



# Wi-Fi CERTIFIED™ Certificate

This certificate lists the features that have successfully completed Wi-Fi Alliance interoperability testing. Learn more: [www.wi-fi.org/certification/programs](http://www.wi-fi.org/certification/programs)



**Certification ID: WFA90528**

## Product Info

Date of Certification	September 2, 2019
Company	Samsung Electronics
Product Name	SM-N970X
Product Model Variant	2019-09-02 (WFA90528 - 9773433)
Model Number	SM-N970X
Category	Phones
Sub-category	Smartphone

## Summary of Certifications

CLASSIFICATION	CERTIFICATION
Applications & Services	Voice-Enterprise Wi-Fi Aware™
Connectivity	2.4 GHz Spectrum Capabilities 5 GHz Spectrum Capabilities Wi-Fi CERTIFIED 6® Wi-Fi CERTIFIED™ a Wi-Fi CERTIFIED™ ac Wi-Fi CERTIFIED™ b Wi-Fi CERTIFIED™ g Wi-Fi CERTIFIED™ n Wi-Fi Direct® Wi-Fi Enhanced Open™ 2018-04
Optimization	WMM® WMM®-Admission Control WMM®-Power Save Wi-Fi Agile Multiband™ Wi-Fi Optimized Connectivity™ 2018
Security	Protected Management Frames WPA2™-Enterprise 2018-04 WPA2™-Personal 2018-04



# Wi-Fi CERTIFIED™ Certificate

Certification ID: WFA90528



## Summary of Certifications (continued)

Page 2 of 5

CLASSIFICATION	CERTIFICATION
Security	WPA3™-Enterprise 2018-04
	WPA3™-Personal 2019-08
	WPA™-Enterprise
	WPA™-Personal
Spectrum & Regulatory Features	Spectrum & Regulatory



# Wi-Fi CERTIFIED™ Certificate

Certification ID: WFA90528



Role: Station

Page 3 of 5

## Wi-Fi Components

### Wi-Fi Component Operating System

Android, version:9.0

### Wi-Fi Component Firmware

18.38.8.1

### RF Architecture

Bands Supported	Transmit (Tx)	Receive (Rx)
2.4 GHz	2	2
5 GHz	2	2

## Certifications

### 2.4 GHz Spectrum Capabilities

20 MHz Channel Width in 2.4 GHz  
40 MHz Channel Width in 2.4 GHz

### WMM®-Power Save (continued)

Legacy Power Save  
Unschedule auto PS

### 5 GHz Spectrum Capabilities

20 MHz Channel Width in 5 GHz  
40 MHz Channel Width in 5 GHz  
80 MHz Channel Width in 5 GHz

### WPA2™-Enterprise 2018-04

EAP methods  
EAP AKA  
EAP AKA Prime  
EAP SIM  
EAP TLS  
EAP TTLS  
PEAPv0  
PEAPv1

### Protected Management Frames

### Spectrum & Regulatory

802.11h

### WPA2™-Personal 2018-04

### Voice-Enterprise

### WPA3™-Enterprise 2018-04

### WMM®

EAP methods  
EAP AKA  
EAP AKA Prime  
EAP SIM  
EAP TLS

### WMM®-Admission Control

### WMM®-Power Save



# Wi-Fi CERTIFIED™ Certificate

Certification ID: WFA90528



Role: Station

Page 4 of 5

## WPA3™-Enterprise 2018-04 (continued)

EAP TTLS  
PEAPv0  
PEAPv1

## WPA3™-Personal 2019-08

## WPA™-Enterprise

## WPA™-Personal

## Wi-Fi Agile Multiband™

ANQP  
Beacon Report Measurement Active Mode  
Beacon Report Measurement Passive Mode  
BTM Query  
Cellular Data capable  
Fast Transition OTA on WPA2-Personal

## Wi-Fi Aware™

Bluetooth® Low Energy - Browser  
Bluetooth® Low Energy - Provider  
Bluetooth® Low Energy - Seeker  
Device Ranging

## Wi-Fi CERTIFIED 6®

A-MPDU with A-MSDU  
BSRP Trigger frame  
DL Mu PPDU multi-tone  
DL MU-MIMO  
Individual Target Wake Time  
LDPC Rx

## Wi-Fi CERTIFIED 6® (continued)

LDPC Tx  
MCS 8-9 Rx  
MCS 8-9 Tx  
MCS 10-11 Rx  
MCS 10-11 Tx  
MU EDCA Parameter Set element  
MU-BAR Trigger frame  
MU-RTS Trigger frame  
OM Control field Tx  
Operating Mode indication  
SU beamformee  
UL OFDMA  
UL TB PPDU multi-tone

## Wi-Fi CERTIFIED™ a

## Wi-Fi CERTIFIED™ ac

Extended 5 GHz Channel Support  
A-MPDU with A-MSDU  
DL MU-MIMO  
LDPC Rx  
MCS 8-9 Rx  
Short Guard Interval  
LDPC Tx  
SU beamformee

## Wi-Fi CERTIFIED™ b

## Wi-Fi CERTIFIED™ g

## Wi-Fi CERTIFIED™ n

A-MPDU Tx



# Wi-Fi CERTIFIED™ Certificate

Certification ID: WFA90528



Role: Station

Page 5 of 5

## Wi-Fi CERTIFIED™ n (continued)

OBSS on Extension Channel  
Power Management  
Short Guard Interval

## Wi-Fi Direct®

## Wi-Fi Enhanced Open™ 2018-04

## Wi-Fi Optimized Connectivity™ 2018