1.6 Verify the Frequency and Channel

Channel	Frequency (GHz)
1	2.412
2	2.417
3	2.422
4	2.427
5	2.432
6	2.437
7	2.442
8	2.447
9	2.452
10	2.457
11	2.462

Note:

1. This is for confirming that all frequencies are in 2.412GHz to 2.462GHz.
2. Section 15.31(m): Measurements on intentional radiators or receivers shall be performed at three frequencies for operating frequency range over 10 MHz.
   (The locations of these frequencies one near the top, one near the middle and one near the bottom.)
3. After test, the EUT operating frequencies are in 2.412GHz to 2.462GHz. So all the items as followed in testing report are need to test these three frequencies:
   Top: Channel – 1; Middle: Channel – 6; Bottom: Channel – 11.

1.7 Test Procedure

All measurements contained in this report were performed mainly according to the techniques described in ANSI C63.4 (1992) and the pre-setup was written on <1.3>, the detail setup was written on each test item.

1.8 Location of the Test Site

The radiated emissions measurements required by the rules were performed on the **three-meter**, **Anechoic Chamber (Registration Number: 93906)** maintained by *Training Research Co., Ltd*. 1F, No. 255 Nanyang Street, Shijr, Taipei Hsien 221, Taiwan, R.O.C. Complete description and measurement data have been placed on file with the commission. The conducted power line emissions tests and other test items were performed in a anechoic chamber also located at Training Research Co., Ltd.

No. 255 Nanyang Street, Shijr, Taipei Hsien 221, Taiwan, R.O.C. *Training Research Co., Ltd.* is listed by the FCC as a facility available to do measurement work for others on a contract basis.

1.9 General Test Condition

The conditions under which the EUT operates were varied to determine their effect on the equipment's emission characteristics. The final configuration of the test system and the mode of operation used during these tests were chosen as that which produced the highest emission levels. However, only those conditions, which the EUT was considered likely to encounter in normal use were investigated.

In test, they were set in high power and continuously transmitting mode that controlled by computer. The ch01, ch06 and ch11 of EUT were all tested. The setting up procedure is recorded on <1.3> test method.

II. Section 15.101(a): Equipment authorization of unintentional radiators

The EUT equipped with a PCMCIA interface and should be operated with the computer. It was categorized to *Class B personal computers and peripherals* as cannot be operated stand-alone. The authorization requires **Declaration of Conformity (DoC)** and the items required such as Sect.15.107 (Conducted limits) and Sect.15.109 (Radiated emission limits) is same as Sect.15.207 and 15.247(C).

III. Section 15.203: Antenna requirement

The EUT has an integrated antenna permanently attached on the PCB. In addition, there is no external antenna or connector employed. The antenna requirement stated in Sect.15.203 is inapplicable to this EUT.

Ⅳ. Section 15.207: Power Line Conducted Emissions for AC Powered Units

4.1 Test Condition & Setup

The power line conducted emission measurements were performed in an anechoic chamber. The EUT was assembled on a wooden table, which is 80 centimeters high, was placed 40 centimeters from the backwall and at least 1 meter from the sidewall.

Power was fed to the EUT from the public utility power grid through a line filter and Line Impedance Stabilization Networks (LISNs). The LISN housing, measuring instrumentation case, ground plane, etc., were electrically bonded together at the same RF potential. The Spectrum analyzer (or EMI receiver) was connected to the AC line through an isolation transformer. The 50-ohm output of the LISN was connected to the spectrum analyzer directly. Conducted emission levels were in the CISPER quasi-peak detection mode. The analyzer's 6 dB bandwidth was set to 9 KHz. No post-detector video filter was used.

The spectrum was scanned from 150 KHz to 30 MHz. The physical arrangement of the test system and associated cabling was varied (within the scope of arrangements likely to be encountered in actual use) to determine the effect on the unit's emanations in amplitude and frequency. All spurious emission frequencies were observed. The highest emission amplitudes relative to the appropriate limit were measured and have been recorded in paragraph 2.4.

There is a test condition applies in this test item, the test procedure description as the following: EUT transmit only:

The setting up procedure is recorded on <1.3>. Three channels were tested, one in the top (CH01), one in the middle (CH06) and the other in bottom (CH11).

4.2 List of Test Instruments

				Calibration Date	
Instrument Name	Model No.	Brand	Serial No.	Last time	Next time
EMI Receiver	8546A	H P	3520A00242	06/28/02	06/28/03
RF Filter Section	85460A	H P	3448A00217	06/28/02	06/28/03
LISN (EUT)	LISN-01	TRC	9912-03,04	06/04/02	06/04/03
LISN (Support E.)	LISN-01	TRC	9912-05	07/15/02	07/15/03
Auto Switch Box (< 30MHz)	ASB-01	TRC	9904-01	11/20/02	11/20/03

The level of confidence of 95%, the uncertainty of measurement of conducted emission is ± 2.02 dB.

4.3 Test Result of Conducted Emissions

EUT station transmit only

The following table shows a summary of the highest emissions of power line conducted emissions on the LIVE and NETURAL conductors of the EUT power cord.

Test Conditions: Testing room : Temperature : 21.3°C Humidity : 61.3% RH

Table 1 Test mode: Channel 1

Power Connected Emissions					*FCC Class B*		
Conductor	***Frequency (KHz)***	***Peak (dBmV)***	***QP (dBmV)***	***Average (dBmV)***	***QP-limit (dBmV)***	***AVG-limit (dBmV)***	***Margin (dB)***
Line 1	206.00	46.89	---	---	64.40	54.40	-7.51
	233.00	44.80	---	---	63.63	53.63	-8.83
	401.00	38.29	---	---	58.83	48.83	-10.54
	456.00	38.33	---	---	57.26	47.26	-8.93
	1134.00	34.34	---	---	56.00	46.00	-11.66
	1836.00	33.56	---	---	56.00	46.00	-12.44
Line 2	203.00	47.71	---	---	64.49	54.49	-6.78
	233.00	46.61	---	---	63.63	53.63	-7.02
	405.00	41.38	---	---	58.71	48.71	-7.33
	937.00	35.89	---	---	56.00	46.00	-10.11
	1295.00	35.14	---	---	56.00	46.00	-10.86
	1503.00	35.61	---	---	56.00	46.00	-10.39

NOTE:

(1) Margin = Amplitude – Limit, ***The reading amplitudes are all under limit.***

(2) A "+" sign in the margin column means the emission is OVER the Class B Limit and "–" sign of means UNDER the Class B limit

Table 2 Test mode: Channel 6

Power Connected Emissions					*FCC Class B*		
Conductor	***Frequency (KHz)***	***Peak (dBmV)***	***QP (dBmV)***	***Average (dBmV)***	***QP-limit (dBmV)***	***AVG-limit (dBmV)***	***Margin (dB)***
Line 1	218.00	46.68	---	---	64.06	54.06	-7.38
	409.00	39.71	---	---	58.60	48.60	-8.89
	480.00	37.64	---	---	56.57	46.57	-8.93
	980.00	34.34	---	---	56.00	46.00	-11.66
	1219.00	34.27	---	---	56.00	46.00	-11.73
	1713.00	34.04	---	---	56.00	46.00	-11.96
Line 2	205.00	47.45	---	---	64.43	54.43	-6.98
	370.00	40.20	---	---	59.71	49.71	-9.51
	494.00	37.38	---	---	56.17	46.17	-8.79
	972.00	36.63	---	---	56.00	46.00	-9.37
	1208.00	35.94	---	---	56.00	46.00	-10.06
	1713.00	36.43	---	---	56.00	46.00	-9.57

Table 3 Test mode: Channel 11

Power Connected Emissions					*FCC Class B*		
Conductor	***Frequency (KHz)***	***Peak (dBmV)***	***QP (dBmV)***	***Average (dBmV)***	***QP-limit (dBmV)***	***AVG-limit (dBmV)***	***Margin (dB)***
Line 1	203.00	47.83	---	---	64.49	54.49	-6.66
	236.00	44.89	---	---	63.54	53.54	-8.65
	405.00	39.37	---	---	58.71	48.71	-9.34
	954.00	33.99	---	---	56.00	46.00	-12.01
	1219.00	34.20	---	---	56.00	46.00	-11.80
	1359.00	33.19	---	---	56.00	46.00	-12.81
Line 2	208.00	46.96	---	---	63.34	54.34	-7.38
	409.00	40.67	---	---	58.60	48.60	-7.93
	490.00	37.52	---	---	56.29	46.29	-8.77
	980.00	35.01	---	---	56.00	46.00	-10.99
	1230.00	35.75	---	---	56.00	46.00	-10.25
	1346.00	35.38	---	---	56.00	46.00	-10.62

V. Section 15.247 (a): Technical description of the EUT

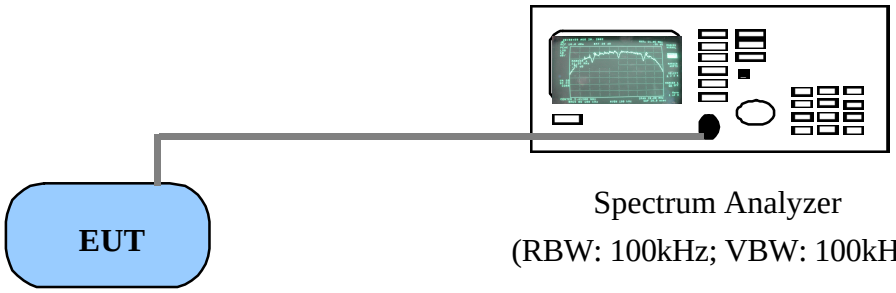
Based on the Section 2.1, *Direct Sequence System* is a spread spectrum system in which the carrier has been modulated by a high speed spreading code and an information data stream. The high speed code sequence dominates the "modulating function" and is the direct cause of the wide spreading of the transmitted signal. In the Exhibit, operational description demonstrates the operation principles of the Baseband processor employed by the EUT, shows that which is a complete DSSS baseband processor and meets the definition of the direct sequence spread spectrum system.

VI. Section 15.247(a)(2): Bandwidth for Direct Sequence System.

6.1 Test Condition & Setup

The transmitter bandwidth measurements were performed by the contact manner. The EUT was set to transmit continuously, also various channels were investigated to find the maximum occupied bandwidth.. The output of the EUT was connected to the spectrum analyzer. The bandwidth of the fundamental frequency is observed by the spectrum analyzer with 100 kHz RBW and 100 kHz VBW.

6.2 Test Instruments Configuration



Test Configuration of Bandwidth for Direct Sequence System

P.S.: Notebook computer to control the EUT at maximal power output and channel number and set antenna kit

6.3 List of Test Instruments

Instrument Name	Model No.	Brand	Serial No.	Last time	Next time
Spectrum Analyzer	8564E	H P	US36433002	08/02/02	08/01/03

6.4 Test Result of Bandwidth

Bandwidth of Channel 1

Bandwidth	:	9.64MKHz
The min. 6 dB BW at least	:	500 KHz

Bandwidth of Channel 6

Bandwidth	:	9.60MHz
The min. 6 dB BW at least	:	500 KHz

Bandwidth of Channel 11

Bandwidth	:	9.68MHz
The min. 6 dB BW at least	:	500 KHz

Note:

1. The data in the above table are summarizing the following attachment spectrum analyzer hard copy. According to the guidance, we' d made the measurement with the spectrum analyzer' s resolution bandwidth *(RBW)=100kHz* and set the *span>>RBW.* The results show the measured 6dB bandwidth comply with the minimum 500kHz requirement.
2. The attachments show these on the following pages.