# Compliance Test Report for FCC

| | | | | |
|---|---|---|---|---|
| Report Number | | ESTF150406-000 | | |
| Applicant | Company name | INTOTECH INC. | | |
| | Address | #902 Aju Bldg., 679-5, Yeoksam-Dong, Kangnam-Ku, Seoul, 135-080, Korea | | |
| | Telephone | 82-2-566-3286 | | |
| Product | Product name | DVR BD | | |
| | Model No. | Real Display | Manufacturer | INTOTECH INC. |
| | Serial No. | NONE | Country of origin | KOREA |
| Test date | 2004-03-13 ~ 2004-06-01 | | Date of issue | 2004-06-01 |
| Testing location | ESTECH. Co., Ltd.<br>97-1 Hoiuk-Ri Majang-Myon, Icheon-city, KyungKi-Do, Korea | | | |
| Standard | FCC PART 15 2002 , ANSI C 63.4 2001 | | | |
| Test item | ■ Conducted Emission | □ Class A ■ Class B | Test result | OK |
| | ■ Radiated Emission | □ Class A ■ Class B | Test result | OK |
| Measurement facility registration number | | 94696 | | |
| Tested by | Senior Engineer J.M. Yang | (Signature) | | |
| Reviewed by | Director T.K. Lee | (Signature) | | |
| Abbreviation | OK, Pass = Passed, Fail = Failed, N/A = not applicable | | | |

* Note

- This test report is not permitted to copy partly without our permission
- This test result is dependent on only equipment to be used
- This test result based on a single evaluation of one sample of the above mentioned

# Contents

# 1. Laboratory Information

## 1.1 General

This EUT (Equipment Under Test) has been shown to be capable of compliance with the applicable technical standards and is tested in accordance with the measurement procedures as indicated in this report.
ESTECH Lab attests to accuracy of test data. All measurement reported herein were performed by ESTECH Co., Ltd.
ESTECH Lab assume full responsibility for the completeness of these measurements and vouch for the qualifications of all persons taking them.

## 1.2 Test Lab.

Corporation Name : ESTECH Co. Ltd

Head Office : 3 rd Fl., Chungdam Bldg., 119-1 Chungdam-dong Kangnam-gu , Seoul, Korea
(Safety & Telecom. Test Lab)

EMC Test Lab : 58-1 Osan-Ri, GaNam-Myon, YeoJoo-Gun, KyungKi-Do, Korea
97-1 Hoiuk-Ri Majang-Myon, Icheon-city, KyungKi-Do, Korea

Branch Office : USA-ESTECH INC.
21801 Stevens Creek Blvd. Suite 2A Cupertino, CA95014

## 1.3 Official Qualification(s)

MIC : Granted Accreditation from Ministry of Information & Communication for EMC, Safety and Telecommunication
KOLAS : Accredited Lab By Korea Laboratory Accreditation Schema base on CENELEC requirements
FCC : Filed Laboratory at Federal Communications Commission
VCCI : Granted Accreditation from Voluntary Control Council for Interference from ITE

# 2. Description of EUT

## 2.1 Summary of Equipment Under Test

Product : DVR BD

Model Number : Real Display

Serial Number : NONE

Manufacturer : INTOTECH INC.

Country of origin : KOREA

Rating : 120V, 60Hz

Receipt Date : 2004-03-13

## 2.2 General descriptions of EUT

| | |
|---|---|
| Video Input | 16ch |
| Video Output | 1 CH (Switching 4,8,16) |
| Display Mode | 1, 4, 6, 8, 9, 10, 13, 16 CH |
| data Security | Water Marking |
| Display Frame / | Max. 480 fps |
| Resolution | NTSC : 320 x240, 640x480, 720x480<br>PAL : 384x228, 720x576, 768x876 |
| Save data File | AVI |
| Watch - Dog | Auto-Rebooting |
| Camera Control | RS 232 / 422 / 485 (Pan/Tilt, Zoom, Focus) |
| Senor In / Out + DTMF | 16 / 16 Port |
| Network | Web, LAN, Modem, Dynamic IP, ISDN |
| Remote control | Remote View, Recording, Serch and P/T/Z/F Control |
| Main Clock | 54Mhz/28.63Mhz |
| SDRAM Clock | 54Mhz |
| PCI Clock | 33Mhz |
| Multiplexer Clock | 54Mhz |
| Video decoder Clock | 24.576Mhz |
| Video Clock(all 16ch) | 27Mhz |

# 3. Test Standards

Test Standard : FCC PART 15 (2002)

This Standard sets out the regulations under which an intentional, unintentional, or incidental radiator may be operated without an individual license. It also contains the technical specifications, administrative requirements and other conditions relating to the marketing of Part 15 devices.

Test Method : ANSI C 63.4 (2001)

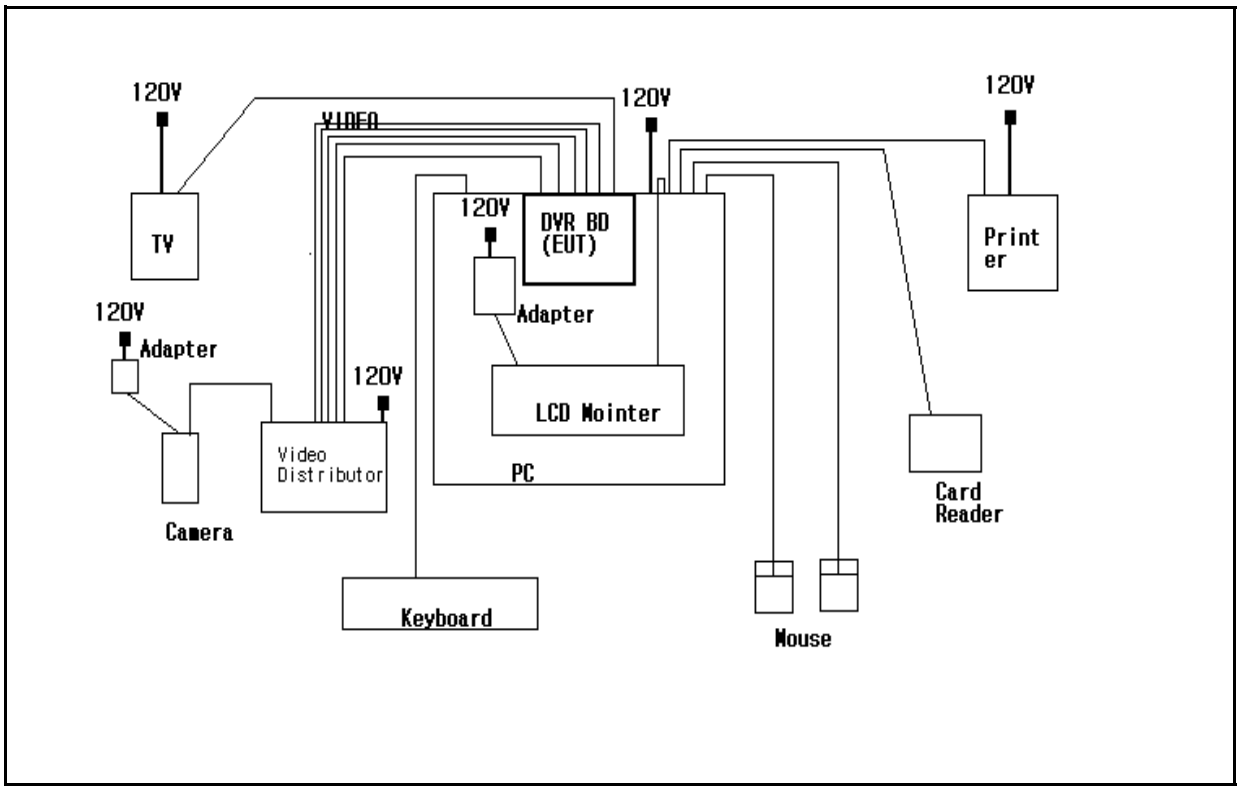
This standard sets forth uniform methods of measurement of radio-frequency (RF) signals and noise emitted from both unintentional and intentional emitters of RF energy in the frequency range 9 kHz to 40 GHz. Methods for the measurement of radiated and AC power-line conducted radio noise are covered and may be applied to any such equipment unless otherwise specified by individual equipment requirements. These methods cover measurement of certain decides that deliberately radiate energy, such as intentional emitters, but does not cover licensed transmitters. This standard is not intended for certification/approval of avionic equipment or for industrial, scientific, and medical (ISM) equipment These method apply to the measurement of individual units or systems comprised of multiple units

# 4. Measurement Condition

## 4.1 EUT Operation.

* The EUT was in the following operation mode during all testing
* The operational conditions of the EUT was determined by the manufacturer according to the typical use of the EUT with respect to the expected hightest level of emission
* After capturing data by CCD Camera,displaying data by Monitor or TV
* we test EUT under continuous displaying "H" characte

## 4.2 Configuration and Peripherals



## 4.3 EUT and Support equipment

| Equipment Name | Model Name | S/N | Manufacturer | Remark (FCC ID) |
|---|---|---|---|---|
| DVR BD | Real Display | NONE | INTOTECH INC. | |
| TV | Samsung 16" | NONE | SAMSUNG | |
| Personal Computer | M6030 | ERA00237 | SAMSUNG | |
| LCD Monitor | 200FTP-005 | NONE | DELL | |
| Adapter | ADP-70EB | TH-093640 | PATENTS PENDING LPS | |
| Printer | LQ-580H+ | B1021095782 | Trigem Computer Inc. | |
| Mouse | X05-51692 | 9404461-1000000 | Microsoft Corporation | |
| Mouse | M-S48a | HCA3140S057 | Logitech | |
| Keyboard | SEM-DT35 | 32006555 | Samsung Electro-mechanics Co., Ltd. | |
| Card Reader | UR2060E | UR2A000870 | NONE | |
| Video Distributor | Input 5output | NONE | ARTPIA | |
| Color CCD Camera | S03-HNB | 154657 | Allied Video Surveillance | |
| Adapter | DR-12300 | NONE | Dream Electronic | |

## 4.4 Cable Connecting

| Start Equipment | | End Equipment | | Cable Standard | | Remark |
|---|---|---|---|---|---|---|
| Name | I/O port | Name | I/O port | Length | Shielded | |
| DVR BD | Video | Video Distributor | Video | 2 | Shielded | |
| DVR BD | Video | Video Distributor | Video | 2 | Shielded | |
| DVR BD | Video | Video Distributor | Video | 2 | Shielded | |
| DVR BD | Video | Video Distributor | Video | 2 | Shielded | |
| DVR BD | Video | Video Distributor | Video | 2 | Shielded | |
| Personal Computer | PS/2 Keyboard | Keyboard | PS/2 Keyboard | 2 | UnShielded | |
| Personal Computer | PS/2 Mouse | Mouse | PS/2 Mouse | 2 | UnShielded | |
| Personal Computer | USB | Mouse | USB | 2 | Shielded | |
| Personal Computer | USB | Card Reader | USB | 2 | Shielded | |
| Personal Computer | Video | TV | Video | 2 | Shielded | |
| Personal Computer | Video | LCD Monitor | Video | 2 | Shielded | |
| Personal Computer | Parallel | Printer | Parallel | 2 | Shielded | |
| Color CCD Camera | Video | Video Distributor | Video | 2 | UnShielded | |
| Color CCD Camera | DC Power | Adapter | – | 2 | UnShielded | |
| LCD Monitor | DC Power | Adapter | – | 2 | UnShielded | |

# 5. Measurement of radiated disturbance

Above 30 MHz Electric Field strength was measured in accordance with FCC Part 15 (2002) & ANSI C 63.4 (2001). The test setup was made according to FCC Part 15 (2002) & ANSI C 63.4 (2001) on an open test site, which allows a 3m distance measurement. The EUT was placed in the center of wooden turntable. The height of this table was 0.8m. The measurement was conducted with both horizontal and vertical antenna polarization. The turntable has fully rotated. For further description of the configuration refer to the picture of the test set-up.

## 5.1 Measurement equipments

| Equipment Name | Type | Manufacturer | Serial No. | Next Calibration date |
|---|---|---|---|---|
| Receiver | ESVS10 | Rohde & Schwarz | 838562/002 | 2005.2.11 |
| Spectrum Analyzer | R3261B | ADVANTEST | 1720302 | 2005.2.12 |
| LogBicon Antenna | VULB 9160 | S/B | 3142 | 2004.7.11 |
| Turn Table | 2087 | EMCO | 2129 | - |
| Antenna Mast | 2070-01 | EMCO | 9702-203 | - |
| ANT Mast Controller | 2090 | EMCO | 1535 | - |
| Turn Table Controller | 2090 | EMCO | 1535 | - |

## 5.2 Environmental Condition

Test Place : Open site(3m)
Temperature (°C) : 24 ℃
Humidity (%) : 39 %

## 5.3 Test data

Measurement Distance : 3 m

| Frequency (MHz) | Reading (dBμV) | Position (V/H) | Height (m) | Correction Factor | | Result Value | | |
|---|---|---|---|---|---|---|---|---|
| | | | | Ant Factor (dB) | Cable (dB) | Limit (dBμV/m) | Result (dBμV/m) | Margin (dBμV/m) |
| 73.71 | 24.50 | V | 1.0 | 10.16 | 1.3 | 40.0 | 35.94 | -4.06 |
| 122.87 | 16.50 | H | 2.4 | 12.20 | 1.7 | 43.5 | 30.39 | -13.11 |
| 162.00 | 20.50 | H | 1.6 | 13.77 | 2.0 | 43.5 | 36.26 | -7.24 |
| 172.04 | 20.50 | H | 2.3 | 13.15 | 2.1 | 43.5 | 35.70 | -7.80 |
| 196.60 | 24.80 | H | 2.0 | 10.62 | 2.2 | 43.5 | 37.60 | -5.90 |
| 215.99 | 18.50 | H | 1.5 | 10.68 | 2.3 | 43.5 | 31.46 | -12.04 |
| 221.18 | 26.50 | H | 1.2 | 10.82 | 2.3 | 43.5 | 39.62 | -3.88 |
| 245.77 | 26.50 | H | 1.3 | 11.83 | 2.4 | 46.0 | 40.71 | -5.29 |
| 432.02 | 17.50 | V | 1.0 | 16.01 | 3.2 | 46.0 | 36.75 | -9.25 |
| 615.66 | 12.50 | H | 1.5 | 19.19 | 4.0 | 46.0 | 35.68 | -10.32 |
| 630.01 | 10.50 | H | 1.5 | 19.35 | 4.0 | 46.0 | 33.88 | -12.12 |
| 648.00 | 14.50 | V | 1.0 | 19.60 | 4.1 | 46.0 | 38.19 | -7.81 |
| 658.64 | 13.50 | V | 1.0 | 19.73 | 4.1 | 46.0 | 37.38 | -8.62 |
| 702.00 | 15.00 | V | 1.0 | 20.18 | 4.3 | 46.0 | 39.46 | -6.54 |
| 810.01 | 13.50 | H | 1.0 | 21.83 | 4.7 | 46.0 | 40.05 | -5.95 |
| 917.99 | 15.10 | H | 1.0 | 22.87 | 5.0 | 46.0 | 42.93 | -3.07 |
| 958.47 | 9.50 | H | 1.0 | 23.43 | 5.1 | 46.0 | 37.99 | -8.01 |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| Remark | H : Horizontal, V : Vertical | | | | | | | |

# 6. Measurement of conducted disturbance

The continuous disturbance voltage of AC Mains in the frequency from 0.15 to 30 MHz was measured in accordance to FCC Part 15 (2002) & ANSI C 63.4 (2001) The test setup was made according to FCC Part 15 (2002) & ANSI C 63.4 (2001) in a shielded. The EUT was placed on a non-conductive table at least 80 above the ground plan. A grounded vertical reference plane was positioned in a distance of 40cm from the EUT. The distance from the EUT to other metal surfaces was at least 0.8m. The EUT was only earthen by its power cord through the line impedance stabilizing network. The power cord has been bundled to a length of 1.0m.. The test receiver with Quasi Peak detector complies with CISPR 16.

## 6.1 Measurement equipments

| Equipment Name | Type | Manufacturer | Serial No. | Next Calibration date |
|---|---|---|---|---|
| LISN | ESH3-Z5 | Rohde & Schwarz | 838979/010 | 2005. 2. 11 |
| LISN | NNLA8120A | Schwarzbeck | NONE | 2005. 2. 12 |
| TEST Receiver | ESPC | Rohde & Schwarz | 838248/001 | 2005. 1. 29 |
| Pulse Limiter | ESH3Z2 | Rohde & Schwarz | NONE | 2004. 7. 4 |

## 6.2 Environmental Condition

Test Place : Shield Room

Temperature (°C) : 24 ℃

Humidity (%) : 39 %

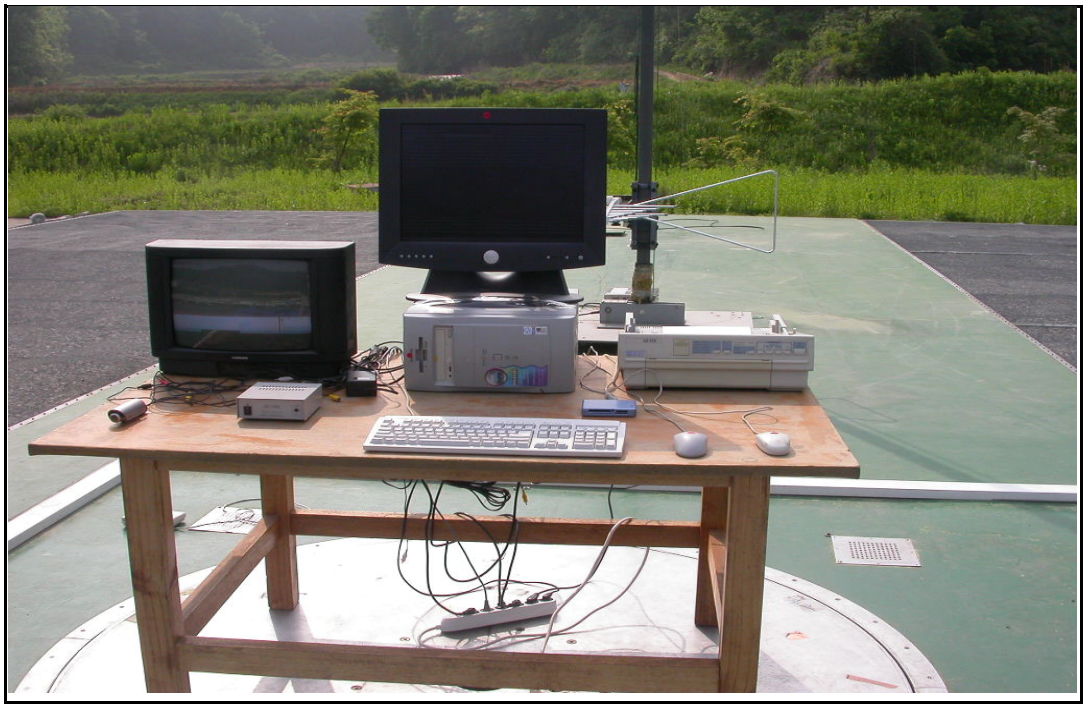
## 6.3 Test data

| Frequency (MHz) | Correction Factor | | Line (H/N) | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | Lisn (dB) | Cable (dB) | | Limit (dBμV) | Reading (dBμV) | Result (dBμV) | Limit (dBμV) | Reading (dBμV) | Result (dBμV) |
| 0.150 | 0.07 | 0.0 | H | 66.00 | 49.19 | 49.26 | 56.00 | 42.02 | 42.09 |
| 0.197 | 0.07 | 0.0 | N | 63.75 | 42.24 | 42.34 | 53.75 | 40.11 | 40.21 |
| 0.220 | 0.07 | 0.0 | H | 62.82 | 41.59 | 41.71 | 52.82 | 36.18 | 36.30 |
| 0.258 | 0.07 | 0.1 | H | 61.50 | 41.37 | 41.51 | 51.50 | 36.23 | 36.37 |
| 0.295 | 0.07 | 0.1 | H | 60.37 | 41.73 | 41.90 | 50.37 | 37.40 | 37.57 |
| 0.492 | 0.07 | 0.2 | N | 56.14 | 41.35 | 41.62 | 46.14 | 41.45 | 41.72 |
| 0.591 | 0.08 | 0.2 | N | 56.00 | 37.20 | 37.48 | 46.00 | 36.38 | 36.66 |
| 0.687 | 0.08 | 0.2 | N | 56.00 | 42.98 | 43.26 | 46.00 | 43.15 | 43.43 |
| 0.880 | 0.09 | 0.2 | N | 56.00 | 38.54 | 38.83 | 46.00 | 38.52 | 38.81 |
| 1.664 | 0.10 | 0.3 | H | 56.00 | 38.05 | 38.42 | 46.00 | 37.50 | 37.87 |
| 1.860 | 0.11 | 0.3 | N | 56.00 | 38.53 | 38.92 | 46.00 | 38.94 | 39.33 |
| 2.253 | 0.12 | 0.3 | H | 56.00 | 35.56 | 35.98 | 46.00 | 33.52 | 33.94 |
| 6.764 | 0.27 | 0.4 | N | 60.00 | 36.18 | 36.84 | 50.00 | 35.92 | 36.58 |
| 7.746 | 0.30 | 0.4 | N | 60.00 | 34.07 | 34.82 | 50.00 | 32.39 | 33.14 |
| 8.660 | 0.32 | 0.5 | H | 60.00 | 27.24 | 28.07 | 50.00 | 24.64 | 25.47 |
| 10.911 | 0.41 | 0.6 | N | 60.00 | 26.89 | 27.93 | 50.00 | 23.89 | 24.93 |
| 13.530 | 0.54 | 0.7 | H | 60.00 | 39.80 | 41.08 | 50.00 | 37.25 | 38.53 |
| 29.541 | 0.71 | 0.9 | N | 60.00 | 26.94 | 28.55 | 50.00 | 22.72 | 24.33 |
| | | | | | | | | | |
| | | | | | | | | | |
| | | | | | | | | | |
| | | | | | | | | | |
| Remark | H : Hot Line, N : Neutral Line | | | | | | | | |

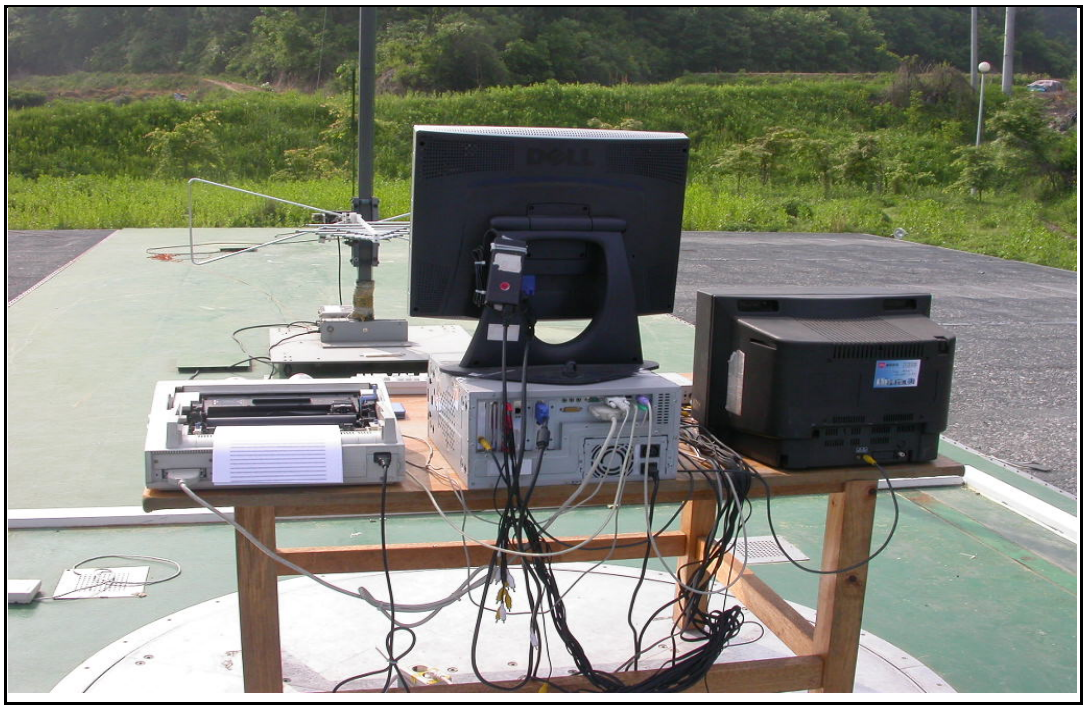
# 7. Photographs of test setup

## 7.1 Setup for Radiated Test : 30 ~ 1000 MHz

[ Front ]



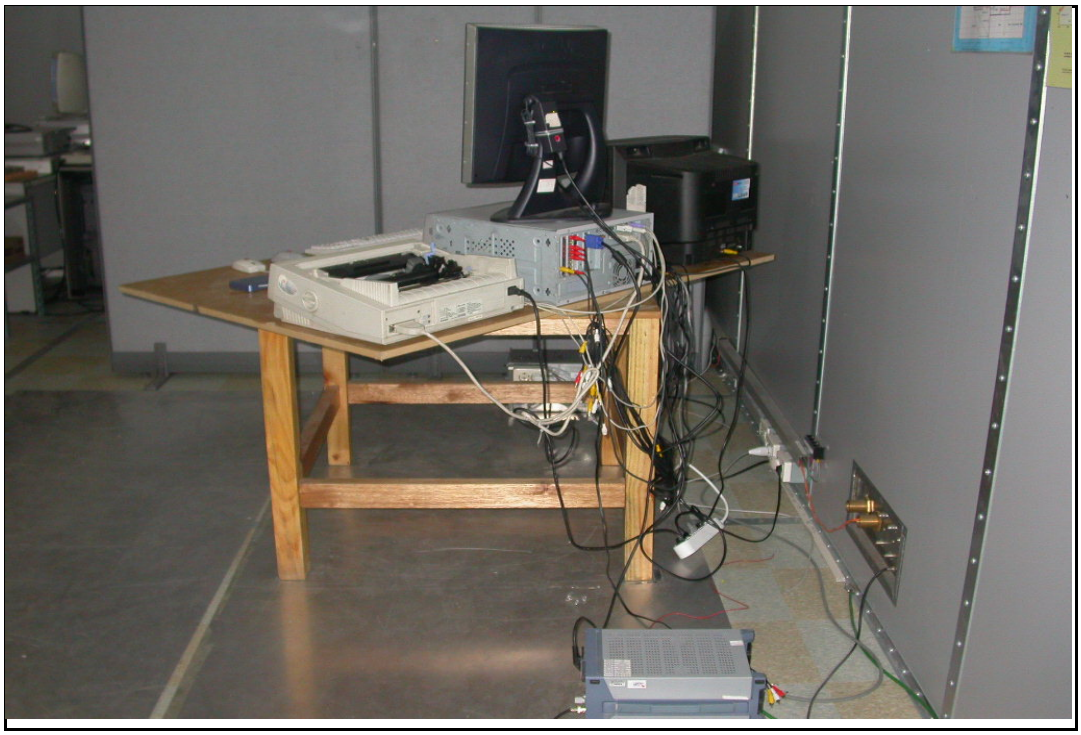
[ Rear ]



## 7.2 Setup for Conducted Test : 0.15 ~ 30 MHz

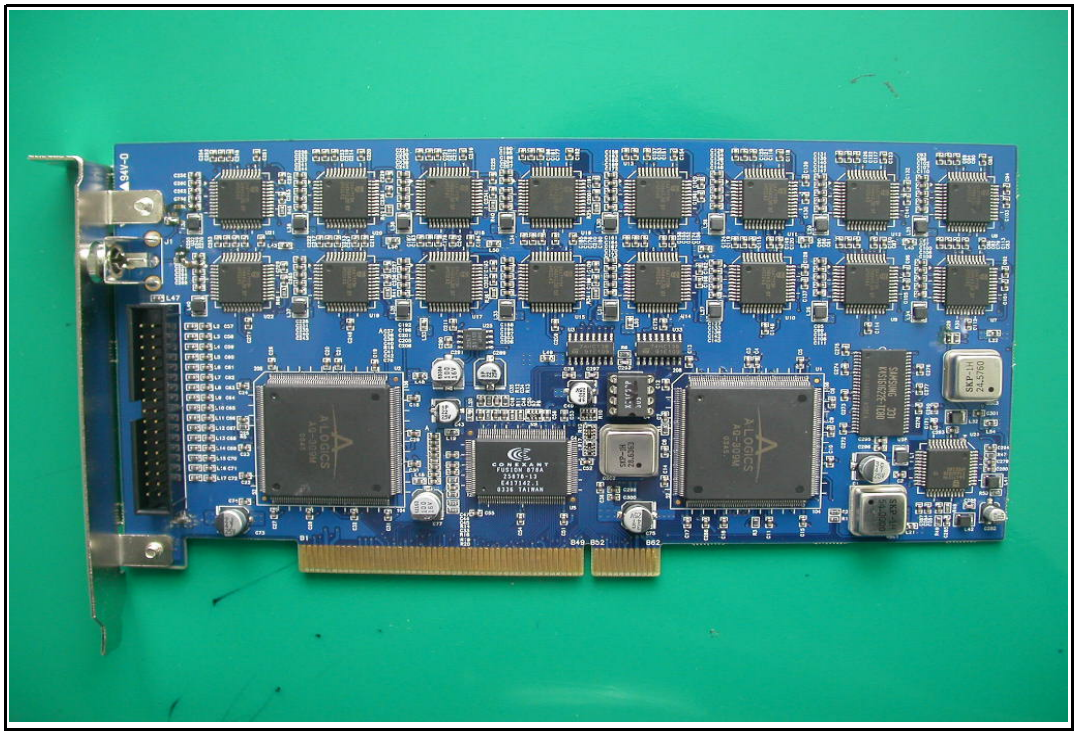
[ Front ]

[ Rear ]

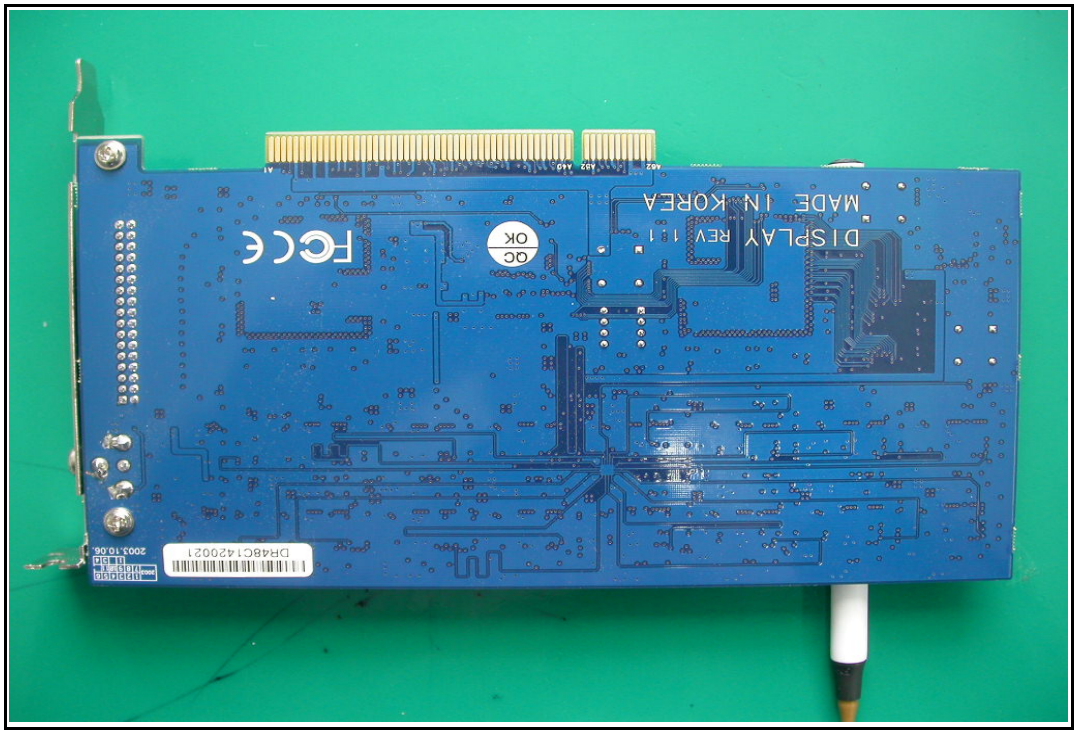


# 8. Photographs of EUT

[ Front ]



[ Rear ]



# Appendix 1. Spectral diagram

*HOT

18 May 2004 13:11

ESTECH

HOT

| | |
|---|---|
| EUT: | INTOTECH INC. |
| Manuf: | Real Display |
| Op Cond: | 120V |
| Operator: | Senior Engineer J.M. Yang |
| Test Spec: | CLASS B |
| Comment: | |
| File: | 0263_h.dat : 인두텍 |

Scan Settings (1 Range)

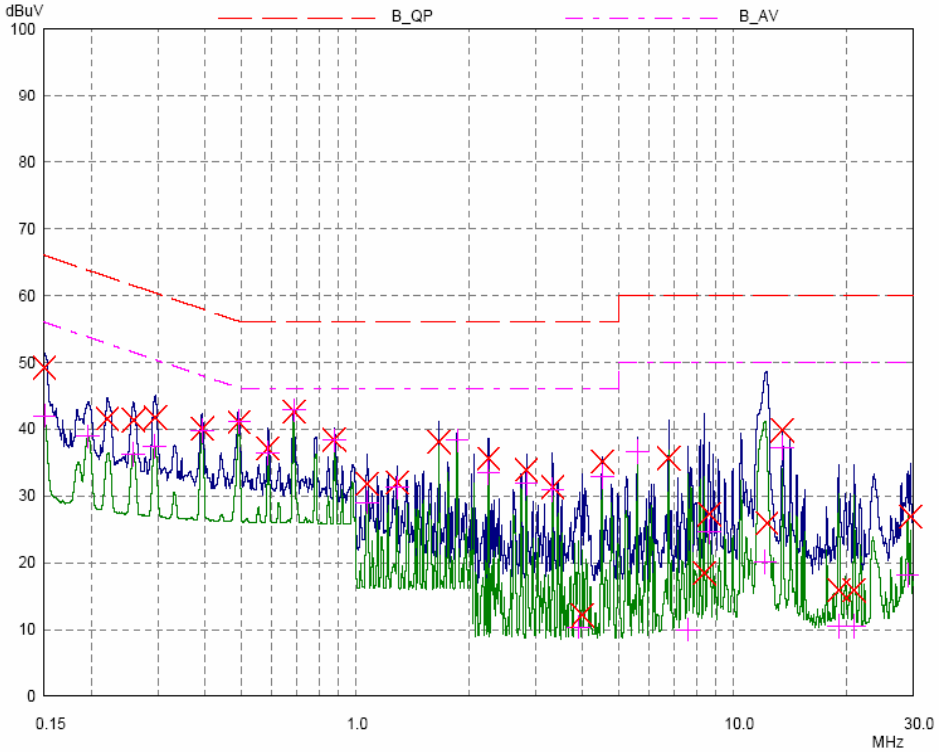
| Frequencies | | | Receiver Settings | | | | |
|---|---|---|---|---|---|---|---|
| Start | Stop | Step | IF BW | Detector | M-Time | Atten | OpRge |
| 150kHz | 30MHz | 0.8% | 10kHz | PK+AV | 20msec | Auto | 60dB |

Final Measurement: X QP / + AV

Meas Time: 1sec

Subranges: 25

Acc Margin: 60 dB



*NETRUL

18 May 2004 13:24

ESTECH

NEUTRAL

| | |
|---|---|
| EUT: | INTOTECH INC. |
| Manuf: | Real Display |
| Op Cond: | 120V |
| Operator: | Senior Engineer J.M. Yang |
| Test Spec: | CLASS B |
| Comment: | |
| File: | 0263_n.dat : 인두턱 |

Scan Settings (1 Range)

| Frequencies | | | Receiver Settings | | | | |
|---|---|---|---|---|---|---|---|
| Start | Stop | Step | IF BW | Detector | M-Time | Atten | OpRge |
| 150kHz | 30MHz | 0.8% | 10kHz | PK+AV | 20msec | Auto | 60dB |

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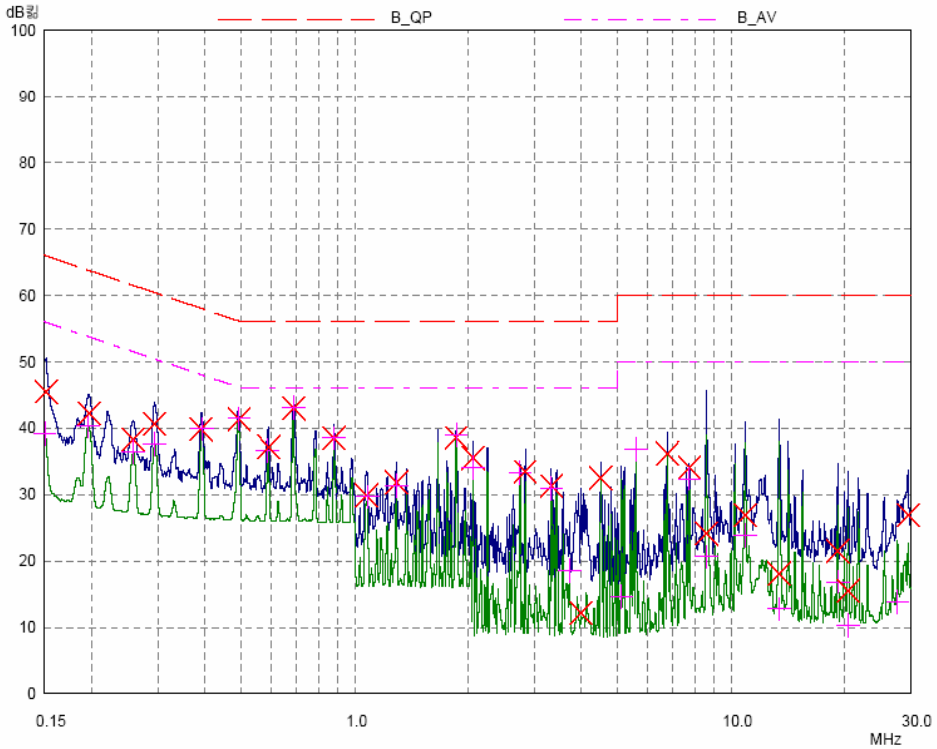
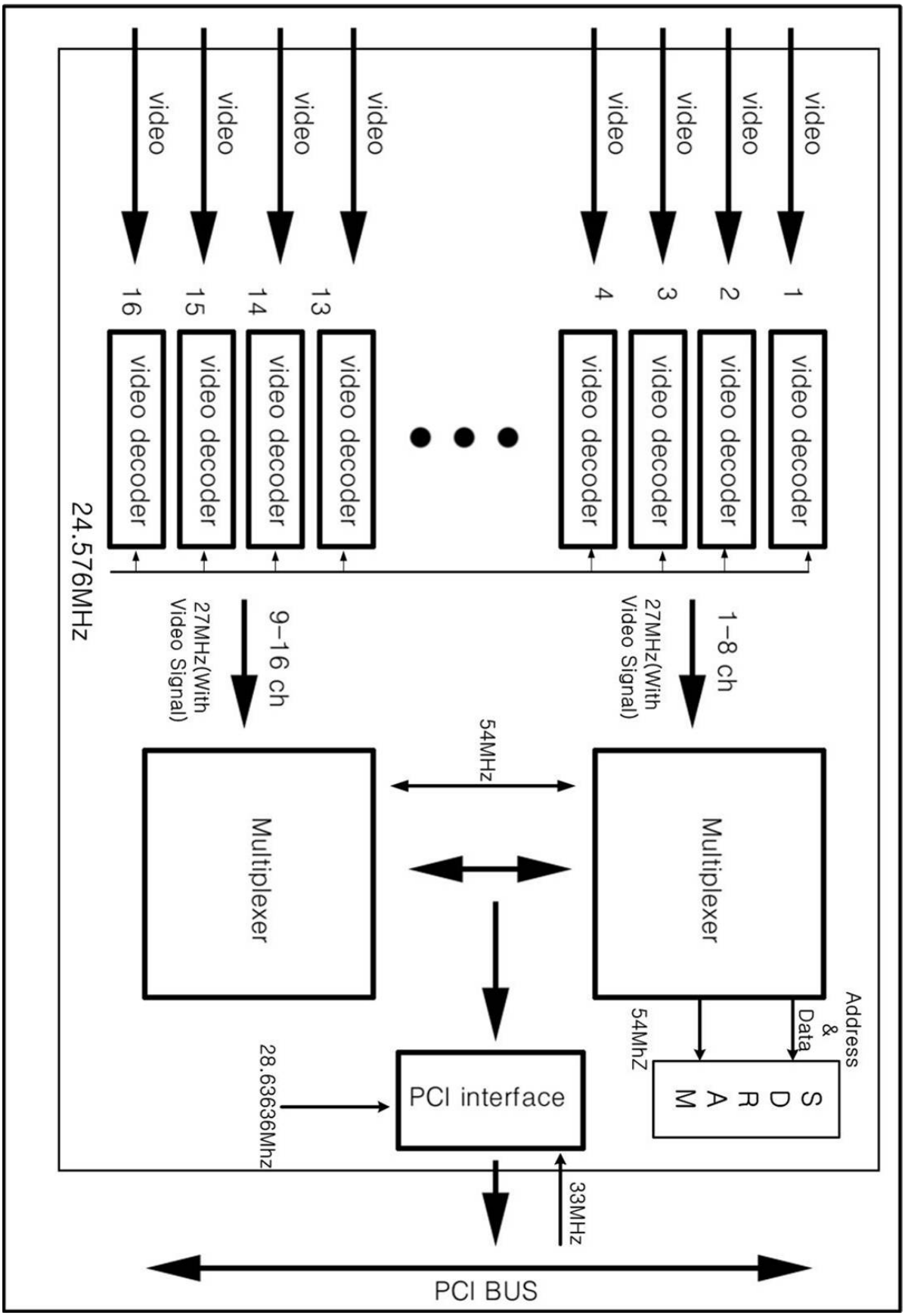


# Appendix 2. Phorographs of EUT in side PCB

Appendix 3. Block diagram of EUT



# Appendix 4. Circuit Diagram