



No.:
FCCSZ2024-0001-H

TEST REPORT

FCC ID : 2A3WD-AQ4




NAME OF SAMPLE : Quantum Access Q4

APPLICANT : QUANTUM CONNECTIVITY DE MEXICO, S.A. DE C.V.

CLASSIFICATION OF TEST : N/A

CVC Testing Technology (Shenzhen) Co., Ltd.



Applicant		Name: QUAMTUM CONNECTIVITY DE MEXICO, S.A. DE C.V. Address: Torcuato Tasso 245, Despacho 403, Oficina 21Col. Polanco V Sección, C.P. 11560 Alcaldía Miguel Hidalgo, CDMX, México	
Manufacturer		Name: QUAMTUM CONNECTIVITY DE MEXICO, S.A. DE C.V. Address: Torcuato Tasso 245, Despacho 403, Oficina 21Col. Polanco V Sección, C.P. 11560 Alcaldía Miguel Hidalgo, CDMX, México	
Equipment Under Test		Name: Quantum Access Q4 Model/Type: Quantum Access Q4 Brand: Quantum Serial NO.: N/A Sample NO.: 4-2	
Date of Receipt.	2024.01.04	Date of Testing	2024.01.04 ~ 2024.01.19
Test Specification		Test Result	
FCC Part 2 (Section 2.1091) KDB 447498 D04 IEEE C95.1		PASS	
Evaluation of Test Result		The equipment under test was found to comply with the requirements of the standards applied. Seal of CVC Issue Date: 2024.01.19	
Tested by:  Zhu Yulin Name Signature		Reviewed by:  Huang Meng Name Signature	Approved by:  Dong Sanbi Name Signature
Other Aspects: NONE.			
Abbreviations:OK, Pass= passed Fail = failed N/A= not applicable EUT= equipment, sample(s) under tested			

This test report relates only to the EUT, and shall not be reproduced except in full, without written approval of CVC.



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RELEASE CONTROL RECORD

ISSUE NO.	REASON FOR CHANGE	DATE ISSUED
FCCSZ2024-0001-H	Original release	2024.01.19



1. GENERAL INFORMATION

PRODUCT	Quantum Access Q4		
BRAND	Quantum		
MODEL	Quantum Access Q4		
FCC ID	2A3WD-AQ4		
POWER SUPPLY	DC 5V from Adapter		
MODULATION TYPE	WLAN 2.4G		CCK, DQPSK, DBPSK for DSSS 64QAM, 16QAM, QPSK, BPSK for OFDM
	WCDMA		BPSK, QPSK
	LTE	UL	QPSK, 16QAM
		DL	QPSK, 16QAM, 64QAM
OPERATING FREQUENCY	WLAN 2.4G		2412MHz ~ 2462MHz for 11b/g/n(HT20) 2422MHz ~ 2452MHz for 11n(HT40)
	WCDMA		See section 4
	LTE		
	MAX POWER	WLAN 2.4G: 19.12dBm (Maximum)	
WCDMA		See section 4	
LTE			
HARDWARE VERSION:	1.0		
SOFTWARE VERSION:	Quantum Access Q4_Ver 1.0		
I/O PORTS	Refer to user's manual		
CABLE SUPPLIED	RJ45, unshielded, 1.5m		
Remark: 1. For more detailed features description, please refer to the manufacturer's specifications or the User's Manual. 2. For the test results, the EUT had been tested with all conditions. But only the worst case was shown in test report. 3. EUT photo refer to the report (Report NO.: FCCSZ2024-0001-EUT).			

2. DESCRIPTION OF ACCESSORIES

Adapter	
BRAND	N/A
Model No.:	KFL-T41
Input:	100-240 V ~ 50/60Hz 0.3A
Output:	5.0 V \equiv 2 A 10.0W
AC Cable:	N/A
DC Cable:	1.20 Meter, Unshielded without ferrite

**3. ANTENNA TYPE AND GAIN**

Mode	Frequency	Antenna Type	Antenna Gain(dBi)
WLAN 2.4G ANT1	2412~2462	External Rod Antenna	6.1
WLAN 2.4G ANT2	2412~2462	External Rod Antenna	6.1

Mode	Band	Antenna Type		Antenna Gain(dBi)	
		Main	Diversity	Main	Diversity
WCDMA	WCDMA B2	External Rod Antenna	External Rod Antenna	5.1	5.1
	WCDMA B5	External Rod Antenna	External Rod Antenna	2.4	2.4
LTE	LTE B2	External Rod Antenna	External Rod Antenna	5.1	5.1
	LTE B4	External Rod Antenna	External Rod Antenna	3.4	3.4
	LTE B5	External Rod Antenna	External Rod Antenna	2.4	2.4
	LTE B7	External Rod Antenna	External Rod Antenna	6.3	6.3
	LTE B66	External Rod Antenna	External Rod Antenna	3.4	3.4

4. OPERATING FREQUENCY AND MAX CONDUTED POWER

Mode	Band	TX(MHz)	RX(MHz)	Maximum Output Power (dBm)
WLAN 2.4G ANT1	/	2412 ~ 2462	2412 ~ 2462	16.22
WLAN 2.4G ANT2	/	2412 ~ 2462	2412 ~ 2462	16.00
WCDMA	WCDMA B2	1850 ~ 1910	1930 ~ 1990	22.88
	WCDMA B5	824 ~ 849	869 ~ 894	22.56
LTE	LTE B2	1850 ~ 1910	1930 ~ 1990	23.07
	LTE B4	1710 ~ 1755	2110 ~ 2155	22.75
	LTE B5	824 ~ 849	869 ~ 894	23.74
	LTE B7	2500 ~ 2570	2620 ~ 2690	23.43
	LTE B66	1710 ~ 1780	2110 ~ 2180	22.95



5. RF EXPOSURE LIMIT

(Option B) According to FCC Part2.1091 and FCC Part1.1307b, the available maximum time-averaged power or effective radiated power (ERP), whichever is greater, is less than or equal to the threshold P_{th} (mW) described in the following formula. This method shall only be used at separation distances (cm) from 0.5 centimeters to 40 centimeters and at frequencies from 0.3 GHz to 6 GHz (inclusive). P is given by:

$$P_{th} \text{ (mW)} = \begin{cases} ERP_{20 \text{ cm}} (d/20 \text{ cm})^x & d \leq 20 \text{ cm} \\ ERP_{20 \text{ cm}} & 20 \text{ cm} < d \leq 40 \text{ cm} \end{cases}$$

Where:

$$x = -\log_{10} \left(\frac{60}{ERP_{20 \text{ cm}} \sqrt{f}} \right)$$

and f is in GHz;

and

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

(Option C) Or using Table 1 and the minimum separation distance (R in meters) from the body of a nearby person for the frequency (f in MHz) at which the source operates, the ERP (watts) is no more than the calculated value prescribed for that frequency. For the exemption in Table 1 to apply, R must be at least $\lambda/2\pi$, where λ is the free-space operating wavelength in meters. If the ERP of a single RF source is not easily obtained, then the available maximum time-averaged power may be used in lieu of ERP 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 (1.64 linear value).

Table 1 to §1.1307(b)(3)(i)(C) - Single RF Sources Subject to Routine Environmental Evaluation

RF Source Frequency (MHz)	Threshold ERP (W)
0.3 - 1.34	$1920R^2$
1.34 - 30	$3450R^2 / f^2$
30 - 300	$3.38R^2$
300 - 1500	$0.0128R^2 / f^2$
1500 - 100000	$19.2R^2$



For multiple RF sources: Multiple RF sources are exempt if:

- a) The available maximum time-averaged power of each source is no more than 1 mW and there is a separation distance of two centimeters between any portion of a radiating structure operating and the nearest portion of any other radiating structure in the same device, except if the sum of multiple sources is less than 1 mW during the time-averaging period, in which case they may be treated as a single source (separation is not required). This exemption may not be used in conjunction with other exemption criteria other than those in paragraph (b)(3)(i)(A) of this section. Medical implant devices may only use this exemption and that in paragraph (b)(3)(i)(A).
- b) in the case of fixed RF sources operating in the same time-averaging period, or of multiple mobile or portable RF sources within a device operating in the same time averaging period, if the sum of the fractional contributions to the applicable thresholds is less than or equal to 1 as indicated in the following equation.

$$\sum_{i=1}^a \frac{P_i}{P_{th,i}} + \sum_{j=1}^b \frac{ERP_j}{ERP_{th,j}} + \sum_{k=1}^c \frac{Evaluated_k}{Exposure Limit_k} \leq 1$$

Where:

a = number of fixed, mobile, or portable RF sources claiming exemption using paragraph (b)(3)(i)(B) of this section for Pth, including existing exempt transmitters and those being added.

b = number of fixed, mobile, or portable RF sources claiming exemption using paragraph (b)(3)(i)(C) of this section for Threshold ERP, including existing exempt transmitters and those being added.

c = number of existing fixed, mobile, or portable RF sources with known evaluation for the specified minimum distance including existing evaluated transmitters.

Pi = the available maximum time-averaged power or the ERP, whichever is greater, for fixed, mobile, or portable RF source i at a distance between 0.5 cm and 40 cm (inclusive).

Pth,i = the exemption threshold power (Pth) according to paragraph (b)(3)(i)(B) of this section for fixed, mobile, or portable RF source i.

ERPj = the ERP of fixed, mobile, or portable RF source j.

ERPth,j = exemption threshold ERP for fixed, mobile, or portable RF source j, at a distance of at least λ/2π according to the applicable formula of paragraph (b)(3)(i)(C) of this section.

Evaluatedk = the maximum reported SAR or MPE of fixed, mobile, or portable RF source k either in the device or at the transmitter site from an existing evaluation at the location of exposure.

Exposure Limitk = either the general population/uncontrolled maximum permissible exposure (MPE) or specific absorption rate (SAR) limit for each fixed, mobile, or portable RF source k, as applicable from § 1.1310 of this chapter.



6. CLASSIFICATION

The antenna of this product, under normal use condition, is at least 20cm away from the body of the user. So, this device is classified as **Mobile Device**.

7. ANTENNA GAIN

The antennas provided to the EUT, please refer to the following table:

Transmitter Circuit	Peak Gain (dBi)	Antenna Type
WLAN 2.4G ANT1	6.1	External Rod Antenna
WLAN 2.4G ANT2	6.1	External Rod Antenna
WCDMA B2	5.1	External Rod Antenna
WCDMA B5	2.4	External Rod Antenna
LTE B2	5.1	External Rod Antenna
LTE B4	3.4	External Rod Antenna
LTE B5	2.4	External Rod Antenna
LTE B7	6.3	External Rod Antenna
LTE B66	3.4	External Rod Antenna

This is provided by the manufacturer. The laboratory is not responsible for technical data provided by the customer.



8. CALCULATION RESULT OF MAXIMUM CONDUCTED POWER

The measured Conducted Power

Mode	Frequency (MHz)	Target Power (dBm)	Tolerance (dBm)	Lower Tolerance (dBm)	Upper Tolerance (dBm)
WLAN 2.4G ANT1	2412 ~ 2462	16	+1	15	17
WLAN 2.4G ANT2	2412 ~ 2462	16	+1	15	17
WCDMA B2	1850 ~ 1910	22	+1	21	23
WCDMA B5	824 ~ 849	22	+1	21	23
LTE B2	1850 ~ 1910	23	+1	22	24
LTE B4	1710 ~ 1755	22	+1	21	23
LTE B5	824 ~ 849	23	+1	22	24
LTE B7	2500 ~ 2570	23	+1	22	24
LTE B66	1710 ~ 1780	22	+1	21	23

The tuned Conducted Power (declared by client)

	Technology	Maximum tune up power (dBm)	Maximum Antenna Gain (dBi)	EIRP (dBm)	ERP (dBm)	ERP (mW)	Part1.1307b Threshold (mW)	Verify
Option B	WLAN 2.4G ANT1	17	6.1	23.1	20.95	124.45	3060	PASS
	WLAN 2.4G ANT2	17	6.1	23.1	20.95	124.45	3060	PASS
	WCDMA B2	23	5.1	28.1	25.95	393.55	3060	PASS
	WCDMA B5	23	2.4	25.4	23.25	211.35	1731.96	PASS
	LTE B2	24	5.1	29.1	26.95	495.45	3060	PASS
	LTE B4	23	3.4	26.4	24.25	266.07	3060	PASS
	LTE B5	24	2.4	26.4	24.25	266.07	1731.96	PASS
	LTE B7	24	6.3	30.3	28.15	653.13	3060	PASS
	LTE B66	23	3.4	26.4	24.25	266.07	3060	PASS

Note: This device can operate simultaneously in WLAN 2.4G, WCDMA or LTE.



CALCULATION FOR SIMULTANEOUS TRANSMISSION:

WLAN 2.4G and LTE can transmit simultaneously, the formula of calculated the MPE is

$$\sum_{i=1}^a \frac{P_i}{P_{th,i}} + \sum_{j=1}^b \frac{ERP_j}{ERP_{th,j}} + \sum_{k=1}^c \frac{Evaluated_k}{Exposure Limit_k} \leq 1$$

Max: $(124.45 / 3060) + (124.45 / 3060) + (653.13 / 3060) = 0.295 < 1$, which is less than the "1" limit.

----- End of the Report -----



Important

- (1) The test report is invalid without the official stamp of CVC;
- (2) Any part photocopies of the test report are forbidden without the written permission from CVC;
- (3) The test report is invalid without the signatures of Approval and Reviewer;
- (4) The test report is invalid if altered;
- (5) Objections to the test report must be submitted to CVC within 15 days.
- (6) Generally, commission test is responsible for the tested samples only.
- (7) As for the test result “-” or “N” means “not applicable”, “/” means “not test”, “P” means “pass” and “F” means “fail”

The test data and test results given in this test report should only be used for purposes of scientific research, teaching and internal quality control when the CMA symbol is not presented.

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