



Test Report: 6W68193

Applicant: Dekolink Wireless Ltd.
16 Bazel St, Qiryat-Arieh
Petah-Tikva
49510 Israel

Apparatus: Deko1489S (MW-MBDA-SMR-025W60-800-900)

FCC ID: OIWMBDA800900025W

In Accordance With: FCC Part 90, Boosters
Private Land Mobile Radio Services

Tested By: Nemko Canada Inc.
303 River Road
Ottawa, Ontario
K1V 1H2

Authorized By:

Xu Jin, Wireless Specialist

Date: June 23, 2006

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 90. Conducted measurements were performed in accordance with ANSI TIA-603-B-2002. Radiated tests were conducted in 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:	Deko1489S (MW-MBDA-SMR-025W60-800-900)
Specification:	FCC Part 90 Private Land Mobile Radio 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.

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Section 1 : Equipment Under Test

1.1 Product Identification

The Equipment Under Test was identified as follows:

Deko1489S (MW-MBDA-SMR-025W60-800-900)

1.2 Samples Submitted for Assessment

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

Sample No.	Description	Serial No.
1	Deko1489S	06064001
2	AC/DC Switching Adapter (M/N: ES25U07-075)	

The first samples were received on: June 12, 2006

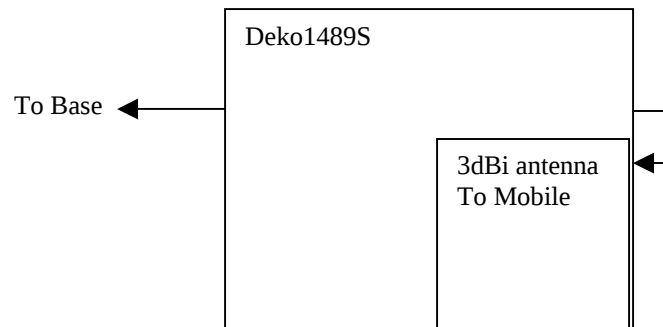
1.3 Theory of Operation

The EUT is a bi-directional booster, which covers the 800 and 900MHz bands. The EUT is intended for indoor applications and has an integral 3dBi antenna for the downlink direction, which can be disconnected and replaced with an external antenna if required.

1.4 Technical Specifications of the EUT

Manufacturer:	Dekolink Wireless Ltd.
Operating Frequency:	Downlink: 851-869MHz and 935-940MHz Uplink: 806-824MHz and 896-901MHz
Emission Designator:	GXW, F1D
Rated Power:	11dBm Single Band 14dBm Composite
Measured Power:	Downlink: 10.77dBm (Single), 13.02dBm (Composite) Uplink: 11.70dBm (Single), 14.17dBm (Composite)
Modulation:	iDEN, 4FSK, 2FSK
Power Source:	7.5VDC

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 90 Private Land Mobile Radio 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 °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.	Next Cal.
Spectrum Analyzer	Rohde & Schwarz	FSP40	FA001920	Mar 17/07
Attenuator	Narda	769-20	FA001394	COU
Power Meter	Agilent	N1911A	FA001946	Dec 28/06
Power Sensor	Agilent	N1922A	FA001947	Dec 8/06
Signal Generator	Rohde & Schwarz	SMIQ03E	FA001269	May 29/07
Signal Generator	Rohde & Schwarz	SMIQ03	FA001091	Jan 1/07
Combiner	Mini-circuits	ZA3PD-2	FA001155	COU
Biconical (1) Antenna	EMCO	3109	FA000805	May 03/07
Log Periodic Antenna #1	EMCO	LPA-25	FA000477	Aug. 29/06
Horn Antenna #1	EMCO	3115	FA000649	Jan. 12/07
1.0 – 2.0 GHz Amplifier	JCA	12-400	FA001498	July 14/06
2.0 – 4.0 GHz Amplifier	JCA	24-600	FA001496	July 14/06
4.0 – 8.0 GHz Amplifier	JCA	48-600	FA001497	July 14/06
5.0 – 18.0 GHz Amplifier	NARDA	DWT-186N23U40	FA001409	COU
Receiver	Rohde & Schwarz	ESVS-30	FA001437	July 27/06

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 90 : 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 90 : Test Results

Clause	Test Method	Test Description	Required	Result
90.205	2.1046	Output power	Y	PASS
90.210	2.1051	Conducted spurious emissions	Y	PASS
90.210	2.1053	Radiated spurious emissions	Y	PASS
90.213	2.1055	Frequency stability	N (1)	
90.214	—	Transient Behavior	N	
90.219	—	Use of boosters	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 is not a band translator.

Appendix A : Test Results

Clause 90.205 Output Power

Applicants for licenses must request and use no more power than the actual power necessary for satisfactory operation. Except where otherwise specifically provided for, the maximum power that will be authorized for new stations authorized after August 16, 1995 is as follows in FCC Part 90.205(a) through (r).

Test Conditions:

Sample Number:	1	Temperature (°C):	26
Date:	June 12, 2006	Humidity (%):	35
Modification State:	0	Tester:	Jason Nixon
		Laboratory:	Wireless

Test Results:

Single Channel Output Power

800MHz Band	Uplink	Downlink
2FSK	11.62dBm	10.15dBm
4FSK	11.62dBm	10.19dBm
iDEN	11.52dBm	11.26dBm
900MHz Band		
2FSK	11.70dBm	10.78dBm
4FSK	11.69dBm	10.77dBm
iDEN	11.48dBm	11.44dBm

Single carrier set to 1dB compression.

Composite Channel Output Power

	Uplink	Downlink
2FSK	14.17dBm	12.37dBm
4FSK	14.03dBm	12.82dBm
iDEN	13.83dBm	13.02dBm

Single carrier in each frequency band set to 1dB compression.

Additional Observations:

Composite output power was measured by injecting a carrier at the middle of each of the transmit bands. Each carrier was set to the single channel output power measured.

Clause 90.210 Conducted Spurious Emissions

Except as indicated elsewhere in this part, transmitters used in the radio services governed by this part must comply with the emission masks outlined in this section. Unless otherwise stated, per paragraphs (d)(4), (e)(4), and (m) of this section, measurements of emission power can be expressed in either peak or average values provided that emission powers are expressed with the same parameters used to specify the unmodulated transmitter carrier power. For transmitters that do not produce a full power unmodulated carrier, reference to the unmodulated transmitter carrier power refers to the total power contained in the channel bandwidth. Unless indicated elsewhere, the Table below specifies the emission masks for equipment operating in the frequency bands governed under this part.

Test Conditions:

Sample Number:	1	Temperature (°C):	26
Date:	June 12, 2006	Humidity (%):	35
Modification State:	0	Tester:	Jason Nixon
		Laboratory:	Wireless

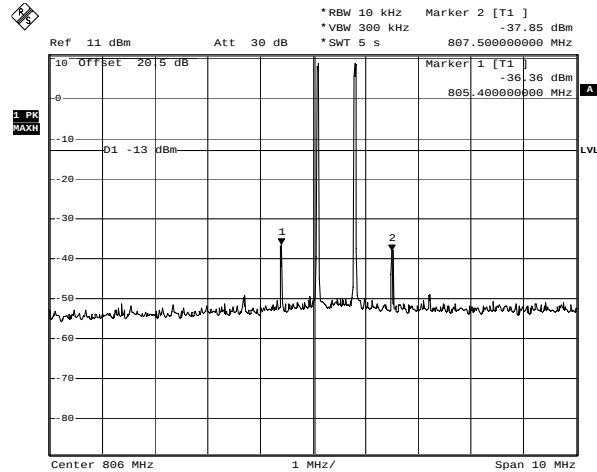
Test Results:

See Attached Plots.

Additional Observations:

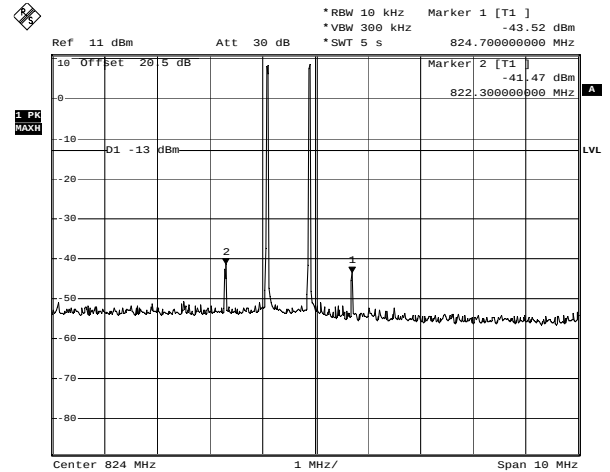
Conducted emissions were performed on all modulation formats and on low, middle and high channels in each band. Only the worst case is shown for each band.

Uplink – 800MHz Band 2FSK



2FSK - Lower Bandedge - 800MHz Band - Uplink

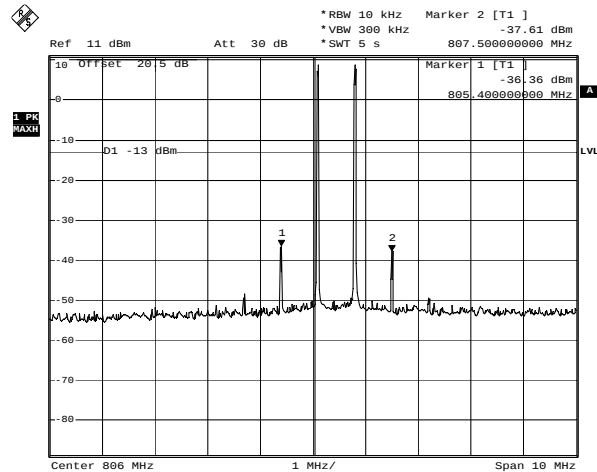
Date: 12.JUN.2006 22:56:51



2FSK - Upper Bandedge - 800MHz Band - Uplink

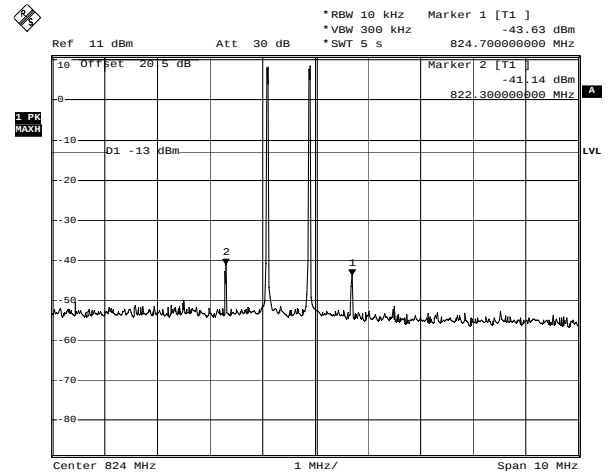
Date: 12.JUN.2006 23:03:05

4FSK



4FSK - Lower Bandedge - 800MHz Band - Uplink

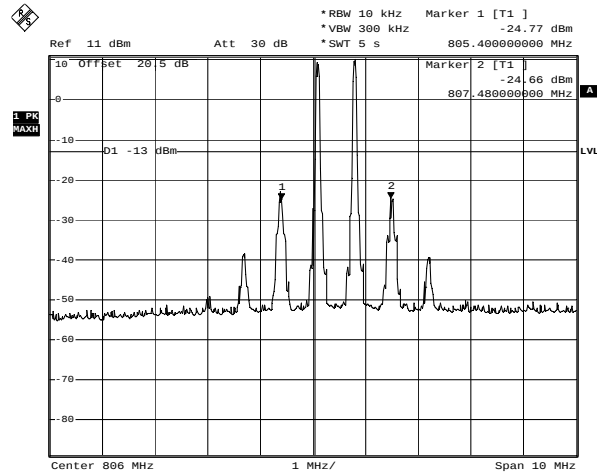
Date: 12.JUN.2006 22:58:28



4FSK - Upper Bandedge - 800MHz Band - Uplink

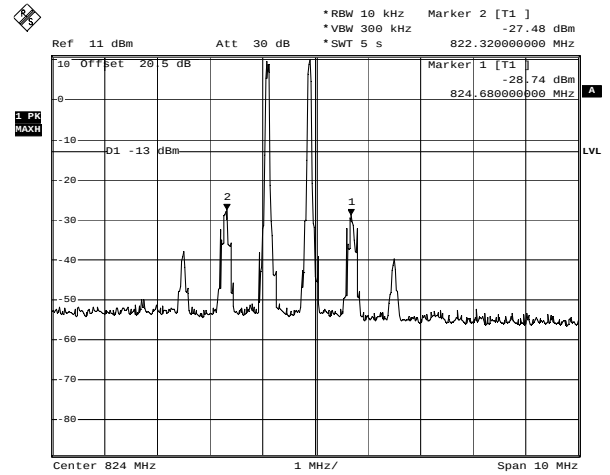
Date: 12.JUN.2006 23:01:36

iDEN



iDEN - Lower Bandedge - 800MHz Band - Uplink

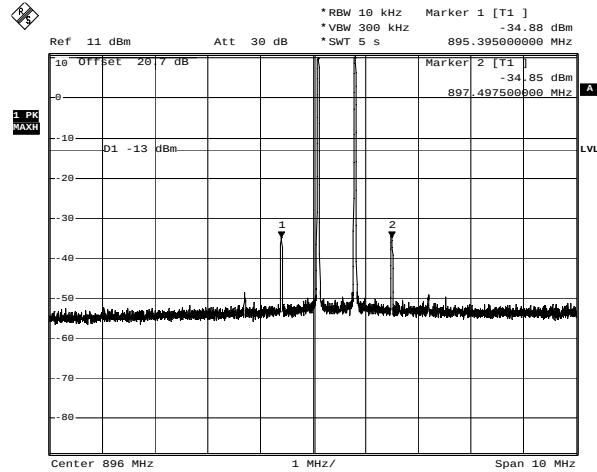
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iDEN - Upper Bandedge - 800MHz Band - Uplink

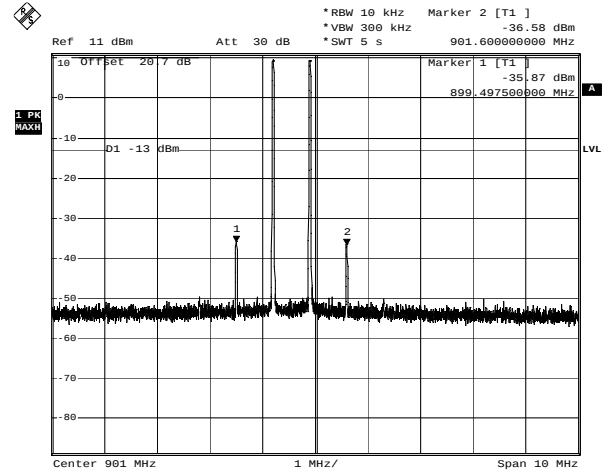
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Uplink – 900MHz Band 2FSK



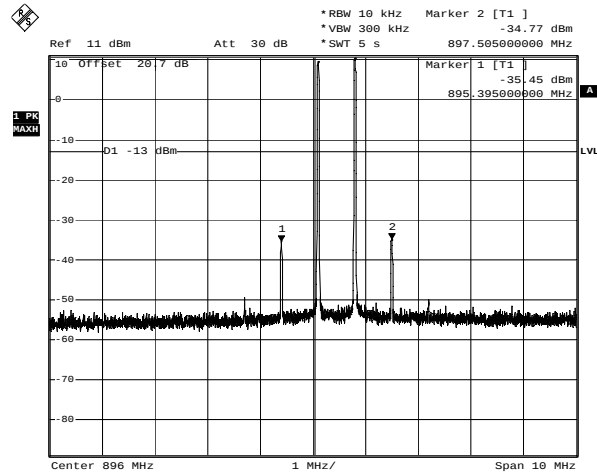
2FSK - Lower Bandedge - 900MHz Band - Uplink

Date: 13.JUN.2006 15:42:05



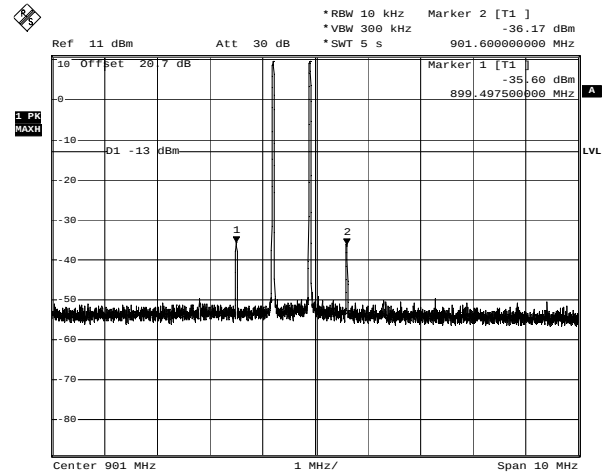
2FSK - Upper Bandedge - 900MHz Band - Uplink

Date: 13.JUN.2006 16:05:45

4FSK

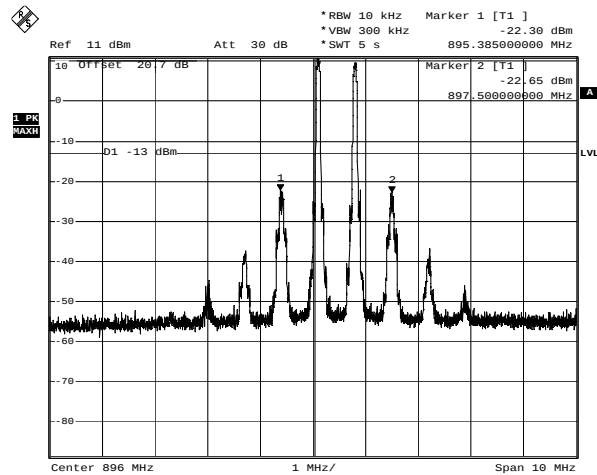
4FSK - Lower Bandedge - 900MHz Band - Uplink

Date: 13.JUN.2006 15:57:50



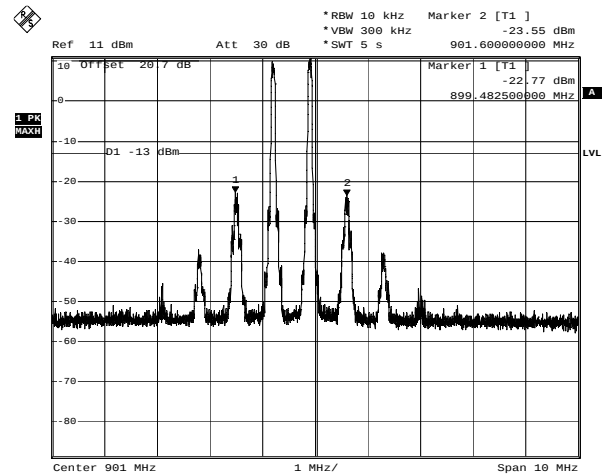
4FSK - Upper Bandedge - 900MHz Band - Uplink

Date: 13.JUN.2006 16:04:56

iDEN

iDEN - Lower Bandedge - 900MHz Band - Uplink

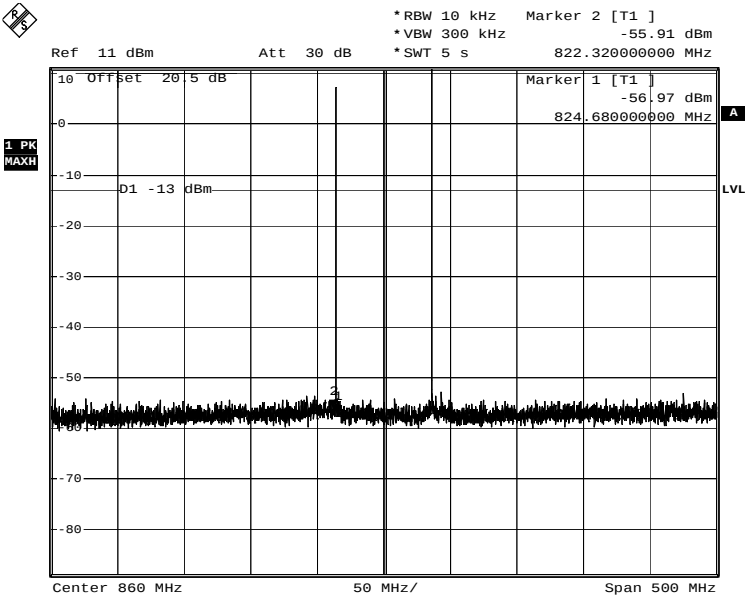
Date: 13.JUN.2006 16:00:09



iDEN - Upper Bandedge - 900MHz Band - Uplink

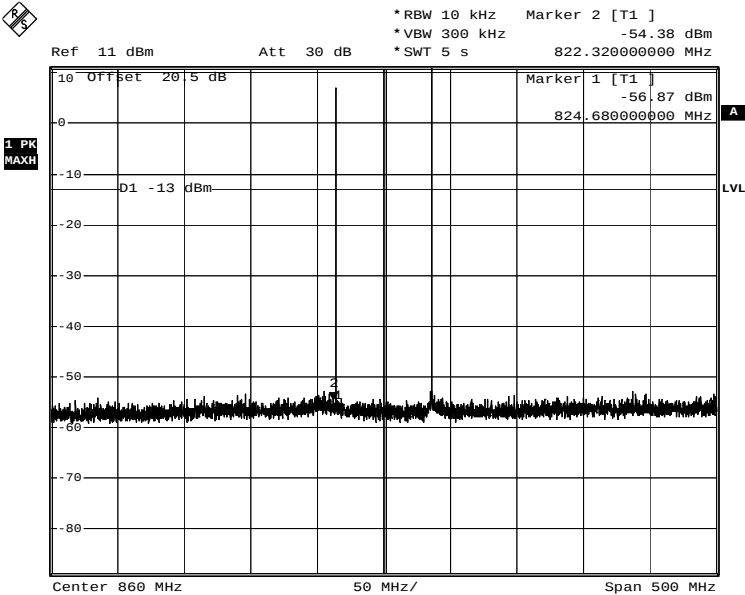
Date: 13.JUN.2006 16:02:58

Uplink – 800MHz and 900MHz Band
2FSK



2FSK - 800MHz Band and 900MHz Band - Uplink
Date: 12.JUN.2006 23:19:09

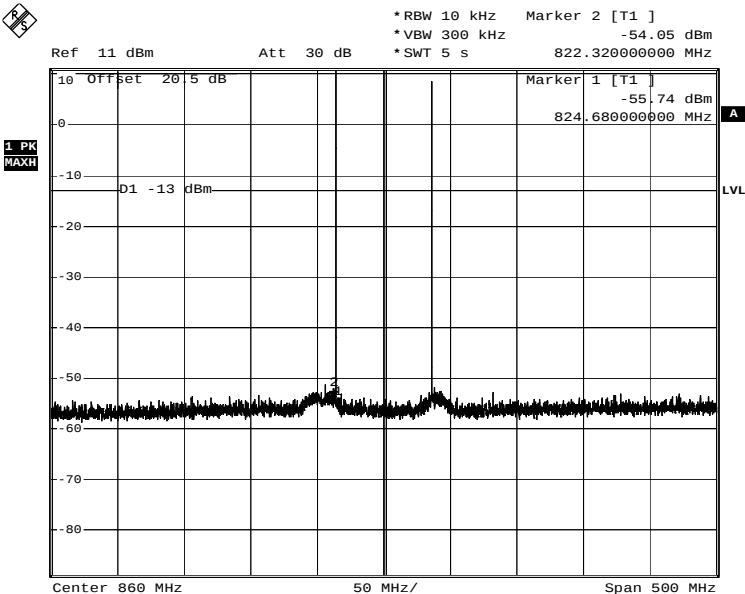
4FSK



4FSK - 800MHz Band and 900MHz Band - Uplink

Date: 12.JUN.2006 23:18:13

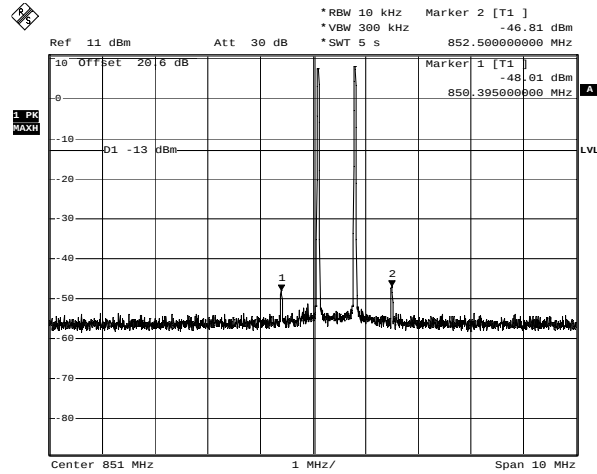
iDEN



iDEN - 800MHz Band and 900MHz Band - Uplink

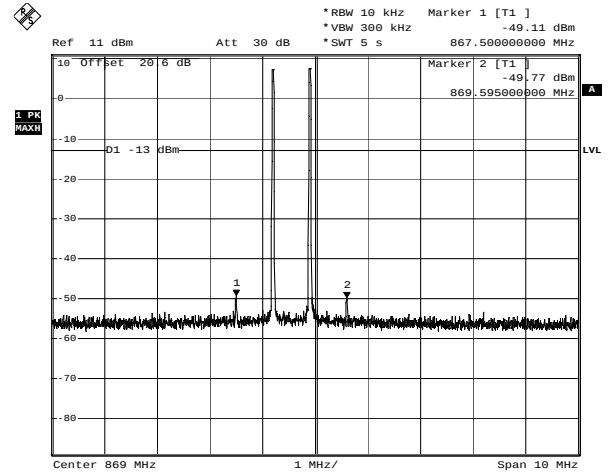
Date: 12.JUN.2006 23:12:38

Downlink – 800MHz Band 2FSK



2FSK - Lower Bandedge - 800MHz Band - Downlink

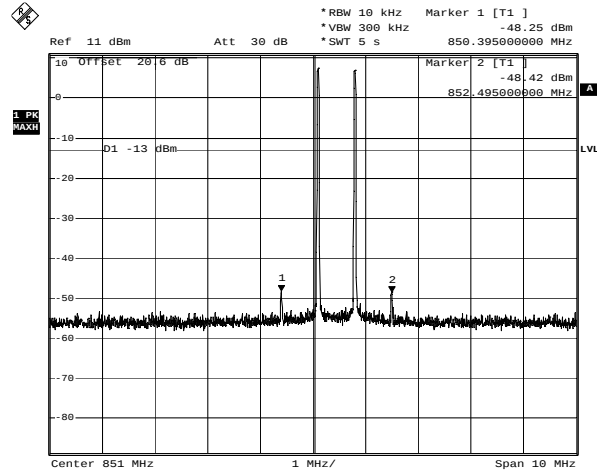
Date: 13.JUN.2006 18:12:07



2FSK - Upper Bandedge - 800MHz Band - Downlink

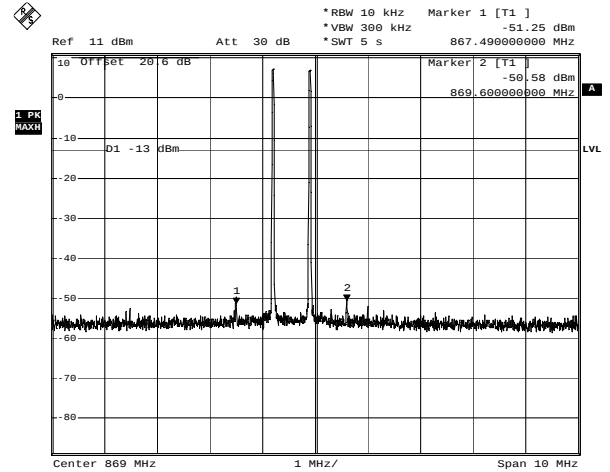
Date: 13.JUN.2006 18:14:08

4FSK



4FSK - Lower Bandedge - 800MHz Band - Downlink

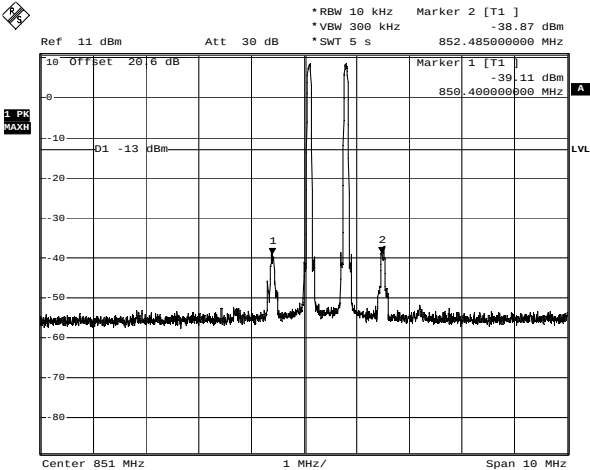
Date: 13.JUN.2006 18:10:18



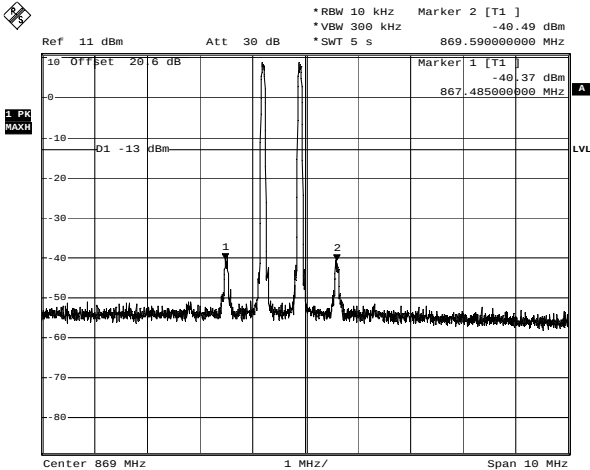
4FSK - Upper Bandedge - 800MHz Band - Downlink

Date: 13.JUN.2006 18:15:43

iDEN

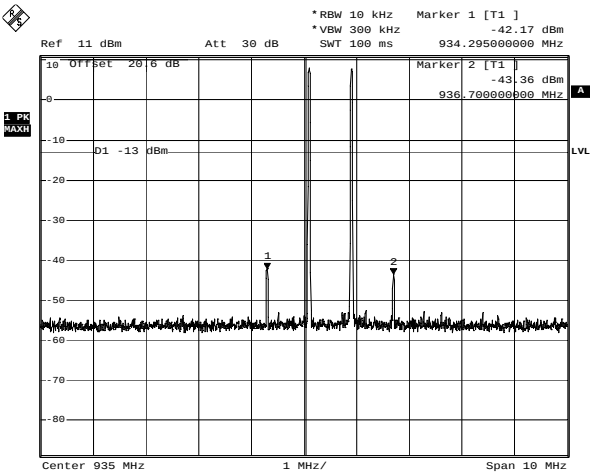


iDEN - Lower Bandedge - 800MHz Band - Downlink
Date: 13.JUN.2006 18:08:28

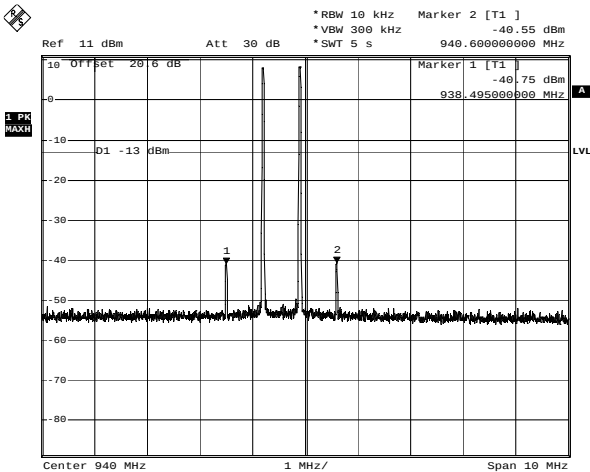


iDEN - Upper Bandedge - 800MHz Band - Downlink
Date: 13.JUN.2006 18:17:25

Downlink – 900MHz Band
2FSK

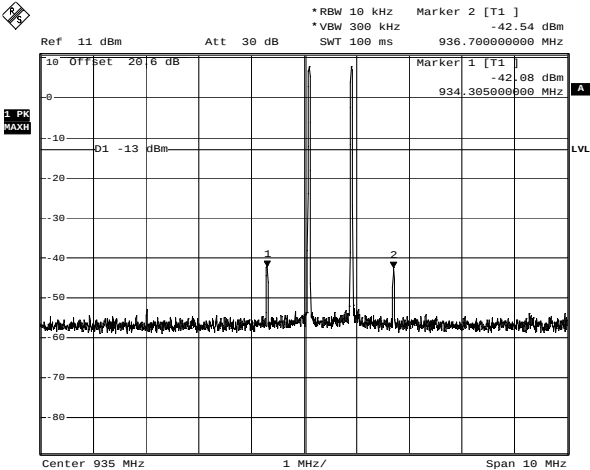


2FSK - Lower Bandedge - 900MHz Band - Downlink
Date: 13.JUN.2006 18:28:11

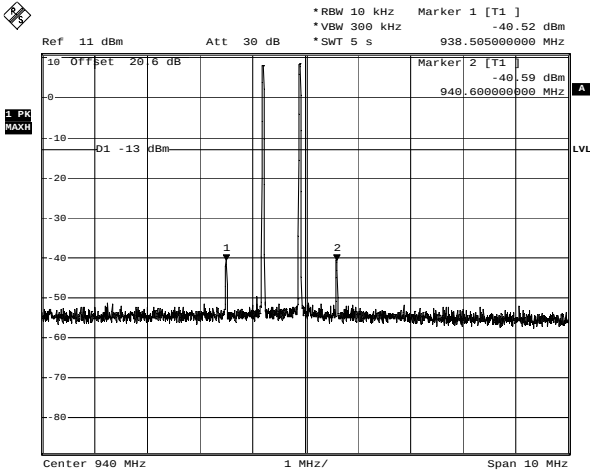


2FSK - Upper Bandedge - 900MHz Band - Downlink
Date: 13.JUN.2006 18:36:25

4FSK

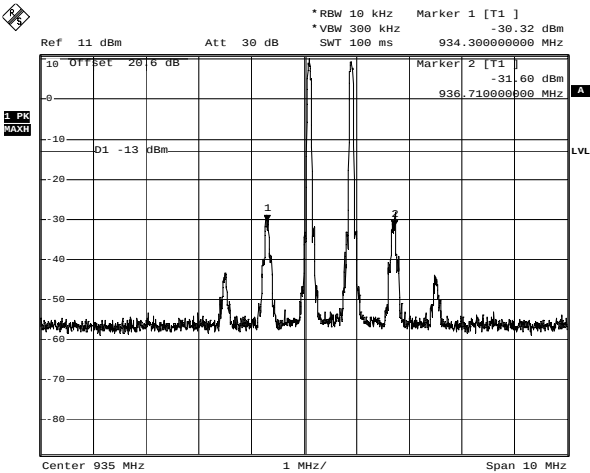


4FSK - Lower Bandedge - 900MHz Band - Downlink
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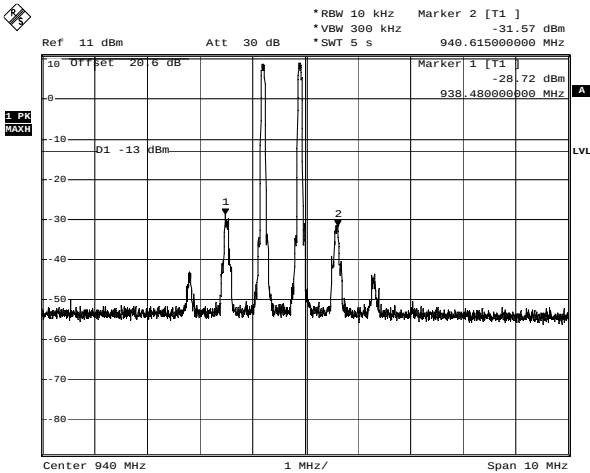


4FSK - Upper Bandedge - 900MHz Band - Downlink
Date: 13.JUN.2006 18:34:07

iDEN

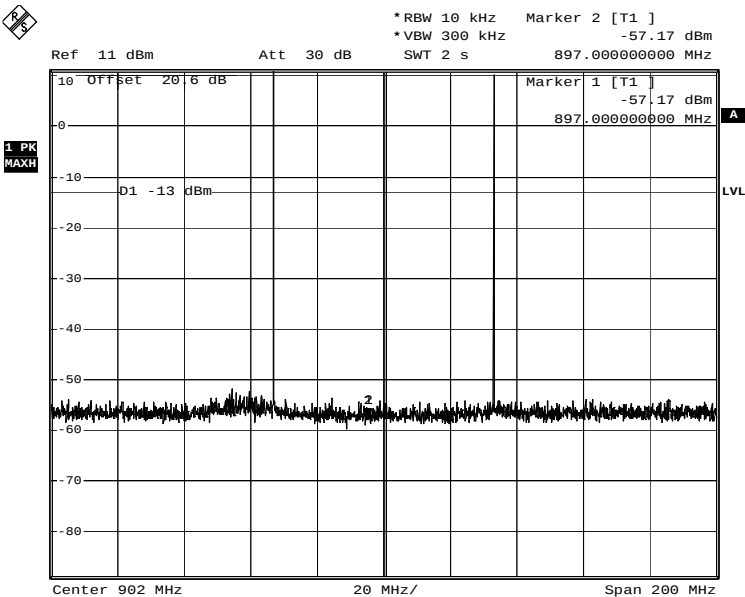


iDEN - Lower Bandedge - 900MHz Band - Downlink
Date: 13.JUN.2006 18:30:09



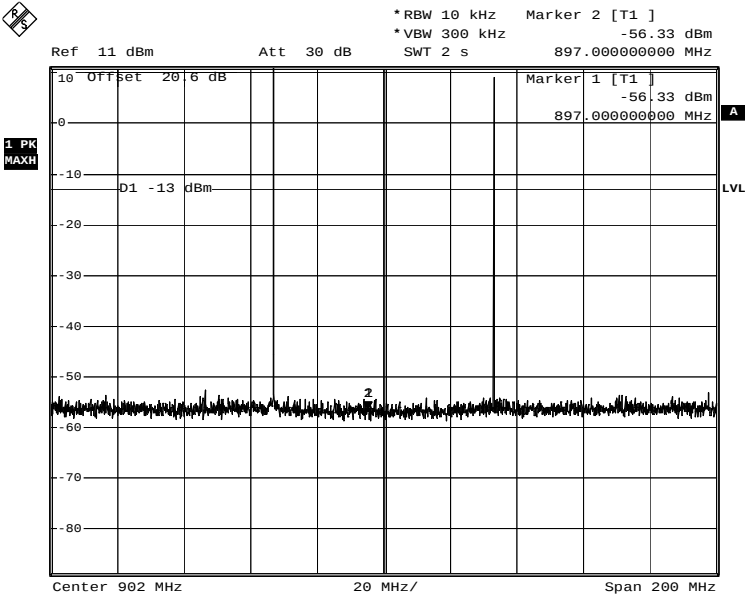
iDEN - Upper Bandedge - 900MHz Band - Downlink
Date: 13.JUN.2006 18:32:35

Downlink – 800MHz and 900MHz Band
2FSK



2FSK - 800MHz Band and 900MHz Band - Downlink
Date: 13.JUN.2006 18:25:22

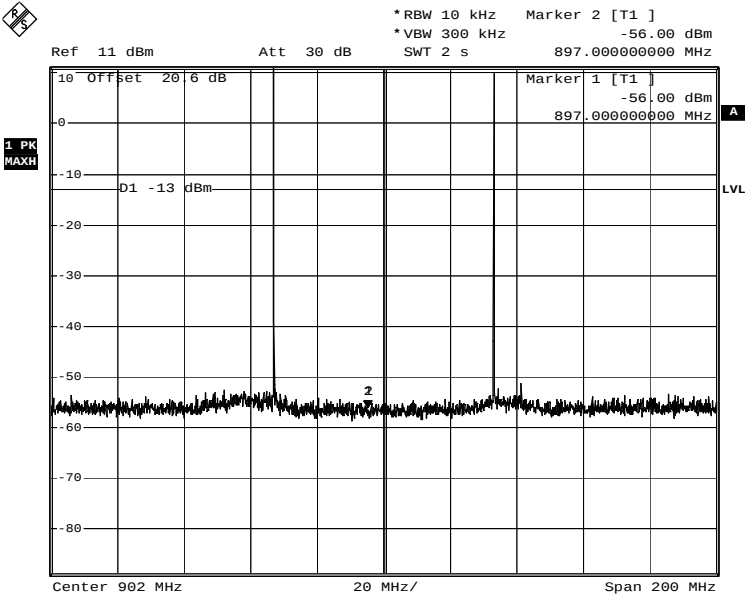
4FSK



4FSK - 800MHz Band and 900MHz Band - Downlink

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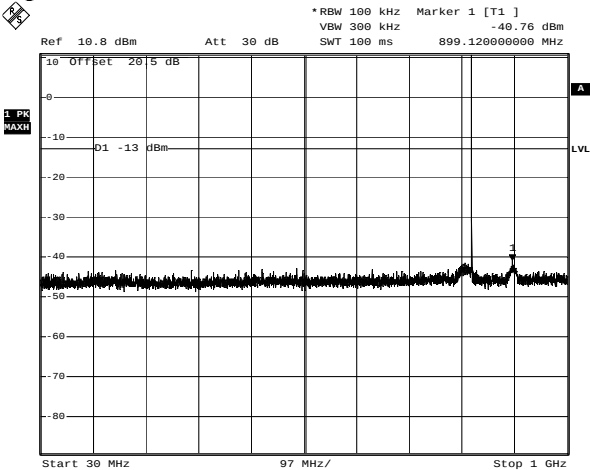
iDEN



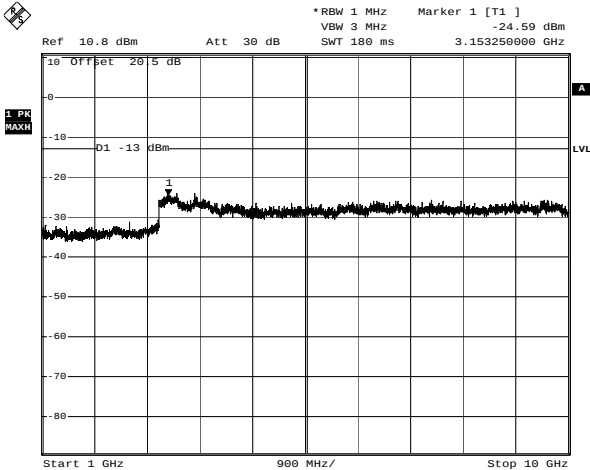
iDEN - 800MHz Band and 900MHz Band - Downlink

Date: 13.JUN.2006 18:20:42

Uplink 800MHz Conducted emissions

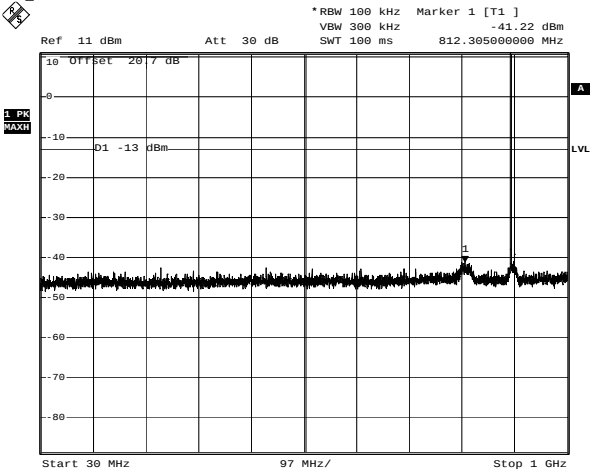


iDEN - High Channel - 800MHz Band - Uplink
Date: 13.JUN.2006 16:37:11

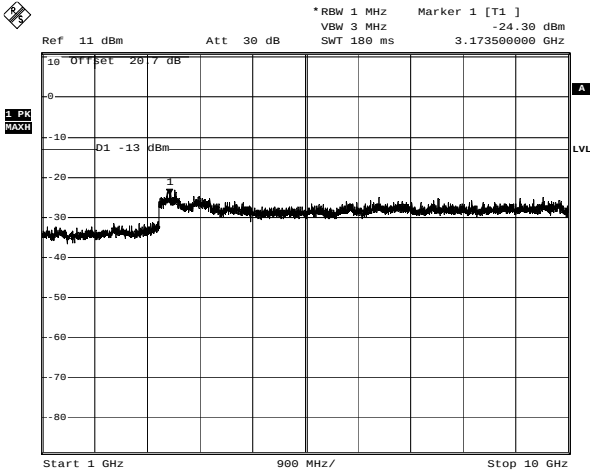


iDEN - High Channel - 800MHz Band - Uplink
Date: 13.JUN.2006 16:36:29

Uplink 900MHz Conducted emissions

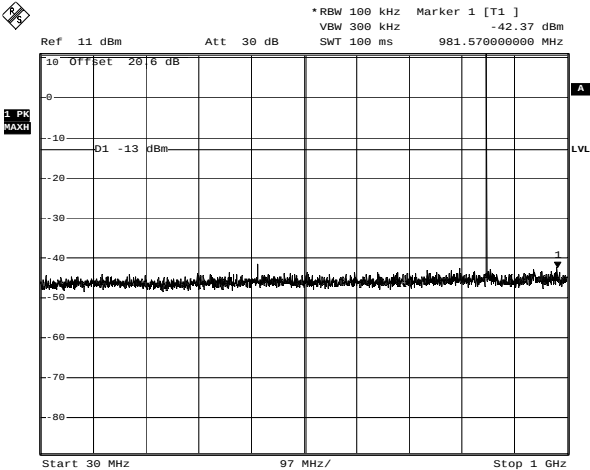


2FSK - Low Channel - 900MHz Band - Uplink
Date: 13.JUN.2006 16:17:18

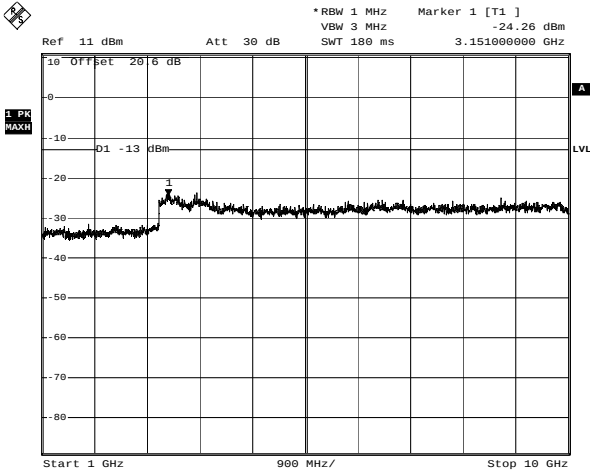


2FSK - Low Channel - 900MHz Band - Uplink
Date: 13.JUN.2006 16:17:52

Downlink 800MHz Conducted emissions

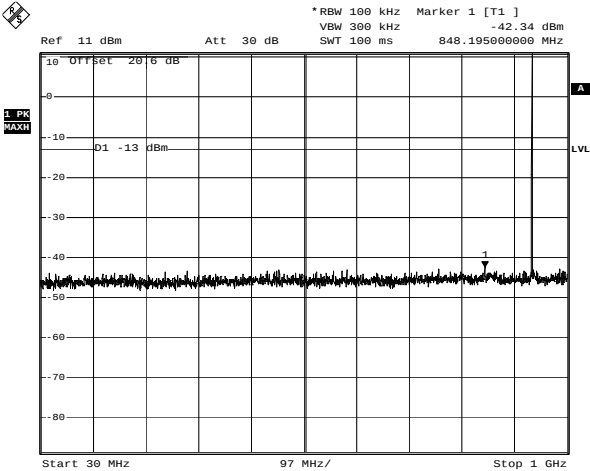


iDEN - Low Channel - 800MHz Band - Downlink
Date: 13.JUN.2006 19:52:11

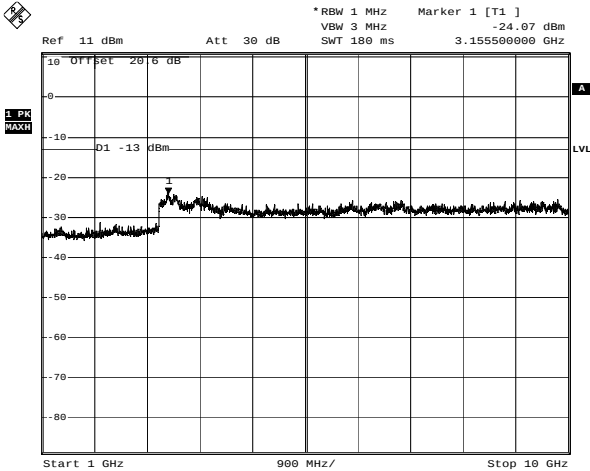


iDEN - Low Channel - 800MHz Band - Downlink
Date: 13.JUN.2006 19:51:52

Downlink 900MHz Conducted emissions



iDEN - Low Channel - 900MHz Band - Downlink
Date: 13.JUN.2006 19:51:01



iDEN - Low Channel - 900MHz Band - Downlink
Date: 13.JUN.2006 19:51:19

Clause 90.210 Radiated Spurious Emissions

Except as indicated elsewhere in this part, transmitters used in the radio services governed by this part must comply with the emission masks outlined in this section. Unless otherwise stated, per paragraphs (d)(4), (e)(4), and (m) of this section, measurements of emission power can be expressed in either peak or average values provided that emission powers are expressed with the same parameters used to specify the unmodulated transmitter carrier power. For transmitters that do not produce a full power unmodulated carrier, reference to the unmodulated transmitter carrier power refers to the total power contained in the channel bandwidth. Unless indicated elsewhere, the Table below specifies the emission masks for equipment operating in the frequency bands governed under this part.

Test Conditions:

Sample Number:	1	Temperature (°C):	21
Date:	June 13, 2006	Humidity (%):	49
Modification State:	0	Tester:	Jason Nixon
		Laboratory:	OATS

Test Results:

There were no spurious emissions detected within 20dB below the limit.

Additional Observations:

The Spectrum was searched from 30MHz to 10GHz.

All measurements were performed using a Peak Detector with 100kHz RBW/VBW below 1GHz and a 1MHz RBW/VBW 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:

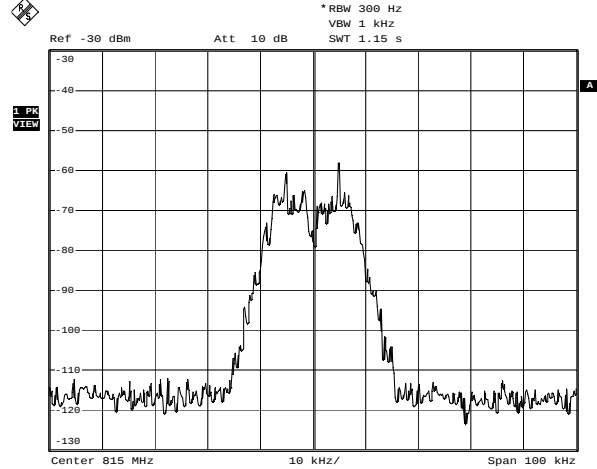
Sample Number:	1	Temperature (°C):	26
Date:	June 12, 2006	Humidity (%):	35
Modification State:	0	Tester:	Jason Nixon
		Laboratory:	Wireless

Test Results:

See Attached Plots.

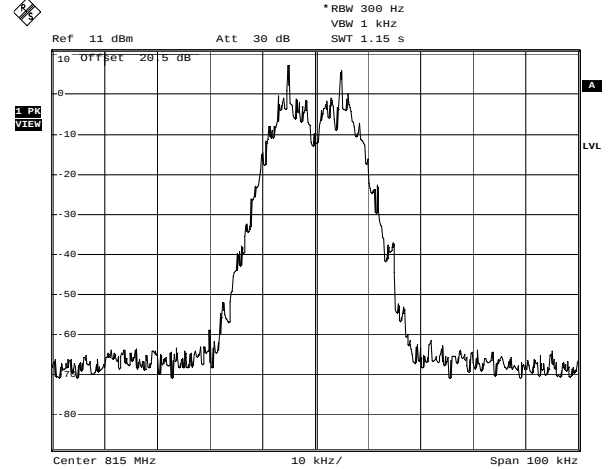
Additional Observations:

Uplink – 800MHz Band 2FSK Input



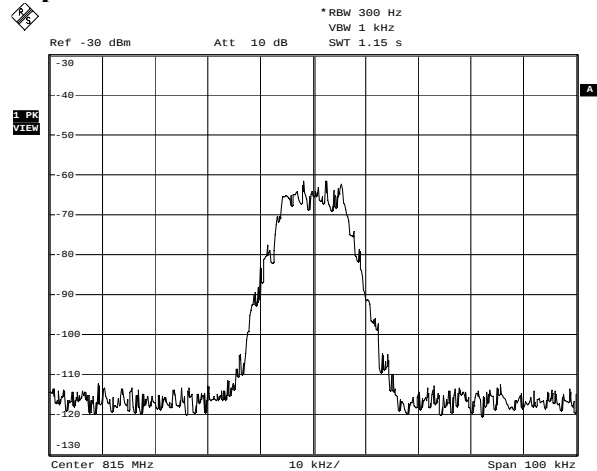
2FSK Input - 800MHz Band - Uplink
Date: 12.JUN.2006 22:00:31

Output



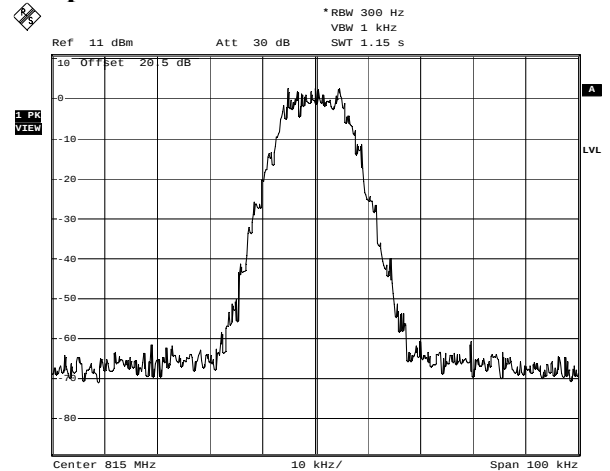
2FSK Output - 800MHz Band - Uplink
Date: 12.JUN.2006 21:51:54

4FSK Input



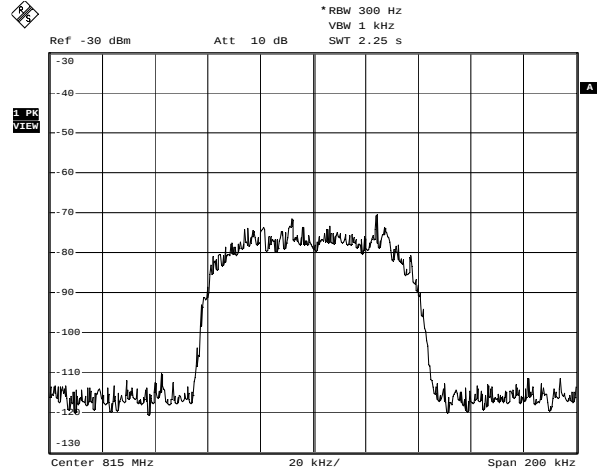
4FSK Input - 800MHz Band - Uplink
Date: 12.JUN.2006 22:00:01

Output



4FSK Output - 800MHz Band - Uplink
Date: 12.JUN.2006 21:52:34

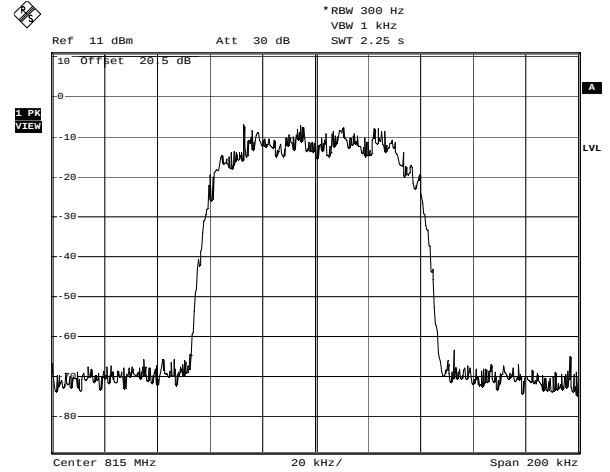
iDEN Input



iDEN Input - 800MHz Band - Uplink

Date: 12.JUN.2006 21:59:16

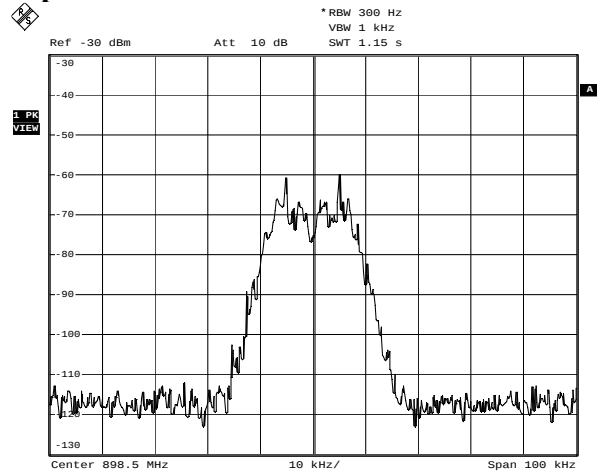
Output



iDEN Output - 800MHz Band - Uplink

Date: 12.JUN.2006 21:53:23

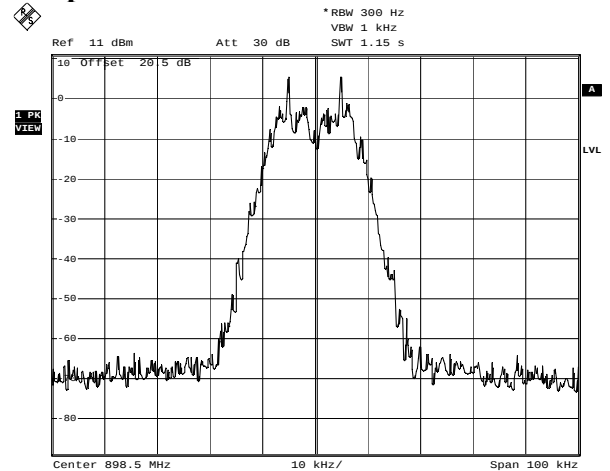
Uplink – 900MHz Band 2FSK Input



2FSK Input - 900MHz Band - Uplink

Date: 12.JUN.2006 21:57:24

Output

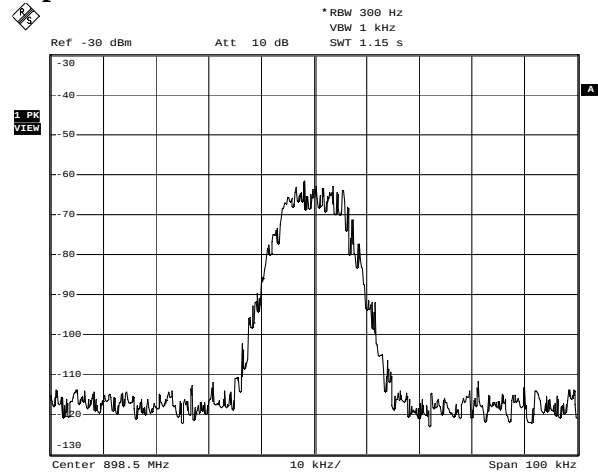


2FSK Output - 900MHz Band - Uplink

Date: 12.JUN.2006 21:56:04

4FSK

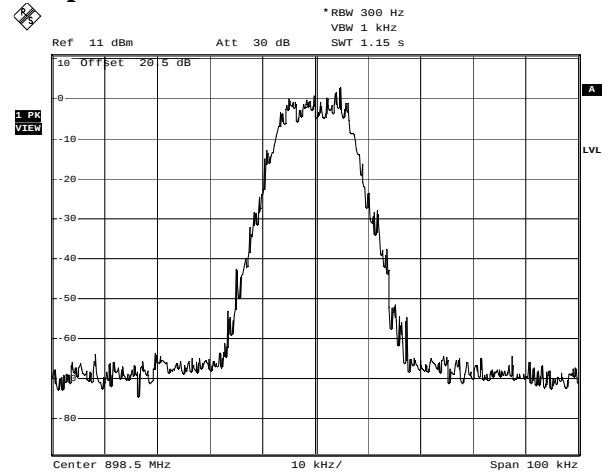
Input



4FSK Input - 900MHz Band - Uplink

Date: 12.JUN.2006 21:57:56

Output

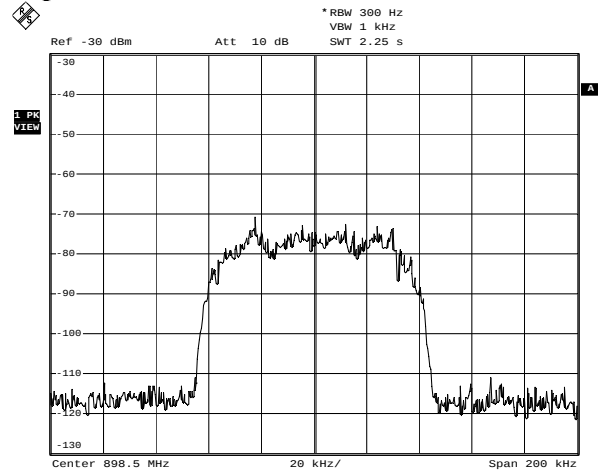


4FSK Output - 900MHz Band - Uplink

Date: 12.JUN.2006 21:55:26

iDEN

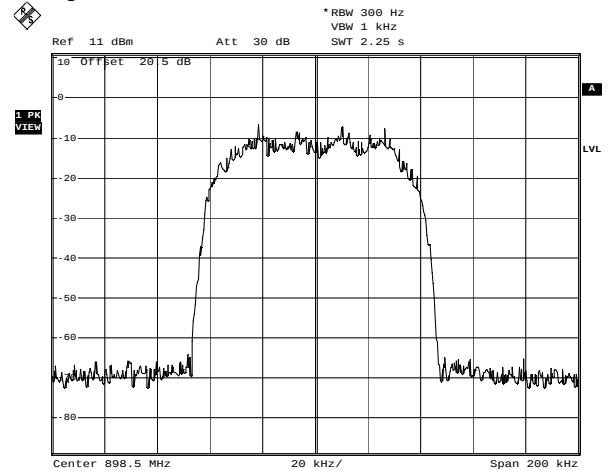
Input



iDEN Input - 900MHz Band - Uplink

Date: 12.JUN.2006 21:58:37

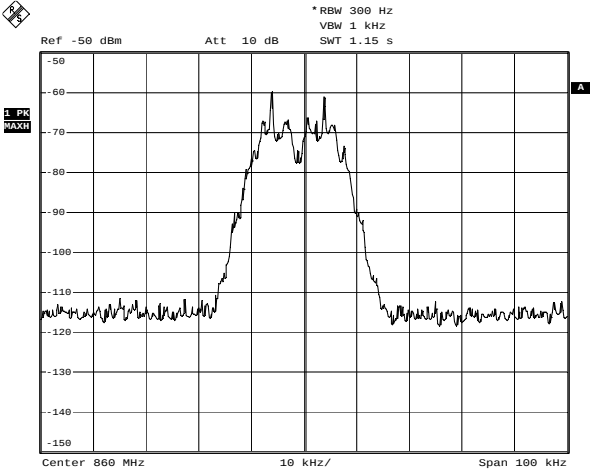
Output



iDEN Output - 900MHz Band - Uplink

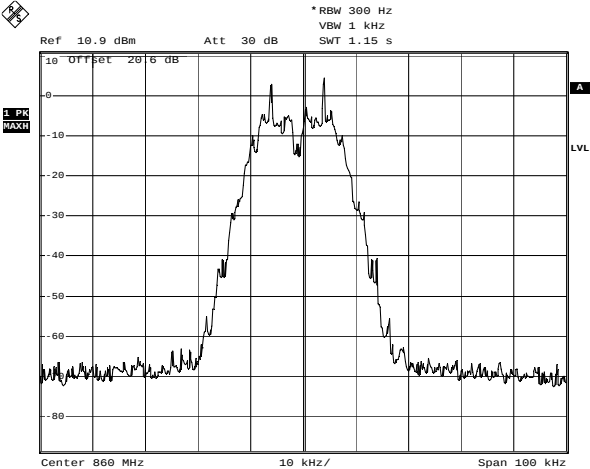
Date: 12.JUN.2006 21:54:34

Downlink – 800MHz Band
2FSK
Input



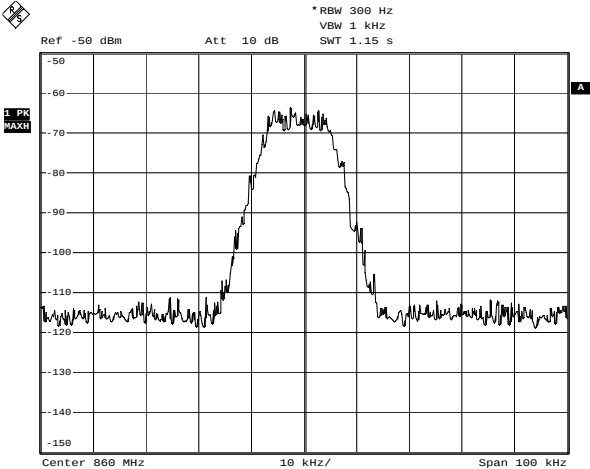
Input - 2FSK - 800MHz Band - Downlink
Date: 13.JUN.2006 17:48:11

Output



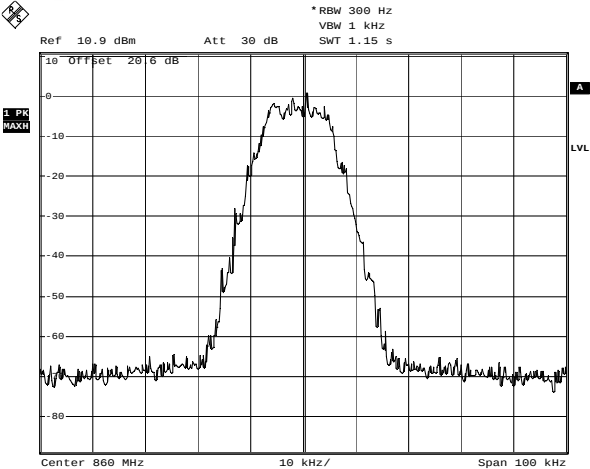
Output - 2FSK - 800MHz Band - Downlink
Date: 13.JUN.2006 17:46:37

4FSK
Input



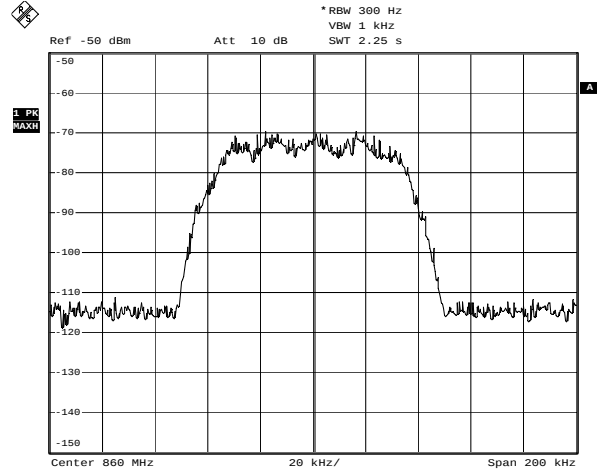
Input - 4FSK - 800MHz Band - Downlink
Date: 13.JUN.2006 17:48:37

Output



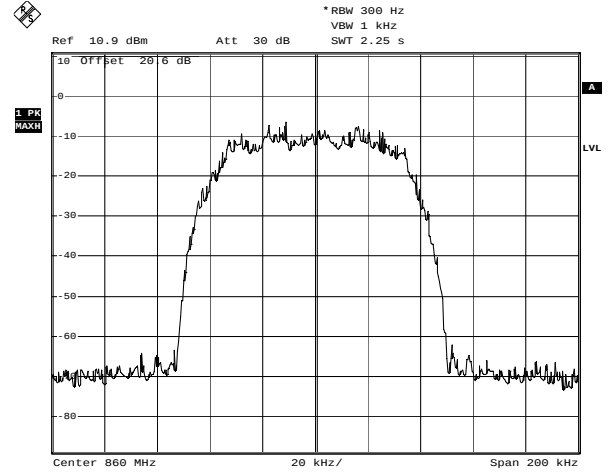
Output - 4FSK - 800MHz Band - Downlink
Date: 13.JUN.2006 17:46:08

iDEN Input



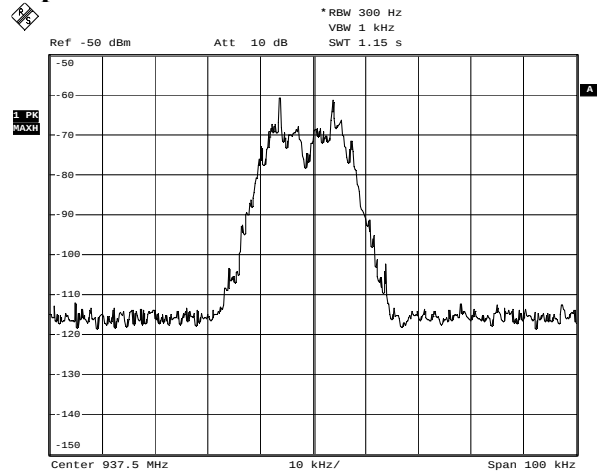
Input - iDEN - 800MHz Band - Downlink
Date: 13.JUN.2006 17:49:32

Output



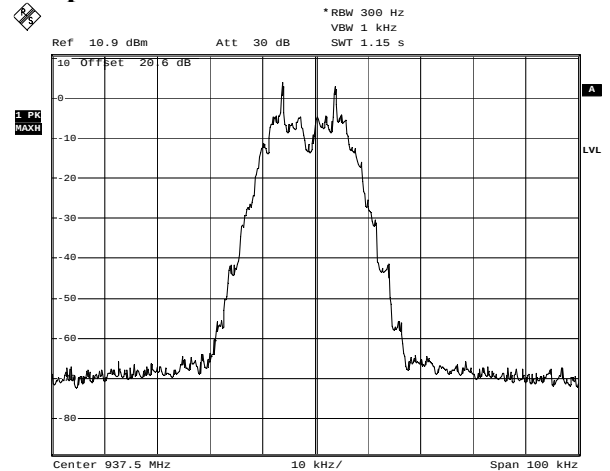
Output - iDEN - 800MHz Band - Downlink
Date: 13.JUN.2006 17:45:16

Downlink – 900MHz Band 2FSK Input



Input - 2FSK - 900MHz Band - Downlink
Date: 13.JUN.2006 17:51:40

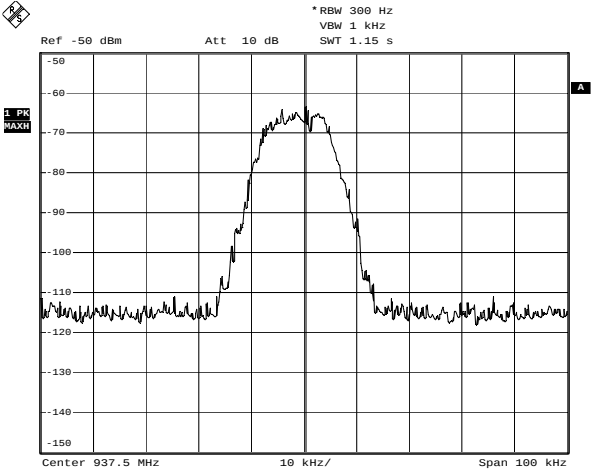
Output



Output - 2FSK - 900MHz Band - Downlink
Date: 13.JUN.2006 17:43:20

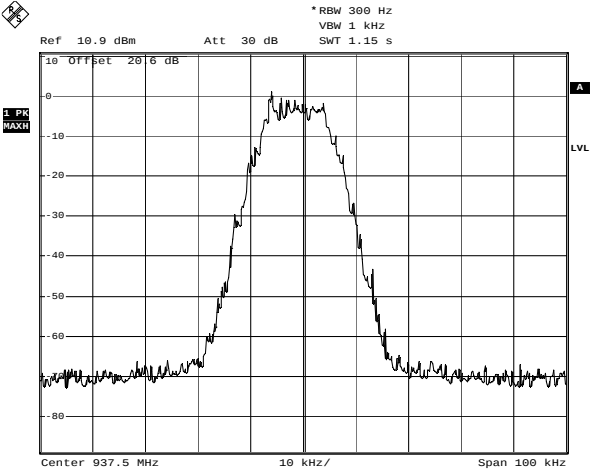
4FSK

Input



Input - 4FSK - 900MHz Band - Downlink
Date: 13.JUN.2006 17:51:14

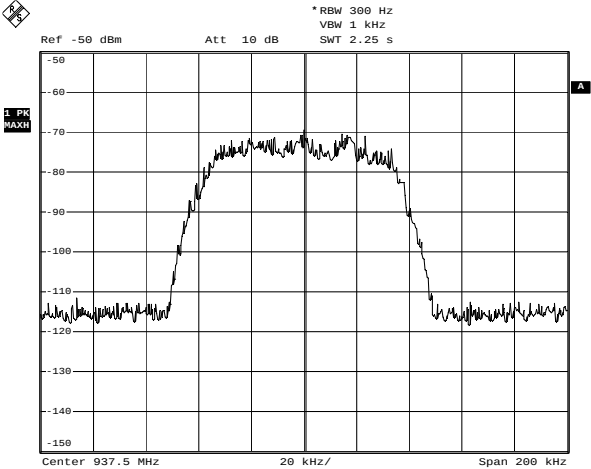
Output



Output - 4FSK - 900MHz Band - Downlink
Date: 13.JUN.2006 17:43:52

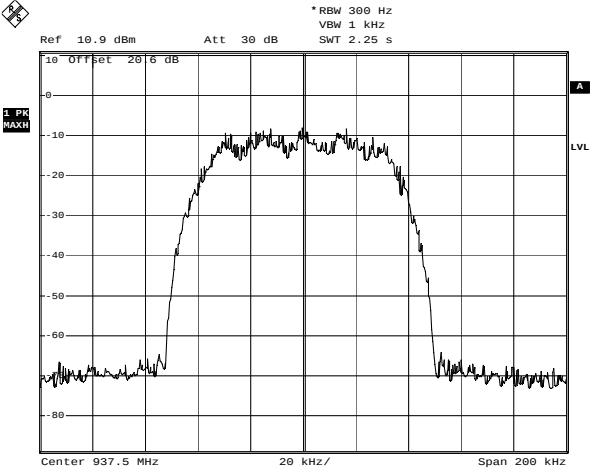
iDEN

Input



Input - iDEN - 900MHz Band - Downlink
Date: 13.JUN.2006 17:50:32

Output



Output - iDEN - 900MHz Band - Downlink
Date: 13.JUN.2006 17:44:42

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

Plots showing the filter frequency response.
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Test Conditions:

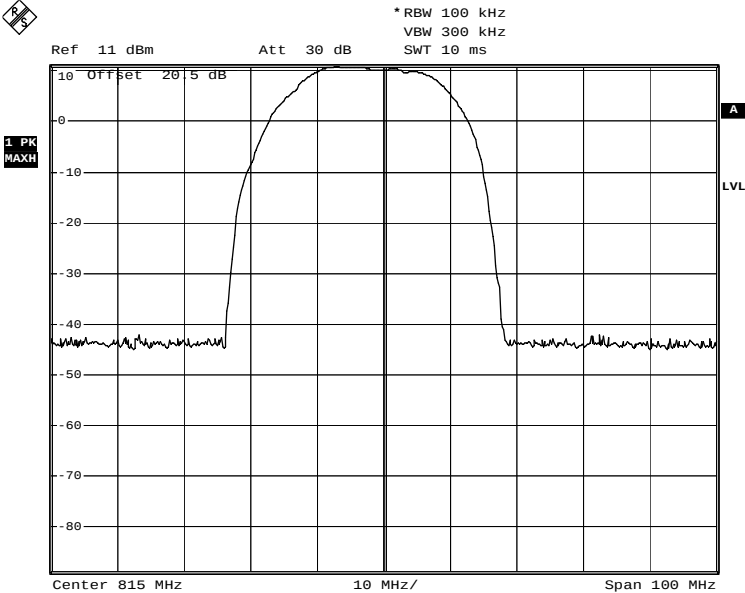
Sample Number:	1	Temperature (°C):	26
Date:	June 12, 2006	Humidity (%):	35
Modification State:	0	Tester:	Jason Nixon
		Laboratory:	Wireless

Test Results:

See Attached Plots.

Additional Observations:

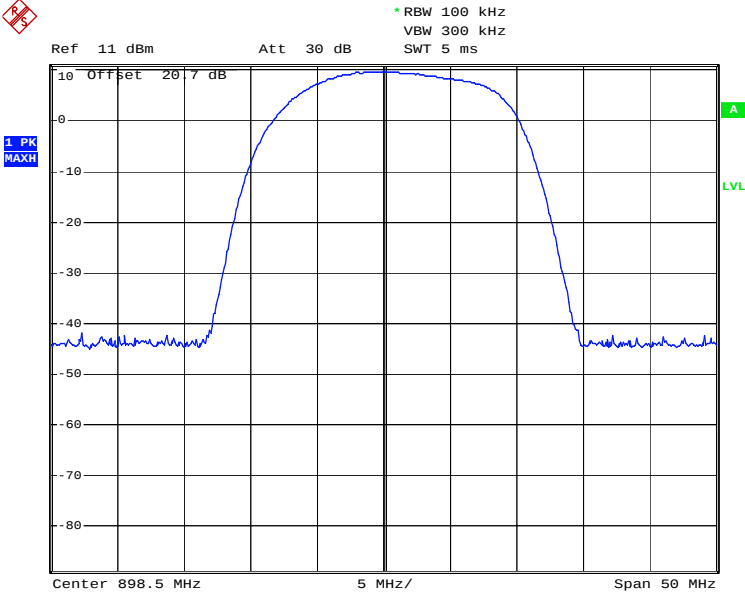
Uplink – 800MHz Band



Out-of-Band Reject - 800MHz Band - Uplink

Date: 12.JUN.2006 21:42:15

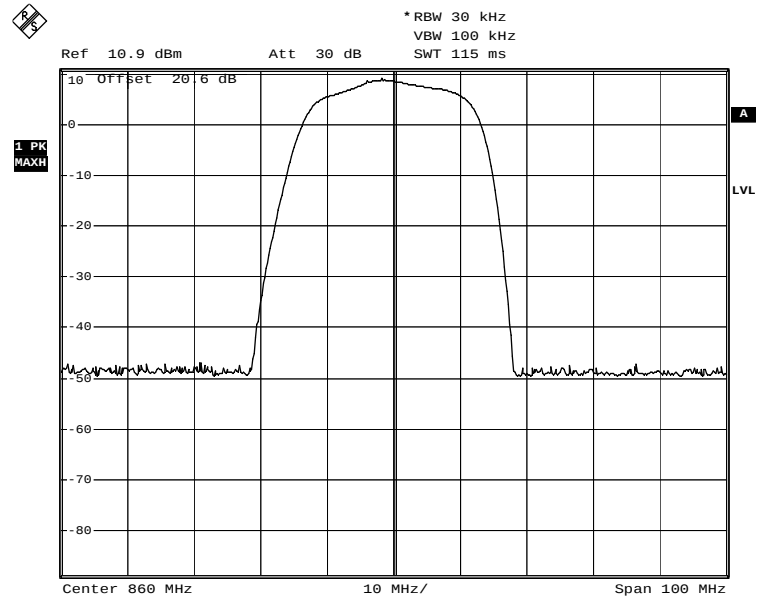
Uplink – 900MHz Band



Out-of-Band Reject - 900MHz Band - Uplink

Date: 12.JUN.2006 21:37:53

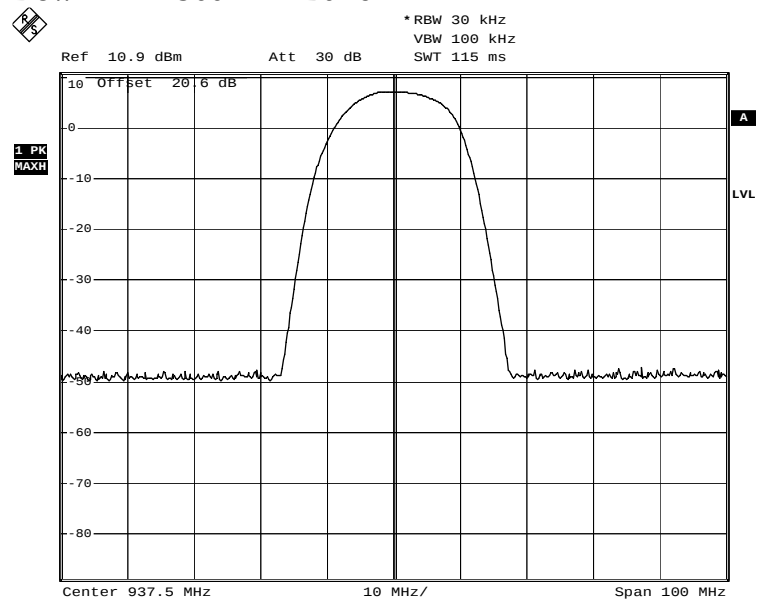
Downlink – 800MHz Band



Out-of-Band Reject - 800MHz Band - Downlink

Date: 13.JUN.2006 17:36:28

Downlink – 900MHz Band



Out-of-Band Reject - 900MHz Band - Downlink

Date: 13.JUN.2006 17:40:21

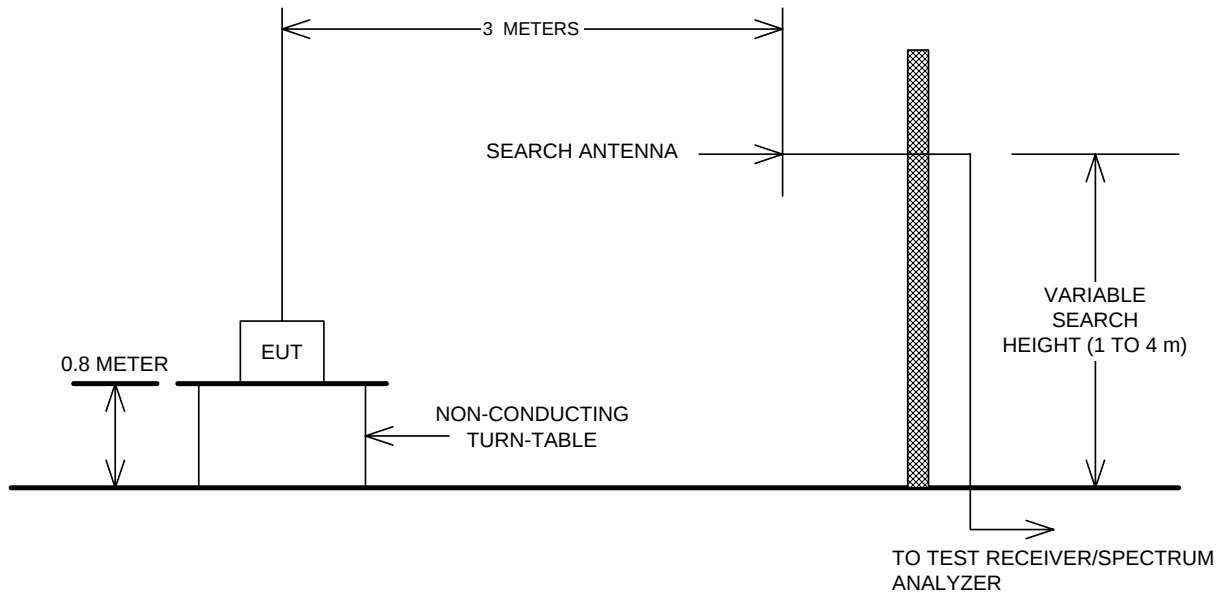
Appendix B : Setup Photographs

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

