Saint Giles Court

Television Reception

Post-Development Survey

MHT Consultants

January 2010

MHT Consultants
4 Kingfisher Rise
Anchor Reach
Quedgeley, GLOS, GL2 4XZ,
England
Tel: +44 1452 883750
+44 7785 731782
e-mail: martin.mhtc@yahoo.co.uk

Contents

APPENDICES

(c) MHT Consultants
Electromagnetic Environmental Effects
Quedgeley GLOS, GL2 4XZ
18th Jan 2010

M.H.THURLOW..... Martin Thurlow

For and on behalf of MHT Consultants

1.0 TEST DETAILS

1. 1 Test Detail

Test Venue : Euston & Camden Area, London
Test Dates : 22nd December 2009, 4th~5th January 2010
Test Personnel : M.H.Thurlow
Test Specification :
Test Protocol : MHTC EM Ambient Test Protocol

1.2 Summary

A second Electromagnetic Emission Field Strength survey has been carried out in the Euston & Camden area of London to the north of the St Giles Court Development site.

The purpose of the tests was to measure and quantify the current level of TV signal strength and reception in the area after the development of the site. The results obtained are then compared to the measured results of the initial survey of 19th December 2006 (see MHTC report 9652-RL-01) to assess the impact of the development upon the TV reception in the area.

The field strength and reception quality measurements obtained at the survey test positions show that generally across most of the surveyed area the quality of TV reception has not been significantly affected.

At survey line A, immediately adjacent to the development, and at the extra survey position Z the reception is affected by signal blockage and by reflection interference from the building.

At test position Z no single antenna position could be found to give good reception of all channels.

2. INTRODUCTION

2.1 General

A second set of EM ambient measurements have been carried out in the general area of Euston & Camden in London, England. These measurements were carried out for and on behalf of Ove Arup by MHT Consultants.

Testing was carried out in the early hours of the 22nd December 2009 and of 4th and 5th January 2010; field strength measurements were carried out to the general methods defined in European Standards over the frequency range 450MHz to 650MHz; in addition tests of the reception quality were carried out at test positions in the predicted reflection zone.

The purpose of the tests was to measure the general field strength and signal/noise levels for television reception in the area to the north of the St Giles Court Development This measurement is required to compare with those of the initial pre-development base-line survey to assess the impact of the development upon the TV reception in the area.

RF emission measurements were made over the following frequency range covering the television broadcast band:

450MHz ~ 650MHz

Testing was carried out using one mobile test station on 22nd December 2009 and on 4th & 5th January 2010 with 1 test engineer on site during the test.

2.2 Survey Area Description

There are two main transmitters serving the Greater London area, these are located at Crystal Palace for BBC and ITV channels and at Croydon for the C5 channel. The antenna mast heights are

Crystal Palace ~ 321 AOD
Croydon ~ 289 AOD

Both transmitters are horizontally polarised. Due to the scattering of buildings etc in the London area coupled with the wide coverage area required there are a great number of active TV transmitters and transponders in the Greater London area.

It should be noted that the quality of TV reception is not only dependent upon the signal strength but also on the received signal/noise ratio.

The field strength and reception quality survey was carried out at the survey points in the area of possible shadowing and reflection to the north of the St Giles Court Development. The general layout of the surveyed test area is shown in figure.A.1.

3.0 TEST METHOD

3.1 Test Method

For the radiated electric and plane-wave tests standard test methods, based upon those described in the European and International standards for radiated Electric and Plane-wave fields, have been employed.

The measurements were made in the frequency domain using a broadband Log Periodic (LPA) antenna as the field transducer. A specialist modified RFI scanning receiver was used as the measurement system. Peak detection was used throughout for the data collection. The analysed data was then stored on a PC controller. The system is pre and post calibrated.

The picture quality tests were subjective and concentrated on the pixilation and multiple image and ghosting of the picture.

3.2 Measurement Sampling

The test positions of the field strength and picture quality survey lines are shown by figure.A.1. Figure.A.2 shows the test schematic for the radiated electric emission tests whilst figure.A.3 shows the test schematic for the picture quality tests.

All the measurements of the radiated electric emissions were made at a height of 4.0m above ground level with the antenna rotated to give maximum signal. For the TV Band A, the measurements were made in horizontal polarisation to match the possible TV transmitters.

At the request of Ove Arup a more searching examination of the reception at location Z in Shaftesbury Avenue next to the development was carried out. This consisted of moving the receive antenna whilst tuned to a single channel and continuously observing the variation in the signal strength at the vision carrier frequency. This was repeated for each of the 5 main TV service channels.

4.0 TEST RESULTS

4.1 Measurement Parameters

The measured results of the current TV reception in the Euston & Camden area to the north of the St Giles Court Development are shown in Appendix.B.

4.2 Field Strength Results

The graphical results for each test position are given in Appendix.B.

For each survey line measurement, the first plot shows the superimposed results of the field strengths measured in Band A at the test positions along the survey line.

The variation of the measured field strength along the survey line at the BBC1 Chan 26 (Crystal Palace) and the C5 Chan 37 (Croydon) frequencies is also given in the subordinate graphs. It should be noted that, due to restrictions in access, the test positions are not necessarily equally spaced along the survey line. However for each survey line 6 test positions were measured to ensure that the TV signal was sampled both external to and within the predicted area of the TV shadow.

4.2 Reception Quality Results

At each survey line in the reflection zone several measurements were made of the reception quality

5.0 CONCLUSIONS

The field strength measurements obtained at the survey test positions A and B show some reduction of the received signal compared to the original survey. However an adequate signal/noise ratio was noted across the rest of the surveyed area.

The field strength and reflection measurements obtained at the survey test positions shows that apart from the small area immediately to the north of the development the current quality of TV reception in the area can be expected to be acceptable to good.

Given the height of the measurement antenna the reflection measurements obtained at the survey test positions show that picture quality can be expected to be acceptable across most of the surveyed area.

At test position Z there is significant interference from reflection from the building; deep nulls and peaks where found in the received field strength and no single antenna position could be found to give good reception of all channels.

Appendix.A
Test Schematics
General View

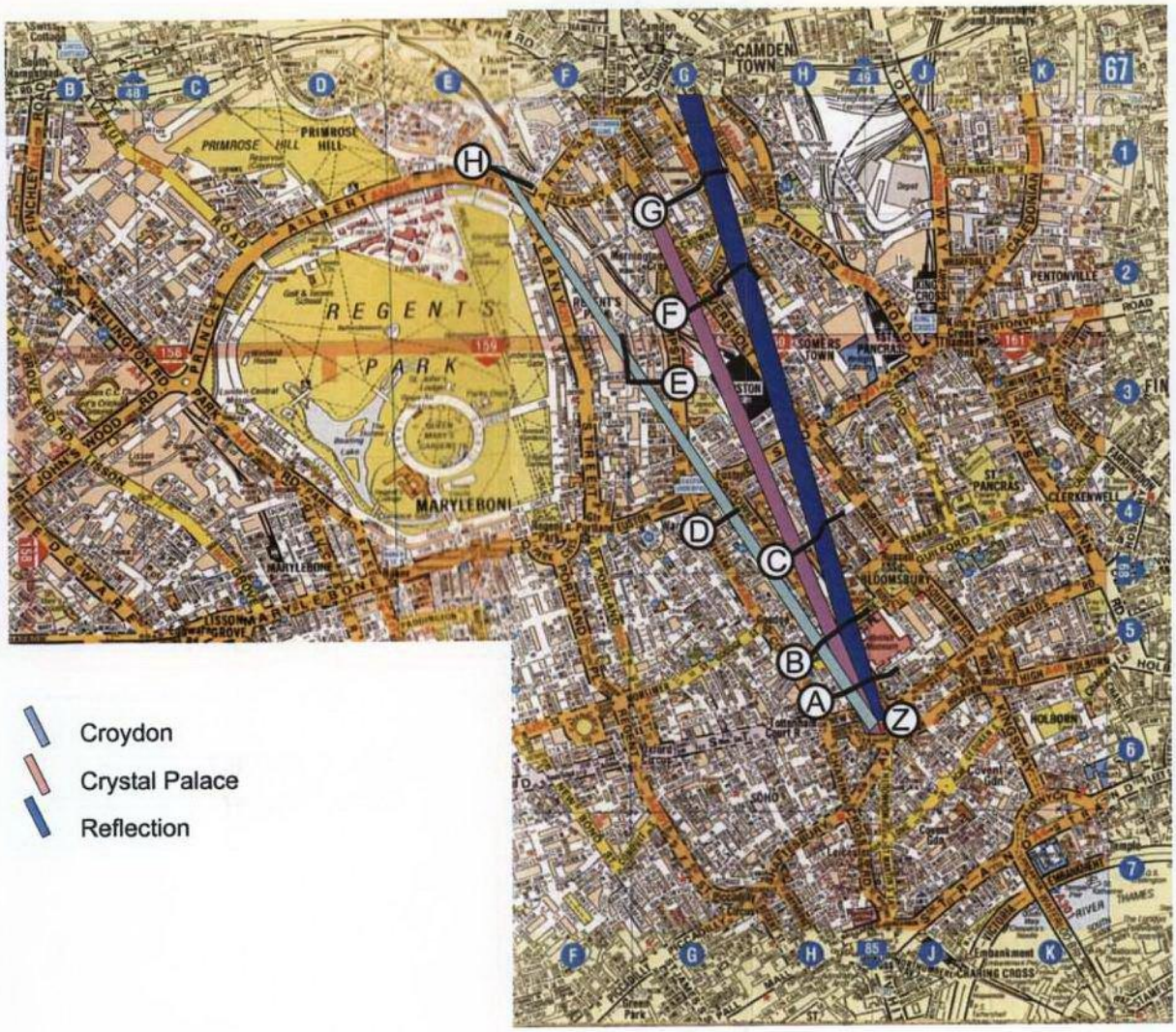


Fig.A.1 : Survey General Layout

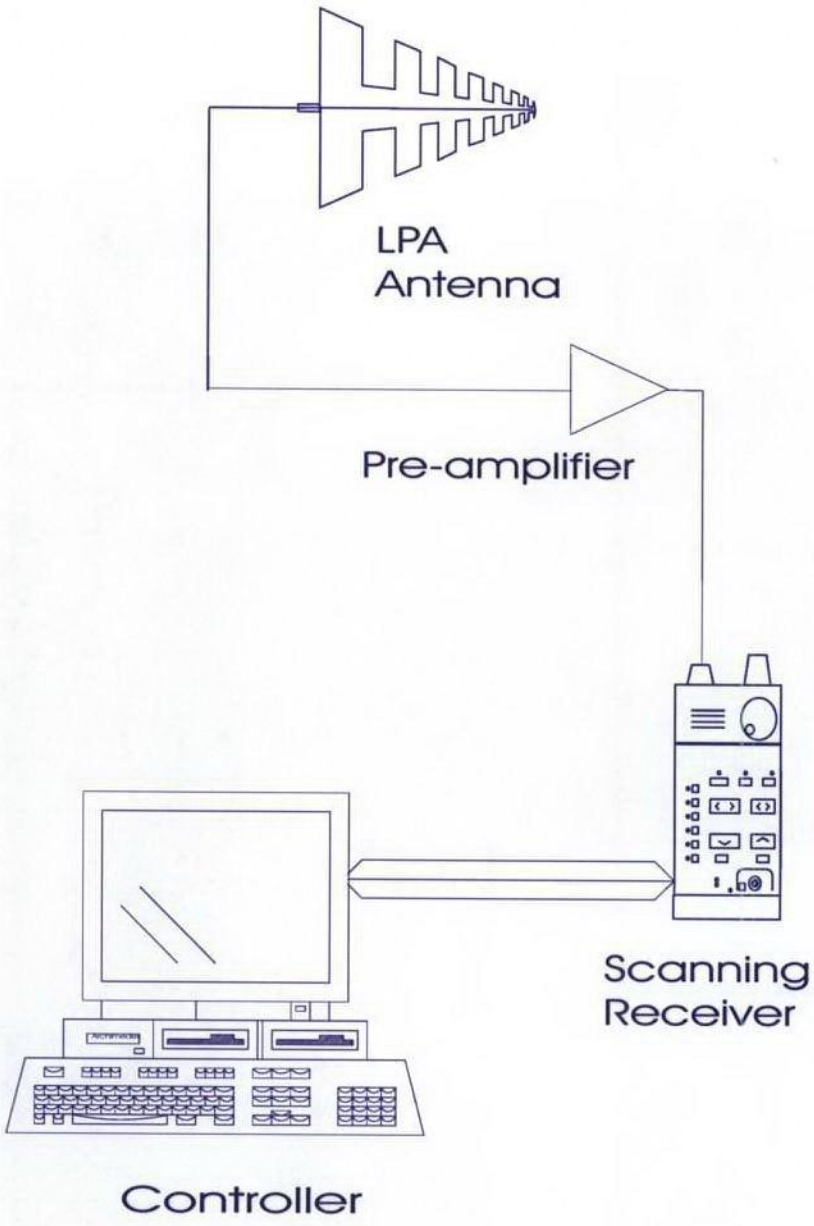


Fig.A.2 : Test Schematic - Signal Strength (450MHz - 650MHz)

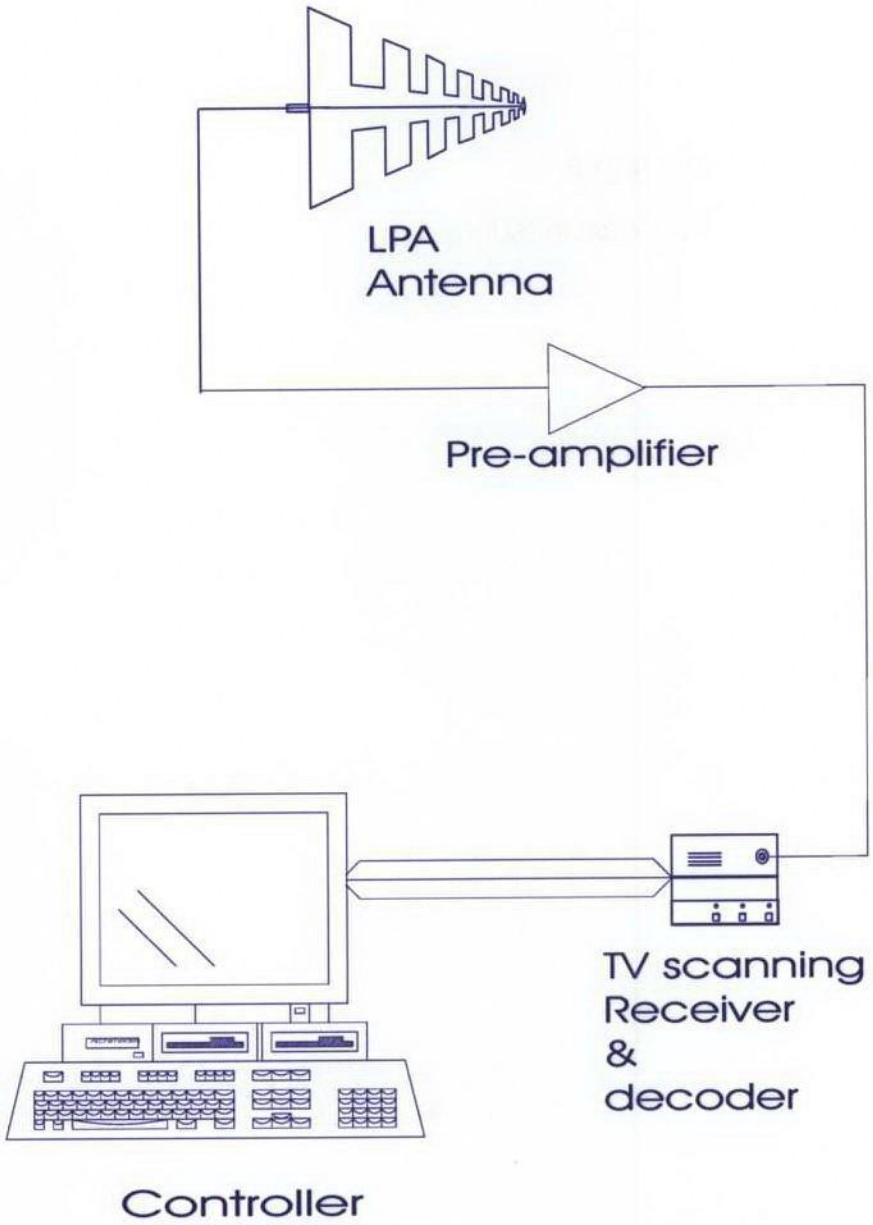
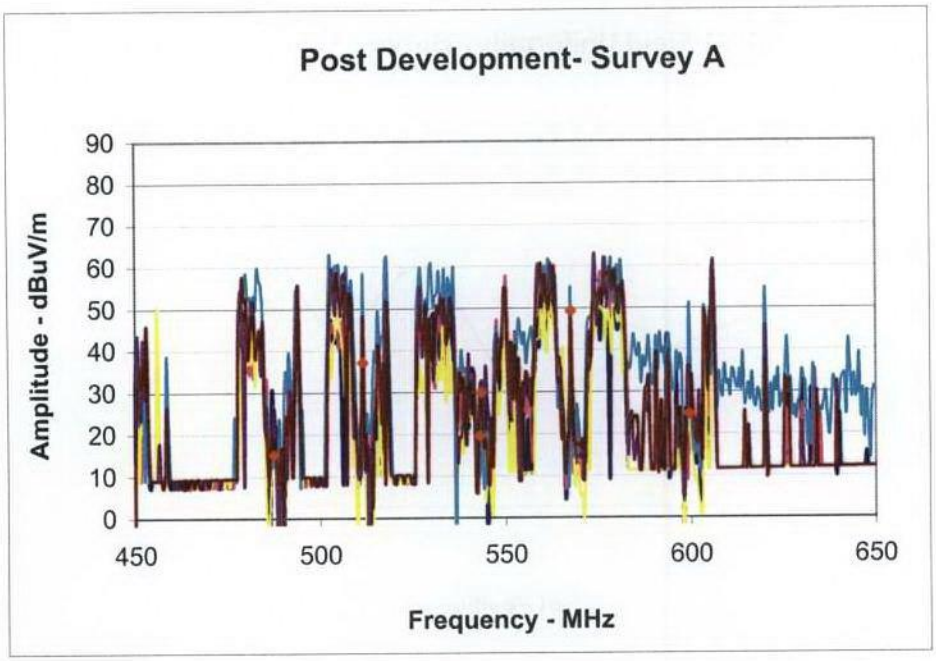
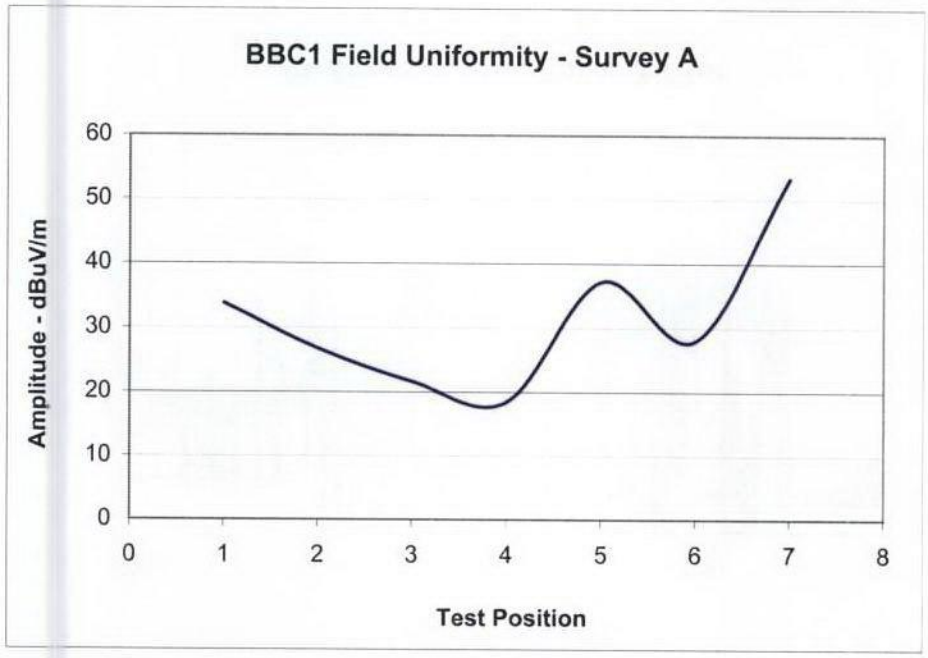


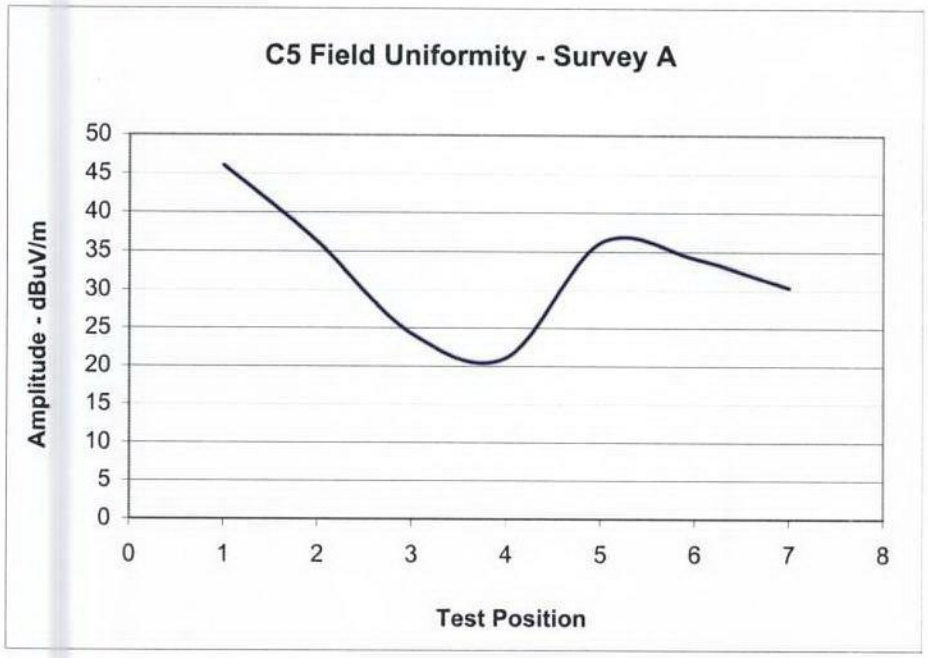
Fig.A.3 : Test Schematic - Reception Quality

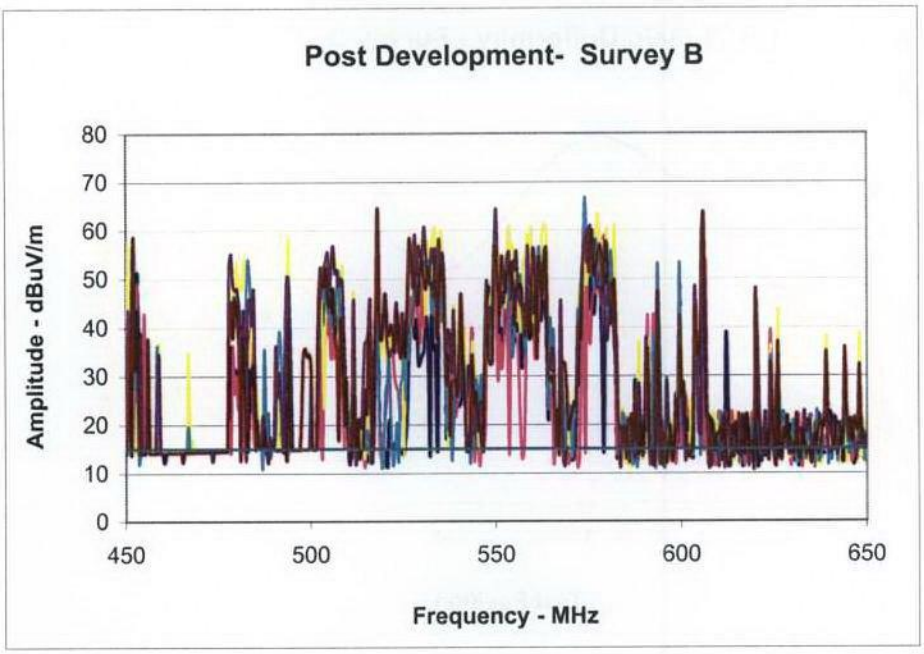
APPENDIX B

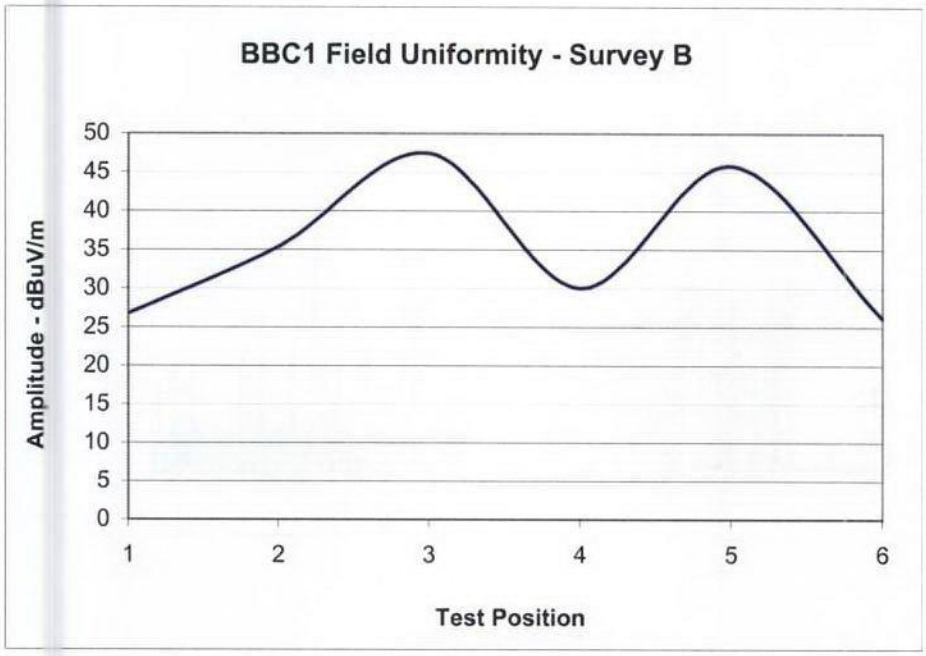
GRAPHICAL RESULTS

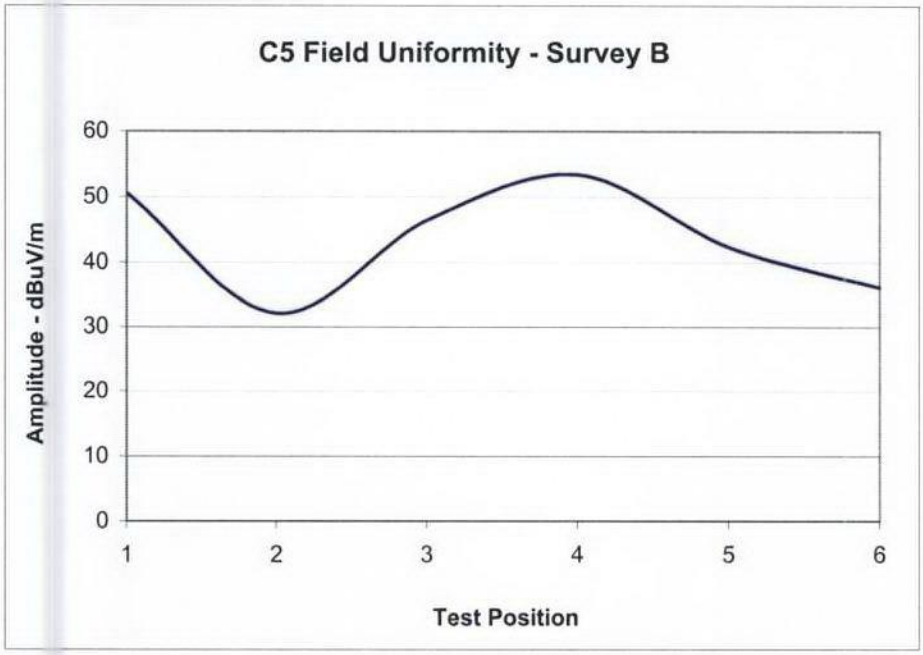

Post Development- Survey A
Amplitude - dBuV/m
90
80
70
60
50
40
30
20
10
0
450
500
550
600
650
Frequency - MHz

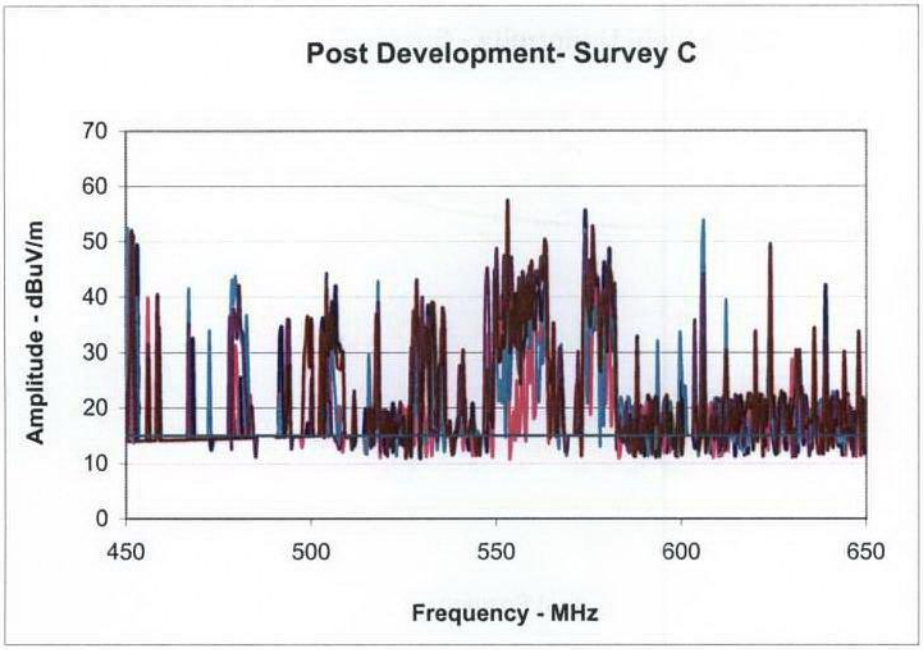

BBC1 Field Uniformity - Survey A
Amplitude - dBuV/m
60
50
40
30
20
10
0
0
1
2
3
4
5
6
7
8
Test Position

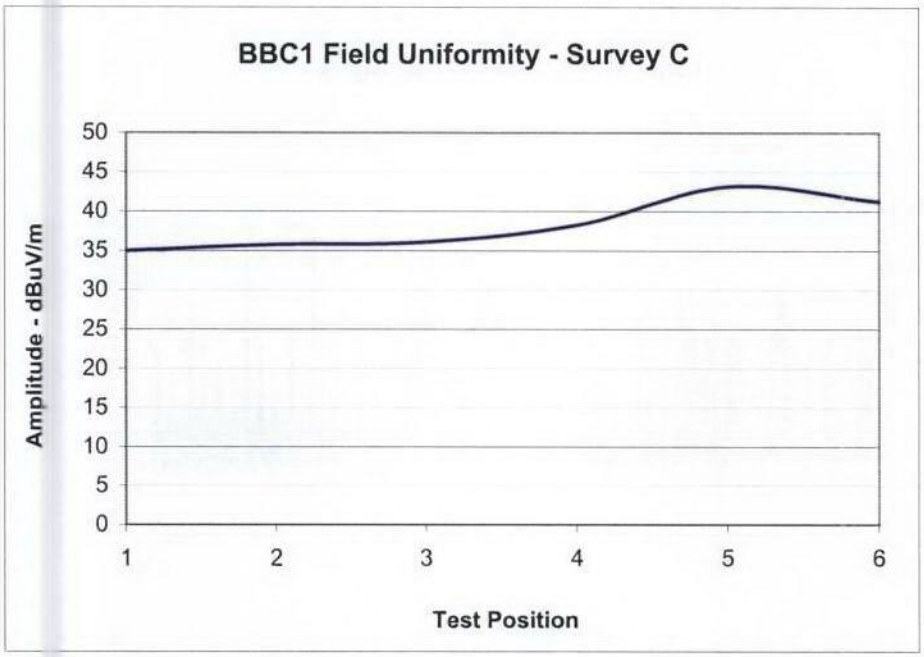

C5 Field Uniformity - Survey A
Amplitude - dBuV/m
50
45
40
35
30
25
20
15
10
5
0
0
1
2
3
4
5
6
7
8
Test Position

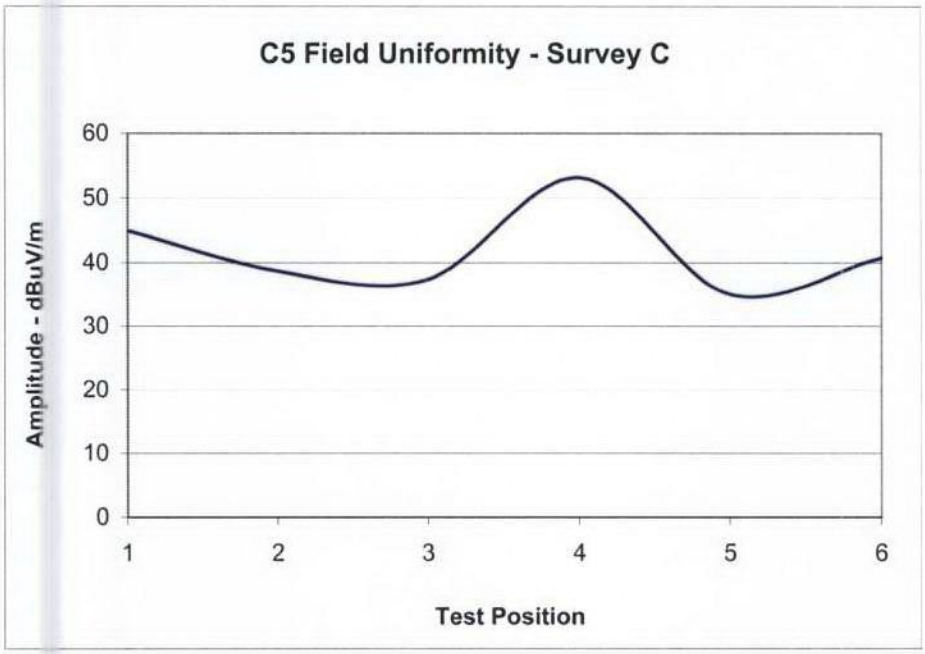

Post Development- Survey B
Amplitude - dBuV/m
80
70
60
50
40
30
20
10
0
450
500
550
600
650
Frequency - MHz

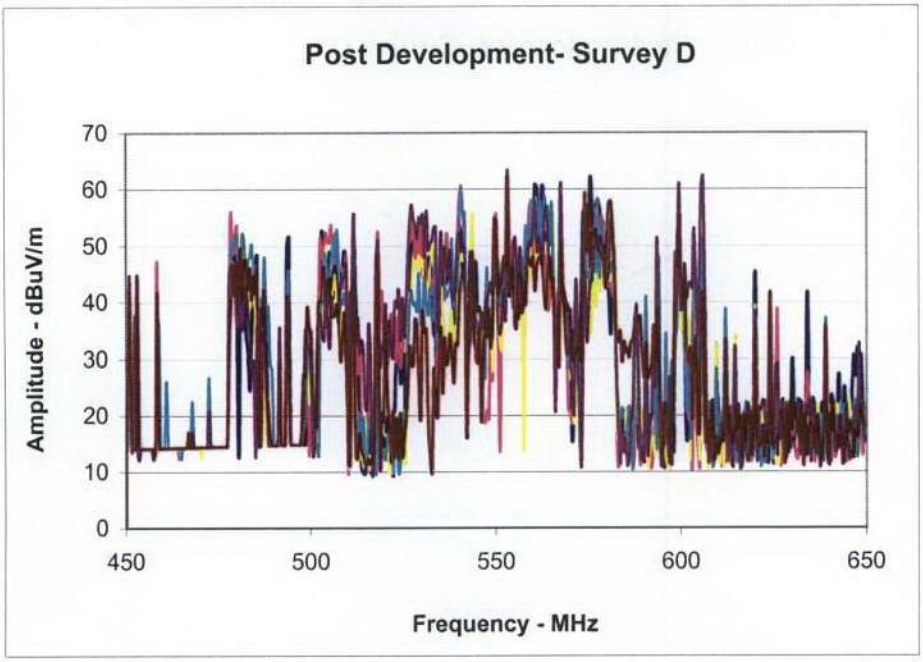

BBC1 Field Uniformity - Survey B
Amplitude - dBuV/m
50
45
40
35
30
25
20
15
10
5
0
1
2
3
4
5
6
Test Position

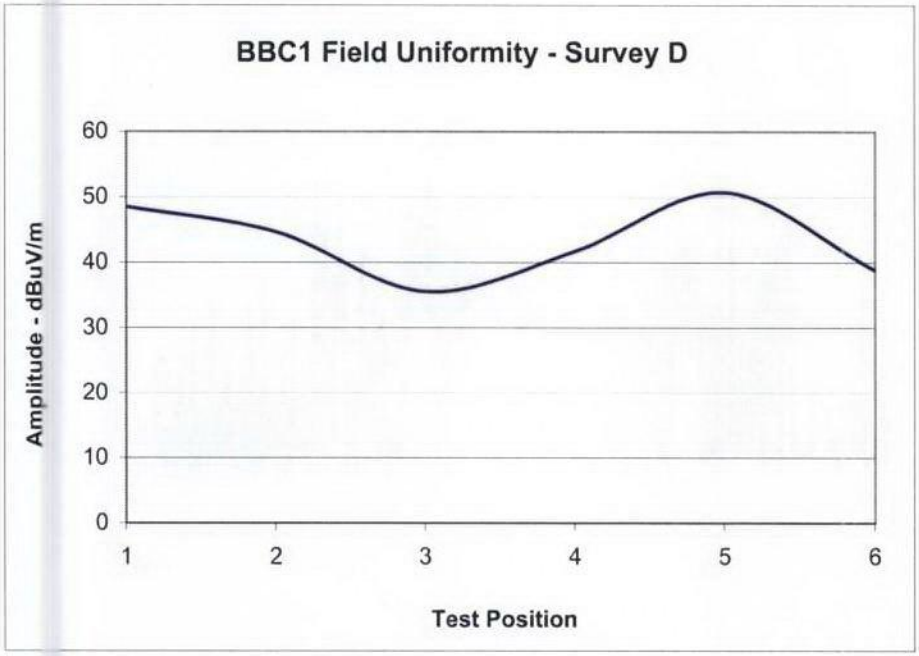

C5 Field Uniformity - Survey B
Amplitude - dBuV/m
60
50
40
30
20
10
0
1
2
3
4
5
6
Test Position

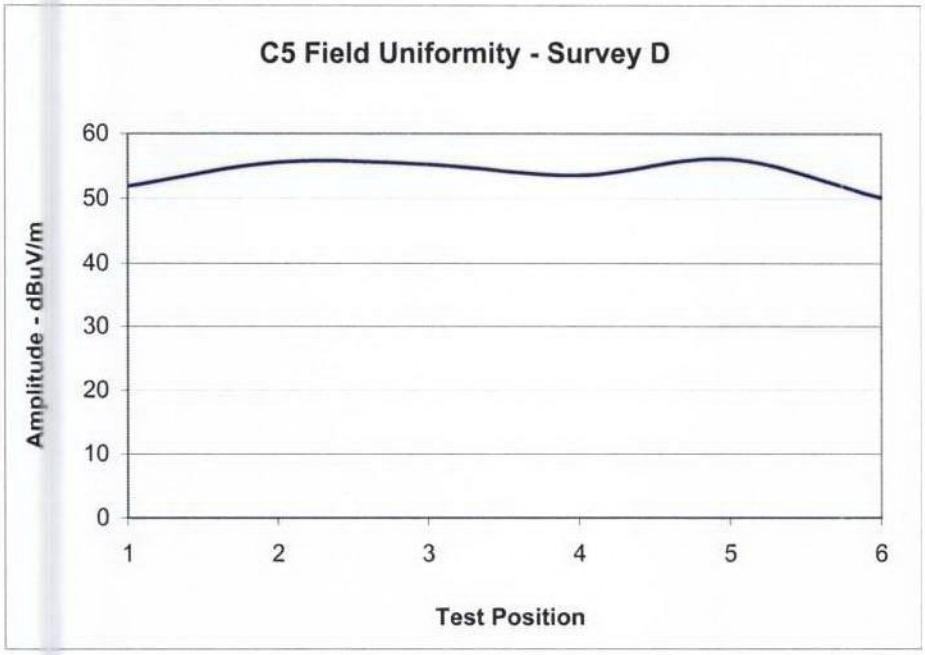

Post Development- Survey C
Amplitude - dBuV/m
70
60
50
40
30
20
10
0
450
500
550
600
650
Frequency - MHz

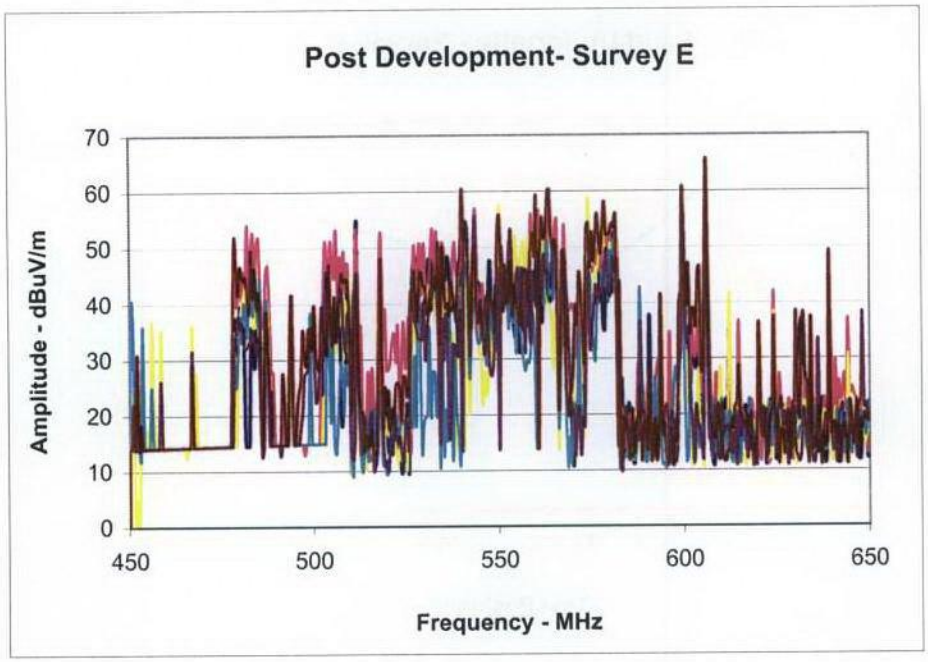

BBC1 Field Uniformity - Survey C
Amplitude - dBuV/m
50
45
40
35
30
25
20
15
10
5
0
1
2
3
4
5
6
Test Position

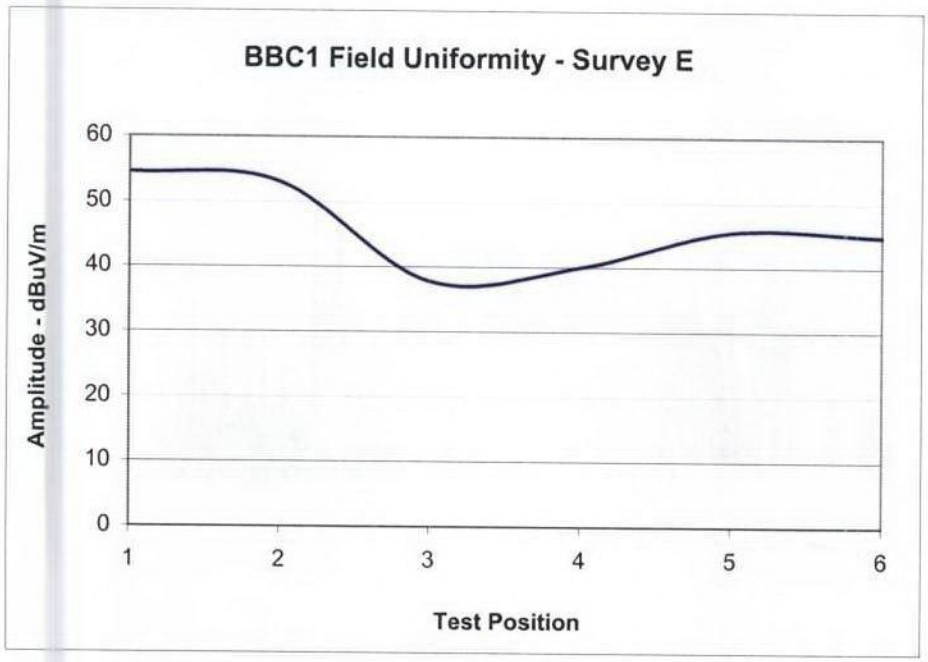

C5 Field Uniformity - Survey C
Amplitude - dBuV/m
60
50
40
30
20
10
0
1
2
3
4
5
6
Test Position

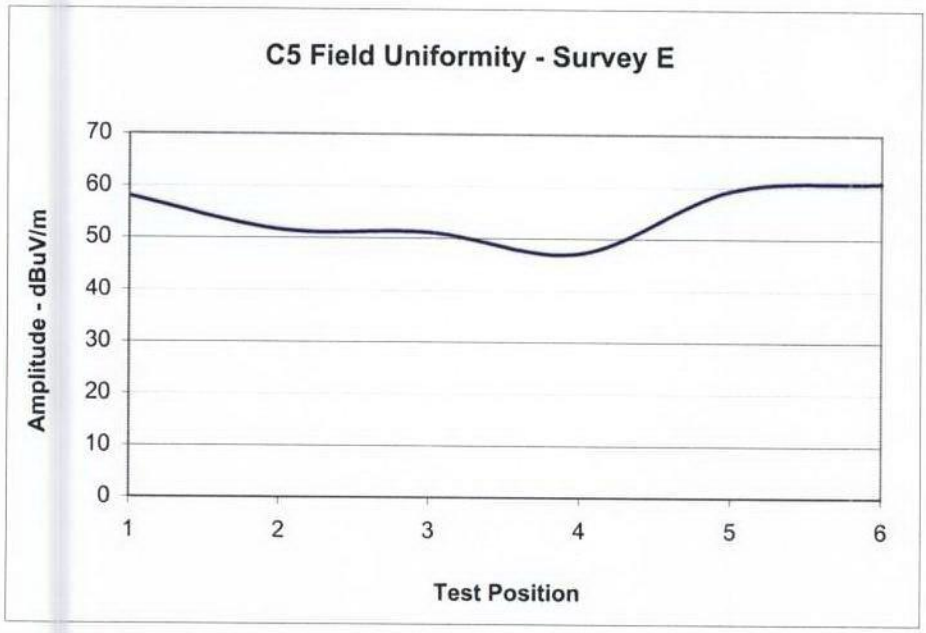

Post Development- Survey D
Amplitude - dBuV/m
70
60
50
40
30
20
10
0
450
500
550
600
650
Frequency - MHz

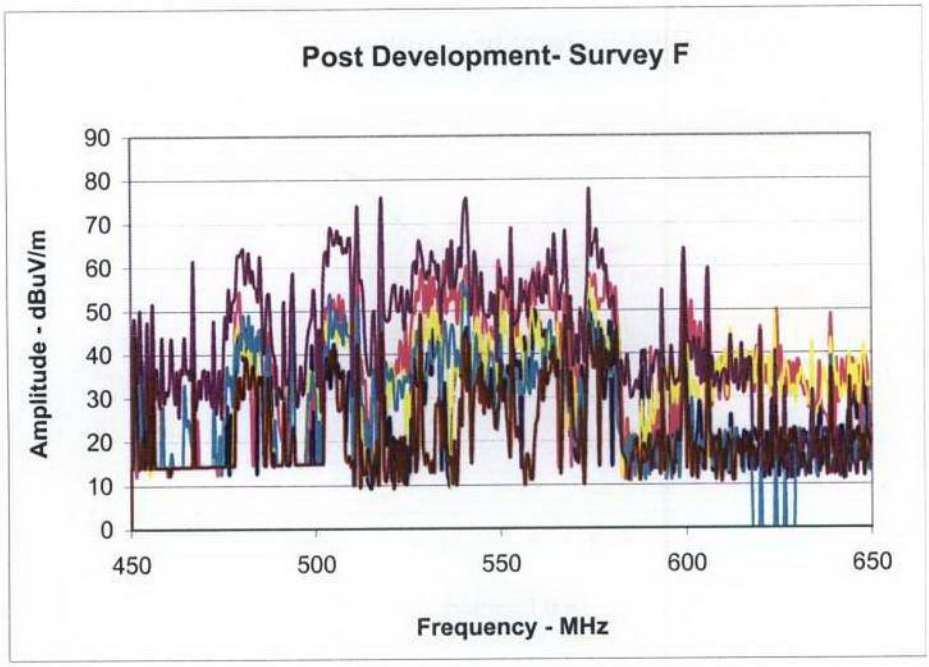

BBC1 Field Uniformity - Survey D
Amplitude - dBuV/m
60
50
40
30
20
10
0
1
2
3
4
5
6
Test Position

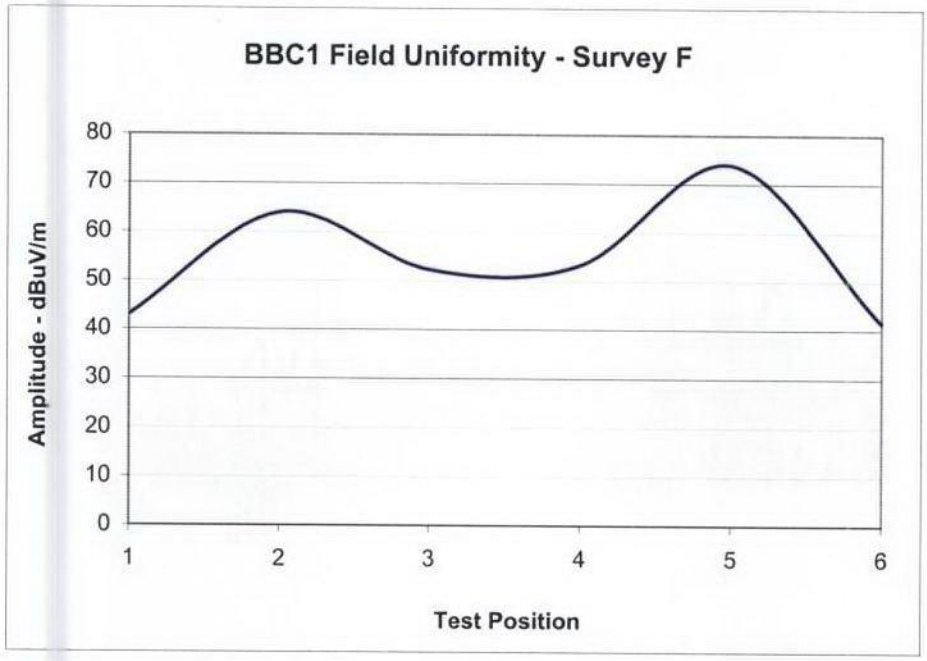

C5 Field Uniformity - Survey D
Amplitude - dBuV/m
60
50
40
30
20
10
0
1
2
3
4
5
6
Test Position

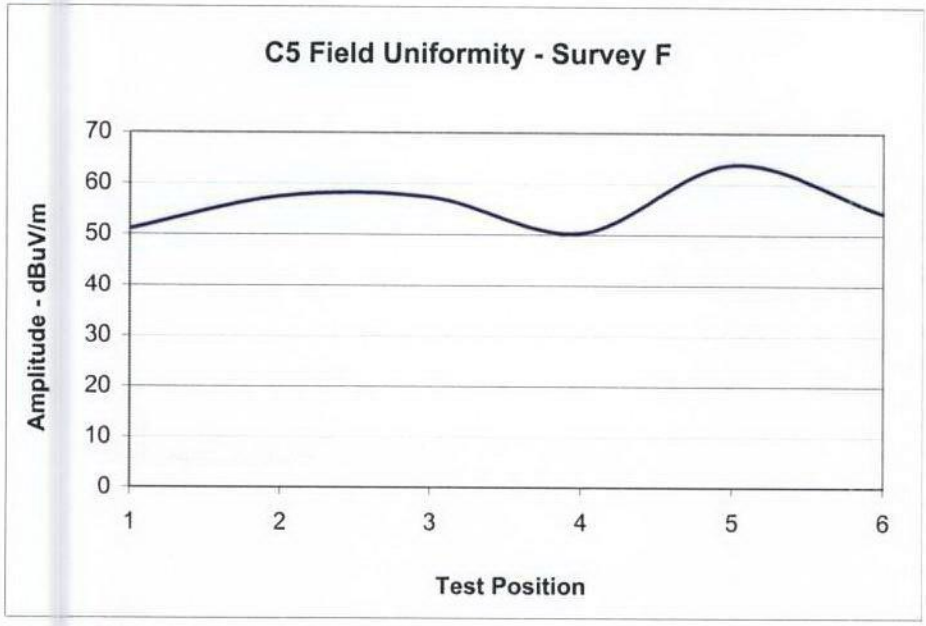

Post Development- Survey E
Amplitude - dBuV/m
70
60
50
40
30
20
10
0
450
500
550
600
650
Frequency - MHz

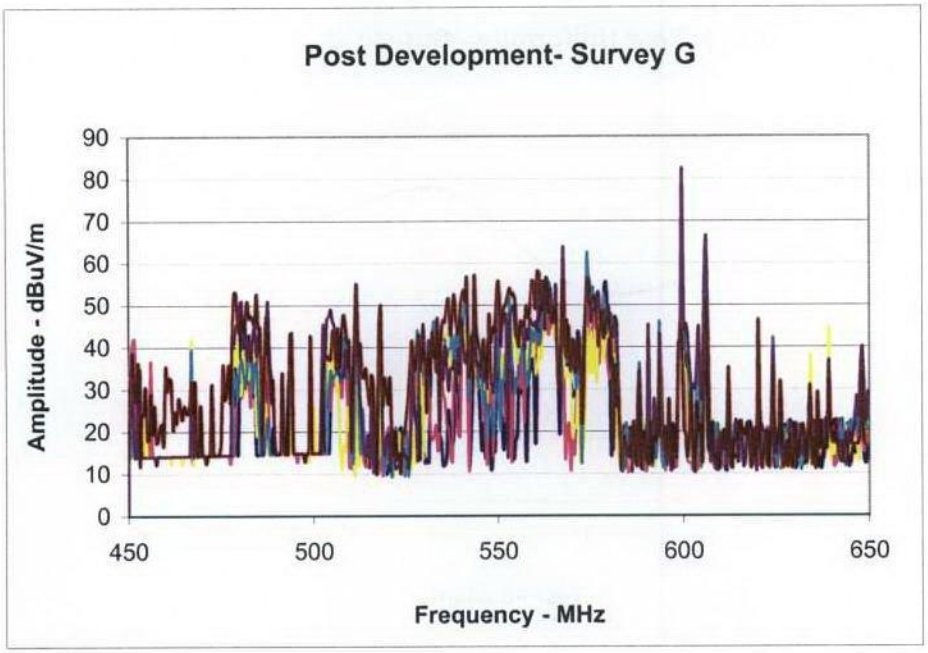

BBC1 Field Uniformity - Survey E
Amplitude - dBuV/m
60
50
40
30
20
10
0
1
2
3
4
5
6
Test Position

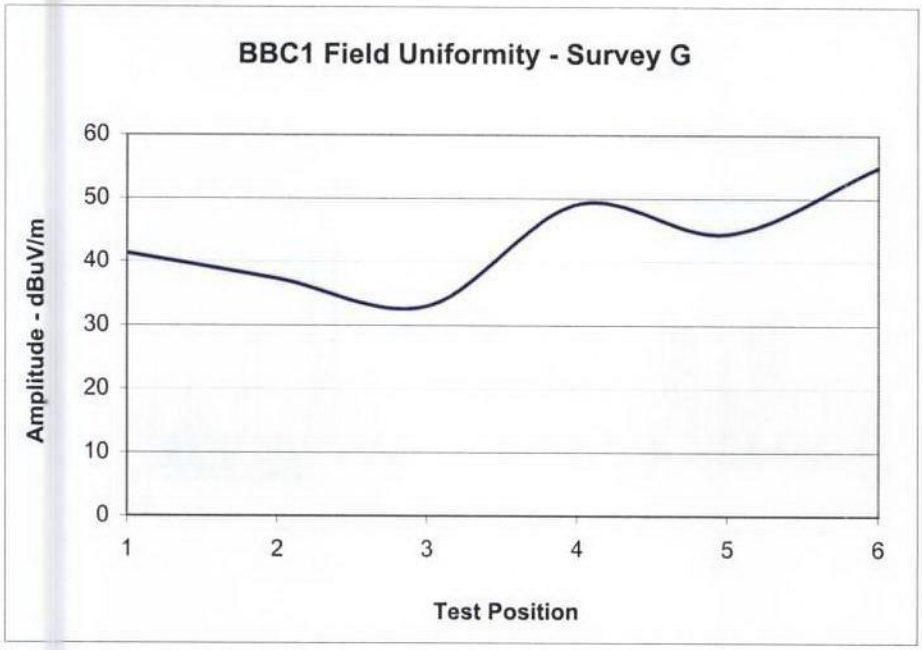

C5 Field Uniformity - Survey E
Amplitude - dBuV/m
70
60
50
40
30
20
10
0
1
2
3
4
5
6
Test Position

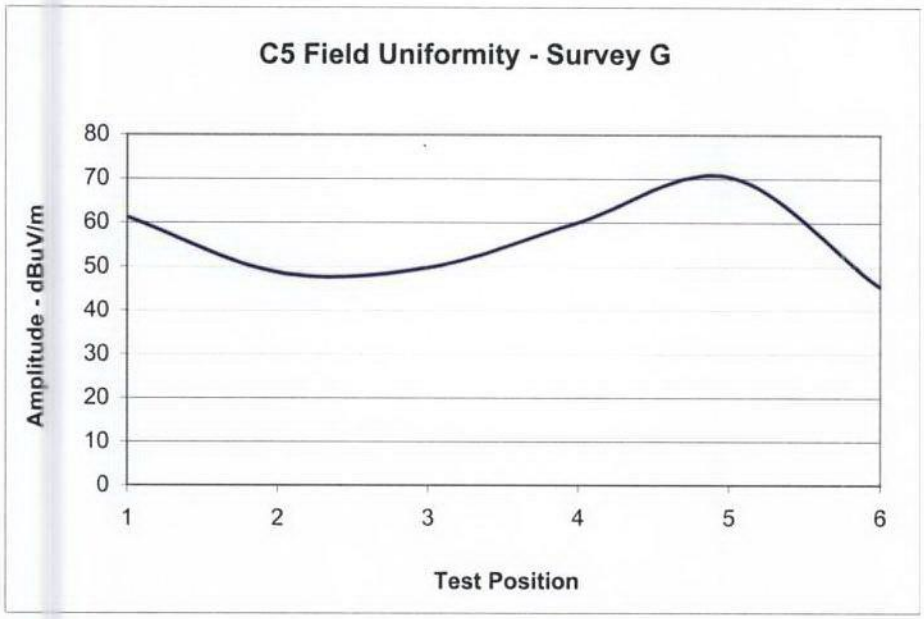

Post Development- Survey F
Amplitude - dBuV/m
90
80
70
60
50
40
30
20
10
0
450
500
550
600
650
Frequency - MHz

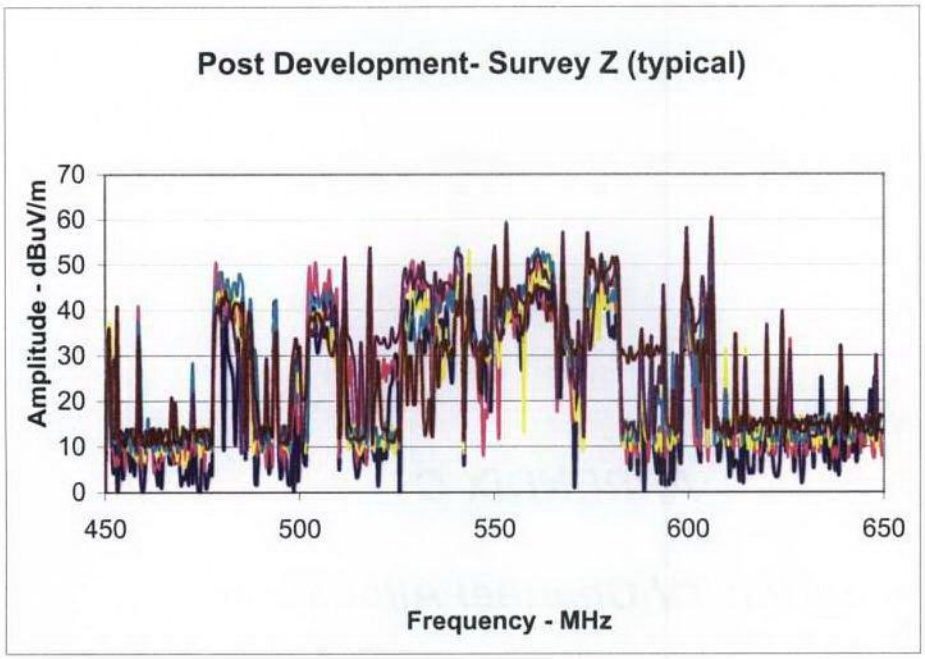

BBC1 Field Uniformity - Survey F
Amplitude - dBuV/m
80
70
60
50
40
30
20
10
0
1
2
3
4
5
6
Test Position


C5 Field Uniformity - Survey F
Amplitude - dBuV/m
70
60
50
40
30
20
10
0
1
2
3
4
5
6
Test Position


Post Development- Survey G
Amplitude - dBuV/m
90
80
70
60
50
40
30
20
10
0
450
500
550
600
650
Frequency - MHz


BBC1 Field Uniformity - Survey G
Amplitude - dBuV/m
60
50
40
30
20
10
0
1
2
3
4
5
6
Test Position


C5 Field Uniformity - Survey G
Amplitude - dBuV/m
80
70
60
50
40
30
20
10
0
1
2
3
4
5
6
Test Position


Post Development- Survey Z (typical)
Amplitude - dBuV/m
70
60
50
40
30
20
10
0
450
500
550
600
650
Frequency - MHz

APPENDIX C

London TV Channel Allocation

1.0 Introduction

1.1 London Area TV coverage

Due to the scattering of buildings etc in the London area coupled with the wide coverage area required there are a great number of TV transmitters and transponders in the Greater London area. With the general propagation properties at UHF it is quiet possible that the occupant of one house will obtain best reception from a particular transmitter in a particular direction whilst the best reception at an adjacent dwelling may be from a different transponder on a different channel and in a different direction.

2.0 Channel Allocation

Analogue Transmitter Information

Station Name	BBC1	BBC2	ITV	C4	ERP	Ae. Grp	Pol	Site No	Land-lord	NGR	Ae. Ht. AOD	BBC Region
Crystal Palace	26	33	23	30	1000kW	A	H	101.00	CCI	TQ339712	321	London
Alexandra Palace	58	64	61	54	65W	C/D	V	101.00	CCI	TQ296900	187	London
Assendon	55	68	58	65	8W	C/D	V	101.68	CCI	SU734856	123	London
Biggin Hill	45	52	49	67	8W	E	V	101.42	CCI	TQ411587	167	London
Bishops Stortford	55	62	59	49	29W	C/D	V	101.11	CCI	TL499214	105	London
Cane Hill	61	54	58	68	25W	C/D	V	101.31	CCI	TQ291588	169	London
Caterham	55	62	59	65	30W	C/D	V	101.40	CCI	TQ343557	213	London
Chepping Wycombe	51	44	41	47	20W	B	V	101.18	CCI	SU877911	192	London
Chesham	40	46	43	50	100W	B	V	101.12	CCI	SP956008	170	London
Chingford	56	50	52	48	7.5W	C/D	V	101.23	ntl	TQ380946	67	London
Croydon (Old Town)	49	56	52	67	33W	C/D	V	101.43	CCI	TQ319647	94	London
Dorking HP	51	44	41	47	45W	B	H	101.39	CCI	TQ169482	155	London
Dorking VP	51	44	41	47	22W	B	V	101.79	CCI	TQ169482	155	London
East Grinstead	40	56	46	59	117W	E	V	101.41	CCI	TQ386360	160	London
Edmonton	57	42	60	53	25W	E	H	101.55	CCI	TQ349934	92	London
Farningham	48	56	50	58	13W	C/D	V	101.80	CCI	TQ547660	82	London
Finchley	52	56	49	67	13W	C/D	V	101.58	CCI	TQ251908	114	London
Forest Row	48	54	62	66	120W	C/D	V	101.22	ntl	TQ438362	168	London
Gravesend	55	62	59	49	12W	C/D	V	101.49	ntl	TQ656715	81	London
Great Missenden	58	64	61	54	85W	C/D	V	101.14	CCI	SP905006	216	London
Greenwich	56	50	52	48	15W	C/D	V	101.74	CCI	TQ408781	45	London
Guildford	40	46	43	50	10kW	B	V	101.01	CCI	SU975486	187	London
Hammersmith	48	62	59	65	10W	C/D	V	101.64	CCI	TQ232786	61	London
Hampstead Heath	51	44	47	41	1.3W	B	H	101.66	CCI	TQ272854	115	London
Hemel Hempstead Town	58	64	61	54	20W	C/D	V	101.24	CCI	TL054065	152	London

Hemel Hempsted	51	44	41	47	10kW	B	V	101.05	CCI	TL088045	225	London
Henley-on-Thames	48	64	67	54	100W	C/D	V	101.10	CCI	SU780822	157	London
Hertford	58	64	61	54	2W	C/D	V	101.02	CCI	TL320137	97	London
High Wycombe	55	62	59	65	500W	C/D	V	101.07	CCI	SU856942	211	London
Hughenden	40	46	43	50	60W	B	V	101.21	CCI	SU856974	186	London
Kenley	40	46	43	50	140W	B	V	101.17	CCI	TQ329592	174	London
Kensal Town	56	49	52	67	25W	C/D	H	101.62	CCI	TQ245820	133	London
Lea Bridge	55	62	39	59	8W	E	V	101.36	ntl	TQ374878	59	London
Marlow Bottom	58	64	61	54	13W	C/D	V	101.3	CCI	SU841885	123	London
Micklefield	54	64	57	67	6W	C/D	V	101.37	CCI	SU897933	166	London
Mickleham	61	55	58	68	90W	C/D	V	101.15	CCI	TQ160538	131	London
New Addington	64	48	54	68	17W	C/D	V	101.33	CCI	TQ378628	169	London
New Barnet	55	62	59	48	5W	C/D	V	101.54	CCI	TQ265965	107	London
Old Coulsdon	48	64	45	66	6W	E	H	101.59	CCI	TQ314587	177	London
Orpington	55	62	59	66	20W	C/D	V	101.73	CCI	TQ458652	113	London
Otford	57	63	60	53	31W	C/D	V	101.35	CCI	TQ533603	212	London
Poplar	45	66	49	68	20W	E	V	101.77	CCI	TQ382812	89	London
Reigate	57	63	60	53	10W	C/D	V	101.03	CCI	TQ256521	293	London
Skirmett	51	44	41	47	126W	B	V	101.47	CCI	SU777902	90	London
St Albans	49	63	57	67	22W	C/D	V	101.48	CCI	TL132069	126	London
Sutton HP	55	62	59	65	9W	C/D	H	101.84	CCI	TQ254647	83	London
Sutton VP	55	62	59	65	9W	C/D	V	101.85	CCI	TQ254647	83	London
Walthamstow North	45	66	49	68	1.7W	E	V	101.25	ntl	TQ378897	61	London
Welwyn	40	46	43	50	150W	B	V	101.13	CCI	TL223161	124	London
West Wycombe	40	46	43	67	28W	E	V	101.34	CCI	SU839936	155	London
Wonersh	48	65	52	67	21W	C/D	V	101.50	CCI	TQ024454	128	London
Wooburn	49	52	56	68	100W	C/D	V	101.09	CCI	SU916873	146	London
Woolwich	57	63	60	67	630W	C/D	V	101.06	CCI	TQ460794	53	London
World"s End	43	50	46	68	25W	E	V	101.70	CCI	TQ264773	66	London

Station Name	Ch 5	ERP	Ae. Grp	Pol	Site No	Land-lord	NGR	Ae. Ht. AOD
Croydon (Old Town) C5	59	330W	A	H	180.11	CCI	TQ319647	94
Croydon C5	37	1000kW	C/D	H	180.10	ntl	TQ332696	289