MEASUREMENT/TECHNICAL REPORT

Challenger, Division of Wayne Dalton - Model: IRF 01-3036 Rev. 1
FCC ID: FON01-3036
April 1998

This report concerns (check one:) Original Grant____ Class II Change__X__

Equipment Type:__Transmitter__(example: computer, printer, modem, etc.)

Deferred grant requested per 47 CFR 0.457(d)(1)(ii)? Yes____ No__X__

If yes, defer until: _____
date

Company Name agrees to notify the Commission by: _____
date

of the intended date of announcement of the product so that the grant can be issued on that date.

Transition Rules Request per 15.37? Yes____ No__X__

If no, assumed Part 15, Subpart B for unintentional radiator - the new 47 CFR [10-1-96 Edition] provision.

Report prepared by:

Andrew J. Bellezza
Intertek Testing Services NA Inc.
593 Massachusetts Avenue
Boxborough, MA 01719
Phone: 978-263-2662
FAX: 978-263-7086

Martec Engineering Notice number 001083

Project Number: 01-3036 ver I0
Initiated By: M.B.

Description: IRF
Date: 04/01/98

Description of Change:

file name: - CH001083

1. Strip the copper under the antenna loop.

Reason for change:

1. Better RF transmitter performance.
   Transmitter is tuned to 303MHz as the earlier F0 version.
2. All timing (microprocessor) is derived from 12MHz oscillator.

Approved By :
Engineering:
Marketing:
Quality:
Materials:
Manufacturing:
Designer:
Other:

Send to:
Untertek J. Zarnowiec
Challenger R Wood

Old Drawing	New Drawing
Artwork 38-3036 ver F	Artwork 38-3036 ver I
Bill of material 02-3036 ver F0.A	Bill of material 02-3036 ver IO.A

1.2 Related Submittal(s) Grants

1.3 Test Methodology

Both AC mains line-conducted and radiated emission measurements were performed according to the procedures in ANSI C63.4 (1992). All measurements were performed in Open Area Test Sites. Preliminary scans were performed in the Open Area Test Sites only to determine worst case modes. For each scan, the procedure for maximizing emissions in Appendices D and E were followed. All Radiated tests were performed at an antenna to EUT distance of 3 meters, unless stated otherwise in the "**Justification Section**" of this Application.

1.4 Test Facility

The open area test site and conducted measurement facility used to collect the radiated data is located at 593 Massachusetts Avenue, Boxborough, Massachusetts. The East site was used. This test facility has been fully described in a report dated November 20, 1996 submitted to your office. Please reference the site filing number: 31040/SIT 1300F2, dated January 16, 1997. Each test site is accredited by the NVLAP program.

EXHIBIT 2

SYSTEM TEST CONFIGURATION

2.0 System Test Configuration

2.1 Justification

The transmitter was configured for testing in a typical fashion (as a customer would normally use it). The device was mounted to a cardboard box, which enabled the engineer to maximize emissions through its placement in the three orthogonal axis.

The device was powered from a new, fully charged 4.5 V battery.

For simplicity of testing, the unit was wired to transmit continuously.

The worst case bit sequence was applied during test.

2.2 EUT Exercising Software

The EUT exercise program used during radiated and conducted testing was designed to exercise the various system components in a manner similar to a typical use.

2.3 Equipment Modification

A list of changes made to the product since original grant of equipment authorization is included in Exhibit 1 of this application.

Any modifications installed previous to testing by Challenger, Division of Wayne Dalton will be incorporated in each production model sold/leased in the United States.

Confirmed by:

Andrew J. Bellezza
Engineering Team Leader, ITE
Intertek Testing Services NA Inc.
Agent for Challenger, Division of Wayne Dalton

Andrew J. Bellezza Signature

4-17-98 Date

2.4 Support Equipment List and Description

The FCC ID's for all equipment, plus descriptions of all cables used in the tested system (included inserted cards, which have grants) are:

Not Applicable

EXHIBIT 3

EMISSION RESULTS

3.0 Emission Results

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

3.1 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 with a sample calculation is as follows:

FS = RA + AF + CF - AG
where FS = Field Strength in dBμV/m
RA = Receiver Amplitude (including preamplifier) in dBμV
CF = Cable Attenuation Factor in dB
AF = Antenna Factor in dB
AG = Amplifier Gain in dB

In the following table(s), the reading shown on the data table reflects the preamplifier gain. An example for the calculations in the following table is as follows:

FS = RR + LF
where FS = Field Strength in dBμV/m
RR = RA - AG in dBμV
LF = CF + AF in dB

Assume a receiver reading of 52.0 dBμV is obtained. The antenna factor of 7.4 dB and cable factor of 1.6 dB is added. The amplifier gain of 29 dB is subtracted, giving a field strength of 32 dBμV/m. This value in dBμV/m was converted to its corresponding level in μV/m.

RA = 52.0 dBμV/m
AF = 7.4 dB
RR = 23.0 dBμV
CF = 1.6 dB
LF = 9.0 dB
AG = 29.0 dB
FS = RR + LF
FS = 23 + 9 = 32 dBμV/m
Level in μV/m = Common Antilogarithm [(32 dBμ/V/m)/20] = 39.8 μV/m

3.2 Radiated Emission Configuration Photograph

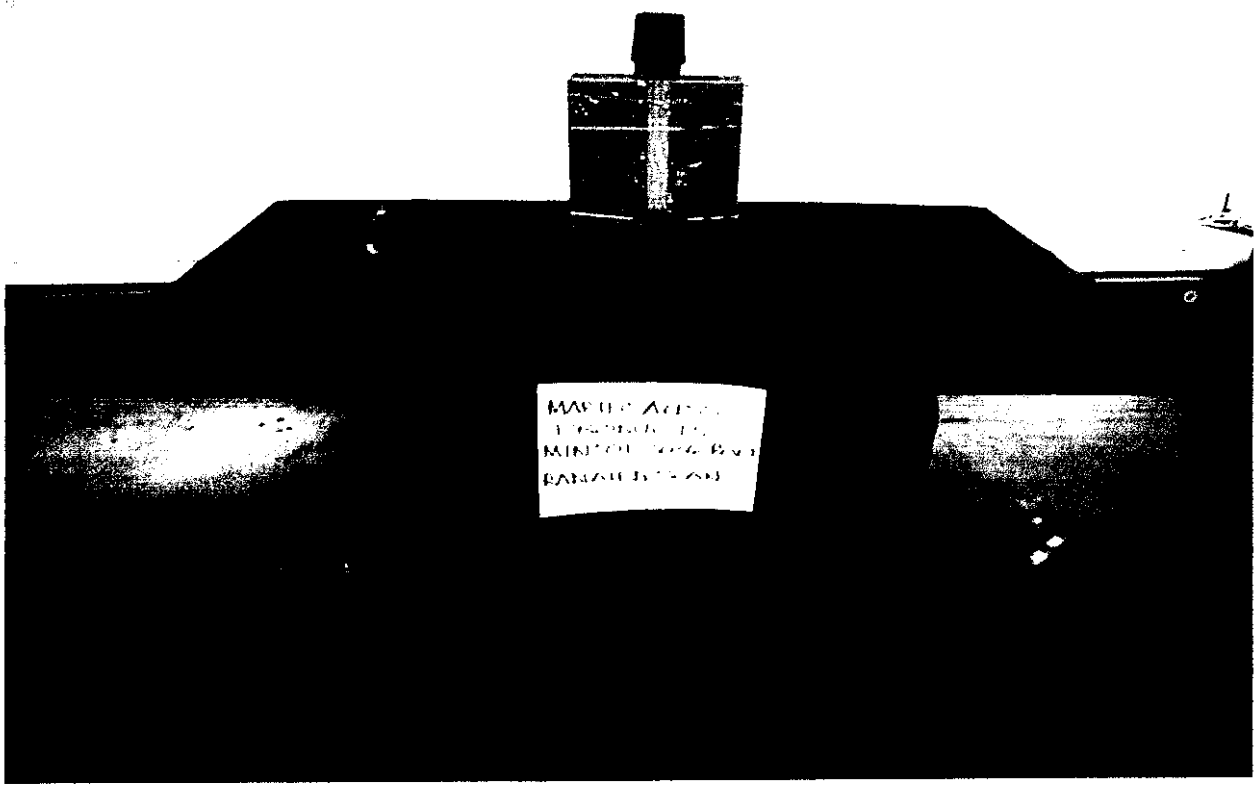
Worst Case Radiated Emission

Front View

909.150 MHz

Company:	Martec Access Products	Model:	01-3036 Rev-1
Date:	March 13, 1998	Engineer:	Kouma Sinn
Notes:			

Worst-Case Radiated Emissions Configuration



3.2 Radiated Emission Configuration Photograph (cont)

Worst Case Radiated Emission

Rear View

909.150 MHz

3.3 Radiated Emission Data

The data on the following page lists the significant emission frequencies, the limit and the margin of compliance. Numbers with a minus sign are below the limit.

Judgement: Passed by 2 dB

*All readings are peak unless stated otherwise

TEST PERSONNEL:

Andrew T. Bellezza FOR KPS

Tester Signature

Kouma Sinn, Compliance Engineer

Typed/Printed Name

1-17-98

Date

COMPANY: Martec Access Products
MODEL: 01-3036 Rev-1

TABLE: 1
Date of Test: 03-13-1998

NOTES: Radiated scan at 3 meters

Radiated Emissions

Frequency (MHz)	Reading (dBuV)	Distance Factor (dB)	Antenna Factor (dB)	Pre-Amp Gain (dB)	Averaging Factor (dB)	Pulse Desensitization (dB)	Field Strength @ 3 m (dBuV/m)	Field Strength @ 3 m (uV/m)	Limits @ 3 m (uV/m)	Margin (dB)
303.050	58	0	22	0	-11	0	69	2818	5630	-6
606.080	27	0	29	0	-11	0	45	178	563	-10
909.150	30	0	34	0	-11	0	53	447	563	-2
1212.000	37	0	24	0	-11	0	50	316	500	-4
1515.000	26	0	26	0	-11	0	41	112	500	-13
2121.000	18	0	30	0	-11	0	37	71	563	-18
2424.000	10	0	30	0	-11	0	29	28	563	-26
3030.000	5	0	34	0	-11	0	28	25	563	-27

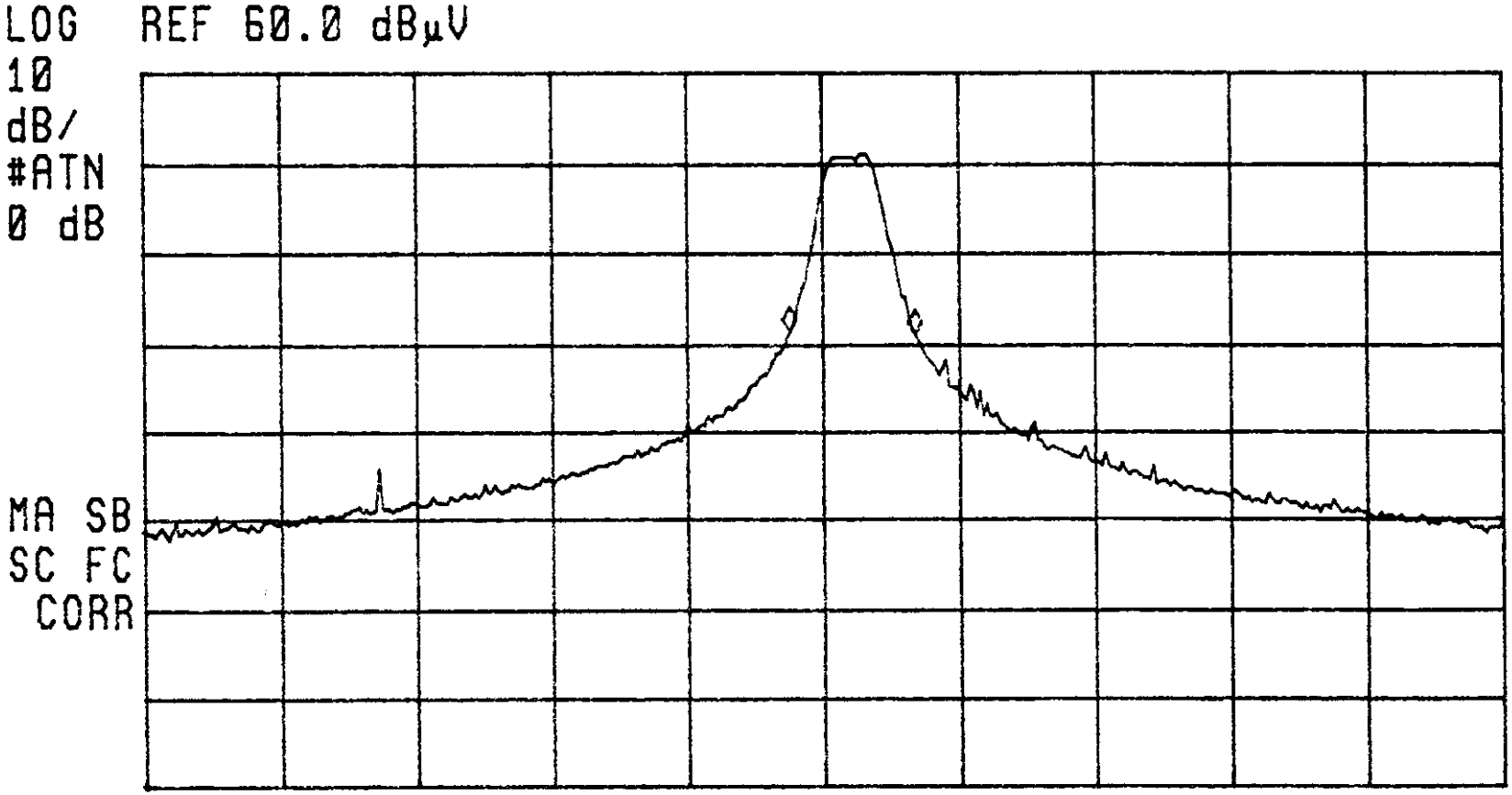
No other harmonic or spurious emissions were detected at a test distance of 0.3 meter.

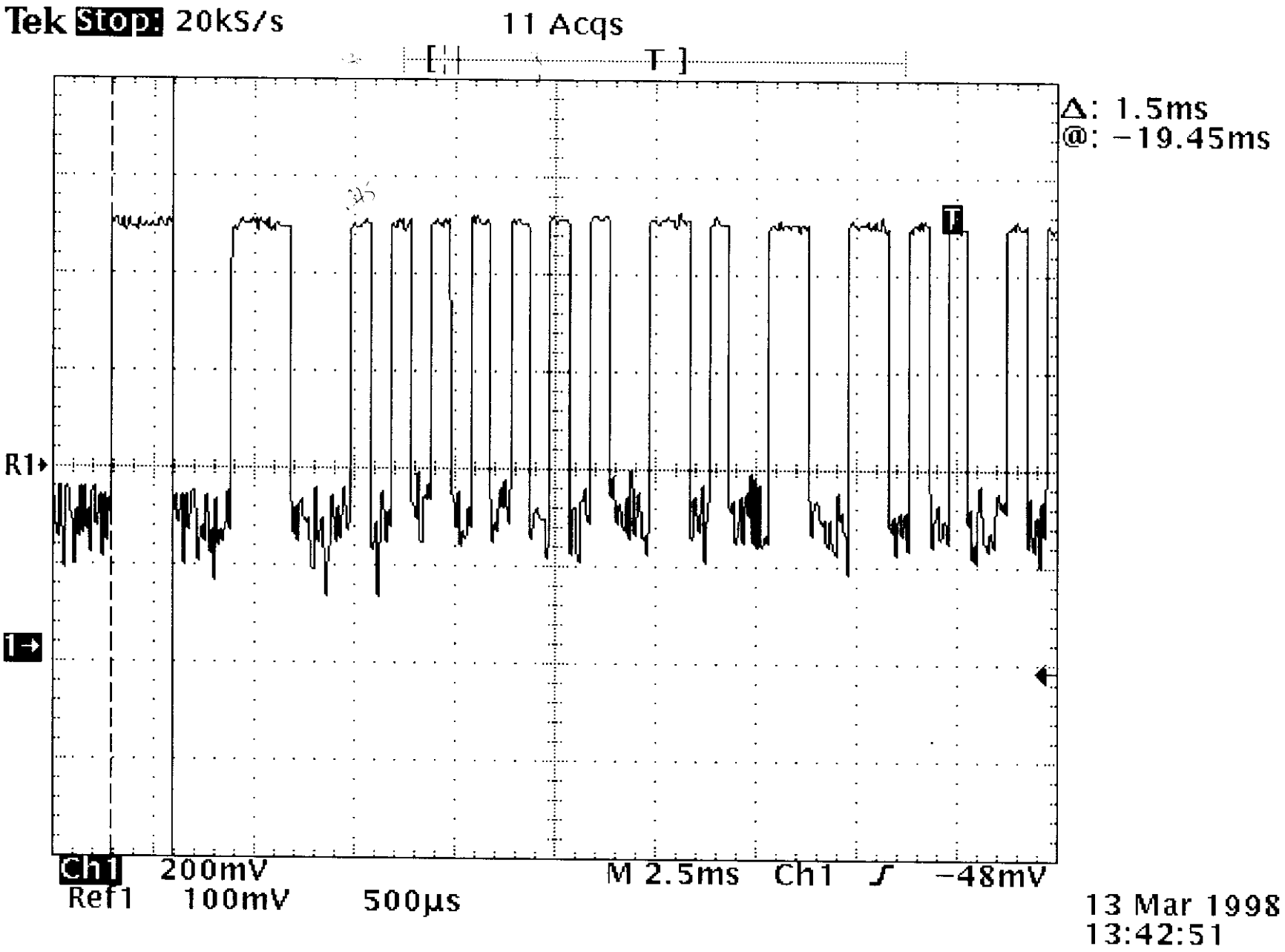
Test Engineer: Kouma Sinn

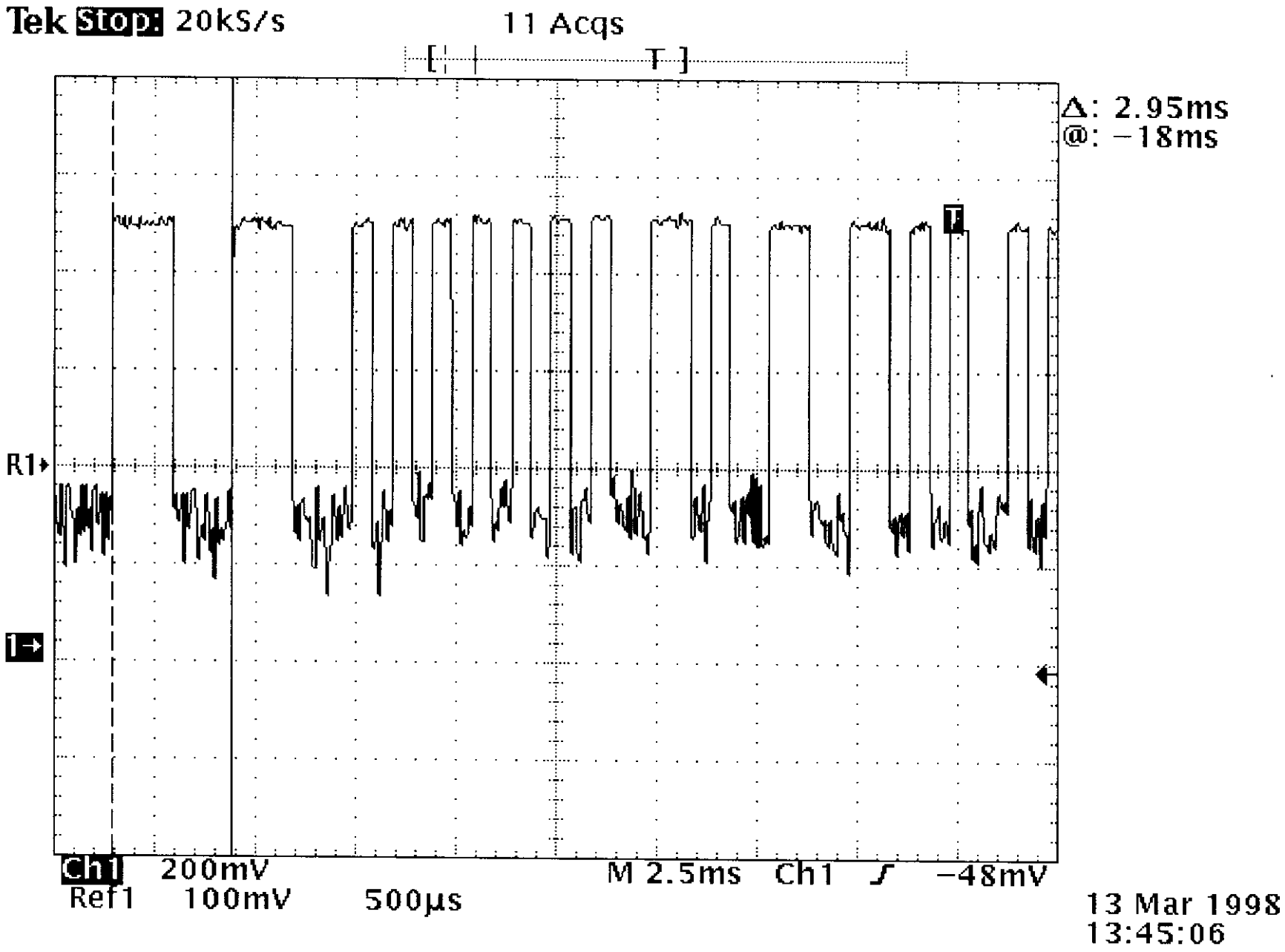
11:46:19 MAR 13, 1998

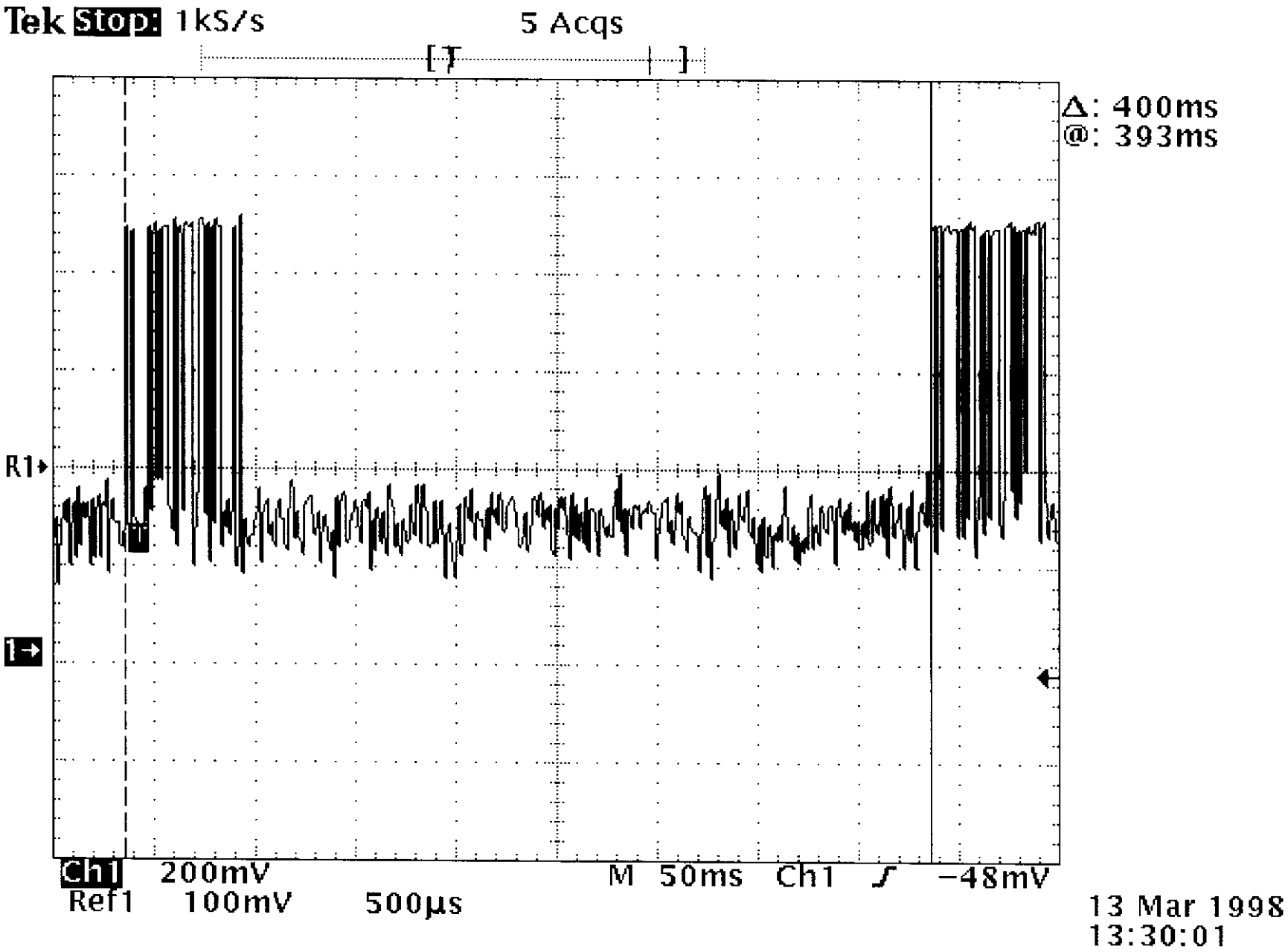
MARKER Δ
-185 kHz
.48 dB

ACTV DET: PEAK
MEAS DET: PEAK QP AVG
MKRΔ -185 kHz
.48 dB




Tek Stop: 20kS/s
11 Acqs
Δ: 1.5ms
@: −19.45ms
R1
Ch1 200mV
Ref1 100mV
500µs
M 2.5ms Ch1 ∫ −48mV
13 Mar 1998
13:42:51


Tek Stop: 20kS/s
11 Acqs
Δ: 2.95ms
@: −18ms
R1
Ch1 200mV
Ref1 100mV
500µs
M 2.5ms Ch1 ∫ −48mV
13 Mar 1998
13:45:06


Tek Stop: 1kS/s
5 Acqs
Δ: 400ms
@: 393ms
R1
Ch1 200mV
Ref1 100mV
500µs
M 50ms Ch1 ∫ −48mV
13 Mar 1998
13:30:01

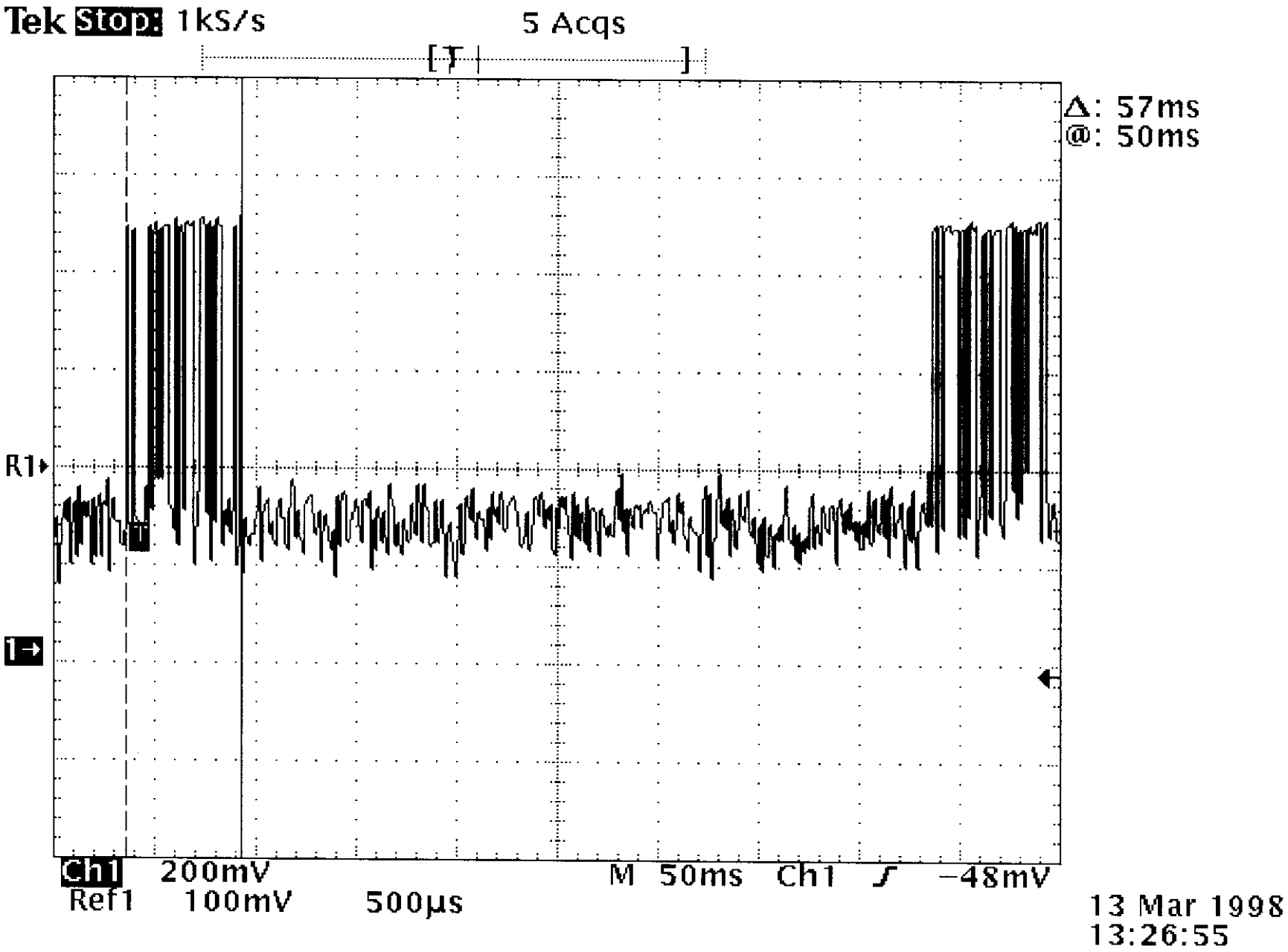

Tek Stop: 1kS/s
5 Acqs
Δ: 57ms
@: 50ms
R1
Ch1 200mV
Ref1 100mV
500µs
M 50ms Ch1 ∫ -48mV
13 Mar 1998
13:26:55

EXHIBIT 4

EQUIPMENT PHOTOGRAPHS

4.0 Equipment Photographs

Photographs of the modifications made to the EUT (since original grant and during testing, if applicable) are attached.

3.4 Line Conducted Emission Configuration Data

No line-conducted emissions measurements were performed as the unit is battery powered.

TEST PERSONNEL:

Andrew T. Bellezza FOR KDS

Tester Signature

Kouma Sinn, Compliance Engineer

Typed/Printed Name

4-17-98

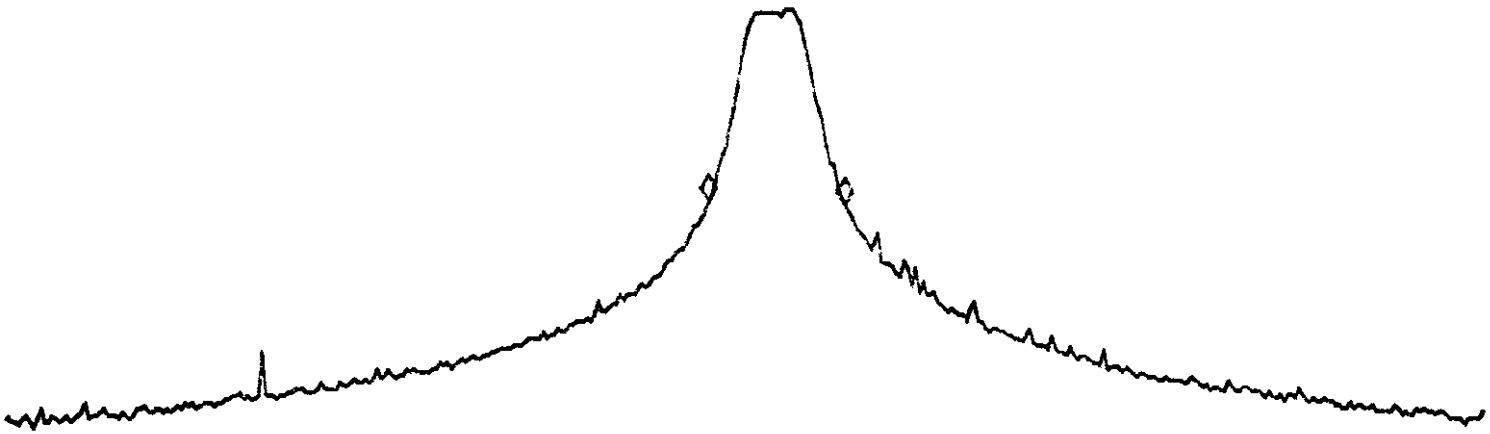
Date

11:46:19 MAR 13, 1998

MARKER Δ
-185 kHz
.48 dB

ACTV DET: PEAK
MEAS DET: PEAK QP AVG
MKRΔ -185 kHz
.48 dB

LOG REF 60.0 dBμV
10
dB/
#ATN
0 dB



MA SB
SC FC
CORR

CENTER 303.000 MHz
#IF BW 30 kHz

AVG BW 30 kHz

SPAN 2.000 MHz
#SWP 100 msec