TECHNICAL REPORT

卓時檢測 TIMEWAY TESTING LABORATORY

TESTING CNAS L2292

ISO/IEC17025 Accredited Lab.

Report No: FCC 0807040
File reference No: 2008-09-25

Applicant: Shen Zhen Knight Electronics Co., Ltd.

Product: CAR DVD with Monitor

Model No: KDU-7003

Trademark: Knight

Test Standards: FCC Part 15 Subpart C, Paragraph 15.239

Test result: It is herewith confirmed and found to comply with the requirements set up by ANSI C63.4&FCC Part 15 Subpart C, Paragraph 15.239 regulations for the evaluation of electromagnetic compatibility

Approved By

Jack Chung

Jack Chung
Manager

Dated: Sep 25,2008

Results appearing herein relate only to the sample tested
The technical reports is issued errors and omissions exempt and is subject to withdrawal at

SHENZHEN TIMEWAY TECHNOLOGY CONSULTING CO LTD

5/F,Block 4, Anhua Industrial Zone.,No.8 TaiRan Rd.CheGongMiao,FuTian District, Shenzhen,CHINA.

Tel (755) 83448688 Fax (755) 83442996

Special Statement:

The testing quality ability of our laboratory meet with "Quality Law of People's Republic of China" Clause 19.

The testing quality system of our laboratory meets with ISO/IEC-17025 requirements, which is approved by CNAS. This approval result is accepted by MRA of APLAC.

Our test facility is recognized, certified, or accredited by the following organizations:

CNAS-LAB Code: L2292

The EMC Laboratory has been assessed and in compliance with CNAS-CL01 accreditation criteria for testing Laboratories (identical to ISO/IEC 17025:1999 General Requirements) for the Competence of testing Laboratories.

FCC-Registration No.: 899988

The EMC Laboratory has been registered and fully described in a report filed with the (FCC) Federal Communications commission. The acceptance letter from the FCC is maintained in our files. Registration No.:899988.

IC- Registration No.: IC5205A-01

The EMC Laboratory has been registered and fully described in a report filed with the (IC) Industry Canada. The acceptance letter from the IC is maintained in our files. Registration No.: IC 5205A-01.

TEST REPORT

Test Report Conclusion

Content

1.0 **General Details**

1.1 Test Lab Details

Name : SHENZHEN TIMEWAY TECHNOLOGY CONSULTING CO LTD

Address: 5/F,Block 4, Anhua Industrial Zone.,No.8 TaiRan Rd.CheGongMiao,FuTian District, Shenzhen,CHINA.

Telephone: (755) 83448688

Fax: (755) 83442996

Site on File with the Federal Communications Commission – United Sates

Registration Number: 899988

For 3m & 10 m OATS

Site Listed with Industry Canada of Ottawa, Canada

Registration Number: IC: 5205A-01

For 3m & 10 m OATS

1.2 Applicant Details

Applicant: Shen Zhen Knight Electronics Co., Ltd.

Address: 4th Building,Hongxiang industrial park,Hezhou village,Xixiang Town,Baoan District,Shenzhen City,Guangdong, China

Telephone: +86-755-29586330

Fax: +86-755-29586335

1.3 Description of EUT

Product:	CAR DVD with Monitor
Brand Name:	Knight
Model Number:	KDU-7003
Additional Model Name	T700SVD,T718DVPL,T929DVPL,SLM-U7040DVD,SLSV-U7070DVD, SLSV-U7040SD ,UH-D700,UH-M700,KXU-7003,KX-7003,XDU-9005,KDU-7005, KDU-9001,ZDU-7003,XDU-9001,XDU-9002
Additional Brand Name:	TVIEW,SAVV,SPECMAN,ARTICS,XOVISION
Rating:	12V DC input
Operation Frequency	88.1MHz, 88.2MHz, 88.3MHz, 88.4MHz, 88.5MHz, 88.6MHz,
Frequency Tuning	The frequency tuning controls have been manually adjusted to the highest and lowest TX frequency. The center frequencies of the tuning range are within 88.1MHz to 88.6MHz.
Type of Modulation	FM
Antenna Designation	A permanent fixed antenna, which is built-in, designed as an indispensable part of the EUT.

1.4 Submitted Sample: 1 Sample

1.5 Test Duration
2008-08-14 to 2008-09-25

1.6 Test Uncertainty
Conducted Emissions Uncertainty =3.6dB
Radiated Emissions Uncertainty =4.7dB

1.7 Test Engineer Terry Tang

The sample tested by _____

Print Name: Terry Tang

2.0	**Test Equipments**				
Instrument Type	Manufacturer	Model	Serial No.	Date of Cal.	Due Date
ESPI Test Receiver	ROHDE&SCHWARZ	ESPI 3	100379	2007-12-05	2008-12-04
Absorbing Clamp	ROHDE&SCHWARZ	MDS-21	100126	2007-12-05	2008-12-04
TWO Line-V-NETW	ROHDE&SCHWARZ	EZH3-Z5	100294	2007-12-05	2008-12-04
TWO Line-V-NETW	ROHDE&SCHWARZ	EZH3-Z5	100253	2007-12-05	2008-12-04
Ultra Broadband ANT	ROHDE&SCHWARZ	HL562	100157	2007-12-05	2008-12-04
ESDV Test Receiver	ROHDE&SCHWARZ	ESDV	100008	2008-04-26	2009-04-25
4-WIRE ISN	ROHDE&SCHWARZ	ENY 41	830663/044	2008-02-18	2009-02-17
GG ENY22 Double 2-Wire ISN	ROHDE&SCHWARZ	ENY22	83066/016	2008-02-18	2009-02-17
Impuls-Begrenzer	ROHDE&SCHWARZ	ESH3-Z2	100281	2008-02-18	2009-02-17
System Controller	CT	SC100	-	2008-02-18	2009-02-17
Printer	EPSON	PHOTO EX3	CFNH234850	2008-02-18	2009-02-17
FM-AM Signal Generator	JUNGJIN	SG-150M	389911177	2008-02-18	2009-02-17

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Color TV Pattern Generator	PHILIPS	PM5418	LO621747	2008-02-18	2009-02-17
Computer	IBM	8434	1S8434KCE99BLX LO*	-	-
Oscillator	KENWOOD	AG-203D	3070002	2008-02-18	2009-02-17
Spectrum Analyzer	HAMEG	HM5012	-	2008-04-26	2009-04-25
Power Supply	LW	APS1502	-	-	-
5K VA AC Power Source	California Instruments	5001iX	56060	2008-02-18	2009-02-17
CDN	EM TEST	CDN M2/M3	-	2008-02-18	2009-02-17
Attenuation	EM TEST	ATT6/75	-	2008-02-18	2009-02-17
Resistance	EM TEST	R100	-	2008-02-18	2009-02-17
Electromagnetic Injection Clamp	LITTHI	EM101	35708	2008-02-18	2009-02-17
Signal Generator	ROHDE&SCHWARZ	SMT03	100029	2008-02-18	2009-02-17
Power Amplifier	AR	150W1000	300999	2008-02-18	2009-02-17
Field probe	Holaday	HI-6005	105152	2008-02-18	2009-02-17
Bilog Antenna	Chase	CBL6111C	2576	2008-02-18	2009-02-17
ESPI Test Receiver	ROHDE&SCHWARZ	ESI26	838786/013	2008-02-18	2009-02-17
3m OATS	--	--	N/A	2008-02-18	2009-02-17
Horn Antenna	SCHWARZBECK	BBHA 9170	BBHA9170265	2008-08-18	2009-08-17
Horn Antenna	SCHWARZBECK	BBHA 9120D	9120D-631	2008-04-26	2009-04-25

3.0 Technical Details

3.1 Summary of test results

The EUT has been tested according to the following specifications:

Standard	Test Type	Result	Notes
FCC Part 15, Paragraph 15.207	Conducted Emission Test	**N/A**	Complies
FCC Part 15 Subpart C Paragraph 15.239 Limit	Field Strength of Fundamental	**PASS**	Complies
FCC Part 15, Paragraph 15.209	Radiated Emission Test	**PASS**	Meets Class B Limit
Attenuation below the general limits specified in Section 15.209(a) is not required. In addition, Radiated emissions which fall in the restricted bands, as defined in Section 15.205(a), must also comply with the Radiated emission limits specified in Section 15.209(a) (see Section 15.205(c)).	Band Edge Test	**PASS**	The field strength of any Emissions, which appear Outside of this band, shall not exceed the general Radiated emission limits in Section 15.209.

3.2 Test Standards

FCC Part 15 Subpart C, Paragraph 15.239

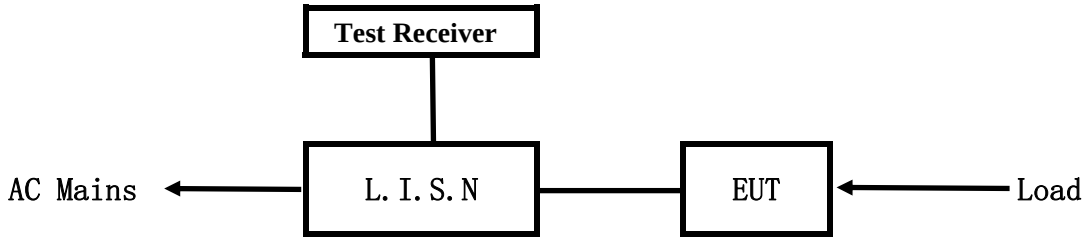
4.0 EUT Modification

No modification by Shenzhen Timeway Technology Consulting Co.,Ltd

TEST REPORT

5. Power Line Conducted Emission Test

5.1 Schematics of the test

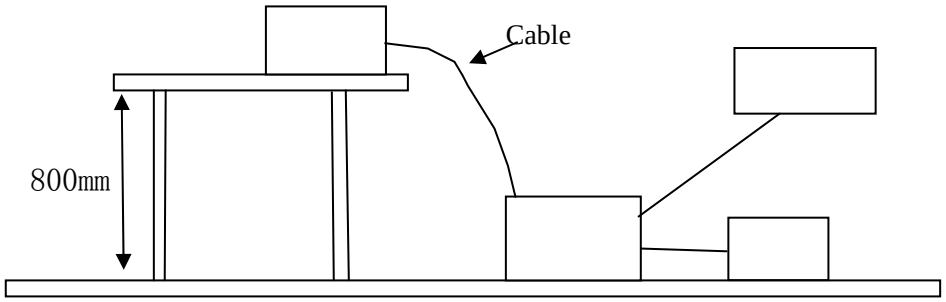


EUT: Equipment Under Test

5.2 Test Method and test Procedure

The EUT was tested according to ANSI C63.4-2003.The Frequency spectrum From 0.15MHz to 30MHz was investigated. The LISN used was 50ohm/50uH as specified by section 5.1 of ANSI C63.4 –2003.

Block diagram of Test setup



5.3 Configuration of The EUT

The EUT was configured according to ANSI C63.4-2003. All interface ports were connected to the Appropriate peripherals. All peripherals and cables are listed below.

Note: EUT can be powered by vehicle with 12V electrical system or batteries. During radiated emission test, EUT power by a regulated DC power supply because it produced more emission at this time.

A. EUT

Device	Manufacturer	Model	FCC ID
CAR DVD with Monitor	Shen Zhen Knight Electronics Co., Ltd	KDU-7003	WLAWKS8998001

B. Internal Device

Device	Manufacturer	Model	FCC ID/DOC
N/A			

C. Peripherals

Device	Manufacturer	Model	FCC ID/DOC	Cable
N/A				

5.4 EUT Operating Condition

Operating condition is according to ANSI C63.4 -2003.

A Setup the EUT and simulators as shown on follow

B Set the volume to the maximum on the DVD Player and play a DVD disc to produce a typical signal, but Not a 1kHz signal.

C the frequency tuning controls have been manually adjusted to the highest and lowest TX frequency. The center frequencies of the tuning range are within 88.1MHz to 88.6MHz.

5.5 Power line conducted Emission Limit according to Paragraph 15.207

Frequency (MHz)	Class A Limits (dB μ V)		Class B Limits (dB μ V)	
	Quasi-peak Level	Average Level	Quasi-peak Level	Average Level
0.15 ～ 0.50	79.0	66.0	66.0～56.0*	56.0～46.0*
0.50 ～ 5.00	73.0	60.0	56.0	46.0
5.00 ～ 30.00	73.0	60.0	60.0	50.0

Notes: 1. *Decreasing linearly with logarithm of frequency.

2. The tighter limit shall apply at the transition frequencies

5.6 Test Results

The frequency spectrum from 0.15MHz to 30MHz was investigated. All reading are quasi-peak values with a resolution bandwidth of 9kHz.

Note: **Owing to DC operation of EUT, this test item is not performed**

6 Radiated Emission Test

6.1 Test Method and test Procedure:

(1) The EUT was tested according to ANSI C63.4 –2003. The radiated test was performed at Timeway Laboratory. This site is on file with the FCC laboratory division, Registration No.899988

(2) The EUT, peripherals were put on the turntable which table size is 1m x 1.5 m, table high 0.8 m. All set up is according to ANSI C63.4-2003.

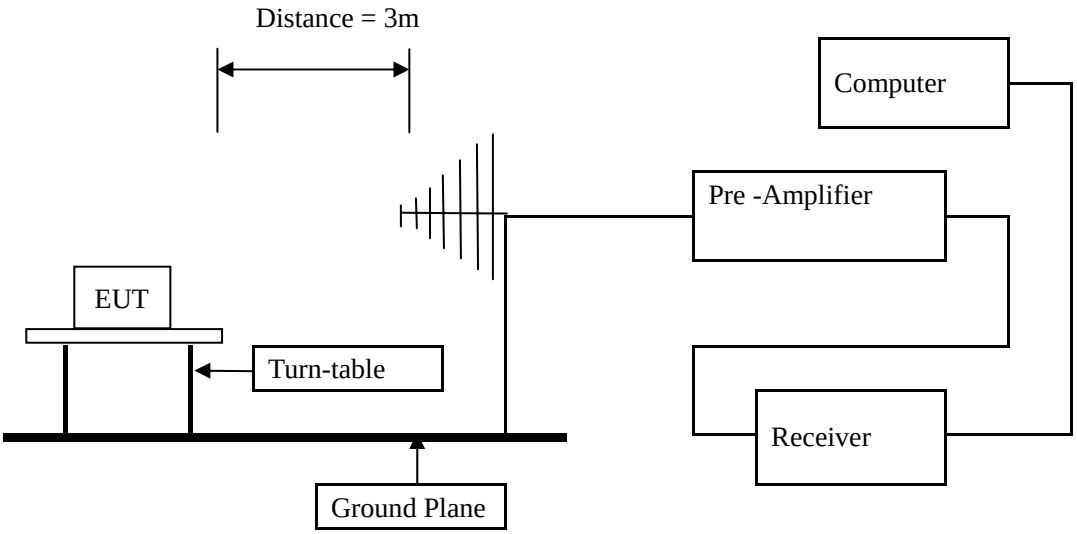
(3) The frequency spectrum from 30 MHz to 1 GHz was investigated. All readings from 30 MHz to 1 GHz are quasi-peak values with a resolution bandwidth of 120 kHz. All readings are above 1 GHz, peak values with a resolution bandwidth of 1 MHz . Measurements were made at 3 meters.

(4) The antenna high is varied from 1 m to 4 m high to find the maximum emission for each frequency.

(5) Maximizing procedure was performed on the six (6) highest emissions to ensure EUT compliance is with all installation combinations. All data was recorded in the peak detection mode. Quasi-peak readings was performed only when an emission was found to be marginal (within -4 dB of specification limit), and are distinguished with a "**QP**" in the data table.

(6) The antenna polarization : Vertical polarization and Horizontal polarization.

Block diagram of Test setup



6.2 Configuration of The EUT

Same as section 5.3 of this report

6.3 EUT Operating Condition

Same as section 5.4 of this report.

6.4 Radiated Emission Limit

All emission from a digital device, including any network of conductors and apparatus connected thereto, shall not exceed the level of field strength specified below:

A FCC Part 15 Subpart C Paragraph 15.239 Limit

Fundamental Frequency (MHz)	Field Strength of Fundamental (3m)	
	uV/m	**dBuV/m**
88 to 108	250	47.96

Note: 1. RF Field Strength (dBuV) = 20 log RF Voltage (uV)

2.Distance refers to the distance in meters between the measuring instrument antenna and the closed point of any part of the device or system.

3. The emission limit in this paragraph is based on measurement instrumentation employing an average detector.

B. Frequencies in restricted band are complied to limit on Paragraph 15.209.

Frequency Range (MHz)	Distance (m)	Field strength (dB μ V/m)
30-88	3	40.0
88-216	3	43.5
216-960	3	46.0
Above 960	3	54.0

Note: 1. RF Voltage (dBuV) = 20 log RF Voltage (uV)

2. In the Above Table, the tighter limit applies at the band edges.

3. Distance refers to the distance in meters between the measuring instrument antenna and the EUT

6.5 Test result

A Fundamental Radiated Emission Data

Product:	CAR DVD with Monitor	Test Mode:	88.1MHz
Test Item:	Fundamental Radiated Emission Data	Temperature:	25℃
Test Voltage:	12V	Humidity:	56%
Test Result:	Pass		

Frequency (MHz)	Emission PK/AV (dBuV/m)	Horiz / Vert	Limits PK/AV (dBuV/m)	Margin (dB)
88.1	45.20 (PK)	Vertical	67.96/47.96	-2.76
88.1	43.70 (PK)	Horizontal	67.96/47.96	-4.26

Product:	CAR DVD with Monitor	Test Mode:	88.3MHz
Test Item:	Fundamental Radiated Emission Data	Temperature:	25℃
Test Voltage:	12V	Humidity:	56%
Test Result:	Pass		

Frequency (MHz)	Emission PK/AV (dBuV/m)	Horiz / Vert	Limits PK/AV (dBuV/m)	Margin (dB)
88.3	45.18 (PK)	Vertical	67.96/47.96	-2.78
88.3	43.52 (PK)	Horizontal	67.96/47.96	-4.44

Product:	CAR DVD with Monitor	Test Mode:	88.6MHz
Test Item:	Fundamental Radiated Emission Data	Temperature:	25℃
Test Voltage:	12V	Humidity:	56%
Test Result:	Pass		

Frequency (MHz)	Emission PK/AV (dBuV/m)	Horiz / Vert	Limits PK/AV (dBuV/m)	Margin (dB)
88.6	44.89 (PK)	Vertical	67.96/47.96	-3.07
88.6	42.66 (PK)	Horizontal	67.96/47.96	-5.30

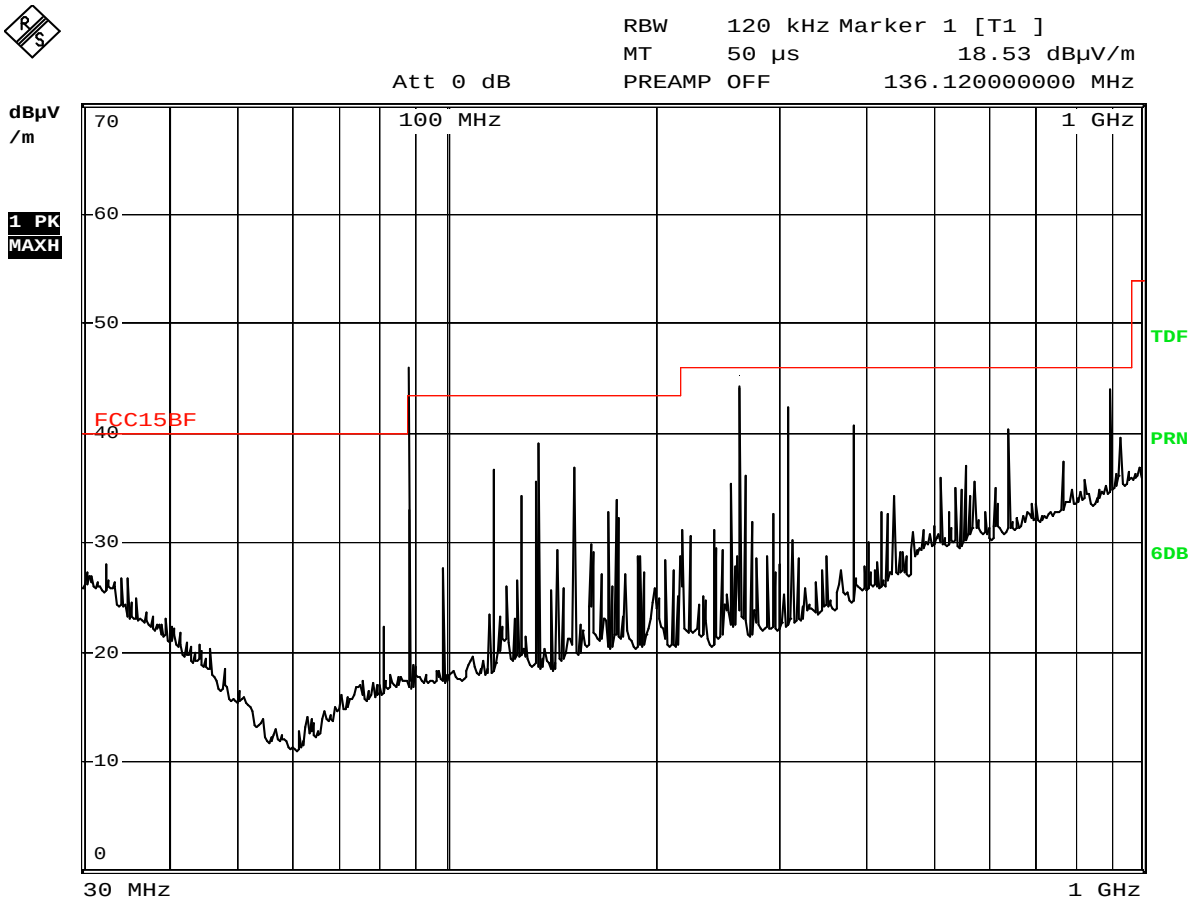
B. **General Radiated Emission Data and Harmonics Radiated Emission Data**

Radiated Emission In Horizontal (30MHz----1000MHz)

EUT set Condition: 88.1MHz

Results: **Pass**

Please refer to following diagram for individual



Frequency (MHz)	Level@3m (dB µ V/m)	Antenna Polarity	Limit@3m (dB µ V/m)
120.02	36.62	H	43.50
144.03	38.69	H	43.50
264.10	44.21	H	46.00
312.07	43.52	H	46.00
386.06	41.50	H	46.00
896.71	42.75	H	46.00

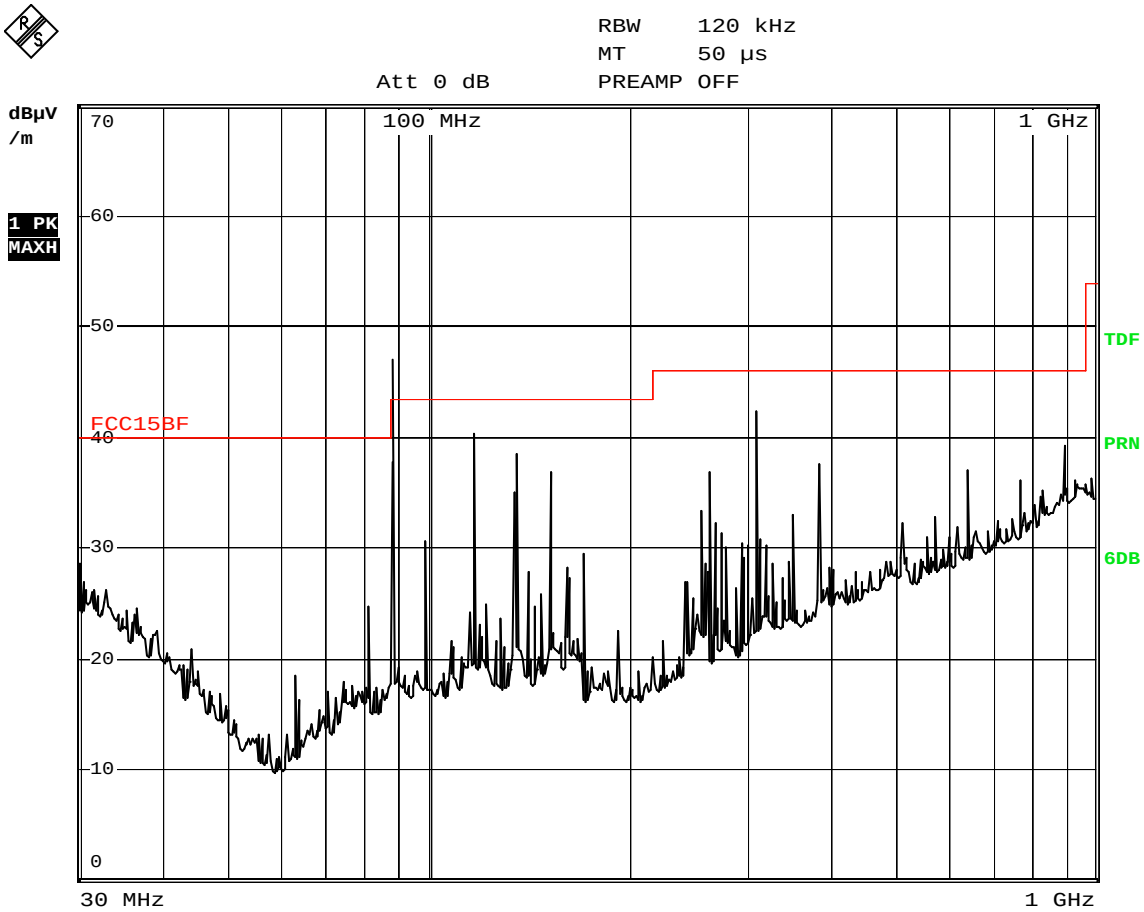
B. **General Radiated Emission Data and Harmonics Radiated Emission Data**

Radiated Emission In Vertical (30MHz----1000MHz)

EUT set Condition: 88.1MHz

Results: **Pass**

Please refer to following diagram for individual



Date: 1.AUG.2008 17:28:21

Frequency (MHz)	Level@3m (dB µ V/m)	Antenna Polarity	Limit@3m (dB µ V/m)
120.01	41.05	V	43.50
144.04	37.95	V	43.50
168.03	33.54	V	43.50
312.06	43.14	V	46.00

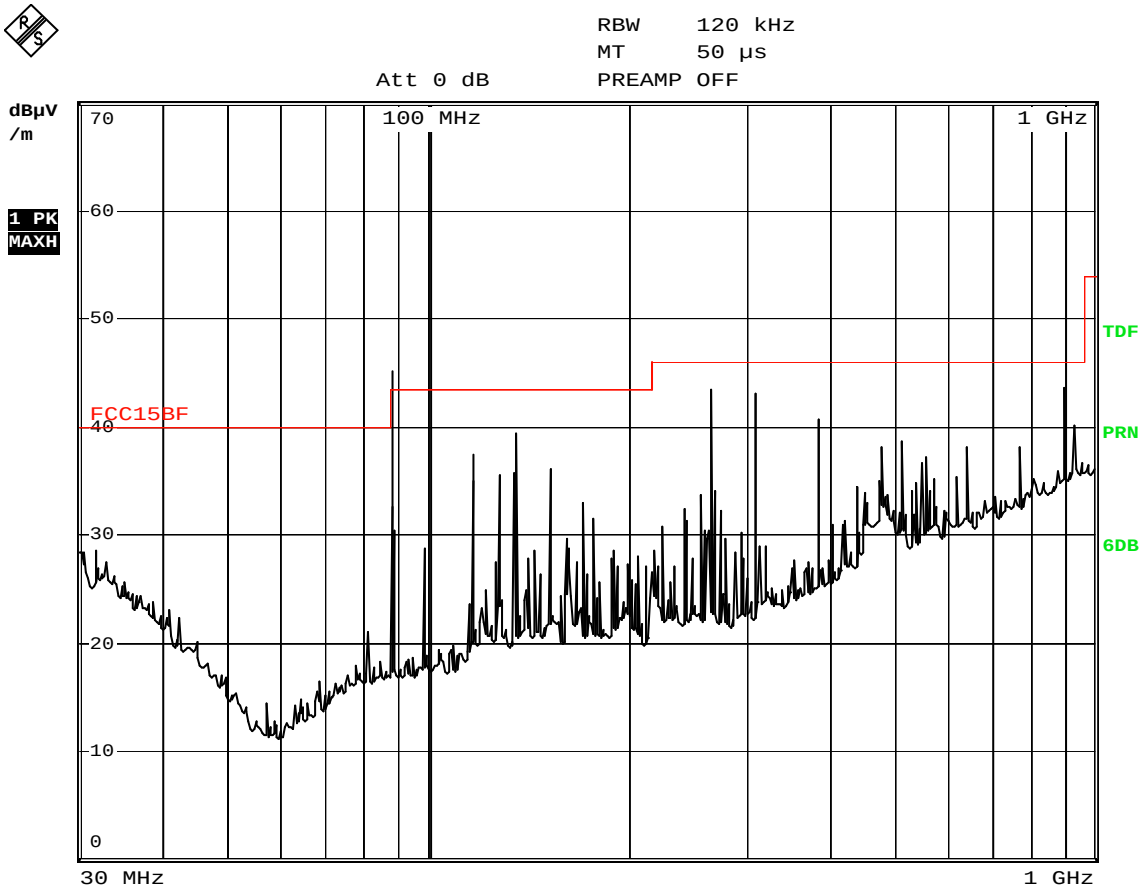
B. **General Radiated Emission Data and Harmonics Radiated Emission Data**

Radiated Emission In Horizontal (30MHz----1000MHz)

EUT set Condition: 88.6MHz

Results: **Pass**

Please refer to following diagram for individual



Date: 1.AUG.2008 17:31:04

Frequency (MHz)	Level@3m (dB µ V/m)	Antenna Polarity	Limit@3m (dB µ V/m)
120.02	36.62	H	43.50
144.03	38.85	H	43.50
264.10	43.36	H	46.00
312.07	42.81	H	46.00
386.06	40.36	H	46.00
896.71	41.69	H	46.00

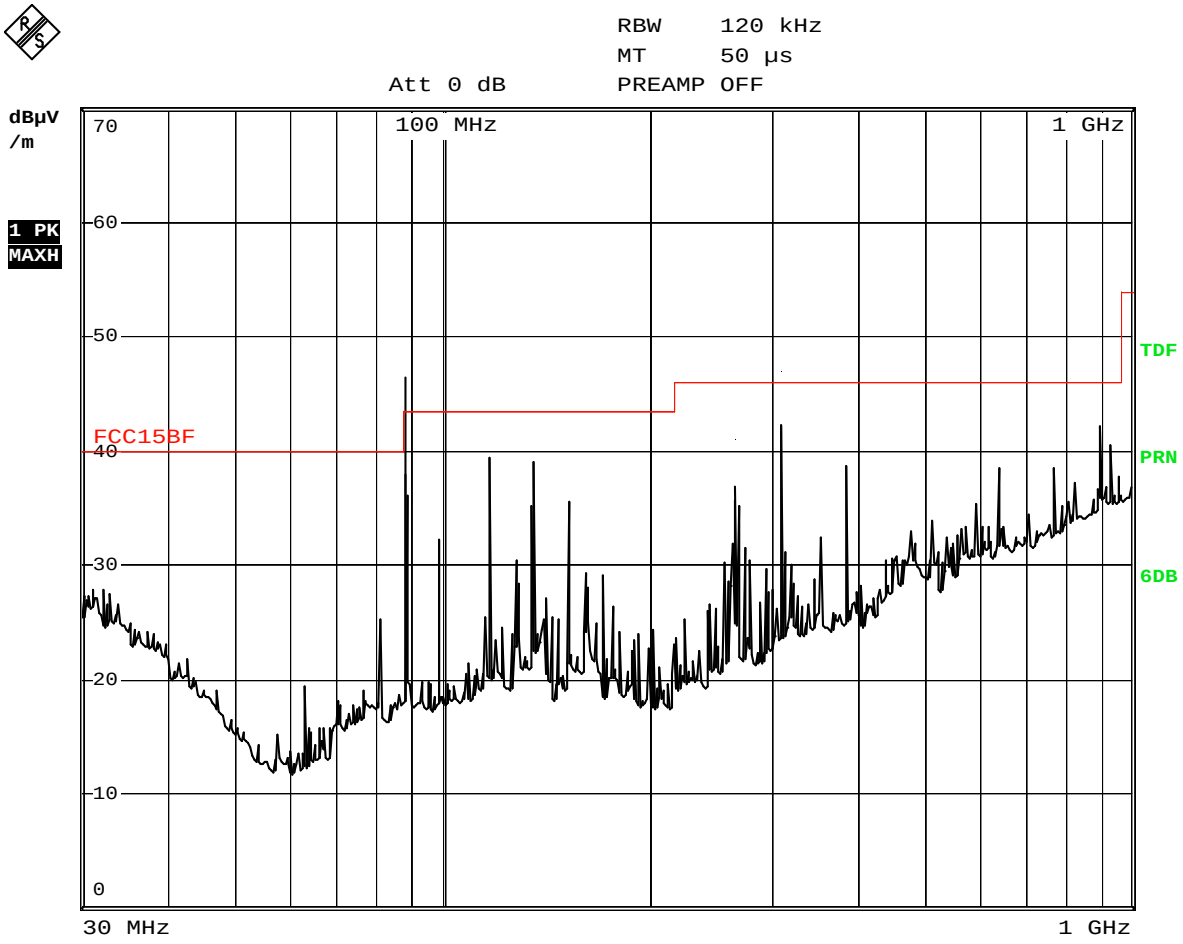
B. **General Radiated Emission Data and Harmonics Radiated Emission Data**

Radiated Emission In Vertical (30MHz----1000MHz)

EUT set Condition: 88.6MHz

Results: **Pass**

Please refer to following diagram for individual



Date: 1.AUG.2008 17:31:52

Frequency (MHz)	Level@3m (dB µ V/m)	Antenna Polarity	Limit@3m (dB µ V/m)
120.00	39.76	V	43.50
144.02	39.25	V	43.50
168.03	36.18	V	43.50
312.06	42.59	V	46.00

7. Band Edge

7.1 Test Method and test Procedure:

(1) The EUT was tested according to ANSI C63.4 –2003. The radiated test was performed at Timeway Laboratory. This site is on file with the FCC laboratory division, Registration No.899988

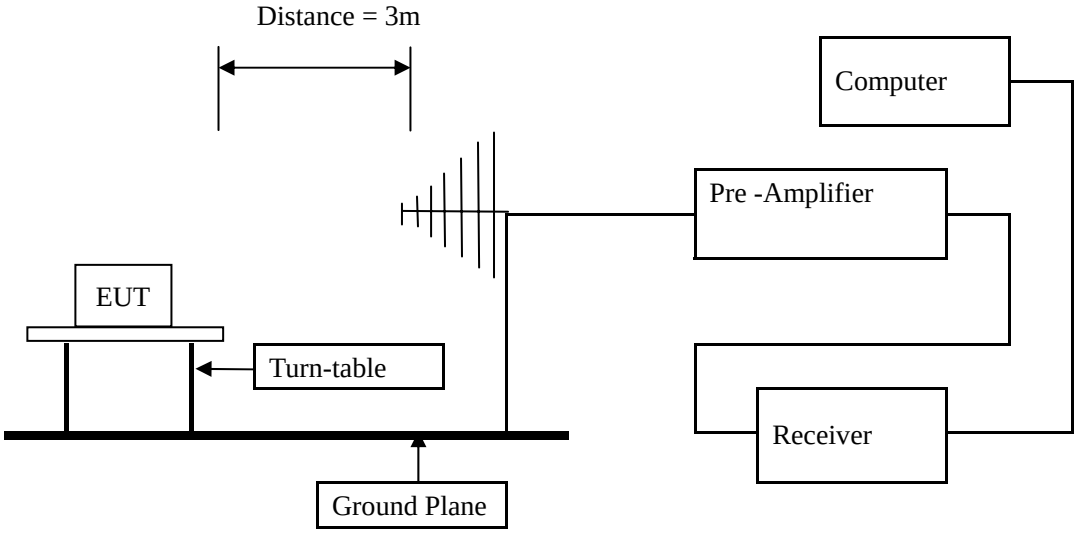
(2) The frequency spectrum from 30 MHz to 1 GHz was investigated. All readings from 30 MHz to 1 GHz are quasi-peak values with a resolution bandwidth of 120 KHz. All readings are above 1 GHz , peak values with a resolution bandwidth of 1 MHz . Measurements were made at 3 meters.

(3) The antenna high is varied from 1 m to 4 m high to find the maximum emission for each frequency.

(4) Maximizing procedure was performed on the six (6) highest emissions to ensure EUT compliance is with all installation combinations. All data was recorded in the peak detection mode. Quasi-peak readings was performed only when an emission was found to be marginal (within -4 dB of specification limit), and are distinguished with a "**QP**" in the data table.

(5) The antenna polarization : Vertical polarization and Horizontal polarization.

7. 2 Radiated Test Setup



For the actual test configuration , please refer to the related items – Photos of Testing

7.3 Configuration of The EUT

Same as section 5.3 of this report

7.4 EUT Operating Condition

Same as section 5.3 of this report.

7.5 Band Edge Limit and 20dB Bandwidth

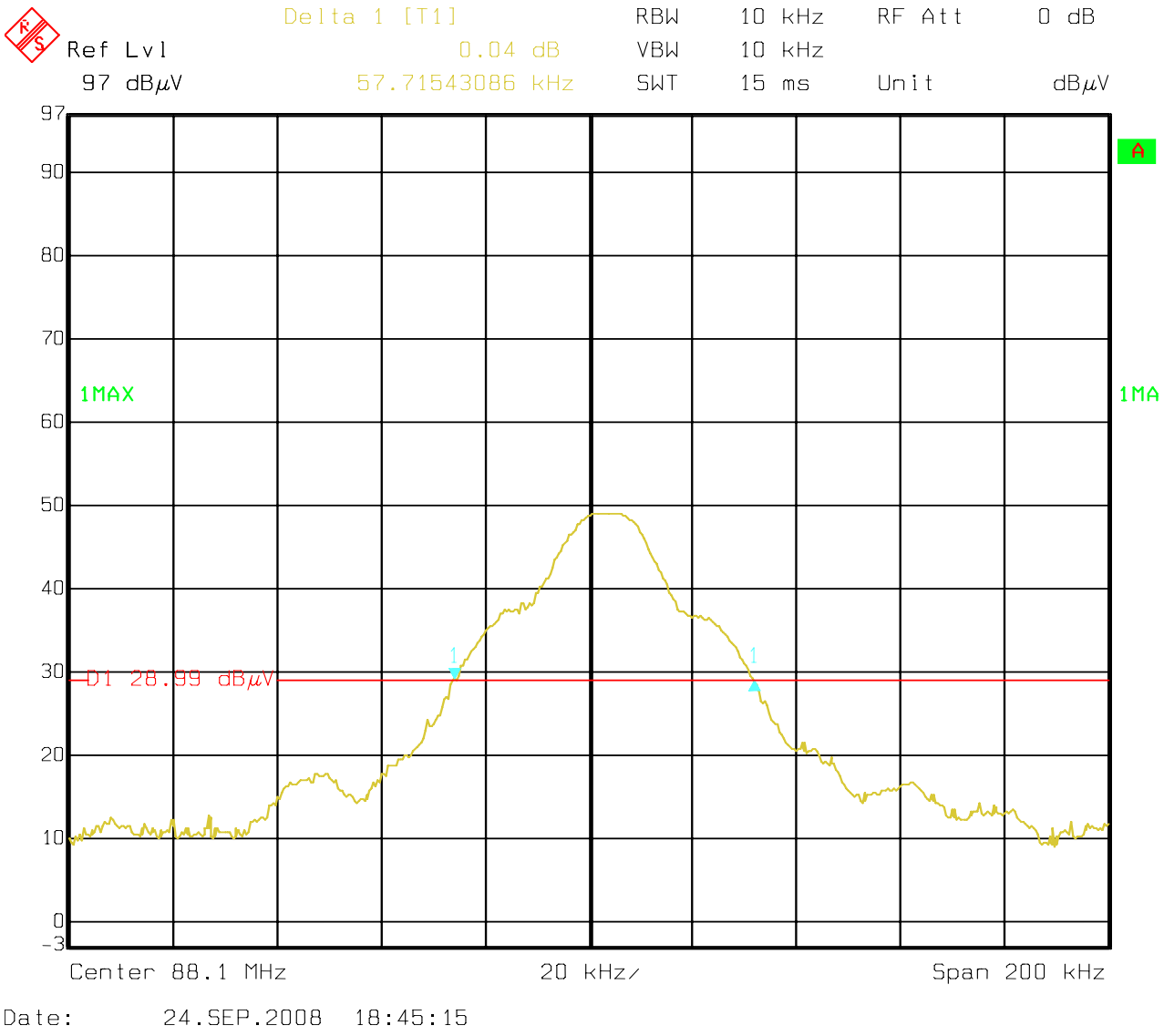
(1) Emissions from the intentional radiator shall be confined within a band 200 kHz wide centered on the Operating frequency. The 200 kHz band shall lie wholly within the frequency range of 88-108 MHz.
(2) The field strength of any emissions within the permitted 200 kHz band shall not exceed 250 microvolts/meter At 3 meters. The emission limit in this paragraph is based on measurement instrumentation employing an Average detector. The provisions in Section 15.35 for limiting peak emissions apply.
(3) Attenuation below the general limits specified in Section 15.209(a) is not required. In addition, radiated emissions which fall in the restricted bands, as defined in Section 15.205(a), must also comply with the radiated Emission limits specified in Section 15.209(a) (see Section 15.205(c)).

EUT Operating Condition
Set the volume to the maximum on the EUT and play a DVD disc to produce a typical signal, but not a 1kHz signal

7.6 Band Edge Test Result

Product:	CAR DVD with Monitor	Test Mode:	88.1MHz
Test Item:	Fundamental Radiated Emission Data	Temperature:	25℃
Test Voltage:	12V	Humidity:	56%
Bandwidth	57kHz	Test Result:	Pass

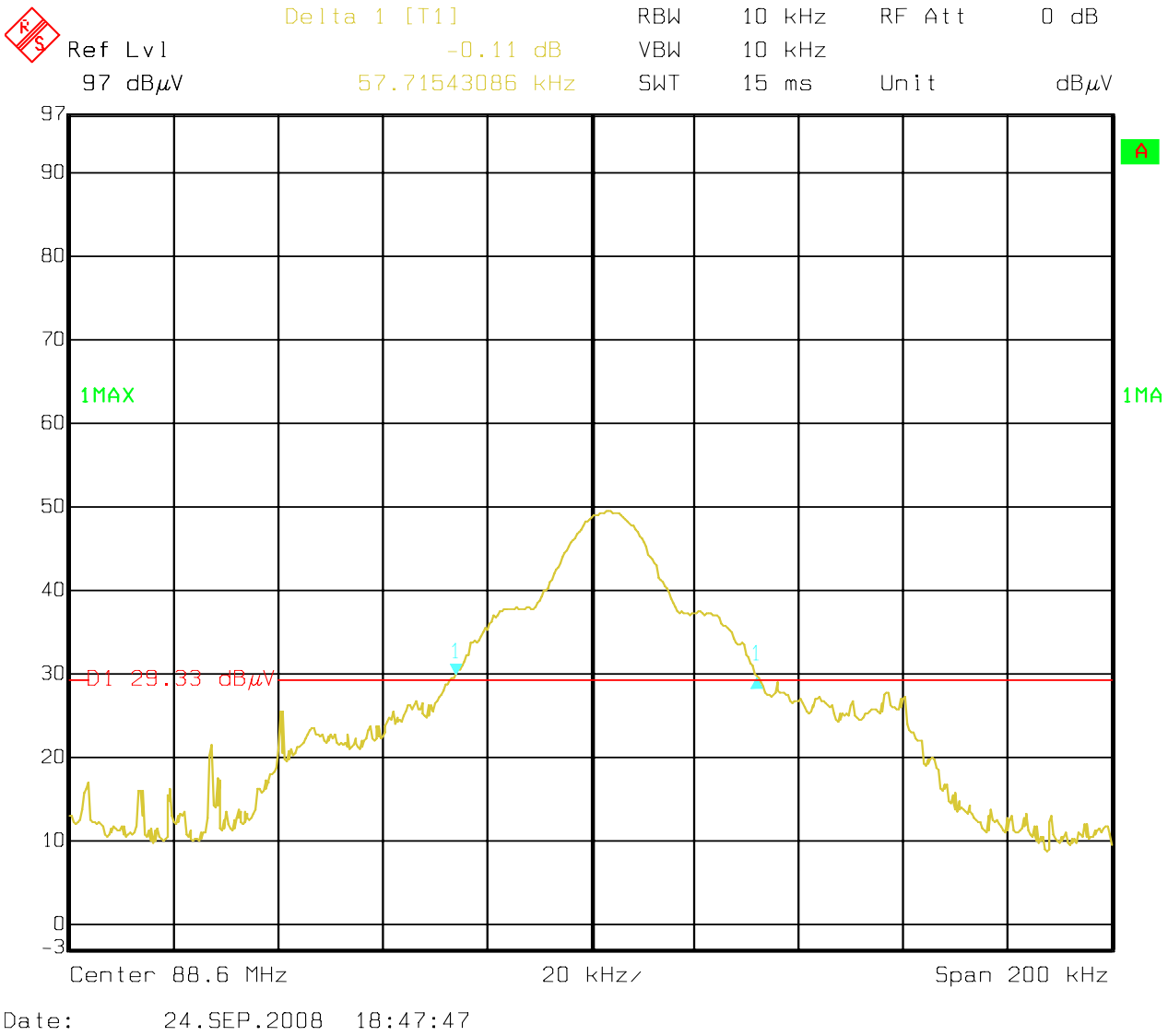
Test Figure:



TEST REPORT

Product:	CAR DVD with Monitor	Test Mode:	88.6MHz
Test Item:	Fundamental Radiated Emission Data	Temperature:	25℃
Test Voltage:	12V	Humidity:	56%
Bandwidth	57kHz	Test Result:	Pass

Test Figure:



Note: (1) The field strength of any emissions which appear outside of this band shall not exceed the general radiated emission limits in Section 15.209.

(2) The average measurement was not performed when the peak measured data under the limit of average detection.

(3) The Uncertainty of conducted emission=±20kHz

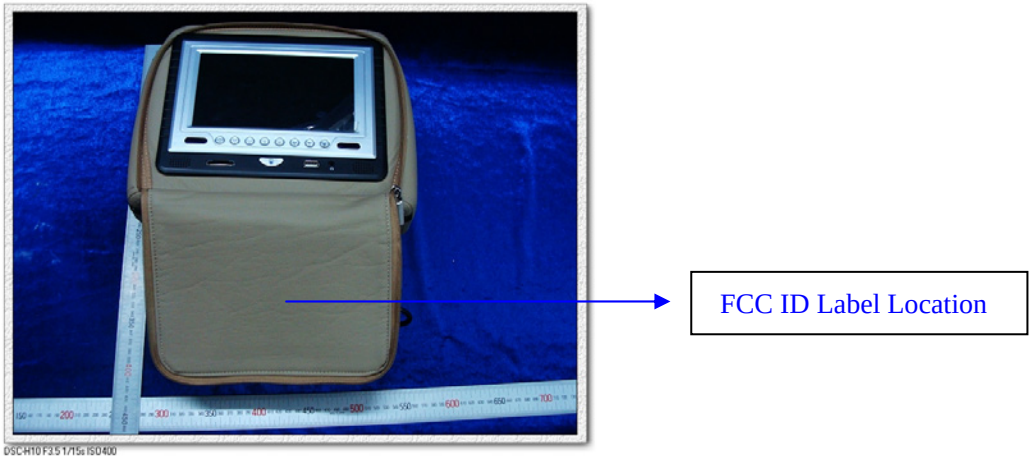
8.0 FCC ID Label

FCC ID: WLAWKS8998001

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, and (2) this device must accept any interference received, including interference that may cause undesired operation.

The label must not be a stick-on paper label. The label on these products must be permanently affixed to the product and readily visible at the time of purchase and must last the expected lifetime of the equipment not be readily detachable.

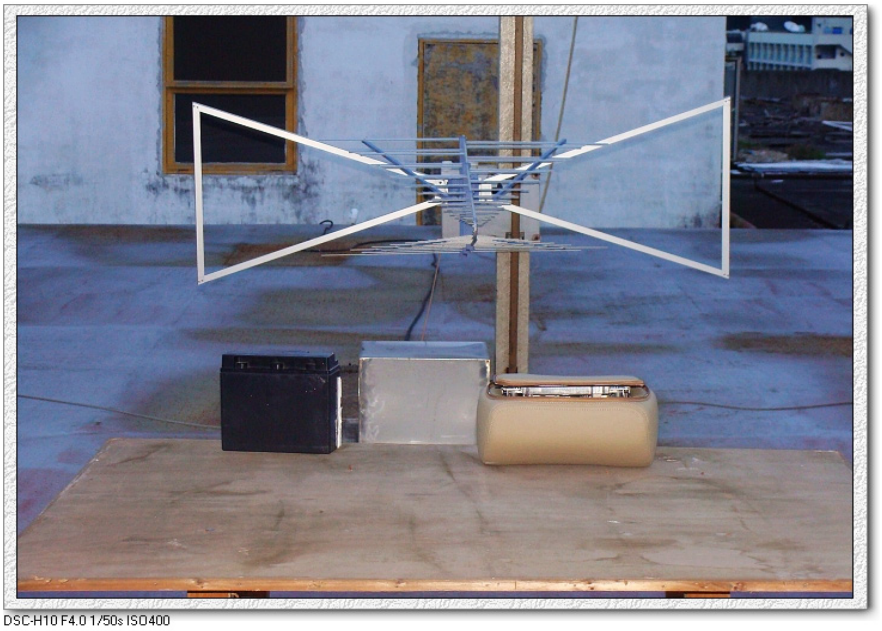
Mark Location:



9.0 Photo of testing

9.1 Conducted test View—N/A

9.2 Radiated emission test view

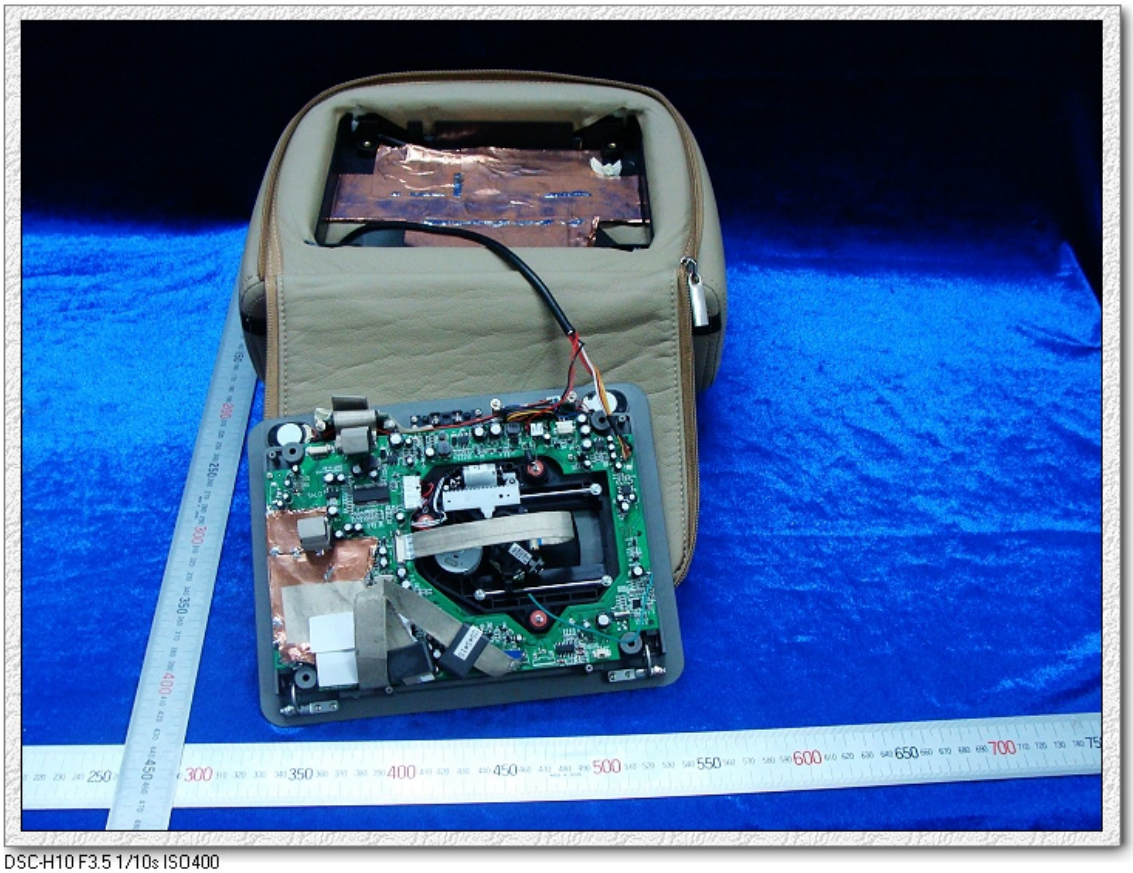


9.3 Photo for the EUT

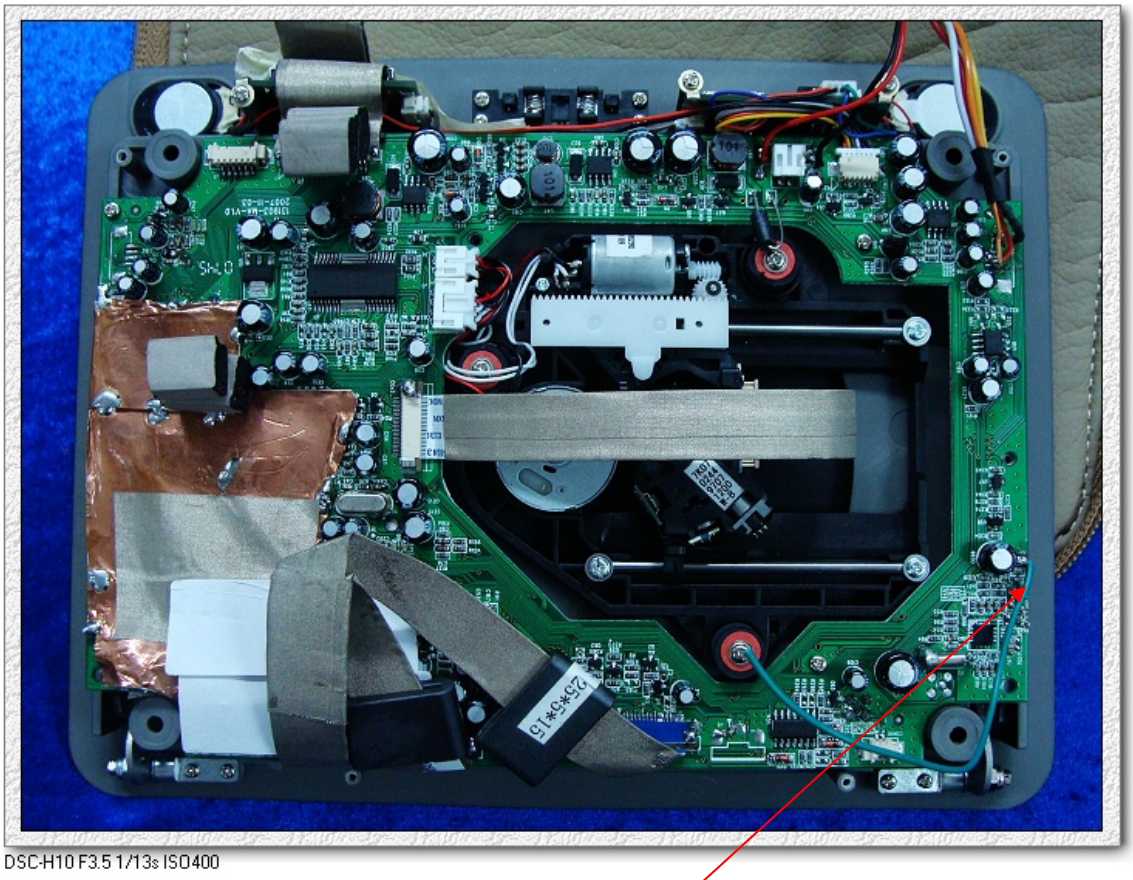
Front View

Front View

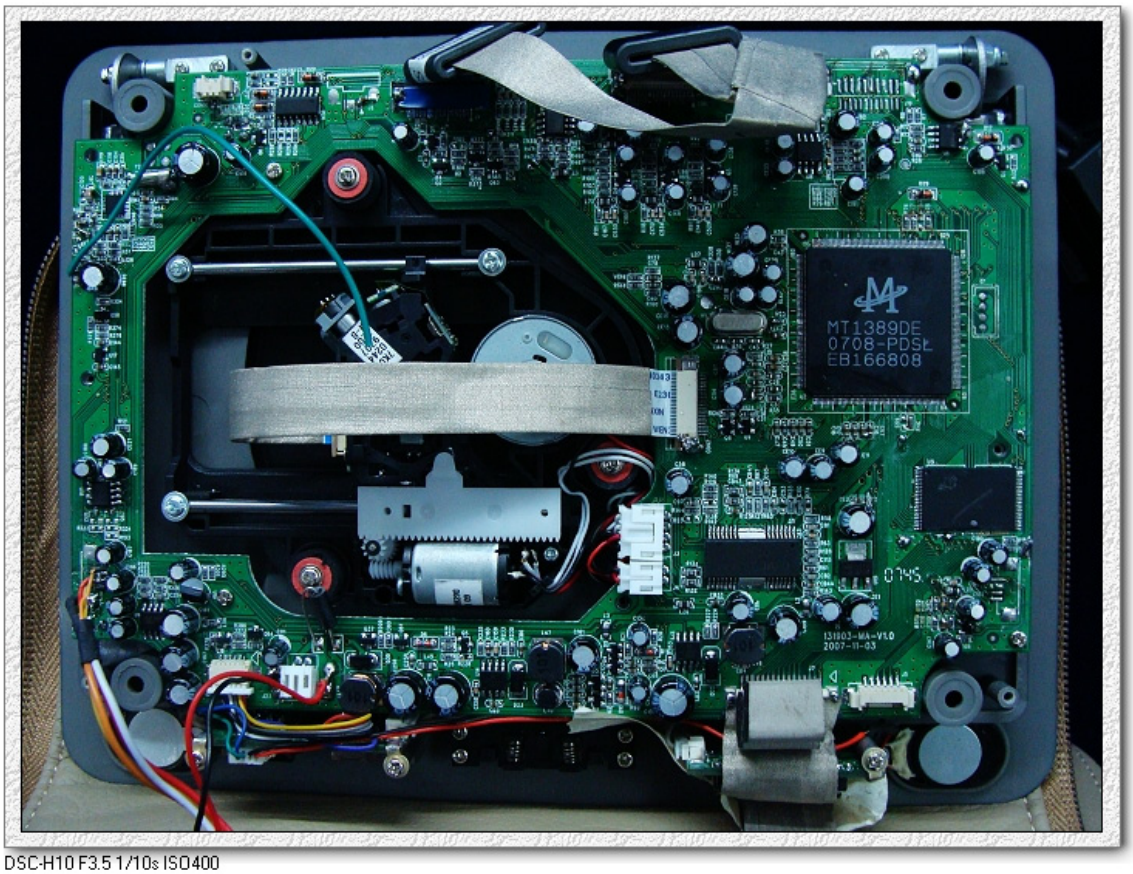
Interior View



Interior View

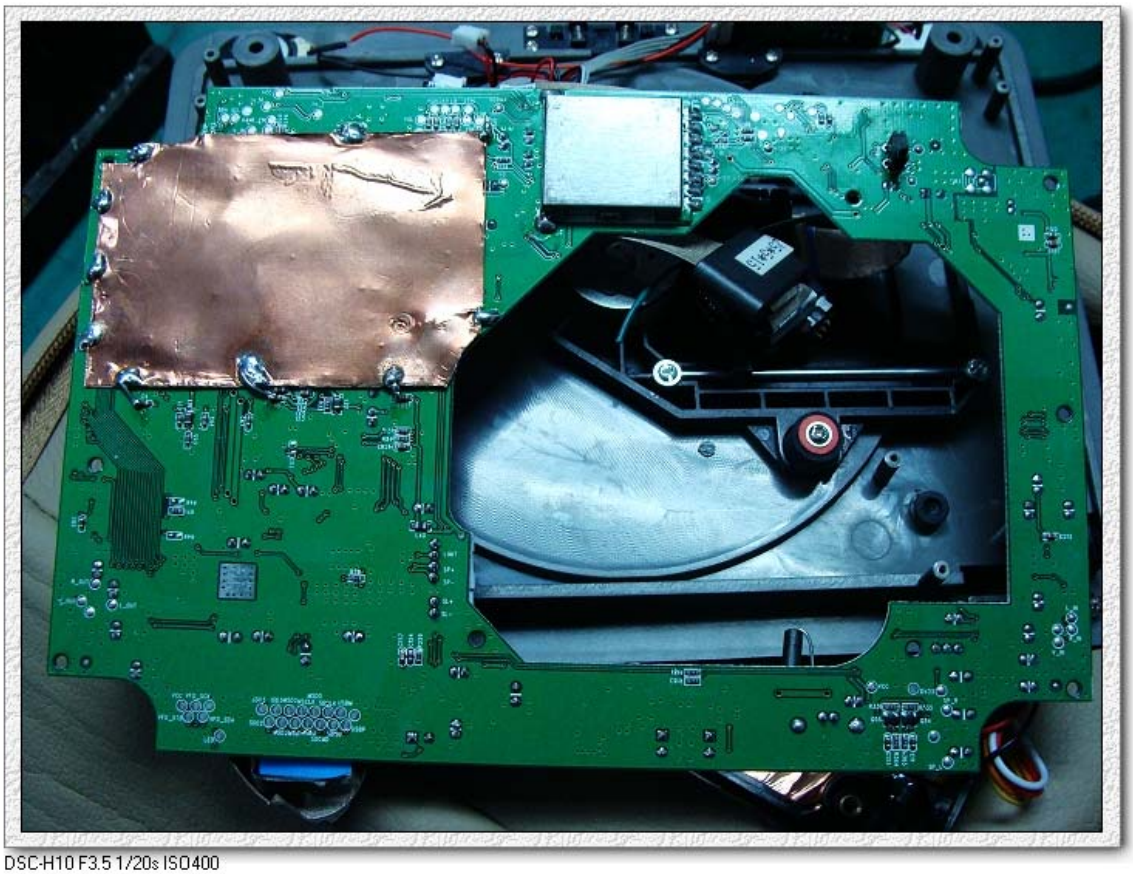


Interior View



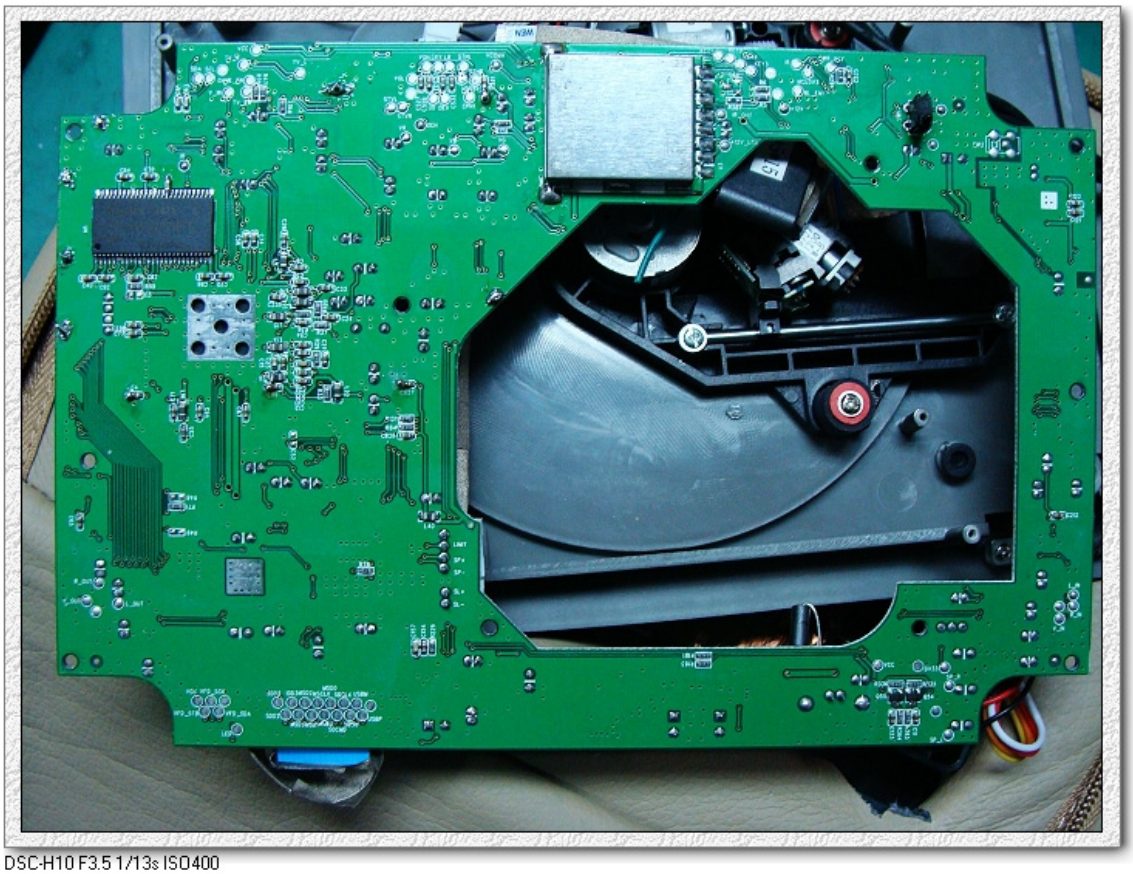
DSC-H10 F3.5 1/10s ISO400

Interior View



DSC-H10 F3.5 1/20s ISO400

Interior View



Note: The product photos show that some ferrites and shielding material was implemented. The applicant confirms that each unit out of serial production contains the same suppression components that were used during certification testing.

End of the report