ELECTROMAGNETIC EMISSION COMPLIANCE REPORT FOR FCC CLASS B CERTIFICATION

Test report file number	**: E015R-054**
Applicant	**: Macro Image Technology, Inc**
Address	**: 723 Yoksam-Dong, Gangnam-Gu, Seoul, 135-080, Korea**
Manufacturer	**: Macro Image Technology, Inc**
Address	**: 723 Yoksam-Dong, Gangnam-Gu, Seoul, 135-080, Korea**
Type of Equipment	**: HDTV Receiving PC Card**
FCC ID	**: PN7MDP-100**
Model / Type No.	**: MDP-100**
Serial number	**: N/A**
Total page of Report	**: 13 pages (including this page)**
Date of Incoming	**: April 12, 2001**
Date of issuing	**: May 29, 2001**

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

Reviewed by: Y. K. Kwon / Chief Engineer
EMC Dept.
ONETECH Corp.

Approved by: S. S. Hong / Managing Director
ONETECH Corp.

HEAD OFFICE : #505 SK APT. Factory 223-28, Sangdaewon 1 Dong, Jungwon-Gu, Seongnam-City, Kyunggi-Do, 462-121, Korea (TEL: 82-31-746-8500 FAX: 82-31-746-8700)

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

CONTENTS

Page

1. VERIFICATION OF COMPLIANCE 3

2. GENERAL INFORMATION 4

2.1 PRODUCT DESCRIPTION 4
2.2 RELATED SUBMITTAL(S) / GRANT(S) 4
2.3 TEST SYSTEM DETAILS 5
2.4 TEST METHODOLOGY 5
2.5 TEST FACILITY 5

3. SYSTEM TEST CONFIGURATION 6

3.1 JUSTIFICATION 6
3.2 EUT EXERCISE SOFTWARE 6
3.3 CABLE DESCRIPTION 6
3.4 NOISE SUPPRESSION PARTS ON CABLE 7
3.5 EQUIPMENT MODIFICATIONS 7
3.6 CONFIGURATION OF TEST SYSTEM 7

4. PRELIMINARY TEST 8

4.1 AC POWER LINE CONDUCTED EMISSION TEST 8
4.2 RADIATED EMISSION TEST 8

5. FINAL RESULT OF MEASURMENT 9

5.1 CONDUCTED EMISSION TEST 9
5.2 RADIATED EMISSION TEST 11

6. FIELD STRENGTH CALCULATION 12

7. LIST OF TEST EQUIPMENT 13

HEAD OFFICE : #505 SK APT. Factory 223-28, Sangdaewon 1 Dong, Jungwon-Gu, Seongnam-City, Kyunggi-Do, 462-121, Korea (TEL: 82-31-746-8500 FAX: 82-31-746-8700)
EMC Testing Dept : 426-1 Daessangryung-Ri, Chowol-Myun, Kwangju-Si, Kyunggi-Do 464-860 Korea. (TEL: 82-31-765-8289 FAX: 82-31-766-2904)

1. VERIFICATION OF COMPLIANCE

APPLICANT	: Macro Image Technology, Inc
ADDRESS	: 723 Yoksam-Dong, Gangnam-Gu, Seoul, 135-080, Korea
CONTACT PERSON	: Mr. Seung-Chol, Ryu / Researcher
TELEPHONE NO	: +82-2-562-1160
FCC ID	: PN7MDP-100
MODEL NO/NAME	: MDP-100
SERIAL NUMBER	: N/A
DATE	: May 29, 2001

DEVICE TYPE	Peripheral Device for Class B Computing Device - Unintentional Radiator
E.U.T. DESCRIPTION	HDTV Receiving PC Card
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 CFR 47 PART 15 §15.101
MODIFICATIONS ON THE EQUIPMENT TO ACHIEVE COMPLIANCE	No
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.

HEAD OFFICE : #505 SK APT. Factory 223-28, Sangdaewon 1 Dong, Jungwon-Gu, Seongnam-City, Kyunggi-Do, 462-121, Korea (TEL: 82-31-746-8500 FAX: 82-31-746-8700)
EMC Testing Dept : 426-1 Daessangryung-Ri, Chowol-Myun, Kwangju-Si, Kyunggi-Do 464-860 Korea. (TEL: 82-31-765-8289 FAX: 82-31-766-2904)

2. GENERAL INFORMATION

2.1 Product Description

The Macro Image Technology, Inc, Model MDP-100 (referred to as the EUT in this report) is a digital and an analog (NTSC) TV receiving PC Card that shall be inserted into a Personal Computer and has a remote control sensor board to be controlled by remote controller. The EUT can display receiving terrestrial digital TV and conventional analog TV program on an existing PC monitor and/or a high quality HD display monitor. Product specification described herein was obtained from product data sheet or user's manual.

CHASSIS TYPE	Not Applicable – PCI Card inserted into a Personal Computer
SYSTEM BUS	PCI
SYSTEM CONFIGURATION	PCI Card, Remote Control Sensor Board and Remote Controller
LIST OF EACH OSC. OR CRY. FREQ.(FREQ.>=1MHz)	18.432MHz, 20.250MHz, 50.280MHz and 13.5MHz
NUMBER OF LAYERS	PCI Board: 4 Layers Remote Control Sensor Board: 1 Layer
USED TUNER	Model No: FCV1236D/F HC, Manufacturer: Philips
RECEIVING FREQUENCY	VHF CH.2~13(55.25 ~ 211.25 MHz), UHF CH.14~ 69(417.25~801.25 MHz) CABLE CH.2~125(55.25 ~ 799.25MHz)
ELECTRICAL RATING	DC 5V and 12V supplied by a personal computer
EXTERNAL TERMINALS	VGA Connector, Digital Audio Output Connector, Antenna Connector (2EA), S-Video Connector and Audio/Video Output Connector

Model Differences

None

2.2 Related Submittal(s) / Grant(s)

Original submittal only

HEAD OFFICE : #505 SK APT. Factory 223-28, Sangdaewon 1 Dong, Jungwon-Gu, Seongnam-City, Kyunggi-Do, 462-121, Korea (TEL: 82-31-746-8500 FAX: 82-31-746-8700)
EMC Testing Dept : 426-1 Daessangryung-Ri, Chowol-Myun, Kwangju-Si, Kyunggi-Do 464-860 Korea. (TEL: 82-31-765-8289 FAX: 82-31-766-2904)

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
MDP-100	Macro Image Technology, Inc.	PN7MDP-100	HDTV Receiving PC Card (EUT)	PCI Slot in PC
N/A	Macro Image Technology, Inc.	PN7MDP-100	Remote Control Receiver (EUT)	Serial Port on PC
N/A	Macro Image Technology, Inc.	N/A	Remote Controller	N/A
DCM	Compaq Computer	DoC	PC	-
6550-23N	IBM	DoC	MONITOR	EUT
OK-720	A4-TECH	DoC	MOUSE	PC
SKR-1032	SEJIN Electronics.	GJJSKR-1032B	KEYBOARD	PC
2225C	HP	DSI6XU2225	PRINTER	PC
GHV-S9990	LG	DoC	VCR	EUT

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 12, 1999. (Registration Number: 92819)

HEAD OFFICE : #505 SK APT. Factory 223-28, Sangdaewon 1 Dong, Jungwon-Gu, Seongnam-City, Kyunggi-Do, 462-121, Korea (TEL: 82-31-746-8500 FAX: 82-31-746-8700)
EMC Testing Dept : 426-1 Daessangryung-Ri, Chowol-Myun, Kwangju-Si, Kyunggi-Do 464-860 Korea. (TEL: 82-31-765-8289 FAX: 82-31-766-2904)

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
Main Board	Macro Image Technology, Inc.	MDP-100	PN7MDP-100
Remote Control Sensor Board	Macro Image Technology, Inc.	N/A	PN7MDP-100

3.2 EUT exercise Software

After connecting the TV antenna to the EUT, the terrestrial digital broadcast received by the TV antenna was continuously displayed on the screen of the monitor. The Digital Broadcast signal was transmitted by the signal generator, which was installed in the test room.

3.3 Cable Description

	Power Cord Shielded (Y/N)	I/O cable Shielded (Y/N)	Length (M)
HDTV Receiving PC Card (EUT)	-	-	-
Remote Control Sensor Receiver (EUT)	N	Y	1.0(D)
PC	N	-	1.5(P)
MONITOR	N	Y	1.5(P), 1.8(D)
VCR	N	N	1.5(P), 1.5(D)
KEYBOARD	N/A	N	1.5(D)
MOUSE	N/A	N	1.5(D)
PRINTER	N	Y	1.5(P), 1.5(D)

* The marked “(P)” means the Power Cable and “(D)’ means Signal Cable.

HEAD OFFICE : #505 SK APT. Factory 223-28, Sangdaewon 1 Dong, Jungwon-Gu, Seongnam-City, Kyunggi-Do, 462-121, Korea (TEL: 82-31-746-8500 FAX: 82-31-746-8700)
EMC Testing Dept : 426-1 Daessangryung-Ri, Chowol-Myun, Kwangju-Si, Kyunggi-Do 464-860 Korea. (TEL: 82-31-765-8289 FAX: 82-31-766-2904)

3.4 Noise Suppression Parts on Cable

	Ferrite Bead (Y/N)	**Location**	**Metal Hood (Y/N)**	**Location**
HDTV Receiving PC Card (EUT)	N/A	N/A	N/A	N/A
Remote Control Sensor Receiver (EUT)	N	N/A	Y	PC
PC	-	-	-	-
MONITOR	Y	BOTH END	Y	EUT END
VCR	N	N/A	Y	BOTH END
KEYBOARD	N	N/A	Y	PC END
MOUSE	N	N/A	Y	PC END
PRINTER	N	N/A	Y	BOTH END

3.5 Equipment Modifications

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

"There was no Modified items during EMI test"

3.6 Configuration of Test System

Line Conducted Test: The EUT was connected to PC, and the power line of PC was connected to LISN. All supporting equipments were 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.

HEAD OFFICE : #505 SK APT. Factory 223-28, Sangdaewon 1 Dong, Jungwon-Gu, Seongnam-City, Kyunggi-Do, 462-121, Korea (TEL: 82-31-746-8500 FAX: 82-31-746-8700)
EMC Testing Dept : 426-1 Daessangryung-Ri, Chowol-Myun, Kwangju-Si, Kyunggi-Do 464-860 Korea. (TEL: 82-31-765-8289 FAX: 82-31-766-2904)

4. PRELIMINARY TEST

4.1 AC Power line Conducted Emission Test

During Preliminary Test, the following operating mode was investigated

Operation Mode	The Worse operating condition (Please check one only)
Receiving Terrestrial Digital Broadcast Signal at 480 P	
Receiving Terrestrial Digital Broadcast Signal at 1080 I	
Receiving Terrestrial Digital Broadcast Signal at 1440 I	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)
Receiving Terrestrial Digital Broadcast Signal at 480 P	
Receiving Terrestrial Digital Broadcast Signal at 1080 I	
Receiving Terrestrial Digital Broadcast Signal at 1440 I	X

HEAD OFFICE : #505 SK APT. Factory 223-28, Sangdaewon 1 Dong, Jungwon-Gu, Seongnam-City, Kyunggi-Do, 462-121, Korea (TEL: 82-31-746-8500 FAX: 82-31-746-8700)
EMC Testing Dept : 426-1 Daessangryung-Ri, Chowol-Myun, Kwangju-Si, Kyunggi-Do 464-860 Korea. (TEL: 82-31-765-8289 FAX: 82-31-766-2904)

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 : 47% Temperature : 23 C

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

Type of Test : CLASS B

Result : PASSED BY -6.48 dB at 15.56 MHz

EUT : HDTV Receiving PC Card Date: April 18, 2001

Operating Condition : Receiving Terrestrial Digital Broadcast Signal at 1440 I

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

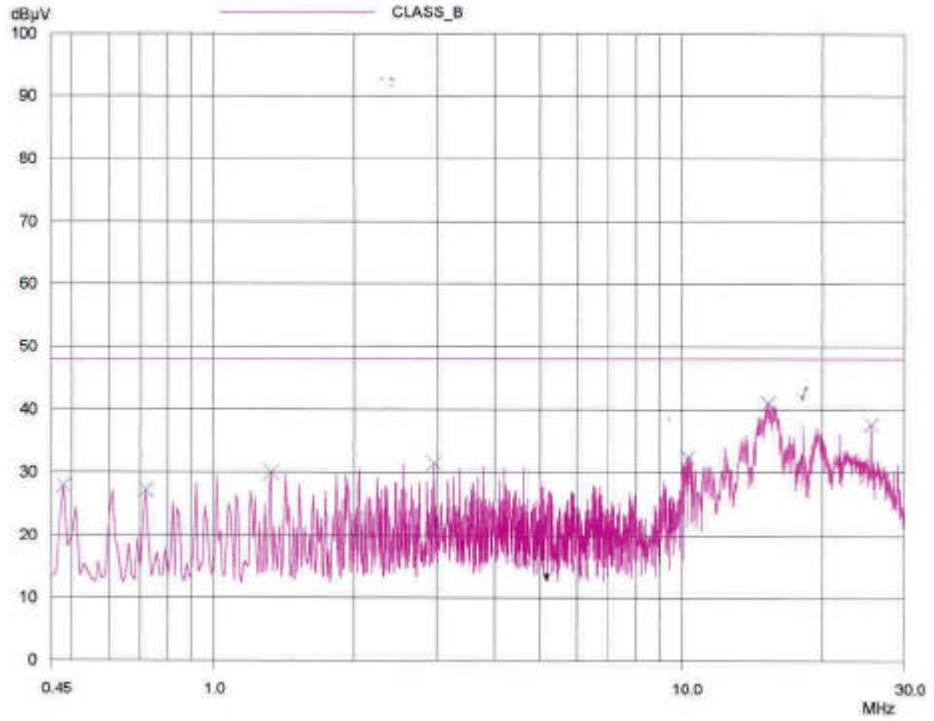
Power Line Conducted Emission			FCC CLASS B	
Frequency (MHz)	**Amplitude (dBuV)**	**Conductor**	**Limit (dBuV)**	**Margin (dB)**
0.48	28.03	NEUTRAL	48.00	-19.97
1.33	29.98	HOT	48.00	-18.02
2.96	31.45	HOT	48.00	-16.55
10.52	32.50	NEUTRAL	48.00	-15.50
15.56	41.52	NEUTRAL	48.00	-6.48
25.45	37.58	HOT	48.00	10.42

Line Conducted Emission Tabulated Data

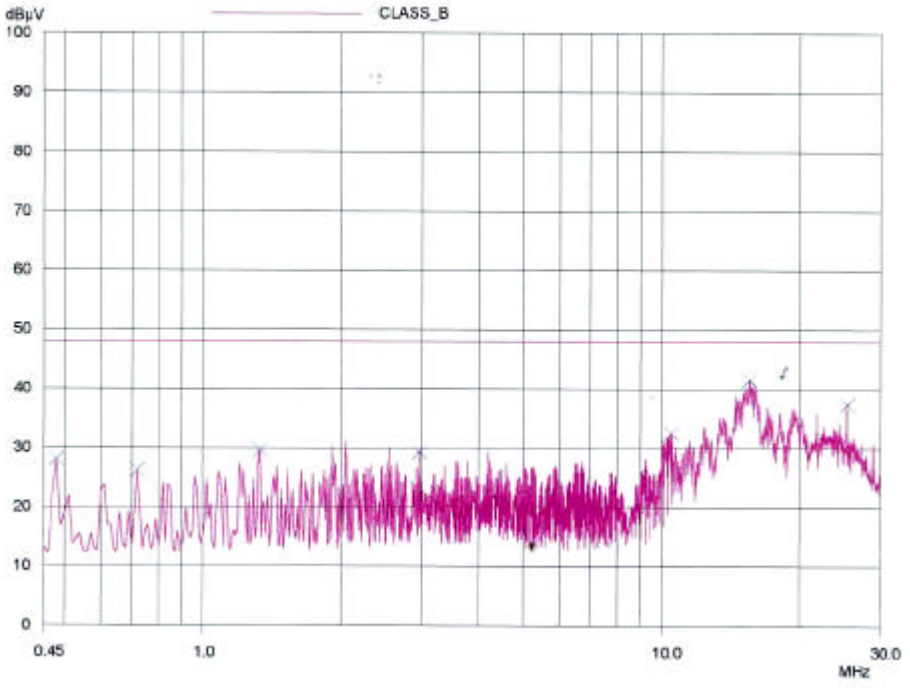
Tested by: Young Min, Choi / Test Engineer

HEAD OFFICE : #505 SK APT. Factory 223-28, Sangdaewon 1 Dong, Jungwon-Gu, Seongnam-City, Kyunggi-Do, 462-121, Korea (TEL: 82-31-746-8500 FAX: 82-31-746-8700)

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



HOT LINE



NEUTRAL LINE

HEAD OFFICE : #505 SK APT. Factory 223-28, Sangdaewon 1 Dong, Jungwon-Gu, Seongnam-City, Kyunggi-Do, 462-121, Korea (TEL: 82-31-746-8500 FAX: 82-31-746-8700)

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

5.2 Radiated Emission Test

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

Humidity Level : 47 % Temperature : 24 C

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

Type of Test : CLASS B

Result : PASSED BY –4.87 dB at 79.90 MHz

EUT : HDTV Receiving PC Card Date: May 16, 2001

Operating Condition : Receiving Terrestrial Digital Broadcast Signal at 1440 I

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)
79.90	27.80	H	6.33	1.00	35.13	40.00	-4.87
74.45	26.10	H	6.41	1.00	33.51	40.00	-6.49
77.40	22.30	V	6.31	1.00	29.61	40.00	-10.39
80.93	22.20	V	6.51	1.02	29.73	40.00	-10.27
100.64	20.50	V	11.90	1.15	33.55	43.50	-9.95
149.00	14.40	H	13.33	1.35	29.08	43.50	-14.42
157.00	13.50	V	13.92	1.37	28.79	43.50	-14.71
213.40	17.60	H	11.76	1.64	31.00	43.50	-12.50
296.80	13.70	H	15.08	1.99	30.77	46.00	-15.23
368.60	13.20	H	15.43	2.36	30.99	46.00	-15.01

Radiated Emission Tabulated Data

Tested by: Young Min, Choi / Test Engineer

HEAD OFFICE : #505 SK APT. Factory 223-28, Sangdaewon 1 Dong, Jungwon-Gu, Seongnam-City, Kyunggi-Do, 462-121, Korea (TEL: 82-31-746-8500 FAX: 82-31-746-8700)

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

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)

HEAD OFFICE : #505 SK APT. Factory 223-28, Sangdaewon 1 Dong, Jungwon-Gu, Seongnam-City, Kyunggi-Do, 462-121, Korea (TEL: 82-31-746-8500 FAX: 82-31-746-8700)
EMC Testing Dept : 426-1 Daessangryung-Ri, Chowol-Myun, Kwangju-Si, Kyunggi-Do 464-860 Korea. (TEL: 82-31-765-8289 FAX: 82-31-766-2904)

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	SEP/00	12MONTH	■
2.	Test receiver	R/S	ESHS10	834467/007	APRIL/01	12MONTH	■
3.	Spectrum analyzer	HP	8568B	3026A0226	SEP/00	12MONTH	■
4.	RF preselector	HP	85685A	3107A01264	SEP/00	12MONTH	■
5.	Quasi-Peak Adapter	HP	85650A	3107A01542	SEP/00	12MONTH	■
6.	Dipole Antenna	EMCO	3121C	9107-745	JUN/00	12MONTH	
7.	Biconical antenna	EMCO	3104C	9109-4441 9109-4443 9109-4444	MAR/01	12MONTH	■
8.	Log Periodic antenna	EMCO	3146	9109-3213 9109-3214 9109-3217	MAR/01	12MONTH	■
9.	Horn Antenna	EMCO	3115	9509-4563	MAR/01	12MONTH	■
10.	LISN	EMCO	3825/2	9109-1867 9109-1869	JUN/00	12MONTH	■
11.	RF Amplifier	HP	8447F	3113A04554	JUN/00	N/A	
12.	Spectrum Analyzer	HP	8591A	3131A02312	APR/01	12MONTH	
13.	Spectrum Analyzer	HP	8561E	3350A00546	SEP/00	12MONTH	■
14.	Computer System Hard disk drive	HP	98581C 9153C	98543A CMC762Z9153	N/A N/A	N/A N/A	■ ■
15.	Plotter	HP	7475A	30052 22986	N/A	N/A	■
16.	Position Controller	EMCO	1090	9107-1038	N/A	N/A	■
17.	Turn Table	EMCO	1080-1.21	9109-1576	N/A	N/A	■
18.	Antenna Master	EMCO	1070-1	9109-1624	N/A	N/A	■

HEAD OFFICE : #505 SK APT. Factory 223-28, Sangdaewon 1 Dong, Jungwon-Gu, Seongnam-City, Kyunggi-Do, 462-121, Korea (TEL: 82-31-746-8500 FAX: 82-31-746-8700)
EMC Testing Dept : 426-1 Daessangryung-Ri, Chowol-Myun, Kwangju-Si, Kyunggi-Do 464-860 Korea. (TEL: 82-31-765-8289 FAX: 82-31-766-2904)