

Cellular Mast Emissions Survey: Maupertuis Pumping Station (Jersey)



DOCUMENT DETAILS

Document Name:	Cellular Mast Emissions Survey:	Maupertuis Pumping
	Station (Jersey)	
Survey Date:	12/06/2017 at 15:49	
Report issue Date	28/07/2017	
Survey Engineer:	Louise Sands	
Report Compiled by:	Erin Dawson	
Checked and Approved by	Bachir Belloul	
Authorised for Distribution	Ravi Mondair	

This document and any information contained therein are intended for the use of employees and customers of iWireless Solutions Limited only. No part of this document may be reproduced or transmitted to a third party in any form or means without the prior written consent of iWireless Solutions Limited

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 Maupertuis Pumping Station site located in Jersey.

The Maupertuis Pumping Station site was used by all three operators at the time of the survey: Airtel J, Sure J and JT J. 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
Maupertuis Pumping Station	800	0.836	Sure J	47	0.002395508	1/ 417
	900	4.927	Sure J	8	0.026669132	1/ 37
	1800	0.7453	Sure J	78	0.007471809	1/ 134
	2100	0.3685	JT J	166	0.00088353	1/ 1132
	2600	0.01157	Airtel J	5272	3.42282E-06	1/ 292157
Total Site EQ					0.037423402	1/ 27

Table 1 - Cumulative Exposure Quotient

The results show that the cumulative EQ was measured at 1/27 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

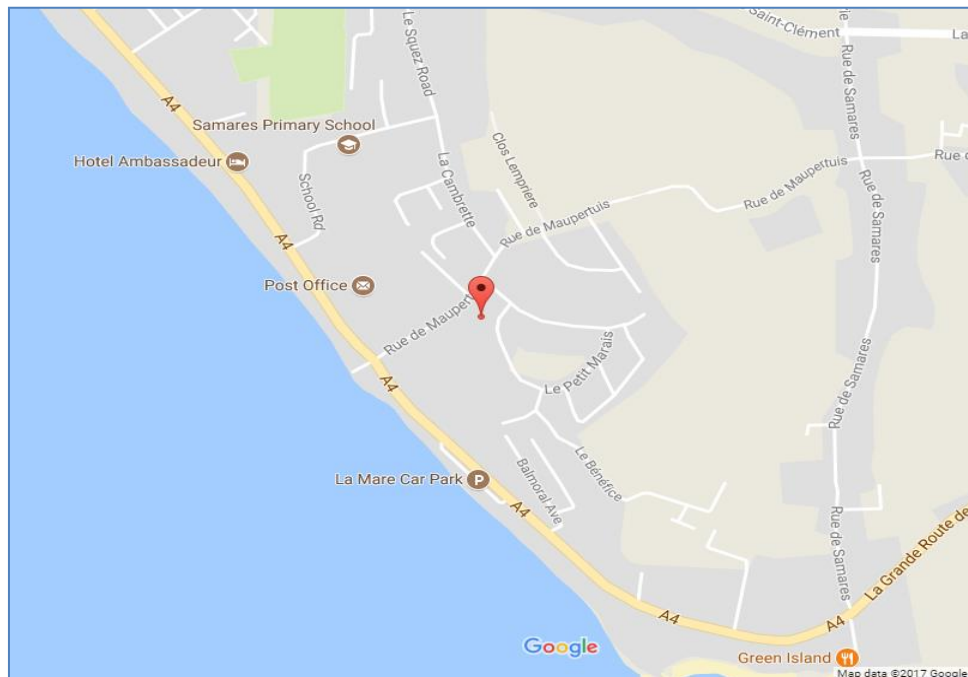


Figure 1 - Map of the Site Area

Site name	Maupertuis Pumping Station
Site address	Rue De Maupertuis, Jersey
Site Latitude	49.16835
Site Longitude	-2.08115

1.2 Site Description

Operators	Airtel J, Sure J & JT J
Antenna types	Directional
Approximate height	5-7m
Site type	Rooftop
Description	The antennas at the Maupertuis Pumping Station are located on the top side of the main building within a fenced enclosure, out of reach of the public.

1.3 Site Photo



Figure 2 – Peak Measurement Location

1.4 Test Location

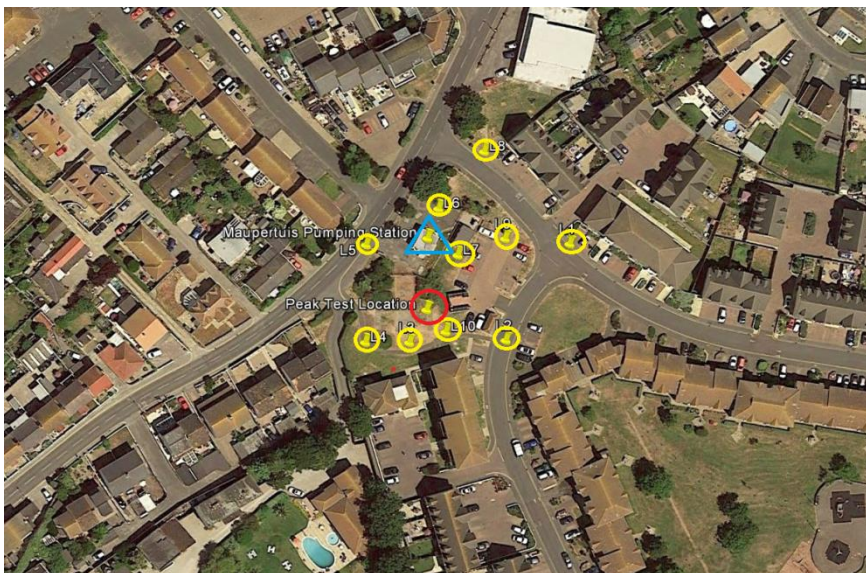


Figure 3- Survey Area with Spot Measurement Markers: The blue triangle is the site location, the yellow circles are intermediate locations measured at during the peak search and the red circle is the spot where the highest spot search reading was obtained and where the detailed survey was carried out

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.

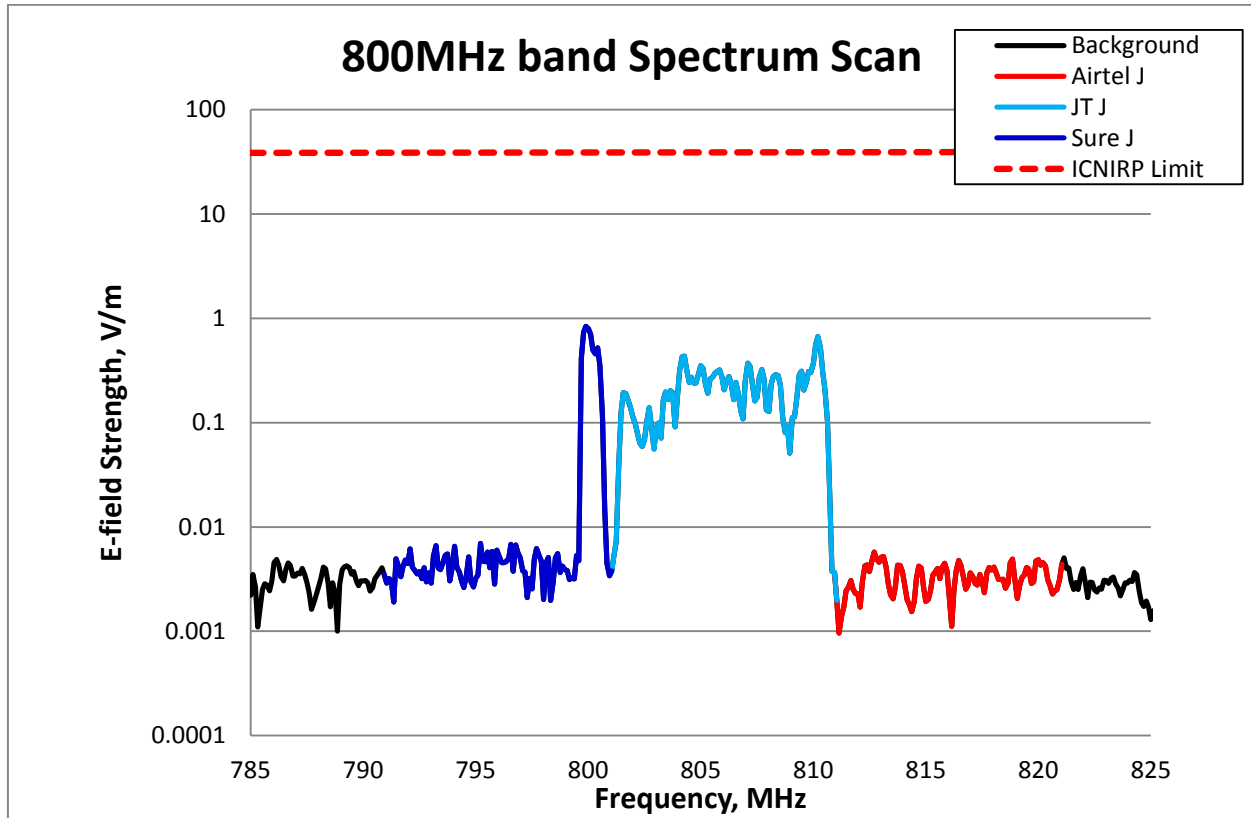


Figure 4 - 800MHz band Spectrum Scan

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 0.836 V/m (Sure J), which is 47 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
Maupertuis Pumping Station	Airtel J	800	0.005752	6761	3.08109E-07	1/ 3245606
	JT J		0.6665	58	0.001482025	1/ 675
	Sure J		0.836	47	0.000913175	1/ 1095
	total band EQ				0.002395508	1/ 417

Table 2– 800MHz band Exposure Quotient at Maupertuis Pumping Station

2.2 900 MHz Band

The graph for the 900 MHz activity is shown below:

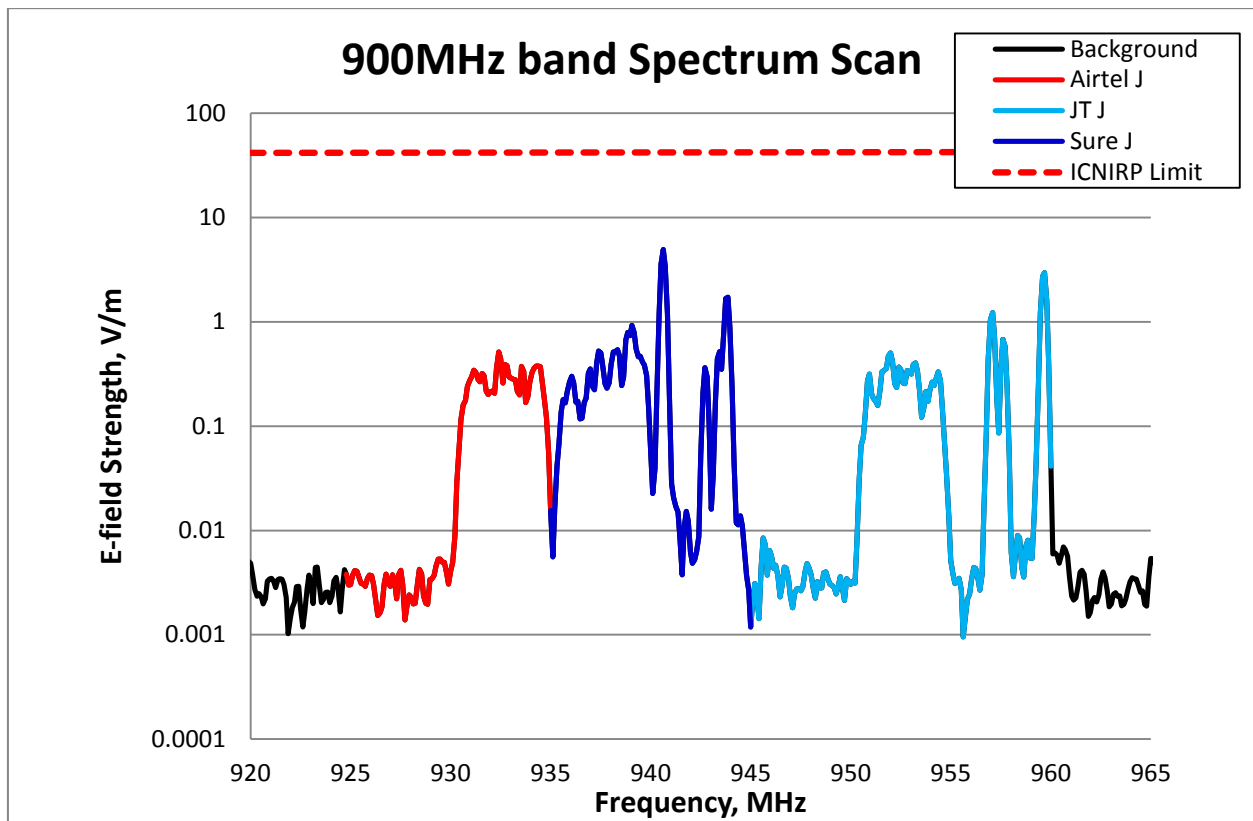


Figure 5 - 900MHz band Spectrum Scan

No field level recorded across the band was higher than 4.927 V/m (Sure J), which is 8 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
Maupertuis Pumping Station	Airtel J	900	0.5142	80	0.000974084	1/ 1027
	JT J		2.966	14	0.007571428	1/ 132
	Sure J		4.927	8	0.01812362	1/ 55
	total band EQ				0.026669132	1/ 37

Table 3– 900MHz band Exposure Quotient at Maupertuis Pumping Station

2.3 1800 MHz Band

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

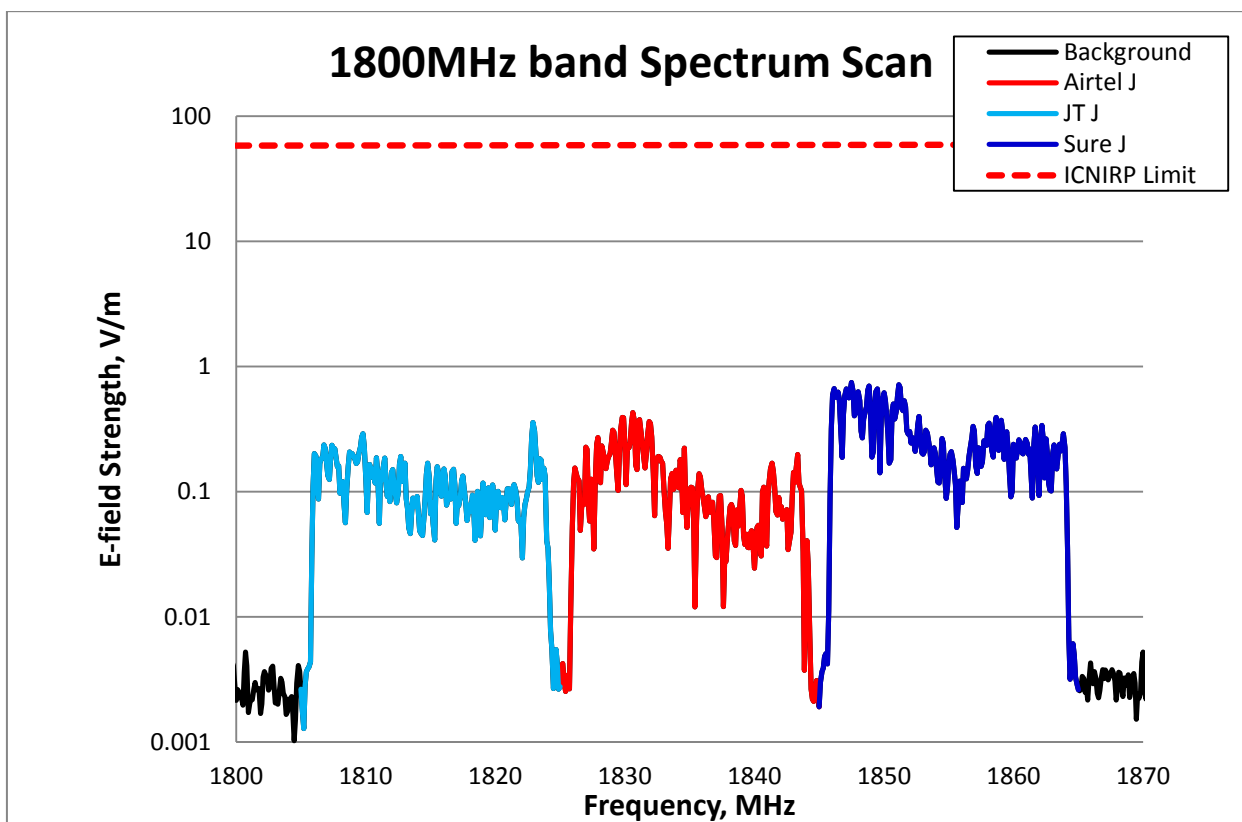


Figure 6 - 1800MHz Spectrum Scan

No field level recorded across the band was higher than 0.7453 V/m (Sure J), which is 78 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
Maupertuis Pumping Station	Airtel J	1800	0.4286	136	0.001122657	1/ 891
	JT J		0.3579	163	0.000839504	1/ 1191
	Sure J		0.7453	78	0.005509649	1/ 181
	total band EQ			0.007471809	1/ 134	

Table 4 – 1800MHz band Exposure Quotient at Maupertuis Pumping Station

2.4 2100MHz Band

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

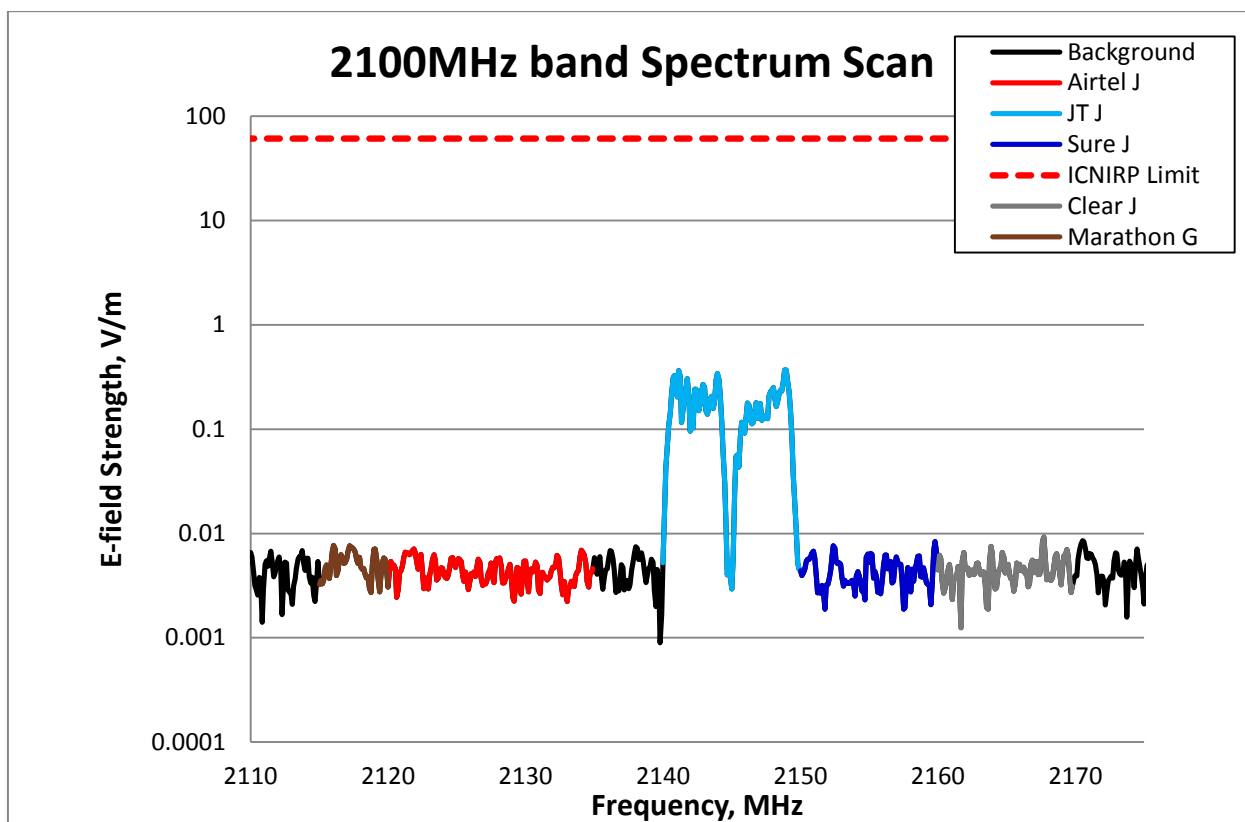


Figure 7 – 2100MHz band Spectrum Scan

No field level recorded across the band was higher than 0.3685 V/m (JT J), which is 166 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
Maupertuis Pumping Station	Airtel J	2100	0.007088	8606	8.0362E-07	1/ 1244369
	Clear J		0.009214	6620	5.57335E-07	1/ 1794253
	JT J		0.3685	166	0.000881258	1/ 1135
	Marathon J		0.007655	7969	3.69242E-07	1/ 2708251
	Sure J		0.008332	7321	5.41595E-07	1/ 1846398
total band EQ					0.00088353	1/ 1132

Table 5 – 2100MHz band Exposure Quotient at Maupertuis Pumping Station

2.5 2600MHz band

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

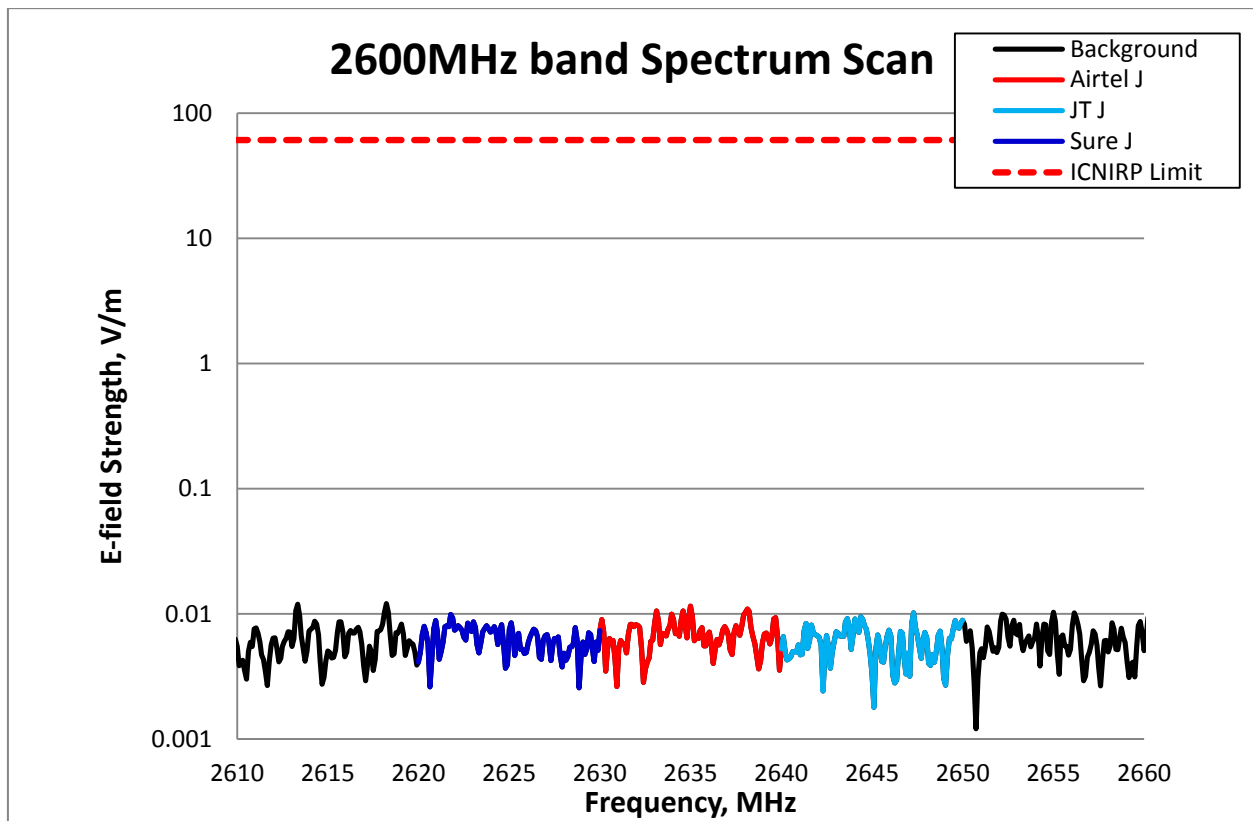


Figure 8 – 2600MHz band Spectrum Scan

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
Maupertuis Pumping Station	Airtel J	2600	0.01157	5272	1.30985E-06	1/ 763446
	JT J		0.01019	5986	1.01964E-06	1/ 980741
	Sure J		0.00992	6149	1.09333E-06	1/ 914634
	total band EQ			3.42282E-06	1/ 292157	

Table 6 – 2600MHz band Exposure Quotient at Maupertuis Pumping Station

End