

MPE TEST REPORT

Applicant	Copeland Comfort Control LP
FCC ID	2A4JN-SA20
Product	SA20
Model	SA20
Report No.	R2404A0342-M1
Issue Date	November 22, 2024

Eurofins TA Technology (Shanghai) Co., Ltd. tested the above equipment in accordance with the requirements in **FCC 47 CFR Part 1 1.1310.** The test results show that the equipment tested is capable of demonstrating compliance with the requirements as documented in this report.

Prepared by: Wei Fangying

Approved by: Xu Kai

Eurofins TA Technology (Shanghai) Co., Ltd. Building 3, No.145, Jintang Rd, Pudong Shanghai, P.R.China

Building 3, No.145, Jintang Rd, Pudong Shanghai, P.R.China TEL: +86-021-50791141/2/3 FAX: +86-021-50791141/2/3-8000

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1 Test Laboratory

1.1 Notes of the Test Report

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Technology (Shanghai) Co., Ltd. The results documented in this report apply only to the tested sample, under the conditions and modes of operation as described herein. Measurement Uncertainties were not taken into account and are published for informational purposes only. This report is written to support regulatory compliance of the applicable standards stated above.

1.2 Test Facility

FCC (Designation number: CN1179, Test Firm Registration Number: 446626)

Eurofins TA Technology (Shanghai) Co., Ltd. has been listed on the US Federal Communications Commission list of test facilities recognized to perform measurements.

1.3 Testing Location

Company:	Eurofins TA Technology (Shanghai) Co., Ltd.
Address:	Building 3, No.145, Jintang Rd, Pudong Shanghai, P.R.China
City:	Shanghai
Post code:	201201
Country:	P. R. China
Contact:	Xu Kai
Telephone:	+86-021-50791141/2/3
Fax:	+86-021-50791141/2/3-8000
Website:	https://www.eurofins.com/electrical-and-electronics
E-mail:	Kain.Xu@cpt.eurofinscn.com

1.4 Laboratory Environment

Temperature	Min. = 18°C, Max. = 25°C		
Relative humidity	Min. = 20%, Max. = 80%		
Ground system resistance	< 0.5 Ω		
Ambient noise is checked and found very low and in compliance with requirement of standards.			
Reflection of surrounding objects is minimized and in compliance with requirement of standards.			

2 Description of Equipment Under Test

Client Information

Applicant	Copeland Comfort Control LP		
Applicant address	8100 West Florissant Ave, St. Louis, United States of America		
Manufacturer	Copeland Comfort Control LP		
Manufacturer address	8100 West Florissant Ave, St. Louis, United States of America		

General Technologies

EUT Description				
Model	SA20			
Lab internal SN	R2404A0342/S01			
Hardware Version	0059 5535			
Software Version	testfile_fcc_carrier_freq_hop_hardware_changed_v2 testfile_fcc_modulated_signal_hardware_changed			
Frequency	Band	TX (MHz)	RX (MHz)	
	Sub-G	902 ~ 928	902 ~ 928	
Date of Testing	May 29, 2024 ~ June 14, 2024			
Date of Sample Received	May 24, 2024			

Note:

1. The EUT is sent from the applicant to Eurofins TA and the information of the EUT is declared by the applicant.

2. All indications of Pass/Fail in this report are opinions expressed by Eurofins TA Technology (Shanghai) Co., Ltd. based on interpretations and/or observations of test results. Measurement Uncertainties were not taken into account and are published for informational purposes only.

3 Maximum Output Power (Measured) and Antenna Gain

The numeric gain (G) of the antenna with a gain specified in dB is determined by Numeric gain (G)= $10^{(antenna gain/10)}$

Band	Maximum Output Power (Measured)		Antenna Gain	Numeric Gain	
	(dBm)	(mW)	(UDI)		
Sub-G	20.13	103.039	-1.54	0.701	

4 MPE Limit

According to section 1.1310 of FCC 47 CFR Part 1, limits for maximum permissible exposure (MPE) are as following.

Frequency Range	Electric Field	Magnetic Field	Power Density	Averaging Time	
(MHz)	Strength	Strength		207 200	
357555 676	(∨/m)	(A/m)	(mW/cm2)	(minutes)	
	(A) Limits for Occu	upational/Controlle	d Exposures		
0.3-3.0	614	1.63	*(100)	6	
3-30	1842/f	4.89/f	*(900/f2)	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/Uncont	rolled Exposure		
0.3-1.34	614	1.63	*(100)	30	
1.34-30	824/f	2.19/f	*(180/f2)	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 MAXIMUN PERMISSIBLE EXPOSURE (MPE)

f = frequency in MHz

* = Plane-wave equivalent power density

Note1. Occupational/controlled limits apply in situations in which persons are exposed as a consequence of their employment provided those persons are fully aware of the potential for exposure and can exercise control over their exposure. Limits for occupational/controlled exposure also apply in situations when an individual is transient through a location where occupational / controlled limits apply provided he or she is made aware of the potential for exposure.

Note2: General population/uncontrolled exposures apply in situations in which the general public may be exposed, or in which persons that are exposed as a consequence of their employment may not be fully aware of the potential for exposure or can not exercise control over their exposure.



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The maximum permissible exposure for 300~1500 MHz is f/1500. So

Band	The Maximum Permissible Exposure (mW/cm ²)		
Sub-G	0.601		

5 RF Exposure Evaluation Result

RF exposure evaluation method is based on KDB 447498 D01, this calculation is based on the conducted power, maximum power and antenna gain with provides the minimum separation distance. The formula shown below is from OET Bulletin 65 Edition 97-01 Per KDB 447498 D01:

$S = PG / 4\pi R^2$

Where: S = power density (in appropriate units, e.g. mW/cm^2)

- P = Time-average maximum tune up procedure (in appropriate units, e.g., mW)
- G = the numeric gain of the antenna
- R = distance to the center of radiation of the antenna (20 cm = limit for MPE)

Band	Maximum Output Power (Measured) (dBm)	Antenna Gain (dBi)	Maximum EIRP (dBm)	PG (mW)	Result (mW/cm²)	Limit Value (mW/cm ²)
Sub-G	20.13	-1.54	18.590	72.277	0.014	0.601
Note: R = 20cm						
π = 3.1416						

Note: For transmitters, minimum separation distance is 20cm, even if calculations indicate MPE distance is less.

IMPORTANT NOTE: To comply with the FCC RF exposure compliance requirements, the antenna(s) used for this transmitter must be installed to provide a separation distance of at least 20 cm from all persons and must not be co-located or operating in conjunction with any other antenna or transmitter. No change to the antenna or the device is permitted. Any change to the antenna or the device could result in the device exceeding the RF exposure requirements and void user's authority to operate the device.



ANNEX A: The EUT Appearance

The EUT Appearance are submitted separately.

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