



EMC TEST REPORT

TGS4 Runway Sign & Taxiway Guidance Sign



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1. INTRODUCTION

1.1 PURPOSE OF THE REPORT

This report was commissioned by All About Signs International BV ('the Applicant') and compiled by Certification Company. The purpose of this report is to carry out the necessary tests against the below mentioned applicable harmonised standards in the field of Electromagnetic Compatibility Directive 2014/30/EU (EMC).

- **EN 55015-1:2019/A11:2020** - Limits and methods of measurement of radio disturbance characteristics of electrical lighting and similar equipment
- **EN 61000-6-3:2007/A1:2011** – Electromagnetic compatibility (EMC) - Part 6-3: Generic standards - Emission standard for residential, commercial and light-industrial environments
- **EN 61547-1:2009** - Equipment for general lighting purposes - EMC immunity requirements
- **EN 61000-6-1:2007** - Electromagnetic compatibility (EMC) - Part 6-1: Generic standards - Immunity for residential, commercial and light-industrial environments

1.2 PRODUCT IDENTIFICATION

For the purpose of this investigation the following Products have been taken into account:

#	PRODUCT NAME	INTENDED USE	PHOTOGRAPHIC EXAMPLE
1	TGS4 (230V & CCR)	Taxi Guidance Sign	
<p>Remark:</p>			

2. TYPE 230V CONNECTOR

2.1 TECHNICAL INFORMATION OF THE PRODUCT (EUT)

Item	Description
Name	TGS4, Taxi Guidance Sign
Manufacturer	AAS International
Brand name	--
Type or model no.	TGS4
Serial no.	N/A
Rated voltage	230Vac
Rated current /power	N/A
Software version	N/A
Hardware version	Unknown
Dimensions	-
Protection Class	I
Environmental to be used	Domestic
Peripheral equipment	July 2023
General remarks	None

2.2 CABLES AND ANCILLARY EQUIPMENT

Description	Port type	Type of cable	Cable length (cm)	Fixing shield	Load at port
Power port	AC	unshielded	200	-	-

2.3 GENERAL DESCRIPTION

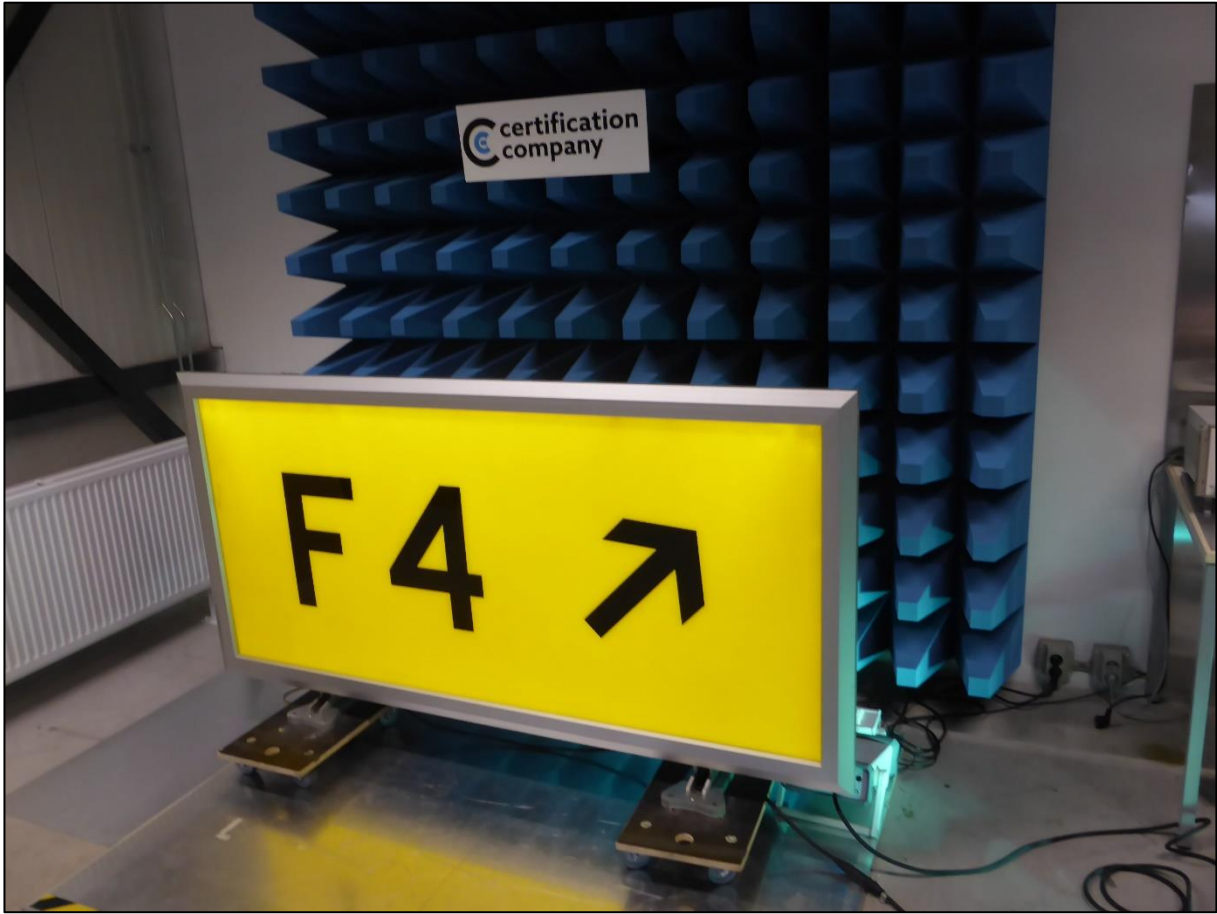


Photo 1 - Front View

2.4 MODES OF OPERATION AND PERFORMANCE CRITERIA

The modes of operation can be find in the table below:

Mode of operation	Description
Mode 1	Normal operational with all control functions activated. Immunity tests: injection on 230Vac

Performance criterion during the immunity test are verified according the information that is laid down in the table below:

Mode of operation	Performance criteria
Mode 1	<p>Performance criteria A: During testing, normal performance within the specification of the EUT</p> <p>Performance criteria B: During testing, temporary degradation, or loss of function or performance is allowed if it is self-recovering.</p> <p>Performance criteria C: During testing, temporary degradation, or loss of function or performance is allowed which requires operator intervention or system reset.</p>

2.5 STANDARDS AND MEASUREMENTS RESULTS

The following standard(s) are used to verify if the EUT is in compliance with the essential requirements of the EMC Directive 2014/30/EU.

Phenomena	Standard	Result
Emission	EN 55015-1:2019/ A11:2020 EN 61000-6-3:2007/A1:2011	PASS
Immunity	EN 61547-1:2009 EN 61000-6-1:2007	PASS

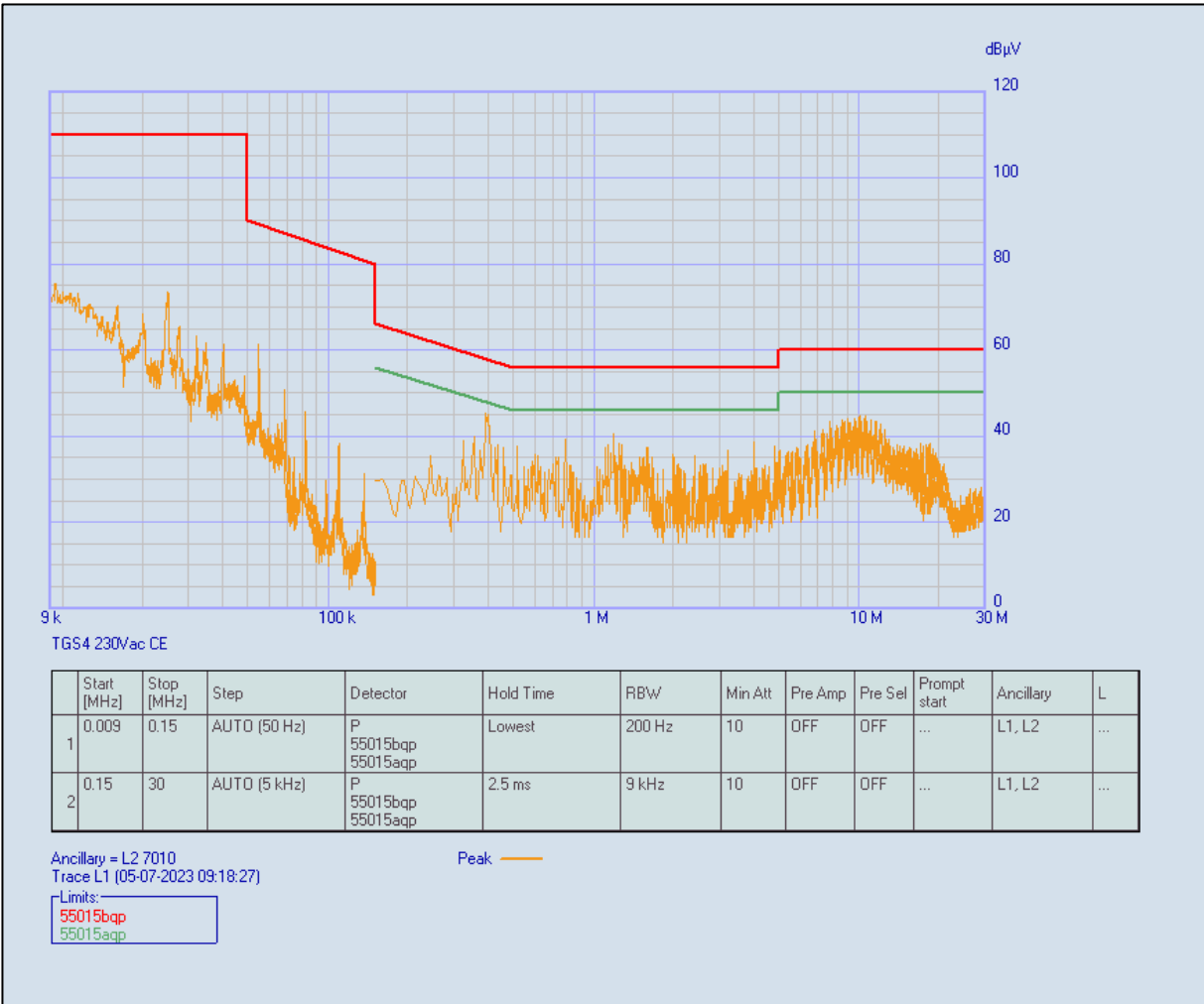
Detailed test information:

Test sequence	Test phenomena	Basic standard	Result (Pass/Fail)
1	Conducted emission (9 kHz – 30 MHz), Class B	EN 55015-1:2019/ A11:2020	PASS
2	Radiated emission (30 – 1000 MHz) Class B	EN 55015-1:2019/ A11:2020	PASS
3	Conducted immunity (0.15 – 80 MHz)	EN 61000-4-6:2014	PASS
4	Radiated immunity (80 – 2700 MHz)	EN 61000-4- 3:2016/A1:2008	PASS
5	EFT tests	EN 61000-4-4:2012	PASS
6	Surge test	EN 61000-4-5:2014	PASS
7	ESD tests	EN 61000-4-2:2009	PASS
8	Voltage dips and interrupts	EN61000-4- 11:2004/A1:2017	PASS
Remark			

2.6 CONDUCTED EMISSION RESULTS

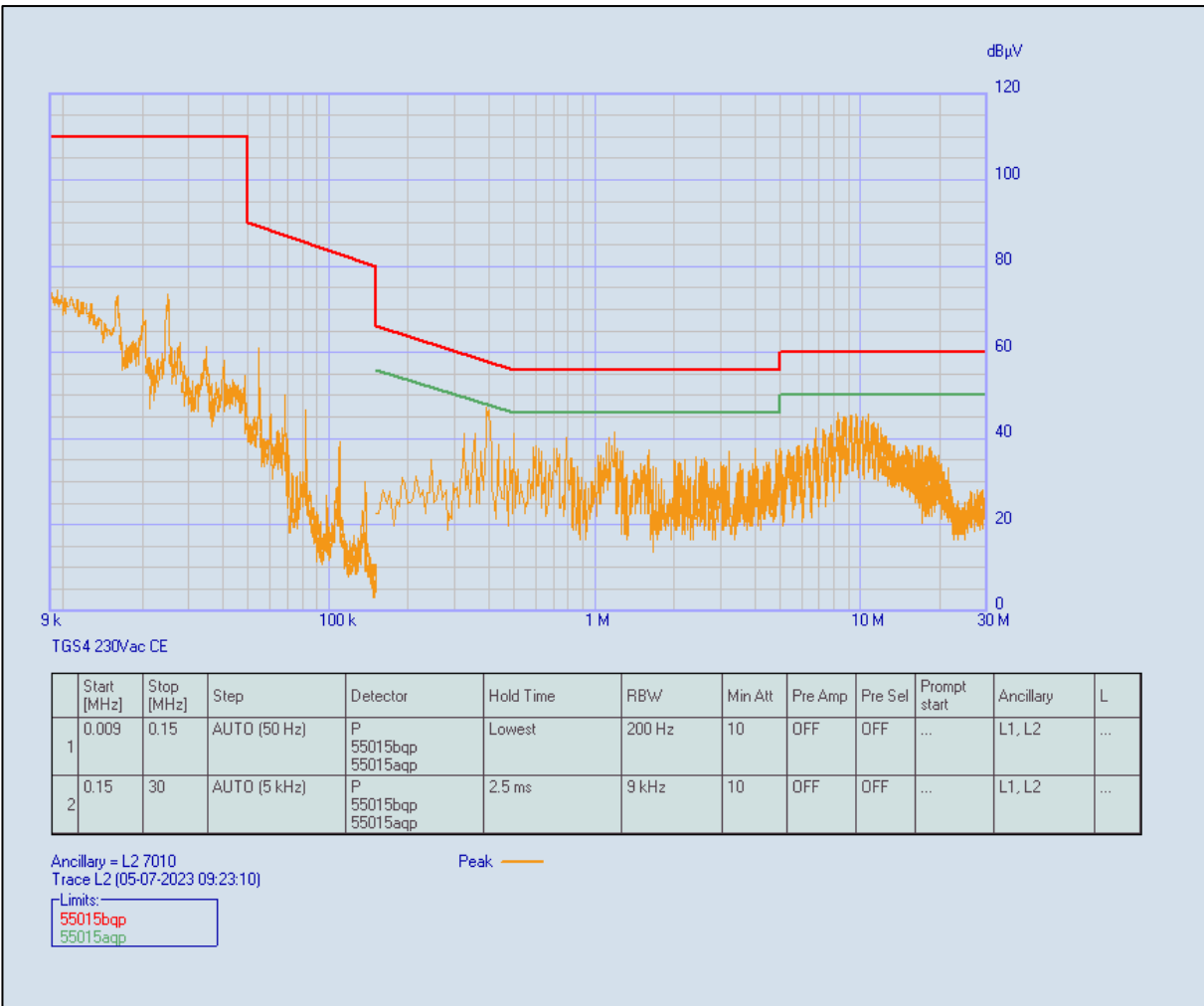
Temperature	21 °C	Air pressure	1014 hpa
Humidity	60 %	Remarks	

Description	Description: 6) Setting: Frequency band From 9 kHz to 30 MHz
Note	Line 1



Detected Peaks Line								
Peak Number	Frequency	Quasi-Peak	Quasi-Peak Limit	Quasi-Peak Delta	Average	Average Limit	Average Delta	Status
1	0.355	37.30	58.84	-21.54	30.75	48.84	-18.09	Pass
2	0.395	44.53	57.96	-13.43	40.74	47.96	-7.22	Pass
3	0.5	32.29	56.00	-23.71	15.03	46.00	-30.97	Pass
4	1.195	39.71	56.00	-16.29	36.53	46.00	-9.47	Pass
5	6.775	37.69	60.00	-22.31	32.96	50.00	-17.04	Pass
6	7.175	37.33	60.00	-22.67	31.46	50.00	-18.54	Pass
7	7.775	37.75	60.00	-22.25	31.10	50.00	-18.90	Pass
8	8.175	41.80	60.00	-18.20	35.35	50.00	-14.65	Pass
9	8.605	41.41	60.00	-18.59	35.70	50.00	-14.30	Pass
10	10.615	39.75	60.00	-20.25	31.98	50.00	-18.02	Pass
RESULT	Pass							

Description	Description: 6) Setting: Frequency band From 150 kHz to 30 MHz
Note	Line 2



Detected Peaks Line								
Peak Number	Frequency	Quasi-Peak	Quasi-Peak Limit	Quasi-Peak Delta	Average	Average Limit	Average Delta	Status
1	0.355	39.07	58.84	-19.77	32.66	48.84	-16.18	Pass
2	0.395	46.33	57.96	-11.63	42.51	47.96	-5.45	Pass
3	0.5	34.39	56.00	-21.61	15.53	46.00	-30.47	Pass
4	1.195	40.66	56.00	-15.34	37.35	46.00	-8.65	Pass
5	6.775	38.00	60.00	-22.00	32.77	50.00	-17.23	Pass
6	7.175	37.87	60.00	-22.13	31.96	50.00	-18.04	Pass
7	7.775	38.70	60.00	-21.30	31.21	50.00	-18.79	Pass
8	8.175	42.31	60.00	-17.69	35.87	50.00	-14.13	Pass
9	8.605	41.95	60.00	-18.05	36.76	50.00	-13.24	Pass
10	10.615	40.32	60.00	-19.68	32.36	50.00	-17.64	Pass
RESULT	Pass							

Photo measurement set-up

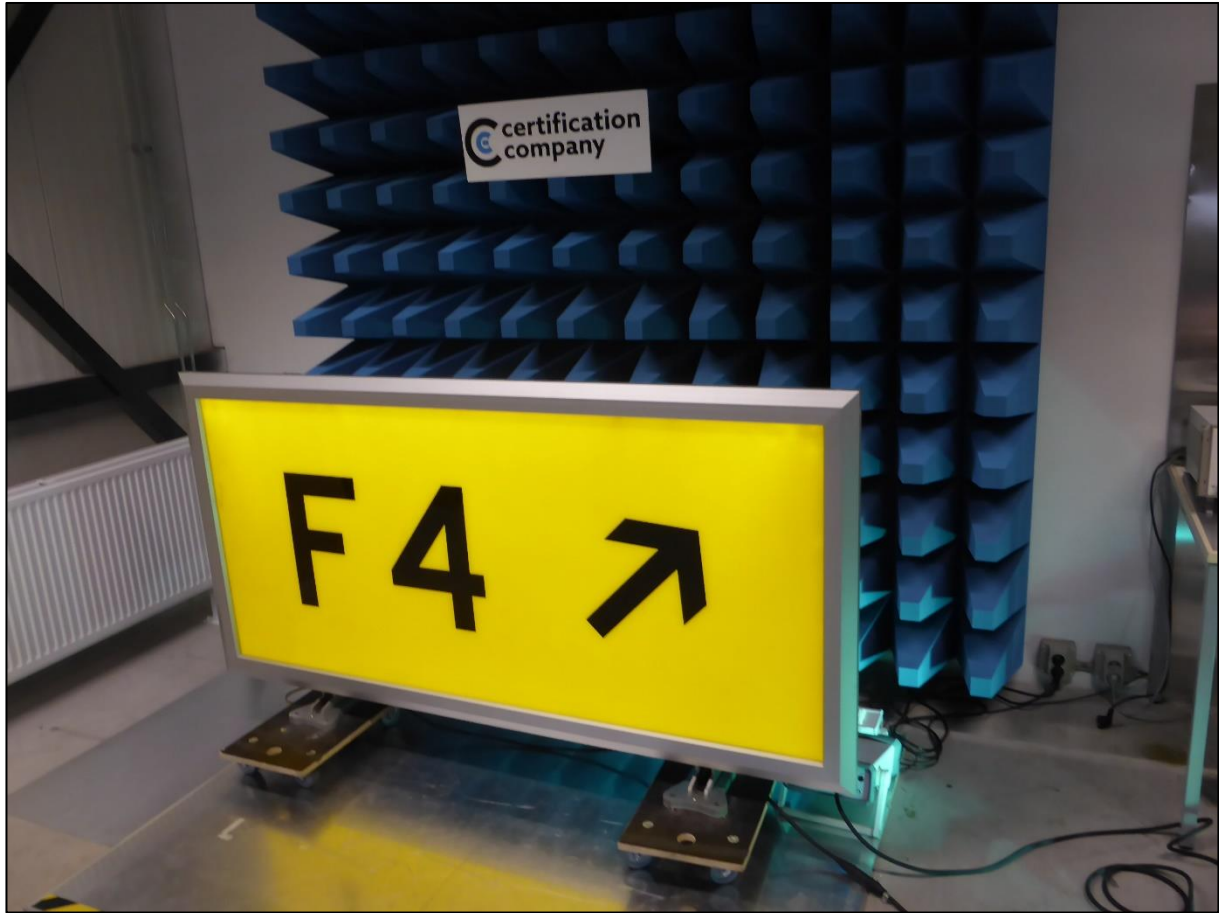
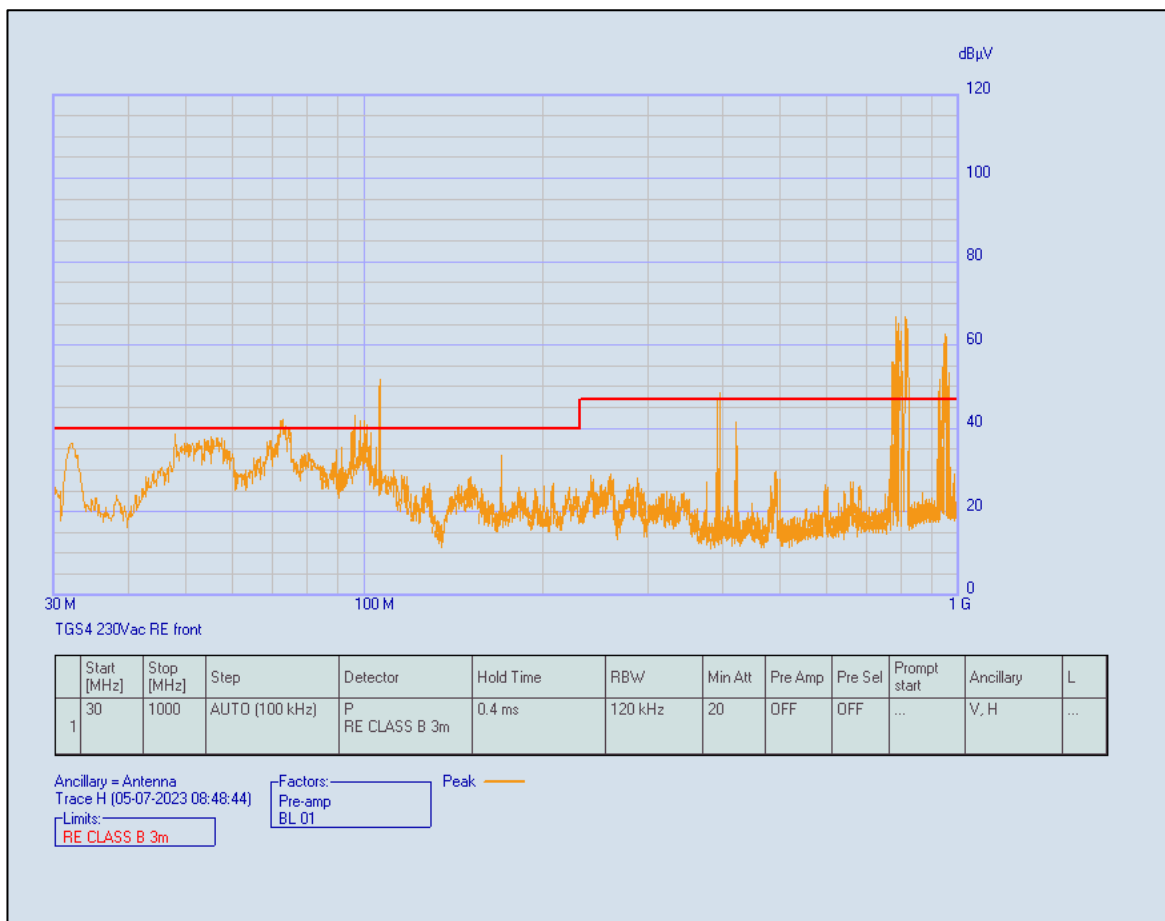


Photo 2 - Test set-up

2.7 RADIATED EMISSION RESULTS

Temperature	21 °C	Air pressure	1014 hpa
Humidity	60 %	Frequency steps	
Remark(s):			

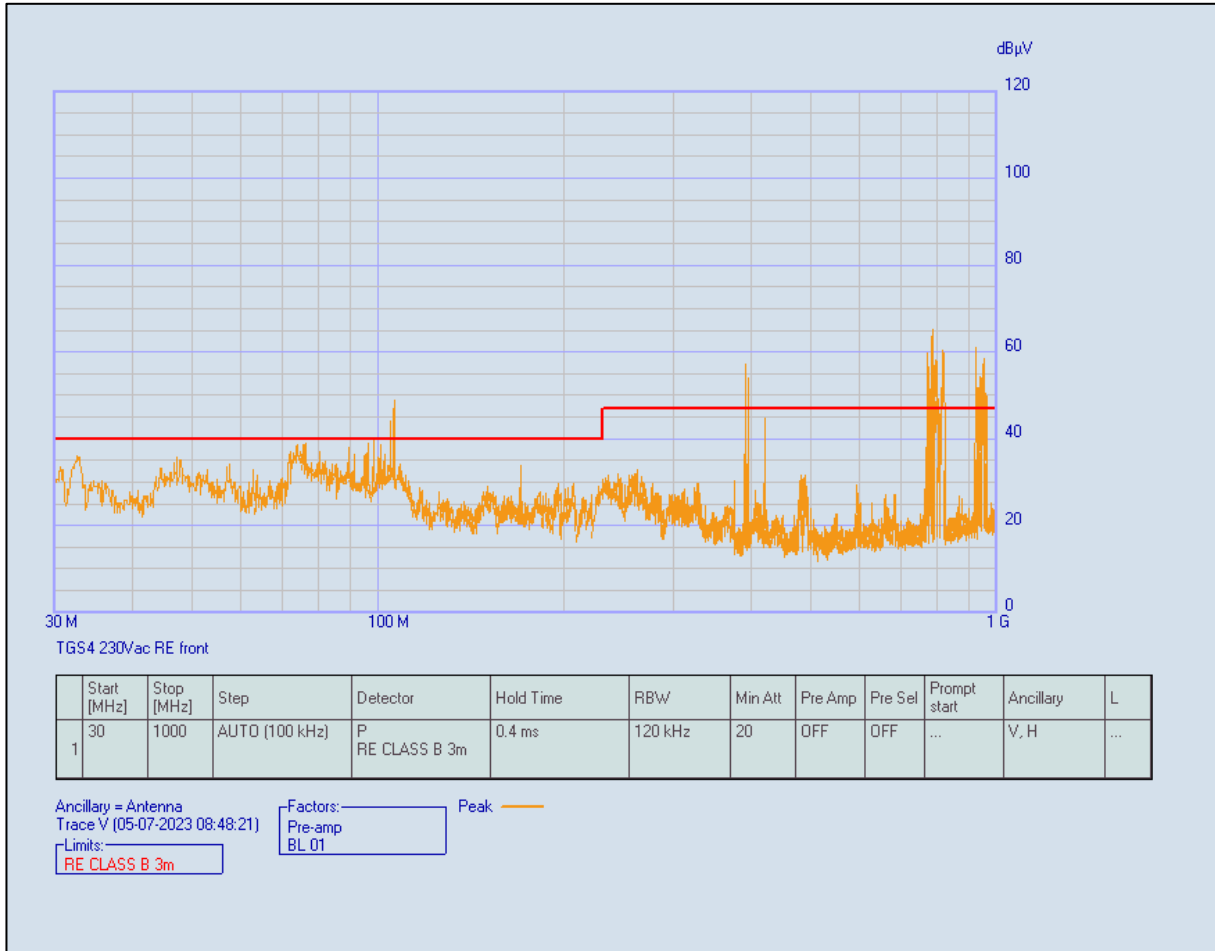
Description	Description: 9) Setting: Frequency band From 30 MHz to 1000 MHz, Class B
Note	Antenna Horizontal front



Ambient noise due FM(100Mhz), C2000 (390MHz), ISM(420MHz) and GSM around 800Mhz and 900 MHz and 70-80Mhz

Detected Peaks										
Peak Number	Frequency	Quasi-Peak	Quasi-Peak Limit	Quasi-Peak Delta						Status
1	55.2	34.75	40.00	-5.25						Pass
RESULT	Pass									

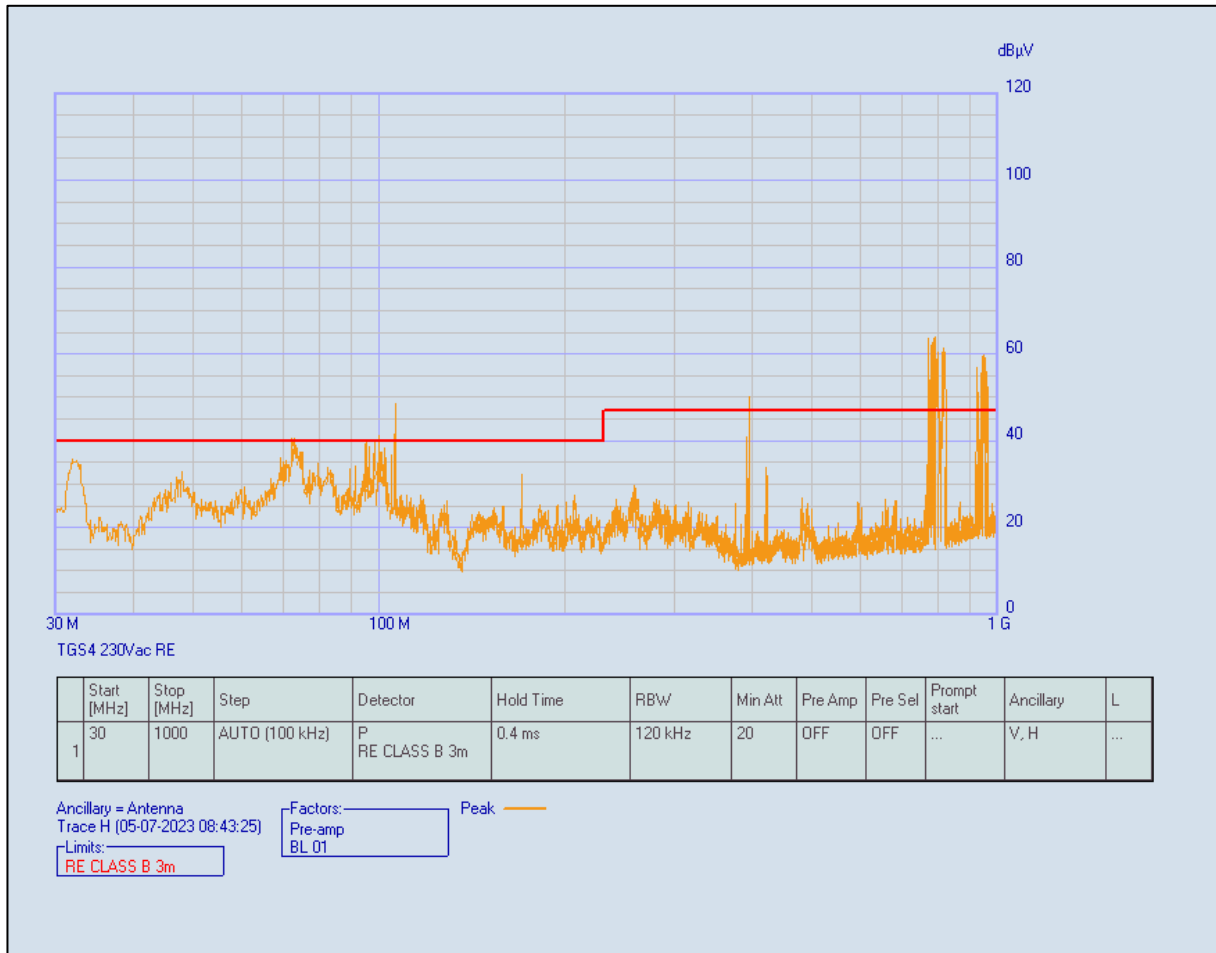
Description	Description: 9) Setting: Frequency band From 30 MHz to 1000 MHz, Class B
Note	Antenna Vertical front



Ambient noise due FM(100MHz), C2000 (390MHz), ISM(420MHz) and GSM around 800MHz and 900 MHz and 70-80MHz

Detected Peaks												
Peak Number	Frequency	Quasi-Peak	Quasi-Peak Limit	Quasi-Peak Delta								Status
1	55.2	26.49	40.00	-13.51								Pass
RESULT	PASS											

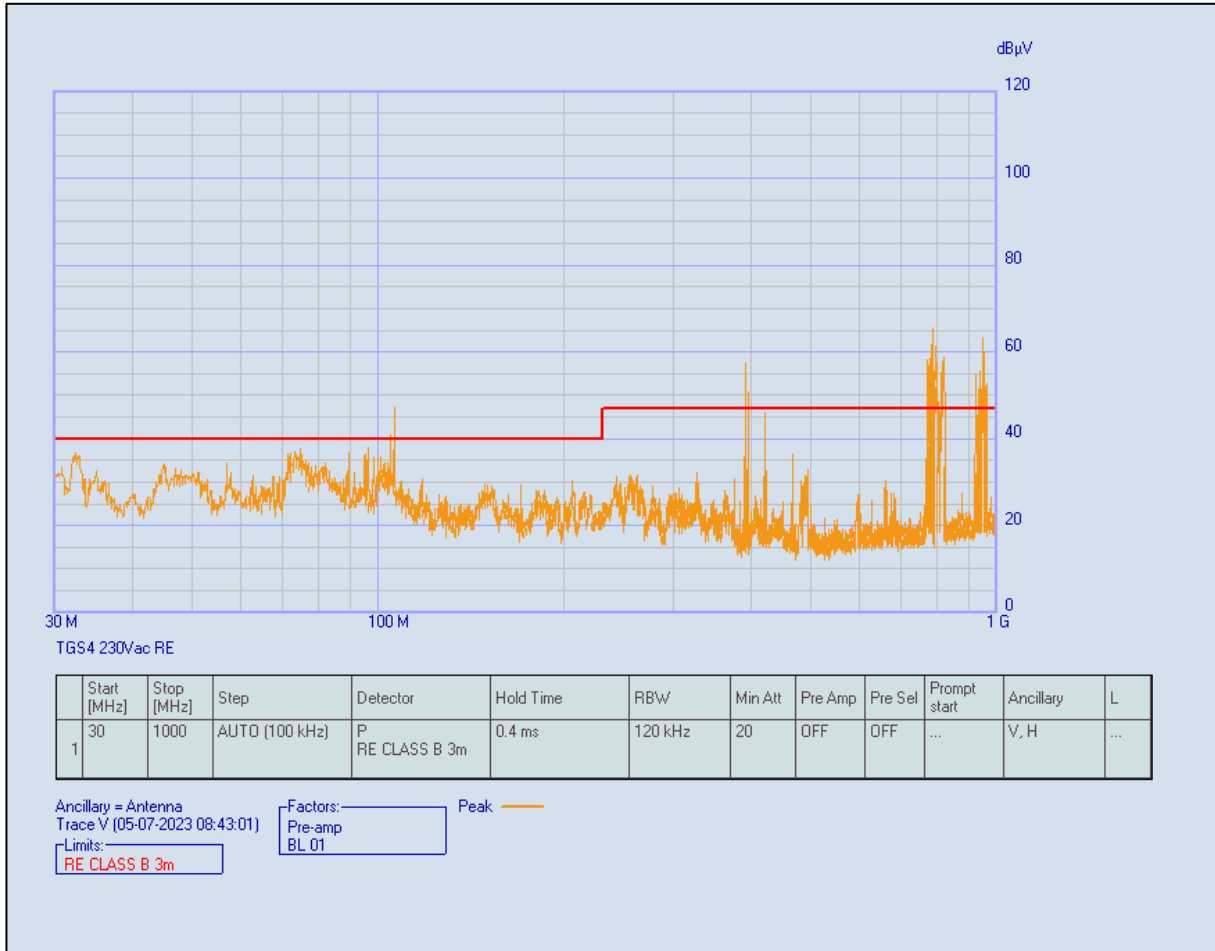
Description	Description: 9) Setting: Frequency band From 30 MHz to 1000 MHz, Class B
Note	Antenna Horizontal back



Ambient noise due FM(100MHz), C2000 (390MHz), ISM(420MHz) and GSM around 800MHz and 900 MHz and 70-80MHz

Detected Peaks											
Peak Number	Frequency	Quasi-Peak	Quasi-Peak Limit	Quasi-Peak Delta							Status
--											Pass
RESULT	Pass										

Description	Description: 9) Setting: Frequency band From 30 MHz to 1000 MHz, Class B
Note	Antenna Vertical back

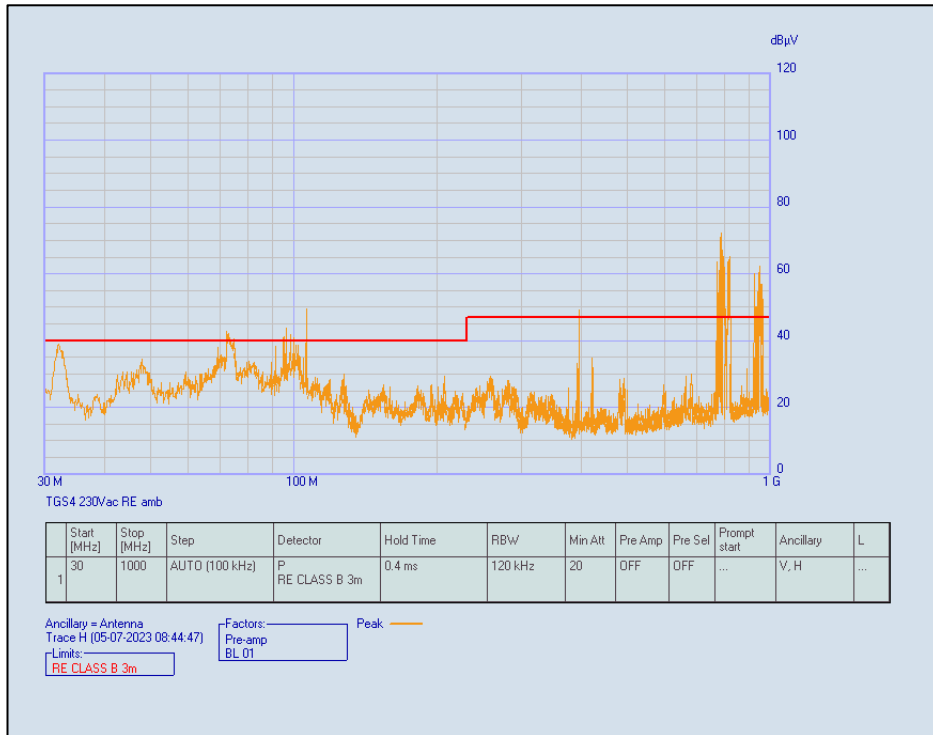


Ambient noise due FM(100MHz), C2000 (390MHz), ISM(420MHz) and GSM around 800MHz and 900 MHz and 70-80MHz

Detected Peaks											
Peak Number	Frequency	Quasi-Peak	Quasi-Peak Limit	Quasi-Peak Delta							Status
											Pass
RESULT	PASS										

Ambient noise:

Horizontal



Vertical

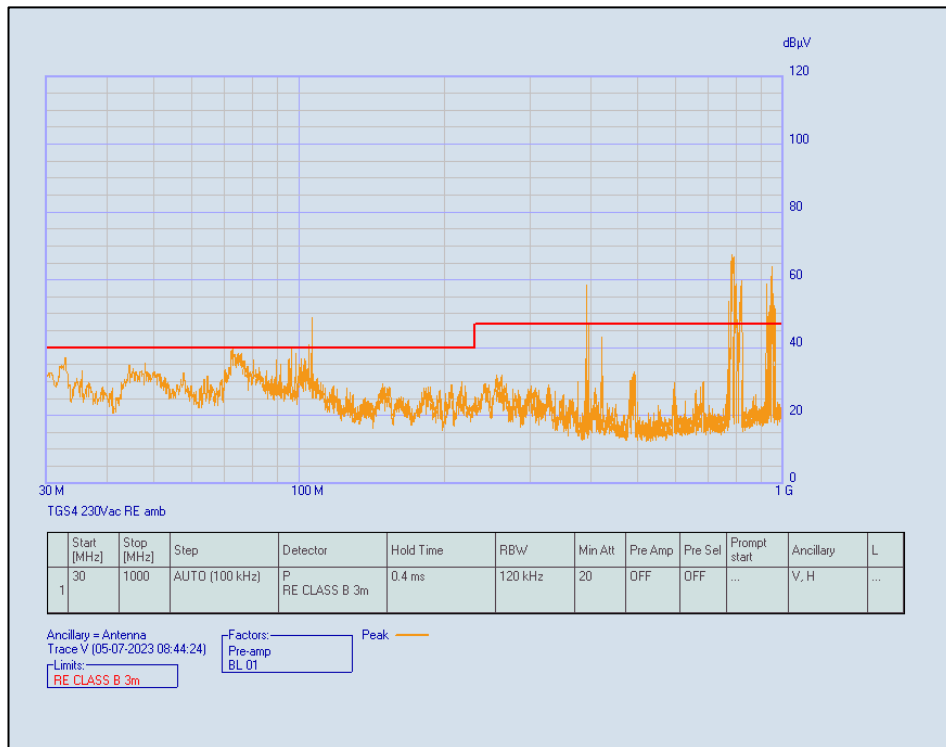


Photo measurement set-up

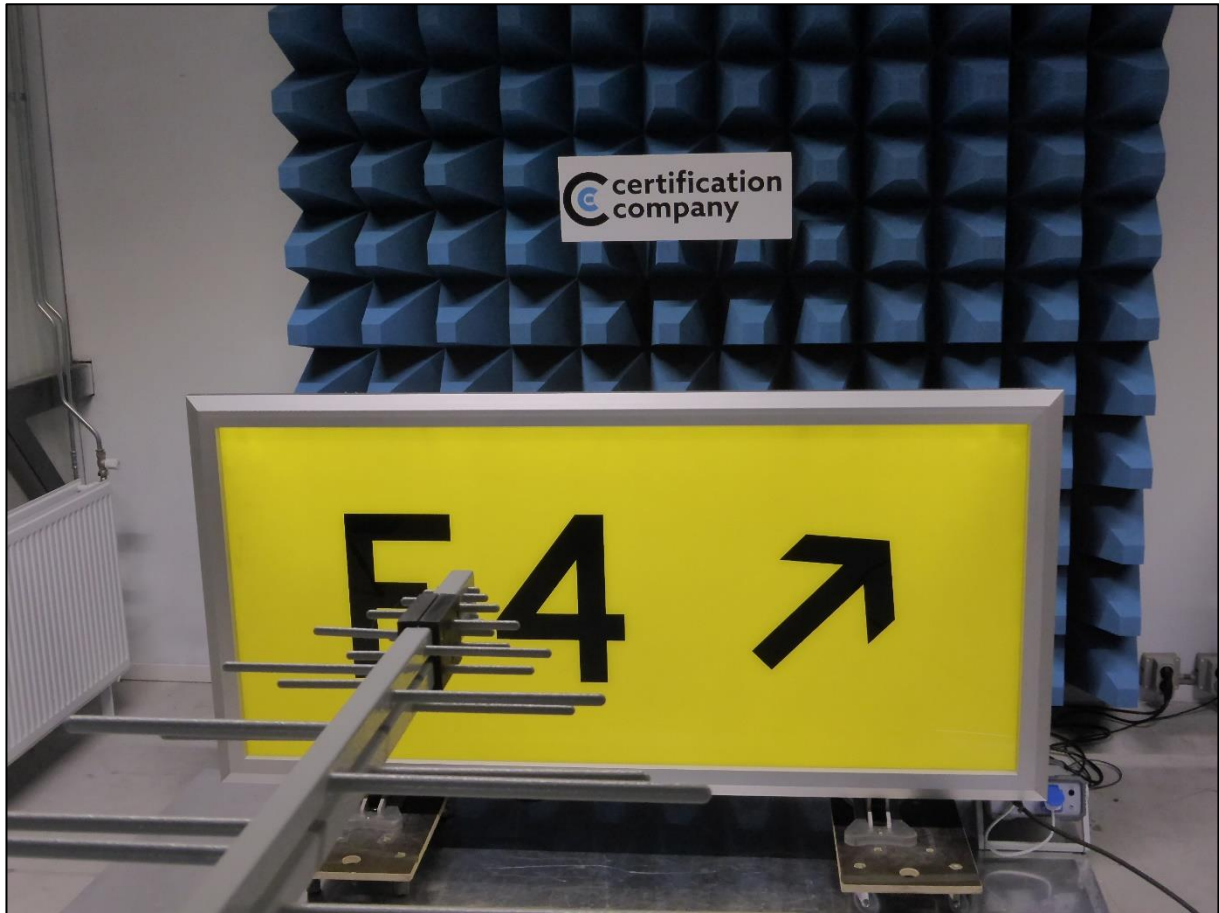


Photo 3 - Test set-up

Used	Description	Type	Manufacturer	ID
√	EMI Receiver	PMM7010	Narda	NC001
√	Antenna	BL-01	Narda	NC002

2.8 RADIATED IMMUNITY RESULTS

Test ports:

Port	Type of cable	Cable length (cm)
enclosure	-	-

Temperature	21 °C	Air pressure	1014 hpa
Humidity	45 %	Frequency steps	2 %
Modulation	1 kHz, 80 % AM	Frequency range	80 – 1000 MHz
Dwell time	2 sec.		

Performance criteria: A			
Antenna / EUT position	Test Level	Remarks	Pass/Fail
Horizontal / Vertical front and back	80 - 1000MHz 3 V/m	No influence detected	Pass
Horizontal / Vertical front and back	1.4 - 2.0 GHZ 3 V/m	No influence detected	Pass
Horizontal / Vertical front and back	2.0 - 2.7 GHZ 1 V/m	No influence detected	Pass

Photo measurement set-up



Photo 4 - Test set-up

Used	Description	Type	Manufacturer	ID
√	Signal generator	DSG815	Rigol	NC003
√	Amplifier	ZHL-20W-13	Mini Circuits	NC007
√	Antenna	BL-01	Narda	NC002

2.9 CONDUCTED IMMUNITY RESULTS

Temperature	21 °C	Air pressure	1014 hpa
Humidity	45 %	Frequency steps	2 %
Modulation	1 kHz, 80 % AM	Frequency range	0.15 – 80 MHz
Dwell time	2 sec.		

Performance criteria: A			
Tested port	Test Level	Remarks	Pass/Fail
230Vac external CCR	3 Vrms	No influence detected	Pass

Photo measurement set-up

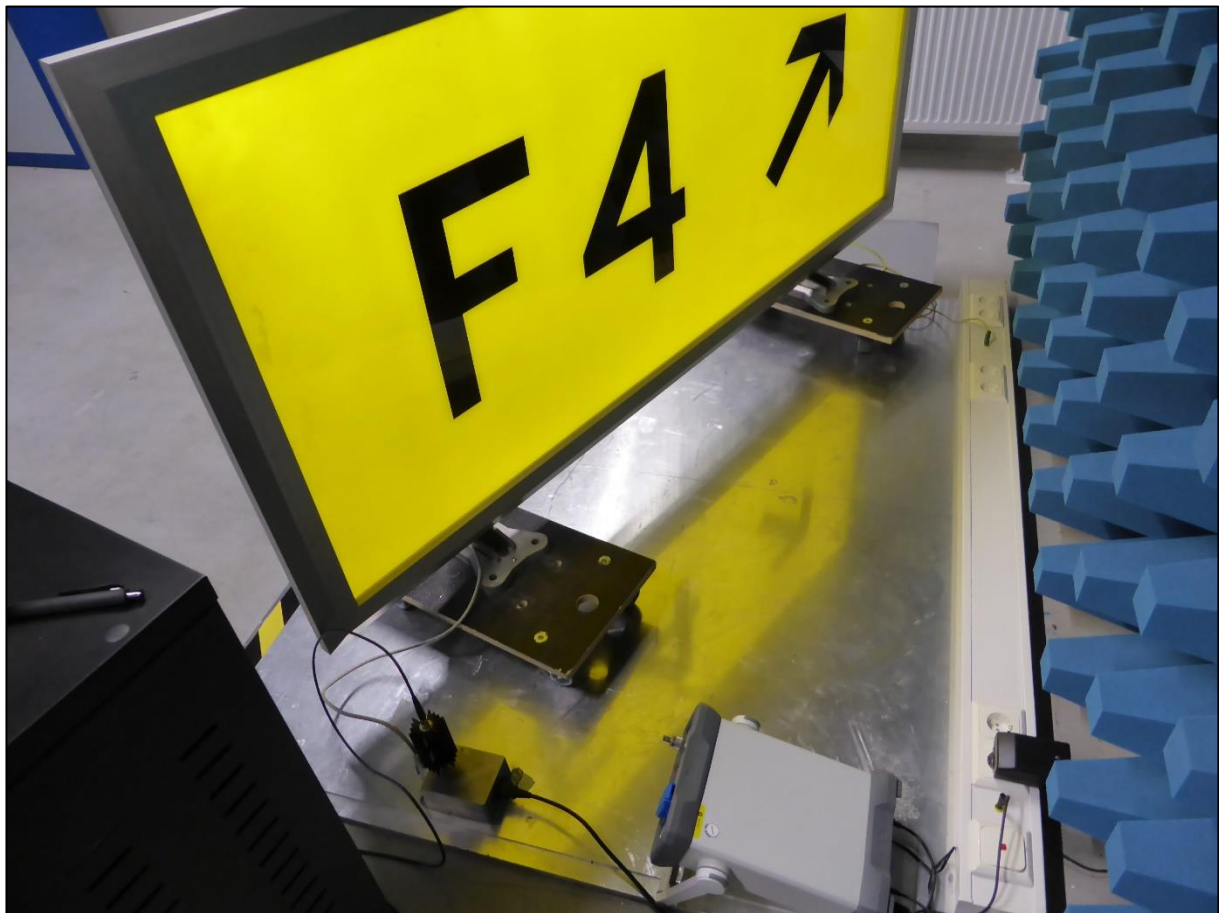


Photo 5 - Test set-up

Used	Description	Type	Manufacturer	ID
√	Signal generator	DSG815	Rigol	NC003
√	Amplifier	LZY-22	Mini Circuits	NC006
√	CDN	CDN-16A	EMCMCC	NC015

2.10 EFT RESULTS

Temperature	21 °C	Air pressure	1014 hpa
Humidity	60 %	Repetition mode	5 kHz
Burst duration	15 msec	Burst period	300 msec

Performance criteria B			
Tested I/O port	Test level	Remarks	Pass/Fail
230Vac external CCR	± 1kV L-L	No influence detected	Pass

Photo measurement set-up

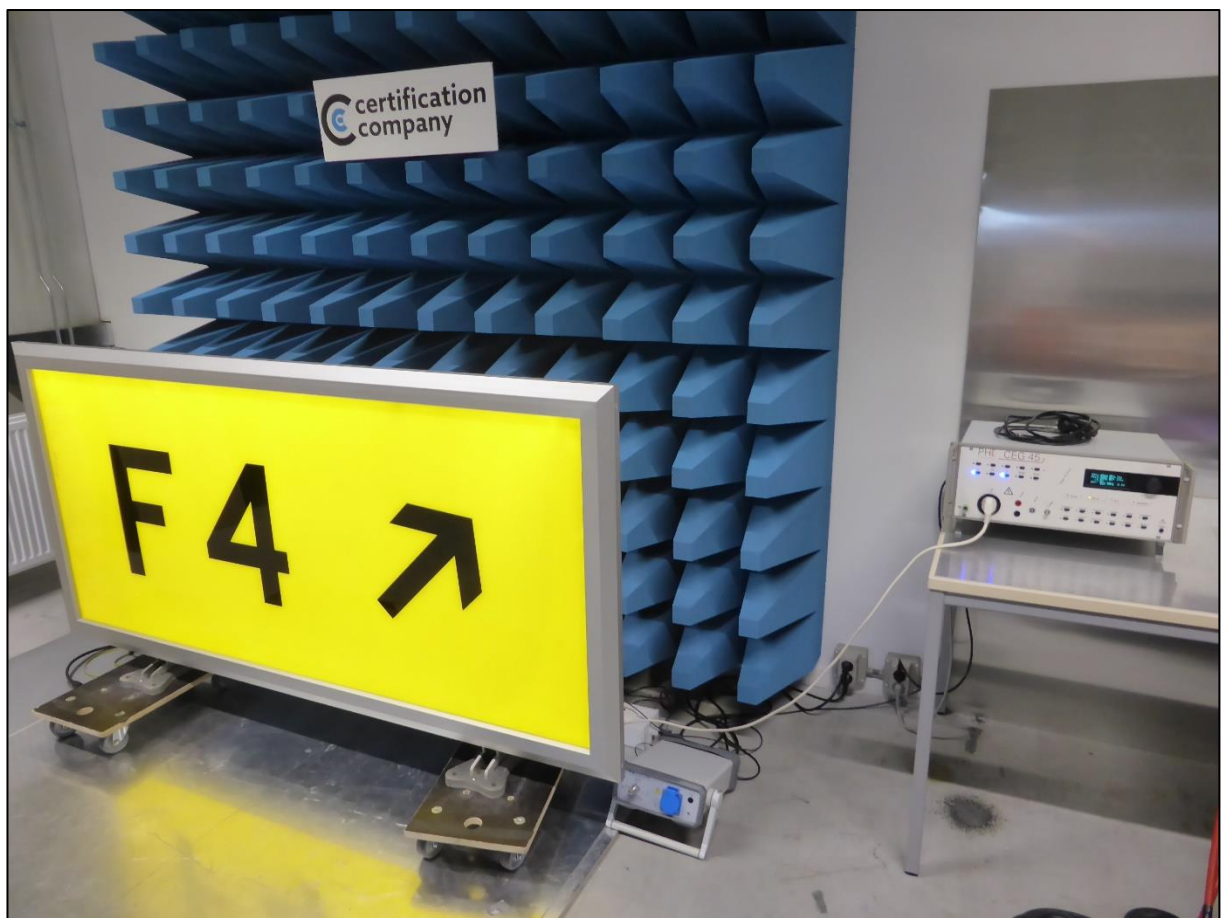


Photo 6 - Test set-up

Used	Description	Type	Manufacturer	ID
√	EFT generator	CEG4500	Hofbauer	NC004

2.11 ESD RESULTS

Temperature	21 °C	Air pressure	1014 hpa
Humidity	60 %	Remarks	---

Performance criteria B			
Indirect contact discharge			
Location of discharge	Test level	Remarks	Pass/Fail
Horizontal coupling plane	± 2-4 kV	No influence detected	Pass
Vertical coupling plane	± 2-4 kV	No influence detected	Pass
Contact discharge			
Metal parts enclosure	± 2-4 kV	No influence detected	Pass
Air discharge			
Enclosure/non-conductive parts	± 6-8 kV	No influence detected	Pass

Photo measurement set-up



Photo 7 - Test set-up

Used	Description	Type	Manufacturer	ID
√	ESD generator	MiniZap MZ-15	KeyTek	NC-20
√	ESD table	--	--	--
√	Horizontal coupling plane	--	--	--
√	Vertical coupling plane	--	--	--

2.12 SURGE RESULTS

Temperature:	21 °C	Air pressure:	1014 hpa
Humidity:	60 %	Remarks:	

Performance criteria B			
Tested I/O port	Test level	Remarks	Pass/Fail
230Vac external CCR	± 1kV L-L	No influences detected	Pass
230Vac external CCR	± 2kV L-PE	No influences detected	Pass

Photo measurement set-up

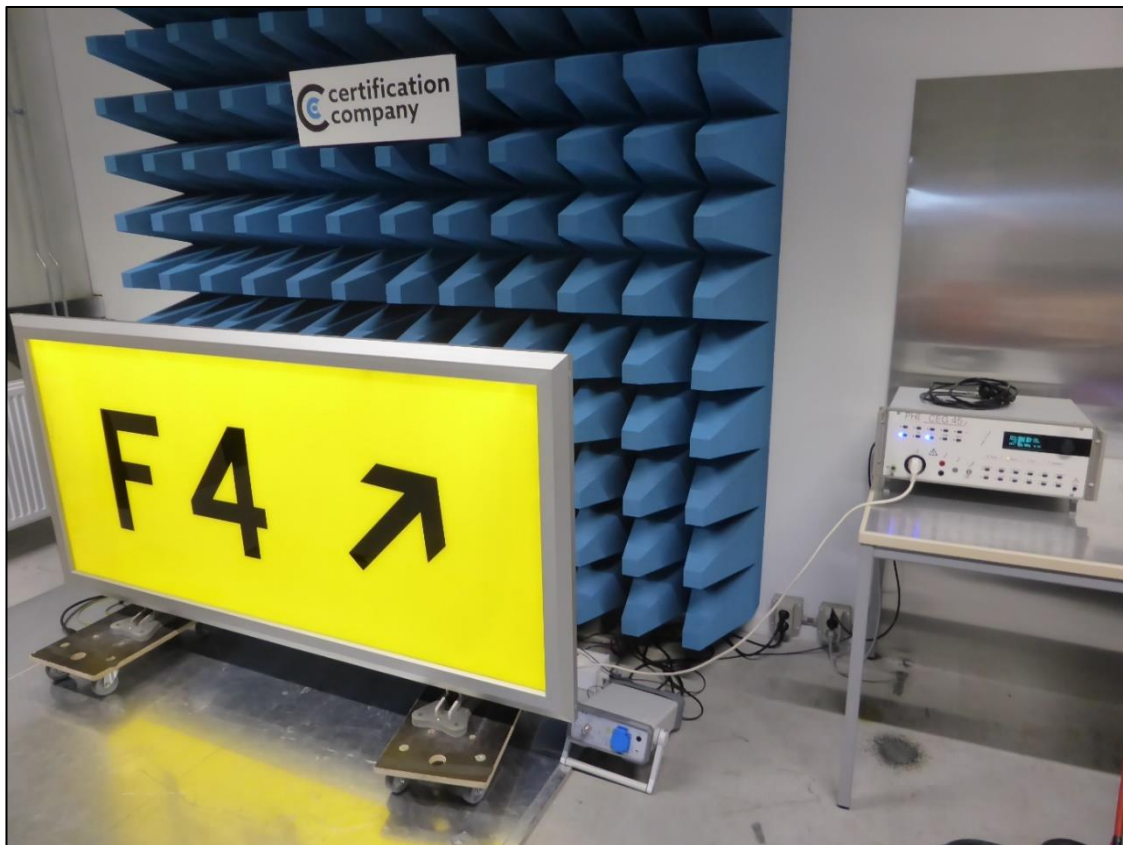


Photo 8 - Test set-up

Used	Description	Type	Manufacturer	ID
√	Surge generator	CEG4500	Hofbauer	NC004

2.13 POWER DIPS /INTERRUPTS RESULTS

Temperature	21 °C	Air pressure	1014 hpa
Humidity	60 %	Remarks:	

Performance criteria B		
Voltage dip to	Remarks	Pass/Fail
0%, 1 period	No influences detected	Pass
70%, 25 periods	No influences detected	Pass

Performance criteria C		
Voltage short interrupt	Remarks	Pass/Fail
0%, 250 periods	EUT restarts correctly after each interrupt	Pass

Photo measurement set-up

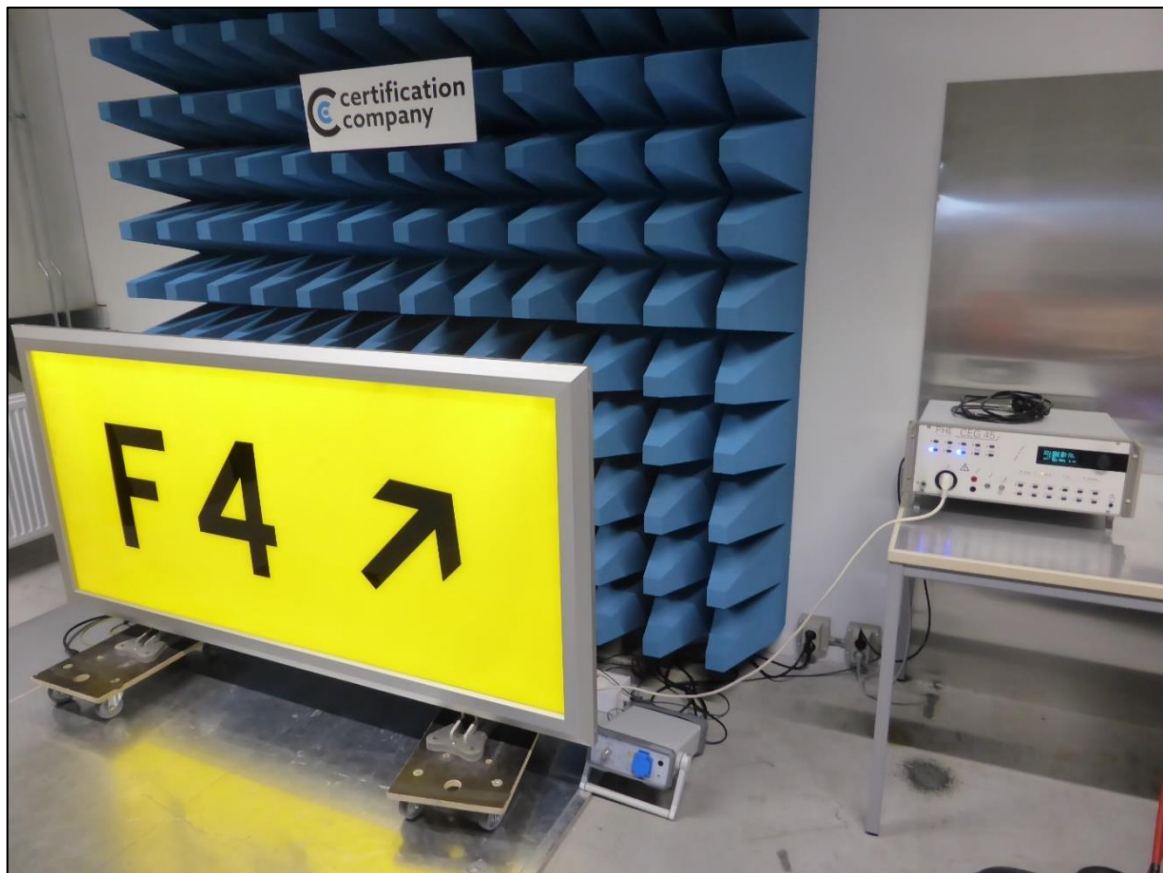
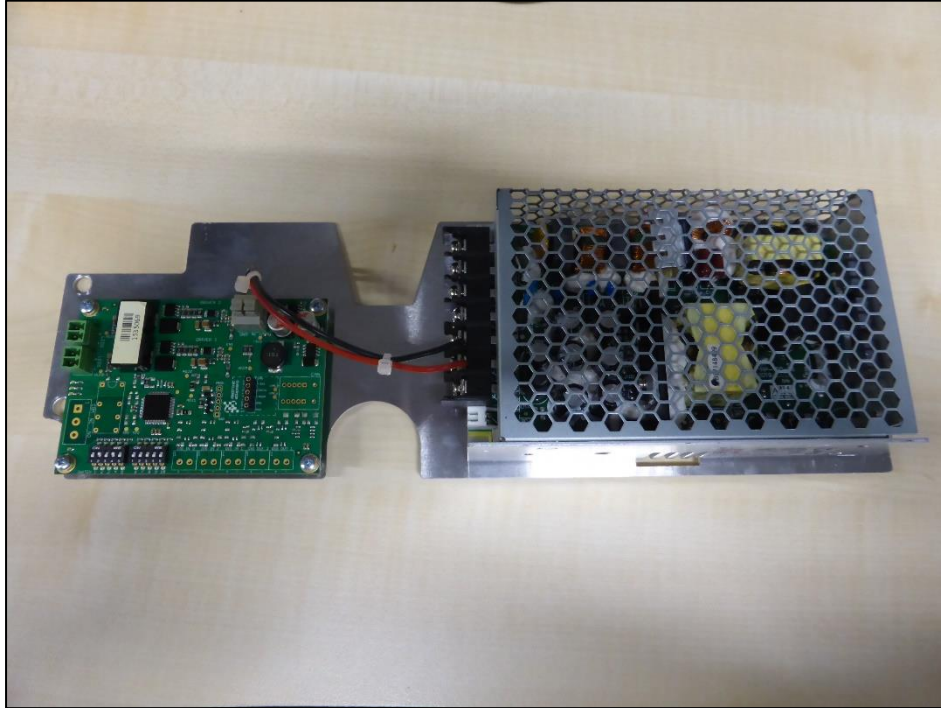


Photo 9 - Test set-up

Used	Description	Type	Manufacturer	ID
√	EFT Generator	CEG4500	Hofbauer	NC004

Internal TGS module:



3. EMC TYPE CCR TEST RESULTS

3.1 TECHNICAL INFORMATION OF THE PRODUCT (EUT)

Item	Description
Name	TGS4, Taxi Guidance Sign
Manufacturer	AAS International
Brand name	--
Type or model no.	TGS4
Serial no.	N/A
Rated voltage	230Vac external CCR (Constand Current Regulator)
Rated current /power	N/A
Software version	N/A
Hardware version	Unknown
Dimensions	-
Protection Class	I
Environmental to be used	Domestic
Peripheral equipment	July 2023
General remarks	None

3.2 CABLES AND ANCILLARY EQUIPMENT

Description	Port type	Type of cable	Cable length (cm)	Fixing shield	Load at port
CCR	AC	Unshielded	200	Not applicable	N/A

3.3 GENERAL DESCRIPTION

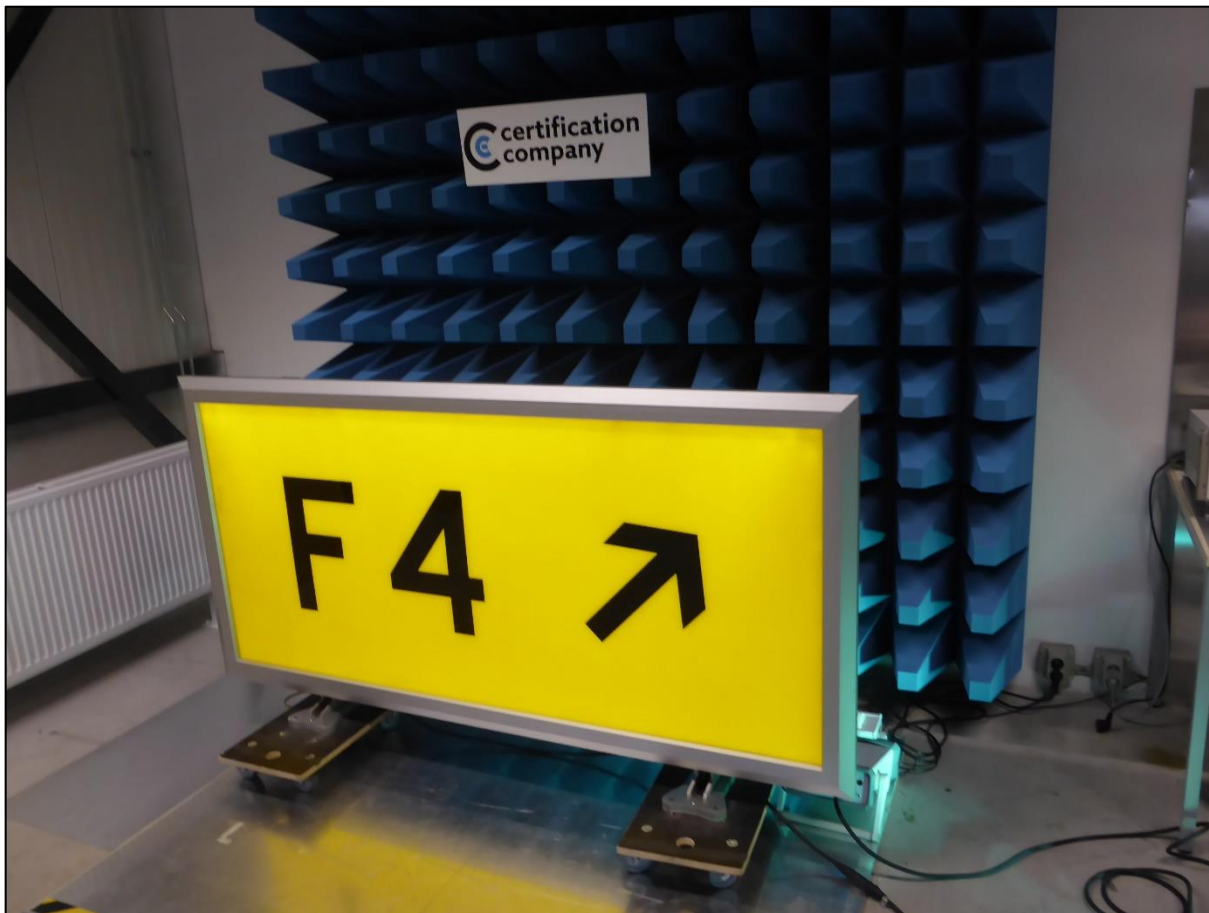


Photo 1 - Front View

3.4 MODES OF OPERATION AND PERFORMANCE CRITERIA

The modes of operation can be find in the table below:

Mode of operation	Description
Mode 1	Normal operational with all control functions activated. Immunity tests: injection on 230Vac external CCR

Performance criterion during the immunity test are verified according the information that is laid down in the table below:

Mode of operation	Performance criteria
Mode 1	<p>Performance criteria A: During testing, normal performance within the specification of the EUT</p> <p>Performance criteria B: During testing, temporary degradation, or loss of function or performance is allowed if it is self-recovering.</p> <p>Performance criteria C: During testing, temporary degradation, or loss of function or performance is allowed which requires operator intervention or system reset.</p>

3.5 STANDARDS AND MEASUREMENTS RESULTS

The following standard(s) are used to verify if the EUT is in compliance with the essential requirements of the EMC Directive 2014/30/EU.

Phenomena	Standard	Result
Emission	EN 55015-1:2019/ A11:2020 EN61000-6-3:2007/A1:2011	PASS
Immunity	EN61547-1:2009 EN61000-6-1:2007	PASS

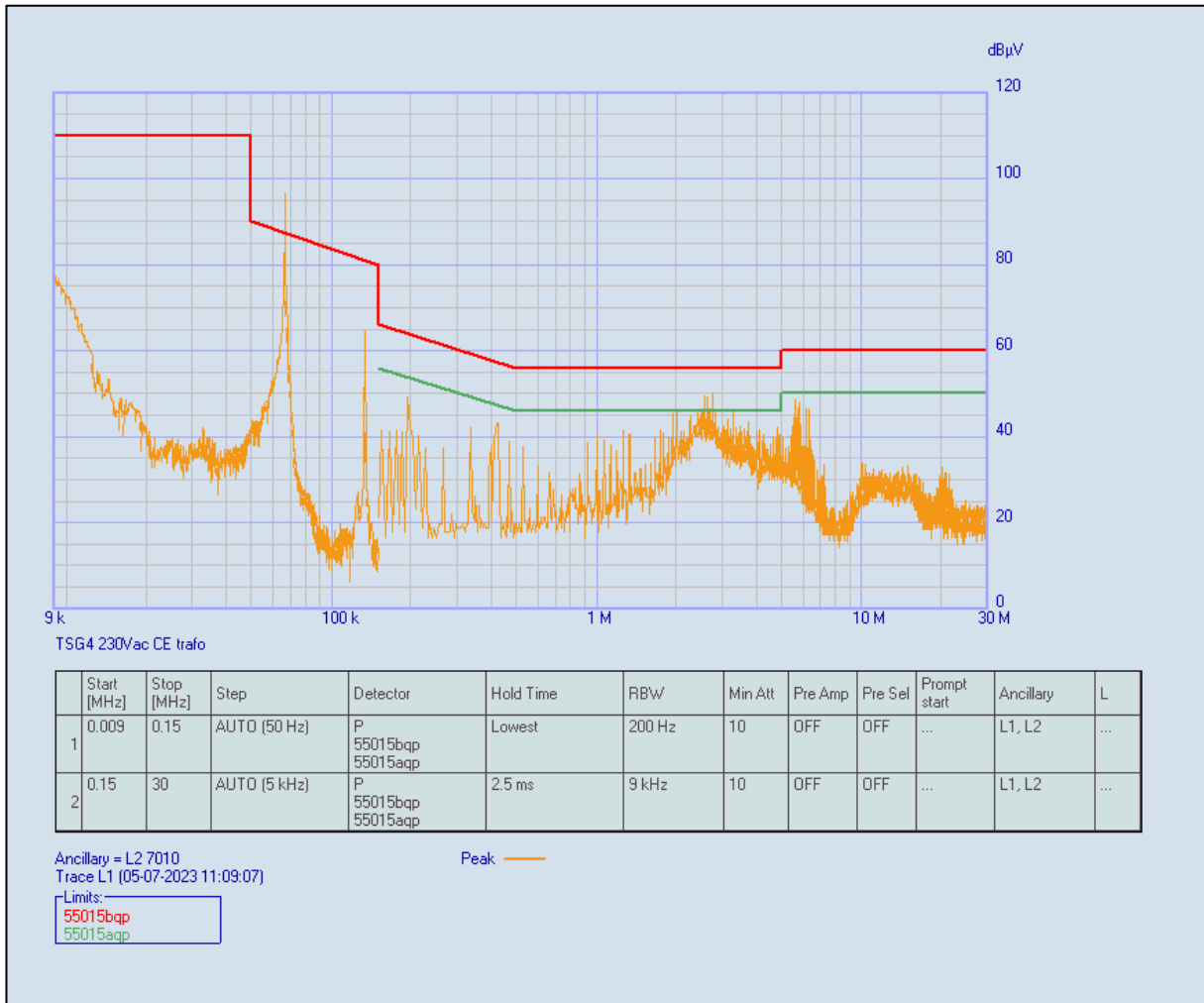
Detailed test information:

Test sequence	Test phenomena	Basic standard	Result (Pass/Fail)
1	Conducted emission (9 kHz – 30 MHz), Class B	EN 55015-1:2019/ A11:2020	PASS
2	Radiated emission (30 – 1000 MHz) Class B	EN 55015-1:2019/ A11:2020	PASS
3	Conducted immunity (0.15 – 80 MHz)	EN 61000-4-6:2014	PASS
4	Radiated immunity (80 – 2700 MHz)	EN 61000-4- 3:2016/A1:2008	PASS
5	EFT tests	EN 61000-4-4:2012	PASS
6	Surge test	EN 61000-4-5:2014	PASS
7	ESD tests	EN 61000-4-2:2009	PASS
8	Voltage dips and interrupts	EN61000-4- 11:2004/A1:2017	PASS
Remark			

3.6 CONDUCTED EMISSION RESULTS

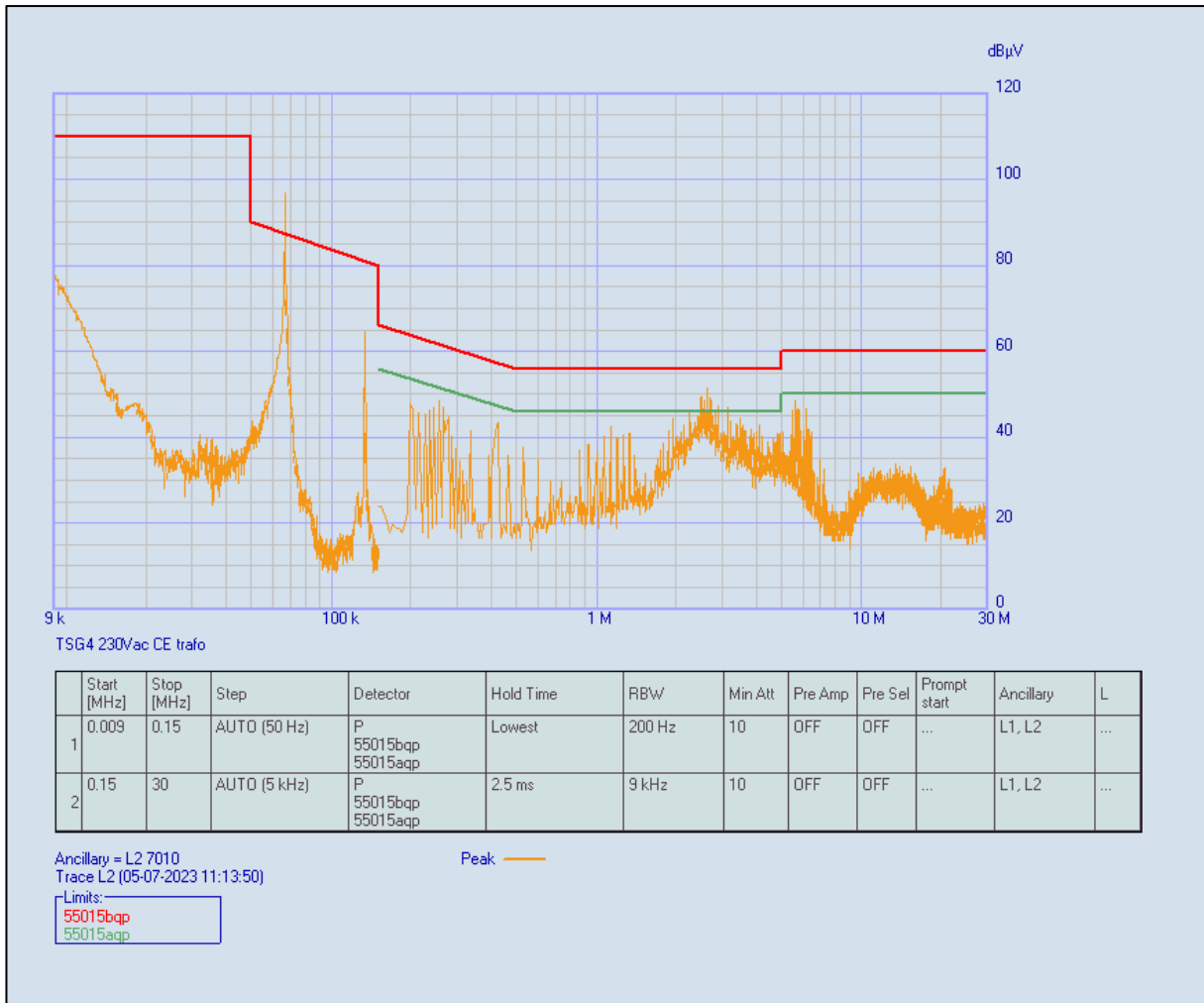
Temperature	21 °C	Air pressure	1014 hpa
Humidity	60 %	Remarks	

Description	Description: 6) Setting: Frequency band From 9 kHz to 30 MHz
Note	Line 1, measured between CCR and EUT



Detected Peaks Line								
Peak Number	Frequency	Quasi-Peak	Quasi-Peak Limit	Quasi-Peak Delta	Average	Average Limit	Average Delta	Status
1	0.009	76.26	110.00	-33.74	73.53	---	---	Pass
2	0.0564	46.62	88.90	-42.28	43.84	---	---	Pass
3	0.0666	86.20	87.39	-1.19	92.24	---	---	Pass
4	0.1333	62.07	81.07	-19.00	58.59	---	---	Pass
5	0.195	46.27	63.82	-17.55	36.27	53.82	-17.55	Pass
6	0.245	36.45	61.92	-25.47	13.93	51.92	-37.99	Pass
7	0.255	38.06	61.59	-23.53	14.64	51.59	-36.95	Pass
8	0.265	46.83	61.27	-14.44	34.40	51.27	-16.87	Pass
9	2.465	46.70	56.00	-9.30	38.46	46.00	-7.54	Pass
10	2.53	49.13	56.00	-6.87	42.13	46.00	-3.87	Pass
11	2.6	48.86	56.00	-7.14	40.73	46.00	-5.27	Pass
12	2.735	46.56	56.00	-9.44	37.66	46.00	-8.34	Pass
13	3.13	45.20	56.00	-10.80	33.92	46.00	-12.08	Pass
14	5.6	46.83	60.00	-13.17	35.34	50.00	-14.66	Pass
15	5.795	49.96	60.00	-10.04	36.98	50.00	-13.02	Pass
RESULT	Pass							

Description	Description: 6) Setting: Frequency band From 150 kHz to 30 MHz
Note	Line 2, measured between CCR and EUT



Detected Peaks Line								
Peak Number	Frequency	Quasi-Peak	Quasi-Peak Limit	Quasi-Peak Delta	Average	Average Limit	Average Delta	Status
1	0.009	76.52	110.00	-33.48	73.55	---	---	Pass
2	0.0564	46.46	88.90	-42.44	43.97	---	---	Pass
3	0.0666	86.15	87.39	-1.24	92.38	---	---	Pass
4	0.1333	62.15	81.07	-18.92	58.92	---	---	Pass
5	0.195	46.46	63.82	-17.36	36.79	53.82	-17.03	Pass
6	0.245	41.19	61.92	-20.73	15.79	51.92	-36.13	Pass
7	0.255	42.30	61.59	-19.29	16.22	51.59	-35.37	Pass
8	0.265	45.13	61.27	-16.14	35.22	51.27	-16.05	Pass
9	2.465	46.77	56.00	-9.23	38.51	46.00	-7.49	Pass
10	2.53	49.13	56.00	-6.87	42.12	46.00	-3.88	Pass
11	2.6	48.78	56.00	-7.22	40.79	46.00	-5.21	Pass
12	2.735	46.42	56.00	-9.58	38.02	46.00	-7.98	Pass
13	3.13	42.17	56.00	-13.83	33.85	46.00	-12.15	Pass
14	5.6	47.25	60.00	-12.75	37.06	50.00	-12.94	Pass
15	5.795	46.46	60.00	-13.54	36.53	50.00	-13.47	Pass
RESULT	Pass							

Photo measurement set-up

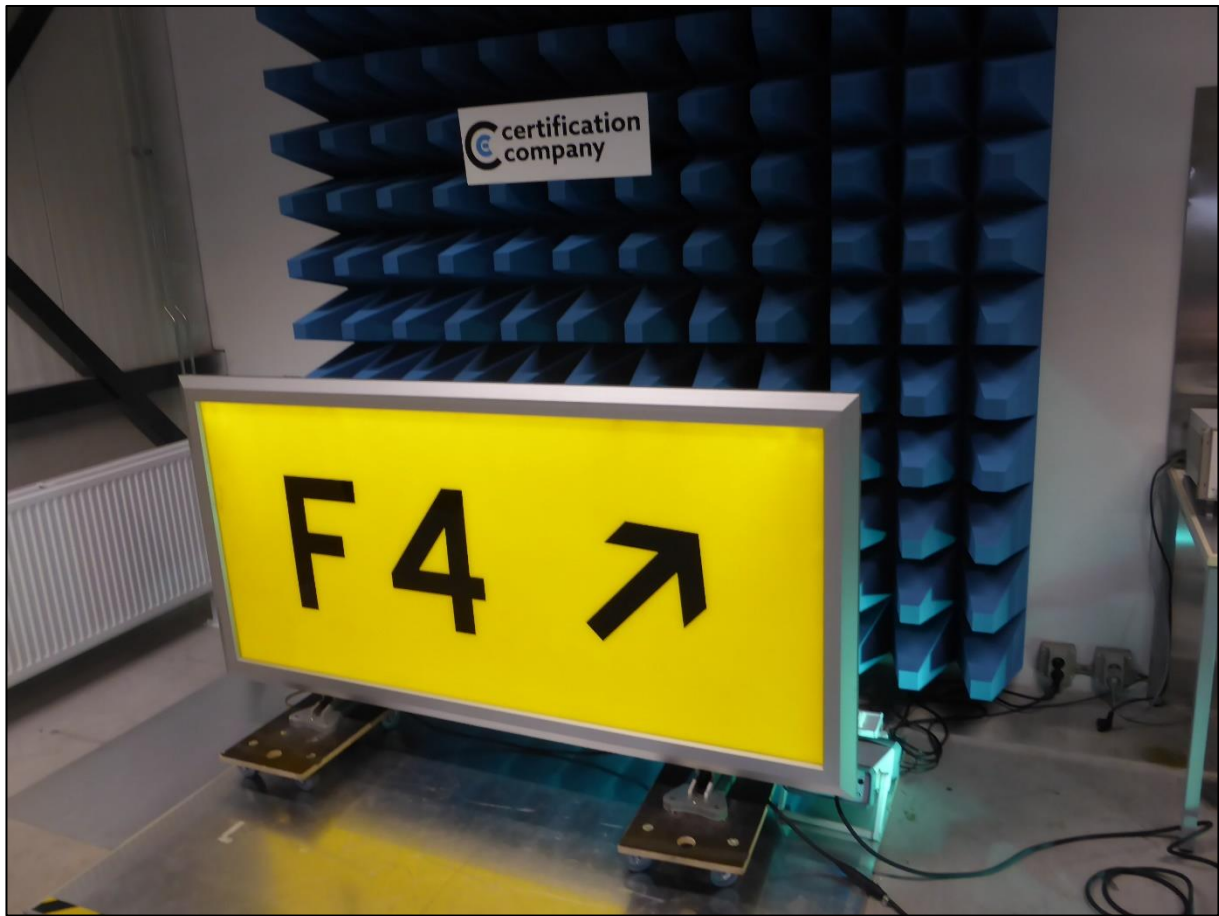


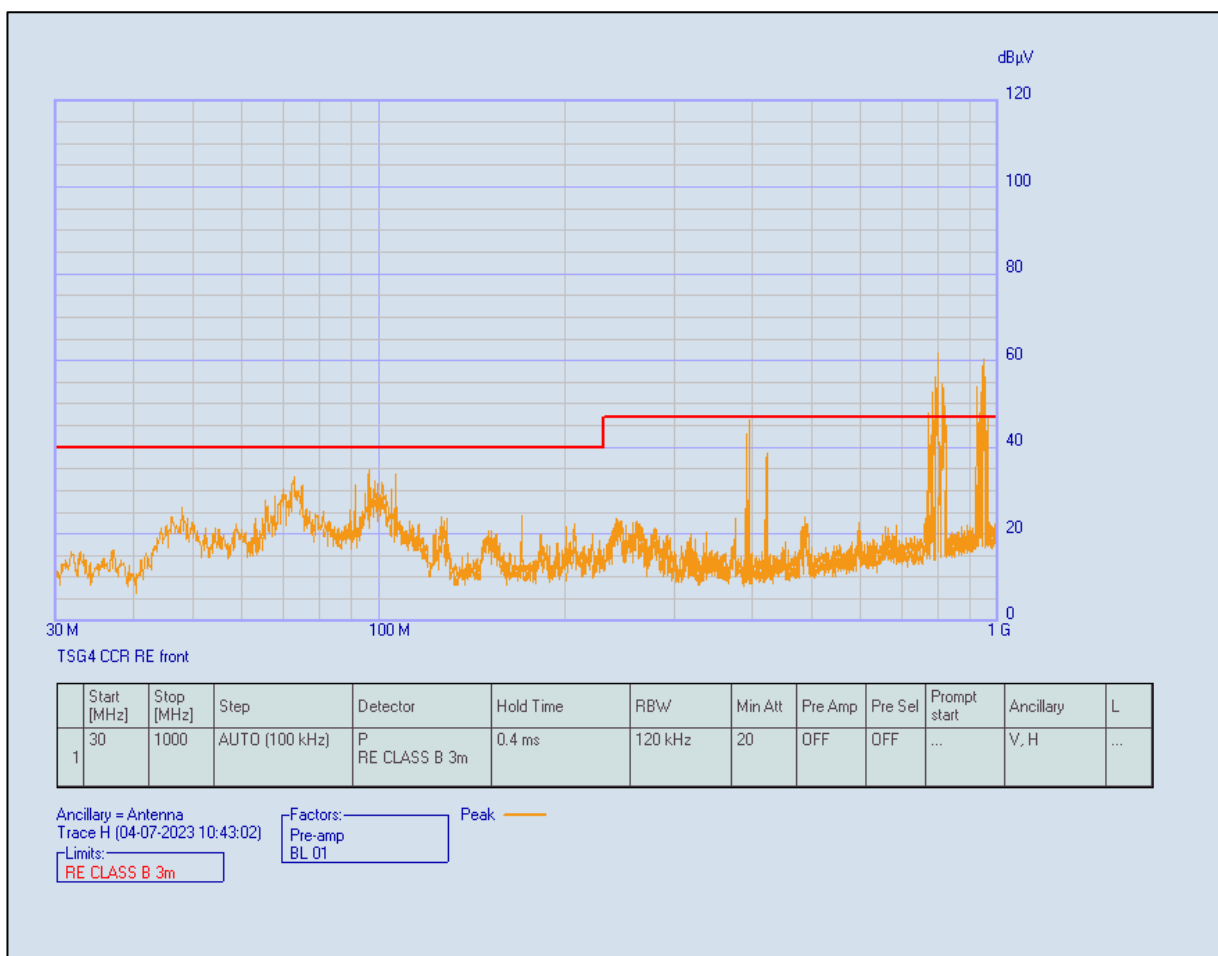
Photo 2 - Test set-up

Used	Description	Type	Manufacturer	ID
√	EMI Receiver	PMM7010	Narda	NC001

3.7 RADIATED EMISSION RESULTS

Temperature	21 °C	Air pressure	1014 hpa
Humidity	60 %	Frequency steps	
Remark(s):			

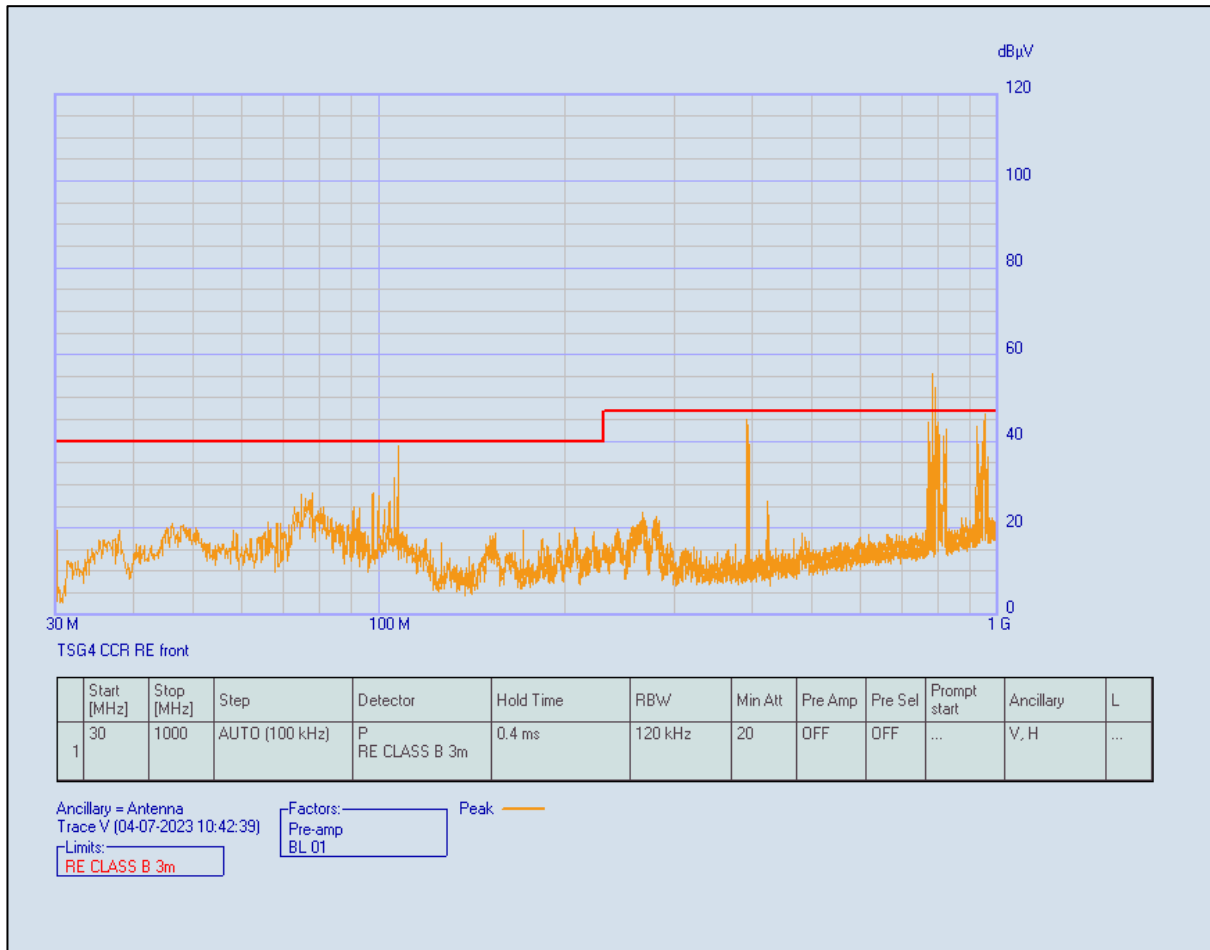
Description	Description: 9) Setting: Frequency band From 30 MHz to 1000 MHz, Class B
Note	Antenna Horizontal front



Ambient noise due FM(100MHz), C2000 (390MHz), ISM(420MHz) and GSM around 800Mhz and 900 MHz

Detected Peaks											
Peak Number	Frequency	Quasi-Peak	Quasi-Peak Limit	Quasi-Peak Delta							Status
--											Pass
RESULT	Pass										

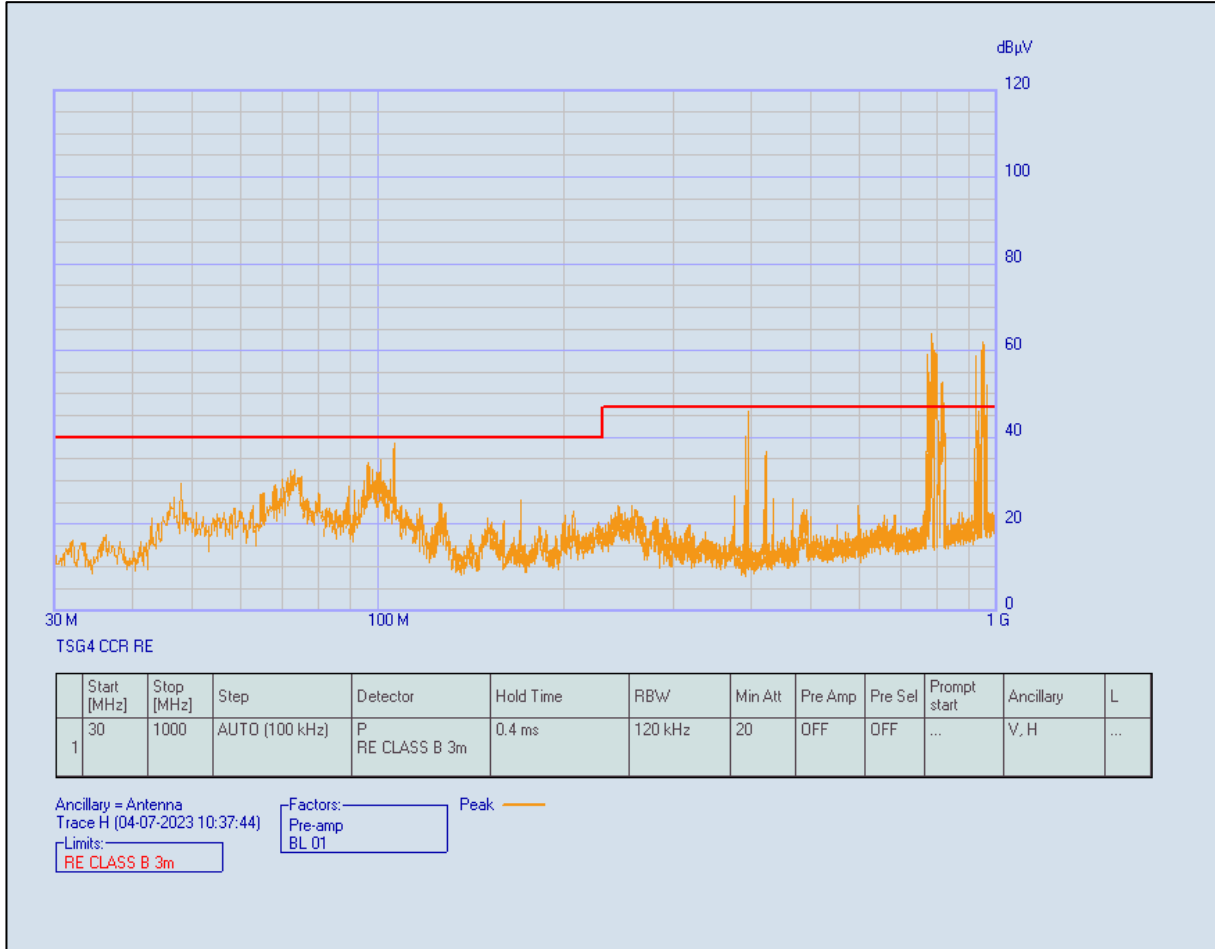
Description	Description: 9) Setting: Frequency band From 30 MHz to 1000 MHz, Class B
Note	Antenna Vertical front



Ambient noise due FM(100MHz), C2000 (390MHz), ISM(420MHz) and GSM around 800MHz and 900 MHz

Detected Peaks												
Peak Number	Frequency	Quasi-Peak	Quasi-Peak Limit	Quasi-Peak Delta								Status
												Pass
RESULT	PASS											

Description	Description: 9) Setting: Frequency band From 30 MHz to 1000 MHz, Class B
Note	Antenna Horizontal back

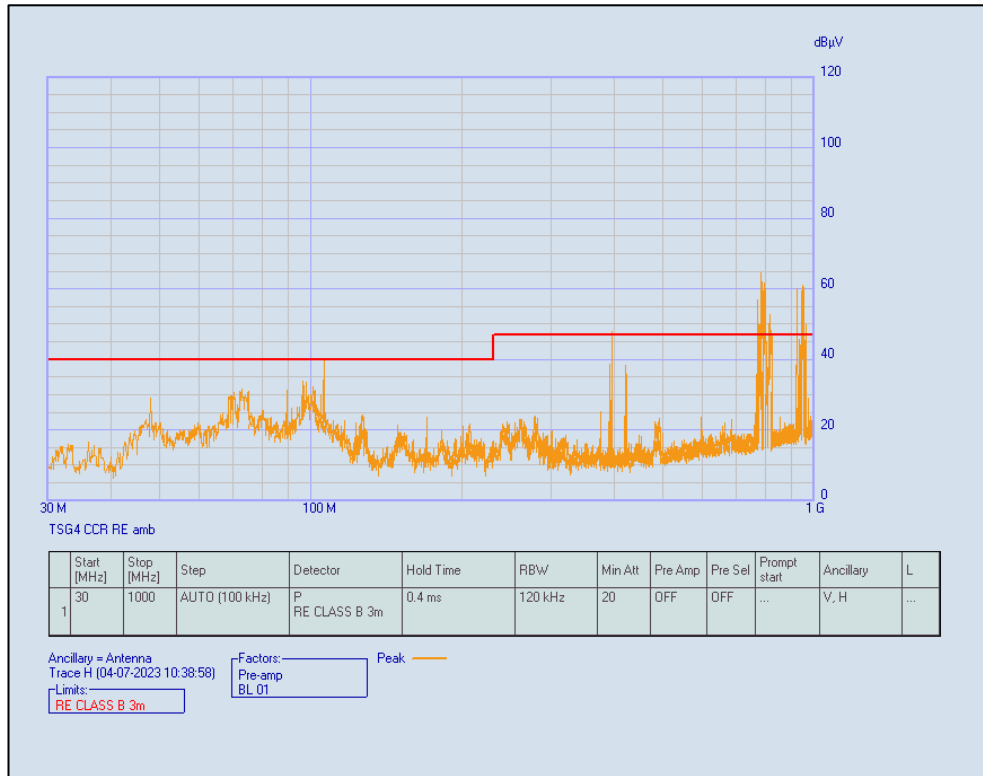


Ambient noise due FM(100MHz), C2000 (390MHz), ISM(420MHz) and GSM around 800MHz and 900 MHz

Detected Peaks											
Peak Number	Frequency	Quasi-Peak	Quasi-Peak Limit	Quasi-Peak Delta							Status
--											Pass
RESULT	Pass										

Ambient noise:

Horizontal



Vertical

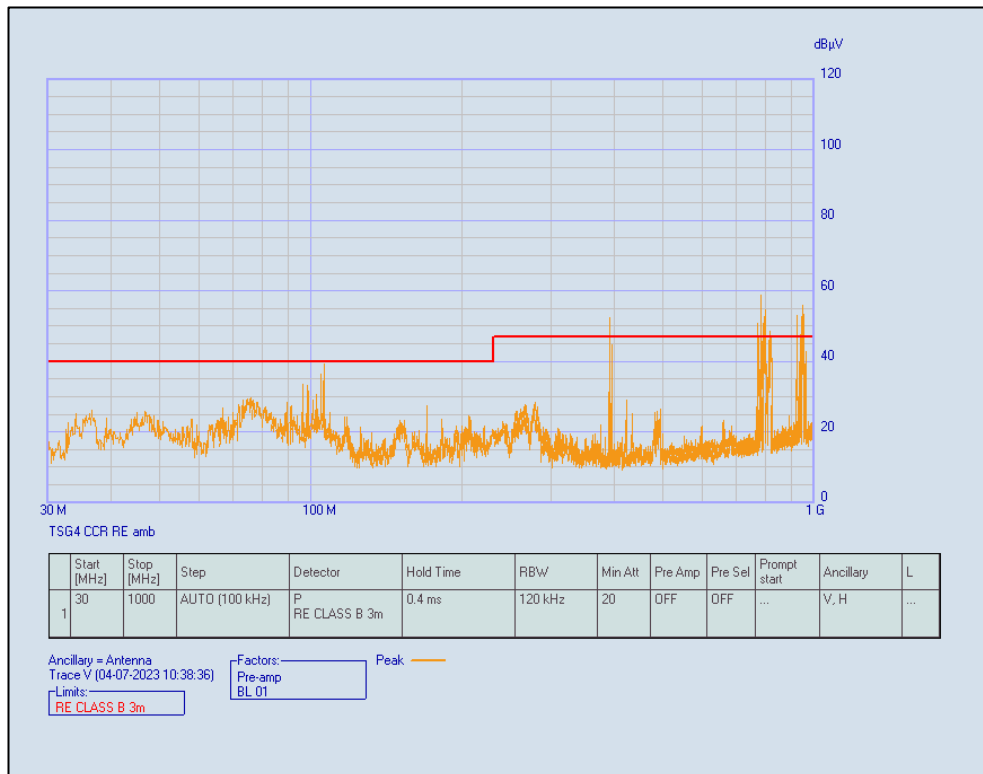


Photo measurement set-up



Photo 3 - Test set-up

Used	Description	Type	Manufacturer	ID
√	EMI Receiver	PMM7010	Narda	NC001
√	Antenna	BL-01	Narda	NC002

3.8 RADIATED IMMUNITY RESULTS

Test ports:

Port	Type of cable	Cable length (cm)
enclosure	-	-

Temperature	21 °C	Air pressure	1014 hpa
Humidity	45 %	Frequency steps	2 %
Modulation	1 kHz, 80 % AM	Frequency range	80 – 1000 MHz
Dwell time	2 sec.		

Performance criteria: A			
Antenna / EUT position	Test Level	Remarks	Pass/Fail
Horizontal / Vertical front and back	80 - 1000MHz 3 V/m	No influence detected	Pass
Horizontal / Vertical front and back	1.4 - 2.0 GHZ 3 V/m	No influence detected	Pass
Horizontal / Vertical front and back	2.0 - 2.7 GHZ 1 V/m	No influence detected	Pass

Photo measurement set-up



Photo 4 - Test set-up

Used	Description	Type	Manufacturer	ID
√	Signal generator	DSG815	Rigol	NC003
√	Amplifier	ZHL-20W-13	Mini Circuits	NC007
√	Antenna	BL-01	Narda	NC002

3.9 CONDUCTED IMMUNITY RESULTS

Temperature	21 °C	Air pressure	1014 hpa
Humidity	45 %	Frequency steps	2 %
Modulation	1 kHz, 80 % AM	Frequency range	0.15 – 80 MHz
Dwell time	2 sec.		

Performance criteria: A			
Tested port	Test Level	Remarks	Pass/Fail
230Vac external CCR	3 Vrms	No influence detected	Pass

Photo measurement set-up

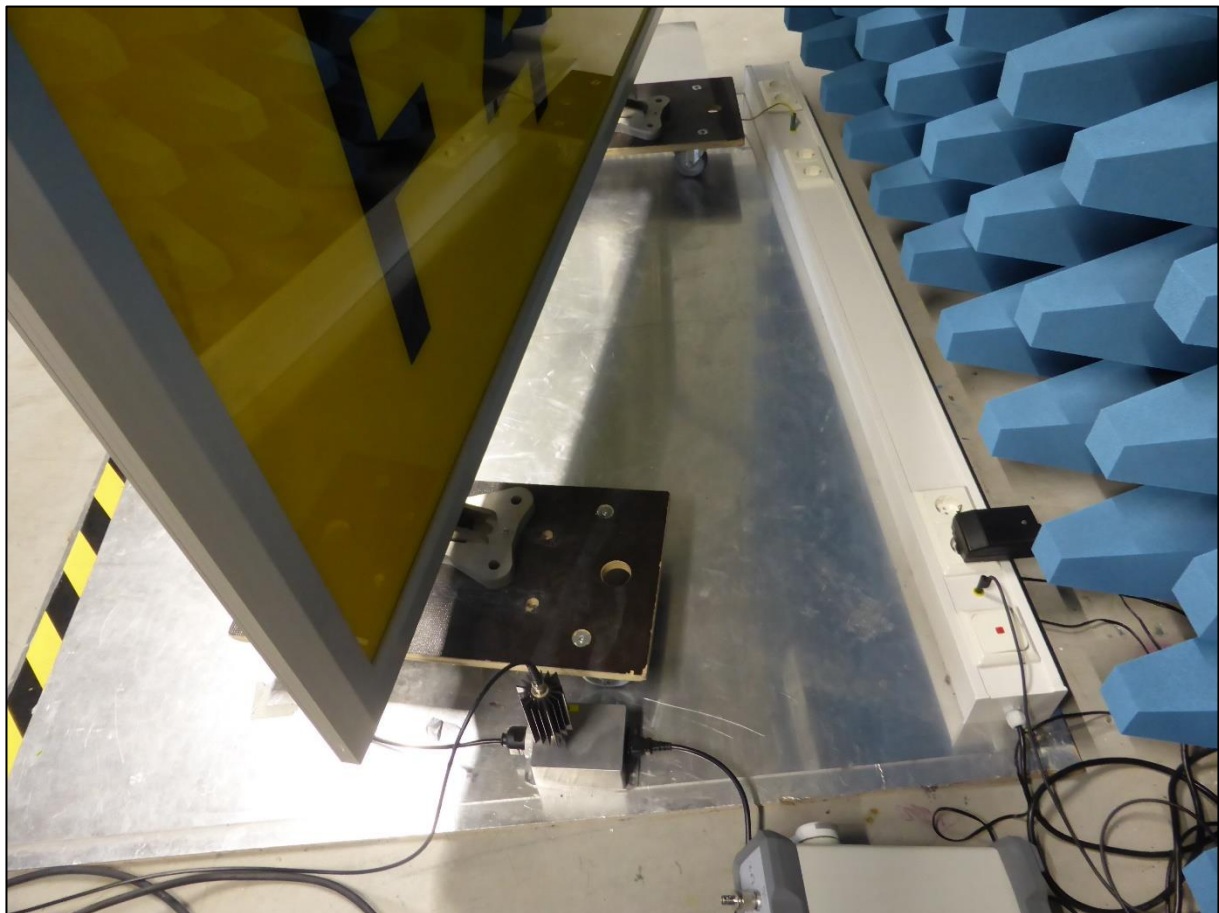


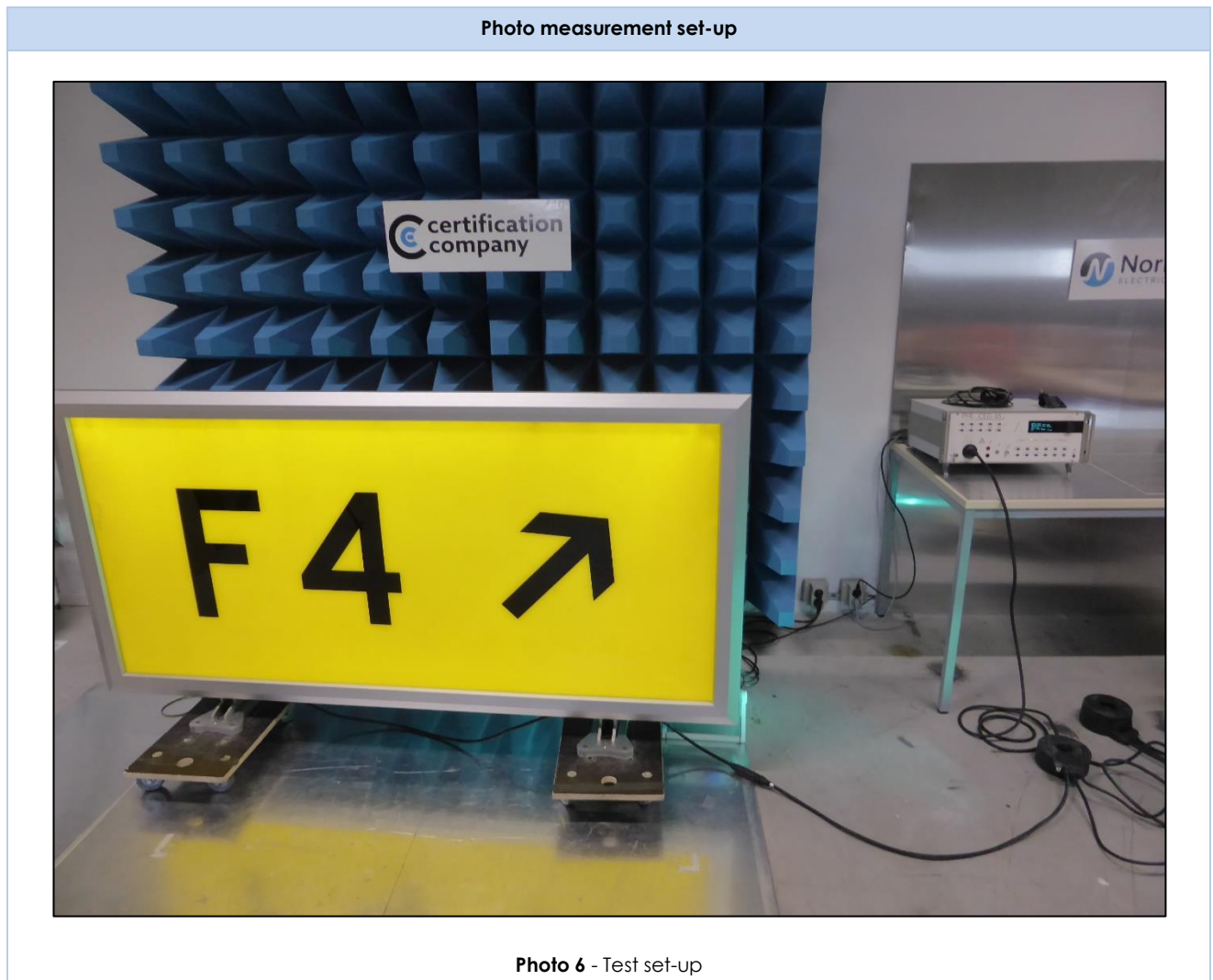
Photo 5 - Test set-up

Used	Description	Type	Manufacturer	ID
√	Signal generator	DSG815	Rigol	NC003
√	Amplifier	LZY-22	Mini Circuits	NC006
√	CDN	CDN-16A	EMCMCC	NC015

3.10 EFT RESULTS

Temperature	21 °C	Air pressure	1014 hpa
Humidity	60 %	Repetition mode	5 kHz
Burst duration	15 msec	Burst period	300 msec

Performance criteria B			
Tested I/O port	Test level	Remarks	Pass/Fail
230Vac external CCR	± 1kV L-L	No influence detected	Pass



Used	Description	Type	Manufacturer	ID
√	EFT generator	CEG4500	Hofbauer	NC004

3.11 ESD RESULTS

Temperature	21 °C	Air pressure	1014 hpa
Humidity	60 %	Remarks	---

Performance criteria B			
Indirect contact discharge			
Location of discharge	Test level	Remarks	Pass/Fail
Horizontal coupling plane	± 2-4 kV	No influence detected	Pass
Vertical coupling plane	± 2-4 kV	No influence detected	Pass
Contact discharge			
Metal parts enclosure	± 2-4 kV	No influence detected	Pass
Air discharge			
Enclosure/non-conductive parts	± 6-8 kV	No influence detected	Pass

Photo measurement set-up



Photo 7 - Test set-up

Used	Description	Type	Manufacturer	ID
√	ESD generator	MiniZap MZ-15	KeyTek	NC-20
√	ESD table	--	--	--
√	Horizontal coupling plane	--	--	--
√	Vertical coupling plane	--	--	--

3.12 SURGE RESULTS

Temperature:	21 °C	Air pressure:	1014 hpa
Humidity:	60 %	Remarks:	

Performance criteria B			
Tested I/O port	Test level	Remarks	Pass/Fail
230Vac external CCR	± 1kV L-L	No influences detected	Pass
230Vac external CCR	± 2kV L-PE	No influences detected	Pass

Photo measurement set-up

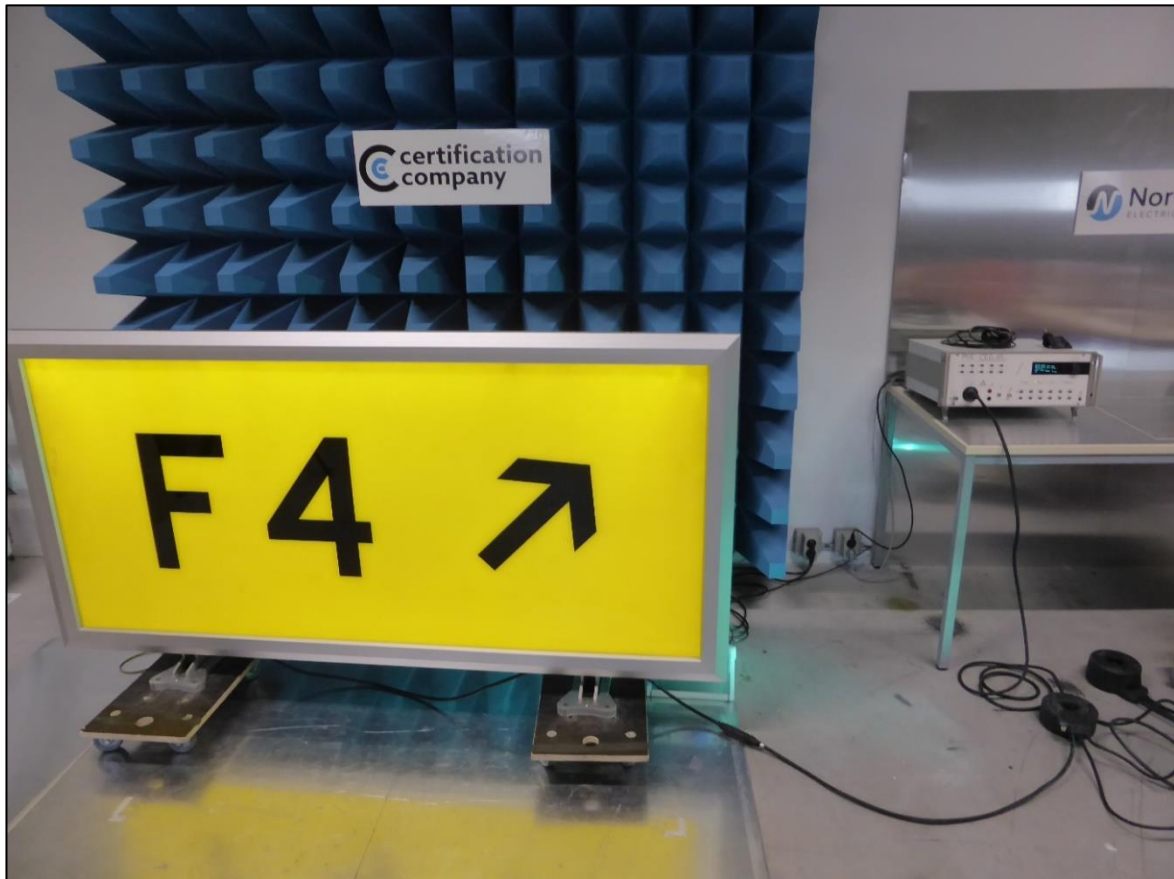


Photo 8 - Test set-up

Used	Description	Type	Manufacturer	ID
√	Surge generator	CEG4500	Hofbauer	NC004

3.13 POWER DIPS /INTERRUPTS RESULTS

Temperature	21 °C	Air pressure	1014 hpa
Humidity	60 %	Remarks:	

Performance criteria B		
Voltage dip to	Remarks	Pass/Fail
0%, 1 period	No influences detected	Pass
70%, 25 periods	No influences detected	Pass

Performance criteria C		
Voltage short interrupt	Remarks	Pass/Fail
0%, 250 periods	EUT restarts correctly after each interrupt	Pass

Photo measurement set-up

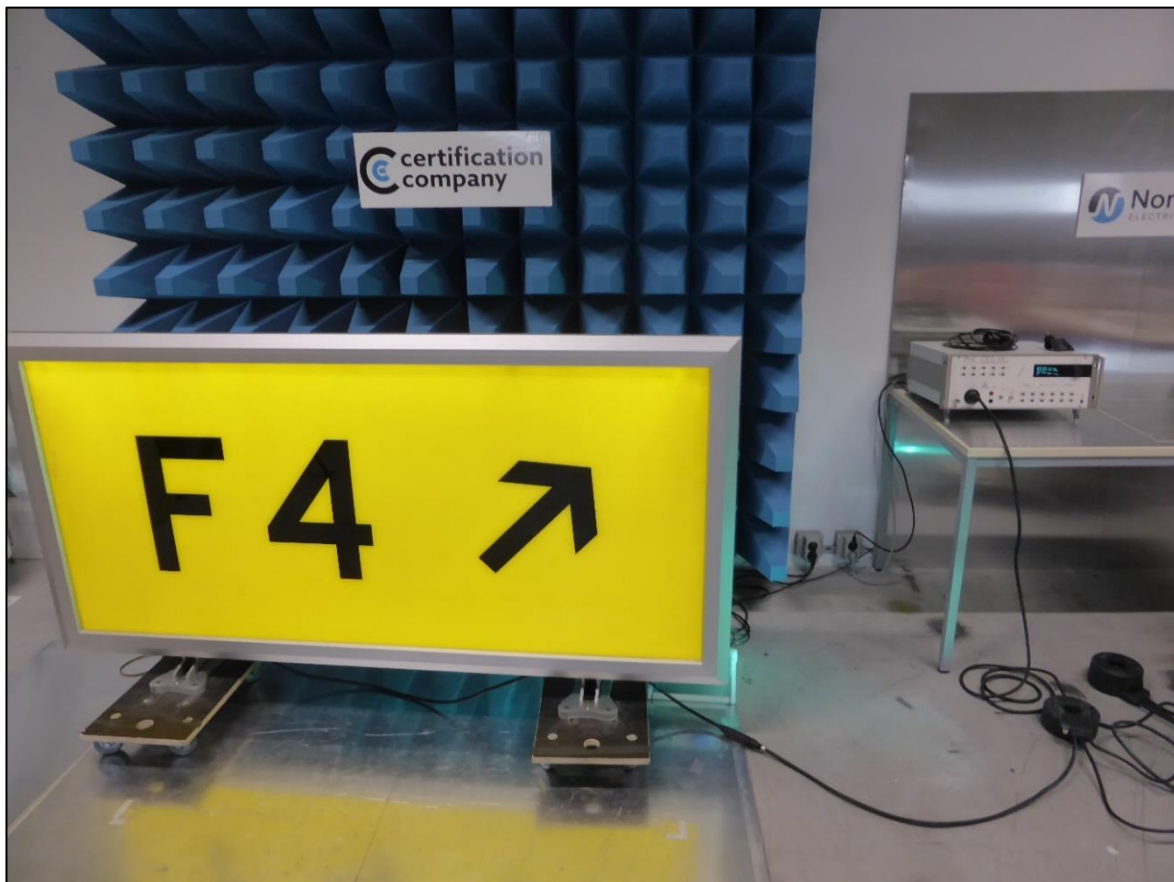


Photo 9 - Test set-up

Used	Description	Type	Manufacturer	ID
√	EFT Generator	CEG4500	Hofbauer	NC004

Internal TGS module:



Used CCR controller, type: CR200 - ALS2317/19/37



4. CONCLUSION

Certification Company executed electromagnetic compatibility tests on behalf of All About Signs International BV. The outcomes from these activities can be found below in the table.

#	REQUIREMENT	ASSESSMENT	REMARKS
1	EMC 230V CONNECTOR TESTS	IN COMPLIANCE	See Chapter 2 for remarks.
2	EMC CCR TESTS	IN COMPLIANCE	See Chapter 3 for remarks
FINAL CONCLUSION			IN COMPLIANCE

Almere, the Netherlands

10 July 2023