
Digital Switchover (DSO) Programme

Radio DSO Block 11C Kent

Document Reference: Radio DSO Kent–1.0

Release Date: 07 April 2011

Company Confidential

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Document Details

General Detail					
Abstract	Kent DAB DSO document - version 1.0				
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Optional Information					
Author Defined Reference No	Not used	Project No	951223		
Cross Reference					

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1 Kent DSO Narrative

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

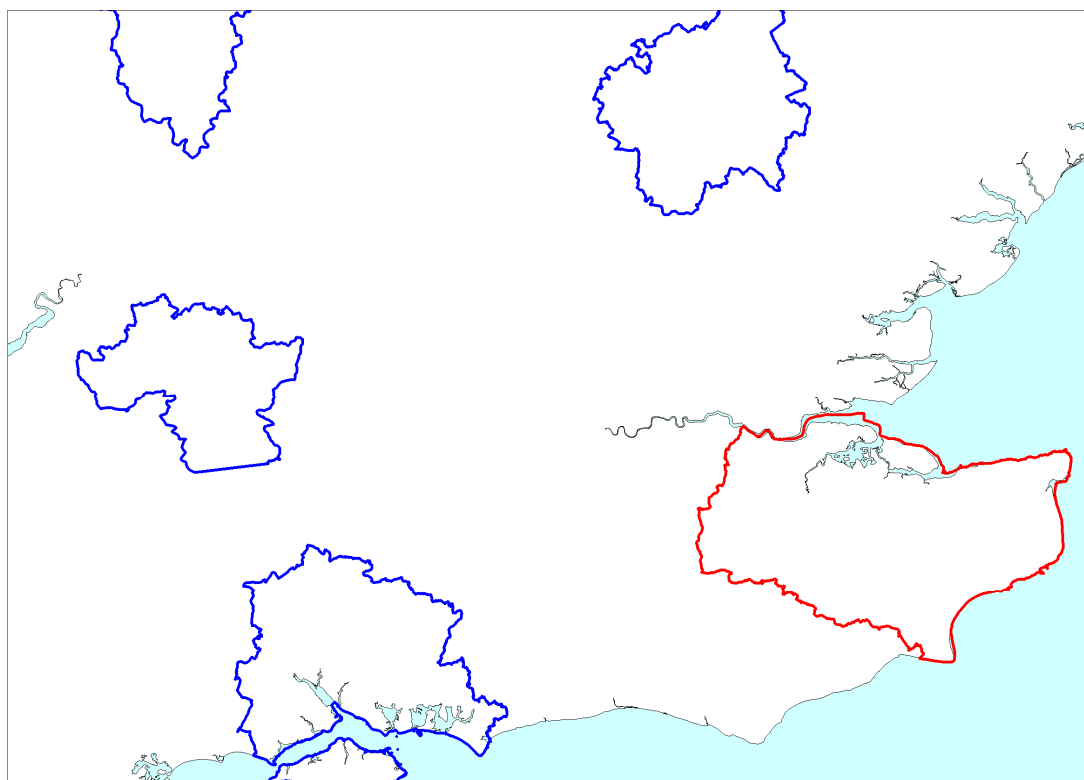


Figure 1.1: Kent (shown in red) – Adjacent 11C Multiplexes

There are five transmitters currently on air for the Kent 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
Ashford (Wye)	1kW	99	43	Dipoles
Bluebell Hill (S)	2kW	191	33	Panels
Chartham	0.25 kW	51	44	Dipoles
Thanet	0.125 kW	49	44	Panels
Tunbridge Wells	1 kW	122	44	Dipoles

Table 1.1: Kent – Current Transmission Characteristics

The editorial area for Kent has been changed somewhat; it now includes the towns of Deal, Dover, Folkestone Hythe and New Romney along the south Kent coast. There is also a reduction in the editorial area to the south of Tunbridge Wells, and some slight alterations along the western boundary from just north of East Grinstead northwards to the Thames, see figure 1.2

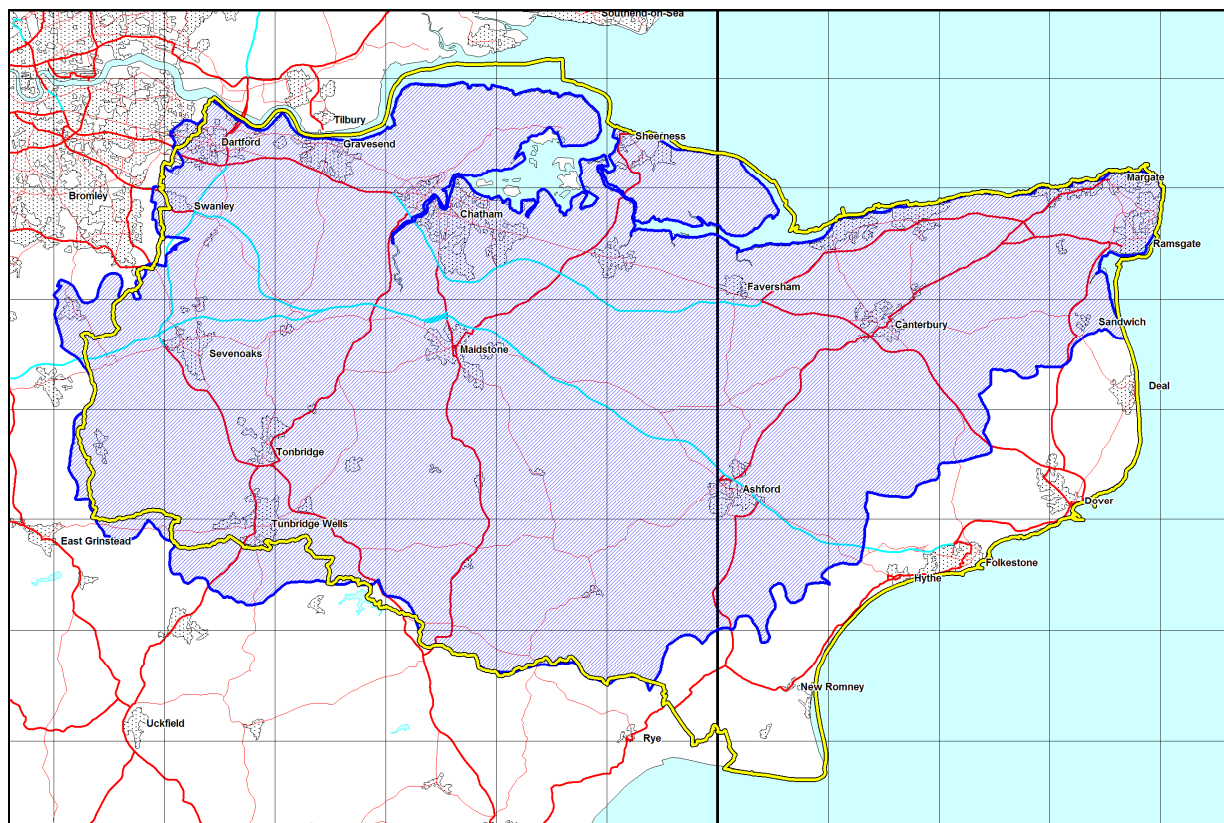


Figure 1.2: Kent – Changes to the editorial area.

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 Kent multiplex is surrounded by four other multiplexes, as shown in Figure 1.3. There is a large overlap with the London multiplexes in the north-west. This area of overlap with London includes the Dartford Crossing and M25/M20/M26 interchange in Kent, as well as part of the M2.

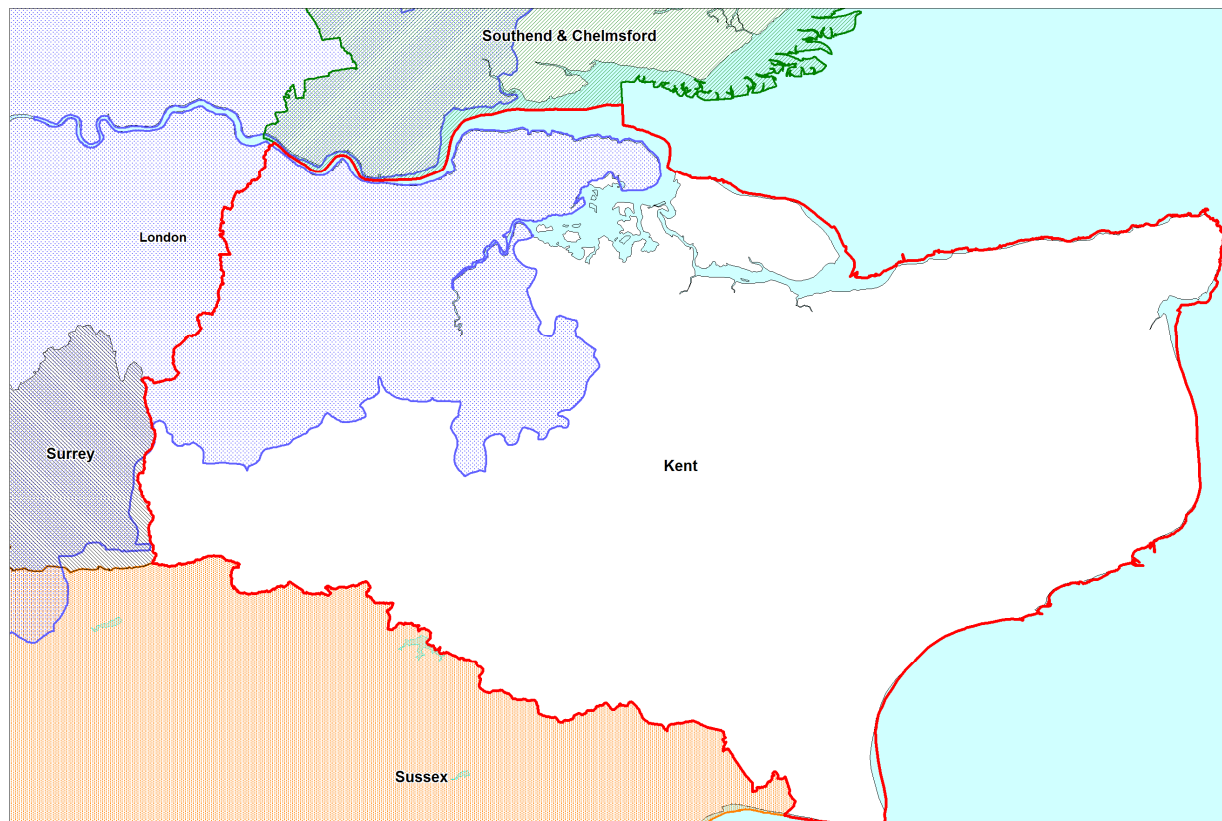


Figure 1.3: Kent Multiplex – Adjacent Multiplexes

The other adjacent multiplexes Sussex, Surrey and Southend & Chelmsford do not overlap with the Kent multiplex.

1.1 Outgoing interference and sensitivity to other co-block multiplexes

1.1.1 Existing Coverage (Case 1)

The noise limited coverage for Kent is shown in Figure 2.1. The original Kent multiplex was restricted somewhat by international consideration for French TV at Boulogne. There is no longer a requirement to protect this French service. This meant that the original Kent coverage was quite limited.

The interference limited coverage for the existing Kent multiplex is shown in Figure 2.2. The existing Kent multiplex is limited by co-block interference. The existing coverage is restricted by co-block interference from the Cambridge, Swindon and Manchester multiplexes. No particular multiplex dominates the incoming interference.

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)

The original Kent multiplex was restricted by the French TV service at Boulogne. This is no longer the case. The transmitter at Thanet had been restricted to 125W, due to this international constraint, Thanet can be increased by 3dB to 250W, and the infrastructure is already in place to facilitate this increase in ERP.

Due to expansion on other 11C multiplexes within the DSO plan, the impact on incoming interference is significant for Case 2, even with an increase in ERP at Thanet. The transmitters currently on air for Kent; Bluebell Hill, Tunbridge Wells, Ashford (Wye), Chartham and Thanet are predicted to produce reasonable interference limited coverage to towns that are in the vicinity of those transmitters.

The interference coverage for case 2 is shown in Figure 2.4, figure 2.5 shows the mobile outdoor 1% time interference limited coverage, which is more restricted than the indoor coverage shown in figure 2.4.

For information, figure 2.6 shows the coverage for mobile outdoor coverage for case 2 with incoming interference predicted at 5% time.

Due to nature of the additional incoming co-clock interference, it seem likely that Kent would need to implement a significant number of additional transmitters to maintain a reasonable coverage throughout it's editorial area.

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

In order to improve the covering for the Kent multiplex, the several transmitters have been considered to endeavour to provide DAB coverage where there is robust FM coverage. The transmitters included are :- Wrotham, Swingate, Benfleet, Creteway Down and Charing Hill.

Wrotham improves the coverage around the area of Sevenoaks and some of the nearby motorways.

Benfleet (sharing the Southend and Chelmsford DAB antenna) reinforces significant areas along the north Kent coast as well as Gravesend, Chatham and Whitstable.

The transmitters at Swingate and Creteway Down bring local DAB coverage to Dover and Folkestone and enhance the DAB coverage to the south of Thanet as well as in the New Romney area.

The transmitter at Charing Hill improves the coverage for population and roads (including large stretches of the M20) in the mid Kent area.

In the overlap area with the London multiplexes, no additional transmitters have been added for Case 3.

Figure 2.7 shows the Kent Case 3 Modified Network 2 coverage at 1% time. Figure 2.8 shows the mobile outdoor coverage, there is incoming co-block interference, which impacts the coverage, the mobile outdoor coverage is more restricted than the indoor coverage.

For information, figure 2.9 shows the coverage for mobile outdoor coverage for case 3 with incoming interference predicted at 5% time.

The indoor and mobile populations for the 5% time interference limited coverages are also included with this report in the "Population Coverage Table" section.

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

In order to expand the network for Kent further, transmitters at Hamstreet and Hythe have been added.

Hamstreet and Hythe reinforce the coverage to the south of Ashford and in the coastal town of Hythe.

Figure 2.10 shows the Case 4, Modified Network 3 where the Hamstreet and Hythe transmitters have been included. For the mobile outdoor coverage, there is incoming co-block interference, see Figure 2.11.

For information, a 5% time interference limited coverage map has been included for the case 4, modified network 3 coverage for Kent. This can be seen in figure 2.12.

The indoor and mobile populations for the 5% time interference limited coverages are also included with this report in the "Population Coverage Table" section.

2 Coverage of Multiplex

2.1 Coverage Maps

Coverage maps for DAB are presented with three colours.

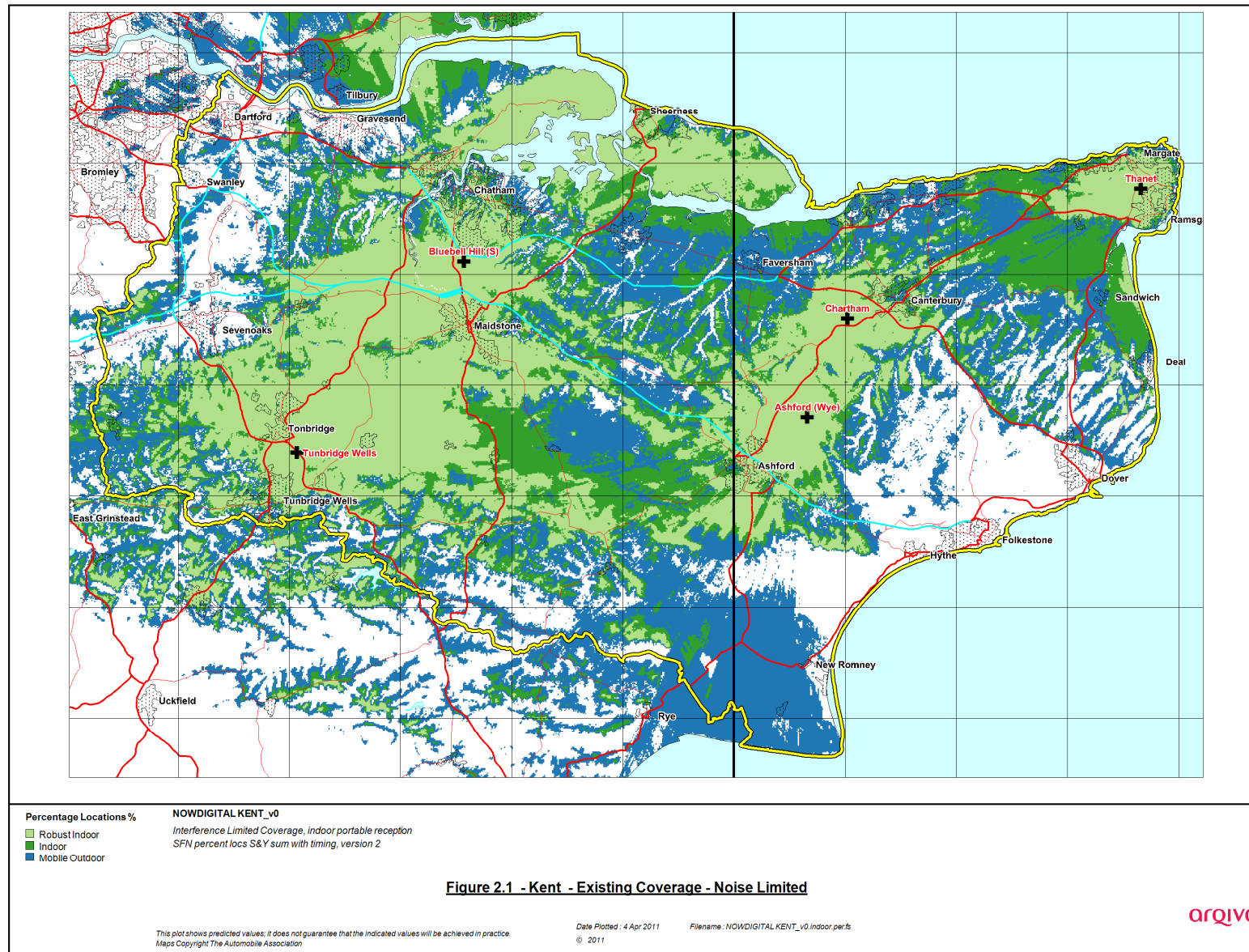
Blue = Mobile coverage (99% locations at 99% time)

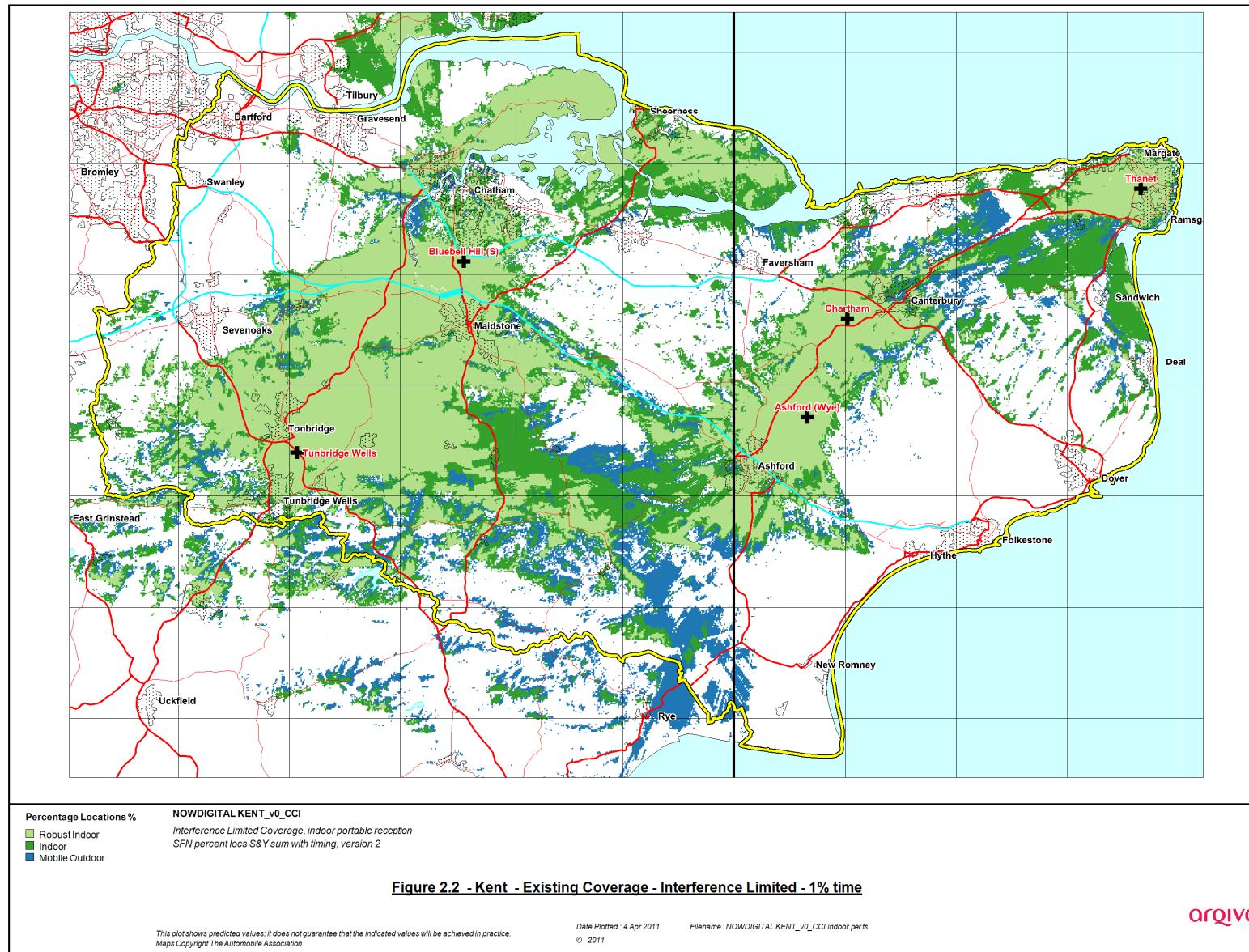
Dark Green = Indoor coverage (80-95% locations at 99% time)

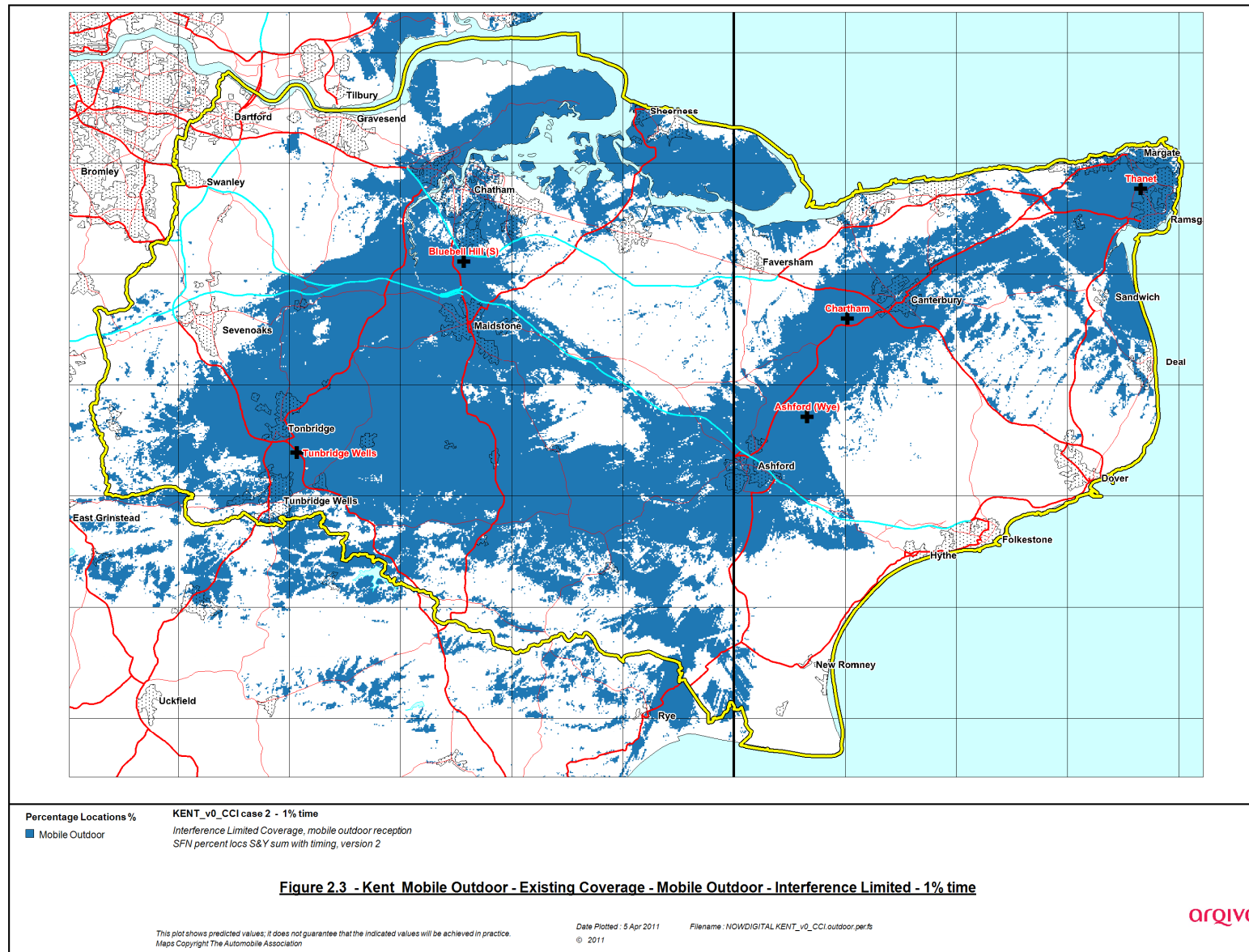
Light Green = Robust Indoor coverage (>95% locations at 99% time)

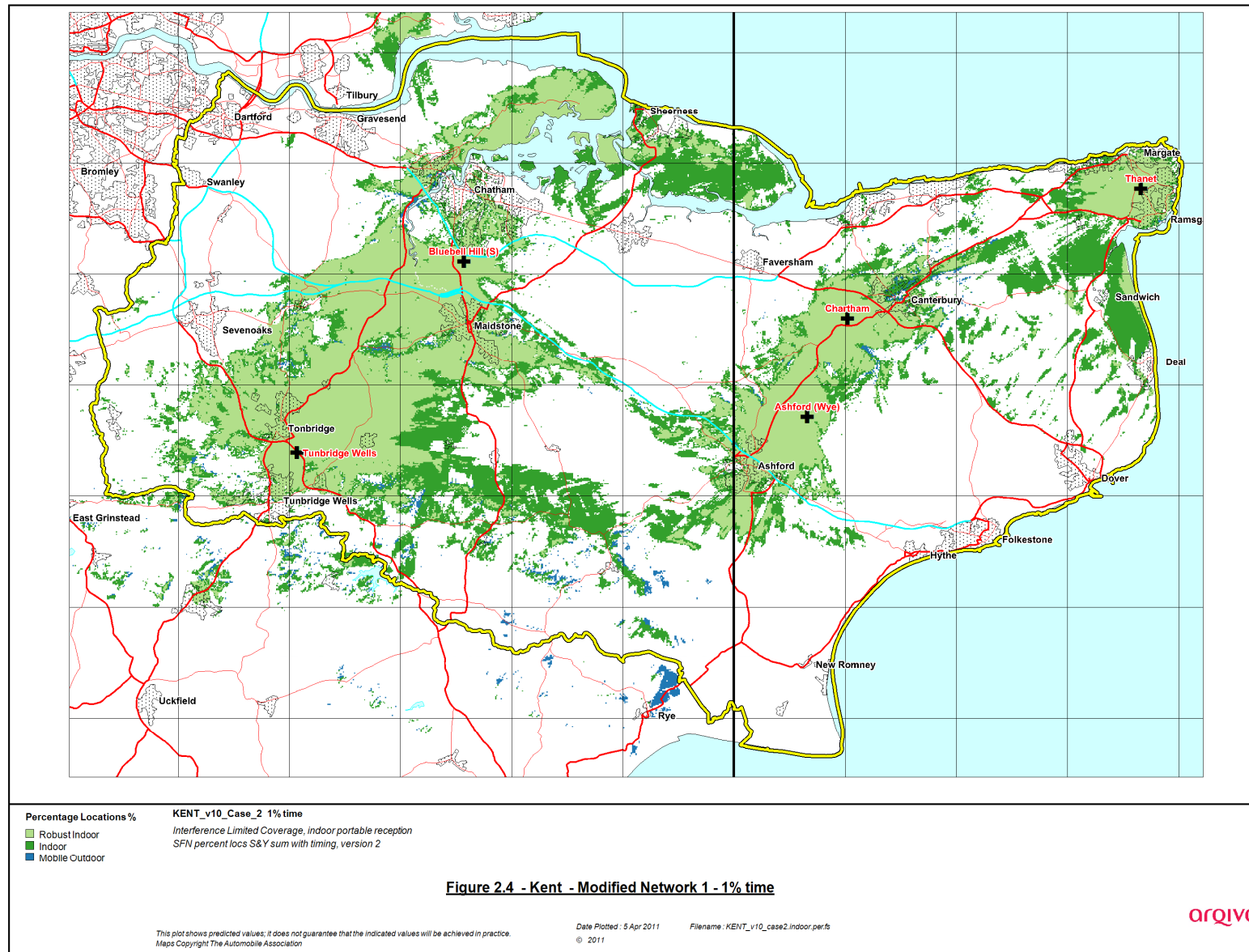
These maps included with this report are shown below.

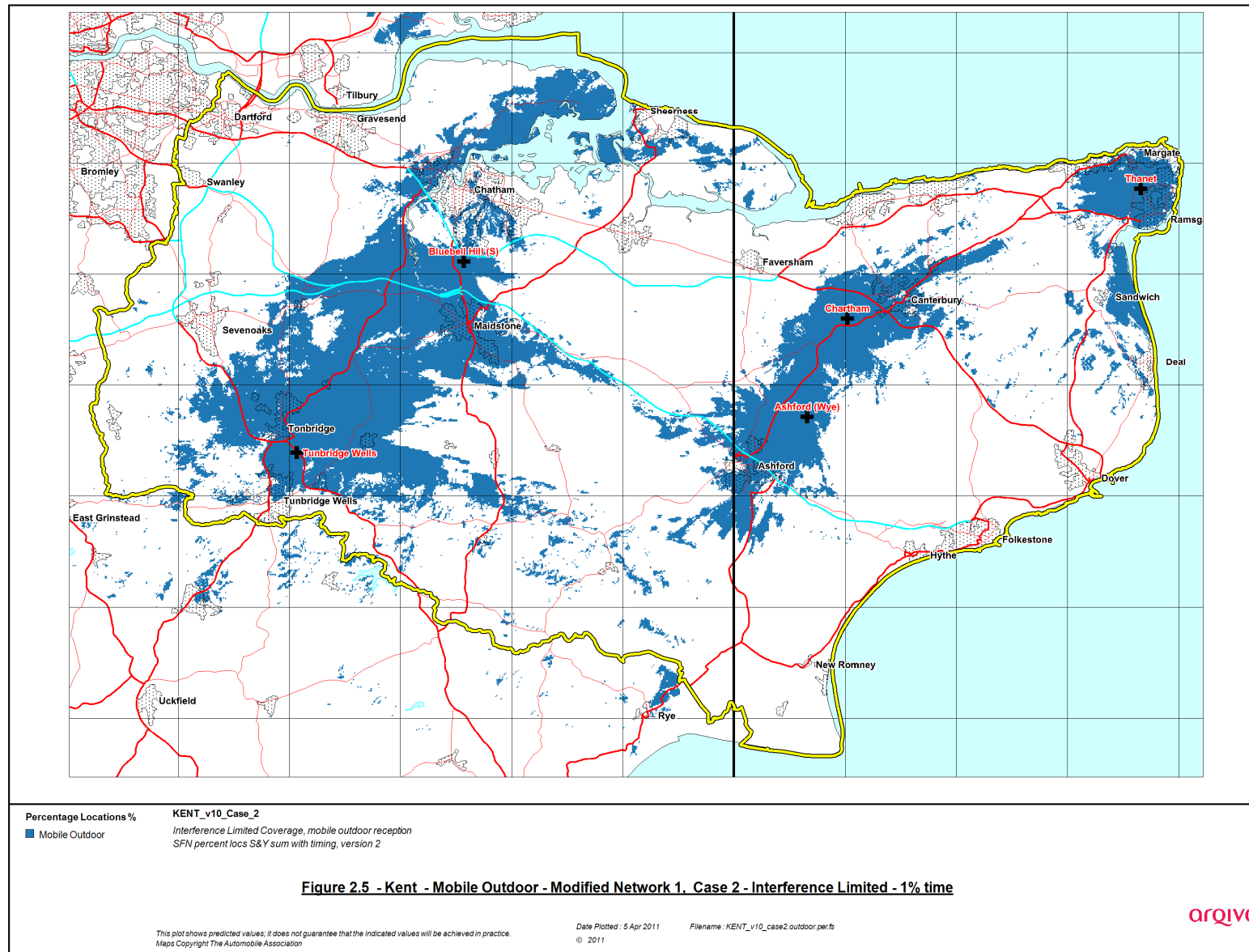
- Figure 2.1 Case 1 -Current NOISE limited coverage for Kent (*5 transmitters*)
- Figure 2.2 Case1 - Current interference limited coverage for Kent, 1% time - (*5 transmitters*)
- Figure 2.3 Case 1 - Mobile outdoor Coverage for Kent interference limited, 1% time - (*5 transmitters*)
- Figure 2.4 Case 2, Interference limited coverage for Kent, Modified network 1% times - (*5 transmitters*)
- Figure 2.5 Case 2 Interference limited coverage for Kent, Modified network 2 1% time - (*5 transmitters*)
- Figure 2.6 Case 2, Mobile outdoor - Coverage for Kent, Modified network 2, 5% time - (*5 transmitters*)
- Figure 2.7 Case 3, Interference limited coverage for Kent Modified network 3, 1% time - (*11 transmitters*)
- Figure 2.8 Case 3, Interference limited coverage for Kent, Modified network 3 1% time - (*11 transmitters*)
- Figure 2.9 Case 3, Mobile outdoor - Coverage for Kent, Modified network 3, 5% time - (*11 transmitters*)
- Figure 2.10 Case 4, Interference limited coverage for Kent, Modified network 3,1% time - (*14 transmitters*)
- Figure 2.11 Case 4, Interference limited coverage for Kent, Modified network 3,1% time - (*14 transmitters*)
- Figure 2.12 Case 4, Mobile outdoor - Coverage for Kent, Modified network 3, 5% time - (*14 transmitters*)

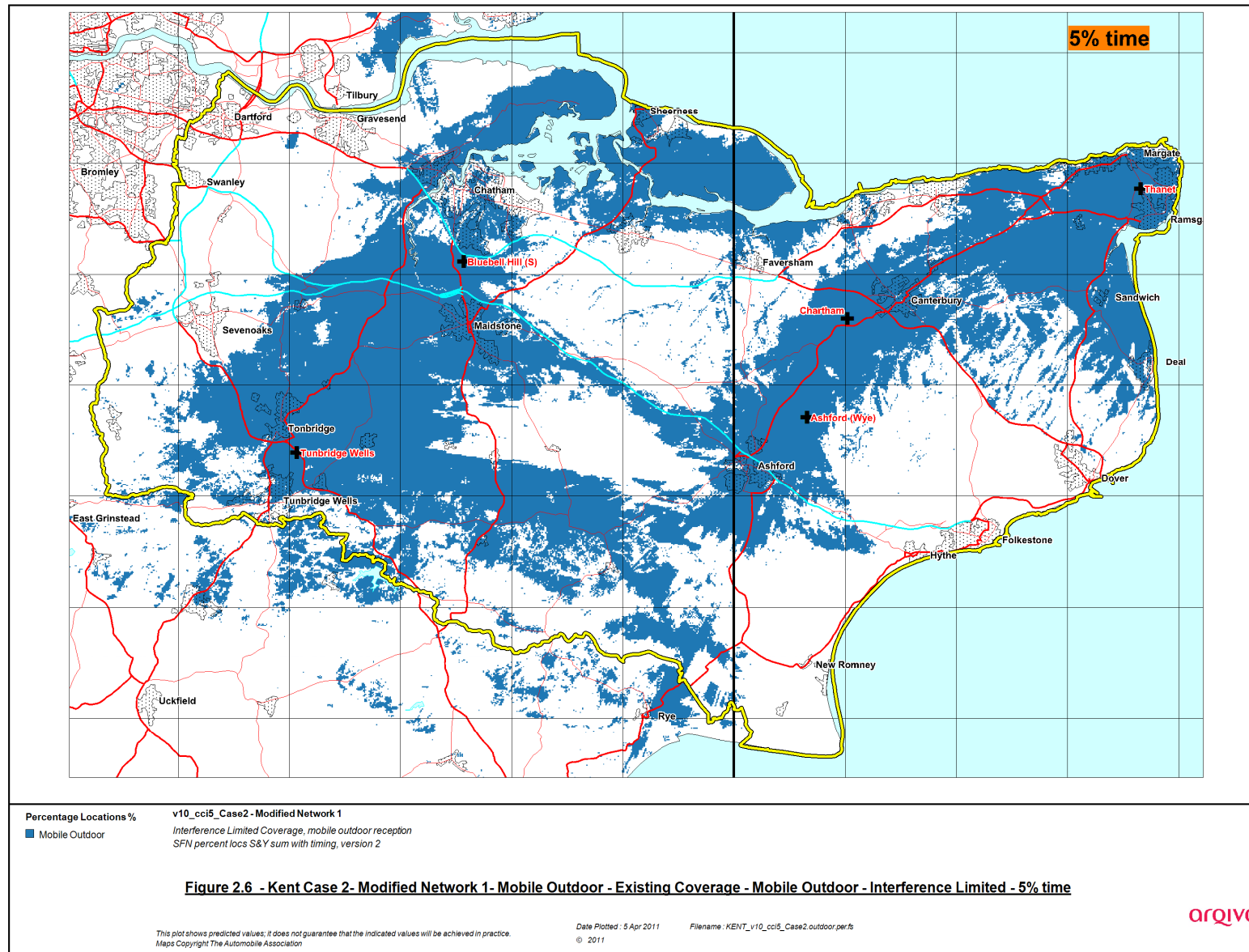


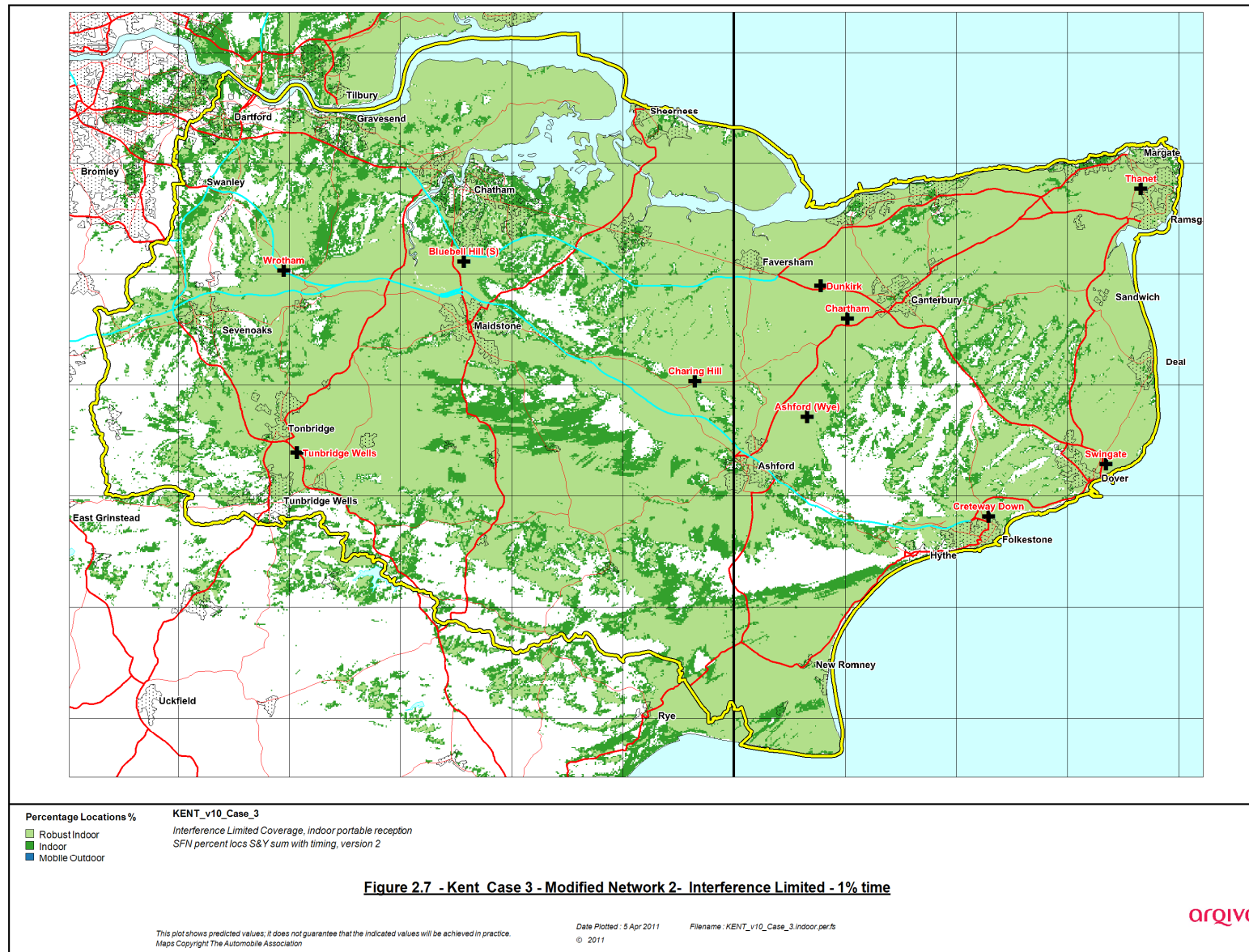


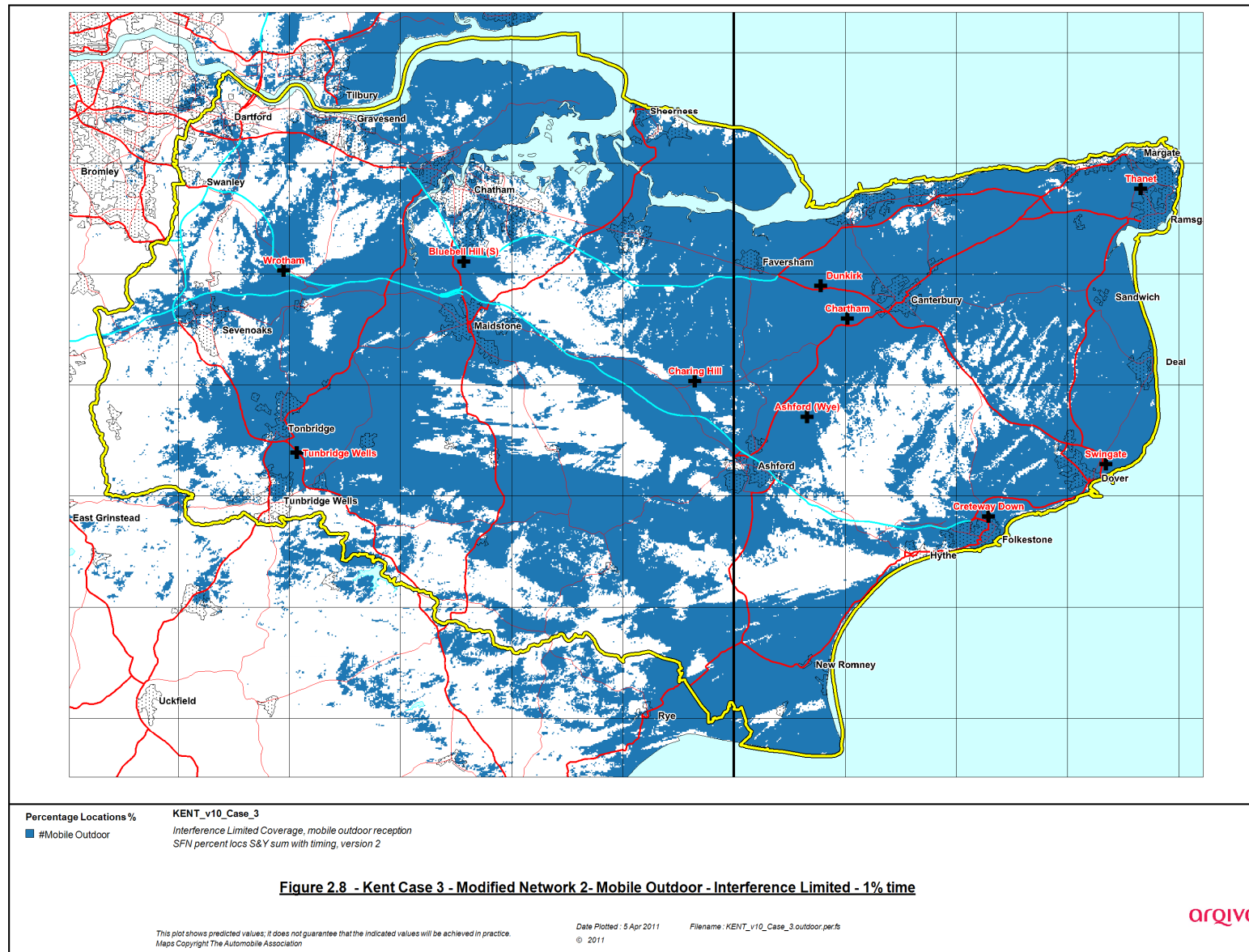


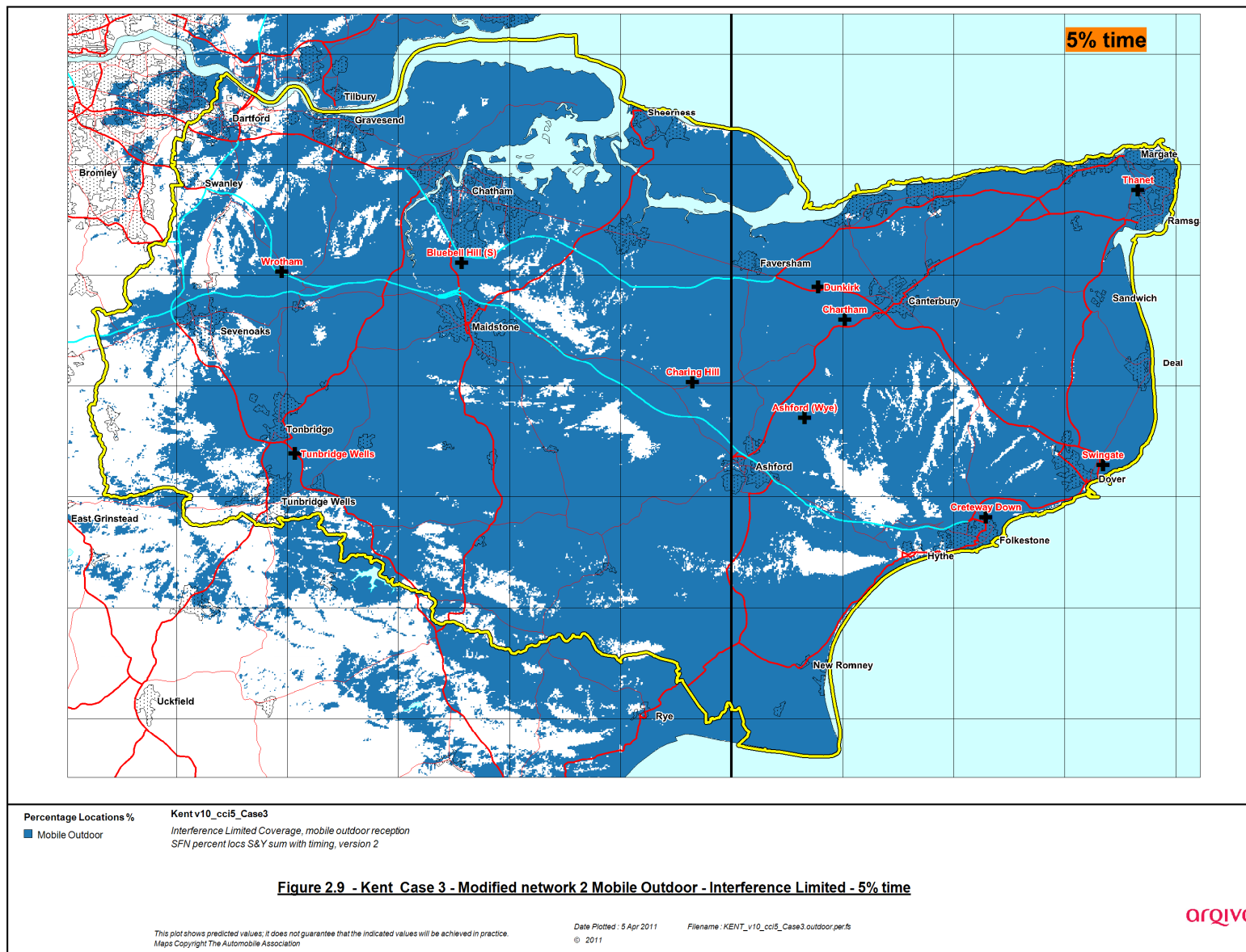


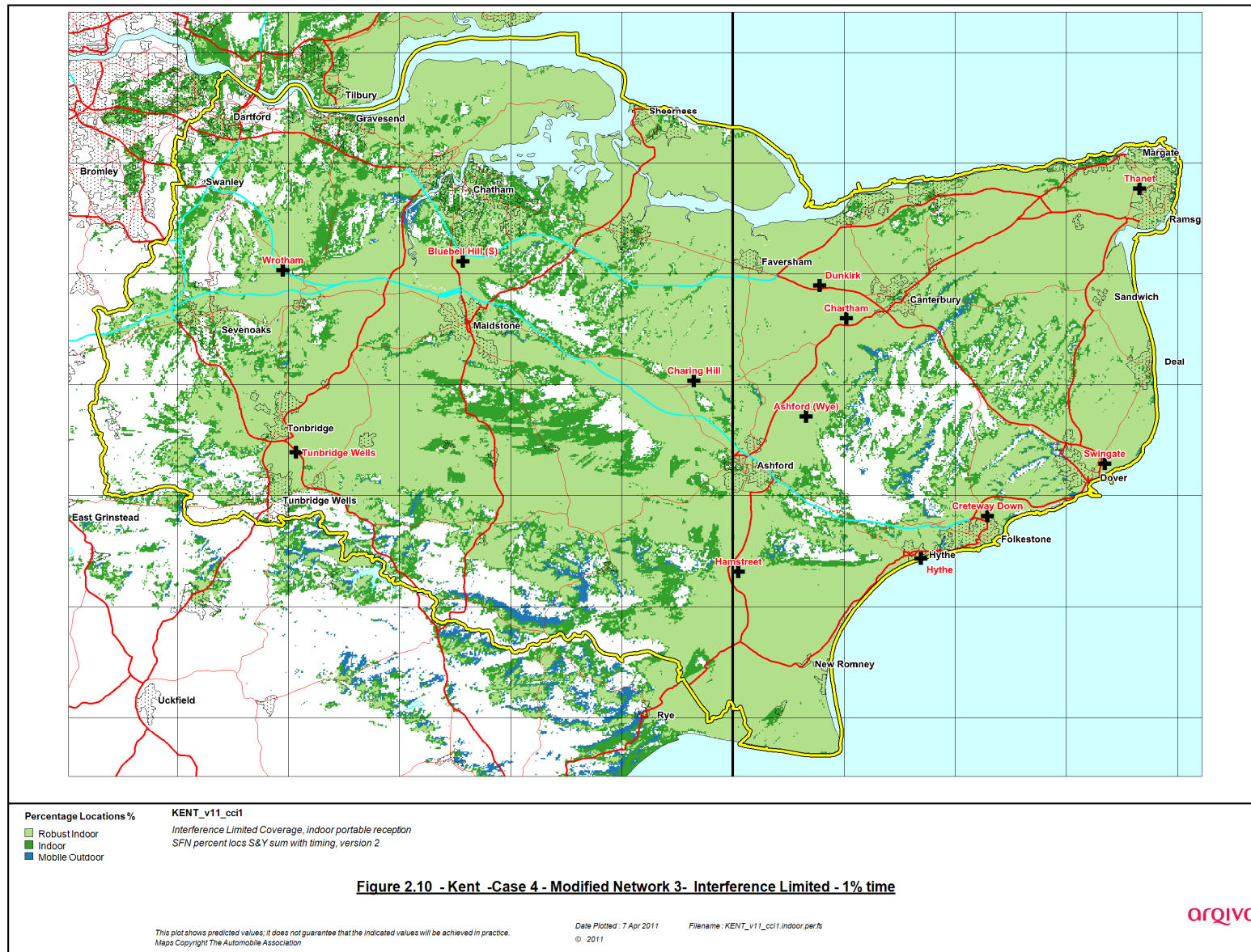


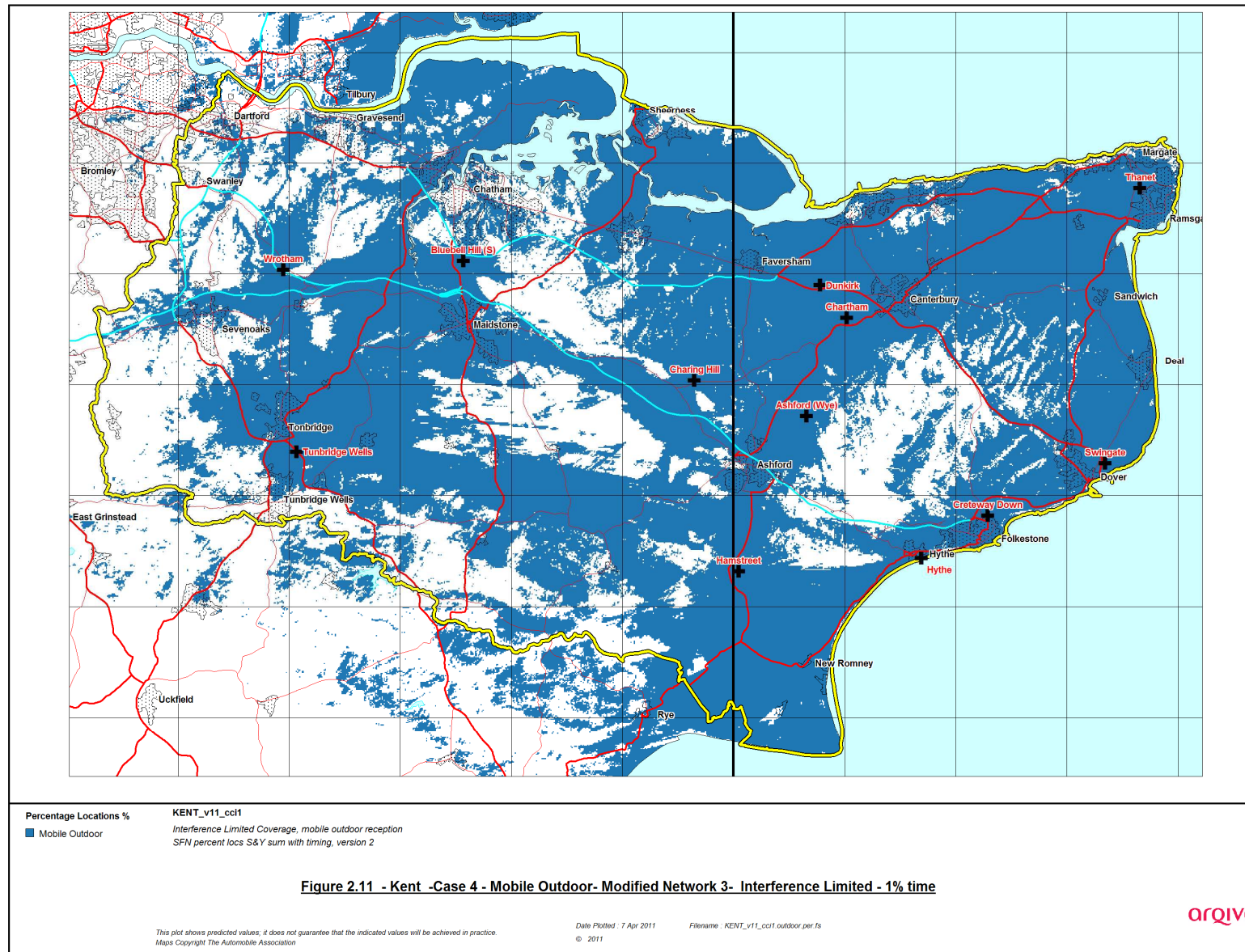


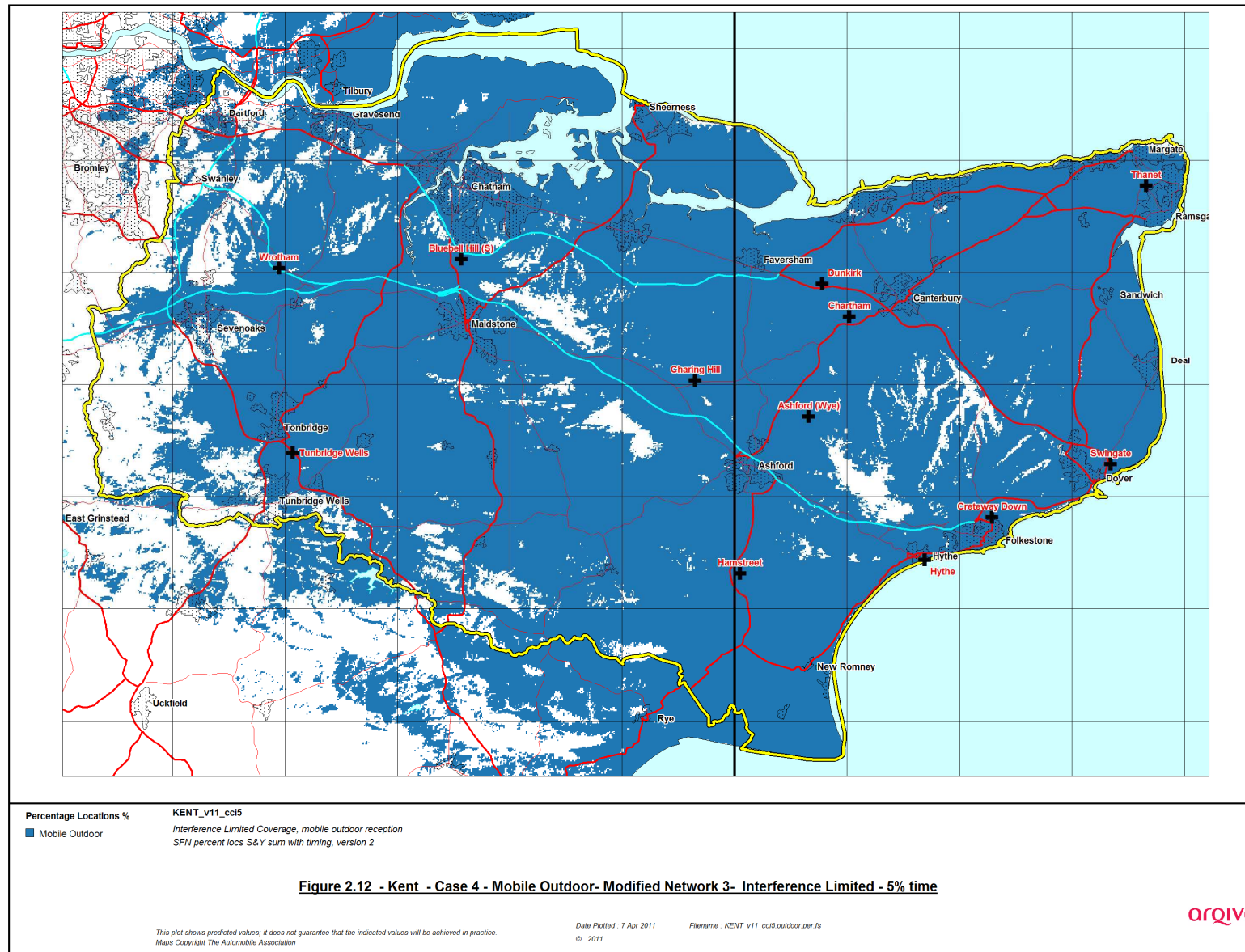












2.2 Population Coverage Tables

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 Kent	Case 1 (<i>5 transmitters</i>)
	- Yellow = Existing sites unchanged
	-
Case 2	Modified Network 1
	- Increase in ERP at Thanet from 0.125kW kW to 0.25 kW (5 transmitters)
	- Orange
	-
Case 3	Modified Network 2
	- Improved Network (<i>11 transmitters</i>)
	- Orange + Green = modified network 2
Case 4	Modified Network 3 (<i>14 transmitters</i>)
	- Expanded network
	- Orange + Green + Blue = modified network 3

Table 2-1. Population coverage proportional indoor 99%T Total 736,503

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
Current (5 Tx)	Existing Dab sites		379048			51.47
Case 2 (5 txs – Thanet increased ERP)	Existing DAB sites		297317	-81731	-11.1%	40.37
Dunkirk	New Site	92880 (12.61%)	399351	102034	13.8%	54.22
Wrotham	Shared DAB site	44875 (6.09%)	455051	55700	7.6%	61.79
Swingate	New Site	65404 (8.88%)	506937	51886	7.0%	68.83
Creteway Down	New Site	32440 (4.40%)	540603	33665	4.6%	73.40
Benfleet	Shared DAB site	14773 (2.01%)	588266	47663	6.5%	79.87
Charing Hill	Shared DAB site	45323 (6.15%)	612711	24446	3.3%	83.19
Hythe	New Site	7500 (1.02%)	618931	6220	0.8%	84.04
Hamstreet	New Site	1509 (0.20%)	620535	1604	0.2%	84.25

Table 2-2. Population coverage proportional indoor 95% time Total 736,503

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
Current (5 Tx)	Existing Dab sites		368974			50.10
Case 2 (5 txs – Thanet increased ERP)	Existing DAB sites		297317	-71659	-9.7%	40.37
Dunkirk	New Site	115063 (15.62%)	455881	86907	11.8%	61.90
Wrotham	Shared DAB site	63156 (8.58%)	528512	72631	9.9%	71.76
Swingate	New Site	73411 (9.97%)	580986	52474	7.1%	78.88
Creteway Down	New Site	35317 (4.80%)	611088	30102	4.1%	82.97
Benfleet	Shared DAB site	33534 (4.55%)	653786	42698	5.8%	88.77
Charing Hill	Shared DAB site	68228 (9.26%)	668618	14833	2.0%	90.78
Hythe	New Site	7557 (1.03%)	673893	5274	0.7%	91.50
Hamstreet	New Site	1885 (0.26%)	675071	1175	0.16%	91.66

Table 2-3 Road coverage 99% locations, 99%T Total 1,226.407 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 (5 Tx)	Existing sites	920.3			75.04
Case 2 (5 txs – Thanet increased ERP)	Existing DAB sites	371.8	-548.475	-44.7%	30.32
Dunkirk	New Site	542.9	-377.4	-30.8%	44.27
Wrotham	Shared DAB site	630.1	87.2	7.1%	51.38
Swingate	New Site	718.9	88.8	7.2%	58.62
Creteway Down	New Site	787.0	68.1	5.6%	64.17
Benfleet	Shared DAB site	808.2	21.2	1.7%	65.90
Charing Hill	Shared DAB site	890.8	82.7	6.7%	72.64
Hythe	New Site	901.0	10.2	0.8%	73.47
Hamstreet	New Site	908.0	7.0	0.6%	74.04

Table 2-4 Road coverage 99% locations, 95% time- Total 1,226.407 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 (5 Tx)	Existing sites	741.5			60.46
Case 2 (5 txs – Thanet increased ERP)	Existing DAB sites	371.8	-369.7	-30.1%	30.32
Dunkirk	New Site	744.1	2.7	0.2%	60.68
Wrotham	Shared DAB site	877.4	133.3	10.9%	71.54
Swingate	New Site	962.0	84.6	6.9%	78.44
Creteway Down	New Site	1018.7	56.7	4.6%	83.06
Benfleet	Shared DAB site	1052.2	33.5	2.7%	85.80
Charing Hill	Shared DAB site	1101.8	49.5	4.0%	89.84
Hythe	New Site	1110.4	8.6	0.7%	90.54
Hamstreet	New Site	1112.6	2.2	0.18%	90.72

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	379048 (51.5%)	920.3 (75.0%)
2	297317 (40.3%)	371.8 (360.3%)
3	612711 (83.2%)	890.8 (72.6%)
4	620535 (84.25%)	908.0 (74.04%)

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

Table 2-6. Summary of Coverage within Editorial Area for Each Case - 5% time interference

Case	Indoor Household (& percentage coverage)	Mobile Road Coverage (& percentage coverage) 99% locations
1	368974 (50.1)	741.5 (60.46)
2	297317 (40.37)	371.8 (30.32)
3	0668618 (91.50)	1101.8 (89.84)
4	675071 (91.66)	1112.6 (90.72)