

Cellular Mast Emissions Survey: Co-Operative Store (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 Co-Operative Store site located in Jersey.

The Co-Operative Store site was used by one operator at the time of the survey: Airtel J; strong signals were also recorded from the other two mobile network operators who operate from nearby sites. 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
Co-Operative Store	800	0.09011	Sure J	432	5.3266E-05	1/ 18774
	900	0.4091	JT J	101	0.000247492	1/ 4041
	1800	0.04976	Sure J	1172	3.88987E-05	1/ 25708
	2100	0.1639	Sure J	372	0.00013127	1/ 7618
	2600	0.002129	Airtel J	28652	1.24591E-07	1/ 8026264
Total Site EQ					0.000471051	1/ 2123

Table 1 - Cumulative Exposure Quotient

The results show that the cumulative EQ was measured at 1/2123 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

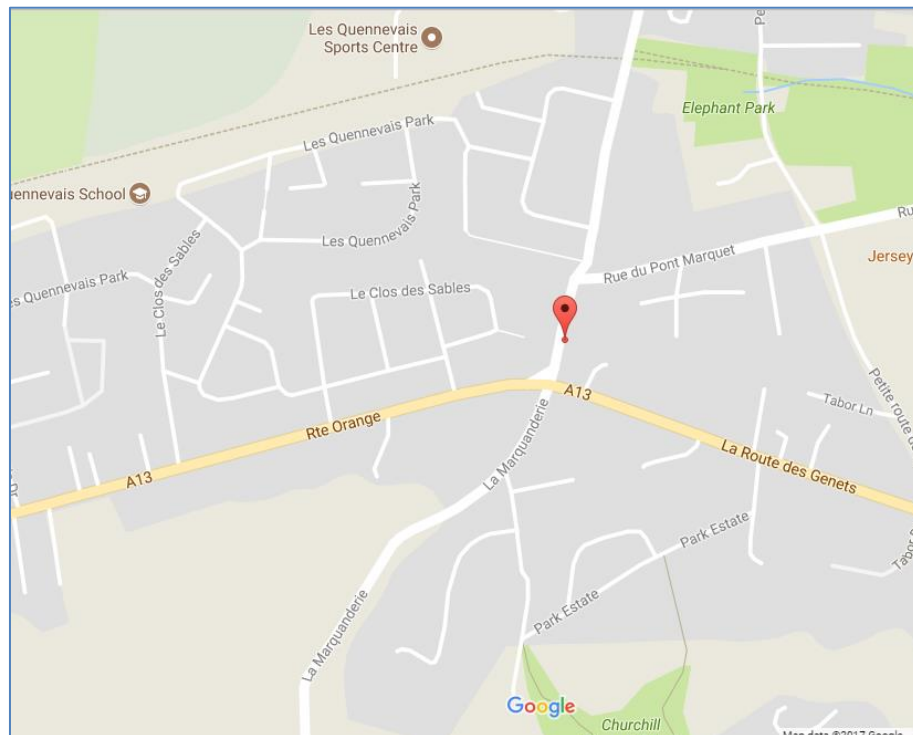


Figure 1 - Map of the Site Area

Site name	Co-Operative Store
Site address	La Route Des Quennevais
Site Latitude	N 49.191
Site Longitude	W 02.2001

1.2 Site Description

Operators	Airtel J
Antenna types	Omni directional
Approximate height	15m
Site type	Rooftop
Description	The antennas at the Co-Operative Store are located on the roof of the main building, the public don't have access

1.3 Site Photo

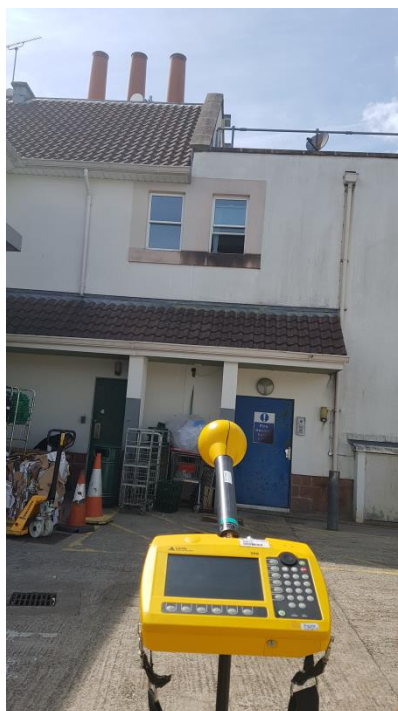


Figure 2 – Peak Measurement Location

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.

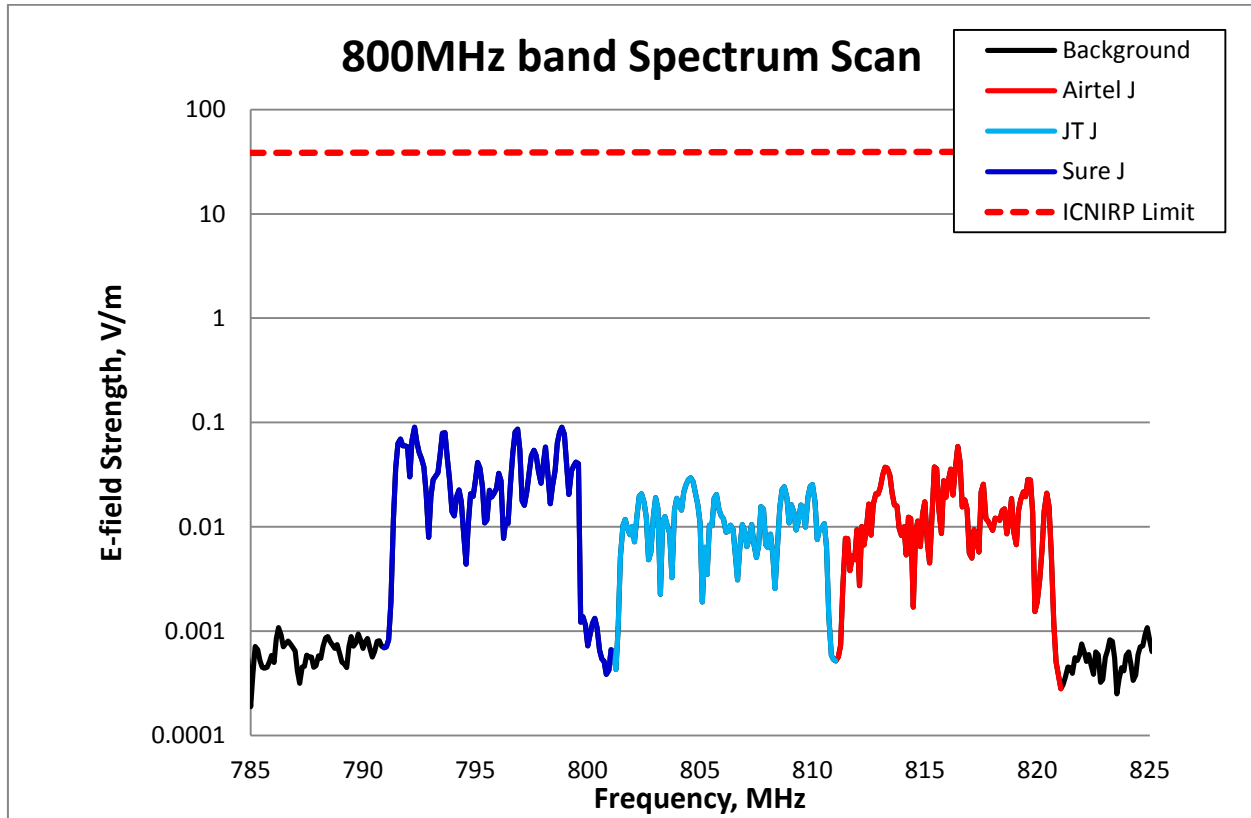


Figure 4 - 800MHz band Spectrum Scan

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 0.09011 V/m (Sure J), which is 432 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
Co-Operative Store	Airtel J	800	0.05897	660	8.32518E-06	1/ 120118
	JT J		0.02947	1320	4.64413E-06	1/ 215325
	Sure J		0.09011	432	4.02967E-05	1/ 24816
	total band EQ			5.3266E-05	1/ 18774	

Table 2– 800MHz band Exposure Quotient at Co-Operative Store

2.2 900 MHz Band

The graph for the 900 MHz activity is shown below:

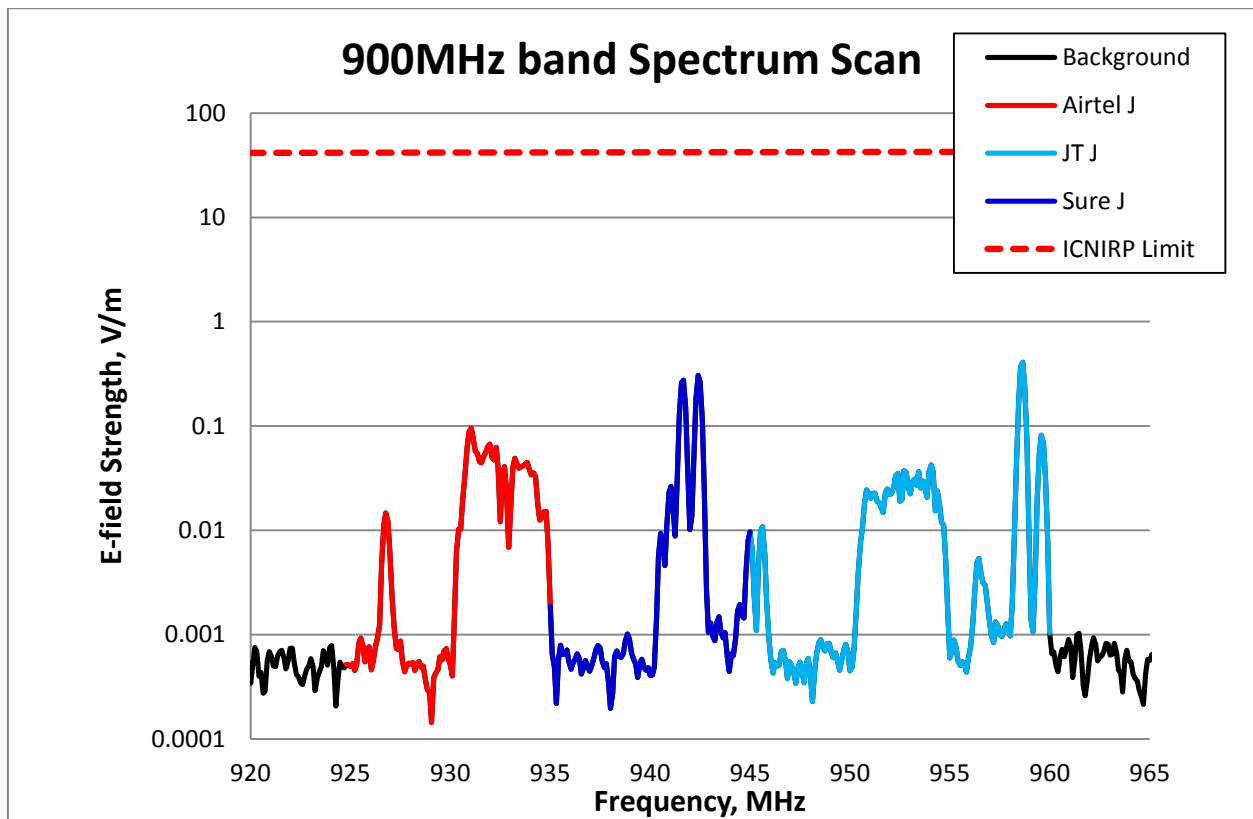


Figure 5 - 900MHz band Spectrum Scan

No field level recorded across the band was higher than 0.4091 V/m (JT J), which is 101 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
Co-Operative Store	Airtel J	900	0.09499	434	2.3705E-05	1/ 42185
	JT J		0.4091	101	0.000116696	1/ 8569
	Sure J		0.3065	135	0.000107092	1/ 9338
	total band EQ			0.000247492	1/ 4041	

Table 3– 900MHz band Exposure Quotient at Co-Operative Store

2.3 1800 MHz Band

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

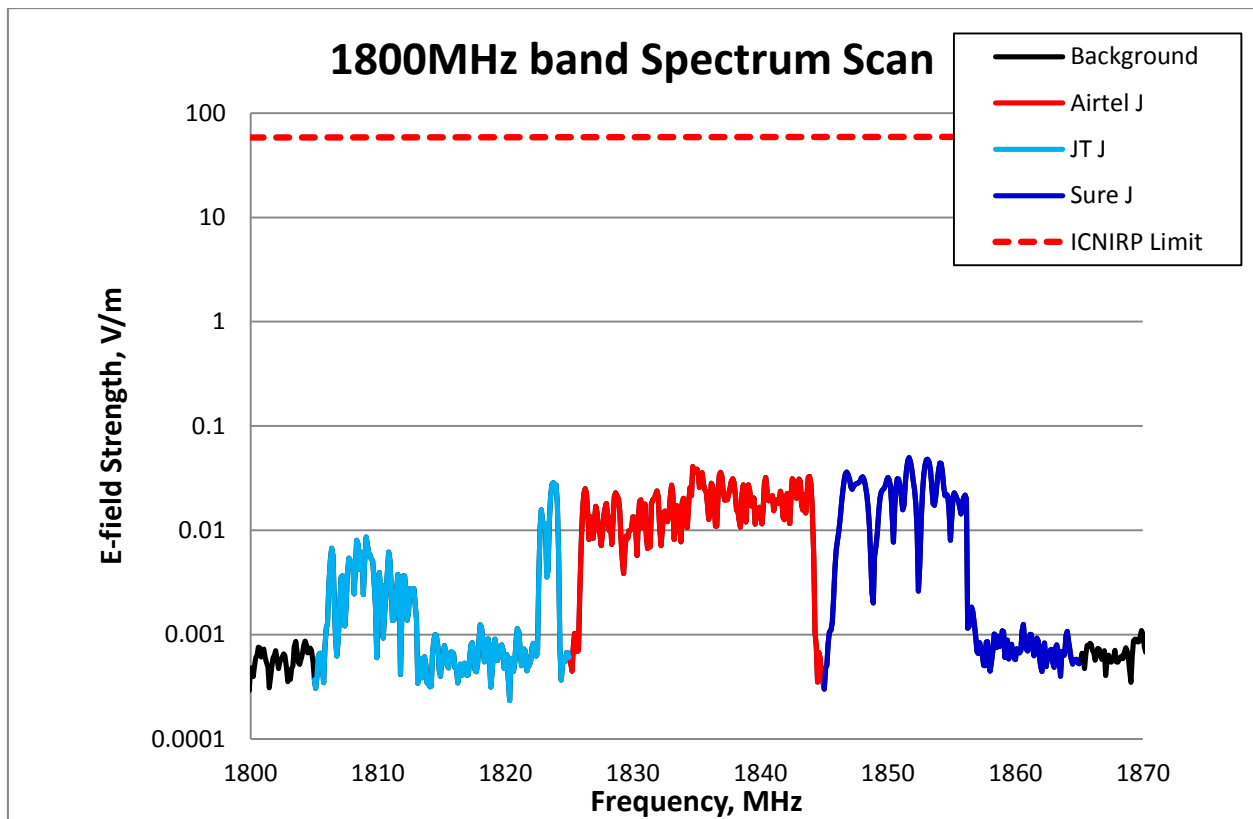


Figure 6 - 1800MHz Spectrum Scan

No field level recorded across the band was higher than 0.04976 V/m (Sure J), which is 1172 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
Co-Operative Store	Airtel J	1800	0.0407	1433	1.87137E-05	1/ 53437
	JT J		0.02868	2034	1.59168E-06	1/ 628268
	Sure J		0.04976	1172	1.85933E-05	1/ 53783
	total band EQ			3.88987E-05	1/ 25708	

Table 4 – 1800MHz band Exposure Quotient at Co-Operative Store

2.4 2100MHz Band

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

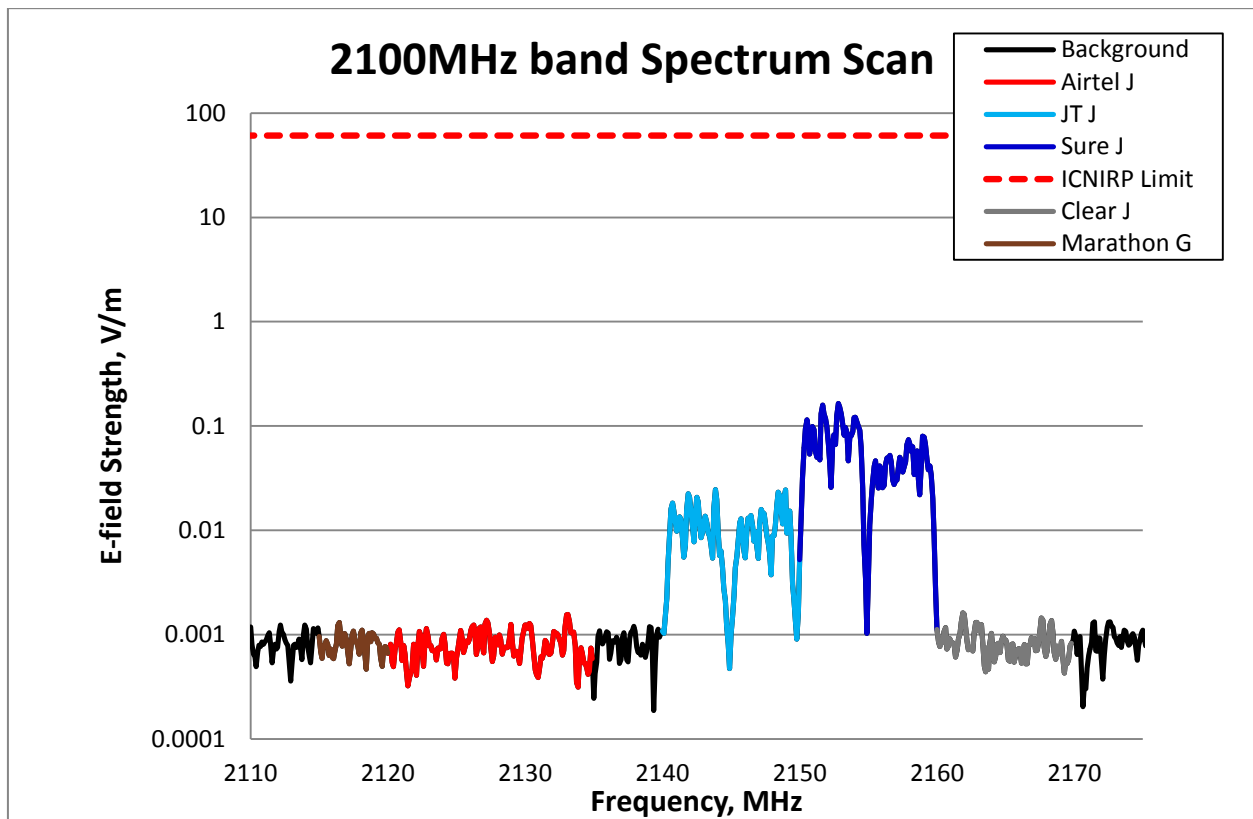


Figure 7 – 2100MHz band Spectrum Scan

No field level recorded across the band was higher than 0.1639 V/m (Sure J), which is 372 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
Co-Operative Store	Airtel J	2100	0.001558	39153	2.71181E-08	1/ 36875751
	Clear J		0.001614	37794	1.9523E-08	1/ 51221567
	JT J		0.02448	2492	3.5231E-06	1/ 283841
	Marathon J		0.001307	46672	9.35898E-09	1/ 106849246
	Sure J		0.1639	372	0.000127691	1/ 7831
total band EQ					0.00013127	1/ 7618

Table 5 – 2100MHz band Exposure Quotient at Co-Operative Store

2.5 2600MHz band

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

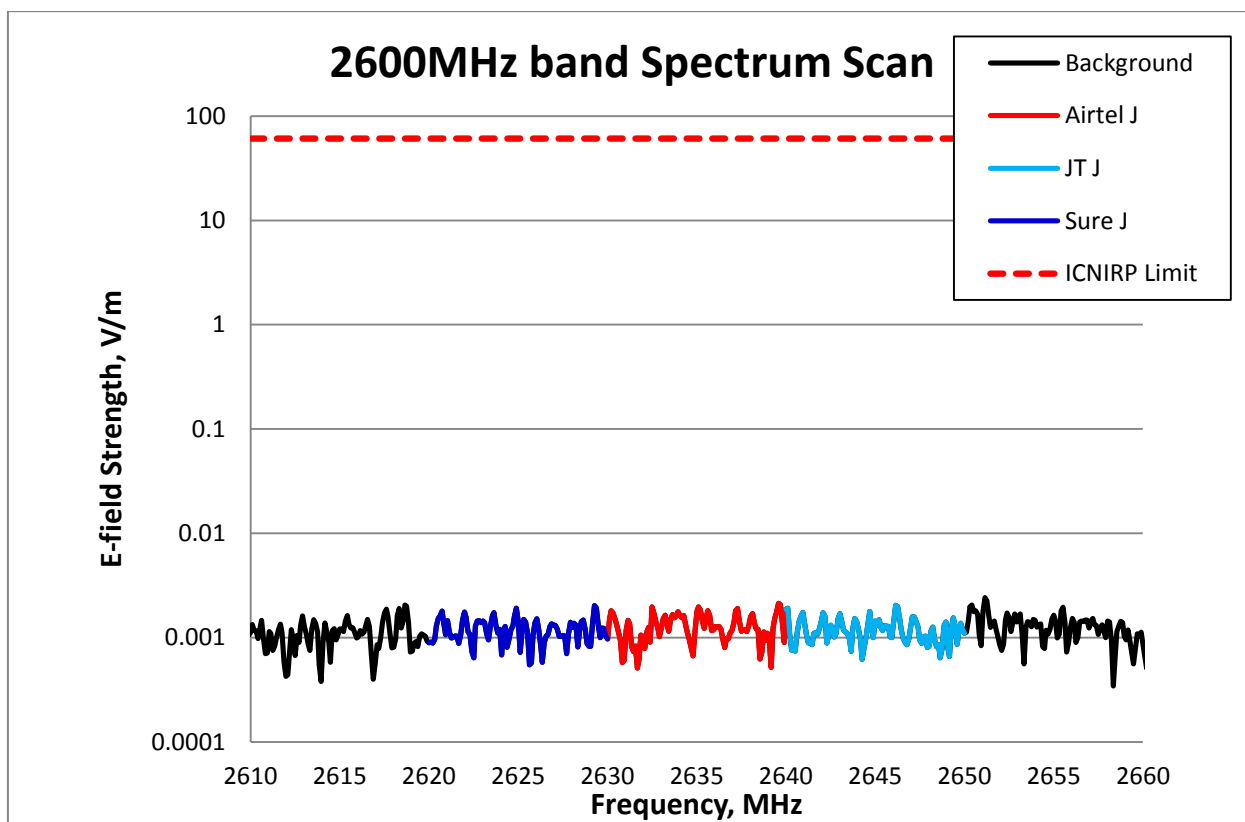


Figure 8 – 2600MHz band Spectrum Scan

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
Co-Operative Store	Airtel J	2600	0.002129	28652	4.6111E-08	1/ 21686812
	JT J		0.002039	29917	3.93593E-08	1/ 25406942
	Sure J		0.00202	30198	3.91207E-08	1/ 25561932
total band EQ					1.24591E-07	1/ 8026264

Table 6 – 2600MHz band Exposure Quotient at Co-Operative Store

End