



Test Report: 6W70331

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

Apparatus: IBDB-SMR-800-900-16W40
Bi-Directional Dual Band Booster

FCC ID: OIWIBDBSMR8916W40

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

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

A handwritten signature in blue ink, appearing to read 'Jason Nixon', with a stylized flourish at the end.

Authorized By:

Jason Nixon, Telecom Specialist

Date: August 29, 2006

Total Number of Pages: 40

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:	IBDB-SMR-800-900-16W40 Bi-Directional Dual Band Booster
Specification:	FCC Part 90 Private Land Mobile Radio Services
Compliance Status:	Complies
Exclusions:	None
Non-compliances:	None
Report Release History:	Original Release

Author: Xu Jin, 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.

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Section 1: Equipment Under Test

1.1 Product Identification

The Equipment Under Test was identified as follows:

IBDB-SMR-800-900-16W40

Bi-Directional Dual Band Booster

1.2 Samples Submitted for Assessment

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

Sample No.	Description	Serial No.
1	Dual Band Compact Bi-Directional Booster Model IBDB-SMR-800-900-16W40	S/N: 06059303

The first samples were received on: July 13, 2006

1.4 Technical Specifications of the EUT

Manufacturer: Dekolink Wireless Ltd.

Operating Frequency: Downlink: 851- 869 and 935 - 941 MHz
Uplink: 806 - 824 and 896 - 902 MHz

Emission Designator: GXW, F1D

Rated Power: UL: 22dBm
DL: 32dBm

Measured Power: UL: 22.30dBm
DL: 32.28dBm

Modulation: iDEN, 4FSK

Power Source: 120VAC

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	FSU	FA001877	May 10/07
Spectrum Analyzer	Hewlett-Packard	8566B	FA001309	May 16/07
Spectrum Analyzer Display	Hewlett-Packard	85662A	FA001309	May 16/07
Biconical (1) Antenna	EMCO	3109	FA000805	May 03/07
Log Periodic Antenna #2	EMCO	3148	FA001355	May 16/07
Horn Antenna #2	EMCO	3115	FA000825	Dec. 16/06
1.0 – 2.0 GHz Amplifier	JCA	12-400	FA001498	Aug 02/07
2.0 – 4.0 GHz Amplifier	JCA	24-600	FA001496	Aug 02/07
4.0 – 8.0 GHz Amplifier	JCA	48-600	FA001497	Aug 02/07
Power Meter	HP	4418B	FA001678	May 16/07
Power Probe	HP	8487A	FA001741	May 22/07

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	Y	PASS
90.214	—	Transient Behavior	N	N/A
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

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:	23 °C
Date:	August 24, 2006	Humidity:	45 %
Modification State:	0	Tester:	Xu Jin
		Laboratory:	Ottawa

Test Results: Complies

Test Data: See attached tables

UpLink

Channel Frequency (MHz)	Measured Mean Power (dBm)	Rated Power (dBm)
806	21.61	22.0
815	22.30	22.0
824	21.65	22.0
896	21.04	22.0
899	21.26	22.0
902	21.22	22.0

DownLink

Channel Frequency (MHz)	Measured Mean Power (dBm)	Rated Power (dBm)
851	32.28	32.0
860	32.04	32.0
869	32.06	32.0
935	31.20	32.0
938	31.32	32.0
941	31.14	32.0

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:	23 °C
Date:	August 25, 2006	Humidity:	45 %
Modification State:	0	Tester:	Xu Jin
		Laboratory:	Ottawa

Criteria: -13 dBm

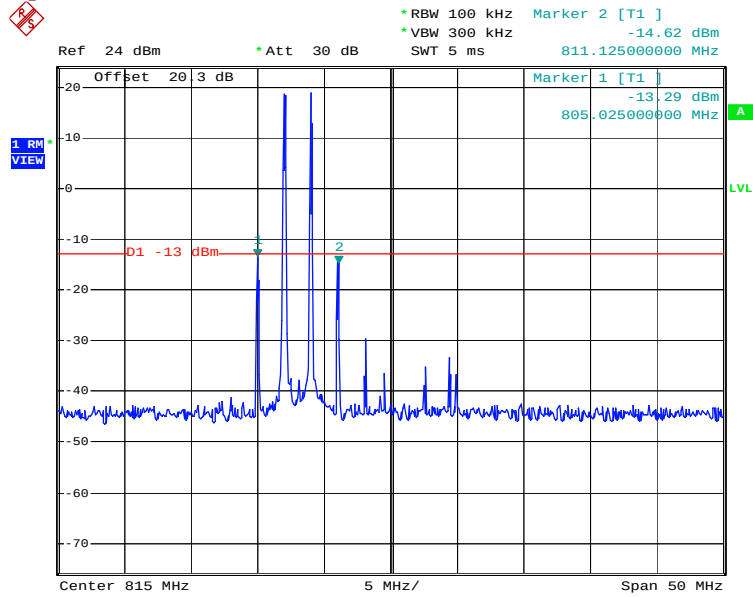
Test Results: Complies.

Additional Observations: The spectrum was investigated for spurious emissions from 30 MHz to 10 GHz. Test data is presented on the plots below.

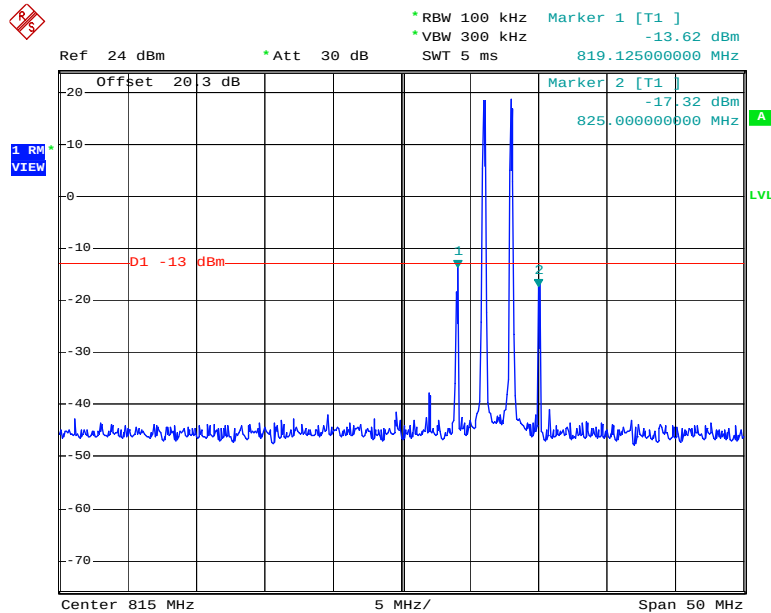
3rd Order Inter-modulation Products

iDEN

UpLink 806-824MHz Band

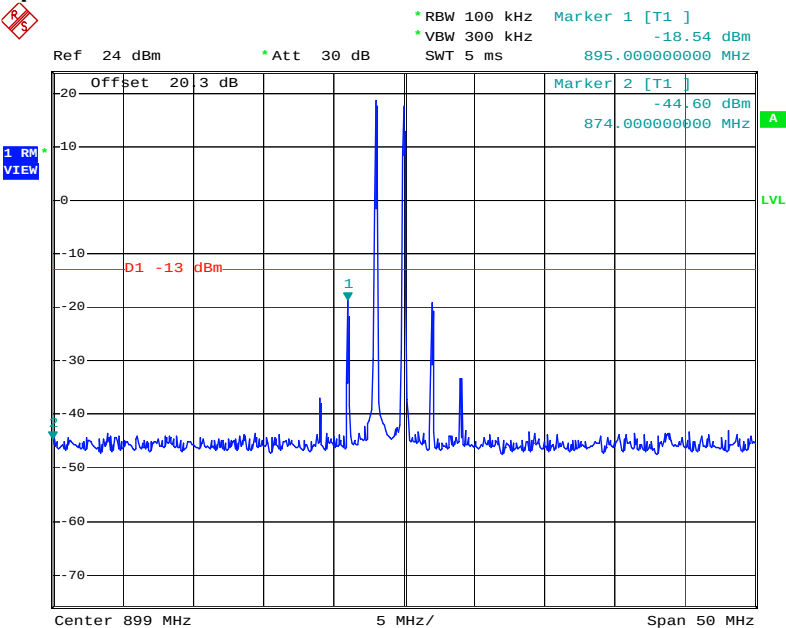


Date: 25.AUG.2006 17:29:25

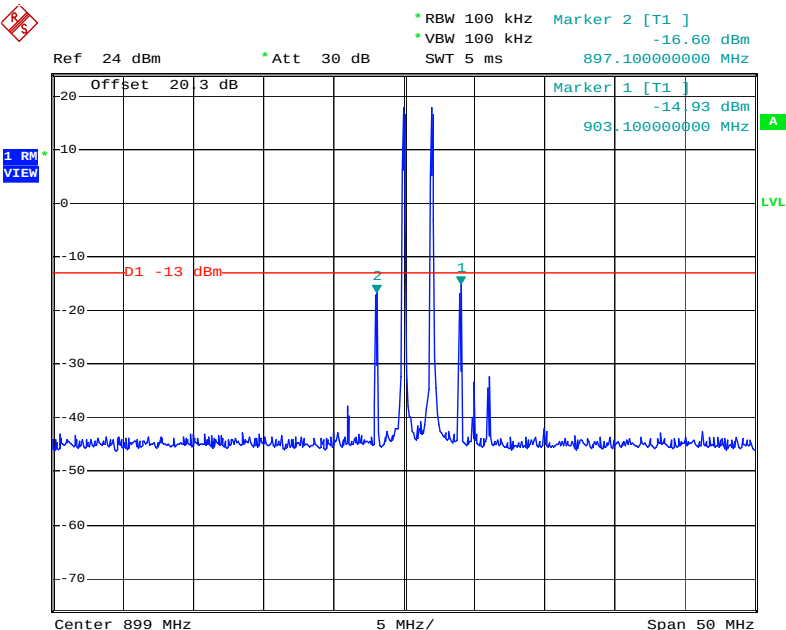


Date: 25.AUG.2006 17:32:51

iDEN
UpLink 896-902MHz Band

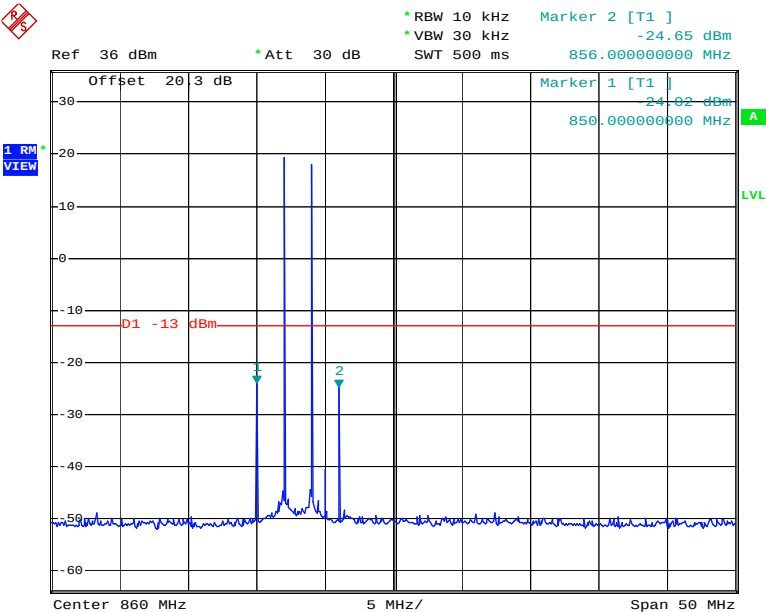


Date: 25.AUG.2006 17:35:47

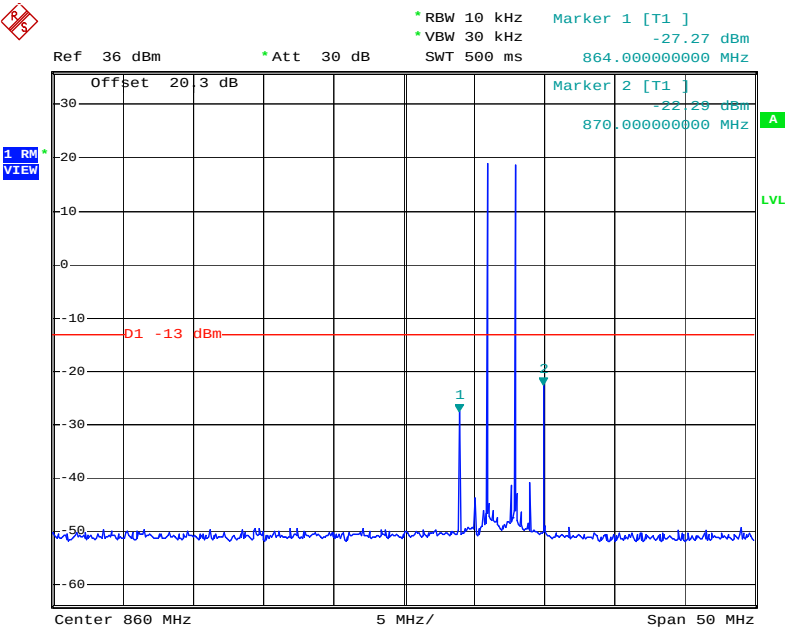


Date: 25.AUG.2006 17:45:10

iDEN
DownLink 851-869MHz Band

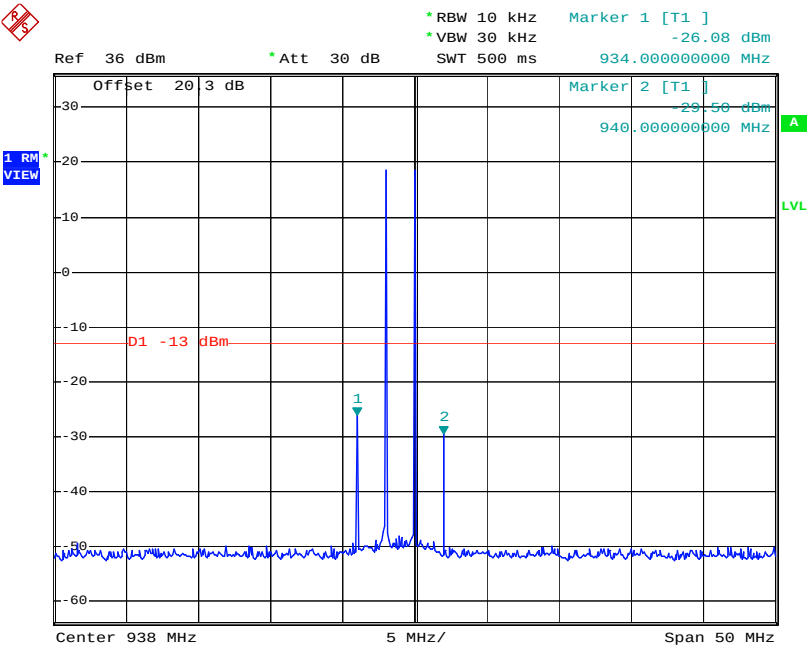


Date: 25.AUG.2006 18:08:56

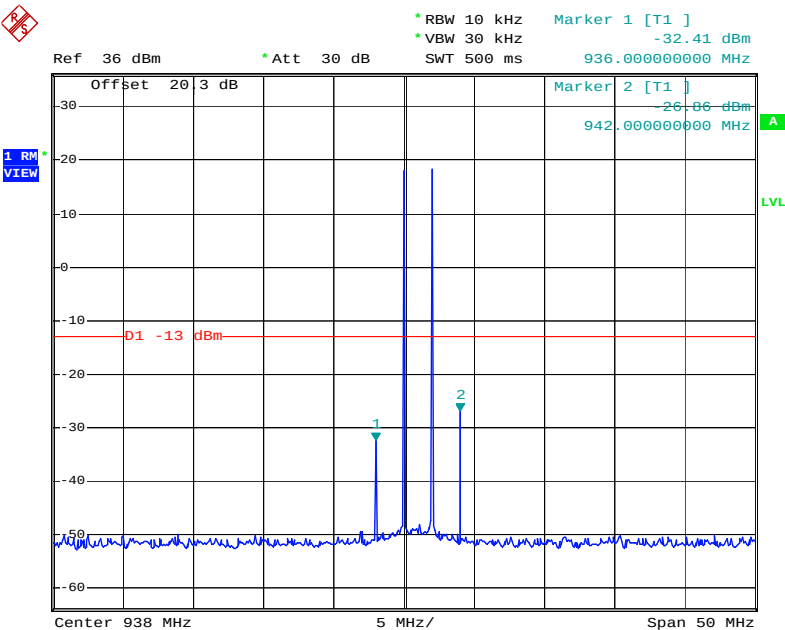


Date: 25.AUG.2006 18:10:37

iDEN
DownLink 935-941MHz Band

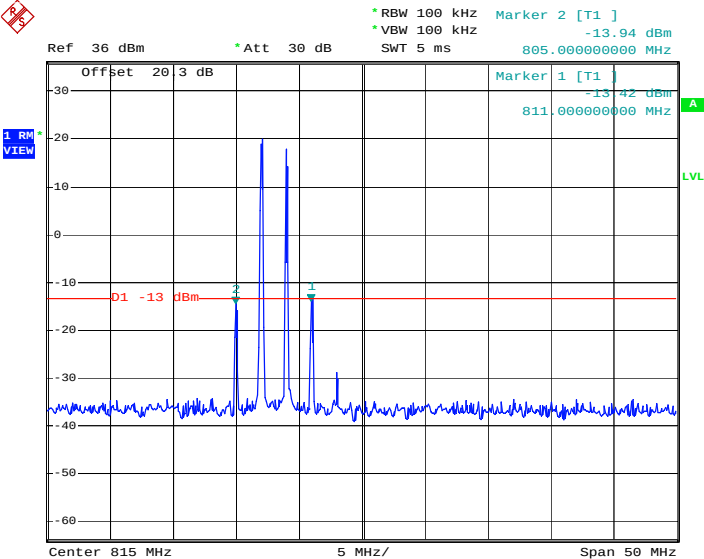


Date: 25.AUG.2006 18:13:11

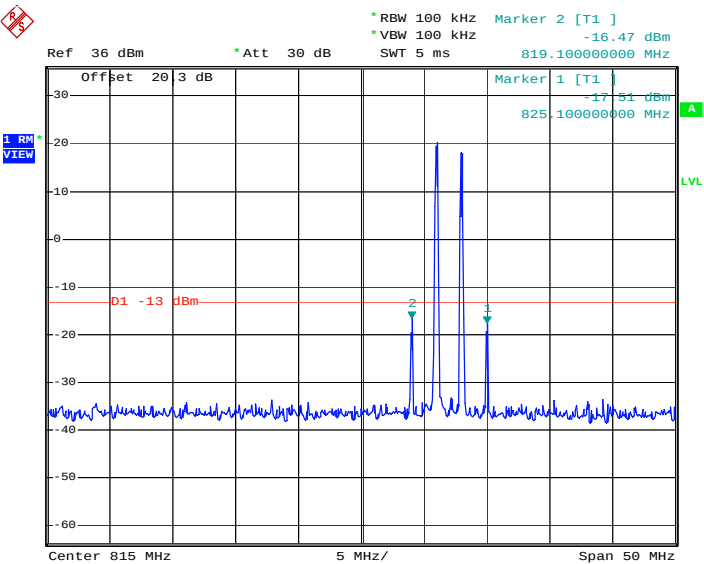


Date: 25.AUG.2006 18:18:42

4FSK
UpLink 806-824MHz Band



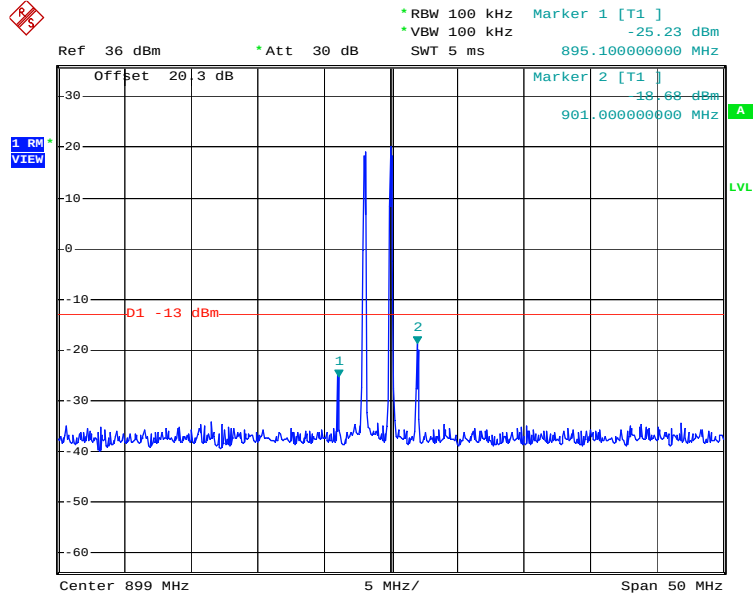
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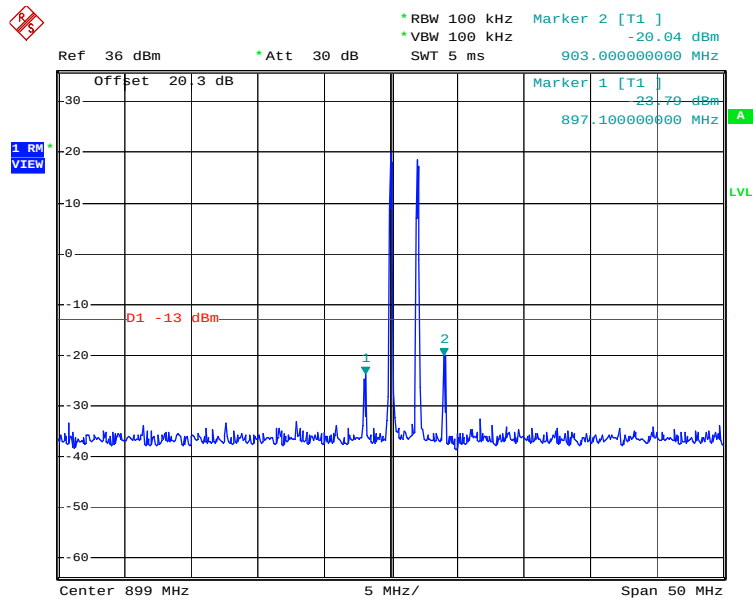
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4FSK

UpLink 896-902MHz Band

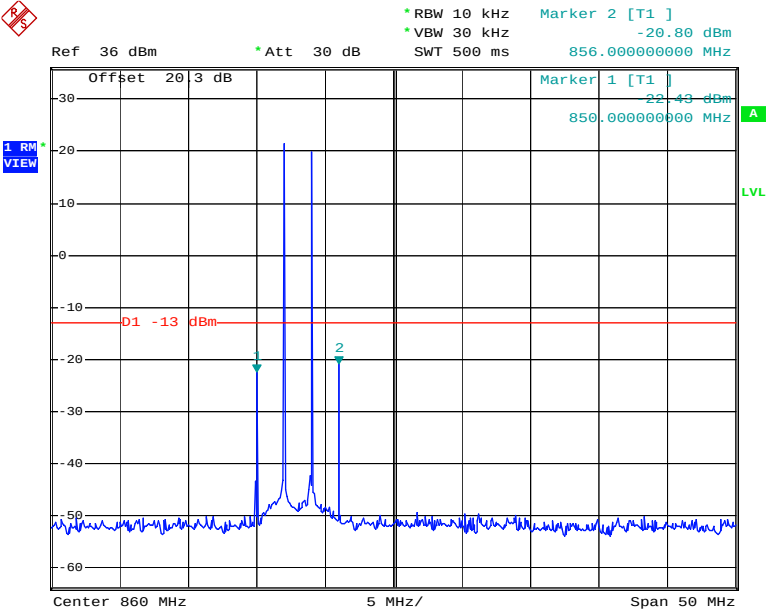


Date: 25.AUG.2006 18:43:58

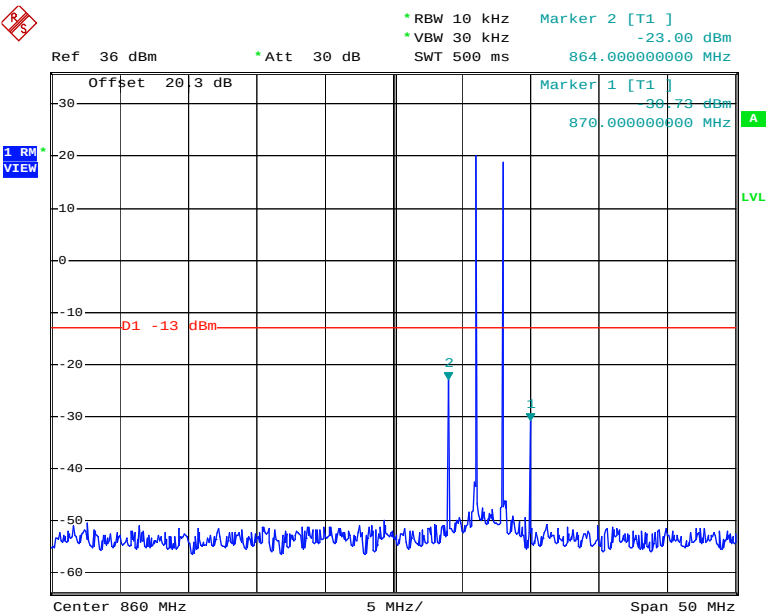


Date: 25.AUG.2006 18:44:50

4FSK
DownLink 851-869MHz Band

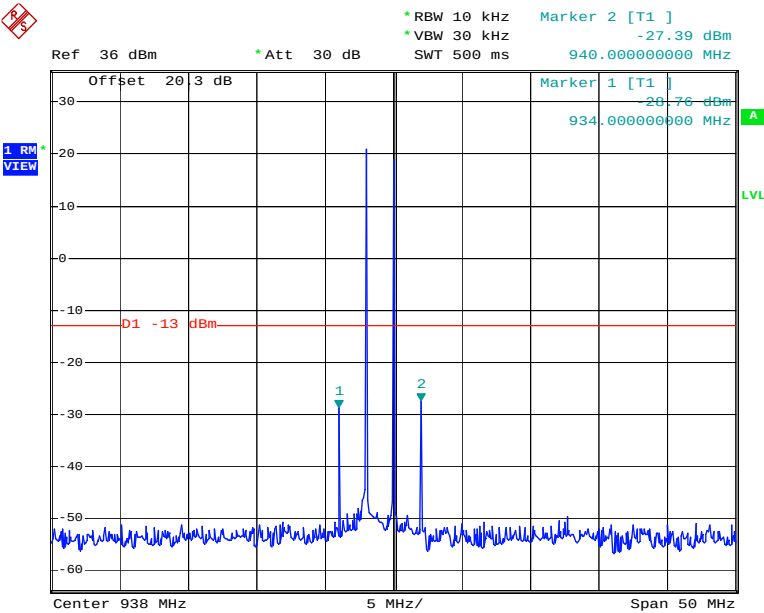


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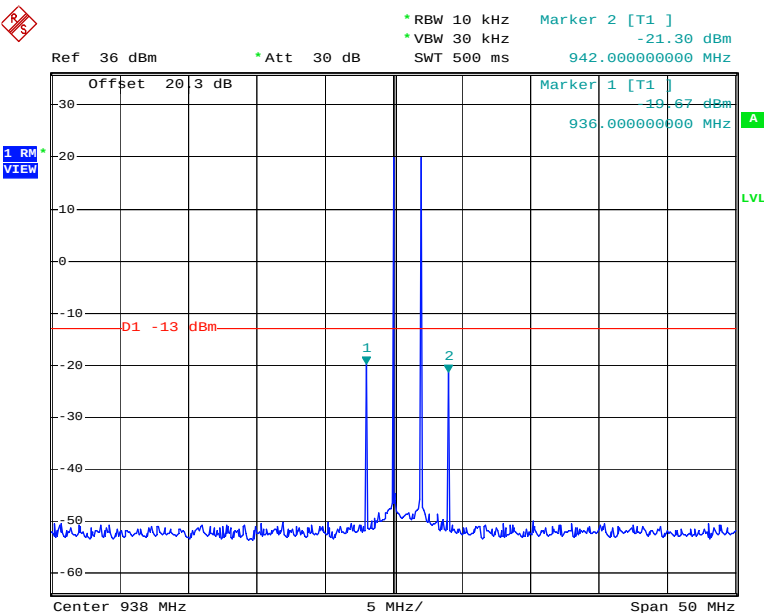


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4FSK
DownLink 935-941MHz Band

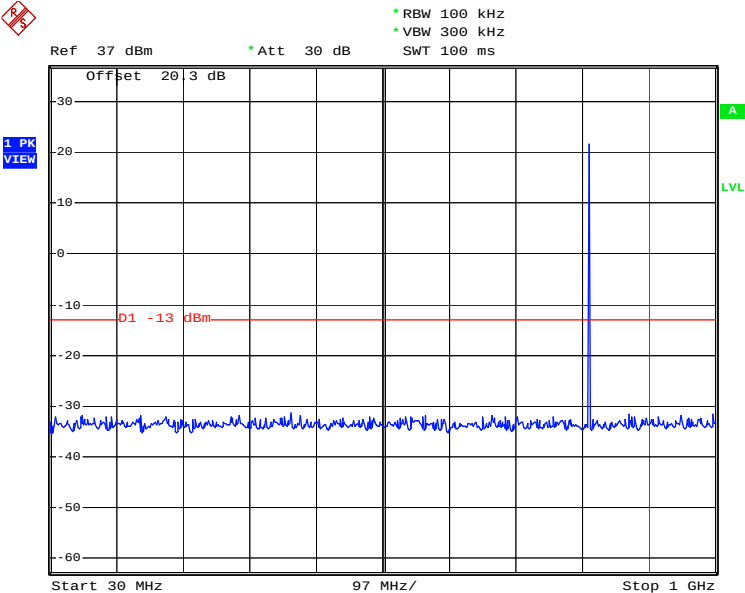


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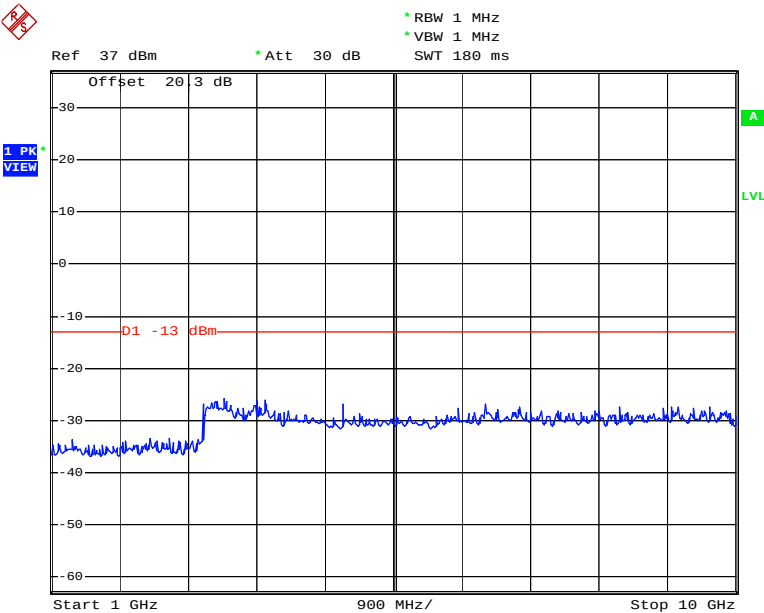


Date: 25.AUG.2006 20:06:05

Conducted emissions
UpLink 806-824MHz Band

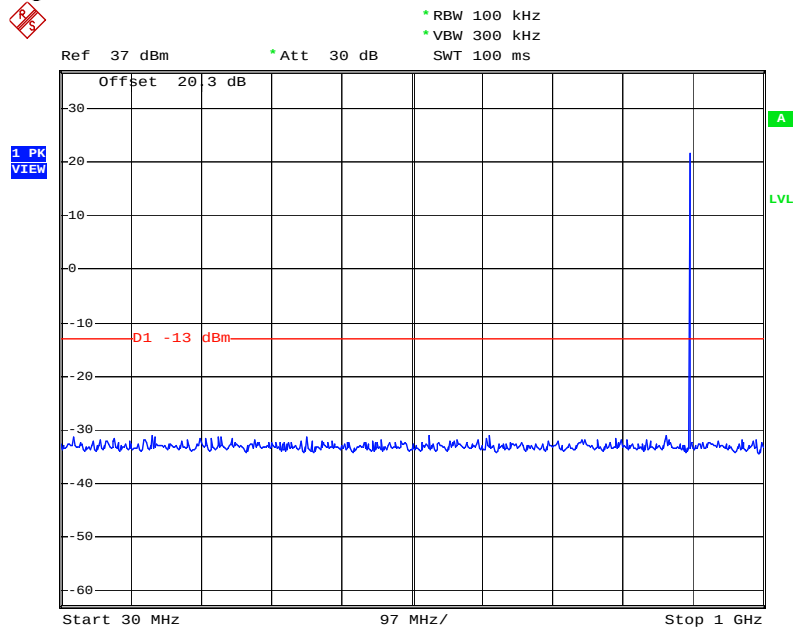


Date: 25.AUG.2006 16:13:20

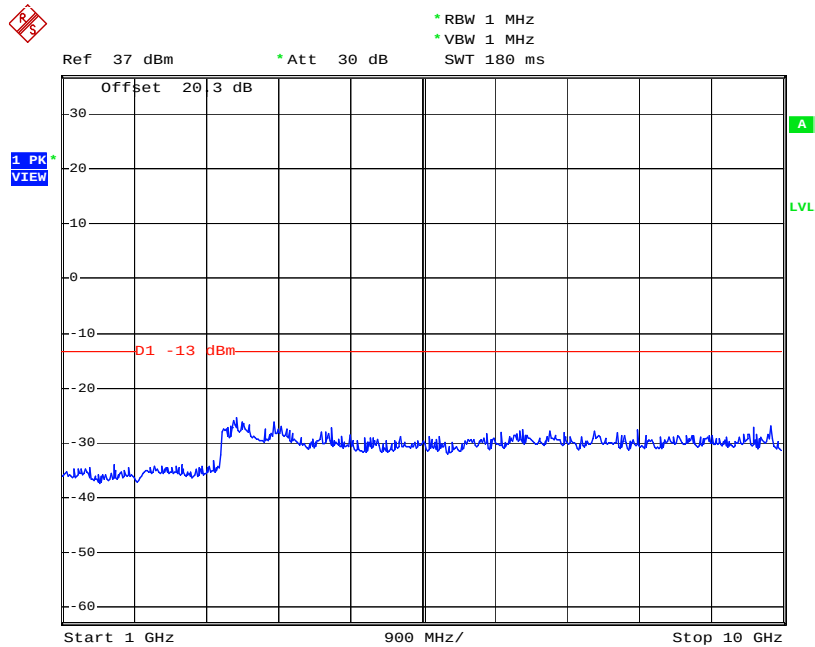


Date: 25.AUG.2006 16:17:24

UpLink 896-902MHz Band

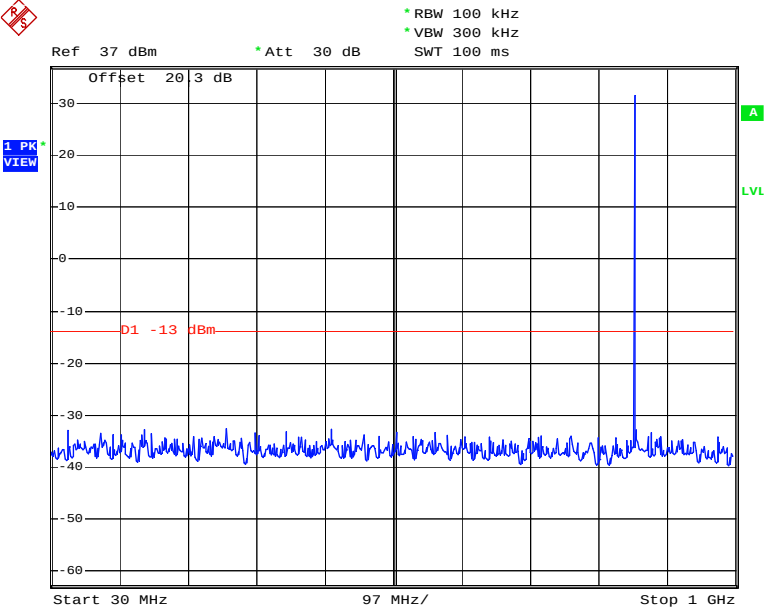


Date: 25.AUG.2006 16:14:13

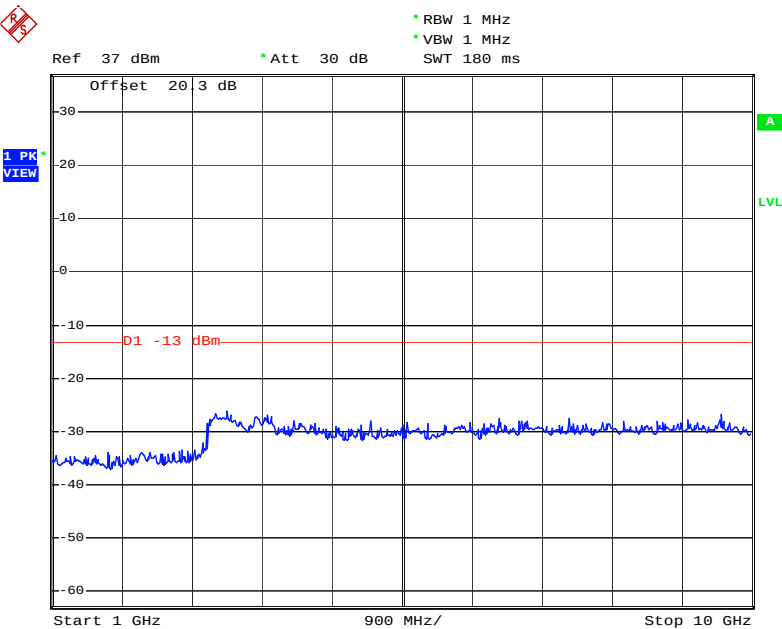


Date: 25.AUG.2006 16:16:51

DownLink 851-869MHz Band

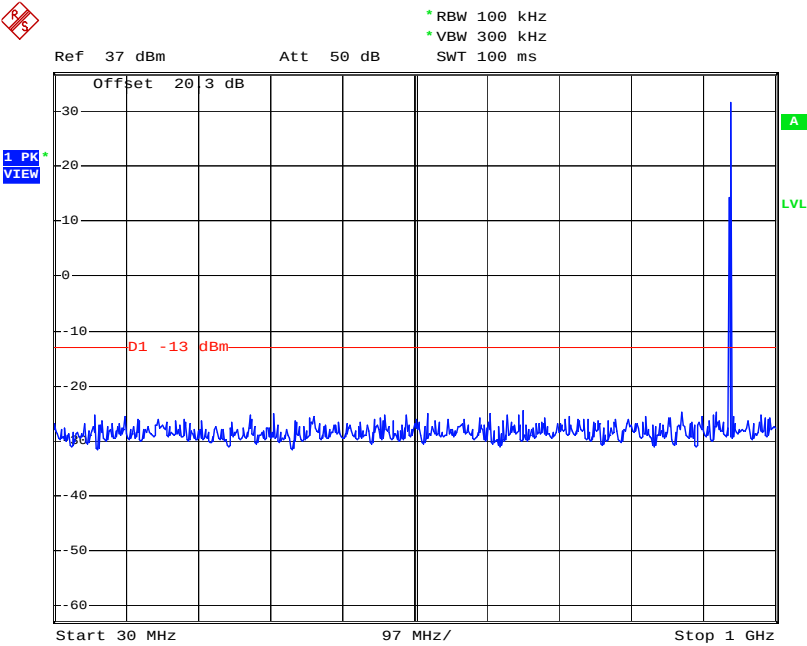


Date: 25.AUG.2006 16:09:41

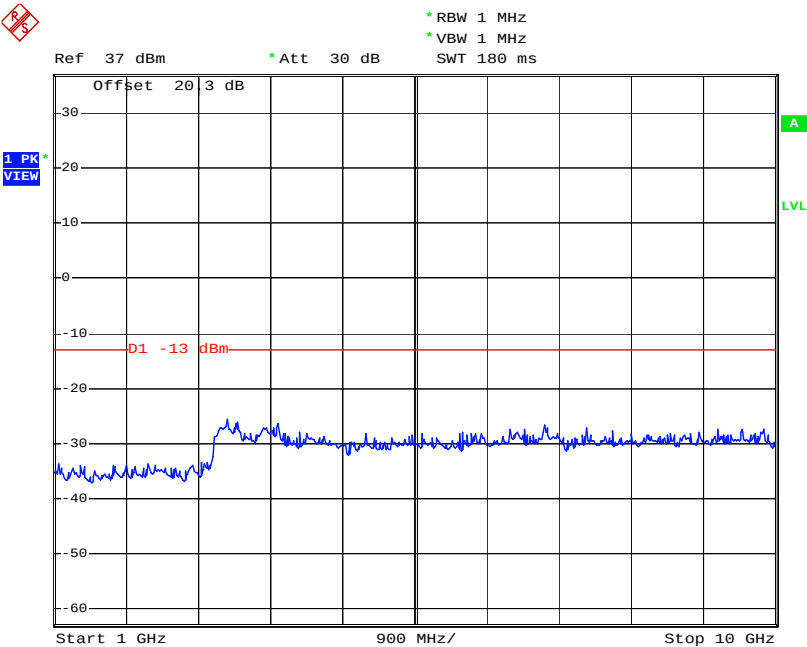


Date: 25.AUG.2006 16:08:39

DownLink 935-941MHz Band



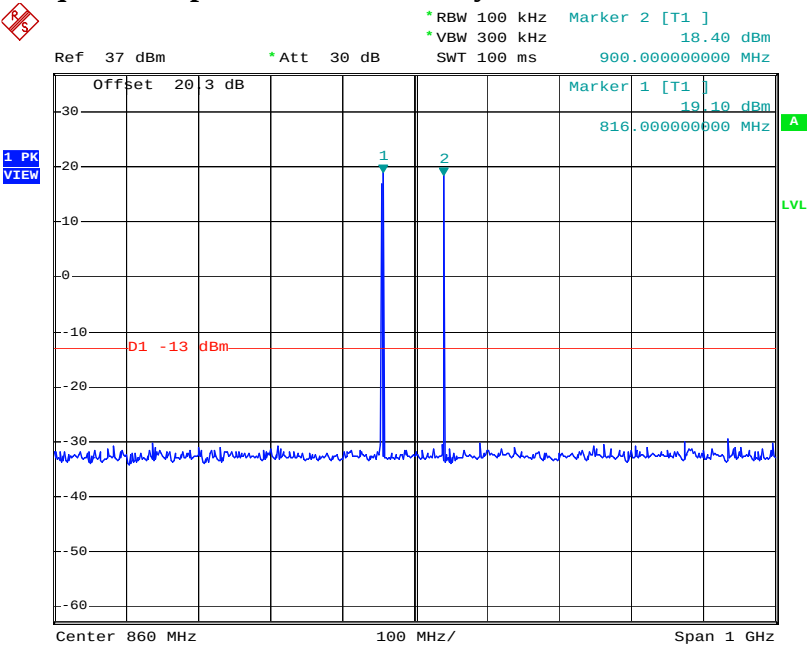
Date: 25.AUG.2006 16:06:45



Date: 25.AUG.2006 16:07:52

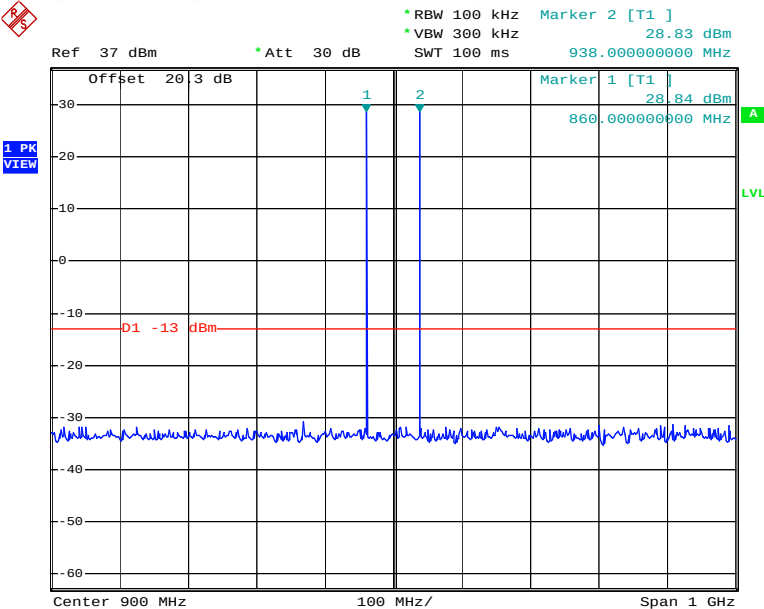
Conducted emissions

Frequencies operate simultaneously at 806-824MHz and 896-902MHz Band



Date: 25.AUG.2006 17:05:49

Frequencies operate simultaneously at 851-869MHz Band and 935-941MHz Band



Date: 25.AUG.2006 17:08:41

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:	23 °C
Date:	August 28, 2006	Humidity:	45 %
Modification State:	0	Tester:	Xu Jin
		Laboratory:	Ottawa

Test Results: Complies.

Additional Observations:

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

All measurements were performed using a Peak Detector with RBW/VBW setting as 100 kHz/300KHz below 1 GHz and RBW/VBW settings as 1 MHz/3MHz above 1 GHz at a distance of 3 meters.

No emissions were detected within 20 dB below the limit.

Clause 90.213 Frequency Stability

a) Unless noted elsewhere, transmitters used in the services governed by this part must have a minimum frequency stability as specified in the following Table.

Minimum Frequency Stability
parts per million (ppm)

Frequency range (MHz)	Fixed and base stations 2 watts output power	Mobile stations Over power	2 watts or less output
Below 25	100	100	200
25-50	20	20	50
72-76	5	---	50
150-174	50	5	50
216-220	1.0	---	1.0
220-222	0.1	1.5	1.5
421-512	2.5	5	5
806-809	1.0	1.5	1.5
809-824	1.5	2.5	2.5
851-854	1.0	1.5	1.5
854-869	1.5	2.5	2.5
896-901	0.1	1.5	1.5
902-928	2.5	2.5	2.5
929-930	1.5	---	---
935-940	0.1	1.5	1.5
1427-1435	300	300	300
Above 2450	---	---	---

Test Conditions:

Sample Number:	1	Temperature:	23 °C
Date:	August 24, 2006	Humidity:	45 %
Modification State:	0	Tester:	Xu Jin
		Laboratory:	Ottawa

Test Results: Complies.

Additional Observations:

The tested repeater uses the same LO for frequency conversion; therefore the transmitted signal is identical in frequency to the received signal. This was verified by measuring the transmitted (output) signal frequency with a frequency counter that was phase-locked to a signal generator used to generate input RF signal. Measured frequency deviation was 0 Hz and the DUT was deemed to comply with frequency stability requirement.

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:	23 °C
Date:	August 24, 2006	Humidity:	45 %
Modification State:	0	Tester:	Xu Jin
		Laboratory:	Ottawa

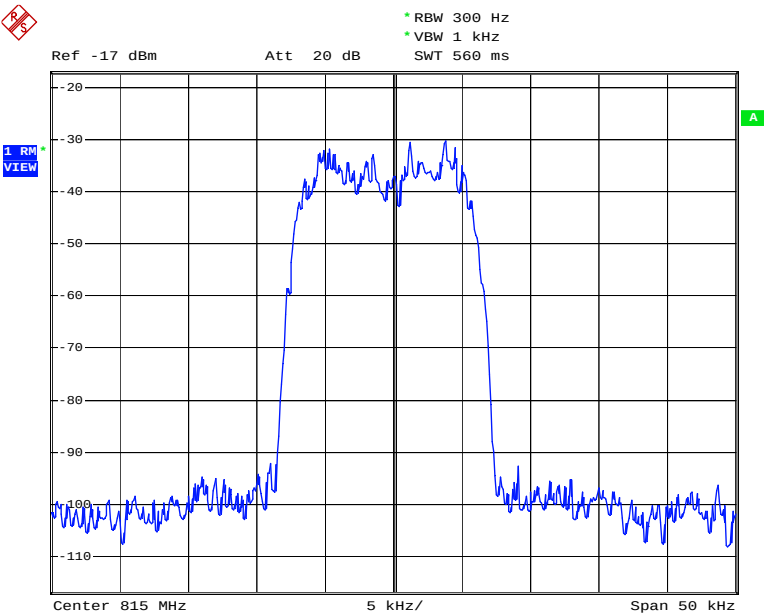
Test Results: Complies.

Test Data: See attached plots.

Additional Observations:

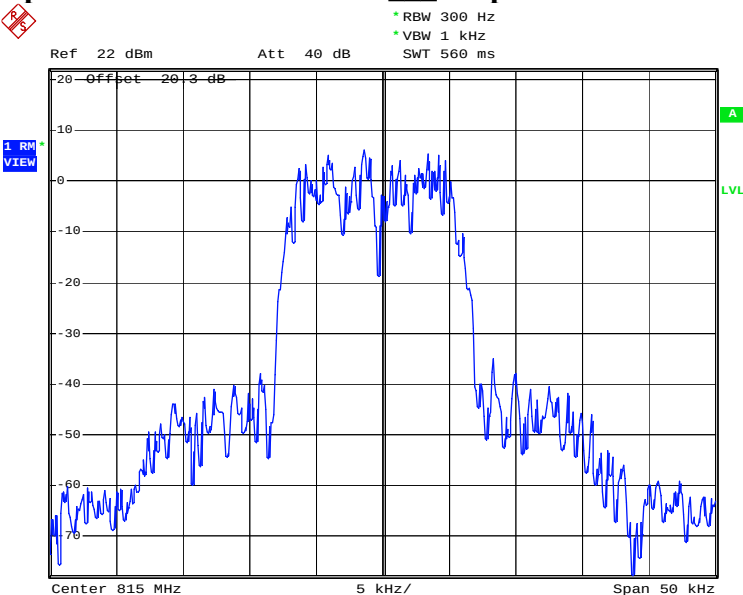
Input and output signals were compared to verify that there was no any degradation to the signal due to amplification and conversion in the DUT.

iDEN
UpLink 806-824MHz Band __Input



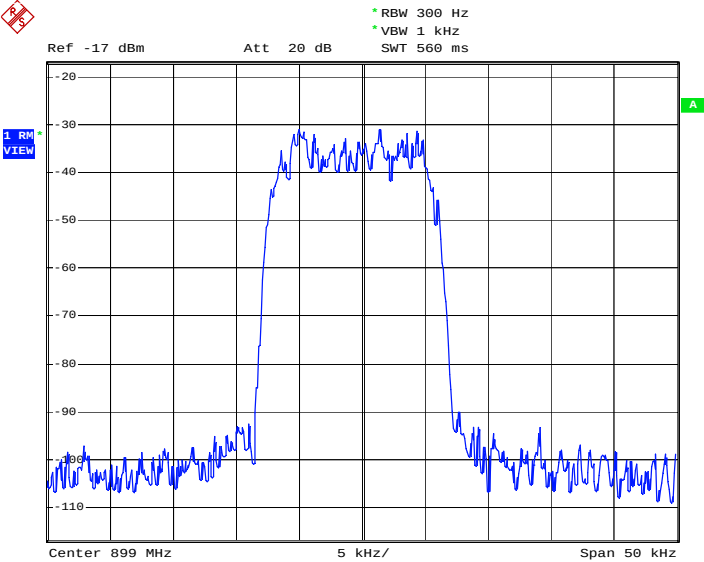
Date: 24.AUG.2006 22:44:58

UpLink 806-824MHz Band __Output



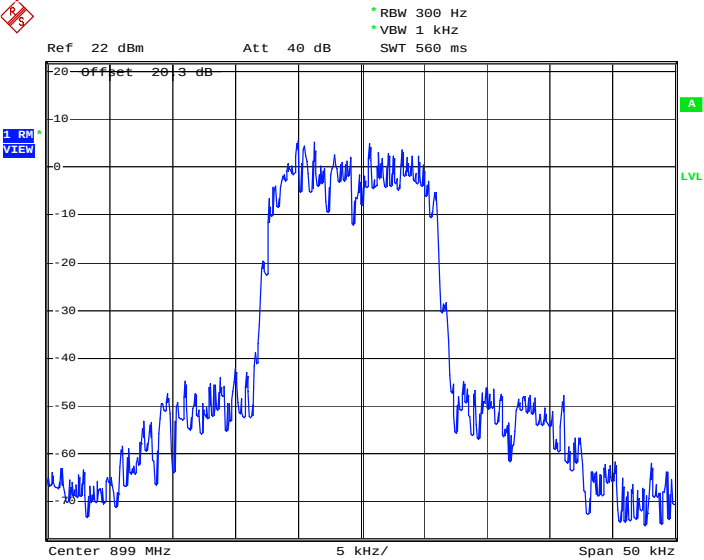
Date: 24.AUG.2006 23:10:19

iDEN
UpLink 896-902MHz Band __Input



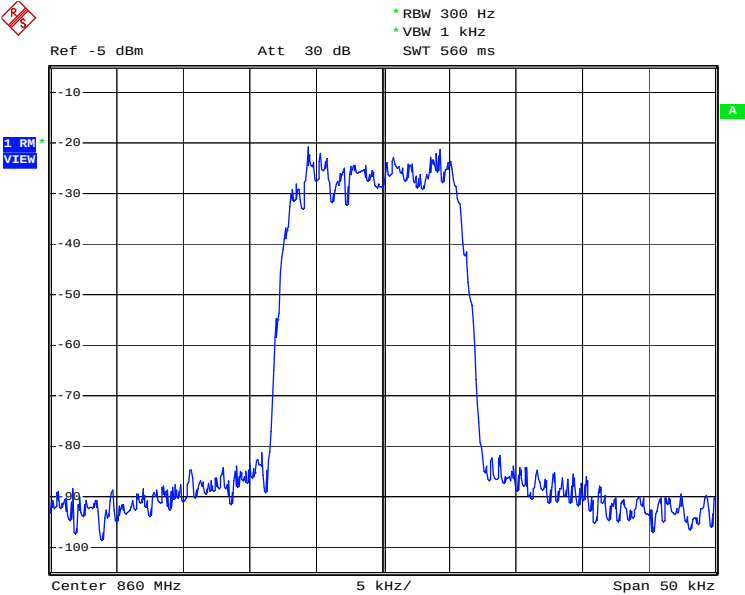
Date: 24.AUG.2006 22:44:23

UpLink 896-902MHz Band __Output



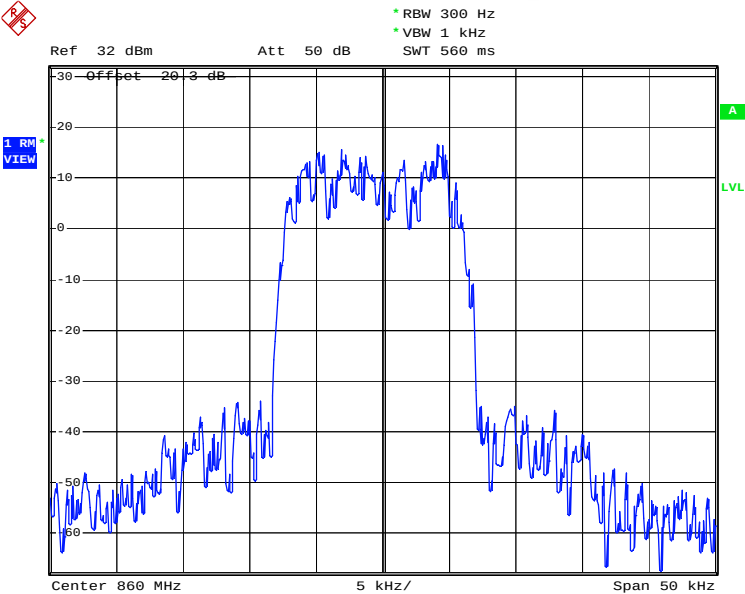
Date: 24.AUG.2006 23:10:57

iDEN
DownLink 851-869MHz Band __Input



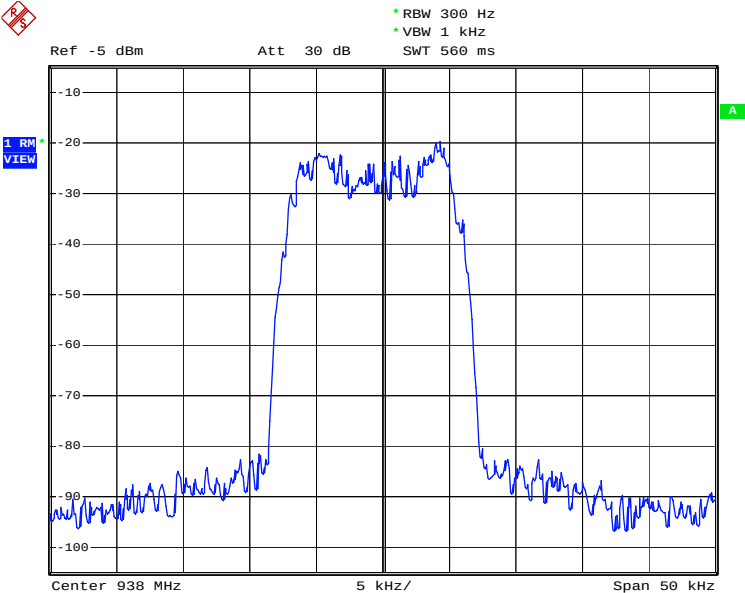
Date: 24.AUG.2006 22:46:49

DownLink 851-869MHz Band __Output



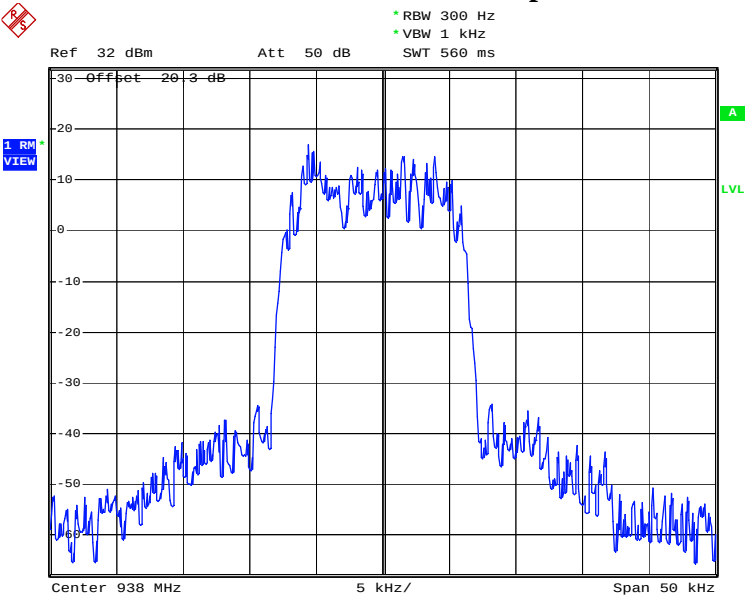
Date: 24.AUG.2006 23:13:52

iDEN
DownLink 935-941MHz Band __Input



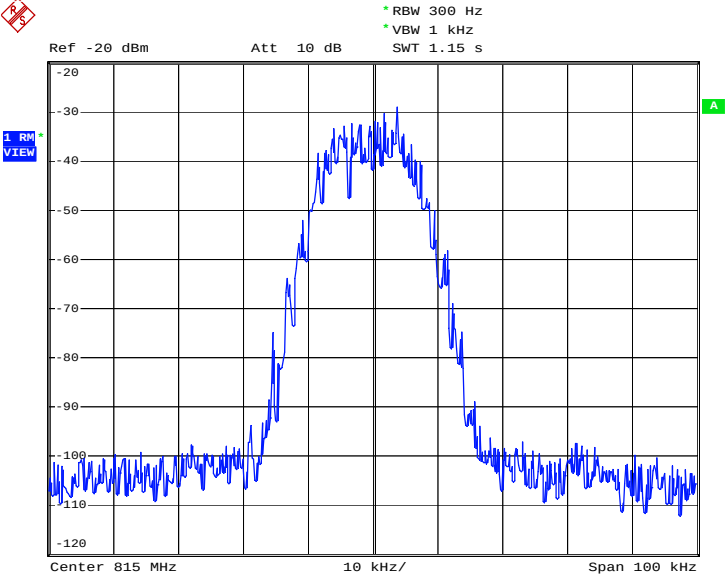
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DownLink 935-941MHz Band __Output



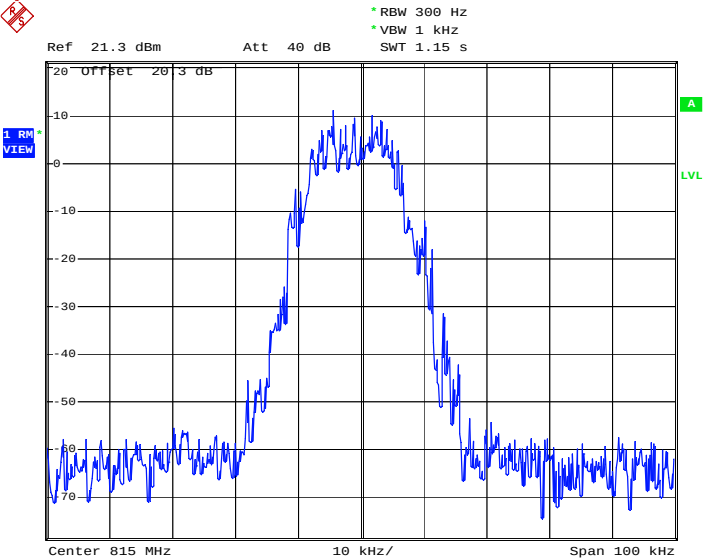
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4FSK
UpLink 806-824MHz Band __ Input



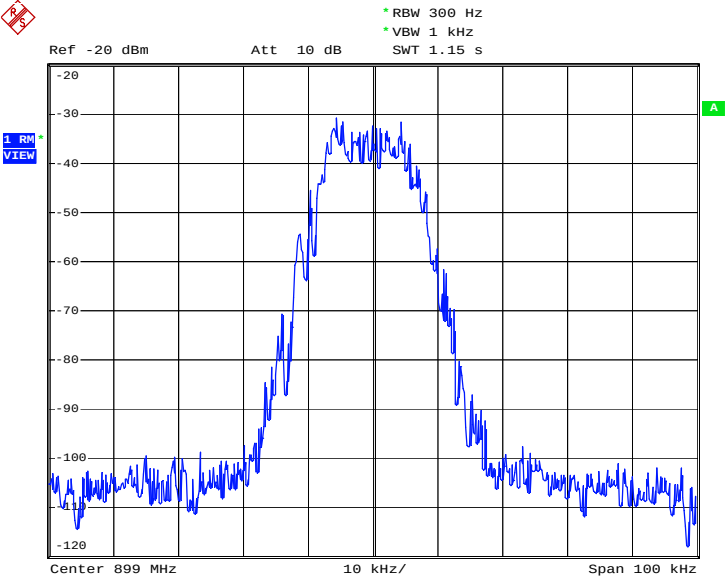
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UpLink 806-824MHz Band __ Output



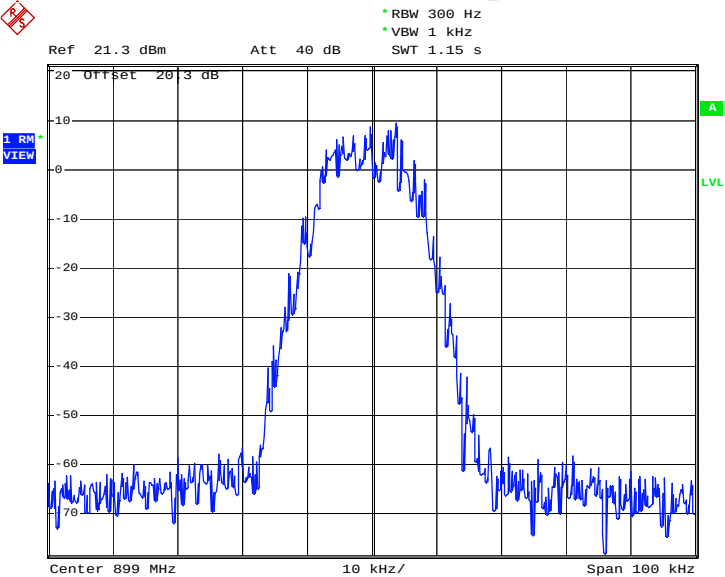
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4FSK
UpLink 896-902MHz Band __Input



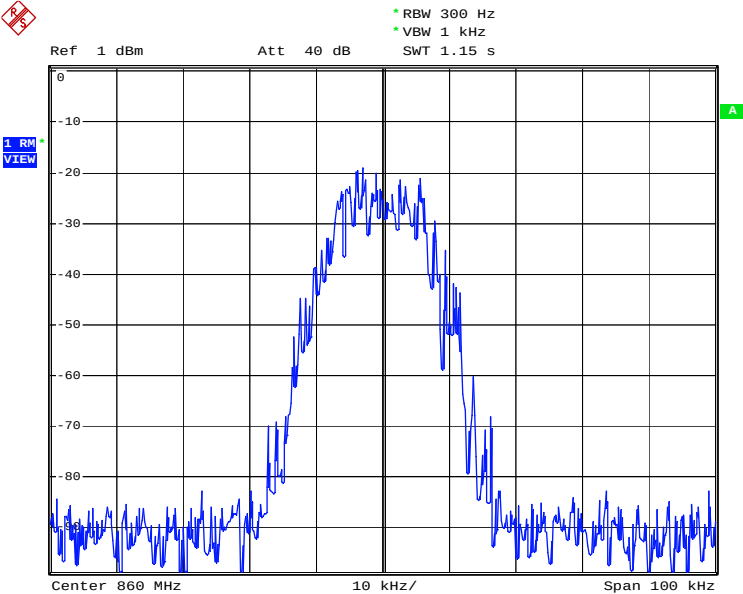
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UpLink 896-902MHz Band __Output



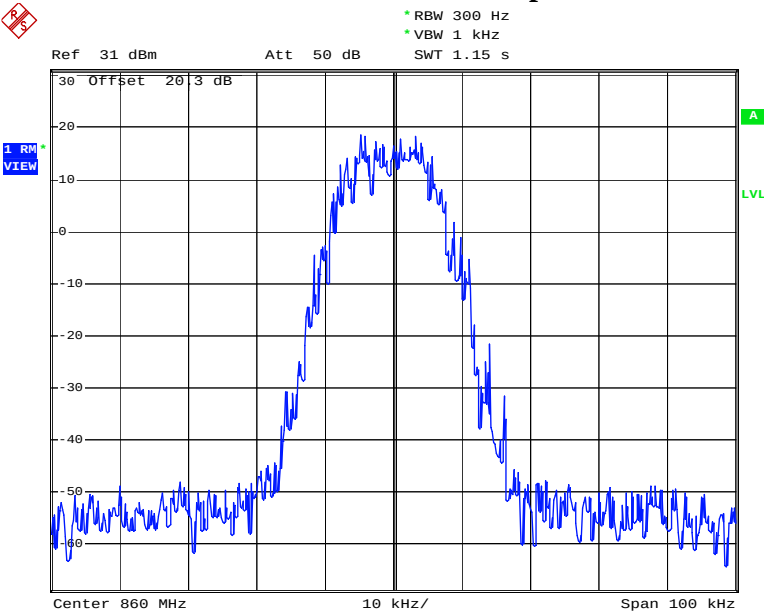
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4FSK
DownLink 851-869MHz Band __Input



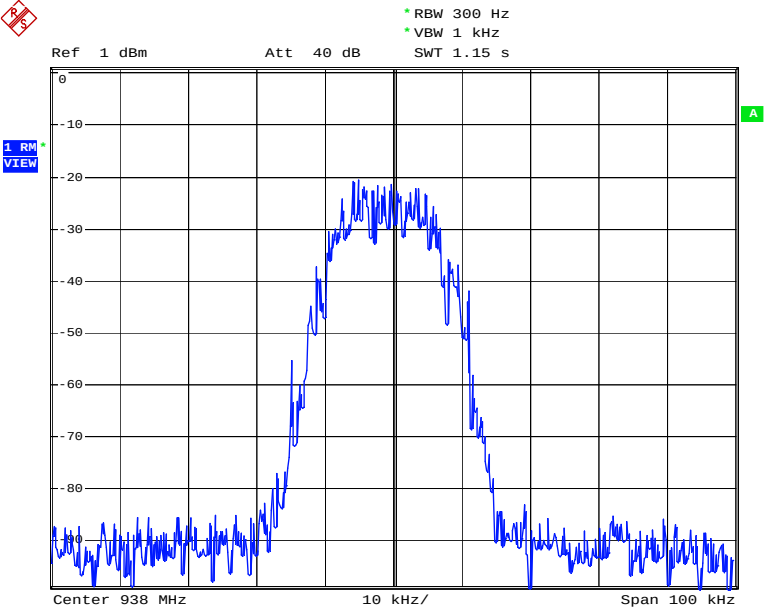
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DownLink 851-869MHz Band __Output



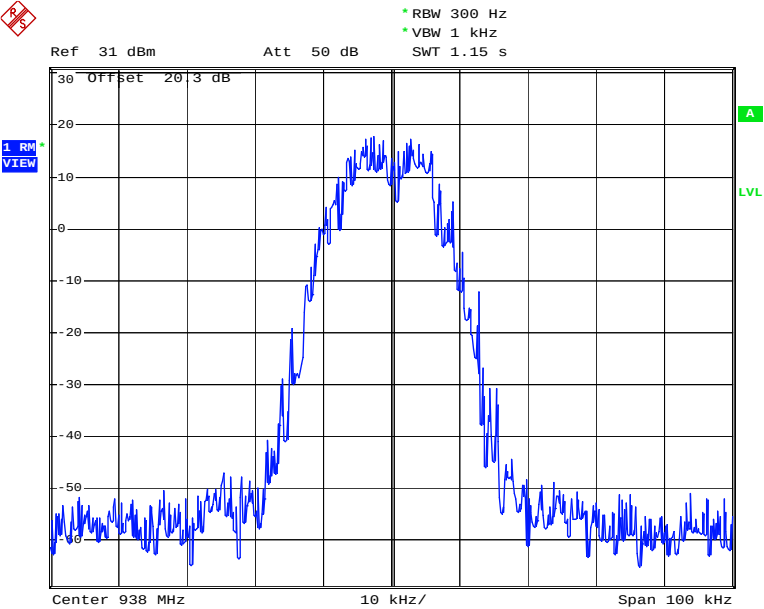
Date: 24.AUG.2006 23:44:47

4FSK
DownLink 935-941MHz Band __Input



Date: 24.AUG.2006 23:33:21

DownLink 935-941MHz Band __Output



Date: 24.AUG.2006 23:45:47

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

Plots showing the filter frequency response.

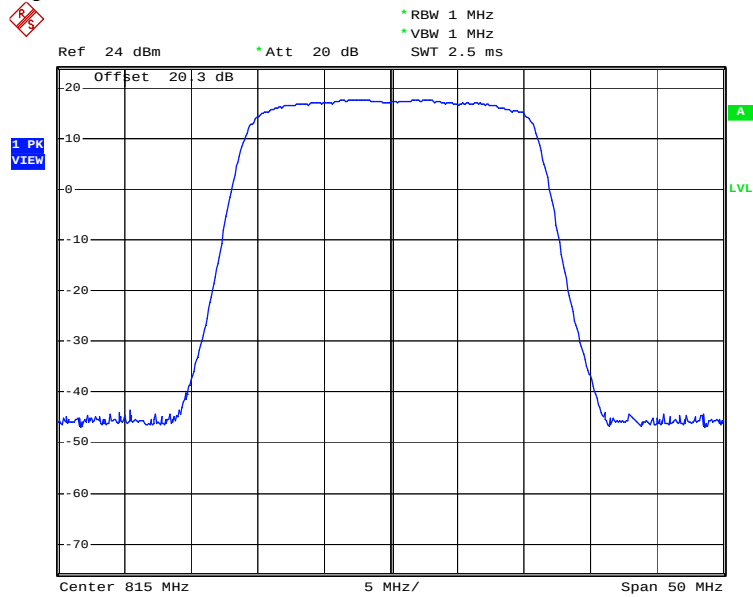
Test Conditions:

Sample Number:	1	Temperature:	23 °C
Date:	August 25, 2006	Humidity:	45 %
Modification State:	0	Tester:	Xu Jin
		Laboratory:	Ottawa

Test Results:

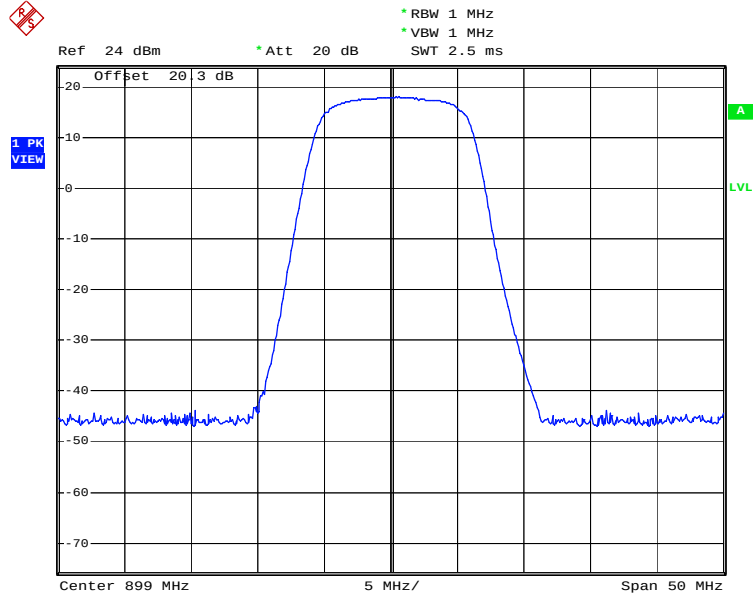
See Attached Plots.

UpLink 806-824MHz Band



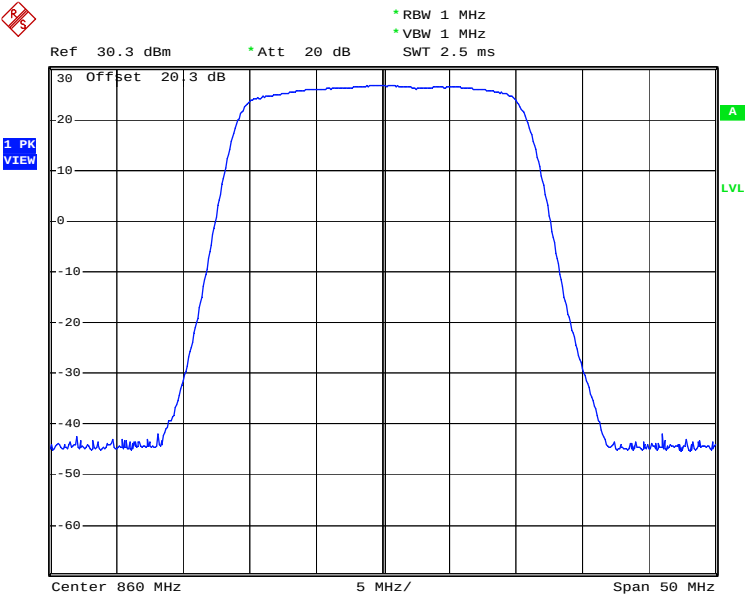
Date: 25.AUG.2006 20:39:44

UpLink 896-902MHz Band



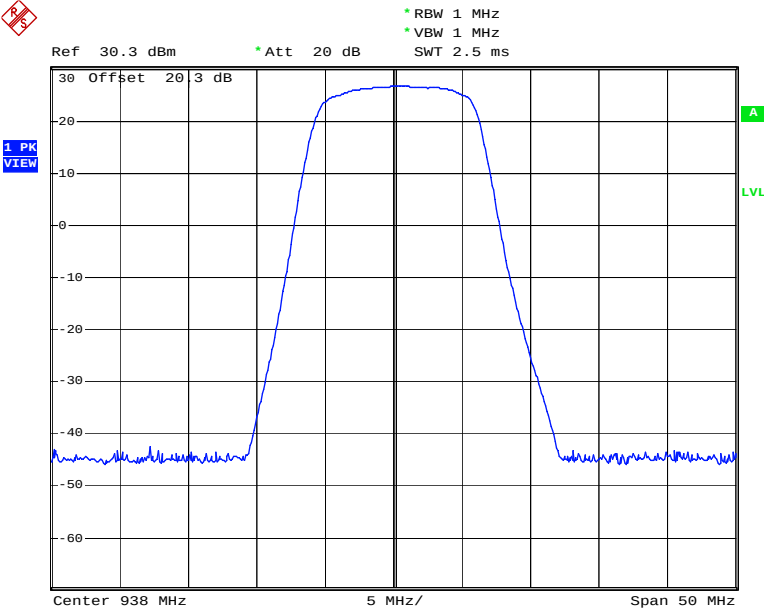
Date: 25.AUG.2006 20:45:11

DownLink 851-869MHz Band



Date: 25.AUG.2006 20:56:48

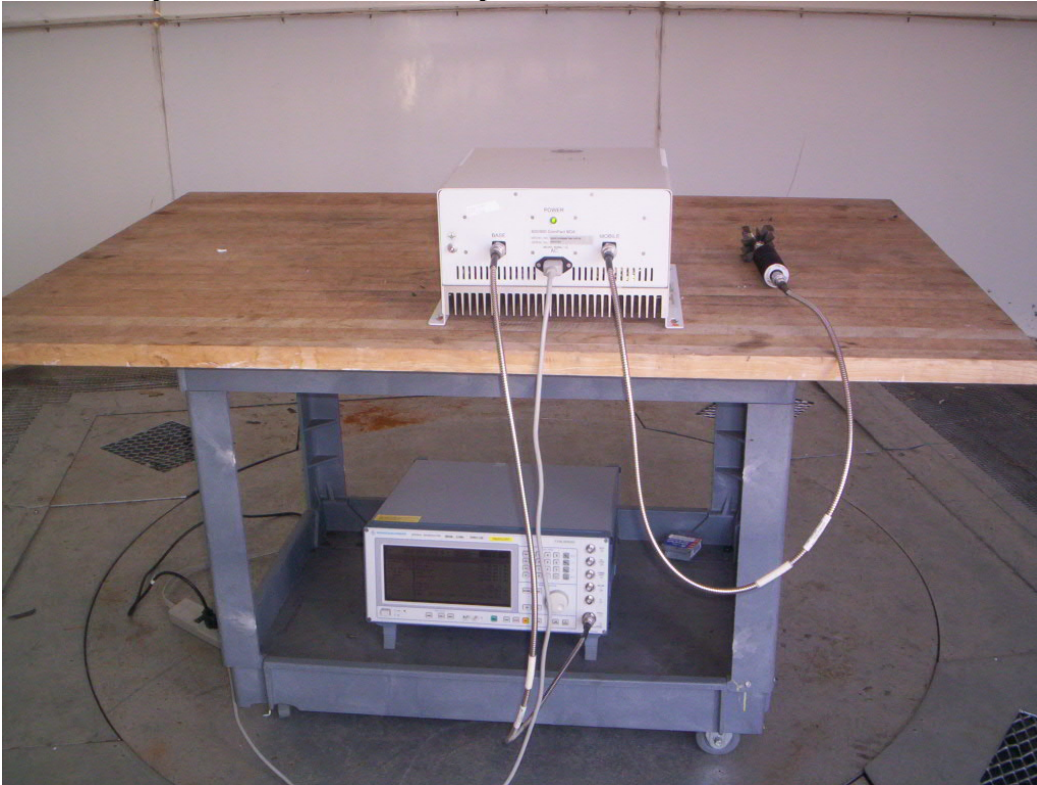
DownLink 935-941MHz Band



Date: 25.AUG.2006 20:58:45

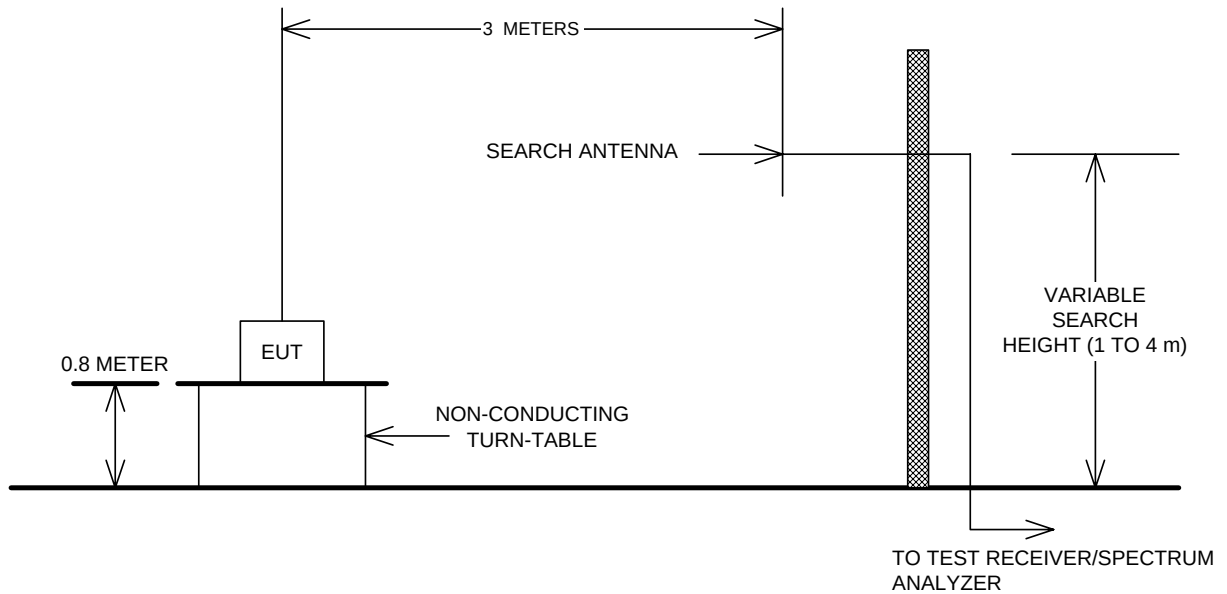
Appendix B: Setup Photographs

Radiated Spurious Emissions Set up



Appendix C : Block Diagram of Test Setups

Test Site For Radiated Emissions



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

