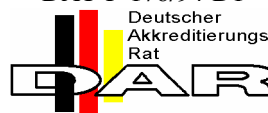


Recognized by the
Federal Communications Commission
Anechoic chamber registration no.: 90462 (FCC)
Anechoic chamber registration no.: IC 3463A-1
TCB ID: DE 0001



Accredited by the
German Accreditation Council
DAR-Registration Number
DAT-P-176/94-D1



Accredited Bluetooth[®] Test Facility (BQTF)

Test report no. : 2-4785-01-08/07
Applicant : Aston Martin Lagonda Ltd
Type : Sapphire - Glass - RKE Key Fob
Test Standard : FCC Part 15 / RSS210 issue 7
FCC ID : OHT7001550
Certification No. IC: 5461A-7001550

The Bluetooth word mark and logos are owned by the Bluetooth SIG, Inc. and any use of such marks by Cetecom ICT is under license

Table of contents

1 GENERAL INFORMATION..... 3

1.1 ADMINISTRATIVE DATA OF THE TEST FACILITY 3

 1.1.1 Identification of the testing laboratory 3

1.2 NOTES 3

1.3 DETAILS OF APPLICANT..... 4

1.4 DETAILS OF MANUFACTURER..... 4

1.5 TEST ITEM 5

1.6 TEST SETUP 6

1.7 TEST SPECIFICATIONS..... 6

2 STATEMENT OF COMPLIANCE..... 7

2.1 SUMMARY OF MEASUREMENT RESULTS..... 7

 2.1.1 CFR 47 Part 15 Radio frequency devices..... 7

3 MEASUREMENTS AND RESULTS 8

4 FCC PART 15 SUBPART C..... 9

 4.1 Timing of the transmitter 9

 4.2 Timing of the transmitter (Release time)..... 11

 4.3 Field Strength of the Fundamental 12

 4.4 Field Strength of Spurious 13

 4.5 Occupied Bandwidth..... 16

5 USED TESTEQUIPMENT..... 17

6 ANNEX B: PHOTOGRAPHS OF TEST SITE 19

7 ANNEX C: EXTERNAL PHOTOGRAPHS OF THE EQUIPMENT 20

1 General information

1.1 Administrative data of the test facility

1.1.1 Identification of the testing laboratory

Company name:	Cetecom ICT Services GmbH
Address:	Untertürkheimerstr. 6-10 D-66117 Saarbruecken Germany
Laboratory accreditation:	DAR-Registration No. DAT-P-176/94-D1 Bluetooth Qualification Test Facility (BQTF) Federal Communications Commission (FCC)
Responsible for testing laboratory:	Identification/Registration No : 90462 Harro Ames Phone: +49 681 598 0 Fax: +49 681 598 9075 email: info@ict.cetecom.de

1.2 Notes

The test results of this test report relate exclusively to the test item specified in 1.5. The 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 the CETECOM ICT Services GmbH.



.....
Responsible for testing laboratory
(Harro Ames)



.....
Responsible for test report
(Stefan Bös)

1.3 Details of Applicant

Name : Aston Martin Lagonda Limited
Address : Banbury Road
City : Gaidon, Warwick, CB35 0DB
Country : England
Phone : +44 (0) 1926 644 177
Fax : +44 (0) 1926 644 001
Contact : --
Phone : --
Fax : --
e-mail : --

1.4 Details of Manufacturer

Name : Stratec Security Group
Address : 3333 West Good Hope Road
City : Milwaukee, WI 53209
Country : USA
Phone : +1 414 247 3333
Fax : +1 414 247 3329
Contact : --
Phone : --
Fax : --
e-mail : --

Date of receipt of application : 2007-10-11
Date of receipt of test item : 2007-10-11
Date(s) of test : 2007-10-15 to 2007-10-16
Date of report : 2008-01-15

1.5 Test Item

Type of equipment : Automotive Key Transmitter Fob
Model name : Sapphire - Glass RKE Key Fob
7001550 and 7007208
Manufacturer : Strattec Security Group
Address : 3333 West Good Hope Road
City : Milwaukee, WI 53209
Country : USA
Tested to Radio Standards Specification(RSS) No. : 210 Issue 7
Open Area Test Site Industry Canada Number : IC 3463A-1
Frequency Range (or fixed frequency) : Tx: 315 MHz
Field Strength (at what distance) : 1096.5 μ V/m (60.8 dB μ V/m) in 3m
Occupied Bandwidth (99% BW) : 240kHz
Type of Modulation : A1D
Antenna Information : printed loop antenna
Emission Designator (TRC-43) : 240KA1D
Transmitter Spurious (worst case) : 42.7dB μ V/m in 3m (1575 MHz)
Receiver Spurious (worst case) : n.a.
IC no. : Sapphire - Glass housing : OHT7001550
FCC ID : Sapphire - Glass housing : 5461A-7001550

ATTESTATION:

DECLARATION OF COMPLIANCE:

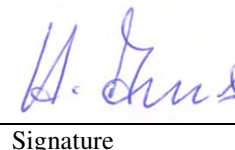
I declare that the testing was performed or supervised by me; that the test measurements were made in accordance with the above-mentioned Industry Canada standard(s); and that the equipment identified in this application has been subjected to all the applicable test conditions specified in the Industry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

Laboratory Manager :

2007-10-16
Date

RSC 8414
Section

Harro Ames
Name



Signature

1.6 Test Setup

The test was performed with a sample which has a housing consists of a mixture of glass.

1.7 Test Specifications

FCC:	CFR Part 15.231
IC:	RSS 210, Issue 7

2 Statement of Compliance

No deviations from the technical specification(s) were ascertained in the course of the tests performed.

2.1 Summary of Measurement Results

2.1.1 CFR 47 Part 15 Radio frequency devices

Section in this Report	Test Name / Section FCC Part 15	Test Name / Section RSS 210 Issue 7	Measurement applicable	Verdict
4.1	§ 15.35 (c) Timing of the transmitter (Duty cycle correction factor)	RSS-GEN	YES	pass
4.2	§ 15.231 (a) Timing of the transmitter (release within 5 seconds)	A1.1.1.(a)	YES	pass
4.3	§ 15.231 (b) FIELDSTRENGTH OF FUNDAMENTAL	A1.1.2 (1)	YES	pass
4.4	§ 15.231 (b) FIELDSTRENGTH OF HARMONICS and SPURIOUS	A1.1.2 (1)	YES	pass
4.5	§ 15.231 (c) Occupied bandwidth	A1.1.3	YES	pass

3 Measurements and results

The radiated measurements are performed in vertical and horizontal plane in the frequency range from 9 kHz to 4 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 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 conform with ANSI C63.2-1996 item 15.

- 9 kHz - 150 kHz: Quasi Peak measurement, 200 Hz Bandwidth, passive loop antenna.
- 150 kHz - 30 MHz: Quasi Peak measurement, 9 kHz Bandwidth, passive loop antenna.
- 30 MHz - 200 MHz: Quasi Peak measurement, 120 kHz Bandwidth, biconical antenna.
- 200MHz - 1GHz: Quasi Peak measurement, 120 kHz Bandwidth, log periodic antenna.
- >1GHz: Average, RBW 1MHz, VBW 10 Hz, waveguide horn.

All measurement settings are according to FCC 15.209 and 15.207

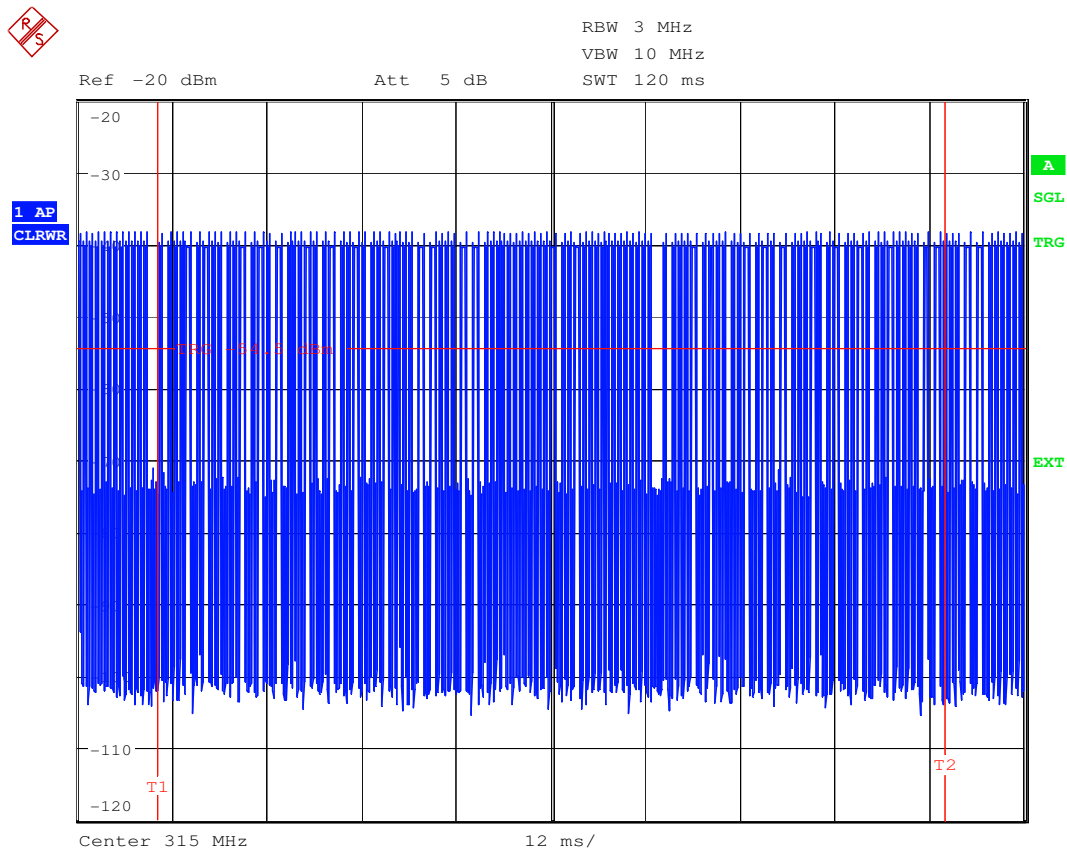
4 FCC Part 15 Subpart C

4.1 Timing of the transmitter

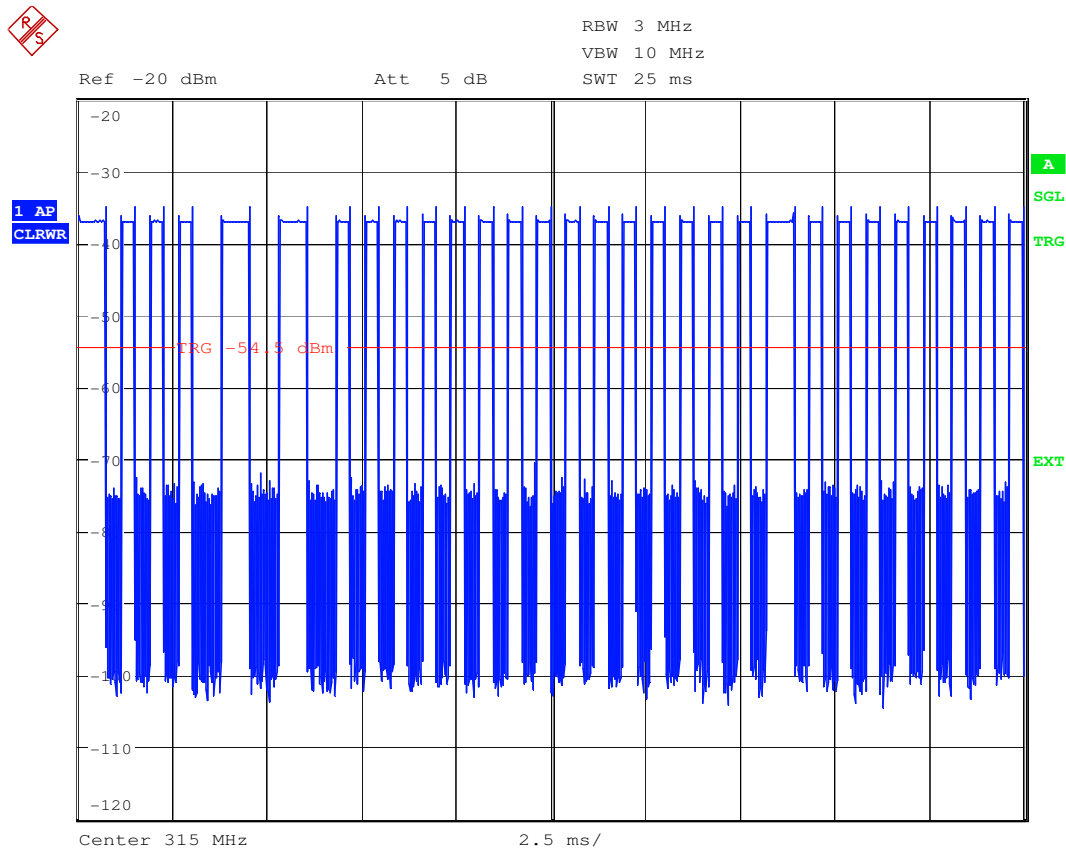
Reference

FCC:	CFR Part SUBCLAUSE § 15.35 (c)
IC:	RSS-GEN

Duty cycle:



Date: 16.OCT.2007 08:15:10



Date: 16.OCT.2007 08:15:55

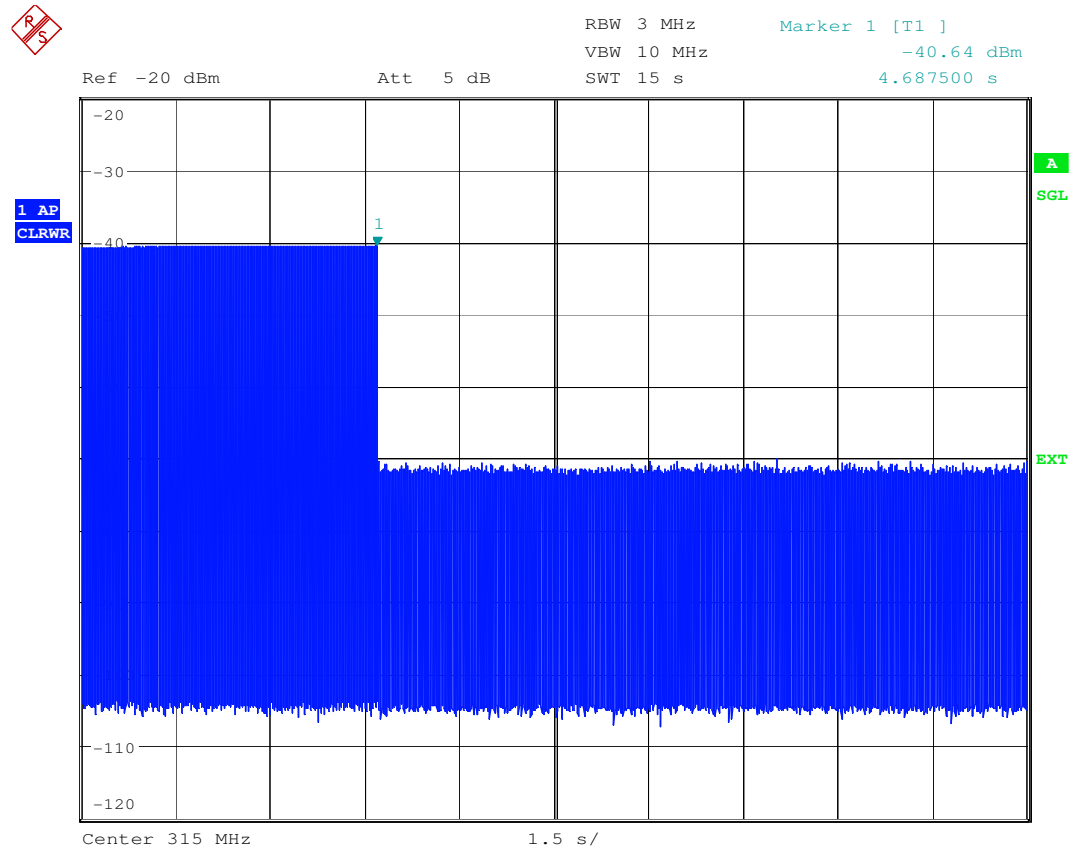
The plots show that within 100ms there is a continuously pulsed emission with a duty cycle of ~50%.

The calculated correction factor from peak to average is $20 \cdot \log(0.5) = -6$ dB

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.

4.2 Timing of the transmitter (Release time)



Date: 16.OCT.2007 08:18:31

The transmitter stops immediately after releasing the button.

4.3 Field Strength of the Fundamental

Reference

FCC:	CFR Part SUBCLAUSE § 15.231 (b)
IC:	RSS 210, Issue 7, A1.1.1.(a)

MAXIMUM OUTPUT POWER RADIATED (PEAK)

TEST CONDITIONS		MAXIMUM POWER ($\mu\text{V/m}$)		
		315 MHz	--	--
Frequency				
T_{nom} 23 °C	V_{nom} 3.0V DC	1096.5 $\mu\text{V/m}$ 60.8 dB $\mu\text{V/m}$	--	--
Maximum deviation from output power under extreme test conditions (dBc)		not applicable	--	--
Measurement uncertainty		$\pm 3\text{dB}$		

RBW/VBW : 1 MHz

Limits (Average Values)

SUBCLAUSE § 15.231 (b)

Fundamental Frequency (MHz)	Field strength of Fundamental ($\mu\text{V/m}$)	Field strength of spurious($\mu\text{V/m}$)
40.66 – 40.70	2,250	225
70-130	1,250	125
130-174	1,250 to 3,750	125 to 375
174-260	3,750	375
260-470	3,750 to 12,500	375 to 1,250
Above 470	12,500	1,250

4.4 Field Strength of Spurious

Reference

FCC:	CFR Part SUBCLAUSE § 15.231 (b)
IC:	RSS 210, Issue 7, A1.1.1.(a)

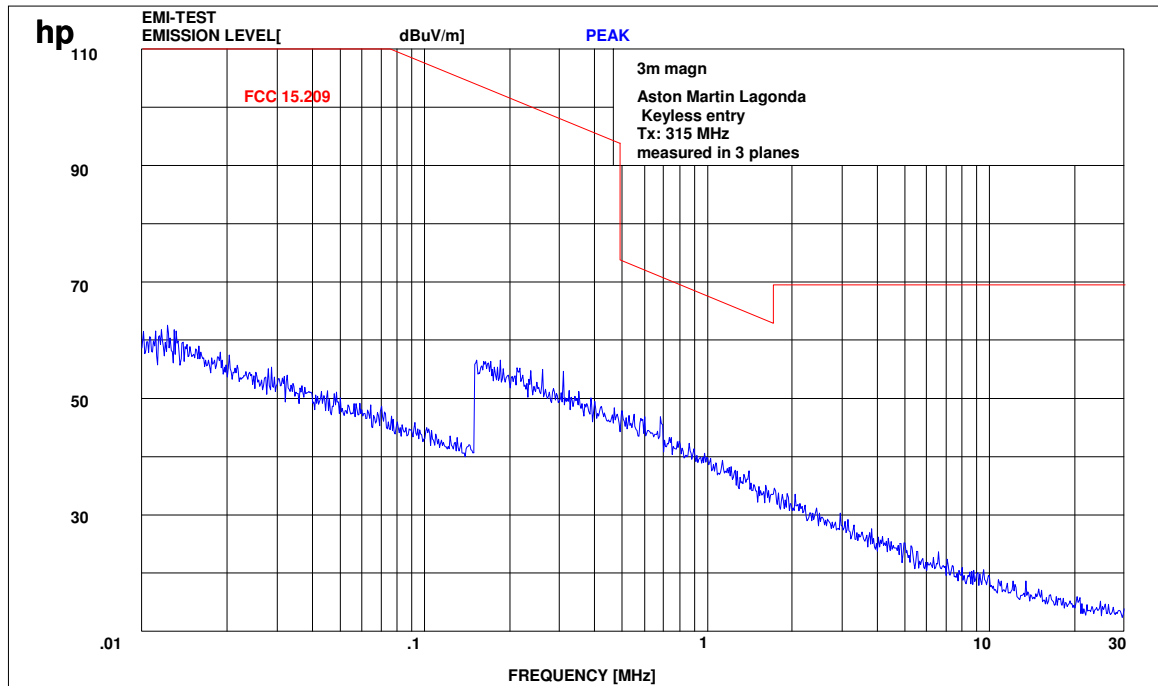
EMISSION LIMITATIONS					
f (MHz)		amplitude of emission (dBμV/m) Peak/ Average/QP	limit max. allowed emmission power	actual attenuation below frequency of operation (dB)	results
315		60.8 / Peak	75.6 dBμV/m		Operating frequency
630		36.2 / Peak	55.6 dBμV/m		Complies
1575		42.7 / Peak			Complies
				Complies	
				Complies	
				Complies	
				Complies	
				Complies	
				Complies	
				Complies	
				Complies	
				Complies	
Measurement uncertainty			± 3dB		

Limits (Average Values)

SUBCLAUSE § 15.231 (b)

Fundamental Frequency (MHz)	Field strength of Fundamental (μV/m)	Field strength of spurious(μV/m)
40.66 – 40.70	2,250	225
70-130	1,250	125
130-174	1,250 to 3,750	125 to 375
174-260	3,750	375
260-470	3,750 to 12,500	375 to 1,250
Above 470	12,500	1,250

Part 15.109 Magnetics



(to convert the measuring distance from 3m to 30m and 30 to 300m a correction factor from 40 dB/decade was used.)

Measurement distance 3m

This measurement was done in 3 polarisation's, the plot shows the worst case

Limits

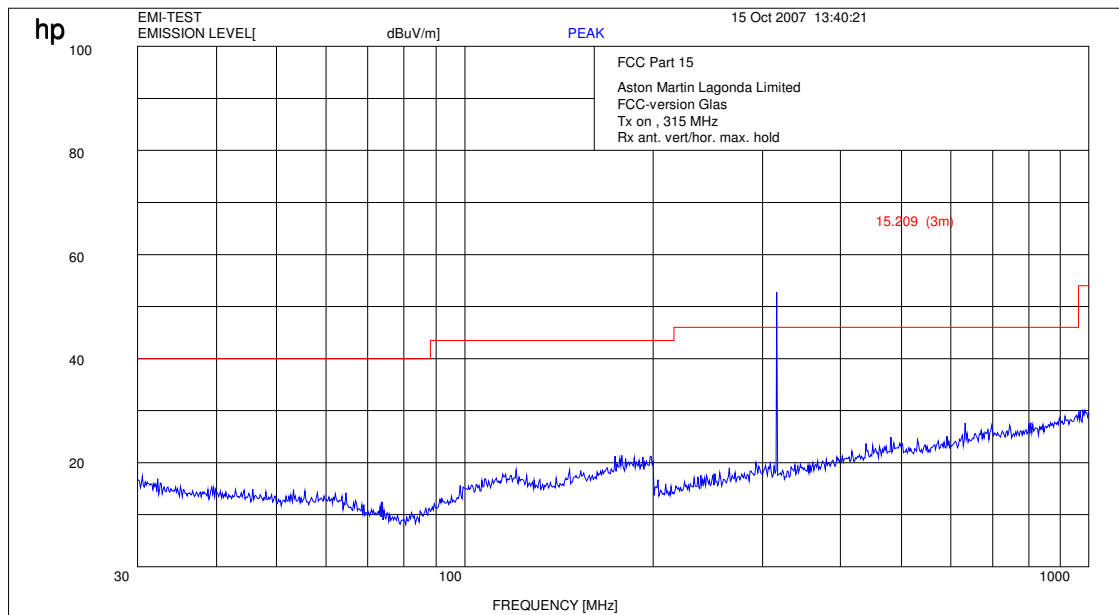
SUBCLAUSE § 15.209

Frequency (MHz)	Field strength (µV/m)	Measurement distance (m)
0.0009 – 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

TX with Glass-housing

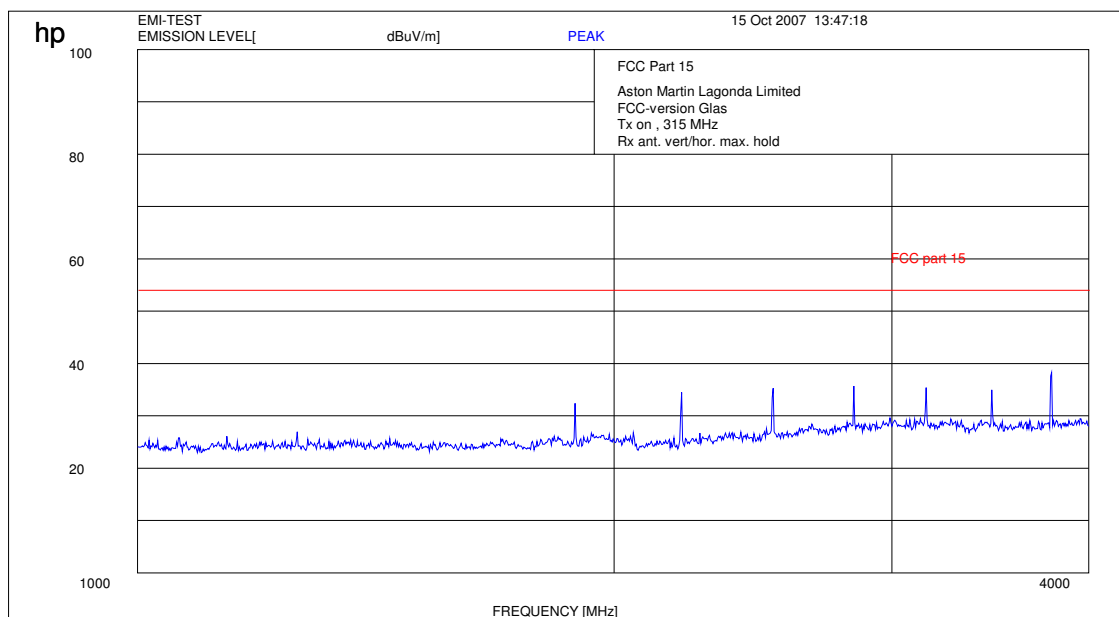
Plot 1:

Tx : 30 MHz - 1 GHz



Plot 2:

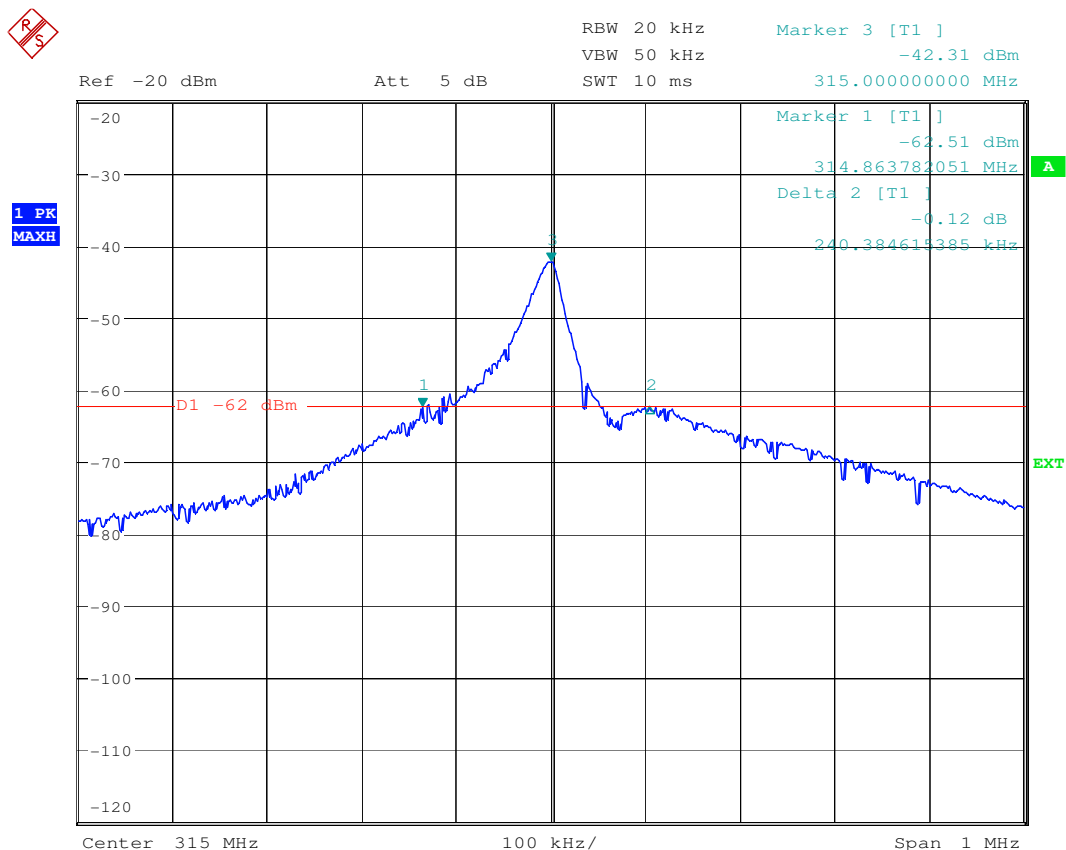
Tx : 1 GHz - 4 GHz



4.5 Occupied Bandwidth

Reference

FCC:	CFR Part SUBCLAUSE § 15.231 (c)
IC:	RSS 210, Issue 7 A1.1.3



Date: 16.OCT.2007 08:55:03

OBW is 240.3 kHz

Limit:

The OBW shall not be wider than 0.25% of the centre frequency, here maximum 787.5 kHz.

5 Used Testequipment

All equipment is calibrated at least once every two years, analyzers and generators have been calibrated last time in August 2007.

Anechoic chamber C:

No	Equipment/Type	Manuf.	Serial Nr.	Inv. No. Cetecom	Last Calibration	Frequency (months)	Next Calibration
1	Anechoic chamber	MWB	87400/02	300000996	Monthly verification		
2	System-Rack 85900	HP I.V.	*	300000222	n.a.		
3	Measurement System 1						
4	Spektrum Analyzer 8566B	HP	2747A05306	300001000	05.10.2006	24	05.10.2008
5	Spektrum Analyzer Display 85662A	HP	2816A16541	300002297	05.10.2006	24	05.10.2008
6	Quasi-Peak-Adapter 85650A	HP	2811A01131	300000999	05.10.2006	24	05.10.2008
7	RF-Preselector 85685A	HP	2837A00779	300000218	08.11.2006	24	08.11.2008
8	PC Vectra VL	HP		300001688	n.a.		
9	Software EMI	HP		300000983	n.a.		
10	Measurement System 2						
11	FSP 30	R&S	100623	ICT 300003464	26.10.2006	12	26.10.2007
12	PC	F+W			n.a.		
13	TILE	TILE			n.a.		
14	Biconical antenna	EMCO	S/N: 860 942/003		Monthly verification (System cal.)		
15	Log. Period. Antenna 3146	EMCO	2130	300001603	Monthly verification (System cal.)		
16	Double Ridged Antenna HP 3115P	EMCO	3088	300001032	Monthly verification (System cal.)		
17	Active Loop Antenna 6502	EMCO	2210	300001015	Monthly verification (System cal.)		
18	Power Supply 6032A	HP	2818A03450	300001040	12.05.2007	36	12.05.2010
19	Busisolator	Kontron		300001056	n.a.		
20	Leitungsteiler 11850C	HP		300000997	Monthly verification (System cal.)		
21	Power attenuator 8325	Byrd	1530	300001595	Monthly verification (System cal.)		
22	Band reject filter WRCG1855/1910	Wainwright	7	300003350	Monthly verification (System cal.)		
23	Band reject filter WRCG2400/2483	Wainwright	11	300003351	Monthly verification (System cal.)		

SRD Laboratory Room 002:

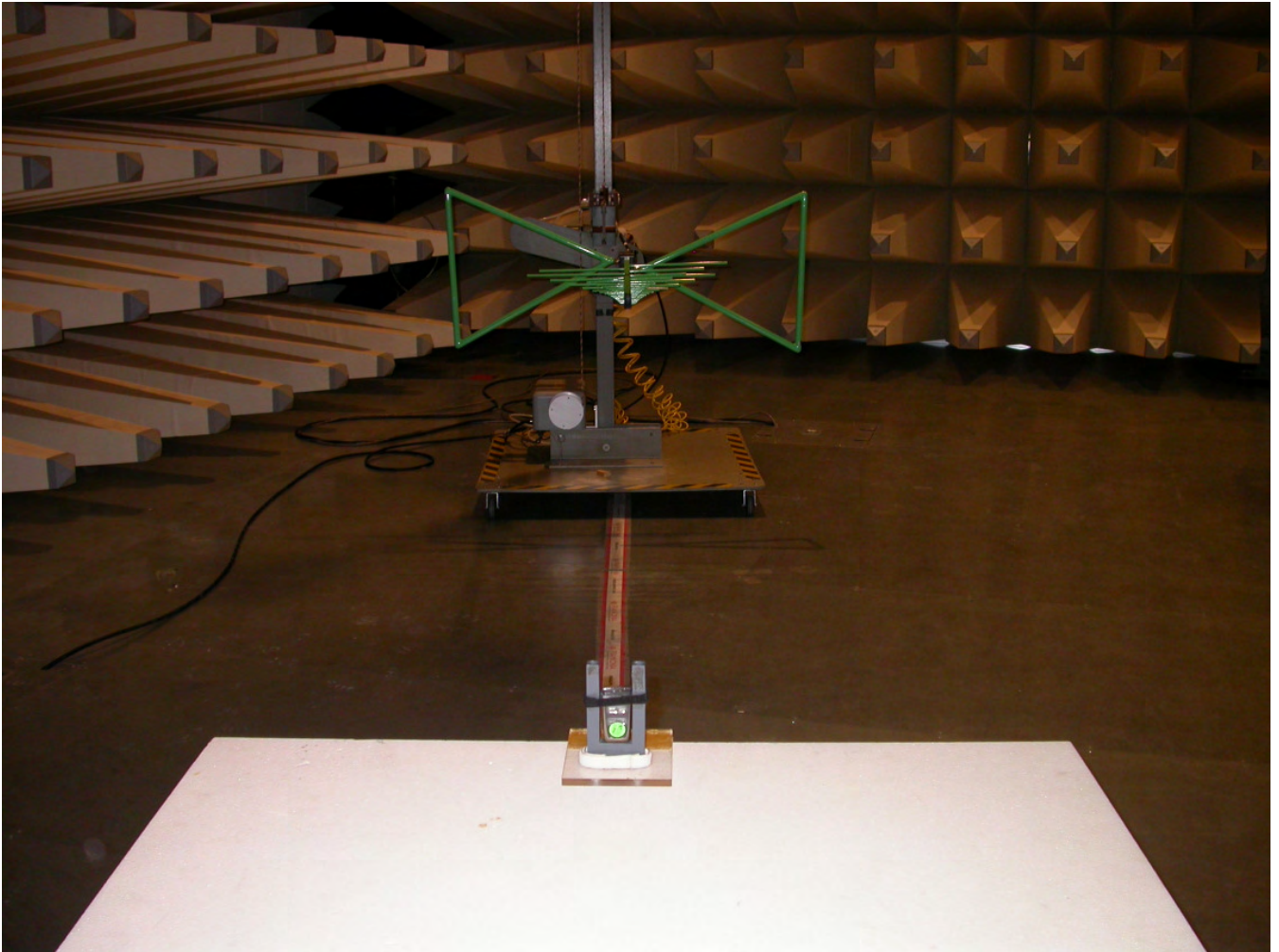
No	Equipment/Type	Manuf.	Serial Nr.	Inv. No. Cetecom	Last Calibration	Frequency (months)	Next Calibration
1	System Controller PSM 12	R&S	835259/007	3000002681-00xx	n.a.		
2	Memory Extension PSM-K10	R&S	To 1	3000002681	n.a.		
3	Operating Software PSM-B2	R&S	To 1	3000002681	n.a.		
4	19'' Monitor		22759020-ED	3000002681	n.a.		
5	Mouse		LZE 0095/6639	3000002681	n.a.		
6	Keyboard		G00013834L461	3000002681	n.a.		
7	Spectrum Analyser FSIQ 26	R&S	835540/018	3000002681-0005	01.08.2006	24	01.08.2008

8	Tracking Generator FSIQ-B10	R&S	835107/015	3000002681	s.No.7		
10	RF-Generator SMIQ03 (B1 Signal)	R&S	835541/056	3000002681-0002	01.08.2006	36	01.08.2009
11	Modulation Coder SMIQ-B20	R&S	To 10	3000002681	s.No.10		
12	Data Generator SMIQ-B11	R&S	To 10	3000002681	s.No.10		
13	RF Rear Connection SMIQ-B19	R&S	To 10	3000002681	s.No.10		
14	Fast CPU SM-B50	R&S	To 10	3000002681	s.No.10		
15	FM Modulator SM-B5	R&S	835676/033	3000002681	s.No.10		
16	RF-Generator SMIQ03 (B2 Signal)	R&S	835541/055	3000002681-0001	01.08.2006	36	01.08.2009
17	Modulation Coder SMIQ-B20	R&S	To 16	3000002681	s.No.16		
18	Data Generator SMIQ-B11	R&S	To 16	3000002681	s.No.16		
19	RF Rear Connection SMIQ-B19	R&S	To 16	3000002681	s.No.16		
20	Fast CPU SM-B50	R&S	To 16	3000002681	s.No.16		
21	FM Modulator SM-B5	R&S	836061/022	3000002681	s.No.16		
22	RF-Generator SMP03 (B3 Signal)	R&S	835133/011	3000002681-0003	01.08.2006	36	01.08.2009
23	Attenuator SMP-B15	R&S	835136/014	3000002681	S.No.22		
24	RF Rear Connection SMP-B19	R&S	834745/007	3000002681	S.No.22		
25	Power Meter NRVD	R&S	835430/044	3000002681-0004	01.08.2006	24	01.08.2008
26	Power Sensor NRVD-Z1	R&S	833894/012	3000002681-0013	01.08.2006	24	01.08.2008
27	Power Sensor NRVD-Z1	R&S	833894/011	3000002681-0010	01.08.2006	24	01.08.2008
28	Rubidium Standard RUB	R&S		3000002681-0009	01.08.2006	24	01.08.2008
29	Switching and Signal Conditioning Unit SSCU	R&S	338864/003	3000002681-0006	01.08.2006	24	01.08.2008
30	Laser Printer HP Deskjet 2100	HP	N/A	3000002681-0011	n.a.		
31	19" Rack	R&S	11138363000004	3000002681	n.a.		
32	RF-cable set	R&S	N/A	3000002681	n.a.		
33	IEEE-cables	R&S	N/A	3000002681	n.a.		
34	Sampling System FSIQ-B70	R&S	835355/009	3000002681	s.No.7		
35	RSP programmable attenuator	R&S	834500/010	3000002681-0007	01.08.2006	24	01.08.2008
36	Signalling Unit	R&S	838312/011	3000002681	n.a.		
37	NGPE programmable Power Supply for EUT	R&S	192.033.41	3000002681			
38	Climatic box VT 4002	Heraeus Vötsch	58566046820010	300003019	11.05.2007	24	11.05.2009
39	Signaling Unit CMU200	R&S	832221/0055	300002862	12.01.2006	24	12.01.2008
40	Power Splitter 6005-3	Inmet Corp.	none	300002841	23.12.2006	24	23.12.2008
41	SMA Cables SPS-1151-985-SPS	Insulated Wire	different	different	n.a.		
42	CBT32 with EDR Signaling Unit	R&S					
43	Coupling unit	Narda	N/A	--	n.a.		
44	2xSwitch Matrix PSU	R&S	872584/021	300001329	n.a.		
45	RF-cable set	R&S	N/A	different	n.a.		
46	IEEE-cables	R&S	N/A	--	n.a.		

6 Annex B: Photographs of Test site

Glass housing

Photo 1 (Radiated Emissions):



7 Annex C: External Photographs of the Equipment

Glass housing

Photo 2:



Photo 3:



8 Annex D: Internal Photographs of the Equipment

Glass housing

Photo 4:



Photo 5:



Photo 6:

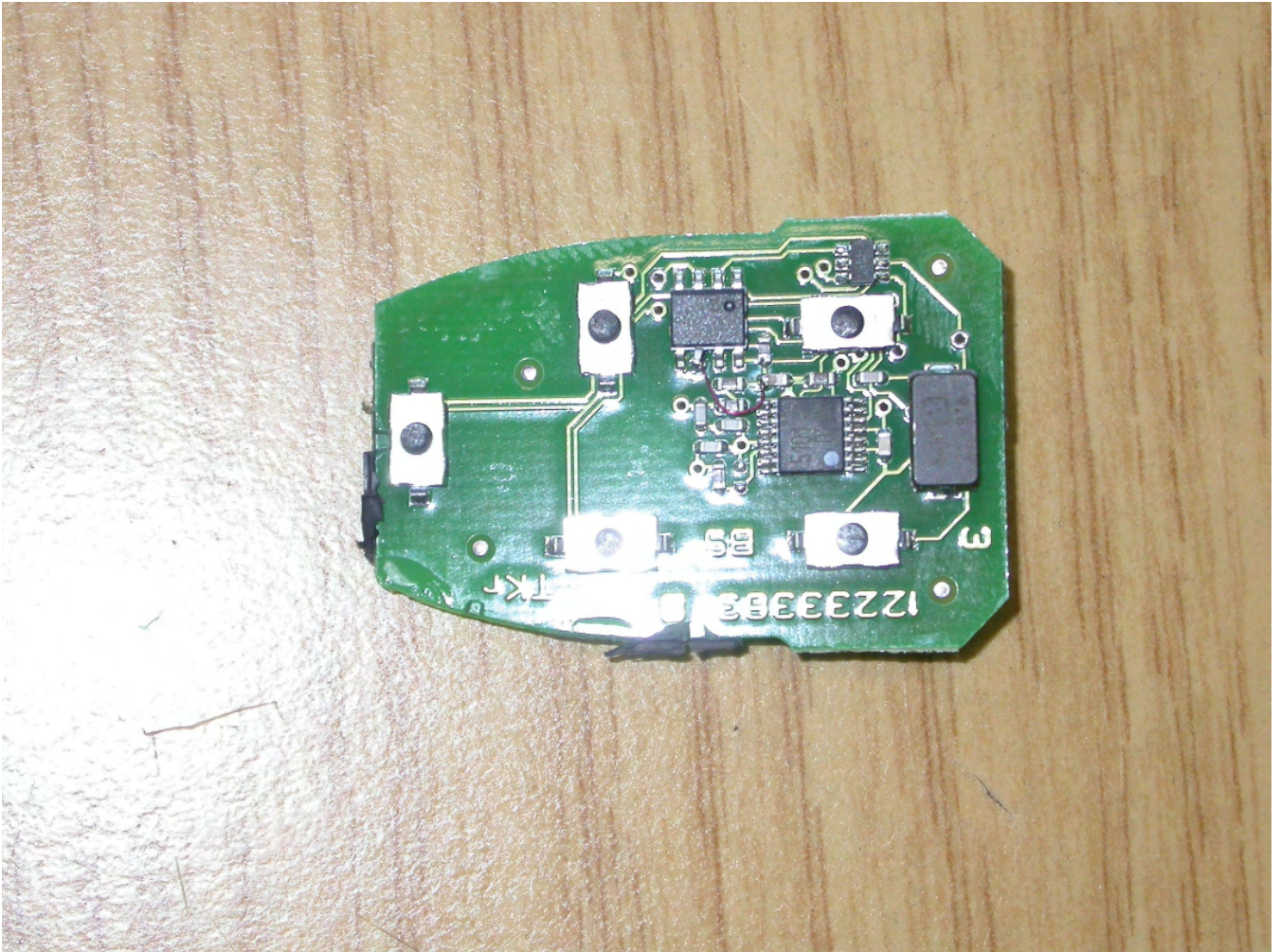


Photo 7:

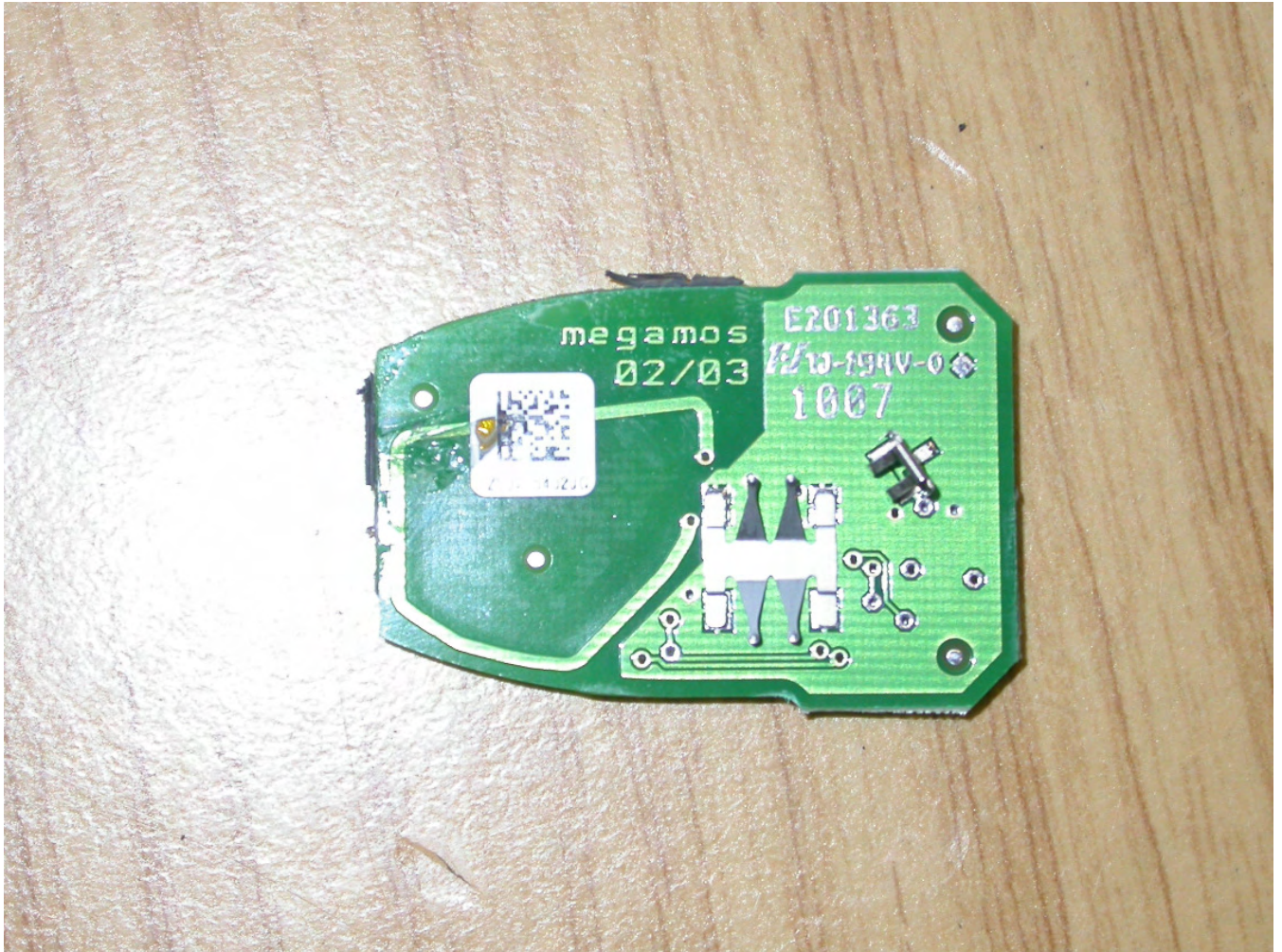


Photo 8:

