Marstech Limited

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Authorized by: Professional Engineers Ontario
Engineering & Administrative
Testing For FCC Submissions/Verifications
Approved Test Facility
Industry Canada Industrie Canada
Qualified SR Facility

TEST REPORT			
REPORT DATE:	August 1, 2000		REPORT NO: 20313D
CONTENTS:	See Table of Contents		
SUBMITTOR:	ATLINKS USA, Inc. 101 West 103rd Street Indianapolis, IN 46290-1102 USA		
SUBJECT:	Model No:	27600XXX-A	
	FCC ID:	G9H2-7600	
TEST SPECIFICATION	FCC CFR 47 15.233 AND 2.989 Sections: 15.209 NOTE: Tests Conducted Are "Type" Tests.		
DATE SAMPLE RECEIVED:	June 29, 2000	DATE TESTED:	July 7, 2000
RESULTS:	Equipment tested complies with referenced specification.		
ALTERATIONS	The following alterations required for compliance with referenced specification: Handset and Base Unit MCU (TMP78C405M) software for channel frequency were changed.		
Tested by:	S. D. Robinson	Approved and Certified by:	Robert G. Marshall, P. Eng.
	Edward Chang	Date:	Aug 8/00

REGISTERED PROFESSIONAL ENGINEER R. G. MARSHALL

TECHNICAL REPORT - FCC 2.1033(b)

Applicant

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

FCC Identifier

G9H2-7600

Manufacturer

Huiyang CCT Telecommunications Products Co.
San He Economic Experimental Zone
Huiyang, Guangdong Province, The PRC

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EXHIBIT D

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

"Report of Measurements"

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TEST REPORT CONTAINING:

EXHIBIT ATTACHMENTS:

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	Double-Ridged Horn Antenna: EMCO 3115, S/N 9611-5010, 1-18GHz.
9	Horn Antenna: Q-PAR 6878/24, S/N 1721, 1.5-18GHz.
10	Line Impendance 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 6.0dB: The measurements were made with the spectrum analyzer's resolution bandwidth (RBW)=1.0MHz 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 Double Ridged Horn 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 VBW above 1.0GHz was = 1.0GHz. 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%.

PRODUCT DESCRIPTION

The Model 27600XXX-A is a 2.4GHz analog cordless telephone that operates in the 2400-2483.5MHz band. The antenna used for the base and the handset is permanently attached to the UUT. Its actual frequency range is:

Base:	2402.3 to 2408.15
Handset:	2474.7 to 2480.55

A complete frequency list is shown on the next page.

THE NEW FREQUENCY TABLE FOR 27600A

Handset Unit Frequency Allocation

Channel No.	Tx Freq.	TXVCO Freq.	RX Freq.	RXVCO Freq.	Channel No.	Tx Freq.	TXVCO Freq.	RX Freq.	RXVCO Freq.
1	2474.700	824.9000	2402.300	797.2000	21	2477.700	825.9000	2405.300	798.2000
2	2474.850	824.9500	2402.450	797.2500	22	2477.850	825.9500	2405.450	798.2500
3	2475.000	825.0000	2402.600	797.3000	23	2478.000	826.0000	2405.600	798.3000
4	2475.150	825.0500	2402.750	797.3500	24	2478.150	826.0500	2405.750	798.3500
5	2475.300	825.1000	2402.900	797.4000	25	2478.300	825.5000	2405.900	798.4000
6	2475.450	825.1500	2403.050	797.4500	26	2478.450	825.5500	2406.050	798.4500
7	2475.600	825.2000	2403.200	797.5000	27	2478.600	825.6000	2406.200	798.5000
8	2475.750	825.2500	2403.350	797.5500	28	2478.750	825.6500	2406.350	798.5500
9	2475.900	825.3000	2403.500	797.6000	29	2478.900	825.7000	2406.500	798.6000
10	2476.050	825.3500	2403.650	797.6500	30	2479.050	825.7500	2406.650	798.6500
11	2476.200	825.4000	2403.800	797.7000	31	2479.200	825.8000	2406.800	798.7000
12	2476.350	825.4500	2403.950	797.7500	32	2479.350	825.8500	2406.950	798.7500
13	2476.500	825.5000	2404.100	797.8000	33	2479.500	825.9000	2407.100	798.8000
14	2476.650	825.5500	2404.250	797.8500	34	2479.650	825.9500	2407.250	798.8500
15	2476.800	825.6000	2404.400	797.9000	35	2479.800	826.0000	2407.400	798.9000
16	2476.950	825.6500	2404.550	797.9500	36	2479.950	826.0500	2407.550	798.9500
17	2477.100	825.7000	2404.700	798.0000	37	2480.100	826.1000	2407.700	799.0000
18	2477.250	825.7500	2404.850	798.0500	38	2480.250	826.1500	2407.850	799.0500
19	2477.400	825.8000	2405.000	798.1000	39	2480.400	826.2000	2408.000	799.1000
20	2477.550	825.8500	2405.150	798.1500	40	2480.550	826.2500	2408.150	799.1500

Base Station Unit Frequency Allocation

Channel No.	Tx Freq.	TXVCO Freq.	RX Freq.	RXVCO Freq.	Channel No.	Tx Freq.	TXVCO Freq.	RX Freq.	RXVCO Freq.
1	2402.300	800.7667	2474.700	828.4667	21	2405.300	801.7667	2477.700	829.4667
2	2402.450	800.8167	2474.850	828.5167	22	2405.450	801.8167	2477.850	829.5167
3	2402.600	800.8667	2475.000	828.5667	23	2405.600	801.8667	2478.000	829.5667
4	2402.750	800.9167	2475.150	828.6167	24	2405.750	801.9167	2478.150	829.6167
5	2402.900	800.9667	2475.300	828.6667	25	2405.900	801.9667	2478.300	829.6667
6	2403.050	801.0167	2475.450	828.7167	26	2406.050	802.0167	2478.450	829.7167
7	2403.200	801.0667	2475.600	828.7667	27	2406.200	802.0667	2478.600	829.7667
8	2403.350	801.1167	2475.750	828.8167	28	2406.350	802.1167	2478.750	829.8167
9	2403.500	801.1667	2475.900	828.8667	29	2406.500	802.1667	2478.900	829.8667
10	2403.650	801.2167	2476.050	828.9167	30	2406.650	802.2167	2479.050	829.9167
11	2403.800	801.2667	2476.200	828.9667	31	2406.800	802.2667	2479.200	829.9667
12	2403.950	801.3167	2476.350	829.0167	32	2406.950	802.3167	2479.350	830.0167
13	2404.100	801.3667	2476.500	829.0667	33	2407.100	802.3667	2479.500	830.0667
14	2404.250	801.4167	2476.650	829.1167	34	2407.250	802.4167	2479.650	830.1167
15	2404.400	801.4667	2476.800	829.1667	35	2407.400	802.4667	2479.800	830.1667
16	2404.550	801.5167	2476.950	829.2167	36	2407.550	802.5167	2479.950	830.2167
17	2404.700	801.5667	2477.100	829.2667	37	2407.700	802.5667	2480.100	830.2667
18	2404.850	801.6167	2477.250	829.3167	38	2407.850	802.6167	2480.250	830.3167
19	2405.000	801.6667	2477.400	829.3667	39	2408.000	802.6667	2480.400	830.3667
20	2405.150	801.7167	2477.550	829.4167	40	2408.150	802.7167	2480.550	830.4167

15.249 (c) BAND EDGES

Requirements: Emissions outside of the frequency band 2400-2483.5MHz 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 handset, and the High end of the band for the base. See Plots in Exhibits 2 (a), 2 (b).

15.107 (a) POWER LINE CONDUCTED INTERFERENCE

Requirements: 0.45 - 30MHz 250μV or 47.96dBμV

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 21.37 dBμV@7.20 MHz.

THE HIGHEST EMISSION READ FOR LINE 2 WAS 18.11 dBμV@7.20 MHz

The graphs in Exhibit 1 (a) and (b) 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:

Field Strength of Fundamental	Field Strength of Harmonics	S15.209
		30-88MHz 40 dBμV/m@ 3m
2.4-2.4835 GHz 94dBμV	54 dBμV/m@ 3m	88-216MHz 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 54dBμV/m

FIELD STRENGTH OF EMISSIONS

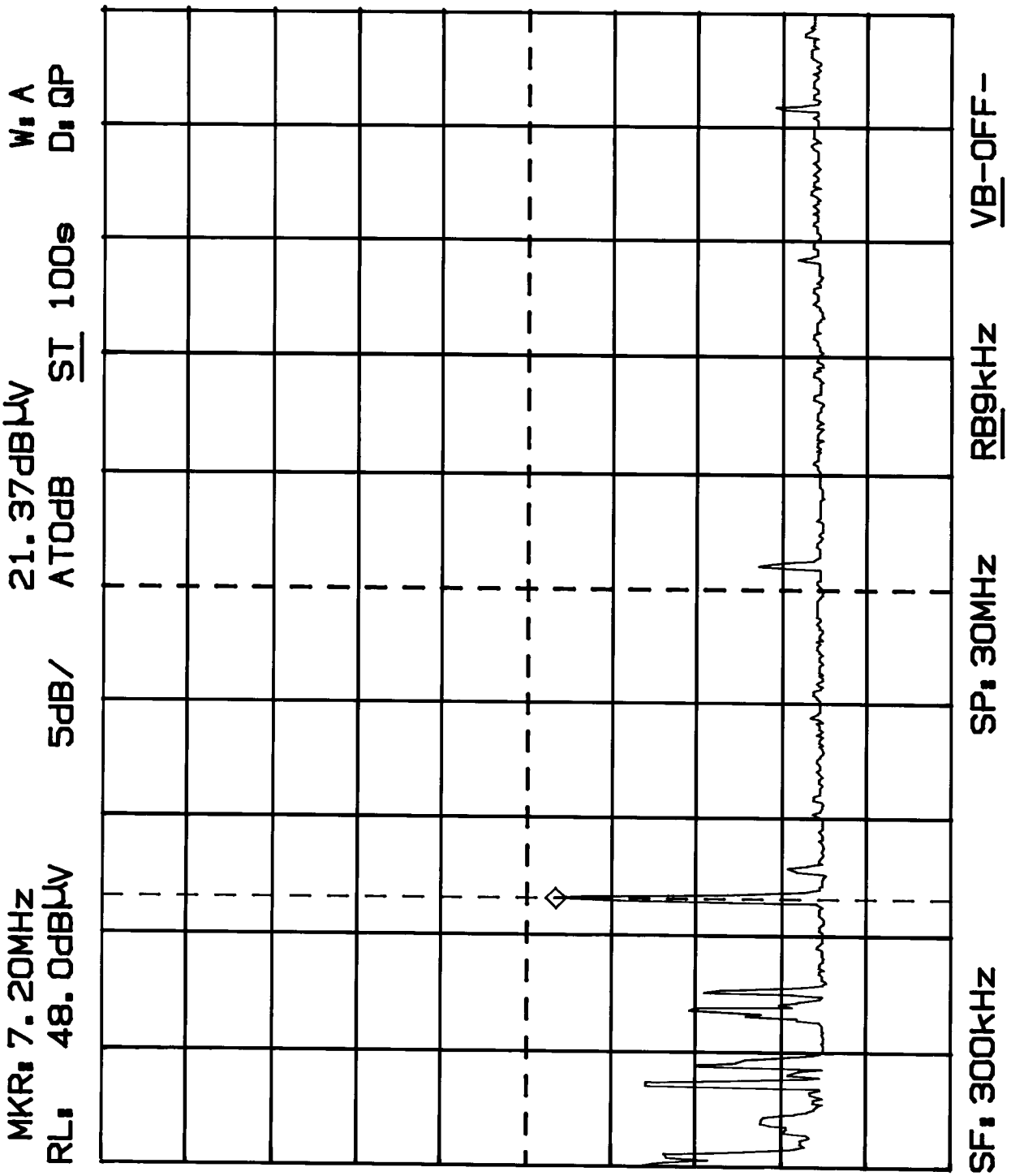
Test Data:

Emission Frequency MHz	Meter Reading @3m dBμV	Cable and ACF dB	Field Strength dBμV/m	FCC Limit dB	Margin dB	Antenna
Handset						
2474.7	53.2	30.3	83.5	94	10.5	H
2477.55	53.73	30.3	84.03	94	9.97	H
2478.7	53.5	30.3	83.8	94	10.2	H
Base						
2402.3	58.7	30.3	89	94	5	H
2405.15	56.96	30.3	87.16	94	6.84	H
2408.15	56.9	30.3	87.2	94	6.8	H

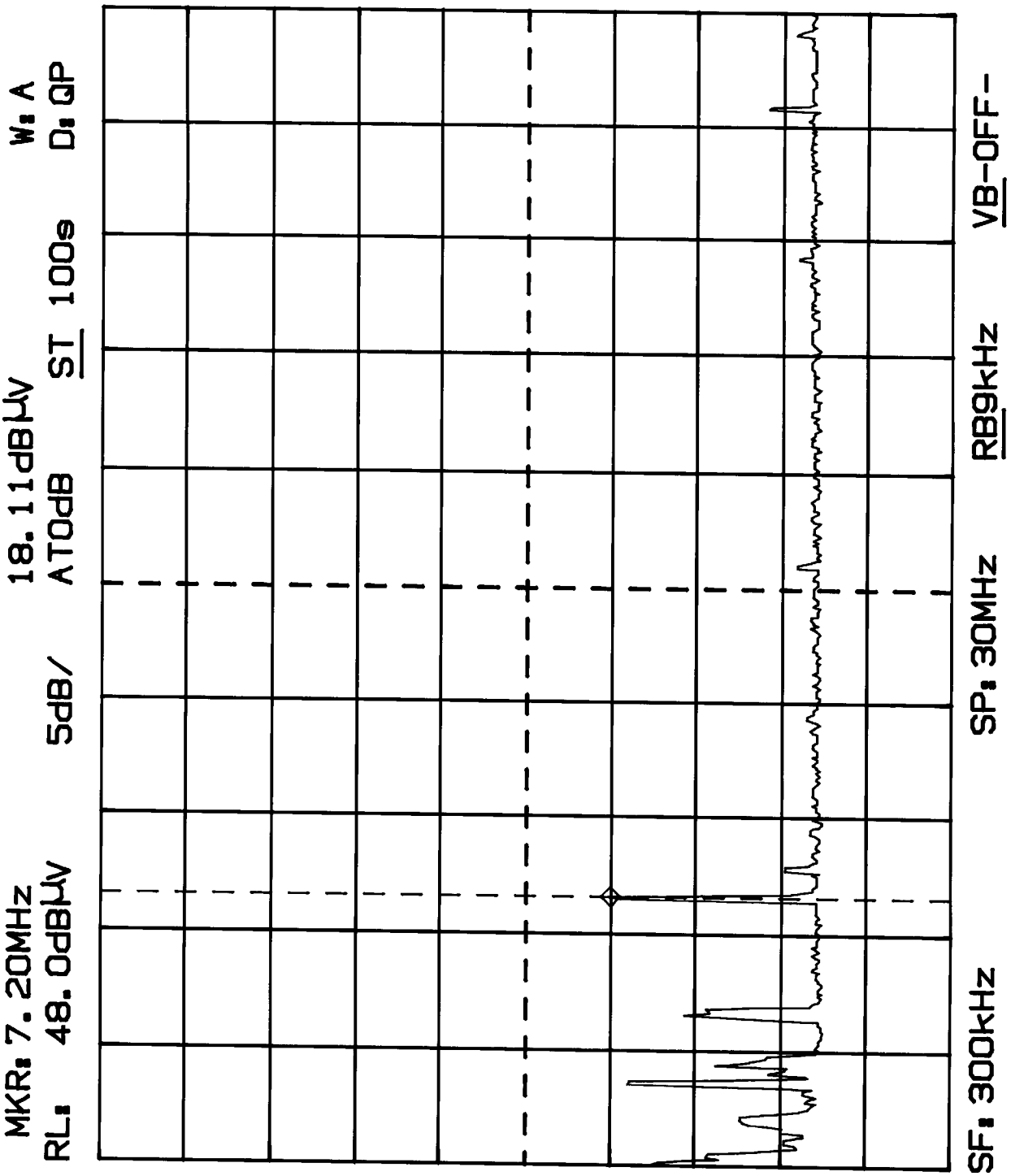
No harmonics were found at 3 meters.

Low End Shown in Exhibit 3.

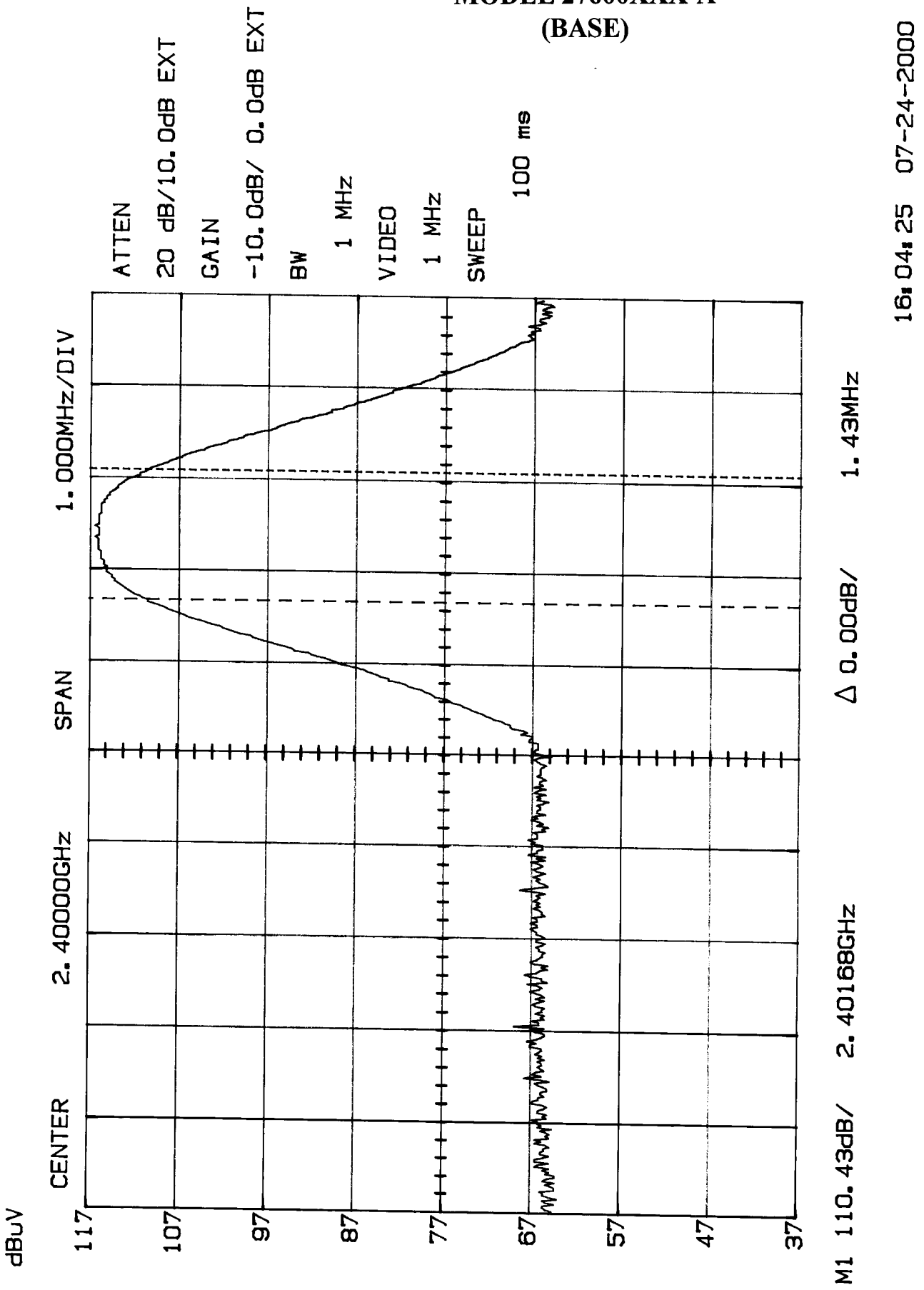
POWER LINE CONDUCTED EMISSIONS
MODEL 27600XXX-A
SIDE: A



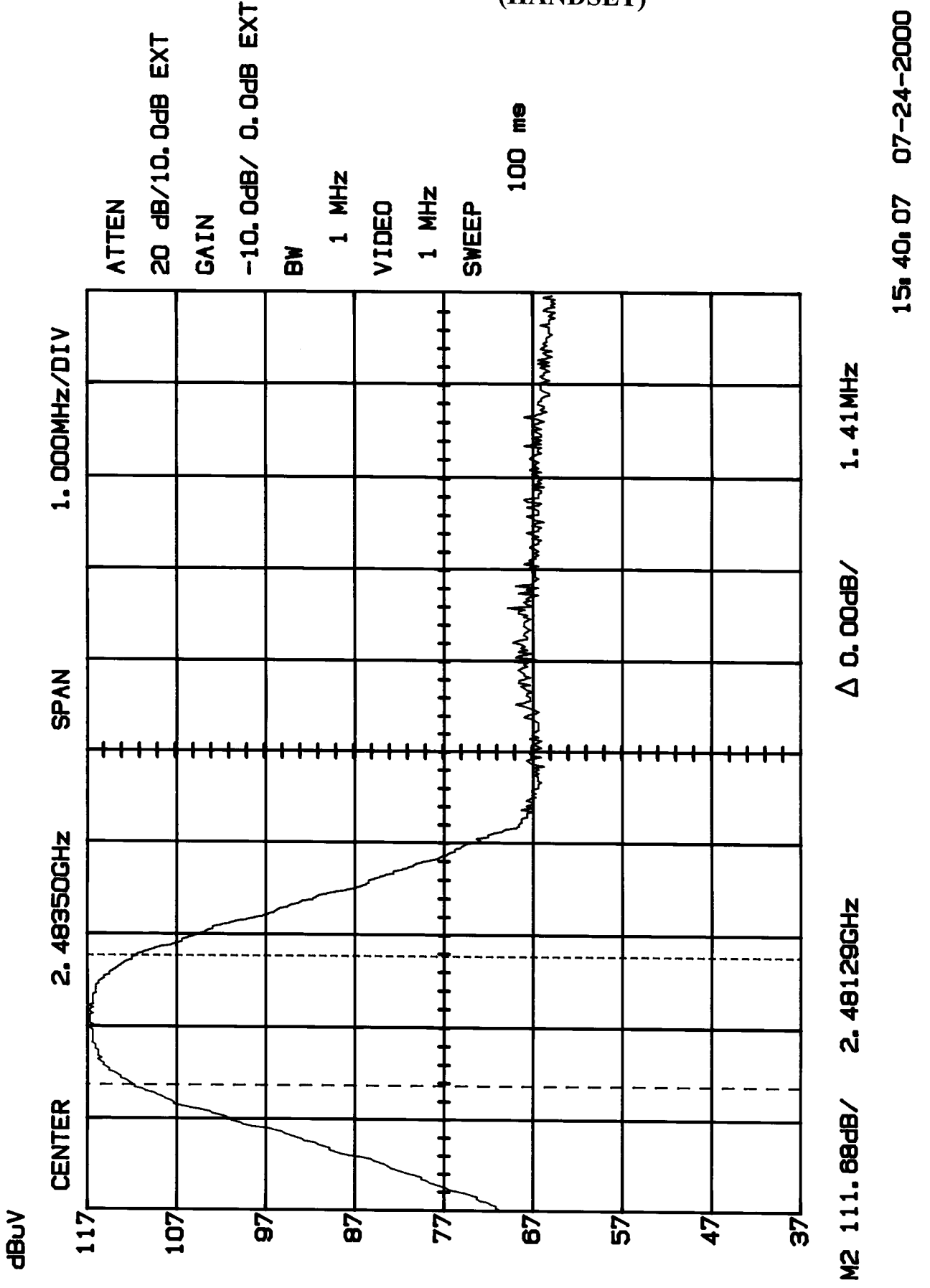
POWER LINE CONDUCTED EMISSIONS
MODEL 27600XXX-A
SIDE: B



BAND EDGE
MODEL 27600XXX-A
(BASE)

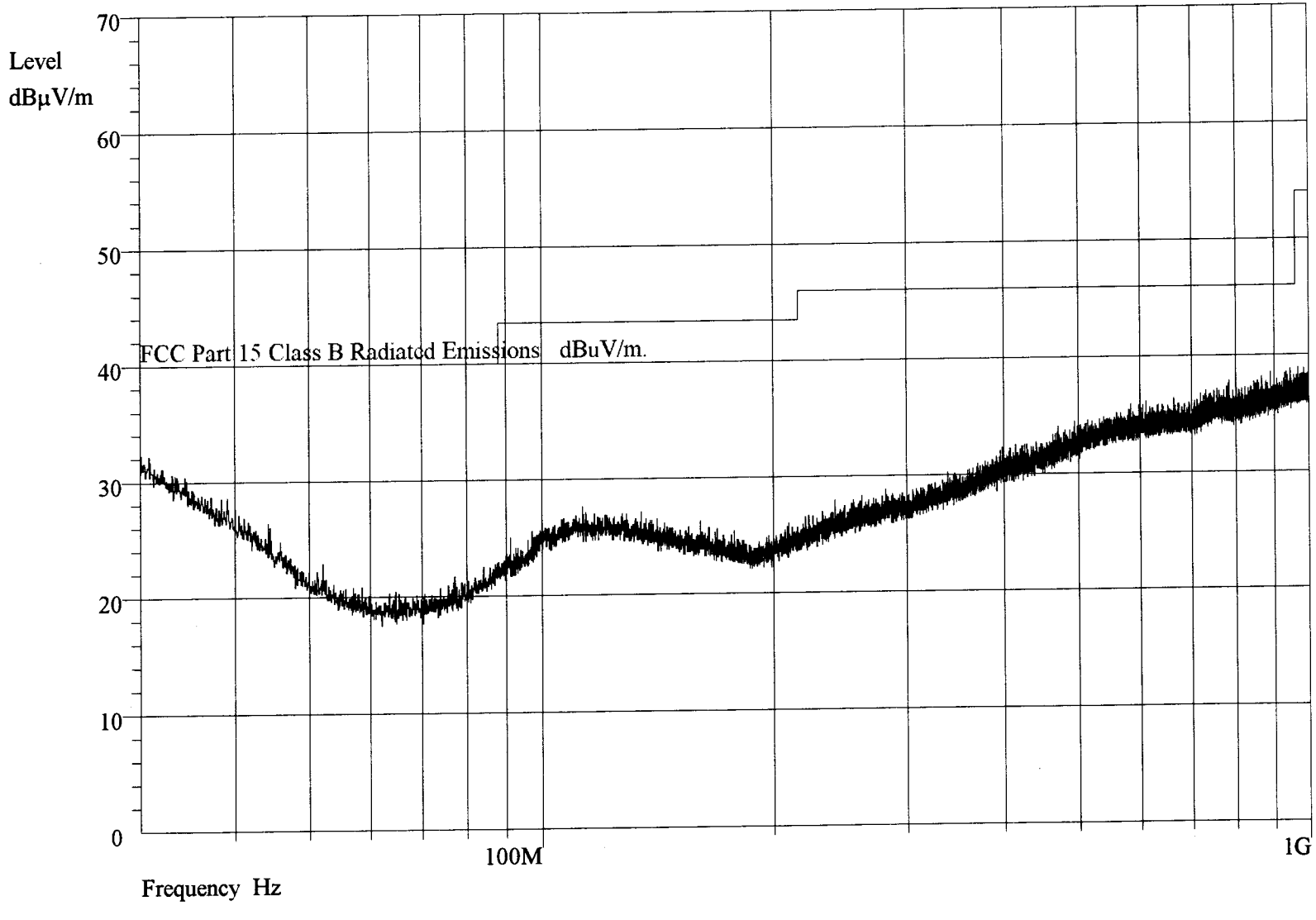


BAND EDGE
MODEL 27600XXX-A
(HANDSET)



Results Name: Model 27600A
Project: 6038247 Marstech INC.
Author: S. D. Robinson
Last Saved: 7/7/00 10:47

Printed on: 7/7/00 10:47



RADIATED EMISSIONS LOW END
MODEL 27600XXX-A

Marstech Report No. 20313D
EXHIBIT 3

Federal Communications Commission

13 Matches Found For:

- **TEST_FIRM_COUNTRY = CANADA**

Query Results:

NOTICE: The following firms have submitted the information required by Section 2.948 of the FCC Rules for measuring devices subject to Certification under Parts 15 & 18 and have indicated that they are available to the public on a contract basis. This list is provided as a public service. **IT IS YOUR RESPONSIBILITY TO SELECT A FIRM THAT IS CAPABLE OF MEASURING YOUR SPECIFIC DEVICE.** The FCC takes no responsiblity regarding the capability of these firms for performing the required measurements. Accordingly, firms on this list should not advertise or otherwise imply FCC approval of their site. An up-to-date listing is available on the FCC website (http://www.fcc.gov). Questions concerning this list may be directed to 301-362-3000.

A "V" indicates the firm is accredited by the National Institute of Standards and Technology (NIST) under the National Voluntary Laboratory Accreditation Program (NVLAP), "A" indicates accreditation by the American Association For Laboratory Accreditation (A2LA) and "F" indicates Accreditation by a Foreign Accreditor, to perform testing under the Declaration of Conformity procedure. For further information contact NIST at 301-975-5305 or A2LA at 301-644-3248. NOTE: A firm indicated by "F" may not be a contract test firm which has met the requirements of Section 2.948 for Certification testing.

Firm Name	Contact	Address One	Address Two	PO Box	Mail Stop	City	State	Zip	Country	E
APREL Laboratories	Jay Sarkar	51 Spectrum Way	N/A	N/A	N/A	Nepean, Ontario	ZZ	K2R 1E6	Canada	j.sarkar
CRIQ	Clermond Marquis	8475, avenue Christophe-Colomb	N/A	N/A	N/A	Montreal, Quebec	ZZ	H2M 2N9	Canada	N/A
√ Canadian Standards Association	Richard Sargent	178 Rexdale Boulevard	N/A	N/A	N/A	Etobicoke, Ontario	ZZ	M9W 1R3	Canada	richard. internati
EMC Consulting Inc.	D. Weston	P.O. Box 496	N/A	N/A	N/A	Merrickville, Ontario	ZZ	K0G 1N0	Canada	emccon
Electrohome Electronics Ltd.	Gerry Gallagher	809 Wellington St. N.	N/A	N/A	N/A	Kitchener, Ontario	ZZ	N2G 4J6	Canada	N/A
			P.O.							