

RA-24-08104576-1/A Ed. 1

“This report cancels and replaces the test report n° RA-24-08104576-1/A Edition 0”

RADIO Measurement Certification Report

Standard to apply:
FCC Part 15

Equipment under test:
**Payment ticket kit C-less and EMVCO
EPSUM C40 C-less**

Modular Approval

FCC ID:
T2X-C40-C-less

Company:
PARKEON

DISTRIBUTION: Mr BOURIOT

Company: PARKEON

Number of pages: 19 including 3 annexes

Ed.	Date	Modified pages	Written by		Technical Verification Quality Approval	
			Name	Visa	Name	Visa
1	12-May-09	Annex 1	M. DUMESNIL	M. D.		

Duplication of this document is only permitted for an integral photographic facsimile. It includes the number of pages referenced here above.
This document is the result of testing a specimen or a sample of the product submitted. It does not imply an assessment of the conformity of the whole manufactured products of the tested sample.



PRODUCT: Payment ticket kit C-less and EMVCO

Reference / model: EPSUM C40 C-less

Trade mark: PARKEON

Serial number: not communicated

MANUFACTURER: PARKEON

COMPANY SUBMITTING THE PRODUCT:

Company: PARKEON

Address: Parc Lafayette
6 rue Isaac Newton
25075 BESANCON CEDEX 9
FRANCE

Responsible: Mr BOURIOT

DATE(S) OF TEST: 2 and 3 December 2008

TESTING LOCATION: EMITECH ATLANTIQUE laboratory at ANGERS (49) FRANCE
EMITECH ATLANTIQUE open area test site in LA POUEZE (49)
FRANCE
Registration Number by FCC: 101696/FRN: 0006 6490 08

TESTED BY: M. DUMESNIL

TUTOR: P. BONNENFANT

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1. INTRODUCTION

This report presents the results of radio test carried out on the following equipment: Payment ticket kit C-less and EMVCO - EPSUM C40 C-less , in accordance with normative reference.

2. PRODUCT DESCRIPTION

Class: B (residential)

Utilization: Kit of ticket of payment

Antenna type: external antenna

Power level, frequency range and channels characteristics are not user adjustable.

The details pictures of the product and the circuit boards are joined with this file.

3. NORMATIVE REFERENCE

The standards and testing methods related throughout this report are those listed below. They are applied on the whole test report even though the extensions (version, date and amendment) are not repeated.

FCC Part 15 (2007) Code of Federal Regulations
Title 47 - Telecommunication
Chapter 1 - Federal Communications Commission
Part 15 - Radio frequency devices
Subpart C - Intentional Radiators

ANSI C63.4 (03) American National Standard for Methods of measurement of Radio-
Noise from low-voltage.
Electrical and Electronic Equipment in the Range of 9 kHz to 40 GHz.

4. TEST METHODOLOGY

Radio performance tests procedures given in part 15:

Paragraph 33: frequency range of radiated measurements
Paragraph 35: measurement detector functions and bandwidths
Paragraph 107: conducted limits
Paragraph 109: radiated emission limits
Paragraph 203: antenna requirement
Paragraph 207: conducted limits
Paragraph 209: radiated emission limits; general requirements
Paragraph 225: operation within the band 13.110 – 14.010 MHz

5. TESTS RESULTS SUMMARY

5.1. Intentional radiator (subpart C)

Test procedure	Description of test	Criteria respected ?				Comment
		Yes	No	NAp	NAs	
FCC Part 15.203	ANTENNA REQUIREMENT				X	Note 3
FCC Part 15.207	CONDUCTED LIMITS			X		
FCC Part 15.209	RADIATED EMISSION LIMITS, GENERAL REQUIREMENTS	X				Note 1
FCC Part 15.225	OPERATION WITHIN THE BAND 13.110 – 14.010 MHz					
	a) 13,553-13,567 MHz, field strength	X				Note 1
	b) 13,410-13,553 MHz et 13,567-13,710 MHz, field strength	X				Notes 1 & 2
	c) 13,110-13,410 MHz et 13,710-14,010 MHz, field strength	X				Notes 1 & 2
	d) spurious outside 13,110 MHz and 14,010 MHz	X				See §15.209 Note 1
	e) frequency tolerance	X				Note 1
	f) Tag actif			X		

NAp: Not Applicable

NAs: Not Asked

5.2. Unintentional radiator (subpart B)

Test procedure	Description of test	Criteria respected ?				Comment
		Yes	No	NAp	NAs	
FCC Part 15.107	CONDUCTED LIMITS			X		
FCC Part 15.109	RADIATED EMISSION LIMITS	X				Note 1

NAp: Not Applicable

NAs: Not Asked

Note 1: these tests have been realized with two ferrites (with two center passages) to extremities of the cable of antenna (ref. Würth Elektronik 742 711 32 see photo in annex 1).

Note 2: there is no emission radiated in these bands. (See annex 2)

Note 3: professional installation

5.3. Conclusion:

The sample of Payment ticket kit C-less and EMVCO - EPSUM C40 C-less submitted to the tests complies with the regulations of the standard FCC Part 15 in accordance with the limits or criteria defined in this report.

6. MEASUREMENT OF RADIATED INTERFERENCE FIELD STRENGTH**Standard:** FCC Part 15**Test procedure:** FCC Part 15

Unintentional Radiators: Sec.15.109

Limits: Class**Test equipment:**

TYPE	BRAND	EMITECH NUMBER
Test receiver	Rohde & Schwarz ESVS 10	1219
Biconical antenna	Hewlett Packard 11966 C	728
Log periodic antenna	Rohde & Schwarz HL 223	1999
Open area test site	EMITECH	1274
Spectrum analyser	ADVANTEST R3131	1628
Power source	Hewlett Packard E3610A	4195
Multimeter	Fluke 77-2	0812

Test set up:

The system is tested in an open area test site (OATS).

The test unit is placed on a rotating table, 0.8 m from a ground plane. Zero degree azimuth corresponds to the front of the equipment under test.

Cables disposition of unit under test:

See photos of the test unit configuration in annex 1.

Frequency range: The highest frequency generated in the device is $f = 13.56$ MHz
According the Sec.15.33 of the FCC Part 15 standard, the frequency range measured is indicated in the following table:

For unintentional radiator, including a digital device (Sec.15.33, §(b)(1) of the FCC Part 15 standard) :

Highest frequency generated or used in the device or on which the device operates or tunes (MHz)	Upper frequency of measurement range (MHz)
1.705 – 108	1000

Detection mode: Quasi-peak for the range 30 MHz - 1 GHz

Bandwidth: 120 kHz for the range 30 MHz - 1 GHz

Distance of antenna: class B: 3 meters

Antenna height: 1 to 4 m

Antenna polarization: vertical and horizontal

Equipment under test operating condition:

The equipment under test is supplied in 12 Vd.c. by a stabilized power source.
Radio emission was deactivated.

Results:

Not any unintentional radiator has been observed during this trial.

Applicable limits: For $30 \text{ MHz} \leq F < 88 \text{ MHz}$: $40 \text{ dB}\mu\text{V/m}$
 $88 \text{ MHz} \leq F < 216 \text{ MHz}$: $43.52 \text{ dB}\mu\text{V/m}$
 $216 \text{ MHz} \leq F < 960 \text{ MHz}$: $46.02 \text{ dB}\mu\text{V/m}$
Above 960 MHz: $53.98 \text{ dB}\mu\text{V/m}$

Test conclusion:

RESPECTED STANDARD

7. RADIATED EMISSION LIMITS

Standard: FCC Part 15

Test procedure: paragraph 209

Test equipment:

TYPE	BRAND	EMITECH NUMBER
Test receiver	Rohde & Schwarz ESVS 10	1219
Biconical antenna	Hewlett Packard 11966 C	728
Spectrum analyzer	Rohde & Schwarz FSP40	4088
Open area test site	EMITECH	1274
Test receiver	Rohde & Schwarz ESH3	4112
Active loop antenna	EMCO 6502	1406
Power source	Hewlett Packard E3610A	4195
Meteo station AB888	Oregon scientific	1539
Multimeter	Fluke 77-2	0812

Test set up:

The system is tested in an open area test site (OATS).

The test unit is placed on a rotating table, 0.8 m from a ground plane. Zero degree azimuths correspond to the front of the equipment under test.

Only the emissions radiated by the cabinet and the structure are checked.

Frequency range: from 9 kHz to harmonic 10 ($F_{\text{carrier}} \leq 1 \text{ GHz}$)

Detection mode: Quasi-peak or average ($F < 1 \text{ GHz}$)

Bandwidth: 120 kHz ($F < 1 \text{ GHz}$)

Distance of antenna: 10 meters for $F < 30 \text{ MHz}$
3 meters for $F \geq 30 \text{ MHz}$

Antenna height: 1 to 4 meters

Antenna polarization: vertical and horizontal

Equipment under test operating condition:

The equipment is blocked in continuous modulated transmission mode at the highest output power level which the transmitter is intended to operate.

Results:

Ambient temperature (°C): 20

Relative humidity (%): 52

Power supply: 12 Vd.c. by a stabilized power source.

The polarity column refers to the antenna polarity at which the maximum emissions level is measured.

FREQUENCIES (MHz)	Antenna height (cm)	Polarization of antenna H: Horizontal V: Vertical	Azimuth (degrees)	Field strength (dBμV/m)	Limits (dBμV/m)	Margin (dB)
14.7	100	V	65	15.92	48.63	32.71
15.04	100	V	72	17.72	48.63	30.91
27.12	100	V	10	35.29	48.63	13.34
40.68	100	V	47	37.6	40	2.4
54.24	100	V	280	33.8	40	6.2
67.80	130	V	304	35.7	40	4.3
81.36	100	V	320	29	40	11
94.92	180	V	305	37	43.52	6.52
108.48	180	H	280	20.9	43.52	22.62
122.03	160	H	335	37.6	43.52	5.92
135.59	145	H	322	32	43.52	11.52

Test conclusion:

RESPECTED STANDARD

8. OPERATION WITHIN THE BAND 13.110 – 14.010 MHz

Standard: FCC Part 15

Test procedure: paragraph 15.225

Test equipment:

TYPE	BRAND	EMITECH NUMBER
Test receiver	Rohde & Schwarz ESH3	4112
Active loop antenna	EMCO 6502	1406
Open area test site	EMITECH	1274
Power source	Hewlett Packard E3610A	4195
Multimeter	Fluke 77-2	0812
Meteo station	Oregon Scientific AB888	1539

Test set up:

The system is tested in an open area test site (OATS).

The test unit is placed on a rotating table, 0.8 m from a ground plane. Zero degree azimuth corresponds to the front of the equipment under test.

The frequency tolerance measure is realized in near-field.

Distance of antenna: 10 meters

Antenna height: 1 meter

Antenna polarization: vertical

Equipment under test operating condition:

The equipment is blocked in continuous modulated transmission mode, at the highest output power level which the transmitter is intended to operate.

Results:

Carrier field strength

Ambient temperature (°C): 20

Relative humidity (%): 43

Sample N° 1

Power supply: 12 Vd.c. by a stabilized power source.

	Field strength (dBμV/m) at frequency: 13.56 MHz
Normal test conditions	69.11
Limits	103.08

Polarization of test antenna: vertical (height: 100 cm)

Position of equipment: use position (azimuth: 60 degrees)

Frequency stability

Sample N° 1

Power supply: 12 Vd.c. by a stabilized power source.

Normal test conditions	Temperature (°C): 26 Humidity (%): 31	Nominal power source (V): 12	Measured differences (ppm) at frequency: 13.559467 MHz	Limits (ppm)
Extreme test conditions	Minimal temperature (°C): -20	Minimal power source (V): 10.2	-2.80	±100
		Maximal power source (V): 13.8	-1.99	
	Maximal temperature (°C): +50	Minimal power source (V): 10.2	-3.10	
		Maximal power source (V): 13.8	-3.10	

Measurement uncertainty: $\pm 1 \times 10^{-7}$

Test conclusion:

RESPECTED STANDARD

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

1 | ANNEX 1: PHOTOS OF THE EQUIPMENT UNDER TEST

READER

GENERAL VIEW



1 |

The internal photos are specified confidential by the applicant.

EMITECH

EMITECH

EMITECH

EMITECH

ANTENNA

GENERAL VIEW



EMITECH

EMITECH

EMITECH

EMITECH

TEST SET UP FOR RADIATED MEASUREMENTS

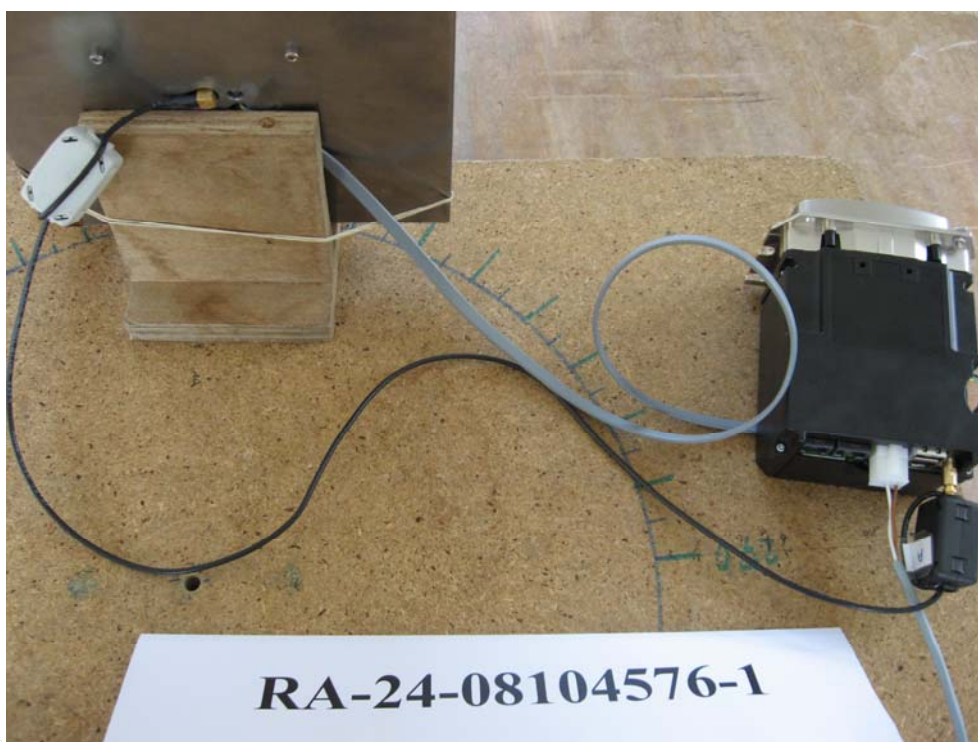


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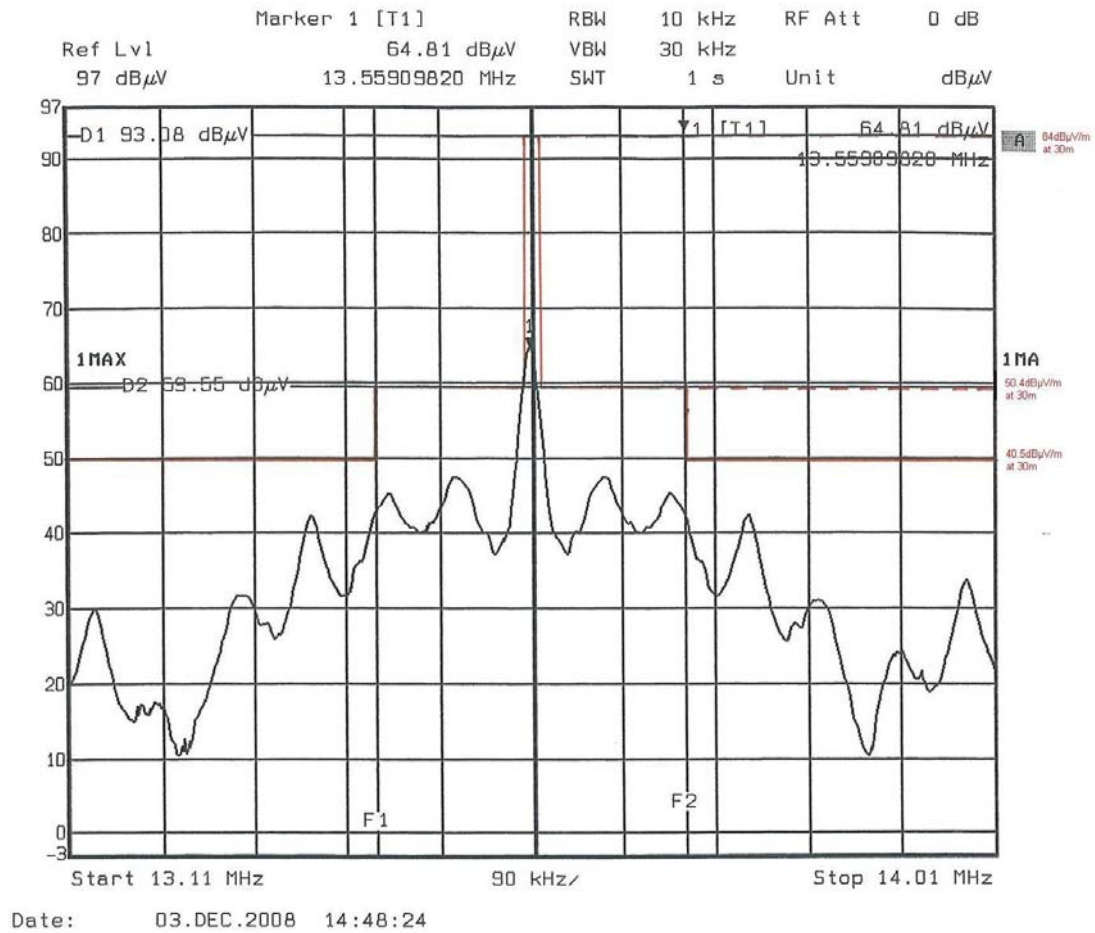
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ANNEX 2: RADIATED EMISSION PLOT



Fcarrier = 13.56MHz, 74.81dB μ V/m at 10m or 55.73dB μ V/m at 30m. (40dB/dec) marker 1

ANNEX 3: RADIO APPLICATION FORM

- A - PARTIE ADMINISTRATIVE

Administrative Part

(Il est important de remplir complètement les questionnaires dans chaque langue du rapport désiré, car ils sont nécessaires à l'établissement de notre proposition technique et financière ainsi qu'au bon déroulement de la prestation).

(It's very important to fill in properly the forms in every language of required report, because they are necessary for the quotation and for a good progress of tests).

A 1- Client (pour lequel l'essai ou la certification est demandé) :

Client (for whom the testing/certification is requested)

Société / Company : Parkeon
 Contact / Contact name : Sylvain Bourriot
 Adresse / Address : 6 rue Isaac Newton
 25075 BESANCON Cedex 3
 Tél : 03 81 54 48 74 Fax : Email : sbourriot@parkeon.com

A 2- Représentant ou Mandataire (pour le client ci-dessus si différent du client) :

Authorised Representative (if different than client)

Société / Company :
 Contact / Contact name :
 Adresse / Address :
 Tél : Fax : Email :

A 3- Fabricant (si différent du client) :

Manufacturer (if different than client)

Société / Company :
 Contact / Contact name :
 Adresse / Address :
 Tél : Fax : Email :

Nota important : Ce formulaire A (administratif) ainsi que le formulaire B (parties techniques) et les questionnaires spécifiques CEM & Radio seront intégrés dans le rapport d'essai.

Important notice: This form A (administrative) and the form B (technical part) and the specific EMC & Radio forms will be integrated in the test report.

-B - PARTIE TECHNIQUE

Technical part (for all types of equipment)

Descriptif de la configuration à tester (joindre des photos et/ou des schémas)

Equipment's specification to test (join photos and/or schemes)

Désignation - fonction / *Kit billettique de paiement C-less et EMVCO*
Designation - function:

Marque commerciale / Trade mark : *PARKEON*

Référence – Modèle – Type / *EPSUM C40 C-less*
Reference – model – type :

Produit / product : ☐ OUI ☒ NON **Système/system :** ☒ OUI ☐ NON

Nbre d'éléments (si système) / Nb of element (if system) : *2*

Gamme de produits / product's range :

Série / serial : ☐ OUI ☒ NON

Présérie / pilot run : ☐ OUI ☒ NON

Prototype / prototype : ☒ OUI ☐ NON

Alimentation / supply : *mono :* Vac *tri :* Vac

avec ou sans neutre / with or without neutral:

Adaptateur secteur / adaptor:

Batterie / battery: Vdc

Autre / other: *Alimentation du laboratoire*

Préciser / specify:

Plage de tension / voltage range : *8 - 30V manuel 12V.*

Fréquence ou plage de fréquence / frequency range :

Courant nominal / nominal current : *2 A max*

Puissance / power : W ou/or VA

Si le produit est embarqué / has the equipment been fitted:

Type de véhicule / kind of vehicle: */*

Connexion à un réseau de télécommunication/connection to telecom network :

RTC / CRT : ☐ OUI ☒ NON

RNIS / ISDN : ☐ OUI ☒ NON

ADSL : ☐ OUI ☒ NON

Ethernet : ☐ OUI ☒ NON

Liaison radio / radio link : ☐ OUI ☒ NON

Autres / others:

ledeur : 510 g

ledeur : 137 x 100 x 73mm.

Poids / weight: *aucune : 220g* **Taille / size: (L x l x h):** *aucune : 86,4 x 86,4 x 16,1mm.*

Température max. d'utilisation / max. temperature use : *-20°C, +55°C*

Présence de liquide (ou produit dangereux) / liquid's presence (or dangerous product) : */*

Connexions particulières (eau, gaz...) / specific connection (water, gas...) : */*

-B- PARTIE TECHNIQUE (suite)

Technical part (continued)

Préciser le type de câbles d'entrées/sorties / *state the input/output cable's type*

	Blindé / shielded ? O (yes) /N (no)	Si L > 3 m préciser la longueur/ if L > 3 m state the length
Câble/cable Alimentation	N	/
Câble/cable communication RS232	N	/
Câble/cable cable coaxial	O	/
Câble/cable fibre led	N	/
Câble/cable		
Câble/cable		
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