TEST REPORT

Report Number: 3091771ATL-001
Project Number: 3091771
April 27th, 2006

Testing performed on the
Remote Control
Model Number: M789

to

FCC Part 15.231

For GRE North America

Test Performed by:	**Test Authorized by:**
Intertek ETL Semko	GRE North America
1950 Evergreen Blvd, Suite 100	3030 McEver Road
Duluth, GA 30096	Gainsville, Georgia 30504

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1 Summary of Tests

MODEL: M789
FCC ID: TQB-Predation

TEST	FCC REFERENCE	RESULTS
Radiated Emission	15.231(b)	**Complies**
Out of Band Radiated Emission	15.231(b)	**Complies**
AC Conducted Emission	15.207	**Not Required**
20 dB Bandwidth	15.231(c)	**Complies**
Frequency Tolerance	15.231(d)	**Not Required**
Antenna Requirement	15.203	**Complies**

2 General Description

2.1 Product Description

The test results in this report pertain only to the item(s) tested.

The following description of the M789 was supplied by Intertek:

The EUT is a Remote control for an animal call base station used for attracting animals during hunting situations.

Overview of the EUT

Applicant	GRE North America 3030 McEver Road Gainsville, Georgia 30504
Trade Name & Model No.	Predation / M789
FCC Identifier	TQB-Predation
Use of product	Remote control for an animal call base station used for attracting animals during hunting situations
Transmitter activation	[x] Manual and automatically deactivate within 5 seconds of being released [ ] Periodic transmissions
Frequency Range (MHz)	433.9
Antenna Requirement	The EUT uses a detachable antenna.
Manufacturer name & address	GRE North America 3030 McEver Road Gainsville, Georgia 30504
EUT type	Production
EUT received date:	March 3rd, 2006
Operating condition:	Good

2.2 Related Submittal(s) Grants

This report is for use with an application for certification of a low power transmitter. One transmitter is included in the application.

2.3 Test Methodology

Both AC mains line-conducted and radiated emissions measurements were performed according to the procedures in ANSI C63.4 (2003). Radiated tests were performed at an antenna to EUT distance of 3 meters, unless stated otherwise in the "Data Sheet" of this Application. All other measurements were made in accordance with the procedures in part 2 of CFR 47.

2.4 Test Facility

The Duluth 10-meter chamber site is located at 1950 Evergreen Blvd., Suite 100, Duluth, Georgia. The test site is a 10-meter semi-anechoic chamber. The site meets the characteristics of CISPR 16-1: 1993 and ANSI C63.4: 2003. For measurements, a remotely controlled flush-mount metal-top turntable is used to rotate the EUT a full 360 degrees. A remote controlled non-conductive antenna mast is used to scan the antenna height from one to four meters.

The A2LA accreditation code for this site is 121624 under certificate number 1455.01.

3 System Test Configuration

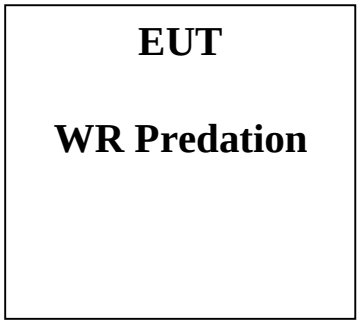
3.1 Support Equipment

No support equipment was needed for this evaluation.

3.2 Cabling

No cables were needed for this evaluation.

3.3 Block Diagram of Test Setup



3.4 Justification

For emissions testing, the test procedures described in American National Standards Institute C63.4-2003 were employed.

The EUT was configured to transmit full power.

3.5 Software Exercise Program

No special software was required.

3.6 Mode of Operation during Test

For emissions testing, a sample was provided that would transmit continuously while the button was depressed and for other testing, a normal functioning sample was also provided.

3.7 Modifications Required for Compliance

No modifications were installed by Intertek during compliance testing in order to bring the product into compliance (Please note that this does not include changes made specifically by GRE North America prior to compliance testing)

3.8 Additions, deviations and exclusions from standards

No additions, deviations or exclusions from the standard were made.

4 Measurement Results

4.1 Radiated Emission

FCC Rule 15.231(b)

4.1.1 Procedure

For radiated emission measurements, the EUT is attached to a cardboard box (if necessary) and placed on the wooden turntable. The signal is maximized through rotation and placement in the three orthogonal axes.

During the test the EUT is rotated and the antenna height and polarization are varied during the search for maximum signal level. The antenna height is varied from 1 to 4 meters.

Radiated emissions are taken at three meters unless the signal level is too low for measurement at that distance. If necessary, a pre-amplifier is used and/or the test is conducted at a closer distance. All readings are extrapolated back to the equivalent three-meter reading using inverse scaling with distance.

Radiated emission measurements were performed from 30 MHz to 4500 MHz.

Analyzer resolution is:

100 kHz or greater for frequencies 1000 MHz and below,

1 MHz for frequencies above 1000 MHz.

The Peak value of the Field Strength was measured. The Average value was obtained from the Peak by subtracting the Duty Cycle Correction Factor.

Data is included of the worst case configuration (the configuration which resulted in the highest emission levels). A sample calculation, configuration photographs and data tables of the emissions are included.

4.1.2 Field Strength Calculation

The field strength is calculated by adding the Antenna Factor and Cable Factor, and subtracting the Amplifier Gain (if any) from the measured reading. The basic equation is as follows:

FS = RA + AF + CF - AG - DC

Where FS = Field Strength in dB (μV/m)

RA = Receiver Amplitude (including preamplifier) in dB (μV)

CF = Cable Attenuation Factor in dB

AF = Antenna Factor in dB(1/m)

AG = Amplifier Gain in dB

DC = Duty Cycle (Average Factor)

4.1.3 Modifications Required for Compliance

The EUT schematic was modified in order to achieve compliance of harmonic emissions. The product's Bill of Material (BOM) must be modified to reflect the following component values:

L6 = 56 uH; C1 = 68 pF; C12 = 100 pF

4.1.4 Test Result

The following data list the significant emission frequencies, the limit and the margin of compliance. The EUT was scanned from 30 MHz to 5 GHz. There were no other radiated emissions within 20 dB of the limit.

Table 4-1: Radiated Emissions – Fundamental Emissions & Orientations

Date: 3/6/06 **Limit:** FCC Part 15.231

Frequency Range (MHz): 30 to 1000 **Test Distance (m):** 3

Input power: battery **Modifications for compliance (y/n):** n

A	B	C	D	E	F	G	H	I	J
Ant. Pol. (V/H)	**Frequency MHz**	**Reading dB(uV)**	**Antenna Factor dB(1/m)**	**Cable Loss dB**	**Pre-amp Factor dB**	**Averaging Factor dB**	**Net dB(uV/m)**	**3m Limit dB(uV/m)**	**Margin dB**
Z-axis orientation (antenna pointing up)									
H	433.886	28.8	16.9	3.9	0.0	4.6	45.1	80.8	-35.7
V	433.902	44.7	17.1	3.9	0.0	4.6	61.1	80.8	-19.7
Y-axis orientation (antenna pointing towards receiving antenna)									
V	433.918	35.6	17.1	3.9	0.0	4.6	52.1	80.8	-28.8
H	433.916	38.2	16.9	3.9	0.0	4.6	54.5	80.8	-26.3
X-axis orientation (antenna pointing right)									
H	433.928	42.4	16.9	3.9	0.0	4.6	58.6	80.8	-22.2
V	433.918	33.8	17.1	3.9	0.0	4.6	50.2	80.8	-30.6
Calculations		H=C+D+E-F-G		J=H-I					

Plot 4-2: Radiated Emissions – Spurious & Restricted Band Emissions – 30 MHz to 1 GHz

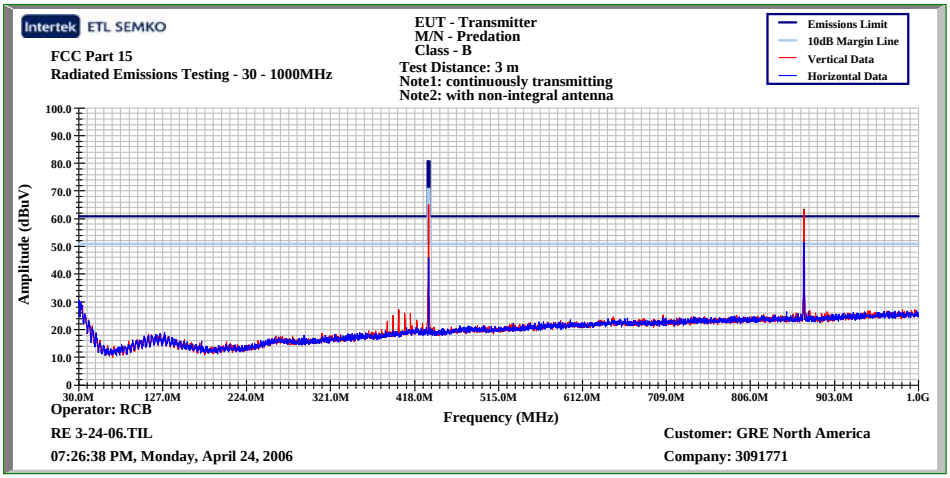


Table 4-3: Radiated Emissions – Spurious & Restricted Band Emissions – 30 MHz to 1 GHz

Frequency Range (MHz): 30 to 1000 **Test Distance (m):** 3

Input power: Battery **Modifications for compliance (y/n):** y

Notes: L6 (previously C13) = 47 uH, C1=8 pF, C12=180pF

A	B	C	D	E	F	G	H	I	J
Ant. Pol. (V/H)	**Frequency MHz**	**Reading dB(uV)**	**Antenna Factor dB(1/m)**	**Cable Loss dB**	**Pre-amp Factor dB**	**Average Factor dB**	**Net dB(uV/m)**	**3m Limit dB(uV/m)**	**Margin dB**
V	433.940	106.2	17.1	3.9	33.5	4.6	89.1	80.8	**+8.3**
V	867.878	86.5	20.6	5.9	32.8	4.6	75.5	60.8	**+14.7**
L6 = 47 uH, C1 = 8 pF, C12 = 180 pF									
V	433.940	106.0	17.1	3.9	33.5	4.6	89.0	80.8	**+8.2**
V	867.820	87.3	20.6	5.9	32.8	4.6	76.3	60.8	**+15.5**
L6 = 56 uH, C1 = 8 pF, C12 = 180pF									
V	433.940	107.3	17.1	3.9	33.5	4.6	90.2	80.8	**+9.4**
V	867.820	85.3	20.6	5.9	32.8	4.6	74.4	60.8	**+13.6**
L6 = 56 uH, C1 = 1.5 pF, C12 = 180pF									
V	433.940	107.3	17.1	3.9	33.5	4.6	90.2	80.8	**+9.4**
V	867.820	91.0	20.6	5.9	32.8	4.6	80.0	60.8	**+19.2**
L6 = 56 uH, C1 = 68 pF, C12 = 180pF									
V	433.940	76.6	17.1	3.9	33.5	4.6	59.5	80.8	-21.3
V	867.820	68.1	20.6	5.9	32.8	4.6	57.1	60.8	-3.7
L6 = 56 uH, C1 = 68 pF, C12 = 68pF									
V	433.943	78.2	17.1	3.9	33.5	4.6	61.1	80.8	-19.7
V	867.820	69.0	20.6	5.9	32.8	4.6	58.0	60.8	-2.8
L6 = 56 uH, C1 = 82 pF, C12 = 82pF									
V	433.943	71.8	17.1	3.9	33.5	4.6	54.7	80.8	-26.1
V	867.820	69.9	20.6	5.9	32.8	4.6	59.0	60.8	-1.8
L6 = 56 uH, C1 = 68 pF, C12 = 100pF									
V	433.943	78.3	17.1	3.9	33.5	4.6	61.3	80.8	-19.6
V	867.820	69.5	20.6	5.9	32.8	4.6	58.5	60.8	-2.3
Calculations		G=C+D+E-F-G		J=H-I					

Plot 4-4: Radiated Emissions – Spurious & Restricted Band Emissions – 1 GHz to 5 GHz

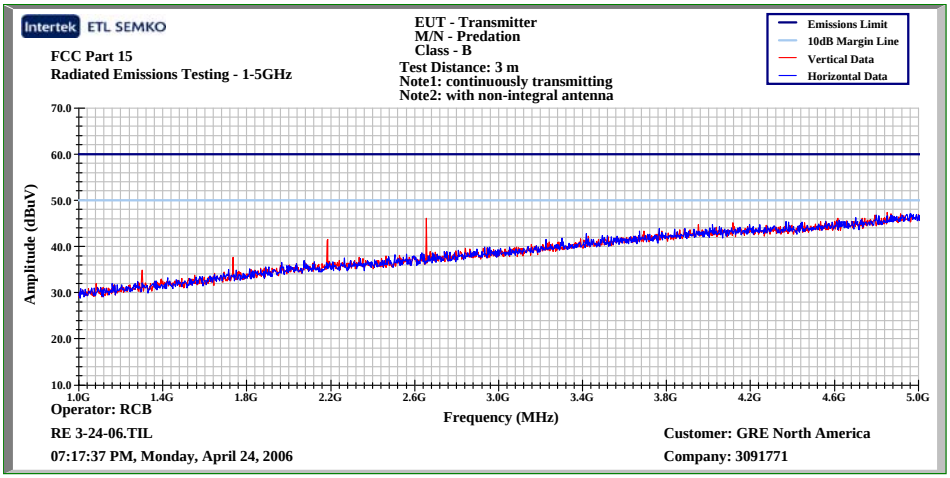


Table 4-5: Radiated Emissions – Spurious Emissions - 1 GHz to 5 GHz

Frequency Range (MHz): 1000 to 5000 **Test Distance (m):** 3

Input power: Battery **Modifications for compliance (y/n):** y

Notes: EUT modified with L6 = 56 uH, C1 = 68 pF, C12 = 100 pF

A	B	C	D	E	F	G	H	I	J
Ant. Pol. (V/H)	**Frequency MHz**	**Reading dB(uV)**	**Antenna Factor dB(1/m)**	**Cable Loss dB**	**Pre-amp Factor dB**	**Average Factor dB**	**Net dB(uV/m)**	**3m Limit dB(uV/m)**	**Margin dB**
V	1301.800	28.1	24.4	6.5	32.9	4.6	21.4	80.8	-59.4
V	1735.600	30.8	26.1	6.5	33.0	4.6	25.7	80.8	-55.1
V	2169.600	32.7	28.0	9.8	33.0	4.6	32.9	80.8	-47.9
V	2603.600	40.4	28.7	9.8	33.0	4.6	41.2	80.8	-39.6
Calculations		G=C+D+E-F-G		J=H-I					

4.2 AC Line Conducted Emission

FCC Rule 15.207

4.2.1 Measurement Procedure

Measurements are carried out using quasi-peak and average detector receivers in accordance with CISPR 16. An AMN is required to provide defined impedance at high frequencies across the power feed at the point of measurement of terminal voltage and also to provide isolation of the circuit under test from the ambient noise on the power lines. An AMN as defined in CISPR 16 shall be used.

The EUT is located so that the distance between the boundary of the EUT and the closest surface of the AMN is 0.8m.

Where a flexible mains cord is provided by the manufacturer, this shall be 1m long or if in excess of 1m, the excess cable is folded back and forth as far as possible so as to form a bundle not exceeding 0.4m in length.

The EUT is arranged and connected with cables terminated in accordance with the product specification.

Conducted disturbance is measured between the phase lead and the reference ground, and between the neutral lead and the reference ground. Both measured values are reported.

The EUT, where intended for tabletop use, is placed on a table whose top is 0.8m above the ground plane. A vertical, metal reference plane is placed 0.4m from the EUT. The vertical metal reference-plane is at least 2m by 2m. The EUT shall be kept at least 0.8m from any other metal surface or other ground plane not being part of the EUT. The table is constructed of non-conductive materials. Its dimensions are 1m by 1.5m, but may be extended for larger EUT.

Floor standing EUTs are placed on a horizontal metal ground plane and isolated from the ground plane by 3 to 12 mm of insulating material. The metal ground plane extends at least 0.5m beyond the boundaries of the EUT and has minimum dimensions of 2m by 2m.

Equipment setup for conducted disturbance tests followed the guidelines of ANSI C63.4: 2003

4.2.2 Test Result

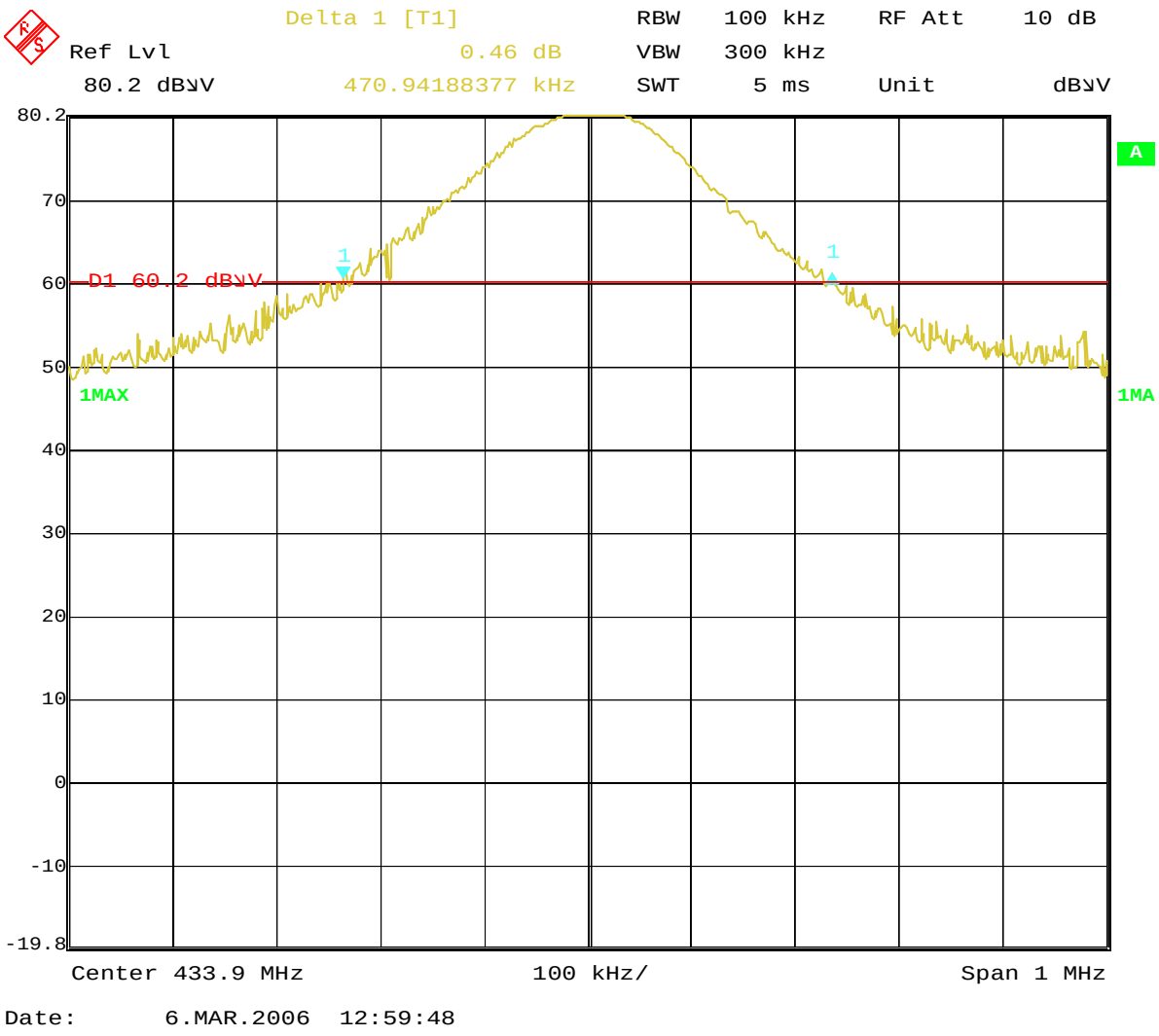
This test was not required as the EUT is battery powered and does not connect to the ac mains.

4.3 Occupied Bandwidth Plot

FCC Rule 15.231(c)

The following plots show the occupied bandwidth the transmitter. The widest occupied bandwidth at 20 dBc is 470.9 kHz, which is 0.11% of the fundamental frequency.

Figure 4-1: Bandwidth plot



4.4 Transmitter Duty Cycle Calculation and Measurements

The following plots show the Duty Cycle (DC) of the transmission signal. Duty Cycle is defined as the maximum 'ON' time within the total sequence period divided by that period (milliseconds).

The entire pulse train sequence from manual activation of the transmitter to the transmitter's automatic shut off is shown in Figure 4-2, demonstrating compliance to FCC Part 15.231 (e). The number of 'ON' pulses within the 5.69 ms pulse sequence cycle is 6, shown in Figure 4-3. Of the 6 pulses in the sequence, the largest, medium, and smallest 'ON' pulse are shown in Figure 4-4, 4-5, and, 4-6, respectively.

Therefore, the Duty Cycle Correction Factor was calculated as follows:

DC Correction Factor = 20 * Log (Duty Cycle) = 20 * LOG ((1220 + 679.4 + (4*358.7)) /5689) = 4.64 dB

Figure 4-2: Output – Pulse Train Sequence Width

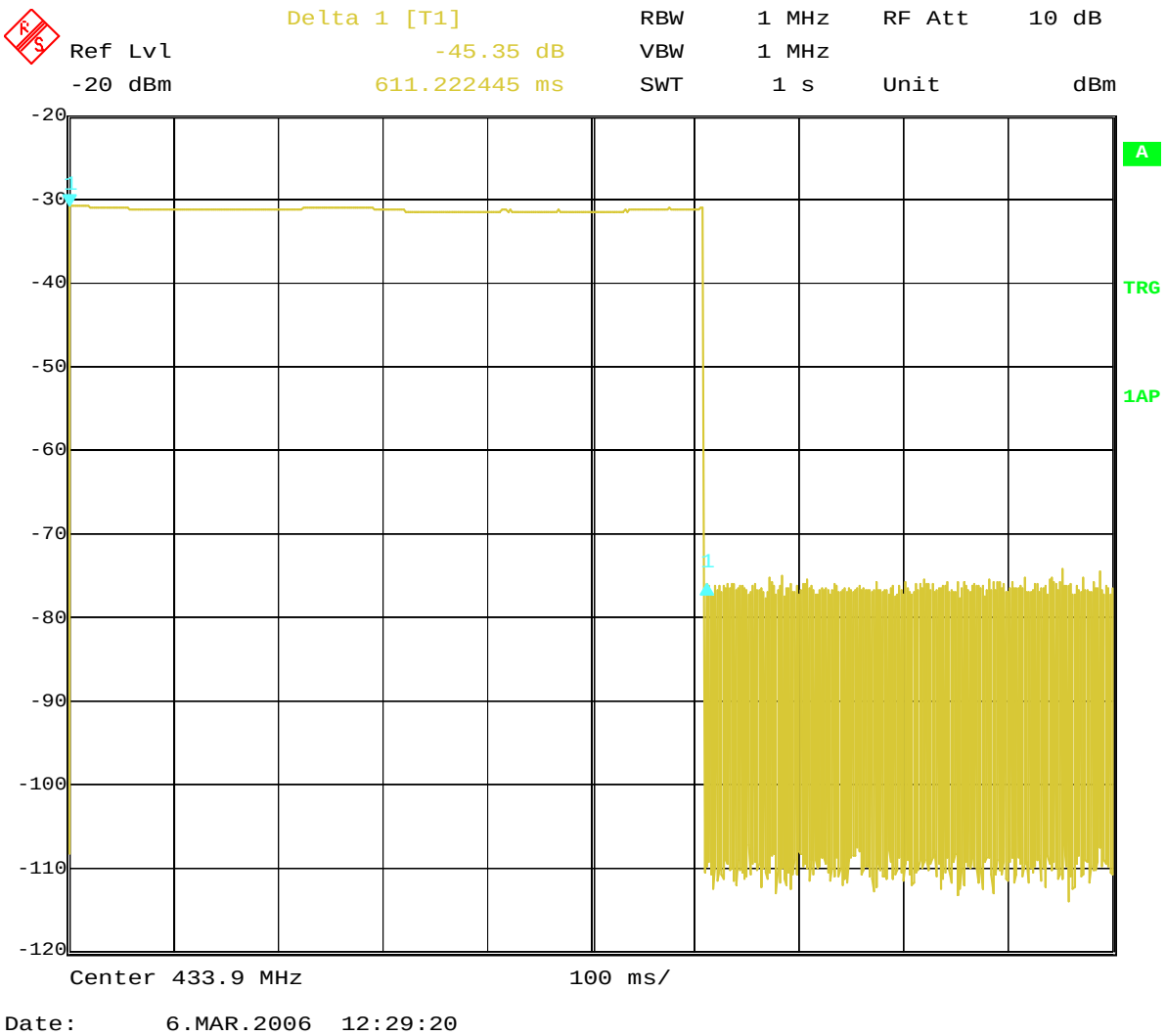


Figure 4-3: Output – Pulse Sequence Width

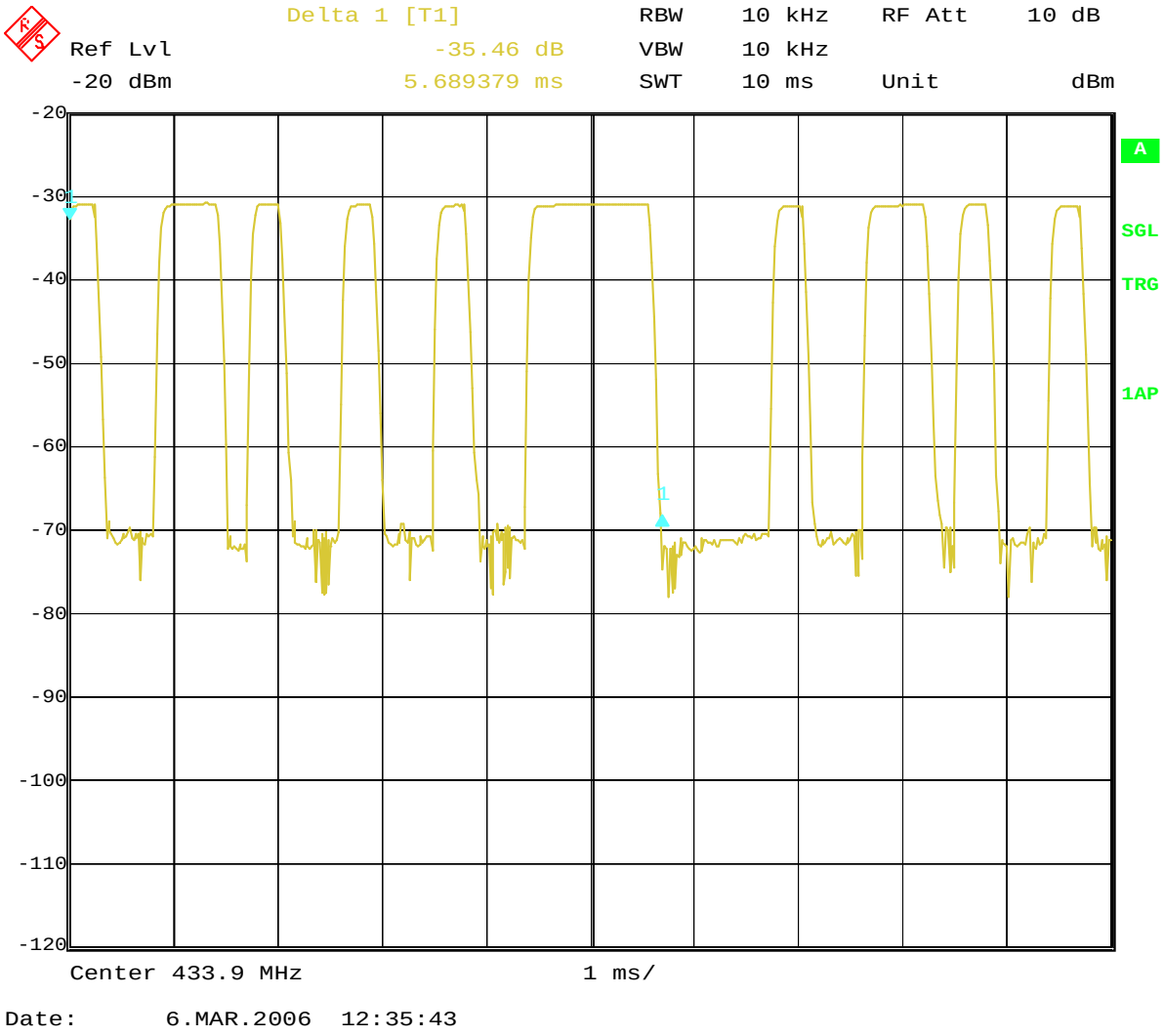


Figure 4-4: Output – Large 'ON' Pulse Width

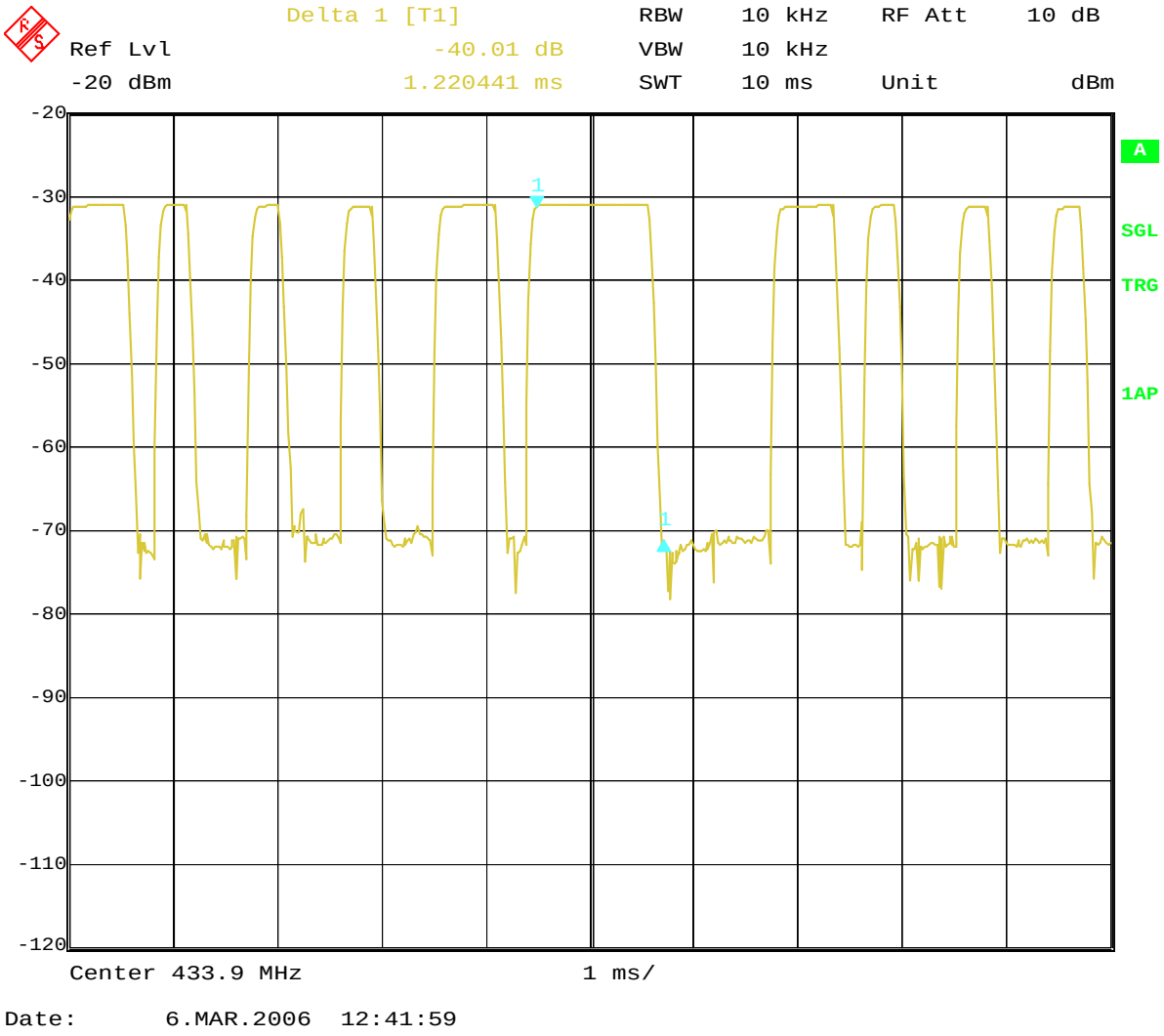


Figure 4-5: Output – Medium 'ON' Pulse Width

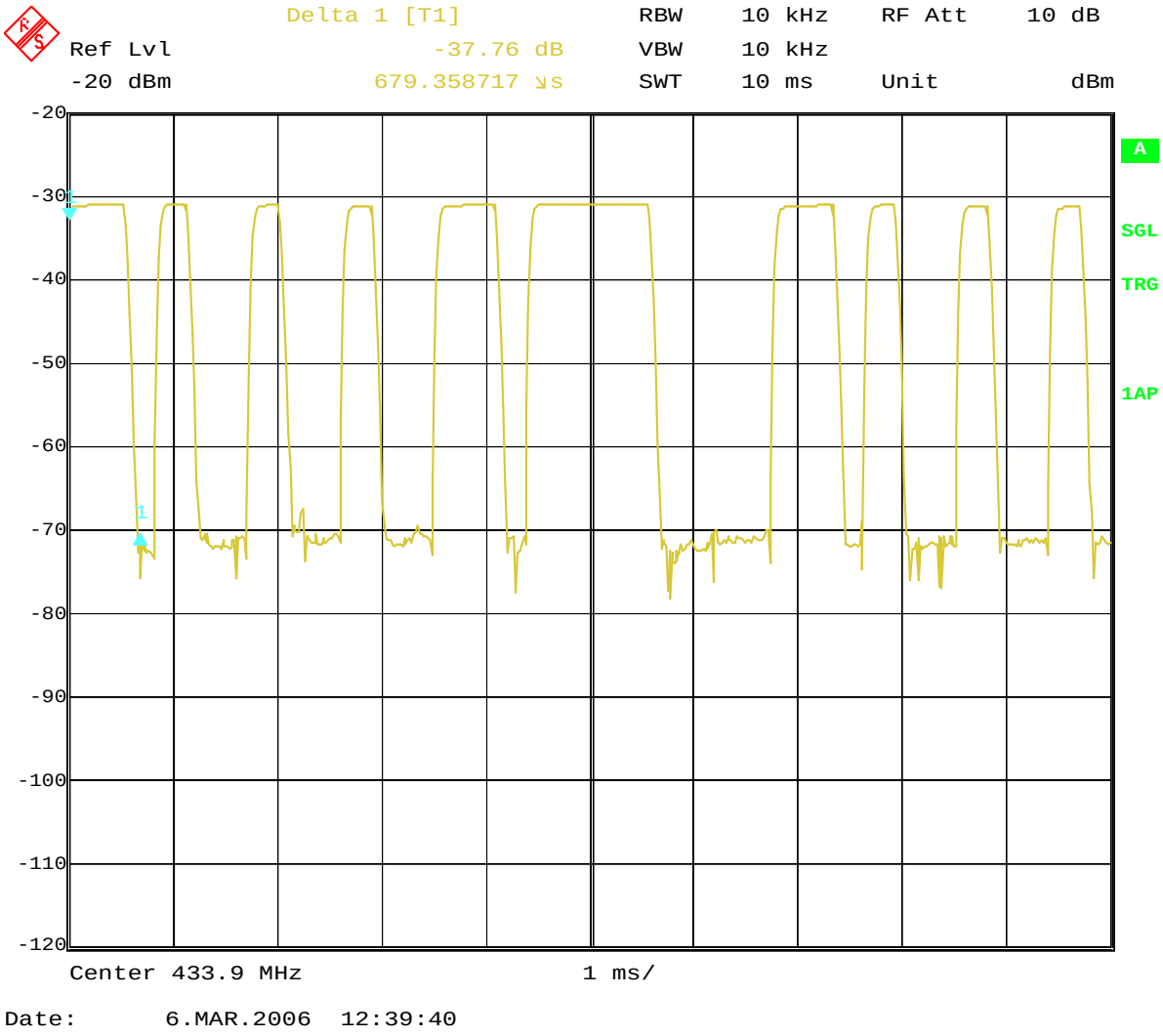
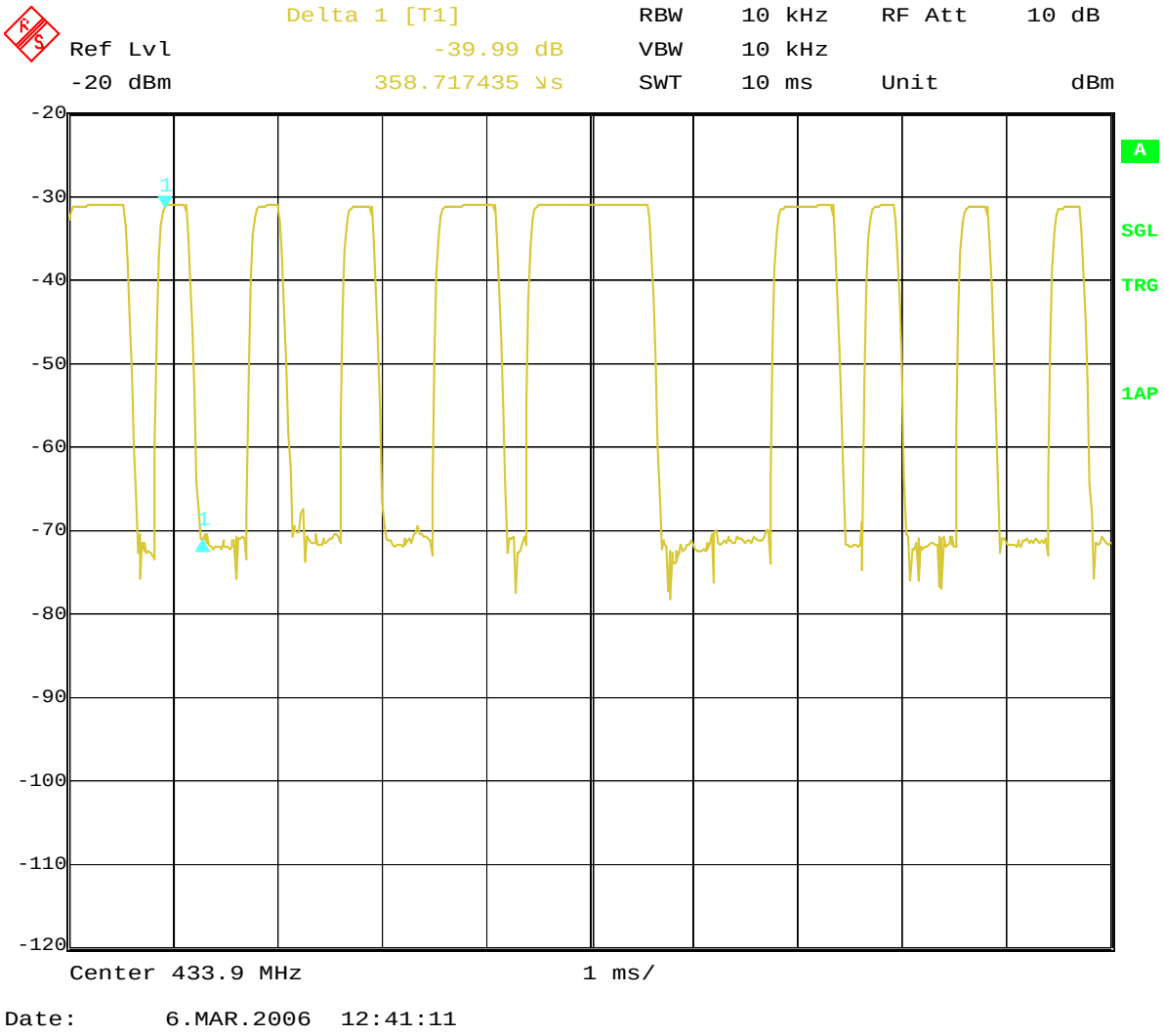


Figure 4-6: Output – Small 'ON' Pulse Width



5 Antenna Requirement

	The transmitter uses a permanently connected antenna.
X	The antenna is affixed to the EUT using a unique connector, which allows for replacement of a broken antenna, but does NOT use a standard antenna jack or electrical connector.
	The EUT requires professional installation.

Please refer to the attached documentation for details.

6 List of test equipment

Equipment	Manufacturer	Model Number	Serial Number	Cal. Interval	Cal. Due
EMI Receiver	Hewlett-Packard	8546A	3650A00362	1 yr	01/05/2007
RF Filter Section	Hewlett-Packard	85460A	3704A00331	1 yr	01/05/2007
Spectrum Analyzer	Rohode & Schwarz	FSEK 30	100353	1 yr	01/03/2007
Amplifier	Hewlett-Packard	HP8449B	3008A00989	1 yr	04/22/2006
Antenna	Schnaffner-Chase	CBL6112B	2622	1 yr	08/30/2006
Horn Antenna	EMCO	3115	9208-3919	1 yr	03/11/2006
Cable	Megaphase	G919-NKNK-394	MP3	1 yr	05/11/2006
Cable	Pasternack	RG214/U	E01	1 yr	05/11/2006
Cable	Huber-Suhner	Sucoflex 104PEA	E11	1 yr	05/11/2006
Cable	Huber-Suhner	Sucoflex 104PE	E08	1 yr	05/13/2006
Cable	Huber-Suhner	Sucoflex 104PEA	E05	1 yr	05/12/2006
Cable	Megaphase	TM18 NKNK 118	E202	1 yr	05/12/2006

7 Document History

Report Number	Writer Initials	Date	Change
3091771ATL-001	CDC	March 30th, 2006	Original document
3091771ATL-001	CDC	April 27th, 2006	Re-tested data after modifications by Intertek were made.