

Cellular Mast Emissions Survey: JEC Stonewall (Jersey)



DOCUMENT DETAILS

Document Name:	Cellular Mast Emissions Survey:	JEC Stonewall (Jersey)
Survey Date:	09/06/2017 at 09:37	
Report issue Date	21/07/2017	
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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 JEC Stonewall site located in Jersey.

The JEC Stonewall site was used by one operator at the time of the survey: Airtel J; but the survey recorded strong signals from JT 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
JEC Stonewall	800	0.03458	Airtel J	1125	1.47589E-05	1/ 67756
	900	1.745	JT J	24	0.001961078	1/ 510
	1800	0.05597	JT J	1042	4.14847E-05	1/ 24105
	2100	0.07776	JT J	784	3.41168E-05	1/ 29311
	2600	0.002036	JT J	29961	1.03778E-07	1/ 9635948
Total Site EQ					0.002051542	1/ 487

Table 1 - Cumulative Exposure Quotient

The results show that the cumulative EQ was measured at 1/487 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

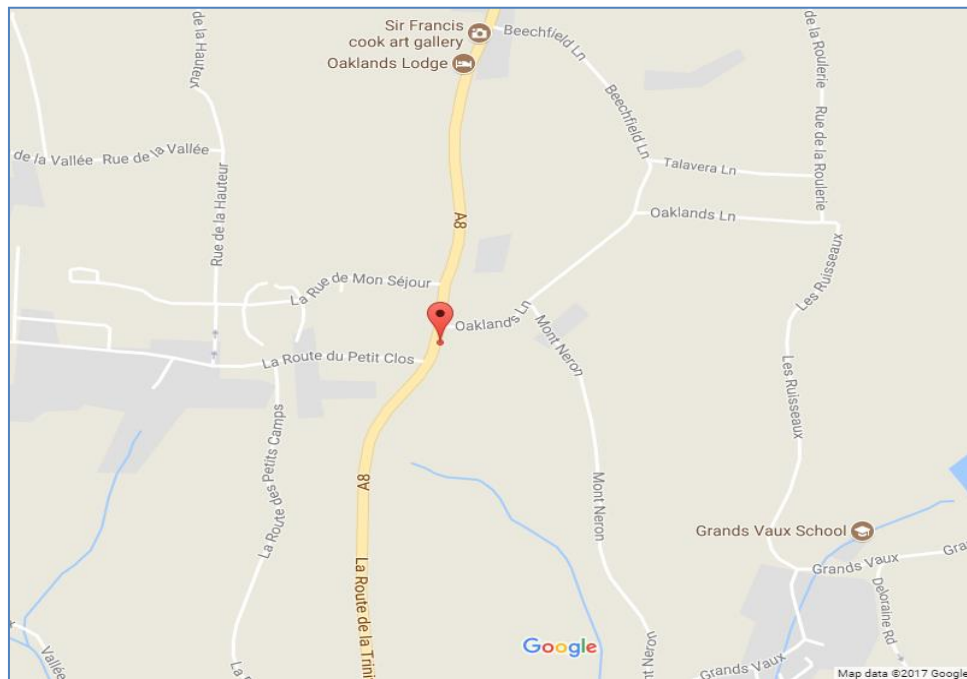


Figure 1 - Map of the Site Area

Site name	JEC Stonewall
Site address	La Route de la Trinity, Trinity, Jersey
Site Latitude	49.2058
Site Longitude	-2.09813

1.2 Site Description

Operators	Airtel J
Antenna types	Directional
Approximate height	18m
Site type	Pole Mast
Description	The Pole Mast at JEC Stonewall is located behind the building; access is open to the public.

1.3 Site Photo



Figure 2 – Peak Measurement Location

1.4 Test Location

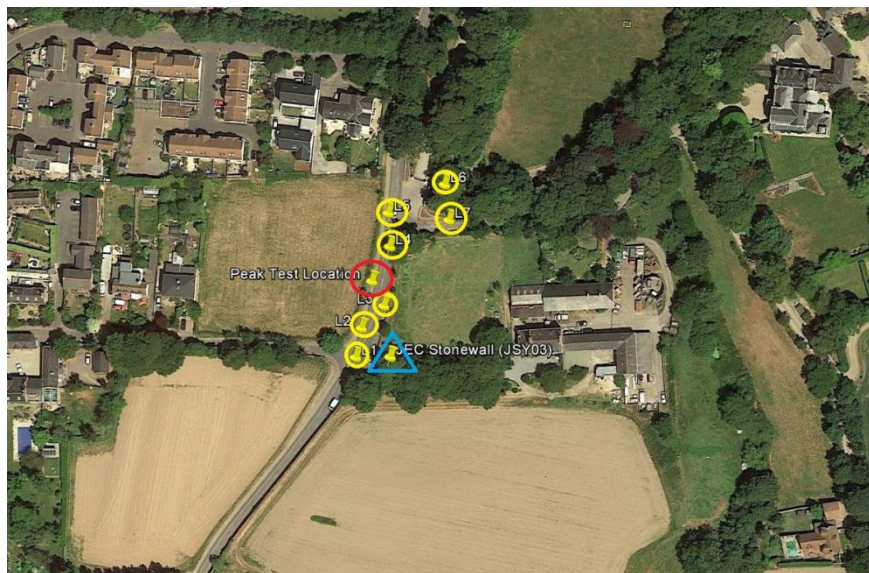


Figure 3- Survey Area with Spot Measurement Markers: The blue triangle is the site location, the yellow circles are intermediate locations measured at during the peak search and the red circle is the spot where the highest spot search reading was obtained and where the detailed survey was carried out

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.

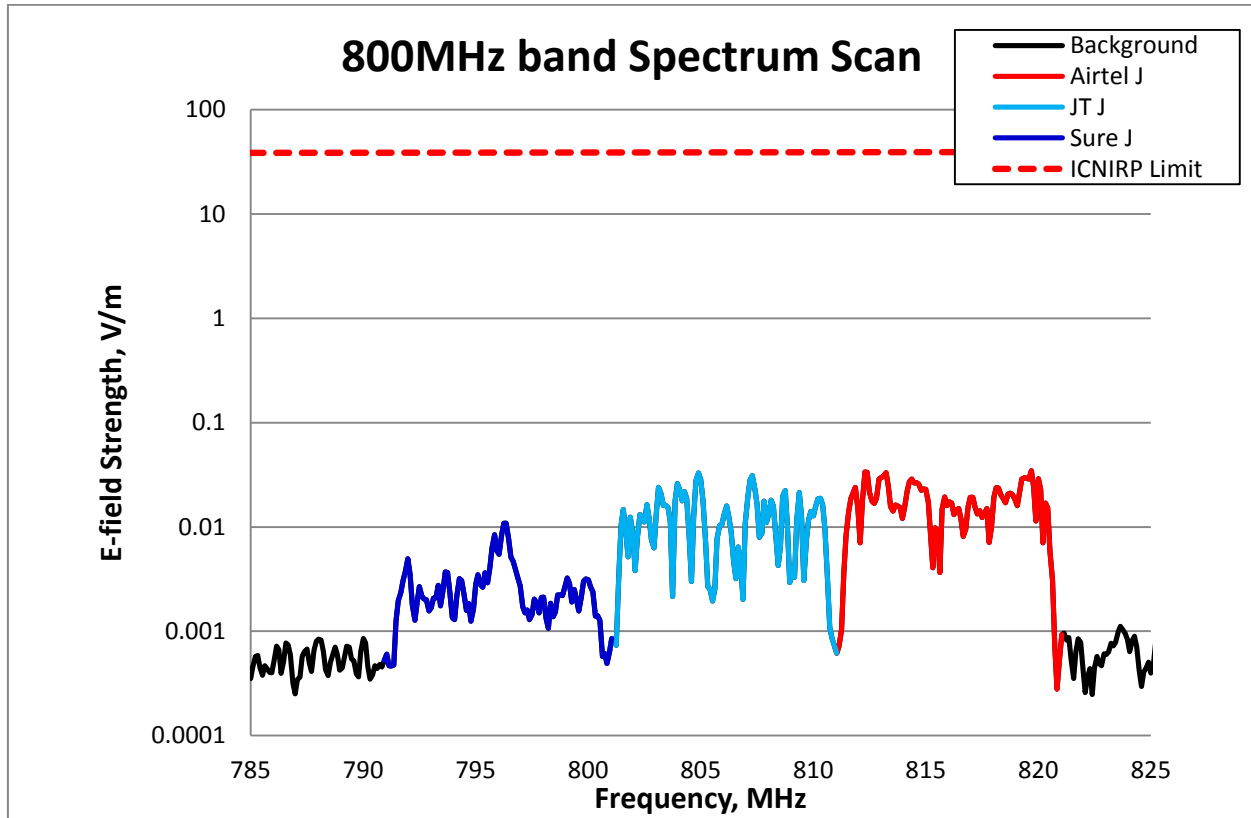


Figure 4 - 800MHz band Spectrum Scan

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 0.03458 V/m (Airtel J), which is 1125 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
JEC Stonewall	Airtel J	800	0.03458	1125	9.38752E-06	1/ 106524
	JT J		0.033	1179	5.08881E-06	1/ 196510
	Sure J		0.01083	3591	2.82575E-07	1/ 3538882
total band EQ					1.47589E-05	1/ 67756

Table 2– 800MHz band Exposure Quotient at JEC Stonewall

2.2 900 MHz Band

The graph for the 900 MHz activity is shown below:

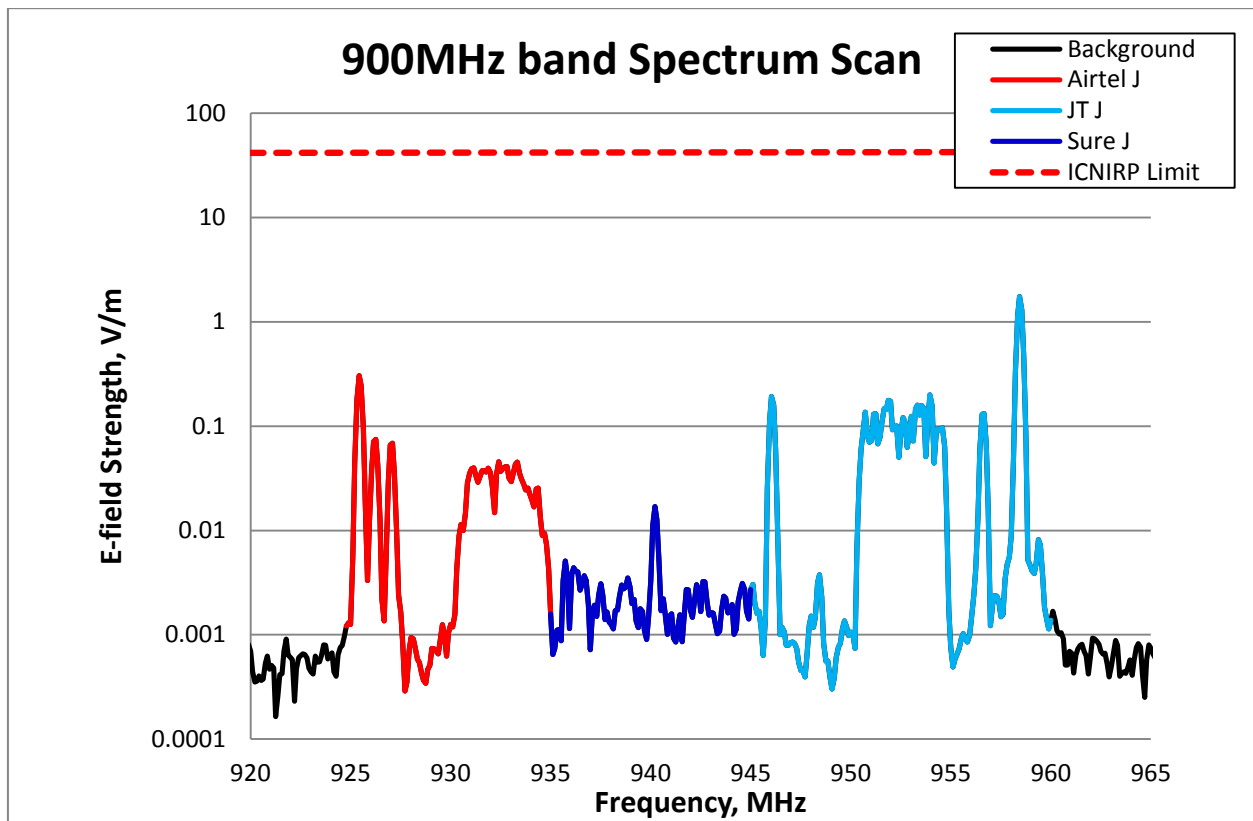


Figure 5 - 900MHz band Spectrum Scan

No field level recorded across the band was higher than 1.745 V/m (JT 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
JEC Stonewall	Airtel J	900	0.3053	135	7.08584E-05	1/ 14113
	JT J		1.745	24	0.001889933	1/ 529
	Sure J		0.01698	2429	2.85919E-07	1/ 3497490
total band EQ					0.001961078	1/ 510

Table 3– 900MHz band Exposure Quotient at JEC Stonewall

2.3 1800 MHz Band

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

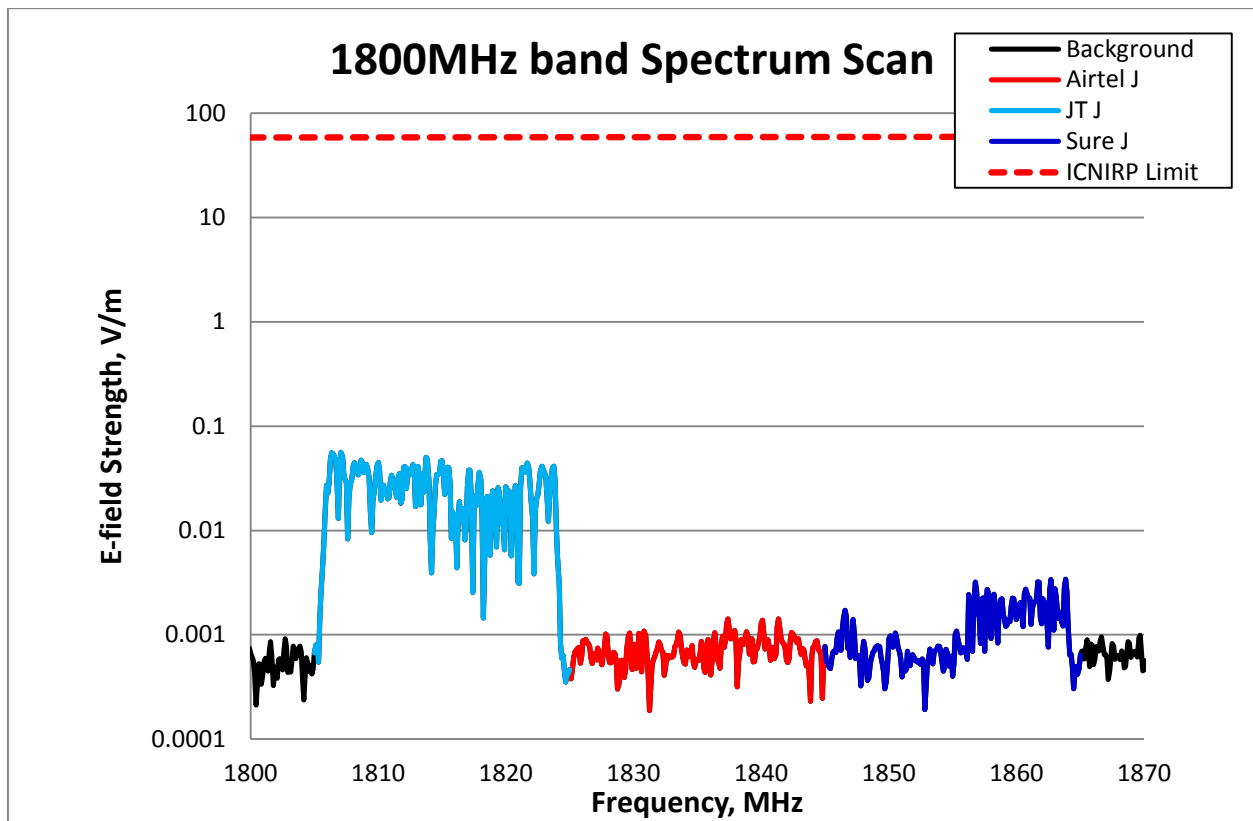


Figure 6 - 1800MHz Spectrum Scan

No field level recorded across the band was higher than 0.05597 V/m (JT J), which is 1042 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
JEC Stonewall	Airtel J	1800	0.001421	41053	2.94789E-08	1/ 33922616
	JT J		0.05597	1042	4.13585E-05	1/ 24179
	Sure J		0.003413	17092	9.6716E-08	1/ 10339548
total band EQ					4.14847E-05	1/ 24105

Table 4 – 1800MHz band Exposure Quotient at JEC Stonewall

2.4 2100MHz Band

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

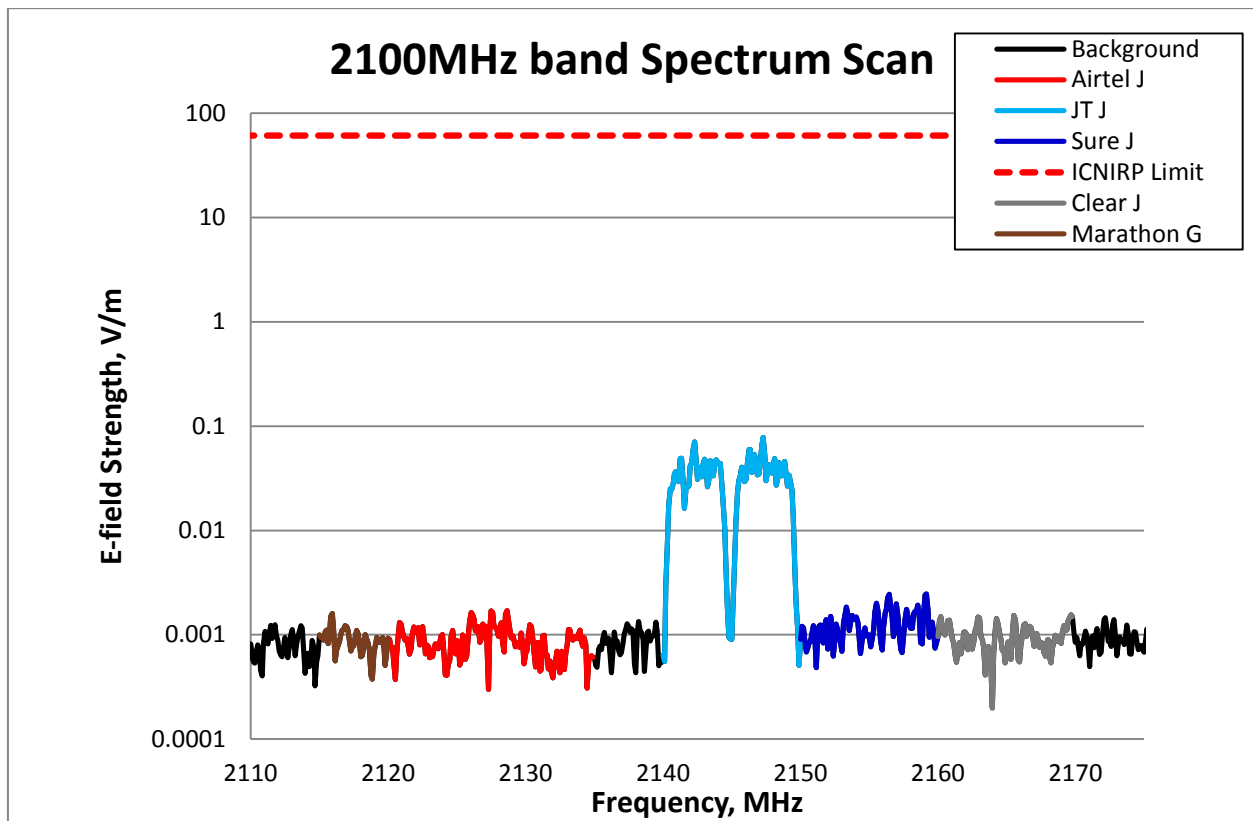


Figure 7 – 2100MHz band Spectrum Scan

No field level recorded across the band was higher than 0.07776 V/m (JT J), which is 784 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
JEC Stonewall	Airtel J	2100	0.00171	35673	3.26977E-08	1/ 30583217
	Clear J		0.001555	39228	2.50046E-08	1/ 39992645
	JT J		0.07776	784	3.4004E-05	1/ 29408
	Marathon J		0.0016	38125	1.12431E-08	1/ 88943676
	Sure J		0.002459	24807	4.39297E-08	1/ 22763629
total band EQ					3.41168E-05	1/ 29311

Table 5 – 2100MHz band Exposure Quotient at JEC Stonewall

2.5 2600MHz band

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

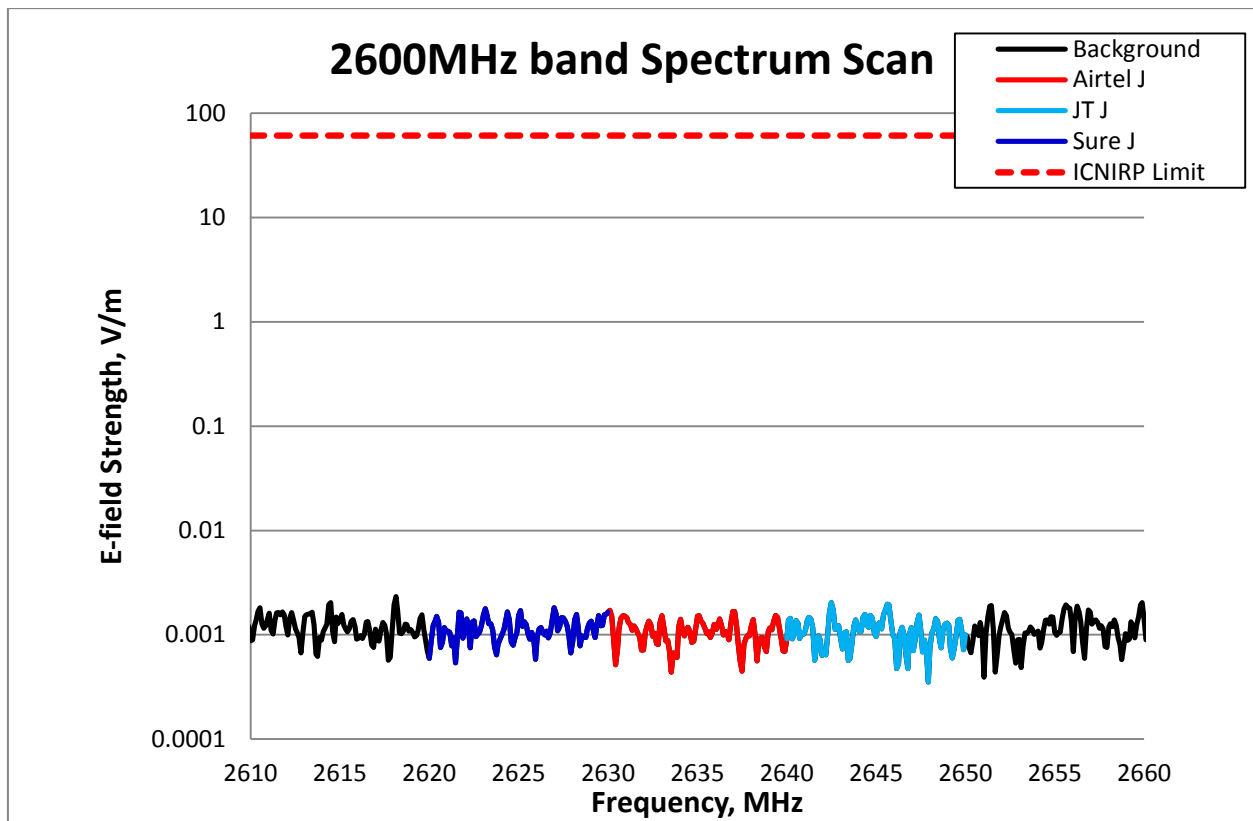


Figure 8 – 2600MHz band Spectrum Scan

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	Operator	Band [MHz]	Max E-field Strength [V/m]	ICNIRP Limit Relative to Max E-field	Band Exposure Quotient	Band EQ Relative to ICNIRP
JEC Stonewall	Airtel J	2600	0.00172	35465	3.26772E-08	1/ 30602414
	JT J		0.002036	29961	3.4133E-08	1/ 29297133
	Sure J		0.001811	33683	3.69679E-08	1/ 27050520
total band EQ					1.03778E-07	1/ 9635948

Table 6 – 2600MHz band Exposure Quotient at JEC Stonewall

End