| Summary: Standalone MPE | Calculations and Summary | | | | | | | |
|---|--------------------------|-------------------|------------------|--------------------|---------------|------------------|---------------------|---------------|
| Band (MHZ) | Tx Duty Cycle (%) | Tx Frequeny (MHz) | Power Total (mW) | Antenna Gain (dBi) | $S_L (W/m^2)$ | $S_{20} (W/m^2)$ | R _C (cm) | $S_C (W/m^2)$ |
| 902-928 | 100 | 917 | 28 | 1 | 2.771 | 0.07 | 3.2 | 2.77 |
| | | | | | | | | |
| Band (MHZ) | Tx Duty Cycle (%) | Tx Frequeny (MHz) | Power Total (mW) | Antenna Gain (dBi) | SL (W/m2) | S20 (W/m2) | RC (cm) | SC (W/m2) |
| 2400-2483.5 | 100 | 2402 | 4 | 5 | 5.351 | 0.03 | 1.4 | 5.35 |
| | | | | | | | | |
| Simlutaneous MPE Calculation | on | | | | | | | |
| Tx Frequeny (MHz) | 917 | 2402 | | | | | | |
| $S_{20} (W/m^2)$ | 0.07 | 0.03 | | | | | | |
| $S_L (W/m^2)$ | 2.771 | 5.351 | | | | | | |
| Power Ratio (S _L / S ₂₀) | 0.025 | 0.005 | | | | | | |
| Sum of Power Ratios at 20cm (0.025 + 0.005) | | 0.030 | | | | | | |
| Requirement = Σ of MPE Ratio ≤ 1 | | | | | | | | |

| Model: TDSPC0U3 | | | Test Number: | 190530 | | |
|--|--|----------------------------|--|--|------------------------------|---------------------------------------|
| MPE Calculator | RF Exposure uses EIRP for cal | culation. EIRP is based or | n TX power added to the antenna | gain in dBi. | | |
| | dBi = dB gain compared to an i | sotropic radiator. | | | | |
| | $S = power density in mW/cm^2$ | | | | | |
| Trans | smitter maximum Output power o | | 0.0280 | | Antenna Gain (dBi) | 1 |
| Output Power for 100% duty Cycle operation | | | | Ante | nna Gain (Numeric) | 1.26 |
| Tx Frequency (MHz) 917 | | Calcualtion power (Watts) | 0.0280 | dBd + 2.17 = dBi | | |
| ~ | | | | | Antenna Gain (dBd) | -1.17 |
| Cable Loss (dB) | 0.0 | Adjusted Power (dBm) | 14.47 | Anteni | na minus cable (dBi) | 1.00 |
| | G 1 1 1 1770 () 21 227 | | | EIDD D. | (IDM) - C-1- (ID) | |
| | Calculated ERP (mw) 21.387 | | | EIRP = Po(dBM) + Gain (dB) | | 15 470 |
| | Calculated EIRP (mw) 35.250 | | | Radiated (EIRP) dBm ERP = EIRP - 2.17 d | | 15.472 |
| | EIRP | | | | adiated (ERP) dBm | 13.302 |
| Power density | y (S) mW/cm ² = | | | I N | adiated (ERF) dBIII | 13.302 |
| | 4 p r^2 | | | | | |
| r (cm) EII | RP (mW) | | | | | |
| | \/ | | | | | |
| | | | | | | |
| | Occupational Limit | FCC radio | frequency radiation exposure limit | s per 1.1310 | | |
| 3.06 | | Frequency (MHz) | Occupational Limit (mW/cm ²) | Public Limit (mW/cm ²) | | |
| 30.57 | | 30-300 | 1 | 0.2 | | |
| 30.3 | General Public Limit | 300-1,500 | f/300 | f/1500 | | |
| 0.61 | | 1,500-10,000 | 5 | 1 | | |
| | III III III | 1,500-10,000 | 3 | 1 | | |
| 6.11 | W/m ² | | | | | |
| | | | | | | |
| | 0 | | | | | |
| 0.5177.00 | Occupational Limit | IC 1'- 6 | 1 | DGG 102 | | |
| $0.6455f^{0.1}$ | | | requency radiation exposure limits p | | | |
| 24.33 | W/m ² | Frequency (MHz) | Occupational Limit (W/m²) | Public Limit (W/m ²) | | |
| | General Public Limit | 100-6,000 | $0.6455f^{0.5}$ | | | |
| $0.02619f^{0.6836}$ | W/m^2 | 6,000-15,000 | 50 | | | |
| 2.73 | | 48-300 | | 1.291 | | |
| | | 300-6,000 | | $0.02619f^{0.6834}$ | | |
| | | 6,000-15,000 | 50 | 10 | | |
| | | 5,555 15,555 | 30 | 10 | | |
| = Transmit Frequecny (MHz) | | | | f (MHz) = | 917 | MHz |
| P _T = Power Input to Antenna (mW) | | | | P_{T} (mW) = | | mW |
| P _T = Power Input to Antenna (r | Duty cycle (percentage of operation) | | | % = | 100 | |
| - | ation) | | | 70 — | 100 | |
| Outy cycle (percentage of oper | | | | P. (mW) - | 20 | mW |
| Outy cycle (percentage of oper P _A = Adjusted Power due to Du | nty cycle or Cable Loss (mW) | | | $P_A (mW) =$ $GN (numeric) =$ | - | mW numeric |
| Outy cycle (percentage of oper $P_A = Adjusted Power due to Du G_N = Numeric Gain of the Anter Power Gain of the Anter Power$ | nty cycle or Cable Loss (mW) | | S = (D C)/(App) ² | GN (numeric) = | 1.26 | numeric |
| Outy cycle (percentage of oper $P_A = A$ djusted Power due to Do $P_A = A$ Diusted Power due to Do $P_A = A$ Diusted Power Gain of the Anter $P_A = A$ Dower Density of device $P_A = A$ | nty cycle or Cable Loss (mW) nna at 20cm (W/m²) | | S_{20} = $(P_AG_N)/(4\pi R_{20})^2$ | $GN (numeric) = S_{20} (W/m^2) =$ | 1.26 0.07 | numeric W/m2 |
| Outy cycle (percentage of open $P_A = A$ djusted Power due to Du $P_A = A$ djusted Power due to Du $P_A = A$ djusted Power die to Du $P_A = A$ djusted Power Density of device a $P_A = A$ device $P_A = A$ device $P_A = A$ device $P_A = A$ die Power Density Limit (W/m) | nty cycle or Cable Loss (mW) nna at 20cm (W/m²) | | | $GN (numeric) = $ $S_{20} (W/m^2) = $ $S_L (W/m^2) = $ | 1.26 0.07 2.771 | numeric W/m2 W/m2 |
| Duty cycle (percentage of open $P_A = A$ djusted Power due to Du $C_N = N$ umeric Gain of the Anter $C_{N0} = N$ umeric Gain of the Anter $C_{N0} = N$ Density of device a $C_{N0} = N$ Density Limit (W/m) | nty cycle or Cable Loss (mW) nna at 20cm (W/m²) |) | $R_C = \sqrt{(P_A G_N / 4\pi S_L)}$ | $GN (numeric) = S_{20} (W/m^2) = S_L (W/m^2) = R_C (cm) =$ | 1.26 0.07 2.771 3.2 | numeric W/m2 W/m2 cm |
| Outy cycle (percentage of oper $P_A = A$ djusted Power due to Du $P_A = A$ djusted Power due to Du $P_A = A$ unmeric Gain of the Anter $P_A = A$ unmeric Gain of the Anter $P_A = A$ unmeric $P_A = A$ unmerically P | nty cycle or Cable Loss (mW) nna at 20cm (W/m²) |) | | $GN (numeric) =$ $S_{20} (W/m^2) =$ $S_L (W/m^2) =$ $R_C (cm) =$ $S_C (W/m^2) =$ | 1.26 0.07 2.771 3.2 | numeric W/m2 W/m2 |
| Outy cycle (percentage of oper $P_A = A$ djusted Power due to Du $P_A = A$ djusted Power due to Du $P_A = A$ unmeric Gain of the Anter $P_A = A$ unmeric Gain of the Anter $P_A = A$ unmeric $P_A = A$ unmerically P | nty cycle or Cable Loss (mW) nna at 20cm (W/m²) r) Radiating Element for Compliance (cm |) | $R_C = \sqrt{(P_A G_N / 4\pi S_L)}$ | $GN (numeric) = S_{20} (W/m^2) = S_L (W/m^2) = R_C (cm) =$ | 1.26 0.07 2.771 3.2 | numeric W/m2 W/m2 cm W/m2 |

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Revision 1

S/N's: 306681 000005 / 306681 000006 SAF Tehnika AS Model: TDSPC0U3 (Aranet 4) Test: 190530

FCC ID: W9Z-ARANET4 IC: 8855A-ARANET4 Test to: CFR47 15C, RSS-Gen RSS-247 Date: August 28, 2019

File: TDSPC0U3 RFExp Page 1 of 2

| Model: TDSPC0U3 | | | Test Number: | 190530 | | |
|--|---|---------------------------------------|---|---|----------------------|--------------------|
| IPE Calculator | - | | n TX power added to the antenna | gain in dBi. | | |
| | dBi = dB gain compared to an | | | | | |
| | $S = power density in mW/cm^4$ | | | | | |
| Trans | smitter maximum Output power | | | | Antenna Gain (dBi) | 5 |
| | Output Power for 100% du | · · · · · · · · · · · · · · · · · · · | | Anto | enna Gain (Numeric) | 3.16 |
| Tx Frequency (MHz) | 2402 | Calcualtion power (Watts) | () ()()4() | dBd + 2.17 = dBi | dBi to dBd | 2.2 |
| | | | | | Antenna Gain (dBd) | 2.83 |
| able Loss (dB) | 0.0 | Adjusted Power (dBm) | 6.02 | Anten | na minus cable (dBi) | 5.00 |
| | Calculated ERP (mw) 7.675 | | | EIRP = Po | o(dBM) + Gain (dB) | |
| | Calculated EIRP (mw | | | Radiated (EIRP) dB | | 11.021 |
| | · · | 121019 | | ERP = EIRP - 2.17 d | | |
| Power densit | EIRP y (S) mW/cm ² = | | | F | Radiated (ERP) dBm | |
| Tower densit | $y (S) \text{ mw/cm}^2 = \frac{1}{4 \text{ p r}^2}$ | | | | ` ´ | |
| | 'P' 2 | | | | | |
| r (cm) EI | RP (mW) | | | | | |
| | | | | | | |
| | 0 | ECC and die | o frequency radiation exposure limit | n par 1 1210 | | |
| | Occupational Limit | | 1 7 1 | 1 2 | | |
| 5.00 | mitty cin | Frequency (MHz) | Occupational Limit (mW/cm ²) | Public Limit (mW/cm ²) | | |
| 50.00 | | 30-300 | 1 | 0.2 | | |
| | General Public Limit | 300-1,500 | f/300 | f/1500 | | |
| 1.00 | mW/cm ² | 1,500-10,000 | 5 | 1 | | |
| 10.00 | W/m^2 | | | | | |
| | | | | | | |
| | | | | | | |
| | Occupational Limit | | | | | |
| $0.6455f^{0.3}$ | | IC radio f | requency radiation exposure limits p | per RSS-102 | | |
| 39.38 | W/m^2 | Frequency (MHz) | Occupational Limit (W/m ²) | Public Limit (W/m ²) | | |
| | General Public Limit | 100-6,000 | $0.6455f^{0.5}$ | | | |
| $0.02619f^{0.6836}$ | $\frac{4}{W/m^2}$ | 6,000-15,000 | 50 | | | |
| 5.35 | | 48-300 | | 1.291 | | |
| 5.50 | 14/111 | 300-6,000 | | $0.02619f^{0.6834}$ | | |
| | | 6,000-15,000 | 50 | 10 | | |
| | | 0,000-13,000 | 30 | 10 | | |
| = Transmit Frequecny (MH: | z) | | | f (MHz) = | 2402 | MHz |
| P _T = Power Input to Antenna (mW) | | | | P_{T} (mW) = | | |
| Outy cycle (percentage of operation) | | | | % = | | |
| $P_A = \text{Adjusted Power due to Duty cycle or Cable Loss (mW)}$ | | | | $P_A(mW) =$ | | |
| $\Delta = Adjusted Power due to$ | • | | | GN (numeric) = | | numeric |
| | | | 2 | | | W/m2 |
| $G_N = Numeric Gain of the An$ | | | $ S_{\alpha\alpha}-(P_{\alpha}G_{\alpha\alpha})/(4\pi P_{\alpha\alpha}) ^2$ | | | |
| $P_{N} = N_{N}$ = Numeric Gain of the An $P_{N} = N_{N}$ = Power Density of device | e at 20cm (W/m ²) | | $S_{20} = (P_A G_N)/(4\pi R_{20})^2$ | $S_{20} (W/m^2) =$ | | |
| $P_{N} = Numeric Gain of the An$ $P_{N} = Numeric Gain of the An$ $P_{N} = Power Density of device P_{N} = Power Density Limit (W. 1)$ | e at 20cm (W/m²) /m²) | | | $S_L (W/m^2) =$ | 5.351 | W/m2 |
| $S_N = Numeric Gain of the An$ $S_{20} = Power Density of devices S_L = Power Density Limit (W.)$ | e at 20cm (W/m ²) | em) | $R_C = \sqrt{(P_A G_N / 4\pi s_i)}$ | $S_{L} (W/m^{2})=$ $R_{C} (cm) =$ | 5.351 1.4 | W/m2 cm |
| $N_N = N$ umeric Gain of the An $N_N $ | e at 20cm (W/m²) /m²) | | | $S_{L} (W/m^{2})=$ $R_{C} (cm) =$ $S_{C} (W/m^{2}) =$ | 5.351 1.4 5.35 | W/m2 cm W/m2 |
| P_{N} = Numeric Gain of the An P_{N} = Numeric Gain of the An P_{N} = Power Density of device P_{N} = Power Density Limit (W. P_{N} = Minimum distance to the | e at $20cm\left(W/m^2\right)$ $/m^2$) e Radiating Element for Compliance (| | $R_C = \sqrt{(P_A G_N / 4\pi s_i)}$ | $S_{L} (W/m^{2})=$ $R_{C} (cm) =$ | 5.351 1.4 5.35 | W/m2 cm |

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Revision 1

SAF Tehnika AS Model: TDSPC0U3 (Aranet 4) Test: 190530

Test to: CFR47 15C, RSS-Gen RSS-247

Date: August 28, 2019 File: TDSPC0U3 RFExp Page 2 of 2

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FCC ID: W9Z-ARANET4

IC: 8855A-ARANET4