



05/08/2020

City of Grand Rapids

Small and Micro Cell Wireless Facilities Sites

Radio Frequency (RF) Power Density Measurements for the Year 2020

Executive Summary:

Geotech, Inc. performed broadband power density measurements of existing small and micro cell sites to determine compliance or non-compliance with the existing requirements for the general public as set by the Federal Communications Commission (FCC) and other international agencies. As of May 8th, 2020, fifty-five (55) sites were tested, and the measurements of the maximum power density were less than two and one-half (2.5) percent of the Maximum Permissible Exposure (MPE) limit as set by the FCC.

Objective:

Perform small and micro cell radio frequency testing to determine compliance or non-compliance of the Maximum Permissible Exposure (MPE) power densities with the applicable requirements as set by the Federal Communications Commission (FCC) and other international agencies.

Testing shall be performed for existing installations, and repeated every 3-years. New installation shall be tested on a yearly basis and repeated every 3-years.

Background Information:

1. Number of cell sites: As of this date, there are 472 existing and proposed sites. 55 sites were activate and tested, since last year's testing.
2. Several types of radio/antenna/pole installations have been installed and/or are proposed. The known radio frequencies of the small/micro cells range from 800 megahertz (MHz) to 6 gigahertz (GHz).
3. The following service providers have, or propose to have small/micro cells within the City limits: Verizon, AT&T, Sprint. (These sites are operated by ACD, Mobilitie, and Zayo).
4. The Federal Communications Commission (FCC) regulates and allocates the radio frequencies. The Institute of Electrical and Electronic Engineers (IEEE) has developed Standard 95.1; which was adopted by the FCC. Similar standards were developed by other agencies; which included the International Commission on Non-Ionizing Radiation

Protection (ICNIRP) and Canada Code 6. These standards define the limits for Maximum Permissible Exposure (MPE) Power Densities (in Watts/Meter Squared) as follows:

	<u>FCC</u> <u>(1.5-100GHz)</u>	<u>INCIRP</u> <u>(2-300GHz)</u>	<u>Canada</u> <u>(6-150GHz)</u>
Occupational	50	50	50
Non-Occupational (General Public)	10	10	10

5. Because the atmosphere is flooded with nearly unlimited radio transmissions from various sources, it may in some cases be difficult to distinguish between existing radiation levels and new small/micro cell radiation levels. Based on these factors, it was decided to perform broadband power density measurements to account for the frequencies ranging from 300KHz to 50GHz; which includes the operating frequencies for the small/micro cells. These measurements identify the existing power densities, and determine compliance or non-compliance with the FCC standards.
6. Ground level Safety: Radio frequency emissions from antennae used for cellular transmissions result in exposure levels on the ground that are typically below the safety limits which were adopted by the FCC based on the recommendations of expert organizations, and endorsed by agencies of the Federal Government responsible for health and safety.

Testing Procedures and Parameters:

1. Test Instrument: Narda NBM-550-S with FCC probe #EA5091
2. Measurements were made at Six (6) feet above ground at distances of 10 feet, 50 feet and 100 feet away from the pole/cell base
3. Measurements were broadband base and account for radio frequencies ranging from 300KHz to 50GHz
4. Measurements recorded the maximum readings as a percentage of the Maximum Permissible Exposure (MPE) power densities for occupational permissible limit. These measurements were converted to non-occupational (general public) power densities, and were compared with its MPE limit. Note: the MPE for non-occupational (general public) permissible limit is lower by a factor of 5 in comparison with the occupational permissible limit.

Testing Results: Refer to:

1. Attachment #1 – Summary of Radio Frequency (RF) Power Density Testing – Non-Occupational
2. Attachment #2 – Radio Frequency (RF) Power Density Testing - Non-Occupational
3. Attachment #3 – Radio Frequency (RF) Power Density Testing - Occupational and Non-Occupational

Conclusions:

1. The exposure levels within 18 inches of the cells are high, and the cells shall be turned off whenever work is to be performed on the lighting luminaires located on the poles.
2. The exposure of the general public to radio frequency power densities at six (6) feet above ground is less than two and one-half (2.5) percent of the Maximum Permissible Exposure set by the FCC.

Attachment #1 - Summary of Radio Frequency (RF) Power Density Testing - Non-Occupational											
City of Grand Rapids/Small Cell Wireless Facilities Radio Frequency (RF) Power Density Testing - Non-Occupational											
				Results as Percentage (% of 10 Watts/Meter Squared) of Maximum Permissible Exposure (MPE) for FCC Non-Occupational Limits							
				Measurements at 6 feet above Ground							
Count	Small Cell	Approved Date	Address	Direction	Distance from Pole			Direction	Distance from Pole		
					10 ft.	50 ft.	100 ft.		10 ft.	50 ft.	100 ft.
1	ACD	6/11/2019	135 Monroe Center St. NW	N	0.1735	0.231	0.3465	S	0.3465	0.491	0.4045
2	ACD	11/8/2019	216 Division Ave. N	N	0.3755	0.4045	0.3175	S	0.289	0.231	0.3175
3	ACD	11/8/2019	81 Lyon St. NW	W	0.3465	0.202	0.26	E	0.1735	0.6435	0.6775
4	ACD	11/8/2019	10 Crescent St. NE	W	0.5775	0.52	0.202	E	0.3755	0.8665	0.8955
5	ACD	11/8/2019	243 Michigan St. NW	W	0.3755	0.0865	0.231	E	0.26	0.1735	0.549
6	ACD	11/8/2019	405 Lafayette Ave. SE	N	0.1735	0.1445	0.1735	S	0.231	0.26	0.4045
7	ACD	11/8/2019	429 Paris Ave. NE	N	0.1735	0.1445	0.289	S	0.0865	0.26	0.231
8	ACD	11/8/2019	198 Scribner Ave. NW	N	0.058	0.1445	0.3175	S	0.1735	0.1155	0.1735
9	ACD	11/8/2019	3433 Lake Eastbrook Blvd. SE	W	0.6355	0.1445	0.3465	E	0.0865	0.202	0.26
10	ACD	11/8/2019	2321 Raybrook St. SE	W	0.0675	0.1155	0.26	E	0.1155	0.058	0.3755
11	ACD	11/8/2019	3982 Camelot Dr. SE	W	0.3175	0.231	0.1155	E	0.1445	0.1735	0.1445
12	ACD	11/8/2019	12 Fulton St. E	W	0.5775	0.4045	0.6355	E	0.491	0.1155	0.3755
13	ACD	11/8/2019	37 LaGrave Ave. SE	N	0.52	0.6065	0.462	S	0.231	0.491	0.8665
14	ACD	11/8/2019	1598 Division Ave. S	N	0.4045	0.26	0.289	S	0.4045	0.4045	0.26
15	ACD	11/8/2019	1209 Cass Ave. SE	N	0.4335	0.289	0.058	S	0.1735	0.289	0.26
16	ACD	11/8/2019	618 Madison Ave. SE	N	0.289	0.231	0.52	S	0.52	0.26	0.491
17	ACD	11/8/2019	732 Jefferson Ave. SE	N	0.1445	0.1735	0.3465	S	0.1735	0.3755	0.4045
18	ACD	11/8/2019	902 Madison Ave. SE	N	0.3755	0.202	0.1735	S	0.26	0.4335	0.3175
19	ACD	11/8/2019	1601 Fuller Ave. SE	W	0.4335	0.0865	0.1445	E	0.0865	0.26	0.289
20	ACD	11/8/2019	2640 Breton Ave. SE	N	0.462	0.202	0.1445	S	0.058	0.0865	0.1155
21	ACD	11/8/2019	321 Richard Terrace SE	N	0.26	0.202	0.3175	S	0.4045	0.462	0.202
22	ACD	11/8/2019	30 Marion Ave. NW	N	0.4065	0.788	0.491	S	0.3175	0.231	0.3465
23	ACD	11/8/2019	219 Jackson Pl. NW	N	0.3175	0.202	0.3755	S	0.26	0.3755	0.52
24	ACD	11/8/2019	890 Seward Ave. NW	N	0.3465	0.1445	0.3465	S	0.1015	0.231	0.231
25	ACD	11/8/2019	700 Scribner Ave. NW	N	0.491	0.3755	0.9535	S	0.1155	0.231	0.3755
26	ACD	11/8/2019	3702 Sparks Dr. SE3982 Camelot	N	0.029	0.26	0.3465	S	0.26	0.1155	0.4335
27	ACD	11/8/2019	1432 Scribner Ave. NW	N	0.1735	0.203	0.745	S	0.474	0.813	0.779
28	ACD	11/8/2019	2350 Elliott St. SE	W	0.549	0.4045	0.231	E	0.3755	0.809	0.1445
29	ACD	11/8/2019	782 Fuller Ave. SE	N	0.3465	0.26	0.058	S	0.1155	0.26	0.231
30	ACD	11/8/2019	1531 Lake Dr. SE	N	0.3175	0.289	0.3465	S	0.1735	0.3755	0.289
31	ACD	11/8/2019	187 Antoine St. SW	W	0.4045	0.058	0.1445	E	0.1735	0.202	0.202
32	AT&T		245 Jefferson Ave. SE	W	0.3755	0.3465	0.3175	E	0.231	0.5775	0.722
33	AT&T		1023 Alexander St. SE	W	0.26	0.1445	0.1735	E	0.0865	0.26	0.1735
34	Mobilite	12/20/2016	10 Goodrich St. SW	W	0.1155	0.058	0.289	E	0.3465	0.3755	0.26
35	Mobilite	2/21/2017	1610 Broadway Ave. NW	N	0.3175	0.034	0.508	S	0.9825	0.237	0.745
36	ACD	3/31/2017	1598 Division Ave. S	N	0.4045	0.26	0.289	S	0.4045	0.4045	0.26
37	ACD	3/31/2017	599 Division Ave.	N	0.058	0.4045	0.1735	S	0.231	0.202	0.1155
38	ACD	5/28/2019	1998 Division Ave. S	N	0.1155	0.1735	0.1445	S	0.029	0.1445	0.289
39	AT&T	10/23/2018	1163 Wealthy St. SE	W	0.202	0.231	0.5775	E	0.462	0.289	0.4335
40	ACD	5/24/2019	2 Cherry St. SE	W	0.231	0.3465	0.26	E	0.1445	0.3175	0.6355
41	ACD	5/24/2019	130 Ottawa Ave. SW	N	0.26	0.202	0.0675	S	0.813	1.084	1.2195
42	ACD	5/28/2019	4 Michigan St. NE	W	0.231	0.0865	0.26	E	0.217	0.3755	0.3575
43	ACD	5/24/2019	125 Oakes St. SW	W	1.4015	2.202	1.863	E	1.9645	0.813	0.4495
44	ACD	5/24/2019	235 Jefferson St. SE	N	0.745	0.1445	0.231	S	0.289	0.4045	0.3465
45	ACD	5/24/2019	97 Logan St. SW	W	0.4045	0.0865	0.4065	E	0.813	0.6775	1.355
46	ACD	5/24/2019	13 Pearl St. NW	W	0.289	0.0865	0.3385	E	0.57	0.6435	1.2195
47	ACD	5/30/2019	425 Lafayette Ave. NE	N	0.28	0.1155	0.0865	S	0.202	0.26	0.391
48	ACD	5/28/2019	220 Crescent St. NE	W	0.3175	0.26	0.3725	E	0.305	0.4065	0.203
49	ACD	5/24/2019	25 Oakes St. SW	W	0.462	0.1445	0.202	E	0.3525	0.334	0.4495
50	ACD	5/24/2019	173 Lafayette Ave. SE	N	0.203	0.1735	0.493	S	0.3385	0.779	0.847
51	ACD	5/29/2019	186 Monroe Ave. NW	N	0.058	0.1445	0.0865	S	0.029	0.231	0.1155
52	ACD	5/24/2019	307 5/5 Ionia Ave. SW	N	1.344	0.1155	0.029	S	0.1735	0.1155	0.3755
53	ACD	5/29/2019	19 Fountain St. NW	N	0.1735	0.4335	0.3175	S	0.1735	0.1155	0.231
54	AT&T	3/25/2019	329 Bridge St. NW	W	0.3465	0.26	0.1735	E	0.26	0.289	0.1445
55	ACD	6/6/2019	1531 Lake Dr. SE	N	0.3175	0.289	0.3465	S	0.1735	0.3755	0.289
Summary of Radio Frequency (RF) Power Density Testing - Non-Occupational											
					1.4015	2.2020	1.8630		1.9645	1.0840	1.3550
					0.0290	0.0340	0.0290		0.0290	0.0580	0.1155
					0.3175	0.2020	0.2890		0.2310	0.2890	0.3465
					0.3540	0.2682	0.3272		0.3099	0.3638	0.4217
Notes:											
1. For a complete description of testing procedures, parameters and results-see Full Report											
2. All values presented as a percentage of 10 watt/meter squared for non-occupational maximum permissible exposure											
3. Direction refers to measurement parallel to street direction											
4. Measurement at 6 feet above ground represents pedestrian height											
5. Above measurements are for active sites as of 5-8-20											

RF Power Density Testing at Small Cell Wireless Facilities

Attachment #2 - Radio Frequency (RF) Power Density Testing - Non-Occupational																					
City of Grand Rapids/Small Cell Wireless Facilities Radio Frequency (RF) Power Density Testing - Non-Occupational																					
Count	OBJECT ID	Small Cell	Pole Owner	Site ID	Site Status	Approved Date	Address	Results as Percentage (% of 10 Watts/Meter Squared) of Maximum Permissible Exposure (MPE) for FCC Non-Occupational Limits													
								Measurements at 6 feet above Ground													
								Direction	Distance from Pole			Direction	Distance from Pole								
10 ft.	50 ft.	100 ft.	10 ft.	50 ft.	100 ft.																
1	927	ACD	Grand Rapids	10016M	Installation Complete	6/11/2019	135 Monroe Center St. NW	N	0.1735	0.231	0.3465	S	0.3465	0.491	0.4045						
2	929	ACD	Grand Rapids	10022M	Installation Complete	11/8/2019	216 Division Ave. N	N	0.3755	0.4045	0.3175	S	0.289	0.231	0.3175						
3	930	ACD	Grand Rapids	10027M	Installation Complete	11/8/2019	81 Lyon St. NW	W	0.3465	0.202	0.26	E	0.1735	0.6435	0.6775						
4	931	ACD	Grand Rapids	10028M	Installation Complete	11/8/2019	10 Crescent St. NE	W	0.5775	0.52	0.202	E	0.3755	0.8665	0.8955						
5	933	ACD	Grand Rapids	10030M	Installation Complete	11/8/2019	243 Michigan St. NW	W	0.3755	0.0865	0.231	E	0.26	0.1735	0.549						
6	934	ACD	Grand Rapids	10033M	Installation Complete	11/8/2019	405 Lafayette Ave. SE	N	0.1735	0.1445	0.1735	S	0.231	0.26	0.4045						
7	935	ACD	Grand Rapids	10035M	Installation Complete	11/8/2019	429 Paris Ave. NE	N	0.1735	0.1445	0.289	S	0.0865	0.26	0.231						
8	936	ACD	Grand Rapids	10037M	Installation Complete	11/8/2019	198 Scribner Ave. NW	N	0.058	0.1445	0.3175	S	0.1735	0.1155	0.1735						
9	938	ACD	Grand Rapids	10060M	Installation Complete	11/8/2019	3433 Lake Eastbrook Blvd. SE	W	0.6355	0.1445	0.3465	E	0.0865	0.202	0.26						
10	939	ACD	Grand Rapids	10061M	Installation Complete	11/8/2019	2321 Raybrook St. SE	W	0.0675	0.1155	0.26	E	0.1155	0.058	0.3755						
11	940	ACD	Grand Rapids	10084M	Installation Complete	11/8/2019	3982 Camelot Dr. SE	W	0.3175	0.231	0.1155	E	0.1445	0.1735	0.1445						
12	941	ACD	Grand Rapids	10090M	Installation Complete	11/8/2019	12 Fulton St. E	W	0.5775	0.4045	0.6355	E	0.491	0.1155	0.3755						
13	942	ACD	Grand Rapids	10091M	Installation Complete	11/8/2019	37 LaGrave Ave. SE	N	0.52	0.6065	0.462	S	0.231	0.491	0.8665						
14	943	ACD	Grand Rapids	14301M	Installation Complete	11/8/2019	1598 Division Ave. S	N	0.4045	0.26	0.289	S	0.4045	0.4045	0.26						
15	944	ACD	Grand Rapids	14302M	Installation Complete	11/8/2019	1209 Cass Ave. SE	N	0.4335	0.289	0.058	S	0.1735	0.289	0.26						
16	945	ACD	Grand Rapids	14305M	Installation Complete	11/8/2019	618 Madison Ave. SE	N	0.289	0.231	0.52	S	0.52	0.26	0.491						
17	946	ACD	Grand Rapids	14306M	Installation Complete	11/8/2019	732 Jefferson Ave. SE	N	0.1445	0.1735	0.3465	S	0.1735	0.3755	0.4045						
18	947	ACD	Grand Rapids	14308M	Installation Complete	11/8/2019	902 Madison Ave. SE	N	0.3755	0.202	0.1735	S	0.26	0.4335	0.3175						
19	948	ACD	Grand Rapids	14317M	Installation Complete	11/8/2019	1601 Fuller Ave. SE	W	0.4335	0.0865	0.1445	E	0.0865	0.26	0.289						
20	949	ACD	Grand Rapids	14323M	Installation Complete	11/8/2019	2640 Breton Ave. SE	N	0.462	0.202	0.1445	S	0.058	0.0865	0.1155						
21	950	ACD	Grand Rapids	14350M	Installation Complete	11/8/2019	321 Richard Terrace SE	N	0.26	0.202	0.3175	S	0.4045	0.462	0.202						
22	951	ACD	Grand Rapids	16401M	Installation Complete	11/8/2019	30 Marion Ave. NW	N	0.4065	0.788	0.491	S	0.3175	0.231	0.3465						
23	952	ACD	Grand Rapids	16402M	Installation Complete	11/8/2019	219 Jackson Pl. NW	N	0.3175	0.202	0.3755	S	0.26	0.3755	0.52						
24	953	ACD	Grand Rapids	16703M	Installation Complete	11/8/2019	890 Seward Ave. NW	N	0.3465	0.1445	0.3465	S	0.1015	0.231	0.231						
25	954	ACD	Grand Rapids	16705M	Installation Complete	11/8/2019	700 Scribner Ave. NW	N	0.491	0.3755	0.9535	S	0.1155	0.231	0.3755						
26	955	ACD	Grand Rapids	10057M	Installation Complete	11/8/2019	3702 Sparks Dr. SE3982 Camelot	N	0.029	0.26	0.3465	S	0.26	0.1155	0.4335						
27	956	ACD	Grand Rapids	16704M	Installation Complete	11/8/2019	1432 Scribner Ave. NW	N	0.1735	0.203	0.745	S	0.474	0.813	0.779						
28	957	ACD	Grand Rapids	10054M	Installation Complete	11/8/2019	2350 Elliott St. SE	W	0.549	0.4045	0.231	E	0.3755	0.809	0.1445						
29	958	ACD	Parks	14354M	Installation Complete	11/8/2019	782 Fuller Ave. SE	N	0.3465	0.26	0.058	S	0.1155	0.26	0.231						
30	959	ACD	Grand Rapids	14352M	Installation Complete	11/8/2019	1531 Lake Dr. SE	N	0.3175	0.289	0.3465	S	0.1735	0.3755	0.289						
31	960	ACD	Grand Rapids	14307M	Installation Complete	11/8/2019	187 Antoine St. SW	W	0.4045	0.058	0.1445	E	0.1735	0.202	0.202						
32	2536	AT&T	CE	GRRPD 028	Installation Complete		245 Jefferson Ave. SE	W	0.3755	0.3465	0.3175	E	0.231	0.5775	0.722						
33	2537	AT&T	CE	GRRPD -17	Installation Complete		1023 Alexander St. SE	W	0.26	0.1445	0.1735	E	0.0865	0.26	0.1735						
34	8	Mobilitie	Grand Rapids	DE90XS475-A	Installation Complete	12/20/2016	10 Goodrich St. SW	W	0.1155	0.058	0.289	E	0.3465	0.3755	0.26						
35	16	Mobilitie	Grand Rapids	DE90XS1YQ-D	Installation Complete	2/21/2017	1610 Broadway Ave. NW	N	0.3175	0.034	0.508	S	0.9825	0.237	0.745						
36	20	Mobilitie	CE	DE90XS1YB-C	Permit Filed	7/27/2017	329 28th St. SE														
37	41	ACD	Grand Rapids	14301	Installation Complete	3/31/2017	1598 Division Ave. S	N	0.4045	0.26	0.289	S	0.4045	0.4045	0.26						
38	46	ACD	Grand Rapids	14304	Installation Complete	3/31/2017	599 Division Ave.	N	0.058	0.4045	0.1735	S	0.231	0.202	0.1155						
39	48	ACD	Grand Rapids	14311	Installation Complete	5/28/2019	1998 Division Ave. S	N	0.1155	0.1735	0.1445	S	0.029	0.1445	0.289						
40	57	AT&T	Grand Rapids	GRRPD 016	Installation Complete	10/23/2018	1163 Wealthy St. SE	W	0.202	0.231	0.5775	E	0.462	0.289	0.4335						
41	468	ACD	Grand Rapids	10010	Installation Complete	5/24/2019	2 Cherry St. SE	W	0.231	0.3465	0.26	E	0.1445	0.3175	0.6355						
42	469	ACD	Grand Rapids	10019	Installation Complete	5/24/2019	130 Ottawa Ave. SW	N	0.26	0.202	0.0675	S	0.813	1.084	1.2195						
43	470	ACD	Grand Rapids	10034	Installation Complete	5/28/2019	4 Michigan St. NE	W	0.231	0.0865	0.26	E	0.217	0.3755	0.3575						
44	471	ACD	Grand Rapids	10039	Installation Complete	5/24/2019	125 Oakes St. SW	W	1.4015	2.202	1.863	E	1.9645	0.813	0.4495						
45	472	ACD	Grand Rapids	10014	Installation Complete	5/24/2019	235 Jefferson St. SE	N	0.745	0.1445	0.231	S	0.289	0.4045	0.3465						
46	473	ACD	Grand Rapids	14303	Installation Complete	5/24/2019	97 Logan St. SW	W	0.4045	0.0865	0.4065	E	0.813	0.6775	1.355						
47	477	ACD	Grand Rapids	10021	Installation Complete	5/24/2019	13 Pearl St. NW	W	0.289	0.0865	0.3385	E	0.57	0.6435	1.2195						
48	478	ACD	Grand Rapids	10040	Installation Complete	5/30/2019	425 Lafayette Ave. NE	N	0.28	0.1155	0.0865	S	0.202	0.26	0.391						
49	887	ACD	Grand Rapids	10041	Installation Complete	5/28/2019	220 Crescent St. NE	W	0.3175	0.26	0.3725	E	0.305	0.4065	0.203						
50	888	ACD	Grand Rapids	10012	Installation Complete	5/24/2019	25 Oakes St. SW	W	0.462	0.1445	0.202	E	0.3525	0.334	0.4495						
51	891	ACD	Grand Rapids	10015	Installation Complete	5/24/2019	173 Lafayette Ave. SE	N	0.203	0.1735	0.493	S	0.3385	0.779	0.847						
52	892	ACD	Grand Rapids	10024	Installation Complete	5/29/2019	186 Monroe Ave. NW	N	0.058	0.1445	0.0865	S	0.029	0.231	0.1155						
53	893	ACD	Grand Rapids	10008	Installation Complete	5/24/2019	307 5/5 Ionia Ave. SW	N	1.344	0.1155	0.029	S	0.1735	0.1155	0.3755						
54	894	ACD	Grand Rapids	10018	Installation Complete	5/29/2019	19 Fountain St. NW	N	0.1735	0.4335	0.3175	S	0.1735	0.1155	0.231						
55	905	AT&T	Grand Rapids	GRRPD 022	Installation Complete	3/25/2019	329 Bridge St. NW	W	0.3465	0.26	0.1735	E	0.26	0.289	0.1445						
56	908	ACD	Grand Rapids	14352	Installation Complete	6/6/2019	1531 Lake Dr. SE	N	0.3175	0.289	0.3465	S	0.1735	0.3755	0.289						
								Radio Frequency (RF) Power Density Testing - Non-Occupational													
								Max					1.4015	2.2020	1.8630				1.9645	1.0840	1.3550
								Min					0.0290	0.0340	0.0290				0.0290	0.0580	0.1155
								Median					0.3175	0.2020	0.2890				0.2310	0.2890	0.3465
								Average					0.3540	0.2682	0.3272				0.3099	0.3638	0.4217
Notes:																					
1. All values presented as a percentage of 10 watt/meter squared for non-occupational maximum permissible exposure																					
2. Direction refers to measurement parallel to street direction																					
3. Measurement at 6 feet above ground represents pedestrian height																					
3. Above measurements are for active sites as of 5-8-20																					

Attachment #3 - Radio Frequency (RF) Power Density Testing - Occupational & Non-Occupational

City of Grand Rapids/Small Cell Wireless Facilities Radio Frequency (RF) Power Density Testing - Occupational & Non-Occupational

Count	OBJECT ID	Small Cell	Pole Owner	Site ID	Site Status	Approved Date	Address	Results as Percentage (% of 50 Watts/Meter Squared) of Maximum Permissible Exposure (MPE) for FCC Occupational Limits Measurements at 6 feet above Ground								
								Direction	Distance from Pole			Direction	Distance from Pole			
									10 ft.	50 ft.	100 ft.		10 ft.	50 ft.	100 ft.	
1	927	ACD	Grand Rapids	10016M	Installation Complete	6/11/2019	135 Monroe Center St. NW	N	0.0347	0.0462	0.0693	S	0.0693	0.0982	0.0809	
2	929	ACD	Grand Rapids	10022M	Installation Complete	11/8/2019	216 Division Ave. N	N	0.0751	0.0809	0.0635	S	0.0578	0.0462	0.0635	
3	930	ACD	Grand Rapids	10027M	Installation Complete	11/8/2019	81 Lyon St. NW	W	0.0693	0.0404	0.052	E	0.0347	0.1287	0.1355	
4	931	ACD	Grand Rapids	10028M	Installation Complete	11/8/2019	10 Crescent St. NE	W	0.1155	0.104	0.0404	E	0.0751	0.1733	0.1791	
5	933	ACD	Grand Rapids	10030M	Installation Complete	11/8/2019	243 Michigan St. NW	W	0.0751	0.0173	0.0462	E	0.052	0.0347	0.1098	
6	934	ACD	Grand Rapids	10033M	Installation Complete	11/8/2019	405 Lafayette Ave. SE	N	0.0347	0.0289	0.0347	S	0.0462	0.052	0.0809	
7	935	ACD	Grand Rapids	10035M	Installation Complete	11/8/2019	429 Paris Ave. NE	N	0.0347	0.0289	0.0578	S	0.0173	0.052	0.0462	
8	936	ACD	Grand Rapids	10037M	Installation Complete	11/8/2019	198 Scribner Ave. NW	N	0.0116	0.0289	0.0635	S	0.0347	0.0231	0.0347	
9	938	ACD	Grand Rapids	10060M	Installation Complete	11/8/2019	3433 Lake Eastbrook Blvd. SE	W	0.1271	0.0289	0.0693	E	0.0173	0.0404	0.052	
10	939	ACD	Grand Rapids	10061M	Installation Complete	11/8/2019	2321 Raybrook St. SE	W	0.0135	0.0231	0.052	E	0.0231	0.0116	0.0751	
11	940	ACD	Grand Rapids	10084M	Installation Complete	11/8/2019	3982 Camelot Dr. SE	W	0.0635	0.0462	0.0231	E	0.0289	0.0347	0.0289	
12	941	ACD	Grand Rapids	10090M	Installation Complete	11/8/2019	12 Fulton St. E	W	0.1155	0.0809	0.1271	E	0.0982	0.0231	0.0751	
13	942	ACD	Grand Rapids	10091M	Installation Complete	11/8/2019	37 LaGrave Ave. SE	N	0.104	0.1213	0.0924	S	0.0462	0.0982	0.1733	
14	943	ACD	Grand Rapids	14301M	Installation Complete	11/8/2019	1598 Division Ave. S	N	0.0809	0.052	0.0578	S	0.0809	0.0809	0.052	
15	944	ACD	Grand Rapids	14302M	Installation Complete	11/8/2019	1209 Cass Ave. SE	N	0.0867	0.0578	0.0116	S	0.0347	0.0578	0.052	
16	945	ACD	Grand Rapids	14305M	Installation Complete	11/8/2019	618 Madison Ave. SE	N	0.0578	0.0462	0.104	S	0.104	0.052	0.0982	
17	946	ACD	Grand Rapids	14306M	Installation Complete	11/8/2019	732 Jefferson Ave. SE	N	0.0289	0.0347	0.0693	S	0.0347	0.0751	0.0809	
18	947	ACD	Grand Rapids	14308M	Installation Complete	11/8/2019	902 Madison Ave. SE	N	0.0751	0.0404	0.0347	S	0.052	0.0867	0.0635	
19	948	ACD	Grand Rapids	14317M	Installation Complete	11/8/2019	1601 Fuller Ave. SE	W	0.0867	0.0173	0.0289	E	0.0173	0.052	0.0578	
20	949	ACD	Grand Rapids	14323M	Installation Complete	11/8/2019	2640 Breton Ave. SE	N	0.0924	0.0404	0.0289	S	0.0116	0.0173	0.0231	
21	950	ACD	Grand Rapids	14350M	Installation Complete	11/8/2019	321 Richard Terrace SE	N	0.052	0.0404	0.0635	S	0.0809	0.0924	0.0404	
22	951	ACD	Grand Rapids	16401M	Installation Complete	11/8/2019	30 Marion Ave. NW	N	0.0813	0.1576	0.0982	S	0.0635	0.0462	0.0693	
23	952	ACD	Grand Rapids	16402M	Installation Complete	11/8/2019	219 Jackson Pl. NW	N	0.0635	0.0404	0.0751	S	0.052	0.0751	0.104	
24	953	ACD	Grand Rapids	16703M	Installation Complete	11/8/2019	890 Seward Ave. NW	N	0.0693	0.0289	0.0693	S	0.0203	0.0462	0.0462	
25	954	ACD	Grand Rapids	16705M	Installation Complete	11/8/2019	700 Scribner Ave. NW	N	0.0982	0.0751	0.1907	S	0.0231	0.0462	0.0751	
26	955	ACD	Grand Rapids	10057M	Installation Complete	11/8/2019	3702 Sparks Dr. SE3982 Camelot Dr. SE	N	0.0058	0.052	0.0693	S	0.052	0.0231	0.0867	
27	956	ACD	Grand Rapids	16704M	Installation Complete	11/8/2019	1432 Scribner Ave. NW	N	0.0347	0.0406	0.149	S	0.0948	0.1626	0.1558	
28	957	ACD	Grand Rapids	10054M	Installation Complete	11/8/2019	2350 Elliott St. SE	W	0.1098	0.0809	0.0462	E	0.0751	0.1618	0.0289	
29	958	ACD	Parks	14354M	Installation Complete	11/8/2019	782 Fuller Ave. SE	N	0.0693	0.052	0.0116	S	0.0231	0.052	0.0462	
30	959	ACD	Grand Rapids	14352M	Installation Complete	11/8/2019	1531 Lake Dr. SE	N	0.0635	0.0578	0.0693	S	0.0347	0.0751	0.0578	
31	960	ACD	Grand Rapids	14307M	Installation Complete	11/8/2019	187 Antoine St. SW	W	0.0809	0.0116	0.0289	E	0.0347	0.0404	0.0404	
32	2536	AT&T	CE	GRRPD 028	Installation Complete		245 Jefferson Ave. SE	W	0.0751	0.0693	0.0635	E	0.0462	0.1155	0.1444	
33	2537	AT&T	CE	GRRPD -17	Installation Complete		1023 Alexander St. SE	W	0.052	0.0289	0.0347	E	0.0173	0.052	0.0347	
34	8	Mobilite	Grand Rapids	DE90XS475-A	Installation Complete	12/20/2016	10 Goodrich St. SW	W	0.0231	0.0116	0.0578	E	0.0693	0.0751	0.052	
35	16	Mobilite	Grand Rapids	DE90XS1YQ-D	Installation Complete	2/21/2017	1610 Broadway Ave. NW	N	0.0635	0.0068	0.1016	S	0.1965	0.0474	0.149	
36	41	ACD	Grand Rapids	14301	Installation Complete	3/31/2017	1598 Division Ave. S	N	0.0809	0.052	0.0578	S	0.0809	0.0809	0.052	
37	46	ACD	Grand Rapids	14304	Installation Complete	3/31/2017	599 Division Ave.	N	0.0116	0.0809	0.0347	S	0.0462	0.0404	0.0231	
38	48	ACD	Grand Rapids	14311	Installation Complete	5/28/2019	1998 Division Ave. S	N	0.0231	0.0347	0.0289	S	0.0058	0.0289	0.0578	
39	57	AT&T	Grand Rapids	GRRPD 016	Installation Complete	10/23/2018	1163 Wealthy St. SE	W	0.0404	0.0462	0.1155	E	0.0924	0.0578	0.0867	
40	468	ACD	Grand Rapids	10010	Installation Complete	5/24/2019	2 Cherry St. SE	W	0.0462	0.0693	0.052	E	0.0289	0.0635	0.1271	
41	469	ACD	Grand Rapids	10019	Installation Complete	5/24/2019	130 Ottawa Ave. SW	N	0.052	0.0404	0.0135	S	0.1626	0.2168	0.2439	
42	470	ACD	Grand Rapids	10034	Installation Complete	5/28/2019	4 Michigan St. NE	W	0.0462	0.0173	0.052	E	0.0434	0.0751	0.0715	
43	471	ACD	Grand Rapids	10039	Installation Complete	5/24/2019	125 Oakes St. SW	W	0.2803	0.4404	0.3726	E	0.3929	0.1626	0.0899	
44	472	ACD	Grand Rapids	10014	Installation Complete	5/24/2019	235 Jefferson St. SE	N	0.149	0.0289	0.0462	S	0.0578	0.0809	0.0693	
45	473	ACD	Grand Rapids	14303	Installation Complete	5/24/2019	97 Logan St. SW	W	0.0809	0.0173	0.0813	E	0.1626	0.1355	0.271	

Attachment #3 - Radio Frequency (RF) Power Density Testing - Occupational & Non-Occupational

City of Grand Rapids/Small Cell Wireless Facilities Radio Frequency (RF) Power Density Testing - Occupational & Non-Occupational

Count	OBJECT ID	Small Cell	Pole Owner	Site ID	Site Status	Approved Date	Address	Results as Percentage (% of 50 Watts/Meter Squared) of Maximum Permissible Exposure (MPE) for FCC Occupational Limits								
								Measurements at 6 feet above Ground								
								Direction	Distance from Pole			Direction	Distance from Pole			
10 ft.	50 ft.	100 ft.	10 ft.	50 ft.	100 ft.											
46	477	ACD	Grand Rapids	10021	Installation Complete	5/24/2019	13 Pearl St. NW	W	0.0578	0.0173	0.0677	E	0.114	0.1287	0.2439	
47	478	ACD	Grand Rapids	10040	Installation Complete	5/30/2019	425 Lafayette Ave. NE	N	0.056	0.0231	0.0173	S	0.0404	0.052	0.0782	
48	887	ACD	Grand Rapids	10041	Installation Complete	5/28/2019	220 Crescent St. NE	W	0.0635	0.052	0.0745	E	0.061	0.0813	0.0406	
49	888	ACD	Grand Rapids	10012	Installation Complete	5/24/2019	25 Oakes St. SW	W	0.0924	0.0289	0.0404	E	0.0705	0.0668	0.0899	
50	891	ACD	Grand Rapids	10015	Installation Complete	5/24/2019	173 Lafayette Ave. SE	N	0.0406	0.0347	0.0986	S	0.0677	0.1558	0.1694	
51	892	ACD	Grand Rapids	10024	Installation Complete	5/29/2019	186 Monroe Ave. NW	N	0.0116	0.0289	0.0173	S	0.0058	0.0462	0.0231	
52	893	ACD	Grand Rapids	10008	Installation Complete	5/24/2019	307 5/5 Ionia Ave. SW	N	0.2688	0.0231	0.0058	S	0.0347	0.0231	0.0751	
53	894	ACD	Grand Rapids	10018	Installation Complete	5/29/2019	19 Fountain St. NW	N	0.0347	0.0867	0.0635	S	0.0347	0.0231	0.0462	
54	905	AT&T	Grand Rapids	GRRPD 022	Installation Complete	3/25/2019	329 Bridge St. NW	W	0.0693	0.052	0.0347	E	0.052	0.0578	0.0289	
55	908	ACD	Grand Rapids	14352	Installation Complete	6/6/2019	1531 Lake Dr. SE	N	0.0635	0.0578	0.0693	S	0.0347	0.0751	0.0578	

Notes:

1. The values are presented as a percentage of 50 watt/meter squared for occupational maximum permissible exposure and 10 watt/meter squared for non-occupational maximum permissible exposure
2. Direction refers to measurement parallel to street direction
3. Measurement at 6 feet above ground represents pedestrian height
4. Above measurements are for active sites as of 5-8-2020

Radio Frequency (RF) Power Density Testing - Occupational						
Max	0.2803	0.4404	0.3726	0.3929	0.2168	0.2710
Min	0.0058	0.0068	0.0058	0.0058	0.0116	0.0231
Median	0.0635	0.0404	0.0578	0.0462	0.0578	0.0693
Average	0.0708	0.0536	0.0654	0.0620	0.0728	0.0843

Comparison of Maximum Permissible Limits (MPE) vs. Maximum Actual Measurements												
FCC Limits for MPE vs. Actual Measurements				ICNIRP Limits for MPE vs. Actual Measurements >2-300GHz				Canada Limits for MPE vs. Actual Measurements				
Occupational Permissible Limit	5	mW/Cm2	50	W/M2	5	mW/Cm2	50	W/M2	5	mW/Cm2	50	W/M2
General Public Permissible Limit	1	mW/Cm2	10	W/M2	1	mW/Cm2	10	W/M2	1	mW/Cm2	10	W/M2
Max Measurement at 6 Feet Above Ground	0.0220	mW/Cm2	0.2202	W/M2	0.0220	mW/Cm2	0.2202	W/M2	0.0220	mW/Cm2	0.2202	W/M2
International Commission on Non-Ionizing Radiation Protection (ICNIRP)												

Attachment #3 - Radio Frequency (RF) Power Density Testing - Occupational & Non-Occupational

City of Grand Rapids/Small Cell Wireless Facilities Radio Frequency (RF) Power Density Testing - Occupational & Non-Occupational

Power Density Measurement Conversions (mW/Cm2) for Non-Occupational																				Results as Percentage (% of 10 Watts/Meter Squared) of Maximum Permissible Exposure (MPE) for FCC Non-Occupational Limits					
Measurements at 6 feet above Ground										Measurements at 6 feet above Ground															
Count	OBJECT ID	Small Cell	Pole Owner	Site ID	Direction	Distance from Pole			Direction	Distance from Pole			Direction	Distance from Pole			Direction	Distance from Pole							
						10 ft.	50 ft.	100 ft.		n	10 ft.	50 ft.		100 ft.	10 ft.	50 ft.		100 ft.	10 ft.	50 ft.	100 ft.				
1	927	ACD	Grand Rapids	10016M	N	0.001735	0.00231	0.003465	S	0.003465	0.00491	0.004045	N	0.1735	0.231	0.3465	S	0.3465	0.491	0.4045					
2	929	ACD	Grand Rapids	10022M	N	0.003755	0.004045	0.003175	S	0.00289	0.00231	0.003175	N	0.3755	0.4045	0.3175	S	0.289	0.231	0.3175					
3	930	ACD	Grand Rapids	10027M	W	0.003465	0.00202	0.0026	E	0.001735	0.006435	0.006775	W	0.3465	0.202	0.26	E	0.1735	0.6435	0.6775					
4	931	ACD	Grand Rapids	10028M	W	0.005775	0.0052	0.00202	E	0.003755	0.008665	0.008955	W	0.5775	0.52	0.202	E	0.3755	0.8665	0.8955					
5	933	ACD	Grand Rapids	10030M	W	0.003755	0.000865	0.00231	E	0.0026	0.001735	0.00549	W	0.3755	0.0865	0.231	E	0.26	0.1735	0.549					
6	934	ACD	Grand Rapids	10033M	N	0.001735	0.001445	0.001735	S	0.00231	0.0026	0.004045	N	0.1735	0.1445	0.1735	S	0.231	0.26	0.4045					
7	935	ACD	Grand Rapids	10035M	N	0.001735	0.001445	0.00289	S	0.000865	0.0026	0.00231	N	0.1735	0.1445	0.289	S	0.0865	0.26	0.231					
8	936	ACD	Grand Rapids	10037M	N	0.00058	0.001445	0.003175	S	0.001735	0.001155	0.001735	N	0.058	0.1445	0.3175	S	0.1735	0.1155	0.1735					
9	938	ACD	Grand Rapids	10060M	W	0.006355	0.001445	0.003465	E	0.000865	0.00202	0.0026	W	0.6355	0.1445	0.3465	E	0.0865	0.202	0.26					
10	939	ACD	Grand Rapids	10061M	W	0.000675	0.001155	0.0026	E	0.001155	0.00058	0.003755	W	0.0675	0.1155	0.26	E	0.1155	0.058	0.3755					
11	940	ACD	Grand Rapids	10084M	W	0.003175	0.00231	0.001155	E	0.001445	0.001735	0.001445	W	0.3175	0.231	0.1155	E	0.1445	0.1735	0.1445					
12	941	ACD	Grand Rapids	10090M	W	0.005775	0.004045	0.006355	E	0.00491	0.001155	0.003755	W	0.5775	0.4045	0.6355	E	0.491	0.1155	0.3755					
13	942	ACD	Grand Rapids	10091M	N	0.0052	0.006065	0.00462	S	0.00231	0.00491	0.008665	N	0.52	0.6065	0.462	S	0.231	0.491	0.8665					
14	943	ACD	Grand Rapids	14301M	N	0.004045	0.0026	0.00289	S	0.004045	0.004045	0.0026	N	0.4045	0.26	0.289	S	0.4045	0.4045	0.26					
15	944	ACD	Grand Rapids	14302M	N	0.004335	0.00289	0.00058	S	0.001735	0.00289	0.0026	N	0.4335	0.289	0.058	S	0.1735	0.289	0.26					
16	945	ACD	Grand Rapids	14305M	N	0.00289	0.00231	0.0052	S	0.0052	0.0026	0.00491	N	0.289	0.231	0.52	S	0.52	0.26	0.491					
17	946	ACD	Grand Rapids	14306M	N	0.001445	0.001735	0.003465	S	0.001735	0.003755	0.004045	N	0.1445	0.1735	0.3465	S	0.1735	0.3755	0.4045					
18	947	ACD	Grand Rapids	14308M	N	0.003755	0.00202	0.001735	S	0.0026	0.004335	0.003175	N	0.3755	0.202	0.1735	S	0.26	0.4335	0.3175					
19	948	ACD	Grand Rapids	14317M	W	0.004335	0.000865	0.001445	E	0.000865	0.0026	0.00289	W	0.4335	0.0865	0.1445	E	0.0865	0.26	0.289					
20	949	ACD	Grand Rapids	14323M	N	0.00462	0.00202	0.001445	S	0.00058	0.000865	0.001155	N	0.462	0.202	0.1445	S	0.058	0.0865	0.1155					
21	950	ACD	Grand Rapids	14350M	N	0.0026	0.00202	0.003175	S	0.004045	0.00462	0.00202	N	0.26	0.202	0.3175	S	0.4045	0.462	0.202					
22	951	ACD	Grand Rapids	16401M	N	0.004065	0.00788	0.00491	S	0.003175	0.00231	0.003465	N	0.4065	0.788	0.491	S	0.3175	0.231	0.3465					
23	952	ACD	Grand Rapids	16402M	N	0.003175	0.00202	0.003755	S	0.0026	0.003755	0.0052	N	0.3175	0.202	0.3755	S	0.26	0.3755	0.52					
24	953	ACD	Grand Rapids	16703M	N	0.003465	0.001445	0.003465	S	0.001015	0.00231	0.00231	N	0.3465	0.1445	0.3465	S	0.1015	0.231	0.231					
25	954	ACD	Grand Rapids	16705M	N	0.00491	0.003755	0.009535	S	0.001155	0.00231	0.003755	N	0.491	0.3755	0.9535	S	0.1155	0.231	0.3755					
26	955	ACD	Grand Rapids	10057M	N	0.00029	0.0026	0.003465	S	0.0026	0.001155	0.004335	N	0.029	0.26	0.3465	S	0.26	0.1155	0.4335					
27	956	ACD	Grand Rapids	16704M	N	0.001735	0.00203	0.00745	S	0.00474	0.00813	0.00779	N	0.1735	0.203	0.745	S	0.474	0.813	0.779					
28	957	ACD	Grand Rapids	10054M	W	0.00549	0.004045	0.00231	E	0.003755	0.00809	0.001445	W	0.549	0.4045	0.231	E	0.3755	0.809	0.1445					
29	958	ACD	Parks	14354M	N	0.003465	0.0026	0.00058	S	0.001155	0.0026	0.00231	N	0.3465	0.26	0.058	S	0.1155	0.26	0.231					
30	959	ACD	Grand Rapids	14352M	N	0.003175	0.00289	0.003465	S	0.001735	0.003755	0.00289	N	0.3175	0.289	0.3465	S	0.1735	0.3755	0.289					
31	960	ACD	Grand Rapids	14307M	W	0.004045	0.00058	0.001445	E	0.001735	0.00202	0.00202	W	0.4045	0.058	0.1445	E	0.1735	0.202	0.202					
32	2536	AT&T	CE	GRRPD 028	W	0.003755	0.003465	0.003175	E	0.00231	0.005775	0.00722	W	0.3755	0.3465	0.3175	E	0.231	0.5775	0.722					
33	2537	AT&T	CE	GRRPD -17	W	0.0026	0.001445	0.001735	E	0.000865	0.0026	0.001735	W	0.26	0.1445	0.1735	E	0.0865	0.26	0.1735					
34	8	Mobilite	Grand Rapids	DE90XS475-A	W	0.001155	0.00058	0.00289	E	0.003465	0.003755	0.0026	W	0.1155	0.058	0.289	E	0.3465	0.3755	0.26					
35	16	Mobilite	Grand Rapids	DE90XS1YQ-D	N	0.003175	0.00034	0.00508	S	0.009825	0.00237	0.00745	N	0.3175	0.034	0.508	S	0.9825	0.237	0.745					
36	41	ACD	Grand Rapids	14301	N	0.004045	0.0026	0.00289	S	0.004045	0.004045	0.0026	N	0.4045	0.26	0.289	S	0.4045	0.4045	0.26					
37	46	ACD	Grand Rapids	14304	N	0.00058	0.004045	0.001735	S	0.00231	0.00202	0.001155	N	0.058	0.4045	0.1735	S	0.231	0.202	0.1155					
38	48	ACD	Grand Rapids	14311	N	0.001155	0.001735	0.001445	S	0.00029	0.001445	0.00289	N	0.1155	0.1735	0.1445	S	0.029	0.1445	0.289					
39	57	AT&T	Grand Rapids	GRRPD 016	W	0.00202	0.00231	0.005775	E	0.00462	0.00289	0.004335	W	0.202	0.231	0.5775	E	0.462	0.289	0.4335					
40	468	ACD	Grand Rapids	10010	W	0.00231	0.003465	0.0026	E	0.001445	0.003175	0.006355	W	0.231	0.3465	0.26	E	0.1445	0.3175	0.6355					
41	469	ACD	Grand Rapids	10019	N	0.0026	0.00202	0.000675	S	0.00813	0.01084	0.012195	N	0.26	0.202	0.0675	S	0.813	1.084	1.2195					
42	470	ACD	Grand Rapids	10034	W	0.00231	0.000865	0.0026	E	0.00217	0.003755	0.003575	W	0.231	0.0865	0.26	E	0.217	0.3755	0.3575					
43	471	ACD	Grand Rapids	10039	W	0.014015	0.02202	0.01863	E	0.019645	0.00813	0.004495	W	1.4015	2.202	1.863	E	1.9645	0.813	0.4495					
44	472	ACD	Grand Rapids	10014	N	0.00745	0.001445	0.00231	S	0.00289	0.004045	0.003465	N	0.745	0.1445	0.231	S	0.289	0.4045	0.3465					
45	473	ACD	Grand Rapids	14303	W	0.004045	0.000865	0.004065	E	0.00813	0.006775	0.01355	W	0.4045	0.0865	0.4065	E	0.813	0.6775	1.355					

Attachment #3 - Radio Frequency (RF) Power Density Testing - Occupational & Non-Occupational

City of Grand Rapids/Small Cell Wireless Facilities Radio Frequency (RF) Power Density Testing - Occupational & Non-Occupational

Power Density Measurement Conversions (mW/Cm2) for Non-Occupational					Results as Percentage (% of 10 Watts/Meter Squared) of Maximum Permissible Exposure (MPE) for FCC Non-Occupational Limits															
Measurements at 6 feet above Ground					Measurements at 6 feet above Ground															
Count	OBJECT ID	Small Cell	Pole Owner	Site ID	Direction	Distance from Pole			Direction	Distance from Pole			Direction	Distance from Pole			Direction	Distance from Pole		
						10 ft.	50 ft.	100 ft.		10 ft.	50 ft.	100 ft.		10 ft.	50 ft.	100 ft.				
46	477	ACD	Grand Rapids	10021	W	0.00289	0.000865	0.003385	E	0.0057	0.006435	0.012195	W	0.289	0.0865	0.3385	E	0.57	0.6435	1.2195
47	478	ACD	Grand Rapids	10040	N	0.0028	0.001155	0.000865	S	0.00202	0.0026	0.00391	N	0.28	0.1155	0.0865	S	0.202	0.26	0.391
48	887	ACD	Grand Rapids	10041	W	0.003175	0.0026	0.003725	E	0.00305	0.004065	0.00203	W	0.3175	0.26	0.3725	E	0.305	0.4065	0.203
49	888	ACD	Grand Rapids	10012	W	0.00462	0.001445	0.00202	E	0.003525	0.00334	0.004495	W	0.462	0.1445	0.202	E	0.3525	0.334	0.4495
50	891	ACD	Grand Rapids	10015	N	0.00203	0.001735	0.00493	S	0.003385	0.00779	0.00847	N	0.203	0.1735	0.493	S	0.3385	0.779	0.847
51	892	ACD	Grand Rapids	10024	N	0.00058	0.001445	0.000865	S	0.00029	0.00231	0.001155	N	0.058	0.1445	0.0865	S	0.029	0.231	0.1155
52	893	ACD	Grand Rapids	10008	N	0.01344	0.001155	0.00029	S	0.001735	0.001155	0.003755	N	1.344	0.1155	0.029	S	0.1735	0.1155	0.3755
53	894	ACD	Grand Rapids	10018	N	0.001735	0.004335	0.003175	S	0.001735	0.001155	0.00231	N	0.1735	0.4335	0.3175	S	0.1735	0.1155	0.231
54	905	AT&T	Grand Rapids	GRRPD 022	W	0.003465	0.0026	0.001735	E	0.0026	0.00289	0.001445	W	0.3465	0.26	0.1735	E	0.26	0.289	0.1445
55	908	ACD	Grand Rapids	14352	N	0.003175	0.00289	0.003465	S	0.001735	0.003755	0.00289	N	0.3175	0.289	0.3465	S	0.1735	0.3755	0.289

Radio Frequency (RF) Power Density Testing - Non-Occupational												
Max	0.0140	0.0220	0.0186	0.0196	0.0108	0.0136	1.4015	2.2020	1.8630	1.9645	1.0840	1.3550
Min	0.0003	0.0003	0.0003	0.0003	0.0006	0.0012	0.0290	0.0340	0.0290	0.0290	0.0580	0.1155
Median	0.0032	0.0020	0.0029	0.0023	0.0029	0.0035	0.3175	0.2020	0.2890	0.2310	0.2890	0.3465
Average	0.0035	0.0027	0.0033	0.0031	0.0036	0.0042	0.3540	0.2682	0.3272	0.3099	0.3638	0.4217

Measurement Parameters			
Instrument: Narda NBM-550-S with FCC probe #EA5091			
Measurements made at 6 feet above ground at 10 feet, 50 feet and 100 feet from the pole/cell base			
Measurements are broadband base and account for radio frequencies ranging from 300KHz to 50GHz			
Maximum Permissible Exposure (MPE) Power Densities in Watts/Meter Squared			
	FCC (1.5-100GHz)	INCIRP (2-300GHz)	Canada (6-150GHz)
Occupational	50	50	50
General Public	10	10	10