Test Report for FCC

FCC ID:UDCREM900

Report Number		ESTF150803-009			
Applicant	Company name	CEYON TECHNOLOGY CO.,LTD.			
	Address	14F Samsung Insurance B/D. #942-9, Ingye-Dong, Paldal-Gu, Suwon-City, Gyeonggi-Do, Korea			
	Telephone	82-31-223-0003			
Product	Product name	UHF RFID Reader			
	Model No.	REM900-R01	Manufacturer	CEYON TECHNOLOGY CO.,LTD.	
	Serial No.	CYRD08070086	Country of origin	KOREA	
Test date	2008-03-03		Date of issue	20-Mar-08	
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 M.J.Song (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, Kor
(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)

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 name : UHF RFID Reader
Model Number : REM900-R01
Serial Number : NONE
Manufacturer : CEYON TECHNOLOGY CO.,LTD.
Country of origin : KOREA
Rating : INPUT:AC 120V,60Hz Output:DC9V,3A
Receipt Date : 7-Dec-07
X-tal lists : 20MHz,18.432MHz,7.3728MHz

2.2 General descriptions of EUT

REM900	Parameter	Description
	Frequency	902MHz ~928MHz
	RF Output Power	30dBm Max
	Attenuation	0.5dB 32step
	Antenna Channel	4EA(Option : Channel Selectable)
	DC Power Supply	DC 9V 3A
	Communication	TCP/IP, RS232C
	LED display	POWER, ACTIVE
	Dimensions	(W)220mm * (D)223mm * (H)65mm
	Weight	1.8Kg
	Material	Metal SS41(Upper Plate), Aluminum 6061(Bottom plate)

Item	Feature
Operating Temp. Range	-20℃ to +60℃ (with proper ventilation)
Operating Humidity Range	20 % to 90 % (no dewdrop)
Operating Atmosphere Range	1 atm. (atmosphere)
Keeping Temp. Range	-30℃ to +80℃
Keeping Humidity Range	20 % to 90 % (no dewdrop)

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)

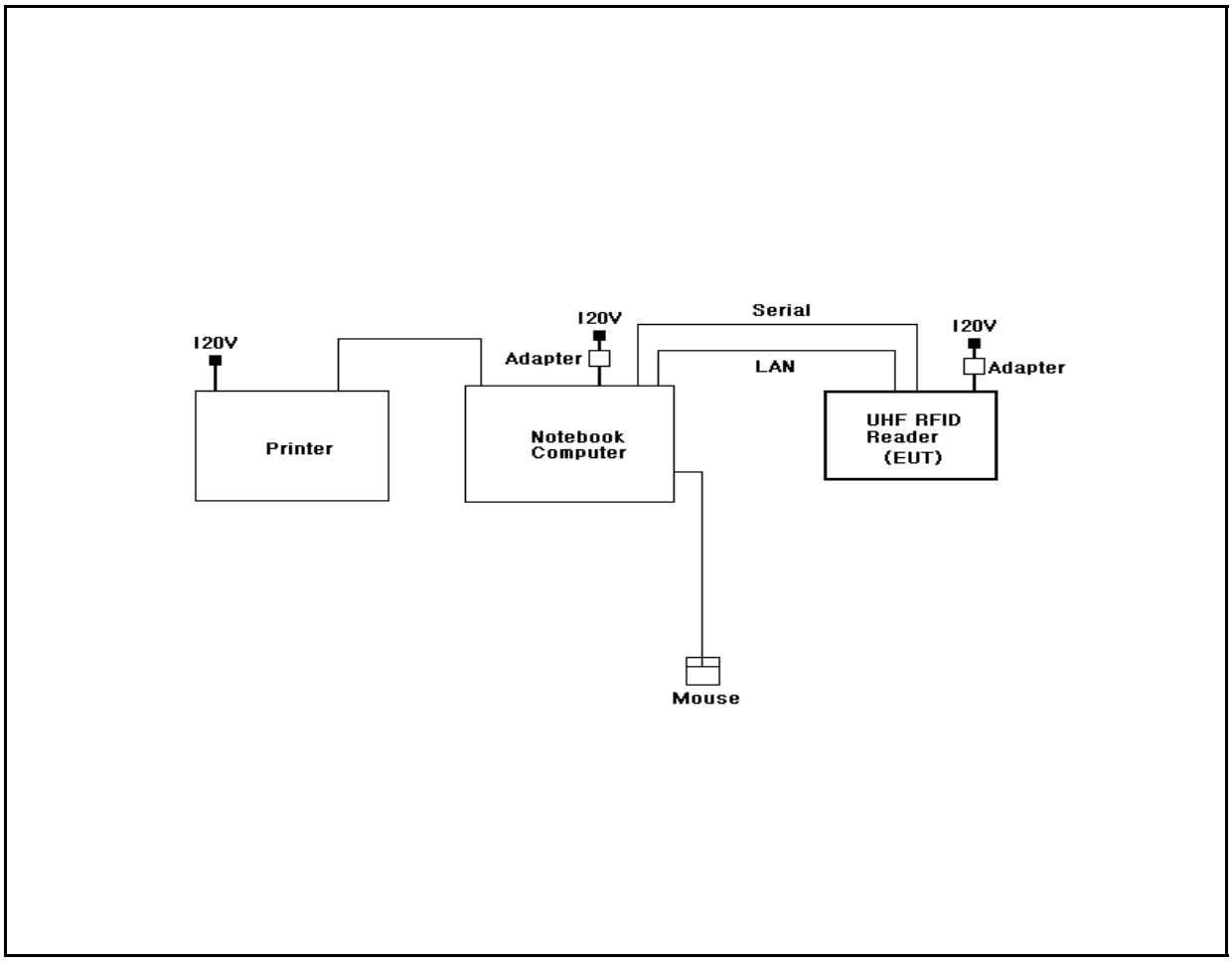
This standard sets forth uniform methods of measurement of radio-frequency (RF) signals and noise emitted from both unintentional and intentional emitters of RF energy in the frequency range 9 kHz to 40 GHz. Methods for the measurement of radiated and AC power-line conducted radio noise are covered and 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.

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. After connect the EUT to Note PC LAN and Serial port,tested sending to packet data between EUT and Note PC

4.2 Configuration and Peripherals



4.3 EUT and Support equipment

Equipment Name	Model Name	S/N	Manufacturer	Remark (FCC ID)
UHF RFID Reader	REM900-R01	CYRD08070086	CEYON TECHNOLOGY CO.,LTD.	EUT
Adapter	PA-090300S	FS-0610094	Perpect Power	
Adapter	PA-1650-050K	71615-52p-0475	Dongguang Lite Power 2nd Plant	
Notebook Computer	PP11L	48643-53e-1495	Dell Asia Pacific Sdn.	
Printer	LQ-570	095782	Trigem Computer Inc.	
Mouse	Wheel Mouse Optical USB	2896557-6	Microsoft Corporation	

4.4 Cable Connecting

Start Equipment		End Equipment		Cable Standard		Remark
Name	I/O port	Name	I/O port	Length	Shielded	
UHF RFID Reader	COM	Notebook Computer	COM	2	No	
UHF RFID Reader	LAN	Notebook Computer	LAN	2	No	
UHF RFID Reader	DC Power	Adapter	-	2	No	
Notebook Computer	DC Power	Adapter	-	2	No	
Notebook Computer	Parallel	Printer	Parallel	2	Yes	
Notebook Computer	USB	Mouse	USB	2	Yes	

5. Measurement of radiated disturbance

Above 30 MHz Electric Field strength was measured in accordance with FCC Part 15 (2007) & ANSI C 63.4 (2003). The test setup was made according to FCC Part 15 (2007) & 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	2009. 1. 24
Spectrum Analyzer	R3261C	ADVANTEST	61720116	2008. 4. 20
LogBicon Antenna	VULB 9160	Schwarzbeck	3142	2008. 5. 07
Amplifier	8447F	HP	2805A02972	2008. 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(3m)
Temperature (°C) : 4 °C
Humidity (%) : 76 %

5.3 Test data

Test Date : 3-Mar-08 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 (dB)
30.09	18.10	V	1.0	11.12	0.2	40.0	29.42	-10.58
66.80	22.10	V	1.0	10.40	0.9	40.0	33.40	-6.60
112.97	20.10	V	1.0	10.53	1.3	43.5	31.96	-11.54
155.09	9.90	V	1.0	12.85	1.7	43.5	24.45	-19.05
201.80	15.00	H	1.7	9.68	2.2	43.5	26.88	-16.62
219.70	17.40	V	1.0	10.36	2.3	46.0	30.06	-15.94
250.01	24.80	H	1.1	11.52	2.5	46.0	38.82	-7.18
365.07	19.40	V	1.7	14.56	3.5	46.0	37.41	-8.59
400.03	21.60	H	1.0	15.31	3.7	46.0	40.61	-5.39
440.04	20.10	H	1.0	16.41	4.0	46.0	40.51	-5.49
480.07	21.70	H	1.0	16.98	4.1	46.0	42.78	-3.22
800.87	2.20	H	1.0	22.16	6.2	46.0	30.57	-15.43
900.38	6.70	H	1.0	23.22	6.5	46.0	36.42	-9.58

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 and video bandwidth of spectrum analyzer is 1MHz and 10Hz for Average peak 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) & ANSI C 63.4 (2003) The test setup was made according to FCC Part 15 (2007) & ANSI C 63.4 (2003) in a shielded Room. 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	Schwarzbeck	838979/010	2009. 2. 29
LISN	NNLA8120A	Schwarzbeck	8120161	2009. 2. 29
TEST Receiver	ESPI7	Rohde & Schwarz	100185	2008. 8. 27
Pulse Limiter	ESH3Z2	Rohde & Schwarz	NONE	-

6.2 Environmental Condition

Test Place : Shielded Room
Temperature (°C) : 20 °C
Humidity (%) : 36 %

6.3 Test data

Test Date : 3-Mar-08

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	0.15	0.8	H	66.00	50.56	51.46	56.00	36.61	37.51
0.19	0.17	0.8	H	63.86	37.38	38.34	53.86	30.41	31.37
0.20	0.17	0.8	H	63.65	44.90	45.86	53.65	35.14	36.10
0.25	0.19	0.8	H	61.79	37.87	38.90	51.79	28.75	29.78
0.30	0.21	0.9	H	60.27	32.07	33.16	50.27	26.81	27.90
0.45	0.20	0.8	N	56.91	34.24	35.25	46.91	32.01	33.02
0.55	0.20	0.8	N	56.00	30.37	31.36	46.00	27.30	28.29
0.60	0.20	0.8	N	56.00	27.82	28.81	46.00	24.17	25.16
1.25	0.19	0.8	H	56.00	28.61	29.60	46.00	21.60	22.59
1.84	0.22	0.8	H	56.00	28.52	29.57	46.00	21.20	22.25
1.89	0.22	0.8	H	56.00	28.47	29.53	46.00	21.08	22.14
2.24	0.24	0.8	H	56.00	29.06	30.15	46.00	21.26	22.35
5.98	0.40	1.0	N	60.00	24.27	25.70	50.00	17.50	18.93
19.73	0.83	1.5	N	60.00	25.65	27.96	50.00	21.02	23.33
22.17	0.87	1.7	N	60.00	25.35	27.95	50.00	19.17	21.77
26.11	0.93	2.2	N	60.00	33.01	36.13	50.00	23.05	26.17
26.14	0.93	2.2	H	60.00	25.91	29.03	50.00	19.08	22.20
29.60	0.98	2.6	N	60.00	35.25	38.87	50.00	30.93	34.55
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]

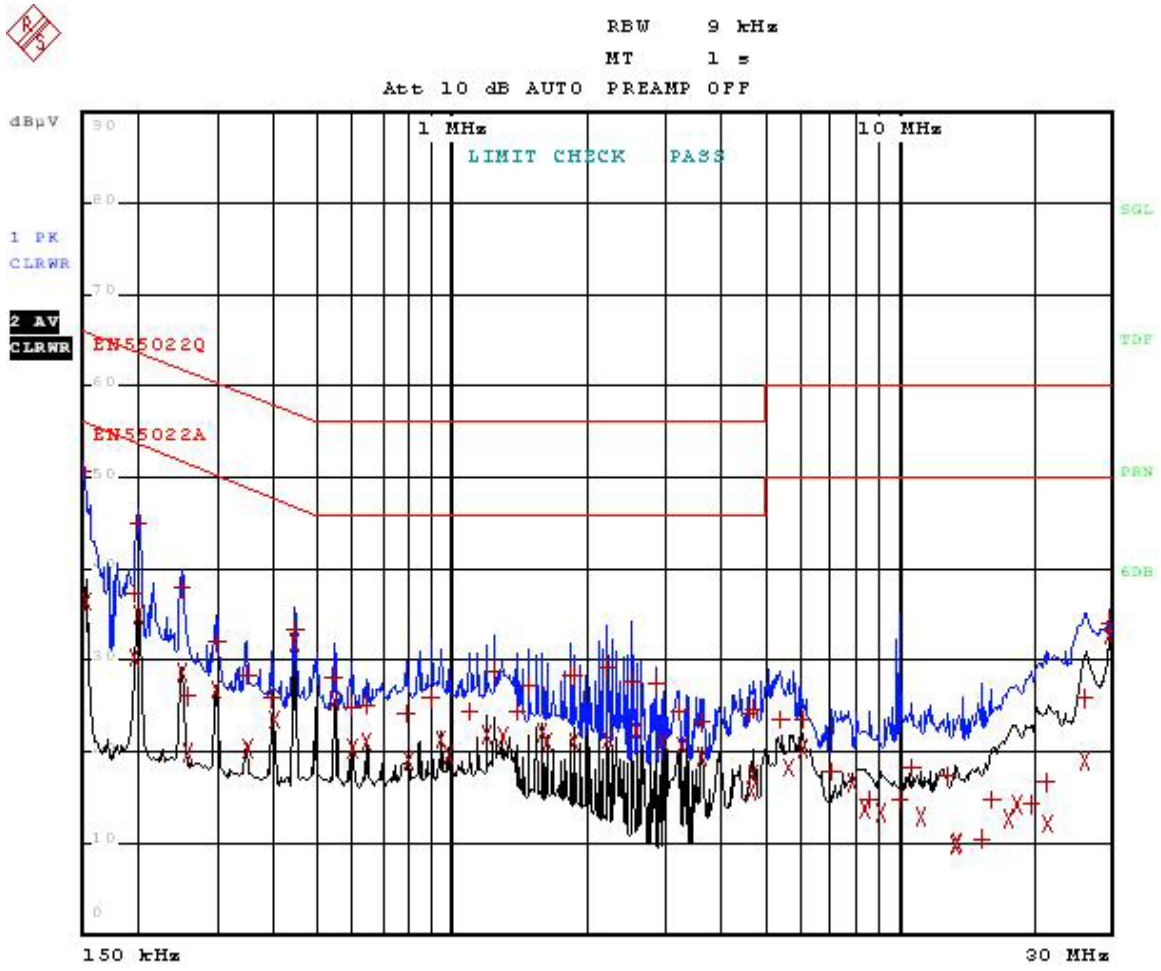
8.1 Photographs of EUT

[Front]

[Rear]

Appendix 1. Spectral diagram

*HOT



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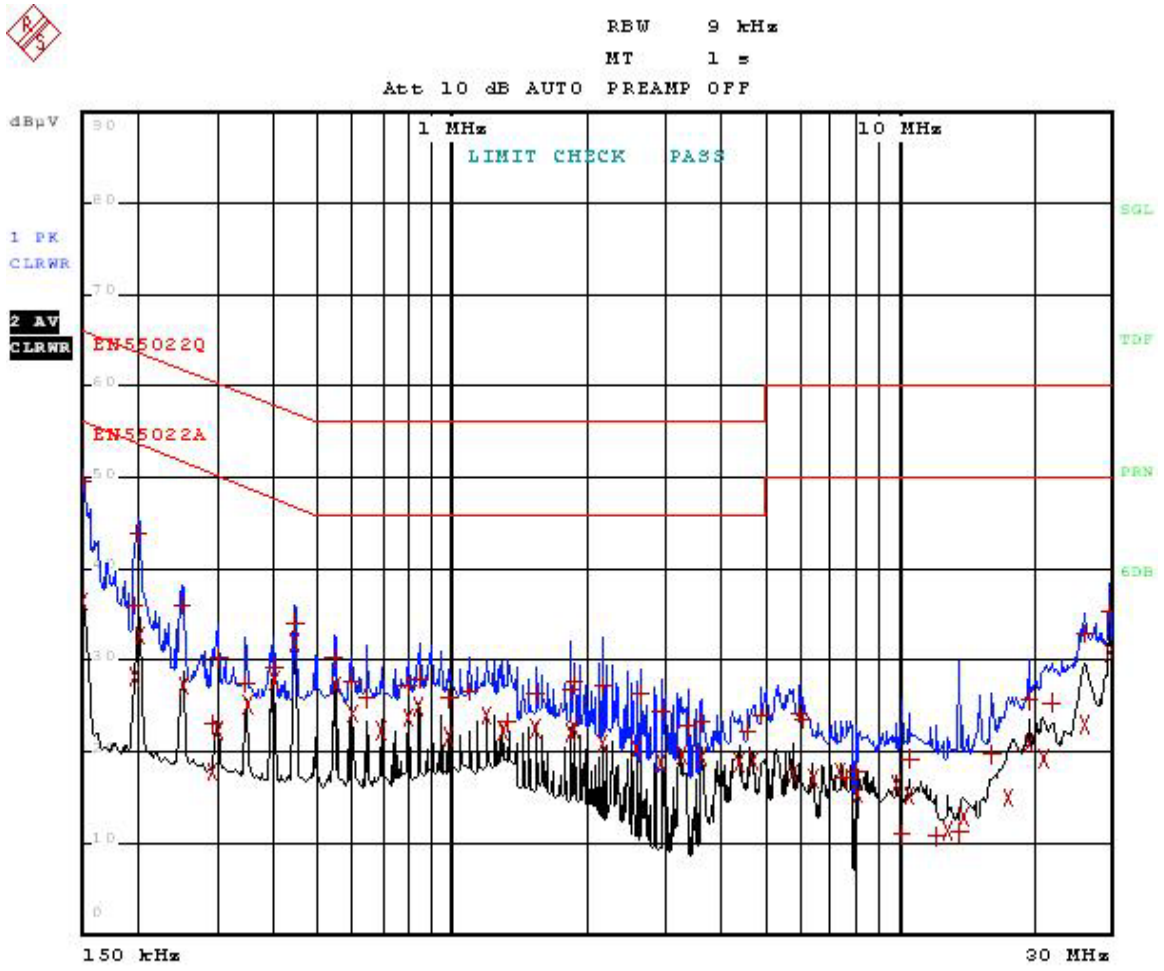
*NEUTRAL



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