

# CENTRE OF TESTING SERVICE INTERNATIONAL

**OPERATE ACCORDING TO ISO/IEC 17025** 

# FCC ID TEST REPORT

TEST REPORT NUMBER: CGZ3141117-01259-EF



**CENTRE OF TESTING SERVICE CO., LTD.** 

A101, No.65, Zhuji Highway, Tianhe District, Guangzhou, China





	TEST REPORT For FCC ID
	47 CFR PART 15 OCT, 2014
Report Reference No	CGZ3141117-01259-EF
Date of issue	13 March 2015
Testing Laboratory Name	CENTRE OF TESTING SERVICE CO., LTD.
Address	A101, No.65, Zhuji Highway, Tianhe District, Guangzhou, China
Testing location/ procedure	Full application of Harmonised standards ■
	Partial application of Harmonised standards $\square$
	Other standard testing method $\square$
Applicant's name	American Tack & Hardware Co., Inc
Address	250 Boulder Drive, Suite 100, Breinigsville, PA 18031.
Test specification	
Standard	47 CFR PART 15 OCT, 2014, ANSI C63.4-2009,
Test Report Form No	CTSEMC-1.0
TRF Originator	CENTRE OF TESTING SERVICE CO., LTD.
Master TRF	Dated 2009-01
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Test item description	: 4 in 1 Wireless Light Control Receiver
Trade Mark	Westek
Manufacturer	American Tack & Hardware Co., Inc
Model/Type reference	MLR18
Ratings	AC 120V/60Hz
Operating Frequency	433.94 MHz (RX)
1	

Compiled by:

Supervised by:

Approved by:

Kate zhang / Fileadministrators

Duke yang / Technique principal

Vincent yao / Manager

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Result ......PASSED

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## FCCID-TEST REPORT

Test Report No. : CGZ3141117-01259-EF 

13 March 2015
Date of issue

Type / Model	MLR18
EUT	4 in 1 Wireless Light Control Receiver
Applicant	American Tack & Hardware Co., Inc
Address	250 Boulder Drive, Suite 100, Breinigsville, PA 18031.
Telephone	+201-9343224
Fax	+201-8250466
Contact	Charlie Telese
Manufacturer	American Tack & Hardware Co., Inc
Address	250 Boulder Drive, Suite 100, Breinigsville, PA 18031.
Telephone	+201-9343224
Fax	+201-8250466
Contact	Charlie Telese
Factory	Inno-Tek Electronic & Plastic Manufacturer (Dong Guan) Limited.
Address	Jinsha, Chang an Town, Donguan, Guangdong, China
Telephone	1
Fax	1
Contact	/

The test report merely corresponds to the test sample.

It is not permitted to copy extracts of these test result without the written permission of the test laboratory.

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## 1. TEST STANDARDS

The tests were performed according to following standards:

- ■47 CFR PART 15 OCT, 2014
- ANSI C63.4-2009

## 2. SUMMARY

## 2.1 GENERAL REMARKS

Date of receipt of test sample	17 November 2014		
Testing commenced on	04 March 2015		
Testing concluded on	13 March 2015		

### 2.2 FINAL ASSESSMENT

The FCC requirements pertaining to the technical standards and tested operation modes are

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	- r	10	t f	ult	IIIE	ed.

The equipment under test

- fulfils the FCC requirements cited on page 1.
- **does not** fulfil the FCC requirements cited on page 1.

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## 3. EQUIPMENT UNDER TEST

## 3.1 Power supply system utilised

Power supply voltage : ■ AC 120V/50Hz

☐ Other

## 3.2 Short description of the Equipment under Test (EUT)

Number of tested samples: 1

Serial number: Prototype EUT type: Receiver

## 3.3 EUT operation mode

The equipment under test was operated during the measurement under the following conditions: For Radiation emission:

■ -RX

Operation mode 1: RX

Note: X position of EUT is the worst case, so only these test results be recorded in the test report.

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## 3.4 EUT configuration

## 3.4.1. Description of configuration (EUT)

Description	:	4 in 1 Wireless Light Control Receiver
Model Number	:	MLR18
Operation frequency	:	433.94MHz
Radio Technology	:	ASK
Modulation Technology	:	ASK modulation
Antenna	:	Internal Antenna

## 3.4.2. Tested Supporting System Details

## 3.4.1.Signal Generator

M/N :	SML03
S/N :	102986
Manufacturer :	R&S
FCC :	1

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#### 4. TEST ENVIRONMENT

#### 4.1 Address of the test laboratory

A101, No.65, Zhuji Highway, Tianhe District, Guangzhou, China

Tel: +86-20-85543113 (32 lines) Fax: +86-20-38780406

## 4.2 Test facility

The test facility is recognized, certified, or accredited by the following organizations:

CNAS-Lab Code: L3394

CENTRE OF TESTING SERVICE CO., LTD has been assessed and proved to be in compliance with CNAS-CL01: 2006 Accreditation Criteria for Testing and Calibration Laboratories (identical to ISO/IEC 17025: 2005 General Requirements) for the Competence of Testing and Calibration Laboratories.

## IC-Registration No.: 8374A

The 3m Alternate Test Site of CENTRE OF TESTING SERVICE CO., LTD has been registered by Certification and Engineering Bureau of Industry Canada for the performance of radiated measurements with Registration No. 8374A on June 6, 2011.

#### FCC-Registration No.: 971995

CENTRE OF TESTING SERVICE CO., LTD, EMC Laboratory has been registered and fully described in a report filed with the FCC (Federal Communications Commission). The acceptance letter from the FCC is maintained in our files. Registration No.791995, July 13,2012.

### 4.3 Environmental conditions

During the measurement the environmental conditions were within the listed ranges:

Temperature:	15~35 ° C
Humidity:	25~75 %
Atmospheric pressure:	86~106 kPa

#### 4.4 Definitions of symbols used in this test report

- The black square indicates that the listed condition, standard or equipment is applicable for this report.
- The empty square indicates that the listed condition, standard or equipment is **not** applicable for this report.

## 4.5 Statement of the measurement uncertainty

The data and results referenced in this document are true and accurate. The reader is cautioned that there may be errors within the calibration limits of the equipment and facilities. The measurement uncertainty was calculated for all measurements listed in this test report acc. to CISPR 16 - 4 "Specification for radio disturbance and immunity measuring apparatus and methods – Part 4: Uncertainty in EMC Measurements" and is documented in the CTS quality system acc. to DIN EN ISO/IEC 17025. Furthermore, component and process variability of devices similar to that tested may result in additional deviation. The manufacturer has the sole responsibility of continued compliance of the device.

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## 4.6 Measurement Uncertainty

Test Item	Frequency Range	Uncertainty	Note
Conduction disturbance	150kHz~30MHz	±1.22dB	(1)
Power disturbance	30MHz~300MHz	±1.38dB	(1)
	30MHz~300MHz	±3.14dB	(1)
Radiation emission (3m)	300MHz~1000MHz	±3.18dB	(1)
	1GHz~18GHz	±3.54dB	(1)

<sup>(1).</sup> This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of k=2.

## 5. Summary of standards and results

## 5.1. Description of Standards and Results

The EUT have been tested according to the applicable standards as referenced below.

EMISSION				
Description of Test Item	Standard	Results		
Conducted Emission Test	ANSI C63.4-2009 FCC Part 15 B: 15.107	PASSED		
Radiated Emission Test	ANSI C63.4-2009 FCC Part 15 B: 109	PASSED		
N/A is an abbreviation for Not Applicable.				

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## 6. Power Line Conducted Emission Test

#### 6.1.1 Description of the test location

Test location : Shielding Room

#### 6.1.2Test Equipment

Conducted Disturbance						
Item	Test Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	
1	EMI Test Receiver	ROHDE & SCHWARZ	ESHS10	842884/012	2014/11	
2	Artificial Mains	ROHDE & SCHWARZ	ESH3-Z5	832479/025	2014/11	
3	Artificial Mains	ROHDE & SCHWARZ	ESH3-Z5	832479/026	2014/11	
4	Pulse Limiter	ROHDE & SCHWARZ	ESHSZ2	100301	2014/11	
5	EMI Test Software	ROHDE & SCHWARZ	ESK1	N/A	2014/11	

#### 6.2.1 Block Diagram of Test Setup

EUT(RX)

SG

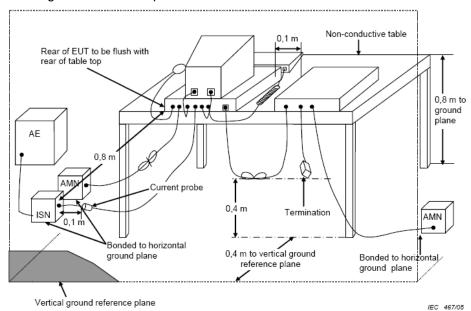
(EUT: 4 in 1 Wireless Light Control Receiver)

#### 6.2.2 Description of the test set-up

#### 6.1.2.1 Operating Condition

The EUT is engraving during the test, and the results of the maximum emanation are recorded

#### 6.1.2.2 Block Diagram of Test Setup



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## 6.2.3 Limits of disturbance (Class B)

		Maximum RF Line Voltage			
Frequency		Quasi-Peak Level	Average Level		
		dB(μV)	dB(μV)		
150kHz	~ 500kHz	66 ~ 56*	56 ~ 46*		
500kHz	~ 5MHz	56	46		
5MHz	~ 30MHz	60	50		

Note: (1) The tighter limit shall apply at the edge between two frequency bands.

#### 6.2.4 Power Line Conducted Emission Test Results

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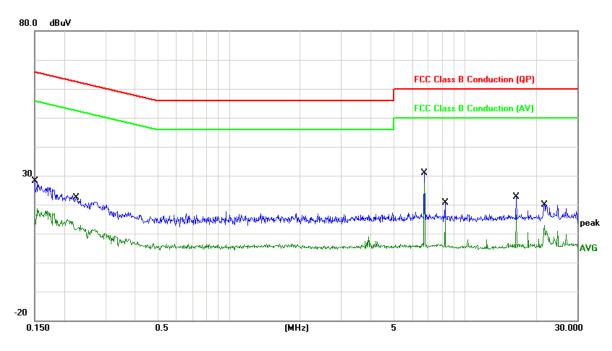
## **CENTRE OF TESTING SERVICE**





Test point:	L	Result:	■ - passed
Frequency range:	0.15MHz~30MHz		☐ - not passed

EUT	4 in 1 Wireless Light Control Receiver		
Operating Condition	AC 120V/60Hz		
Test Condition	Ambient Temperature: 25°C Humidity: 56%		
Test Date:	04 March 2015		
Operator	Duke		
MODEL NO	MLR18		



No.	Frequency (MHz)	Factor (dB)	Reading (dBuV)	Level (dBuV)	Limit (dBuV)	Margin (dB)	Det.
1	0.1500	9.78	18.28	28.06	65.99	-37.93	QP
2	0.1500	9.78	7.94	17.72	55.99	-38.27	AVG
3	0.2260	9.78	5.41	15.19	62.59	-47.40	QP
4	0.2260	9.78	0.25	10.03	52.59	-42.56	AVG
5	6.7460	9.89	19.76	29.65	60.00	-30.35	QP
6	6.7460	9.89	17.48	27.37	50.00	-22.63	AVG
7	8.2620	9.88	8.20	18.08	60.00	-41.92	QP
8	8.2620	9.88	3.12	13.00	50.00	-37.00	AVG
9	16.5220	9.96	10.57	20.53	60.00	-39.47	QP
10	16.5220	9.96	2.16	12.12	50.00	-37.88	AVG
11	21.7300	10.02	4.84	14.86	60.00	-45.14	QP
12	21.7300	10.02	0.47	10.49	50.00	-39.51	AVG

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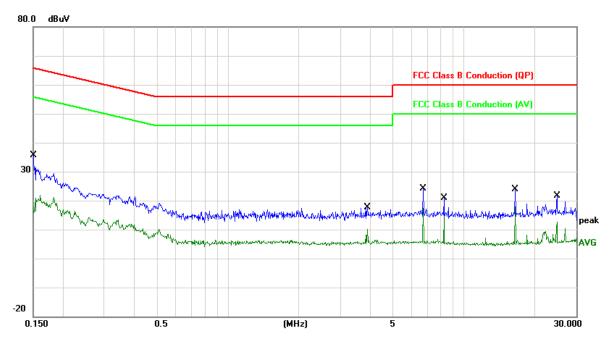
## **CENTRE OF TESTING SERVICE**





Test point:	N	Result:	■ - passed
Frequency range:	0.15MHz~30MHz		□ - not passed

EUT	4 in 1 Wireless Light Control Receiver
Operating Condition	AC 120V/60Hz
Test Condition	Ambient Temperature: 25°C Humidity: 56%
Test Date:	04 March 2015
Operator	Duke
MODEL NO	MLR18



No.	Frequency (MHz)	Factor (dB)	Reading (dBuV)	Level (dBuV)	Limit (dBuV)	Margin (dB)	Det.
1	0.1500	9.78	19.02	28.80	65.99	-37.19	QP
2	0.1500	9.78	10.94	20.72	55.99	-35.27	AVG
3	3.9020	9.90	3.59	13.49	56.00	-42.51	QP
4	3.9020	9.90	-0.48	9.42	46.00	-36.58	AVG
5	6.7460	9.89	11.35	21.24	60.00	-38.76	QP
6	6.7460	9.89	8.24	18.13	50.00	-31.87	AVG
7	8.2620	9.88	6.55	16.43	60.00	-43.57	QP
8	8.2620	9.88	0.17	10.05	50.00	-39.95	AVG
9	16.5300	9.96	10.64	20.60	60.00	-39.40	QP
10	16.5300	9.96	4.60	14.56	50.00	-35.44	AVG
11	24.7979	10.05	7.33	17.38	60.00	-42.62	QP
12	24.7979	10.05	0.44	10.49	50.00	-39.51	AVG

Note:Level=Reading+Factor. Margin= Limit-Level

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## 7. Radiated disturbance (electric field)

## 7.1.Test Equipment

Radia	Radiated disturbance (electric field)								
Item	Test Equipment	Manufacturer	Model No.	Serial No.	Last Cal.				
1	EMI Test Receiver	ROHDE & SCHWARZ	ESCI	100868	2014/11				
2	Biconical Antenna	ROHDE & SCHWARZ	HK116	100221	2014/03				
3	Log per Antenna	ROHDE & SCHWARZ	HL223	100226	2014/03				
4	Log per Antenna	ROHDE & SCHWARZ	HL050	100186	2014/03				
5	Signal analyzer	ROHDE & SCHWARZ	FSIQ26	100311	2014/03				
6	Loop Antenna	A.R.A	PLA-1030/B	1030	2014/11				

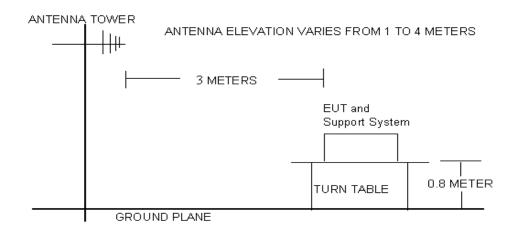
## 7.2.Block Diagram of Test Setup

### 7.2.1 Block Diagram of connection between EUT and simulators



## (EUT:4 in 1 Wireless Light Control Receiver)

#### 7.2.2 Anechoic Chamber Setup Diagram



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#### 7.3. Radiated Emission Limit Standard: FCC 109

FR	FREQUENCY		DISTANCE	FIELD STRENGTHS LIMIT		
	MHz		Meters	μV/m	dB(μV)/m	
30	30 ~ 88		3	100	40.0	
88	~	216	3	150	43.5	
216	216 ~ 960		3	200	46.0	
960	~	1000	3	500	54.0	
Λ	Above 1000		2	Other:74.0 dB(μV)/m (Peak)		
	bove it	J00	3	54.0 dB(μV)/m	n (Average)	

Remark:

- (1) Emission level  $dB\mu V = 20 \log Emission level \mu V/m$
- (2) The smaller limit shall apply at the cross point between two frequency bands.
- (3) Distance is the distance in meters between the measuring instrument, antenna and the closest point of any part of the device or system.

#### 7.4.Test Procedure

Connect the EUT receiver antenna terminal to the Signal Generator power output port; Set the Signal Generator output power level to unmodulated signal -60dBm, and turn on the output power.

The EUT and its simulators are placed on a turn table, which is 0.8 meter high above ground. The turn table can rotate 360 degrees to determine the position of the maximum emission level. The EUT is set 3 meters away from the receiving antenna, which is mounted on a antenna tower. The antenna can be moved up and down between 1 meter and 4 meters to find out the maximum emission level. Broadband antenna (calibrated bilog antenna) is used as receiving antenna. Both horizontal and vertical polarization of the antenna is set on Test. In order to find the maximum emission levels, all of the interface cables must be manipulated according to ANSI C63.4-2009on radiated emission Test.

The frequency range from 30MHz to 1000MHz and above 1GHz. is investigated. Please see the following pages.

All measurements for radiated emissions within the restricted bands were performed using a Quasi-Peak detector with 120kHz RBW below 1GHz and a Peak and Average detector with 1MHz RBW above 1GHz,

All measurements for radiated emissions within the restricted bands were performed using a Quasi-Peak detector with 300kHz VBW below 1GHz and a Peak detector with 1MHz VBW above 1GHz, Pretest of EUT, final, select the worst case test and record the test results in the report.

The test modes is tested in Anechoic Chamber and all the scanning waveforms are reported on section 7.5

# 7.5.Radiated Emission Test Results PASSED.

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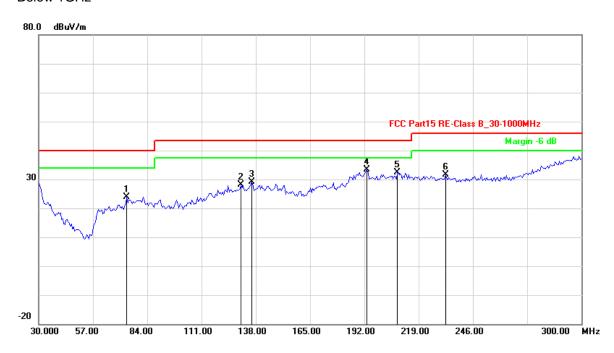




Channel:	433.94 MHz (RX)	Result:	■ - passed
Test point:	Horizontal		☐ - not passed
Frequency range:	30MHz ~18GHz		

EUT	4 in 1 Wireless Light Control Receiver			
Operating Condition	AC 120V/60Hz			
Test Condition	Ambient Temperature: 25°C Humidity: 56%			
Test Date:	04 March 2015			
Operator	Duke			
MODEL NO	MLR18			

#### Below 1GHz



No.	Frequency (MHz)	Factor (dB/m)	Reading (dBµV/m)	Level (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Det.
1	73.8277	-27.84	51.82	23.98	40.00	-16.02	QP
2	130.6413	-23.02	51.24	28.22	43.50	-15.28	QP
3	136.0521	-22.65	51.75	29.10	43.50	-14.40	QP
4	193.4068	-18.23	51.70	33.47	43.50	-10.03	QP
5	208.5571	-18.15	50.57	32.42	43.50	-11.08	QP
6	232.3647	-18.53	50.13	31.60	46.00	-14.40	QP

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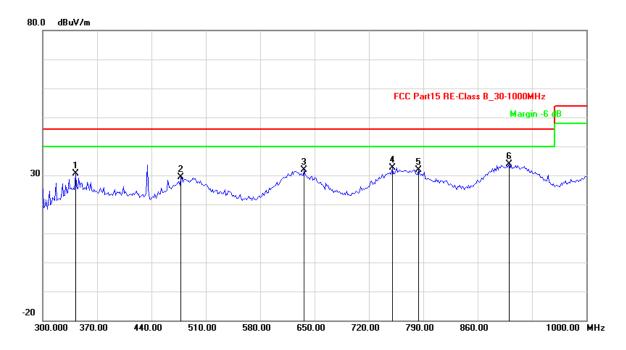
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## **CENTRE OF TESTING SERVICE**







No.	Frequency (MHz)	Factor (dB/m)	Reading (dBµV/m)	Level (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Det.
1	342.0842	-23.13	53.80	30.67	46.00	-15.33	QP
2	478.1563	-19.03	48.43	29.40	46.00	-16.60	QP
3	636.6733	-16.00	47.80	31.80	46.00	-14.20	QP
4	750.3006	-14.67	47.30	32.63	46.00	-13.37	QP
5	783.9679	-14.87	46.86	31.99	46.00	-14.01	QP
6	900.4008	-11.39	45.39	34.00	46.00	-12.00	QP

### Above 1GHz

No.	Frequency (MHz)	Factor (dB/m)	Reading (dBµV/m)	Level (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Det.
1	1661.323	-11.21	44.98	33.77	74.00	-40.23	peak
2	1661.323	-11.21	31.35	20.14	54.00	-33.86	AVG
3	2807.615	-2.92	42.61	39.69	74.00	-34.31	peak
4	2807.615	-2.92	27.51	24.59	54.00	-29.41	AVG
5	3953.908	1.18	45.29	46.47	74.00	-27.53	peak
6	3953.908	1.18	32.10	33.28	54.00	-20.72	AVG

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## **CENTRE OF TESTING SERVICE**

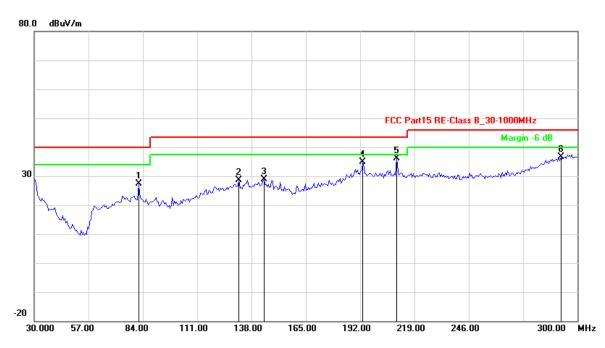




Channel:	433.94 MHz (RX)	Result:	■ - passed
Test point:	Vertical		☐ - not passed
Frequency range:	30MHz ~18GHz		

EUT	4 in 1 Wireless Light Control Receiver		
Operating Condition	AC 120V/60Hz		
Test Condition	Ambient Temperature: 25°C Humidity: 56%		
Test Date:	04 March 2015		
Operator	Duke		
MODEL NO	MLR18		

#### Below 1GHz



No.	Frequency (MHz)	Factor (dB/m)	Reading (dBµV/m)	Level (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Det.
1	81.9439	-27.84	55.29	27.45	40.00	-12.55	QP
2	131.7234	-22.94	51.65	28.71	43.50	-14.79	QP
3	144.1683	-22.78	51.71	28.93	43.50	-14.57	QP
4	193.4068	-18.23	52.99	34.76	43.50	-8.74	QP
5	210.1804	-18.07	54.24	36.17	43.50	-7.33	QP
6	291.8838	-12.87	49.54	36.67	46.00	-9.33	QP

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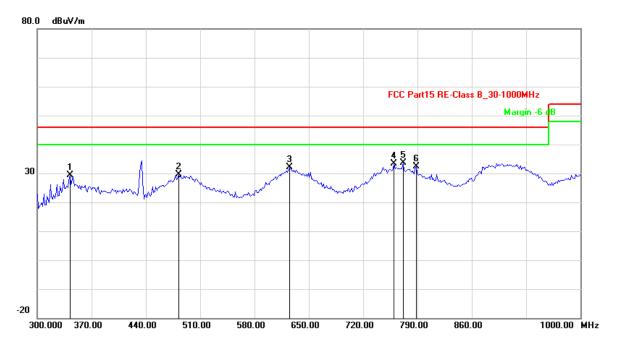
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#### **CENTRE OF TESTING SERVICE**







No.	Frequency (MHz)	Factor (dB/m)	Reading (dBµV/m)	Level (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Det.
1	342.0842	-23.13	52.50	29.37	46.00	-16.63	QP
2	482.3647	-18.76	48.48	29.72	46.00	-16.28	QP
3	625.4509	-15.73	47.84	32.11	46.00	-13.89	QP
4	760.1202	-13.88	47.22	33.34	46.00	-12.66	QP
5	771.3427	-14.19	47.78	33.59	46.00	-12.41	QP
6	788.1764	-15.34	47.82	32.48	46.00	-13.52	QP

#### Above 1GHz

No.	Frequency (MHz)	Factor (dB/m)	Reading (dBµV/m)	Level (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Det.
1	1705.411	-10.95	46.10	35.15	74.00	-38.85	peak
2	1705.411	-10.95	31.11	20.16	54.00	-33.84	AVG
3	2653.307	-3.75	43.61	39.86	74.00	-34.14	peak
4	2653.307	-3.75	28.32	24.57	54.00	-29.43	AVG
5	4637.275	2.83	45.23	48.06	74.00	-25.94	peak
6	4637.275	2.83	34.86	37.69	54.00	-16.31	AVG

Note:Level=Reading+Factor. Margin= Limit-Level

Remark: Others frequency Radiated Emission level margin all >10dB of Limit.

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## 8. Manufacturer/ Approval holder Declaration

N/A

Belong to the tested device:

The following identical model(s):

Product description: 4 in 1 Wireless Light Control Receiver

Model name: MLR18

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