



RF Exposure Evaluation Report

Application No.: DNT2510160483R11550-14344
Applicant: Shenzhen Bilian Electronic Co.,Ltd.
Address of Applicant: Room 501, Building 3, No. 32, Dafu Road, Zhangge Community, Fucheng Street, Longhua District, Shenzhen City,China
EUT Description: FWM
Model No.: FWM-4A25
Additional Model(s): /
FCC ID: 2AL6KFWM-4A25
Power supply DC 12V
Trade Mark: /
47 CFR Part 2.1091
Standards: FCC KDB 447498 D01 v06
Date of Receipt: 2025/10/16
Date of Test: 2025/10/16 to 2025/11/20
Date of Issue: 2025/11/20
Test Result: PASS

Prepared By: Wayne Lin (Testing Engineer)
Reviewed By: Pengfei Chen (Project Engineer)
Approved By: Youse Chen (Manager)



Note: If there is any objection to the results in this report, please submit a written inquiry to the company within 15 days from the date of receiving the report. The test report is effective only with both signature and specialized stamp, and is issued by the company in accordance with the requirements of the "Conditions of Issuance of Test Reports" printed in the attached page. Unless otherwise stated, the results presented in this report only apply to the samples tested this time. Partial reproduction of this report is not allowed unless approved by the company in writing.

Dongguan DN Testing Co., Ltd.

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Report Revise Record

Report Version	Revise Time	Issued Date	Valid Version	Notes
V1.0	/	Nov.20, 2025	Valid	Original Report



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1 General Information

1.1 Test Location

Company:	Dongguan DN Testing Co., Ltd
Address:	No. 1, West Fourth Street, South Xinfu Road, Wusha Liwu, Chang ' an Town, Dongguan City, Guangdong P.R.China
Test engineer:	Wayne Lin

1.2 General Description of EUT

Manufacturer:	Shenzhen Bilian Electronic Co.,Ltd.
Address of Manufacturer:	Room 501, Building 3, No. 32, Dafu Road, Zhangge Community, Fucheng Street, Longhua District, Shenzhen City,China
EUT Description:	FWM
Model No.:	FWM-4A25
Additional Model(s):	/
Power Supply:	DC 12V
Trade Mark:	/
Hardware Version:	V1.0
Software Version:	V1.0.3
Chip Type:	MT7975N, MT7975PN
Serial number	PR2510160483R11550
Sample Type:	☐ Portable Device, ☒ Module, ☒ Mobile Device
Antenna Type:	☒ External, ☐ Integrated
Antenna Ports:	☒ Ant 1, ☒ Ant 2, ☐ Ant 3
Antenna Gain:	☒ Provided by applicant
	2.4G ANT1:9.15dBi ANT2:9.15dBi 5G ANT1:5.39dBi ANT2:5.39dBi
Note: *Since the above data and/or information is provided by the client relevant results or conclusions of this report are only made for these data and/or information, DNT is not responsible for the authenticity, integrity and results of the data and information and/or the validity of the conclusion. *All models are just color differences, motherboard, PCB circuit board, chip, electronic components, appearance is all the same.	



2 RF Exposure Evaluation

2.1 RF Exposure Compliance Requirement

2.1.1 Limits

Frequency range (MHz)	Electric field strength (V/m)	Magnetic field strength (A/m)	Power density (mW/cm ²)	Averaging time (minutes)
(A) Limits for Occupational/Controlled Exposures				
0.3-3.0	614	1.63	*(100)	6
3.0-30	1842/f	4.89/f	*(900/f ²)	6
30-300	61.4	0.163	1.0	6
300-1500	/	/	f/300	6
1500-100,000	/	/	5	6
(B) Limits for General Population/Uncontrolled 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
F=frequency in MHz *=Plane-wave equivalent power density RF exposure compliance will need to be determined with respect to 1.1307(c) and (d) of the FCC rules. The emissions should be within the limits at 300kHz in Table 1 of 1.1310(use the 300kHz limits for 150kHz:614V/m,1.63A/m).				

Friis Formula

Friis transmission formula: $P_d = (P_{out} * G) / (4 * \pi * R^2)$

Where

P_d = power density in mW/cm²

P_{out} = output power to antenna in mW

G = gain of antenna in linear scale

π = 3.1416

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

P_d is the limit of MPE, 1 mW/cm². If we know the maximum gain of the antenna and the total power input to the antenna, through the calculation, we will know the distance r where the MPE limit is reached.



2.1.2 Test Procedure

Software provided by client enabled the EUT to transmit data at lowest, middle and highest channel individually

2.1.3 EUT RF Exposure Evaluation

Antenna Gain: The maximum Gain measured in fully anechoic chamber is 2.0 / 2.0 in linear scale.

Output Power Into Antenna & RF Exposure Evaluation Distance:

This confirmed that the device comply with MPE limit.

Test Mode	Antenna	Freq(MHz)	Power [dBm]
11B	Ant1	2412	15.47
	Ant2	2412	13.06
	Ant1	2437	15.33
	Ant2	2437	12.35
	Ant1	2462	15.04
	Ant2	2462	12.83
11G	Ant1	2412	14.05
	Ant2	2412	16.19
	Ant1	2437	13.46
	Ant2	2437	16.2
	Ant1	2462	13.14
	Ant2	2462	15.61
11N20MIMO	Ant1	2412	13.97
	Ant2	2412	13.21
	Total	2412	16.62
	Ant1	2437	13.39
	Ant2	2437	13.25
	Total	2437	16.33
	Ant1	2462	11.16
	Ant2	2462	15.59
	Total	2462	16.93
11N40MIMO	Ant1	2422	15.14
	Ant2	2422	14.09
	Total	2422	15.48
	Ant1	2437	13.62
	Ant2	2437	14.29
	Total	2437	16.98
	Ant1	2452	13.22



	Ant2	2452	14.16
	Total	2452	16.73
11AX20MIMO	Ant1	2412	13.54
	Ant2	2412	14.66
	Total	2412	17.15
	Ant1	2437	11.19
	Ant2	2437	13.75
	Total	2437	15.67
	Ant1	2462	10.83
	Ant2	2462	13.36
	Total	2462	15.29
11AX40MIMO	Ant1	2422	15.58
	Ant2	2422	14.32
	Total	2422	18.01
	Ant1	2437	13.18
	Ant2	2437	14.29
	Total	2437	16.78
	Ant1	2452	12.95
	Ant2	2452	15.24
	Total	2452	17.25



Test Mode	Antenna	Freq (MHz)	Power [dBm]
11A	Ant1	5180	15.41
	Ant2	5180	14.94
	Ant1	5200	14.23
	Ant2	5200	16.03
	Ant1	5240	16.06
	Ant2	5240	14.67
	Ant1	5260	19.39
	Ant2	5260	18.04
	Ant1	5280	17.98
	Ant2	5280	17.78
	Ant1	5320	17.89
	Ant2	5320	16.62
	Ant1	5500	18.11
	Ant2	5500	16.28
	Ant1	5580	19.09
	Ant2	5580	19.30
	Ant1	5700	18.78
	Ant2	5700	18.17
	Ant1	5745	18.16
	Ant2	5745	15.92
	Ant1	5785	17.68
	Ant2	5785	17.15
	Ant1	5825	16.23
	Ant2	5825	16.63
11N20MI MO	Ant1	5180	16.32
	Ant2	5180	16.46
	total	5180	19.40
	Ant1	5200	15.53
	Ant2	5200	15.40
	total	5200	18.48
	Ant1	5240	16.02
	Ant2	5240	17.66
	total	5240	19.93
	Ant1	5260	17.93
	Ant2	5260	19.01
	total	5260	21.51
	Ant1	5280	16.76
	Ant2	5280	15.56
	total	5280	19.21
	Ant1	5320	17.20
	Ant2	5320	18.60
	total	5320	20.97
	Ant1	5500	19.49
	Ant2	5500	14.11
	total	5500	20.60
	Ant1	5580	16.68
	Ant2	5580	17.21
	total	5580	19.96
	Ant1	5700	18.82
	Ant2	5700	16.52
	total	5700	20.83
	Ant1	5745	18.08
	Ant2	5745	17.64
	total	5745	20.88
	Ant1	5785	17.17
	Ant2	5785	17.45
	total	5785	20.32
	Ant1	5825	16.78
	Ant2	5825	16.99



11N40MI MO	total	5825	19.90
	Ant1	5190	16.16
	Ant2	5190	15.50
	total	5190	18.85
	Ant1	5230	16.36
	Ant2	5230	15.01
	total	5230	18.85
	Ant1	5270	20.88
	Ant2	5270	17.55
	total	5270	22.54
	Ant1	5310	13.97
	Ant2	5310	14.20
	total	5310	17.10
	Ant1	5510	12.38
	Ant2	5510	13.78
	total	5510	16.15
	Ant1	5550	14.64
	Ant2	5550	15.45
	total	5550	18.07
	Ant1	5670	15.61
	Ant2	5670	12.23
	total	5670	17.25
	Ant1	5755	16.05
	Ant2	5755	16.60
	total	5755	19.34
	Ant1	5795	15.71
	Ant2	5795	15.14
	total	5795	18.44
11AC20 MIMO	Ant1	5180	13.92
	Ant2	5180	16.57
	total	5180	18.45
	Ant1	5200	12.58
	Ant2	5200	13.57
	total	5200	16.11
	Ant1	5240	14.08
	Ant2	5240	16.90
	total	5240	18.73
	Ant1	5260	12.92
	Ant2	5260	13.02
	total	5260	15.98
	Ant1	5280	11.83
	Ant2	5280	11.64
	total	5280	14.75
	Ant1	5320	11.64
	Ant2	5320	12.29
	total	5320	14.99
	Ant1	5500	13.30
	Ant2	5500	14.62
	total	5500	17.02
	Ant1	5580	15.80
	Ant2	5580	15.91
	total	5580	18.87
	Ant1	5700	11.55
	Ant2	5700	12.53
	total	5700	15.08
	Ant1	5745	15.17
	Ant2	5745	15.14
	total	5745	18.17
	Ant1	5785	14.05
	Ant2	5785	15.34



	total	5785	17.75
	Ant1	5825	14.70
	Ant2	5825	15.70
	total	5825	18.24
	Ant1	5190	13.73
	Ant2	5190	14.19
	total	5190	16.98
	Ant1	5230	13.12
	Ant2	5230	15.44
	total	5230	17.44
	Ant1	5270	15.42
	Ant2	5270	14.17
	total	5270	17.85
	Ant1	5310	14.99
	Ant2	5310	15.36
	total	5310	18.19
	Ant1	5510	14.38
	Ant2	5510	16.17
	total	5510	18.38
	Ant1	5550	15.58
	Ant2	5550	16.97
	total	5550	19.34
	Ant1	5670	14.60
	Ant2	5670	15.32
	total	5670	17.99
	Ant1	5755	14.92
	Ant2	5755	15.58
	total	5755	18.27
	Ant1	5795	14.72
	Ant2	5795	15.64
	total	5795	18.21
	Ant1	5210	14.47
	Ant2	5210	16.47
	total	5210	18.59
	Ant1	5290	16.23
	Ant2	5290	16.71
	total	5290	19.49
	Ant1	5530	16.81
	Ant2	5530	13.40
	total	5530	18.44
	Ant1	5610	14.55
	Ant2	5610	14.59
	total	5610	17.58
	Ant1	5775	14.56
	Ant2	5775	15.72
	total	5775	18.19
11AC160 MIMO	Ant1	5250_UN II-1	14.72
	Ant2	5250_UN II-1	15.33
	total	5250_UN II-1	18.05
	Ant1	5250_UN II-2A	15.08
	Ant2	5250_UN II-2A	16.33
	total	5250_UN II-2A	18.76
	Ant1	5570	14.41
	Ant2	5570	16.01
	total	5570	18.29



11AX20M IMO	Ant1	5180	13.70
	Ant2	5180	14.62
	total	5180	17.19
	Ant1	5200	16.19
	Ant2	5200	15.96
	total	5200	19.09
	Ant1	5240	14.92
	Ant2	5240	16.03
	total	5240	18.52
	Ant1	5260	13.76
	Ant2	5260	13.90
	total	5260	16.84
	Ant1	5280	16.23
	Ant2	5280	16.43
	total	5280	19.34
	Ant1	5320	17.27
	Ant2	5320	16.34
	total	5320	19.84
	Ant1	5500	14.38
	Ant2	5500	16.33
	total	5500	18.47
	Ant1	5580	17.52
	Ant2	5580	12.37
	total	5580	18.68
	Ant1	5700	15.34
	Ant2	5700	13.71
	total	5700	17.61
	Ant1	5745	17.64
	Ant2	5745	15.65
	total	5745	19.77
11AX40M IMO	Ant1	5785	16.59
	Ant2	5785	15.26
	total	5785	18.99
	Ant1	5825	14.39
	Ant2	5825	13.04
	total	5825	16.78
	Ant1	5190	14.58
	Ant2	5190	14.13
	total	5190	17.37
	Ant1	5230	14.98
	Ant2	5230	16.77
	total	5230	18.98
	Ant1	5270	15.30
	Ant2	5270	14.63
	total	5270	17.99
	Ant1	5310	15.06
	Ant2	5310	14.72
	total	5310	17.90
	Ant1	5510	13.86
	Ant2	5510	14.16
	total	5510	17.02
	Ant1	5550	14.24
	Ant2	5550	13.60
	total	5550	16.94
	Ant1	5670	15.55
	Ant2	5670	13.94
	total	5670	17.83
	Ant1	5755	16.94
	Ant2	5755	12.42
	total	5755	18.25



	Ant1	5795	16.00
	Ant2	5795	17.60
	total	5795	19.88
11AX80M IMO	Ant1	5210	12.64
	Ant2	5210	14.35
	total	5210	16.59
	Ant1	5290	14.00
	Ant2	5290	14.43
	total	5290	17.23
	Ant1	5530	16.36
	Ant2	5530	16.48
	total	5530	19.43
	Ant1	5610	14.83
	Ant2	5610	14.18
	total	5610	17.53
	Ant1	5775	15.94
	Ant2	5775	14.60
	total	5775	18.33
11AX160 MIMO	Ant1	5250_UN II-1	14.71
	Ant2	5250_UN II-1	13.01
	total	5250_UN II-1	16.95
	Ant1	5250_UN II-2A	15.56
	Ant2	5250_UN II-2A	13.51
	total	5250_UN II-2A	17.67
	Ant1	5570	13.30
	Ant2	5570	15.98
	total	5570	17.85

The Worst Mode	Antenna	MAX output power (dBm)	Target power (dBm)	MAX Target power (dBm)	Antenna gain		Power Density (S) (mW /cm ²)	Limited of Power Density (S) (mW /cm ²)	Test Result	Distance (cm)
					(dBi)	(Linear)				
11B(2.4G)	Ant1	15.45	15±1	16	9.15	8.2224	0.0651	1	Complies	20
11G(2.4G)	Ant2	16.2	16±1	17	9.15	8.2224	0.0820	1	Complies	20
11A(5G)	Ant1	19.49	19±1	20	5.39	3.459	0.0688	1	Complies	20
	Ant2	20.01	20±1	21	5.39	3.459	0.0866	1	Complies	20



2.4G:ANT1+ANT2

MAX Power Density (S) (mW/cm ²) ANT1	MAX Power Density (T) (mW/cm ²) ANT2	Total Radio	Limit	Result
0.0651	0.0820	0.1471	1	Complies

5G:Ant1+Ant2

MAX Power Density (U) (mW/cm ²) ANT3	MAX Power Density (V) (mW/cm ²) ANT4	Total Radio	Limit	Result
0.0688	0.0866	0.1554	1	Complies

2.4G+5G

MAX Power Density (W) (mW/cm ²) 2.4G	MAX Power Density (X) (mW/cm ²) 5G	Total Radio	Limit	Result
0.1471	0.1554	0.3025	1	Complies

The End Report