

Cellular mast emissions survey

Grand Marché



Document details

Document name	Cellular mast emissions survey	Grand Marché
Survey date	21-09-2023 at 10:23	
Report issue date	27-09-2023	
Survey engineer	Aleem Alvi	
Report compiled by	Fatima Tuz Zehra	
Checked and approved by	Bachir Belloul	

Contents page

1	Executive summary	3
2	Site details.....	4
2.1	Site location	4
2.2	Site description	4
2.3	Site photo.....	5
2.4	Test location.....	5
3	Survey results.....	6
3.1	800MHz band.....	6
3.2	900MHz band.....	7
3.3	1800MHz band.....	8
3.4	2100MHz band.....	9
3.5	2600MHz band.....	10

Lists of figures

Figure 1 – Map of the site area	4
Figure 2 – Location of the peak where emission levels were measured.....	5
Figure 3 – Survey area with spot measurement markers.....	5
Figure 4 – 800MHz band spectrum scan.....	6
Figure 5 – 900MHz band spectrum scan.....	7
Figure 6 – 1800MHz spectrum scan.....	8
Figure 7 – 2100MHz band spectrum scan.....	9
Figure 8 – 2600MHz band spectrum scan.....	10

List of tables

Table 1 – Cumulative exposure quotient.....	3
Table 2 – 800MHz band exposure quotient at Grand Marché	6
Table 3 – 900MHz band exposure quotient at Grand Marché	7
Table 4 – 1800MHz band exposure quotient at Grand Marché	8
Table 5 – 2100MHz band exposure quotient at Grand Marché	9
Table 6 – 2600MHz band exposure quotient at Grand Marché	10

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, JCRA commissioned EM emission level surveys at all the sites within the island. The surveys were repeated in each subsequent year for all new sites and sites where major changes were made by the operators in the previous year. This report presents the results of the survey conducted at the Grand Marché site in 2023.

The Grand Marché site was used by two operators at the time of the survey: Airtel and Sure. Surveys were conducted at all cellular frequency bands (800, 900, 1800, 2100 and 2600MHz) for all mobile cellular technologies (GSM, 3G and 4G) 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 – Cumulative exposure quotient

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
Grand Marché	800	0.5258	Airtel	74	0.002352309	1/ 425
	900	0.5819	Sure	71	0.001114919	1/ 897
	1800	0.3425	Airtel	170	0.00043275	1/ 2311
	2100	0.07245	Sure	842	2.56615E-05	1/ 38969
	2600	0.0392	Sure	1556	1.29887E-05	1/ 76990
Total Site EQ					0.003938628	1/ 254

The results show that the total EQ was measured at 1/254 and therefore remains well below the ICNIRP guidelines.

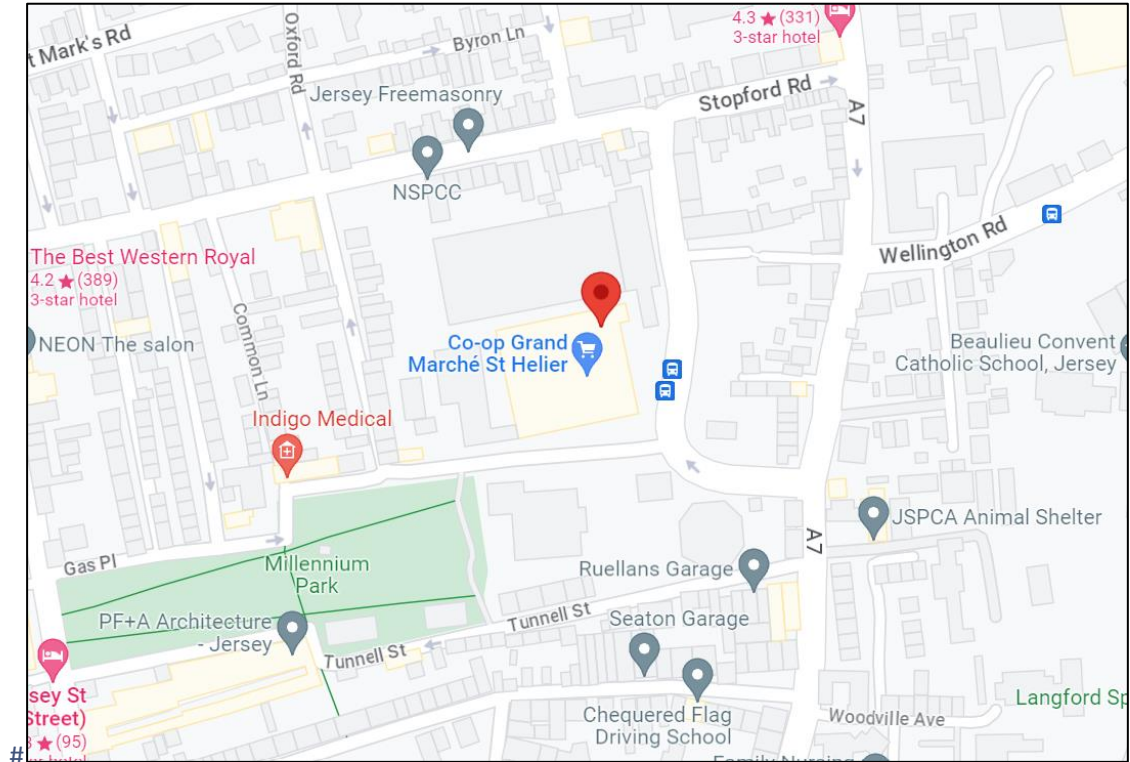
The graphs which follow show the activity on all the frequency bands surveyed. The plots are colour-coded for easy identification of the three main operators: Airtel in red, Sure in dark blue, and Jersey Telecom in light blue. The graphs are also supported by the equivalent statistical figures derived from the measured levels at the site for added clarity.

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.

2 Site details

2.1 Site location

Figure 1 – Map of the site area



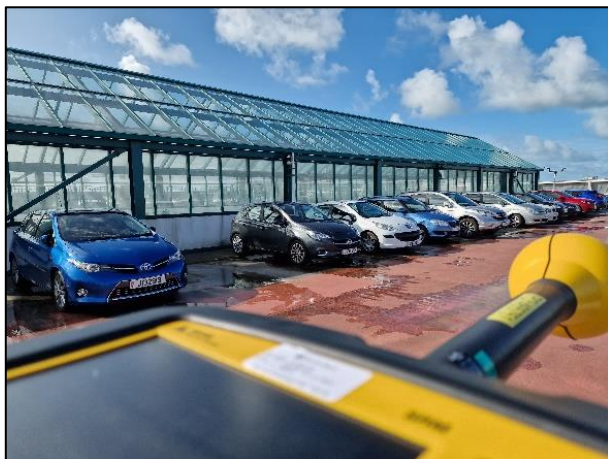
Site name:	Grand Marché
Site address:	La Rue le Masurier, St Helier, Jersey
Site latitude:	49.1888
Site longitude:	-2.09876

2.2 Site description

Operators:	Airtel and Sure
Antenna types:	Directional
Approximate height:	20m from Street level, 5-6m from roof level
Site type:	Rooftop
Description:	The antennas are located on the rooftop. Public access to the antenna is not possible without climbing aid

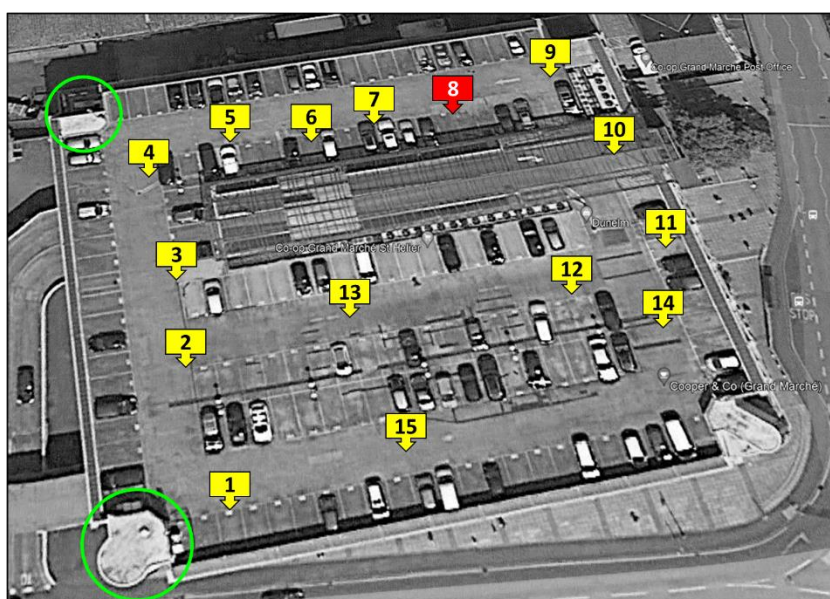
2.3 Site photo

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



2.4 Test location

Figure 3 – Survey area with spot measurement markers



The green circles is the antenna location(s), the yellow arrow boxes are intermediate locations measured at during the peak search and the red arrow box is the spot where the highest spot search reading was obtained and where the detailed survey was carried out.

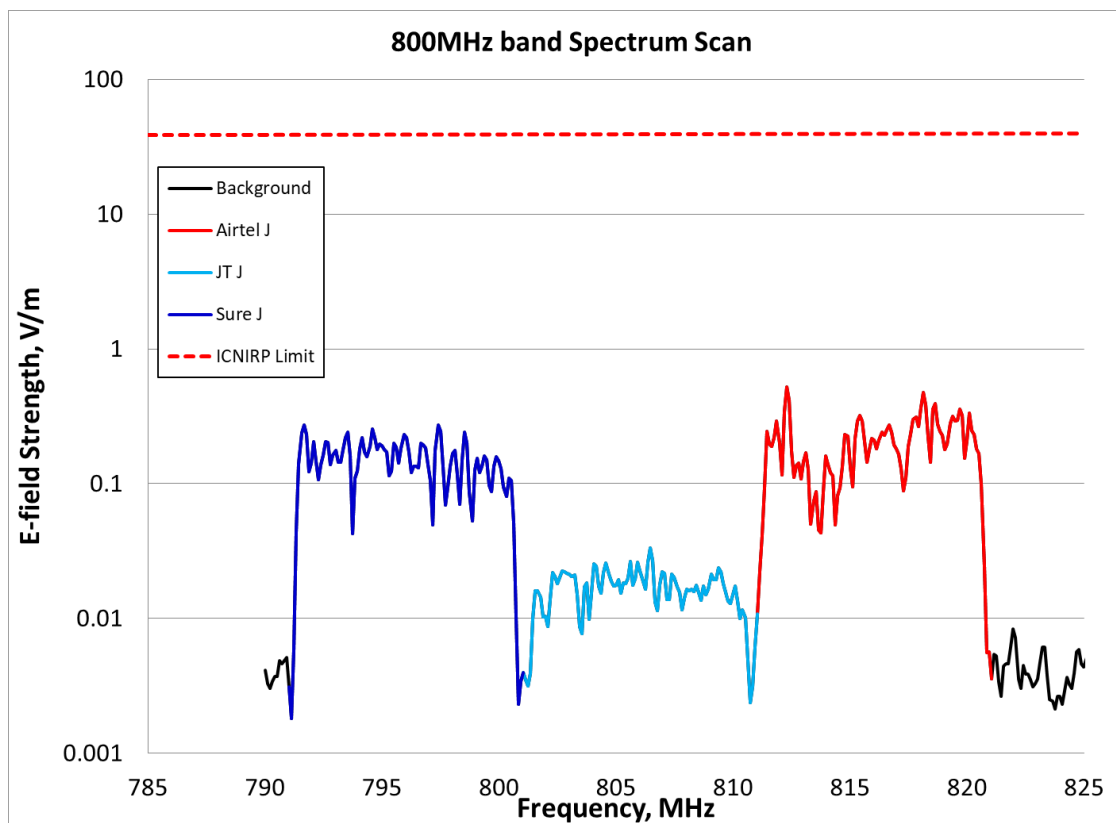
As part of the peak search procedure, spot measurements were taken at locations around the antennas as shown on the above sketch. The reported spectrum scans were taken at the peak location (shown in red above) where the highest readings were recorded. The spectrum readings reported further down this report were recorded over a period of six minutes as advised by ICNIRP.

3 Survey results

3.1 800MHz band

The graph for the 800MHz activity is shown below with the E-field strength levels measured at the site plotted on a logarithmic scale.

Figure 4 – 800MHz band spectrum scan



The red line on the scan represents the Airtel activity, the light blue is JT and the dark blue is Sure. ICNIRP's reference level for the *General Public* is also shown as the straight dashed line at the top of the graph. For clarity, each step on the vertical axis represents a 10-fold increase. The same scaling and colour scheme will be used throughout this report.

No field level recorded across the band was higher than 0.5258 V/m (Airtel), which is 74 times smaller than the ICNIRP Guideline Reference Level.

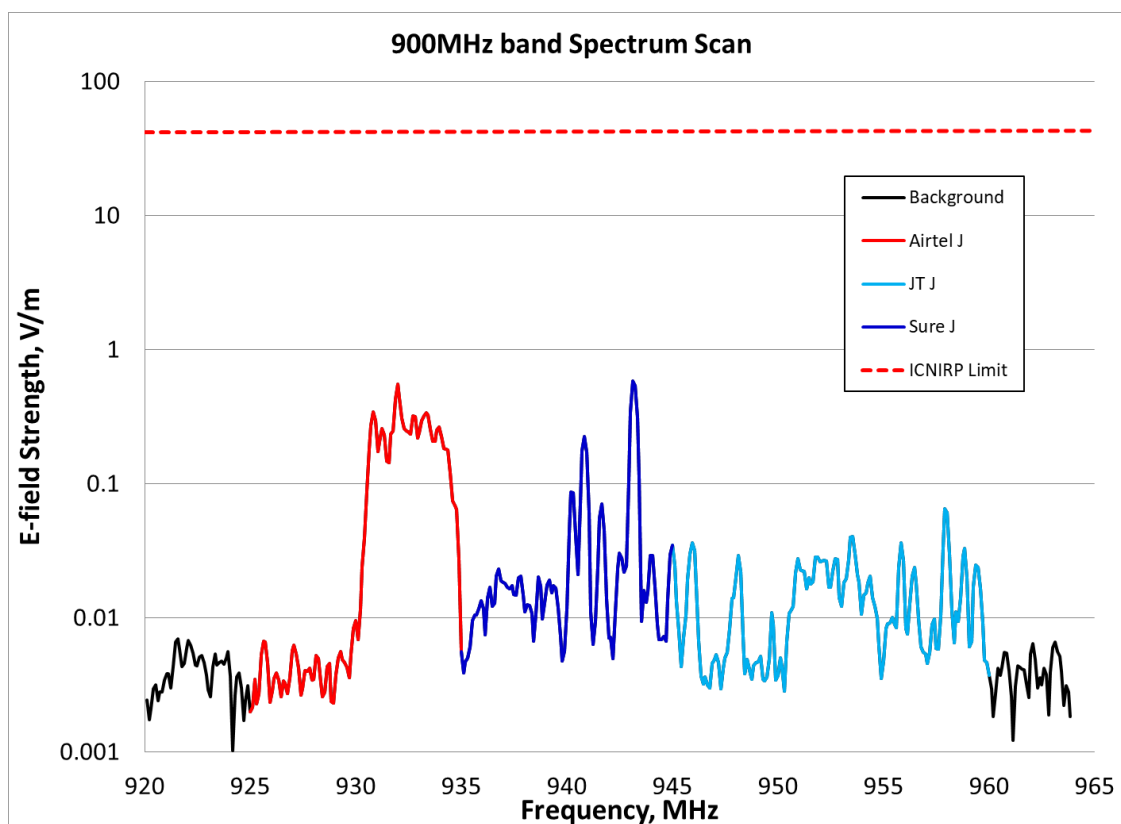
Table 2 – 800MHz band exposure quotient at Grand Marché

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
Grand Marche	Airtel	800	0.5258	74	0.001545797	1/ 647
	JT		0.03327	1169	9.70795E-06	1/ 103008
	Sure		0.2744	142	0.000796804	1/ 1255
	total band EQ				0.002352309	1/ 425

3.2 900MHz band

The graph for the 900MHz activity is shown below.

Figure 5 – 900MHz band spectrum scan



No field level recorded across the band was higher than 0.5819 V/m (Sure), which is 71 times smaller than the ICNIRP Guideline Reference Level.

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

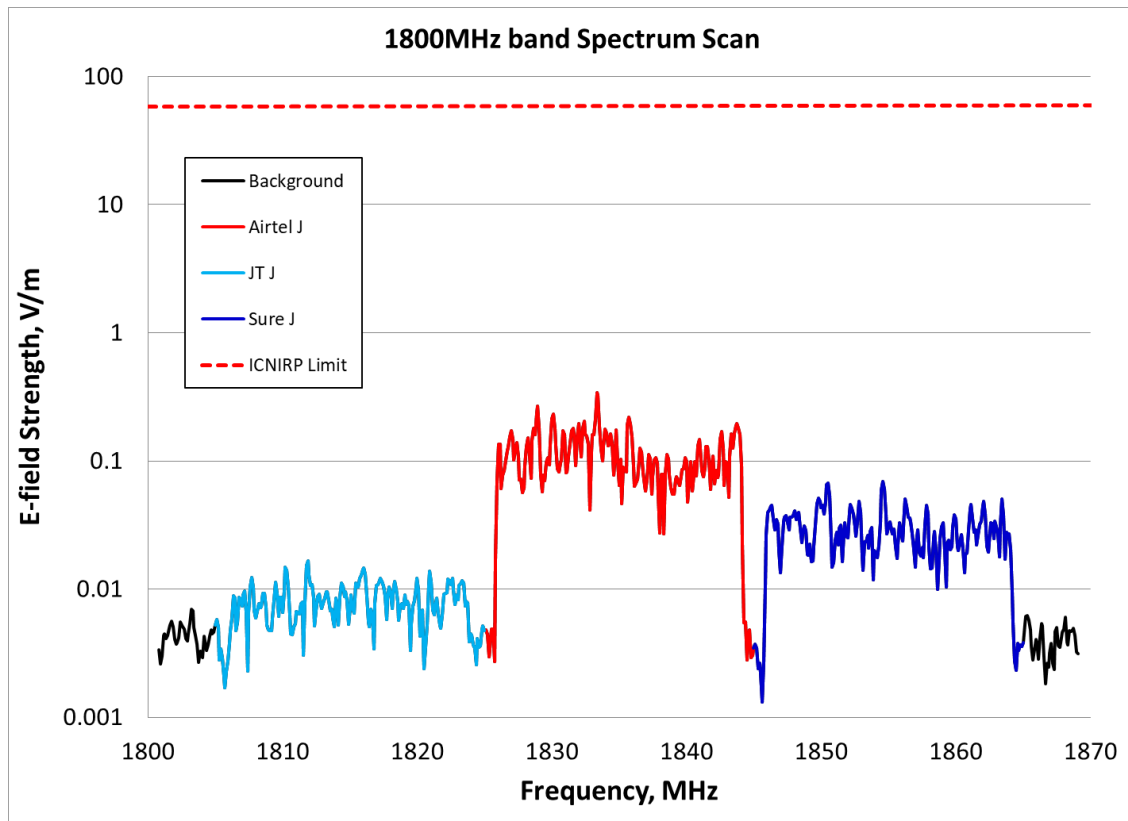
Table 3 – 900MHz band exposure quotient at Grand Marché

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
Grand Marche	Airtel	900	0.5491	75	0.000812543	1/ 1231
	JT		0.06524	632	1.36661E-05	1/ 73174
	Sure		0.5819	71	0.00028871	1/ 3464
total band EQ					0.001114919	1/ 897

3.3 1800MHz band

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

Figure 6 – 1800MHz spectrum scan



No field level recorded across the band was higher than 0.3425 V/m (Airtel), which is 170 times smaller than the ICNIRP Guideline Reference Level.

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

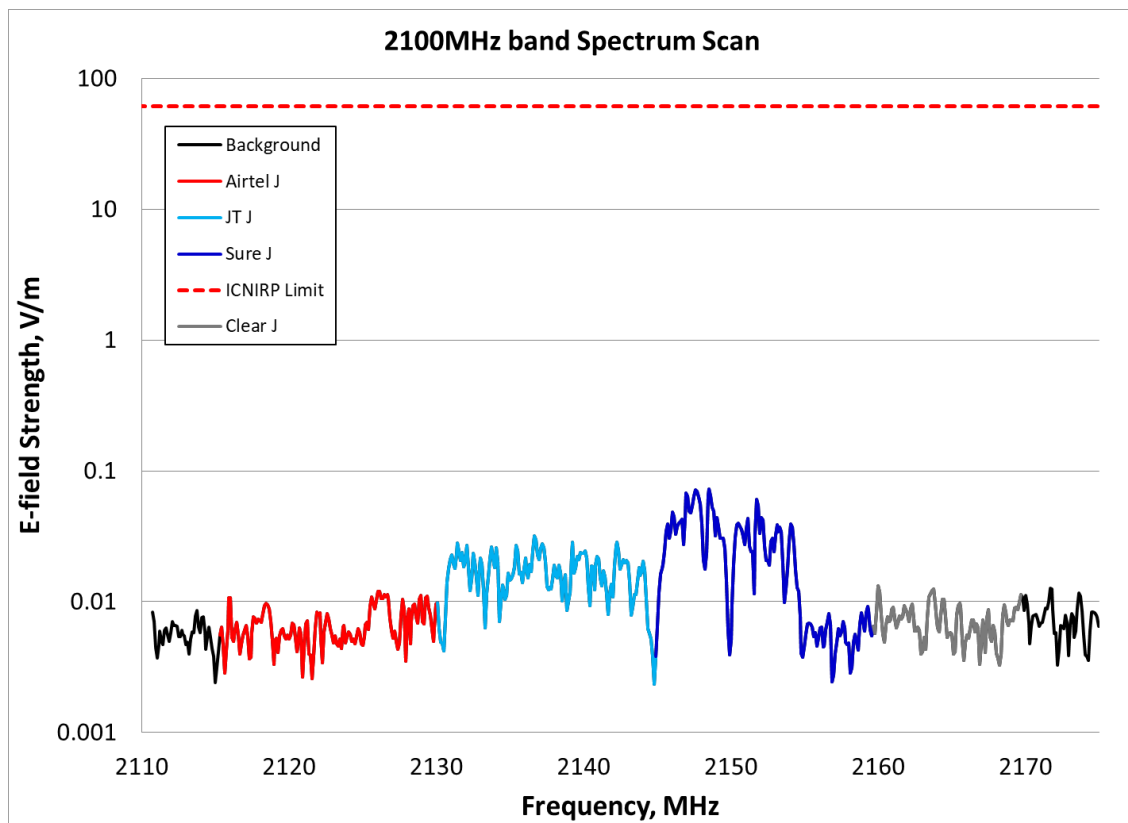
Table 4 – 1800MHz band exposure quotient at Grand Marché

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
Grand Marche	Airtel	1800	0.3425	170	0.00040521	1/ 2468
	JT		0.01664	3506	1.92595E-06	1/ 519223
	Sure		0.06952	839	2.56137E-05	1/ 39042
total band EQ					0.00043275	1/ 2311

3.4 2100MHz band

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

Figure 7 – 2100MHz band spectrum scan



No field level recorded across the band was higher than 0.07245 V/m (Sure), which is 842 times smaller than the ICNIRP Guideline Reference Level.

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

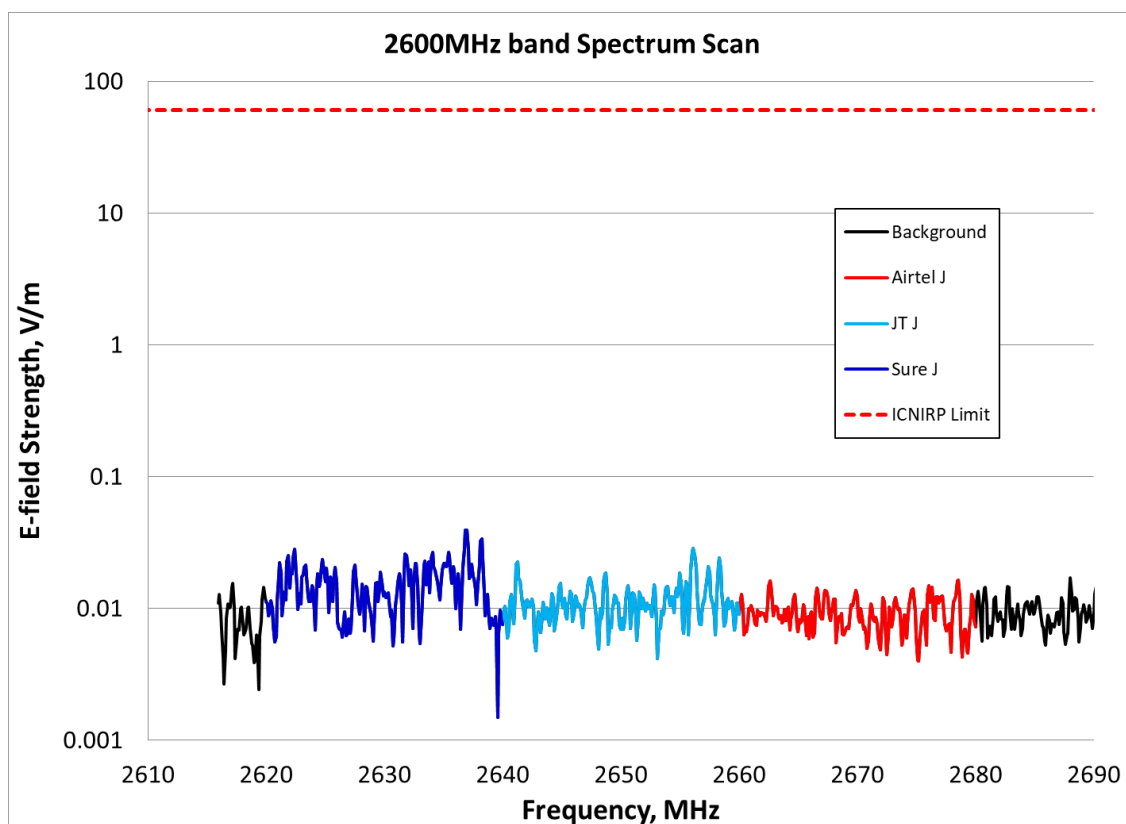
Table 5 – 2100MHz band exposure quotient at Grand Marché

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
Grand Marche	Airtel	2100	0.01197	5096	9.46345E-07	1/ 1056698
	Clear		0.01328	4593	7.26653E-07	1/ 1376172
	JT		0.03183	1916	6.12185E-06	1/ 163349
	Sure		0.07245	842	1.78667E-05	1/ 55970
total band EQ					2.56615E-05	1/ 38969

3.5 2600MHz band

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

Figure 8 – 2600MHz band spectrum scan



No field level recorded across the band was higher than 0.0392 V/m (Sure), which is 1556 times smaller than the ICNIRP Guideline Reference Level.

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

Table 6 – 2600MHz band exposure quotient at Grand Marché

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
Grand Marche	Airtel	2600	0.01655	3686	2.38156E-06	1/ 419893
	JT		0.02848	2142	3.81317E-06	1/ 262249
	Sure		0.0392	1556	6.79392E-06	1/ 147190
total band EQ					1.29887E-05	1/ 76990

END