

Cellular Mast Emissions Survey: War Tunnels (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 War Tunnels site located in Jersey.

The War Tunnels site was used by a single operator at the time of the survey: JT 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
War Tunnels	800	0.03797	JT J	1024	2.55046E-06	1/ 392087
	900	0.2538	JT J	163	9.29475E-05	1/ 10759
	1800	0.00119	Sure J	49022	5.87826E-08	1/ 17011848
	2100	0.002163	Sure J	28202	1.23416E-07	1/ 8102665
	2600	0.002691	Sure J	22668	1.23875E-07	1/ 8072653
Total Site EQ					9.5804E-05	1/ 10438

Table 1 - Cumulative Exposure Quotient

The results show that the cumulative EQ was measured at 1/10438 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

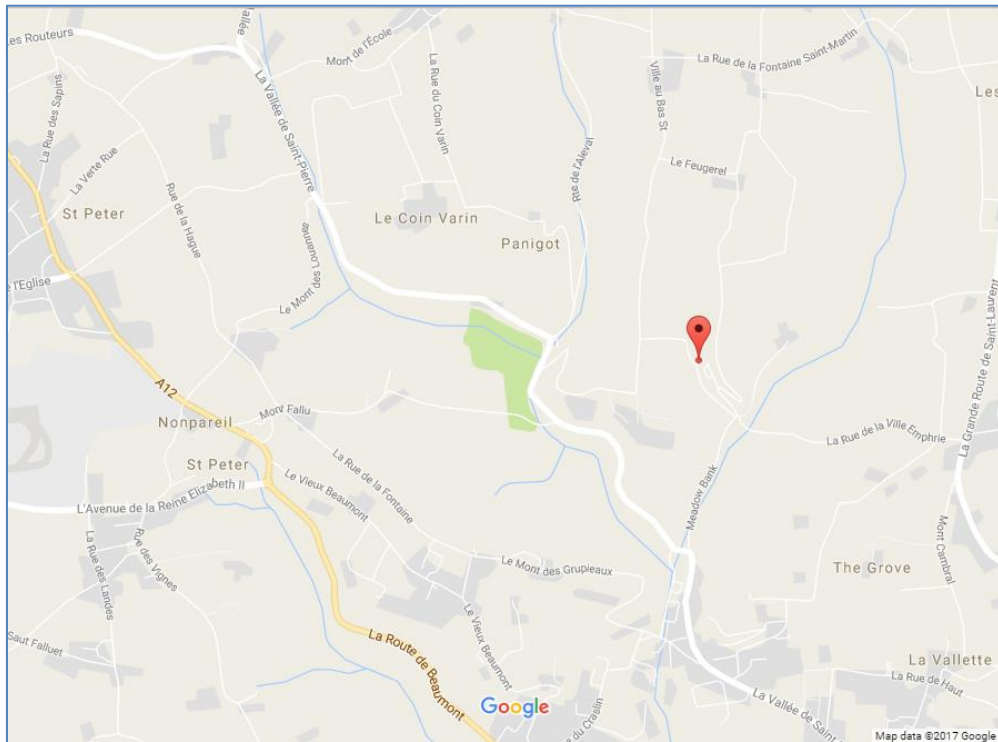


Figure 1 - Map of the Site Area

Site name	War Tunnels
Site address	Les Charrieres de Malorey, St Lawrence, Jersey
Site Latitude	N 49.21046
Site Longitude	W 02.15464

1.2 Site Description

Operators	JT J
Antenna types	Omni directional
Approximate height	5m
Site type	Pole mast
Description	The pole mast at the War Tunnels is located within the car park, access is open to the public.

1.3 Site Photo



Figure 2 – Peak Measurement Location

1.4 Test Location

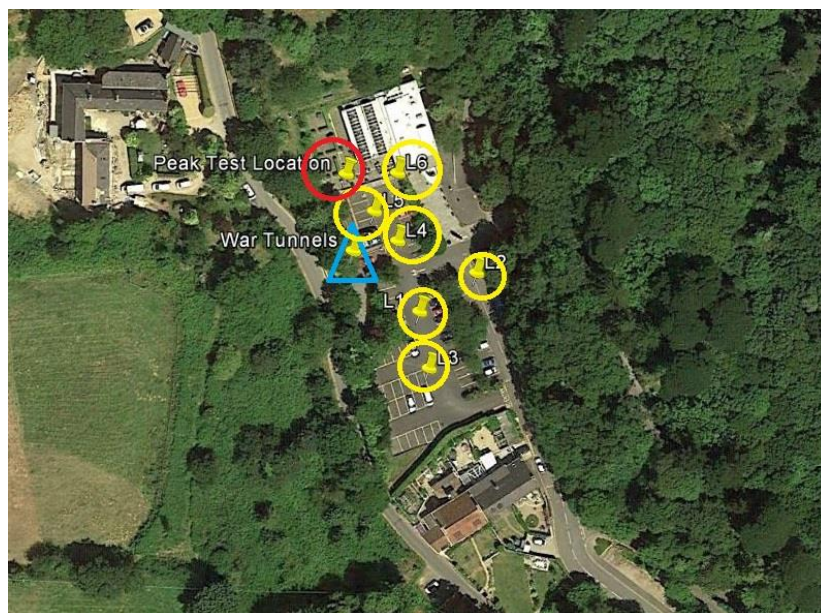


Figure 3- Survey Area with Spot Measurement Markers: The blue triangle is the site location, the yellow circles are intermediate locations measured at during the peak search and the red circle is the spot where the highest spot search reading was obtained and where the detailed survey was carried out

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.

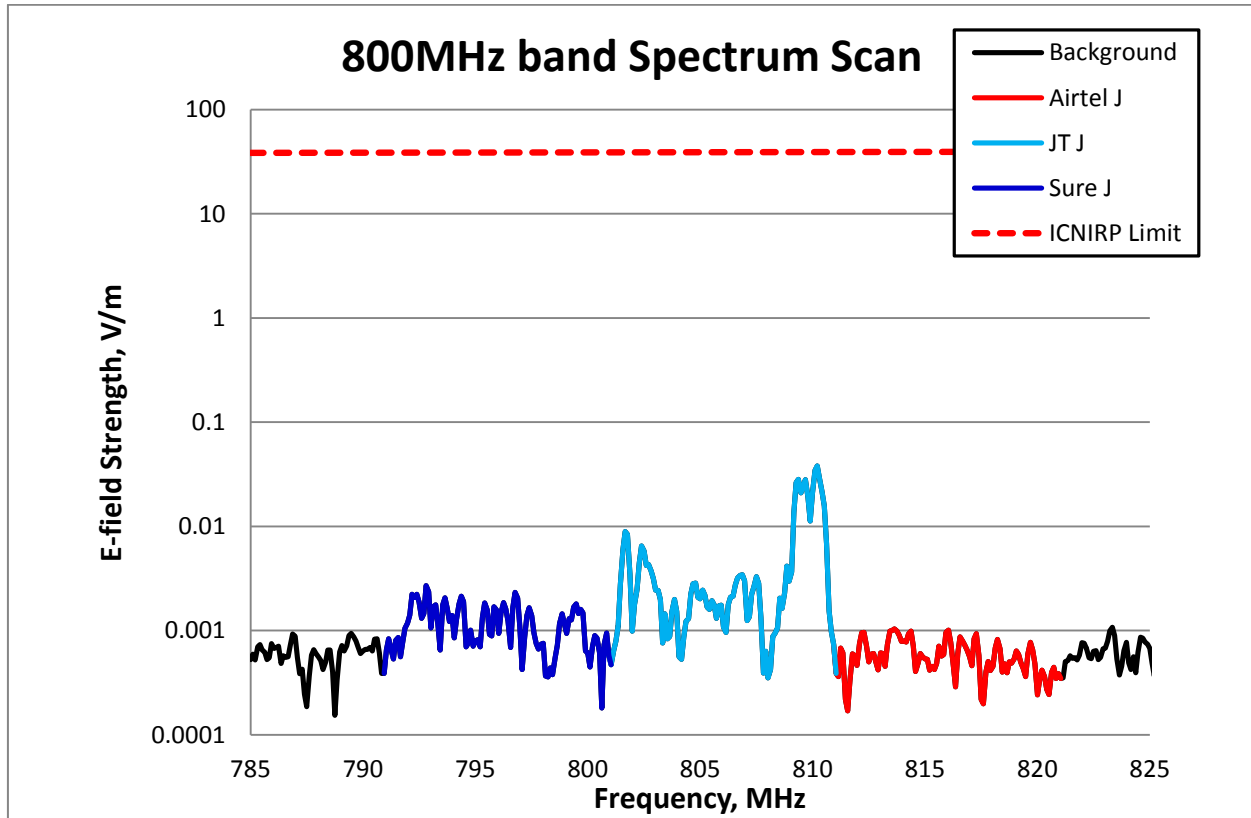


Figure 4 - 800MHz band Spectrum Scan

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 0.03797 V/m (JT J), which is 1024 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
War Tunnels	Airtel J	800	0.001036	37539	1.00131E-08	1/ 99869305
	JT J		0.03797	1024	2.49673E-06	1/ 400524
	Sure J		0.002706	14372	4.3712E-08	1/ 22877000
total band EQ					2.55046E-06	1/ 392087

Table 2– 800MHz band Exposure Quotient at War Tunnels

2.2 900 MHz Band

The graph for the 900 MHz activity is shown below:

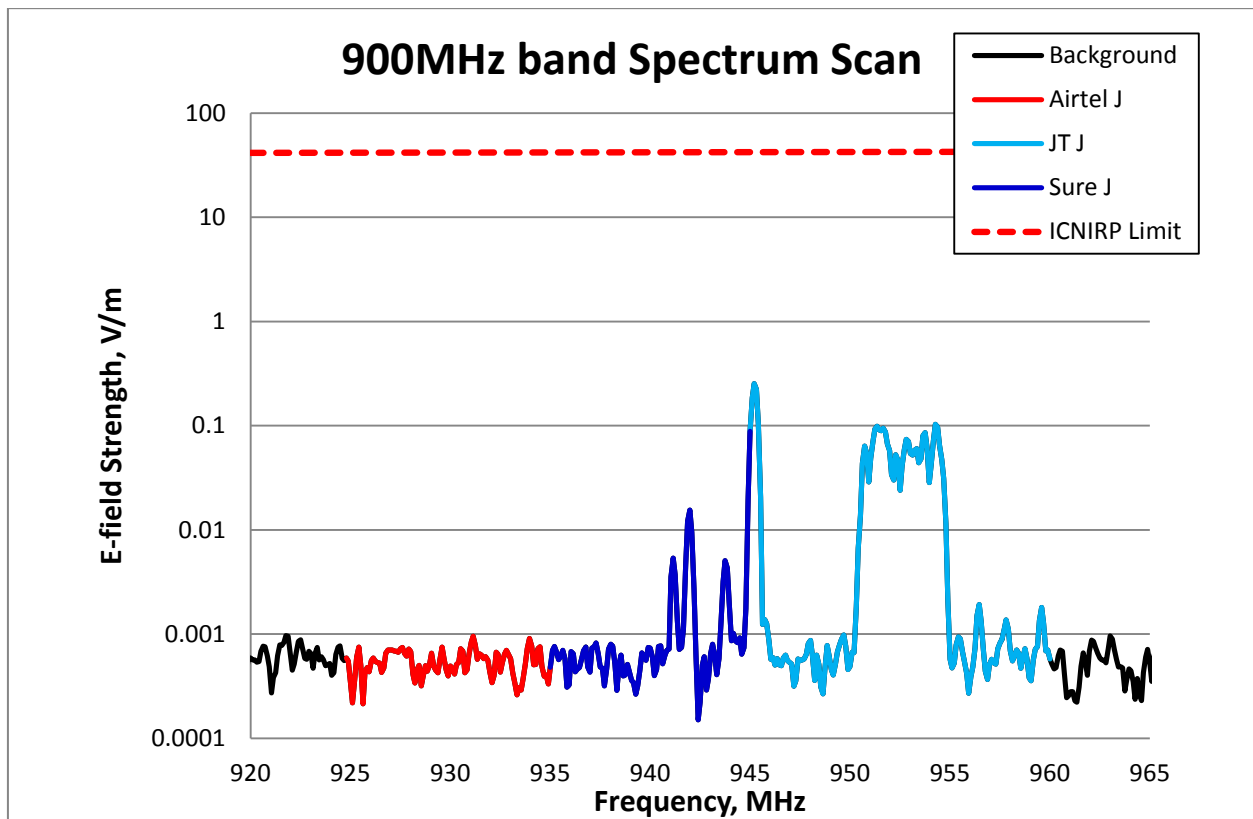


Figure 5 - 900MHz band Spectrum Scan

No field level recorded across the band was higher than 0.2538 V/m (JT J), which is 163 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
War Tunnels	Airtel J	900	0.0009543	43225	8.26289E-09	1/ 121023088
	JT J		0.2538	163	9.05696E-05	1/ 11041
	Sure J		0.08815	468	2.36956E-06	1/ 422020
total band EQ					9.29475E-05	1/ 10759

Table 3– 900MHz band Exposure Quotient at War Tunnels

2.3 1800 MHz Band

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

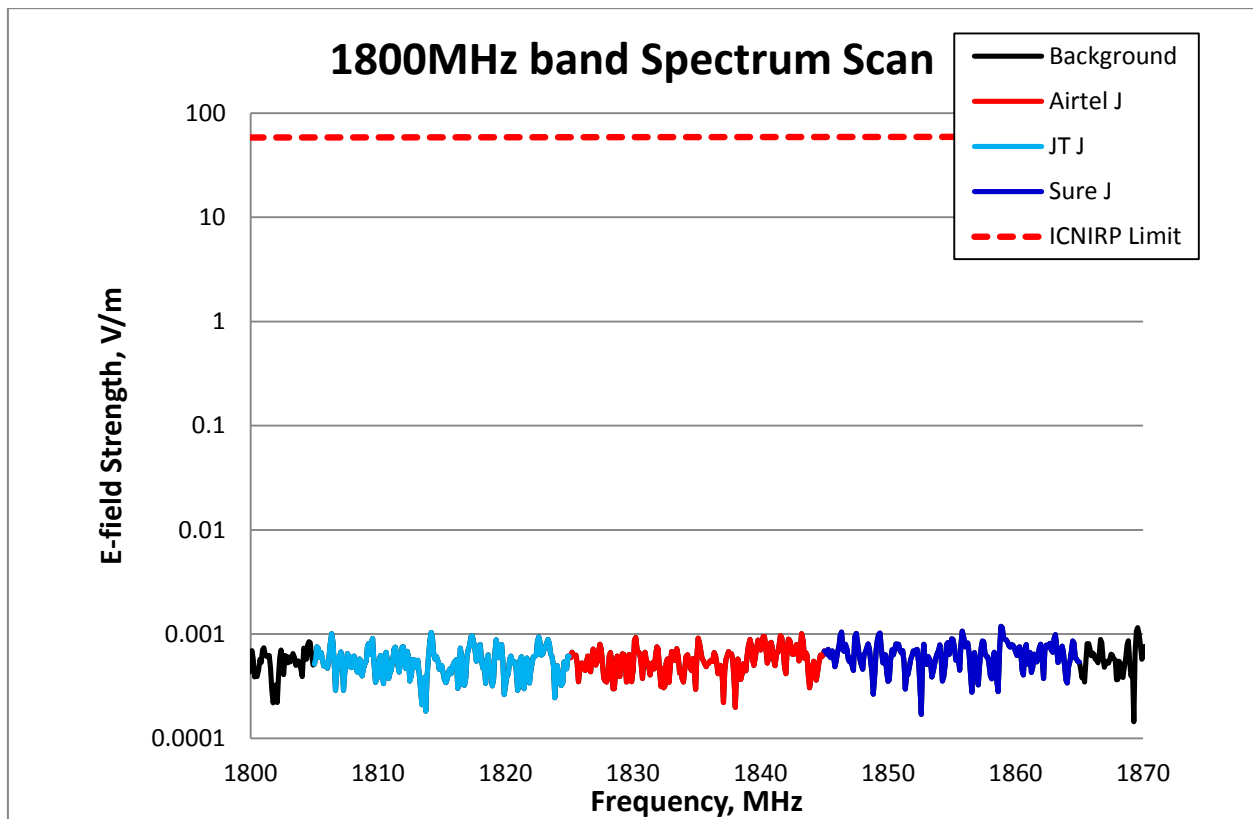


Figure 6 - 1800MHz Spectrum Scan

No activity was recorded in the 1800MHz as no operator appears to transmit in this band at this site.

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
War Tunnels	Airtel J	1800	0.001011	57702	1.84953E-08	1/ 54067729
	JT J		0.00104	56093	1.72742E-08	1/ 57889679
	Sure J		0.00119	49022	2.3013E-08	1/ 43453693
total band EQ					5.87826E-08	1/ 17011848

Table 4 – 1800MHz band Exposure Quotient at War Tunnels

2.4 2100MHz Band

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

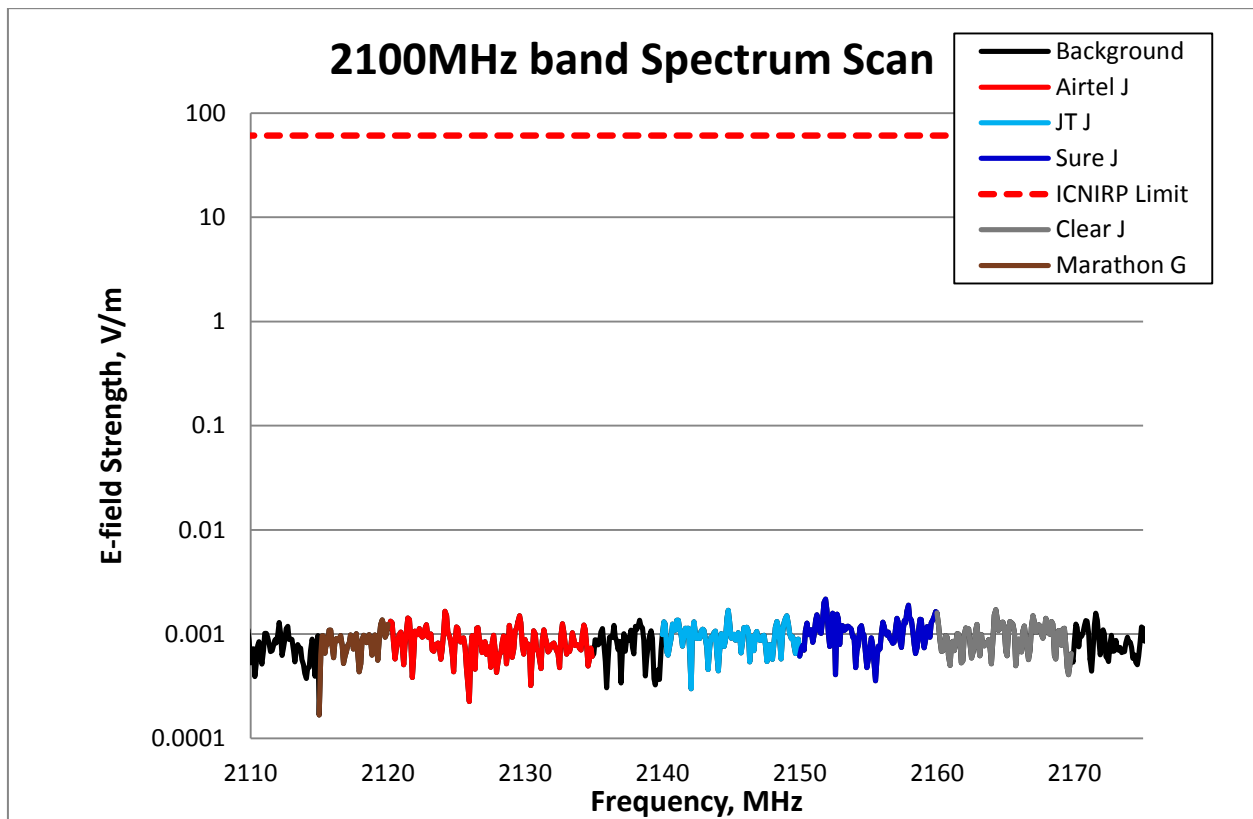


Figure 7 – 2100MHz band Spectrum Scan

No activity was recorded in the 2100MHz as no operator appears to transmit in this band at this site.

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
War Tunnels	Airtel J	2100	0.001655	36858	3.05046E-08	1/ 32781966
	Clear J		0.001718	35506	2.48517E-08	1/ 40238736
	JT J		0.001693	36031	2.52522E-08	1/ 39600496
	Marathon J		0.001368	44591	1.00101E-08	1/ 99898727
	Sure J		0.002163	28202	3.27976E-08	1/ 30490049
total band EQ					1.23416E-07	1/ 8102665

Table 5 – 2100MHz band Exposure Quotient at War Tunnels

2.5 2600MHz band

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

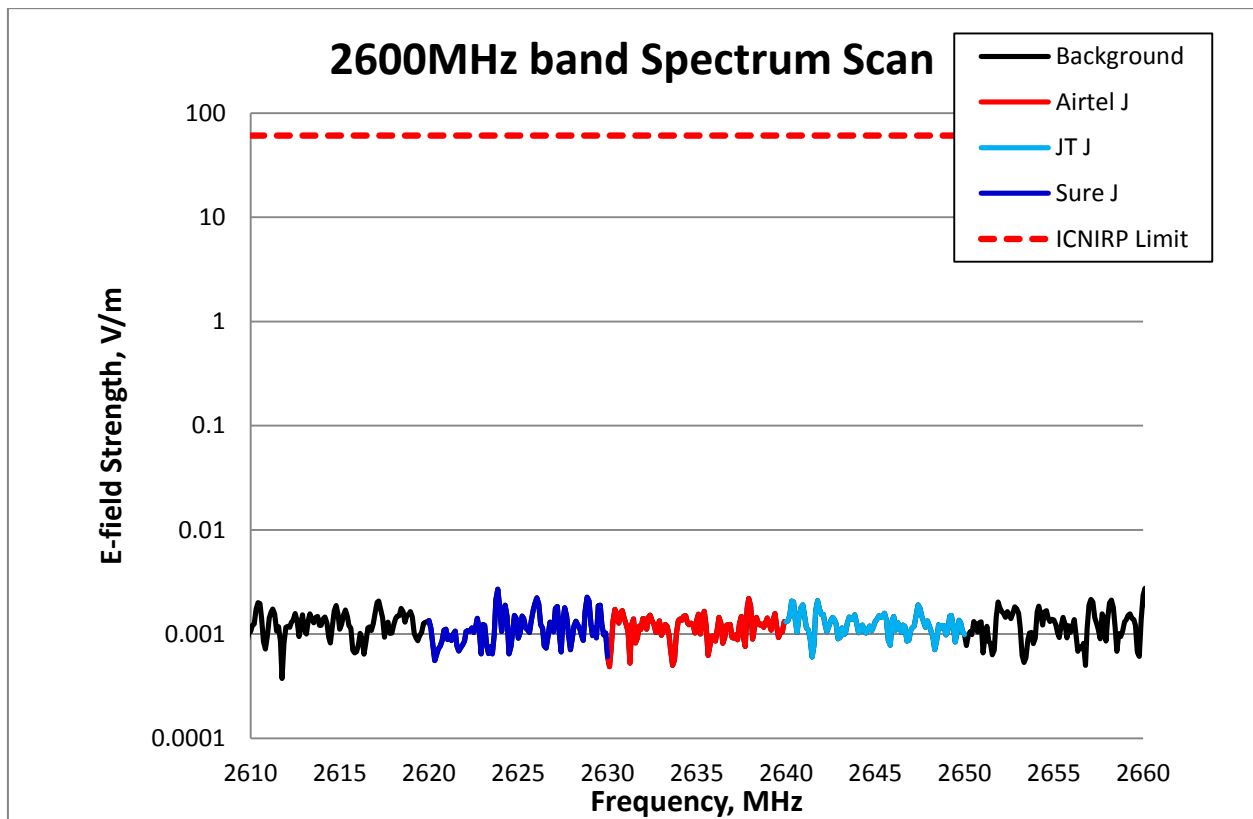


Figure 8 – 2600MHz band Spectrum Scan

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
War Tunnels	Airtel J	2600	0.002199	27740	3.90444E-08	1/ 25611880
	JT J		0.002096	29103	4.36634E-08	1/ 22902458
	Sure J		0.002691	22668	4.11672E-08	1/ 24291186
total band EQ					1.23875E-07	1/ 8072653

Table 6 – 2600MHz band Exposure Quotient at War Tunnels

End