

TEST REPORT
48859-1 TRF EMC
ETSI EN 301 489-14

Report Reference No. : 48859-1 TRF EMC
Tested by (name+signature) : G. Curioni *Curioni G*
Witnessed by (name+signature) : Not applicable
Supervised by (name+signature) : Not applicable
Approved by (name+signature) : P. Barbieri *Barbieri Paul*
Date of issue : 2005-08-25

Testing Laboratory : **Nemko Spa**
Address : Via Trento e Trieste, 116
I-20046 Biassono MI (Italy)
Testing location/ procedure : Full application of Harmonised standards
Partial application of Harmonised standards
Other standard testing methods
Non-standard testing methods
SINAL accredited test report
Testing location/ address : Nemko Spa - Via Trento e Trieste, 116 - I-20046 Biassono MI (Italy)

Applicant's name : Hurma Elektronik Sanayi ve Ticaret Koll. Sti.
Address : Eskoop Sanayi Sitesi C5 Blok No: 243
Organize sanayi Bölgesi İkitelli/İstanbul/Türkiye

Test specification:
Standard : ETSI EN 301 489-14 v1.2.1 (2003-05)
Test procedure : Nemko PT 177
Non-standard test method : N/A

Test Report Form No. : TRF EMC SpA
TRF Originator : Nemko Spa
Master TRF : 2005-04

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Test item description : Analogue TV Broadcasting service transmitter
Trade Mark : HURMA
Manufacturer : Hurma Elektronik Sanayi ve Ticaret Koll. Sti
Model/Type reference : TVV 200
Ratings : 180 – 240 Vac, 50 Hz, 5 A max. – 200 W Peak Sync.

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EMC -- TEST REPORT

Test Report No. :	48859-1 TRF EMC	2005-08-25 Date of issue
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Type / Model : TVV 200 s/n 400605

Equipment : The E.U.T. was composed by a single unit.(output filter included)

Applicant : Hurma Elektronik Sanayi ve Ticaret Koll. Sti.

Address : Eskoop Sanayi Sitesi C5 Blok No: 243
Organize sanayi Bölgesi İkitelli/İstanbul/Türkiye

Manufacturer : Hurma Elektronik Sanayi ve Ticaret Koll. Sti.

Address : Eskoop Sanayi Sitesi C5 Blok No: 243
Organize sanayi Bölgesi İkitelli/İstanbul/Türkiye

Test Result according to the standards on page 6:	Positive
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The test report merely corresponds to the test sample.
It is not permitted to copy extracts of these test result without the written permission of the test laboratory.

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1 - EQUIPMENT UNDER TEST (E.U.T.)

1.1 - Product description:

- Model / (s/n) : TVV 200 / s.n. 400605

1.2 - E.U.T. specifications:

- E.U.T. use : base station for fixed use
- Antenna connector : 7/16, 50 Ω
- Antenna type : external antenna (not provided)

1.2.1 – Electric characteristics:

- Rated voltage : 230 V mono phase
- Voltage supply source : AC mains
- Rated power : 1000 W (actual 1105 W)

1.2.2 – RF characteristics:

- RF rated power @ 50 Ω : 200 W peak sync.
- Transmission frequency : Ch 28 (527.250 MHz)
- Assigned band : IV – V
- Operating frequency range : 470 ÷ 860 MHz
- Channel step : 8 MHz
- Necessary bandwidth : 7.607 MHz
- Colour/system : PAL/ B,G
- ITU designation : VISION C3F / SOUND 1 F3E
- Video IF : 38.9 MHz
- Local osc. : higher

1.3 - E.U.T. I/O terminals:

- Power supply cable;
- Audio & Video input > 3 m. long
- Local oscillator control port; < 3 m. long
- RF out.

1.4 - E.U.T. configuration:

The E.U.T. was composed of single unit (output filter included).

Sample incoming date : 2005-07-28

2 - REFERENCE DOCUMENTS

- Nemko PT 177: Use of measurements equipment to perform standard tests.
- Nemko PT 179: Uncertainty measurement evaluation in EMI testing.
- ETSI EN 301 489-01 v1.4.1
ElectroMagnetic compatibility and Radio spectrum Matters (ERM); ElectroMagnetic Compatibility (EMC) standard for radio equipment and services;
Part 1: Common Technical Requirements.
- ETSI EN 301 489-14 v 1.2.1
Electromagnetic compatibility and Radio spectrum Matters (ERM); ElectroMagnetic Compatibility (EMC) standard for radio equipment and services;
Part 14: Specific conditions for analogue and digital terrestrial TV broadcasting service transmitters.
- - EN 55011 (1998) + A1 (1999) + A2 (2002)
Limits and methods of measurement of radio disturbance characteristics of industrial, scientific and medical (ISM) radio-frequency equipment.
- EN 55022 (1998) + A1 (2000) + A2 (2003)
Information technology equipment – Radio disturbance characteristics - Limits and methods of measurement.
- EN 61000-3-2 (2000)
Electromagnetic compatibility (EMC) - Part 3: Limits - Section 2: Limits for harmonic current emission (equipment input current ≤ 16 A per phase).
- EN 61000-3-3 (1995) + A1 (2001)
Electromagnetic compatibility (EMC) - Part 3: Limits. - Section 3: Limitation of voltage fluctuations and flicker in low-voltage supply systems for equipment with rated current ≤ 16 A.
- EN 61000-4-2 (1995) + A1 (1998) + A2 (2001)
Electromagnetic Compatibility (EMC) - Part 4: Testing and measurements techniques - Section 2: Electrostatic discharge immunity test.
- EN 61000-4-3 (1996) + A1 (1998) + A2 (2001)
Electromagnetic Compatibility (EMC) - Part 4: Testing and measurements techniques - Section 3: Radiated, radio-frequency, electromagnetic field immunity test.
- EN 61000-4-4 (1995) + A1 (2001) + A2 (2001)
Electromagnetic Compatibility (EMC) - Part 4: Testing and measurements techniques - Section 4: Electrical fast transient/burst immunity test.
- EN 61000-4-5 (1995) + A1 (2001)
Electromagnetic compatibility (EMC) - Part 4: Testing and measurement techniques - Section 5: Surge immunity test.
- EN 61000-4-6 (1996) + A1 (2001)
Electromagnetic Compatibility (EMC) - Part 4: : Testing and measurements techniques - Section 6: Immunity to conducted disturbances induced by radio-frequency fields.
- EN 61000-4-11 (1994) + A1 (2001)
Electromagnetic compatibility (EMC) - Part 4: Testing and measurement techniques
- Section 11: Voltage dips, short interruptions and voltage variations immunity tests.

3 - TEST FACILITIES

3.1 - TEST EQUIPMENT LIST

<i>Equipment</i>	<i>Model</i>	<i>Manufacturer</i>	<i>Serial N°</i>
RF receiver 9 kHz ÷ 30 MHz	ESHS 30	R&S	828765/012
LISN 9 kHz ÷ 30 MHz	ESH2-Z5	R&S	872 460/041
Shielded room	--	Siemens	009
AC power source	6814	HP	3426A-00128
Mains analyzer	PM 3000A	Voltech	6872-002-10
Log periodic antenna 200 ÷ 1000 MHz	HUF-Z3	R&S	893 232/005
Biconical antenna 20 ÷ 200 MHz	HUF-Z2	R&S	893 934/008
Anechoic chamber	Alflab	Pagmatron	002
Signal generator 100 kHz ÷ 1 GHz	SMX	R&S	883 180/027
RF amplifier 80 ÷ 1000 MHz	SMC100	IFI	1754-0696
Power supply control module	PS5000	IFI	-
ESD generator	NSG 435	Schaffner	000310
Mainframe	NSG 200E	Schaffner	00861
Burst generator	NSG 225A	Schaffner	1484 9222
Coupling clamp	NSG 125	Schaffner	--
RF generator 0.1÷1000 MHz	SMX	R&S	883179/014
RF amplifier 150 kHz÷300 MHz	411/LA	EIN	629
Coupling/decoupling network	CDN 801-M3	Rohrbacher	60116
RF Injection Probe 1÷500 MHz	F-130-1	FCC	104
Pulse generator	Transient 1000	EMC partner	TRA 1000-82
Pulse generator	NSG 651	Schaffner	172
Coupling network	CDN 110	Schaffner	255
Spectrum analyzer	FSEK	R & S	88255/905
TV Demodulator	AMFS	R&S	839094/001
Video measurement system	VSA	R&S	839340/007
Colour TV pattern generator	PM 551B	Philips	LO3029

3.2 – BEST MEASUREMENT CAPABILITY

Hereafter the best measurement capability for EMC tests are reported

<i>Test</i>	<i>Field</i>	<i>uncertainty of measurement</i>	<i>remarks</i>
Radiated Emission	Antenna distance 3m Frequency range (30÷200)MHz	±5.2dB	(1)
Radiated Emission	Antenna distance 3m Frequency range (200÷1000)MHz	±4.9dB	(1)
Radiated Emission	Antenna distance 10m Frequency range (30÷200)MHz	±5.0dB	(1)
Radiated Emission	Antenna distance 10m Frequency range (200÷1000)MHz	±4.8dB	(1)
Conducted Emission	Frequency range (0.009÷30)MHz	±2.8dB	(1)
Radiated Power Emission	Frequency range 30÷300MHz	±4.0dB	(1)
Harmonic current emission	Frequency range 50Hz÷2kHz	2%	(1)
Voltage fluctuation emission	--	2%	(1)
Radiated Immunity	Frequency range 20MHz÷2.5GHz	(0÷6.0)dB	(1)
Conducted RF Immunity	Frequency range(0.09÷230)MHz	2.0dB	(1)
ESD Immunity	--	6%	(1)
Burst Immunity	5kHz	2%	(1)
Surge Immunity	--	2%	(1)
Dips immunity	--	2%	(1)
Magnetic field immunity	50Hz	2.0dB	(1)
Low frequency immunity	Frequency range 15Hz÷150kHz	2.0dB	(1)

(1) The reported expanded uncertainty of measurement is stated as the standard uncertainty of measurement multiplied by the coverage factor k=2 which has been derived from the assumed normal probability distribution for a coverage probability of 95%

4 - TESTS PERFORMED

- Conducted voltage emission from AC mains power port [0.15÷30 MHz]
- Voltage fluctuations (flicker)
- Radiated RF Electro-magnetic field immunity (Amplitude modulation) [80 ÷ 2000 MHz]
- Electrostatic discharge
- Fast transients (burst) common mode
- RF common mode [0.15÷80 MHz]
- Voltage dips and short interruptions
- Surges, common and differential mode

5 - GENERAL TEST CONDITIONS

5.1 - ENVIRONMENTAL CONDITIONS

$t = 18 \div 25 \text{ }^\circ\text{C}$ $p = 985 \div 1010 \text{ hPa}$ $\text{RH} = 30 \div 55 \%$

5.2 - OPERATING CONDITIONS OF THE EUT DURING THE TESTS

The E.U.T. was tested at its maximum RF output power, according to figure 1 of ETSI EN 301 489-14 & sub clause 4.2.1.

For particular test conditions see remarks in detailed page of the relevant test.

5.3 - PARAMETERS EVALUATED DURING IMMUNITY TESTS

According to table 1 ETSI EN 301 489-14
Manufacturer's declared minimum video S/N > 57 dB weighted

5.4 - EXCLUSION BANDS

Transmitter exclusion band for immunity test:
allocated channel No. 28, according to clause 4.3.1 of EN 301 489-14.

6 - SUMMARY OF TEST RESULTS

Port	Test category	Type of test	Frequency range	Level	Performance criteria	Normative references	Test result
Enclosure	Emission	Radiated emission	30÷1000 MHz	-	-	EN 55022	NA (1)
AC mains	Emission	Conducted voltage emission	0.15 ÷ 30 MHz	-	-	EN 55022	C
AC mains	Emission	Harmonic currents	0.1÷2 kHz	-	-	EN 61000-3-2	NA (2)
AC mains	Emission	Voltage fluctuations	-	-	-	EN 61000-3-3	C
Enclosure	Immunity	Radiated EM fields (AM)	80÷2000 MHz	3	CT	EN 61000-4-3 EN 301489-14	C
Enclosure	Immunity	Electrostatic discharge	-	2,3	TT	EN 61000-4-2 EN 301489-14	C
AC mains	Immunity	Fast transients	-	3	TT	EN 61000-4-4 EN 301489-14	C
Control / signal lines	Immunity	Fast transients	-	3	TT	EN 61000-4-4 EN 301489-14	C
AC mains	Immunity	RF common mode	0.15 ÷ 80 MHz	3	CT	EN 61000-4-6 EN 301489-14	C
Control / signal lines	Immunity	RF common mode	0.15 ÷ 80 MHz	3	CT	EN 61000-4-6 EN 301489-14	C
AC mains	Immunity	Voltage dips and short interruptions	-	70%U _T 40%U _T 0%U _T	TT TT TT	EN 61000-4-11 EN 301489-14	C
AC mains	Immunity	Surges Line to line Line to earth	-	2,3	TT	EN 61000-4-5 EN 301489-14	C

C = the equipment under test complied with the test specification limit.

NC = the equipment under test did not comply with the test specification limit.

NA = the test is not applicable to the port.

Notes:

- (1) This parameters are normally covered in standards relating to the use of radio spectrum. This test is applicable for ancillary equipment not incorporated into transmitters, receivers or transceivers.
- (2) For professional equipment with a total power greater than 1000 W the limits are not specified in this standard EN 61000-3-2. (actual AC mains power 1105 W, see page 16)

Plots symbols

Symbols used in the attached plots have the following meaning:

- "Conducted voltage emission on AC mains power port" test
- (+) = repetition of Average measurements for values near the test specification limit;
- (X) = repetition of Quasi Peak measurements for values near the test specification limit;
- Upper curve = measured Peak values;
- Lower curve = measured Average values.

7 - TEST RESULTS

7.1 - CONDUCTED EMISSION ON AC MAINS POWER PORT.

- *Test equipment list*

<i>Equipment</i>	<i>Model</i>	<i>Manufacturer</i>	<i>Serial N°</i>
RF receiver 9 kHz ÷ 30 MHz	ESHS 30	R&S	828765/012
LISN 9 kHz ÷ 30 MHz	ESH2-Z5	R&S	872 460/041
Shielded room	--	Siemens	009
Colour TV pattern generator	PM 551B	Philips	LO3029

- *Test method*

According to sub clause 9 of EN 55022.

- *Acceptance limits (according to table 2 of ETSI EN 301 489-14 for E.U.T. power greater than 200 VA or ; according to ETSI EN 301 489-1 E.U.T. power less than 200 VA intended to be used in telecommunication centres only).*

<i>Frequency (MHz)</i>	<i>Quasi-Peak dB(µV)</i>	<i>Average dB(µV)</i>
0.15 to 0.50	79	66
0.50 to 30	73	60

for $0.2 < AC \text{ mains power [kVA]} \leq 2$

- *Test result*

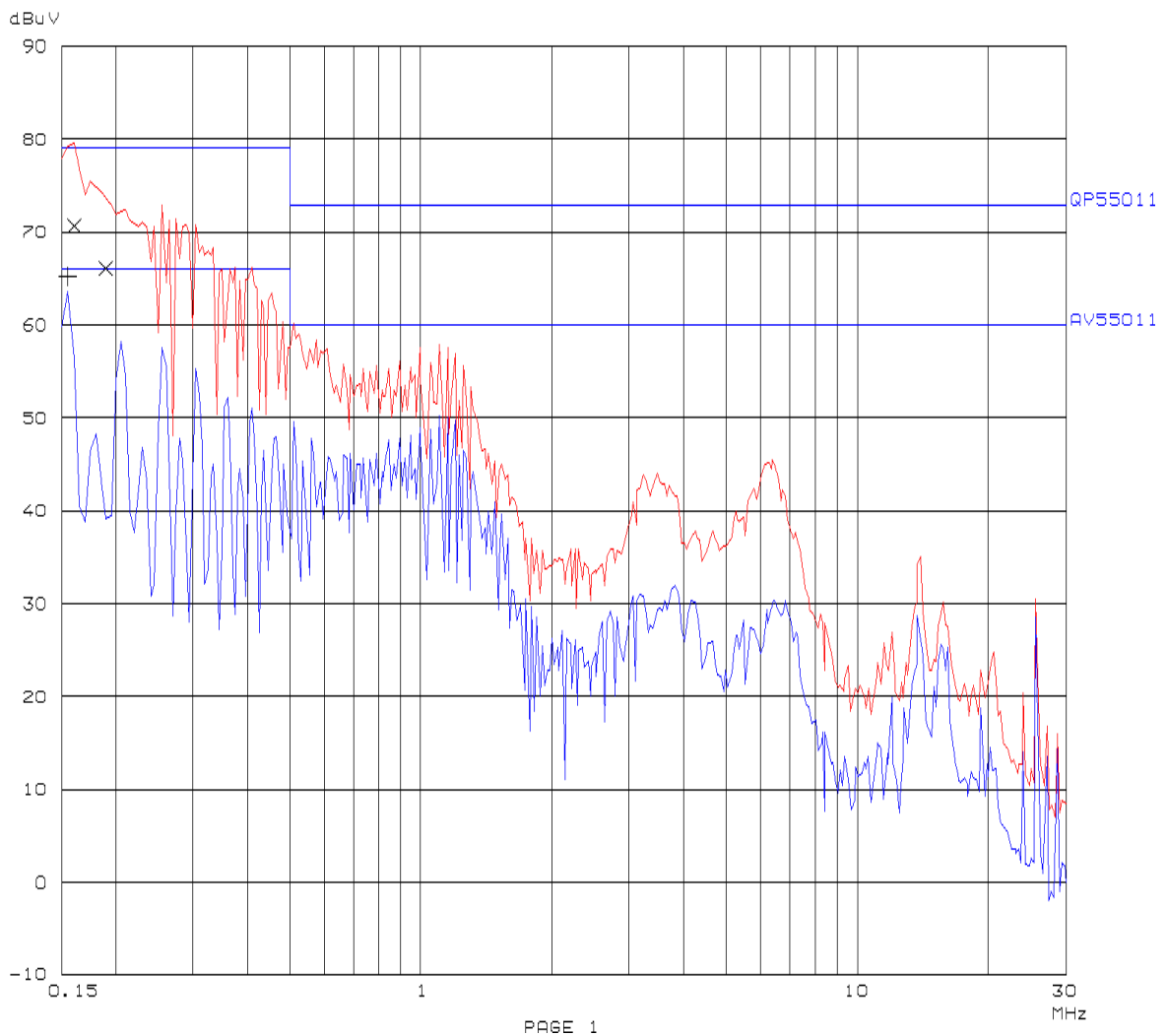
The equipment under test **complied** with the test specification limit.
For test result see the following attachments .

- *Remarks*

//

NEMKO S.p.A. PT Dpt.
 CONDUCTED DISTURBANCE ON AC-MAINS

EUT: TVV200
 Manuf: HURMA
 Op Cond: See relevant paragraph of test report
 Operator: G. Curioni
 Test Spec: EN 55011
 Comment: Neutral line
 Continuous operation



NEMKO S.p.A. PT Dpt.
CONDUCTED DISTURBANCE ON AC-MAINS

EUT: TVV200
Manuf: HURMA
Op Cond: See relevant paragraph of test report
Operator: G. Curioni
Test Spec: EN 55011
Comment: Neutral line
Continuous operation

Final Measurement Results:

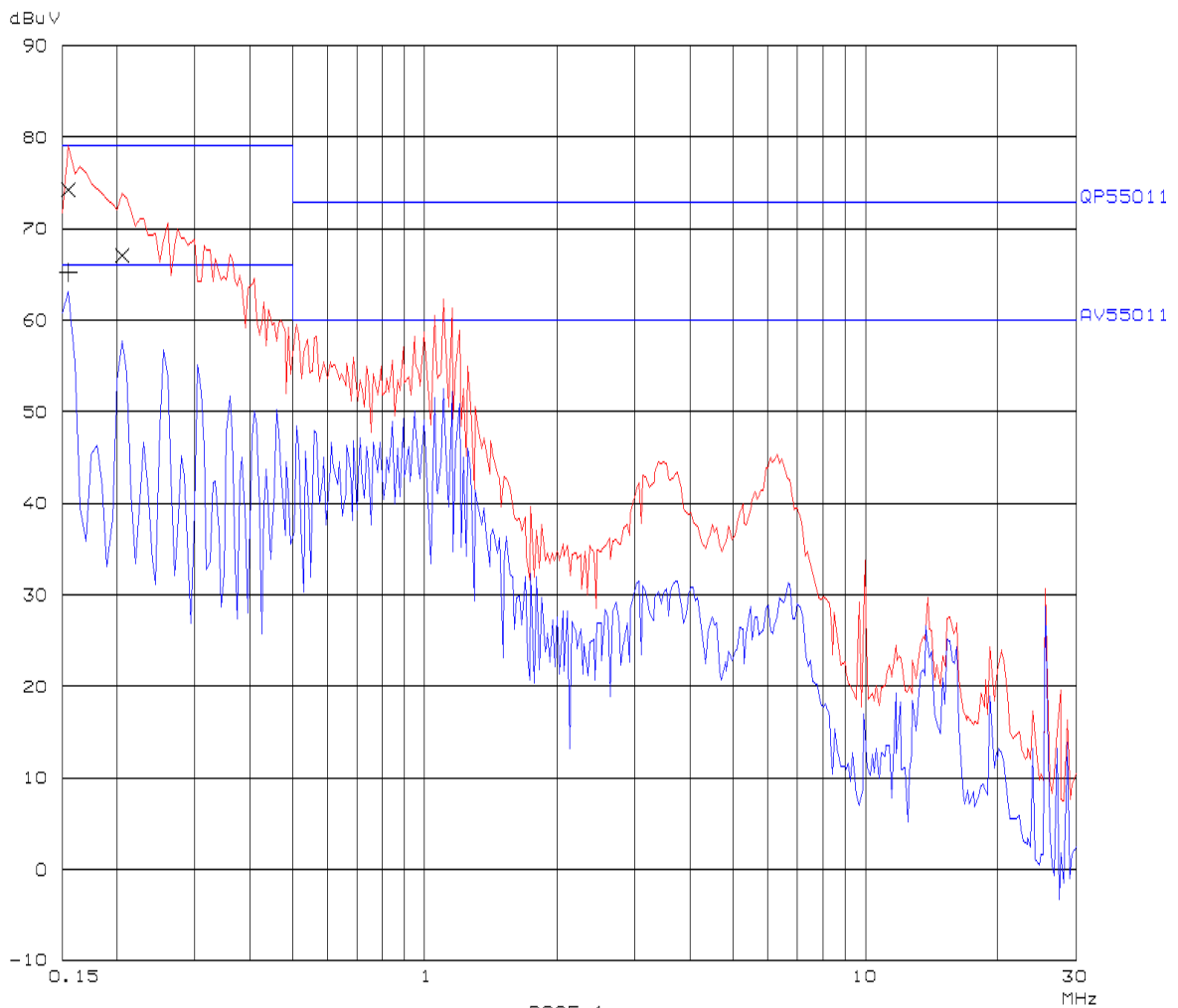
Frequency MHz	QP Level dBuV	QP Limit dBuV
0.16000	70.6	79.0
0.19000	66.1	79.0

Frequency MHz	AV Level dBuV	AV Limit dBuV
0.15500	65.2	66.0

* limit exceeded

NEMKO S.p.A. PT Dpt.
 CONDUCTED DISTURBANCE ON AC-MAINS

EUT: TVV200
 Manuf: HURMA
 Op Cond: See relevant paragraph of test report
 Operator: G. Curioni
 Test Spec: EN 55011
 Comment: Phase line
 Continuous operation





NEMKO S.p.A. PT Dpt.
CONDUCTED DISTURBANCE ON AC-MAINS

EUT: TVV200
Manuf: HURMA
Op Cond: See relevant paragraph of test report
Operator: G. Curioni
Test Spec: EN 55011
Comment: Phase line
Continuous operation

Final Measurement Results:

Frequency MHz	QP Level dBuV	QP Limit dBuV
0.15500	74.3	79.0
0.20500	67.1	79.0

Frequency MHz	DV Level dBuV	DV Limit dBuV
0.15500	65.1	66.0

* limit exceeded

7.2 - VOLTAGE FLUCTUATIONS

- *Test equipment list*

<i>Equipment</i>	<i>Model</i>	<i>Manufacturer</i>	<i>Serial N°</i>
AC power source	6814	HP	3426A-00128
Mains analyzer	PM 3000A	Voltech	6872-002-10
Colour TV pattern generator	PM 551B	Philips	LO3029

- *Test method*

According to clause 6 of EN 61000-3-3.

- *Acceptance limits*

Short-term flicker value $P_{st} \leq 1.0$.

Relative steady-state voltage change $d_c \leq 3.3\%$.

Maximum relative voltage change $d_{max} \leq 4\%$.

The relative voltage change value $d(t)$ during a voltage change shall not exceed 3.30 % for more than 500 ms.

- *Test result*

The equipment under test **complied** with the test specification limit.

For test result see the following attachments.

- *Remarks*

//

Unit : TVV 200
Remarks See paragraph 5.2 of test report

Remarks

Urms = 226.2V Freq = 50.016 Range: 25 A
Irms = 6.396A Ipk = 15.10A cf = 2.361
P = 1105W S = 1447VA pf = 0.764

Test - Time : 1 x 10min = 10min (100 %)

LIN (Line Impedance Network) : L: 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 completed, Result: **PASSED**

Pst dmax dc dt>Lim
[%] [%] [ms]
1 0.072 0.000 0.010 0.000

7.3 - RADIATED RF ELECTROMAGNETIC FIELD IMMUNITY

• *Test equipment list*

<i>Equipment</i>	<i>Model</i>	<i>Manufacturer</i>	<i>Serial N°</i>
Log periodic antenna 200 ÷ 1000 MHz	HUF-Z3	R&S	893 232/005
Biconical antenna 20 ÷ 200 MHz	HUF-Z2	R&S	893 934/008
RF amplifier 80 ÷ 1000 MHz	SMC100	IFI	1754-0696
Power supply control module	PS5000	IFI	-
RF generator 0.1 ÷ 1000 MHz	SMX	R&S	826 4517.5
Anechoic chamber	Alflab	Pagmatron	002
RF generator 0.4 ÷ 1040 MHz	SMS	R&S	871366/010
RF amplifier 10 kHz ÷ 220 MHz	250 L	AR	8645
Anechoic chamber	ALFLAB	Pagmatron	002
Microwave horn antenna 0.8 ÷ 5 GHz	AT 4002A	A&R	300773
RF amplifier 0.8 ÷ 4.2 GHz	50S1G4A	A&R	301049
Signal generator 10 MHz-20 GHz	SMP 22	R&S	830857/001
Spectrum analyzer	FSEK	R & S	88255/905
TV Demodulator	AMFS	R&S	839094/001
Video measurement system	VSA	R&S	839340/007
Colour TV pattern generator	PM 551B	Philips	LO3029

• *Test method*

According to clauses 7 and 8 of EN 61000-4-3 and according to table 3 of ETSI EN 301 489-14.

Radiated immunity was tested on EUT with horizontal and vertical polarization of the antenna.

Antenna: biconical/log periodic

Field strength: 10 V/m

Frequency range: 80 ÷ 2000 MHz

Modulation: 80% AM

Frequency step increment: 1%

AF signal: 1000 Hz (sine wave)

Frequency scan ranges: 80 ÷ 200 MHz; 200 ÷ 1000 MHz; 1000 ÷ 2000 MHz

• *Acceptance limits*

Performance criteria CT according to clause 6.1 of EN 301 489-14.

• *Test result*

The equipment under test **complied** with the test specification limit.

• *Remarks //*

7.4 - ELECTROSTATIC DISCHARGE

• Test equipment list

<i>Equipment</i>	<i>Model</i>	<i>Manufacturer</i>	<i>Serial N°</i>
ESD generator	NSG 435	Schaffner	000310
Spectrum analyzer	FSEK	R & S	88255/905
TV Demodulator	AMFS	R&S	839094/001
Video measurement system	VSA	R&S	839340/007
Colour TV pattern generator	PM 551B	Philips	LO3029

• Test method

According to clauses 7 and 8 of EN 61000-4-2.

• Acceptance limits

Performance criteria TT according to clause 6.2 of EN 301 489-14.

• Test result

<i>Test point</i>	<i>Test voltage (kV)</i>	<i>Discharge application mode</i>	<i>Test result</i>	<i>Remarks</i>
Connectors	± 4	Contact	C	-
Enclosure	± 4	Contact	C	-
VCP	± 4	Contact	C	-
HCP	± 4	Contact	C	-
Screws	± 4	Contact	C	-
LEDs	± 8	Air	C	-
push button	± 8	Air	C	-
display	± 8	Air	C	-
Main switch - fuse	± 8	Air	C	-

C = the equipment under test complied with the test specification limit.

NC = the equipment under test did not comply with the test specification limit.

VCP = Vertical coupling plane

HCP = Horizontal coupling plane

• Remarks

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7.5 - FAST TRANSIENTS (BURST) COMMON MODE

• Test equipment list

<i>Equipment</i>	<i>Model</i>	<i>Manufacturer</i>	<i>Serial N°</i>
Mainframe	NSG 200E	Schaffner	00861
Burst generator	NSG 225A	Schaffner	1484 9222
Coupling clamp	NSG 125	Schaffner	--
Spectrum analyzer	FSEK	R & S	88255/905
TV Demodulator	AMFS	R&S	839094/001
Video measurement system	VSA	R&S	839340/007
Colour TV pattern generator	PM 551B	Philips	LO3029

• Test method

According to clauses 7 and 8 of EN 61000-4-4 and according to table 3 of ETSI EN 301 489-14.

• Acceptance limits

Performance criteria TT according to clause 6.2 of EN 301 489-14.

• Test result

<i>Port</i>	<i>Test voltage (kV)</i>	<i>Duration of test (min)</i>	<i>Test result</i>	<i>Remarks</i>
AC mains input port	± 2	2	C	-
<i>Audio/Video inputs</i>	± 1	2	C	-

C = the equipment under test complied with the test specification limit.

NC = the equipment under test did not comply with the test specification limit.

• Remarks

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7.6 - RADIO-FREQUENCY COMMON MODE (conducted).

• *Test equipment list*

<i>Equipment</i>	<i>Model</i>	<i>Manufacturer</i>	<i>Serial N°</i>
RF generator 0.1÷1000 MHz	SMX	R&S	883179/014
RF amplifier 150 kHz÷300 MHz	411/LA	EIN	629
Coupling/decoupling network	CDN 801-M3	Rohrbacher	60116
RF Injection Probe 1÷500 MHz	F-130-1	FCC	104
Spectrum analyzer	FSEK	R & S	88255/905
TV Demodulator	AMFS	R&S	839094/001
Video measurement system	VSA	R&S	839340/007
Colour TV pattern generator	PM 551B	Philips	LO3029

• *Test method*

According to clauses 7 and 8 of EN 61000-4-6 and according to table 3 of ETSI EN 301 489-14.

• *Acceptance limits*

Performance criterion CT according to table 1 of EN 301 489-14

• *Test result*

<i>Port</i>	<i>Interfering voltage (V) Mod. AM 80 % 1000 Hz</i>	<i>Frequency range (MHz)</i>	<i>Frequency step</i>	<i>Test result</i>	<i>Remarks</i>
AC mains input port	10	0.15 ÷ 5 5 ÷ 80	50kHz 1%	C	-
Audio/Video inputs	10	0.15 ÷ 5 5 ÷ 80	50kHz 1%	C	-

C = the equipment under test complied with the test specification limit.

NC = the equipment under test did not comply with the test specification limit.

• *Remarks*

//

7.7 - VOLTAGE DIPS AND SHORT INTERRUPTIONS

- *Test equipment list*

<i>Equipment</i>	<i>Model</i>	<i>Manufacturer</i>	<i>Serial N°</i>
Pulse generator	Transient 1000	EMC partner	TRA 1000-82
Spectrum analyzer	FSEK	R & S	88255/905
TV Demodulator	AMFS	R&S	839094/001
Video measurement system	VSA	R&S	839340/007
Colour TV pattern generator	PM 551B	Philips	LO3029

- *Test method*

According to clauses 7 and 8 of EN 61000-4-11 and according to table 3 of ETSI EN 301 489-14.

- *Acceptance limits*

According to clause 9.7.3 of EN 301 489-1.

- *Test result*

<i>Reduction (%)</i>	<i>Reduction time (ms)</i>	<i>Disturbances (n°)</i>	<i>Performance criteria</i>	<i>Test result</i>	<i>Remarks</i>
30	10	3	TT	C	-
60	100	3	TT	C	-
>95	5000	3	TT	C	-

C = the equipment under test complied with the test specification limit.

NC = the equipment under test did not comply with the test specification limit.

- *Remarks*

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7.8 - SURGES, DIFFERENTIAL AND COMMON MODE

• Test equipment list

<i>Equipment</i>	<i>Model</i>	<i>Manufacturer</i>	<i>Serial N°</i>
Pulse generator	NSG 651	Schaffner	172
Coupling network	CDN 110	Schaffner	255
Spectrum analyzer	FSEK	R & S	88255/905
TV Demodulator	AMFS	R&S	839094/001
Video measurement system	VSA	R&S	839340/007
Colour TV pattern generator	PM 551B	Philips	LO3029

• Test method

According to clauses 7 and 8 of EN 61000-4-5 and according to table 3 of ETSI EN 301 489-14.

• Acceptance limits

Performance criterion TT according to table 1 of EN 301 489-14

• Test result

<i>Port</i>	<i>Coupling mode</i>	<i>Test voltage</i>	<i>Test result</i>	<i>Remarks</i>
AC mains power input port	Common mode (line to ground)	2 kV	C	-
	Differential mode (line to line)	1 kV	C	-

C = the equipment under test complied with the test specification limit.

NC = the equipment under test did not comply with the test specification limit.

• Remarks

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8 – PHOTOS

