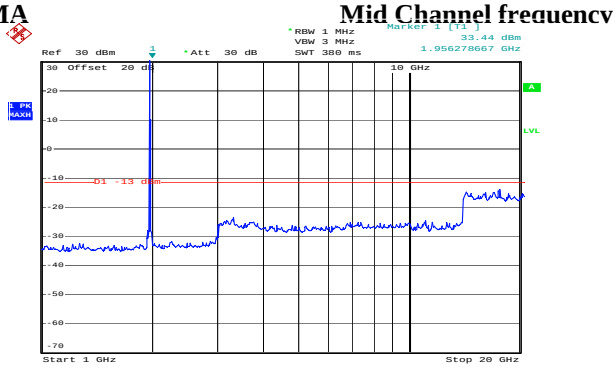
CDMA Mid Channel frequency



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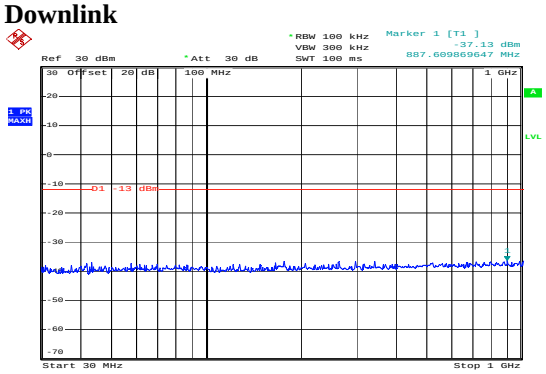

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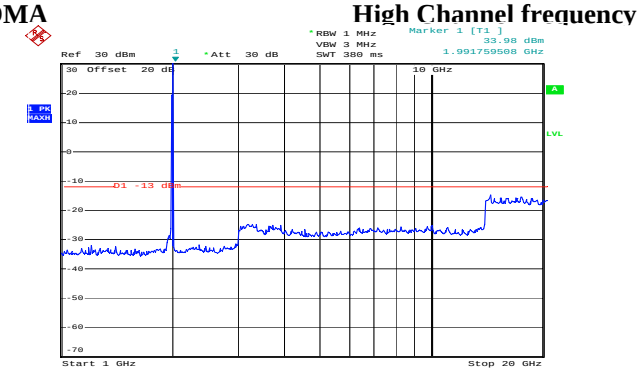
CDMA High Channel frequency



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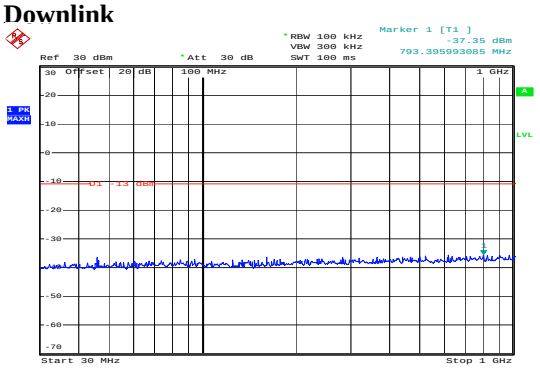
Conducted Spurious Emissions, continued

Downlink **1x EV-DO** **Low Channel frequency**



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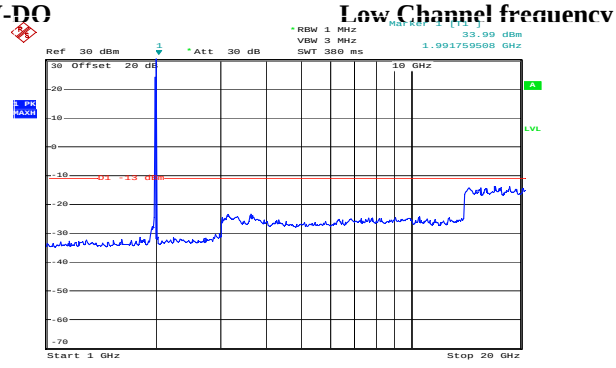

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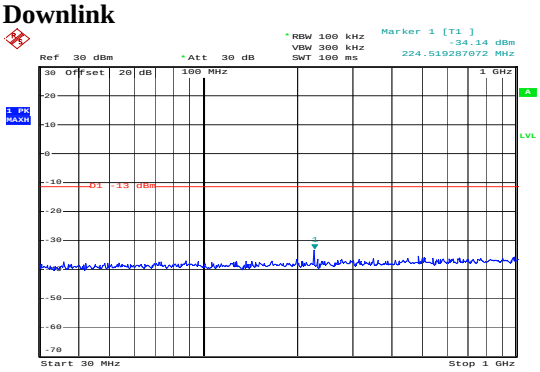
Downlink **1x EV-DO** **Mid Channel frequency**



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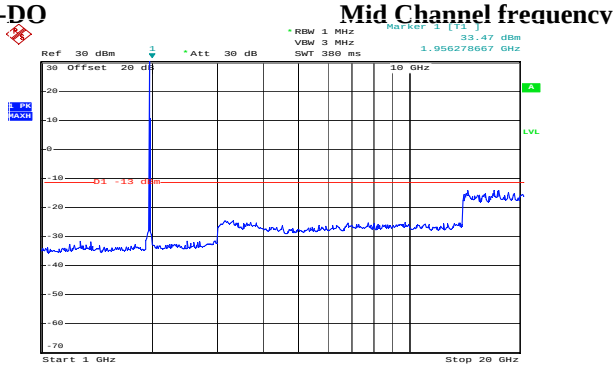

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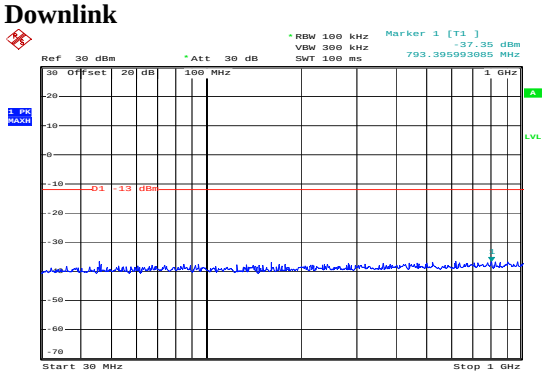
Downlink **1x EV-DO** **High Channel frequency**



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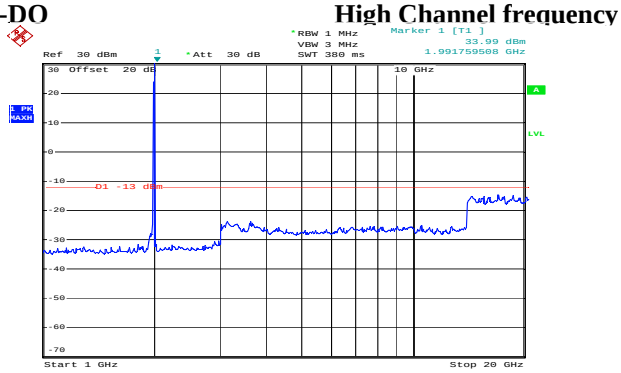

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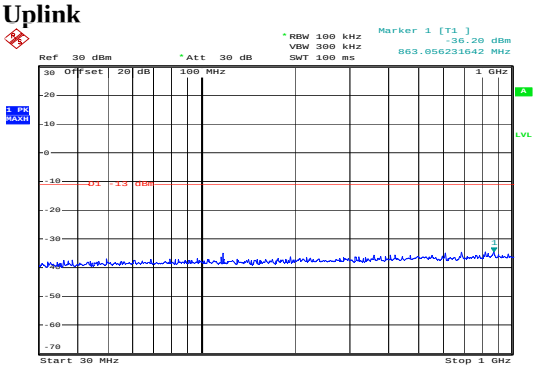
Conducted Spurious Emissions, continued

Uplink



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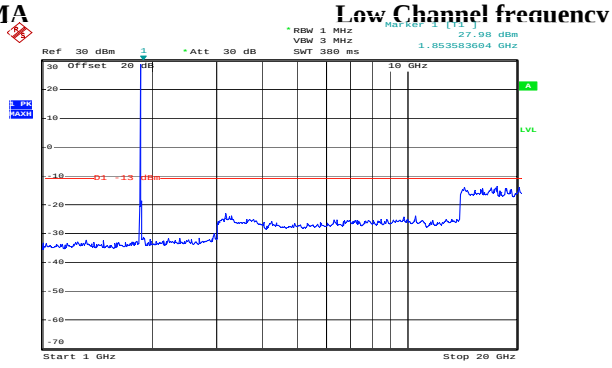
CDMA **Low Channel frequency**



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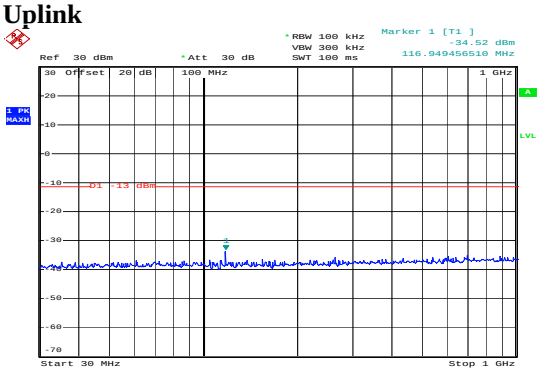
Uplink



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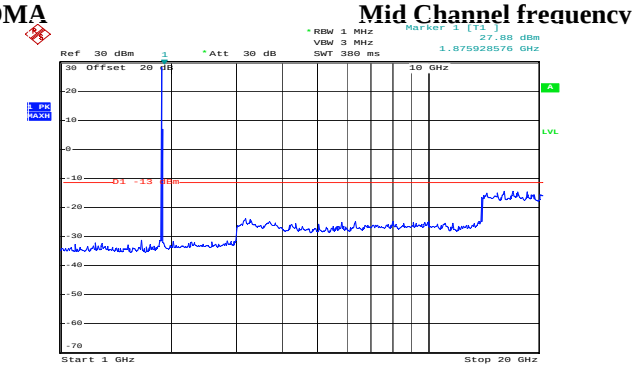
CDMA **Mid Channel frequency**



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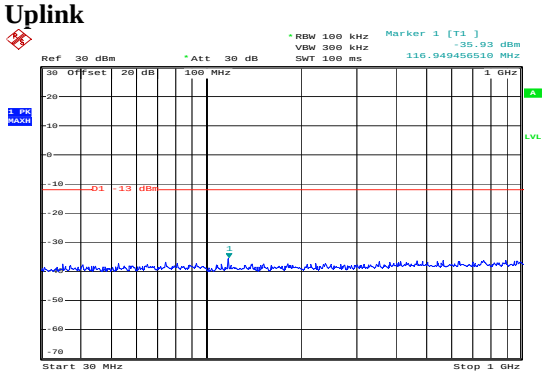
Uplink



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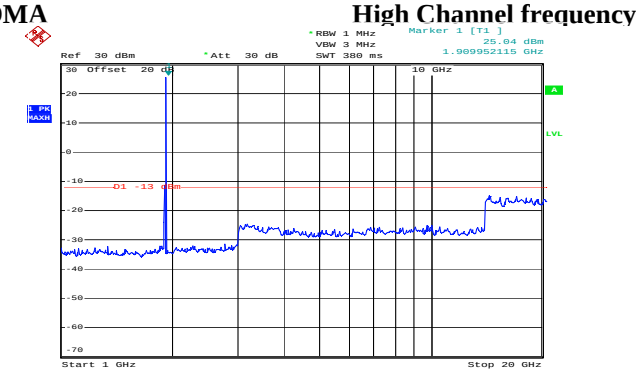
CDMA **High Channel frequency**



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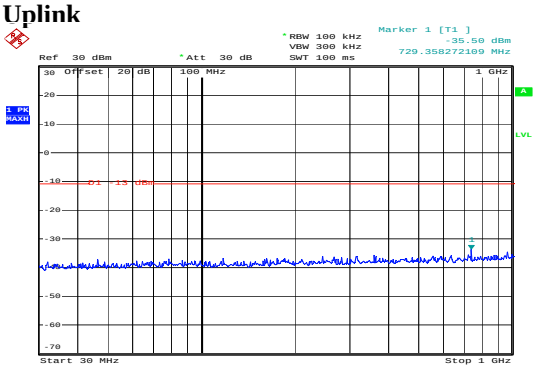
Conducted Spurious Emissions, continued

Uplink



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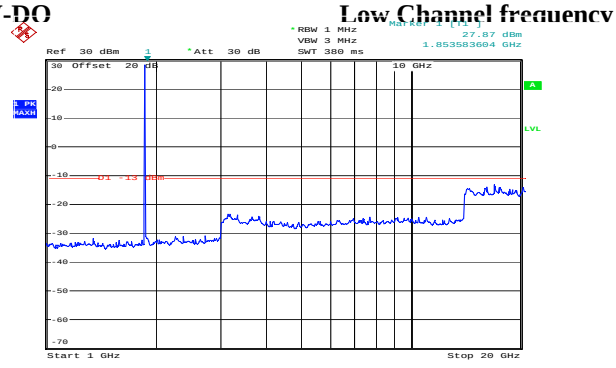
1x EV-DO Low Channel frequency



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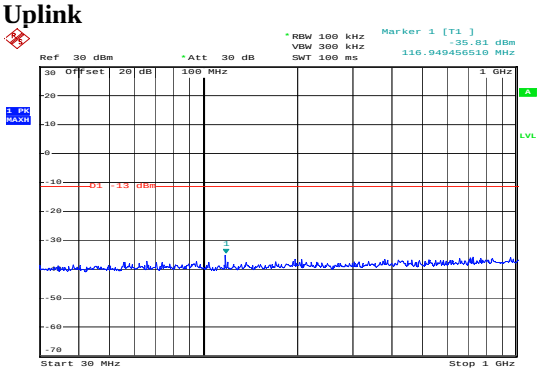
Uplink



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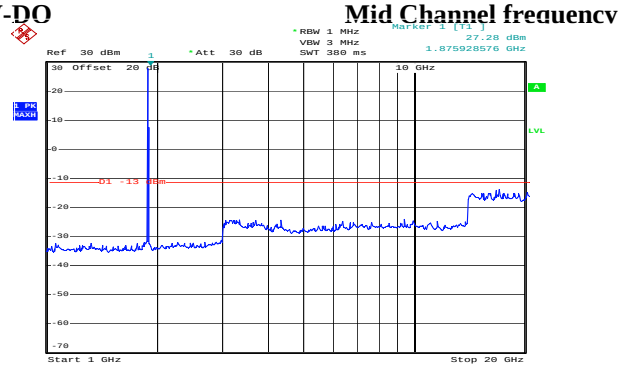
1x EV-DO Mid Channel frequency



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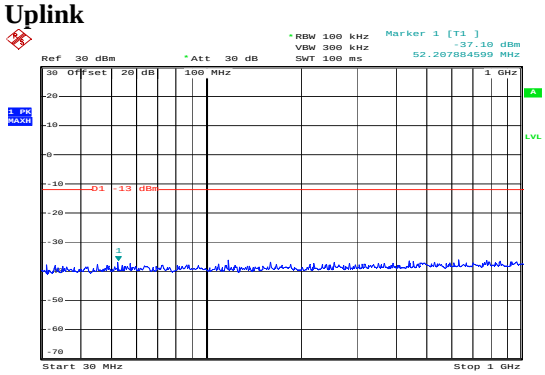
Uplink



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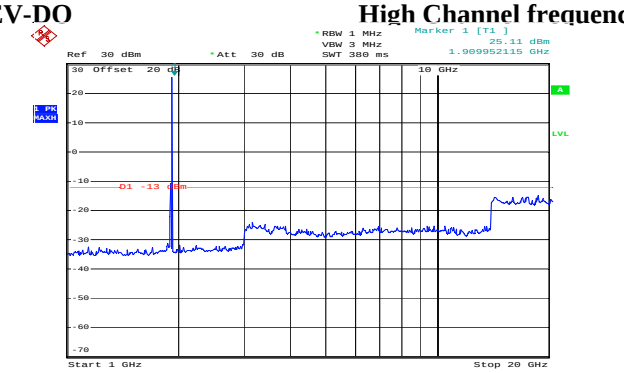
1x EV-DO High Channel frequency



Date: 23.JAN.2008 14:46:41

Clause 24.238 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:**	23°C
Date:	January 30, 2008	**Humidity:**	37%
Modification State:	0	**Tester:**	Andrey Adelberg
		Laboratory:	Ottawa

Test Results:

All emissions were more than 20 dB below the limit.

Additional Observations:

The Spectrum was searched from 30MHz to the 10^{th} Harmonic.

The EUT was assessed in both directions (Uplink and Downlink) at three carrier frequencies (at low, mid and high channels)

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.

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:	January 23, 2008	**Humidity:**	40%
Modification State:	0	**Tester:**	Andrey Adelberg
		Laboratory:	Ottawa

Test Results:

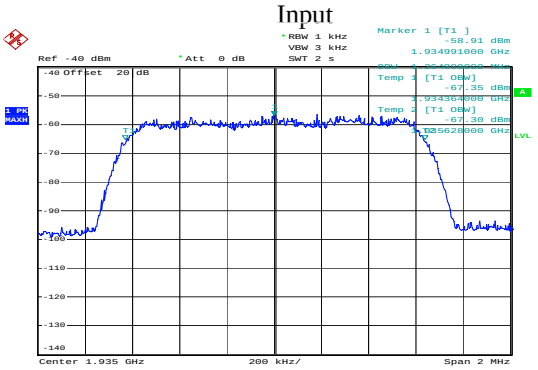
See Attached Plots.

Additional Observations:

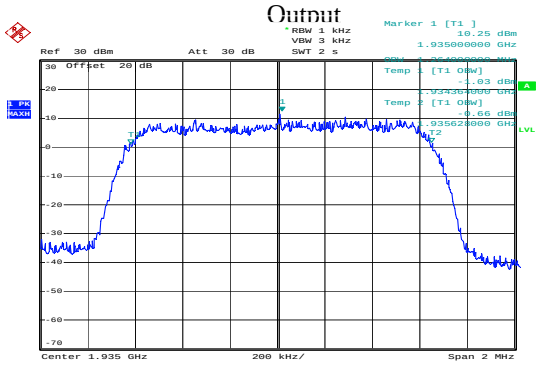
Input and output signals were compared to verify that there was no any degradation to the signal due to amplification and conversion in the EUT.

Occupied Bandwidth, continued

Downlink **CDMA** **Low Channel frequency**

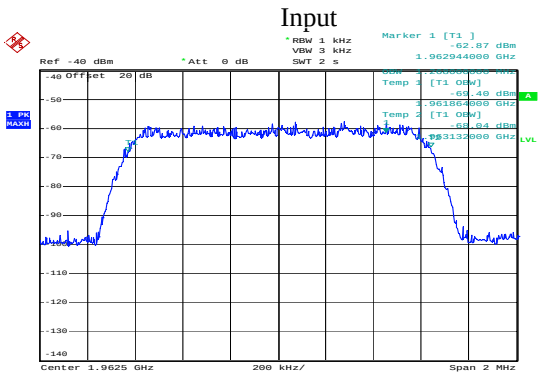


Date: 24.JAN.2008 09:55:44

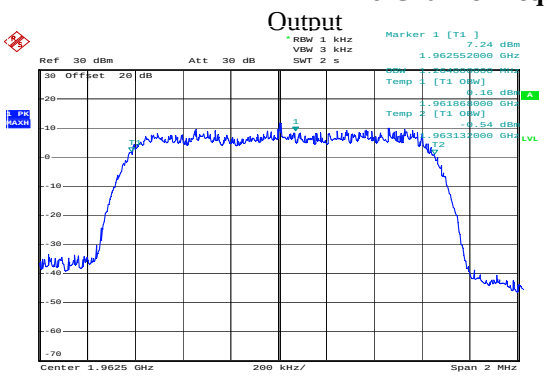


Date: 23.JAN.2008 15:38:08

Downlink **CDMA** **Mid Channel frequency**

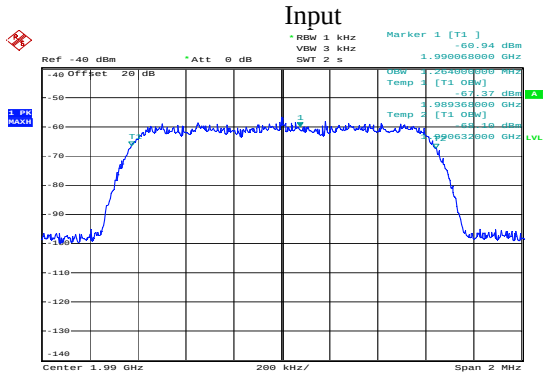


Date: 24.JAN.2008 09:57:19

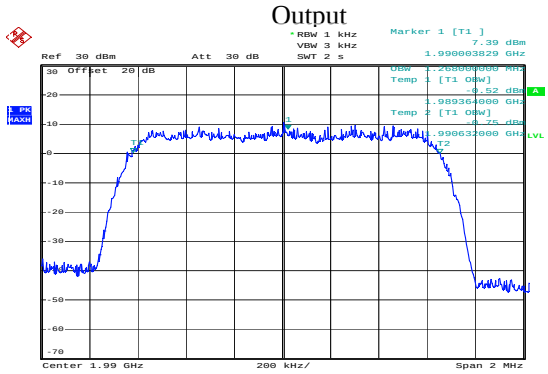


Date: 23.JAN.2008 15:29:11

Downlink **CDMA** **High Channel frequency**



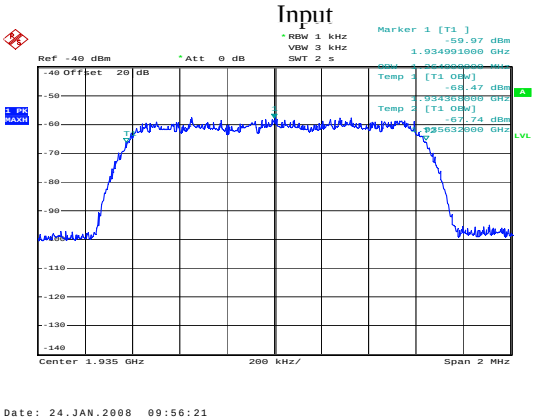
Date: 24.JAN.2008 09:58:24

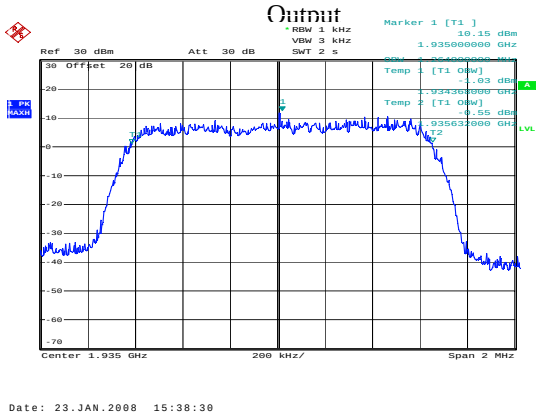


Date: 23.JAN.2008 15:21:43

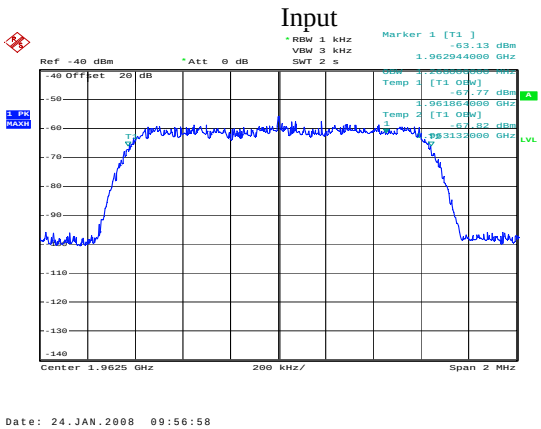
Occupied Bandwidth, continued

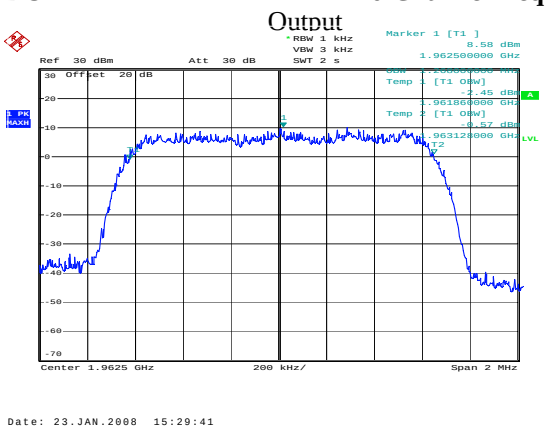
Downlink **1x EV-DO** **Low Channel frequency**



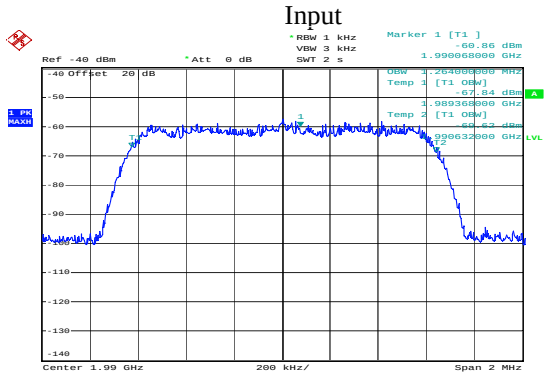


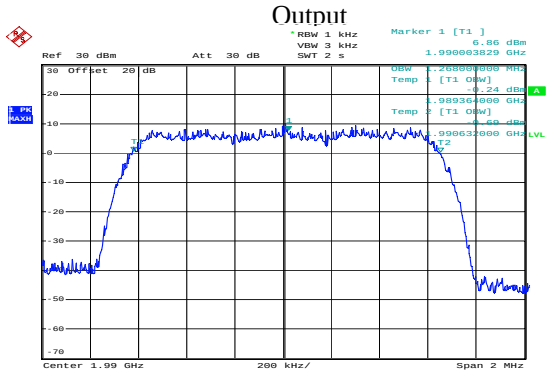
Downlink **1x EV-DO** **Mid Channel frequency**





Downlink **1x EV-DO** **High Channel frequency**

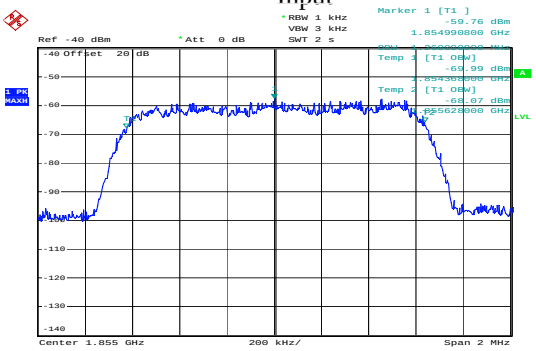




Occupied Bandwidth, continued

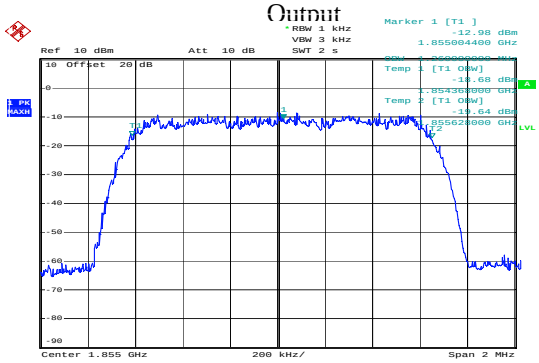
Uplink **CDMA** **Low Channel frequency**

Input



Date: 23.JAN.2008 17:08:03

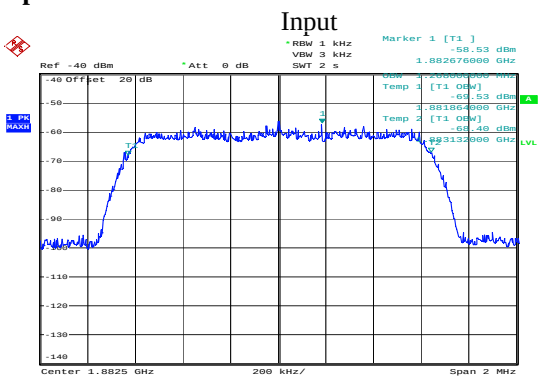
Output



Date: 23.JAN.2008 15:47:57

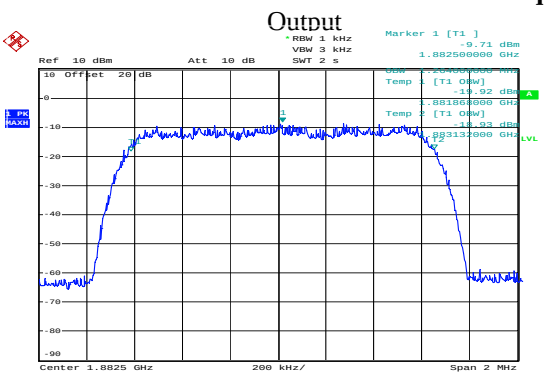
Uplink **CDMA** **Mid Channel frequency**

Input



Date: 23.JAN.2008 17:09:21

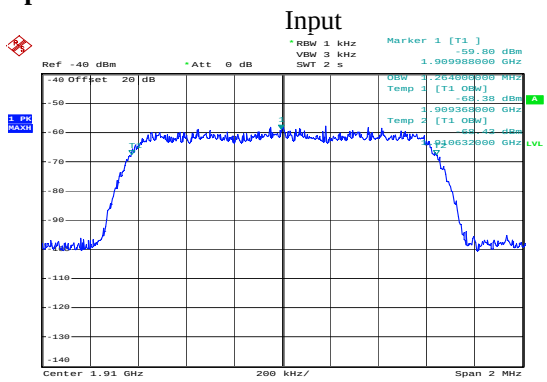
Output



Date: 23.JAN.2008 15:48:57

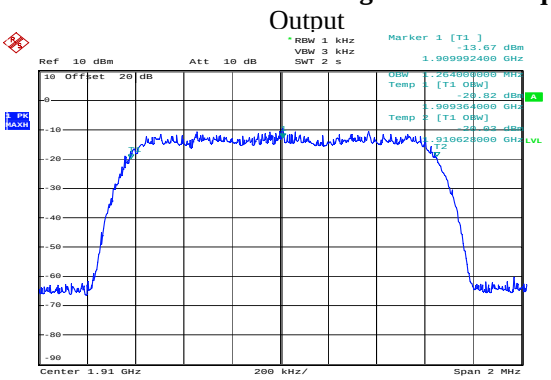
Uplink **CDMA** **High Channel frequency**

Input



Date: 23.JAN.2008 17:13:38

Output

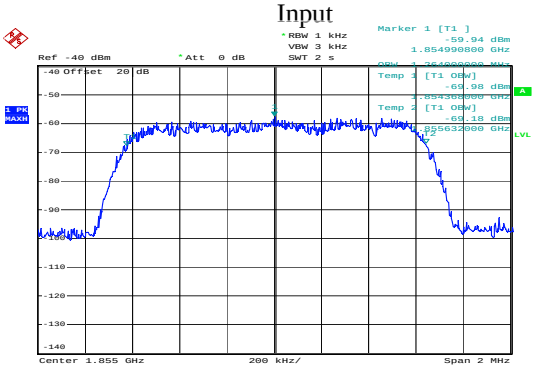


Date: 23.JAN.2008 15:55:43

Occupied Bandwidth, continued

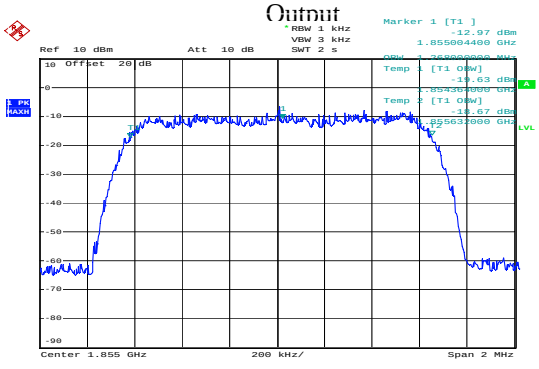
Uplink **1x EV-DO** **Low Channel frequency**

Input



Date: 23.JAN.2008 17:07:34

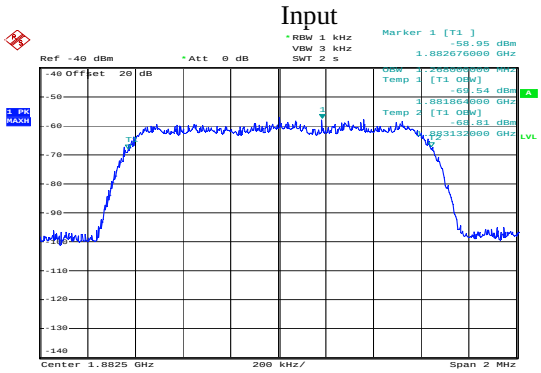
Output



Date: 23.JAN.2008 15:47:32

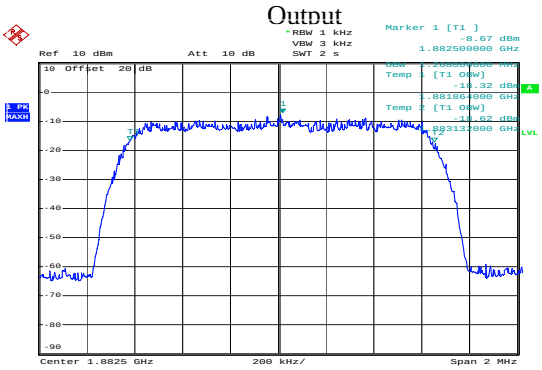
Uplink **1x EV-DO** **Mid Channel frequency**

Input



Date: 23.JAN.2008 17:09:50

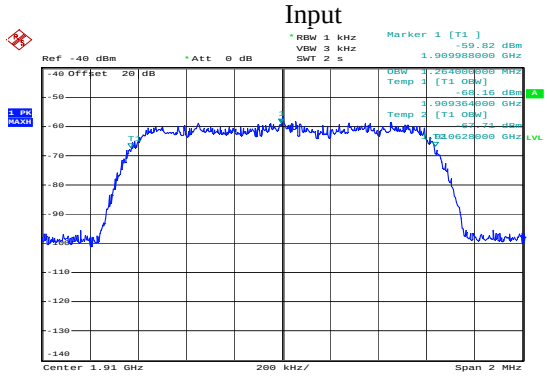
Output



Date: 23.JAN.2008 15:49:26

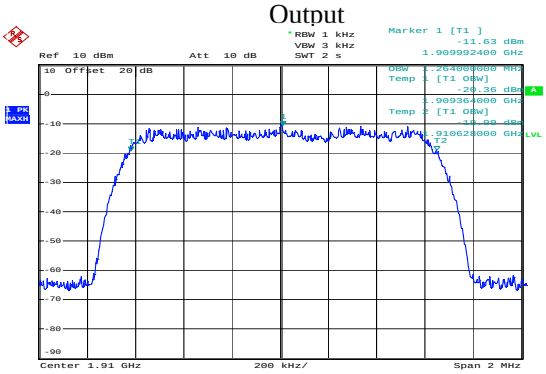
Uplink **1x EV-DO** **High Channel frequency**

Input



Date: 23.JAN.2008 17:14:24

Output



Date: 23.JAN.2008 15:56:16

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

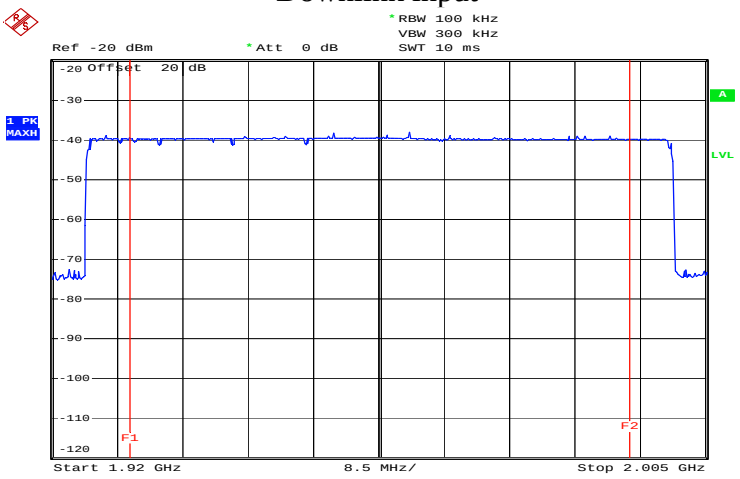
Plots showing the filter frequency response.

Test Conditions:

Sample Number:	1	**Temperature:**	23°C
Date:	January 24, 2008	**Humidity:**	38%
Modification State:	0	**Tester:**	Andrey Adelberg
		Laboratory:	Ottawa

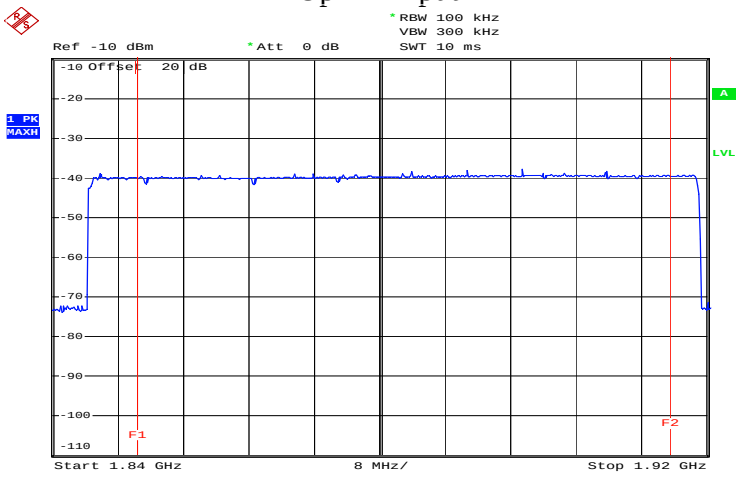
Test Results:

Downlink input



F1 = 1930 MHz; F2 = 1995 MHz

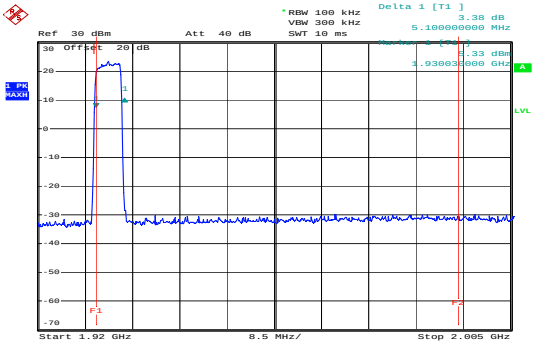
Uplink input



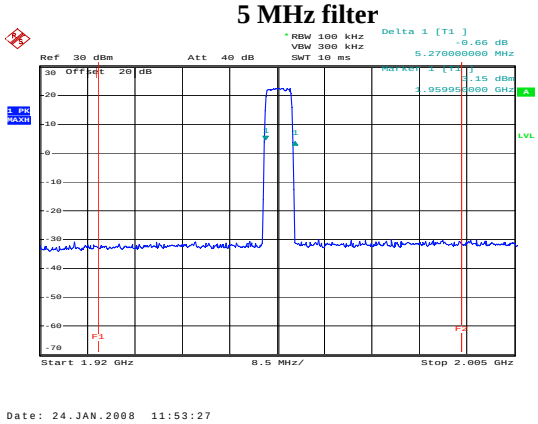
F1 = 1850 MHz; F2 = 1915 MHz

Out Of Band Rejection, continued

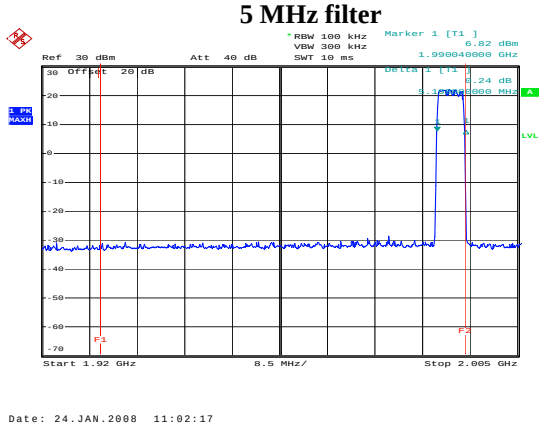
Downlink output **5 MHz filter** **Lower frequencies filter position**



Downlink output **5 MHz filter** **Middle frequencies filter position**

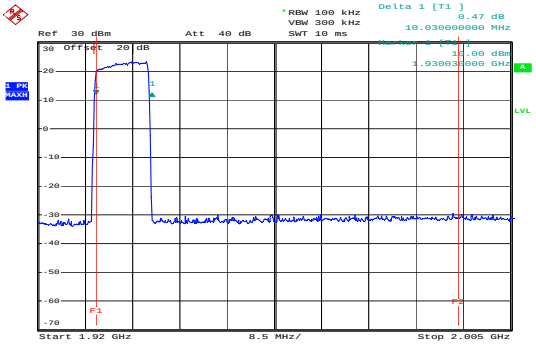


Downlink output **5 MHz filter** **Higher frequencies filter position**



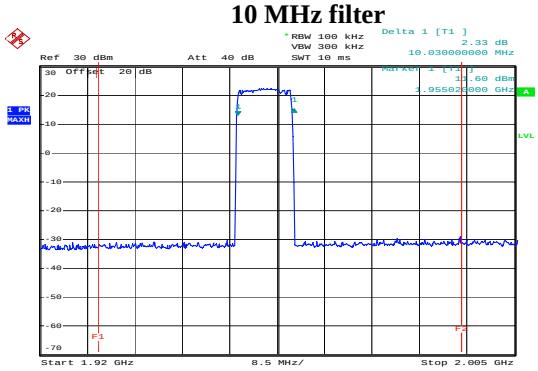
Out Of Band Rejection, continued

Downlink output **10 MHz filter** **Lower frequencies filter position**



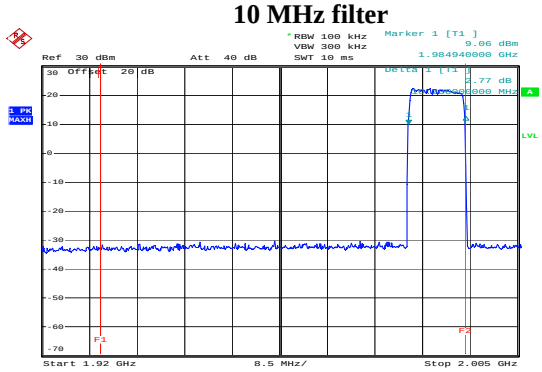
Date: 24.JAN.2008 11:13:25

Downlink output **10 MHz filter** **Middle frequencies filter position**



Date: 24.JAN.2008 11:47:22

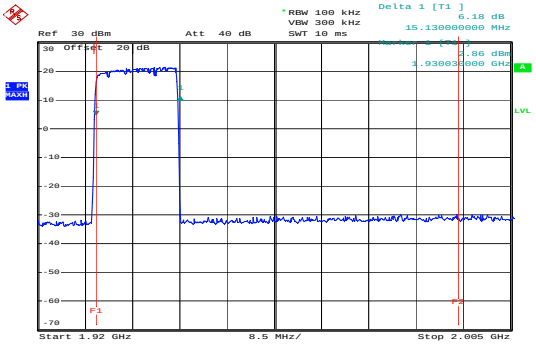
Downlink output **10 MHz filter** **Higher frequencies filter position**



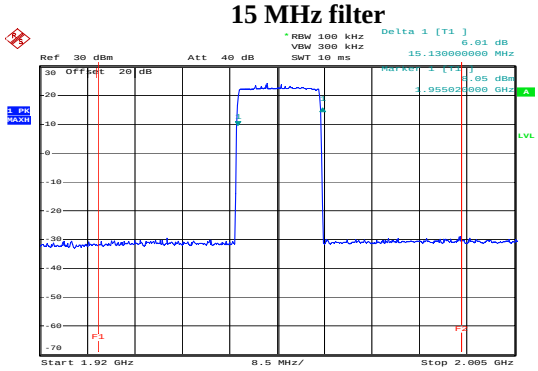
Date: 24.JAN.2008 10:58:50

Out Of Band Rejection, continued

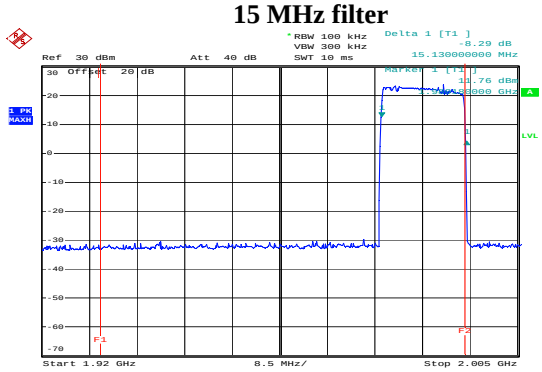
Downlink output **15 MHz filter** **Lower frequencies filter position**



Downlink output **15 MHz filter** **Middle frequencies filter position**

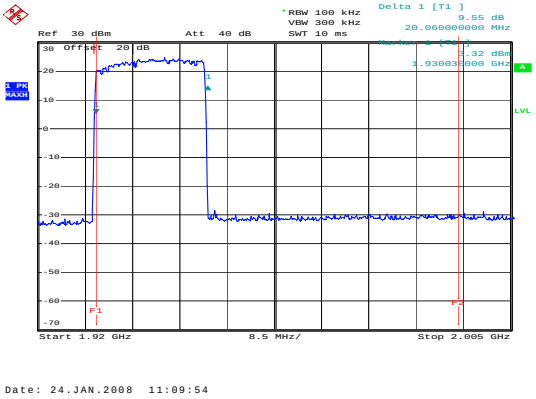


Downlink output **15 MHz filter** **Higher frequencies filter position**

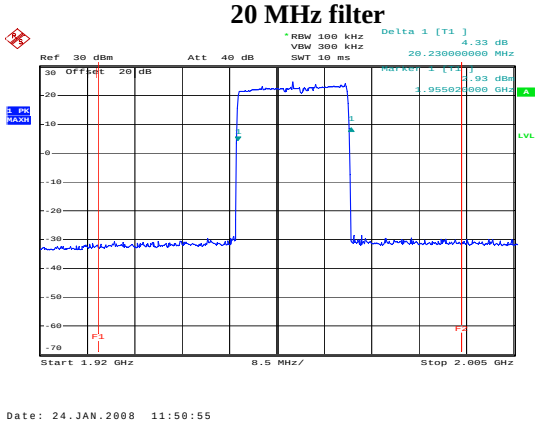


Out Of Band Rejection, continued

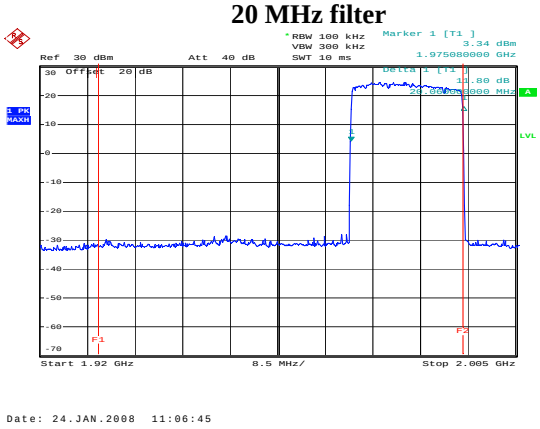
Downlink output **20 MHz filter** **Lower frequencies filter position**



Downlink output **20 MHz filter** **Middle frequencies filter position**

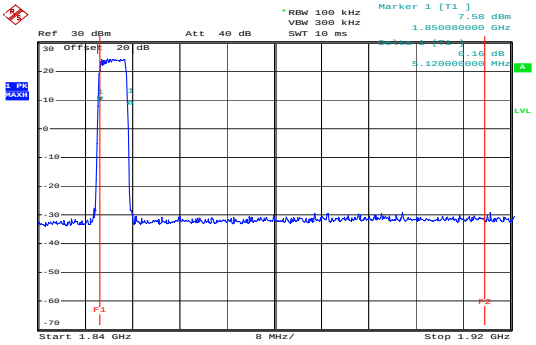


Downlink output **20 MHz filter** **Higher frequencies filter position**

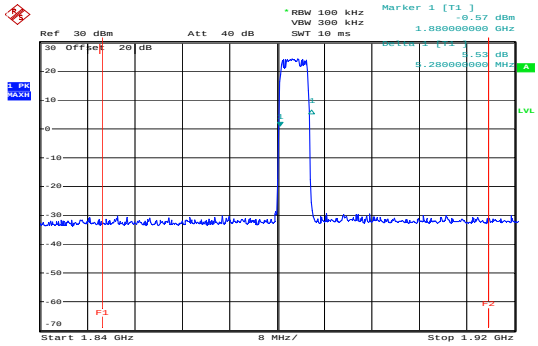


Out Of Band Rejection, continued

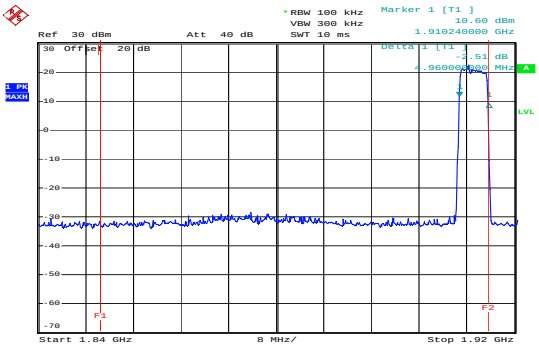
Uplink output **5 MHz filter** **Lower frequencies filter position**



Uplink output **5 MHz filter** **Middle frequencies filter position**

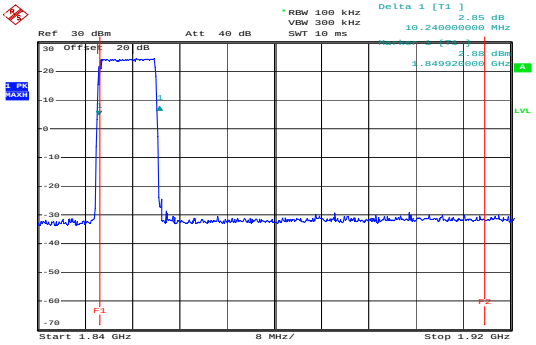


Uplink output **5 MHz filter** **Higher frequencies filter position**

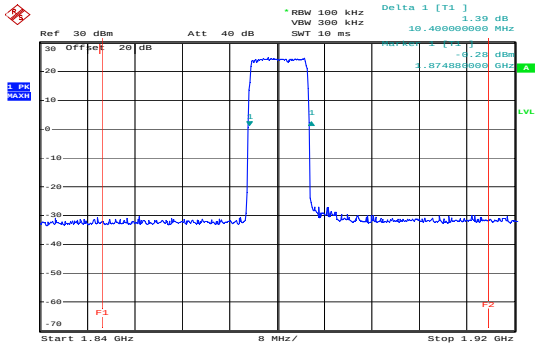


Out Of Band Rejection, continued

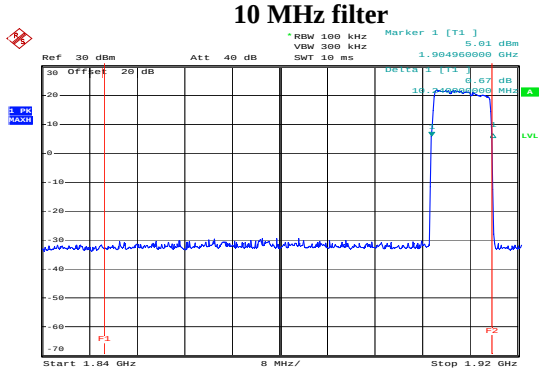
Uplink output **10 MHz filter** **Lower frequencies filter position**



Uplink output **10 MHz filter** **Middle frequencies filter position**

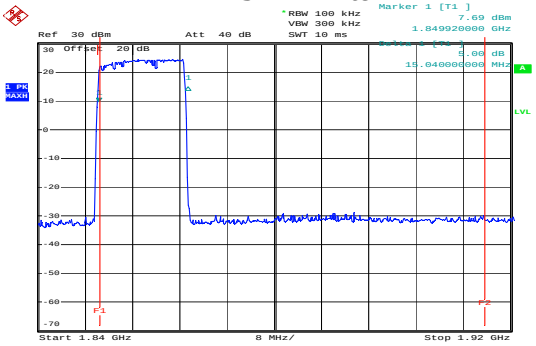


Uplink output **10 MHz filter** **Higher frequencies filter position**

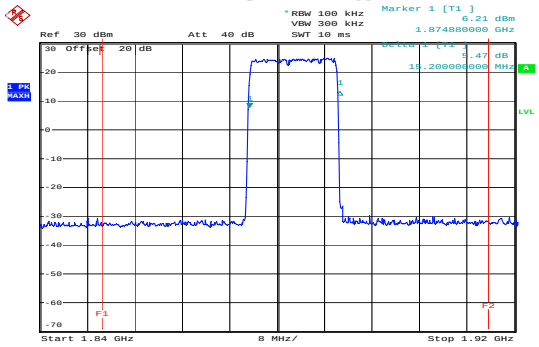


Out Of Band Rejection, continued

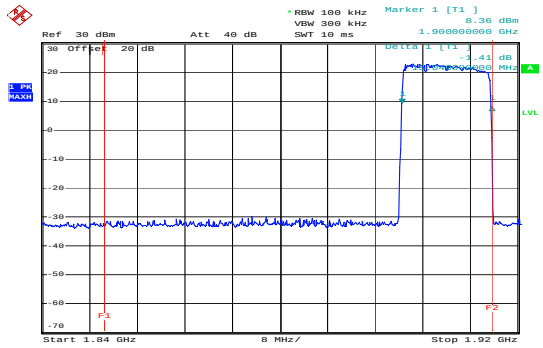
Uplink output **15 MHz filter** **Lower frequencies filter position**



Uplink output **15 MHz filter** **Middle frequencies filter position**

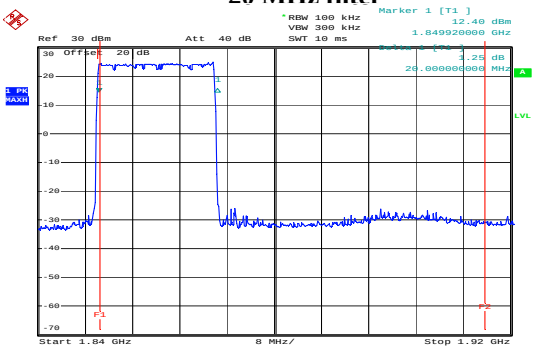


Uplink output **15 MHz filter** **Higher frequencies filter position**



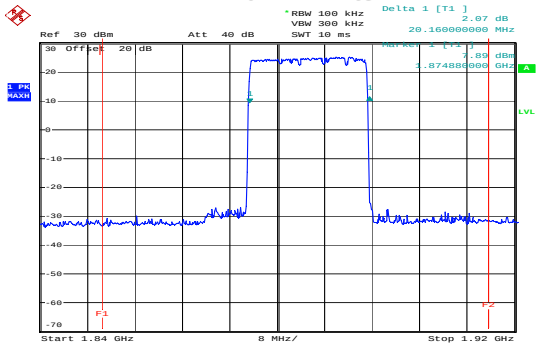
Out Of Band Rejection, continued

Uplink output **20 MHz filter** **Lower frequencies filter position**



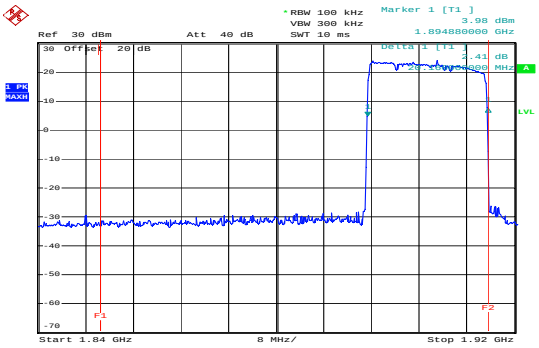
Date: 24.JAN.2008 10:12:23

Uplink output **20 MHz filter** **Middle frequencies filter position**



Date: 24.JAN.2008 10:26:01

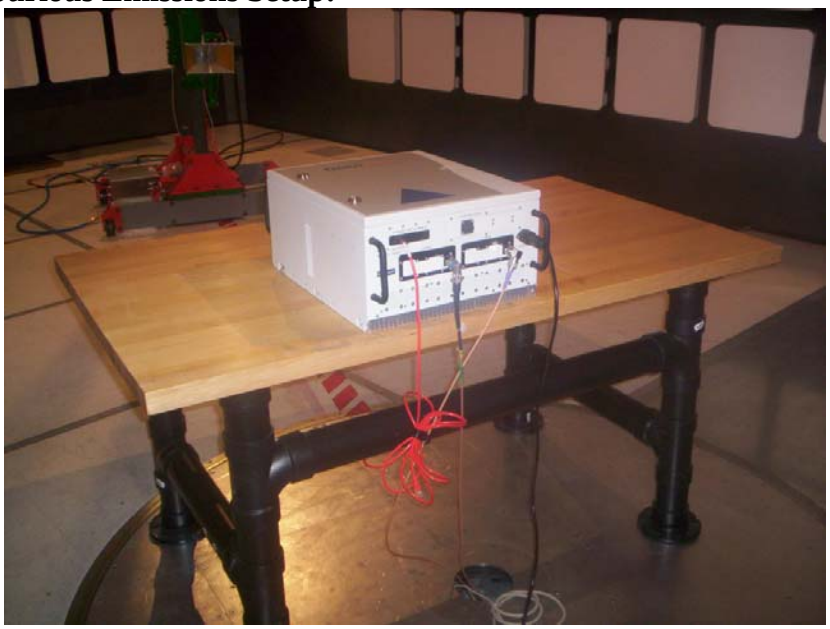
Uplink output **20 MHz filter** **Higher frequencies filter position**



Date: 24.JAN.2008 10:41:10

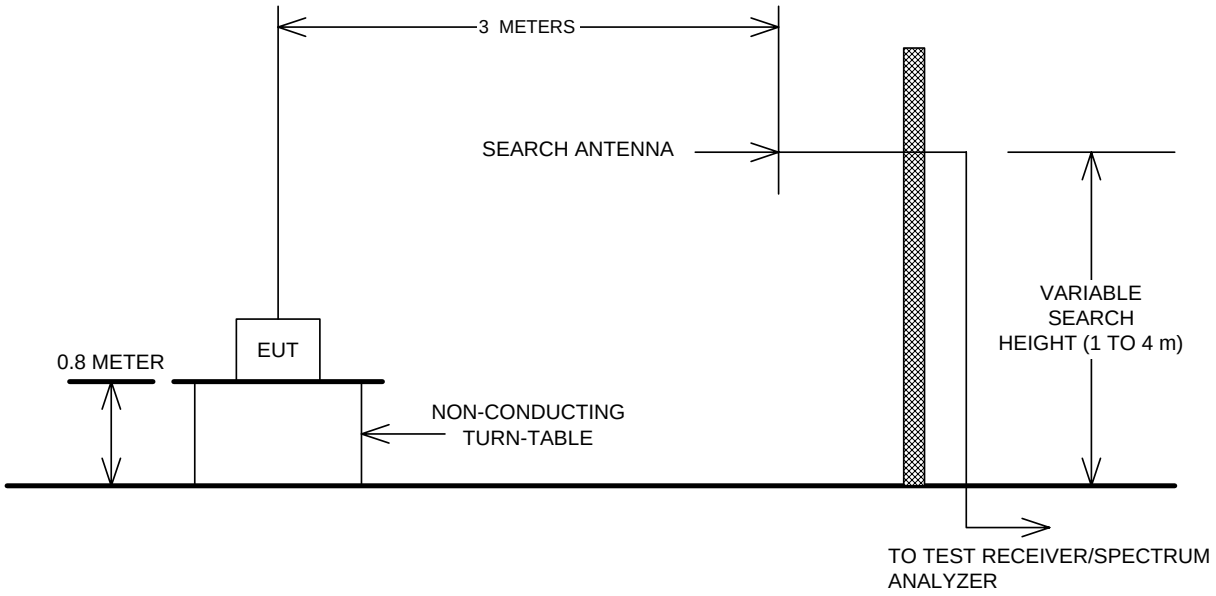
Appendix B : Setup Photographs

Radiated Spurious Emissions Setup:

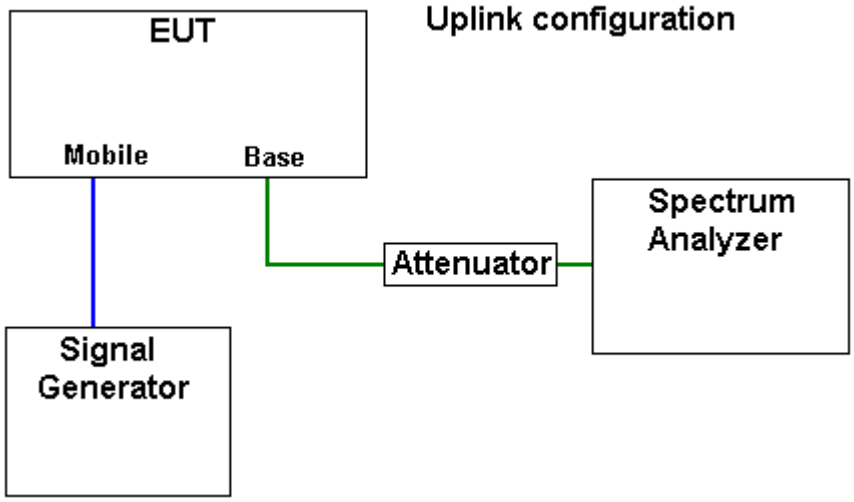


Appendix C : Block Diagram of Test Setups

Test Site For Radiated Emissions



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



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