

Cellular Mast Emissions Survey: Colombey (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 Colombey site located in Jersey.

The Colombey site was used by one operator at the time of the survey: Sure 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
Colombey	800	0.1579	Sure J	246	0.000139948	1/ 7146
	900	0.671	Sure J	61	0.00060244	1/ 1660
	1800	0.1531	Sure J	381	0.000233045	1/ 4291
	2100	0.1777	Sure J	343	0.000123472	1/ 8099
	2600	0.002873	JT J	21232	2.27478E-07	1/ 4396034
Total Site EQ					0.001099133	1/ 910

Table 1 - Cumulative Exposure Quotient

The results show that the cumulative EQ was measured at 1/910 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

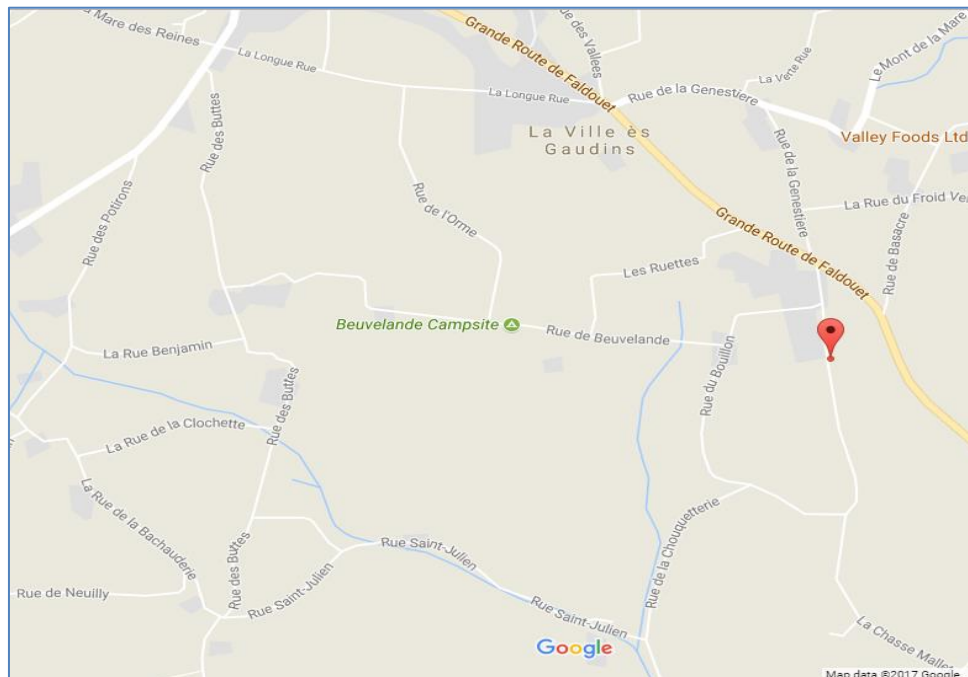


Figure 1 - Map of the Site Area

Site name	Colombey
Site address	Field 549, Rue Des Alleurs, St Martin, Jersey
Site Latitude	49.21049
Site Longitude	-2.03841

1.2 Site Description

Operators	Sure J
Antenna types	Directional
Approximate height	12m
Site type	Pole Mast
Description	The antennas at Colombey are located at the back of the field; access is open to the public.

1.3 Site Photo



Figure 2 – Peak Measurement Location

1.4 Test Location

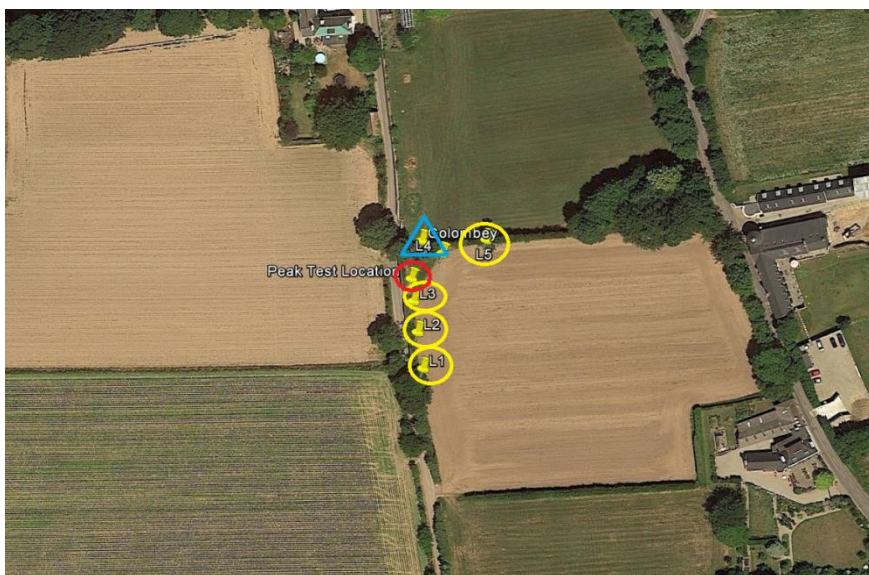


Figure 3- Survey Area with Spot Measurement Markers: The blue triangle is the site location, the yellow circles are intermediate locations measured at during the peak search and the red circle is the spot where the highest spot search reading was obtained and where the detailed survey was carried out

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.

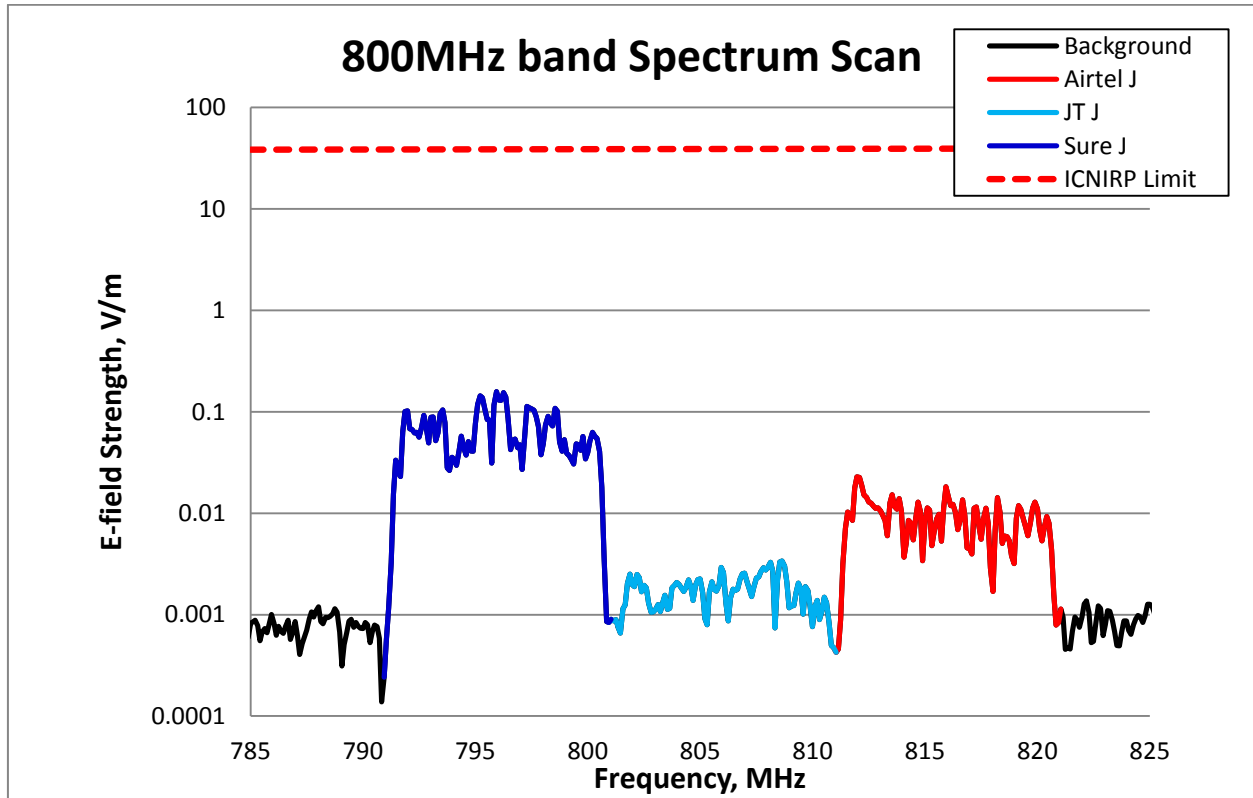


Figure 4 - 800MHz band Spectrum Scan

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 0.1579 V/m (Sure J), which is 246 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
Colombey	Airtel J	800	0.02285	1702	2.55752E-06	1/ 391004
	JT J		0.003374	11527	8.8312E-08	1/ 11323490
	Sure J		0.1579	246	0.000137302	1/ 7283
total band EQ					0.000139948	1/ 7146

Table 2– 800MHz band Exposure Quotient at Colombey

2.2 900 MHz Band

The graph for the 900 MHz activity is shown below:

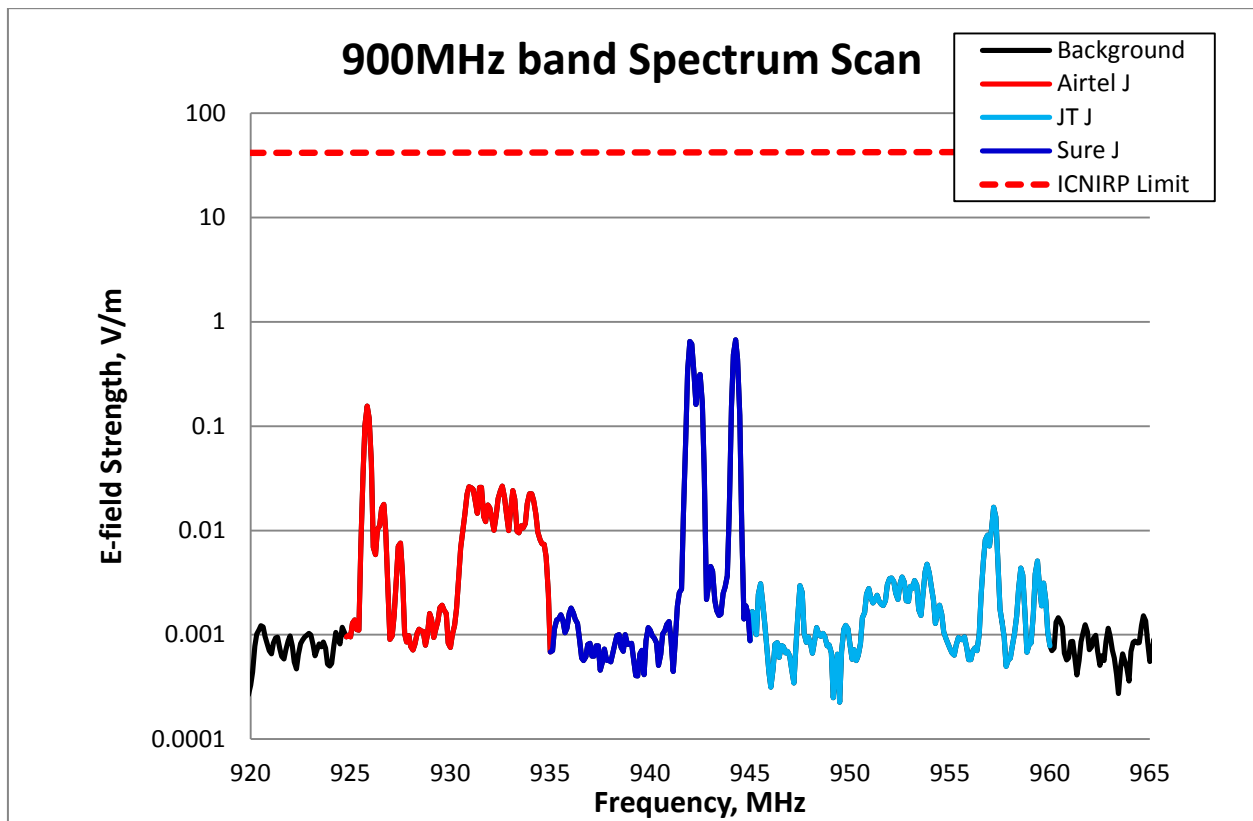


Figure 5 - 900MHz band Spectrum Scan

No field level recorded across the band was higher than 0.671 V/m (Sure J), which is 61 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
Colombey	Airtel J	900	0.1559	265	1.78252E-05	1/ 56100
	JT J		0.01665	2477	3.5337E-07	1/ 2829895
	Sure J		0.671	61	0.000584262	1/ 1712
total band EQ					0.00060244	1/ 1660

Table 3– 900MHz band Exposure Quotient at Colombey

2.3 1800 MHz Band

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

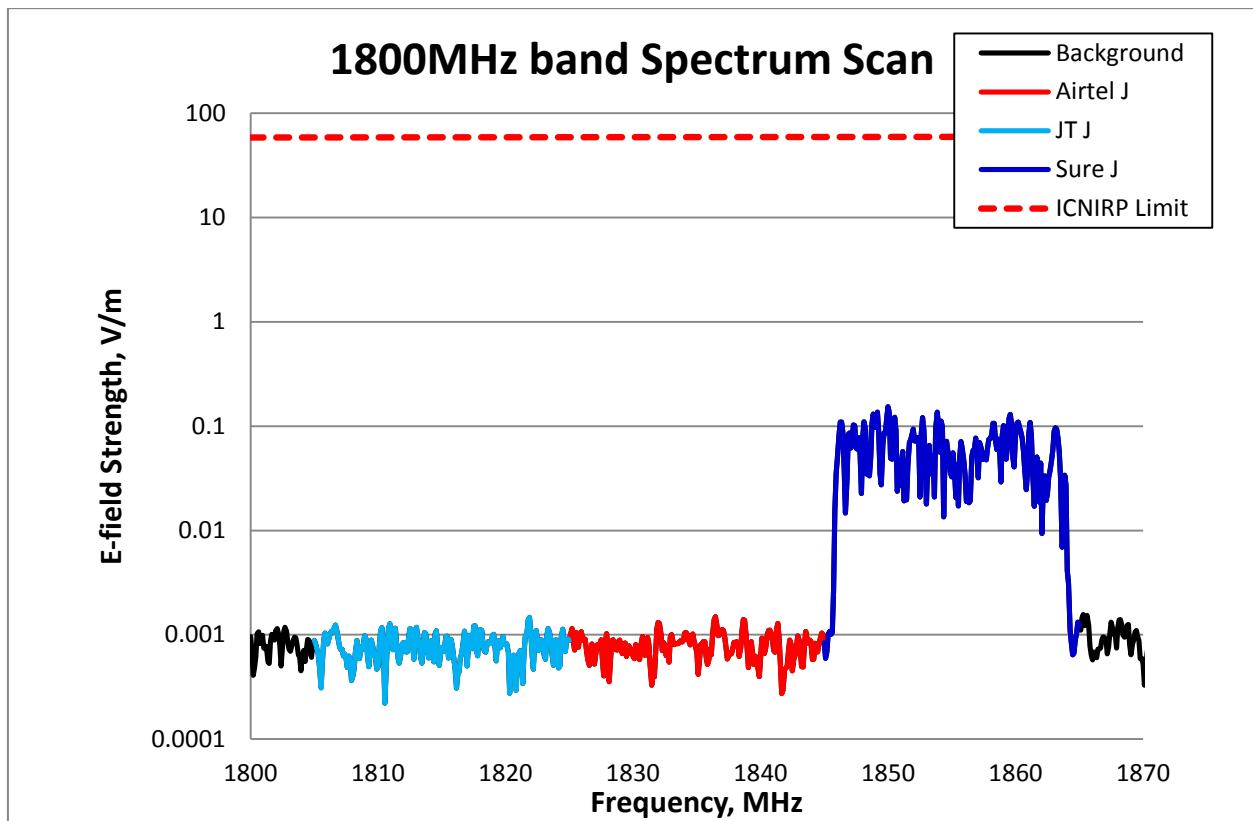


Figure 6 - 1800MHz Spectrum Scan

No field level recorded across the band was higher than 0.1531 V/m (Sure J), which is 381 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
Colombey	Airtel J	1800	0.001489	39178	3.53214E-08	1/ 28311474
	JT J		0.001473	39604	3.45079E-08	1/ 28978847
	Sure J		0.1531	381	0.000232975	1/ 4292
total band EQ					0.000233045	1/ 4291

Table 4 – 1800MHz band Exposure Quotient at Colombey

2.4 2100MHz Band

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

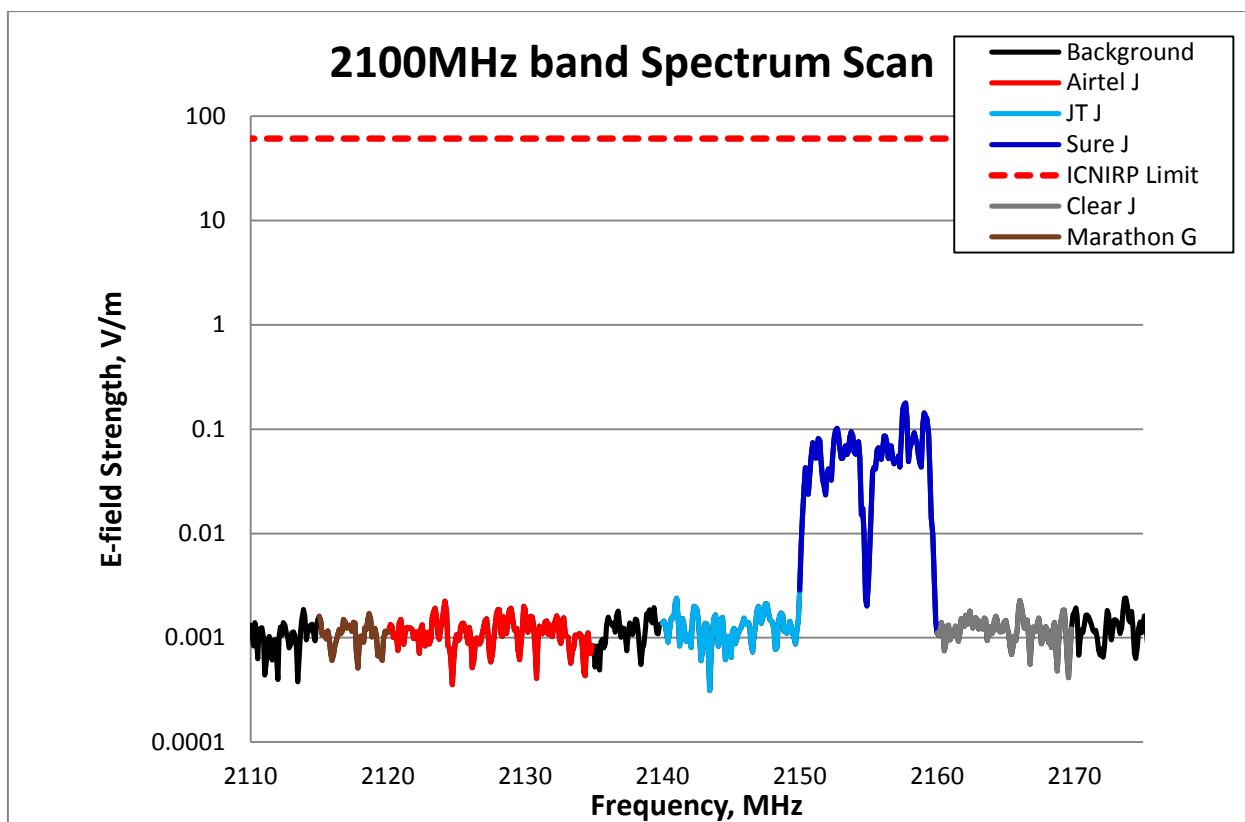


Figure 7 – 2100MHz band Spectrum Scan

No field level recorded across the band was higher than 0.1777 V/m (Sure J), which is 343 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
Colombey	Airtel J	2100	0.002244	27184	5.56265E-08	1/ 17977033
	Clear J		0.002275	26813	4.06056E-08	1/ 24627142
	JT J		0.002849	21411	4.86022E-08	1/ 20575179
	Marathon J		0.001704	35798	1.65188E-08	1/ 60537187
	Sure J		0.1777	343	0.000123311	1/ 8110
total band EQ					0.000123472	1/ 8099

Table 5 – 2100MHz band Exposure Quotient at Colombey

2.5 2600MHz band

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

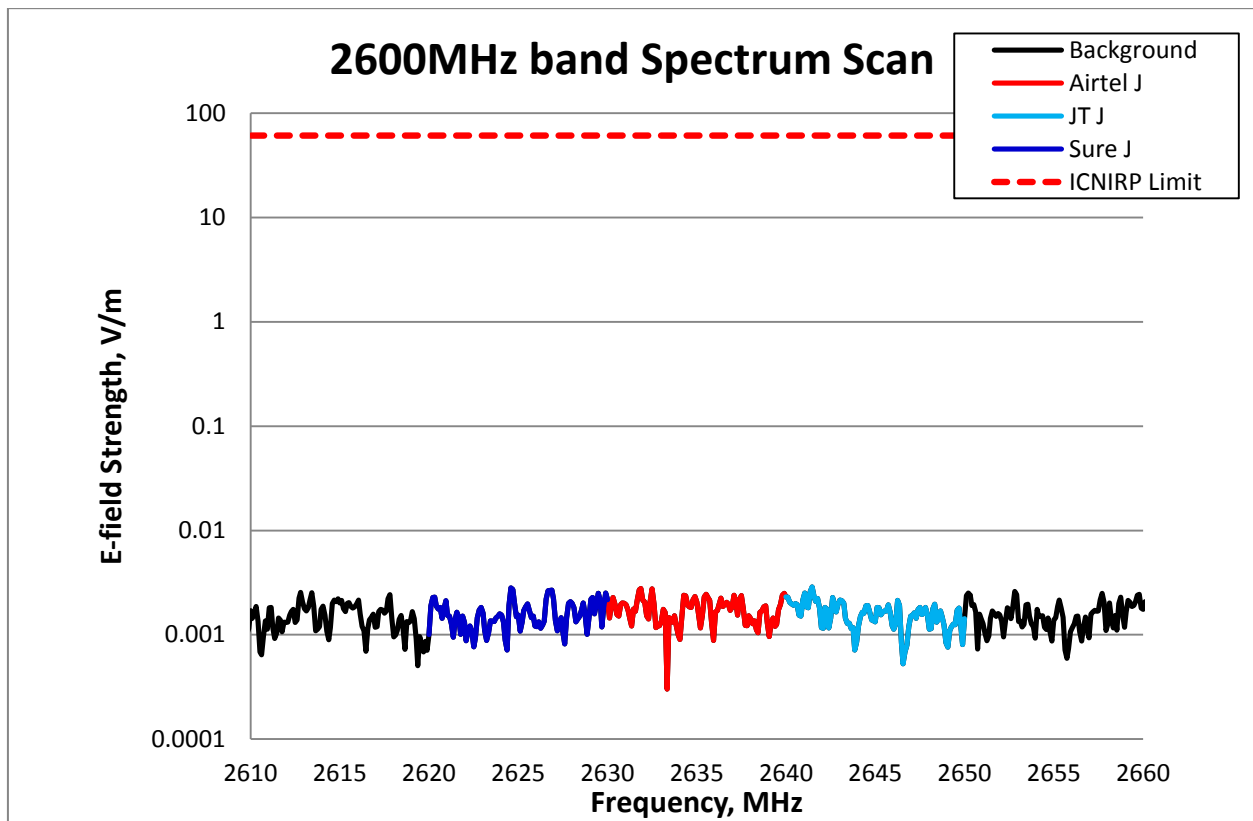


Figure 8 – 2600MHz band Spectrum Scan

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
Colombey	Airtel J	2600	0.002778	21958	8.41949E-08	1/ 11877205
	JT J		0.002873	21232	7.11306E-08	1/ 14058645
	Sure J		0.002813	21685	7.21523E-08	1/ 13859575
total band EQ					2.27478E-07	1/ 4396034

Table 6 – 2600MHz band Exposure Quotient at Colombey

End