

Radio Frequency Exposure

Applicant : Micro-Star Int'l Co.,Ltd.

Address No.69, Lide St., Zhonghe Dist. New Taipei City 235

Taiwan

Equipment : Wireless USB dongle

Model No. : WD05

Trade Name : msi

FCC ID : I4L-WD05

I HEREBY CERTIFY THAT:

The sample was received on Jun. 16, 2025 and the testing was completed on Jun. 25, 2025 at Cerpass Technology Corp. The test result refers exclusively to the test presented test model / sample. Without written approval of Cerpass Technology Corp., the test report shall not be reproduced except in full.

Approved by:

Mark Liao / Supervisor

Laboratory Accreditation:

Cerpass Technology Corporation Test Laboratory





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History of this test report

Report No.	Issued Date	Description
25060279-TRFCC02	Jul. 16, 2025	Original

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1. Summary of Test Procedure and Test Results

1.1. Applicable Standards

FCC Rules and Regulations Part 2.1091

FCC Rule	. Description of Test	Result
2.1091	. Radio Frequency Exposure	PASS

^{*}The lab has reduced the uncertainty risk factor from test equipment, environment and staff technicians which according to the standard on contract. Therefore, the test result will only be determined by standard requirement, measurement uncertainty evaluation is not considered.

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2. Test Configuration of Equipment under Test

2.1. Feature of Equipment under Test

Operation Frequency Range	2400-2483.5MHz
Center Frequency Range	2408-2474MHz
Modulation Type	GFSK
Modulation Technology	DTS
Data Rate	1Mbps
Antenna Type	PCB Antenna
Antenna Gain	1.80 dBi

Note: For more details, please refer to the User's manual of the EUT.

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2.2. General Information of Test

Organization	Cerpass Technology Corp.					
	Cerpass Technology Corporation Test Laboratory					
	Address: No.10, Ln. 2, Lianfu St., Luzhu Dist., Taoyuan City 33848,					
	Taiwan (Taiwan (R.O.C.)				
	Tel: +886-3-3226-888					
	Fax: +886-3-3226-881					
	FCC	TW1439, TW1079				
	IC	4934E-1, 4934E-2				
Frequency Range Investigated	Conducted: from 150kHz to 30 MHz Radiation: from 30 MHz to 40,000MHz					
Test Distance	The test distance of radiated emission from antenna to EUT is 3 M.					

Test Item	Test Site	Test period	Environmental Conditions	Tested By
RF Conducted	RFCON01-NK	2025/06/25	26.3°C / 48%	Leon Huang

2.3. Measurement Uncertainty

ISO/IEC 17025 requires that an estimate of the measurement uncertainties associated with the emissions test results be included in the report. The measurement uncertainties given below are based on a 95% confidence level (based on a coverage factor (k=2)

Measurement Item	Uncertainty
AC Power Line Conduction(150K~30MHz)	±3.2dB
Radiated Spurious Emission(9KHz~30MHz)	±3.5dB
Radiated Spurious Emission(30MHz~1GHz)	±5.1dB
Radiated Spurious Emission(1GHz~40GHz)	±5.2dB
Conducted Spurious Emission	±2.1dB
6dB Bandwidth	±5.4%
20dB Bandwidth	±4.4%
Occupied Bandwidth	±4.5%
Peak Output Power(Conducted Power Meter)	±1.1dB
Dwell Time / Deactivation Time	±7.6%
Power Spectral Density	±2.0dB
Duty Cycle	±3.5%

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3. Test Equipment and Ancillaries Used for Tests

Test Item	RF Conducted									
Test Site RFCON01-NK										
Instrument	Manufacturer	Model No	Serial No	Calibration Date	Valid Date					
Spectrum Analyzer	ROHDE & SCHWARZ	FSP 40	100047	2025/03/03	2026/03/02					
Attenuator	KEYSIGHT	8491B	MY39250703	2025/02/12	2026/02/11					
Cable-0.5m(30M-40G)	HUBER SUHNER	SUCOFLEX 102	28420/2	2024/10/24	2025/10/23					
Power Meter	Anritsu	ML2495A	1224005	2025/02/12	2026/02/11					
Power Sensor	Anritsu	MA2411B	1207295	2025/02/12	2026/02/11					
Switch Box	Theda	1-4	TW5451159	NA	NA					

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4. Radio Frequency Exposure

4.1. Applicable Standards

		The available maximum time-averaged power is no more than 1 mW,							
ERP is below a threshold calculated based on the distance , R between the particle of the par	4 4007(1)(0)(1)(4)								
antenna / radiating structure, where R > λ / 2 π . $TABLE B.1—THRESHOLDS FOR SINGLE RF SOURCES SUBJECT TO ROUTINE ENVIRONMENTAL EVALUATION \hline {RF Source Frequency} $	1.1007 (8)(0)(1)(71)	regardless of separation distance.							
$ \begin{array}{c ccccccccccccccccccccccccccccccccccc$	E	ERP is below a threshold calculated based on the distance , R between the ${}^{\scriptscriptstyle \parallel}$							
$ \begin{array}{c ccccccccccccccccccccccccccccccccccc$	a	antenna / radiating structu	ıre, v	vhere R	> λ / 2 π.				
		· ·	,						
$ \begin{array}{ c c c c }\hline & Frequency & FRP \\\hline f_1 MHz & f_{\rm H} & \lambda_{\rm L}/2\pi & \lambda_{\rm H}/2\pi & W \\\hline & MHz & MHz & 0.3 & 1.34 & 159{\rm m} & -35.6{\rm m} & 1,920{\rm R}^2 \\\hline & 1.34 & -30 & 35.6{\rm m} & -1.6{\rm m} & 3,450{\rm R}^2/f^2 \\\hline & 30 & -300 & 1.6{\rm m} & -159{\rm mm} & 3.83{\rm R}^2 \\\hline & 300 & -1,500 & 159{\rm mm} & -31.8{\rm mm} & 0.0128{\rm R}^2f \\\hline & 1,500 & -100,00 & 31.8{\rm mm} & -0.5{\rm mm} & 19.2{\rm R}^2 \\\hline & Subscripts {\rm L} {\rm and} {\rm H} {\rm are} {\rm low} {\rm and} {\rm high}; \lambda {\rm is} {\rm wavelength}. \\From \S 1.1307({\rm b})(3)({\rm i})({\rm C}), {\rm modified} {\rm by} {\rm adding} {\rm Minimum} {\rm Distance} {\rm columns}. \\\hline \\ Device {\rm operates} {\rm between} 300 {\rm MHz} {\rm and} {\rm 6} {\rm GHz} {\rm and} {\rm the} {\rm maximum} {\rm time-average} {\rm power} {\rm or} {\rm effective} {\rm radiated} {\rm power} ({\rm ERP}), {\rm whichever} {\rm is} {\rm greater}, <= {\rm Pth} {\rm effective} {\rm radiated} {\rm power} ({\rm ERP}_{20cm}(d/20{\rm cm})^x d \leq 20{\rm cm} {\rm effective} {\rm effective} {\rm radiated} {\rm effective} {\rm effective} {\rm radiated} {\rm effective} {\rm effective} {\rm effective} {\rm radiated} {\rm effective} {\rm ef$				TO ROU					1
$ \begin{array}{c ccccccccccccccccccccccccccccccccccc$					WIIIIIII	uiii 1	ristance		
$\frac{1.34}{30} - \frac{30}{300} \frac{35.6 \text{m}}{1.6 \text{m}} - \frac{1.6 \text{m}}{3,450 \text{R}^2/f^2}$ $\frac{30}{300} - \frac{300}{1.500} \frac{1.6 \text{m}}{159 \text{mm}} - \frac{159 \text{mm}}{3.83 \text{R}^2}$ $\frac{300}{1,500} - \frac{100,00}{100,00} \frac{31.8 \text{mm}}{31.8 \text{mm}} - \frac{0.5 \text{mm}}{19.2 \text{R}^2}$ Subscripts L and H are low and high; λ is wavelength. From § 1.1307(b)(3)(i)(C), modified by adding Minimum Distance columns. Device operates between 300 MHz and 6 GHz and the maximum time-average power or effective radiated power (ERP), whichever is greater, <= Pth $P_{th} (\text{mW}) = \begin{cases} ERP_{20 cm} (d/20 \text{cm})^x & d \leq 20 \text{cm} \\ ERP_{20 cm} & 20 \text{cm} < d \leq 40 \text{cm} \end{cases}$ Where $x = -\log_{10} \left(\frac{60}{ERP_{20 cm} \sqrt{f}} \right) \text{ and } f \text{ is in GHz};$				-	λ_L / 2π		$\lambda_{\rm H}$ / 2π		
$\frac{30 - 300}{300 - 1,500} \frac{1.6 \text{ m}}{159 \text{ mm}} - \frac{159 \text{ mm}}{31.8 \text{ mm}} \frac{3.83 \text{ R}^2}{0.0128 \text{ R}^2 f}$ $\frac{1,500}{1,500} - \frac{100,00}{0} \frac{31.8 \text{ mm}}{0} - \frac{0.5 \text{ mm}}{19.2 \text{R}^2}$ Subscripts L and H are low and high; λ is wavelength. From § 1.1307(b)(3)(i)(C), modified by adding Minimum Distance columns. Device operates between 300 MHz and 6 GHz and the maximum time-average power or effective radiated power (ERP), whichever is greater, <= Pth $P_{th} \text{ (mW)} = \begin{cases} ERP_{20 \text{ cm}} (d/20 \text{ cm})^x & d \leq 20 \text{ cm} \\ ERP_{20 \text{ cm}} & 20 \text{ cm} < d \leq 40 \text{ cm} \end{cases}$ Where $x = -\log_{10} \left(\frac{60}{ERP_{20 \text{ cm}} \sqrt{f}} \right) \text{ and } f \text{ is in GHz};$	1.1307(b)(3)(i)(c)	0.3	_	1.34	159 m	_	35.6 m	1,920 R ²	
$\frac{300 - 1,500}{1,500} = \frac{159 \text{ mm}}{0} - \frac{31.8 \text{ mm}}{0} = \frac{0.0128 \text{ R}^2 f}{1,500} = \frac{100,00}{0} = \frac{31.8 \text{ mm}}{0} = \frac{0.05 \text{ mm}}{19.2 \text{R}^2}$ Subscripts L and H are low and high; λ is wavelength. From $\S 1.1307(b)(3)(i)(C)$, modified by adding Minimum Distance columns. Device operates between 300 MHz and 6 GHz and the maximum time-average power or effective radiated power (ERP), whichever is greater, <= Pth $P_{th} \text{ (mW)} = \begin{cases} ERP_{20 \text{ cm}} (d/20 \text{ cm})^x & d \leq 20 \text{ cm} \\ ERP_{20 \text{ cm}} & 20 \text{ cm} < d \leq 40 \text{ cm} \end{cases}$ Where $x = -\log_{10} \left(\frac{60}{ERP_{20 \text{ cm}} \sqrt{f}} \right) \text{ and } f \text{ is in GHz};$, , , , , , ,		_			_			
$\frac{1,500 - 100,00}{0} = \frac{31.8 \text{ mm}}{0} - \frac{0.5 \text{ mm}}{19.2 \text{R}^2}$ Subscripts L and H are low and high; λ is wavelength. From § 1.1307(b)(3)(i)(C), modified by adding Minimum Distance columns. Device operates between 300 MHz and 6 GHz and the maximum time-average power or effective radiated power (ERP), whichever is greater, <= Pth $P_{th} \text{ (mW)} = \begin{cases} ERP_{20\ cm}(d/20\ \text{cm})^x & d \leq 20\ \text{cm} \\ ERP_{20\ cm} & 20\ \text{cm} < d \leq 40\ \text{cm} \end{cases}$ Where $x = -\log_{10}\left(\frac{60}{ERP_{20\ cm}\sqrt{f}}\right) \text{ and } f \text{ is in GHz};$			_			_			
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From § 1.1307(b)(3)(i)(C), modified by adding Minimum Distance columns. Device operates between 300 MHz and 6 GHz and the maximum time-average power or effective radiated power (ERP), whichever is greater, <= Pth $P_{th} \text{ (mW)} = \begin{cases} ERP_{20\ cm} (d/20\ cm)^x & d \leq 20\ cm \\ ERP_{20\ cm} & 20\ cm < d \leq 40\ cm \end{cases}$ Where $x = -\log_{10}\left(\frac{60}{ERP_{20\ cm}\sqrt{f}}\right) \text{ and } f \text{ is in GHz};$		1,500	_	0	31.8 mm	_	0.5 mm	19.2R ²	
power or effective radiated power (ERP), whichever is greater, <= Pth $P_{th} \text{ (mW)} = \begin{cases} ERP_{20\ cm} (d/20\ \text{cm})^x & d \leq 20\ \text{cm} \\ ERP_{20\ cm} & 20\ \text{cm} < d \leq 40\ \text{cm} \end{cases}$ Where $x = -\log_{10} \left(\frac{60}{ERP_{20\ cm}\sqrt{f}}\right) \text{ and } f \text{ is in GHz};$		From §	1.130						
$P_{th} \text{ (mW)} = \begin{cases} ERP_{20\ cm} (d/20\ \text{cm})^x & d \leq 20\ \text{cm} \\ ERP_{20\ cm} & 20\ \text{cm} < d \leq 40\ \text{cm} \end{cases}$ Where $\sum_{K=0}^{\infty} \sum_{i=1}^{\infty} \frac{1}{2} \left(\frac{60}{ERP_{20\ cm} \sqrt{f}} \right) \text{ and } f \text{ is in GHz};$		Device operates between	300	MHz an	d 6 GHz a	and	the maxim	um time-avera	ged
$P_{th} \text{ (mW)} = \begin{cases} ERP_{20\ cm} (d/20\ \text{cm})^x & d \leq 20\ \text{cm} \\ ERP_{20\ cm} & 20\ \text{cm} < d \leq 40\ \text{cm} \end{cases}$ Where $\sum_{k=0}^{\infty} \sum_{j=0}^{\infty} \frac{1}{2} \left(\frac{60}{ERP_{20\ cm} \sqrt{f}} \right) \text{ and } f \text{ is in GHz};$		•							J
	ľ								
		$P_{th} \text{ (mW)} = \begin{cases} ERP_{20 \ cm} (d/20 \ \text{cm})^x & d \leq 20 \ \text{cm} \end{cases}$							
§ 1.1307(b)(3)(i)(B). $ x = -\log_{10}\left(\frac{60}{ERP_{20\ cm}\sqrt{f}}\right) \text{ and } f \text{ is in GHz}; $				(E	$RP_{20\ cm}$		20 cm	$< d \le 40 \text{ cm}$	
§ 1.1307(b)(3)(i)(B). $x = -\log_{10}\left(\frac{60}{ERP_{20\ cm}\sqrt{f}}\right)$ and f is in GHz;		Where							
§ 1.1307(b)(3)(i)(B). $x = -\log_{10}\left(\frac{60}{ERP_{20\ cm}\sqrt{f}}\right)$ and f is in GHz;									
v 25 cm V				x = -10	$g_{10}\left(\frac{60}{1000}\right)$	0	= and f is in	GHz;	
and					\ERP ₂₀	cm√.	7		
		and							
$ERP_{20 cm} \text{ (mW)} = \begin{cases} 2040 f & 0.3 \text{ GHz} \le f < 1.5 \text{ GHz} \\ 3060 & 1.5 \text{ GHz} \le f \le 6 \text{ GHz} \end{cases}$				ERP ₂₀	_{cm} (mW) =	${204}$	0.3 GH	$z \le f < 1.5 \mathrm{GHz}$	
$(3060 1.5 GHz \le f \le 6 GHz$				20		(306	0 1.5 GH	$z \le f \le 6 \text{ GHz}$	
d = the separation distance (cm);				d =	the separat	ion d	istance (cm):		

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4.2. EUT Specification

Frequency band (Operating) SRD: 2408MHz ~ 2474MHz					
Device category	☑ Portable (<20cm separation)☑ Mobile (>20cm separation)				
Antenna diversity	 Single antenna Multiple antennas ☐ Tx diversity ☐ Rx diversity ☐ Tx/Rx diversity 				
Evaluation applied	☐ Blanket 1 mW Blanket Exemption☐ MPE-based Exemption☑ SAR-based Exemption				
Remark:					
The maximum conducted output power is <u>-9.25dBm (0.119mW)</u> at <u>2408MHz</u> (with <u>1.80dBi</u> antenna gain.)					

4.3. Result

GFSK(1Mbps)

Channel Frequency (MHz)	Max. Conducted output power (dBm)	power	lin	Gain(dBi)	Max.Tune up e.i.r.p. Power (dBm)	Max.Tune up e.r.p. Power (dBm)	Max.Tune up e.r.p. Power (mW)	Distance (mm)	SAR test exclusion thresholds (mW)
2408-2474	-9.25	-8.75	0.13	1.80	-6.95	-9.10	0.12	5	2.72

No non-compliance noted.

-----THE END OF REPORT-----

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