

Cellular mast emissions survey: Dunedin Farm



Document details

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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 Dunedin Farm 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 Dunedin Farm site was used by a single operator at the time of the survey: Sure. 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
Dunedin Farm	700	0.05081	JT	765	2.44048E-05	1/ 40975
	800	0.5015	Sure	78	0.003114016	1/ 321
	900	0.6208	Sure	66	0.000591187	1/ 1692
	1800	0.2648	Sure	220	0.00071347	1/ 1402
	2100	0.2263	Sure	270	0.000183591	1/ 5447
	2600	0.01813	JT	3365	2.61105E-06	1/ 382988
	3400	0.003695	JT	10525	5.7787E-07	1/ 1730494
Total Site EQ					0.004629857	1/ 216

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 0.462% of ICNIRP's *General Public* Reference Levels (or about 1/216) 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.

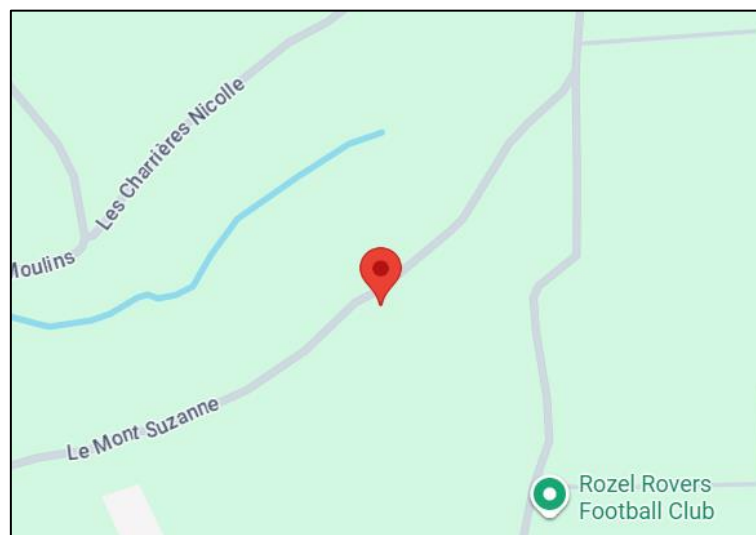
ICNIRP's *General Public* Reference Level is also shown as the dashed line at the top of the graphs. For clarity, each step on the vertical axis represents a 10-fold increase. The same scaling and colour scheme will be used on the plots throughout this report.

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:	Dunedin Farm
Site address:	La Rue de Billeres
Site latitude:	49.22026
Site longitude:	-2.12752

2.2 Site description

Operators:	Sure
Antenna types:	Two poles, both with directional antennas
Approximate height:	12m
Site type:	Lattice mast and monopole
Description:	The lattice mast and monopole at Dunedin Farm are located within shrubbery to the side of the site, access by the public is restricted.

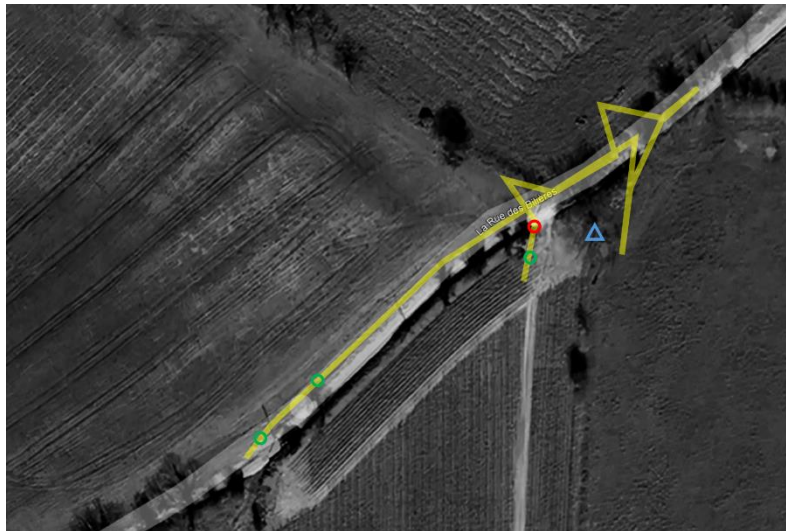
2.3 Site photo

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.

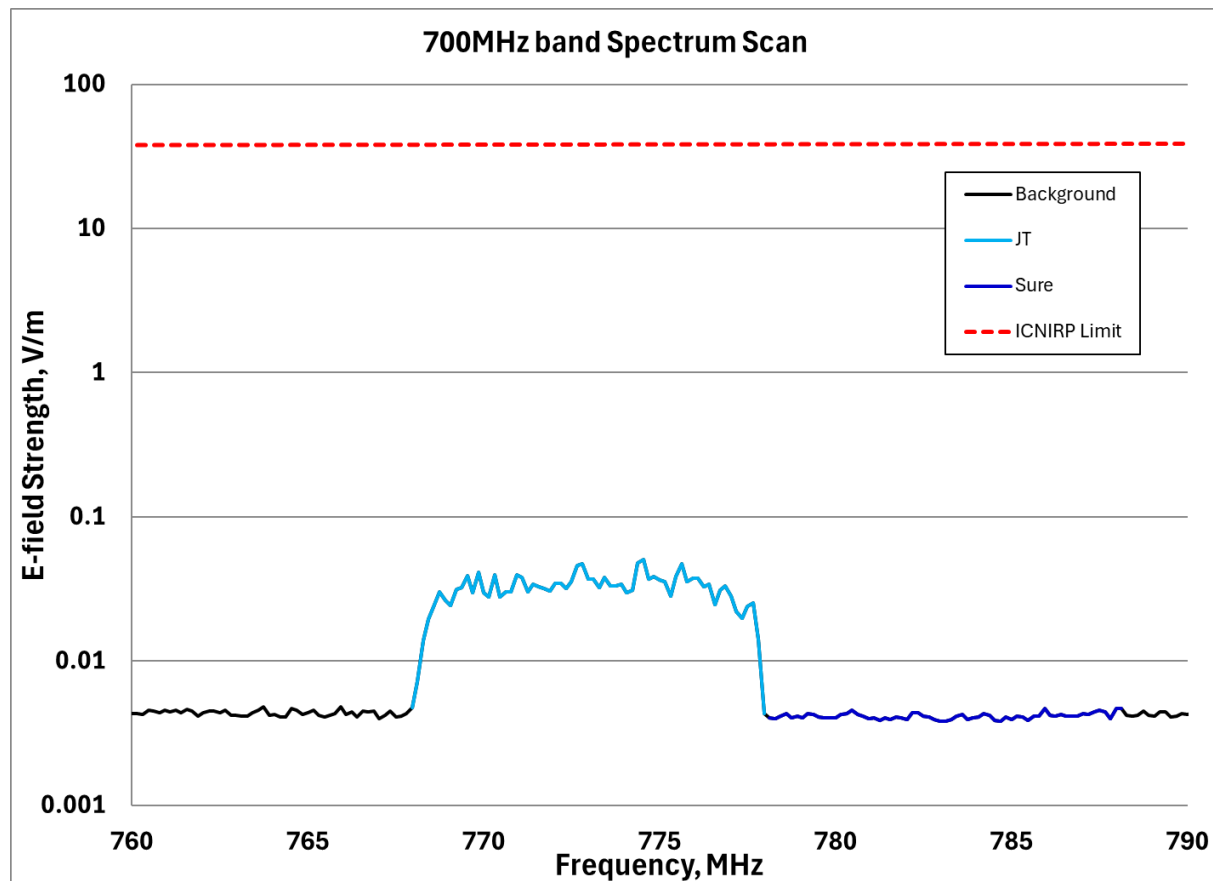
The spectrum readings reported further down this report were recorded over a period of six minutes as advised by ICNIRP.

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 0.05081 V/m (JT), which is 765 times smaller than the ICNIRP Reference Level.

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

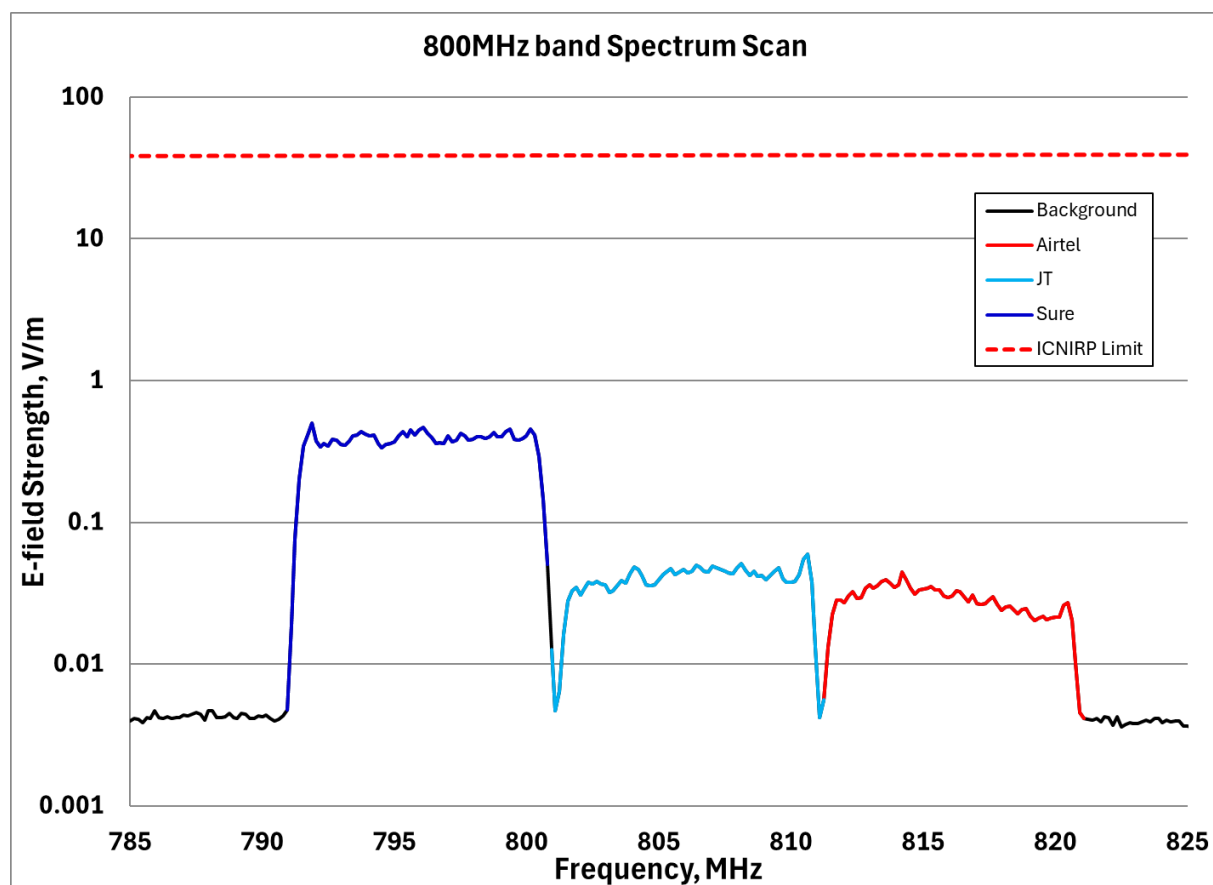
Table 2 – 700MHz band exposure quotient at Dunedin Farm

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
Dunedin Farm	JT	700	0.05081	765	2.40238E-05	1/ 41625
	Sure		0.004714	8250	3.81012E-07	1/ 2624589
total band EQ					2.44048E-05	1/ 40975

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 0.5015 V/m (Sure), which is 78 times smaller than the ICNIRP Reference Level.

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

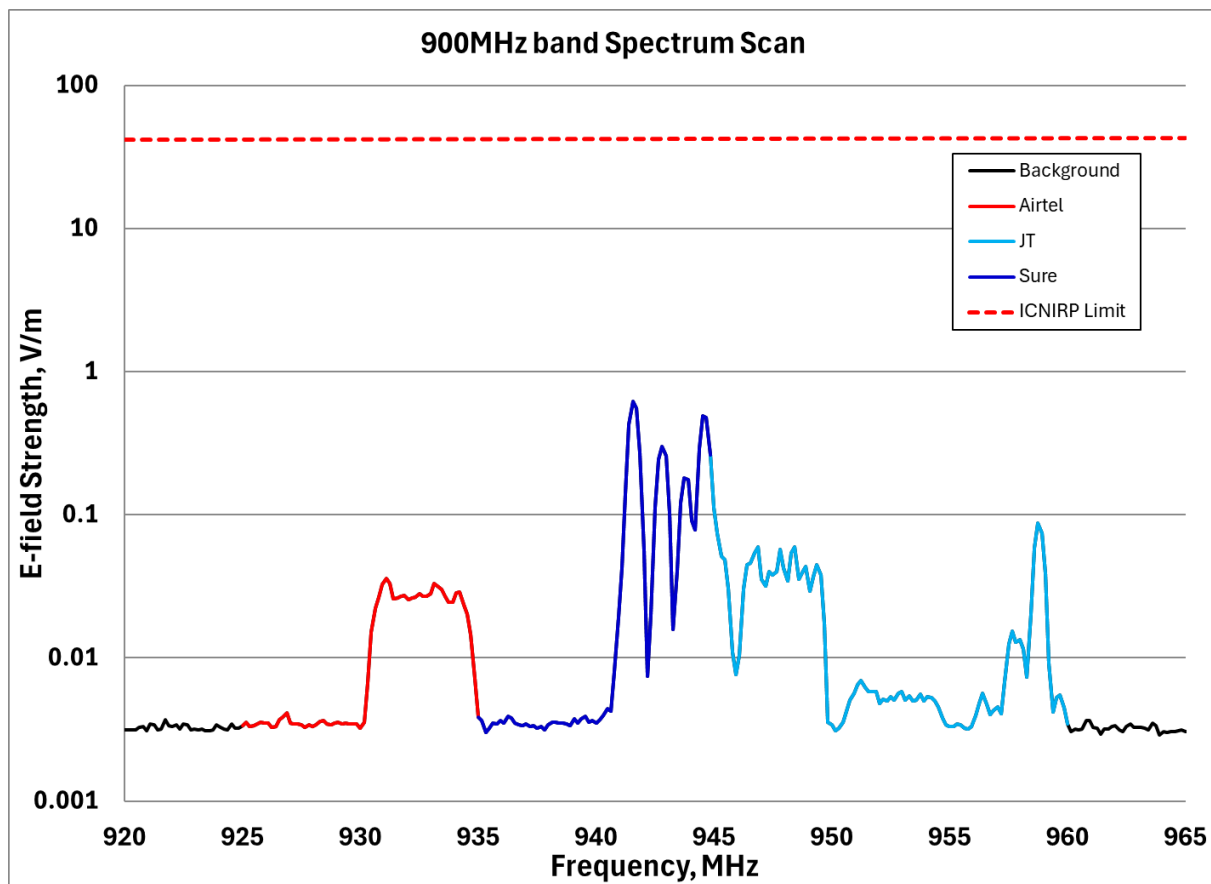
Table 3 – 800MHz band exposure quotient at Dunedin Farm

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
Dunedin Farm	Airtel	800	0.04433	877	1.71265E-05	1/ 58389
	JT		0.05961	652	3.54547E-05	1/ 28205
	Sure		0.5015	78	0.003061435	1/ 327
total band EQ					0.003114016	1/ 321

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 0.6208 V/m (Sure), which is 66 times smaller than the ICNIRP Reference Level.

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

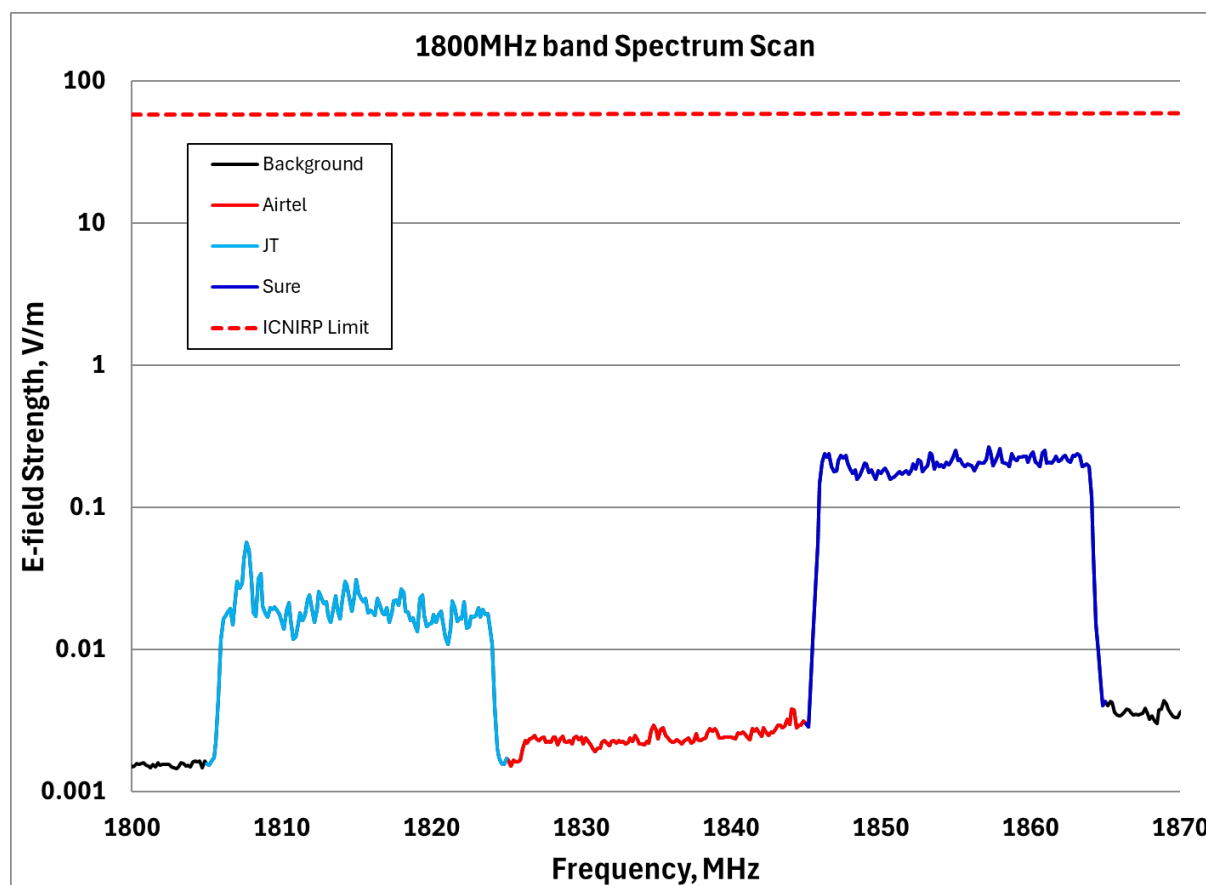
Table 4 – 900MHz band exposure quotient at Dunedin Farm

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
Dunedin Farm	Airtel	900	0.03578	1153	5.97827E-06	1/ 167272
	JT		0.2624	157	4.34029E-05	1/ 23040
	Sure		0.6208	66	0.000541805	1/ 1846
total band EQ					0.000591187	1/ 1692

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 0.2648 V/m (Sure), which is 220 times smaller than the ICNIRP Reference Level.

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

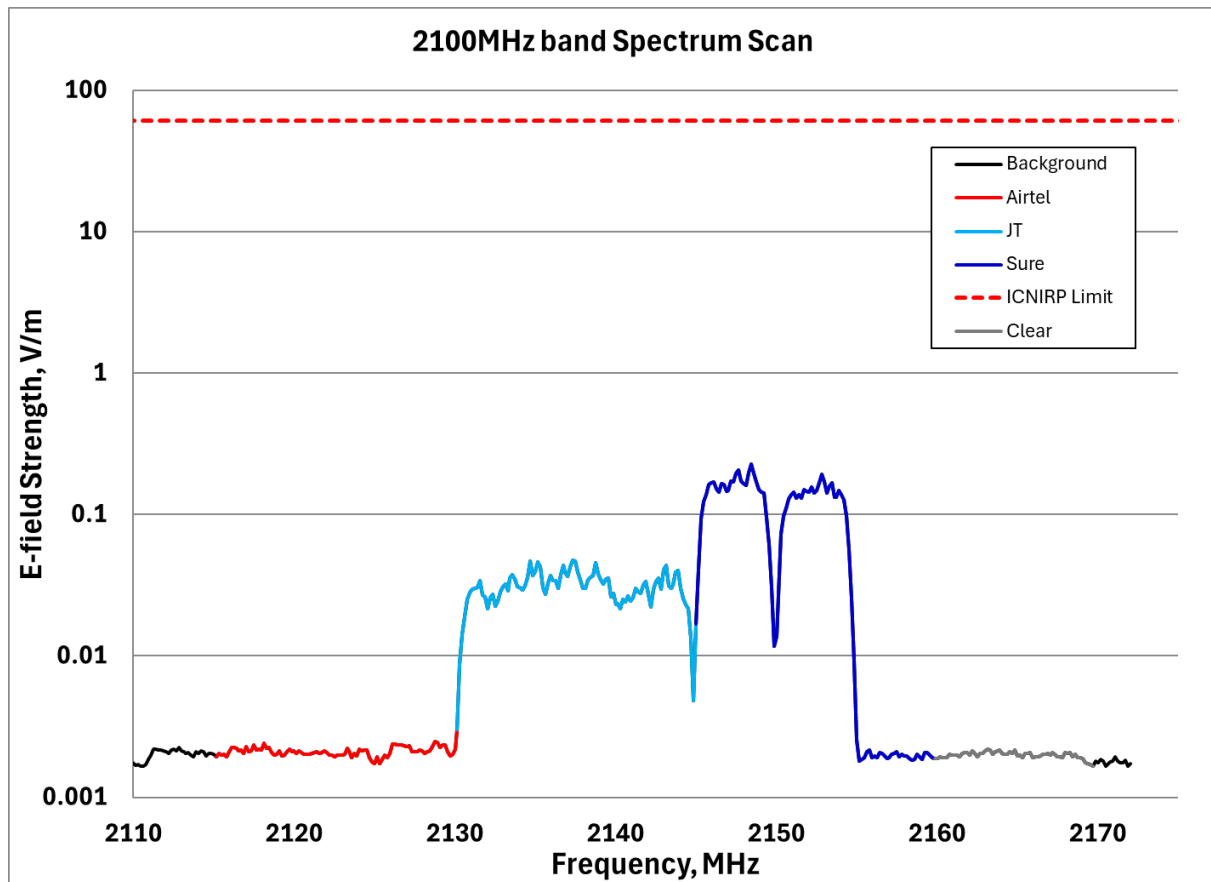
Table 5 – 1800MHz band exposure quotient at Dunedin Farm

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
Dunedin Farm	Airtel	1800	0.003789	15396	1.10158E-07	1/ 9077882
	JT		0.0569	1025	7.66014E-06	1/ 130546
	Sure		0.2648	220	0.0007057	1/ 1417
total band EQ					0.00071347	1/ 1402

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 0.2263 V/m (Sure), which is 270 times smaller than the ICNIRP Reference Level.

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

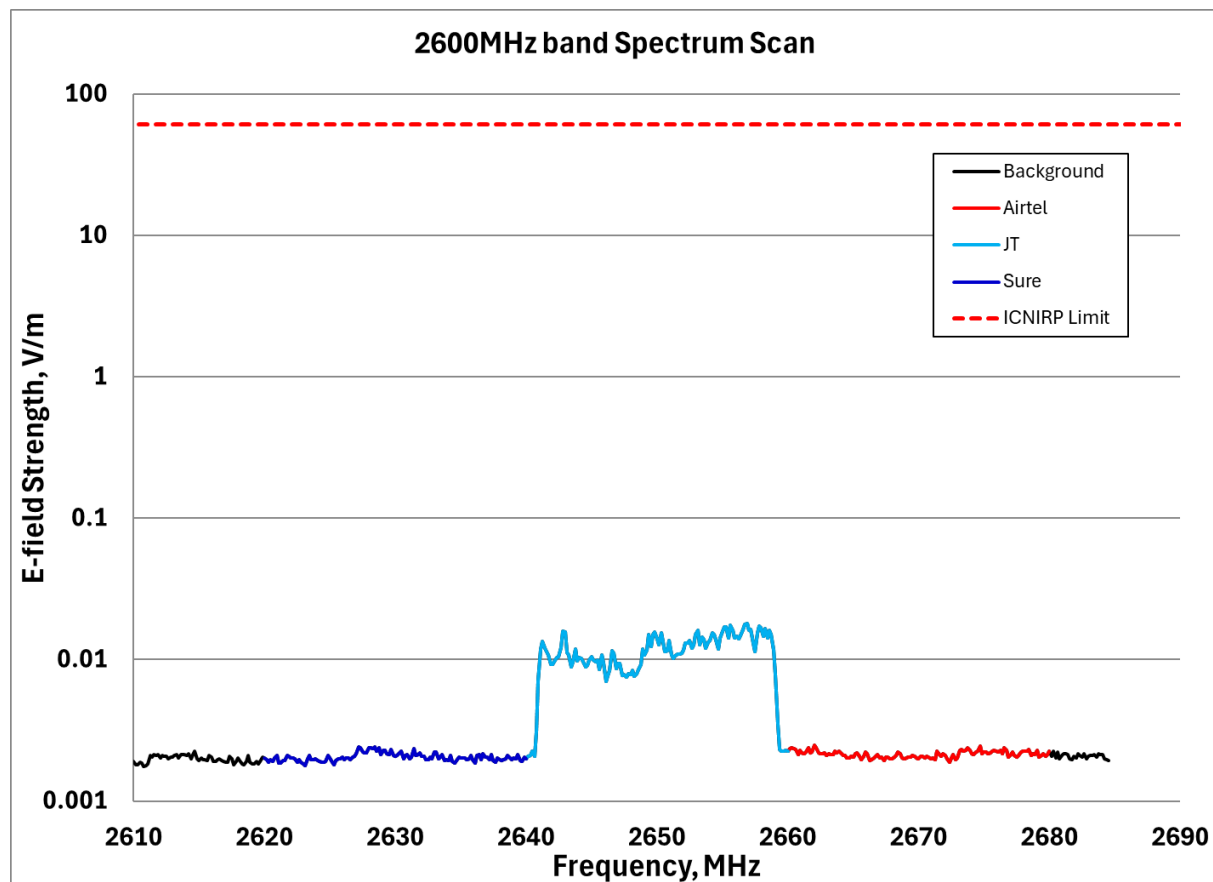
Table 6 – 2100MHz band exposure quotient at Dunedin Farm

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
Dunedin Farm	Airtel	2100	0.002994	20374	5.88046E-08	1/ 17005471
	Clear		0.002189	27867	3.41612E-08	1/ 29273001
	JT		0.04717	1293	1.30464E-05	1/ 76650
	Sure		0.2263	270	0.000170451	1/ 5867
total band EQ					0.000183591	1/ 5447

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 0.01813 V/m (JT), which is 3365 times smaller than the ICNIRP Reference Level.

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

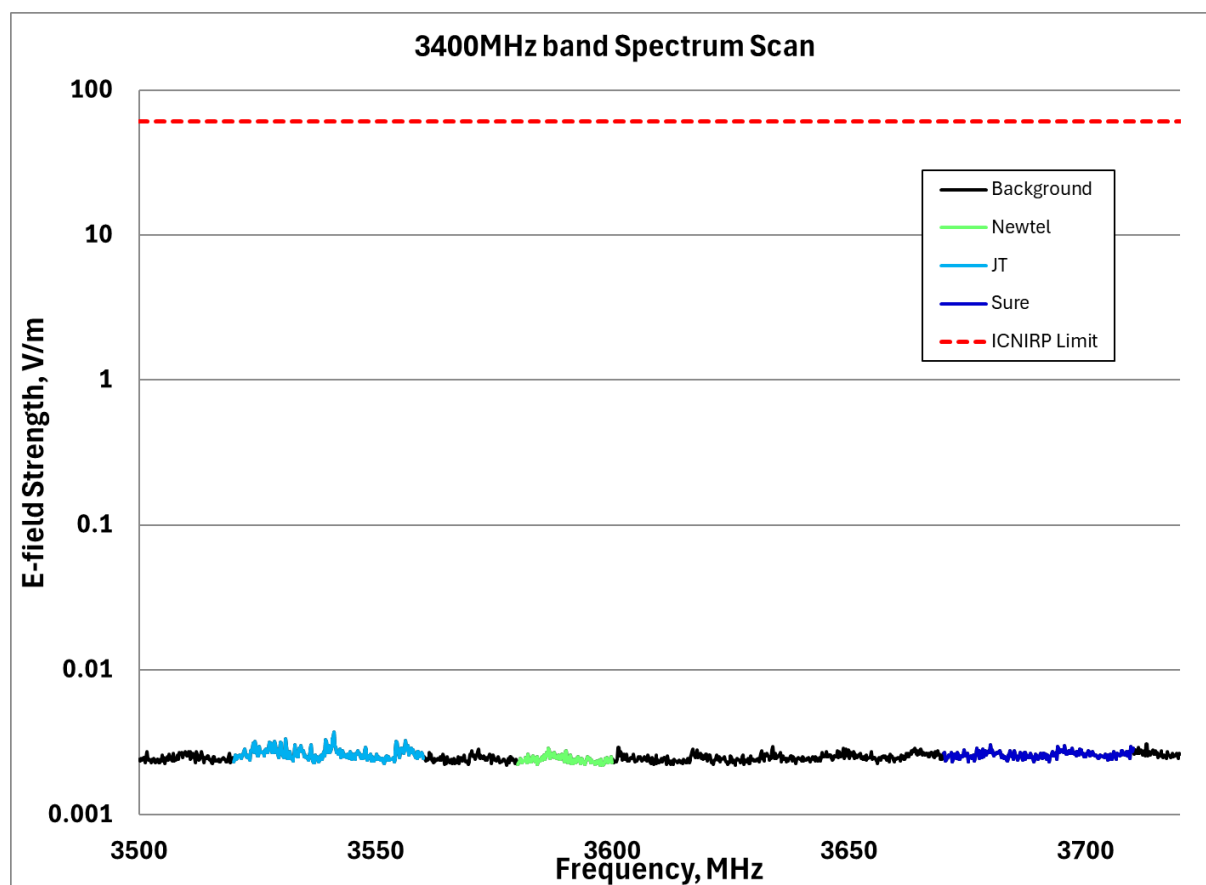
Table 7 – 2600MHz band exposure quotient at Dunedin Farm

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
Dunedin Farm	Airtel	2600	0.002499	24410	8.03302E-08	1/ 12448621
	JT		0.01813	3365	2.45791E-06	1/ 406850
	Sure		0.002417	25238	7.28075E-08	1/ 13734855
total band EQ					2.61105E-06	1/ 382988

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 Dunedin Farm

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
Dunedin Farm	Newtel	3400	0.002882	13494	1.01004E-07	1/ 9900563
	JT		0.003695	10525	2.44127E-07	1/ 4096235
	Sure		0.003048	12759	2.32739E-07	1/ 4296665
total band EQ					5.7787E-07	1/ 1730494

END