

## APPLICATION CERTIFICATION FCC Part 15C On Behalf of Beijing Miiiw Technology Co., Ltd.

## MIIIW USB Receiver Model No.: MWM24ND

## FCC ID: 2AR3N-MWWR01

Prepared for Address	:	Beijing Miiiw Technology Co., Ltd. RM101, Building A-1, Shunshijiaye Innovation Park, Beijing, China
Prepared by Address	:	Shenzhen Accurate Technology Co., Ltd. 1/F., Building A, Changyuan New Material Port, Science & Industry Park, Nanshan District, Shenzhen, Guangdong, P.R. China
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Report Number	:	ATE20190228
Date of Test	:	February 14-February 25, 2019
Date of Report	:	February 28, 2019



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D: 2AR3N-M	MWWR01 Shenzhen Accurate Tech	nology Co., Ltd.





# Test Report Certification

Applicant Address	:	Beijing Miiiw Technology Co., Ltd. RM101, Building A-1, Shunshijiaye Innovation Park, Beijing, China
Product	:	MIIIW USB Receiver
Model No.	:	MWM24ND

Measurement Procedure Used:

### FCC Rules and Regulations Part 15 Subpart C Section 15.249 ANSI C63.10: 2013

The EUT was tested according to FCC 47CFR 15.249 for compliance to FCC 47CFR 15.249 requirements

The device described above is tested by Shenzhen Accurate Technology Co., Ltd. to determine the maximum emission levels emanating from the device. The maximum emission levels are compared to the FCC Part 15 Subpart C Section 15.249 limits. The measurement results are contained in this test report and Shenzhen Accurate Technology Co., Ltd. is assumed full responsibility for the accuracy and completeness of these measurements. Also, this report shows that the Equipment Under Test (EUT) is to be technically compliant with the FCC requirements.

This report applies to above tested sample only. This report shall not be reproduced in part without written approval of Shenzhen Accurate Technology Co., Ltd.

Date of Test : Date of Report : February 14-February 25, 2019 February 28, 2019

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Prepared by :

Approved & Authorized Signer :

(Sean Liu, Manager)



# **1. GENERAL INFORMATION**

## 1.1. Description of Device (EUT)

EUT	:	MIIIW USB Receiver
Model Number	:	MWM24ND
Frequency Range	:	2402-2480MHz
Number of Channels	:	40
Modulation mode	:	GFSK
Antenna Gain	:	0dBi
Antenna type	:	PCB Antenna
Power Supply	:	USB 5V
Applicant Address	:	Beijing Miiiw Technology Co., Ltd. RM101, Building A-1, Shunshijiaye Innovation Park, Beijing, China

# 1.2. Frequency List

Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channe 1	Frequency (MHz)
0	2402	10	2422	20	2442	30	2462
1	2404	11	2424	21	2444	31	2464
2	2406	12	2426	22	2446	32	2466
3	2408	13	2428	23	2448	33	2468
4	2410	14	2430	24	2450	34	2470
5	2412	15	2432	25	2452	35	2472
6	2414	16	2434	26	2454	36	2474
7	2416	17	2436	27	2456	37	2476
8	2418	18	2438	28	2458	38	2478
9	2420	19	2440	29	2460	39	2480



## 1.3. Special Accessory and Auxiliary Equipment

Notebook PC:
(For Conducted Emission)

n) M/N: ThinkPad X240 S/N:n.a

Notebook PC: (For Radiated Emission) Manufacturer: DELL M/N: Vostro 5471 S/N: n.a

Manufacturer: Lenovo

## 1.4. Description of Test Facility

EMC Lab	:	Recognition of accreditation by Federal Communications Commission (FCC) The Designation Number is CN1189 The Registration Number is 708358
		Listed by Innovation, Science and Economic Development Canada (ISEDC)
		The Registration Number is 5077A-2
		Accredited by China National Accreditation Service for
		Conformity Assessment (CNAS) The Registration Number is CNAS L3193
		Accredited by American Association for Laboratory Accreditation (A2LA) The Certificate Number is 4297.01
Name of Firm Site Location	:	Shenzhen Accurate Technology Co., Ltd. 1/F., Building A, Changyuan New Material Port, Science & Industry Park, Nanshan District, Shenzhen, Guangdong, P.R. China

### 1.5. Measurement Uncertainty

Conducted Emission Expanded Uncertainty	=	2.23dB, k=2
Radiated emission expanded uncertainty (9kHz-30MHz)	=	3.08dB, k=2
Radiated emission expanded uncertainty (30MHz-1000MHz)	=	4.42dB, k=2
Radiated emission expanded uncertainty (Above 1GHz)	=	4.06dB, k=2



# 2. MEASURING DEVICE AND TEST EQUIPMENT

Kind of equipment	Manufacturer	Туре	S/N	Calibrated dates	Cal. Interval
EMI Test Receiver	Rohde&Schwarz	ESCS30	100307	Jan. 05, 2019	One Year
EMI Test Receiver	Rohde&Schwarz	ESR	101817	Jan. 05, 2019	One Year
Spectrum Analyzer	Rohde&Schwarz	FSV-40	101495	Jan. 05, 2019	One Year
Pre-Amplifier	Rohde&Schwarz	CBLU118354 0-01	3791	Jan. 05, 2019	One Year
Loop Antenna	Schwarzbeck	FMZB1516	1516131	Jan. 05, 2019	One Year
Bilog Antenna	Schwarzbeck	VULB9163	9163-323	Jan. 05, 2019	One Year
Horn Antenna	Schwarzbeck	BBHA9120D	9120D-655	Jan. 05, 2019	One Year
Horn Antenna	Schwarzbeck	BBHA9170	9170-359	Jan. 05, 2019	One Year
LISN	Schwarzbeck	NSLK8126	8126431	Jan. 05, 2019	One Year
Highpass Filter	Wainwright Instruments	WHKX3.6/18 G-10SS	N/A	Jan. 05, 2019	One Year
Band Reject Filter	Wainwright Instruments	WRCG2400/2 485-2375/2510 -60/11SS	N/A	Jan. 05, 2019	One Year
Conducted Emission Measurement Software: ES-K1 V1.71					
Radiated Emission Measurement Software: EZ_EMC V1.1.4.2					

### Table 1: List of Test and Measurement Equipment

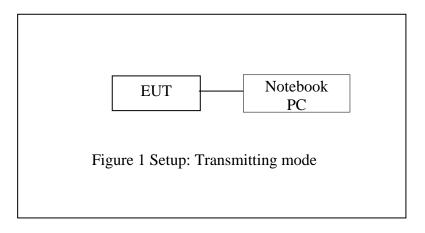


# 3. OPERATION OF EUT DURING TESTING

3.1.Operating Mode

The mode is used: **Transmitting mode** Low Channel: 2402MHz Middle Channel: 2440MHz High Channel: 2480MHz

## 3.2. Configuration and peripherals





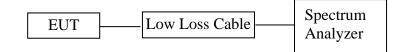
# 4. TEST PROCEDURES AND RESULTS

FCC Rules	Description of Test	Result
Section 15.215(c)	20dB Bandwidth	Compliant
Section 15.249(d)	Band Edge Compliance Test	Compliant
Section 15.205(a), Section 15.209(a), Section 15.249, Section 15.35	Radiated Spurious Emission Test	Compliant
Section 15.207	AC Power Line Conducted Emission Test	Compliant
Section 15.203	Antenna Requirement	Compliant



## 5. 20DB BANDWIDTH TEST

### 5.1.Block Diagram of Test Setup



### 5.2. The Requirement For Section 15.215(c)

Must be designed to ensure that the 20 dB bandwidth of the emission, or whatever bandwidth may otherwise be specified in the specific rule section under which the equipment operates, is contained within the frequency band designated in the rule section under which the equipment is operated.

### 5.3. Operating Condition of EUT

- 5.3.1.Setup the EUT and simulator as shown as Section 5.1.
- 5.3.2.Turn on the power of all equipment.
- 5.3.3.Let the EUT work in TX modes measure it. The transmit frequency are 2402, 2440, 2480MHz.

### 5.4.Test Procedure

- 5.4.1.Place the EUT on the table and set it in transmitting mode.
- 5.4.2.Remove the antenna from the EUT and then connect a low loss RF cable from the antenna port to the spectrum analyzer.
- 5.4.3.Set RBW of spectrum analyzer to 100 kHz and VBW to 300 kHz, Detector function=peak, Trace=max hold, Sweep=auto.
- 5.4.4.Set the measured low, middle and high frequency and test 20dB bandwidth with spectrum analyzer.



## 5.5.Test Results

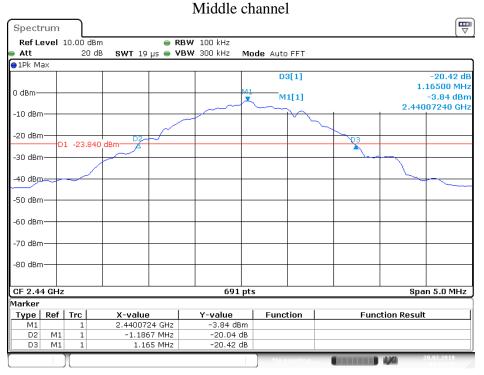
Channel	Frequency (MHz)	20 dB Bandwidth (MHz)
Low	2402	2.402
Middle	2440	2.352
High	2480	2.525

The spectrum analyzer plots are attached as below.

Spect	81100	_			Low c	ha	nnel					
•												[ \Box ]
	evel	10.00 di			<b>W</b> 100 kHz							
Att		20	dB SWT 19	µs 👄 VB	<b>W</b> 300 kHz	Mot	de Auto I	FT				
●1Pk M	ax											
							D3	[1]				-20.44 dB
0 dBm—						M1					1	.21560 MHz
						≁	M1	[1]			9.40	-2.98 dBm 206510 GHz
-10 dBm	η		_		~~~	-		$\sim$			2.402	200310 GH2
				/				L.	<u>_</u>			
-20 dBm	η		D2-		_	-			$\rightarrow$	53		
		1 -22.9	30 dBm			-				X I		
-30 dBm	ι <del></del>		- / -							$\neg$	$\sim$	
			X								$\sim$	
-40 dBm	<del>⊢</del> ا	~	-									$\sim$
-50 dBm	ι <del></del>											
-60 dBm												
-70 dBm	י <del> </del>					+						
-80 dBm	י—⊢		_			-						
CF 2.4	 D2 G⊢	łz			69	1 pts			I		Şna	an 5.0 MHz
Marker	41											
Type	Ref	Trc	X-value	1	Y-value	1	Functi	on		Fund	tion Resul	F 1
M1	1.61	1	2.402065		-2.98 d	Bm	, and	011		- and	cion nesul	<u> </u>
D2	M1	1	-1.186		-20.05							
D3	M1	1		6 MHz	-20.44							
		1					Mone	urina			4.363	20.02.2019
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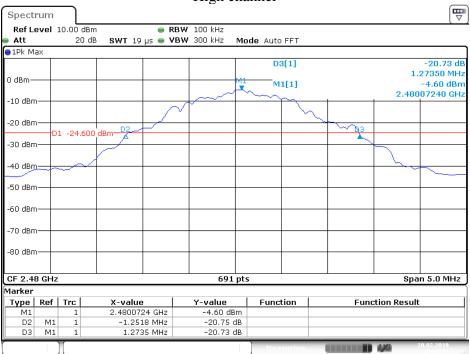
Date: 20.FEB.2019 10:02:32





Date: 20.FEB.2019 10:03:48

### High channel



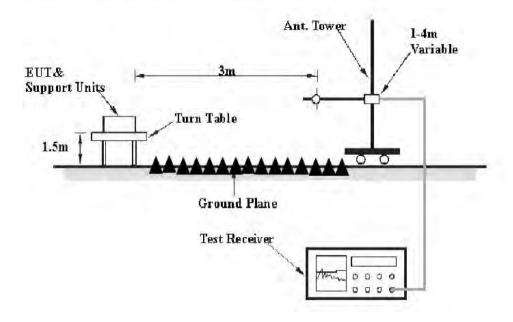
Date: 20.FEB.2019 10:05:08



## 6. BAND EDGE COMPLIANCE TEST

### 6.1.Block Diagram of Test Setup

(C) Radiated Emission Test Set-Up, Frequency above 1GHz



### 6.2. The Requirement For Section 15.249

In any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement, provided the transmitter demonstrates compliance with the peak conducted power limits. If the transmitter complies with the conducted power limits based on the use of RMS averaging over a time interval, as permitted under paragraph A8.4(4), the attenuation required shall be 30 dB instead of 20 dB. Attenuation below the general limits specified in Section 15.209(a) is not required. In addition, radiated emissions which fall in the restricted bands, as defined in Section 15.209(a).

### 6.3.EUT Configuration on Measurement

The equipment are installed on the emission Measurement to meet the commission requirements and operating regulations in a manner which tends to maximize its emission characteristics in normal application.



### 6.4. Operating Condition of EUT

- 6.4.1.Setup the EUT and simulator as shown as Section 6.1.
- 6.4.2.Turn on the power of all equipment.
- 6.4.3.Let the EUT work in TX modes measure it. The transmit frequency are 2402, 2480MHz.

### 6.5.Test Procedure

Radiate Band Edge:

- 6.5.1. The EUT is placed on a turntable, which is 1.5m above the ground plane and worked at highest radiated power.
- 6.5.2. The turntable was rotated for 360 degrees to determine the position of maximum emission level.
- 6.5.3. EUT is set 3m away from the receiving antenna, which is varied from 1m to 4m to find out the highest emission.
- 6.5.4.Set the spectrum analyzer in the following setting in order to capture the lower and upper band-edges of the emission:

RBW=1MHz, VBW=1MHz

6.5.5.The band edges was measured and recorded.

### 6.6.Test Results

### Pass.

Note:

1. Emissions attenuated more than 20 dB below the permissible value are not reported.

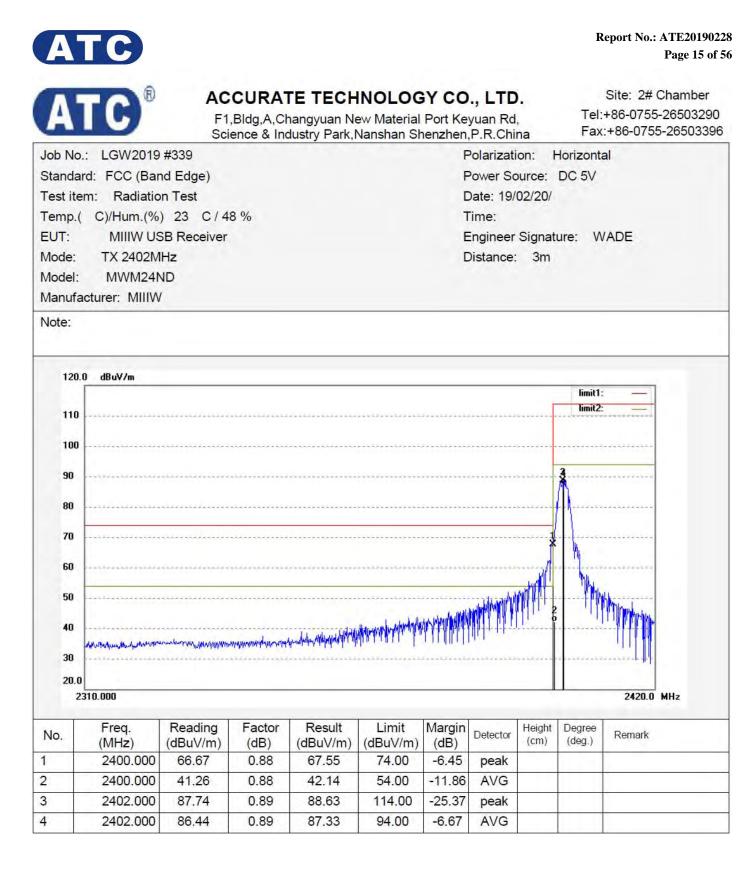
2. The field strength is calculated by adding the antenna factor, high pass filter loss(if used) and cable loss, and subtracting the amplifier gain(if any)from the measured reading. The basic equation calculation is as follows:

Result = Reading + Corrected Factor

3. Display the measurement of peak values.

4. The average measurement was not performed when peak measured data under the limit of average detection.

The spectrum analyzer plots are attached as below.

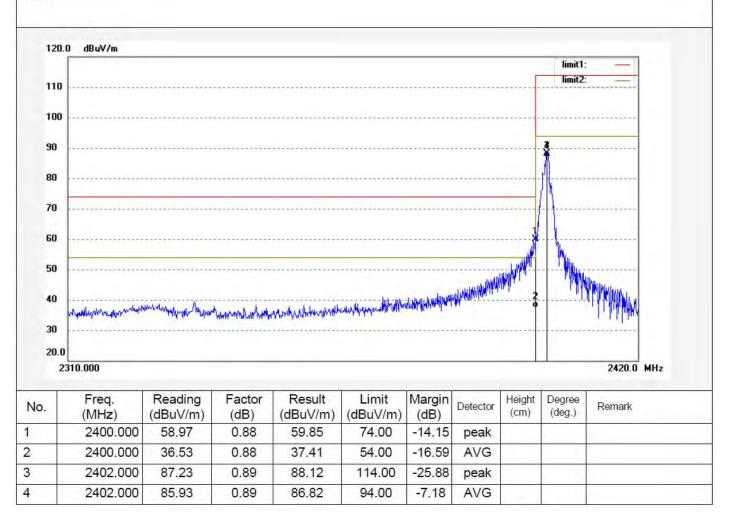




F1,Bldg,A,Changyuan New Material Port Keyuan Rd, Science & Industry Park,Nanshan Shenzhen,P.R.China Site: 2# Chamber Tel:+86-0755-26503290 Fax:+86-0755-26503396

Job No.: LGW2019 #338	Polarization: Vertical
Standard: FCC (Band Edge)	Power Source: DC 5V
Test item: Radiation Test	Date: 19/02/20/
Temp.( C)/Hum.(%) 23 C / 48 %	Time:
EUT: MIIIW USB Receiver	Engineer Signature: WADE
Mode: TX 2402MHz	Distance: 3m
Model: MWM24ND	
Manufacturer: MIIIW	
2000	

Note:



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A	TC®	F1	,Bldg,A,Cl	TE TECH hangyuan Ne dustry Park,I	ew Material	Port Ke	yuan Rd	,		+86-0755	Chamber 5-26503290 5-26503396
Job N	lo.: LGW2019	#344				F	Polarizati	on: H	orizonta	al	
Standa	lard: FCC (Bar	nd Edge)				F	Power Sc	ource:	DC 5V		
Test it	tem: Radiatio	on Test				C	Date: 19/	02/20/			
Temp.	.( C)/Hum.(%	) 23 C/4	8 %			٦	Time:				
EUT:	MIIIW US	SB Receiver				E	Engineer	Signat	ure: W	ADE	
Mode:	: TX 2480M	IHz				E	Distance:	3m			
Model	I: MWM24M	ND									
Manuf	facturer: MIIIW	1									
									limit1:		
11( 10( 90	IO					2			limit2:		
100 90 80	10 1 1					\$					
100 90	10 1 1										
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100 90 80 70 60 50 40		hindrit-haypertenne					naw hi tan ki ya wa ya		limit2		
100 90 80 70 60 50 40 30 20.		hinder and for the second					and the second se		limit2		
100 90 80 70 60 50 40 30 20.	0 	Reading	Factor	Result	Limit	Margin	Detector	Height	Jimit2:		
100 90 80 70 60 50 40 30 20.	0 	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	(dB)	Detector		limit2:	2500.0	
100 90 80 70 60 50 40 30 20. NO.	0 .0 .0 2450.000 Freq. (MHz) 2480.000	Reading (dBuV/m) 85.95	Factor (dB) 1.10	Result (dBuV/m) 87.05	Limit (dBuV/m) 114.00	(dB) -26.95	Detector peak	Height	Jimit2:	2500.0	
100 90 80 70 60 50 40 30 20.	0 	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	(dB)	Detector	Height	Jimit2:	2500.0	

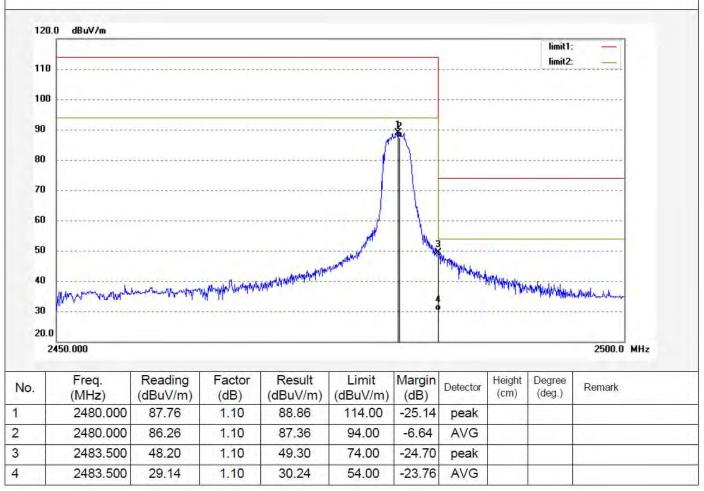


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## ACCURATE TECHNOLOGY CO., LTD.

F1,Bldg,A,Changyuan New Material Port Keyuan Rd, Science & Industry Park,Nanshan Shenzhen,P.R.China Site: 2# Chamber Tel:+86-0755-26503290 Fax:+86-0755-26503396

	Polarization: Vertical
Standard: FCC (Band Edge)	Power Source: DC 5V
Test item: Radiation Test	Date: 19/02/20/
Temp.( C)/Hum.(%) 23 C / 48 %	Time:
EUT: MIIIW USB Receiver	Engineer Signature: WADE
Mode: TX 2480MHz	Distance: 3m
Model: MWM24ND	
Manufacturer: MIIIW	

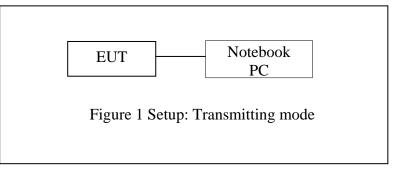




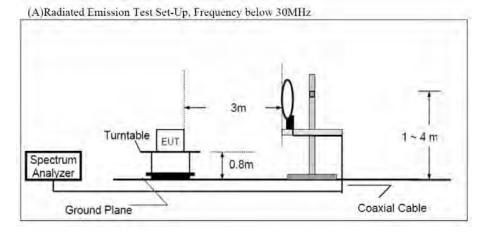
# 7. RADIATED SPURIOUS EMISSION TEST

### 7.1.Block Diagram of Test Setup

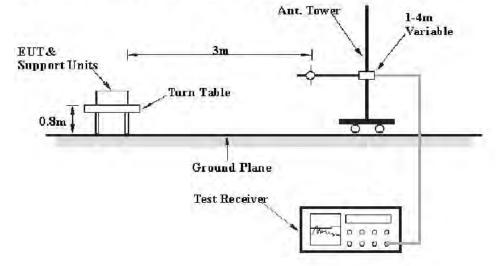
7.1.1.Block diagram of connection between the EUT and peripherals



### 7.1.2.Semi-Anechoic Chamber Test Setup Diagram

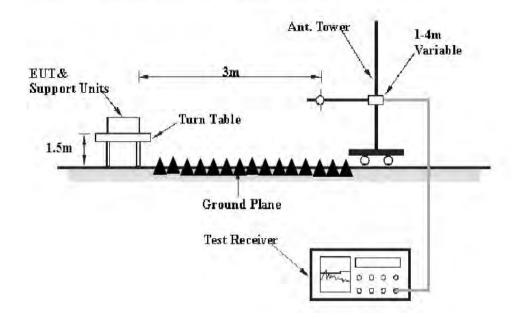


(B)Radiated Emission Test Set-Up, Frequency 30MHz-1GHz





(C) Radiated Emission Test Set-Up. Frequency above 1GHz



### 7.2. The Limit For Section 15.249

In any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement, provided the transmitter demonstrates compliance with the peak conducted power limits. If the transmitter complies with the conducted power limits based on the use of RMS averaging over a time interval, as permitted under paragraph A8.4(4), the attenuation required under this paragraph shall be 30 dB instead of 20 dB. Attenuation below the general limits specified in Section 15.209(a) is not required. In addition, radiated emissions which fall in the restricted bands, as defined in Section 15.205(a), must also comply with the radiated emission limits specified in Section 15.209(a).



### 7.3. Restricted bands of operation

### 7.3.1.FCC Part 15.205 Restricted bands of operation

permitted in any of the frequency bands listed below:							
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	$(^{2})$				
13.36-13.41							

(a) Except as shown in paragraph (d) of this section, Only spurious emissions are permitted in any of the frequency bands listed below:

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

 $^{2}$ Above 38.6

(b) Except as provided in paragraphs (d) and (e), the field strength of emission appearing within these frequency bands shall not exceed the limits shown in Section 15.209. At frequencies equal to or less than 1000MHz, Compliance with the limits in Section 15.209 shall be demonstrated using measurement instrumentation employing a CISPR quasi-peak detector. Above 1000MHz, compliance with the emission limits in Section15.209 shall be demonstrated based on the average value of the measured emissions. The provisions in Section 15.35 apply to these measurements.

### 7.4.Configuration of EUT on Measurement

The equipment are installed on Radiated Emission Measurement to meet the commission requirements and operating regulations in a manner which tends to maximize its emission characteristics in normal application.



### 7.5. Operating Condition of EUT

- 7.5.1.Setup the EUT and simulator as shown as Section 7.1.
- 7.5.2.Turn on the power of all equipment.
- 7.5.3.Let the EUT work in TX modes and measure it. The transmit frequency are 2402, 2440, 2480MHz.

### 7.6.Test Procedure

The EUT and its simulators are placed on a turntable, which is 0.8m(Below 1GHz) and 1.5m(above 1GHz) high above ground. The turntable can rotate 360 degrees to determine the position of the maximum emission level. EUT is set 3.0 meters away from the receiving antenna, which is mounted on an antenna tower. The antenna can be moved up and down between 1.0 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 polarizations of the antenna are set on measurement. In order to find the maximum emission levels, all of the interface cables must be manipulated according to ANSI C63.10: 2013 on radiated emission measurement. This EUT was tested in 3 orthogonal positions and the worst case position data was reported.

The bandwidth of test receiver is set at 9 kHz in below 30MHz. and set at 120 kHz in 30-1000MHz, and 1MHz in above 1000MHz.

The frequency range from 9 kHz to 26.5GHz is checked.

The final measurement in band 9-90 kHz, 110-490 kHz and above 1000MHz is performed with Average detector. Except those frequency bands mention above, the final measurement for frequencies below 1000MHz is performed with Quasi Peak detector.

RBW (120 kHz), VBW (300 kHz) for QP detector below 1GHz Peak detector above 1GHz RBW (1 MHz), VBW (3MHz) for Peak measurement RBW (1 MHz), VBW (10Hz) for AV measurement



### 7.7. Data Sample

Frequency	Reading	Factor	Result	Limit	Margin	Remark
(MHz)	(dBµv)	(dB/m)	(dBµv/m)	(dBµv/m)	(dB)	
X.XX	48.69	-13.35	35.34	46	-10.66	QP

$$\label{eq:requency} \begin{split} & Frequency(MHz) = Emission frequency in MHz \\ & Reading(dB\mu\nu) = Uncorrected Analyzer/Receiver reading \\ & Factor (dB/m) = Antenna factor + Cable Loss - Amplifier gain \\ & Result(dB\mu\nu/m) = Reading(dB\mu\nu) + Factor(dB/m) \\ & Limit (dB\mu\nu/m) = Limit stated in standard \\ & Margin (dB) = Result(dB\mu\nu/m) - Limit (dB\mu\nu/m) \\ & QP = Quasi-peak Reading \end{split}$$

Calculation Formula: Margin(dB) = Result ( $dB\mu V/m$ )–Limit( $dB\mu V/m$ ) Result( $dB\mu V/m$ )= Reading( $dB\mu V$ )+ Factor(dB/m)

The "Margin" column of the following data tables indicates the degree of compliance with the applicable limit. For example, a margin of -7dB means the emission is 7dB below the limit.

### 7.8.Test Results

### Pass.

Note: 1. Emissions attenuated more than 20 dB below the permissible value are not reported.

2. \*: Denotes restricted band of operation.

3. The EUT is tested radiation emission in three axes. The worst emissions are reported in all channels.

The spectrum analyzer plots are attached as below.



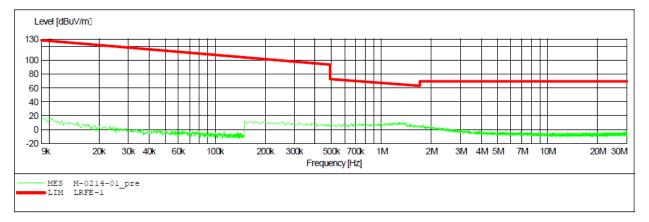
#### 9KHz to 30MHz Test data

### ACCURATE TECHNOLOGY CO., LTD

#### FCC Part 15C 3M Radiated

EUT:	MIIIW USB Receiver M/N:MWM24ND
Manufacturer:	MIIIW
Operating Condition:	TX 2402MHz
Test Site:	2# Chamber
Operator:	WADE
Test Specification:	DC 5V
Comment:	Х
Start of Test:	2019-2-14 /

Short Desci	ription:		JB STD VTER			
Start	Stop	Step –	Detector	Meas.	IF	Transducer
Frequency	Frequency	Width		Time	Bandw.	
9.0 kHz	150.0 kHz	100.0 Hz	QuasiPeak	1.0 s	200 Hz	1516M
150.0 kHz	30.0 MHz	5.0 kHz	QuasiPeak	1.0 s	9 kHz	1516M

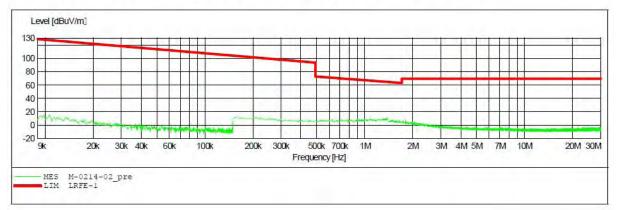




#### FCC Part 15C 3M Radiated

EUT:	MIIIW USB Receiver M/N:MWM24ND
Manufacturer:	MIIIW
Operating Condition:	TX 2402MHz
Test Site:	2# Chamber
Operator:	WADE
Test Specification:	DC 5V
Comment:	Y
Start of Test:	2019-2-14 /

2	Short Desc	ription:	5	SUB STD VTE	RM2 1.70		
	Start	Stop	Step _	Detector	Meas.	IF	Transducer
	Frequency	Frequency	Width		Time	Bandw.	
	9.0 kHz	150.0 kHz	100.0 Hz	QuasiPeak	1.0 s	200 Hz	1516M
	150.0 kHz	30.0 MHz	5.0 kHz	QuasiPeak	1.0 s	9 kHz	1516M

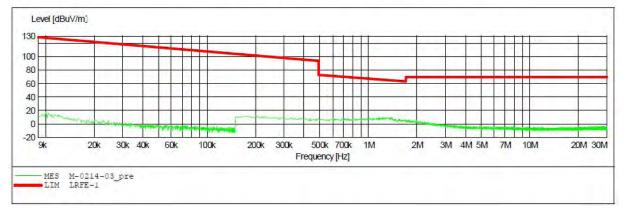




### FCC Part 15C 3M Radiated

EUT:	MIIIW USB Receiver M/N:MWM24ND
Manufacturer:	MIIIW
Operating Condition:	TX 2402MHz
Test Site:	2# Chamber
Operator:	WADE
Test Specification:	DC 5V
Comment:	Z
Start of Test:	2019-2-14 /

sducer
M
M

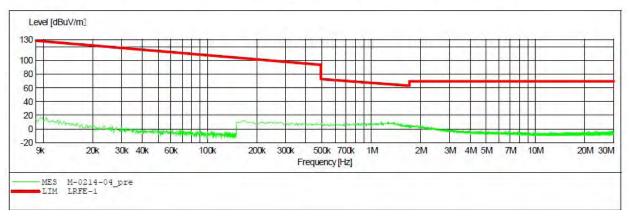




#### FCC Part 15C 3M Radiated

EUT:	MIIIW USB Receiver M/N:MWM24ND
Manufacturer:	MIIIW
Operating Condition:	TX 2440MHz
Test Site:	2# Chamber
Operator:	WADE
Test Specification:	DC 5V
Comment:	X
Start of Test:	2019-2-14 /

Short Desc	ription:	S	UB STD VTE	RM2 1.70		
Start	Stop	Step -	Detector	Meas.	IF	Transducer
Frequency	Frequency	Width		Time	Bandw.	
9.0 kHz	150.0 kHz	100.0 Hz	QuasiPeak	1.0 s	200 Hz	1516M
150.0 kHz	30.0 MHz	5.0 kHz	QuasiPeak	1.0 s	9 kHz	1516M

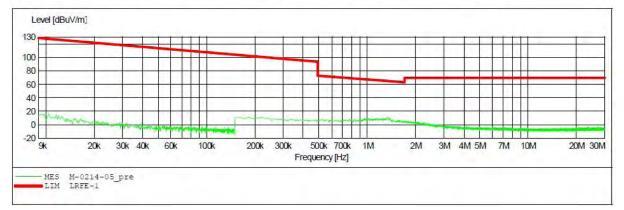




### FCC Part 15C 3M Radiated

MIIIW USB Receiver M/N:MWM24ND
MIIIW
TX 2440MHz
2# Chamber
WADE
DC 5V
Y
2019-2-14 /

Short Desc	ription:	5	SUB STD VTE	RM2 1.70		
Start	Stop	Step	Detector	Meas.	IF	Transducer
Frequency	Frequency	Width		Time	Bandw.	
9.0 kHz	150.0 kHz	100.0 Hz	QuasiPeak	1.0 s	200 Hz	1516M
150.0 kHz	30.0 MHz	5.0 kHz	QuasiPeak	1.0 s	9 kHz	1516M

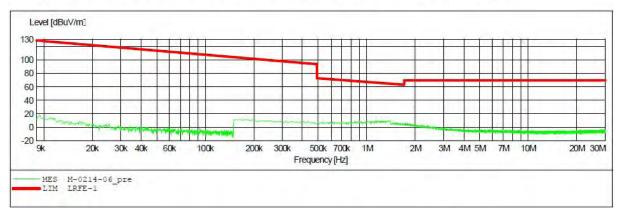




#### FCC Part 15C 3M Radiated

EUT:	MIIIW USB Receiver M/N:MWM24ND
Manufacturer:	MIIIW
Operating Condition:	TX 2440MHz
Test Site:	2# Chamber
Operator:	WADE
Test Specification:	DC 5V
Comment:	Z
Start of Test:	2019-2-14 /

Short Desc	ription:	4	SUB STD VTE	RM2 1.70		
Start	Stop	Step	Detector	Meas.	IF	Transducer
Frequency	Frequency	Width		Time	Bandw.	
9.0 kHz	150.0 kHz	100.0 Hz	QuasiPeak	1.0 s	200 Hz	1516M
150.0 kHz	30.0 MHz	5.0 kHz	QuasiPeak	1.0 s	9 kHz	1516M

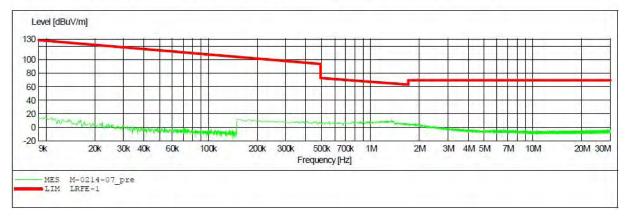




### FCC Part 15C 3M Radiated

EUT:	MIIIW USB Receiver M/N:MWM24ND
Manufacturer:	MIIIW
Operating Condition:	TX 2480MHz
Test Site:	2# Chamber
Operator:	WADE
Test Specification:	DC 5V
Comment:	X
Start of Test:	2019-2-14 /

ription:	S	UB STD VTER	RM2 1.70		
Stop	Step -	Detector	Meas.	IF	Transducer
Frequency	Width		Time	Bandw.	
150.0 kHz	100.0 Hz	QuasiPeak	1.0 s	200 Hz	1516M
30.0 MHz	5.0 kHz	Quasi Peak	1.0 s	9 kHz	1516M
	Stop Frequency 150.0 kHz	Stop Step Frequency Width 150.0 kHz 100.0 Hz	Stop Step Detector Frequency Width 150.0 kHz 100.0 Hz QuasiPeak	StopStepDetector Meas.FrequencyWidthTime150.0kHz100.0HzQuasiPeak1.0s	Stop Step Detector Meas. IF Frequency Width Time Bandw.

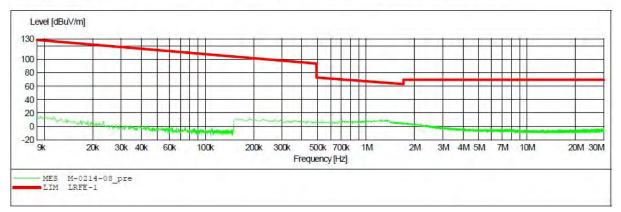




### FCC Part 15C 3M Radiated

EUT:	MIIIW USB Receiver M/N:MWM24ND
Manufacturer:	MIIIW OSB Receiver M/N.MWM24ND MIIIW
Operating Condition:	TX 2480MHz
Test Site:	2# Chamber
Operator:	WADE
Test Specification:	DC 5V
Comment:	Y
Start of Test:	2019-2-14 /

		SUB STD VTE	RM2 1.70		
Stop	Step -	Detector	Meas.	IF	Transducer
Frequency	Width		Time	Bandw.	
150.0 kHz	100.0 Hz	QuasiPeak	1.0 s	200 Hz	1516M
30.0 MHz	5.0 kHz	QuasiPeak	1.0 s	9 kHz	1516M
	ription: Stop Frequency 150.0 kHz	Stop Step Frequency Width 150.0 kHz 100.0 Hz	ription:SUB_STD_VTE Stop Step Detector Frequency Width 150.0 kHz 100.0 Hz QuasiPeak	ription:SUB_STD_VTERM2 1.70 Stop Step Detector Meas. Frequency Width Time 150.0 kHz 100.0 Hz QuasiPeak 1.0 s	ription:SUB_STD_VTERM2 1.70StopStepDetector Meas.IFFrequencyWidthTimeBandw.150.0kHz100.0HzQuasiPeak1.0s200Hz

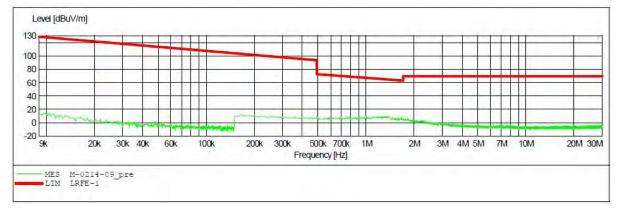




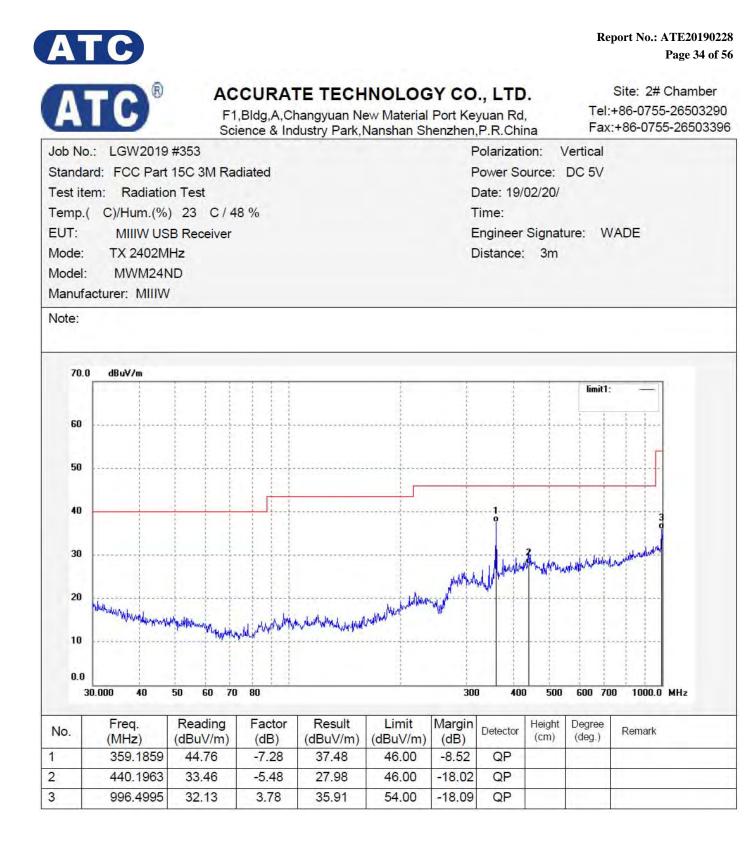
#### FCC Part 15C 3M Radiated

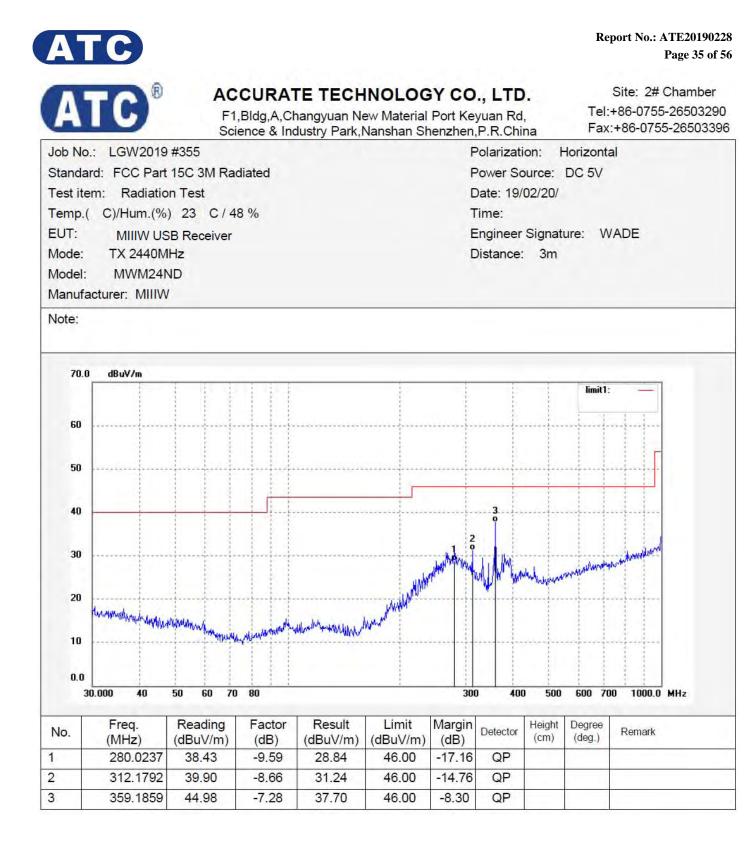
EUT:	MIIIW USB Receiver M/N:MWM24ND
Manufacturer:	MIIIW
Operating Condition:	TX 2480MHz
Test Site:	2# Chamber
Operator:	WADE
Test Specification:	DC 5V
Comment:	Z
Start of Test:	2019-2-14 /

Short Desc	ription.		SUB_STD_VTE			
Start	Stop	Step	Detector	Meas.	IF	Transducer
Frequency	Frequency	Width		Time	Bandw.	
9.0 kHz	150.0 kHz	100.0 Hz	QuasiPeak	1.0 s	200 Hz	1516M
150.0 kHz	30.0 MHz	5.0 kHz	QuasiPeak	1.0 s	9 kHz	1516M







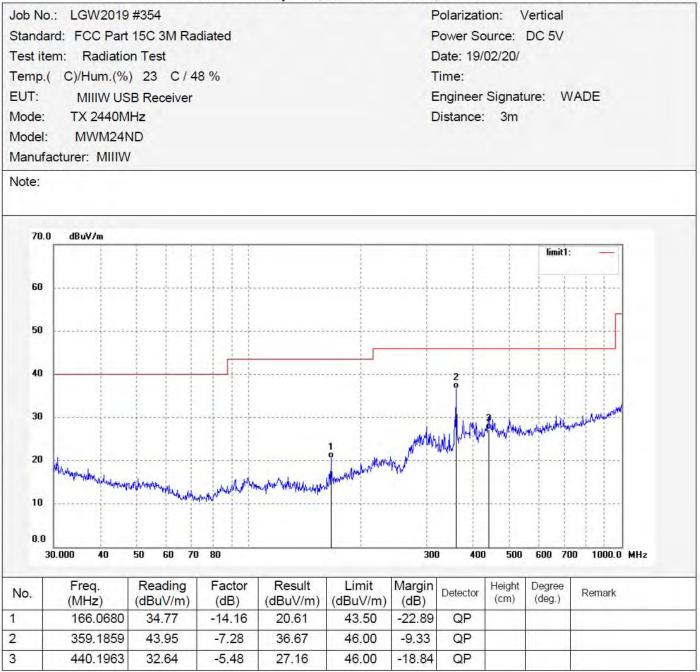




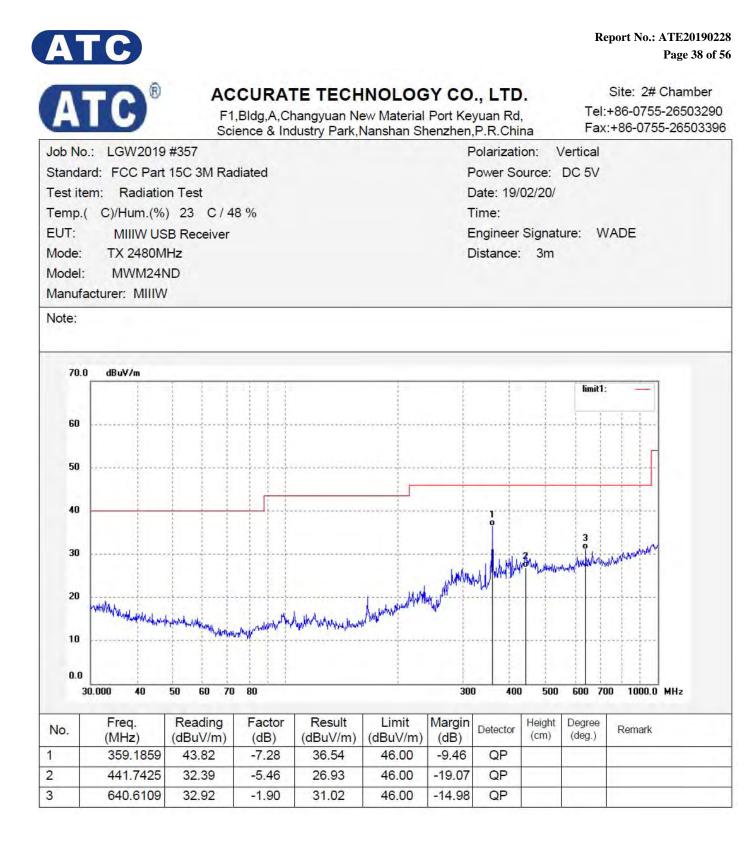
#### Report No.: ATE20190228 Page 36 of 56

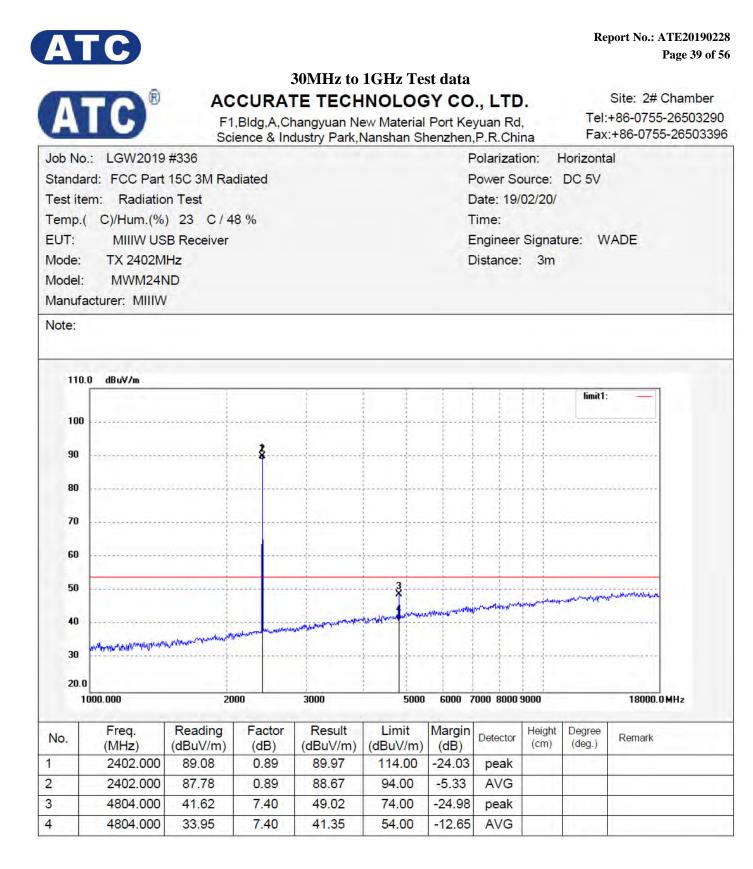
## ACCURATE TECHNOLOGY CO., LTD.

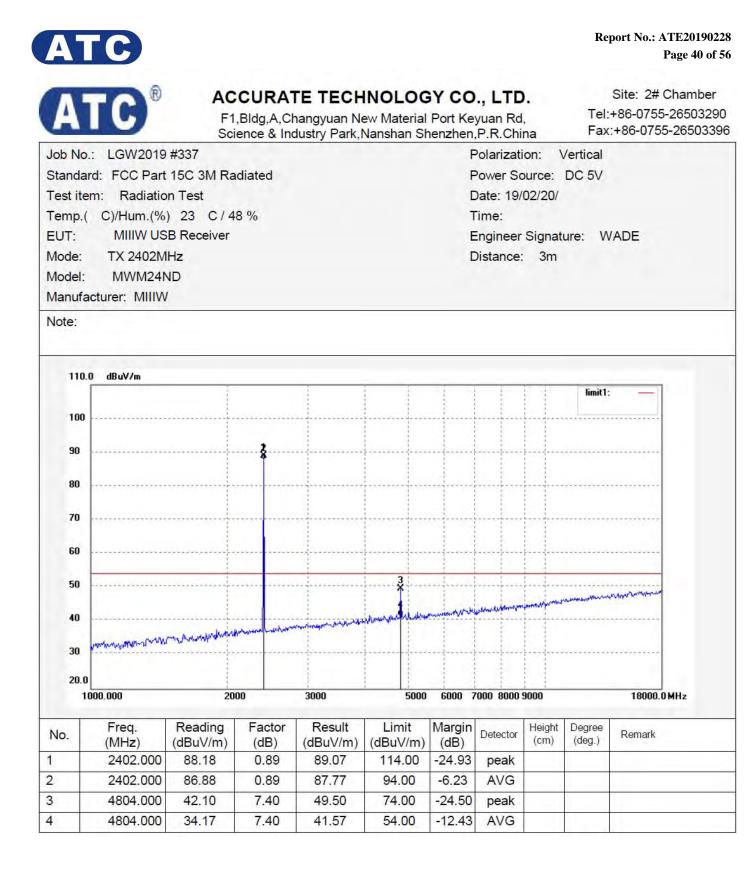
F1,Bldg,A,Changyuan New Material Port Keyuan Rd, Science & Industry Park,Nanshan Shenzhen,P.R.China Site: 2# Chamber Tel:+86-0755-26503290 Fax:+86-0755-26503396







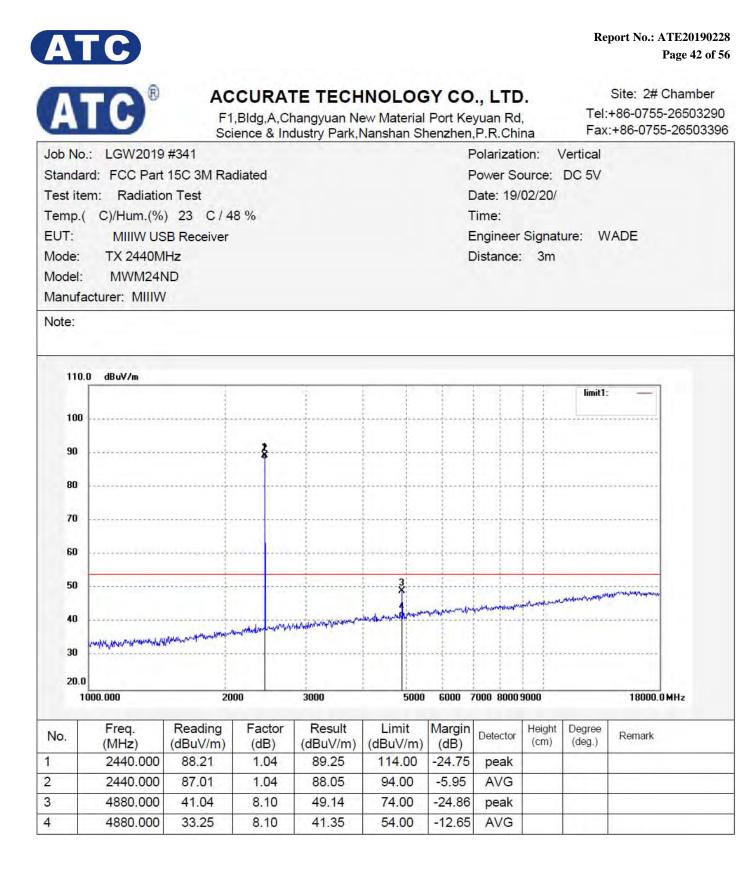






F1,Bldg,A,Changyuan New Material Port Keyuan Rd, Science & Industry Park,Nanshan Shenzhen,P.R.China

Joh Ne	.: LGW2019	A CONTRACT OF		usuy raik,i					Jorizont	al		
	ard: FCC Part		diated				Polarization: Horizontal Power Source: DC 5V					
	em: Radiatio		ulated				Date: 19/02/20/					
			0.0/			02/20/						
	( C)/Hum.(%		6 %		ime:	0:	10					
	MIIIW US				Engineer		ure: vv	ADE				
	TX 2440M					L	Distance:	3m				
	MWM24N											
Manuf	acturer: MIIIW											
Note:	7.5											
110	.0 dBuV/m											
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40	whenter			- pagate chill	Anorthaning	kinginghout	he of the second se					
	Later & B. Kunthall	weld the superior mation	pourleased and another	Marked a mouth .								
30	WAA MAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAA	······			}							
20.												
	1000.000	20	100	3000	5000	6000	7000 8000	9000		18000.0 MHz		
No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark		
1	2440.000	88.80	1.04	89.84	114.00	-24.16	peak	- 10 10 M				
2	2440.000	87.60	1.04	88.64	94.00	-5.36	AVG					
3	4880.000	40.96	8.10	49.06	74.00	-24.94	peak					
4	4880.000	33.22	8.10	41.32	54.00	-12.68	AVG					





# ACCURATE TECHNOLOGY CO., LTD. F1,Bldg,A,Changyuan New Material Port Keyuan Rd,

Site: 2# Chamber Tel:+86-0755-26503290

Mode: TX 2480MHz Distance: 3m   Model: MWM24ND Manufacturer: MIIIW   Note: Immit: Immit: Immit:   100 dBuV/m dBuV/m Immit: Immit:   90 3 400.000 3000 5000 6000 7000 B000.00Hitz   70 60 3 4960.000 39.95 8.60 48.55 74.00 -25.45 peak Immit:		-	Sci	ience & Ind	dustry Park,	Nanshan Sh	nenzhen	,P.R.Chi	na	Fax	:+86-0755-26503396	
Test item:   Radiation Test   Date: 19/02/20/     Temp.( C)/Hum.(%) 23 C / 48 %   Time:     EUT:   MIIW USB Receiver   Engineer Signature:   WADE     Mode:   TX 2480MHz   Distance:   3m     Model:   MVM24ND   Manufacturer:   MIIW     Note:   Immit:   Immit:   Immit:     100   dbw//m   Immit:   Immit:   Immit:     90   4   0   Immit:   Immit:     90   4   0   4   0   Immit:     90   4   0   4   0   0   0   Immit:     90   4	Job N	o.: LGW2019	#343			F	Polarization: Horizontal					
Temp, (C)/Hum, (%) 23 C / 48 %   Time:     EUT:   MIIIW USB Receiver   Engineer Signature:   WADE     Mode:   TX 2480MHz   Distance:   3m     Mode:   MWM24ND   Manufacturer:   MIIIW     Note:   Immit:   Immit:   Immit:     100   dBwV/m   Immit:   Immit:     100   200   300   500   500   500   500     100   2480.000   88.53   1.10   88.63   94.00   34.3   AVG   Immit:	Stand	ard: FCC Part	15C 3M Ra	diated			F	Power Sc	ource:	DC 5V		
EUT:   MIIIW USB Receiver   Engineer Signature:   WADE     Modei:   TX 2480MHz   Distance:   3m     Modei:   MWM24ND   Manufacturer:   MIIW     Note:   Immit:   Immit:   Immit:     100   dBuV/m   Immit:   Immit:   Immit:     1   2480.000   88.53   1.10   88.63   94.00   34.33   AVG     2   2480.000   39.95   8.60   48.55   74.00   -25.45   peak   Immit:   Immit:	Test it	em: Radiatio	n Test				ſ	Date: 19/	02/20/			
Mode: TX 2480MHz Distance: 3m   Model: MWM24ND Manufacturer: MIIIW   Note: Immit: Immit: Immit:   100 dBuV/m dBuV/m Immit: Immit:   90 3 400.000 3000 5000 6000 7000 B000.00Hitz   70 60 3 4960.000 39.95 8.60 48.55 74.00 -25.45 peak Immit:	Temp	( C)/Hum.(%	) 23 C/4	8 %			7	Time:				
Model:   MWM24ND     Manufacturer:   MIIIW     Note:   Imit:   Imit:     100   dBuV/m   Imit:   Imit:     100   30   30   Imit:   Imit:     30   30   30   30   Imit:   Imit:     60   30   300   5000   600   70   Imit:   Imit:     60   300   2000   3000   5000   6000   700   Imit:   Imit:<	EUT:	MIIIW US	B Receiver				E	Engineer	Signat	ure: W	ADE	
Manufacturer:     MIIIW       Note:	Mode:	TX 2480M		ſ	Distance:	3m						
Note:     Imit:     Imit: <th< td=""><td>Model</td><td>: MWM241</td><td>ND</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></th<>	Model	: MWM241	ND									
No.     Freq. (MHz)     Reading (dBuV/m)     Factor (dBuV/m)     Result (dBuV/m)     Limit (dBuV/m)     Detector (dBuV/m)     Height (dBuV/m)     Degree (dBuV/m)     Remark       1     2480.000     87.23     1.10     89.63     114.00     34.33     AVG     Image: Control of the control o	Manuf	acturer: MIIIW	1									
Interpretation     Iminitian     Iminitian       90     30     3     4     <	Note:											
100     3     4	11	0.0 dBu∀/m					7			E_34.		
90 80 70 60 50 60 70 60 60 70 60 70 60 70 60 70 60 70 60 70 70 70 70 70 70 70 70 70 7							l			limiti:	_	
80     70<	10	0									*********	
80     70<	90		l.	2		1						
No.     Freq. (MHz)     Reading (dBUV/m)     Factor (dB)     Result (dBUV/m)     Limit (dBUV/m)     Margin (dB)     Detector     Height (m)     Degree (deg.)     Remark       1     2480.000     88.53     1.10     89.63     114.00     35.63     peak				Î								
60   30   3   40   3   40   30   3   40	80			*****				····-	ļ			
60   30   3   40   3   40   30   3   40					1							
50     3     40     3     40     30     40 <td>70</td> <td></td> <td></td> <td>******</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td>*******</td> <td></td>	70			******						*******		
50     3     40     3     40     30     40 <td>60</td> <td></td> <td></td> <td></td> <td></td> <td>ļ</td> <td></td> <td></td> <td></td> <td></td> <td></td>	60					ļ						
40   30   40   30   40   30   40   30   40   30   40   30   40   30   40   30   40   30   40   30   40 <th< td=""><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></th<>												
20.0   20.0   2000   3000   5000   6000   7000   8000 9000   13000.0 MHz     No.   Freq. (MHz)   Reading (dBuV/m)   Factor (dB)   Result (dBuV/m)   Limit (dBuV/m)   Margin (dB)   Detector   Height (cm)   Degree (deg.)   Remark     1   2480.000   88.53   1.10   89.63   114.00   35.63   peak       2   2480.000   87.23   1.10   88.33   94.00   34.33   AVG       3   4960.000   39.95   8.60   48.55   74.00   -25.45   peak	50			·····		·					Auropan Martin	
1000.000     2000     3000     5000     6000     7000     8000 9000     18000.0 MHz       No.     Freq. (MHz)     Reading (dBuV/m)     Factor (dB)     Result (dBuV/m)     Limit (dBuV/m)     Margin (dB)     Detector     Height (cm)     Degree (deg.)     Remark       1     2480.000     88.53     1.10     89.63     114.00     35.63     peak         2     2480.000     87.23     1.10     88.33     94.00     34.33     AVG         3     4960.000     39.95     8.60     48.55     74.00     -25.45     peak	30		monterit	grander larroad	an when an a country	intration		horner from	Annalianana.			
NO.     (MHz)     (dBuV/m)     (dB)     (dBuV/m)     (dBuV/m)     (dB)     Detector     (cm)     (deg.)     Nethank       1     2480.000     88.53     1.10     89.63     114.00     35.63     peak         2     2480.000     87.23     1.10     88.33     94.00     34.33     AVG         3     4960.000     39.95     8.60     48.55     74.00     -25.45     peak			20	00	3000	5000	6000	7000 8000	9000		18000.0 MHz	
1   2480.000   88.53   1.10   89.63   114.00   35.63   peak     2   2480.000   87.23   1.10   88.33   94.00   34.33   AVG     3   4960.000   39.95   8.60   48.55   74.00   -25.45   peak	No.							Detector			Remark	
2     2480.000     87.23     1.10     88.33     94.00     34.33     AVG       3     4960.000     39.95     8.60     48.55     74.00     -25.45     peak	1							peak	1.111	1		
3 4960.000 39.95 8.60 48.55 74.00 -25.45 peak	1	A CONTRACTOR										
		A CONTRACTOR OF A CONTRACT OF					1-1-2-2-00			-		
	4	4960.000	31.64	8.60	40.24	54.00	-13.76					



F1,Bldg,A,Changyuan New Material Port Keyuan Rd, Science & Industry Park,Nanshan Shenzhen,P.R.China

Job No	.: LGW2019						Polarizati		/ertical	
Standa	rd: FCC Part	15C 3M Ra	diated			F	Power So	ource:	DC 5V	
	em: Radiatio						Date: 19/			
	( C)/Hum.(%		8 %				Time:			
EUT:		B Receiver					Engineer	Signat	ure: W	
Mode:	TX 2480M						Distance:			
Model:							Diotarioe.	onn		
	acturer: MIIIW									
	acturer. Willing									
Note:										
110	.0 dBuV/m	9		1		1			limit1:	
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-	and the second second second	symmetrythemetrythemetry	New J. Conc. of C.							
30										*********
20.0		1		1 1						
1	000.000	20	00	3000	5000	6000	7000 8000	9000		18000.0 MHz
No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	2480.000	88.32	1.10	89.42	114.00	-24.58	peak			
2	2480.000	87.02	1.10	88.12	94.00	-5.88	AVG			
3	4960.000	40.24	8.60	48.84	74.00	-25.16	peak			
4	4960.000	31.61	8.60	40.21	54.00	-13.79	AVG			11

<b>A</b> 1										port No.: ATE2019022 Page 45 of 5
			1	8GHz to 20	6.5GHz T	est dat	a			
	B	AC	CURA	TE TECH	NOLOG	YCO	LTD			Site: 2# Chamber
Δ	TC			hangyuan Ne					Tel:	+86-0755-26503290
				dustry Park,					Fax	:+86-0755-26503396
ob No	.: LGW2019	#347				F	Polarizati	on: I	Horizont	al
tanda	rd: FCC Part	15C 3M Ra	diated			F	Power Sc	ource:	DC 5V	
est ite	em: Radiatio		E	Date: 19/	02/20/					
Гетр.( C)/Hum.(%) 23 C / 48 %						3	Time:			
UT:	MIIIW US	B Receiver			E	Engineer	Signat	ure: W	/ADE	
Node: TX 2402MHz						C	Distance:	3m		
lodel:	MWM24M	ND								
lanufa	acturer: MIIIW	1								
90.0	) dBuV/m								limit1:	-
									limit1:	
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70										
60					*******	********		********	*********	
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10		***********	1							
0.0	8000.000		20000							26500.0 MHz
					1	1			1	
No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
	22318.536	10.48	39.67	50.15	74.00	-23.85	peak	1.1		
	22318.536	0.90	39.67	40.57	54.00	-13.43	AVG			

A'	ГС								Re	port No.: ATE20190228 Page 46 of 50	
A	TC®	F1	,Bldg,A,C	TE TECH hangyuan Ne dustry Park,I	ew Material	Port Ke	yuan Rd	Ι,		Site: 2# Chamber +86-0755-26503290 ::+86-0755-26503396	
Job No	b.: LGW2019	#346				F	Polarizat	ion: \	/ertical		
Standa	ard: FCC Part	15C 3M Rad	diated			F	Power So	ource:	DC 5V		
Test ite	em: Radiatio	n Test				C	Date: 19/	02/20/			
Temp.	( C)/Hum.(%	) 23 C/4	8 %			3	Time:				
EUT:	MIIIW US	B Receiver				E	Engineer	Signat	ure: W	ADE	
Mode:	TX 2402M	Hz				[	Distance	: 3m			
Model:	: MWM24M	MWM24ND									
vianut	acturer: MIIIW										
90.1	0 dBu¥/m								limit1:	-	
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0.0	18000.000		20000							26500.0 MHz	
No.	Freq.	Reading	Factor	Result	Limit	Margin	Detector	Height	Degree	Remark	
	(MHz)	(dBuV/m)	(dB)	(dBuV/m)	(dBuV/m)	(dB)		(cm)	(deg.)	I CHIGIN	
1	21174.898	10.69	39.36	50.05	74.00	-23.95					
2	21174.898	0.99	39.36	40.35	54.00	-13.65	AVG	-			



ACCURATE TECHNOLOGY CO., LTD. F1.Bldg.A.Changyuan New Material Port Keyuan Rd. Page 47 of 56 Site: 2# Chamber

Report No.: ATE20190228

F1,Bldg,A,Changyuan New Material Port Keyuan Rd, Science & Industry Park,Nanshan Shenzhen,P.R.China Tel:+86-0755-26503290 Fax:+86-0755-26503396

Stand Test it Temp EUT: Mode: Model			F C T E	Polarizat Power So Date: 19/ Time: Engineer Distance	ource: 02/20/ Signat		al /ADE			
90	.0 dBuV/m									
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	18000.000		20000			1				26500.0 MHz
No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)			Detector	Height (cm)	Degree (deg.)	Remark
1	23028.812	10.39	39.60	49.99	74.00	-24.01	peak			
2	23028.812	-0.19	39.60	39.41	54.00	-14.59	AVG		h	



F1,Bldg,A,Changyuan New Material Port Keyuan Rd, Science & Industry Park,Nanshan Shenzhen,P.R.China

Job No	.: LGW2019	#349				F	Polarizati	ion: \	/ertical				
Standa	ard: FCC Part	15C 3M Ra	diated			F	Power So	ource:	DC 5V				
Test ite	em: Radiatio	n Test				C	Date: 19/02/20/						
Temp.	( C)/Hum.(%	) 23 C/4	8 %			Т	Time:						
EUT:	MIIIW US		Engineer Signature: WADE										
Mode:	TX 2440M	Hz			Distance: 3m								
Model:	MWM24	D											
Manufa	acturer: MIIIW	1											
Note:													
90.0	D dBu¥/m												
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0.0	18000.000		20000	-						26500.0 MHz			
No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark			
1	21480.102	10.89	39.28	50.17	74.00	-23.83	peak						
2	21480.102	1.29	39.28	40.57	54.00	-13.43	AVG						



F1,Bldg,A,Changyuan New Material Port Keyuan Rd, Science & Industry Park,Nanshan Shenzhen,P.R.Chin

-		SCI	ence & In	dustry Park,	Nanshan Sr	nenznen	P.R.Chi	na	1 an			
Job N	b.: LGW2019	#351			Polarization: Horizontal							
Standa	ard: FCC Part	15C 3M Ra	diated			F	Power Sc	ource:	DC 5V			
Test it	em: Radiatio	n Test			Date: 19/02/20/							
Temp.	( C)/Hum.(%		Time:									
EUT:	MIIIW US	B Receiver			Engineer Signature: WADE							
Mode:	TX 2480M	Hz				C	Distance:	3m				
Model	: MWM241	ND										
Manuf	acturer: MIIIW	1										
Note:												
90.	0 dBu¥/m		-						limit1:			
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10												
0.0	18000.000		20000							26500.0 MHz		
No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark		
1	21605.083	11.16	38.70	49.86	74.00	-24.14	peak					
2	21605.083	0.91	38.70	39.61	54.00	-14.39	AVG					



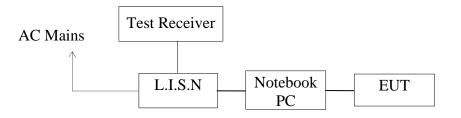
F1,Bldg,A,Changyuan New Material Port Keyuan Rd, Science & Industry Park,Nanshan Shenzhen,P.R.China Report No.: ATE20190228 Page 50 of 56

-		00	choc a m	austry i aik,i	inditional of	ienznen	,1 .1 Offi						
Job No	.: LGW2019	#350		Polarization: Vertical									
Standa	ard: FCC Part	15C 3M Ra	diated			F	Power So	ource:	DC 5V				
Test it	em: Radiatio	n Test				Date: 19/02/20/							
Temp.	( C)/Hum.(%	) 23 C/4	8 %			Time:							
EUT:	MIIIW US	B Receiver				Engineer Signature: WADE							
Mode:	TX 2480M	IHz				C	Distance:	3m					
Model	MWM24M	ND											
Manuf	acturer: MIIIW	1											
Note:													
90.	0 dBuV/m									_			
			1						limit1:				
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0.0	18000.000		20000							26500.0 MHz			
				T						- Gregory			
No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark			
1	22249.585	10.52	39.30	49.82	74.00	-24.18	peak						
2	22249.585	0.24	39.30	39.54	54.00	-14.46	AVG						

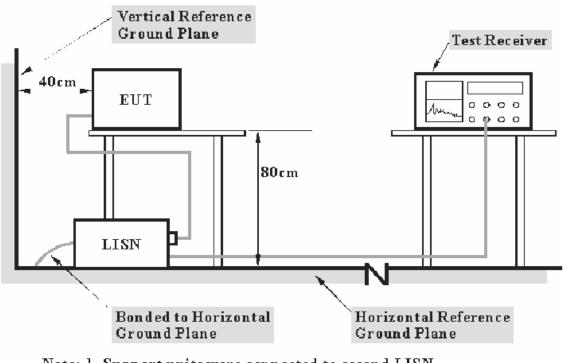


### 8. POWER LINE CONDUCTED EMISSION TEST

### 8.1.Block Diagram of Test Setup



### 8.2.Test System Setup



- Note: 1. Support units were connected to second LISN.
  - 2. Both of LISNs (AMN) 80 cm from EUT and at the least 80 cm from other units and other metal planes support units.



#### 8.3.Test Limits

Frequency	Limit d	B(µV)					
(MHz)	Quasi-peak Level	Average Level					
0.15 - 0.50	66.0 - 56.0 *	56.0 - 46.0 *					
0.50 - 5.00	0.50 - 5.00 56.0 46.0						
5.00 - 30.00	5.00 - 30.00 60.0 50.0						
NOTE1: The lower limit sha	NOTE1: The lower limit shall apply at the transition frequencies.						
NOTE2: The limit decreases linearly with the logarithm of the frequency in the range							
0.15MHz to 0.50MHz.							

#### 8.4. Configuration of EUT on Measurement

The equipments are installed on Power Line Conducted Emission Measurement to meet the commission requirement and operating regulations in a manner, which tends to maximize its emission characteristics in a normal application.

### 8.5. Operating Condition of EUT

8.5.1. Setup the EUT and simulator as shown as Section 8.1.

- 8.5.2. Turn on the power of all equipment.
- 8.5.3. Let the EUT work in test mode and measure it.

#### 8.6.Test Procedure

The EUT is put on the plane 0.8m high above the ground by insulating support and is connected to the power mains through a line impedance stabilization network (L.I.S.N.). This provides a 500hm coupling impedance for the EUT system. Please refer the block diagram of the test setup and photographs. Both sides of AC lines are checked to find out the maximum conducted emission. In order to find the maximum emission levels, the relative positions of equipment and all of the interface cables shall be changed according to ANSI C63.10: 2013 on Conducted Emission Measurement. The bandwidth of test receiver (R & S ESCS30) is set at 9kHz.

The frequency range from 150kHz to 30MHz is checked.



Frequency	Transducer	QuasiPeak	Average	QuasiPeak	Average	QuasiPeak	Average	Remark
(MHz)	value	Level	Level	Limit	Limit	Margin	Margin	(Pass/Fail)
	(dB)	(dBµV)	(dBµV)	(dBµV)	(dBµV)	(dB)	(dB)	
X.XX	10.5	51.1	34.2	56.0	46.0	4.9	11.8	Pass

#### 8.7.Data Sample

Frequency(MHz) = Emission frequency in MHz

 $\begin{array}{l} Transducer\ value(dB) = Insertion\ loss\ of\ LISN + Cable\ Loss\\ Level(dB\mu V) = Quasi-peak\ Reading/Average\ Reading + Transducer\ value\ Limit\ (dB\mu V) = Limit\ stated\ in\ standard \end{array}$ 

Calculation Formula: Margin = Limit (dBµV) - Level (dBµV)

#### **8.8.Test Results**

Pass.

The frequency range from 150kHz to 30MHz is checked.

Maximizing procedure was performed on the six (6) highest emissions of the EUT.

Emissions attenuated more than 20 dB below the permissible value are not reported.

All data was recorded in the Quasi-peak and average detection mode.

The spectral diagrams are attached as below.

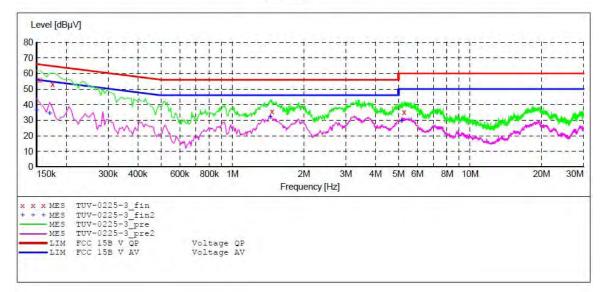


CONDUCTED EMISSION STANDARD FCC PART 15 C

EUT:	MIIIW USB Receiver M/N:MWM24ND
Manufacturer:	MIIIW
Operating Condition:	Communication
Test Site:	1#Shielding Room
Operator:	WADE
Test Specification:	N 120V/60Hz
Comment:	
Start of Test:	2/25/2019 /

#### SCAN TABLE: "V 9K-30MHz fin"

Short Desc		Souther	UB STD VTE	RM2 1.70		
Start Frequency	Stop Frequency	Step Width	Detector	Meas. Time	IF Bandw.	Transducer
	150.0 kHz		QuasiPeak Average			NSLK8126 2008
150.0 kHz	30.0 MHz	5.0 kHz	QuasiPeak Average	1.0 s	9 kHz	NSLK8126 2008



#### MEASUREMENT RESULT: "TUV-0225-3 fin"

2/25/2019

- /	20/2010								
	Frequency MHz	Level dBµV	Transd dB	Limit dBµV	Margin dB	Detector	Line	PE	
	0.155000	55.80	10.5	66	9.9	QP	N	GND	
	0.175000	53.20	10.5	65	11.5	QP	N	GND	
	1.465000	35.60	10.9	56	20.4	QP	N	GND	
	5.270000	35.10	11.2	60	24.9	QP	N	GND	

#### MEASUREMENT RESULT: "TUV-0225-3 fin2"

2/25/2019 Frequency MHz	Level dBµV	Transd dB	Limit dBµV	Margin dB	Detector	Line	PE
0.150000	36.40	10.5	56	19.6	AV	N	GND
0.170000	34.40	10.5	55	20.6	AV	N	GND
1.440000	32.20	10.9	46	13.8	AV	N	GND
5.160000	29.40	11.2	50	20.6	AV	N	GND

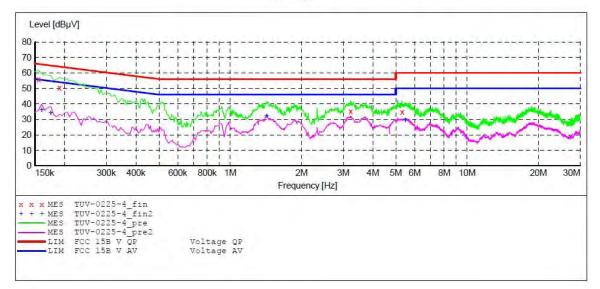


#### CONDUCTED EMISSION STANDARD FCC PART 15 C

EUT:	MIIIW USB Receiver M/N:MWM24ND
Manufacturer:	MIIIW
Operating Condition:	Communication
Test Site:	1#Shielding Room
Operator:	WADE
Test Specification:	L 120V/60Hz
Comment:	
Start of Test:	2/25/2019 /

#### SCAN TABLE: "V 9K-30MHz fin"

Short Desc		S	UB STD VTE	RM2 1.70			
	Stop Frequency		Detector	Meas. Time	IF Bandw.	Transducer	
	150.0 kHz		QuasiPeak Average	1.0 s	200 Hz	NSLK8126 2008	
150.0 kHz	30.0 MHz	5.0 kHz	QuasiPeak Average	1.0 s	9 kHz	NSLK8126 2008	



#### MEASUREMENT RESULT: "TUV-0225-4 fin"

2/25/2019

- /	20/2010							
	Frequency MHz	Level dBµV	Transd dB	Limit dBµV	Margin dB	Detector	Line	PE
	0.155000	55.90	10.5	66	9.8	QP	L1	GND
	0.190000	50.40	10.5	64	13.6	QP	L1	GND
	3.220000	35.30	11.1	56	20.7	QP	L1	GND
	5.310000	34.80	11.2	60	25.2	QP	L1	GND

#### MEASUREMENT RESULT: "TUV-0225-4\_fin2"

2/25/2019	
Fromionaut	To

Frequency MHz	Level dBµV	Transd dB	Limit dBµV	Margin dB	Detector	Line	PE
0.160000	36.00	10.5	56	19.5	AV	L1	GND
0.175000	33.90	10.5	55	20.8	AV	L1	GND
1.425000	32.20	10.9	46	13.8	AV	L1	GND
5.480000	29.40	11.2	50	20.6	AV	L1	GND



## 9. ANTENNA REQUIREMENT

### 9.1.The Requirement

According to Section 15.203, an intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device.

#### 9.2. Antenna Construction

Device is equipped with permanent attached antenna, which isn't displaced by other antenna. The Antenna gain of EUT is 0dBi. Therefore, the equipment complies with the antenna requirement of Section 15.203.

\*\*\*\*\* End of Test Report \*\*\*\*\*