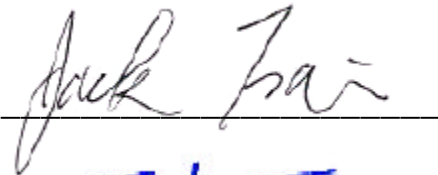
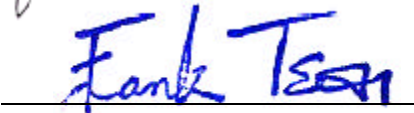


TRENDware International Inc.
TEW-230APB
RF Test Report

Report No.	C51ET285
Specifications	ETSI EN 300 328-1 (V.1.3.1) / December, 2001 ETSI EN 300 328-2 (V.1.2.1) / December, 2001
Applicant	TRENDware International Inc.
Applicant address	3135 Kashiwa Street Torrance, CA 90505, USA
Items tested	802.11b 11Mbps Wireless Access Point
Model No.	TEW-230APB
Results	Compliance (As detailed within this report)
Date	10/27/2003 (month / day / year) (Sample received) 11/03/2003 (month / day / year) (Test)
Prepared by	 Project Engineer (Jack Tsai)
Authorized by	 General Manager (Frank Tsai)
Issue date	November 18, 2003 (month / day / year)
Modifications	None
Tested by	Training Research Co., Ltd.
Office at	No. 255, Nan Yang Street, Shijr City, Taipei Hsien 221, Taiwan
Laboratory at	1F, No. 255, Nan Yang Street, Shijr City, Taipei Hsien 221, Taiwan
Open site at	No. 15, Lane 530, Balian Rd., Sec. 1, Shijr City, Taipei Hsien 221, Taiwan

Conditions of issue:

This test report shall not be reproduced except in full, without written approval of TRC. And the test result contained within this report only relate to the sample submitted for testing.

★ **Aut. No. ELA 131**

We here by verify that:

The test data, data evaluation, test procedures and equipment configurations shown in this report were made mainly in accordance with the procedures given in ETSI EN 300328-2 (V.1.2.1) as a reference. All test were conducted by *Training Research Co., Ltd.*, 255 Nanyang Street, Shijr, Taipei Hsien 221, Taiwan, R.O.C. Also, we attest to the accuracy of each.

We further submit that the energy emitted by the sample EUT tested as described in the report is **in compliance with** the technical requirements set second edition in the European Telecommunication Standard ETSI EN 300328-2 (V.1.2.1).

Reservation:

The test results herein refer only to the tested sample. Training Research Co., Ltd. is not responsible for any generalizations or conclusions draw from these test results and concerning further samples. Any modification of the tested samples is prohibited and leads to the invalidity of this test report.

Test by :

Training Research Co., Ltd.

TEL: 886-2-26935155

FAX: 886-2-26934440

No. 255, Nanyang Street, Shijr, Taipei Hsien 221, Taiwan, R.O.C.

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I. GENERAL

1.1 Introduction

The following measurement report is submitted on behalf of Applicant in support of a wireless LAN measurement in accordance with ETSI EN 300328-2 (V.1.2.1) (Dec. 2001) of the European Telecommunication Standard.

1.2 Description of EUT

Product Name : 802.11b 11Mbps Wireless Access Point

Model : TEW-230APB

Frequency Range : 2.400GHz ~ 2.4835GHz

Operating Frequency: 2.412GHz ~ 2.472GHz

Support Channel : 13 Channels

Modulation Skill : DBPSK, DQPSK, CCK

Power Type : (1) Power adapter#1
Mfg.: DVE
Model: DSA-0151A-05A
I/P: 200-240VAC, 50-60Hz, 0.4A ;
O/P: 5VDC, 2.4A
Power cable 105cm length, non-shielded, no ferrite core

or

(2) Power adapter#2
Model: RH41-0501200DG
I/P: 230VAC, 50Hz, 78mA ;
O/P: 5VDC, 1.2A, 6VA
Power cable 190cm length, non-shielded, no ferrite core

Data Cable : RJ45, 30m length, non-shielded, no ferrite core

1.3 Test Method

1. The EUT can be equipped with two kinds of antennas. Besides, it has an integral (Undetachable) antenna, and the detachable antenna.

The detachable antenna is affixed to the EUT using a unique connector, which allows for replacement of a broken antenna, but does not use a standard antenna jack or electrical connector.

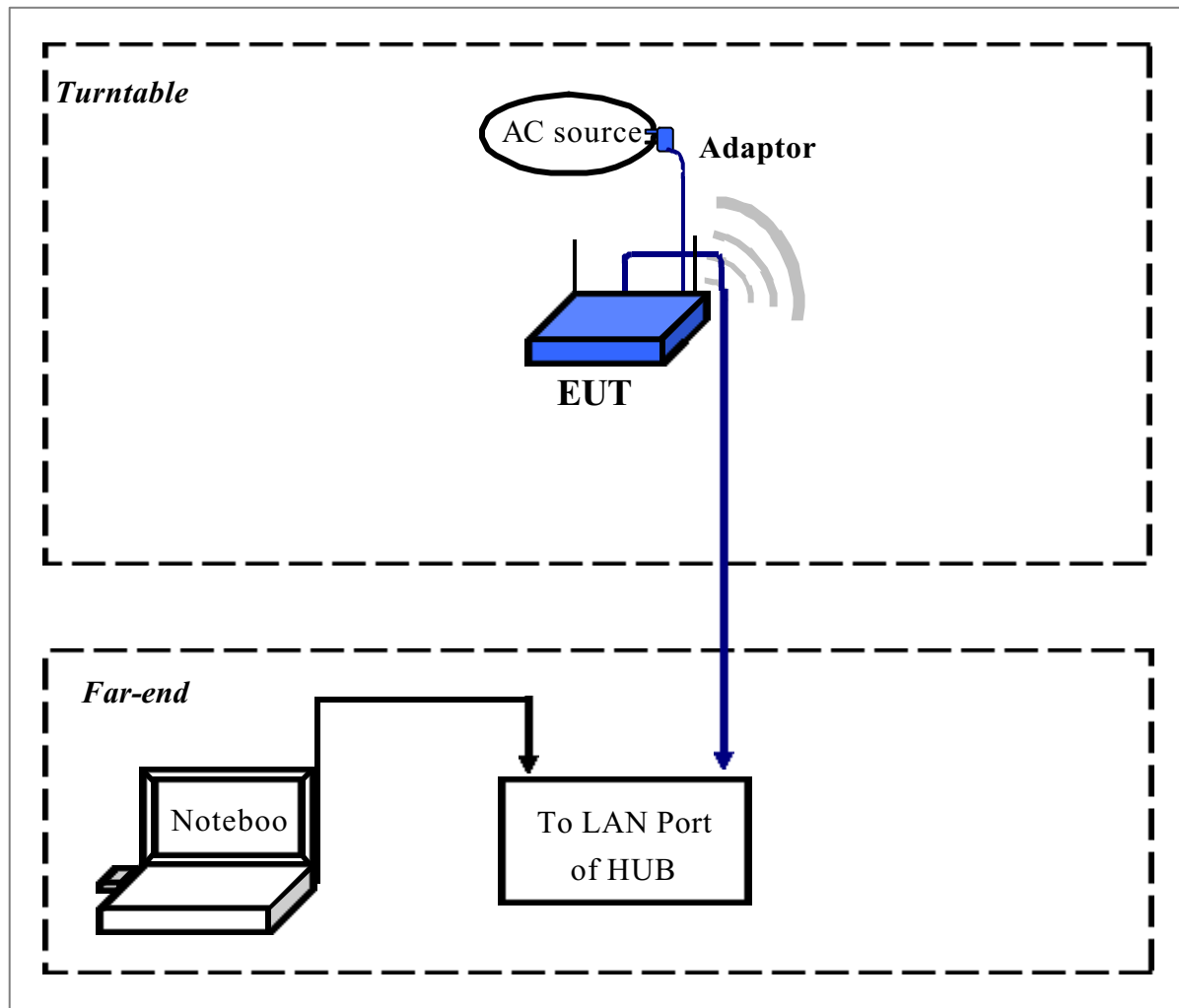
2. Using the LAN port of far-end notebook computer and software provided by the manufacturer to control the EUT's continuous transmission. The test is performed under those specific conditions.
3. Then making EUT to the mode of continuous transmission and set the testing channel being tested.

1.4 Description of Support Equipment

In order to construct the minimum testing, following equipment were used as the support units.

Notebook	:	IBM Think Pad X20
Model No.	:	2662-11T
Serial No.	:	FX-1192200/09
FCC ID	:	N/A, Doc Approved
檢磁	:	3892B565
Adaptor	:	IBM
Model No.	:	PA2450U
Serial No.	:	02K6654
FCC ID	:	N/A, Doc Approved
Power type	:	I/P: 100 ~ 240vac, 50 ~ 60 Hz, 0.5A ~ 1.2A; O/P: 16Vdc, 4.5A
Power cord	:	Non-shielded, 1.80m length, Plastic, with ferrite core
Notebook	:	ASUSTek Computer
Model No.	:	AB00F
Serial No.	:	24NP016361
FCC ID	:	DoC Approved
BSMI	:	41016012
Power type	:	100 ~ 240VAC, 1A 50/60 Hz, Switching
Adaptor of PC	:	LITE-ON Electronics, Inc.
Model No.	:	PA-1530-01
Serial No.	:	00151184
FCC ID	:	Doc Approved
檢磁	:	3882B259
Power cable	:	Non-shielded, 1.72m length, Plastic hood, No ferrite core (Between power adaptor and AC power source)
Power cable	:	Shielded, 1.48m length, Plastic hood, with ferrite core (Between power adaptor and notebook)
WLAN Card	:	Gemtek Technology Co., Ltd.
Model No.	:	C911003
FCC ID	:	MXF-C911003
HUB	:	D-Link
Model No.	:	DGS-1008T
FCC ID	:	N/A, DoC Approved
Power type	:	I/P: 100 ~ 240vac, 50 ~ 60 Hz, 0.7A
Power cord	:	Non-shielded, no ferrite core, 1.90m length

1.5 Configuration of System Under Test



The tests below are carried with the EUT transmitter set at high power in TDD mode. The EUT is forced to select of output power level and channel number by notebook computer.

The setting up procedure was recorded in 1.3 test method.

1.6 Verify the Frequency and Channel

CH	1	2	3	4	5	6	7	8	9	10
0	2412	2417	2422	2427	2432	2437	2442	2447	2452	2457
1	2462	2467	2472	---	---	---	---	---	---	---

Note:

- (1) This is for sure that all frequencies are in 2.4GHz – 2.4835 GHz.
- (2) After test, the EUT operating frequencies are in 2.412GHz to 2.472GHz. So all the item as followed in testing report are need to test these three frequencies:
channel 1, channel 7, and channel 13.
- (3) E.T.S.I (2400MHz ~ 2483.5MHz),
FRANCE outdoor use limited to 10mW e.i.r.p. within the band 2454MHz ~ 2483.5MHz.

1.7 Test Procedure

All measurements performed in this report were performed mainly according to the techniques described in ETSI EN 300328-2 (Dec., 2001) and the pre-setup was written on 1.4 test method, 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 test condition shall be as follows: (See Clause 6)

The NORMAL temperature and humidity conditions for tests shall be any convenient combination of temperature and humidity within the following ranges:

-temperature: +15°C to +35°C;

-relative humidity: 20% to 75%.

The normal test voltage for equipment to be connected to the main shall be the nominal mains voltage.

For purpose of this ETS, the normal voltage shall be the declared voltage or any of the declared voltages for which the equipment was designed.

The frequency of the test power source corresponding to the AC mains shall be between 49Hz and 51Hz. When radio equipment is intended for operation from the usual, alternator fed lead-acid battery power source used on vehicles, then the normal test voltage shall be 1.1 times the nominal voltage of the battery (6V, 12V, etc.)

For operation from other power sources or types of battery (primary or secondary), the nominal test voltage shall be as declared by the equipment manufacturer. This shall be recorded in the test report.

For tests at EXTREME temperatures, measurements shall be made in accordance with the procedures specified in subclause 6.4.3, at the upper and lower temperatures of the range as follows:

- temperature: -20°C to +55°C;

Where the manufacturer's declared operating range does not include the range of -20°C to +55°C, the equipment shall be tested over the following temperature ranges:

a) 0°C to +35°C for equipment intended for INDOOR use only, or intended for use in areas where the temperature is controlled within this range;

b) Over the extremes of the operating temperature range(s) of the declared host equipment(s) in case of plug-in radio devices.

The frequency range as in subclause 5.2.3 and the e.i.r.p. Limit in subclause 5.2.1 shall not be exceeded.

Tests at extreme power source voltages specified below are not required when the equipment under test is designed for operation as part of and powered by another system or piece of equipment. Where this is the case, the limit values of the host system or host equipment shall apply. The appropriate limit values shall be declared by the manufacturer and recorded in the test report.

The EXTREME TEST VOLTAGE for equipment to be connected to an AC mains source shall be the nominal mains voltage $\pm 10\%$.

When radio equipment is intended for operation from the usual type of alternator fed lead-acid battery power source used on vehicles, then extreme test voltage shall be 1.3 and 0.9 times the nominal voltage of the battery (6V, 12V, etc.).

The lower extreme test voltage for equipment with power source using the following type of battery, shall be:

- for the Leclanche' or lithium type battery: 0.85 times the nominal voltage of the battery;
- for the mercury or nickel-cadmium type of battery: 0.9 times the nominal voltage of the battery.

In both cases, the upper extreme test voltage shall be 1.15 times the nominal voltage of the battery.

For equipment using other power sources, or capable of being operated from a variety of power sources (primary or secondary), the extreme test voltages shall be those declared by the manufacturer; these shall be recorded in the test report. Before measurements are made the equipment shall have reached thermal balance in the test chamber.

II. Section 5.2.1 : Effective Radiated Power

2.1 Test Result of Effective Radiated Power

Power level at which the measurement has been performed **60.716** mW

TEST CONDITION		TRANSMITTER PEAK POWER		
		Tx Peak (dBm)	Tx Ave. (dBm)	Cable Loss (dB)
Channel 1	25 °C	7.095	4.948	5.80
	0 °C	10.233	8.061	
	35 °C	7.150	4.989	
Channel 7	25 °C	6.801	4.653	5.80
	0 °C	9.608	7.416	
	35 °C	6.718	4.532	
Channel 13	25 °C	6.755	4.625	5.80
	0 °C	8.953	6.834	
	35 °C	6.847	4.742	
Limit		Tx Peak : 23dBm / -7dBW Tx Ave. : 20dBm / -10dBW		

NOTE:

- (1) The E.U.T is a stand-alone radio device (see the clause 6.2.2). The powered by the adaptor. So, the AC power is used as the extreme voltage source. (See clause 6.3.2.1)
- (2) The value of table is worst case during test condition, includes different combinations of transmitter rate antenna polarity and temperature
- (3) TX PEAK: Max Peak Power, TX Ave.: Average Peak.
Actually Power (Peak Power) = Tx Peak + Cable Loss,
E.I.R.P. = Actually Power + Antenna Gain
= 16.033dBm + 1.8dBi
= 17.833dBm
- (4) ETSI (2400MHz ~ 2483.5MHz),
FRANCE outdoor use limited to 10mW e.i.r.p. within the band 2454MHz ~ 2483.5MHz

III. Section 5.2.2 : Peak Power Density

3.1 Test Result of Peak Power Density

Channel	Frequency (MHz)	Ppr (dBm)	CF (dB)	Ant.Gain (dBi)	Ppq (dBm)	Limit (dBm)	Margin (dB)
CH 01	2412	1.24	6.60	1.80	9.64	10.00	-0.36
CH 07	2442	1.03	6.60	1.80	9.43	10.00	-0.57
CH 13	2472	0.70	6.70	1.80	9.20	10.00	-0.80

NOTE:

- (1) For equipment using FHSS modulation, the peak power density shall be limit to -10dBW(100mW) per 100kHz E.I.R.P.
- (2) For equipment using other types modulation, the peak power density shall be limit -20dBW(10mW) per MHz E.I.R.P.
- (3) Ppr: spectrum read power density (using peak search mode), CF: correct factor, Ppq: actual peak power density in the spread spectrum band. $Ppq = Ppr + CF$
- (4) The value of table is worst case during test condition, includes different combination s of transmitter rate, antenna polarity and temperature
- (5) The data in the above table are summarizing the following attachment spectrum analyzer hard copy.
- (6) ETSI (2400MHz ~ 2483.5MHz), FRANCE outdoor use limited to 10mW e.i.r.p. within the band 2454MHz ~ 2483.5MHz

Channel 1



Channel 7



Channel 13



IV. Section 5.2.3 : Frequency Range

4.1 Test Result of Frequency Range for 802.11b

Transmitter Frequency Range – DSSS Equipment

TEST CONDITION		FREQUENCY(MHz)			
		Lowest Channel		Highest Channel	
		Channel 1		Channel 13	
		Frequency	Rate (Mbps)	Frequency	Rate (Mbps)
0°C	207 V	2402.70	11	2482.20	11
	253 V	2402.70	11	2482.20	11
25°C	230 V	2402.90	11	2481.80	11
35°C	207 V	2402.90	11	2481.80	11
	253 V	2402.90	11	2481.80	11
Measured frequencies (lowest and highest)		FL = 2402.70 MHz		FH = 2482.20 MHz	
Limit		FL > 2400MHz		FH < 2483.5MHz	

Note:

- (1) The E.U.T is a stand-alone radio device (see the clause 6.2.2). This is powered by the main. So, the AC power is used as the extreme voltage source. (see clause 6.3.2.1).
- (2) B: Battery, AC: AC Source, Rate: Transmitter Rate.
- (3) The value of table is worst case during test condition, includes different combinations of transmitter rate, antenna polarity and temperature.
- (4) The data in the above table are summarizing the following attachment spectrum analyzer hard copy.
- (5) ETSI(2400MHz~2483.5MHz),
FRANCE outdoor use limited to 10mW e.i.r.p. within the band 2454MHz ~ 2483.5MHz

Channel 1 (The lowest one in the frequency range)



Channel 13 (The greatest one in the frequency range)



V. Section 5.2.4 : Transmitter Spurious Emissions (Radiated)

5.1 Test Result of Adaptor#1 for Detachable antenna

Channel 1 (30MHz to 1GHz)

Frequency (MHz)	A. P. (H/V)	LEVEL (dBm)	Limit (dBm)	Margin (dB)	Rate (Mbps)
125.79	H	-62.21	-36.00	-26.21	11
175.50	H	-65.47	-36.00	-29.47	11
202.17	H	-64.97	-36.00	-28.97	11
304.02	H	-63.70	-36.00	-27.70	11
405.87	H	-60.83	-36.00	-24.83	11
536.83	H	-61.88	-36.00	-25.88	11
37.27	V	-65.16	-36.00	-29.16	11
99.11	V	-65.24	-36.00	-29.24	11
125.79	V	-64.55	-36.00	-28.55	11
310.09	V	-62.98	-36.00	-26.98	11
411.94	V	-59.88	-36.00	-23.88	11
544.10	V	-61.31	-36.00	-25.31	11

Note:

- (1) A. P. means antenna polarization, horizontal and vertical.
 Amplitude means the fundamental emission measured
 C F. means Correct Factor, Rate means transmitter rate
 Corrected Factor (C. F.) = Cable Loss + Antenna Factor – Amplified Gain
 LEVEL = Amplitude + Corrected Factor
- (2) The margin is minus that means under limit.
- (3) The value of table is the worst case during test condition. This is including different combinations of transmitter rate antenna polarity and temperature.
- (4) ETSI (2400MHz~2483.5MHz),
 FRANCE outdoor use limited to 10mW e.i.r.p. within the band 2454MHz ~ 2483.5MHz

Channel 13 (30MHz to 1GHz)

Frequency (MHz)	A. P. (H/V)	LEVEL (dBm)	Limit (dBm)	Margin (dB)	Rate (Mbps)
125.79	H	-60.52	-36.00	-24.52	11
200.96	H	-65.04	-36.00	-29.04	11
301.60	H	-63.76	-36.00	-27.76	11
402.24	H	-59.58	-36.00	-23.58	11
530.76	H	-62.41	-36.00	-26.41	11
667.77	H	-65.75	-36.00	-29.75	11
56.67	V	-64.87	-36.00	-28.87	11
107.60	V	-64.85	-36.00	-28.85	11
200.96	V	-64.67	-36.00	-28.67	11
401.02	V	-60.52	-36.00	-24.52	11
533.19	V	-61.78	-36.00	-25.78	11
565.92	V	-65.39	-36.00	-29.39	11

Channel 1 (1GHz to 12.75GHz)

Frequency (MHz)	A. P. (H/V)	LEVEL (dBm)	Limit (dBm)	Margin (dB)	Rate (Mbps)
4823.27	H	-62.53	-30.00	-32.53	11
7235.97	H	-60.54	-30.00	-30.54	11
9648.68	H	-57.83	-30.00	-27.83	11
2279.17	V	-58.74	-30.00	-28.74	11
4823.27	V	-62.37	-30.00	-32.37	11
7235.97	V	-59.70	-30.00	-29.70	11
9648.68	V	-58.49	-30.00	-28.49	11

Channel 13 (1GHz to 12.75GHz)

Frequency (MHz)	A. P. (H/V)	LEVEL (dBm)	Limit (dBm)	Margin (dB)	Rate (Mbps)
2433.33	H	-57.96	-30.00	-27.96	11
4944.03	H	-63.76	-30.00	-33.76	11
7415.83	H	-61.75	-30.00	-31.75	11
9887.64	H	-59.59	-30.00	-29.59	11
2375.00	V	-58.28	-30.00	-28.28	11
4944.03	V	-63.26	-30.00	-33.26	11
7415.83	V	-59.92	-30.00	-29.92	11
9887.64	V	-58.42	-30.00	-28.42	11

5.2 Test Result of Adaptor#1 for Un-detachable antenna

Channel 1 (30MHz to 1GHz)

Frequency (MHz)	A. P. (H/V)	LEVEL (dBm)	Limit (dBm)	Margin (dB)	Rate (Mbps)
125.79	H	-60.85	-36.00	-24.85	11
197.32	H	-63.46	-36.00	-27.46	11
296.75	H	-64.17	-36.00	-28.17	11
394.96	H	-59.51	-36.00	-23.51	11
500.45	H	-63.04	-36.00	-27.04	11
534.40	H	-63.64	-36.00	-27.64	11
100.32	V	-63.28	-36.00	-27.28	11
127.00	V	-65.42	-36.00	-29.42	11
198.54	V	-65.16	-36.00	-29.16	11
394.96	V	-60.54	-36.00	-24.54	11
494.39	V	-63.74	-36.00	-27.74	11
525.91	V	-64.74	-36.00	-28.74	11

Channel 13 (30MHz to 1GHz)

Frequency (MHz)	A. P. (H/V)	LEVEL (dBm)	Limit (dBm)	Margin (dB)	Rate (Mbps)
125.79	H	-61.98	-36.00	-25.98	11
198.54	H	-64.13	-36.00	-28.13	11
296.75	H	-63.79	-36.00	-27.79	11
394.96	H	-60.19	-36.00	-24.19	11
501.66	H	-61.95	-36.00	-25.95	11
557.44	H	-63.91	-36.00	-27.91	11
107.60	V	-64.97	-36.00	-28.97	11
197.32	V	-65.35	-36.00	-29.35	11
393.75	V	-60.76	-36.00	-24.76	11
491.96	V	-63.90	-36.00	-27.90	11
556.23	V	-64.42	-36.00	-28.42	11
687.17	V	-65.90	-36.00	-29.90	11

Channel 1 (1GHz to 12.75GHz)

Frequency (MHz)	A. P. (H/V)	LEVEL (dBm)	Limit (dBm)	Margin (dB)	Rate (Mbps)
4823.27	H	-60.37	-30.00	-30.37	11
7235.97	H	-59.54	-30.00	-29.54	11
9648.68	H	-58.33	-30.00	-28.33	11
2309.37	V	-63.32	-30.00	-33.32	11
4825.84	V	-61.69	-30.00	-31.69	11
7235.97	V	-59.37	-30.00	-29.37	11
9651.25	V	-55.65	-30.00	-25.65	11

Channel 13 (1GHz to 12.75GHz)

Frequency (MHz)	A. P. (H/V)	LEVEL (dBm)	Limit (dBm)	Margin (dB)	Rate (Mbps)
4944.03	H	-64.76	-30.00	-34.76	11
7415.83	H	-60.92	-30.00	-30.92	11
9887.64	H	-59.09	-30.00	-29.09	11
2372.92	V	-61.79	-30.00	-31.79	11
4944.03	V	-64.26	-30.00	-34.26	11
7415.83	V	-59.92	-30.00	-29.92	11
9887.64	V	-57.26	-30.00	-27.26	11

5.3 Test Result of Adaptor#2 for Detachable antenna

Channel 1 (30MHz to 1GHz)

Frequency (MHz)	A. P. (H/V)	LEVEL (dBm)	Limit (dBm)	Margin (dB)	Rate (Mbps)
107.60	H	-64.75	-36.00	-28.75	11
198.54	H	-64.50	-36.00	-28.50	11
396.17	H	-63.37	-36.00	-27.37	11
501.66	H	-65.06	-36.00	-29.06	11
533.19	H	-64.14	-36.00	-28.14	11
561.08	H	-64.17	-36.00	-28.17	11
107.60	V	-61.02	-36.00	-25.02	11
125.79	V	-64.09	-36.00	-28.09	11
141.55	V	-68.75	-36.00	-32.75	11
300.39	V	-62.80	-36.00	-26.80	11
399.81	V	-58.55	-36.00	-22.55	11
563.50	V	-65.08	-36.00	-29.08	11

Channel 13 (30MHz to 1GHz)

Frequency (MHz)	A. P. (H/V)	LEVEL (dBm)	Limit (dBm)	Margin (dB)	Rate (Mbps)
70.01	H	-64.91	-36.00	-28.91	11
102.75	H	-65.44	-36.00	-29.44	11
198.54	H	-64.95	-36.00	-28.95	11
396.17	H	-62.93	-36.00	-26.93	11
501.66	H	-64.29	-36.00	-28.29	11
559.86	H	-64.89	-36.00	-28.89	11
37.27	V	-64.95	-36.00	-28.95	11
107.60	V	-61.38	-36.00	-25.38	11
125.79	V	-64.34	-36.00	-28.34	11
297.96	V	-62.78	-36.00	-26.78	11
396.17	V	-59.09	-36.00	-23.09	11
558.65	V	-65.52	-36.00	-29.52	11

5.4 Test Result of Adaptor#2 for Un-detachable antenna

Channel 1 (30MHz to 1GHz)

Frequency (MHz)	A. P. (H/V)	LEVEL (dBm)	Limit (dBm)	Margin (dB)	Rate (Mbps)
72.44	H	-65.23	-36.00	-29.23	11
163.37	H	-64.10	-36.00	-28.10	11
251.89	H	-66.49	-36.00	-30.49	11
294.32	H	-63.71	-36.00	-27.71	11
391.32	H	-62.71	-36.00	-26.71	11
501.66	H	-63.04	-36.00	-27.04	11
95.47	V	-59.61	-36.00	-23.61	11
125.79	V	-64.65	-36.00	-28.65	11
150.04	V	-60.81	-36.00	-24.81	11
197.32	V	-63.69	-36.00	-27.69	11
392.54	V	-63.19	-36.00	-27.19	11
490.75	V	-64.29	-36.00	-28.29	11

Channel 13 (30MHz to 1GHz)

Frequency (MHz)	A. P. (H/V)	LEVEL (dBm)	Limit (dBm)	Margin (dB)	Rate (Mbps)
76.07	H	-65.17	-36.00	-29.17	11
163.37	H	-66.01	-36.00	-30.01	11
251.89	H	-65.54	-36.00	-29.54	11
294.32	H	-64.06	-36.00	-28.06	11
390.11	H	-64.40	-36.00	-28.40	11
501.66	H	-63.32	-36.00	-27.32	11
51.83	V	-64.75	-36.00	-28.75	11
102.75	V	-61.01	-36.00	-25.01	11
125.79	V	-64.60	-36.00	-28.60	11
197.32	V	-63.64	-36.00	-27.64	11
393.75	V	-64.23	-36.00	-28.23	11
523.49	V	-64.78	-36.00	-28.78	11

VI. Section 5.3.2 : Receiver Spurious Emissions (Radiated)

6.1 Test Result of Adaptor#1 for Detachable antenna

Channel 1 (30MHz to 1GHz)

Frequency (MHz)	A. P. (H/V)	LEVEL (dBm)	Limit (dBm)	Margin (dB)	Rate (Mbps)
107.60	H	-64.10	-57.00	-7.10	11
305.24	H	-61.69	-57.00	-4.69	11
405.87	H	-59.75	-57.00	-2.75	11
506.51	H	-61.26	-57.00	-4.26	11
540.46	H	-58.73	-57.00	-1.73	11
573.20	H	-61.27	-57.00	-4.27	11
99.11	V	-64.85	-57.00	-7.85	11
306.45	V	-60.57	-57.00	-3.57	11
408.30	V	-58.65	-57.00	-1.65	11
476.20	V	-63.78	-57.00	-6.78	11
542.89	V	-61.74	-57.00	-4.74	11
610.79	V	-62.46	-57.00	-5.46	11

Note:

- (1) A. P. means antenna polarization, horizontal and vertical.
Amplitude means the fundamental emission measured.
C F. means Correct Factor, Rate means transmitter rate
Corrected Factor (C. F.) = Cable Loss + Antenna Factor – Amplified Gain
LEVEL = Amplitude + Corrected Factor
- (2) The value of table is worst case during test condition, includes different combinations of transmitter rate antenna polarity and temperature
- (3) ETSI (2400MHz~2483.5MHz),
FRANCE outdoor use limited to 10mW e.i.r.p. within the band 2454MHz ~ 2483.5MHz

Channel 13 (30MHz to 1GHz)

Frequency (MHz)	A. P. (H/V)	LEVEL (dBm)	Limit (dBm)	Margin (dB)	Rate (Mbps)
125.79	H	-61.97	-57.00	-4.97	11
251.89	H	-63.92	-57.00	-6.92	11
306.45	H	-60.92	-57.00	-3.92	11
408.30	H	-59.81	-57.00	-2.81	11
501.66	H	-63.01	-57.00	-6.01	11
542.89	H	-60.37	-57.00	-3.37	11
37.27	V	-64.86	-57.00	-7.86	11
306.45	V	-60.80	-57.00	-3.80	11
408.30	V	-59.16	-57.00	-2.16	11
515.00	V	-63.04	-57.00	-6.04	11
542.89	V	-61.56	-57.00	-4.56	11
610.79	V	-62.46	-57.00	-5.46	11

Channel 1 (1GHz to 12.75GHz)

Frequency (MHz)	A. P. (H/V)	LEVEL (dBm)	Limit (dBm)	Margin (dB)	Rate (Mbps)
1042.43	H	-64.31	-47.00	-17.31	11
1192.57	H	-63.84	-47.00	-16.84	11
1257.85	H	-64.36	-47.00	-17.36	11
1323.12	H	-62.11	-47.00	-15.11	11
1368.82	H	-61.29	-47.00	-14.29	11
4822.02	H	-58.90	-47.00	-11.90	11
1127.29	V	-64.01	-47.00	-17.01	11
1261.11	V	-63.71	-47.00	-16.71	11
1326.39	V	-63.29	-47.00	-16.29	11
1607.08	V	-64.49	-47.00	-17.49	11
4822.02	V	-59.90	-47.00	-12.90	11

Channel 13 (1GHz to 12.75GHz)

Frequency (MHz)	A. P. (H/V)	LEVEL (dBm)	Limit (dBm)	Margin (dB)	Rate (Mbps)
1062.01	H	-64.94	-47.00	-17.94	11
1130.56	H	-65.34	-47.00	-18.34	11
1326.39	H	-63.63	-47.00	-16.63	11
2285.97	H	-63.92	-47.00	-16.92	11
4942.78	H	-59.81	-47.00	-12.81	11
1042.43	V	-65.31	-47.00	-18.31	11
1195.83	V	-63.17	-47.00	-16.17	11
1326.39	V	-64.13	-47.00	-17.13	11
1483.05	V	-66.75	-47.00	-19.75	11
1629.93	V	-63.92	-47.00	-16.92	11

6.2 Test Result of Adaptor#1 for Un-detachable antenna

Channel 1 (30MHz to 1GHz)

Frequency (MHz)	A. P. (H/V)	LEVEL (dBm)	Limit (dBm)	Margin (dB)	Rate (Mbps)
125.79	H	-61.44	-57.00	-4.44	11
251.89	H	-65.75	-57.00	-8.75	11
306.45	H	-60.31	-57.00	-3.31	11
407.09	H	-58.42	-57.00	-1.42	11
501.66	H	-61.35	-57.00	-4.35	11
541.67	H	-63.00	-57.00	-6.00	11
56.67	V	-64.31	-57.00	-7.31	11
125.79	V	-64.93	-57.00	-7.93	11
308.87	V	-62.05	-57.00	-5.05	11
410.72	V	-58.45	-57.00	-1.45	11
501.66	V	-63.39	-57.00	-6.39	11
545.31	V	-61.25	-57.00	-4.25	11

Channel 13 (30MHz to 1GHz)

Frequency (MHz)	A. P. (H/V)	LEVEL (dBm)	Limit (dBm)	Margin (dB)	Rate (Mbps)
125.79	H	-62.05	-57.00	-5.05	11
304.02	H	-60.58	-57.00	-3.58	11
405.87	H	-58.16	-57.00	-1.16	11
501.66	H	-61.42	-57.00	-4.42	11
539.25	H	-62.60	-57.00	-5.60	11
831.46	H	-62.73	-57.00	-5.73	11
125.79	V	-64.90	-57.00	-7.90	11
305.24	V	-63.15	-57.00	-6.15	11
405.87	V	-59.22	-57.00	-2.22	11
501.66	V	-61.21	-57.00	-4.21	11
539.25	V	-61.75	-57.00	-4.75	11
573.20	V	-64.68	-57.00	-7.68	11

Channel 1 (1GHz to 12.75GHz)

Frequency (MHz)	A. P. (H/V)	LEVEL (dBm)	Limit (dBm)	Margin (dB)	Rate (Mbps)
1150.14	H	-61.67	-47.00	-14.67	11
1218.68	H	-63.84	-47.00	-16.84	11
1287.22	H	-61.31	-47.00	-14.31	11
1368.82	H	-62.96	-47.00	-15.96	11
1623.40	H	-64.60	-47.00	-17.60	11
1153.40	V	-64.84	-47.00	-17.84	11
1287.22	V	-62.31	-47.00	-15.31	11
1368.82	V	-63.79	-47.00	-16.79	11
1629.93	V	-64.09	-47.00	-17.09	11
2406.73	V	-62.58	-47.00	-15.58	11

Channel 13 (1GHz to 12.75GHz)

Frequency (MHz)	A. P. (H/V)	LEVEL (dBm)	Limit (dBm)	Margin (dB)	Rate (Mbps)
1042.43	H	-64.31	-47.00	-17.31	11
1150.14	H	-62.84	-47.00	-15.84	11
1218.68	H	-61.84	-47.00	-14.84	11
1283.96	H	-58.30	-47.00	-11.30	11
1368.82	H	-64.29	-47.00	-17.29	11
1042.43	V	-65.64	-47.00	-18.64	11
1146.87	V	-64.01	-47.00	-17.01	11
1280.69	V	-63.78	-47.00	-16.78	11
1368.82	V	-64.12	-47.00	-17.12	11
2406.73	V	-64.91	-47.00	-17.91	11

6.3 Test Result of Adaptor#2 for Detachable antenna

Channel 1 (30MHz to 1GHz)

Frequency (MHz)	A. P. (H/V)	LEVEL (dBm)	Limit (dBm)	Margin (dB)	Rate (Mbps)
70.01	H	-63.73	-57.00	-6.73	11
251.89	H	-64.52	-57.00	-7.52	11
411.94	H	-59.99	-57.00	-2.99	11
518.64	H	-62.67	-57.00	-5.67	11
582.90	H	-62.92	-57.00	-5.92	11
833.89	H	-63.49	-57.00	-6.49	11
102.75	V	-61.32	-57.00	-4.32	11
125.79	V	-63.74	-57.00	-6.74	11
308.87	V	-62.53	-57.00	-5.53	11
410.72	V	-60.60	-57.00	-3.60	11
546.52	V	-60.41	-57.00	-3.41	11
581.69	V	-62.83	-57.00	-5.83	11

Channel 13 (30MHz to 1GHz)

Frequency (MHz)	A. P. (H/V)	LEVEL (dBm)	Limit (dBm)	Margin (dB)	Rate (Mbps)
107.60	H	-63.77	-57.00	-6.77	11
306.45	H	-61.84	-57.00	-4.84	11
407.09	H	-62.12	-57.00	-5.12	11
540.46	H	-63.82	-57.00	-6.82	11
575.62	H	-63.43	-57.00	-6.43	11
676.26	H	-64.69	-57.00	-7.69	11
105.17	V	-61.12	-57.00	-4.12	11
125.79	V	-64.38	-57.00	-7.38	11
307.66	V	-61.40	-57.00	-4.40	11
409.51	V	-61.86	-57.00	-4.86	11
542.89	V	-61.22	-57.00	-4.22	11
576.84	V	-62.99	-57.00	-5.99	11

6.4 Test Result of Adaptor#2 for Un-detachable antenna**Channel 1 (30MHz to 1GHz)**

Frequency (MHz)	A. P. (H/V)	LEVEL (dBm)	Limit (dBm)	Margin (dB)	Rate (Mbps)
74.86	H	-64.30	-57.00	-7.30	11
168.22	H	-63.73	-57.00	-6.73	11
300.39	H	-62.15	-57.00	-5.15	11
401.02	H	-59.98	-57.00	-2.98	11
502.87	H	-59.43	-57.00	-2.43	11
567.14	H	-63.85	-57.00	-6.85	11
100.32	V	-60.90	-57.00	-3.90	11
301.60	V	-64.67	-57.00	-7.67	11
402.24	V	-61.03	-57.00	-4.03	11
502.87	V	-62.11	-57.00	-5.11	11
534.40	V	-63.13	-57.00	-6.13	11
701.73	V	-64.88	-57.00	-7.88	11

Channel 13 (30MHz to 1GHz)

Frequency (MHz)	A. P. (H/V)	LEVEL (dBm)	Limit (dBm)	Margin (dB)	Rate (Mbps)
168.22	H	-63.50	-57.00	-6.50	11
301.60	H	-61.23	-57.00	-4.23	11
307.66	H	-63.50	-57.00	-6.50	11
402.24	H	-62.08	-57.00	-5.08	11
501.66	H	-61.07	-57.00	-4.07	11
567.14	H	-64.76	-57.00	-7.76	11
99.11	V	-61.13	-57.00	-4.13	11
125.79	V	-63.90	-57.00	-6.90	11
301.60	V	-63.93	-57.00	-6.93	11
401.02	V	-61.83	-57.00	-4.83	11
501.66	V	-61.00	-57.00	-4.00	11
534.40	V	-63.96	-57.00	-6.96	11

6.5 Test Result of Standby mode

Adaptor#1 for Detachable antenna (30MHz to 12.5GHz)

Frequency (MHz)	A. P. (H/V)	LEVEL (dBm)	Limit (dBm)	Margin (dB)	Rate (Mbps)
125.79	H	-61.90	-57.00	-4.90	---
306.45	H	-60.62	-57.00	-3.62	---
408.30	H	-59.53	-57.00	-2.53	---
500.45	H	-63.68	-57.00	-6.68	---
542.89	H	-61.35	-57.00	-4.35	---
576.84	H	-64.20	-57.00	-7.20	---
678.69	H	-64.43	-57.00	-7.43	---
829.04	H	-63.47	-57.00	-6.47	---
1332.92	H	-62.65	-47.00	-15.65	---
3979.93	H	-61.42	-47.00	-14.42	---
37.27	V	-65.00	-57.00	-8.00	---
99.11	V	-65.55	-57.00	-8.55	---
306.45	V	-60.30	-57.00	-3.30	---
407.09	V	-58.69	-57.00	-1.69	---
513.79	V	-64.43	-57.00	-7.43	---
542.89	V	-62.00	-57.00	-5.00	---
610.79	V	-63.99	-57.00	-6.99	---
711.42	V	-66.04	-57.00	-9.04	---
1130.56	V	-63.84	-57.00	-6.84	---
2406.73	V	-64.74	-57.00	-7.74	---

Adaptor#1 for Un-detachable antenna (30MHz to 12.5GHz)

Frequency (MHz)	A. P. (H/V)	LEVEL (dBm)	Limit (dBm)	Margin (dB)	Rate (Mbps)
127.00	H	-62.56	-57.00	-5.56	---
251.89	H	-64.91	-57.00	-7.91	---
304.02	H	-60.26	-57.00	-3.26	---
404.66	H	-58.21	-57.00	-1.21	---
501.66	H	-61.46	-57.00	-4.46	---
539.25	H	-62.42	-57.00	-5.42	---
573.20	H	-64.34	-57.00	-7.34	---
673.84	H	-64.62	-57.00	-7.62	---
1300.28	H	-61.03	-57.00	-4.03	---
1642.99	H	-61.06	-57.00	-4.06	---
100.32	V	-64.87	-57.00	-7.87	---
125.79	V	-66.28	-57.00	-9.28	---
305.24	V	-63.55	-57.00	-6.55	---
405.87	V	-58.93	-57.00	-1.93	---
501.66	V	-62.90	-57.00	-5.90	---
539.25	V	-61.31	-57.00	-4.31	---
573.20	V	-64.82	-57.00	-7.82	---
906.61	V	-60.31	-57.00	-3.31	---
1293.75	V	-62.83	-57.00	-5.83	---
1368.82	V	-63.96	-57.00	-6.96	---

Adaptor#2 for Detachable antenna (30MHz to 12.5GHz)

Frequency (MHz)	A. P. (H/V)	LEVEL (dBm)	Limit (dBm)	Margin (dB)	Rate (Mbps)
102.75	H	-65.70	-57.00	-8.70	---
125.79	H	-62.16	-57.00	-5.16	---
203.39	H	-63.62	-57.00	-6.62	---
305.24	H	-61.21	-57.00	-4.21	---
408.30	H	-63.07	-57.00	-6.07	---
507.72	H	-60.65	-57.00	-3.65	---
574.41	H	-61.45	-57.00	-4.45	---
642.31	H	-64.20	-57.00	-7.20	---
711.42	H	-64.06	-57.00	-7.06	---
833.89	H	-62.92	-57.00	-5.92	---
102.75	V	-61.69	-57.00	-4.69	---
125.79	V	-65.77	-57.00	-8.77	---
205.81	V	-67.86	-57.00	-10.86	---
307.66	V	-58.06	-57.00	-1.06	---
410.72	V	-58.89	-57.00	-1.89	---
512.58	V	-62.10	-57.00	-5.10	---
542.89	V	-63.31	-57.00	-6.31	---
576.84	V	-62.78	-57.00	-5.78	---
614.42	V	-63.18	-57.00	-6.18	---
717.49	V	-65.27	-57.00	-8.27	---

Adaptor#2 for Un-detachable antenna (30MHz to 12.5GHz)

Frequency (MHz)	A. P. (H/V)	LEVEL (dBm)	Limit (dBm)	Margin (dB)	Rate (Mbps)
78.50	H	-65.26	-57.00	-8.26	---
93.05	H	-67.72	-57.00	-10.72	---
168.22	H	-65.18	-57.00	-8.18	---
250.67	H	-65.42	-57.00	-8.42	---
302.81	H	-60.59	-57.00	-3.59	---
402.24	H	-60.26	-57.00	-3.26	---
502.87	H	-61.68	-57.00	-4.68	---
569.56	H	-64.37	-57.00	-7.37	---
99.11	V	-60.71	-57.00	-3.71	---
127.00	V	-64.73	-57.00	-7.73	---
202.17	V	-66.45	-57.00	-9.45	---
304.02	V	-63.46	-57.00	-6.46	---
404.66	V	-60.39	-57.00	-3.39	---
502.87	V	-61.70	-57.00	-4.70	---
603.51	V	-64.42	-57.00	-7.42	---
702.94	V	-64.46	-57.00	-7.46	---

VII. Instrument and Ancillaries Equipment of List

No.	Type of Equipment	Brand Name	Model No.	Serial No.
01	EMI Receiver	H P	8546A	3520A00242
02	RF Filter Section	H P	85460A	3448A00217
03	Auto Switch Box	TRC	ASB-01	9904-01
04	Spectrum Analyzer	H P	8564E	3720A00840
05	Spectrum Analyzer	Anritsu	MS2665C	6200175476
06	Microwave Pre. Amp.	H P	84125C	US36433002
07	Horn Antenna	EMCO	3115	9104-3668
08	EM Rad. Monitor	WG	EMC-20	Y-0026
09	E-Field Sensor 3GHz	WG	TYP-8	Z-0001
10	RF Power Meter	BOONTON	4532	117501
11	Signal Generator	HP	83711A	3429A00434
12	Bi-log Antenna	Schaffner	CBL6141A	4151
13	Bi-log Antenna	CHASE	CBL6141A	4206
14	Temp.& Hum. Chamber	King Son	THS-ML1	240
15	EMC Analyzer	HP	8594EM	3710A00279
16	DC Power Supply	GW	GPC-3030D	8050381
17	AC Power Supply	Ch. Hong	CF-3000E	974302
18	Digital Multimeter	GW	GDM-8055	8080365
19	Small Bi-con. Ant.	Schwarzbeck	UBAA9114	127 (CE use)
20				128 (FCC use)

Appendix A

Brand name and Model name List

Brand Name	Model Name
TRENDware	TEW-230AP
TRENDware	TEW-230APB

Appendix B

Antenna Specification

RF Antenna Cable Assembly

Specification

1. Electrical Properties :

- 1.1 Frequency Rang..... 2.4GHz ~ 2.5GHz
- 1.2 Impedance 50 Ω Nominal
- 1.3 VSWR 1.92 Max.
- 1.4 Return Loss..... -10dB Maximum
- 1.5 Electrical Wave..... $1/2 \lambda$ Diople
- 1.6 Gain..... 1.8 dBi
- 1.7 Admitted Power..... 1W

2. Physical Properties :

- 2.1 Cable..... RG-178 Cable
- 2.2 Antenna Cover..... TPE
- 2.3 Antenna Base..... PC
- 2.4 Operating Temp. -20°C ~ +65°C
- 2.5 Storage Temp. -30°C ~ +75°C
- 2.6 Color Cool Gray 4C

RF Antenna Cable Assembly

Specification

1. Electrical Properties :

- 1.1 Frequency Rang.....2.4GHz ~ 2.5GHz
- 1.2 Impedance 50 Ω Nominal
- 1.3 VSWR 1.92 Max.
- 1.4 Return Loss..... -10dB Maximum
- 1.5 Electrical Wave..... 1/2 λ Diople
- 1.6 Gain..... 1.8 dBi
- 1.7 Admitted Power..... 1W

2. Physical Properties :

- 2.1 Cable..... RG-178 Cable
- 2.2 Antenna Cover..... TPE
- 2.3 Antenna Base..... PC
- 2.4 Operating Temp. -20 $^{\circ}$ C ~ +65 $^{\circ}$ C
- 2.5 Storage Temp. -30 $^{\circ}$ C ~ +75 $^{\circ}$ C
- 2.6 Color Cool Gray 4C
- 2.7 Connector..... SMA Plug Reverse Plated Gold