

Cellular Mast Emissions Survey: Police HQ (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 Police HQ site located in Jersey.

The Police HQ site is listed as being used by a single operator at the time of the survey: JT J; equally strong signals were however recorded by the other two operators (Sure J and Airtel J) who transmit from antennas at nearby sites. Surveys were 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
Police HQ	800	0.205	Sure J	190	0.000366195	1/ 2731
	900	1.166	Sure J	35	0.001241967	1/ 805
	1800	0.1259	Sure J	463	7.18946E-05	1/ 13909
	2100	0.05093	Sure J	1198	2.1582E-05	1/ 46335
	2600	0.002567	Airtel J	23763	1.38548E-07	1/ 7217729
Total Site EQ					0.001701778	1/ 588

Table 1 - Cumulative Exposure Quotient

The results show that the cumulative EQ was measured at 1/588 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

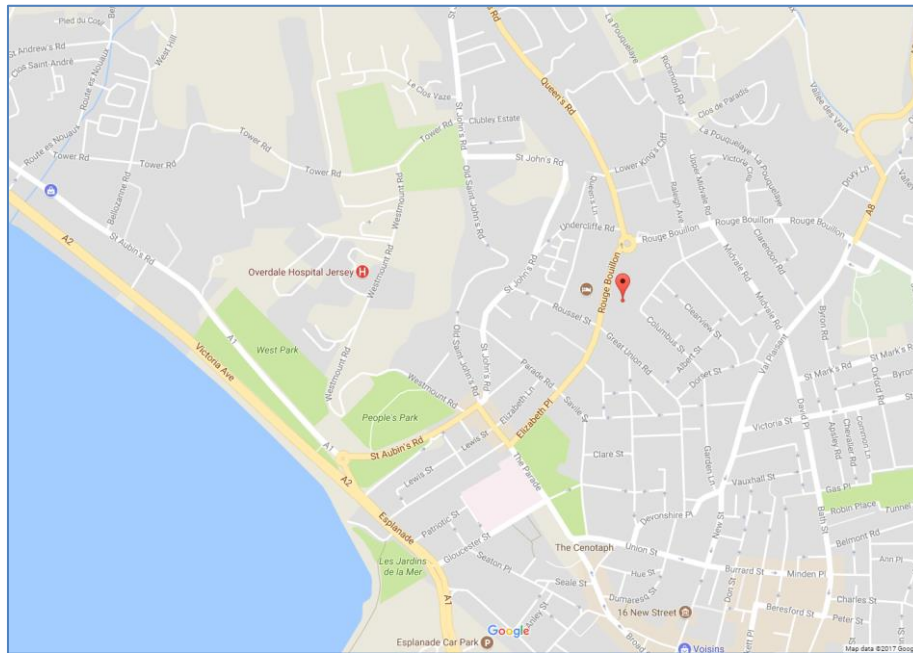


Figure 1 - Map of the Site Area

Site name	Police HQ
Site address	Rouge Bouillon, St Helier, Jersey
Site Latitude	N 49.19148
Site Longitude	W 02.10872

1.2 Site Description

Operators	JT J
Antenna types	Directional
Approximate height	15m
Site type	Building - Rooftop
Description	The antennas at the Police HQ are located on the roof of the main building, out of reach of the public

1.3 Site Photo



Figure 2 – Peak Measurement Location

1.4 Test Location

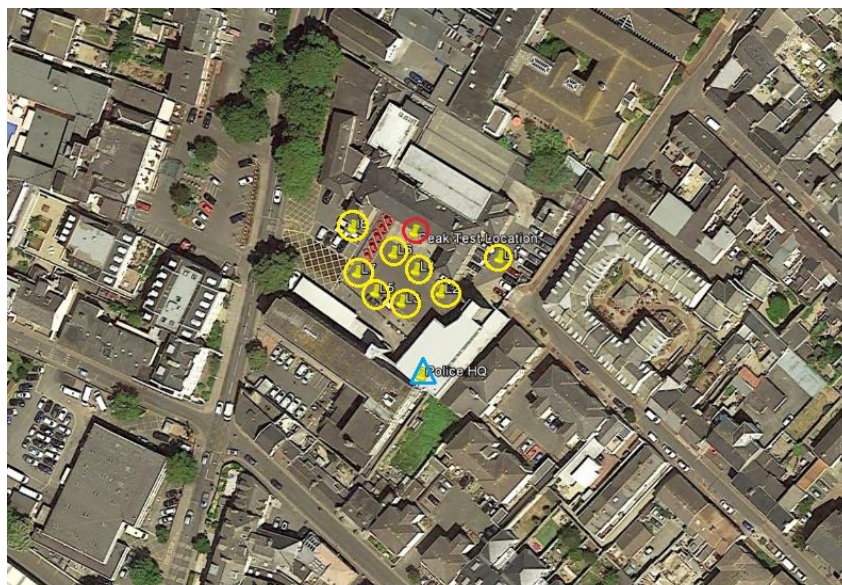


Figure 3- Survey Area with Spot Measurement Markers: The blue triangle is the site location, the yellow circles are intermediate locations measured at during the peak search and the red circle is the spot where the highest spot search reading was obtained and where the detailed survey was carried out

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.

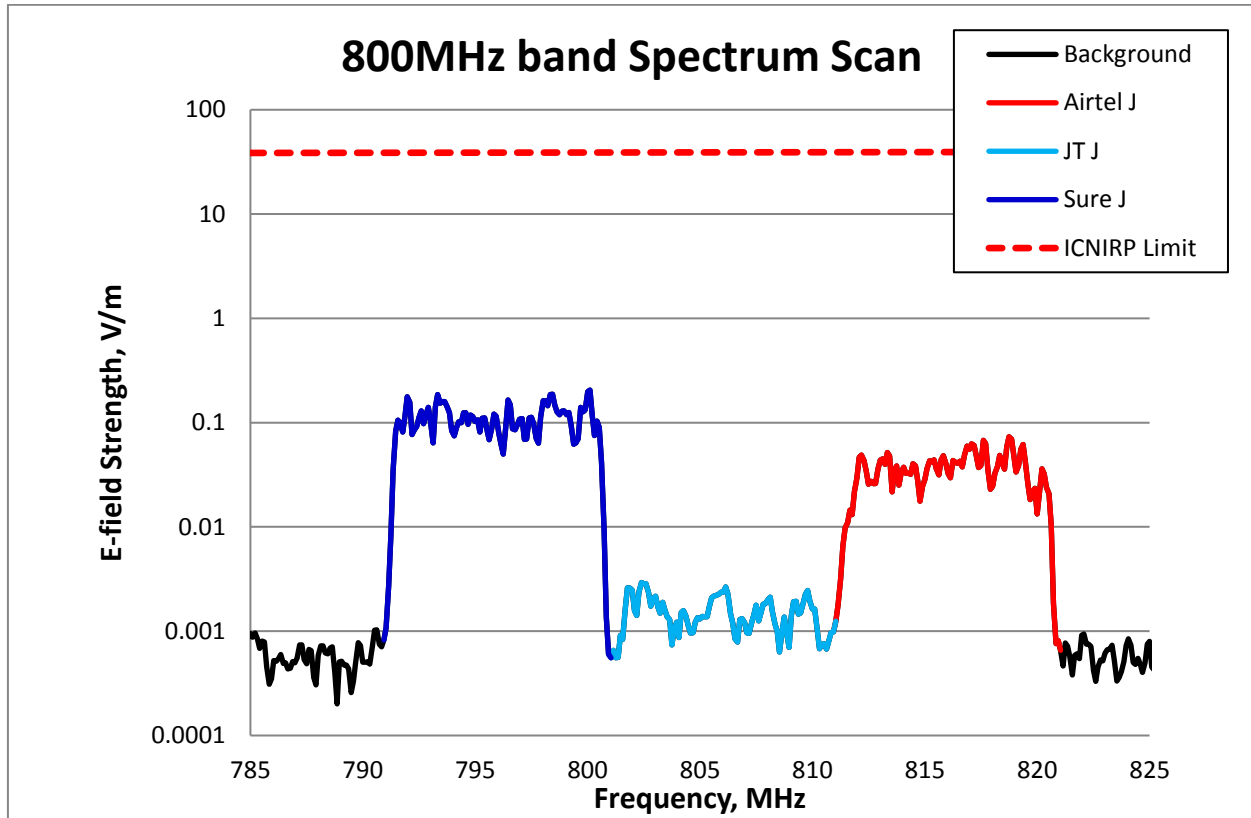


Figure 4 - 800MHz band Spectrum Scan

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 0.205 V/m (Sure J), which is 190 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
Police HQ	Airtel J	800	0.07316	532	3.72749E-05	1/ 26828
	JT J		0.002928	13282	6.8391E-08	1/ 14621809
	Sure J		0.205	190	0.000328852	1/ 3041
total band EQ					0.000366195	1/ 2731

Table 2– 800MHz band Exposure Quotient at the Police HQ

2.2 900 MHz Band

The graph for the 900 MHz activity is shown below:

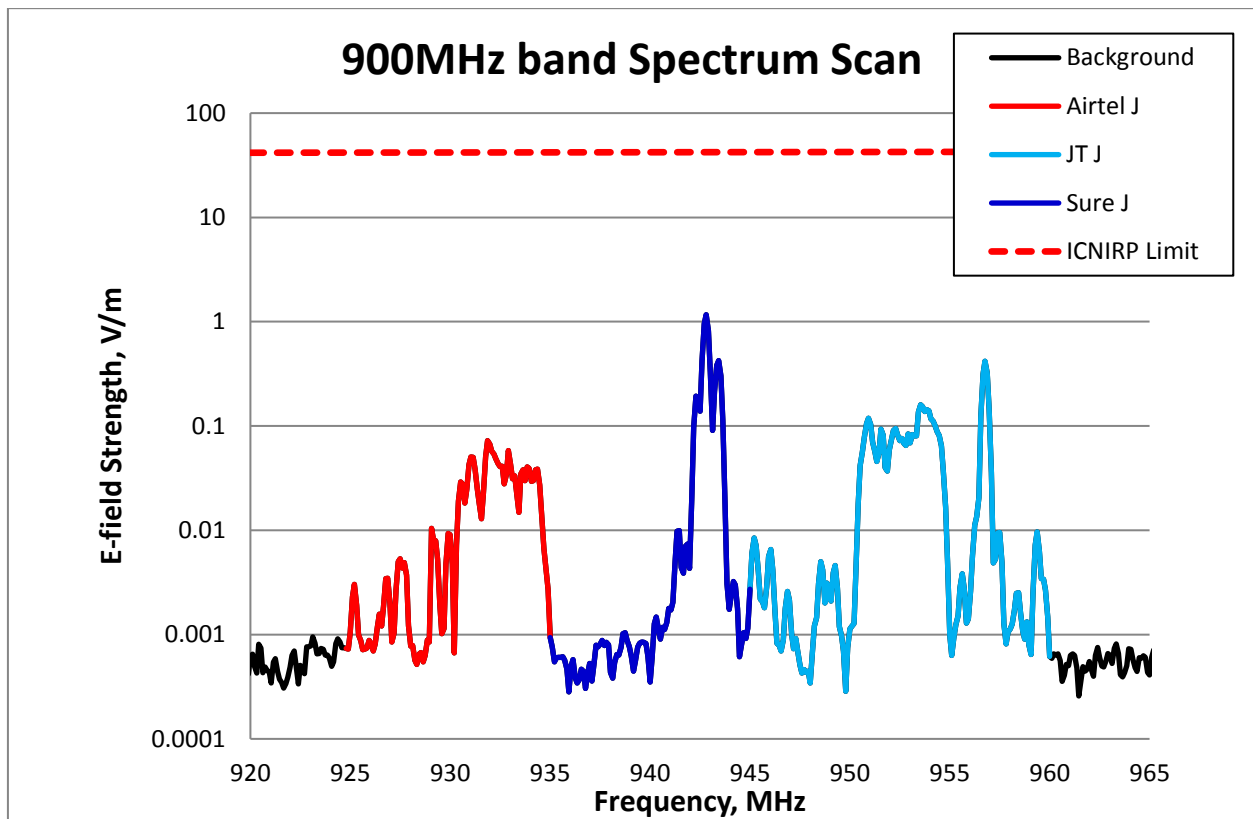


Figure 5 - 900MHz band Spectrum Scan

No field level recorded across the band was higher than 1.166 V/m (Sure J), which is 35 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
Police HQ	Airtel J	900	0.07228	571	1.66722E-05	1/ 59980
	JT J		0.418	99	0.000204749	1/ 4884
	Sure J		1.166	35	0.001020546	1/ 980
total band EQ					0.001241967	1/ 805

Table 3– 900MHz band Exposure Quotient at the Police HQ

2.3 1800 MHz Band

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

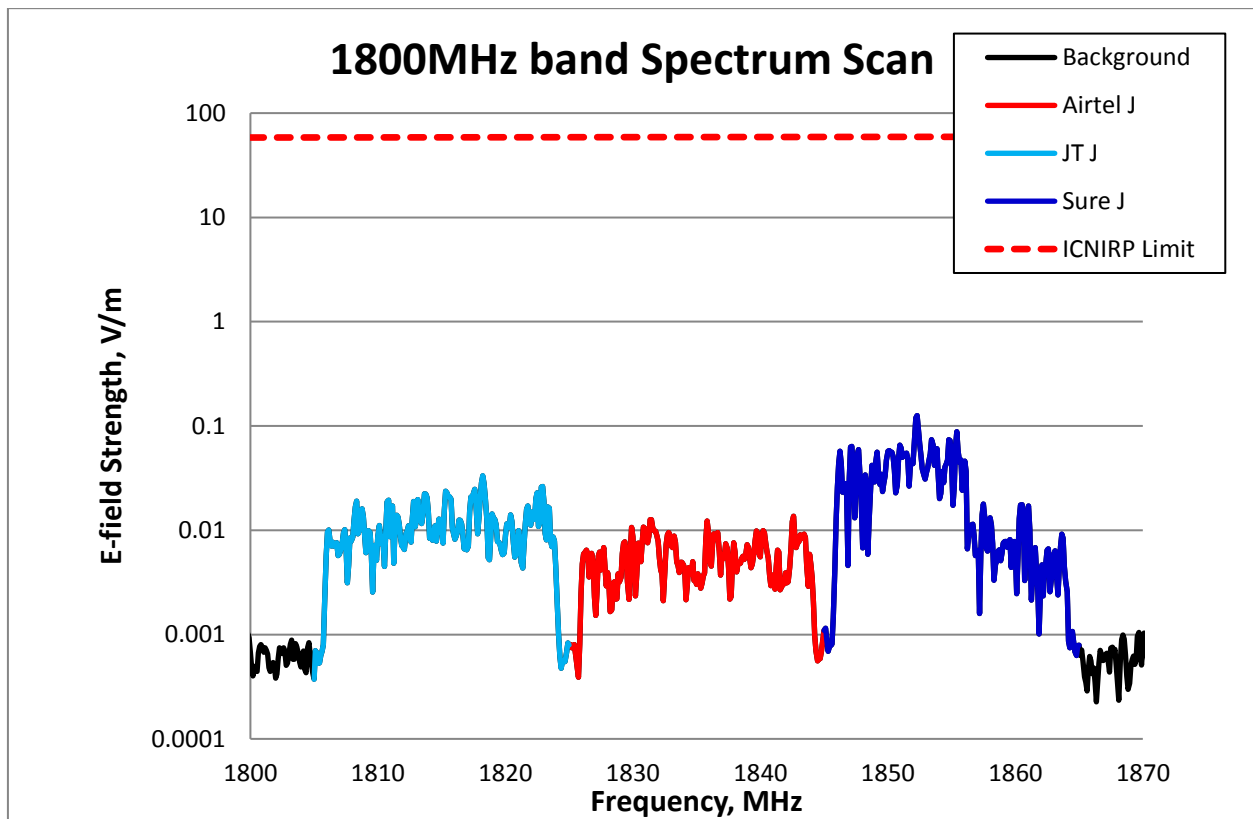


Figure 6 - 1800MHz Spectrum Scan

No field level recorded across the band was higher than 0.1259 V/m (Sure J), which is 463 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
Police HQ	Airtel J	1800	0.01361	4286	1.88245E-06	1/ 531224
	JT J		0.03335	1749	7.858E-06	1/ 127259
	Sure J		0.1259	463	6.21541E-05	1/ 16089
total band EQ					7.18946E-05	1/ 13909

Table 4 – 1800MHz band Exposure Quotient at Police HQ

2.4 2100MHz Band

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

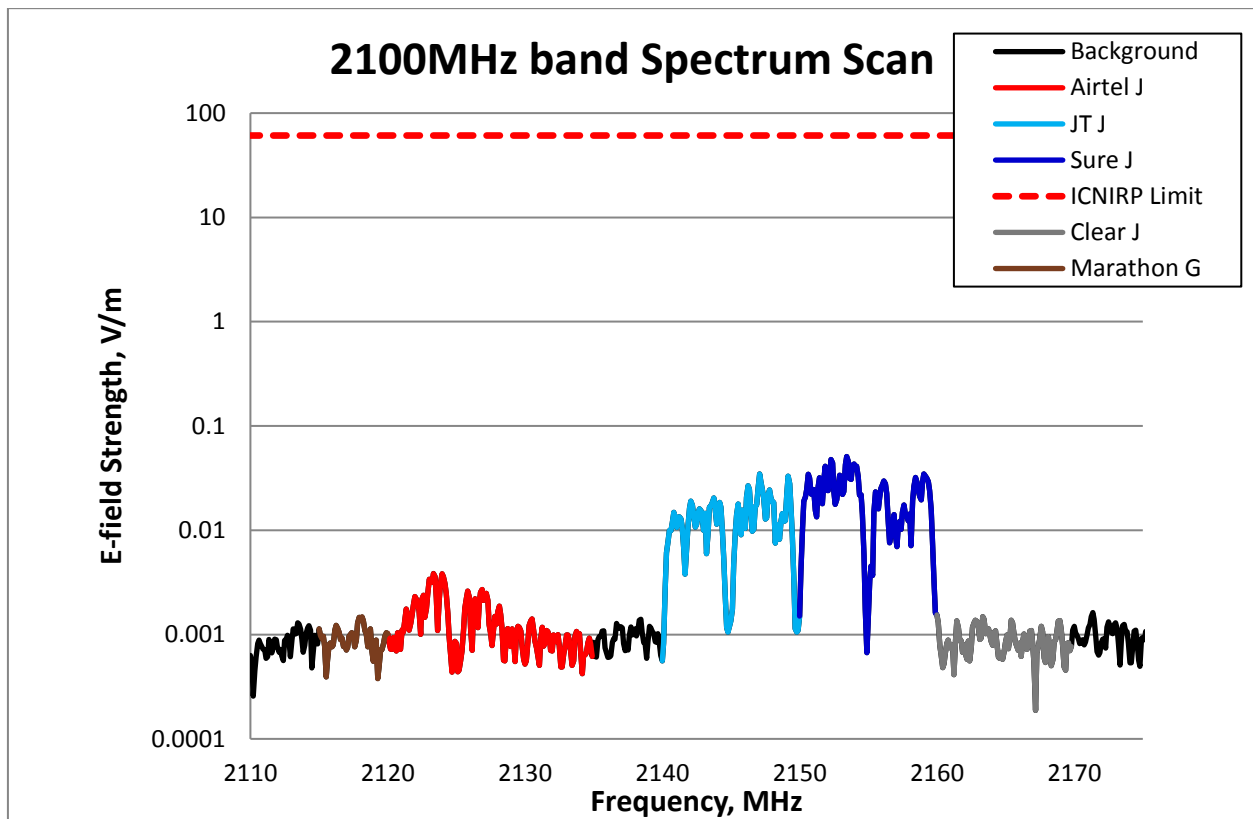


Figure 7 – 2100MHz band Spectrum Scan

No field level recorded across the band was higher than 0.05093 V/m (Sure J), which is 1198 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
Police HQ	Airtel J	2100	0.003838	15894	9.02128E-08	1/ 11084903
	Clear J		0.00154	39610	2.13766E-08	1/ 46780129
	JT J		0.03461	1762	5.66355E-06	1/ 176568
	Marathon J		0.001478	41272	1.18295E-08	1/ 84534173
	Sure J		0.05093	1198	1.5795E-05	1/ 63311
total band EQ					2.1582E-05	1/ 46335

Table 5 – 2100MHz band Exposure Quotient at the Police HQ

2.5 2600MHz band

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

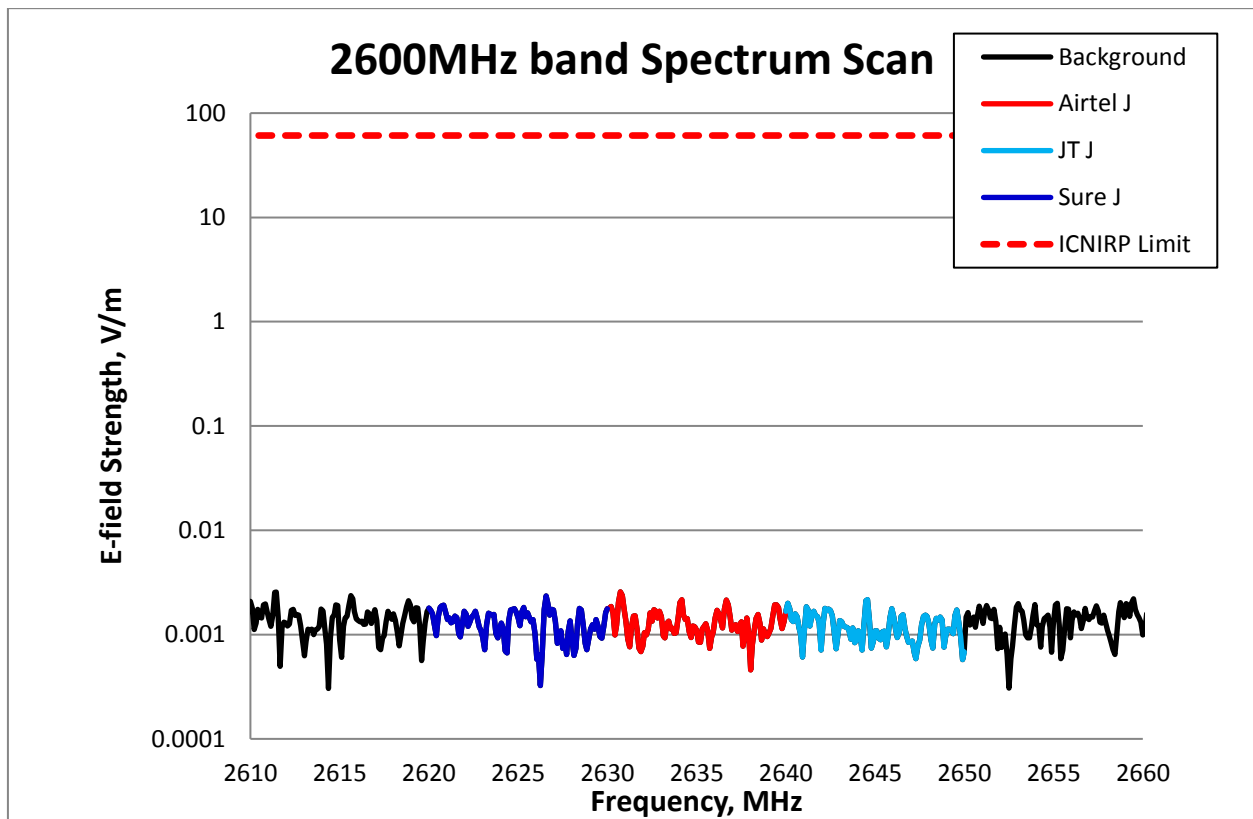


Figure 8 – 2600MHz band Spectrum Scan

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
Police HQ	Airtel J	2600	0.002567	23763	4.90372E-08	1/ 20392673
	JT J		0.002164	28189	4.1752E-08	1/ 23950928
	Sure J		0.002342	26046	4.77585E-08	1/ 20938688
total band EQ					1.38548E-07	1/ 7217729

Table 6 – 2600MHz band Exposure Quotient at the Police HQ

End