
Digital Switchover (DSO) Programme

Radio DSO Block 11C Exeter and Torbay

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1 Exeter and Torbay DSO Narrative

The current allocation for Exeter and Torbay is 11C and this has not been changed. The nearest co-block multiplexes are for Cardiff and Newport to the north, Swindon to the north-east, South Hampshire to the east. These areas are shown below in Figure 1.1; the Exeter and Torbay multiplex is shown in red.

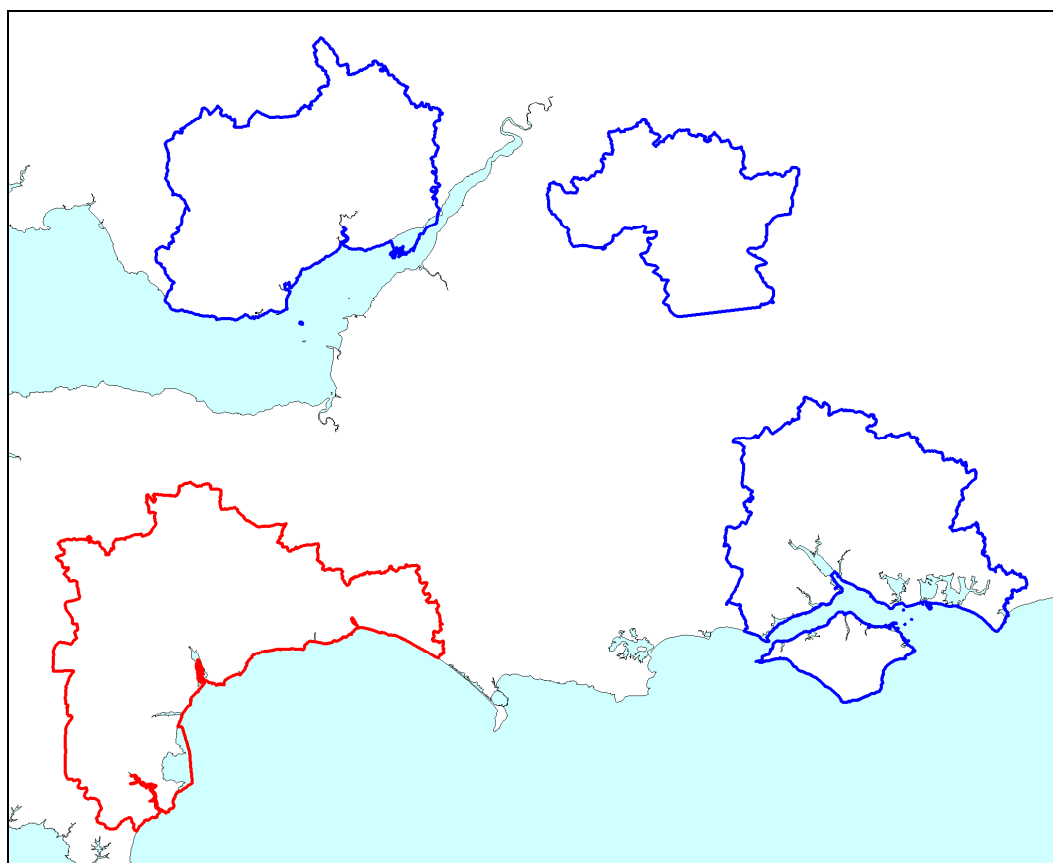


Figure 1.1: Exeter and Torbay (shown in red) – Adjacent 11C Multiplexes

There are three transmitters currently on air for the Exeter and Torbay multiplex; these are shown in Table 1.1.

Site Name	ERP	Site height m a.o.d.	Antenna height m a.g.l.	Antenna Type
Beacon Hill B	2 kW	196	68	Panels
Exeter St Thomas	0.5 kW	99	40	Yagi
Stockland Hill	0.5 kW	229	173	Yagi

Table 1.1: Exeter and Torbay – Current Transmission Characteristics

The editorial area for Exeter and Torbay has been extended to the east to include Bridport and the area around it, see figure 1.2. There are also some minor changes to along the northern part of the Exeter and Torbay editorial boundary.

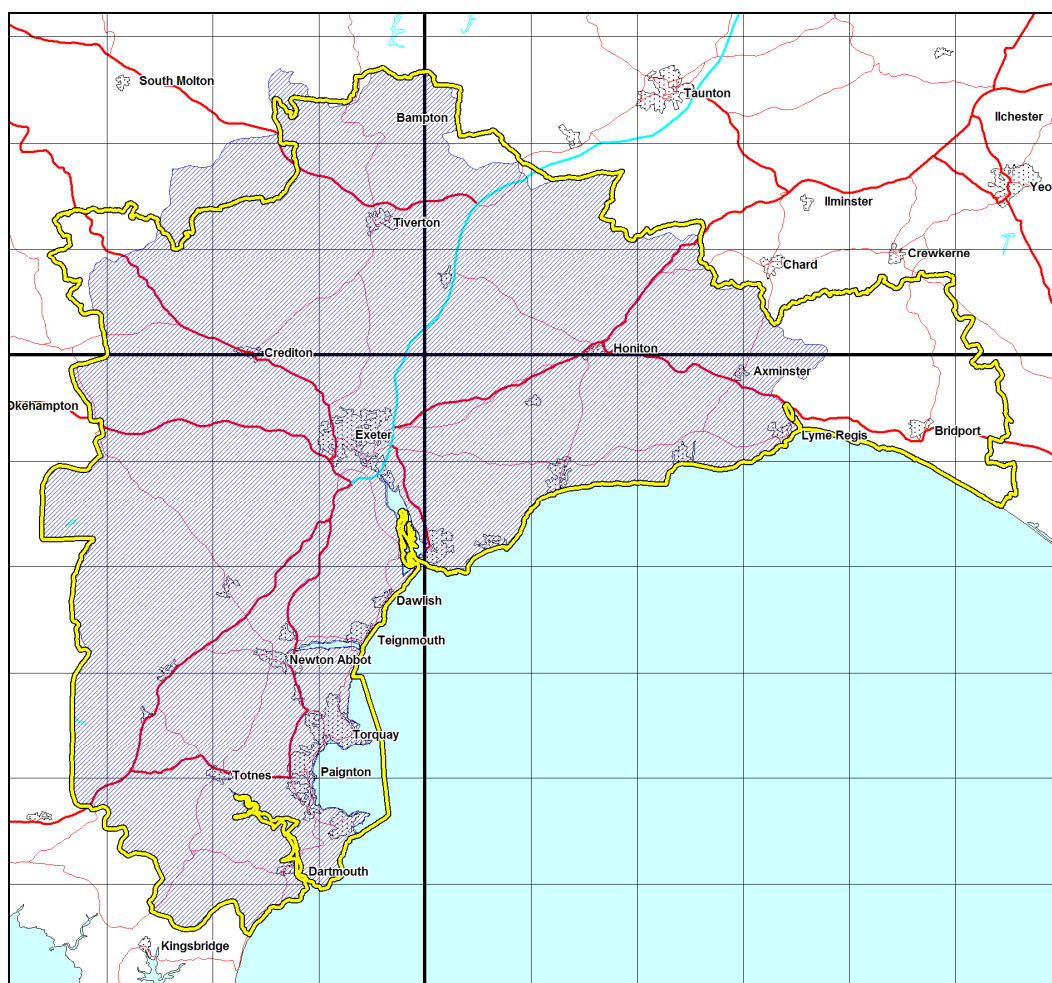


Figure 1.2: Exeter and Torbay – Changes to the editorial area.

Existing area is shown in Blue and the new editorial area is shown in Yellow

In planning for each multiplex Ofcom have required coverage assessments:

- For each area four maps should be produced as follows:
 1. **Current Situation** - Map showing current actual coverage (or launch plans where a mux hasn't yet launched), including any transmitters which are required as part of the current licence, but which are not yet operational.
 2. **Modified Network 1** - Map showing the above, plus any improvements to existing infrastructure.
 3. **Modified Network 2** - Map of the above, plus additional smaller infill transmitters focused on areas where FM coverage is robust.
 4. **Modified Network 3** - Map of the above, plus additional transmitters to provide near universal coverage.

The Exeter and Torbay multiplex is surrounded by five other multiplexes, as shown in Figure 1.3. The other adjacent multiplexes: Plymouth, North Devon, Somerset and Bournemouth do not overlap with the Exeter and Torbay multiplex.

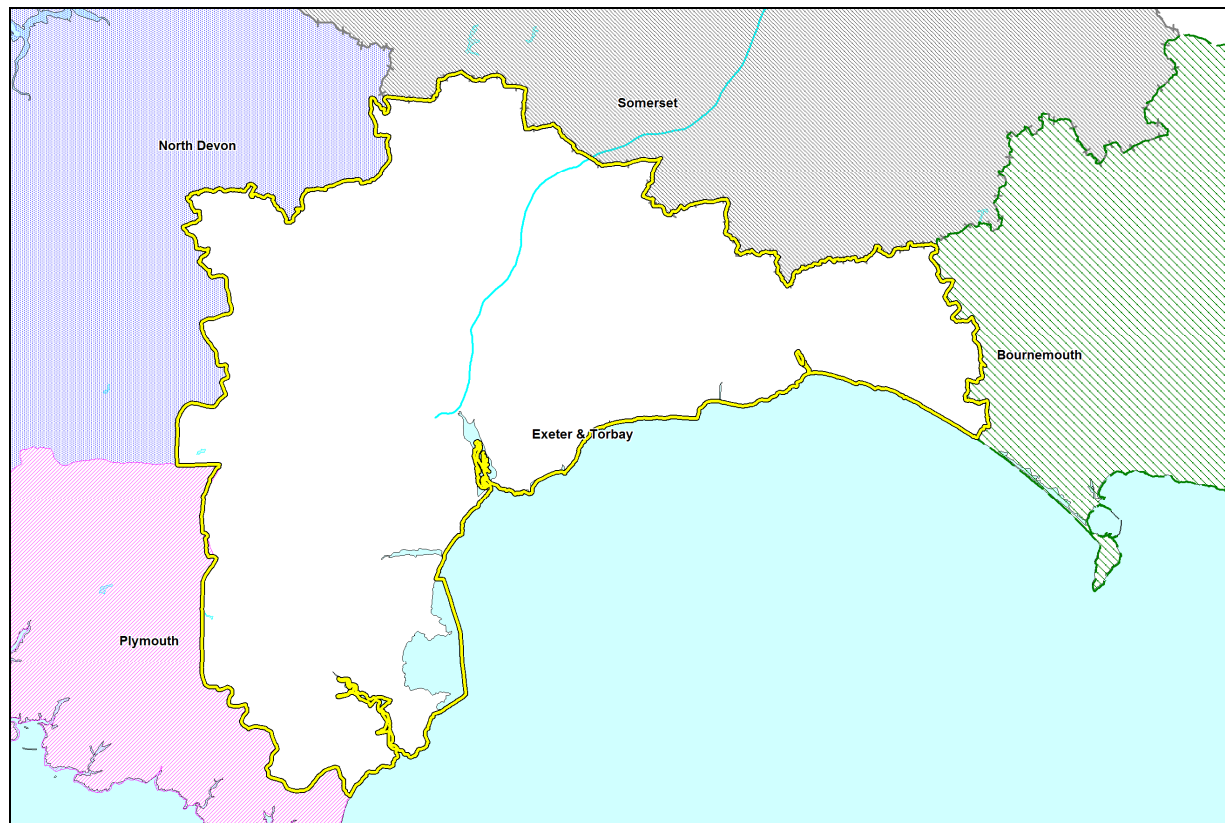


Figure 1.3: Exeter and Torbay Multiplex – Adjacent Multiplexes

1.1 Outgoing interference and sensitivity to other co-block multiplexes

1.1.1 Existing Coverage (Case 1)

The noise limited coverage for Exeter and Torbay is shown in Figure 2.1.

The existing coverage is moderately well protected from co-block interference by nature of the terrain in the area. However there is some limitation to the coverage from the Swindon, Birmingham, Cardiff and Newport and South Hampshire multiplexes. The existing coverage is mainly targeted on the population centres Exeter and Torbay for the original Exeter and Torbay editorial area however, the roads coverage between the population centres is fairly patchy.

The interference limited coverage for the existing Exeter and Torbay multiplex is shown in Figure 2.2.

For information figure 2.3 shows the mobile outdoor coverage for interference at 1% time, for case 1.

1.1.2 Proposed DSO Coverage – Improvements to Existing Infrastructure (Case 2, Modified Network 1)

Consideration has been given to modifying the existing Exeter and Torbay infrastructure.

It is proposed that the Exeter St Thomas should increase its ERP by 3dB from 500W to 1kW.

The Beacon Hill B transmitter currently has a very restricted antenna pattern, and it is hoped that a more omni-directional will be possible, to be shareable with other DAB services, so the Case 2 antenna pattern assumed for Beacon Hill is omni-directional with a 5kW, Beacon Hill currently operates with its directional antenna and an ERP of 2kW.

The Exeter and Torbay, Stockland Hill transmitter transmits with an ERP of 500W, an increase in ERP for case 2 is planned from 500 W to 5kW. The current Stockland Hill antenna is fairly restrictive between approx 150° ETN and 190° ETN; it is assumed that it will be possible to share the BBC antenna; this should improve the coverage in the arc 150-190°.

Figure 2.4 shows the interference limited coverage for the Exeter and Torbay multiplex, Case 2, Modified Network 1, and Figure 2.5 shows the Mobile Outdoor coverage for Case 2 network.

1.1.3 Proposed DSO Coverage (Case 3, Modified Network 2)

In order to improve the coverage for the Exeter and Torbay multiplex, the following transmitters have been considered to endeavour to provide DAB coverage where there is robust FM coverage.

The transmitters included are: - Ashburton, Bampton, Beer, Brixham, Chudleigh, Crediton, Cullompton, Culm Valley, Dartmouth, Holcombe Down, Lyme Regis, Sidmouth, South Brent and Tiverton.

Figure 2.6 shows the Exeter and Torbay Case 3 Modified Network 2 coverage at 1% time. Figure 2.7 shows the mobile outdoor coverage.

1.1.4 Expanded DSO Coverage (Case 4, Modified Network 3)

In order to expand the Exeter and Torbay further, transmitters at Bridport, Budleigh Salterton, Kennford and Honiton have been included.

Bridport would provide coverage to the part of the Exeter and Torbay editorial area that previously was not part of the coverage remit for this multiplex.

Figure 2.8 shows the Exeter and Torbay Case 4 Modified Network 3 coverage at 1% time. Figure 2.9 shows the mobile outdoor coverage.

2 Coverage of Multiplex

2.1 Coverage Maps

Coverage maps for DAB are presented with three colours.

Blue = Mobile coverage (99% locations at 99% time)

Dark Green = Indoor coverage (80-95% locations at 99% time)

Light Green = Robust Indoor coverage (>95% locations at 99% time)

These maps included with this report are shown below.

Figure 2.1 Case 1 -Current NOISE limited coverage for Exeter and Torbay (3 transmitters)

Figure 2.2 Case1 - Current interference limited coverage for Exeter and Torbay 1% time - (3 transmitters)

Figure 2.3 Case 1 - Mobile outdoor Coverage for Exeter and Torbay interference limited 1% time - (3 transmitters)

Figure 2.4 Case 2 - Interference limited coverage for Exeter and Torbay, Modified network 1, 1% time –(Increases at all 3 transmitters)

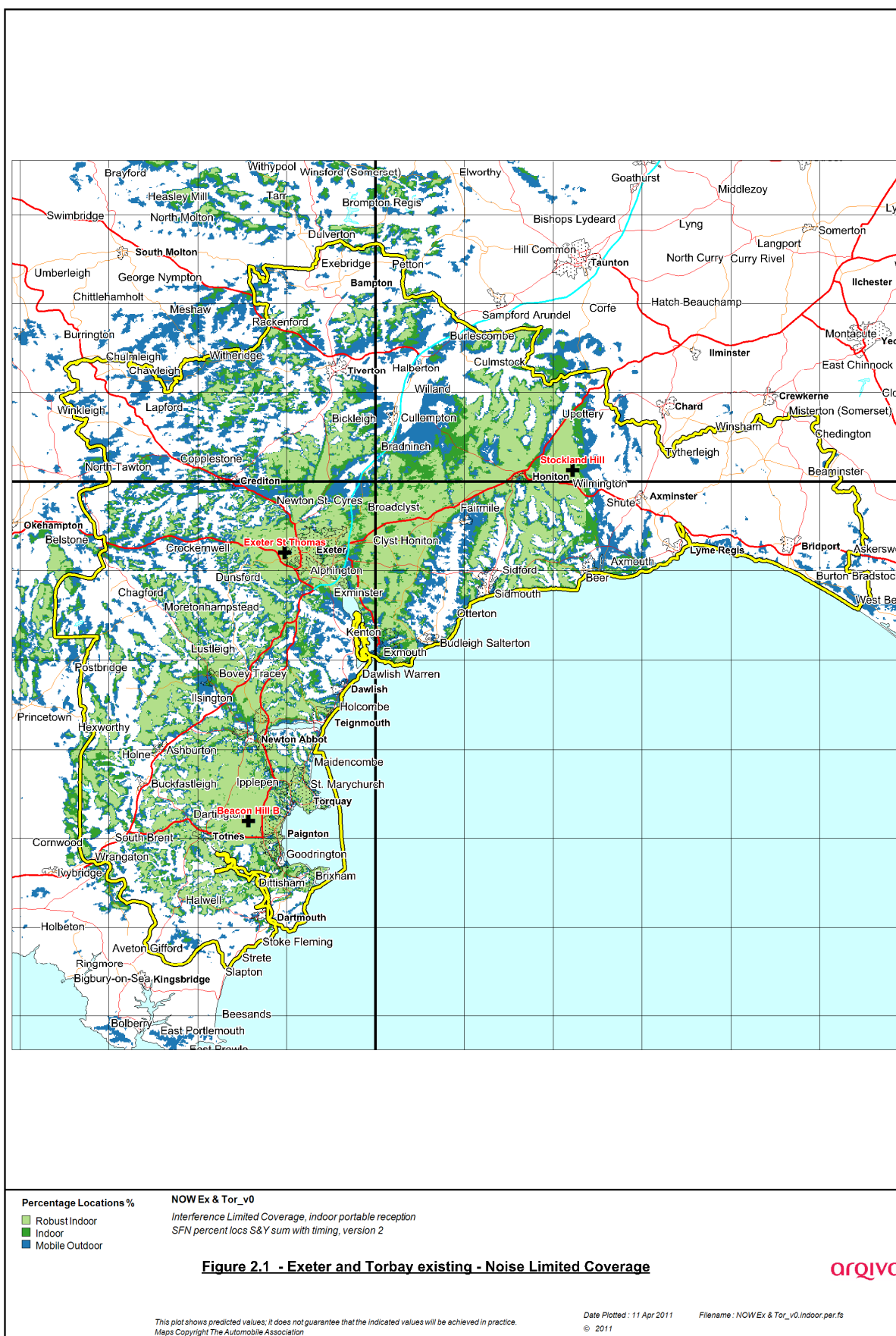
Figure 2.5 Case 2, Mobile outdoor - Interference limited coverage for Exeter and Torbay Modified network 1, 1% time – (Increases at all 3 transmitters)

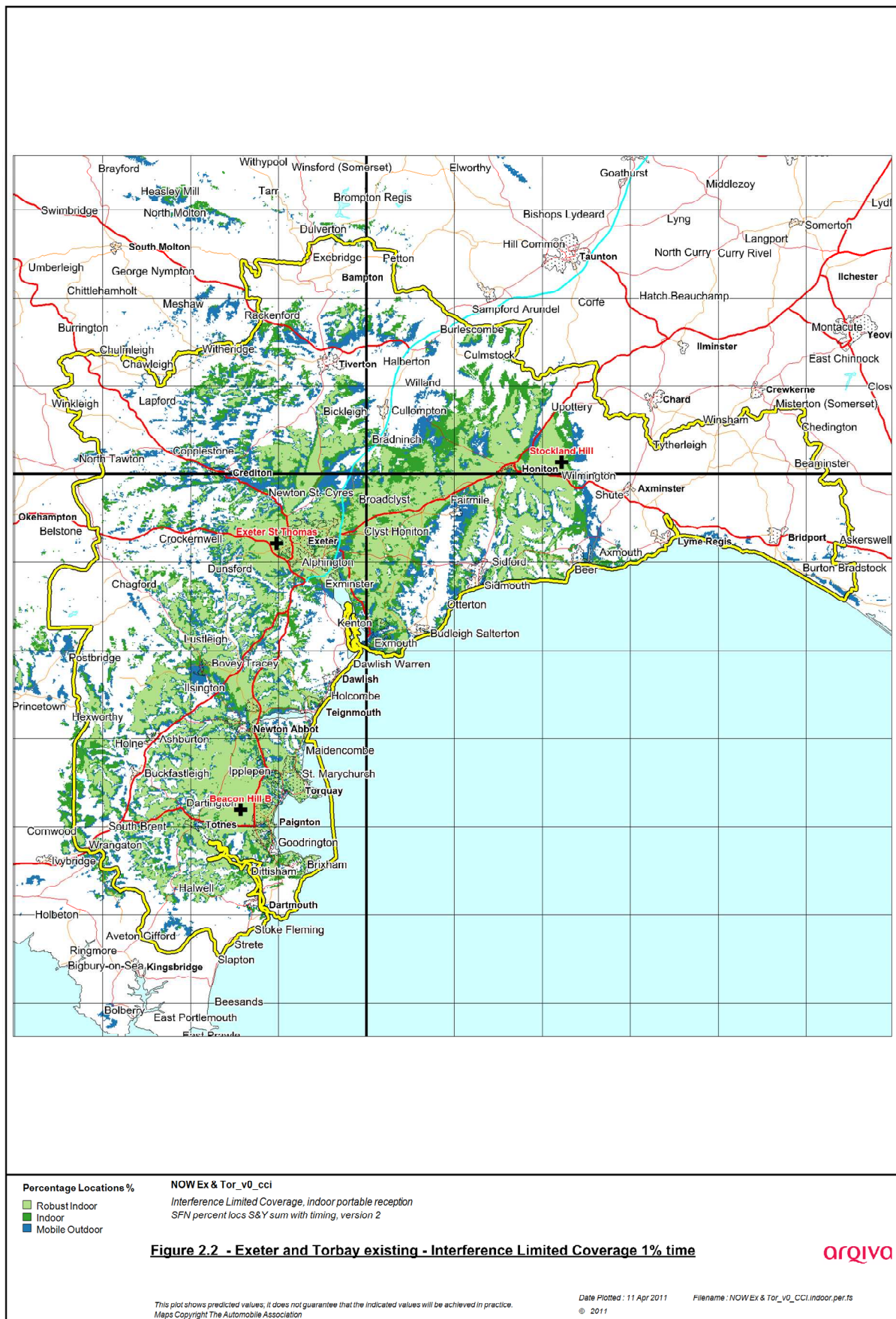
Figure 2.6 Case 3, Interference Limited coverage for Exeter and Torbay 1% time, Modified Network 2 (17 transmitters)

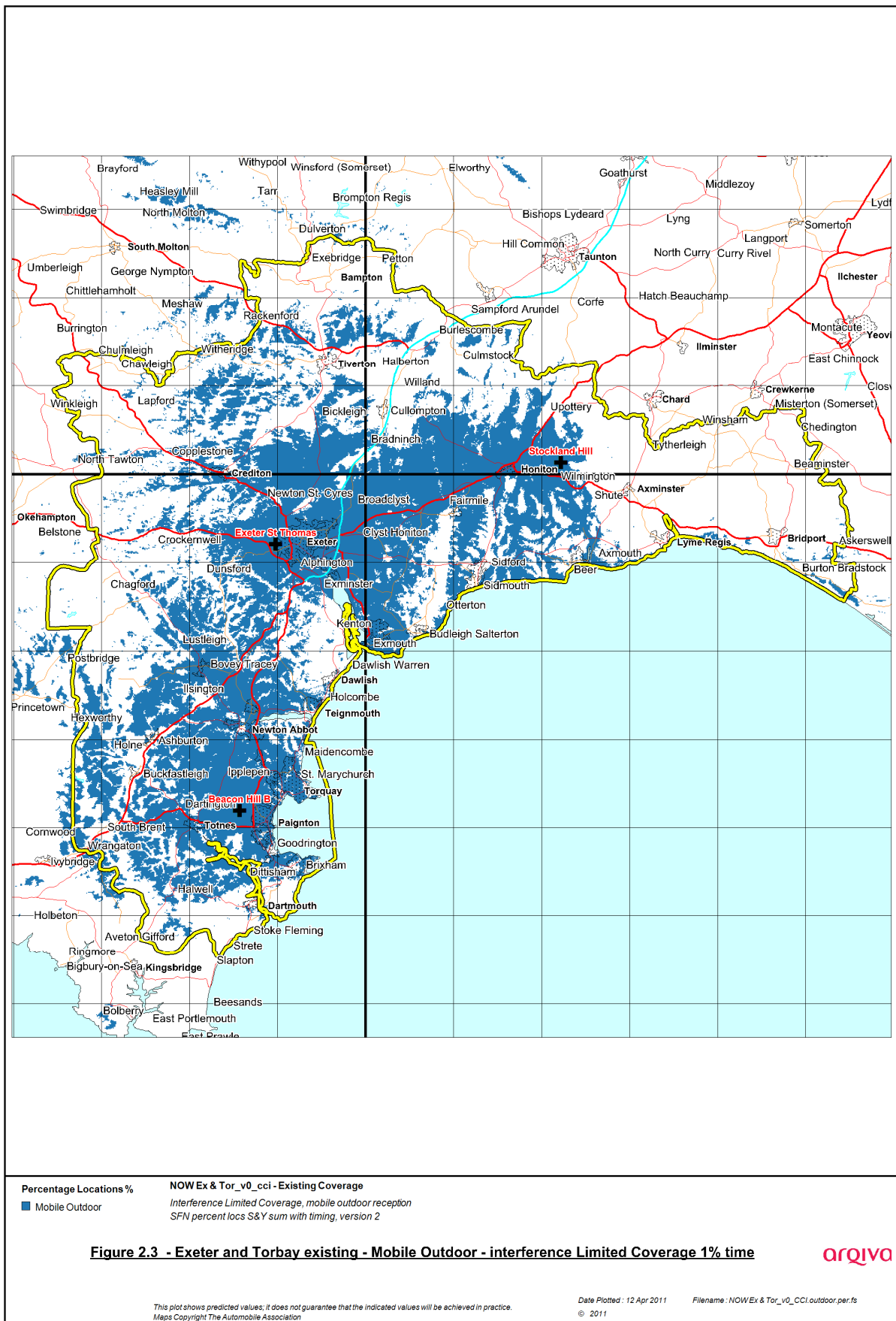
Figure 2.7 Case 3, Mobile Outdoor Interference Limited coverage for Exeter and Torbay 1% time
Modified Network 2 (17 transmitters)

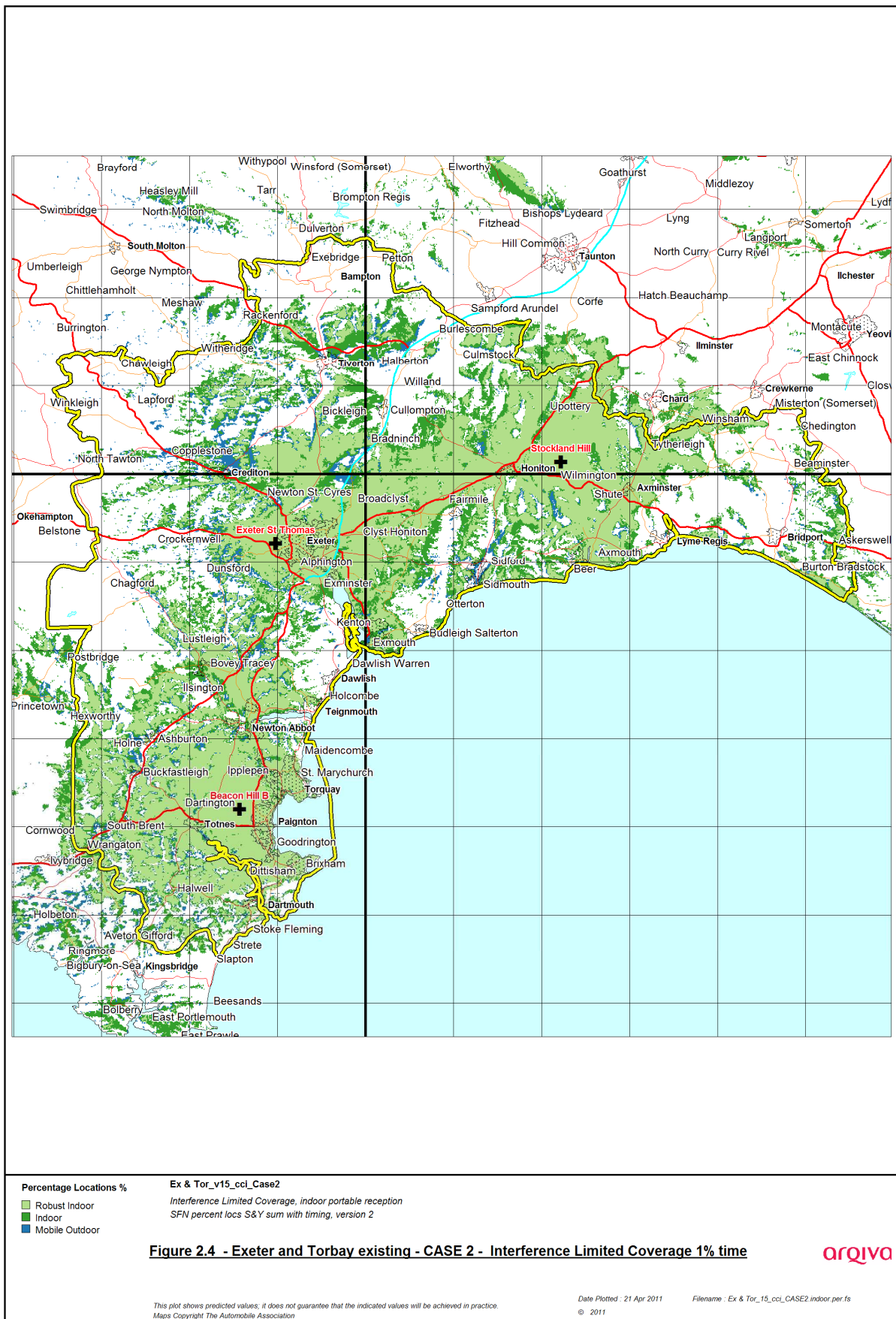
Figure 2.8 Case 4, Interference Limited coverage for Exeter and Torbay 1% time, Modified Network 3 (21 transmitters)

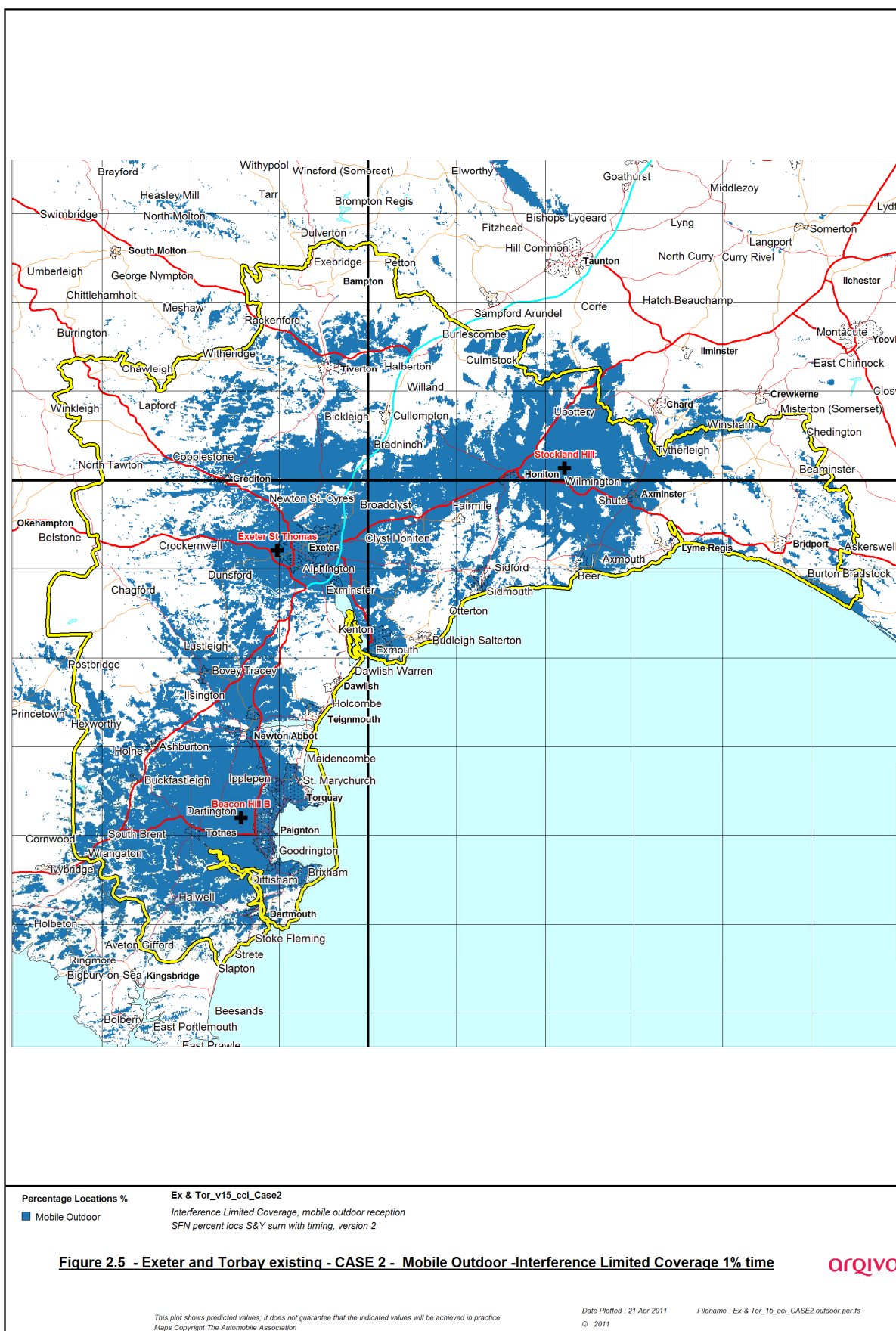
Figure 2.9 Case 4, Mobile Outdoor Interference Limited coverage for Exeter and Torbay 1% time
Modified Network 3 (21 transmitters)

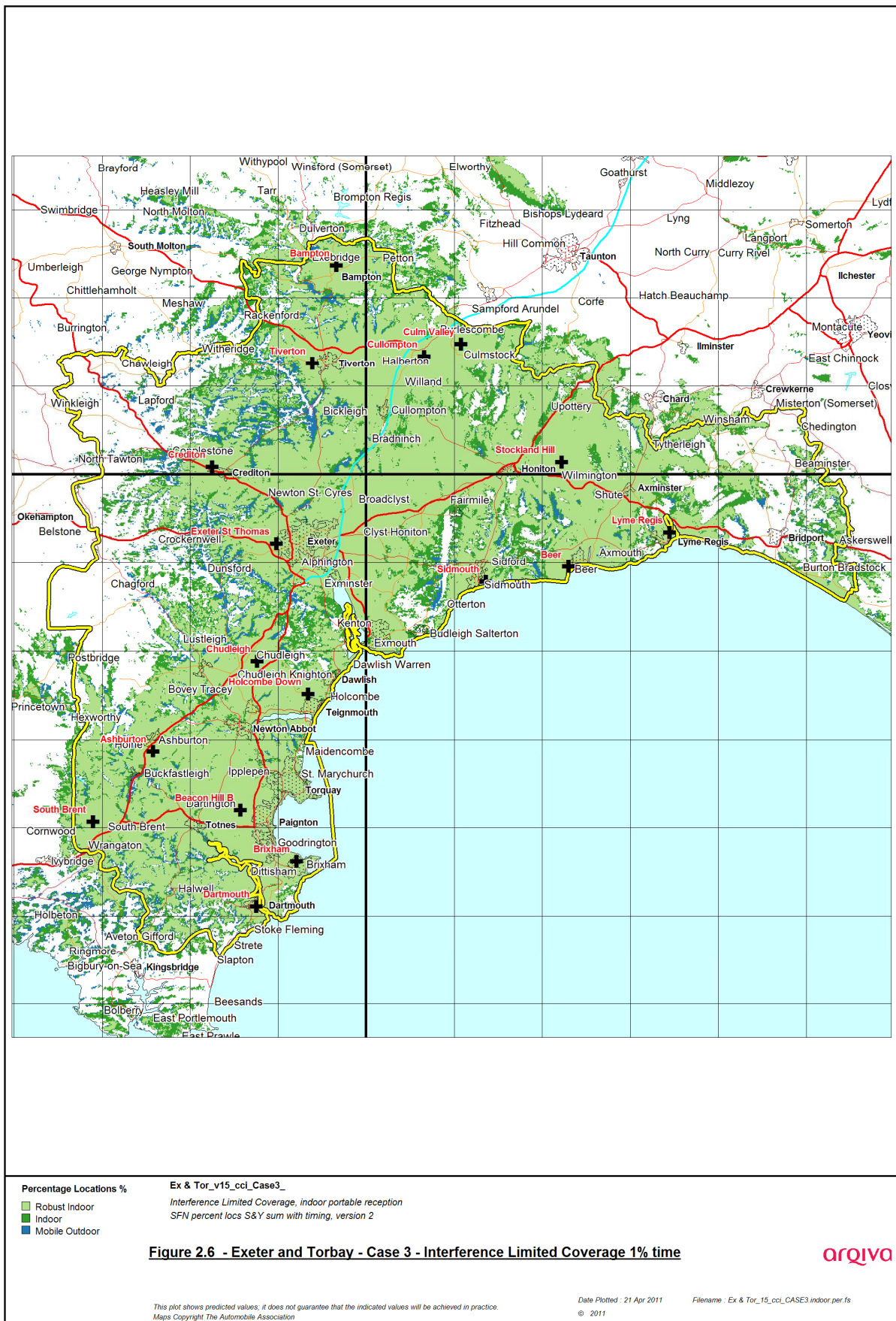


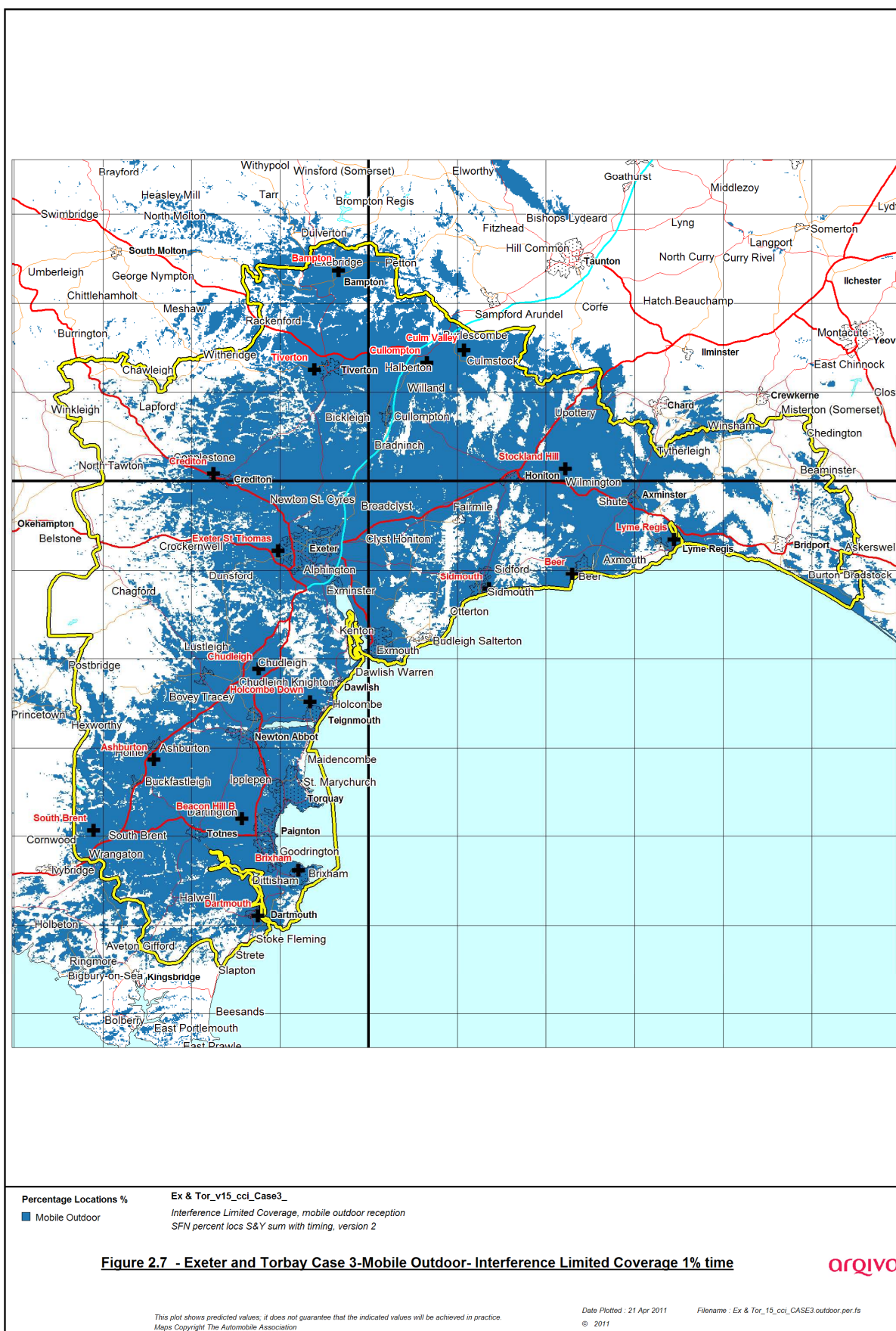


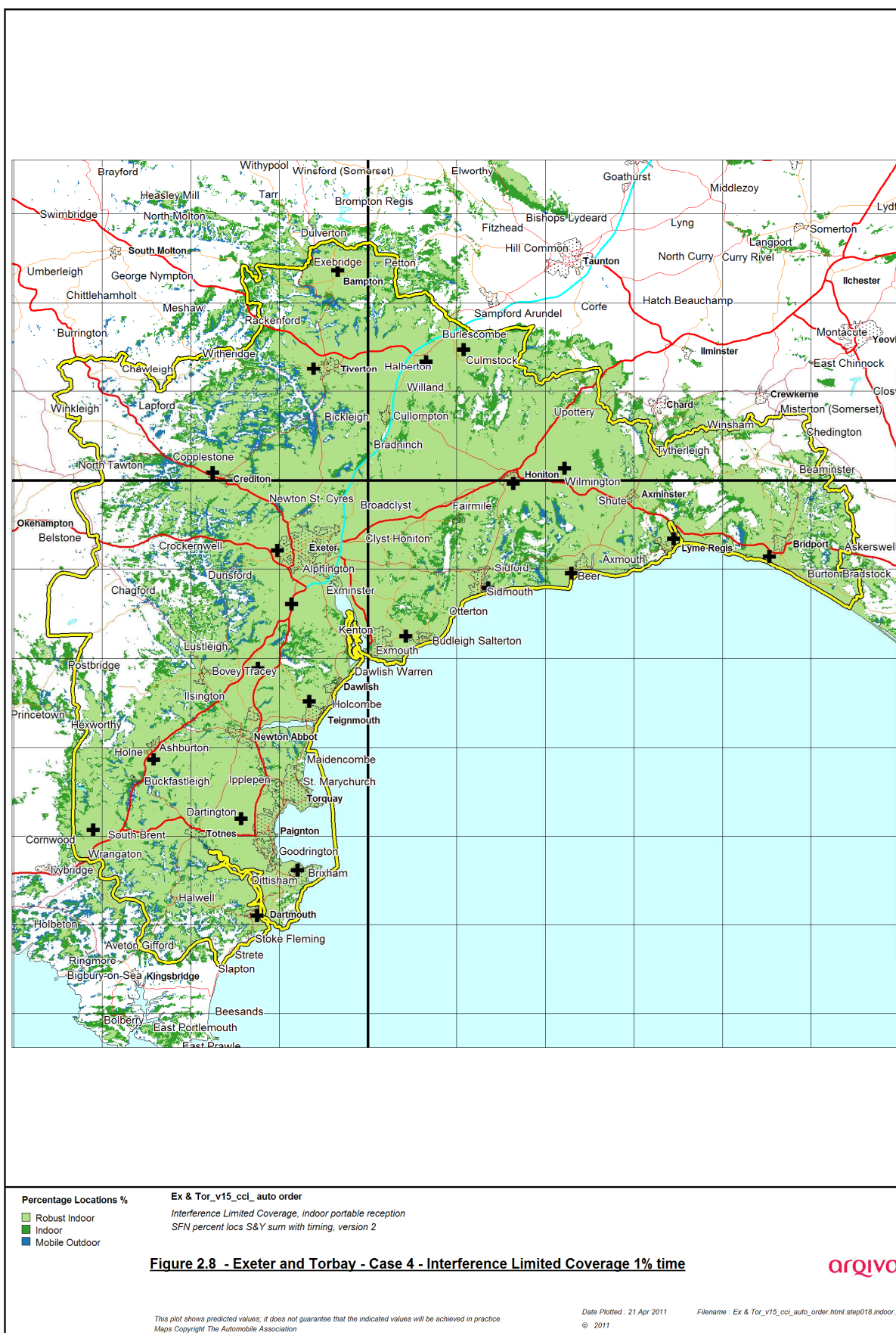


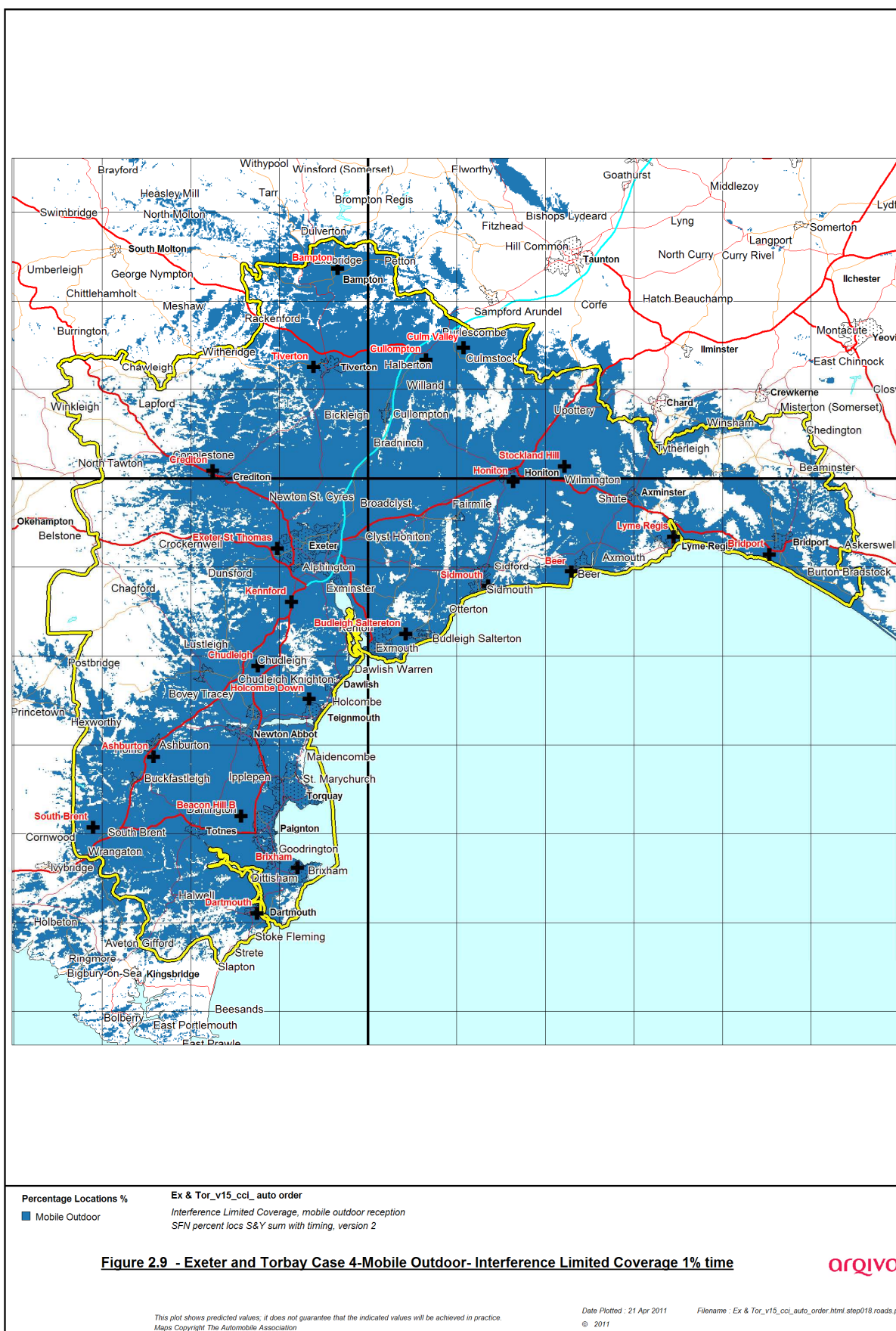












2.2 Population Coverage Tables

The following tables 2.1 and 2.2 and 2.3 show the population figures and the roads coverage for Kent. These tables are colour coded thus:-

Existing Exeter & Torbay	Case 1 (<i>3 transmitters</i>)
	- Yellow = Existing sites unchanged
	-
Case 2	Modified Network 1 (<i>3 transmitters</i>)
	- Pink
	-
Case 3	Modified Network 2
	- Improved Network (<i>17 transmitters</i>)
	- Pink + Orange= modified network 2
Case 4	Modified Network 3
	- Expanded Network (<i>21 transmitters</i>)
	- Pink + Orange + Blue = modified network 3

Table 2-1. Population coverage proportional indoor 99%T Total 306,748

Site scenario and incremental additional sites	Site Type	Individual Gross Interference Limited coverage within Editorial Area	Number of households within Editorial Area	Increase in number of households	Incremental percentage increase of population	Percentage of Editorial Area
Case 1 - Current (3 Tx)	Existing DAB sites		155313			50.63
Case 2 (3 txs) changes to 3 txs	Existing DAB sites		205556	50243	16.38%	67.01
Holcombe Down	Shared DAB site	46010 (15.00%)	227082	71769	23.40%	74.03
Tiverton	Shared DAB site	10623 (3.46%)	237201	10119	3.30%	77.33
Bridport	Shared DAB site	8997 (2.93%)	246338	9137	2.98%	80.31
Sidmouth	New Site	7627 (2.49%)	254388	8050	2.62%	82.93
Cullompton	New Site	7505 (2.45%)	259452	5065	1.65%	84.58
Lyme Regis	New Site	4125 (1.34%)	263520	4067	1.33%	85.91
Budleigh Salterton	New Site	12524 (4.08%)	269008	5488	1.79%	87.70
Crediton	New Site	4500 (1.47%)	271888	2881	0.94%	88.64
Chudleigh	New Site	4128 (1.35%)	274513	2625	0.86%	89.49
Beer	New Site	7768 (2.53%)	276848	2335	0.76%	90.25
Dartmouth	Shared DAB site	3882 (1.27%)	278593	1745	0.57%	90.82
Ashburton	New Site	2169 (0.71%)	280466	1873	0.61%	91.43
Brixham	New Site	26670 (8.69%)	281936	1470	0.48%	91.91
Bampton	New Site	1287 (0.42%)	283466	1530	0.50%	92.41
South Brent	New Site	1735 (0.57%)	284391	926	0.30%	92.71
Culm Valley	New Site	7198 (2.35%)	285246	855	0.28%	92.99
Kennford	New Site	6115 (1.99%)	286059	813	0.27%	93.26
Honiton	New Site	7297 (2.38%)	286832	772	0.25%	
Population Improvement For Case3 w.r.t. Case 2						
CASE 3 Totals			271560	66004	21.52	88.53

Table 2-2 Road coverage 99% locations, 99%T Total 690.8 km

Site scenario and incremental additional sites	Site Type	Total road length in km	Increase in number of road length in km	Incremental percentage increase of road length	Percentage of roads within the editorial area
Current (3 Tx)	Existing sites	325.7			47.22
Case 2 (3 txs) changes to all txs	Existing DAB sites	373.5			54.15
Holcombe Down	Shared DAB site	406.4	80.6	11.69	58.91
Tiverton	Shared DAB site	429.6	23.3	3.37	62.28
Bridport	Shared DAB site	444.0	14.3	2.08	64.36
Sidmouth	New Site	451.6	7.7	1.11	65.47
Cullompton	New Site	461.2	9.6	1.39	66.87
Lyme Regis	New Site	470.8	9.6	1.39	68.26
Budleigh Salterton	New Site	477.8	6.9	1.00	69.26
Crediton	New Site	486.3	8.5	1.23	70.49
Chudleigh	New Site	494.4	8.1	1.17	71.67
Beer	New Site	496.7	2.3	0.34	72.01
Dartmouth	Shared DAB site	498.3	1.6	0.23	72.24
Ashburton	New Site	508.9	10.6	1.53	73.77
Brixham	New Site	511.0	2.1	0.30	74.08
Bampton	New Site	525.7	14.7	2.14	76.21
South Brent	New Site	534.7	9.0	1.31	77.52
Culm Valley	New Site	545.1	10.3	1.50	79.02
Kennford	New Site	550.2	5.1	0.74	79.76
Honiton	New Site	552.7	2.5	0.36	80.12
Improvement for Roads For Case3 w.r.t. Case 2					
CASE 3 Totals		524.7	151.2	21.94	76.09

Table 2-5. Summary of Coverage within Editorial Area for Each Case

Case	Indoor Household (& percentage coverage)	Mobile Road Coverage (& percentage coverage) 99% locations
1	155313 (50.63%)	325.7 (47.22%)
2	205556 (67.01%)	373.5 (54.15%)
3	271560 (88.53%)	524.7 (76.09%)
4	286832 (93.51%)	552.7 (80.12)

- Case 1 - Light Yellow = existing sites unchanged
- Case 2 - Pink = Modified Network 1
- Case 3 - Pink + Orange = modified network 2
- Case 4 - Pink + Orange + blue = modified network 3