

Cellular mast emissions survey: Rue des Varvots



Document details

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1 Executive summary

The Jersey Competition and Regulatory Authority or JCRA regularly monitors emission levels from the cellular masts in Jersey¹ to ensure the mobile network operators who operate their services from those masts comply with their license obligations in terms of power levels and that the levels from the sites meet the internationally recognised standards and guidelines regarding health and safety limits for the public.

In 2017, the JCRA commissioned surveys to measure the electromagnetic field (EMF) emission levels at all the sites hosting mobile telecommunication equipment within the island. Further surveys have been conducted in each subsequent year focussing on new sites, those where significant changes have been made by the operators or those where the public have raised concerns to the JCRA in the previous year. This report presents the results of the survey conducted at the Rue des Varvots site in 2025.

In 2025, the Jersey mobile network operators have launched their first commercial 5G services. This year's audits therefore include the frequency bands used for 5G, noting however that not all sites currently have 5G transmitting equipment.

The Rue des Varvots site was used by a single operator at the time of the survey: JT. Surveys were conducted at all cellular frequency bands (700, 800, 900, 1800, 2100, 2600 and 3400MHz) for all mobile cellular technologies (2G, 3G, 4G and 5G) and for all three cellular operators as a routine procedure. Even though the reported levels are expected to be predominantly emitted from this site, the test equipment does not discriminate between nearby sites which means that the levels are cumulated over all site emissions detected by the test instrument.

The survey established that the emission levels around the site were very low and well below the safety limits for the public advised by internationally recognised standards.

The values shown hereafter are the maximum levels recorded around the site following a peak search. The levels were found to be lower at all the other locations round this site. The recorded values are true at the time of testing and can go up or down depending on the level of user activity on the site.

The total Exposure Quotient (EQ) for the site recorded across all detected cellular frequency bands is given at the bottom of the summary table below. A total EQ close to 1 (one) for the site would mean that emission levels approach the safety limit advised by ICNIRP in their guidelines.

Table 1 – Total EQ by frequency band

Site Name	Band [MHz]	Max E-field in band [V/m]	Operator at Max E-field	ICNIRP Limit Relative to Max E-field	Band Exposure Quotient	Band EQ Relative to ICNIRP
Rue des Varvots	700	0.1302	JT	299	0.000129896	1/ 7698
	800	0.4476	JT	87	0.001943865	1/ 514
	900	1.531	JT	27	0.001732855	1/ 577
	1800	0.2166	JT	269	0.000264441	1/ 3782
	2100	0.3993	JT	153	0.000383568	1/ 2607
	2600	0.2747	JT	222	0.000581557	1/ 1720
	3400	0.003886	Sure	10008	8.64951E-07	1/ 1156135
Total Site EQ					0.005037048	1/ 199

¹ Prior to 1 July 2020, the JCRA and the Guernsey Competition & Regulatory Authority coordinated their activities in the Channel Islands as the Channel Islands Competition Regulatory Authorities (CICRA). Earlier reports may refer to CICRA rather than JCRA.

The results show that the total EQ was measured at 0.503% of ICNIRP's *General Public* Reference Levels (or about 1/199) and the site therefore remains safe.

The graphs which follow show the activity on all the frequency bands surveyed. The plots are colour-coded for easy identification of the operator. On each plot, the solid red line represents the Airtel activity, the light blue is JT, the dark blue is Sure, the light grey is Clear (Clear only operates in the 2100MHz band) and the green line is Newtel (Newtel only operates a license in the 3400MHz band). Note however that not all operators are present in each frequency band but the colour assigned to each operator remains the same throughout.

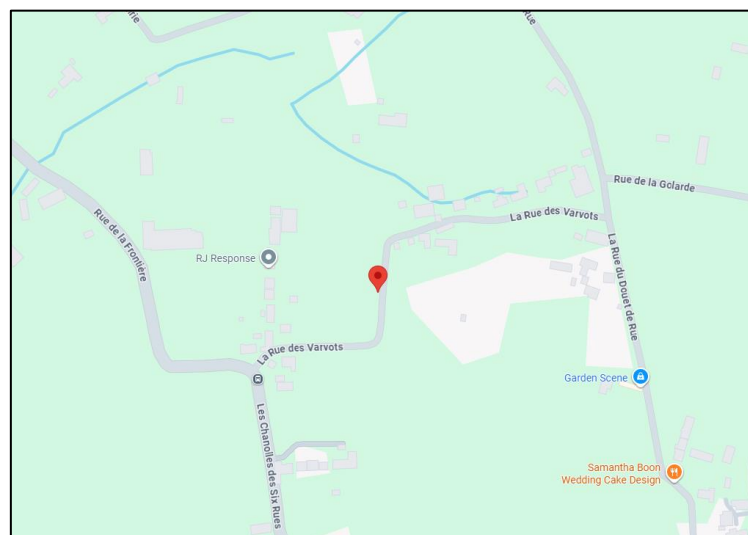
ICNIRP's *General Public* Reference Level is also shown as the dashed line at the top of the graphs. For clarity, each step on the vertical axis represents a 10-fold increase. The same scaling and colour scheme will be used on the plots throughout this report.

The graphs are also supported by the equivalent statistical tables derived from the measured levels at the site for added clarity.

2 Site details

2.1 Site location

Figure 1 – Map of the site area



Site name:	Rue des Varvots
Site address:	La Rue des Varvots
Site latitude:	49.23207
Site longitude:	-2.15306

2.2 Site description

Operators:	JT
Antenna types:	Omni Directional Antenna
Approximate height:	8m
Site type:	Monopole
Description:	The antenna at Rue des Varvots is a monopole, located close to the side of the building.

2.3 Site photo

Figure 2 – Location of the peak where emission levels were measured.



2.4 Test location

Figure 3 – Survey area with spot measurement markers



As part of the peak search procedure, spot measurements were taken at locations around the antennas as shown on the above sketch.

The blue triangle is the antenna location, yellow lines are the walk route, the green circles are intermediate locations measured at during the peak search and the red circle is the spot where the highest spot search reading was obtained and where the detailed survey was carried out.

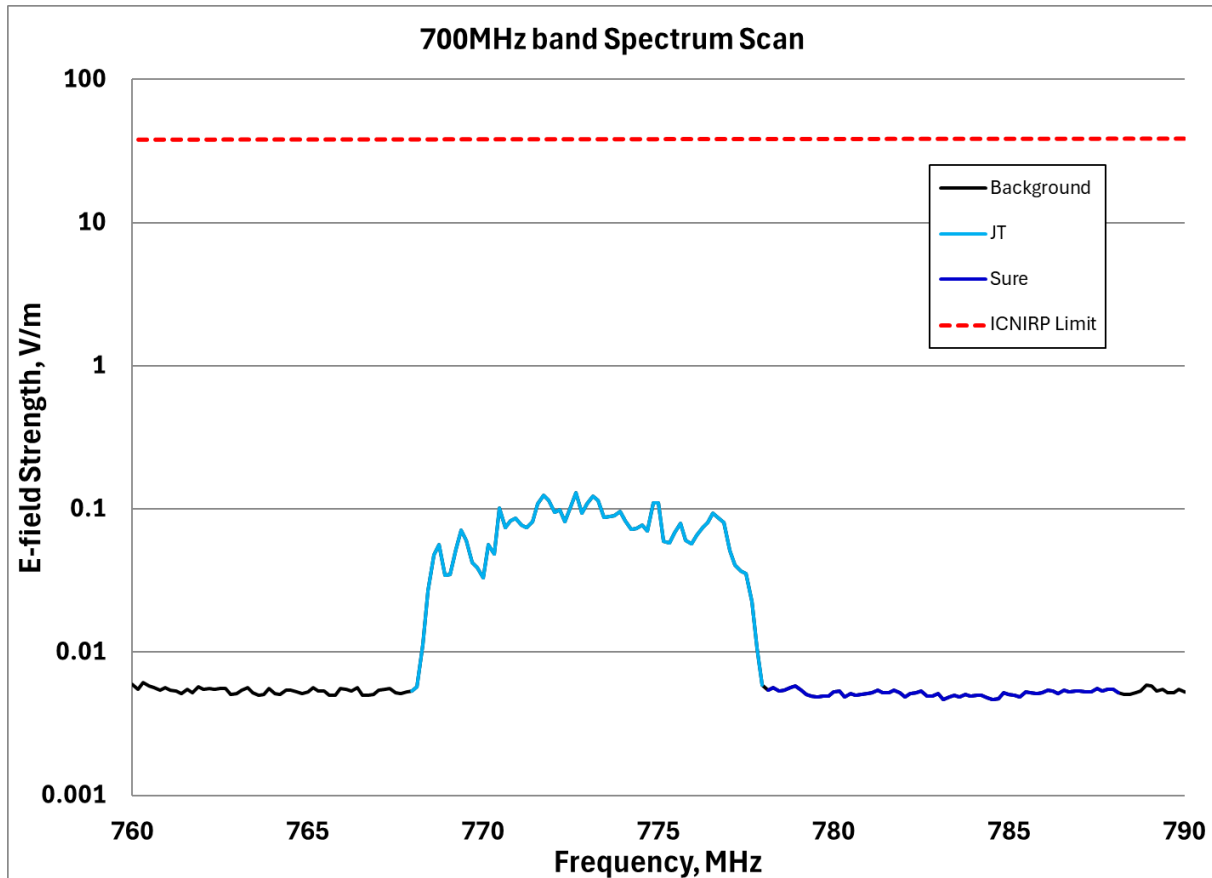
The spectrum readings reported further down this report were recorded over a period of six minutes as advised by ICNIRP.

3 Survey results

3.1 700MHz band

The graph for the 700MHz activity is shown below with the E-field strength levels measured at the site plotted on a logarithmic scale.

Figure 4 – 700MHz band spectrum scan



No field level recorded across the band was higher than 0.1302 V/m (JT), which is 299 times smaller than the ICNIRP Reference Level.

The EQ results for the 700MHz band are shown below.

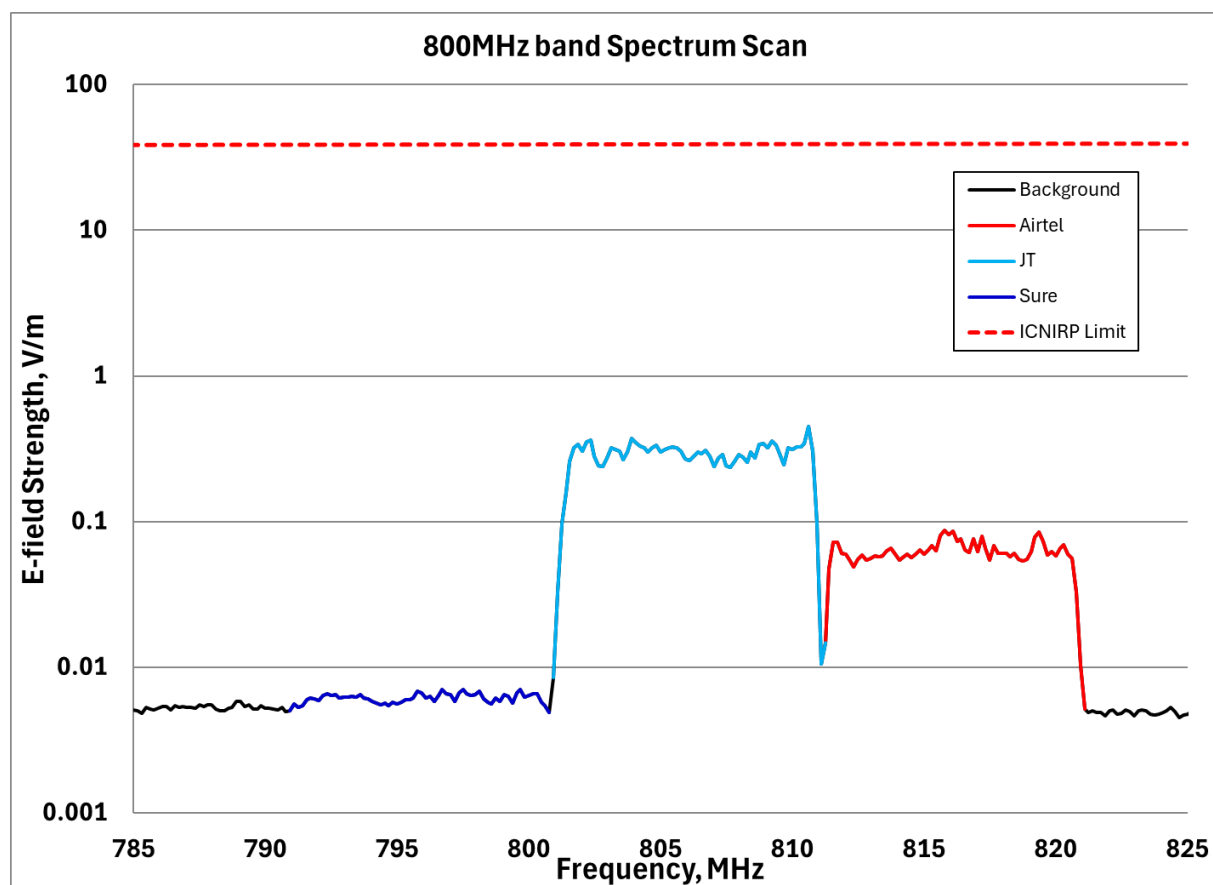
Table 2 – 700MHz band exposure quotient at Rue des Varvots

Site Name	Operator	Band [MHz]	Max E-field Strength [V/m]	ICNIRP Limit Relative to Max E-field	Band Exposure Quotient	Band EQ Relative to ICNIRP
Rue des Varvots	JT	700	0.1302	299	0.000129307	1/ 7734
	Sure		0.005772	6738	5.88978E-07	1/ 1697855
	total band EQ					0.000129896

3.2 800MHz band

The graph for the 800MHz activity is shown below.

Figure 5 – 800MHz band spectrum scan



No field level recorded across the band was higher than 0.4476 V/m (JT), which is 87 times smaller than the ICNIRP Reference Level.

The EQ results for the 800MHz band are shown below.

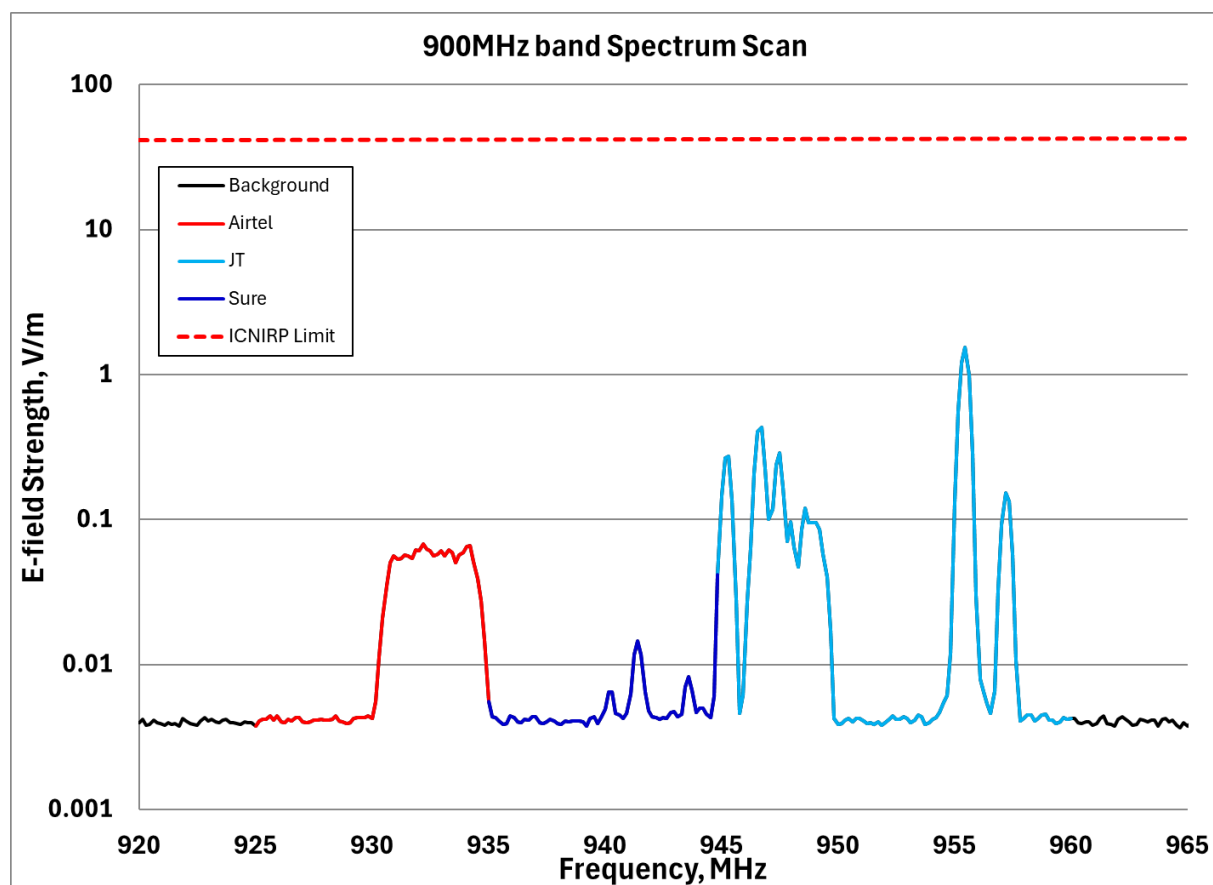
Table 3 – 800MHz band exposure quotient at Rue des Varvots

Site Name	Operator	Band [MHz]	Max E-field Strength [V/m]	ICNIRP Limit Relative to Max E-field	Band Exposure Quotient	Band EQ Relative to ICNIRP
Rue des Varvots	Airtel	800	0.08751	444	8.07499E-05	1/ 12384
	JT		0.4476	87	0.001862286	1/ 537
	Sure		0.00855	4549	8.28984E-07	1/ 1206296
total band EQ					0.001943865	1/ 514

3.3 900MHz band

The graph for the 900MHz activity is shown below.

Figure 6 – 900MHz band spectrum scan



No field level recorded across the band was higher than 1.531 V/m (JT), which is 27 times smaller than the ICNIRP Reference Level.

The EQ results for the 900MHz band are shown below.

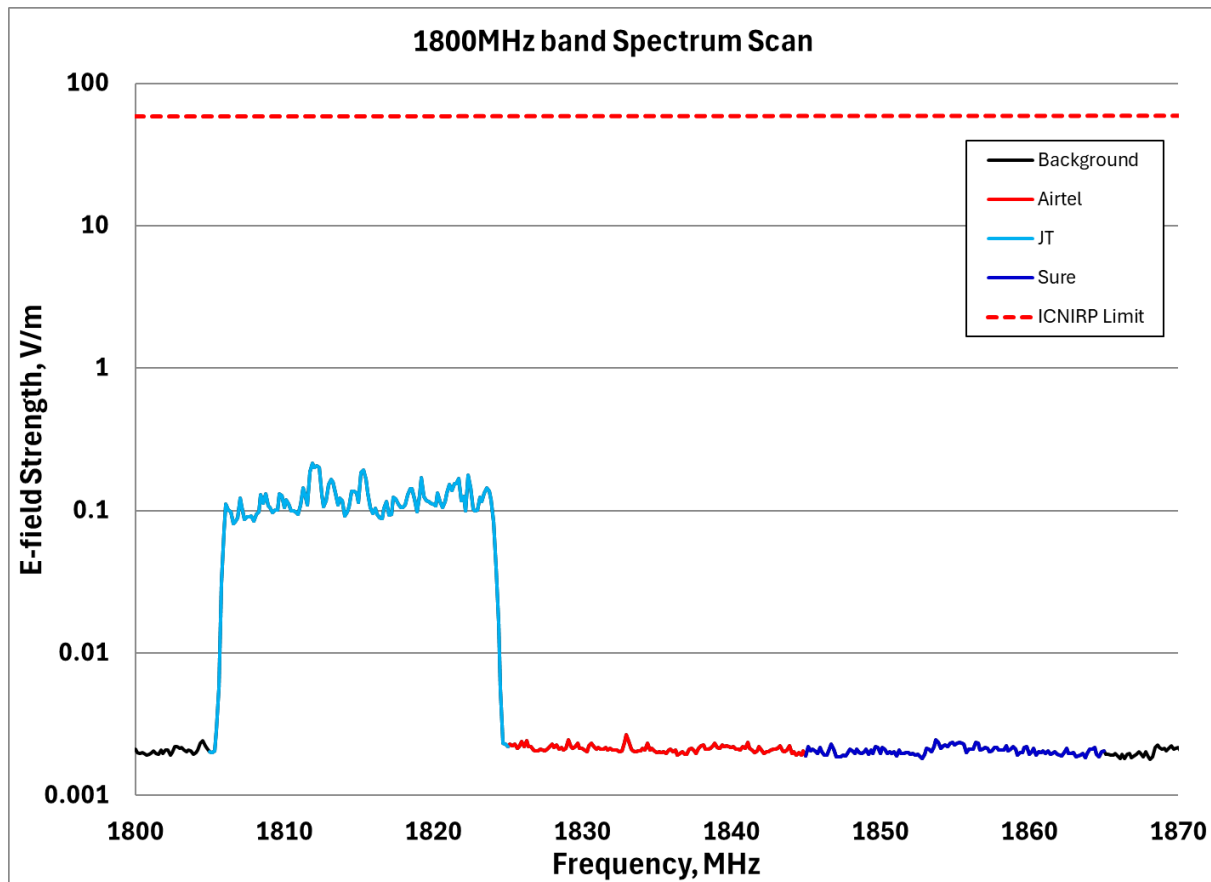
Table 4 – 900MHz band exposure quotient at Rue des Varvots

Site Name	Operator	Band [MHz]	Max E-field Strength [V/m]	ICNIRP Limit Relative to Max E-field	Band Exposure Quotient	Band EQ Relative to ICNIRP
Rue des Varvots	Airtel	900	0.06789	608	2.45012E-05	1/ 40814
	JT		1.531	27	0.001707354	1/ 586
	Sure		0.04185	986	9.99884E-07	1/ 1000116
total band EQ					0.001732855	1/ 577

3.4 1800MHz band

The graph for the 1800MHz activity around the site is shown below.

Figure 7 – 1800MHz spectrum scan



No field level recorded across the band was higher than 0.2166 V/m (JT), which is 269 times smaller than the ICNIRP Reference Level.

The EQ results for the 1800MHz band are shown below.

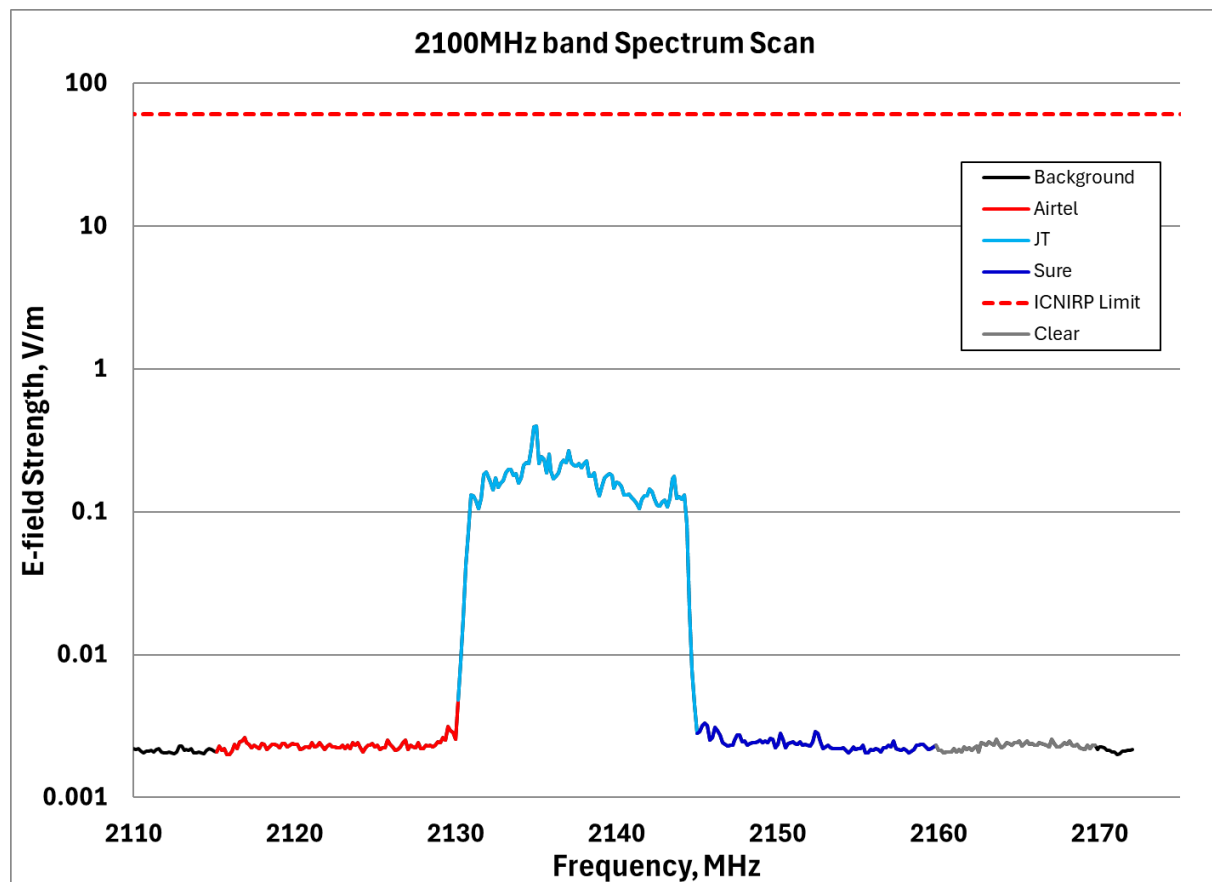
Table 5 – 1800MHz band exposure quotient at Rue des Varvots

Site Name	Operator	Band [MHz]	Max E-field Strength [V/m]	ICNIRP Limit Relative to Max E-field	Band Exposure Quotient	Band EQ Relative to ICNIRP
Rue des Varvots	Airtel	1800	0.002679	21775	8.50201E-08	1/ 11761923
	JT		0.2166	269	0.000264278	1/ 3784
	Sure		0.002458	23733	7.86167E-08	1/ 12719946
total band EQ					0.000264441	1/ 3782

3.5 2100MHz band

The graph for the 2100MHz band activity around the site is shown below.

Figure 8 – 2100MHz band spectrum scan



No field level recorded across the band was higher than 0.3993 V/m (JT), which is 153 times smaller than the ICNIRP Reference Level.

The EQ results for the 2100MHz band are shown below.

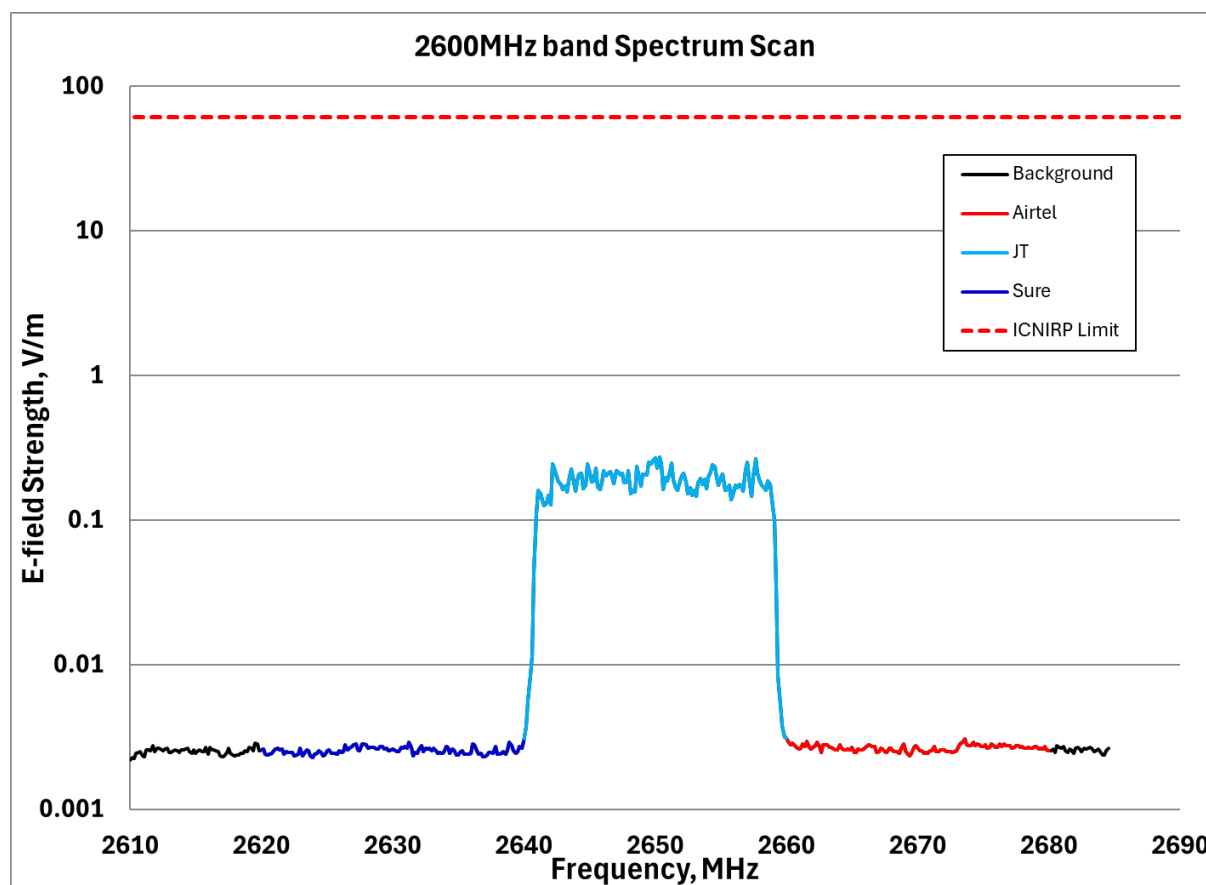
Table 6 – 2100MHz band exposure quotient at Rue des Varvots

Site Name	Operator	Band [MHz]	Max E-field Strength [V/m]	ICNIRP Limit Relative to Max E-field	Band Exposure Quotient	Band EQ Relative to ICNIRP
Rue des Varvots	Airtel	2100	0.004811	12679	7.28722E-08	1/ 13722649
	Clear		0.002561	23819	4.56457E-08	1/ 21907879
	JT		0.3993	153	0.000383375	1/ 2608
	Sure		0.003316	18396	7.44433E-08	1/ 13433046
total band EQ					0.000383568	1/ 2607

3.6 2600MHz band

The graph for the 2600MHz band activity around the site is shown below.

Figure 9 – 2600MHz band spectrum scan



No field level recorded across the band was higher than 0.2747 V/m (JT), which is 222 times smaller than the ICNIRP Reference Level.

The EQ results for the 2600MHz band are shown below.

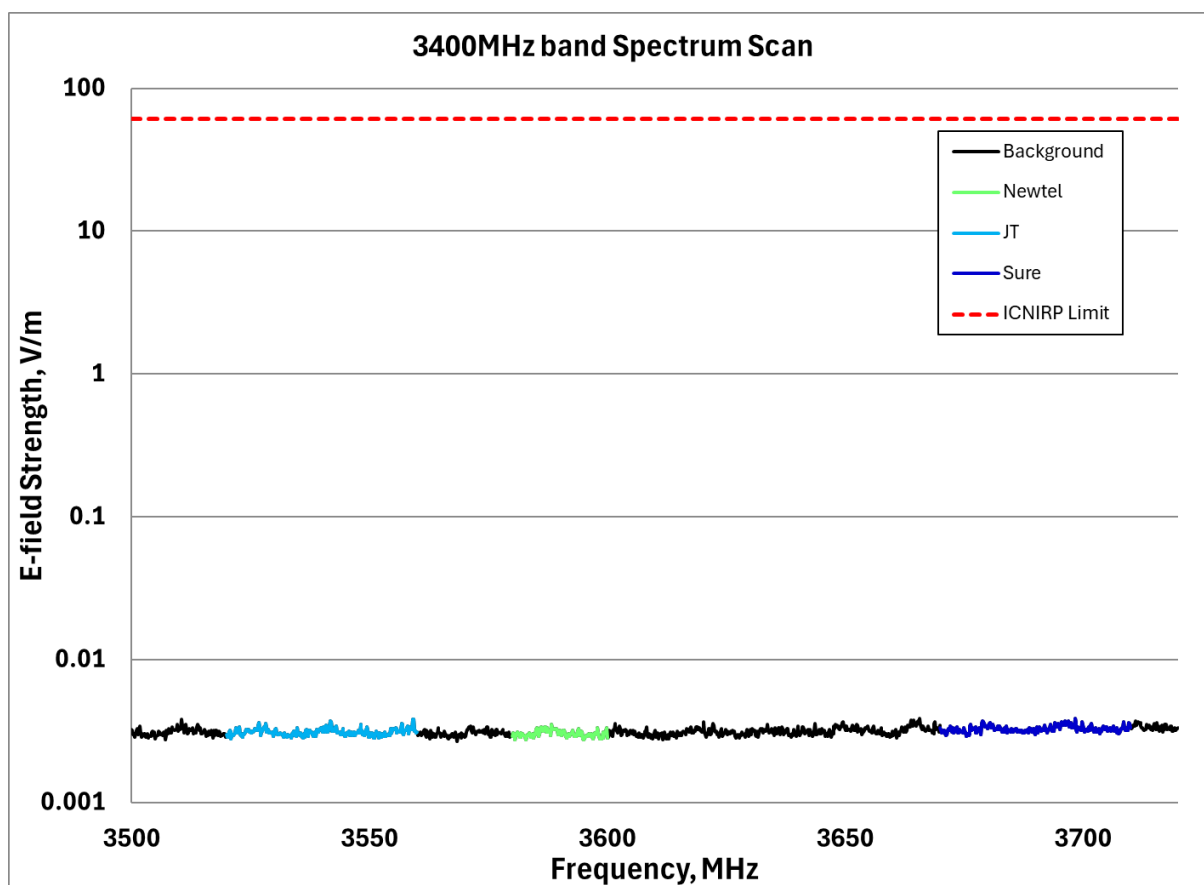
Table 7 – 2600MHz band exposure quotient at Rue des Varvots

Site Name	Operator	Band [MHz]	Max E-field Strength [V/m]	ICNIRP Limit Relative to Max E-field	Band Exposure Quotient	Band EQ Relative to ICNIRP
Rue des Varvots	Airtel	2600	0.003118	19564	1.23577E-07	1/ 8092127
	JT		0.2747	222	0.00058132	1/ 1720
	Sure		0.002961	20601	1.13285E-07	1/ 8827310
total band EQ					0.000581557	1/ 1720

3.7 3400MHz band

The graph for the 3400-3800MHz band activity around the site is shown below.

Figure 10 – 3400MHz band spectrum scan



No meaningful activity was recorded at this site in the 3400MHz band. The EQ results for the band are shown below.

Table 8 – 3400MHz band exposure quotient at Rue des Varvots

Site Name	Operator	Band [MHz]	Max E-field Strength [V/m]	ICNIRP Limit Relative to Max E-field	Band Exposure Quotient	Band EQ Relative to ICNIRP
Rue des Varvots	Newtel	3400	0.003516	11061	1.59431E-07	1/ 6272321
	JT		0.003822	10176	3.34456E-07	1/ 2989929
	Sure		0.003886	10008	3.71064E-07	1/ 2694952
total band EQ					8.64951E-07	1/ 1156135

END