

# FCC CERTIFICATION RADIO MEASUREMENT TECHNICAL REPORT

On Model Name: Multi Function Remote Laser Pointer

Model Number : LR6

Trademark : 

FCC ID : UMUS751433LR6

Prepared for Suzhou Optical Maser Technology Inc.

According to FCC Part 15 (2007), Subpart C

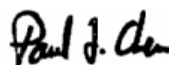
Test Report #: SUZ-0705-6275-FCC

Prepared by: Chris Huang

Reviewed by: Harry Zhao

QC Manager: Paul Chen

Test Report Released by:



Paul Chen

2007, July 2

Date

### **Test Location**

*Tests performed at EMC Compliance Management Group (China) in a Certified ANSI Semi-Anechoic Chamber and Shielded Room performed testing.*

**Test Site Location:** Jiangsu Electronic Products  
Supervision & Inspection Institute  
No 107 Ge lane ZhongQiao  
WuXi, JiangSu, China  
**Tel:** 86-510-85140038  
**Fax:** 86-510-85140037  
**Registration Number:** 399439

### **Accreditation Bodies**

*EMC Compliance Management Group is a fully accredited Test Laboratory for ITE, ISM and Telecommunications Products.*



*In compliance with the site registration requirements of Section 2.948 of the FCC Rules to perform EMI measurements for the general public.*



*Accredited by the National Voluntary Laboratory Accreditation Program for the specific scope of accreditation under Lab Code # 200068-0.*

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### ***Opinions and Interpretations***

*This test report relates to the abovementioned equipment under test (EUT). Without the permission of EMC Compliance Management Group Test Lab this test report is not permitted to be duplicated in extracts. This test report does not entitle to carry any test mark on this or similar products. The manufacturer has sole responsibility of continued compliance of the device.*


### ***Statement of Measurement Uncertainty***

*The data and results referenced in the document are true and accurate. The reader is cautioned that there may be errors within the calibration limits of the equipment and facilities that can account for a nominal measurement error. Furthermore, component and process variability of devices similar to that tested may result in additional deviation.*

### **Administrative Data**

*Test Sample* : Multi Function Remote Laser Pointer

*Model Number* : LR6

*Trade Mark* : 

*Date Tested* : 2007, June 18<sup>th</sup>

*Applicant* : Suzhou Optical Maser Technology Inc.  
No.5 NEW&HI-TECH. EXPORT PROCESSING  
ZONE, SUZHOU CITY, JIANGSU, PRC

*Telephone* : 86-512-66724188

*Fax* : 86-512-66724288

*Manufacturer* : Suzhou Optical Maser Technology Inc.  
No.5 NEW&HI-TECH. EXPORT PROCESSING  
ZONE, SUZHOU CITY, JIANGSU, PRC

## ***EUT Description***

*Suzhou Optical Maser Technology Inc. Model number LR6 (referred to as the EUT in this report) is a Multi Function Remote Laser Pointer.*

*The EUT is powered by two AAA batteries and it is a laser pointer. When the receiver part is plugged in the USB port of PC, and communicated with the EUT, we can remote control the PC. EUT has three control functions including keyboard, mouse, media player. For detail information, please refer to the user manual.*

*EUT uses 2.4GHz band frequency, and has 24 channels. When the communication is set, the EUT will choose a channel (pseudo-random number list) to generate signal. Then it will keep working at this channel unless it is reset.*

## ***Test Summary***

*The Electromagnetic Compatibility requirements on model LR6 for this test are stated below. All results listed in this report relate exclusively to this above-mentioned model as the Equipment Under Test. This report confers no approval or endorsement upon any other component, host or subsystem used in the test set-up.*

<b>EMC Test Items</b>			
<i>Reference FCC Part 15 (2007), Subpart C</i>			
<b><i>Specification</i></b>	<b><i>Description</i></b>	<b><i>Test Results</i></b>	<b><i>Remark</i></b>
<i>FCC Part 15.203</i>	<i>Antenna Requirement</i>	<i>Compliance</i>	<i>Integral Antenna</i>
<i>FCC Part 15.205</i>	<i>Restricted Band of Operation</i>	<i>Compliance</i>	<i>Attachment 1</i>
<i>FCC Part 15.209</i>	<i>Radiated Emission Limits</i>	<i>Compliance</i>	<i>Attachment 1</i>
<i>FCC Part 15.249 (a)</i>	<i>Fundamental and Harmonics</i>	<i>Compliance</i>	<i>Attachment 2</i>
<i>FCC Part 15.249 (d)</i>	<i>Band Edge</i>	<i>Compliance</i>	<i>Attachment 3</i>

### ***Test Mode Justification***

*The test modes (Lie, Side, Stand) were done for testing.*

*Note: Lie mode means let EUT put flat;*

*Side mode means let EUT put side;*

*Stand mode means let EUT stand up.*

*This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) this device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.*

### ***EUT Exercise Software***

*The EUT doesn't use software during test.*

### ***Equipment Modification***

*Any modifications installed previous to testing by Suzhou Optical Maser Technology Inc. will be incorporated in each production model sold or leased in United States.*

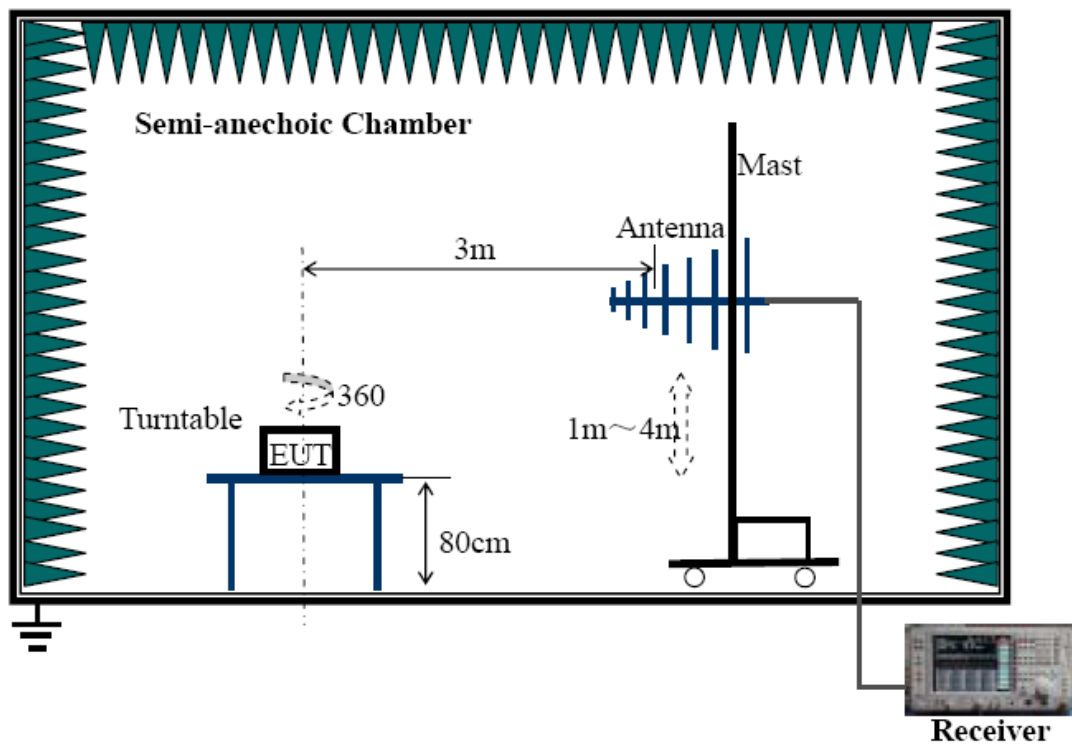
*There were no modifications installed by EMC Compliance Management Group (China) test personnel.*



## Test System Details

EUT					
Model Number:		LR6			
Trademark:		<div>INFINITER®</div>			
Serial Number:		Engineering Sample			
Input Voltage:		3V DC			
Description:		Multi Function Remote Laser Pointer			
Manufacturer:		Suzhou Optical Maser Technology Inc.			
Support Equipment					
Description	Model Number	Serial Number	Manufacturer	Power Cable Description (Meters)	
PC	OptiPlex™ GX60SD	FLH4C1X	Dell	1.5m Unshielded	
Monitor	M782	CN050927476063A MBK8D	Dell	1.8m Unshielded	
Keyboard	SK-8110	C07N244711063AE F369	Dell	N/A	
Mouse	M300BT	N/A	Shaosheng	N/A	
Printer	Laserjet 6L Pro	CN3j154367	HP	1.8m unshielded	
Cable Description					
Description	From	To	Length (m)	Shielded (Y/N)	Ferrite (Y/N)
VGA Cable	PC	Monitor	1.8	Y	Y*2
Keyboard Cable	PC	Keyboard	1.9	N	N
Mouse Cable	PC	Mouse	1.9	N	N
Parallel Cable	PC	Printer	2.0	Y	N

## Configuration of Tested System



***EUT Sample Photos of LR6***



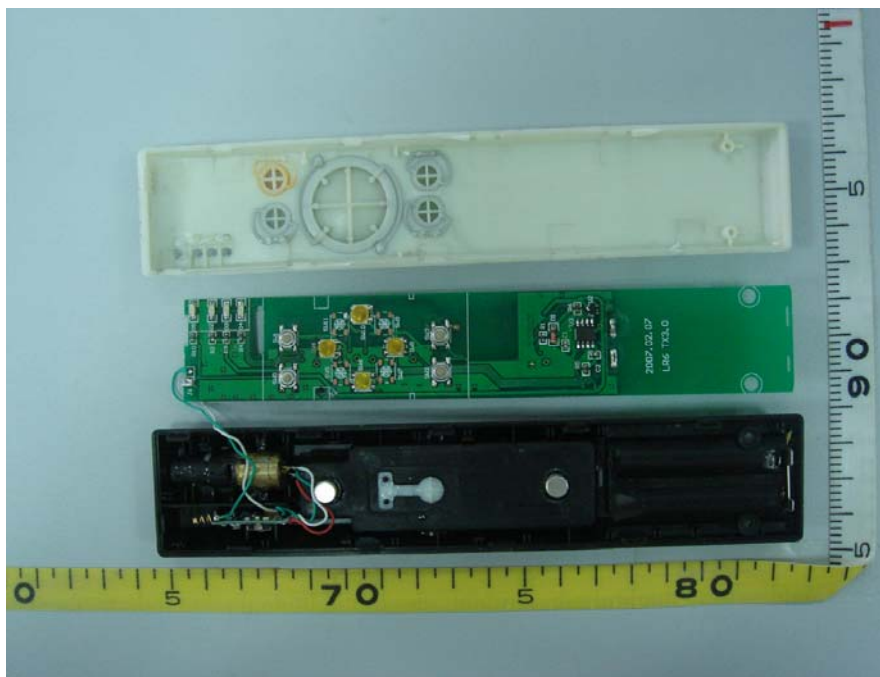
***Front View***



***Rear View***

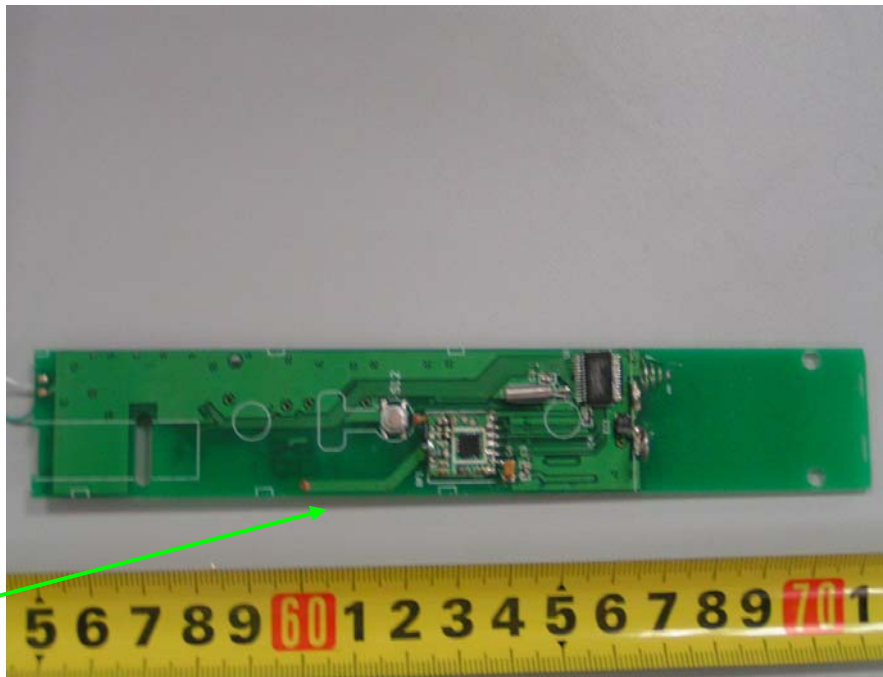


***Uncovered View #1***

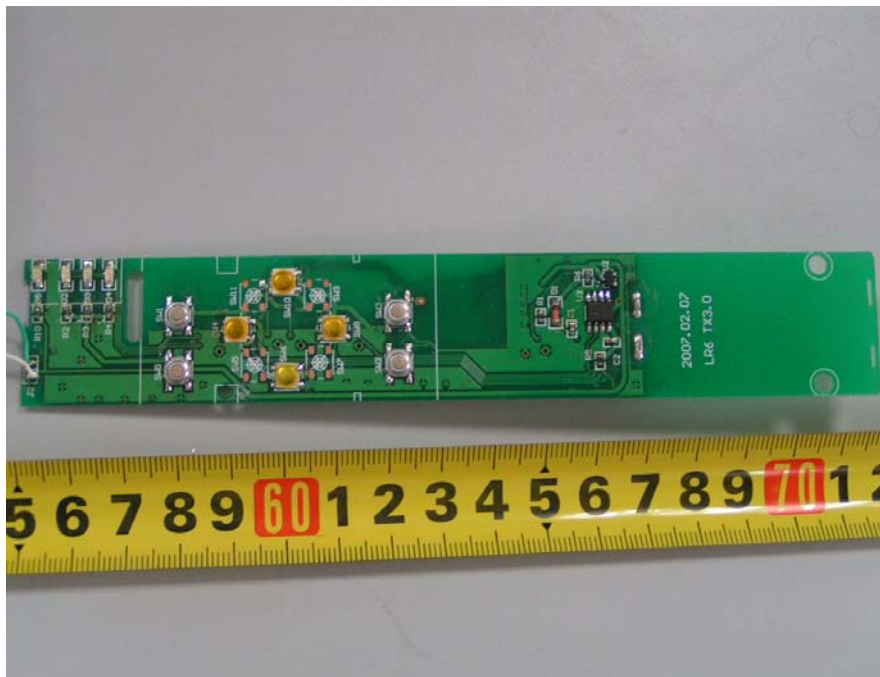


***Uncovered View #2***

Antenna

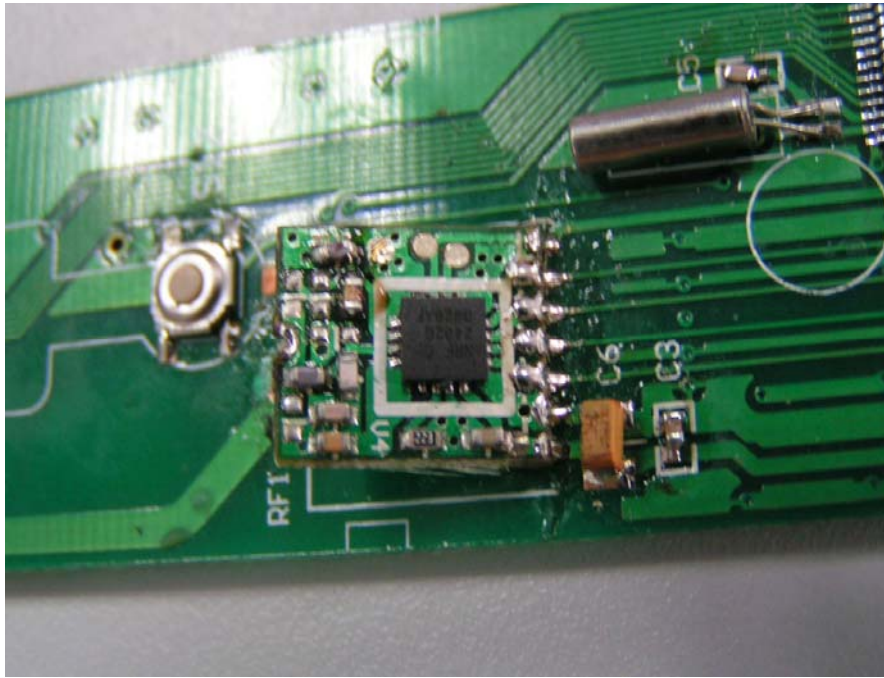


*Main Board Front View*

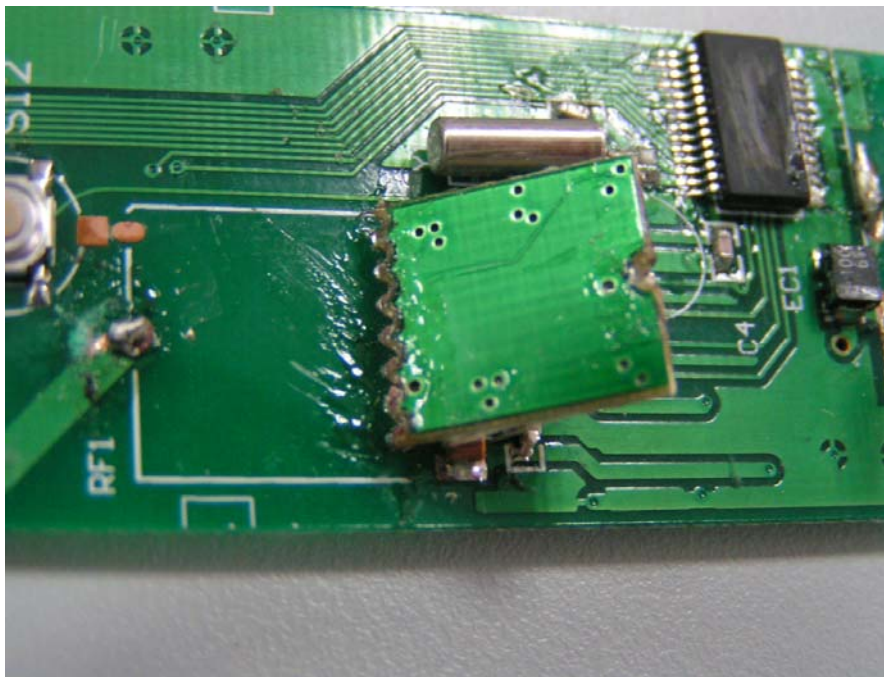


*Main Board Rear View*





*RF board – Front View*



*RF board – Rear View*

## ATTACHMENT 1 – RADIATED EMISSION TEST RESULTS

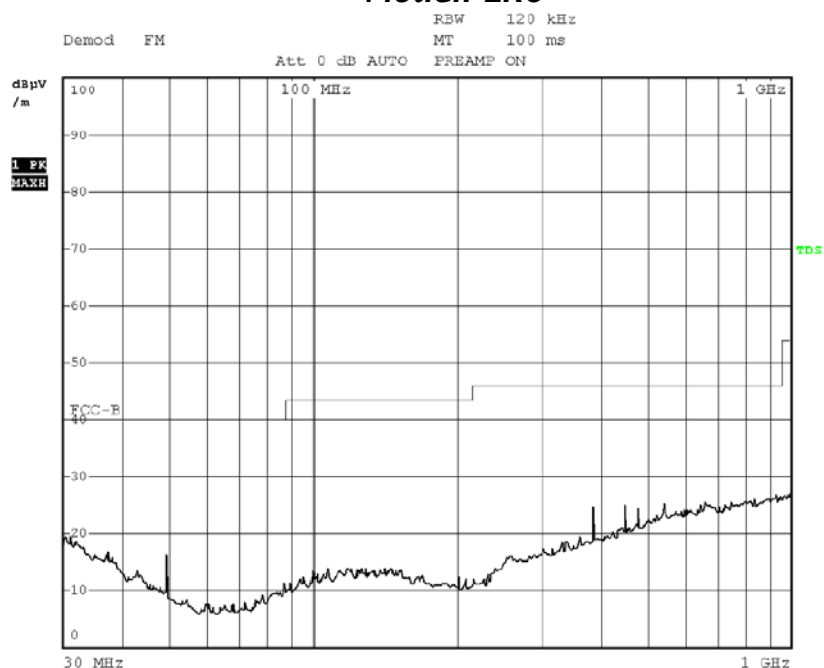
<b>CLIENT:</b>	Suzhou Optical Maser Technology Inc.	<b>TEST STANDARD:</b>	FCC Part 15.209 FCC Part 15.205
<b>MODEL NUMBER:</b>	LR6	<b>PRODUCT:</b>	Multi Function Remote Laser Pointer
<b>SERIAL NO.:</b>	Engineering Sample	<b>EUT DESIGNATION:</b>	RF Equipment
<b>TEMPERATURE:</b>	24°C	<b>HUMIDITY:</b>	56%RH
<b>ATM PRESSURE:</b>	101.6 kPa	<b>GROUNDING:</b>	No Grounding
<b>TESTED BY:</b>	Shi Xiting	<b>DATE OF TEST:</b>	2007, June 18
<b>SETUP METHOD:</b>	ANSI C63.4 : 2003		
<b>TEST PROCEDURE:</b>	<p>a. The EUT was placed on a rotatable table with 0.8 meters above ground.</p> <p>b. The EUT was set 3 meters from the interference-receiving antenna, which was mounted on the top of a variable height antenna tower.</p> <p>c. The antenna was 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 were set to make measurement.</p> <p>d. For each suspected emission the EUT was arranged to its worst case and then change the antenna tower height (from 1m to 4m) and turn table (from 0 degree to 360 degree) to find the maximum reading.</p> <p>e. If the emission level of the EUT in peak mode was 20 dB lower than the specified, then testing will be stopped and peak values of EUT will be reported, otherwise, the emissions will be tested using the quasi-peak method in about six maximal points and the results will be reported.</p> <p>f. Broadband antenna (Calibrated antenna) was used as receiving antenna below 1000MHz. Horn antenna were used as receiving antenna above 1000MHz.</p> <p>g. The bandwidth is 120 kHz below 1000 MHz, and 1 MHz above 1000 MHz</p> <p>Explanation of the Correction Factor are given as follows:</p> $FS = RA + AF + CF - AG$ <p>Where: FS = Field Strength  RA = Receiver Amplitude  AF = Antenna Factor  CF = Cable Attenuation Factor  AG = Amplifier Gain</p>		
<b>TESTED RANGE:</b>	30MHz to 24000MHz		
<b>TEST VOLTAGE:</b>	3V DC		

CONTINUE ON THE NEXT PAGE...

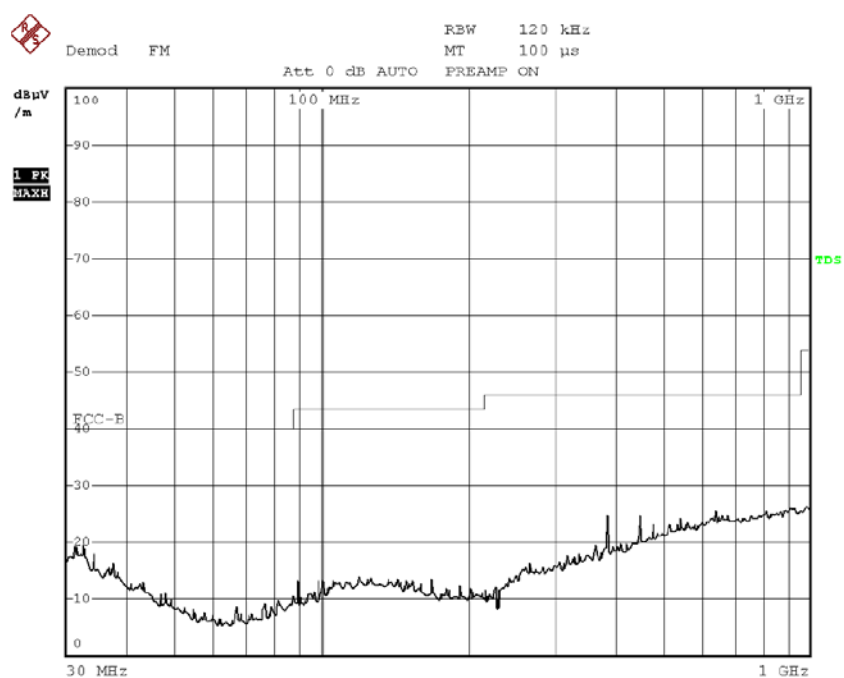
<b>TEST STATUS:</b>	Keep Tx in normal continuous transmission mode, modulated
<b>RESULTS:</b>	The EUT meets the requirements of field strength test.  The test results relate only to the equipment under test provided by client.
<b>CHANGES OR MODIFICATIONS:</b>	There were no modifications installed by EMC Compliance Management Group (China) test personnel.
<b>M. UNCERTAINTY:</b>	Freq. $\pm 2 \times 10^{-7}$ x Center Freq., Amp $\pm 2.6$ dB



### Model: LR6



**Radiated Emission Plot -Horizontal Polarization  
(Peak, Max Hold Mode)**



**Radiated Emission Plot -Vertical Polarization  
(Peak, Max Hold Mode)**

### ***Test Results (30MHz~1GHz)***

<b><i>Horizontal</i></b>								
<b>Signal</b>	<b>Frequency (MHz)</b>	<b>Antenna Factor (dB/m)</b>	<b>Cable Factor (dB)</b>	<b>Corrected QP Level dB(uV/m)</b>	<b>3 Meter Limits dB(uV/m)</b>	<b>Margin (dB)</b>	<b>Angle of Turner (degree)</b>	<b>Height of Tower (cm)</b>
1	48.77	8.7	0.5	19.6	40.0	-20.4	300	150
2	382.14	15.0	1.7	24.5	46.0	-21.5	217	168
3	665.71	19.1	2.8	23.9	46.0	-22.1	154	164
<b><i>Vertical</i></b>								
<b>Signal</b>	<b>Frequency (MHz)</b>	<b>Antenna Factor (dB/m)</b>	<b>Cable Factor (dB)</b>	<b>Corrected QP Level dB(uV/m)</b>	<b>3 Meter Limits dB(uV/m)</b>	<b>Margin (dB)</b>	<b>Angle of Turner (degree)</b>	<b>Height of Tower (cm)</b>
1	33.82	16.3	0.3	18.7	40.0	-21.3	216	150
2	382.51	15.0	1.7	23.8	46.0	-22.2	139	100
3	643.25	19.0	2.7	23.1	46.0	-22.9	58	100
Note: All readings are quasi-peak unless stated otherwise, using a QP bandwidth of 120kHz, with a 30 ms sweep time. A video filter was not used.								

### **Test Results (1GHz~24GHz)**

<i>Horizontal</i>									
Signal	Frequency (MHz)	Antenna Factor (dB/m)	Cable Factor (dB)	Corrected AV Level dB(uV/m)	3 Meter Limits dB(uV/m)	Margin (dB)	Corrected PK Level dB(uV/m)	3 Meter Limits dB(uV/m)	Margin (dB)
1	1246.8	25.2	3.6	27.7	54.0	-26.3	35.4	74.0	-38.6
2	2633.7	27.6	6.8	29.8	54.0	-24.2	38.9	74.0	-35.1
3	6387.6	36.8	8.2	29.4	54.0	-24.6	39.1	74.0	-34.9
<i>Vertical</i>									
Signal	Frequency (MHz)	Antenna Factor (dB/m)	Cable Factor (dB)	Corrected AV Level dB(uV/m)	3 Meter Limits dB(uV/m)	Margin (dB)	Corrected PK Level dB(uV/m)	3 Meter Limits dB(uV/m)	Margin (dB)
1	1246.8	25.2	3.6	28.7	54.0	-25.3	37.4	74.0	-36.6
2	2633.7	27.6	6.8	30.6	54.0	-23.4	39.4	74.0	-34.6
3	6387.6	36.8	8.2	31.7	54.0	-22.3	40.2	74.0	-33.8
Note: All readings are average and peak unless stated otherwise, using a bandwidth of 1000kHz, with a 30 ms sweep time. A video filter was not used.									

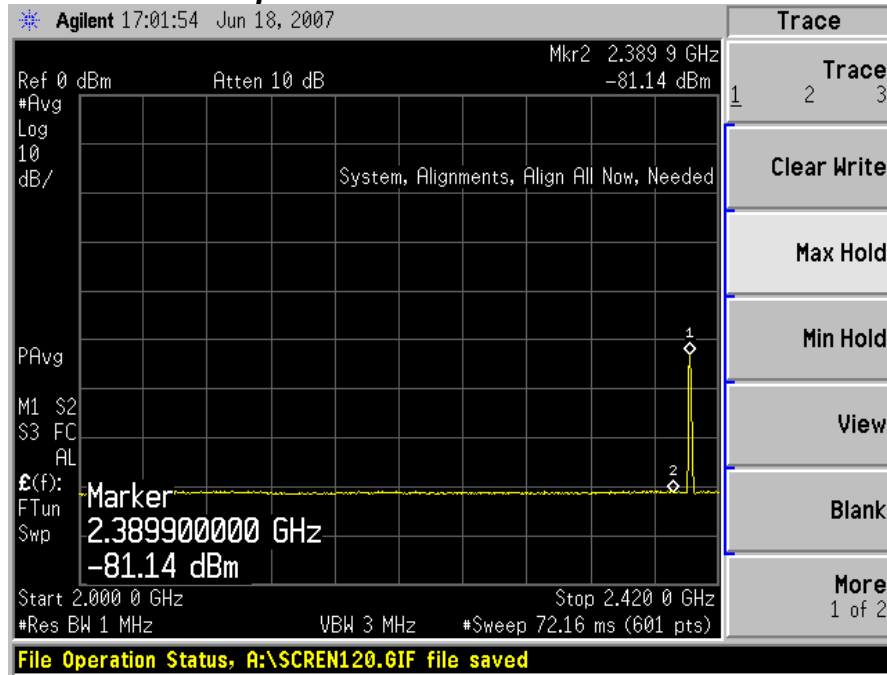
***Restricted bands:***

MHz	MHz	MHz	GHz
0.090 - 0.110	16.42 - 16.423	399.9 - 410	4.5 - 5.15
<sup>1</sup> 0.495 - 0.505	16.69475 - 16.69525	608 - 614	5.35 - 5.46
2.1735 - 2.1905	16.80425 - 16.80475	960 - 1240	7.25 - 7.75
4.125 - 4.128	25.5 - 25.67	1300 - 1427	8.025 - 8.5
4.17725 - 4.17775	37.5 - 38.25	1435 - 1626.5	9.0 - 9.2
4.20725 - 4.20775	73 - 74.6	1645.5 - 1646.5	9.3 - 9.5
6.215 - 6.218	74.8 - 75.2	1660 - 1710	10.6 - 12.7
6.26775 - 6.26825	108 - 121.94	1718.8 - 1722.2	13.25 - 13.4
6.31175 - 6.31225	123 - 138	2200 - 2300	14.47 - 14.5
8.291 - 8.294	149.9 - 150.05	2310 - 2390	15.35 - 16.2
8.362 - 8.366	156.52475 - 156.52525	2483.5 - 2500	17.7 - 21.4
8.37625 - 8.38675	156.7 - 156.9	2690 - 2900	22.01 - 23.12
8.41425 - 8.41475	162.0125 - 167.17	3260 - 3267	23.6 - 24.0
12.29 - 12.293	167.72 - 173.2	3332 - 3339	31.2 - 31.8
12.51975 - 12.52025	240 - 285	3345.8 - 3358	36.43 - 36.5
12.57675 - 12.57725	322 - 335.4	3600 - 4400	( <sup>2</sup> )
13.36 - 13.41			

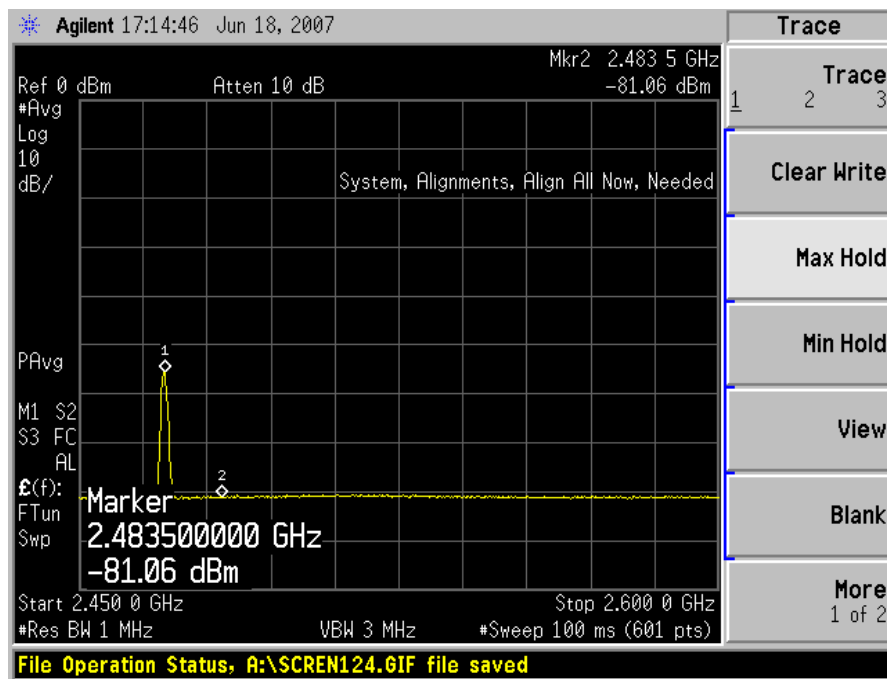
<sup>1</sup> Until February 1, 1999, this restricted band shall be 0.490-0.510 MHz.

<sup>2</sup> Above 38.6

### Test plots about restricted bands:



Channel 1



Channel 24

(Plots with antenna horizontal)

**Test data about restricted bands:**

<b>Antenna Horizontal</b>								
Signal	Frequency (MHz)	PK Reading Level (dBuV)	Antenna Factor (dB/m)	Preamp Gain (dB)	Cable Factor (dB)	Corrected PK Level (dBuV)	Limits PK (dBuV/m)	Margin PK (dB)
1	2389.9	25.8	27.2	0.0	6.5	59.5	74.0	-14.5
2	2483.5	26.0	27.5	0.0	6.6	60.1	74.0	-13.9
Signal	Frequency (MHz)	AV Reading Level (dBuV)	Antenna Factor (dB/m)	Preamp Gain (dB)	Cable Factor (dB)	Corrected AV Level (dBuV)	Limits AV (dBuV/m)	Margin AV (dB)
1	2389.9	19.1	27.2	0.0	6.5	52.8	54.0	-1.2
2	2483.5	19.5	27.5	0.0	6.6	53.6	54.0	-0.4
<b>Antenna Vertical</b>								
Signal	Frequency (MHz)	PK Reading Level (dBuV)	Antenna Factor (dB/m)	Preamp Gain (dB)	Cable Factor (dB)	Corrected PK Level (dBuV)	Limits PK (dBuV/m)	Margin PK (dB)
1	2389.9	26.3	27.2	0.0	6.5	60.0	74.0	-14.0
2	2483.5	26.0	27.5	0.0	6.6	60.1	74.0	-13.9
Signal	Frequency (MHz)	AV Reading Level (dBuV)	Antenna Factor (dB/m)	Preamp Gain (dB)	Cable Factor (dB)	Corrected AV Level (dBuV)	Limits AV (dBuV/m)	Margin AV (dB)
1	2389.9	18.8	27.2	0.0	6.5	52.5	54.0	-1.5
2	2483.5	19.0	27.5	0.0	6.6	53.1	54.0	-0.9
Note1: The peak readings are using a resolution bandwidth of 1MHz and video bandwidth of 3MHz; the average readings are using a resolution bandwidth of 1MHz and video bandwidth of 10Hz.								

Test Equipment	Manufacturer	Model	Serial No.	Last Cal.	Cal. Due Date
Spectrum Analyzer	Agilent	E4440A	US45303119	03/20/07	03/19/08
Test Receiver	R&S	ESCI	1166.595003 100065	11/23/06	11/22/07
Broad-Band Horn Antenna	Schwarzbeck	BBHA9120D	513	03/20/07	03/19/08
Bilog Antenna	CHASE	CBL6112	117.0800.20	02/17/07	02/16/08
Anechoic Chamber	LINDGREN	FACT-3	601	01/10/07	01/10/08

Note: All testing were performed using internationally recognized standards. All test instruments were calibrated.

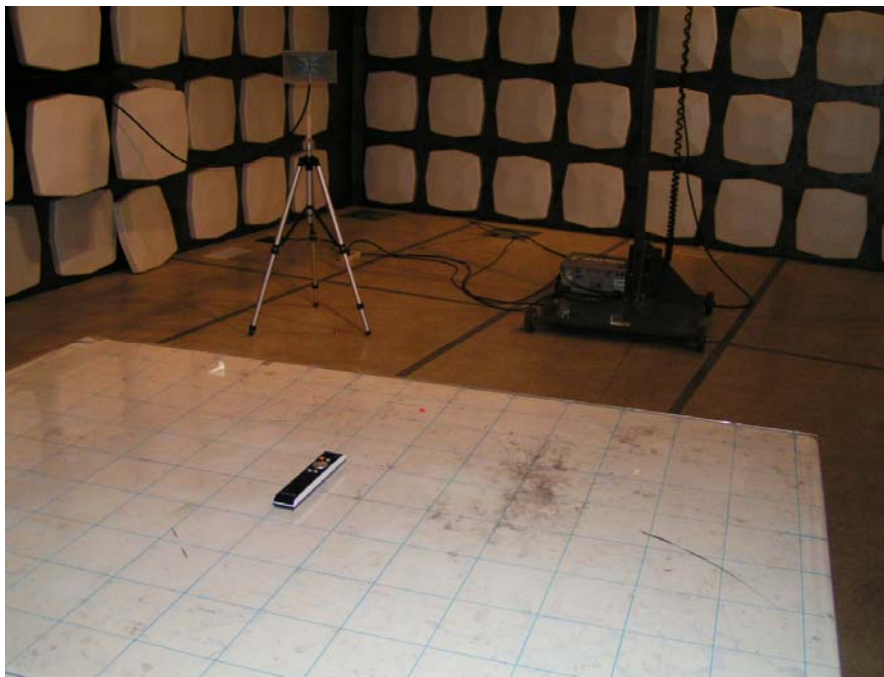
SIGNED BY: Shi-xiting  
ENGINEER

REVIEWED BY: Hanyzhan  
SENIOR ENGINEER

*For LR6*



***Radiated Emissions Test Set-up (Low frequency)***



***Radiated Emissions Test Set-up (High Frequency)***



## ATTACHMENT 2 – FUNDAMENTAL AND HARMONIC FIELD STRENGTH TEST RESULTS

<b>CLIENT:</b>	Suzhou Optical Maser Technology Inc.	<b>TEST STANDARD:</b>	FCC Part 15.249 (a)
<b>MODEL NUMBER:</b>	LR6	<b>PRODUCT:</b>	Multi Function Remote Laser Pointer
<b>SERIAL NO.:</b>	Engineering Sample	<b>EUT DESIGNATION:</b>	RF Equipment
<b>TEMPERATURE:</b>	21°C	<b>HUMIDITY:</b>	53%RH
<b>ATM PRESSURE:</b>	101.6 kPa	<b>GROUNDING:</b>	No Grounding
<b>TESTED BY:</b>	Shi Xiting	<b>DATE OF TEST:</b>	2007, June 18
<b>SETUP METHOD:</b>	ANSI C63.4 : 2003		
<b>TEST PROCEDURE:</b>	<p>a. The EUT was placed on a rotatable table with 0.8 meters above ground.</p> <p>b. The EUT was set 3 meters from the interference-receiving antenna, which was mounted on the top of a variable height antenna tower.</p> <p>c. The antenna was 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 were set to make measurement.</p> <p>d. For each suspected emission the EUT was arranged to its worst case and then change the antenna tower height (from 1m to 4m) and turn table (from 0 degree to 360 degree) to find the maximum reading.</p> <p>e. If the emission level of the EUT in peak mode was 20 dB lower than the specified, then testing will be stopped and peak values of EUT will be reported, otherwise, the emissions will be tested using the quasi-peak method in about six maximal points and the results will be reported.</p> <p>f. Broadband antenna (Calibrated antenna) was used as receiving antenna below 1000MHz. Horn antenna were used as receiving antenna above 1000MHz.</p> <p>g. The bandwidth is 120 kHz below 1000 MHz, and 1 MHz above 1000 MHz</p> <p>Explanation of the Correction Factor are given as follows:</p> $FS = RA + AF + CF - AG$ <p>Where: FS = Field Strength</p> <p>RA = Receiver Amplitude</p> <p>AF = Antenna Factor</p> <p>CF = Cable Attenuation Factor</p> <p>AG = Amplifier Gain</p> <p>FCC 15.249 limit</p> <p>15.249 (a) Except as provided in paragraph (b) of this section, the field strength of emissions from intentional radiators operated within these frequency bands shall comply with the following:</p>		

	Fundamental Frequency	Field Strength of Fundamental (milivolts/meter)	Field Strength of Harmonics (microvolts/meter)
	902-928MHz	50	500
	2400-2483.5MHz	50	500
	5725-5875MHz	50	500
	24.0-24.25GHz	250	2500
<b>TESTED RANGE:</b>	2400MHz to 24000MHz		
<b>TEST VOLTAGE:</b>	3V DC		
<b>TEST STATUS:</b>	Set transmitter to generate signal at low, middle and high channels continually, and set transmitter in lying, side and standing mode		
<b>RESULTS:</b>	<p>The EUT meets the requirements of the fundamental and harmonic field strength.</p> <p>The test results relate only to the equipment under test provided by client.</p>		
<b>CHANGES OR MODIFICATIONS:</b>	There were no modifications installed by EMC Compliance Management Group (China) test personnel.		
<b>M. UNCERTAINTY:</b>	Freq. $\pm 2 \times 10^{-7}$ x Center Freq., Amp $\pm 2.6$ dB		

*Peak Field Strength=Peak Read Level + Factor*

*Factor = Antenna Factor + Cable Loss - Preamplifier Factor*

*Average Field Strength=Peak Field Strength - Duty Cycle Correction Factor*

*Duty Cycle Correction Factor is calculated by averaging the sum of the pulse train. Correction factor is measured as follows:*

*Keep the EUT in continuous transmission mode (modulated), and set the spectrum to the fundamental frequency and set the span width to 0 Hz. Then connect a storage oscilloscope to the video output of the spectrum that is used to detect the pulse train. Adjust the oscilloscope settings to observe the pulse train and determine the number and width of the pulses, as well as the period of the train.*

*Duty cycle#1 =  $(3.693\text{ms} - 3.28\text{ms}) / (3.693\text{ms} - 1.633\text{ms}) = 0.2005$*

*The complete pulse train is  $185\text{ms} - 82.67\text{ms} = 102.33\text{ms}$  exceeds 100ms*

*So Duty cycle #2 =  $(130\text{ms} - 82.67\text{ms}) / 100\text{ms} = 0.4733$*

*Duty cycle =  $0.2005 * 0.4733 = 9.5\%$*

*So the Duty Cycle Correction Factor =  $20|\log 9.5\%| = 20.45\text{dB}$*

*(See the plot in next page)*

## Duty Cycle Test Data

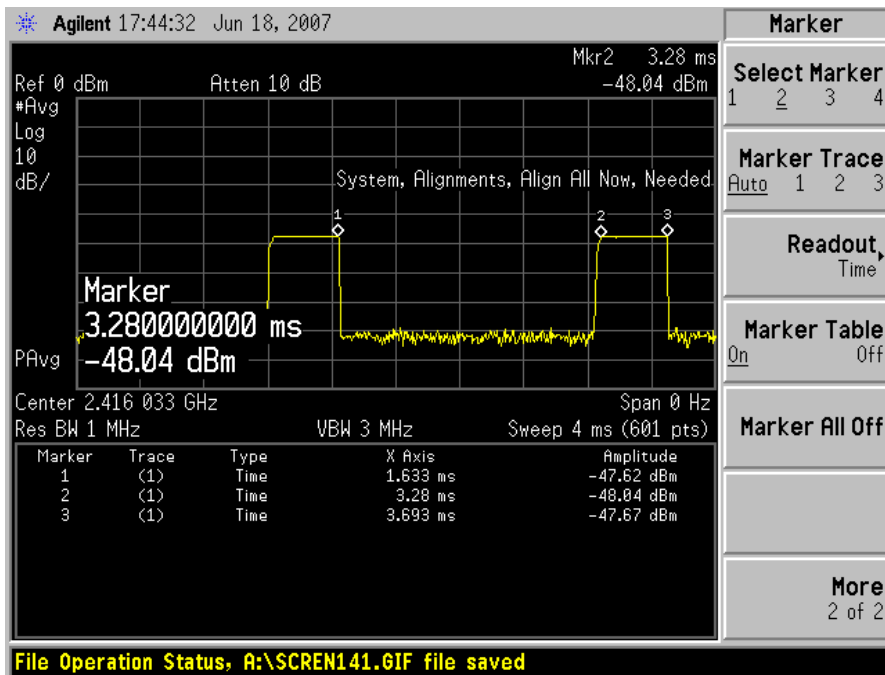


Figure #1- Duration of one signal

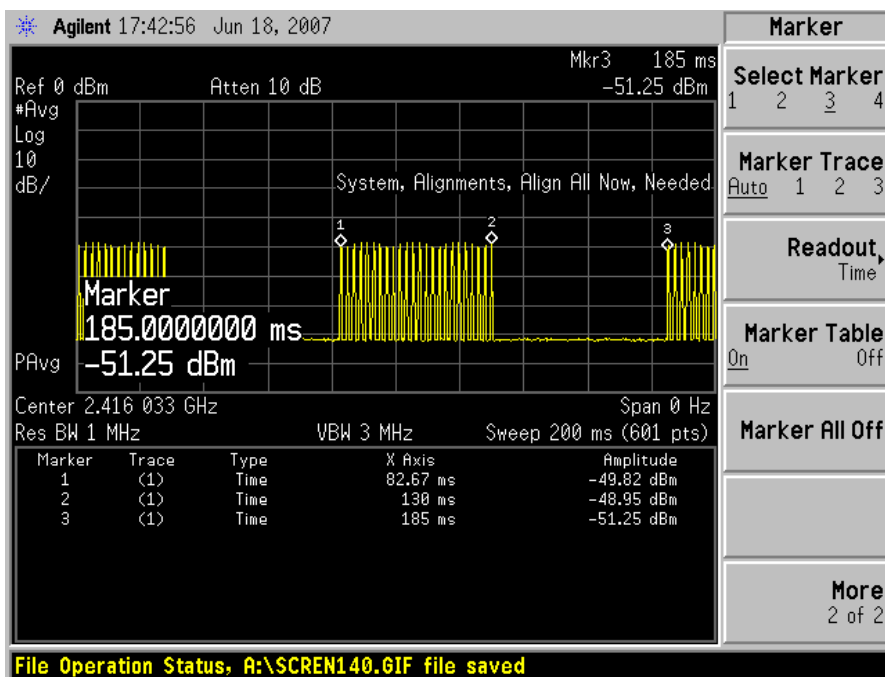


Figure #2 – Duration of a burst of signal

**For transmitter of LR6  
For Channel 1 (2401MHz) (Lie mode)  
Test Results (2.4GHz~24GHz)**

<i>Horizontal</i>							
Signal	Frequency (MHz)	Factor (dB)	PK Level (dBuV/m)	Duty Cycle Correction Factor (dB)	Corrected Average Level (dBuV/m)	3 Meter Limits (dBuV/m)	Margin (dB)
1	2401	33.7	83.50	20.45	63.05	94.00	-30.95
2	4802	34.5	58.70	20.45	38.25	54.00	-15.75
3	7203	35.5	55.80	20.45	35.35	54.00	-18.65
4	9604	37.8	50.60	20.45	30.15	54.00	-23.85
5	12005	38.6	<48	20.45	27.55	54.00	-26.45
HIGHER HARMONICS		--	<48	20.45	27.55	54.00	-26.45
<i>Vertical</i>							
Signal	Frequency (MHz)	Factor (dB)	PK Level (dBuV/m)	Duty Cycle Correction Factor (dB)	Corrected Average Level (dBuV/m)	3 Meter Limits (dBuV/m)	Margin (dB)
1	2401	33.7	81.60	20.45	61.15	94.00	-32.85
2	4802	34.5	60.70	20.45	40.25	54.00	-13.75
3	7203	35.5	55.60	20.45	35.15	54.00	-18.85
4	9604	37.8	50.80	20.45	30.35	54.00	-23.65
5	12005	38.6	<48	20.45	27.55	54.0	-26.45
HIGHER HARMONICS		--	<48	20.45	27.55	54.0	-26.45
Note: All readings are peak and average unless stated otherwise, using a bandwidth of 1MHz, with a 30 ms sweep time. A video filter was not used.							

**For transmitter of LR6  
For Channel 12 (2434MHz) (Side mode)  
Test Results (2.4GHz~24GHz)**

<i>Horizontal</i>							
Signal	Frequency (MHz)	Factor (dB)	PK Level (dBuV/m)	Duty Cycle Correction Factor (dB)	Corrected Average Level (dBuV/m)	3 Meter Limits (dBuV/m)	Margin (dB)
1	2434	33.8	86.7	20.45	66.25	94.00	-27.75
2	4868	34.9	61.8	20.45	41.35	54.00	-12.65
3	7302	35.8	58.9	20.45	38.45	54.00	-15.55
4	9736	38.1	53.2	20.45	32.75	54.00	-21.25
5	12170	38.9	<48	20.45	27.55	54.00	-26.45
HIGHER HARMONICS		--	<48	20.45	27.55	54.00	-26.45
<i>Vertical</i>							
Signal	Frequency (MHz)	Factor (dB)	PK Level (dBuV/m)	Duty Cycle Correction Factor (dB)	Corrected Average Level (dBuV/m)	3 Meter Limits (dBuV/m)	Margin (dB)
1	2434	33.8	78.50	20.45	58.05	94.00	-35.95
2	4868	34.9	62.60	20.45	42.15	54.00	-11.85
3	7302	35.8	57.50	20.45	37.05	54.00	-16.95
4	9736	38.1	54.30	20.45	33.85	54.00	-20.15
5	12170	38.9	<48	20.45	27.55	54.00	-26.45
HIGHER HARMONICS		--	<48	20.45	27.55	54.00	-26.45
Note: All readings are peak and average unless stated otherwise, using a bandwidth of 1MHz, with a 30 ms sweep time. A video filter was not used.							

**For transmitter of LR6  
For Channel 24 (2470MHz) (Stand mode)  
Test Results (2.4GHz~24GHz)**

<i>Horizontal</i>							
Signal	Frequency (MHz)	Factor (dB)	PK Level (dBuV/m)	Duty Cycle Correction Factor (dB)	Corrected Average Level (dBuV/m)	3 Meter Limits (dBuV/m)	Margin (dB)
1	2470	34.0	83.10	20.45	62.65	94.00	-31.35
2	4940	35.1	59.10	20.45	38.65	54.00	-15.35
3	7410	36.1	54.40	20.45	33.95	54.00	-20.05
4	9880	38.5	51.10	20.45	30.65	54.00	-23.35
5	12350	39.5	<48	20.45	27.55	54.00	-26.45
HIGHER HARMONICS		--	<48	20.45	27.55	54.00	-26.45
<i>Vertical</i>							
Signal	Frequency (MHz)	Factor (dB)	PK Level (dBuV/m)	Duty Cycle Correction Factor (dB)	Corrected Average Level (dBuV/m)	3 Meter Limits (dBuV/m)	Margin (dB)
1	2470	34.0	83.50	20.45	63.05	94.00	-30.95
2	4940	35.1	58.30	20.45	37.85	54.00	-16.15
3	7410	36.1	55.20	20.45	34.75	54.00	-19.25
4	9880	38.5	48.60	20.45	28.15	54.00	-25.85
5	12350	39.5	<48	20.45	27.55	54.00	-26.45
HIGHER HARMONICS		--	<48	20.45	27.55	54.00	-26.45
Note: All readings are peak and average unless stated otherwise, using a bandwidth of 1MHz, with a 30 ms sweep time. A video filter was not used.							

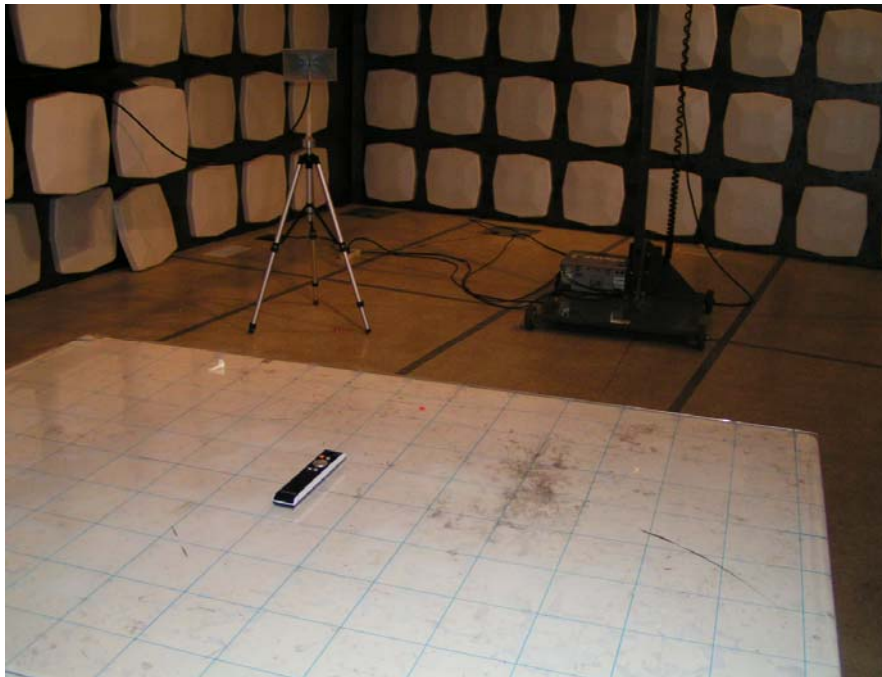
Test Equipment	Manufacturer	Model	Serial No.	Last Cal.	Cal. Due Date
Spectrum Analyzer	Agilent	E4440A	US45303119	03/20/07	03/19/08
Broad-Band Horn Antenna	Schwarzbeck	BBHA9120D	513	03/20/07	03/19/08
Bilog Antenna	CHASE	CBL6112	117.0800.20	02/17/07	02/16/08
Anechoic Chamber	LINDGREN	FACT-3	601	01/10/07	01/10/08
Note: All testing were performed using internationally recognized standards. All test instruments were calibrated.					

SIGNED BY: Shi-xiting  
ENGINEER

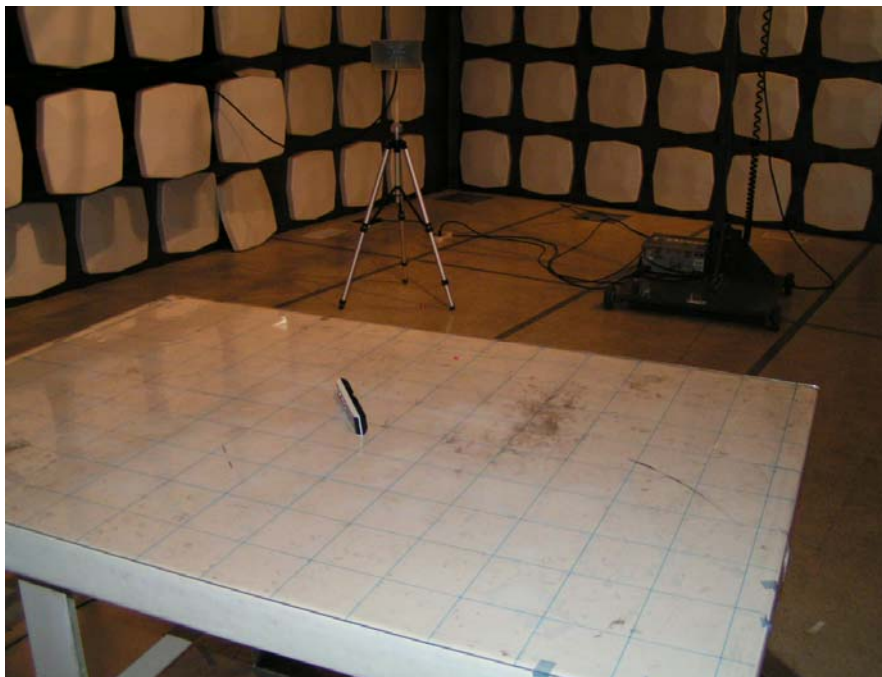
REVIEWED BY: Hanyuan  
SENIOR ENGINEER



*For LR6*



***Radiated Emissions Test Set-up – Lie mode***



***Radiated Emissions Test Set-up – Side mode***

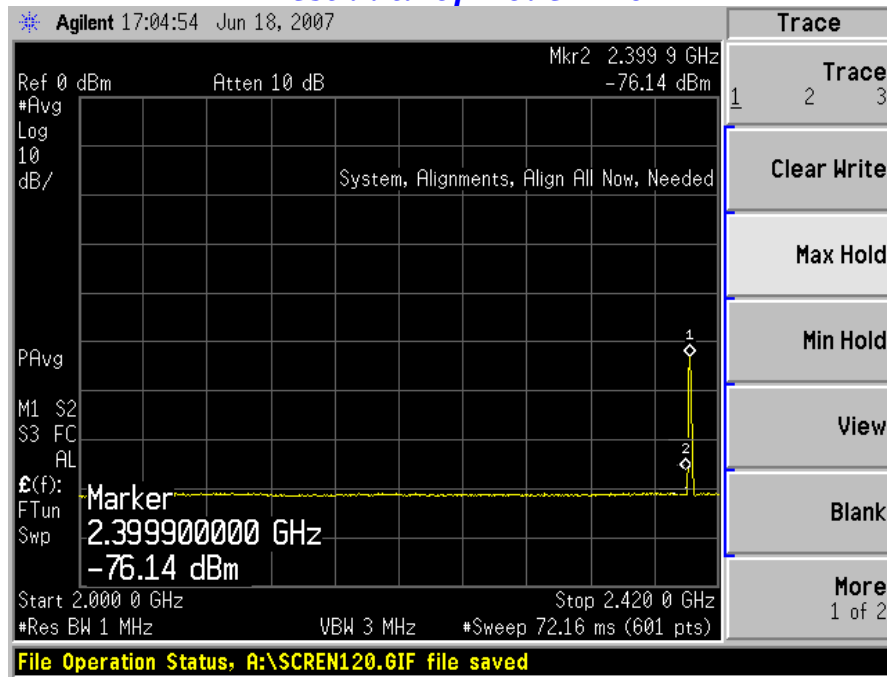


***Radiated Emissions Test Set-up – Stand mode***

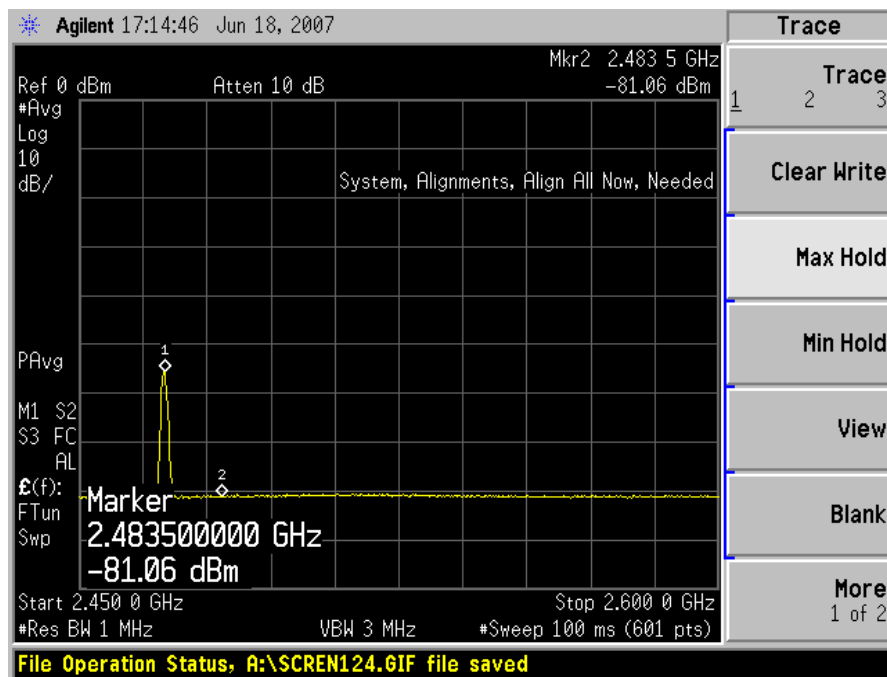
### ATTACHMENT 3 – Band Edge Test

<b>CLIENT:</b>	Suzhou Optical Maser Technology Inc.	<b>TEST STANDARD:</b>	FCC Part 15.249 (d)
<b>MODEL NUMBER:</b>	LR6	<b>PRODUCT:</b>	Multi Function Remote Laser Pointer
<b>SERIAL NO.:</b>	Engineering Sample	<b>EUT DESIGNATION:</b>	RF Equipment
<b>TEMPERATURE:</b>	24°C	<b>HUMIDITY:</b>	56%RH
<b>ATM PRESSURE:</b>	101.6 kPa	<b>GROUNDING:</b>	No Grounding
<b>TESTED BY:</b>	Shi Xiting	<b>DATE OF TEST:</b>	2007, June 18
<b>SETUP METHOD:</b>	ANSI C63.4 - 2003		
<b>BANDEDGE REQUIREMENT:</b>	FCC 15.249 (d) Emissions radiated outside of the specified frequency bands, except for harmonics, shall be attenuated by at least 50 dB below the level of the fundamental or to general radiated emission limits in Section 15.209, which is the lesser attenuation.		
<b>TEST PROCEDURE:</b>	<p>Set the spectrum as follow:</p> <p>Span=wide enough to capture the peak level of the emission operating on the channel closest to the band-edge, as well as any modulation products which fall outside of the authorized band of operation.</p> <p>RBW=1000kHz; VBW<math>\geq</math>RBW; Sweep=Auto; Detector=Peak; Trace=Maxhold;</p> <p>Allow the trace to stabilize and use the search peak function to set the marker to the peak of the useful emission, then use delta-mark function to mark the maximum emission outside of the band, record the delta level to see if it's more than 50dB. Or see if the emissions outside the operating frequencies can satisfy the limit 15.209.</p>		
<b>TEST VOLTAGE:</b>	3.0V DC		
<b>TEST STATUS:</b>	Channel 1 for low and Channel 24 for high		
<b>RESULTS:</b>	The EUT meets band edge requirement. The test results relate only to the equipment under test provided by client.		
<b>CHANGES OR MODIFICATIONS:</b>	There were no modifications installed by EMC Compliance Management Group (China) test personnel.		
<b>M. UNCERTAINTY:</b>	Freq. $\pm 2 \times 10^{-7}$ x Center Freq., Amp $\pm 2.6$ dB		

### Test data of Model LR6



Channel 1



Channel 24

Band Edge Test Plot with antenna horizontal

## Band Edge Test Table

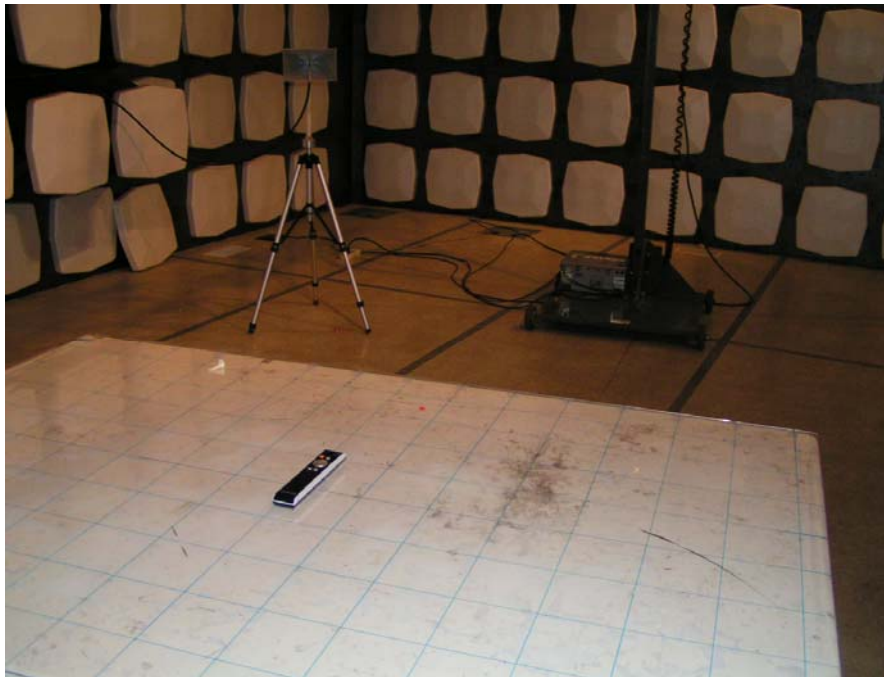
Antenna Horizontal								
Signal	Frequency (MHz)	PK Reading Level (dBuV)	Antenna Factor (dB/m)	Preamp Gain (dB)	Cable Factor (dB)	Corrected PK Level (dBuV)	Limits PK (dBuV/m)	Margin PK (dB)
1	2399.9	30.9	27.2	0.0	6.5	64.6	74.0	-9.4
2	2483.5	26.0	27.5	0.0	6.6	60.1	74.0	-13.9
Signal	Frequency (MHz)	AV Reading Level (dBuV)	Antenna Factor (dB/m)	Preamp Gain (dB)	Cable Factor (dB)	Corrected AV Level (dBuV)	Limits AV (dBuV/m)	Margin AV (dB)
1	2399.9	18.7	27.2	0.0	6.5	52.4	54.0	-1.6
2	2483.5	14.6	27.5	0.0	6.6	48.7	54.0	-5.3
Antenna Vertical								
Signal	Frequency (MHz)	PK Reading Level (dBuV)	Antenna Factor (dB/m)	Preamp Gain (dB)	Cable Factor (dB)	Corrected PK Level (dBuV)	Limits PK (dBuV/m)	Margin PK (dB)
1	2399.9	30.7	27.2	0.0	6.5	64.4	74.0	-9.6
2	2483.5	26.0	27.5	0.0	6.6	60.1	74.0	-13.9
Signal	Frequency (MHz)	AV Reading Level (dBuV)	Antenna Factor (dB/m)	Preamp Gain (dB)	Cable Factor (dB)	Corrected AV Level (dBuV)	Limits AV (dBuV/m)	Margin AV (dB)
1	2399.9	19.0	27.2	0.0	6.5	52.7	54.0	-1.3
2	2483.5	19.0	27.5	0.0	6.6	53.1	54.0	-0.9
Note1: The peak readings are using a resolution bandwidth of 1MHz and video bandwidth of 3MHz; the average readings are using a resolution bandwidth of 1MHz and video bandwidth of 10Hz.								

Test Equipment	Manufacturer	Model	Serial No.	Last Cal.	Cal. Due Date
Spectrum Analyzer	Agilent	E4440A	US45303119	03/20/07	03/19/08
Broad-Band Horn Antenna	Schwarzbeck	BBHA9120D	513	03/20/07	03/19/08
Anechoic Chamber	LINDGREN	FACT-3	601	01/10/07	01/10/08
Note: All testing were performed using internationally recognized standards. All test instruments were calibrated.					

SIGNED BY: Shi-xiting  
ENGINEER

REVIEWED BY: Hongzhan  
SENIOR ENGINEER

*For LR6*



***Band Edge Test Set-up***