

RF Exposure Evaluation Declaration

Product Name : Consumer Home Router
Trade Name : Verizon
Model No. : CR1000A
FCC ID : NKR-LVSK-R2

Applicant : Wistron NeWeb Corporation

Address : 20 Park Ave. II, Hsinchu Science Park, Hsinchu 308, Taiwan

Date of Receipt : Oct. 21, 2020

Date of Declaration : Jul. 07, 2021

Report No. : 20A0549R-E3082100013-A

Report Version : V1.0



The declaration results relate only to the samples calculated.

The declaration shall not be reproduced except in full without the written approval of DEKRA Testing and Certification Co., Ltd..

RF Exposure Evaluation Declaration

Issued Date : Jul. 07, 2021

Report No. : 20A0549R-E3082100013-A



Product Name : Consumer Home Router

Applicant : Wistron NeWeb Corporation

Address : 20 Park Ave. II, Hsinchu Science Park, Hsinchu 308, Taiwan

Manufacturer : Wistron NeWeb Corporation

Address : 20 Park Ave. II, Hsinchu Science Park, Hsinchu 308, Taiwan

Trade Name : Verizon

Model No. : CR1000A

FCC ID : NKR-LVSK-R2

EUT Voltage : AC 100~120V, 50~60Hz

Testing Voltage : AC 120V/60Hz

Applicable Standard : FCC 47 CFR Part 2.1091 Radiofrequency radiation exposure evaluation: mobile devices.

Test Lab : Hsin Chu Laboratory

Address : No.372-2, Sec. 4, Zhongxing Rd., Zhudong Township, Hsinchu County 310, Taiwan, R.O.C.
TEL: +886-3-582-8001 / FAX: +886-3-582-8958

Test Result : Complied

Tested By

:



(Elwin Lin / Senior Engineer)

Approved By

:



(Louis Hsu / Deputy Manager)

Revision History

Version	Description	Issued Date
V1.0	Initial issue of report	Jul. 07, 2021

1.1. Test Facility

Ambient conditions in the laboratory:

Items	Test Item	Required	Test Site
Temperature (°C)	Peak Output Power	15 - 35	1
Humidity (%RH)		25 - 75	

Note: Test site information refers to Laboratory Information.

USA : FCC Registration Number: TW3024
Canada : IC Registration Number: 22397-1 / 22397-2 / 22397-3

The address and introduction of DEKRA Testing and Certification Co., Ltd. laboratories can be founded in our Web site: <http://www.dekra.com.tw>

If you have any comments, please don't hesitate to contact us. Our test sites as below:

Test Laboratory	DEKRA Testing and Certification Co., Ltd.
Address	1. No.372, Sec. 4, Zhongxing Rd., Zhudong Township, Hsinchu County 31061, Taiwan, R.O.C. 2. No.372-2, Sec. 4, Zhongxing Rd., Zhudong Township, Hsinchu County 31061, Taiwan, R.O.C.
Phone number	1. +886-3-582-8001 2. +886-3-582-8001
Fax number	1. +886-3-582-8958 2. +886-3-582-8958
Email address	info.tw@dekra.com
Website	http://www.dekra.com.tw

1.2. List of Test Equipment

Peak Output Power / SR12-H

Instrument	Manufacturer	Model No.	Serial No.	Cal. Date	Next Cal. Date
High Speed Peak Power Meter Dual Input	Anritsu	ML2496A	1602004	2020/11/30	2021/11/29
Pulse Power Sensor	Anritsu	MA2411B	1531043	2020/11/30	2021/11/29
Pulse Power Sensor	Anritsu	MA2411B	1531044	2020/11/30	2021/11/29
Power Meter	Keysight	8990B	MY51000248	2021/05/21	2022/05/20
Power Sensor	Keysight	N1923A	MY57240005	2021/05/21	2022/05/20

Note: All equipment upon which need to calibrated are with calibration period of 1 year.

1.3. Uncertainty

Test item	Uncertainty
Peak Output Power	± 2.26 dB

Determining compliance shall be based on the results of the compliance measurement, not taking into account measurement instrumentation uncertainty.

2. RF Exposure Evaluation

2.1. Limits

According to FCC 1.1310: The criteria listed in the following table shall be used to evaluate the environment impact of human exposure to radio frequency (RF) radiation as specified in 1.1307(b)

LIMITS FOR MAXIMUM PERMISSIBLE EXPOSURE (MPE)

Frequency Range (MHz)	Electric Field Strength (V/m)	Magnetic Field Strength (A/m)	Power Density (mW/cm ²)	Average Time (Minutes)
(A) Limits for Occupational/ Control Exposures				
300-1500	--	--	F/300	6
1500-100,000	--	--	5	6
(B) Limits for General Population/ Uncontrolled Exposures				
300-1500	--	--	F/1500	6
1500-100,000	--	--	1	30

F= Frequency in MHz

RF Field Strength Limits for Controlled Use Devices (Controlled Environment)

Frequency Range (MHz)	Electric Field (V/m rms)	Magnetic Field (A/m rms)	Power Density (W/m ²)	Reference Period (minutes)
0.003-1023	170	180	-	Instantaneous*
0.1-10	-	1.6/ f	-	6**
1.29-10	193/ f 0.5	-	-	6**
10-20	61.4	0.163	10	6
20-48	129.8/ f 0.25	0.3444/ f 0.25	44.72/ f 0.5	6
48-100	49.33	0.1309	6.455	6
100-6000	15.60 f 0.25	0.04138 f 0.25	0.6455 f 0.5	6
6000-15000	137	0.364	50	6
15000-150000	137	0.364	50	616000/ f 1.2
150000-300000	0.354 f 0.5	9.40 x 10 ⁻⁴ f 0.5	3.33 x 10 ⁻⁴ f	616000/ f 1.2
Note: f is frequency in MHz. *Based on nerve stimulation (NS). ** Based on specific absorption rate (SAR).				

Friis Formula

Friis transmission formula: $P_d = (P_{out} \cdot G) / (4 \cdot \pi \cdot r^2)$

Where

P_d = power density in mW/cm^2

P_{out} = output power to antenna in mW

G = gain of antenna in linear scale

π = 3.1416

R = distance between observation point and center of the radiator in cm

P_d is the limit of MPE, $1 \text{ mW}/\text{cm}^2$. If we know the maximum gain of the antenna and the total power input to the antenna, through the calculation, we will know the distance r where the MPE limit is reached.

2.2. Test Procedure

Software provided by client enabled the EUT to transmit and receive data at lowest, middle and highest channel individually.

2.3. Test Result of RF Exposure Evaluation

Product	Consumer Home Router		
Test Mode	Transmit Mode		
Test Condition	RF Exposure Evaluation		
Date of Test	2021/02/03	Test Site	SR12-H
Temperature(°C)	23.8°C	Test Humidity	51.0%

Antenna Gain: The maximum antenna gain is 5.25 (5GHz B2) & 5.91 (5GHz B3) dBi.

Output Power into Antenna & RF Exposure Evaluation Distance:

WLAN Function					
5GHz Band					
Mode	Frequency (MHz)	Conducted Output Power		Power Density at R = 20cm (mW/cm ²)	Limit (mW/cm ²)
		dBm	W		
802.11a (CDD Mode)	5260	23.043	201.512	0.134	1
	5300	23.117	204.975	0.137	1
	5320	23.083	203.376	0.136	1
	5500	22.079	161.399	0.125	1
	5580	22.542	179.556	0.139	1
	5700	23.038	201.280	0.156	1
802.11ax (20MHz) (RU Mode_Full)	5260	23.558	226.882	0.151	1
	5300	23.582	228.139	0.152	1
	5320	23.525	225.165	0.150	1
	5500	22.953	197.379	0.153	1
	5580	23.389	218.223	0.169	1
	5700	21.913	155.346	0.121	1
802.11ax (40MHz) (RU Mode_Full)	5270	23.754	237.356	0.158	1
	5310	23.274	212.520	0.142	1
	5510	21.702	147.979	0.115	1
	5550	23.94	247.742	0.192	1
	5670	21.318	135.457	0.105	1
802.11ax (80MHz) (RU Mode_Full)	5290	23.843	242.270	0.161	1
	5530	23.927	247.002	0.192	1
	5610	23.595	228.823	0.178	1

WLAN Function					
5GHz Band					
Mode	Frequency (MHz)	Conducted Output Power		Power Density at R = 20cm (mW/cm ²)	Limit (mW/cm ²)
		dBm	W		
802.11ax (20MHz) (RU Mode_Center)	5260	21.514	141.710	0.094	1
	5300	21.633	145.646	0.097	1
	5320	21.481	140.637	0.094	1
	5500	20.883	122.546	0.095	1
	5580	21.535	142.397	0.110	1
	5700	20.826	120.948	0.094	1
802.11ax (40MHz) (RU Mode_Center)	5270	23.761	237.739	0.158	1
	5310	23.251	211.398	0.141	1
	5510	21.149	130.287	0.101	1
	5550	23.803	240.049	0.186	1
	5670	22.13	163.305	0.127	1
802.11ax (80MHz) (RU Mode_Center)	5290	20.958	124.681	0.083	1
	5530	20.932	123.937	0.096	1
	5610	22.944	196.970	0.153	1
802.11ax (20MHz) (RU Mode_Edge)	5260	21.817	151.950	0.101	1
	5300	21.858	153.391	0.102	1
	5320	21.791	151.043	0.101	1
	5500	21.157	130.527	0.101	1
	5580	21.894	154.668	0.120	1
	5700	21.132	129.778	0.101	1
802.11ax (40MHz) (RU Mode_Edge)	5270	23.729	235.993	0.157	1
	5310	23.285	213.059	0.142	1
	5510	21.131	129.748	0.101	1
	5550	23.732	236.157	0.183	1
	5670	21.931	155.991	0.121	1
802.11ax (80MHz) (RU Mode_Edge)	5290	20.615	115.213	0.077	1
	5530	20.991	125.632	0.097	1
	5610	22.975	198.381	0.154	1

WLAN Function					
5GHz Band					
Mode	Frequency (MHz)	Conducted Output Power		Power Density at R = 20cm (mW/cm ²)	Limit (mW/cm ²)
		dBm	W		
802.11ax (20MHz) (Beamforming Mode)	5260	22.608	182.306	0.121	1
	5300	22.666	184.757	0.123	1
	5320	22.664	184.672	0.123	1
	5500	22.629	183.189	0.142	1
	5580	22.936	196.607	0.153	1
	5700	23.562	227.091	0.176	1
802.11ax (40MHz) (Beamforming Mode)	5270	23.787	239.166	0.159	1
	5310	23.666	232.595	0.155	1
	5510	23.583	228.192	0.177	1
	5550	23.913	246.207	0.191	1
	5670	23.688	233.776	0.181	1
802.11ax (80MHz) (Beamforming Mode)	5290	23.779	238.726	0.159	1
	5530	23.967	249.287	0.193	1
	5610	23.605	229.351	0.178	1

Note:

1. The antenna information is from the customer declaration.
2. The EUT description is from the customer declaration.
3. The product specification and testing instructions for the EUT declared in the report are provided by the manufacturer who will take all responsibilities for the accuracy.
4. The results are evaluated using the maximum power.

Antenna Gain:

The directional gain for power is 3.06 (U-NII 5) / 2.22 (U-NII 6) / 1.02 (U-NII 7) / 2.02 (U-NII 8) dBi.

The directional gain for beamforming is 5.74 (U-NII 5) / 4.58 (U-NII 6) / 3.82 (U-NII 7) / 4.11 (U-NII 8) dBi.

Output Power into Antenna & RF Exposure Evaluation Distance:

Mode	Frequency (MHz)	Conducted Output Power		Power Density at R = 20cm (mW/cm ²)	Limit (mW/cm ²)
		dBm	W		
802.11a (CDD mode)	6115	10.231	10.546	0.008	1
	6255	9.775	9.495	0.007	1
	6415	10.324	10.775	0.008	1
	6435	12.018	15.915	0.009	1
	6475	12.01	15.885	0.009	1
	6515	11.955	15.686	0.009	1
	6535	12.192	16.565	0.008	1
	6695	11.922	15.567	0.007	1
	6855	12.644	18.382	0.009	1
	6875_L	8.513	7.101	0.002	1
	6875_R	8.309	6.775	0.002	1
	6895	12.091	16.185	0.008	1
	6995	11.824	15.219	0.008	1
	7095	12.26	16.827	0.009	1
802.11ax (20 MHz) (RU Mode_Full)	6115	11.799	15.132	0.011	1
	6255	11.551	14.292	0.011	1
	6415	11.94	15.631	0.012	1
	6435	13.348	21.617	0.012	1
	6475	13.461	22.187	0.013	1
	6515	13.287	21.316	0.012	1
	6535	14.274	26.755	0.013	1
	6695	13.746	23.692	0.011	1
	6855	13.909	24.598	0.012	1
	6875_L	10.501	11.223	0.003	1
	6875_R	10.571	11.405	0.004	1
	6895	13.752	23.725	0.012	1
	6995	13.834	24.177	0.012	1
	7095	13.676	23.313	0.012	1

Mode	Frequency (MHz)	Conducted Output Power		Power Density at R = 20cm (mW/cm ²)	Limit (mW/cm ²)
		dBm	W		
802.11ax (40 MHz) (RU Mode_Full)	6125	14.774	30.019	0.022	1
	6245	15.325	34.080	0.025	1
	6405	15.626	36.526	0.027	1
	6445	17.088	51.145	0.029	1
	6485	16.57	45.394	0.026	1
	6525_L	12.779	18.963	0.006	1
	6525_R	12.850	19.275	0.005	1
	6565	17.356	54.400	0.026	1
	6725	16.661	46.355	0.022	1
	6845	17.483	56.014	0.027	1
	6885_L	9.153	8.228	0.002	
	6885_R	14.180	26.182	0.008	1
	6925	17.696	58.830	0.030	1
	7005	17.124	51.570	0.026	1
	7085	16.959	49.648	0.025	1
802.11ax (80 MHz) (RU Mode_Full)	6145	18.731	74.662	0.056	1
	6225	18.446	69.920	0.052	1
	6385	18.457	70.097	0.052	1
	6465	19.764	94.711	0.054	1
	6545_L	12.525	17.885	0.006	1
	6545_R	18.346	68.328	0.017	1
	6625	20.231	105.463	0.051	1
	6705	20.156	103.657	0.050	1
	6785	20.342	108.193	0.052	1
	6865_L	17.160	52.000	0.013	1
	6865_R	14.200	26.303	0.008	1
	6945	20.602	114.868	0.059	1
	7025	20.195	104.592	0.054	1
802.11ax (160 MHz) (RU Mode_Full)	6185	22.947	197.106	0.147	1
	6345	22.942	196.879	0.147	1
	6505_L	22.657	184.374	0.061	1
	6505_R	20.421	110.179	0.028	1
	6665	24.992	315.646	0.151	1
	6825_L	24.278	267.793	0.067	1
	6825_R	16.930	49.340	0.016	1
	6985	24.262	266.809	0.137	1

Mode	Frequency (MHz)	Conducted Output Power		Power Density at R = 20cm (mW/cm ²)	Limit (mW/cm ²)
		dBm	W		
802.11ax (20 MHz) (RU Mode_Center)	6115	9.57	9.057	0.007	1
	6255	9.346	8.602	0.006	1
	6415	9.983	9.961	0.007	1
	6435	11.437	13.922	0.008	1
	6475	11.346	13.633	0.008	1
	6515	11.219	13.240	0.008	1
	6535	11.825	15.223	0.007	1
	6695	11.137	12.993	0.006	1
	6855	11.751	14.966	0.007	1
	6875_L	7.503	5.627	0.001	1
	6875_R	7.784	6.003	0.002	1
	6895	11.668	14.682	0.008	1
	6995	11.351	13.649	0.007	1
	7095	11.435	13.916	0.007	1
802.11ax (40 MHz) (RU Mode_Center)	6125	13.65	23.174	0.017	1
	6245	13.335	21.553	0.016	1
	6405	13.847	24.249	0.018	1
	6445	14.998	31.608	0.018	1
	6485	15.464	35.188	0.020	1
	6525_L	10.347	10.832	0.004	1
	6525_R	10.002	10.005	0.003	1
	6565	15.345	34.237	0.016	1
	6725	15.099	32.352	0.016	1
	6845	15.319	34.033	0.016	1
	6885_L	-0.307	0.932	0.0002	1
	6885_R	13.405	21.903	0.007	1
	6925	14.881	30.768	0.016	1
	7005	14.855	30.584	0.016	1
	7085	14.914	31.003	0.016	1

Mode	Frequency (MHz)	Conducted Output Power		Power Density at R = 20cm (mW/cm ²)	Limit (mW/cm ²)
		dBm	W		
802.11ax (80 MHz) (RU Mode_Center)	6145	16.986	49.957	0.037	1
	6225	17.17	52.119	0.039	1
	6385	17.289	53.567	0.040	1
	6465	18.743	74.869	0.043	1
	6545_L	10.116	10.271	0.003	1
	6545_R	17.612	57.703	0.015	1
	6625	18.831	76.401	0.037	1
	6705	18.8	75.858	0.036	1
	6785	19.052	80.390	0.039	1
	6865_L	16.587	45.572	0.011	1
	6865_R	13.119	20.507	0.006	1
	6945	19.384	86.776	0.044	1
	7025	19.328	85.664	0.044	1
802.11ax (160 MHz) (RU Mode_Center)	6185	21.07	127.938	0.095	1
	6345	20.836	121.227	0.090	1
	6505_L	20.827	120.976	0.040	1
	6505_R	15.857	38.521	0.010	1
	6665	22.984	198.793	0.095	1
	6825_L	22.921	195.930	0.049	1
	6825_R	4.844	3.051	0.001	1
	6985	23.135	205.826	0.105	1

Mode	Frequency (MHz)	Conducted Output Power		Power Density at R = 20cm (mW/cm ²)	Limit (mW/cm ²)
		dBm	W		
802.11ax (20 MHz) (RU Mode_Edge)	6115	10.44	11.066	0.008	1
	6255	10.119	10.278	0.008	1
	6415	10.155	10.363	0.008	1
	6435	11.69	14.757	0.008	1
	6475	11.545	14.272	0.008	1
	6515	11.568	14.348	0.008	1
	6535	11.64	14.588	0.007	1
	6695	11.342	13.621	0.007	1
	6855	12.159	16.440	0.008	1
	6875_L	8.326	6.801	0.002	1
	6875_R	8.287	6.741	0.002	1
	6895	11.584	14.401	0.007	1
	6995	11.746	14.949	0.008	1
	7095	11.844	15.290	0.008	1
802.11ax (40 MHz) (RU Mode_Edge)	6125	12.508	17.816	0.013	1
	6245	11.706	14.812	0.011	1
	6405	12.083	16.155	0.012	1
	6445	13.665	23.254	0.013	1
	6485	13.699	23.437	0.013	1
	6525_L	9.519	8.952	0.003	1
	6525_R	9.505	8.923	0.002	1
	6565	14.116	25.799	0.012	1
	6725	13.786	23.911	0.011	1
	6845	14.232	26.497	0.013	1
	6885_L	9.440	8.790	0.002	
	6885_R	10.508	11.241	0.004	1
	6925	13.937	24.757	0.013	1
	7005	13.909	24.598	0.013	1
	7085	13.86	24.322	0.012	1

Mode	Frequency (MHz)	Conducted Output Power		Power Density at R = 20cm (mW/cm ²)	Limit (mW/cm ²)
		dBm	W		
802.11ax (80 MHz) (RU Mode_Edge)	6145	17.651	58.224	0.043	1
	6225	17.847	60.912	0.045	1
	6385	17.809	60.381	0.045	1
	6465	19.636	91.960	0.053	1
	6545_L	13.577	22.788	0.008	1
	6545_R	14.522	28.327	0.007	1
	6625	19.828	96.117	0.046	1
	6705	19.806	95.631	0.046	1
	6785	20.01	100.231	0.048	1
	6865_L	15.003	31.645	0.008	1
	6865_R	14.372	27.365	0.009	1
	6945	19.688	93.068	0.048	1
	7025	20.179	104.208	0.053	1
802.11ax (160 MHz) (RU Mode_Edge)	6185	22.168	164.740	0.123	1
	6345	22.338	171.317	0.128	1
	6505_L	17.407	55.043	0.018	1
	6505_R	17.239	52.954	0.013	1
	6665	23.968	249.345	0.120	1
	6825_L	18.945	78.433	0.020	1
	6825_R	16.213	41.812	0.013	1
	6985	24.191	262.482	0.135	1

Mode	Frequency (MHz)	Conducted Output Power		Power Density at R = 20cm (mW/cm ²)	Limit (mW/cm ²)
		dBm	W		
802.11ax (20 MHz) (Beamforming Mode)	6115	11.52	14.191	0.011	1
	6255	10.982	12.537	0.009	1
	6415	11.679	14.720	0.011	1
	6435	12.826	19.169	0.011	1
	6475	13.236	21.067	0.012	1
	6515	13.1	20.417	0.012	1
	6535	13.666	23.259	0.011	1
	6695	13.003	19.966	0.010	1
	6855	13.673	23.297	0.011	1
	6875_L	9.605	9.131	0.004	1
	6875_R	9.632	9.188	0.005	1
	6895	13.622	23.025	0.012	1
	6995	13.241	21.091	0.011	1
	7095	13.286	21.311	0.011	1
802.11ax (40 MHz) (Beamforming Mode)	6125	14.998	31.608	0.024	1
	6245	14.958	31.318	0.023	1
	6405	14.855	30.584	0.023	1
	6445	16.398	43.631	0.025	1
	6485	16.311	42.766	0.024	1
	6525_L	12.057	16.058	0.009	1
	6525_R	11.978	15.769	0.008	1
	6565	17.266	53.284	0.026	1
	6725	16.1	40.738	0.020	1
	6845	16.993	50.038	0.024	1
	6885_L	8.784	7.558	0.004	
	6885_R	14.240	26.546	0.014	1
	6925	16.995	50.061	0.026	1
	7005	16.527	44.947	0.023	1
	7085	16.415	43.803	0.022	1

Mode	Frequency (MHz)	Conducted Output Power		Power Density at R = 20cm (mW/cm ²)	Limit (mW/cm ²)
		dBm	W		
802.11ax (80 MHz) (Beamforming Mode)	6145	17.741	59.443	0.044	1
	6225	17.529	56.611	0.042	1
	6385	17.499	56.221	0.042	1
	6465	18.891	77.464	0.044	1
	6545_L	11.837	15.265	0.009	1
	6545_R	17.653	58.251	0.028	1
	6625	19.528	89.702	0.043	1
	6705	18.999	79.415	0.038	1
	6785	19.224	83.637	0.040	1
	6865_L	16.282	42.482	0.020	1
	6865_R	13.338	21.568	0.011	1
	6945	19.446	88.024	0.045	1
	7025	18.852	76.771	0.039	1
802.11ax (160 MHz) (Beamforming Mode)	6185	19.879	97.252	0.073	1
	6345	19.732	94.016	0.070	1
	6505_L	18.798	75.823	0.043	1
	6505_R	16.182	41.515	0.020	1
	6665	21.812	151.775	0.073	1
	6825_L	20.222	105.245	0.050	1
	6825_R	11.839	15.272	0.008	1
	6985	21.829	152.370	0.078	1

Note:

1. The antenna information is from the customer declaration.
2. The EUT description is from the customer declaration.
3. The product specification and testing instructions for the EUT declared in the report are provided by the manufacturer who will take all responsibilities for the accuracy.
4. The results are evaluated using the maximum power.