

Cellular Mast Emissions Survey: JT Shop (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 JT Shop site located in Jersey.

The JT Shop site was used by one 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
JT Shop	800	0.1319	JT J	295	0.000121865	1/ 8206
	900	0.7411	JT J	56	0.000402235	1/ 2486
	1800	0.05597	JT J	1042	1.61736E-05	1/ 61829
	2100	0.1027	JT J	594	7.67061E-05	1/ 13037
	2600	0.002547	Airtel J	23950	1.46921E-07	1/ 6806387
Total Site EQ					0.000617127	1/ 1620

Table 1 - Cumulative Exposure Quotient

The results show that the cumulative EQ was measured at 1/1620 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

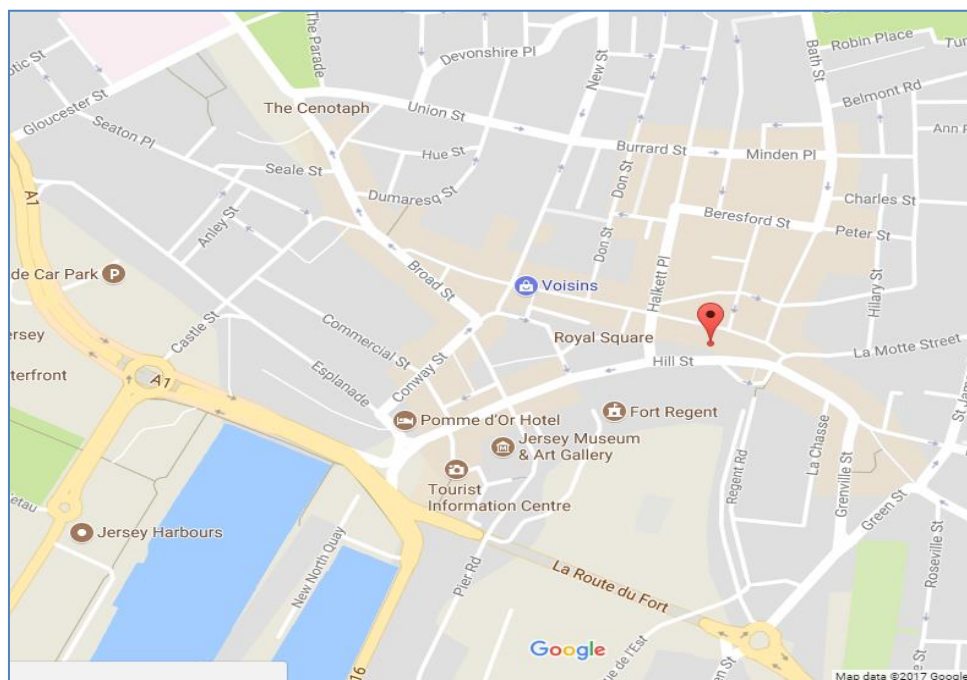


Figure 1 - Map of the Site Area

Site name	JT Shop
Site address	Queen Street, St Helier, Jersey
Site Latitude	49.1838
Site Longitude	-2.10409

1.2 Site Description

Operators	JT J
Antenna types	Omni directional
Approximate height	3m
Site type	Building (Internal)
Description	The antennas at JT Shop are located behind the till in the staff area, the public have access.

1.3 Site Photo



Figure 2 – Peak Measurement Location

1.4 Test Location

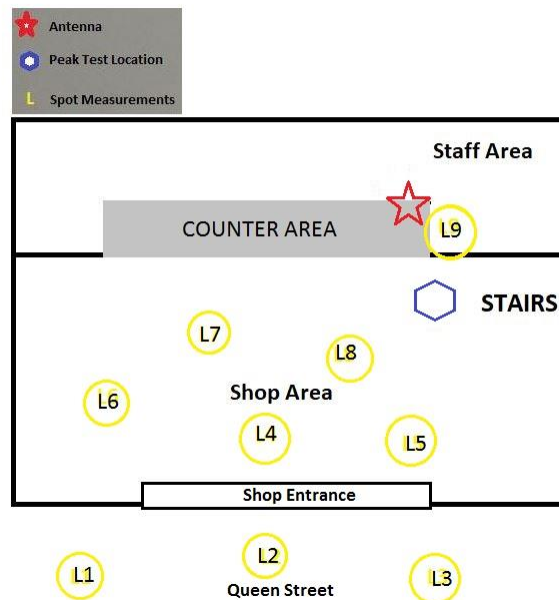


Figure 3- Survey Area with Spot Measurement Markers: The blue triangle is the site location, the yellow circles are intermediate locations measured at during the peak search and the red circle is the spot where the highest spot search reading was obtained and where the detailed survey was carried out

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.

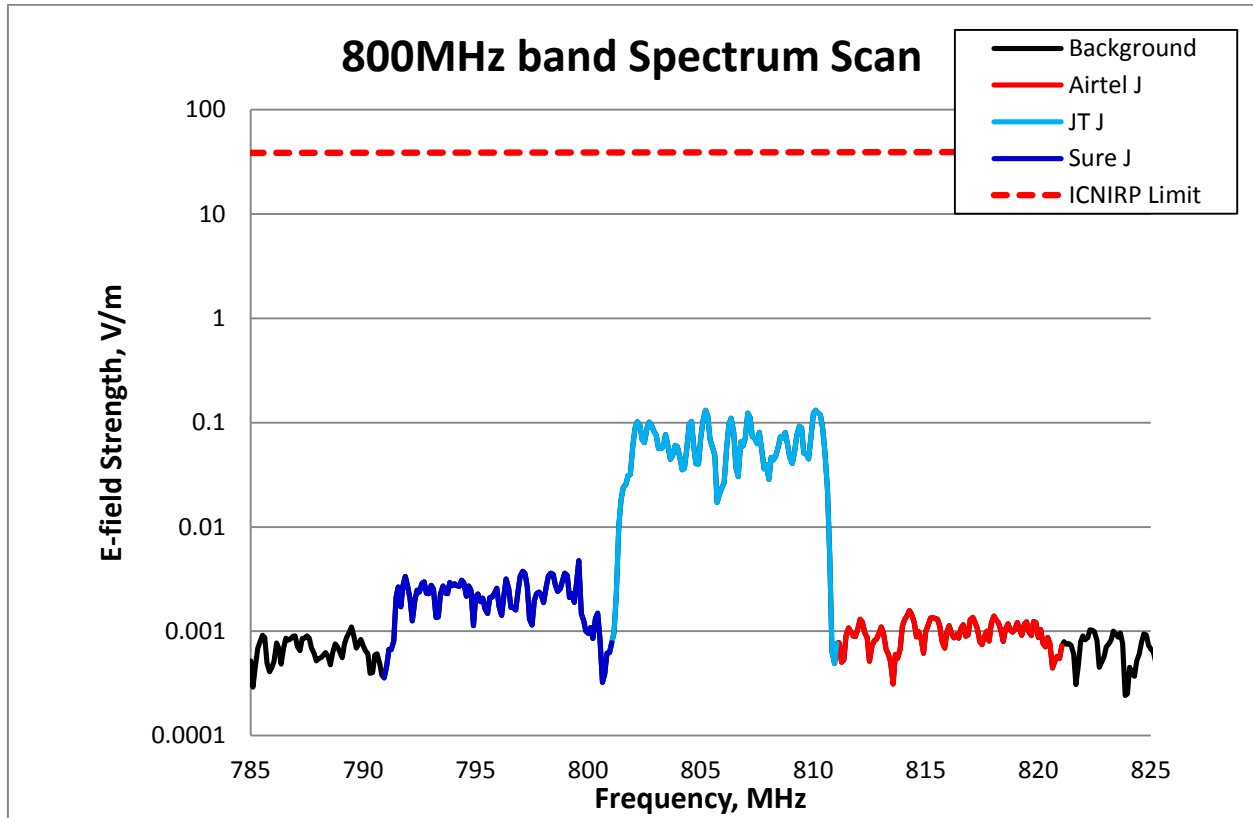


Figure 4 - 800MHz band Spectrum Scan

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 0.1319 V/m (JT J), which is 295 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
JT Shop	Airtel J	800	0.001572	24740	2.57377E-08	1/ 38853566
	JT J		0.1319	295	0.000121699	1/ 8217
	Sure J		0.004748	8191	1.39966E-07	1/ 7144598
total band EQ					0.000121865	1/ 8206

Table 2– 800MHz band Exposure Quotient at JT Shop

2.2 900 MHz Band

The graph for the 900 MHz activity is shown below:

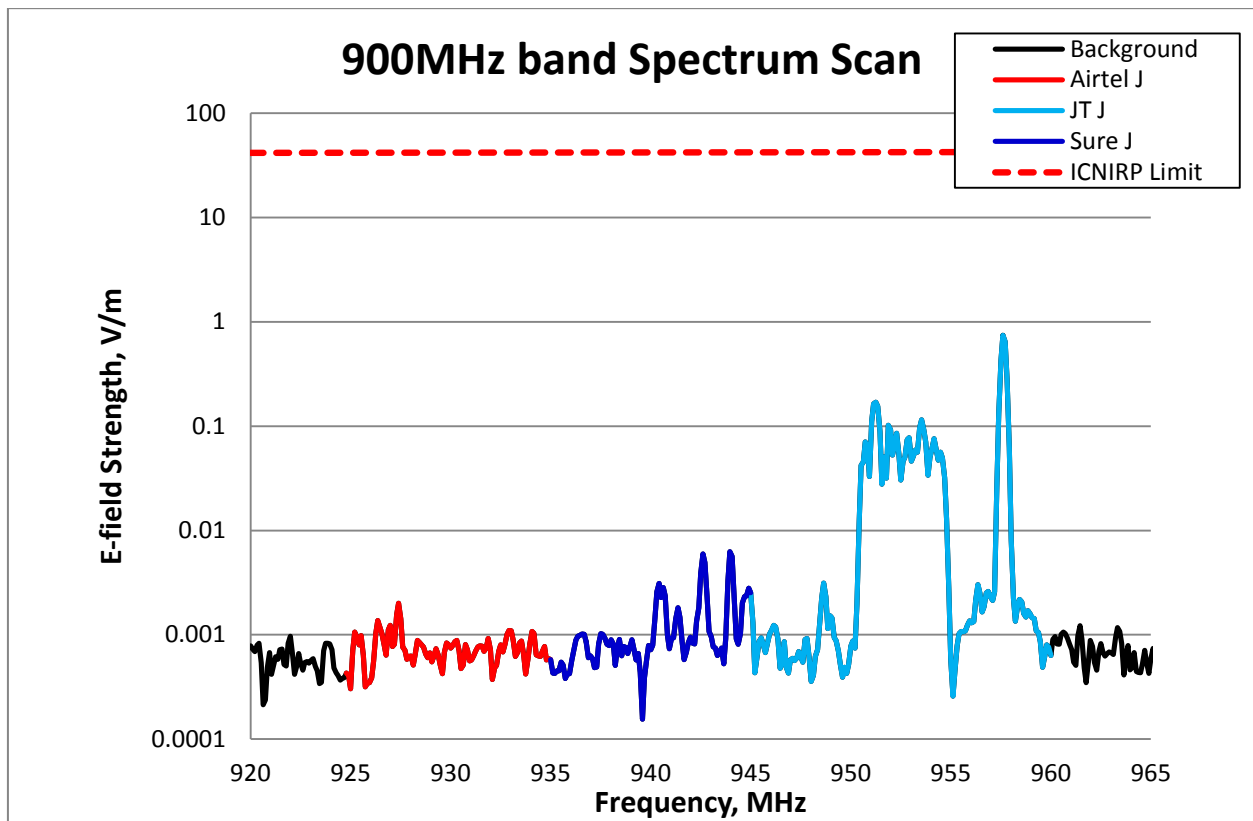


Figure 5 - 900MHz band Spectrum Scan

No field level recorded across the band was higher than 0.7411 V/m (JT J), which is 56 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
JT Shop	Airtel J	900	0.00201	20522	1.66863E-08	1/ 59929277
	JT J		0.7411	56	0.000402141	1/ 2487
	Sure J		0.006259	6591	7.75043E-08	1/ 12902506
total band EQ					0.000402235	1/ 2486

Table 3– 900MHz band Exposure Quotient at JT Shop

2.3 1800 MHz Band

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

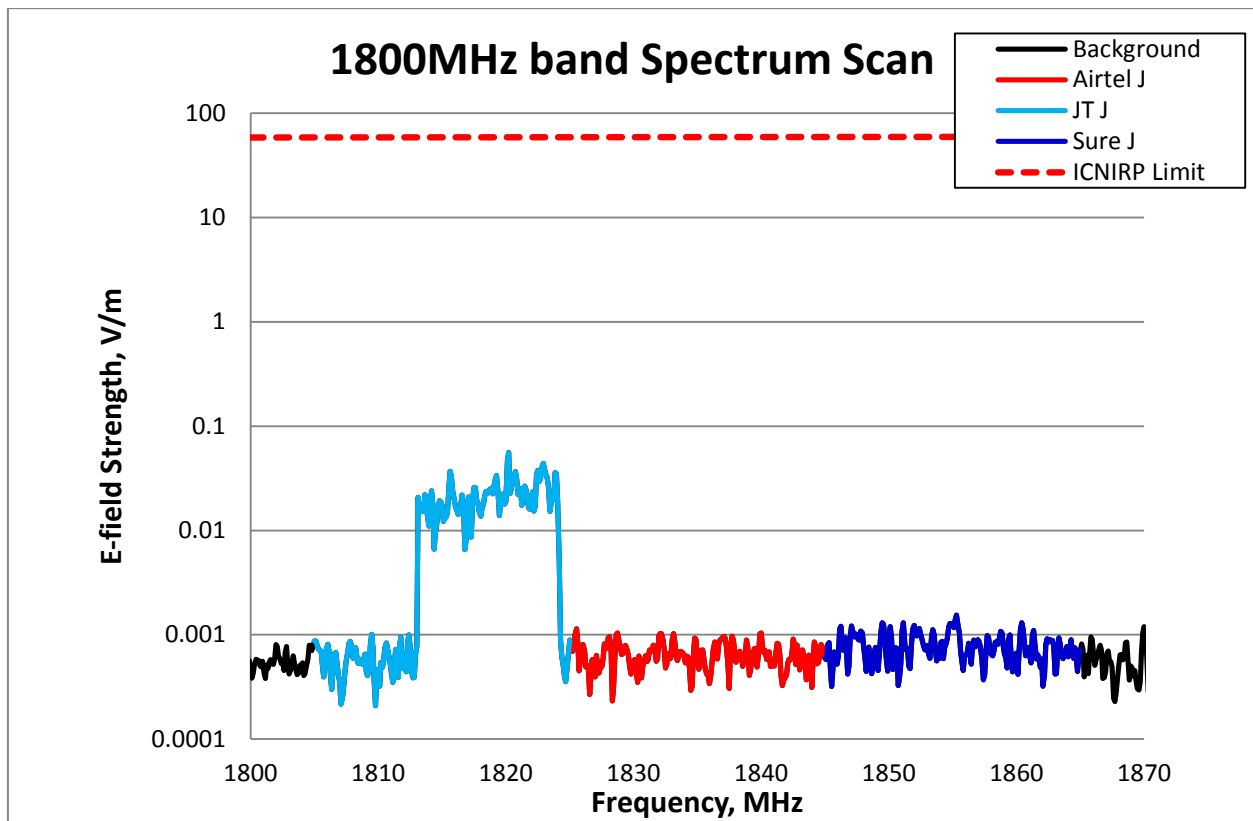


Figure 6 - 1800MHz Spectrum Scan

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
JT Shop	Airtel J	1800	0.00114	51172	2.3203E-08	1/ 43097964
	JT J		0.05597	1042	1.6116E-05	1/ 62050
	Sure J		0.001545	37758	3.44091E-08	1/ 29062050
total band EQ					1.61736E-05	1/ 61829

Table 4 – 1800MHz band Exposure Quotient at JT Shop

2.4 2100MHz Band

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

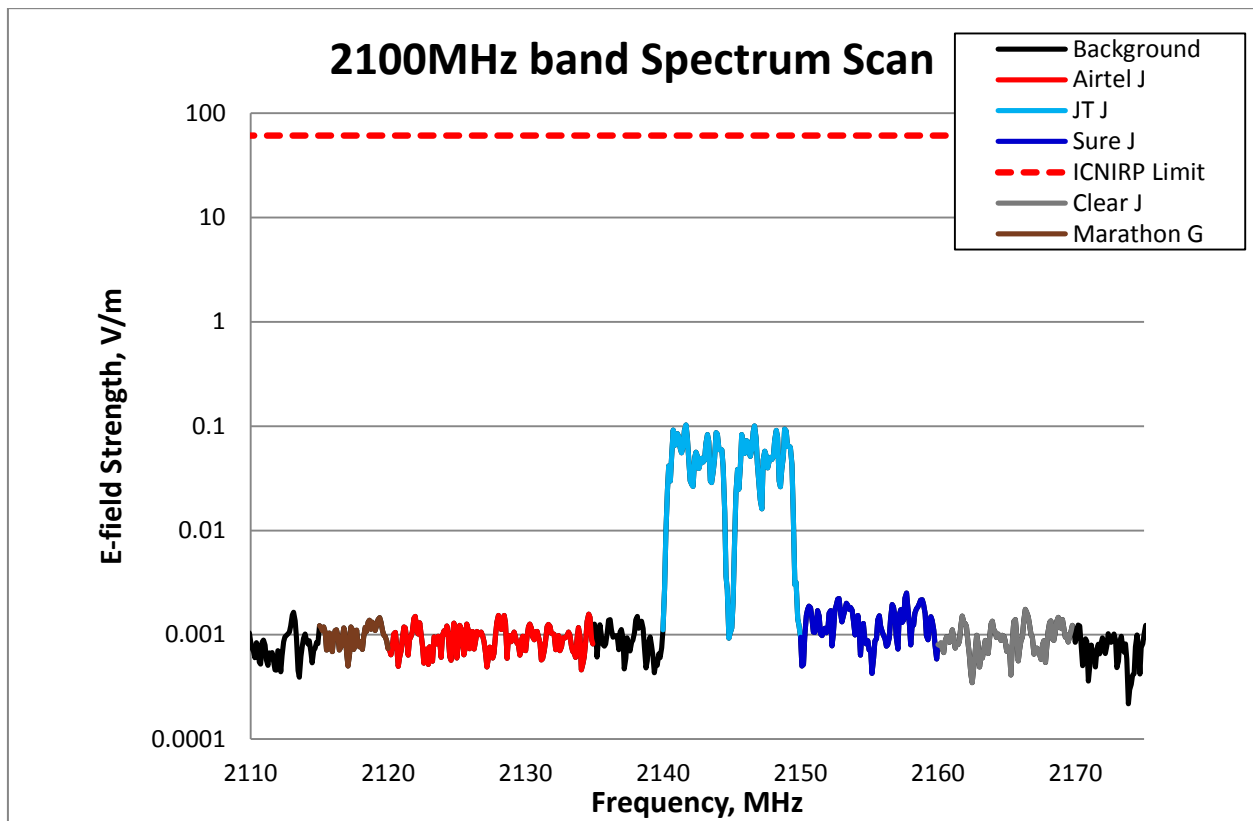


Figure 7 – 2100MHz band Spectrum Scan

No field level recorded across the band was higher than 0.1027 V/m (JT J), which is 594 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
JT Shop	Airtel J	2100	0.001577	38681	3.51936E-08	1/ 28414248
	Clear J		0.001755	34758	2.47906E-08	1/ 40337820
	JT J		0.1027	594	7.65807E-05	1/ 13058
	Marathon J		0.001462	41724	1.40517E-08	1/ 71165699
	Sure J		0.002515	24254	5.13714E-08	1/ 19466096
total band EQ					7.67061E-05	1/ 13037

Table 5 – 2100MHz band Exposure Quotient at JT Shop

2.5 2600MHz band

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

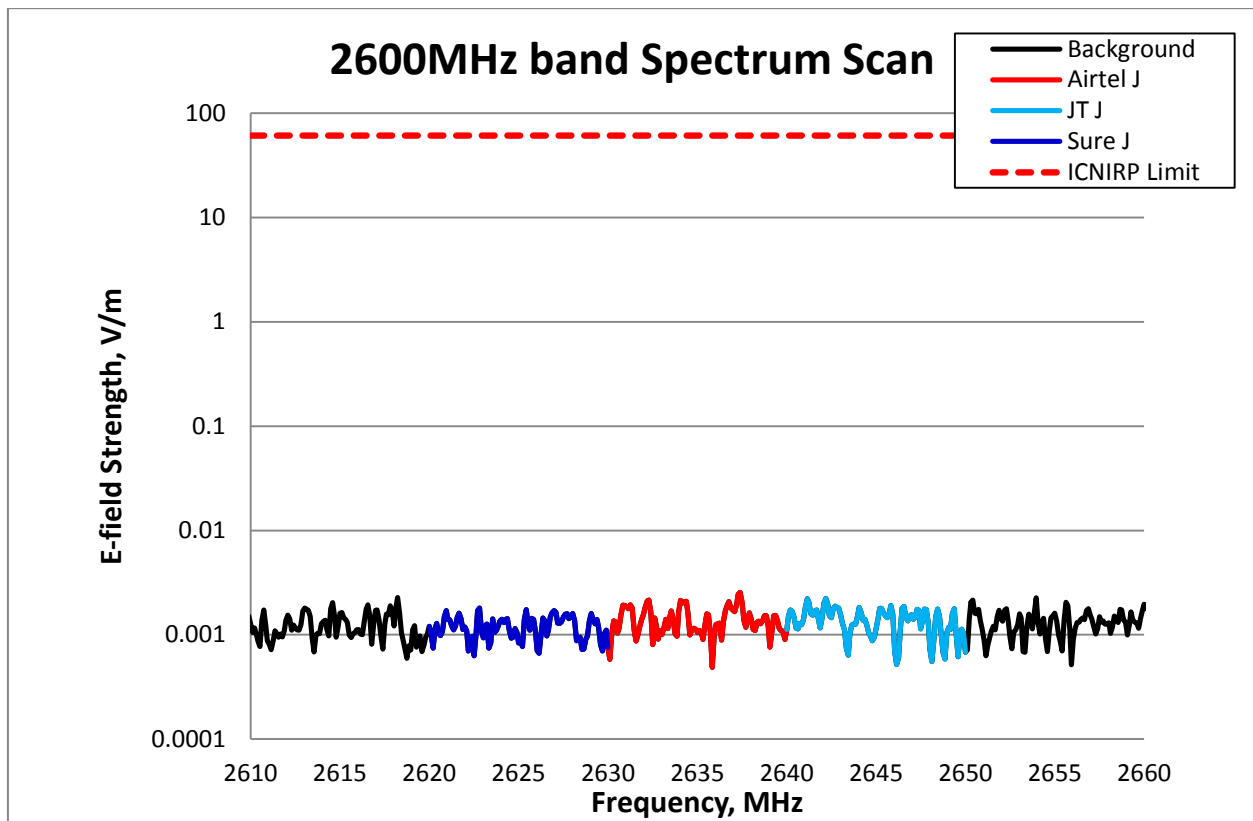


Figure 8 – 2600MHz band Spectrum Scan

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
JT Shop	Airtel J	2600	0.002547	23950	5.48478E-08	1/ 18232280
	JT J		0.002232	27330	5.30803E-08	1/ 18839372
	Sure J		0.0018	33889	3.89927E-08	1/ 25645802
total band EQ					1.46921E-07	1/ 6806387

Table 6 – 2600MHz band Exposure Quotient at JT Shop

End