

**ELECTRONIC TECHNOLOGY SYSTEMS
DR. GENZ GMBH**

**COMPETENT BODY
DAR-REGISTRATION NUMBER: BPT-ZE-026/96**

**ACCREDITED TESTING LABORATORY
DAR-REGISTRATION NUMBER: TTI-P-G 126/96**

FCC filed test laboratory Reg. No. 96970

A2LA Accredited Certification No.1983-01

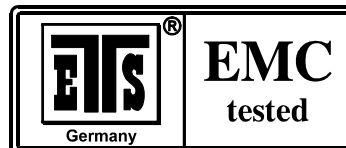
Bluetooth Qualification Test Facility (BQTF)

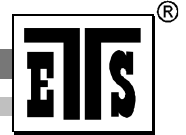
Accredited by Bluetooth Qualification Review Board

Industry Canada filed test laboratory Reg. No. IC 3470

EMC TEST - REPORT

TEST REPORT NUMBER : W6M20603-6706-E-11





Testing laboratory

Location

ELECTRONIC TECHNOLOGY SYSTEMS DR. GENZ GMBH (ETS)

Storkower Str.38c

D- 15526 Reichenwalde

Germany

Telephone : + 49 33631 888-0

Telefax : + 49 33631 888-660

Test location, where different from ETS Dr. Genz GmbH Germany

Name : ./.
Street : ./.
Town : ./.
Country : ./.
Telephone : ./.
Fax : ./.

Details of applicant

Name : Semicon-Optronics Channel Corp.
Street : 9F, No.563, Sec. 1, Beising Rd., Jhudong
Town : Hsinchu
Country : Taiwan
Telephone : +886-3-596-7711
Fax : +886-3-596-8557
Contact : Ms. Li
Telephone : +886-3-596-7711

Test item

Description of test item

Type of Product : High Power LED Constant Current Driver
Type identification : HPD Driver
Power supply : 230VAC (ac/dc adaptor)
Serial number : ./.

Test Standards

EN 55015: 2000+A1 :2001+A2 :2002, EN 61000-3-2: 2000+A2: 2005, EN 61000-3-3: 1995+A1:2001+A2: 2005
EN 61547: 1995+A1 :2000, (EN 61000-4-2 /-3 /-4 /-5 /-6 /-11)

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Electro - Magnetic Compatibility

Test - Result

Reg.-no. : W6M20603-6706-E-11
Device : High Power LED Constant Current Driver
Model No : HPD Driver
Manufacturer : Semicon-Optronics Channel Corp.
 9F, No.563, Sec. 1, Beising Rd., Jhudong, Hsinchu, Taiwan

1st test test after modification production test

Test Emission / Immunity			Done	Test passed	Test failed
Emission	Conducted Emission	EN 55015 : 2000+A1 :2001+A2 :2002	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Emission	Radiated Emission	EN 55015 : 2000+A1 :2001+A2 :2002	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Harmonics	Current Harmonics	EN 61000 - 3 - 2: 2000+A2 : 2005	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Flicker	Voltage Fluctuations	EN 61000 - 3 - 3: 1995+A1: 2001+A2: 2005	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
ESD	Electrostatic Discharge	EN 61000- 4 - 2: 1995+A1: 1998+A2: 2001	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
RF - Field	Radiated Immunity	EN 61000 - 4 - 3: 2002+A1: 2002	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Burst	Electrical Fast Transients	EN 61000- 4- 4 : 2004	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Surge	Transients comm.& diff.mode	EN 61000 - 4 - 5: 1995+A1: 2001	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
RF-commonmode	RF continues conducted	EN 61000 - 4 - 6: 1996+A1 : 2001	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
V-dips	Voltage dips and Interruption	EN 61000 - 4 - 11: 2004	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

Remarks : **Please take running production control.**
 ETS can carry out running producing tests for you.

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Test equipment utilized

No.	Test equipment	Type	Manufacturer
ETS 0001	Test receiver	ESHS 10	Rohde & Schwarz
ETS 0002	Test receiver	ESVP	Rohde & Schwarz
ETS 0003	Test receiver	ESVS 10	Rohde & Schwarz
ETS 0004	Spektrum- and Network-Analyzer	FSMS 26	Rohde & Schwarz
ETS 0005	Test receiver	SMV 11	MEB
ETS 0006	Test receiver system	SME 12	MEB
ETS 0008	Antenna	Loop antenna	Siemens
ETS 0009	Antenna	ARA 2	MEB
ETS 0010	Antenna	Loop antenna	MEB
ETS 0011	Antenna	van Veen/ Frame	Rohde & Schwarz
ETS 0012	Antenna	HK 116	Rohde & Schwarz
ETS 0013	Antenna	HL 223	Rohde & Schwarz
ETS 0014	Antenna	HL 025	Rohde & Schwarz
ETS 0015	Antenna	HL 025	Rohde & Schwarz
ETS 0016	Precision antenna kit	VHAP	Schwarzbeck
ETS 0017	Precision antenna kit	UHAP	Schwarzbeck
ETS 0020	Antenna	DP 21	MEB
ETS 0021	Antenna	DP 3	MEB
ETS 0022	Antenna	SAS-200/ 521	A.H. Systeme+D65
ETS 0023	Antenna	DP 1	MEB
ETS 0024	Antenna mast	AF 2	MEB
ETS 0025	Antenna mast	AF 2	MEB
ETS 0026	Tripod		Heinrich Deisel
ETS 0027	Tripod		Heinrich Deisel
ETS 0028	Tripod	STA 2	C. Lorenz AG
ETS 0029	Tripod		Berlebach
ETS 0031	Turn table	DS 412	Heinrich Deisel
ETS 0032	Controller	HD 050	Heinrich Deisel
ETS 0033	RF generator	SMG	Rohde & Schwarz
ETS 0034	RF generator/ Amplifier	SMLR	Rohde & Schwarz
ETS 0035	RF generator/ Amplifier	SMLM	Rohde & Schwarz
ETS 0038	RF amplifier	150L	Amplifier Research
ETS 0039	Absorbing clamp	MDS 21	Rohde & Schwarz

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No.	Test equipment	Type	Manufacturer
ETS 0040	Artificial mains	ESH3-Z5	Rohde & Schwarz
ETS 0041	Artificial mains	ESH3-Z4	Rohde & Schwarz
ETS 0042	Artificial mains	ESH3-Z6	Rohde & Schwarz
ETS 0044	Artificial mains	NNB 111	MEB
ETS 0045	Stripe line	IEC 801-3	ETS
ETS 0046	Power supply	LTS 006	RFT
ETS 0047	Power supply	TG 20/ 1	Statron
ETS 0048	Power supply	TG 20/ 1	Statron
ETS 0049	Power supply	T 102	TPW
ETS 0050	Power supply	T 101b	TPW
ETS 0051	Oscilloscope	TDS 640A	Tektronix
ETS 0052	Audio analyzer	UPA 4	Rohde & Schwarz
ETS 0053	ECAT Controlcentre	CE 40	Keytek/ EMV
ETS 0054	EFT simulator	E 412	Keytek/ EMV
ETS 0055	Modul network coupler	E 4551	Keytek/ EMV
ETS 0056	Blank plug-in		Keytek/ EMV
ETS 0057	Module SURGE with DC coupler	E 501	Keytek/ EMV
ETS 0058	Capacitive coupling clamp	E 502 B	Keytek/ EMV
ETS 0059	Kikusui amplfier	PCR 2000L	Keytek/ EMV
ETS 0060	Xitron power analyzer		Keytek/ EMV
ETS 0061	Power/ Arb (Harm., Ramp)		Keytek/ EMV
ETS 0062	Reference impedance		Keytek/ EMV
ETS 0063	Blank plug-in		Keytek/ EMV
ETS 0064	CDN IEC 1000-4-6		Keytek/ EMV
ETS 0065	ESD-generator minizap		Keytek/ EMV
ETS 0066	EM Injection Clamp		FCC/ EMV
ETS 0067	Calibration Fixture	IEC 801-2031 CF	FCC/ EMV
ETS 0068	CDN IEC 1000-4-6	CDN	FCC/ EMV
ETS 0069	EM Radiation Monitor	EMR-20	Wandel & Goltermann
ETS 0070	PC Transfer set EMR-20	EMR-20	Wandel & Goltermann
ETS 0071	Videocamera system	KMB012	Kocom
ETS 0072	Interphone system	JS-1400	Jiuh Sheng
ETS 0073	Audio noise meter	GSM 2	MKD/ RFT
ETS 0074	RF milivoltmeter	QRV 2	MKD/ RFT
ETS 0075	NF generator	GF 22	Präcitronic
ETS 0076	Feeding bridge A	SBA 1000	ESP

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No.	Test equipment	Type	Manufacturer
ETS 0077	Audio/ Video Filter set	AV 55020	ETS
ETS 0078	LCR meter	SR 720	SRS
ETS 0079	Functional generator	MX-2020	Maxcom
ETS 0080	EMI Software	ES-K1	Rohde & Schwarz
ETS 0081	EMI Software	ES-K10	Rohde & Schwarz
ETS 0082	PC Novell network system	Novell	Esotronic
ETS 0083	Apple computer sstem	Performa 630	Macintosh
ETS 0084	Processcontroler	PSA 15	Rohde & Schwarz
ETS 0085	Shielded room	SR 1	Frankonia
ETS 0086	Anechoic chamber	AC 1	Frankonia
ETS 0087	Climatic cell	HC 4033	Heraeus
ETS 0088	Colour TV pattern generator	PM 5518-TX VPS	Philips
ETS 0089	Radiocommunication tester	CMS 54	Rohde & Schwarz
ETS 0090	DECT type approval CTR06	TS 8930	Rohde & Schwarz
ETS 0091	RF signal generator	SME 03	Rohde & Schwarz
ETS 0092	DM-Coder	SME-B11	Rohde & Schwarz
ETS 0093	Pulse Modulator	SM-B8	Rohde & Schwarz
ETS 0095	DECT system controller	PSMD	Rohde & Schwarz
ETS 0096	DECT Signalling unit	PSMD-B11	Rohde & Schwarz
ETS 0097	Rack, 19", 36 HU	TS 89RA	Rohde & Schwarz
ETS 0098	System engineering and software	CS 893BE	Rohde & Schwarz
ETS 0099	Extension unit for basic version	TS 8930B	Rohde & Schwarz
ETS 0100	RF signal generator	SME-06	Rohde & Schwarz
ETS 0101	DM-Coder	SME-B11	Rohde & Schwarz
ETS 0102	Pulse modulator	SM-B8	Rohde & Schwarz
ETS 0103	Pulse generator	SM-B4	Rohde & Schwarz
ETS 0105	High power synthesizer/ sweeper	SMP 22 / 02	Rohde & Schwarz
ETS 0106	Frequency extension	SMP-B11	Rohde & Schwarz
ETS 0107	RF attenuator for SMP 22	SMP-B15	Rohde & Schwarz
ETS 0108	DECT protocol tester TBR 22	TS 1220	Rohde & Schwarz
ETS 0109	Process controller	PSM 2	Rohde & Schwarz
ETS 0110	Real time signalling unit	PSMD-B2	Rohde & Schwarz
ETS 0111	PCM Realtime audio interface for PSM	PSMD-B3	Rohde & Schwarz
ETS 0112	Synthesizer Module	PSMD-B4	Rohde & Schwarz
ETS 0113	Keyboard	PSA-Z2	Rohde & Schwarz

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No.	Test equipment	Type	Manufacturer
ETS 0114	RF step attenuator	RSG	Rohde & Schwarz
ETS 0115	Glide path		Rohde & Schwarz
ETS 0116	RF Millivoltmeter	URV 55	Rohde & Schwarz
ETS 0117	Insertion unit	URV-Z2	Rohde & Schwarz
ETS 0118	Mixer	MFC 1000	Avcom
ETS 0119	Mixer	MFC 2000	Avcom
ETS 0120	RF step attenuator	TRI-50-20	INCO
ETS 0121	Oscilloscope	EO 147A	Serute
ETS 0122	Oscilloscope	5201	Dagatron
ETS 0123	RF step attenuator	RBU	Rohde & Schwarz
ETS 0124	Tripod	STA 2	Rohde & Schwarz
ETS 0126	Uninterruptable power supply	UPS - 1500	Sendon
ETS 0127	Uninterruptable power supply	UPS - 1000 LC	Sendon
ETS 0128	Uninterruptable power supply	UPS - 1000	Sendon
ETS 0129	Uninterruptable power supply	UPS - 500	Sendon
ETS 0130	Uninterruptable power supply	Power saver	Sendon
ETS 0131	Telephone connection box		Systel
ETS 0132	Frequency doubler	TR-0616	EMG
ETS 0133	Probe body	P6015	Tektronix
ETS 0134	Mains filter	MSF	Erika Fiedler
ETS 0135	Measureing switching point	AK 11	RFT
ETS 0136	Attenuator	33-6-34	Weinschel
ETS 0137	Multimeter	YX-360TRA	Mastech
ETS 0138	Multimeter	DT-9410	Diditec
ETS 0139	Multimeter	ST-9202	Standard
ETS 0140	High voltage generator	IP 6Wa	TPW
ETS 0141	Sliding bridge	J 573	RFT
ETS 0142	Impedanz converter	TK 11	RFT
ETS 0143	Impedanz converter	TK 12	RFT
ETS 0146	Aktive RF probe	ESH2-Z2	Rohde & Schwarz
ETS 0147	Probe	TK 103	MEB
ETS 0148	Test TV	21PT4301/00	Philips
ETS 0149	Power divider	ZAPD-21	MCL
ETS 0150	Switcher	HR07-720	Wisi
ETS 0151	Interference pulse generator	NSG 500C	Schaffner
ETS 0152	Simulator for Load-Dump-Impulse	NSG 506C (I)	Schaffner

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No.	Test equipment	Type	Manufacturer
ETS 0153	Simulator for Load-Dump-Impulse	NSG 506C (II)	Schaffner
ETS 0154	Signalgenerator	SMG	Rohde & Schwarz
ETS 0155	Signalgenerator	SMG	Rohde & Schwarz
ETS 0156	Adjacent channel power meter	NKS	Rohde & Schwarz
ETS 0157	TV and Sat-Signalgenerator	VTG 700	Grundig
ETS 0158	TV and Sat Signalgenerator	VTG 700	Grundig
ETS 0159	Programmable power supply	TOE 8815	Toellner
ETS 0160	Protective wire and isolation tester	PI 6001 D	SPS electronic
ETS 0161	Filter system / consumer electronic		Fiedler
ETS 0162	Acoustic chamber	403-A	IAC
ETS 0163	Test head	BK 4602	Brüel & Kjær
ETS 0164	Simulator ear	BK 4185	Brüel & Kjær
ETS 0165	Simulator mouth	BK 4227	Brüel & Kjær
ETS 0166	Acoustic calibrator	BK 4231	Brüel & Kjær
ETS 0167	Communication Analysis System	CAS TE I	HEAD acoustics
ETS 0168	Acoustical test for DECT	CTR 10	HEAD acoustics
ETS 0169	Measurement - Frontend (analog)	MFE III	HEAD acoustics
ETS 0170	Measurement - Frontend (digital)	MFE IV	HEAD acoustics
ETS 0171	Electronic test cradle	TEH	HEAD acoustics
ETS 0172	Noise generator	HNG III.1	HEAD acoustics
ETS 0173	Speaker	Canton S Pluss	HEAD acoustics
ETS 0174	Measurement - Frontend line interface	MFE V	HEAD acoustics
ETS 0175	Software Line interface (analog)	COPTZV5	HEAD acoustics
ETS 0176	Acoustic volt meter	COP 4	HEAD acoustics
ETS 0177	Feeding bridge B	SBB 1000	ESP
ETS 0178	Open area test side	10m	ETS
ETS 0180	Artificial mains	NNB01/RFZ	RFZ
ETS 0181	Test pin for protective wire	PE 156-i	SPS electronic
ETS 0182	Power supply	MX-9300	Maxcom
ETS 0183	Frequency counter	MX-9300	Maxcom
ETS 0184	Function generator	MX-9300	Maxcom
ETS 0185	Digital multimeter	MX-9300	Maxcom
ETS 0186	Power supply	DF 1730	WJG
ETS 0187	Power supply		TPW/RFT
ETS 0189	Spectrum Analyzer	FSEB	Rohde & Schwarz

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No.	Test equipment	Type	Manufacturer
ETS 0190	Function generator	MX 2020	Maxcom
ETS 0191	Sweep function generator	7202	Dagatron
ETS 0192	Audio generator	7101	Dagatron
ETS 0193	Vibration table	N1-201-M	Sandbox
ETS 0194	Digital multimeter	PMM 208	Dagatron
ETS 0195	Thermo hygro recorder		Amarell
ETS 0196	Digital thermometer	AK-688	KD
ETS 0197	Digital thermometer		Prima
ETS 0198	Digital thermometer	ad 170th	ama-digit
ETS 0199	Digital thermometer	ad 31th	ama-digit
ETS 0200	Digital thermometer / hygrometer	ad 90h	ama-digit
ETS 0201	Digital thermometer / hygrometer	37950-10	Cole Parmer
ETS 0202	Digital thermometer	ad 15th	ama-digit
ETS 0203	Digital thermometer	Type K	Amarell
ETS 0204	Digital thermometer	ad 20th	ama-digit
ETS 0205	High voltage test generator	HA 3300 D	SPS electronic
ETS 0206	High voltage test accessories	HVGZ 312	SPS electronic
ETS 0207	Socket-Outlet torque balance	F 37.13	PTL
ETS 0208	Unjointed Finger probe	P 10.05	PTL
ETS 0209	Flexible Finger probe	P 10.01	PTL
ETS 0210	Spring operated impact hammer	P 22.50	PTL
ETS 0211	Metallic ball	F 53.32	PTL
ETS 0212	Hazardous live probe	P 10.06	PTL
ETS 0213	Hazardous live probe	P 10.11	PTL
ETS 0214	Ball pressure test apparatus	T 10.02	PTL
ETS 0215	Glow Wire tester	T 03.14	PTL
ETS 0216	Force indicator 50N	P 10.31	PTL
ETS 0217	Millivolt meter	URV 55	Rohde & Schwarz
ETS 0218	RF probe	URV5-Z7	Rohde & Schwarz
ETS 0219	Power sensor	NRV-Z2	Rohde & Schwarz
ETS 0220	Insertion unit	URV5-Z4	Rohde & Schwarz
ETS 0221	ISDN-S0-Analyser	K1403	Siemens
ETS 0222	ISDN Protocol Analyser	TE965	Tekelec Teleco.
ETS 0223	GSM/ PCN/ PCS-Simul.	TS8915B	Rohde & Schwarz
ETS 0224	GSM System Simulator	FTA	Rohde & Schwarz
ETS 0225	SIM Simulator		Orga

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No.	Test equipment	Type	Manufacturer
ETS 0226	SIM Editor		Orga
ETS 0227	Vibration table	TIRA vib	GenRad
ETS 0228	Climatic chamber	VT 4010	Vötsch
ETS 0229	Radio Commun. Tester	CMT 54	Rohde & Schwarz
ETS 0230	Radio Commun. Tester	CMD 65	Rohde & Schwarz
ETS 0231	Testreceiver	ESVS 30	Rohde & Schwarz
ETS 0232	Radiation test source	VSQ 1	MEB
ETS 0233	Direction coupler	RK 100	MEB
ETS 0234	Power meter	NRVD	Rohde & Schwarz
ETS 0235	RF-network-analyser	8752 C	Hewlett Packard
ETS 0236	RF-amplifier	100A100	Amplifier Research
ETS 0237	RF-amplifier	100W1000M1	Amplifier Research
ETS 0238	Field strong meter	FM 2000	Amplifier Research
ETS 0239	Isotr. field probe 40 GHz	FP 2080 Kit	Amplifier Research
ETS 0240	Isotr. field probe 1 GHz	FP 2000 Kit	Amplifier Research
ETS 0241	Pulse Generator	4050	PicoSecond PL
ETS 0242	Harmonics analyser	F 41B	Fluke
ETS 0243	AC-clamp 1000 A	80i 1000s	Fluke
ETS 0244	Burst generator	EFT 200	EM-Test
ETS 0245	Load dump generator	LD 200	EM-Test
ETS 0246	Voltage drop simulator	VDS 200	EM-Test
ETS 0247	Microsecond generator	MPG 200	EM-Test
ETS 0248	Switch unit	AN 200	EM-Test
ETS 0249	Coupling network	CNA 200	EM-Test
ETS 0250	Coupling clamp	ACC	EM-Test
ETS 0252	System controller	PSM 12	Rohde & Schwarz
ETS 0253	Spectrum analyser	FSIQ	Rohde & Schwarz
ETS 0254	RF generator	SMIQ 03	Rohde & Schwarz
ETS 0255	RF generator	SMIQ 03	Rohde & Schwarz
ETS 0256	RF generator	SMP 03	Rohde & Schwarz
ETS 0257	Step attenuator	RSP	Rohde & Schwarz
ETS 0258	Rubidium standard	RSTU	DATUM GmbH
ETS 0259	Power meter	NRVD	Rohde & Schwarz
ETS 0260	Power sensor	NRVD-Z1	Rohde & Schwarz
ETS 0261	Power sensor	NRVD-Z1	Rohde & Schwarz
ETS 0262	Switching unit	SSCU	Rohde & Schwarz

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No.	Test equipment	Type	Manufacturer
ETS 0263	Signaling unit		Wird
ETS 0264	Spectrum analyser	F 1048	HAMEG
ETS 0265	Loop antenna	HFRA 9150	Schwarzbeck
ETS 0267	RF signal generator	SMT 03	Rohde & Schwarz
ETS 0268	RF signal generator	SMP 02	Rohde & Schwarz
ETS 0270	RF signal generator	SMP 04	Rohde & Schwarz
ETS 0271	Test receiver	ESI 40	Rohde & Schwarz
ETS 0272	RF signal generator	SME 03	Rohde & Schwarz
ETS 0273	RF signal generator	SME 03	Rohde & Schwarz
ETS 0274	RF signal generator	SMY 01	Rohde & Schwarz
ETS 0275	Power sensor	NRV-Z51	Rohde & Schwarz
ETS 0276	Audio analyser	UPL	Rohde & Schwarz
ETS 0277	Power sensor	NRV-Z1	Rohde & Schwarz
ETS 0278	Power sensor	NRV-Z31	Rohde & Schwarz
ETS 0279	Step attenuator	RSP	Rohde & Schwarz
ETS 0280	Power meter	NRVD	Rohde & Schwarz
ETS 0281	Spectrum analyser	FSM	Rohde & Schwarz
ETS 0282	RF bridge	86207 A	Hewlett Packard
ETS 0283	RF bridge	86205 A	Hewlett Packard
ETS 0284	Field probe	11940 A	Hewlett Packard
ETS 0285	Field probe	11941 A	Hewlett Packard
ETS 0286	Limiter	11867 A	Hewlett Packard
ETS 0287	Test receiver	ESHS 10	Rohde & Schwarz
ETS 0288	Artificial mains	ESH2-Z5	Rohde & Schwarz
ETS 0289	Audio generator	TAG 101	Troneer
ETS 0290	Audio generator	TAG 101	Troneer
ETS 0291	Loop antenna	HFH2-Z2	Rohde & Schwarz
ETS 0292	RF generator	SMHU	Rohde & Schwarz
ETS 0293	Artificial mains	NNBM 8125	Schwarzbeck
ETS 0294	Biconical antenna	HK 116	Rohde & Schwarz
ETS 0295	LPD antenna	HL 223	Rohde & Schwarz
ETS 0296	Oscilloscope	TDS 520 A	Tektronix
ETS 0297	Power pulse generator	IGUF 2910	Schwarzbeck
ETS 0298	ICO tester	TS 1232	Rohde & Schwarz
ETS 0299	DECT protocol tester	TS 1220	Rohde & Schwarz
ETS 0300	RF amplifier	75 A 250	Amplifier Research

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No.	Test equipment	Type	Manufacturer
ETS 0301	Relay switch unit	RSU	Rohde & Schwarz
ETS 0302	Data line CDN	CM-I/O CD	Keytek
ETS 0303	Telecom line CDN	CM-TEL CD	Keytek
ETS 0304	Test receiver	ESHS 10	Rohde & Schwarz
ETS 0305	Test receiver	ESVS 10	Rohde & Schwarz
ETS 0306	Function generator	HP 33120A	Hewlett Packard
ETS 0307	Commu. Sign. Analyzer	CSA 803 A	Tektronix
ETS 0308	Spectrum analyzer	R 3361A	Advantest
ETS 0309	Anechoic chamber	AC 2	Frankonia
ETS 0310	Anechoic chamber	AC 3	Frankonia
ETS 0311	Anechoic chamber	AC 4	Frankonia
ETS 0312	Climatic chamber	VC 0033	Vötsch
ETS 0313	Power sensor	NRV-Z51	Rohde & Schwarz
ETS 0314	LPD antenna	HL 223	Rohde & Schwarz
ETS 0315	Biconical antenna	HK 116	Rohde & Schwarz
ETS 0316	Switcher	Hr 07-720	WISI
ETS 0317	Switcher	Hr 07-720	WISI
ETS 0318	Dial pulse/ DTMF tester	210	HE
ETS 0319	Opto link	GPIB 140	NI
ETS 0320	Opto link	GPIB 140	NI
ETS 0321	RF Millivoltmeter	URV 55	Rohde & Schwarz
ETS 0322	Insertion unit	URV5-Z4	Rohde & Schwarz
ETS 0323	DECT portable part	Gigaset 1000	SIEMENS
ETS 0324	DECT fix part	Gigaset 1000	SIEMENS
ETS 0325	DECT portable part		Philipps
ETS 0326	DECT fix part		Philipps
ETS 0327	Blue Unit	V 2.0	Nokia
ETS 0328	BT Protocol tester	PTW 60	Rohde & Schwarz
ETS 0330	Spectrum analyser	FSM	Rohde & Schwarz
ETS 0333	turn table	DE 350	Heinrich Deisel
ETS 0334	Controller	HD 100	Heinrich Deisel
ETS 0335	BT Development kit	CASIRA	CSR
ETS 0336	LPD Antenna	HL 223	Rohde & Schwarz
ETS 0337	Professional Power Amplifier	SE-1200	Wharfedale Pro
ETS 0338	Coupling network	KN002	ETS
ETS 0339	Isolating Transformer	KN003	ETS

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No.	Test equipment	Type	Manufacturer
ETS 0340	Thermometer		Proficell
ETS 0341	Thermometer		Proficell
ETS 0342	Thermometer		Proficell
ETS 0343	Thermometer		Proficell
ETS 0344	Thermometer		Proficell
ETS 0345	Thermometer		Proficell
ETS 0346	Thermometer		Proficell
ETS 0347	Current Probe	EZ-17	R & S
ETS 0348	RF Millivolt meter	URV 55	R & S
ETS 0349	Insertion unit	URV5-Z4	R & S
ETS 0350	Horn Antenna	BBHA 9120-C	Schwarzbeck
ETS 0351	RF amplifier	DWT-1857	Microwave
ETS 0352			
ETS 0353			
ETS 0354	RF amplifier	DBS-0408N423	Microwave
ETS 0355	high pass	H03G12G3	Microwave
ETS 0356	high pass	H03G12G3	Microwave
ETS 0357	high pass	H08G18G3	Microwave
ETS 0358	RF amplifier	AFD3-010040-15-ln	MITEQ
ETS 0359	RF amplifier	M/N AM-1331	MITEQ
ETS 0360	RF amplifier	DBS-0408N423	Microwave
ETS 0361	RF amplifier	DBS 1826N515	Microwave
ETS 0362	high pass	H03G12G3	Microwave
ETS 0363	high pass	H08G18G3	Microwave
ETS 0364	high pass	H08G18G3	Microwave
ETS 0365	Notch filter 2.4 GHz	WRCT2.40/248	Wain Wright
ETS 0366	high pass	H08G18G3	Microwave
ETS 0367	high pass	H03G12G3	Microwave
ETS 0368	Notch filter 0.5-1 GHz	BN86883	Schomandl
ETS 0369	Notch filter 210-500 MHz	BN86882	Schomandl
ETS 0370	Notch filter 15-90 MHz	BN86880	Schomandl
ETS 0371	Notch filter 85-250 MHz	BN86881	Schomandl
ETS 0372	Direction coupler	RK 100	MEB
ETS 0373	Direction coupler	DC3001	emv
ETS 0374	Insertion Unit	URV 5-Z2	R&S
ETS 0375	RCo Network	8 Ohm	Erika Fiedler
ETS 0376	RCo Network	300 Ohm	Erika Fiedler
ETS 0377	RCo Network	10K Ohm	Erika Fiedler
ETS 0378	RCo Network	10K Ohm	Erika Fiedler
ETS 0379	Abschlusswiderstand	150 Ohm	Erika Fiedler
ETS 0380	Abschlusswiderstand	150 Ohm	Erika Fiedler
ETS 0381	RCi Network	100 Ohm	Erika Fiedler
ETS 0382	RCi Network	2.2K Ohm	Erika Fiedler
ETS 0383	RCi Network	1K Ohm	Erika Fiedler

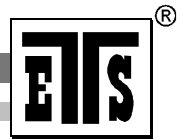
Registration number :W6M20602-6706-E-11

No.	Test equipment	Type	Manufacturer
ETS 0384	RCi Network	22K Ohm	Erika Fiedler
ETS 0385	RCi Network	22K Ohm	Erika Fiedler
ETS 0386	Bandpass 0.5-3kHz	nach EN 55020-D.2	
ETS 0387	Tiefpass 15 kHz	nach EN 55020-D.1	
ETS 0388	Tiefpass 15 kHz	nach EN 55020-D.1	
ETS 0389	Bandpass 0.5-3kHz	nach EN 55020-D.2	
ETS 0390	Netz Filter	Mains Filter 'M'	Erika Fiedler
ETS 0391	Bewertungsnetzwerk	nach EN 55020-B.3	
ETS 0392	Matching Network	MN 50-150Ohm	Erika Fiedler
ETS 0393	Matching Network	MN 50-150Ohm	Erika Fiedler
ETS 0394	RCo Network	Loudspeaker Load 8 Ohm	Erika Fiedler
ETS 0395	RCo Network	Loudspeaker Load 8 Ohm	Erika Fiedler
ETS 0396	RCo Network	Loudspeaker Load 8 Ohm	Erika Fiedler
ETS 0397	RCo Network	Phone Load 300 Ohm	Erika Fiedler
ETS 0398	RCo Network	Phone Load 300 Ohm	Erika Fiedler
ETS 0399	RCo Network	Phone Load 300 Ohm	Erika Fiedler
ETS 0400	RCo Network	Audio Adapter	Erika Fiedler
ETS 0401	RCo Network	Audio Adapter	Erika Fiedler
ETS 0402	Coupling Unit	SR (47K Ohm)	Erika Fiedler
ETS 0403	Coupling Unit	SR (47K Ohm)	Erika Fiedler
ETS 0404	Coupling Unit	SR (47K Ohm)	Erika Fiedler
ETS 0405	Coupling Unit	SR (2.2K Ohm)	Erika Fiedler
ETS 0406	Coupling Unit	SR (22K Ohm)	Erika Fiedler
ETS 0407	Coupling Network	"M"	Erika Fiedler
ETS 0408	Coupling Network	"A"	Erika Fiedler
ETS 0409	Coupling Network	"A"	Erika Fiedler
ETS 0410	Coupling Network	"A"	Erika Fiedler
ETS 0411	Coupling Network	"L"	Erika Fiedler
ETS 0412	Coupling Network	"L"	Erika Fiedler
ETS 0413	Coupling Network	"L"	Erika Fiedler
ETS 0414	A/V adapter	Type 2	Erika Fiedler
ETS 0415	A/V adapter	Type 2	Erika Fiedler
ETS 0416	A/V adapter	Type 2	Erika Fiedler
ETS 0417	A/V adapter	Type 3	Erika Fiedler
ETS 0418	A/V adapter	Type 1	Erika Fiedler
ETS 0419	A/V adapter	Type 1	Erika Fiedler
ETS 0420	Verstärker 0.1-1 GHz	M/N AM-1331	MITEC
ETS 0421	Verstärker 1-4 GHz	AFD3-010040-15-LN	MITEC
ETS 0422	Verstärker 4-8 GHz	DBS-0408N423	Narda

Registration number : W6M20602-6706-E-11

No.	Test equipment	Type	Manufacturer
ETS 0423	Verstärker 8-18 GHz	DWT-18057	Narda
ETS 0424	Verstärker 18-26.5 GHz	DBS-1826N515	Narda
ETS 0425	T-Network	ESH 3-Z4	R&S
ETS 0426	CDN	T4 HF	MEB
ETS 0427	Power sensor	NRV-Z6	R&S
ETS 0428	4-WIRE ISN mit B1	ENY41	R&S
ETS 0429	Current Probe Test Jig	SW14 7LY	Chase
ETS 0430	RF signal generator	SML02	R&S
ETS 0431	AC Mains Adaptor	BS5733	Travel Emporium
ETS 0432	RF Verstärkermatrix	RSU-ETS-BT	ETS
ETS 0433	RF Verstärkermatrix	RSU-ETS-CTR6	ETS
ETS 0434	Reserviert Tre	RSU-ETS-GSM	
ETS 0435	HP-Filter	H1G04G01	Microwave
ETS 0436	HP-Filter	H1G04G01	Microwave
ETS 0437	HP-Filter	H0G408G1	Microwave
ETS 0438	HP-Filter	H0G408G1	Microwave
ETS 0439	Reserviert Tre		
ETS 0440	Reserviert Tre		
ETS 0441	Bluetooth Protocol Tester	PTW 60	R & S
ETS 0442	Nokia Tester for Bluetooth 1.1	DTL - 1	Nokia
ETS 0443	IBM BT PC Card	BTPCN101	IBM / Motorola
ETS 0444	Sony BT DUN Modem	BTA- NW 1	Sony
ETS 0445	RF-Attenuator 6dB	50FH-006-300	JFK
ETS 0446	RF-Attenuator 30dB	50FH-030-300	JFK
ETS 0447	KFZ-Bordnetznachbildung	LN-KFZ/200	R. Heine Hochfrequenztechn.
ETS 0448	RF Power Amplifier	AR 60S1G3	AR Amplifier Resarch
ETS 0449	Stäubli Robot	RX90B L	Stäubli
ETS 0450	Stäubli Robot Controller	CS/MBs&p	Stäubli
ETS 0451	DASY 4 Measurement Server		Schmidt & Partner
ETS 0452	Control Pendant		Stäubli
ETS 0453	Compaq Computer	Pentium IV 2 GHz	Schmidt & Partner
ETS 0454	Dabu Acquisition Electronis	DAE3V1	Schmidt & Partner
ETS 0455	Dummy Probe		Schmidt & Partner
ETS 0456	Dosimetric E-Field Probe	ET3DV6	Schmidt & Partner
ETS 0457	Dosimetric E-Field Probe	ET3DV6	Schmidt & Partner
ETS 0458	Dosimetric H-Field Probe	H3DV6	Schmidt & Partner
ETS 0459	System Validation Kit	D900V2	Schmidt & Partner
ETS 0460	System Validation Kit	D1800V2	Schmidt & Partner
ETS 0461	System Validation Kit	D1900V2	Schmidt & Partner
ETS 0462	System Validation Kit	D2450V2	Schmidt & Partner
ETS 0463	Probe Alignment Unit	LBV2	Schmidt & Partner
ETS 0464	SAM Twin phantom	V4.0	
ETS 0465	Mounting Device	V 3.1	
ETS 0466	Directional Coupler	HP 87300B	

Registration number : W6M20602-6706-E-11



No.	Test equipment	Type	Manufacturer
ETS 0467	Universal Radio Communication T	CMU 200	R & S
ETS 0468			
ETS 0469	Dielectric Probe Kit	85070C	Agilent
ETS 0470	Amplifier	AM-1300-1103	MITEQ

Registration number :W6M20602-6706-E-11

Conducted Emission

Test Equipment

- a) Artificial mains (ESH3-Z5)
For your reference please find it in our test equipment list at page 4 to 16 as number : **40.**
- b) Artificial mains (ESH3-Z4)
For your reference please find it in our test equipment list at page 4 to 16 as number : **41.**
- c) Test receiver (ESHS10)
For your reference please find it in our test equipment list at page 4 to 16 as number : **01.**
- d) Monitoring System
For your reference please find it in our test equipment list at page 4 to 16 as number : **71.**
- e) Inter phone System
For your reference please find it in our test equipment list at page 4 to 16 as number : **72.**
- f) Shielded room
For your reference please find it in our test equipment list at page 4 to 16 as number : **85.**
- g) Radio communication tester
For your reference please find it in our test equipment list at page 4 to 16 as number : **89.**
- h) Artificial mains (ESH3-Z6)
For your reference please find it in our test equipment list at page 4 to 16 as number : **42.**
- i) Artificial mains (NNB 11)
For your reference please find it in our test equipment list at page 4 to 16 as number : **43.**
- j) Artificial mains (NNB 111)
For your reference please find it in our test equipment list at page 4 to 16 as number : **44.**
- k) Feelding Bridge (SBA 1000)
For your reference please find it in our test equipment list at page 4 to 16 as number : **76**

Test Procedures

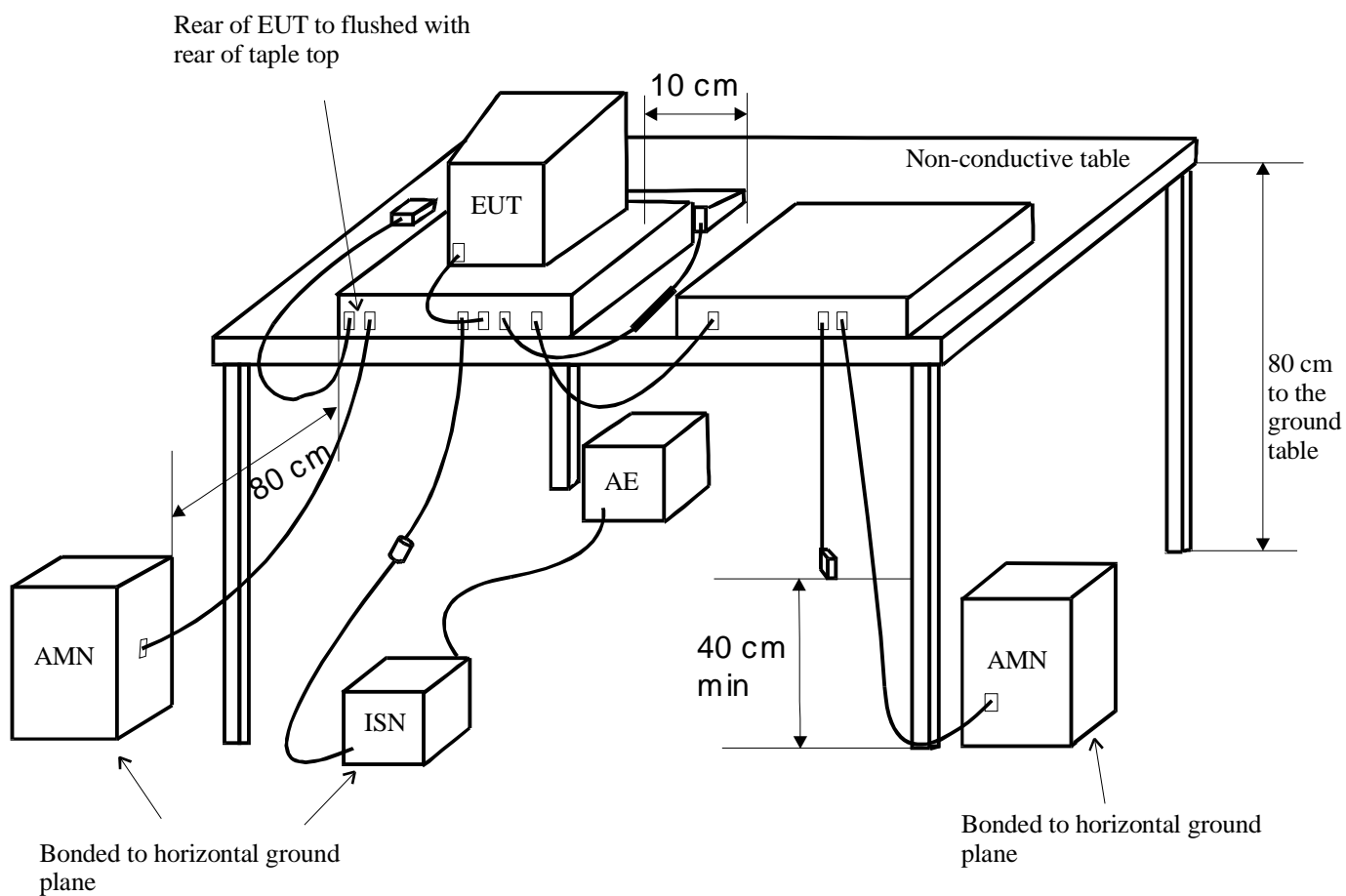
- Test configuration

The test configuration is contained inside of a shielded chamber and corresponds to the standard EN 55015. The equipment under test is placed in the facility on a wooden table 0.8m high. The equipment under test is connected with the artificial mains network (AMN) in a distance of 0,8m and also 0,8m from other subassembly and metallic area. (see picture 1) The observation of the equipment under test is realized by 3 video cameras and by a microphone.

- Test parameters and marginal conditions

The test are carried out with a nominal impedance by $50\Omega / 50\mu\text{H}$ of the AMN in a frequency range 150 kHz to 30 MHz. Further information please find in test report.

Conducted emission according to EN 55015



AMN = Artificial mains network
 AE = Associated equipment
 EUT = Equipment under test
 ISN = Impedance stabiliation network

picture 1

Radiated electromagnetic Emission

Test Equipment

- a) Loop Antenna
For your reference please find it in our test equipment list at page 4 to 16 as number : **11.**
- b) Test Receiver
For your reference please find it in our test equipment list at page 4 to 16 as number : **287.**
- c) EMI Software
For your reference please find it in our test equipment list at page 4 to 16 as number : **80.**
- d) Monitoring System
For your reference please find it in our test equipment list at page 4 to 16 as number : **71.**
- e) Anechoic Chamber
For your reference please find it in our test equipment list at page 4 to 16 as number : **86.**

Test Procedures

- Test configuration

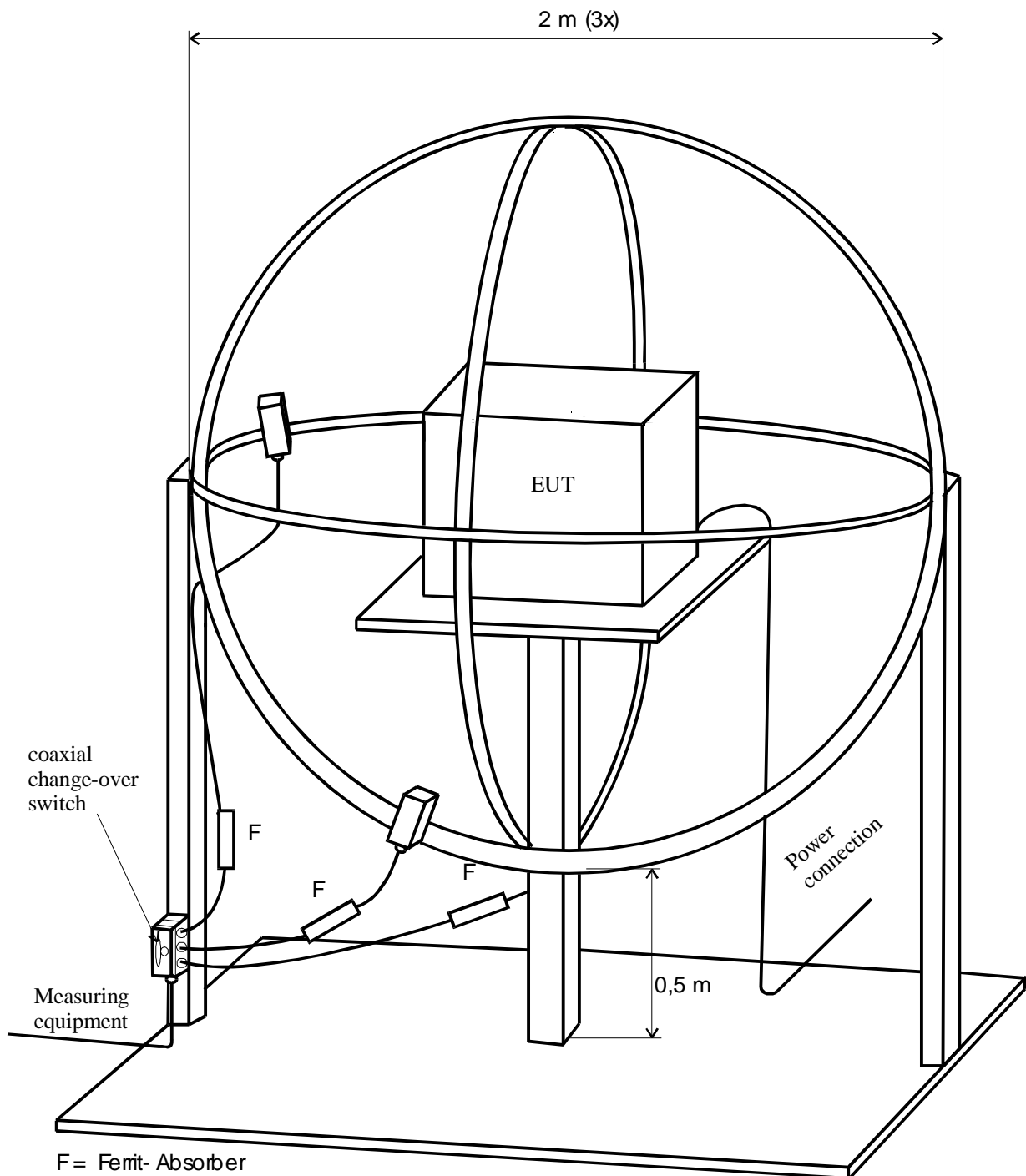
The test configuration corresponds to the standard IEC/CISPR 15. The lighting equipment under test is placed in the centre of the antenna. (see picture 2)

In the case of lighting equipment incorporating more than one lamp, all the lamps are operated simultaneously. The earth terminal of the lighting equipment shall be connected to the reference earth of the V-network. The observation of the equipment under test is realized by 3 video cameras and by a microphone.

- Test parameter and marginal conditions

The test are carried out with a frequency range between 9 kHz to 30 MHz. Further information please find in test report.

Radiated electromagnetic emission acc. EN 55015



picture 2

Registration number : W6M20602-6706-E-11

Harmonic Current Emission /Voltage Fluctuations and Flicker (EN 61000-3-2/-3)

Test Equipment

a) ECAT Testsystem

For your reference please find it in our test equipment list at page 4 to 16 as number : **53 to 63.**

b) PC Novell network system

For your reference please find it in our test equipment list at page 4 to 16 as number : **82.**

Test Procedures

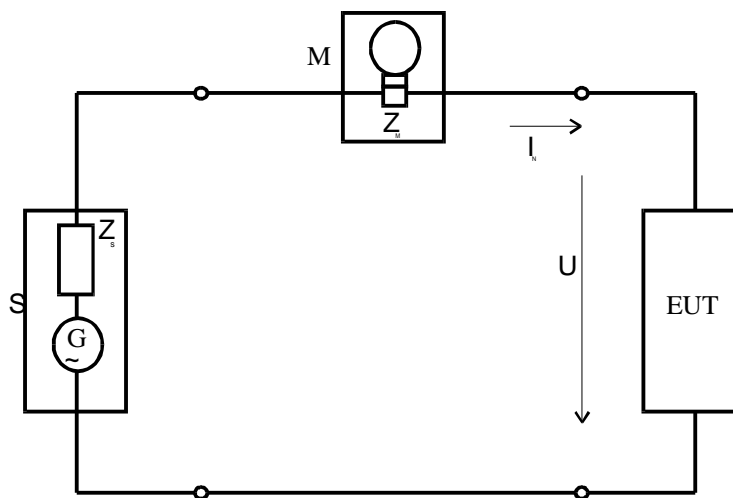
- Test configuration

The test configuration is correspondence to the standard EN 61000-3-2/-3. The equipment under test is placed on a wooden table with a height of 0,8m in the EMC lab.

- Test parameters and marginal conditions

The harmonic test are carried out in according the classification A,B,C,D of the standard EN 61000-3-2. The flicker test are carried out in according the time interval of the standard EN 61000-3-3. Both tests are carried out with above mentioned equipment with 230V and 50 Hz. (see picture 3) Further information please find in test protocol.

Current Harmonics and Flicker according to EN 61000 - 3 - 2, EN 61000 - 3 - 3



- | | |
|-------|---|
| S | supply source |
| M | measuring equipment |
| EUT | equipment under test |
| U | test voltage |
| Z_u | input impedance of the measuring equipment |
| Z_s | internal impedance of the supply source |
| I_u | upper shrinkage portion of the conduction current order |
| G | open-circuit voltage of the supply source |

Picture 3

Electrostatic Discharge

Test Equipment

a) ESD - generator minizap

For your reference please find it in our test equipment list at page 4 to 16 as number : **65**.

b) Power supply

For your reference please find it in our test equipment list at page 4 to 16 as number : **46 to 50**.

Test Procedures

- Test configuration

The test configuration is in correspondence to the standard EN 61000-4-2. The equipment under test is placed on a wooden table with one metal plate on its top and one metal plate under the table, which is grounded. Both plates are connected with two 470 k Ω resistor in series. (see picture 4)

- Test parameters and marginal conditions

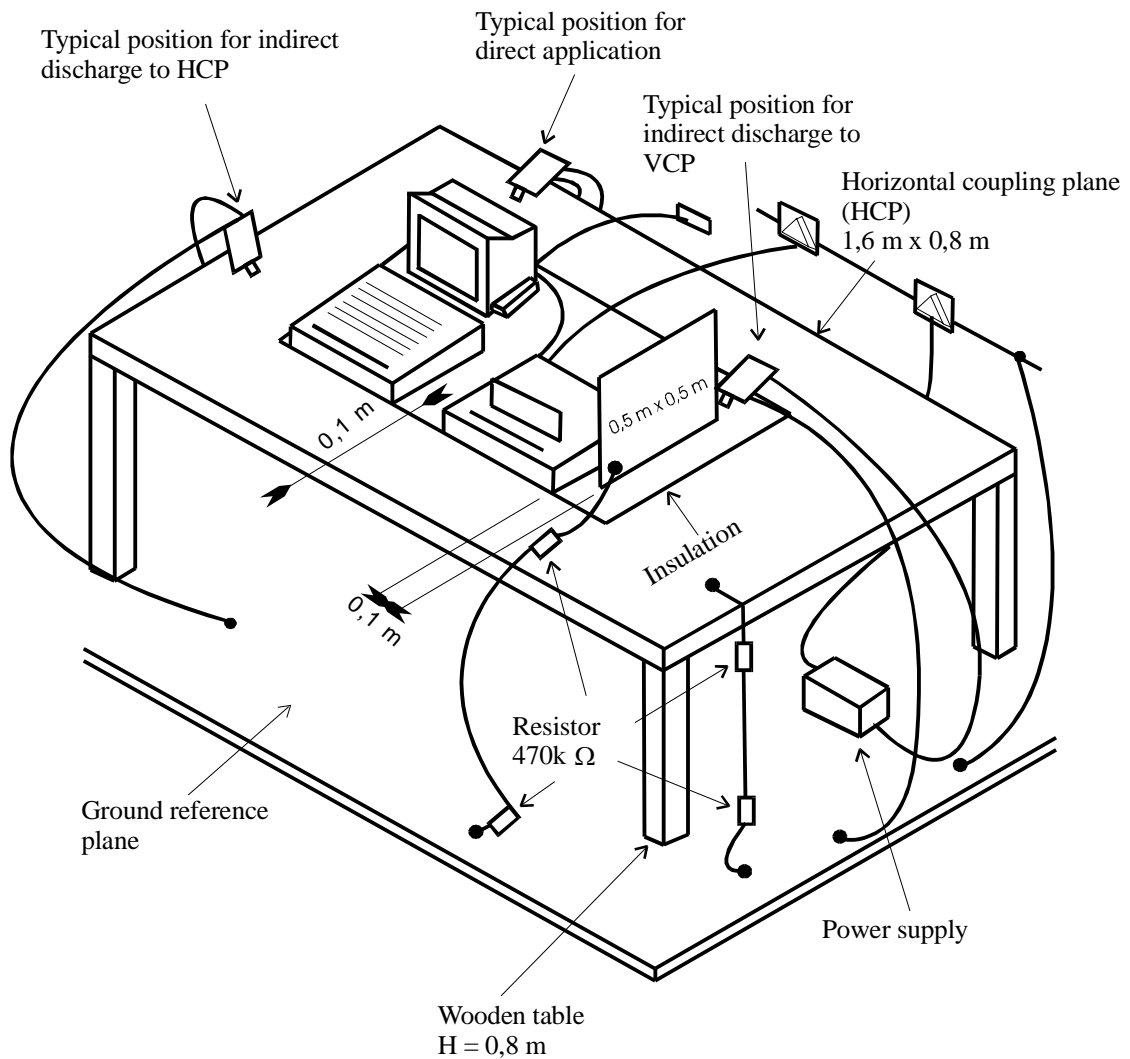
The test is carried out with $\pm 2\text{kV}$, $\pm 4\text{kV}$ and $\pm 6\text{kV}$ contact discharge and $\pm 2\text{kV}$, $\pm 4\text{kV}$ and $\pm 8\text{kV}$ air discharge. Time between two discharges ≥ 1 second

Ten discharges for every point every voltage and polarity

The tested points please find in the test protocol.

Observation of the equipment under test.

Electrostatic Discharge according to EN 61000 - 4 - 2



Picture 4

Registration number : W6M20602-6706-E-11

RF Electromagnetic Field (80-2000 MHz)

Test Equipment

- a) Antenna (HK116)
For your reference please find it in our test equipment list at page 4 to 16 as number : **12.**
- b) Antenna (HL223)
For your reference please find it in our test equipment list at page 4 to 16 as number : **13.**
- c) Antenna (HL025)
For your reference please find it in our test equipment list at page 4 to 16 as number : **14**
- d) Generator SMG (R&S)
For your reference please find it in our test equipment list at page 4 to 16 as number : **33.**
- e) Amplifier (ar)
For your reference please find it in our test equipment list at page 4 to 16 as number : **36.**
- f) Monitoring System
For your reference please find it in our test equipment list at page 4 to 16 as number : **71.**
- g) Interphone System
For your reference please find it in our test equipment list at page 4 to 16 as number : **72.**
- h) Anechoic Chamber
For your reference please find it in our test equipment list at page 4 to 16 as number : **86.**
- i) Radiocommunication tester
For your reference please find it in our test equipment list at page 4 to 16 as number : **89.**

Test Procedures

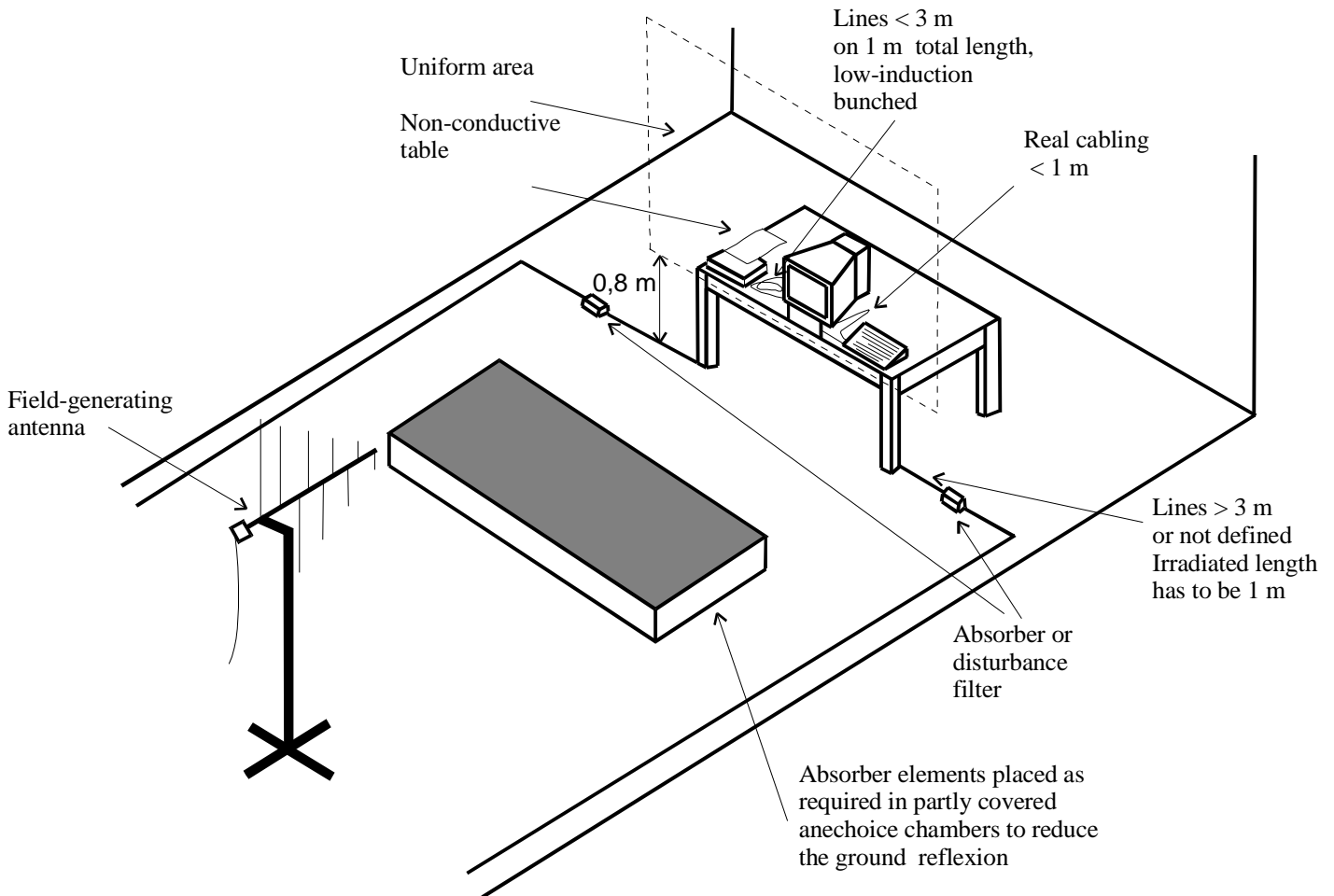
- Test configuration

The test configuration is contained inside of a shielded chamber and corresponds to the standard EN 61000-4-3 /9/. The equipment under test is placed in the facility on a wooden table 0.8m high on the centre axis of the chamber. The power supply and the RF connection points are close to the equipment under test at the floor of the chamber inside a connection box. The cables to this connection box are shielded and below the double floor. The transmitting antenna is placed in a height of 1.5m, in a distance of 3.0m. The RF-generators are placed in a special room adjacent to the chamber. (see picture 5) The observation of the equipment under test is realized by 3 video cameras and by a microphone.

- Test parameters and marginal conditions

The tests are carried out in the frequency range between 80 and 2000 MHz with a field strength by 10 V/m (measured in the unmodulated field) with amplitude modulated signal by a depth of 80 % by a sinusoidal audio signal of 1 kHz. and with puls modulated signal of 1 Hz (0,5s on;0,5s off).The step was 1% and the remaining time was 3s. Further information please find in test protocol.
Observation of the equipment under test.

RF - Field according to EN 61000 - 4 - 3



Picture 5

Registration number : W6M20602-6706-E-11

Transients common mode

Test Equipment

- a) ECAT Controlcentre
For your reference please find it in our test equipment list at page 4 to 16 as number : **53.**
- b) EFT Simulator
For your reference please find it in our test equipment list at page 4 to 16 as number : **54.**
- c) Module network coupler
For your reference please find it in our test equipment list at page 4 to 16 as number : **55.**
- d) Capacitive coupling clamp
For your reference please find it in our test equipment list at page 4 to 16 as number : **58.**
- e) PC Novell network system
For your reference please find it in our test equipment list at page 4 to 16 as number : **82.**
- f) Power supply
For your reference please find it in our test equipment list at page 4 to 16 as number : **46 to 50.**

Test Procedures

- Test configuration

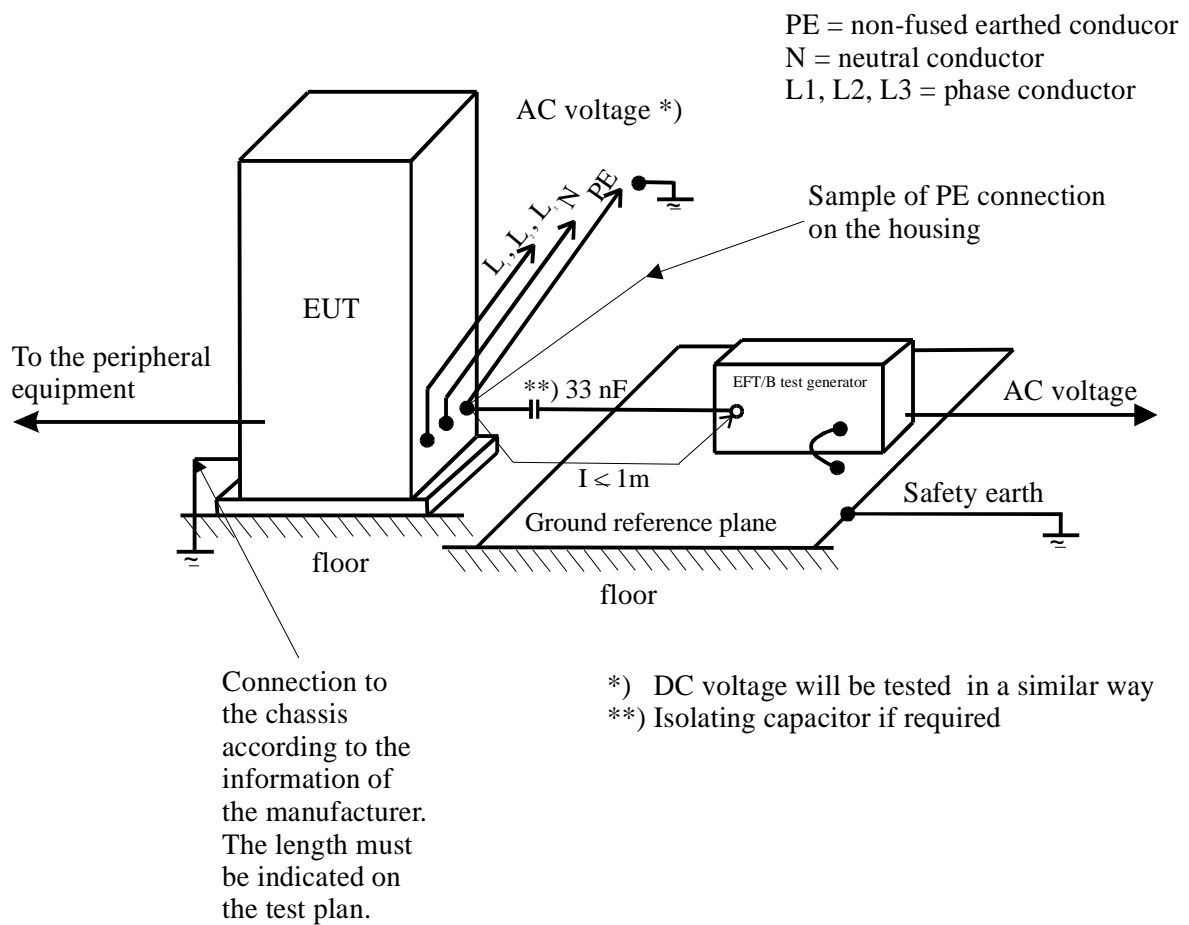
The test configuration is in correspondence to the standard EN 61000-4-4. The equipment under test is placed on a wooden table with a height of 0,8m \pm 0,08m. The table stands on metal plate which is grounded. (see picture 6)

- Test parameters and marginal conditions

The tests are carried out with 0,25; 0,5 and 1kV open circuit voltage on signal, control ports and DC power ports and with 0,5; 1 and 2kV open circuit voltage on AC mains power input. One test for each voltage and polarity. Space for each test 1 minute. The applied voltage please find in the test protocol.

Observation of the equipment under test.

Electrical Fast Transients according to EN 61000 - 4 - 4



Picture 6

Transients surge common and differential mode

Test Equipment

- a) ECAT Controlcentre
For your reference please find it in our test equipment list at page 4 to 16 as number : **53**.
- b) Module Surge with DC coupler
For your reference please find it in our test equipment list at page 4 to 16 as number : **57**.
- c) Capacitive Coupling Clamp
For your reference please find it in our test equipment list at page 4 to 16 as number : **58**
- d) PC Novell network system
For your reference please find it in our test equipment list at page 4 to 16 as number : **82**.
- e) Power supply
For your reference please find it in our test equipment list at page 4 to 16 as number : **46 to 50**.

Test Procedures

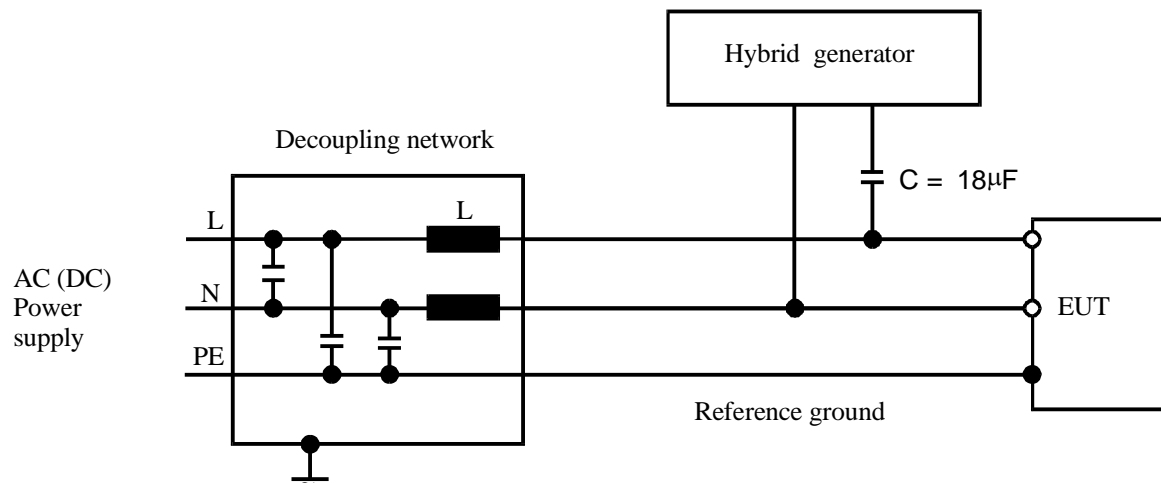
- Test configuration

The test configuration is in correspondence to the standard EN 61000-4-5. The equipment under test is placed on a wooden table with a height of 0,8m. The table stands on metal plate which is grounded.

- Test parameters and marginal conditions

The tests are carried out with 0,5; 1 and 2kV open circuit voltage for common mode (line-ground) and with 0,5 and 1 kV open circuit voltage for different mode (line-line) for AC main line, for signal-line and other power supply lines. (see picture 7) The test was carried out for every voltage both polarities at all 4 phases. Further information please find in the test protocol.

Transients common & differential mode according to EN 61000 - 4 - 5



Picture 7

Radio frequency common mode

Test Equipment

- a) RF Generator
For your reference please find it in our test equipment list at page 4 to 16 as number : **33.**
- b) RF Amplifier
For your reference please find it in our test equipment list at page 4 to 16 as number : **38.**
- c) CDN system IEC 1000-4-6
For your reference please find it in our test equipment list at page 4 to 16 as number : **64.**
- d) EM Injection Clamp
For your reference please find it in our test equipment list at page 4 to 16 as number : **66.**
- e) PC Novell network system
For your reference please find it in our test equipment list at page 4 to 16 as number : **82.**
- f) Power supply
For your reference please find it in our test equipment list at page 4 to 16 as number : **46 to 50.**
- g) RF Millivoltmeter
For your reference please find it in our test equipment list at page 4 to 16 as number : **116.**
- h) Insertion Unit (URV-Z2)
For your reference please find it in our test equipment list at page 4 to 16 as number : **117.**
- i) Calibration fixture
For your reference please find it in our test equipment list at page 4 to 16 as number : **67.**
- j) Radiocommunication tester
For your reference please find it in our test equipment list at page 4 to 16 as number : **89.**

Test Procedures

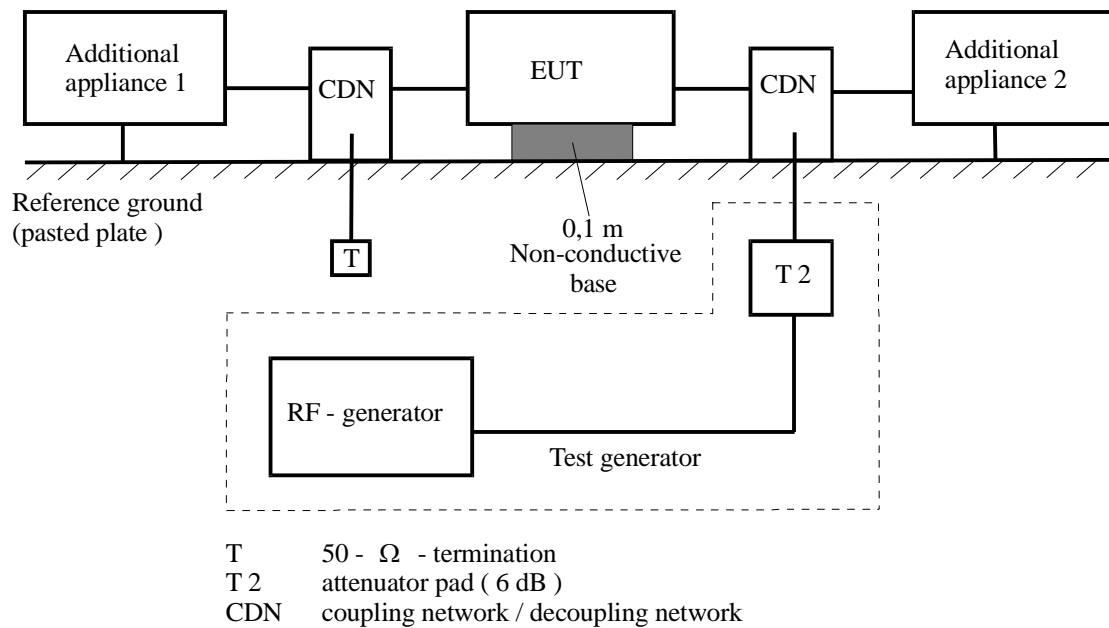
- Test configuration

The test configuration is in correspondence to the standard EN 61000-4-6. The test is carried out on a wooden table with a grounded metal plate on its top. The equipment under test is placed on an insulating support of 0,1m height above this metal plate. (see picture 8)

- Test parameters and marginal conditions

The tests are carried out with a Voltage of 1/ 3/ 10V RMS (measured unmodulated) with amplitude modulated audio signal signal of 1 kHz by a depth of 80 % by a sinusoidal and with puls modulated signal of 1 Hz (0,5s on;0,5s off). The frequency steps in the frequency range 150 kHz - 100 MHz the frequency increments with 1 % of the actual frequency. The remaining time is 3s. The tested ports please find in the test protocol.

RF- continues conducted according to EN 61000 - 4 - 6



Picture 8

Voltage dips and interruptions

Test Equipment

a) ECAT Testsystem

For your reference please find it in our test equipment list at page 4 to 16 as number : **53 to 63.**

b) PC Novell network system

For your reference please find it in our test equipment list at page 4 to 16 as number : **82.**

Test Procedures

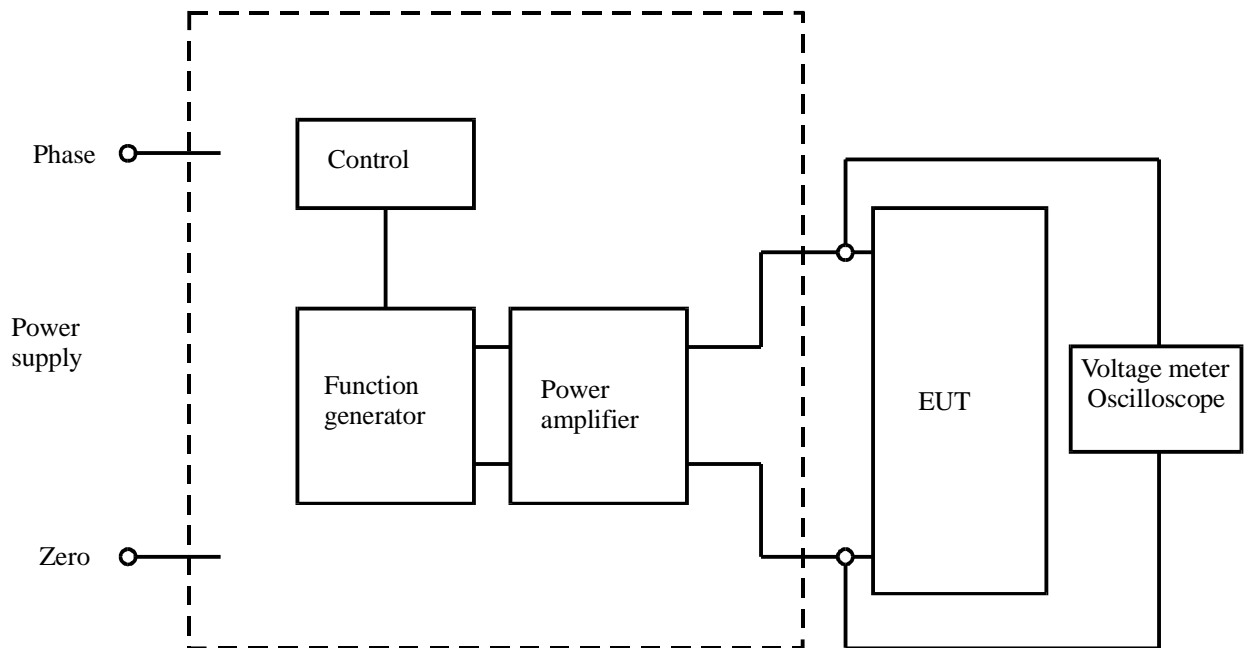
- Test configuration

The test configuration is in correspondence to the standard EN 61000-4-11. The equipment under test is placed on a wooden table with a height of 0,8 metre. (see picture 9)

- Test parameters and marginal conditions

The test levels corresponding to a reduction of the supply voltage of 30 % (for 10ms), > 95 % (for 5000ms). The applied voltage please find in the test protocol.

Voltage dips and interruption according to EN 61000 - 4 - 11



Picture 9

Conducted Emission**Emission**

Standard : EN 55015

Reg.-no. : W6M20603-6706-E-11

Device : HPD Driver

Date : 17.03.2006

Temperature : 22.5 °C
Pressure : 919 hPa
Rel. humidity: 54 %

Frequency Range	Network	Passed	Failed	Number of rechecks
150 kHz - 30 MHz	R&S	<input checked="" type="checkbox"/>	<input type="checkbox"/>	0

Remark: See attached diagram as appendix A.

Standard : EN 55015

Reg.-no. : W6M20603-6706-E-11

Device : HPD Driver

Date : 17.03.2006

Temperature : 22.5 °C
 Pressure : 919 hPa
 Rel. humidity: 54 %

Measurement Result:

LISN type	Frequency Marker (MHz)	Corrected Reading (dBμV)	Correction Factor (dB)	Detector	Test Result (dBμV)	Compliance Limit (dBμV)	Margin (dB)
N	0.0093682	44.5	10.1	QP	54.6	110	55.4
	0.066527	35.6	10.1	QP	45.7	87.3	41.6
	0.1998664	35.7	10.1	QP	45.8	63.6	17.8
	0.1998672	24.1	10.1	AV	34.2	53.6	19.4
	3.084435	22.5	10.1	QP	32.6	56	23.4
	3.084435	13.3	10.1	AV	23.4	46	22.6

LISN type	Frequency Marker (MHz)	Corrected Reading (dBμV)	Correction Factor (dB)	Detector	Test Result (dBμV)	Compliance Limit (dBμV)	Margin (dB)
L1	0.01631	42	10.1	QP	52.1	110	57.9
	0.06623	35.8	10.1	QP	45.9	87.3	41.4
	0.19905	36.1	10.1	QP	46.2	63.6	17.4
	0.19959	25.4	10.1	AV	35.5	53.6	18.1
	3.04699	26	10.1	QP	36.1	56	19.9
	3.04699	16.4	10.1	AV	26.5	46	19.5

- Note :**
1. Correction Factor = Antenna Factor + Cable Loss – Pre-amplifier.
 2. The formula of measured value as : Test Result = Corrected Reading + Correction Factor.
 3. Detector function in the form : P = Peak, QP = Quasi Peak, AV=Average.

Radio Noise Field Strength - Frame Antenna , Ø 2m - **Emission**

Standard : EN 55015

Reg.-no. : W6M20603-6706-E-11

Device : HPD Driver

Date : 17.03.2006

Temperature : 22.5 °C
Pressure : 919 hPa
Rel. humidity: 54 %

Frequency Range / Polarization	Antenna	Passed	Failed	Number of Rechecks
9 kHz - 30 MHz - X -	Frame Ø 2m	<input checked="" type="checkbox"/>	<input type="checkbox"/>	0
9 kHz - 30 MHz - Y -	Frame Ø 2m	<input checked="" type="checkbox"/>	<input type="checkbox"/>	0
9 kHz - 30 MHz - Z -	Frame Ø 2m	<input checked="" type="checkbox"/>	<input type="checkbox"/>	0

Remark: See attached diagram as appendix B.

Registration number :W6M20602-6706-E-11

Standard : EN 55015

Reg.-no. : W6M20602-6617-E-11

Device : LWL-PR-AL-RD

Date : 17.03.2006

Temperature : 22.5 °C
 Pressure : 919 hPa
 Rel. humidity: 54 %

X mode

Frequency Marker [MHz]	Corrected Reading [dBuV/m]	Correction Factor (dB)	Detector	Test Result (dBuV)	Compliance Limit [dBuV/m]	Margin
0.01024910787	10.89	1.01	PK	11.9	88	76.1
0.020413513831	9.69	0.9	PK	10.59	88	77.41
0.112071833824	13.11	0.83	PK	13.94	70	56.06
1.021539374	5.12	0.79	PK	5.91	35	29.09

Y mode

Frequency Marker [MHz]	Corrected Reading [dBuV/m]	Correction Factor (dB)	Detector	Test Result (dBuV)	Compliance Limit [dBuV/m]	Margin
0.011080841268	9.82	1.04	PK	10.86	88	77.14
0.042827151644	11.79	0.84	PK	12.63	88	75.37
0.561766343422	13.24	0.82	PK	14.06	42	27.94
1.021539374	23.1	0.77	PK	23.87	35	11.13

Z mode

Frequency Marker [MHz]	Corrected Reading [dBuV/m]	Correction Factor (dB)	Detector	Test Result (dBuV)	Compliance Limit [dBuV/m]	Margin
0.009857390979	9.13	1.04	PK	10.17	88	77.83
0.045113004029	10.84	0.83	PK	11.67	88	76.33
0.561766343422	11.5	0.79	PK	12.29	42	29.71
1.021539374	23.98	0.77	PK	24.75	35	10.25

Registration number : W6M20602-6706-E-11

Electrostatic Discharge

ESDStandard : EN 61000 - 4 - 2Reg.-no. : W6M20603-6706-E-11Device : HPD DriverDate : 17.03.2006

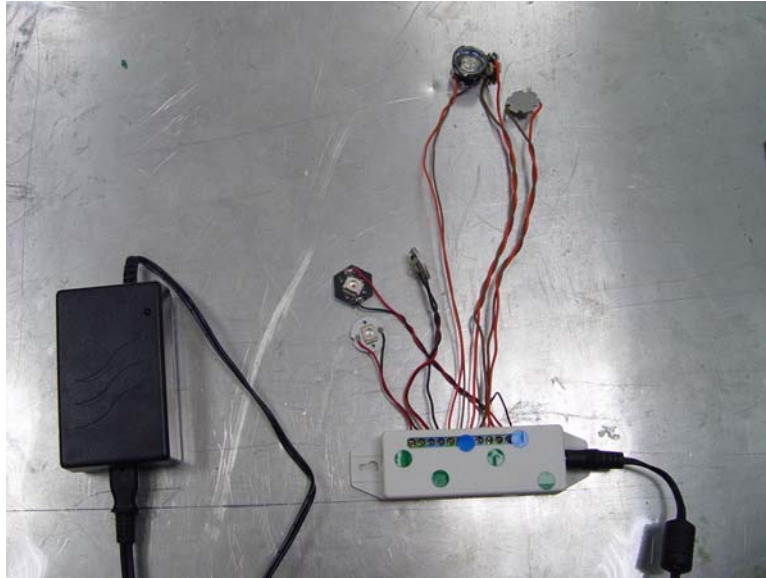
Temperature	: 22.5 °C
Pressure	: 919 hPa
Rel. humidity	: 54 %

Test point	Table (T)	Contact (C)	Voltage (kV)	Polarity (+ / -)	Remarks
	Floor (F)	Air (A)			
Housing	T	A	2, 4, 8	+ / -	A
Housing	T	C	2, 4	+ / -	A
Indirect	T	C	2, 4	+ / -	A
LED	T	A	2, 4	+ / -	NA
Display	T	C	2, 4	+ / -	NA

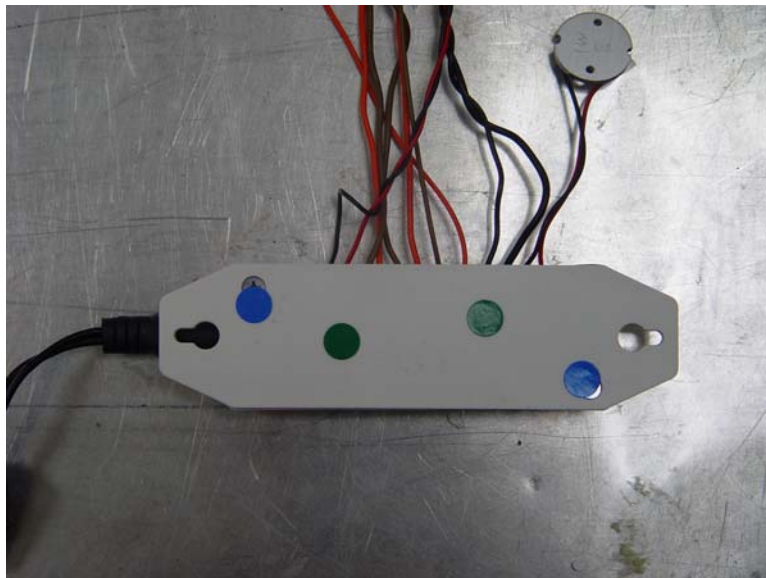
Registration number : W6M20602-6706-E-11

ESD discharge points

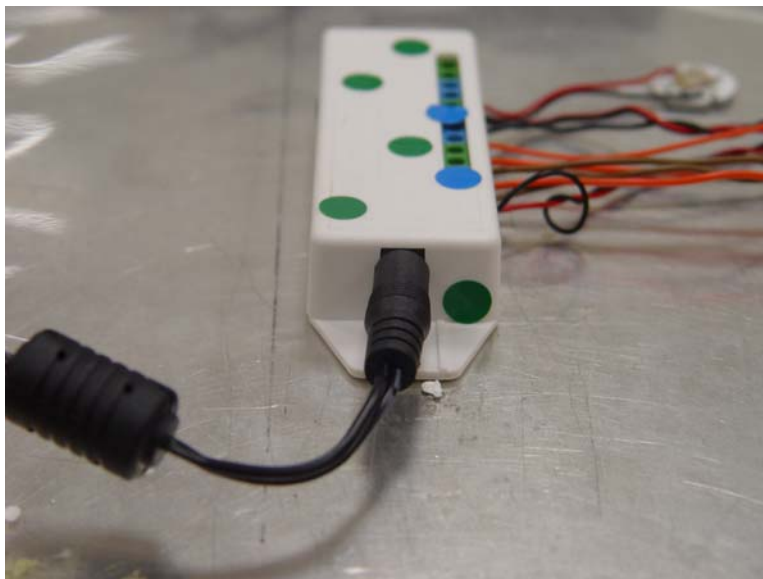
The top of EUT



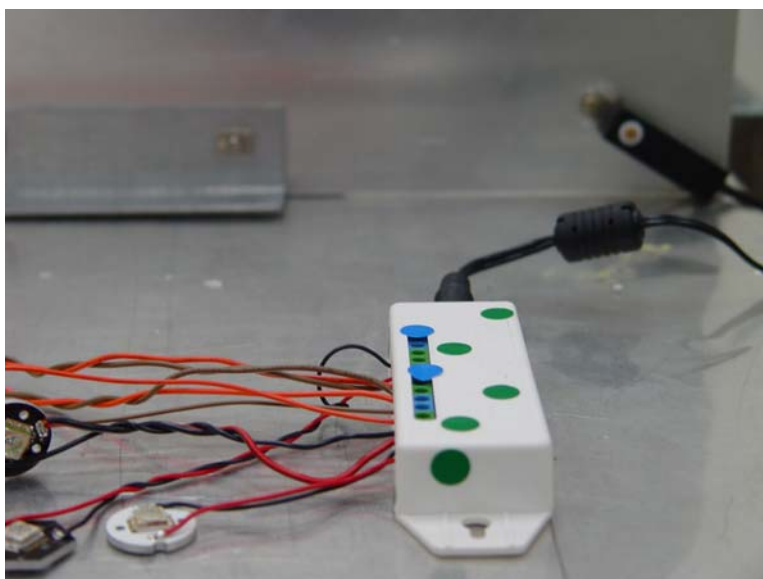
The bottom of EUT



The front of EUT

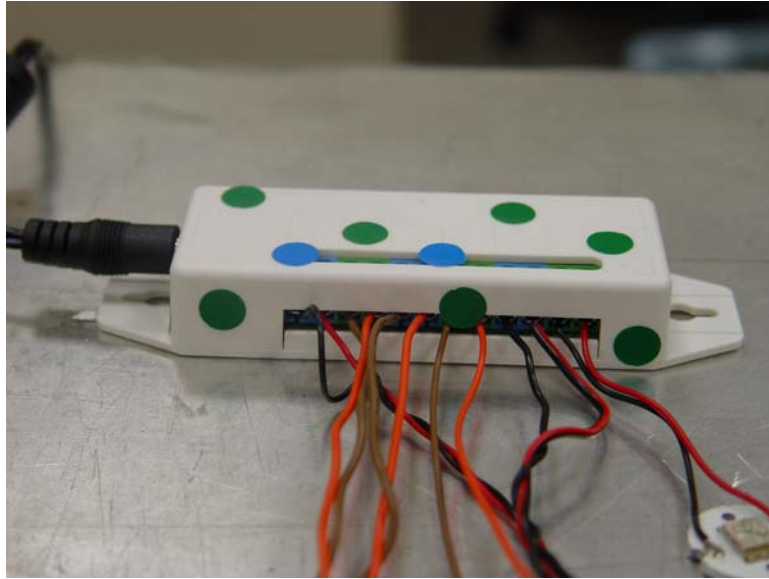


The back of EUT

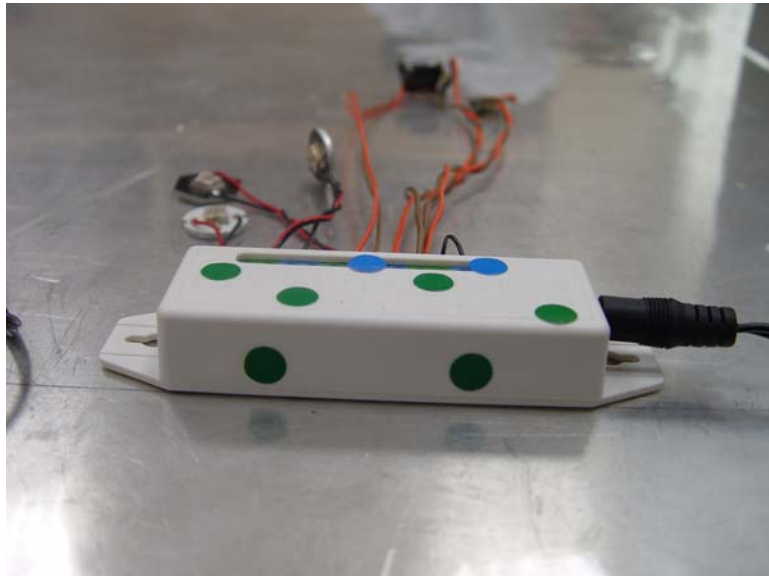


Registration number :W6M20602-6706-E-11

The left of EUT



The right of EUT



Registration number :W6M20602-6706-E-11

Remark:

- A: Normal performance within the specification.
- B: Temporary degradation or less of function or performance which is self recoverable
- C: Temporary degradation or loss of function or performance which requires operating intervention or system reset
- D: Degradation or loss of function which is not recoverable due to damage of equipment (components) or software, or loss of data.

NA: Not Applicable

Comment: ./.

Interference Immunity Against Electromagnetic Irradiation

RF Field

Standard : EN 61000 - 4 - 3

Reg.-no. : W6M20603-6706-E-11

Device : HPD Driver

Date : 17.03.2006

Temperature	: 22.5 °C
Pressure	: 919 hPa
Rel. humidity	: 54 %

Testequipment : Anechoic Chamber, Generator

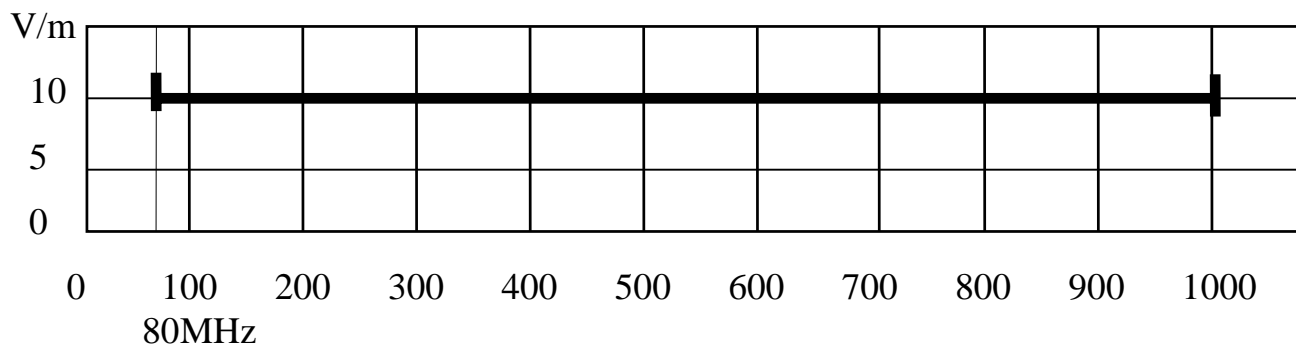
SMG (R&S), Monitoring System,

Amplifier 10W1000/150L (ar), Antenna SAS-200/521 (AHS)

Severity Level : 2 (3 V/m)

Modulation Frequency : 1kHz (80% AM)

Pulsmodulation : 1 Hz (0,5s on;0,5s off)



Comment : At 3 V/m to watch only a little deterioration of the image and at 1 V/m not deterioration

Remarks :

- A : No loss of performance or function
- B : Temporary loss of function or performance which is self recoverable
- C : Temporary loss of function or perform. which req. operate intervention or system reset
- D : Loss of function which is not recoverable

Registration number : W6M20602-6706-E-11

Electrical Fast Transients

Burst

Standard : EN 61000 - 4 - 4

Reg.-no. : W6M20603-6706-E-11

Device : HPD Driver

Date : 17.03.2006

Temperature : 22.5 °C
 Pressure : 919 hPa
 Rel. humidity: 54 %

Testport	Voltage (kV)	Polarity (+ / -)	Waveform T _r / T _h	Repetition Frequency (kHz)	Remarks
AC-Power line	1	+ / -	5/50 ns	5	B

Remarks :

- A : No loss of performance or function
- B : Temporary loss of function or performance which is self recoverable
- C : Temporary loss of function or perform. which req. operate. intervention or system reset
- D : Loss of function which is not recoverable

Registration number : W6M20602-6706-E-11

Transients common & diff. mode

Surge

Standard : EN 61000 - 4 - 5

Reg.-no. : W6M20603-6706-E-11

Device : HPD Driver

Date : 17.03.2006

Temperature : 22.5 °C
Pressure : 919 hPa
Rel. humidity: 54 %

Test mode	Voltage (kV)	Waveform T_r / T_h	Remarks
AC-line to line	1	1.2/50 μ s	B

Remarks :

- A : No loss of performance or function
- B : Temporary loss of function or performance which is self recoverable
- C : Temporary loss of function or perform. which req. operate. intervention or system reset
- D : Loss of function which is not recoverable

Registration number : W6M20602-6706-E-11

continues conducted

RF - common mode

Standard : EN 61000 - 4 - 6

Reg.-no. : W6M20603-6706-E-11

Device : HPD Driver

Date : 17.03.2006

Temperature : 22.5 °C
Pressure : 919 hPa
Rel. humidity: 54 %

Test mode	Voltage (rms)	Waveform T_r / T_h	Remarks
AC-line to line	3	1.2/50 μ s	A

Remarks :

- A : No loss of performance or function
- B : Temporary loss of function or performance which is self recoverable
- C : Temporary loss of function or perform. which req. operate. intervention or system reset
- D : Loss of function which is not recover

Registration number : W6M20602-6706-E-11

Voltage dips and interruption

V - Dips

Standard : EN 61000 - 4 - 11

Reg.-no. : W6M20603-6706-E-11

Device : HPD Driver

Date : 17.03.2006

Temperature : 22.5 °C
Pressure : 919 hPa
Rel. humidity: 54 %

Reduction of supply voltage of	Voltage in % (in V)	Duration in ms	Remarks
>95 %	11 V	5000	A
30 %	70% (161 V)	10	A

Remarks :

- A : No loss of performance or function
- B : Temporary loss of function or performance which is self recoverable
- C : Temporary loss of function or perform. which req. operate. intervention or system reset
- D : Loss of function which is not recoverable

Registration number : W6M20602-6706-E-11

Current Harmonics

Harmonics

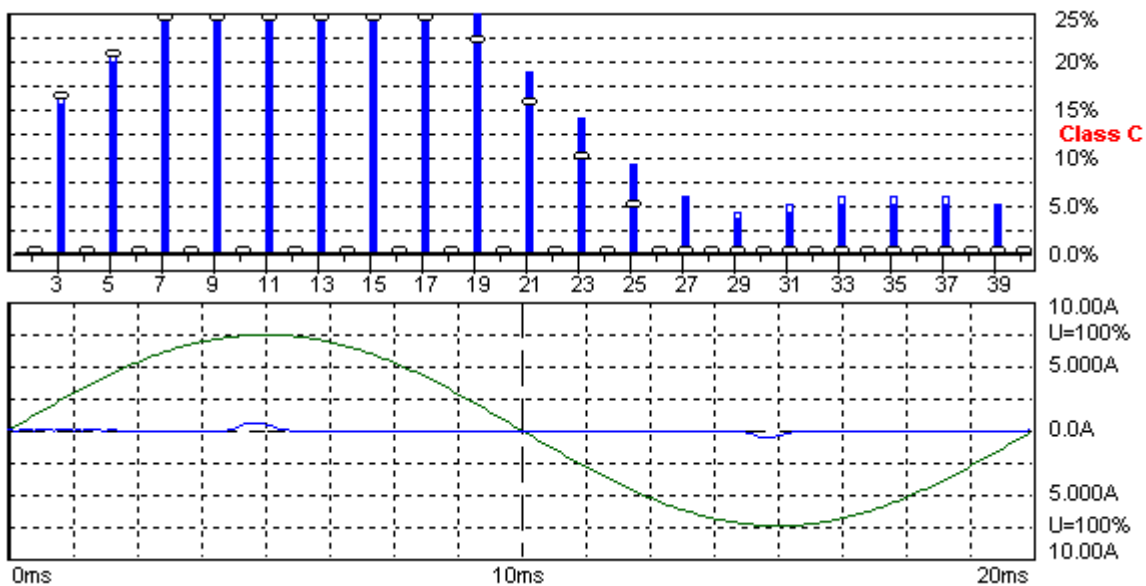
Standard : EN 61000 - 3 - 2

Reg.-no. : W6M20603-6706-E-11

Device : HPD Driver

Date : 17.03.2006

Temperature : 22.5 °C
 Pressure : 919 hPa
 Rel. humidity: 54 %



Passed : **yes** / no

Remarks : See attached diagram as next page

Registration number : W6M20602-6706-E-11

Harmonic Emission - IEC 61000-3-2 , EN 61000-3-2 , (EN60555-2)

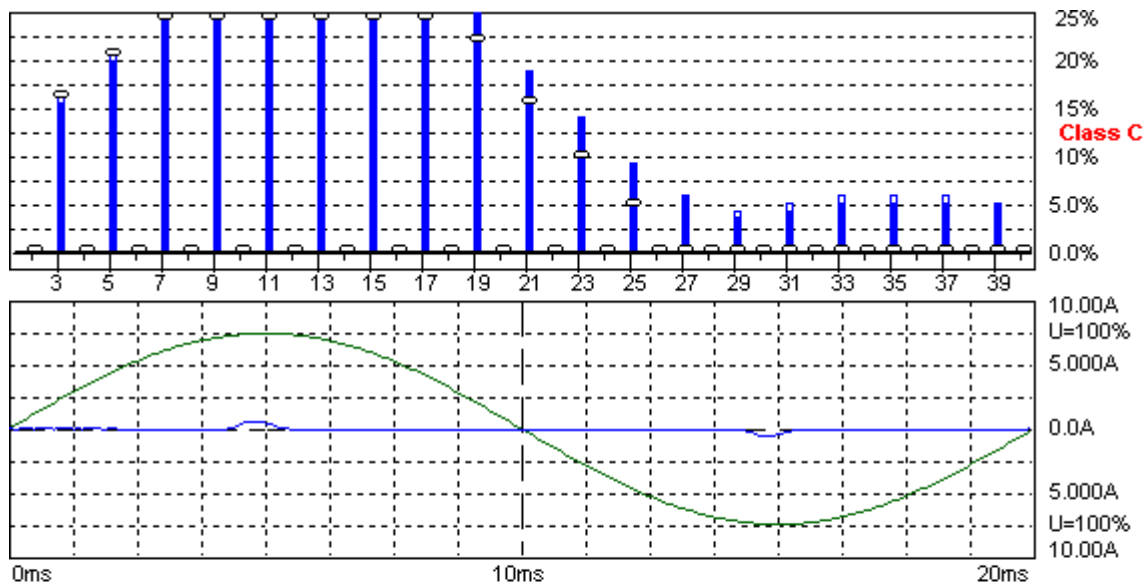
Comply: IEC 61000-3-2 Ed.2.1 :2001 (incl. Amd.14) - IEC 61000-4-7 Ed.1.0 :1991

Semicon-Optronics Channel Corp.

HARCS Setup File : [unnamed](#)

HARCS Report File : [unnamed](#)

Operator : Catey
 Unit : High Power LED Constant Current Driver
 Serialnumber : HPD Driver
 Remarks



Harmonic Emission - IEC 61000-3-2 , EN 61000-3-2 , (EN60555-2)

2006/3/17 11:21

Urms = 229.9 V	P = 13.01 W	THC = 0.118 A	Range: 10 A
Irms = 0.132 A	pf = 0.429	H1max = 2.506 A	V-nom: 230 V
			TestTime: 5 min (100%)

High Power LED Constant Current Driver **Test completed, Result: PASSED**

HAR-1000 EMC-Partner

Full Bar : Actual Values
 Empty Bar : Maximum Values
 Blue : Current , Green : Voltage , Red : Failed

Measurement

Date : 2006/3/17 11:21 V3.16

Urms = 229.9V	Freq = 49.987	Range: 10 A
Irms = 0.132A	Ipk = 0.591A	cf = 4.481
P = 13.01W	Pap = 30.31VA	pf = 0.429
THDi = 88.9 %	THDu = 0.10 %	Class C

Test - Time : 5min (100 %)

Limit Reference: H1(max)= 2.5057A pf(max)= 0.445

Test completed, Result: PASSED

Order	Freq. [Hz]	Iavg [A]	Iavg%L [%]	Imax [A]	Imax%L [%]	Limit [A]	Status
1	50	0.1550		7.4060			
2	100	0.0000	0.0000	0.0000	0.0000	0.0501	
3	150	0.0537	16.045	0.0543	16.227	0.3348	
4	200	0.0000		0.0000			
5	250	0.0513	20.461	0.0525	20.948	0.2506	
6	300	0.0000		0.0000			
7	350	0.0476	27.142	0.0488	27.838	0.1754	
8	400	0.0000		0.0000			
9	450	0.0439	35.076	0.0446	35.563	0.1253	
10	500	0.0000		0.0000			
11	550	0.0391	51.965	0.0397	52.777	0.0752	
12	600	0.0000		0.0000			
13	650	0.0330	43.845	0.0342	45.469	0.0752	
14	700	0.0000		0.0000			
15	750	0.0275	36.538	0.0287	38.162	0.0752	
16	800	0.0000		0.0000			
17	850	0.0220	29.230	0.0238	31.666	0.0752	
18	900	0.0000		0.0000			
19	950	0.0165	21.923	0.0189	25.170	0.0752	
20	1000	0.0000		0.0000			
21	1050	0.0116	15.427	0.0140	18.675	0.0752	
22	1100	0.0000		0.0000			
23	1150	0.0073	9.7434	0.0104	13.803	0.0752	
24	1200	0.0000		0.0000			
25	1250	0.0037	4.8717	0.0067	8.9314	0.0752	
26	1300	0.0000		0.0000			
27	1350	0.0000	0.0000	0.0043	5.6836	0.0752	
28	1400	0.0000		0.0000			
29	1450	0.0000	0.0000	0.0031	4.0597	0.0752	
30	1500	0.0000		0.0000			
31	1550	0.0000	0.0000	0.0037	4.8717	0.0752	
32	1600	0.0000		0.0000			
33	1650	0.0000	0.0000	0.0043	5.6836	0.0752	
34	1700	0.0000		0.0000			
35	1750	0.0000	0.0000	0.0043	5.6836	0.0752	
36	1800	0.0000		0.0000			
37	1850	0.0000	0.0000	0.0043	5.6836	0.0752	
38	1900	0.0000		0.0000			
39	1950	0.0000	0.0000	0.0037	4.8717	0.0752	
40	2000	0.0000		0.0000			

Important:

The active power is less than 25W, so the alternative test method should be used.

Voltage Fluctuation

Flicker

Standard : EN 61000 - 3 - 3

Reg.-no. : W6M20603-6706-E-11

Device : HPD Driver

Date : 17.03.2006

Temperature : 22.5 °C
 Pressure : 919 hPa
 Rel. humidity: 54 %

P_{st}	0,07
$P_{it} < 0,65$	pass
$dc < 3,3\%$	pass
$dt < 3\%$	pass
d max (%)	pass

Passed : **yes** / no

Remarks : See attached diagram as next page

Flicker Emission - IEC 61000-3-3 , EN 61000-3-3 , (EN60555-3)

Comply: IEC 61000-3-3 Ed.1.1 :2002 (incl. Amd.1) - IEC 61000-4-15 Ed.1.0 :1997 (in

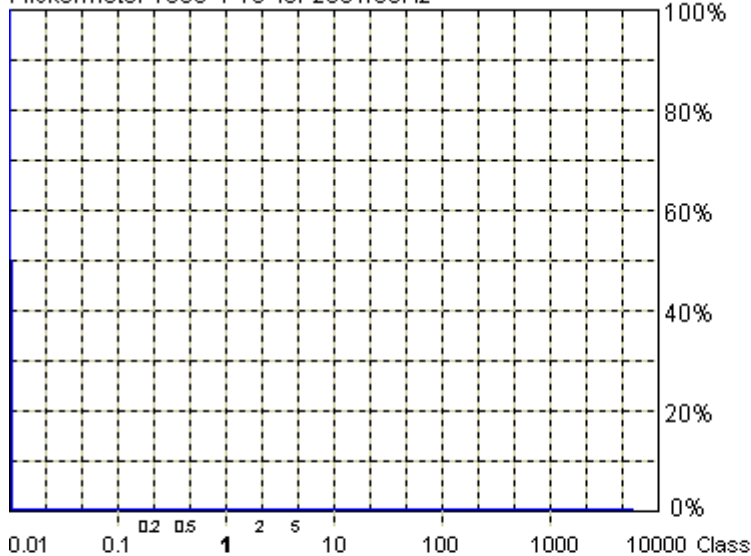
Semicon-Optronics Channel Corp.

HARCS Setup File : [unnamed](#)

HARCS Report File : [unnamed](#)

Operator : Catey
Unit : High Power LED Constant Current Driver
Serialnumber : HPD Driver
Remarks

Flickermeter 1000-4-15 for 230V/50Hz



Actual Flicker (Fl):	0.00
Short-term Flicker (Pst):	0.07
Limit (Pst):	1.00
Long-term Flicker (Plt):	0.06
Limit (Plt):	0.65
Maximum Relative Volt. Change (dmax):	0.00%
Limit (dmax):	4.00%
Relative Steady-state Voltage Change (dc):	0.00%
Limit (dc):	3.30%
Maximum Interval exceeding 3.30% (dt):	0.00ms
Limit (dt>Lim):	500ms

Flicker Emission - IEC 61000-3-3 , EN 61000-3-3 , (EN60555-3)

2006/3/17 11:48

Urms = 229.9 V P = 12.76 W
Irms = 0.132 A pf = 0.421

Range: 10 A
V-nom: 230 V
TestTime: 120 min (1617%)

High Power LED Constant Current Driver **Test aborted, Result: PASSED**

HAR-1000 EMC-Partner

Full Bar : Actual Values
Empty Bar : Maximum Values
Circles : Average Values
Blue : Current , Green : Voltage , Red : Failed

Measurement

Date : 2006/3/17 11:48 V3.16

Urms = 229.9V Freq = 50.000 Range: 10 A
Irms = 0.132A Ipk = 0.620A cf = 4.704
P = 12.76W Pap = 30.31VA pf = 0.421

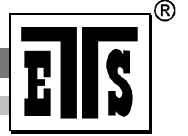
Test - Time : 12 x 10min = 120min (1617 %)

LIN (Line Impedance Network) : SLIN 0.24ohm +j0.15ohm N:0.16ohm +j0.10ohm

Limits : Plt : 0.65 Pst : 1.00
 dmax : 4.00 % dc : 3.30 %
 dtLim: 3.30 % dt>Lim: 500ms

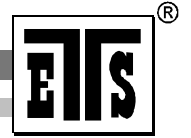
Test aborted, Result: PASSED

1
2



Appendix

- A Conducted Emissions
- B Radiated Emissions
- C Pictures



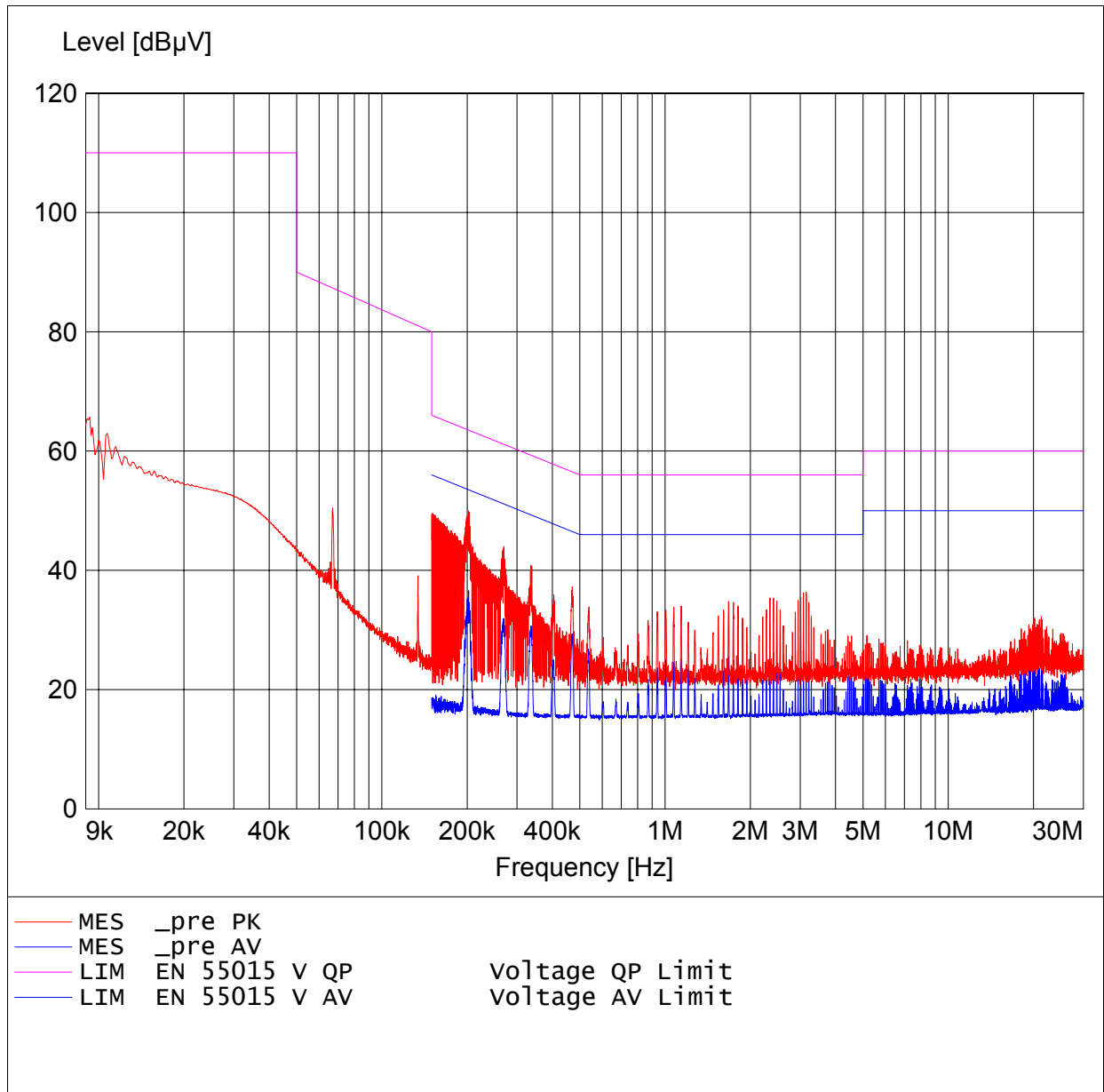
Appendix A

Conducted Emissions

The measurement diagram are wideband scan results before final test. Please see final results as page 36.

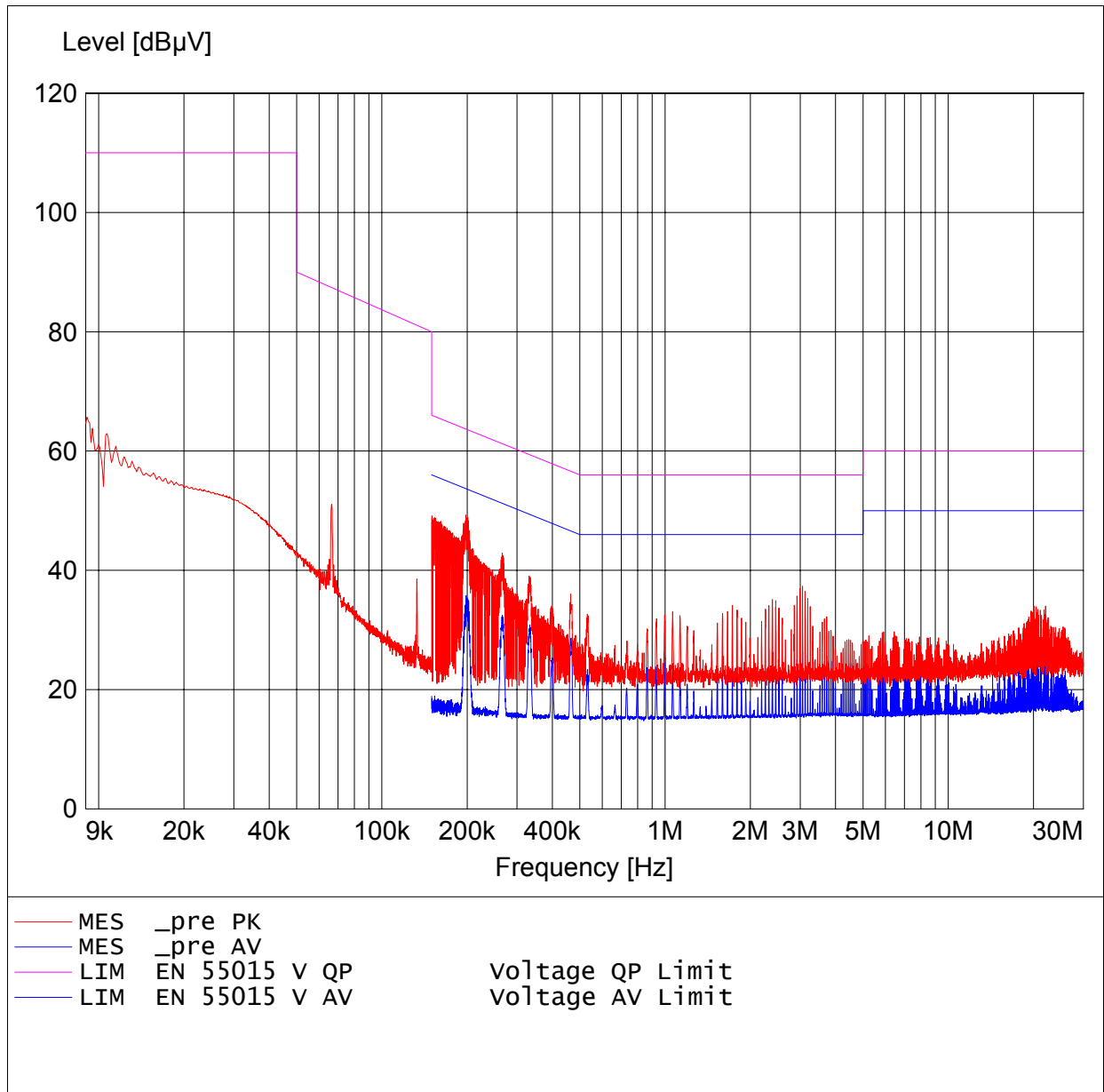
EMI voltage test in the ac-line according to EN55015

EUT: High Power LED Constant Current Driver
Approval Holder: Semicon-Optronics Channel Corp.
Operating Condition: Unom : 230 VAC (ac/dc adaptor) , Tnom : 23 °C
Test Site: ETS
Operator: Catey
Test Specification: V-Network : ESH3-Z5 N
Comment: model: HPD Driver mode: active



EMI voltage test in the ac-line according to EN55015

EUT: High Power LED Constant Current Driver
Approval Holder: Semicon-Optronics Channel Corp.
Operating Condition: Unom : 230 VAC (ac/dc adaptor) , Tnom : 23 °C
Test Site: ETS
Operator: Catey
Test Specification: V-Network : ESH3-Z5 L1
Comment: model: HPD Driver mode: active





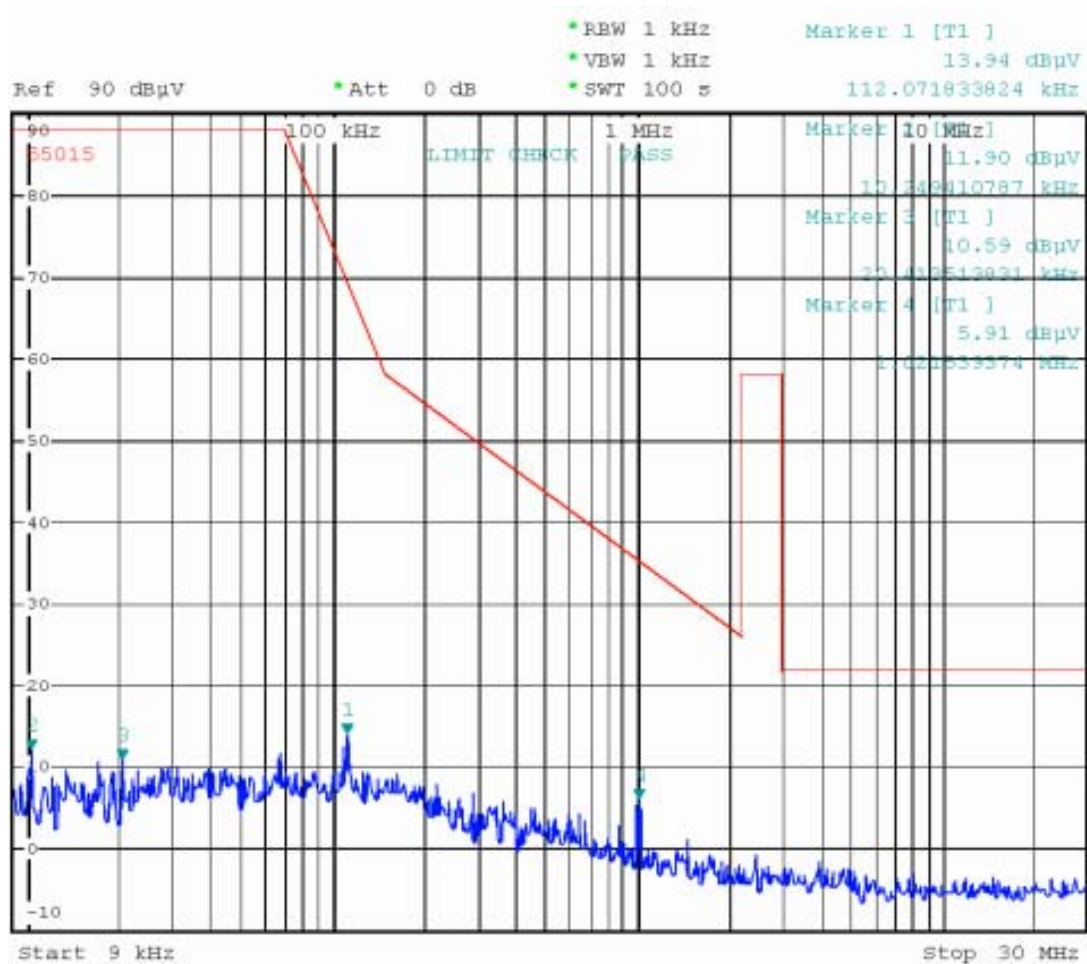
Appendix B

Radiated Emissions

Registration number : W6M20602-6706-E-11

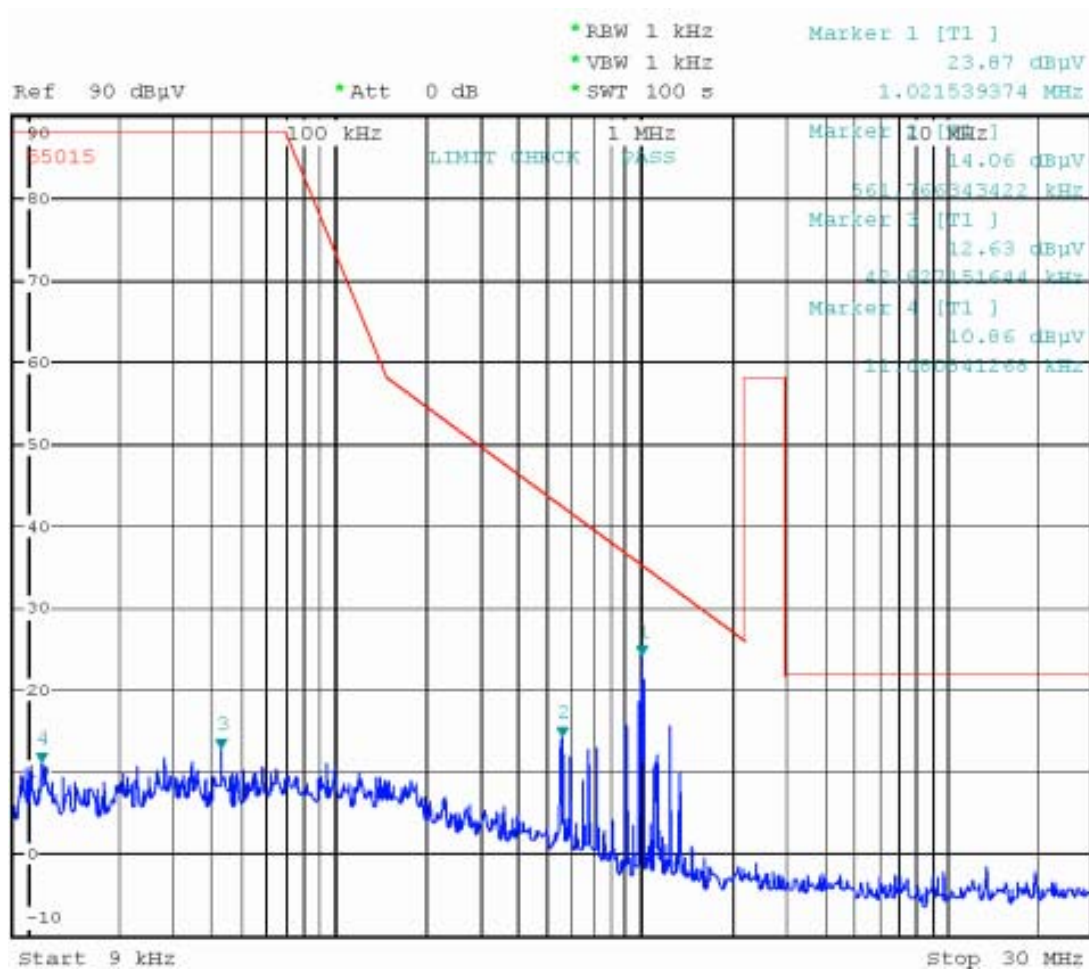
Spurious emissions under normal conditions in accordance to the EN 55015

EUT: High Power LED Constant Current Driver
MODEL NO.: HPD Driver
Approval Holder: Semicon-Optronics Channel Corp.
Test Site / Operator: ETS / Catey
Temperature/Voltage: Temp.: 23°C / Unom.: 230VAC (ac/dc adaptor)
Test Specification: Loop antenna
Type: X mode



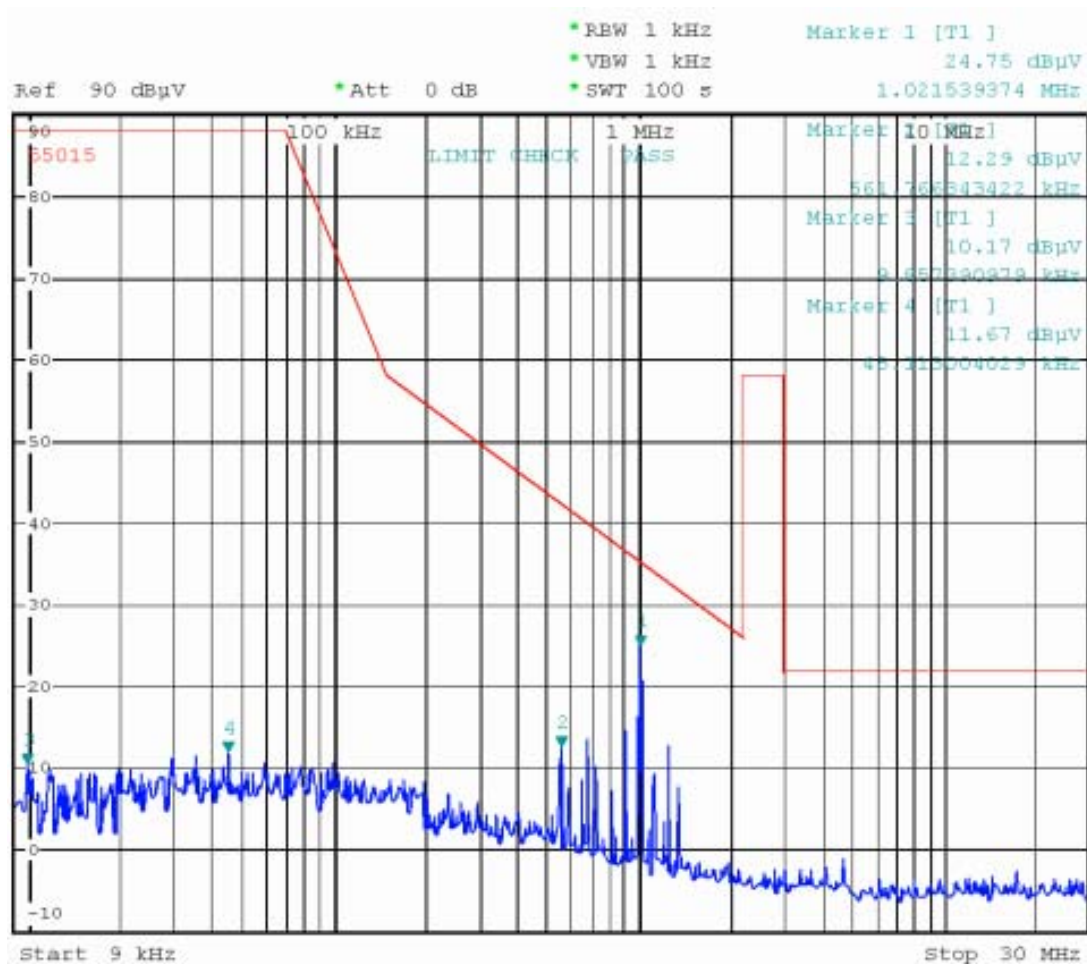
Spurious emissions under normal conditions in accordance to the EN 55015

EUT: High Power LED Constant Current Driver
MODEL NO.: HPD Driver
Approval Holder: Semicon-Optronics Channel Corp.
Test Site / Operator: ETS / Catey
Temperature/Voltage: Temp.: 23°C / Unom.: 230VAC (ac/dc adaptor)
Test Specification: Loop antenna
Type: Y mode



Spurious emissions under normal conditions in accordance to the EN 55015

EUT: High Power LED Constant Current Driver
MODEL NO.: HPD Driver
Approval Holder: Semicon-Optronics Channel Corp.
Test Site / Operator: ETS / Catey
Temperature/Voltage: Temp.: 23°C / Unom.: 230VAC (ac/dc adaptor)
Test Specification: Loop antenna
Type: Z mode





Appendix C

Pictures



Registration number : W6M20603-6706-E-11

ELECTRONIC TECHNOLOGY SYSTEMS DR. GENZ GMBH
STORKOWER STRASSE 38C, D-15526 REICHENWALDE B. BERLIN



Registration number : W6M20603-6706-E-11



Registration number : W6M20603-6706-E-11

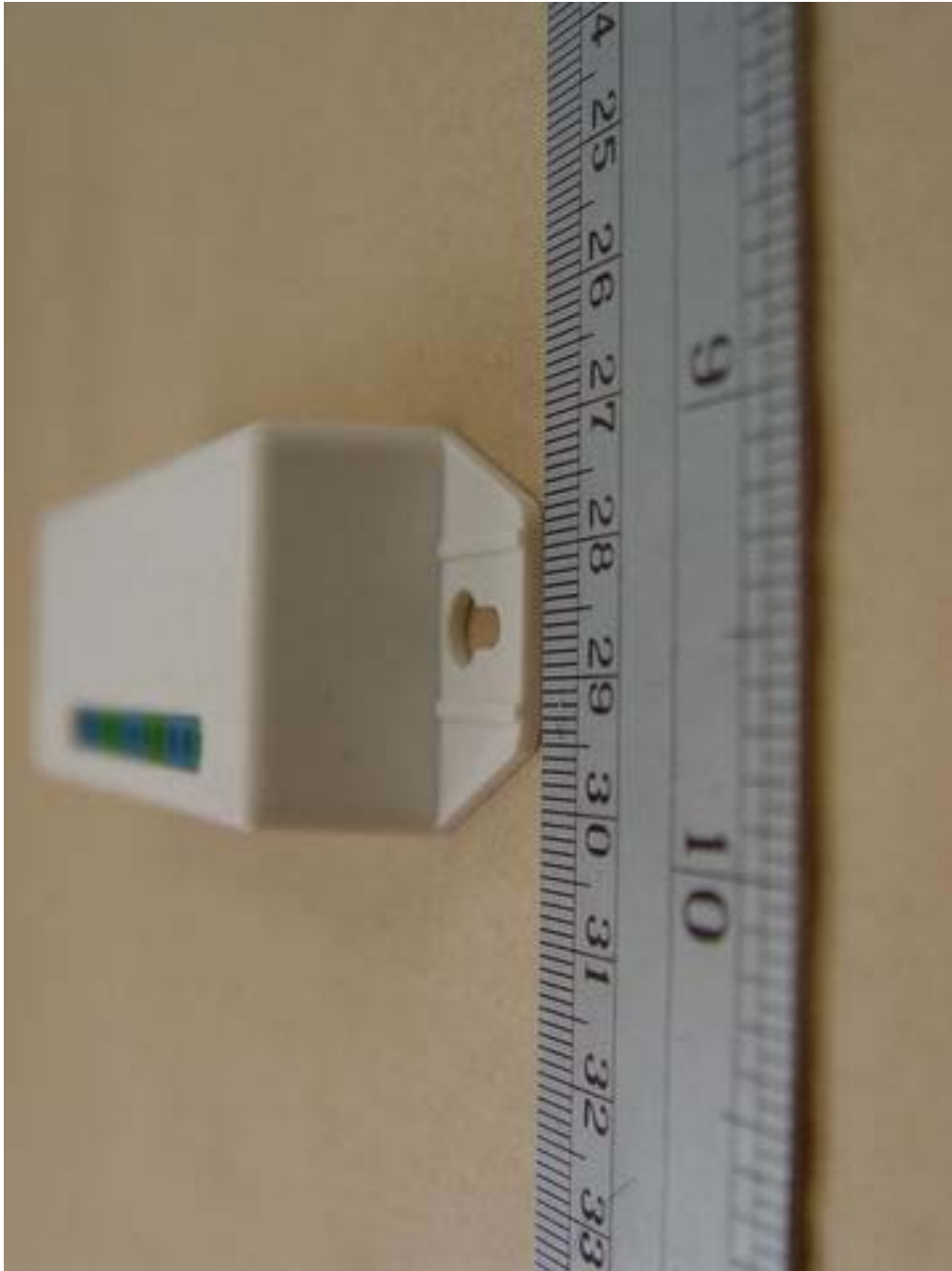


Registration number : W6M20603-6706-E-11

ELECTRONIC TECHNOLOGY SYSTEMS DR. GENZ GMBH
STORKOWER STRASSE 38C, D-15526 REICHENWALDE B. BERLIN



Registration number : W6M20603-6706-E-11



Registration number : W6M20603-6706-E-11

ELECTRONIC TECHNOLOGY SYSTEMS DR. GENZ GMBH
STORKOWER STRASSE 38C, D-15526 REICHENWALDE B. BERLIN



Registration number : W6M20603-6706-E-11

ELECTRONIC TECHNOLOGY SYSTEMS DR. GENZ GMBH
STORKOWER STRASSE 38C, D-15526 REICHENWALDE B. BERLIN



Registration number : W6M20603-6706-E-11

ELECTRONIC TECHNOLOGY SYSTEMS DR. GENZ GMBH
STORKOWER STRASSE 38C, D-15526 REICHENWALDE B. BERLIN



Registration number : W6M20603-6706-E-11

ELECTRONIC TECHNOLOGY SYSTEMS DR. GENZ GMBH
STORKOWER STRASSE 38C, D-15526 REICHENWALDE B. BERLIN



Registration number : W6M20603-6706-E-11

ELECTRONIC TECHNOLOGY SYSTEMS DR. GENZ GMBH
STORKOWER STRASSE 38C, D-15526 REICHENWALDE B. BERLIN