

CONCEPT PAPER ON MIGRATING TO DIGITAL RADIO AND TV BROADCASTING SYSTEM

I. Introduction

Currently the allocated frequency bands are almost completely used for analog radio and TV transmission. Further expansion of TV and radio services and improvement of quality is impossible with the use of current analog technologies; development of the sector requires application of new technologies. The problem is common and topical for all countries. In order to address it a process of migration from analog TV and radio transmission to digital is in progress in the frames of international cooperation. Among the advantages of TV and radio transmission are higher quality of transmitted voice and picture, higher interception, interactiveness.

Digital transmission enables to more effectively use the band of frequencies, increase the number of TV and radio programs, combine other high technology services to TV and radio transmission.

Recommendation Rec (2007)³ of the Committee of Ministers proves the special role of public broadcasting services, the need for developing common information environment.

In the dynamic environment of scientific and technological advancement in the area of electronic communication and convergence of diverse information technologies digital transmission becomes more attractive with its new information opportunities, quality attributes and more effective use of frequency bands contributing to the development and free competition in the information market.

The concept paper on migration to digital TV and radio transmission and its action plan are targeted at ensuring extensive availability and access to multi-content TV and radio transmission, effective use of frequency bands, combining of TV and radio transmission and information networks, harmonized use of transmission platforms and synchronization of technical means used in the area of information.

II. MAIN GOALS OF THE STRATEGY

Given the current status and realities in the area of TV and radio broadcasting, existing opportunities and projected challenges, goals of the Concept Paper on migrating to TV and radio broadcasting is to implement reforms in the area of TV and radio broadcasting;

balance and ensure interests of RoA citizens, national industry, TV and radio operators, TV program producers, state structures, other stakeholder organizations and institutions, end users of information service during that process; determine development routes; inform and prepare the stakeholders for effective migration.

The Concept Pare is focused to the following principles of regulating relations in the area of broadcasting:

1. Freedom and independence of the broadcasted media;
2. Exclusion of illegal intervention and censorship in the operations of the broadcasted media;
3. Balanced coexistence of public and private broadcasters;
4. Rational and effective use of natural frequency resources, ensuring of fair and transparent frequency allocation procedures;
5. Free and equal access to telecommunication infrastructures;
6. Promotion of competition and pluralism;
7. Application of international standards and principles of transmission.

III. SPECIFICITIES OF DIGITAL BROADCASTING SYSTEM

Digitalization is unavoidable as broadcasting development phase. Since 1990s besides the satellite broadcasting services this tendency embraced also terrestrial TV and radio broadcasting.

For the effective production, maintenance and transmission of audio and video materials improvement of digital signal compression standards is of great significance. MPEG-2 standard is used during ether broadcasting including satellite broadcasting and cable TV. This standard is widely used in our days. MPEG-2 standard is flexible in terms varying information flow effectiveness. It ensures the 2 main current standards of digital TV broadcasting: SDTV standard digital television (720x576 resolution, 4-6 Mb/s flow speed) and HDTV high fidelity television (over 20 Mb/s flow speed).

MPEG-4 standard created in 1999 enables transmission of television image through IP network. This is a serious prerequisite for the formation of converged environment of TV and radio transmission and propagation of internet audio and video materials. MPEG-4 standard is used for ether broadcasting and video telecommunication and comprises various functions of MPEG-2 and similar standards with added interactive and 3D broadcasting aptitude.

Application of terrestrial transmission network by DVB-T standard enables simultaneous propagation of different quality TV programs (HDTV – high, SDTV - standard, LDTV – low fidelity television).

Adjustment of data transmission speed is typical to the digital TV and radio broadcasting system, which enables broadcasting of different TV programs and audio-video quality on one TV channel, adjustability of protection form electromagnetic reflection, alternative to modulation schemes, guarantees from information sharing errors, etc.

Transition to digital broadcasting system also secures specific information needs of consumers offering additional services such as electronic guide of TV programs (EPG), teletext, analogous program language.

Through terrestrial signal transmission and broadcasting network it is possible to broadcast TV programs of DVB-T and DVB-H standards. DVB-T and DVB-H programs may be included in the same multiplex. However, it should be noted that network structures for propagation of DVB-T and DVB-H standard signals differ with their technical solutions and financial investments.

Not being restrained with the need of transcoding between color TV systems and standards (PAL, SECAM, NTSC,..., B, G, K, L, M,..) digital broadcasting considerably simplifies internal and international exchange of TV and radio programs which is so important in the period of globalization.

IV. MIGRATION FROM ANALOG TO DIGITAL TV AND RADIO BROADCASTING ABROAD

Migration from analog to digital TV and radio broadcasting system is characterized with the following common features:

1. 1998-2002

- *Appear first digital TVs providing paid services;*
- *Implementation of national digitalization plans are delayed or stopped;*
- *Digitalization process is slow.*

2. 2002-2005

- *Appear first free platforms;*
- *Public broadcasters are involved in the digitalization process;*
- *Plans and terms of transition from analog to digital TV and radio broadcasting are not clear;*
- *Digital TV and radio systems expand relatively quicker.*

3. 2005-2008

- *Common introduction of digital TV and radio systems in Western Europe;*
- *Simultaneous operation of analog and digital TV and radio program broadcasting;*
- *Improvement of digital broadcasting technologies.*

4. 2008-2010

- *Trial operation of HDTV;*

- *Extensive introduction of digital TV and radio systems in Eastern Europe;*
- *Identification of time when analog TV and radio broadcasting is to be terminated;*
- *Termination of analog TV broadcasting in a number of countries;*
- *Promotion and incentives for the activities of some TV and radio market participants.*

5. 2010-2015 (planned)

- *Final migration to digital broadcasting in the majority of states;*
- *Expansion of HDTV broadcasting;*
- *Development of digital television and interactive services for mobile means.*

Among conceptual issues in the digitalization process is selection between paid or free delivery of TV and radio services. In Western Europe states free broadcasting of TV and radio programs combined with the provision of additional paid services is prevailing. Experience shows that quick advancement in this area may become reality in case of free broadcasting with the option of introducing specific paid components in the future.

Leading states differ also in their regional approach of organizing digitalization process. In a number of countries digitalization was implemented by regions, i.e. gradually, others preferred all-at-once approach. Regional approach of digitalization reduces risks and enables making adjustments in the process building on own experience.

Countries of leading experience had different approaches also in terms of determining digitalization process deadlines. Countries where residents are maximum supplied with satellite and cable TV and radio services have determined clear-cut deadlines for the completion of digitalization process, while countries mainly having terrestrial broadcasting system contented themselves with the determination of approximate deadlines for the completion of the process.

V. SITUATION IN THE BROADCASTING SYSTEM OF THE REPUBLIC OF ARMENIA

There 81 TV companies and 19 radio companies broadcasted in Armenia (see Tables 1 and 2).

22 terrestrial ether broadcasting TV companies provide 100% coverage in the territory of Yerevan. While in average 8 to 10 TV programs broadcasted in the Marzes/regions do not have homogenous coverage of the whole territory in the Marz, which is conditioned with several aspects, such as weak capacity of transmission equipment of Marz local TV companies, Armenia's underdeveloped and under-equipped TV and radio transmission network, geographic specificities of the area, etc. That is the reason that average number of broadcasted TV programs in certain residence areas is less – 5 to 6 TV programs. Situation is different in areas neighboring Yerevan. Alongside to TV programs of companies having local and national coverage here they can partially receive several TV

programs of Yerevan. Only one of the TV channels has 100% coverage in the whole territory of Armenia.

There are 30 TV companies in Armenia that provide cable broadcasting. Their distribution by Yerevan and Marzes is as follows: 8 – in Yerevan, 3 – in Gegharkunik, 2 – in Ararat, 1 – in Aragatsotn, 1 – in Armavir, 5 – in Kottayk, 5 – in Syunik, 2 – in Shirak, 2 – in Vanadzor, 1 – in Tavush. Number of cable TV subscribers makes approximately 7.5% of Armenia's population.

Ratio of satellite TV program users differs by residence areas. Number of satellite receivers depends on aspects such as social vulnerability of the population and shortage of TV programs broadcasted in the area. According to approximate data currently about 5% of the population has access to satellite TV programs. Out of the TV companies functioning in Armenia satellite transmission is performed only by 3 of them.

All radio companies broadcasted in the territory of Armenia are functioning especially in FM band with the exception of Public Radio of Armenia functioning on long, short and medium wave bands. Coverage of radio programs in Yerevan and Marzes is as follows: 16 radio companies are broadcasted in Yerevan (including 3 in Yerevan and simultaneously in several Marzes) and 3 in Marzes. In average 3 to 4 radio programs are broadcasted in every residence areas.

In Armenia's TV program broadcasting network transmission of signals is mainly carried out by radio relay links (RRL). TV programs of the Public TV are received from satellite in remote (isolated) areas left without communication links. In specific cases receiving of TV programs is performed through ether, i.e. TV retransmitter.

In Armenia there are 55 radio relay and 48 technical retransmission stations. In the remaining settlements stations with satellite receiver are installed ensuring universal coverage of at least 1 TV station.

In the south of Armenia transmission between radio-modem stations is carried out digitally. Simultaneously, about 80 stations ensure radio transmission through the FM band parallel to main roads. 30 TV stations are private.

According to the social survey findings conducted by the Public TV as of January 1, 2008 100% of Yerevan population and 81.1% of the population in other areas of Armenia has TV of foreign production.

In compliance with Geneva RRC 2006 (GE06) Final Act on Digital Terrestrial Broadcasting Plan radiofrequency bands 3, 4, and 5 were allocated for digital broadcasting.

In Armenia the use of TV frequency band is extensive, particularly in TV frequency band 1, which is still used for TV-transmission purposes and during the digitalization will serve as main reserve for the analog channels.

TV frequency band 3 also is used exceptionally for TV-transmission. In Europe it is mostly used for transmission of DVB-T and digital radio services of Eureka 147 standards.

Mountainous landscape of Armenia provides great opportunity for reapplication of frequencies.

VI. OBJECTIVES

Given the above-mentioned and in order to ensure migration from analog to digital TV and radio broadcasting system it is necessary to meet the following objectives:

1. Ratification of GE06 Final Acts of the Regional Radiocommunication Conference RRC 2006 on Digital Terrestrial Broadcasting by the Government of Armenia, after which GE 06 digital radiocommunication plan will legally become applicable for Armenia;
2. Operators transmitting digital TV signals to the ether must get respective allocations of residence areas from 241 communication lines allocated for digital transmission in Armenia (transmitter installation geographic coordinates, capacity, height of antenna and other necessary data are to be indicated).

In order to ensure this process cost estimation is required, which will be done after getting the estimated special program package.

After the registration of estimated allocations under the referred program the Plan of Digital Transmission in the Territory of the Republic of Armenia will be considered as accepted plan for Armenia by the international information register of the International Telecommunications Union (ITU).

1. Based on objective and transparent criteria ensure legal operation of 2 to 3 multiplexes including at least one free social package (5 to 6 channels) and several paid packages by an independent regulatory body;
2. Before final termination of analog broadcasting provide the needy and vulnerable population of Armenia with digital TV and radio broadcasting receiving and decoding equipment;
3. Ensure maximum coverage of population by the main network and broadcasting;
4. In the digital broadcasting process of TV and radio programs ensure protection of spiritual legacy, cultural diversity and pluralism;
5. Ensure regulation of fees for public services for digital broadcasting and propagation of TV and radio programs;
6. Develop and ensure equal opportunities for operators providing broadcasting services and users of telecommunication networks to be involved in digital broadcasting processes;
7. Encourage and promote commercial services for digital TV and radio program broadcasting;

8. Encourage and promote production and import of means to meet the technical needs of information society;
9. Develop and apply effective methods for frequency band management;
10. Ensure protection of copyright and other related rights in the process of application of new digital technologies.

VI. MECHANISMS FOR ENSURING DIGITALIZATION PROCESS

1. Public Opinion Polls

Have public opinion polls on the progress of digital migration and harmonization of transition process to European Commission's i2010 strategy paper.

2. Cost/Benefit Analysis

Optimality of the period for transition from analog to digital broadcasting system depends from cost/benefit balance of the transition; hence it is necessary to have detailed research of the market to be aware of consumer opinions and their readiness to pay for additional services.

3. Information and Support Resources

Timely implementation and completion of transition process depends on the obtaining of receiver equipment and perception of end users about service prices.

4. New Approaches for Band Management

New approaches may involve market-oriented approaches:

- 1) Licenses and bids for simultaneous participation of different types of operators for the use of the same resources;
- 2) Sale or vending of the right to use the band.

5. Effective Use of Digital Dividend

Part of frequency band necessary for broadcasting of programs through analog TV systems will significantly decrease after the introduction of digital broadcasting. Given the above-mentioned part of frequency domain left after final migration to digital broadcasting is digital dividend.

One of the preconditions for effective use of digital dividend is projection of long-term development of broadcasting services in accordance with market requirements. Regulation framework should be flexible enough to involve numerous opportunities for service implementation and development.

6. International and Inter-Sectoral Cooperation

With the objective of ensuring digital migration and free economic competition it is necessary to develop active inter-sectorial and international cooperation.

VIII. ECONOMIC FRAMEWORK AND BUSINESS

Economic impact on stakeholders involved in the process of migration may be presented as follows:

Stakeholders	Investment	Positive Outcomes
Content suppliers	- new signal transmission systems, - new methods of program production	- low cost of signal transmission, - opportunity of getting higher income from commercials and advertisements, - new incomes
Network operators	- new signal transmission systems, - new antenna systems, - new partial connection systems	- lower consumption of electricity after full transition, - rationalization of space and equipment, - cost-effective control
End users	- new receiving equipment, - partially new antenna systems	- lower equipment needs, - lower consumption of electricity
Equipment producers	- introduction of new technologies, - new production models,	- new job openings, - opportunities for sales expansion, - production rationalization and use of raw materials
Government, administration	- financing of information campaign, - testing of subsidizing some services and equipment	- increased competition and pluralism, - digital dividend

Main cost directions for digital transition in Armenia are as follows:

- Digitalization of current route radio relay links or offering of alternative links to arrange TV-transmission to Marzes, obtaining and installation of digital receiver systems for receiving mandatory universal package in TV stations;
- Provision of digital TV switch the most vulnerable groups of population;
- Obtaining, installation of at least one DVB-T digital exciter and accessories of respective capacity for broadcasting of at least one program package at TV stations.

The most widely spread business model of digital television currently is free broadcasting. This is an opportunity for the producers to produce cheaper digital switches although they do not allow the viewers to use interactive higher technology services.

Transition to digital broadcasting systems decreases cost (price) of broadcasting networks functionality, leads to massive sale of digital receivers, makes content processing and storage easier.

Another important advantage of digital broadcasting systems is release of some part of frequency resource band, which enables to introduce other services such as cellular communication and terrestrial broadcasting, as well as international electronic communication services.

From legal perspective, content producers and suppliers, multiplex operators and network operators participate in the transmission and receiving of digital signals.

1) Content Producers and Suppliers

From the legal perspective it is suggested to clearly distinguish between only content producers and multiplex and network operators, thus making a distinction between program production and their service accompaniment and transmission.

2) Multiplex Operators

Multiplex operator delivers multiplex services that in addition to TV and radio programs assume also other digital services, electronic communication services and other accompanying signals provision of which may be regulated by specific license.

3) Network Operators

Network operator transmits multiplex signal to end users through transmission network, which beams the digital signal through special technical actions into the ether.

During the transition process an important source of improving television situation is flow of foreign investors to Armenia.

Transition process and deadlines set by the European countries will contribute to the development of digital TV market. This will enable the shareholders to compete with other interested global groups that will have positive economic implication, will lead to growth of import and export, strong competition of content quality and coverage.

The following obstacles may be faced during the transition process:

- Lack of essential decision in the political field, such as setting final deadline for migration from analog to digital broadcasting systems;
- In the economic/market sector: 1) need for fundamental platform for analog receivers, 2) little demand among the users related to the lack of transition motives; 3) reluctance related to financial risks accompanied with investments of operators.

In order to mitigate implications of transition to digital broadcasting for socially vulnerable households about 150 families registered in Armenia's national family means testing system will be subsidized to obtain digital switches (about AMD 1.5 to 2 billion in total).

Although digital transition assumes additional expenses for all beneficiaries of the process in the long run positive outcome for all of them, as well as end users is obvious. Concurrently, considering the need of returning financial investments for digital transition it is planned to extend validity of digital broadcasting licenses as compared to the analog ones.

IX. CONCEPTUAL PROVISIONS

- In the initial stage of transition to digital broadcasting give priority to free provision of radio and television services with the option of gradually introducing specific paid components.
- Implement digitalization process by frequency distribution zones or regions decreasing risks and enabling further stage-by-stage adjustments.
- Subsidize households registered in Armenia's national family means testing system for getting digital switches. Announce state open tender in order to provide affordable and quality social switches.
- By July 20, 2010 ensure development of respective legal regulation framework for introduction of digital broadcasting of TV programs and transition from analog to digital broadcasting.
- Before transition to digital television make estimations, develop plan of allocated frequencies and register in international information register of the ITU.
- Given specificities of networks and infrastructures for propagation of TV and radio programs in Armenia by July 20, 2010 adopt national standards consistent with digital terrestrial broadcasting, digital satellite broadcasting, digital cable broadcasting, and digital mobile television standards of the European Telecommunications Standards Institute.
- Adopt joint technical standards for other information services accompanying TV and radio broadcasting.
- By December 31, 2013 ensure digital copying of all analog TV programs.
- Before final termination of analog broadcasting ensure coverage of digitally broadcasted TV programs (at minimum social multiplex) in the whole territory of Armenia.
- Ensure triple play transition – access to radio-, TV- and telephone communication and electronic services by the public.
- Pay special attention to establishing communication and broadcasting in difficult-to-access areas.
- In the frames of introducing public/private cooperation recognize announcement of open tenders as best option for selection of network operator and content broadcasters.

- Set such validity periods for digital broadcasting licenses that will ensure return of investments.
- Initial investment expenses for digitalization are huge and ensure return only after certain period, consequently it is necessary to ensure involvement of some public resources or in some cases – partial or full privatization of state shares.

Table 1

ETHER AND ETHER-CABLE (“EK-AP” CJSC) TRANSMISSION OF TV
PROGRAMS IN YEREVAN AND MARZES

1. Yerevan	
1	“AR TV” LLC
2	“RTR-Planeta” TV program
3	“Public TV of Armenia” CJSC
4	“ALM-HOLDING” CJSC
5	“Second Armenian TV” CJSC
6	“HAYRENIK-TV” CJSC
7	“KULTURA” TV
8	“ARMENIA TV” CJSC
9	“DAR-21” TV
10	“ARMENAKOB-TV” CJSC
11	“SHOGHAKAT” TV CJSC
12	“MULTIMEDIA-KENTRON” CJSC
13	“TV5” CJSC
14	“SHANT” CJSC
15	“SHARK” CJSC
16	“ARARAT” TV
17	“YEREVAN” TV company CJSC
18	“HUSABER” CJSC
19	“EV” TV
20	Armenian branch of “MIR” interstate TV company
21	“CINEMAX” CJSC
22	“A-UP” CJSC
23	First Russian channel
2. Aragatsotn Marz	
1	“KULTURA” TV
2	“Public TV of Armenia” CJSC
3	“ARARAT” TV
4	“Second Armenian TV” CJSC
5	“ARMENIA TV” CJSC
6	First Russian channel
7	“Shirak Public TV and Radio” CJSC
8	“RTR-Planeta” TV program
3. Ararat Marz	
1	“ARMENIA TV” CJSC

2	“ARARAT” TV
3	ՏԻՆՆՈՒԹՅՈՒՆ ԷՅՏ
4	“Public TV of Armenia” CJSC
5	“RTR-Planeta” TV program
6	First Russian channel
7	“ALM-HOLDING” CJSC
8	“Second Armenian TV” CJSC
4. Vayots Dzor Marz	
1	“RTR-Planeta” TV program
2	“Public TV of Armenia” CJSC
3	“Second Armenian TV” CJSC
4	First Russian channel
5	“ARARAT” TV
6	“ARMENIA TV” CJSC
7	“DZORI KANCH” CJSC
8	“ALM-HOLDING” CJSC
5. Gegharkunik Marz	
1	“Second Armenian TV” CJSC
2	“RTR-Planeta” TV program
3	First Russian channel
4	“Public TV of Armenia” CJSC
5	“GAL EV ENKERNER” CJSC
6	“ALM-HOLDING” CJSC
7	“ARARAT” TV
8	“ARMENIA TV” CJSC
9	“QYAVAR” TV
10	“RADIO” AK
6. Lori Marz	
1	“LORI TV” CJSC
2	First Russian channel
3	“Public TV of Armenia” CJSC
4	“Second Armenian TV” CJSC
5	“RTR-Planeta” TV program
6	“ARTGAR” CJSC
7	“ARMENIA TV” CJSC
8	“LORU MIG” CJSC
9	“ALM-HOLDING” CJSC
10	“ARARAT” TV
11	“FORTUNA” CJSC
12	“ANNA EV KAREN” CJSC

13	“ANKYUN +3” CJSC
7. Kotayk Marz	
1	“Public TV of Armenia” CJSC
2	“RTR-Planeta” TV program
3	“Second Armenian TV” CJSC
4	“SIRAK” CJSC
5	“ALM-HOLDING” CJSC
6	“ARMENIA TV” CJSC
7	“ARARAT” TV
8	First Russian channel
9	“ABOVYAN” TV EDITORIAL OFFICE
10	“NAREK” TV
11	“LUSALIK” TV
8. Tavush Marz	
1	First Russian channel
2	“Public TV of Armenia” CJSC
3	“Second Armenian TV” CJSC
4	“RTR-Planeta” TV program
5	“KAMUT” LLC
6	“ARARAT” TV
7	“ARMENIA TV” CJSC
8	“IJEVAN STUDIA” LLC
9	“ALM-HOLDING” CJSC
9. Armavir Marz	
1	“ALT” TV EDITORIAL OFFICE
2	“TEV” LLC
3	“ARARAT” TV
4	“ETCHMIADZON” TV EDITORIAL OFFICE
5	“Public TV of Armenia” CJSC
6	Second Armenian TV
10. Shirak Marz	
1	“SHANT” LLC
2	“RTR-Planeta” TV program
3	“Public TV of Armenia” CJSC
4	Shirak public TV and Radio
5	“Second Armenian TV” CJSC
6	First Russian channel
7	“ALM-HOLDING” CJSC

8	“ARMENIA TV” CJSC
9	“TSAYG” LLC
10	“ARARAT” TV
11	“CHAP” LLC
11. Syunik Marz	
1	“RTR-Planeta” TV program
2	“Public TV of Armenia” CJSC
3	First Russian channel
4	“Second Armenian TV” CJSC
5	“ALM-HOLDING” CJSC
6	“ARMENIA TV” CJSC
7	“VOROTANYAN GHOGHANJNER”
8	“ARARAT” TV
9	“LASTI KHUT”
10	“DZAGEDZOR” TV

Table 2

ETHER TRANSMISSION OF RADIO PROGRAMS IN YEREVAN AND MARZES

1. Yerevan	
1	"Public Radio of Armenia" CJSC
2	"AVTORADIO" LLC
3	"ULIS MEDIA" LLC
4	"RADIOPRO" LLC
5	"RADIO AVRORA" LLC
6	"VEM SPYUR" LLC
7	"AR RADIO INTERCONTINENTAL" LLC
8	"FM –102.4" French program
9	"RADIOVAN" LLC
10	"ARDZAGANK ST." LLC
11	"RADIOHAY" LLC
12	"RADIO-ALPHA" LLC
13	"FM–105.5" LLC
14	"TOSPA" radio editorial office
15	"IMPULS" LLC
16	"RADIO 107 FM" LLC
2. Aragatsotn Marz	
1	"Public Radio of Armenia" CJSC
2	"AR RADIO INTERCONTINENTAL" LLC
3	"RADIOHAY" LLC
3. Ararat Marz	
1	"RADIOHAY" LLC
2	"Public Radio of Armenia" CJSC
3	"AR RADIO INTERCONTINENTAL" LLC
4. Vayots Dzor Marz	
1	"Public Radio of Armenia" CJSC
2	"RADIOHAY" LLC
3	"AR RADIO INTERCONTINENTAL" LLC
5. Gegharkunik Marz	
1	"Public Radio of Armenia" CJSC
2	"RADIOHAY" LLC
3	"AR RADIO INTERCONTINENTAL" LLC
6. Lori Marz	
1	"LURU MIG" LLC

2	“Public Radio of Armenia” CJSC
3	“RADIOHAY” LLC
4	“AR RADIO INTERCONTINENTAL” LLC
7. Kotayk Marz	
1	“AR RADIO INTERCONTINENTAL” LLC
2	“Public Radio of Armenia” CJSC
3	“RADIOHAY” LLC
8. Tavush Marz	
1	“Public Radio of Armenia” CJSC
2	“RADIOHAY” LLC
3	“AR RADIO INTERCONTINENTAL” LLC
9. Armavir Marz	
1	“RADIOHAY” LLC
10. Shirak Marz	
1	“Public Radio of Armenia” CJSC
2	“SHIRAK PUBLIC TV AND RADIO
3	“AR RADIO INTERCONTINENTAL” LLC
4	ՏԻՐԱԿԻ ԵՐԱՐԱԿ
5	“RADIOHAY” LLC
11. Syunik Marz	
1	“Public Radio of Armenia” CJSC
2	“AR RADIO INTERCONTINENTAL” LLC
3	“RADIOHAY” LLC
4	“RADIOHAY” LLC