



SAR Test exclusion documentation according to FCC KDB 447498, RSS-102

Report identification number: 1-1635/20-01-07-A Exclusion (FCC_ISED)

contains the module with the following certification numbers	
FCC ID	T7V1780
ISED number	216Q-1780
HVIN (Hardware Version Identification Number)	ENW89854A1KF ENW89854A4KF
PMN (Product Marketing Name)	PAN1780
FVIN (Firmware Version Identification Number)	NCS SDK V1.x libnrf-802154
HMN (Host Marketing Name)	-/-

This report is electronically signed and valid without handwriting signature. For verification of the electronic signatures, the public keys can be requested at the testing laboratory.

Document authorised:



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EUT technologies:

Technologies:	Max. measured power: (AVG)	Max. gain:	Min. pathloss:
Bluetooth LE	8.5 dBm	0.4 dBi	0 dB (if applicable)
ZigBee IEEE 802.15.4	6.9 dBm	0.4 dBi	0 dB (if applicable)

NOTE:

Bluetooth LE test results see CTC advanced test report 1-9206/19-01-06-A

Max. Peak conducted measured: 8.5 dBm (2480 MHz)

ZigBee IEEE 802.15.4 test results see CTC advanced test report 1-1635/20-01-05

Max. Peak conducted measured: 6.9 dBm (2405 MHz)

Max. EIRP measured: 7.2 dBm (2440 MHz)

SAR test exclusion according to KDB447498 (General RF Exposure Guidance v06)

Equation from Chapter 4.3.1: Standalone SAR test exclusion considerations page 11 and ff.

(1) Standalone SAR test exclusion for 100 MHz to 6 GHz at test separation distances ≤ 50 mm

$$(\text{Threshold}_{1\text{-g};10\text{-g}}) \times d_{\text{separation}} / f^{0.5}$$

where

$\text{Threshold}_{1\text{-g};10\text{-g}}$ is 3 for 1-g; 7.5 for 10-g

$d_{\text{separation}}$ is the min. test separation distance; 5mm is used if the distance is less

f is the RF channel transmit frequency

The table below gives the calculated maximal power that could be used for source based time averaged conducted or radiated power, adjusted for tune up tolerance. If this is at or below the calculated value the DUT is exempted from SAR evaluation.

Technology:	frequency [MHz]	$d_{\text{separation}}$ [mm]	$\text{Threshold}_{1\text{-g}}$	Powerlimit [mW]	$P_{\text{max-declared}}$		Exclusion
					[dBm]	[mW]	
ZigBee	2405.00	5	3	9.67	6.90	4.90	yes
BT LE	2480.00	5	3	9.53	8.50	7.08	yes

SAR test exclusion according to RSS-102 Issue 5 Section 2.5.1/Table 1

The table below gives the calculated maximal power that could be used for source based time averaged conducted or radiated power, adjusted for tune up tolerance. If this is at or below the calculated value the DUT is exempted from SAR evaluation.

Technology:	frequency [MHz]	$d_{\text{separation}}$ [mm]	tissue volume	Powerlimit [mW]	$P_{\text{max-declared}}$		Exclusion
					[dBm]	[mW]	
ZigBee	2440.00	10	1 g	7.00	6.90	4.90	yes
BT LE	2480.00	15	1 g	15.00	8.50	7.08	yes

The limits above are defined for body worn application and therefore cover all use cases.