

# Marstech Limited

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Authorized by:  
Professional Engineers  
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Engineering &  
Administrative

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TESTING FOR FCC  
Submissions/Verifications

Approved Test Facility

Qualified  
Facility

## TEST REPORT

REPORT DATE:	04 February 2002		REPORT NO:	21490D
CONTENTS:	See Table of Contents			
SUBMITTOR:	ATLINKS USA, Inc. 101 West 103 <sup>rd</sup> Street Indianapolis, IN 46290-1102 USA			
SUBJECT:	Model No: 26928XXX-A			
	FCC ID: G9H2-6928A			
TEST SPECIFICATION	FCC 47 CFR Part 15 NOTE: Tests Conducted Are "Type" Tests.			
DATE SAMPLE RECEIVED:	21 January 2002	DATE TESTED:	21, 30, & 31 January 2002	
RESULTS:	Equipment tested complies with referenced specification.			
ALTERATIONS	None			
Tested by:	Edward Chang	APPROVED BY MARSHALL	Robert G. Marshall, P. Eng.	
		DATE:	Feb 07/02	

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TECHNICAL REPORT - FCC 2.1033(b)

Applicant

ATLINKS USA, Inc.  
101 West 103<sup>rd</sup> Street  
Indianapolis, IN  
46290-1102 USA

FCC Identifier

G9H2-6928A

Manufacturer

Huiyang CCT Telecommunications Products Co. Ltd.  
CCT Technology Park, San He Economic Experimental Zone  
Huiyang City, Guangdong Province  
P. R. of China

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EXHIBIT D

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

"Report of Measurements"

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## **PRODUCT DESCRIPTION**

The Model 26928XXX-A is a single-line 900MHz cordless telephone that operates in the 902.10 to 927.86 MHz band. The antenna used for the base and the handset is permanently attached to the EUT. Its actual frequency range is:

Base: 902.10 to 904.05 MHz

Handset: 925.90 to 927.86 MHz

## TEST FACILITY AND EQUIPMENT LIST

### FACILITIES

Radiated	ANSI C63.4 (FCC OET/55) open field 3 metre test range. This test range is protected from the cold and moisture by a non-conductive enclosure.
Conducted	2.5m Anechoic Chamber

### EQUIPMENT

Anritsu 2601A Spectrum Analyzer  
Advantest R3261A Spectrum Analyzer  
Hewlett-Packard RF generator # 8640 B with an 002 doubler  
A.H. Systems biconical antenna; ..... 20 MHz to 330 MHz  
A.H. Systems log periodic antenna; ..... 300 MHz to 1.8 GHz  
Eaton dipole antennas; T1, T2, T3 ..... 25 MHz to 1.0 GHz  
Roberts dipole antennas; T1, T2, T3 & T4 25 MHz to 1.0 GHz  
Compliance Design P950 Preamp (16 dB) ... 25 MHz to 1.0 GHz

### NOTE:

The Anritsu 2601A Spectrum Analyzer and the Advantest R3261A Spectrum Analyzer are calibrated annually, and that calibration is directly traceable to the National Research Council of Canada. (NRC) This equipment is only used by qualified technicians and only for the purpose of EMI measurements. The three metre test range has been carefully evaluated to the ANSI document C63.4 and will be remeasured for reflections and losses every three years.

**ADDITIONAL TEST EQUIPMENT LIST**

1. Spectrum Analyzer: HP 8591EM, S/N 3639A00995, Calibrated April 2001
2. Spectrum Analyzer: ANRITSU 2601A, S/N MT64544, Calibrated May 2001
3. Spectrum Analyzer: IFR AN940, S/N 635001039, Calibrated March 2001
4. Preamp: HP 8449B, S/N 3008A00378, Calibrated August 2001
5. Horn Antenna: Q-PAR 6878/24, S/N 1721, 1.5-18GHz
6. Line Impedance Stabilization Network.: Marstech, Cal. July 2001

## **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 EUT 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 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 EUT was 24°F with a humidity of 60%.

**15.107 (a) POWER LINE CONDUCTED INTERFERENCE**

**Requirements:** 0.45 - 30MHz  $250\mu\text{V}$  or  $47.96\text{dB}\mu\text{V}$

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

**Test Data:**

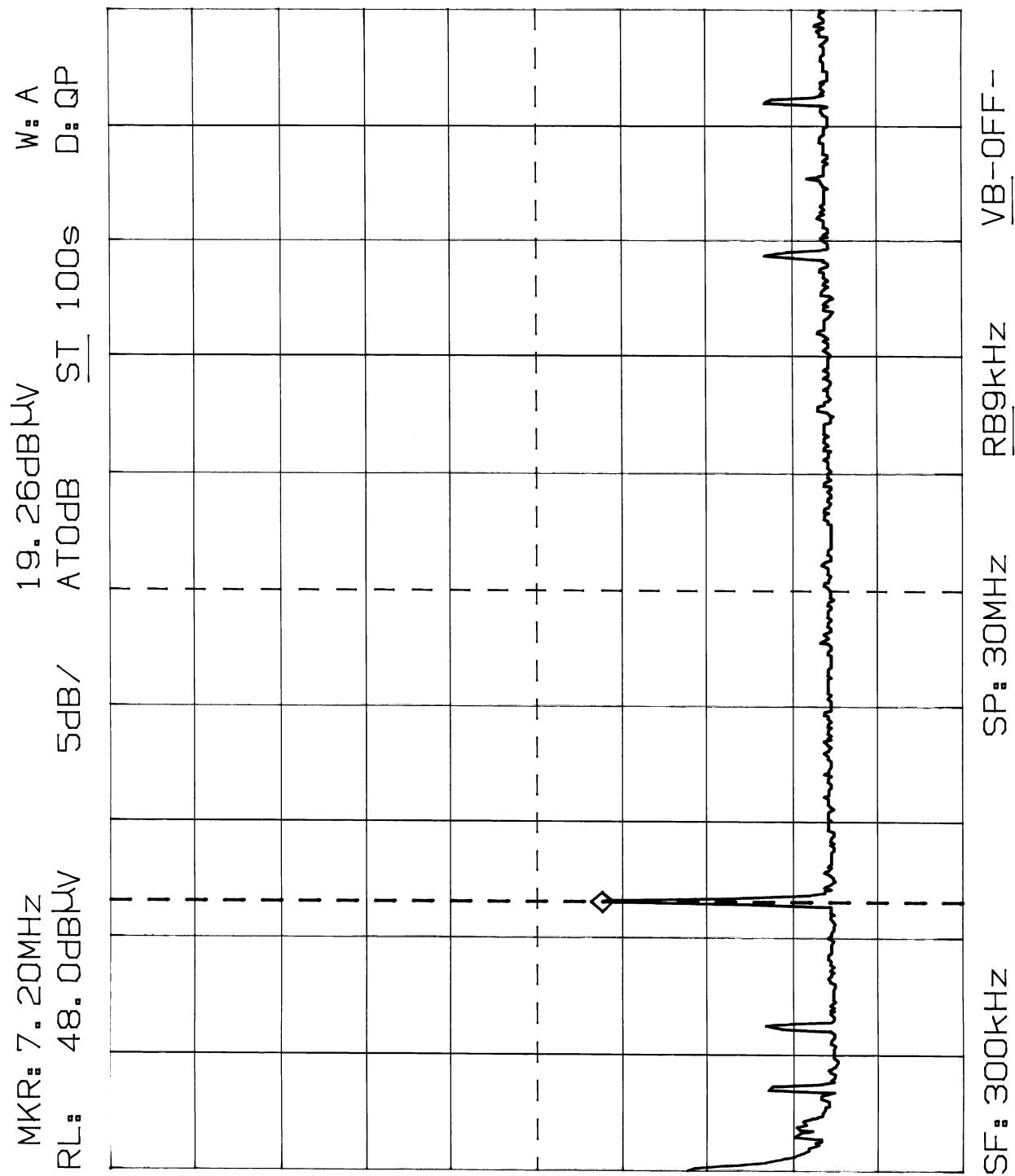
The highest emission read for LINE was  $19.26\text{ dB}\mu\text{V}$  @ 7.20 MHz.  
The highest emission read for NEUTRAL was  $19.31\text{ dB}\mu\text{V}$  @ 7.20 MHz.

The graphs on Exhibit D(1)-7 to -8 represent the emissions taken for this device.

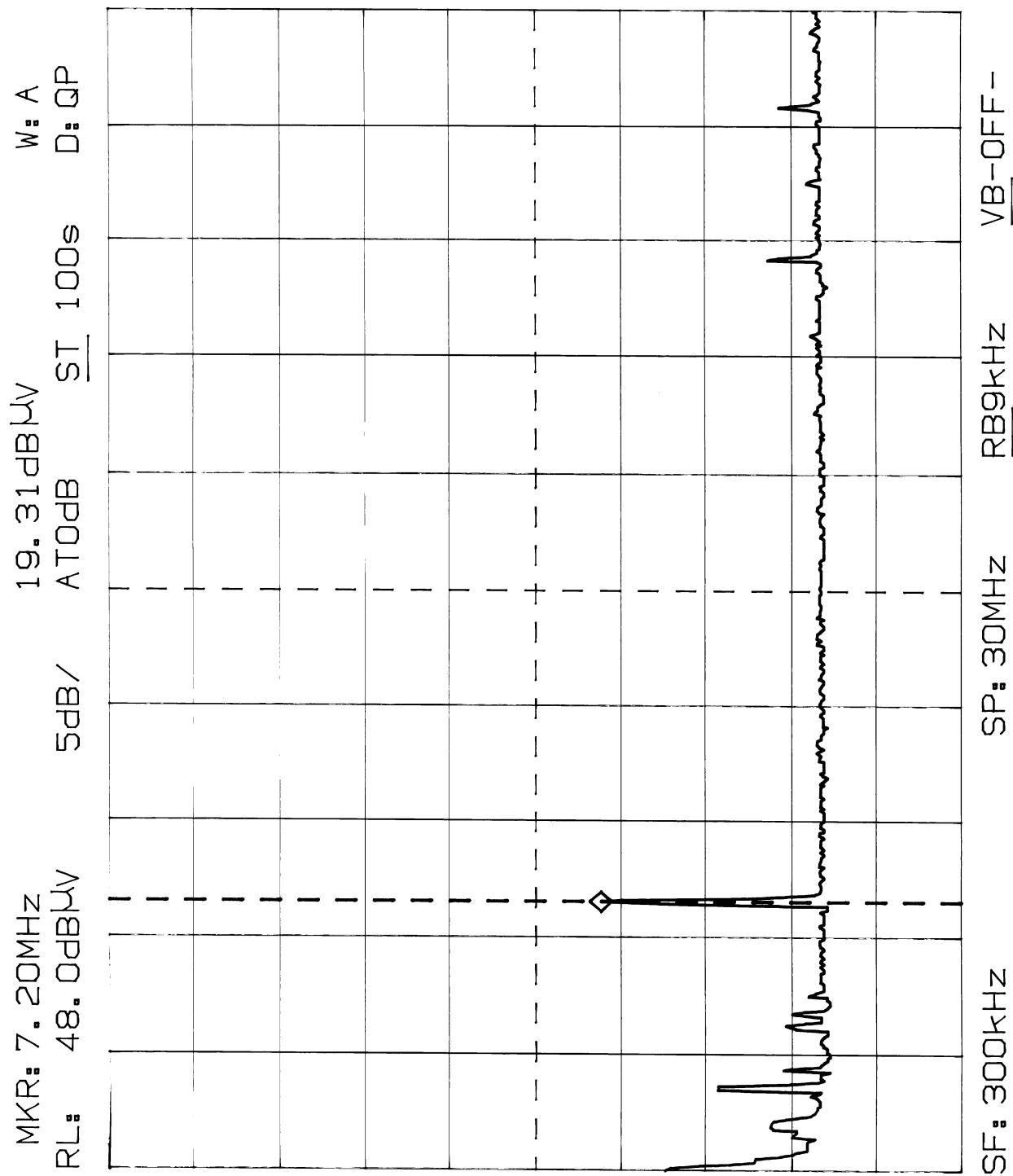
**Test Results:**

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

**POWER LINE CONDUCTED EMISSIONS  
MODEL 26928XXX-A; LINE**



POWER LINE CONDUCTED EMISSIONS  
MODEL 26928XXX-A; NEUTRAL



**15.249 (c) BAND EDGES**

**Requirements:** Emissions outside of the frequency band must be attenuated 50dB below the fundamental.

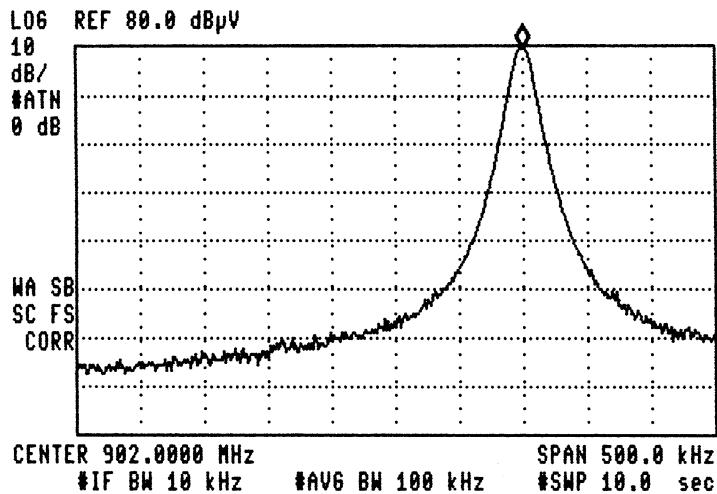
**Measurement:** The base was attenuated by 50 dB. The headset was attenuated by 50 dB.

**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 [Exhibits D(1)-10 to -11].

**BAND EDGE (Base)**  
**MODEL 26928XXX-A**

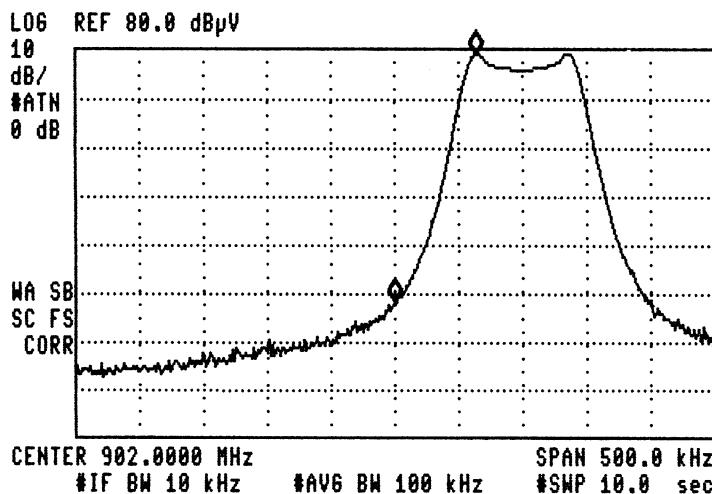
09:50:08 JAN 24, 2002

SWEETIME  
10.0 sec  
ACTV DET: PEAK  
MEAS DET: PEAK QP AVG  
MKR 902.1000 MHz  
79.64 dB $\mu$ V



09:52:51 JAN 24, 2002

MARKER A  
63.8 kHz  
51.05 dB  
ACTV DET: PEAK  
MEAS DET: PEAK QP AVG  
MKRA 63.8 kHz  
51.05 dB



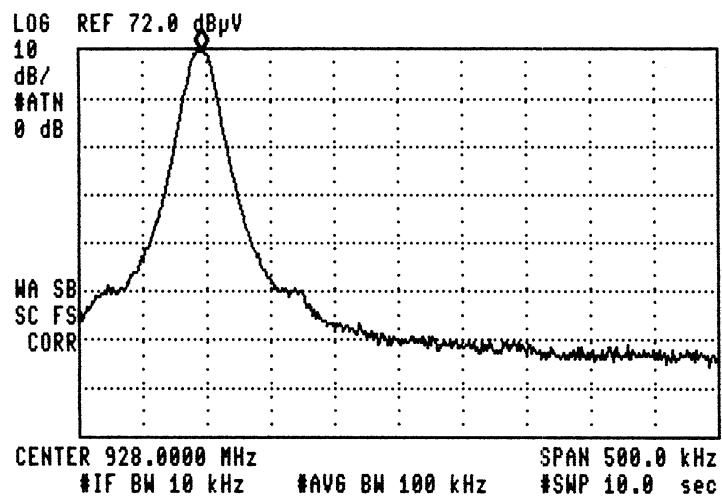
**BAND EDGE (Handset)**  
**MODEL 26928XXX-A**

10:15:16 JAN 24, 2002

#P

MARKER  
927.8463 MHz  
71.24 dB $\mu$ V

ACTV DET: PEAK  
MEAS DET: PEAK QP AVG  
MKR 927.8463 MHz  
71.24 dB $\mu$ V

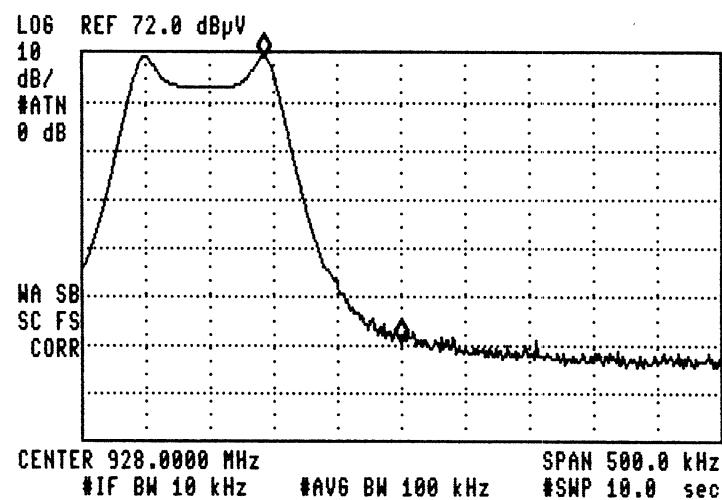


10:16:53 JAN 24, 2002

#P

MARKER &  
-107.5 kHz  
58.43 dB

ACTV DET: PEAK  
MEAS DET: PEAK QP AVG  
MKR -107.5 kHz  
58.43 dB



**2.202 BANDWIDTH**

**Handset**

Channel 1: **0.37 MHz** [Refer to Exhibit A(1)-13]  
Channel 40: **0.37 MHz** [Refer to Exhibit A(1)-13]

**Base:**

Channel 1: **0.385 MHz** [Refer to Exhibit A(1)-14]  
Channel 40: **0.385 MHz** [Refer to Exhibit A(1)-14]

BANDWIDTH = **0.4 MHz**

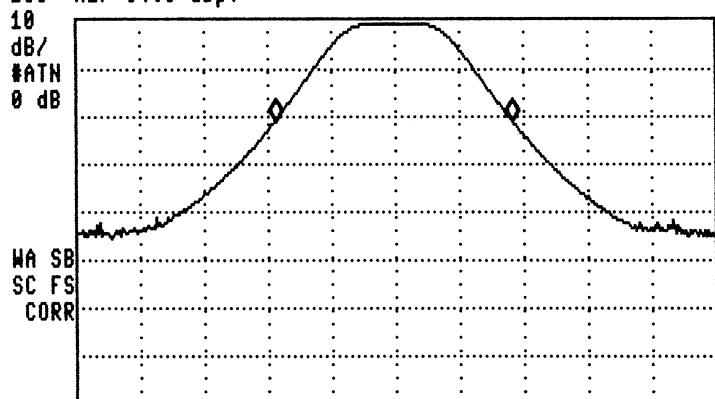
20dB BANDWIDTH (Handset)  
MODEL 26928XXX-A

11:41:02 JAN 31, 2002

SWEEPTIME  
10.0 sec

ACTV DET: PEAK  
MEAS DET: PEAK QP AVG  
MKRa 370 kHz  
.00 dB

LOG REF 64.0 dB $\mu$ V



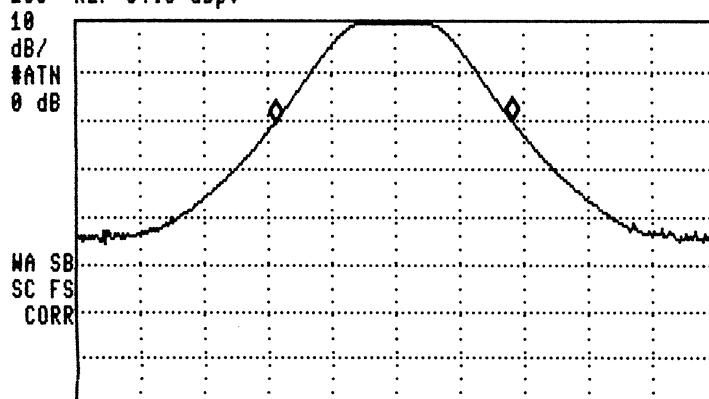
CENTER 925.910 MHz SPAN 1.000 MHz  
#IF BW 120 kHz #AVG BW 100 kHz #SWP 10.0 sec

11:45:37 JAN 31, 2002

MARKER A  
370 kHz  
.14 dB

ACTV DET: PEAK  
MEAS DET: PEAK QP AVG  
MKRa 370 kHz  
.14 dB

LOG REF 64.0 dB $\mu$ V



CENTER 927.868 MHz SPAN 1.000 MHz

FCC ID: G9H2-6928A  
Marstech Report No. 21490D  
EXHIBIT D(1)-13

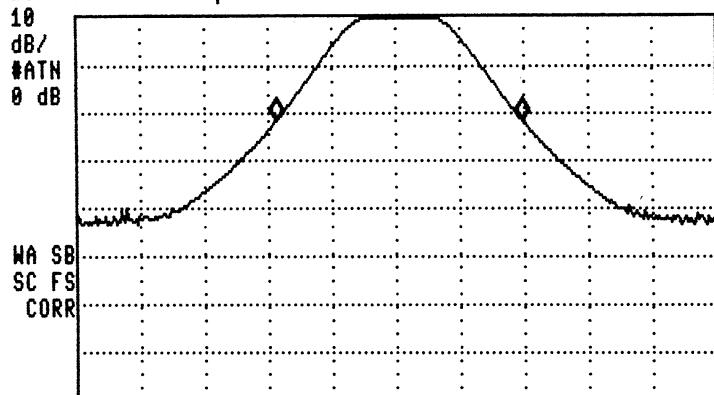
**20dB BANDWIDTH (Base)**  
**MODEL 26928XXX-A**

11:28:18 JAN 31, 2002

SWEETIME  
10.0 sec

ACTV DET: PEAK  
MEAS DET: PEAK QP AVG  
MKRA 385 kHz  
.07 dB

LOG REF 62.0 dB $\mu$ V



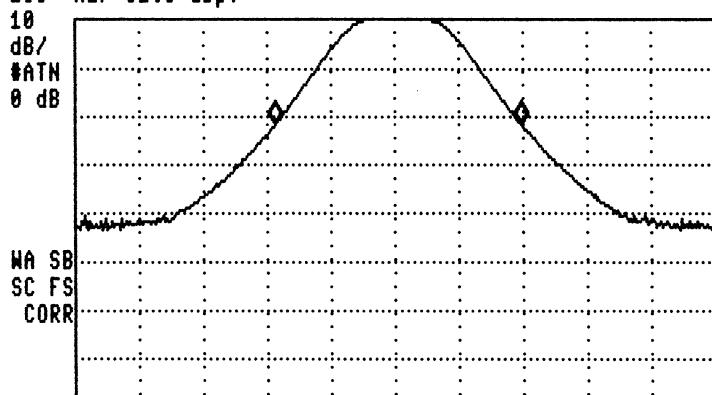
CENTER 902.105 MHz SPAN 1.000 MHz  
#IF BW 120 kHz #AVG BW 100 kHz #SWP 10.0 sec

11:33:46 JAN 31, 2002

SWEETIME  
10.0 sec

ACTV DET: PEAK  
MEAS DET: PEAK QP AVG  
MKRA 385 kHz  
.00 dB

LOG REF 62.0 dB $\mu$ V



CENTER 904.055 MHz SPAN 1.000 MHz  
#IF BW 120 kHz #AVG BW 100 kHz #SWP 10.0 sec

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

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**Requirements:**

Field Strength of Fundamental	Field Strength of Harmonics	15.209
	30-88 MHz	40 dB $\mu$ V/M@ 3m
902 to 928 MHz 94dB $\mu$ V	54 dB $\mu$ V/M@ 3m	88-216 MHz 43.5
		216-960 MHz 46
		Above 960 MHz 54

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 $\mu$ V/M.

## FIELD STRENGTH OF EMISSIONS

Test Data:**HANDSET (TX Spurious Emission and Carrier)**

Emission Frequency MHz	Meter Reading @3m dB $\mu$ V	Antenna	Cable and ACF dB	Field Strength dB $\mu$ V/M	FCC Limit dB $\mu$ V/M	Margin dB	Detector & BW KHz
925.90	54.80	T4 V	33.5	88.3	94	-5.70	PK 100
445.70	12.00	LP H	19.00	31.00	46	-15.00	PK 100
462.98	13.00	LP H	20.00	33.00	46	-13.00	PK 100
669.28	10.00	LP H	24.50	34.50	46	-11.50	PK 100
1851.80	---						
927.86	53.60	T4 V	33.5	87.1	94	-6.90	PK 100
446.68	12.00	LP H	19.00	31.00	46	-15.00	PK 100
463.95	13.00	LP H	20.10	33.10	46	-12.90	PK 100
669.25	10.00	LP H	24.50	34.50	46	-11.50	PK 100
1855.72	---						

## FIELD STRENGTH OF EMISSIONS

Test Data:**BASE UNIT (TX Spurious Emission and Carrier)**

Emission Frequency MHz	Meter Reading @3m dB $\mu$ V	Antenna	Cable and ACF dB	Field Strength dB $\mu$ V/M	FCC Limit dB $\mu$ V/M	Margin dB	Detector & BW KHz
902.10	49.00	RT4 H	33.21	82.21	94	-11.79	PK 100
468.30	14.00	LP H	20.40	34.40	46	-11.60	PK 100
1804.20	---						
904.05	48.90	RT4 H	33.23	82.13	94	-11.87	PK 100
469.29	13.00	LP H	20.40	33.40	46	-12.60	PK 100
1808.10	---						