



Measurement of RF Emissions from a Dualband Wireless Amplifier Model 8811960A

For : 3XA Wireless Inc.
Crystal Lake, IL

P.O. No. : 3XA031507
Date Received : March 20, 2007
Date Tested : March 20 through March 29, 2007
Test Personnel : Richard E. King
Specification : FCC "Code of Federal Regulations" Title 47
Part 22; RSS-132- Cellular Telephones Employing
New Technologies Operating in the Bands 824-
849 MHz and 869-894 MHz Issue 2 September
2005

Test Report By : *Richard E. King*
Richard E. King
EMC Engineer

Witnessed by :
Phil Aseltine
3XA Wireless Inc.

Approved By : *Raymond J. Klouda*
Raymond J. Klouda
Registered Professional Engineer
of Illinois - 44894



TABLE OF CONTENTS

PARAGRAPH	DESCRIPTION OF CONTENTS	PAGE NO.
1.0	INTRODUCTION	4
1.1	DESCRIPTION OF TEST ITEM.....	4
1.2	PURPOSE.....	4
1.3	DEVIATIONS, ADDITIONS AND EXCLUSIONS.....	4
1.4	APPLICABLE DOCUMENTS.....	4
1.5	SUBCONTRACTOR IDENTIFICATION.....	4
1.6	LABORATORY CONDITIONS.....	5
2.0	TEST ITEM SETUP AND OPERATION.....	5
2.1	POWER INPUT	5
2.2	GROUNDING.....	5
2.3	PERIPHERAL EQUIPMENT.....	5
2.4	MODULATION.....	5
2.5	FREQUENCY SELECTION	5
2.6	RF POWER OUTPUT	5
3.0	TEST EQUIPMENT	6
3.1	TEST EQUIPMENT LIST	6
3.2	CALIBRATION TRACEABILITY	6
4.0	REQUIREMENTS, PROCEDURES AND RESULTS	6
4.1	RF POWER OUTPUT MEASUREMENTS.....	6
4.1.1	REQUIREMENTS	6
4.1.2	PROCEDURES.....	6
4.1.3	RESULTS	6
4.2	OCCUPIED BANDWIDTH MEASUREMENTS.....	7
4.2.1	REQUIREMENTS.....	7
4.2.2	PROCEDURES.....	7
4.2.3	RESULTS	8
4.3	SPURIOUS EMISSIONS AT ANTENNA TERMINAL.....	8
4.3.1	REQUIREMENTS.....	8
4.3.2	PROCEDURES.....	8
4.3.3	RESULTS	9
4.4	FIELD STRENGTH OF SPURIOUS EMISSIONS.....	9
4.4.1	REQUIREMENTS	9
4.4.2	PROCEDURES	9
4.4.3	RESULTS.....	10
5.0	CONCLUSION.....	10
6.0	CERTIFICATION	10
7.0	ENDORSEMENT DISCLAIMER.....	11
	TABLE I - EQUIPMENT LIST.....	12



REVISION HISTORY

Revision	Date	Description
—	04/26/2007	Initial release

Measurement of RF Emissions from a Model No. 8811960A, Dualband Wireless Amplifier

1.0 INTRODUCTION:

1.1 DESCRIPTION OF TEST ITEM: This document presents the results of the series of radio interference measurements performed on a model 8811960A Dualband Wireless Amplifier Serial Number 000001, (hereinafter referred to as the test item). The tests were performed for 3XA Wireless Inc. of Crystal Lake, IL.

The test item is a single channel Dualband Wireless Amplifier that operates in the 800MHz Cellular band 869MHz to 894MHz. The test item has a rated gain of 50dB.

1.2 PURPOSE: The test series was performed to determine if the test item meets the technical requirements of the FCC Part 22 for 800MHz cellular radio.

1.3 DEVIATIONS, ADDITIONS AND EXCLUSIONS: There were no deviations, additions to, or exclusions from the test specification during this test series.

1.4 APPLICABLE DOCUMENTS: The following documents of the exact issue designated form part of this document to the extent specified herein:

- Federal Communications Commission "Code of Federal Regulations", Title 47, Part 22, dated 1 October 2006
- Federal Communications Commission "Code of Federal Regulations", Title 47, Part 2, dated 1 October 2006
- ANSI C63.4-2003, "American National Standard for Methods of Measurement of Radio-Noise Emissions from Low-Voltage Electrical and Electronic Equipment in the Range of 9 kHz to 40 GHz"
- RSS-132 - Cellular Telephones Employing New Technologies Operating in the Bands 824-849 MHz and 869-894 MHz Issue 2 September 2005
- TIA-603-C-2004, "Land Mobile FM or PM – Communications Equipment - Measurement and Performance Standards"

1.5 SUBCONTRACTOR IDENTIFICATION: This series of tests was performed by Elite Electronic Engineering Incorporated, of Downers Grove, Illinois. The laboratory is accredited by the National Institute of Standards and Technology (NIST) under the National Voluntary Laboratory Accreditation Program (NVLAP). NVLAP Lab Code: 100278-0.

1.6 LABORATORY CONDITIONS: The temperature at the time of the test was 22°C and the relative humidity was 21%.

2.0 TEST ITEM SETUP AND OPERATION:

2.1 POWER INPUT: The test item obtained 12VDC from a Power Sonic M/N: PS-1250 F1 rechargeable battery.

2.2 GROUNDING: The test item was ungrounded during the tests.

2.3 PERIPHERAL EQUIPMENT: The following peripheral equipment was submitted with the test item:

ITEM	DESCRIPTION
------	-------------

HP Signal GeneratorM/N E4432B, S/N VS39440973	
---	--

The output of the signal generator was connected to the test item through a 1 foot long coaxial cable.

2.4 MODULATION: The test signal was modulated with four different representative types of modulations: (1) Amps (FM) 30kHz modulation, (2) Digital I/Q modulation - CDMA 1.23 MHz, and (3) Digital modulation - GSM 300kHz. (4) Digital I/Q modulation - TDMA 30kHz.

The input signals were supplied from an HP M/N E4432B Signal Generator.

The RF Power Output, the Occupied Bandwidth, the Spurious Emissions at Antenna Terminal, and the Field Strength of Spurious Emissions tests were performed with AMPS, CDMA, GSM, and TDMA modulated input signals.

2.5 FREQUENCY SELECTION: For all tests, one test frequency was used for each frequency band. The test item operated in the downlink frequency band only. The downlink frequency band all tests were performed at 881.5MHz.

The specified channel spacing used for each modulation type is shown below:

Modulation	Channel Spacing
AMPS	30kHz
CDMA	1.23MHz
GSM	300kHz
TDMA	30kHz

2.6 RF POWER OUTPUT: The input levels were adjusted to reach the rated output levels shown below:

Modulation	Rated Power	
	Downlink dBm	Downlink Watts
AMPS	12	0.016
CDMA	12	0.016
GSM	12	0.016
TDMA	12	0.016

3.0 TEST EQUIPMENT:

3.1 TEST EQUIPMENT LIST: A list of the test equipment used can be found on Table I. All equipment was calibrated per the instruction manuals supplied by the manufacturer.

3.2 CALIBRATION TRACEABILITY: Test equipment is maintained and calibrated on a regular basis. All calibrations are traceable to the National Institute of Standards and Technology (NIST).

4.0 REQUIREMENTS, PROCEDURES AND RESULTS:

4.1 RF POWER OUTPUT MEASUREMENTS:

4.1.1 REQUIREMENTS: In accordance with paragraph 22.913, the effective radiated power (ERP) level is allowed up to 7 watts for mobile transmitters.

4.1.2 PROCEDURES: The test item was adjusted for the rated gain. The test item was configured to measure the output for the uplink path.

- The input signal was set to 881.5MHz.
- The input signal was AMPS modulated.
- The spectrum analyzer was connected to the output of the test item and the output of the test item was monitored.
- The amplitude of the input signal was adjusted until the rated output level was achieved. The output power level was measured and recorded. The input signal level was also recorded.
- Steps (b) through (d) were repeated separately for each frequency and modulation listed in paragraph 2.5 above.

4.1.3 RESULTS: The output power measurements are presented on Page 13. The power outputs achieved for the downlink path were 0.016 watts for all frequencies and modulations listed in paragraph 2.5 above. The remainder of the tests was performed at these

power levels. The power output complies with the FCC requirements.

The ERP limit does not apply to the power output alone, but the combination of the power output and the antenna. Compliance to the power output will be based on the system configuration.

Therefore, the EIRP requirement cannot be directly applied to the test item.

4.2 OCCUPIED BANDWIDTH MEASUREMENTS:

4.2.1 REQUIREMENTS: For AMPS and TDMA modulations, in accordance with paragraph 22.917(d), the mean power of any emission shall be attenuated below the unmodulated carrier power (P) in accordance with the following schedule:

- i. On any frequency removed from the carrier frequency by more than 20 kHz but not more than 45kHz: at least 26 dB.
- ii. On any frequency removed from the carrier frequency by more than 45 kHz but not more than 90kHz: at least 45 dB.
- iii. On any frequency removed from the carrier frequency by more than 90 kHz; up to the first multiple of the carrier frequency: at least 60 dB or $43 + 10 \log P$ dB, whichever is the lesser attenuation.

For CDMA modulation, in accordance with paragraph 10.5.1.3 of the TIA/EIA/IS-98-A specification, the mean power of any emission shall be attenuated below the unmodulated carrier power (P) in accordance with the following schedule:

- (1) For offset frequencies greater than 900kHz from the CDMA Channel center frequency: At least 42dB
- (2) For offset frequencies greater than 1.98MHz from the CDMA Channel center frequency: At least 54dB

For GSM modulation, there is not an emissions specification. To determine compliance the output signal must represent the input signal.

4.2.2 PROCEDURES: The test was performed using each of the modulation types listed in paragraph 2.2 (AMPS, CDMA, GSM, TDMA).

- (a) The input signal was set to 881.5MHz. The input signal level was adjusted to provide the rated level at the test item output. The reference level was recorded.
- (b) The input signal was AMPS modulated.
- (c) A spectrum analyzer was connected to the output of the test item. With a bandwidth of the spectrum analyzer set to 300 Hz, the output of the test item was measured and recorded.
- (d) The input signal from the signal generator was measured with the spectrum

analyzer and recorded over the same frequency range.

- (e) The modulation was changed to CDMA and steps (c) and (d) were repeated separately with the input signal set to 881.5MHz.
- (f) The modulation was changed to GSM and steps (c) and (d) were repeated separately with the input signal set to 881.5MHz. The bandwidth of the spectrum analyzer was set to 30kHz.
- (g) The modulation was changed to TDMA and steps (c) and (d) were repeated separately with the input signal set to 881.5MHz. The bandwidth of the spectrum analyzer was set to 300Hz.

4.2.3 RESULTS: The plots of the occupied bandwidth measured with the AMPS, CDMA, GSM and TDMA modulation of the carrier are presented on Pages 14 through 25.

The limits, shown on the plots, are referenced to the power measured from the unmodulated carrier.

As can be seen from the data, the test item output met the occupied bandwidth requirements with the AMPS, CDMA, GSM and TDMA modulations of the carrier. The sideband emissions measured at the test item output were similar to the sideband emissions measured from the input signals. The 99% bandwidth measurement for Industry Canada was 33.06 kHz AMPS(FM), 1.26 MHz (CDMA), 252.5 kHz (GSM) and 28.45 kHz (TDMA) modulations.

4.3 SPURIOUS EMISSIONS AT ANTENNA TERMINAL:

4.3.1 REQUIREMENTS: This test determines whether the test item produces excessive spurious emissions.

In accordance with paragraph 22.917(e), on any frequency twice or more than twice the fundamental frequency, the spurious emissions shall be attenuated below the unmodulated carrier power (P) by at least $43 + 10 \log(P)$ dB. This requirement translates to a field strength limit of -13dBm (ERP). The peak power of the emissions shall be measured from 30MHz up to the 10th harmonic of the fundamental frequency.

4.3.2 PROCEDURES: In general, this test will measure spurious emissions at the antenna terminals. The test was performed using each of the modulation types listed in paragraph 2.2 (AMPS, CDMA, GSM, TDMA).

- (a) The input signal was set to 881.5MHz. The input signal level was adjusted to

provide the rated level at the test item output.

- (b) The input signal was AMPS modulated.
- (c) A spectrum analyzer was connected to the output of the test item. The frequency span was adjusted to cover 30 MHz up to 1 GHz. With a bandwidth of the spectrum analyzer set to 100 kHz, the output of the test item was measured and recorded.
- (d) The frequency span was adjusted to cover 1 GHz up to 10GHz. With a bandwidth of the spectrum analyzer set to 1 MHz, the output of the test item was measured and recorded.
- (e) Steps (c) through (e) were repeated on the input signal from the signal generator.
- (f) The modulation was changed to CDMA and steps (c) through (e) were repeated separately with the input signal set to 881.5MHz.
- (g) The modulation was changed to GSM and steps (c) through (e) were repeated separately with the input signal set to 881.5MHz.
- (h) The modulation was changed to TDMA and steps (c) through (e) were repeated separately with the input signal set to 881.5MHz.

4.3.3 RESULTS: The plots of the antenna conducted output measurements are presented on Pages 26 through 33. As can be seen from the data, the test item did not produce spurious emissions in excess of the -13 dBm limit.

4.4 FIELD STRENGTH OF SPURIOUS EMISSIONS:

4.4.1 REQUIREMENTS: Because emission levels in the open field may be masked by interference from sources other than the test item, preliminary radiated measurements are first performed in the low ambient environment of a shielded enclosure. The radiated emissions from the test item were first measured using peak detection. This data was then automatically plotted

4.4.2 PROCEDURES: All preliminary tests were performed in a 32ft. x 20ft. x 18ft. hybrid ferrite-tile/anechoic absorber lined test chamber. The walls and ceiling of the shielded chamber are lined with ferrite tiles. Anechoic absorber material is installed over the ferrite tile. The floor of the chamber is used as the ground plane. The chamber complies with ANSI C63.4 2001 for site attenuation.

The shielded enclosure prevents emissions from other sources, such as radio and TV stations from interfering with the measurements. All powerlines and signal lines entering the enclosure

pass through filters on the enclosure wall. The powerline filters prevent extraneous signals from entering the enclosure on these leads.

The test was performed using each of the modulation types listed in paragraph 2.2 (AMPS, CDMA, GSM, TDMA).

- (a) The preliminary measurements were performed with the test item operating with an input signal (downlink) at 881.5MHz, with AMPS modulation. The broadband measuring antenna was positioned at a 3 meter distance from the test item. The frequency range from 30MHz to 10GHz was investigated. The readings were taken with a peak detector function and recorded.
- (b) The modulation was changed to CDMA and step (a) was repeated separately with the input signal (downlink) set to 881.5MHz.
- (c) The modulation was changed to GSM and step (a) was repeated separately with the input signal (downlink) set to 881.5MHz.
- (d) The modulation was changed to TDMA and step (a) was repeated separately with the input signal (downlink) set to 881.5MHz.

4.4.3 RESULTS: The preliminary plots are presented on Pages 34 through 37. Factors for the antennas and cables were added to the data before it was plotted. This data is only presented for a reference, and is not used as official data. All significant radiated emissions were subsequently measured at an open field test site.

Final radiated emissions data is presented on Page 38.

5.0 CONCLUSION:

It was found that the 3XA Wireless Inc. model 8811960A, Serial No. 2, Dualband Wireless Amplifier, complies with the RF Power Output, the Occupied Bandwidth, the Spurious Emissions at Antenna Terminal, and the Field Strength of Spurious Emissions requirements of the FCC Part 22 and RSS-132 Issue 2 September 2005.

6.0 CERTIFICATION:

Elite Electronic Engineering Incorporated certifies that the information contained in this report was obtained under conditions which meet or exceed those specified in the test specification.

The data presented in this test report pertains only to the test item at the test date as operated by 3XA Wireless Inc. personnel. Any electrical or mechanical modification made to the test item



subsequent to the specified test date will serve to invalidate the data and void this certification.

7.0 ENDORSEMENT DISCLAIMER:

This report must not be used to claim product endorsement by NVLAP or any agency of the US Government.



TABLE I: TEST EQUIPMENT LIST

Equipment Type: ACCESSORIES, MISCELLANEOUS

XZG2	ATTENUATOR/SWITCH DRIVER	HEWLETT PACKARD	11713A	2223A01751	---	N/A
------	--------------------------	-----------------	--------	------------	-----	-----

Equipment Type: AMPLIFIERS

APK2	PREAMPLIFIER	AGILENT TECHNOL	8449B	3008A01595	1-26.5GHZ	03/13/07 12	03/13/08
------	--------------	-----------------	-------	------------	-----------	-------------	----------

Equipment Type: ANTENNAS

NDQ0	TUNED DIPOLE ANTENNA	EMCO	3121C-DB4	311	400-1000MHZ	03/06/07 12	03/06/08
NTA0	BILOG ANTENNA	CHASE EMC LTD.	BILOG CBL611	2057	0.03-2GHZ	08/21/06 12	08/21/07
NWI0	RIDGED WAVE GUIDE	AEL	H1498	153	2-18GHZ	10/09/06 12	10/09/07
NWI1	RIDGED WAVE GUIDE	AEL	H1498	154	2-18GHZ	10/09/06 12	10/09/07

Equipment Type: ATTENUATORS

T1N1	10DB 20W ATTENUATOR	NARDA	766-10		DC-4GHZ	09/07/06 12	09/07/07
T2C9	20DB, 20W ATTENUATOR	NARDA	768-20	19	DC-11GHZ	01/10/07 12	01/10/08
T2DA	20DB, 25W ATTENUATOR	WEINSCHEL	46-20-34	BH5446	DC-18GHZ	10/04/06 12	10/04/07
T2S3	20DB 25W ATTENUATOR	WEINSCHEL CORP	BV3544	BV3544	DC-18GHZ	12	

Equipment Type: CONTROLLERS

CDS2	COMPUTER	GATEWAY	MFATXPNT NMZ	0028483108	1.8GHZ	N/A
CMA0	MULTI-DEVICE CONTROLLER	EMCO	2090	9701-1213	---	N/A

Equipment Type: METERS

MPC1	DUAL POWER METER	HEWLETT PACKARD	EPM-442A	US37480258	0.1MHZ-50GHZ	02/23/07 12	02/23/08
MPCI	POWER SENSOR	HEWLETT PACKARD	8482A	US3318A27650	0.1-4200MHZ	07/03/06 12	07/03/07

Equipment Type: PRINTERS AND PLOTTERS

HRE1	LASER JET 5P	HEWLETT PACKARD	C3150A	USHB061052	---	N/A
------	--------------	-----------------	--------	------------	-----	-----

Equipment Type: RECEIVERS

RAC0	SPECTRUM ANALYZER	HEWLETT PACKARD	85660B	2449A01117	100HZ-22GHZ	07/18/06 12	07/18/07
RAC1	SPECTRUM ANALYZER	HEWLETT PACKARD	85660B	3407A08369	100HZ-22GHZ	02/21/07 12	02/21/08
RACB	RF PRESELECTOR	HEWLETT PACKARD	85685A	3506A01491	20HZ-2GHZ	02/21/07 12	02/21/08
RACE	RF PRESELECTOR W/ RECEIVER	HEWLETT PACKARD	85685A	3010A01194	20HZ-2GHZ	08/23/06 12	08/23/07
RAF1	QUASISPEAK ADAPTER	HEWLETT PACKARD	85650A	2043A00271	0.01-1000MHZ	02/21/07 12	02/21/08
RAF3	QUASISPEAK ADAPTER	HEWLETT PACKARD	85650A	3303A01775	0.01-1000MHZ	02/21/07 12	02/21/08
RBB0	EMI TEST RECEIVER 20HZ TO	ROHDE & SCHWARZ	ES1B40	100250	20 HZ TO 40GHZ	09/29/06 12	09/29/07

Equipment Type: SIGNAL GENERATORS

GRD0	SIGNAL GENERATOR	HEWLETT PACKARD	E4432B	US38080222	250KHZ-3.0GHZ	08/28/06 12	08/28/07
------	------------------	-----------------	--------	------------	---------------	-------------	----------

Cal. Interval: Listed in Months I/O: Initial only N/A: Not Applicable

Note 1: For the purpose of this test, the equipment was calibrated over the specified frequency range, pulse rate, or modulation prior to the test or monitored by a calibrated instrument.



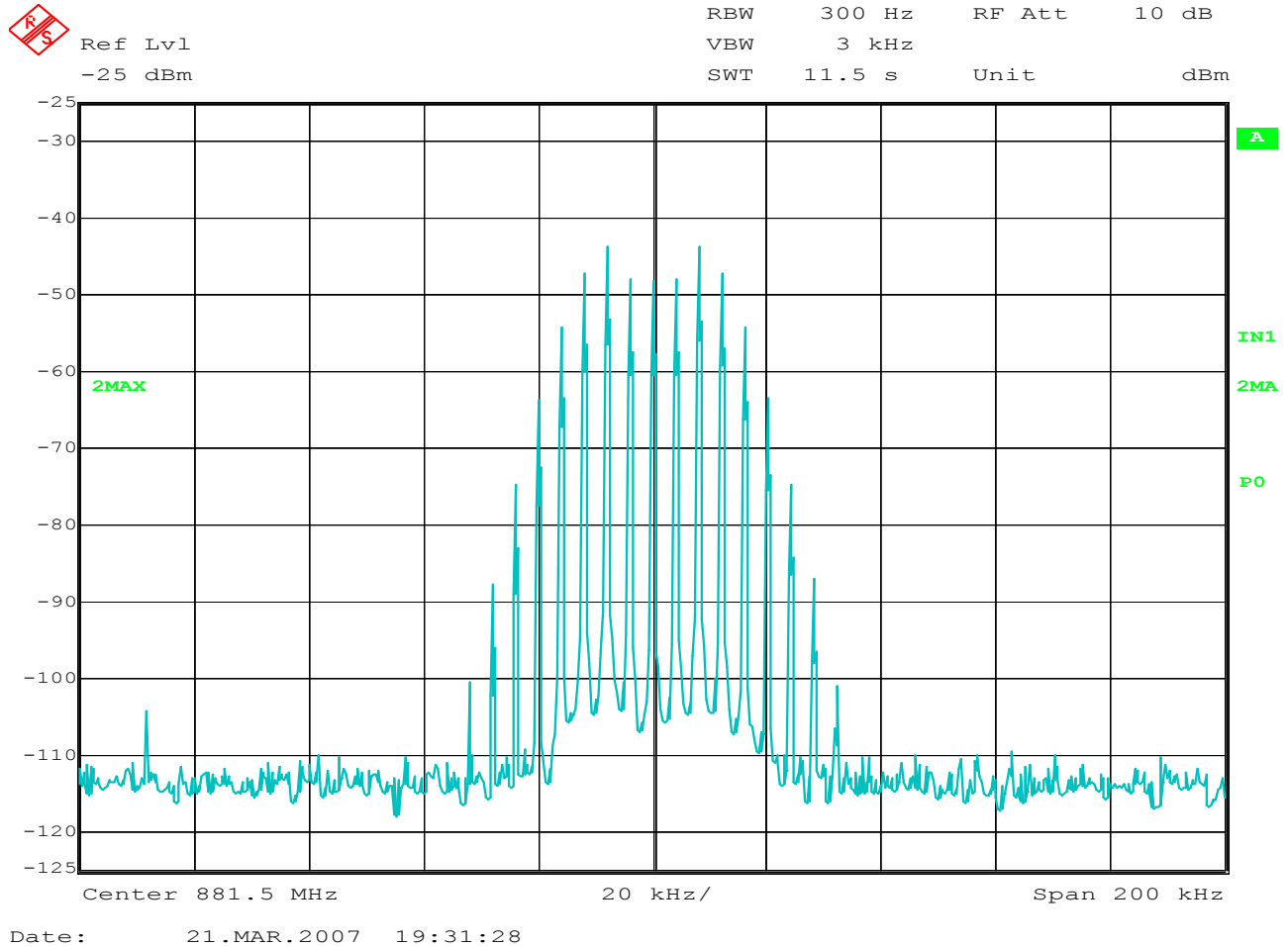
RF Output Power

MANUFACTURER : 3XA Wireless Inc.
TEST ITEM : 8811960A
MODEL NUMBER : 000001
TEST MODE : Tx @ 881.5MHz
DATE : 03/21/2007
NOTES : All modulations

Frequency	Modulation	Rated Power	
		Downlink dBm	Downlink Watts
881.5	AMPS	12	0.016
881.5	CDMA	12	0.016
881.5	GSM	12	0.016
881.5	TDMA	12	0.016

Checked BY RICHARD E. KING :

Richard E. King

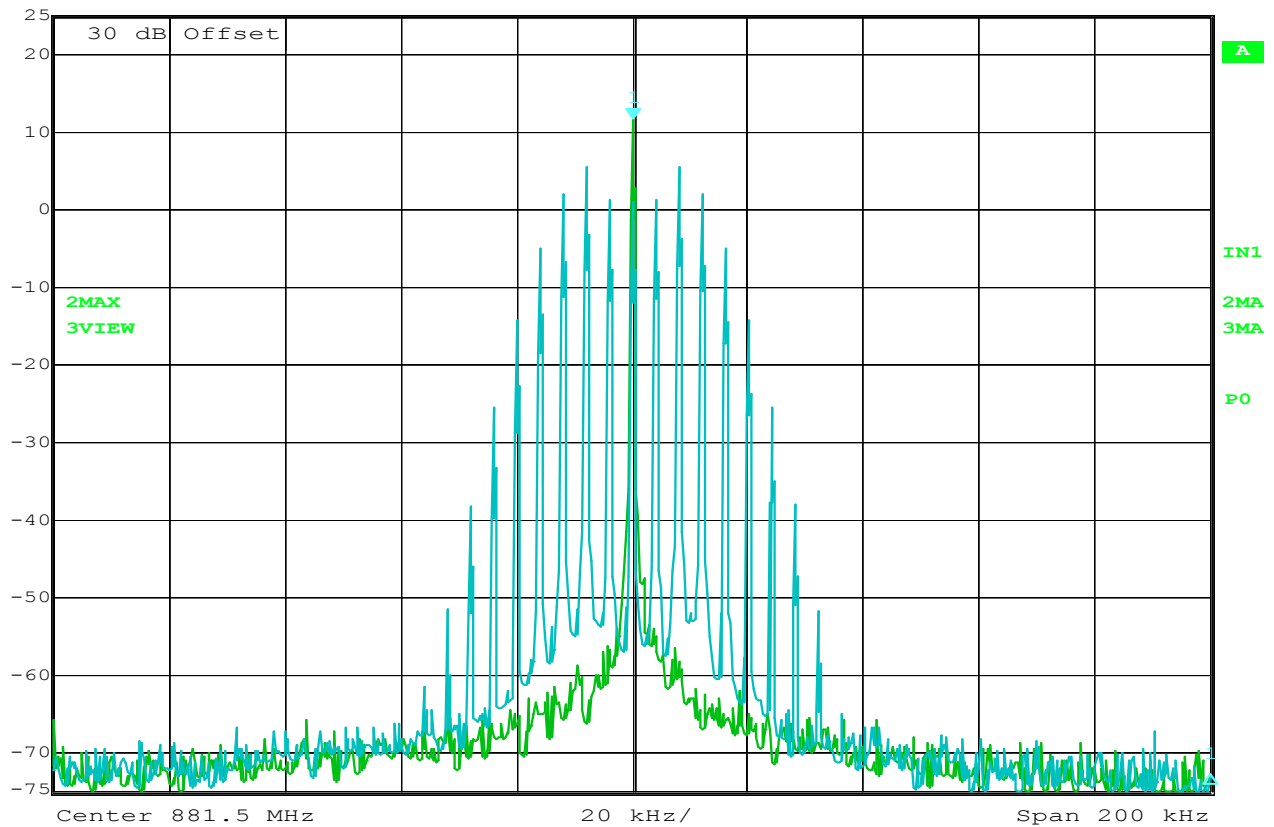


Occupied Bandwidth

MANUFACTURER : 3XA Wireless Inc.
TEST ITEM : 8811960A
MODEL NUMBER : 000001
TEST MODE : Tx @ 881.5MHz
NOTES : AMPS (FM)
NOTES : AMPS (FM) Input



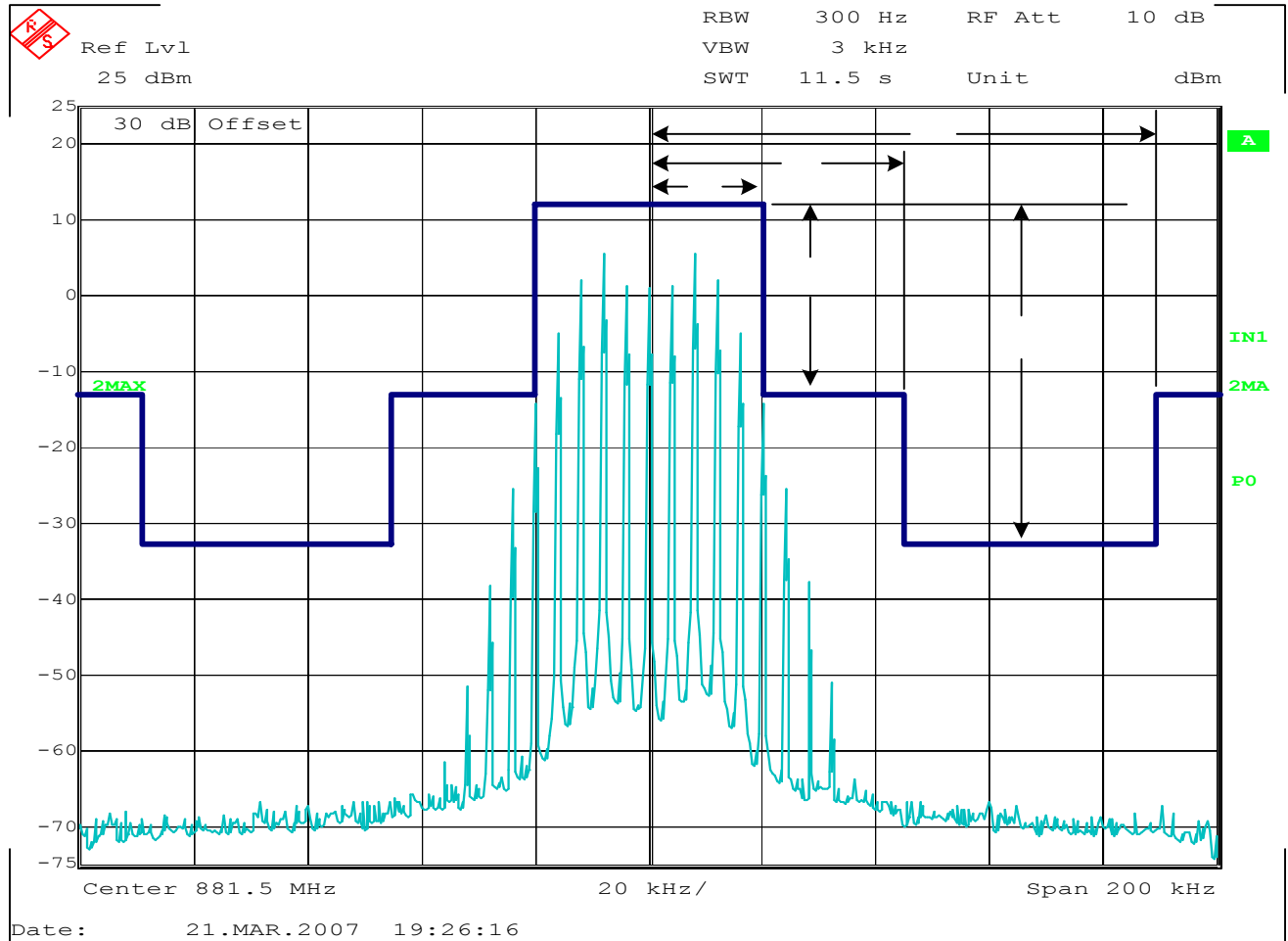
Marker 1 [T3] RBW 300 Hz RF Att 10 dB
11.63 dBm VBW 3 kHz
25 dBm 881.50020040 MHz SWT 11.5 s Unit dBm



Date: 21.MAR.2007 19:24:53

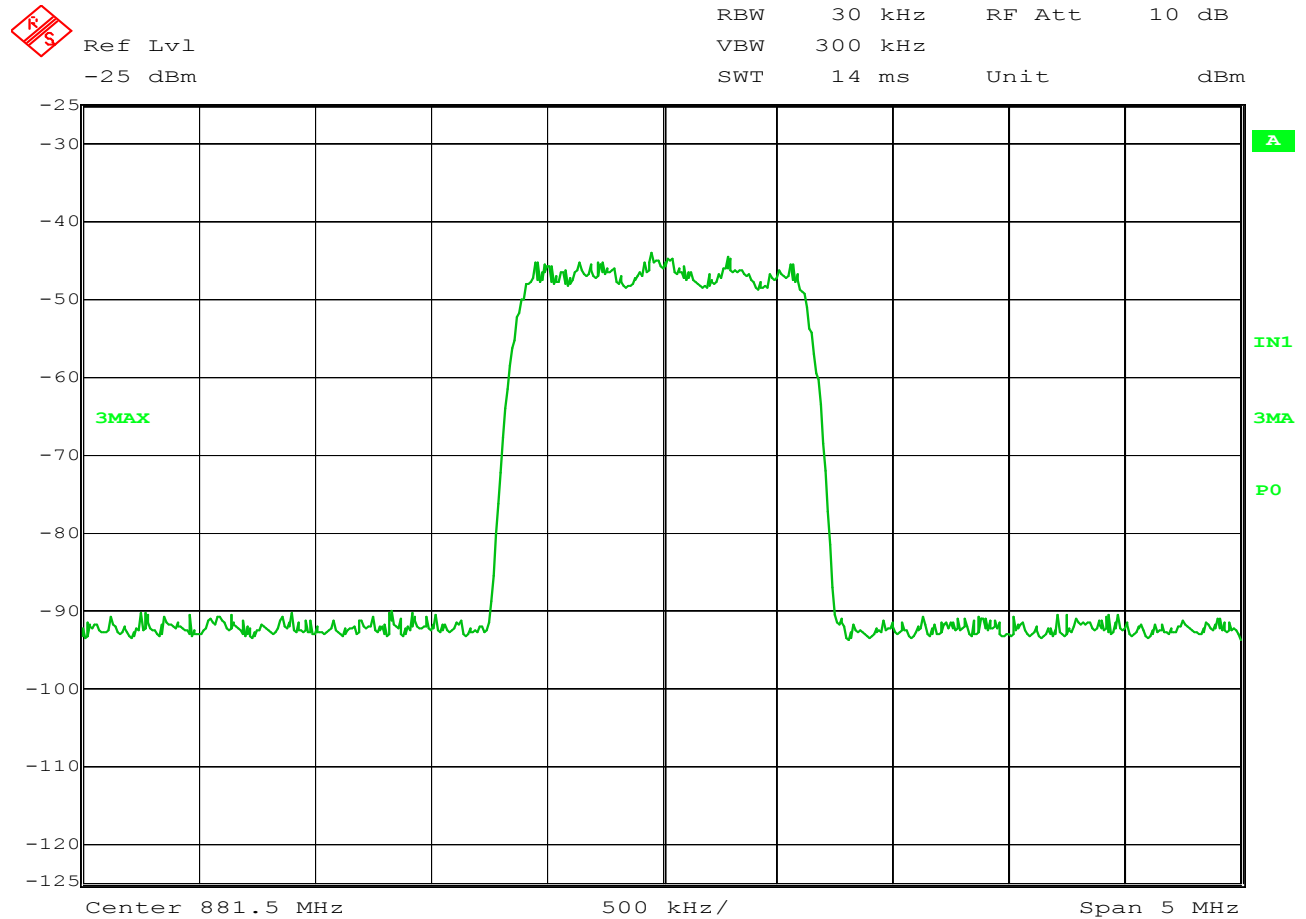
Occupied Bandwidth

MANUFACTURER : 3XA Wireless Inc.
TEST ITEM : 8811960A
MODEL NUMBER : 000001
TEST MODE : Tx @ 881.5MHz
NOTES : AMPS (FM)
NOTES : CW vs AMPS (FM)



Occupied Bandwidth

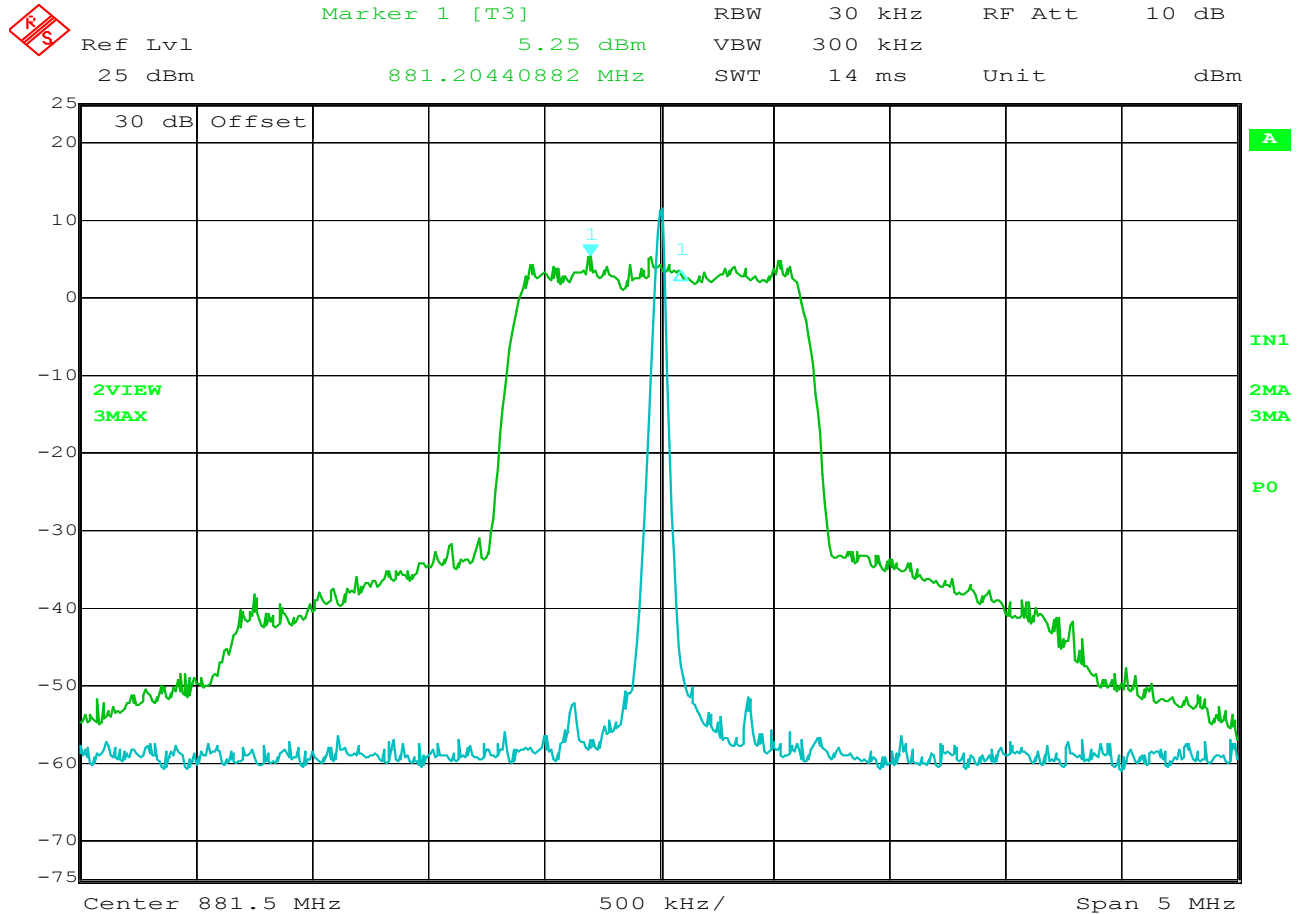
MANUFACTURER : 3XA Wireless Inc.
 TEST ITEM : 8811960A
 MODEL NUMBER : 000001
 TEST MODE : Tx @ 881.5MHz
 NOTES : AMPS (FM)
 NOTES : AMPS (FM) Output



Date: 21.MAR.2007 19:33:15

Occupied Bandwidth

MANUFACTURER : 3XA Wireless Inc.
TEST ITEM : 8811960A
MODEL NUMBER : 000001
TEST MODE : Tx @ 881.5MHz
NOTES : CDMA
NOTES : CDMA Input



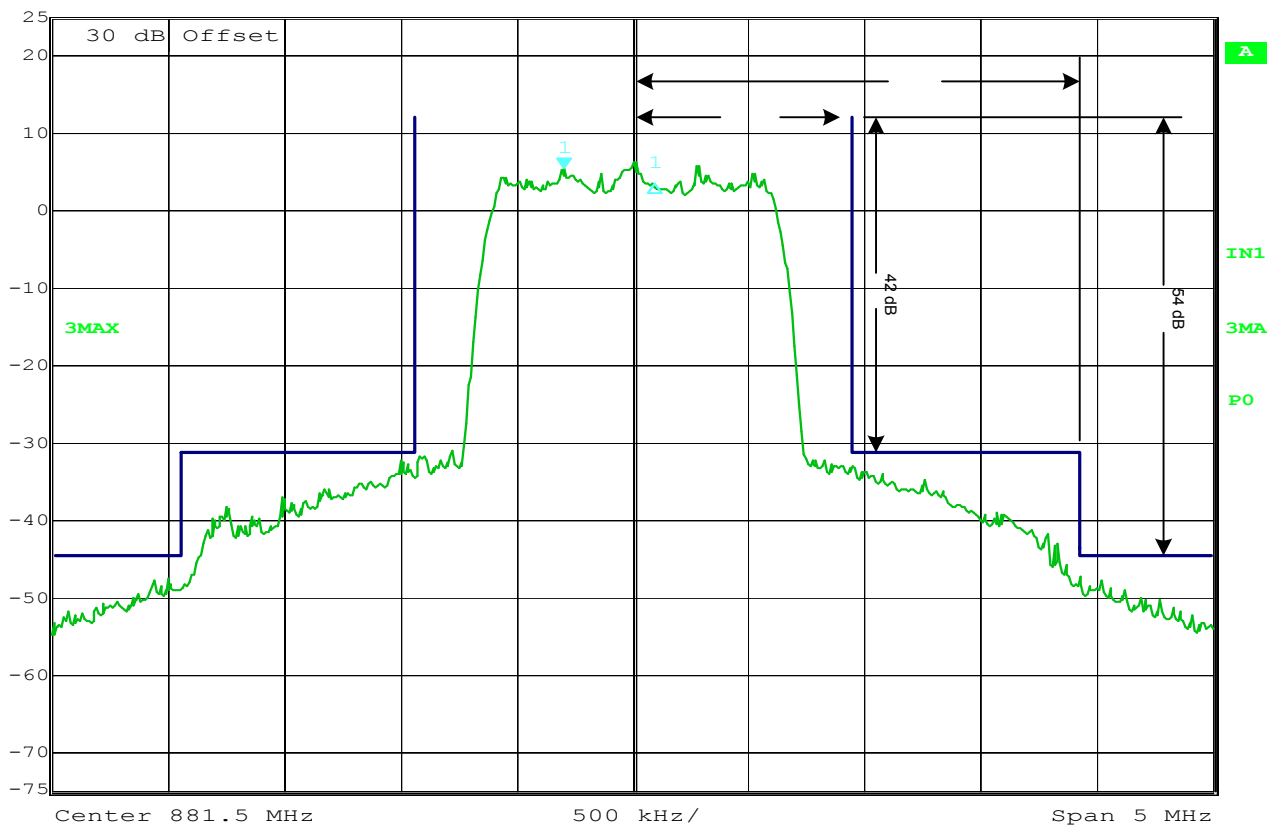
Date: 21.MAR.2007 19:21:07

Occupied Bandwidth

MANUFACTURER : 3XA Wireless Inc.
 TEST ITEM : 8811960A
 MODEL NUMBER : 000001
 TEST MODE : Tx @ 881.5MHz
 NOTES : CDMA
 NOTES : CW vs CDMA
 NOTES : 30 dB external attenuation



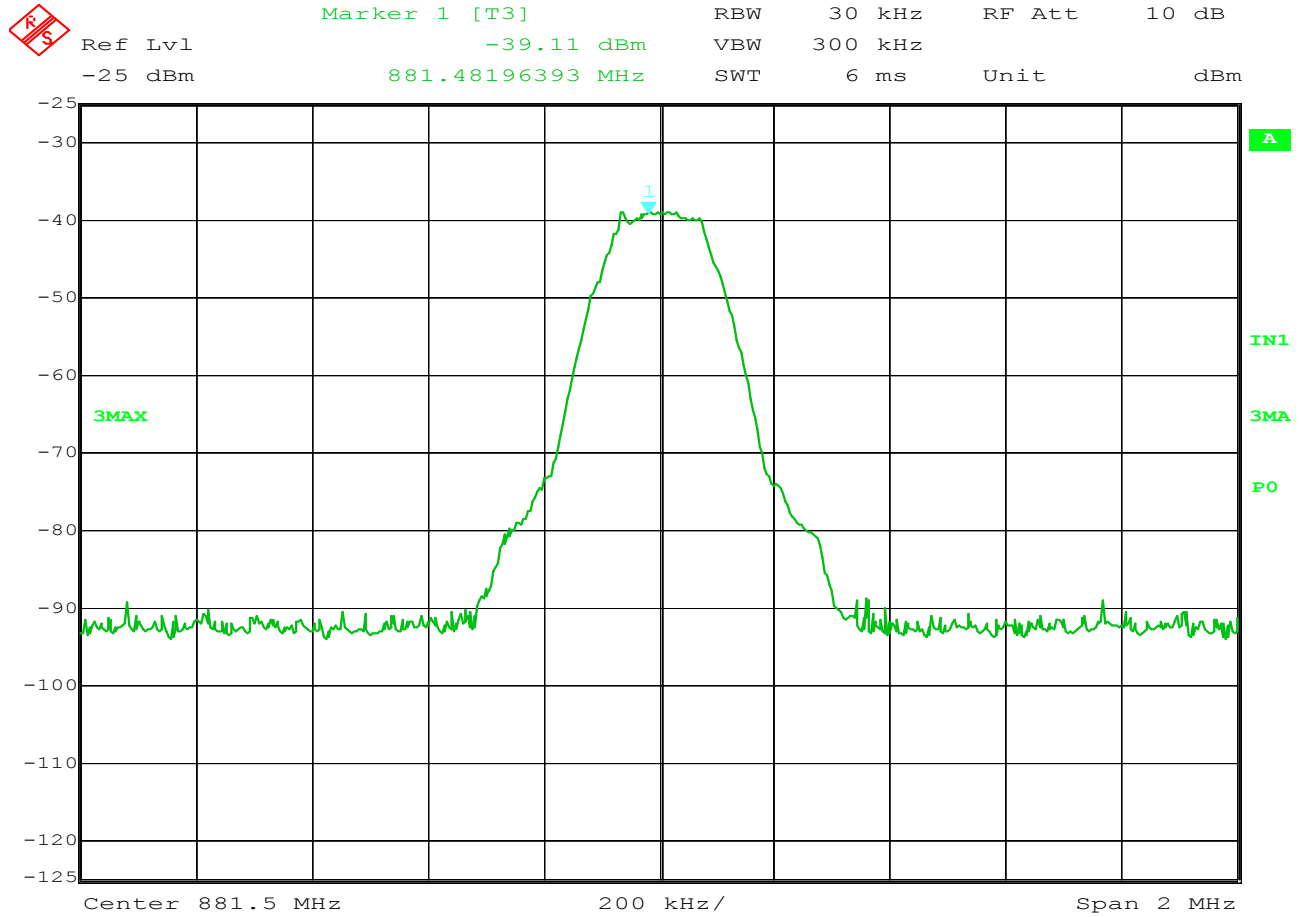
Marker 1 [T3] RBW 30 kHz RF Att 10 dB
5.25 dBm VBW 300 kHz
881.20440882 MHz SWT 14 ms Unit dBm



Date: 21.MAR.2007 19:22:40

Occupied Bandwidth

MANUFACTURER : 3XA Wireless Inc.
TEST ITEM : 8811960A
MODEL NUMBER : 000001
TEST MODE : Tx @ 881.5MHz
NOTES : CDMA
NOTES : CDMA Output
NOTES : 30 dB external attenuation



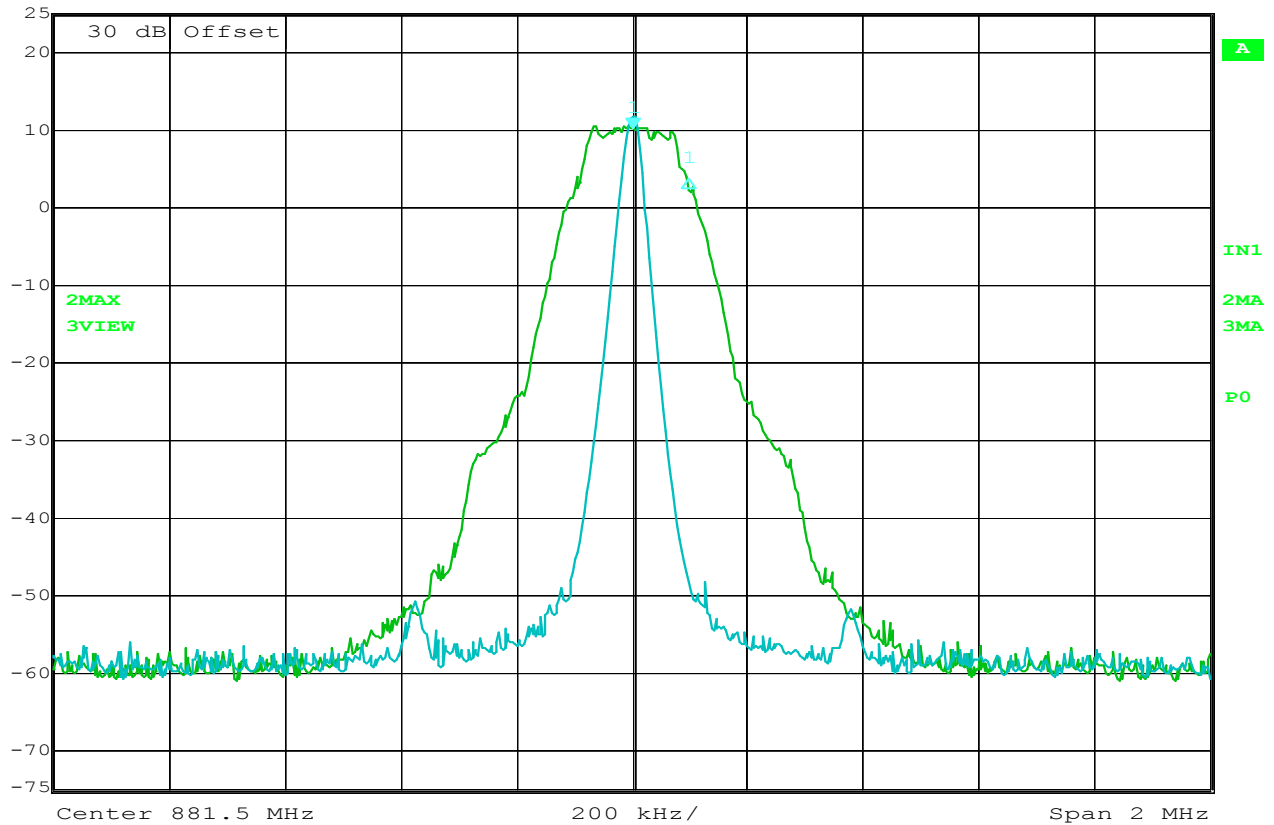
Date: 21.MAR.2007 19:35:56

Occupied Bandwidth

MANUFACTURER : 3XA Wireless Inc.
 TEST ITEM : 8811960A
 MODEL NUMBER : 000001
 TEST MODE : Tx @ 881.5MHz
 NOTES : GSM
 NOTES : GSM Input



Ref Lvl 25 dBm
Marker 1 [T3] 10.23 dBm
881.50200401 MHz
RBW 30 kHz
VBW 300 kHz
RF Att 10 dB
SWT 6 ms
Unit dBm



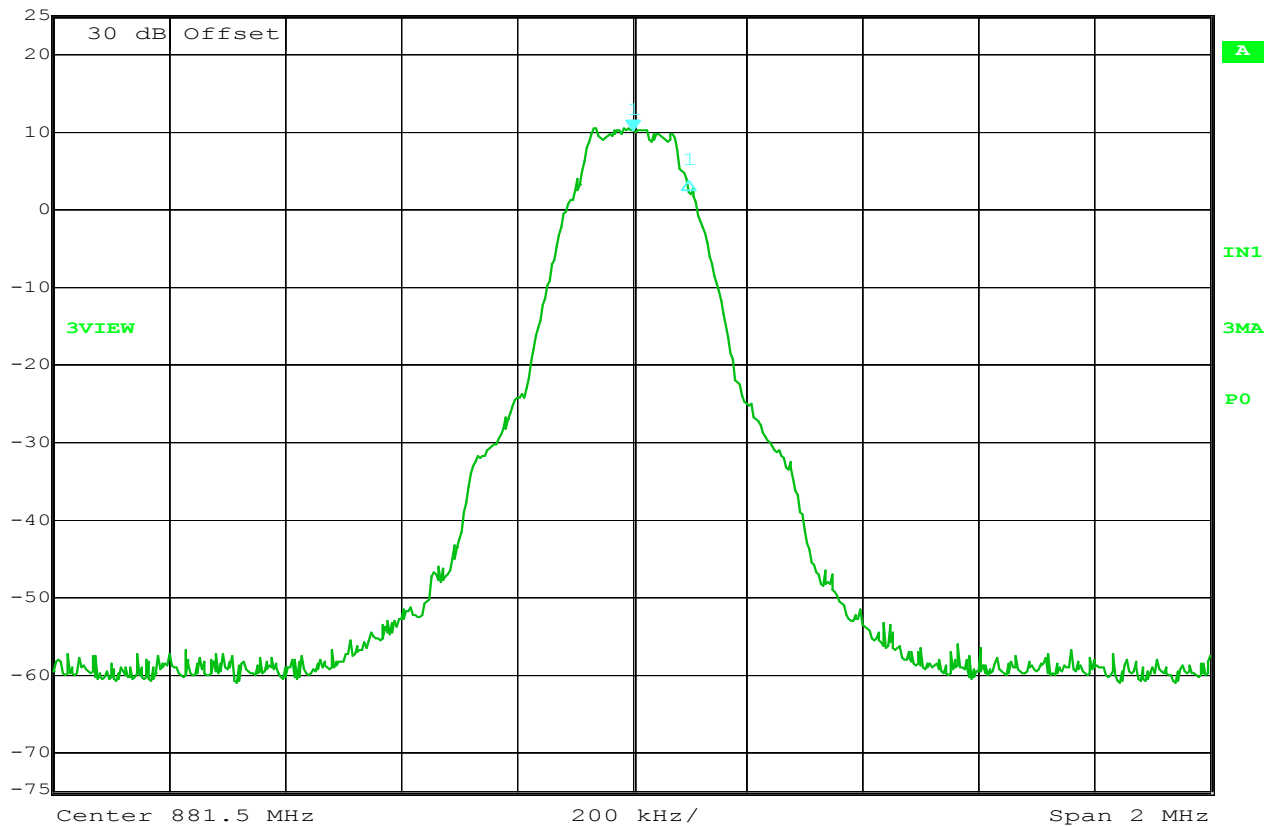
Date: 21.MAR.2007 19:12:57

Occupied Bandwidth

MANUFACTURER : 3XA Wireless Inc.
TEST ITEM : 8811960A
MODEL NUMBER : 000001
TEST MODE : Tx @ 881.5MHz
NOTES : GSM
NOTES : CW vs GSM



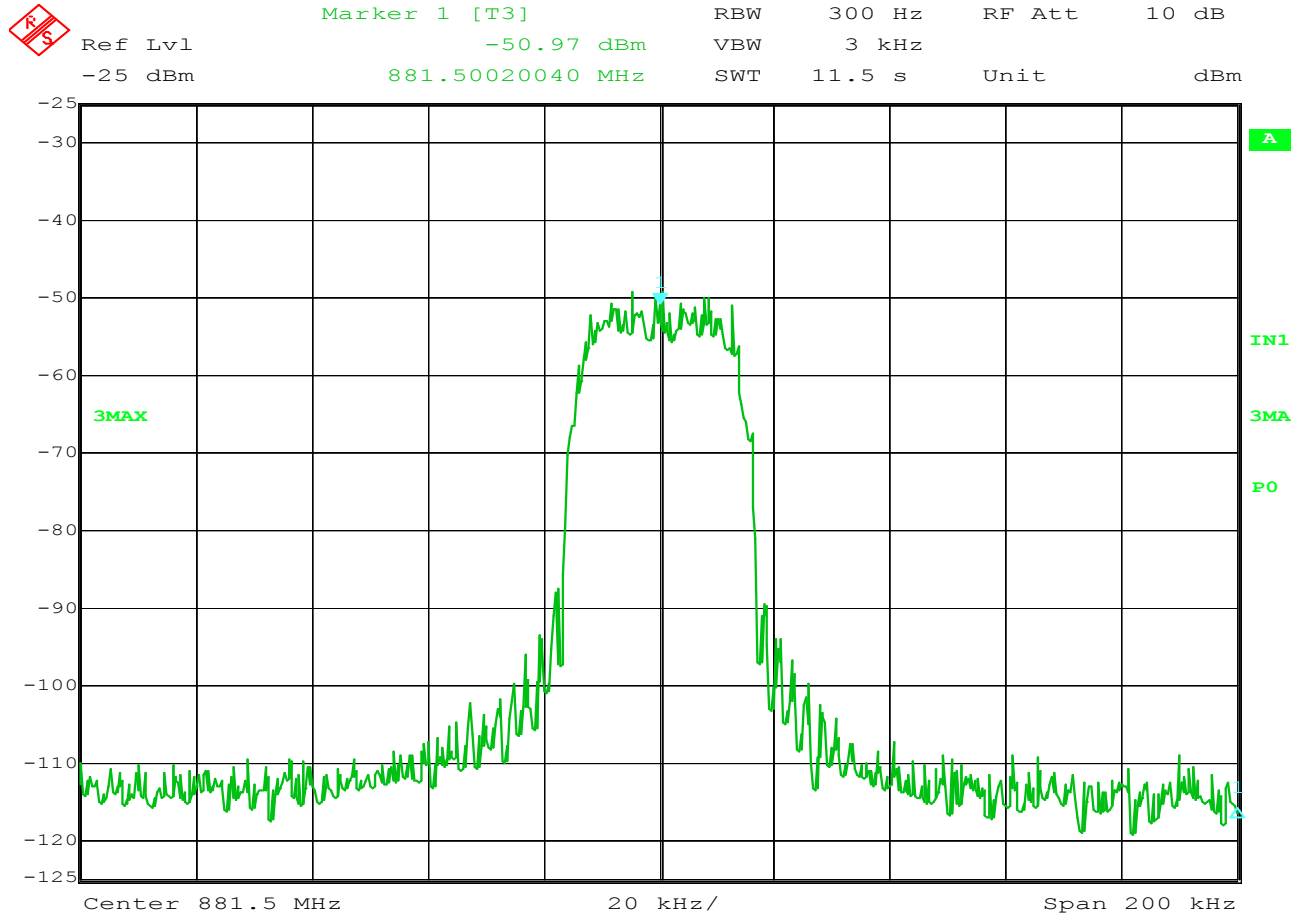
Ref Lvl 25 dBm
Marker 1 [T3] 10.23 dBm
881.50200401 MHz
RBW 30 kHz
VBW 300 kHz
RF Att 10 dB
SWT 6 ms
Unit dBm



Date: 21.MAR.2007 19:14:08

Occupied Bandwidth

MANUFACTURER : 3XA Wireless Inc.
TEST ITEM : 8811960A
MODEL NUMBER : 000001
TEST MODE : Tx @ 881.5MHz
NOTES : GSM
NOTES : GSM Output



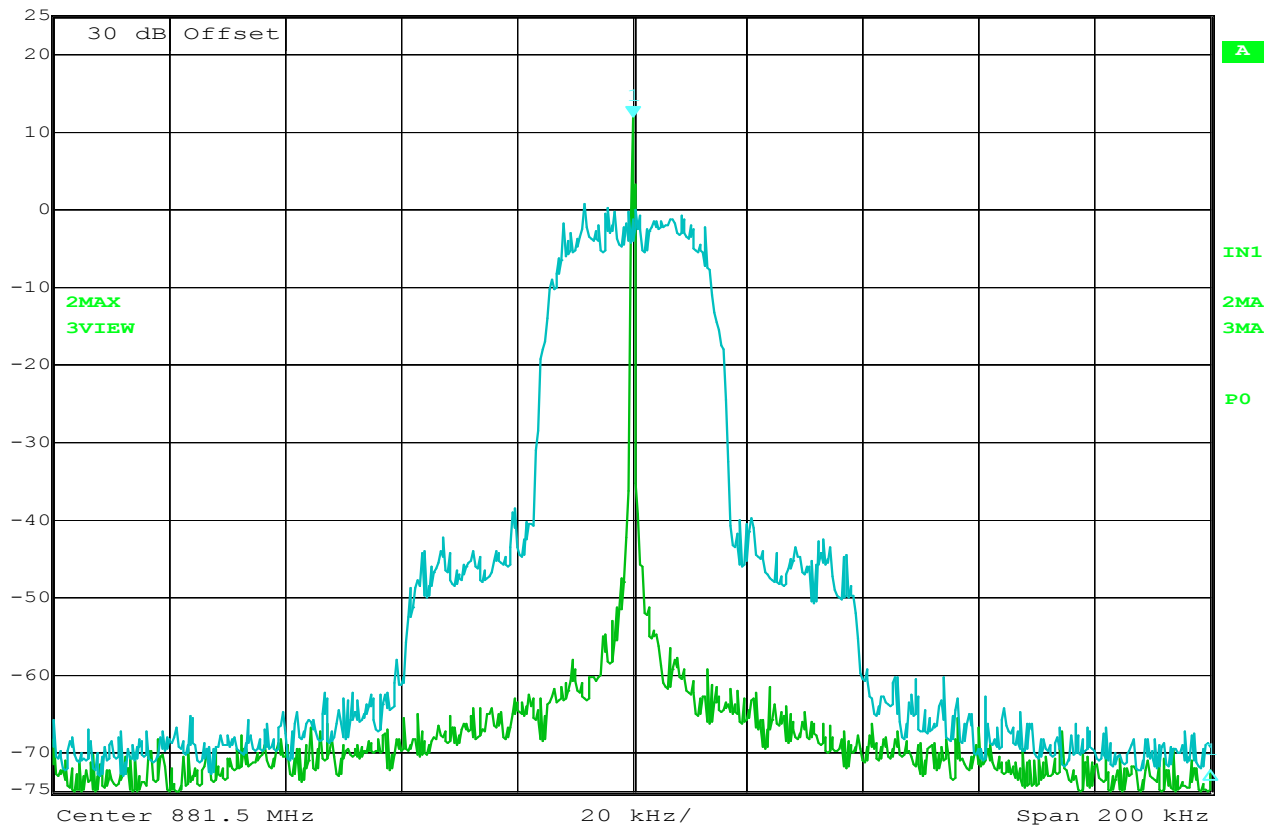
Date: 21.MAR.2007 19:09:02

Occupied Bandwidth

MANUFACTURER : 3XA Wireless Inc.
TEST ITEM : 8811960A
MODEL NUMBER : 000001
TEST MODE : Tx @ 881.5MHz
NOTES : TDMA
NOTES : Input



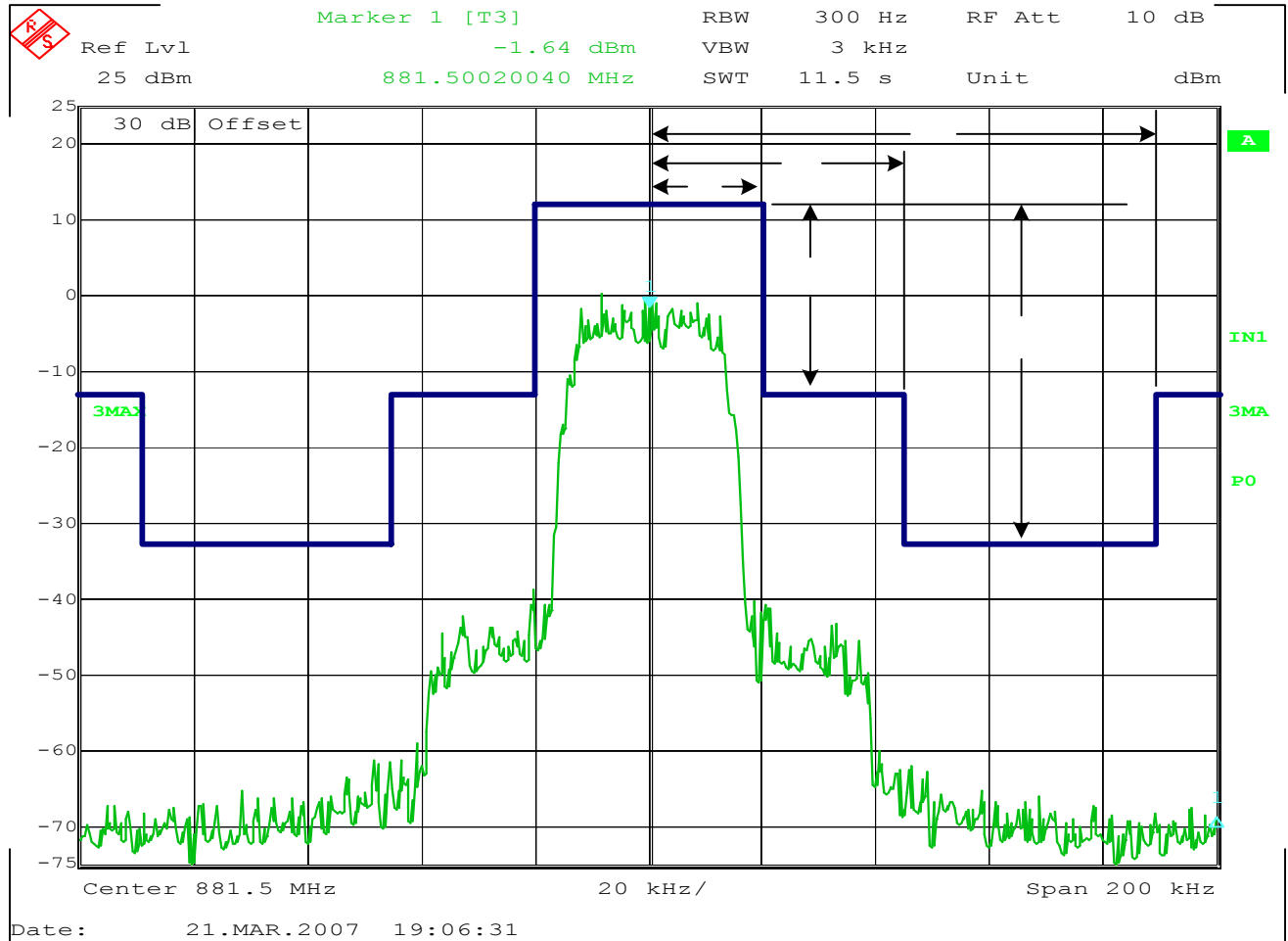
Ref Lvl 25 dBm
Marker 1 [T3] 11.84 dBm
881.50020040 MHz
RBW 300 Hz
VBW 3 kHz
SWT 11.5 s
RF Att 10 dB
Unit dBm



Date: 21.MAR.2007 19:02:25

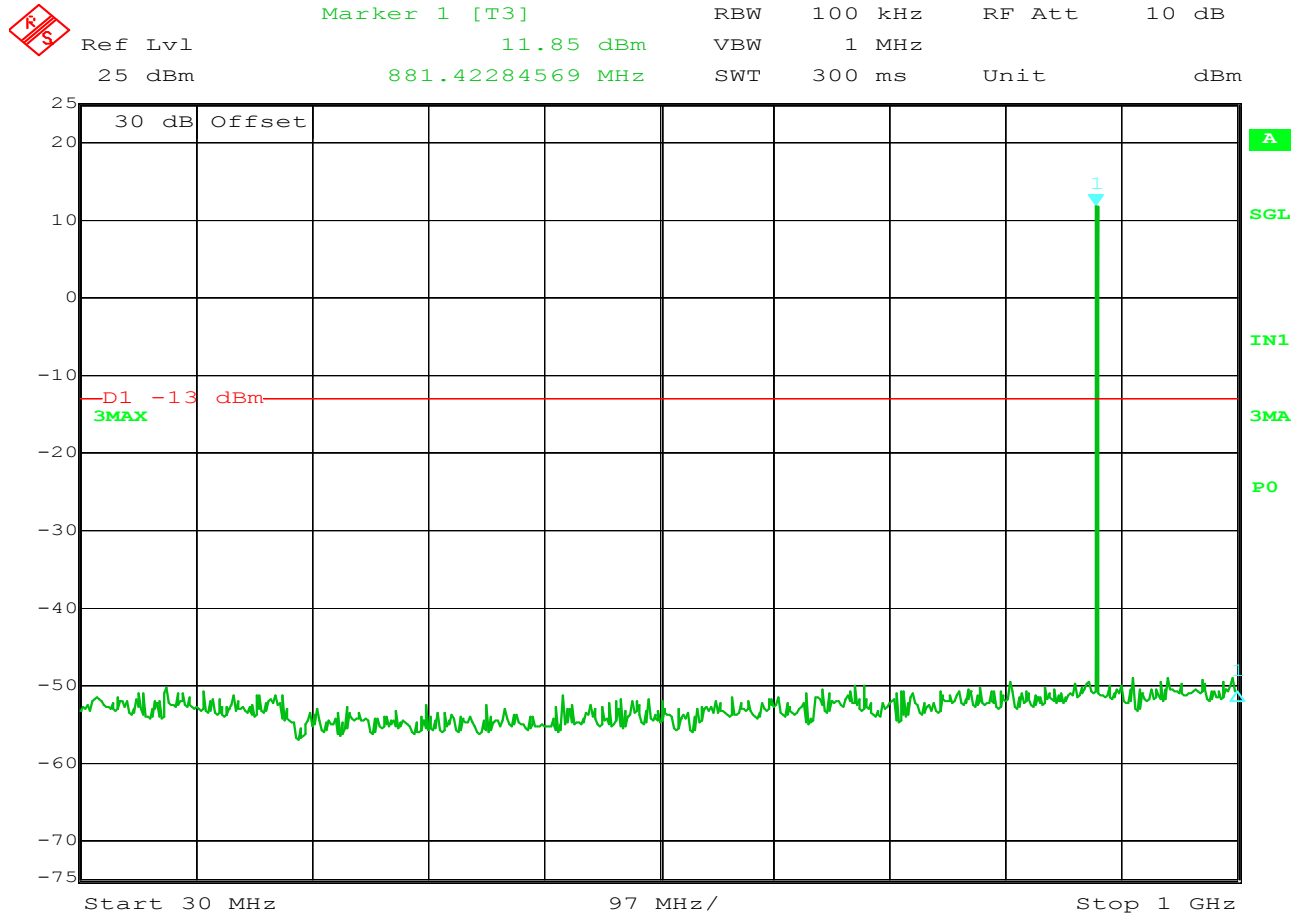
Occupied Bandwidth

MANUFACTURER : 3XA Wireless Inc.
TEST ITEM : 8811960A
MODEL NUMBER : 000001
TEST MODE : Tx @ 881.5MHz
NOTES : TDMA
NOTES : CW vs TDMA



Occupied Bandwidth

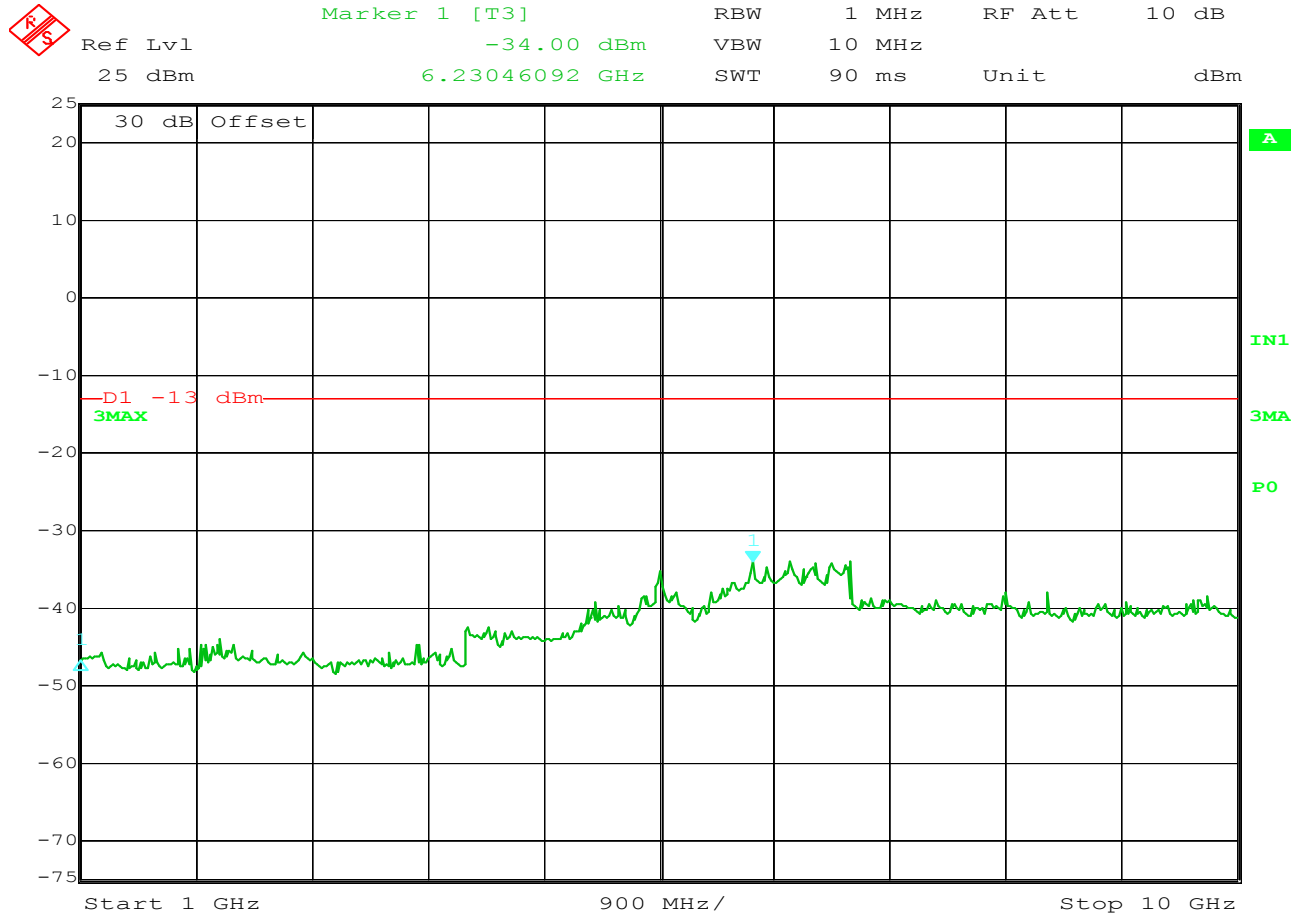
MANUFACTURER : 3XA Wireless Inc.
 TEST ITEM : 8811960A
 MODEL NUMBER : 000001
 TEST MODE : Tx @ 881.5MHz
 NOTES : TDMA
 NOTES : Output



Date: 21.MAR.2007 15:49:03

Antenna Conducted Emissions

MANUFACTURER : 3XA Wireless Inc.
TEST ITEM : Dualband Wireless Amp
MODEL NUMBER : 8811960A
TEST MODE : Transmit @ 881.5 MHz
NOTES : AMPS (FM) modulation
NOTES :



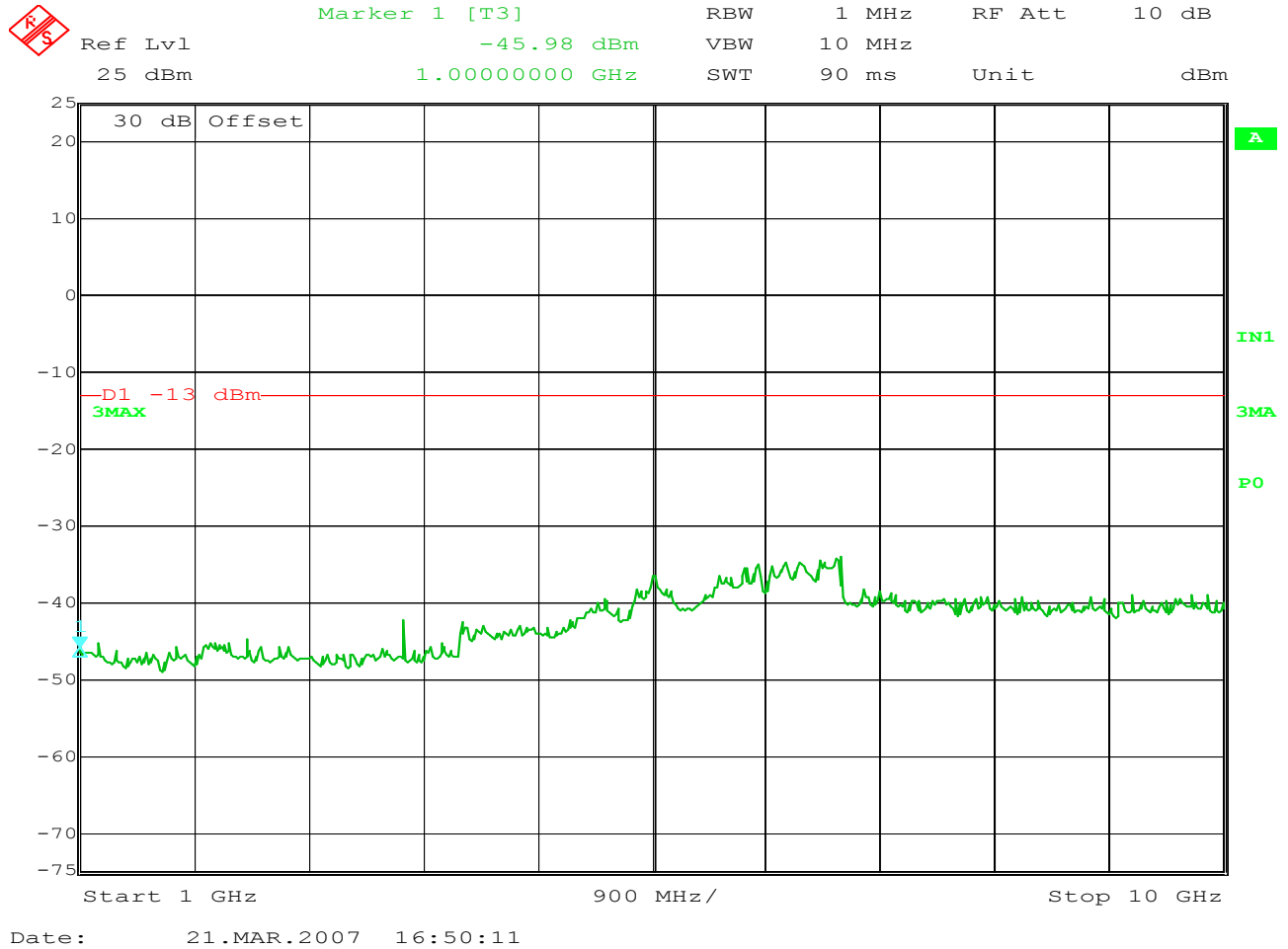
Date: 21.MAR.2007 16:31:35

Antenna Conducted Emissions

MANUFACTURER : 3XA Wireless Inc.
TEST ITEM : Dualband Wireless Amp
MODEL NUMBER : 8811960A
TEST MODE : Transmit @ 881.5 MHz
NOTES : AMPS (FM) modulation
NOTES :

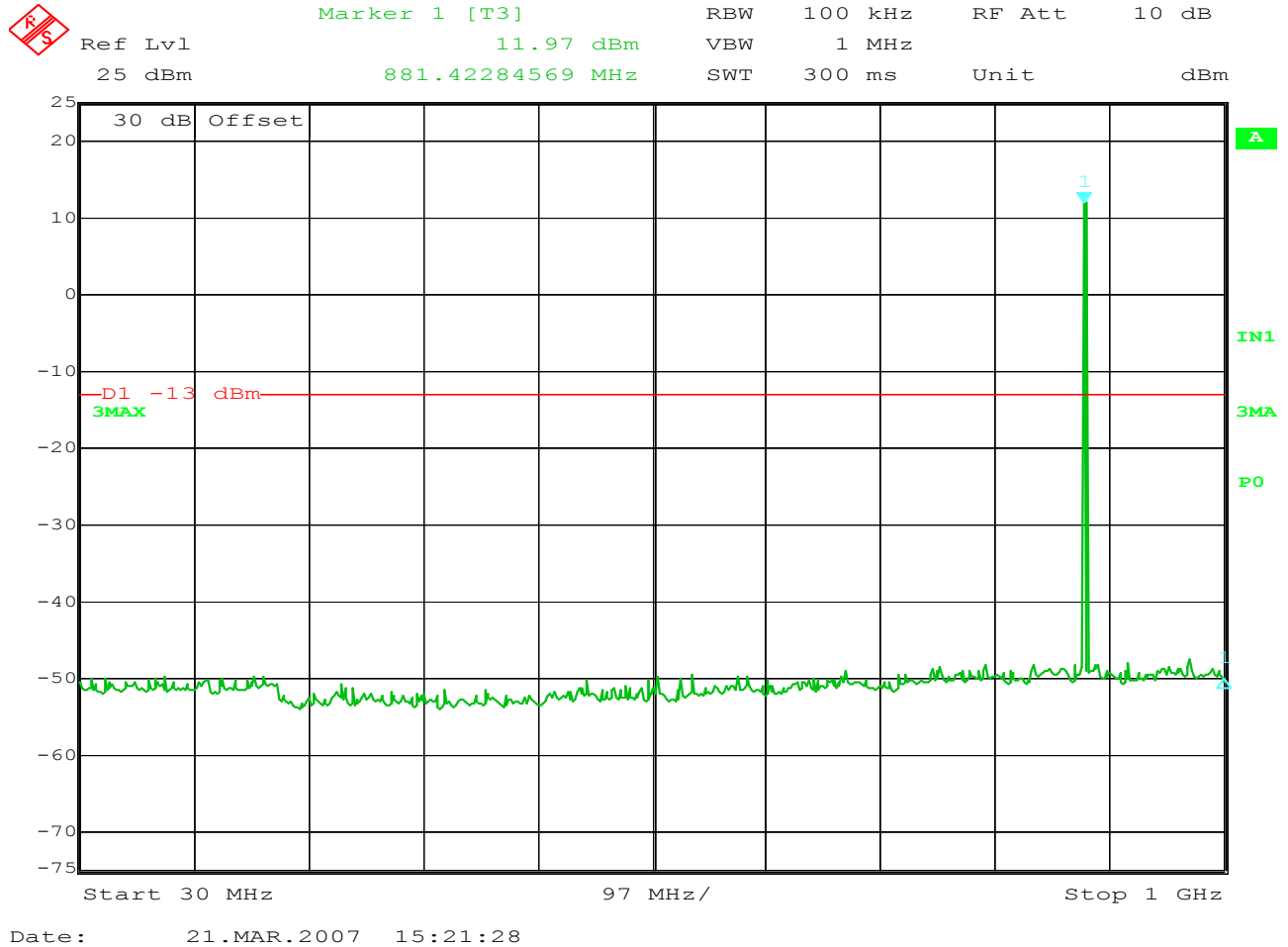


MANUFACTURER	: 3XA Wireless Inc.
TEST ITEM	: Dualband Wireless Amp
MODEL NUMBER	: 8811960A
TEST MODE	: Transmit @ 881.5 MHz
NOTES	: CDMA modulation
NOTES	:



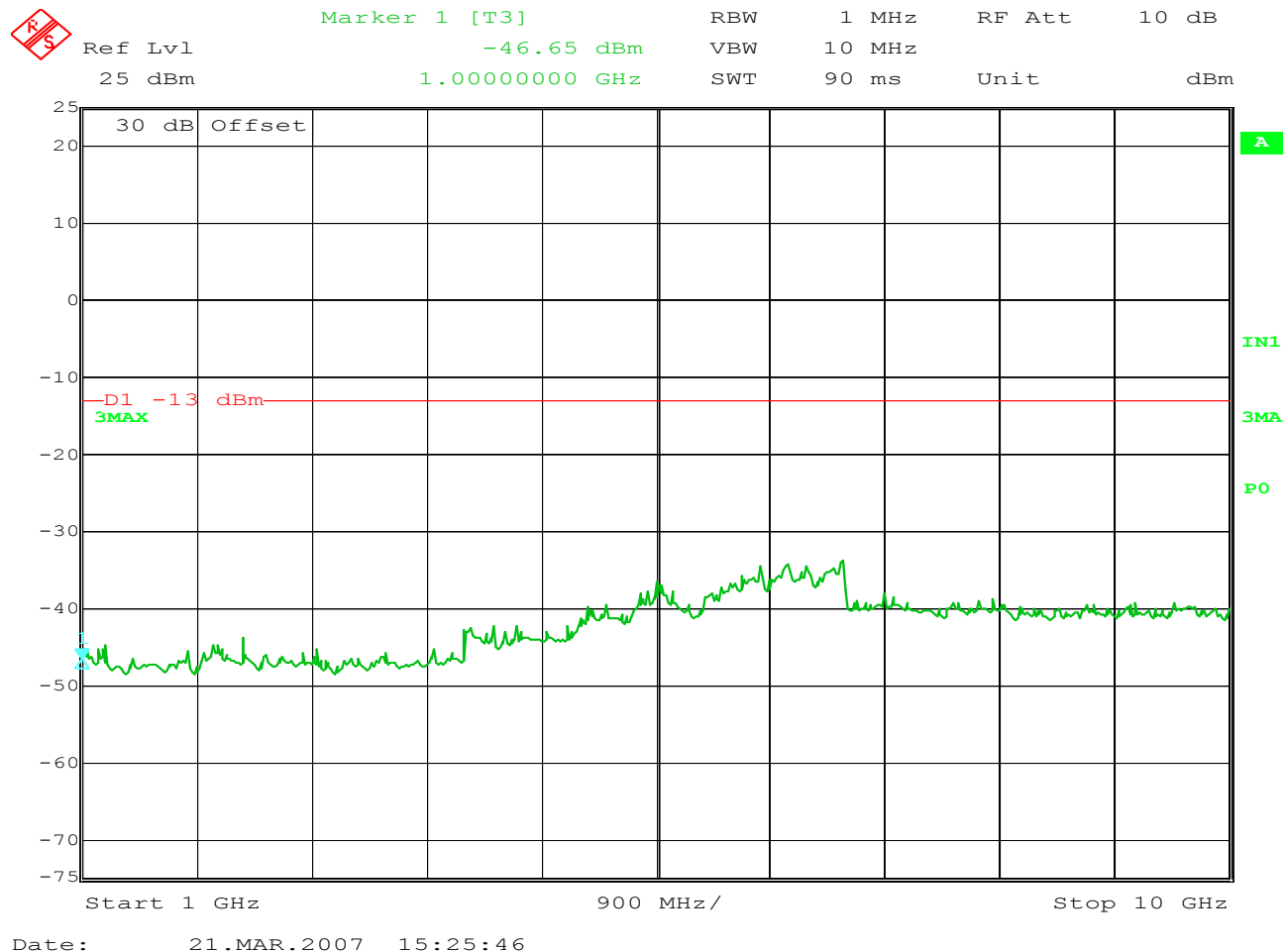
Antenna Conducted Emissions

MANUFACTURER : 3XA Wireless Inc.
TEST ITEM : Dualband Wireless Amp
MODEL NUMBER : 8811960A
TEST MODE : Transmit @ 881.5 MHz
NOTES : CDMA modulation
NOTES :



Antenna Conducted Emissions

MANUFACTURER : 3XA Wireless Inc.
TEST ITEM : Dualband Wireless Amp
MODEL NUMBER : 8811960A
TEST MODE : Transmit @ 881.5 MHz
NOTES : GSM modulation
NOTES :



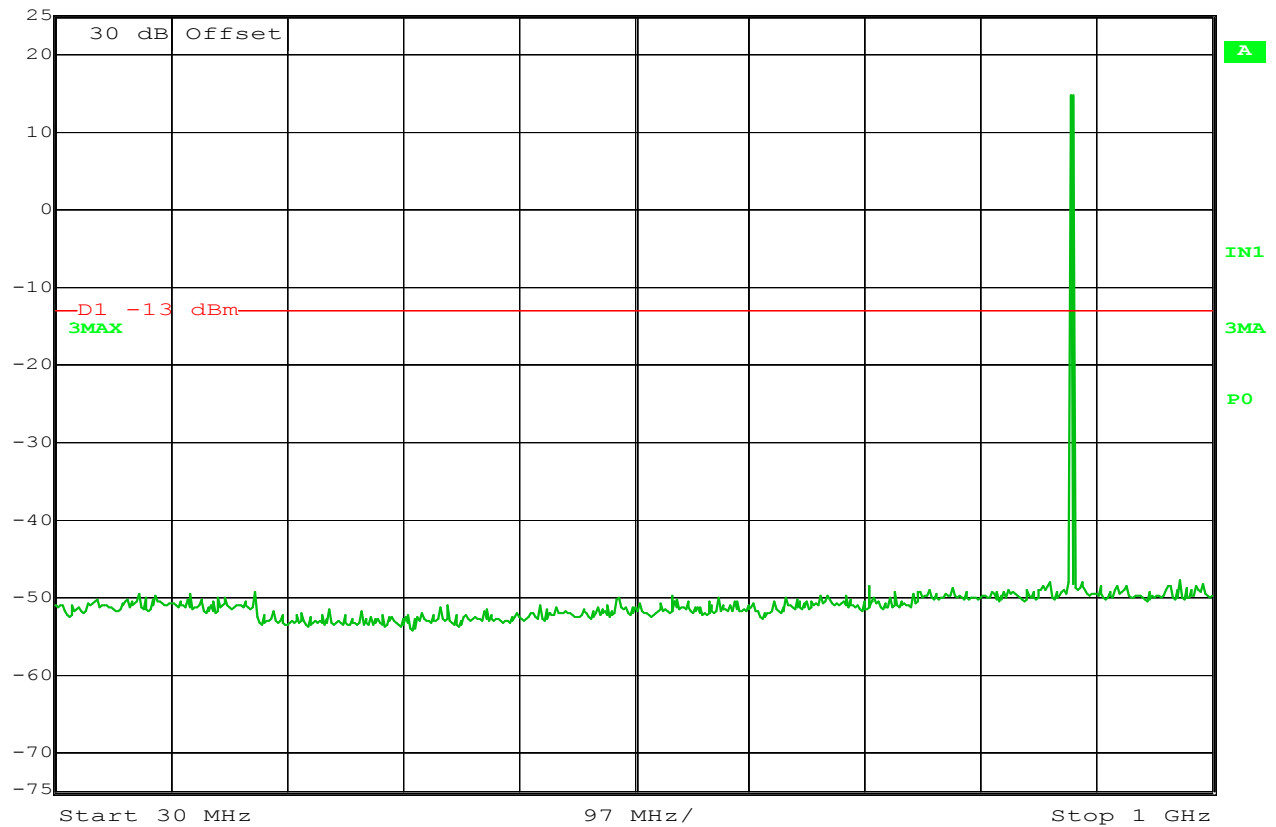
Antenna Conducted Emissions

MANUFACTURER : 3XA Wireless Inc.
TEST ITEM : Dualband Wireless Amp
MODEL NUMBER : 8811960A
TEST MODE : Transmit @ 881.5 MHz
NOTES : GSM modulation
NOTES :



Ref Lvl
25 dBm

RBW 100 kHz RF Att 10 dB
VBW 1 MHz
SWT 300 ms Unit dBm



Date: 21.MAR.2007 17:09:48

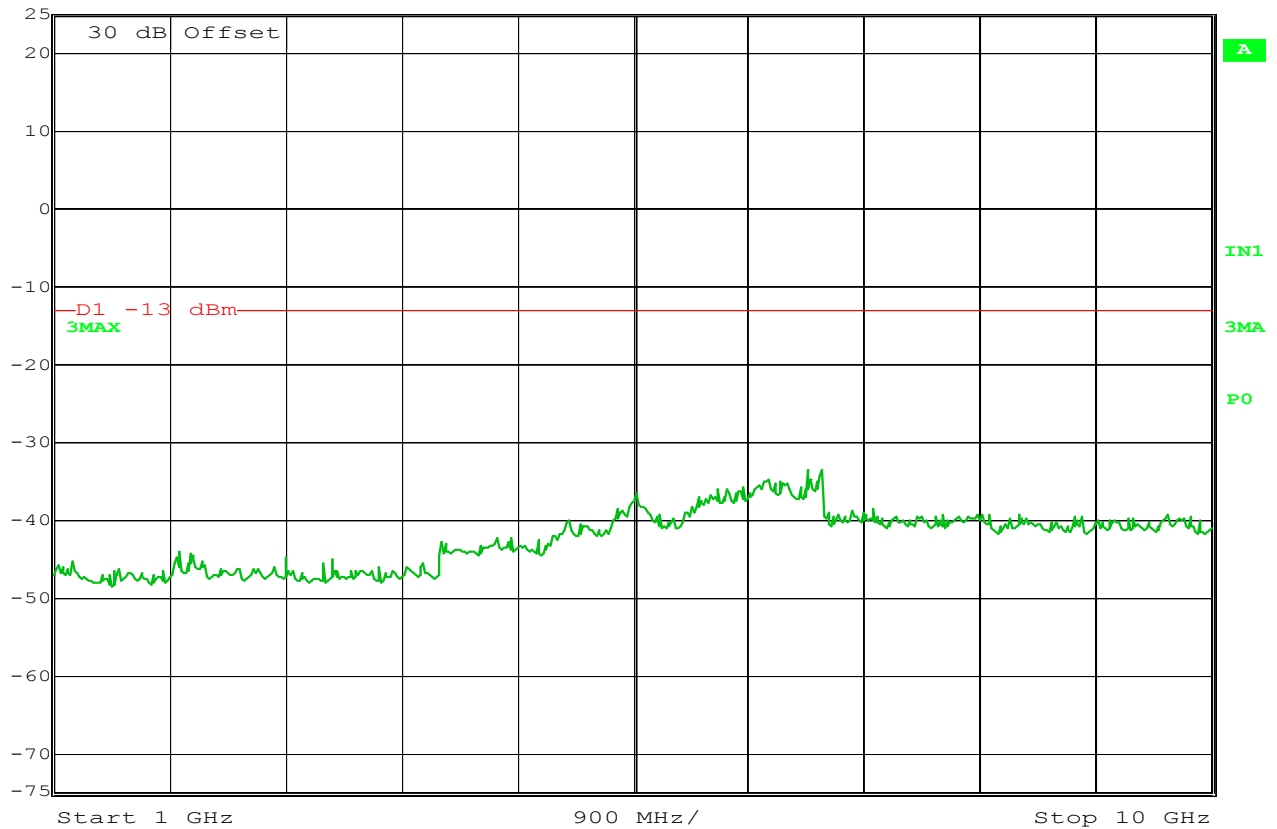
Antenna Conducted Emissions

MANUFACTURER : 3XA Wireless Inc.
TEST ITEM : Dualband Wireless Amp
MODEL NUMBER : 8811960A
TEST MODE : Transmit @ 881.5 MHz
NOTES : TDMA modulation
NOTES :



Ref Lvl
25 dBm

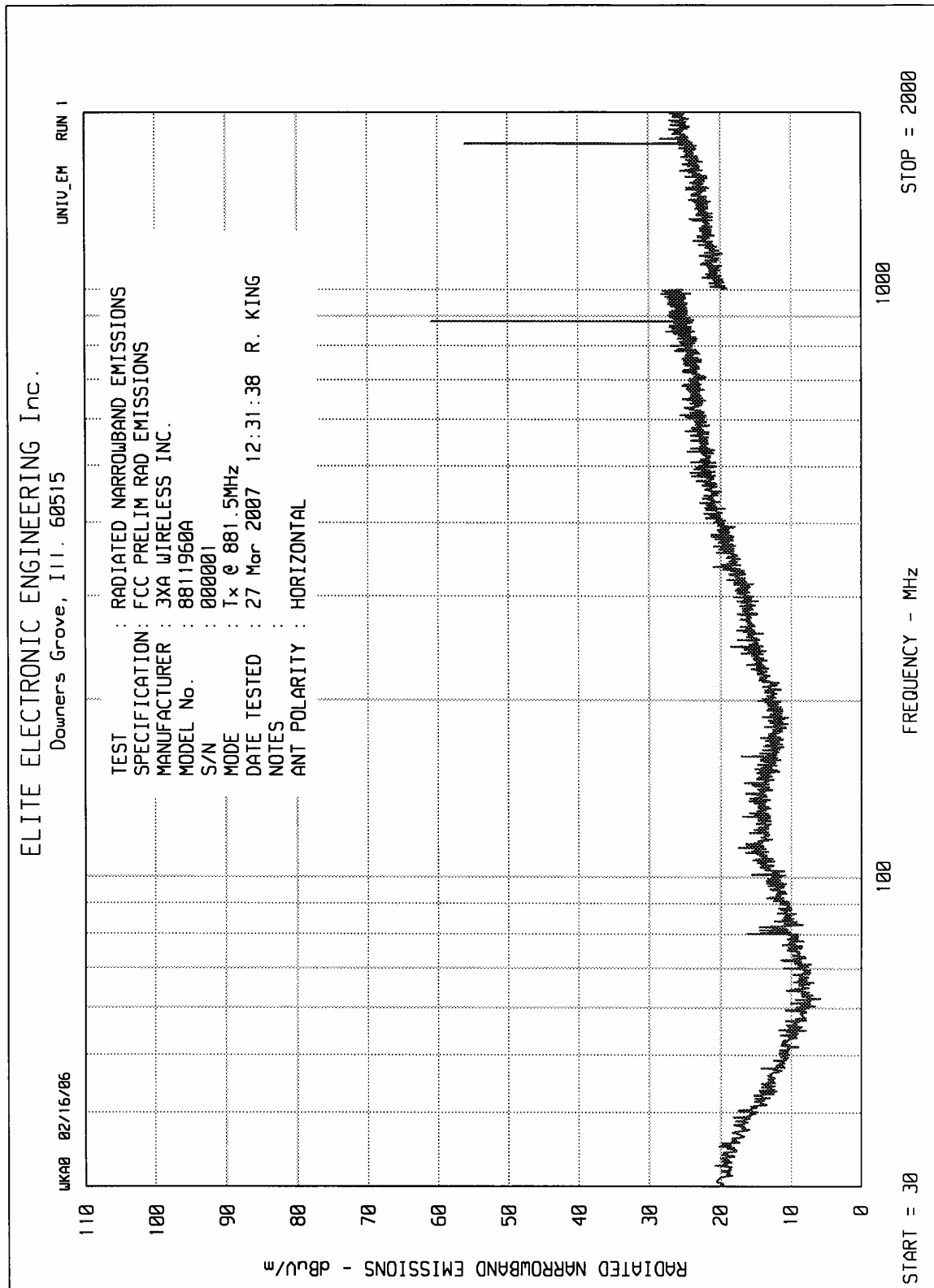
RBW 1 MHz RF Att 10 dB
VBW 10 MHz
SWT 90 ms Unit dBm

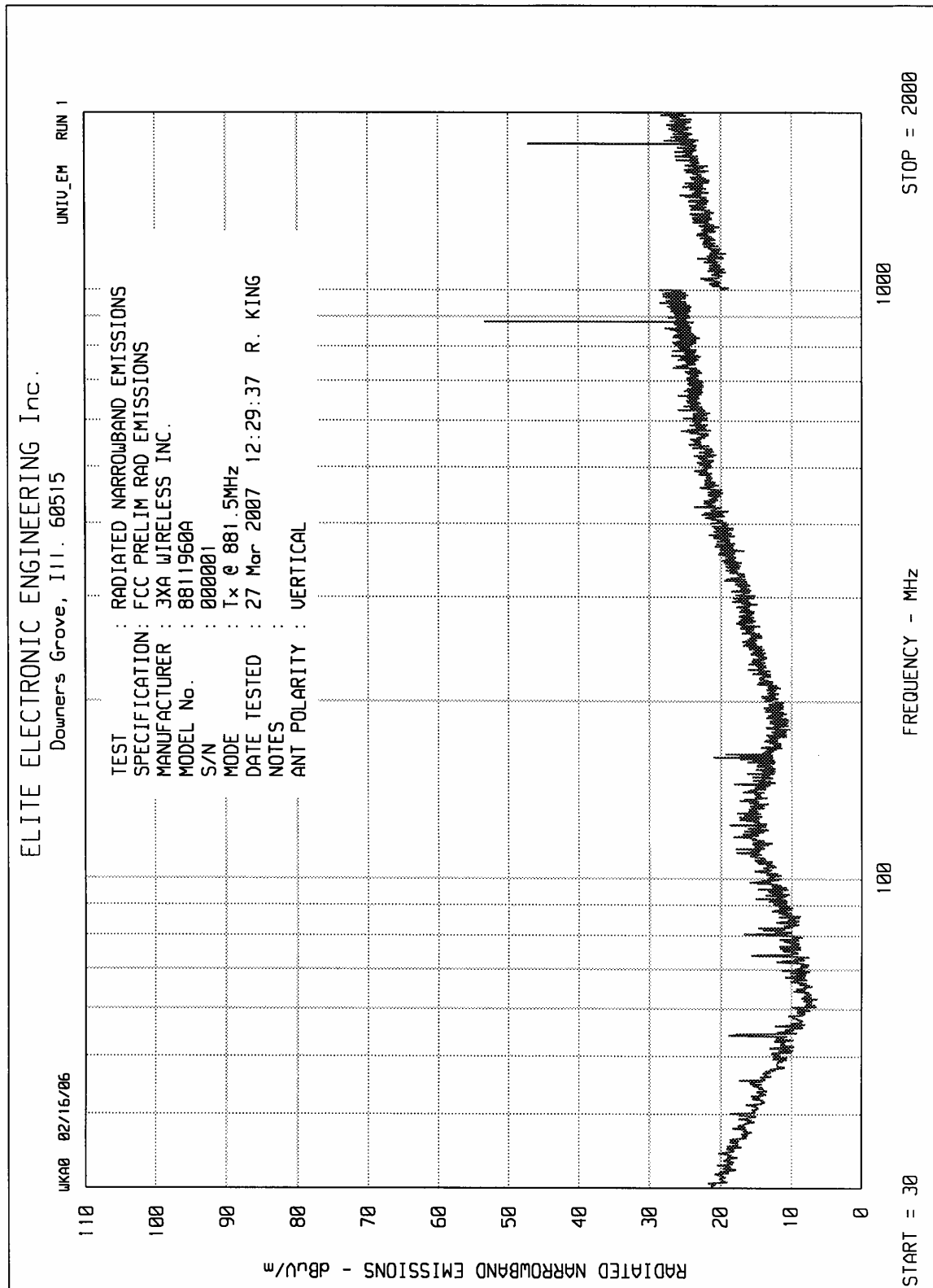


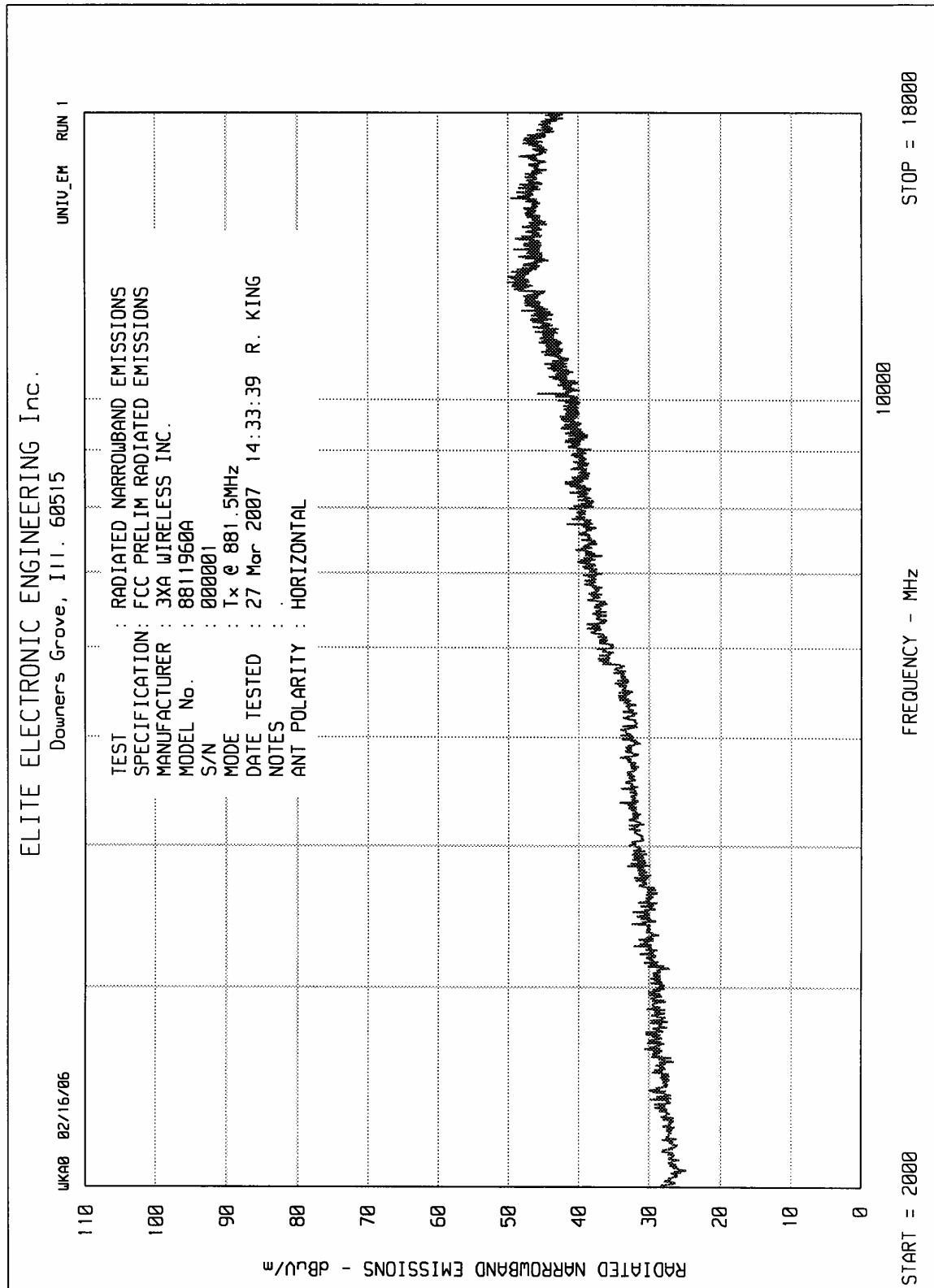
Date: 21.MAR.2007 17:12:33

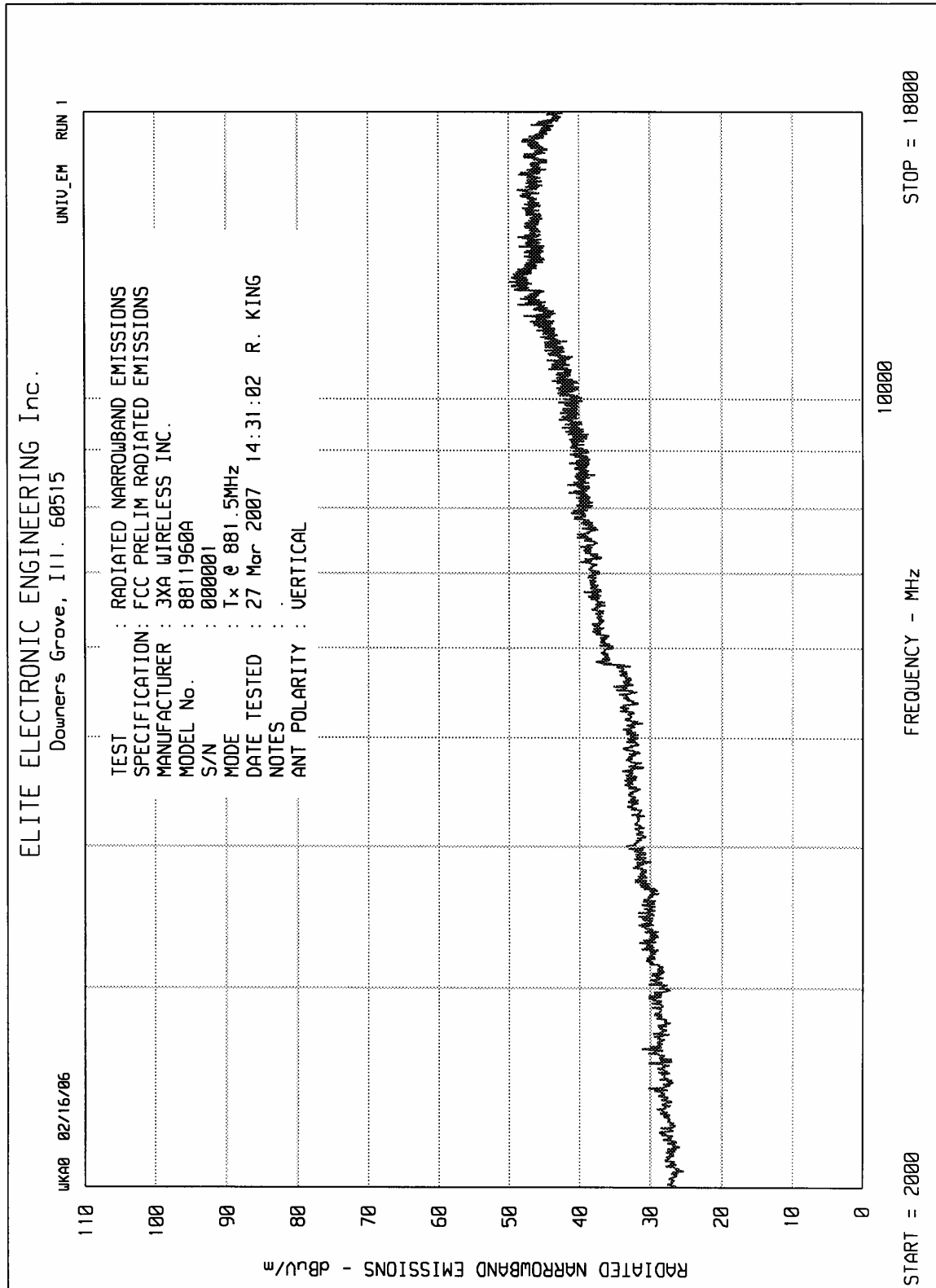
Antenna Conducted Emissions

MANUFACTURER : 3XA Wireless Inc.
TEST ITEM : Dualband Wireless Amp
MODEL NUMBER : 8811960A
TEST MODE : Transmit @ 881.5 MHz
NOTES : TDMA modulation
NOTES :











MANUFACTURER : 3XA Wireless Inc.
 TEST ITEM : Dualband Wireless Amp
 MODEL NUMBER : 8811960A
 TEST MODE : Transmit @ 881.5 MHz
 NOTES : Test distance is 3 meters.
 NOTES : ERP Total = Matched Sig. Gen. level + Antenna gain – cable loss

Freq (MHz)	Ant Pol	Meter		Matched	Equivalent		ERP		
		Reading	Ambient	SIG. GEN. (dB)	Ant Gain (dB)	CBL (dB)	Total (dBm)	Attenuation	Minimum Attenuation
1763.0	H	73.2		-33.9	5.8	3.9	-32.0	44.0	25.0
1763.0	V	68.0		-38.5	5.8	3.9	-36.6	48.6	25.0
2644.5	H	49.4		-50.3	6.4	4.9	-48.8	60.8	25.0
2644.5	V	52.5		-49.4	6.4	4.9	-48.0	60.0	25.0
3526.0	H	43.7		-60.3	6.8	5.7	-59.2	71.2	25.0
3526.0	V	41.3	*	-62.9	6.8	5.7	-61.8	73.8	25.0
4407.5	H	42.0	*	-62.7	8.1	6.4	-61.0	73.0	25.0
4407.5	V	40.3	*	-62.7	8.1	6.4	-61.0	73.0	25.0
5289.0	H	39.6	*	-60.6	7.0	7.1	-60.7	72.7	25.0
5289.0	V	39.7	*	-60.6	7.0	7.1	-60.7	72.7	25.0
6170.5	H	43.7	*	-64.4	8.0	7.8	-64.2	76.2	25.0
6170.5	V	42.9	*	-64.4	8.0	7.8	-64.2	76.2	25.0
7052.0	H	40.3	*	-62.8	8.3	8.9	-63.4	75.4	25.0
7052.0	V	40.9	*	-62.8	8.3	8.9	-63.4	75.4	25.0
7933.5	H	41.2	*	-65.5	7.9	10.1	-67.7	79.7	25.0
7933.5	V	41.0	*	-65.5	7.9	10.1	-67.7	79.7	25.0
8815.0	H	40.8	*	-58.6	8.6	10.4	-60.4	72.4	25.0
8815.0	V	40.3	*	-58.6	8.6	10.4	-60.4	72.4	25.0

Checked BY RICHARD E. King :

Richard E. King