Test Report for FCC

Report Number		ESTF150904-009			
Applicant	Company name	Suprema Inc.			
	Address	16F Parkview Office Tower, Jeongja-dong, Bundang-gu, Seongnam, Gyeonggi, 463-863 Korea			
	Telephone	82-31-710-2442			
Product	Product name	RealScan-D			
	Model No.	RSD	Manufacturer	Suprema Inc.	
	Serial No.	NONE	Country of origin	Korea	
Test date	18-Apr-09		Date of issue	22-Apr-09	
Testing location	ESTECH. Co., Ltd. 97-1 Hoiuk-Ri Majang-Myon, Icheon-city, KyungKi-Do, Korea				
Standard	FCC PART 15 2007 , ANSI C 63.4 2003				
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 H.H.Lee		(Signature)		
Reviewed by	Engineering Manager J.M.Yang		(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 : Rm 1015, World Venture Center II, 426-5, Gasan-dong, Geumcheon-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

1.3 Official Qualification(s)

KCC : 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

NONE	: RealScan-D
Model Number	: RSD
Serial Number	: NONE
Manufacturer	: Suprema Inc.
Country of origin	: Korea
Rating	: Supplied from PC USB port
Receipt Date	: 16-Apr-09
X-tal list(s)	: 30MHz, 18.43MHz

2.2 General descriptions of EUT

1-1. RealScan-D Specifiation

- Optical two-print flats and rolls

- Compact and lightweight
  - Mounting bracket for fixing
  - User Interface
    ① Function buttons for easy and convenient capture
    ② Color LED for status display

3. Test Standards

Test Standard : FCC PART 15 (2007)

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 (2003)

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

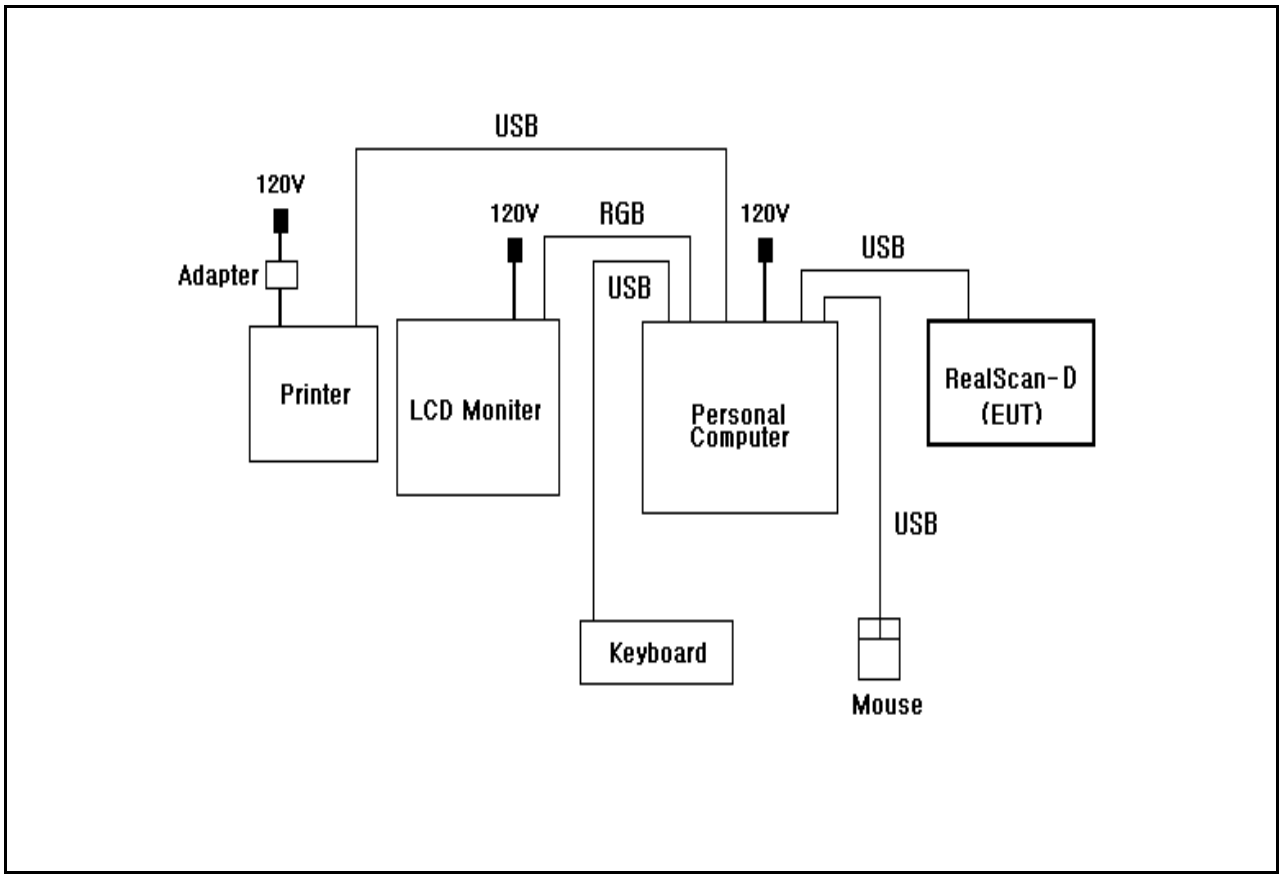
4. Measurement Condition

4.1 EUT Operation.

- The EUT was in the following operation mode during all testing

1. Check to normal mode operation
2. The operational conditions of the EUT was determined by the manufacturer according to the typical use of the EUT with respect to the expected highest level of emission.
3. Connect the EUT to PC usb port.
4. Install scanning program in the PC.
5. Put hand to Fingerprint system and check action availability from PC.

4.2 Configuration and Peripherals



4.3 EUT and Support equipment

Equipment Name	Model Name	S/N	Manufacturer	Remark (FCC ID)
RealScan-D	RSD	NONE	Suprema Inc.	EUT
Personal Computer	DCGAF	HKKPHBX	Dell Asia Pacific Sdn.	
LCD Monitor	M1717AD	702SRXP36394	SERONICS	
Printer	MJC-5750	NA34BFFP313402V	SAMSUNG ELECTRONICS(SHANDONG) DIGITAL PRINTING Co.,Ltd.	
Adapter	PA8040WB	0703016326	Bestec Electronics (DongGuan)Co.,Ltd.	
Keyboard	SK-8115	NONE	YET FOUNDATE LTD	
Mouse	M-UAG96B	LZ747AL	Logitech	

4.4 Cable Connecting

Start Equipment		End Equipment		Cable Standard		Remark
Name	I/O port	Name	I/O port	Length	Shielded	
RealScan-D	USB	Personal Computer	USB	1.5	Yes	
Personal Computer	USB	Mouse	USB	2	Yes	
Personal Computer	USB	Keyboard	USB	2	Yes	
Personal Computer	RGB	LCD Monitor	RGB	2	Yes	
Personal Computer	USB	Printer	USB	2	Yes	
Printer	POWER	Adapter	-	2	No	

5. Measurement of radiated disturbance

Above 30 MHz Electric Field strength was measured in accordance with FCC Part 15 (2007). The test setup was made according to ANSI C 63.4 (2003) 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 setup.

5.1 Measurement equipments

Equipment Name	Type	Manufacturer	Serial No.	Next Calibration date
Test Receiver	ESVS10	Rohde & Schwarz	838562/002	2010. 1. 29
Spectrum Analyzer	R3273	ADVANTEST	110600592	2009. 6. 09
LogBicon Antenna	VULB 9160	Schwarzbeck	3142	2009. 5. 15
Amplifier	8447F	HP	2805A02972	2009. 6. 26
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(10m)
Temperature (°C) : 13 °C
Humidity (%) : 37 %

5.3 Test data

Test Date : 18-Apr-09 Measurement Distance : 10 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 (dB)
37.32	13.60	V	1.0	11.08	0.9	39.5	25.62	-13.88
70.83	14.10	V	1.0	9.88	1.3	39.5	25.28	-14.22
132.09	11.60	V	1.0	11.96	1.8	43.5	25.37	-18.13
175.25	18.60	H	4.0	11.65	2.2	43.5	32.45	-11.05
215.75	15.40	V	1.0	10.21	2.5	43.5	28.09	-15.41
228.86	9.70	V	1.0	10.71	2.6	43.5	23.00	-20.50
260.94	9.70	H	4.0	11.87	2.9	46.5	24.42	-22.08
318.70	13.70	H	3.2	13.53	3.4	46.5	30.61	-15.89
326.08	10.70	V	1.0	13.69	3.6	46.5	27.95	-18.55
393.00	11.40	V	1.0	15.16	4.0	46.5	30.51	-15.99
480.06	10.40	H	1.5	16.98	4.6	46.5	31.97	-14.53
541.76	7.60	V	1.0	18.10	5.2	46.5	30.85	-15.65
619.75	7.90	V	1.0	19.87	5.5	46.5	33.31	-13.19
770.33	5.10	V	1.0	22.06	6.8	46.5	33.99	-12.51

Remark

H : Horizontal, V : Vertical
*CL = Cable Loss - Amplifier Gain(In case of above1000MHz)
*CL = Cable Loss(In case of below1000MHz)
*The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 120kHz for Quasi-peak detection at frequency below 1GHz.
*The resolution bandwidth of test receiver/spectrum analyzer is 1MHz and the video bandwidth is 10Hz for Average detection at frequency above 1GHz.

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 (2007). The test setup was made according to ANSI C 63.4 (2003) 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	2010. 2. 21
LISN	NNLA8120A	Schwarzbeck	8120161	2010. 2. 21
TEST Receiver	ESPI7	Rohde & Schwarz	100185	2009. 8. 27
Pulse Limiter	ESH3Z2	Rohde & Schwarz	NONE	2009. 9. 10

6.2 Environmental Condition

Test Place : Shield Room
Temperature (°C) : 21 °C
Humidity (%) : 42 %

6.3 Test data

Test Date : 18-Apr-09

Frequency (MHz)	Correction Factor		Line (H/N)	Quasi-peak Value			Average Value		
	Lisn (dB)	Cable (dB)		Limit (dBμV)	Reading (dBμV)	Result (dBμV)	Limit (dBμV)	Reading (dBμV)	Result (dB)
0.15	0.09	0.2	N	79.00	35.22	35.54	66.00	30.71	31.03
0.17	0.09	0.2	N	79.00	30.43	30.75	66.00	27.01	27.33
0.22	0.09	0.2	H	79.00	39.48	39.80	66.00	38.75	39.07
0.31	0.09	0.2	N	79.00	31.66	31.98	66.00	29.77	30.09
0.33	0.09	0.3	H	79.00	28.64	28.98	66.00	25.61	25.95
0.34	0.09	0.3	N	79.00	27.08	27.42	66.00	23.31	23.65
0.61	0.10	0.4	H	73.00	31.48	31.96	60.00	30.09	30.57
0.92	0.11	0.5	N	73.00	33.49	34.07	60.00	32.41	32.99
1.23	0.12	0.5	N	73.00	31.01	31.62	60.00	28.90	29.51
1.53	0.13	0.5	H	73.00	32.34	32.93	60.00	29.88	30.47
1.84	0.14	0.4	H	73.00	34.34	34.91	60.00	33.40	33.97
4.60	0.22	0.6	H	73.00	28.99	29.80	60.00	28.15	28.96
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]

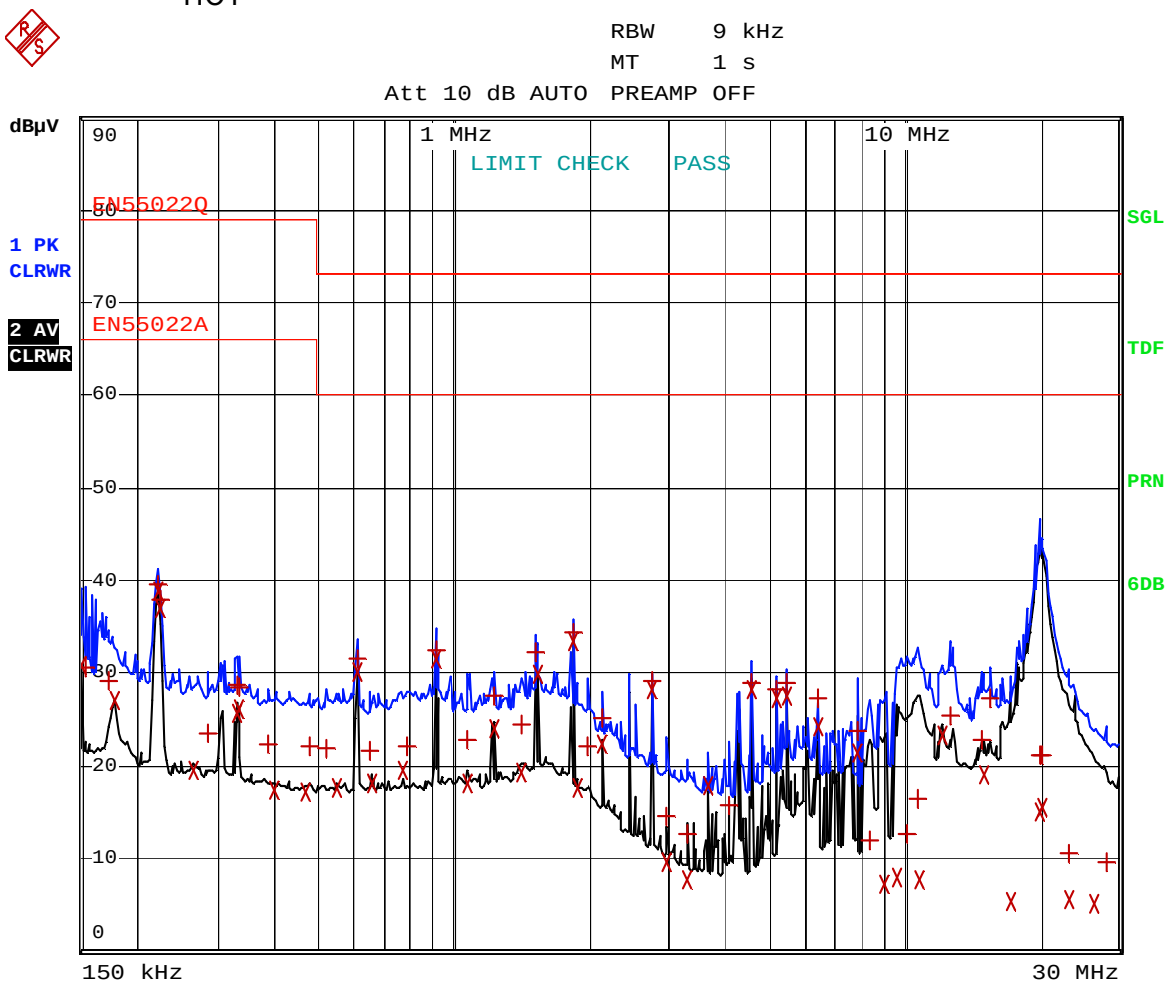
8. Photographs of EUT

[Front]

[Rear]

Appendix 1. Spectral diagram

*HOT



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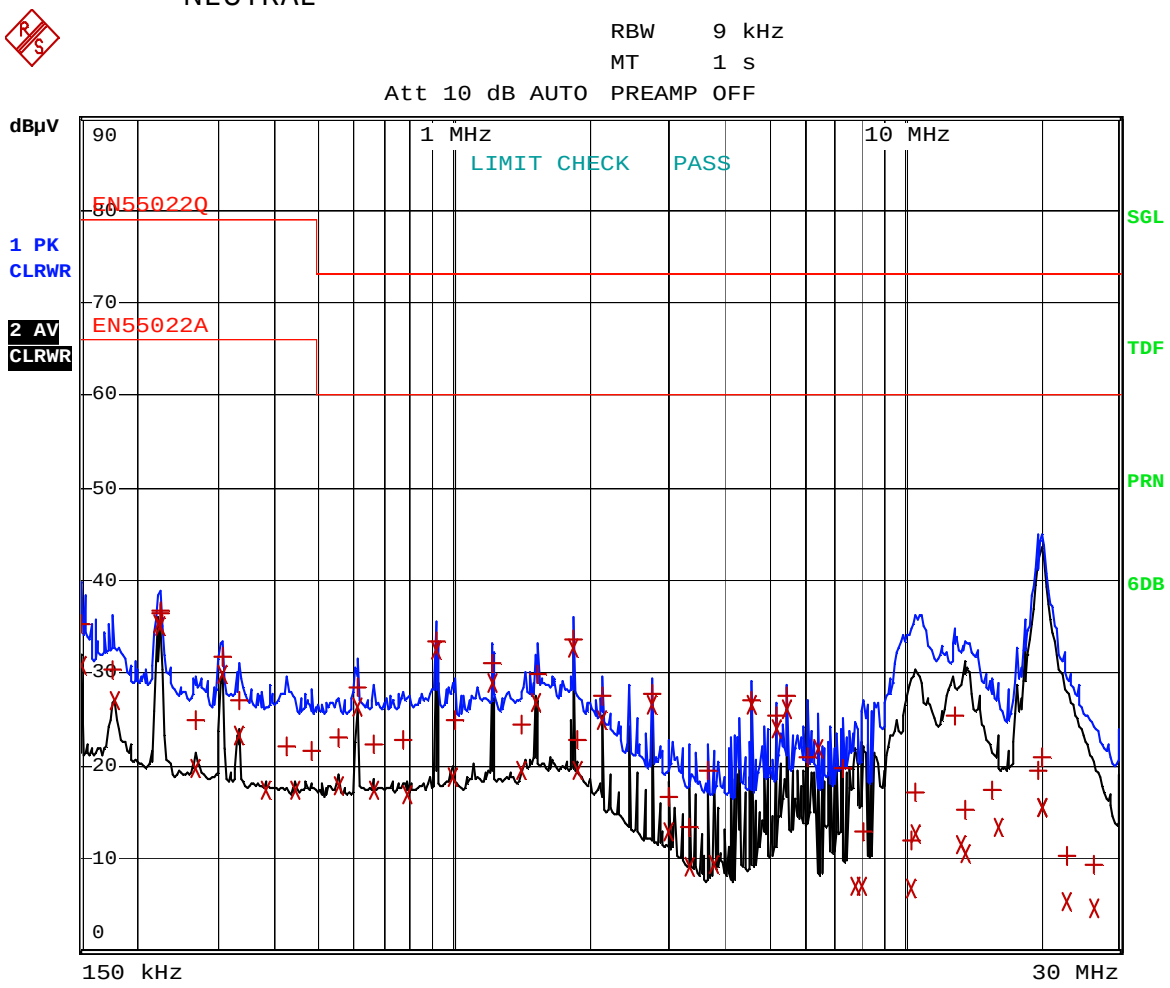
*NEUTRAL



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Appendix 2. Phorographs of EUT in side PCB