

Cellular Mast Emissions Survey: Sunfield (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 the Sunfield site located in Jersey.

The Sunfield site was used by a single operator at the time of the survey: Sure J. Surveys were however 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
Sunfield	800	0.2083	Sure J	187	0.000107198	1/ 9329
	900	1.697	Sure J	24	0.001937423	1/ 516
	1800	0.1736	Sure J	336	0.00013655	1/ 7323
	2100	0.4591	Sure J	133	0.000750631	1/ 1332
	2600	0.002698	Sure J	22609	1.23029E-07	1/ 8128155
Total Site EQ					0.002931924	1/ 341

Table 1 - Cumulative Exposure Quotient

The results show that the cumulative EQ was measured at 1/341 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. Site Details

1.1 Site Location



Figure 1 - Map of the Site Area

Site name	Sunfield
Site address	La Rue DU Bocage, St Brelade, Jersey
Site Latitude	N 49.19055
Site Longitude	W 02.18132

1.2 Site Description

Operators	Sure J
Antenna types	Directional
Approximate height	12m
Site type	Pole Mast
Description	The Pole Mast at Sunfield is located to the side of the road, access to the public is open.

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.

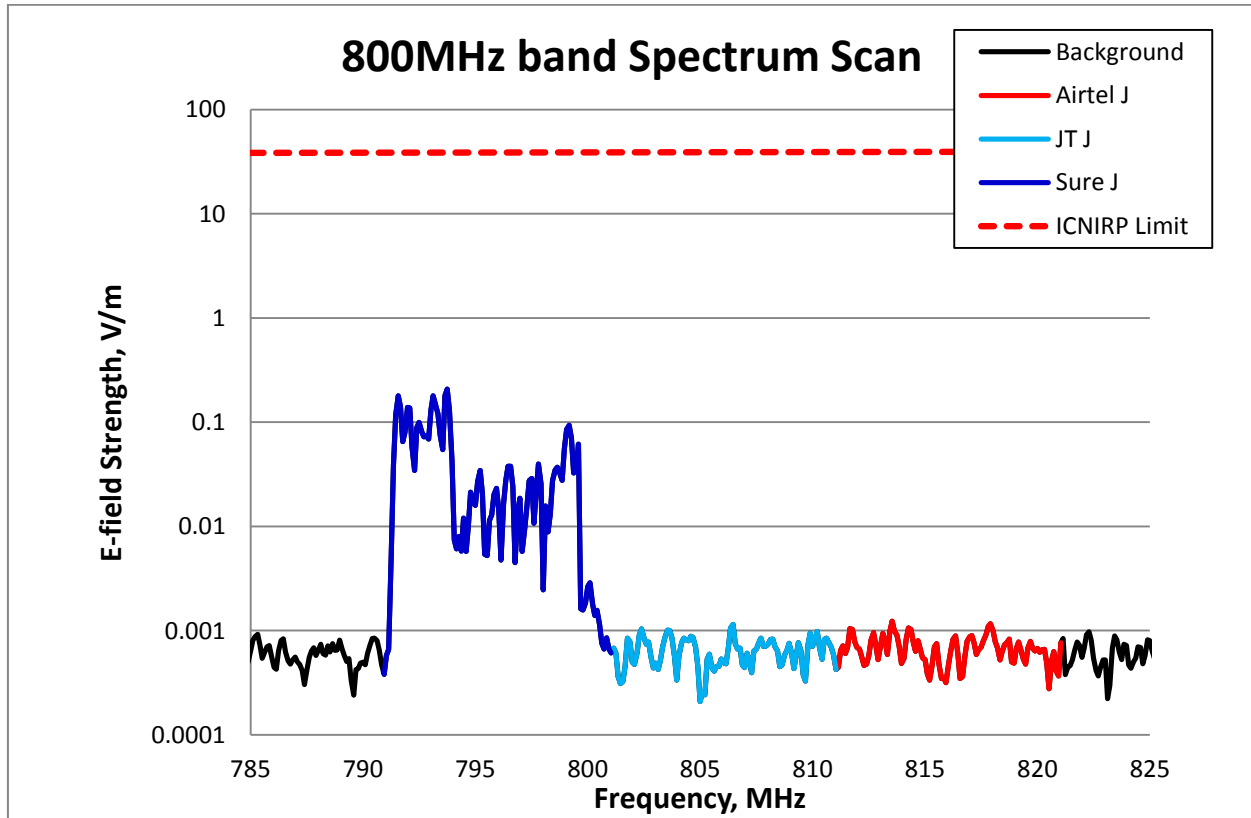


Figure 4 - 800MHz band Spectrum Scan

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 0.2083 V/m (Sure J), which is 187 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
Sunfield	Airtel J	800	0.001228	31670	1.30541E-08	1/ 76604403
	JT J		0.001144	33996	1.17783E-08	1/ 84901880
	Sure J		0.2083	187	0.000107173	1/ 9331
total band EQ					0.000107198	1/ 9329

Table 2– 800MHz band Exposure Quotient at Sunfield

2.2 900 MHz Band

The graph for the 900 MHz activity is shown below:

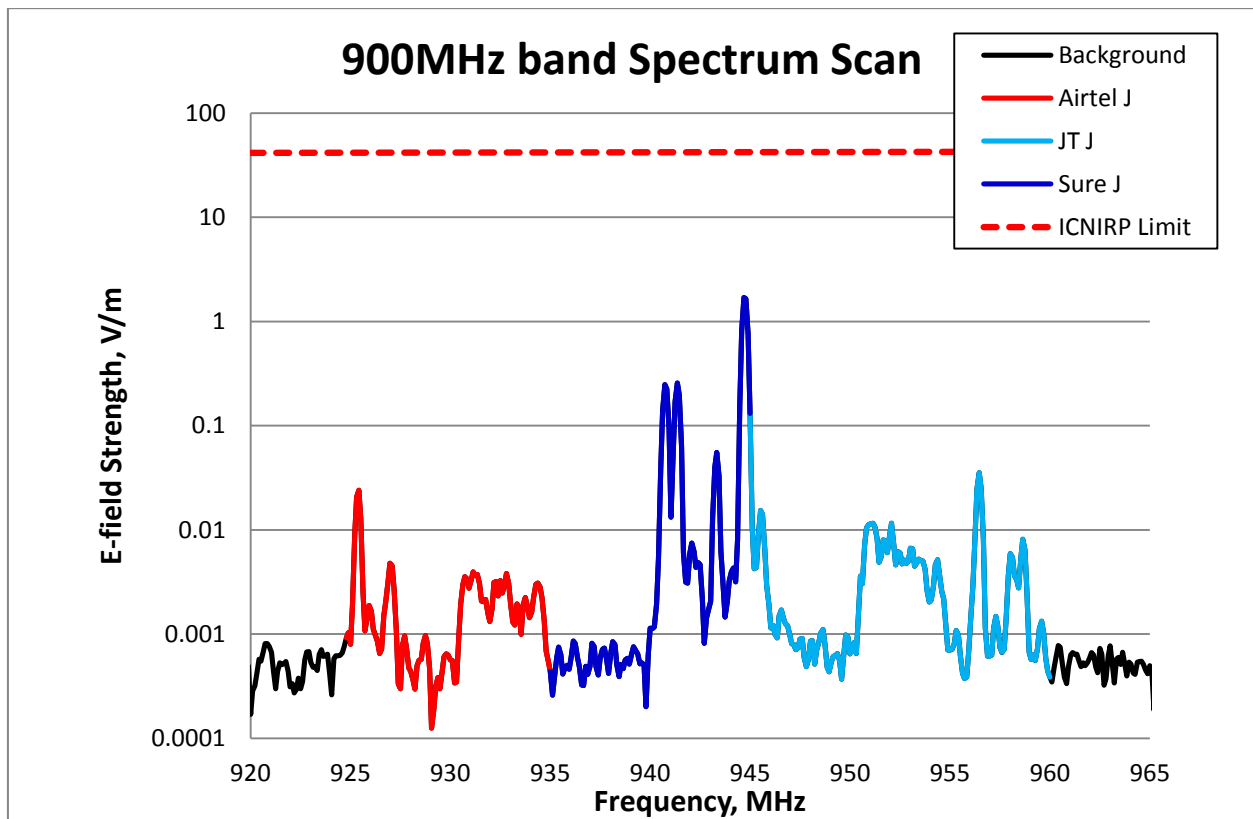


Figure 5 - 900MHz band Spectrum Scan

No field level recorded across the band was higher than 1.697 V/m (Sure J), which is 24 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
Sunfield	Airtel J	900	0.02394	1723	4.35201E-07	1/ 2297791
	JT J		0.1308	315	6.06227E-06	1/ 164955
	Sure J		1.697	24	0.001930925	1/ 518
total band EQ					0.001937423	1/ 516

Table 3– 900MHz band Exposure Quotient at Sunfield

2.3 1800 MHz Band

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

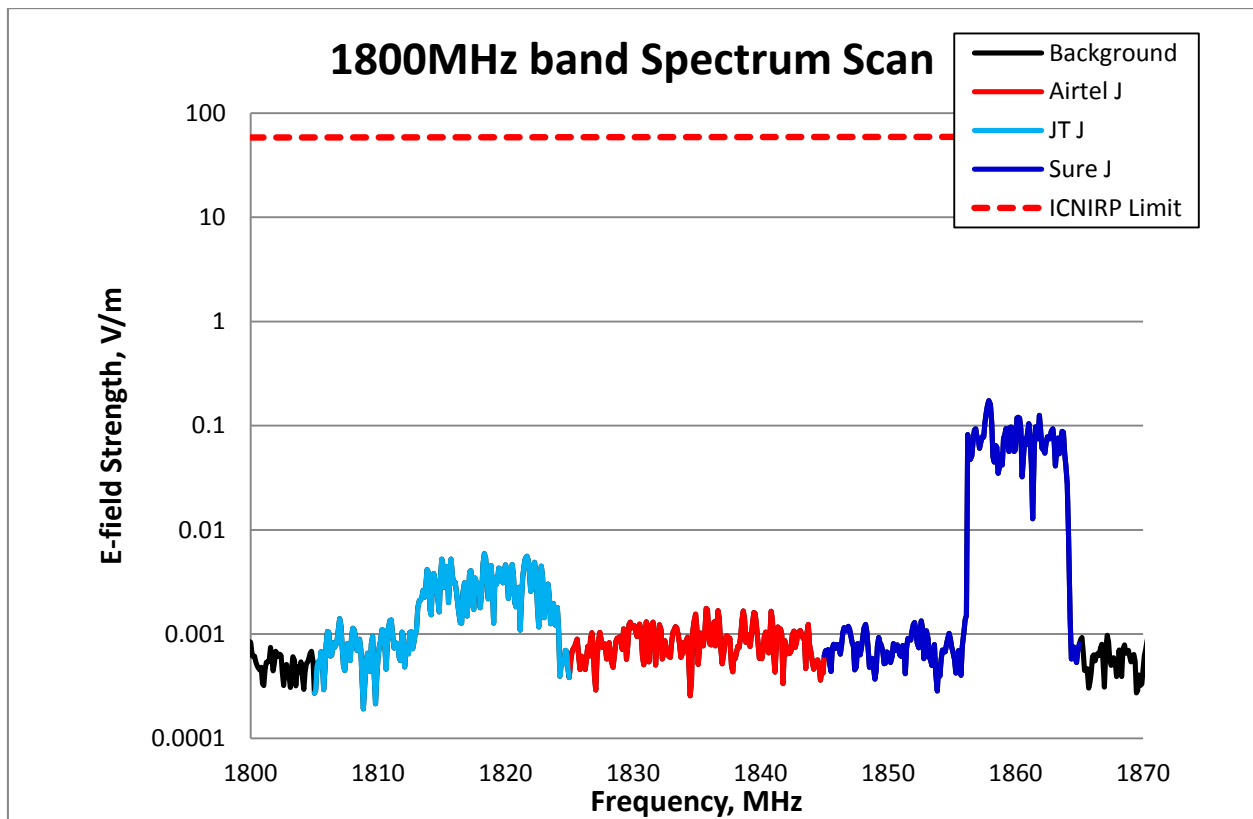


Figure 6 - 1800MHz Spectrum Scan

No field level recorded across the band was higher than 0.1736 V/m (Sure J), which is 336 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
Sunfield	Airtel J	1800	0.001768	32996	4.27979E-08	1/ 23365635
	JT J		0.005922	9851	3.15375E-07	1/ 3170827
	Sure J		0.1736	336	0.000136192	1/ 7343
total band EQ					0.00013655	1/ 7323

Table 4 – 1800MHz band Exposure Quotient at Sunfield

2.4 2100MHz Band

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

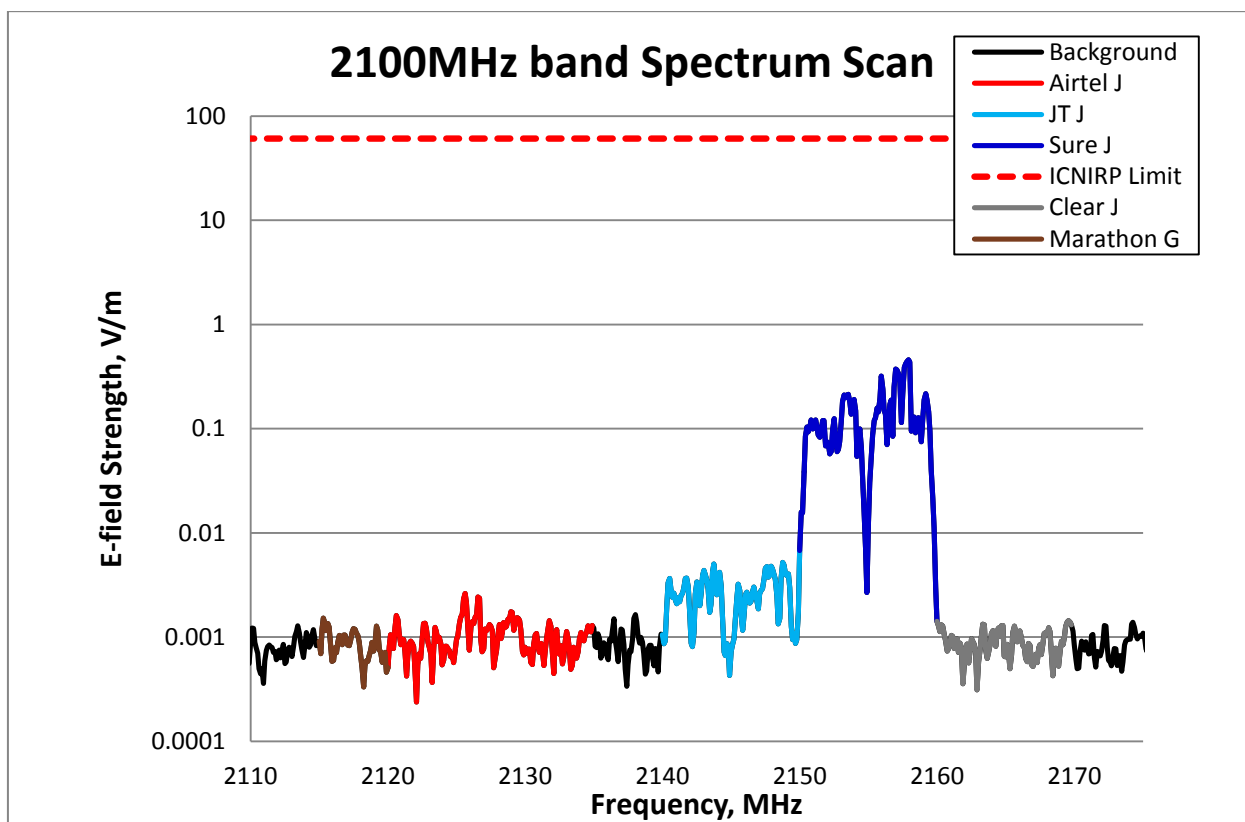


Figure 7 – 2100MHz band Spectrum Scan

No field level recorded across the band was higher than 0.4591 V/m (Sure J), which is 133 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
Sunfield	Airtel J	2100	0.002633	23167	4.62152E-08	1/ 21637909
	Clear J		0.001437	42450	2.21601E-08	1/ 45126105
	JT J		0.006762	9021	2.22E-07	1/ 4504504
	Marathon J		0.001518	40184	1.08776E-08	1/ 91931978
	Sure J		0.4591	133	0.00075033	1/ 1333
total band EQ					0.000750631	1/ 1332

Table 5 – 2100MHz band Exposure Quotient at Sunfield

2.5 2600MHz band

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

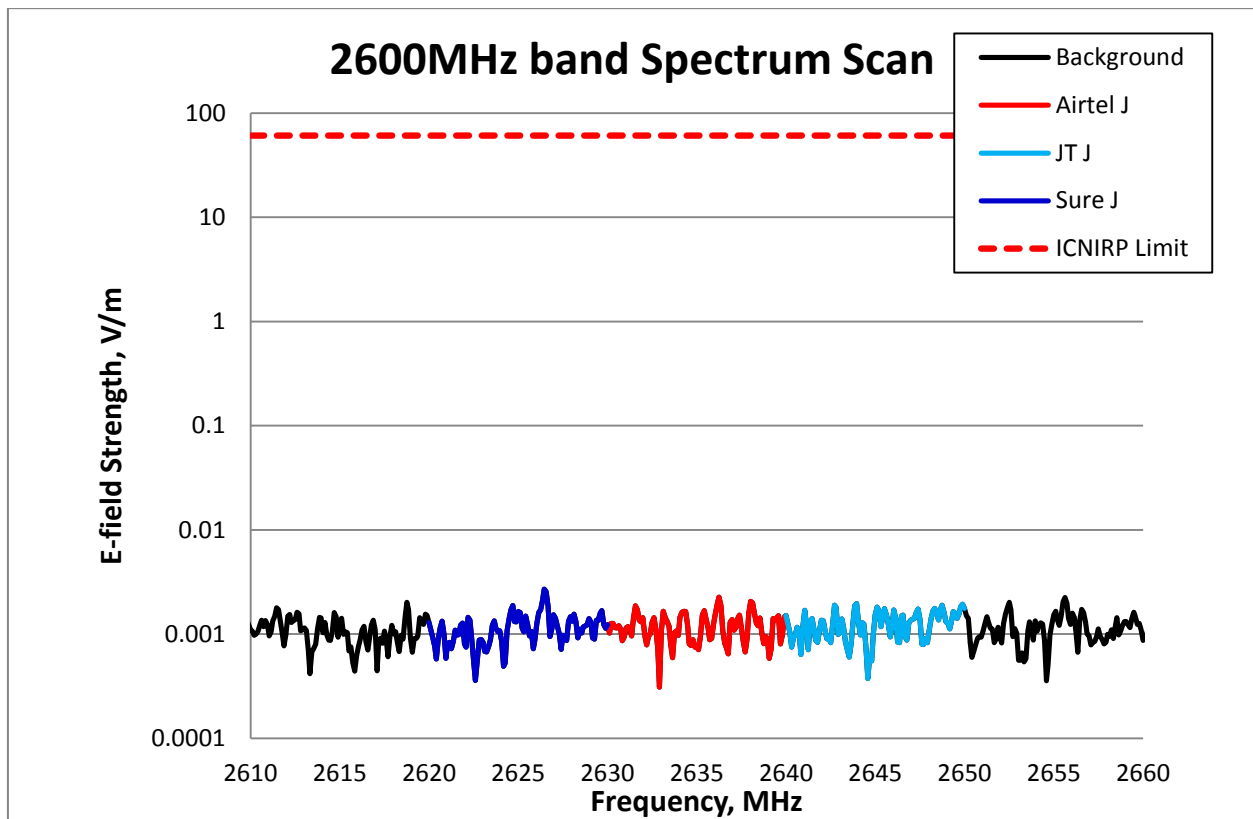


Figure 8 – 2600MHz band Spectrum Scan

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 2600MHz 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
Sunfield	Airtel J	2600	0.002256	27039	4.03101E-08	1/ 24807648
	JT J		0.001964	31059	4.43391E-08	1/ 22553438
	Sure J		0.002698	22609	3.83799E-08	1/ 26055335
total band EQ					1.23029E-07	1/ 8128155

Table 6 – 2600MHz band Exposure Quotient at Sunfield

End