



Accredited testing-laboratory

DAR registration number: DGA-PL-176/94-D1

**Federal Motor Transport Authority (KBA)
DAR registration number: KBA-P 00070-97**

Recognized by the Federal Communications Commission

Anechoic chamber registration no.: 90462 (FCC)

Anechoic chamber registration no.: 3462C-1 (IC)

Certification ID: DE 0001

Accreditation ID: DE 0002

Accredited Bluetooth® Test Facility (BQTF)

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Test report no. : 1-2147-01-05/10-B
Type identification : A05IAA
Applicant : VALEO Security Systems - DAS
FCC ID : N5F-A05IAA
IC Certification No : 3248A- A05IAA
Test standards : 47 CFR Part 15.209
RSS - 210 Issue 7

Table of contents

1	General information.....	3
1.1	Notes	3
1.2	Testing laboratory	4
1.3	Details of applicant	4
1.4	Application details	4
2	Test standard/s	5
3	Technical tests	6
3.1	Details of manufacturer.....	6
3.2	Test Item	6
3.3	Test Item (Additional EUT information For IC Canada (appendix 2)	7
3.4	Extreme conditions testing values.....	8
3.5	EUT Description	8
4	Statement of Compliance.....	9
4.1	Summary of Measurement Results.....	9
4.2	CFR 47 Part 15 Unintentional Radiators.....	9
5	Measurements and results	10
6	FCC Part 15 Subpart C	11
6.1	Timing of the transmitter.....	11
6.2	Field strength of the fundamental.....	12
6.3	Field strength of the harmonics and the spurious.....	13
6.4	Frequency tolerance	15
6.5	Conducted Limits	15
7	Test equipment and ancillaries used for tests.....	16
8	Photographs of the Test Set-up.....	18
9	Photographs of the EUT	20

1 General information

1.1 Notes

The test results of this test report relate exclusively to the test item specified in 3.1.1. The CETECOM ICT Services GmbH does not assume responsibility for any conclusions and generalisations 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 the CETECOM ICT Services GmbH.

Test laboratory manager:

2010-07-29 **Daniel Muyunga**

Date Name Signature

Technical responsibility for area of testing:

2010-07-29 **Michael Berg** **i.A. Jakob Reschke**

Date Name Signature

1.2 Testing laboratory

CETECOM ICT Services GmbH**Untertürkheimer Straße 6 - 10****66117 Saarbrücken****Germany****Phone: + 49 681 5 98 - 0****Fax: + 49 681 5 98 - 9075****e-mail: info@ICT.cetecom.de****Internet: http://www.cetecom-ict.de**

State of accreditation: The test laboratory (area of testing) is accredited according to
DIN EN ISO/IEC 17025

DAR registration number: DGA-PL-176/94-D1

Accredited by: Federal Motor Transport Authority (KBA)

DAR registration number: KBA-P 00070-97

Testing location, if different from CETECOM ICT Services GmbH:

Name :**Street :****Town :****Country :****Phone :****Fax :**

1.3 Details of applicant

Name:	VALEO Security Systems - DAS
Street:	Europarc - 42, rue Le Corbusier
Town:	F-94042 CRETEIL
Country:	France
Telephone:	-/-
Fax:	-/-
Contact:	Bruno Liagre
E-mail:	bruno.liagre@valeo.com
Telephone:	+33-156715459

1.4 Application details

Date of receipt of order:	2010-04-22
Date of receipt of test item:	2010-04-26
Date of start test:	2010-04-26
Date of end test:	2010-04-29
Persons(s) who have been present during the test:	-/-

2 Test standard/s

47 CFR Part 15	2008-07	Title 47 of the Code of Federal Regulations; Chapter I- Federal Communications Commission subchapter A - general, Part 15-Radio frequency devices
RSS - 210 Issue 7	2007-06	Spectrum Management and Telecommunications - Radio Standards Specification Low-power Licence-exempt Radiocommunication Devices (All Frequency Bands): Category I Equipment

3 Technical tests

3.1 Details of manufacturer

Name:	VALEO Security Systems - DAS
Street:	Europarc - 42, rue Le Corbusier
Town:	F-94042 CRETEIL
Country:	France

3.2 Test Item

Kind of test item	:	Immobilizer Receiver
Type identification	:	A05IAA
S/N serial number	:	Transmitter: 40848, 40852 Receiver: 40848, 40852
HW hardware status	:	Transmitter: 3.0 Receiver: 3.0
SW software status	:	Transmitter: 1.0 RF_On, 1.0 RF+LED Receiver: 1.0 RF_On, 1.0 RF+LED
Frequency Range (or fixed frequency)	:	Transmitter : 125 kHz Receiver: 313.8 MHz
Type of Modulation	:	Transmitter : ASK Receiver: FSK
Number of channels	:	1
Antenna	:	Transmitter : Integral loop antenna Receiver: Integral antenna
Power Supply	:	12 V DC vehicle battery in normal use, by power supply during tests
Temperature Range	:	-20 °C to +55 °C

FCC ID:

N5F- A05IAA

IC:

3248A- A05IAA

3.3 Test Item (Additional EUT information For IC Canada (appendix 2))

IC Registration Number:	3248A- A05IAA
Model Name:	A05IAA
Details of Manufacturer	
Company	: Same as applicant
Address	:
City	:
Country	:
Details of EUT	
S/N serial number	: Transmitter: 40848, 40852 Receiver: 40848, 40852
HW hardware status	: Transmitter: 3.0 Receiver: 3.0
SW software status	: Transmitter: 1.0 RF_On, 1.0 RF+LED Receiver: 1.0 RF_On, 1.0 RF+LED
Tested to Radio Standards Specification (RSS) No.:	RSS-210 Issue 7
Open Area Test Site Industry Canada Number	: IC 3462C-1
Frequency Range (or fixed frequency)	: Transmitter : 125 kHz Receiver: 313.8 MHz
Field Strength (at what distance)	: -7.64 dBμV/m at 300m
Occupied Bandwidth (99% BW)	: 18.6 kHz
Type of Modulation	: Transmitter : ASK Receiver: FSK
Emission designator	: Transmitter : 18K6A1D Receiver: 300KF1D (declared by manufacturer)
Number of channels	: 1
Antenna information	: Transmitter : Integral loop antenna Receiver: Integral antenna
Transmitter Spurious (worst case)	: 70.5 dBμV/m at 3m
Receiver Spurious (worst case)	: 22.7 dBμV/m at 10 m
Power Supply	: 12 V DC by power supply or Pb vehicle battery (normal use)
Temperature Range	: -20 °C to +55 °C

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

Signature:

Date: 2010-07-29

Test engineer: Daniel Muyunga

3.4 Extreme conditions testing values

Description	Shortcut	Unit	Value
Nominal Temperature	T _{nom}	°C	+23
Nominal Humidity	H _{nom}	%	39
Nominal Power Source	V _{nom}	V	12

Type of power source: **DC by power supply or Pb vehicle battery (normal use)**

3.5 EUT Description

The Immobilizer Receiver is an electronic security device designed to perform two main functions:

1- Transmitter in order to authorise starting and to prevent unauthorised starting of the vehicle by transponder authentication key (enable ENGINE CONTROL UNIT). This happens through a Low Frequency communication at 125 KHz.

2- Receiver to dialogue with RF key in order to operate remote control via Body Control Unit. The Immobilizer Receiver is de facto a Radio Frequency Receiver as well and a RF Key can be used as a Remote Control using radio waves at 313.8 MHz. When the user operates a button, a unidirectional radio message is emitted and received by the Immobilizer Receiver.

4 Statement of Compliance

4.1 Summary of Measurement Results

- ☒ No deviations from the technical specifications were ascertained
- ☐ There were deviations from the technical specifications ascertained

4.2 CFR 47 Part 15 Unintentional Radiators

Section in this Report	Test Name / Section FCC Part 15	Test Name / Section RSS 210	applicable	Verdict
4.1	§ 15.35 (c) Timing of the transmitter (Duty cycle correction factor)	6.5 Pulsed Operation	No	
4.2	§ 15.225 (a) FIELDSTRENGTH OF FUNDAMENTAL	Annex 2.6	YES	pass
4.3	§ 15.225 (b,c,d) FIELDSTRENGTH OF HARMONICS and SPURIOUS	Annex 2.6	YES	pass
4.4	§ 15.225 (e) Frequency tolerance	Annex 2.6	NO	
4.5	§ 15.107 / 15.207 Conducted Limits	Section 6.6 , 7.4	NO	

5 Measurements and results

The radiated measurements are performed in vertical and horizontal plane in the frequency range from 9 kHz to 1 GHz in semi-anechoic chambers or free field. 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 conform with specifications ANSI C63.2-1996 clause 15 and ANSI C63.4-2003 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 set-ups 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 C63.4-2003 clause 4.2.

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

9 kHz - 30 MHz: Quasi Peak measurement, 9kHz Bandwidth, active loop antenna.

30 MHz - 1GHz: Quasi Peak measurement, 120KHz Bandwidth, Trilog antenna

>1GHz: Average, RBW 1MHz, VBW 10 Hz, wave guide horn

All measurement settings are according to FCC 15.209 and 15.207

6 FCC Part 15 Subpart C

6.1 Timing of the transmitter

Not applicable

Reference

FCC:	CFR Part SUBCLAUSE § 15.35 (c)
IC:	RSS 210, Issue 7 6.5 PULSED OPERATION

Limits: § 15.35 (c)

(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.

6.2 Field strength of the fundamental

Reference

FCC:	CFR Part SUBCLAUSE § 15.209 (a)
IC:	RSS 210, Annex 2.6

Measured at 10m distance

TEST CONDITIONS		MAXIMUM FIELD STENGTH	
Frequency		125.2 kHz	
		Measured at 3 m distance	Calculated for 300 m distance
$T_{nom} = +23\text{ °C}$	$V_{nom} = 12\text{ V DC}$	72.36 dB $\mu\text{V/m}$ (4149.54 $\mu\text{V/m}$)	-7.64 dB$\mu\text{V/m}$ (0.414954 $\mu\text{V/m}$)
Measurement uncertainty		.±3dB	

RBW/VBW: 200 Hz up to 150 kHz, 9 kHz up to 30 MHz, 120 kHz up to 1 GHz

Limits

SUBCLAUSE § 15.209 (a)

Fundamental Frequency (MHz)	Field strength of Fundamental ($\mu\text{V/m}$)	Measurement Distance (meters)
0.009 – 0.490	2400 / F (kHz) (19.2 $\mu\text{V/m}$)	300
0.490 – 1.705	24000 / F (kHz)	30
1.705 – 30.0	30 (29.5 dB $\mu\text{V/m}$)	30
30.0 – 88.0	100 (40 dB $\mu\text{V/m}$)	3
88 – 216	150 (43.5 dB $\mu\text{V/m}$)	3
216 – 960	200 (46 dB $\mu\text{V/m}$)	3

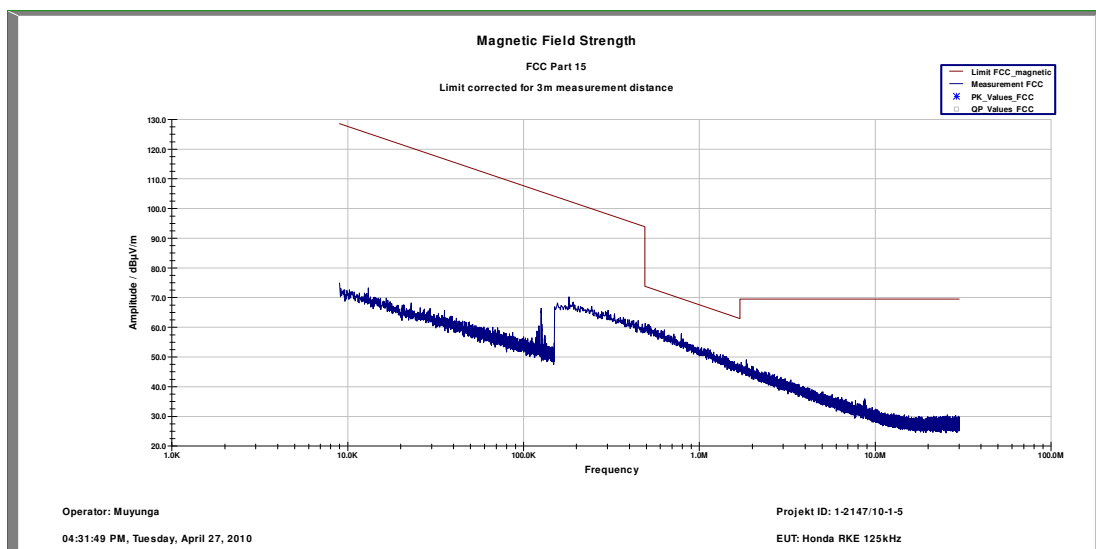
RBW/VBW : 200 Hz up to 150 kHz, 9 kHz up to 30 MHz, 120 kHz up to 1 GHz

6.3 Field strength of the harmonics and the spurious

Reference

FCC:	CFR Part SUBCLAUSE § 15.209 (a)
IC:	RSS 210, Annex 2.6

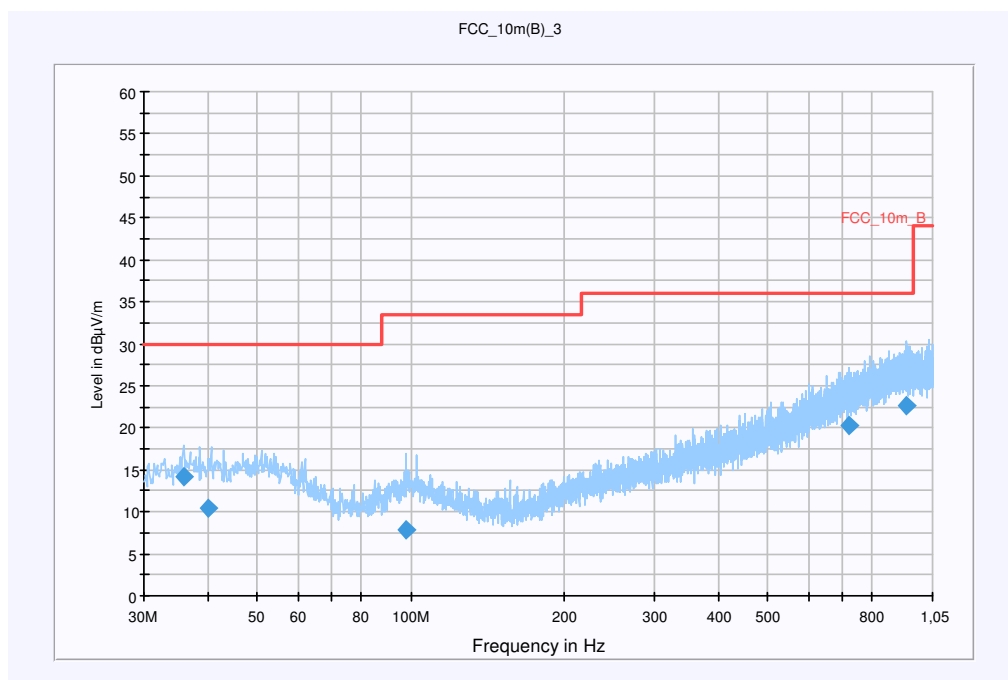
Plot 1: Part 15.209 Magnetics



(to convert the measuring distance from 10m to 30m and 30 to 300m a correction factor from 40 dB/decade was used. Here we use 60 dB to recalculate from 10m to 300m)

Plot 2: 30 MHz – 1000 MHz

Receiver active at 313.8 MHz



EMISSION LIMITATIONS				
f (MHz)	amplitude of emission (dB μ V/m)	limit max. allowed field strength	Distance (Meter)	results
No critical emissions detected			300	
			30	
Measurement uncertainty		± 3 dB		

Limits**SUBCLAUSE § 15.209 (a)**

Fundamental Frequency (MHz)	Field strength of Fundamental (μ V/m)	Measurement Distance (meters)
0.009 – 0.490	2400 / F (kHz)	300
0.490 – 1.705	24000 / F (kHz)	30
1.705 – 30.0	30 (29.5 dB μ V/m)	30
30.0 – 88.0	100 (40 dB μ v/m)	3
88 – 216	150 (43.5 dB μ V/m)	3
216 – 960	200 (46 dB μ V/m)	3

RBW/VBW : 200 Hz up to 150 kHz, 9 kHz up to 30 MHz, 120 kHz up to 1 GHz

6.4 Frequency tolerance

Not performed

Reference

FCC:	CFR Part SUBCLAUSE § 15.225 (e)
IC:	RSS 210, Annex 2.6

Limits

SUBCLAUSE § 15.225

The frequency tolerance of the carrier signal shall be maintained within +/- 0.01% of the operating frequency over a temperature variation of -20 degrees to +50 degrees C at normal supply voltage, and for a variation in the primary supply voltage from 85% to 115% of the rated supply voltage at a temperature of 20 degrees C.

6.5 Conducted Limits

Not applicable

Reference

FCC:	CFR Part 15.207, 15.107
IC:	RSS 210, Issue 7, Section 6.6 , 7.4

Limits: § 15.107 / 15.207

Frequency of Emission (MHz)	Conducted Limit (dBµV)	
	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

7 Test equipment and ancillaries used for tests

In order to simplify the identification of the equipment used at each specific test, each item of test equipment and ancillaries are provided with an identifier or number in the equipment list below.

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).

No.	Labor / Item	Equipment	Type	Manufact.	Serial No.	INV. No Cetecom	Kal. Art	Last Calibration	Next Calibration
1	45	Switch-Unit	3488A	HP Meßtechnik	2719A14505	300000368	g		
2	50	Netzgerät	6032A	HP Meßtechnik	2920A04466	300000580	k	06.01.2009	06.01.2011
4	n. a.	EMI-Messempfänger	ESCI 1166.5950.03	R&S	100083	300003312	k	08.01.2010	08.01.2012
5	n. a.	Amplifier	JS42-00502650-28-5A	MITEQ	1084532	300003379	ev		
6	n. a.	Antennenmast	Model 2175	ETS-LINDGREN	64762	300003745	izw		
7	n. a.	Steuergerät	Model 2090	ETS-LINDGREN	64672	300003746	izw		
8	n. a.	Interface-Box für Drehtisch	Model 105637	ETS-LINDGREN	44583	300003747	izw		
9	n. a.	Breitbandantenne	VULB9163	Schwarzbeck	295	300003787	k	01.04.2010	01.04.2012
10	n. a.	Spectrum-Analyzer	FSU26	R&S	200809	300003874	k	08.01.2010	08.01.2012
11	n. a.	System Autoranging DC power supply, 60Vdc, 50A, 1200 W	6032A	HP Meßtechnik	2818A03450	300001040	Ve	08.01.2009	08.01.2012
12	n. a.	PowerAttenuator	8325	Byrd	1530	300001595			
13	n. a.	Double-Ridged Waveguide Horn Antenna 1-26.5GHz	3115	EMCO	8812-3088	300001032	viKI!	05.03.2009	05.03.2011
14	n. a.	Active Loop Antenna	6502	EMCO	2210	300001015	ne		
15	n. a.	Anechoic chamber		MWB	87400/02	300000996			
16	Spec.A. 2_2e	System rack for EMI measurement solution	85900	HP I.V.	*	300000222	ne		
17	9	Artificial Mains 9 kHz to 30 MHz, 4 x 25 Ampere	ESH3-Z5	R&S	828576/020	300001210	Ve	06.01.2010	06.01.2012
18	n. a.	Relais Matrix	3488A	HP Meßtechnik	2719A15013	300001156	ne		
19	n. a.	Relais Matrix	PSU	R&S	890167/024	300001168	ne		
20	n. a.	Isolating Transformer	RT5A	Grundig	9242	300001263	ne		
21	n. a.	Three-Way Power Splitter, 50 Ohm	11850C	HP Meßtechnik		300000997	ne		
22	n. a.	Switch / Control Unit	3488A	HP	2605e08770	300001443	ne		
23	n. a.	Band Reject filter	WRCG1855/1910-1835/1925-40/8SS	Wainwright	7	300003350	ev		
24	n. a.	Band Reject filter	WRCG2400/2483-2375/2505-50/10SS	Wainwright	11	300003351	ev		
25	n. a.	TILE-Software Emission	Quantum Change, Modell TILE-ICS/FULL	EMCO	none	300003451	ne		
26	n. a.	Highpass Filter	WHKX2.9/18G-12SS	Wainwright	1	300003492	ev		
27	n. a.	Highpass Filter	WHK1.1/15G-10SS	Wainwright	3	300003255	ev		
28	n. a.	Highpass Filter	WHKX7.0/18G-8SS	Wainwright	18	300003789	ne		
29	n. a.	PSA Spectrum Analyzer 3 Hz - 26.5 GHz	E4440A	Agilent Vertr. Bad Hom	MY48250080	300003812	k	05.08.2008	05.08.2010
30	n. a.	MXG Microwave Analog Signal Generator	N5183A	Agilent Vertr. Bad Hom	MY47420220	300003813	k	06.08.2008	06.08.2010

31	n. a.	RF Filter Section 9kHz - 1GHz	N9039A	Agilent Vertr. Bad Hom	MY48260003	300003825	vIKI!	19.08.2008	19.08.2010
32	n. a.	TRILOG Super Breitband Antenne	VULB9163	Schwarzbeck	371	300003854	vIKI!	17.12.2008	17.12.2010
33	n. a.	Signal Analyzer 20Hz-26,5GHz- 150 to + 30 DBM	FSiQ26	R&S	835111/0004	300002678	Ve	06.01.2009	06.01.2011

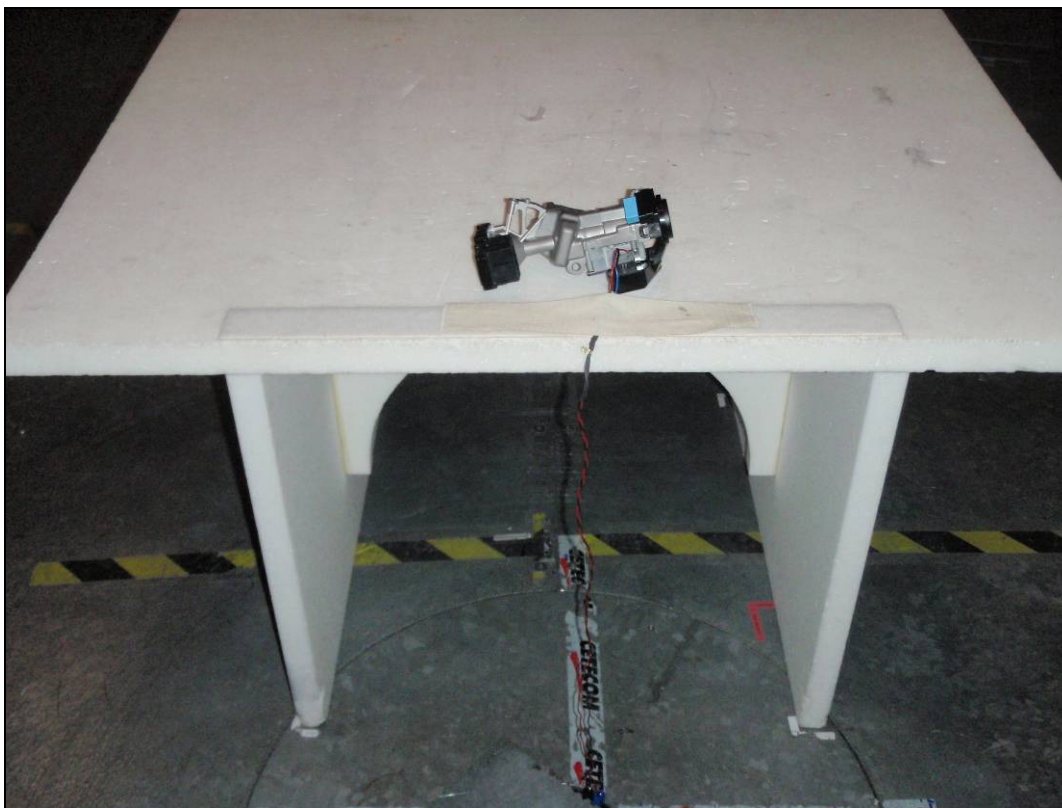
8 Photographs of the Test Set-up

Photo documentation

Photo 1: EUT mounted on Lock cylinder



Photo 2: EUT mounted on Lock cylinder



9 Photographs of the EUT

Photo documentation

Photo 2: EUT



Photo 3: EUT



Photo 4: EUT



Photo 5: EUT



Photo 6: EUT



Photo 7: EUT



Photo 8:

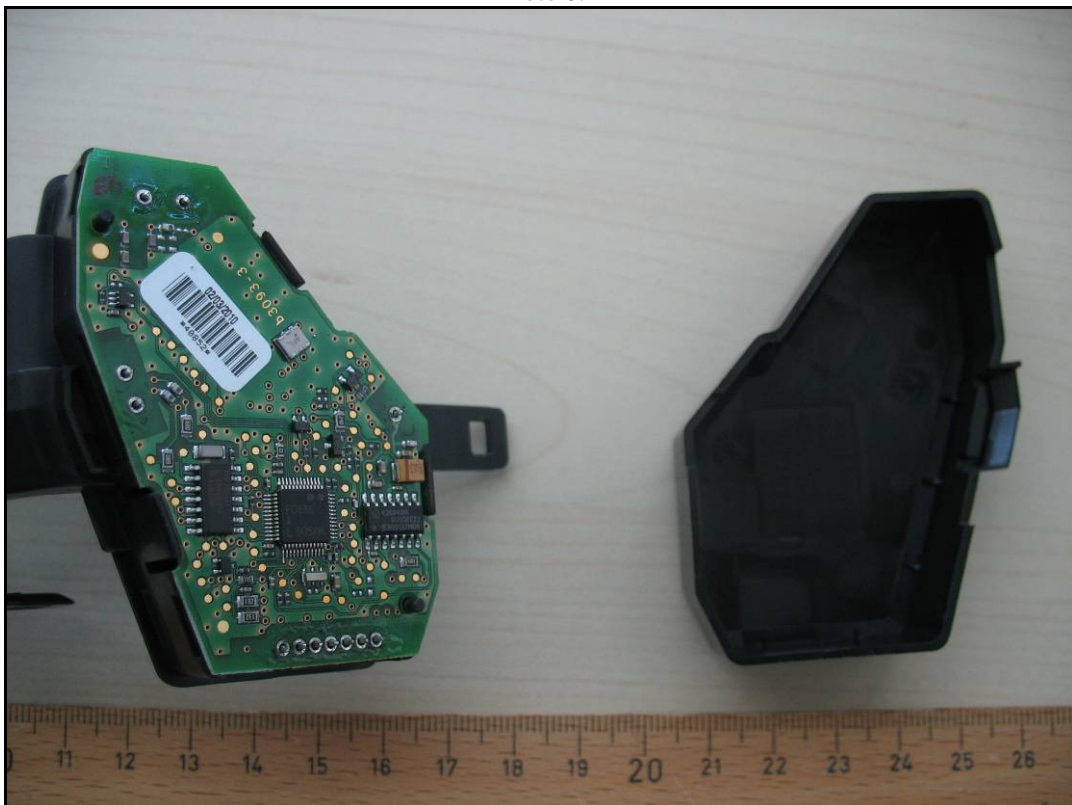


Photo 9: EUT

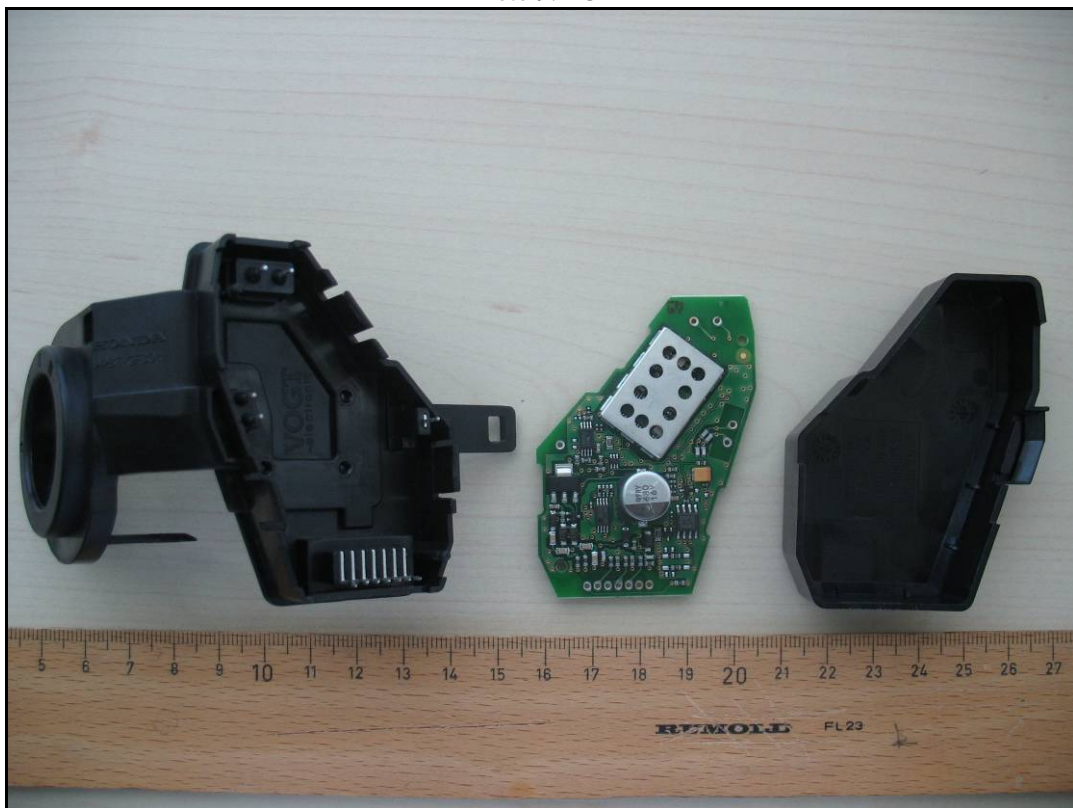


Photo 10: EUT

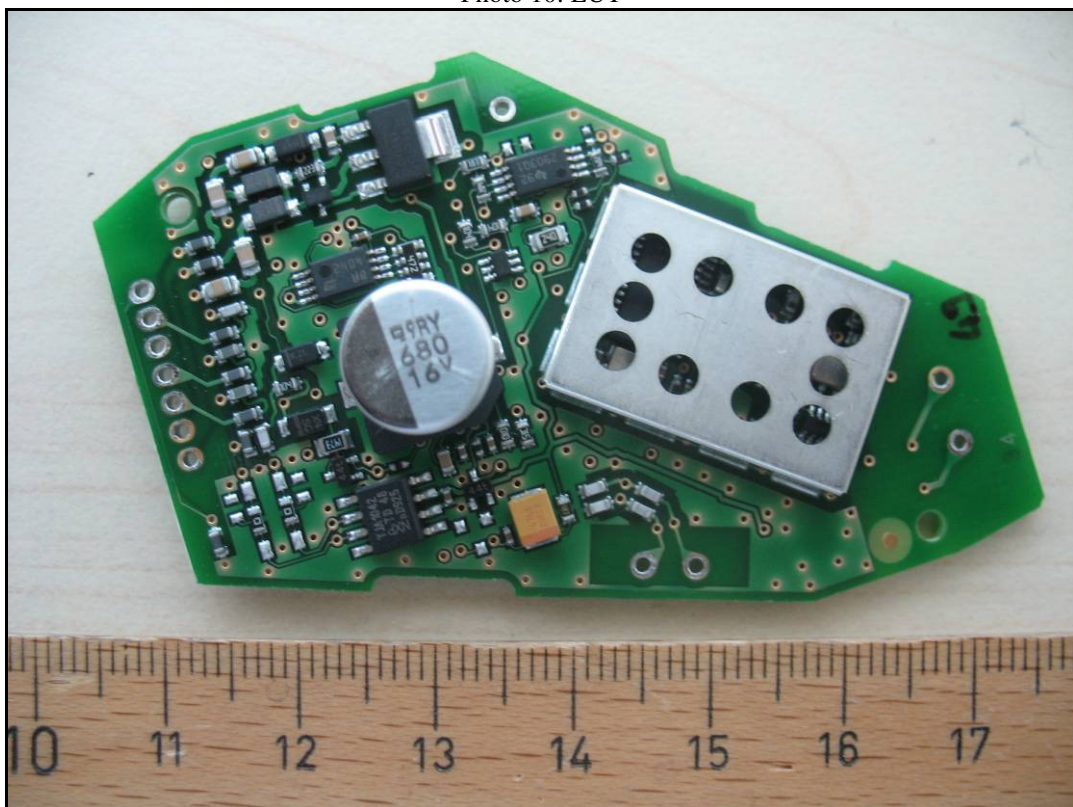


Photo 11: EUT

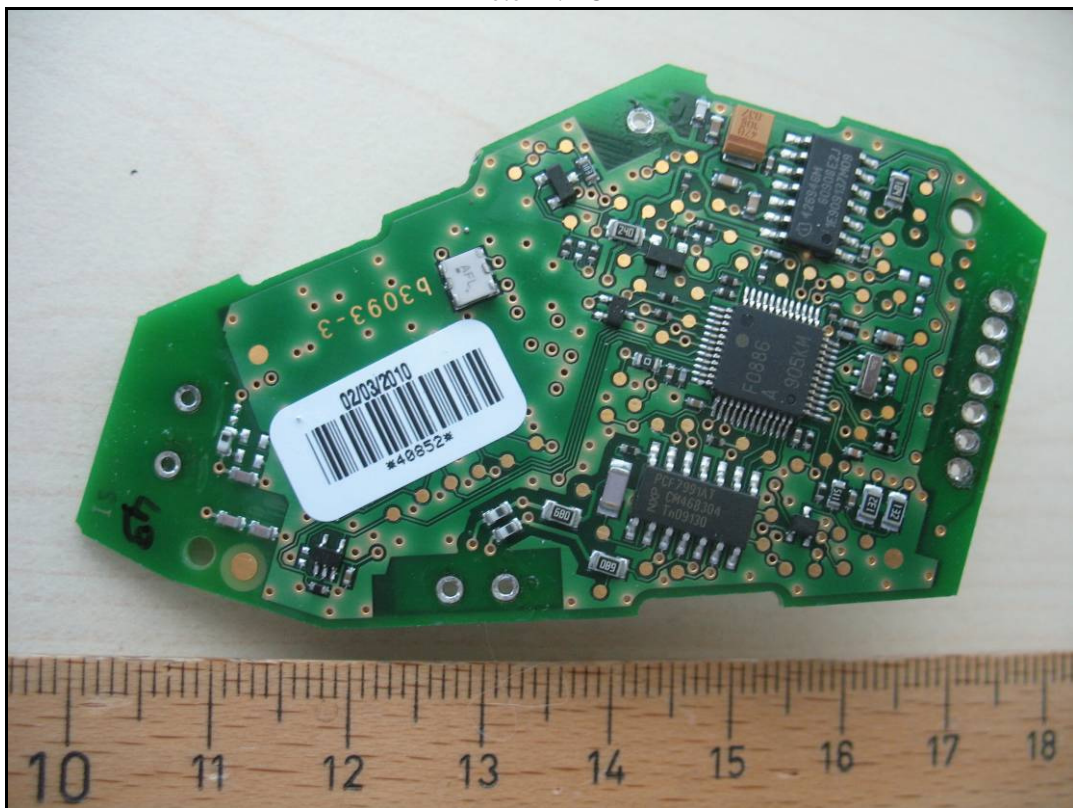


Photo 12: Lock cylinder

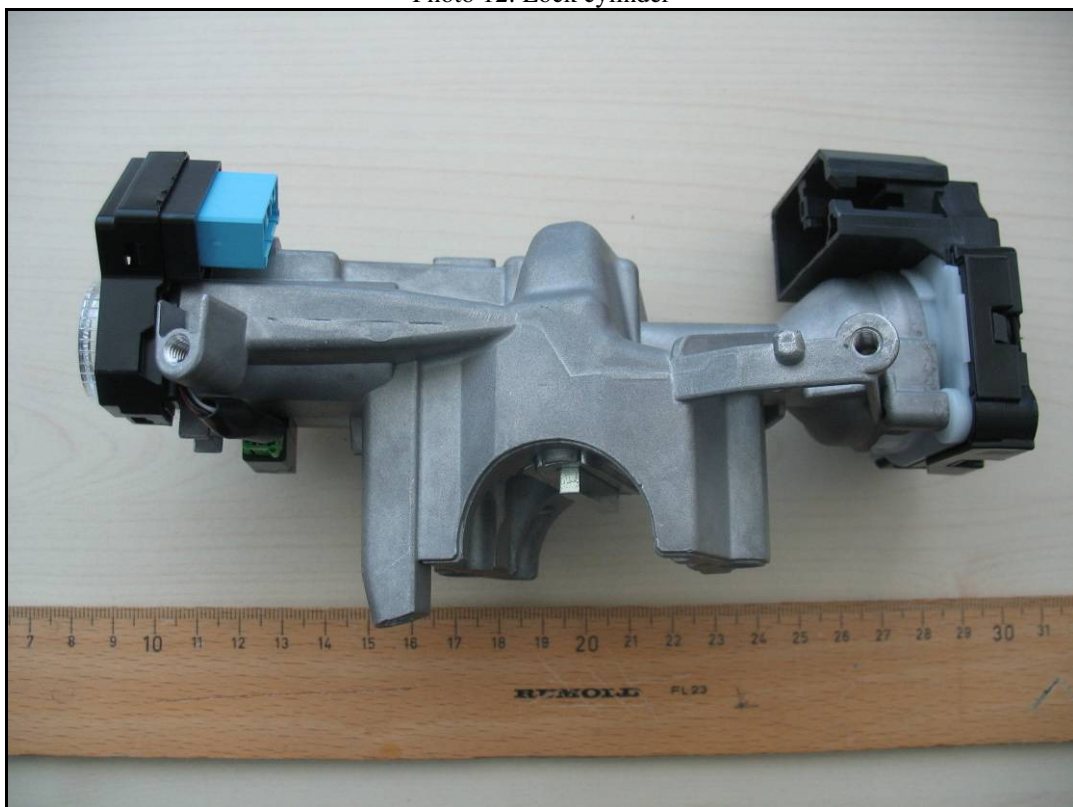


Photo 13: Lock cylinder

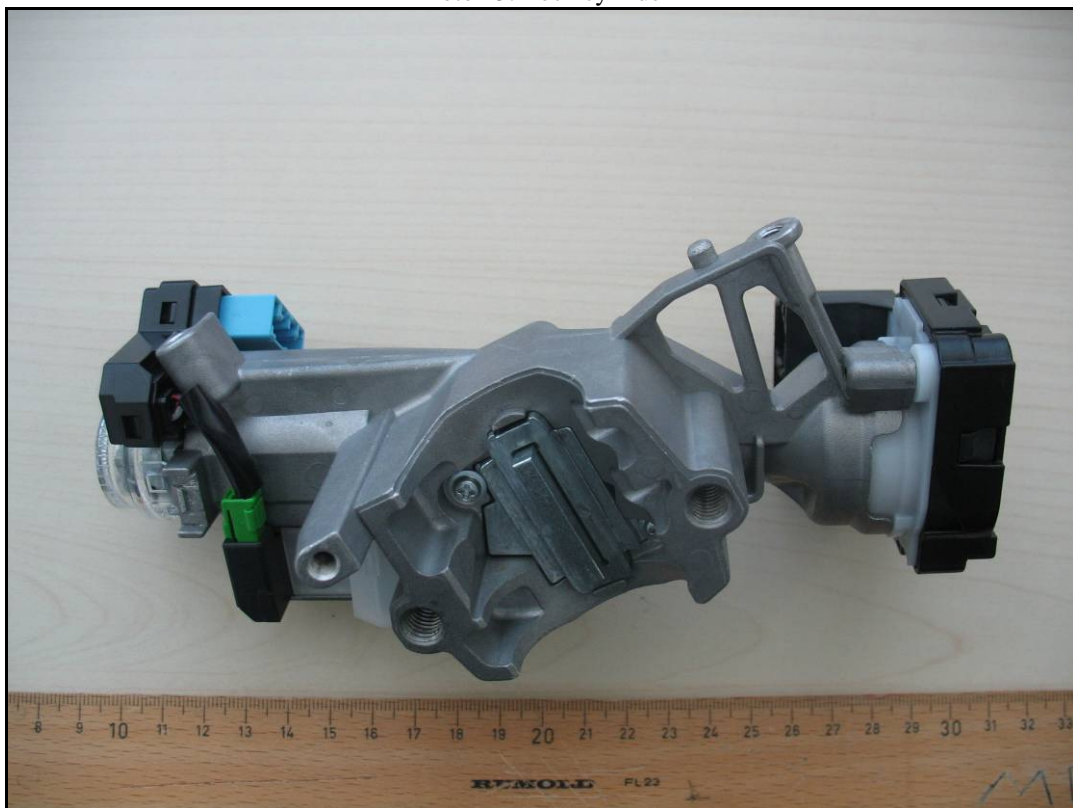


Photo 14: Lock cylinder

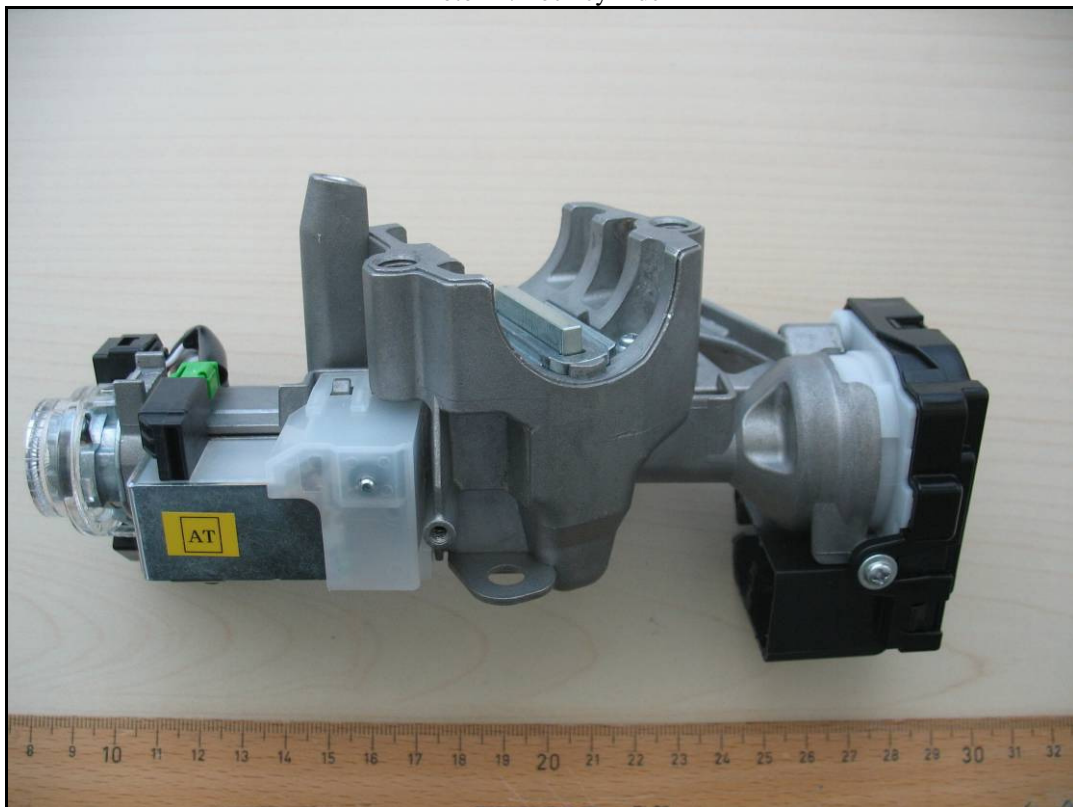


Photo 15: Lock cylinder

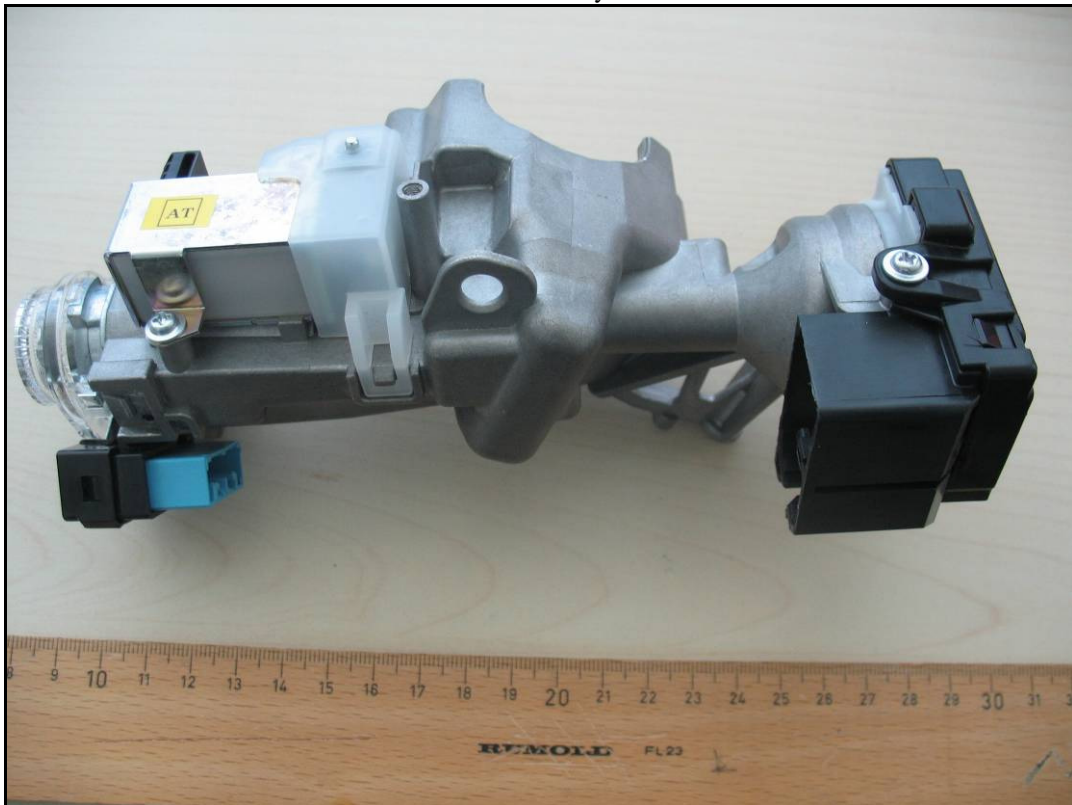


Photo 16: Lock cylinder



Photo 17: Lock cylinder

