



EMC & Radio Equipment Testing Lab
Telecommunication Equipment Testing Center
Telecommunication Laboratories
Chunghwa Telecom Co., Ltd.

TEL : +886 3 4244238 FAX : +886 3 4202444
E-mail:chichao@cht.com.tw <http://www.chttl.com.tw>
NO.12,Lane 551,Min-Tsu Road Sec.5,
Yang-Mei, Taoyuan
Taiwan, R.O.C.

Date of Issue : Apr. 12, 2002



0280

FCC

TEST REPORT

Client : ABERA SYSTEMS CORPERATION

Product : Abera Wireless Earpiece (Headset)

Model No. : AWE 2.0

This test report shall not be reproduced except in full
without the written permission of
Testing Laboratories of Chunghwa Telecom.



STATEMENT

Client : **ABERA SYSTEMS CORPORATION**
8F, No. 31, Hsintai Road, Chupei City, Hsinchu 302, Taiwan,
R.O.C.

Manufacturer : **ABERA SYSTEMS CORPORATION**
8F, No. 31, Hsintai Road, Chupei City, Hsinchu 302, Taiwan,
R.O.C.

FCC ID : P9GAWE020EPC

Product : **Abera Wireless Earpiece (Headset)**
Model Number : AWE 2.0
Serial Number : N/A
Brand : **ABERA**
Date of Test Sample Received : Mar. 25, 2002
Date of Test : Apr. 2, 2002 – Apr. 10, 2002
Regulation Applied : FCC Part 15 Subpart C
Test Result : **Compliant**

WE HEREBY CERTIFY THAT the test data in this report were made in accordance with the regulation FCC Part 15 Subpart C. We assume full responsibility for the accuracy of these data measured. The results in this report is only related to the test sample.

Test Engineer : Yu-Min Hsieh

Yu-Min Hsieh

Technical Manager : Chi-Chao Chang

Chi-Chao Chang



TABLE OF CONTENTS

1. General Information	4
1.1 Description of EUT.....	4
1.2 Basic Specification of EUT.....	4
1.3 Test Applicability Table.....	5
2. Measurements and Results	6
2.1 Field strength inside of band	6
2.1.1 Test Procedure	6
2.1.2 Test Facility Used	6
2.1.3 Test Results.....	7
2.2 Emissions outside of authorized band	7
2.2.1 Test Procedure	7
2.2.2 Test Facility Used	8
2.2.3 Test Results.....	8
Appendix	9



1 Description of EUT

The Equipment Under Test(EUT) is a wireless earpiece, which is designed to work between ears of a person and a mobile phone in a distance of about 3m. The AWE 2.0 baseset working without a battery can be plugged in most of types of mobile phones such as GSM900, DCS 1800 or PHS 1800 as one end of a voice transceiver. The AWE 2.0 earpiece powered by Ni-Mh 3.6V battery hooks to a person's ear as the other end of a transceiver. When a mobile phone with AWE 2.0 baseset rings, just press the button one time on the AWE 2.0 earpiece to get the call. The AWE 2.0 earpiece can be charged by the battery of a mobile phone through a bridge wire for longer use. The pair of transceiver won't radiate after power-on when in charge mode.

1.2 Basic Specification of EUT

RF Transmission Frequency : 2420 MHz

Type of Modulation : FM

Transmission Range : 0 ~ 3 m

Working Duration : 80 minutes

Stand-by Time : 80 hours

Charge time : 3.5 Hours

Compatible System : GSM 900 / DCS 1800 / PHS 1800

Dimension :

Headset 139(L) X 57.5(W) X 25.5(T) mm

Baseset 136(L) X 30(W) X 27(T) mm

Weight :

Earpiece : 25.5g

Baseset : 21g

Rechargeable Battery : Ni-Mh 3.6V, 80mA

Mode of operation : On & Off Mode/ Charge Mode (No ports for any input signals)



1.3 Test Applicability Table

Test Item	Applicability	Remark
Antenna requirement – per 15.203	no	The antenna is soldered on board and not interchangeable
Radiated Emissions – per 15.209 & 15.249	yes	none
Conducted Emissions – per 15.207	no	Powered by 3.6V battery



2. Measurements and Results

2.1 Field Strength Inside of Band

2.1.1 Test procedure

The test sample transceivers(EUT) were switched on and placed on a wooden turntable of 80 cm high in a semi-anechoic chamber. The EUTs were X-axis orientated and turned 360 degree to detect the emission and then Y-axis and Z-axis orientated to determine the max emissions that will be recorded in the report. A microwave receiver system with a receiving horn antenna was set 3m away from the EUT. The maximum emission of the fundamental radiation strength was measured and recorded. The microwave EMI receiver was previously programmed to offset the cable factors and antenna factors, and therefore the readings of the spectrum were already the field strength from the EUTs.

2.1.2 Test Facilities Used

Description	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Interval
Microwave EMI Receiver System	HP	84125C	36433007	MAY 22,01	1 YEAR
Horn Antenna	EMCO	3115	9012-3608	----	----
RF Preamp	HP	83051A	3332A00392	JUN 12,01	1 YEAR



2.1.3 Test Results

Mode of operation : normal TX/RX mode

Fundamental freq. (MHz)	Receiver readings (dB μ V)		Correction factor (dB)	Corrected readings (dB μ V/m)		Limits (dB μ V/m)	Margin (dB)	
	H	V		H	V		H	V
2420.09	110.67	113.74	-28	82.57	85.64	94	-11.4	-8.36

2.2 Emissions outside of authorized band

2.2.1 Test procedure

The test sample transceivers(EUT) were switched on and placed on a wooden turntable of 80 cm high in a semi-anechoic chamber. The EUTs were X-axis orientated and turned 360 degree to detect the emission and then Y-axis and Z-axis orientated to determine the max emissions that will be recorded in the report. A microwave receiver system with a receiving horn antenna was set 3m away from the EUT. After the maximum emission of the harmonic radiation and other spurious power were recorded, the receiving horn antenna was changed to a bilog antenna to take measurement of spurious emissions at 30 – 1000MHz. A 3.5GHz high pass filter(HPF) was connected to preamplifier to protect it from being operating in saturated condition when 2.6GHz – 26.5GHz was measured.

2.2.2 Test Facilities Used

Description	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Interval
RF Preamp	HP	83051A	3332A00392	JUN 12,01	1 YEAR
Microwave EMI Receiver	HP	84125C	36433007	MAY 22,01	1 YEAR
Bi-Log Antenna	EMCO	3142	1331	MAY 23,01	1 YEAR
Horn Antenna	EMCO	3115	9012-3608	----	----
HPF	HP	84300-80038	007	----	----



2.2.3 Test Results

Harmonics	Freq (MHz)	Receiver readings (dB μ V)		Cor. factor (dB)	Corrected readings (dB μ V/m)		Limits (dB μ V/m)	Margin (dB)	
		H	V		H	V		H	V
2	4820.18	70.6	67.1	-20.1	50.5	47	54	-3.5	-7
3	7230.26	65	65	-14	51	51	54	-3	-3
4	9640.35	63.6	60.6	-10.6	53	50	54	-1	-4
5	12050.4	61.9	60.9	-11.9	50	49	54	-4	-5
6	14460.5	63.4	63.9	-13.4	50	50.5	54	-4	-3.5
7	16870.6	---	---	---	---	---	54	---	---
8	19280.7	---	---	---	---	---	54	---	---
9	21690.8	---	---	---	---	---	54	---	---
10	24100.9	---	---	---	---	---	54	---	---
Spurious	30-88	---	---	---	< 40	< 40	40	---	---
Spurious	88-216	---	---	---	< 43.5	< 43.5	43.5	---	---
Spurious	216-960	---	---	---	< 46	< 46	46	---	---

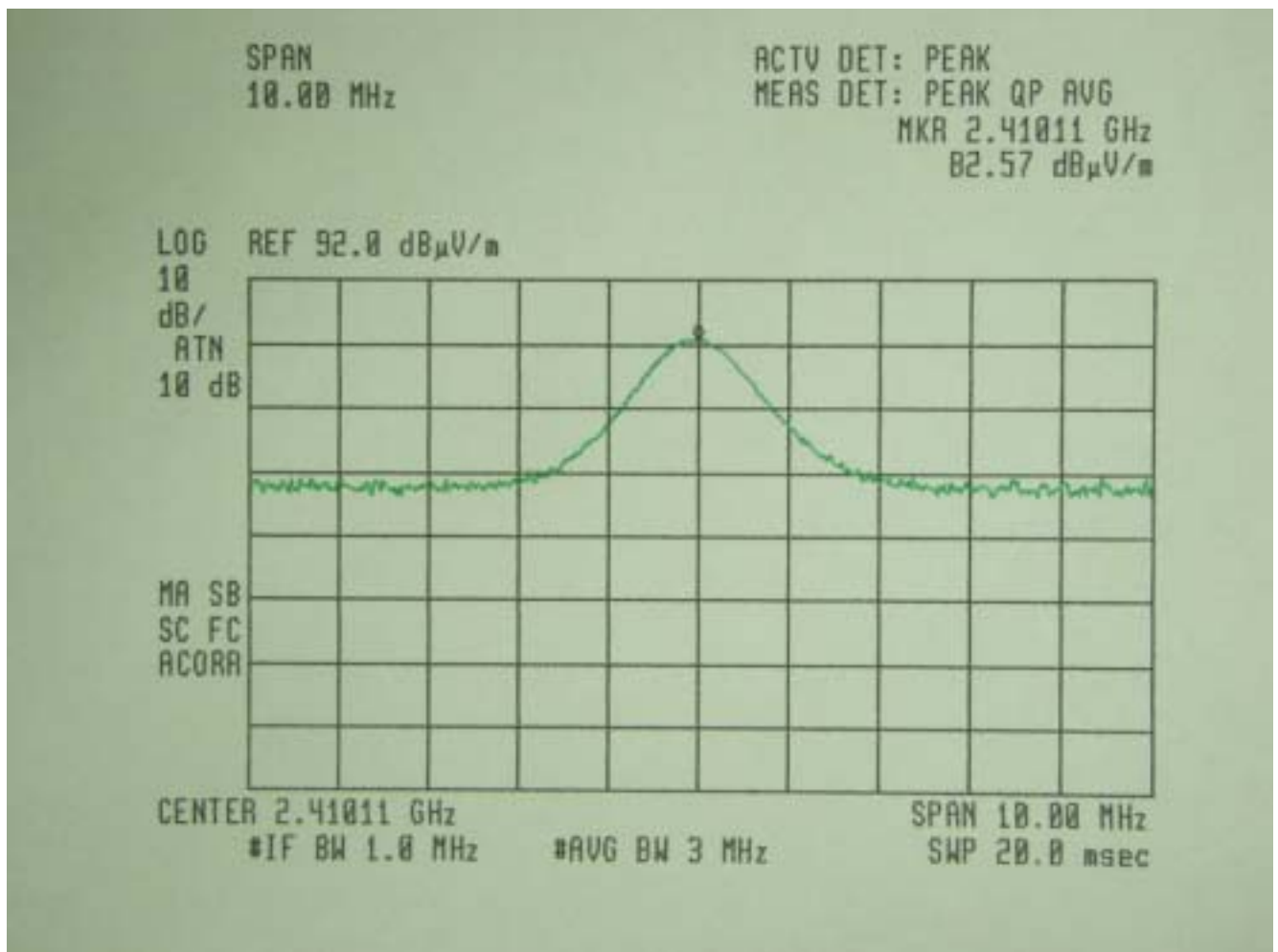
- Note : 1. --- means that the corrected readings is below the background noise level and within the limits.
2. Frequency for 30~1000MHz is measured with **peak** detection.
3. Frequency above 1000MHz is measured with **peak** detection
4. Corrected reading = Receiver reading + Calibration factor(CF)
5. CF =Antenna factor +cable loss – Preamplifier gain (used when above1GHz)
6. Margin = Corrected readings – Limits



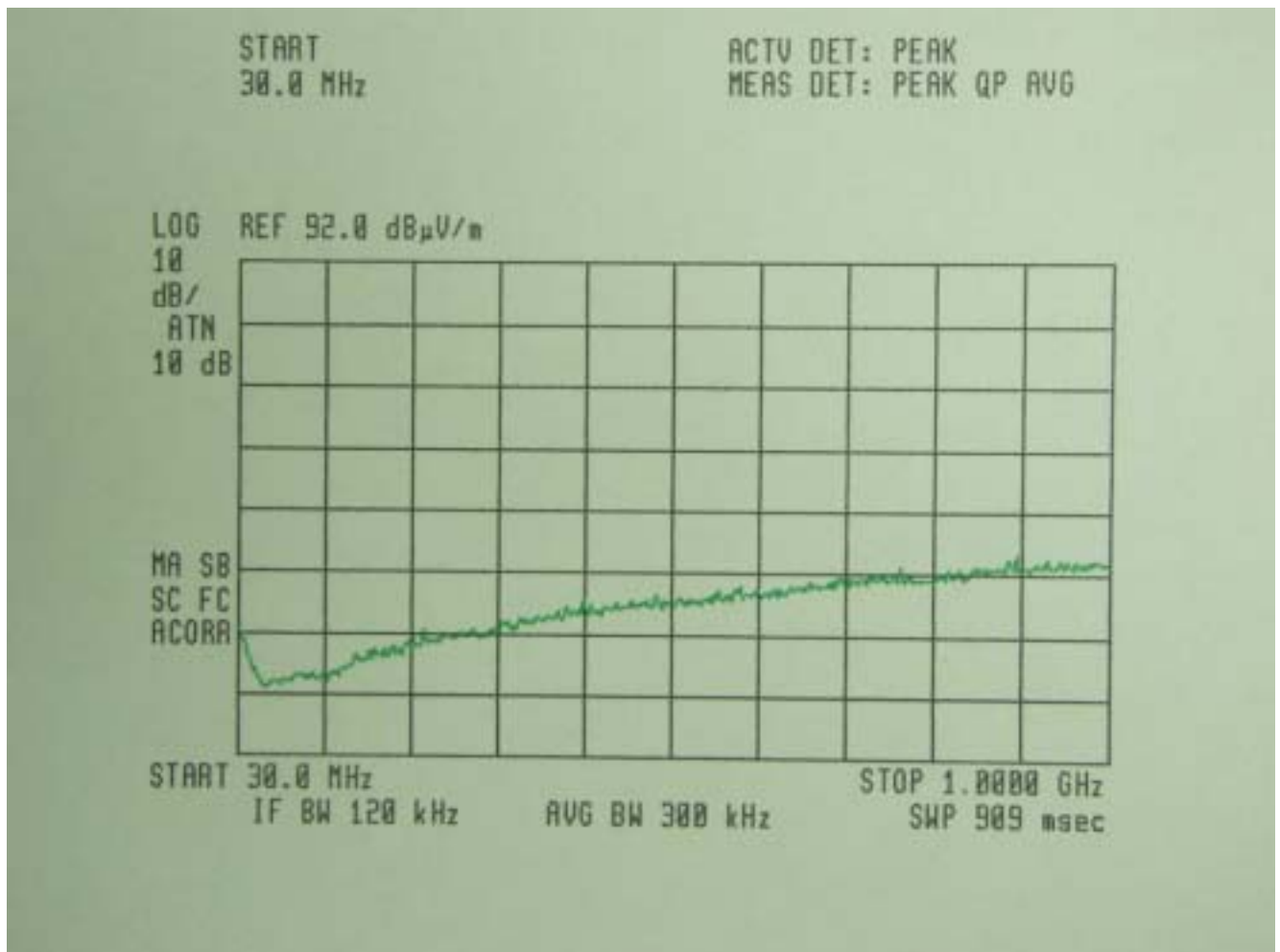
Appendix



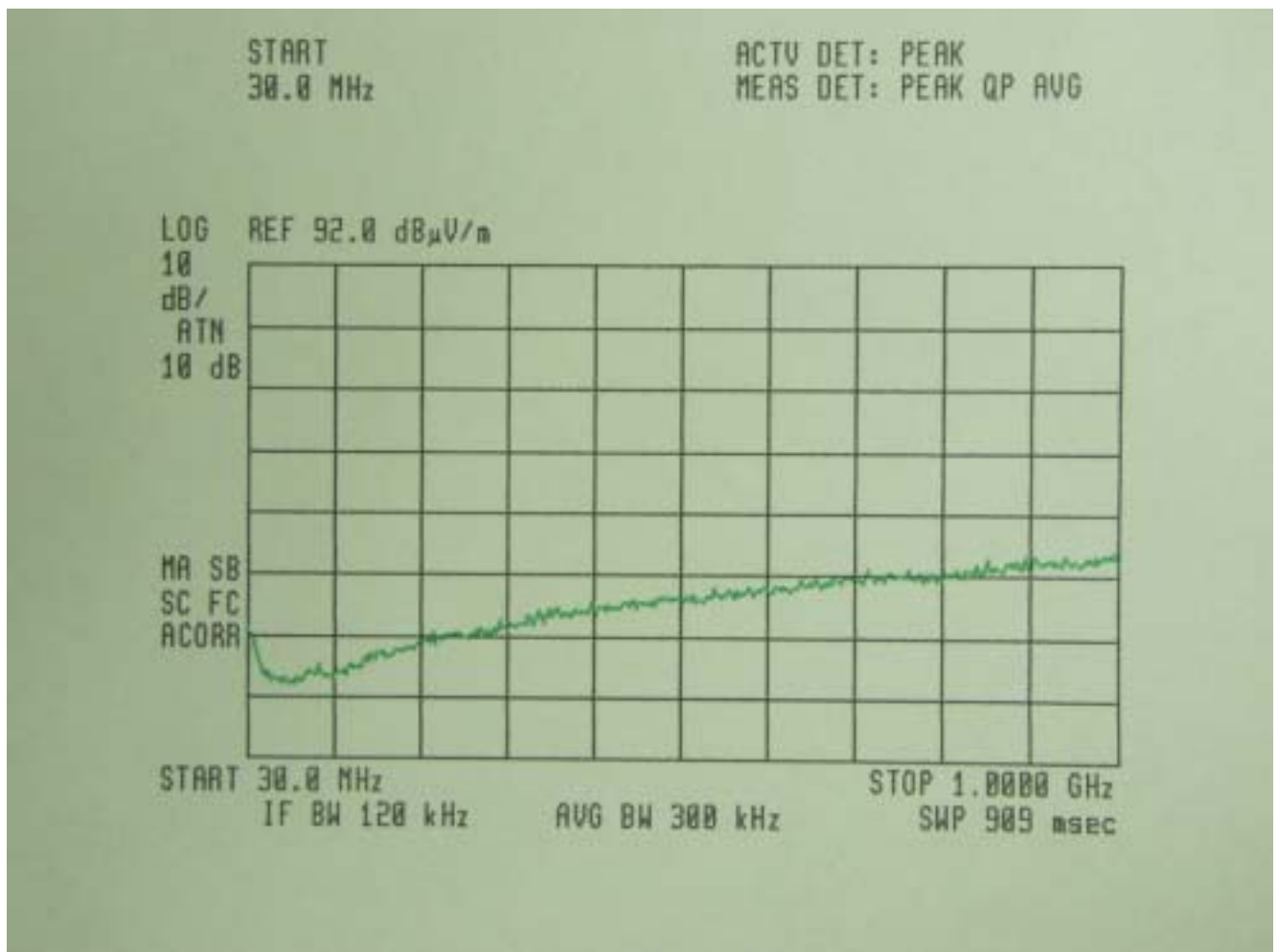
Headset – V Polarization



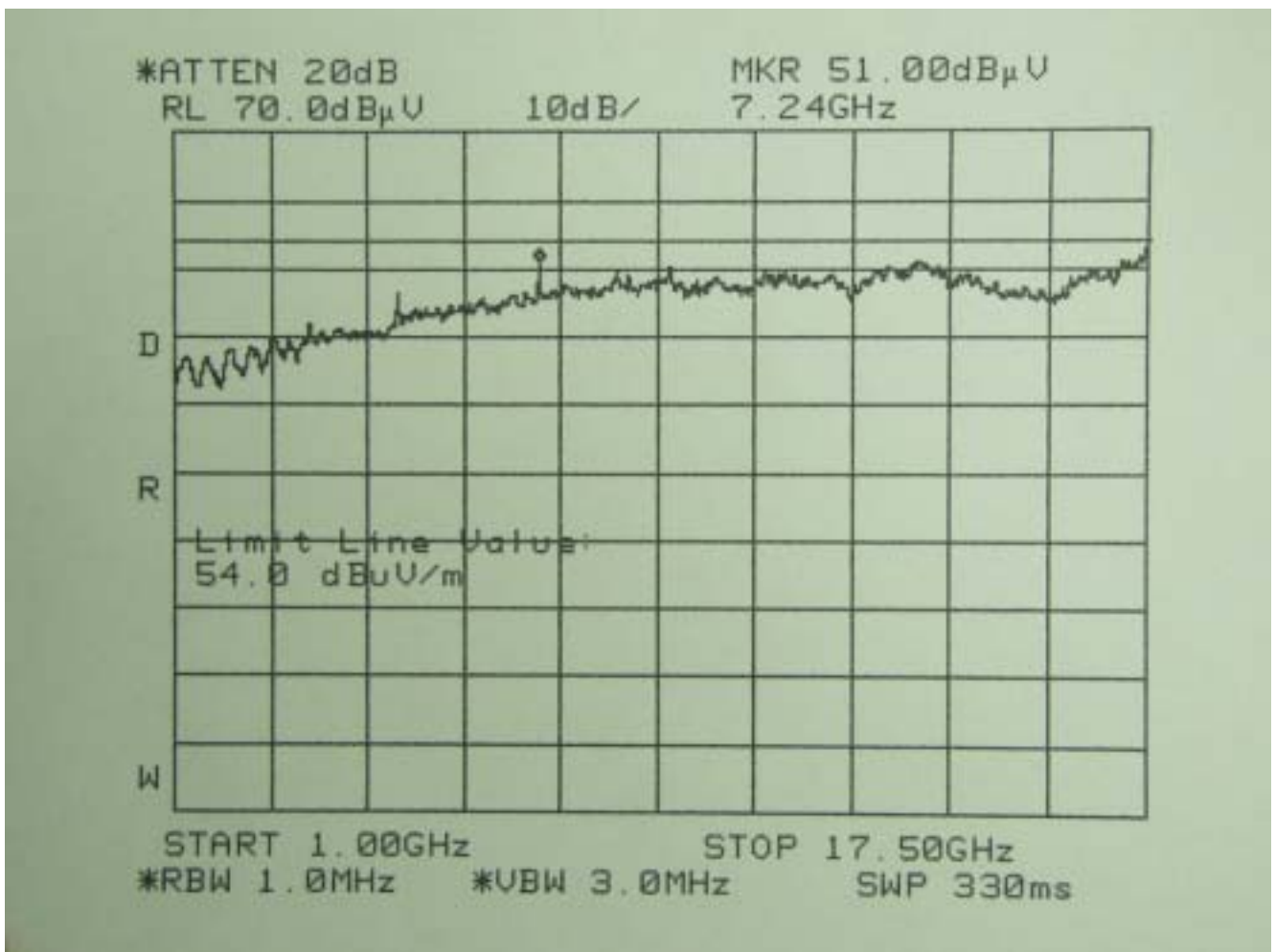
Headset – H Polarization



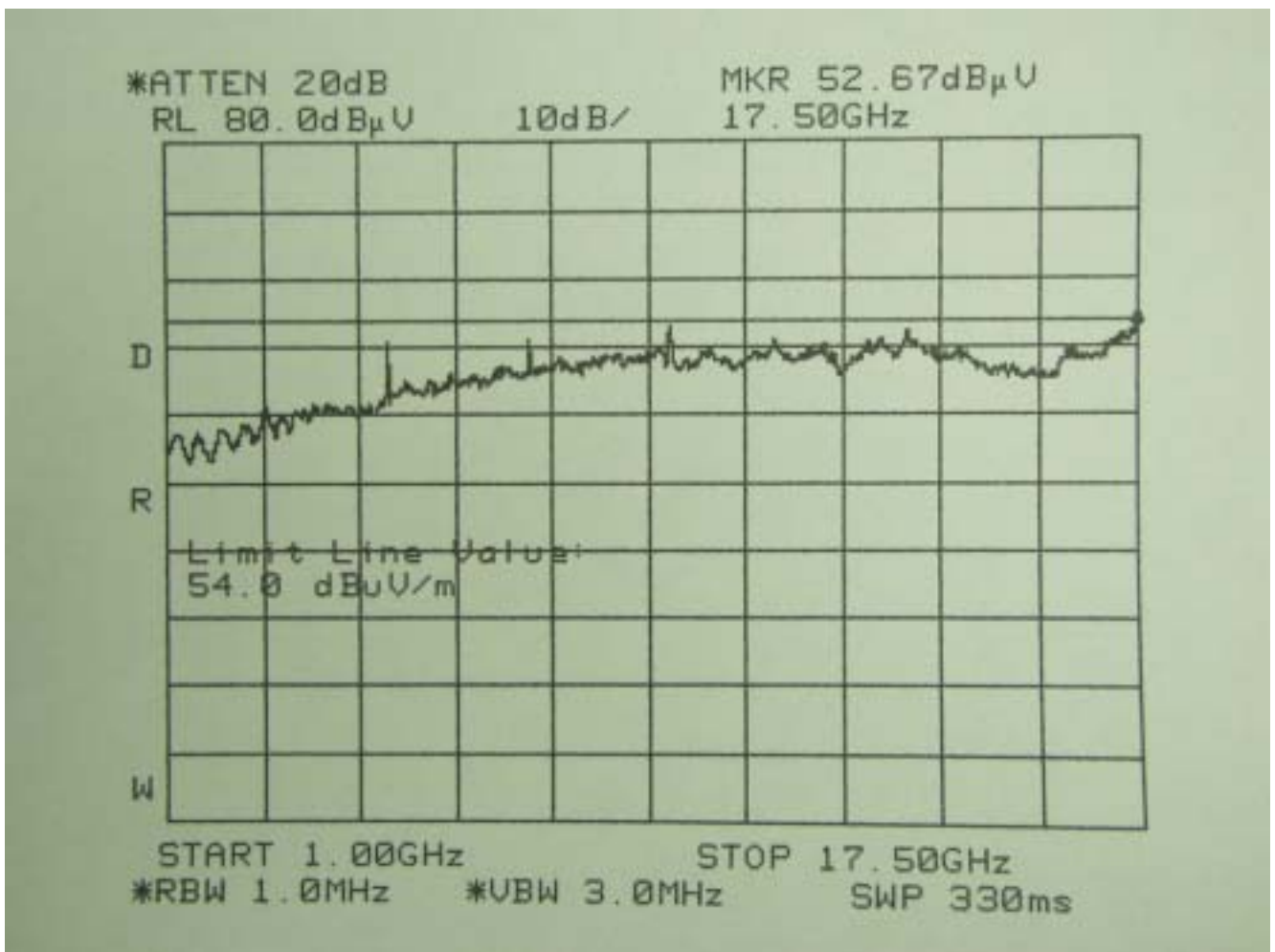
Headset – H Polarization 30-1000Mhz



Headset – V Polarization 30-1000Mhz



Headset – V Polarization

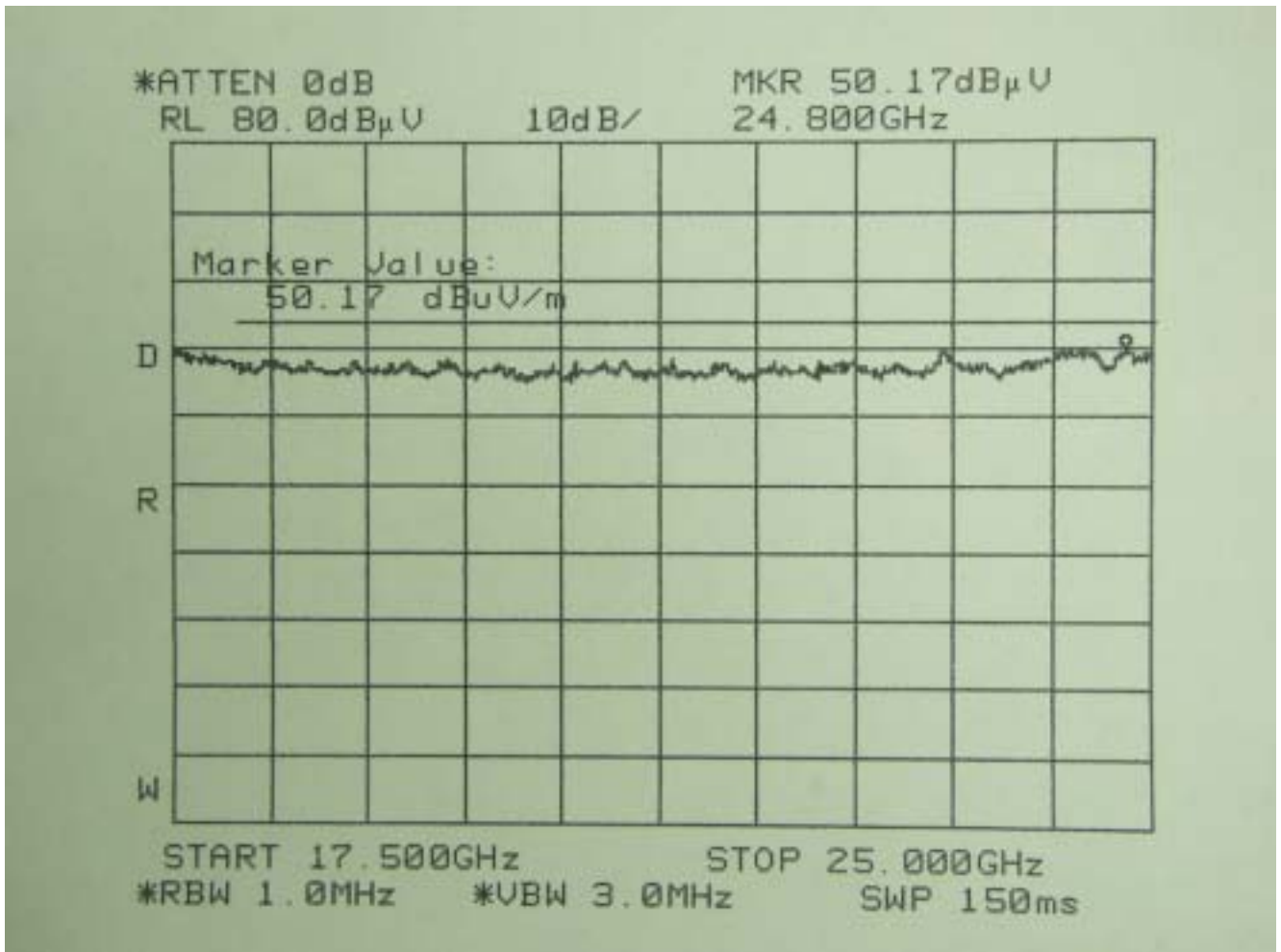


Headset – H Polarization



EMC & Radio Equipment Testing Lab
Telecommunication Equipment Testing Center
Telecommunication Laboratories
Chunghwa Telecom Co., Ltd.

TEL : +886 3 4244238 FAX : +886 3 4202444
E-mail:chichao@cht.com.tw http://www.chttl.com.tw
NO.12,Lane 551,Min-Tsu Road Sec.5,
Yang-Mei, Taoyuan
Taiwan, R.O.C.

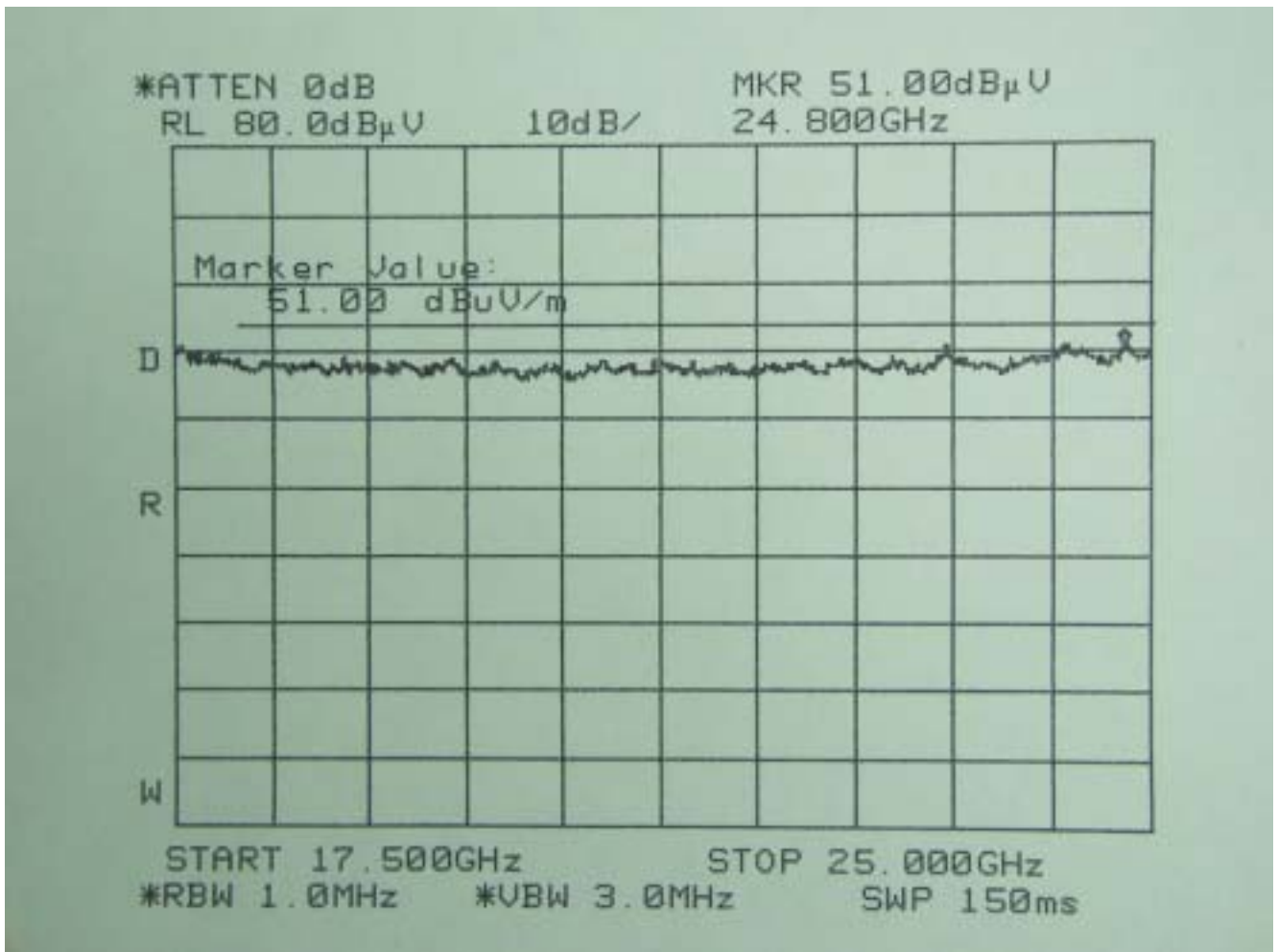


Headset – V Polarization



EMC & Radio Equipment Testing Lab
Telecommunication Equipment Testing Center
Telecommunication Laboratories
Chunghwa Telecom Co., Ltd.

TEL : +886 3 4244238 FAX : +886 3 4202444
E-mail:chichao@cht.com.tw http://www.chttl.com.tw
NO.12,Lane 551,Min-Tsu Road Sec.5,
Yang-Mei, Taoyuan
Taiwan, R.O.C.



Headset – H Polarization



EMC & Radio Equipment Testing Lab
Telecommunication Equipment Testing Center
Telecommunication Laboratories
Chunghwa Telecom Co., Ltd.

TEL : +886 3 4244238 FAX : +886 3 4202444
E-mail:chichao@cht.com.tw <http://www.chttl.com.tw>
NO.12,Lane 551,Min-Tsu Road Sec.5,
Yang-Mei, Taoyuan
Taiwan, R.O.C.



Test Setup for power measurement at 30~1000Mhz



EMC & Radio Equipment Testing Lab
Telecommunication Equipment Testing Center
Telecommunication Laboratories
Chunghwa Telecom Co., Ltd.

TEL : +886 3 4244238 FAX : +886 3 4202444
E-mail:chichao@cht.com.tw <http://www.chttl.com.tw>
NO.12,Lane 551,Min-Tsu Road Sec.5,
Yang-Mei, Taoyuan
Taiwan, R.O.C.



Test Setup for fundamental power



EMC & Radio Equipment Testing Lab
Telecommunication Equipment Testing Center
Telecommunication Laboratories
Chunghwa Telecom Co., Ltd.

TEL : +886 3 4244238 FAX : +886 3 4202444
E-mail:chichao@cht.com.tw <http://www.chttl.com.tw>
NO.12,Lane 551,Min-Tsu Road Sec.5,
Yang-Mei, Taoyuan
Taiwan, R.O.C.



Test Setup for harmonic power