

FCC Test Report

Report No.: AGC00688231002FR02

FCC ID	:	2BCE8-WGM832
APPLICATION PURPOSE	:	Original Equipment
PRODUCT DESIGNATION	:	Dual Mode Wireless Mouse
BRAND NAME	:	WAIZOWL, TRUSYO
MODEL NAME	:	WGM832(OGM CLOUD), WGM833(OGM Pro V2)
CLIENT	:	Shenzhen Qianhai Biguan electronic Technology Co., LTD
DATE OF ISSUE	:	Nov. 29, 2023
STANDARD(S)	:	FCC Part 15 Subpart C Section 15.249
REPORT VERSION	:	V1.0







Report Revise Record

Report Version	Revise Time	Issued Date	Valid Version	Notes
V1.0	/	Nov. 29, 2023	Valid	Initial release



TABLE OF CONTENTS

1. VERIFICATION OF CONFORMITY	5
2. GENERAL INFORMATION	6
2.1. PRODUCT DESCRIPTION	6
2.2. TABLE OF CARRIER FREQUENCYS	7
3. MEASUREMENT UNCERTAINTY	
4. DESCRIPTION OF TEST MODES	9
5. SYSTEM TEST CONFIGURATION	
5.1. CONFIGURATION OF EUT SYSTEM	
5.2. EQUIPMENT USED IN EUT SYSTEM	
5.3. SUMMARY OF TEST RESULTS	11
6. TEST FACILITY	12
7. TEST EQUIPMENT LIST	13
8. RADIATED EMISSION	14
8.1TEST LIMIT	14
8.2. MEASUREMENT PROCEDURE	
8.3. TEST SETUP	
8.4. TEST RESULT	
9. BAND EDGE EMISSION	
9.1TEST LIMIT	
9.2. MEASUREMENT PROCEDURE	
9.3 TEST SETUP	
9.4 TEST RESULT	
10. 20DB BANDWIDTH	
10.1. MEASUREMENT PROCEDURE	
10.2. TEST SET-UP	
10.3. LIMITS AND MEASUREMENT RESULTS	
11. FCC LINE CONDUCTED EMISSION TEST	



11.1. LIMITS OF LINE CONDUCTED EMISSION TEST	
11.2. BLOCK DIAGRAM OF LINE CONDUCTED EMISSION TEST	
11.3. PRELIMINARY PROCEDURE OF LINE CONDUCTED EMISSION TEST	
11.4. FINAL PROCEDURE OF LINE CONDUCTED EMISSION TEST	
11.5. TEST RESULT OF LINE CONDUCTED EMISSION TEST	
APPENDIX I: PHOTOGRAPHS OF TEST SETUP	40
APPENDIX II: PHOTOGRAPHS OF TEST EUT	40



1. VERIFICATION OF CONFORMITY

Shenzhen Qianhai Biguan electronic Technology Co., LTD		
A201, 203, Building A2, Fuhai International Science Park, 306 Qiao He Road, Heping Community, Fuhai Street, Baoan District, Shenzhen, China		
Dongguan ShangGui Electronics Co., Ltd		
No.7, 7th Str. YinCheng Rd., Xiabian Village, Chang'an Town, Dongguan City, G.D, China. P.C. 523876		
Dongguan ShangGui Electronics Co., Ltd		
No.7, 7th Str. YinCheng Rd., Xiabian Village, Chang'an Town, Dongguan City, G.D, China. P.C. 523876		
Dual Mode Wireless Mouse		
WAIZOWL, TRUSYO		
WGM832(OGM CLOUD)		
WGM833(OGM Pro V2)		
All the series models are the same as the test model except for the model names, appearance size and side key PCB are different.		
Nov. 13, 2023		
Nov. 13, 2023 - Nov. 29, 2023		
None		
Normal		
Pass		
AGCRT-US-BR/RF		

Note: The test results of this report relate only to the tested sample identified in this report.

Jack Gai Prepared By Jack Gui Nov. 29, 2023 (Project Engineer) **Reviewed By** Calvin Liu Nov. 29, 2023 (Reviewer) ax Zhan Approved By Max Zhang Nov. 29, 2023 Authorized Officer



2. GENERAL INFORMATION

2.1. PRODUCT DESCRIPTION

A major technical description of EUT is described as following

Operation Frequency	2.403 GHz to 2.477GHz			
Maximum field strength	93.25dBuV/m(peak)@3m			
Modulation	GFSK			
Number of channels	38			
Hardware Version	ver1.0			
Software Version	ver1.0			
Antenna Designation	Ceramic Antenna			
Antenna Gain	2.2dBi			
Power Supply	DC 3.7V by battery			



2.2. TABLE OF CARRIER FREQUENCYS

Frequency Band	Channel Number	Frequency	Channel Number	Frequency
	1	2403	20	2441
	2	2405	21	2443
	3	2407	22	2445
	4	2409	23	2447
	5	2411	24	2449
	6	2413	25	2451
	7	2415	26	2453
	8	2417	27	2455
	9	2419	28	2457
2400~2483.5MHz	10	2421	29	2459
	11	2423	30	2461
	12	2425	31	2463
	13	2427	32	2465
	14	2429	33	2467
	15	2431	34	2469
	16	2433	35	2471
	17	2435	36	2473
	18	2437	37	2475
	19	2439	38	2477



3. MEASUREMENT UNCERTAINTY

The reported uncertainty of measurement y ±U, where expended uncertainty U is based on a standard

uncertainty multiplied by a coverage factor of k=2, providing a level of confidence of approximately 95%. - Uncertainty of Conducted Emission, $Uc = \pm 2.9 \text{ dB}$

- Uncertainty of Radiated Emission below 1GHz, Uc = ±3.9 dB
- Uncertainty of Radiated Emission above 1GHz, Uc = ±4.9 dB
- Uncertainty of Occupied Channel Bandwidth: $Uc = \pm 2 \%$



4. DESCRIPTION OF TEST MODES

NO.	TEST MODE DESCRIPTION				
1	Low channel TX_2403MHz_GFSK				
2		Middle channel TX	_2441MHz_GFSK		
3		High channel TX_	2477MHz_GFSK		
report, if no other cases.2. For Radiated Emission,3. The EUT used fully-cha	ternal dimensions and side key PCB, the series model: WGM833 (OGM Pro V2)				
	Softw	are Setting Diagram			
🗳 4K RF Test V1.0			- 0	X –	
• Dongle	VID 1915 PID 072C	• Device	VID 1915 PID 072C	_	
Туре: ТХ	_Modulation0x55	→ Power(dbr	n): 8 ~		
	2403	2441	2477		



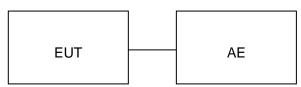
5. SYSTEM TEST CONFIGURATION

5.1. CONFIGURATION OF EUT SYSTEM

Configure 1:



Configure 2:



5.2. EQUIPMENT USED IN EUT SYSTEM

The following peripheral devices and interface cables were connected during the measurement:

☑ Test Accessories Come From The Laboratory

No.	Equipment	Model No.	Manufacturer	Specification Information	Cable
1	Control Box	USB-TTL			

☐ Test Accessories Come From The Manufacturer

No.	Equipment	Model No.	Manufacturer	Specification Information	Cable
1					



5.3. SUMMARY OF TEST RESULTS

FCC RULES	DESCRIPTION OF TEST	RESULT
§15.249(a) §15.209	Radiated Emission	Compliant
§15.249(d)	Band Edges	Compliant
§15.207	Conduction Emission	N/A
§15.215	Band Width	Compliant

Note: 1.N/A means not applicable.

2. The 2.4G function cannot transmit when charging.



6. TEST FACILITY

Test Site	Attestation of Global Compliance (Shenzhen) Co., Ltd		
Location	1-2/F, Building 19, Junfeng Industrial Park, Chongqing Road, Heping Community, Fuhai Street, Bao'an District, Shenzhen, Guangdong, China		
Designation Number	CN1259		
FCC Test Firm Registration Number	975832		
A2LA Cert. No.	5054.02		
Description	Attestation of Global Compliance(Shenzhen) Co., Ltd is accredited by A2LA		



7. TEST EQUIPMENT LIST

• R	RF Conducted Test System									
Used	Equipment No.	Test Equipment	Manufacturer	Model No.	Model No. Serial No.		Next Cal. Date (YY-MM-DD)			
\boxtimes	AGC-ER-E036	Spectrum Analyzer	Agilent	N9020A	MY49100060	2023-06-01	2024-05-31			
\boxtimes	AGC-ER-E062	Power Sensor	Agilent	U2021XA	MY54110007	2023-03-03	2024-03-02			
\boxtimes	AGC-ER-E063	Power Sensor	Agilent	U2021XA	MY54110009	2023-03-03	2024-03-02			
\boxtimes	AGC-EM-A152	6dB Attenuator	Eeatsheep	LM-XX-6-5W	N/A	2023-06-09	2024-06-08			
\boxtimes	AGC-ER-E083	Signal Generator	Agilent	E4421B	US39340815	2023-06-01	2024-05-31			
	N/A	RF Connection Cable	N/A	1#	N/A	Each time	N/A			
\boxtimes	N/A	RF Connection Cable	N/A	2#	N/A	Each time	N/A			

• F	 Radiated Spurious Emission 									
Used	Equipment No.	Test Equipment	Manufacturer	Model No. Serial No.		Last Cal. Date (YY-MM-DD)	Next Cal. Date (YY-MM-DD)			
	AGC-EM-E046	EMI Test Receiver	R&S	ESCI	10096	2023-02-18	2024-02-17			
\boxtimes	AGC-EM-E116	EMI Test Receiver	R&S	ESCI	100034	2023-06-03	2024-06-02			
\boxtimes	AGC-EM-E061	Spectrum Analyzer	Agilent	N9010A	MY53470504	2023-06-01	2024-05-31			
\boxtimes	AGC-EM-E086	Loop Antenna	ZHINAN	ZN30900C	18051	2022-03-12	2024-03-11			
\boxtimes	AGC-EM-E001	Wideband Antenna	SCHWARZBECK	VULB9168	D69250	2023-05-11	2025-05-10			
	AGC-EM-E029	Broadband Ridged Horn Antenna	ETS	3117	00034609	2023-03-23	2024-03-22			
\boxtimes	AGC-EM-E082	Horn Antenna	SCHWARZBECK	BBHA 9170	#768	2023-09-24	2025-09-23			
\boxtimes	AGC-EM-E146	Pre-amplifier	ETS	3117-PA	00246148	2022-08-04	2024-08-03			
\boxtimes	AGC-EM-A119	2.4G Filter	SongYi	N/A	N/A	2023-06-01	2024-05-31			
\boxtimes	AGC-EM-A138	6dB Attenuator	Eeatsheep	LM-XX-6-5W	N/A	2023-06-09	2024-06-08			
	AGC-EM-A139	6dB Attenuator	Eeatsheep	LM-XX-6-5W	N/A	2023-06-09	2024-06-08			

● Te	Test Software									
Used	Equipment No. Test Equipment		Manufacturer	Model No.	Version Information					
	AGC-EM-S001	CE Test System	R&S	ES-K1	V1.71					
\boxtimes	AGC-EM-S003	RE Test System	FARA	EZ-EMC	V.RA-03A					
	AGC-ER-S012	BT/WIFI-Test System	Tonscend	JS1120-2	2.6					
	AGC-EM-S011	RSE Test System	Tonscend	TS+-Ver2.1(JS36-RSE)	4.0.0.0					



8. RADIATED EMISSION

8.1TEST LIMIT

Standard FCC15.249

Fundamental	Field Strength of Fundamental	Field Strength of Harmonics		
Frequency	(millivolts/meter)	(microvolts/meter)		
902-928MHz	50	500		
2400-2483.5MHz	50	500		
5725-5875MHz	50	500		
24.0-24.25GHz	250	2500		

Standard FCC 15.209

Frequency	Distance	Field Strengths Limit				
(MHz)	Meters	բ V/m	dB(µV)/m			
0.009 ~ 0.490	300	2400/F(kHz)				
0.490 ~ 1.705	30	24000/F(kHz)				
1.705 ~ 30	30	30				
30 ~ 88	3	100	40.0			
88 ~ 216	3	150	43.5			
216 ~ 960	3	200	46.0			
960 ~ 1000	3	500	54.0			
Above 1000	3	Other:74.0 dB(µV)/m (Peal	k) 54.0 dB(μV)/m			
		(Average)				
Remark: (1) Emission I	evel dB μ V = 20 log Emissio	on level µV/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.



8.2. MEASUREMENT PROCEDURE

- The measuring distance of 3m shall be used for measurements. The EUT was placed on the top of a rotating table 0.8 meter above the ground at a 3 meter semi-anechoic chamber. The table was rotated 360 degrees to determine the position of the highest radiation(Below 1GHz)
- The measuring distance of 3m shall used for measurements. The EUT was placed on the top of a rotating table 1.5 meter above the ground at a 3 meter semi-anechoic chamber. The table was rotated 360 degrees to determine the position of the highest radiation(Above 1GHz)
- 3. The height of the test antenna shall vary between 1m to 4m.Both horizontal and vertical polarization Of the antenna are set to make the measurement.
- 4. The initial step in collecting radiated emission data is a receive peak detector mode. Pre-scanning the measurement frequency range. Significant peaks are then marked and then Quasi Peak detector mode re-measured.
- 5. All readings are peak unless otherwise stated QP in column of Note. Peak denoted that the Peak reading compliance with the QP limits and then QP Mode measurement didn't perform(Below 1GHz)
- 6. All readings are Peak mode value unless otherwise stated AVG in column of Note. If the Peak mode measured value compliance with the Peak limits and lower than AVG Limits, the EUT shall be deemed to meet Peak & AVG limits and then only Peak mode was measured, but AVG mode didn't perform.(Above 1GHz)



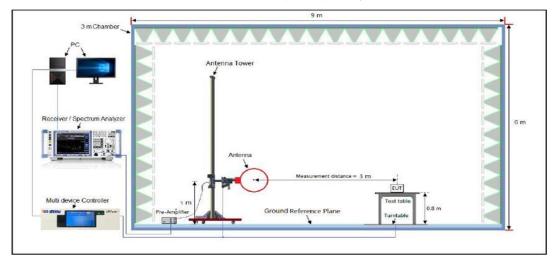
Spectrum Parameter	Setting
Start ~Stop Frequency	9KHz~150KHz/RB 200Hz for QP
Start ~Stop Frequency	150KHz~30MHz/RB 9KHz for QP
Start ~Stop Frequency	30MHz~1000MHz/RB 120KHz for QP
Start ~Stop Frequency	Fundamental: 2.4~2.483GHz RBW 2MHz/ VBW 6MHz for Peak, RBW 2MHz/ VBW 10Hz for Average Harmonics: 1GHz~25GHz RBW 1MHz/ VBW 3MHz for Peak, RBW 1MHz/ VBW 10Hz for Average
Receiver Parameter	Setting
Start ~Stop Frequency	9KHz~150KHz/RB 200Hz for QP
Start ~Stop Frequency	150KHz~30MHz/RB 9KHz for QP
Start ~Stop Frequency	30MHz~1000MHz/RB 120KHz for QP

The following table is the setting of spectrum analyzer and receiver.

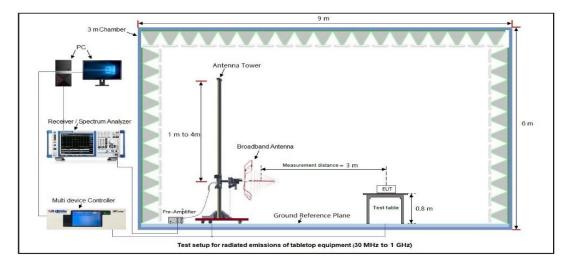


8.3. TEST SETUP

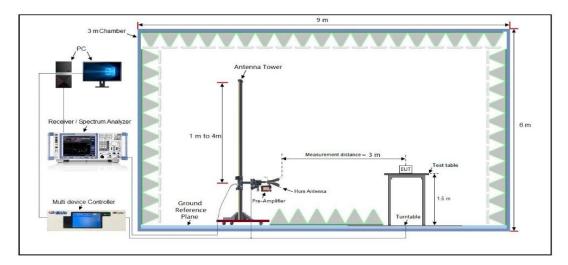
Radiated Emission Test-Setup Frequency Below 30MHz



RADIATED EMISSION TEST SETUP 30MHz-1000MHz







RADIATED EMISSION TEST SETUP ABOVE 1000MHz



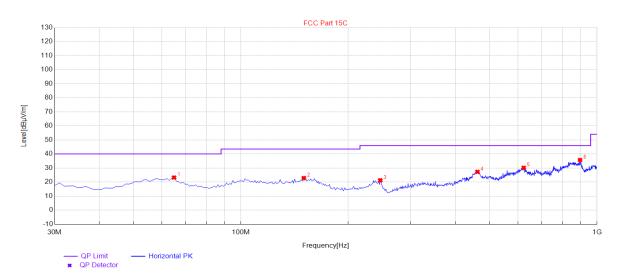
8.4. TEST RESULT

RADIATED EMISSION BELOW 30MHz

No emission found between lowest internal used/generated frequencies to 30MHz.

RADIATED EMISSION 30MHz-1GHZ

EUT	Dual Mode Wireless Mouse	Model Name	WGM832(OGM CLOUD)
Temperature	22.5°C	Relative Humidity	59.1%
Pressure	1010 hPa	Test Voltage	DC 3.7V
Test Mode	Mode 3	Polarization	Horizontal

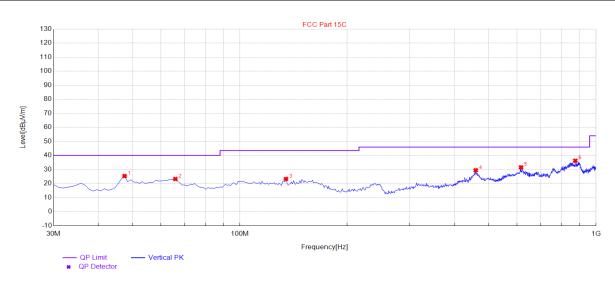


NO.	Freq. [MHz]	Level [dBµV/m]	Factor [dB]	Limit [dBµV/m]	Margin [dB]	Height [cm]	Angle [°]	Polarity
1	64.92	23.24	16.29	40.00	16.76	100	210	Horizontal
2	150.28	22.87	17.19	43.50	20.63	100	210	Horizontal
3	246.31	21.29	13.86	46.00	24.71	100	120	Horizontal
4	461.65	27.31	24.36	46.00	18.69	100	140	Horizontal
5	622.67	30.21	25.54	46.00	15.79	100	170	Horizontal
6	896.21	35.73	30.12	46.00	10.27	100	120	Horizontal

RESULT: PASS



EUT	Dual Mode Wireless Mouse	Model Name	WGM832(OGM CLOUD)
Temperature	22.5°C	Relative Humidity	59.1%
Pressure	1010 hPa	Test Voltage	DC 3.7V
Test Mode	Mode 3	Polarization	Vertical



NO.	Freq. [MHz]	Level [dBµV/m]	Factor [dB]	Limit [dBµV/m]	Margin [dB]	Height [cm]	Angle [°]	Polarity
1	47.46	25.36	13.96	40.00	14.64	100	210	Vertical
2	65.89	23.26	15.98	40.00	16.74	100	310	Vertical
3	134.76	23.32	15.79	43.50	20.18	100	340	Vertical
4	459.71	29.47	24.69	46.00	16.53	100	310	Vertical
5	615.88	31.58	25.47	46.00	14.42	100	110	Vertical
6	874.87	36.28	29.51	46.00	9.72	100	60	Vertical

RESULT: PASS

Note: 1. Factor=Antenna Factor + Cable loss, Margin= Limit -Level.

2. The "Factor" value can be calculated automatically by software of measurement system.

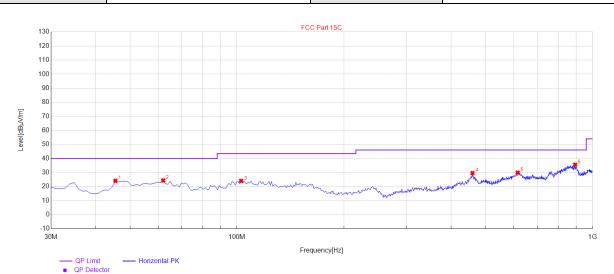


RADIATED EMISSION BELOW 30MHz

No emission found between lowest internal used/generated frequencies to 30MHz.

EUT	Dual Mode Wireless Mouse	Model Name	WGM833(OGM Pro V2)
Temperature	21.9°C	Relative Humidity	60.2%
Pressure	1010 hPa	Test Voltage	DC 3.7V
Test Mode	Mode 3	Polarization	Horizontal

RADIATED EMISSION 30MHz-1GHZ



NO.	Freq. [MHz]	Level [dBµV/m]	Factor [dB]	Limit [dBµV/m]	Margin [dB]	Height [cm]	Angle [°]	Polarity
1	45.52	24.08	12.99	40.00	15.92	100	120	Horizontal
2	62.01	24.38	17.23	40.00	15.62	100	210	Horizontal
3	102.75	24.04	16.93	43.50	19.46	100	220	Horizontal
4	459.71	29.60	24.69	46.00	16.40	100	280	Horizontal
5	615.88	29.96	25.47	46.00	16.04	100	250	Horizontal
6	893.3	35.60	29.98	46.00	10.40	100	230	Horizontal

RESULT: PASS



EUT	Dual Mode Wireless Mouse	Model Name	WGM833(OGM Pro V2)
Temperature	21.9°C	Relative Humidity	60.2%
Pressure	1010 hPa	Test Voltage	DC 3.7V
Test Mode	Mode 3	Polarization	Vertical



NO.	Freq. [MHz]	Level [dBµV/m]	Factor [dB]	Limit [dBµV/m]	Margin [dB]	Height [cm]	Angle [°]	Polarity
1	48.43	25.06	14.44	40.00	14.94	100	180	Vertical
2	86.26	22.87	13.25	40.00	17.13	100	120	Vertical
3	127	22.78	15.65	43.50	20.72	100	100	Vertical
4	458.74	28.19	24.42	46.00	17.81	100	100	Vertical
5	625.58	30.03	25.12	46.00	15.97	100	280	Vertical
6	844.8	34.45	29.47	46.00	11.55	100	210	Vertical

RESULT: PASS

Note: 1. Factor=Antenna Factor + Cable loss, Margin= Limit -Level.

2. The "Factor" value can be calculated automatically by software of measurement system.



EUT	Dual Mode Wireless Mouse	Model Name	WGM832(OGM CLOUD)	
Temperature	22.5°C	Relative Humidity	59.1%	
Pressure	1010 hPa	Test Voltage	DC 3.7V	
Test Modulation	GFSK	Polarization	Horizontal	

FIELD STRENGTH OF FUNDAMENTAL

Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Value Type		
(MHz)	(dBµV)	(dB)	(dBµV/m)	(dBµV/m)	(dB)			
2403	79.32	13.46	92.78	114	-21.22	peak		
2403	65.41	13.46	78.87	94	-15.13	AVG		
2441	75.84	13.88	89.72	114	-24.28	peak		
2441	63.81	13.88	77.69	94	-16.31	AVG		
2477	79.14	14.11	93.25	114	-20.75	peak		
2477	77.25	14.11	91.36	94	-2.64	AVG		
Remark:								
Factor = Ar	Factor = Antenna Factor + Cable Loss – Pre-amplifier.							

EUT	Dual Mode Wireless Mouse	Model Name	WGM832(OGM CLOUD)	
Temperature	22.5°C	Relative Humidity	59.1%	
Pressure	1010 hPa	Test Voltage	DC 3.7V	
Test Modulation	GFSK	Polarization	Vertical	

Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Value Type	
(MHz)	(dBµV)	(dB)	(dBµV/m)	(dBµV/m)	(dB)		
2403	76.37	13.46	89.83	114	-24.17	peak	
2403	61.86	13.46	75.32	94	-18.68	AVG	
2441	71.73	13.88	85.61	114	-28.39	peak	
2441	61.05	13.88	74.93	94	-19.07	AVG	
2477	76.11	14.11	90.22	114	-23.78	peak	
2477	74.49	14.11	88.60	94	-5.4	AVG	
Remark:							
Factor = Antenna Factor + Cable Loss – Pre-amplifier.							



EUT	Dual Mode Wireless Mouse	Model Name	WGM832(OGM CLOUD)
Temperature	22.5°C	Relative Humidity	59.1%
Pressure	1010 hPa	Test Voltage	DC 3.7V
Test Mode	Mode 1	Polarization	Horizontal

RADIATED EMISSION ABOVE 1GHZ FOR BR/EDR

Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Value Type		
(MHz)	(dBµV)	(dB)	(dBµV/m)	(dBµV/m)	(dB)			
4806	45.21	7.12	52.33	74	-21.67	peak		
4806	34.26	7.12	41.38	54	-12.62	AVG		
7209	41.11	9.84	50.95	74	-23.05	peak		
7209	30.38	9.84	40.22	54	-13.78	AVG		
	Remark:							
Factor = A	ntenna Factor +	Cable Loss -	Pre-amplifier.					

EUT	Dual Mode Wireless Mouse	Model Name	WGM832(OGM CLOUD)
Temperature	22.5°C	Relative Humidity	59.1%
Pressure	1010 hPa	Test Voltage	DC 3.7V
Test Mode	Mode 1	Polarization	Vertical

Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Value Type		
(MHz)	(dBµV)	(dB)	(dBµV/m)	(dBµV/m)	(dB)			
4806	45.32	7.12	52.44	74	-21.56	peak		
4806	35.27	7.12	42.39	54	-11.61	AVG		
7209	39.47	9.84	49.31	74	-24.69	peak		
7209	28.38	9.84	38.22	54	-15.78	AVG		
	Remark:							
Factor = Ar	Factor = Antenna Factor + Cable Loss – Pre-amplifier.							



EUT	Dual Mode Wireless Mouse	Model Name	WGM832(OGM CLOUD)
Temperature	22.5°C	Relative Humidity	59.1%
Pressure	1010 hPa	Test Voltage	DC 3.7V
Test Mode	Mode 2	Polarization	Horizontal

Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Value Type		
(MHz)	(dBµV)	(dB)	(dBµV/m)	(dBµV/m)	(dB)			
4882	44.27	7.12	51.39	74	-22.61	peak		
4882	36.21	7.12	43.33	54	-10.67	AVG		
7323	40.12	9.84	49.96	74	-24.04	peak		
7323	29.88	9.84	39.72	54	-14.28	AVG		
Remark:								
Factor = Ar	Factor = Antenna Factor + Cable Loss – Pre-amplifier.							

EUT	Dual Mode Wireless Mouse	Model Name	WGM832(OGM CLOUD)
Temperature	22.5°C	Relative Humidity	59.1%
Pressure	1010 hPa	Test Voltage	DC 3.7V
Test Mode	Mode 2	Polarization	Vertical

Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Value Type	
(MHz)	(dBµV)	(dB)	(dBµV/m)	(dBµV/m)	(dB)		
4882	45.29	7.12	52.41	74	-21.59	peak	
4882	32.56	7.12	39.68	54	-14.32	AVG	
7323	40.34	9.84	50.18	74	-23.82	peak	
7323	28.47	9.84	38.31	54	-15.69	AVG	
Remark:							
Factor = Ar	Factor = Antenna Factor + Cable Loss – Pre-amplifier.						



EUT	Dual Mode Wireless Mouse	Model Name	WGM832(OGM CLOUD)
Temperature	22.5°C	Relative Humidity	59.1%
Pressure	1010 hPa	Test Voltage	DC 3.7V
Test Mode	Mode 3	Polarization	Horizontal

Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Value Type		
(MHz)	(dBµV)	(dB)	(dBµV/m)	(dBµV/m)	(dB)			
4954	45.47	7.12	52.59	74	-21.41	peak		
4954	36.16	7.12	43.28	54	-10.72	AVG		
7431	40.26	9.84	50.10	74	-23.9	peak		
7431	31.44	9.84	41.28	54	-12.72	AVG		
Remark:								
Factor = Ar	Factor = Antenna Factor + Cable Loss – Pre-amplifier.							

EUT	Dual Mode Wireless Mouse	Model Name	WGM832(OGM CLOUD)
Temperature	22.5°C	Relative Humidity	59.1%
Pressure	1010 hPa	Test Voltage	DC 3.7V
Test Mode	Mode 3	Polarization	Vertical

Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Value Type	
(MHz)	(dBµV)	(dB)	(dBµV/m)	(dBµV/m)	(dB)		
4954	44.17	7.12	51.29	74	-22.71	peak	
4954	33.44	7.12	40.56	54	-13.44	AVG	
7431	38.45	9.84	48.29	74	-25.71	peak	
7431	27.18	9.84	37.02	54	-16.98	AVG	
Remark:							
Factor = Ar	Factor = Antenna Factor + Cable Loss – Pre-amplifier.						



EUT	Dual Mode Wireless Mouse	Model Name	WGM833(OGM Pro V2)
Temperature	22.5°C	Relative Humidity	59.1%
Pressure	1010 hPa	Test Voltage	DC 3.7V
Test Mode	Mode 1	Polarization	Horizontal

Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Value Type	
(MHz)	(dBµV)	(dB)	(dBµV/m)	(dBµV/m)	(dB)		
4806	45.17	7.12	52.29	74	-21.71	peak	
4806	34.22	7.12	41.34	54	-12.66	AVG	
7209	41.05	9.84	50.89	74	-23.11	peak	
7209	30.33	9.84	40.17	54	-13.83	AVG	
Remark:							
Factor = Ar	Factor = Antenna Factor + Cable Loss – Pre-amplifier.						

EUT	Dual Mode Wireless Mouse	Model Name	WGM833(OGM Pro V2)	
Temperature	22.5°C	Relative Humidity	59.1%	
Pressure	1010 hPa	Test Voltage	DC 3.7V	
Test Mode	Mode 1	Polarization	Vertical	

Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Value Type		
(MHz)	(dBµV)	(dB)	(dBµV/m)	(dBµV/m)	(dB)			
4806	45.26	7.12	52.38	74	-21.62	peak		
4806	35.21	7.12	42.33	54	-11.67	AVG		
7209	39.40	9.84	49.24	74	-24.76	peak		
7209	28.31	9.84	38.15	54	-15.85	AVG		
	Remark:							
Factor = Ar	Factor = Antenna Factor + Cable Loss – Pre-amplifier.							



EUT	Dual Mode Wireless Mouse	Model Name	WGM833(OGM Pro V2)
Temperature	22.5°C	Relative Humidity	59.1%
Pressure	1010 hPa	Test Voltage	DC 3.7V
Test Mode	Mode 2	Polarization	Horizontal

Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Value Type		
(MHz)	(dBµV)	(dB)	(dBµV/m)	(dBµV/m)	(dB)			
4882	44.20	7.12	51.32	74	-22.68	peak		
4882	36.15	7.12	43.27	54	-10.73	AVG		
7323	40.03	9.84	49.87	74	-24.13	peak		
7323	29.82	9.84	39.66	54	-14.34	AVG		
Remark:								
Factor = Ar	Factor = Antenna Factor + Cable Loss – Pre-amplifier.							

EUT	Dual Mode Wireless Mouse	Model Name	WGM833(OGM Pro V2)
Temperature	22.5°C	Relative Humidity	59.1%
Pressure	1010 hPa	Test Voltage	DC 3.7V
Test Mode	Mode 2	Polarization	Vertical

Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Value Type
(MHz)	(dBµV)	(dB)	(dBµV/m)	(dBµV/m)	(dB)	
4882	45.19	7.12	52.31	74	-21.69	peak
4882	32.51	7.12	39.63	54	-14.37	AVG
7323	40.30	9.84	50.14	74	-23.86	peak
7323	28.42	9.84	38.26	54	-15.74	AVG
Remark:						
Factor = Ar	Factor = Antenna Factor + Cable Loss – Pre-amplifier.					



EUT	Dual Mode Wireless Mouse	Model Name	WGM833(OGM Pro V2)
Temperature	22.5°C	Relative Humidity	59.1%
Pressure	1010 hPa	Test Voltage	DC 3.7V
Test Mode	Mode 3	Polarization	Horizontal

Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Value Type
(MHz)	(dBµV)	(dB)	(dBµV/m)	(dBµV/m)	(dB)	
4954	45.39	7.12	52.51	74	-21.49	peak
4954	36.10	7.12	43.22	54	-10.78	AVG
7431	40.22	9.84	50.06	74	-23.94	peak
7431	31.40	9.84	41.24	54	-12.76	AVG
Remark:						
Factor = Ar	Factor = Antenna Factor + Cable Loss – Pre-amplifier.					

EUT	Dual Mode Wireless Mouse	Model Name	WGM833(OGM Pro V2)
Temperature	22.5°C	Relative Humidity	59.1%
Pressure	1010 hPa	Test Voltage	DC 3.7V
Test Mode	Mode 3	Polarization	Vertical

Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Value Type
(MHz)	(dBµV)	(dB)	(dBµV/m)	(dBµV/m)	(dB)	
4954	44.12	7.12	51.24	74	-22.76	peak
4954	33.41	7.12	40.53	54	-13.47	AVG
7431	38.29	9.84	48.13	74	-25.87	peak
7431	27.12	9.84	36.96	54	-17.04	AVG
Remark:	Remark:					
Factor = Ar	Factor = Antenna Factor + Cable Loss – Pre-amplifier.					

Note: Other emissions from 8G to 25 GHz are considered as ambient noise. No recording in the test report. Factor=Antenna Factor + Cable loss - Amplifier gain, Margin=Emission Level-Limit. The "Factor" value can be calculated automatically by software of measurement system.



9. BAND EDGE EMISSION

9.1TEST LIMIT

Frequency Band	Limit of the Field Strength (dBµV/m)		
Frequency Band	Peak	Average	
f≪2400MHz	74	54	
f≥2483.5MHz	74	54	

9.2. MEASUREMENT PROCEDURE

1. The EUT operates at transmitting mode. The operate channel is tested to verify the largest transmission and spurious emissions power at the continuous transmission mode.

2. Set the spectrum analyzer in the following setting in order to capture the lower and upper band-edges of

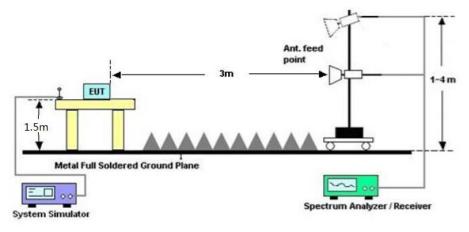
the emission: (a) PEAK: RBW=1MHz, VBW=3MHz / Sweep=AUTO

(b) AVERAGE: RBW=1MHz ; VBW=1/on time / Sweep=AUTO

3. Other procedures refer to clause 8.2.

9.3 TEST SETUP

RADIATED EMISSION TEST SETUP



9.4 TEST RESULT

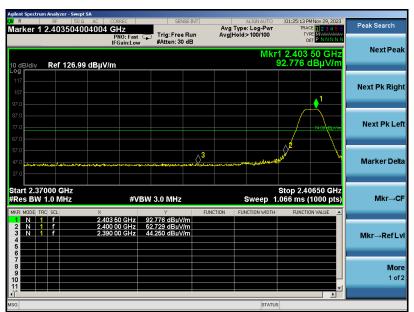
Note:

- 1. Factor=Antenna Factor + Cable loss Amplifier gain. Field Strength=Factor + Reading level
- 2. The factor had been edited in the "Input Correction" of the Spectrum Analyzer. So the Amplitude of
- test plots is equal to Reading level plus the Factor in dB. Use the A dB(μ V) to represent the Amplitude.

Use the F dB(μ V/m) to represent the Field Strength. So A=F.



EUT	Dual Mode Wireless Mouse	Model Name	WGM832(OGM CLOUD)
Temperature	22.5°C	Relative Humidity	59.1%
Pressure	1010 hPa	Test Voltage	DC 3.7V
Test Mode	Mode 1	Polarization	Horizontal



Average Value





EUT	Dual Mode Wireless Mouse	Model Name	WGM832(OGM CLOUD)
Temperature	22.5°C	Relative Humidity	59.1%
Pressure	1010 hPa	Test Voltage	DC 3.7V
Test Mode	Mode 1	Polarization	Vertical



Average Value





EUT	Dual Mode Wireless Mouse	Model Name	WGM832(OGM CLOUD)
Temperature	22.5°C	Relative Humidity	59.1%
Pressure	1010 hPa	Test Voltage	DC 3.7V
Test Mode	Mode 3	Polarization	Horizontal

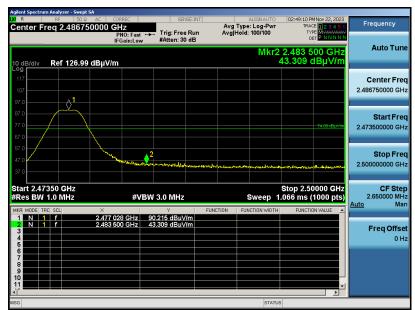


Average Value





EUT	Dual Mode Wireless Mouse	Model Name	WGM832(OGM CLOUD)
Temperature	22.5°C	Relative Humidity	59.1%
Pressure	1010 hPa	Test Voltage	DC5V
Test Mode	Mode 3	Polarization	Vertical



Average Value



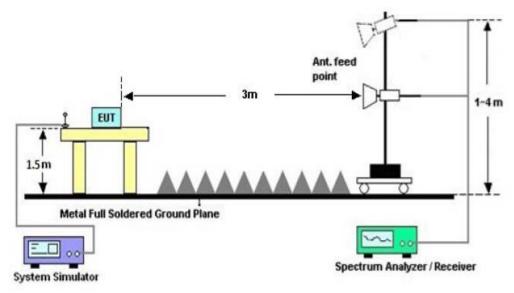


10. 20DB BANDWIDTH

10.1. MEASUREMENT PROCEDURE

- 1. Set the EUT Work on the top, the middle and the bottom operation frequency individually.
- 2. Set Span = approximately 2 to 3 times the 20 dB bandwidth, centered on a hoping channel
- RBW \geq 1% of the 20 dB bandwidth, VBW \geq 3RBW; Sweep = auto; Detector function = peak
- 3. Set SPA Trace 1 Max hold, then View.

10.2. TEST SET-UP



10.3. LIMITS AND MEASUREMENT RESULTS

TEST ITEM	20DB BANDWIDTH
TEST MODULATION	GFSK

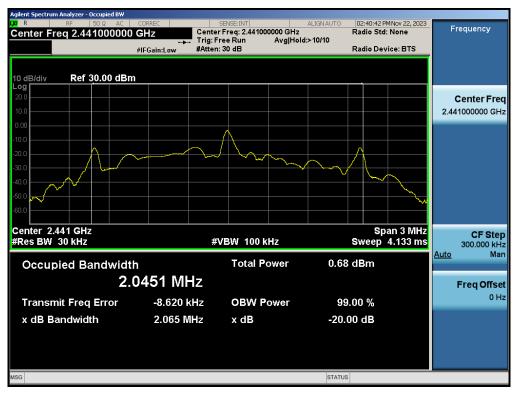
Test Data (MHz)		Criteria
Low Channel	2.065	PASS
Middle Channel	2.065	PASS
High Channel	2.066	PASS



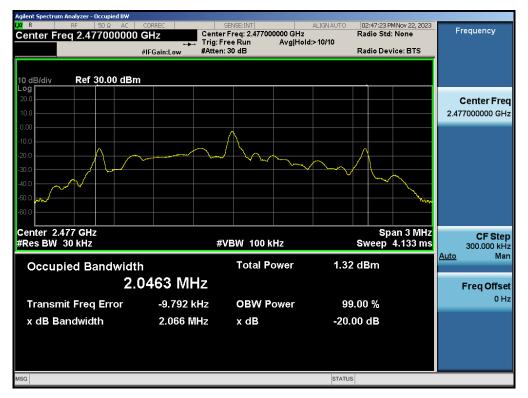


TEST PLOT OF BANDWIDTH FOR LOW CHANNEL

TEST PLOT OF BANDWIDTH FOR MIDDLE CHANNEL







TEST PLOT OF BANDWIDTH FOR HIGH CHANNEL



11. FCC LINE CONDUCTED EMISSION TEST

11.1. LIMITS OF LINE CONDUCTED EMISSION TEST

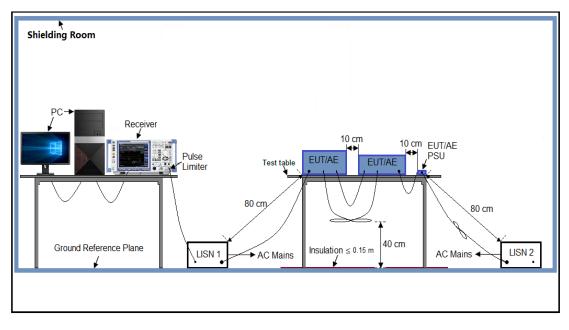
Frequency	Maximum RF Line Voltage		
Frequency	Q.P.(dBuV)	Average(dBuV)	
150kHz~500kHz	66-56	56-46	
500kHz~5MHz	56	46	
5MHz~30MHz	60	50	

Note:

1. The lower limit shall apply at the transition frequency.

2. The limit decreases linearly with the logarithm of the frequency in the range 0.15 MHz to 0.50 MHz.

11.2. BLOCK DIAGRAM OF LINE CONDUCTED EMISSION TEST





11.3. PRELIMINARY PROCEDURE OF LINE CONDUCTED EMISSION TEST

- 1. The equipment was set up as per the test configuration to simulate typical actual usage per the user's manual. When the EUT is a tabletop system, a wooden table with a height of 0.8 meters is used and is placed on the ground plane as per ANSI C63.10-2013 (see Test Facility for the dimensions of the ground plane used). When the EUT is a floor-standing equipment, it is placed on the ground plane which has a 3-12 mm non-conductive covering to insulate the EUT from the ground plane.
- 2. Support equipment, if needed, was placed as per ANSI C63.10-2013.
- 3. All I/O cables were positioned to simulate typical actual usage as per ANSI C63.10-2013.
- 4. All support equipments received AC120V/60Hz power from a LISN, if any.
- 5. The EUT received DC 5V power by adapter which received AC120V/60Hzpower by a LISN.
- 6. The test program was started. Emissions were measured on each current carrying line of the EUT using a spectrum Analyzer / Receiver connected to the LISN powering the EUT. The LISN has two monitoring points: Line 1 (Hot Side) and Line 2 (Neutral Side). Two scans were taken: one with Line 1 connected to Analyzer / Receiver and Line 2 connected to a 50 ohm load; the second scan had Line 1 connected to a 50 ohm load and Line 2 connected to the Analyzer / Receiver.
- 7. Analyzer / Receiver scanned from 150 kHz to 30MHz for emissions in each of the test modes.
- 8. During the above scans, the emissions were maximized by cable manipulation.
- 9. The test mode(s) were scanned during the preliminary test.

Then, the EUT configuration and cable configuration of the above highest emission level were recorded for reference of final testing.

11.4. FINAL PROCEDURE OF LINE CONDUCTED EMISSION TEST

- 1. EUT and support equipment was set up on the test bench as per step 2 of the preliminary test.
- 2. A scan was taken on both power lines, Line 1 and Line 2, recording at least the six highest emissions. Emission frequency and amplitude were recorded into a computer in which correction factors were used to calculate the emission level and compare reading to the applicable limit. If EUT emission level was less –2dB to the A.V. limit in Peak mode, then the emission signal was re-checked using Q.P and Average detector.
- 3. The test data of the worst case condition(s) was reported on the Summary Data page.

11.5. TEST RESULT OF LINE CONDUCTED EMISSION TEST

N/A

Note: The 2.4G function cannot transmit when charging



Report No.: AGC00688231002FR02 Page 40 of 40

Appendix I: Photographs of Test Setup

Refer to the Report No.: AGC00688231002AP01

Appendix II: Photographs of Test EUT

Refer to the Report No.: AGC00688231002AP02

----END OF REPORT----



Conditions of Issuance of Test Reports

1. All samples and goods are accepted by the Attestation of Global Compliance (Shenzhen) Co., Ltd (the "Company") solely for testing and reporting in accordance with the following terms and conditions. The company provides its services on the basis that such terms and conditions constitute express agreement between the company and any person, firm or company requesting its services (the "Clients").

2. Any report issued by Company as a result of this application for testing services (the "Report") shall be issued in confidence to the Clients and the Report will be strictly treated as such by the Company. It may not be reproduced either in its entirety or in part and it may not be used for advertising or other unauthorized purposes without the written consent of the Company. The Clients to whom the Report is issued may, however, show or send it, or a certified copy thereof prepared by the Company to its customer, supplier or other persons directly concerned. The Company will not, without the consent of the Clients, enter into any discussion or correspondence with any third party concerning the contents of the Report, unless required by the relevant governmental authorities, laws or court orders.

3. The Company shall not be called or be liable to be called to give evidence or testimony on the Report in a court of law without its prior written consent, unless required by the relevant governmental authorities, laws or court orders.

4. In the event of the improper use of the report as determined by the Company, the Company reserves the right to withdraw it, and to adopt any other additional remedies which may be appropriate.

5. Samples submitted for testing are accepted on the understanding that the Report issued cannot form the basis of, or be the instrument for, any legal action against the Company.

6. The Company will not be liable for or accept responsibility for any loss or damage however arising from the use of information contained in any of its Reports or in any communication whatsoever about its said tests or investigations.

7. Clients wishing to use the Report in court proceedings or arbitration shall inform the Company to that effect prior to submitting the sample for testing.

8. The Company is not responsible for recalling the electronic version of the original report when any revision is made to them. The Client assumes the responsibility to providing the revised version to any interested party who uses them.

9. Subject to the variable length of retention time for test data and report stored hereinto as otherwise specifically required by individual accreditation authorities, the Company will only keep the supporting test data and information of the test report for a period of six years. The data and information will be disposed of after the aforementioned retention period has elapsed. Under no circumstances shall we provide any data and information which has been disposed of after retention period. Under no circumstances shall we be liable for damage of any kind, including (but not limited to) compensatory damages, lost profits, lost data, or any form of special, incidental, indirect, consequential or punitive damages of any kind, whether based on breach of contract of warranty, tort (including negligence), product liability or otherwise, even if we are informed in advance of the possibility of such damages.