Exhibit A ..... Technical Report, Diagram

Applicant Name And Address

Their full name and mailing address is given below:

Name	*: TECOM CO., LTD.*
Address	*: 23, R & D Rd. 2,SCIENCE-BASED INDUSTRIAL PARK, HSIN-CHU, TAIWAN, R.O.C.*
Model No.	*:MH-200(Handset),MA-240(Handset+Base)*
Brand Name	*: CASIO PHONEMATE*

ETC ELECTRONICS TESTING CENTER(ETC), TAIWAN

EMI TEST REPORT

FCC ID.	: D6XMA-240
Product	: 2L Multi-Handset Cordless Phone System
Model No.	: MH-200(Handset),MA-240(Handset+Base)
Applicant	: TECOM CO., LTD.
Manufacturer	: TECOM CO., LTD.
Regulation Applied	: FCC Rules and Regulations Part 15 Subpart C (1997)
Report Number	: ET88S-04-119
Issued Date	: May 04, 1999

BSMI ISO 9002 and Guide 25.

TÜV Product Service ISO9002 and EN45001.

NIST NVLAP Accredited Laboratory for FCC Part 15/ CISPR 22/ AS/NZS 3548.

CNLA ISO/ IEC Guide 25.

NEMKO, FIMKO , SGS , TÜV Laboratory Assessment.

FCC, VCCI Registered.

ETC ELECTRONICS TESTING CENTER(ETC), TAIWAN

TEST REPORT CERTIFICATION

Applicant	: TECOM CO., LTD. 23, R&D ROAD 2, SCIENCE-BASED INDUSTRIAL PARK, HSIN-CHU, TAIWAN, R.O.C.
Manufacturer	: TECOM CO., LTD. 23, R&D ROAD 2, SCIENCE-BASED INDUSTRIAL PARK, HSIN-CHU, TAIWAN, R.O.C.
Description of EUT	: 2L Multi-Handset Cordless Phone System
a) Brand Name	: CASIO PHONEMATE
b) Model No.	: MH-200(Handset),MA-240(Handset+Base)
c) FCC ID.	: D6XMA-240
d) Power Supply	: Base unit: AC Adapter (Model: LS-11492-AD7, I/P: 120VAC, 60Hz O/P: 9VDC, 0.5A) Handset: Ni-MH Battery DC 3.6V, 550mA/hrs, P/N:GP55AAAH3BMI
Regulation Applied	: FCC Rules and Regulations Part 15 Subpart C (1997)

I HEREBY CERTIFY THAT: The data shown in this report was in accordance with the procedures given in ANSI C63.4 and the energy emitted by the device was found to be within the limits applicable. I assume full responsibility for accuracy and completeness of these data.

Test Date : Apr. 29, 1999

Test Engineer : _____

Approve & Authorized Signer : Win-Po Tsai May, 04, 1999

Win-po Tsai, Supervisor
NVLAP Signatory
EMC Dept. of ELECTRONICS
TESTING CENTER, TAIWAN

TABLE OF CONTENTS

1. GENERAL INFORMATION

1.1 Characteristics of Device

The EUT consists of one base unit and one cordless handset provides RF links for intercom and outside call.

1.2 Test Methodology

The conducted emissions and radiated emissions testing were performed according to the procedures in FCC/ANSI C63.4, Radiated testing was performed at an antenna to EUT distance of 3 meters.

1.3 Test Facility

The Open Area Test Site and and conducted measurement facility used to collect the radiated and conducted data is located at No. 8, Lane 29, Wen-ming Road,Lo-shan Tsun, Kui-Shan Hsiang, Taoyuan, Taiwan, R.O.C.
This site has been fully described in a report submitted to your office, and accepted in a letter dated July 07, 1998.

2. PROVISIONS APPLICABLE

2.1 Class Definition

Unintentional radiator:

A device that intentionally generates and emits radio frequency energy for use within the device, or that sends radio frequency signals by conduction to associated equipment via connecting wiring, but which is not intended to emit RF energy by radiation or induction.

Class A Digital Device: A digital device which is marketed for use in commercial or business environment; exclusive of a device which is marketed for use by the general public, or which is intended to be used in the home.

Class B Digital Device : A digital device which is marketed for use in a residential environment notwithstanding use in a commercial, business of industrial environment. Example of such devices that are marketed for the general public.

Note : A manufacturer may also qualify a device intended to be marketed in a commercial ,business, or industrial environment as a Class B digital device, and in fact is encouraged to do so, provided the device complies with the technical specifications for a Class B Digital Device. In the event that a particular type of device has been found to repeatedly cause harmful interference to radio communications, the Commission may classify such a digital device as a Class B Digital Device, Regardless of its intended use.

Intentional radiator:

A device that intentionally generates and emits radio frequency energy by radiation or induction.

2.2 Class Limitations

(1) Conducted Emission Requirement

For unintentional device, according to § 15.107(a) Line Conducted Emission Limit is as following :

Frequency MHZ	Emissions uV	Emissions dBuV
0.45 - 30.0	250	48.0

(2) Radiated Emission Requirement

For unintentional device, according to § 15.109(a), except for Class A digital devices, the field strength of radiated emissions from unintentional radiators at a distance of 3 meters shall not exceed the following values :

Frequency MHZ	Distance Meters	Radiated uV/m	Radiated dBuV/m
30 - 88	3	100	40.0
88 - 216	3	150	43.5
216 - 960	3	200	46.0
above 960	3	500	54.0

For intentional device, according to § 15.209(a), the general requirement of field strength of radiated emissions from intentional radiators at a distance of 3 meters shall not exceed the above table.

For intentional radiator device, per § 15.249(a), the field strength of radiated emissions comply with the following values :

Frequency MHZ	Distance Meters	Fundamental dBuV/m	Fundamental mV/m	Harmonic dBuV/m	Harmonic uV/m
902 - 928	3	94	50	54	500
2400 - 2483.5	3	94	50	54	500
5725 - 5875	3	94	50	54	500
24000 - 24250	3	108	250	54	2500

In according with § 15.249(d), limits shown in above table are based on average limits for frequencies above 1000MHz, and frequencies below 1000MHz are based on quasi peak. However, the peak field strength of any emission shall not exceed the maximum permitted average limits by more than 20 dB.

(3) Antenna Requirement

For intentional device, according to § 15.203, an intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device.

(4) Band edges measurement

For intentional device, according to § 15.249(c), emissions radiated outside of the specified frequency bands, except for harmonics, shall be attenuated by at least 50 dB below the level of fundamental or to the radiated emission limits in § 15.209.

2.3 Restricted Bands of Operation

Only spurious emissions are permitted in any of the frequency bands listed below :

MHz	MHz	MHz	GHz
0.090 - 0.110	16.42-16.423	399.9-410	4.5-5.25
0.490 - 0.510	16.69475 - 16.69525	608-614	5.35-5.46
2.1735 - 2.1905	16.80425 - 16.80475	960-1240	7.25-7.75
4.125-4.128	25.5-25.67	1300-1427	8.025-8.5
4.17725-4.17775	37.5-38.25	1435-1626.5	9.0-9.2
4.20725-4.20775	73-74.6	1645.5-1646.5	9.3-9.5
6.215-6.218	74.8-75.2	1660-1710	10.6-12.7
6.26775-6.26825	108-121.94	1718.8-1722.2	13.25-13.4
6.31175-6.31225	123-138	2200-2300	14.47-14.5
8.291-8.294	149.9-150.05	2310-2390	15.35-16.2
8.362-8.366	156.52475 - 156.52525	2483.5-2500	17.7-21.4
8.37625-8.38675	156.7-156.9	2655-2900	22.01-23.12
8.41425-8.41475	162.0125-167.17	3260-3267	23.6-24.0
12.29-12.293	167.72-173.2	3332-3339	31.2-31.8
12.51975-12.52025	240-285	3345.8-3358	36.43-36.5
12.57675-12.57725	322-335.4	3360-4400	Above 38.6
13.36-13.41			

2.4 Labelling Requirement

The device shall bear the following statement in a conspicuous location on the device.

This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference (2)This device must accept any interference received, including interference that may cause undesired operation.

2.5 User Information

The users manual or instruction manual for an intentional or unintentional radiator shall caution the user that changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

For a Class B digital device or peripheral, the instructions furnished the user shall include the following or similar statement, placed in a prominent location in the text of the manual.

The Federal Communications Commission Radio Frequency Interference Statement includes the following paragraph.

This equipment has been tested and found to comply with the limits for a Class B Digital Device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation.

This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instruction may cause harmful interference to radio communication. However, there is no guarantee that interference will not occur in a particular installation.

If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

-- Reorient or relocate the receiving antenna.

-- Increase the separation between the equipment and receiver.

-- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.

-- Consult the dealer or an experienced radio / TV technician for help.

3. SYSTEM TEST CONFIGURATION

3.1 EUT configuration and operating

The radiated and conducted emissions, the system was configured for testing in a typical fashion as a customer would normally use it. The peripherals other than EUT were connected in normally.

3.2 Tested System Details

The Tested System Detail equipment, plus description of all cables used in the tested system are :

Description	Model No.	FCC ID.	Manufacturer	Cable
2L Multi-Handset Cordless Phone System *	MH-200 (Handset), MA-240 (Handset+ Base)	D6XMA-240	TECOM	Telephone Line 1.8m x 3 Unshielded
Adapter *	LS-11492-AD7	----	----	DC Line 3.0m Unshielded
Telephone Analyzer	1076-A	----	SYSGRATION LTD.	Power cord 1.5m Unshielded

Note : "*" means equipment under test.

3.3 Modification

(If any deviation from additions to or exclusions from test method must be stated)

N/A

4. RADIATED EMISSION MEASUREMENT

4.1 Applicable Standard

For intentional radiator digital devices, according to § 15.249(a), operation within the frequency band of 902 to 928 MHz, the fundamental field strength shall not exceed 94 dBuV/m and the harmonics shall not exceed 54 dBuV/m. For out band emission except for harmonics shall comply with § 15.209 or at least attenuated by 50 dB below the level of the fundamental.

4.2 Measurement Procedure

(1). Setup the configuration per figure 1 & 2.

(2). For emission frequencies measured below 1 GHz, a pre-scan is performed in a semi-anechoic chamber to determine the accurate frequencies of higher emissions then each selected frequency is precisely measured in Open Area Test Site.

(3). The search antenna is to be raised and lowered over a range from 1 to 4 meters in horizontally polarized orientation. Position the highness when the highest value is indicated on spectrum analyzer, then change the orientation of EUT on test table over a range from 0 ° to 360 ° with a speed as slow as possible, and keep the azimuth that the highest emission is indicated on the spectrum analyzer. Vary the antenna position again and record the highest value as a final reading. A RF test receiver is also used to confirm emissions measured.

(4). Repeat step 3 until all frequencies need to be measured were complete.

(5). Repeat step 4 with search antenna in vertical polarized orientations.

(6). Check the frequency of the highest emission with varying the placement of cables associated with EUT to obtain the worst case and record the result.

Figure 1 : Frequencies measured below 1 GHz configuration

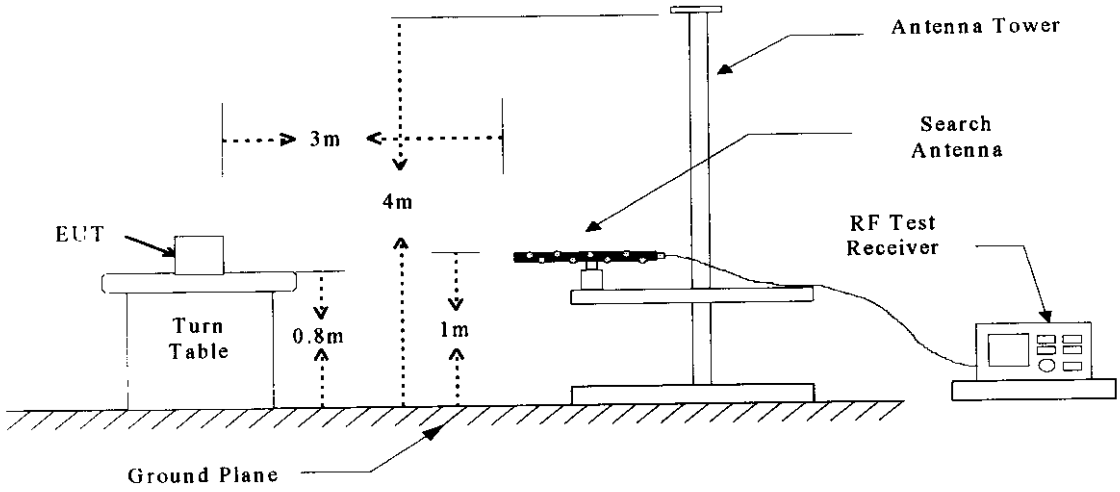
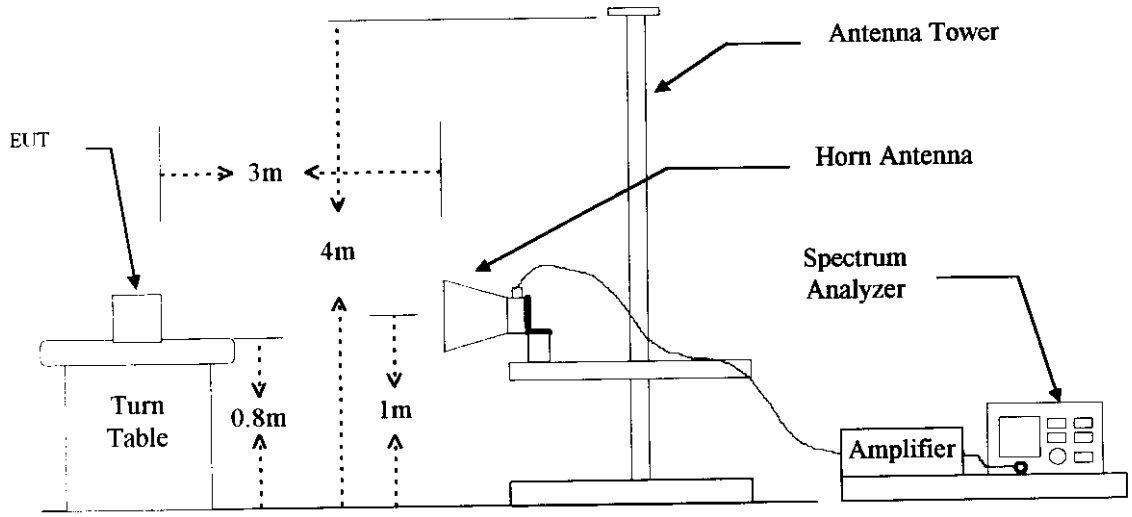


Figure 2 : Frequencies measured above 1 GHz configuration



4.3 Radiated Emission Data

4.3.1 Fundamental and Harmonics

Operation Mode : Communicating

(1) Base, channel 1(Fundamental Frequency: 903.200 MHz)

Test Date : Apr. 29, 1999 Temperature: 27 ℃ Humidity: 71%

Emission Frequency	Meter Reading (dBuV)		CORR'd Factor	Results (dBuV/m)		Limit	Margins
(MHz)	HOR.	VERT.	(dB)	HOR.	VERT.	(dBuV/m)	(dB)
903.230	60.4	59.6	30.4	90.8	90.0	94.0	-3.2
1806.500	44.5	40.7	-2.0	42.5	38.7	54.0	-11.5
2709.750	43.4	38.7	-5.6	37.8	33.1	54.0	-16.2
3613.000	29.5	29.9	-1.3	28.2	28.6	54.0	-25.4
4516.250	----	----	----	----	----	54.0	----
5419.500	----	----	----	----	----	54.0	----
6322.750	----	----	----	----	----	54.0	----
7226.000	----	----	----	----	----	54.0	----
8129.250	----	----	----	----	----	54.0	----
9032.300	----	----	----	----	----	54.0	----

Note: 1. Measuring data shown on above table is according to section (2) of 2.2 of this report.

2. "----" means the noise is too low to be measured.

(2) Base, channel 24(Fundamental Frequency: 910.442 MHz)

Test Date : Apr. 29, 1999 Temperature: 27 ℃ Humidity: 71%

Emission Frequency	Meter Reading (dBuV)		CORR'd Factor	Results (dBuV/m)		Limit	Margins
(MHz)	HOR.	VERT.	(dB)	HOR.	VERT.	(dBuV/m)	(dB)
910.442	45.3	59.2	30.4	75.7	89.6	94.0	-4.4
1820.844	42.5	38.8	-2.1	40.4	36.7	54.0	-13.6
2731.326	37.8	37.9	-5.8	32.0	32.1	54.0	-21.9
3641.768	----	----	----	----	----	54.0	----
4552.210	----	----	----	----	----	54.0	----
5456.652	----	----	----	----	----	54.0	----
6373.094	----	----	----	----	----	54.0	----
7283.536	----	----	----	----	----	54.0	----
8193.978	----	----	----	----	----	54.0	----

Note: 1. Measuring data shown on above table is according to section (2) of 2.2 of this report.

2. "----" means the noise is too low to be measured.

(3) Base, channel 80(Fundamental Frequency: 926.980 MHz)

Test Date : Apr. 29, 1999 Temperature: 27 ℃ Humidity: 71%

Emission Frequency	Meter Reading (dBuV)		CORR'd Factor	Results (dBuV/m)		Limit	Margins
(MHz)	HOR.	VERT.	(dB)	HOR.	VERT.	(dBuV/m)	(dB)
926.925	54.9	57.9	30.4	85.3	88.3	94.0	-5.7
1853.900	41.8	38.7	-2.2	39.6	36.5	54.0	-14.4
2780.850	42.6	38.7	-5.9	36.7	32.8	54.0	-17.3
3707.800	26.0	27.8	-1.5	24.5	26.3	54.0	-27.7
4634.750	----	----	----	----	----	54.0	----
5561.700	----	----	----	----	----	54.0	----
6488.650	----	----	----	----	----	54.0	----
7415.600	----	----	----	----	----	54.0	----
8347.550	----	----	----	----	----	54.0	----
9269.500	----	----	----	----	----	54.0	----

Note: 1. Measuring data shown on above table is according to section (2) of 2.2 of this report.

2. "----" means the noise is too low to be measured.

(4) Handset, channel 1(Fundamental Frequency: 903.235 MHz)

Test Date : Apr. 29, 1999 Temperature: 27 ℃ Humidity: 71%

Emission Frequency	Meter Reading (dBuV)		CORR'd Factor	Results (dBuV/m)		Limit	Margins
(MHz)	HOR.	VERT.	(dB)	HOR.	VERT.	(dBuV/m)	(dB)
903.235	58.7	56.7	30.4	89.1	87.1	94.0	-4.9
1806.500	43.4	38.7	-2.0	41.4	36.7	54.0	-12.6
2709.750	42.5	38.4	-5.6	36.9	32.8	54.0	-17.1
3613.000	25.7	23.9	-1.3	24.4	22.6	54.0	-29.6
4516.250	----	----	----	----	----	54.0	----
5419.500	----	----	----	----	----	54.0	----
6322.750	----	----	----	----	----	54.0	----
7226.000	----	----	----	----	----	54.0	----
8129.250	----	----	----	----	----	54.0	----
9032.300	----	----	----	----	----	54.0	----

Note: 1. Measuring data shown on above table is according to section (2) of 2.2 of this report.

2. "----" means the noise is too low to be measured.

(5) Handset, channel 24(Fundamental Frequency: 910.442 MHz)

Test Date : Apr. 29, 1999 Temperature: 27 ℃ Humidity: 71%

Emission Frequency	Meter Reading (dBuV)		CORR'd Factor	Results (dBuV/m)		Limit	Margins
(MHz)	HOR.	VERT.	(dB)	HOR.	VERT.	(dBuV/m)	(dB)
910.442	43.4	52.2	30.4	73.8	82.6	94.0	-11.4
1820.844	46.8	48.5	-2.1	44.7	46.4	54.0	-7.6
2731.326	39.0	36.4	-5.8	33.2	30.6	54.0	-20.8
3641.768	24.1	23.3	-1.4	22.7	21.9	54.0	-31.3
4552.210	----	----	----	----	----	54.0	----
5456.652	----	----	----	----	----	54.0	----
6373.094	----	----	----	----	----	54.0	----
7283.536	----	----	----	----	----	54.0	----
8193.978	----	----	----	----	----	54.0	----

Note: 1. Measuring data shown on above table is according to section (2) of 2.2 of this report.

2. "----" means the noise is too low to be measured.

(6) Handset, channel 80(Fundamental Frequency: 926.980 MHz)

Test Date : Apr. 29, 1999 Temperature: 27 ℃ Humidity: 71%

Emission Frequency	Meter Reading (dBuV)		CORR'd Factor	Results (dBuV/m)		Limit	Margins
(MHz)	HOR.	VERT.	(dB)	HOR.	VERT.	(dBuV/m)	(dB)
926.965	50.8	52.2	30.4	81.2	82.6	94.0	-11.4
1853.900	39.8	36.6	-2.2	37.6	34.4	54.0	-16.4
2780.850	41.7	37.6	-5.9	35.8	31.7	54.0	-18.2
3707.800	25.7	23.3	-1.5	24.2	21.8	54.0	-29.8
4634.750	----	----	----	----	----	54.0	----
5561.700	----	----	----	----	----	54.0	----
6488.650	----	----	----	----	----	54.0	----
7415.600	----	----	----	----	----	54.0	----
8347.550	----	----	----	----	----	54.0	----
9269.500	----	----	----	----	----	54.0	----

Note: 1. Measuring data shown on above table is according to section (2) of 2.2 of this report.

2. "----" means the noise is too low to be measured.

4.3.2 Spurious Emission

Operation Mode : Communicating

(1) Base, channel 1(Fundamental Frequency: 903.200 MHz)

Test Date : Apr. 29, 1999 Temperature: 27 ℃ Humidity: 71%

Emission Frequency	Meter Reading (dBuV)		CORR'd Factor	Results (dBuV/m)		Limit	Margins
(MHz)	HOR.	VERT.	(dB)	HOR.	VERT.	(dBuV/m)	(dB)
76.796	25.3	26.5	9.6	34.9	36.1	40.0	-3.9
84.899	----	25.3	10.1	----	35.4	40.0	-4.6
115.210	26.0	27.8	9.4	35.4	37.2	43.5	-6.3
249.610	24.1	----	14.5	38.6	----	46.0	-7.4
288.005	18.4	----	16.5	34.9	----	46.0	-11.1

Note: 1. Measuring data shown on above table was derived with quasi peak detector function.

2. "----" means the noise is too low to be measured.

(2) Base, channel 24(Fundamental Frequency: 910.442 MHz)

Test Date : Apr. 29, 1999 Temperature: 27 ℃ Humidity: 71%

Emission Frequency	Meter Reading (dBuV)		CORR'd Factor	Results (dBuV/m)		Limit	Margins
(MHz)	HOR.	VERT.	(dB)	HOR.	VERT.	(dBuV/m)	(dB)
76.800	25.9	26.8	9.6	35.5	36.4	40.0	-3.6
84.492	----	25.7	10.1	----	35.8	40.0	-4.2
115.200	25.7	28.4	9.4	35.1	37.8	43.5	-5.7
249.600	24.3	----	14.5	38.8	----	46.0	-7.2
288.002	19.0	----	16.5	35.5	----	46.0	-10.5

Note: 1. Measuring data shown on above table was derived with quasi peak detector function.

2. "----" means the noise is too low to be measured.

(3) Base, channel 80(Fundamental Frequency: 926.980 MHz)

Test Date : Apr. 29, 1999 Temperature: 27 ℃ Humidity: 71%

Emission Frequency	Meter Reading (dBuV)		CORR'd Factor	Results (dBuV/m)		Limit	Margins
(MHz)	HOR.	VERT.	(dB)	HOR.	VERT.	(dBuV/m)	(dB)
76.800	25.5	26.2	9.6	35.1	35.8	40.0	-4.2
84.492	----	25.6	10.1	----	35.7	40.0	-4.3
115.210	25.6	28.1	9.4	35.0	37.5	43.5	-6.0
249.602	23.7	----	14.5	38.2	----	46.0	-7.8
288.005	18.8	----	16.5	35.3	----	46.0	-10.7

Note: 1. Measuring data shown on above table was derived with quasi peak detector function.

2. "----" means the noise is too low to be measured.

(4) Handset, channel 1(Fundamental Frequency: 903.200 MHz)

Test Date : Apr. 29, 1999 Temperature: 27 ℃ Humidity: 71%

Emission Frequency	Meter Reading (dBuV)		CORR'd Factor	Results (dBuV/m)		Limit	Margins
(MHz)	HOR.	VERT.	(dB)	HOR.	VERT.	(dBuV/m)	(dB)
45.443	11.7	----	9.5	21.2	----	40.0	-18.8
59.360	----	26.9	7.5	----	34.4	40.0	-5.6
145.151	8.6	14.5	12.7	21.3	27.2	43.5	-16.3
249.581	15.0	20.0	14.5	29.5	34.5	46.0	-11.5
950.342	1.4	3.4	30.2	31.6	33.6	46.0	-12.4

Note: 1. Measuring data shown on above table was derived with quasi peak detector function.

2. "----" means the noise is too low to be measured.

(5) Handset, channel 24(Fundamental Frequency: 910.442 MHz)

Test Date : Apr. 29, 1999 Temperature: 27 ℃ Humidity: 71%

Emission Frequency	Meter Reading (dBuV)		CORR'd Factor	Results (dBuV/m)		Limit	Margins
(MHz)	HOR.	VERT.	(dB)	HOR.	VERT.	(dBuV/m)	(dB)
45.443	11.4	----	9.5	20.9	----	40.0	-19.1
59.335	----	26.9	7.5	----	34.4	40.0	-5.6
145.125	9.0	14.9	12.7	21.7	27.6	43.5	-15.9
249.582	14.5	19.7	14.5	29.0	34.2	46.0	-11.8
950.340	2.2	2.9	30.2	32.4	33.1	46.0	-12.9

Note: 1. Measuring data shown on above table was derived with quasi peak detector function.

2. "----" means the noise is too low to be measured.

(6) Handset, channel 80(Fundamental Frequency: 926.980 MHz)

Test Date : Apr. 29, 1999 Temperature: 27 ℃ Humidity: 71%

Emission Frequency (MHz)	Meter Reading (dBuV)		CORR'd Factor (dB)	Results (dBuV/m)		Limit (dBuV/m)	Margins (dB)
	HOR.	VERT.		HOR.	VERT.		
45.445	10.7	----	9.5	20.2	----	40.0	-19.8
59.361	----	27.4	7.5	----	34.9	40.0	-5.1
145.129	8.8	25.4	12.7	21.5	38.1	43.5	-5.4
249.585	14.7	19.8	14.5	29.2	34.3	46.0	-11.7
950.342	1.7	3.2	30.2	31.9	33.4	46.0	-12.6

Note: 1. Measuring data shown on above table was derived with quasi peak detector function.

2. "----" means the noise is too low to be measured.

4.4 Field Strength Calculation

The field strength is calculated by adding the Antenna Factor, High Pass Filter Loss and Cable Loss, and subtracting the Amplifier Gain (if any) from the measured reading. The basic equation calculation is as follows:

Result = Reading + Corrected Factor

where

Corrected Factor = Antenna Factor + Cable Loss - Amplifier Gain

4.5 Radiated Measuring Equipment

The following instrument are used for radiated emissions measurement :

Equipment	Manufacturer	Model No.	Serial No.	Calibrated until
Test Receiver	Hewlett-Packard	8546A	3411A00192	Nov. 04, 1999
Spectrum Analyzer	Advantest	R3271	1505001	Aug. 24, 1999
Horn Antenna	EMCO	3115	9107-3729	Apr. 22, 1999
BiconiLog Antenna	EMCO	3142	9702-1142	Aug. 20, 1999

Note: The standards used to perform this calibration are traceable to NML/ROC and NIST/USA.

Measuring instrument setup in measured frequency band when specified detector function is used :

Frequency Band (MHz)	Instrument	Function	Resolution bandwidth	Video Bandwidth
30 to 1000	RF Test Receiver	Quasi-Peak	120 kHz	N/A
	Spectrum Analyzer	Peak	100 kHz	100 kHz
Above 1000	Spectrum Analyzer	Peak	1 MHz	1 MHz
	Spectrum Analyzer	Average	1 MHz	Auto

5. CONDUCTED EMISSION MEASUREMENT

5.1 Applicable Standard

For intentional digital devices, Line Conducted Emission Limits are in accordance to § 15.207(a).

5.2 Measurement Procedure

(1). Setup the configuration per figure 3.

(2). A preliminary scan with a spectrum monitor is performed to identify the frequency of emission that has the highest amplitude relative to the limit by operating the EUT in selected modes of operation, typical cable positions, and with a typical system configuration.

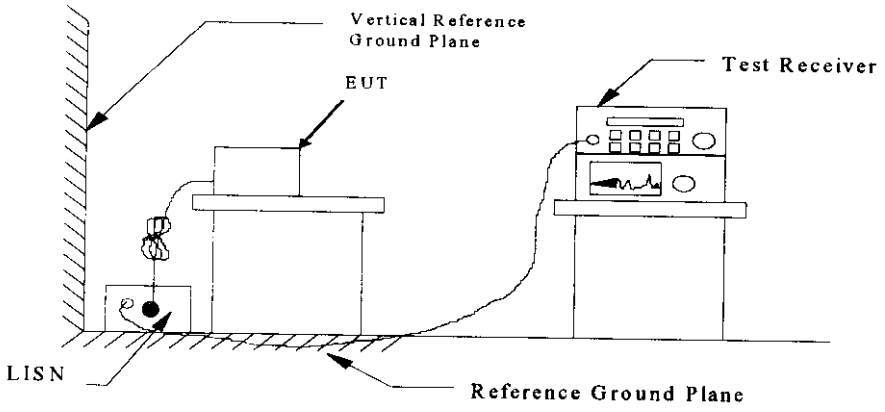
(3). Record the 4 to 8 highest emissions relative to the limit.

(4). Measure each frequency obtained from step 3 by a test receiver set on quasi peak detector function, and then record the accuracy frequency and emission level. If all emissions measured in the specified band are attenuated more than 20 dB from the limit, this step would be ignored, and the peak detector function would be used.

(5). Confirm the highest emissions with variation of the EUT cable configuration and record the final data.

(6). Repeat all above procedures on measuring each operation mode of EUT.

Figure 3 : Conducted emissions measurement configuration



5.3 Conducted Emission Data

(1) Charging unit

Operation Mode : Charging & Handset

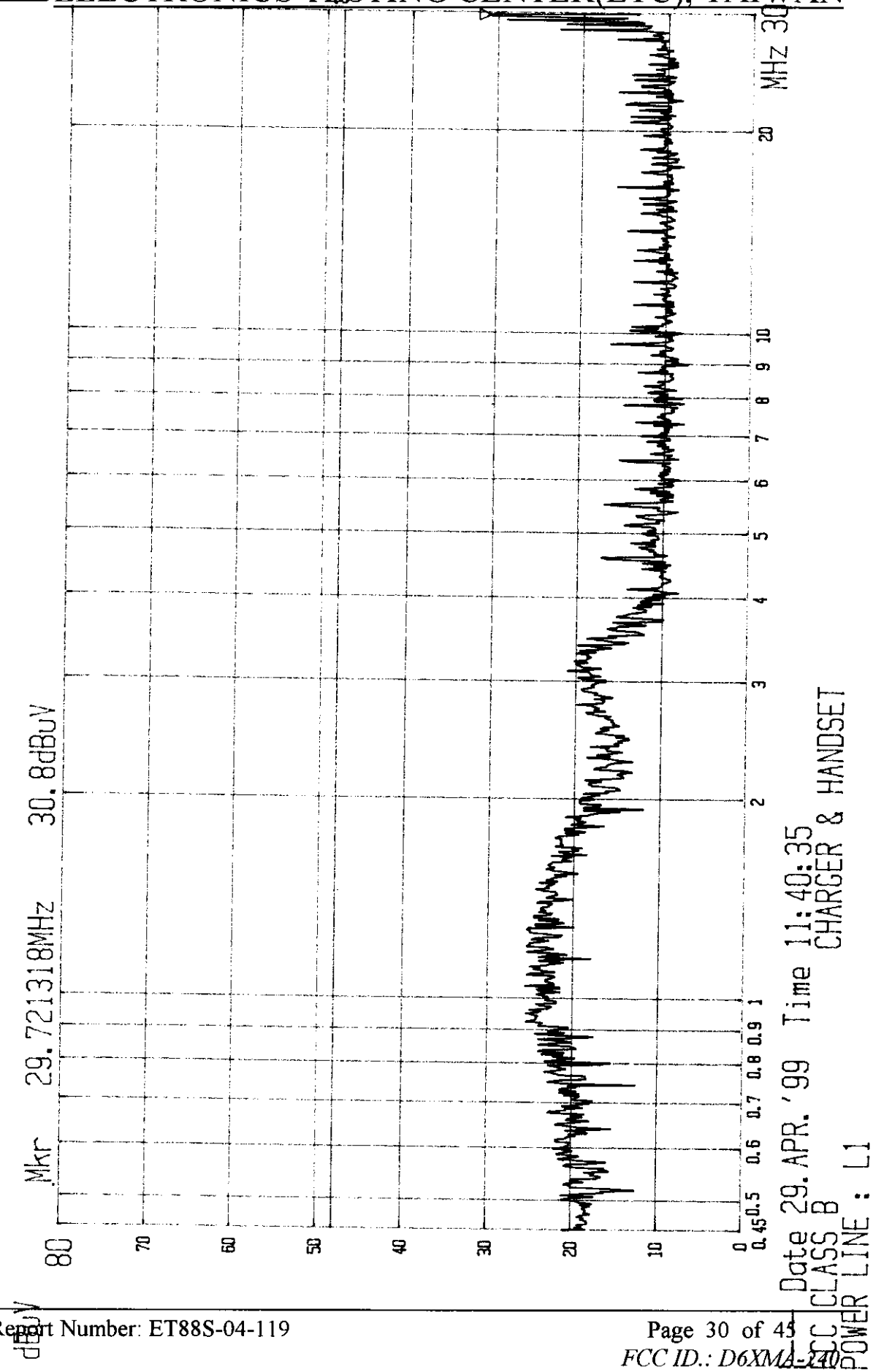
Test Date : Apr. 29,1999 Temperature : 25 ℃ Humidity : 71%

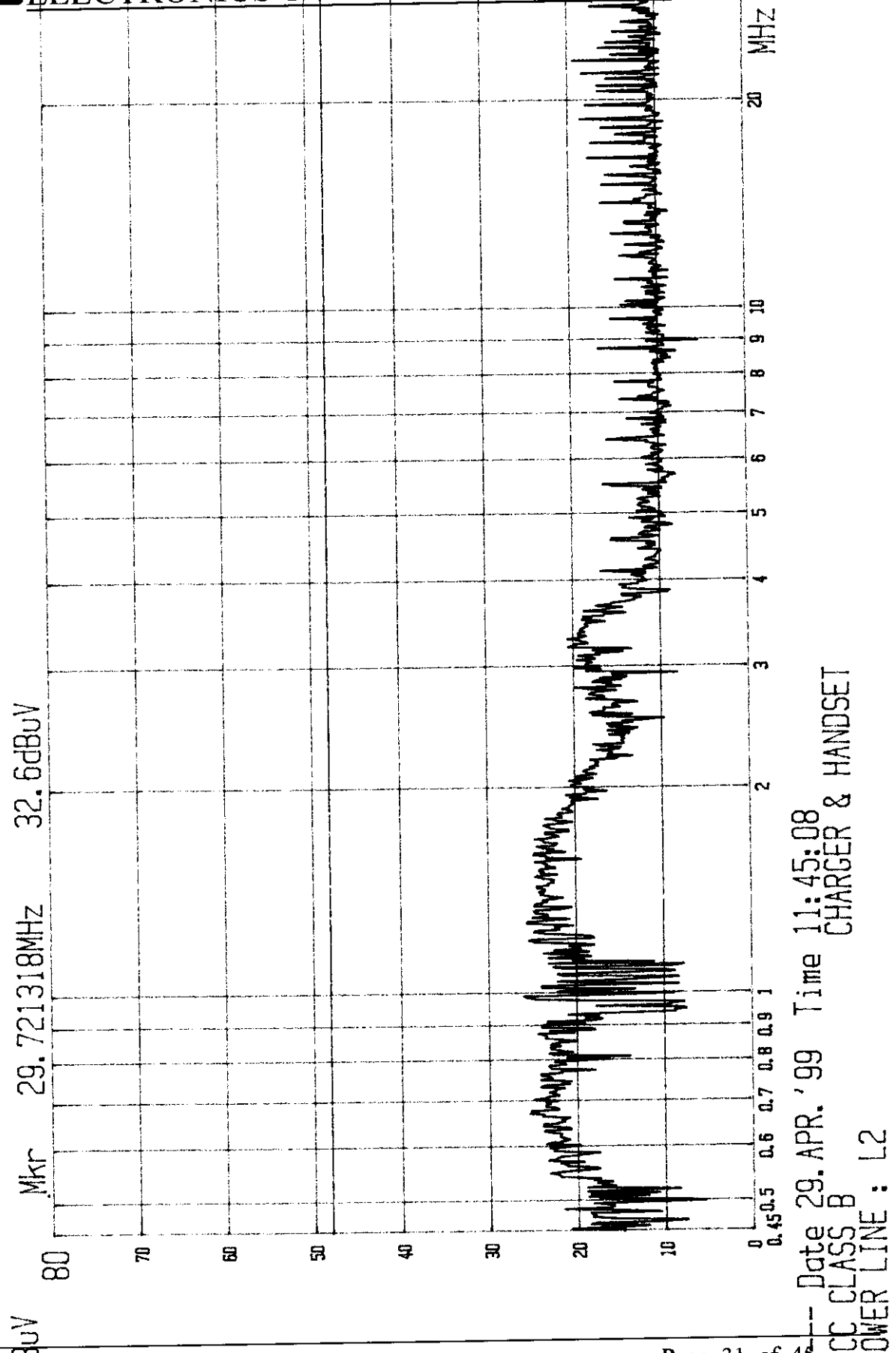
Frequency	Reading dB μV		LISN	Results dB μV		Limit	Margins
MHz	L1	L2	Factor	L1	L2	dB μV	dB
0.450	18.0	20.5	0.1	18.1	20.6	48.0	-27.4
1.050	21.6	20.8	0.2	21.8	21.0	48.0	-26.2
3.160	13.6	----	0.2	13.8	----	48.0	-34.2
3.210	----	16.7	0.2	----	16.9	48.0	-31.1
4.130	14.0	----	0.2	14.2	----	48.0	-33.8
4.590	----	14.3	0.2	----	14.5	48.0	-33.5
8.721	12.9	13.6	0.3	13.2	13.9	48.0	-34.1
29.840	33.3	34.9	0.5	33.8	35.4	48.0	-12.6

Note :

(1) "----" means the noise is too low to be measured.

(2) The full frequency range scanning test data is shown in next two pages.


Mkr 29.721318MHz 30.8dBuV
Date 29.APR.'99 Time 11:40:35
FCC CLASS B
POWER LINE : L1
CHARGER & HANDSET
dBuV
MHz


dBuV
80
70
60
50
40
30
20
10
0
0.45 0.5 0.6 0.7 0.8 0.9 1 2 3 4 5 6 7 8 9 10 20
MHz
Mkr 29.721318MHz 32.6dBuV
-- Date 29.APR.'99 Time 11:45:08
FCC CLASS B CHARGER & HANDSET
POWER LINE : L2

(2) Base, voice channel 40

Operation Mode : Base unit

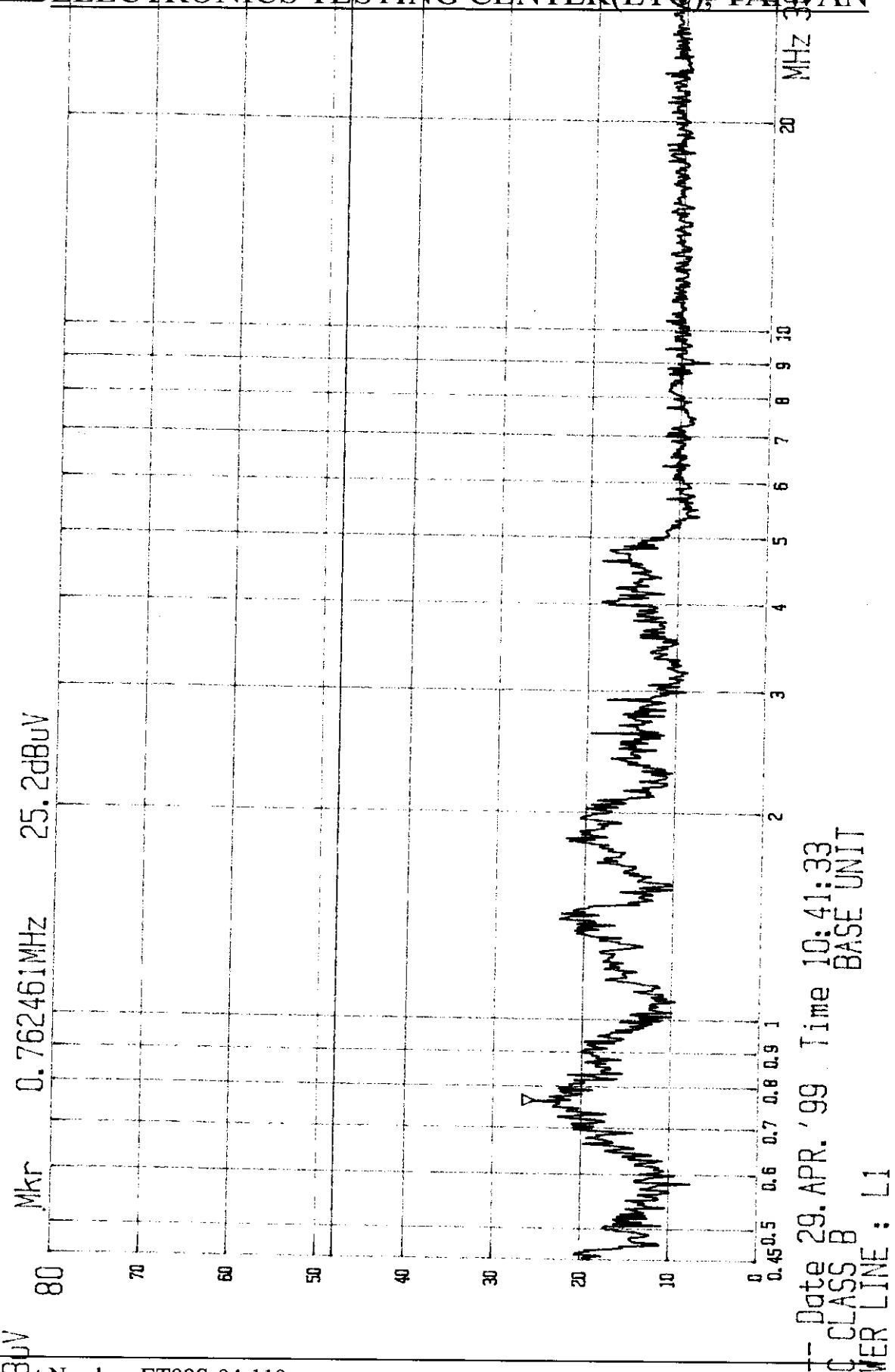
Test Date : Apr. 29,1999 Temperature : 25 ℃ Humidity : 71%

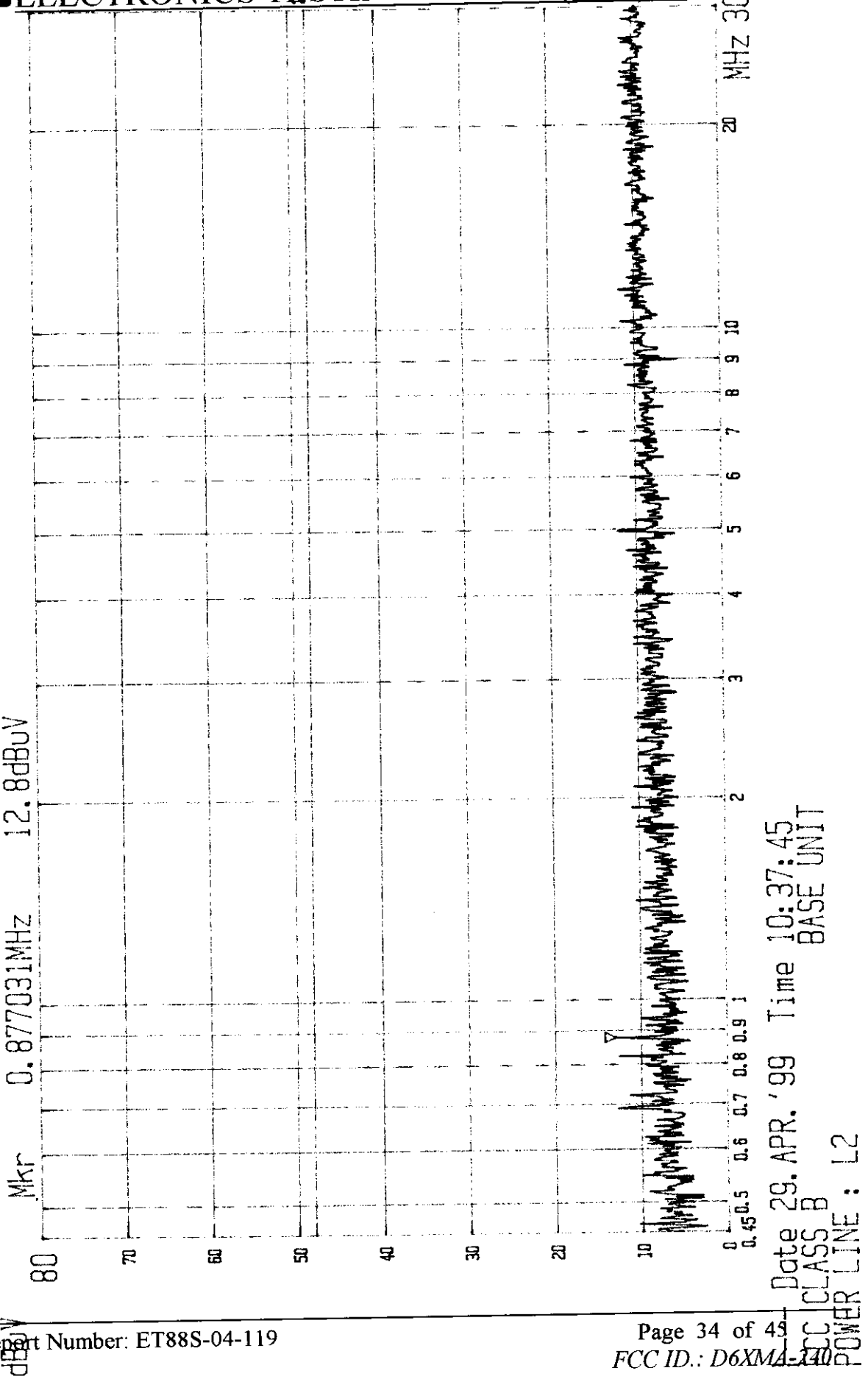
Frequency	Reading dB μV		LISN	Results dB μV		Limit	Margins
MHz	L1	L2	Factor	L1	L2	dB μV	dB
0.763	24.2	----	0.1	24.3	----	48.0	-23.7
1.425	21.6	----	0.2	21.8	----	48.0	-26.2
1.816	20.8	----	0.2	21.0	----	48.0	-27.0
2.392	16.2	----	0.2	16.4	----	48.0	-31.6
4.034	17.6	----	0.2	17.8	----	48.0	-30.2
4.794	16.8	----	0.2	17.0	----	48.0	-31.0

Note :

(1) "----" means the noise is too low to be measured.

(2) The full frequency range scanning test data is shown in next two pages.


Mkr 0.762461MHz 25.2dBuV
dBuV
80
70
60
50
40
30
20
10
0
0.45 0.5 0.6 0.7 0.8 0.9 1 2 3 4 5 6 7 8 9 10 20 MHz 30
Date 29.APR.'99 Time 10:41:33
FCC CLASS B
POWER LINE : L1
BASE UNIT


Mkr 0.877031MHz 12.8dBuV
dBuV
80
70
60
50
40
30
20
10
0.45 0.5 0.6 0.7 0.8 0.9 1 2 3 4 5 6 7 8 9 10 20 30 MHz
Date 29. APR. '99 Time 10:37:45
FCC CLASS B BASE UNIT
POWER LINE : L2

5.4 Result Data Calculation

The result data is calculated by adding the LISN Factor to the measured reading. The basic equation with a sample calculation is as follows:

RESULT = READING + LISN FACTOR

Assume a receiver reading of 22.5 dB μ V is obtained, and LISN Factor is 0.1 dB, then the total of field strength is 22.6 dB μ V.

RESULT = 22.5 + 0.1 = 22.6 dB μ V
Level in μ V = Common Antilogarithm[(22.6 dB μ V)/20]
= 13.48 μ V

5.5 Conducted Measurement Equipment

The following test equipment are used during the conducted test .

Equipment	Manufacturer	Model No.	Serial No.	Calibrated until
Test Receiver	Rohde and Schwarz	ESH3	894718/018	Jan. 20, 2000
Line Impedance Stabilization Network	EMCO	3825/2	9704-2677	Oct. 29, 1999

Note: The standards used to perform this calibration are traceable to NML/ROC and NIST/USA.

6. ANTENNA REQUIREMENT

6.1 Applicable Standard

According to § 15.203, an intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device.

6.2 Antenna Construction

The antenna is permanently mounted on RF box, no consideration of replacement.

7. BAND EDGES MEASUREMENT

7.1 Applicable Standard

According to § 15.249(c), emissions radiated outside of the specified frequency bands, except for harmonics, shall be attenuated by at least 50 dB below the level of fundamental or to the radiated emission limits in § 15.209.

7.2 Measurement Procedure

(1) Check the calibration of the measuring instrument using either an internal calibrator or a known signal from an external generator.

(2) Turn on the EUT and connect its antenna terminal to measurement instrument via a low loss cable. Then set it to any one measured frequency within its operating range and make sure the instrument is operated in its linear range.

(3) Set RES BW 100KHz and VBW 300KHz with a convenient frequency span.

(4) Measure the highest amplitude appearing on spectral display and set it as a reference level. Plot the graph with marking the highest point and edge frequency.

(5) Repeat above procedures until all measured frequencies were complete.

7.3 Measurement Equipment

Equipment	Manufacturer	Model No.	Serial No.	Calibrated until
Test Receiver	R&S	ESCS30	847124/028	Jan. 11, 2000

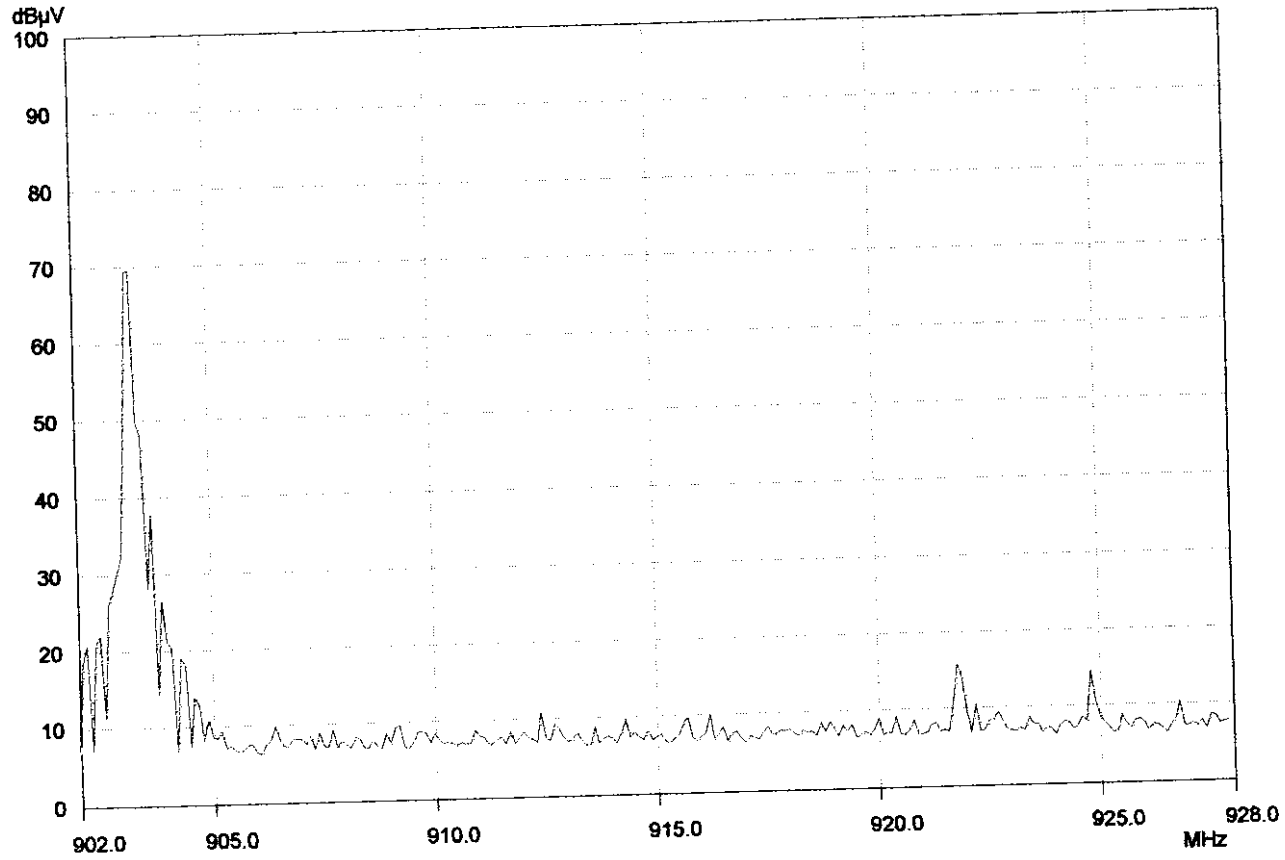
7.4.1 Measurement Data

(1) Base, voice channel 1

Manuf:
Op Cond:
Operator:
Test Spec: FCC PART 15
Comment:

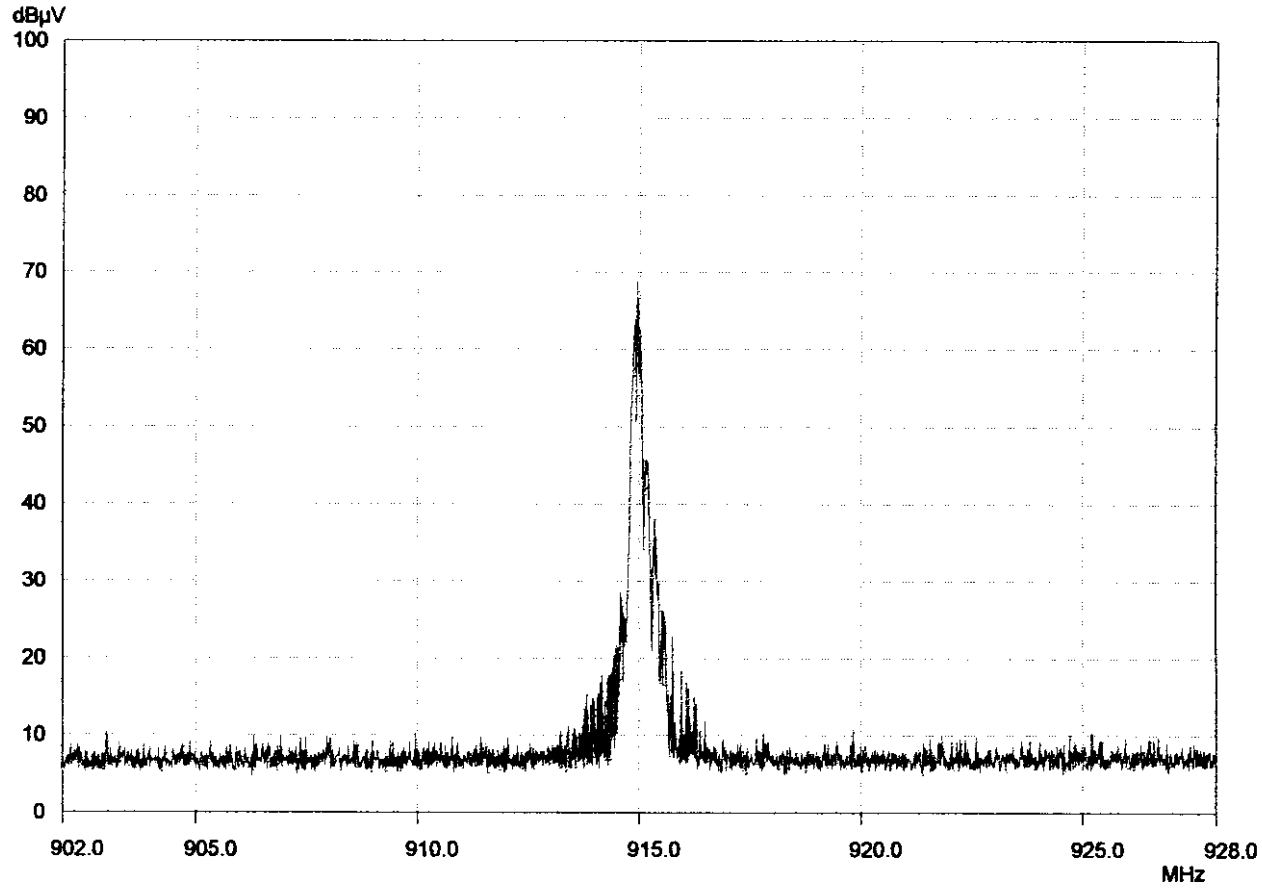
Result File: b-ch1.dat : baseunit channel 1

Final Measurement: Detector: X QP
Meas Time: 1sec
Peaks: 8
Acc Margin: 25 dB



(2) Base, voice channel 40

EUT:	Base Unit		
Manuf:			
Op Cond:	Channel 40		
Operator:			
Test Spec:	FCC PART 15		
Comment:			
Result File:	b-ch40.dat : baseunit channel 40		
Final Measurement:		Detector:	X QP
		Meas Time:	1sec
		Peaks:	8
		Acc Margin:	25 dB



Bandwidth Measurement

ELECTRONICS TESTING CENTER(ETC), TAIWAN

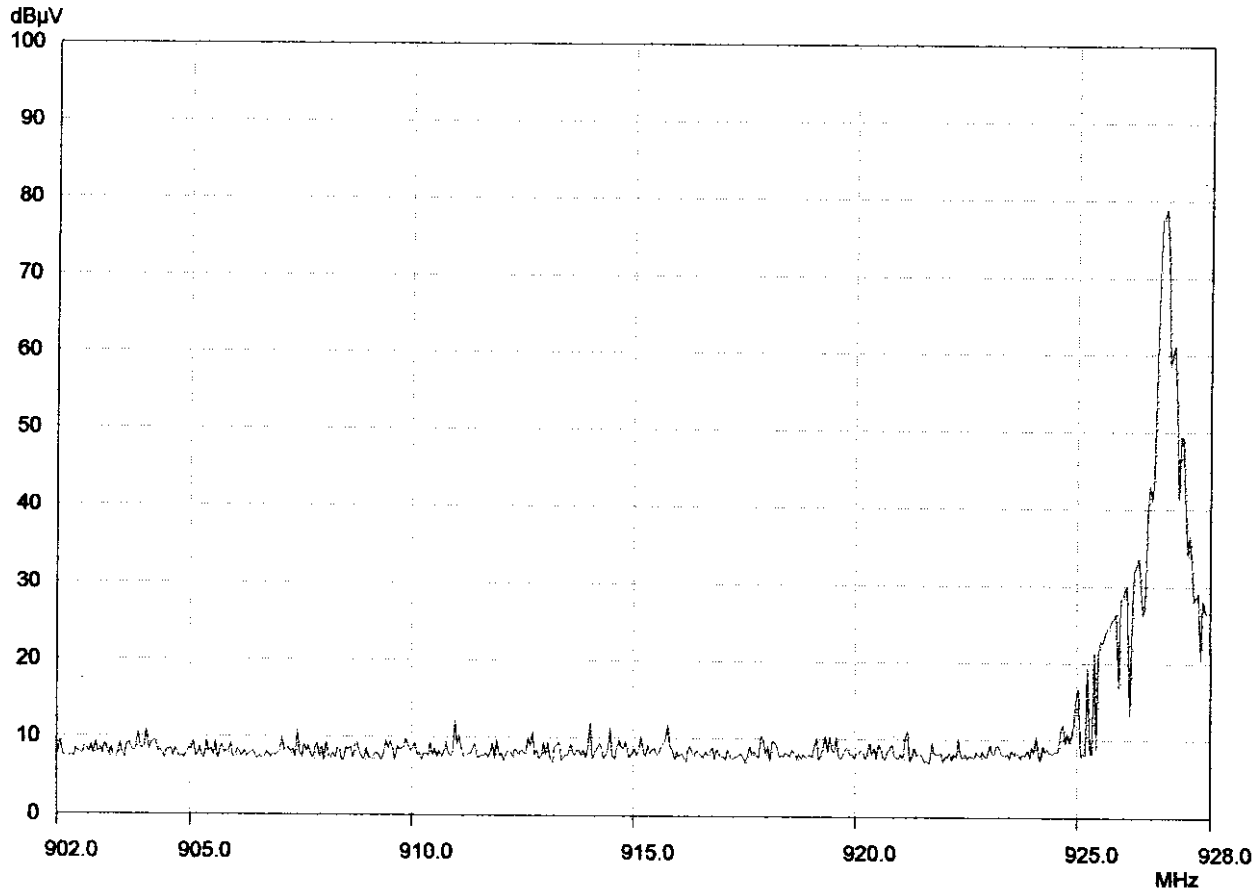
(3) Base, voice channel 80

EUT:	Base Unit
Manuf:	
Op Cond:	Channel 80
Operator:	
Test Spec:	FCC PART 15
Comment:	

Result File: b-ch80.dat : baseunit channel 80

Final Measurement:

Detector:	X QP
Meas Time:	1sec
Peaks:	8
Acc Margin:	25 dB



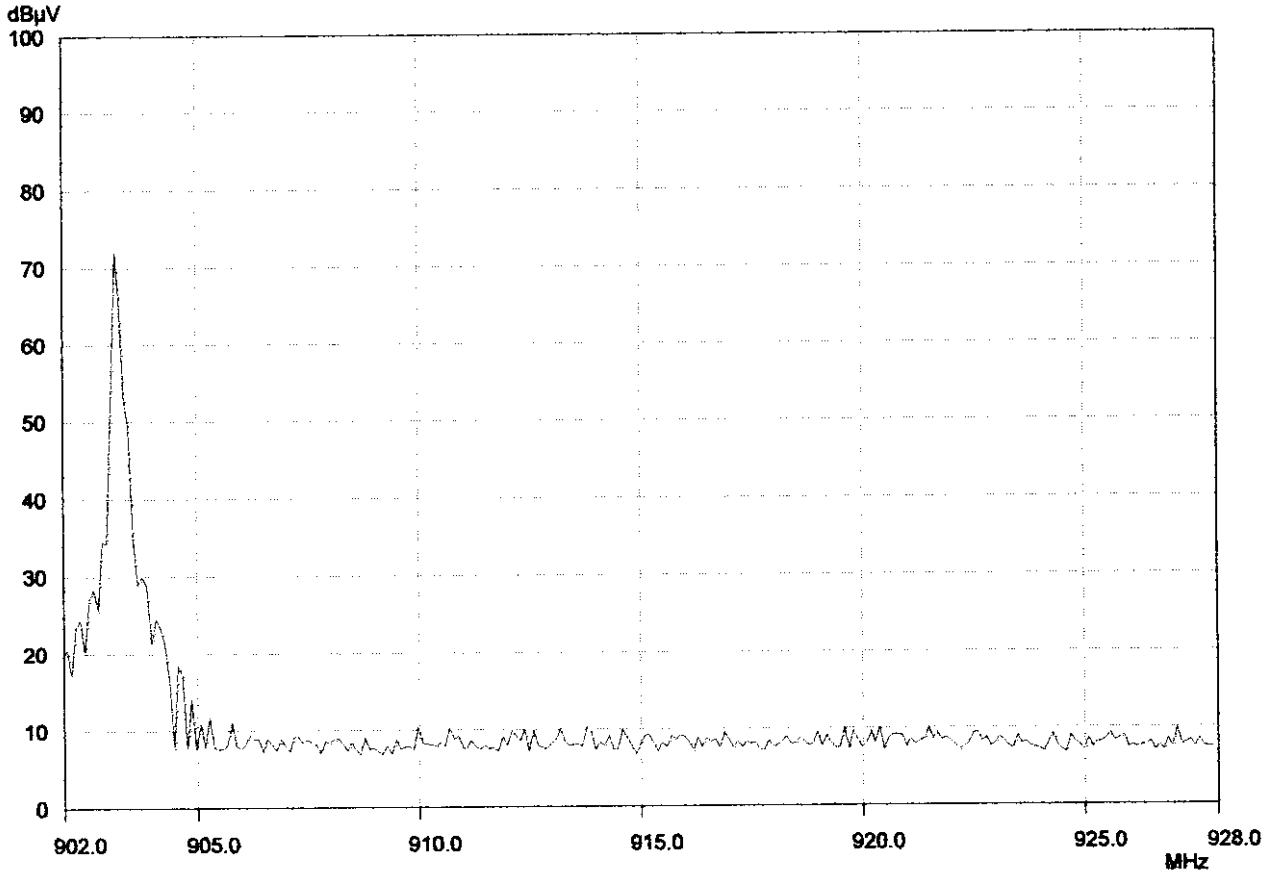
(4) Handset, voice channel 1

EUT:	Handset
Manuf:	
Op Cond:	Channel 1
Operator:	
Test Spec:	FCC PART 15
Comment:	

Result File: h-ch1.dat : Handset channel 1

Final Measurement:

Detector:	X QP
Meas Time:	1sec
Peaks:	8
Acc Margin:	25 dB

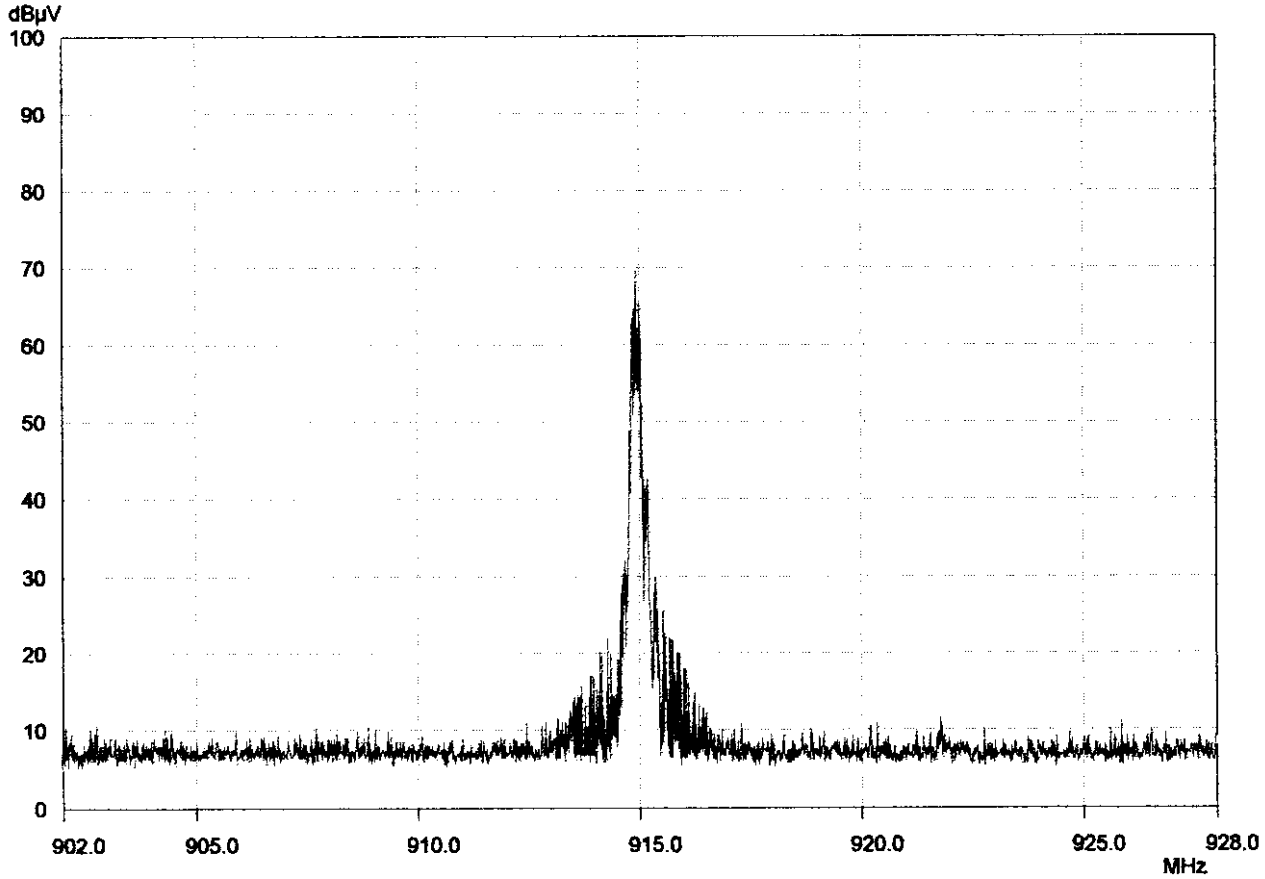


(5) Handset, voice channel 40

EUT:	Handset
Manuf:	
Op Cond:	Channel 40
Operator:	
Test Spec:	FCC PART 15
Comment:	

Result File: h-ch40.dat : Handset Channel 40

Final Measurement:		
	Detector:	X QP
	Meas Time:	1sec
	Peaks:	8
	Acc Margin:	25 dB



Bandwidth Measurement

ETC ELECTRONICS TESTING CENTER(ETC), TAIWAN

(6) Handset, voice channel 80

EUT:	Handset		
Manuf:			
Op Cond:	Channel 80		
Operator:			
Test Spec:	FCC PART 15		
Comment:			
Result File:	h-ch801.dat : Handset Channel 80		
Final Measurement:		Detector:	X QP
		Meas Time:	1sec
		Peaks:	8
		Acc Margin:	25 dB