Cellular Mast Emissions Survey: St Peter's Technical Park (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 St Peter's Technical Park site located in Jersey.

The St Peter's Technical Park 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
St Peters Technical Park	800	0.07514	JT J	518	8.64293E-06	1/ 115702
	900	0.4493	JT J	92	0.000346159	1/ 2889
	1800	0.08135	JT J	717	3.71257E-05	1/ 26935
	2100	0.6066	JT J	101	0.001234515	1/ 810
	2600	0.002581	Airtel J	23634	1.18572E-07	1/ 8433705
				Total Site EQ	0.001626561	1/ 615

Table 1 - Cumulative Exposure Quotient

The results show that the cumulative EQ was measured at 1/615 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

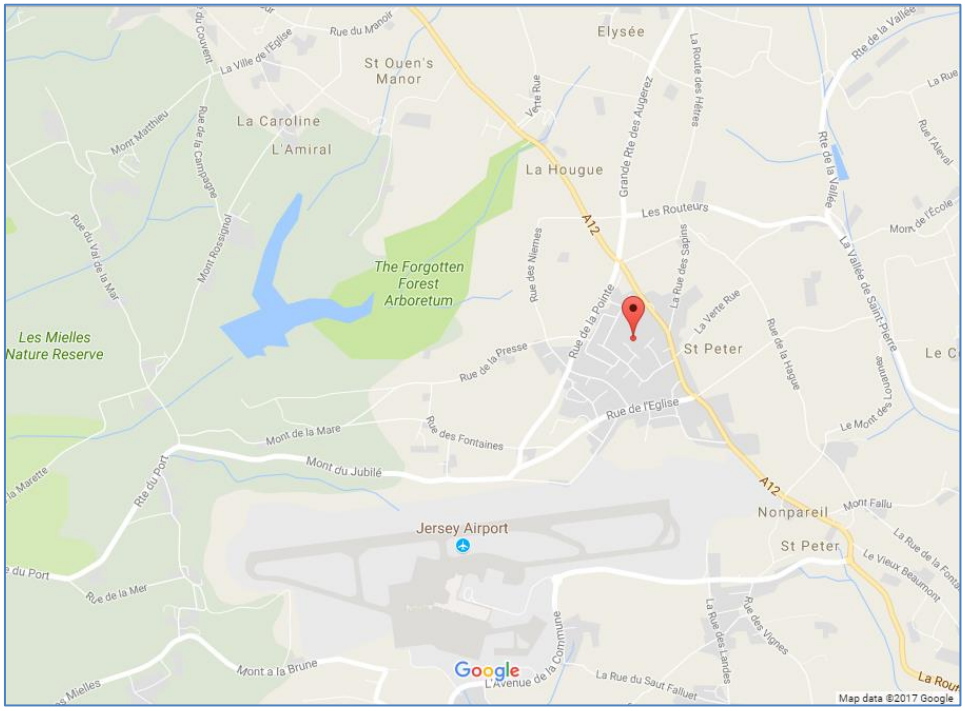

Figure 1 - Map of the Site Area

Site name	St Peter's Technical Park
Site address	La Grande Route de St-Pierre, St Peter, Jersey
Site Latitude	N 49.21505
Site Longitude	W 02.18568

1.2 Site Description

Operators	JT J
Antenna types	Directional
Approximate height	5m
Site type	Rooftop
Description	The pole at St Peter's Technical Park is mounted on the side of an industrial building and is out of reach of the public

1.3 Site Photo

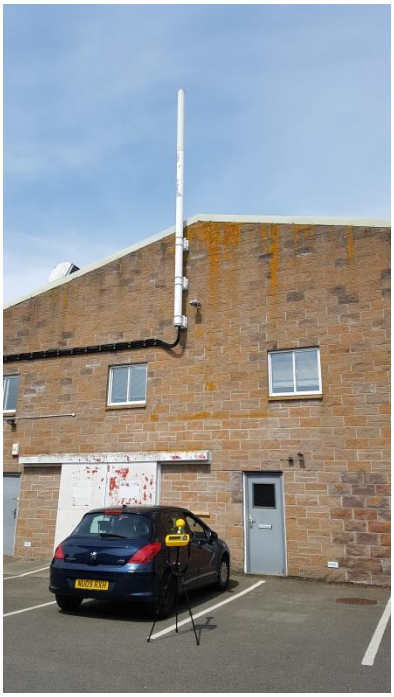

Figure 2 – Peak Measurement Location

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.

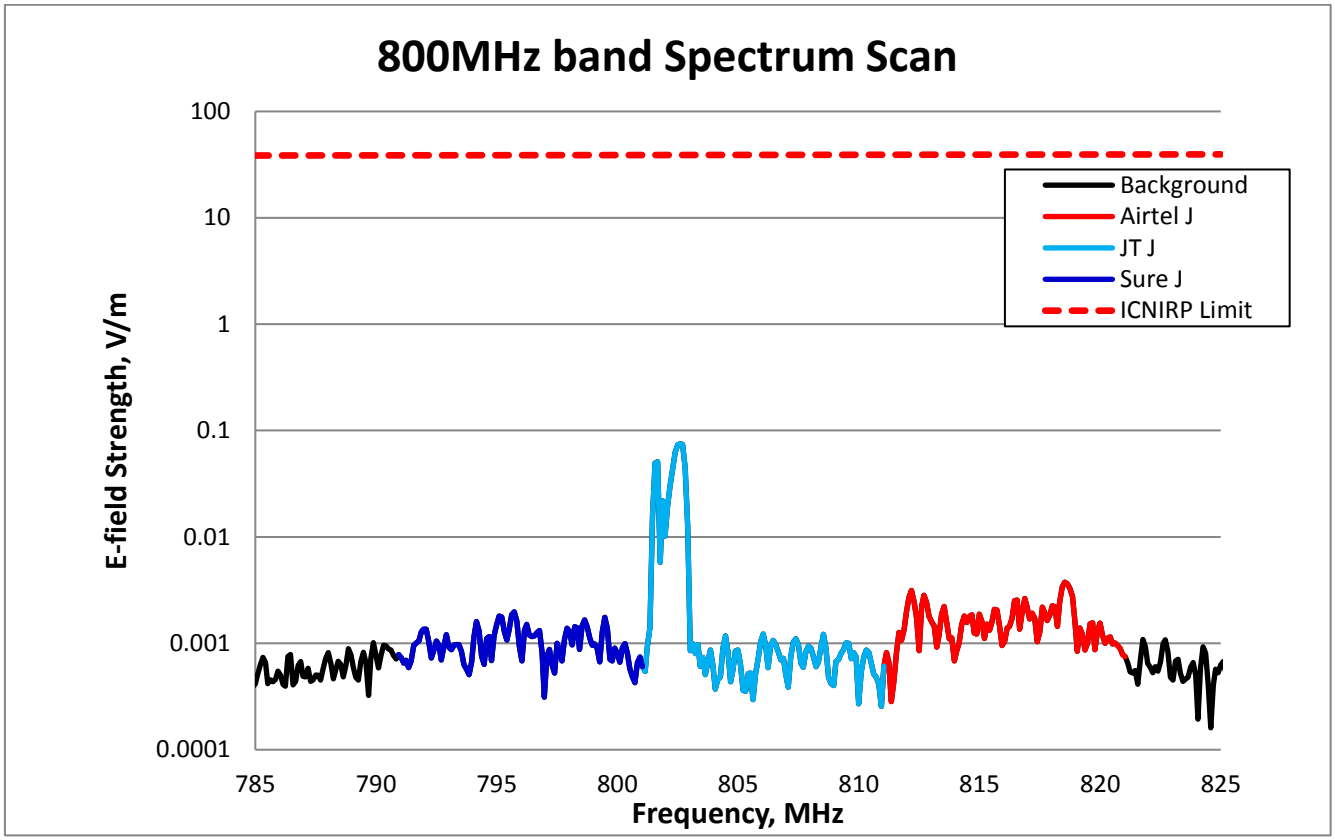

Figure 4 - 800MHz band Spectrum Scan

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 0.07514 V/m (JT J), which is 518 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
St Peters Technical Park	Airtel J	800	0.003749	10374	7.89547E-08	1/ 12665483
	JT J		0.07514	518	8.53366E-06	1/ 117183
	Sure J		0.00198	19642	3.0312E-08	1/ 32990279
				total band EQ	8.64293E-06	1/ 115702

Table 2– 800MHz band Exposure Quotient at St Peters Technical Park

2.2 900 MHz Band

The graph for the 900 MHz activity is shown below:

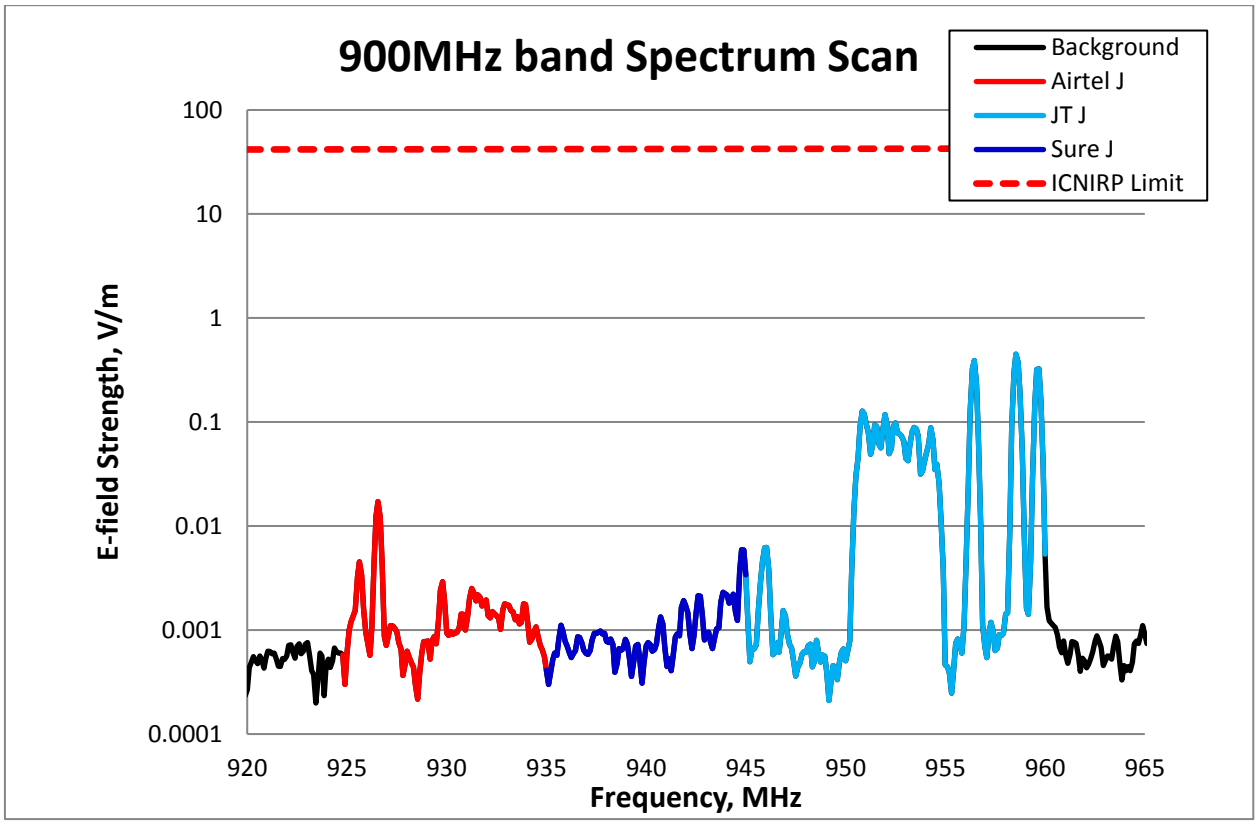

Figure 5 - 900MHz band Spectrum Scan

No field level recorded across the band was higher than 0.4493 V/m (JT J), which is 92 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
St Peters Technical Park	Airtel J	900	0.01717	2402	2.2222E-07	1/ 4500036
	JT J		0.4493	92	0.000345884	1/ 2891
	Sure J		0.005902	6989	5.26453E-08	1/ 18995032
				total band EQ	0.000346159	1/ 2889

Table 3– 900MHz band Exposure Quotient at St Peters Technical Park

2.3 1800 MHz Band

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

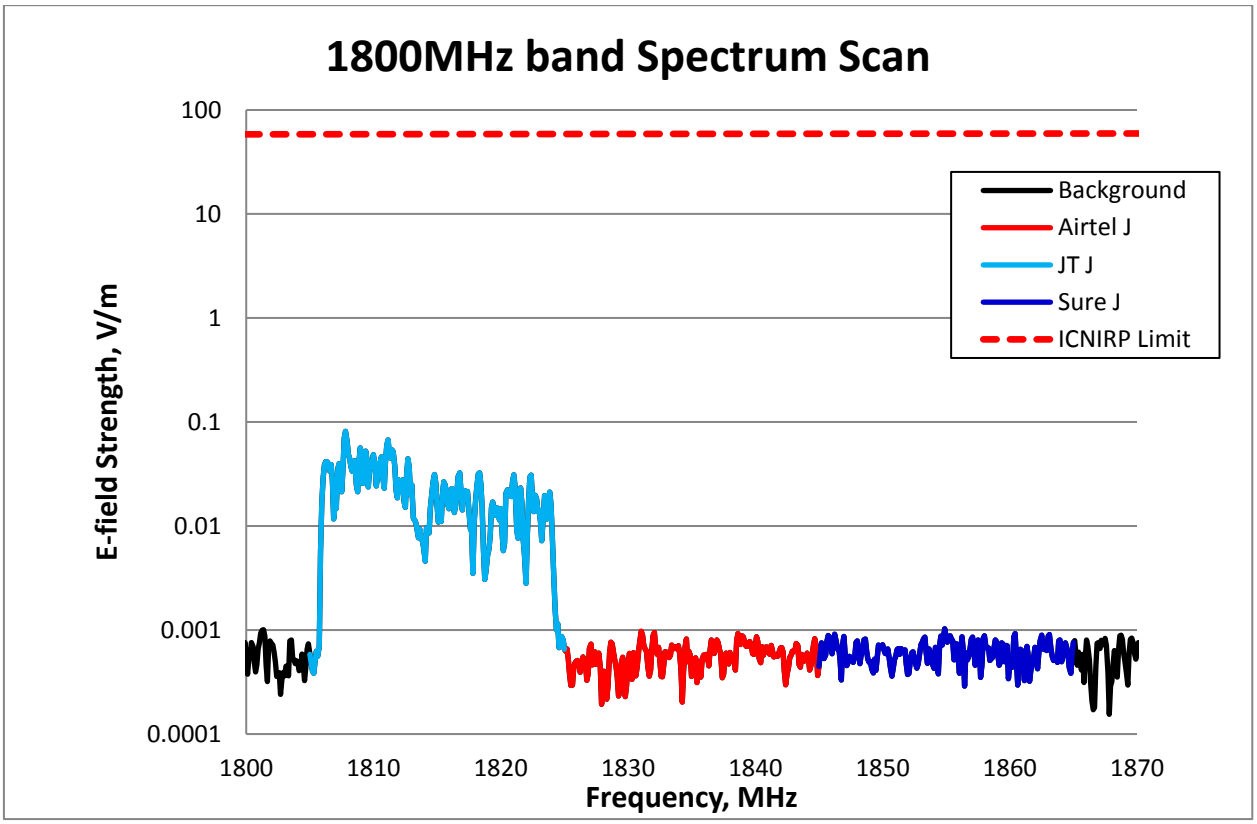

Figure 6 - 1800MHz Spectrum Scan

No field level recorded across the band was higher than 0.08135 V/m (JT J), which is 717 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
St Peters Technical Park	Airtel J	1800	0.0009733	59937	1.75081E-08	1/ 57116416
	JT J		0.08135	717	3.70874E-05	1/ 26963
	Sure J		0.001028	56747	2.08312E-08	1/ 48004998
				total band EQ	3.71257E-05	1/ 26935

Table 4 – 1800MHz band Exposure Quotient at St Peters Technical Park

2.4 2100MHz Band

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

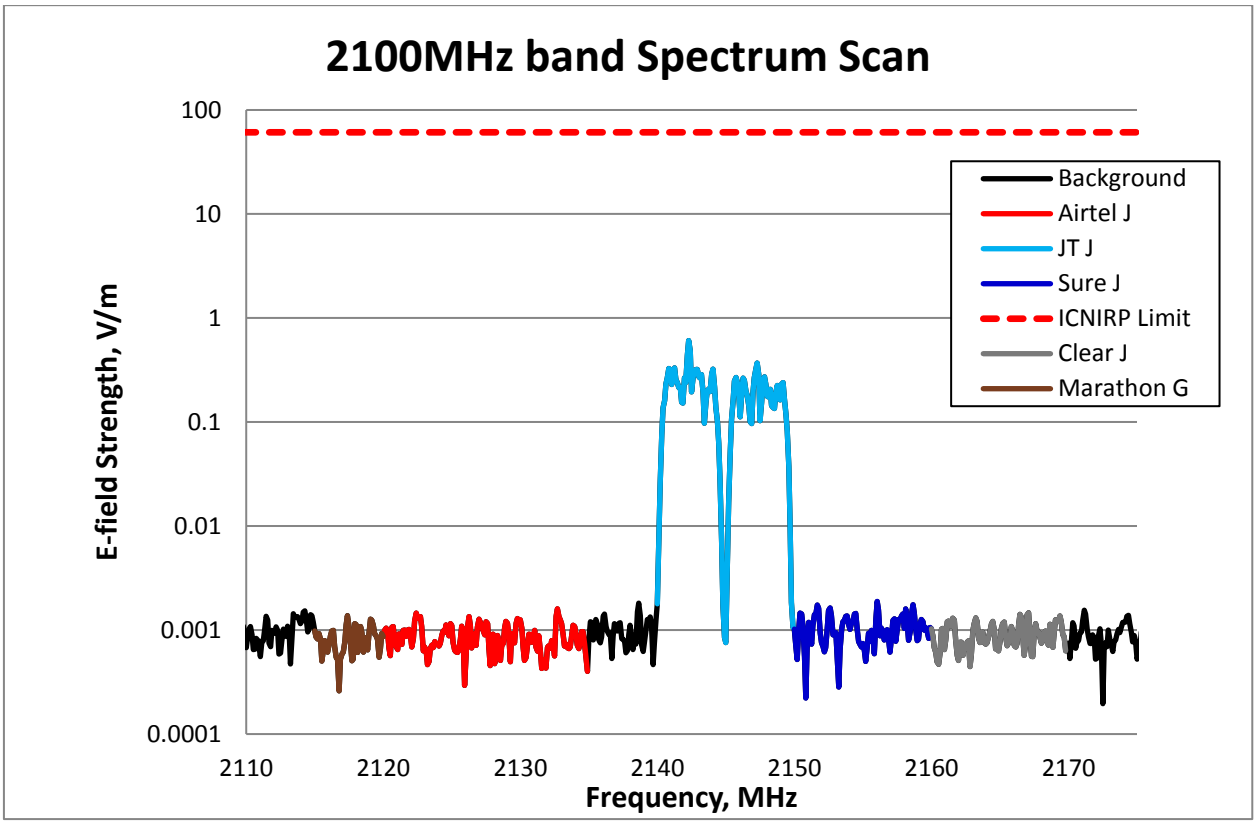

Figure 7 – 2100MHz band Spectrum Scan

No field level recorded across the band was higher than 0.6066 V/m (JT J), which is 101 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
St Peters Technical Park	Airtel J	2100	0.001601	38101	3.0895E-08	1/ 32367717
	Clear J		0.001465	41638	2.22538E-08	1/ 44936099
	JT J		0.6066	101	0.001234422	1/ 810
	Marathon J		0.001372	44461	9.40385E-09	1/ 106339400
	Sure J		0.001885	32361	3.07489E-08	1/ 32521462
				total band EQ	0.001234515	1/ 810

Table 5 – 2100MHz band Exposure Quotient at St Peters Technical Park

2.5 2600MHz band

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

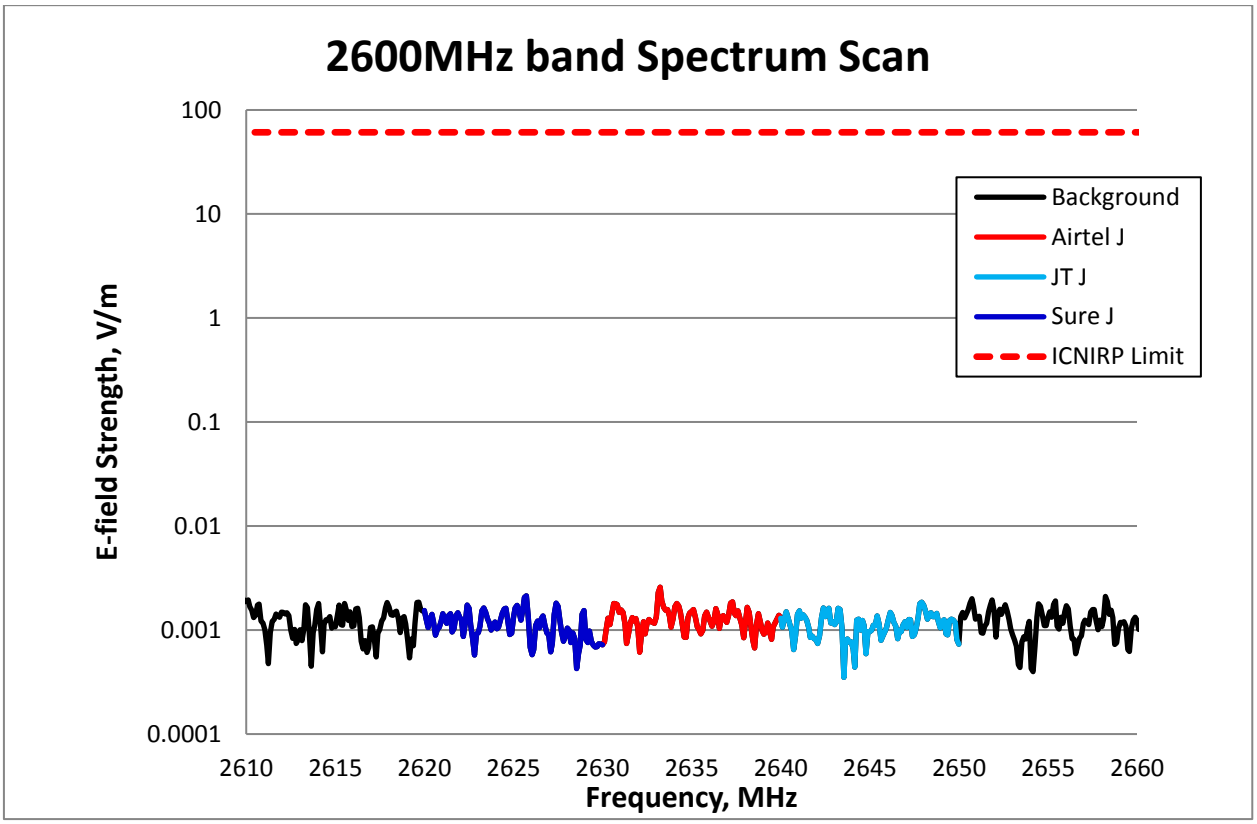

Figure 8 – 2600MHz band Spectrum Scan

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 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
St Peters Technical Park	Airtel J	2600	0.002581	23634	4.56307E-08	1/ 21915088
	JT J		0.001848	33009	3.58771E-08	1/ 27872933
	Sure J		0.002129	28652	3.70641E-08	1/ 26980299
				total band EQ	1.18572E-07	1/ 8433705

Table 6 – 2600MHz band Exposure Quotient at St Peters Technical Park

End