



RADIO TEST REPORT

Report No: STS2106097H01

Issued for

Masterbuilt Manufacturing LLC

1 Masterbuilt Court Columbus, Georgia 31907 United States

Product Name:	Controller with Fan
Brand Name:	Masterbuilt
Model Name:	MB20040220
Series Model:	MB20043020,MB20043120,MB20041021, MB20041121,MB20041220,MB20041420, MB20041421,MB20041521
FCC ID:	YHXMB20040220
Test Standard:	FCC 47CFR §2.1091

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Test Report Certification

Applicant's Name..... : Masterbuilt Manufacturing LLC
 Address : 1 Masterbuilt CourtColumbus, Georgia 31907 United States
Manufacturer's Name : Masterbuilt Manufacturing LLC
 Address : 1 Masterbuilt CourtColumbus, Georgia 31907 United States

Product Description

Product Name..... : Controller with Fan
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Standards : FCC 47CFR §2.1091

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Date of Test

Date of receipt of test item : 15 June 2021
 Date (s) of performance of tests : 15 June 2021 ~ 29 June 2021
 Date of Issue..... : 29 June 2021
 Test Result..... : **Pass**

Testing Engineer : *Chris Chen*

 (Chris Chen)

Technical Manager : *Sean She*

 (Sean she)



Authorized Signatory : *Vita Li*

 (Vita Li)



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Revision History

Rev.	Issue Date	Report No.	Effect Page	Contents
00	29 June 2021	STS2106097H01	ALL	Initial Issue





1. GENERAL INFORMATION

1.1 GENERAL DESCRIPTION OF THE EUT

Product Name	Controller with Fan								
Brand Name	Masterbuilt								
Model Name	MB20040220								
Series Model	MB20043020,MB20043120,MB20041021,MB20041121,MB20041220,MB20041420,MB20041421,MB20041521								
Model Difference	Please refer to below Declaration of different.								
Product Description	<p>The EUT is Controller with Fan</p> <table border="1"><tr><td>Operation Frequency:</td><td>BT/BLE: 2402~2480MHz WLAN: 2412~2462MHz</td></tr><tr><td>Modulation Type:</td><td>BT: GFSK, $\pi/4$-DQPSK,8DPSK BLE: GFSK WLAN: 802.11b(DSSS):CCK,DQPSK,DBPSK 802.11g(OFDM):BPSK,QPSK,16-QAM,64-QAM 802.11n(OFDM):BPSK,QPSK,16-QAM,64-QAM</td></tr><tr><td>Antenna gain:</td><td>0dBi</td></tr><tr><td>Antenna Designation:</td><td>Rod Antenna</td></tr></table>	Operation Frequency:	BT/BLE: 2402~2480MHz WLAN: 2412~2462MHz	Modulation Type:	BT: GFSK, $\pi/4$ -DQPSK,8DPSK BLE: GFSK WLAN: 802.11b(DSSS):CCK,DQPSK,DBPSK 802.11g(OFDM):BPSK,QPSK,16-QAM,64-QAM 802.11n(OFDM):BPSK,QPSK,16-QAM,64-QAM	Antenna gain:	0dBi	Antenna Designation:	Rod Antenna
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Antenna gain:	0dBi								
Antenna Designation:	Rod Antenna								
Adapter	Model: DQS181-120150-U Input: AC 100-240V 50/60hz 0.45A Max Output: DC 12V 1.5A Model: R122-1201500ID Input: AC 100-240V 50/60hz 0.6A Output: DC 12V 1.5A 18.0W								
Hardware version number	V2.1								
Software version number	V001 R000								

Declaration of different			
Appearance	Model	Differences within series	Differences between series
	MB20040220	560 GF EU/UK/AU/NZ (The product structure and design are the same, only representing different shipping regions)	The differences between 560 GF and 1050 GF are that the grilling area and shape are different. The controller and the amount of charcoal are exactly the same.
	MB20043020		
	MB20043120		
	MB20041021		
	MB20041121		
	MB20041220	1050 GF EU/UK/AU/NZ (The product structure and design are the same, only representing different shipping regions)	
	MB20041420		
	MB20041421		
	MB20041521		
Two limit switches for all models. Both functions are the same, but the producers are different.			

1.2 TEST FACTORY

SHENZHEN STS TEST SERVICES CO., LTD

Address: A 1/F, Building B, Zhuoke Science Park, No.190 Chongqing Road, HepingShequ, Fuyong Sub-District, Bao'an District, Shenzhen, Guang Dong, China

FCC test Firm Registration Number: 625569

IC test Firm Registration Number: 12108A

A2LA Certificate No.: 4338.01



2. FCC 47CFR §2.1091 REQUIREMENT

2.1 TEST STANDARDS

The limit for Maximum Permissible Exposure (MPE) specified in FCC 1.1310 is followed. The gain of the antennas used in the product is extracted from the Antenna data sheets provided and also the maximum total power input to the antenna is measured. Through the Friis transmission formula and the maximum gain of the antenna, we can calculate the distance, away from the product, where the limit of MPE is reached.

Although the Friis Transmission formula is far field assumption, the calculated result of that is an over-prediction for near field power density. It is taken as worst case to specify the safety range.

2.2 LIMIT

According to FCC 1.1310: The criteria listed in the following table shall be used to evaluate the environmental impact of the human exposure to radio-frequency (RF) radiation as specified in 1.1307 (b)

Limits for Maximum Permissible Exposure (MPE)

Frequency Range (MHz)	Electric Field Strength (V/m)	Magnetic Field Strength (A/m)	Power Density (mW/cm ²)
Limits for Occupational / controlled Exposures			
300 - 1500	--	--	F/300
1500 – 100000	--	--	5.0
Limits for General population / Uncontrolled Exposure			
300 - 1500	--	--	F/1500
1500 – 100000	--	--	1.0

F= Frequency in MHz

Friss Formula

Friss Transmission Formula: $Pd = (Pout * G) / (4*pi*r^2)$

Where

Pd = power density in mW/cm²

Pout = output power to antenna in mW

G = gain of antenna in linear scale

Pi = 3.1416

R = Distance between observation point and the center of radiator in cm

If we know the maximum gain of the antenna and the total output power to the antenna, through calculation, we will know MPE value at distance 20cm.

2.3 EUT OPERATION CONDITION

EUT was enabled to transmit and receive at lowest, middle and highest channels.

2.4 CLASSIFICATION

The antenna of this product, under normal use condition, is at least 20cm away from the body of the user. Warning statement to the user for keeping at least 20cm or more separation distance from the antenna should be included in the User manual. So, this device is classified as Mobile device.



2.5 TEST RESULT

Turn up

Mode	Detector	Turn up Power
802.11b	AV	13±1dBm
802.11g	AV	11±1dBm
802.11n(HT20)	AV	11±1dBm
8DPSK	AV	-6±1dBm
GFSK(BLE)	AV	-5±1dBm

ANT Gain (G)

2402-2483.5MHz: 0dBi (gain of antenna in linear scale=1)

Protocol	Max Turn up Power (dBm)	Max Turn up Power (mW)	ANT Gain(gain of antenna in linear scale)	Power Density (mW/cm ²)	Limit (mW/c m ²)	Result
802.11b	14	25.11886	1	0.00006	1	Pass
802.11g	12	15.84893	1	0.00008	1	Pass
802.11n(HT20)	12	15.84893	1	0.00500	1	Pass
8DPSK	-5	0.31623	1	0.00315	1	Pass
GFSK(BLE)	-4	0.39811	1	0.00315	1	Pass

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