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ELECTROMAGNETIC COMPATIBILITY TEST REPORT

Company ：Spectrum Technologies Corporation

Address ：12F-1, No.100, Min-Chuan Rd. , Hsin-Tien, Taipei, Taiwan, R.O.C.

Sample Name ：Access Point (AP)

Model ：SP911

Date Received ：NOV. 10, 2000

Date Tested ：MAY 30, 2000

MEASUREMENT REQUIREMENT USED：

FCC RULES AND REGULATION PART 15 SUBPART B CLASS B OCTOBER 1998 AND ANSI C63.4 MAY 1992
CISPR 22, CLASS B, 1996

WE HEREBY CERTIFY THAT: The measurements shown in the attachment were made in accordance with the procedures indicated, and the energy emitted by the equipment was found to be within the limits applicable. We assume full responsibility for the accuracy and completeness of these measurements and vouch for the qualifications of all persons taking them.

	Name	Signature	Date
Testing Engineer	C.F.Wu	C. F. Wu	Nov. 17, 2000
Approving Manager	Laurence Chang	Laurence Chang	Dec 28 2000

Notes：
1. This report will be invalid if duplicated or photocopied in part.
2. This report refers only to the specimen(s) submitted to test, and is invalid as seperately used.
3. This report is invalid without examination stamp and signature of this institute.
4. The tested specimen(s) will be preserved for thirty days from the date issued.

TABLE OF CONTENTS

TITLE PAGE NO.

1. GENERAL INFORMATION 3
   1.1 GENERAL STATEMENT 3
   1.2 DESCRIPTION OF EUT & POWER 3
   1.3 DESCRIPTION OF PERIPHERALS 4
   1.4 EUT & PERIPHERALS SETUP DIAGRAM 5
   1.5 EUT OPERATING CONDITION 6
   1.6 DESCRIPTION OF TEST SITE 6
2. CONDUCTED EMISSION TEST 7
   2.1 TEST EQUIPMENTS 7
   2.2 TEST SETUP 7
   2.3 CONDUCTED POWER LINE EMISSION LIMIT 8
   2.4 TEST PROCEDURE 8
   2.5 UNCERTAINTY OF CONDUCTED EMISSION 8
   2.6 CONDUCTED RF VOLTAGE MEASUREMENT 9
   2.7 PHOTOS OF CONDUCTION TEST 10
3. RADIATED EMISSION TEST 11
   3.1 TEST EQUIPMENTS 11
   3.2 TEST SETUP 11
   3.3 RADIATION LIMIT 12
   3.4 TEST PROCEDURE 12
   3.5 UNCERTAINTY OF RADIATED EMISSION 12
   3.6 RADIATED RF NOISE MEASUREMENT 13
   3.7 PHOTOS OF OPEN SITE 14-15

1. GENERAL INFORMATION

1.1 GENERAL STATEMENT

MEASUREMENT DEVIATION：Comply with standard in full

TRACEABILITY：This test result is traceable to national or international std.

1.2 DESCRIPTION OF EUT & POWER

MANUFACTURER：Spectrum Technologies Corporation

SAMPLE NAME ：Access Point (AP)

MODEL NUMBER ：SP911

SERIAL NUMBER ：Not applicable

POWER SUPPLY ：12VDC(from power adapter)

I/O PORT ：Console Port × 1， LAN Port (with 2 RJ-45 connector) × 1，
PCMCIA Port × 1

Engineering Sample ☑ ， Product Sample ☐ ，Mass Product Sample ☐ .

1.3 DESCRIPTION OF PERIPHERALS

（1）PC

MODEL NUMBER ：KAYAK XU 6/300
SERIAL NUMBER ：SG82100177
MANUFACTURER ：HP CORP.
FCC ID ：B94VECTRAXU6WT
POWER CORD ：Unshielded , Detachable , 1.8m

（2）MONITOR

MODEL NUMBER ：6546-00N
SERIAL NUMBER ：23-M6334
MANUFACTURER ：IBM CORP.
F.C.C. ID ：A3KM065
POWER CORD ：Unshielded , Detachable , 1.8m
SIGNAL CABLE ：Shielded , Non-detachable , 1.8m

（3）KEYBOARD

MODEL NUMBER ：SK-2502
SERIAL NUMBER ：M97075806
MANUFACTURER ：HP CORP.
F.C.C. ID ：GYUR41SK
SIGNAL CABLE ：Shielded , Undetachable , 1.8m
POWER SOURCE ：5VDC (from PC)

（4）MOUSE

MODEL NUMBER ：M-S35
SERIAL NUMBER ：C4728-60101
MANUFACTURER ：HP CORP.
FCC ID ：DZL211029
SIGNAL CABLE ：Shielded , Undetachable , 1.8m
POWER SOURCE ：5VDC (from PC)

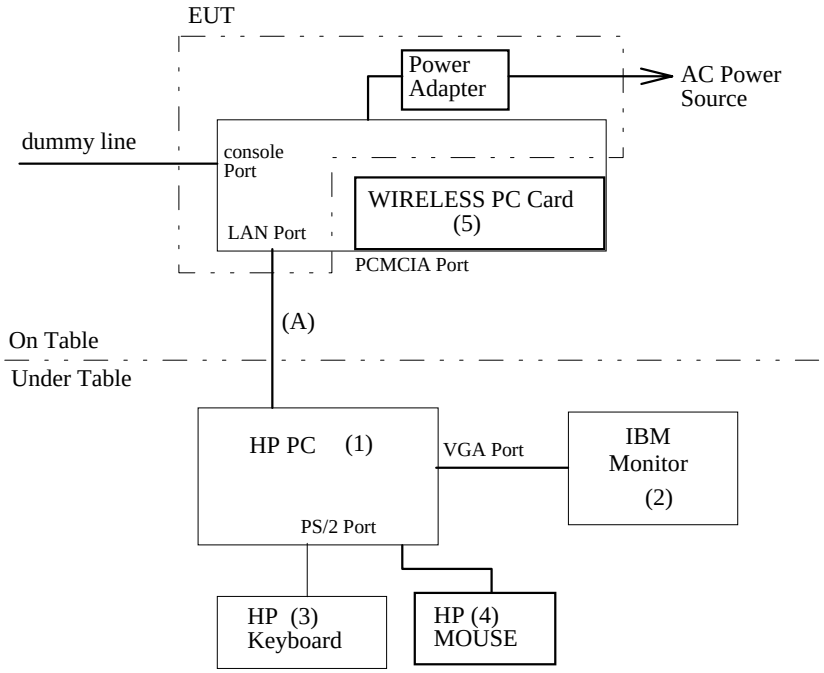
（5）WIRELESS PC Card

MODEL NUMBER ：XI-300
SERIAL NUMBER ：---------
MANUFACTURER ：Z-Com, Inc.
POWER SOURCE ：5VDC (from connecting device)

(6) Cables

	Type	Connector	Shielded	length
(A)	Cross-over CAT5 twisted-pair	RJ-45, plastic	No	15m

1.4 EUT & PERIPHERALS SETUP DIAGRAM



The indicated numbers (1)(2)----,(A), please refer to item 1.3

1.5 EUT OPERATING CONDITION

1. Setup system for test as shown on setup diagram.
2. PC run “Ping” program on DOS Mode.
3. PC will send data package to wireless PC card for transmitting through LAN cable and EUT.

1.6 DESCRIPTION OF TEST SITE

SITE DESCRIPTION ：FCC certificate NO. :31040/PRV
TUV certificate NO. :I9664582-9911
Lloyd's certificate NO. :LA003
BSMI certificate NO. :SL2-IN-E-0002
NVLAP Lab code：200118-0
CNLA certificate NO. :CNLA-ZL97018
VCCI certificate NO. : R-706, C-650

NAME OF SITE ：Electronics Research & Service Organization
Industrial Technology Research Institute

SITE LOCATION ：R1500, 195-4 , Sec. 4, Chung Hsing Rd.,
Chu-Tung Chen. Hsin-Chu, Taiwan 31015 R.O.C.

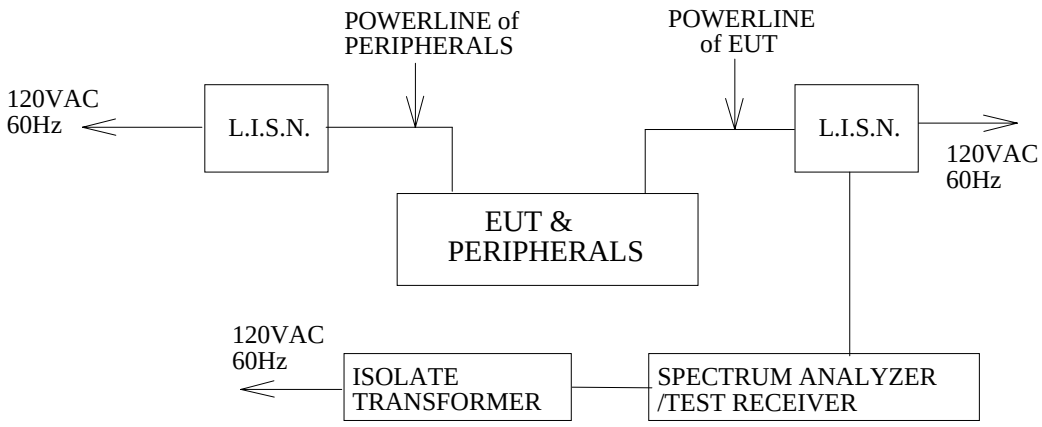
2. CONDUCTED EMISSION TEST

2.1 TEST EQUIPMENTS

The following test equipments are used during the conducted powerline tests：

MANUFACTURER OR TYPE	MODEL No	SERIAL NO.	DATE OF CALIBRATION	CALIBRA-TION PERIOD	REMARK
SPECTRUM ANALYZER & DISPLAY	HP 8568A	2235A02320	MAR. 24, 2000	1 Year	PRETEST
QUASI-PEAK ADAPTER	HP 85650 A	2341A00672	MAR. 24, 2000	1 Year	PRETEST
ISOLATION TRANSFORMER	SOLAR 7032-1	N/A	N/A	N/A	FINAL
L.I.S.N.	EMCO 3850/2	9311-1025 9401-1028	JAN. 05, 2000 For Characteristic impedance JAN. 05, 2000 For Insertion loss	1 Year	FINAL
TEST RECEIVER	R/S ESH3	8720791118	MAR. 24, 2000	1 Year	FINAL
SHIELDED ROOM	KEENE 5983	NO.1	N/A	N/A	FINAL
PULSE LIMIT	R/S EHS3Z2	357.8810.52	JUL. 22, 1999	1 Year	FINAL
N TYPE COAXIAL CABLE	----------	----------	JUL. 05, 1999	1 Year	FINAL
50Ω TERMINATOR	----------	----------	JUL. 14, 1999	1 Year	FINAL

2.2 TEST SETUP



2.3 CONDUCTED POWER LINE EMISSION LIMIT

FREQUENCY (MHz)	MAXIMUM RF LINE VOLTAGE (dB μ V)	
	CLASS A	CLASS B
0.45 - 1.705	60	48
1.705 - 30.0	69.5	48

2.4 TEST PROCEDURE

The test procedure is performed in a 12ft× 12ft× 8ft(L× W× H) shielded room. the EUT along with its peripherals were placed on a 1.0m(W)× 1.5m(L) and 0.8m in height wooden table and the EUT was adjusted to maintain a 0.4 meter space from a vertical reference plane. The EUT was connected to power mains through a line impedance stabilization network (LISN) which provides 50 ohm coupling impedance for measuring instrument and the chasis ground was bounded to the horizontal ground plane of shielded room. All peripherals were connected to the second LISN and the chasis ground also bounded to the horizontal ground plane of shielded room. The excess power cable between the EUT and the LISN was bundled. The power cables of peripherals were unbundled. All connecting cables of EUT and peripherals were moved to find the maximum emission.

2.5 UNCERTAINTY OF CONDUCTED EMISSION

The uncertainty of conducted emission is ± 1.36dB.

2.6 CONDUCTED RF VOLTAGE MEASUREMENT

The frequency spectrum from 0.45 MHz to 30 MHz was investigated. All emissions not reported below are more than 20 dB below the prescribed limits.

Temperature：25℃ Humidity：49 % RH

FREQUENCY	READING(dB μ V)		LIMITS
	ONE END & GRD'D	THE OTHER END & GRD'D	(dB μ V)
(MHz)	Q.P.	Q.P.	Q.P.
0.450	*	*	48.00
0.705	17.50	17.40	48.00
2.273	18.30	17.80	48.00
3.064	20.10	21.30	48.00
4.196	19.50	20.10	48.00
14.317	29.00	28.40	48.00
16.611	25.00	26.50	48.00
30.000	*	*	48.00

REMARKS：1. * Undetectable or the Q.P.values is lower than the limits of Ave.

2.7 PHOTOS OF CONDUCTION TEST

3. RADIATED EMISSION TEST

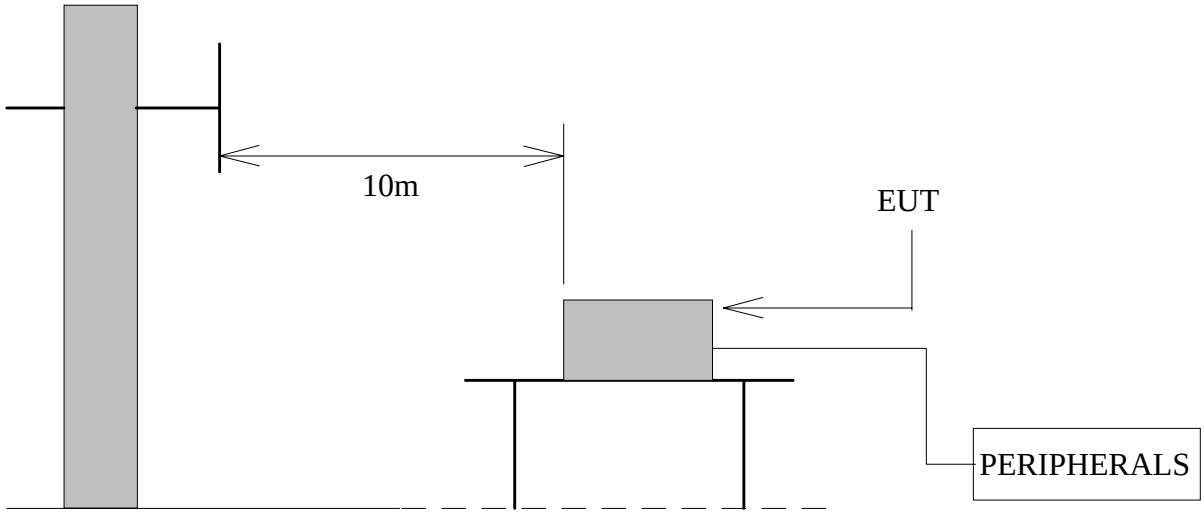
3.1 TEST EQUIPMENTS

The following test equipments are utilized in making the measurements contained in this report.

MANUFACTURER OR TYPE	MODEL NO	SERIAL NO	DATE OF CALIBRATION	CALIBRA-TION PERIOD	REMARK
CHASE BI-LOG ANTENNA	CBL6112B	2562	MAY 02, 2000	1 Year	FINAL
R/S TEST RECEIVER	ESMI	842088/005 841978/008	JUL. 29, 1999	1 Year	FINAL
OPEN SITE	----------	No.1	JUN. 29, 1999	1 Year	FINAL
N TYPE COAXIAL CABLE	CHA9525	015	JUL. 06, 1999	1 Year	FINAL

3.2 TEST SETUP

The diagram below shows the test setup which is utilized to make these measurements.



Antenna Elevation Variable

3.3 RADIATION LIMIT

All emanation from a class B computing device or system , including any network of conductors and apparatus connected thereto, shall not exceed the level of field strengths specified below：

FREQUENCY (MHz)	FIELD STRENGTHS(dB μ V/M)	
	CLASS A(10m)	CLASS B(3m)
30－88	39.0	40.0
88－216	43.5	43.5
216－960	46.4	46.0
960－1000	49.5	54.0

Note：(1)The tighter limit shall apply at the edge between two frequency bands.
(2)Distance refers to the distance in meters between the measuring instrument antenna and the closest point of any part of the device or system.

3.4 TEST PROCEDURE

The devices under test were placed on a rotatable table top 0.8 meter above ground. The table was rotated 360 degrees to determine the position of the highest radiation. EUT is set 10 meters from the interference receiving antenna which is mounted on the top of a variable height mast. The antenna height is varied between one meter and four meters above ground to find the maximum value of the field strength Both horizontal polarization and vertical polarization of the antenna are set to make the measurement. The bandwidth setting on the E.M.I. meter (R/S TEST RECEIVER ESMI) is 120 KHz. The levels are quasi peak value readings. The frequency spectrum from 30MHz to 1000MHz was investigated.

3.5 UNCERTAINTY OF RADIATED EMISSION

The uncertainty of radiated emission is ± 2.72dB.

3.6 RADIATED RF NOISE MEASUREMENT

The frequency spectrum from 30 MHz to 1000 MHz was investigated. All emissions not reported below are more than 20 dB below the prescribed limits.
All readings are quasi-peak values.

Temperature：25℃ Humidity：72％ RH

FREQ-UENCY (MHz)	ANTENNA FACTOR (dB/m)	CABLE LOSS (dB)	METER READING AT10m(dBμV) HORIZON-TAL	METER READING AT10m(dBμV) VERTICAL	LIMITS (dBμV/m)	EMISSION LEVEL AT3m(dBμV/m) HORIZON-TAL	EMISSION LEVEL AT3m(dBμV/m) VERTICAL
30.00	18.08	1.06	*	*	40.00	*	*
66.00	6.49	1.60	8.85	20.06	40.00	27.40	38.61
132.00	12.27	2.13	5.22	9.84	43.50	30.08	34.70
198.00	9.92	2.62	9.14	10.82	43.50	32.14	33.82
230.97	11.52	2.84	8.30	*	46.00	33.12	*
263.97	12.64	3.06	6.20	4.94	46.00	32.36	31.10
297.00	13.01	3.28	8.02	*	46.00	34.77	*
395.97	15.71	3.88	*	5.50	46.00	*	35.55
461.97	16.81	4.21	3.54	*	46.00	35.02	*
524.95	17.86	4.52	4.80	6.76	46.00	37.64	39.60
724.95	19.88	5.52	2.14	*	46.00	38.00	*
1000.00	21.39	6.80	*	*	54.00	*	*

REMARKS：1. ＊Undetectable

2. Emission level (dBμV/m) =Antenna Factor (dB/m) + Cable loss (dB) + Meter Reading (dBμV).

3. The test data marked in gray background means the EUT emission data is located in the margin uncertainty range of emission limits.

4. 10m measured data are transferred to 3m by adding 20log (10/3)=10.46dB

3.7 PHOTOS OF OPEN SITE

3.7 PHOTOS OF OPEN SITE