

Report No.	M1215946
Specifications	FCC Part 15 - Notification
Test Method	ANSI C63.4 1992
Applicant address	NO. 85, CHANG HSING FIRST STREET, TAI-TZU VILLAGE JEN-TE HSIAN, TAINAN HSIEN , TAIWAN
Applicant Items tested	WA-GOL INDUSTRIAL CO., LTD WIRELESS MICROPHONE RECEIVER
Model No.	MR-H06A
Results	As detailed within this report
Sample received date	02 / 26 /1998 (month / day / year )
Prepared by	<u>Stephen Chen</u> project engineer
Authorized by	<u>Jacob Lin</u> Vice General Manager (Jacob Lin )
Issue date	<u>Apr. 3, 1998</u> (month / day / year )
<b>Modifications</b>	<b>None</b>
Tested by	Training Research Co., Ltd.
Office at	2F, No. 571, Chung Hsiao E. Road, Sec.7, Taipei, Taiwan
Open site at	No. 5-3, Lane 21, Yen Chiu Yuan Rd., Sec.4, Taipei Taiwan

**Conditions of issue:**

- (1). **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.**
- (2). **This report must not be used by the client to claim product endorsement by NVLAP or nay agency of U.S. Government.**

★ FCC ID : JEBMR-H06B

# Contents

## Chapter 1 Introduction

Description of EUT.....	3
Configuration of Test Setup.....	4
List of Support Equipment.....	5

## Chapter 2 Conducted Emission Test

Test Condition and Setup.....	6
Conducted Test Placement.....	7

## Chapter 3 Radiated Emission Test

Test Condition and Setup.....	8
.Radiated Test Placement.....	9

## Appendix A :

Conducted test result.....	10
----------------------------	----

## Appendix B :

Radiated test result .....	13
----------------------------	----

## ***Chapter 1 Introduction***

### ***Description of EUT :***

These products are professionally designed wireless microphone and receiver system made-up of diverse circuit. It can receive one frequency between 174 MHz and 216 MHz. This microphone is worn by a performer and other participants in a program, filming , reporting .....etc.

### ***Connection of EUT :***

- (1)Connect the EUT's audio output to guitar amplifier by an audio cable .
- (2)Plug the adapter into the EUT.
- (3)Pull out the antenna vertically .

### ***Test method :***

There are three EUTs tested which are operatd at 174.6, 195.6, 215.25 MHz separately. Turn on the receiver and the speaker . There is a signal generator connected with a field probe , which can transmit the receiving frequency , put near the EUT . The test data also showed three EUT's emission .

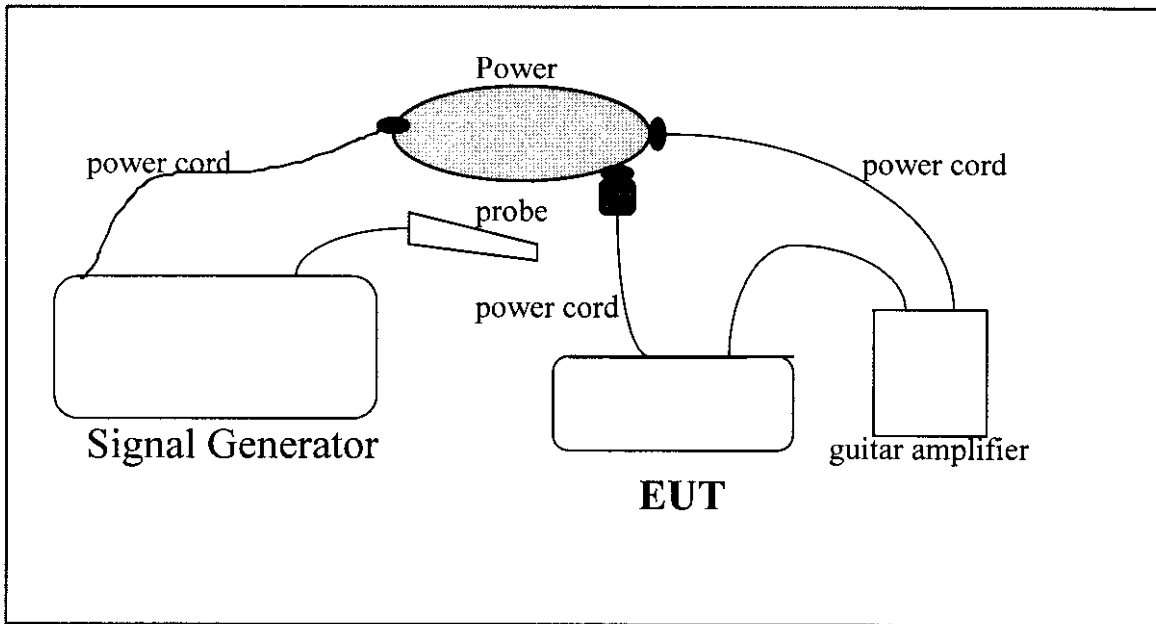
(If the emission is close to the ambience, the resolution BW and view resolution will be reduced and the data will be recorded by detection of maximum hold peak mode.)

### ***Statement of transition provision for compliance with the rules***

The EUT receives the signal which only send from the wireless microphone. The EUT won't be influenced by the transition provision , it will be continue to comply with the regulations of the FCC Part 15 . ( The relative wireless microphone FCC ID : JEBMX-66E, JEBMX-66A).

***The testing configuration of test setup is showing in the next page.***

**Configuration of test setup**



**Connections :**

- \* The Adapter 120Vac/12Vdc,500 mA, 190 cm long, non-shielded.
- \* The Audio cable dual head 6.3Ø, 126 cm, non-shielded.

**List of support equipment**

**Conducted (Radiated) test :**

**PABX** : **King Design**  
Model No. : KD8705-A  
Serial No. : GV101101186  
Power type : 110 VAC 50/60Hz  
Power cord : Non - Shielded

**Guitar Amplifier : Dragon (KIKUTANI MUSIC COL,LTD. )**

Model No. : GA-10 ( RMS-100 )  
Power type : 110vac 60Hz  
Power code : Non-shield , 1.2m long

**Field Probe : HP Field Probe 30MHz~1GHz**

Model No. : HP11940A  
Serial No. : 2650A03038

**Signal Generator : HP 9KHz~4000MHz**

Model No. : 8648D  
Serial No. : 3613A00117  
Power type : 110vac 60Hz  
Power cord : Non - Shielded

## **Chapter 2 Conducted emission test**

### **Test condition and set up :**

All the equipment is placed and setup according to the ANSI C63.4 - 1992 . The EUT is assembled on a wooden table which is 80 cm high , is placed 40 cm from the back-wall which is a vertical conducting plane . One LISN is for EUT ,the other LISN is for support equipment. They are all placed on the conductive ground .The EUT's LISN is connected to a line switch box for selecting L1 or L2 ,then connect to a preamplifier and spectrum.

The spectrum scans from 450KHz to 30MHz . Conducted emission levels are detected at max. peak mode . But if the max. peak mode failed ,it will be measured by CISPR's quasi-peak detection mode .

While testing, there is a worst-emission plot printed at peak detection mode ,and there are more than 6 highest emissions relative to limit recorded. The plot is kept as the original data, not included in test report .

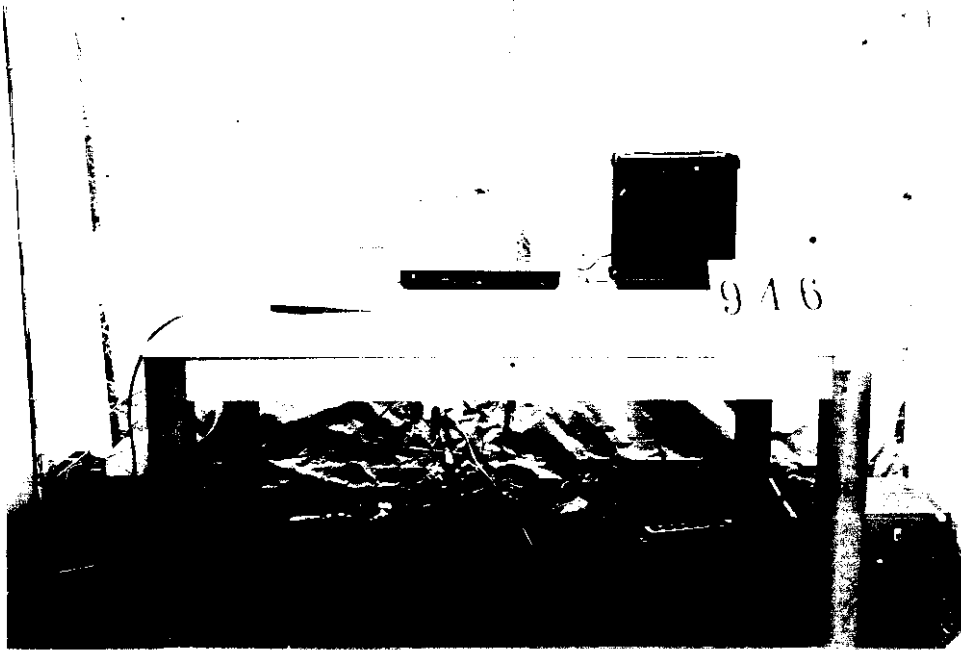
### **List of test Instrument :**

<u>Instrument Name</u>	<u>Model No.</u>	<u>Brand</u>	<u>Serial No.</u>	<u>Calibration Date</u>	
				<u>Last time</u>	<u>Next time</u>
Spectrum analyzer	8591EM	H P	3619A00821	08/29/96	08/29/97
LISN (EUT)	3825/2	EMCO	9411-2284	05/15/97	05/15/98
LISN (Support E.)	3825/2	EMCO	9210-2007	05/15/97	05/15/98
Preamplifier	8447F	H P	2944A03706	05/13/97	05/15/98
Line switch box	AC1-003	TRC	-----	05/15/97	05/15/98
Line selector	AC1-002	TRC	-----	05/15/97	05/15/98

The level of confidence of 95% ,the uncertainty of measurement of conducted emission is  $\pm 2.4$  dB .

**Test Result : Pass (Appendix A)**

*Conducted Test Placement : (Photographs)*



P/S : Because the space is not large enough for taking photograph of rear side . Please refer to the radiated testing set up .

### Chapter 3 Radiated emission test

#### Test condition and set up :

**Pretest :** Prior to the final test (OATS test), the EUT is placed in a shielded enclosure, GTEM, and scan from 30MHz to 1GHz. This is done to ensure the radiation exactly emits from the EUT.

**Final test :** Final radiation measurements is made on a **3 - meter, open-field** test site. The EUT is placed on a nonconductive table which is 0.8 m height, the top surface is 1.0 x 1.5 meter. All the placement is according to ANSI C63.4 - 1992.

The spectrum is examined from 30 MHz to 1000 MHz measured by HP spectrum.

The EMCO whole range Antenna is used to measure frequency from 30 MHz to 1GHz. The final test is used the spectrum HP 8594EM.

Measure more than six top marked frequencies generated from pretest by computer step by step at each frequency. The EUT is rotated 360 degrees, and antenna is raised and lowered from 1 to 4 meter to find the maximum emission levels. The antenna is used with both horizontal and vertical polarization.

Appropriated preamplifier which is made by TRC is used for improving sensitivity and precautions is taken to avoid overloading. The spectrum analyzer's 6dB bandwidth is set to 120 K Hz, and the EUT is measured at quasi-peak mode.

If the emission is close to the frequency band of ambience, the data will be rechecked by the tester and the corrected data will be written in the test data sheet. If the emission is just within the ambience, the data from GTEM will be taken as the final data.

#### List of test Instrument :

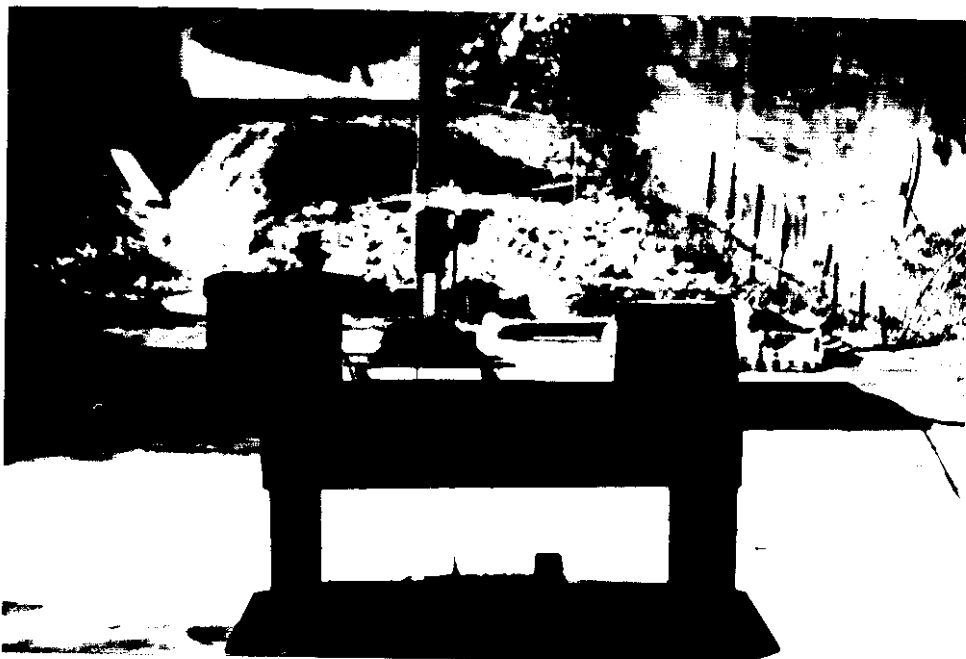
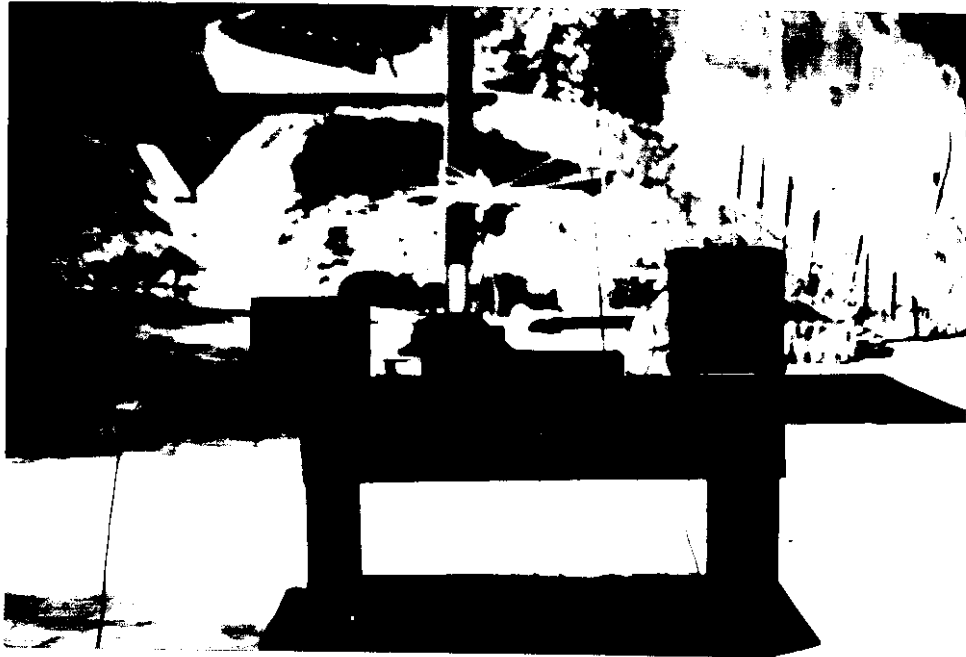
Instrument name	Model No.	Brand	Serial No.	Calibration Date	
				Last	Next
Spectrum analyzer	8568B	H P	3004A18617	05/15/97	05/15/98
Quasi-peak Adapter	85650A	H P	2521A00984	05/15/97	05/15/98
RF Pre-selector	85685A	H P	2947A01011	05/15/97	05/15/98
Spectrum analyzer	8594EM	H P	3619A00198	08/07/96	08/07/97
Antenna(30M-2G Hz)	3142	EMCO	9610-1094	10/30/96	10/30/97
Open test side (Antenna, Amplify, cable calibrated together)				05/15/97	05/15/98

The level of confidence of 95%, the uncertainty of measurement of radiated emission is ± 4.96 dB.

#### Test Result : Pass (Appendix B)



*Radiated Test Placement : (Photographs)*



### Appendix A

#### Conducted Emission Test Result ( Frequency 174.6 MHz )

Testing room : Temperature : 24 ° C      Humidity : 40 % RH

***Line 1***

<i>Frequency (MHz)</i>	<i>Amplitude (dBuV)</i>	<i>Limit (dBuV/m)</i>	<i>Margin (dB)</i>
0.524	30.21	48	-17.79
1.558	19.21	48	-28.79
12.819	17.12	48	-30.88
19.995	19.38	48	-28.62
22.186	19.32	48	-28.68
23.061	20.65	48	-27.35
23.718	21.53	48	-26.47
24.009	27.05	48	-20.95
25.613	17.63	48	-30.37
27.942	17.75	48	-30.25

***Line 2***

<i>Frequency (MHz)</i>	<i>Amplitude (dBuV)</i>	<i>Limit (dBuV)</i>	<i>Margin (dB)</i>
0.45	42.03	48	-5.97
1.189	23.03	48	-24.97
2.148	16.19	48	-31.81
19.995	17.53	48	-30.47
22.332	18.39	48	-29.61
23.061	20.86	48	-27.14
24.009	24.69	48	-23.31
27.942	17.47	48	-30.53
29.615	17.72	48	-30.28

( Frequency 195.6 MHz )

**Line 1**

<i>Frequency (MHz)</i>	<i>Amplitude (dBuV)</i>	<i>Limit (dBuV/m)</i>	<i>Margin (dB)</i>
0.524	39.02	48	-8.98
1.189	23.08	48	-24.92
3.700	14.73	48	-32.27
6.360	15.31	48	-32.69
10.645	15.48	48	-32.52
11.457	15.57	48	-32.43
24.238	19.16	48	-28.84
26.306	18.06	48	-29.94
28.966	16.80	48	-31.20

**Line 2**

<i>Frequency (MHz)</i>	<i>Amplitude (dBuV)</i>	<i>Limit (dBuV)</i>	<i>Margin (dB)</i>
0.45	39.96	48	-8.04
1.558	20.59	48	-27.41
4.144	15.68	48	-32.32
6.064	15.18	48	-32.82
10.719	16.44	48	-31.56
14.486	16.21	48	-31.79
16.703	16.81	48	-31.19
24.238	21.29	48	-26.71
24.903	19.22	48	-28.78

( Frequency 215.25 MHz )

***Line 1***

<i>Frequency (MHz)</i>	<i>Amplitude (dBuV)</i>	<i>Limit (dBuV/m)</i>	<i>Margin (dB)</i>
0.450	39.23	48	-8.77
1.189	22.68	48	-25.32
17.663	16.81	48	-31.19
21.800	17.00	48	-31.00
22.317	21.33	48	-26.67
22.613	22.01	48	-25.99
23.425	22.20	48	-25.80
24.238	20.75	48	-27.25
24.977	19.92	48	-28.08
26.454	19.75	48	-28.25

***Line 2***

<i>Frequency (MHz)</i>	<i>Amplitude (dBuV)</i>	<i>Limit (dBuV)</i>	<i>Margin (dB)</i>
0.450	42.14	48	-7.86
1.189	22.37	48	-25.63
18.623	17.14	48	-30.86
20.470	16.79	48	-31.21
22.834	21.99	48	-26.01
24.238	21.19	48	-26.81
24.903	21.07	48	-26.93
26.232	19.42	48	-28.58
26.528	18.55	48	-29.45

**Appendix B**

**Radiated Emission Test Result :( Frequency 174.6 MH Horizontal)**

Test Conditions:

Testing room : Temperature : 19° C Humidity : 75% RH

Testing site : Temperature : 19° C Humidity : 85 % RH

Frequency	Reading Amplitude	Ant. Height	Table	Correction Factors	Corrected Amplitude	Class B limit	Margin
MHz	DBuV	m	degree	dB/m	dBuV/m	dBuV/m	dB

163.900	41.63	0.99	325	-11.39	30.24	43.50	-13.26
524.000	24.21	0.99	327	-13.64	20.57	46	-25.43
698.500	33.45	0.98	347	-7.15	26.30	46	-19.7
873.000	33.89	0.98	351	-5.75	28.14	46	-17.86
***							

Note:

1.Margin = Amplitude - limit, *if margin is minus means under limit.*

2.Corrected Amplitude = Reading Amplitude - Correction Factors

3.Correction factor = Antenna factor + ( Cable Loss - Amplitude gain)

(For example : 30MHz correction factor = 15.5 + (-15.26) = 0.24 dB/m)

**Radiated Emission Test Result :(Vertical)**

Frequency	Reading Amplitude	Ant. Height	Table	Correction Factors	Corrected Amplitude	Class B limit	Margin
MHz	dBuV	m	degree	dB/m	dBuV/m	dBuV/m	dB

163.900	38.00	0.99	48	-11.39	26.61	43.50	-16.89
524.000	34.12	0.99	275	-13.64	20.48	46	-25.52
698.500	33.45	0.98	324	-7.15	26.30	46	-19.7
873.000	34.22	0.99	341	-5.75	28.47	46	-17.53
***							

**Radiated Emission Test Result :( Frequency 195.6 MH Horizontal)**

Frequency	Reading Amplitude	Ant. Height	Table	Correction Factors	Corrected Amplitude	Class B limit	Margin
MHz	dBuV	m	degree	dB/m	dBuV/m	dBuV/m	dB

162.275	40.95	1.00	54	-11.69	29.26	43.50	-14.34
182.149	39.17	1.00	155	-10.87	28.30	43.50	-15.20
282.849	37.10	1.00	236	-5.75	31.35	46	-14.65
385.822	45.52	1.00	242	-17.18	28.34	46	-17.66
446.092	42.16	1.00	102	-16.41	25.75	46	-20.25
584.311	45.37	1.00	43	-11.02	34.35	46	-11.65
679.753	39.84	1.00	14	-7.92	31.92	46	-14.08
***							

**Radiated Emission Test Result :( Frequency 195.6 MH Vertical)**

Frequency	Reading Amplitude	Ant. Height	Table	Correction Factors	Corrected Amplitude	Class B limit	Margin
MHz	dBuV	m	degree	dB/m	dBuV/m	dBuV/m	dB

162.275	42.78	1.00	355	-11.69	31.09	43.50	-12.41
182.149	43.46	1.00	179	-10.87	32.59	46	-10.91
282.849	43.64	1.00	166	-5.75	37.89	46	-8.11
385.822	47.03	1.00	172	-17.18	29.85	46	-16.15
446.092	44.76	1.00	355	-16.41	28.35	46	-17.65
584.311	37.57	1.00	297	-11.02	26.55	46	-19.45
679.753	38.94	1.00	245	-7.92	31.02	46	-14.98
***							



**Radiated Emission Test Result :( Frequency 215.25 MH Horizontal)**

Frequency	Reading Amplitude	Ant. Height	Table	Correction Factors	Corrected Amplitude	Class B limit	Margin
MHz	DBuV	m	degree	dB/m	dBuV/m	DBuV/m	DB

162.290	44.81	4.01	12	-11.69	33.12	43.50	-10.38
181.394	43.44	4.01	109	-10.90	32.54	43.50	-10.96
248.854	43.17	4.01	124	-7.26	35.91	46	-10.09
385.262	46.82	1.00	321	-17.19	29.63	46	-16.37
439.154	46.73	1.00	64	-16.63	30.10	46	-15.90
445.951	39.93	1.00	306	-16.41	23.52	46	-22.48
609.267	39.56	1.00	353	-9.53	30.03	46	-15.97
639.248	46.69	4.01	196	-9.14	37.55	46	-8.45

**Radiated Emission Test Result :( Frequency 215.25 MH Vertical)**

<b>Frequency</b>	<b>Reading Amplitude</b>	<b>Ant. Height</b>	<b>Table</b>	<b>Correction Factors</b>	<b>Corrected Amplitude</b>	<b>Class B limit</b>	<b>Margin</b>
MHz	DBuV	m	degree	dB/m	dBuV/m	dBuV/m	DB

162.290	42.45	4.01	346	-11.69	30.76	43.50	-12.74
181.394	44.45	4.01	242	-10.90	33.55	43.50	-9.95
248.854	37.36	1.00	205	-7.26	30.10	46	-15.90
385.262	41.51	2.51	277	-17.19	24.32	46	-21.68
439.154	45.11	2.51	284	-16.63	28.48	46	-17.52
445.951	42.05	1.00	354	-16.41	25.64	46	-20.36
609.267	39.56	2.51	330	-9.53	30.03	46	-15.97
639.248	46.89	1.00	223	-9.14	37.75	46	-8.25

**Final statement :**

***This test report, measurements made by TRC are traceable to the NIST.***