



JAPAN QUALITY ASSURANCE ORGANIZATION
21-25, KINUTA 1-CHOME, SETAGAYA-KU, TOKYO 157, JAPAN
PHONE (03) 3416-0111, TELE 242-2511 FAX 1144 (03) 3416-9691



JQA APPLICATION NO.: 80-80475

FCC ID : N7U-ERFOLG1
Sheet 2 of 13 sheets

REPORT OF MEASUREMENTS

FCC ID : N7U-ERFOLG1

JQA APPLICATION NO.: 80-80475

Date : November 26, 1993
Issue in : Tokyo, Japan

1. Applicant

: Techunit Co., Ltd.
Techunit Bldg. 6-17-2, Kameido,
Koto-ku 136-0071, Japan

2. Manufacturer

: Integrated Display Technology International Ltd.
41, Man Yue Street Kaiser Estate 9/F Block C
Hung Hom, Kowloon, Hong Kong

3. Description of Equipment

: LOVEGEITY
(Transceiver)

- a) FCC ID : N7U-ERFOLG1
- b) Trade Name : ERFOLG
- c) Model No. : LOVEGEITY II-1
- d) Operating Frequency : 315 MHz
- e) Tuning Frequency : 300 MHz
- f) Power Supply : 3 VDC

4. Applicable Rule

: FCC Rules & Regulations Part 15
Subpart B&C (June 23, 1989)

5. Place of Measurement

: JQA EMC Engineering Dept.

6. Date of Measurement

: November 13, 1993 (Completed)

7. Total Pages of This Report : 13 (including this page)

8. I certify that I am authorized to sign for the report and that all the statement in this report and in the exhibits hereto are true and correct to the best my knowledge and belief.

Shigeo Osawa
Shigeo Osawa, Assistant Manager
Testing Div.
EMC Engineering Dept.

[Transmitter portion]

1. Transmitter Fundamental and Spurious Emission: [§15.231(b)]

Measurement Method Employed:

Measurements were made under the conditions specified ANSI C63.4. The transmitter under test was operated continuously in its normal operating mode for the purpose of the measurements. In order to secure the continuous operation of the device under test, rewiring in the circuit was down by the manufacturer so as to affect its intended operation. The receiving antenna polarized horizontally was varied from 1 to 4 meters and the wooden turntable was rotated 360 degrees to obtain the highest reading on the field strength meter or on the display of the spectrum analyzer. And also, each emission was to be maximized by changing the orientation of the transmitter under test. The device was tested three orthogonal planes. These measurements were repeated with the receiving antenna polarized vertically.

Measurement Results:

Operating Frequency : 315 MHz
Distance of Measurement : 3.0 meters

Frequency (MHz)	Antenna Factor (dB)	Amp. Gain (dB)	Meter Reading		Field Strength	
			Horiz. (dB/uv)	Vert. (dB/uv)	Horiz. (uv/m)	Vert. (uv/m)
Fundamental						
315	23.0	-	43.6	42.5	2138.0	1883.6
Harmonic Frequency						
630	31.2	-	15.8	15.8	223.9	223.8
945	36.6	-	3.3	4.7	98.9	116.1
1260	26.7	-	< 10.0	< 10.0	< 68.5	< 68.5
1575	29.5	-	< 10.0	< 10.0	< 94.4	< 94.4
1890	31.1	-	< 10.0	< 10.0	< 114.1	< 114.2
2205	33.0	46.8	< 52.0	< 52.0	< 81.0	< 81.0
2520	33.8	46.8	< 52.0	< 52.0	< 89.2	< 89.2
2835	35.2	46.8	< 52.0	< 52.0	< 104.9	< 104.9
3150	36.4	46.7	< 52.0	< 52.0	< 121.5	< 121.5

Note: 1. The spectrum was checked from 30 MHz to tenth harmonics.
All emissions not listed were found to be more than 20 dB below the limits.

2. The symbol of "<" means "or less".

3. The cable loss was included in the antenna factor.

4. Sample calculation :
at 315 MHz

$$10(Af+Mr)/20 = 10(23.0+43.6)/20 = 2138.0 \text{ uV/m}$$

Where,

Af = Antenna Factor including the cable loss.

Mr = Meter Reading

6. Measuring Instrument Setting:

Field Strength Meter: (<1000 MHz)

Detector function : CISPR Quasi-Peak

IF Bandwidth : 120 kHz

Spectrum Analyzer: (>1000 MHz)

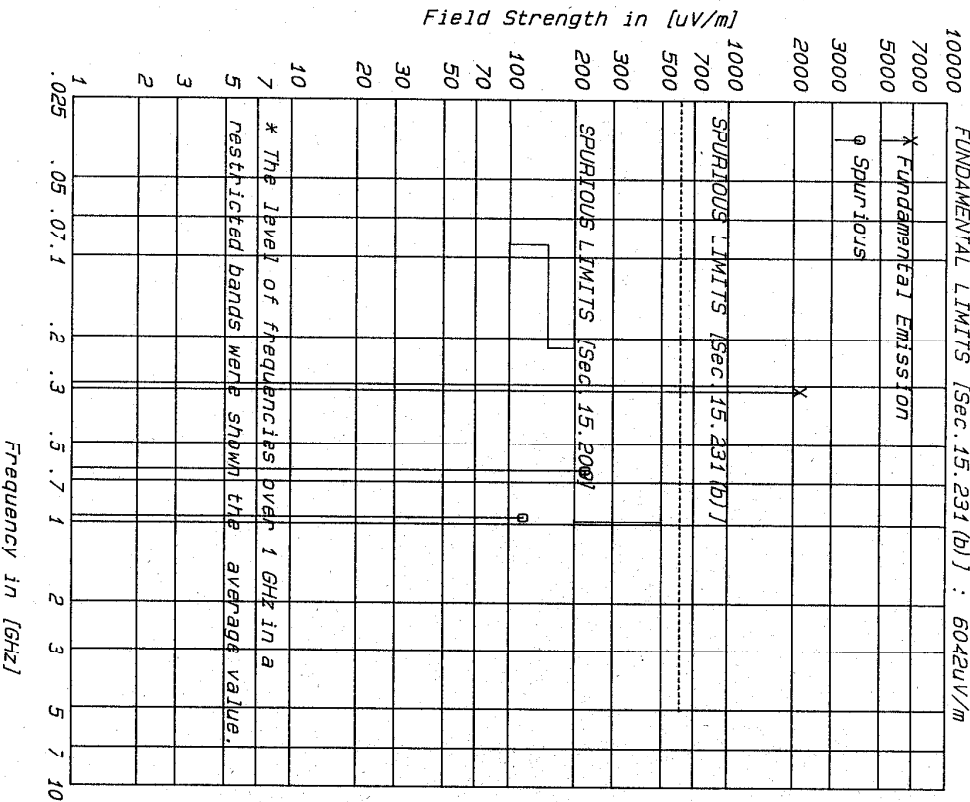
Detector function : Peak

Resolution Bandwidth : 1 MHz

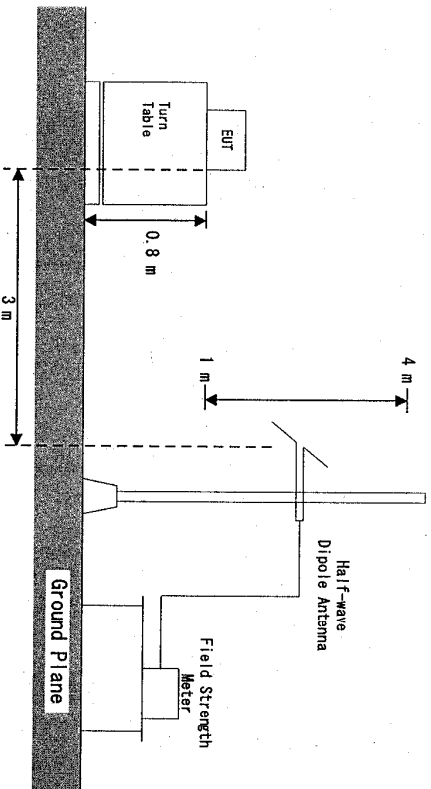
Radiated Fundamental & Spurious Emissions

FCC ID : N7U-ERFOLG1
Operating Frequency : 315 MHz

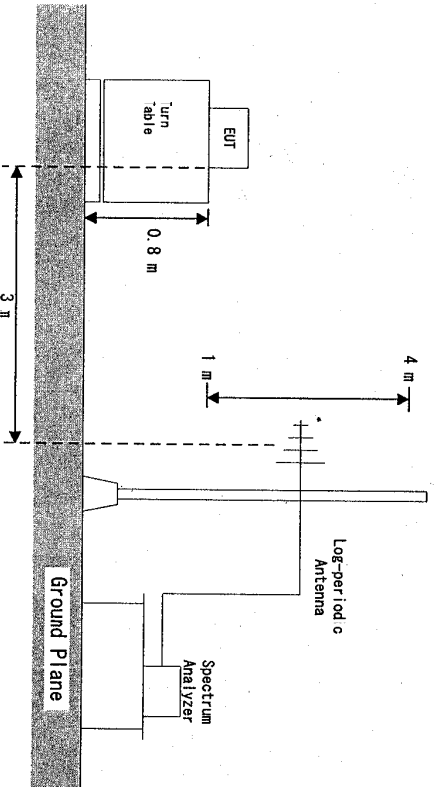
FUNDAMENTAL LIMITS [Sec.15.231(b)] : 6042uV/m



MEASUREMENT SET-UP FOR UP TO 1 GHz



MEASUREMENT SET-UP FOR ABOVE 1 GHz



2. Emission Limitation: [§13.231(c)]

Measurement Method Employed: By using a spectrum analyzer with a vertical antenna for picking up the signal, the measurements of the fundamental frequency were made under the following transmitting modes of the EUT.

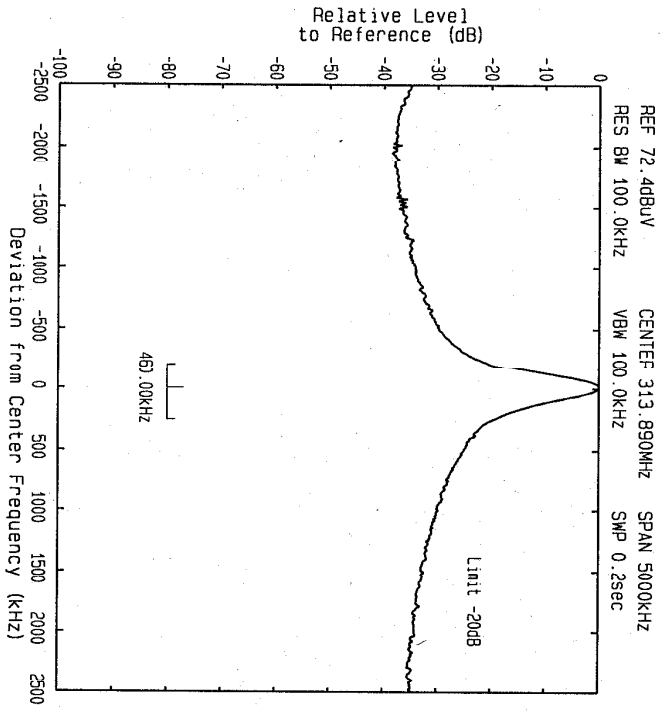
Measurements Results:-

Specified limits: 0.25 % of the Fundamental Frequency
 $3.5 \text{ MHz} \times 0.0025 = 787.5 \text{ kHz}$
 Refer to the attached graphs.

Emission Limitation

FCC ID : N7U-ERFOLG1
Model : LOVEGETY II-1

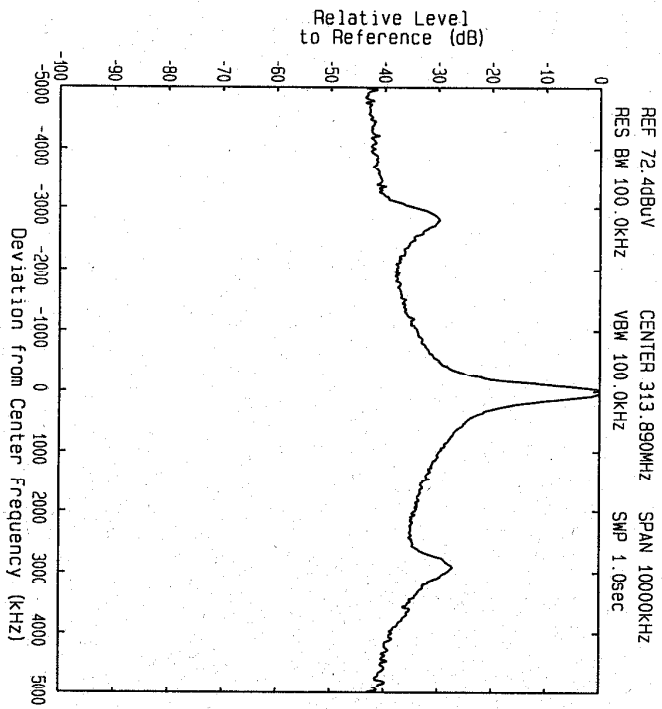
Mode of EUT : Transmit



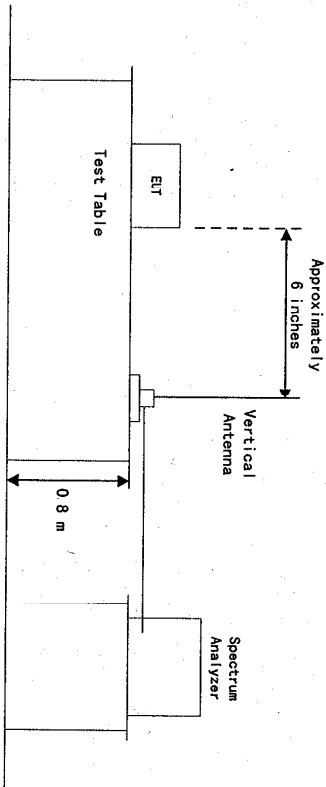
Emission Limitation

FCC ID : N7U-ERFOLG1
Model : LOVEGETY II-1

Mode of EUT : Transmit



MEASUREMENT SET-UP FOR BAND WIDTH



[Receiver portion]

3. Radiated Spurious Emissions: [§15.109(a)]

Measurement Method Employed:

Measurements were made under the conditions specified ANSI C63.4. The field strength measurements of the equipment under test were made at the distance of 3 meters away from the device which was placed on the wooden turntable 0.8 meter in height. The receiving antenna polarized horizontally was varied from 1 to 4 meters and the wooden turntable was rotated through 360 degrees to obtain the highest reading on the field strength meter. The device was tested three orthogonal planes. These measurements were repeated with the receiving antenna polarized vertically.

Measurement Results:

Tuning Frequency : 300 MHz
Distance of Measurement : 3.0 meters

Frequency (MHz)	Antenna Factor (dB)	Meter Reading (dB/μV)		Field Strength at 3 m (μV/m)	
		Horizontal	Vertical	Horizontal	Vertical
299.330	22.4	16.2	13.3	85.1	61.0
500.000	28.1	< -5.0	< -5.0	< 14.3	< 14.3
700.000	32.6	< -5.0	< -5.0	< 24.0	< 24.0
1000.000	37.4	< -5.0	< -5.0	< 41.7	< 41.7

Note: 1. The spectrum was checked from 30 MHz to 1000 MHz

All emissions not listed were found to be more than 20 dB below the limits.

2. The symbol of "<" means "or less".

3. The cable loss was included in the antenna factor.

4. Sample calculation :

At 299.330 MHz

$$10(AfMr)/20 = 10(22.4+16.2)/20 = 85.1 \text{ } \mu\text{V/m}$$

Where,

Af = Antenna Factor including the cable loss.

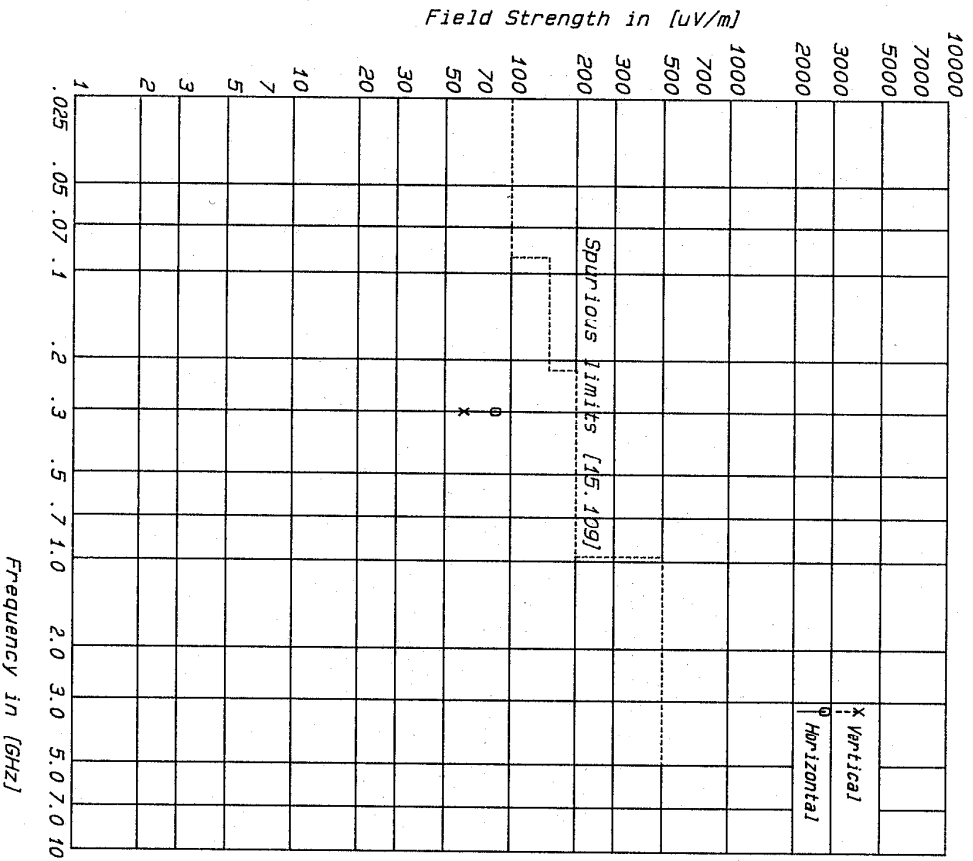
Mr = Meter Reading

6. Measuring Instrument Setting:

Detector function : CISPR quasi-peak
IF Bandwidth : 120 KHz

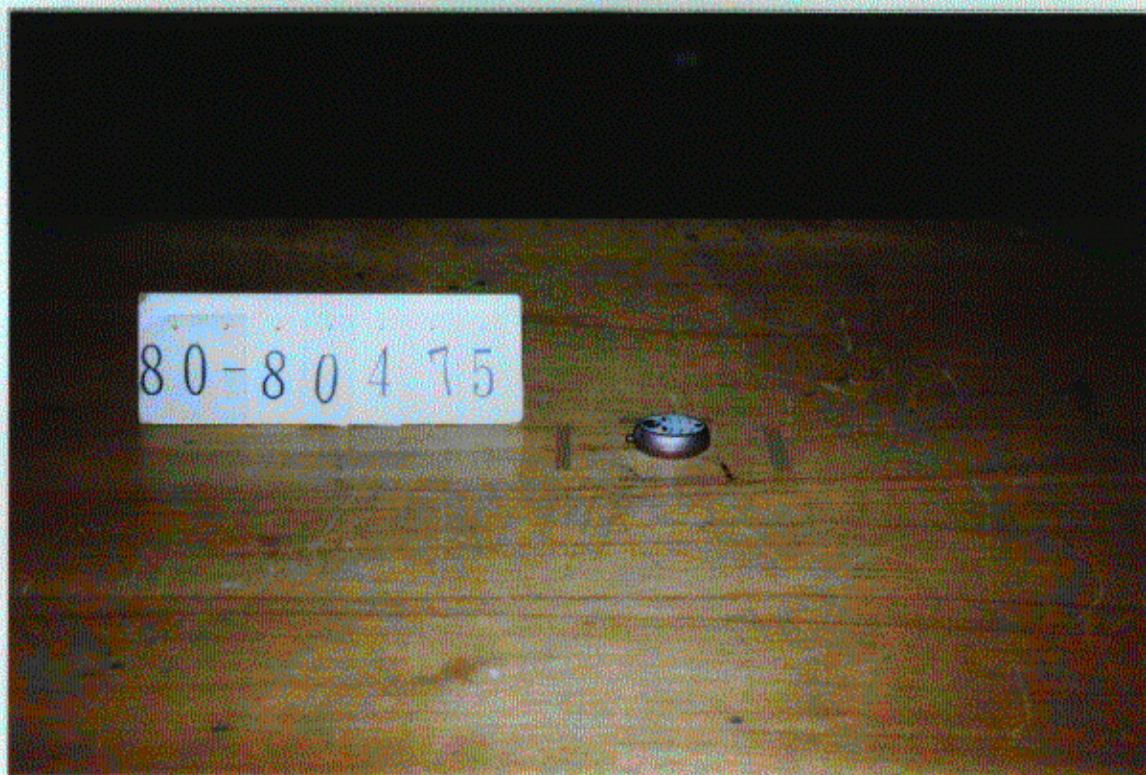
Radiated Spurious Emission Measurement

RX FCC ID : None
Tuning Frequency: 300.000 MHz

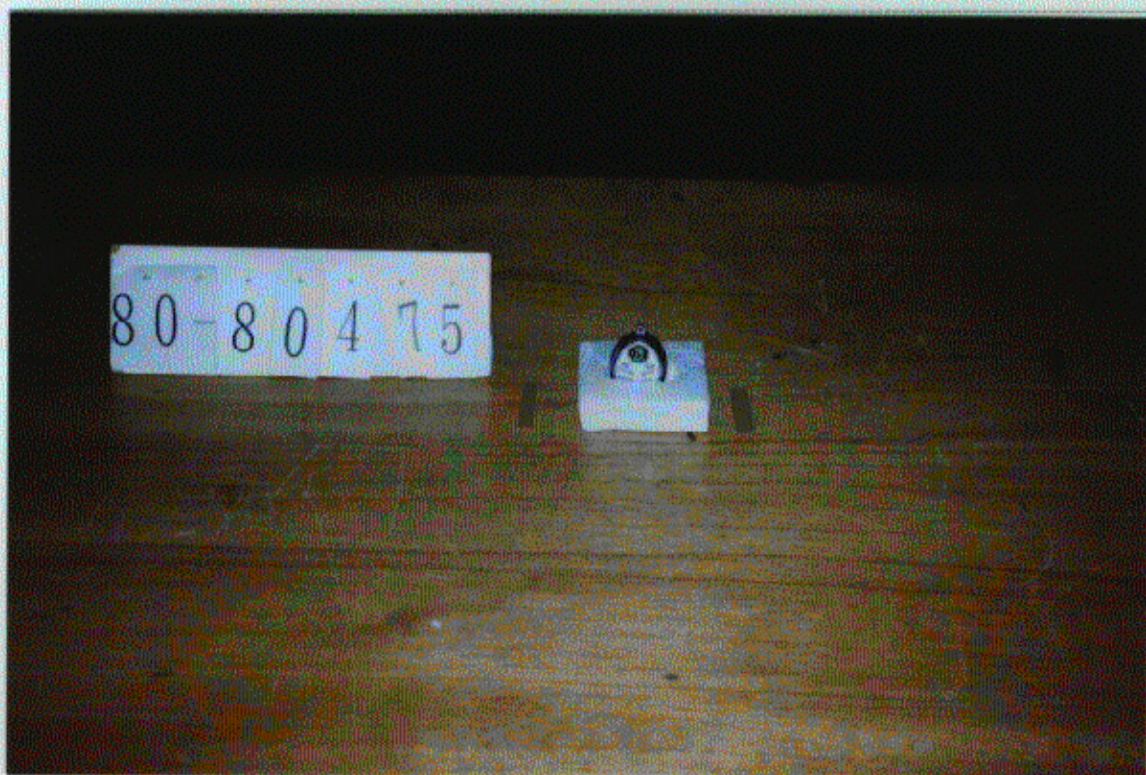


LIST OF MEASUREMENT EQUIPMENT

Equipment (Model No.)	Manufacturer	Date of Cal.
1. Field Strength Meter		
ESVP	Rohde & Schwarz	May 1998
2. Spectrum Analyzer		
8566B	Hewlett Packard Inc.	April 1998
3. Tuned Dipole Antenna		
KBA-511	Kyoritsu Electrical Works	November 1998
KBA-611	Kyoritsu Electrical Works	November 1998
4. Vertical Antenna		
91972-2	Stoddard Aircraft Radio Co., Ltd.	-
5. Log-periodic Antenna		
HL 025	Rohde & Schwarz	November 1998



for Horizontal Plane



for Vertical Plane