FCC TEST REPORT

for

47 CFR, Part 15, Subpart C

Equipment	:	Life Guard (Transmitter)
Model No.	:	TD1501-TX
FCC ID	:	PRATD1501-TX
Filing Type	:	Certification
Applicant	:	**TIDIN Electronics Corp.** 4F, No. 15, Tsin-Chou Road, Nei-Hu, Taipei, Taiwan, R.O.C.

- The test result refers exclusively to the test presented test model / sample.
- Without the written authorization of the test lab., the Test Report may not be copied.
- **Certificate or Test Report must not be used by the applicant to claim the product in this test report endorsement by NVLAP or any agency of U.S. government.**

SPORTON International Inc.

6F, No.106, Sec. 1, Hsin Tai Wu Rd., Hsi Chih, Taipei Hsien, Taiwan, R.O.C.

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Certificate No. : F160601

CERTIFICATE OF COMPLIANCE

for

47 CFR, Part 15, Subpart C

Equipment	:	Life Guard (Transmitter)
Model No.	:	TD1501-TX
FCC ID	:	PRATD1501-TX
Applicant	:	**TIDIN Electronics Corp.** 4F, No. 15, Tsin-Chou Road, Nei-Hu, Taipei, Taiwan, R.O.C.

I **HEREBY** CERTIFY THAT :

The measurements shown in this test report were made in accordance with the procedures given in **ANSI C63.4 - 1992** and the energy emitted by this equipment was ***passed*** both radiated and conducted emission limits. Testing was carried out on Jun. 20, 2001 at **SPORTON International Inc.** LAB. in Lin Kou.

K. J. Lin
Manager

SPORTON International Inc.

6F, No.106, Sec. 1, Hsin Tai Wu Rd., Hsi Chih, Taipei Hsien, Taiwan, R.O.C.

1. General Description of Equipment under Test

1.1. Applicant

TIDIN Electronics Corp.
4F, No. 15, Tsin-Chou Road, Nei-Hu, Taipei,
Taiwan, R.O.C.

1.2. Manufacturer

Same as 1.1.

1.3. Basic Description of Equipment under Test

Equipment	: Life Guard (Transmitter)
Model No.	: TD1501-TX
FCC ID	: PRATD1501-TX
Trade Name	: TIDIN
Power Supply Type	: Linear
AC Power Input	: Wall-mount, 2 pin
DC Power Cable	: Non-Shielded, 1.8m, 2 pin

1.4. Feature of Equipment under Test

- Channel Frequency (4 Channels): 2413 MHz, 2432 MHz, 2451 MHz, 2470 MHz
- Video Format: NTSC (EIA)/ PAL (CCIR)
- Transmission Power: ≤ 0dBm(1mW)
- Video Input Level: 1Vp-p@ 75Ω
- Audio Input Level: Electrets Condenser microphone ≤ -40dB
- Channel Spacing: 19MHz
- RF Channel Bandwidth: 16MHz
- Audio Carrier: 6.0MHz ± 10KHz
- Audio-Video Modulation Type: FM-FM
- Frequency Stability: ± 250KHz
- Current Consumption: ≤ 150mA

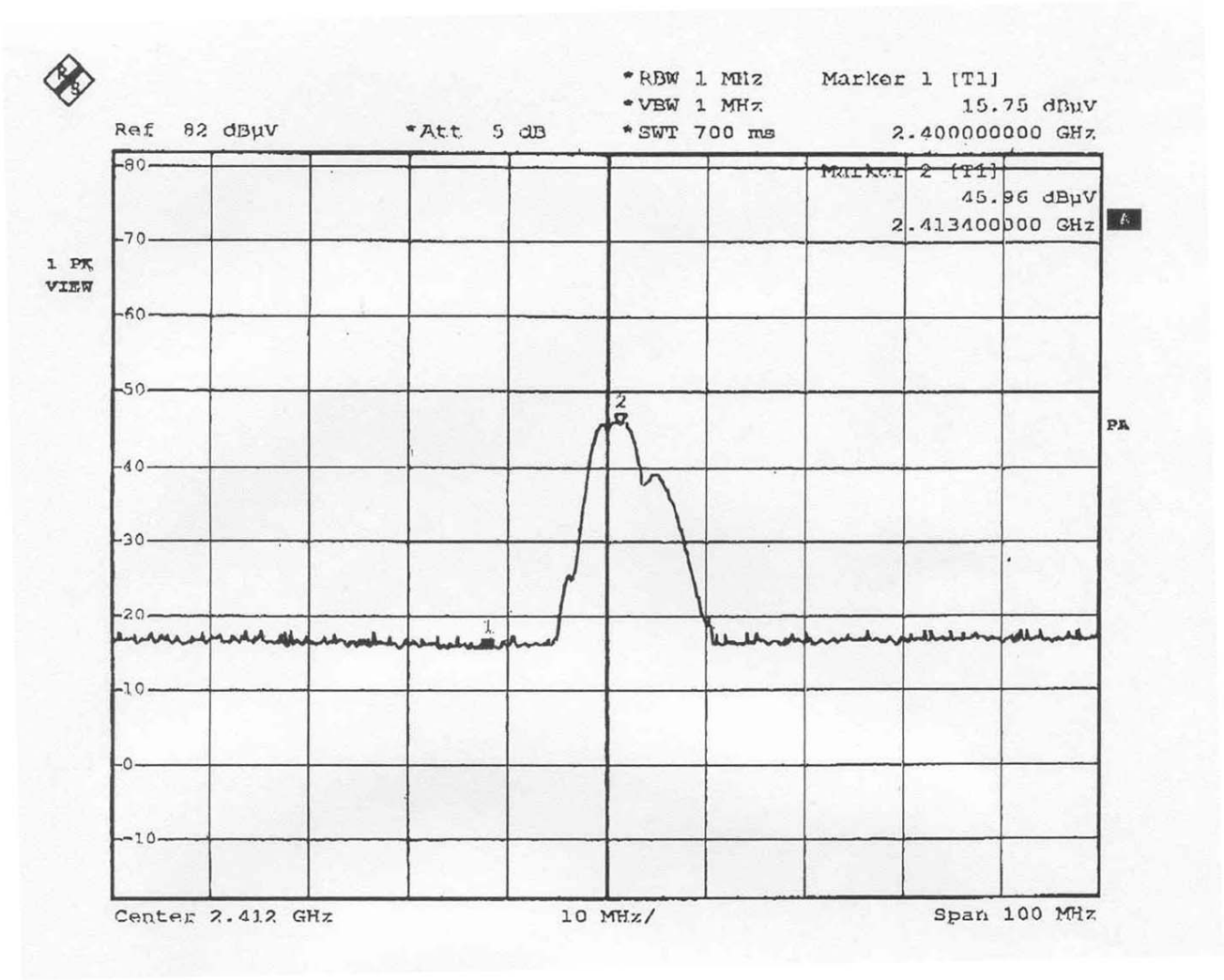
2. Test Configuration of Equipment under Test

2.1. Test Manner

a. The EUT has been configured and operated pursuant to ANSI C63.4-1992 in a manner which tended to maximize its emission characteristics in a typical application.
b. Frequency range investigated: conduction 450 KHz to 30 MHz, radiation 30 MHz to 25000MHz.
c. The EUT was tested alone. No support device is needed for testing.
d. During testing, the EUT kept transmitting signals.
e. According to 15.203 of FCC rule, the EUT is designed to ensure that no antenna other than that furnished with the EUT could be used. The antenna is permanently mounted on the EUT.
f. The EUT has four channels, 2413MHz, 2432MHz, 2451MHz, 2470MHz. The frequency range is more than 10 MHz. According to 15.31 (m) of FCC rule, channel 1 (2413MHz), channel 2 (2432MHz) and channel 4 (2470MHz) were tested.
g. The emissions test of channel 1 was made by rotating three orthogonal axes.(Normal mode, Horizontal mode, Vertical mode). The vertical mode was measured as the worst case. So vertical mode was used to perform the tests of channel 2 and channel 4.

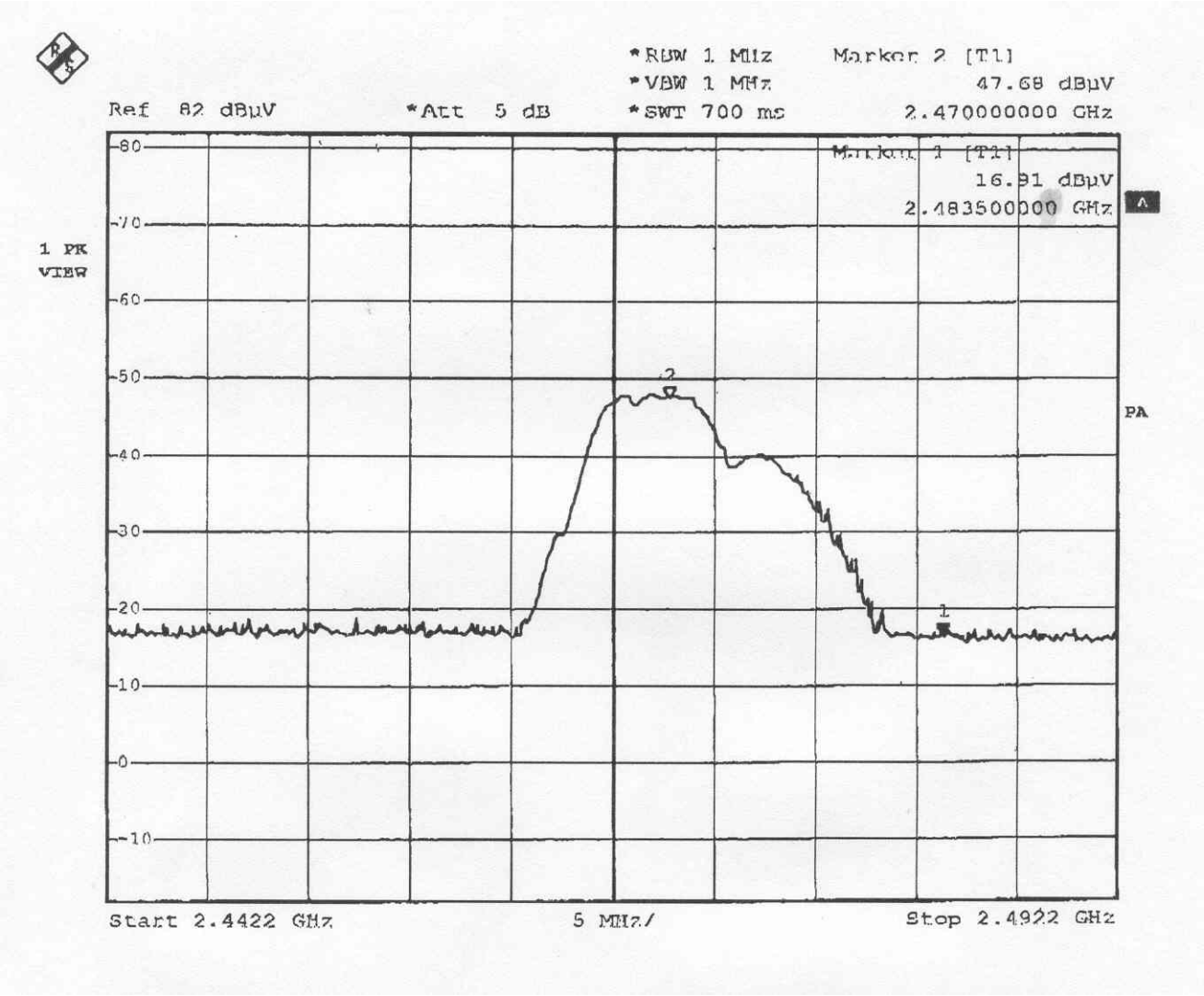
2.2. Band edges measurement

Channel 1:



Frequency (MHz)	Antenna Factor (dB/m)	Cable Loss (dB)	Reading (dBuV)	Limits (dBuV/m)	Limits (uV/m)	Emission Level (dBuV/m)	Emission Level (uV/m)	Margin (dB)
2400.00	29.06	6.36	15.75	54.00	501	51.17	361.83	-2.83

Channel 4:



Frequency (MHz)	Antenna Factor (dB/m)	Cable Loss (dB)	Reading (dBuV)	Limits (dBuV/m)	(uV/m)	Emission (dBuV/m)	Level (uV/m)	Margin (dB)
2483.50	29.27	6.48	16.91	54.00	501	52.66	429.54	-1.34

3. General Information of Test

3.1. Test Facility

This test was carried out by SPORTON International Inc.

Test Site Location : No. 30-2, Lin 6, Diing-Fwu Tsuen, Lin-Kou-Hsiang,
Taipei Hsien, Taiwan, R.O.C.
TEL : 886-2-2601-1640
FAX : 886-2-2601-1695

3.2. Standard for Methods of Measurement

ANSI C63.4-1992

3.3. Test in Compliance with

FCC Part 15, Subpart C

3.4. Frequency Range Investigated

a. Conduction: from 450 kHz to 30 MHz
b. Radiation : from 30 MHz to 25 GHz

3.5. Test Distance

The test distance of radiated emission from antenna to EUT is 3 M.

4. Test of Conducted Powerline

Conducted Emissions were measured from 450 kHz to 30 MHz with a bandwidth of 9 KHz on the 115 VAC power and return leads of the EUT according to the methods defined in ANSI C63.4-1992 Section 3.1. The EUT was placed on a nonmetallic stand in a shielded room 0.8 meters above the ground plane as shown in section 5.3. The interface cables and equipment positioning were varied within limits of reasonable applications to determine the position produced maximum conducted emissions.

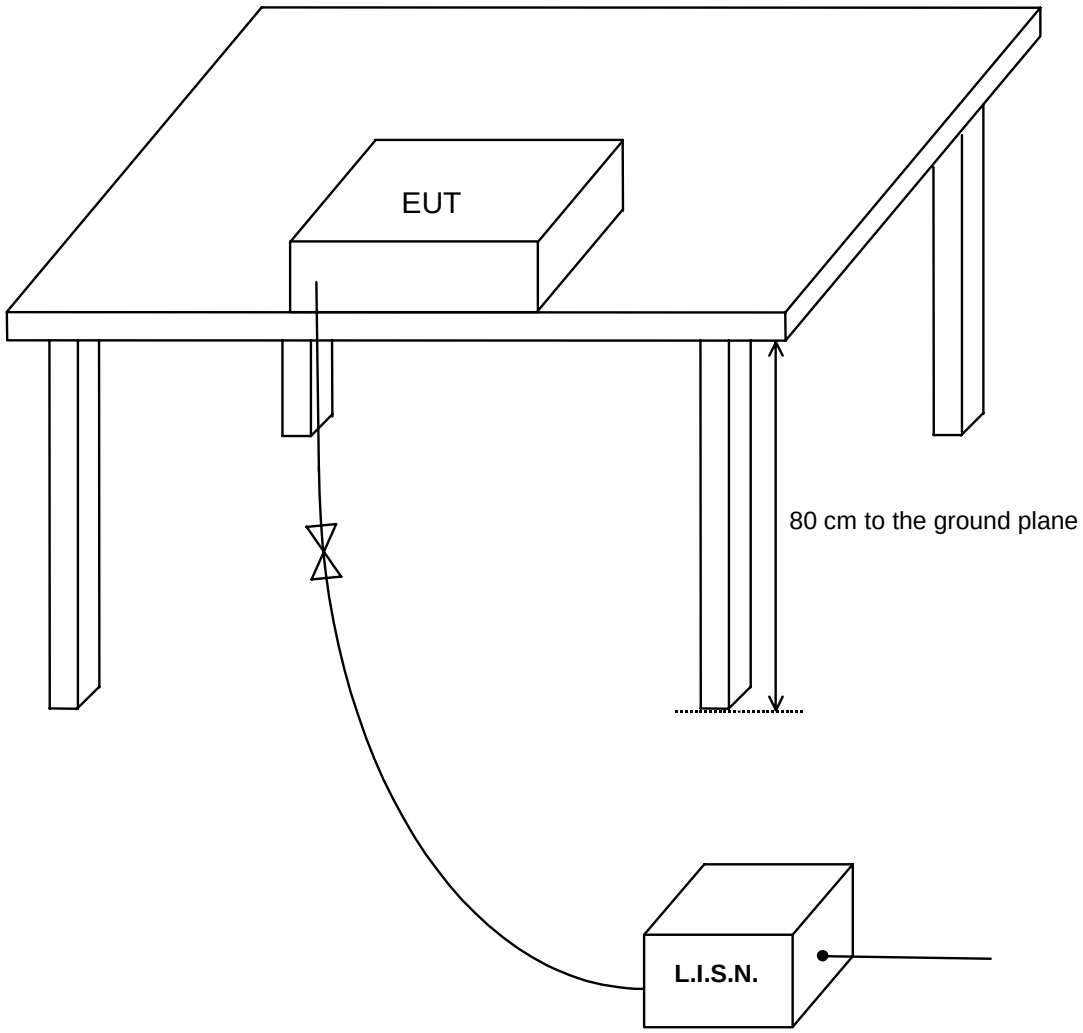
4.1. Major Measuring Instruments

Test Receiver	HP 8591EM
Attenuation	0 dB
Start Frequency	0.45 MHz
Stop Frequency	30 MHz
IF Bandwidth	9 kHz

4.2. Test Procedures

a. The EUT was placed 0.4 meter from the conducting wall of the shielding room was kept at least 80 centimeters from any other grounded conducting surface.
b. Connect EUT to the power mains through a line impedance stabilization network (LISN).
c. All the support units are connect to the other LISN.
d. The LISN provides 50 ohm coupling impedance for the measuring instrument.
e. The FCC states that a 50 ohm, 50 microhenry LISN should be used.
f. Both sides of AC line were checked for maximum conducted interference.
g. The frequency range from 450 kHz to 30 MHz was searched.
h. Set the test-receiver system to Peak Detect Function and Specified Bandwidth with Maximum Hold Mode.
i. If the emission level of the EUT in peak mode was 6 dB lower than the limit specified, then testing will be stopped and peak values of EUT will be reported, otherwise, the emissions which do not have 6 dB margin will be retested one by one using the quasi-peak method and reported.

4.3. Typical Test Setup Layout of Conducted Powerline



4.4. Test Result of AC Powerline Conducted Emission

- Frequency Range of Test : from 0.45 MHz to 30 MHz
- Temperature : 20°C
- Relative Humidity : 41 %
- Test Date : Jun. 20, 2001
- Test Mode: CHANNEL 1 (NORMAL Mode)

The Conducted Emission test was passed at minimum margin NEUTRAL 0.45 MHz / 42.90 dBuV.

Freq. (MHz)	Line/ Neutral	Meter Reading (dBuV)	Meter Reading (uV)	Limits (dBuV)	Limits (uV)	Margin (dB)
0.45	N	42.90	139.64	48.00	251.19	-5.10
0.70	N	33.40	46.77	48.00	251.19	-14.60
2.93	N	23.50	14.96	48.00	251.19	-24.50
8.00	N	25.20	18.20	48.00	251.19	-22.80
0.48	L	35.70	60.95	48.00	251.19	-12.30
0.78	L	35.40	58.88	48.00	251.19	-12.60

Test Engineer : _____
Aldrich Hong

- Frequency Range of Test : from 0.45 MHz to 30 MHz
- Temperature : 20°C
- Relative Humidity : 41 %
- Test Date : Jun. 20, 2001
- Test Mode: CHANNEL 1 (HORIZONTAL Mode)

The Conducted Emission test was passed at minimum margin NEUTRAL 0.45 MHz / 42.90 dBuV.

Freq. (MHz)	Line/ Neutral	Meter Reading (dBuV)	Meter Reading (uV)	Limits (dBuV)	Limits (uV)	Margin (dB)
0.47	L	34.50	53.09	48.00	251.19	-13.50
0.78	L	36.50	66.83	48.00	251.19	-11.50
0.45	N	42.90	139.64	48.00	251.19	-5.10
0.70	N	32.50	42.17	48.00	251.19	-15.50
2.93	N	24.00	15.85	48.00	251.19	-24.00
8.00	N	25.50	18.84	48.00	251.19	-22.50

Test Engineer : _____
Aldrich Hong

- Frequency Range of Test : from 0.45 MHz to 30 MHz
- Temperature : 20°C
- Relative Humidity : 41 %
- Test Date : Jun. 20, 2001
- Test Mode: CHANNEL 1 (VERTICAL Mode)

The Conducted Emission test was passed at minimum margin NEUTRAL 0.45 MHz / 42.30 dBuV.

Freq. (MHz)	Line/ Neutral	Meter Reading (dBuV)	Meter Reading (uV)	Limits (dBuV)	Limits (uV)	Margin (dB)
0.49	N	42.30	130.32	48.00	251.19	-5.70
0.78	N	36.00	63.10	48.00	251.19	-12.00
3.26	N	23.50	14.96	48.00	251.19	-24.50
0.47	L	34.40	52.48	48.00	251.19	-13.60
0.78	L	35.00	56.23	48.00	251.19	-13.00
3.94	L	23.50	14.96	48.00	251.19	-24.50

Test Engineer : _____
Aldrich Hong

- Frequency Range of Test : from 0.45 MHz to 30 MHz
- Temperature : 20°C
- Relative Humidity : 41 %
- Test Date : Jun. 20, 2001
- Test Mode: CHANNEL 2 (VERTICAL Mode)

The Conducted Emission test was passed at minimum margin NEUTRAL 0.47 MHz / 41.60 dBuV.

Freq. (MHz)	Line/ Neutral	Meter Reading (dBuV)	Meter Reading (uV)	Limits (dBuV)	Limits (uV)	Margin (dB)
0.48	L	35.20	57.54	48.00	251.19	-12.80
0.78	L	35.20	57.54	48.00	251.19	-12.80
3.52	L	23.20	14.45	48.00	251.19	-24.80
0.47	N	41.60	120.23	48.00	251.19	-6.40
0.77	N	35.80	61.66	48.00	251.19	-12.20
3.50	N	24.20	16.22	48.00	251.19	-23.80

Test Engineer : _____
Aldrich Hong

- Frequency Range of Test : from 0.45 MHz to 30 MHz
- Temperature : 20°C
- Relative Humidity : 41 %
- Test Date : Jun. 20, 2001
- Test Mode: CHANNEL 4 (VERTICAL Mode)

The Conducted Emission test was passed at minimum margin NEUTRAL 0.47 MHz / 41.80 dBuV.

Freq. (MHz)	Line/ Neutral	Meter Reading (dBuV)	Meter Reading (uV)	Limits (dBuV)	Limits (uV)	Margin (dB)
0.47	N	41.80	123.03	48.00	251.19	-6.20
0.77	N	35.70	60.95	48.00	251.19	-12.30
3.50	N	23.50	14.96	48.00	251.19	-24.50
0.46	L	36.60	67.61	48.00	251.19	-11.40
0.78	L	35.70	60.95	48.00	251.19	-12.30
3.81	L	24.10	16.03	48.00	251.19	-23.90

Test Engineer : _____
Aldrich Hong

5. Test of Radiated Emission

Radiated emissions from 30 MHz to 25 GHz were measured with a bandwidth of 120 kHz according to the methods defines in ANSI C63.4-1992. The EUT was placed on a nonmetallic stand in the open-field site, 0.8 meter above the ground plane, as shown in section 5.3. The interface cables and equipment positions were varied within limits of reasonable applications to determine the positions producing maximum radiated emissions.

5.1. Major Measuring Instruments

5.1.1. from 30MHz to 1GHz

- Amplifier (HP 87405A)
  - Attenuation 0 dB
  - RF Gain 20 dB
  - Signal Input 10 MHz to 3 GHz
- Spectrum Analyzer (HP 8560E)
  - Attenuation 0 dB
  - Start Frequency 30 MHz
  - Stop Frequency 1000 MHz
  - Resolution Bandwidth 1 MHz
  - Video Bandwidth 1 MHz
  - Signal Input 30 Hz to 2.9 GHz
- Test Receiver (R&S ESEC30)
  - Resolution Bandwidth 120 KHz
  - Frequency Band 9 KHz to 2.75 GHz
  - Quasi-Peak Detector ON for Quasi-Peak Mode
    OFF for Peak Mode

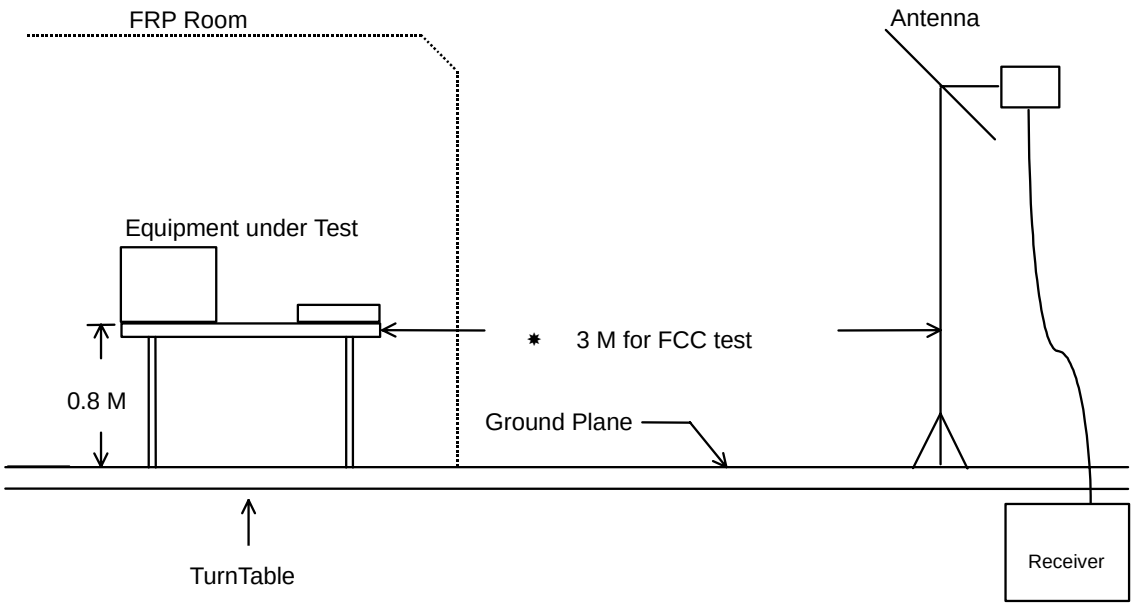
5.1.2. from 1GHz to 25GHz

- Spectrum (R&S FSP30)
  - Attenuation 10 dB
  - Start Frequency 1000 MHz
  - Stop Frequency 25GHz
  - Resolution Bandwidth 1 MHz
  - Video Bandwidth For peak mode: 1MHz
    For average mode: 300Hz
  - Signal Input 9 KHz to 30 GHz

5.2. Test Procedures

a. The EUT was placed on a rotatable table top 0.8 meter above ground.
b. The EUT was set 3 meters from the interference receiving antenna which was mounted on the top of a variable height antenna tower.
c. The table was rotated 360 degrees to determine the position of the highest radiation.
d. The antenna is a half wave dipole and its 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.
e. For each suspected emission the EUT was arranged to its worst case and then tune the antenna tower (from 1 M to 4 M) and turn table (from 0 degree to 360 degrees) to find the maximum reading.
f. Set the test-receiver system to Peak or CISPR quasi-peak Detect Function and specified bandwidth with Maximum Hold Mode.
g. If the emission level of the EUT in peak mode was 6 dB lower than the limit specified, then testing will be stopped and peak values of EUT will be reported, otherwise, the emissions which do not have 6 dB margin will be repeated one by one using the quasi-peak method and reported.

5.3. Typical Test Setup Layout of Radiated Emission



5.4. Test Result of Radiated Emission

5.4.1. Test mode : CHANNEL 1, NORMAL MODE

- Test Distance : 3 M
- Temperature : 26°C
- Relative Humidity : 58 %
- Test Date : Jun. 18, 2001
- Emission level (dBuV/m) = 20 log Emission level (uV/m)
- Corrected Reading : Antenna Factor + Cable Loss + Reading = Emission

The Radiated Emission test was passed at minimum margin
220.00 MHz / 35.68 dBuV (HORIZONTAL) Antenna Height 3 Meter, Turntable Degree 190 °.

- Spurious Emissions:

Frequency (MHz)	Polarity	Antenna Factor (dB/m)	Cable Loss (dB)	Reading (dBuV)	Limits (dBuV/m)	Limits (uV/m)	Emission Level (dBuV/m)	Emission Level (uV/m)	Margin (dB)	Detect Mode
220.00	V	9.54	2.20	23.10	46.00	200	34.84	55.21	-11.16	Peak
228.80	V	10.09	2.20	17.60	46.00	200	29.89	31.22	-16.11	Peak
800.80	V	19.91	4.50	3.50	46.00	200	27.91	24.86	-18.09	Peak
220.00	H	9.54	2.20	23.94	46.00	200	35.68	60.81	-10.32	Peak
228.80	H	10.09	2.20	19.94	46.00	200	32.23	40.88	-13.77	Peak
744.00	H	19.81	4.29	5.50	46.00	200	29.60	30.20	-16.40	Peak

- Field strength of fundamental and harmonics

Frequency (MHz)	Polarity	Antenna Factor (dB/m)	Cable Loss (dB)	Reading (dBuV)	Limits (dBuV/m)	Limits (uV/m)	Emission Level (dBuV/m)	Emission Level (uV/m)	Margin (dB)	Detect Mode
2413.00	V	29.10	6.38	48.36	114.00	501187	83.84	15559.66	-30.16	Peak
2413.00	V	29.10	6.38	41.99	94.00	50119	77.47	7473.09	-16.53	A.V.
2413.00	H	29.10	6.38	41.16	114.00	501187	76.64	6792.04	-37.36	Peak
2413.00	H	29.10	6.38	35.19	94.00	50119	70.67	3415.86	-23.33	A.V.
4826.00	H/V						-			Peak, A.V.
7239.00	H/V						-			Peak, A.V.
9685.00	H/V						-			Peak, A.V.
12065.00	H/V						-			Peak, A.V.
14478.00	H/V						-			Peak, A.V.
16891.00	H/V						-			Peak, A.V.
19304.00	H/V						-			Peak, A.V.
21717.00	H/V						-			Peak, A.V.
24130.00	H/V						-			Peak, A.V.

Remark " - ": The emission emitted by the EUT is too low to be measured except the emission listed above,

Test Engineer : _____
Benny Lee

5.4.2. Test mode : CHANNEL 1, HORIZONTAL MODE

- Test Distance : 3 M
- Temperature : 26°C
- Relative Humidity : 58 %
- Test Date : Jun. 18, 2001
- Emission level (dBuV/m) = 20 log Emission level (uV/m)
- Corrected Reading : Antenna Factor + Cable Loss + Reading = Emission

The Radiated Emission test was passed at minimum margin
220.00 MHz / 33.84 dBuV (VERTICAL) Antenna Height 1 Meter, Turntable Degree 80 °.

- Spurious Emissions:

Frequency (MHz)	Polarity	Antenna Factor (dB/m)	Cable Loss (dB)	Reading (dBuV)	Limits (dBuV/m)	Limits (uV/m)	Emission Level (dBuV/m)	Emission Level (uV/m)	Margin (dB)	Detect Mode
220.00	V	9.54	2.20	22.10	46.00	200	33.84	49.20	-12.16	Peak
228.80	V	10.09	2.20	17.60	46.00	200	29.89	31.22	-16.11	Peak
744.00	V	19.81	4.29	5.17	46.00	200	29.27	29.07	-16.73	Peak
220.00	H	9.54	2.20	20.27	46.00	200	32.01	39.86	-13.99	Peak
228.80	H	10.09	2.20	16.44	46.00	200	28.73	27.32	-17.27	Peak
744.80	H	19.83	4.29	5.84	46.00	200	29.96	31.48	-16.04	Peak

- Field strength of fundamental and harmonics

Frequency (MHz)	Polarity	Antenna Factor (dB/m)	Cable Loss (dB)	Reading (dBuV)	Limits (dBuV/m)	Limits (uV/m)	Emission Level (dBuV/m)	Emission Level (uV/m)	Margin (dB)	Detect Mode
2413.00	V	29.10	6.38	41.46	114.00	501187	76.94	7030.72	-37.06	Peak
2413.00	V	29.10	6.38	34.19	94.00	50119	69.67	3044.39	-24.33	A.V.
2413.00	H	29.10	6.38	41.38	114.00	501187	76.86	6966.27	-37.14	Peak
2413.00	H	29.10	6.38	33.99	94.00	50119	69.47	2975.09	-24.53	A.V.
4826.00	H/V						-			Peak, A.V.
7239.00	H/V						-			Peak, A.V.
9685.00	H/V						-			Peak, A.V.
12065.00	H/V						-			Peak, A.V.
14478.00	H/V						-			Peak, A.V.
16891.00	H/V						-			Peak, A.V.
19304.00	H/V						-			Peak, A.V.
21717.00	H/V						-			Peak, A.V.
24130.00	H/V						-			Peak, A.V.

Remark " - ": The emission emitted by the EUT is too low to be measured except the emission listed above,

Test Engineer : _____
Benny Lee

5.4.3. Test mode : CHANNEL 1, VERTICAL MODE

- Test Distance : 3 M
- Temperature : 26°C
- Relative Humidity : 58 %
- Test Date : Jun. 18, 2001
- Emission level (dBuV/m) = 20 log Emission level (uV/m)
- Corrected Reading : Antenna Factor + Cable Loss + Reading = Emission

The Radiated Emission test was passed at minimum margin
220.00 MHz / 36.34 dBuV (VERTICAL) Antenna Height 1 Meter, Turntable Degree 75 °.

- Spurious Emissions:

Frequency (MHz)	Polarity	Antenna Factor (dB/m)	Cable Loss (dB)	Reading (dBuV)	Limits (dBuV/m)	Limits (uV/m)	Emission Level (dBuV/m)	Emission Level (uV/m)	Margin (dB)	Detect Mode
200.40	V	8.32	2.20	14.94	43.50	150	25.46	18.75	-18.04	Peak
220.00	V	9.54	2.20	24.60	46.00	200	36.34	65.61	-9.66	Peak
228.80	V	10.09	2.20	23.60	46.00	200	35.89	62.30	-10.11	Peak
572.80	V	18.68	3.75	5.50	46.00	200	27.93	24.92	-18.07	Peak
220.00	H	9.54	2.20	20.60	46.00	200	32.34	41.40	-13.66	Peak
228.80	H	10.09	2.20	18.44	46.00	200	30.73	34.40	-15.27	Peak

- Field strength of fundamental and harmonics

Frequency (MHz)	Polarity	Antenna Factor (dB/m)	Cable Loss (dB)	Reading (dBuV)	Limits (dBuV/m)	Limits (uV/m)	Emission Level (dBuV/m)	Emission Level (uV/m)	Margin (dB)	Detect Mode
2413.00	V	29.10	6.38	44.09	114.00	501187	79.57	9517.00	-34.43	Peak
2413.00	V	29.10	6.38	37.29	94.00	50119	72.77	4350.11	-21.23	A.V.
2413.00	H	29.10	6.38	44.92	94.00	50119	80.40	10471.29	-13.60	A.V.
2414.00	H	29.10	6.38	52.07	114.00	501187	87.55	23850.64	-26.45	Peak
4826.00	H/V						-			Peak, A.V.
7239.00	H/V						-			Peak, A.V.
9685.00	H/V						-			Peak, A.V.
12065.00	H/V						-			Peak, A.V.
14478.00	H/V						-			Peak, A.V.
16891.00	H/V						-			Peak, A.V.
19304.00	H/V						-			Peak, A.V.
21717.00	H/V						-			Peak, A.V.
24130.00	H/V						-			Peak, A.V.

Remark " - ": The emission emitted by the EUT is too low to be measured except the emission listed above,

Test Engineer : _____
Benny Lee

5.4.4. Test mode : CHANNEL 2, VERTICAL MODE

- Test Distance : 3 M
- Temperature : 26°C
- Relative Humidity : 58 %
- Test Date : Jun. 18, 2001
- Emission level (dBuV/m) = 20 log Emission level (uV/m)
- Corrected Reading : Antenna Factor + Cable Loss + Reading = Emission

The Radiated Emission test was passed at minimum margin
220.00 MHz / 35.34 dBuV (VERTICAL) Antenna Height 1 Meter, Turntable Degree 70 °.

- Spurious Emissions:

Frequency (MHz)	Polarity	Antenna Factor (dB/m)	Cable Loss (dB)	Reading (dBuV)	Limits (dBuV/m)	Limits (uV/m)	Emission Level (dBuV/m)	Emission Level (uV/m)	Margin (dB)	Detect Mode
220.00	V	9.54	2.20	23.60	46.00	200	35.34	58.48	-10.66	Peak
228.80	V	10.09	2.20	21.27	46.00	200	33.56	47.64	-12.44	Peak
668.00	V	18.65	4.07	5.18	46.00	200	27.90	24.83	-18.10	Peak
744.00	V	19.81	4.29	3.84	46.00	200	27.94	24.95	-18.06	Peak
220.00	H	9.54	2.20	20.27	46.00	200	32.01	39.86	-13.99	Peak
228.80	H	10.10	2.20	16.59	46.00	200	28.89	27.83	-17.11	Peak

- Field strength of fundamental and harmonics

Frequency (MHz)	Polarity	Antenna Factor (dB/m)	Cable Loss (dB)	Reading (dBuV)	Limits (dBuV/m)	Limits (uV/m)	Emission Level (dBuV/m)	Emission Level (uV/m)	Margin (dB)	Detect Mode
2432.00	V	29.16	6.42	41.84	114.00	501187	77.42	7430.19	-36.58	Peak
2433.00	V	29.16	6.42	35.87	94.00	50119	71.45	3736.80	-22.55	A.V.
2432.00	H	29.16	6.42	50.08	114.00	501187	85.66	19186.69	-28.34	Peak
2432.00	H	29.16	6.42	45.67	94.00	50119	81.25	11547.82	-12.75	A.V.
4864.00	H/V						-			Peak, A.V.
4296.00	H/V						-			Peak, A.V.
9728.00	H/V						-			Peak, A.V.
12160.00	H/V						-			Peak, A.V.
14592.00	H/V						-			Peak, A.V.
17024.00	H/V						-			Peak, A.V.
19456.00	H/V						-			Peak, A.V.
21888.00	H/V						-			Peak, A.V.
24320.00	H/V						-			Peak, A.V.

Remark " - ": The emission emitted by the EUT is too low to be measured except the emission listed above,

Test Engineer : _____
Benny Lee

5.4.5. Test mode : CHANNEL 4, VERTICAL MODE

- Test Distance : 3 M
- Temperature : 26°C
- Relative Humidity : 58 %
- Test Date : Jun. 18, 2001
- Emission level (dBuV/m) = 20 log Emission level (uV/m)
- Corrected Reading : Antenna Factor + Cable Loss + Reading = Emission

The Radiated Emission test was passed at minimum margin
220.00 MHz / 57.41 dBuV (VERTICAL) Antenna Height 1 Meter, Turntable Degree 75 °.

- Spurious Emissions:

Frequency	Polarity	Antenna Factor	Cable Loss	Reading	Limits		Emission Level		Margin	Detect
(MHz)		(dB/m)	(dB)	(dBuV)	(dBuV/m)	(uV/m)	(dBuV/m)	(uV/m)	(dB)	Mode
200.40	V	8.32	2.20	14.27	43.50	150	24.79	17.36	-18.71	Peak
220.00	V	9.54	2.20	23.44	46.00	200	35.18	57.41	-10.82	Peak
228.80	V	10.09	2.20	20.94	46.00	200	33.23	45.87	-12.77	Peak
668.00	V	18.65	4.07	6.35	46.00	200	29.07	28.41	-16.93	Peak
220.00	H	9.54	2.20	20.94	46.00	200	32.68	43.05	-13.32	Peak
228.80	H	10.09	2.20	17.77	46.00	200	30.06	31.84	-15.94	Peak

- Field strength of fundamental and harmonics

Frequency (MHz)	Polarity	Antenna Factor (dB/m)	Cable Loss (dB)	Reading (dBuV)	Limits (dBuV/m)	Limits (uV/m)	Emission Level (dBuV/m)	Emission Level (uV/m)	Margin (dB)	Detect Mode
2470.00	V	29.22	6.45	41.04	114.00	501187	76.71	6846.99	-37.29	Peak
2470.00	V	29.22	6.45	37.82	94.00	50119	73.49	4726.07	-20.51	A.V.
2470.00	H	29.22	6.45	49.44	114.00	501187	85.11	18009.43	-28.89	Peak
2470.00	H	29.22	6.45	43.52	94.00	50119	79.19	9109.61	-14.81	A.V.
4940.00	H/V						-			Peak, A.V.
7410.00	H/V						-			Peak, A.V.
9880.00	H/V						-			Peak, A.V.
12350.00	H/V						-			Peak, A.V.
14820.00	H/V						-			Peak, A.V.
17290.00	H/V						-			Peak, A.V.
19760.00	H/V						-			Peak, A.V.
22230.00	H/V						-			Peak, A.V.
24700.00	H/V						-			Peak, A.V.

Remark: The emission emitted by the EUT is too low to be measured except the emission listed above,

Test Engineer : _____

6. EMI Suppression Component List

No. EMI suppression component.

7. Antenna Factor & Cable Loss

Frequency (Mhz)	Antenna Factor (dB)	Cable Loss (dB)
30	18.0	0.8
35	15.4	0.9
40	12.6	1.0
45	9.5	1.1
50	7.8	1.2
55	6.4	1.2
60	5.1	1.2
65	5.1	1.3
70	5.1	1.3
75	5.9	1.3
80	6.8	1.3
85	7.8	1.4
90	8.7	1.5
95	9.5	1.5
100	10.3	1.5
110	10.9	1.5
120	11.5	1.5
130	11.3	1.6
140	11.0	1.7
150	10.5	1.8
160	9.2	2.0
170	8.9	2.1
180	8.7	2.2
190	8.3	2.2
200	8.0	2.2
220	9.5	2.2
240	11.0	2.2
260	12.0	2.3
280	12.5	2.3
300	13.0	2.5
320	13.4	2.6
340	13.9	2.6
360	14.5	2.7
380	15.1	2.8
400	15.7	2.8
450	16.3	3.3
500	17.3	3.3
550	19.0	3.7
600	18.5	3.8
650	18.9	4.0
700	19.2	4.2
750	19.9	4.3
800	20.0	4.5
850	20.2	4.7
900	20.2	5.2
950	20.6	5.0
1000	21.0	5.2
2000	28.1	5.8
3000	30.3	7.2

8. List of Measuring Equipments Used

Instrument	Manufacturer	Model No.	Serial No.	Characteristics	Calibration Date	Remark
EMC Receiver (site 2)	HP	8591EM	3710A00187	9 KHz – 1.8 GHz	Sep. 16. 2000	Conduction
LISN (Support Unit) (site 2)	AFJ	AFJ LT32	32030012050	50 ohm / 50 uH	May 29, 2001	Conduction
LISN (EUT) (site 2)	Telemeter	NNB-2/16Z	98081	50 ohm / 50 uH	Dec. 06, 2000	Conduction
Spectrum Analyzer (Site 6)	HP	8560E	3728A03186	9KHz – 2.6GHz	Sep. 15, 2000	Radiation
Receiver (Site 6)	R&S	ESCS30	847793/003	9 K – 2.75 GHz	Dec. 27, 2000	Radiation
Amplifier (Site 6)	HP	87405A	3207A01437	100K - 3GHz	Aug. 03, 2000	Radiation
Bilog Antenna (Site 6)	CHASE	CBL6112A	2442	30MHz -2GHz	Jun. 23, 2000	Radiation
Half-wave dipole antenna (Site 6)	EMCO	3121C	9705-1285	28 M - 1GHz	May 16, 2001	Radiation
Turn Table (site 6)	EMCO	2080	9711-2021	0 ~ 360 degree	N/A	Radiation
Antenna Mast (site 6)	EMCO	2075	9711-2115	1 m- 4 m	N/A	Radiation
Spectrum	R&S	FSP30	100024	9KHz~30GHz	Mar..31, 2001	Radiation
Horn Antenna	EMCO	3115	4976	1GHz~18GHz	Jun. 21, 2000	Radiation

※ Calibration Interval of instruments listed above is one year.

9. Uncertainty of Test Site

Uncertainty of Conducted Emission Measurement

Contribution	Probability Distribution	150KHz – 30MHz
Cable and I/P attenuator calibration	normal(k=2)	±0.3
RCV/SPA specification	rectangular	±2.5
LISN coupling specification	rectangular	±1.5
Transducer factor frequency interpolation	rectangular	±0.2
Mismatch Receiver VSWR Γ1=0.09 LISN VSWR Γ2=0.33 Uncertainty=20log(1-Γ1*Γ2)	U-shaped	0.2
combined standard uncertainty Ue(y)	**normal**	**±1.7**
Measuring uncertainty for a level of confidence of 95% U=2Ue(y)	**normal (k=2)**	**±3.4**

$U=\sqrt{\{(0.3/2)^2 +(2.5^2+1.5^2+0.2^2)/3+(0.2)^2/2\}}=1.7$

Uncertainty of Radiated Emission Measurement

Contribution	**Probability Distribution**	3m	10m
Antenna factor calibration	normal(k=2)	±1.6	±1.6
cable loss calibration	normal(k=2)	±0.3	±0.3
RCV/SPA specification	rectangular	±2.5	±2.5
Antenna Directivity	rectangular	±3	±0.5
Antenna Factor V.S. Height	rectangular	±2	±2
Antenna Factor Interpolation for Frequency	rectangular	±0.25	±0.25
site imperfection	rectangular	±2	±2
Mismatch Receiver VSWR Γ1=0.09 Antenna VSWR Γ2=0.67 Uncertainty=20log(1-Γ1*Γ2)	U-shaped	±0.54	±0.54
combined standard uncertainty Ue(y)	**normal**	**±2.9**	**±2.4**
Measuring uncertainty for a level of confidence of 95% U=2Ue(y)	**normal (k=2)**	**±5.8**	**±4.8**

$U=\sqrt{\{(1.6/2)^2+(0.3/2)^2+(3^2+0.5^2+2^2+0.25^2+2^2)/3+(0.54)^2/2\}}=2.4$ for 10m test distance

$U=\sqrt{\{(1.6/2)^2+(0.3/2)^2+(3^2+3^2+2^2+0.25^2+2^2)/3+(0.54)^2/2\}}=2.9$ for 3m test distance