

Cellular Mast Emissions Survey: Stonewall (Jersey)



DOCUMENT DETAILS

Document Name:	Cellular Mast Emissions Survey:	Stonewall (Jersey)
Survey Date:	09/06/2017 at 09:44	
Report issue Date	21/07/2017	
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 Stonewall site located in Jersey.

The Stonewall site was used by a single operator at the time of the survey: JT J; but the survey recorded strong signals from Airtel J who operate a site in a nearby location. Surveys were nonetheless 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
Stonewall	800	0.1161	JT J	335	6.5979E-05	1/ 15156
	900	2.219	JT J	19	0.003230924	1/ 310
	1800	0.09391	JT J	621	2.23318E-05	1/ 44779
	2100	0.0824	JT J	740	5.18513E-05	1/ 19286
	2600	0.002251	Airtel J	27099	1.19527E-07	1/ 8366340
Total Site EQ					0.003371206	1/ 297

Table 1 - Cumulative Exposure Quotient

The results show that the cumulative EQ was measured at 1/297 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

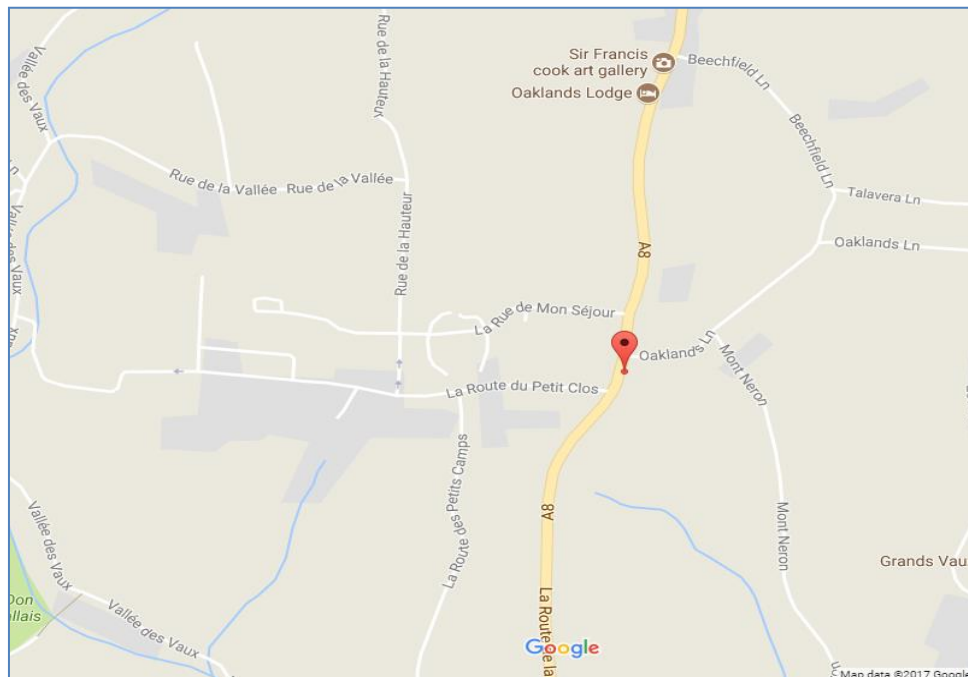


Figure 1 - Map of the Site Area

Site name	Stonewall
Site address	Field 1425, La Route De Trinity, Jersey
Site Latitude	49.2058
Site Longitude	-2.09813

1.2 Site Description

Operators	JT J
Antenna types	Directional
Approximate height	15m
Site type	Monopole
Description	The monopole at Stonewall is located within shrubbery to the side of the road, access is restricted to the public.

1.3 Site Photo



Figure 2 – Peak Measurement Location

1.4 Test Location

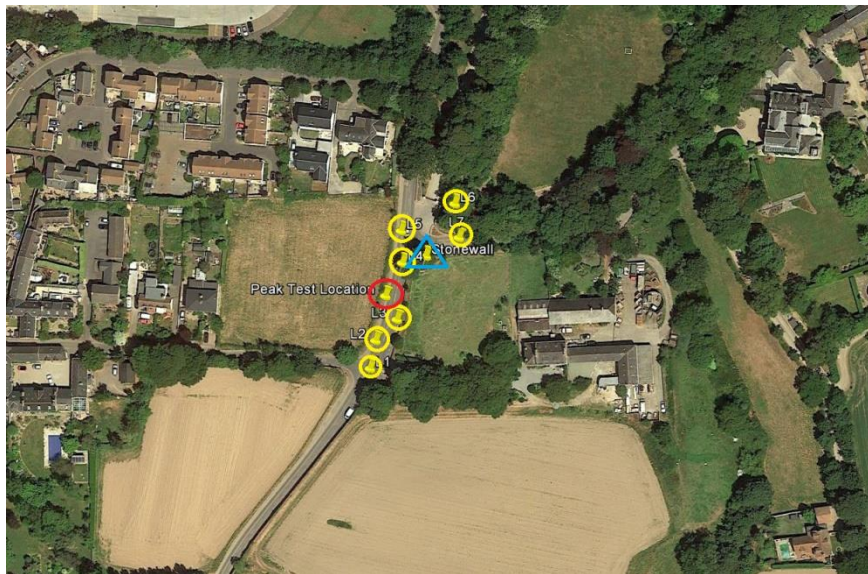


Figure 3- Survey Area with Spot Measurement Markers: The blue triangle is the site location, the yellow circles are intermediate locations measured at during the peak search and the red circle is the spot where the highest spot search reading was obtained and where the detailed survey was carried out

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.

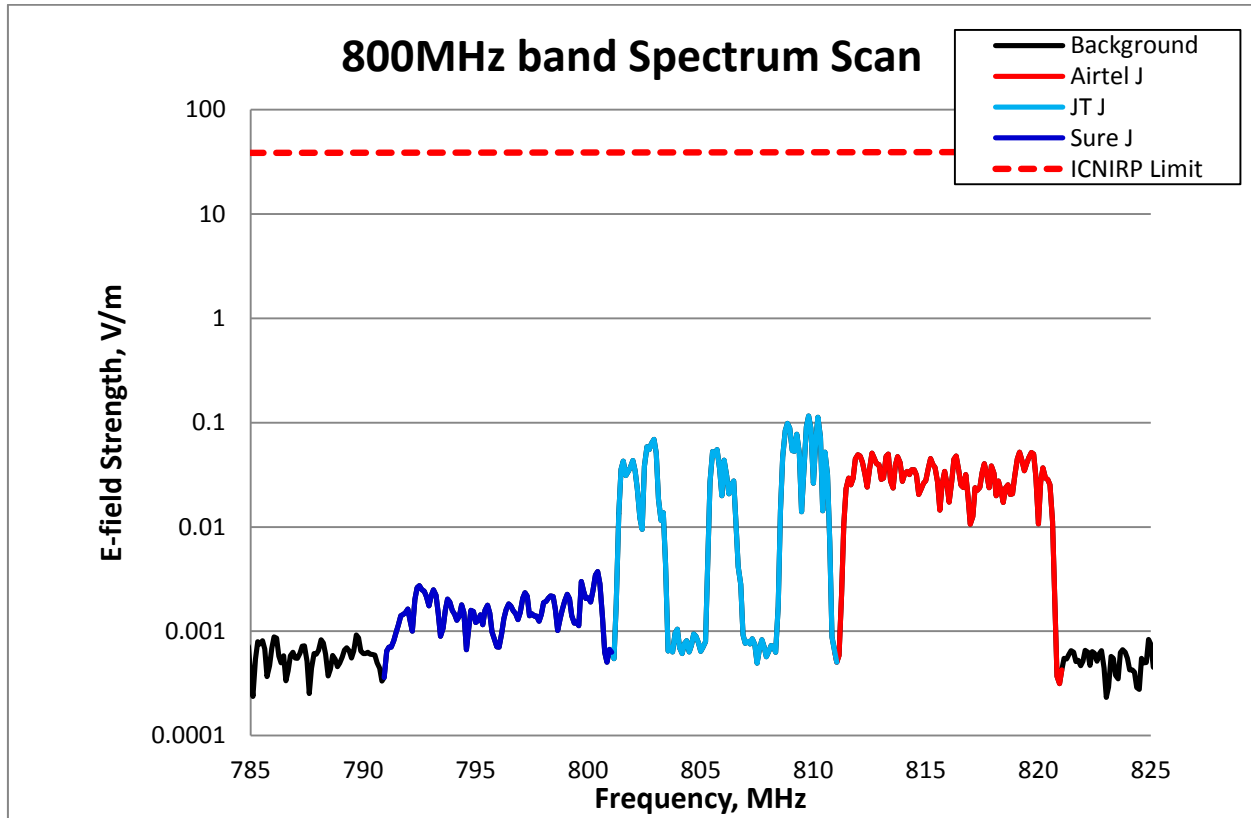


Figure 4 - 800MHz band Spectrum Scan

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 0.1161 V/m (JT J), which is 335 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
Stonewall	Airtel J	800	0.05227	744	2.69208E-05	1/ 37146
	JT J		0.1161	335	3.8981E-05	1/ 25654
	Sure J		0.003747	10379	7.71686E-08	1/ 12958637
total band EQ					6.5979E-05	1/ 15156

Table 2– 800MHz band Exposure Quotient at Stonewall

2.2 900 MHz Band

The graph for the 900 MHz activity is shown below:

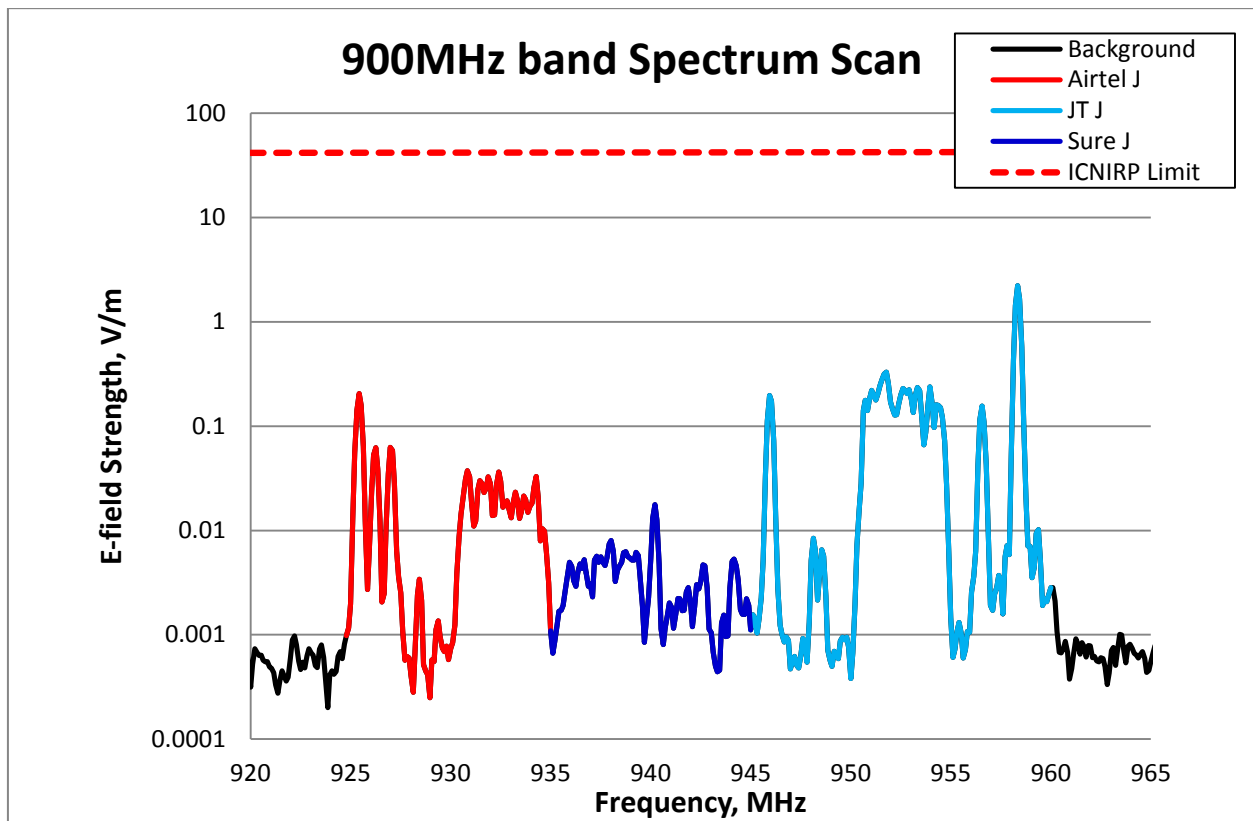


Figure 5 - 900MHz band Spectrum Scan

No field level recorded across the band was higher than 2.219 V/m (JT J), which is 19 times smaller than the ICNIRP Reference level.

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

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
Stonewall	Airtel J	900	0.2058	200	3.62559E-05	1/ 27582
	JT J		2.219	19	0.003194162	1/ 313
	Sure J		0.01771	2329	5.06253E-07	1/ 1975297
total band EQ					0.003230924	1/ 310

Table 3– 900MHz band Exposure Quotient at Stonewall

2.3 1800 MHz Band

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

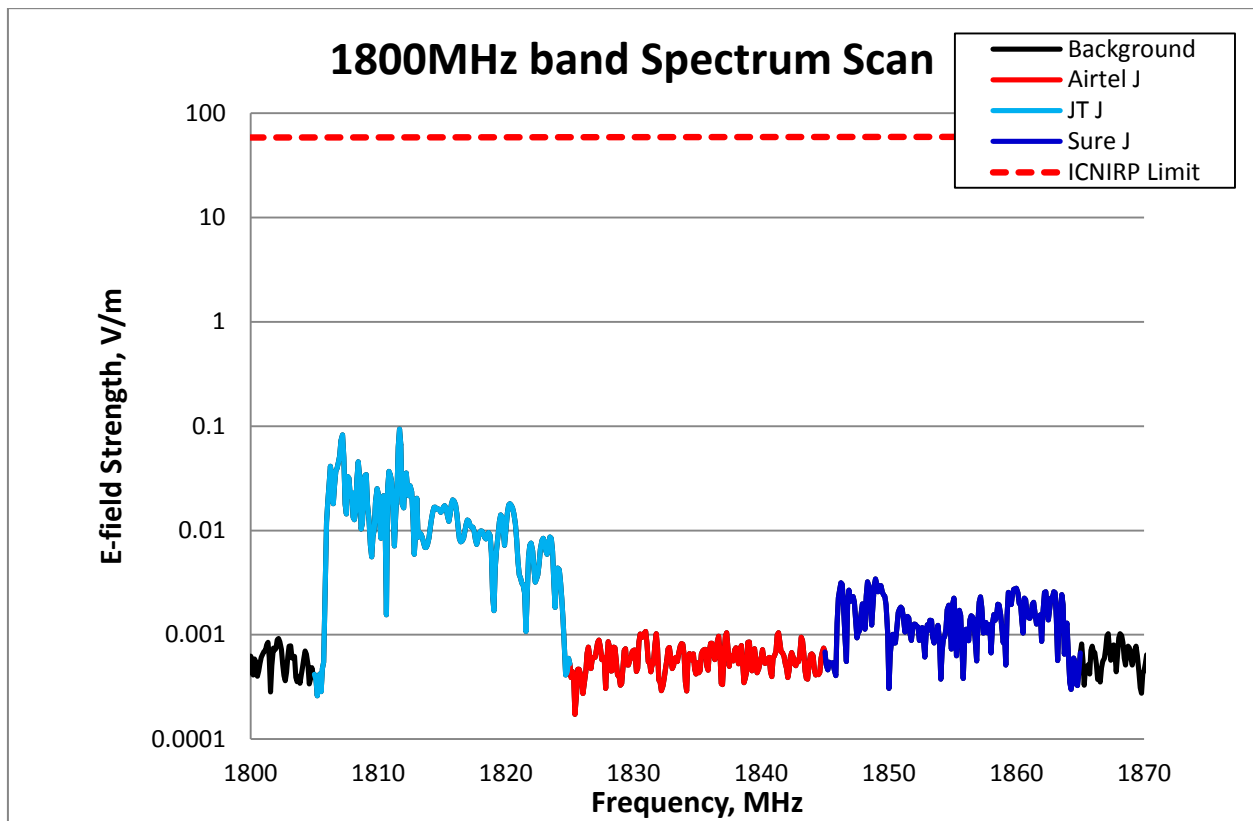


Figure 6 - 1800MHz Spectrum Scan

No field level recorded across the band was higher than 0.09391 V/m (JT J), which is 621 times smaller than the ICNIRP Reference level.

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

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
Stonewall	Airtel J	1800	0.001075	54266	2.0348E-08	1/ 49144829
	JT J		0.09391	621	2.21738E-05	1/ 45098
	Sure J		0.003441	16953	1.3772E-07	1/ 7261108
total band EQ					2.23318E-05	1/ 44779

Table 4 – 1800MHz band Exposure Quotient at Stonewall

2.4 2100MHz Band

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

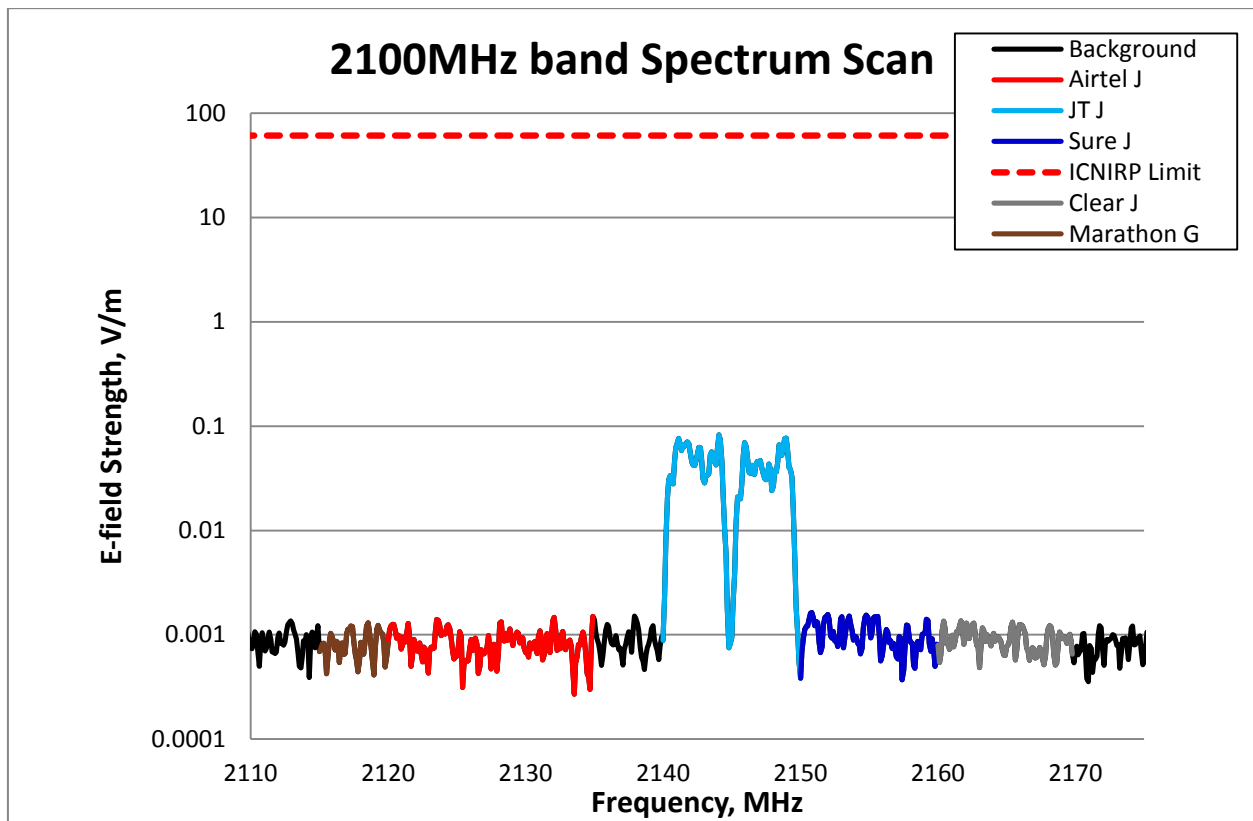


Figure 7 – 2100MHz band Spectrum Scan

No field level recorded across the band was higher than 0.0824 V/m (JT J), which is 740 times smaller than the ICNIRP Reference level.

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

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
Stonewall	Airtel J	2100	0.001497	40748	2.95875E-08	1/ 33798075
	Clear J		0.001364	44721	2.2093E-08	1/ 45263283
	JT J		0.0824	740	5.17605E-05	1/ 19320
	Marathon J		0.001305	46743	9.81719E-09	1/ 101862095
	Sure J		0.001629	37446	2.9296E-08	1/ 34134382
total band EQ					5.18513E-05	1/ 19286

Table 5 – 2100MHz band Exposure Quotient at Stonewall

2.5 2600MHz band

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

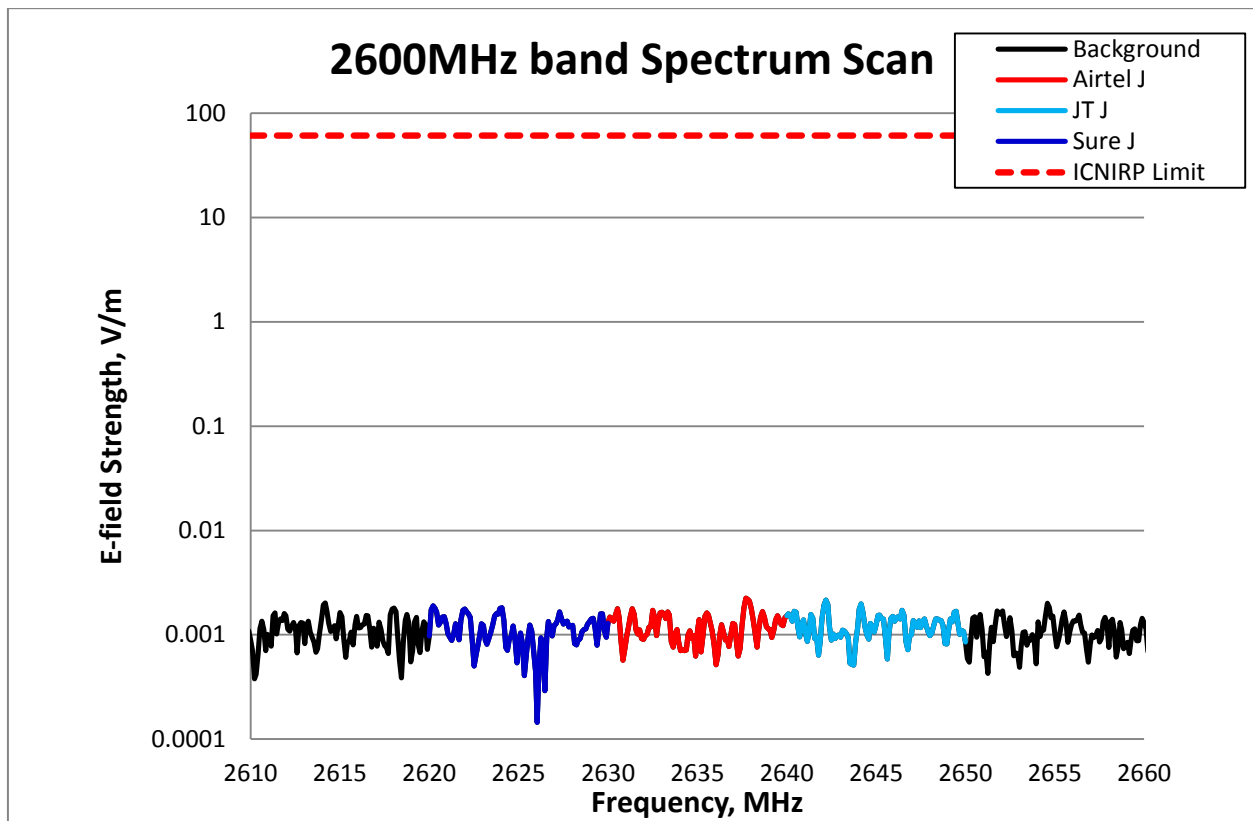


Figure 8 – 2600MHz band Spectrum Scan

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	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
Stonewall	Airtel J	2600	0.002251	27099	4.09961E-08	1/ 24392574
	JT J		0.002151	28359	4.15941E-08	1/ 24041892
	Sure J		0.001901	32088	3.69364E-08	1/ 27073537
total band EQ					1.19527E-07	1/ 8366340

Table 6 – 2600MHz band Exposure Quotient at Stonewall

End