

ISED MPE REPORT

Certification

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Report No.: HCT-RF-1808-IC005-R1

IC: 9354A-L781921

APPLICANT: SOLiD, Inc.

Model: N2RDU_781921

EUT Type: ALLIANCE_2W

The measurements shown in this report were made in accordance with the procedures specified in §2.947. I assume full responsibility for the accuracy and completeness of these measurements, and for the qualifications of all persons taking them.

HCT CO., LTD. Certifies that no party to this application has subject to a denial of Federal benefits that includes FCC benefits pursuant to section 5301 of the Anti-Drug Abuse Act of 1998, 21 U.S.C. 853(a)



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Version

TEST REPORT NO.	DATE	DESCRIPTION
HCT-RF-1808-IC005	August 22, 2018	- First Approval Report
HCT-RF-1808-IC005-R1	September 12, 2018	- Added the result about P25 phase 2(6.25 kHz) for 800 MHz.

RF Exposure Statement

1. LIMITS

1-1 Limits for ISED

The limit for Maximum Permissible Exposure (MPE), specified in ISED RSS-102, is listed in Table 4
According to ISED RSS-102: the criteria listed in the following table shall be used to evaluate the environmental impact of human exposure to radio-frequency(RF) radiation as specified in RSS-102

Table 4: RF Field Strength Limits for Devices Used by the General Public (Uncontrolled Environment)

Frequency range (MHz)	Electric field Strength (V/m)	Magnetic field Strength (A/m)	Power density (W/m ²)	Averaging time (minutes)
0.003-10	83	90	-	Instantaneous*
0.1-10	-	$0.73/f$	-	6**
1.1-10	$87/f^{0.5}$	-	-	6**
10-20	27.46	0.0728	-2	6
20-48	$58.07/f^{0.25}$	$0.1540/f^{0.25}$	$8.944/f^{0.5}$	6
48-300	22.06	0.05852	1.291	6
300-6000	$3.142 f^{0.3417}$	$0.008335 f^{0.3417}$	$0.02619 f^{0.6834}$	6
6000-15000	61.4	0.163	10	6
15000-150000	61.4	0.163	10	$616000/f^{1.2}$
150000-300000	$0.158 f^{0.5}$	$4.21 \times 10^{-4} f^{0.5}$	$6.67 \times 10^{-5} f$	$616000/f^{1.2}$

Note: f is frequency in MHz.

* Based on nerve stimulation (NS).

** Based on specific absorption rate (SAR).

2. MAXIMUM PERMISSIBLE EXPOSURE Prediction

Prediction of MPE limit at a given distance

$$S = PG/4\pi R^2$$

S = Power density

P = power input to antenna

G = power gain of the antenna in the direction of interest relative to an isotropic radiator

R = distance to the center of radiation of the antenna

3. RESULTS

3-1. 700 MHz

* LTE(5 MHz)

Max Peak output Power at antenna input terminal	33.170	dBm
Max Peak output Power at antenna input terminal	2.075	W
Prediction distance	2.000	m
Prediction frequency	753.500	MHz
Antenna Gain(typical)	17.000	dBi
Antenna Gain(numeric)	50.119	-
Power density at prediction frequency (S)	2.069	W/m ²
MPE limit for uncontrolled exposure at prediction frequency	2.423	W/m ²

* LTE(10 MHz)

Max Peak output Power at antenna input terminal	33.210	dBm
Max Peak output Power at antenna input terminal	2.094	W
Prediction distance	2.000	m
Prediction frequency	751.000	MHz
Antenna Gain(typical)	17.000	dBi
Antenna Gain(numeric)	50.119	-
Power density at prediction frequency (S)	2.088	W/m ²
MPE limit for uncontrolled exposure at prediction frequency	2.417	W/m ²

3-2. 800 MHz

* LTE(5 MHz)

Max Peak output Power at antenna input terminal	33.390	dBm
Max Peak output Power at antenna input terminal	2.183	W
Prediction distance	2.000	m
Prediction frequency	866.500	MHz
Antenna Gain(typical)	17.000	dBi
Antenna Gain(numeric)	50.119	-
Power density at prediction frequency (S)	2.176	W/m ²
MPE limit for uncontrolled exposure at prediction frequency	2.666	W/m ²

* LTE(10 MHz)

Max Peak output Power at antenna input terminal	33.200	dBm
Max Peak output Power at antenna input terminal	2.089	W
Prediction distance	2.000	m
Prediction frequency	889.000	MHz
Antenna Gain(typical)	17.000	dBi
Antenna Gain(numeric)	50.119	-
Power density at prediction frequency (S)	2.083	W/m ²
MPE limit for uncontrolled exposure at prediction frequency	2.713	W/m ²

* WCDMA

Max Peak output Power at antenna input terminal	33.230	dBm
Max Peak output Power at antenna input terminal	2.104	W
Prediction distance	2.000	m
Prediction frequency	871.500	MHz
Antenna Gain(typical)	17.000	dBi
Antenna Gain(numeric)	50.119	-
Power density at prediction frequency (S)	2.098	W/m ²
MPE limit for uncontrolled exposure at prediction frequency	2.676	W/m ²

* CDMA

Max Peak output Power at antenna input terminal	33.280	dBm
Max Peak output Power at antenna input terminal	2.128	W
Prediction distance	2.000	m
Prediction frequency	881.500	MHz
Antenna Gain(typical)	17.000	dBi
Antenna Gain(numeric)	50.119	-
Power density at prediction frequency (S)	2.122	W/m ²
MPE limit for uncontrolled exposure at prediction frequency	2.697	W/m ²

* P25 Phase 2(6.25 kHz)

Max Peak output Power at antenna input terminal	33.270	dBm
Max Peak output Power at antenna input terminal	2.123	W
Prediction distance	2.000	m
Prediction frequency	865.500	MHz
Antenna Gain(typical)	17.000	dBi
Antenna Gain(numeric)	50.119	-
Power density at prediction frequency (S)	2.117	W/m ²
MPE limit for uncontrolled exposure at prediction frequency	2.664	W/m ²

3-3. 1900 MHz* LTE (5 MHz)

Max Peak output Power at antenna input terminal	33.160	dBm
Max Peak output Power at antenna input terminal	2.070	W
Prediction distance	1.500	m
Prediction frequency	1992.500	MHz
Antenna Gain(typical)	17.000	dBi
Antenna Gain(numeric)	50.119	-
Power density at prediction frequency (S)	3.670	W/m ²
MPE limit for uncontrolled exposure at prediction frequency	4.709	W/m ²

* LTE (10 MHz)

Max Peak output Power at antenna input terminal	33.050	dBm
Max Peak output Power at antenna input terminal	2.018	W
Prediction distance	1.500	m
Prediction frequency	1962.500	MHz
Antenna Gain(typical)	17.000	dBi
Antenna Gain(numeric)	50.119	-
Power density at prediction frequency (S)	3.578	W/m ²
MPE limit for uncontrolled exposure at prediction frequency	4.661	W/m ²

* LTE (20 MHz)

Max Peak output Power at antenna input terminal	33.270	dBm
Max Peak output Power at antenna input terminal	2.123	W
Prediction distance	1.500	m
Prediction frequency	1985.000	MHz
Antenna Gain(typical)	17.000	dBi
Antenna Gain(numeric)	50.119	-
Power density at prediction frequency (S)	3.764	W/m ²
MPE limit for uncontrolled exposure at prediction frequency	4.697	W/m ²

* WCDMA

Max Peak output Power at antenna input terminal	33.340	dBm
Max Peak output Power at antenna input terminal	2.158	W
Prediction distance	1.500	m
Prediction frequency	1962.500	MHz
Antenna Gain(typical)	17.000	dB
Antenna Gain(numeric)	50.119	-
Power density at prediction frequency (S)	3.825	W/m ²
MPE limit for uncontrolled exposure at prediction frequency	4.661	W/m ²

* CDMA

Max Peak output Power at antenna input terminal	33.290	dBm
Max Peak output Power at antenna input terminal	2.133	W
Prediction distance	1.500	m
Prediction frequency	1962.500	MHz
Antenna Gain(typical)	17.000	dB
Antenna Gain(numeric)	50.119	-
Power density at prediction frequency (S)	3.781	W/m ²
MPE limit for uncontrolled exposure at prediction frequency	4.661	W/m ²

* GSM

Max Peak output Power at antenna input terminal	33.140	dBm
Max Peak output Power at antenna input terminal	2.061	W
Prediction distance	1.500	m
Prediction frequency	1962.500	MHz
Antenna Gain(typical)	17.000	dB
Antenna Gain(numeric)	50.119	-
Power density at prediction frequency (S)	3.653	W/m ²
MPE limit for uncontrolled exposure at prediction frequency	4.661	W/m ²

3-4. 2100 MHz* LTE(5 MHz)

Max Peak output Power at antenna input terminal	32.990	dBm
Max Peak output Power at antenna input terminal	1.991	W
Prediction distance	1.500	m
Prediction frequency	2145.000	MHz
Antenna Gain(typical)	17.000	dBi
Antenna Gain(numeric)	50.119	-
Power density at prediction frequency (S)	3.529	W/m ²
MPE limit for uncontrolled exposure at prediction frequency	4.953	W/m ²

* LTE(10 MHz)

Max Peak output Power at antenna input terminal	33.140	dBm
Max Peak output Power at antenna input terminal	2.061	W
Prediction distance	1.500	m
Prediction frequency	2175.000	MHz
Antenna Gain(typical)	17.000	dBi
Antenna Gain(numeric)	50.119	-
Power density at prediction frequency (S)	3.653	W/m ²
MPE limit for uncontrolled exposure at prediction frequency	5.000	W/m ²

* LTE(20 MHz)

Max Peak output Power at antenna input terminal	33.070	dBm
Max Peak output Power at antenna input terminal	2.028	W
Prediction distance	1.500	m
Prediction frequency	2145.000	MHz
Antenna Gain(typical)	17.000	dBi
Antenna Gain(numeric)	50.119	-
Power density at prediction frequency (S)	3.594	W/m ²
MPE limit for uncontrolled exposure at prediction frequency	4.953	W/m ²

* WCDMA

Max Peak output Power at antenna input terminal	32.900	dBm
Max Peak output Power at antenna input terminal	1.950	W
Prediction distance	1.500	m
Prediction frequency	2112.500	MHz
Antenna Gain(typical)	17.000	dBi
Antenna Gain(numeric)	50.119	-
Power density at prediction frequency (S)	3.456	W/m ²
MPE limit for uncontrolled exposure at prediction frequency	4.901	W/m ²

* CDMA

Max Peak output Power at antenna input terminal	33.240	dBm
Max Peak output Power at antenna input terminal	2.109	W
Prediction distance	1.500	m
Prediction frequency	2178.750	MHz
Antenna Gain(typical)	17.000	dBi
Antenna Gain(numeric)	50.119	-
Power density at prediction frequency (S)	3.738	W/m ²
MPE limit for uncontrolled exposure at prediction frequency	5.006	W/m ²