

TEST REPORT

Test report no.: 1-3574-01-02/11-D



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>
 e-mail: ict@cetecom.com

Accredited test laboratory:
 The test laboratory (area of testing) is accredited according to DIN EN ISO/IEC 17025
 DAkkS registration number: D-PL-12076-01-01

Area of Testing: Radio/Satellite Communications

Applicant

STRATTEC SECURITY Corporation
 3333 West Good Hope Road
 Milwaukee, WI 53209 / UNITED STATES OF AMERICA
 Phone: +1-414-247-3333
 Fax: +1-247-247-3329
 Contact: Tanja Totos
 e-mail: ttotos@strattec.com
 Phone: +1-414-247-3656

Manufacturer

STRATTEC SECURITY Corporation
 3333 West Good Hope Road
 Milwaukee, WI 53209 / UNITED STATES OF AMERICA

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: Keyless entry system/ remote control device for vehicle
Product name: Flap Key Fob
Model name: GM 13500224
FCC ID: OHT05918179
IC: 5461A-05918179
Frequency: 315 MHz
Power supply: 3 V DC supplied by Li-battery CR2032
Temperature range: -20 °C to +55 °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 performed:

[Signature box]

Stefan Bös

Test report authorised:

[Signature box]

Marco Bertolino

1 Table of contents

1 Table of contents2

2 General information3

 2.1 Notes.....3

 2.2 Application details.....3

3 Test standard/s3

4 Test environment.....3

5 Test item4

 5.1 Type declaration according manufacturer declaration5

6 Test laboratories sub-contracted6

7 Summary of measurement results7

8 RF measurements8

 8.1 Description of test setup8

 8.1.1 Radiated measurements.....8

 8.1.2 Conducted measurements.....9

 8.2 Additional comments9

 8.3 RSP100 test report cover sheet / performance test data10

9 Measurement results.....11

 9.1 Timing of the transmitter11

 9.2 Switch off time13

 9.3 Emission bandwidth.....14

 9.4 Field strength of the fundamental15

 9.5 Field strength of the harmonics and spurious16

 9.6 Receiver spurious emission (radiated)22

10 Test equipment and ancillaries used for tests23

Annex A Photographs of the test setup25

Annex B External photographs of the EUT27

Annex C Internal photographs of the EUT30

Annex D Document history33

Annex E Further information.....33

2 General information

2.1 Notes

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 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 CETECOM ICT Services GmbH.

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.

2.2 Application details

Date of receipt of order:	2011-06-01
Date of receipt of test item:	2011-06-03
Start of test:	2011-06-03
End of test:	2011-06-06
Person(s) present during the test:	-/-

3 Test standard/s

Test standard	Version	Test standard description
47 CFR Part 15	2009-10	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}	+23 °C during room temperature tests
	T_{max}	+55 °C during high temperature test
	T_{min}	-20 °C during low temperature test
Relative humidity content:		53 %
Air pressure:		not relevant for this kind of testing
Power supply:	V_{nom}	3.0 V DC supplied by Li-battery CR2032
	V_{max}	3.3 V
	V_{min}	2.7 V

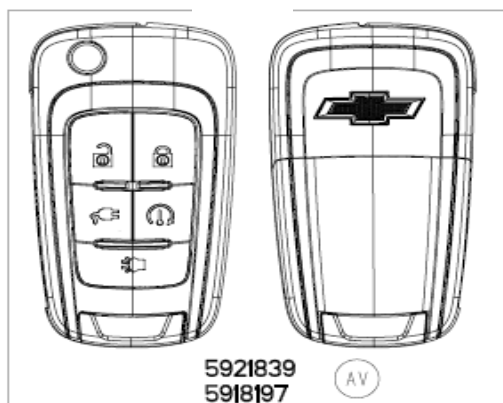
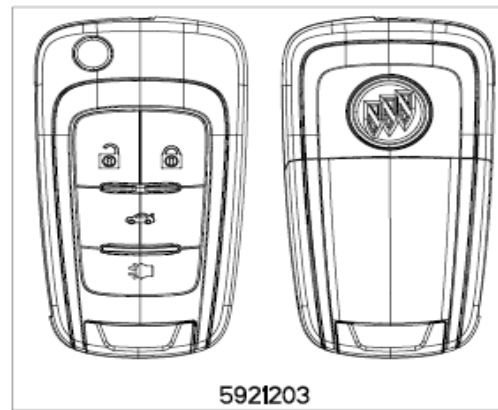
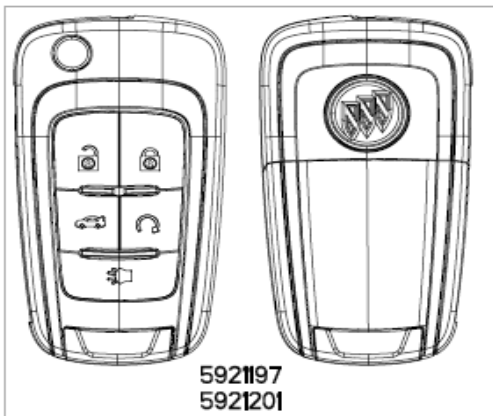
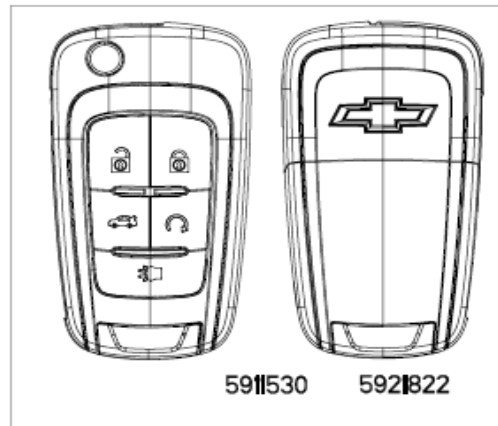
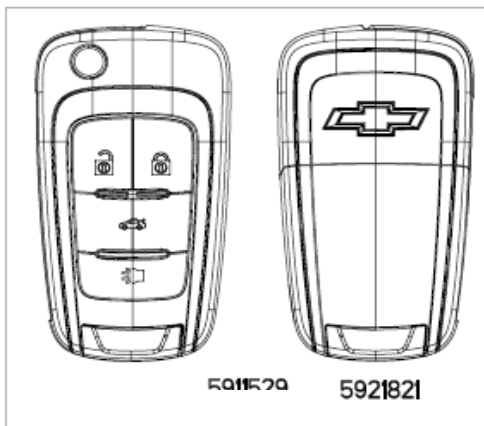
5 Test item

Kind of test item	:	Keyless entry system/ remote control device for vehicle
Product name	:	Flap Key Fob
Type identification	:	GM 13500224
S/N serial number	:	-/-
HW hardware status	:	Unknown
SW software status	:	Unknown
Frequency band [MHz]	:	315 MHz
Type of modulation	:	ASK, manchester
Number of channels	:	1
Antenna	:	3 antennas for x, y and z direction, including loop antenna (for more informations please see photos in Annex C)
Power supply	:	3 V DC supplied by Li-battery CR2032
Temperature range	:	-20°C to +55 °C

5.1 Type declaration according manufacturer declaration

GM Part Number	STRATTEC Part Number	Button Configuration
13500319	5921822	5 Button
13504236	5921873	5 Button
22755323	5918197	5 Button
22755321	5919637	5 Button
13500224	5921197	5 Button
13504202	5919562	5 Button
13500318	5921821	4 Button
13504235	5912543	4 Button

Pictures are below



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 8	Passed	2013-03-01	-/-

Test Specification Clause	Test Case	Temperature Conditions	Power Source Voltages	Pass	Fail	NA	NP	Results (max.)
§ 15.35 (c)/ RSS-GEN Issue 2 Section 4.5	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 Section A1.1.1	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 Section A1.1.3	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 Section A1.1.2 / 2.7 Table 4	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 Section 2.7 Table 4	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"/>	complies

Note: NA = Not Applicable; NP = Not Performed

8 RF measurements

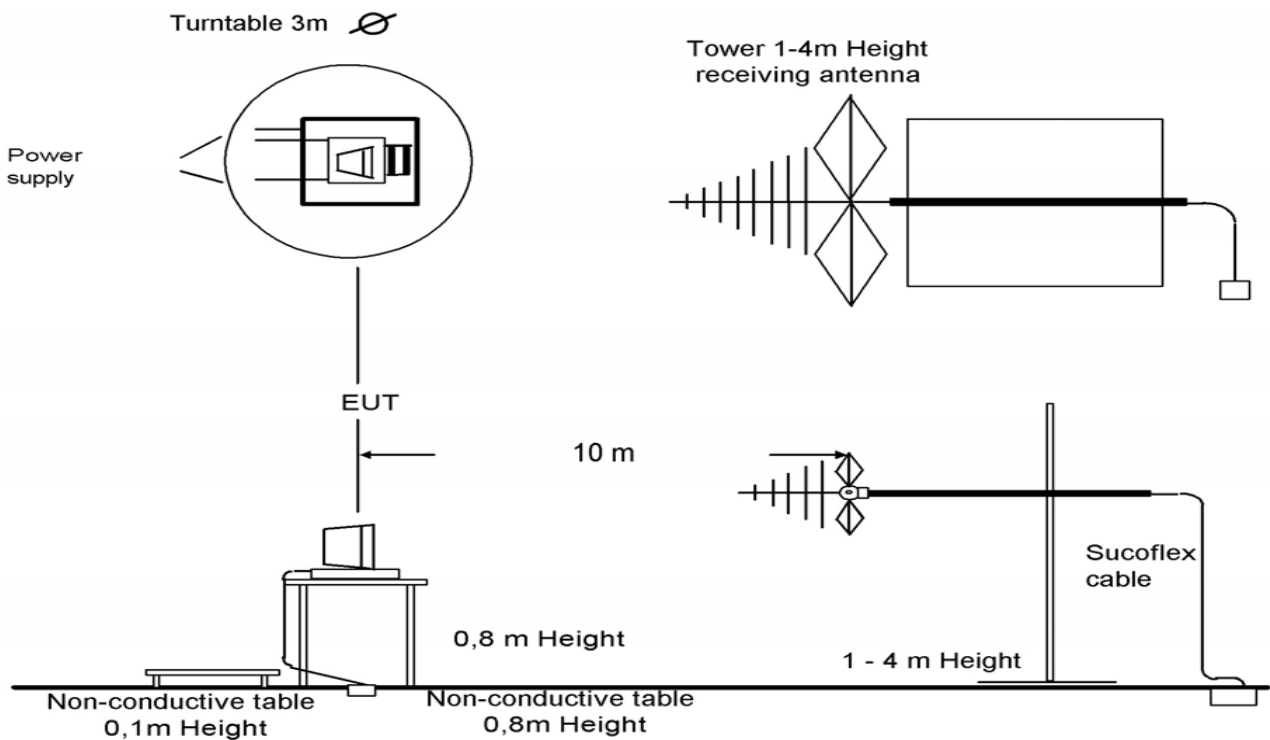
8.1 Description of test setup

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



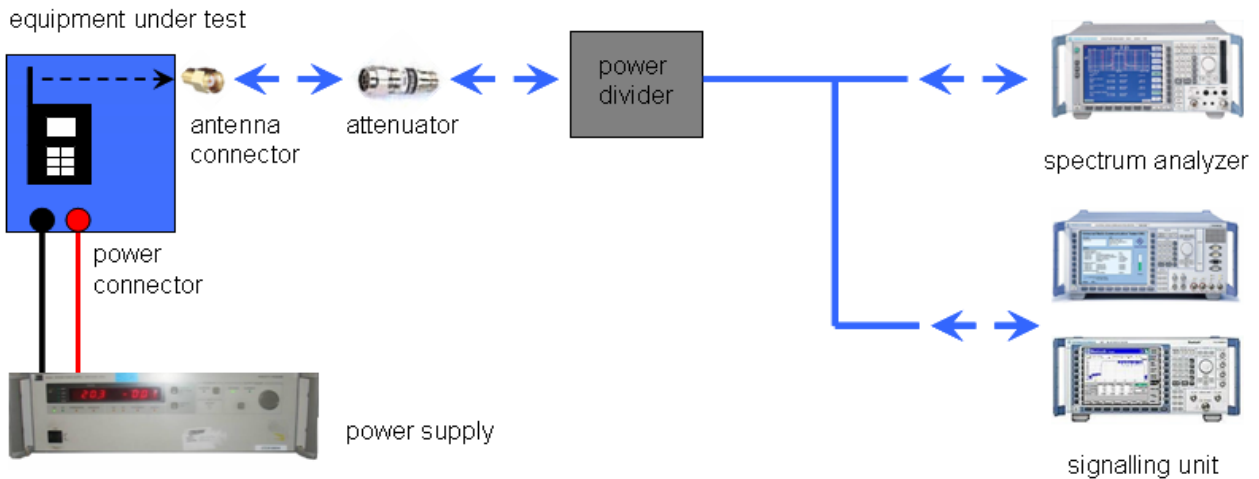
Picture 1: Diagram radiated measurements

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: None

Special test descriptions: None

Configuration descriptions: None

8.3 RSP100 test report cover sheet / performance test data

Test Report Number	:	1-3574-01-02/11-D
Equipment Model Number	:	GM 13500224; GM 13500225; GM 13500318; GM 13500319; GM 13504202; GM 13504235; GM 13504236; GM 22755321
Certification Number	:	5461A-05918179
Manufacturer (complete Address)	:	STRATTEC SECURITY Corporation 3333 West Good Hope Road Milwaukee, WI 53209 / UNITED STATES OF AMERICA
Tested to radio standards specification no.	:	RSS 210, Issue 8, Annex 8
Open Area Test Site IC No.	:	IC 3462C-1
Frequency Range or fixed frequency	:	315 MHz
Field Strength [dB μ V/m] (at which distance)	:	74.4 dB μ V/m @ 3 m
Occupied bandwidth (99%-BW) [kHz]	:	27.2 kHz
Type of modulation	:	A1D
Emission Designator (TRC-43)	:	27k2A1D
Antenna Information	:	3 antennas for x, y and z direction, including loop antenna
Transmitter Spurious (worst case) [μV/m @ 3m]:		416.9 μV/m @ 2519.5 MHz
Receiver Spurious (worst case) [μV/m @ 3m]:		106 μV/m (noise floor)

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:

2013-03-01
Date

Stefan Bös
Name


Signature

9 Measurement results

9.1 Timing of the transmitter

Measurement:

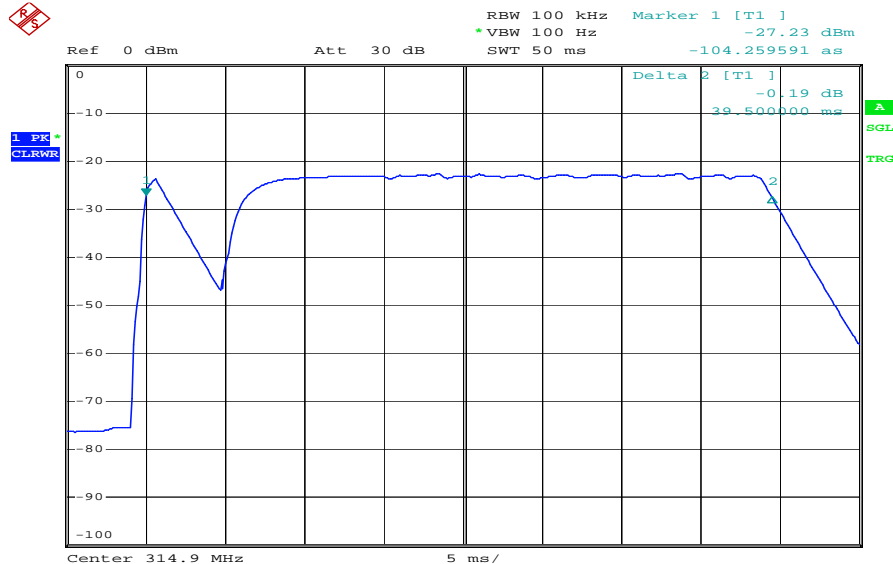
Measurement parameter	
Detector:	Peak
Sweep time:	50 / 300 ms
Resolution bandwidth:	100 kHz
Video bandwidth:	100 Hz
Span:	Zero
Trace-Mode:	Single Sweep

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>	

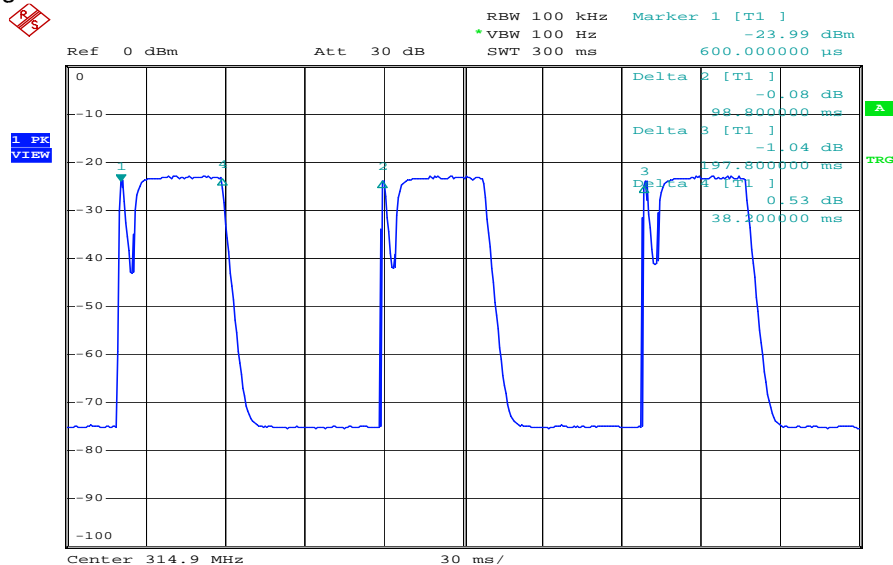
Result:

Plot 1: Transmit burst



Date: 6.JUN.2011 16:00:36

Plot 2: Timing of the Transmitter



Date: 6.JUN.2011 15:59:16

Transmit time (Tx on) = 39.5 ms (Plot 1)
 Tx on + Tx off = 100 ms

The peak-to-average correction factor is calculated with: $20\text{Log} [\text{Tx on}/100\text{ms}]$.

Hereby the peak-to-average correction factor is: **-8.0 dB**

Result: The result of the measurement is passed.

9.2 Switch off time

Measurement:

Measurement parameter	
Detector:	Peak
Sweep time:	1 s
Resolution bandwidth:	100 kHz
Video bandwidth:	100 kHz
Span:	Zero
Trace-Mode:	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:

The EUT automatically ceases transmission within not more than 100 ms after releasing the switch.

Result: [The result of the measurement is passed.](#)

9.3 Emission bandwidth

Measurement:

Measurement of the 20 dB - bandwidth of the modulated signal

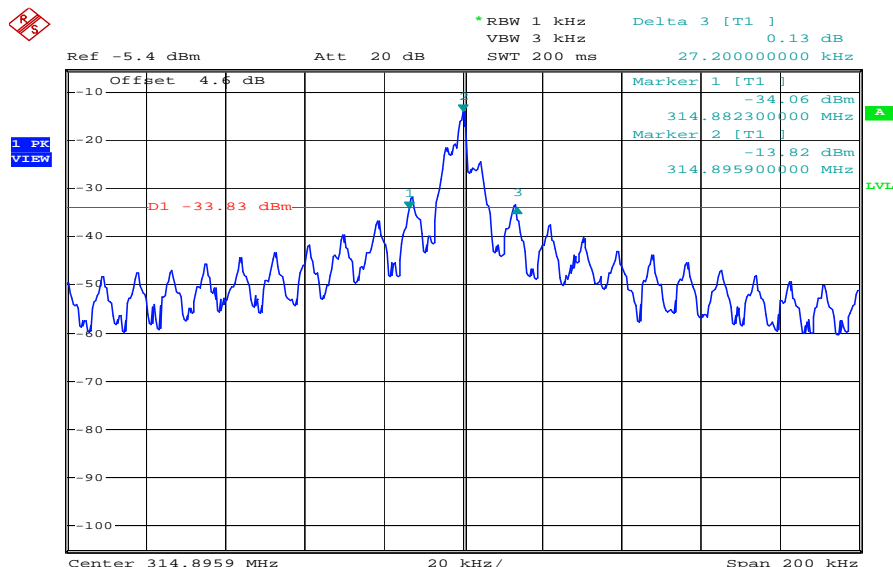
Measurement parameter	
Detector:	Peak
Sweep time:	100 ms
Resolution bandwidth:	1 kHz
Video bandwidth:	10 kHz
Span:	100 kHz
Trace-Mode:	Max Hold

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 33.9 kHz.	

Result:

Plot 1:



Date: 7 JUN 2011 11:40:20

The emission bandwidth is 27.2 kHz

Result: The result of the measurement is passed.

9.4 Field strength of the fundamental

Measurement:

Measurement parameter	
Detector:	Peak
Sweep time:	Auto
Video bandwidth:	1 MHz
Resolution bandwidth:	1 MHz
Span:	3 MHz
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 ($\mu\text{V/m}$)	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

The calculation of the maximum permitted fundamental field strength for 315 MHz is as follows:

$$\begin{aligned} \text{Field Strength} &= 3750 \mu\text{V/m} + ((12500 - 3750) \mu\text{V/m} / (470 - 260)\text{MHz}) * (315 \text{ MHz} - 260 \text{ MHz}) \\ &= 6041.67 \mu\text{V/m} = \mathbf{75.6 \text{ dB}\mu\text{V/m}} \end{aligned}$$

Result:

TEST CONDITIONS		MAXIMUM POWER (dB $\mu\text{V/m}$ at 3 m distance)	
Frequency		315 MHz	315 MHz
Mode		Peak @ 3 m	Average
T _{nom}	V _{nom}	82.4	74.4 ¹⁾
Measurement uncertainty		±3dB	

¹⁾ Value recalculated from Peak-to-Average correction factor described in chapter 9.1

Result: The result of the measurement is passed.

9.5 Field strength of the harmonics and spurious

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

The calculation of the maximum permitted field strength of harmonics and spurious for 315 MHz is as follows:

$$\begin{aligned} \text{Field Strength} &= 375 \mu\text{V/m} + ((1250 - 375) \mu\text{V/m} / (470 - 260)\text{MHz}) * (315 \text{ MHz} - 260 \text{ MHz}) \\ &= 604.17 \mu\text{V/m} = \mathbf{55.6 \text{ dB}\mu\text{V/m}} \end{aligned}$$

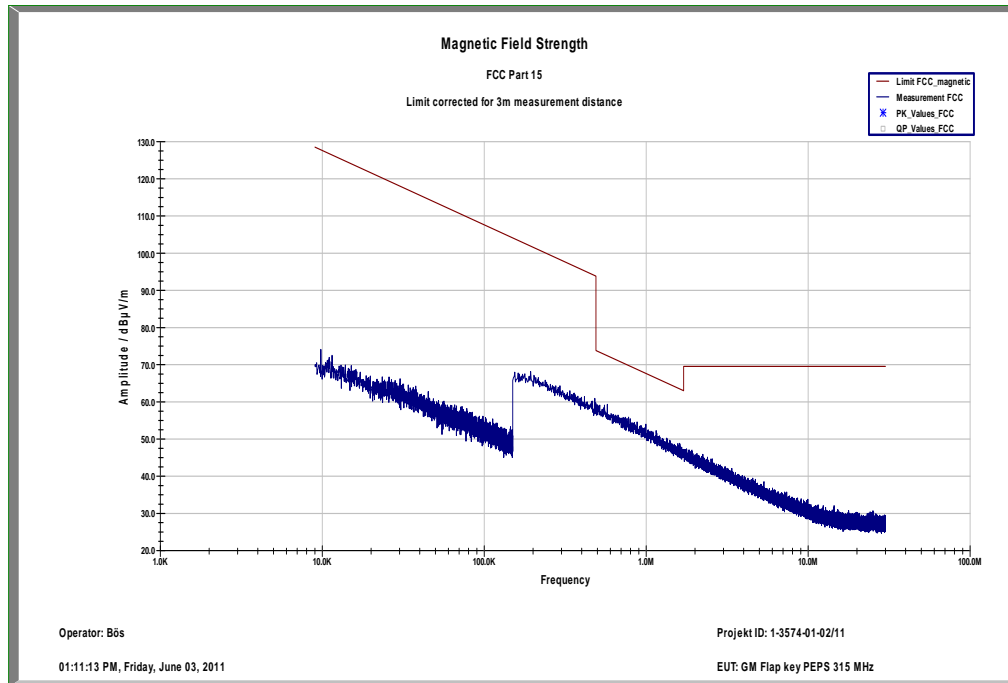
Results:

EMISSION LIMITATIONS						
f [MHz]	Detector	Amplitude of emission [dBµV/m]	DC – correction factor [dB]	Amplitude of emission [dBµV/m]	Limit [dBµV/m]	Results
1259.500000	Peak	44.6	- 8 dB	36.6	55.6	complies
1574.500000	Peak	55.8	- 8 dB	47.8	54.0	complies
1889.200000	Peak	51.8	- 8 dB	43.8	55.6	complies
2203.900000	Peak	49.6	- 8 dB	41.6	54.0	complies
2519.500000	Peak	60.4	- 8 dB	52.4	55.6	complies
2833.900000	Peak	55.1	- 8 dB	47.1	54.0	complies
3149.200000	Peak	47.7	- 8 dB	39.7	55.6	complies
3464.200000	Peak	43.2	- 8 dB	35.2	55.6	complies

Result: The result of the measurement is passed.

Plots of the measurements

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



Plot 2: 30 MHz – 1000 MHz

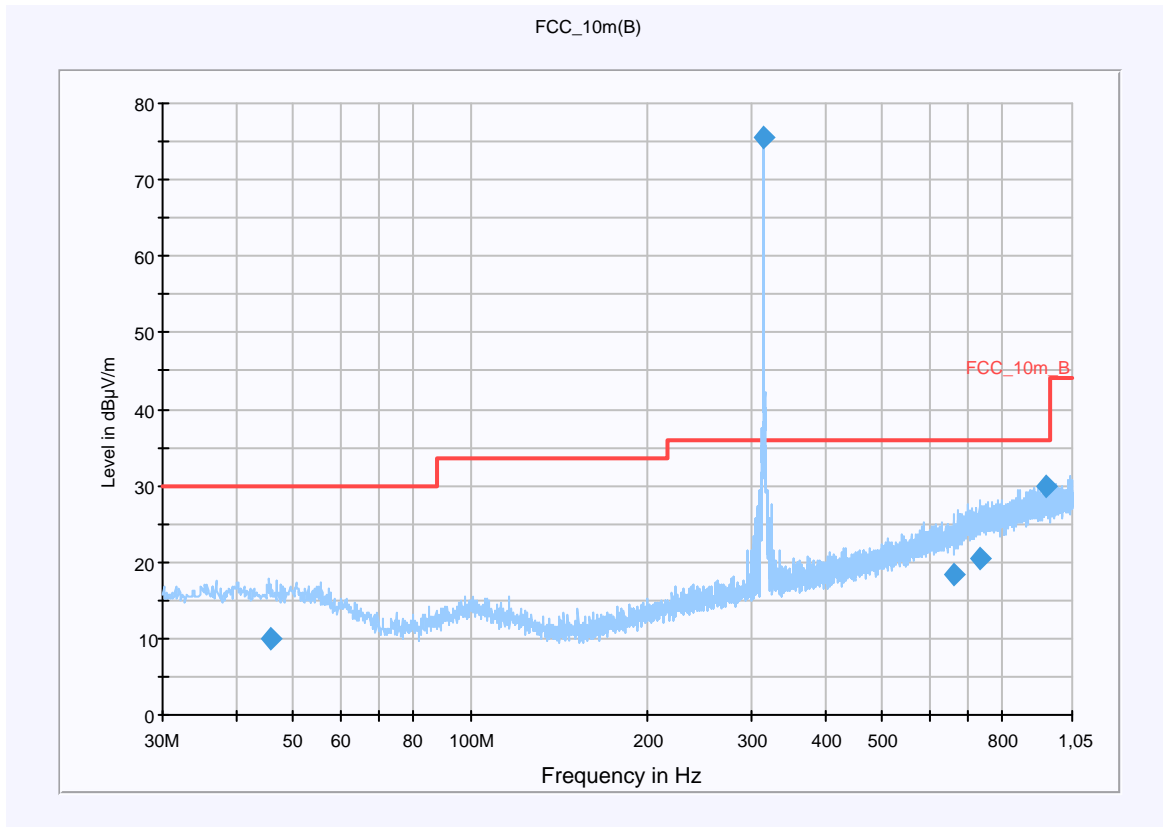
Common Information

EUT: GM Flap Key PEPS 315MHz
 Serial Number: -
 Test Description: FCC 15.231
 Operating Conditions: cont. TX
 Operator Name: Kraus
 Comment: bat powered

Scan Setup: STAN_Fin [EMI radiated]

Hardware Setup: Electric Field (NOS)
 Level Unit: dBµV/m

Subrange	Detectors	IF Bandwidth	Meas. Time	Receiver
30 MHz - 2 GHz	QuasiPeak	120 kHz	15 s	Receiver



Final Result 1

Frequency (MHz)	QuasiPeak (dBµV/m)	Meas. Time (ms)	Bandwidth (kHz)	Antenna height (cm)	Polarity	Turntable position (deg)	Corr. (dB)	Margin (dB)	Limit (dBµV/m)	Comment
45.653850	10.1	15000.000	120.000	352.0	H	129.0	13.3	19.9	30.0	
314.893650	75.7	15000.000	120.000	100.0	V	279.0	15.0	---	---	peak
659.885550	18.4	15000.000	120.000	189.0	V	253.0	21.4	17.6	36.0	
733.787250	20.4	15000.000	120.000	400.0	V	207.0	23.3	15.6	36.0	
944.700750	29.9	15000.000	120.000	100.0	H	187.0	25.3	6.1	36.0	

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

Subrange 1

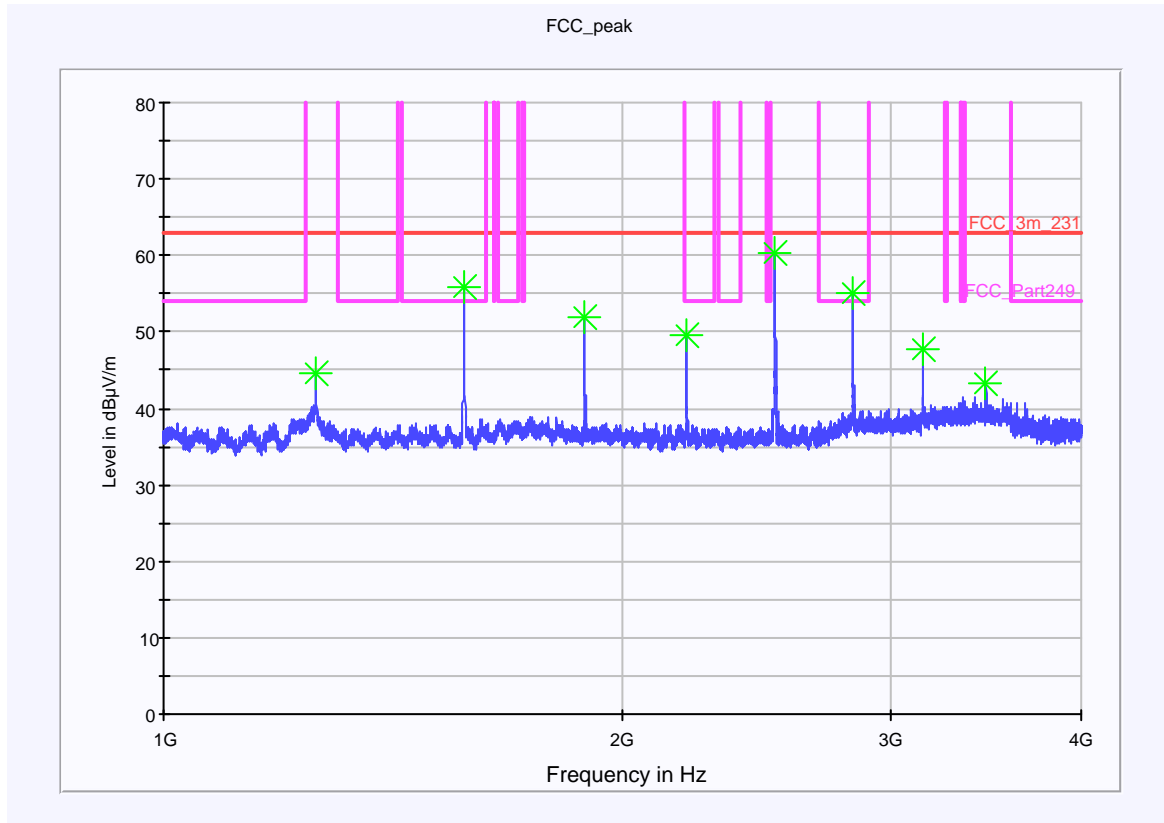
Frequency Range:	30 MHz - 2 GHz
Receiver:	Receiver [ESCI 3] @ GPIB0 (ADR 20), SN 100083/003, FW 4.42
Signal Path:	without Notch FW 1.0
Antenna:	VULB 9163 SN 9163-295, FW --- Correction Table (vertical): VULP6113 Correction Table (horizontal): VULP6113 Correction Table: Cable_EN_1GHz (1005)
Antenna Tower:	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: 1000 MHz – 4000 MHz

Common Information

EUT: GM Flap Key PEPS 315MHz
 Serial Number: -
 Test Description: FCC 15.231
 Operating Conditions: cont. TX
 Operator Name: Kraus
 Comment: bat powered



Peaks

Frequency (MHz)	MaxPeak-MaxHold without DC-correction (dBµV/m)	Antenna height (cm)	Polarity	Turntable position (deg)	Corr. (dB)	DC-Corr. (dB)	MaxPeak-MaxHold with DC-correction (dBµV/m)	Comment
1259.500000	44.6	100.0	V	2.0	-2.7	-8.0	36.6	pass
1574.500000	55.8	100.0	V	17.0	-4.5	-8.0	47.8	pass
1889.200000	51.8	100.0	V	84.0	-4.2	-8.0	43.8	pass
2203.900000	49.6	100.0	V	2.0	-3.9	-8.0	41.6	pass
2519.500000	60.4	100.0	V	353.0	-4.1	-8.0	52.4	pass
2833.900000	55.1	100.0	V	2.0	-2.7	-8.0	47.1	pass
3149.200000	47.7	100.0	V	353.0	-2.3	-8.0	39.7	pass
3464.200000	43.2	100.0	V	300.0	-2.0	-8.0	35.2	pass

9.6 Receiver spurious emission (radiated)

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
11	n. a.	Isolating Transformer	RT5A	Grundig	8041	300001626	g		
2	n. a.	DC power supply, 60Vdc, 50A, 1200 W	6032A	HP Meßtechnik	2818A03450	300001040	Ve	08.01.2009	08.01.2012
3	n. a.	Coaxial Attenuator 30dB/500W	8325	Bird	1530	300001595	ev		
4	n. a.	Double-Ridged Waveguide Horn Antenna 1-18.0GHz	3115	EMCO	8812-3088	300001032	vIKI!	05.03.2009	05.09.2011
5	n. a.	Active Loop Antenna	6502	EMCO	2210	300001015	ne		
6	n. a.	Anechoic chamber	FAC 3/5m	MWB / TDK	87400/02	300000996		23.03.2009	
7	Spec.A. 2_2e	System rack for EMI measurement solution	85900	HP I.V.	*	300000222	ne		
8	9	Artificial Mains 9 kHz to 30 MHz	ESH3-Z5	R&S	828576/020	300001210	Ve	06.01.2010	06.01.2012
9	n. a.	Relais Matrix	3488A	HP Meßtechnik	2719A15013	300001156	ne		
10	n. a.	Relais Matrix	PSU	R&S	890167/024	300001168	ne		
11	n. a.	Isolating Transformer	RT5A	Grundig	9242	300001263	ne		
12	n. a.	Three-Way Power Splitter, 50 Ohm	11850C	HP Meßtechnik		300000997	ne		
13	n. a.	Switch / Control Unit	3488A	HP	2605e08770	300001443	ne		
14	n. a.	Amplifier	js42-00502650-28-5a	Parzich GMBH	928979	300003143	ne		
15	n. a.	Band Reject filter	WRCG1855/1910-1835/1925-40/8SS	Wainwright	7	300003350	ev		
16	n. a.	Band Reject filter	WRCG2400/2483-2375/2505-50/10SS	Wainwright	11	300003351	ev		
17	n. a.	TILE-Software Emission	Quantum Change, Modell TILE-ICS/FULL	EMCO	none	300003451	ne		
18	n. a.	Highpass Filter	WHKX2.9/18G-12SS	Wainwright	1	300003492	ev		
19	n. a.	Highpass Filter	WHK1.1/15G-10SS	Wainwright	3	300003255	ev		
20	n. a.	Highpass Filter	WHKX7.0/18G-8SS	Wainwright	18	300003789	ne		
21	n. a.	PSA Spectrum Analyzer 3 Hz - 26.5 GHz	E4440A	Agilent Technologies	MY48250080	300003812	k	08.09.2010	08.09.2012
22	n. a.	MXG Microwave Analog Signal Generator	N5183A	Agilent Technologies	MY47420220	300003813	k	13.09.2010	13.09.2012
23	n. a.	RF Filter Section 9kHz - 1GHz	N9039A	Agilent Technologies	MY48260003	300003825	vIKI!	08.09.2010	08.09.2012

24	n. a.	TRILOG Broadband Test-Antenna 30 MHz - 3 GHz	VULB9163	Schwarzbeck	371	300003854	vlk!	17.12.2008	17.12.2011
25	45	Switch-Unit	3488A	HP Meßtechnik	2719A14505	300000368	g		
26	50	DC power supply, 60Vdc, 50A, 1200 W	6032A	HP Meßtechnik	2920A04466	300000580	ne		
27	n. a.	software	SPS_PHE 1.4f	Spitzberger & Spieß	B5981; 5D1081;B5979	300000210	ne		
28	n. a.	EMI Test Receiver	ESCI 1166.5950.03	R&S	100083	300003312	k	05.01.2011	05.01.2013
29	n. a.	Analyzer-Reference-System (Harmonics and Flicker)	ARS 16/1	SPS	A3509 07/0 0205	300003314	k	31.07.2009	31.07.2011
30	n. a.	Amplifier	JS42-00502650-28-5A	MITEQ	1084532	300003379	ev		
31	n. a.	Antenna Tower	Model 2175	ETS-LINDGREN	64762	300003745	izw		
32	n. a.	Positioning Controller	Model 2090	ETS-LINDGREN	64672	300003746	izw		
33	n. a.	Turntable Interface-Box	Model 105637	ETS-LINDGREN	44583	300003747	izw		
34	n. a.	TRILOG Broadband Test-Antenna 30 MHz - 3 GHz	VULB9163	Schwarzbeck	295	300003787	k	01.04.2010	01.04.2012
35	n. a.	Spectrum-Analyzer	FSU26	R&S	200809	300003874	k	10.01.2011	10.01.2013

Agenda: Kind of Calibration

k calibration / calibrated
 ne not required (k, ev, izw, zw not required)
 ev periodic self verification
 Ve long-term stability recognized
 vlk! Attention: extended calibration interval
 NK! Attention: not calibrated

EK limited calibration
 zw cyclical maintenance (external cyclical maintenance)
 izw internal cyclical maintenance
 g blocked for accredited testing
 *) next calibration ordered / currently in progress

Annex A Photographs of the test setup

Photo documentation:

Photo 1: Chamber F

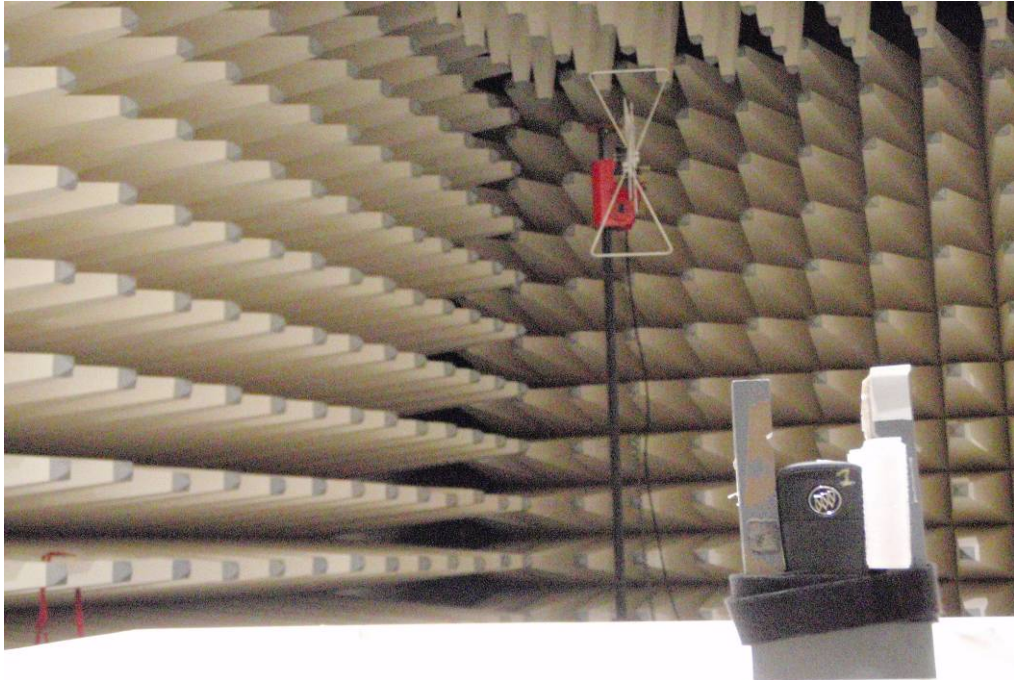


Photo 2: Chamber F

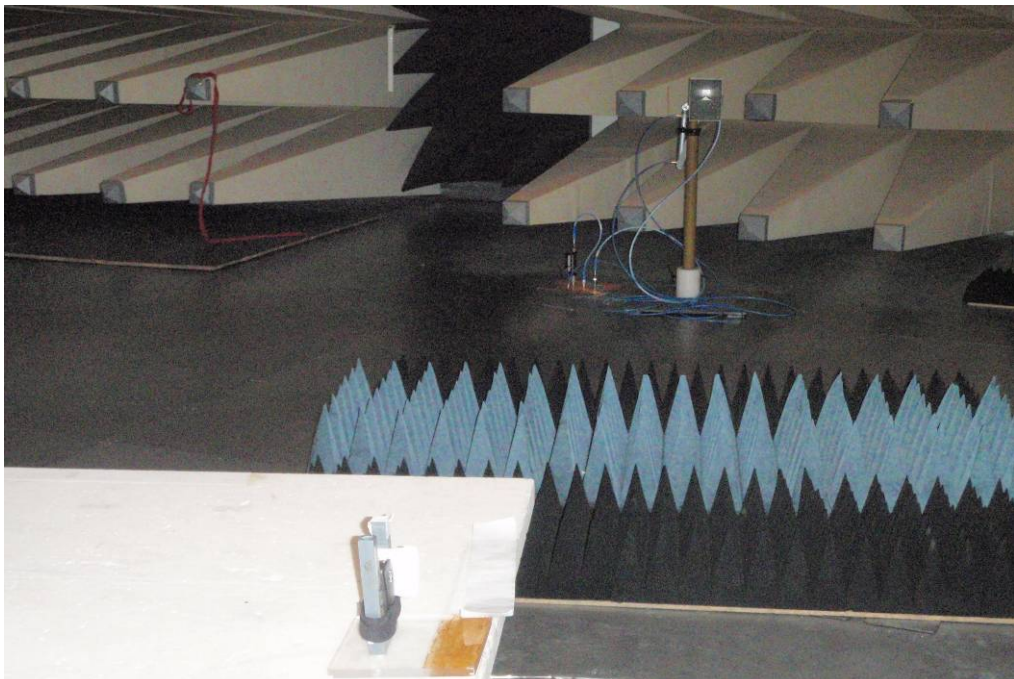


Photo 3: Chamber C

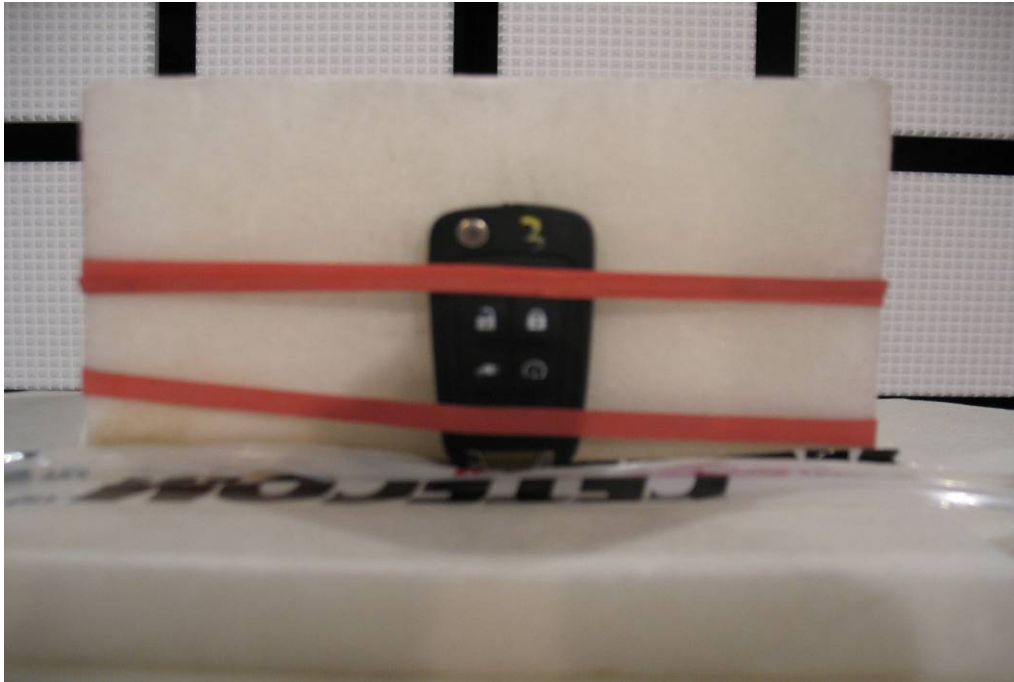
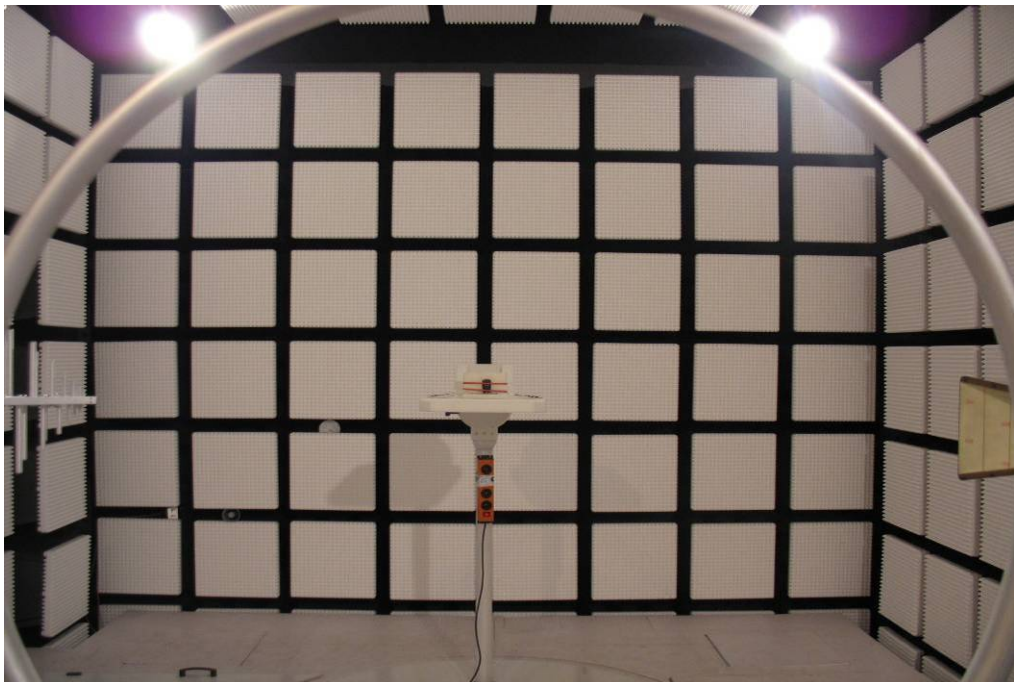


Photo 4: Chamber C



Annex B External photographs of the EUT

Photo documentation:

Photo 1:



Photo 2:



Photo 3:



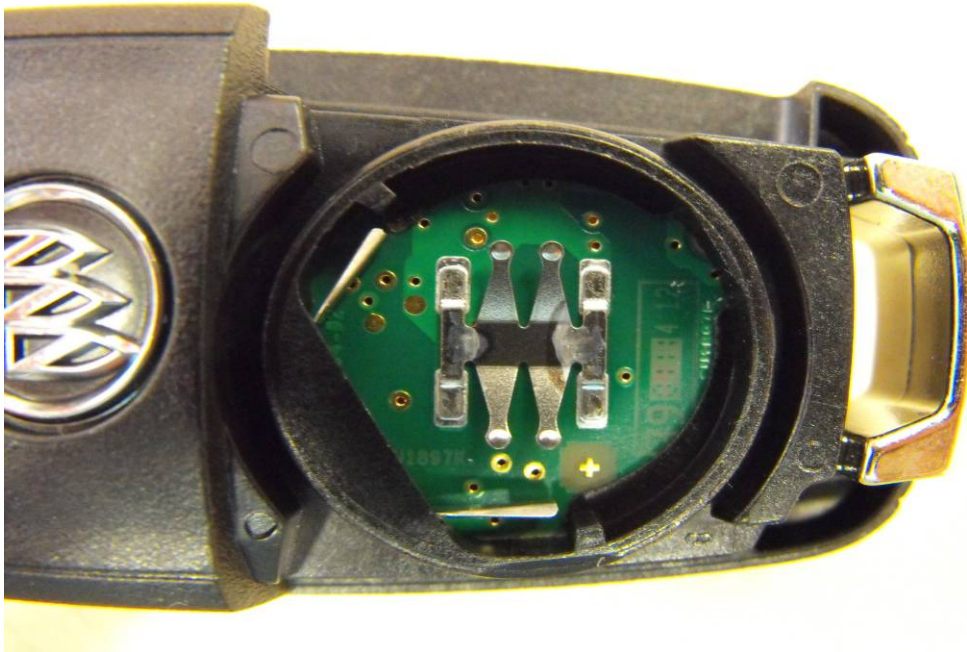
Photo 4:



Photo 5:



Photo 6:



Annex C Internal photographs of the EUT

Photo documentation:

Photo 1:

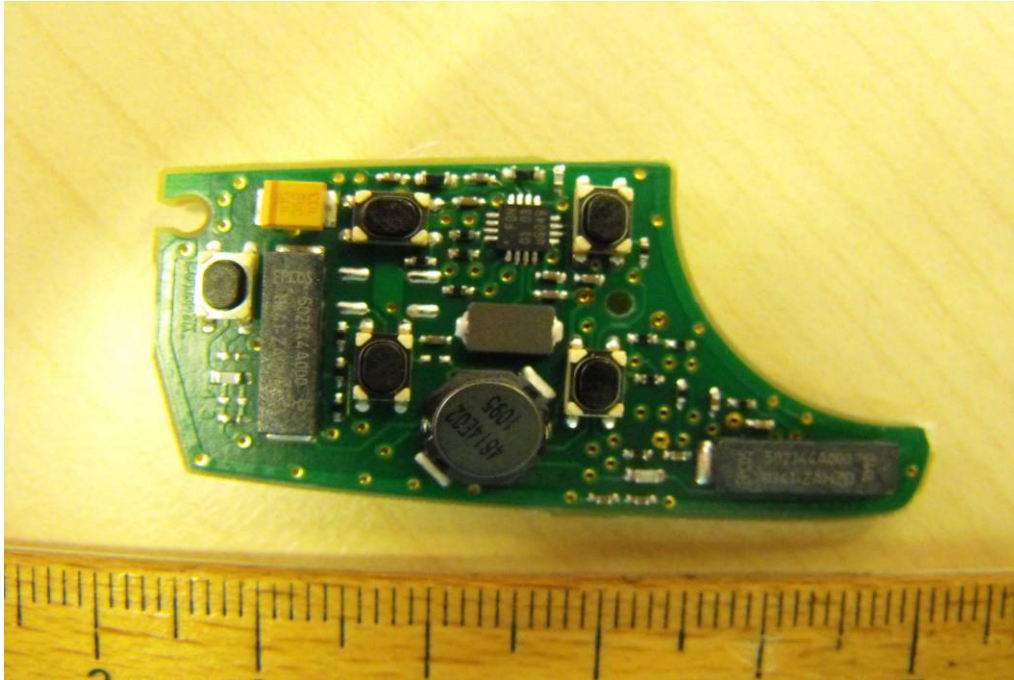


Photo 2:

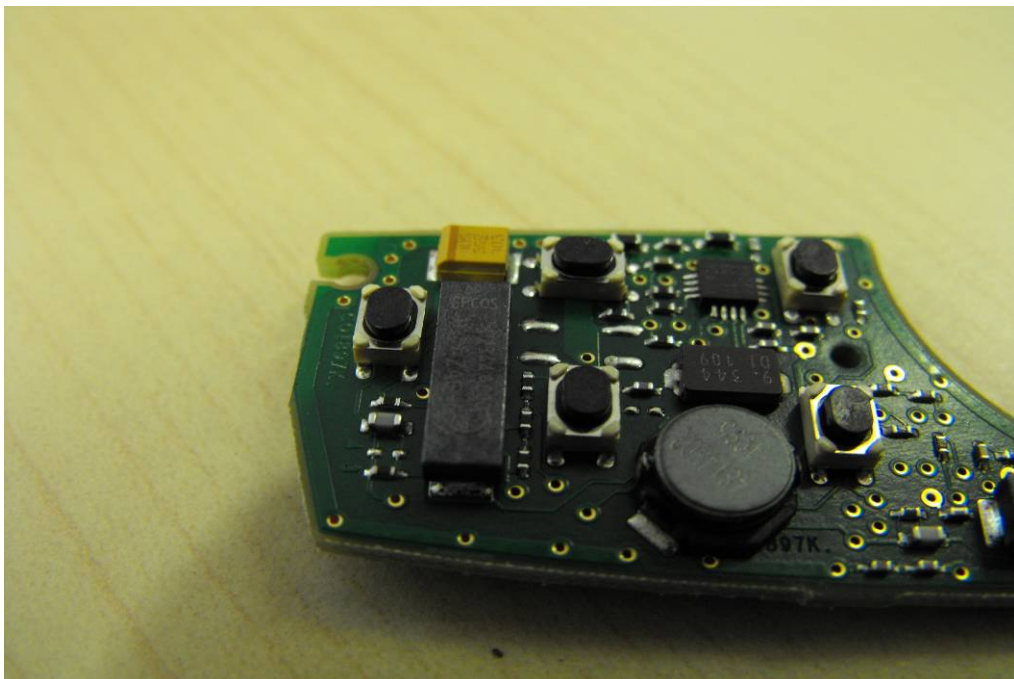


Photo 3:

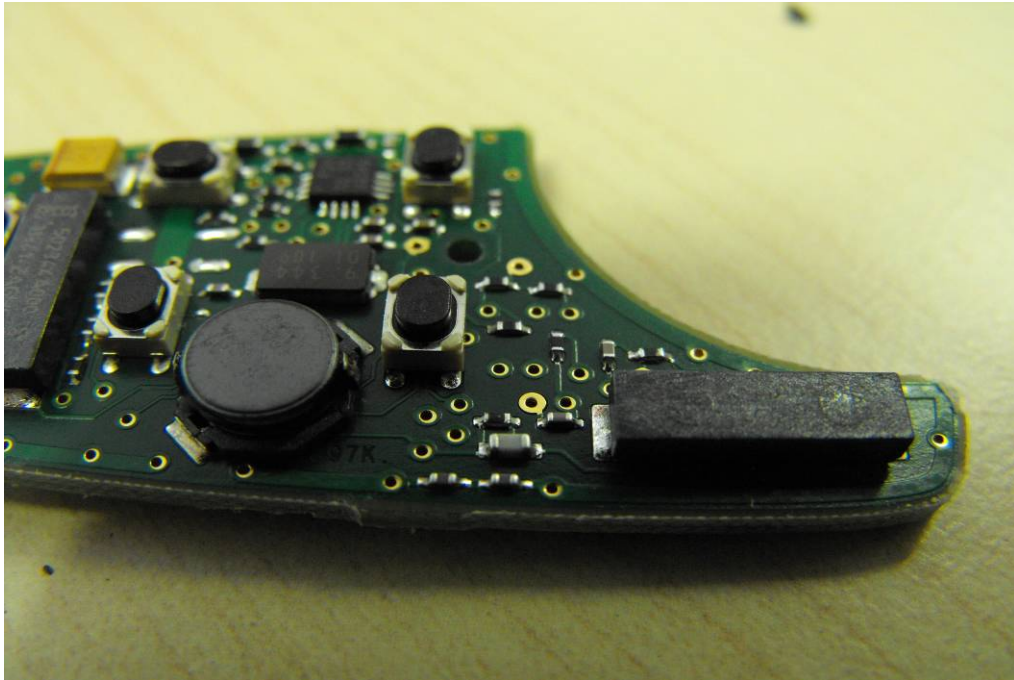


Photo 4:

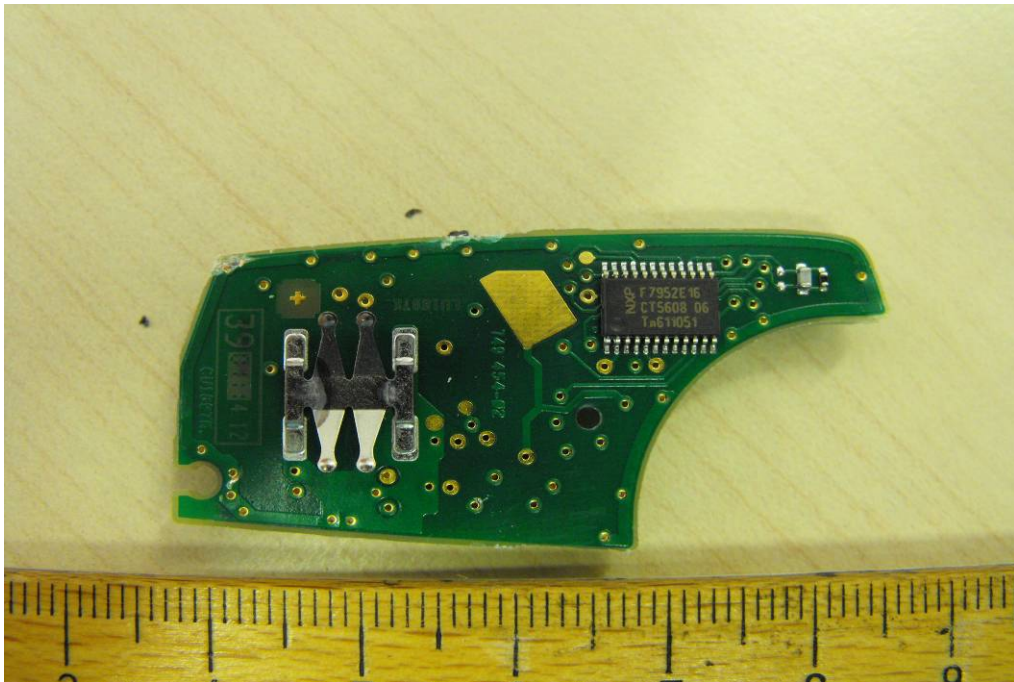


Photo 5:

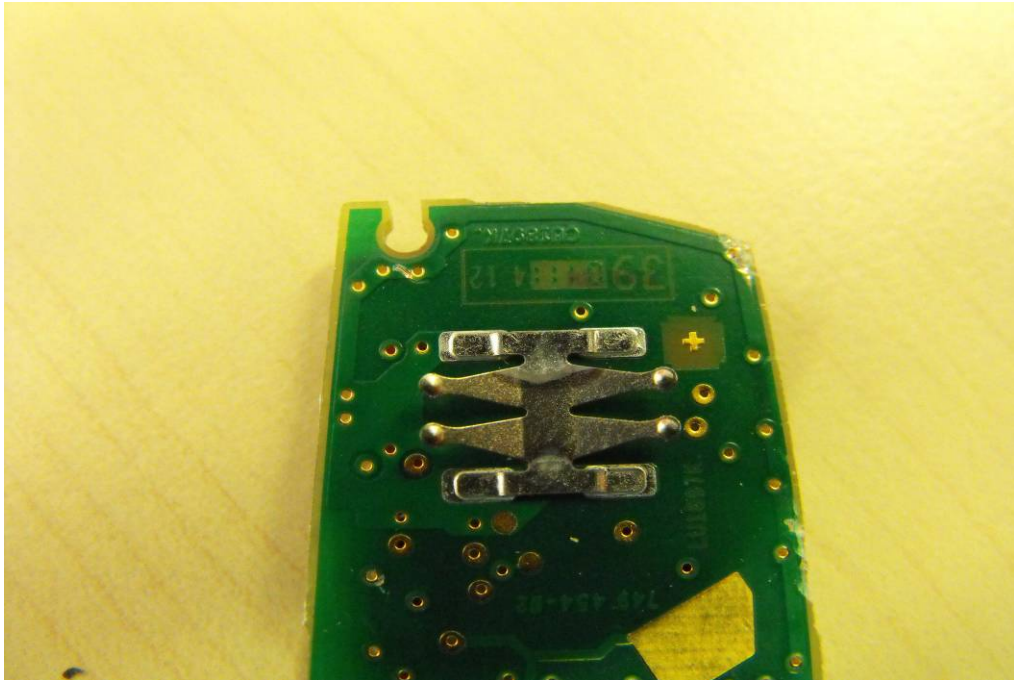
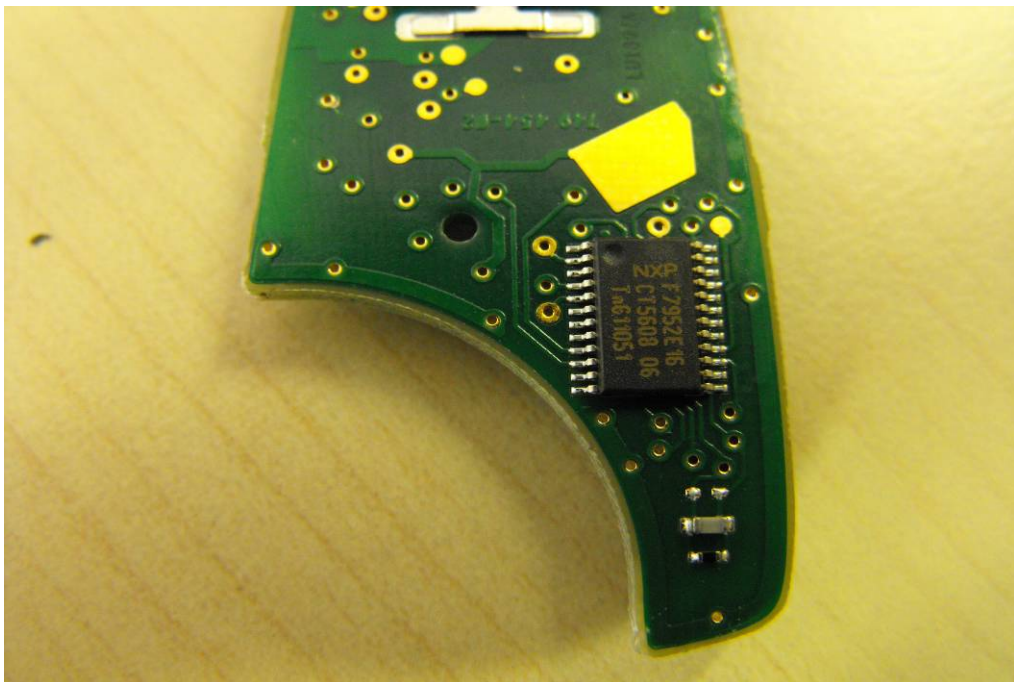


Photo 6:



Annex D Document history

Version	Applied changes	Date of release
1.0	Initial release	2011-06-09
-A	Product informations changed	2013-01-28
-B	New model name / New EUT Part numbers	2013-01-28
-C	Addition of model names	2013-02-27
-D	Correction of model name	2013-03-01

Annex E Further information

Glossary

DUT	-	Device under Test
EMC	-	Electromagnetic Compatibility
EUT	-	Equipment under Test
FCC	-	Federal Communication Commission
FCC ID	-	Company Identifier at FCC
HW	-	Hardware
IC	-	Industry Canada
Inv. No.	-	Inventory number
N/A	-	not applicable
S/N	-	Serial Number
SW	-	Software