

RF EXPOSURE EVALUATION REPORT

	GLORY HORSE INDUSTRIES LTD.
: ,	M18/M12 Wireless Jobsite Speaker
:	2891-20 / WSR1602
2.0	Milwaukee
.08	Milwaukee
:	2ABL52891-M18
i.es	47CFR 2.1091 KDB 447498 D01 General RF Exposure Guidance v06
:	2016-11-14
educts Quan	Certification OMMUNICATIONS TECHNOLOGY Co., Ltd.
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	Change History					
Issue Date Reason for change						
8	1.0	2016-11-14	First edition			
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TEST REPORT DECLARATION

Applicant	GLORY HORSE INDUSTRIES LTD.		
Applicant Address	workshop 8, 4/f., World-Wide Industrial Centre, 43-47 Shan Mei street, Fotan, Shatin, N.T., Hong Kong		
Manufacturer	Glory Horse Digitech Ltd. Dongguan		
Manufacturer Address	No. 11, Jin YuLing Road, Sang Yuan Industrial District, Dongcheng, Dongguan, Guangdong, China.		
Product Name	M18/M12 Wireless Jobsite Speaker		
Model Name	2891-20 / WSR1602		
Brand Name	Milwaukee		
HW Version	REV05		
SW Version	REV1.5		
Test Standards	47CFR 2.1091; KDB 447498 D01 General RF Exposure Guidance v06		
Issue Date	2016-11-14		
SAR Evaluation	Not Required		

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1. TECHNICAL INFORMATION

Note: the following data is based on the information by the applicant.

1.1. Identification of Applicant

Company Name:	GLORY HORSE INDUSTRIES LTD.		
Address:	workshop 8, 4/f., World-Wide Industrial Centre, 43-47 Shan M	Mei	
NORL MO	street, Fotan, Shatin, N.T., Hong Kong		

1.2. Identification of Manufacturer

Company Name:	Glory Horse Digitech Ltd. Dongguan
Address:	No. 11, Jin YuLing Road, Sang Yuan Industrial District, Dongcheng,
LB ORLAN MORN	Dongguan, Guangdong, China.

1.3. Equipment Under Test (EUT)

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Model Name:	2891-20 / WSR1602
Trade Name:	Milwaukee
Brand Name:	Milwaukee
Hardware Version:	REV05
Software Version:	REV1.5
Frequency Bands:	Bluetooth 4.0; Bluetooth 2.1 ;
Modulation Mode:	Bluetooth 4.0:GFSK; Bluetooth 2.1+EDR: GFSK/π/4-DQPSK/8-DPSK
Antenna type:	PCB Antenna
Development Stage:	Identical prototype

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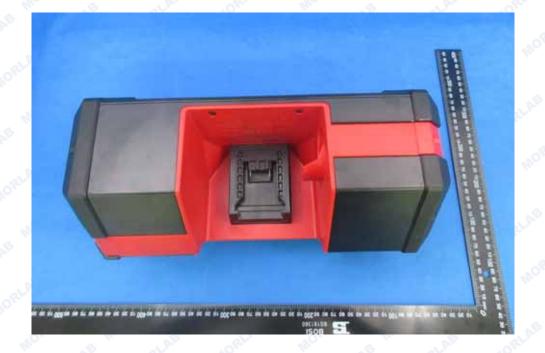


1.3.1. Photographs of the EUT

1. EUT front view



2. EUT rear view



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1.3.2. Identification of all used EUT

The EUT identity consists of numerical and letter characters, the letter character indicates the test sample, and the following two numerical characters indicate the software version of the test sample.

EUT Identity Hardware Versi		Hardware Version	Software Version
Nor	1#	REV05	REV1.5

1.4. Applied Reference Documents

Leading reference documents for testing:

	No.	Identity	Document Title		
	1 OPLAS	47 CFR§2.1091	Radiofrequency Radiation Exposure Evaluation: mobile devices		
,	2	KDB 447498 D01v06	General RF Exposure Guidance		

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2. DEVICE CATEGORY AND RF EXPOSURE LIMIT

Per user manual. Based on 47CFR 2.1091, this device belongs to mobile device category with General Population/Uncontrolled exposure.

Mobile Devices:

47CFR 2.1091(b)

For purposes of this section, a mobile device is defined as a transmitting device designed to be used in other than fixed locations and to generally be used in such a way that a separation distance of at least 20 centimeters is normally maintained between the transmitter's radiating structure(s) and the body of the user or nearby persons. In this context, the term "fixed location" means that the device is physically secured at one location and is not able to be easily moved to another location. Transmitting devices designed to be used by consumers or workers that can be easily re-located, such as wireless devices associated with a personal computer, are considered to be mobile devices if they meet the 20 centimeter separation requirement.

GENERAL POPULATION / UNCONTROLLED EXPOSURE

The general population/uncontrolled exposure limits are applicable to situations in which the general public may be exposed or in which persons who are exposed as a consequence of their employment may not be made fully aware of the potential for exposure or cannot exercise control over their exposure. Members of the general public would come under this category when exposure is not employment-related; for example, in the case of a wireless transmitter that exposes persons in its vicinity. Warning labels placed on low-power consumer devices such as cellular telephones are not considered sufficient to allow the device to be considered under the occupational/controlled category, and the general population/uncontrolled exposure limits apply to these devices.

Frequency range (MHz)	Electric field strength (V/m)	Magnetic field strength (A/m)	Power density (mW/cm ²)	Averaging time (minutes)
1)	B) Limits for General	Population/Uncontro	lied Exposure	
0.3-1.34	614	1.63	*(100)	30
1.34-30	824/f	2.19/f	*(180/f ²)	30
30-300	27.5	0.073	0.2	30
300-1500	-	-	f/1500	30
1500-100,000	-	-	1.0	30

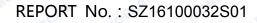
TABLE 1—LIMITS FOR MAXIMUM PERMISSIBLE EXPOSURE (MPE)

f = frequency in MHz

* = Plane-wave equivalent power density

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3. MEASUREMENT OF CONDUCTED PEAK OUTPUT POWER

Bluetooth Average output power

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	Dond	Channel	Frequency		Output Power(dB	3m)
ø	Band	Channel	(MHz)	GFSK	π/4-DQPSK	8-DPSK
	ORLA	0	2402	6.06	3.67	3.67
0	BT2.1	39	2441	6.20	4.13	4.12
	MON	78	2480	5.54	3.40	3.35

			Output	
Band	Channel	Frequency	Power(dBm) GFSK	
4		(MHz)		
RLAL	0	2402	6.49	
BT 4.0	19	2440	6.86	
MORL	39	2480	6.14	

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4. RF EXPOSURE EVALUATION

Standalone transmission MPE evaluation

Bands	Frequency (MHz)	Antenna Gain (dBi)	Conducted Average Power (dBm)	Time-averaging EIRP (mW)	Power density (mW/cm ²)	Limit for MPE (mW/cm ²)
Bluetooth 4.0	2440	JRLAE1	6.86	6.11	0.001	1.0
Bluetooth 2.1	2441	mo1LAB	6.20	5.25	0.001	1.0

Note:

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1. MPE calculation method

Power Density = EIRP/4 π R²

Where: EIRP = P·G

P = Peak out power

G = Antenna gain

R = Separation distance (20cm)

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ANNEX GENERAL INFORMATION

1. Identification of the Responsible Testing Laboratory

Company Name:	Shenzhen Morlab Communications Technology Co., Ltd.		
Department:	Morlab Laboratory		
Address:	FL.3, Building A, FeiYang Science Park, No.8 LongChang Road, Block 67, BaoAn District, ShenZhen, GuangDong Province, P. R. China		
Responsible Test Lab Manager:	Mr. Su Feng		
Telephone:	+86 755 36698555		
Facsimile:	+86 755 36698525		

2. Identification of the Responsible Testing Location

Name:	Shenzhen Morlab Communications Technology Co., Ltd. Morlab Laboratory
Address:	FL.3, Building A, FeiYang Science Park, No.8 LongChang Road, Block 67, BaoAn District, ShenZhen, GuangDong Province, P. R. China

***** END OF REPORT *****

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