

Cellular Mast Emissions Survey: Gorey Church (Jersey)



DOCUMENT DETAILS

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Survey Engineer:	Louise Sands	
Report Compiled by:	Lauren Medhurst	
Checked and Approved by	Bachir Belloul	
Authorised for Distribution	Ravi Mondair	

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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 Gorey Church site located in Jersey.

The Gorey Church 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
Gorey Church	800	0.01291	Sure J	3012	1.06583E-06	1/ 938240
	900	2.285	JT J	18	0.003575991	1/ 280
	1800	0.002956	Sure J	19735	2.75548E-07	1/ 3629131
	2100	0.004937	Sure J	12356	5.0226E-07	1/ 1991000
	2600	0.004065	Airtel J	15006	4.68757E-07	1/ 2133302
Total Site EQ					0.003578304	1/ 279

Table 1 - Cumulative Exposure Quotient

The results show that the cumulative EQ was measured at 1/279 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

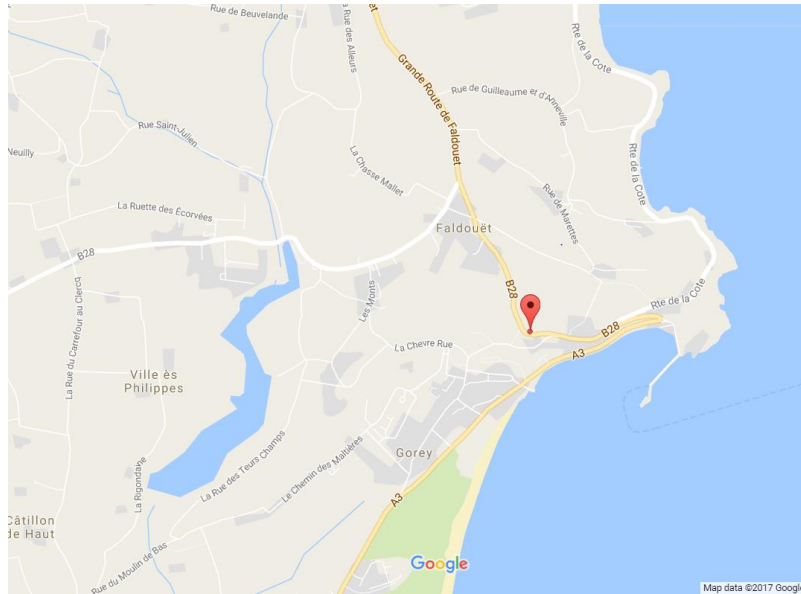


Figure 1 - Map of the Site Area

Site name	Gorey Church
Site address	Le Mont du Gouray, St Martin, Jersey
Site Latitude	N 49.19946
Site Longitude	W 2.02847

1.2 Site Description

Operators	JT J
Antenna types	Directional
Approximate height	12m
Site type	Building – Wall Mount
Description	The directional antenna at Gorey Church is located on the rooftop 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.

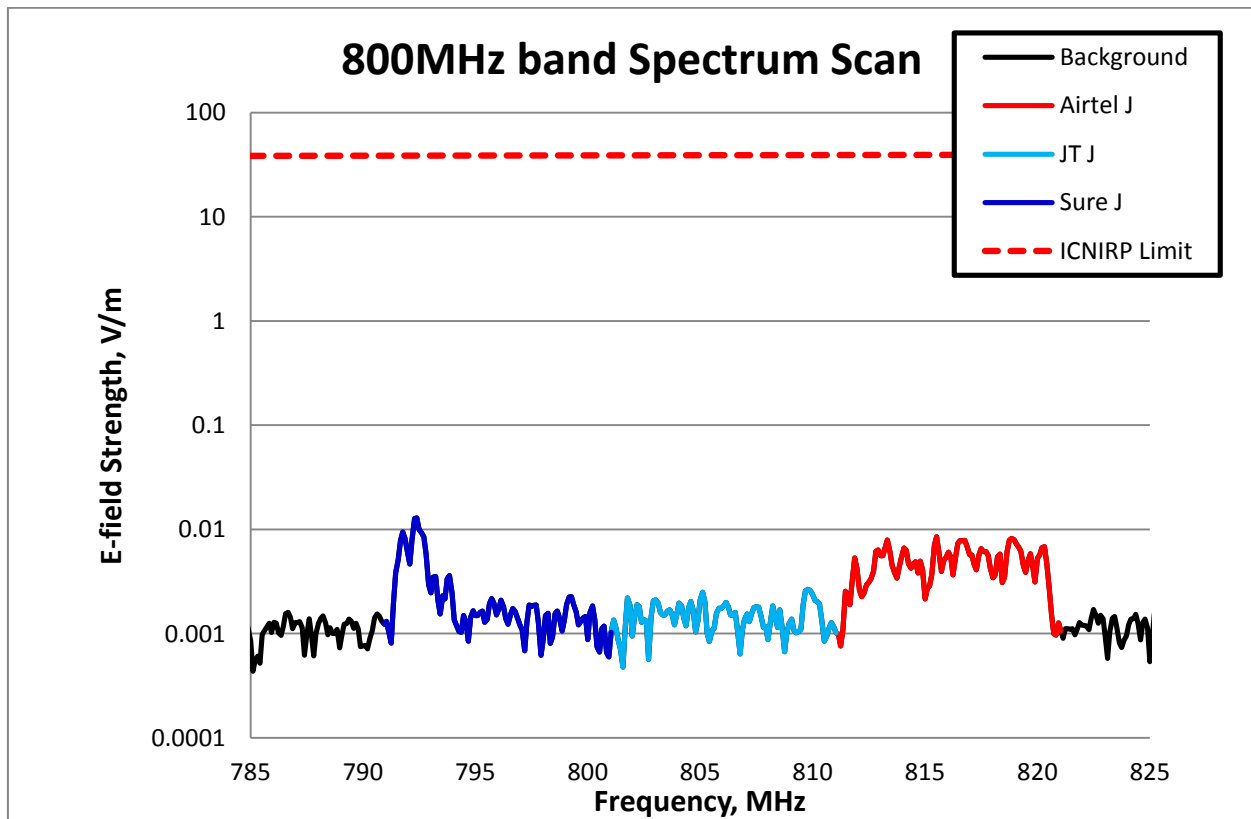


Figure 4 - 800MHz band Spectrum Scan

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 0.01291 V/m (Sure J), which is 3012 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
Gorey Church	Airtel J	800	0.00847	4592	6.70177E-07	1/ 1492143
	JT J		0.002661	14615	6.24577E-08	1/ 16010835
	Sure J		0.01291	3012	3.33191E-07	1/ 3001281
total band EQ					1.06583E-06	1/ 938240

Table 2– 800MHz band Exposure Quotient at Gorey Church

2.2 900 MHz Band

The graph for the 900 MHz activity is shown below:

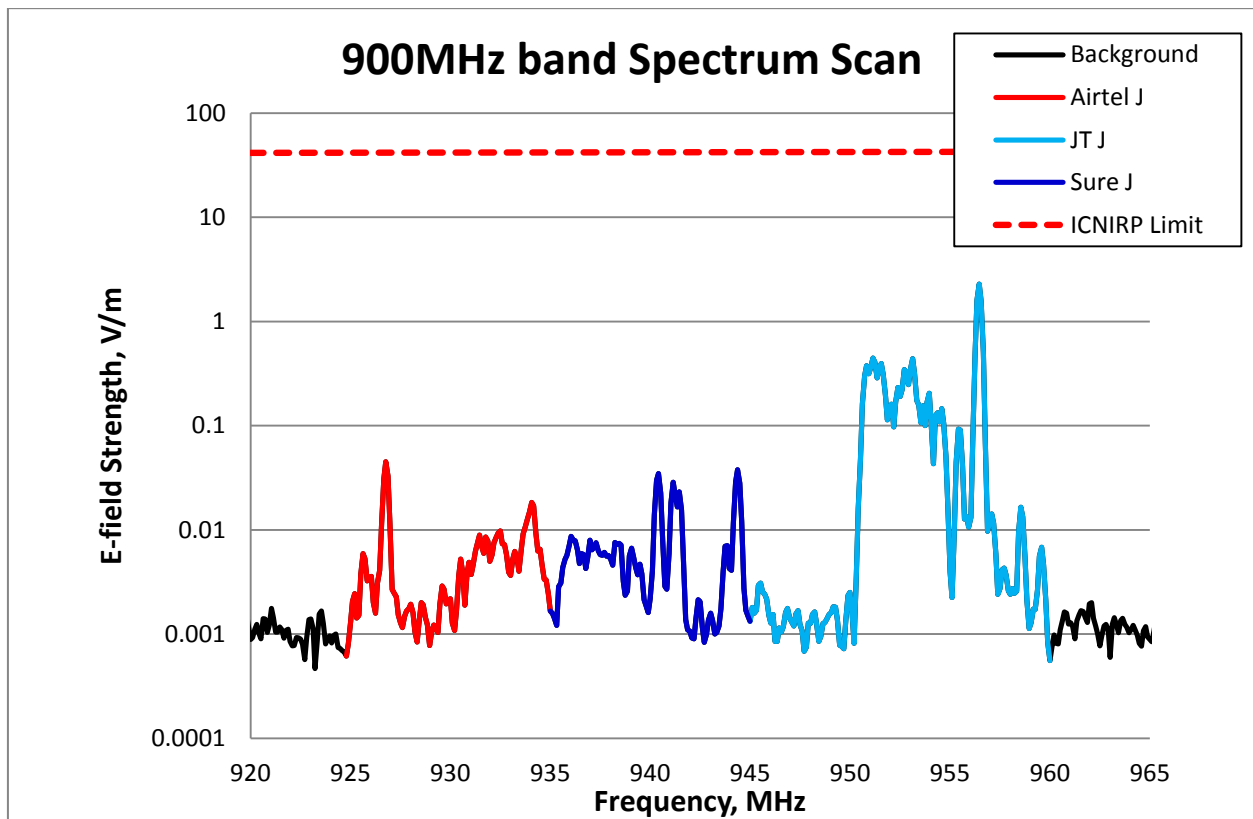


Figure 5 - 900MHz band Spectrum Scan

No field level recorded across the band was higher than 2.285 V/m (JT J), which is 18 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
Gorey Church	Airtel J	900	0.04507	915	1.94515E-06	1/ 514100
	JT J		2.285	18	0.003571203	1/ 280
	Sure J		0.03774	1093	2.84293E-06	1/ 351749
total band EQ					0.003575991	1/ 280

Table 3– 900MHz band Exposure Quotient at Gorey Church

2.3 1800 MHz Band

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

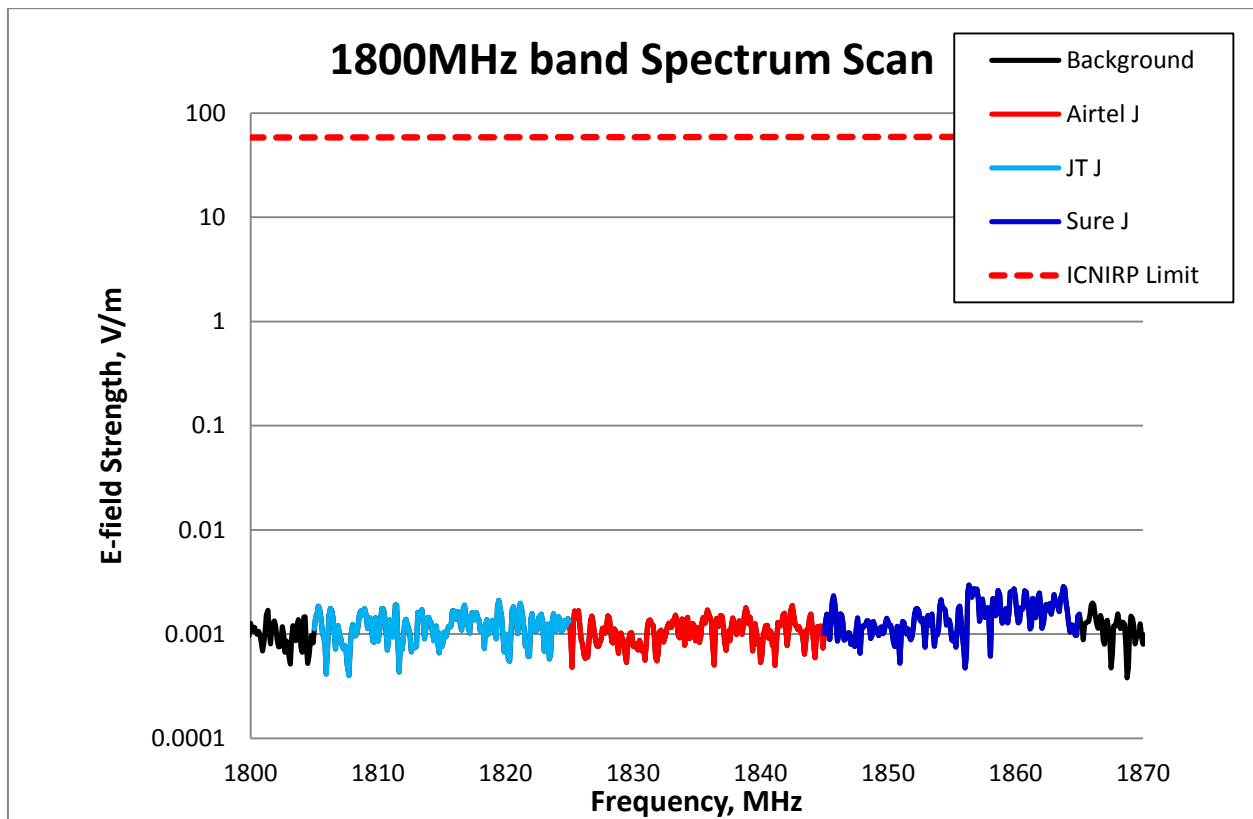


Figure 6 - 1800MHz Spectrum Scan

No activity was recorded in the 1800MHz as no operator appears to transmit in this band at this site.

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
Gorey Church	Airtel J	1800	0.001882	30997	6.44305E-08	1/ 15520590
	JT J		0.00211	27648	8.10497E-08	1/ 12338113
	Sure J		0.002956	19735	1.30068E-07	1/ 7688297
total band EQ					2.75548E-07	1/ 3629131

Table 4 – 1800MHz band Exposure Quotient at Gorey Church

2.4 2100MHz Band

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

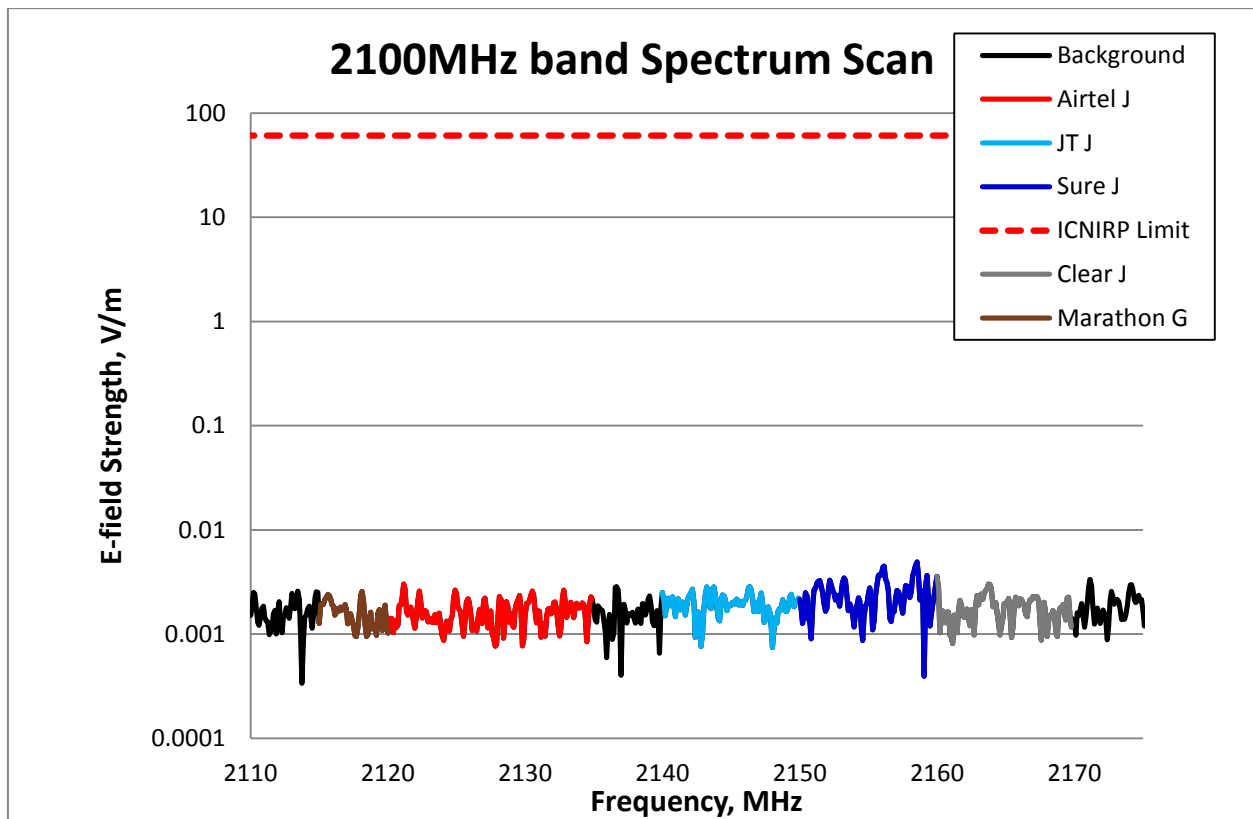


Figure 7 – 2100MHz band Spectrum Scan

No activity was recorded in the 2100MHz as no operator appears to transmit in this band at this site.

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
Gorey Church	Airtel J	2100	0.003016	20225	1.07954E-07	1/ 9263209
	Clear J		0.003587	17006	8.62649E-08	1/ 11592204
	JT J		0.002853	21381	1.02428E-07	1/ 9762997
	Marathon J		0.002577	23671	3.59234E-08	1/ 27836971
	Sure J		0.004937	12356	1.6969E-07	1/ 5893091
total band EQ					5.0226E-07	1/ 1991000

Table 5 – 2100MHz band Exposure Quotient at Gorey Church

2.5 2600MHz band

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

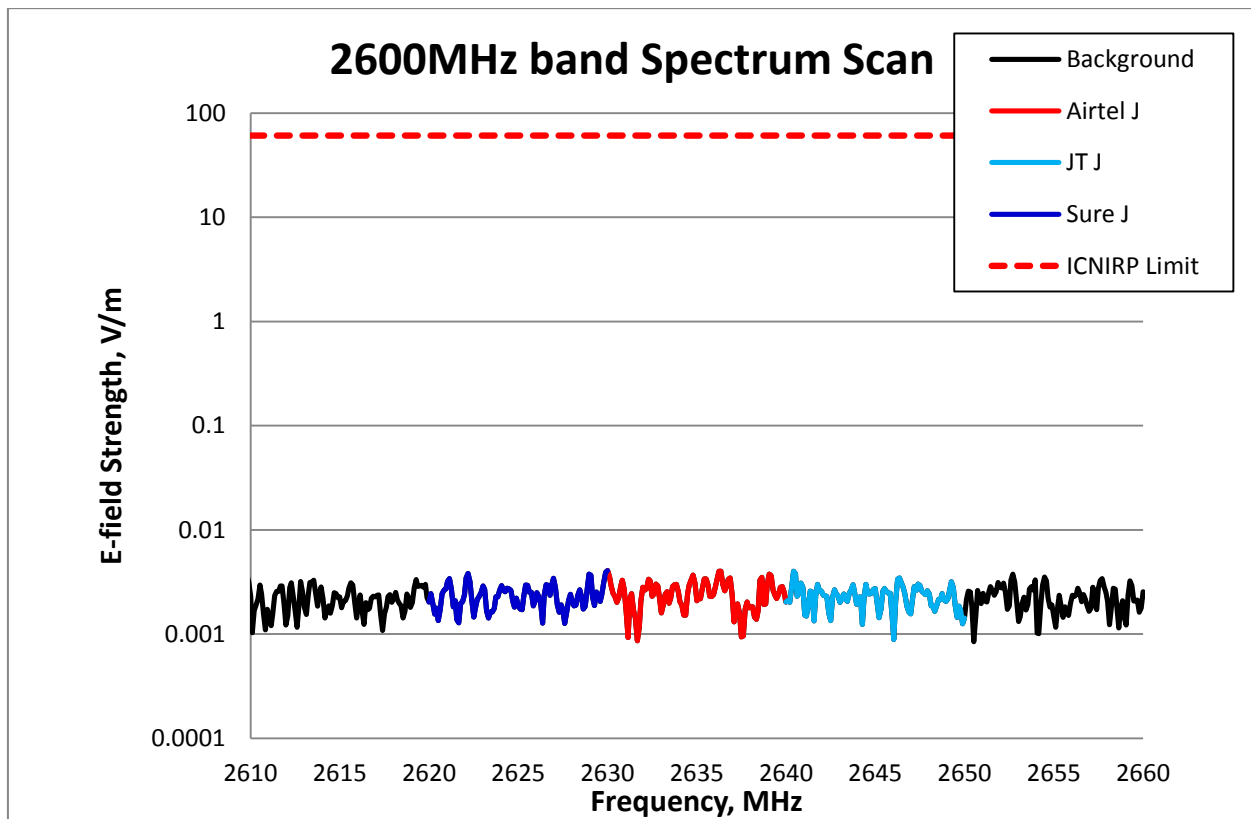


Figure 8 – 2600MHz band Spectrum Scan

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
Gorey Church	Airtel J	2600	0.004065	15006	1.7156E-07	1/ 5828869
	JT J		0.003999	15254	1.46449E-07	1/ 6828330
	Sure J		0.004065	15006	1.50748E-07	1/ 6633572
total band EQ					4.68757E-07	1/ 2133302

Table 6 – 2600MHz band Exposure Quotient at Gorey Church

End