



REPUBLIC OF CROATIA
CROATIAN POST AND ELECTRONIC COMMUNICATIONS AGENCY
H A K O M

Analogue to digital TV transition in Croatia (HRV)

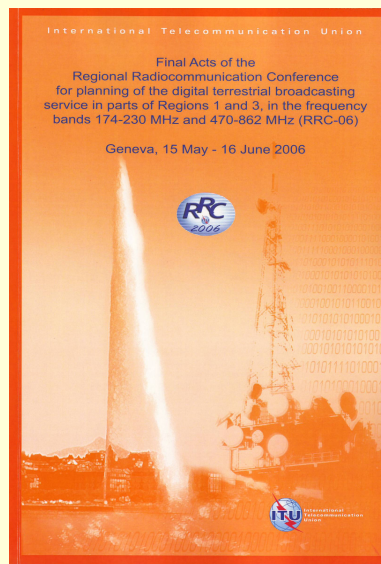
Zagreb, 31 March 2009

1

GE'06 digital plan

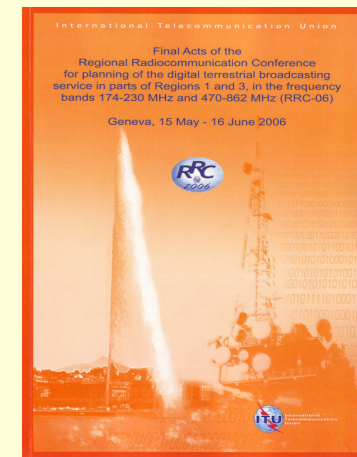
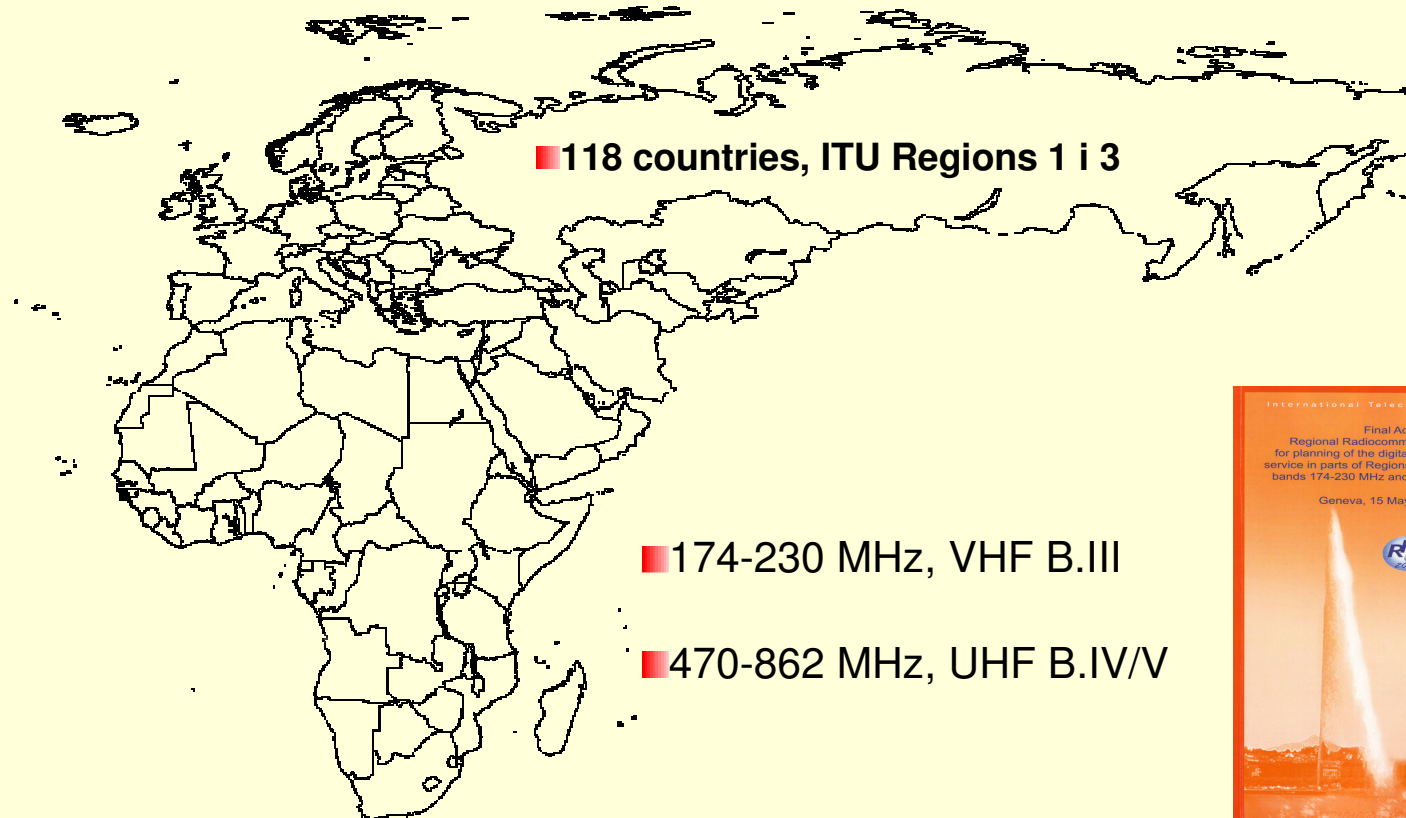
- “Stockholm 1961”, Agreement containing frequency Plan and regulatory – technical framework for analogue broadcasting stations
- “Geneva 2006”, Agreement containing frequency Plan and regulatory – technical framework for digital broadcasting stations.

“Stockholm 1961”



“Geneva 2006”

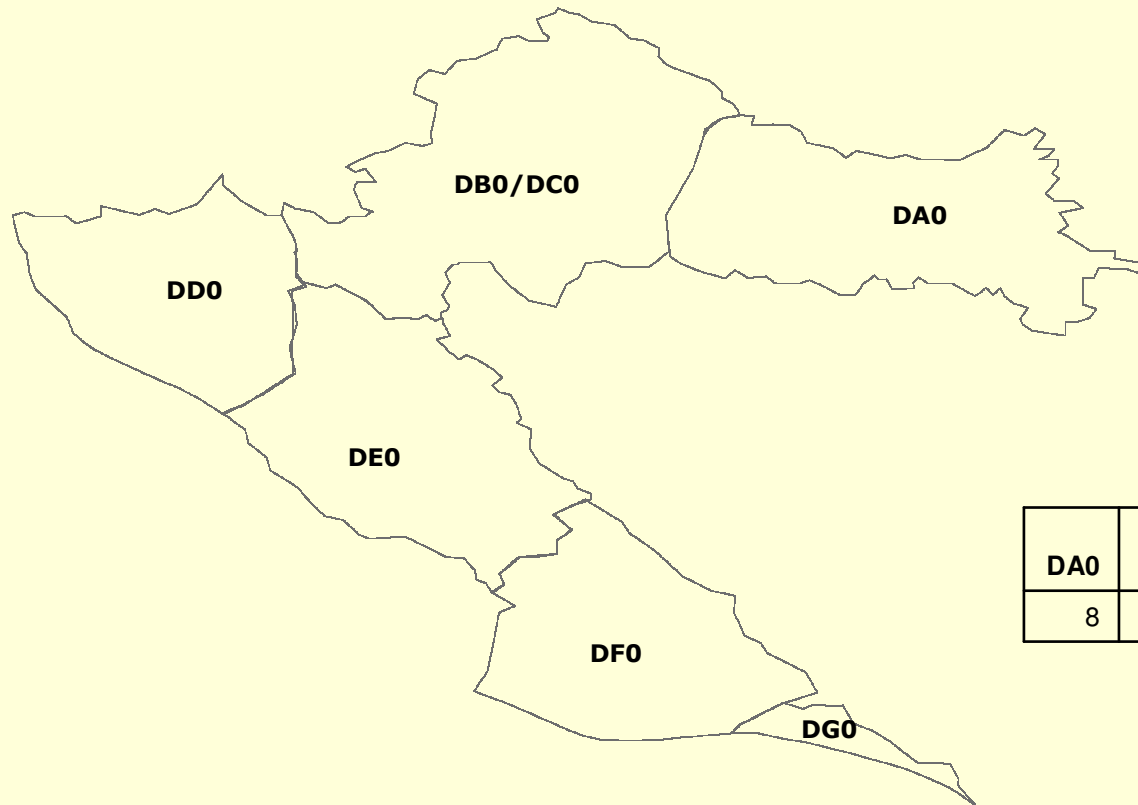
GE'06 digital plan



- Based on allotment / assignment plan entries
- Equitable access to the radio spectrum between neighbouring countries



HRV GE'06 VHF digital plan

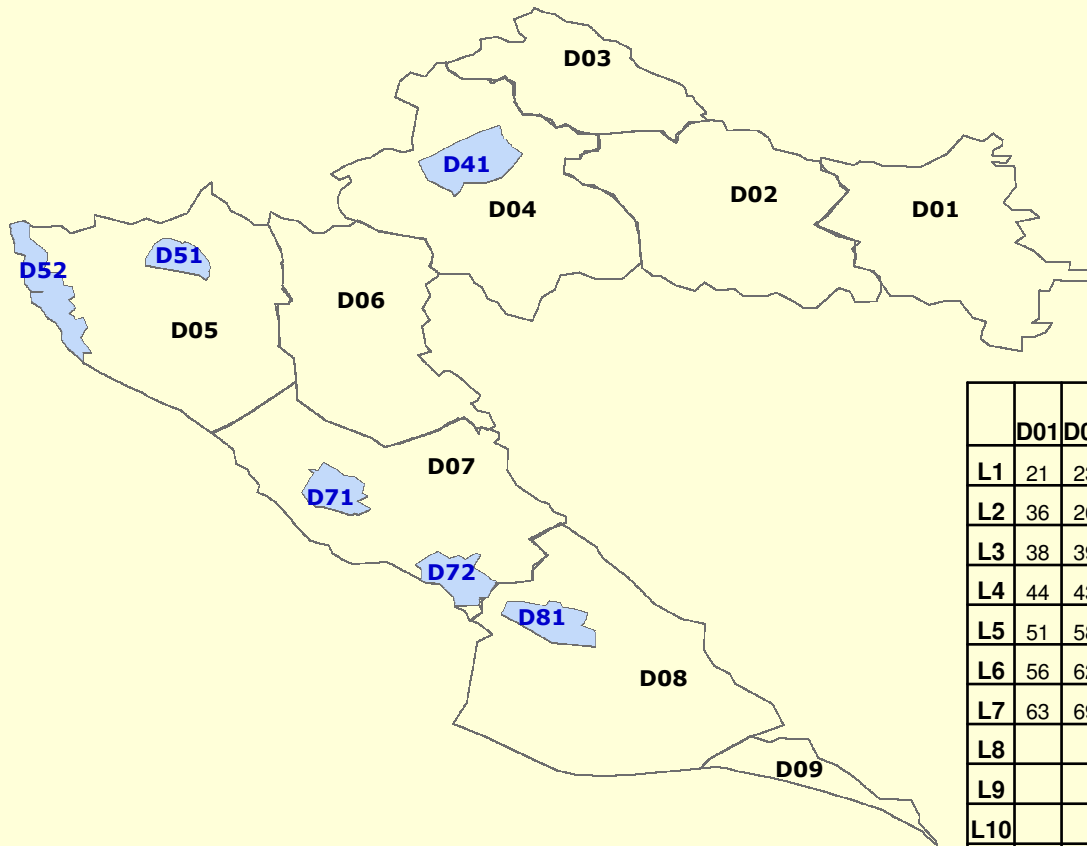


■ 174-230 MHz, VHF B.III

DA0	DB0	DC0	DD0	DE0	DF0	DG0
8	9	9	11	8	9	6



HRV GE'06 UHF digital plan



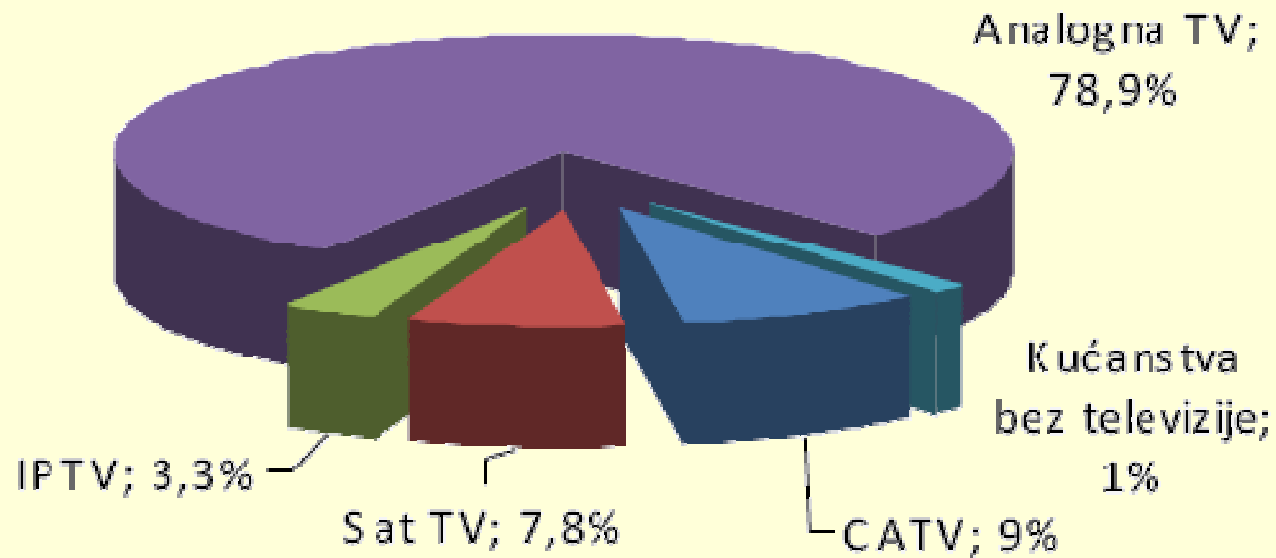
■ 470-862 MHz, UHF B.IV/V

	D01	D02	D03	D04	D41	D05	D51	D52	D06	D07	D71	D72	D08	D81	D09
L1	21	23	21	25	22	29	21	34	30	21	33	28	23	22	22
L2	36	26	34	28	31	39	27	45	34	27	34	29	33	28	28
L3	38	39	36	40	46	43	31	61	36	45	35	35	34	29	29
L4	44	43	44	42	51	46	33		44	51	41	46	41	35	45
L5	51	58	56	48	57	53	34		54	59	67	57	43	46	51
L6	56	62	63	53	60	57	35		56	61		67	53	57	59
L7	63	69		68	29	68	41		63	64			68	67	66
L8						23	45			22					21
L9						28	51			31					
L10							59			66					
L11							61								
L12							64								
L13							66								
L14							67								

Relevant legislation

- Law on electronic communications (OG 73/08, 26/06/08)
- Analogue to Digital Television Broadcasting Switchover Strategy for the Republic of Croatia (31/07/08)
- Ordinance on radiofrequency spectrum allocation (OG 136/08, 24/11/08)
- Ordinance on radiofrequency spectrum assignment and usage (OG 136/08, 24/11/08)
- **Ordinance on Analogue to Digital Radio and Television Broadcasting Switchover and Access to Multiplex Positions in Terrestrial Digital Broadcasting (OG 148/08, 19/12/08)**

TV platform shares in Croatia



Switchover strategy

HRV Government adopted ATV →DTV strategy in July '08

Basic guidelines of strategy:

transition starts on Jan 1st 2009;

- full digital TV in 2011;
- encoding: SDTV – MPEG-2, HDTV – MPEG-4 Part 10 (H.264/AVC);
- conditions for preserving free universal service of public BCTV, services of other BCTV on all levels of coverage;
- ensure technical – technological preconditions by optimal use of transmission capabilities to meet public interests;
- access conditions for independent content providers;
- development of content pluralism, open services market;

DTV license invitation

HAKOM published invitation for :

- 2 DTV MUX for national coverage
- spectrum licence duration 10 years
- required network coverage of 95 % population
- MPEG-2, SDTV
- has to ensure multiplexing service
- must carry obligation for existing analogue programs
- deadline for applications - 30 March 2009
 - two applications received
- decision date by the end of April 2009

HRV transition process

First phase

- starts with operation of two national MUX
- MUX - 5 TV programs in each MUX
- content - national public free to air content
- transition on region by region basis (9 regions)
- each region 6 – 11 months simulcast

Second Phase – commercial content

- commercial operation of regional MUX (regional content)
- operation of additional national MUX (HDTV)
- commercial operation of mobile TV MUX (DVB-H)
- operation of additional regional/national MUX

HRV transition process

First phase activities for each region

- ensuring frequencies in transition period
- distribution of subsidy vouchers
- promoting campaign and informing the public
- commencement of digital broadcasting A & B MUX
- ensuring 95% of households coverage
- ensuring households digital receiver penetration
- ensuring frequencies for phase 2
- switching-off analogue transmitters to ensure frequencies for phase 2

HRV transition process

First phase - difficulties

- demanding geography for coverage
- different transition timeframes
- interference from un-coordinated stations on channels for 1'st and 2'nd phase
- intellectual & content rights
- households digital receiver penetration

DTV transmissions in operation

First phase transition transmissions:

- transmission of MUX A & B– national public and commercial content - FTA

Test transmissions current in operation:

- HDTV – promo content
- DVB-H– mobile operator
- T-DAB (VHF)– national public radio content

DTV transmissions in operation



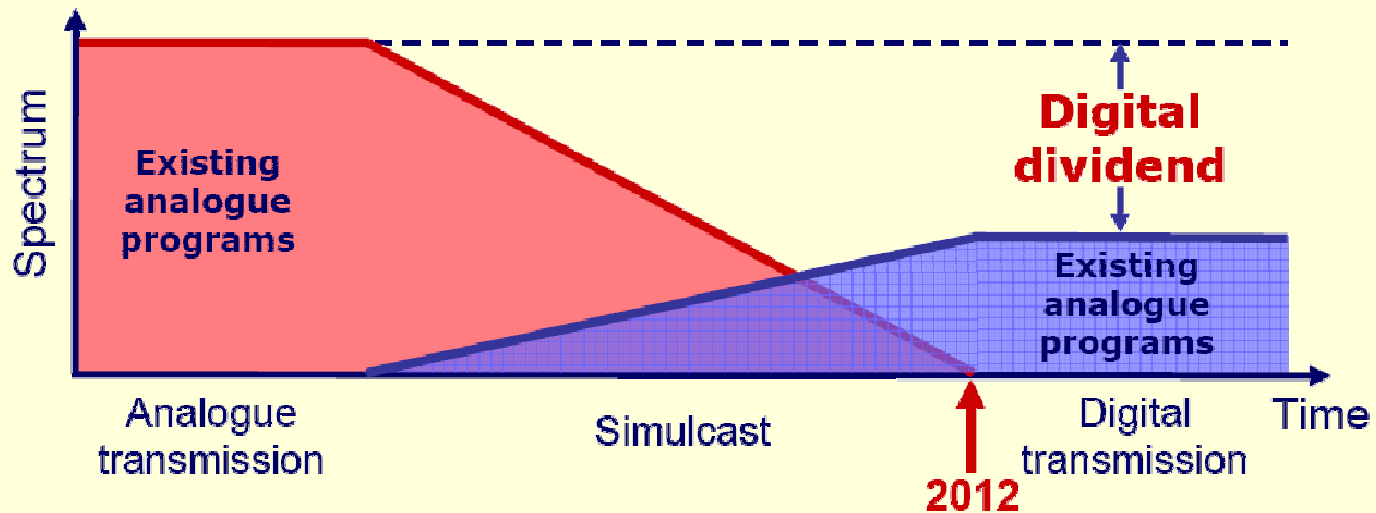
MUX A & B
coverage

Zagreb, 31 March 2009

Digital dividend



Digital dividend is the spectrum made available over and above the required spectrum to accomodate the existing analogue television services in a digital form in VHF and UHF





Digital dividend

Digital dividend
 available AFTER:
 ATV → DTV transition
 DTV full operation
 Analogue switch-off

channel	21	55	56	60	61	69	70
frequency	470MHz		750MHz		790MHz		860MHz
service	DVB-T/-H		DVB-T		IMT / DVB-T		
MUX A - national			5 SDTV programs				
MUX B - national			5 SDTV programs				
MUX C - national			2-3 HDTV programs				
MUX D - regional /national			5 SDTV programs				
MUX E - national	DVB-H: additionally available ~30 TV programs or ~ 60 radio programs						
MUX F - national /regional			additionally available: DVB-T ili DVB-H				
MUX G - regional /national			additionally available: DVB-T ili DVB-H				
MUX H - regional			additionally available: DVB-T ili DVB-H				



Thank you for your
patience ...