

Cellular mast emissions survey: Field 426 (St Marys Village)



Document details

Document name	Cellular mast emissions survey:	Field 426 (St Marys Village)
Survey date	16-09-2025 at 13:10	
Report issue date	24-10-2025	
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Contents page

1	Executive summary	3
2	Site details	4
2.1	Site location	4
2.2	Site description	4
2.3	Site photo	5
2.4	Test location	5
3	Survey results	6
3.1	700MHz band	6
3.2	800MHz band	7
3.3	900MHz band	8
3.4	1800MHz band	9
3.5	2100MHz band	10
3.6	2600MHz band	11
3.7	3400MHz band	12

Lists of figures

Figure 1 – Map of the site area	4
Figure 2 – Location of the peak where emission levels were measured	5
Figure 3 – Survey area with spot measurement markers	5
Figure 4 – 700MHz band spectrum scan	6
Figure 5 – 800MHz band spectrum scan	7
Figure 6 – 900MHz band spectrum scan	8
Figure 7 – 1800MHz spectrum scan	9
Figure 8 – 2100MHz band spectrum scan	10
Figure 9 – 2600MHz band spectrum scan	11
Figure 10 – 3400MHz band spectrum scan	12

List of tables

Table 1 – Total EQ by frequency band	3
Table 2 – 700MHz band exposure quotient at Field 426 (St Marys Village)	6
Table 3 – 800MHz band exposure quotient at Field 426 (St Marys Village)	7
Table 4 – 900MHz band exposure quotient at Field 426 (St Marys Village)	8
Table 5 – 1800MHz band exposure quotient at Field 426 (St Marys Village)	9
Table 6 – 2100MHz band exposure quotient at Field 426 (St Marys Village)	10
Table 7 – 2600MHz band exposure quotient at Field 426 (St Marys Village)	11
Table 8 – 3400MHz band exposure quotient at Field 426 (St Marys Village)	12

1 Executive summary

The Jersey Competition and Regulatory Authority or JCRA regularly monitors emission levels from the cellular masts in Jersey¹ 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 levels from the sites meet the internationally recognised standards and guidelines regarding health and safety limits for the public.

In 2017, the JCRA commissioned surveys to measure the electromagnetic field (EMF) emission levels at all the sites hosting mobile telecommunication equipment within the island. Further surveys have been conducted in each subsequent year focussing on new sites, those where significant changes have been made by the operators or those where the public have raised concerns to the JCRA in the previous year. This report presents the results of the survey conducted at the Field 426 (St Marys Village) site in 2025.

In 2025, the Jersey mobile network operators have launched their first commercial 5G services. This year's audits therefore include the frequency bands used for 5G, noting however that not all sites currently have 5G transmitting equipment.

The Field 426 (St Marys Village) site was used by multiple operators at the time of the survey: Airtel and JT. Surveys were conducted at all cellular frequency bands (700, 800, 900, 1800, 2100, 2600 and 3400MHz) for all mobile cellular technologies (2G, 3G, 4G and 5G) and for all three cellular operators as a routine procedure. Even though the reported levels are expected to be predominantly emitted from this site, the test equipment does not discriminate between nearby sites which means that the levels are cumulated over all site emissions detected by the test instrument.

The survey established that the emission levels around the 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 recorded around the site following a peak search. The levels were found to be lower at all the other locations round this site. The recorded values are true at the time of testing and can go up or down depending on the level of user activity on the site.

The total Exposure Quotient (EQ) for the site recorded across all detected cellular frequency bands is given at the bottom of the summary table below. A total EQ close to 1 (one) for the site would mean that emission levels approach the safety limit advised by ICNIRP in their guidelines.

Table 1 – Total EQ by frequency band

Site Name	Band [MHz]	Max E-field in band [V/m]	Operator at Max E-field	ICNIRP Limit Relative to Max E-field	Band Exposure Quotient	Band EQ Relative to ICNIRP
Field 426 (St Mary's Village)	700	0.2152	JT	181	0.000360169	1/ 2776
	800	0.4281	JT	91	0.001335057	1/ 749
	900	0.3806	JT	108	0.000663465	1/ 1507
	1800	0.1394	JT	418	0.000104159	1/ 9601
	2100	0.2177	JT	280	0.00031735	1/ 3151
	2600	0.07469	JT	817	3.13306E-05	1/ 31918
	3400	0.003076	Sure	12643	5.40719E-07	1/ 1849388
Total Site EQ					0.00281207	1/ 356

¹ Prior to 1 July 2020, the JCRA and the Guernsey Competition & Regulatory Authority coordinated their activities in the Channel Islands as the Channel Islands Competition Regulatory Authorities (CICRA). Earlier reports may refer to CICRA rather than JCRA.

The results show that the total EQ was measured at 0.281% of ICNIRP's *General Public* Reference Levels (or about 1/356) and the site therefore remains safe.

The graphs which follow show the activity on all the frequency bands surveyed. The plots are colour-coded for easy identification of the operator. On each plot, the solid red line represents the Airtel activity, the light blue is JT, the dark blue is Sure, the light grey is Clear (Clear only operates in the 2100MHz band) and the green line is Newtel (Newtel only operates a license in the 3400MHz band). Note however that not all operators are present in each frequency band but the colour assigned to each operator remains the same throughout.

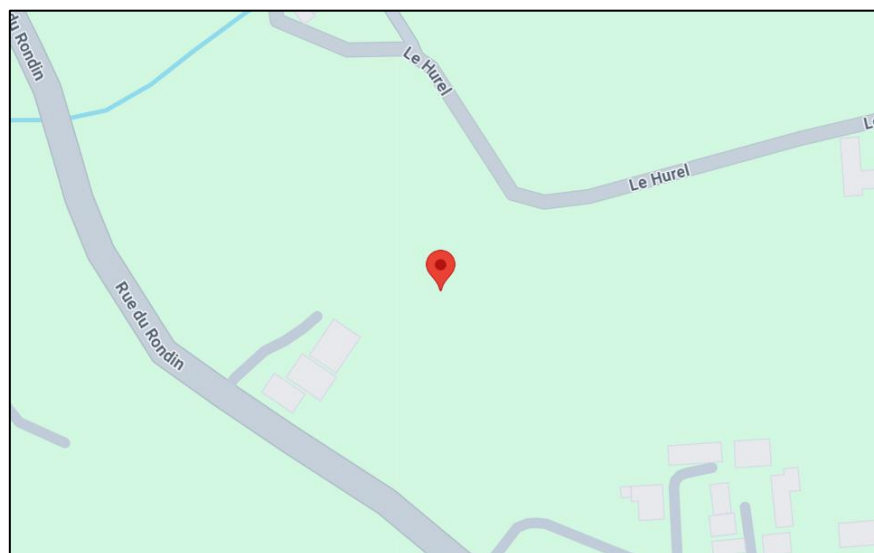
ICNIRP's *General Public* Reference Level is also shown as the dashed line at the top of the graphs. For clarity, each step on the vertical axis represents a 10-fold increase. The same scaling and colour scheme will be used on the plots throughout this report.

The graphs are also supported by the equivalent statistical tables derived from the measured levels at the site for added clarity.

2 Site details

2.1 Site location

Figure 1 – Map of the site area



Site name:	Field 426 (St Marys Village)
Site address:	La Rue du Rondin
Site latitude:	49.23755
Site longitude:	-2.17779

2.2 Site description

Operators:	Airtel / JT
Antenna types:	2 Monopole Masts
Approximate height:	18m
Site type:	Monopole
Description:	The monopole masts at Field 426 are located at the back of the main buildings, out of reach of the public.

2.3 Site photo

Figure 2 – Location of the peak where emission levels were measured.



2.4 Test location

Figure 3 – Survey area with spot measurement markers



As part of the peak search procedure, spot measurements were taken at locations around the antennas as shown on the above sketch.

The blue triangle is the antenna location, yellow lines are the walk route, the green 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.

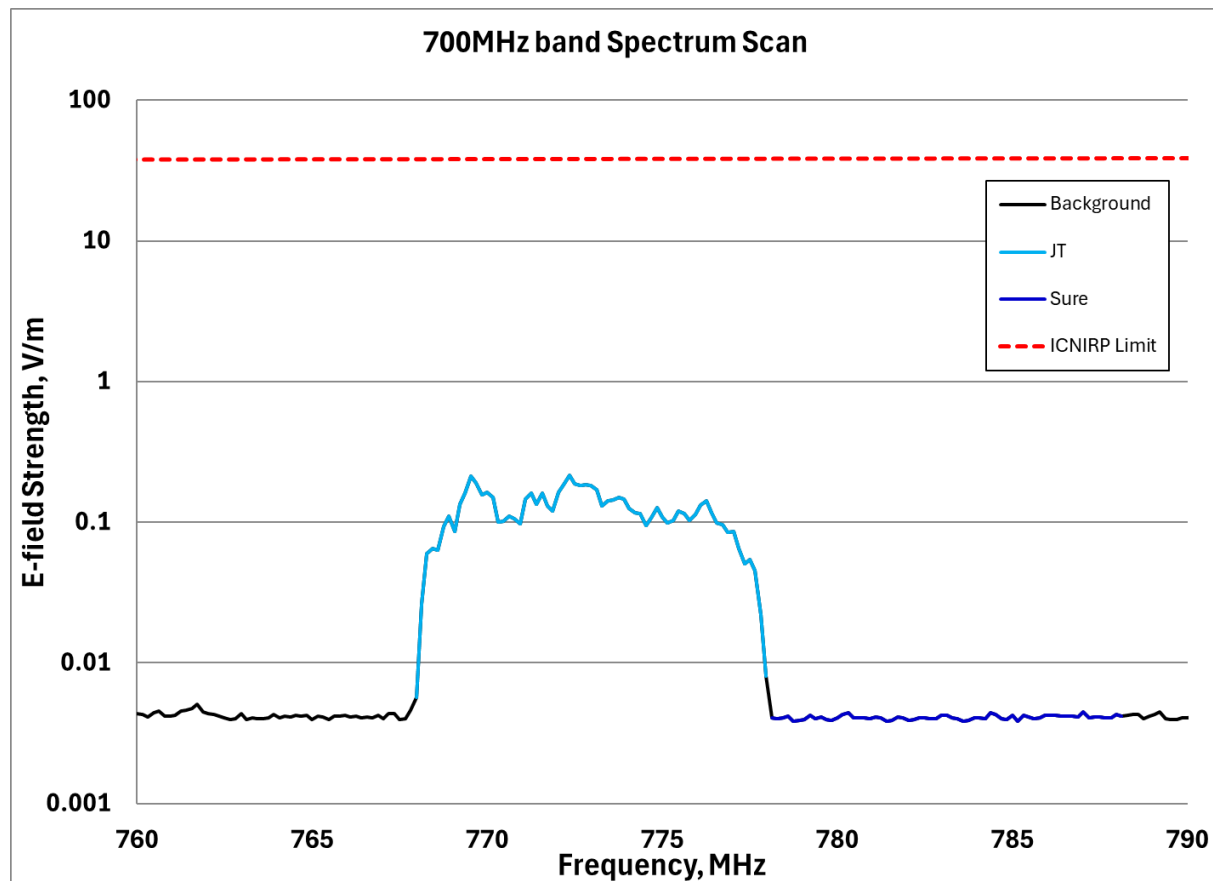
The spectrum readings reported further down this report were recorded over a period of six minutes as advised by ICNIRP.

3 Survey results

3.1 700MHz band

The graph for the 700MHz activity is shown below with the E-field strength levels measured at the site plotted on a logarithmic scale.

Figure 4 – 700MHz band spectrum scan



No field level recorded across the band was higher than 0.2152 V/m (JT), which is 181 times smaller than the ICNIRP Reference Level.

The EQ results for the 700MHz band are shown below.

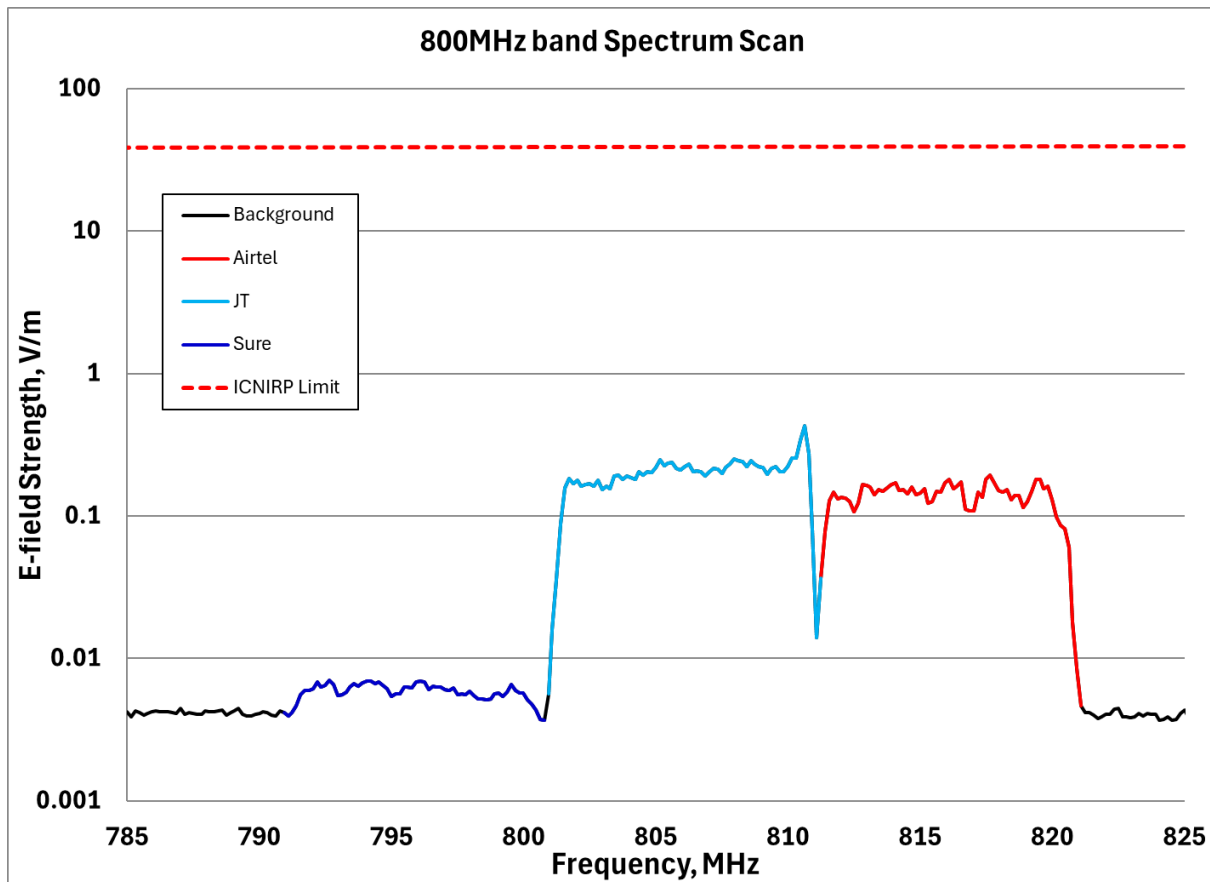
Table 2 – 700MHz band exposure quotient at Field 426 (St Marys Village)

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
Field 426 (St Mary's Village)	JT	700	0.2152	181	0.0003598	1/ 2779
	Sure		0.004463	8714	3.68786E-07	1/ 2711597
	total band EQ					0.000360169

3.2 800MHz band

The graph for the 800MHz activity is shown below.

Figure 5 – 800MHz band spectrum scan



No field level recorded across the band was higher than 0.4281 V/m (JT), which is 91 times smaller than the ICNIRP Reference Level.

The EQ results for the 800MHz band are shown below.

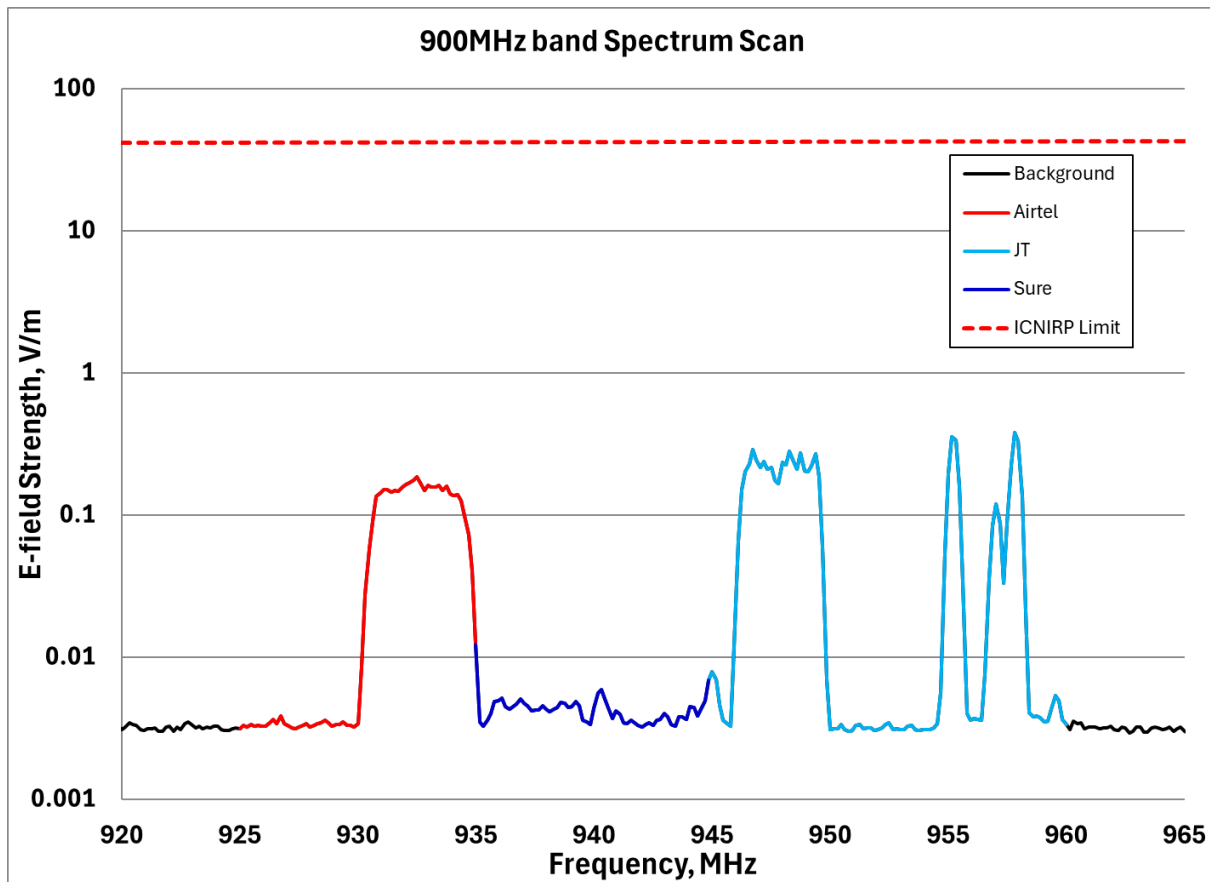
Table 3 – 800MHz band exposure quotient at Field 426 (St Marys Village)

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
Field 426 (St Mary's Village)	Airtel	800	0.1923	202	0.00040514	1/ 2468
	JT		0.4281	91	0.000929169	1/ 1076
	Sure		0.007044	5521	7.47294E-07	1/ 1338161
	total band EQ				0.001335057	1/ 749

3.3 900MHz band

The graph for the 900MHz activity is shown below.

Figure 6 – 900MHz band spectrum scan



No field level recorded across the band was higher than 0.3806 V/m (JT), which is 108 times smaller than the ICNIRP Reference Level.

The EQ results for the 900MHz band are shown below.

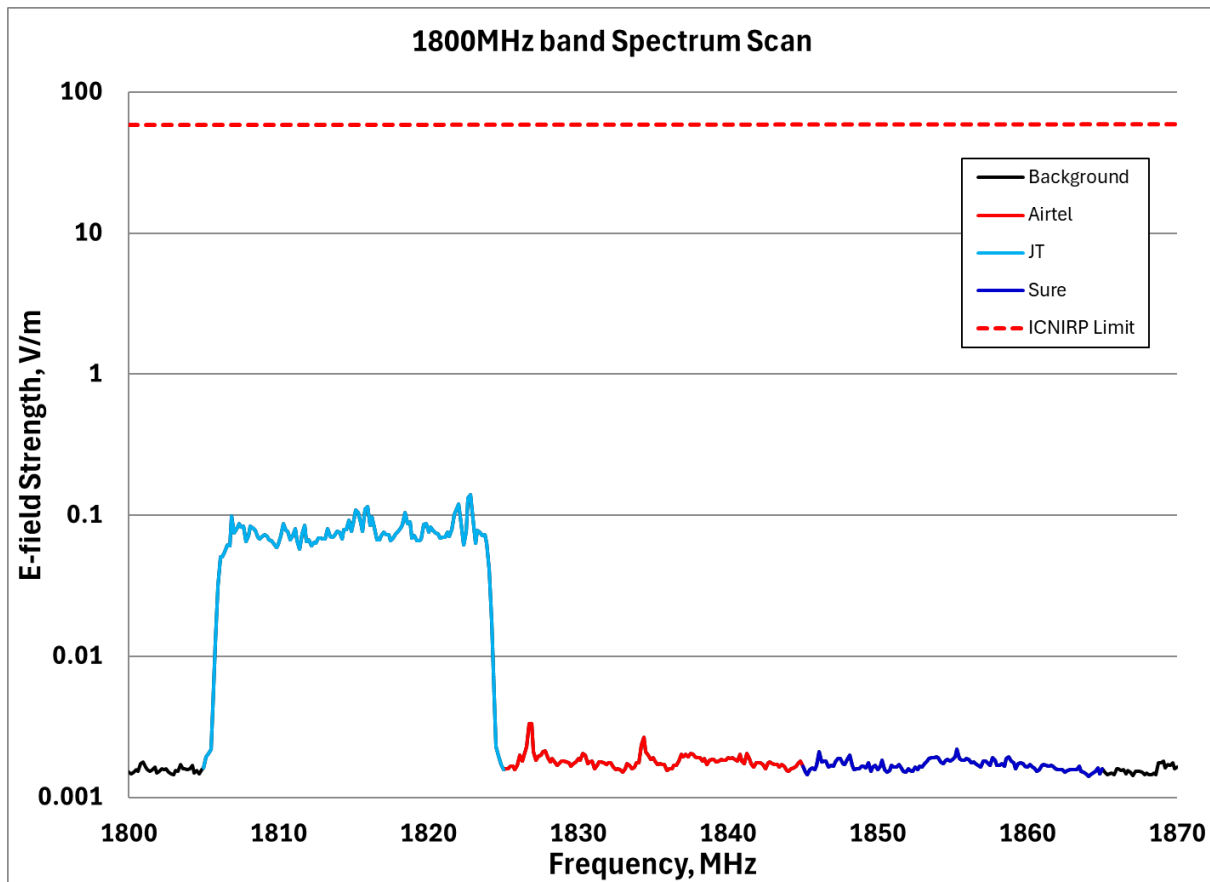
Table 4 – 900MHz band exposure quotient at Field 426 (St Marys Village)

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
Field 426 (St Mary's Village)	Airtel	900	0.1854	222	0.000168763	1/ 5925
	JT		0.3806	108	0.000494341	1/ 2023
	Sure		0.0123	3354	3.60763E-07	1/ 2771900
	total band EQ				0.000663465	1/ 1507

3.4 1800MHz band

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

Figure 7 – 1800MHz spectrum scan



No field level recorded across the band was higher than 0.1394 V/m (JT), which is 418 times smaller than the ICNIRP Reference Level.

The EQ results for the 1800MHz band are shown below.

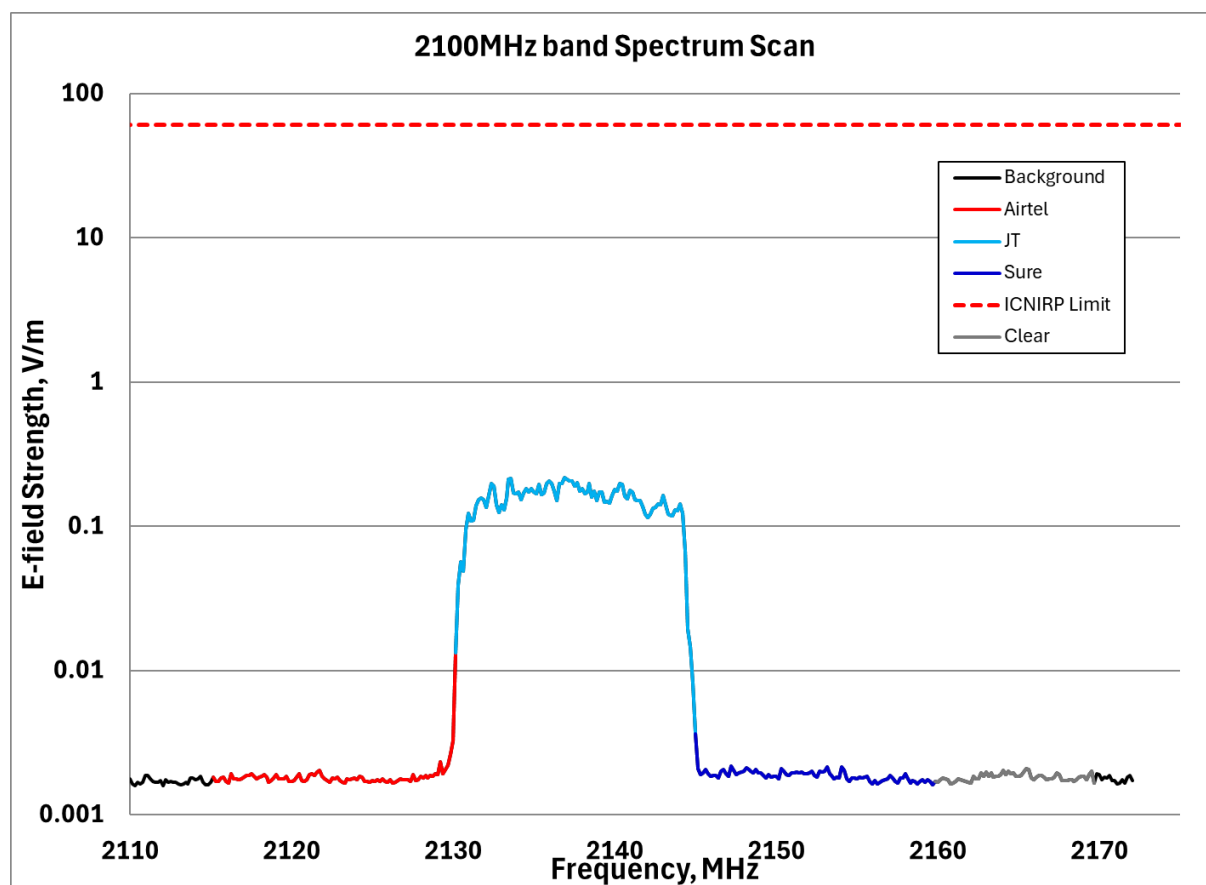
Table 5 – 1800MHz band exposure quotient at Field 426 (St Marys Village)

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
Field 426 (St Mary's Village)	Airtel	1800	0.003336	17487	6.2787E-08	1/ 15926874
	JT		0.1394	418	0.000104043	1/ 9611
	Sure		0.002185	26699	5.29686E-08	1/ 18879127
	total band EQ				0.000104159	1/ 9601

3.5 2100MHz band

The graph for the 2100MHz band activity around the site is shown below.

Figure 8 – 2100MHz band spectrum scan



No field level recorded across the band was higher than 0.2177 V/m (JT), which is 280 times smaller than the ICNIRP Reference Level.

The EQ results for the 2100MHz band are shown below.

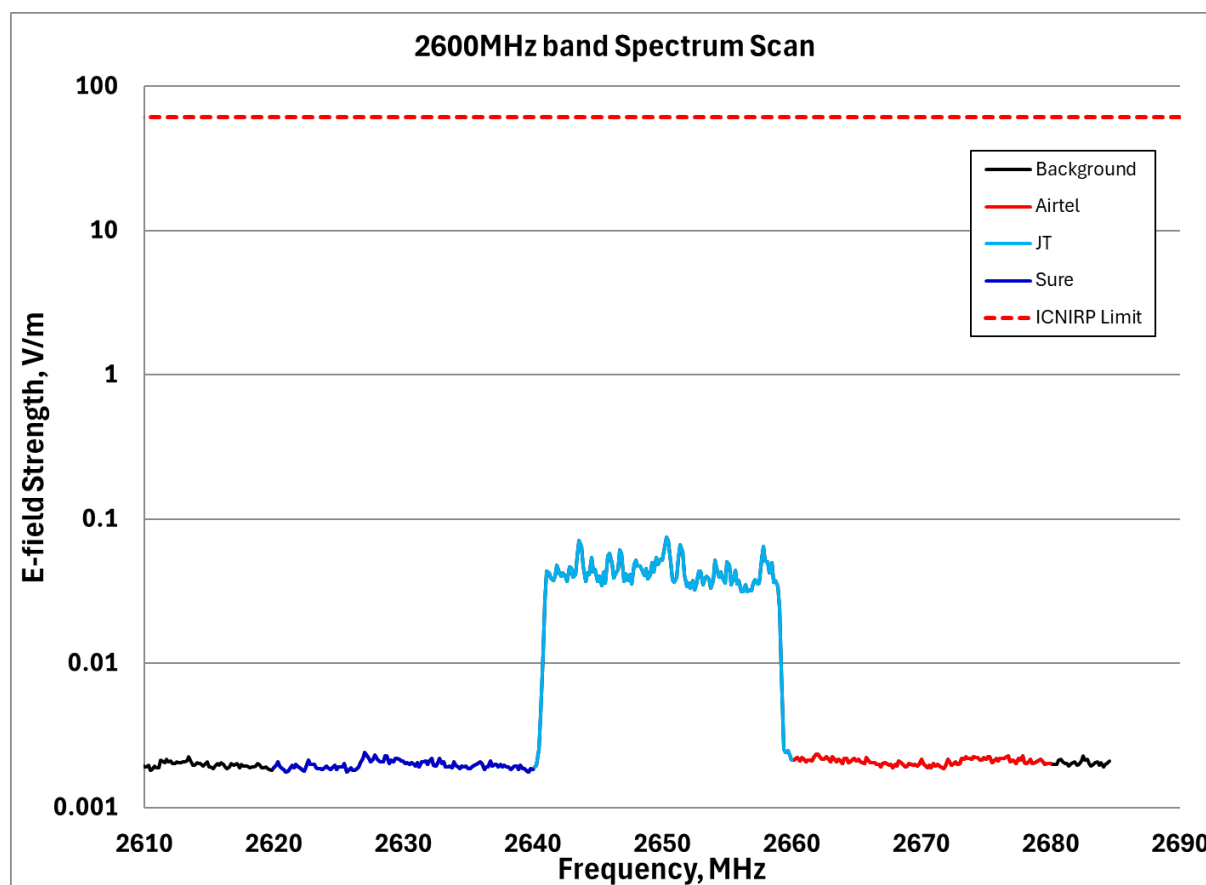
Table 6 – 2100MHz band exposure quotient at Field 426 (St Marys Village)

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
Field 426 (St Mary's Village)	Airtel	2100	0.01327	4597	6.70308E-08	1/ 14918514
	Clear		0.002098	29075	2.85864E-08	1/ 34981661
	JT		0.2177	280	0.000317208	1/ 3153
	Sure		0.00365	16712	4.65011E-08	1/ 21504886
total band EQ					0.00031735	1/ 3151

3.6 2600MHz band

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

Figure 9 – 2600MHz band spectrum scan



No field level recorded across the band was higher than 0.07469 V/m (JT), which is 817 times smaller than the ICNIRP Reference Level.

The EQ results for the 2600MHz band are shown below.

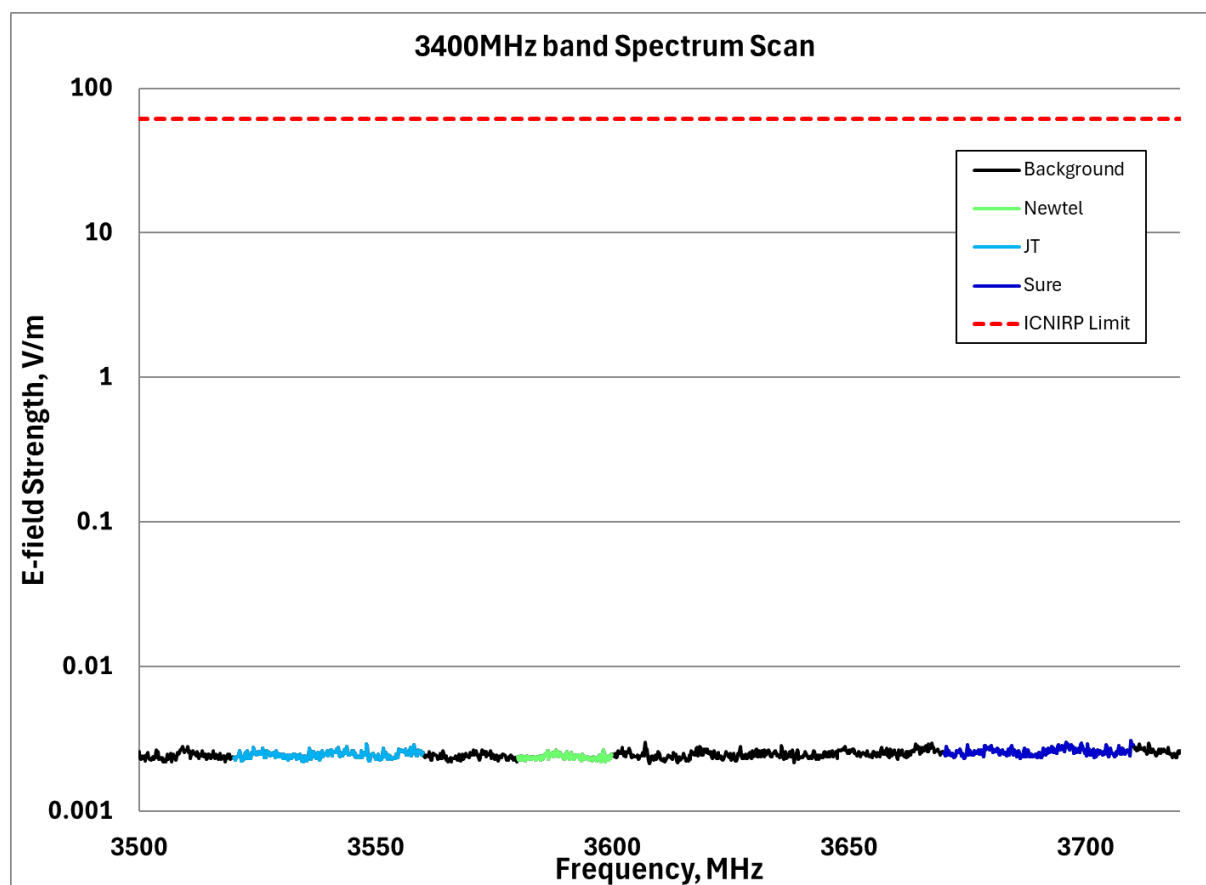
Table 7 – 2600MHz band exposure quotient at Field 426 (St Marys Village)

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
Field 426 (St Mary's Village)	Airtel	2600	0.002358	25869	7.62562E-08	1/ 13113696
	JT		0.07469	817	3.11864E-05	1/ 32065
	Sure		0.002403	25385	6.79603E-08	1/ 14714483
	total band EQ				3.13306E-05	1/ 31918

3.7 3400MHz band

The graph for the 3400-3800MHz band activity around the site is shown below.

Figure 10 – 3400MHz band spectrum scan



No meaningful activity was recorded at this site in the 3400MHz band. The EQ results for the band are shown below.

Table 8 – 3400MHz band exposure quotient at Field 426 (St Marys Village)

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
Field 426 (St Mary's Village)	Newtel	3400	0.002653	14659	9.82272E-08	1/ 10180483
	JT		0.002936	13246	2.10739E-07	1/ 4745201
	Sure		0.003076	12643	2.31753E-07	1/ 4314940
total band EQ					5.40719E-07	1/ 1849388

END