

**EMC TEST REPORT For FCC**

Test Report No. : CTK01-F125

Date of Issue : September 21, 2001

Model/Type No: : VR10T, VR10N and VR10E

Kind of Product : Digital Voice Recorder

Applicant : Personal Telecom. Inc.

Applicant Address : 4th FL. Kyonggi Venture Bldg.
1017 Inge-Dong, Paldal-Gu, Suwon, Korea 442-070

Manufacturer : Personal Telecom. Inc.

Manufacturer Address : 4th FL. Kyonggi Venture Bldg.
1017 Inge-Dong, Paldal-Gu, Suwon, Korea 442-070

Contact Person : IL-KEUN PARK (President)

Telephone : +82-31-221-9064

Received Date : July 24, 2001

Test period : Start: Sep. 20, 2001 End: Sep. 20, 2001

Test Results : **In Compliance** **Not in Compliance**

The test results presented in this report relate only to the object tested.

CERTiTEK Standards Laboratory Co., Ltd. is accredited by Korea Laboratory Accreditation Scheme (KOLAS) which signed the International Laboratory Accreditation Cooperation (ILAC) Mutual Recognition Arrangement (MRA) for the above test item(s) and test method(s).

Tested by

Michael Jang
EMC Test Engineer
Date: September 21, 2001

Reviewed by

Tony Kim
EMC Technical Manager
Date: September 21, 2001

**REPORT REVISION HISTORY**

Date	Revision	Page No
Sep. 10, 2001	Issued	All

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TABLE OF CONTENTS

1.0 General Product Description	4
1.0 General Product Description	4
1.1 Model Differences	4
1.2 Device Modifications	4
1.3 EUT Configuration(s)	5
1.4 Test Software	5
1.5 EUT Operating Mode(s)	5
1.6 Calibration Details of Equipment Used for Measurement	6
1.7 Test Facility	6
1.8 Measurement Procedure	6
1.9 Laboratory Accreditations and Listings	7
2.0 Emissions Test Regulations	8
2.1 Conducted Voltage Emissions	9
2.2 Radiated Electric Field Emissions	10
Configurations	11
APPENDIX A - TEST DATA	12
Conducted Voltage Emissions (Quasi-Peak reading)	12
Radiated Electric Field Emissions (Quasi-Peak reading)	13



1.0 General Product Description

The product is Digital Voice Recorder.

1.0.1 Tested Equipment

- Unless otherwise indicated, all tests were conducted on Model VR10T
- Tests performed on Model VR10T were considered to be representative of Model(s) VR10N and VR10E.

1.0.2 Equipment Size, Mobility and Identification

Dimensions:	34.5 by 109 by 19.3	<input checked="" type="checkbox"/> mm <input type="checkbox"/> in
Mobility:	<input checked="" type="checkbox"/> Hand-Held <input type="checkbox"/> Table-top	<input checked="" type="checkbox"/> Floor-standing
Serial No.:	Not Applicable	

1.0.3 Electrical Ratings

Input:	DC 3 V (AAA Size Battery x 2 EA)
Output:	Not applicable

1.0.4 Test Voltage & Frequency

Unless indicated otherwise on the individual data sheet or test results, the test voltage and frequency was as indicated below.

Voltage:	DC 3 V (AAA Size Battery x 2 EA)
Frequency:	DC

1.0.5 Clock & Other Frequencies Utilized

USB:	48 MHz
DSP:	4.096 MHz
MCU:	4.19 MHz

1.1 Model Differences

These models are identical except for memory capacity as follows;

VR10T: 32 MB
VR10N: 16 MB
VR10E: 8 MB

1.2 Device Modifications

The following modifications were necessary for compliance:

Not applicable



1.3 EUT Configuration(s)

See Appendix A for individual test set-up configuration(s). The following peripheral devices and/or interface cables were connected during the measurement:

Peripheral Devices

Device	Manufacturer	Model No.	Serial No.	FCC ID or DoC
PC	Hewlett Packard	DTPC-17	SG01501776	DOC
Monitor	Samsung	PG17HS	301661	DOC
Printer	Hewlett Packard	C4530A	US7A91703J	DOC
Keyboard	Hewlett Packard	SK-2502C	M000351491	DOC
Game Pad	Microsoft	Side Winder	03421317	C3KMGMP1
Headset	-	Hi-Sonic	-	-
PS/2 Mouse	Logitech	M-S48	LZA84601000	JNZ201213
Serial Mouse	Sotec	M-S48	LZA91153127	DZL211153
USB Mouse	Logitech	M-BB48	LZE93853157	DOC
Microphone	-	-	-	-
Earphone	-	-	-	-

Cable Description

#	Description	Ferrited	Length (m)	Other Details
1	PC Power Cable	No	1.8	Connect to AC Power
2	Monitor Power Cable	No	1.8	Connect to AC Power
3	Printer Power Cable	No	2.0	Connect to AC Power
4	Monitor Cable, Shielded	Yes	1.8	Between PC and Monitor
5	Printer Cable, Shielded	No	1.8	Between PC and Printer
6	Keyboard Cable, Shielded	No	2.0	Connect to PC
7	Game Pad Cable, Unshielded	No	2.0	Connect to PC
8	Headset Cable, Unshielded	No	2.0	Connect to PC
9	Mouse Cable, Shielded	No	2.0	Connect to PC
10	Mouse Cable, Shielded	No	2.0	Connect to PC
11	Mouse Cable, Shielded	No	2.0	Connect to PC
12	USB Cable, Shielded	Yes	1.4	Between PC and EUT
13	Microphone Cable, Unshielded	No	1.5	Connect to EUT
14	Earphone Cable, Unshielded	No	1.5	Connect to EUT
15	Line-in Cable, Unshielded	No	1.2	-

n/a = not available

1.4 Test Software

Pinging
 Name / Manufacturer
 Voice Editor / Personal Telecom. Inc. / Version
 / 1.0

1.5 EUT Operating Mode(s)

Equipment under test was operated during the measurement under the following conditions:

Test program (H-Pattern)
 Standby
 Test program (customer specific) - Download

Test program (color bar)
 Practice operation



1.6 Calibration Details of Equipment Used for Measurement

Test equipment and test accessories are calibrated on regular basis. The maximum time between calibrations is one year or what is recommended by the manufacturer, whichever is less. All test equipment calibrations are traceable to the Korea Research Institute of Standards and Science (KRISS), therefore, all test data recorded in this report is traceable to KRISS.

1.7 Test Facility

The measurement facility is located at 386-1, Ho-Dong, Yongin-City, Kyungki-Do, Korea 449-100. The sites are constructed in conformance with the requirements of ANSI C63.7, ANSI C63.4 and CISPR Publication 22.

1.8 Measurement Procedure

Preliminary AC power line conducted emissions tests were performed shielded room.

To find worst mode, several typical mode and typical cable position were tested.

Final AC power line conducted emissions test was performed shielded room. (location is same as Preliminary test)

Based on the preliminary tests of the EUT, final test was proceeded worst case test mode and cable configuration.

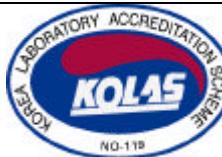
Preliminary radiated emissions test were performed anechoic chamber (Distance of antenna and EUT was 3 m). To find worst mode, several typical mode and typical cable position were tested and peak level and frequency were recorded.

Final radiated emissions test was performed Open Area Test Site. Based on the preliminary tests of the EUT, final test was proceeded worst case test mode and cable configuration.

* Measurement procedures was In accordance with ANSI C63.4-1992 7.2.3, 7.2.4, 8.3.1.1, 8.3.1.2



1.9 Laboratory Accreditations and Listings

Country	Agency	Scope of Accreditation	Logo
USA	FCC	3 and 10 meter Open Area Test Sites to perform FCC Part 15/18 measurements.	 93250
JAPAN	VCCI	10 meter Open Area Test Site and one conducted site.	 R-948, C-986
KOREA	MIC	10 meter Open Area Test Site and EMS (ESD, RS, EFT/Burst, Surge)	 No. 51, KR0025
International	KOLAS	EMC	



2.0 Emissions Test Regulations

The emissions tests were performed according to following regulations:

<input type="checkbox"/> EN 50081-1 /1992		
<input type="checkbox"/> EN 55011 /1998	<input type="checkbox"/> Group 1 <input type="checkbox"/> Class A	<input type="checkbox"/> Group 2 <input type="checkbox"/> Class B
<input type="checkbox"/> EN 55013 /A12:1994		
<input type="checkbox"/> EN 55014 /1987	<input type="checkbox"/> Household appliances and similar <input type="checkbox"/> Portable tools <input type="checkbox"/> Semiconductor devices	
<input type="checkbox"/> EN 55014 /A2:1990		
<input type="checkbox"/> EN 55014 /1993	<input type="checkbox"/> Household appliances and similar <input type="checkbox"/> Portable tools <input type="checkbox"/> Semiconductor devices	
<input type="checkbox"/> EN 55015 /1987		
<input type="checkbox"/> EN 55015 /A1:1990		
<input type="checkbox"/> EN 55015 /1993		
<input type="checkbox"/> EN 55022 /A1:1995	<input type="checkbox"/> Class A	<input type="checkbox"/> Class B
<input type="checkbox"/> EN 55022 /1998	<input type="checkbox"/> Class A	<input type="checkbox"/> Class B
<input type="checkbox"/> EN 61000-3-2 /1995 (EN 60555 Part 2 /4.87)		
<input type="checkbox"/> EN 61000-3-3 /1995 (EN 60555 Part 3 /4.87)		
<input type="checkbox"/> BS		
<input type="checkbox"/> VCCI V-3/99.05 : 1999	<input type="checkbox"/> Class A	<input type="checkbox"/> Class B
<input checked="" type="checkbox"/> FCC Part 15 SUBPART B	<input type="checkbox"/> Class A	<input checked="" type="checkbox"/> Class B
<input type="checkbox"/> AS 3548 (1992)	<input type="checkbox"/> Class A	<input type="checkbox"/> Class B
<input type="checkbox"/> CISPR 11 (1990)	<input type="checkbox"/> Group 1 <input type="checkbox"/> Class A	<input type="checkbox"/> Group 2 <input type="checkbox"/> Class B
<input type="checkbox"/> CISPR 22 (1993)	<input type="checkbox"/> Class A	<input type="checkbox"/> Class B



2.1 Conducted Voltage Emissions

Test Date**Not applicable****Test Location**

EMI-CE: Shielded Room

Test Instruments

<input type="checkbox"/> Field Strength Meter	Rohde Schwarz	ESHS30	828144/002
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Test Accessories

<input type="checkbox"/> LISN	EMCO	3825/2	9206-1971
<input type="checkbox"/> LISN	EMCO	3825/2	9409-2246
<input type="checkbox"/> LISN	EMCO	3825/2	9607-2574
<input type="checkbox"/> Control PC	HP	Vectra 500	SG72000192

Frequency Range of Measurement

<input type="checkbox"/> 150 kHz to 30 MHz
<input type="checkbox"/> 450 kHz to 30 MHz
<input type="checkbox"/> _____

Instrument Settings

IF Band Width: 9 kHz

Test Results

The requirements are:

<input type="checkbox"/> MET	minimum margin is _____ dB μ V at _____ MHz
<input type="checkbox"/> NOT MET	limit exceeded by maximum of _____ dB μ V at _____ MHz
<input checked="" type="checkbox"/> NOT APPLICABLE	

RemarksNot applicable



2.2 Radiated Electric Field Emissions

Test Date

September 20, 2001

Test Location

EMI-OATS: Testing was performed at a test distance of 10 m
 EMI-OATS: Testing was performed at a test distance of 3 m

Test Instruments

Field Strength Meter Rohde Schwarz ESVS30 826638/008

Test Accessories

<input checked="" type="checkbox"/> Ultra Broadband Antenna	R & S	HL562	361324/014
<input type="checkbox"/> Biconical Antenna	Schwarzbeck	BBA9106	41-00201
<input type="checkbox"/> Biconical Antenna	EMCO	3110B	9607-2564
<input type="checkbox"/> Log-periodic Antenna	EMCO	3146	9607-4567

Frequency Range of Measurement

30 MHz to 1 GHz

Instrument Settings

IF Band Width: 120 kHz

Test Results

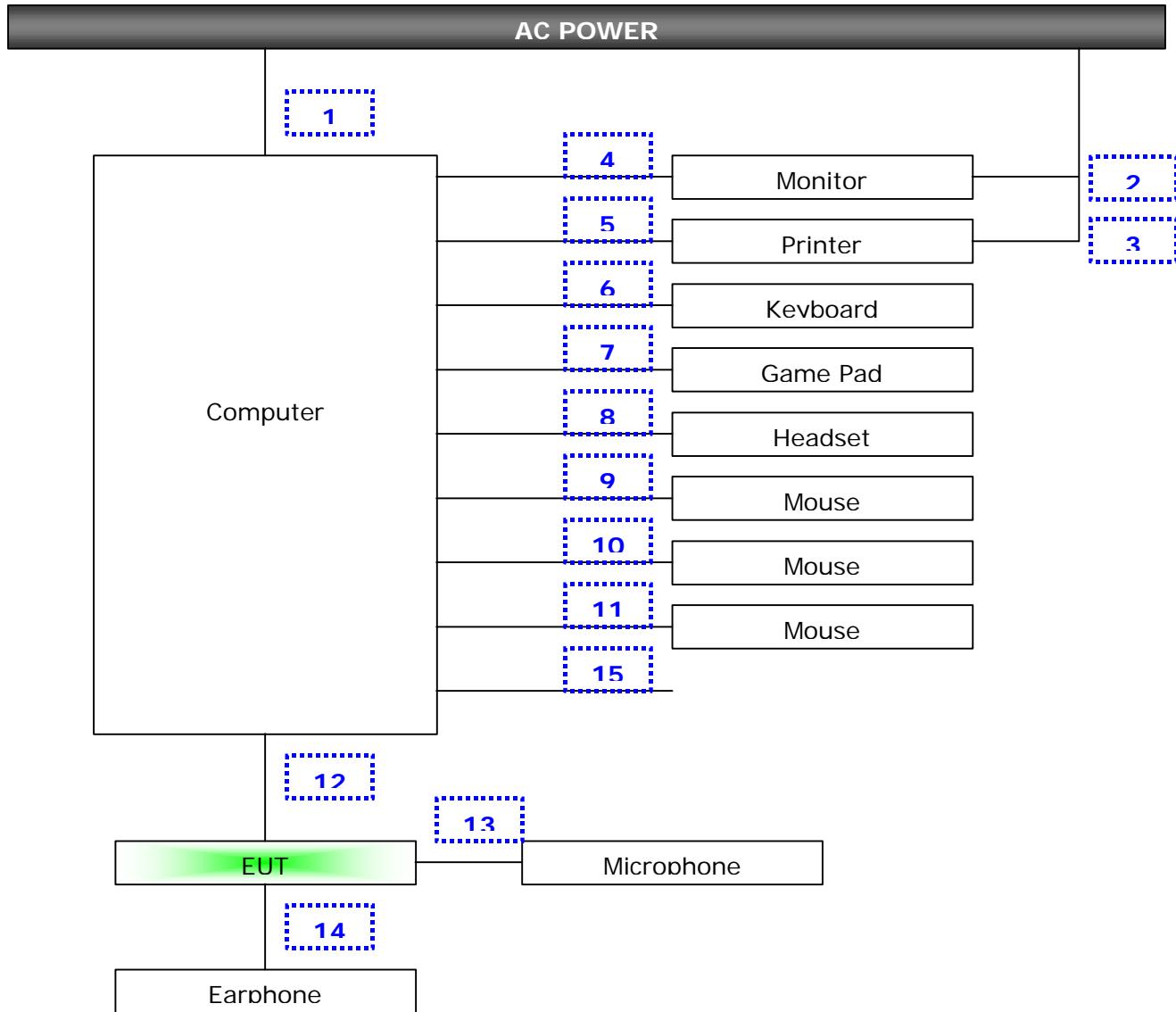
The requirements are:

MET minimum margin is 17.03 dB (μ V/m) at 949.3 MHz
 NOT MET limit exceeded by maximum of _____ dB(μ V/m) at _____ MHz
 NOT APPLICABLE

RemarksSee Appendix A for test data



Configuration



**APPENDIX A - TEST DATA****Conducted Voltage Emissions (Quasi-Peak reading)**

Frequency [MHz]	Correction Factor		Line	Quasi-peak				Average				
	LISN	Cable		Limit	Reading	Result	Margin	Limit	Reading	Result	Margin	
				[dBuV]	[dBuV]	[dBuV]	[dB]	[dBuV]	[dBuV]	[dBuV]	[dB]	

Not applicable



Radiated Electric Field Emissions (Quasi-Peak reading)

Frequency [MHz]	Reading [dBuV/m]	Pol.	Height [m]	Correction Factor		Limits [dBuV/m]	Result [dBuV/m]	Margin [dB]
				Antenna	Cable			
144.10	15.5	V	1.0	7.80	1.40	43.5	24.67	18.83
192.00	14.4	H	3.5	7.00	1.60	43.5	23.03	20.47
195.40	14.4	H	4.0	7.00	1.70	43.5	23.11	20.39
195.40	13.6	V	1.2	7.00	1.70	43.5	22.29	21.21
260.90	12.8	H	4.0	9.80	2.20	46.0	24.75	21.25
260.90	8.9	V	1.0	9.80	2.20	46.0	20.89	25.11
384.00	12.3	H	4.0	13.10	2.60	46.0	28.01	17.99
384.00	10.3	V	1.0	13.10	2.60	46.0	25.98	20.02
753.30	4.8	V	1.3	19.00	4.50	46.0	28.33	17.67
818.00	3.5	H	3.9	19.90	4.60	46.0	28.01	17.99
818.00	4.3	V	1.0	19.90	4.60	46.0	28.78	17.22
949.30	3.1	H	4.0	21.00	4.90	46.0	28.97	17.03