

Bellaterra: **May 26th, 2005**

File number : **4038322-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 4038322 from April 20th, 2005 has been cancelled and substituted by file number 4038322-M1. Modifications performed:
Test FCC subpart C section 15.247 b) 1 done again with new software (bt agreement). 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): 2004, 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).

INDEX

1.0 EQUIPMENT RECEIVED AND TESTED

1.1 Test configuration

1.2 Communication cables

2.0 TESTING PROCEDURE

2.1 Test procedures

2.2 Measuring equipment used

2.3 Measuring uncertainties

2.4 Environmental conditions

3.0 RESULTS

3.0.1 Results before modifications

3.0.2 Results after modifications

3.1 Conformity to emissions standards

4.0 IDENTIFICATION PICTURES

4.1 TEST CONFIGURATION

5.0 ANNEX: DETAIL OF RESULTS

1.0 EQUIPMENT RECEIVED AND TESTED

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This document consists of 31 pages of which are 25 annexes.



Payment terminal (hand held terminal + base station + power supply) brand INGENICO, models I7780 + 7770BAS + ALI0075 BTv2, s/n 5125400017 + 5123400016 + 452003 (*)

Modifications performed:

- Kitagawa ferrites ref: SFC-8 are added to the serial ports
- Richo flat ferrite ref: RFS1-1507 is added to Bluetooth bus inside of the terminal

Test product reception (*): 2004-11-30
Test initial date (*): 2004-11-30
Test final date (*): 2005-04-19

(*) 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 at 20 m distance when base tested alone

Terminal unlocked with base when terminal tested alone

1.2 Communication cables

Two serial cables loaded with impedances

Telephone cable

2.0 TESTING PROCEDURE

APPLIED STANDARDS FOR EMISSIONS TESTS <u>FCC CFR47 Part 15 rules subpart C</u> Test: ① ☒ Radiated emissions RF (30-1000 MHz) ② ☒ Radiated emissions RF (1-24 GHz) ③ ☒ Continuous interference (150 kHz-30 MHz)	<u>Class</u> ☐ A ☒ B
APPLIED STANDARDS FOR EMISSIONS TESTS <u>FCC CFR47 Part 15 rules subpart C</u> 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)	

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Este documento consta de 32 páginas de las cuales son anexos.

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 EUROSIELD 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

Conducted emissions

- Faraday chamber EUROSIELD 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 50μH 50Ω R&S model ESH3-Z5 s/n: 843012/001 **Cal. expiration date:** 2007/09/14
- RF path N° 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

Radiated emissions above 1GHz

- Semianechoic chamber EUROSIELD 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

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

2.4 Environmental 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, models I7780 + 7770BAS + ALI0075 BTv2, s/n 5125400017 + 5123400016 + 452003 (*)	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 within the limits, even when extended by the uncertainty interval.

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.



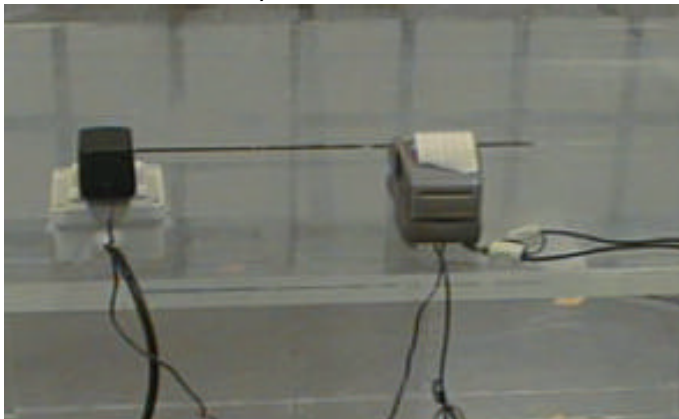
4.0 IDENTIFICATION PICTURES



Base station model 7770BAS



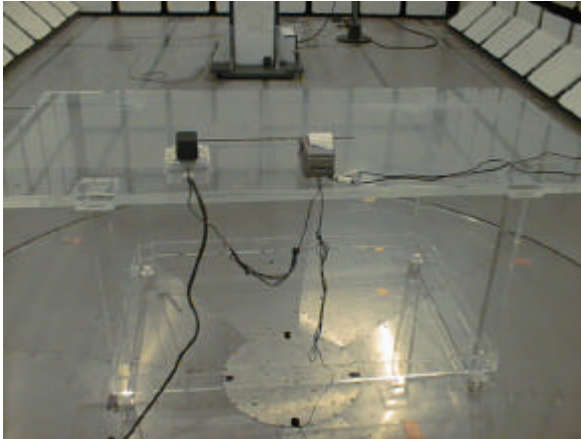
Hand held Terminal, model I7780



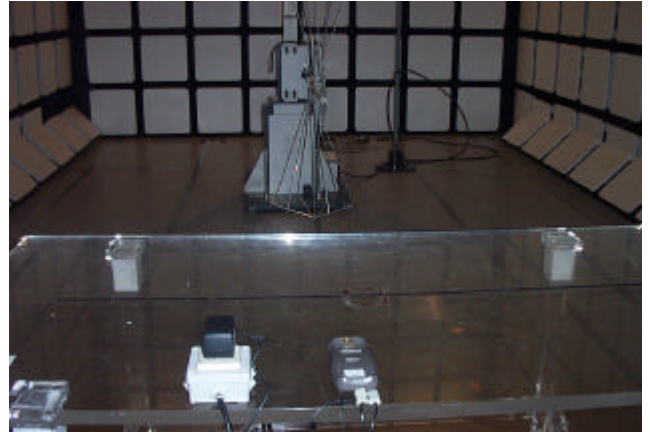
Kitagawa ferrites ref: SFC-8

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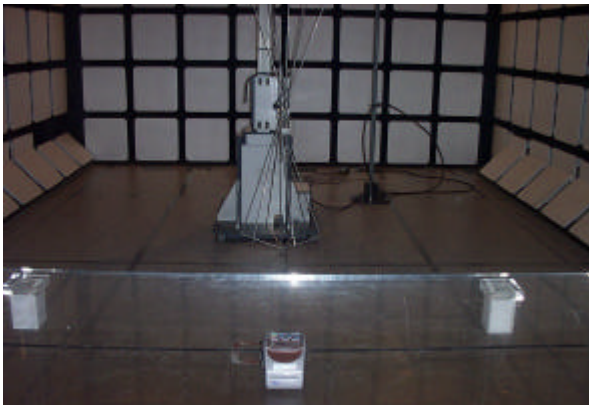
4.1 TEST CONFIGURATION



**Radiated emissions
(base and terminal)**



Radiated emissions (base)



Radiated emissions (terminal)



Conducted emissions

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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+7770BAS+ALI0075 BTv2			
Standard: Fcc CFR 47 Part 15 subpart C RSS-210:2001			Serial number: 5125400017 + 5123400016+ 452003			
			Reception date: 2004-11-30			
Perf. Criteria according to: Fcc CFR 47 Part 15 subpart C RSS-210:2001			Test type: Conformity		Temperature: 19,0 °C	
Technician: Eudald Badia					Humidity: 37,10%	
supervised:					Atm. Pressure: 997,13 hPa	
Test date: 2004-11-30			DUT exercise:			
Auxiliary equipment:			MODE1: TERMINAL AND BASE tested together. Automatic test mode: Burn-in test and charging battery 120V 60Hz supplied Tested emissions are worst case for Rx and Tx mode.			
Test disposition/communication cables: Two serial cables terminated with impedances Telephone 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 DUT : Device Under Test AUX : Auxiliary Devices SYS : DUT + AUX BB : Broad-band NB : Narrow-band QP : Quasi-peak		Emissions Limit > QP>=Limit -2dB		Main emission source and type: DUT, NB		
Comments:						
I+D: kitagawa ferrites ref. SFC-8 are added to the serial ports						

Test date: 2004-11-30

Test: Radiated Emissions
Standard: Fcc CFR 47 Part 15 (Class B) & RSS-210
Test Area: SAC-2 (3m)

Petitioner: INGENICO BARCELONA, S.A
Manufacturer: INGENICO

Device Under Test: Payment Terminal
Description: Payment Terminal
Model: I7780+7770BAS+ALI0075 BTv2
Serial Number: 5125400017 + 5123400016+ 452003

PRODUCT EMISSIONS

Freq. (MHz)	Limit (dBuV/m)	Pol	Ht (cm)	Azm (deg)	Value (dBuV/m)	Corr. Value (dBuV/m)	Corr. Margin (dB)	Detector	Note
40.32	40.0	V	120	264	45.6	36.6	3.4	Qpk	NB
56.45	40.0	V	120	272	47.3	37.4	2.6	Qpk	NB
105.39	40.0	V	120	127	36.8	27.9	12.1	Qpk	BB TEMP
235.94	47.0	V	194	69	46.9	39.4	7.6	Qpk	NB/BB
353.91	47.0	H	120	298	50.8	46.8	0.2	Qpk	NB
707.82	47.0	H	122	250	37.4	40.8	6.2	Qpk	NB

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:

MODE 1: Terminal and base tested together. Automatic test mode: Burn-in test and charging battery
Charging battery
120Vac 60Hz

Technician: Eudald Badia



Test date: 2004-11-30

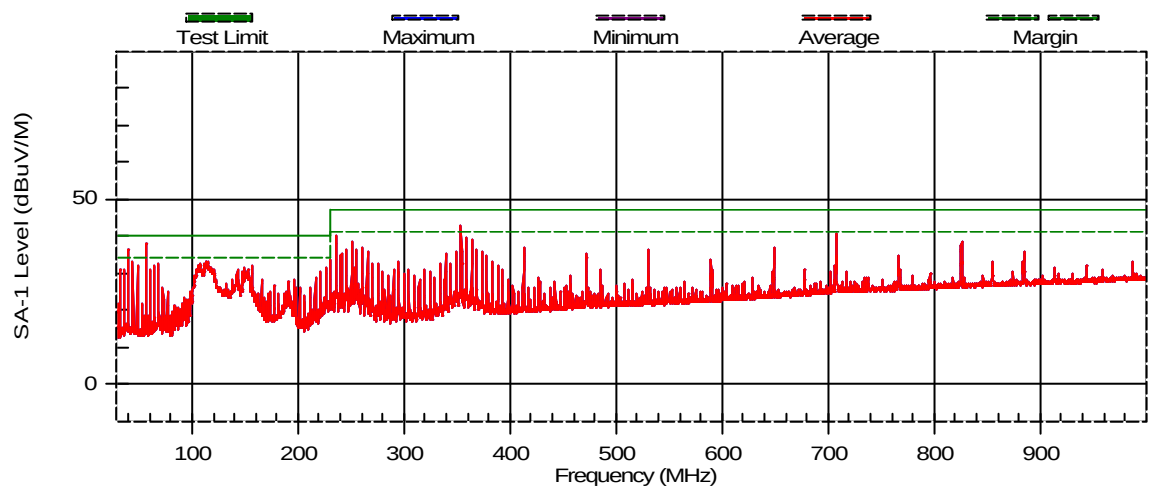
Test: Radiated Emissions
Standard: Fcc CFR 47 Part 15 (Class B) & RSS-210
Test Area: SAC-2 (3m)

Petitioner: INGENICO BARCELONA, S.A
Manufacturer: INGENICO

Device Under Test: Payment Terminal
Description: Payment Terminal
Model: I7780+7770BAS+ALI0075 BTv2
Serial Number: 5125400017 + 5123400016+ 452003

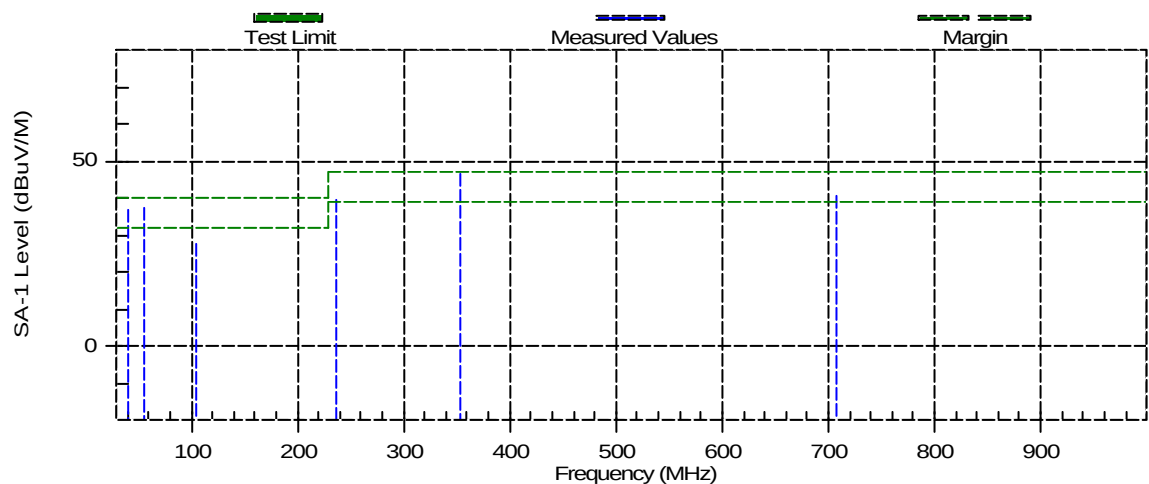
Prescan Test Results

INGENICO I7780_I7770B/ JV_24_11_04/. / 30/11/04 @ 11:33:55
(ted Data)



Final Test Results

INGENICO I7780_I7770BAS_220V_24_11_04/. / 30/11/04 @ 12:19:14



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RADIATED EMISSIONS						
Petitioner: INGENICO BARCELONA, S.A			Device under test: Payment terminal			
Procedure: PT-104029			Brand: INGENICO			
Standard: Fcc CFR 47 Part 15 subpart C RSS-210:2001			Model: 7770BAS+ALI0075 BTv2			
			Serial number: 5123400016+ 452003			
			Reception date: 2004-11-30			
Perf. Criteria according to: Fcc CFR 47 Part 15 subpart C RSS-210:2001			Test type: Conformity		Temperature: 19,3 °C	
Technician: Marc Pous					Humidity: 34,40%	
Supervised:					Atm. Pressure: 1008,92 hPa	
Test date: 2005-01-20			DUT exercise:			
Auxiliary equipment: Terminal model: I7780			MODE2: BASE tested alone. Terminal locked with base at 20 m distance. 120v 60Hz supplied Tested emissions are worst case for Rx and Tx mode.			
Test disposition/communication cables: Two serial cables terminated with impedances Telephone 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 DUT : Device Under Test AUX : Auxiliary Devices SYS : DUT + AUX BB : Broad-band NB : Narrow-band QP : Quasi-peak		Emissions Limit > QP>=Limit -2dB		Main emission source and type: DUT, NB		
Comments:						

Test date: 2005-01-20

Test: Radiated Emissions
Standard: Fcc CFR 47 Part 15 (Class B) & RSS-210
Test Area: SAC 2

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

Device Under Test: PAYMENT TERMINAL
Description: BASE
Model: 7770BAS+ALI0075 BTv2
Serial Number: id 5123400016+ 452003

PRODUCT EMISSIONS

Freq. (MHz)	Limit (dBuV/m)	Pol	Ht (cm)	Azm (deg)	Value (dBuV/m)	Corr. Value (dBuV/m)	Corr. Margin (dB)	Detector	Note
40.32	40.0	V	120	225	48.2	39.2	0.8	Qpk	
32.54	40.0	V	131	195	42.6	32.8	7.2	Qpk	
186.78	43.5	V	120	239	45.0	37.2	6.3	Qpk	
206.44	43.5	V	121	213	48.0	39.5	4.0	Qpk	
211.36	43.5	V	121	214	48.0	39.7	3.8	Qpk	
363.74	46.0	H	121	309	45.6	41.9	4.2	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: MODE 2: Base tested alone. Terminal locked with base at 20 m distance.

Technician: MARC POUS



Test date: 2005-01-20

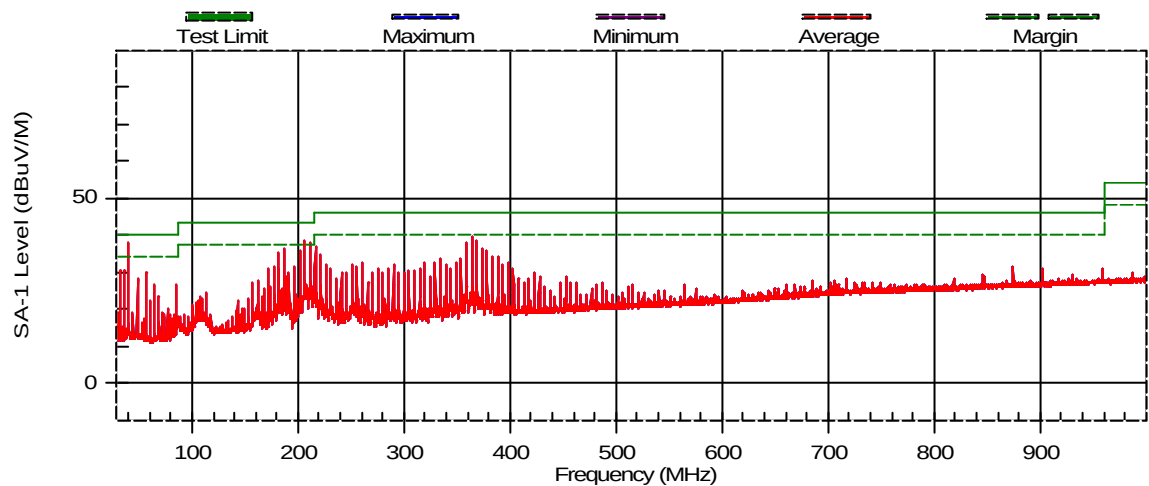
Test: Radiated Emissions
Standard: FCC CFR 47 part 15 subpart C & RSS-210
Test Area: SAC 2

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

Device Under Test: PAYMENT TERMINAL
Description: BASE
Model: 7770BAS+ALI0075 BTv2
Serial Number: id 5123400016+ 452003

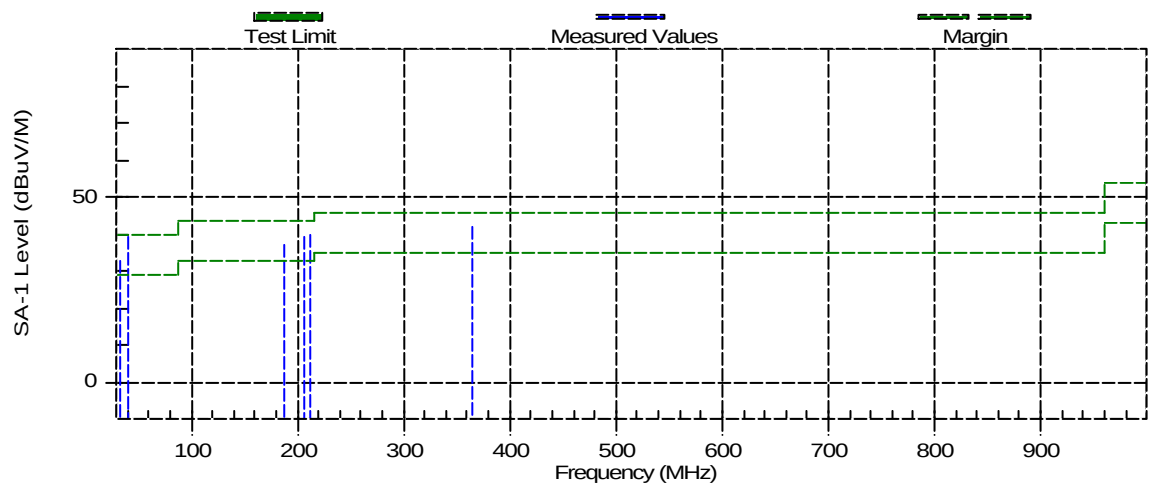
Prescan Test Results

D



Final Test Results

B



RADIATED EMISSIONS						
Petitioner: INGENICO BARCELONA, S.A			Device under test: Payment terminal			
Procedure: PT-104029			Brand: INGENICO			
Standard: Fcc CFR 47 Part 15 subpart C RSS-210:2001			Model: I7780 BTv2			
			Serial number: 5125400017			
			Reception date: 2004-11-30			
Perf. Criteria according to: Fcc CFR 47 Part 15 subpart C RSS-210:2001			Test type:		Temperature: 16,0 °C	
Technician: Héctor Carreño			Conformity		Humidity: 35,50%	
supervised:					Atm. Pressure: 1012,96hPa	
Test date: 2005-02-05			DUT exercise:			
Auxiliary equipment:			MODE 3: Terminal tested alone. Terminal unlocked with base. Power supply DC: 6V battery 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 DUT : Device Under Test AUX : Auxiliary Devices SYS : DUT + AUX BB : Broad-band NB : Narrow-band QP : Quasi-peak		Emissions Limit -2dB > QP>=Limit -4dB		Main emission source and type: DUT, NB		
Comments:						
R+D: rfs1-507 richo flat ferrite in bluetooth bus						

Test date: 2005-02-05

Test: Radiated Emissions
Standard: Fcc CFR 47 Part 15 (Class B) & RSS-210
Test Area: SAC 2

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

Device Under Test: PAYMENT TERMINAL
Description: TERMINAL
Model: I7780 BTv2
Serial Number: id 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: MODE 3: Terminal tested alone. Terminal unlocked with base.

Technician: HÉCTOR CARREÑO

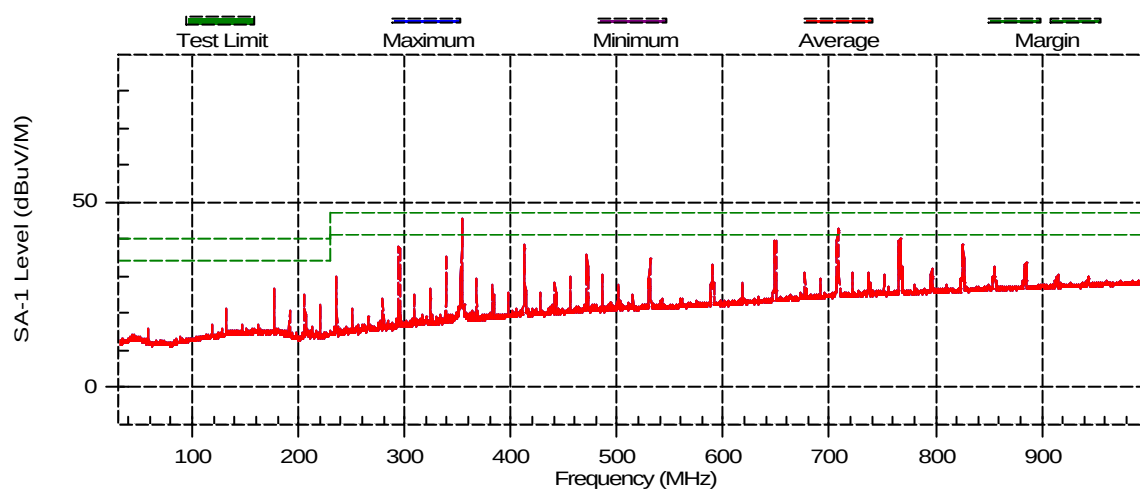
Test date: 2005-02-05

Test: Radiated Emissions
Standard: Fcc CFR 47 Part 15 (Class B) & RSS-210
Test Area: SAC 2

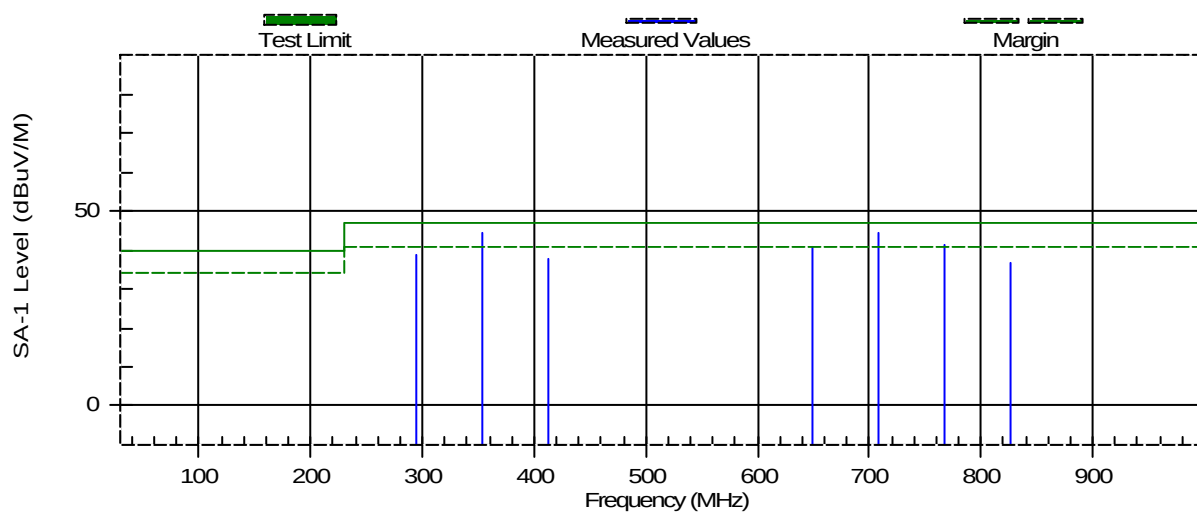
Petitioner: INGENICO BARCELONA, S.A.
Manufacturer: INGENICO BARCELONA, S.A.
Job Number: 1

Device Under Test: PAYMENT TERMINAL
Description: TERMINAL
Model: I7780 BTv2
Serial Number: id 5125400017

Prescan Test Results



Final Test Results



RADIATED EMISSIONS						
Petitioner: INGENICO BARCELONA, S.A			Device under test: Payment terminal			
Procedure: PT-104029			Brand: INGENICO			
Standard: Fcc CFR 47 Part 15 subpart C RSS-210:2001			Model: I7780+7770BAS+ALI0075 BTv2			
			Serial number: 5125400017 + 5123400016+ 452003			
			Reception date: 2004-11-30			
Perf. Criteria according to: Fcc CFR 47 Part 15 subpart C RSS-210:2001			Test type: Conformity		Temperature: 19,7 °C	
Technician: Eudald Badia					Humidity: 41,80%	
supervised:					Atm. Pressure: 994,55, hPa	
Test date: 2004-12-02			DUT exercise:			
Auxiliary equipment:			MODE 1: 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			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	120kHz	Individually
RESULT: PASS						
Identification DUT : Device Under Test AUX : Auxiliary Devices SYS : DUT + AUX BB : Broad-band NB : Narrow-band QP : Quasi-peak			Emissions Limit -6dB > AVG		Main emission source and type: DUT, NB	
Comments:						

Test date: 2004-12-02

Test: Radiated Emissions
 Standard: Fcc CFR 47 Part 15 (Class B) & RSS-210
 Test Area: SAC-2 (3m)

Petitioner: INGENICO BARCELONA, S.A
 Manufacturer: INGENICO

Device Under Test: Payment Terminal
 Description: Payment Terminal
 Model: I7780+7770BAS+ALI0075 BTv2
 Serial Number: 5125400017 + 5123400016 + 452003

PRODUCT EMISSIONS

Freq. (MHz)	Limit (dBuV/m)	Pol	Ht (cm)	Azm (deg)	Value (dBuV/m)	Corr. Value (dBuV/m)	Corr. Margin (dB)	Detector	Note
1016.03	54.0	H	120	50	48.6	40.4	13.6	Avg	NB
1199.49	54.0	V	120	290	39.0	31.9	22.1	Avg	NB
2400.00	54.0	H	251	284	25.8	25.6	28.4	Avg	NB
2465.00	54.0	V	200	0	23.4	23.6	30.4	Avg	SPU
4950.00	54.0	V	200	270	20.8	27.8	26.2	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:
 MODE 1: Terminal and base tested together. Automatic test mode: Burn-in test and charging battery
 Charging battery
 120Vac 60Hz

Technician: Eudald Badia



Test date: 2004-12-02

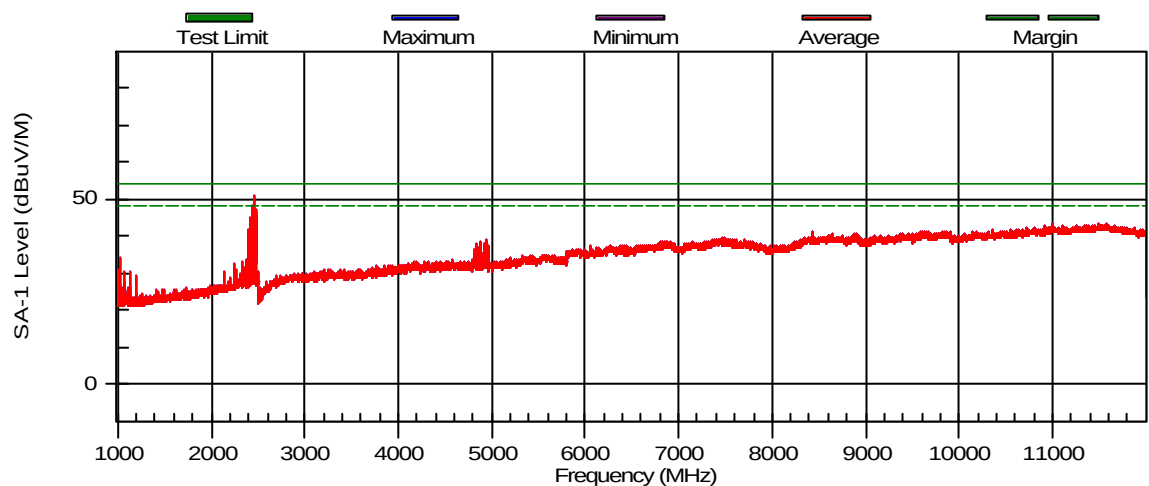
Test: Radiated Emissions
Standard: Fcc CFR 47 Part 15 (Class B) & RSS-210
Test Area: SAC-2 (3m)

Petitioner: INGENICO BARCELONA, S.A
Manufacturer: INGENICO

Device Under Test: Payment Terminal
Description: Payment Terminal
Model: I7780+7770BAS+ALI0075 BTv2
Serial Number: 5125400017 + 5123400016 + 452003

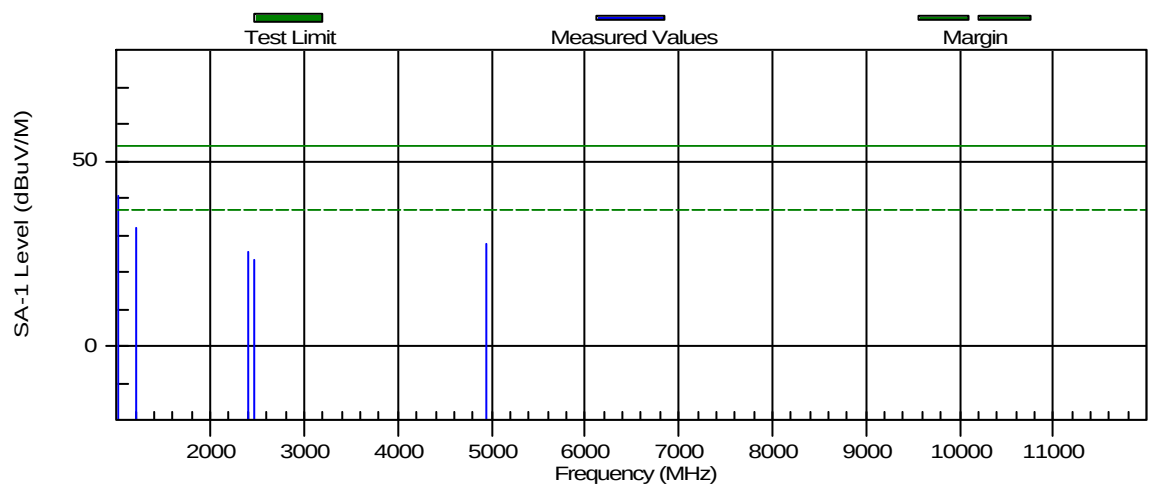
Prescan Test Results

INGENICO I7780_I7770BAS_120V / 1 / 1 / 2/12/04 @ 13:20:50
(Corrected Data)



Final Test Results

INGENICO I7780_I7770BAS_120V / 1 / 1 / 2/12/04 @ 16:13:25



Signature

RADIATED EMISSIONS						
Petitioner: INGENICO BARCELONA, S.A			Device under test: Payment terminal			
Procedure: PT-104029			Brand: INGENICO			
Standard: Fcc CFR 47 Part 15 subpart C RSS-210:2001			Model: 7770BAS+ALI0075 BTv2			
			Serial number: 5123400016+ 452003			
			Reception date: 2004-11-30			
Perf. Criteria according to: Fcc CFR 47 Part 15 subpart C RSS-210:2001			Test type: Conformity		Temperature: 22,0 °C	
Technician: Marc Pous					Humidity: 34,00%	
supervised:					Atm. Pressure: 1008,92hPa	
Test date: 2005-01-20			DUT exercise:			
Auxiliary equipment: terminal mod. I7780			MODE 2: 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			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 DUT : Device Under Test AUX : Auxiliary Devices SYS : DUT + AUX BB : Broad-band NB : Narrow-band QP : Quasi-peak		Emissions Limit -6dB > AVG		Main emission source and type: DUT, NB		
Comments:						

Test date: 2005-01-20

Test: Radiated Emissions
Standard: Fcc CFR 47 Part 15 (Class B) & RSS-210
Test Area: SAC 2

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

Device Under Test: PAYMENT TERMINAL
Description: BASE
Model: 7770BAS+ALI0075 BTv2
Serial Number: 5123400016 + 452003

PRODUCT EMISSIONS

"Freq. (MHz)"	"Limit (dBuV/m)"	"Pol"	"Ht (m)"	"Azm (deg)"	"Value (dBuV)"	"Corr. Value (dBuV/m)"	"Corr. Margin (dB)"	"Detector"	"Note"
2401.00	54.0	H	120	270	27.3	27.1	26.9	Avg	""
2479.00	54.0	H	120	270	27.3	27.5	26.5	Avg	""
2480.00	54.0	V	200	90	26.9	27.2	26.8	Avg	""
7272.00	54.0	H	200	267	23.2	35.4	18.5	Avg	""
7413.00	54.0	H	121	267	24.0	36.6	17.4	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: MODE 2: Base tested alone. Terminal locked with base at 20 m distance.

Technician: MARC POUS



Test date: 2005-01-20

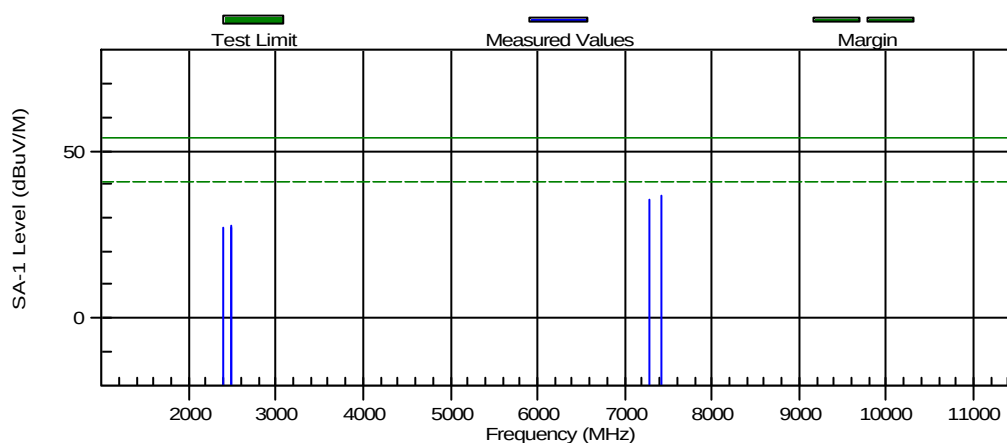
Test: Radiated Emissions
Standard: Fcc CFR 47 Part 15 (Class B) & RSS-210
Test Area: SAC 2

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

Device Under Test: PAYMENT TERMINAL
Description: BASE
Model: 7770BAS+ALI0075 BTV2
Serial Number: 5123400016 + 452003

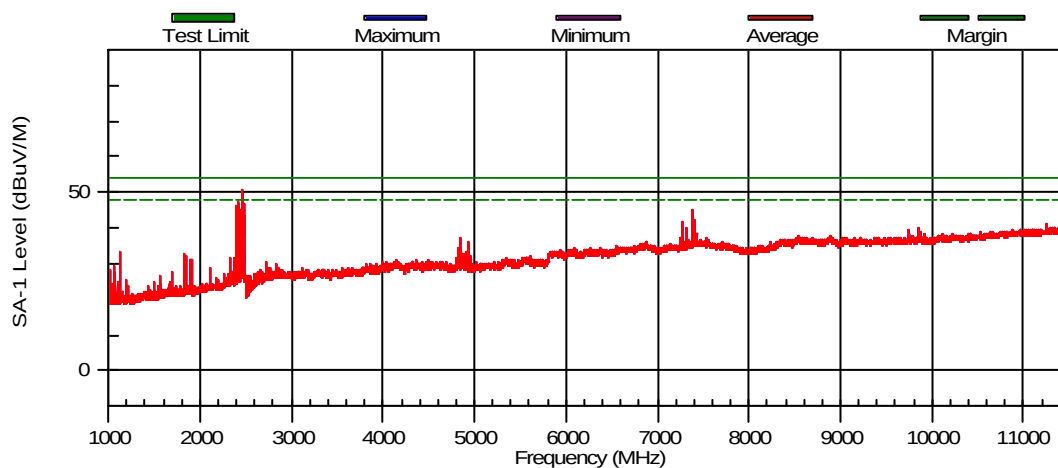
Final Test Results

INGENICO TEST 4 BASE FCC SUPC / 1 / 1 / 20/01/05 @ 22:28:05



Prescan Test Results

INGENICO TEST 4 BASE FCC SUPC / 1 / 1 / 20/01/05 @ 22:12:04



RADIATED EMISSIONS						
Petitioner: INGENICO BARCELONA, S.A			Device under test: Payment terminal			
Procedure: PT-104029			Brand: INGENICO			
Standard: Fcc CFR 47 Part 15 subpart C RSS-210:2001			Model: I7780 BTv2			
			Serial number: 5125400017+ 452003			
			Reception date: 2004-11-30			
Perf. Criteria according to: Fcc CFR 47 Part 15 subpart C RSS-210:2001			Test type:		Temperature: 18,3 °C	
Technician: Héctor Carreño			Conformity		Humidity: 25,20%	
supervised:					Atm. Pressure: 997,3 hPa	
Test date: 2005-02-24			DUT exercise:			
Auxiliary equipment:			MODE 3: Terminal tested alone. Terminal unlocked with base. Power supply DC: 6V battery 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 DUT : Device Under Test AUX : Auxiliary Devices SYS : DUT + AUX BB : Broad-band NB : Narrow-band QP : Quasi-peak			Emissions Limit -6dB > AVG		Main emission source and type: DUT, NB	
Comments:						

Test date: 2005-02-24

Test: Radiated Emissions
Standard: Fcc CFR 47 Part 15 (Class B) & RSS-210
Test Area: SAC 2

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

Device Under Test: PAYMENT TERMINAL
Description: TERMINAL
Model: I7780 BTv2
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: MODE 3: Terminal tested alone. Terminal unlocked with base.

Technician: HÉCTOR CARREÑO

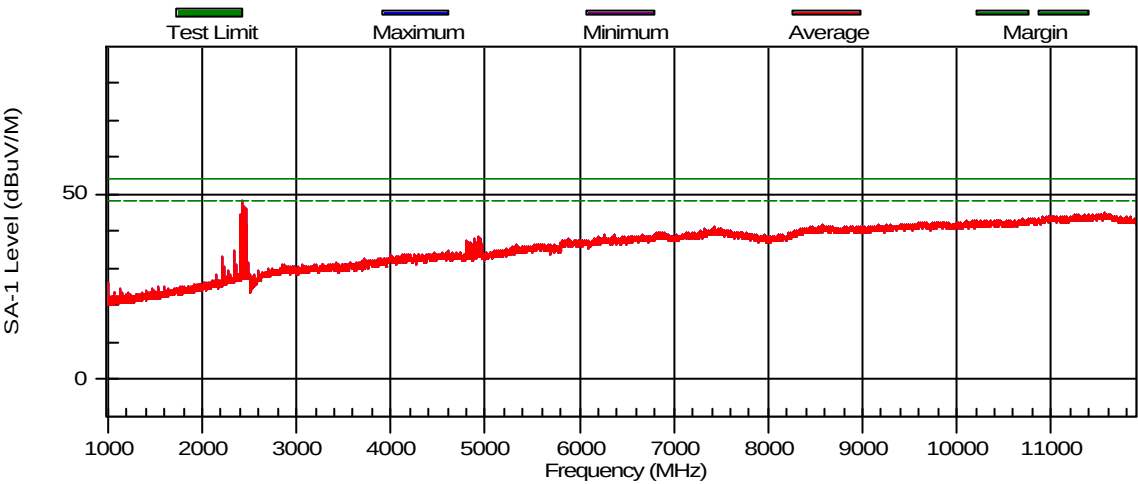
Test date: 2005-02-24

Test: Radiated Emissions
Standard: Fcc CFR 47 Part 15 (Class B) & RSS-210
Test Area: SAC 2

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

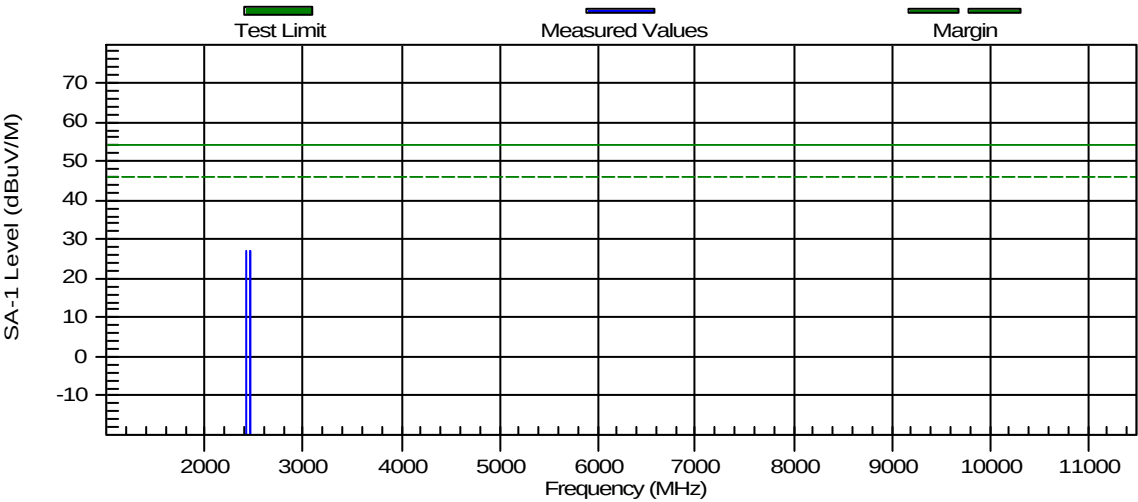
Device Under Test: PAYMENT TERMINAL
Description: TERMINAL
Model: I7780 BTv2
Serial Number: 5125400017

Prescan Test Results



Final Test Results

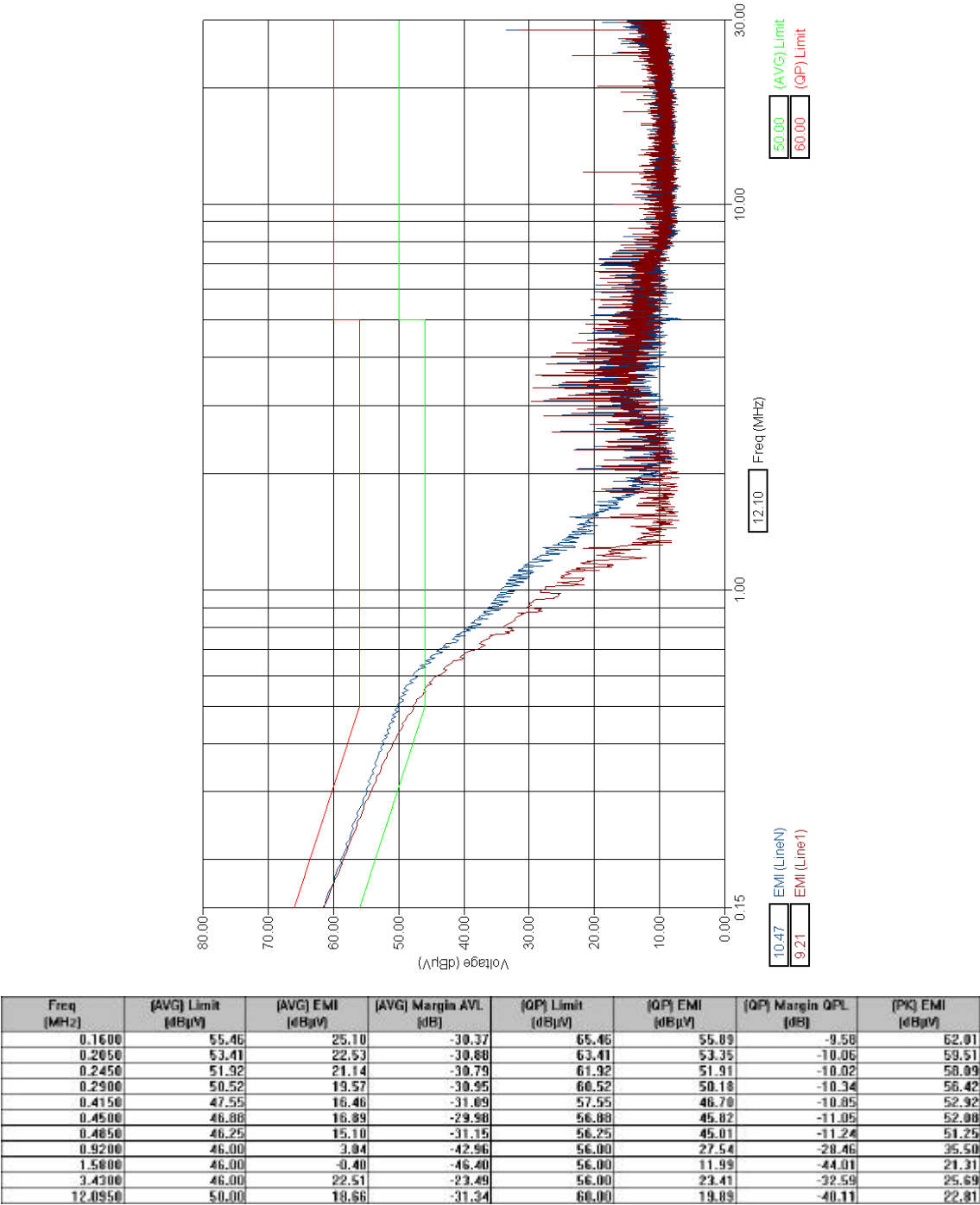
INGENICO / TEST2 / 24-02-05 / 24/02/05 @ 13:33:42



[Handwritten signature]

CONDUCTED EMISSIONS			
Petitioner: INGENICO BARCELONA, S.A		Device under test: Payment terminal	
Procedure: PT-104028		Brand: INGENICO	
Standard: Fcc CFR 47 Part 15 subpart C RSS-210:2001		Model: I7780+7770BAS+ALI0075 BTv2	
		Serial number: 5125400017 + 5123400016 + 452003	
		Reception date: 2004-11-30	
Perf. Criteria according to: Fcc CFR 47 Part 15 subpart C RSS-210:2001		Test type: Conformity	Temperature: 23,5°C Humidity: 37,60% Atm. Pressure: 998,71hPa
Technician: Marc Pous		DUT exercise:	
Supervised:		MODE 1: Terminal and base tested together. Automatic test mode: Burn-in test and charging battery	
Test date: 2005-04-19		Power supply AC: 120V / 60Hz	
Equipment: RS ESHS30 EMI Receiver RS ESH2-Z5 LISN		Tested emissions are worst case for Rx and Tx mode.	
		Test Area: FAC-1 Ground plane	
Auxiliary equipment:		Test disposition / communication cables: On Table Two serial cables terminated with impedances Telephone 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: Broad 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:			

GRAPHIC AND FINAL TABLE OF CONDUCTED EMISSIONS: SUPPLY



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SECTION 15.247 a) 1			
Petitioner: INGENICO BARCELONA, S.A		Device under test: Payment terminal	
		Brand: INGENICO	
		Model: I7780+7770BAS+ALI0075 BTv2	
Standard: FCC CFR 47 Part 15 subpart C RSS-210:2001		Serial number: 5125400017 + 5123400016 + 452003	
		Reception date: 2004-11-30	
Perf. criteria according to: Fcc CFR 47 Part 15 subpart C RSS-210:2001		Test type: Conformity	Temperature: 20,3 °C
Criteria: PASS			Humidity: 16,20%
Technician: H.Carreño / M.Pous		Atm. Pressure: 995,0 hPa	
Supervised:		DUT exercise:	
Test date: 2005-02-16		MODE 2: Base tested alone.Terminal locked with base at 20 m distance.	
		MODE 3: Terminal tested alone.Terminal unlocked with base.	
Auxiliary equipment: Receiver EMI HP model 8546A.		Mode 2: Power supply AC 120V / 60Hz. Mode 3 Power supply DC: 6 V battery.	
		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+7770BAS+ALI0075 BTv2	
Standard: FCC CFR 47 Part 15 subpart C RSS-210:2001		Serial number: 5125400017 + 5123400016 + 452003	
		Reception date: 2004-11-30	
Perf. criteria according to: Fcc CFR 47 Part 15 subpart C RSS-210:2001		Test type:	
Criteria: PASS		Conformity	
Technician: H.Carreño / M.Pous		Temperature: 20,3 °C	
Supervised:		Humidity: 16,20%	
Test date: 2005-02-16		Atm. Pressure: 995,0 hPa	
Auxiliary equipment: Receiver EMI HP model 8546A.		DUT exercise:	
		MODE 2: Base tested alone. Terminal locked with base at 20 m distance.	
		MODE 3: Terminal tested alone. Terminal unlocked with base.	
		Mode 2: Power supply AC 120V / 60Hz. Mode 3 Power supply DC: 6 V battery.	
		Tested emissions are worst case for Rx and Tx mode.	
Resolution Bandwidth: 100kHz		Test disposition / communication cables: On Table	
TEST RESULTS : PASS			
CRITERIA: <i>timing hopping < 0,4 seg</i> Observation time: $0,4 \times n^{\circ} \text{ channels} = 0,4 \times 79 = 31,6 \text{ seg}$			
Base [MODE 2] Fundamental: 2,441687GHz 0,36 seg < 0,4 seg 0,3ms timing channel in 1seg 38ch $0,0003 \times 38 \times 31,6 = 0,36 \text{seg}$			
Terminal [MODE 3] Fundamental: 2,411184 GHz 0,367seg < 0,4 seg 0,375ms timing channel in 1seg 31ch $0,000375 \times 31 \times 31,6 = 0,367 \text{seg}$			

SECTION 15.247 b) 1			
Petitioner: INGENICO BARCELONA, S.A		Device under test: Payment terminal	
		Brand: INGENICO	
		Model: I7780+7770BAS+ALI0075 BTv2	
Standard: FCC CFR 47 Part 15 subpart C RSS-210:2001		Serial number: 5125400017 + 5123400016 + 452003	
		Reception date: 2004-11-30 (*)	
Perf. criteria according to: Fcc CFR 47 Part 15 subpart C RSS-210:2001		Test type:	Temperature: 19,8 °C (*)
Criteria: PASS		Conformity	Humidity: 17,8% (*)
Technician: H.Carreño / M.Pous			Atm. Pressure: 991,0 hPa (*)
Supervised:		DUT exercise:	
Test date: 2005-02-18 (*)		MODE 2: Base tested alone.Terminal locked with base at 20 m distance.	
		MODE 3: Terminal tested alone.Terminal unlocked with base.	
Auxiliary equipment:		Mode 2: Power supply AC 120V / 60Hz. Mode 3 Power supply DC: 6 V battery.	
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: <i>maximum peak conducted < 1W</i> Base [MODE 2] Conducted peak(fundamental): f=2,479GHz 10,47dBm < 1W = 30dBm Terminal [MODE3] (*) Conducted 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 °C, 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+7770BAS+ALI0075 BTv2	
Standard: FCC CFR 47 Part 15 subpart C RSS-210:2001		Serial number: 5125400017 + 5123400016 + 452003	
		Reception date: 2004-11-30	
Perf. criteria according to: FCC CFR 47 Part 15 subpart C RSS-210:2001		Test type: Conformity	Temperature: 20,3 °C
Criteria: PASS			Humidity: 16,20%
Technician: M.Pous			Atm. Pressure: 995,0 hPa
Supervised:		DUT exercise:	
Test date: 2005-01-20		MODE 1: Terminal and base tested together. Automatic test mode: Burn-in test and charging battery	
		MODE 2: Base tested alone. Terminal locked with base at 20 m distance.	
TEST AREA: SAC2		MODE 3: Terminal tested alone. Terminal unlocked with base.	
Auxiliar equipment:		Modes 1&2: Power supply: AC 120V / 60Hz.	
		Mode 3: Power supply DC: 6V battery.	
		Tested emissions are worst case for Rx and Tx mode.	
Resolution Bandwidth: 1MHz		Test disposition / communication cables:	
Video Bandwidth: 3Hz		On Table	
TEST RESULTS : PASS			
Payment terminal (Base+Terminal) [MODE 1] All frequency range at -50dBc or below AVG Limit ☒ Base [MODE 2] All frequency range at -50dBc or below AVG Limit ☒ Terminal [MODE 3] All frequency range at -50dBc or below AVG Limit ☒			

SECTION 15.249 e)															
Petitioner: INGENICO BARCELONA, S.A		Device under test: Payment terminal													
		Brand: INGENICO													
		Model: I7780+7770BAS+ALI0075 BTv2													
Standard: FCC CFR 47 Part 15 subpart C RSS-2102001		Serial number: 5125400017 + 5123400016 + 452003													
		Reception date: 2004-11-30													
Perf. criteria according to: Fcc CFR 47 Part 15 subpart C RSS-2102001		Test type: Conformity	Temperature: 20,3 °C												
Criteria: PASS			Humidity: 16,20%												
Technician: M.Pous			Atm. Pressure: 995,0 hPa												
Supervised:															
Test date: 2005-01-20		DUT exercise:													
		MODE 1: Terminal and base tested together. Automatic test mode: Burn-in test and charging battery													
TEST AREA: SAC 2		MODE 2: Base tested alone. Terminal locked with base at 20 m distance.													
		MODE 3: Terminal tested alone. Terminal unlocked with base.													
Auxiliar equipment:		Modes 1&2: Power supply: AC 120V / 60Hz.													
		Mode 3: Power supply DC: 6V battery.													
		Tested emissions are worst case for Rx and Tx mode.													
Resolution Bandwidth: 1MHz		Test disposition / communication cables:													
Video Bandwidth: 3Hz		On Table													
TEST RESULT : PASS															
CRITERIA: Peak EMI < Limit AVG + 20 dB Payment terminal (Base+Terminal) [MODE 1] <table> <tr> <td>Fundamental: 2,406GHz</td> <td>77,4dBuV/m < 94 dBuV/m + 20 dB</td> </tr> <tr> <td>Harmonics: 4,831 GHz</td> <td>33,4dBuV/m < 54 dBuV/m + 20 dB</td> </tr> </table> Base [MODE 2] <table> <tr> <td>Fundamental: 2,403 GHz</td> <td>101,4dBuV/m < 94 dBuV/m + 20 dB</td> </tr> <tr> <td>Harmonics: 4,84 GHz</td> <td>57dBuV/m < 54 dBuV/m + 20 dB</td> </tr> </table> Terminal [MODE 3] <table> <tr> <td>Fundamental: 2,406 GHz</td> <td>98,3dBuV/m < 94 dBuV/m + 20 dB</td> </tr> <tr> <td>Harmonics: 4,84 GHz</td> <td>59,2dBuV/m < 54 dBuV/m + 20 dB</td> </tr> </table>				Fundamental: 2,406GHz	77,4dBuV/m < 94 dBuV/m + 20 dB	Harmonics: 4,831 GHz	33,4dBuV/m < 54 dBuV/m + 20 dB	Fundamental: 2,403 GHz	101,4dBuV/m < 94 dBuV/m + 20 dB	Harmonics: 4,84 GHz	57dBuV/m < 54 dBuV/m + 20 dB	Fundamental: 2,406 GHz	98,3dBuV/m < 94 dBuV/m + 20 dB	Harmonics: 4,84 GHz	59,2dBuV/m < 54 dBuV/m + 20 dB
Fundamental: 2,406GHz	77,4dBuV/m < 94 dBuV/m + 20 dB														
Harmonics: 4,831 GHz	33,4dBuV/m < 54 dBuV/m + 20 dB														
Fundamental: 2,403 GHz	101,4dBuV/m < 94 dBuV/m + 20 dB														
Harmonics: 4,84 GHz	57dBuV/m < 54 dBuV/m + 20 dB														
Fundamental: 2,406 GHz	98,3dBuV/m < 94 dBuV/m + 20 dB														
Harmonics: 4,84 GHz	59,2dBuV/m < 54 dBuV/m + 20 dB														