Test Report for FCC

FCC ID:TKWDSMOC

Report Number		ESTF151007-004		
Applicant	Company name	Suprema Inc.		
	Address	16F Parkview Office Tower, Jeongja-dong, Bundang-gu, Seongnam, Gyeonggi, 463-863 Korea		
	Telephone	82-31-710-2443		
Product	Product name	D-STATION		
	Model No.	DSM-OC	Manufacturer	Suprema Inc.
	Serial No.	NONE	Country of origin	KOREA
Test date	2010-06-28		Date of issue	20-Jul-10
Testing location	ESTECH. Co., Ltd. 97-1 Hoiuk-Ri Majang-Myon, Icheon-city, KyungKi-Do, Korea			
Standard	FCC PART 15 2008 , 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

Product Name : D-STATION
Model Number : DSM-OC
Serial Number : NONE
Manufacturer : Suprema Inc.
Country of origin : KOREA
Rating : Adapter Input : (100 ~ 240)Va.c. , 1.0 A ,(50 ~ 60) Hz
EUT input : 12 Vd.c. , 2.5 A
Receipt Date : 31-May-10
X-tal lists : 8 MHz,12 MHz,14.7456 MHz,24 MHz,25 MHz,27 MHz, 48 MHz

2.2 General descriptions of EUT

Sensor	Optical fingerprint sensor x 2 Face recognition camera	
Matching Speed (1:N)	1:10,000 < 1 sec	
Card Options	13.56 MHz ISO 14443 A/B	
Capacity	Template Capacity	400,000 (1:1) 20,000 (1:N)
	Max. User	200,000
	Log Capacity	1,000,000
Interfaces	Communication Interfaces	Wireless LAN TCP/IP RS485, RS232 USB (Slave)
	Wiegand	IN & OUT
	TTL I/O	4 inputs
	Built-in Relay	2
	Memory Slot	USB host, SD card
Hardware	CPU	667MHz RISC x 1 400MHz DSP x 2
	Memory	1GB flash + 128MB RAM (with SD card slot)
	LCD Display	5.0" WVGA touch screen
	LED Indicator	Multi-color x 2
	Sound Indication	16-bit Hi-Fi sound
	Voice Instruction	16-bit Hi-Fi sound
	Operating Temperature	-20'C ~ 50'C
	Tamper	Accelerometer, switch
	Operating Voltage	12V DC
	Dimensions	148mm(W) x 204mm(H) x 48mm(D)

3. Test Standards

Test Standard : FCC PART 15 (2008)

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

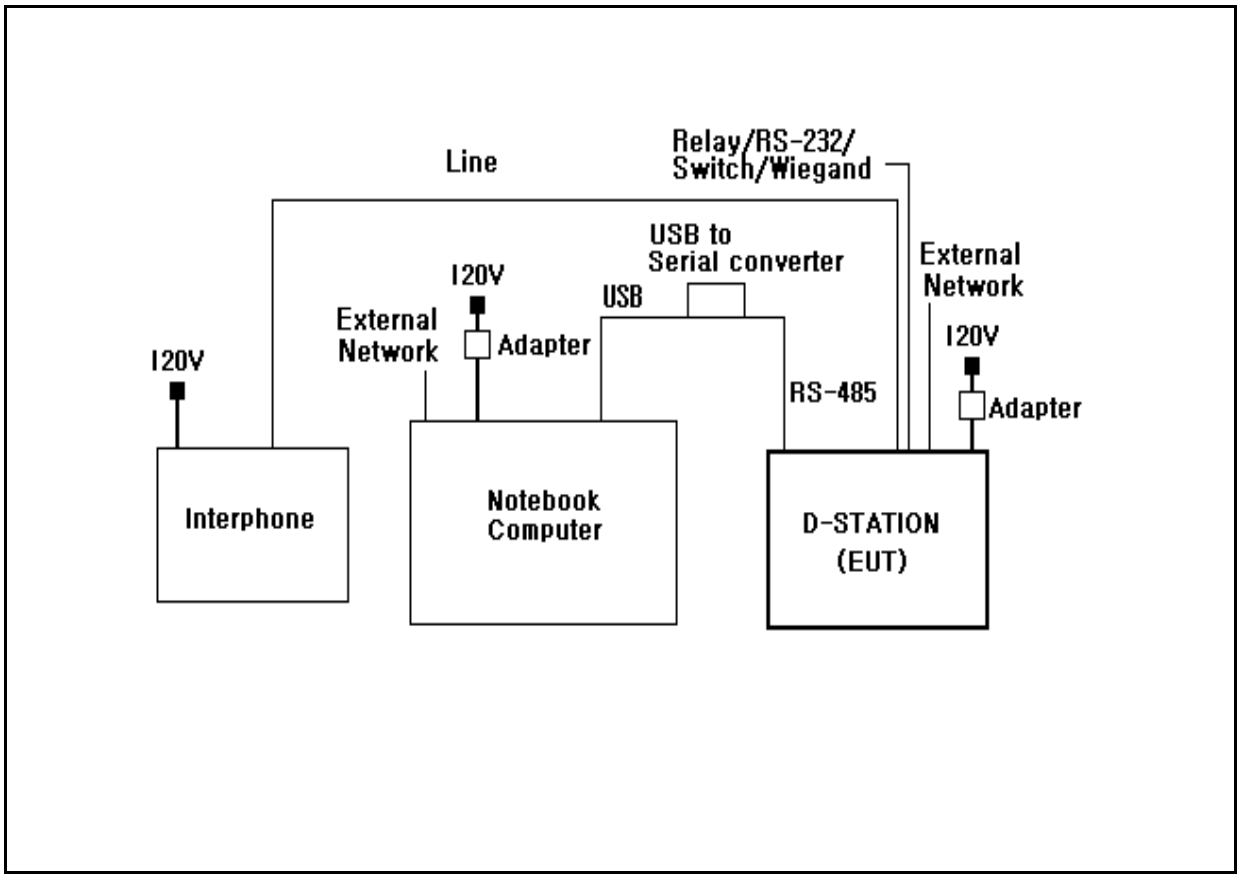
4. Measurement Condition

Test mode: ADAPTER MODE

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. Connect D-station to note PC and connect Lan port to Ethernet Switch
4. D-station and check action availability from Note PC.
5. Receiving packet data between external network.

4.2 Configuration and Peripherals



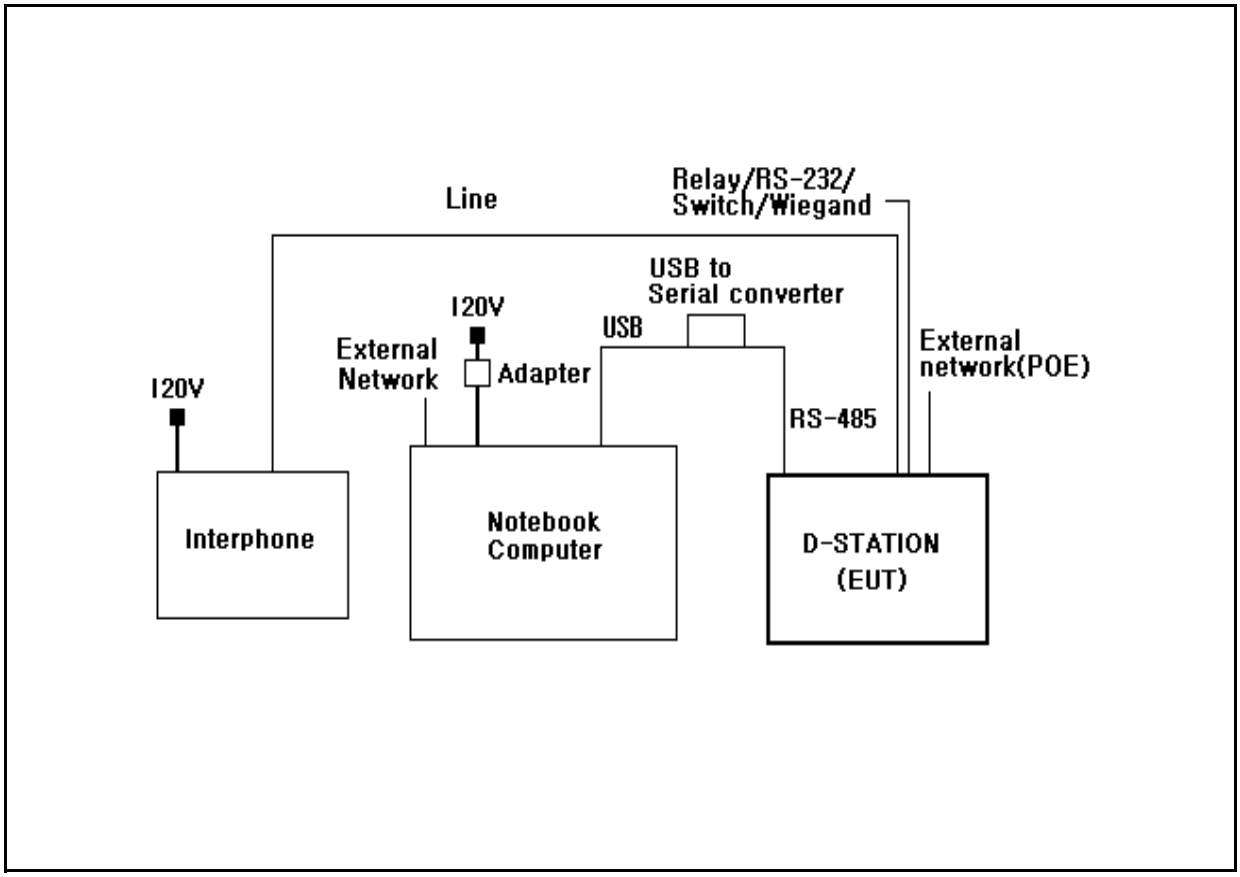
4. Measurement Condition

Test mode: POE MODE

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. Connect D-station to note PC and connect Lan port to POE Ethernet Switch
4. D-station and check action availability from Note PC.
5. Receiving packet data between external network.

4.2 Configuration and Peripherals



4.3 EUT and Support equipment (ADAPTER MODE)

Equipment Name	Model Name	S/N	Manufacturer	Remark (FCC ID)
D-STATION	DSM-OC	NONE	Suprema Inc.	EUT
Adapter	JPW128KA1200N04	NONE	Bridge Power Corp.	
Notebook Computer	dv5-1206TX	CNF9100JMW	Hewlett-Packard Company	
Adapter	PPP012L-E	0105624202	Suzhou Lishin Electronic Co.,Ltd	
Interphone	NONE	NONE	COMMAX	
USB to Serial Converter	NONE	NONE	NONE	

4.4 Cable Connecting

Start Equipment		End Equipment		Cable Standard		Remark
Name	I/O port	Name	I/O port	Length	Shielded	
D-STATION	POWER	Adapter	-	2	No	
D-STATION	LAN	External Network	LAN	20	No	
D-STATION	Relay	LED switch	Relay	3	No	
D-STATION	Line	Interphone	Line	3	No	
D-STATION	RS-485	USB to Serial Converter	RS-485	0.1	No	
D-STATION	RS-232	-	-	3	No	Termination
D-STATION	WIEGAND	-	-	3	No	Termination
D-STATION	Switch	-	-	3	No	Termination
Notebook Computer	USB	USB to Serial Converter	USB	3	Yes	
Notebook Computer	LAN	External Network	LAN	20	No	
Notebook Computer	POWER	Adapter	-	2	No	

4.3 EUT and Support equipment (POE MODE)

Equipment Name	Model Name	S/N	Manufacturer	Remark (FCC ID)
D-STATION	DSM-OC	NONE	Suprema Inc.	EUT
Notebook Computer	dv5-1206TX	CNF9100JMW	Hewlett-Packard Company	
Adapter	PPP012L-E	0105624202	Suzhou Lishin Electronic Co.,Ltd	
Interphone	NONE	NONE	COMMAX	
USB to Serial Converter	NONE	NONE	NONE	

4.4 Cable Connecting

Start Equipment		End Equipment		Cable Standard		Remark
Name	I/O port	Name	I/O port	Length	Shielded	
D-STATION	LAN	External Network	LAN	20	No	
D-STATION	Relay	LED switch	Relay	3	No	
D-STATION	Line	Interphone	Line	3	No	
D-STATION	RS-485	USB to Serial Converter	RS-485	0.1	No	
D-STATION	RS-232	-	-	3	No	Termination
D-STATION	WIEGAND	-	-	3	No	Termination
D-STATION	Switch	-	-	3	No	Termination
Notebook Computer	USB	USB to Serial Converter	USB	3	Yes	
Notebook Computer	LAN	External Network	LAN	20	No	
Notebook Computer	POWER	Adapter	-	2	No	

5. Measurement of radiated disturbance

Above 30 MHz Electric Field strength was measured in accordance with FCC Part 15 (2008) & ANSI C 63.4 (2003). The test setup was made according to FCC Part 15 (2008) & ANSI C 63.4 (2003) on an open test site, which allows a 3 m distance measurement. The EUT was placed in the center of wooden turntable. The height of this table was 0.8 m. 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
Receiver	ESVS10	Rohde & Schwarz	838562/002	2011. 2. 1
Spectrum Analyzer	R3273	ADVANTEST	110600592	2011. 2. 1
Logbicon Antenna	VULB9160	Schwarzbeck	3142	2011.5.13
Horn Antenna	BBHA 9120 D	Schwarzbeck	352	2010. 9. 17
Amplifier	8447F	HP	2805A02972	2011. 2. 1
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(3 m)

ADAPTER MODE

Temperature (°C) : 20 ℃

Humidity (% R.H.) : 53 % R.H.

POE MODE

Temperature (°C) : 20 ℃

Humidity (% R.H.) : 53 % R.H.

5.3 Test data (ADAPTER MODE)

Test Date : 28-Jun-10 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)
36.75	15.20	H	4.0	10.85	0.9	40.0	26.99	-13.02
133.02	12.10	H	3.1	11.87	1.9	43.5	25.83	-17.67
144.01	18.00	H	3.5	12.50	2.0	43.5	32.50	-11.00
166.25	12.00	V	1.0	12.46	2.1	43.5	26.61	-16.89
209.75	14.90	H	2.1	12.15	2.4	43.5	29.47	-14.03
222.96	11.90	V	1.0	10.47	2.6	46.0	24.92	-21.08
230.65	18.50	H	1.6	11.01	2.6	46.0	32.12	-13.88
250.00	21.40	H	1.5	11.39	2.8	46.0	35.58	-10.42
276.81	18.20	V	1.0	12.81	3.1	46.0	34.07	-11.93
350.00	16.50	H	1.4	14.67	3.6	46.0	34.81	-11.19
414.91	13.00	V	1.0	16.09	4.1	46.0	33.24	-12.76
500.00	11.30	H	1.1	17.81	4.8	46.0	33.86	-12.14
649.99	7.50	H	1.1	20.69	6.0	46.0	34.23	-11.77

Remark

H : Horizontal, V : Vertical

*There is no detected Radiated Emission above 1GHz
*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 detection at frequency above 1GHz.
*To meet the radiated emission added a ferrite core(Ring type:Steward-28B1417-200) at all cable harness of the EUT connector.

5.3 Test data (POE MODE)

Test Date : 28-Jun-10 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)
36.90	15.20	V	1.0	10.87	0.9	40.0	27.01	-12.99
133.02	12.30	H	3.0	11.87	1.9	43.5	26.03	-17.47
144.02	18.10	H	3.6	12.50	2.0	43.5	32.60	-10.90
166.27	12.10	V	1.0	12.46	2.1	43.5	26.71	-16.79
209.77	14.80	H	2.0	12.16	2.4	43.5	29.38	-14.12
222.92	11.60	V	1.0	10.47	2.6	46.0	24.62	-21.38
230.64	18.50	H	1.6	11.01	2.6	46.0	32.12	-13.88
250.02	22.90	H	1.5	11.39	2.8	46.0	37.08	-8.92
276.84	18.20	V	1.0	12.81	3.1	46.0	34.07	-11.93
349.99	17.90	V	1.0	14.66	3.6	46.0	36.21	-9.79
414.96	13.60	V	1.0	16.09	4.1	46.0	33.84	-12.16
500.01	11.10	H	1.1	17.81	4.8	46.0	33.66	-12.34
649.98	7.40	H	1.1	20.69	6.0	46.0	34.13	-11.87

Remark

H : Horizontal, V : Vertical

*There is no detected Radiated Emission above 1GHz
*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 detection at frequency above 1GHz.
*To meet the radiated emission added a ferrite core(Ring type:Steward-28B1417-200) at all cable harness of the EUT connector.

6. Measurement of conducted disturbance

The continuous disturbance voltage of AC Mains in the frequency from 0.15 MHz to 30 MHz was measured in accordance to FCC Part 15 (2008) & ANSI C 63.4 (2003) The test setup was made according to FCC Part 15 (2008) & ANSI C 63.4 (2003) in a shielded Room. The EUT was placed on a non-conductive table at least 0.8 m above the ground plan. A grounded vertical reference plane was positioned in a distance of 0.4 m from the EUT. The distance from the EUT to other metal surfaces was at least 0.8 m. 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 1.0 m. 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	2011. 2. 1
LISN	NNLA8120A	Schwarzbeck	8120161	2011. 2. 1
TEST Receiver	ESPI7	Rohde & Schwarz	100185	2011. 2. 1
Pulse Limiter	ESH3Z2	Rohde & Schwarz	NONE	2011. 2. 1

6.2 Environmental Condition

Test Place : Shielded Room

Temperature (°C) : 21 ℃

Humidity (% R.H.) : 46 % R.H.

6.3 Test data (ADAPTER MODE)

Test Date : 28-Jun-10

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)
0.16	0.10	0.4	N	65.52	33.08	33.56	55.52	26.84	27.32
0.19	0.10	0.4	N	63.86	37.17	37.66	53.86	30.19	30.68
0.20	0.10	0.4	N	63.65	42.75	43.24	53.65	32.39	32.88
0.27	0.11	0.4	N	61.27	35.60	36.10	51.27	27.32	27.82
0.31	0.11	0.4	H	59.97	37.22	37.73	49.97	28.28	28.79
0.33	0.11	0.4	N	59.35	32.28	32.80	49.35	25.05	25.57
0.62	0.12	0.5	H	56.00	41.57	42.15	46.00	30.79	31.37
0.74	0.12	0.5	H	56.00	39.45	40.04	46.00	30.49	31.08
0.93	0.12	0.5	H	56.00	41.90	42.51	46.00	29.25	29.86
2.24	0.19	0.6	N	56.00	42.35	43.10	46.00	37.16	37.91
3.51	0.25	0.7	N	56.00	37.58	38.49	46.00	31.76	32.67
4.96	0.31	0.8	N	56.00	37.54	38.63	46.00	35.42	36.51
6.09	0.34	0.8	N	60.00	42.29	43.45	50.00	32.51	33.67
6.87	0.37	0.8	H	60.00	44.74	45.95	50.00	41.83	43.04
6.95	0.37	0.8	N	60.00	45.79	47.01	50.00	43.15	44.37
7.01	0.37	0.9	H	60.00	45.14	46.36	50.00	37.49	38.71
7.08	0.37	0.9	N	60.00	45.39	46.61	50.00	41.04	42.26
24.00	0.78	1.4	N	60.00	43.22	40.17	50.00	42.82	44.95
Remark	H : Hot Line, N : Neutral Line								

7. Photographs of test setup

Test mode: ADAPTER MODE

7.1 Setup for Radiated Test

[Front]

[Rear]

7. Photographs of test setup

Test mode: POE MODE

7.1 Setup for Radiated Test

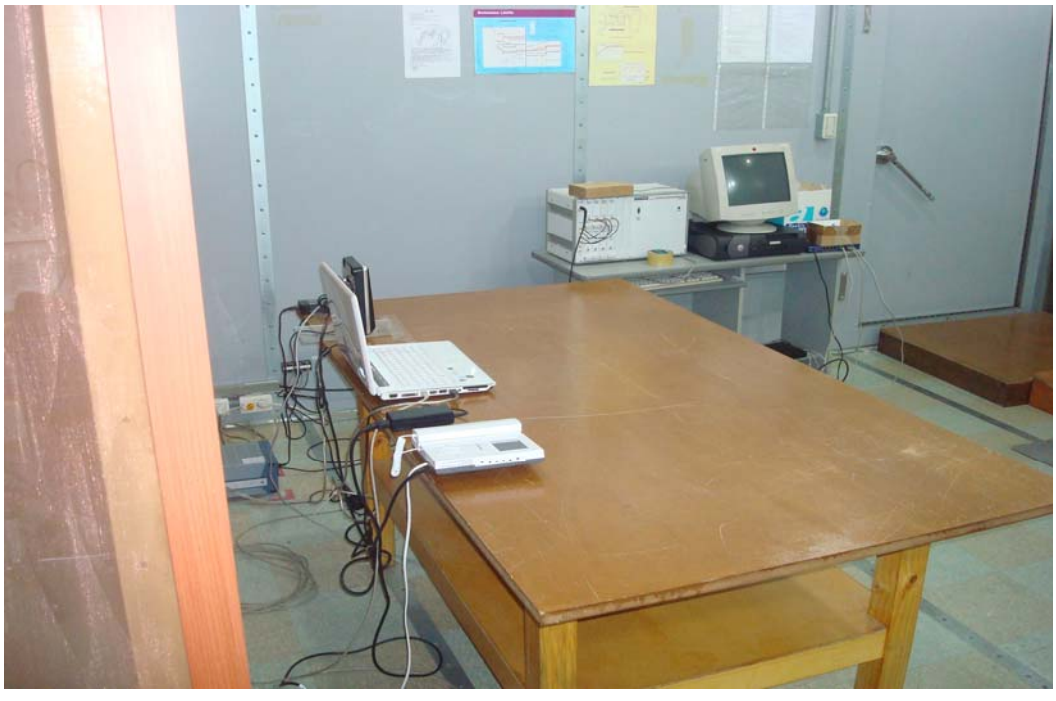
[Front]

[Rear]

7.2 Setup for Conducted Test : 0.15 MHz ~ 30 MHz (ADAPTER MODE)

[Front]

[Rear]



8. Photographs of EUT

[Front]

[Rear]

8.1 Photographs of EUT

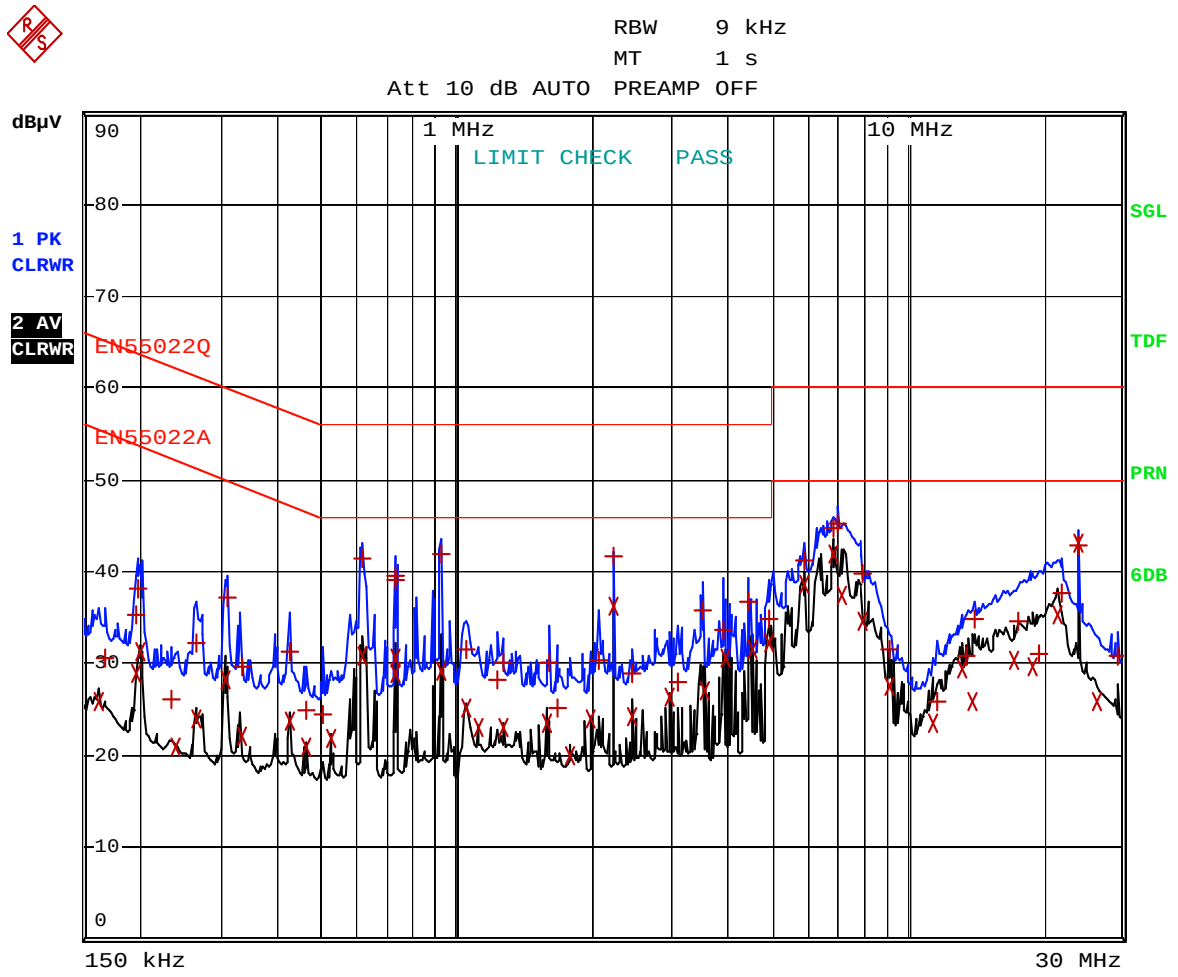
[Front]

[Label]

Appendix 2. Spectral diagram

ADAPTER MODE

*HOT



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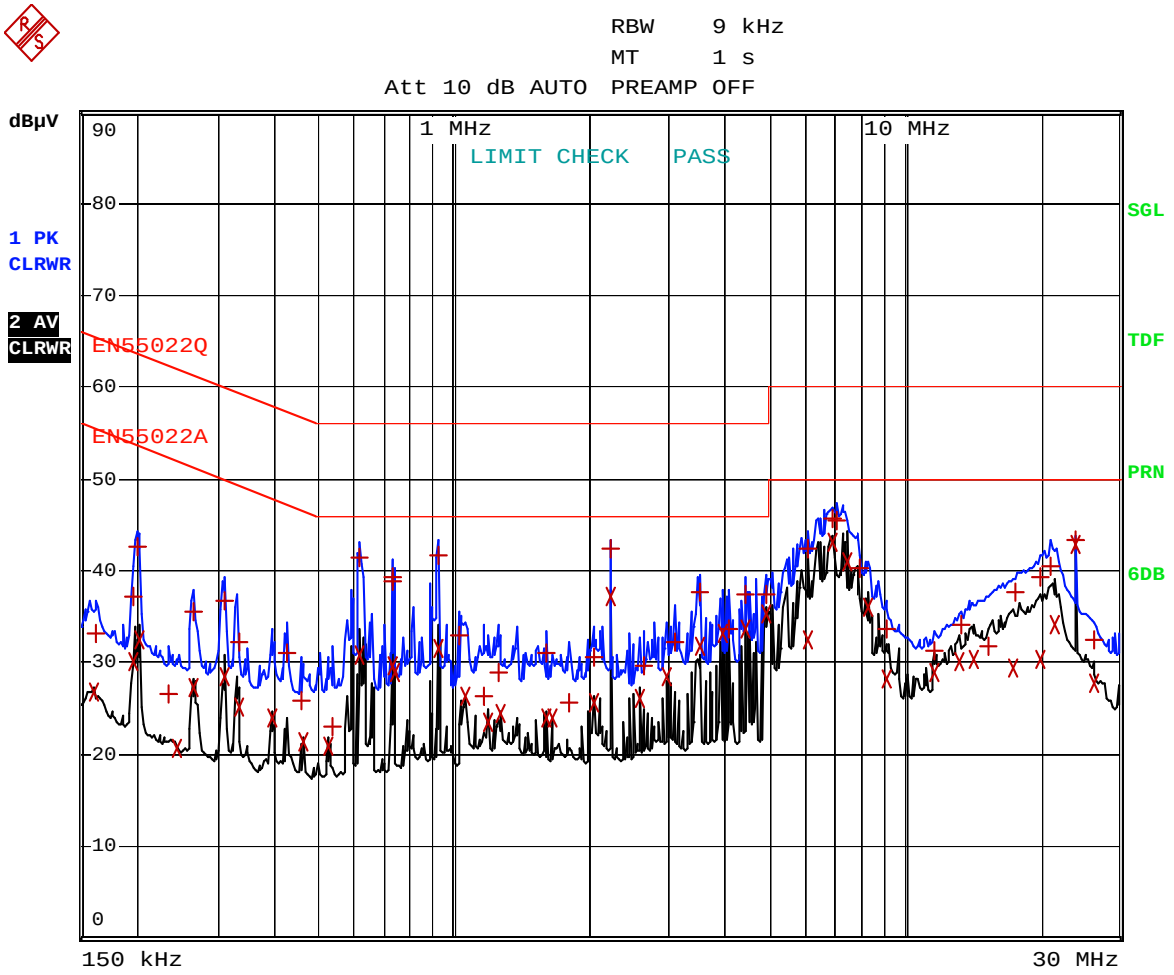
*NEUTRAL



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