

EQUIPMENT FCC ID : I6U SMARTLP3

FCC CLASS B

EMI MEASUREMENT TEST REPORT

TEST LAB FCC ID : I6U

This report concerns : Original grant ☒ Class II change ☐

Equipment tested : Card Reader SmartLP3

Equipment FCC ID : I6U SMARTLP3

Designed by : BULL CP8
68 Route de Versailles
78431 LOUVECIENNES - FRANCE

Manufactured by : BULL CP8
68 Route de Versailles
78431 LOUVECIENNES - FRANCE

Deferred grant requested per 47 CFR 0.457 (d)(1)(ii)

YES ☐ NO ☒

if yes, defer until :

Company Named agrees to notify the Commission by : 09/18/1998

of the intended date of announcement of the product so that the grant can be issued on the date

Transition rules requested per 15.37?

YES ☐ NO ☒

If no, assumed Part 15, Subpart B for intentional or
unintentional radiator

The new 47 CFR [10-1-96 edition] provision

Report Prepared by :

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Test facility :

Bull Electronics Angers
34 Rue du Nid de Pie - BP 428
49004 ANGERS Cédex - France

5. POWER LINE CONDUCTED EMISSION

5.1 Test results measurements

The initial step in collecting conducted data is a spectrum analyzer peak plot of the measurement range. Significant peaks are then measured with ESH3 receiver in quasi-peak mode detector.

SUMMARY OF 18 HIGHEST SIGNALS PER WIRE MEASURED ON THE THREE CONFIGURATIONS

CONFIGURATIONS

CONFIGURATION	Product	Result	MINIMUM MARGIN				Data and Plot on following Pages
			WIRE LINE		NEUTRAL LINE		
			dB μ V	MHz	dB μ V	MHz	
SmarTLP3 Powered by mouse PS/2 Port	SmarTLP3	Pass	-19.0	12.021	-16.1	12.512	16 and 22
			-15.1	14.968	-15.2	15.000	
			-13.6	18.195	-14.7	14.906	
	DISPLAY+ PRINTER	Pass	-12.2	7.861	-13.0	7.986	17 and 23
			-10.3	4.322	-11.2	4.320	
			-9.6	6.14	-10.1	6.138	
SmarTLP3 Powered by keyboard PS/2 Port	SmarTLP3	Pass	-17.3	18.539	-16.3	13.903	18 and 24
			-15.7	15.845	-15.1	15.501	
			-14.8	14.184	-10.5	18.133	
	DISPLAY+ PRINTER	Pass	-11.4	7.861	-14.0	9.862	19 and 25
			-10.9	6.138	-11.8	6.138	
			-9.8	4.322	-10.9	4.320	
SmarTLP3 Powered by External DC Power supply	SmarTLP3	Pass	-22.6	26.088	-21.1	26.025	20 and 26
			-22.0	25.493	-20.4	7.986	
			-21.7	7.892	-19.5	23.989	
	P.C+ DISPLAY+ PRINTER	Pass	-8.2	4.353	-7.5	9.614	21 and 27
			-7.1	7.986	-6.3	7.892	
			-5.4	6.200	-5.4	6.204	

5.2 POWER LINE CONDUCTED EMISSION DATA AND PLOTTING (LINE WIRE)

APPENDIX 1-1

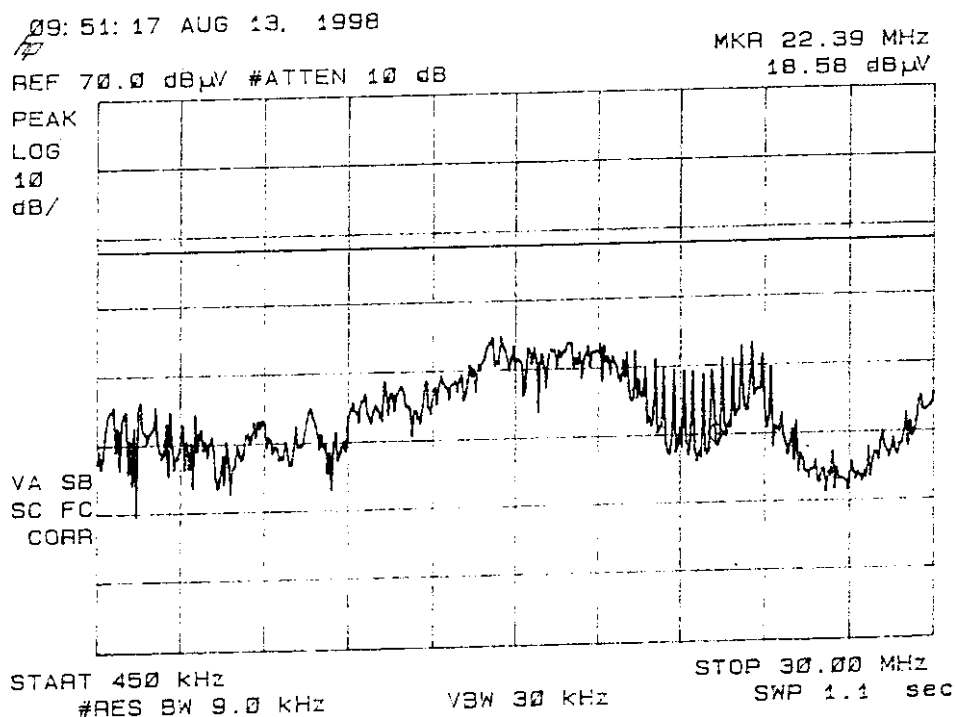
REPORT NUMBER : 965-215-21/e
 PRODUCT NAME : Card reader SMARTLP3, powered by 5V DC Mouse power
 SERIAL NUMBER : LRX W 00306
 STANDARD : FCC CFR 47 PART 15/1997 CLASS B
 MEASUREMENT : AC POWER LINE CONDUCTED CPU power cord LINE
 CONDITIONS : 120V / 60Hz
 DATE : 08/12/98
 MEASUREMENT DONE BY : J.L. CANDELON

Class B limit value : 48 dB μ V, from .45 MHz to 30 MHz

LINE
 Table of the highest QUASI PEAK values, measures done with Rohde & Schwarz ESH3 receiver :

PEAK	FREQ (MHz)	QP value (dB μ V)	DELTA (dB μ V)
1	1,9928	25,4	-22,6
2	3,985	23,5	-24,5
3	6,2011	23,7	-24,3
4	7,8923	25	-23
5	10,7407	30,2	-17,8
6	12,0211	29	-19
7	14,9687	32,9	-15,1
8	18,1954	34,4	-13,6
9	23,4885	27	-21
10	29,9713	24,3	-23,7

PLOT OF PEAK VALUES, measured with HP8594A spectrum analyser (EMC mode), Limit line class B



EQUIPMENT FCC ID : I6U SMARTLP3**5.2 POWER LINE CONDUCTED EMISSION DATA AND PLOTTING (LINE WIRE cont'd)**

REPORT NUMBER : 965-215-21/e
PRODUCT NAME : Card reader SMARTLP3, powered by 5V DC Mouse power
SERIAL NUMBER : LRX W 00306
STANDARD : FCC CFR 47 PART 15/1997 CLASS B
MEASUREMENT : AC POWER LINE CONDUCTED Printer and Display power cord
CONDITIONS : 120V / 60Hz
DATE : 08/12/98
MEASUREMENT DONE BY : JL CANDELON

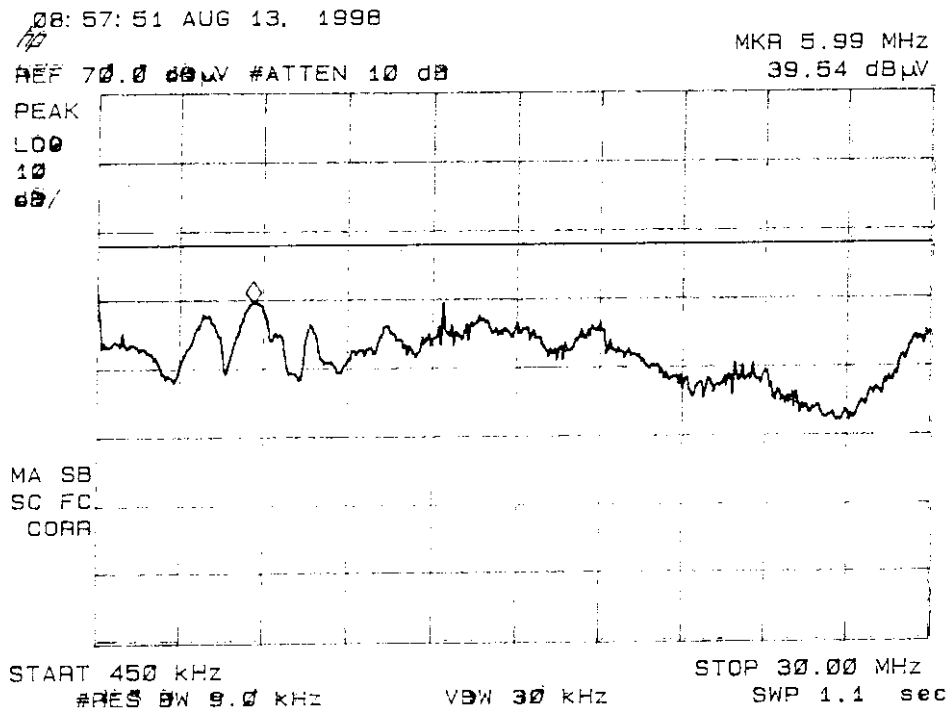
APPENDIX : 1-3

Class B limit value : 48 dB μ V, from .45 MHz to 30 MHz

LINE
Table of the highest QUASI PEAK values, measures done with Rohde & Schwarz ESH3 receiver :

PEAK	FREQ (MHz)	QP value (dB μ V)	DELTA (dB μ V)
1	0,4698	34,5	-13,5
2	4,3221	37,7	-10,3
3	6,14	38,4	-9,6
4	7,861	35,8	-12,2
5	10,4292	34,3	-13,7
6	12,6527	34,2	-13,8
7	14,1872	35	-13
8	18,2271	29	-19
9	30	31,2	-16,8

PLOT OF PEAK VALUES, measured with HP8594A spectrum analyser (EMC mode), Limit line class B



EQUIPMENT FCC ID : I6U SMARTLP3**5.2 POWER LINE CONDUCTED EMISSION DATA AND PLOTTING (LINE WIRE cont'd)**

REPORT NUMBER : 965-215-21/e
PRODUCT NAME : Card reader SMARTLP3, powered by 5V DC Keyboard power.
SERIAL NUMBER : LRX W 00306
STANDARD : FCC CFR 47 PART 15/1997 CLASS B
MEASUREMENT : AC POWER LINE CONDUCTED CPU power cord
CONDITIONS : 120V / 60Hz
DATE : 08/12/98
MEASUREMENT DONE BY : J.L. CANDELON

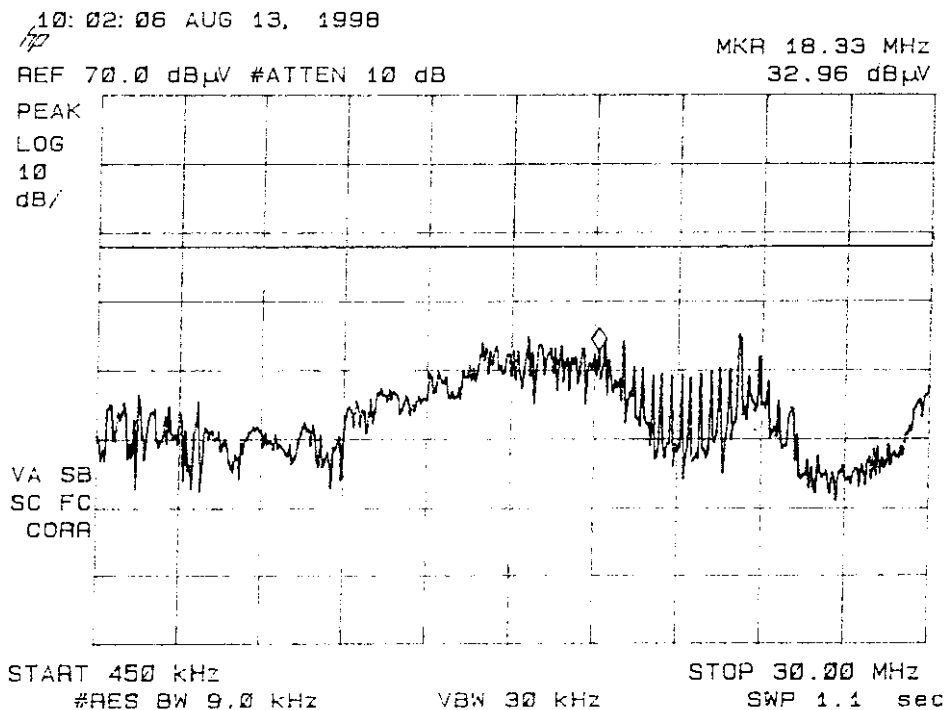
APPENDIX : 1-5

Class B limit value : 48 dB μ V, from .45 MHz to 30 MHz

LINE
Table of the highest QUASI PEAK values, measures done with Rohde & Schwarz ESH3 receiver :

PEAK	FREQ (MHz)	QP value (dB μ V)	DELTA (dB μ V)
1	1,9912	23	-25
2	3,981	24,3	-23,7
3	6,1696	24,5	-23,5
4	7,8931	24,2	-23,8
5	9,7395	24,9	-23,1
6	10,9922	27	-21
7	12,6211	29,3	-18,7
8	14,1846	33,2	-14,8
9	15,8453	32,3	-15,7
10	18,5393	30,7	-17,3
11	19,2293	27,4	-20,6
12	23,1799	27,3	-20,7
13	30	27,5	-20,5

PLOT OF PEAK VALUES, measured with HP8594A spectrum analyser (EMC mode), Limit line class B



EQUIPMENT FCC ID : I6U SMARTLP3

5.2 POWER LINE CONDUCTED EMISSION DATA AND PLOTTING (LINE WIRE cont'd)

REPORT NUMBER : 965-215-21/e
PRODUCT NAME : Card reader SMARTLP3, powered by 5V DC Keyboard power.
SERIAL NUMBER : LRX W 00306
STANDARD : FCC CFR 47 PART 15/1997 CLASS B
MEASUREMENT : AC POWER LINE CONDUCTED Printer and Display power cord
CONDITIONS : 120V / 60Hz
DATE : 08/12/98
MEASUREMENT DONE BY : J.L. CANDELON

APPENDIX : 1-7

LINE

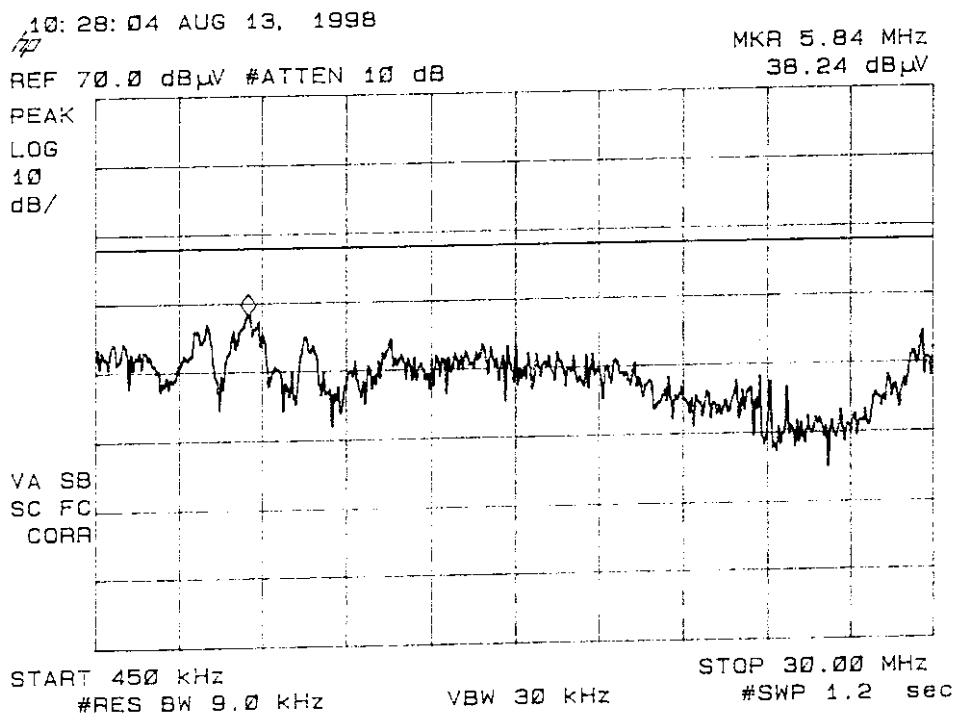
Class B limit value : 48 dB μ V, from .45 MHz to 30 MHz

LINE

Table of the highest QUASI PEAK values, measures done with Rohde & Schwarz ESH3 receiver :

PEAK	FREQ (MHz)	QP value (dB μ V)	DELTA (dB μ V)
1	0,4695	33,9	-14,1
2	4,3221	38,2	-9,8
3	6,1384	37,1	-10,9
4	7,8613	36,6	-11,4
5	10,4281	33,1	-14,9
6	10,6477	34	-14
7	12,6527	32,9	-15,1
8	14,1872	32,9	-15,1
9	18,2271	30,7	-17,3
10	23,74	23,3	-24,7
11	30	33,5	-14,5

PLOT OF PEAK VALUES, measured with HP8594A spectrum analyser (EMC mode), Limit line class B



EQUIPMENT FCC ID : I6U SMARTLP3

5.2 POWER LINE CONDUCTED EMISSION DATA AND PLOTTING (LINE WIRE cont'd)

REPORT NUMBER : 965-215-21/e
PRODUCT NAME : Card reader SMARTLP3, powered by AC power module.
SERIAL NUMBER : LRX W 00306
STANDARD : FCC CFR 47 PART 15/1997 CLASS B
MEASUREMENT : AC POWER LINE CONDUCTED AC power module
CONDITIONS : 120V / 60Hz
DATE : 08/12/98
MEASUREMENT DONE BY : J.L.CANDELON

APPENDIX : 1-9

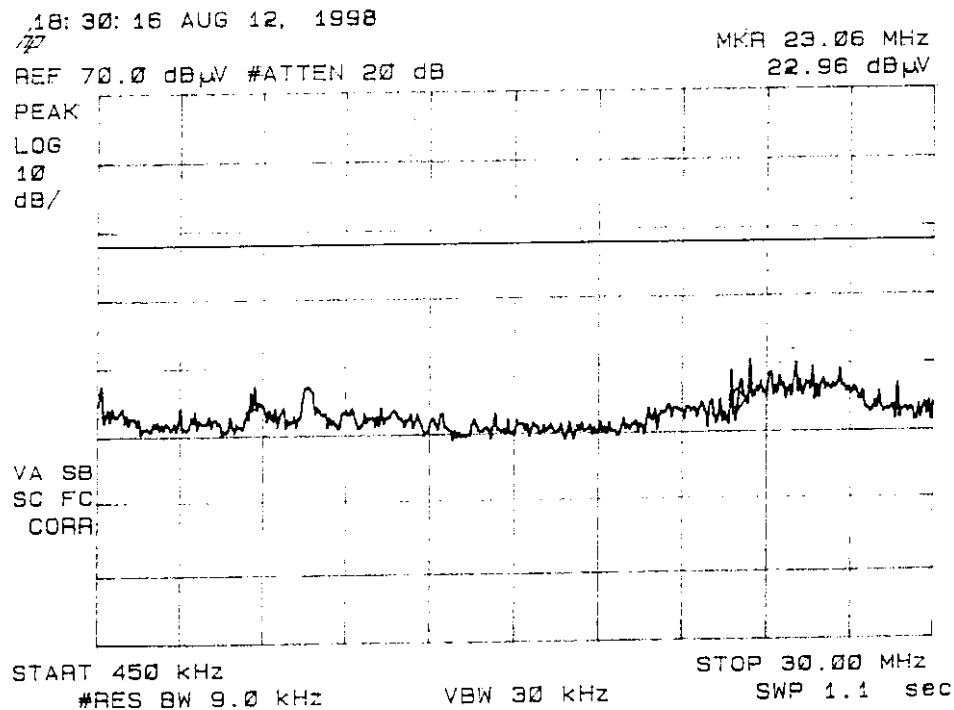
Class B limit value : 48 dB μ V, from .45 MHz to 30 MHz

LINE

Table of the highest QUASI PEAK values, measures done with Rohde & Schwarz ESH3 receiver :

PEAK	FREQ (MHz)	QP value (dB μ V)	DELTA (dB μ V)
1	5,9191	21,8	-26,2
2	6,0131	22,7	-25,3
3	7,8921	26,3	-21,7
4	23,8957	24,3	-23,7
5	25,4935	26	-22
6	26,0882	25,4	-22,6
7	26,2763	23,9	-24,1

PLOT OF PEAK VALUES, measured with HP8594A spectrum analyser (EMC mode), Limit line class B



EQUIPMENT FCC ID : I6U SMARTLP3

5.2 POWER LINE CONDUCTED EMISSION DATA AND PLOTTING (LINE WIRE cont'd)

REPORT NUMBER : 965-215-21/e
PRODUCT NAME : Card reader SMARTLP3, powered by AC power module.
SERIAL NUMBER : LRX W 00306
STANDARD : FCC CFR 47 PART 15/1997 CLASS B
MEASUREMENT : AC POWER LINE CONDUCTED CPU, Printer, Display power cord
CONDITIONS : 120V / 60Hz
DATE : 08/12/98
MEASUREMENT DONE BY : J.L CANDELON

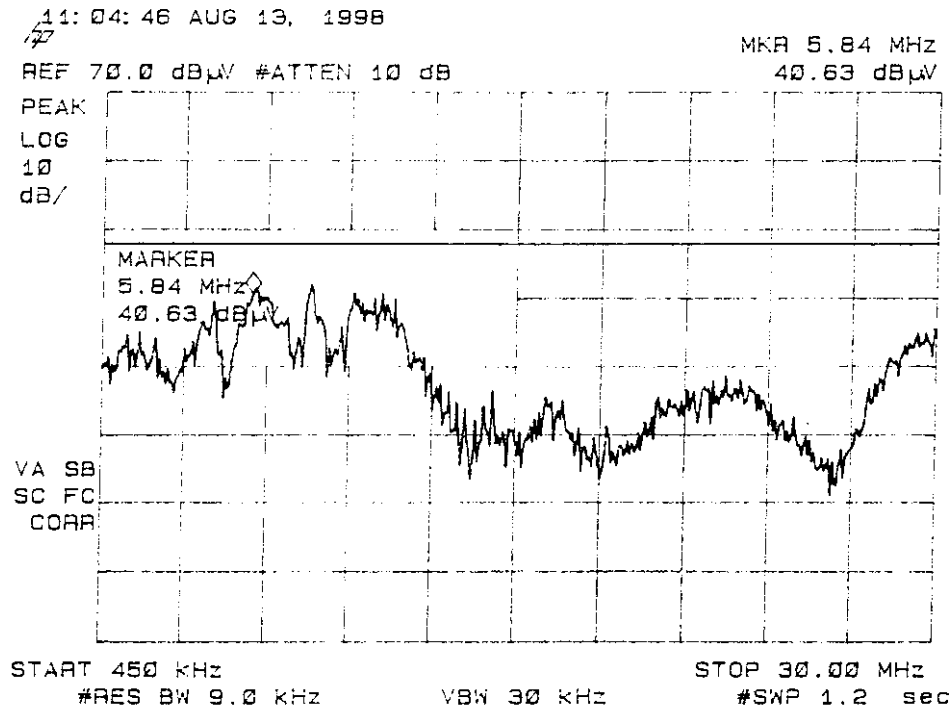
APPENDIX : 1-11

Class B limit value : 48 dB μ V, from .45 MHz to 30 MHz

LINE
Table of the highest QUASI PEAK values, measures done with Rohde & Schwarz ESH3 receiver :

PEAK	FREQ (MHz)	QP value (dB μ V)	DELTA (dB μ V)
1	0,4698	31,7	-16,3
2	0,6257	31,9	-16,1
3	0,813	31,9	-16,1
4	0,9708	33,5	-14,5
5	1,1588	32,8	-15,2
6	3,3833	35	-13
7	4,3532	39,8	-8,2
8	6,2001	42,6	-5,4
9	7,9862	40,9	-7,1
10	9,6781	39	-9
11	10,5543	38,5	-9,5
12	22,4242	26,2	-21,8
13	29,596	33,3	-14,7

PLOT OF PEAK VALUES, measured with HP8594A spectrum analyser (EMC mode), Limit line class B



EQUIPMENT FCC ID : I6U SMARTLP3

5.3 POWER LINE CONDUCTED EMISSION DATA AND PLOTTING (NEUTRAL WIRE)

REPORT NUMBER : 965-215-21/e
PRODUCT NAME : Card reader SMARTLP3, powered by 5V DC Mouse power.
SERIAL NUMBER : LRX W 00306
STANDARD : FCC CFR 47 PART 15/1997 CLASS B
MEASUREMENT : AC POWER LINE CONDUCTED CPU power cord NEUTRAL
CONDITIONS : 120V / 60Hz
DATE : 08/12/98
MEASUREMENT DONE BY : J.L.CANDELON

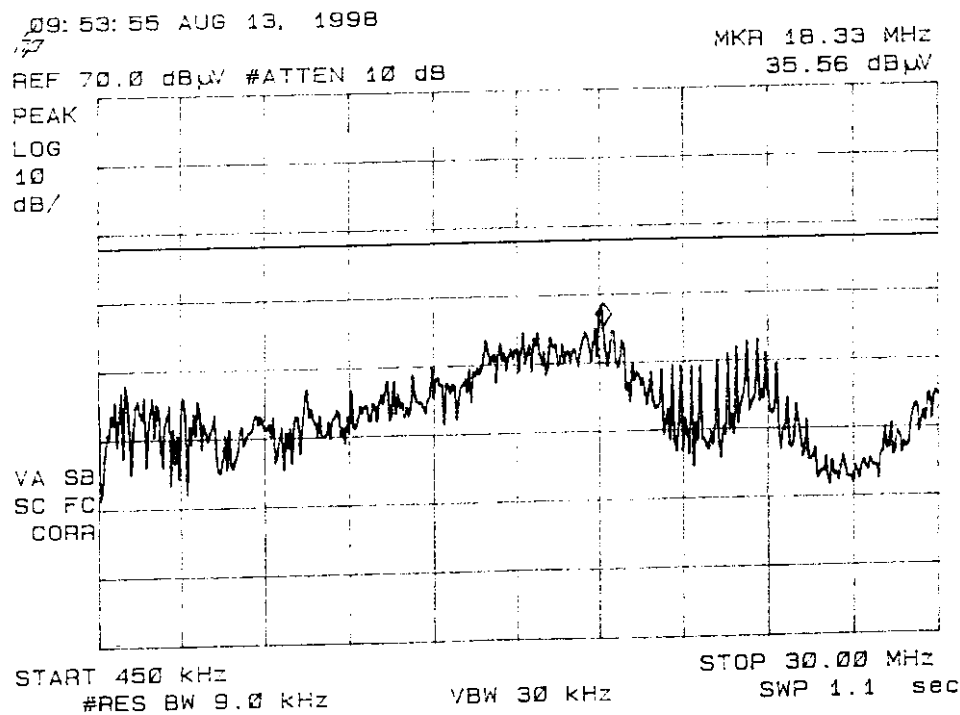
APPENDIX : 1-2

Class B limit value : 48 dB μ V, from .45 MHz to 30 MHz

NEUTRAL
Table of the highest QUASI PEAK values, measures done with Rohde & Schwarz ESH3 receiver :

PEAK	FREQ (MHz)	QP value (dB μ V)	DELTA (dB μ V)
1	1,9921	26,2	-21,8
2	3,9844	23,6	-24,4
3	6,2011	23,6	-24,4
4	7,83	25,5	-22,5
5	7,8922	25	-23
6	9,4895	25,9	-22,1
7	7411	29,8	-18,2
8	12,5126	31,9	-16,1
9	14,9066	33,3	-14,7
10	15	32,8	-15,2
11	18,9788	30,9	-17,1
12	23,4895	27	-21
13	30	24	-24

PLOT OF PEAK VALUES, measured with HP8594A spectrum analyser (EMC mode), Limit line class B



EQUIPMENT FCC ID : I6U SMARTLP3

5.3 POWER LINE CONDUCTED EMISSION DATA AND PLOTTING (NEUTRAL WIRE cont'd)

REPORT NUMBER : 965-215-21/e
PRODUCT NAME : Card reader SMARTLP3, powered by 5V DC Mouse power.
SERIAL NUMBER : LRX W 00306
STANDARD : FCC CFR 47 PART 15/1997 CLASS B
MEASUREMENT : AC POWER LINE CONDUCTED Printer and Display power cord
CONDITIONS : 120V / 60Hz
DATE : 08/12/98
MEASUREMENT DONE BY : J.L. CANDELON

APPENDIX : 1-4

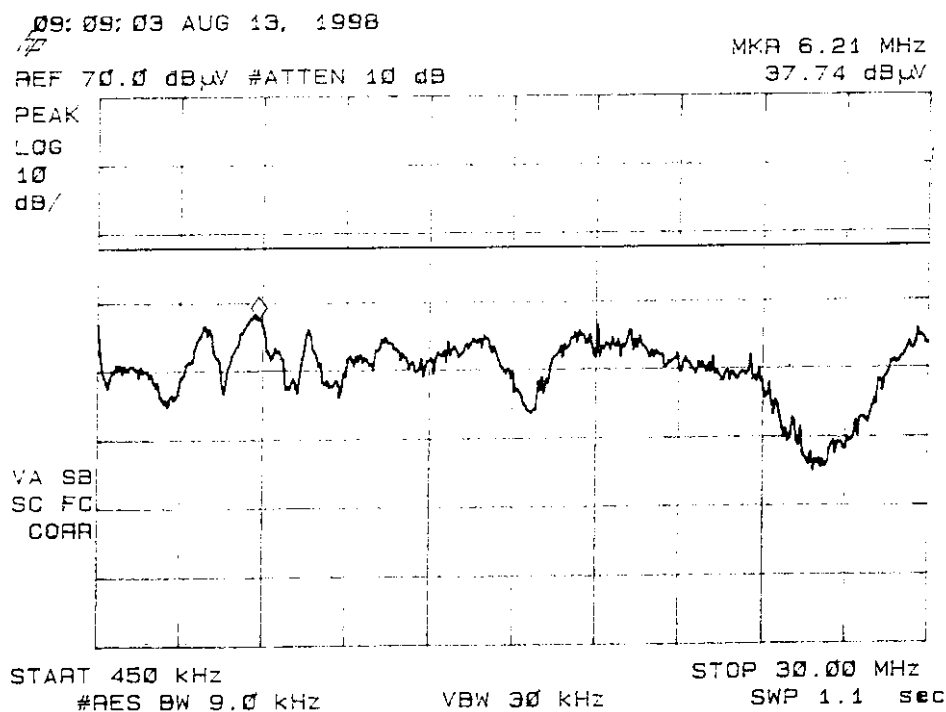
NEUTRAL

Class B limit value : 48 dB μ V, from .45 MHz to 30 MHz

NEUTRAL
Table of the highest QUASI PEAK values, measures done with Rohde & Schwarz ESH3 receiver :

PEAK	FREQ (MHz)	QP value (dB μ V)	DELTA (dB μ V)
1	0,4698	32	-16
2	4,3202	36,8	-11,2
3	6,1385	37,9	-10,1
4	7,9862	35	-13
5	0,4292	34	-14
6	12,9345	32	-16
7	14,2183	33,4	-14,6
8	17,6945	33,5	-14,5
9	19,48	32,5	-15,5
10	23,6454	27,4	-20,6
11	29,7647	33	-15

PLOT OF PEAK VALUES, measured with HP8594A spectrum analyser (EMC mode), Limit line class B



EQUIPMENT FCC ID : I6U SMARTLP3

5.3 POWER LINE CONDUCTED EMISSION DATA AND PLOTTING (NEUTRAL WIRE cont'd)

REPORT NUMBER : 965-215-21/e
PRODUCT NAME : Card reader SMARTLP3, powered by 5V DC Keyboard power.
SERIAL NUMBER : LRX W 00306
STANDARD : FCC CFR 47 PART 15/1997 CLASS B
MEASUREMENT : AC POWER LINE CONDUCTED CPU power cord
CONDITIONS : 120V / 60Hz
DATE : 08/12/98
MEASUREMENT DONE BY : J.L. CANDELON

APPENDIX : 1-6

NEUTRAL

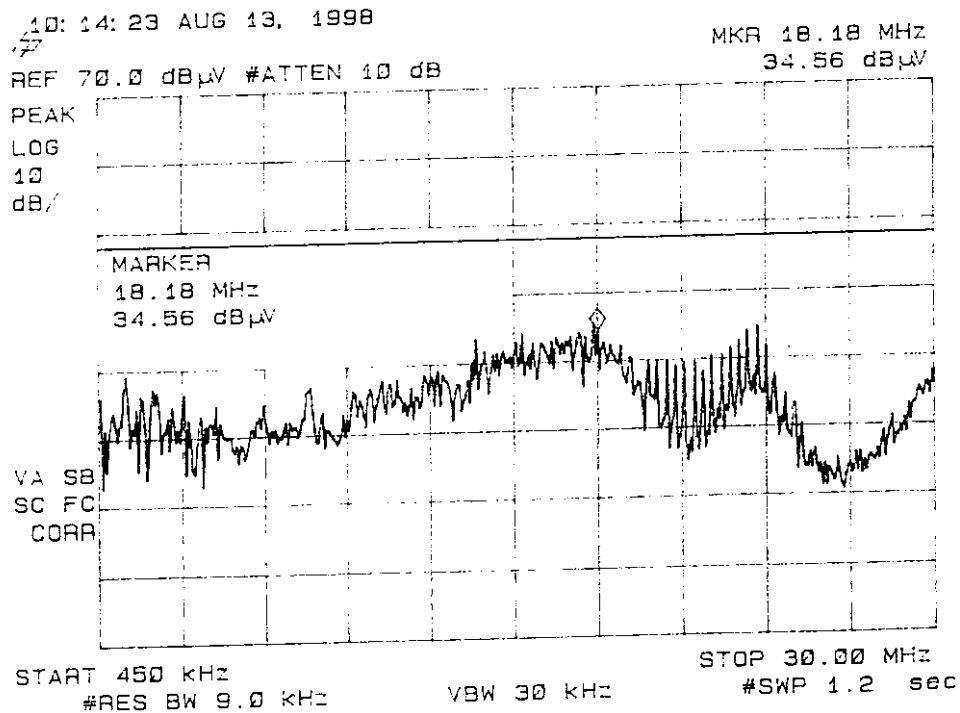
Class B limit value : 48 dB μ V, from .45 MHz to 30 MHz

NEUTRAL

Table of the highest QUASI PEAK values, measures done with Rohde & Schwarz ESH3 receiver :

PEAK	FREQ (MHz)	QP value (dB μ V)	DELTA (dB μ V)
1	1,9914	24,2	-23,8
2	3,9801	25	-23
3	6,1717	25,4	-22,6
4	7,8915	24,4	-23,6
5	9,5203	25,7	-22,3
6	11,0235	26,5	-21,5
7	12,557	28,7	-19,3
8	13,903	31,7	-16,3
9	15,501	32,9	-15,1
10	18,1331	37,5	-10,5
11	19,4767	26,5	-21,5
12	21,9	22,5	-25,5
13	23,8265	24	-24

PLOT OF PEAK VALUES, measured with HP8594A spectrum analyser (EMC mode), Limit line class B



EQUIPMENT FCC ID : I6U SMARTLP3**5.3 POWER LINE CONDUCTED EMISSION DATA AND PLOTTING (NEUTRAL WIRE cont'd)**

REPORT NUMBER : 965-215-21/e
PRODUCT NAME : Card reader SMARTLP3, powered by 5V DC Keyboard power.
SERIAL NUMBER : LRX W 00306
STANDARD : FCC CFR 47 PART 15/1997 CLASS B
MEASUREMENT : AC POWER LINE CONDUCTED Printer and Display power cord
CONDITIONS : 120V / 60Hz
DATE : 08/12/98
MEASUREMENT DONE BY : J.L.CANDELON

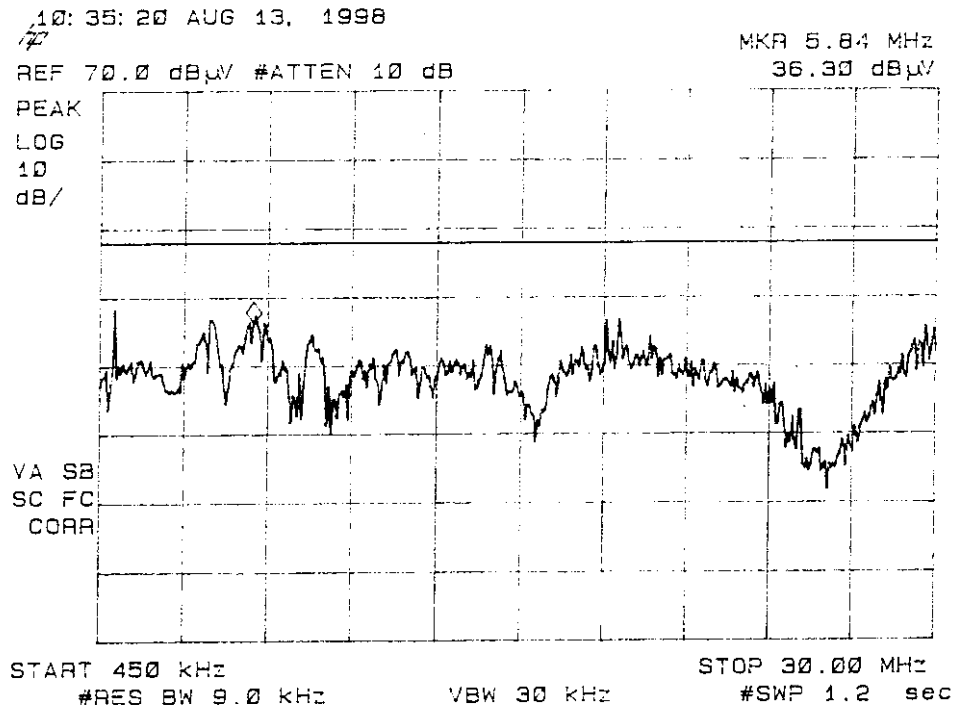
APPENDIX : 1-8
NEUTRAL

Class B limit value : 48 dB μ V, from .45 MHz to 30 MHz

NEUTRAL
Table of the highest QUASI PEAK values, measures done with Rohde & Schwarz ESH3 receiver :

PEAK	FREQ (MHz)	QP value (dB μ V)	DELTA (dB μ V)
1	0,4695	32	-16
2	4,3206	37,1	-10,9
3	6,1385	36,2	-11,8
4	9862	34	-14
5	10,4292	31,9	-16,1
6	12,9345	31,1	-16,9
7	14,2173	32	-16
8	17,6945	31,4	-16,6
9	19,48	31,6	-16,4
10	23,6454	27,3	-20,7
11	29,7847	33,7	-14,3

PLOT OF PEAK VALUES, measured with HP8594A spectrum analyser (EMC mode), Limit line class B



EQUIPMENT FCC ID : I6U SMARTLP3

5.3 POWER LINE CONDUCTED EMISSION DATA AND PLOTTING (NEUTRAL WIRE cont'd)

REPORT NUMBER : 965-215-21/e
PRODUCT NAME : Card reader SMARTLP3, powered by AC power module.
SERIAL NUMBER : LRX W 00306
STANDARD : FCC CFR 47 PART 15/1997 CLASS B
MEASUREMENT : AC POWER LINE CONDUCTED AC power module NEUTRAL
CONDITIONS : 120V / 60Hz
DATE : 08/12/98
MEASUREMENT DONE BY : J.L.CANDELON

APPENDIX : 1-10

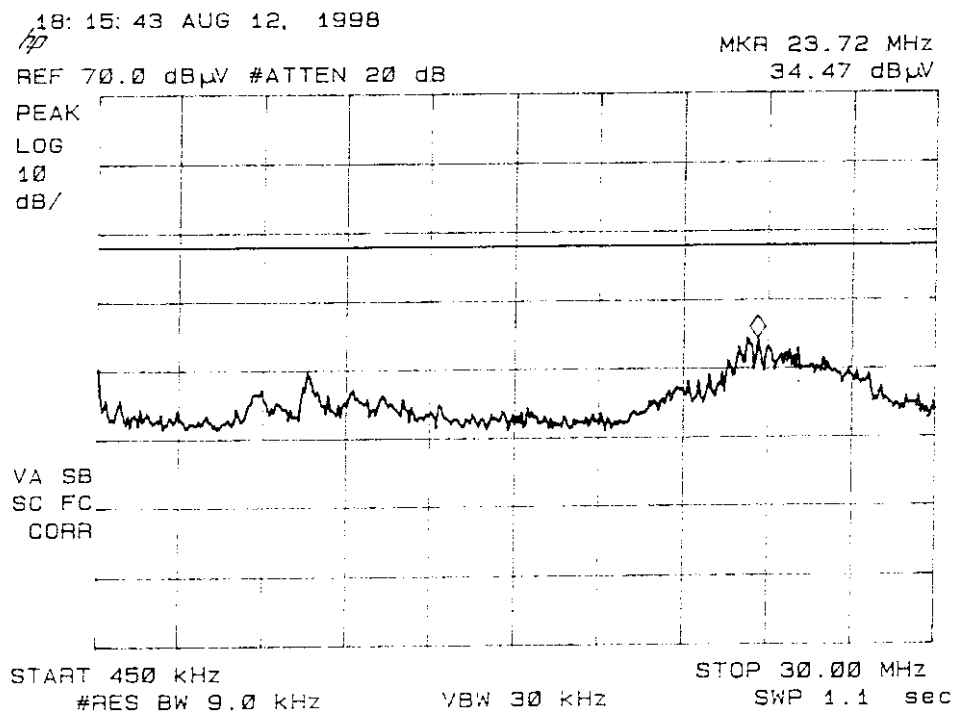
Class B limit value : 48 dB μ V, from .45 MHz to 30 MHz

NEUTRAL/LINE

Table of the highest QUASI PEAK values, measures done with Rohde & Schwarz ESH3 receiver :

PEAK	FREQ (MHz)	QP value (dB μ V)	DELTA (dB μ V)
1	6,02016	24,8	-23,2
2	7,9862	27,6	-20,4
3	9,521	23,1	-24,9
4	20,92	23,3	-24,7
5	23,019	24,5	-23,5
6	23,1438	25,5	-22,5
7	23,9896	28,5	-19,5
8	26,0257	26,9	-21,1

PLOT OF PEAK VALUES, measured with HP8594A spectrum analyser (EMC mode), Limit line class B



EQUIPMENT FCC ID : I6U SMARTLP3

5.3 POWER LINE CONDUCTED EMISSION DATA AND PLOTTING (NEUTRAL WIRE cont'd)

REPORT NUMBER : 965-215-21/e
PRODUCT NAME : Card reader SMARTLP3, powered by AC power module.
SERIAL NUMBER : LRX W 00306
STANDARD : FCC CFR 47 PART 15/1997 CLASS B
MEASUREMENT : AC POWER LINE CONDUCTED CPU, Printer, Display power cord
CONDITIONS : 120V / 60Hz
DATE : 08/12/98
MEASUREMENT DONE BY : J.L.CANDELON

APPENDIX : 1-12

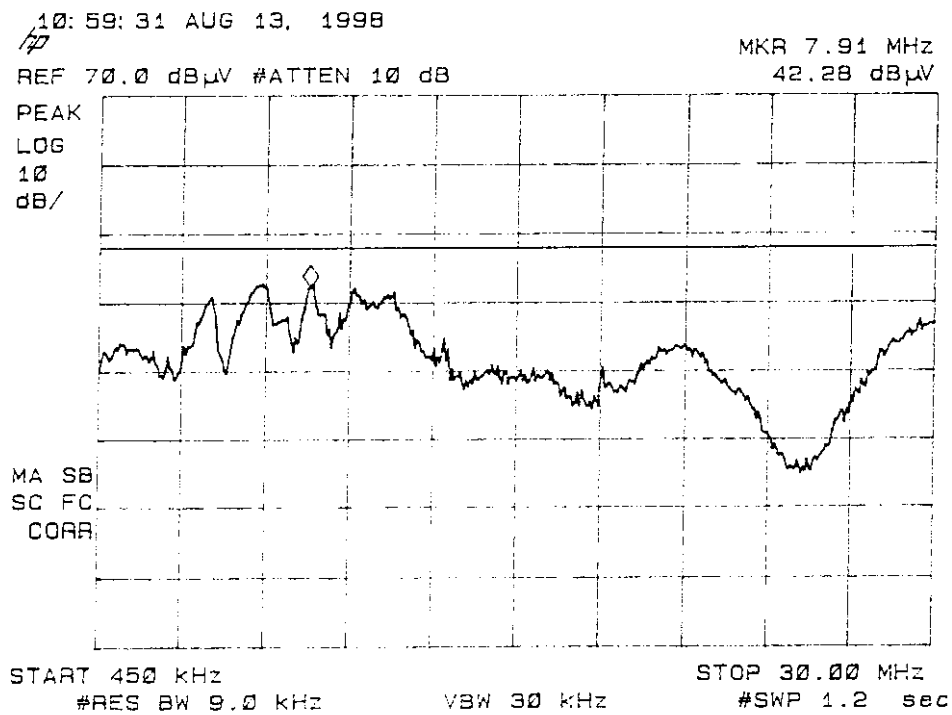
NEUTRAL

Class B limit value : 48 dB μ V, from .45 MHz to 30 MHz

NEUTRAL
Table of the highest QUASI PEAK values, measures done with Rohde & Schwarz ESH3 receiver :

PEAK	FREQ (MHz)	QP value (dB μ V)	DELTA (dB μ V)
1	0.4695	32	-16
2	0.9711	33	-15
3	1.1587	32,5	-15,5
4	1.6914	34,1	-13,9
5	3.078	29,7	-18,3
6	3.3825	33,6	-14,4
7	4.4473	38	-10
8	6.204	42,6	-5,4
9	7.8923	41,7	-6,3
10	9.6148	40,5	-7,5
11	10.5857	40	-8
12	20.9831	33,6	-14,4

PLOT OF PEAK VALUES, measured with HP8594A spectrum analyser (EMC mode), Limit line class B



6. OPEN FIELD RADIATED EMISSION**6.1 Test results measurements**

The following data pages lists the significant emission frequencies, limit, measured level including correction factor (cable loss + antenna factors), margin, polarisation, hight and azimuth. The frequencies are measured in quasi-peak detection mode with ESVP receiver until 1000 MHz. The frequencies between 1000MHz and 2000MHz(because the upper frequency is 166MHz) are checked in peak detection mode with HP8594A spectrum analyser in anechoic chamber during a prescan signature at a distance of 3 meters.

Explanation of the Correction Factor is given in paragraph 6.4.

SUMMARY OF 18 HIGHEST SIGNALS MEASURED ON THE THREE CONFIGURATIONS

Product	Result	MINIMUM MARGIN		Data and Plot on following Pages
		dB μ V	MHz	
SmarTLP3 powered by mouse PS/2 port + P.C + Display + Printer	Pass	-3.0	596.798	35 and 36
		-5.5	30.200	
		-7.2	76.956	
		-7.5	60.850	
		-7.7	68.000	
		-8.6	64.432	
SmarTLP3 powered by keyboard PS/2 port+ P.C + Display + Printer	Pass	-3.2	264.054	37 and 38
		-4.9	83.100	
		-5.0	30.200	
		-5.3	81.700	
		-5.9	596.798	
		-7.0	60.850	
SmarTLP3 powered by external DC power supply + Display + Printer	Pass	-6.9	64.432	39 and 40
		-8.0	39.800	
		-9.6	171.810	
		-10.0	68.000	
		-10.0	464.179	
		-11.0	296.059	

6.2 OPEN FIELD EMISSION DATA AND PLOTTING

APPENDIX : 2-1

REPORT NUMBER : 965-215-21/e
 PRODUCT NAME : Card reader SMARTLP3, powered by 5V DC Mouse power.
 SERIAL NUMBER : LRX W 00306
 STANDARD : FCC CFR 47 PART 15/1997 CLASS B
 MEASUREMENT : ELECTRIC FIELDSTRENGTH INTERERENCE 30MHz-2000MHz
 CONDITIONS : 120V / 60Hz, distance of measure : 3 m
 DATE : 08/11/98
 MEASUREMENT DONE BY : D.RAUD

Class B limit value (3m measurement distance)

Table of the highest QUASI PEAK values, measures done with Rohde & Schwarz ESVP receiver until 1000MHz:

No	EMISSION	SPEC	MEASUREMENTS					CORR	COMMENT
	FREQ MHz	LIMIT dBµV/m	ABS	dLIM dB	POL	HGT cm	AZM deg	FACTOR dB	
1	30,2	40	34,5	-5,5	V	106	289	18,90	BB (display)
2	41,64	40	28,4	-11,6	V	100	230	16,50	BB (display)
3	53,693	40	26,9	-13,1	V	150	0	13,10	BB (display)
4	60,85	40	32,5	-7,5	V	106	317	10,20	
5	64,432	40	31,4	-8,6	V	100	0	8,80	
6	68	40	32,3	-7,7	V	150	0	6,90	
7	76,956	40	32,8	-7,2	V	150	20	7,50	BB (display)
8	113,302	43,5	31,6	-11,9	V	260	0	12,80	
9	184,038	43,5	29,6	-13,9	H	320	310	18,50	
10	186,129	43,5	33,3	-10,2	H	135	113	18,60	
11	200,039	43,5	31,4	-12,1	H	185	192	18,90	
12	208,041	43,5	33,3	-10,2	H	148	207	19,10	
13	212,046	43,5	29,1	-14,4	H	148	208	19,20	
14	214,761	43,5	28,3	-15,2	V	125	20	19,30	
15	232,047	46	31,8	-14,2	H	106	0	19,70	
16	240,049	46	33,2	-12,8	H	160	200	20,10	
17	248,051	46	31	-15	H	150	120	20,20	
18	256,052	46	30,9	-15,1	H	170	140	20,35	
19	264,054	46	34,8	-11,2	H	136	140	20,45	
20	288,059	46	34,1	-11,9	H	136	160	20,70	
21	296,059	46	35,5	-10,5	H	150	170	20,75	
22	304,062	46	31,9	-14,1	H	150	310	17,40	
23	344,07	46	30	-16	H	194	45	19,15	
24	431,022	46	31,7	-14,3	H	205	73	21,60	
25	464,179	46	32,5	-13,5	H	213	250	22,25	
26	596,798	46	43	-3	H	156	224	24,75	

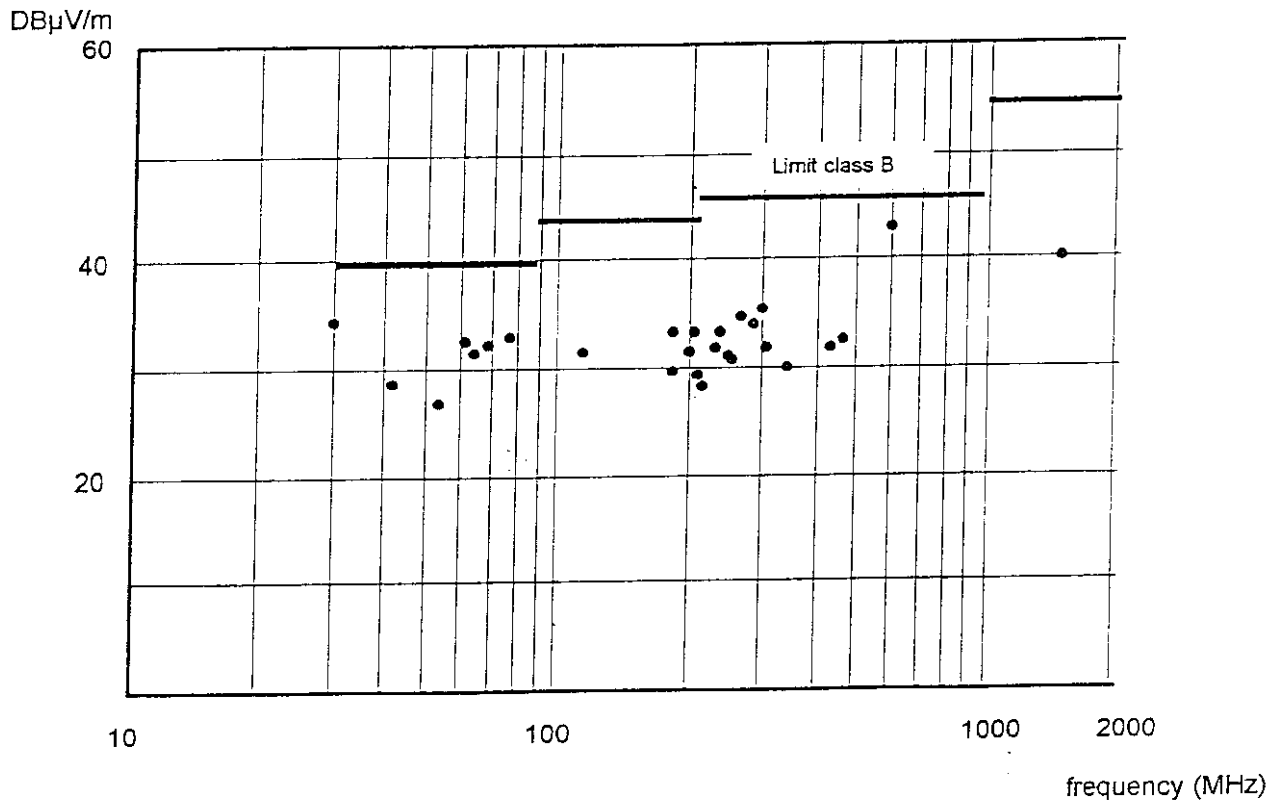
6.2 OPEN FIELD EMISSION DATA AND PLOTTING (cont'd)

APPENDIX : 2-2

REPORT NUMBER : 965-215-21/e
PRODUCT NAME : Card reader SMARTLP3, powered by 5V DC Mouse power.
SERIAL NUMBER : LRX W 00306
STANDARD : FCC CFR 47 PART 15/1997 CLASS B
MEASUREMENT : ELECTRIC FIELDSTRENGTH INTERERENCE 30MHz-2000MHz
CONDITIONS : 120V / 60Hz, distance of measure :3 m
DATE : 08/11/98
MEASUREMENT DONE BY : D.RAUD

Class B limit value (3m measurement distance)

GRAPHIC OF PEAK AND QUASI PEAK VALUES, measured with HP8594A spectrum analyser (EMC mode), Limit line class



EQUIPMENT FCC ID : I6U SMARTLP3**6.2 OPEN FIELD EMISSION DATA AND PLOTTING (cont'd)**

APPENDIX : 2-3

REPORT NUMBER : 965-215-21/e
 PRODUCT NAME : Card reader SMARTLP3, powered by 5V DC Keyboard power.
 SERIAL NUMBER : LRX W 00306
 STANDARD : FCC CFR 47 PART 15/1997 CLASS B
 MEASUREMENT : ELECTRIC FIELDSTRENGTH INTERERENCE 30MHz-2000MHz
 CONDITIONS : 120V / 60Hz, distance of measure : 3 m
 DATE : 08/11/98
 MEASUREMENT DONE BY : D.RAUD

 Class B limit value (3m measurement distance)

Table of the highest QUASI PEAK values, measures done with Rohde & Schwarz ESVP receiver until 1000MHz:

No	EMISSION	SPEC	MEASUREMENTS			HGT	AZM	CORR	COMMENT
	FREQ MHz	LIMIT dBµV/m	ABS	dLIM dB	POL			FACTOR dB	
1	30,2	40	35	-5	V	106	289	18,90	BB (display)
2	53,8	40	29,9	-10,1	V	150	0	13,10	BB (display)
3	60,85	40	33	-7	V	106	317	10,20	
4	64,432	40	32,8	-7,2	V	100	0	8,80	
5	81,7	40	34,7	-5,3	V	100	0	7,40	
6	83,1	40	35,1	-4,9	V	150	20	7,65	BB (display)
7	113,302	43,5	31,6	-11,9	V	260	0	12,80	BB (display)
8	120,267	43,5	28,1	-15,4	H	116	277	14,44	
9	184,038	43,5	29,6	-13,9	H	320	310	18,50	
10	208,041	43,5	33,4	-10,1	H	148	207	19,10	
11	232,047	46	31,9	-14,1	H	106	0	19,70	
12	240,049	46	34,1	-11,9	H	160	200	20,10	
13	248,051	46	31,6	-14,4	H	150	120	20,20	
14	256,052	46	30,9	-15,1	H	170	140	20,35	
15	264,054	38	34,8	-3,2	H	155	318	20,45	
16	280,059	46	30	-16	H	160	301	20,60	
17	288,059	46	32,4	-13,6	H	157	310	20,70	
18	296,059	46	33,6	-12,4	H	140	157	20,75	
19	304,062	46	32,7	-13,3	H	147	304	17,40	
20	344,07	46	31	-15	H	144	0	19,15	
21	431,022	46	34,6	-11,4	H	105	108	21,60	
22	464,179	46	33	-13	H	114	184	22,25	
23	596,798	46	40,1	-5,9	H	220	243	22,25	
24	994,669	54	43	-11	H	106	158	31,85	

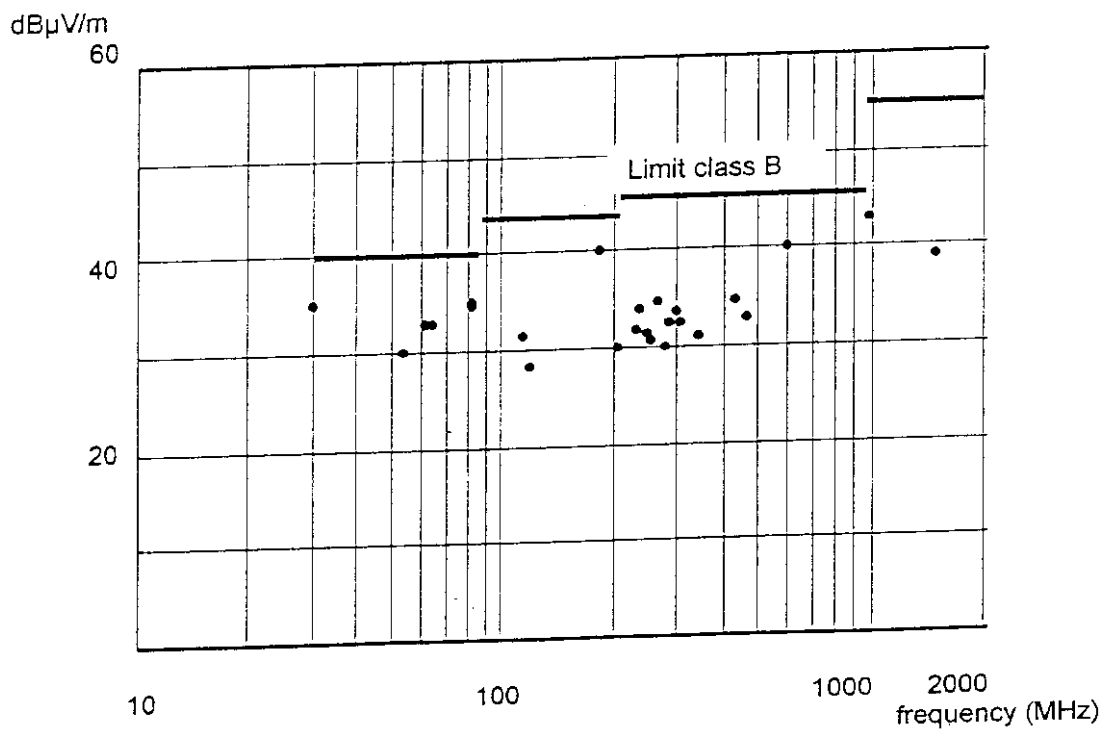
6.2 OPEN FIELD EMISSION DATA AND PLOTTING (cont'd)

APPENDIX : 2-4

REPORT NUMBER : 965-215-21/e
PRODUCT NAME : Card reader SMARTLP3, powered by 5V DC Keyboard power.
SERIAL NUMBER : LRX W 00306
STANDARD : FCC CFR 47 PART 15/1997 CLASS B
MEASUREMENT : ELECTRIC FIELDSTRENGTH INTERERENCE 30MHz-2000MHz
CONDITIONS : 120V / 60Hz, distance of measure : 3 m
DATE : 08/11/98
MEASUREMENT DONE BY : D.RAUD

Class B limit value (3m measurement distance)

GRAPHIC OF PEAK AND QUASI PEAK VALUES, measured with HP8594A spectrum analyser (EMC mode), Limit line class B



EQUIPMENT FCC ID : I6U SMARTLP3**6.2 OPEN FIELD EMISSION DATA AND PLOTTING (cont'd)**

APPENDIX : 2-5

REPORT NUMBER : 965-215-21/e
 PRODUCT NAME : Card reader SMARTLP3, powered by AC power module.
 SERIAL NUMBER : LRX W 00306
 STANDARD : FCC CFR 47 PART 15/1997 CLASS B
 MEASUREMENT : ELECTRIC FIELDSTRENGTH INTERERENCE 30MHz-2000MHz
 CONDITIONS : 120V / 60Hz, distance of measure : 3 m
 DATE : 08/11/98
 MEASUREMENT DONE BY : D.RAUD

 Class B limit value (3m measurement distance)

 Table of the highest QUASI PEAK values, measures done with Rohde & Schwarz ESVP receiver until 1000MHz:

No	EMISSION	SPEC	MEASUREMENTS				AZM	CORR	COMMENT
	FREQ MHz	LIMIT dBµV/m	ABS	dLIM dB	POL	HGT cm		FACTOR dB	
1	39,8	40	32	-8	V	100	50	16,30	
2	46,5	40	24	-16	V	100	100	15,45	
3	64,432	40	33,1	-6,9	V	377	204	8,80	
4	68	40	30	-10	V	100	288	6,90	
5	106,6	43,5	29,5	-14	V	100	225	12,65	
6	148	43,5	23,5	-20	V	100	290	16,38	
7	150,3	43,5	27	-16,5	V	100	0	16,48	BB (display)
8	164,03	43,5	23	-20,5	V	100	180	15,50	
9	171,81	43,5	33,9	-9,6	H	150	270	18,30	
10	184,03	43,5	32	-11,5	H	148	170	18,50	
11	192,03	43,5	33	-10,5	H	148	180	18,74	
12	200	43,5	32,6	-10,9	H	130	180	18,97	
13	207,6	46	29	-17	H	130	290	19,05	
14	208,03	46	34,4	-11,6	H	130	290	19,10	
15	214,75	46	31,3	-14,7	H	130	100	19,30	
16	232,04	46	34,9	-11,1	H	130	334	19,70	
17	288,06	46	34,8	-11,2	H	154	160	20,70	
18	296,059	46	35	-11	H	150	160	20,75	
19	304,062	46	32	-14	H	170	170	17,40	
20	344,07	46	30,3	-15,7	H	165	16	19,15	
21	464,179	46	36	-10	H	190	205	22,25	

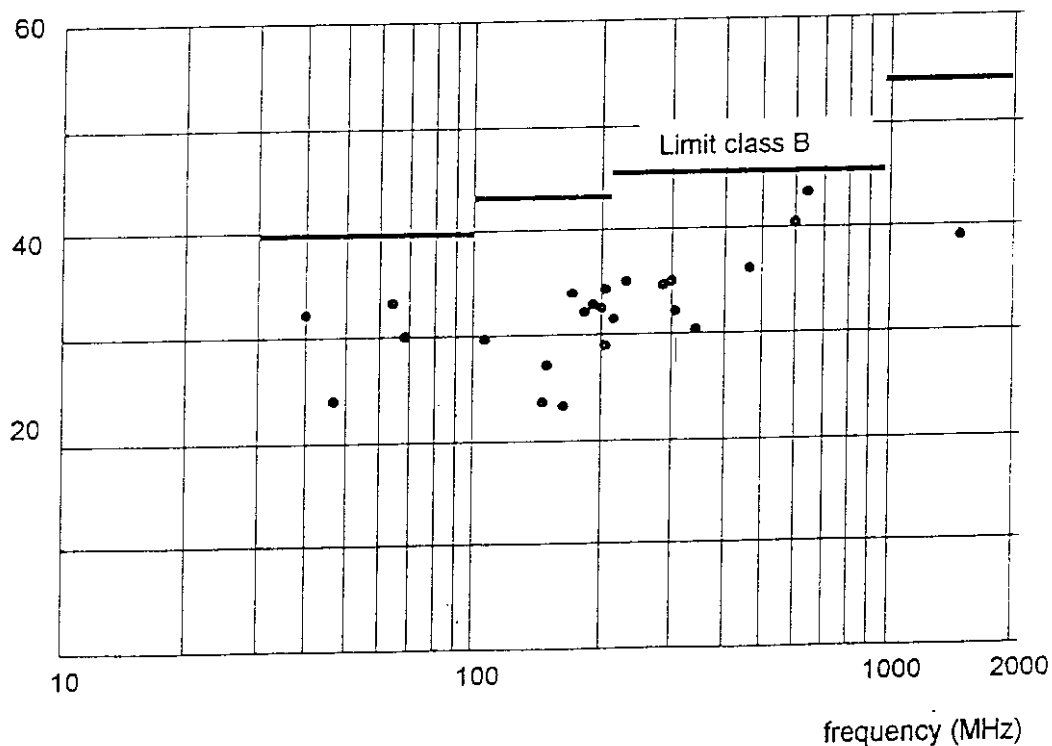
6.2 OPEN FIELD EMISSION DATA AND PLOTTING (cont'd)

APPENDIX : 2-6

REPORT NUMBER : 965-215-21/e
PRODUCT NAME : Card reader SMARTLP3, powered by AC power module.
SERIAL NUMBER : LRX W 00306
STANDARD : FCC CFR 47 PART 15/1997 CLASS B
MEASUREMENT : ELECTRIC FIELDSTRENGTH INTERERENCE 30MHz-2000MHz
CONDITIONS : 120V / 60Hz, distance of measure : 3 m
DATE : 08/11/98
MEASUREMENT DONE BY : D.RAUD

Class B limit value (3m measurement distance)

GRAPHIC OF PEAK AND QUASI PEAK VALUES, measured with HP8594A spectrum analyser (EMC mode), Limit line class B

DB μ V/m

6.3 FIELD STRENGTH CALCULATION

The field strength is calculated by adding the Antenna Factor and cable loss to the measured reading. The basic equation with a sample calculation is as follows :

$$FS = RA + AF + CF$$

FS = Field Strength

RA = Receiver Amplitude

AF = Antenna Factor

CF = Cable loss

Assume a receiver reading. The antenna factor and the cable loss are added., giving the field strength.

6.4 ANTENNA FACTORS AND CABLE LOSS FOR 3m DISTANCE MEASUREMENT

6-4-1 Cable loss

E field 3 meters cable losses

FREQUENCY	LOSS
F (MHz)	(dB)
30	0.7
40	0.8
50	0.9
100	1.1
120	1.4
160	1.6
200	1.9
250	2.1
300	2.2
400	2.9
500	3.5
600	3.7
700	4.1
800	4.6
900	4.8
1000	5.0
1100	5.2
1200	5.4
1300	5.6
1400	5.9
1500	6.0
1600	6.6
1700	6.7
1800	6.8
1900	7
2000	7.1

EQUIPMENT FCC ID : I6U SMARTLP3

6-4-2 Antenna factor: BICONIC BBA9106 30-300MHz; LOG PERIODIC UHALP9107 300-1000MHz;
BILOG CBL6112 30-2000 MHz (3m)

BICONIC BBA9106

Frequency (MHz)	Factor antenna (dB)
30	17.4
35	16.0
40	15.5
45	14.7
50	13.0
60	9.3
70	6.4
80	6.8
90	8.7
100	10.0
125	13.1
150	15.0
175	16.7
200	17.0
250	18.2
300	18.7

BILOG CBL6112

Frequency (MHz)	Factor antenna (dB)
30	19.4
35	16.9
40	14.3
45	11.9
50	9.5
55	7.7
60	6.7
65	6.4
70	6.7
75	7.6
80	8.6
90	10.5
100	11.9
150	11.9
200	10.1
250	13.7
300	14.4
400	17.1
500	19.0
600	20.2
700	20.4
800	21.3
900	21.8
1000	22.6
1100	23.4
1200	24.3
1300	24.8
1400	25.7
1500	26.6
1600	26.9
1700	28.0
1800	28.1
1900	28.6
2000	29.2

LOG PERIODIC UHALP9107

Frequency (MHz)	Factor antenna (dB)
300	15.1
400	18.0
500	19.5
600	21.3
700	24.3
800	24.5
900	24.5
1000	26.9

NOTICE D'INSTALLATION SMARTLP3

SMARTLP3 INSTALLATION GUIDE

Connecting the SMARTLP3 to PC :

- 1 - Plug in the data cable to the RS232 serial port.
- 2 - Plug in the power cable to the PS2 port.
- 3 - Plug in the power cable Jack into the data cable Jack socket.

If the PC has no PS2 port, use an external power supply adapter
+6 V / 200 mA minimum with the following criteria :
Polarity + located at the centre of the Jack + — — — — —
Maximum voltage allowed by the SMARTLP3 is +12 V.

Si le PC ne possède pas de port PS2, utiliser un adaptateur secteur externe délivrant en sortie +6 V / 200 mA minimum et respectant :
• La polarité + au milieu de la prise Jack + — — — — —
• La tension maximum admissible par SMARTLP3 qui est de +12 V.

- 2bis - Connecter l'adaptateur secteur externe sur le secteur.
- 3bis - Connecter son Jack sur l'entrée Jack du câble de données.

Using SMARTLP3 :

- 1 - The green LED lights are on when :

- SMARTLP3 is powered.
- Cables are well attached.
- SMARTLP3's driver is installed.

At this stage the SMARTLP3 is ready.

The SMARTLP3's driver exists in the Microsoft® Windows™ NT5 CD-ROM. For other versions (Windows NT4, 95 and 98) it can be downloaded through the WEB.

- 2 - Insert the smart card with the contact first and upside.

- 3 - The yellow LED light comes on when the smart card is accessed.

Note:

Every trademark mentioned belongs to its owner.

Note:

- 2 - Introduire la carte à puce avec son bouton en premier et situé sur le dessus.
- 3 - Le voyant jaune s'allume quand un traitement est en cours sur la carte à puce. Application carte à puce exécutée à partir du PC.

A ce stade le SMARTLP3 est opérationnel.
Le driver du SMARTLP3 existe sur le CD-ROM de Microsoft® Windows™ NT5. Pour les autres versions (Windows NT4, 95 et 98) il peut être téléchargé via le WEB.

- Le driver du SMARTLP3 est installé.
- Les câbles sont correctement branchés.
- L'alimentation est présente.

- 1 - Le voyant vert du SMARTLP3 s'allume quand :

Utilisation du SMARTLP3 :

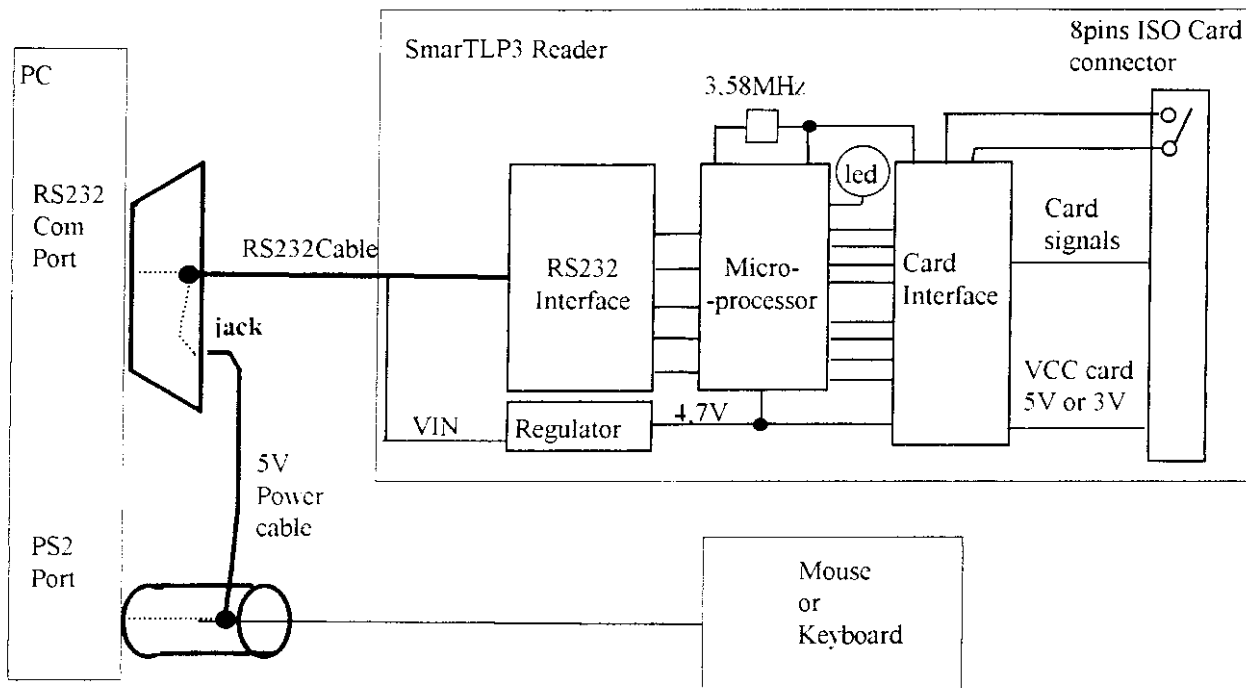
- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help

Pursuant to part 15.21 of the FCC Rules, any changes or modifications to this equipment not expressly approved by FCC Company may cause harmful interference and void the FCC authorisation to operate this equipment.

4. E.U.T TECHNICAL DESCRIPTION

4.1 Block diagram

Bloc diagram



The microprocessor manages data transfert between RS232 P.C port and Smart card interface

4-5 List of EMI critical components

Quartz: 3.579545 MHz (X1)

EMI inductance for power supply filtering: L1 and L2 (80 ohms at 100MHz)

Card interface circuit includes a low power step-up switching voltage regulator:

Input=4.7V; output=5V/65mA max

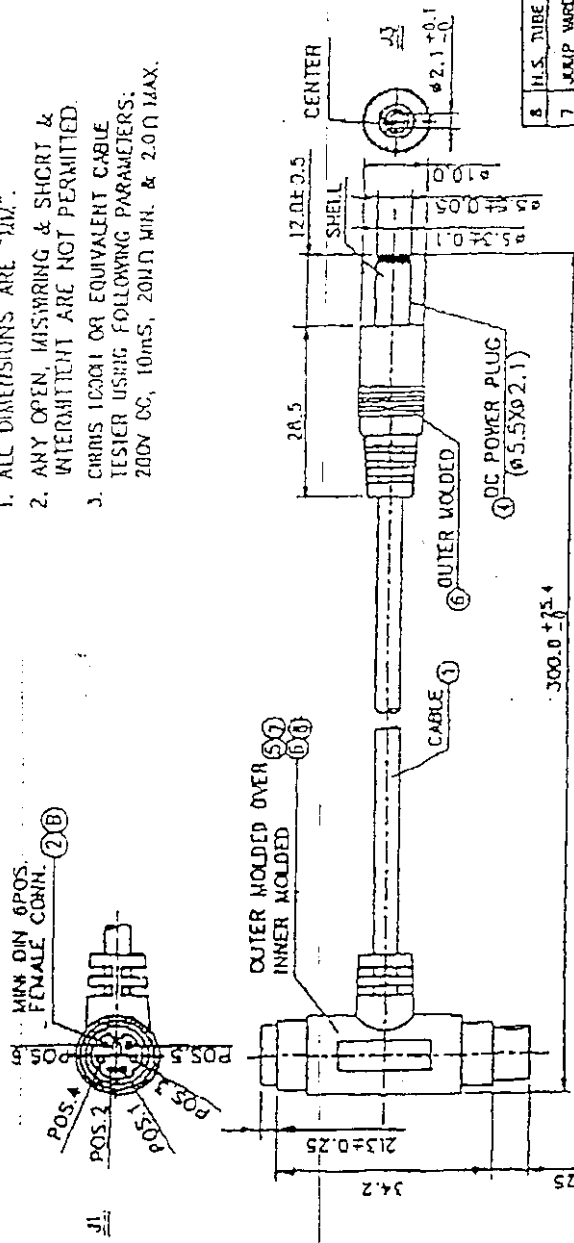
This circuit uses inductance L3 (47 μ H)

PRÉSENCE D'UNE FEUILLE E.R. ☐ 76158 213

REV		OC. DU CO.		DATE		VISA	
1							

NOTES:

1. ALL DIMENSIONS ARE "MM".
2. ANY OPEN, MISWIRING & SHORT & INTERMITTENT ARE NOT PERMITTED.
3. CHRIS 10001 OR EQUIVALENT CABLE TESTER USING FOLLOWING PARAMETERS:
200V DC, 10mA, 2000 MIN. & 2.00 MAX.



SHELL	6	5	4	3	2	1	WIRE COLOR	J2	WIRE COLOR	J3
SHELL	6	5	4	3	2	1	WIRE CONNECTION TABLE			
26AWG JUMP WIRE (7X)										
RED										
BLACK										
CENTER										
SHELL										
DRAIN WIRE										

CE DOCUMENT DOIT ÊTRE CONSIDÉRÉ COMME ÉTANT D'USAGE INTERNE DE CELLE-CI
NE PAS ÊTRE COMMUNIQUÉ À DES TIERS SANS AUTORISATION EXPRESSE DE CELLE-CI

NO	ITEM	QTY	DESCRIPTION
8	H.S. TUBE	2PCS	Ø2.0MM, L=8MM, UL224, COLOR=BLACK
7	WRAP WIRE	1PC	Ø26, UL1061, L=30MM, COLOR=OPTION
6	OUTER MOLDED	8.5mm	Ø26, UL1081, L=25MM, COLOR=OPTION
5	INNER MOLDED	3mm	Ø26, UL1081, L=25MM, COLOR=OPTION
4	DC POWER PLUG	1PC	INSULATOR: ABS, COLOR=BLACK SHELL: BRASS, MODEL PLATED
3	MINI DIN 6POS. WIRE CONN.	1PC	CONTACT: BRASS, GOLD FLASH INSULATOR: PBT, COLOR=BLACK, UL84V-0 SHELL: BRASS, MODEL PLATED
2	MINI DIN 6POS. FEMALE CONN.	1PC	CONTACT: PHOSPHOR BRONZE, GOLD FLASH INSULATOR: PBT, COLOR=BLACK, UL84V-0 SHELL: BRASS, MODEL PLATED
1	CABLE	0.205M	Ø2.0MM, L=205MM, DRINK WIRE 4 AL/ULYAR+ JACKET: PVC, Ø2.0MM, Ø3.0MM, UL2454 & CSA 11 A/B, COLOR=600-GRY-083 (PAINTONE COOL, GRAY 3C)

Bull

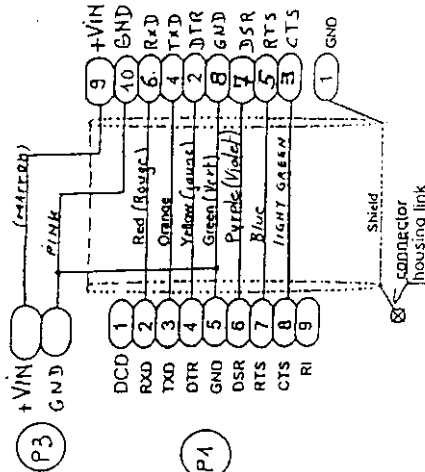
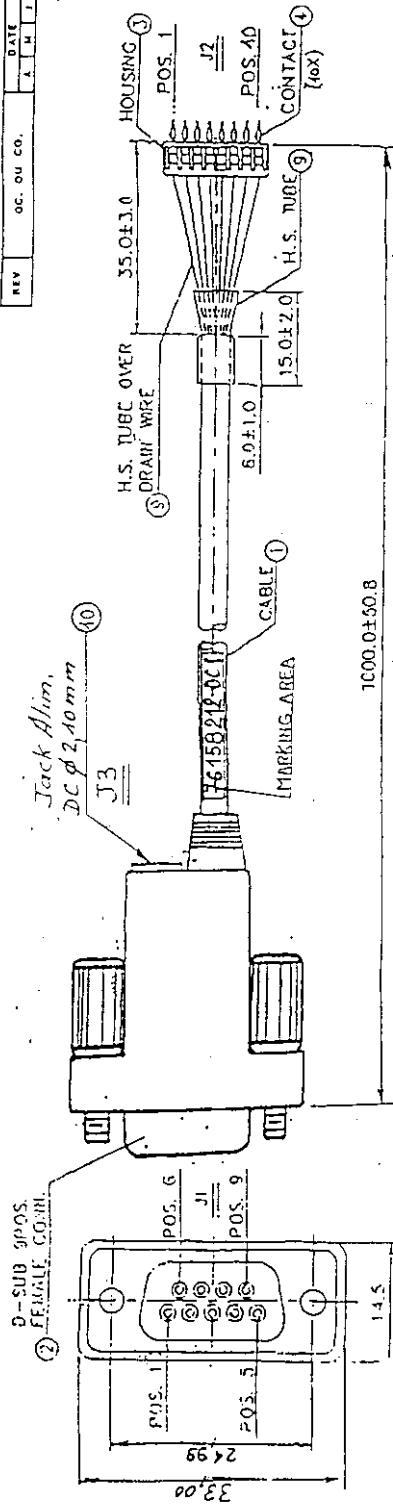
SAUF MENTION PARTICULIÈRE		DIMENSIONS EN MILLIMÈTRES		TOLERANCES EN INCHES		ET DE FORMES		ETUDE D'ORIGINE		PROJECTION		TECH.		U.M.					
NO	ITEM	QTY	DESCRIPTION	NO	ITEM	QTY	DESCRIPTION	NO	ITEM	QTY	DESCRIPTION	NO	ITEM	QTY	DESCRIPTION				
1	CABLE	0.205M	Ø2.0MM, L=205MM, DRINK WIRE 4 AL/ULYAR+ JACKET: PVC, Ø2.0MM, Ø3.0MM, UL2454 & CSA 11 A/B, COLOR=600-GRY-083 (PAINTONE COOL, GRAY 3C)	1	CABLE	0.205M	Ø2.0MM, L=205MM, DRINK WIRE 4 AL/ULYAR+ JACKET: PVC, Ø2.0MM, Ø3.0MM, UL2454 & CSA 11 A/B, COLOR=600-GRY-083 (PAINTONE COOL, GRAY 3C)	1	CABLE	0.205M	Ø2.0MM, L=205MM, DRINK WIRE 4 AL/ULYAR+ JACKET: PVC, Ø2.0MM, Ø3.0MM, UL2454 & CSA 11 A/B, COLOR=600-GRY-083 (PAINTONE COOL, GRAY 3C)	1	CABLE	0.205M	Ø2.0MM, L=205MM, DRINK WIRE 4 AL/ULYAR+ JACKET: PVC, Ø2.0MM, Ø3.0MM, UL2454 & CSA 11 A/B, COLOR=600-GRY-083 (PAINTONE COOL, GRAY 3C)	1	CABLE	0.205M	Ø2.0MM, L=205MM, DRINK WIRE 4 AL/ULYAR+ JACKET: PVC, Ø2.0MM, Ø3.0MM, UL2454 & CSA 11 A/B, COLOR=600-GRY-083 (PAINTONE COOL, GRAY 3C)

Fournisseur: FOB
Parc Technologique de Martillac
33610 - Bordeaux-Mérignac
Tel: 05.56.21.82.82

REF. SPEC. NO
IMPRIMERIE N°1245110 (A)

PRÉSENCE D'UNE FEUILLE E.A.

REV	OC. OU CO.	DATE			VISA
		A	M	J	



10	Jack Alim.	1PC	DC 240
9	1/4" S. TUBE	1PC	ø1.0MM, L=33MM, COLOR=BLACK, UL224
8	AL. FOIL	2PCS	ø4.0MM, L=15MM, COLOR=BLACK, UL224
7	MOUNTING SCREW	2PCS	W=20MM, L=27MM, L=0.035MM ;
6	OUTER MOLDED	10gm	#14-AOUNG, ZINC PLATED ;
5	INNER MOLDED	3.2gm	KNOB: PVC, COLOR=GRAY, UL94V-0
4	CONTACT	40PCS	PVC, COLOR=GRAY, UL94V-0 ; PE, COLOR=NATURAL
3	HOUSING	1PC	BRASS, TH PLATED,RANGE: #23~26 JST P/N: SZN-002T-0.7K
2	0-SUB 19POS: FEMALE CONN.	1PC	NYLON 66, COLOR=WHITE, UL94V-0, PITCH: 1.5MM, JST P/N:40P-SZN ; CONTACT: COPPER ALLOY, GOLD FLASH INSULATION: PBT, COLOR=GRAY, UL94V-0
1	CABLE	1.2M	#26X8C WIRE + #24X1C DRAIN WIRE + AL/MYLAR + JACKET: PVC, 0.0D=ø1.5MM,UL94V-0, COLOR=GRAY, UL2725
	ITEM	QTY	DESCRIPTION

2017

1. ALL DIMENSIONS ARE "MM".
2. ANY OPEN LEISURING & SHORT & INTERMITTENT ARE NOT PERMITTED.
3. INSULATION RESISTANCE: 50M OHMS/250V DC MIN



11

DESIGNATION:

Cordon SmartLP3

P.C. B	DESSIN NO : 76158212	FOLIO 1/1	REV C
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REF. SPEC. NO

IMPROVING THE QUALITY OF LIFE

EQUIPMENT FCC ID : I6U SMARTLP3

GENERAL INFORMATION

1.1 Product description

The SmarTLP3 Company name is a Plug and Play Smart Card Reader. It's connected to a P.C RS232 serial port and is powered:

- either by the 5V derived from the P.C keyboard or mouse PS2 port using a special cable.
- Or by an additional mains power supply. (Not sold with SmarTLP3 card reader), which is connected by jack connector into RS232 connector of the data cable of SmarTLP3 card reader.

The RS232 cable is permanently attached to the SmarTLP3.

A front panel two-color-LED-indicator reports "reader installed" and "card access"

1.2 Tested systems details

The FCC IDs for all equipment, plus description of all cables used in the tested system (including inserted cards which have grants) are :

Description Model & Serial number	FCC ID	Cable description	Cable termination	Length (m)
SmarTLP3 (1) S/N : LRX W 00306	I6U SMARTLP3	Data cable RS232+DC power shielded (2) # 76158212	Plastic / metal 9 pts	1
		DC Power cable shielded for derived 5V DC from PS/2 port mouse or keyboard	Jack connector PS/2 male/female	0.30
External plug in power supply MCTI 120VAC- 60Hz-12W/12VDC- 500mA model DV-1250		Power cord DC unshielded	Jack connector Plastic/metal	2
Personal computer Zenith Data System Model Z Station EL S/N: 7224600124	Declaration Of Conformity (See exhibit 7)	Power cord unshielded	Plastic	2
Zenith Data System Display ZCM-1435-XT S/N : 181-6230 5356 A2	DBL 1451C	1 Unshielded power cord 1 Shielded Video cable(2)	Plastic Metal	2 1.2
Zenith Data System Keyboard Model RS6000 S/N : G00913113J48 1II	GDDG83-6000	1 Shielded cable (3)	Metal	2
Mouse Logitech Model M-S34 S/N : LZA74007698	DZL 210472	1 Shielded cable (4)	Metal	2.5
Hewlett Packard Printer Model 2277A S/N : 2906A16132	B948JA2277X	1 Unshielded power cord with external power module ETT76J2A	Plastic	2
		1 Shielded parallel cable # N0856675000.01C	Metal/Metal	2

- (1) EUT submitted for grant
- (2) Permanently attached cable to SmarTLP3 card reader
- (3) Keyboard cable permanently attached to keyboard
- (4) Mouse cable permanently attached to mouse

1.3 Test Methodology and procedure

Both conducted and radiated testing were performed in accordance with ANSI C63.4 procedure, as revised in 1992. The specification used was the Class B limits of FCC Rules Part 15 Subpart B for conductive (§ 15-107) and radiated (§ 15-109) interference measurements.

Final radiated measurement is performed with an antenna located at 3 meters distance from EUT (Preliminary radiated emission signature was realized at a distance of 3 meters in the anechoic chamber of test site)

1.4 Test Facility

The open area test site and conducted measurement facility used to collect the radiated data is located at the following address :

BULL ELECTRONICS ANGERS
34 Rue du Nid de Pie
B.P 428
49004 ANGERS Cedex 01
France

This site has been fully described in a report dated August 21, 1997 submitted to your Office, and accepted in a letter dated October 9, 1997 (31040/SIT 1300F2)

1.5 List of measurement apparatus

APPARATUS	MANUFACTURER	REFERENCE	SERIAL NUMBER	DATE OF VERIFICATION
RECEIVERS Receiver: 0.090-30MHz Receiver: 30-1200 MHz Spectrum Analyzer: 2.9GHz	Rhode & Schwarz Rhode & Schwarz Hewlett Packard	ESH3 ESVP HP 8594A	872994/013 891752/030 3108U00124	May 1998 June 1998 October 1997
ARTIFICIAL MAINS NETWORKS LISN LISN	Rohde&Schwarz Rohde&Schwarz	ESH2-Z5 ESH2-Z5	861741/019 872094/037	June 1997 June 1997
ANTENNAS Biconic Log periodic Bilog	Schwarzbeck SCHwarzbeck Chase	BBA9106 UHALP9107 CBL6112	42456050001 42456080001 2290	June 1997 June 1997 September 1997