

Cellular Mast Emissions Survey: Longfields (Jersey)



DOCUMENT DETAILS

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Executive Summary

CICRA regularly monitors radiowave emissions from the cellular masts in the Bailiwicks of Guernsey and Jersey 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 emissions from the sites comply with internationally recognised standards and guidelines regarding Health & Safety limits for the public.

In 2017, CICRA commissioned iWireless Solutions to conduct the emission surveys at all sites within the two Bailiwicks. This report is for Longfields site located in Jersey.

The Longfields site was shared by two operators at the time of the survey: JT J and Sure J; with the third operator (Airtel) also showing signals of similar strength transmitted from a nearby site. 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.

The survey established that the emissions around this 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 that were recorded around the site following a peak search. In most other locations, the levels were lower. The recorded values are only true at the time of testing and can go up or down depending on the level of user activity on the cell.

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

Site Name	Band [MHz]	Max E-field in band [V/m]	Operator at Max E-field	ICNIRP Limit Relative Max E-field	Band Exposure Quotient	Band EQ Relative to ICNIRP
Longfields	800	0.06047	Sure J	643	2.37252E-05	1/ 42149
	900	4	JT J	10	0.013230572	1/ 76
	1800	0.1565	JT J	373	0.000304455	1/ 3285
	2100	0.1104	JT J	553	0.000126897	1/ 7880
	2600	0.005276	Airtel J	11562	6.97301E-07	1/ 1434101
Total Site EQ					0.013686346	1/ 73

Table 1 - Cumulative Exposure Quotient

The results show that the cumulative EQ was measured at 1/73 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 J in red, Sure J in dark blue, and Jersey Telecom J in light blue.

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

1.3 Site Photo



Figure 2 – Peak Measurement Location

1.4 Test Location



Figure 3- Survey Area with Spot Measurement Markers: The blue triangle is the site location, the yellow 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

As part of the peak search procedure, spot measurements were taken at locations around the site, 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 6 minutes as advised by ICNIRP.

2. Survey Results

2.1 800 MHz Band

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

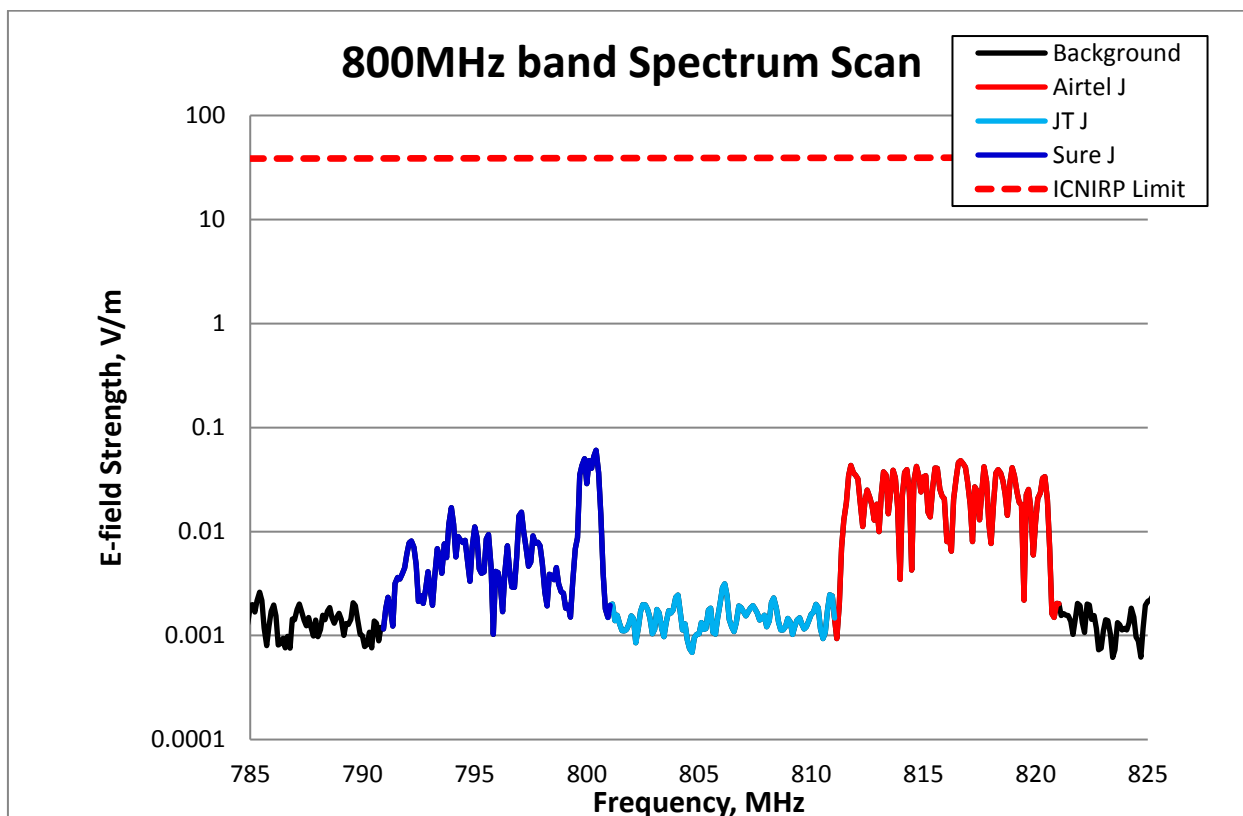


Figure 4 - 800MHz band Spectrum Scan

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 0.06047 V/m (Sure J), which is 643 times smaller than the ICNIRP Reference level. The Exposure Quotient results for the 800MHz band are shown below:

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
Longfields	Airtel J	800	0.04809	809	1.78261E-05	1/ 56097
	JT J		0.003145	12366	6.5888E-08	1/ 15177263
	Sure J		0.06047	643	5.83322E-06	1/ 171432
total band EQ					2.37252E-05	1/ 42149

Table 2– 800MHz band Exposure Quotient at Longfields

2.2 900 MHz Band

The graph for the 900 MHz activity is shown below:

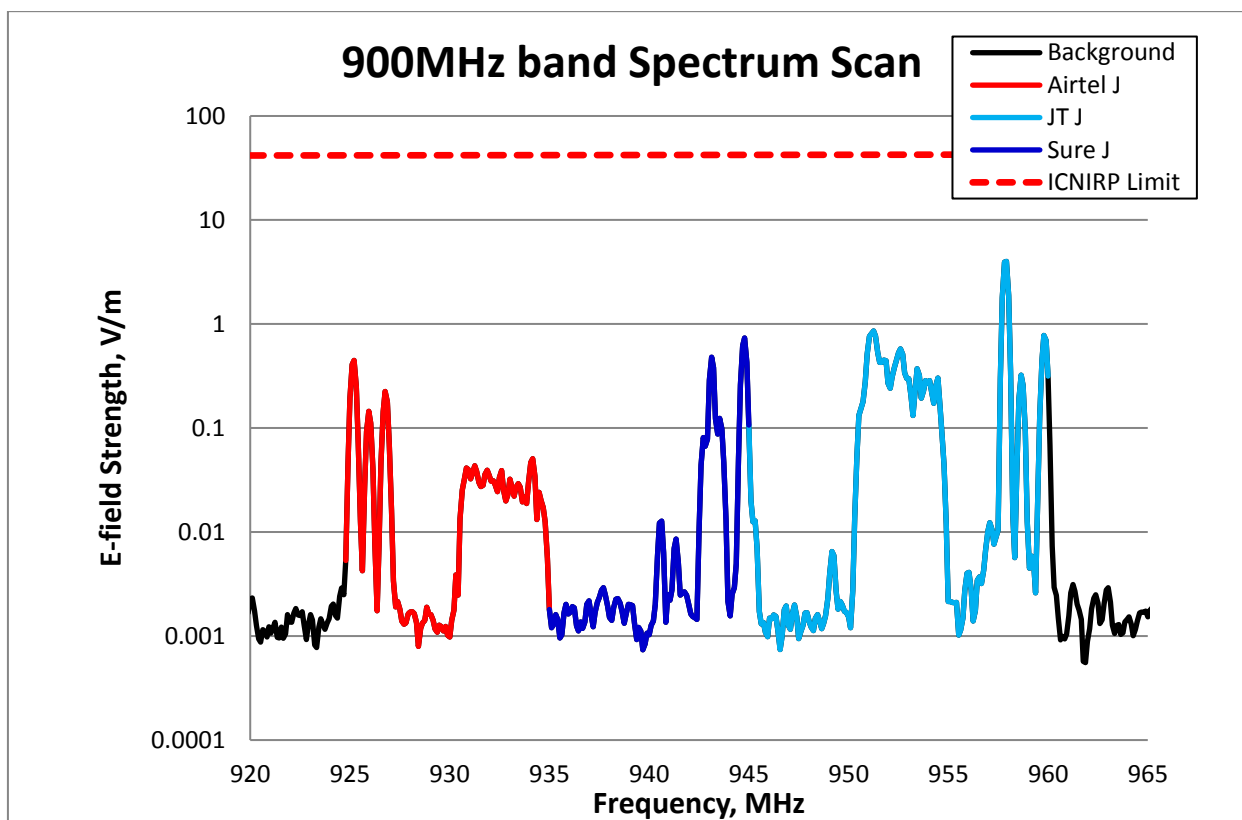


Figure 5 - 900MHz band Spectrum Scan

No field level recorded across the band was higher than 4 V/m (JT J), which is 10 times smaller than the ICNIRP Reference level.

The Exposure Quotient results for the 900MHz band are shown below:

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
Longfields	Airtel J	900	0.4467	92	0.000178433	1/ 5604
	JT J		4	10	0.012591471	1/ 79
	Sure J		0.7341	56	0.000460668	1/ 2171
total band EQ					0.013230572	1/ 76

Table 3– 900MHz band Exposure Quotient at Longfields

2.3 1800 MHz Band

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

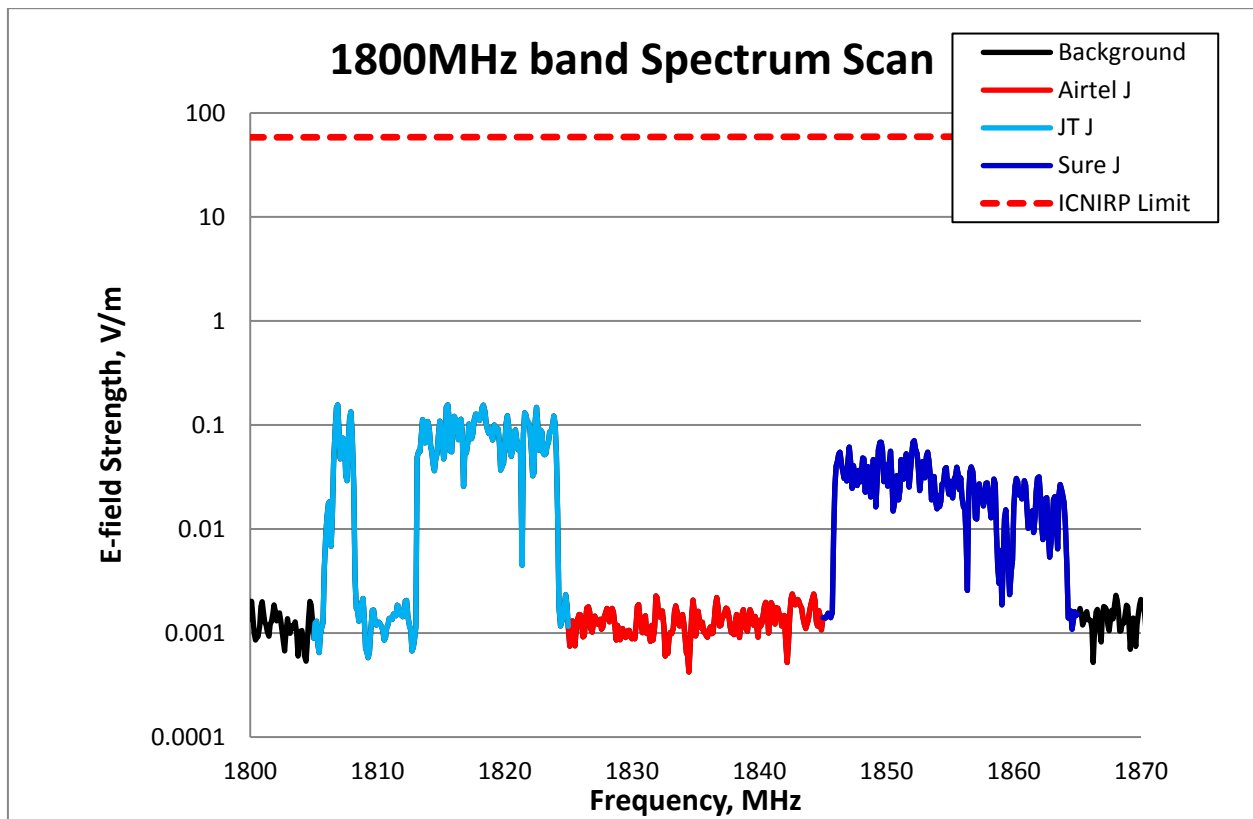


Figure 6 - 1800MHz Spectrum Scan

No field level recorded across the band was higher than 0.1565 V/m (JT J), which is 373 times smaller than the ICNIRP Reference level.

The Exposure Quotient results for the 1800MHz band are shown below:

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
Longfields	Airtel J	1800	0.002378	24532	9.84521E-08	1/ 10157226
	JT J		0.1565	373	0.000258604	1/ 3867
	Sure J		0.0706	826	4.57519E-05	1/ 21857
total band EQ					0.000304455	1/ 3285

Table 4 – 1800MHz band Exposure Quotient at Longfields

2.4 2100MHz Band

The graph for the UMTS activity around the site is shown below:

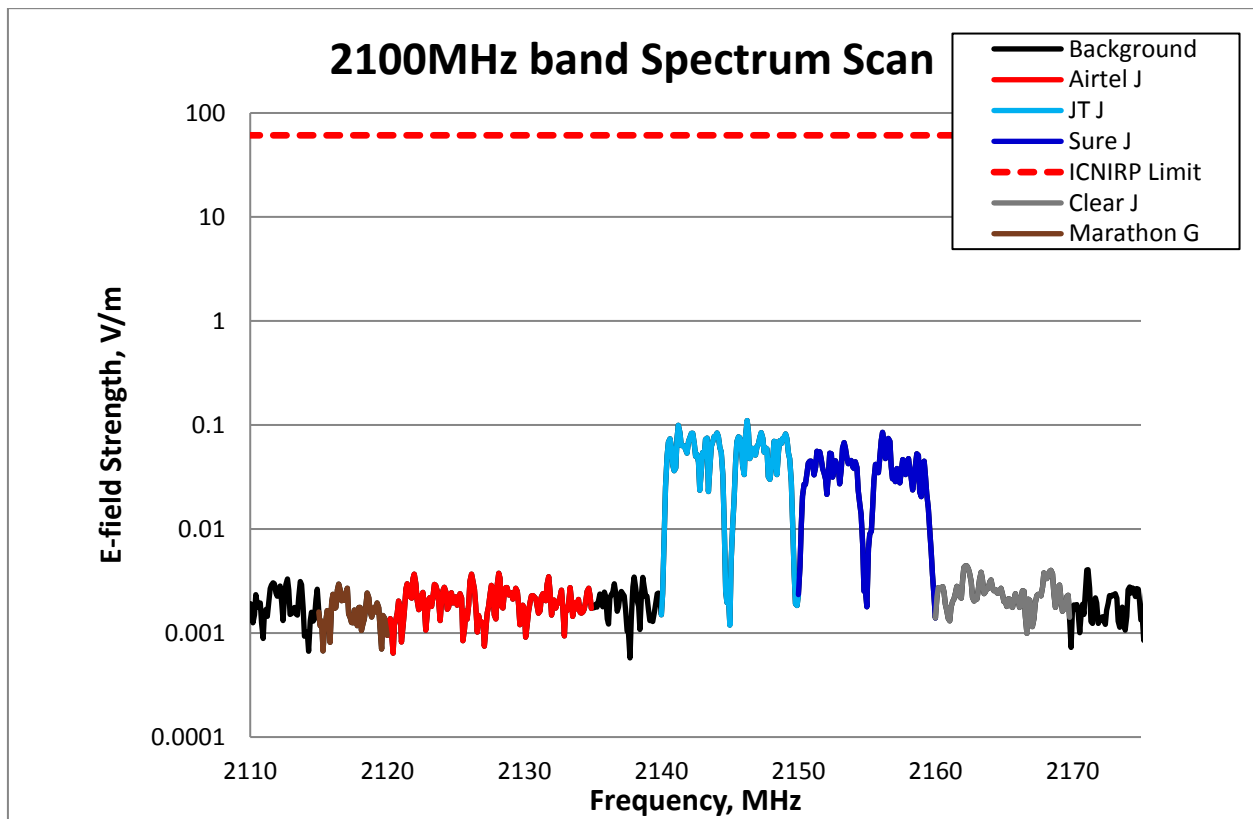


Figure 7 – 2100MHz band Spectrum Scan

No field level recorded across the band was higher than 0.1104 V/m (JT J), which is 553 times smaller than the ICNIRP Reference level.

The Exposure Quotient results for the 2100MHz band are shown below:

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
Longfields	Airtel J	2100	0.003752	16258	1.71253E-07	1/ 5839324
	Clear J		0.004428	13776	1.68964E-07	1/ 5918419
	JT J		0.1104	553	8.62963E-05	1/ 11588
	Marathon J		0.002948	20692	3.91084E-08	1/ 25569960
	Sure J		0.08511	717	4.02215E-05	1/ 24862
total band EQ					0.000126897	1/ 7880

Table 5 – 2100MHz band Exposure Quotient at Longfields

2.5 2600MHz band

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

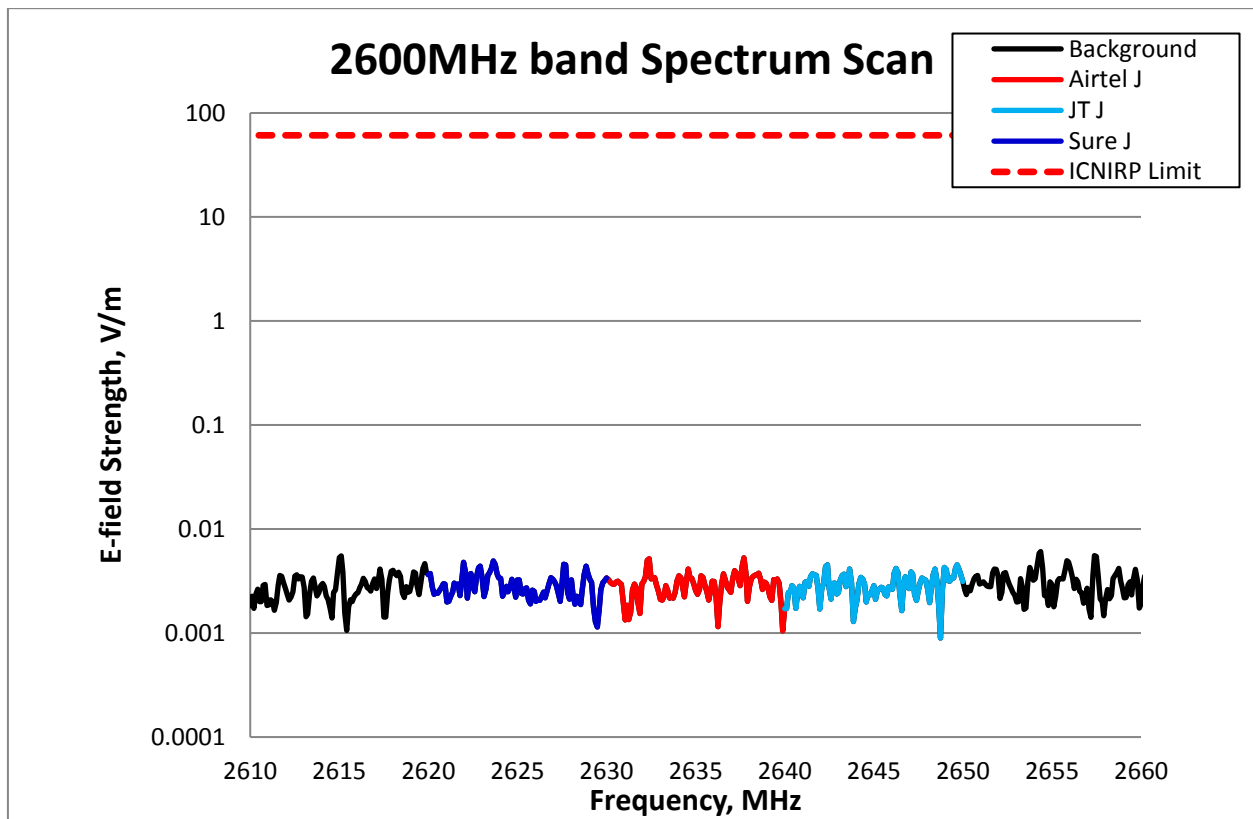


Figure 8 – 2600MHz band Spectrum Scan

No activity was recorded in the 2600MHz as no operator appears to transmit in this band at this site.

The Exposure Quotient results for the 2600MH band are shown below:

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
Longfields	Airtel J	2600	0.005276	11562	2.31988E-07	1/ 4310573
	JT J		0.004534	13454	2.34466E-07	1/ 4265019
	Sure J		0.004937	12356	2.30848E-07	1/ 4331861
total band EQ					6.97301E-07	1/ 1434101

Table 6 – 2600MHz band Exposure Quotient at Longfields

End