

EMI - TEST REPORT

- FCC Part 15B -

Test Report No. : **T37444-01-01HU**

26. May 2014

Date of issue

Type / Model Name : RFID POS READER V2

Product Description : UHF RFID READER

Applicant : Checkpoint Systems

Address : Brentanostr. 27-29

D-69434 Hirschhorn

Manufacturer : RM-Gerätebau

Address : Hirschbachstrasse 47

D-64354 Reinheim

Licence holder : Checkpoint Systems

Address : Bentanostr. 27-29

D-69434 Hirschhorn

Test Result according to the
standards listed in clause 1 test
standards:

POSITIVE



The test report merely corresponds to the test sample.
It is not permitted to copy extracts of these test results
without the written permission of the test laboratory.

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1 TEST STANDARDS

The tests were performed according to following standards:

FCC Rules and Regulations Part 15 Subpart A - General (October, 2013)

Part 15, Subpart A, Section 15.31	Measurement standards
Part 15, Subpart A, Section 15.33	Frequency range of radiated measurements
Part 15, Subpart A, Section 15.35	Measurement detector functions and bandwidths

FCC Rules and Regulations Part 15 Subpart B - Unintentional Radiators (October, 2013)

Part 15, Subpart B, Section 15.107	AC Line conducted emissions
Part 15, Subpart B, Section 15.109	Radiated emissions, general requirements
ANSI C63.4: 2003	Methods of Measurement of Radio-Noise Emissions from Low-Voltage Electrical and Electronic Equipment in the Range of 9 kHz to 40 GHz.
ANSI C95.1:1992	IEEE Standard for Safety Levels with respect to Human Exposure to Radio Frequency Electromagnetic Fields, 3 kHz to 300 GHz
CISPR 16-4-2: 2003	Uncertainty in EMC measurement
CISPR 22: 2005 EN 55022: 2006	Information technology equipment

Rev. No. 3.0, 2014-01-30

FINAL ASSESSMENT:

The equipment under test **fulfills** the EMI requirements cited in clause 1 test standards.

Date of receipt of test sample : acc. to storage records

Testing commenced on : 17. March 2014

Testing concluded on : 03. April 2014

Checked by:

Tested by:

Thomas Weise
Laboratory Manager

Markus Huber

3 EQUIPMENT UNDER TEST

3.1 Photo documentation of the EUT – Detailed photos see Attachment A

3.2 Power supply system utilised

Power supply voltage : 100-240 V / 50-60 Hz / 1 ϕ , 12.0 V DC

3.3 Short description of the equipment under test (EUT)

The EUT is a UHF RFID reader system. It can read active and passive Tags in the frequency range from 902 to 928 MHz.

Number of tested samples: 1
Serial number: Prototype

The equipment under test was operated during the measurement under the following conditions:

- Data download via Data Cable RJ 45

-

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EUT configuration:

The following peripheral devices and interface cables were connected during the measurements:

- <u>Test software</u>	Model : <u>Supplied by manufacturer</u>
- <u>Lap Top</u>	Model : <u>CSA Group Bayern GmbH</u>
- <u>Antenna</u>	Model : <u>PoS on Desk RFID only</u>
- <u>Antenna</u>	Model : <u>PoS on Desk RFID + RF combined</u>
- <u>Antenna</u>	Model : <u>PoS under Desk RFID only</u>
- <u>Antenna</u>	Model : <u>PoS under Desk RFID + RF</u>
- <u>Antenna</u>	Model : <u>PoS under Desk shielded RFID only</u>
- <u>Antenna</u>	Model : <u>PoS on Desk Detacher RFID only</u>

- | | |
|------------------------------|---------------------------------------|
| - <u>Power supply</u> | Model : <u>EPSA 120100UE</u> |
| - <u>Test tags</u> | Model : <u>Supplied by Checkpoint</u> |
| Cisco Router – SF100D-08P V2 | |
| - <u>S/N DNI172904W9</u> | Model : <u>Supplied by Checkpoint</u> |
| - customer specific cables | |
| - unscreened power cables | |

4 TEST ENVIRONMENT

4.1 Address of the test laboratory

**CSA Group Bayern GmbH
Ohmstrasse 1-4
94342 STRASSKIRCHEN
GERMANY**

4.2 Environmental conditions

During the measurement the environmental conditions were within the listed ranges:

Temperature: 15-35 ° C

Humidity: 30-60 %

Atmospheric pressure: 86-106 kPa

4.3 Statement of the measurement uncertainty

The data and results referenced in this document are true and accurate. It is noted that the expanded measurement uncertainty corresponds to the measurement results from the standard measurement uncertainty multiplied by the coverage factor $k = 2$. The true value is located in the corresponding interval with a probability of 95 %. The measurement uncertainty was calculated for all measurements listed in this test report acc. to CISPR 16-4-2 / 11.2003 „Uncertainties, statistics and limit modelling – Uncertainty in EMC measurements“ and is documented in the quality system acc. to DIN EN ISO/IEC 17025. For all measurements shown in this report, the measurement uncertainty of the test laboratory, CSA Group Bayern GmbH, is below the measurement uncertainty as defined by CISPR. Therefore, no special measures must be taken into consideration with regard to the limits according to CISPR. Furthermore, component and process variability of devices similar to that tested may result in additional deviation. The manufacturer has the sole responsibility of continued compliance of the device.

4.4 Measurement Protocol for FCC, VCCI and AUSTEL

4.4.1 GENERAL INFORMATION

4.4.1.1 Test Methodology

Conducted and radiated disturbance testing is performed according to the procedures set out by the International Special Committee on Radio Interference (CISPR) Publication 22, European Standard EN 55022 as shown under section 1 of this report.

The test methods used comply with CISPR Publication 22, EN 55022 - "Information technology equipment - Radio disturbance characteristics - Limits and methods of measurement" and with ANSI C63.10: 2009, Testing Unlicensed Wireless Devices."

In compliance with 47 CFR Part 15 Subpart A, Section 15.38 testing for FCC compliance may be achieved by following the procedures set out in ANSI C63.4 and applying the CISPR 22 limits.

4.4.1.2 Justification

The Equipment under Test (EUT) is configured in a typical user arrangement in accordance with the manufacturer's instructions. A cable is connected to each available port and either terminated with a peripheral using the appropriate impedance characteristic or left unterminated. Where appropriate, cables are manually manipulated with respect to each in order to obtain maximum disturbances from the unit.

4.4.2 DETAILS OF TEST PROCEDURES

4.4.2.1 General Standard Information

The test methods used comply with CISPR Publication 22, EN 55022 - "Information technology equipment - Radio disturbance characteristics - Limits and methods of measurement" and with ANSI C63.4 - "Methods of Measurement of Radio-Noise Emissions from Low-Voltage Electrical and Electronic Equipment in the Range of 9 kHz to 40 GHz."

5 TEST CONDITIONS AND RESULTS

5.1 Conducted emissions

For test instruments and accessories used see section 6 Part A 4.

5.1.1 Description of the test location

Test location: Shielded Room S2

5.1.2 Photo documentation of the test set-up

PoE and Power supply:



5.1.3 Applicable standard

According to FCC Part 15B, Section 15.107(a):

Except as shown in paragraphs (b) and (c) of this Section, for an unintentional radiator that is designed to be connected to the public utility AC power line, the radio frequency voltage that is conducted back onto the AC power line on any frequency or frequencies within the band 150 kHz to 30 MHz shall not exceed the limits in the following table.

Frequency of emission (MHz)	Conducted limit (dB μ V)	
	Quasi-peak	Average
0.15-0.5	66 to 56 *	56 to 46 *
0.5-5	56	46
5-30	60	50

* Decreases with the logarithm of the frequency

5.1.4 Description of Measurement

The correction factors for cable loss and antenna gain are stored in the memory of the EMI receiver therefore the final level (dB μ V) appears directly in the reading of the EMI receiver. This level is compared to the FCC limit.

To convert between dB μ V and μ V, the following conversions apply:

$$\text{dB}\mu\text{V} = 20(\log \mu\text{V})$$

$$\mu\text{V} = 10^{(\text{dB}\mu\text{V}/20)}$$

The measurements are performed using a receiver, which has CISPR characteristic bandwidth and quasi-peak detection and a line impedance stabilization network (LISN) with 50 Ω /50 μ H (CISPR 16) characteristics. Table top equipment is placed on a non-conducting table 80 centimetres above the floor and is positioned 40 centimetres from the vertical ground plane (wall) of the screen room. If the minimum limit margin appears to be less than 20 dB with a peak mode measurement, the emissions are remeasured using a tuned receiver with quasi-peak and average detection and recorded on the data sheets.

5.1.5 Test result

Frequency range:	0.15 MHz - 30 MHz
Min. limit margin	4.14. dB at 0.15 MHz

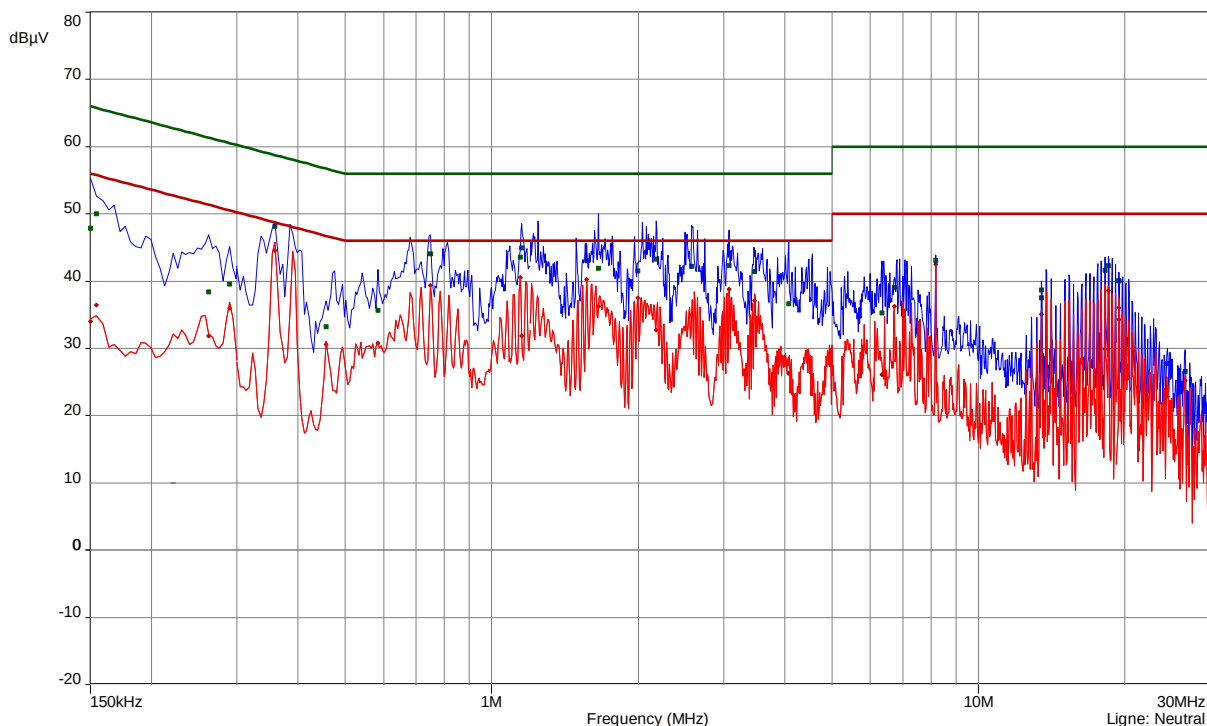
The requirements are **FULFILLED**.

Remarks:

5.1.6 Test protocol

Test point L1
 Operation mode: Standby mode
 Remarks: Powered via PoE

Result: Passed

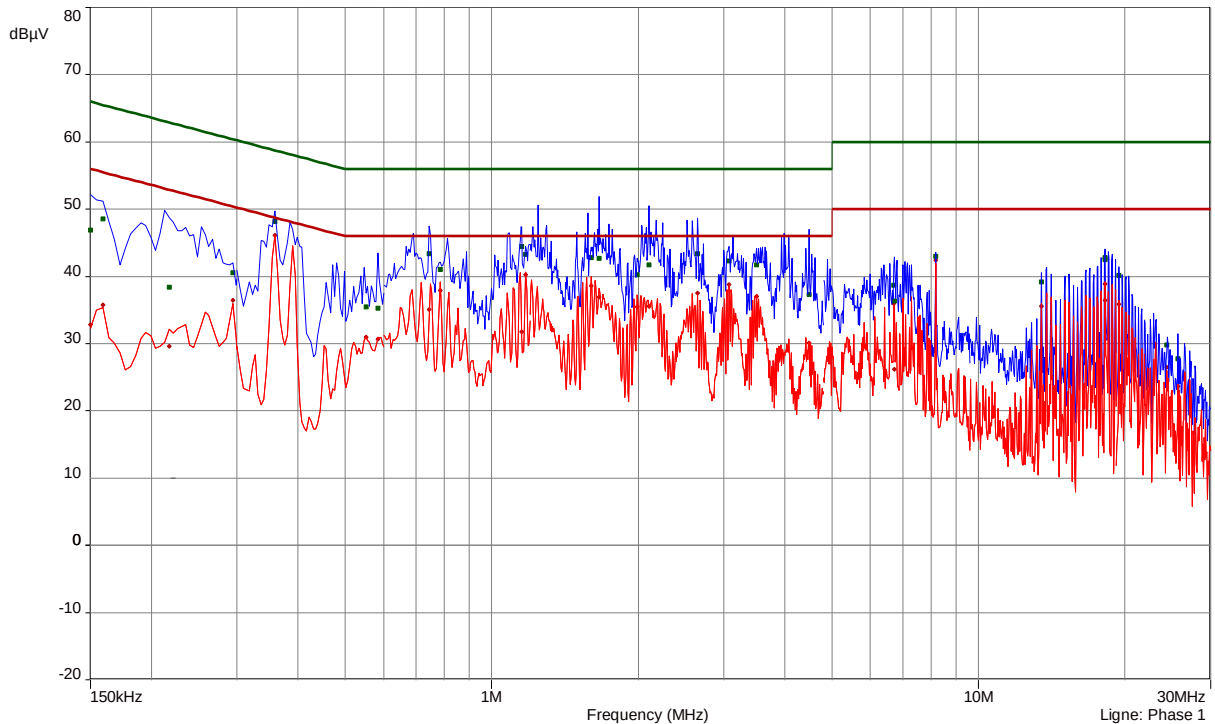


freq MHz	SR	QP dB(μV)	margin dB	limit dB	AV dB(μV)	margin dB	limit dB	line
0.15	1	46.87	19.13	66	32.79	23.21	56	Phase 1
0.159	1	48.55	16.97	65.52	35.75	19.77	55.52	Phase 1
0.2175	1	38.41	24.5	62.91	29.63	23.28	52.91	Phase 1
0.294	1	40.53	19.88	60.41	36.45	13.96	50.41	Phase 1
0.3585	2	48.15	10.61	58.76	46.1	2.66	48.76	Phase 1
0.552	2	35.45	20.55	56	30.96	15.04	46	Phase 1
0.5835	2	35.29	20.71	56	30.66	15.34	46	Phase 1
0.744	3	43.43	12.57	56	35.05	10.95	46	Phase 1
0.7845	3	41.02	14.98	56	37.88	8.12	46	Phase 1
1.1535	3	44.48	11.52	56	31.73	14.27	46	Phase 1
1.176	3	43.34	12.66	56	40.26	5.74	46	Phase 1
1.6005	4	42.79	13.21	56	38.6	7.4	46	Phase 1
1.6635	4	42.69	13.31	56	36.97	9.03	46	Phase 1
1.992	4	40.3	15.7	56	35.5	10.5	46	Phase 1
2.1045	4	41.7	14.3	56	35.53	10.47	46	Phase 1
2.652	5	43.42	12.58	56	37.53	8.47	46	Phase 1
3.075	5	42.33	13.67	56	38.83	7.17	46	Phase 1
3.5025	5	41.73	14.27	56	37.02	8.98	46	Phase 1
4.4835	5	37.36	18.64	56	30.13	15.87	46	Phase 1

freq MHz	SR	QP dB(μ V)	margin dB	limit dB	AV dB(μ V)	margin dB	limit dB	line
4.4835	5	37.36	18.64	56	30.13	15.87	46	Phase 1
6.708	6	38.75	21.25	60	35.95	14.05	50	Phase 1
6.7305	6	36.39	23.61	60	26.23	23.77	50	Phase 1
8.1705	6	43.03	16.97	60	42.44	7.56	50	Phase 1
13.479	7	39.21	20.79	60	35.54	14.46	50	Phase 1
18.1815	7	42.78	17.22	60	38.93	11.07	50	Phase 1
18.186	7	42.46	17.54	60	36.46	13.54	50	Phase 1
19.434	8	40.14	19.86	60	35.83	14.17	50	Phase 1
24.348	8	29.78	30.22	60	26.51	23.49	50	Phase 1
25.6935	8	27.77	32.23	60	23.63	26.37	50	Phase 1

Test point N
Operation mode: Standby mode
Remarks: Powered via PoE

Result: Passed

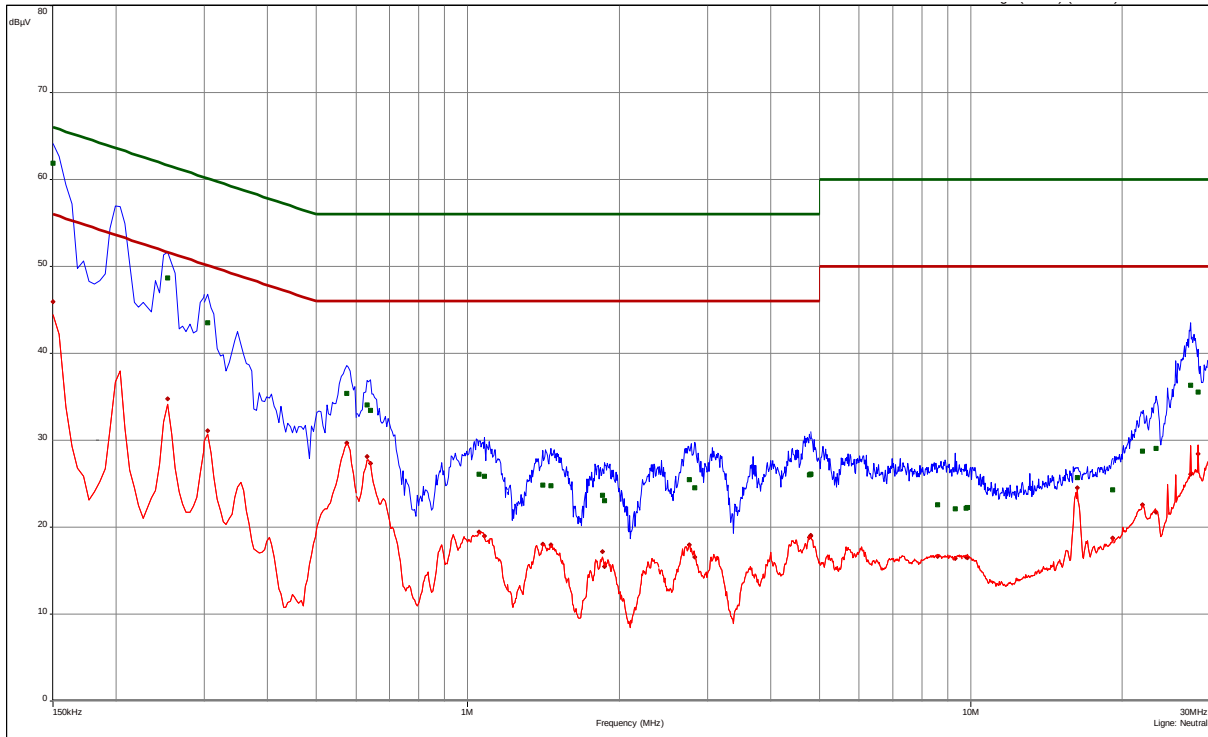


freq MHz	SR	QP dB(μV)	margin dB	limit dB	AV dB(μV)	margin dB	limit dB	line
0.15	9	47.89	18.11	66	34.04	21.96	56	Neutral
0.1545	9	50.07	15.68	65.75	36.45	19.3	55.75	Neutral
0.2625	9	38.39	22.96	61.35	31.82	19.53	51.35	Neutral
0.2895	9	39.55	20.99	60.54	35.92	14.62	50.54	Neutral
0.3585	10	48.17	10.59	58.76	44.58	4.18	48.76	Neutral
0.4575	10	33.22	23.52	56.74	30.59	16.15	46.74	Neutral
0.5835	10	35.63	20.37	56	30.75	15.25	46	Neutral
0.7485	11	44.05	11.95	56	39.42	6.58	46	Neutral
1.1445	11	43.62	12.38	56	40.58	5.42	46	Neutral
1.1535	11	44.94	11.06	56	31.82	14.18	46	Neutral
1.569	12	43.12	12.88	56	40.22	5.78	46	Neutral
1.659	12	41.91	14.09	56	36.23	9.77	46	Neutral
1.9965	12	41.51	14.49	56	37.52	8.48	46	Neutral
2.1765	12	43.32	12.68	56	32.7	13.3	46	Neutral
2.5755	13	42.2	13.8	56	35.03	10.97	46	Neutral
3.075	13	42.31	13.69	56	38.77	7.23	46	Neutral
3.471	13	41.41	14.59	56	37.16	8.84	46	Neutral
4.074	13	36.61	19.39	56	26.31	19.69	46	Neutral

freq	SR	QP	margin	limit	AV	margin	limit	line
MHz		dB(μ V)	dB	dB	dB(μ V)	dB	dB	
6.33	14	35.27	24.73	60	26.07	23.93	50	Neutral
6.7125	14	39.13	20.87	60	36.24	13.76	50	Neutral
8.1705	14	43.13	16.87	60	42.51	7.49	50	Neutral
13.479	15	38.71	21.29	60	35.12	14.88	50	Neutral
13.488	15	37.53	22.47	60	28.76	21.24	50	Neutral
18.1995	15	41.64	18.36	60	29.95	20.05	50	Neutral
18.501	15	42.36	17.64	60	38.58	11.42	50	Neutral
19.443	16	40.1	19.9	60	34.34	15.66	50	Neutral
19.4475	16	40.06	19.94	60	36.09	13.91	50	Neutral
24.4695	16	27.78	32.22	60	22.89	27.11	50	Neutral
26.607	16	26.55	33.45	60	25.27	24.73	50	Neutral

Test point L1
 Operation mode: Standby mode
 Remarks: Powered via standard power supply

Result: Passed

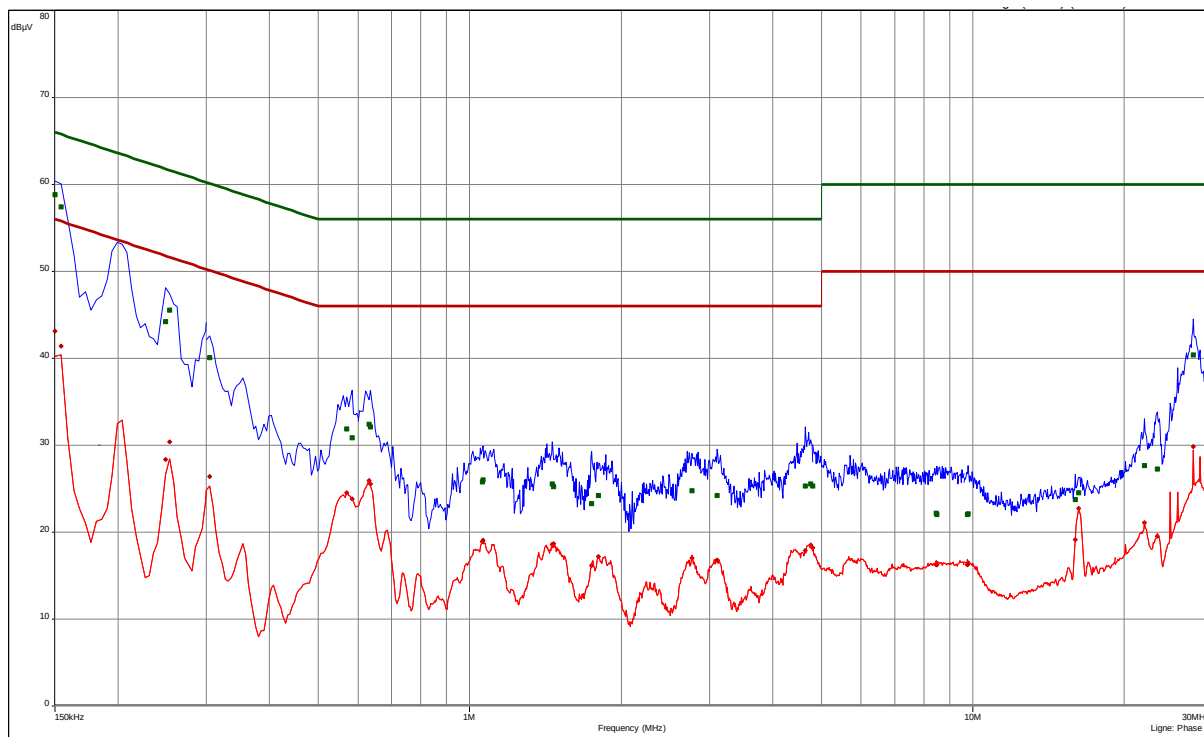


freq MHz	SR	QP dB(μV)	margin dB	limit dB	AV dB(μV)	margin dB	limit dB	line
0.15	9	58.87	7.13	66	43.16	12.84	56	Phase 1
0.1545	9	57.4	8.35	65.75	41.43	14.32	55.75	Phase 1
0.249	9	44.2	17.59	61.79	28.35	23.44	51.79	Phase 1
0.2535	9	45.54	16.1	61.64	30.36	21.28	51.64	Phase 1
0.3045	10	40.05	20.07	60.12	26.41	23.71	50.12	Phase 1
0.57	10	31.91	24.09	56	24.5	21.5	46	Phase 1
0.5835	10	30.87	25.13	56	23.86	22.14	46	Phase 1
0.6315	11	32.45	23.55	56	25.96	20.04	46	Phase 1
0.636	11	32.15	23.85	56	25.53	20.47	46	Phase 1
1.059	11	25.79	30.21	56	18.93	27.07	46	Phase 1
1.0635	11	26.05	29.95	56	19.05	26.95	46	Phase 1
1.461	12	25.54	30.46	56	18.62	27.38	46	Phase 1
1.47	12	25.28	30.72	56	18.71	27.29	46	Phase 1
1.749	12	23.32	32.68	56	16.18	29.82	46	Phase 1
1.803	12	24.19	31.81	56	17.2	28.8	46	Phase 1
2.7645	13	24.77	31.23	56	17.06	28.94	46	Phase 1
3.1065	13	24.21	31.79	56	16.83	29.17	46	Phase 1

freq MHz	SR	QP dB(μ V)	margin dB	limit dB	AV dB(μ V)	margin dB	limit dB	line
4.6455	13	25.32	30.68	56	17.87	28.13	46	Phase 1
4.758	13	25.53	30.47	56	18.5	27.5	46	Phase 1
4.8	14	25.3	30.7	56	18.18	27.82	46	Phase 1
8.454	14	22.16	37.84	60	16.28	33.72	50	Phase 1
8.49	14	22.08	37.92	60	16.29	33.71	50	Phase 1
9.7395	15	22.06	37.94	60	16.29	33.71	50	Phase 1
9.798	15	22.08	37.92	60	16.34	33.66	50	Phase 1
15.999	15	23.73	36.27	60	19.13	30.87	50	Phase 1
16.2465	15	24.54	35.46	60	22.76	27.24	50	Phase 1
21.9045	16	27.68	32.32	60	21.13	28.87	50	Phase 1
23.286	16	27.29	32.71	60	19.54	30.46	50	Phase 1
27.381	16	40.42	19.58	60	29.85	20.15	50	Phase 1

Test point N
 Operation mode: Standby mode
 Remarks: Powered via standard power supply

Result: Passed



freq MHz	SR	QP dB(μV)	margin dB	limit dB	AV dB(μV)	margin dB	limit dB	line
0.15	1	61.86	4.14	66	45.92	10.08	56	Neutral
0.2535	1	48.7	12.94	61.64	34.78	16.86	51.64	Neutral
0.3045	2	43.54	16.58	60.12	31.08	19.04	50.12	Neutral
0.5745	2	35.41	20.59	56	29.7	16.3	46	Neutral
0.6315	3	34.09	21.91	56	28.12	17.88	46	Neutral
0.6405	3	33.45	22.55	56	27.33	18.67	46	Neutral
1.0545	3	26.09	29.91	56	19.46	26.54	46	Neutral
1.0815	3	25.89	30.11	56	18.96	27.04	46	Neutral
1.4115	4	24.82	31.18	56	18.03	27.97	46	Neutral
1.4655	4	24.8	31.2	56	17.99	28.01	46	Neutral
1.8525	4	23.71	32.29	56	17.21	28.79	46	Neutral
1.8705	4	23.05	32.95	56	15.5	30.5	46	Neutral
2.76	5	25.44	30.56	56	17.94	28.06	46	Neutral
2.823	5	24.53	31.47	56	16.57	29.43	46	Neutral
4.7805	5	26.02	29.98	56	18.84	27.16	46	Neutral
4.8	5	26.1	29.9	56	19.06	26.94	46	Neutral
4.8	6	26.12	29.88	56	18.98	27.02	46	Neutral
8.598	6	22.55	37.45	60	16.64	33.36	50	Neutral

freq MHz	SR	QP dB(μ V)	margin dB	limit dB	AV dB(μ V)	margin dB	limit dB	line
9.3	6	22.14	37.86	60	16.44	33.56	50	Neutral
9.7935	7	22.18	37.82	60	16.55	33.45	50	Neutral
9.852	7	22.26	37.74	60	16.5	33.5	50	Neutral
16.2915	7	25.71	34.29	60	24.54	25.46	50	Neutral
19.1535	7	24.27	35.73	60	18.79	31.21	50	Neutral
21.8955	8	28.76	31.24	60	22.58	27.42	50	Neutral
23.2995	8	29.07	30.93	60	21.71	28.29	50	Neutral
27.363	8	36.37	23.63	60	26.06	23.94	50	Neutral
28.281	8	35.56	24.44	60	28.44	21.56	50	Neutral

5.2 Radiated emissions

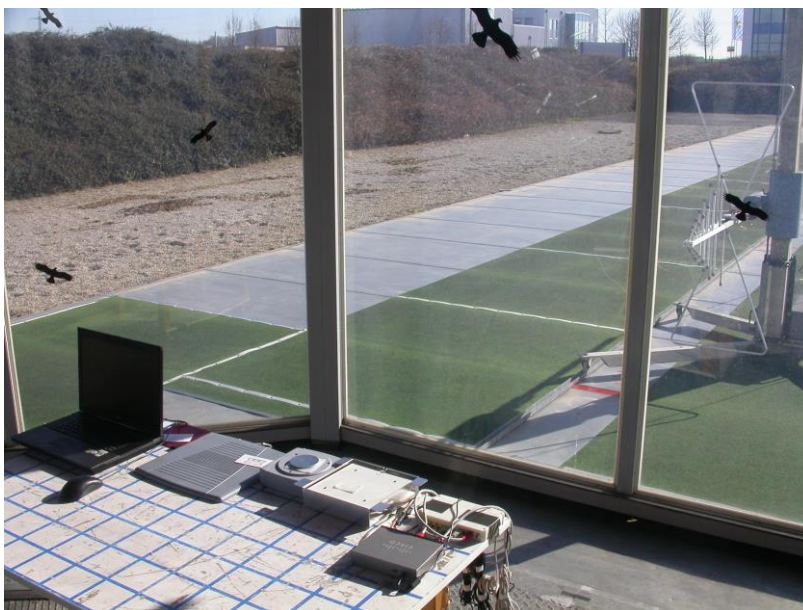
For test instruments and accessories used see section 6 Part **SER 1**, **SER 2**.

5.2.1 Description of the test location

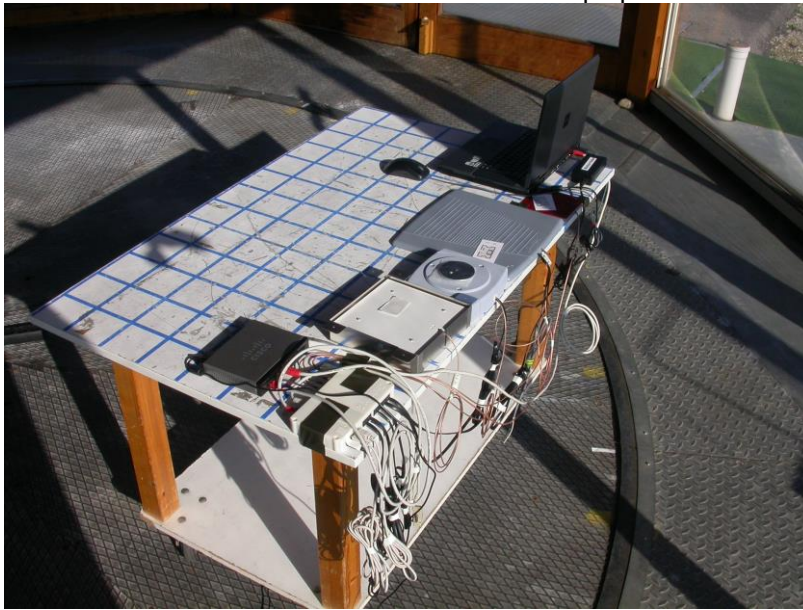
Test location: OATS1

Test distance: 3 metres

5.2.2 Photo documentation of the test set-up



Data connection UHF Reader / Laptop



5.2.3 Applicable standard

According to FCC Part 15B, Section 15.109 (a):

Except for Class A digital devices, the field strength of radiated emissions from unintentional radiators at a distance of 3 m shall not exceed the given limit.

According to FCC Part 15C, Section 15.209:

The emissions from intentional radiators shall not exceed the effective field strength limits.

5.2.4 Description of Measurement

The spurious emissions from the EUT will be measured on an open area test site in the frequency range of 9 kHz to 30 MHz using a tuned receiver and a shielded loop antenna. The antenna was positioned 3, 10 or 30 m horizontally from the EUT. Measurements have been made in all three orthogonal axes and the shielded loop antenna was rotated to locate the maximum of the emissions. In the case where larger measuring distances are required the results will extrapolated based on the values measured on the closer distances according to Section 15.31(f)(2). The final measurement will be performed with an EMI Receiver set to Quasi Peak detector except for the frequency bands 9 kHz to 90 kHz and 110 to 490 kHz where an average detector will be used according to Section 15.209(d)(2).

Radiated emissions from the EUT are measured in the frequency range of 30 MHz to 1000 MHz using a tuned receiver and appropriate broadband linearly polarized antennas. Measurements between 30 MHz and 1000 MHz are made with 120 kHz/6 dB bandwidth and quasi-peak detection. Table top equipment is placed on a 1.0 X 1.5 dB(μ V/m) non-conducting table 80 centimetres above the ground plane. Floor standing equipment is placed directly on the turntable/ground plane. The set up of the equipment under test will be in accordance to ANSI C63.4. The interface cables that are closer than 40 cm to the ground plane are bundled in the center in a serpentine fashion so they are at least 40 cm from the ground plane. Cables to simulators/testers (if used in this test) are routed through the center of the table and to a screen room located outside the test area. The antenna was positioned 3 m horizontally from the EUT. To locate maximum emissions from the test sample the antenna is varied in height from 1 to 4 metres, measurement scans are made with horizontal and vertical antenna polarization and the EUT is rotated

360

degrees.

The resolution bandwidth during the measurement is as following:

9 kHz – 150 kHz: RBW: 200 Hz

150 kHz – 30 MHz: RBW: 9 kHz

30 MHz – 1000 MHz: RBW: 120 kHz

5.2.5 Test result

Measurement distance: 3 m

Frequency [kHz]	L: QP [dBμV]	L: AV [dBμV]	Bandwidth [kHz]	Correct. [dB]	L: QP [dBμV/m]	L: AV [dBμV/m]	Limit [dBμV/m]	Delta [dB]
536.8	24.1	19.7	9.0	20	44.1	39.7	73.0	-33.3
1073.6	23.4	18.0	9.0	20	43.4	38.0	67.0	-29.0
1342.0	21.6	15.9	9.0	20	41.6	35.9	65.0	-29.1

Frequency [MHz]	L: QP [dBμV]	Correct. [dB]	L: QP [dBμV/m]	Limit [dBμV/m]	Delta [dB]
33.78	3.7	13.4	17.1	40.0	-22.9
118.54	9.3	12.9	22.2	43.5	-21.3
517.43	4.8	21.9	26.7	46.0	-19.3

Note: No unwanted emissions could be measured!

Limit according to FCC Part 15 Subpart 15.209(a):

Frequency (MHz)	Field strength of spurious emissions		Measurement distance (metres)
	(μV/m)	dB(μV/m)	
0.009-0.490	2400/F(kHz)	--	300
0.490-1.705	24000/F (kHz)	--	30
1.705-30.0	30	29.5	30

Limit according to FCC part 15B, Section 15.109(a):

Frequency (MHz)	Limit (μV/m)	Limit dB(μV/m)
30 - 88	100	40
88 - 216	150	43.5
216 - 960	200	46
Above 960	500	54

The requirements are **FULFILLED**.

Remarks: The measurement was performed according to FCC Part 15A, Section 15.33(b), up to 1 GHz.
No unwanted emissions from the EuT could be measured in the relevant frequency ranges.
Only ambient noises could be detected.

6 USED TEST EQUIPMENT AND ACCESSORIES

All test instruments used are calibrated and verified regularly. The calibration history is available on request.

Test ID	Model Type	Equipment No.	Next Calib.	Last Calib.	Next Verif.	Last Verif.
A 4	ESHS 30	02-02/03-05-002	16/07/2014	16/07/2013		
	ESH 2 - Z 5	02-02/20-05-004	18/10/2014	18/10/2013	28/08/2014	28/02/2014
	N-4000-BNC	02-02/50-05-138				
	N-1500-N	02-02/50-05-140				
	ESH 3 - Z 2	02-02/50-05-155			10/04/2014	10/10/2013
	SP 103 /3.5-60	02-02/50-05-182				
SER 1	FMZB 1516	01-02/24-01-018			13/02/2015	13/02/2014
	ESR 7	02-02/03-13-001	21/05/2014	21/05/2013		
	S10162-B	02-02/50-05-031				
	KK-EF393-21N-16	02-02/50-05-033				
	NW-2000-NB	02-02/50-05-113				
SER 2	ESVS 30	02-02/03-05-006	28/06/2014	28/06/2013		
	VULB 9168	02-02/24-05-005	11/04/2014	11/04/2013	06/09/2014	06/03/2014
	S10162-B	02-02/50-05-031				
	NW-2000-NB	02-02/50-05-113				
	KK-EF393/U-16N-21N20 m	02-02/50-12-018				