

Cellular mast emissions survey: St Aubin Pier



Document details

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Survey engineer	Aleem Alvi	
Report compiled by	Sonia Khan	
Reviewed and approved by	Bachir Belloul	

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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 St Aubin Pier 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 St Aubin Pier site was used by two operators at the time of the survey: Airtel and Sure. 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 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
St Aubin Pier	700	0.01231	JT	3159	4.8366E-06	1/ 206757
	800	1.368	Airtel	28	0.024946654	1/ 40
	900	1.825	Airtel	23	0.011556636	1/ 87
	1800	0.9102	Airtel	64	0.005443706	1/ 184
	2100	0.1884	Sure	324	0.000169339	1/ 5905
	2600	0.009454	Sure	6452	2.04158E-06	1/ 489817
	3400	0.007298	Sure	5329	3.28636E-06	1/ 304288
Total Site EQ					0.0421265	1/ 24

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 4.21% of ICNIRP's *General Public* Reference Levels (or about 1/24) 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.

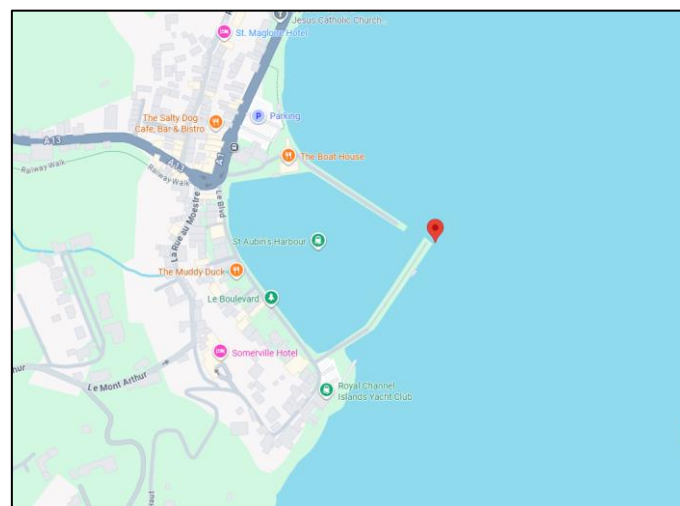
ICNIRP's *General Public* Reference Level is also shown as the dashed line at the top of the graphs. For clarity, each step on the vertical axis represents a 10-fold increase. The same scaling and colour scheme will be used on the plots throughout this report.

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:	St Aubin Pier
Site address:	St Aubin's Harbour off La Route Neuve
Site latitude:	49.18656
Site longitude:	-2.16689

2.2 Site description

Operators:	Airtel / Sure
Antenna types:	2 Monopoles
Approximate height:	5m
Site type:	Rooftop
Description:	The antennas are located on external poles on the outside of a small portacabin building at the end of the pier. Public access to the antenna is possible but getting close to the antenna without climbing aid is not possible.

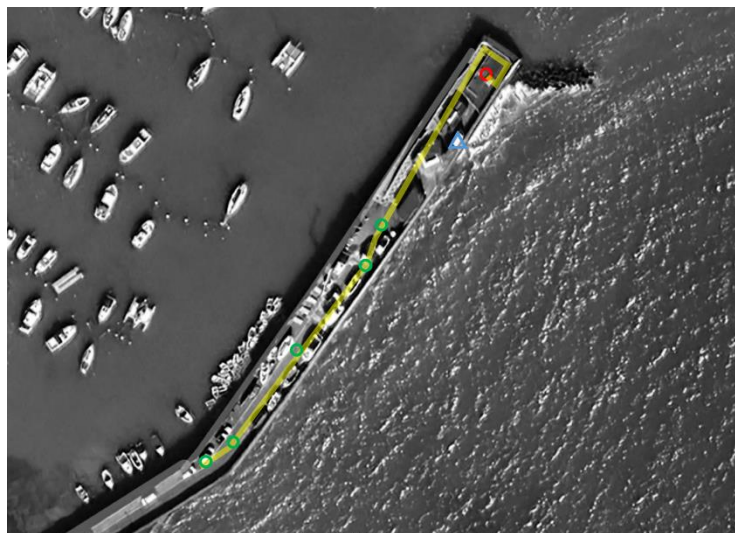
2.3 Site photo

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.

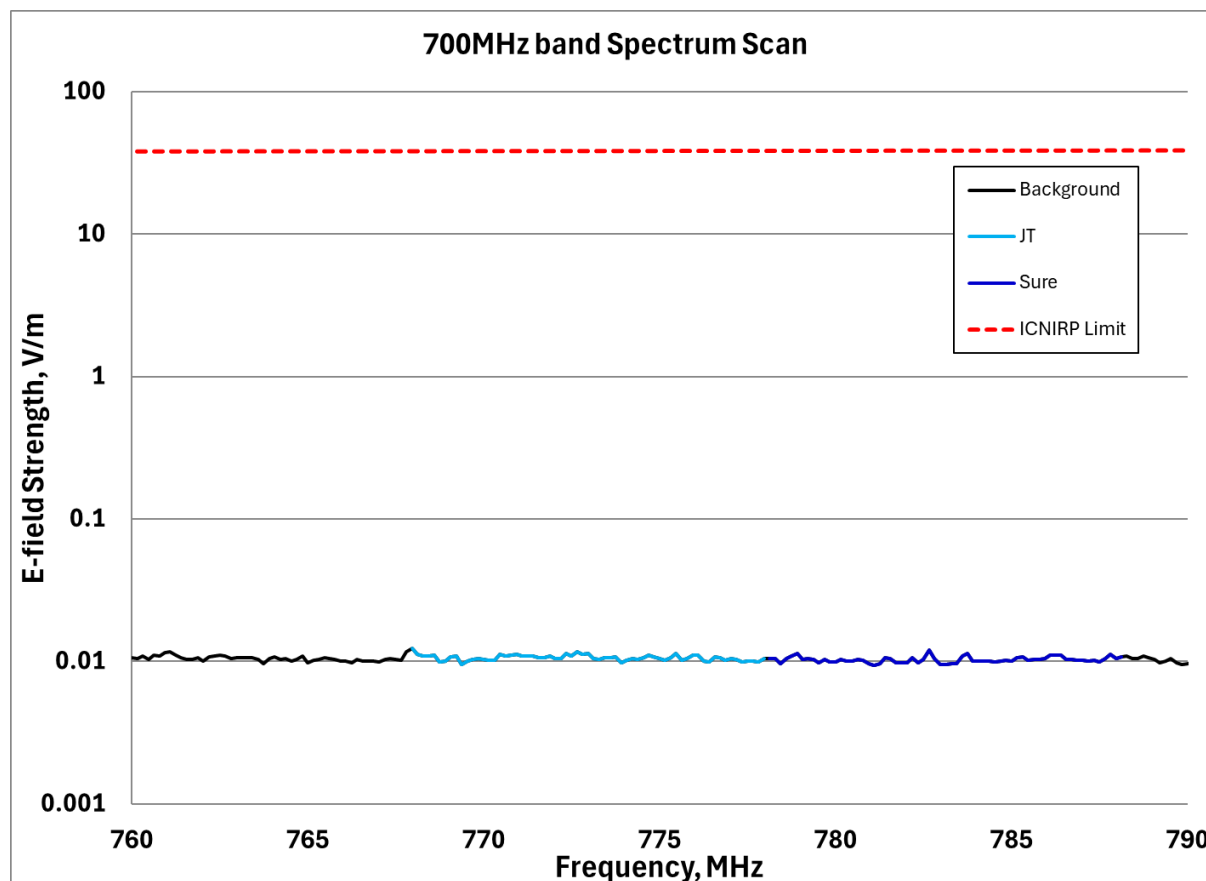
The spectrum readings reported further down this report were recorded over a period of six minutes as advised by ICNIRP.

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 meaningful activity was recorded at this site on the 700MHz band. The EQ results for the band are shown below.

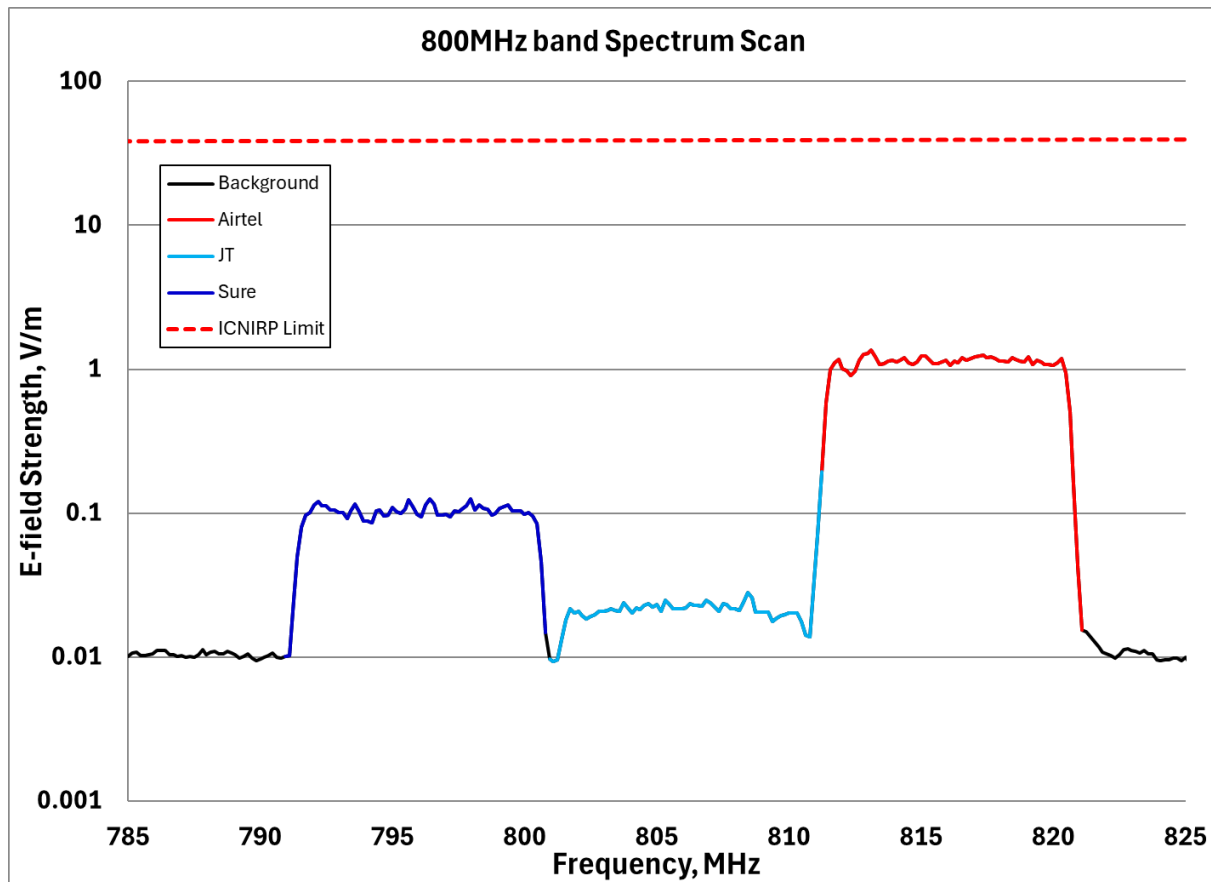
Table 2 – 700MHz band exposure quotient at St Aubin Pier

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
St Aubin Pier	JT	700	0.01231	3159	2.50983E-06	1/ 398433
	Sure		0.01197	3249	2.32676E-06	1/ 429781
total band EQ					4.8366E-06	1/ 206757

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 1.368 V/m (Airtel), which is 28 times smaller than the ICNIRP Reference Level.

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

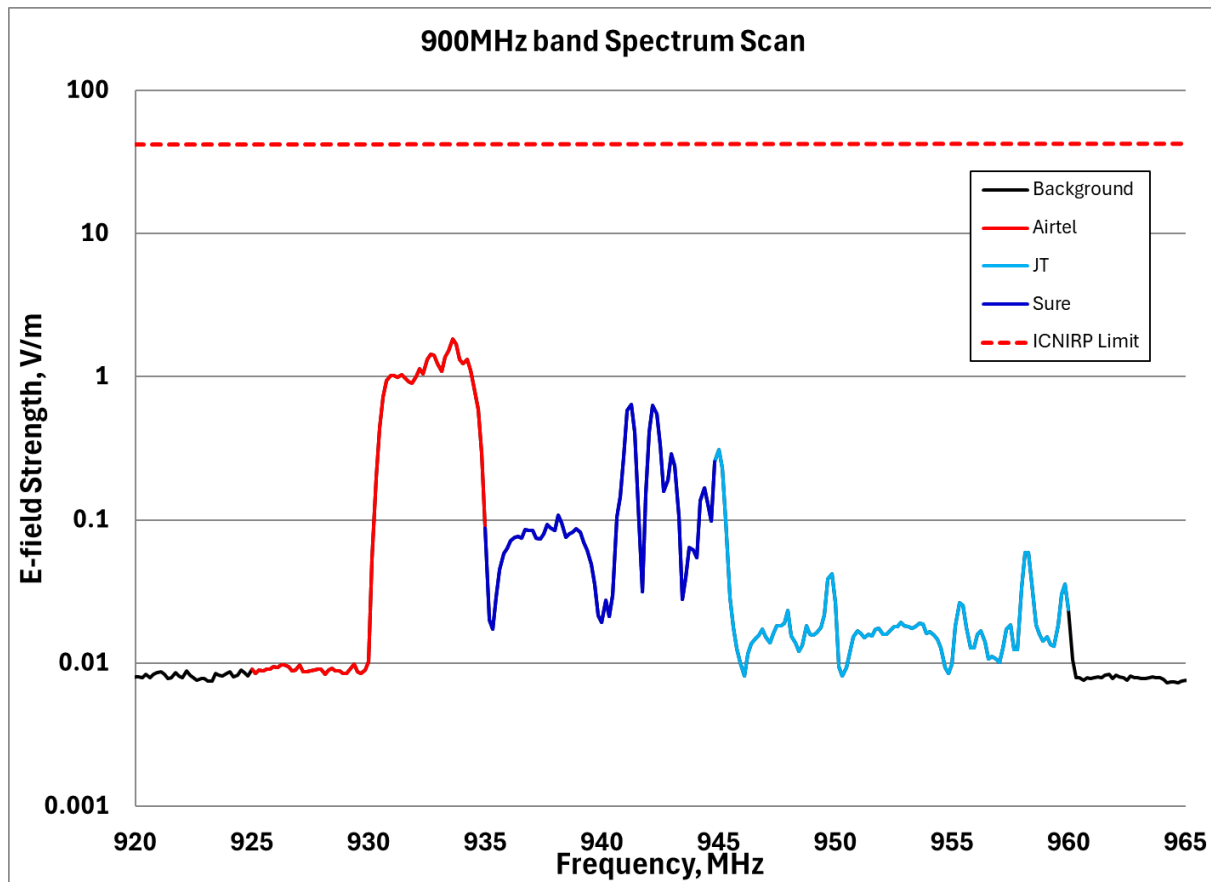
Table 3 – 800MHz band exposure quotient at St Aubin Pier

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
St Aubin Pier	Airtel	800	1.368	28	0.024712131	1/ 40
	JT		0.1946	200	2.3402E-05	1/ 42731
	Sure		0.1257	309	0.000211121	1/ 4737
total band EQ					0.024946654	1/ 40

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 1.825 V/m (Airtel), which is 23 times smaller than the ICNIRP Reference Level.

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

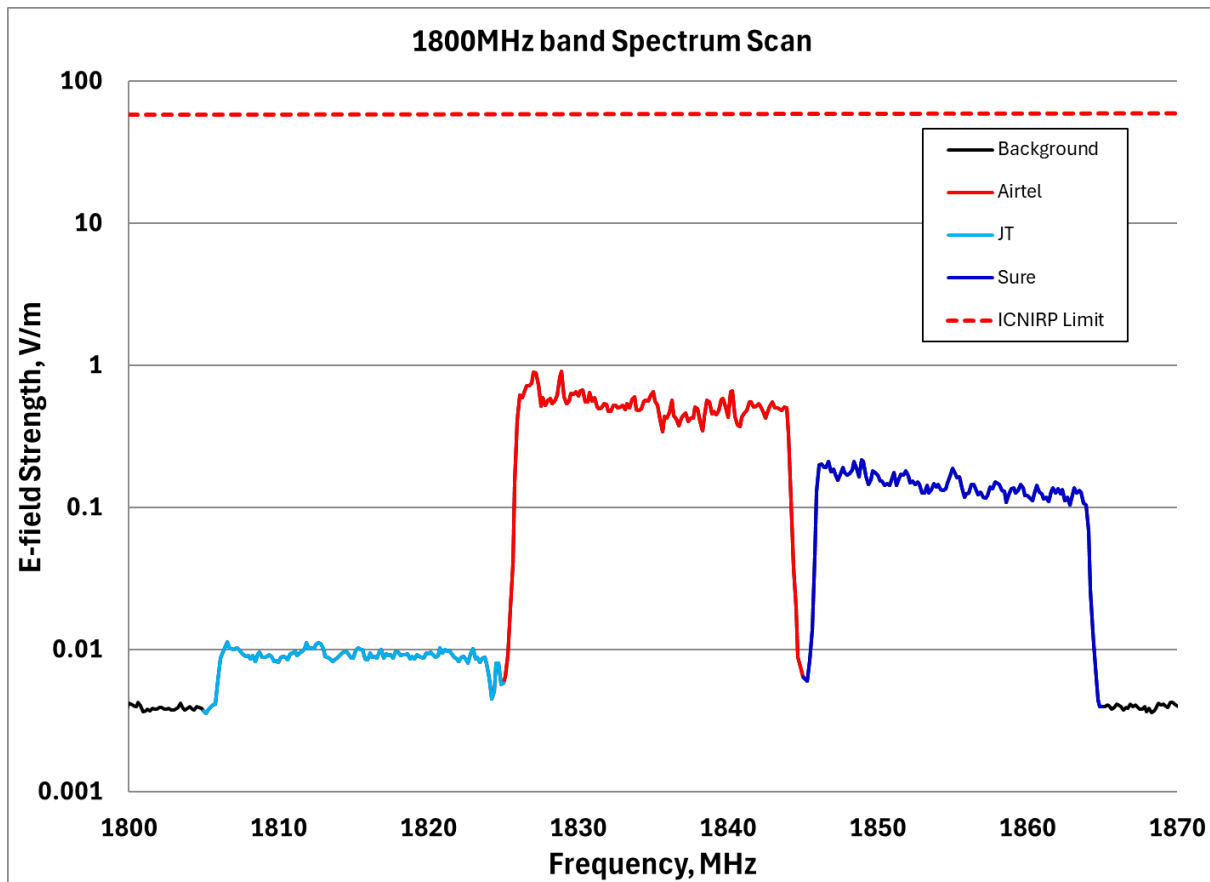
Table 4 – 900MHz band exposure quotient at St Aubin Pier

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
St Aubin Pier	Airtel	900	1.825	23	0.010760531	1/ 93
	JT		0.3081	134	7.26362E-05	1/ 13767
	Sure		0.6383	65	0.000723469	1/ 1382
total band EQ					0.011556636	1/ 87

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 0.9102 V/m (Airtel), which is 64 times smaller than the ICNIRP Reference Level.

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

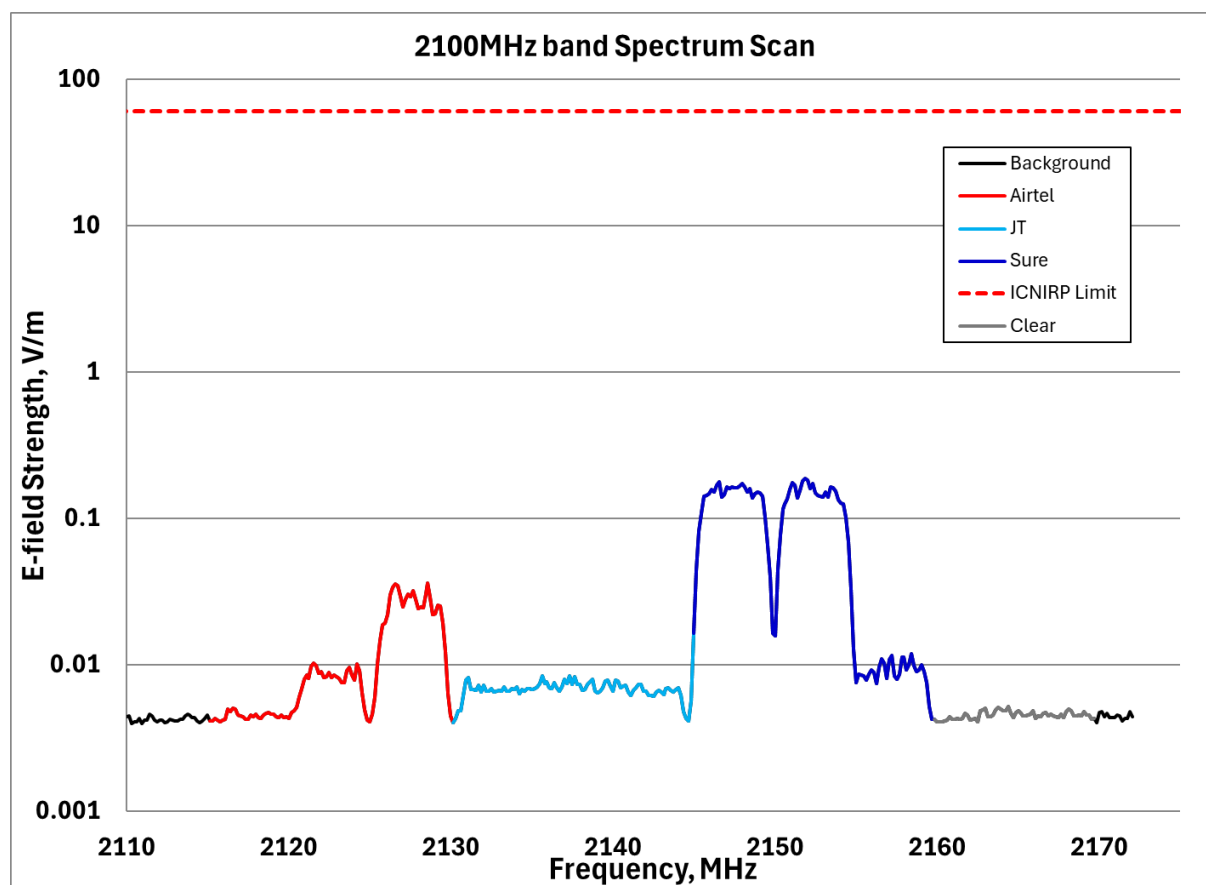
Table 5 – 1800MHz band exposure quotient at St Aubin Pier

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
St Aubin Pier	Airtel	1800	0.9102	64	0.005068736	1/ 197
	JT		0.01136	5135	1.52056E-06	1/ 657654
	Sure		0.219	266	0.000373449	1/ 2678
total band EQ					0.005443706	1/ 184

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 0.1884 V/m (Sure), which is 324 times smaller than the ICNIRP Reference Level.

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

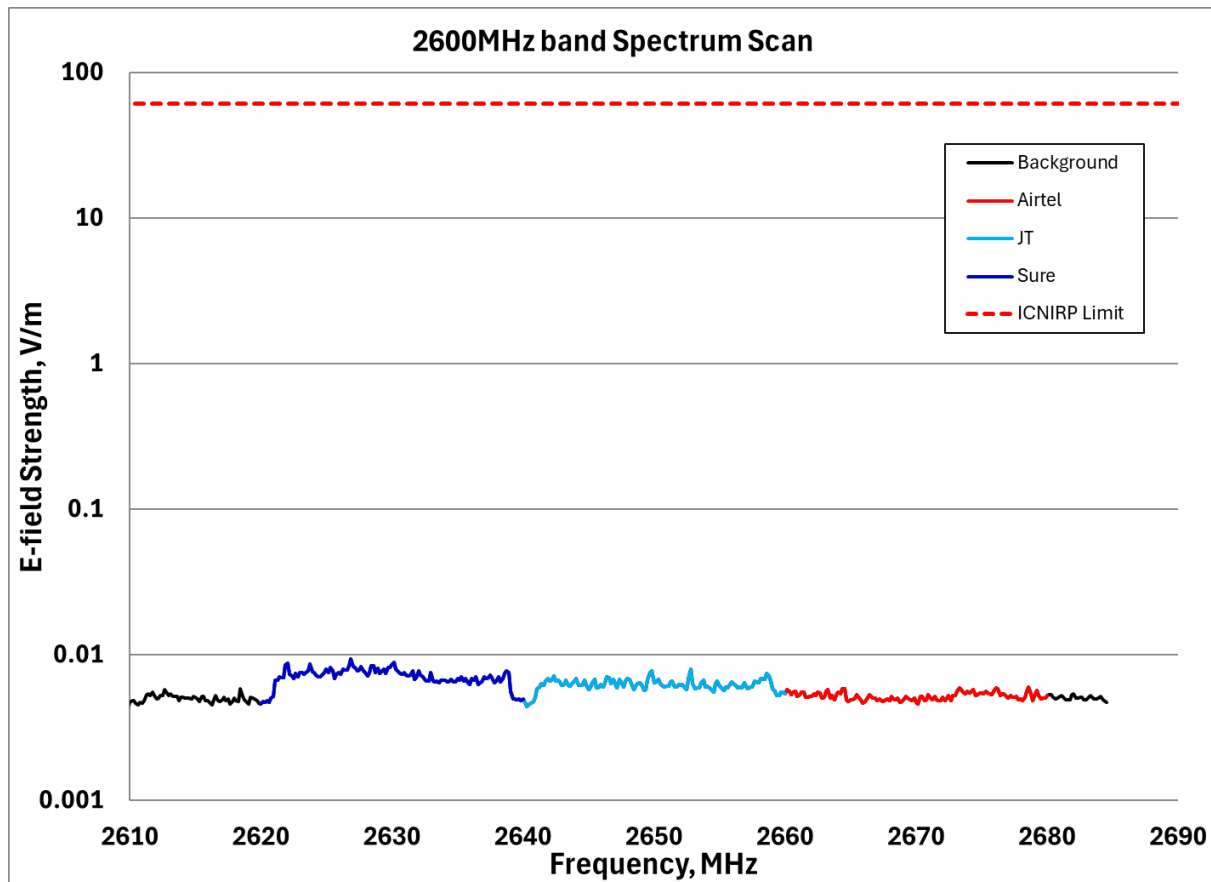
Table 6 – 2100MHz band exposure quotient at St Aubin Pier

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
St Aubin Pier	Airtel	2100	0.0362	1685	2.99786E-06	1/ 333571
	Clear		0.005154	11835	1.76647E-07	1/ 5661002
	JT		0.01652	3692	6.32095E-07	1/ 1582042
	Sure		0.1884	324	0.000165532	1/ 6041
total band EQ					0.000169339	1/ 5905

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 0.009454 V/m (Sure), which is 6452 times smaller than the ICNIRP Reference Level.

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

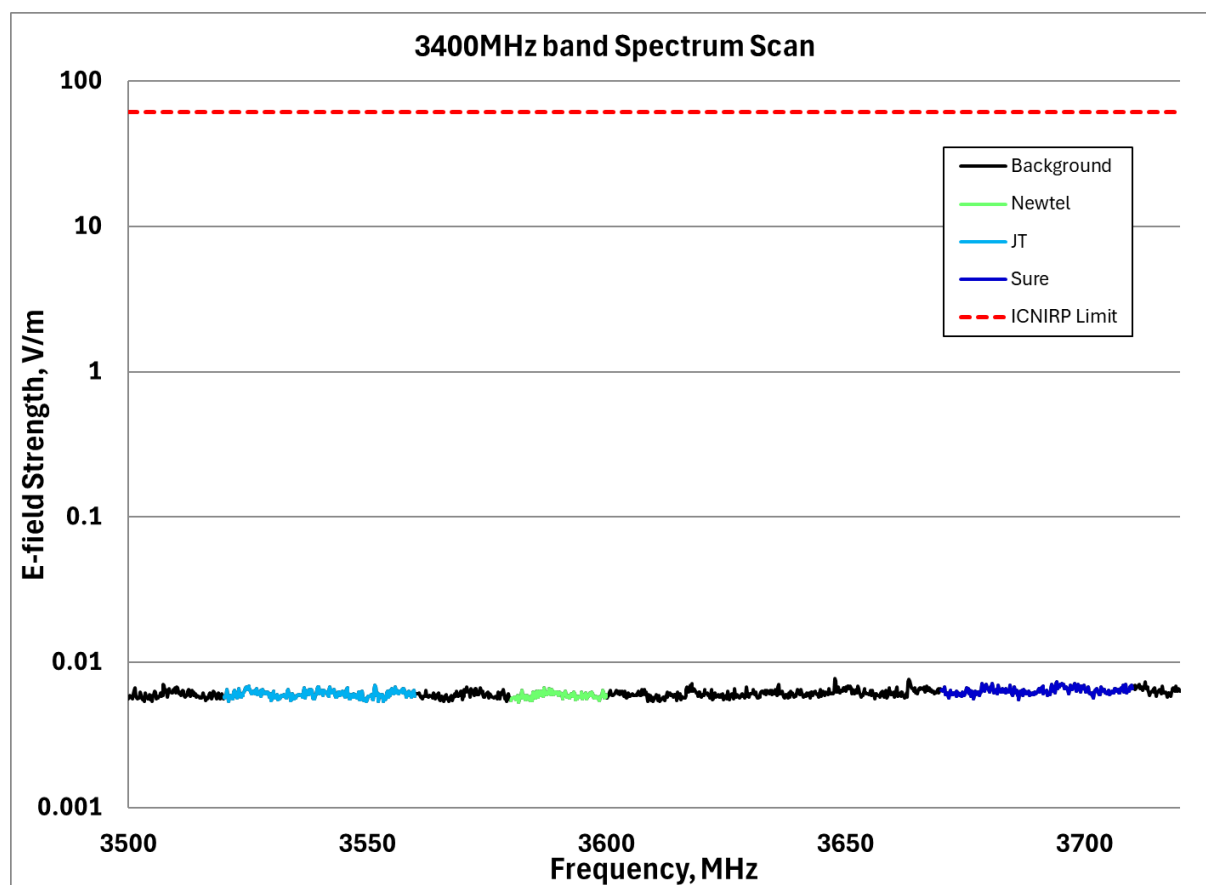
Table 7 – 2600MHz band exposure quotient at St Aubin Pier

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
St Aubin Pier	Airtel	2600	0.006002	10163	4.75237E-07	1/ 2104215
	JT		0.00799	7635	6.79772E-07	1/ 1471081
	Sure		0.009454	6452	8.8657E-07	1/ 1127943
total band EQ					2.04158E-06	1/ 489817

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 St Aubin Pier

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
St Aubin Pier	Newtel	3400	0.006724	5784	6.0817E-07	1/ 1644278
	JT		0.007002	5554	1.26834E-06	1/ 788433
	Sure		0.007298	5329	1.40985E-06	1/ 709295
total band EQ					3.28636E-06	1/ 304288

END