Prüfbericht-Nr.: *Test Report No.*:	**18052303.r02**	**Auftrags-Nr.:** *Order No.*:	89213652	Seite 1 von 15 *Page 1 of 15*
Kunden-Referenz-Nr.: *Client Reference No.*:	4603457	**Auftragsdatum:** *Order date*:	30.05.2018	
Auftraggeber: *Client*:	MYLAPS BV, Zuiderhoutlaan 4 2012PJ Haarlem , Netherlands			
Prüfgegenstand: *Test item*:	ProChip Timer Communicator			
Bezeichnung / Typ-Nr.: *Identification / Type No.*:	ProChip Communicator			
Auftrags-Inhalt: *Order content*:	Compliance with regulatory requirements			
Prüfgrundlage: *Test specification*:	47 CFR PART 15 (10-1-17 EDITION), Subpart 15B - -			

Wareneingangsdatum: *Date of receipt*:	31.05.2018
Prüfmuster-Nr.: *Test sample No.*:	177122
Prüfzeitraum: *Testing period*:	10.07.2018 – 30.07.2018
Ort der Prüfung: *Place of testing*:	Leek
Prüflaboratorium: *Testing laboratory*:	TÜV Rheinland Nederland B.V. Leek Laboratory
Prüfergebnis*: *Test result**:	Pass

geprüft von / *tested by:*			**Kontrolliert von** / reviewed by:		
10.10.2018	R.van der Meer/Test Eng.		10.10.2018	E. van der Wal/Senior Eng.	
Datum *Date*	**Name / Stellung** *Name / Position*	**Unterschrift** *Signature*	**Datum** *Date*	**Name / Stellung** *Name / Position*	**Unterschrift** *Signature*

Sonstiges / *Other:* -

Zustand des Prüfgegenstandes be Anlieferung: *Condition of the test item at delivery:*	Prüfmuster vollständig und unbeschädigt *Test item complete and undamaged*

* Legende:	1 = sehr gut P(ass) = entspricht o.g.	2 = gut Prüfgrundlage(n)	3 = befriedigend F(ail) = entspricht nicht o.g.	4 = ausreichend N/A = nicht anwendbar	5 = mangelhaft N/T/ = nicht getested
Legend:	*1 = very good* *P(ass) = passed a.m*	*2 = good* *Test specification(s)*	*3 = satisfactory* *F(ail) a.m. test specification(s)*	*4 = sufficient* *N/A = not applicable*	*5 = poor* *N/T = not tested*

Liste der verwendenten Prüfmittel
List of used test equipment

Conformance of the used measurement and test equipment with the requirements of ISO/IEC 17025:2005 has been confirmed before testing.
NA= Not Applicable

Prüfmittel Kind of Equipment	**Hersteller /** Manufacturer	**Bezeichnung /** Model Name	**Prüfmittel-Nr. / ID-Nr.** *Equipment No. / ID-No.*	**Kalibrierung** *Calibration* **(mm/yyyy)**	**Nächste Kalibrierung** *Next calibration* **(mm/yyyy)**
For Radiated Emissions					
Measurement Receiver	Rohde & Schwarz	ESCI	A00314	03/2018	03/2019
RF Cable S-AR	Gigalink	APG0500	A00447	01/2018	01/2019
Controller	Maturo	SCU/088/ 8090811	A00450	N/A	N/A
Controller	EMCS	DOC202	A00257	N/A	N/A
Test facility	Comtest	FCC listed: 786213 IC: 2932G-2	A00235	10/2017	10/2020
Antenna mast	EMCS	AP-4702C	A00258	N/A	N/A
Temperature-Humiditymeter	Extech	SD500	A00444	06/2018	06/2019
Biconilog Testantenna	Teseq	CBL 6111D	A00466	10/2017	10/2018

Prüfmittel Kind of Equipment	**Hersteller /** Manufacturer	**Bezeichnung /** Model Name	**Prüfmittel-Nr. / ID-Nr.** *Equipment No. / ID-No.*	**Kalibrierung** *Calibration* **(mm/yyyy)**	**Nächste Kalibrierung** *Next calibration* **(mm/yyyy)**
For AC Powerline Conducted Emissions					
Pulse limiter	R&S	ESH3-Z2	A00051	01/2018	01/2019
Variac	RFT	LSS020	A00171	NA	NA
LISN	EMCO	3625/2	A00019	06/2018	06/2019
Measurement Receiver	Rohde & Schwarz	ESCS30	A00726	10/2017	10/2018
Shielded room for Conducted emissions	--	--	A00437	NA	NA
Temperature-Humiditymeter	Extech	SD500	A00441	06/2018	06/2019

Accreditation
The reported tests were performed under ISO17025 accreditation, unless otherwise specified as 'not under Accreditation'

An overview of all TÜV Rheinland Nederland B.V. accreditations, notifications and designations, please visit our website www.tuv.com/nl. You can find the relevant declarations under the download link

Prufbericht-Nr: 18052303.r02
Test report No: 18052303.r02

Produktbeschreibung
Product description

1	**Produktdetails** *Product details*	MYLAPS Sports Timing – ProChip Communicator
2	**Maße / Gewicht** *Dimensions / Weight*	670g (1.5lb)
3	**Bedienelemente** *Operating elements*	None
4	**Ausstattung / Zubehör** *Equipment / Accessories*	USB cable
5	**Verwendete Materialien** *Used materials*	--
6	**Sonstiges** *Other*	--

Absatz			
Clause	*Anforderungen – Prüfungen / Requirements - Tests*		
1	47 CFR Part 15, Subpart 15B (10-1-17 Edition) Section 15.107(a)	AC Power Line Conducted Emissions	P ☒ F ☐ N/A ☐ N/T ☐
2	47 CFR Part 15, Subpart 15B (10-1-17 Edition) Section 15.109(a)	Radiated unwanted emissions	P ☒ F ☐ N/A ☐ N/T ☐

Test methods: ANSI C63.4-2014.

Revisions *Revisions*			
Revision Revision	**Datum** Date	**Anmerkung** Remark	**Verfasser** Author
-	10.10.2018	First release	R. van der Meer
Note: Latest revision report will replace all previous reports			

Table of contents

1.1 Test methodology.

The test methodology used is based on the requirements of 47 CFR Part 15 (10-1-17 Edition), sections 15.109 and 15.107. The test methods, which have been used, are based on ANSI C63.4-2014.

Radiated emission tests were performed at a measurement distance of 3 meters and measurement results were extrapolated to the applicable distance.
The receivers are switching automatically to the right bandwidth in accordance with CISPR 16. This is implemented in the receiver. The antenna factors are programmed in the test receiver. The receiver automatically calculates the appropriate correction factor for the utilized antenna and also the appropriate antenna factor for the cable loss. The total correction is automatically added to the measured value.

1.2 Test facility.

The Federal Communications Commission has reviewed the technical characteristics of the test facilities at TÜV Rheinland Nederland B.V., located at Eiberkamp 10, 9351 VT Leek, The Netherlands, and has found these test facilities to be in compliance with the requirements of 47 CFR Part 15, section 2.948.

The description of the test facilities has been filed at the Office of the Federal Communications Commission under registration number 786213. The facility has been added to the list of laboratories performing these test services for the public on a fee basis.

1.3 Test conditions.

Normal test conditions:

Temperature (*)	: +15°C to +35°C
Relative humidity(*)	: 20 % to 75 %
Supply voltage	: 5Vdc, USB powered by PC/Notebook (not by power supply adapter).

**When it was impracticable to carry out the tests under these conditions, a note to this effect stating the ambient temperature and relative humidity during the tests are stated separately.*

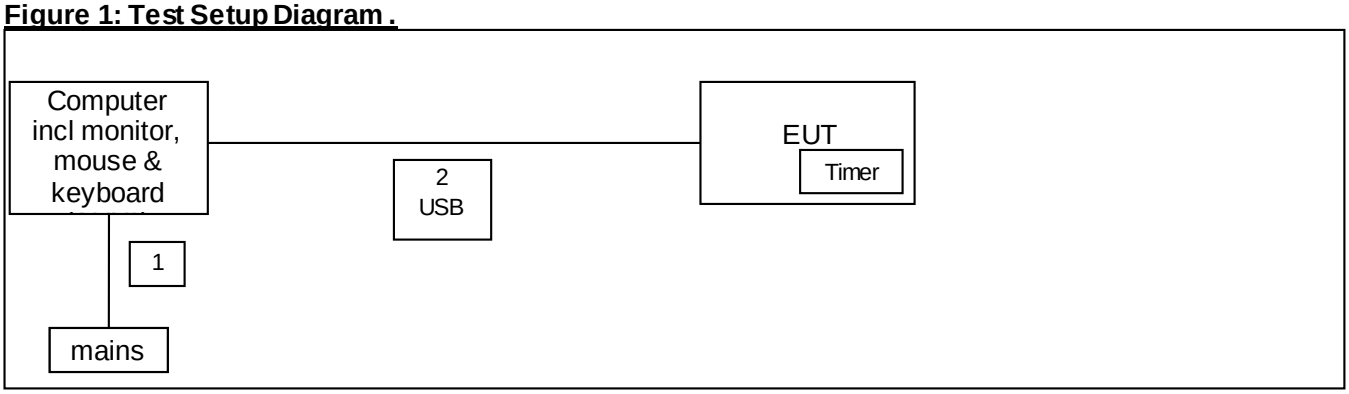
2 System test configuration.

2.1 Justification.

The EUT was configured for testing as normally used. A normal setup consists of a PC which powers the EUT through USB connection (See Figure 1). The EUT is not usable with just a USB power supply. The test sample was configured by the applicant to enable continuous transmit.

The justification and manipulation of cables and equipment in order to simulate a worst-case behavior of the test setup has been carried out as prescribed in ANSI C63.4-2014.

Figure 1: Test Setup Diagram .

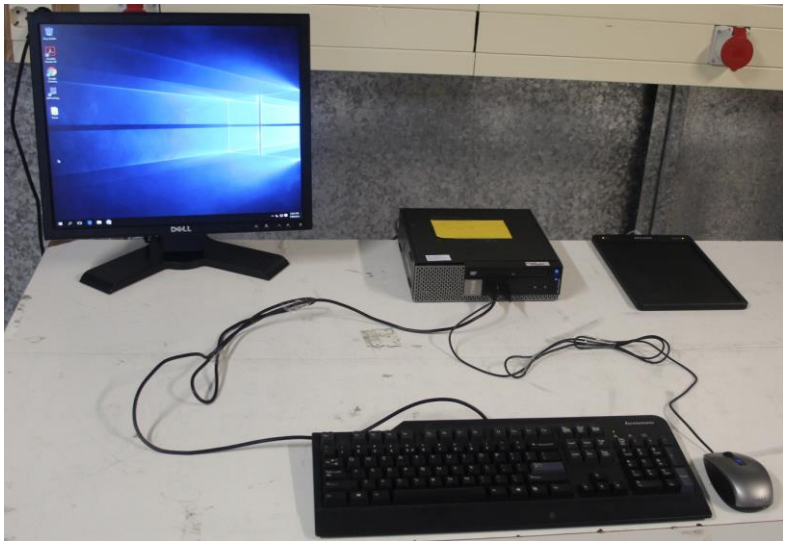


2.2 EUT mode of operation.

The tests have been performed with a complete functioning EUT.

2.3 Special accessories.

The product has been tested together with the following additional accessories:(see next page)



1. AUX1a
   Product: Personal Computer
   Brand: Dell
   Model: Optiplex 780
   Serial Number: 1DR3W4J
   Remark: host for test software, property applicant MY000132

2. AUX1b
   Product: PC Mouse
   Brand: Dell
   Model: 0Y357c
   Serial Number: iOL001JK
   Remark: property TR

3. AUX1c
   Product: PC Keyboard
   Brand: Lenovo
   Model: SK-8825(L)
   Serial Number: 00941921
   Remark: property TR

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4. AUX1d
   Product: PC Monitor
   Brand: Dell
   Model: 1908FPb
   Serial Number: CN-OD320J-74261-8AA-1CHS
   Remark: property TR

2.4 Equipment modifications.

None.

.

3 Radiated emission data.

3.1 Radiated field strength measurements (30 MHz – 1 GHz, E-field)

RESULT: PASS

Date of testing: 2018-07-30

Frequency range: 30MHz - 1000MHz

FCC 'Code of Federal Regulations Title 47 CFR Part 15, Subpart B, Section 15.109(a).

Except for Class A digital devices, the field strength of radiated emissions from an unintentional radiator shall not exceed the field strength levels specified in the following table:

Frequency (MHz)	Field strength (µV/meter)	Field strength (dBµV/m)	Measurement distance (meters)
30-88	100	40.0	3
88-216	150	43.5	3
216-960	200	46.0	3
Above 960	500	54.0 (Av), 74 (Pk)	3

Table of applicable limits

Test procedure:

The EUT was placed on a nonconductive turntable 0.8m (<1 GHz) or 1.5m (>1GHz) above the ground plane. Before final measurements of radiated emissions were performed, the EUT was scanned to determine its emission spectrum profile.

The spectrum was examined from 30MHz to 1 GHz. Final radiated emission measurements were made at 3m distance.

At each frequency where a spurious emission was found, the EUT was rotated 360° and the antenna was raised and lowered from 1 to 4m in order to determine the emission's maximum level. Measurements were taken using both horizontal and vertical antenna polarizations.

The highest emission amplitudes relative to the appropriate limit were recorded in this report. Field strength values of radiated emissions at frequencies not listed in the tables are more than 20 dB below the applicable limit. Where Peak (Pk) values where at least 6 dB under the Average (Av) limits, Av value was not tested. Were Average values were tested, Average values were measured using a reduced Video Bandwidth.

Frequency [MHz]	Antenna Orientation	Detector / Bandwidth	Level [dBµV/m]	Limit QP [dBµV/m]	Result Pass/Fail
36.21	Vertical	Qp / 120 kHz	20.0	40.0	Pass
48.00	Vertical	Qp / 120 kHz	28.0	40.0	Pass
240.0 *R	Vertical	Qp / 120 kHz	32.4	46.0	Pass
528.0	Vertical	Qp / 120 kHz	26.0	46.0	Pass
576.0	Vertical	Qp / 120 kHz	27.7	46.0	Pass
672.0	Horizontal	Qp / 120 kHz	42.9	46.0	Pass
960.0 noise	Vertical	Qp / 120 kHz	20.0	46.0	Pass

Table 2 Radiated emissions of the EUT

The results of the radiated emission tests, carried out in accordance with 47 CFR Part 15 section 15.109 are depicted in Table 2.

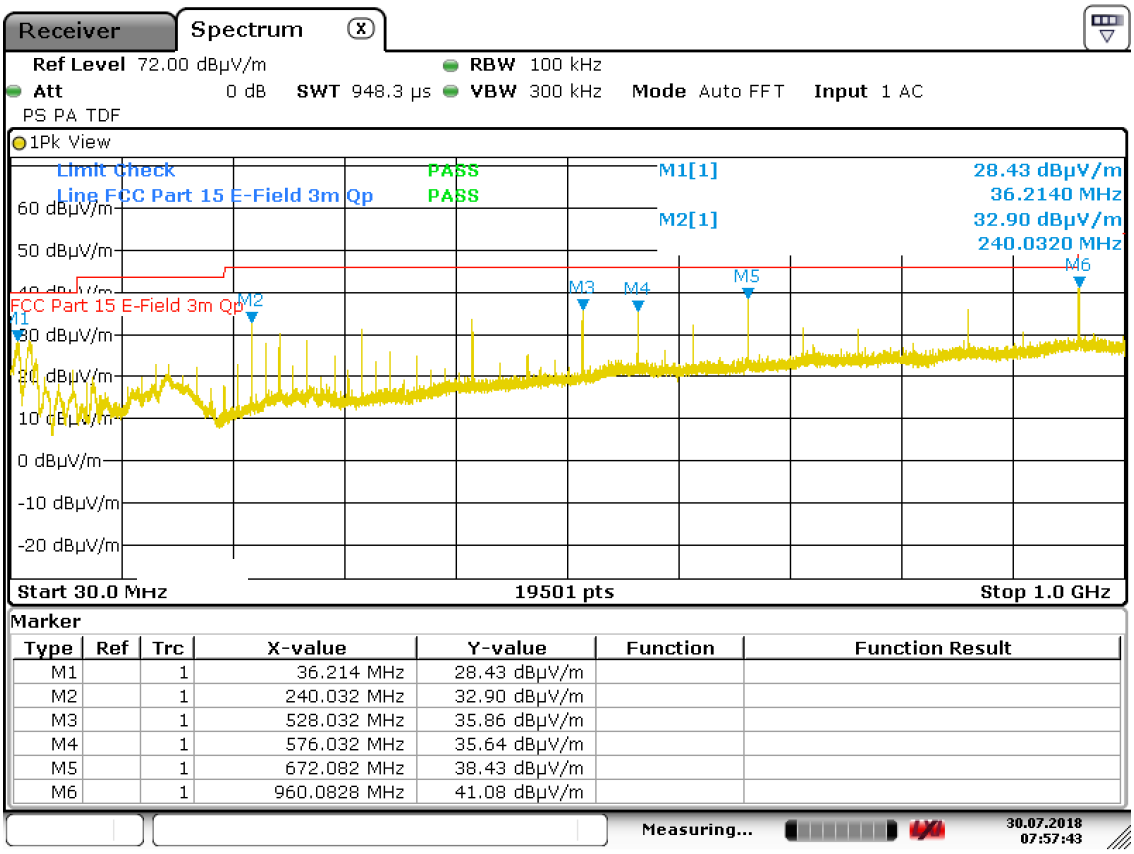
Notes:

1. Field strength values of radiated emissions at frequencies not listed in the table above are more than 20 dB below the applicable limit.
2. Measurement uncertainty is 5.22 dB.
3. The reported value is the worst case found at the reported frequency.
4. *R refers to a frequency in a restricted band.
5. a selection of plots is provided on the next pages.

3.1.1 Test equipment used (for reference see test equipment listing).

A00257	A00258	A00314	A00447	A00235	A00466	

3.1.2 Plot of the emissions



Date: 30.JUL.2018 07:57:43

Plot 3: plot of the emissions, Vertical polarization, Peak values shown

4 AC Power line Conducted emission data.

4.1 AC Power Line Conducted Emission data of the EUT

RESULT: PASS

Date of testing: 2018-07-30

Requirements: 15.107 (a) Except for Class A digital devices, for equipment 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, as measured using a 50 µH/50 ohms line impedance stabilization network (LISN). Compliance with the provisions of this paragraph shall be based on the measurement of the radio frequency voltage between each power line and ground at the power terminal. The lower limit applies at the band edges.

Frequency of Emission (MHz)	Conducted Limit (dBµV) Quasi-Peak	Conducted Limit (dBµV) Average
0.15 – 0.5	66 to 56*	56 to 46*
0.5 – 5	56	46
5 - 30	46	50

*Decreases with the logarithm of the frequency.

Test procedure:

ANSI C63.4-2014.

Each phase and neutral of the AC power line were measured with respect to ground. Measurements were performed using a 50 µH / 50 Ω LISN. The frequency range from 150kHz to 30MHz was searched. The six highest EUT emissions relative to the limit were noted. In the case of tabletop equipment, the EUT is placed on a 1.0m x 1.5m non-conductive table 80cm above the ground plane and 40cm from a vertical ground reference plane. The rear of the EUT was positioned flush with the backside of the table and directly over the LISNs. The power and I/O cables were routed over the edge of the table and bundled approximately 40cm from the ground plane.

4.2 AC Power Line Conducted emission data of the EUT, results.

Frequency (MHz)	Measurement results dB(µV) Neutral/L2		Measurement results dB(µV) Line 1		Limits dB(µV)		Result
	QP	AV	QP	AV	QP	AV	
0.177	49.0	-	45.0	-	64.5	54.5	Pass
0.189	50.0	24.0	51.1	24.9	64.0	54.0	Pass
0.196	50.0	25.0	51.1	25.0	63.6	53.6	Pass
0.361	49.0	-	50.0	-	58.7	48.7	Pass
0.545	39.8	-	35.0	-	56.0	46.0	Pass
6.78 *4	30.0	-	30.0	-	60.0	50.0	Pass
13.93 *4	35.0	-	34.0	-	60.0	50.0	Pass

Table 3 AC Power Line Conducted emission measurements of the EUT

The results of the AC power line conducted emission tests, carried out in accordance with 47 CFR Part 15 section 15.107, at the 120 Volts AC mains connection terminals of AUX1a of the system, are depicted in Table 3. Maximum values were recorded. For AC Power line conducted emissions only, the EUT was tested in a full system with and without Timer Transponder.

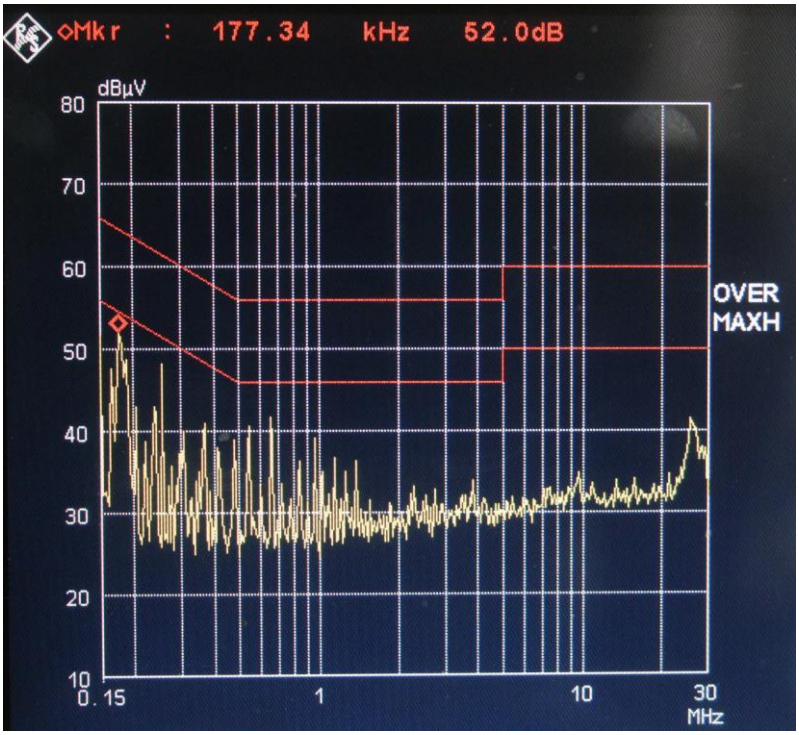
Notes:

1. Measurement uncertainty is 3.5 dB.
2. The resolution bandwidth used was 9 kHz.
3. "-" Not measured as the Quasi Peak values were already within the average limits
4. While reading a Timer transponder

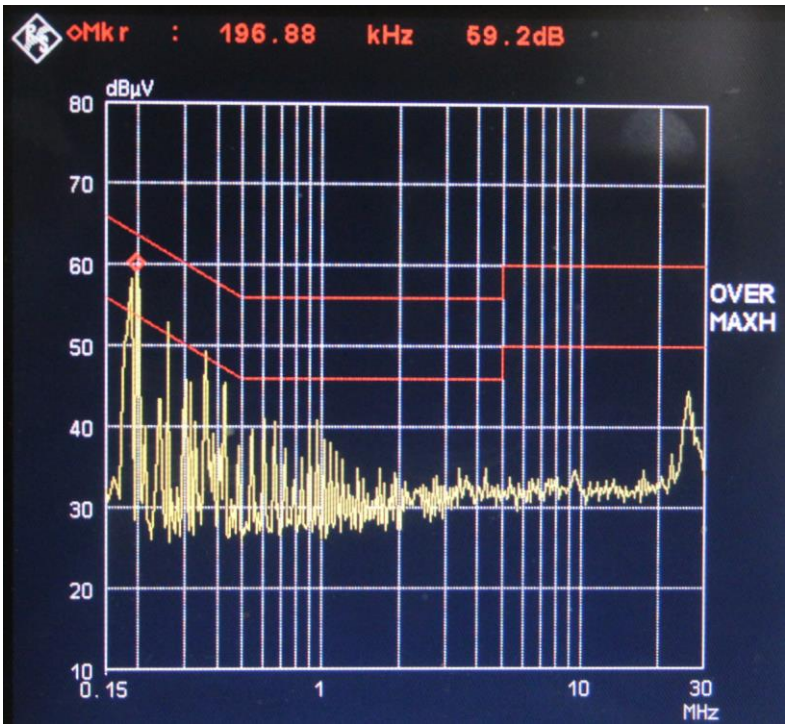
4.2.1 Test equipment used (for reference see test equipment listing).

A00051	A00019	A00726	A00441	A00437	

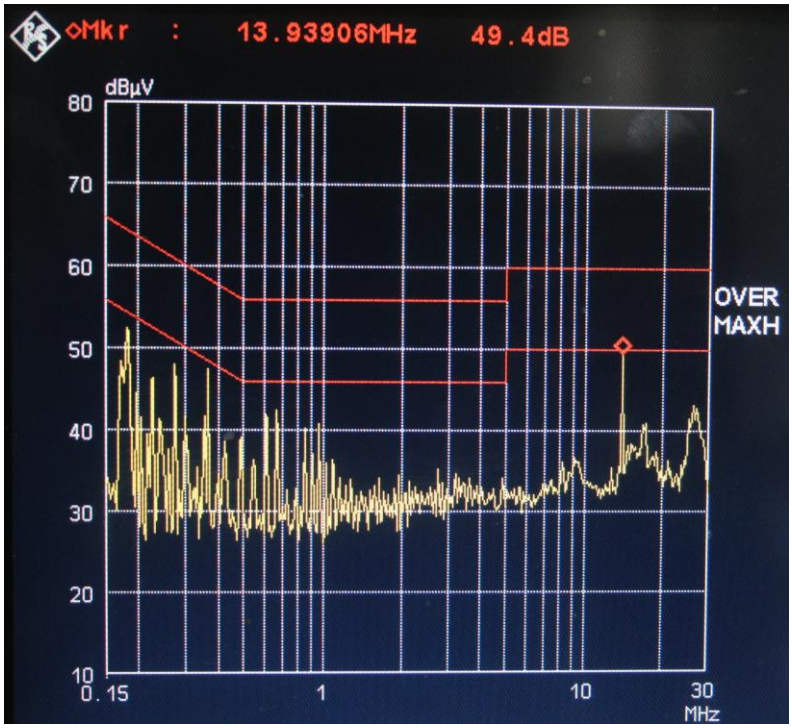
4.2.2 Plots of the AC Power Line Conducted Emissions



Plot of the AC Power Line Conducted Emissions on N, not reading the Timer



Plot of the AC Power Line Conducted Emissions on L1, not reading the Timer



Plot of the AC Power Line Conducted Emissions on N, while reading the Timer

<< End of report >>