

EXHIBIT F EQUIPMENT EVALUATION
DATATRONICS TECHNOLOGY, INC.
DISCOVERY MODEL: FB PC/104 HP

1. RADIO FREQUENCY SOURCES

The Fax/Modem is considered computing devices defined by the FCC rules and are subject to evaluation under FCC rules, Part 15, subpart B.

2. TEST PROCEDURES

The device was treated in accordance with the FCC Rules, Part 68, using the procedures of our latest submitted application.

3. TEST PLAN

(a) The block diagram of the device is shown in Figure 1 of EXHIBIT D. The category (1) through (8) leads are identified.

(b) All exposed conductive surfaces of the Fax/Modem was treated as category (3) lead in all applicable tests requiring earth ground.

A brief description of the tests performed is given below:

Section 68.302 - Environmental Conditioning

This device withstood all of the tests of this section including drop shock, vibration, and temperature and humidity cycling. The metallic voltage surge was applied between the interface tip and ring leads. The longitudinal voltage surge was applied from tip and ring to ground. and from the Tip and Ring leads to the category (4) lead.

The following electrical tests, included in the subpart D of the FCC Rules, Part 68 were normally performed before and after the required stresses of this section.

Section 68.304 - Leakage Current Limitations

A voltage source was applied to the following combinations during the tests:

<u>Lead combinations</u>	<u>Test Voltage(rms)</u>
(1) to (3)	1000 V

Section 68.306 - Hazardous Voltage Limitations

The Fax/Modem is mounted in a personal computer, and all the exposed conductive surfaces are connected to the ground. The device has no hazardous on the exposed surface. A 120VAC test voltage source was applied between the category (4) lead and the earth ground. then the Tip and Ring leads were monitored for hazardous voltages. The device is evaluated to show compliance with the physical separation requirements.

Section 68.308 - Signal Power Limitations

This device generate no DTMF tones . The metallic and longitudinal out of band tests were also performed, please see Exhibit F1.

Section 68.310 - Longitudinal Balance Limitations

The longitudinal balance characteristics if the device were tested while in the on-hook and off-hook modes. The device meets all requirements in the voice band. Loop current was adjusted from 20mA to 100mA.

Section 68.312 On-Hook impedance Limitation

The applicable test of this section were conducted on the device. The DC on-hook resistance was measured at 10 to 100V step 10V and 150, 200 volts for section 68.312 (b) (1) (i) requirements, please see Test No. 12, EXHIBIT F1, Criteria form the Table 1 of section 68.312 corresponding to "B" ringing type was used for all applicable tests. Please see Test No.13, 14, 15, Exhibit F1.

Section 68.314 - Billing Protection

The on-hook level, line seizure, and SF signal power restriction tests were conducted on the interface TIP and RING leads.

Section 68.316 Hearing Aid compatibility

The section is not applicable.

EXHIBIT F1 GENERAL STATEMENT

APPLICANT DATATRONICS TECHNOLOGY, INC.
MODEL NO. FB PC/104 HP

We hereby certify that :

The test data, data evaluation, test procedures, and equipment configurations shown in this report were made in accordance with the procedures given in the latest revision, this report is in compliance with limits of FCC Rules Part 68.

Class of Equipment :TERMINAL DEVICE

Number of Unit tested :ONE

Type of Equipment :FB

Date of Testing :MAY 27, 1997

Test report written by

: John Chow
John Chow

Approved

by

: Jacob Lin
Jacob Lin

SUMMARY OF TEST REQUIREMENTS

TEST NO.	Part 68 SECTION	DESCRIPTION	SUMMARY
1.	68.302	Environmental Simulation	*
2.	68.304	Leakage Current	*
3.	68.306(b)(2)	Hazardous Voltage	*
4.	68.308(b)(1)	Voiceband Metallic Level	NA
5.	68.308(b)(2)	Network Control Signaling	*
6.	68.308(b)(4)	Data Transmission	*
7.	68.308(b)(3)	Through Transmission	NA
8.	68.308(c)	3995-4005Hz Signal Power	*
9.	68.308(d)	Metallic Voltage 4KHz to 6MHz	*
10.	68.308(d)(e)	Longitudinal Voltage 0.1KHz to 6MHz	*
11.	68.310	Longitudinal Balance	*
12.	68.312(b)	On-Hook Resistance	*
13.	68.312(b)(c)	DC Current During Ring	*
14.	68.312(b)(c)	AC On-Hook Impedance	*
15.	68.312	Ringer Equivalence Number	*
16.	68.314(a)(b)	Bill Protection	*
17.	68.314(c)	Line Seizure	*
18.	68.314	Signaling Interference	*
19.	68.316	Hearing-Aid Compatibility	NA

TEST NO. 1 ENVIRONMENTAL SIMULATION 68.302

Criteria: 68.302(a) Vibration

1. One sweep at a level of 0.5 G peak from 5 to 100Hz, at a rate of 0.1 octave/min.
2. One sweep at a level of 1.5 G peak from 100 to 500Hz, at a rate of 0.25 octave/min.

Criteria: 68.302(b) Temperature and Humidity

30 minutes at 150 degree F and 15 percent relative humidity, followed by 30 minutes at 90 degree F 90 percent relative humidity, followed by 30 minutes at -40 degree F and any convenient humidity.

Criteria: 68.302(C) Shock

Hand Held Item Customer Carried Not Customer Carried

Criteria: 68.302(d) Metallic Voltage Surge

Two 800-volt peak surges of a metallic Voltage (one of each polarity) having a 10 microsecond maximum rise time to crest and a 560 microsecond minimum decay time to half crest applied between tip and ring of a 2-wire connection.

Criteria: 68.302(e) Longitudinal Voltage Surge

- X
1. Two 1500 Volt peak surges (one of each polarity) having a 10 microsecond maximum rise time to crest and a 160 microsecond minimum decay to half crest.

- NA
2. AC power line surge, Six 2500 Volt peak Surges (three of each polarity) having a 2 microsecond maximum rise time to crest and a 10 microsecond decay time to half crest applied between the phase and neutral of the AC power line.

Comments: Complied with every applicable requirement of Subpart D of Part 68 before and after simulated environmental stress testing. It is the judgment of the technically qualified person responsible for preparation of this engineering evaluation that the device now complies, and should continue to comply, with Subpart D of Part 68 Under normal conditions of usage through out its life.

TEST NO. 2 LEAKGE CURRENT

68.304

Criteria: From zero to the values listed in the table below, over a 30 seconds time period, then applied continuously for one minute, the current in the mesh formed by the voltage source and these points shall not exceed 10 milliamperes peak at any time during this 90 second time interval.

DEFINITION OF TESTED POINTS

- | | |
|-------------------------------|------------------------------|
| 1. All telephone connections | 5. Secondary of power supply |
| 2. All power connections | 6. Auxiliary lead terminals |
| 3. Exposed conductive surface | 7. E&M lead terminals |
| 4. Nonregistered equipment | 8. PR, PC, CY1 and CY2 leads |

Data:

Voltage Sources connected between	Value (rms, 60Hz)	Before ON-HOOK (uA)	E.S. OFF-HOOK (uA)	After ON-HOOK (uA)	E.S. OFF-HOOK (uA)	CRITERIA
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1-3	1000	22.30	22.40	22.97	23.03	10mA peak
2-3	1500			0.00		10mA peak
2-5	1500			0.00		10mA peak
1-4	1000			0.00		10mA peak
1-5	1000			0.00		10mA peak
1-6	1000			0.00		10mA peak
1-7	1000			0.00		10mA peak
2-4	1500			0.00		10mA peak
2-8	1500			0.00		10mA peak
3-6	1000			0.00		10mA peak
3-7	1000			0.00		10mA peak
4-6	1000			0.00		10mA peak
4-7	1000			0.00		10mA peak
5-7	1000			0.00		10mA peak

Comment: PASS

TRC TRAINING RESEARCH CO., LTD.

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TEST NO. 3 HAZARDOUS VOLTAGE 68.306(b)(2)

Criteria: The Voltage measurable between the appropriate leads shall not exceed 70 volts peak for more than 1 second.

Data: Voltage Source 120 Volts, rms, 60Hz
Voltage shall be applied between all connections to other equipment tied together (except connections to non-hazardous Voltages sources) and ground.

TEST POINTS	BEFORE E.S.(Volt)	AFTER E.S.(Volt)	CRITERIA
T-R	2.63	2.76	70 Volt peak
T-G	2.69	2.84	70 Volt peak
R-G	2.88	3.02	70 Volt peak
A-A1			70 Volt peak
A-G			70 Volt peak
A1-G			70 Volt peak

Comment: PASS

TEST NO. 5 NETWORK CONTROL SIGNALING

68.308(b)(2)

Criteria : Network control signaling shall not exceed 0dBm when averaged over any 3 second interval. For tie trunk applications, the network control signaling shall not exceed -4dBm for 2-wire and 4-wire lossless, and -8dBm for 4-wire CTS, when averaged over 3 second interval.

Condition:

KEY NO.	RESULTS (dBm)			RESULTS (dBm)		
	Before	Environmental	Simulation	After	Environmental	Simulation
	20mA	60mA	100mA	20mA	60mA	100mA
1	-11.51	-11.42	-11.64	-11.18	-11.10	-11.31
2	-11.51	-11.42	-11.64	-11.21	-11.12	-11.34
3	-11.51	-11.42	-11.64	-11.26	-11.17	-11.38
4	-11.51	-11.38	-11.64	-11.20	-11.07	-11.33
5	-11.51	-11.34	-11.64	-11.18	-11.01	-11.31
6	-11.42	-11.38	-11.64	-11.14	-11.10	-11.36
7	-11.42	-11.42	-11.64	-11.09	-11.09	-11.30
8	-11.42	-11.38	-11.64	-11.19	-11.15	-11.40
9	-11.42	-11.38	-11.59	-11.08	-11.04	-11.25
0	-11.42	-11.38	-11.59	-11.18	-11.14	-11.35
*	-11.42	-11.34	-11.59	-11.16	-11.07	-11.33
#	-11.42	-11.34	-11.59	-11.07	-10.99	-11.24

Comments: PASS

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TEST NO. 6 DATA TRANSMISSION

68.308(b)(4)

Criteria : The maximum power from internal source other than network control signals, over any 3 second interval, shall not exceed the criteria's levels.

Data:

TYPE
Registered Terminal Equipment

CRITERIA
-9dBm

Condition:

Before Environmental Simulation

RESULTS
-11.22 dBm

20mA 80mA
-11.22 -11.22 dBm

Condition:

After Environmental Simulation

RESULTS
-10.94 dBm

CCITT
20mA 80mA
-10.94 -10.94 dBm

Comments: PASS

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TEST NO. 8 SIGNAL POWER IN 3995-4005 Hz 68.308(c)

Criteria : The maximum power from internal source in the 3995 -4005 Hz band to an appropriate simulator circuit, shall not exceed the following criteria's levels.

Data:	TYPE	CRITERIA
	Registered Terminal Equipment	-27dBm

Condition: Before Environmental Simulation

RESULTS
-44.94 dBm

After Environmental Simulation

RESULTS
-44.66 dBm

Comments: PASS

TEST NO. 9 METALLIC VOLTAGE-OUT OF BAND 68.308(e)

Criteria : The root-mean-squared voltage as averaged over 100ms the telephone connections under specified conditions shall not exceed the maximum indicated below.

Data:
APPLICABLE : General Case

Condition: Before Environmental Simulation

FREQ. RANGE	RESULTS (dBV)	GEN. CASE	TERMINATION
4K-12KHz	-63.24	-17.8dBv	300
12K-20KHz	-68.26	-25.2dBv	135
20K-28KHz	-87.30	-32.2dBv	135
28K-36KHz	-80.65	-32.2dBv	135
36K-44KHz	-77.64	-41.1dBv	135
44K-52KHz	-82.70	-44.2dBv	135
52K-60KHz	-80.15	-46.9dBv	135
60K-68KHz	-90.37	-49.2dBv	135
68K-76KHz	-90.85	-51.3dBv	135
76K-84KHz	-93.74	-53.1dBv	135
84K-92KHz	-82.57	-54.6dBv	135
92K-270KHz	-80.37	-55.0dBv	135
270K-6MHz	-69.32	-15.0dBv	135

Condition: After Environmental Simulation

FREQ. RANGE	RESULTS (dBV)	GEN. CASE	TERMINATION
4K-12KHz	-63.02	-17.8dBv	300
12K-20KHz	-67.93	-25.2dBv	135
20K-28KHz	-87.01	-32.2dBv	135
28K-36KHz	-80.30	-32.2dBv	135
36K-44KHz	-77.39	-41.1dBv	135
44K-52KHz	-82.46	-44.2dBv	135
52K-60KHz	-79.87	-46.9dBv	135
60K-68KHz	-90.06	-49.2dBv	135
68K-76KHz	-90.68	-51.3dBv	135
76K-84KHz	-93.40	-53.1dBv	135
84K-92KHz	-82.37	-54.6dBv	135
92K-270KHz	-80.10	-55.0dBv	135
270K-6MHz	-69.01	-15.0dBv	135

Comments: PASS

TEST NO. 10 LONGITUDINAL VOLTAGE-SIGNAL POWER 68.308(d),(e)(4)

Criteria : The weighted root-mean-squared voltage averaged over 100msec that is the result of all the component longitudinal voltage shall not exceeded the maximum indicated below.

Condition: Before Environmental Simulation

Data:

FREQ. RANGE	RESULT (dBv)	GEN. CASE	TERMINATION
100-4KHz	-61.43	-30.0dBv	500ohms
4K-12KHz	-60.44	-36.5dBv	500
12K-20KHz	-63.39	-45.2dBv	90
20K-28KHz	-89.72	-52.2dBv	90
28K-36KHz	-77.79	-57.2dBv	90
36K-44KHz	-82.77	-61.1dBv	90
44K-279KHz	-74.35	-62.0dBv	90
270K-6MHz	-65.28	-30.0dBv	90

Condition: After Environmental Simulation

Data:

FREQ. RANGE	RESULT (dBv)	GEN. CASE	TERMINATION
100-4KHz	-61.20	-30.0dBv	500ohms
4K-12KHz	-60.11	-36.5dBv	500
12K-20KHz	-63.10	-45.2dBv	90
20K-28KHz	-89.38	-52.2dBv	90
28K-36KHz	-77.54	-57.2dBv	90
36K-44KHz	-82.51	-61.1dBv	90
44K-279KHz	-74.06	-62.0dBv	90
270K-6MHz	-64.97	-30.0dBv	90

Comments: PASS

TEST NO. 11 LONGITUDINAL BALANCE 68.310

Criteria : The longitudinal balance shall meet the criteria listed below
for the specific type of circuit.

Condition:

Before Environmental Simulation

Data:

FREQ (Hz)	ON-HOOK	RESULTS (dB)					CRITERIA (dB)
		20mA	40mA	60mA	80mA	100mA	
200	94.30	86.46					>= 60
400	87.27	106.38					>= 60
600	83.04	89.54					>= 60
800	96.24	80.80					>= 60
1000	95.59	80.07					>= 40
2000	91.38	93.25					>= 40
3000	89.97	93.46					>= 40
4000	83.66	90.91					>= 40

Condition:

After Environmental Simulation

Data:

FREQ (Hz)	ON-HOOK	RESULTS (dB)					CRITERIA (dB)
		20mA	40mA	60mA	80mA	100mA	
200	94.87	88.77					>= 60
400	91.06	109.95					>= 60
600	79.72	92.85					>= 60
800	93.83	78.96					>= 60
1000	96.10	80.69					>= 40
2000	94.59	90.71					>= 40
3000	85.60	93.71					>= 40
4000	87.65	93.24					>= 40

Comments:

TEST NO. 12 ON-HOOK DC RESISTANCE 68.312(b)(1)(i)(ii)

Criteria : The DC resistance between tip and ring connectors, and between each of the tip and ring connectors and earth ground, shall be greater the criteria below.

Condition: Before Environmental Simulation

Tip-Ring	VOLTAGE (VDC)	CURRENT(μ A)		RES. (M ohm)		MINIMUM CRITERIA
		NOR.	REV.	NOR.	REV.	
	10	0.00	0.00	1224.71	1069.34	5M ohm
	20	0.02	0.02	729.94	676.15	5M ohm
	30	0.02	0.03	1198.75	900.55	5M ohm
	40	0.02	0.03	1326.89	1067.78	5M ohm
	50	0.03	0.03	1504.25	1244.87	5M ohm
	60	0.02	0.04	2006.19	1353.38	5M ohm
	70	0.03	0.04	1788.27	1550.90	5M ohm
	80	0.03	0.04	2268.10	1620.48	5M ohm
	90	0.04	0.04	1959.19	1819.02	5M ohm
	100	0.03	0.05	2697.72	1905.09	5M ohm
	150	0.06	0.06	2341.01	2272.91	30K ohm
	200	0.09	0.09	2069.33	2057.72	30K ohm

Tip-Gnd	VOLTAGE (VDC)	RES. (G ohm)		Ring-Gnd	RES. (G ohm)		MINIMUM CRITERIA
		NOR.	REV.		NOR.	REV.	
	10	1.53	2.59		1.52	2.56	5M ohm
	20	1.41	2.36		1.42	2.37	5M ohm
	30	1.38	2.26		1.38	2.32	5M ohm
	40	1.35	2.19		1.34	2.23	5M ohm
	50	1.34	2.13		1.31	2.13	5M ohm
	60	1.28	2.05		1.25	2.09	5M ohm
	70	1.29	1.99		1.22	2.06	5M ohm
	80	1.24	1.92		1.20	2.02	5M ohm
	90	1.52	2.21		1.20	2.02	5M ohm
	100	1.41	2.07		1.18	1.99	5M ohm
	150	1.72	2.29		5.82	4.23	30K ohm
	200	7.05	3.57		5.26	4.00	30K ohm

Comments: PASS

TEST NO. 12 ON-HOOK DC RESISTANCE 68.312(b)(1)(i)(ii)

Criteria : The DC resistance between tip and ring connectors, and between each of the tip and ring connectors and earth ground, shall be greater the criteria below.

Condition: Before Environmental Simulation

Tip-Ring	VOLTAGE (VDC)	CURRENT(μ A)		RES. (M ohm)		MINIMUM CRITERIA
		NOR.	REV.	NOR.	REV.	
	10	0.00	0.00	1224.71	1069.34	5M ohm
	20	0.02	0.02	729.94	676.15	5M ohm
	30	0.02	0.03	1198.75	900.55	5M ohm
	40	0.02	0.03	1326.89	1067.78	5M ohm
	50	0.03	0.03	1504.25	1244.87	5M ohm
	60	0.02	0.04	2006.19	1353.38	5M ohm
	70	0.03	0.04	1788.27	1550.90	5M ohm
	80	0.03	0.04	2268.10	1620.48	5M ohm
	90	0.04	0.04	1959.19	1819.02	5M ohm
	100	0.03	0.05	2697.72	1905.09	5M ohm
	150	0.06	0.06	2341.01	2272.91	30K ohm
	200	0.09	0.09	2069.33	2057.72	30K ohm

Tip-Gnd	VOLTAGE (VDC)	RES. (G ohm)		Ring-Gnd	RES. (G ohm)		MINIMUM CRITERIA
		NOR.	REV.		NOR.	REV.	
	10	1.53	2.59		1.52	2.56	5M ohm
	20	1.41	2.36		1.42	2.37	5M ohm
	30	1.38	2.26		1.38	2.32	5M ohm
	40	1.35	2.19		1.34	2.23	5M ohm
	50	1.34	2.13		1.31	2.13	5M ohm
	60	1.28	2.05		1.25	2.09	5M ohm
	70	1.29	1.99		1.22	2.06	5M ohm
	80	1.24	1.92		1.20	2.02	5M ohm
	90	1.52	2.21		1.20	2.02	5M ohm
	100	1.41	2.07		1.18	1.99	5M ohm
	150	1.72	2.29		5.82	4.23	30K ohm
	200	7.05	5.57		5.26	4.00	30K ohm

Comments: PASS

TEST NO. 13 DC CURRENT DURING RINGER 68.312(b)(c)

Criteria : During the application of simulated ringing. the DC current

Condition: Before Enviroment Simulation

Data: For operation on loop - start telephone facilities

MEASUREMENT VOLTAGE : 150 VRMS SUPERIMPOSED ON 56.5 VDC

FREQ (HZ)	MEASURED CURRENT (uA)		CRITERIA CURRENT
	NOR.	REV.	
15.3	634.63	657.85	3.0mA
20	325.74	393.17	3.0mA
33	311.13	296.13	3.0mA
40	125.59	138.25	3.0mA
50	318.55	472.82	3.0mA
68	206.68	217.42	3.0mA

Condition: After Enviroment Simulation

Data: For operation on loop - start telephone facilities

MEASUREMENT VOLTAGE : 150 VRMS SUPERIMPOSED ON 56.5 VDC

FREQ (HZ)	MEASURED CURRENT (uA)		CRITERIA CURRENT
	NOR.	REV.	
15.3	515.76	603.76	3.0mA
20	80.50	103.21	3.0mA
33	469.53	319.46	3.0mA
40	171.40	133.94	3.0mA
50	375.26	280.16	3.0mA
68	211.13	139.42	3.0mA

TEST NO. 14 AC ON-HOOK IMPEDANCE 68.312(b)(c)

Criteria:

During the application of simulated ringing

1. for operation on loop start telephone facilities:
 - A. The AC impedance between the tip and ring shall be greater than the minimum impedance indicated in 68.312(k) Table 1. Except that terminal equipment have additional ringing detection circuitry, such impedance shall be less than 40K ohm.
 - B. The AC impedance between each of the tip and ground shall be greater than 100K ohm.
2. for operation on ground - start telephone facilities:

The total impedance of the parallel combination of the AC impedance across tip and ring conductors and AC impedance from the ring conductors to ground shall be greater than the value specified in 68.312(k) table 1. Except that the terminal equipment have additional ringing detection circuitry, such impedance shall be less than 40K ohm

Condition: Before Environment Simulation

Data: 1. For registered equipment intend for operation on:
Loop - Start Telephone facilities

2. Verify the individual equipment if it has a additional ringing detection circuitry

Yes. (Such impedance need not less than 40K ohm

No. (Such impedance shall be less than 40K ohm

3. for operation on loop - start telephone facilities :

A. IMPEDANCE BETWEEN TIP AND RING .

Ring type : 8

FREQ (HZ)	VOLTAGE (VAC)	NORMAL		REVERSE		*IMPEDANCE COEFF(C)
		CURRENT (mA)	RES (K ohm)	CURRENT (mA)	RES (K ohm)	
15.3	150	4.50	33.04	3.49	33.15	1500
20	150	5.65	26.33	5.62	26.52	1500
33	150	8.35	18.07	8.16	18.30	1500
40	150	9.13	15.34	9.11	16.37	1500
50	150	10.52	14.22	10.29	14.43	1500
68	150	12.17	12.10	12.00	12.27	1500

TEST NO. 14 (cont'd)

Data: impedance between ring and ground. (for loop-start)

Ring type : 8

FREQ (HZ)	VOLTAGE (VAC)	NORMAL		REVERSE		*IMPEDANCE CRITERIA
		CURRENT (uA)	RES. (M ohm)	CURRENT (uA)	RES. (M ohm)	
15.3	150	4.55	32.67	4.49	33.13	>=100K
20	150	5.50	27.07	5.44	27.39	>=100K
33	150	7.43	20.10	7.34	20.34	>=100K
40	150	8.11	18.38	8.01	18.61	>=100K
50	150	8.77	16.94	8.66	17.16	>=100K
68	150	9.39	15.68	9.28	15.88	>=100K

Data: impedance between tip and ground. (for loop-start)

Ring type : 8

FREQ (HZ)	VOLTAGE (VAC)	NORMAL		REVERSE		*IMPEDANCE CRITERIA
		CURRENT (uA)	RES. (M ohm)	CURRENT (uA)	RES. (M ohm)	
15.3	150	4.55	32.67	4.51	32.95	>=100K
20	150	5.50	27.07	5.43	27.43	>=100K
33	150	7.44	20.10	7.36	20.30	>=100K
40	150	8.11	18.38	8.02	18.60	>=100K
50	150	8.77	16.94	8.67	17.13	>=100K
68	150	9.39	15.68	9.28	15.87	>=100K

Comments :PASS



TRAINING RESEARCH CO., LTD.

5F, NO. 571, CHUNG-HSIAO E. RD., SEC. 7, TAIPEI, TAIWAN R.O.C.
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TEST NO. 14 AC ON-HOOK IMPEDANCE 68.312(b)(c)

Criteria:

- During the application of simulated ringing
- 1. for operation on loop start telephone facilities:
 - A. The AC impedance between the tip and ring shall be greater than the minimum impedance indicated in 68.312(k) Table 1. Except that terminal equipment have additional ringing detection circuitry, such impedance shall be less than 40K ohm.
 - B. The AC impedance between each of the tip and ground shall be greater than 100K ohm.
- 2. for operation on ground - start telephone facilities:
 - The total impedance of the parallel combination of the AC impedance across tip and ring conductors and AC impedance from the ring conductors to ground shall be greater than the value specified in 68.312(k) table 1. Except that the terminal equipment have additional ringing detection circuitry, such impedance shall be less than 40K ohm

Condition: After Environment Simulation

- Data: 1. For registered equipment intend for operation on:
 - Loop - Start Telephone facilities
- 2. Verify the individual equipment if it has a additional ringing detection circuitry
 - Yes. (Such impedance need not less than 40K ohm
 - No. (Such impedance shall be less than 40K ohm
- 3. for operation on loop - start telephone facilities :
 - A. IMPEDANCE BETWEEN TIP AND RING .
 - Ring type : B

FREQ (HZ)	VOLTAGE (VAC)	NORMAL		REVERSE		# IMPEDANCE CRITERIA
		CURRENT (mA)	RES (K ohm)	CURRENT (mA)	RES (K ohm)	
15.3	150	4.33	34.75	4.33	34.71	1600
20	150	5.42	27.56	5.11	27.62	1600
33	150	3.10	13.43	3.00	13.65	1600
40	150	2.95	16.47	3.23	16.61	1600
50	150	10.53	14.17	10.53	14.58	1600
68	150	12.06	12.21	11.89	12.33	1600

TEST NO. 14 (cont'd)

Data: impedance between ring and ground. (for loop-start)

Ring type : B

FREQ (HZ)	VOLTAGE (VAC)	NORMAL		REVERSE		*IMPEDANCE CRITERIA
		CURRENT (uA)	RES. (M ohm)	CURRENT (uA)	RES. (M ohm)	
15.3	150	4.55	32.64	4.50	33.03	>=100K
20	150	5.50	27.13	5.44	27.46	>=100K
33	150	7.44	20.08	7.34	20.34	>=100K
40	150	8.11	18.38	8.01	18.61	>=100K
50	150	8.77	16.93	8.65	17.16	>=100K
68	150	9.40	15.67	9.28	15.87	>=100K

Data: impedance between tip and ground. (for loop-start)

Ring type : B

FREQ (HZ)	VOLTAGE (VAC)	NORMAL		REVERSE		*IMPEDANCE CRITERIA
		CURRENT (uA)	RES. (M ohm)	CURRENT (uA)	RES. (M ohm)	
15.3	150	4.55	32.64	4.50	33.03	>=100K
20	150	5.51	27.13	5.45	27.41	>=100K
33	150	7.44	20.08	7.35	20.31	>=100K
40	150	8.11	18.38	8.02	18.60	>=100K
50	150	8.77	16.93	8.66	17.15	>=100K
68	150	9.40	15.67	9.28	15.86	>=100K

Comments :PASS

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TEST NO. 15 RINGER EQUIVALENCE NUMBER 68.312(d) - (g)

Condition: Before Environmental Simulation

Data: 1. A.ON - HOOK RESISTANCE (Test No. 12)
R(dc - 1) : Minimum dc resistance (100 V DC) 675.15 M ohm
R(dc - 2) : Minimum dc resistance (200 V DC) 2057.72 M ohm

B.ON - HOOK RINGING CURRENT (Test No. 13)
Idc : Maximum dc ringing current = 657.85 uA

C.ON - HOOK AC IMPEDANCE (Test No. 14)
R (ac - 1) minimum on - hook AC impedance
(for the lowest frequency) = 33.04 K ohm

R (ac - 2) minimum on - hook AC impedance
(for the highest frequency) = 12.10 K ohm

D. Verify the above result if it conforms to the criteria of
Test No. 12, 13 and 14 ?

YES (Calculate the Max. REN)

NO (Label with a Ringing Type designation 'Z', or shall not be registered)

Data: 2. RINGER EQUIVIVALENCE NUMBER CALCULATION

A. $RE (dc-1) = 25 \cdot 10^{-6} / R (dc-1) == 0.03$

B. $RE (dc-2) = 150 \cdot 10^{-3} / R (dc-2) == 0.00$

C. $RE (Idc) = Idc / 0.6 ===== 1.09$

D. $RE (ac-1) = *Impedance / R (ac-1) = 0.24$

E. $RE (ac-2) = *Impedance / R (ac-2) = 0.66$

A: Ringer Equipment (DC) : 1.09

B: Ringer Equipment (AC) : 0.66 (B)

NOTE 1: Five time the impedance limitation listed in 68.312(K) Table 1.

2: The largest of numbers/quotients so formed, followed by the Ringer Type letter indicating the frequency range for which that number is valid, is the Ringer Equivalence.

Comments: PASS

TEST NO. 15 RINGER EQUIVALENCE NUMBER 68.312(d) - (g)

Condition: After Environmental Simulation

Data:1. A.ON - HOOK RESISTANCE (Test No. 12)

R(dc - 1) : Minimum dc resistance (100 V DC) 291.79 M ohm

R(dc - 2) : Minimum dc resistance (200 V DC) 2074.19 M ohm

B.ON - HOOK RINGING CURRENT (Test No. 13)

Idc : Maximum dc ringing current = 603.76 uA

C.ON - HOOK AC IMPEDANCE (Test No. 14)

R (ac - 1) minimum on - hook AC impedance
(for the lowest frequency) = 34.71 K ohm

R (ac - 2) minimum on - hook AC impedance
(for the highest frequency) = 12.21 K ohm

D. Verify the above result if it conforms to the criteria of
Test No. 12, 13 and 14 ?

YES (Calculate the Max. REN)

NO (Label with a Ringing Type designation 'Z' , or
shall not be registered

Data: 2. RINGER EQUIVIVALENCE NUMBER CALCULATION

A. $RE (dc-1) = 25 \cdot 10^6 / R (dc-1) == 0.08$

B. $RE (dc-2) = 150 \cdot 10^3 / R (dc-2) == 0.00$

C. $RE (Idc) = Idc / 0.6 ===== 1.00$

D. $RE (ac-1) = *Impedance / R (ac-1) = 0.23$

E. $RE (ac-2) = *Impedance / R (ac-2) = 0.65$

A: Ringer Equipment (DC) : 1.00

B: Ringer Equipment (AC) : 0.65 (B)

NOTE 1: Five time the impedance limitation listed in 68.312(K) Table 1.

2: The largest of unitless quotients so formed, followed by the
Ring Type Letter indicator representing the frequency range
for which that number is valid, is the Ringer Equivalence

Comments: PASS

TRC TRAINING RESEARCH CO., LTD.

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TEST NO. 16

BILLING PROTECTION

68.314(a)(b)

Criteria: 68.314(a) Call Duration

Signal power limitations are met for at least 2 seconds after the off-hook condition is presented to the telephone network in response to an incoming call:

Signals that appear at the protective circuitry/telephone network interface for delivery to the telephone network shall be limited to -55dB With respect to one milliwatt as such signals are delivered into a loop simulator circuit.

TEST ITEM	RESULTS		Criteria
	Before E.S.	After E.S.	
OUTPUT LEVEL (dBm)		<-55dBm	<=-55dBm
Time Delay (Second)		>2 Seconds	>2 Seconds

Criteria: 68.314(b) On-Hook signal Level

The power delivered into a loop simulator circuit in the on-hook state shall not exceed -55dB with respect to one milliwatt within the frequency band from 200 to 4000Hz.

TEST ITEM	RESULTS		Criteria
	Before E.S.	After E.S.	
FREQ. 0.2-4KHz			
ON-HOOK LEVEL	-74.48 dBm	-74.23 dBm	<=-55dBm

Comments: PASS

RC TRAINING RESEARCH CO., LTD.

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TEST NO. 17 LINE SEIZURE 68.314 (C)

Criteria: For all the loop currents, the Line seizer shall be less 200 ohm, or the line current shall not decrease by more than 25% from its maximum value during the first 5 second after the equipment goes to its normal off-hook mode.

Data:

1. STATIC TEST

Condition

: Before Environmental Simulation

Normal:

Reverse:

CURRENT	VOLT.	RES.ohm	VOLT.	RES.ohm
20 mA	32.31	1615.50	32.10	1605.00

Data:

2. DYNAMIC TEST

A. NORMAL POLARITY

TIME	CURRENT (mA)	VOLTAGE (V DC)	RES. (ohm)	DEVIATION (%)
1 sec.	19.92	31.67	1589.69	0.00
2 sec.	19.92	31.67	1589.69	0.00
3 sec.	19.92	31.67	1589.69	0.00
4 sec.	19.92	31.67	1589.69	0.00
5 sec.	19.92	31.67	1589.69	0.00

B. REVERSE POLARITY

TIME	CURRENT (mA)	VOLTAGE (V DC)	RES. (ohm)	DEVIATION (%)
1 sec.	19.47	31.39	1611.87	0.00
2 sec.	19.47	31.39	1611.87	0.00
3 sec.	19.47	31.39	1611.87	0.00
4 sec.	19.47	31.39	1611.87	0.00
5 sec.	19.47	31.39	1611.87	0.00

Comments PASS

TRC TRAINING RESEARCH CO., LTD.

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TEL:886-2-7881332

FAX:886-2-7857408

TEST NO. 17 LINE SEIZURE

68.314 (C)

Criteria: For all the loop currents, the line seizer shall be less 200 ohm, or the line current shall not decrease by more than 25% from its maximum value during the first 5 second after the equipment goes to its normal off-hook mode.

Data:

1. STATIC TEST

Condition

: After Environmental Simulation

Normal:

CURRENT	VOLT.	RES.ohm	Reverse:	VOLT.	RES.ohm
20 mA	31.79	1589.50	31.78	1589.00	

Data:

2. DYNAMIC TEST

A. NORMAL POLARITY

TIME	CURRENT (mA)	VOLTAGE (V DC)	RES. (ohm)	DEVIATION (%)
1 sec.	19.93	30.88	1549.15	0.00
2 sec.	19.93	30.88	1549.15	0.00
3 sec.	19.93	30.88	1549.15	0.00
4 sec.	19.93	30.88	1549.15	0.00
5 sec.	19.93	30.88	1549.15	0.00

B. REVERSE POLARITY

TIME	CURRENT (mA)	VOLTAGE (V DC)	RES. (ohm)	DEVIATION (%)
1 sec.	19.57	31.27	1597.57	0.00
2 sec.	19.57	31.27	1597.57	0.00
3 sec.	19.57	31.27	1597.57	0.00
4 sec.	19.57	31.27	1597.57	0.00
5 sec.	19.57	31.27	1597.57	0.00

Comments: PASS

RC TRAINING RESEARCH CO., LTD.

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TEST NO. 18 BILLING PROTECTION 68.314 (d)
(SINGNALING INTERFERENCE)

Criteria: The energy in the 2450 to 2750 Hz band not exceed the energy in the 800 to 2450 Hz band.

Condition:
Before Environmental Simulation

Data:	FREQ. (Hz)	RESULTS (dBm)
	800 TO 2450	-14.18 dBm
	2450 TO 2750	-30.67 dBm

Condition:
After Environmental Simulation

Data:	FREQ. (Hz)	RESULTS (dBm)
	800 TO 2450	-13.96 dBm
	2450 TO 2750	-30.44 dBm

Comments: PASS



翊 程 科 技 股 份 有 限 公 司

DATATRONICS TECHNOLOGY, INC.

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15, 2F, LANE 708, PAI-TEH RD., SEC. 1, TAIPEI 10565 TAIWAN
TEL: (886) 2-2456-1111 FAX: (886) 2-2456-1111

EXHIBIT G1.

QUALITY ASSURANCE PROGRAM

We hereby confirm that we will perform the necessary quality assurance program included a Exhibit G1 to ensure our products that are manufactured in a good manner and good workmanship. This manufacturer's quality assurance and quality control procedures are such to insure all future manufacturing of apparatus will be of the same quality as that which was used for compliance tests for the registration application on the Federal Communication Commission.

The Quality Control Program (QCP) OF the manufacturer observes for full quality control and quality assurance:

1. Quality control polication orgnization
2. Supplier quality control requirements
3. Receiving inspections
4. Inspection and control of raw materials
5. In-Process inspection and acceptance
6. Delivery inspection and acceptance
7. Shipping inspection
8. Material review responsibility and authority
9. Inspection stamps
10. Drawing and change controls
11. Calibration and maintenance of test equipment
12. Corrective and feedback replacement action
13. Amendments and notes
14. Inspection at systems levels

Subject quality control standards are in full accord with reliable portions of MIL-Q-9859-A and electronic industries standards RS-186-E which is approved by the American National Ostandards Institute as ANSI C83.58-1972. These standards together collectively insure long-lasting reliability of the finished product and assure maintenance of quality necessary for interconnect and complete customer satisfaction. This quality control program will assure customer satisfaction with the factor of possible failures to be extremely low.

Dated this 18th day Mar .1997 .

Applicant: DATATRONICS TECHNOLOGY, INC.

By: JOHN JOHN
Signature

JOHNNY CHUANG
Printed

Title: Manager

DATA TRONICS

DATA TRONICS TECHNOLOGY, INC.

175 W. PUEBLO AVENUE
SUITE 200
SAN JOSE, CALIFORNIA 95131
(415) 938-1000

XHIBIT G2 PART 68 CONTINUING COMPLIANCE PROGRAM

In order to comply with FCC Rule Part 68 for continuing compliance, testing and evaluations will be conducted on at least one unit of production with an interval not to exceed six months. The tests listed herein will be performed by a laboratory which is properly trained to verify compliance to the criteria of Subpart D, FCC Rule Part 68.

1. General. The applicant assures that the following analyses and tests will be performed on a production unit with a maximum interval between tests of six months.
2. Environmental Simulation - Section 68.302. Continuing analyses will be made of any trouble reports that indicate failure due to environmental conditions. Should such evaluation indicate that any design change is necessary, such changes will be reported in a modification application.
3. Leakage Current Limitations - Section 68.304.
4. Hazardous Voltage Limitations - Section 68.306.
5. Signal Power Limitations - section 68.308.
6. Longitudinal Balance Limitations - Section 68.310.
7. On-Hook Impedance Limitations - Section 68.312.
8. Billing Protection - Section 68.314.

Dated this 18th day of Mar:1997

Applicant: DATATRONICS TECHNOLOGY, INC.

By:


Signature

JOHNNY CHUANG
Printed

Title: Manager



高振科技股份有限公司 DATATRONICS TECHNOLOGY, INC.

EXHIBIT H EQUIPMENT LABEL

This equipment label shown below is to be affixed to the backside of this equipment, pursuant to FCC Rules, section 68.300. Either the date of manufacturer or the serial number will be displayed on the equipment. The proper model number and USOC connector will be given for each device.

(A) The drawing of the label to be attached

<p>This device complies with Part 68 FCC rules, FCC REG. NO. REN. AC: 0.7B USOC JACK: RJ11C SERIAL NO.: Operation is subject to the following two conditions: (1) This device may not cause harmful interference (2) This device must accept any interference received including interference that may cause undesired operation.</p> <table border="1"><tr><td>MODEL NO.: FB PC/104 HP</td></tr><tr><td>MADE IN TAIWAN</td></tr></table>	MODEL NO.: FB PC/104 HP	MADE IN TAIWAN
MODEL NO.: FB PC/104 HP		
MADE IN TAIWAN		

(B) In compliance with section 68.300(b), The device will have the following identifying information permanently affixed thereto:

- (1) GRANTEE'S NAME
- (2) MODEL NUMBER, AS SPECIFIED IN THE REGISTRATION APPLICATION.
- (3) DATE OF MANUFACTURE, OR SERIAL NUMBER.
- (4) COUNTRY OF ORIGIN OF THE EQUIPMENT.

Dated this 18th day of MAR, 1997.
Applicant: DATATRONICS TECHNOLOGY, INC.

By: Joy John JOY JOHN
Signature Printed

Title: Manager

DATATRONICS

科技股份有限公司 DATATRONICS TECHNOLOGY, INC.

8 10000000 / 0000 0000 0000 0000
E 700, P 0000 000 000 0000 0000 0000
7-7436 Fax 0000 0000 0000

EXHIBIT J1 INFORMATION TO BE SUPPLIED TO USERS

We confirm that the following information will be supplied to the users of this equipment. This information will be provided with the user's manual.

FCC REQUIREMENTS

This equipment complies with Part 68 of the FCC Rules. On the bottom of this equipment is a label that contains, among other information, the FCC Registration Number and Ringer Equivalence Number (REN) for this equipment. IF REQUESTED, THIS INFORMATION MUST BE GIVEN TO THE TELEPHONE COMPANY.

The REN is useful to determine the quantity of devices you may connect to your telephone line and still have all of those devices ring when your telephone number is called. In most, but not all areas, the sum of the REN's of all devices connected to one line should not exceed five (5.0). To be certain of the number of devices you may connect to your line, as determined by the REN, you should contact your local telephone company to determine the maximum REN for your calling area. If your telephone equipment causes harm to the telephone network, the telephone company may discontinue your service temporarily. If possible, they will notify you in advance. But if advance notice isn't practical, you will be notified as soon as possible. You will be informed of your right to file a complaint with the FCC.

Your telephone company may change its facilities, equipment, operations or procedures that could affect the proper functioning of your equipment. If they do, you will be notified in advance to give you an opportunity to maintain uninterrupted telephone service.

If you experience trouble with this telephone equipment, please contact the following address and phone number for information on obtaining service or repairs. The telephone company may ask that you disconnect this equipment from the network until the problem has been corrected or until you are sure that the equipment is not malfunctioning. This equipment may not be used on coin service provided by the telephone company. Connection to party lines is subject to state tariffs.

COMPANY: CACTUS COMPUTER SYSTEMS

