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RF Exposure Evaluation Report

Report No.: CQASZ20231202343E-05
Applicant: Shenzhen Jiteng Network Technology Co., Ltd
Address of Applicant: Floor 7, Building B, Boton Science and Technology Park, Chaguang Road, Xili Street Nanshan District, Shenzhen, China
Equipment Under Test (EUT):
EUT Name: Mini PC
Model No.: XT13 Pro, XT***Pro, XT***Max, AX***, AX***Pro, AX***Max, AE***, AE***Pro, AE***Max, GT***, GT***Max, GT***Pro, XU***, XU***Pro, XU***Max, AG***Pro, AG***Max, GT***Ultra, GT***Mega, U***Ultra, U***Mega, XT***Ultra, XT***Mega, IT***Ultra, IT***Mega (*Representing numbers 0-9, letters A-Z, a-z, "-" or spaces)
Test Model No.: XT13 Pro
Brand Name: GEEKOM, geeknuc
FCC ID: 2AY4C-GXT01
Standards: 47 CFR Part 1.1307
47 CFR Part 1.1310
447498 D04 Interim General RF Exposure Guidance v01
Date of Receipt: 2023-12-18
Date of Test: 2023-12-18 to 2024-06-07
Date of Issue: 2024-06-07
Test Result: **PASS***

*In the configuration tested, the EUT complied with the standards specified above

Tested By: Lewis Zhou
(Lewis Zhou)

Reviewed By: Timo Lei
(Timo Lei)

Approved By: Alex
(Alex Wang)



The test report is effective only with both signature and specialized stamp, The result(s) shown in this report refer only to the sample(s) tested. Without written approval of CQA, this report can't be reproduced except in full.

1 Version

Revision History Of Report

Report No.	Version	Description	Issue Date
CQASZ20231202343E-05	Rev.01	Initial report	2024-06-07

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3 General Information

3.1 Client Information

Applicant:	Shenzhen Jiteng Network Technology Co., Ltd
Address of Applicant:	Floor 7, Building B, Boton Science and Technology Park, Chaguang Road, Xili Street Nanshan District, Shenzhen,China
Manufacturer:	Shenzhen Jiteng Network Technology Co., Ltd
Address of Manufacturer:	Floor 7, Building B, Boton Science and Technology Park, Chaguang Road, Xili Street Nanshan District, Shenzhen,China
Factory:	China Greatwall Technology Group Co., Ltd. Shiyang Branch
Address of Factory:	Great-Wall Computer Industry Park, Baoshi East Rd. Shiyang County, Baoan, Shenzhen, P.R.China

3.2 General Description of EUT

Product Name:	Mini PC
Model No.:	XT13 Pro, XT***Pro, XT***Max, AX***, AX***Pro, AX***Max, AE***, AE***Pro, AE***Max, GT***, GT***Max, GT***Pro, XU***, XU***Pro, XU***Max, AG***Pro, AG***Max, GT***Ultra, GT***Mega, U***Ultra, U***Mega, XT***Ultra, XT***Mega, IT***Ultra, IT***Mega (*Representing numbers 0-9, letters A-Z, a-z, "-" or spaces)
Test Model No.:	XT13 Pro
Trade Mark:	GEEKOM, geeknuc
Software Version:	Windows 11
Hardware Version:	NUCAL02_MB_V30
EUT Power Supply:	Power supply adapter 1# Model No.:BSY120T1906323D Input:100-240V~50/60Hz 2.5A Output:19V 6.32A 120W 2# Model No.:hyleton-120W1906320 Input:100-240V~50/60Hz 1.4A Output:19V 6.32A 120W 3# Model No.:J130-190006320DMI Input:100-240V~50/60Hz 2.5A Output:19V 6.32A 120.08W 4# Model No.:MSS-Z6320WR190-120C0-E Input:100-240V~50/60Hz 2.0A

	<p>Output:19V 6.32A</p> <p>5#</p> <p>Model No.:FSP120-ABBU3</p> <p>Input:100-240V~50/60Hz 1.4A</p> <p>Output:19V 6.32A 120W</p>
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3.3 General Description of BT Classic

Operation Frequency:	2402MHz~2480MHz
Bluetooth Version:	Bluetooth Spec 5.2
Modulation Technique:	Frequency Hopping Spread Spectrum(FHSS)
Modulation Type:	GFSK, $\pi/4$ DQPSK, 8DPSK
Number of Channel:	79
Transfer Rate:	1Mbps/2Mbps/3Mbps
Hopping Channel Type:	Adaptive Frequency Hopping systems
Sample Type:	<input checked="" type="checkbox"/> Mobile <input type="checkbox"/> Portable
Antenna Type:	PIFA antenna
Antenna Gain:	1.32 dBi

3.4 General Description of 2.4G WIFI Classic

Operation Frequency:	2412MHz~2462MHz
Type of Modulation:	802.11b: DSSS(CCK/QPSK/BPSK) 802.11g: OFDM(BPSK/QPSK/16QAM/64QAM) 802.11n (HT20)(HT40): OFDM (64QAM, 16QAM, QPSK, BPSK) 802.11ax(HE20)(HE40) :OFDMA(1024QAM, 256QAM, 64QAM, 16QAM, QPSK, BPSK)
Number of Channel:	IEEE 802.11b/g, IEEE 802.11n HT20 ax HE20: 11 Channels IEEE 802.11n HT40 ax HE 40: 7 Channels
Channel Separation:	5MHz
Transfer Rate:	802.11b: 1M/2M/5.5M/11M bps 802.11g: 6M/9M/12M/18M/24M/36M/48M/54M bps 802.11n(HT20)(HT40): 7.2M/14.4M/21.7M/28.9M/43.3M/57.8M/65M/72.2M bps 802.11ax(HE20)(HE40): 8.6M/17.2M/25.8M/34.4M/51.6M/68.8M/77.4M/86M/103.2M/114.7M/129M/143.4Mbps
Sample Type:	<input checked="" type="checkbox"/> Mobile <input type="checkbox"/> Portable
Antenna Type:	PIFA antenna
Antenna Gain:	Ant1:1.32dBi, Ant2:2.25dBi Ant1+Ant2:4.8dBi

3.5 General Description of 5G WIFI Classic

Type of Modulation:	OFDM
Number of Channel:	IEEE 802.11a/n/ac/ax(20M): 5150MHz ~5250MHz/ 4 channel IEEE 802.11n/ac/ax(40M): 5150MHz ~5250MHz/ 2 channel IEEE 802.11ac/ax(80M): 5150MHz ~5250MHz/ 1 channel IEEE 802.11a/n/ac/ax(20M): 5725MHz ~5850MHz/ 5 channel IEEE 802.11n/ac/ax(40M): 5725MHz ~5850MHz/ 2 channel IEEE 802.11ac/ax(80M): 5725MHz ~5850MHz/ 1 channel
Channel Separation:	5MHz
Operation Frequency:	IEEE 802.11a/n/ac/ax(20M): 5150MHz ~5250 MHz IEEE802.11n/ac/ax(40M): 5150MHz ~5250 MHz IEEE802.11ac/ax(80M): 5150MHz ~5250 MHz IEEE 802.11a/n/ac/ax(20M): 5725MHz ~5850 MHz IEEE802.11n/ac/ax(40M): 5725MHz ~5850 MHz IEEE802.11ac/ax(80M): 5725MHz ~5850 MHz
Sample Type:	<input checked="" type="checkbox"/> Mobile <input type="checkbox"/> Portable
Antenna Type:	PIFA antenna
Antenna Gain:	Ant1:2.06dBi@5GHz: Wi-Fi: U-NII-1, 3.38dBi@5GHz: Wi-Fi: U-NII-3 Ant2:3dBi@5GHz: Wi-Fi: U-NII-1, 3dBi@5GHz: Wi-Fi: U-NII-3

	Ant1+Ant2: 5.55dBi@5GHz: Wi-Fi: U-NII-1, 6.2dBi@5GHz: Wi-Fi: U-NII-3
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Note:

The above parameters will directly affect the test results. The information is provided by the applicant.

4 MPE Evaluation

4.1 RF Exposure Compliance Requirement

4.1.1 Limits

The table applies to any RF source (i.e., single fixed, mobile, and portable transmitters) and specifies power and distance criteria for each of the five frequency ranges used for the MPE limits. These criteria apply at separation distances from any part of the radiating structure of at least $\lambda/2\pi$. The thresholds are based on the general population MPE limits with a single perfect reflection, outside of the reactive near-field, and in the main beam of the radiator. For mobile devices that are not exempt per Table B.1 [Table 1 of § 1.1307(b)(1)(i)(C)] at distances from 20 cm to 40 cm and in 0.3 GHz to 6 GHz, evaluation of compliance with the exposure limits in § 1.1310 is necessary if the ERP of the device is greater than ERP_{20cm} in Formula (B.1) [repeated from § 2.1091(c)(1) and § 1.1307(b)(1)(i)(B)].

$$P_{th} \text{ (mW)} = ERP_{20 \text{ cm}} \text{ (mW)} = \begin{cases} 2040f & 0.3 \text{ GHz} \leq f < 1.5 \text{ GHz} \\ 3060 & 1.5 \text{ GHz} \leq f \leq 6 \text{ GHz} \end{cases}$$

If the ERP is not easily obtained, then the available maximum time-averaged power may be used (i.e., without consideration of ERP only if the physical dimensions of the radiating structure(s) do not exceed the electrical length of $\lambda/4$ or if the antenna gain is less than that of a half-wave Dipole.

SAR-based exemptions are constant at separation distances between 20 cm and 40 cm to avoid discontinuities in the threshold when transitioning between SAR-based and MPE-based exemption criteria at 40 cm, considering the importance of reflections.

4.1.2 Test Procedure

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

4.1.3 EUT RF Exposure

1) For BT Classic

Measurement Data

GFSK mode				
Test channel	Max.Peak Power (dBm)	Antenna Gain (dBi)	EIRP (dBm)	ERP (dBm)
2402MHz	4.45	1.32	5.77	3.62
Tune-up				
Tune up tolerance (dBm)		Maximum tune-up Power		
3.5±1		(dBm)	(mW)	
		4.5	2.82	

$\pi/4$ DQPSK mode				
Test channel	Max.Peak Power (dBm)	Antenna Gain (dBi)	EIRP (dBm)	ERP (dBm)
2402MHz	-0.55	1.32	0.77	-1.38
Tune-up				
Tune up tolerance (dBm)		Maximum tune-up Power		
-1.5±1		(dBm)	(mW)	
		-0.5	0.89	

8DPSK mode				
Test channel	Max.Peak Power (dBm)	Antenna Gain (dBi)	EIRP (dBm)	ERP (dBm)
2402MHz	-0.55	1.32	0.77	-1.38
Tune-up				
Tune up tolerance (dBm)		Maximum tune-up Power		
-1.5±1		(dBm)	(mW)	
		-0.5	0.89	

The ERP of this product is less than 3060mW

Note: 1) Refer to report No. CQASZ20231202343E-01 for EUT test Max Conducted Peak Output Power value.
2) EUT's module is more than 20cm away from the human body.

2) For BLE

Measurement Data

GFSK(1Mbps) mode				
Test channel	Max.Peak Power (dBm)	Antenna Gain (dBi)	EIRP (dBm)	ERP (dBm)
2402MHz	0.45	1.32	1.77	-0.38
Tune-up				
Tune up tolerance (dBm)		Maximum tune-up Power		
-0.5±1		(dBm)		(mW)
		0.5		1.12

GFSK(2Mbps) mode				
Test channel	Max.Peak Power (dBm)	Antenna Gain (dBi)	EIRP (dBm)	ERP (dBm)
2402MHz	0.49	1.32	1.81	-0.34
Tune-up				
Tune up tolerance (dBm)		Maximum tune-up Power		
-0.5±1		(dBm)		(mW)
		0.5		1.12

The ERP of this product is less than 3060mW

Note: 1) Refer to report No. CQASZ20231202343E-02 for EUT test Max Conducted Peak Output Power value.

2) EUT's module is more than 20cm away from the human body.

3) For 2.4G WIFI Classic

Measurement Data

11b mode				
Test channel	Max.Peak Power (dBm)	Antenna Gain (dBi)	EIRP (dBm)	ERP (dBm)
2412MHz	12.28	2.25	14.53	12.38
Tune-up				
Tune up tolerance (dBm)		Maximum tune-up Power		
12.5±1		(dBm)	(mW)	
		13.5	22.39	

11g mode				
Test channel	Max.Peak Power (dBm)	Antenna Gain (dBi)	EIRP (dBm)	ERP (dBm)
2412MHz	11.08	2.25	13.33	11.18
Tune-up				
Tune up tolerance (dBm)		Maximum tune-up Power		
11.5±1		(dBm)	(mW)	
		12.5	17.78	

11n20 mode				
Test channel	Max.Peak Power (dBm)	Antenna Gain (dBi)	EIRP (dBm)	ERP (dBm)
2412MHz	12.94	4.8	17.74	15.59
Tune-up				
Tune up tolerance (dBm)		Maximum tune-up Power		
15.5±1		(dBm)	(mW)	
		16.5	44.67	

11n40 mode				
Test channel	Max.Peak Power (dBm)	Antenna Gain (dBi)	EIRP (dBm)	ERP (dBm)
2422MHz	12.95	4.8	17.75	15.60
Tune-up				
Tune up tolerance (dBm)		Maximum tune-up Power		
15.5±1		(dBm)	(mW)	
		16.5	44.67	

11ax20 mode				
Test channel	Max.Peak Power (dBm)	Antenna Gain (dBi)	EIRP (dBm)	ERP (dBm)
2412MHz	15.5	4.8	20.30	18.15
Tune-up				
Tune up tolerance (dBm)		Maximum tune-up Power		
18.0±1		(dBm)	(mW)	
		19	79.43	

11ax 40 mode				
Test channel	Max.Peak Power (dBm)	Antenna Gain (dBi)	EIRP (dBm)	ERP (dBm)
2452MHz	15.75	4.8	20.55	18.40
Tune-up				
Tune up tolerance (dBm)		Maximum tune-up Power		
18.5±1		(dBm)	(mW)	
		19.5	89.13	

The ERP of this product is less than 3060mW

Note: 1) Refer to report No. CQASZ20231202343E-03 for EUT test Max Conducted AV Output Power value.
2) EUT's module is more than 20cm away from the human body.

3) For 5G WIFI Classic

11a mode				
Test channel	Max.Peak Power (dBm)	Antenna Gain (dBi)	EIRP (dBm)	ERP (dBm)
5825MHz	14.46	3	17.46	15.31
Tune-up				
Tune up tolerance (dBm)		Maximum tune-up Power		
15.5±1		(dBm)	(mW)	
		16.5	44.67	

11n20 mode				
Test channel	Max.Peak Power (dBm)	Antenna Gain (dBi)	EIRP (dBm)	ERP (dBm)
5825MHz	15.46	6.2	21.66	19.51
Tune-up				
Tune up tolerance (dBm)		Maximum tune-up Power		
19.5±1		(dBm)	(mW)	
		20.5	112.20	

11n40 mode				
Test channel	Max.Peak Power (dBm)	Antenna Gain (dBi)	EIRP (dBm)	ERP (dBm)
5755MHz	15.9	6.2	22.10	19.95
Tune-up				
Tune up tolerance (dBm)		Maximum tune-up Power		
20.0±1		(dBm)	(mW)	
		21	125.89	

11ac20 mode				
Test channel	Max.Peak Power (dBm)	Antenna Gain (dBi)	EIRP (dBm)	ERP (dBm)
5825MHz	15.61	6.2	21.81	19.66
Tune-up				
Tune up tolerance (dBm)		Maximum tune-up Power		
19.5±1		(dBm)	(mW)	
		20.5	112.20	

11ac40 mode				
Test channel	Max.Peak Power (dBm)	Antenna Gain (dBi)	EIRP (dBm)	ERP (dBm)
5755MHz	15.96	6.2	22.16	20.01
Tune-up				
Tune up tolerance (dBm)		Maximum tune-up Power		
20.0±1		(dBm)	(mW)	
		21	125.89	

11ac80 mode				
Test channel	Max.Peak Power (dBm)	Antenna Gain (dBi)	EIRP (dBm)	ERP (dBm)
5775MHz	15.83	6.2	22.03	19.88
Tune-up				
Tune up tolerance (dBm)		Maximum tune-up Power		
20.0±1		(dBm)	(mW)	
		21	125.89	

11ax20 mode				
Test channel	Max.Peak Power (dBm)	Antenna Gain (dBi)	EIRP (dBm)	ERP (dBm)
5180MHz	14.52	5.55	20.07	17.92
Tune-up				
Tune up tolerance (dBm)		Maximum tune-up Power		
18.0±1		(dBm)	(mW)	
		19	79.43	

11ax40 mode				
Test channel	Max.Peak Power (dBm)	Antenna Gain (dBi)	EIRP (dBm)	ERP (dBm)
5190MHz	14.55	5.55	20.1	17.95
Tune-up				
Tune up tolerance (dBm)		Maximum tune-up Power		
18.0±1		(dBm)	(mW)	
		19	79.43	

11ax80 mode				
Test channel	Max.Peak Power (dBm)	Antenna Gain (dBi)	EIRP (dBm)	ERP (dBm)
5210MHz	14.27	5.55	19.82	17.67
Tune-up				
Tune up tolerance (dBm)		Maximum tune-up Power		
17.5±1		(dBm)	(mW)	
		18.5	70.79	

The ERP of this product is less than 3060mW

Note: 1) Refer to report No. CQASZ20231202343E-04 for EUT test Max Conducted AV Output Power value.
2) EUT's module is more than 20cm away from the human body.

*** END OF REPORT ***