National Association of NAB BROADCASTERS

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**Ex Parte Communication**

Mr. William F. Caton
Acting Secretary
Federal Communications Commission
445 12th Street, S.W.
Washington, D.C. 20445

*Re*: IB Docket No. 95-91

Dear Mr. Caton:

On December 21, 2001, XM Satellite Radio, Inc. ("XM") told the Commission that "XM has no intent to originate local programming from its repeaters." Reply Comments of XM Satellite Radio, Inc., IB Docket No. 95-91, Dec. 21, 2001, at 21-22. Today, we report that XM has recently obtained a patent on technology intended to do precisely what XM told the Commission it would not – use its growing network of terrestrial repeaters to provide locally differentiated advertising and programming.

XM's promise to the Commission was not a casual utterance; its statement is in line with repeated assurances XM made to the Commission that the sole use of its network of terrestrial repeaters would be to fill in gaps in satellite coverage. A summary of XM's commitments not to use its repeaters to provide local programming is attached. [1] Indeed, the Commission made clear that it would authorize repeaters only to overcome "the effects of signal blockage and multipath interference." *Digital Audio Radio Satellite*

[1] The other SDARS licensee, Sirius Satellite Radio, Inc., has made similar representations. *See*, *e.g.*, Letter from Robert D. Briskman, Technical Executive, Sirius to Magalie Roman Salas, Secretary, FCC, July 24, 2001 at 3; Reply Comments of Sirius, In the Matter of Authorization of Satellite Digital Audio Radio Service Terrestrial Repeaters Network, IB Docket No. 95-91, Dec. 21, 2001 at 12; Comments of Sirius, IB Docket No. 95-91, Dec. 14, 2001 at 27; Supplemental Comments of Sirius, IB Docket No. 95-91, Jan. 18, 2000, at Exhibit 3; Comments of CD Radio, Inc. (now Sirius), IB Docket No. 95-91, June 13, 1997 at 2.

*Service*, 12 FCC Rcd 5754, 5811 (1997). The Commission accordingly conditioned the Special Temporary Authority granted XM last year to operate repeaters on their not being used to insert local programming.[2]

Despite these repeated commitments to the Commission, it now appears that XM has entirely different intentions for its repeaters. On February 12, 2002, XM was issued a patent for a process specifically designed to use terrestrial repeaters to "provide geographically targeted broadcast data, such as weather, sports scores, advertisements and the like." To put it bluntly, while XM was telling the Commission that it had no plans to use repeaters other than to fill gaps, it was actively developing technology specifically intended to use repeaters to provide locally differentiated material.

XM's previously undisclosed efforts to develop local origination technology should lead the Commission to do two things.

- First, the Commission should consider, in light of this disclosure, whether it can continue to accept XM's assertions that gaps in satellite distribution necessitated the construction of a repeater network containing far more repeaters, many of which operate at very high power levels, than XM originally specified. For example, just in Boston, XM has now built over 60 high-powered repeaters, more than the number of full-power radio stations in that market. Indeed, the Commission should not grant permanent licenses for XM repeaters, or extend the STA for those repeaters, without a specific showing by XM that each repeater is in fact required to correct a gap in satellite distribution.

- Second, the Commission should condition the licenses for any terrestrial repeaters for SDARS service on an iron-clad commitment that they will not be used to permit locally differentiated programming.

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On February 12, 2002, the United States Patent Office issued patent number US 6,347,216 B1 to XM Satellite Radio, Inc. Attached is a copy of that patent entitled *Method and System for Providing Geographic Specific Services in a Satellite Communications Network*. As described in the patent, an XM terrestrial repeater "retransmits the composite signal [from the satellite] with a unique transmitter identification number which indicates the identity of the repeater."[3]

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[2] XM's Application for Special Temporary Authority to Operate Satellite Digital Audio Radio Service Complimentary Terrestrial Repeaters, *Order and Authorization*, DA 01-2172 (rel. September 17, 2001). The XM STA will expire March 18, 2002.

[3] U.S. Patent No. US 6,347,216 B1, p. 1.

> "Upon reception of the composite signal [*i.e*., the satellite signal augmented with repeater ID number] from the terrestrial repeater, a receiver determines the current geographical location of the receiver based on the transmitter identification number. The receiver then compares the current location of the receiver to header information . . . carried within the data channels to *select geographically targeted information in the data channels*. The receiver then provides the selected information to a user of the receiver so that user may receive services directed to audiences in the geographic location of the receiver."[4]

Thus, XM contemplates a system where locally targeted data streams will be distributed through repeaters on data channels multiplexed with the main XM program information, each of which will be individually targeted to a specific location. The patent explains that, based on the current geographic location of the receiver, the

> "receiver then provides the selected information within the data channel to a user of the receiver so that [the] user may access services that are directed to audiences in the general location of the receiver. This feature would be transparent to the user. Accordingly, the receiver can provide *geographically targeted broadcast data,* such as weather, sports scores, *advertisements* and the like, to subscribers."[5]

Simply put, the XM patent is for a system under which an apparently unlimited number of local program streams could be developed by XM, and originated either in local markets or elsewhere.[6] These streams of local information would then be transmitted along with XM's satellite program stream. The XM terrestrial repeaters would then add a geographic identifier to the data transmitted from the satellite. The XM receiver would then use that geographic information to provide a local radio service, in stark contrast to XM's repeated commitments to the Commission that its plans were for a national service only.

Even if the local programming information is not added to the program steam at the repeater, the geographic identifier that "triggers" the receiver to play that information will be, thus providing XM with a system of local origination through its repeaters. Indeed, there does not appear to be any reason for XM to require repeaters to add geographic identifying signals other than to activate this local origination scheme.

At no time has XM indicated to the Commission that it intends to provide a locally targeted service. Instead, the entire and consistent focus of the proposals of the SDARS licensees has been a national service. The huge increase in the number of

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[4] *Id*. (emphasis added).
[5] *Id.*, columns 3-4 (intermediate references omitted; emphasis added).
[6] Indeed, because of the very large number of repeaters XM has built in urban markets, advertising and other information could be directed at very small areas.

terrestrial repeaters XM in particular has built has been explained entirely as being necessitated by greater than anticipated transmission difficulties.[7] It now appears that XM has been instead pursuing a different goal – providing a local service. While to be sure, the issuance of the patent does not itself signify that XM will provide locally differentiated service through its repeaters, the Commission must assume that XM did not invest substantial resources to develop this technology without intending to use it.

This is not the first time that an SDARS applicant has told the FCC one thing, while in fact intending to do something else.[8] At a minimum, the XM patent raises questions about whether XM's explanations of its need for terrestrial repeaters and its intended use of them were truthful and complete. *See* Section 1.17 of the Commission's Rules, 47 C.F.R. § 1.17. At a minimum, the Commission should require XM to provide specific information demonstrating the need for each repeater before the Commission either grants a permanent repeater license or extends XM's STA.

The now-revealed XM patent makes it even more important that the Commission limit the use of SDARS terrestrial repeaters to make sure that the *same programming* is being transmitted to and played *at the same time by all receivers* throughout the entire SDARS networks. We urge the FCC to adopt the no-local origination clause in the current STAs:

> "SDARS terrestrial repeaters may not originate any programming and are restricted to the simultaneous retransmission of the complete programming, and only that programming, transmitted by the satellite directly to the SDARS subscriber's receivers."

In other words, lest there be any question now or in the future, gap fillers should not be allowed to originate or distribute locally differentiated programming. We urge the Commission to ensure that SDARS licensees are precluded from using this patent or any other method of deploying a terrestrial-based, satellite supplemented local radio service.

Respectfully submitted,

Jack N. Goodman

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[7] Comments of XM, In the Matter of Request for Special Temporary Authority to Operate Digital Audio Radio Service Terrestrial Repeaters, FCC File No. SAT-STA-20010712-00063; IB Docket No. 95-91, Aug. 31, 2001 at 1-2.

[8] *See* Letter from Henry L. Baumann, Senior Vice President and General Counsel, NAB, to Magalie Roman Salas, Secretary, FCC, October 8, 1998.

Attachments

cc: The Honorable Michael Powell
The Honorable Kathleen Q. Abernathy
The Honorable Michael J. Copps
The Honorable Kevin Martin
Donald Abelson, Chief, International Bureau
Roy Stewart, Chief, Mass Media Bureau
Kenneth Ferree, Chief, Cable Services Bureau

## XM'S STATEMENTS CONCERNING THE USES OF ITS REPEATERS

- "XM Radio has no intent to originate local programming or to store programming at a repeater." Reply Comments of XM, In the Matter of Authorization of Satellite Digital Audio Radio Service Terrestrial Repeaters Network, IB Docket No. 95-91, Dec. 21, 2001 at 21.

- "XM Radio has no intent to originate local programming from its repeaters. XM Radio believes that both the language suggested in the Public Notice and the language used in the STA orders that NAB prefers adequately conveys that DARS repeaters cannot be used to originate local programming." *Id.* at 22.

- "Terrestrial broadcasters have expressed concerns from DARS competition, particularly if the repeaters are used to originate local programming and advertising. XM Radio has stated that it will not use its repeaters to originate local programming." Comments of XM, IB Docket No. 95-91, Dec. 14, 2001 at 3.

- "XM Radio supports the Commission's proposal to limit transmissions from repeaters to only that programming that is transmitted by an authorized DARS satellite and to require that the satellite and repeater signal are received nearly simultaneous by subscribers. XM Radio continues to support this concept, as it has throughout the DARS rulemaking proceeding. Adoption of this proposal should appease the concerns of the terrestrial broadcast industry that DARS licensees seek to use repeaters to originate local programming and create independent terrestrial radio networks." *Id*. at 12.

- "During all this time DARS licensees have always been candid and consistent in their plans for repeaters." *Id*. at 2.

- "A key element of providing a high-quality audio service has always been the operation of terrestrial repeaters in urban areas, to assure listeners that they will reliably receive the XM Radio signal even under conditions where reception of a satellite signal is impaired." Comments of XM, In the Matter of Request for Special Temporary Authority to Operate Digital Audio Radio Service Terrestrial Repeaters, FCC File No. SAT-STA-20010712-00063; IB Docket No. 95-91, Aug. 31, 2001 at 1-2.

- "XM radio has consistently reasserted its intention that the repeaters will only simultaneously rebroadcast the programming from its satellites." *Id*. at 3.

- "Contrary to the claims of commenters, XM Radio has always been candid and consistent in its plans for repeaters." *Id*. at 4.

- "Consistent with the Commission's March 1997 Further Notice of Proposed Rulemaking, XM Radio will operate 'gap-filler' terrestrial repeaters as part of its

DARS network to overcome the effects of signal blockage and multipath interference." Letter from Lon C. Levin, Senior Vice President, XM to Magalie Roman Salas, Secretary, FCC, July 12, 2001 (requesting STA for 168 terrestrial repeaters operating at EIRP between greater than 10 kW and 40 kW and 610 terrestrial repeaters operating at EIRP between greater than 2 kW and 10 kW) at 1.

- "XM Radio also certifies that its terrestrial repeaters will not be used to originate programming or transmit signals other than those received from its satellite." *Id*. at 2.

- "Terrestrial repeaters shall not be used to originate local programming not also transmitted from authorized DARS satellites." Letter from Bruce Jacobs, Counsel for XM to Magalie Roman Salas, Secretary, FCC, April 25, 2001 at Exhibit 1 (proposing language for final terrestrial repeater service rules).

- "[XM] does not object to the Commission's proposal to prohibit the use of terrestrial repeaters to transmit locally originated programming . . . Throughout the Commission's rulemaking and licensing process, [XM] has advocated the use of DARS to provide a high-quality, nationwide service." Comments of American Mobile Radio Corporation (now XM), IB Docket No. 95-91, June 13, 1997 at 1-2.

- "Any spectrum devoted to the retransmission of satellite delivered programming should be permitted only to improve the link margin in difficult propagation environments and not as a service in and of itself." Joint Comments of American Mobile Radio Corporation (now XM), Satellite CD Radio, Inc. (now Sirius), *et al*., IB Docket No. 95-91, Sept. 15, 1995 at 2.

US006347216B1

(12) **United States Patent**
**Marko et al.**

(10) **Patent No.: US 6,347,216 B1**
(45) **Date of Patent: Feb. 12, 2002**

(54) **METHOD AND SYSTEM FOR PROVIDING GEOGRAPHIC SPECIFIC SERVICES IN A SATELLITE COMMUNICATIONS NETWORK**

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(73) Assignee: **XM Satellite Radio Inc.**, Washington, DC (US)

( * ) Notice: Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 0 days.

(21) Appl. No.: **09/433,863**

(22) Filed: **Nov. 4, 1999**

(51) **Int. Cl.**[7] ..... **H04B 1/69**
(52) **U.S. Cl.** ..... **455/12.1**; 455/13.1; 375/200
(58) **Field of Search** ..... 455/12.1, 13.1, 455/16, 18, 20, 22; 375/200

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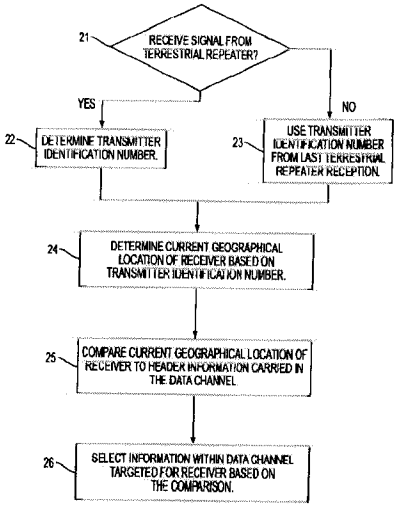
(57) **ABSTRACT**

A method and apparatus for communicating geographic specific services to a receiver in a satellite communications network by utilizing location identification information included in a composite signal transmitted by a terrestrial repeater. A terrestrial repeater receives from a satellite a composite signal comprising a plurality of time-division multiplexed (TDM) data channels and retransmits the composite signal with a unique transmitter identification number which indicates the identity of the repeater. Upon reception of the composite signal from the terrestrial repeater, the receiver determines the current geographical location of the receiver based on the transmitter identification number. The receiver then compares the current location of the receiver to header information carried in the data channels to select information in the data channels is targeted to the geographical location of the receiver. The receiver then provides the selected information to a user of the receiver so that user may access services directed to audiences in the geographic location of the receiver.

**27 Claims, 4 Drawing Sheets**



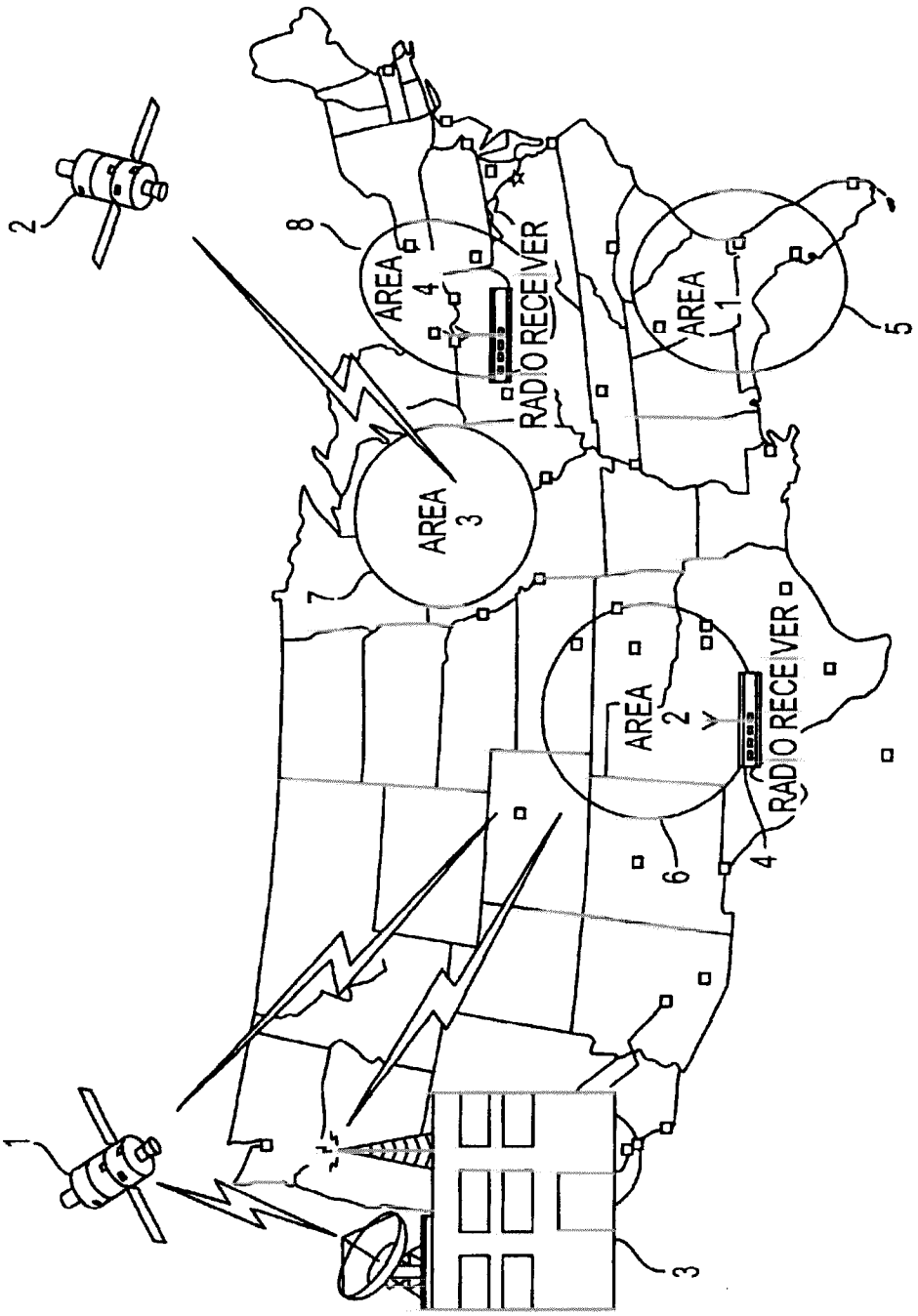

AREA 1
AREA 2
AREA 3
AREA 4
RADIO RECEIVER
RADIO RECEIVER
1
2
3
4
5
6
7
8

FIG. 1

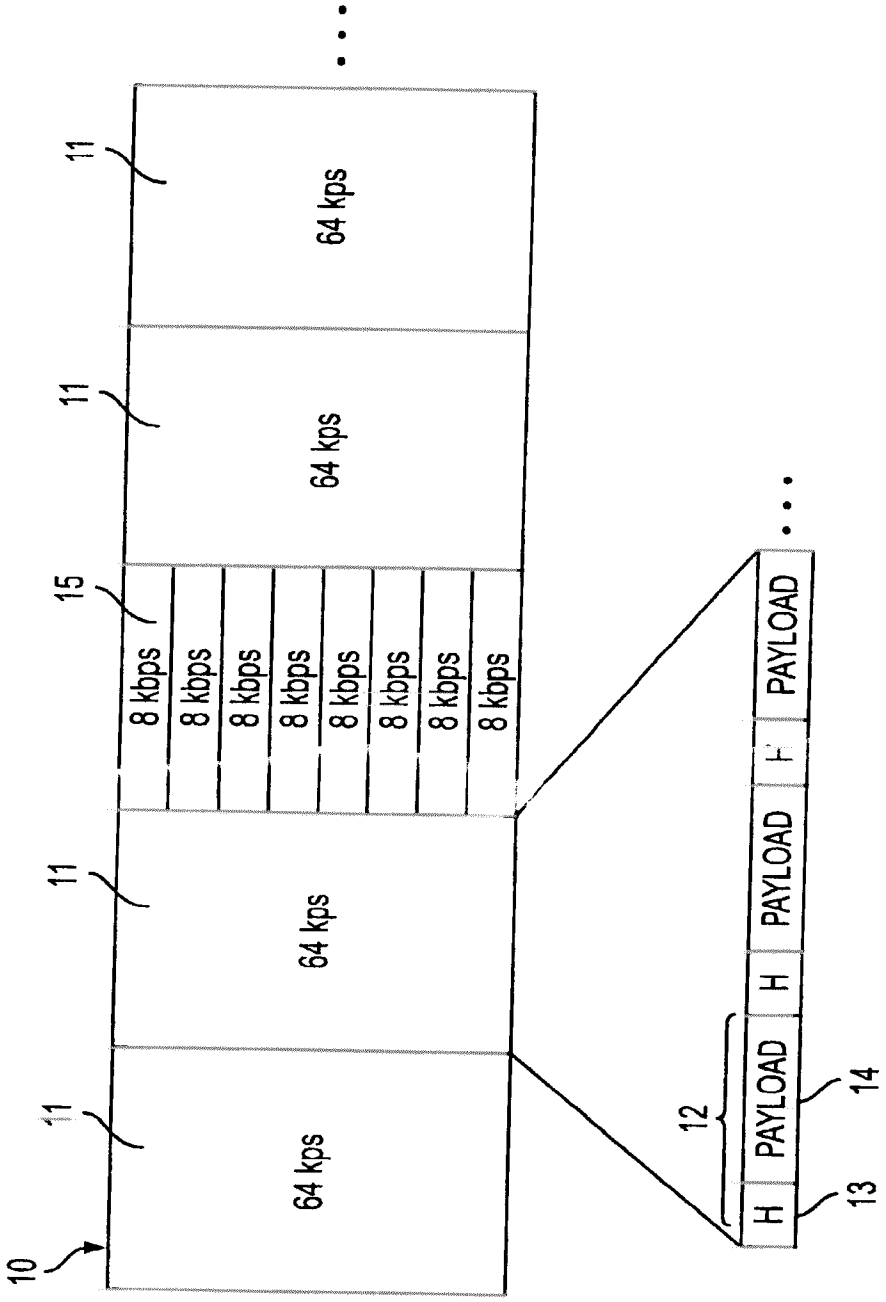

10
11
64 kps
11
64 kps
15
8 kbps
8 kbps
8 kbps
8 kbps
8 kbps
8 kbps
8 kbps
8 kbps
11
64 kps
11
64 kps
12
H
PAYLOAD
H
PAYLOAD
PAYLOAD
13
14

FIG. 2

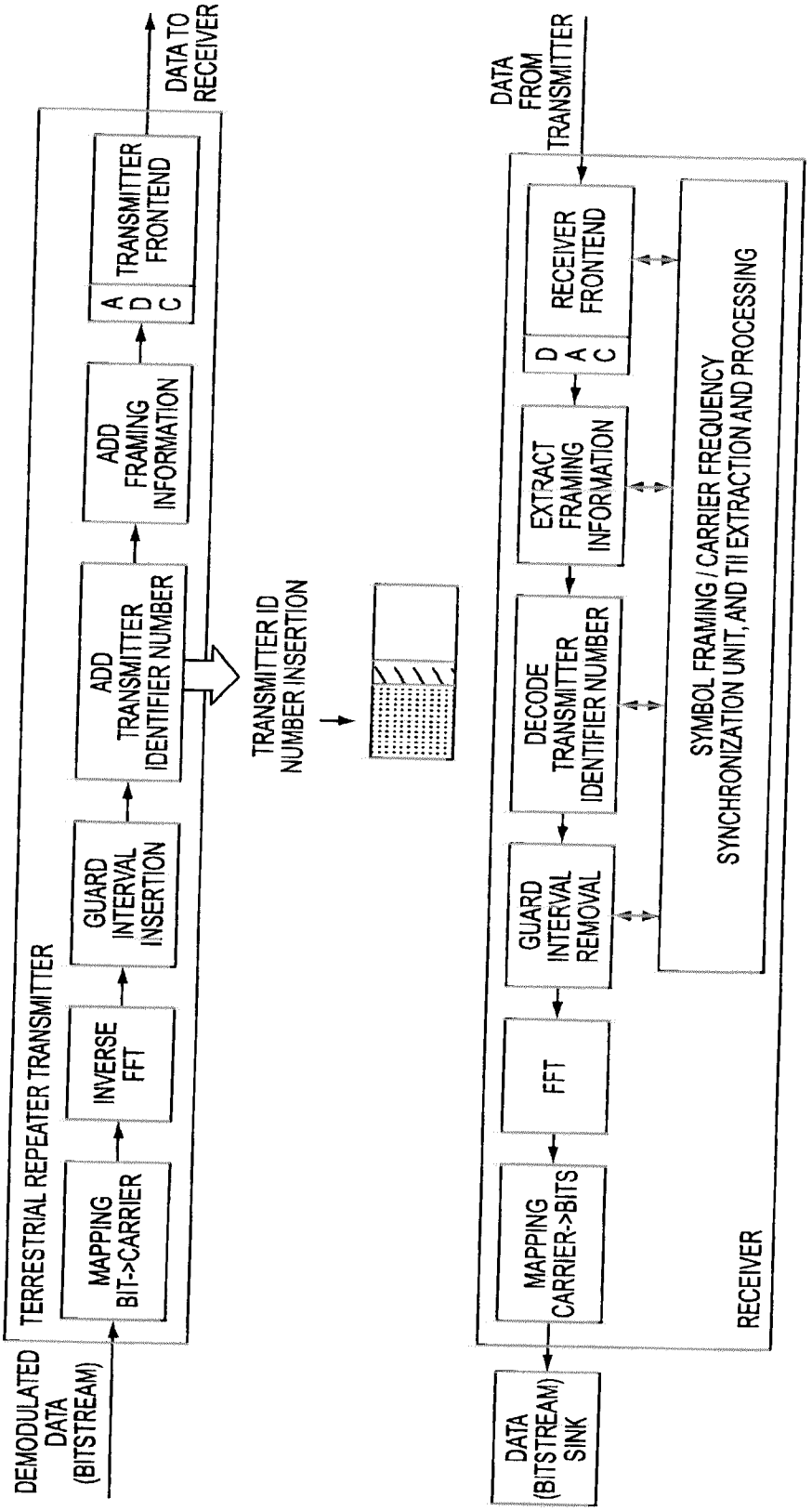

DEMODULATED DATA (BITSTREAM)
TERRESTRIAL REPEATER TRANSMITTER
MAPPING BIT->CARRIER
INVERSE FFT
GUARD INTERVAL INSERTION
ADD TRANSMITTER IDENTIFIER NUMBER
ADD FRAMING INFORMATION
A D C
TRANSMITTER FRONTEND
DATA TO RECEIVER
TRANSMITTER ID NUMBER INSERTION
DATA FROM TRANSMITTER
D A C
RECEIVER FRONTEND
EXTRACT FRAMING INFORMATION
DECODE TRANSMITTER IDENTIFIER NUMBER
GUARD INTERVAL REMOVAL
FFT
MAPPING CARRIER->BITS
DATA (BITSTREAM) SINK
SYMBOL FRAMING / CARRIER FREQUENCY SYNCHRONIZATION UNIT, AND TII EXTRACTION AND PROCESSING
RECEIVER

FIG. 3

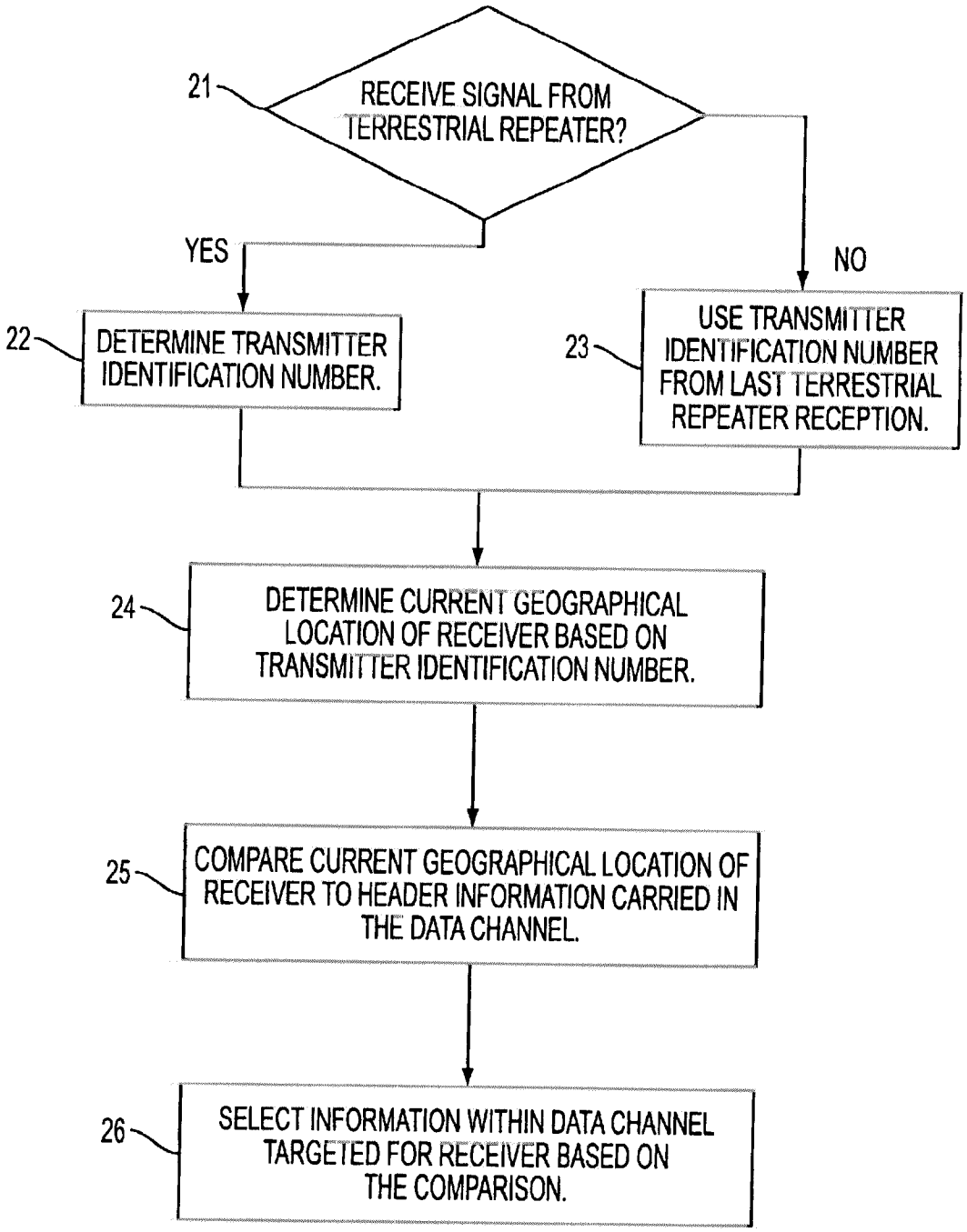

21
RECEIVE SIGNAL FROM TERRESTRIAL REPEATER?
YES
NO
22
DETERMINE TRANSMITTER IDENTIFICATION NUMBER.
23
USE TRANSMITTER IDENTIFICATION NUMBER FROM LAST TERRESTRIAL REPEATER RECEPTION.
24
DETERMINE CURRENT GEOGRAPHICAL LOCATION OF RECEIVER BASED ON TRANSMITTER IDENTIFICATION NUMBER.
25
COMPARE CURRENT GEOGRAPHICAL LOCATION OF RECEIVER TO HEADER INFORMATION CARRIED IN THE DATA CHANNEL.
26
SELECT INFORMATION WITHIN DATA CHANNEL TARGETED FOR RECEIVER BASED ON THE COMPARISON.

FIG. 4

# METHOD AND SYSTEM FOR PROVIDING GEOGRAPHIC SPECIFIC SERVICES IN A SATELLITE COMMUNICATIONS NETWORK

## RELATED APPLICATIONS

Related subject matter is disclosed and claimed in co-pending U.S. patent application Ser. No. 09/318,938, filed by Paul D. Marko et al on May 26, 1999; and in co-pending U.S. patent application Ser. No. 09/433,861 filed by Paul D. Marko even date herewith for "Method And Apparatus For Concatenated Convolutional Encoding And Interleaving" (Attorney File 38879); both applications being expressly incorporated herein by reference.

## FIELD OF THE INVENTION

The present invention relates to a method and system for providing geographic specific services to a receiver in a satellite communications network. More particularly, the present invention relates to a method and system for providing geographic specific services to a receiver in a satellite digital audio radio service (SDARS) network by utilizing transmitter identification information included in a composite signal transmitted by a terrestrial repeater.

## BACKGROUND OF THE INVENTION

Satellite digital audio radio service (SDARS) is a satellite broadcast service recently approved by the U.S. Federal Communications Commission (FCC) which provides satellite transmission of digital audio programs to compatible radio receivers. The radio receivers can be stationary or mobile and are generally configured to receive composite broadcast signals comprising a plurality of data channels from satellites as well as terrestrial repeaters.

As shown in FIG. **1**, SDARS provides service to a receiver or subscriber **4** over a nationwide coverage area through the use of two geostationary satellites **1** and **2** and a terrestrial repeater network comprising a plurality of individual terrestrial repeaters **3**. In particular, SDARS employs a spatial and frequency diversity system wherein one of the geostationary satellites **1** transmits a first signal on one transmission channel and the other geostationary satellite **2** transmits a second signal containing the same program material as the first signal on a second transmission channel. Upon reception, the first and second signals are stored at the receiver **4** so that the two channels can be combined, or the program material in the two channels selected, via suitable receiver circuitry.

The terrestrial repeaters **3** receive the signals from the geostationary satellite **1** or **2**, and retransmit the signals using multi-carrier modulation (MCM). The terrestrial repeaters **3** are used for coverage reinforcement in areas which receive poor satellite coverage. Signal reception can be disrupted at the receiver **4** due to physical obstructions which interfere with line of sight (LOS) reception between the geostationary satellites **1** and **2** and the receiver **4**, or service outages. For example, mobile receivers may encounter physical obstructions when they pass through tunnels or travel near buildings or trees that impede LOS signal reception. Service outages can occur, on the other hand, when noise or cancellations of multipath signal reflections are sufficiently high with respect to the desired signal.

All of the terrestrial repeaters **3** of the terrestrial repeater network simultaneously transmit the same data to all subscribers (i.e., receiver **4**) in the coverage area with the exception that each of the terrestrial repeaters transmits



additional information which allows the receiver to identify the individual terrestrial repeater from which the currently received signal is originating. In particular, each terrestrial repeater adds to the retransmitted composite signal a unique transmitter identification number which is embedded after an MCM synchronization pattern. Presently, the transmitter identification number is generally used for RF network coverage analysis and field testing.

Although the nationwide coverage area comprises a plurality of distinct geographic areas (e.g., the northeast, the southwest, and so on), the ability to provide geographic specific service is not inherent with the above-described system architecture. That is, all receivers or subscribers receive the same broadcast data regardless of their geographic location. Accordingly, this inhibits the transmission/reception of geographically targeted data such a local weather forecasts, news, advertisements, and so on.

Accordingly, it is an object of the present invention to provide a method and system for providing geographic specific services to receivers in an SDARS network, wherein a receiver can provide different types of broadcast information to a user based on the geographic location of the receiver.

## SUMMARY OF THE INVENTION

In accordance with the present invention, a method and apparatus are provided for transmitting and receiving geographic specific services in a satellite communications network by utilizing location identification information included in a composite signal transmitted by a terrestrial repeater. In particular, the terrestrial repeater receives from a satellite a composite signal comprising a plurality of time-division-multiplexed (TDM) data channels and retransmits the composite signal along with a unique transmitter identification number which indicates the identity of an individual repeater. Upon reception of the composite signal from the terrestrial repeater, a receiver determines the current geographical location of the receiver based on the transmitter identification number. The receiver then compares the current location of the receiver to header information of packets or frames carried within the data channels to select geographically targeted information in the data channels. The receiver then provides the selected information to a user of the receiver so that the user may receive services directed to audiences in the geographic location of the receiver.

## BRIEF DESCRIPTION OF THE DRAWINGS

A preferred embodiment of the present invention is described in detail below with reference to the attached drawing figures, in which:

FIG. **1** is a block diagram of a communication system in accordance with a preferred embodiment of the present invention;

FIG. **2** illustrates the format of composite signal in accordance with the preferred embodiment of the present invention;

FIG. **3** is a block diagram illustrating a terrestrial repeater and a receiver in according with the preferred embodiment of the present invention; and

FIG. **4** is a flowchart illustrating a method of selecting geographically target information in accordance with the preferred embodiment of the present invention.

## DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENT

With reference to FIGS. **1** and **2**, the geostationary satellites **1** and **2** and the terrestrial repeater **3** each transmit a

composite signal **10** comprising a plurality of TDM channels **11**. Each of the channels **11** comprises a plurality of multiplexed data packets **12** comprising a preamble/header **13** and a payload **14** of audio, video or other data. Alternatively, the multiplexed data packets **12** may be packaged in a frame (not shown) comprising a frame header with information regarding the individual data packets within the frame.

The composite signal **10** transmitted from each of the terrestrial repeaters **3** also includes the unique transmitter identification number which is embedded after an MCM synchronization signal in the header. In particular, the terrestrial repeater transmitter demodulates the composite signal received from the satellites **1** and **2** and then, as shown in FIG. **3**, decodes, reformats, and frequency translates the demodulated bitstream data. In particular, the bits of incoming data are mapped to MCM carriers, and an inverse Fast Fourier Transfer function is performed to move from the frequency to the time domain. Next, a guard interval time is inserted to protect against inter-symbol interference and eight bits of transmitter identifier information are added prior to sync/framing information. The entire output is routed to an analog-to-digital (ADC) converter and the ADC output is applied to the transmitter modulation port. As shown in FIG. **4**, the inverse process is performed at the receiver including extracting the transmitter identification information (TII). As discussed in detail below, the receiver **4** uses the transmitter identification number to determine the current geographical location of the receiver in order to select different categories of data to be provided to the user of the receiver based on the determined geographical location.

In particular, the individual data channels **11** of the composite signal that are transmitted nationwide by the system have the ability to define, through the use of header information, which geographical area the data is targeted for. That is, the information contained within each channel **11** of the composite signal can be subdivided into a plurality subchannels **15**, wherein each of the subchannels **14** contains information directed to different geographically defined regions. The intended geographic region of each subchannel **15** is identified by information contained in the packet headers (or frame headers). For example, as shown in FIG. **2**, a 64 kbps channel **11** can be divided into eight low-rate subchannels **15** (service components), wherein each subchannel **15** comprises 8 kbps of information and is targeted for a different geographic region. It should be noted that since the capacity of each channel may vary from 8 kbps to 1024 kbps, the number of subchannels within a particular channel is variable depending on the channel capacity and the capacity required for each subchannel.

With reference to FIG. **4**, upon reception of the composite signal from the terrestrial repeater **3**, the receiver **4** determines the transmitter identification number and the current location of the receiver **4** based on the transmitter identification number (steps **21** and **22**). When the receiver **4** is located in an area of satellite only coverage (i.e., no terrestrial receiver signal reception is available), the transmitter identification number which was last received by the receiver is used (step **23**). Based on the transmitter identification number, the receiver **4** then determines the current geographical location of the receiver **4** and compares the current location to the header information carried in the packets comprising the data channel to determine which information (subchannel) is available to the receiver **4** (steps **24** and **25**). The receiver **4** then provides the selected information within the data channel to a user of the receiver **4** so that user may access services that are directed to audiences in the geographic location of the receiver **4** (step **26**). This feature would be transparent to the user. Accordingly, the receiver can provide geographically targeted broadcast data, such as weather, sports scores, advertisements and the like, to subscribers.

In order to implement the method of preferred embodiment across multiple categories or regions, a given channel **11** must be capable of being allocated (e.g., up to 16 kbps) a predetermined capacity for the transmission of data. This would allow the simultaneous transmission of weather forecasts for locations throughout the country in order for a given radio to choose and provide forecast information pertinent to its category or geographic region. For example, four geographic regions **5–8** (FIG. **1**) are defined so that the terrestrial repeaters within each particular geographic areas **5–8** would transmit same transmitter identification number grouping data. This would allow for a nationwide weather channel that would be assigned the same station number but carried several weather data streams with their associated geographical identifiers. When a user in geographic area **5** tuned to this channel, the user would only hear the weather information pertinent to geographic area **5** (the current location of the receiver).

Similarly, if a subscriber is listening to sports programming on a national sports channel, and this channel is providing sports scores, the subscriber might only receive scores for nationally known teams and small local schools within the geographical region in which the receiver is currently located. The system would accomplish this by having the service broadcast nationally the scores for local teams all around the country, flagging each group with the category for their region.

Another application of the preferred embodiment is geographically targeted advertisements, in a subdivided audio signal and/or a service information text, according to customer demographic or attitudinal traits. For example, a nationwide audio program could allocate time for an advertisement, wherein the advertisement would carry several unique commercial segments with different transmitter identification number data. In this manner, the subscriber receiver would only provide the audio for the advertisement relative to his location. Moreover, since advertisements generally have lower data rate or capacity requirements, they may be targeted at narrower audiences.

Although the present invention has been shown and described with respect to preferred embodiment, various changes and modifications within the scope of the invention will readily occur to those skilled in the art.

What is claimed is:

**1**. A communications method comprising the steps of:

transmitting a data signal from a transmitter, said data signal comprising a plurality of data channels and information identifying said transmitter;

receiving said data signal at a receiver; and

selectively providing data contained in one of said data channels to a user of said receiver based on said information identifying said transmitter, said data being directed to users within a geographic area corresponding to the location of said transmitter.

**2**. The method according to claim **1**, wherein said step of selectively providing data contained in one of said data channels comprises determining a geographical location of said receiver based on said information identifying said transmitter and selectively providing said data contained in one of said data channels to a user of said receiver based on said geographical location of said receiver.

3. The method according to claim 2, wherein at least one of said data channels comprises a plurality of sub-channels corresponding to a plurality of geographic regions and said step of selectively providing data contained in one of said data channels further comprises selecting one of said sub-channels based on said geographical location of said receiver and providing said data contained in said one of said sub-channels to said user of said receiver.

4. The method according to claim 3, wherein each of said sub-channels includes information identifying said geographic regions to which said sub-channels correspond.

5. The method according to claim 4, said information identifying said geographic regions to which said sub-channels correspond is provided in headers of data packets which comprise said sub-channels.

6. A communications method for transmitting and receiving geographically targeted information in a satellite communications network comprising a satellite, a plurality of terrestrial repeaters and a receiver, said method comprising the steps of:

transmitting a composite signal from one of said terrestrial repeaters, said composite signal comprising a plurality of data channels;

receiving at said receiver said composite signal transmitted from one of said terrestrial repeaters;

determining at said receiver a geographical location of said receiver based on information contained in said composite signal; and

selectively providing information contained in one of said data channels to a user of said receiver based on said geographical location of said receiver.

7. The method according to claim 6, wherein at least one of said channels comprises a plurality of sub-channels each corresponding to a different geographic region, and said step of selectively providing information contained in one of said data channels further comprises selecting one of said sub-channels based on said geographical location of said receiver and providing said information contained in said one of said sub-channels to said user of said receiver.

8. The method according to claim 7, wherein said composite signal includes a transmitter identification number which is unique to said one of said terrestrial repeaters and said step of determining said geographical location of said receiver comprises determining said geographical location of said receiver based on said transmitter identification number.

9. The method according to claim 7, wherein each of said sub-channels includes information identifying said geographic regions to which said sub-channels correspond.

10. The method according to claim 6, wherein said composite signal comprises a time division multiplexed (TDM) signal.

11. A communications method for transmitting and receiving geographically targeted information in a satellite communications network comprising a satellite, a plurality of terrestrial repeaters, and a receiver, said method comprising the steps of:

transmitting a first composite signal from said satellite, said composite signal comprising a plurality of data channels;

receiving said first composite signal at one of said terrestrial repeaters;

retransmitting said first composite signal from said one of said terrestrial repeaters as a second composite signal comprising said plurality of data channels and information identifying said one of said terrestrial repeaters;

receiving at said receiver said second composite signal transmitted from said one of said terrestrial repeaters;

determining at said receiver a geographical location of said receiver based on said information identifying said one of said terrestrial repeaters; and

selecting information contained in one of said data channels based on said geographical location of said receiver and providing said information to a user of said receiver.

12. The method according to claim 11, wherein at least one of said channels comprises a plurality of sub-channels corresponding to a plurality of geographic regions, and said step of selecting information contained in one of said data channels further comprises selecting one of said sub-channels based on said geographical location of said receiver and providing information contained in said one of said sub-channels to said user of said receiver.

13. The method according to claim 12, wherein each of said sub-channels includes information identifying said geographic regions to which said sub-channels correspond.

14. The method according to claim 11, wherein said information identifying said one of said terrestrial repeaters comprises a unique transmitter identification number.

15. A communications system comprising:

at least one satellite for transmitting a first composite data signal comprising a plurality of data channels;

at least one terrestrial repeater for receiving said first composite data signal from said satellite and retransmitting said first composite data signal as a second composite data signal comprising said plurality of data channels and information identifying said terrestrial repeater; and

a receiver for receiving said second composite signal transmitted from said terrestrial repeater and selectively providing program information contained in one of said data channels to a user of said receiver based on said information identifying said terrestrial repeater, said program information being directed to users within a geographic area corresponding to the location of said transmitter.

16. The communications system according to claim 15, wherein at least one of said channels comprises a plurality of sub-channels corresponding to a plurality of geographic regions, and said receiver selectively provides information contained in one of said channels by determining a geographical location of said receiver based on said information identifying said transmitter, selecting one of said sub-channels based on said geographical location of said receiver and providing said information contained in said one of said sub-channels to said user of said receiver.

17. The communications system according to claim 15, wherein said information identifying said terrestrial repeater comprises a transmitter identification number which is unique to said terrestrial repeater.

18. A communications method comprising the steps of:

transmitting a data signal from a transmitter, said data signal comprising a plurality of data channels and information identifying said transmitter;

receiving said data signal at a receiver; and

selectively providing data contained in one of said data channels to a user of said receiver based on said information identifying said transmitter;

wherein said step of selectively providing data contained in one of said data channels comprises determining a geographical location of said receiver based on said information identifying said transmitter and selectively

providing said data contained in one of said data channels to a user of said receiver based on said geographical location of said receiver; and

wherein at least one of said data channels comprises a plurality of sub-channels corresponding to a plurality of geographic regions and said step of selectively providing data contained in one of said data channels further comprises selecting one of said sub-channels based on said geographical location of said receiver and providing said data contained in said one of said sub-channels to said user of said receiver.

**19**. The method according to claim **18**, wherein each of said sub-channels includes information identifying said geographic regions to which said sub-channels correspond.

**20**. The method according to claim **19**, said information identifying said geographic regions to which said sub-channels correspond is provided in headers of data packets which comprise said sub-channels.

**21**. A communications method for transmitting and receiving geographically targeted information in a satellite communications network comprising a satellite, a plurality of terrestrial repeaters and a receiver, said method comprising the steps of:

transmitting a composite signal from one of said terrestrial repeaters, said composite signal comprising a plurality of data channels;

receiving at said receiver said composite signal transmitted from one of said terrestrial repeaters;

determining at said receiver a geographical location of said receiver based on information contained in said composite signal; and

selectively providing information contained in one of said data channels to a user of said receiver based on said geographical location of said receiver;

wherein at least one of said channels comprises a plurality of sub-channels each corresponding to a different geographic region, and said step of selectively providing information contained in one of said data channels further comprises selecting one of said sub-channels based on said geographical location of said receiver and providing said information contained in said one of said sub-channels to said user of said receiver;

wherein said composite signal includes a transmitter identification number which is unique to said one of said terrestrial repeaters and said step of determining said geographical location of said receiver comprises determining said geographical location of said receiver based on said transmitter identification number.

**22**. A communications method for transmitting and receiving geographically targeted information in a satellite communications network comprising a satellite, a plurality of terrestrial repeaters and a receiver, said method comprising the steps of:

transmitting a composite signal from one of said terrestrial repeaters, said composite signal comprising a plurality of data channels;

receiving at said receiver said composite signal transmitted from one of said terrestrial repeaters;

determining at said receiver a geographical location of said receiver based on information contained in said composite signal; and

selectively providing information contained in one of said data channels to a user of said receiver based on said geographical location of said receiver;

wherein at least one of said channels comprises a plurality of sub-channels each corresponding to a different geographic region, and said step of selectively providing information contained in one of said data channels further comprises selecting one of said sub-channels based on said geographical location of said receiver and providing said information contained in said one of said sub-channels to said user of said receiver;

wherein each of said sub-channels includes information identifying said geographic regions to which said sub-channels correspond.

**23**. The method according to claim **22**, wherein said information identifying said geographic regions to which said sub-channels correspond is provided in headers of data packets which comprise said sub-channels.

**24**. A communications method for transmitting and receiving geographically targeted information in a satellite communications network comprising a satellite, a plurality of terrestrial repeaters, and a receiver, said method comprising the steps of:

transmitting a first composite signal from said satellite, said composite signal comprising a plurality of data channels;

receiving said first composite signal at one of said terrestrial repeaters;

retransmitting said first composite signal from said one of said terrestrial repeaters as a second composite signal comprising said plurality of data channels and information identifying said one of said terrestrial repeaters;

receiving at said receiver said second composite signal transmitted from said one of said terrestrial repeaters;

determining at said receiver a geographical location of said receiver based on said information identifying said one of said terrestrial repeaters; and

selecting information contained in one of said data channels based on said geographical location of said receiver and providing said information to a user of said receiver;

wherein at least one of said channels comprises a plurality of sub-channels corresponding to a plurality of geographic regions, and said step of selecting information contained in one of said data channels further comprises selecting one of said sub-channels based on said geographical location of said receiver and providing information contained in said one of said sub-channels to said user of said receiver;

wherein each of said sub-channels includes information identifying said geographic regions to which said sub-channels correspond.

**25**. The method according to claim **24**, wherein said information identifying said geographic regions to which said sub-channels correspond is provided in headers of data packets which comprise said sub-channels.

**26**. A communications method for transmitting and receiving geographically targeted information in a satellite communications network comprising a satellite, a plurality of terrestrial repeaters, and a receiver, said method comprising the steps of:

transmitting a first composite signal from said satellite, said composite signal comprising a plurality of data channels;

receiving said first composite signal at one of said terrestrial repeaters;

retransmitting said first composite signal from said one of said terrestrial repeaters as a second composite signal comprising said plurality of data channels and information identifying said one of said terrestrial repeaters;

receiving at said receiver said second composite signal transmitted from said one of said terrestrial repeaters;

determining at said receiver a geographical location of said receiver based on said information identifying said one of said terrestrial repeaters; and

selecting information contained in one of said data channels based on said geographical location of said receiver and providing said information to a user of said receiver;

wherein said information identifying said one of said terrestrial repeaters comprises a unique transmitter identification number.

**27**. A communications system comprising:

at least one satellite for transmitting a first composite data signal comprising a plurality of data channels;

at least one terrestrial repeater for receiving said first composite data signal from said satellite and retransmitting said first composite data signal as a second composite data signal comprising said plurality of data channels and information identifying said terrestrial repeater; and

a receiver for receiving said second composite signal transmitted from said terrestrial repeater and selectively providing information contained in one of said data channels to a user of said receiver based on said information identifying said terrestrial repeater;

wherein said information identifying said terrestrial repeater comprises a transmitter identification number which is unique to said terrestrial repeater.

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