ESTECH Co., Ltd.
Rm 1015, World Venture Center II,
426-5 Gasan-dong, Guncheon-gu,
Seoul, 158-803, Korea

Electromagnetic Interference Test Report

Compliance Test Report for FCC

Report Number		ESTF150501-001		
Applicant	Company name	Corecess Inc.		
	Address	500-2, Sangdaewon-dong, Jungwon-ku Sungnam-city Kyungki-do Korea, 462-120		
	Telephone	82-31-739-6743		
Product	Product name	SHDSL MODEM		
	Model No.	Corecess 3311N	Manufacturer	Corecess Inc.
	Serial No.	400029230000002	Country of origin	KOREA
Test date	2005-01-06 ~ 2005-01-12		Date of issue	2004-01-12
Testing location	ESTECH. Co., Ltd. 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 : 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 : SHDSL MODEM
Model Number : Corecess 3311N
Serial Number : 400029230000002
Manufacturer : Corecess Inc.
Country of origin : KOREA
Rating : INPUT:AC120V / 60Hz OUTPUT:DC5V/2A
Receipt Date : 2005-01-06

2.2 General descriptions of EUT

Description	Specification
Interfaces	Ethernet Interface
	• 10/100Base-TX • Distance: Up to 100m • Connector: RJ-45
	SHDSL Line Interface
	• ITU-T G.991.2 (G.SHDSL) • Line Code: TC-PAM • Data Transmission Rate - Corecess 3311N: up to 2.3 Mbps in 2-wire mode - Corecess 3312N: up to 4.6 Mbps in 4-wire mode • Distance: 3Km, up to 8Km @ 26AWG • Connector: RJ-11
Connectors	• 1 RJ-11 connectors (LINE) • 1 RJ-45 connector (LAN) • 1 Power socket (DC IN)
LEDs	• POWER: Indicates DC power status • LINK: Indicates the connection status with SHDSL network • LAN: Indicates the connection status with Ethernet network • DATA: Indicates data transmit/receive status via SHDSL network
Environmental Conditions	• Operating Temperature: 32 to 122°F (0 to 50°C) • Storage Temperature: -40 to 158°F (-40 to 70°C) • Humidity: 5 to 90% (non-condensing)
Physical Conditions	• Dimension: 140(W) x 150(D) x 30(H) mm • Weight: 250 g
Power Requirements	• Power Input: 100 to 240 VAC (auto-ranging), 50-60Hz, DC 5V/2A • Power Consumption: Max. 4 Watt

Using Freq. :48Mhz/34.56Mhz/25Mhz

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)

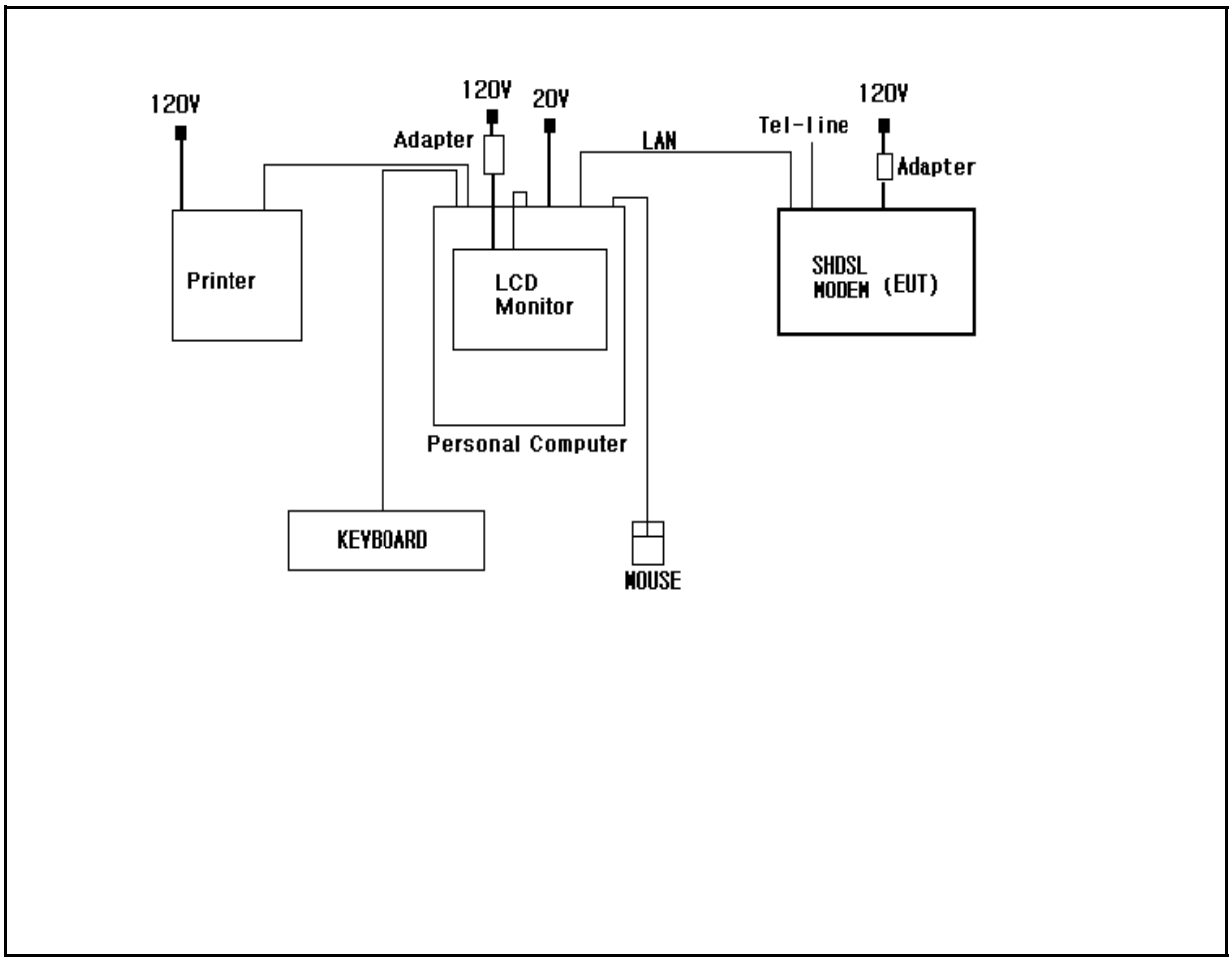
This standard sets forth uniform methods of measurement of radio-frequency (RF) signals and noise emitted from both unintentional and intentional emitters of RF energy in the frequency range 9 kHz to 40 GHz. Methods for the measurement of radiated and AC power-line conducted radio noise are covered and 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
* Using ping command between external Network, Transmission and Receiving test at between external Network

4.2 Configuration and Peripherals



4.3 EUT and Support equipment

Equipment Name	Model Name	S/N	Manufacturer	Remark (FCC ID)
SHDSL MODEM	Corecess 3311N	400029230000002	Corecess Inc.	EUT
Adapter	VE10B-050	NONE	Powertron Technology Co., Ltd.	-
PERSONAL COMPUTER	HP Pavilion m000	KRF35200YM	Trigem Inc.	-
LCD Monitor	KD17NS	N433H4KX300852K	Samsung Electronics Co., Ltd.	-
Adapter	AP04914-UV	0401011616AC	Anam Instruments Co., Ltd.	-
PRINTER	LQ-570H+	B1021095782	Trigem Computer Inc.	-
MOUSE	M-S48a	HCA12618097	Logitech	
KEYBOARD	SEM-DT35	32006557	Samsung Electro-mechanics Co., Ltd.	-

4.4 Cable Connecting

Start Equipment		End Equipment		Cable Standard		Remark
Name	I/O port	Name	I/O port	Length	Shielded	
SHDSL MODEM	10 / 100 Base TX	Personal Computer	10 / 100 Base TX	2	N	-
SHDSL MODEM	Tel-Line	External Network	Tel-Line	25	N	-
SHDSL MODEM	Power	Adapter	-	2	N	-
PC	Video	Mointor	Video	2	Y	-
PC	PS/2 Mouse	Mouse	PS/2 Mouse	2	N	-
PC	PS/2 Keyboard	Keyboard	PS/2 Keyboard	2	N	-
PC	Parallel	Printer	Parallel	2	Y	-
LCD Monitor	Dc Power	Adapter	-	2	N	-
						-

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
TEST Receive	ESPI7	Rohde & Schwarz	100185	2005. 8. 20
Spectrum Analyzer	R3261B	ADVANTEST	1720302	2005.2.12
LogBicon Antenna	VULB 9160	S/B	3142	2005.7.06
Horn Antenna	BBHA 9120 D	SCHWARZBECK	352	2006.4.06
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) : 14 ℃
Humidity (%) : 45 %

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)
60.01	17.40	V	1.0	12.67	1.2	40.0	31.22	-8.78
79.24	19.70	H	5.6	9.94	1.3	40.0	30.95	-9.05
110.97	14.20	H	1.8	11.09	1.6	43.5	26.89	-16.61
125.02	16.90	V	1.7	12.10	1.7	43.5	30.70	-12.80
168.01	16.70	H	1.8	13.95	2.0	43.5	32.66	-10.84
180.00	22.70	H	1.5	12.44	2.1	43.5	37.19	-6.31
228.00	17.20	H	1.3	10.96	2.3	46.0	30.49	-15.51
375.02	24.70	H	1.0	14.73	3.1	46.0	42.48	-3.52
750.00	17.20	H	1.0	21.20	4.4	46.0	42.81	-3.19
34.55	23.60	V	1.0	12.28	0.9	40.0	36.79	-3.21
250.00	21.30	V	1.0	11.92	2.4	46.0	35.59	-10.41
500.00	21.40	H	1.0	17.06	3.6	46.0	42.01	-3.99
575.99	13.20	H	1.0	18.53	3.8	46.0	35.56	-10.44
400.13	15.20	H	1.0	15.32	3.2	46.0	33.67	-12.33
625.00	14.60	V	1.0	19.28	4.0	46.0	37.89	-8.11
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. 12
LISN	NNLA8120A	Schwarzbeck	NONE	2005. 2. 12
TEST Receive	ESPI7	Rohde & Schwarz	100185	2005. 8. 20
Pulse Limiter	ESH3Z2	Rohde & Schwarz	NONE	2005. 6. 15

6.2 Environmental Condition

Test Place : Shield Room
Temperature (°C) : 21 ℃
Humidity (%) : 38 %

6.3 Test data

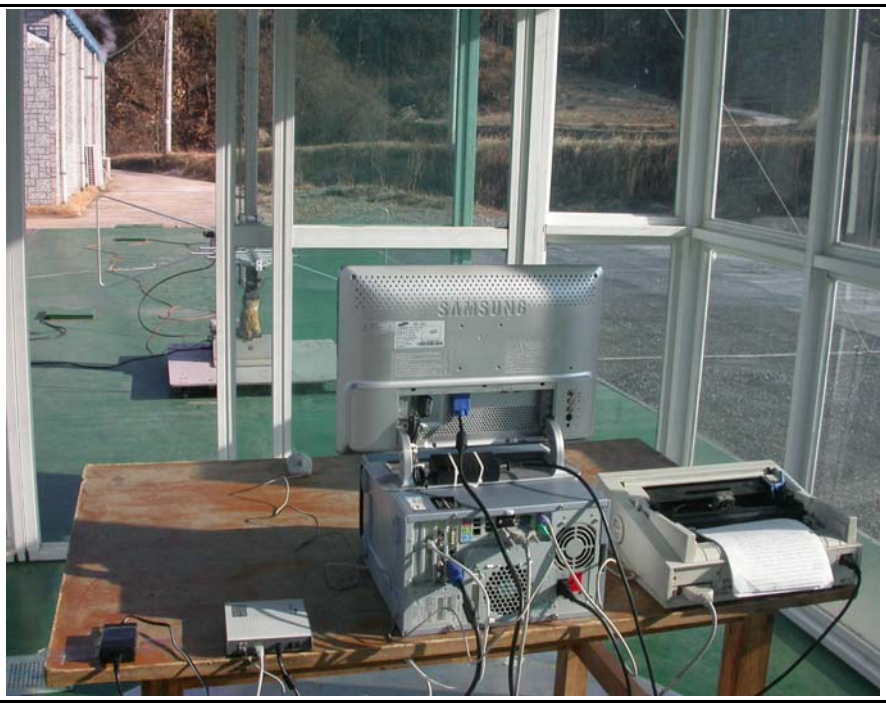
Frequency (MHz)	Correction Factor		Line (H/N)	Quasi-peak Value			Average Value		
	Lisn (dB)	Cable (dB)		Limit (dBμV)	Reading (dBμV)	Result (dBμV)	Limit (dBμV)	Reading (dBμV)	Result (dBμV)
0.150	0.07	0.0	N	66.00	37.26	37.33	56.00		
0.217	0.07	0.0	N	62.93	36.51	36.62	52.93		
0.238	0.07	0.1	N	62.17	27.80	27.93	52.17		
0.260	0.07	0.1	H	61.43	26.42	26.56	51.43		
0.318	0.07	0.1	N	59.76	32.04	32.22	49.76		
0.326	0.07	0.1	H	59.55	28.97	29.15	49.55		
0.427	0.07	0.2	H	57.31	41.05	41.28	47.31	37.38	37.61
0.433	0.07	0.2	N	57.19	41.56	41.80	47.19		
0.532	0.07	0.2	N	56.00	41.48	41.75	46.00	36.07	36.34
0.534	0.07	0.2	H	56.00	41.36	41.63	46.00		
0.539	0.07	0.2	H	56.00	41.96	42.23	46.00		
0.543	0.07	0.2	N	56.00	40.90	41.17	46.00		
0.745	0.09	0.2	N	56.00	41.84	42.13	46.00	34.00	34.29
0.747	0.09	0.2	H	56.00	41.33	41.62	46.00		
0.850	0.09	0.2	N	56.00	41.74	42.03	46.00		
0.867	0.09	0.2	H	56.00	41.76	42.05	46.00		
1.060	0.09	0.2	H	56.00	41.04	41.34	46.00		
5.745	0.23	0.3	N	60.00	50.68	51.25	50.00		
10.258	0.37	0.6	H	60.00	25.52	26.50	50.00	21.55	22.53
10.455	0.38	0.6	N	60.00	27.19	28.19	50.00	23.13	24.13
10.645	0.39	0.6	H	60.00	26.52	27.54	50.00		
18.243	0.67	0.8	N	60.00	26.00	27.47	50.00	20.56	22.03
19.159	0.68	0.8	H	60.00	25.00	26.48	50.00		
23.657	0.79	0.9	H	60.00	32.12	33.78	50.00		
30.000	0.70	0.9	H	60.00	30.32	31.92	50.00	23.83	25.43
Remark	H : Hot Line, N : Neutral Line								

7. Photographs of test setup

7.1 Setup for Radiated Test : 30 ~ 1000 MHz

[Front]

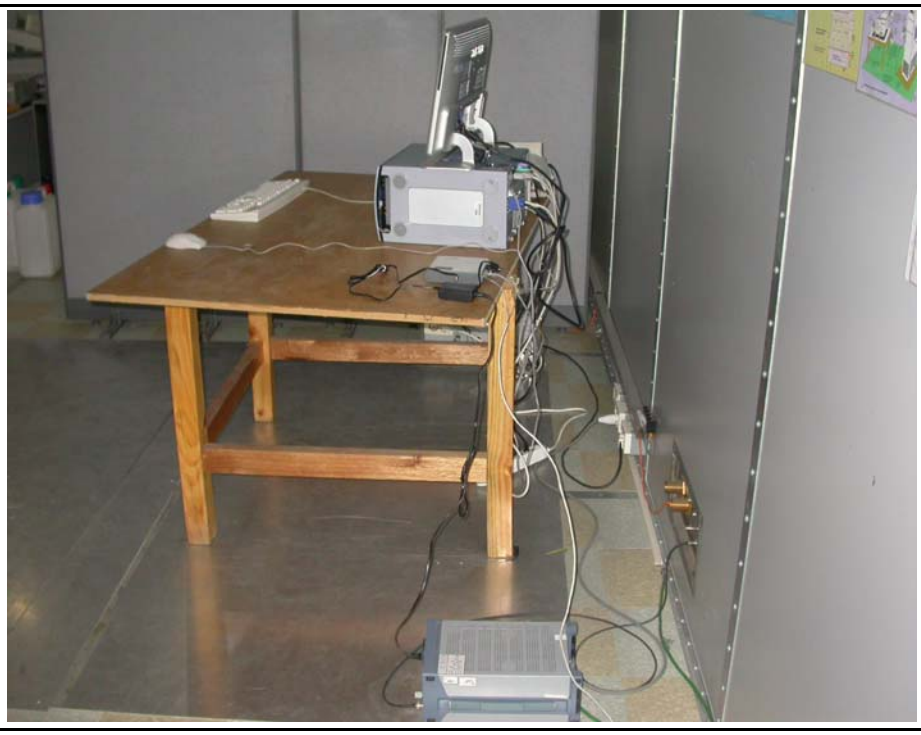
[Rear]



7.2 Setup for Conducted Test : 0.15 ~ 30 MHz

[Front]

[Rear]



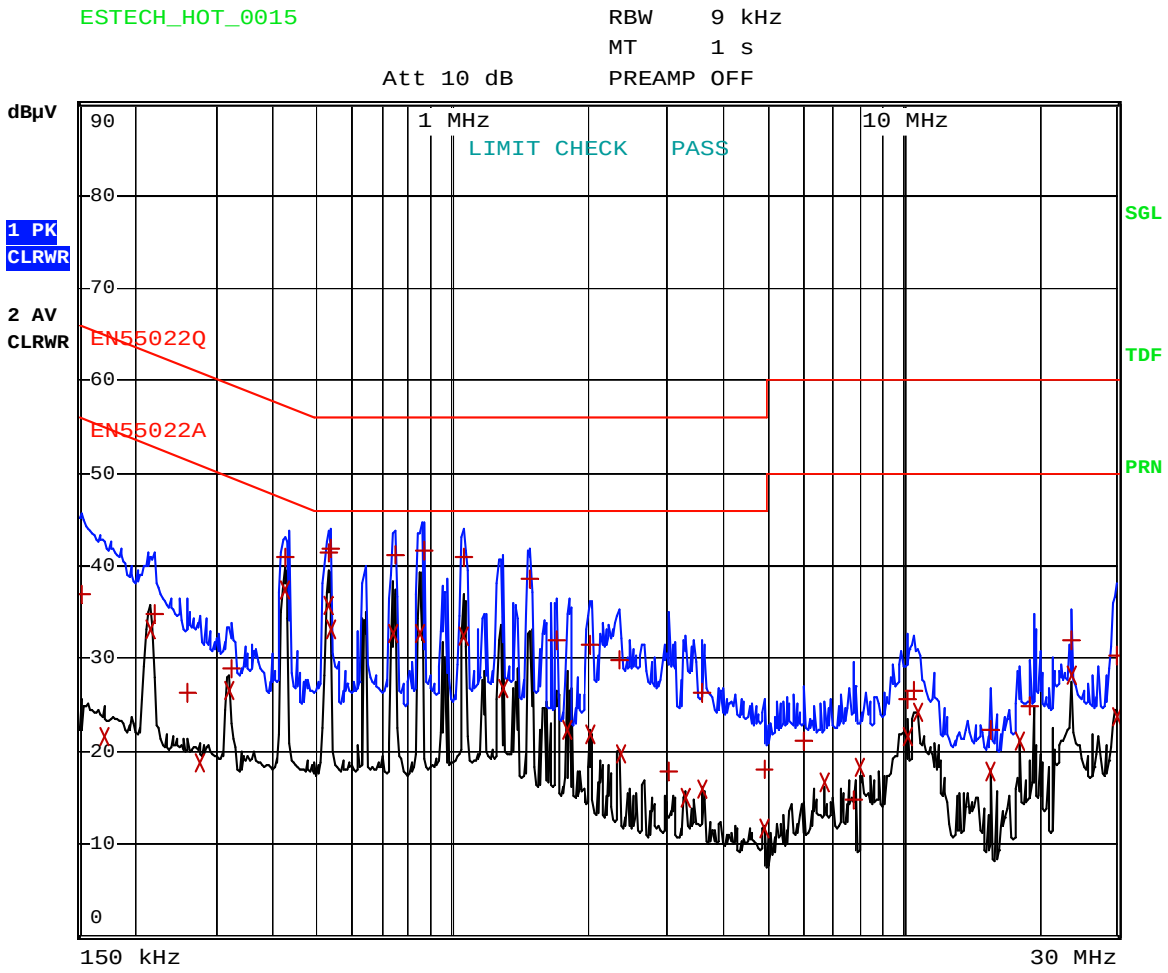
8. Photographs of EUT

[Front]

[Rear]

Appendix 1. Spectral diagram

*HOT



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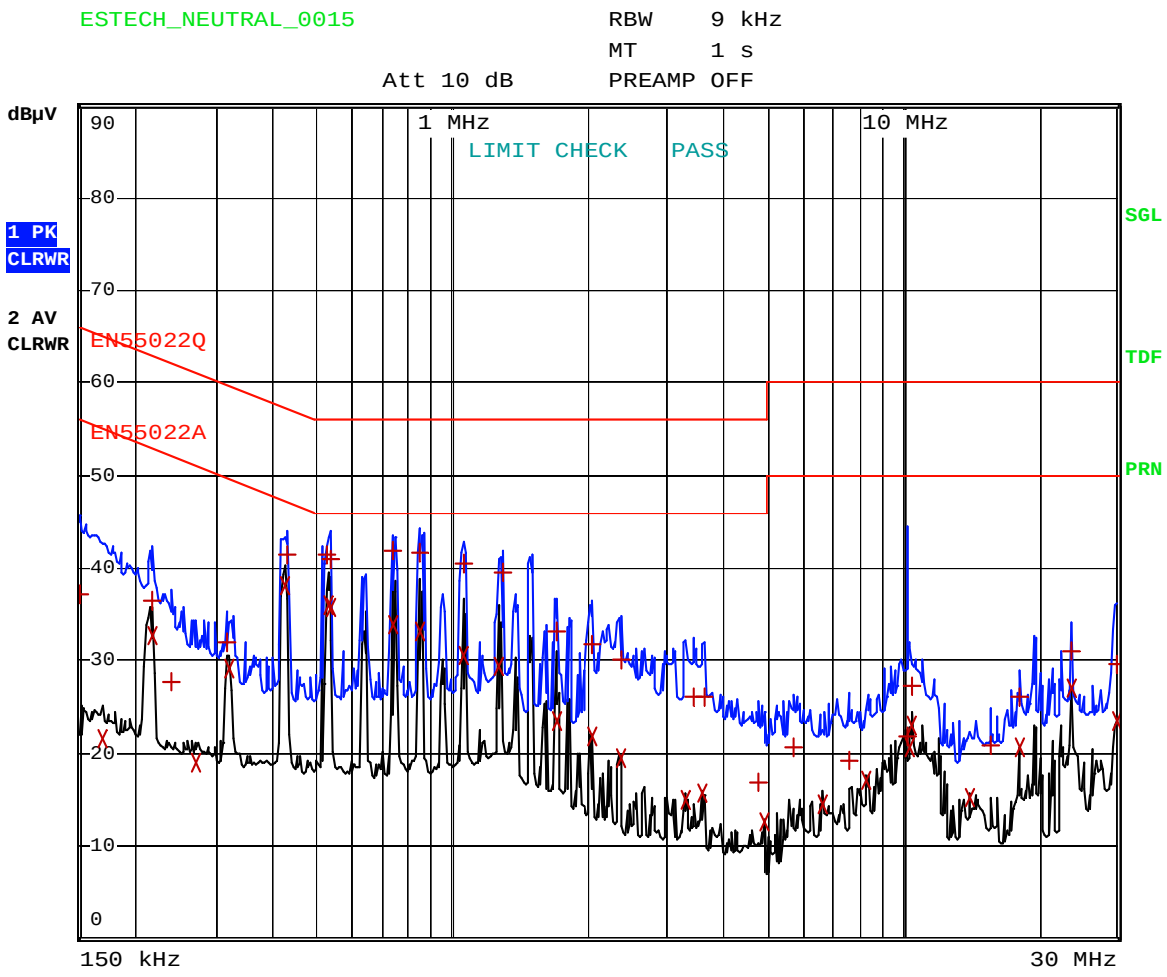

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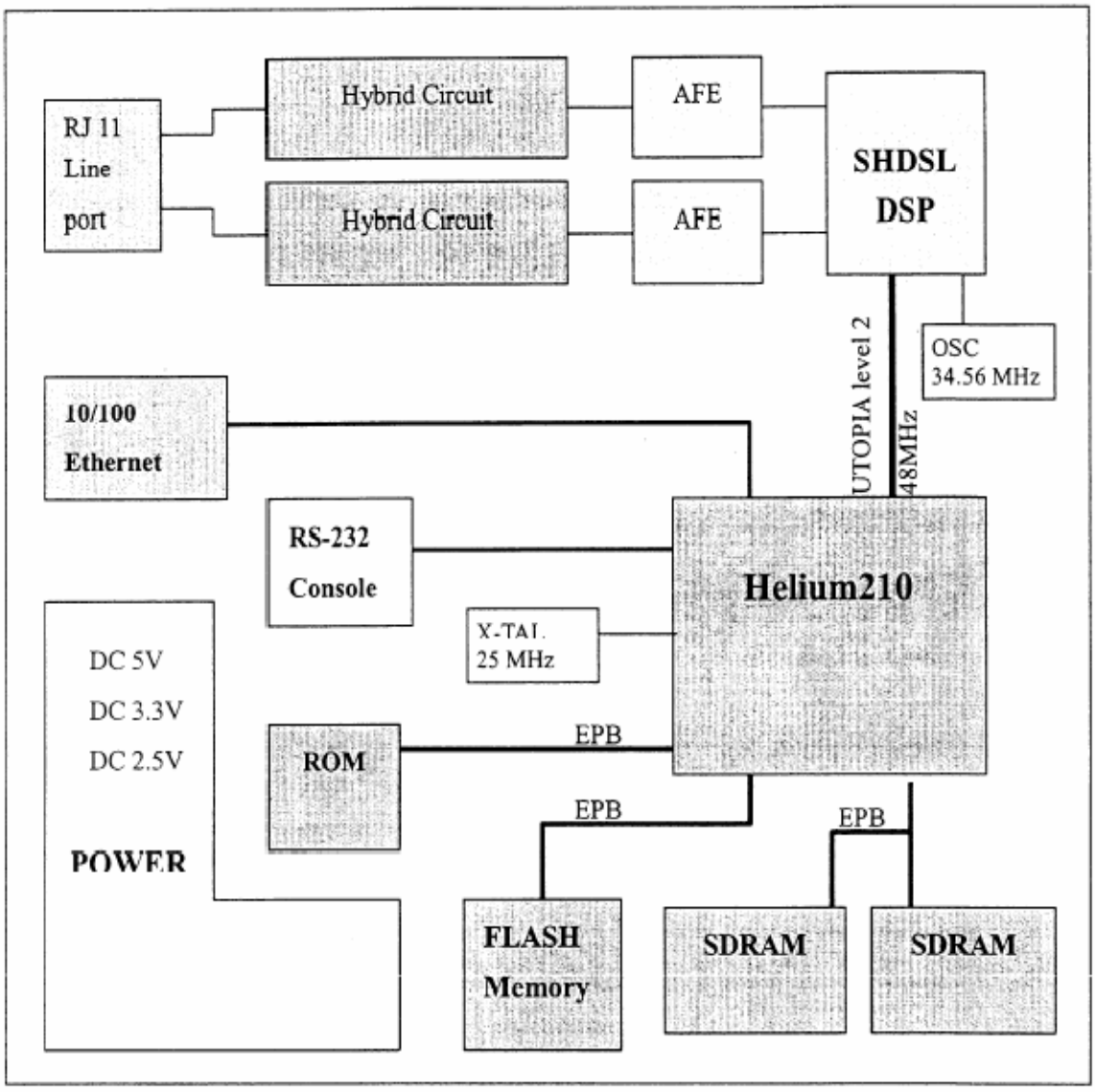
Appendix 2. Phorographs of EUT in side PCB

Appendix 3. Block diagram of EUT



Appendix 4. Circuit Diagram