RF Exposure Compliance Requirement

E (V/m)=(30*P*G)$^{0.5}$/d
E=Electric Field (V/m)
P=Peak RF output Power (W)
G=EUT Antenna numeric gain (numeric)
d= Separation distance between radiator and human body (m)
in the formula above:
d=3m, E = 0.00069V/m (refer test report 180306075GZU-002), G=1dBi=1.25(numeric)
P=0.00011mW

In KDB 447498 D01 v06: 4.3.1 Standalone SAR test exclusion considerations:

a) For 100 MHz to 6 GHz and *test separation distances* ≤ 50 mm, the 1-g and 10-g *SAR test exclusion thresholds* are determined by the following:

[(*max. power of channel, including tune-up tolerance, mW*) / (*min. test separation distance, mm*)] · [√$f_{(GHz)}$] ≤ 3.0 for 1-g SAR, and ≤ 7.5 for 10-g extremity SAR,[30] where

- $f_{(GHz)}$ is the RF channel transmit frequency in GHz
- Power and distance are rounded to the nearest mW and mm before calculation[31]
- The result is rounded to one decimal place for comparison
- The values 3.0 and 7.5 are referred to as *numeric thresholds* in step b) below

The test exclusions are applicable only when the minimum *test separation distance* is ≤ 50 mm, and for transmission frequencies between 100 MHz and 6 GHz. When the minimum *test separation distance* is < 5 mm, a distance of 5 mm according to 4.1 f) is applied to determine SAR test exclusion.

b) For 100 MHz to 6 GHz and *test separation distances* > 50 mm, the 1-g and 10-g *SAR test exclusion thresholds* are determined by the following (also illustrated in Appendix B):[32]

1) {[Power allowed at *numeric threshold* for 50 mm in step a)] + [(test separation distance – 50 mm)·($f_{(MHz)}$/150)]} mW, for 100 MHz to 1500 MHz
2) {[Power allowed at *numeric threshold* for 50 mm in step a)] + [(test separation distance – 50 mm)·10]} mW, for > 1500 MHz and ≤ 6 GHz

c) For frequencies below 100 MHz, the following may be considered for SAR test exclusion (also illustrated in Appendix C):[33]

1) For *test separation distances* > 50 mm and < 200 mm, the power threshold at the corresponding test separation distance at 100 MHz in step b) is multiplied by [1 + log(100/$f_{(MHz)}$)]
2) For *test separation distances* ≤ 50 mm, the power threshold determined by the equation in c) 1) for 50 mm and 100 MHz is multiplied by ½
3) SAR measurement procedures are not established below 100 MHz.

Formulas as below:

$P \le (3 \times m)/\sqrt{f_{(GHz)}}$ a)

P is the max.power of channel, including tune-up tolerance,mW

m is min.test separation distance, mm

$f_{(GHZ)}$ is the RF channel transmit frequency in GHz

$P \leq (3 \times 50)/\sqrt{f_{(GHZ)}} + (m-50)x\ f_{(MHZ)}/150$ b)1)

$P \leq [(3x50)/\sqrt{0.1} + (m-50)x100/150] \times [1+lg(100/f_{(MHZ)})]$ c)1)

$P \leq \{[(3x50)/\sqrt{0.1} + (50-50)x100/150] \times (1+lg100/100)\} \times 1/2$ c)2)

$P \leq 237.19mW$

The SAR Test Exclusion Threshold is calculated from:

[(*max. power of channel, including tune-up tolerance, mW*)/(*min. test separation distance, mm*)] ·[√f(GHz)] ≤ 3.0 for 1-g SAR.

The worst case test separation distance is **5mm.**

The product belongs to **standalone portable device** base the FCC rule part 2.1091&2.1093. The transmission frequencies of the device are below 100 MHz.

The ERP and SAR Test Exclusion Threshold (mW) are listed below:

Transmit frequency (MHz)	ERP (mW)	SAR Test Exclusion Threshold (mW)
13.56	0.00011	237.19

According to SAR Exclusion Threshold in KDB 447498 (D01) General RF Exposure Guidance v05, the SAR report is not required.