

FCC MPE CALCULATION (FCC ID: 2AH4HATD310S)

RF Exposure Requirements: 47 CFR §1.1307(b)

RF Radiation Exposure Limits: 47 CFR §1.1310

RF Radiation Exposure Guidelines: FCC OST/OET Bulletin Number 65

EUT Frequency Band: BLE: 2402-2480MHz
 WCDMA Band II: 1852.4 – 1907.6 MHz
 WCDMA Band IV: 1712.4 – 1752.6 MHz
 WCDMA Band V: 826.4 – 846.6 MHz
 LTE Cat-1 Band 2: 1850.7-1909.3MHz
 LTE Cat-1 Band 4: 1710.7-1754.3MHz
 LTE Cat-1 Band 5: 824.7-848.3MHz
 LTE Cat-1 Band 12: 699.7-715.3MHz
 LTE Cat-1 Band 13: 779.5-784.5MHz

Limits for General Population/Uncontrolled Exposure in the band of: 300 - 1500 MHz,
Power Density Limit: f/1500 mW/cm²

Limits for General Population/Uncontrolled Exposure in the band of: 1500 - 100,000 MHz
Power Density Limit: 1 mW / cm²

Equation: $S = PG / 4\pi R^2$ or $R = \sqrt{PG / 4\pi S}$

Where, S = Power Density
 P = Power Input to Antenna
 G = Antenna Gain
 R = distance to the center of radiated antenna

Prediction distance 20 cm

EUT: ATD310

Radio	Frequency (MHz)	Max Conducted Output Power (dBm)	Antenna Gain (dBi)	Separation distance (cm)	Power Density (mW/ cm ²)	MPE Limit (mW/ cm ²)
BLE	2400-2480	3.35	-2.5	20	0.0002	1
WCDMA Band II	1852.4 – 1907.6	24.00	4	20	0.1255	1
WCDMA Band IV	1712.4 – 1752.6	24.00	4	20	0.1255	1
WCDMA Band V	826.4 – 846.6	24.00	4	20	0.1255	0.551
LTE Band2	1850.7-1909.3	24.50	4	20	0.1408	1
LTE Band4	1710.7-1754.3	24.50	4	20	0.1408	1
LTE Band5	824.7-848.3	24.50	4	20	0.1408	0.550
LTE Band12	699.7-715.3	24.50	4	20	0.1408	0.466
LTE Band13	779.5-784.5	24.50	4	20	0.1408	0.518

The above results show that the device complies with the MPE requirement.

The BLE is able to transmit simultaneously with LTE.

The ratio = 0.0002/1 + 0.1408/0.466 = 0.302 < 1.0

The above results show that the device complies with the simultaneous transmission MPE requirement.

Completed By: David Zhang

Vista Laboratories, Inc.

1261 Puerta Del Sol, San Clemente, CA 92673

Date: May 23rd, 2019

ISED RF Exposure Evaluation (ISED ID: 21385-ATD310S)

RF Exposure Requirements:

RSS-102 Issue 5: March 2015

RF Radiation Exposure Limits:

RSS-102 Issue 5: March 2015

RF Radiation Exposure Guidelines:

RSS-102 Issue 5: March 2015

EUT Frequency Band:

BLE: 2402-2480MHz
WCDMA Band II: 1852.4 – 1907.6 MHz
WCDMA Band IV: 1712.4 – 1752.6 MHz
WCDMA Band V: 826.4 – 846.6 MHz
LTE Cat-1 Band 2: 1850.7-1909.3MHz
LTE Cat-1 Band 4: 1710.7-1754.3MHz
LTE Cat-1 Band 5: 824.7-848.3MHz
LTE Cat-1 Band 12: 699.7-715.3MHz
LTE Cat-1 Band 13: 779.5-784.5MHz

Limits for General Population/Uncontrolled Exposure in the band of:

300 - 6,000 MHz

Exemption limit for Routine Evaluation:

$1.31 \times 10^{-2} f^{0.6834} \text{ W}$

EUT: ATD310

Radio	Frequency (MHz)	Max Conducted Output Power (dBm)	Antenna Gain (dBi)	Max E.I.R.P (dBm)	Max E.I.R.P (W)	Evaluation Exemption limit (W)
BLE	2400-2480	3.35	2.0	5.35	0.0034	2.67
WCDMA Band II	1852.4 – 1907.6	24.00	0.6	24.6	0.288	2.24
WCDMA Band IV	1712.4 – 1752.6	24.00	0.6	24.6	0.288	2.12
WCDMA Band V	826.4 – 846.6	24.00	2.4	26.4	0.437	1.29
LTE Band2	1850.7-1909.3	24.50	0.6	25.1	0.324	2.24
LTE Band4	1710.7-1754.3	24.50	0.6	25.1	0.324	2.12
LTE Band5	824.7-848.3	24.50	2.4	26.9	0.490	1.29
LTE Band12	699.7-715.3	24.50	2.4	26.9	0.490	1.15
LTE Band13	779.5-784.5	24.50	2.4	26.9	0.490	1.24

The above results show that the E.I.R.P of this device is below the exemption limit for Routine Evaluation.

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