ELECTROMAGNETIC EMISSION COMPLIANCE REPORT FOR FCC CLASS B CERTIFICATION

Test report file number	**: E024R-074**
Applicant	**: Decktron Co., Ltd.**
Address	**: 187-3 Sinbong-Dong, Hungduk-Gu, Cheongju-Si, Chungcheongbuk-Do, 361-839 Korea**
Manufacturer	**: Decktron Co., Ltd.**
Address	**: 187-3 Sinbong-Dong, Hungduk-Gu, Cheongju-Si, Chungcheongbuk-Do, 361-839 Korea**
Type of Equipment	**: Digital Voice Recorder**
FCC ID	**: P42DMR1218SU**
Model / Type No.	**: DMR-1218SU**
Serial number	**: N/A**
Total page of Report	**: 13 pages (including this page)**
Date of Incoming	**: March 22, 2002**
Date of issuing	**: May 02, 2002**

SUMMARY

The equipment complies with the regulation; ***FCC CFR 47 PART 15 SUBPART B, Class B.***

This test report contains only the result of a single test of the sample supplied for the examination.

It is not a general valid assessment of the features of the respective products of the mass-production.

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EMC Testing Dept : 426-1 Daessangryung-Ri, Chowol-Myun, Kwangju-Kun, Kyunggi-Do 464-860 Korea. (TEL: 82-31-765-8289 FAX: 82-31-766-2904)

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1. VERIFICATION OF COMPLIANCE

APPLICANT : Decktron Co., Ltd.

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CONTACT PERSON : Dong-Woong Shin / Assist Manager

TELEPHONE NO : +82-43-269-9671

FCC ID : P42DMR1218SU

MODEL NO/NAME : DMR-1218SU

SERIAL NUMBER : N/A

DATE : May 02, 2002

DEVICE TYPE	Peripheral Device for Class B Computing Device -Unintentional Radiator
E.U.T. DESCRIPTION	Digital Voice Recorder
THIS REPORT CONCERNS	ORIGINAL GRANT
MEASUREMENT PROCEDURES	ANSI C63.4/1992
TYPE OF EQUIPMENT TESTED	PRE-PRODUCTION
KIND OF EQUIPMENT AUTHORIZATION REQUESTED	CERTIFICATION
EQUIPMENT WILL BE OPERATED UNDER FCC RULES PART(S)	FCC PART 15 SECTION 15.101
MODIFICATIONS ON THE EQUIPMENT TO ACHIEVE COMPLIANCE	YES
FINAL TEST WAS CONDUCTED ON	3 METER OPEN AREA TEST SITE

The above equipment was tested by ONETECH Corp. for compliance with the requirement set forth in the FCC Rules and Regulations. This said equipment in the configuration described in this report, shows the maximum emission levels emanating from equipment are within the compliance requirements.

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2. GENERAL INFORMATION

2.1 Product Description

The Decktron Co., Ltd., Model DMR-1218SU (referred to as the EUT in this report) is a Digital Voice Recorder, which can record voice by using external/built-in microphone and connect to PC in order to transfer recorded message in EUT. Product specification described herein was obtained from product data sheet or user's manual.

Chassis Type	Plastic
List of Each Oscillator or Crystal Frequency	8.192 MHz, 32.768MHz, 36.86MHz and 48 MHz
Power Requirements	DC 1.5V x 2 (AAA Size Battery)
Max File No to Rec.	6 Folder X 99 Files
Frequency Response	400Hz ~ 3500Hz
Battery Life	10hours/Recording mode, 8hours / Playback mode
Storage Medium	Built-in Flash Memory
Max Output Power	100 mW @ THD 10%
Input	Built-in MIC & 3.5F Mono Jack
Output	Built-in Speaker & 3.5F Mono Jack
External Connector	Mic Jack, Earphone Jack, USB Port

Model Differences:

-. The following list consists of added model name and their difference. The basic and added models are identical except for model name and built-in flash memory.

	Model Name	Max Recording Time (SP)	Max Recording Time (LP)
Basic Model Name	DMR-1218SU	510 min.	1100 min.
Added Model Name	DMR-1209SU	250 min	510 min

2.2 Related Submittal(s) / Grant(s)

Original submittal only.

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2.3 Test System Details

The model numbers for all the equipments which were used in the tested system is:

Model	Manufacturer	FCC ID	Description	Connected to
DMR-1218SU	Decktron Co., Ltd.	P42DMR1218SU	Digital Voice Recorder (EUT)	NOTEBOOK PC
S690	Samsung Electronic	DoC	NOTEBOOK PC	-
N/A	N/A	N/A	EARPHONE	EUT
N/A	N/A	N/A	MICROPHONE	EUT
SMB-601	SEJIN Elec.	GJJB509A0	MOUSE	NOTEBOOK PC
2225C	HP	DSI6XU2225	PRINTER	NOTEBOOK PC

2.4 Test Methodology

Both conducted and radiated testing was performed according to the procedures in ANSI C63.4/1992.

Radiated testing was performed at a distance of 3 meters from EUT to the antenna.

2.5 Test Facility

The open area test site and conducted measurement facilities are located on at 426-1 Daessangryung-Ri, Chowol-Myun, Kwangju-Kun, Kyunggi-Do 464-080 Korea. Description details of test facilities were submitted to the Commission on January 18, 2002. (Registration Number: 92819)

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3. SYSTEM TEST CONFIGURATION

3.1 Justification

This device was configured for testing in a typical way as a normal customer is supposed to be used. During the test, the following components were installed inside of the EUT.

DEVICE TYPE	MANUFACTURER	MODEL/PART NUMBER	FCC ID
CPU Board	Decktron Co., Ltd.	N/A	N/A
AUDIO Board	Decktron Co., Ltd.	N/A	N/A

3.2 EUT exercise Software

After connecting the earphone, microphone and PC using interface cable on the EUT, the EUT was tested at each following mode during the testing.

1) Standby mode 2) Recording mode 3) Playing the recorded message and

4) PC Communication Mode between PC and the EUT

3.3 Cable Description

	Power Cord Shielded (Y/N)	I/O cable Shielded (Y/N)	Length (M)
Digital Voice Recorder (EUT)	N/A	Y	1.2 (D)
Notebook PC	N	Y	1.5(P), 1.2(D)
MOUSE	N/A	Y	1.5(D)
PRINTER	N	Y	1.5(P), 1.2 (D)
EARPHONE	N/A	N	1.2(D)
MIC	N/A	N	1.2 (D)

* The marked “(P)” means the Power Cable, “(D)” means the Data Cable.

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3.4 Noise Suppression Parts on Cable

	Ferrite Bead (Y/N)	Location	Metal Hood (Y/N)	Location
Digital Voice Recorder (EUT)	Y	PC END	Y	BOTH END
Notebook PC	-	-	-	-
MOUSE	N	N/A	Y	PC END
PRINTER	N	N/A	Y	BOTH END
EARPHONE	N	N/A	Y	EUT END
MIC	N	N/A	Y	EUT END

3.5 Equipment Modifications

To achieve compliance to CLASS B levels, the following change(s) was made by Deckron Co., Ltd during compliance testing:

1. Added a ferrite core on the USB cable at the EUT end.
2. Added a capacitor, 470pF at 1st pin of CON2.
3. Added a bead, 600ohm at 5th pin of U10.
4. Added a capacitor, 470nF at 25th pin of U1.
5. Added a capacitor, 470nF at 47th pin of U9.
6. Changed capacitor value to 470nF pin at C45.
7. Changed capacitor value to 470nF pin at C40.
8. Changed capacitor value to 470nF pin at C56.
9. Changed bead value has 600ohm impedance at BD1.

3.6 Configuration of Test System

Line Conducted Test: EUT was connected to the PC by using interface cable and PC was connected to LISN, all supporting equipment was connected to another LISN. Preliminary Power line Conducted Emission test was performed by using the procedure in ANSI C63.4/1992 7.2.3 to determine the worse operating conditions.

Radiated Emission Test: Preliminary radiated emission test was conducted using the procedure in ANSI C63.4/1992 8.3.1.1 to determine the worse operating conditions. Final radiated emission test was conducted at 3 meters open area test site.

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4. PRELIMINARY TEST

4.1 Conducted Emission Test

During Preliminary Test, the following operating mode was investigated.

Operation Mode	The Worse operating condition (Please check one only)
Recording Mode	
Playing the recorded Message	
Download and Upload between EUT and Notebook PC	X

4.2 Radiated Emission Test

During Preliminary Test, the following operating mode was investigated.

Operation Mode	The Worse operating condition (Please check one only)
Recording Mode	
Playing the recorded Message	
Download and Upload between EUT and Notebook PC	X

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5. FINAL RESULT OF MEASURMENT

Preliminary test was done in normal operation mode. And the final measurement was selected for the maximized emission level.

5.1 Conducted Emission Test

Humidity Level : 39 % Temperature : 21°C

Limits apply to : FCC CFR 47, PART 15, SUBPART B

Type of Test : CLASS B

Result : PASSED BY –8.87 dB at 0.85 MHz

EUT : Digital Voice Recorder Date: March 27, 2002

Operating Condition : Upload and Down load messages between PC and EUT

Detector : CISPR Quasi-Peak (6 dB Bandwidth: 9 kHz)

Power Line Conducted Emission			FCC CLASS B	
Frequency (MHz)	**Amplitude (dBuV)**	**Conductor**	**Limit (dBuV)**	**Margin (dB)**
0.85	39.13	HOT	48.00	-8.87
0.92	38.11	NEUTRAL	48.00	-9.89
0.98	37.55	NEUTRAL	48.00	-10.45
2.03	30.17	NEUTRAL	48.00	-17.83
5.57	31.63	NEUTRAL	48.00	-16.37
7.53	31.20	NEUTRAL	48.00	-16.80

Line Conducted Emission Tabulated Data

Tested by: Young Min, Choi / Project Engineer

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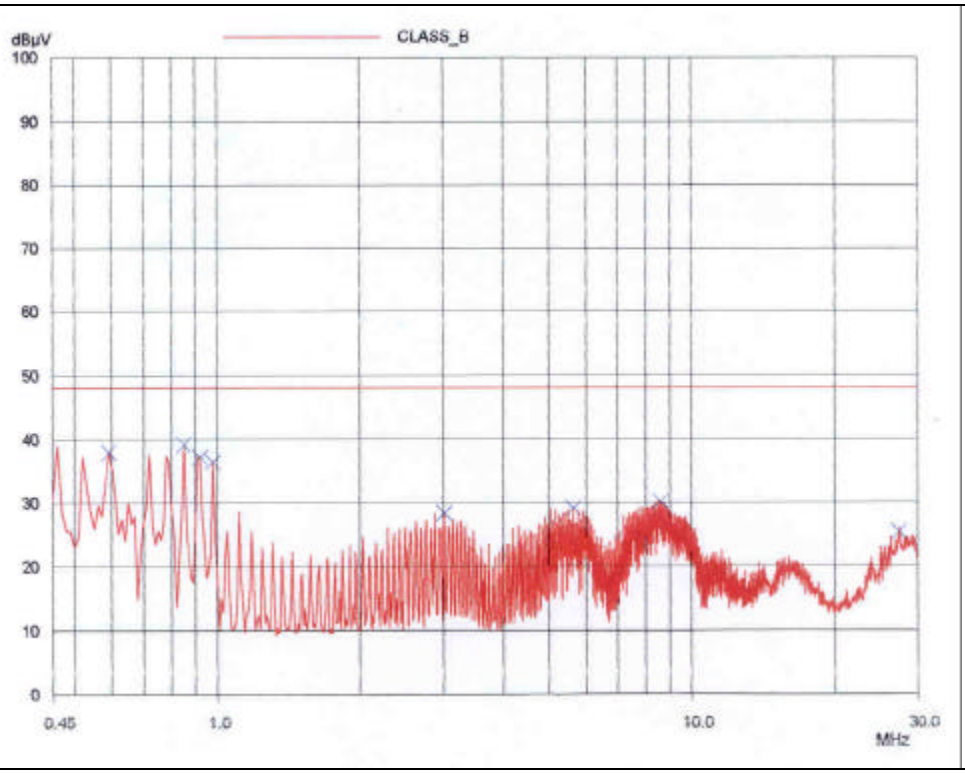
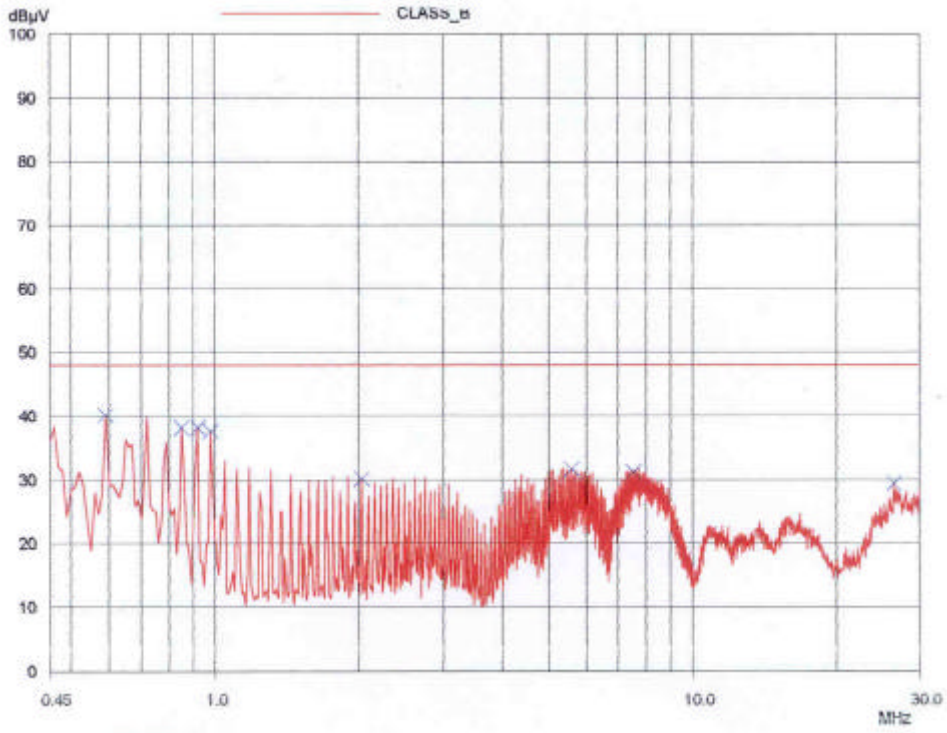


HOT LINE



NEUTRAL LINE

5.2 Radiated Emission Test

The following table shows the highest levels of radiated emission on both polarizations of horizontal and vertical.

Humidity Level : 43 % Temperature : 19 °C

Limits apply to : FCC CFR 47, PART 15, SUBPART B

Type of Test : CLASS B

Result : PASSED BY –6.16 dB at 456.00 MHz

EUT : Digital Voice Recorder Date: April 18, 2002

Operating Condition : Upload and Down load messages between PC and EUT

Detector : CISPR Quasi-Peak (6 dB Bandwidth: 120 kHz)

Distance : 3 Meter

Radiated Emission		Ant	Correction Factors		Total	FCC CLASS B	
Freq. (MHz)	Amp. (dBuV)	Pol.	Ant. (dBuV/m)	Cable (dB)	Amp. (dBuV/m)	Limit (dBuV/m)	Margin (dB)
72.00	23.10	H	7.40	1.00	31.50	40.00	-8.50
120.00	22.10	H	13.19	1.23	36.52	43.50	-6.98
144.00	21.35	H	13.28	1.33	35.96	43.50	-7.54
168.00	17.20	H	15.54	1.42	34.16	43.50	-9.34
192.00	17.80	H	16.81	1.52	36.13	43.50	-7.37
216.00	23.30	H	10.94	1.65	35.89	43.50	-7.61
312.20	20.70	H	14.82	2.07	37.59	46.00	-8.41
360.40	21.70	H	15.76	2.33	39.79	46.00	-6.21
384.40	20.60	H	15.35	2.41	38.36	46.00	-7.64
456.00	20.50	H	16.78	2.56	39.84	46.00	-6.16

Radiated Emission Tabulated Data

Tested by: Young Min, Choi / Project Engineer

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6. FIELD STRENGTH CALCULATION

Meter readings are compared to the specification limit correcting for antenna and cable losses

+	Meter reading	(dBuV)
+	Cable Loss	(dB)
+	Antenna Factor (Loss)	(dB/meter)
=	Corrected Reading	(dBuV/meter)
-	Specification Limit	(dBuV/meter)
=	dB Relative to Spec	(+/- dB)

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7. LIST OF TEST EQUIPMENT

No.	EQUIPMENTS	MFR.	MODEL	SER. NO.	LAST CAL	DUE CAL	USE
1.	Test receiver	R/S	ESVS 10	827864/005	OCT/01	12MONTH	■
2.	Test receiver	R/S	ESHS10	834467/007	APR/02	12MONTH	■
3.	Spectrum analyzer	HP	8568B	3026A0226	SEP/01	12MONTH	■
4.	RF preselector	HP	85685A	3107A01264	SEP/01	12MONTH	■
5.	Quasi-Peak Adapter	HP	85650A	3107A01542	SEP/01	12MONTH	■
6.	Dipole Antenna	EMCO	3121C	9107-745	JUN/01	12MONTH	
7.	Biconical antenna	EMCO	3104C	9109-4441 9109-4443 9109-4444	MAR/02	12MONTH	■
8.	Log Periodic antenna	EMCO	3146	9109-3213 9109-3214 9109-3217	JUN/01	12MONTH	■
9.	LISN	EMCO	3825/2	9109-1867 9109-1869	JUN/01	12MONTH	■
10.	RF Amplifier	HP	8447F	3113A04554	JUN/01	N/A	
11.	Spectrum Analyzer	HP	8591A	3131A02312	APR/02	12MONTH	
12.	Computer System Hard disk drive	HP	98581C 9153C	98543A CMC762Z9153	N/A N/A	N/A N/A	■ ■
13.	Plotter	HP	7475A	30052 22986	N/A	N/A	■
14.	Position Controller	EMCO	1090	9107-1038	N/A	N/A	■
15.	Turn Table	EMCO	1080-1.21	9109-1576	N/A	N/A	■
16.	Antenna Master	EMCO	1070-1	9109-1624	N/A	N/A	■

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