

TEST REPORT

Test report no.: 1-4220/11-01-03-B



Testing laboratory

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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-12076-01-01
 Area of Testing: Radio/Satellite Communications

Applicant

VALEO Security Systems - DAS
 Europarc - 76 rue Auguste Perret
 F-94046 CRETEIL / FRANCE
 Phone: -/-
 Fax: -/-
 Contact: Jerome Hugot
 e-mail: jerome.hugot@valeo.com
 Phone: +33 1 48 84 57 14

Manufacturer

VALEO Security Systems - DAS
 Europarc - 76 rue Auguste Perret
 F-94046 CRETEIL / FRANCE

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 Low-power Licence-exempt Radiocommunication Devices (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:	Flap Key 3SW; Flap Key 4SW
Model name:	A08TAB
FCC ID:	N5F-A08TAA
IC:	3248A-A08TAA
Frequency:	314.95 MHz
Technology tested:	Modulated carrier
Antenna:	Integrated PCB antenna
Power Supply:	3.6 V DC by cell battery CR2032
Temperature Range:	-20°C to +60 °C



Test report authorised:

2012-04-13 Andreas Luckenbill

Test performed:

2012-04-13 Marco Bertolino
 Testing Manager

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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.

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

2.2 Application details

Date of receipt of order:	2012-02-24
Date of receipt of test item:	2012-03-09
Start of test:	2012-03-09
End of test:	2012-03-13
Person(s) present during the test:	-/-

3 Test standard/s

Test standard	Date	Test standard description
47 CFR Part 15	2010-10	Title 47 of the Code of Federal Regulations; Chapter I Part 15 - Radio frequency devices
RSS - 210 Issue 8	2010-12	Spectrum Management and Telecommunications - Radio Standards Specification Low-power Licence-exempt Radiocommunication Devices (All Frequency Bands): Category I Equipment

4 Test environment

Temperature:	T_{nom}	+22 °C during room temperature tests
	T_{max}	+60 °C during high temperature tests
	T_{min}	-20 °C during low temperature tests
Relative humidity content:		41 %
Barometric pressure:		not relevant for this kind of testing
Power supply:	V_{nom}	3.6 V DC by cell battery CR2032
	V_{max}	4.0 V
	V_{min}	3.2 V

5 Test item

Kind of test item	:	Flap Key 3SW; Flap Key 4SW	
Type identification	:	A08TAB	
S/N serial number	:	Radiated unit (CW):	*42719*
		Radiated unit (modulated carrier):	*42718*
HW hardware status	:	No information available!	
SW software status	:	No information available!	
Frequency [MHz]	:	314.95	
Type of radio transmission	:	Modulated carrier	
Use of frequency spectrum	:		
Channel access method	:	-/-	
Type of modulation	:	OOK	
Number of channels	:	1	
Antenna	:	Integrated PCB antenna	
Power supply	:	3.6 V DC by cell battery CR2032	
Temperature range	:	-20°C to +60 °C	

6 Test laboratories sub-contracted

None

7 Summary of measurement results

- No deviations from the technical specifications were ascertained**
- There were deviations from the technical specifications ascertained

TC Identifier	Description	Verdict	Date	Remark
RF-Testing	CFR Part 15 RSS 210, Issue 8, Annex 1	Passed	2012-04-13	-/-

Test Specification Clause	Test Case	Temperature Conditions	Power Source Voltages	Pass	Fail	NA	NP	Remark
§ 15.35 (c)/ RSS-GEN Issue 2	Timing of the transmitter (Duty cycle correction factor)	Nominal	Nominal	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	complies
§ 15.231 (a) (1)/ RSS-210 Issue 8	Switch off time	Nominal	Nominal	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	complies
§ 15.231 (3) (c)/ RSS-210 Issue 8	Emission Bandwidth	Nominal	Nominal	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	complies
§ 15.231 (b)/ RSS-210 Issue 8	Fieldstrength of Fundamental	Nominal	Nominal	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	complies
§ 15.209/ RSS-210 Issue 8	Fieldstrength of harmonics and spurious	Nominal	Nominal	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	complies
§ 15.209/ RSS-GEN Issue Section 6	Receiver spurious emissions (radiated)	Nominal	Nominal	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	-/-

Note: NA = Not Applicable; NP = Not Performed

8 RF measurements

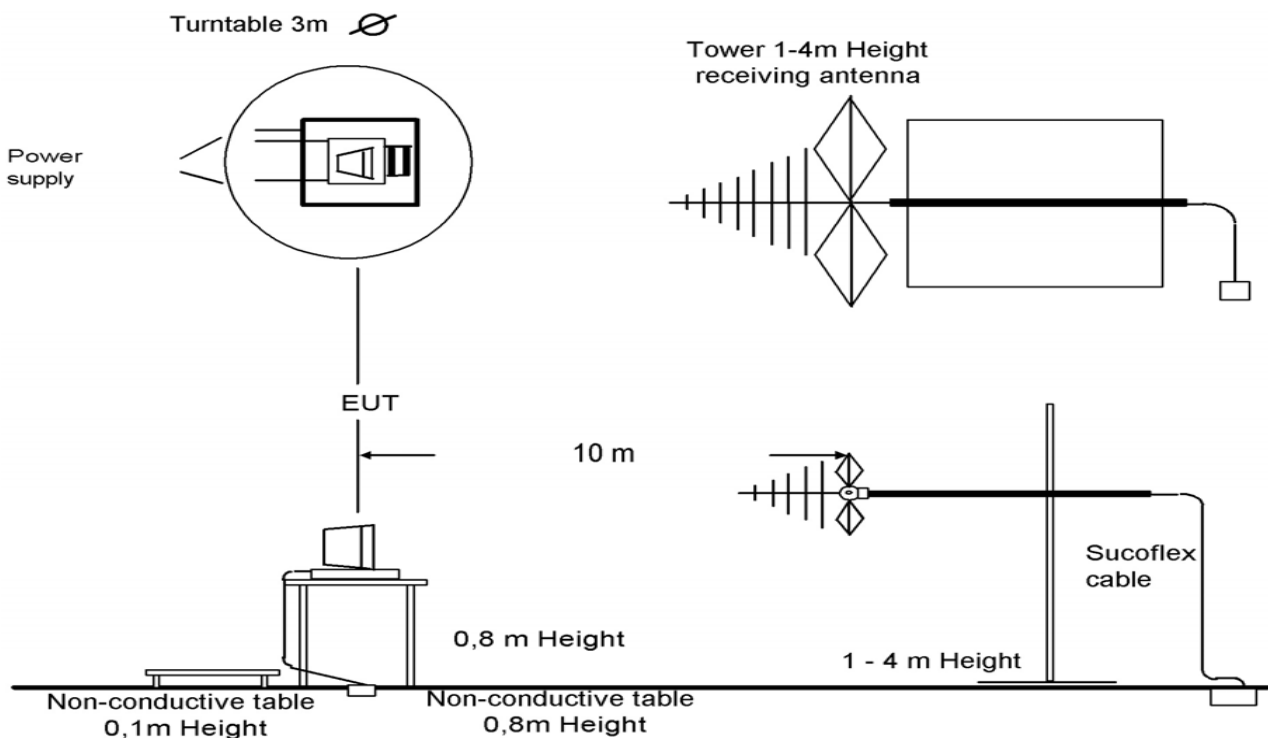
8.1 Description of test setup

8.1.1 Radiated measurements

The radiated measurements are performed in vertical and horizontal plane in the frequency range from 9 kHz to 25 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 C63.2-1996 clause 15 and ANSI C63.4-2009 clause 4.1.5. 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 C63-4-2009 clause 4.2.

Antennas are confirmed with ANSI C63.2-1996 item 15.

Semi anechoic chamber



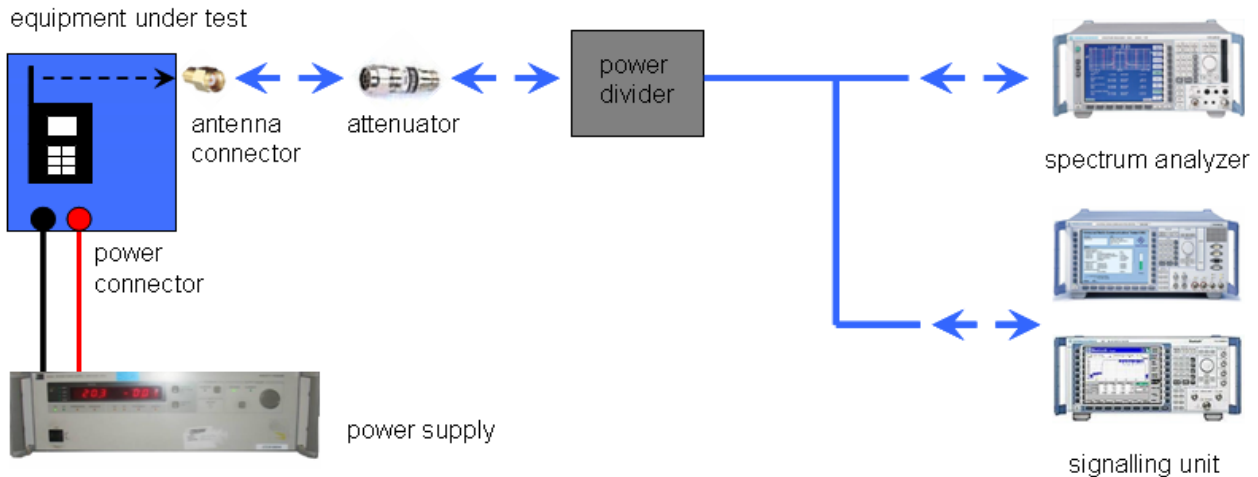
Picture 1: Diagram radiated measurements

9 kHz - 30 MHz:	active loop antenna
30 MHz – 1 GHz:	tri-log antenna
> 1 GHz:	horn antenna

The EUT is powered by an external power supply with nominal voltage. The signalling is performed from outside the chamber with a signalling unit (CMU200 or other) by air link using signalling antenna.

8.1.2 Conducted measurements

The EUT's RF signal is coupled out by the antenna connector which is supplied by the manufacturer. The signal is first 10dB attenuated before it is power divided (~6dB loss per branch). One of the signal paths is connected to the communication base Station (CMU200 or other), the other one is connected to the spectrum analyzer. The specific losses for both signal paths are first checked within a calibration. The measurement readings on the signalling unit/spectrum analyzer are corrected by the specific test set-up loss. The attenuator, power divider, signalling unit and the spectrum analyzer are impedance matched on 50 Ohm.



Picture 2: Diagram conducted measurements

8.2 Additional comments

Reference documents: A08TAA_User Guide.pdf

Special test descriptions: None

Configuration descriptions: None

8.3 RSP100 test report cover sheet / performance test data

Test Report Number	:	1-4220/11-01-03-B
Equipment Model Number	:	A08TAB
Certification Number	:	3248A-A08TA
Manufacturer (complete Address)	:	VALEO Security Systems - DAS Europarc - 76 rue Auguste Perret F-94046 CRETEIL / FRANCE
Tested to radio standards specification no.	:	RSS 210, Issue 8, Annex 1
Open Area Test Site IC No.	:	IC 3462C-1
Frequency Range or fixed frequency	:	314.95 MHz
Field Strength [dB μ V/m] (at which distance)	:	69.36 AVG @ 3 m
Occupied bandwidth (99%-BW) [kHz]	:	21.2
Type of modulation	:	OOK
Emission Designator (TRC-43)	:	21K2A1D
Antenna Information	:	Integrated PCB antenna
Transmitter Spurious (worst case) [dB μ V/m@3m]:	:	43.86 @ 5354.2 MHz
Receiver Spurious (worst case) [dB μ V/m@3m]:	:	No receiver integrated!

ATTESTATION:

DECLARATION OF COMPLIANCE:

I attest that the testing was performed or supervised by me; that the test measurements were made in accordance with the above-mentioned Industry Canada standard(s); and that the equipment identified in this application has been subjected to all the applicable test conditions specified in the Industry Canada standards and all of the requirements of the standard have been met.

Laboratory Manager:

2012-04-13

Marco Bertolino



Date

Name

Signature

9 Measurement results

9.1 Timing of the transmitter

Measurement:

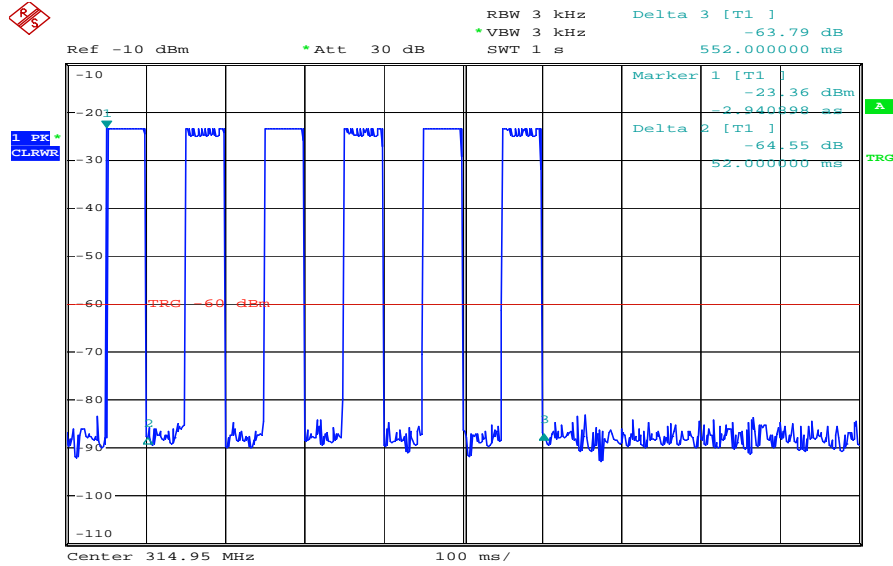
Measurement parameter	
Detector:	Peak
Sweep time:	1 s / 300 ms
Resolution bandwidth:	3 kHz
Video bandwidth:	3 kHz
Span:	Zero span
Trace-Mode:	Clear write / Trigger video / single sweep

Limits:

FCC	IC
CFR Part SUBCLAUSE § 15.35 (c)	RSS-GEN Issue 2 Section 4.5
Timing of the transmitter	
<p>(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.</p>	

Result:

Plot 1: Pulse train



Date: 13.MAR.2012 09:52:27

Manufacturer statement:

Each pulse including 105 single bursts with a transmit period of 238 μ s.

Transmit time (Tx on 1) = 105 * 238 μ s = 24.99 ms

TX complete = 100 ms

Duty cycle = 24.99 % (100 ms range)

The peak-to-average correction factor is calculated with $20 \log [Tx \text{ on} / (Tx \text{ on} + Tx \text{ off})]$.
 Hereby the peak-to-average correction factor is.

peak-to-average correction factor: 12.04 dB

Result: Passed.

9.2 Switch off time

Measurement:

Measurement parameter	
Detector:	Peak
Sweep time:	1 s
Resolution bandwidth:	3 kHz
Video bandwidth:	3 kHz
Span:	Zero span
Trace-Mode:	Clear write / Trigger video / single sweep

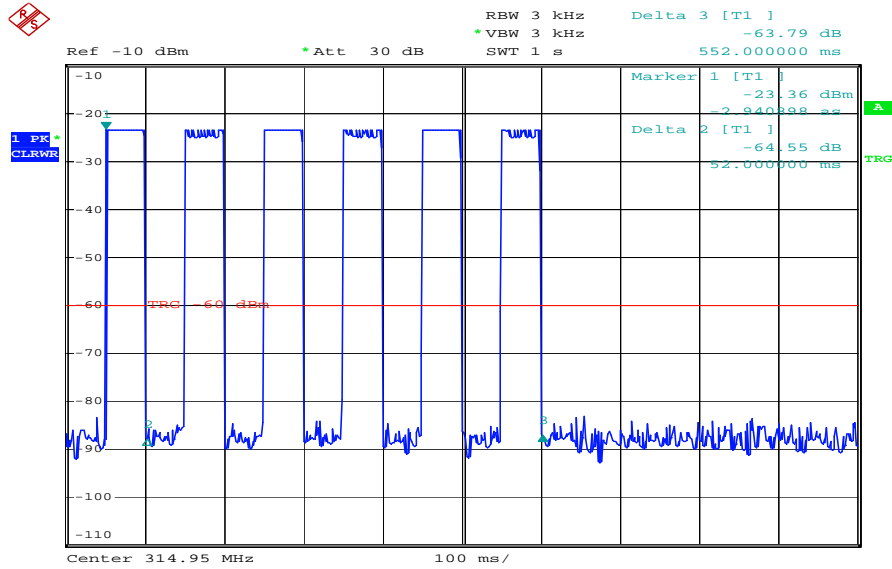
Limits:

FCC	IC
CFR Part SUBCLAUSE § 15.231 (a) (1)	RSS-GEN Issue 2 Section 4.5
Switch off time	
A manually operated transmitter shall employ a switch that will automatically deactivate the transmitter within not more than 5 seconds of being released.	

Results:

Plot 1: Pulse train

The EUT automatically ceases transmission within not more than 552 ms after releasing the switch.



Date: 13.MAR.2012 09:52:27

Result: Passed.

9.3 Emission bandwidth

Measurement:

Measurement of the 20 dB bandwidth of the modulated signal

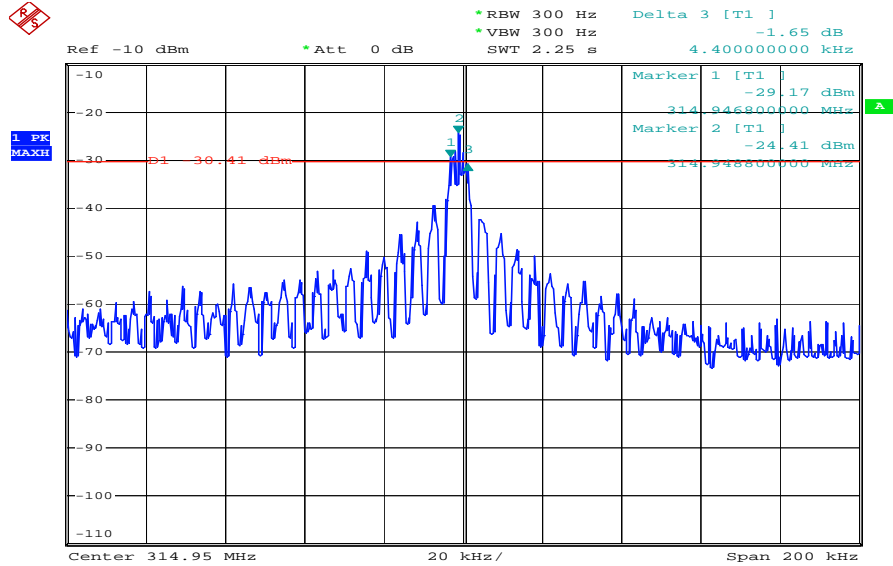
Measurement parameter	
Detector:	Peak
Sweep time:	2.25 s
Resolution bandwidth:	300 Hz
Video bandwidth:	300 Hz
Span:	200 kHz
Trace-Mode:	Max. hold

Limits:

FCC	IC
CFR Part SUBCLAUSE § 15.231 (c)	RSS-210 Issue 8 Section A1.1.3
Emission bandwidth	
The OBW shall not be wider than 0.25% of the centre frequency, here maximum 787.5 kHz.	

Result:

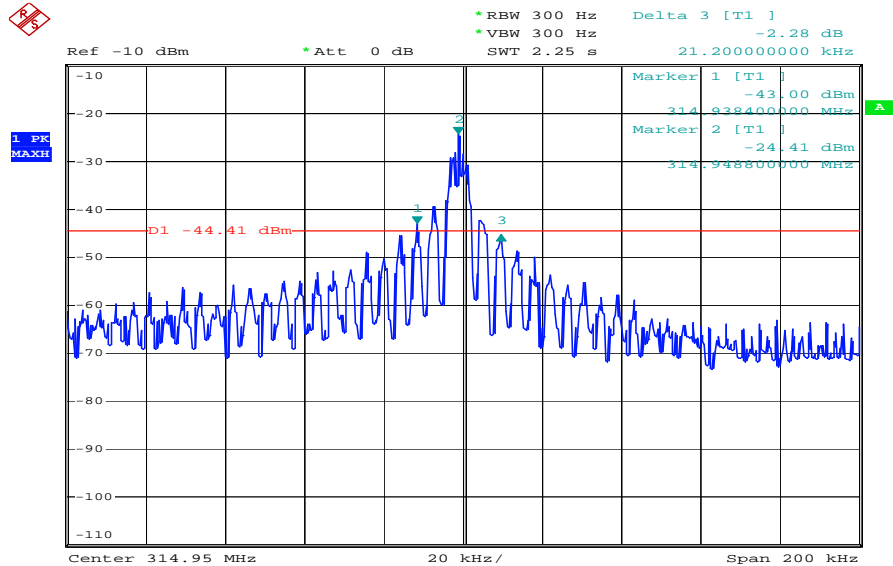
Plot 1: 6 dB bandwidth



Date: 13.MAR.2012 10:08:46

The emission bandwidth at 6 dB is 4.4 kHz

Plot 2: 20 dB bandwidth



Date: 13.MAR.2012 10:10:08

The emission bandwidth at 20 dB is 21.2 kHz

Result: Passed.

9.4 Field strength of the fundamental

Measurement:

Measurement parameter	
Detector:	Peak
Sweep time:	Auto
Video bandwidth:	≤ 3x RBW
Resolution bandwidth:	120 kHz
Trace-Mode:	Max. hold

Limits:

FCC	IC	
CFR Part SUBCLAUSE § 15.231 (b)	RSS-210 Issue 8 Section A1.1.2 / 2.7 Table 4	
Field strength of the fundamental. In addition to the provisions of Section 15.205, the field strength of emissions from intentional radiators operated under this Section shall not exceed the following:		
Fundamental Frequency (MHz)	Field strength of Fundamental (μV/m)	Measurement distance (m)
40.66 – 40.70	2,250	3
70-130	1,250	3
130-174	1,250 to 3,750	3
174-260	3,750	3
260-470	3,750 to 12,500	3
Above 470	12,500	3

Where F is the frequency in MHz, the formulas for calculating the maximum permitted fundamental field strengths are as follows:

- for the band 130-174 MHz, μV/m at 3 meters = $56.81818(F) - 6136.3636$;
- for the band 260-470 MHz, μV/m at 3 meters = $41.6667(F) - 7083.3333$.

Note: $41.6667 * 314.95 \text{ MHz} - 7083.3333 = 6039.59 \Rightarrow 75.62 \text{ dB}\mu\text{V/m @ 3 m}$
 $\Rightarrow 65.62 \text{ dB}\mu\text{V/m @ 10 m}$

Result:

TEST CONDITIONS		MAXIMUM POWER (dB μ V/m at 10 m distance)	
Frequency		314.95 MHz	314.95 MHz
Mode		Peak	Average (DC correction)
T _{nom}	V _{nom}	71.4	59.36
TEST CONDITIONS		MAXIMUM POWER (dB μ V/m at 3 m distance)	
Frequency		314.95 MHz	314.95 MHz
Mode		Peak	Average (DC correction)
T _{nom}	V _{nom}	81.4*	69.36*
Measurement uncertainty		±3dB	

* Value recalculated from Peak-to-Average correction factor described in 6.1

* Re-calculated values 10 m to 3 m distance with 20 dB / decade.

Result: Passed.

9.5 Field strength of the harmonics and spurious

Measurement:

Measurement parameter	
Detector:	Peak
Sweep time:	Auto
Resolution bandwidth:	120 kHz
Video bandwidth:	≤ 3x RBW
Trace-Mode:	Max. hold

Limits:

FCC		IC
CFR Part SUBCLAUSE § 15.231 (b)		RSS-210 Issue 8 Section A1.1.2 / 2.7 Table 4
Field strength of the fundamental. In addition to the provisions of Section 15.205, the field strength of emissions from intentional radiators operated under this Section shall not exceed the following:		
Fundamental Frequency (MHz)	Field strength of spurious (µV/m)	Measurement distance (m)
40.66 – 40.70	225	3
70-130	125	3
130-174	125 to 375	3
174-260	375	3
260-470	375 to 1,250	3
Above 470	1,250	3

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 § 15.209		
Field strength of the harmonics and spurious.		
Frequency (MHz)	Field strength (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	100	3
88 – 216	150	3
216 – 960	200	3
above 960	500	3

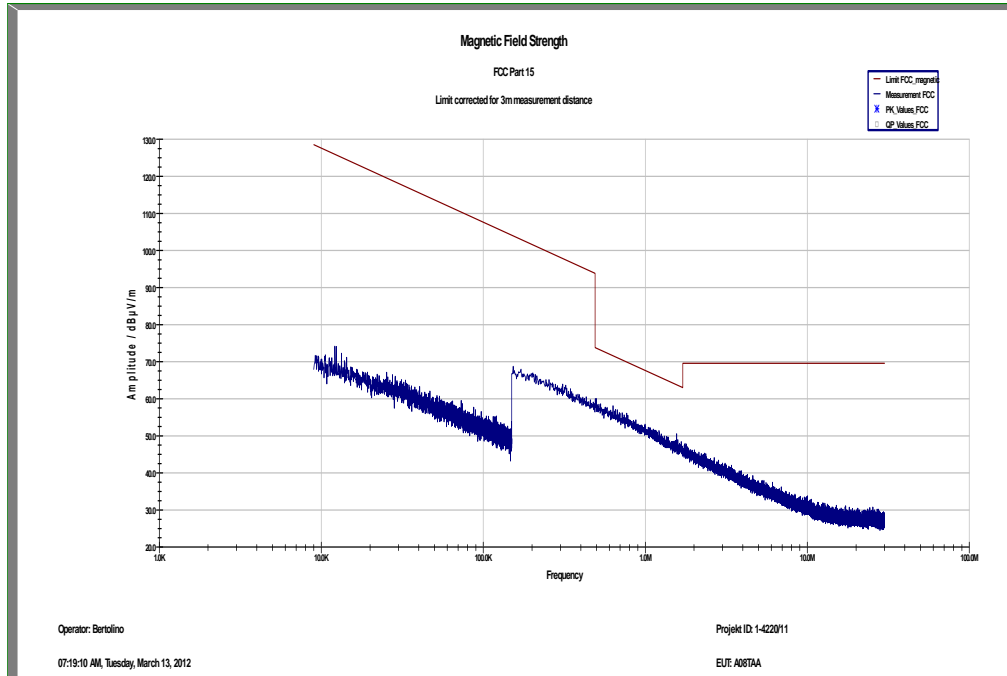
Results:

EMISSION LIMITATIONS				
f [MHz]	Detector	Amplitude of emission [dB μ V/m] Peak @ 10 m	Amplitude of emission [dB μ V/m] AVG @ 10 m	Results
629.9	Peak / pulse AVG	39.0 @ 120 kHz RBW	26.96 @ 120 kHz RBW	passed
944.8	Peak / pulse AVG	47.9 @ 120 kHz RBW	35.86 @ 120 kHz RBW	passed
f [MHz]	Detector	Amplitude of emission [dB μ V/m] Peak @ 3 m	Amplitude of emission [dB μ V/m] AVG @ 3 m	Results
1259.2	Peak / pulse AVG	41.9 @ 1 MHz RBW/VBW	29.86 @ 1 MHz RBW/VBW	passed
1890.1	Peak / pulse AVG	45.7 @ 1 MHz RBW/VBW	33.66 @ 1 MHz RBW/VBW	passed
3464.2	Peak / pulse AVG	52.7 @ 1 MHz RBW/VBW	40.66 @ 1 MHz RBW/VBW	passed
4094.2	Peak / pulse AVG	50.4 @ 1 MHz RBW/VBW	38.36 @ 1 MHz RBW/VBW	passed
4410.1	Peak / pulse AVG	55.6 @ 1 MHz RBW/VBW	43.56 @ 1 MHz RBW/VBW	passed
4724.2	Peak / pulse AVG	55.6 @ 1 MHz RBW/VBW	43.56 @ 1 MHz RBW/VBW	passed
5040.1	Peak / pulse AVG	53.4 @ 1 MHz RBW/VBW	41.36 @ 1 MHz RBW/VBW	passed
5354.2	Peak / pulse AVG	55.9 @ 1 MHz RBW/VBW	43.86 @ 1 MHz RBW/VBW	passed
5669.2	Peak / pulse AVG	53.5 @ 1 MHz RBW/VBW	41.46 @ 1 MHz RBW/VBW	passed
6299.2	Peak / pulse AVG	46.8 @ 1 MHz RBW/VBW	34.76 @ 1 MHz RBW/VBW	passed
6614.2	Peak / pulse AVG	49.3 @ 1 MHz RBW/VBW	37.26 @ 1 MHz RBW/VBW	passed
8189.2	Peak / pulse AVG	43.7 @ 1 MHz RBW/VBW	31.66 @ 1 MHz RBW/VBW	passed

Result: Passed.

Plots of the measurements:

Plot 1: 9 kHz – 30 MHz, Part 15.209 Magnetics, Measurement distance 3m



Plot 2: 30 MHz – 1000 MHz

CETECOM ICT Services GmbH

Common Information

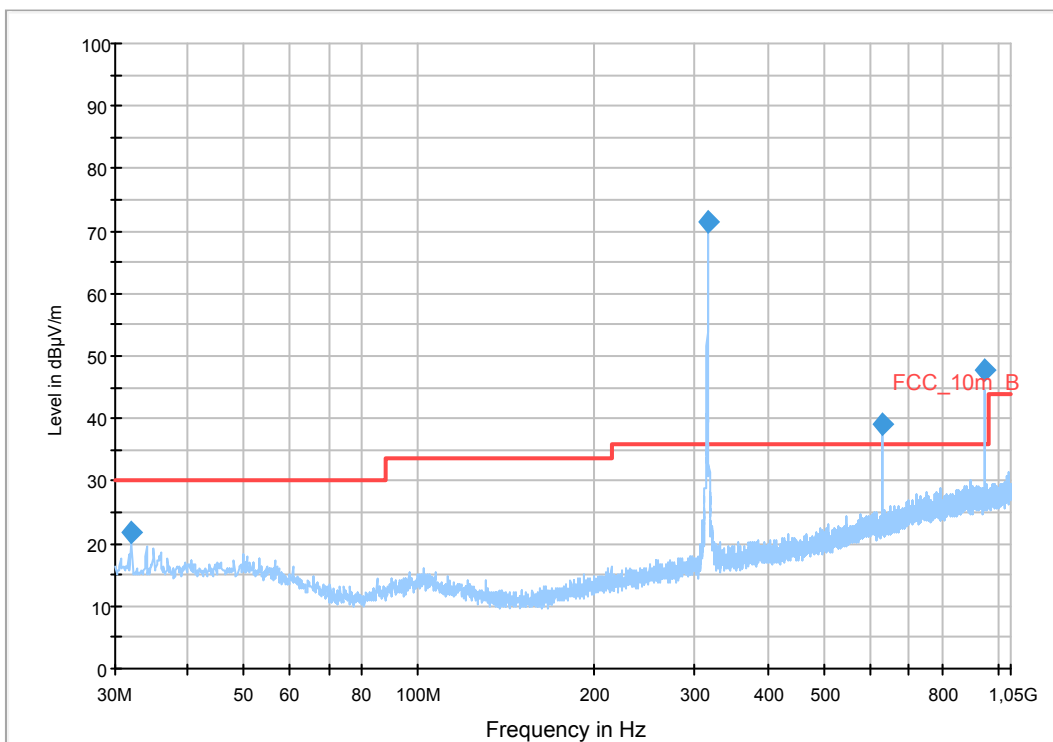
EUT: A08TAB
 Serial Number: CW sample
 Test Description: FCC part 15
 Operating Conditions: cont TX
 Operator Name: Kraus
 Comment: battery powered

Scan Setup: STAN_Fin [EMI radiated]

Hardware Setup: Electric Field (NOS)
 Receiver: [ESCI 3]
 Level Unit: dBµV/m

Subrange 30 MHz - 2 GHz **Step Size** 60 kHz **Detectors** QPK **IF BW** 120 kHz **Meas. Time** 1 s **Preamp** 20 dB

FCC_10m(B)_MOD



Final Result 1

Frequency (MHz)	MaxPeak (dBµV/m)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Polarization	Azimuth (deg)	Corr. (dB)	Margin (dB)	Limit (dBµV/m)	Comment
32.005650	21.7	100.0	120.000	326.0	V	48.0	12.7			
314.950950	71.4	100.0	120.000	100.0	V	284.0	15.0			
629.897850	39.0	100.0	120.000	125.0	V	86.0	21.0			
944.846100	47.9	100.0	120.000	110.0	V	48.0	25.3			

Hardware Setup: EMI radiated\Electric Field (NOS) - [EMI radiated]

Subrange 1	
Frequency Range:	30 MHz - 2 GHz
Receiver:	Receiver [ESC1 3] @ GPIB0 (ADR 20), SN 100083/003, FW 4.42
Signal Path:	without Notch FW 1.0
Antenna:	VULB 9163 SN 9163-295, FW --- Correction Table (vertical): VULP6113 Correction Table (horizontal): VULP6113 Correction Table (vertical): Cable_EN_1GHz (1005) Correction Table (horizontal): Cable_EN_1GHz (1005)
Antenna Tower:	Tower [EMCO 2090 Antenna Tower] @ GPIB0 (ADR 8), FW REV 3.12
Turntable:	Turntable [EMCO Turntable] @ GPIB0 (ADR 9), FW REV 3.12

EMC 32 Version 8.10.00

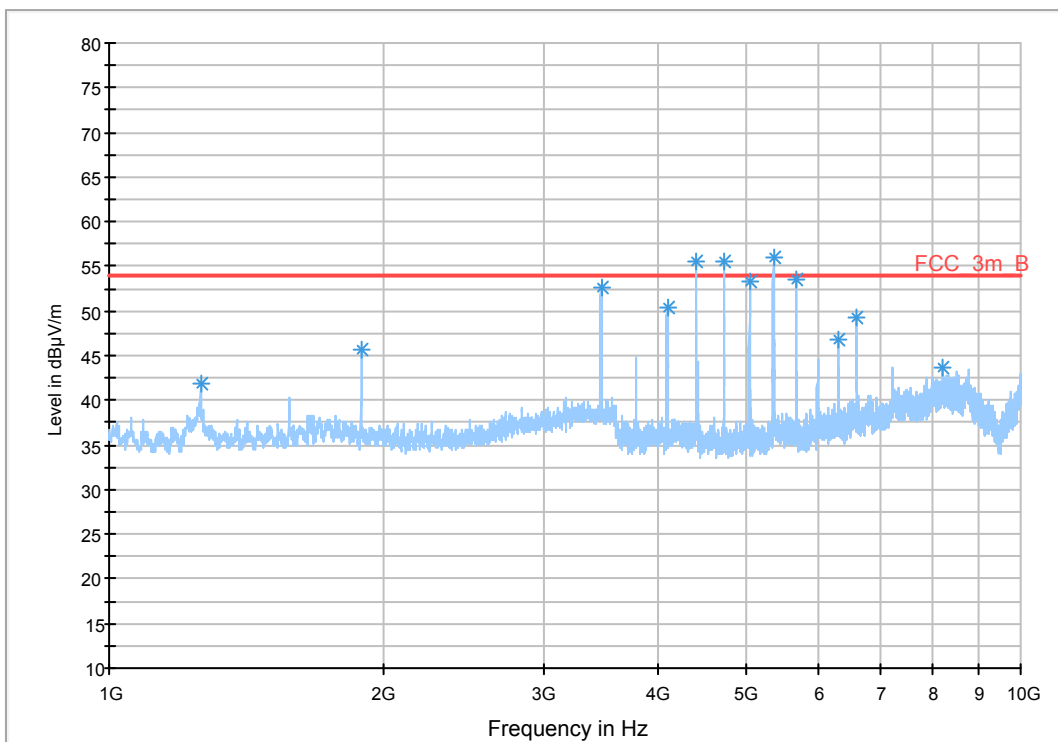
Plot 3: 1 GHz – 10 GHz

CETECOM ICT Services GmbH

Common Information

EUT: A08TAB
 Serial Number: CW sample
 Test Description: FCC part 15
 Operating Conditions: cont TX
 Operator Name: Kraus
 Comment: battery powered

FCC_1_10_B_5m



Data Reduction Result 1 [1]

Frequency (MHz)	MaxPeak-MaxHold (dBµV/m)	Height (cm)	Polarization	Azimuth	Corr. (dB)	Comment
1259.200000	41.9	100.0	V	117.0	-2.7	
1890.100000	45.7	100.0	H	81.0	-4.2	
3464.200000	52.7	100.0	H	228.0	-2.0	
4094.200000	50.4	100.0	H	268.0	-1.9	
4410.100000	55.6	100.0	H	263.0	-1.6	
4724.200000	55.6	100.0	H	207.0	-1.7	
5040.100000	53.4	100.0	H	59.0	-1.1	
5354.200000	55.9	100.0	H	59.0	-0.8	
5669.200000	53.5	100.0	H	53.0	0.0	
6299.200000	46.8	100.0	H	59.0	1.2	
6614.200000	49.3	100.0	V	44.0	2.1	
8189.200000	43.7	100.0	H	42.0	4.3	

Hardware Setup: EMI radiated\BBHA_5m - [EMI radiated]

Subrange 1	
Frequency Range:	1 GHz - 10 GHz
Receiver:	ESU [ESU 26] @ GPIB0 (ADR 17), SN 100037/026, FW 4.43
Signal Path:	1_6_EN FW 1.0 Correction Table: 3_5m
Antenna:	Correction Table: LNA_EN (matix) BBHA 9120 B Correction Table (vertical): BBHA9120 Correction Table (horizontal): BBHA9120
Antenna Tower:	Correction Table (vertical): Cable_Horn_EN (1103) Correction Table (horizontal): Cable_Horn_EN (1103) Generic Tripod [Generic Tripod] @ GPIB0 (ADR 19), SN ?
Turntable:	Turntable [EMCO Turntable] @ GPIB0 (ADR 9), FW REV 3.12

9.6 Receiver spurious emission (radiated)

No receiver integrated!

Measurement not applicable!

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, rf-generating and signalling 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 (Labor/Item).

No.	Lab / Item	Equipment	Type	Manufact.	Serial No.	INV. No Cetecom	Kind of Calibration	Last Calibration	Next Calibration
1	45	Switch-Unit	3488A	HP Meßtechnik	2719A14505	300000368	g		
2	50	DC power supply, 60Vdc, 50A, 1200 W	6032A	HP Meßtechnik	2920A04466	300000580	ne		
3	n. a.	software	SPS_PHE 1.4f	Spitzberger & Spieß	B5981; 5D1081;B597 9	300000210	ne		
4	n. a.	EMI Test Receiver	ESCI 1166.5950. 03	R&S	100083	300003312	k	05.01.2011	05.01.2013
5	n. a.	Analyzer- Reference- System (Harmonics and Flicker)	ARS 16/1	SPS	A3509 07/0 0205	300003314	k	14.07.2011	14.07.2013
6	n. a.	Amplifier	JS42- 00502650- 28-5A	MITEQ	1084532	300003379	ev		
7	n. a.	Antenna Tower	Model 2175	ETS- LINDGREN	64762	300003745	izw		
8	n. a.	Positioning Controller	Model 2090	ETS- LINDGREN	64672	300003746	izw		
9	n. a.	Turntable Interface-Box	Model 105637	ETS- LINDGREN	44583	300003747	izw		
10	n. a.	TRILOG Broadband Test-Antenna 30 MHz - 3 GHz	VULB9163	Schwarzbe ck	295	300003787	k	01.04.2010	01.04.2012
11	n. a.	Spectrum- Analyzer	FSU26	R&S	200809	300003874	k	10.01.2011	10.01.2013
12	n. a.	Active Loop Antenna	6502	EMCO	2210	300001015	ne		
13	n. a.	Anechoic chamber	FAC 3/5m	MWB / TDK	87400/02	300000996		23.03.2009	
14	n. a.	Relais Matrix	PSU	R&S	890167/024	300001168	ne		
15	n. a.	Switch / Control Unit	3488A	HP	2605e08770	300001443	ne		
16	n. a.	TILE-Software Emission	Quantum Change, Modell TILE- ICS/FULL	EMCO	none	300003451	ne		
17	n. a.	PSA Spectrum Analyzer 3 Hz - 26.5 GHz	E4440A	Agilent Technologi es	MY48250080	300003812	k	08.09.2010	08.09.2012
18	n. a.	RF Filter Section 9kHz - 1GHz	N9039A	Agilent Technologi es	MY48260003	300003825	vIKI!	08.09.2010	08.09.2012
19	n. a.	Spectrum Analyzer 9kHz to 30GHz - 140..+30dBm	FSP30	R&S	100886	300003575	k	07.09.2010	07.09.2012

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
vkI!	Attention: extended calibration interval	*	next calibration ordered / currently in progress
NK!	Attention: not calibrated		

11 Observations

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

Annex A Photographs of the test setup

Photo documentation:

Photo 1: chamber F

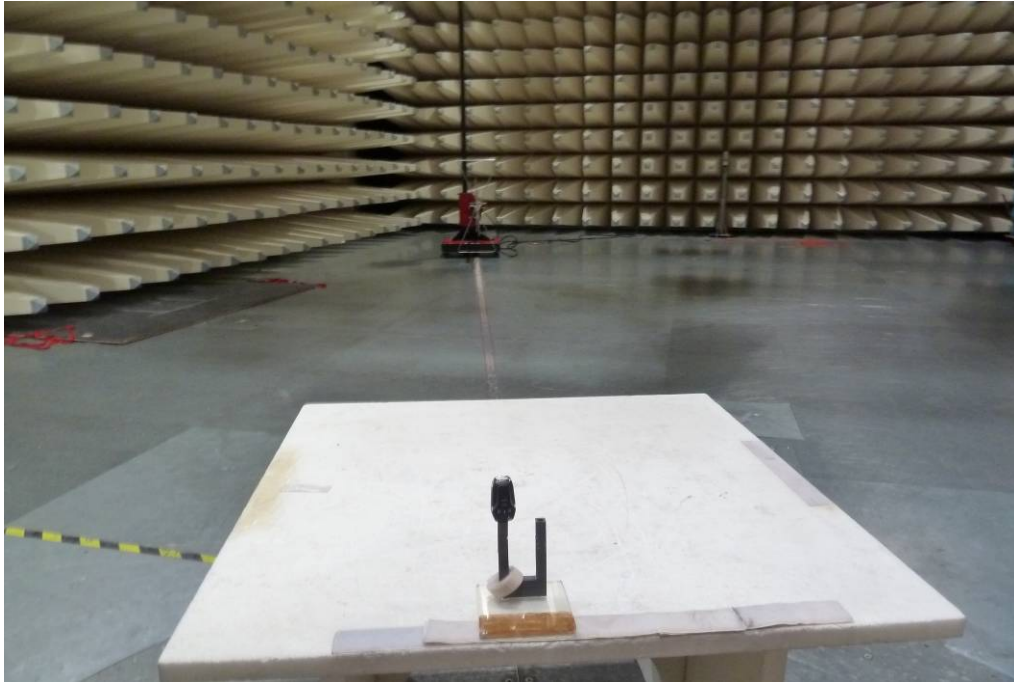


Photo 2: chamber F



Photo 3: chamber C

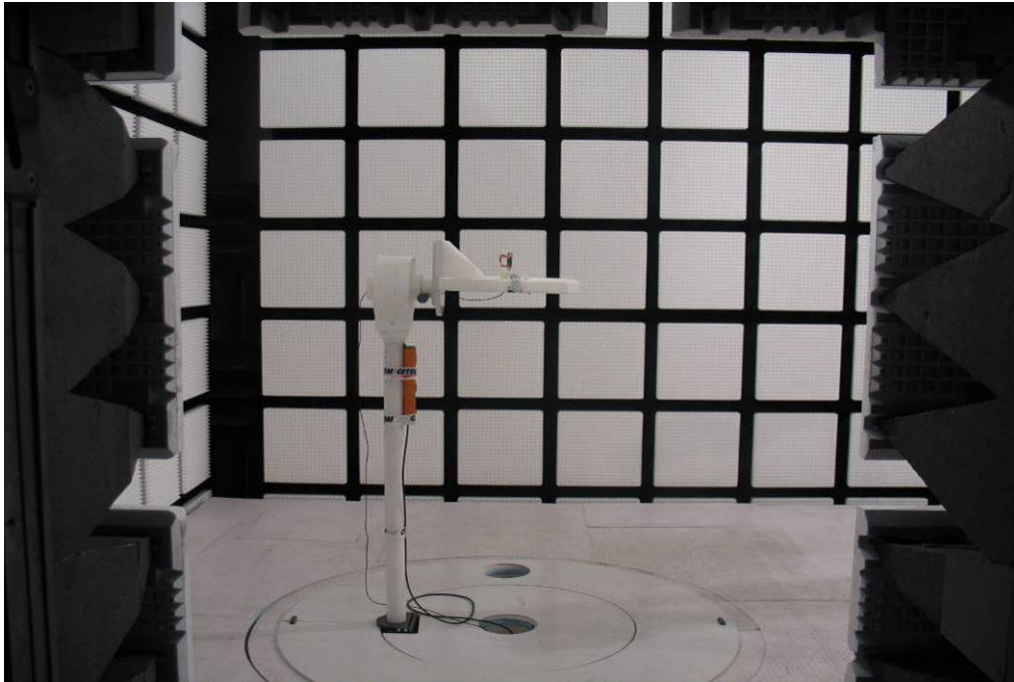


Photo 4: chamber C

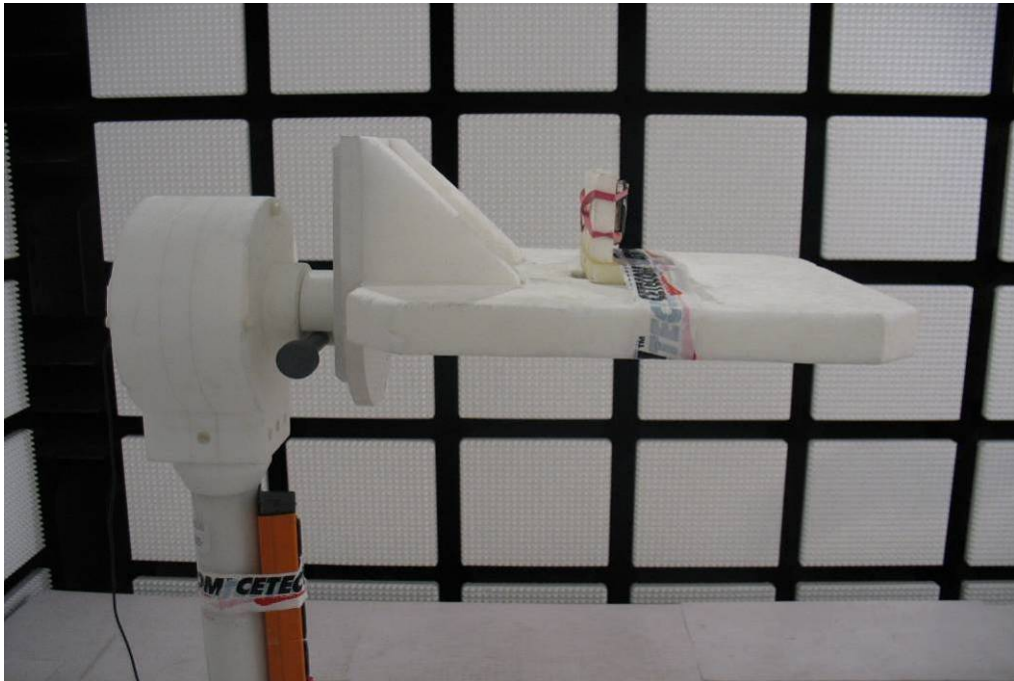


Photo 5: chamber C



Photo 6: chamber C

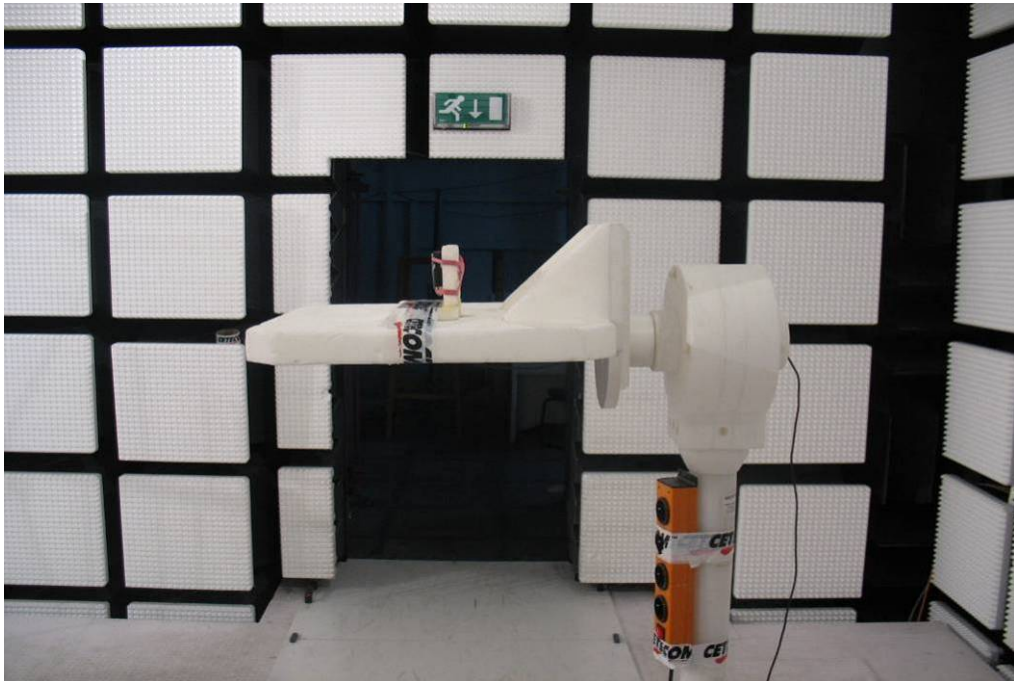


Photo 7: chamber C



Photo 8: chamber C



Photo 9: chamber C



Annex B External photographs of the EUT

Photo documentation:

Photo 1:



Photo 2:



Photo 3:



Photo 4:



Photo 5:



Photo 6:



Photo 7:



Photo 8:



Annex C Internal photographs of the EUT

Photo documentation:

Photo 1:



Photo 2:



Photo 3:

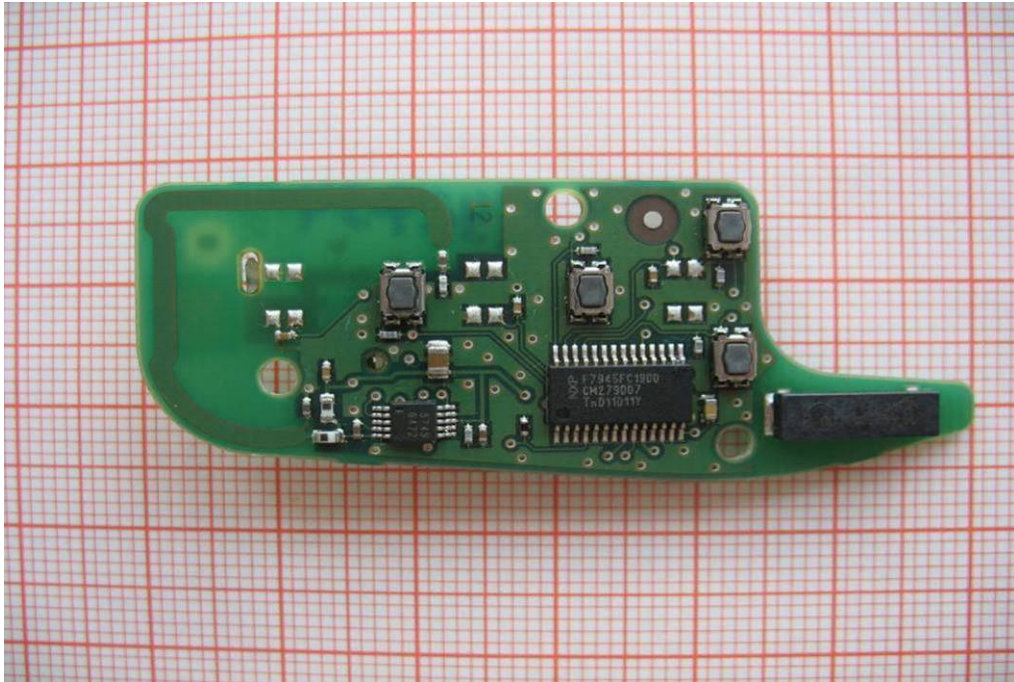


Photo 4:

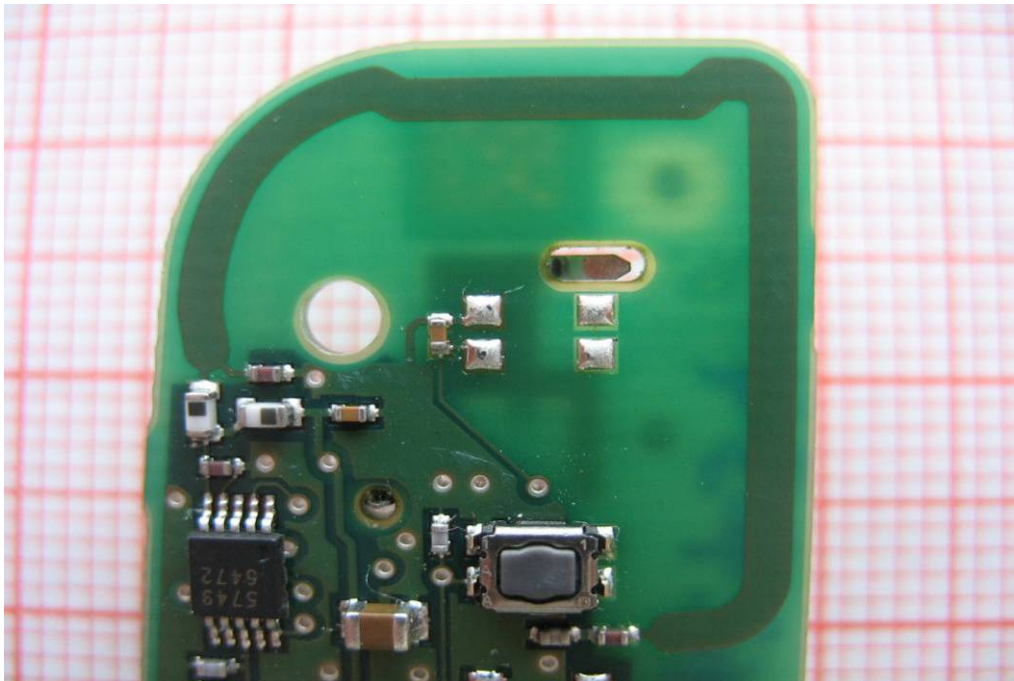
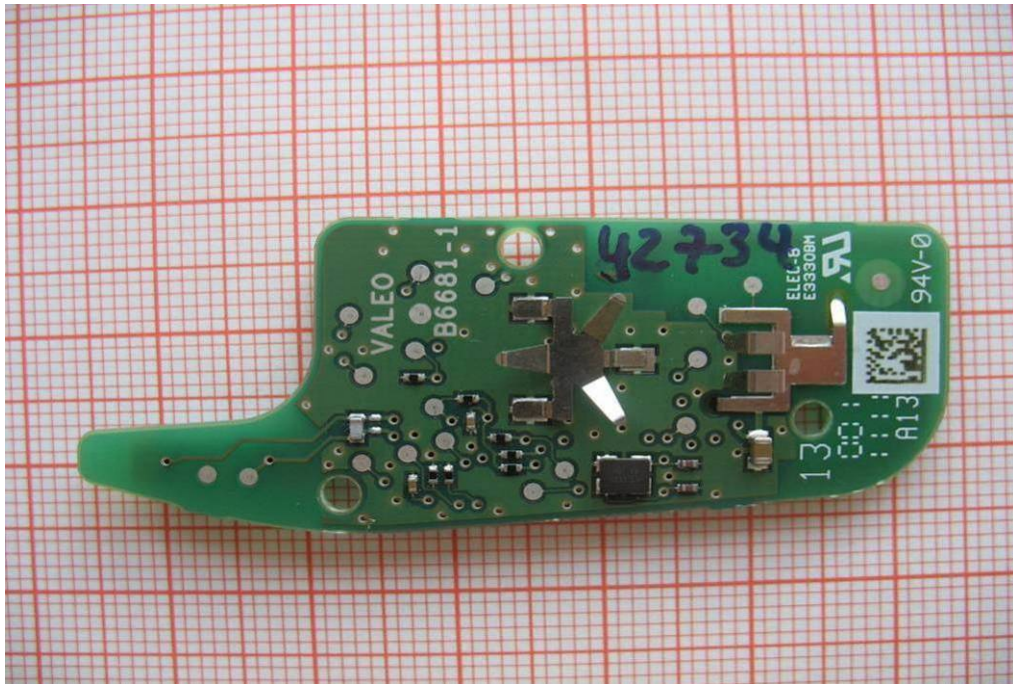


Photo 5:



Annex D Document history

Version	Applied changes	Date of release
1.0	Initial release	2012-03-20
-A	Added field strength @ 3 m / Added manufacture information according to timing of the transmitter and re-calculation of the carrier and harmonics.	2012-04-13
-B	New model name	2012-04-13

Annex E 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

Annex F Accreditation Certificate



Deutsche Akkreditierungsstelle GmbH
German Accreditation Body

Entrusted according to Section 8 subsection 1 AkkStelleG in connection with Section 1 subsection 1 AkkStelleGBV
Signatory to the Multilateral Agreements of EA, ILAC and IAF for Mutual Recognition

Accreditation



The Deutsche Akkreditierungsstelle GmbH (German Accreditation Body) attests that the testing laboratory

CETECOM ICT Services GmbH
Untertürkheimer Straße 6-10
66117 Saarbrücken

is competent under the terms of DIN EN ISO/IEC 17025:2005 to carry out tests in the following fields:

- Wired communications and DECT
- Acoustic
- Radio
- Shirt Range Devices (SRD)
- RFID
- WiMax and Richtfunk
- Mobile radio (GSM / DCS), Over the Air (OTA) Performance
- Electromagnetic Compatibility (EMC) incl. Automotive
- Product safety
- SAR and Hearing Aid Compatibility (HAC)
- Environmental simulation
- Smart Card Terminals
- Bluetooth
- Wi-Fi-Services

The accreditation certificate shall only apply in connection with the notice of accreditation of 13.04.2011 with the accreditation number D-PL-12076-01 and is valid until 03.09.2014. It comprises the cover sheet, the reverse side of the cover sheet and the following annex with a total of 82 pages.

Registration number of the certificate: **D-PL-12076-01-01**

Frankfurt am Main, 13.04.2011

Dipl.-Ing. (FH) Ralf Egner
Head of Division 2

This document is a translation. The definitive version is the original German accreditation certificate.
www.dakks.de

Deutsche Akkreditierungsstelle GmbH

Office Berlin
Spittelmarkt 10
10117 Berlin

Office Frankfurt am Main
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Office Braunschweig
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38116 Braunschweig

The publication of extracts of the accreditation certificate is subject to the prior written approval by Deutsche Akkreditierungsstelle GmbH (DAkkS). Exempted is the unchanged form of separate disseminations of the cover sheet by the conformity assessment body mentioned overleaf.

No impression shall be made that the accreditation also extends to fields beyond the scope of accreditation attested by DAkkS.

The accreditation was granted pursuant to the Act on the Accreditation Body (AkkStelleG) of 31 July 2009 (Federal Law Gazette I p. 2625) and the Regulation (EC) No 765/2008 of the European Parliament and of the Council of 9 July 2008 setting out the requirements for accreditation and market surveillance relating to the marketing of products (Official Journal of the European Union L 218 of 9 July 2008; p. 30). DAkkS is a signatory to the Multilateral Agreements for Mutual Recognition of the European co-operation for Accreditation (EA), International Accreditation Forum (IAF) and International Laboratory Accreditation Cooperation (ILAC). The signatories to these agreements recognise each other's accreditations.

The up-to-date state of membership can be retrieved from the following websites:
EA: www.european-accreditation.org
ILAC: www.ilac.org
IAF: www.iaf.eu

Front side of certificate

Back side of certificate

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/fileadmin/de/CETECOM_D_Saarbruecken/accreditations_Jan_2010/DAKKS_Akkredi_Urk_EN17025-En_incl_Annex.pdf