



## **TEST REPORT**

Test report no.: 1-9177/15-03-02-A



#### **Testing laboratory**

#### **CETECOM ICT Services GmbH**

Untertuerkheimer Strasse 6 – 10
66117 Saarbruecken / Germany
Phone: + 49 681 5 98 - 0
Fax: + 49 681 5 98 - 9075
Internet: http://www.cetecom.com
ict@cetecom.com

#### **Accredited Testing Laboratory:**

The testing laboratory (area of testing) is accredited according to DIN EN ISO/IEC 17025 (2005) by the Deutsche Akkreditierungsstelle GmbH (DAkkS)

The accreditation is valid for the scope of testing procedures as stated in the accreditation certificate with

the registration number: D-PL-12076-01-00

### **Applicant**

#### Pacific Industrial Co., Ltd

Godo-Cho, Anpachi Gifu 503-2397 / JAPAN

Phone: -/-Fax: -/-

Contact: Kunitaka Yano

e-mail: knyano@pacific-ind.co.jp

Phone: -/-

#### **Manufacturer**

Pacific Industrial Co., Ltd

Godo-Cho, Anpachi Gifu 503-2397 / JAPAN

#### Test standard/s

47 CFR Part 15 Title 47 of the Code of Federal Regulations; Chapter I; Part 15 - Radio frequency

devices

RSS - 210 Issue 8 Spectrum Management and Telecommunications Radio Standards Specification -

Licence-exempt Radio Apparatus (All Frequency Bands): Category I Equipment

For further applied test standards please refer to section 3 of this test report.

### Test Item

Kind of test item: Tire Pressure Monitoring system Transmitters

Model name: PMV-C110
FCC ID: PAXPMVC110
IC: 3729A-PMVC110
Frequency: 314.98 MHz
Technology tested: proprietary

Antenna: Integrated antenna
Power supply: 3.0 V DC by battery
Temperature range: -35°C to +100°C



This test report is electronically signed and valid without handwriting signature. For verification of the electronic signatures, the public keys can be requested at the testing laboratory.

Test report authorised:	Test performed:
Andreas Luckenbill Radio Communications & EMC	Christoph Schneider Radio Communications & EMC



# Table of contents

1	Table of contents2				
2	Gene	ral information	3		
	2.1	Notes and disclaimer			
	2.2	Application details			
3	Test s	standard/s	3		
4	Test e	environment	2		
5	Test i	tem	2		
	5.1	Additional information			
6	Test I	aboratories sub-contracted			
7		iption of the test setup			
•	7.1	Radiated measurements chamber F			
	7.1 7.2	Radiated measurements chamber C			
	7.3	Conducted measurements			
8	Sumn	nary of measurement results	8		
	8.1	Additional comments	8		
9	Meas	urement results	9		
	9.1	Timing of the transmitter			
	9.2	Field strength of the fundamental			
	9.3	Duration of transmission			
	9.4	Emission bandwidth			
	9.5	Field strength of the harmonics and spurious			
10	Tes	t equipment and ancillaries used for tests	20		
11	Obs	servations	20		
Anı	nex A	Document history	21		
Anı	nex B	Further information	21		
Anr	nex C	Accreditation Certificate	22		



#### 2 General information

#### 2.1 Notes and disclaimer

The test results of this test report relate exclusively to the test item specified in this test report. CETECOM ICT Services GmbH does not assume responsibility for any conclusions and generalizations drawn from the test results with regard to other specimens or samples of the type of the equipment represented by the test item.

The test report may only be reproduced or published in full. Reproduction or publication of extracts from the report requires the prior written approval of CETECOM ICT Services GmbH.

The testing service provided by CETECOM ICT Services GmbH has been rendered under the current "General Terms and Conditions for CETECOM ICT Services GmbH".

CETECOM ICT Services GmbH will not be liable for any loss or damage resulting from false, inaccurate, inappropriate or incomplete product information provided by the customer.

Under no circumstances does the CETECOM ICT Services GmbH test report include any endorsement or warranty regarding the functionality, quality or performance of any other product or service provided.

Under no circumstances does the CETECOM ICT Services GmbH test report include or imply any product or service warranties from CETECOM ICT Services GmbH, including, without limitation, any implied warranties of merchantability, fitness for purpose, or non-infringement, all of which are expressly disclaimed by CETECOM ICT Services GmbH.

All rights and remedies regarding vendor's products and services for which CETECOM ICT Services GmbH has prepared this test report shall be provided by the party offering such products or services and not by CETECOM ICT Services GmbH.

In no case this test report can be considered as a Letter of Approval.

This test report is electronically signed and valid without handwritten signature. For verification of the electronic signatures, the public keys can be requested at the testing laboratory.

This test report replaces the test report with the number 1-9177/15-03-02 and dated 2015-03-18

#### 2.2 Application details

Date of receipt of order: 2015-01-26
Date of receipt of test item: 2015-01-22
Start of test: 2015-02-02
End of test: 2015-02-03

Person(s) present during the test: -/-

#### 3 Test standard/s

Test standard	Date	Test standard description
47 CFR Part 15		Title 47 of the Code of Federal Regulations; Chapter I; Part 15 - Radio frequency devices
RSS - 210 Issue 8	01.12.2010	Spectrum Management and Telecommunications Radio Standards Specification - Licence-exempt Radio Apparatus (All Frequency Bands): Category I Equipment
RSS – 210 Issue 8 Amendment 1	05.02.2015	Licence-Exempt, Low-Power Radio Apparatus Operating in the Television Bands
RSS - Gen Issue 4	01.11.2014	Spectrum Management and Telecommunications Radio Standards Specifications - General Requirements and Information for the Certification of Radio Apparatus



#### 4 Test environment

T<sub>min</sub> -35 °C during low temperature tests

Relative humidity content: 42 %

Barometric pressure: not relevant for this kind of testing

V<sub>nom</sub> 3.0 V DC by battery

Power supply:  $V_{max}$  3.6 V

 $V_{min}$  1.9 V

#### 5 Test item

Kind of test item	:	Tire Pressure Monitoring system Transmitters
Type identification	:	PMV-C110
,,		
S/N serial number	:	PMV-C110 ID:18
HW hardware status	:	TBD
SW software status	:	TBD
Frequency band	:	314.98 MHz
Type of modulation	:	F2D
Number of channels	:	1
Antenna	:	Integrated antenna
Power supply	:	3.0 V DC by battery
Temperature range	:	-35°C to +100 °C

### 5.1 Additional information

The content of the following annexes is defined in the QA. It may be that not all of the listed annexes are necessary for this report, thus some values in between may be missing.

Test setup- and EUT-photos are included in test report: 1-9177/15-03-01\_AnnexA

1-9177/15-03-01\_AnnexB 1-9177/15-03-01\_AnnexC

#### 6 Test laboratories sub-contracted

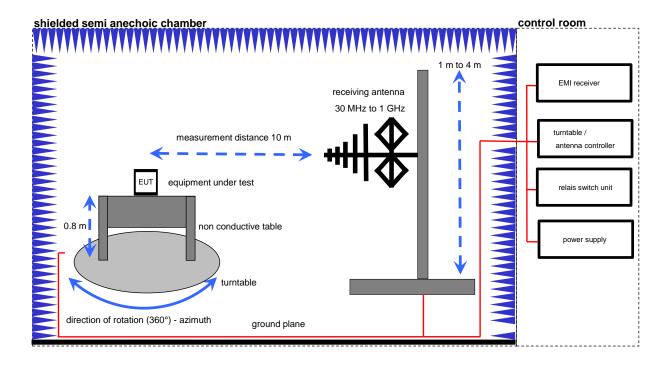
None



### 7 Description of the test setup

#### 7.1 Radiated measurements chamber F

The radiated measurements are performed in vertical and horizontal plane in the frequency range from 9 kHz to 1 GHz in semi-anechoic chambers. The EUT is positioned on a non-conductive support with a height of 0.80 m above a conductive ground plane that covers the whole chamber. The receiving antennas are confirmed with specifications ANSI C63. These antennas can be moved over the height range between 1.0 m and 4.0 m in order to search for maximum field strength emitted from EUT. The measurement distances between EUT and receiving antennas are indicated in the test setups for the various frequency ranges. For each measurement, the EUT is rotated in all three axes until the maximum field strength is received. The wanted and unwanted emissions are received by spectrum analysers where the detector modes and resolution bandwidths over various frequency ranges are set according to requirement ANSI C63.

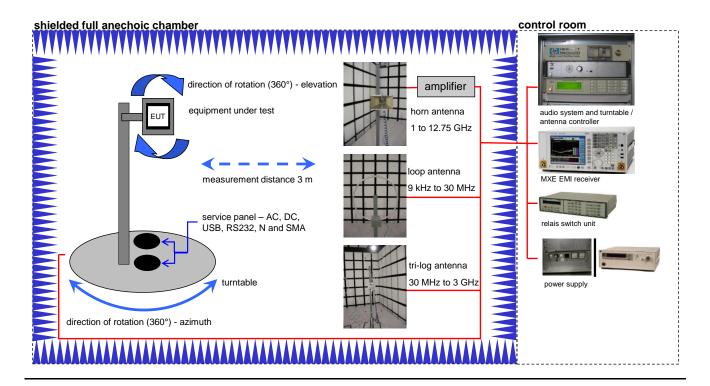


#### **Equipment table:**

Equipment	Туре	Manufacturer	Serial No.	INV. No Cetecom
Software	EMC32 V.  9.12.05	R&S	-/-	-/-
Switch-Unit	3488A	HP Meßtechnik	2719A14505	300000368
DC power supply, 60Vdc, 50A, 1200 W	6032A	HP Meßtechnik	2920A04466	300000580
EMI Test Receiver	ESCI 3	R&S	100083	300003312
Amplifier	JS42-00502650-28-5A	MITEQ	1084532	300003379
Antenna Tower	Model 2175	ETS-LINDGREN	64762	300003745
Positioning Controller	Model 2090	ETS-LINDGREN	64672	300003746
Turntable Interface-Box	Model 105637	ETS-LINDGREN	44583	300003747
TRILOG Broadband Test- Antenna 30 MHz - 3 GHz	VULB9163	Schwarzbeck	295	300003787



### 7.2 Radiated measurements chamber C

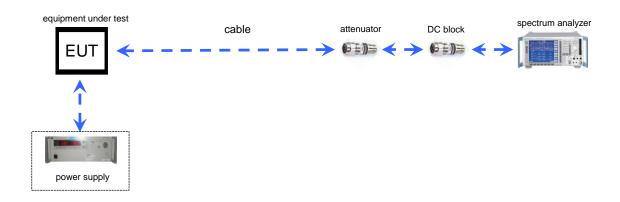


#### **Equipment table:**

Equipment	Туре	Manufacturer	Serial No.	INV. No Cetecom
MXE EMI Receiver 20 Hz bis 26,5 GHz	N9038A	Agilent Technologies	MY51210197	300004405
TRILOG Broadband Test- Antenna 30 MHz - 3 GHz	VULB9163	Schwarzbeck	371	300003854
Band Reject filter	WRCG2400/2483- 2375/2505-50/10SS	Wainwright	11	300003351
Highpass Filter	WHKX7.0/18G-8SS	Wainwright	18	300003789
Double-Ridged Waveguide Horn Antenna 1-18.0GHz	3115	EMCO	8812-3088	300001032
Active Loop Antenna	6502	EMCO	8905-2342	300000256
Anechoic chamber	FAC 3/5m	MWB / TDK	87400/02	300000996
Switch / Control Unit	3488A	HP Meßtechnik	*	300000199
Switch / Control Unit	3488A	HP Meßtechnik	2719A15013	300001156
Isolating Transformer	MPL IEC625 Bus Regeltrenntravo	Erfi	91350	300001155
Three-Way Power Splitter, 50 Ohm	11850C	HP Meßtechnik		300000997
Amplifier	js42-00502650-28-5a	Parzich GMBH	928979	300003143



## 7.3 Conducted measurements



## **Equipment table:**

Equipment	Туре	Manufacturer	Serial No.	INV. No Cetecom
Signal Analyzer 40 GHz	FSV40	R&S	101042	300004517



## 8 Summary of measurement results

Х	No deviations from the technical specifications were ascertained	
	There were deviations from the technical specifications ascertained	
	This test report is only a partial test report. The content and verdict of the performed test cases are listed below.	

TC Identifier	Description	Verdict	Date	Remark
	CFR Part 15			
RF-Testing	RSS 210, Issue 8, Annex 8	See table	2015-03-20	-/-
	RSS-GEN, Issue 4			

Test Specification Clause	Test Case	Temperature Conditions	Power Source Voltages	Pass	Fail	NA	NP	Remark
§ 15.35 (c) RSS-GEN, Issue 4	Timing of the transmitter (Duty cycle correction factor)	Nominal	Nominal					-/-
§ 15.231 (b) § 15.231 (e) RSS-210 Issue 8	Fieldstrength of Fundamental	Nominal	Nominal	$\boxtimes$				-/-
§ 15.231 (a) (3) § 15.231 (e) RSS-210 Issue 8	Duration of transmissions	Nominal	Nominal					-/-
§ 15.231 (a) (1) RSS-210 Issue 8	Switch off time	Nominal	Nominal			$\boxtimes$		Periodically transmission acc. 15.231 (e)
§ 15.231 (c) RSS-210 Issue 8	Emission Bandwidth	Nominal	Nominal					-/-
§ 15.231 (b) § 15.231 (e) § 15.205 RSS-210 Issue 8	Fieldstrength of harmonics and spurious	Nominal	Nominal	$\boxtimes$				-/-
§ 15.231 (b) § 15.231 (e) § 15.109 RSS-GEN, Issue 4	Receiver spurious emissions (radiated)	Nominal	Nominal			$\boxtimes$		No RX part included

Note: NA = Not Applicable; NP = Not Performed

## 8.1 Additional comments

Reference documents: None

Special test descriptions: None

Configuration descriptions: None



#### 9 Measurement results

### 9.1 Timing of the transmitter

#### Measurement:

Measurement parameter		
Detector:	Peak	
Sweep time:	1 s	
Resolution bandwidth:	1 MHz	
Video bandwidth:	1 MHz	
Span:	Zero	
Trace-Mode:	Single Sweep	

#### Limits:

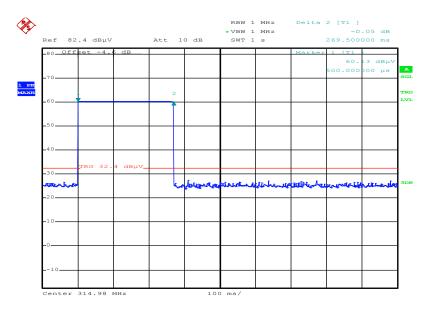
FCC	IC		
Timing of the transmitter			

15.35 (c) Unless otherwise specified, e.g. Section 15.255(b), when the radiated emission limits are expressed in terms of the average value of the emission, and pulsed operation is employed, the measurement field strength shall be determined by averaging over one complete pulse train, including blanking intervals, as long as the pulse train does not exceed 0.1 seconds. As an alternative (provided the transmitter operates for longer than 0.1 seconds) or in cases where the pulse train exceeds 0.1 seconds, the measured field strength shall be determined from the average absolute voltage during a 0.1 second interval during which the field strength is at its maximum value. The exact method of calculating the average field strength shall be submitted with any application for certification or shall be retained in the measurement data file for equipment subject to notification or verification.



### Result:

Plot 1: Transmit burst



Date: 4.FEB.2015 14:55:15

Transmit time (Tx on) = 269.5 ms

The transmitter operates for longer than 0.1 seconds. The duty cycle over the 0.1s of measurement is 100%. Hereby the peak-to-average correction factor is 0dB.



# 9.2 Field strength of the fundamental

## **Measurement:**

Measurement parameter				
Detector:	Peak			
Sweep time:	Auto			
Video bandwidth:	1 MHz			
Resolution bandwidth:	1 MHz			
Span:	5 MHz			
Trace-Mode:	Max hold			

### Limits:

FCC		IC					
Field strength of the fundamental.  In addition to the provisions of Section 15.205 and according 15.231 (e), the field strength of emissions from intentional radiators operated under this Section shall not exceed the following:							
Fundamental Frequency (MHz)	Field strength of (µV/		Measurement distance (m)				
40.66 - 40.70	1,00	0	3				
70-130	500	)	3				
130-174	500 to 3°	1,500(*	3				
174-260	1,50	0	3				
260-470	1,500 to (64 dBµV/m to		3				
Above 470	5,00	00	3				

<sup>\*)</sup>Linear interpolations.

### Result:

TEST CO	ONDITIONS	MAXIMUM POWER (dBµV/m at 3 m distance)			
Fred	quency	MHz	MHz		
Mode		Peak	Average		
T <sub>nom</sub>	V <sub>nom</sub>	63.34 63.34			
Measureme	ent uncertainty	±3dB			

<sup>\*</sup>Value recalculated from Peak-to-Average correction factor described in 9.1



#### 9.3 Duration of transmission

#### **Limits:**

FCC IC

§15.231 (e) Devices operated under the provisions of this paragraph shall be provided with a means for automatically limiting operation so that the duration of each transmission shall not be greater than one second and the silent period between transmissions shall be at least 30 times the duration of the transmission but in no case less than 10 seconds.

### Result (customer declaration):

#### Periodical transmitting:

Transmission length: 269 ms

Minimum silent period: 604 s - 269 ms = 603.731 s

### Pressure alert (at rapid leak):

Transmission length: 282 ms

Minimum silent period: 14.7 s - 282 ms = 14.418 s

#### Pressure alert (at slow leak):

Transmission length: 282 ms

Minimum silent period: 14.7 s - 282 ms = 14.418 s

#### High temperature alert:

Transmission length: 282 ms

Minimum silent period: 14.7 s - 282 ms = 14.418 s



## 9.4 Emission bandwidth

## **Measurement:**

Measurement of the 20 dB bandwidth of the modulated signal

Measurement parameter				
Detector:	Peak			
Sweep time:	Auto			
Resolution bandwidth:	3 kHz			
Video bandwidth:	10 kHz			
Span:	300 kHz			
Trace-Mode:	Max hold			

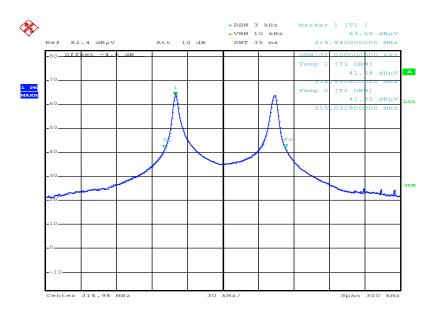
## Limits:

FCC	IC
Emission	bandwidth
The OBW shall be no wider than 0.25% of the	e centre frequency, here maximum 787.5 kHz.

	20 dB bandwidth [kHz]					
channel	314.98 MHz	-/-	-/-			
	102.0					
Measurement uncertainty	± 10 kHz					



### Result:



Date: 4.FEB.2015 14:49:17



## 9.5 Field strength of the harmonics and spurious

### **Measurement:**

Measurement parameter					
Detector:	Peak / Average / Quasi Peak				
Sweep time:	Auto				
Resolution bandwidth:	120 kHz / 1 MHz				
Video bandwidth:	> RBW				
Span:	See plots!				
Trace-Mode:	Max hold				
EUT mode	Unmodulated carrier*				

<sup>(\*</sup>Due to the used frequency modulation (FSK), spurious measurements were performed using the unmodulated carrier with the highest power (lowest carrier in this case).

### **Limits:**

FCC		IC		
	Field strength of	the fundamental.		
			, the field strength of emissions from	
intentional radiators	operated under this	Section shall not	exceed the following:	
Fundamental Frequency (MHz)	Field strength	of spurious	Measurement distance (m)	
	(μV/	m)		
40.66 – 40.70	100	)	3	
70-130	50		3	
130-174	50 to 1	50(*	3	
174-260	150	)	3	
260-470	150 to	500 <sup>(*</sup>	3	
Above 470	500	)	3	

<sup>\*)</sup>Linear interpolations.

The maximum permitted unwanted emission level is 20 dB below the maximum permitted fundamental level. Spurious emissions shall be attenuated to the average (or, alternatively, CISPR quasi-peak) limits shown in this table or to the general limits shown in Section 15.209, whichever limit permits a higher field strength.

FCC		IC			
SUBCLAUSE § 15	5.209				
F	ield strength of the ha	armonics and spu	urious.		
Frequency (MHz)	Field streng	gth (μV/m)	Measurement distance (m)		
0.009 - 0.490	2400/F	(kHz)	300		
0.490 - 1.705	24000/F	(kHz)	30		
1.705 – 30	30	)	30		
30 – 88	10	0	3		
88 – 216	150		3		
216 – 960	20	0	3		
above 960	50	0	3		



### Results:

	EMISSION LIMITATIONS								
f [MHz]	Detector	Limit max. allowed [dBµV/m]	Amplitude of emission [dBµV/m]	Results					
1575	Peak	54 (Average)	49.36	pass					
2205	Peak	54 (Average)	53.98	pass					
2835	5 Peak 54 (Average)		53.66	pass					
				_					

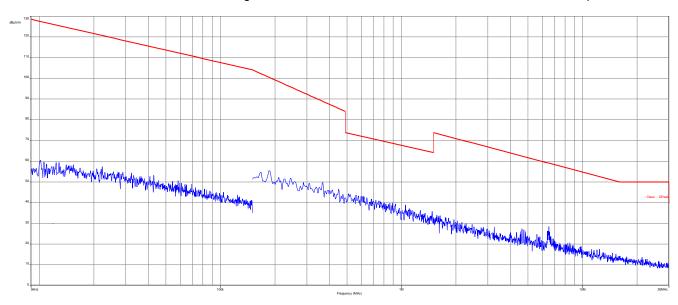
**Verdict:** complies

**Note:** The limit was recalculated with 20 dB / decade (Part 15.31) for all radiated spurious emissions 30 MHz to 1 GHz from 3 meter limit to a 10 meter distance. (40dB/decade for emissions < 30MHz)



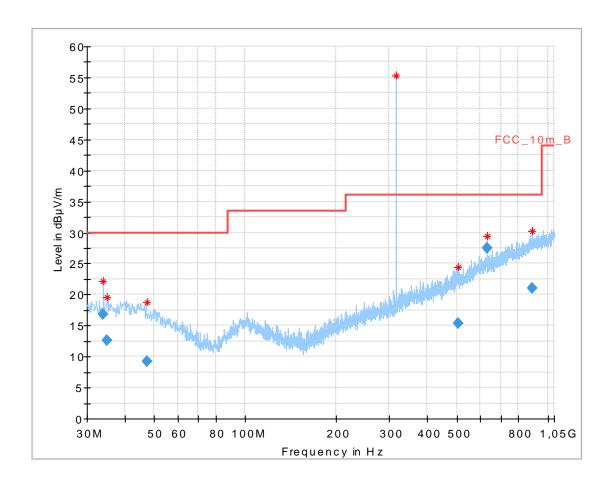
### Plots of the measurements

Plot 1: 9 kHz - 30 MHz; Part 15.209 Magnetics, Measurement distance 3m, valid for all carrier frequencies





Plot 2: 30 MHz - 1000 MHz, valid for all carrier frequencies

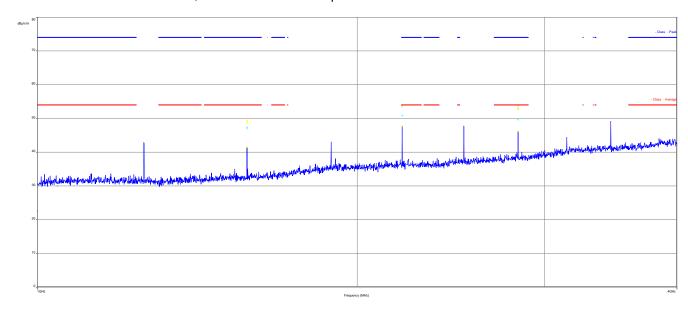


## Final\_Result

Frequency (MHz)	QuasiPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB)
34.003950	16.75	30.00	13.25	1000.0	120.000	172.0	٧	8	13.7
35.025000	12.60	30.00	17.40	1000.0	120.000	171.0	٧	96	13.8
47.356500	9.27	30.00	20.73	1000.0	120.000	351.0	٧	220	13.3
506.055000	15.34	36.00	20.66	1000.0	120.000	273.0	Н	232	18.8
630.033000	27.55	36.00	8.45	1000.0	120.000	103.0	Н	212	21.0
885.897000	21.08	36.00	14.92	1000.0	120.000	275.0	Н	320	23.9



## Plot 3: 1000 MHz - 4000 MHz, valid for all carrier frequencies





### 10 Test equipment and ancillaries used for tests

Typically, the calibrations of the test apparatus are commissioned to and performed by an accredited calibration laboratory. The calibration intervals are determined in accordance with the DIN EN ISO/IEC 17025. In addition to the external calibrations, the laboratory executes comparison measurements with other calibrated test systems or effective verifications. Weekly chamber inspections and range calibrations are performed. Where possible, rfgenerating and signaling equipment as well as measuring receivers and analyzers are connected to an external high-precision 10 MHz reference (GPS-based or rubidium frequency standard).

In order to simplify the identification of the equipment used at some special tests, some items of test equipment and ancillaries can be provided with an identifier or number in the equipment list below (Lab/Item).

No.	Lab / Item	Equipment	Туре	Manufact.	Serial No.	INV. No Cetecom	Kind of Calibration	Last Calibration	Next Calibration
11	n. a.	Double-Ridged Waveguide Horn Antenna 1-18.0GHz	3115	EMCO	8812-3088	300001032	vIKI!	08.05.2013	08.05.2015
2	n.a.	Anechoic chamber	FAC 3/5m	MWB / TDK	87400/02	300000996	ev		
3	n. a.	Switch / Control Unit	3488A	HP Meßtechnik	*	300000199	ne		
4	90	Active Loop Antenna 10 kHz to 30 MHz	6502	Kontron Psychotech	8905-2342	300000256	k	13.06.2013	13.06.2015
5	90	Amplifier	js42-00502650-28- 5a	Parzich GMBH	928979	300003143	ne		
6	90	TRILOG Broadband Test-Antenna 30 MHz - 3 GHz	VULB9163	Schwarzbeck	371	300003854	vIKI!	29.10.2014	29.10.2017
7	90	MXE EMI Receiver 20 Hz to 26,5 GHz	N9038A	Agilent Technologies	MY51210197	300004405	k	13.03.2014	13.03.2015
8	90	4U RF Switch Platform	L4491A	Agilent Technologies	MY50000037	300004509	ne		
9	n. a.	DC Power Supply 0 - 32V	1108-32	Heiden	001802	300001383	Ve	29.01.2014	29.01.2017
10	n. a.	Temperature Test Chamber	T-40/50	CTS GmbH	064023	300003540	Ve	26.09.2013	26.09.2015
11	n. a.	EMI Test Receiver 9 kHz - 3 GHz incl. Preselector	ESPI3	R&S	101713	300004059	k	23.01.2015	22.01.2016
12	45	Switch-Unit	3488A	HP	2719A14505	300000368	g		
13	50	DC power supply, 60Vdc, 50A, 1200 W	6032A	HP	2920A04466	300000580	ne		
14	50	EMI Test Receiver	ESCI 3	R&S	100083	300003312	k	26.01.2015	26.01.2016
15	50	Analyzer-Reference- System (Harmonics and Flicker)	ARS 16/1	SPS	A3509 07/0 0205	300003314	Ve	11.02.2014	11.02.2016
16	50	Antenna Tower	Model 2175	ETS-Lindgren	64762	300003745	izw		
17	50	Positioning Controller	Model 2090	ETS-Lindgren	64672	300003746	izw		
18	50	Turntable Interface- Box	Model 105637	ETS-Lindgren	44583	300003747	izw		
19	50	TRILOG Broadband Test-Antenna 30 MHz - 3 GHz	VULB9163	Schwarzbeck	295	300003787	k	22.04.2014	22.04.2016
20	50	Spectrum-Analyzer	FSU26	R&S	200809	300003874	k	26.01.2015	26.01.2016
21	50	Breitband Doppelsteg- Hornantenne	BBHA9120 B	Schwarzbeck	188	300003896	k	10.06.2013	10.06.2015

#### Agenda: Kind of Calibration

k	calibration / calibrated	EK	limited calibration
ne	not required (k, ev, izw, zw not required)	ZW	cyclical maintenance (external cyclical maintenance)
ev	periodic self verification	izw	internal cyclical maintenance
Ve	long-term stability recognized	g	blocked for accredited testing
vlkl!	Attention: extended calibration interval		
NK!	Attention: not calibrated	*)	next calibration ordered / currently in progress

#### 11 Observations

No observations except those reported with the single test cases have been made.



## Annex A Document history

Version	Applied changes	Date of release
	Initial release	2015-03-18
А	Updated test signal information	2015-03-20

### Annex B Further information

### **Glossary**

AVG - Average

DUT - Device under test

EMC - Electromagnetic Compatibility

EN - European Standard EUT - Equipment under test

ETSI - European Telecommunications Standard Institute

FCC - Federal Communication Commission

FCC ID - Company Identifier at FCC

HW - Hardware

IC - Industry Canada
Inv. No. - Inventory number
N/A - Not applicable
PP - Positive peak
QP - Quasi peak
S/N - Serial number
SW - Software



#### **Accreditation Certificate** Annex C

Front side of certificate

Back side of certificate

((DAkkS

Deutsche Akkreditierungsstelle GmbH

Bellehene gemäß § 8 Absatz 1 AkkStelleG i.V.m. § 1 Absatz 1 AkkStelleGBV Unterzeichnerin der Multilateralen Abkommen von EA, ILAC und IAF zur gegenseitigen Anerkennung

Akkreditierung



Die Deutsche Akkreditierungsstelle GmbH bestätigt hiermit, dass das Prüflaboratorium

CETECOM ICT Services GmbH Untertürkheimer Straße 6-10, 66117 Saarbrücken

die Kompetenz nach DIN EN ISO/IEC 17025:2005 besitzt, Prüfungen in folgenden Bereichen durchzuführen:

Drahtgebundene Kommunikation einschließlich xDSL VoIP und DECT Akustik

Akustik
Fluk einschließlich WLAN
Short Range Devices (SRD)
RFID
WilMax und Richtfunk
Mobiltunk (GSM / DCS, Over the Air (OTA) Performance)
Elektromagnetische Verräglichkeit (EMV) einschließlich Automotive
Forduktsicherheit
SAR und Hearing Aid Compatibility (HAC)
Umweltsimulation

Umweltsimulation Smart Card Terminals Bluetooth Wi-Fi- Services

Die Akkreditierungsurkunde gill nur in Verbindung mit dem Bescheld von 07.03.2014 mit der Akkreditierungsurummer D-PI-17076-01 und ist gillig 17.01.2018. Sie besteht aus diesem Deckblatt, der Rückseite des Deckblatts und der fulgenden Anlage mit Insgesamt 77 Seiten.

Registrierungsnummer der Urkunde: D-PL-12076-01-00

Frankfurt am Main, 07.03.2014

Deutsche Akkreditierungsstelle GmbH

Standort Frankfurt am Main Gartenstra 3e 6 60594 Frankfurt am Main

Standort Braunschweig Bundesallee 100 38116 Braunschweig

Die auszugsweise Veröffentlichung der Akkraditionungsunfunde bedanf der vorherigen schriftlichen Zusämmung der Deutsche Aktraditionungsstelle Gribb (DAIAS), Ausgenammen duwen ist die sepanale Weberzerendetung des Decklattes durch die umsetrig genenner Kunformitätsbewertungsstelle in unweränderter Form.

Die Akkreditierung erfolgte gemöß der Gesetzes über din Akkreditierungsstelle (AkkistelleG) wem 31 Juli 2009 (BGR). I.S. 2025) sowie der Veronfrung (EG) Nr. 205,2026 des Europätischen Parlaments und des Rets vom 9. Juli 2008 (Mare die Verschriften für die Akkrediterung und Marktibervorbung im Zusammenhang mit der Vermanktung von Produkten (Abl. 1.28 von 9. Juli 2008, S. 30). Die DAKKS ist Unterverschrein der Waltilätersien Akkismenn zur gegenzeit Eigen Anseksnung der Europenn en operation für Auszeitstätten (Abl., des International Accreditation Portm (AV) und der International Labertung Accreditation (EA), des International Accreditation Fortm (AV) und der International Labertung Accreditation (EA).

Der aktue le Stund der Miglieukenaft kann folgenden Webseiten enthommen werden: FA: www.curopeum-accred tation.org ILAC www.lach.org IAC www.lach.org

#### Note:

The current certificate including annex is published on our website (see link below) or may be received from CETECOM ICT Services on request.

http://www.cetecom.com/eu/de/cetecom-group/europa/deutschland-saarbruecken/akkreditierungen.html