



RR-032-C42-08-103330-14-A

RADIO MEASUREMENT TESTS REPORT

According to the standard:
FCC part 15 Edition 2008

Equipment under test:
BIOMETRIC ACCESS CONTROL TERMINAL
MA521 +


Company:
SAGEM SECURITE GROUPE SAFRAN

FCC listed: 910 701

Distribution: Mr SANDRAZ

(Company: SAGEM SECURITE GROUPE SAFRAN)

Number of pages: 22 with 3 annexes

Ed.	Date	Modified page	Written by		Technical Verification and Quality	
			Name	Visa	Name	Visa
0	23/06/2009	Creation	L. BOMBA LB		B. Pellerin 	

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NAME OF THE EQUIPMENT UNDER TEST (E.U.T.) : BIOMETRIC ACCESS CONTROL
TERMINAL – MA521 +

Serial number : 091801082A

Part number : 293556608

Software Version : Not communicated

MANUFACTURER'S NAME : SAGEM SECURITE GROUPE SAFRAN

APPLICANT'S ADDRESS:

Company : SAGEM SECURITE GROUPE SAFRAN

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FRANCE

Person present during the tests : -

Responsibles : Mr SANDRAZ

DATES OF TESTS : 2009, 23rd of June

TESTS LOCATION : Open area test site of Aunainville (28) -
FRANCE

TESTS SUPERVISOR : J.C. BOGA

TESTS OPERATOR : L. BOMBA

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1. INTRODUCTION

This document submits the results of Electromagnetic Compatibility tests performed on the equipment « Biometric access control terminal MA 521 +» (denominated hereafter E.U.T.: equipment under test) according to documents listed below.

2. REFERENCE DOCUMENTS

FCC part 15 Edition 2008

Code of federal regulations.

Title 47 – Telecommunication.

Chapter 1 – Federal communication commission.

Part 15 – Radio frequency devices.

Subpart B – Unintentional radiators.

Limits and methods of measurement of radio disturbance. Characteristic of information technology equipment.

ANSI C63-4 : 2003

Methods of Measurement of Radio-Noise Emissions from Low-voltage Electrical and Electronics Equipment in the range of 9 kHz to 40 GHz.

3. EQUIPMENT UNDER TEST CONFIGURATION

Equipment under test (E.U.T.) description:

Equipment under test is a biometric access control terminal. It is powered to mains 12Vdc (750mA).

Cycle and operating mode during emission tests:

In permanent communication.

Equipment modifications applied during tests: No.

Product Description:

ITU Emission code:	-
Class:	B
Operating frequency range:	13.110 MHz - 14.010MHz
Number of channels:	-
Channel spacing:	-
Frequency generation:	-
Modulation:	-
Power source:	12Vdc (750mA).

4. SUMMARY OF TEST RESULTS

Test procedure	Designation of test	Test results				Comments
		Pass	Fail	N.A.	N.P.	
15.207	Measurement of conducted emission on AC mains ports			X		
15.209	Unintentional radiated emissions in the band 9 kHz - 1 GHz	X				

N.P.: Not Performed.

N.A.: Not Applicable.

The tested sample "Biometric access control terminal MA 521 +" complies with the requirements of the standard:

- FCC PART 15:2008

According to the limits specified in the present report.

5. RADIATED EMISSION IN OPEN AREA TEST SITE

Temperature (°C): 23

Humidity (%HR): 40

Air pressure (hPa): 1003

Standard: FCC PART 15: 2008

Sections: 15.209

Equipment under test arrangement:

The equipment under test (EUT) is placed on a non-conductive test table at 0.8 m above the horizontal metal ground plane.

For maximum meter reading at each frequency, the antenna height is adjusted between 1 m and 4 m above the ground plane. A 360 degrees rotation of the EUT is performed in vertical and horizontal polarization. The frequency azimuth and antenna height are presented in the table on the next pages.

The equipment is in continuous transmission.

Frequency range: 9 kHz - 1 GHz

Detection mode: Quasi-peak (for 9 kHz - 30 MHz)
Quasi-peak (for 30 MHz - 1 GHz)

Resolution bandwidth: 9 kHz (for 9 kHz - 30 MHz)
120 kHz (for 30 MHz - 1 GHz)

Measurement distance: 10 meters (for 9 kHz - 30 MHz)
10 meters (for 30 MHz - 1 GHz)

Test method deviation: In communication.

Test equipment list:

CATEGORY	BRAND	TYPE	N° EMITECH
Antenna	Schwarzbeck	UHALP 9108	3106
Antenna	Schwarzbeck	VHA 9103	3426
Antenna	Rohde & Schwarz	HFH2-Z2	0315
Antenna mast	HD GmbH	HD 100	2342
Antenna mast	HD GmbH	MA 240	2341
Cable	Câbles & Connectiques	N-13m	2452
Cable	Câbles & Connectiques	N-2m	2451
Cable HF	Câbles & Connectiques	HF-12m	2450
Cable	Cables & Connectiques	N-7m	6087
Cable	-	N-30m	4359
OATS	Emitech	Aunainville	0187
Receiver	Rohde & Schwarz	ESVP	1057
Receiver	Rohde & Schwarz	ESH3	0181
Power supply	SODILEC	SDR 60/10	0213

Results:

● Power supply 12Vdc:

FREQUENCY (MHz)	POLARIZATION	AZIMUT (degrees)	Gant (dBi)	Pcab (dB)	MEASURE (dB μ V/m)	LIMIT (dB μ V/m)
13.5598 ①	⊥	255	-32.8	1.2	53.5	104
27.1196	⊥	6	-29.4	1.7	29	49

⊥: perpendicular

$M \text{ (dB}\mu\text{V/m)} = V_{\text{max}} - G_{\text{ant}} + P_{\text{cab}} + 51.5$

① Carrier frequency

FREQUENCY (MHz)	POLARIZATION	ANTENNA HEIGHT (cm)	AZIMUT (degrees)	MEASURE (dB μ V/m)	LIMIT (dB μ V/m)
40.678	V	268	191	29.0	30

V: Vertical

H: Horizontal

Test conclusion:

The equipment complies with the requirements of the standard FCC part 15.

□□□ End of report, 3 annexes to be forwarded □□□

ANNEX 1:

ANTENNA FACTORS, INSERTION LOSSES AND AMPLIFIER VALUES

BILL OF MATERIAL

The test antenna used for the radiated emission between 30 MHz and 300 MHz is the biconical antenna n°3426. Antenna factors are given in table 1.

The test antenna used for the radiated emission between 300 MHz and 1 GHz is the log-periodic antenna n°3106. Antenna factors are given in table 2.

The test antenna used for the radiated emission between 9 kHz and 30 MHz is the frame antenna n°0315. Antenna factors are given in table 3.

The measuring receiver n°0181 used in the frequency range 9 kHz and 30 MHz has an integrated preamplifier.

The measuring receiver n°1057 used in the frequency range 30 MHz to 1 GHz has an integrated preamplifier.

The test cable used between 9 kHz and 30 MHz to connect the antennas to the receiver for measurements at a distance of 10 meters has losses given in table 4.

The test cable used between 30 MHz and 1 GHz to connect the antennas to the receiver for measurements at a distance of 10 meters has losses given in table 5.

Frequency (MHz)	Antenna factor (dB/m)	Frequency (MHz)	Antenna factor (dB/m)
30	18.5	90	10.9
35	16.5	100	13.3
40	15.5	120	13.6
50	11.9	140	14.6
60	8.8	160	16.8
70	6.3	180	18.8
80	8.2	200	18.4

TABLE 1 : BICONICAL ANTENNA

Frequency (MHz)	Antenna factor (dB/m)	Frequency (MHz)	Antenna factor (dB/m)
200	23.2	-	-
300	14.4	700	20.8
400	16.3	800	21.2
500	17.7	900	21.9
600	19.3	1000	22.5

TABLE 2 : LOG-PERIODIC ANTENNA

Frequency (MHz)	Antenna factor (dB μ A/m)	Frequency (MHz)	Antenna factor (dB μ A/m)
0.009	- 24.3	10	- 31.1
0.01	- 24.9	15	- 30.7
0.02	- 28.4	20	- 29.5
0.05	- 30.5	25	- 28.0
0.1	- 31.1	30	- 26.6
0.2	- 31.2	-	-
0.5	- 31.4	-	-
1	- 31.4	-	-
2	- 31.3	-	-
5	- 31.4	-	-

TABLE 3 : FRAME ANTENNA

Frequency (MHz)	Loss (dB)	Frequency (MHz)	Loss (dB)
0.009	0.0	10	- 0.7
0.05	0.4	13.56	- 0.9
0.1	0.4	15	- 1.1
0.5	0.4	20	- 1.2
1	0.1	25	- 1.3
5	- 0.6	30	- 1.4

TABLE 4 : TEST CABLE FOR 10 M MEASUREMENT INTO 9 kHz AND 30 MHz

Frequency (MHz)	Loss (dB)	Frequency (MHz)	Loss (dB)
30	0.8	160	2.0
35	0.9	180	2.2
40	1.0	200	2.3
45	1.1	300	2.8
50	1.1	400	3.3
60	1.2	500	3.7
70	1.3	600	4.0
80	1.4	700	4.3
90	1.5	800	4.7
100	1.6	900	5.0
120	1.7	1000	5.3
140	1.9	-	-

TABLE 5 : TEST CABLE FOR 10 M MEASUREMENT INTO 30 MHz and 1 GHz

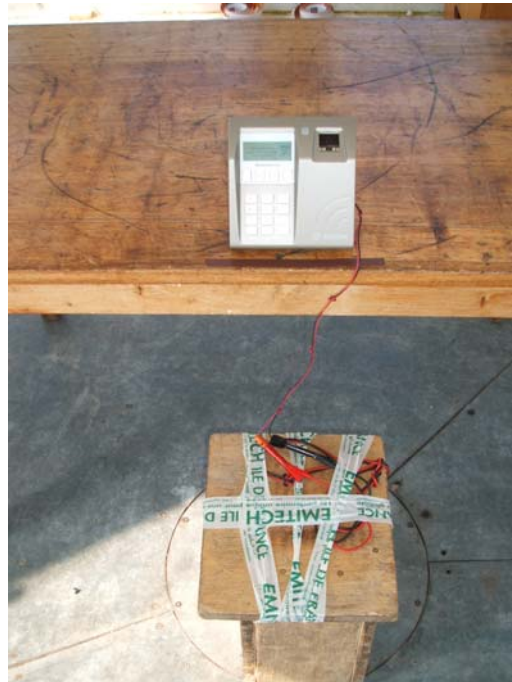
ANNEX 2:

PHOTOGRAPHIES

EQUIPMENT UNDER TEST (E.U.T.) PHOTOGRAPHIES

MA 521

E.U.T. Photographies:





E.U.T. Photographies:





E.U.T. Photographies:



Measurement of electromagnetic field in open area test site:



Measurement of electromagnetic field in open area test site:



Measurement of electromagnetic field in open area test site:



ANNEX 3:

CALIBRATION DATE

N° EMITECH	LAST CALIBRATION	CALIBRATION DUE DATE
3374	04/03/08	04/03/10
2896	06/01/09	06/01/11
1097	26/02/09	26/02/11
187	18/06/07	18/08/09
3106	09/03/09	09/03/11
3426	21/08/07	21/08/09
2450	13/03/09	13/03/11
2451	28/05/08	28/05/10
2452	11/06/08	11/06/10
1529	26/02/09	26/02/11
4691	26/02/09	26/02/11
3229	08/04/09	08/04/10
1057	04/07/07	04/07/09
2864	06/01/09	06/01/11
315	19/12/08	19/12/10
6087	22/08/08	22/08/10
4359	23/07/07	23/07/09