telefication bv
The Netherlands
Chamber of Commerce
51565536
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telefication

Test report
20133227302-Ver 1.00

based on:

FCC Part 15 Subpart C, section 15.225
(10-01-13 Edition)
FCC Part 15 Subpart B, section 15.109
(10-01-13 Edition)
IC RSS-210, Issue 8 (December 2010 edition)

Control device for various types of industrial equipment
Prodrive
SAM2

Revision history

REVISION	DATE	REMARKS	REVISED BY
Ver 1.00	23-09-2014 29-08-2014 25-08-2014	Initial release	ing. A.G.B. van Zwieten

Contents

This report comprises of three modules. The total number of pages is: 16

Main module

1. Introduction

This report contains the result of tests performed by:

Telefication bv
Edisonstraat 12a
6902 PK Zevenaar
The Netherlands

Telefication complies with the accreditation criteria for test laboratories as laid down in ISO/IEC 17025:2005. The accreditation covers the quality system of the laboratory as well as the specific activities as described in the authorized annex bearing the accreditation number L021 and is granted on 30 November 1990 by the Dutch Council For Accreditation (RvA: Raad voor Accreditatie).

Telefication is designated by the FCC as an Accredited Test Firm for compliance testing of equipment subject to Certification under Parts 15 & 18. The Registration Number is: 282250.

The Industry Canada number for the Open Area Test Site of Telefication is: 4173A-1.

Ordering party:

Company name	:	Prodrive B.V.
Address	:	Science Park Eindhoven 5501
Zipcode	:	5692 EM
City/town	:	Son
Country	:	The Netherlands
Date of order	:	1 October 2013

2. Product

A sample of the following product was submitted for testing:

Product description	:	Control device for various types of industrial equipment
Product category	:	Intentional radiators
Manufacturer	:	Prodrive B.V.
Trade mark	:	Prodrive
Type designation	:	SAM2
ITU designator	:	458KA1D
FCC ID	:	Y2ISAM2
IC ID	:	9389A-SAM2
Software version	:	--
Hardware release	:	--

3. Test schedule

Tests are carried out in accordance with the specification detailed in chapter 7 "Summary" of this report.

Tests are carried out at the following location:

- Telefication, Zevenaar

The sample of the product was received on:

- 16 July 2014

Tests are carried out between:

- 6 and 25 August 2014

4. Product documentation

For production of this report the following product documentation has been used:

Identification	Date
RF_100_27, General application form 20133227.doc	3 Oct. 2013
Prodrive specification document of SAM2	8 Oct. 2013
Instruction ManualR04.pdf	4 Nov. 2013
operational_description.pdf	21 Aug 2014

The above-mentioned documentation will be filed at Telefication for a period of 10 years following the issue of this report.

5. Observations and comments

The Control device for various types of industrial equipment contains a RFID reader, which is subject to tests according to FCC part15 C, § 15.225.

The RFID reader has been tested together with a passive tag.
Due to the interaction between the reader and the corresponding tag, transmit and receive modes could not be tested separately.
Therefore testing is performed only according to FCC part15C, § 15.209, which is referred to in FCC part 15C, §15.225(d).

6. Modifications

None.

7. Summary

The product is intended for use in the following application area:

OPERATION WITHIN THE BAND 13.110 - 14.010 MHz

The sample is tested according to the following specifications:

FCC Part 15 Subpart C, section 15.225 (10-01-13 Edition)
FCC Part 15 Subpart B, section 15.109 (10-01-13 Edition)
IC RSS-210, Issue 8 (December 2010 Edition)

8. Conclusions

The sample of the product showed **NO NON-COMPLIANCES** to the specification stated in chapter 7 of this report.

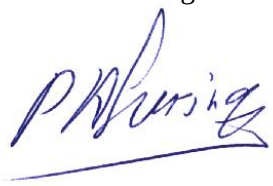
The results of the tests as stated in this report, are exclusively applicable to the product item as identified in this report. Telefication accepts no responsibility for any stated properties of product items in this test report, which are not supported by the tests as specified in chapter 7 “Summary”.

All tests are performed by:

name : ing. P.A. Suringa

function : Senior Test Engineer

signature :

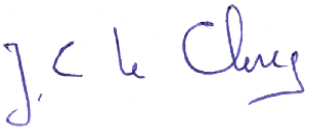


Review of test methods and report by:

name : ing. J.C. le Clercq

function : Test Engineer

signature :



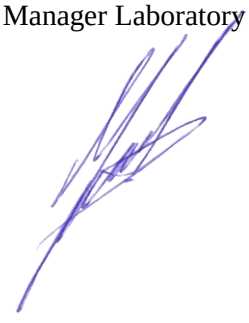
The above conclusions have been verified by the following signatory:

date : 23 September 2014

name : ing. A.G.B. van Zwieten

function : Manager Laboratory a.i.

signature :



Test results module

Summary

According to FCC Part 15 subparts C, section 15.225, the following tests have been performed:

Port	Reference	Phenomenon	Result
Enclosure and antenna	15.225 (a), (b), (c), (d)	Radiated emissions	P
Antenna	15.225 (e)	Frequency tolerance	P
Enclosure and antenna	15.109 (a) / 15.209 (a)	Radiated emissions	P

Results:

P	=	pass	NA	=	not applicable
F	=	fail	NP	=	not performed

Emission tests

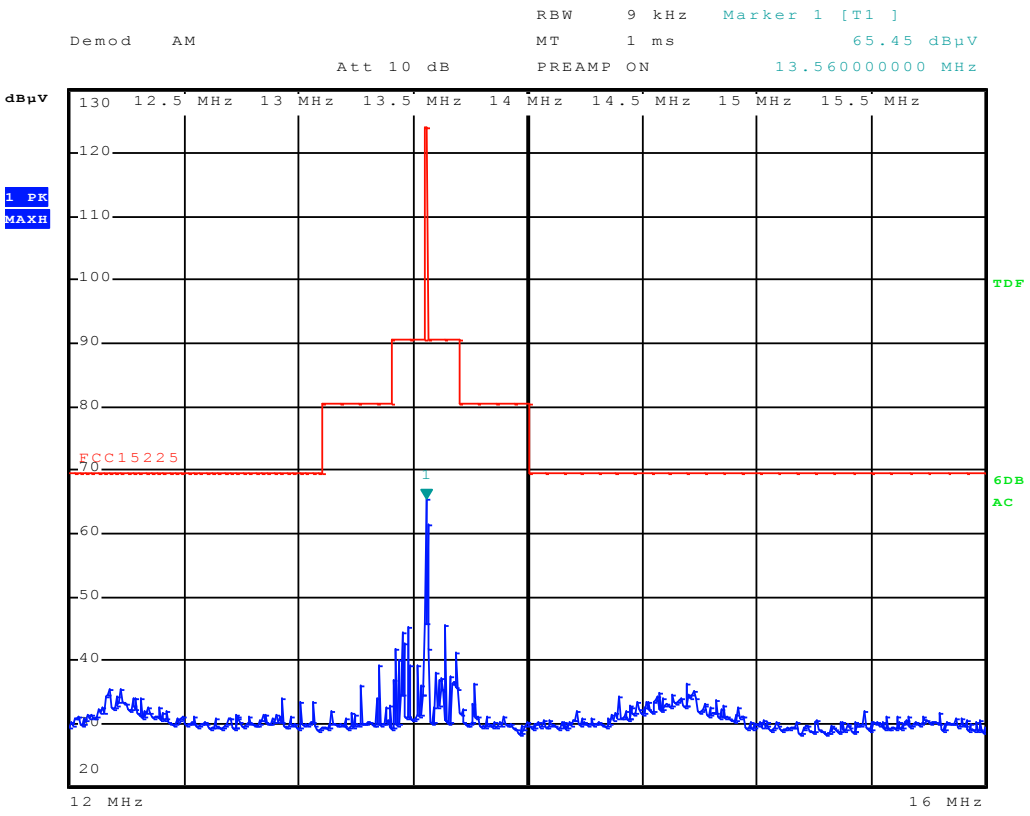
1.1 Field strength of emissions (< 30 MHz)

Compliance standard : FCC part 15, subpart C, section 15.225(a), (b), (c)
FCC part 15, subpart C, section 15.205;
FCC part 15, subpart B, section 15.209 (a)

Method of test : ANSI C63.4-2003, sections 5.3 & 8.2.1; FCC part 15, subpart A, section 15.31 (f) (2), 15.33, 15.35.

Test results :

(units in dBµV/m)



The maximum field strength at 13.56 MHz is: 67.6 dBµV/m (3 m distance)

Measurement uncertainty	+1.9 / -2.1 dB

Remark: in the plot the limit is modified for an inverse linear distance extrapolation factor of 40 dB/decade.

Test equipment used: (Item numbers)	1, 2, 7

Item numbers refer to the used test equipment module.

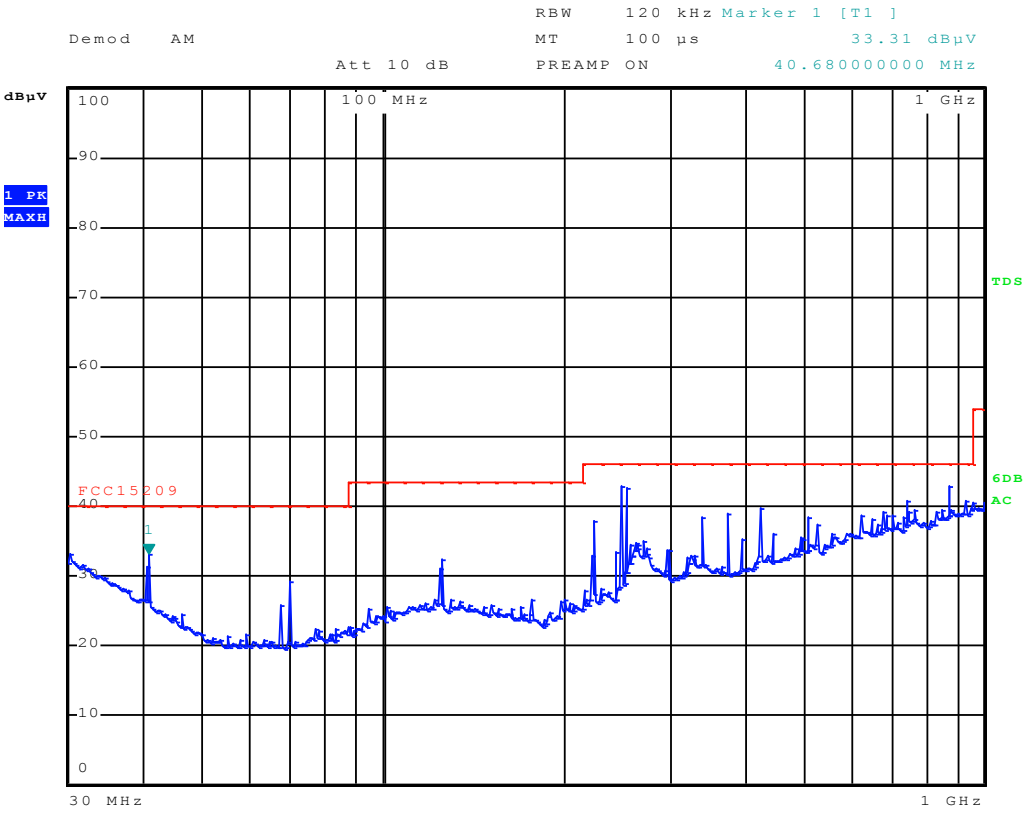
1.2 Field strength of unwanted emissions (> 30 MHz)

Compliance standard : FCC part 15, subpart C, section 15.225 (d)
FCC part 15, subpart C, section 15.205
FCC part 15, subpart C, section 15.209 (a)
FCC part 15, subpart B, section 15.109 (a)

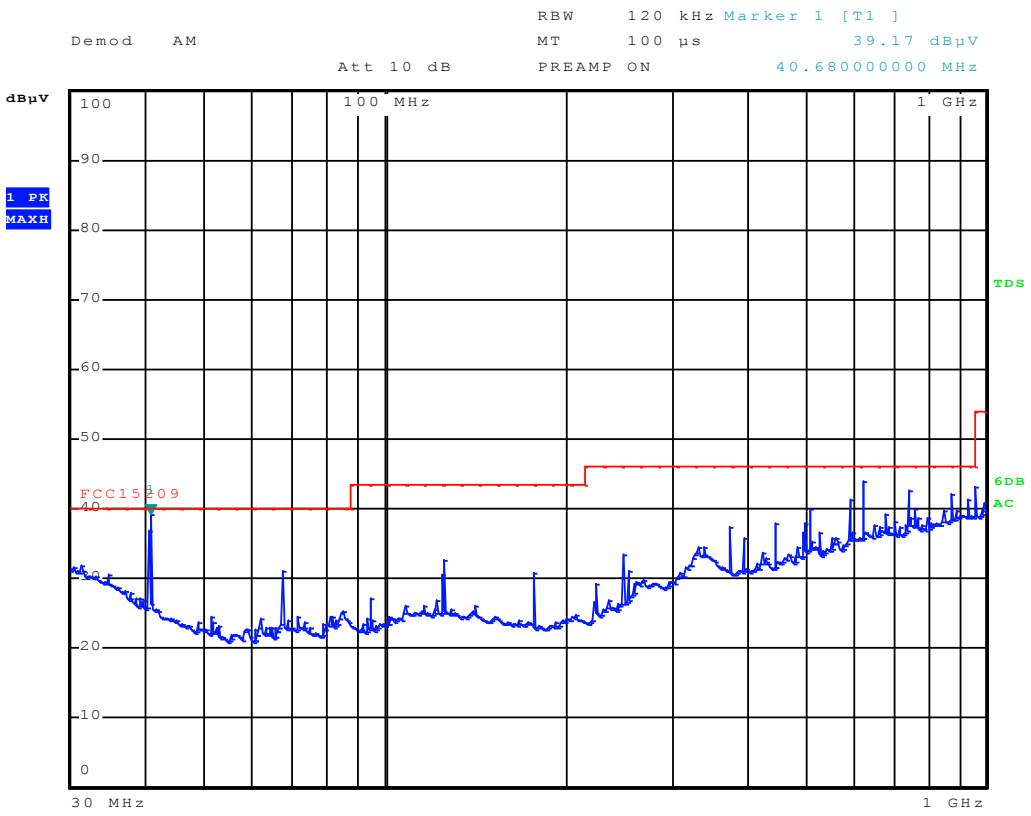
Method of test : ANSI C63.4-2003, sections 5.4.2 & 8.2.3;
FCC part 15, subpart A, sections 15.33, 15.35.

Test results: :

Horizontal polarization



Vertical polarization



Measurement uncertainty

Horizontal polarization	
30 – 200 MHz	4.5 dB
200 – 1000 MHz	3.6 dB
Vertical polarization	
30 – 200 MHz	5.4 dB
200 – 1000 MHz	4.6 dB

Test equipment used: (Item numbers)	2, 7, 8

Item numbers refer to the used test equipment module.

1.3 Frequency tolerance

Compliance standard : FCC part 15, subpart C, section 15.225 (e)

Method of test : ANSI C63.10-2009, clause 6.8

Test results: :

Temperature variation:

Temp. (ºC)	-20	-10	0	10	20	30	40	50
Frequency (MHz)	13.56100	13.56100	13.56000	13.56000	13.56000	13.56000	13.56000	13.56000
Deviation (%)*)	0.007	0.007	0	0	0	0	0	0
Limit (%)	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01

*) w.r.t. operating frequency of 13.560 MHz

Voltage variation:

Voltage	**Frequency (MHz)*)**	**Deviation (%)*)**	**Limit (%)**
20.4 V	13.56000	0	0.01
27.6 V	13.56000	0	0.01

*) w.r.t. operating frequency of 13.560 MHz

Measurement uncertainty	+ /- 16 Hz

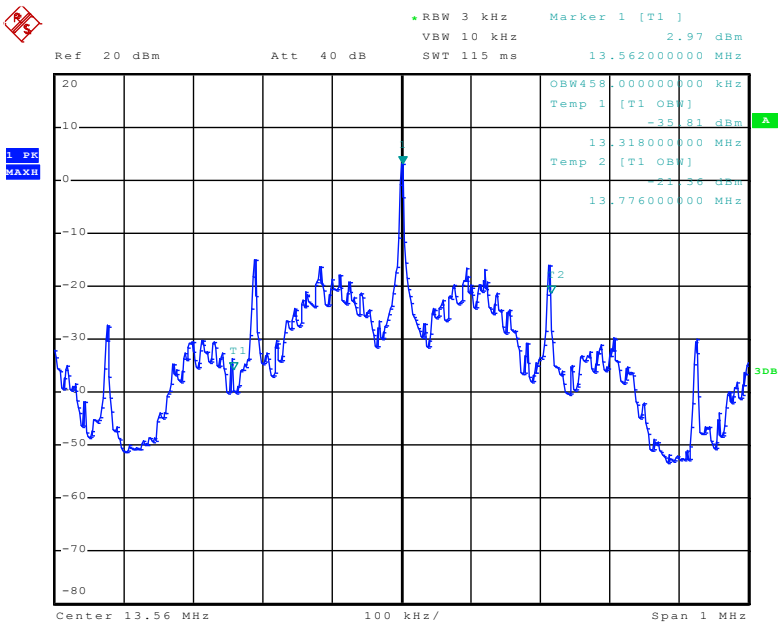
Test equipment used: (Item numbers)	2, 9, 10, 11, 12

Item numbers refer to the used test equipment module.

Compliance standard : ICC RSS 210

Method of test : Occupied bandwidth 99 %

Test results: :



Measurement uncertainty	1 kHz

Test equipment used: (Item numbers)	2, 12

Item numbers refer to the used test equipment module.

Used test equipment module

Ref	Description	ID	Manufacturer	Model
1	Active loop antenna	TE 00746	R & S	HFH 2-Z2
2	Test receiver	TE 00091	R & S	ESCI
3	Large triple loop antenna	TE 01066	Telefication	--
4	Logper/bow-tie antenna	TE 00700	EMCO	3143
5	Spectrum analyzer	TE 00461	HP	8563E
6	Compact anechoic chamber (ANEC)	TE 01064	Euroshield	RFD-F-100
7	Semi anechoic chamber (SAR)	TE 00861	Comtest	--
8	Biconilog antenna	TE 00967	Chase	CBL6112A
9	Climate chamber	TE 00392	CTS	KK-35/70
10	Digital multimeter	TE 00143	HP	34401A
11	Power supply	TE 00715	Delta	E060-06
12	Near field probe	--	--	--

Cross reference table

Transmitter	
IC RSS-210 Issue 8	**FCC 47 CFR Part 15, subpart C (1-Oct-13 Edition)**
Section 2.5	§ 15.209
Section 2.5	§ 15.205
IC RSS-210 Issue 8, Annex 2	**FCC 47 CFR Part 15, subpart C (1-Oct-13 Edition)**
Annex A2.6 (a)	§ 15.225 (a)
Annex A2.6 (b)	§ 15.225 (b)
Annex A2.6 (c)	§ 15.225 (c)
Annex A2.6 (d)	§ 15.225 (d)
Annex A2.6	§ 15.225 (e)