MPE CALCULATION

FCC ID: I28-ZBRZQ3BT

I28-RFIDM6EMTT

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: 902.75-927.25MHz;2402-2480 MHz,

Limits for General Population/Uncontrolled Exposure in the band of: 300-1500MHz;1500-100,000 MHz

Power Density Limit: 0.62 mW / cm^2 ;1 mW / cm^2

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

EUT: Thermal Printer, Model No.: ZT610, ZT620

Prediction distance 20cm

(Bluetooth BDR/EDR): Power = 8.40 dBm, Antenna Gain = 1.69 dBi, Power density = 0.002 mW/cm^2

(Bluetooth LE): Power = 5.72 dBm, Antenna Gain = 1.69 dBi, Power density = 0.0011 mW/cm^2

Type	CH Freq (MHz)	Conducted Power (dBm)	Antenna Gain (dBi)	Directional Gain (dBi)	Tune-Up Tolerance	Tolerance Max Power (dBm)	Measurement Distance (cm)	Calculated MPE (mW/cm^2)	MPE Limit (mW/cm^2)	Pass/ Fail
BLE	2402	4.72	1.69	1.69	±1dB	5.72	20	0.0011	1	Pass
BT-EDR	2402	7.40	1.69	1.69	±1dB	8.40	20	0.002	1	Pass

UHF RFID: Power = 29.11 dBm, Antenna Gain = -36dBi, Power density = 0.0000407 mW/cm^2

Type	CH Freq (MHz)	Conducted Power (dBm)	Antenna Gain (dBi)	Directional Gain (dBi)	Tune-Up Tolerance	Tolerance Max Power (dBm)	Measurement Distance (cm)	Calculated MPE (mW/cm^2)	MPE Limit (mW/cm^2)	Pass/ Fail
RFID	902.75	28.11	-36	-36	±1dB	29.11	20	0.0000407	0.62	Pass

Co-location worse case:

BT-EDR = (0.002/1) x 100% = 0.2%
RFID = (0.0000407/0.62) x 100% = 0.0066%

Total MPE Percentage = (0.2+0.0066)%=0.2066%<100%

The Above Result had shown that the Device complied with MPE requirement.

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Date: 12/20/2018