

Measurement Report

Product: **49MHz WALKIE TALKIE (TX)**
Manufacture: **WANG TUNG LIMITED.**
FCC ID: **N54WTCOL98TX**
Model: **LT#**
Report No.: **MLT9808P15005**
Test Date: **AUG.28,1998**

Test By

Max Light Technology Co.,Ltd.

*Room 5, 8F, No.125, Section 3 Roosevelt Road,
Taipei, Taiwan., R.O.C.*

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MAX LIGHT

MEASUREMENT REPORT

Page: 2

Table of Contents :

<i>I. General</i>	-----
<i>4.</i>	-----
<i>II. Conducted Emissions Requirements</i>	-----
<i>9.</i>	-----
<i>III. Radiated Emissions Requirements</i>	-----
<i>13.</i>	-----
<i>IV. Emissions Within Band Edges Measurement</i>	-----
<i>15.</i>	-----
<i>Appendix I (EUT Test Setup)</i>	-----
<i>17.</i>	-----



CERTIFICATION

We here by verify that :

The test data, data evaluation, test procedures and equipment configurations shown in this report were made in accordance with the procedures given in ANSI C63.4-1992. All test were conducted by *MLT (Max Light Technology Co.,Ltd) Room 5, 8F, No.125, Section 3 Roosevelt Road, Taipei, 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 Class B conducted and radiated emission limit of FCC Rules Part 15 Subpart C Section 15.235.

EUT : 49MHz WALKIE TALKIE (TX)

Applicant : WANG TUNG LIMITED.
Flat 4, 7F, Block A, Hong Kong
Industrial Centre, 489 Castle Peak Road,
Kowloon, Hong Kong

Manufacturer : WANG TUNG LIMITED.
Flat 4, 7F, Block A, Hong Kong
Industrial Centre, 489 Castle Peak Road,
Kowloon, Hong Kong

Model No : LT#



MAX LIGHT

MEASUREMENT REPORT

Page: 4

FCC ID

: N54WTCOL98TX

Prepared by : Country Country Approved by : Roger
Country Roger Chen
Huang

I. GENERAL

1.1 Introduction

The following measurement report is submitted on behalf of WANG TUNG LIMITED. In support of an Intentional Periodic Radiator certification in accordance with Part2 Subpart J and Part 15 Subpart A And C of the Commission's Rules and Regulations.

1.2 Description of EUT

EUT : 49MHz WALKIE TALKIE (TX)

Applicant : WANG TUNG LIMITED..
Flat 4, 7F, Block A, Hong Kong
Industrial Centre, 489 Castle Peak Road,
Kowloon, Hong Kong

Manufacturer : WANG TUNG LIMITED..
Flat 4, 7F, Block A, Hong Kong
Industrial Centre, 489 Castle Peak Road,
Kowloon, Hong Kong

Model No : LT#

FCC ID : N54WTCOL98TX

Power Type : 9.0 V/DC("6F22" Size Battery x 1)

Report Number: MLT9808P15005

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MAX LIGHT

MEASUREMENT REPORT

Page: 5

Frequency : 49.86MHz

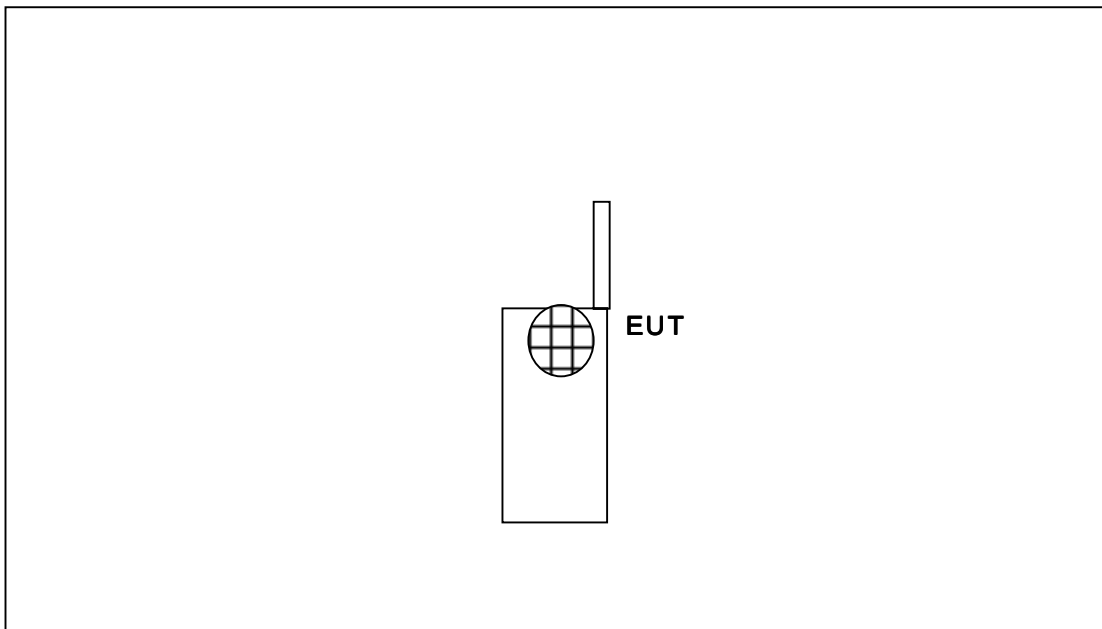
The EUT(LT#) is 49MHz Walkie Talkie product. The operation frequency is 49.86MHz. While testing the EUT was adjusted at a position which transmit the maximum.

1.3 Description of Support Equipment

In order to construct the minimum system which required by the ANSI C63.4-1991, following equipments were used as the support units.

N/A

1.4 Configuration of System Under Test



During testing the EUT(49MHz Walkie Talkie (TX))'s Talk Button is pushed so RF out continuously from the EUT.



1.5 Test Procedure

All measurements contained in this report were performed according to the techniques described in Measurement procedure ANSI C63.4-1992 "Measurement of Intentional Radiators."

1.6 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 was 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.



II. Conducted Emissions Requirements

The EUT operates solely by the battery. According to the rule of Section 15.207(c), the EUT exempt to the power line conducted test.



III. Radiated Emissions Requirements

3.1 General & Setup :

Prior to open-field testing, the EUT was placed in a shielded enclosure and scanned at a close distance to determine its emission characteristics. The physical arrangement of the EUT 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, directivity, and frequency. The exact system configuration which produced the highest emissions was noted so it could be reproduced later during the open-field tests. This was done to ensure that the final measurements would demonstrate the worst-case interference potential of the EUT. Final radiation measurements were made on a three-meter, open-field test site. The EUT system was placed on a nonconductive turntable which is 0.8 meters height, top surface 1.0 x 1.5 meter. The spectrum was examined from 30 MHz to 1000 MHz using an Hewlett Packard 8591EM Spectrum Analyzer, EMCO Biconical Antenna (Model 3142) for 30-1000MHz. At each frequency, the EUT was rotated 360 degrees, and the antenna was raised and lowered from one to four meters to find the maximum emission levels. Measurements were taken using both horizontal and vertical antenna polarization. Appropriate preamplifiers were used for improving sensitivity and precautions were taken to avoid overloading or desensitizing the spectrum analyzer. No post-detector video filters were used in the test. The spectrum analyzer's 6 dB bandwidth was set to 120 KHz, and the analyzer was operated in the quasi-peak detection mode. The highest emission amplitudes relative to the appropriate limit were measured and recorded in paragraph 3.6.

3.2 Test Equipment List:

- A. HP 8591EM 9KHz-1.8GHz Spectrum Analyzer (S/N:73412A00230)
- B. HP 8447D Pre Amplifier (S/N:2944A08954)
- C. EMCO 3142 Biconilog Antenna (S/N:1184)
- D. HP 8590A 10KHz-1.5GHz Spectrum Analyzer (S/N:5212A000211)
- E. HP 9872B Plotter (S/N:20447A03436)

3.3 Test Configuration:



Front View of The Test Configuration



MAX LIGHT

MEASUREMENT REPORT

Page: 11



Rear View of The Test Configuration



3.4 Test condition:

EUT tested in accordance with the specifications given by the manufacturer , and exercised in the most unfavorable manner. During the testing,the highest and lowest frequency were measured under the conditions that the EUT was considered likely to encounter in normal use.

3.5 Radiated Emissions Limits:

<i>Frequency range (MHz)</i>	<i>Peak(dBuV)</i>
30 to 88	40
88 to 216	43.5
216 to 960	46
Above 960	54

3.6 Measurement Data Of Radiated Emissions:

3.6.1 Open Field Radiated Emissions

The highest peak values of radiated emissions from the EUT at various antenna heights, antenna polarization, EUT orientation , etc. are recorded on the following

Manufacturer : WANG TUNG LIMITED.
 Model No : LT#
 EUT : 49MHZ WALKIE TALKIE (TX)

Radiated Emissions (HORIZONTAL)					
Frequency (MHz)	Amplitude (dBuV/m)	Ant. (m)	Table (Degree)	Limits(Class B) (dBuV/m)	Margin (dB)
49.86	72.56	2	30	80	-7.44
99.81	34.87	2	320	43.5	-8.63
149.63	36.12	1.5	360	43.5	-7.38
249.35	32.54	2	340	46	-13.46
299.12	33.63	1.5	300	46	-12.37
348.87	32.09	2	360	46	-13.91
448.55	33.60	1.5	360	46	-12.40
498.32	32.98	2	300	46	-13.02
543.17	32.76	2.5	360	46	-13.24
598.23	31.55	2	360	46	-14.45

Notes : 1.Margin= Amplitude - Limits
 2.Distance of Measurement : 3 Meter (30-1000MHz)
 3.Height of table for EUT placed: 0.8 Meter.
 4.ANT= Antenna height.



MAX LIGHT

MEASUREMENT REPORT

Page: 14

5.Amplitude= Reading Amplitude –Amplifier gain+Cable loss
+Antenna factor
(Auto calculate in spectrum analyzer)

3.6.2 Open Field Radiated Emissions (Lowest operation frequency)

The highest peak values of radiated emissions from the EUT at various antenna heights, antenna polarization, EUT orientation , etc. are recorded on the following.

Manufacturer : WANG TUNG LIMITED.
Model No : LT#
EUT : 49MHZ WALKIE TALKIE (TX)

Radiated Emissions (VERTICAL)					
Frequency (MHz)	Amplitude (dBuV/m)	Ant. (m)	Table (Degree)	Limits(Class B) (dBuV/m)	Margin (dB)
49.86	77.56	1	360	80	-2.44
99.81	36.76	1	360	43.5	-6.74
149.63	38.91	1.5	320	43.5	-4.59
249.35	35.56	1	320	46	-10.44
299.12	37.65	1.5	360	46	-8.35
348.87	35.09	1	0	46	-10.91
448.55	37.09	1	360	46	-8.91
498.32	36.90	1	30	46	-9.10
543.17	37.21	1	360	46	-8.79
598.23	35.75	1	360	46	-10.25

Notes : 1.Margin= Amplitude - Limits
2.Distance of Measurement : 3 Meter (30-1000MHz)
3.Height of table for EUT placed: 0.8 Meter.
4.ANT= Antenna height.

5.Amplitude= Reading Amplitude –Amplifier gain+Cable loss
+Antenna factor
(Auto calculate in spectrum analyzer)

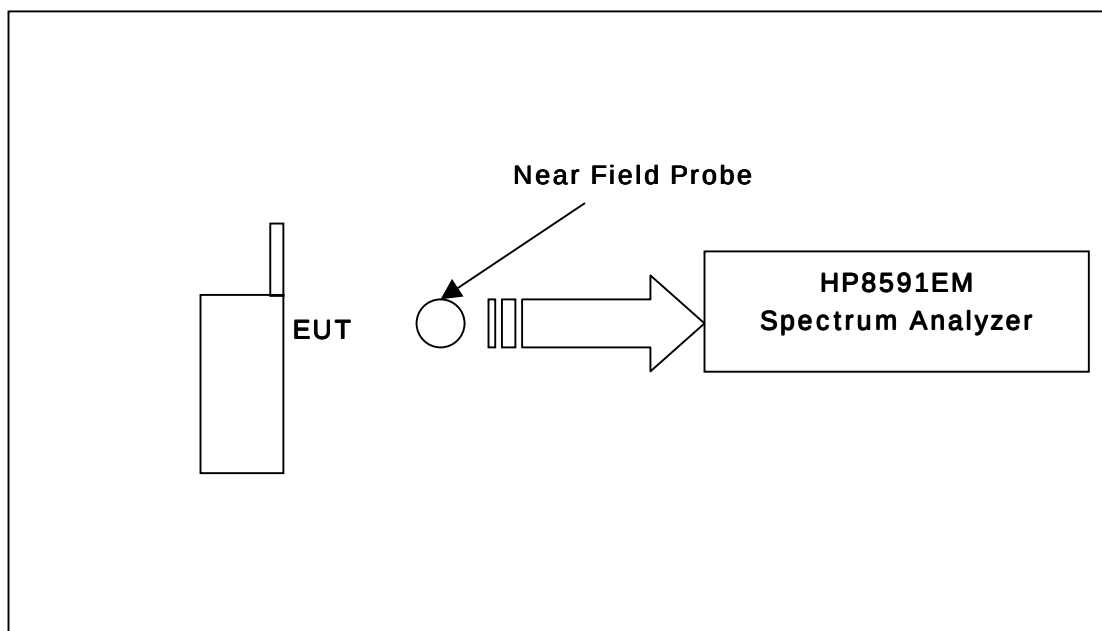
IV. Emission Within Band Edges Measurement

4.1 Test Condition & Setup :

The transmitter bandwidth measurements were performed in a shielded enclosure. The EUT was placed on a wooded table which is 0.8 meters height and a near field probe was used at a distance about 20 cm for receiving. While testing, EUT was set to transmit continuously.

The resolution bandwidth of the spectrum analyzer was set to 10KHz. The detector function was set to peak and hold mode to clearly observe the components.

4.2 Test Instruments Configuration:



4.3 Test Equipment List:

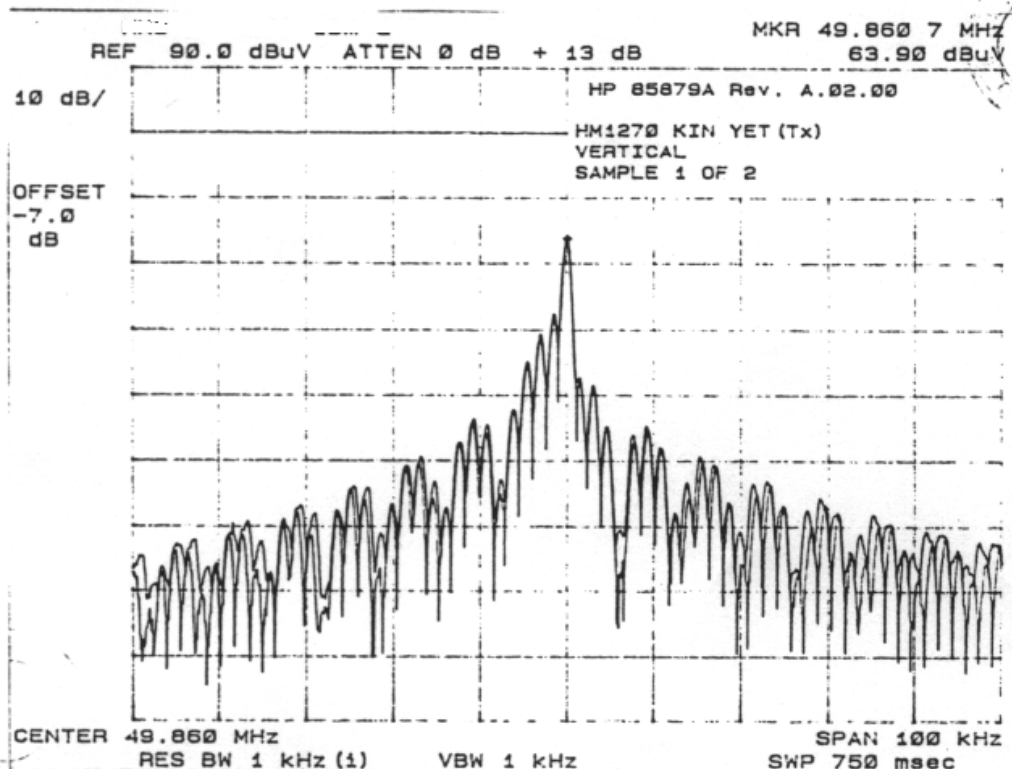
- A. EMCO Near Field Probe (S/N:7901-291)
- B. HP 8591EM 9KHZ-1.8GHz Spectrum Analyzer (S/N:73412A00110)
- C. Shielded Room (MLT-SR1)

4.4 Test Result and Notes:

<i>Fundamental Emission</i>	
FCC Lower Band Edge	49.820 MHz
FCC Higher Band Edge	49.900 MHz
Unmodulated carrier at frequency	49.860 MHz
No. of dB from unmodulated carrier	63.90 dB

PS. Fcc Limit: Minimum No. of dB from unmodulated carrier required: 26.0 dB.

4.5 Test Graphs:



Appendix I- EUT Test SETUP

MEASUREMENT OF RADIATED EMISSION

