




Canada

Exhibit: RF Exposure – FCC

FCC ID:
2AQSOCBRSYS4450

Report File #: 7169009122-FCC-MPE-000


Client	Octasic Inc.	
Product	CBRSYS4450	
Standard(s)	FCC KDB 447498:2015	

RF Exposure – FCC


The EUT transmits in several bands as depicted in the table below.

Table 1. EUT Power Output per Band

Radio Type	Band	47 CFR Rule Part	Frequency (MHz)	Max Power (dBm)	Max Power (mW)	
LTE	14	90R	760.5	21.85	153.11	
			763	25.78	378.44	
			765.5	26.72	469.89	
	5	22H	871.5	29.95	988.55	
			881.5	29.41	872.97	
			891.5	26.42	438.53	
	2 & 25	24E	1932.5	27.92	619.44	
			1960.0	27.87	612.35	
			1962.5	26.73	470.98	
			1987.5	27.8	602.56	
	41	27C	1992.5	27.95	623.73	
			2498.5	25.90	389.05	
			2593	25.93	391.74	
			2687.5	24.93	311.17	
			30	2352.5	29.90	977.24
				2355	29.94	986.28
				2357.5	28.64	731.14
			13	748.5	28.95	785.24
				751	28.98	790.68
				753.5	28.89	774.46
			12	731.5	29.93	984.01
				737.5	28.92	779.83
				743.5	28.99	792.50
			4	2112.5	27.8	602.56
			66	2132.5	27.88	613.76
	2152.5	27.92		619.44		
	2155	27.96		625.17		
	2197.5	27.89		615.18		
	71	619.5	28.9	776.25		
		634.5	28.87	770.90		
649.5		28.93	781.63			

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Radio Type	Band	47 CFR Rule Part	Frequency (MHz)	Max Power (dBm)	Max Power (mW)
UTMS	2	24E	1932.4	27.7	588.84
			1960	27.82	605.34
			1987.6	27.87	612.35
	4	27C	2112.4	27.56	570.16
			2132.6	27.81	603.95
			2152.6	27.84	608.14
	5	22H	871.6	29.55	901.57
			877.4	29.82	959.40
			882.6	29.69	931.11
			887.4	29.97	993.12
GSM	PSC_1900	24E	1930.2	29.82	959.40
			1989.8	26.85	484.17
	850	22H	869.2	29.85	966.05
			893.8	29.81	957.19
CDMA	15	27C	2111.25	28.3	676.08
			2132.5	29.94	986.28
			2153.75	29.22	835.60
	0 & 10	90S	860.76	29.83	961.61
			862.25	29.94	986.28
			867.75	28.81	760.33
	1	24E	1931.2	27.96	625.17
			1960	27.12	515.23
1988.75			27.64	580.76	

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Radiofrequency Radiation Exposure Evaluation: Mobile Devices

Mobile devices shall be evaluated for RF radiation exposure according to the provisions of [FCC §2.1091 \(d\) \(2\)](#) (with Amendment 85 [FR18146](#), April 1, 2020) and the MPE guidelines identified in [FCC §1.1310](#).

As per FCC §1.1310 Table 1(B), the limit for Maximum Permissible Exposure (MPE) to radiofrequency electromagnetic fields for General Population/Uncontrolled Exposure in the frequency range of:

- ✓ 1.5GHz to 100GHz is 1.0 mW/cm².

The power density can be calculate using the formula:

$$P_d = (P_{out} * G) / (4 * \pi * R^2)$$

where,

f = frequency in MHz

P_d = Power density in mW/cm²

P_{out} = Conducted output power to antenna in mW


G = Numeric Antenna Gain

Pi = 3.1416

R1 = First separation distance of 24cm for 24dBm power output (see page 10 in [CBRSYS4450-User Guide.pdf](#)).

R2 = First separation distance of 50cm for 30dBm power output (see page 10 in [CBRSYS4450-User Guide.pdf](#)).

R3 = Second separation distance of 100cm for 30dBm power output (see page 10 in [CBRSYS4450-User Guide.pdf](#)).

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MPE Calculation:

For user-controlled personnel at 50cm distance, the maximum conducted output power of 30 dBm or 1 W, the EUT complies with limits for Occupational/Controlled Exposure according to Table 2:

Table 2. Controlled Exposure at 50cm distance and 30dBm Power Output

Type	Lower (MHz)	Upper (MHz)	Output power (dBm)	MIMO Factor (dBi)	Antenna Gain (dBi)	Total Power for MIMO (dBm)	Calculated (mW/cm ²)	Limit (mW/cm ²)	Pass/Fail
LTE	619.5	649.5	28.93	6	5	39.93	0.40	2.2 <Note 1>	Pass
	760.5	765.5	26.72	6	5	37.72	0.24	2.6 <Note 1>	Pass
	2132.5	2197.5	27.92	6	5	38.92	0.31	5 <Note 2>	Pass
	871.5	891.5	29.95	6	5	40.95	0.50	3 <Note 1>	Pass
	1932.5	1992.5	27.95	6	5	38.95	0.32	5 <Note 2>	Pass
	2497.5	2687.5	25.93	6	5	36.93	0.20	5 <Note 2>	Pass
	2352.5	2357.5	29.94	6	5	40.94	0.50	5 <Note 2>	Pass
	748.5	753.5	28.98	6	5	39.98	0.40	2.5 <Note 1>	Pass
	731.5	743.5	29.93	6	5	40.93	0.50	2.5 <Note 1>	Pass
	2112.5	2112.5	27.8	6	5	38.8	0.30	5 <Note 2>	Pass
UTMS	1932.4	1987.6	27.87	6	5	38.87	0.31	5 <Note 2>	Pass
	2112.4	2152.6	27.84	6	5	38.84	0.31	5 <Note 2>	Pass
	871.6	887.4	29.97	6	5	40.97	0.50	2.96 <Note 1>	Pass

Table 2. continue



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Table 2. continue

GSM	1930.2	1989.8	29.82	6	5	40.82	0.50	5 <Note 2>	Pass
	869.2	893.8	29.85	6	5	40.85	0.50	3.0 <Note 1>	Pass
CDMA	2111.25	2153.75	29.94	6	5	40.94	0.50	5 <Note 2>	Pass
	860.76	867.75	29.94	6	5	40.94	0.50	2.9 <Note 1>	Pass
	1931.2	1988.75	27.96	6	5	38.96	0.32	5 <Note 2>	Pass
UTMS+ WIFI <Worst Case>	871.6	887.4	29.97	6	5	40.97	0.50	2.96 <Note 1>	Pass
	5735 <Note 3>	5755 <Note 3>	20 <Note 3>	-	3.99 <Note 3>	-	0.063	1	
Note 1. Limits for Occupational/Controlled Exposure: Table 1 to § 1.1310(e)(1) : f/300 [mW/cm ²] Note 2 Limits for Occupational/Controlled Exposure: Table 1 to § 1.1310(e)(1) : 5[mW/cm ²] Note 3. 2AE3B-AEH-AR9462 - Section 2.4 of MPE Report.									

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For user-controlled personnel at 24cm distance, the maximum conducted output power shall be 24 dBm or 252mW, the EUT complies with limits for Occupational/Controlled Exposure according to Table 3.

Table 3. Controlled Exposure for 24cm distance and 24dBm Power Output

Type	Lower (MHz)	Upper (MHz)	Output power (dBm)	MIMO Factor (dBi)	Antenna Gain (dBi)	Total Power for MIMO (dBm)	Calculated (mW/cm ²)	Limit (mW/cm ²)	Pass/Fail
LTE	619.5	649.5	24.0	6	5	35	0.55	2.2 <Note 1>	Pass
	760.5	765.5	24.0	6	5	35	0.55	2.6 <Note 1>	Pass
	2132.5	2197.5	24.0	6	5	35	0.55	5 <Note 2>	Pass
	871.5	891.5	24.0	6	5	35	0.55	3 <Note 1>	Pass
	1932.5	1992.5	24.0	6	5	35	0.55	5 <Note 2>	Pass
	2497.5	2687.5	24.0	6	5	35	0.55	5 <Note 2>	Pass
	2352.5	2357.5	24.0	6	5	35	0.55	5 <Note 2>	Pass
	748.5	753.5	24.0	6	5	35	0.55	2.5 <Note 1>	Pass
	731.5	743.5	24.0	6	5	35	0.55	2.5 <Note 1>	Pass
	2112.5	2112.5	24.0	6	5	35	0.55	5 <Note 2>	Pass
UTMS	1932.4	1987.6	24.0	6	5	35	0.55	5 <Note 2>	Pass
	2112.4	2152.6	24.0	6	5	35	0.55	5 <Note 2>	Pass
	871.6	887.4	24.0	6	5	35	0.55	3.0 <Note 1>	Pass

Table 3. continue



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Table 3. continue

GSM	1930.2	1989.8	24.0	6	5	35	0.55	5 <Note 2>	Pass
	869.2	893.8	24.0	6	5	35	0.55	3.0 <Note 1>	Pass
CDMA	2111.25	2153.75	24.0	6	5	35	0.55	5 <Note 2>	Pass
	860.76	867.75	24.0	6	5	35	0.55	2.9 <Note 1>	Pass
	1931.2	1988.75	24.0	6	5	35	0.55	5 <Note 2>	Pass
LTE+WIFI <Worst Case>	871.6	887.4	24.0	6	5	35	0.55	2.2 <Note 1>	Pass
	5735 <Note 3>	5755 <Note 3>	20 <Note 3>	-	3.99 <Note 3>	-	0.063	1	
Note 1. Limits for Occupational/Controlled Exposure: Table 1 to § 1.1310(e)(1) : f/300 [mW/cm ²] Note 2. Limits for Occupational/Controlled Exposure: Table 1 to § 1.1310(e)(1) : 5[mW/cm ²] Note 3. 2AE3B-AEH-AR9462 - Section 2.4 of MPE Report.									

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For user general use at 100 cm distance, the maximum conducted output power of 30 dBm or 1 W, the EUT complies with limits of General Population/Uncontrolled Exposure according to Table 4.

Table 4. Uncontrolled Exposure at 100cm distance and 30dBm Power Output

Type	Lower (MHz)	Upper (MHz)	Output power (dBm)	MIMO Factor (dBi)	Antenna Gain (dBi)	Total Power for MIMO (dBm)	Calculated (mW/cm ²)	Limit (mW/cm ²)	Pass/Fail
LTE	619.5	649.5	28.93	6	5	39.93	0.10	0.43 <Note 1>	Pass
	760.5	765.5	26.72	6	5	37.72	0.10	0.51 <Note 1>	Pass
	2132.5	2197.5	27.92	6	5	38.92	0.10	1 <Note 2>	Pass
	871.5	891.5	29.95	6	5	40.95	0.13	0.59 <Note 1>	Pass
	1932.5	1992.5	27.95	6	5	38.95	0.10	1 <Note 2>	Pass
	2497.5	2687.5	25.93	6	5	36.93	0.10	1 <Note 2>	Pass
	2352.5	2357.5	29.94	6	5	40.94	0.13	1 <Note 2>	Pass
	748.5	753.5	28.98	6	5	39.98	0.10	0.50 <Note 1>	Pass
	731.5	743.5	29.93	6	5	40.93	0.13	0.50 <Note 1>	Pass
	2112.5	2112.5	27.8	6	5	38.8	0.10	1 <Note 2>	Pass
UTMS	1932.4	1987.6	27.87	6	5	38.87	0.10	1 <Note 2>	Pass
	2112.4	2152.6	27.84	6	5	38.84	0.10	1 <Note 2>	Pass
	871.6	887.4	29.97	6	5	40.97	0.13	0.59 <Note 1>	Pass

Table 4. continue


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Table 4. continue

GSM	1930.2	1989.8	29.82	6	5	40.82	0.12	1 <Note 2>	Pass
	869.2	893.8	29.85	6	5	40.85	0.12	0.60 <Note 1>	Pass
CDMA	2111.25	2153.75	29.94	6	5	40.94	0.13	1 <Note 2>	Pass
	860.76	867.75	29.94	6	5	40.94	0.13	0.58 <Note 1>	Pass
	1931.2	1988.75	27.96	6	5	38.96	0.10	1 <Note 2>	Pass
UTMS +WIFI <Worst Case>	871.6	887.4	29.97	6	5	40.97	0.13	0.59 <Note 1>	Pass
	5735 <Note 3>	5755 <Note 3>	20 <Note 3>	-	3.99 <Note 3>	-	0.063	1	
Note 1. Limit according to General Uncontrolled Exposure: Table 1 to § 1.1310(e)(2) ; f/1500 [mW/cm ²] Note 2. Limit according to General Uncontrolled Exposure: Table 1 to § 1.1310(e)(2) ; 1[mW/cm ²] Note 3. 2AE3B-AEH-AR9462 - Section 2.4 of MPE Report.									

The EUT meets the requirements