Bellaterra : **May 26th, 2005** File number : **5006131-M1**

Petitioner's reference: **INGENICO BARCELONA, S.A.**
Via Augusta 71, 73
08174 Sant Cugat del Vallès
BARCELONA – SPAIN

On its behalf:
Mr. Josep Maria Galindo

File number 5006131from March 10th, 2005 has been cancelled and substituted by file number 5006131-M1. Modifications performed:
Test FCC subpart C section 15.247 b) 1 done again with new software (btagreement). Only handset I7780 BTv2 s/n 8102518540 tested again.

Federal Communications Commission:
FRN: 0007-0391-00
Industry Canada:
File Number: IC 5766

TEST REQUESTED

Electromagnetic compatibility
FCC rules (CFR47 Part 15): 2001, subpart C: Information technology equipment. Radio disturbance characteristics. Limits and methods of measurement.
Radio Standards Specification (RSS-210): 2001: Low Power Licence-Exempt Radiocommunication Devices (All Frequency Bands).

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1.0 EQUIPMENT RECEIVED AND TESTED

Payment terminal (hand held terminal + base station+power supply) brand INGENICO BARCELONA, model I7780+7780BAS+ALI0085 BTv2, s/n 5125400017+IP038 +id.022 (*)
Modifications:
Kitagawa ferrite ref: SFC-8 is added to the serial port
Richo flat ferrite ref: RFS1-1507 is added to Bluetooth bus inside of the terminal

Test product reception (*): 2004-11-30
Test initial date (*): 2004-02-12
Test final date (*): 2005-02-24

(*) This modified file also contains a hand held terminal brand INGENICO, model I7780 BTv2 s/n 8102518540; test product reception: 2005-05-26, test initial date: 2005-05-26 and test final date: 2005-05-26

1.1 Test configuration
Power supply AC: 120V 60Hz.
Set-up: on - table.
For continuous interference:
Automatic test mode: Burn-in test and charging battery when base and terminal tested as a system. (2,4GHz communication between base and terminal)
For the remaining tests:
Automatic test mode: Burn-in test and charging battery when base and terminal tested as a system. 2,4GHz communication between base and terminal.
Terminal locked with base and separated 20metres when base tested alone
Terminal unlocked with base when terminal tested alone

1.2 Communication cables
Two serial cables loaded with impedances
Lan cable
Telephone cable

2.0 TESTING PROCEDURE

APPLIED STANDARDS FOR EMISSIONS TESTS FCC CFR47 Part 15 rules subpart C Test: ① ☑ Radiated emissions RF (30-1000 MHz) ② ☑ Radiated emissions RF (1-24 GHz) ③ ☑ Continuous interference (150 kHz-30 MHz)	Class ☐ A ☑ B
APPLIED STANDARDS FOR EMISSIONS TESTS FCC CFR47 Part 15 rules subpart C Test: ④ ☑ Section 15.247 (operation within the bands 2400-2483,5 MHz) ⑤ ☑ Section 15.249 (operation within the bands 2400-2483,5 MHz)	

APPLIED STANDARDS FOR EMISSIONS TESTS
Radio Standards Specification (RSS-210):2001
Test: ⑥ ☑ Section 6.6 (Transmitter AC Wireline Conducted Emissions)
⑦ ☑ Section 6.2.2 (m2): (Non-momentarily Operated Devices – 2400-2483.5MHz)
⑧ ☑ Section 6.2.2 (o): (Non-momentarily Operated Devices – 2400-2483.5MHz Spread Spectrum)

2.1 Test procedures

Radiated emissions RF: PT-104029.
Continuous conducted emissions: PT-104028.

2.2 Measuring equipment used

Radiated emissions below 1GHz

- Semianechoic chamber EUROSHIELD model TC2 TEST CHAMBER. **Cal. expiration date:** 2006/10/01
- Bilogoperiodic antenna MESS-ELEKTRONIK model VULB 9165 s/n: 2010. **Cal. expiration date:** 2005/07/17
- Turntable HD model DS 430.
- Informatic system HP model D4776N D2845 s/n: FR74350473.
- Quasi Peak adaptor HP model 85650A s/n 2811A01184. **Cal. expiration date:** 2005/08/29
- Preselect HP model 85685A s/n 2837A00829 **Cal. expiration date:** 2005/08/29
- Spectrum analyzer HP model 8566B s/n 3138A08001 **Cal. expiration date:** 2005/08/29
- RF path of radiated emissions SAC2 (30M-1GHz) model W.L GORE (NC) **Cal. expiration date:** 2005/07/29
- Radiated emissions SW (REMS) HP model 85879A

Radiated emissions above 1GHz

- Semianechoic chamber EUROSHIELD model TC2 TEST CHAMBER. **Cal. expiration date:** 2006/10/01
- Horn antenna EMCO model 3115 s/n 4240 **Cal. expiration date:** 2007/08/05
- Turntable HD model DS 430.
- Informatic system HP model D4776N D2845 s/n: FR74350473.
- Spectrum analyzer HP model 8566B s/n 3138A08001 **Cal. expiration date:** 2005/08/29
- RF path of radiated emissions SAC2 (1-12GHz) SUCOFLEX **Cal. expiration date:** 2005/09/09
- Radiated emissions SW (REMS) HP model 85879A

Conducted emissions

- Faraday chamber EUROSHIELD model RFSD-100 s/n: 1427/97.
- Receiver EMI 9KHz to 230MHz R&S model ESHS-30 s/n: 830289/004 **Cal. expiration date:** 2005/08/18
- LISN 2x10A 50µH50Ω R&S model ESH3-Z5 s/n: 843012/001 **Cal. expiration date:** 2007/09/14
- RF path Nº 4 conducted emissions FAC1 **Cal. expiration date:** 2006/02/07
- Informatic system HP model D4776N D2836 s/n: FR74350477.
- Conducted emissions SW EMC AUTOMATION
- External RF path FAC1 SUHNER model RG-223 **Cal. expiration date:** 2007/09/22

Operation within the bands 2400-2483.5MHz)

- Receiver EMI HP model 8546A. **Cal. expiration date:** 2005/11/23

2.3 Measuring uncertainties

Radiated emissions: ± 4,3 dB.
Conducted emissions: ± 2,1 dB.
In all cases, with a confidence level of 95%, k=2

2.4Environmental conditions

See result sheets.

3.0 RESULTS

3.0.1 Results before modifications

PRODUCT	Test reference							
	Emissions							
Payment terminal (hand held terminal + base station+power supply) brand INGENICO BARCELONA, model I7780+7780BAS+ALI0085 BTv2, s/n 5125400017+IP038 +id.022 (*)	①	②	③	④	⑤	⑥	⑦	⑧
	P	P	P	P	P	P	P	P

P - PASS F - FAIL
Detail of results in annex

3.0.2 Results after modifications

PRODUCT	Test reference
	Emissions
Hand held terminal brand INGENICO, model I7780 BTv2, s/n 8102518540	④
	P

P - PASS

F - FAIL

Detail of results in annex

3.1 Conformity to emissions standards

①**.- FCC CFR47 Part 15 rules subpart C: Radiated emissions RF (30-1000 MHz)**
The measured results are below the specification limit by a margin less than the measurement uncertainty; it is therefore not possible to state compliance based on the 95% level of confidence.
However, the results indicate that compliance is more probable than non-compliance with the specification limit.

②**.- FCC CFR47 Part 15 rules subpart C: Radiated emissions RF (1-24 GHz)**
The measured results are within the limits, even when extended by the uncertainty interval.

③**.- FCC CFR47 Part 15 rules subpart C: Continuous conducted emissions**
The measured results are within the limits, even when extended by the uncertainty interval.

④**.- FCC CFR47 Part 15 rules subpart C: Section 15.247**
The measured results are within the limits, even when extended by the uncertainty interval.

⑤**.- FCC CFR47 Part 15 rules subpart C: Section 15.249**
The measured results are within the limits, even when extended by the uncertainty interval.

⑥**.- RSS-210 Section 6.6 (Transmitter AC Wireline Conducted Emissions)**
The measured results are below the specification limit by a margin less than the measurement

uncertainty; it is therefore not possible to state compliance based on the 95% level of confidence.

However, the results indicate that compliance is more probable than non-compliance with the specification limit.

⑦**.- RSS-210 Section 6.2.2 (m2): (Non-momentarily Operated Devices – 2400-2483.5MHz)**

The measured results are within the limits, even when extended by the uncertainty interval.

⑧**.- RSS-210 Section 6.2.2 (o): (Non-momentarily Operated Devices – 2400-2483.5MHz Spread Spectrum)**

The measured results are within the limits, even when extended by the uncertainty interval.

Albert Marginet i Morales
Center Responsible
Electrics, Telecom & Electronics
LGAI Technological Center, S.A.

Jordi Gorchs Pahisa
Project Responsible
Electrics, Telecom & Electronics
LGAI Technological Center, S.A.

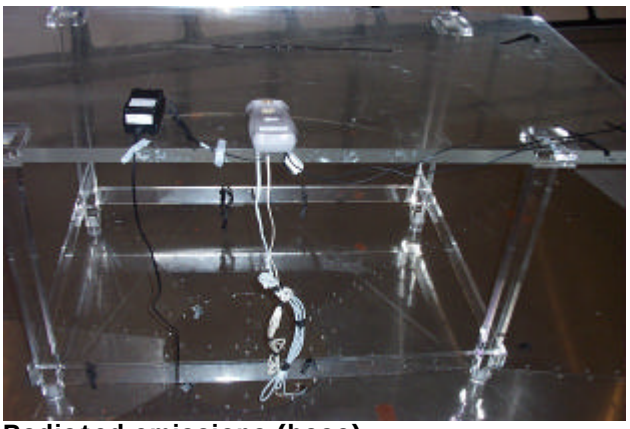
The results refer only and exclusively to the sample, product or material delivered for testing in “Received Material” section above. The equipment has been tested under conditions stipulated by standard(s) quoted in this document.

4.0 IDENTIFICATION PICTURES

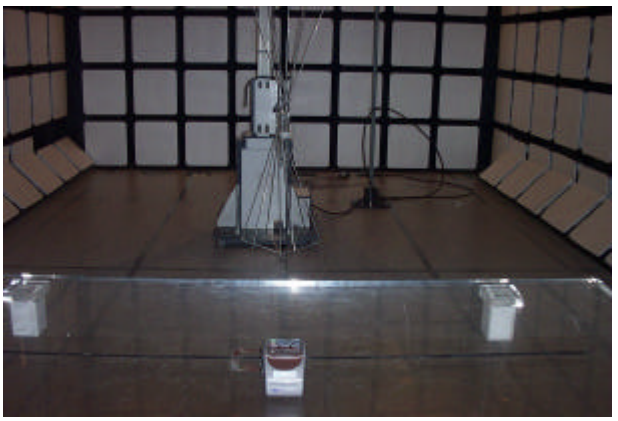
Base model 7780BAS, s/n IP038

Terminal model I7780, s/n 5125400017

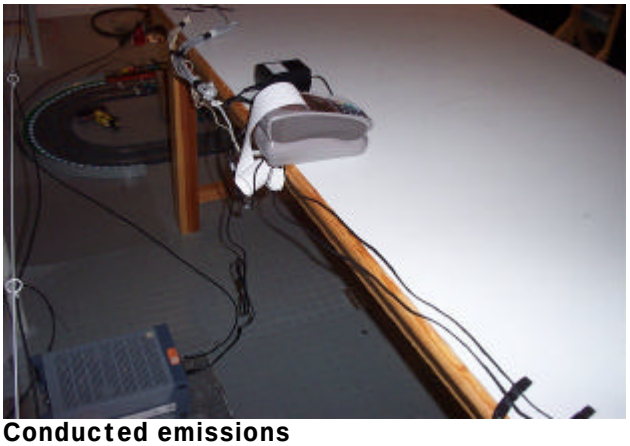
4.1 TEST CONFIGURATION



Radiated emissions (base)



Radiated emissions (terminal)



Conducted emissions

5.0 ANNEX: DETAIL OF RESULTS

RADIATED EMISSIONS			
Petitioner:	**INGENICO BARCELONA, S.A**	**Device under test:**	Payment terminal
		Brand:	INGENICO
Procedure:	PT-104029	Model:	I7780+7780BAS+ALI0085 BTv2
Standard:	Fcc CFR 47 Part 15 subpart C	Serial number:	5125400017 + IP038 + id.022
	RSS 210	Reception date:	2004-11-30
Perf. Criteria according to:	Fcc CFR 47 Part 15 subpart C RSS-210:2001	**Test type:**	Conformity
Technician:	Héctor Carreño	**Temperature:**	17,8 ºC
supervised:		**Humidity:**	30,10%
Test date:	2005-01-14	**Atm. Pressure:**	1013,0 hPa
Auxiliary equipment:		**DUT exercise:**	MODE1: TERMINAL AND BASE tested together. Automatic test mode: Burn-in test and charging battery. Power supply AC: 120V / 60Hz Tested emissions are worst case for Rx and Tx mode.
Test disposition/communication cables:	Two serial cables terminated with impedances Telephone cable Lan cable	**Frequency range:**	30MHz - 1GHz
		DUT Size:	0,22m x 0,1m x 0,08m

EUT	Class	Test Area	Distance	PreScan	RBW	Evaluation
On table	Class B	SAC 2	3 m	4 faces	120kHz	Individually

RESULT: **PASS**

Identification	Emissions	Main emission source and type:
DUT : Device Under Test AUX : Auxiliary Devices SYS : DUT + AUX BB : Broad-band NB : Narrow-band QP : Quasi-peak	Limit > QP>=Limit -2dB	DUT, NB/BB

Comments:

I+D: kitagawa ferrite ref. SFC-8 IS added to the serial port

Test date: 2005-01-14

Test: Radiated Emissions
Standard: FCC CFR 47 part 15 subpart C
Test Area: SAC2

Petitioner: INGENICO BARCELONA, S.A.
Manufacturer: INGENICO BARCELONA, S.A.
Job Number: 1

Device Under Test: PAYMENT TERMINAL
Description: BASE + TERMINAL
Model: I7780+7780BAS+ALI0085 BTv2
Serial Number: 5125400017 + IP038 + id.022

PRODUCT EMISSIONS

Freq. (MHz)	Limit (dBuV/m)	Pol	Ht (cm)	Azm (deg)	Value (dBuV/m)	Corr. Value (dBuV/m)	Corr. Margin (dB)	Detector	Note
61.54	40.0	V	123	4	47.1	36.9	3.1	Qpk	
85.79	40.0	H	385	199	44.4	34.4	5.6	Qpk	
93.15	43.5	H	351	348	49.3	39.9	3.6	Qpk	
98.35	43.5	H	336	32	49.5	40.3	3.2	Qpk	
107.88	43.5	H	186	217	50.9	42.1	1.4	Qpk	
113.11	43.5	H	147	209	43.8	35.2	8.3	Qpk	
144.72	43.5	V	143	14	36.8	29.6	13.9	Qpk	
149.90	43.5	V	128	276	46.2	39.0	4.5	Qpk	
235.94	46.0	V	122	313	51.6	44.1	1.9	Qpk	
353.93	46.0	V	157	183	44.6	40.6	5.4	Qpk	
707.86	46.0	H	132	278	40.4	43.8	2.2	Qpk	

Corr. Value= Value + Antenna Factor (dB) + Cable Loss (dB) - Amplifier Gain (dB) // QPK: Quasi Peak Detector

COMMENTS: BB= Broad Band, NB= Narrow Band, SPU= Spurious, TEMP= Temporary, AOF= Auxiliar Off

Operating Mode: BURN-IN TEST

Technician: HÉCTOR CARREÑO

Test date: 2005-01-14

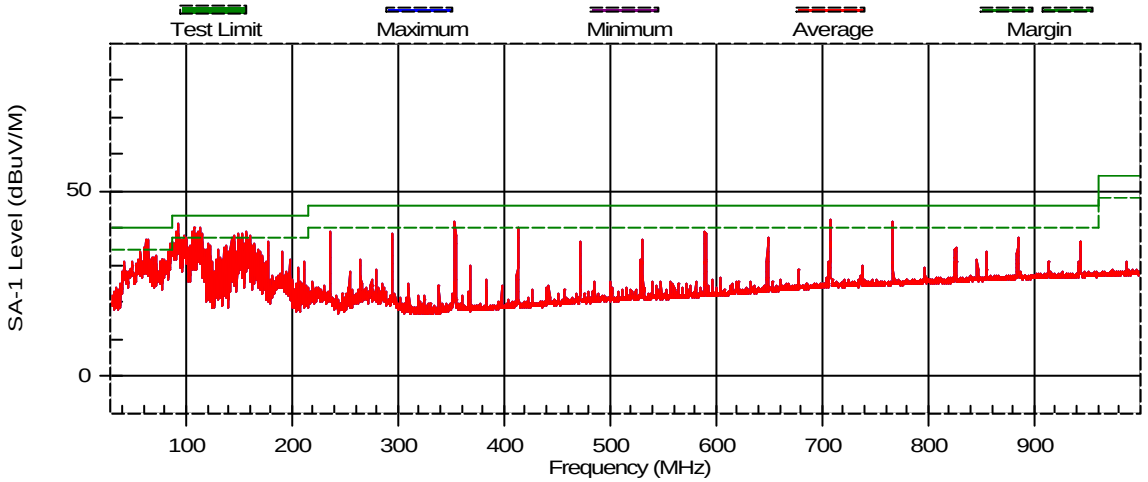
Test: Radiated Emissions
Standard: FCC CFR 47 part 15 subpart C
Test Area: SAC2

Petitioner: INGENICO BARCELONA, S.A.
Manufacturer: INGENICO BARCELONA, S.A.
Job Number: 1

Device Under Test: PAYMENT TERMINAL
Description: BASE + TERMINAL
Model: I7780+7780BAS+ALI0085 BTv2
Serial Number: 5125400017 + IP038 + id.022

Prescan Test Results

INGENICO_I7780BAS+I7780_FCC_14-01-05 / 1 / 1 / 14/01/05 @ 8:02:54
(Corrected Data)



Final Test Results

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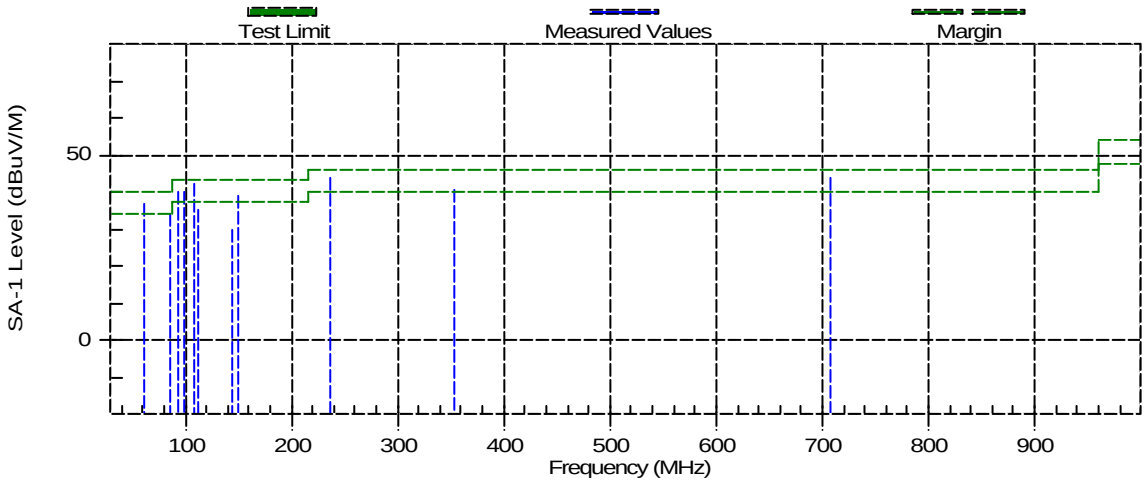


RADIATED EMISSIONS

Petitioner:	**INGENICO BARCELONA, S.A**	**Device under test:**	Payment terminal
		Brand:	INGENICO
Procedure:	PT-104029	Model:	7780BAS+ALI0085 BTv2
Standard:	Fcc CFR 47 Part 15 subpart C	Serial number:	IP038 + id.022
	RSS 210	Reception date:	2004-11-30
Perf. Criteria according to:	Fcc CFR 47 Part 15 subpart C RSS-210:2001	**Test type:**	Conformity
Technician:	Héctor Carreño	**Temperature:**	18,5 ºC
supervised:		**Humidity:**	20,20%
		Atm. Pressure:	997,18 hPa
Test date:	2005-01-25	**DUT exercise:**	
Auxiliary equipment:	Terminal mod. I7780		MODE2: BASE tested alone. Terminal locked with base at 20 m distance. Power supply AC: 120V / 60Hz Tested emissions are worst case for Rx and Tx mode.
Test disposition/communication cables:	Two serial cables terminated with impedances Telephone cable Lan cable	**Frequency range:**	30MHz - 1GHz
		DUT Size:	0,22m x 0,02m x 0,08m

EUT	Class	Test Area	Distance	PreScan	RBW	Evaluation
On table	Class B	SAC 2	3 m	4 faces	120kHz	Individually

RESULT: **PASS**

Identification	Emissions	Main emission source and type:
DUT : Device Under Test AUX : Auxiliary Devices SYS : DUT + AUX BB : Broad-band NB : Narrow-band QP : Quasi-peak	Limit -2dB > QP>=Limit -4dB	DUT, NB

Comments:

Test date: 2005-01-25

Test: Radiated Emissions
Standard: FCC CFR 47 part 15 subpart C
Test Area: SAC2

Petitioner: INGENICO BARCELONA, S.A.
Manufacturer: INGENICO BARCELONA, S.A.
Job Number: 1

Device Under Test: PAYMENT TERMINAL
Description: BASE
Model: 7780BAS+ALI0085 BTv2
Serial Number: IP038 + id.022

PRODUCT EMISSIONS

Freq. (MHz)	Limit (dBuV/m)	Pol	Ht (cm)	Azm (deg)	Value (dBuV/m)	Corr. Value (dBuV/m)	Corr. Margin (dB)	Detector	Note
40.33	40.0	V	121	102	42.7	33.6	6.4	Qpk	
236.10	46.0	H	135	294	43.4	35.9	10.2	Qpk	
353.40	46.0	H	120	30	42.8	38.8	7.2	Qpk	
413.10	46.0	H	120	16	45.1	42.6	3.4	Qpk	
439.60	46.0	H	120	53	37.9	36.1	10.0	Qpk	
707.60	46.0	H	131	136	38.1	41.5	4.5	Qpk	

Corr. Value= Value + Antenna Factor (dB) + Cable Loss (dB) - Amplifier Gain (dB) // QPK: Quasi Peak Detector

COMMENTS: BB= Broad Band, NB= Narrow Band, SPU= Spurious, TEMP= Temporary, AOF= Auxiliar Off

Operating Mode: BURN-IN TEST

Technician: HECTOR CARREÑO

Test date: 2005-01-25

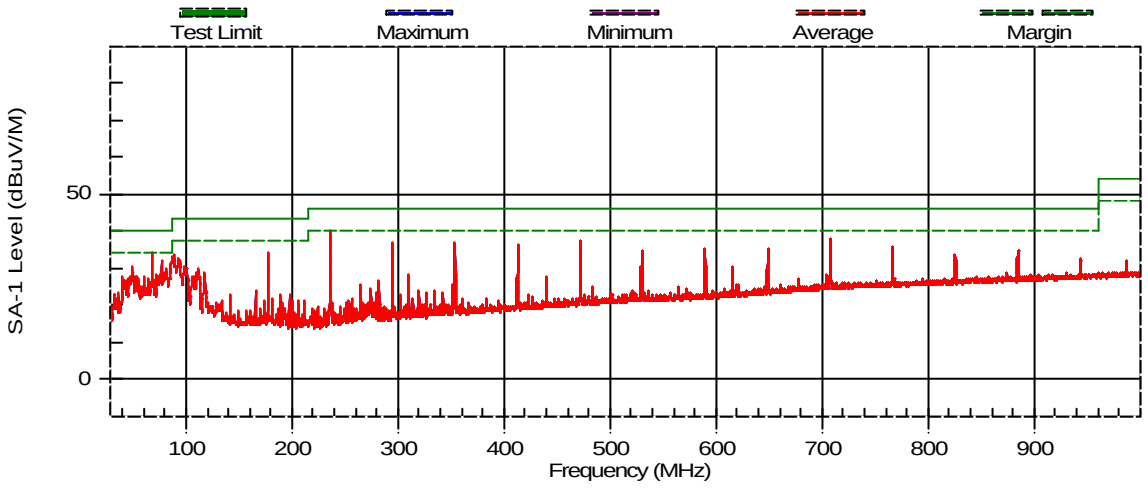
Test: Radiated Emissions
Standard: FCC CFR 47 part 15 subpart C
Test Area: SAC2

Petitioner: INGENICO BARCELONA, S.A.
Manufacturer: INGENICO BARCELONA, S.A.
Job Number: 1

Device Under Test: PAYMENT TERMINAL
Description: BASE
Model: 7780BAS+ALI0085 BTv2
Serial Number: IP038 + id.022

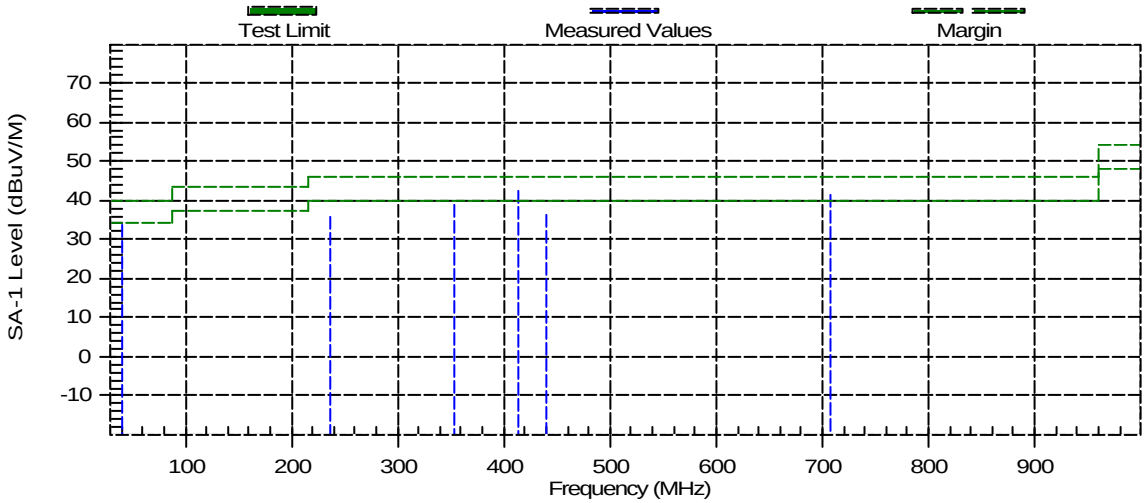
Prescan Test Results

9:19



Final Test Results

22



RADIATED EMISSIONS

Petitioner:	**INGENICO BARCELONA, S.A**	**Device under test:**	Payment terminal
		Brand:	INGENICO
Procedure:	PT-104029	Model:	I7780 BTv2
Standard:	Fcc CFR 47 Part 15 subpart C	Serial number:	5125400017
	RSS 210	Reception date:	2004-11-30
Perf. Criteria according to:	Fcc CFR 47 Part 15 subpart C RSS-210:2001	**Test type:**	Conformity
Technician:	Héctor Carreño	**Temperature:**	16,0 ºC
supervised:		**Humidity:**	35,20%
Test date:	2005-02-05	**Atm. Pressure:**	1013,26hPa
Auxiliary equipment:		**DUT exercise:**	MODE3: TERMINAL tested alone. Terminal unlocked with base. Power supply DC: 6V (battery supplied) Tested emissions are worst case for Rx and Tx mode.
Test disposition/communication cables:		**Frequency range:**	30MHz - 1GHz
		DUT Size:	0,22m x 0,08m x 0,08m

EUT	Class	Test Area	Distance	PreScan	RBW	Evaluation
On table	Class B	SAC 2	3 m	4 faces	120kHz	Individually

RESULT: **PASS**

Identification	Emissions	Main emission source and type:
DUT : Device Under Test AUX : Auxiliary Devices SYS : DUT + AUX BB : Broad-band NB : Narrow-band QP : Quasi-peak	Limit -2dB > QP>=Limit -4dB	DUT, NB

Comments:

i+d: RFS1-507 RICHO FLAT FERRITE IN BLUETOOTH BUS

Test date: 2005-02-05

Test: Radiated Emissions
Standard: FCC CFR 47 part 15 subpart C
Test Area: SAC2

Petitioner: INGENICO BARCELONA, S.A.
Manufacturer: INGENICO BARCELONA, S.A.
Job Number: 1

Device Under Test: PAYMENT TERMINAL
Description: TERMINAL
Model: I7780
Serial Number: 5125400017

PRODUCT EMISSIONS

Freq. (MHz)	Limit (dBuV/m)	Pol	Ht (cm)	Azm (deg)	Value (dBuV/m)	Corr. Value (dBuV/m)	Corr. Margin (dB)	Detector	Note
353.86	47.0	H	121	80	48.5	44.5	2.5	Qpk	
707.93	47.0	H	125	274	40.8	44.2	2.8	Qpk	
766.88	47.0	H	120	270	37.3	41.4	5.6	Qpk	
294.95	47.0	H	120	82	44.7	39.0	8.0	Qpk	
412.90	47.0	H	213	75	40.5	38.0	9.0	Qpk	
648.93	47.0	H	131	285	38.9	41.0	6.0	Qpk	
825.79	47.0	H	120	81	32.1	37.0	10.0	Qpk	

Corr. Value= Value + Antenna Factor (dB) + Cable Loss (dB) - Amplifier Gain (dB) // QPK: Quasi Peak Detector

COMMENTS: BB= Broad Band, NB= Narrow Band, SPU= Spurious, TEMP= Temporary, AOF= Auxiliar Off

Operating Mode: BURN-IN TEST

Technician: HÉCTOR CARREÑO

Test date: 2005-02-05

Test: Radiated Emissions
Standard: FCC CFR 47 part 15 subpart C
Test Area: SAC2

Petitioner: INGENICO BARCELONA, S.A.
Manufacturer: INGENICO BARCELONA, S.A.
Job Number: 1

Device Under Test: PAYMENT TERMINAL
Description: TERMINAL
Model: I7780
Serial Number: 5125400017

Prescan Test Results
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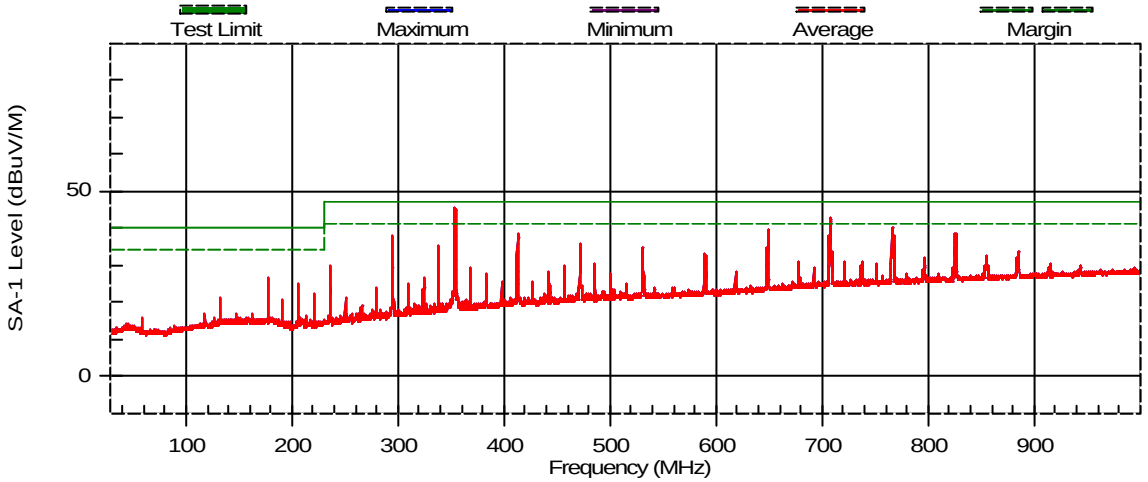

Final Test Results
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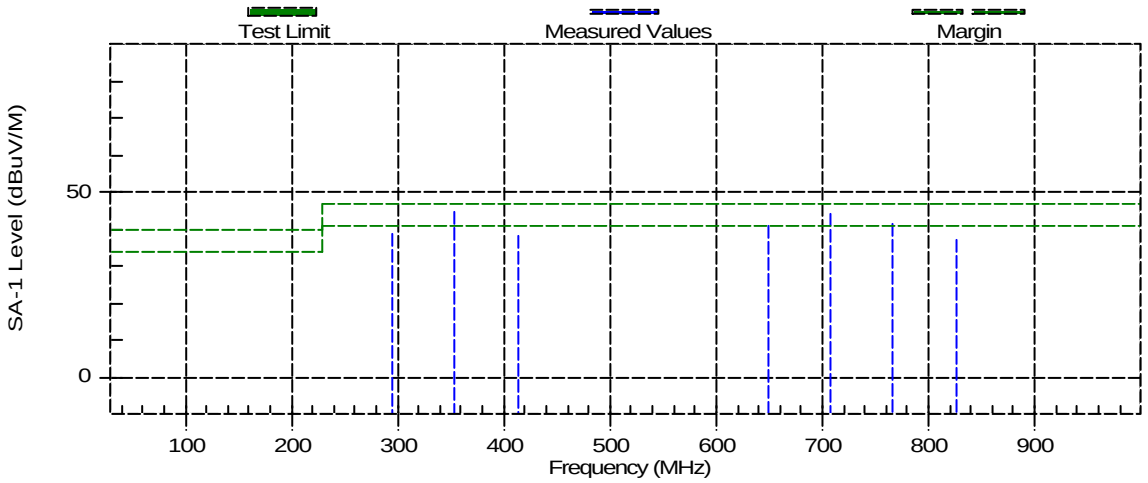


RADIATED EMISSIONS

Petitioner:	**INGENICO BARCELONA, S.A**	**Device under test:**	Payment terminal
		Brand:	INGENICO
Procedure:	PT-104029	Model:	I7780+7780BAS+ALI0085 BTv2
Standard:	Fcc CFR 47 Part 15 subpart C	Serial number:	5125400017 + IP038 + id.022
	RSS 210	Reception date:	2004-11-30
Perf. Criteria according to:	Fcc CFR 47 Part 15 subpart C RSS-210:2001	**Test type:**	Conformity
Technician:	Eudald Badia	**Temperature:**	20,0 ºC
supervised:		**Humidity:**	41,50%
Test date:	2004-12-02	**Atm. Pressure:**	994,55 hPa

Auxiliary equipment:

DUT exercise:

MODE1: TERMINAL AND BASE tested together. Automatic test mode: Burn-in test and charging battery.

Power supply AC: 120V / 60Hz

Tested emissions are worst case for Rx and Tx mode.

Test disposition/communication cables:

Two serial cables terminated with impedances

Telephone cable

Lan cable

Frequency range: 1GHz - 24GHz

DUT Size: 0,22m x 0,1m x 0,08m

EUT	Class	Test Area	Distance	PreScan	RBW	Evaluation
On table	Class B	SAC 2	3 m	4 faces	1MHz	Individually

RESULT: **PASS**

Identification	Emissions	Main emission source and type:
DUT : Device Under Test		
AUX : Auxiliary Devices		DUT, NB
SYS : DUT + AUX		
BB : Broad-band		
NB : Narrow-band	Limit -6dB > AVG	
QP : Quasi-peak		

Comments:

Test date: 2004-12-02

Test: Radiated Emissions
Standard: Fcc CFR 47 Part 15 Subpart C
Test Area: SAC-2 (3m)

Petitioner: INGENICO BARCELONA, S.A
Manufacturer: INGENICO BARCELONA, S.A

Device Under Test: Payment Terminal
Description: TERMINAL+BASE
Model: I7780+7780BAS+ALI0085 BTv2
Serial Number: 5125400017 + IP038 + id.022

PRODUCT EMISSIONS

Freq. (MHz)	Limit (dBuV/m)	Pol	Ht (cm)	Azm (deg)	Value (dBuV/m)	Corr. Value (dBuV/m)	Corr. Margin (dB)	Detector	Note
1128.91	54.0	H	120	321	45.7	38.1	15.8	Avg	NB
1199.47	54.0	V	120	350	40.2	33.1	20.9	Avg	NB
2368.00	54.0	H	171	340	30.4	30.0	24.0	Avg	NB
2400.00	54.0	H	140	358	23.1	22.8	31.1	Avg	NB
2443.20	54.0	H	200	0	20.9	20.9	33.1	Avg	SPU
4914.20	54.0	H	200	270	18.3	25.2	28.8	Avg	SPU

Corr. Value= Value + Antenna Factor (dB) + Cable Loss (dB) - Amplifier Gain (dB) // QPK: Quasi Peak Detector

COMMENTS: BB= Broad Band, NB= Narrow Band, SPU= Spurious, TEMP= Temporary, AOF= Auxiliar Off

Operating Mode:

Automatic test mode: Burn-in test
Charginig battery
120Vac 60Hz

Technician: Eudald Badia

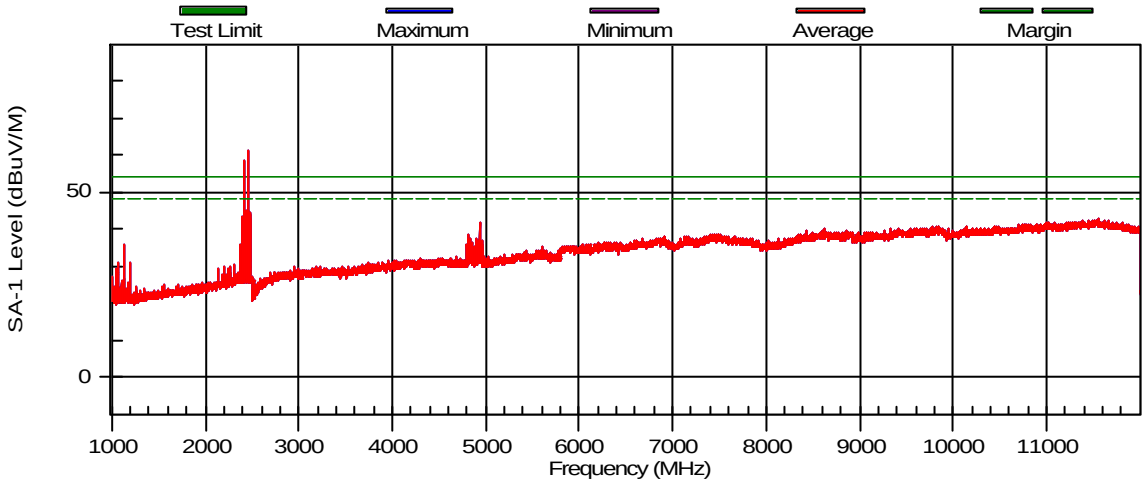
Test date: 2004-12-02

Test: Radiated Emissions
Standard: Fcc CFR 47 Part 15 Subpart C
Test Area: SAC-2 (3m)

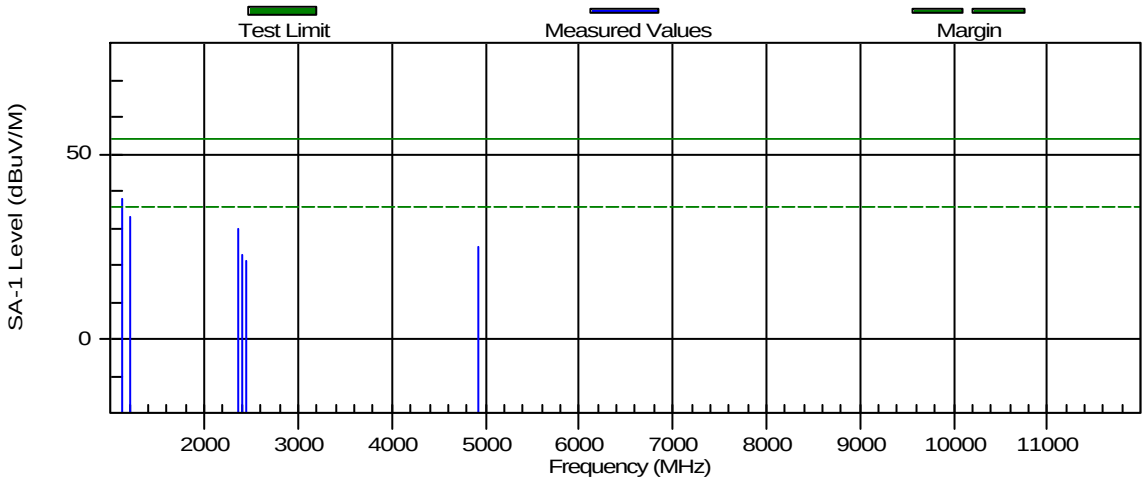
Petitioner: INGENICO BARCELONA, S.A
Manufacturer: INGENICO BARCELONA, S.A

Device Under Test: Payment Terminal
Description: TERMINAL+BASE
Model: I7780+7780BAS+ALI0085 BTv2
Serial Number: 5125400017 + IP038 + id.022

Prescan Test Results
INGENICO I7780_I7780BAS_120V / 1 / 1 / 2/12/04 @ 16:32:32
(Corrected Data)



Final Test Results
INGENICO I7780_I7780BAS_120V / 1 / 1 / 2/12/04 @ 17:14:27



RADIATED EMISSIONS

Petitioner:	**INGENICO BARCELONA, S.A**	**Device under test:**	Payment terminal
		Brand:	INGENICO
Procedure:	PT-104029	Model:	7780BAS+ALI0085 BTv2
Standard:	Fcc CFR 47 Part 15 subpart C	Serial number:	IP038 + id.022
	RSS 210	Reception date:	2004-11-30
Perf. Criteria according to:	Fcc CFR 47 Part 15 subpart C RSS-210:2001	**Test type:**	Conformity
Technician:	Héctor Carreño	**Temperature:**	19,3 ºC
supervised:		**Humidity:**	22,50%
Test date:	2005-02-15	**Atm. Pressure:**	991,85 hPa
Auxiliary equipment:	terminal mod. I7780	**DUT exercise:**	MODE2: BASE tested alone. Terminal locked with base at 20 m distance. Power supply AC: 120V / 60Hz Tested emissions are worst case for Rx and Tx mode.
Test disposition/communication cables:	Two serial cables terminated with impedances Telephone cable Lan cable	**Frequency range:**	1GHz - 24GHz
		DUT Size:	0,22m x 0,02m x 0,08m

EUT	Class	Test Area	Distance	PreScan	RBW	Evaluation
On table	Class B	SAC 2	3 m	4 faces	1MHz	Individually

RESULT: **PASS**

Identification	Emissions	Main emission source and type:
DUT : Device Under Test AUX : Auxiliary Devices SYS : DUT + AUX BB : Broad-band NB : Narrow-band QP : Quasi-peak	Limit -6dB > AVG	DUT, NB

Comments:

Test date: 2005-02-15

Test: Radiated Emissions
Standard: FCC CFR 47 part 15 subpart C
Test Area: SAC 2

Petitioner: INGENICO BARCELONA, S.A.
Manufacturer: INGENICO BARCELONA, S.A.
Job Number: 1

Device Under Test: PAYMENT TERMINAL
Description: BASE
Model: 7780BAS+ALI0085 BTv2
Serial Number: IP038 + id.022

PRODUCT EMISSIONS

Freq. (MHz)	Limit (dBuV/m)	Pol	Ht (cm)	Azm (deg)	Value (dBuV/m)	Corr. Value (dBuV/m)	Corr. Margin (dB)	Detector	Note
2408.00	54.0	V	150	80	20.1	19.9	34.0	Avg	

Corr. Value= Value + Antenna Factor (dB) + Cable Loss (dB) - Amplifier Gain (dB) // QPK: Quasi Peak Detector

COMMENTS: BB= Broad Band, NB= Narrow Band, SPU= Spurious, TEMP= Temporary, AOF= Auxiliar Off

Operating Mode: BURN-IN TEST

Technician: HÉCTOR CARREÑO

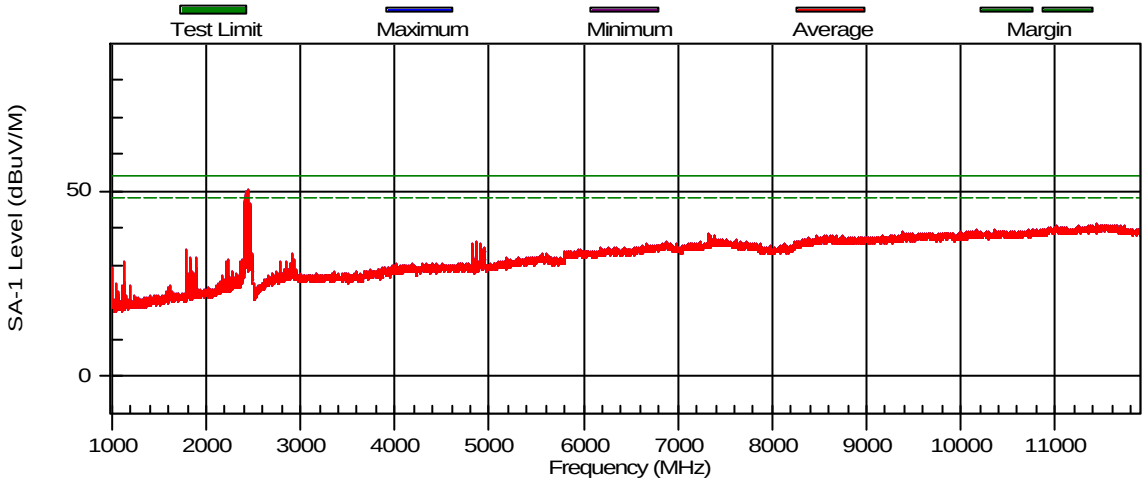
Test date: 2005-02-15

Test: Radiated Emissions
Standard: FCC CFR 47 part 15 subpart C
Test Area: SAC 2

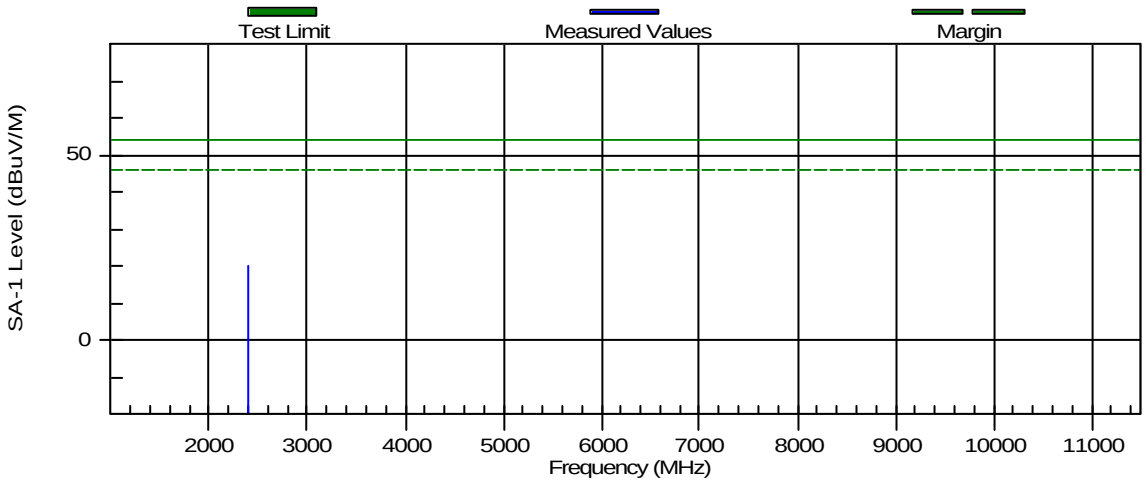
Petitioner: INGENICO BARCELONA, S.A.
Manufacturer: INGENICO BARCELONA, S.A.
Job Number: 1

Device Under Test: PAYMENT TERMINAL
Description: BASE
Model: 7780BAS+ALI0085 BTv2
Serial Number: IP038 + id.022

Prescan Test Results
INGENICO / TEST2 / 15-02-05 / 15/02/05 @ 10:59:38
(Corrected Data)



Final Test Results
INGENICO / TEST2 / 15-02-05 / 15/02/05 @ 12:09:45



RADIATED EMISSIONS

Petitioner:	**INGENICO BARCELONA, S.A**	**Device under test:**	Payment terminal
		Brand:	INGENICO
Procedure:	PT-104029	Model:	I7780 BTv2
Standard:	Fcc CFR 47 Part 15 subpart C RSS 210	Serial number: Reception date:	5125400017 2004-11-30
Perf. Criteria according to:	Fcc CFR 47 Part 15 subpart C RSS-210:2001	**Test type:**	Conformity
Technician:	Héctor Carreño	**Temperature:**	17,8 ºC
supervised:		**Humidity:**	25,00%
Test date:	2005-02-24	**Atm. Pressure:**	997,3 hPa
Auxiliary equipment:		**DUT exercise:**	MODE3: TERMINAL tested alone. Terminal unlocked with base. Power supply DC: 6V (battery supplied) Tested emissions are worst case for Rx and Tx mode.
Test disposition/communication cables:		**Frequency range:**	1GHz - 24GHz
		DUT Size:	0,22m x 0,08m x 0,08m

EUT	Class	Test Area	Distance	PreScan	RBW	Evaluation
On table	Class B	SAC 2	3 m	4 faces	1MHz	Individually

RESULT: **PASS**

Identification	Emissions	Main emission source and type:
DUT : Device Under Test AUX : Auxiliary Devices SYS : DUT + AUX BB : Broad-band NB : Narrow-band QP : Quasi-peak	Limit -6dB > AVG	DUT, NB

Comments:

Test date: 2005-02-24

Test: Radiated Emissions
Standard: FCC CFR 47 part 15 subpart C
Test Area: SAC2

Petitioner: INGENICO BARCELONA, S.A.
Manufacturer: INGENICO BARCELONA, S.A.
Job Number: 1

Device Under Test: PAYMENT TERMINAL
Description: TERMINAL
Model: I7780
Serial Number: 5125400017

PRODUCT EMISSIONS

Freq. (MHz)	Limit (dBuV/m)	Pol	Ht (cm)	Azm (deg)	Value (dBuV/m)	Corr. Value (dBuV/m)	Corr. Margin (dB)	Detector	Note
2455.00	54.0	V	150	0	26.9	27.0	27.0	Avg	
2418.00	54.0	H	200	0	27.3	27.2	26.8	Avg	
2469.00	54.0	V	200	270	26.8	27.0	27.0	Avg	

Corr. Value= Value + Antenna Factor (dB) + Cable Loss (dB) - Amplifier Gain (dB) // QPK: Quasi Peak Detector

COMMENTS: BB= Broad Band, NB= Narrow Band, SPU= Spurious, TEMP= Temporary, AOF= Auxiliar Off

Operating Mode: BURN-IN TEST

Technician: HÉCTOR CARREÑO

Test date: 2005-02-24

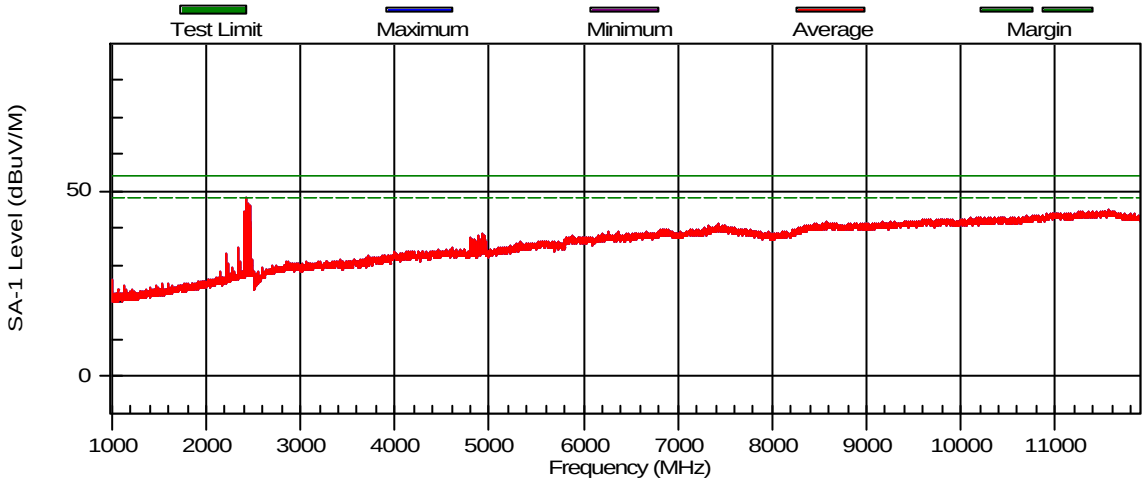
Test: Radiated Emissions
Standard: FCC CFR 47 part 15 subpart C
Test Area: SAC2

Petitioner: INGENICO BARCELONA, S.A.
Manufacturer: INGENICO BARCELONA, S.A.
Job Number: 1

Device Under Test: PAYMENT TERMINAL
Description: TERMINAL
Model: I7780
Serial Number: 5125400017

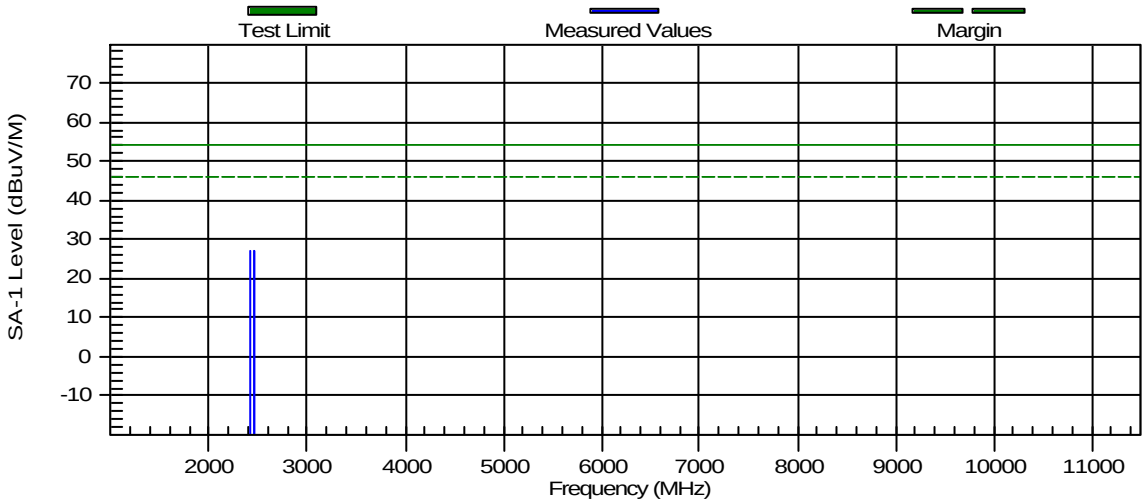
Prescan Test Results

INGENICO / TEST6 / 24-02-05 / 24/02/05 @ 13:15:37
(Corrected Data)



Final Test Results

INGENICO / TEST2 / 24-02-05 / 24/02/05 @ 13:33:42



CONDUCTED EMISSIONS

Petitioner:	**INGENICO BARCELONA, S.A**	**Device under test:**	Payment terminal
		Brand:	INGENICO
Procedure:	PT-104028	Model:	I7780+7780BAS+ALI0085 BTv2
Standard:	Fcc CFR 47 Part 15 subpart C	Serial number:	5125400017 + IP038 + id.022
	RSS 210	Reception date:	2004-11-30
Perf. Criteria according to:	FCC CFR 47 Part 15 subpart C RSS-210:2001	**Test type:**	Conformity
Technician:	Héctor Carreño	**Temperature:**	20,1 ºC
Supervised:		**Humidity:**	34,70%
Test date:	2005-01-24	**Atm. Pressure:**	998,68 hPa
Equipment:	RS ESHS30 EMI Receiver RS ESH2-Z5 LISN	**DUT exercise:**	MODE1: TERMINAL AND BASE tested together. Automatic test mode: Burn-in test and charging battery. Power supply AC: 120V / 60Hz Tested emissions are worst case for Rx and Tx mode.
		Test Area:	FAC-1 Ground plane
		Test disposition / communication cables:	On Table
Auxiliary equipment:			Two serial cables terminated with impedances Telephone cable LAN cable
Resolution Bandwidth:	10kHz		
Measurement time:	20s		

CONTINUOUS CONDUCTED EMISSIONS

Supply

Mains supply

T. in Power Supply (dBµV) PASS Vqp< lim QP + Vavg< lim AVG

Source and type of the most important emissions:

Source: Device Under Test **Type** Narrow Band

Telecommunication Ports

Port type:

T. in telecommunication port (dBµV) Test not applicable

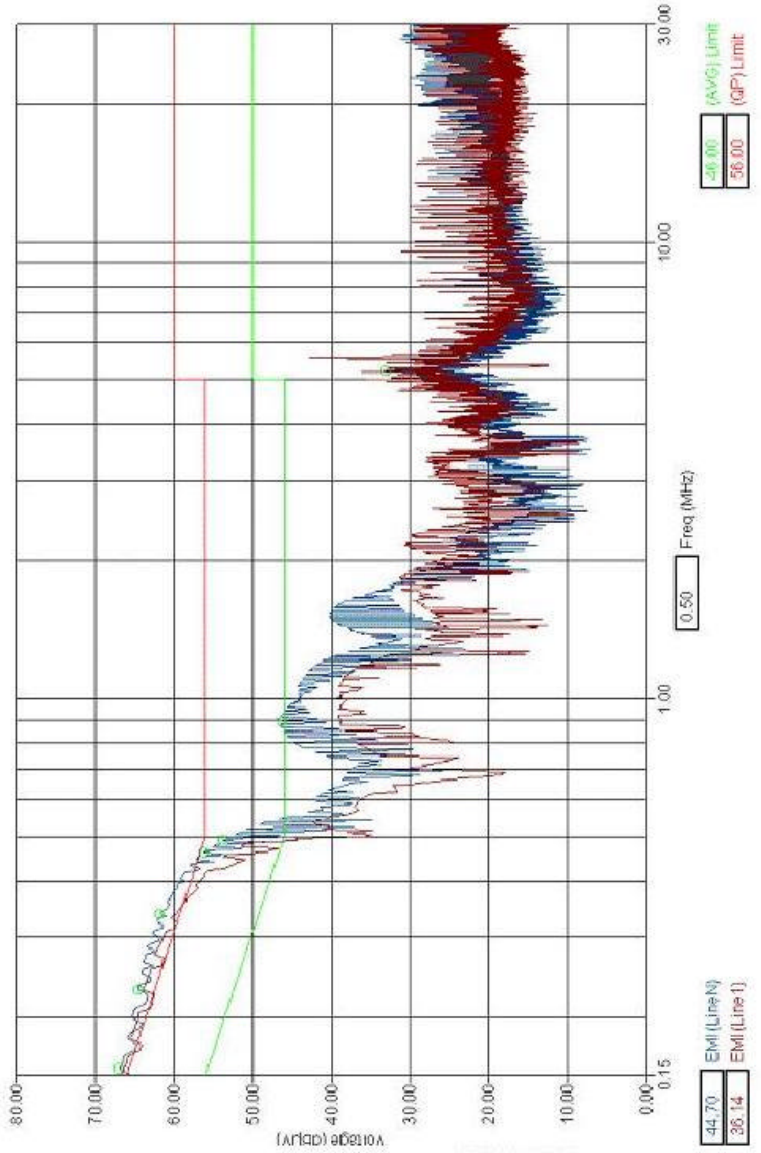
Source and type of the most important emissions

Source: **Type**

FINAL RESULTS: **PASS**

Comments:

CONDUCTED EMISSIONS GRAPHIC AND FINAL TABLE: SUPPLY



Freq (MHz)	(AVG) Limit (dBµV)	(AVG) EMI (dBµV)	(AVG) Margin AVL (dB)	(QP) Limit (dBµV)	(QP) EMI (dBµV)	(QP) Margin QPL (dB)	(PK) EMI (dBµV)
0.1550	55.73	24.55	-31.18	65.73	59.00	-6.73	69.37
0.2300	52.45	22.25	-30.20	62.45	56.85	-5.60	67.11
0.3400	49.20	20.22	-28.98	59.20	53.03	-6.17	61.72
0.4600	46.69	18.51	-28.18	56.69	49.34	-7.35	57.05
0.4900	46.17	17.67	-28.50	56.17	48.53	-7.64	55.93
0.8950	46.00	5.44	-40.56	56.00	33.30	-22.70	47.04
5.2050	50.00	10.45	-39.55	60.00	29.70	-30.30	42.20

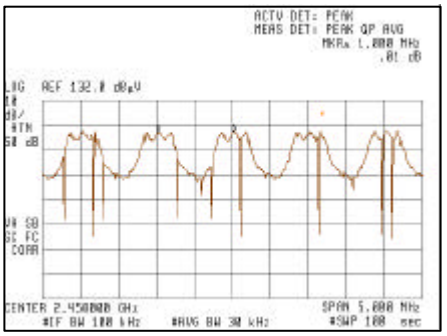
SECTION 15.247 a) 1

Petitioner:	**INGENICO BARCELONA, S.A**	**Device under test:**	Payment terminal
		Brand:	INGENICO
		Model:	I7780+7780BAS+ALI0085 BTv2
Standard:	FCC CFR 47 Part 15 subpart C RSS 210	Serial number:	5125400017 + IP038 + id.022
		Reception date:	2004-11-30
Perf. criteria according to:	Fcc CFR 47 Part 15 subpart C RSS-210:2001	**Test type:**	Conformity
Criteria:	PASS	**Temperature:**	20,3 ºC
Technician:	Carreño/Pous	**Humidity:**	12,60%
Supervised:		**Atm. Pressure:**	995,0 hPa
Test date:	2005-02-16	**DUT exercise:**	
		MODE1: TERMINAL AND BASE tested together. Automatic test mode: Burn-in test and charging battery.	
		MODE2: BASE tested alone. Terminal locked with base at 20 m distance.	
		MODE3: TERMINAL tested alone. Terminal unlocked with base.	
Auxiliary equipment:		mode 2: Power supply AC 120V / 60Hz 3:Power supply DC 6V (battery supplied)	
Receiver EMI HP model 8546A.		Tested emissions are worst case for Rx and Tx mode.	
		Test disposition / communication cables:	
		On Table	
Resolution Bandwidth:	100kHz		

TEST RESULTS : PASS

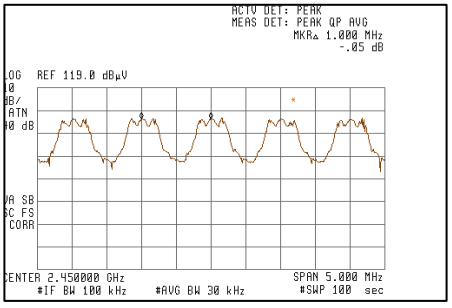
Base [MODE 2]

Carries separated minimum 25kHz ☑



Terminal [MODE 3]

Carries separated minimum 25kHz ☑



SECTION 15.247 a) 1 iii)

Petitioner:	**INGENICO BARCELONA, S.A**	**Device under test:**	Payment terminal
		Brand:	INGENICO
		Model:	I7780+7780BAS+ALI0085 BTv2
Standard:	FCC CFR 47 Part 15 subpart C	Serial number:	5125400017 + IP038 + id.022
	RSS 210	Reception date:	2004-11-30
Perf. criteria according to:	Fcc CFR 47 Part 15 subpart C RSS-210:2001	**Test type:**	Conformity
Criteria:	PASS	**Temperature:**	20,3 ºC
Technician:	Carreño/Pous	**Humidity:**	12,60%
Supervised:		**Atm. Pressure:**	995,0 hPa
Test date:	2005-02-16	**DUT exercise:**	
		MODE1: TERMINAL AND BASE tested together. Automatic test mode: Burn-in test and charging battery.	
		MODE2: BASE tested alone. Terminal locked with base at 20 m distance.	
		MODE3: TERMINAL tested alone. Terminal unlocked with base.	
Auxiliary equipment:		mode 2: Power supply AC 120V / 60Hz and mode 3: Power supply DC 6V (battery supplied)	
Receiver EMI HP model 8546A.		Tested emissions are worst case for Rx and Tx mode.	
		Test disposition / communication cables:	
		On Table	
Resolution Bandwidth:	100kHz		

TEST RESULTS : PASS

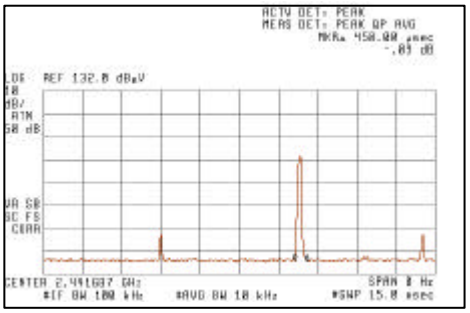
CRITERIA: *timing hopping < 0,4 seg*

Observation time: *0,4 x nº channels = 0,4 x 79 = 31,6 seg*

Base [MODE 2]

Fundamental: 2,441687GHz 0,39seg < 0,4 seg

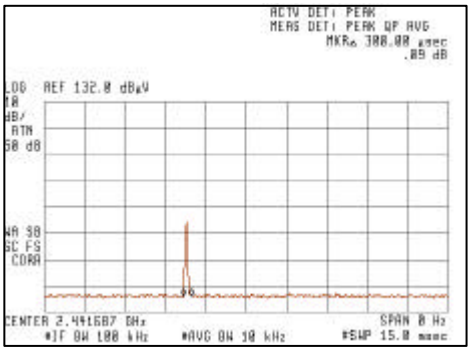
0,450ms timing channel
in 1s 28ch
0,00045 x 28 x 31,6 = 0,39seg



Terminal [MODE 3]

Fundamental: 2,411184 GHz 0,367seg < 0,4 seg

0,375ms timing channel
in 1seg 31ch
0,000375 x 31 x 31,6 = 0,367seg



RSS 210		Reception date: 2004-11-30 (*)	
Perf. criteria according to:	Fcc CFR 47 Part 15 subpart C RSS-210:2001	**Test type:** Conformity	**Temperature:** 18,6 ºC (*) **Humidity:** 15,2% (*) **Atm. Pressure:** 991,0 hPa (*)
Criteria:	PASS		
Technician:	Carreño/Pous		
Supervised:		**DUT exercise:**	
Test date:	2005-02-18 (*)	MODE1: TERMINAL AND BASE tested together. Automatic test mode: Burn-in test and charging battery.	
		MODE2: BASE tested alone. Terminal locked with base at 20 m distance.	
		MODE3: TERMINAL tested alone. Terminal unlocked with base.	
Auxiliary equipment:		mode 2: Power supply AC 120V / 60Hz and mode 3: Power supply DC 6V (battery supplied)	
Receiver EMI HP model 8546A.		Tested emissions are worst case for Rx and Tx mode.	
		Test disposition / communication cables:	
		On Table	
Resolution Bandwidth:	1MHz		

TEST RESULTS: PASS

CRITERIA: *maximum peak conduced < 1W*

Base [MODE 2]

Conduced peak (fundamental): f=2,48GHz 12,8dBm < 1W = 30dBm

Terminal [MODE 3] (*)

Conduced peak (fundamental): f=2,402GHz 17,8dBm < 1W = 30dBm

(*) Hand held terminal brand INGENICO, model I7780 BTv2 s/n 8102518540; test product reception: 2005-05-26, test date: 2005-05-26. Temperature: 20,8 ºC, humidity: 48,1 % and atm. Pressure: 1006,38hPa

SECTION 15.249 d)			
Petitioner:	**INGENICO BARCELONA, S.A**	**Device under test:**	Payment terminal
		Brand:	INGENICO
		Model:	I7780+7780BAS+ALI0085 BTv2
Standard:	FCC CFR 47 Part 15 subpart C RSS 210	Serial number: Reception date:	5125400017 + IP038 + id.022 2004-11-30
Perf. criteria according to:	Fcc CFR 47 Part 15 subpart C RSS-210:2001	**Test type:**	Conformity
Criteria:	PASS	**Temperature:**	NOTE1
Technician:	NOTE1	**Humidity:** **Atm. Pressure:**	NOTE1 NOTE1
Supervised:		**DUT exercise:**	
Test date:	NOTE1	MODE1: TERMINAL AND BASE tested together. Automatic test mode: Burn-in test and charging battery.	
TEST AREA: SAC 2		MODE2: BASE tested alone. Terminal locked with base at 20 m distance. MODE3: TERMINAL tested alone. Terminal unlocked with base.	
		mode 2: Power supply AC 120V / 60Hz and mode 3: Power supply DC 6V (battery supplied)	
		Tested emissions are worst case for Rx and Tx mode.	
Auxiliar equipment:		**Test disposition / communication cables:**	On Table
		Two serial cables terminated with impedances Telephone cable LAN cable	
Resolution Bandwidth:	1MHz		
Video Bandwidth:	3Hz		

TEST RESULTS : PASS

Payment terminal (Base+Terminal) [MODE 1]
All frequency range at -50dBc or belove AVG Limit ☑

Base [MODE 2]
All frequency range at -50dBc or belove AVG Limit ☑

Terminal [MODE 3]
All frequency range at -50dBc or belove AVG Limit ☑

NOTE1:
Temperature, humidity, atmospheric pressure, test date and technician are the same as in test 15.209 for payment terminal, base and terminal.

SECTION 15.249 e)

Petitioner:	**INGENICO BARCELONA, S.A**	**Device under test:**	Payment terminal
		Brand:	INGENICO
		Model:	I7780+7780BAS+ALI0085 BTv2
Standard:	FCC CFR 47 Part 15 subpart C RSS 210	Serial number: Reception date:	5125400017 + IP038 + id.022 2004-11-30
Perf. criteria according to:	Fcc CFR 47 Part 15 subpart C RSS-210:2001	**Test type:**	Conformity
Criteria:	PASS	**Temperature:**	NOTE1
Technician:	NOTE1	**Humidity:**	NOTE1
		Atm. Pressure:	NOTE1
Supervised:		**DUT exercise:**	
Test date:	NOTE1	MODE1: TERMINAL AND BASE tested together. Automatic test mode: Burn-in test and charging battery.	
TEST AREA:	**SAC 2**	MODE2: BASE tested alone. Terminal locked with base at 20 m distance. MODE3: TERMINAL tested alone. Terminal unlocked with base.	
Auxiliar equipment:		mode 2: Power supply AC 120V / 60Hz and mode 3: Power supply DC 6V (battery supplied)	
		Tested emissions are worst case for Rx and Tx mode.	
		Test disposition / communication cables:	On Table
Resolution Bandwidth:	1MHz		
Video Bandwidth:	3Hz		

TEST RESULTS : PASS

CRITERIA: *Peak EMI < Limit AVG + 20 dB*

Payment terminal (Base+Terminal) [MODE 1]

Fundamental: 80,4dBuV/m < 94 dBuV/m + 20 dB
Harmonics: 35dBuV/m < 54 dBuV/m + 20 dB

Base [MODE 2]

Fundamental: 91,4dBuV/m < 94 dBuV/m + 20 dB
Harmonics: 56dBuV/m < 54 dBuV/m + 20 dB

Terminal [MODE 3]

Fundamental: 98,3dBuV/m < 94 dBuV/m + 20 dB
Harmonics: 59,2dBuV/m < 54 dBuV/m + 20 dB

NOTE1:
Temperature, humidity, atmospheric pressure, test date and technician are the same as in test 15.209 for payment terminal, base and terminal.