

Electromagnetic Compatibility (EMC) SECTOR

EUT:	Electric quick changer
Model:	EQC75-A
Manufacturer:	Gimatic S.r.l. Via Enzo Ferrari, 2/4 - 25030 Roncadelle (BS) - Italy

Test specification:	EN 61000-6-2:2005 /EC:2005 /IS1:2005 EN 61000-6-4:2007 /A1:2011
Application:	All applicable tests
Remarks:	None

Customer:	Gimatic S.r.l. Via Enzo Ferrari, 2/4 - 25030 Roncadelle (BS) - Italy		
Purchase Order:	ODA-V00834	dated:	2017-02-27
Order Confirmation:	CO 2017-0074-00	dated:	2017-02-28

Samples receiving date:	2017-04-04		
Tests date:	from:	2017-04-04	to: 2017-04-07

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This document does not include any attachments.

00	2017-04-27	Formal issue
Rev.	Date	Description

Results of tests and controls reported in this document refer only to samples as tested and described.

It is the responsibility of the manufacturer to ensure that all production models meet the intent of the requirements detailed within this report.

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1. PURPOSE

Purpose of this document is to contain results of the tests performed to verify correspondence of test sample, as identified and described in paragraph 3, to requirements of the tests of the standards listed in paragraph 2.

2. APPLICABLE DOCUMENTS

In the following of this test report, the “applicable documents” will be indicated without date and/or edition number and/or amendments.

2.1 REFERENCE STANDARDS

On customer request, the tests have been performed in compliance with the standards listed below:

Standard	Title
EN 61000-6-2:2005 /EC:2005 /IS1:2005	Electromagnetic compatibility (EMC) Part 6-2: Generic standards - Immunity for industrial environments
EN 61000-6-4:2007 /A1:2011	Electromagnetic compatibility (EMC) Part 6-4: Generic standards - Emission standard for industrial environments

and test methods listed on chapter 2.2.

2.2 TEST METHODS

The reference standards listed in the par. 2.1 require the use of the following basic standards that specify *how* the tests shall be performed. The dates of publication of the following basic standards are in conformity with the reference standards requirements.

Standard	Title
EN 55016-2-3:2010	Specification for radio disturbance and immunity measuring apparatus and methods Part 2-3: Methods of measurement of disturbances and immunity – Radiated disturbance measurements
EN 61000-4-2:2009	Electromagnetic compatibility (EMC) - Part 4: Testing and measurement techniques Section 2: Electrostatic discharge immunity test - Basic EMC publication
EN 61000-4-3:2006 /A1:2008 /IS1:2009 /A2:2010	Electromagnetic compatibility (EMC) - Part 4-3: Testing and measurement techniques – Radiated, radio-frequency, electromagnetic field immunity test
EN 61000-4-4:2012	Electromagnetic compatibility (EMC) -Part 4: Testing and measurement techniques Section 4: Fast transients / burst immunity test
EN 61000-4-6:2014	Electromagnetic compatibility (EMC) - Part 4: Testing and measurement techniques Section 6: Immunity to conducted disturbances, induced by radio-frequency fields
EN 61000-4-8:2010	Electromagnetic compatibility (EMC) - Part 4: Testing and measurement techniques Section 8: Power frequency magnetic field immunity test

2.3 OTHERS DOCUMENTS

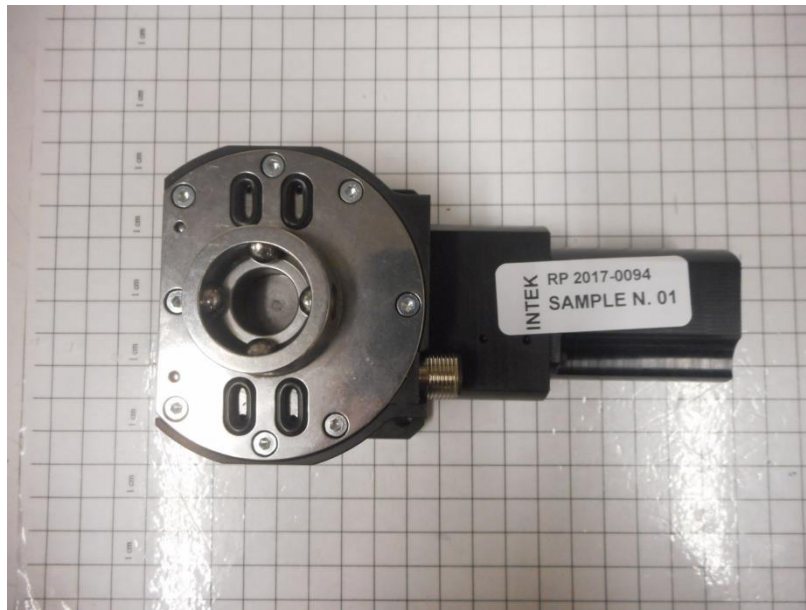
Document	Title
INTEK 05 04 PP 001 PRE rev.04	Procedure for electrostatic discharge immunity test
INTEK 05 04 PP 003 PRE rev.03	Procedure for radiated disturbances measurement
INTEK 05 04 PP 005 PRE rev.06	Procedure for radiated, radio-frequency, electromagnetic field immunity test
INTEK 05 04 PP 010 PRE rev.05	Procedure for fast transients / burst immunity test
INTEK 05 04 PP 012 PRE rev.05	Procedure for immunity to conducted disturbances, induced by radio-frequency field
INTEK 05 04 PP 013 PRE rev.04	Procedure for power frequency magnetic field immunity test

3. TEST SAMPLE IDENTIFICATION

Unless otherwise specified, the technical data stated in this paragraph are declared by the manufacturer or obtained from the product technical documentation.

3.1 DESCRIPTION

Identification data of test samples are reported in the first page of this document.



Sample under test



Marking plate / markings



External view 1



External view 2



External view 3



External view 4

EUT composed of:	Single unit
Sample/Unit No. 1	
Serial / batch number:	V00648
Hardware version:	C
Firmware/software release:	2
Dimensions:	75 x 146 x 63,5 mm

3.1.1 TECHNICAL DATA

Identification	Power source	Rated voltage	Rated power	Highest internal frequency
Sample No. 1	Dedicated power supply	24 Vdc	8 W	16 MHz

3.1.2 CLASSIFICATION

On the basis of the definition given by the applicable standard the test sample is classified as:	
Emission:	<input type="checkbox"/> Equipment intended for use in residential locations <input checked="" type="checkbox"/> Equipment intended for use in industrial locations
Immunity:	<input type="checkbox"/> Equipment intended for use in residential locations <input checked="" type="checkbox"/> Equipment intended for use in industrial locations
As far as tests are concerned, test sample is considered as:	
Setup for equipment:	<input type="checkbox"/> Floor standing <input checked="" type="checkbox"/> Table top
Other information:	None

3.1.3 ADDITIONAL INFORMATION

None

3.2 SAMPLES ORIGIN

The test samples are supplied by:			
<input checked="" type="checkbox"/> Manufacturer	<input type="checkbox"/> Customer	<input type="checkbox"/> Applicant	<input type="checkbox"/> _____
The beginning sampling is carried out by:			
<input checked="" type="checkbox"/> Manufacturer	<input type="checkbox"/> Customer	<input type="checkbox"/> Applicant	<input type="checkbox"/> _____
Received samples:	1	Tested samples:	1
Selection method:	<input type="checkbox"/> Random taking <input checked="" type="checkbox"/> None		

3.3 PORTS DESCRIPTION

ID	Name	Type	Cable length	Cable	Shield	Remarks
0	Enclosure	Conductive	N/A	N/A	N/A	None
1	Control cable	DC - I/O	No limitation	5-poles	NO	None

Remarks: the ports listed above are only the ports connected to the EUT during the tests, this not means necessarily that all these ports are submitted to the tests. The ports involved in the tests are identified in paragraphs of the tests.

Key to columns:

ID:	Number assigned to the cable. Ports with the same ID means that are contained in the same cable.
Name:	Name given by manufacturer
Type:	AC = AC Power Port AC mains = AC Mains Power Port DC = DC Power Port N/E = Non-Electrical I/O = Signal Input or Output Port CMD = Command Port TP = Telecommunication Ports PE = Protective Earth FE = Functional Earth
L:	Maximum length declared by applicant in meters. The abbreviation "N/Av" indicates no length limitation.
S:	Shielded cable
Cable:	For instance type of cable used during tests; 2Pdc : Two lines (positive and negative) 2Pac : Two lines (line and neutral) 3Pdc : Three lines (positive, negative and ground connection) 3Pac : Three lines (line, neutral and ground connection) SW : Single wire(s) TW : Twisted pair
Remarks:	If necessary indicated the line details, shield connection side, connected from-to, classification, etc.

4. TEST INFORMATION

Unless otherwise specified, during the tests the sample/s was/were been configured following the methods and procedure specified in the reference standard.

4.1 CONDITIONS DURING THE TESTS

4.1.1 PERSONNEL

Test performed by:	<i>Luigi Sala (Intek S.p.A.)</i>
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4.1.2 MODIFICATIONS TO SAMPLES

Test samples are not modified during the tests.

4.1.3 ENVIRONMENTAL CONDITIONS

Laboratory environmental conditions are recorded during tests and they are shown on relevant chapters. The measurement uncertainties are given with expanded uncertainty with a level of confidence of 95% ($k=2$)

4.1.4 CONVENTIONS

If applicable, on the right of each chapter or paragraph is written the number of the chapter or paragraph of reference Standard in the form: § number

4.1.5 ABBREVIATIONS

The following abbreviation and acronyms are applicable to this test report (not all could be used):

N/A	Not Applicable	AMN	Artificial Mains Network
N/Av	Not Available	LISN	Line Impedance Stabilization Network
N/R	Not Required by the customer	ISN	Impedance Stabilization Network
N/D	Not Declared	VP	Voltage Probe
N/T	Not Tested	HVP	High Voltage Probe
NCR	No Calibration Required	CP	Current Probe
No.	Number	CD	Coupling Device
TR	Test Report	CDN	Coupling / Decoupling Network
Req.	Required	CCC	Capacitive Coupling Clamp
Obt.	Obtained	Z_{coup}	Coupling Impedance
EUT	Equipment Under Test	AM	Amplitude Modulation
AE	Auxiliary Equipment	PM	Pulse Modulation
U_{LAB}	Laboratory Measurement Uncertainty	PK	Peak detector
U_{CISPR}	Instrumentation Measurement Uncertainty	AV	Average detector
EMI	ElectroMagnetic Interference	QP	Quasi-Peak detector
EMS	ElectroMagnetic Susceptibility	LF	Low Frequency
GRP	Ground Reference Plane	HF	High Frequency

4.2 CONFIGURATION MODES

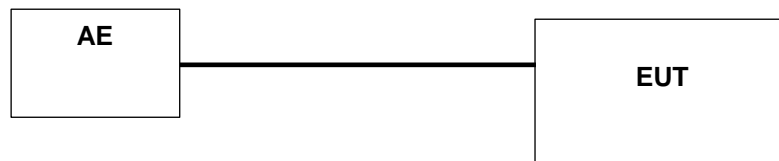
During tests the sample is connected to a power supply able to generate voltage and current required for sample operation.

Emission: the EUT was configured to measure its highest possible radiation level. The test modes selected are according to EUT instruction manual and/or manufacturer information.




Immunity: the EUT was configured to have its highest possible susceptibility against tested phenomena. The configuration modes are according to EUT instruction manual and/or manufacturer information.

Configuration mode	Description
CM1	Normal conditions: voltage supply 24 Vdc The PIN Vout unlock is connected to datalogger

Connections of sample are shown on following figure:

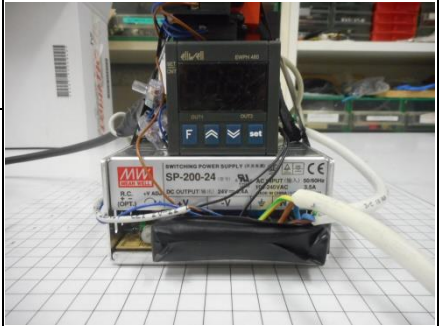


Caption:

 **Power Supply lines**
 **Signal lines**
 **Data lines**

4.2.1 AUXILIARY EQUIPMENT DESCRIPTION

Supporting equipment used during testing:

Type(*)	Equipment	Manufacturer	Model	Remarks / Photo
AE1	Power supply (provided by customer)	Mean Well	SP-200-24	
AE2	Electronic programmable timer (provided by customer)	Eliwell	EWPH480	
AE3	Datalogger with Software	Agilent	34970A BenchLink Data Logger 3	INTEK ID 0584P
(*) : Are used the following abbreviations: - AE: Auxiliary/Associated Equipment, or - SIM: Simulator (Not Subjected to Test) - CABL: Connecting cables				

4.3 OPERATION MODES

The operation mode adopted during the tests are listed in the following table:

Operation mode	Description
Run	The Actuator open and close with duty cycle at 50 % and period of cycle of 6 seconds

4.4 PERFORMANCE CRITERIA

Emission tests:

"Quasi peak" emissions, and "average" emissions if any, shall be lower than relevant limits.

Measured values are identified on plots as here below described:

- Red line: "quasi peak" emission limit
- Blue line: "average" emission limit
- x [symbol] red: "quasi peak" measured value
- + [symbol] blue: "average" measured value

Immunity tests:

According to requirements of standard EN 61000-6-2, here below reported:

"The general principles (performance criteria) for the evaluation of the immunity test results are the following:

Performance criterion A:

The apparatus shall continue to operate as intended during and after the test. No degradation of performance or loss of function is allowed below a performance level specified by the manufacturer, when the apparatus is used as intended. The performance level may be replaced by a permissible loss of performance. If the minimum performance level or the permissible performance loss is not specified by the manufacturer, either of these may be derived from the product description and documentation and what the user may reasonably expect from the apparatus if used as intended.

Performance criterion B:

The apparatus shall continue to operate as intended after the test. No degradation of performance or loss of function is allowed below a performance level specified by the manufacturer, when the apparatus is used as intended. The performance level may be replaced by a permissible loss of performance. During the test, degradation of performance is however allowed. No change of actual operating state or stored data is allowed. If the minimum performance level or the permissible performance loss is not specified by the manufacturer, either of these may be derived from the product description and documentation and what the user may reasonably expect from the apparatus if used as intended.

Performance criterion C:

Temporary loss of function is allowed, provided the function is self-recoverable or can be restored by the operation of the controls.

4.5 PERFORMANCE EVALUATION METHOD

The here above listed performance criteria are applied to the sample by means of verification of the correct implementation of the cycle with data logger.





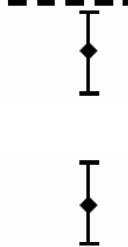
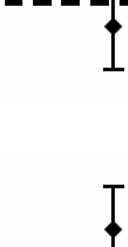


Remarks:

Convention adopted by Laboratory for performance criteria A: variations within the accepted tolerances are noted in the respective test paragraphs if any.

4.6 CRITERIA ADOPTED FOR COMPLIANCE EVALUATION

If applicable for compliance evaluation of the test results and considering the uncertainty values of the tests, the Laboratory adopts the following criteria:

- the reference standard specifies uncertainty for measurements:
 - measurements uncertainty permitted, or
 - instruments accuracy, or
 - application of measurements uncertainty to the measured values,
 in this case the measurement complies with the requirement if the measured value is within the limits, or with the correction due to the Laboratory uncertainty.
- the reference standard doesn't specify uncertainty for measurements or particular requirements of the instrumentation: in this case the Laboratory uses the following scheme:

	Case A	Case B	Case C	Case D
<div>Specified upper limit</div> <div>  = measured result  = uncertainty interval </div> <div>Specified lower limit</div>				
	Pass	Pass	Fail	Fail

For Case B the result is considered to comply with the requirements only if the value is within the limits of the standard.

5. TEST RESULTS

Par. TR	Test	Reference	Port	Result
	EMISSION TEST			
6.1	Radiated emission 30-1000 MHz	EN 61000-6-4 Tab. 1.2 (*)	Enclosure	PASS
/	Radiated emission above 1 GHz	EN 61000-6-4 Tab. 1.4 (*)	Enclosure	N/A
/	Conducted emission	EN 61000-6-4 Tab. 2.1 (*)	AC mains	N/A (#1)
/		EN 61000-6-4 Tab. 3.1 (*)	Telecom./Network	N/A (#1)
/	Discontinuous interference	EN 61000-6-4 Tab. 3.1 (*)	AC mains	N/A (#1)
	IMMUNITY TEST			
6.2	Power-frequency magnetic field	EN 61000-6-2 Tab. 1	Enclosure	PASS
6.3	Radio-frequency electromagnetic field	EN 61000-6-2 Tab. 1	Enclosure	PASS
6.4	Electrostatic discharge	EN 61000-6-2 Tab. 1	Enclosure	PASS
6.5	Radio-frequency common mode	EN 61000-6-2 Tab. 2	Signal ports	PASS
/		EN 61000-6-2 Tab. 3	DC power	N/A (#1)
/		EN 61000-6-2 Tab. 4	AC power	N/A (#1)
6.6	Fast transients	EN 61000-6-2 Tab. 2	Signal ports	PASS
/		EN 61000-6-2 Tab. 3	DC power	N/A (#1)
/		EN 61000-6-2 Tab. 4	AC power	N/A (#1)
/	Surge	EN 61000-6-2 Tab. 2	Signal ports	N/A
/		EN 61000-6-2 Tab. 3	DC power	N/A (#1)
/		EN 61000-6-2 Tab. 4	AC power	N/A (#1)
/	Voltage dips and interruptions	EN 61000-6-2 Tab. 4	AC power	N/A (#1)

Remarks:
Radiated emission above 1 GHz

In according to EN 61000-6-3/A1 Table 1 note c, the test was not performed because the highest internal frequency of the EUT is less than 108 MHz.

Current harmonics

For equipment with a rated power of 75 W or less, other than lighting equipment; the standard is not specified the limits

Power frequency magnetic fields

Applicable only to magnetically sensitive equipment.

Fast transients and conducted RF:

Applicable only to signal ports interfacing with cables whose total length may exceed 3 m.

Surge

Applicable only to signal ports interfacing with cables whose total length may exceed 30 m.

Notes:

(*) This test is not under ACCREDIA accreditation.

#1 Port not present

5.1 SAMPLES CORRELATION / TEST SEQUENCE

The sample(s) was(were) sequentially subjected to the tests described in the following table:

Test	Sample(s)	Remarks
Radiated emission 30-1000 MHz	1	None
Radio-frequency electromagnetic field	1	None
Radio-frequency common mode	1	None
Fast transients	1	None
Power-frequency magnetic field	1	None
Electrostatic discharge	1	None

5.2 TEST METHOD DEVIATIONS

Test methods described in the reference document were adopted without any deviation.

6. TEST PERFORMED**6.1 RADIATED EMISSION 30-1000 MHz**

Test specification:	EN 61000-6-4
Test method:	EN 55016-2-3
Test procedure:	INTEK 05 04 PP 003 PRE

6.1.1 TEST SET-UP

Test site:	FAR - Room N. 26
Antenna height:	155 cm
Distance:	3 m
Antenna polarity:	Horizontal and vertical

6.1.2 TEST PARAMETERS

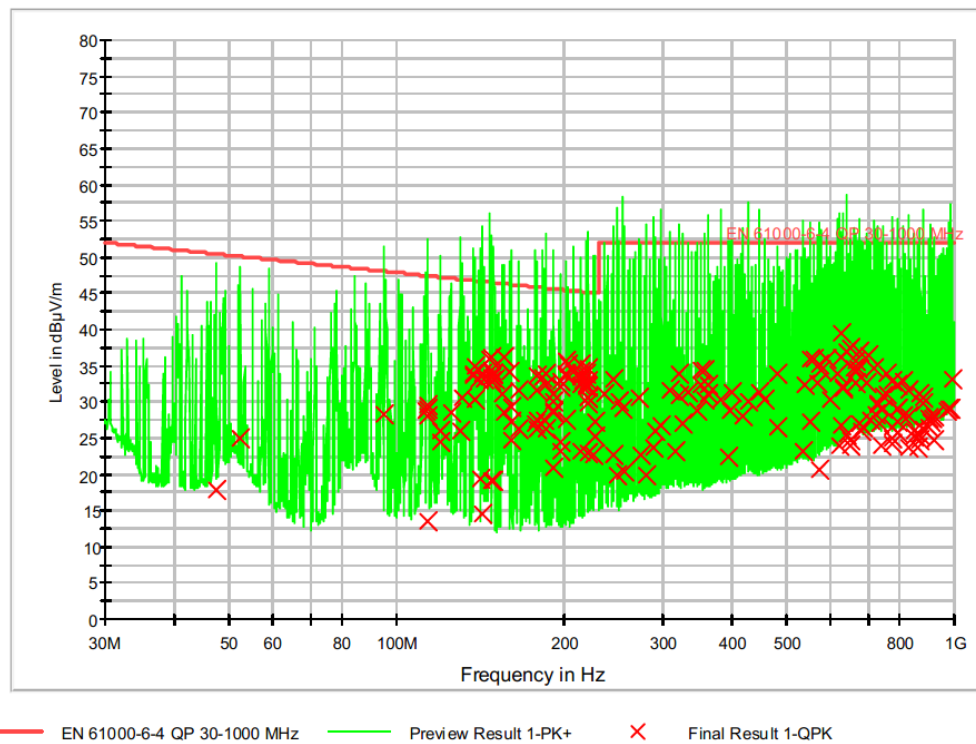
Preliminary scan:	0° to 180° (45° step) with peak detector
Final measurement:	0° to 315° (45° step) with quasi peak detector
Frequency range:	30 - 1000 MHz
Limits:	See graph

6.1.3 ENVIRONMENTAL CONDITIONS

Temperature:	23 °C ± 5 °C
Relative humidity:	50 % ± 25 %
Atmospheric press.:	960 mBar ± 100 mBar

6.1.4 SUMMARY OF RESULTS

Sample No.:	1			
Configuration mode:	CM1 - EUT powered 24 Vdc			
Graph No.	Port under test	Polarity	Operative mode (see par. 4.3)	Result
1	Enclosure	Horizontal	Run	PASS
2	Enclosure	Vertical	Run	PASS



Frequency (MHz)	QuasiPeak (dBµV/m)	Meas. Time (ms)	Bandwidth (kHz)	Polarization	Azimuth (deg)	Corr. (dB)	Margin (dB)	Limit (dBµV/m)
47.460000	17.7	5000.0	120.000	H	315.0	15.6	32.7	50.4
52.500000	24.9	5000.0	120.000	H	182.0	14.1	25.2	50.1
94.740000	28.4	5000.0	120.000	H	227.0	11.0	19.7	48.0
112.620000	28.7	5000.0	120.000	H	317.0	11.9	18.8	47.5
113.340000	28.1	5000.0	120.000	H	315.0	12.0	19.3	47.4
113.580000	13.5	5000.0	120.000	H	272.0	12.0	33.9	47.4
113.700000	29.0	5000.0	120.000	H	317.0	12.0	18.4	47.4
113.820000	29.6	5000.0	120.000	H	137.0	12.0	17.9	47.4
119.880000	26.0	5000.0	120.000	H	182.0	12.6	21.3	47.2
120.180000	24.5	5000.0	120.000	H	227.0	12.6	22.7	47.2
124.980000	28.4	5000.0	120.000	H	45.0	12.6	18.7	47.1
130.440000	26.0	5000.0	120.000	H	315.0	12.1	20.9	46.9
131.400000	30.5	5000.0	120.000	H	182.0	12.1	16.4	46.9
136.740000	34.0	5000.0	120.000	H	227.0	11.4	12.8	46.8
137.580000	33.7	5000.0	120.000	H	137.0	11.3	13.1	46.8
137.880000	30.4	5000.0	120.000	H	317.0	11.2	16.4	46.8
138.000000	35.0	5000.0	120.000	H	227.0	11.2	11.8	46.8
139.860000	33.0	5000.0	120.000	H	182.0	10.8	13.7	46.7
141.840000	19.4	5000.0	120.000	H	92.0	10.5	27.2	46.7
142.620000	14.6	5000.0	120.000	H	272.0	10.4	32.0	46.6
142.740000	34.0	5000.0	120.000	H	317.0	10.4	12.7	46.6
143.100000	33.1	5000.0	120.000	H	45.0	10.4	13.5	46.6
146.760000	35.9	5000.0	120.000	H	137.0	10.0	10.6	46.5
147.540000	19.1	5000.0	120.000	H	92.0	9.9	27.4	46.5

Graph No. 1 – Horizontal polarity

Frequency (MHz)	QuasiPeak (dBμV/m)	Meas. Time (ms)	Bandwidth (kHz)	Polarization	Azimuth (deg)	Corr. (dB)	Margin (dB)	Limit (dBμV/m)
147.660000	36.1	5000.0	120.000	H	137.0	9.9	10.4	46.5
147.840000	34.5	5000.0	120.000	H	317.0	9.9	12.1	46.5
147.960000	33.5	5000.0	120.000	H	317.0	9.9	13.1	46.5
148.320000	32.8	5000.0	120.000	H	45.0	9.9	13.7	46.5
149.160000	33.8	5000.0	120.000	H	315.0	9.9	12.7	46.5
149.280000	19.1	5000.0	120.000	H	272.0	9.8	27.4	46.5
149.460000	34.0	5000.0	120.000	H	317.0	9.8	12.5	46.5
149.640000	33.1	5000.0	120.000	H	315.0	9.8	13.3	46.5
154.620000	31.0	5000.0	120.000	H	227.0	9.8	15.4	46.4
155.520000	36.1	5000.0	120.000	H	137.0	9.8	10.2	46.3
155.640000	28.6	5000.0	120.000	H	227.0	9.8	17.8	46.3
159.660000	34.2	5000.0	120.000	H	137.0	9.7	12.1	46.3
160.500000	27.3	5000.0	120.000	H	137.0	9.7	18.9	46.2
160.680000	24.7	5000.0	120.000	H	317.0	9.7	21.6	46.2
160.920000	29.3	5000.0	120.000	H	182.0	9.7	17.0	46.2
165.480000	26.3	5000.0	120.000	H	317.0	10.0	19.8	46.1
165.660000	31.5	5000.0	120.000	H	45.0	10.0	14.7	46.1
177.540000	27.1	5000.0	120.000	H	45.0	10.5	18.8	45.9
178.320000	33.6	5000.0	120.000	H	137.0	10.5	12.3	45.9
178.500000	26.1	5000.0	120.000	H	45.0	10.5	19.7	45.9
178.620000	27.5	5000.0	120.000	H	317.0	10.4	18.4	45.9
178.740000	31.7	5000.0	120.000	H	182.0	10.4	14.2	45.9
182.460000	33.4	5000.0	120.000	H	137.0	10.4	12.3	45.8
184.080000	27.6	5000.0	120.000	H	315.0	10.5	18.1	45.8
184.920000	26.3	5000.0	120.000	H	45.0	10.5	19.4	45.7
185.160000	32.4	5000.0	120.000	H	137.0	10.6	13.4	45.7
185.280000	33.8	5000.0	120.000	H	182.0	10.6	12.0	45.7
190.380000	28.4	5000.0	120.000	H	315.0	11.2	17.2	45.6
191.100000	20.9	5000.0	120.000	H	182.0	11.2	24.8	45.6
191.340000	31.2	5000.0	120.000	H	137.0	11.2	14.4	45.6
191.460000	30.2	5000.0	120.000	H	182.0	11.2	15.5	45.6
191.580000	28.9	5000.0	120.000	H	227.0	11.2	16.8	45.6
196.260000	24.4	5000.0	120.000	H	137.0	11.1	21.1	45.5
196.440000	23.3	5000.0	120.000	H	317.0	11.1	22.3	45.5
196.620000	32.0	5000.0	120.000	H	317.0	11.1	13.5	45.5
196.740000	33.0	5000.0	120.000	H	227.0	11.1	12.6	45.5
201.180000	33.8	5000.0	120.000	H	315.0	10.9	11.6	45.5
201.420000	27.5	5000.0	120.000	H	182.0	11.0	18.0	45.5
201.540000	35.7	5000.0	120.000	H	227.0	11.0	9.8	45.5
201.660000	33.7	5000.0	120.000	H	137.0	11.0	11.7	45.5
203.040000	35.2	5000.0	120.000	H	315.0	11.1	10.2	45.4
208.200000	34.2	5000.0	120.000	H	317.0	11.8	11.1	45.3
213.300000	34.3	5000.0	120.000	H	182.0	12.3	11.0	45.3
214.020000	23.2	5000.0	120.000	H	315.0	12.3	22.1	45.2
214.200000	33.5	5000.0	120.000	H	137.0	12.3	11.7	45.2
214.320000	32.2	5000.0	120.000	H	227.0	12.3	13.0	45.2
214.440000	35.1	5000.0	120.000	H	137.0	12.3	10.2	45.2
214.560000	33.4	5000.0	120.000	H	315.0	12.4	11.9	45.2
214.740000	32.8	5000.0	120.000	H	317.0	12.4	12.4	45.2
218.220000	34.0	5000.0	120.000	H	182.0	12.6	11.2	45.2
219.000000	32.4	5000.0	120.000	H	315.0	12.7	12.8	45.2
219.180000	32.0	5000.0	120.000	H	315.0	12.7	13.2	45.2
219.300000	32.3	5000.0	120.000	H	317.0	12.7	12.9	45.2
219.540000	30.6	5000.0	120.000	H	45.0	12.8	14.6	45.2
219.780000	32.8	5000.0	120.000	H	137.0	12.8	12.3	45.2
220.560000	32.0	5000.0	120.000	H	317.0	12.8	13.1	45.1
220.680000	34.7	5000.0	120.000	H	182.0	12.8	10.5	45.1
220.800000	23.0	5000.0	120.000	H	315.0	12.9	22.1	45.1
220.980000	29.9	5000.0	120.000	H	227.0	12.9	15.3	45.1
221.160000	30.5	5000.0	120.000	H	317.0	12.9	14.6	45.1
226.080000	22.8	5000.0	120.000	H	45.0	13.2	22.3	45.1
227.040000	25.3	5000.0	120.000	H	137.0	13.2	19.7	45.0
227.160000	27.3	5000.0	120.000	H	317.0	13.2	17.8	45.0
236.100000	31.1	5000.0	120.000	H	182.0	13.6	20.9	52.0
243.960000	22.7	5000.0	120.000	H	315.0	13.6	29.3	52.0
244.980000	33.0	5000.0	120.000	H	137.0	13.5	19.0	52.0
249.000000	19.8	5000.0	120.000	H	227.0	13.4	32.2	52.0

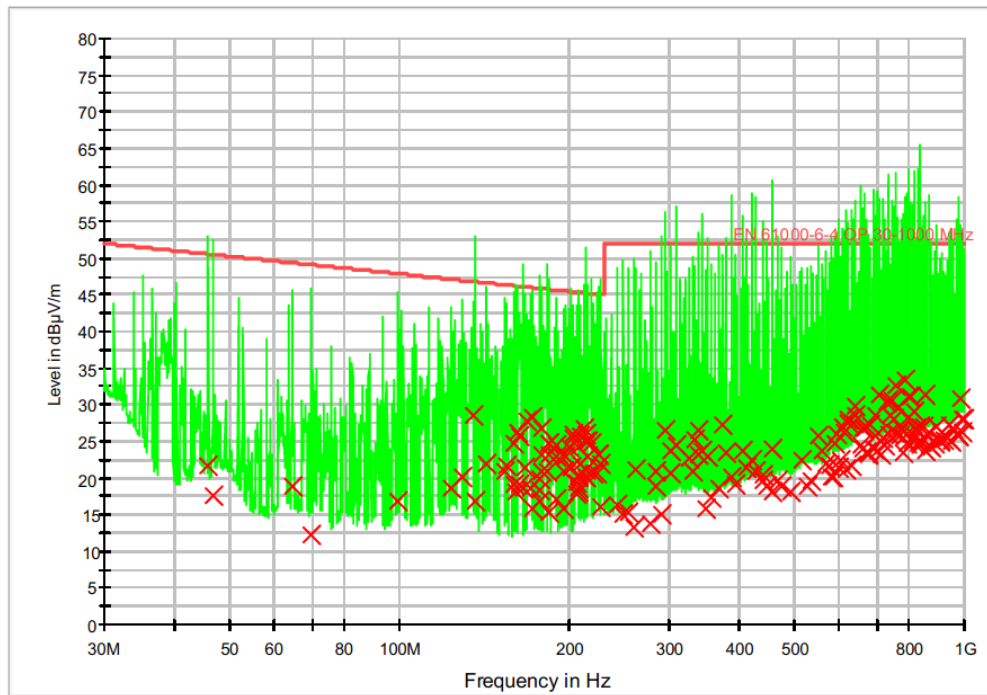
Graph No. 1 – Horizontal polarity

Frequency (MHz)	QuasiPeak (dBμV/m)	Meas. Time (ms)	Bandwidth (kHz)	Polarization	Azimuth (deg)	Corr. (dB)	Margin (dB)	Limit (dBμV/m)
249.960000	30.0	5000.0	120.000	H	45.0	13.3	22.0	52.0
253.980000	29.0	5000.0	120.000	H	137.0	13.7	23.0	52.0
255.540000	20.3	5000.0	120.000	H	317.0	13.9	31.7	52.0
271.860000	30.5	5000.0	120.000	H	182.0	14.9	21.5	52.0
274.500000	22.8	5000.0	120.000	H	315.0	14.9	29.2	52.0
279.720000	19.8	5000.0	120.000	H	227.0	14.7	32.2	52.0
289.740000	23.8	5000.0	120.000	H	317.0	14.9	28.2	52.0
291.300000	25.9	5000.0	120.000	H	315.0	15.0	26.1	52.0
297.600000	26.7	5000.0	120.000	H	137.0	15.5	25.3	52.0
309.120000	31.6	5000.0	120.000	H	137.0	16.2	20.4	52.0
315.420000	23.1	5000.0	120.000	H	272.0	16.2	28.9	52.0
321.360000	30.9	5000.0	120.000	H	315.0	16.0	21.1	52.0
321.480000	33.9	5000.0	120.000	H	137.0	16.0	18.1	52.0
327.000000	27.0	5000.0	120.000	H	317.0	16.1	25.0	52.0
333.300000	31.2	5000.0	120.000	H	227.0	16.2	20.8	52.0
344.880000	28.7	5000.0	120.000	H	137.0	15.8	23.3	52.0
351.900000	34.5	5000.0	120.000	H	137.0	15.8	17.5	52.0
352.080000	32.3	5000.0	120.000	H	317.0	15.8	19.7	52.0
357.120000	34.5	5000.0	120.000	H	315.0	15.8	17.5	52.0
357.300000	30.3	5000.0	120.000	H	45.0	15.8	21.7	52.0
361.140000	31.0	5000.0	120.000	H	317.0	15.9	21.0	52.0
362.760000	32.3	5000.0	120.000	H	227.0	16.0	19.7	52.0
380.640000	30.2	5000.0	120.000	H	137.0	16.5	21.8	52.0
392.880000	22.3	5000.0	120.000	H	92.0	16.3	29.7	52.0
396.900000	28.9	5000.0	120.000	H	317.0	16.4	23.1	52.0
398.460000	31.3	5000.0	120.000	H	315.0	16.4	20.7	52.0
416.340000	28.1	5000.0	120.000	H	137.0	17.4	23.9	52.0
427.680000	30.1	5000.0	120.000	H	317.0	17.5	21.9	52.0
445.560000	31.3	5000.0	120.000	H	227.0	17.3	20.7	52.0
456.900000	30.4	5000.0	120.000	H	137.0	17.7	21.6	52.0
482.100000	26.5	5000.0	120.000	H	182.0	18.3	25.5	52.0
482.220000	33.9	5000.0	120.000	H	45.0	18.3	18.1	52.0
535.800000	23.2	5000.0	120.000	H	92.0	19.3	28.8	52.0
540.720000	32.5	5000.0	120.000	H	137.0	19.3	19.5	52.0
553.620000	27.3	5000.0	120.000	H	317.0	19.1	24.7	52.0
553.860000	35.8	5000.0	120.000	H	45.0	19.1	16.2	52.0
558.600000	35.9	5000.0	120.000	H	137.0	19.1	16.1	52.0
570.660000	32.7	5000.0	120.000	H	227.0	19.7	19.3	52.0
571.560000	35.2	5000.0	120.000	H	182.0	19.7	16.8	52.0
571.680000	20.6	5000.0	120.000	H	315.0	19.7	31.4	52.0
576.360000	34.3	5000.0	120.000	H	137.0	19.9	17.7	52.0
588.540000	36.0	5000.0	120.000	H	182.0	20.2	16.0	52.0
601.260000	30.2	5000.0	120.000	H	227.0	20.0	21.8	52.0
619.140000	33.8	5000.0	120.000	H	137.0	20.2	18.2	52.0
624.240000	23.9	5000.0	120.000	H	315.0	20.4	28.1	52.0
625.020000	39.5	5000.0	120.000	H	182.0	20.4	12.5	52.0
625.320000	26.8	5000.0	120.000	H	315.0	20.5	25.2	52.0
629.160000	36.3	5000.0	120.000	H	137.0	20.7	15.7	52.0
631.560000	32.1	5000.0	120.000	H	227.0	20.8	19.9	52.0
632.220000	31.8	5000.0	120.000	H	45.0	20.9	20.2	52.0
642.060000	36.9	5000.0	120.000	H	137.0	21.6	15.1	52.0
643.140000	25.6	5000.0	120.000	H	315.0	21.7	26.4	52.0
649.560000	24.7	5000.0	120.000	H	317.0	22.1	27.3	52.0
649.680000	37.5	5000.0	120.000	H	182.0	22.1	14.5	52.0
649.800000	24.0	5000.0	120.000	H	315.0	22.1	28.0	52.0
659.940000	34.5	5000.0	120.000	H	137.0	22.4	17.5	52.0
667.260000	34.1	5000.0	120.000	H	227.0	22.4	17.9	52.0
667.380000	35.8	5000.0	120.000	H	137.0	22.4	16.2	52.0
667.560000	32.7	5000.0	120.000	H	45.0	22.4	19.3	52.0
673.500000	34.6	5000.0	120.000	H	137.0	22.1	17.4	52.0
677.820000	36.9	5000.0	120.000	H	182.0	21.9	15.1	52.0
678.540000	27.1	5000.0	120.000	H	315.0	21.8	24.9	52.0
682.740000	26.0	5000.0	120.000	H	315.0	21.7	26.0	52.0
685.260000	26.5	5000.0	120.000	H	227.0	21.6	25.5	52.0
695.700000	32.5	5000.0	120.000	H	137.0	21.5	19.5	52.0
703.260000	36.4	5000.0	120.000	H	182.0	21.6	15.6	52.0
709.440000	27.5	5000.0	120.000	H	317.0	21.7	24.5	52.0

Graph No. 1 – Horizontal polarity

Frequency (MHz)	QuasiPeak (dBμV/m)	Meas. Time (ms)	Bandwidth (kHz)	Polarization	Azimuth (deg)	Corr. (dB)	Margin (dB)	Limit (dBμV/m)
720.840000	34.7	5000.0	120.000	H	182.0	22.0	17.3	52.0
721.140000	28.4	5000.0	120.000	H	315.0	22.0	23.6	52.0
727.260000	29.8	5000.0	120.000	H	45.0	22.2	22.2	52.0
727.380000	29.5	5000.0	120.000	H	45.0	22.2	22.5	52.0
727.560000	29.7	5000.0	120.000	H	137.0	22.2	22.3	52.0
736.320000	27.1	5000.0	120.000	H	315.0	22.2	24.9	52.0
738.720000	24.1	5000.0	120.000	H	92.0	22.2	27.9	52.0
745.020000	30.9	5000.0	120.000	H	227.0	22.2	21.1	52.0
745.200000	29.0	5000.0	120.000	H	315.0	22.2	23.0	52.0
755.760000	33.8	5000.0	120.000	H	182.0	22.1	18.2	52.0
756.600000	31.1	5000.0	120.000	H	227.0	22.1	20.9	52.0
772.080000	26.5	5000.0	120.000	H	137.0	22.1	25.5	52.0
774.480000	24.1	5000.0	120.000	H	92.0	22.1	27.9	52.0
774.660000	25.0	5000.0	120.000	H	317.0	22.1	27.0	52.0
774.780000	33.0	5000.0	120.000	H	182.0	22.1	19.0	52.0
789.900000	25.8	5000.0	120.000	H	315.0	22.3	26.2	52.0
792.300000	32.3	5000.0	120.000	H	182.0	22.3	19.7	52.0
792.420000	27.2	5000.0	120.000	H	45.0	22.3	24.8	52.0
792.540000	29.1	5000.0	120.000	H	137.0	22.3	22.9	52.0
792.720000	29.0	5000.0	120.000	H	137.0	22.3	23.0	52.0
810.180000	27.9	5000.0	120.000	H	45.0	22.6	24.1	52.0
810.360000	33.0	5000.0	120.000	H	182.0	22.6	19.0	52.0
828.060000	23.6	5000.0	120.000	H	315.0	22.8	28.4	52.0
828.180000	31.6	5000.0	120.000	H	182.0	22.8	20.4	52.0
828.360000	28.1	5000.0	120.000	H	45.0	22.8	23.9	52.0
845.940000	26.0	5000.0	120.000	H	137.0	22.7	26.0	52.0
846.120000	25.1	5000.0	120.000	H	315.0	22.7	26.9	52.0
862.920000	23.6	5000.0	120.000	H	317.0	22.9	28.4	52.0
863.820000	31.0	5000.0	120.000	H	182.0	23.0	21.0	52.0
863.940000	24.8	5000.0	120.000	H	315.0	23.0	27.2	52.0
864.120000	25.5	5000.0	120.000	H	137.0	23.0	26.5	52.0
880.800000	29.7	5000.0	120.000	H	45.0	23.2	22.3	52.0
881.640000	26.2	5000.0	120.000	H	137.0	23.3	25.8	52.0
881.820000	30.6	5000.0	120.000	H	45.0	23.3	21.4	52.0
897.060000	27.9	5000.0	120.000	H	317.0	23.7	24.1	52.0
897.840000	26.5	5000.0	120.000	H	272.0	23.7	25.5	52.0
904.920000	27.2	5000.0	120.000	H	315.0	23.8	24.8	52.0
914.940000	27.6	5000.0	120.000	H	272.0	24.0	24.4	52.0
917.340000	28.1	5000.0	120.000	H	317.0	24.0	23.9	52.0
917.520000	24.7	5000.0	120.000	H	137.0	24.0	27.3	52.0
968.520000	28.7	5000.0	120.000	H	315.0	24.4	23.3	52.0
976.380000	29.2	5000.0	120.000	H	317.0	24.7	22.8	52.0
986.400000	29.0	5000.0	120.000	H	182.0	25.0	23.0	52.0
994.260000	33.1	5000.0	120.000	H	315.0	25.1	18.9	52.0

Graph No. 1 – Horizontal polarity



— EN 61000-6-4 QP 30-1000 MHz — Preview Result 1-PK+ x Final Result 1-QPK

Frequency (MHz)	QuasiPeak (dBμV/m)	Meas. Time (ms)	Bandwidth (kHz)	Polarization	Azimuth (deg)	Corr. (dB)	Margin (dB)	Limit (dBμV/m)
45.840000	21.6	5000.0	120.000	V	227.0	15.9	29.0	50.5
46.860000	17.5	5000.0	120.000	V	317.0	15.7	33.0	50.5
64.680000	18.9	5000.0	120.000	V	137.0	9.2	30.5	49.4
69.600000	12.3	5000.0	120.000	V	227.0	8.0	36.8	49.1
99.360000	16.7	5000.0	120.000	V	92.0	12.6	31.2	47.9
123.240000	18.5	5000.0	120.000	V	272.0	12.6	28.7	47.1
129.480000	20.1	5000.0	120.000	V	45.0	12.2	26.9	47.0
135.120000	28.6	5000.0	120.000	V	227.0	11.8	18.2	46.8
136.140000	16.8	5000.0	120.000	V	92.0	11.6	30.0	46.8
142.260000	22.0	5000.0	120.000	V	272.0	10.5	24.7	46.7
153.780000	20.8	5000.0	120.000	V	45.0	9.8	25.6	46.4
154.440000	21.6	5000.0	120.000	V	92.0	9.8	24.7	46.4
159.780000	19.0	5000.0	120.000	V	182.0	9.7	27.2	46.3
159.960000	24.8	5000.0	120.000	V	45.0	9.7	21.5	46.2
160.440000	18.1	5000.0	120.000	V	227.0	9.7	28.1	46.2
161.280000	26.3	5000.0	120.000	V	92.0	9.7	19.9	46.2
162.720000	19.2	5000.0	120.000	V	272.0	9.8	27.0	46.2
163.320000	25.7	5000.0	120.000	V	45.0	9.8	20.5	46.2
166.020000	18.5	5000.0	120.000	V	317.0	10.1	27.6	46.1
166.260000	21.5	5000.0	120.000	V	272.0	10.2	24.6	46.1
168.060000	27.7	5000.0	120.000	V	45.0	10.7	18.4	46.1
170.880000	18.6	5000.0	120.000	V	227.0	11.1	27.4	46.0
171.900000	28.2	5000.0	120.000	V	92.0	11.0	17.8	46.0
172.200000	15.9	5000.0	120.000	V	272.0	11.0	30.1	46.0

Graph No. 2 – Vertical polarity

Frequency (MHz)	QuasiPeak (dBμV/m)	Meas. Time (ms)	Bandwidth (kHz)	Polarization	Azimuth (deg)	Corr. (dB)	Margin (dB)	Limit (dBμV/m)
176.820000	19.8	5000.0	120.000	V	315.0	10.6	26.1	45.9
177.540000	18.3	5000.0	120.000	V	317.0	10.5	27.6	45.9
177.720000	16.8	5000.0	120.000	V	272.0	10.5	29.1	45.9
177.840000	23.2	5000.0	120.000	V	45.0	10.5	22.7	45.9
178.020000	20.8	5000.0	120.000	V	227.0	10.5	25.1	45.9
179.100000	26.7	5000.0	120.000	V	92.0	10.4	19.1	45.9
183.120000	20.9	5000.0	120.000	V	182.0	10.5	24.9	45.8
183.900000	24.7	5000.0	120.000	V	315.0	10.5	21.1	45.8
184.020000	23.2	5000.0	120.000	V	92.0	10.5	22.5	45.8
184.200000	15.3	5000.0	120.000	V	182.0	10.5	30.5	45.8
184.320000	24.7	5000.0	120.000	V	45.0	10.5	21.0	45.8
189.780000	22.9	5000.0	120.000	V	137.0	11.1	22.8	45.7
189.900000	24.4	5000.0	120.000	V	92.0	11.1	21.3	45.7
190.080000	17.1	5000.0	120.000	V	182.0	11.2	28.5	45.7
195.600000	23.3	5000.0	120.000	V	45.0	11.1	22.3	45.6
195.720000	21.0	5000.0	120.000	V	315.0	11.1	24.5	45.6
195.900000	15.8	5000.0	120.000	V	317.0	11.1	29.7	45.6
196.860000	22.9	5000.0	120.000	V	45.0	11.0	22.7	45.5
199.620000	24.1	5000.0	120.000	V	137.0	10.9	21.4	45.5
201.720000	21.4	5000.0	120.000	V	227.0	11.0	24.1	45.5
202.020000	21.3	5000.0	120.000	V	182.0	11.0	24.1	45.4
202.140000	26.0	5000.0	120.000	V	45.0	11.0	19.4	45.4
202.260000	25.5	5000.0	120.000	V	92.0	11.0	20.0	45.4
205.620000	19.5	5000.0	120.000	V	317.0	11.3	25.9	45.4
206.580000	17.9	5000.0	120.000	V	272.0	11.5	27.5	45.4
207.360000	18.6	5000.0	120.000	V	137.0	11.6	26.8	45.4
207.480000	20.4	5000.0	120.000	V	227.0	11.6	24.9	45.4
207.720000	20.2	5000.0	120.000	V	182.0	11.7	25.2	45.4
207.900000	18.0	5000.0	120.000	V	272.0	11.7	27.4	45.3
208.080000	24.3	5000.0	120.000	V	315.0	11.7	21.0	45.3
208.680000	22.0	5000.0	120.000	V	227.0	11.8	23.4	45.3
208.800000	25.8	5000.0	120.000	V	45.0	11.9	19.6	45.3
212.580000	26.8	5000.0	120.000	V	137.0	12.2	18.5	45.3
213.420000	21.2	5000.0	120.000	V	227.0	12.3	24.1	45.3
213.540000	20.2	5000.0	120.000	V	182.0	12.3	25.0	45.3
213.720000	24.9	5000.0	120.000	V	45.0	12.3	20.3	45.3
214.500000	26.1	5000.0	120.000	V	137.0	12.4	19.2	45.2
214.620000	20.2	5000.0	120.000	V	317.0	12.4	25.1	45.2
214.740000	24.9	5000.0	120.000	V	45.0	12.4	20.3	45.2
214.980000	22.9	5000.0	120.000	V	137.0	12.4	22.4	45.2
218.820000	24.7	5000.0	120.000	V	315.0	12.7	20.5	45.2
219.960000	20.6	5000.0	120.000	V	317.0	12.8	24.6	45.2
224.460000	20.7	5000.0	120.000	V	182.0	13.2	24.3	45.1
225.480000	23.3	5000.0	120.000	V	137.0	13.2	21.8	45.1
225.720000	23.1	5000.0	120.000	V	92.0	13.2	21.9	45.1
226.440000	16.1	5000.0	120.000	V	272.0	13.2	28.9	45.1
226.560000	22.0	5000.0	120.000	V	45.0	13.2	23.1	45.1
243.360000	16.2	5000.0	120.000	V	137.0	13.6	35.8	52.0
249.480000	15.1	5000.0	120.000	V	317.0	13.3	36.9	52.0
254.580000	15.3	5000.0	120.000	V	182.0	13.8	36.7	52.0
260.220000	13.3	5000.0	120.000	V	315.0	14.6	38.7	52.0
261.240000	21.1	5000.0	120.000	V	317.0	14.6	30.9	52.0
278.100000	13.8	5000.0	120.000	V	272.0	14.7	38.2	52.0
284.040000	18.8	5000.0	120.000	V	137.0	14.6	33.2	52.0
285.240000	21.0	5000.0	120.000	V	92.0	14.6	31.0	52.0
290.340000	15.1	5000.0	120.000	V	317.0	14.9	36.9	52.0
295.980000	26.4	5000.0	120.000	V	45.0	15.4	25.6	52.0
301.860000	20.6	5000.0	120.000	V	137.0	15.8	31.4	52.0
303.060000	23.6	5000.0	120.000	V	92.0	15.9	28.4	52.0
308.160000	24.5	5000.0	120.000	V	45.0	16.2	27.5	52.0
326.040000	22.6	5000.0	120.000	V	137.0	16.1	29.4	52.0
331.680000	20.8	5000.0	120.000	V	317.0	16.2	31.2	52.0
332.700000	25.2	5000.0	120.000	V	92.0	16.2	26.8	52.0
337.620000	23.2	5000.0	120.000	V	272.0	16.1	28.8	52.0
338.820000	26.4	5000.0	120.000	V	315.0	16.1	25.6	52.0
343.920000	23.6	5000.0	120.000	V	92.0	15.9	28.4	52.0
349.560000	15.7	5000.0	120.000	V	45.0	15.8	36.3	52.0

Graph No. 2 – Vertical polarity

Frequency (MHz)	QuasiPeak (dBμV/m)	Meas. Time (ms)	Bandwidth (kHz)	Polarization	Azimuth (deg)	Corr. (dB)	Margin (dB)	Limit (dBμV/m)
350.580000	23.0	5000.0	120.000	V	272.0	15.8	29.0	52.0
356.700000	17.2	5000.0	120.000	V	227.0	15.8	34.8	52.0
368.400000	18.6	5000.0	120.000	V	92.0	16.3	33.4	52.0
374.520000	27.2	5000.0	120.000	V	182.0	16.4	24.8	52.0
379.620000	23.5	5000.0	120.000	V	137.0	16.5	28.5	52.0
386.280000	20.2	5000.0	120.000	V	92.0	16.4	31.8	52.0
392.400000	19.1	5000.0	120.000	V	45.0	16.3	32.9	52.0
404.160000	23.7	5000.0	120.000	V	272.0	16.8	28.3	52.0
410.280000	21.5	5000.0	120.000	V	137.0	17.0	30.5	52.0
422.040000	22.5	5000.0	120.000	V	317.0	17.5	29.5	52.0
428.160000	20.8	5000.0	120.000	V	182.0	17.5	31.2	52.0
438.900000	20.3	5000.0	120.000	V	137.0	17.3	31.7	52.0
439.920000	19.6	5000.0	120.000	V	92.0	17.3	32.4	52.0
446.040000	18.8	5000.0	120.000	V	45.0	17.3	33.2	52.0
456.720000	23.9	5000.0	120.000	V	272.0	17.7	28.1	52.0
457.740000	18.2	5000.0	120.000	V	227.0	17.7	33.8	52.0
468.960000	19.5	5000.0	120.000	V	92.0	18.2	32.5	52.0
475.620000	18.9	5000.0	120.000	V	45.0	18.4	33.1	52.0
493.500000	18.0	5000.0	120.000	V	272.0	18.2	34.0	52.0
517.500000	22.4	5000.0	120.000	V	92.0	19.2	29.6	52.0
528.240000	18.9	5000.0	120.000	V	317.0	19.3	33.1	52.0
534.180000	19.6	5000.0	120.000	V	45.0	19.3	32.4	52.0
552.060000	25.9	5000.0	120.000	V	137.0	19.1	26.1	52.0
559.800000	23.7	5000.0	120.000	V	92.0	19.1	28.3	52.0
569.940000	22.0	5000.0	120.000	V	272.0	19.6	30.0	52.0
576.180000	21.6	5000.0	120.000	V	45.0	19.9	30.4	52.0
582.840000	20.3	5000.0	120.000	V	317.0	20.1	31.8	52.0
587.760000	20.1	5000.0	120.000	V	272.0	20.2	31.9	52.0
588.960000	24.8	5000.0	120.000	V	272.0	20.2	27.2	52.0
594.060000	26.0	5000.0	120.000	V	315.0	20.2	26.0	52.0
600.660000	21.4	5000.0	120.000	V	92.0	20.0	30.6	52.0
605.640000	22.5	5000.0	120.000	V	182.0	20.0	29.5	52.0
606.780000	27.0	5000.0	120.000	V	272.0	19.9	25.0	52.0
611.880000	26.2	5000.0	120.000	V	137.0	19.9	25.8	52.0
618.540000	21.2	5000.0	120.000	V	227.0	20.1	30.8	52.0
623.460000	27.6	5000.0	120.000	V	272.0	20.4	24.4	52.0
624.660000	28.0	5000.0	120.000	V	137.0	20.4	24.0	52.0
629.760000	21.7	5000.0	120.000	V	227.0	20.7	30.3	52.0
636.420000	27.4	5000.0	120.000	V	182.0	21.2	24.6	52.0
641.340000	28.5	5000.0	120.000	V	272.0	21.6	23.5	52.0
642.540000	29.7	5000.0	120.000	V	137.0	21.7	22.3	52.0
654.240000	24.4	5000.0	120.000	V	92.0	22.3	27.6	52.0
659.220000	24.0	5000.0	120.000	V	45.0	22.4	28.0	52.0
660.360000	26.7	5000.0	120.000	V	137.0	22.4	25.3	52.0
665.460000	26.8	5000.0	120.000	V	92.0	22.4	25.2	52.0
672.120000	23.3	5000.0	120.000	V	137.0	22.2	28.7	52.0
677.100000	23.2	5000.0	120.000	V	45.0	21.9	28.8	52.0
678.240000	23.4	5000.0	120.000	V	227.0	21.9	28.6	52.0
683.340000	27.2	5000.0	120.000	V	92.0	21.6	24.8	52.0
690.000000	23.9	5000.0	120.000	V	45.0	21.4	28.1	52.0
694.980000	25.8	5000.0	120.000	V	137.0	21.5	26.2	52.0
696.120000	28.4	5000.0	120.000	V	227.0	21.5	23.6	52.0
701.220000	23.6	5000.0	120.000	V	92.0	21.6	28.4	52.0
707.880000	31.4	5000.0	120.000	V	137.0	21.7	20.6	52.0
712.800000	23.3	5000.0	120.000	V	227.0	21.8	28.7	52.0
719.100000	25.6	5000.0	120.000	V	227.0	22.0	26.4	52.0
725.700000	24.4	5000.0	120.000	V	272.0	22.1	27.6	52.0
730.680000	30.4	5000.0	120.000	V	315.0	22.2	21.6	52.0
731.820000	26.1	5000.0	120.000	V	92.0	22.2	25.9	52.0
736.920000	30.7	5000.0	120.000	V	182.0	22.2	21.3	52.0
742.560000	28.7	5000.0	120.000	V	182.0	22.2	23.3	52.0
743.580000	30.7	5000.0	120.000	V	315.0	22.2	21.3	52.0
748.500000	26.1	5000.0	120.000	V	92.0	22.2	25.9	52.0
749.700000	28.1	5000.0	120.000	V	45.0	22.2	23.9	52.0
754.800000	32.6	5000.0	120.000	V	137.0	22.2	19.4	52.0
760.440000	25.9	5000.0	120.000	V	92.0	22.1	26.1	52.0
761.460000	29.4	5000.0	120.000	V	182.0	22.1	22.6	52.0

Graph No. 2 – Vertical polarity

Frequency (MHz)	QuasiPeak (dBμV/m)	Meas. Time (ms)	Bandwidth (kHz)	Polarization	Azimuth (deg)	Corr. (dB)	Margin (dB)	Limit (dBμV/m)
767.580000	25.7	5000.0	120.000	V	45.0	22.1	26.3	52.0
772.680000	26.8	5000.0	120.000	V	227.0	22.1	25.2	52.0
778.320000	25.5	5000.0	120.000	V	92.0	22.1	26.5	52.0
779.340000	23.5	5000.0	120.000	V	272.0	22.1	28.5	52.0
785.460000	33.3	5000.0	120.000	V	137.0	22.2	18.7	52.0
790.500000	24.6	5000.0	120.000	V	92.0	22.3	27.4	52.0
796.140000	31.1	5000.0	120.000	V	182.0	22.3	20.9	52.0
797.160000	28.2	5000.0	120.000	V	45.0	22.3	23.8	52.0
803.280000	31.0	5000.0	120.000	V	137.0	22.4	21.0	52.0
808.380000	24.9	5000.0	120.000	V	92.0	22.6	27.1	52.0
814.020000	29.0	5000.0	120.000	V	272.0	22.7	23.0	52.0
815.040000	25.6	5000.0	120.000	V	137.0	22.7	26.4	52.0
819.960000	26.5	5000.0	120.000	V	92.0	22.8	25.5	52.0
821.160000	26.8	5000.0	120.000	V	182.0	22.8	25.2	52.0
826.260000	24.8	5000.0	120.000	V	45.0	22.8	27.2	52.0
831.900000	24.9	5000.0	120.000	V	315.0	22.7	27.1	52.0
832.920000	26.9	5000.0	120.000	V	92.0	22.7	25.1	52.0
837.840000	24.6	5000.0	120.000	V	45.0	22.7	27.4	52.0
844.140000	24.9	5000.0	120.000	V	227.0	22.7	27.1	52.0
849.720000	27.1	5000.0	120.000	V	92.0	22.8	24.9	52.0
850.740000	31.3	5000.0	120.000	V	182.0	22.8	20.7	52.0
855.720000	23.8	5000.0	120.000	V	317.0	22.8	28.2	52.0
861.960000	25.9	5000.0	120.000	V	315.0	22.9	26.1	52.0
868.620000	24.5	5000.0	120.000	V	92.0	23.1	27.5	52.0
873.540000	24.1	5000.0	120.000	V	272.0	23.1	27.9	52.0
886.500000	24.7	5000.0	120.000	V	137.0	23.5	27.3	52.0
891.420000	27.1	5000.0	120.000	V	227.0	23.6	24.9	52.0
904.320000	25.1	5000.0	120.000	V	45.0	23.8	26.9	52.0
909.300000	24.9	5000.0	120.000	V	272.0	23.9	27.1	52.0
915.540000	26.3	5000.0	120.000	V	315.0	24.0	25.7	52.0
921.180000	25.2	5000.0	120.000	V	92.0	24.1	26.8	52.0
933.420000	25.4	5000.0	120.000	V	45.0	24.2	26.6	52.0
945.000000	27.2	5000.0	120.000	V	137.0	24.1	24.8	52.0
951.240000	24.9	5000.0	120.000	V	227.0	24.0	27.1	52.0
957.900000	26.7	5000.0	120.000	V	317.0	24.1	25.3	52.0
969.120000	26.0	5000.0	120.000	V	45.0	24.4	26.0	52.0
975.780000	25.8	5000.0	120.000	V	315.0	24.7	26.2	52.0
980.700000	25.7	5000.0	120.000	V	92.0	24.8	26.3	52.0
987.000000	30.8	5000.0	120.000	V	137.0	25.0	21.2	52.0
992.640000	28.0	5000.0	120.000	V	137.0	25.1	24.0	52.0
993.660000	26.1	5000.0	120.000	V	227.0	25.1	25.9	52.0
998.580000	28.1	5000.0	120.000	V	92.0	25.2	23.9	52.0

Graph No. 2 – Vertical polarity



Photo of the test set-up

6.1.5 TEST INSTRUMENTATION

Description	Manufacturer	Model	Intek ID	Last Calibration	Calibration due
EMI Receiver	Rohde & Schwarz	ESU26	0692 P	2017-03	2018-03
Biconical log-periodic antenna	Antenna Research Associates	LPB-2513	0308 P	2016-08	2019-08
Coaxial cable (external)	INSULATED WIRE	NPS-2301-2167	0820 P	2017-03	2018-03
Coaxial cable (internal)	INSULATED WIRE	NPS-2301-2167	0817 P	2017-03	2018-03
Decoupling clamp	LUTHI	FTC 101	1034 P	NCR	NCR
Measurement Software	Rohde & Schwarz	EMC32 PLUS	0686 SW	NCR	NCR
Full Anechoic Chamber	SIDT Europe	/	0309 P	NCR	NCR
Turntable	HD	DS 415	0302 P	NCR	NCR

6.1.6 TEST MEASUREMENTS UNCERTAINTY

Values of expanded uncertainty are given with a level of confidence of 95 % ($k = 2$):

- $U_{LAB} = 2,68$ dB except for the frequency range from 410 MHz to 450 MHz where $U_{LAB} = 4,33$ dB,
and $U_{LAB} < U_{CISPR} = 5,3$ dB (measurement instrumentation uncertainty) in according to standards CISPR 16-4-1 and CISPR 16-4-2.

6.2 POWER-FREQUENCY MAGNETIC FIELD TEST

Test specification:	EN 61000-6-2
Test method:	EN 61000-4-8
Test procedure:	INTEK 05 04 PP 013 PRE

6.2.1 TEST SET-UP

Test site:	Laboratory - Room N. 27
Coupling method:	<input checked="" type="checkbox"/> Immersion <input type="checkbox"/> Proximity

6.2.2 TEST PARAMETERS

Waveform:	Sinusoidal
Duration:	1 minute

6.2.3 ENVIRONMENTAL CONDITIONS IN THE TEST SITE

Temperature:	23 °C ± 5 °C
Relative humidity:	50 % ± 25 %
Atmospheric press.:	960 mBar ± 100 mBar

6.2.4 SUMMARY OF RESULTS

Port under test:	Enclosure					
Configuration mode:	CM1 - EUT powered 24 Vdc					
Level	Axle	Frequency	Criteria (see par. 4.4)		Operation mode (see par. 4.3)	Result
			Req.	Obt.		
30 A/m	X	50 Hz	A	A	Run	PASS
30 A/m	Y	50 Hz	A	A	Run	PASS
30 A/m	Z	50 Hz	A	A	Run	PASS



Photo of the test set-up

6.2.5 TEST INSTRUMENTATION

Description	Manufacturer	Model	Intek ID	Last Calibration	Calibration due
Signal generator	Spitzenberger + Spies	Sycore 1K4	0439 P	2017-02	2019-02
Power amplifier	Spitzenberger + Spies	PAS 5000	0071 P	2017-02	2019-02
Induction coil with "power" connector	Schaffner	INA 702	0437 P	2017-02	2019-02
Trasformer 230/24 Vac	INTEK	/	0810 P	2017-01	2018-01
Test software	Spitzenberger + Spies	Signal Manager	0851 SW	NCR	NCR

6.2.6 TEST MEASUREMENTS UNCERTAINTY

Values of expanded uncertainty are given with a level of confidence of 95 % ($k = 2$):

- $U_{LAB} = 3,50$ dB.

6.3 RADIATED RF IMMUNITY

Test specification:	EN 61000-6-2
Test method:	EN 61000-4-3
Test procedure:	INTEK 05 04 PP 005 PRE

6.3.1 TEST SET-UP

Test site:	FAR - Room N. 26
Antenna height:	155 cm
Distance:	2,5 m (up to 1 GHz) 4,7 m (above 1 GHz)
Antenna polarity:	Horizontal and vertical

6.3.2 TEST PARAMETERS

Frequency range:	80 - 1000 MHz and 1,4 - 2,7 GHz
Frequency step:	1 % of previous frequency
Modulation	AM: 1 kHz depth 80 %
Dwell time:	3 seconds at each frequency
Antenna polarity:	Horizontal and vertical
Exposure side:	0° / 90° (clockwise respect to antenna)

6.3.3 ENVIRONMENTAL CONDITIONS IN THE TEST SITE

Temperature:	23 °C ± 5 °C
Relative humidity:	50 % ± 25 %
Atmospheric press.:	960 mBar ± 100 mBar

6.3.4 SUMMARY OF RESULTS

Sample No.:	1					
Port under test:	Enclosure					
Configuration mode:	CM1 - EUT powered 24 Vdc					
Level (#1)	Frequency range	Polarity	Criteria (see par. 4.4)		Operation mode (see par. 4.3)	Result
			Req.	Obt.		
10 V/m	80 - 1000 MHz	Horizontal	A	A	Run	PASS
		Vertical	A	A	Run	PASS
3 V/m	1,4 - 2,0 GHz	Horizontal	A	A	Run	PASS
		Vertical	A	A	Run	PASS
1 V/m	2,0 - 2,7 GHz	Horizontal	A	A	Run	PASS
		Vertical	A	A	Run	PASS

Notes:

#1 V/m (rms) unmodulated.



Photo of the test set-up for frequency up to 1 GHz



Photo of the test set-up for frequency above 1 GHz

6.3.5 TEST INSTRUMENTATION

Description	Manufacturer	Model	Intek ID	Last Calibration	Calibration due
Anechoic chamber	SIDT	/	0309 P	2017-01	2018-01
Signal generator	Rhode & Schwarz	SML 03	0431 P	2016-08	2017-08
Power meter	Amplifier Research	PM 2002	0433 P	2016-08	2017-08
Probe for power meter	Amplifier Research	PH 2004	0434 P	2016-08	2017-08
Probe for power meter	Amplifier Research	PH 2004	0809 P	2016-08	2017-08
Coaxial cable (external)	INTEK	RG58	0510 P	2017-03	2018-03
Amplifier 80-1000 MHz	Amplifier Research	100W1000M1	0307 N	2017-01	2018-01
Coaxial cable (external)	INSULATED WIRE	NPS-2301	0935 P	2017-03	2018-03
Coaxial cable (external)	INSULATED WIRE	NPS-2301	0934 P	2017-03	2018-03
Directional coupler 600 W, 80-1000 MHz	Amplifier Research	DC 6180	0303 P	2017-03	2018-03
Coaxial cable (internal)	INSULATED WIRE	NPS-2301	0816 P	2017-03	2018-03
Log-periodic Antenna	Amplifier Research	AT 1080	0304 N	2017-01	2018-01
Amplifier 800-4200 MHz	Amplifier Research	50S1G4A	0430 N	2017-01	2018-01
Coaxial cable (external)	INSULATED WIRE	NPS-2301	0933 P	2017-03	2018-03
Coaxial cable (external)	INSULATED WIRE	NPS-2301	0936 P	2017-03	2018-03
Directional coupler 400 W, 800-4200 MHz	Amplifier Research	DC 7144	0438 P	2017-03	2018-03
Coaxial cable (internal)	INSULATED WIRE	NPS-2301	0818 P	2017-03	2018-03
Horn Antenna	Amplifier Research	AT 4200 A	0432 N	2017-01	2018-01
Test software	Dare	Radimation	0641 SW	NCR	NCR

6.3.6 TEST MEASUREMENTS UNCERTAINTY

Values of expanded uncertainty are given with a level of confidence of 95 % ($k = 2$):

- $U_{LAB} = 3,50$ dB for frequencies range 80-1000 MHz;
- $U_{LAB} = 3,50$ dB for frequencies range 1,0-3,0 GHz.

6.4 ELECTROSTATIC DISCHARGES TEST

Test specification:	EN 61000-6-2
Test method:	EN 61000-4-2
Test procedure:	INTEK 05 04 PP 001 PRE

6.4.1 TEST SET-UP

Test site:	Laboratory - Room N. 27
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6.4.2 TEST PARAMETERS

Repetition rate:	1 discharge every 1 second for contact method
Number of discharges for contact discharge type:	10 discharges
Number of discharges for air discharge type:	10 discharges

6.4.3 ENVIRONMENTAL CONDITIONS IN THE TEST SITE

Temperature:	23 °C ± 5 °C
Relative humidity:	50 % ± 25 %
Atmospheric press.:	960 mBar ± 100 mBar

6.4.4 SUMMARY OF RESULTS

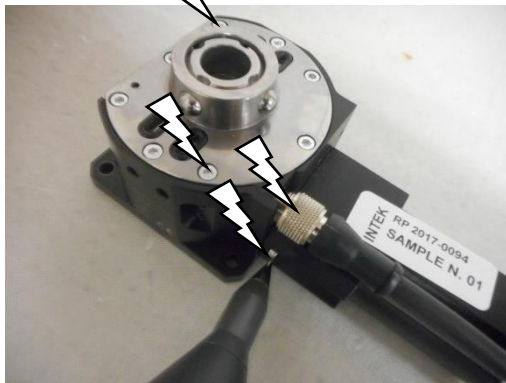
Port under test:	Enclosure					
Configuration mode:	CM1 - EUT powered at 24 Vdc					
Level	Coupling	Discharge point	Criteria (see par. 4.4)		Operation mode (see par. 4.3)	Result
			Req.	Obt.		
±2; ±4; ±8 kV	Air	Non conductive parts	B	N/A	N/A	N/A (#1)
±4 kV	Direct	Conductive parts	B	A	Run	PASS
±4 kV	Indirect	VCP	B	A	Run	PASS
±4 kV	Indirect	HCP	B	A	Run	PASS

Notes:

#1 According to EN 61000-4-2 the air discharges shall be used where contact discharges cannot be applied



Photo of the test set-up


Legend


Air discharge



Contact discharge

Point of application of the discharges

6.4.5 TEST INSTRUMENTATION

Description	Manufacturer	Model	Intek ID	Last Calibration	Calibration due
ESD Generator	EMC-Partner	ESD-3000	0764 P	2016-02	2018-02
RC filter 150 pF – 330 Ω	EMC-Partner	ESD3000DN1	0765 P	2016-02	2018-02
High-voltage relay module	EMC-Partner	ESD3000RM32	1118 P	2016-02	2018-02
Grounding cable	EMC-Partner	/	0807 A	2016-02	2018-02
HCP + 2x470 kΩ bleeder	INTEK	/	0808 A	2016-02	2018-02
VCP + 2x470 kΩ bleeder	INTEK	/	0808 A	2016-02	2018-02

6.4.6 TEST MEASUREMENTS UNCERTAINTY

Values of expanded uncertainty are given with a level of confidence of 95 % ($k = 2$):

- $U_{LAB} = \pm 5,00$ % for voltage.

6.5 RADIO-FREQUENCY COMMON MODE

Test specification:	EN 61000-6-2
Test method:	EN 61000-4-6
Test procedure:	INTEK 05 04 PP 012 PRE

6.5.1 TEST SET-UP

Test site:	Laboratory - Room N. 27
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6.5.2 TEST PARAMETERS

Frequency range:	150 kHz - 80 MHz
Frequency step:	1 % of previous frequency
Modulation:	AM: 1 kHz depth 80 %
Dwell time:	3 seconds at each frequency

6.5.3 ENVIRONMENTAL CONDITIONS

Temperature:	(23 ± 5) °C
Relative humidity:	(50 ± 25) %
Atmospheric press.:	(960 ± 100) mBar

6.5.4 SUMMARY OF RESULTS

Sample No.:	1					
Configuration mode:	CM1 - EUT powered at 24 Vdc					
Level (#1)	Port under test	CD	Criteria (see par. 4.4)		Operation mode (see par. 4.3)	Result
			Req.	Obt.		
10 V	Control cable	Clamp	A	A	Run	PASS

Notes:

#1 V (rms) unmodulated.



Photo of the test set-up

6.5.5 TEST INSTRUMENTATION

Description	Manufacturer	Model	Intek ID	Last Calibration	Calibration due
Signal generator	Rohde & Schwarz	SMY 01	0221 P	2016-08	2017-08
RF Cable (SG-PA)	INTEK	RG58	0292 P	2017-03	2018-03
Amplifier 10 kHz-250 MHz	Amplifier Research	75A250	0249 N	2017-01	2018-01
Power meter 3 channels	Teseo	SOPM03S	0635 P	2016-08	2017-08
Directional coupler	Amplifier Research	DC 3001A	0636 P	2017-03	2018-03
RF Cable (PA-ATT)	INTEK	RG 58	0293 P	2017-03	2018-03
Attenuator 6dB (OUT PA)	A-INFOMW	ACB06-100SN	0896 P	2017-03	2018-03
RF Cable (ATT-CD)	INTEK	RG 58	0955 P	2017-03	2018-03
Test software	Dare	Radimation	0642 SW	NCR	NCR
EM Clamp	FCC	F-203I	0240 P	2017-03	2018-03

6.5.6 TEST MEASUREMENTS UNCERTAINTY

Values of expanded uncertainty are given with a level of confidence of 95 % ($k = 2$):

- $U_{LAB} = \pm 2,50$ dB with CDN injection method
- $U_{LAB} = \pm 3,50$ dB with EM CLAMP injection method

6.6 FAST TRANSIENTS

Test specification:	EN 61000-6-2
Test method:	EN 61000-4-4
Test procedure:	INTEK 05 04 PP 010 PRE

6.6.1 TEST SET-UP

Test site:	Laboratory - Room N. 27
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6.6.2 TEST PARAMETERS

Frequency:	5 kHz
Burst duration:	15 ms
Burst repetition:	300 ms
Coupling:	Asynchronous
Test duration:	1 minute for polarity
Pause:	10 seconds

6.6.3 ENVIRONMENTAL CONDITIONS IN THE TEST SITE

Temperature:	(23 ± 5) °C
Relative humidity:	(50 ± 25) %
Atmospheric press.:	(960 ± 100) mBar

6.6.4 SUMMARY OF RESULTS

Sample No.:	1					
Configuration mode:	CM1 - EUT powered at 24 Vdc					
Frequency:	5 kHz					
Level	Port (line) under test	CD	Criteria (see par. 4.4)		Operation mode (see par. 4.3)	Result
			Req.	Obt.		
± 1,0 kV	Control cable	CCC	B	A	Run	PASS



Photo of the test set-up

6.6.5 TEST INSTRUMENTATION

Description	Manufacturer	Model	Intek ID	Last Calibration	Calibration due
Fast transient generator	EM TEST	EFT 500	0481 P	2017-02	2019-02
Coupling Clamp	EM TEST	EFK	0482 P	2017-02	2019-02
Cable generator / clamp	EM TEST	/	0803 P	2017-02	2019-02
Test software	EM TEST	ISMIEC	0685 SW	NCR	NCR

6.6.6 TEST MEASUREMENTS UNCERTAINTY

Values of expanded uncertainty are given with a level of confidence of 95 % ($k = 2$):

- $U_{LAB} = \pm 20\%$ for amplitude.

7. TEST INSTRUMENTATION

Instruments not listed in the relative paragraph of the tests:

Description	Manufacturer	Model	Intek ID	Last Calibration	Calibration due
Room N. 25: Shielded room					
Thermometer / hygrometer	Salmoiraghi	1750-2/QM	0301 P	2016-03	2018-03
Barometer	DeltaOhm	HD35EDG14bNTVI	1044 P	2017-03	2018-03
Room N. 26: Fully anechoic room					
Thermometer / hygrometer	Salmoiraghi	1750-2/QM	0222 P	2016-03	2018-03
Barometer	DeltaOhm	HD35EDG14bNTVI	1044 P	2017-03	2018-03
Room N. 27: Bench test					
Thermometer / hygrometer / barometer	DeltaOhm	HD35EDG14bNTVI	1044 P	2017-03	2018-03

7.1 INSTRUMENTATION ACCURACY

If reference standard doesn't specify otherwise, accuracy of used instruments is in accordance with the limits listed in the IEC operational document - IEC EE OD-5014 ed. 1.0 "Instrument Accuracy Limit".

8. ANNEXES LIST

None.

End of test report.