

FCC RF Exposure

Applicant : Quantex GmbH
Address : Rueckertstrasse 10, 32257 Buende, Germany
Product Name : ScanDoc NANO ET
Brand Mark : N/A
Model no. : nano
Series model : N/A
FCC ID : 2BPMA-NANO
Report Number : BLA-EMC-202505-A0203
Date of Receipt : May 07, 2025
Date of Test : May 07, 2025 to May 26, 2025
47 CFR Part 15, Part1.1307
Test Standard : 47 CFR Part 15, Part2.1093
KDB447498D04 General RF Exposure Guidance v01
Test Result : Pass

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Review by: Xavier

Approved by: Blue Zheng

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Revise Record

Version No.	Date	Description
01	Jun. 04, 2025	Original

1 General information

1.1 General information

Applicant	Quantex GmbH
Address	Rueckertstrasse 10, 32257 Buende, Germany
Manufacturer	SHENZHEN JIECHUANG ELECTRONIC TECHNOLOGY CO., LTD
Address	3RD FLOOR, BUILDING 3, FACTORY BUILDING 3, LINGXIA ROAD, FENGHUANG COMMUNITY, FUYONG STREET, BAO'AN DISTRICT, SHENZHEN CITY, GUANGDONG PROVINCE, CHINA
Factory	SHENZHEN JIECHUANG ELECTRONIC TECHNOLOGY CO., LTD
Address	3RD FLOOR, BUILDING 3, FACTORY BUILDING 3, LINGXIA ROAD, FENGHUANG COMMUNITY, FUYONG STREET, BAO'AN DISTRICT, SHENZHEN CITY, GUANGDONG PROVINCE, CHINA

1.2 General description of EUT

Product Name	ScanDoc NANO ET
Model No.	nano
Operation Frequency	BLE: 2402MHz-2480MHz 2.4GWIFI: 802.11b/g/n(HT20): 2412MHz to 2462MHz 802.11n(HT40): 2422MHz to 2452MHz
Modulation Type	BLE: GFSK 2.4GWIFI: 802.11b: DSSS(CCK/QPSK/BPSK) 802.11g: OFDM(BPSK/QPSK/16QAM/64QAM) 802.11n (HT20 and HT40): OFDM (64QAM, 16QAM, QPSK, BPSK)
Number of Channels	BLE: 40 2.4GWIFI: 802.11b/g/n(HT20):11 802.11n(HT40):7
Antenna Type	PCB antenna
Antenna Gain	4.16dBi (Provided by customer)
Power supply	DC 12V
Hardware Version	N/A
Software Version	N/A

Note: For a more detailed description, please refer to Specification or User's Manual supplied by the applicant and/or manufacturer.

2 RF Exposure Compliance Requirement

2.1 Standard Requirement

According to 447498 D04 Interim General RF Exposure Guidance v01

Standalone SAR test exclusion considerations

Unless specifically required by the published RF exposure KDB procedures, standalone 1-g head or body and 10-g extremity SAR evaluation for general population exposure conditions, by measurement or numerical simulation, is not required when the corresponding SAR Exclusion Threshold condition, listed below, is satisfied.

2.2 Limits

$$P_{th} \text{ (mW)} = \begin{cases} ERP_{20 \text{ cm}} (d/20 \text{ cm})^x & d \leq 20 \text{ cm} \\ ERP_{20 \text{ cm}} & 20 \text{ cm} < d \leq 40 \text{ cm} \end{cases} \quad (\text{B. 2})$$

where

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

and f is in GHz, d is the separation distance (cm), and $ERP_{20 \text{ cm}}$ is per Formula (B.1).

Example values shown in Table B.2 are for illustration only.

Table B.2—Example Power Thresholds (mW)

Frequency (MHz)	Distance (mm)										
		5	10	15	20	25	30	35	40	45	50
	300	39	65	88	110	129	148	166	184	201	217
	450	22	44	67	89	112	135	158	180	203	226
	835	9	25	44	66	90	116	145	175	207	240
	1900	3	12	26	44	66	92	122	157	195	236
	2450	3	10	22	38	59	83	111	143	179	219
	3600	2	8	18	32	49	71	96	125	158	195
	5800	1	6	14	25	40	58	80	106	136	169

$$P_{th} \text{ (mW)} = ERP_{20 \text{ cm}} \text{ (mW)} = \begin{cases} 2040f & 0.3 \text{ GHz} \leq f < 1.5 \text{ GHz} \\ 3060 & 1.5 \text{ GHz} \leq f \leq 6 \text{ GHz} \end{cases} \quad (\text{B. 1})$$

2.3 Result

$$\text{EIRP} = \text{pt} \times \text{gt} = (\text{E} \times \text{d})^{2/30}$$

Where:

pt = transmitter output power in watts,

gt = numeric gain of the transmitting antenna (unitless),

E = electric field strength in V/m

d = measurement distance in meters (m)

$$\text{Spot} = (\text{E} \times \text{d})^{2/30} \times \text{gt}$$

Separation Distance: 20 (cm)

Antenna gain = 4.16dBi

BLE worse case: 1.853dBm @2480MHz

$$\text{ERP} = 1.853 + 4.16 - 2.15 = 3.863 \text{dBm} = 2.434 \text{mW} < 3060 \text{mW}$$

2.4G WIFI worse case: 16.605dBm @802.11b 2462MHz

$$\text{ERP} = 16.605 + 4.16 - 2.15 = 18.615 \text{dBm} = 72.694 \text{mW} < 3060 \text{mW}$$

Comply with RF exposure exemption limit.

----END OF REPORT----

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