

Marstech Limited

11 Kelfield Street, Etobicoke, Ontario, Canada, M9W 5A1
Telephone (416) 246-1116, Fax (416) 246-1020

Authorized by:
Professional Engineers
Ontario



Engineering &
Administrative



Testing For FCC
Submissions/Verifications

Approved Test Facility



TEST REPORT

REPORT DATE: 8 November 2000 REPORT NO: 20460D

CONTENTS: See Table of Contents

SUBMITTOR: ATLINKS USA, Inc.
101 West 103rd Street
Indianapolis, IN
46290-1102 USA

SUBJECT: Model No: 26930XXX-D
FCC ID: G9H2-6930D

TEST SPECIFICATION CFR 47 FCC Part 15
Sections: 15.35; 15.109, 15.209 and 15.249
NOTE: Tests Conducted Are "Type" Tests.

DATE SAMPLE RECEIVED: 27 Sept and 27 October 2000 DATE TESTED: 5, 13, 30 October 2000

RESULTS: Equipment tested complies with referenced specification.

ALTERATIONS The following alteration is required in compliance with referenced specification:
Base RF Module:
1. R21, 220 Ω resistor was changed to 470 Ω .
2. C51, 2pF capacitor was changed to 1pF.
3. C55, 2pF capacitor was changed to 4pF.

Tested by: *Ed. Chang*
Edward Chang
Approved by: *Robert G. Marshall*
R. G. MARSHALL, P. Eng.
Date: *Nov 21/00*

THIS REPORT SHALL NOT BE REPRODUCED, EXCEPT IN FULL, WITHOUT THE WRITTEN APPROVAL OF MARSTECH LIMITED. This report was prepared by Marstech Limited for the account of the "Submitter". The material in it reflects Marstech's judgement in light of the information available to it at the time of preparation. Any use which a Third Party makes of this report, or any reliance on decisions to be made based on it, are the responsibility of such Third Parties. Marstech accepts no responsibility for damages, if any, suffered by any Third Party as a result of decisions made or actions based on this report.

TECHNICAL REPORT - FCC 2.1033(b)

Applicant

ATLINKS USA, Inc.
101 West 103rd Street
Indianapolis, IN
46290-1102 USA

FCC Identifier

G9H2-6930D

Manufacturer

Integrated Display Technology Telecommunications (Shenzhen) Co. Ltd.
Block D, Xixian Chen Tian Industrial Estate
Xixian Town, Baoan City, China

TABLE OF CONTENTS

<u>Exhibit</u>	<u>Description</u>	<u>FCC Ref.</u>	<u>Page</u>
A	Installation and Operating Instructions Furnished to the User.	2.1033(b)(3)	Exhibit A Exhibit A(1)
B	Description of Circuit Functions	2.1033(b)(4)	Exhibit B Exhibit B(1)-1 to -2
C	Block Diagram Schematic Diagram	2.1033(b)(5)	Exhibit C Exhibit C(1)-1 to -2 Exhibit C(2)-1 to -2
D	Report of Measurements	2.1033(b)(6)	Exhibit D
E	Photographs Label Equipment	2.1033(b)(7)	Exhibit E Exhibit E(1)-1 to -3 Exhibit E(2)-1 to -8

EXHIBIT D

[FCC Ref. 2.1033(b)(6)]

"Report of Measurements"

Exhibit D(1)-1 to D(1)-9 - Test Report
Attachments 1 to 9 - Exhibit Attachments

TABLE OF CONTENTS

TEST REPORT CONTAINING:

Exhibit D(1)-2	Product Description
Exhibit D(1)-3	Test Equipment List
Exhibit D(1)-4	Test Procedure
Exhibit D(1)-5	Band Edges
Exhibit D(1)-6	Power Line Conducted Interference
Exhibit D(1)-7 to -9	Field Strength of Emissions

EXHIBIT ATTACHMENTS:

Attachments 1 to 2	Power Line Conducted Emissions
Attachment 3	Band Edge Attenuation
Attachment 4	Bandwidth
Attachments 5 to 6	Test Setup Photos
Attachment 7	Measurement Facility (3 meter site)

PRODUCT DESCRIPTION

The Model 26930XXX-D is a 40-channel 900 MHz analog cordless telephone with caller ID and optional headset that operates in the 902 to 928 MHz band. The antenna used for the base and the handset is permanently attached to the UUT. Its actual frequency range is:

Base: **902.8 to 904.75 MHz**

Handset: **925.3 to 927.25 MHz**

TEST EQUIPMENT LIST

- 1 Spectrum Analyzer: HP 8591EM, S/N 3639A00995, Cal. March 2000.
- 2 Spectrum Analyzer: ANISTRU 2601A, S/N MT64544, Cal. May 2000.
- 3 Spectrum Analyzer: IFR AN940, S/N 635001039, Cal. March 2000.
- 4 Spectrum Analyzer: Advantest R3271A, S/N J001279, Cal. due May 2001.
- 5 Preamp: HP 8449B, S/N 3008A00378, Cal. March 2000.
- 6 Bilog Antenna: Chase CBL6121A, S/N 1039, Cal. July 2000.
- 7 Dipole Antenna Kit: Compliance Design A100, S/N 00430, Cal. due Sept. 2004.
- 8 Horn Antenna: Q-PAR 6878/24, S/N 1721, 1.5-18GHz.
- 9 Line Impedance Stabilization Network: Marstech, Cal. July 2000.

TEST PROCEDURE

GENERAL:

Shielded interface cables were used in all cases except for cables connecting to the telephone line and the power cords. A test program was run which simulated a normal transmission.

POWER LINE CONDUCTED INTERFERENCE:

The procedure used was ANSI STANDARD C63.4 1992 using a 50uH LISN. Both lines were observed with the UUT transmitting. The bandwidth of the spectrum analyzer was 9KHz QP with an appropriate sweep speed. The ambient temperature of the UUT was 24°F with a humidity of 60%.

BANDWIDTH 20dB:

The measurements were made with the spectrum analyzer's resolution bandwidth (RBW)=100KHz and the video bandwidth (VBW)=1.0MHz and the span set as shown on plot.

POWER OUTPUT:

The radiated output power was measured with the spectrum analyzer and Bilog Antenna.

RADIATION INTERFERENCE:

The test procedure used was ANSI STANDARD C63.4-1992 using an appropriate spectrum analyzer, as listed in the Test Equipment List. The bandwidth (RBW) of the spectrum analyzer was 100KHz/120KHz up to 1GHz with an appropriate sweep speed. The RBW above 1.0GHz was = 1MHz. The analyzer was calibrated in dB above a microvolt at the output of the antenna. The ambient temperature of the UUT was 24°F with a humidity of 60%.

15.249 (c) BAND EDGES

Requirements: Emissions outside of the frequency band 902 to 928 MHz must be attenuated 50dB below the fundamental.

Measurement: The base was attenuated by 50 dB. The headset was attenuated by 50 dB.

Measurement Data: The Bandedge was measured at the Low end of the band for the base, and the High end of the band for the handset. See Plots in Attachment 3.

15.107 (a) POWER LINE CONDUCTED INTERFERENCE

Requirements: 0.45 - 30MHz 250 μ V or 47.96dB μ V

Test Procedure: ANSI STANDARD C63.4-1992.
The spectrum was scanned from 0.45 to 30MHz.

Test Data:

THE HIGHEST EMISSION READ FOR LINE 1 WAS 19.97 dB μ V @ 7.14 MHz.

THE HIGHEST EMISSION READ FOR LINE 2 WAS 18.40 dB μ V @ 7.14 MHz

The graphs in Attachments 1 & 2 represent the emissions taken for this device.

Test Results:

Both lines were observed. The measurements indicate that the unit DOES appear to meet the FCC requirements for this class of equipment.

15.249 (a) and 15.249 (b)
FIELD STRENGTH OF EMISSIONS

Requirements:

<u>Field Strength of Fundamental</u>	<u>Field Strength of Harmonics</u>	<u>S15.209</u>
		30-88 MHz 40 dB μ V/m@ 3m
902 to 928MHz 94dB μ V	54dB μ V/m@ 3m	88-216 MHz 43.5
		216-960 MHz 46
		Above 960 MHz 46

Emissions radiated outside of the specified frequency bands, except for harmonics, shall be attenuated by at least 50dB below the level of the fundamental or to the general radiated emission limits in 15.209, whichever is the lesser attenuation.

Emissions that fall in the restricted bands (15.205) must be less than 54dB μ V/m

FIELD STRENGTH OF EMISSIONS**Test Data:****HANDSET**

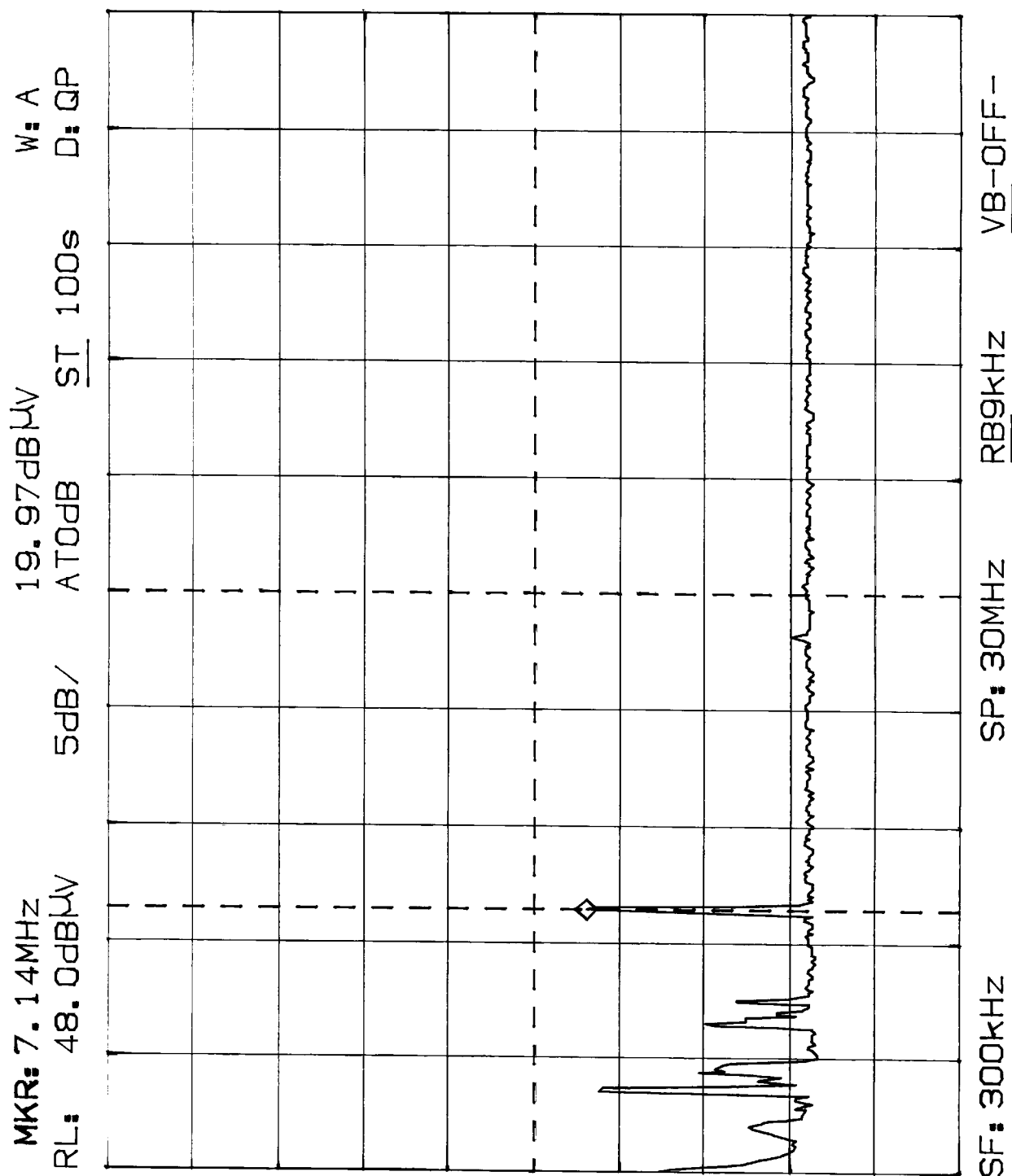
Emission Frequency MHZ	Meter Reading @3m dB μ V	Antenna	Cable and ACF dB	Field Strength dB μ V/M	FCC Limit dB μ V/M	Margin dB	Detector & BW KHz
<u>Channel 1</u>							
925.300	58.5	RT.4 V	33.4	91.9	94	-2.1	PK 100
1850.60	11.96	Horn V	33.2	45.12	54	-8.88	PK 1000
2775.90	13.1	Horn V	33.92	47.02	54	-6.98	PK 1000
3701.20	10.4	Horn V	35.55	45.95	54	-8.05	PK 1000
4626.50	---						
5551.80	---						
6477.10	---						
<u>TX</u>							
462.64	13.9	LP V	19.4	33.30	46	-12.7	QP 120
<u>Channel 40</u>							
927.2502	57.75	RT.4 V	33.5	91.25	94	-2.75	PK 100
1854.50	11.86	Horn V	33.2	45.06	54	-8.94	PK 1000
2781.75	11.1	Horn V	33.92	45.02	54	-8.98	PK 1000
3709.00	10.6	Horn V	35.55	46.15	54	-7.85	PK 1000
4636.25	---						
5563.50	---						
6490.75	---						
<u>TX</u>							
463.62	14.69	LP V	19.4	34.09	46	-11.91	QP 120

FIELD STRENGTH OF EMISSIONS**Test Data:****BASE UNIT**

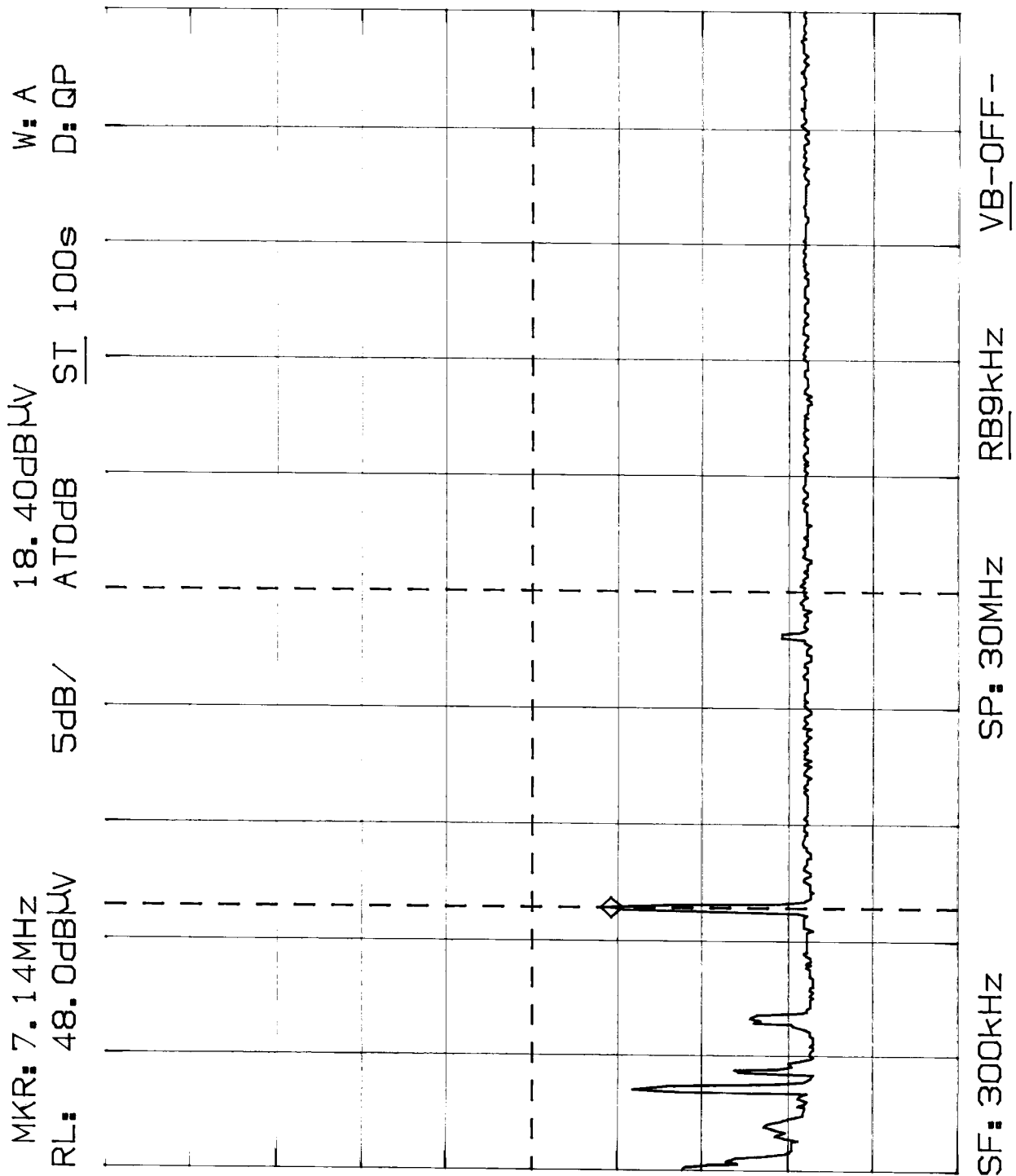
Emission Frequency MHZ	Meter Reading @3m dB μ V	Antenna	Cable and ACF dB	Field Strength dB μ V/M	FCC Limit dB μ V/M	Margin dB	Detector & BW KHz
<u>Channel 1</u>							
902.801	52	RT.4 V	33.20	85.2	94	-8.8	PK 100
1805.60	18.72	Horn V	33.20	51.92	54	-2.08	PK 1000
2708.40	10.03	Horn V	33.92	43.94	54	-10.06	PK 1000
3611.20	---						
<u>Channel 40</u>							
904.751	58.2	RT.4 V	33.30	91.6	94	-2.4	PK 100
1809.50	16.92	Horn V	33.20	50.12	54	-3.88	PK 1000
2714.25	10.02	Horn V	33.92	43.94	54	-10.06	PK 1000
3619.00	---						

LOW END RESULTS:**EMISSIONS ARE LESS THAN 20dB BELOW THE LIMIT.**

POWER LINE CONDUCTED EMISSIONS
MODEL 26930XXX-D; LINE 1



POWER LINE CONDUCTED EMISSIONS
MODEL 26930XXX-D; LINE 2



BAND EDGE ATTENUATION MODEL 26930XXX-D; (HANDSET)

16:54:49 OCT 30, 2000

17

MARKER Δ

-750 kHz

56.48 dB

ACTV DET: PEAK

MEAS DET: PEAK QP AVG

MKR Δ -750 kHz

56.48 dB

LOG REF 78.0 dB μ V

10

dB/

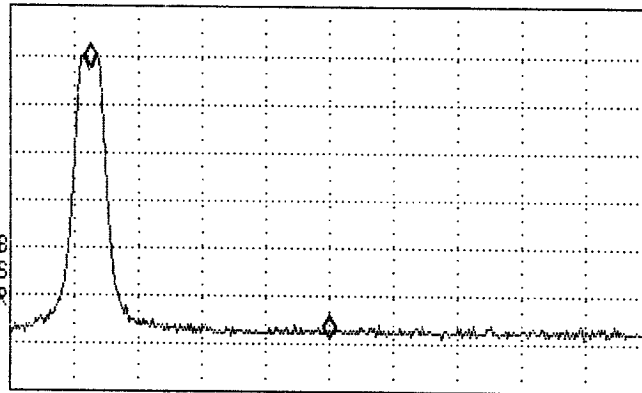
#ATN

0 dB

WA SB

SC FS

CORR



CENTER 928.000 MHz

#IF BW 10 kHz

#AVG BW 1 MHz

SPAN 2.000 MHz

#SWP 20.0 sec

16:58:51 OCT 30, 2000

17

SWEPTIME

20.0 sec

ACTV DET: PEAK

MEAS DET: PEAK QP AVG

MKR Δ 805 kHz

65.48 dB

LOG REF 78.0 dB μ V

10

dB/

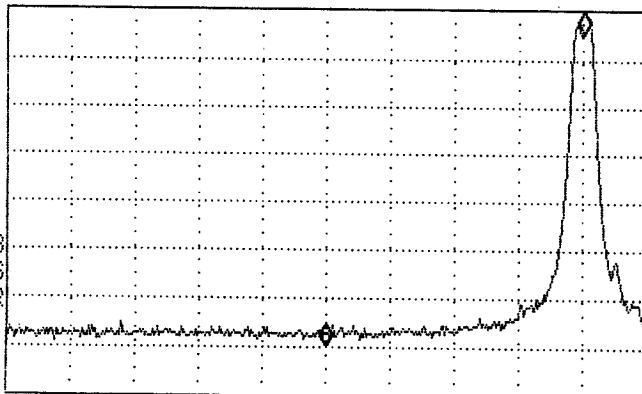
#ATN

0 dB

WA SB

SC FS

CORR



CENTER 902.000 MHz

#IF BW 10 kHz

#AVG BW 1 MHz

SPAN 2.000 MHz

#SWP 20.0 sec

BAND EDGE ATTENUATION MODEL 26930XXX-D; (BASE)

FCC ID: G9H2-6930D
Marstech Report No. 20460D
ATTACHMENT 3

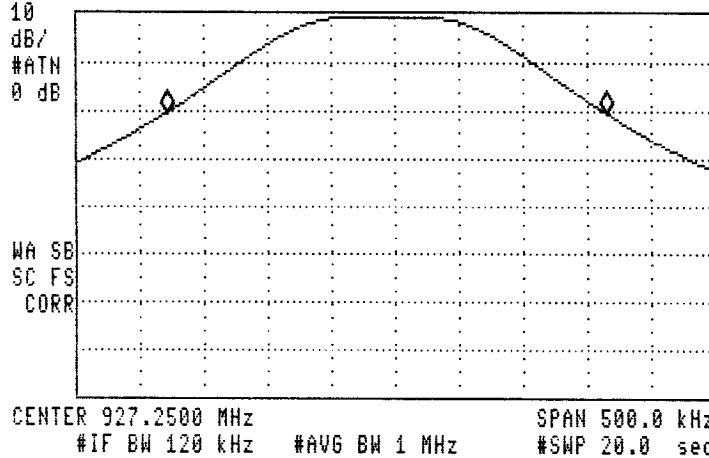
BANDWIDTH (HANDSET) **MODEL 26930XXX-D**

16:47:02 OCT 30, 2000
/p/

SWEEPTIME
20.0 sec

ACTV DET: PEAK
MEAS DET: PEAK QP AVG
MKRA 343.8 kHz
-.02 dB

LOG REF 67.0 dBμV

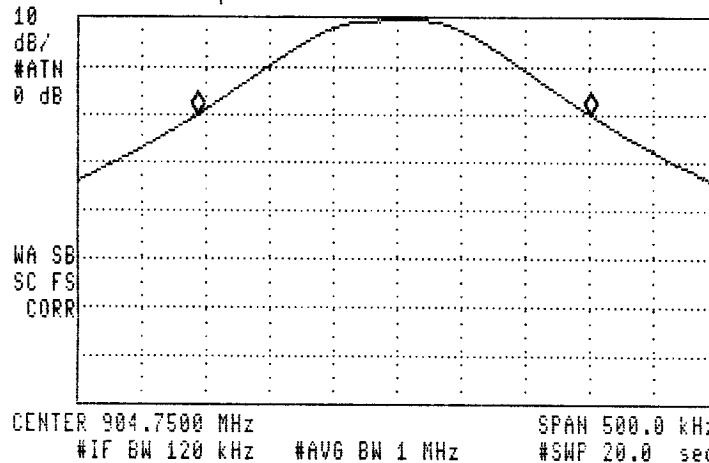


16:49:33 OCT 30, 2000
/p/

SWEEPTIME
20.0 sec

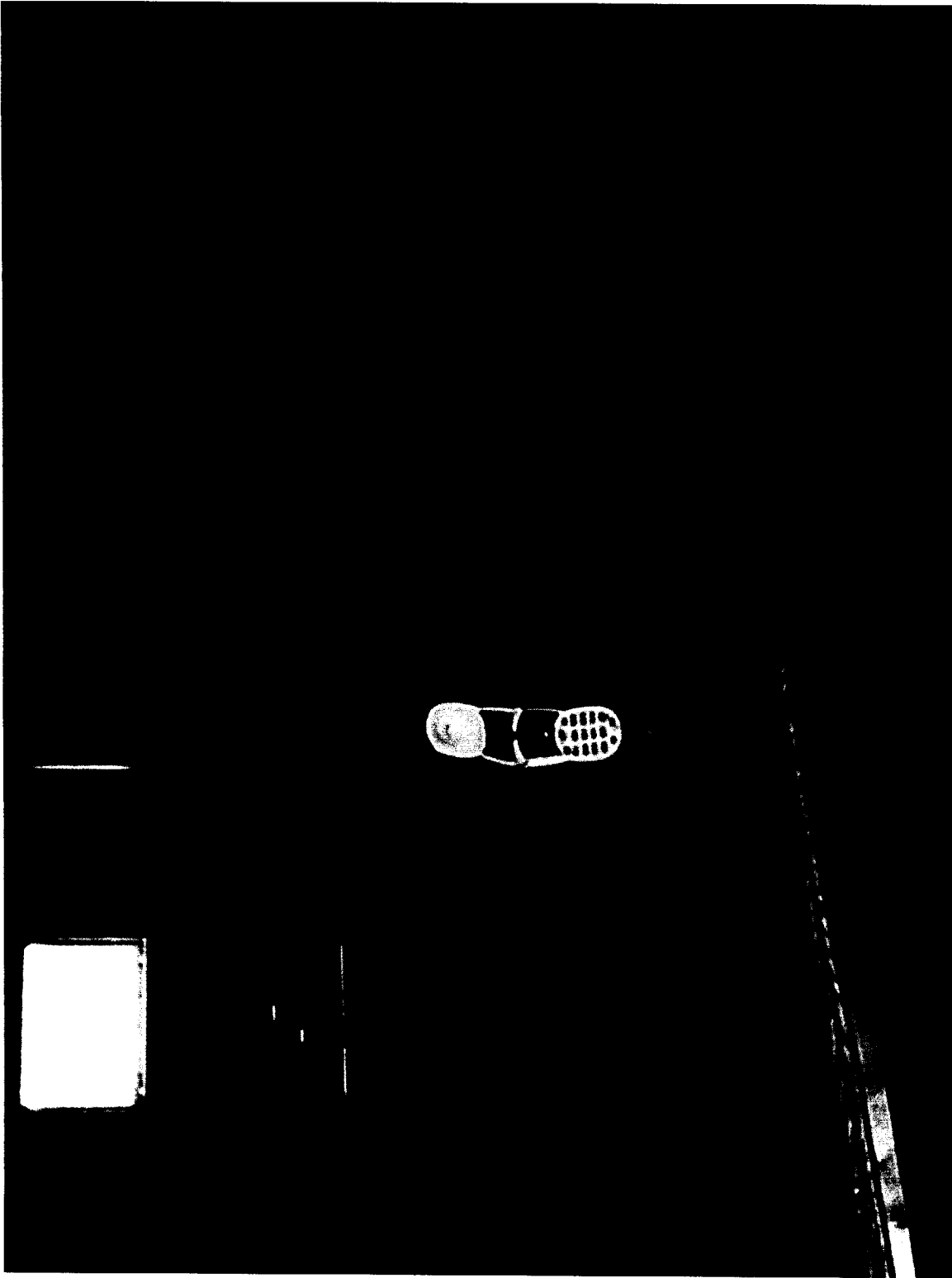
ACTV DET: PEAK
MEAS DET: PEAK QP AVG
MKRA 307.5 kHz
-.03 dB

LOG REF 70.0 dBμV

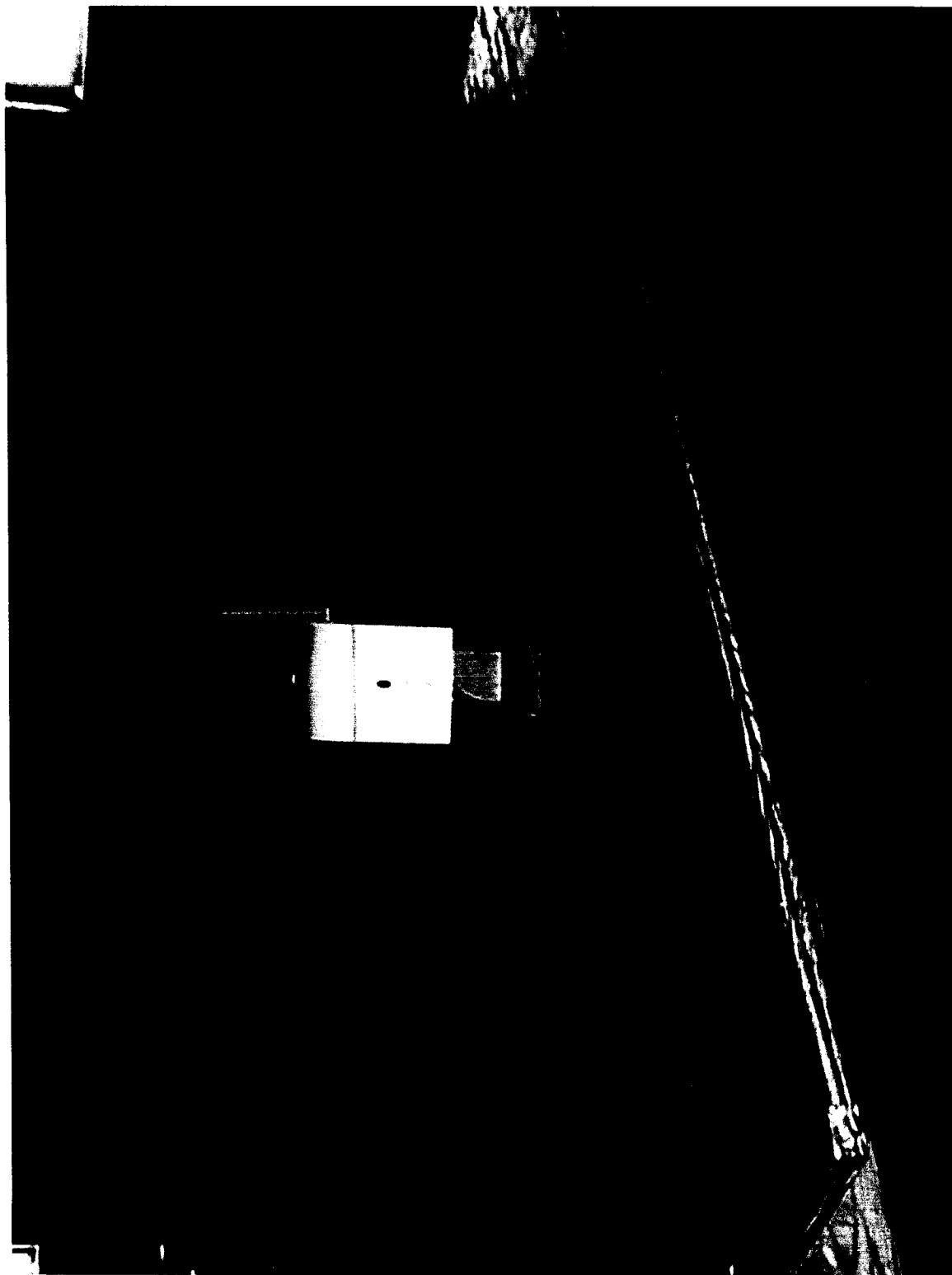


BANDWIDTH (BASE) **MODEL 26930XXX-D**

**TEST SET UP (HANDSET)
MODEL 26930XXX-D**



TEST SET UP (BASE)
MODEL 26930XXX-D



FEDERAL COMMUNICATIONS COMMISSION

Laboratory Division
7435 Oakland Mills Road
Columbia, MD. 21046

September 20, 2000

Registration Number: 90578

Electrohome Electronics Ltd.
809 Wellington St. N.
Kitchener, Ontario N2G 4J6
Canada

Attention: Gerry Gallagher

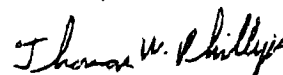
Re: Measurement facility located at Roseville
3 meter-site
Date of Listing: September 20, 2000

Gentlemen:

Your submission of the description of the subject measurement facility has been reviewed and found to be in compliance with the requirements of Section 2.948 of the FCC Rules. The description has, therefore, been placed on file and the name of your organization added to the Commission's list of facilities whose measurement data will be accepted in conjunction with applications for Certification under Parts 15 or 18 of the Commission's Rules. Please note that this filing must be updated for any changes made to the facility, and at least every three years from the date of listing the data on file must be certified as current.

If requested, the above mentioned facility has been added to our list of those who perform these measurement services for the public on a fee basis. An up-to-date list of such public test facilities is available on the Internet on the FCC Website at WWW.FCC.GOV, E-Filing, OET Equipment Authorization Electronic Filing.

Sincerely,



Thomas W Phillips
Electronics Engineer

FCC ID: G9H2-6930D
Marstech Report No. 20460D
ATTACHMENT 7

TOTAL P. 01