THE FUTURE OF TERRESTRIAL BROADCASTING IN TURKEY

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THE FUTURE OF TERRESTRIAL BROADCASTING IN TURKEY

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In 1994, RTUK- Radio and Television Supreme Council- was set-up as an independent authority,
9 members were elected by the Turkish Parliament,
Supreme Council is responsible for the regulation and inspection of all radio and television broadcasters all across Turkey in both technical and content aspects, including
  - Frequency allocations to broadcasters
  - Licencing
  - Content monitoring and
  - Inspection
The new law 6112, has been adopted in March 2011

- the termination of the terrestrial unlicensed period that continued since 1994,
- providing digital broadcast transition,
- open the way for the new broadcasting technologies,
- ensuring compliance with EU legislation,
- supplying of pluralism in the broadcasting industry,
- controlling public broadcaster,
- launching a new era in the audiovisual media sector.
Terrestrial Licences

- According to the provisional clause of new law, terrestrial broadcasters, have to pay frequency usage prices until terrestrial frequency auction
- Number of broadcasters in the terrestrial medium;

<table>
<thead>
<tr>
<th>Terrestrial TV</th>
<th>Broadcaster Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>National TV</td>
<td>24</td>
</tr>
<tr>
<td>Regional TV</td>
<td>17</td>
</tr>
<tr>
<td>Local TV</td>
<td>204</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>245</strong></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Terrestrial RD</th>
<th>Broadcaster Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>National RD</td>
<td>39</td>
</tr>
<tr>
<td>Regional RD</td>
<td>100</td>
</tr>
<tr>
<td>Local RD</td>
<td>910</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>1049</strong></td>
</tr>
</tbody>
</table>
Satellite and Cable-TV Licences

2014
Television: 315
Radio: 97

2014
Television: 142
Radio: 4
Broadcasting Sector in Turkey

**TV Households**
18 million

**Broadcasting Companies Registered to RTUK**
Satellite, Cable, Terrestrial totally: almost 1600

**Cable Platforms including IPTV (31.12.2013)**
2 platforms (Türksat & TTNET) with total 1,450,000 subscribers

**Satellite Platforms (31.12.2011)**
2 platforms (Digitürk & D-Smart) with total 5,165,000 subscribers

Source: RTÜK
Total Ad Revenue of Turkish Broadcasting Sector, 2000-2013 (12/31/2013) (million TL)

Source: RTÜK
Technology and ASO

- In Turkey, DVB-T2, MPEG-4 adopted as standard broadcasting technology.
- TV frequency planning and allocations has been done in last two years.
- DVB-T2 trial has been conducted in Ankara with 3 Tx as SFN since the beginning of 2013
- Simulcast period with analog and digital TV.
- Analog Switch-Off will be conducted region by region.
The New Media Law – Technological Aspect

- Terrestrial transmitter facilities will be installed and operated by a single company named as Transmitter Building and Operating Company (Anten A.Ş.).
- Multiplex, platform, cable and satellite broadcast operators were defined and regulated.
- For terrestrial broadcasting, set-top-box and integrated receiver standardization were completed by TSE (Turkish Standards Institution) as DVB-T2.
- For the receivers test and approval, RTUK aim is to set up a Test and Approval Center.
Frequency Spectrum

• In Turkey, frequency spectrum usage of the radio & TV services is being regulated by RTUK.
• Frequency planning consist of:
  ▫ Field measurements,
  ▫ Determination of emission points
  ▫ Coverage and interference analysis
  ▫ Allocation of the frequencies to emission points
  ▫ International coordination accounts
• 96 allotment areas have been defined in DVB-T2 frequency plan.
• To this areas, total 827 frequency channels have been allocated.
In Planning;
VHF Band, channels 5-10,
UHF Band, channels 21-60 have been used,
16 metropol city is planned as portable indoors,
Others is planned as portable outdoors,

<table>
<thead>
<tr>
<th>Broadcasting Standard</th>
<th>DVB-T2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Compression technique</td>
<td>MPEG-4</td>
</tr>
<tr>
<td>Guard interval</td>
<td>19/256</td>
</tr>
<tr>
<td>Modulation type</td>
<td>64-QAM</td>
</tr>
<tr>
<td>Carriers Mod</td>
<td>32k</td>
</tr>
<tr>
<td>Coding ratio</td>
<td>2/3</td>
</tr>
<tr>
<td>Capacity</td>
<td>27 Mbit/s</td>
</tr>
</tbody>
</table>
Frequency Plans

• Digital Terrestrial Television Frequency Plans
  – It consists of 9 MUX all over the Turkey.
  – UHF Band Ch. 61-69 is not included
  – 1 MUX in VHF and 8 MUX in UHF bands
  – **Allotment allocation**: Total 779 frequencies were allocated to 96 allotment areas.
  – **Assignments**: Total 11268 frequencies were assigned to 1399 emission points (including gap filler points).

• Terrestrial FM Radio National Frequency Plan
  – Total 25899 frequencies were assigned to 1059 emission points (including gap filler points).
## MULTIPLEX

<table>
<thead>
<tr>
<th>Mux No</th>
<th>Band</th>
<th>Number of RRC-06 Region</th>
<th>Allocated broadcast type</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>VHF</td>
<td>95</td>
<td>Reserved</td>
</tr>
<tr>
<td>2</td>
<td>UHF</td>
<td>96</td>
<td>TRT</td>
</tr>
<tr>
<td>3</td>
<td>UHF</td>
<td>96</td>
<td>National TV</td>
</tr>
<tr>
<td>4</td>
<td>UHF</td>
<td>96</td>
<td>National TV</td>
</tr>
<tr>
<td>5</td>
<td>UHF</td>
<td>96</td>
<td>National TV</td>
</tr>
<tr>
<td>6</td>
<td>UHF</td>
<td>105</td>
<td>Regional &amp; Local TV</td>
</tr>
<tr>
<td>7</td>
<td>UHF</td>
<td>95</td>
<td>National TV</td>
</tr>
<tr>
<td>8</td>
<td>UHF</td>
<td>84</td>
<td>National TV</td>
</tr>
<tr>
<td>9</td>
<td>UHF</td>
<td>17</td>
<td>Not yet, may be mobile</td>
</tr>
</tbody>
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### National Broadcasters

<table>
<thead>
<tr>
<th>Licence type</th>
<th>Technique</th>
<th>Type of broadcast</th>
<th>#</th>
</tr>
</thead>
<tbody>
<tr>
<td>National TV (T1)</td>
<td>HD</td>
<td>General</td>
<td>8</td>
</tr>
<tr>
<td>National TV (T1)</td>
<td>HD</td>
<td>Thematic</td>
<td>3</td>
</tr>
<tr>
<td>National TV (T1)</td>
<td>SD</td>
<td>General</td>
<td>11</td>
</tr>
<tr>
<td>National TV (T1)</td>
<td>SD</td>
<td>Thematic</td>
<td>11</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Toplam</td>
<td>33</td>
</tr>
</tbody>
</table>

### Regional & Local Broadcasters

<table>
<thead>
<tr>
<th>Licence type</th>
<th>Technique</th>
<th>Type</th>
<th>#</th>
</tr>
</thead>
<tbody>
<tr>
<td>Regional TV (T2)</td>
<td>SD</td>
<td>General</td>
<td>4</td>
</tr>
<tr>
<td>Local TV (T3)</td>
<td>SD</td>
<td>General</td>
<td>7</td>
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</table>
## Time Schedule of Digital Terrestrial Broadcasting

<table>
<thead>
<tr>
<th>QUARTER OF YEAR</th>
<th>2011</th>
<th>2012</th>
<th>2013</th>
<th>2014</th>
<th>2015</th>
</tr>
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<tbody>
<tr>
<td></td>
<td>3</td>
<td>4</td>
<td>1</td>
<td>2</td>
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<td></td>
<td>3</td>
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<td>2</td>
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<td>1</td>
<td>2</td>
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<td>2</td>
<td>3</td>
<td>4</td>
<td>1</td>
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<td>2</td>
<td>3</td>
<td>4</td>
<td>1</td>
<td>2</td>
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<tr>
<td>FREQUENCY PLANNING</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>AUCTION &amp; ALLOCATION</td>
<td></td>
<td></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>STARTING OF DIGITAL TERRESTRIAL BROADCASTING AND ENDING OF ANALOG TV BROADCASTING</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**DVB T2**
ANTEN A.Ş.
(The DTT Network Operator)

- History (.... Current Situation)
- TRT, Public TV, 1964
  **Terrestrial Broadcasting Network:** Owned by TRT
  Managed by TRT
- Private (Commercial) Broadcasting, 1990
  **Terrestrial Broadcasting Network:**
  - Powerful (National) < 15-20 staff/each
    Towers, stations, antenna systems...
  - Others (Regional, Local), Service from vendors < 2-3 person
    subcontractors < 2-3 person
- 2011, New Law « TV and Radio Broadcasting»
  ➔ Switch to DTT
  ➔ Licencing for DTT
  - Terrestrial Broadcasting Network Operation (Whole Turkey, DTT)
    - One single company
    - Established by «National DTT licence holders»
    - Investment / Operation / Management
- 2012 (May), Anten AS
  - Present status «National Broadcasters» 15 broadcaster
  - TRT, Public TV
  - 16 shareholders
IMPORTANT POINTS OF THE LAW

1. The DTT License Tender No Later Then March,2013
2. Min coverage limit for the **National Broadcaster** 70% Population (Whole Country)
3. Min coverage limit for the **Regional Broadcaster** 70% Population (Whole Region)
4. One Single Company for DTT operations, shareholders are National DTT License Holders
LEGAL PROCESS

RTUK’S FREQUENCY PLAN
- 9 Mux (8 UHF, 1 VHF) planned
  - 7 Mux (UHF), Nationwide, tendered
    - 1 Mux, TRT
    - 5 Mux, National Private
    - 1 Mux, Regionals, Locals  (Turkey has 7 regions, 81 cities)
  - 952 sites planned

MODULATION PARAMETERS

- Mode : DVB-T2
- Reception Target : Indoor reception
- Coding : 64QAM
- FEC : 2/3
- Guard Interval : 19/256
- FFT Size : 32K
- Pilot Pattern : PP4
- Channel Bandwidth : 27 Mbps

PROGRAMME DATA RATES
HD: 7.5 Mbps  SD: 2.5 Mbps

MULTIPLEX CONFIGURATION
11 SD, 2 HD /5 SD , 3 HD /2 SD
LEGAL PROCESS

1. DTT License Tenders executed in Spring, 2013 by RTUK

2. Result
   - 11 HD National DTT License
   - 22 SD National DTT License
   - 24 SD Regional DTT License
   - 185 SD Local DTT License issued.

3. Court cancelled the DTT tender

4. RTUK will announce the new tender time and terms very soon.

5. RTUK will issue Anten AS a line-up permission for the present broadcasters for DTT / limited time
ADVANTAGES OF ONE SINGLE OPERATOR MODEL ANTEN A.Ş.

- The CAPEX (Investment costs) will be reduced
- The OPEX (Operation costs) will be reduced
- Will prevent the waste of investment made by different companies/broadcasters
- The same professional level of quality, technical standards
- The same coverage
- Reduction of technical problems (interfences...)
- Reduction of towers in site/ Gathering all systems in one tower
- One single responsible/respondent for RTUK
- One single responsible/respondent for Broadcasters

TASKS FOR ANTEN A.Ş.

1. DEPLOYMENT PROJECT
2. TRIAL
DVB-T2 TRIAL

City: Ankara (Capital City)
Population: 4.6m
Area: 2.516km²
Planned Site: 4
Planning Mode: SFN
Area Definition: Urban
  - No sea, no river
  - Surrounded by mountains
  - Higher buildings
    - concret
    - glass covered buildings
Rural Area (Far from downtown, in coverage)
Close to co-channel interference
Not so huge as Istanbul for traffic / easy to measure
Enough SFN site (not few, not many)
Existing stations
Possibility to use R/L or fiber distribution instead of satellite
RESULTS OF THE TRIAL

RTUKS’ REQUIREMENTS

Threshold Levels
- Outdoor: 50 dbuV (73 dbuV/m)
- Indoor: 38 dbuV
- C/N: 17,9 dB
- Indoor Receiving Target: Ground Floor, Window

COVERAGE

Quite Successful
Gap filler needed

INDOOR

- Indoor Receiving Target: Ground Floor, Window / Quite Successful
- Measured Signal Levels > Required Levels
- STBs decoded

MOBILE

STBs decoded ≤ 50 km/hour
THANK YOU FOR YOUR ATTENTION

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