Before The
FEDERAL COMMUNICATIONS COMMISSION
WASHINGTON, D.C.

In the matter of:	)	
	)	
Amendment of Part 90 of the Commission's	)	RM No. 10403
Rules Governing the Location and	)	
Monitoring Service to Provide Greater	)	
Flexibility	)	

REPLY COMMENTS OF REC NETWORKS

REC Networks ("REC") is a supporter of locally owned and diverse radio. REC currently operates several Internet only streams including Anime Hardcore Radio 1, Anime Hardcore Radio 2, Anime Hardcore Radio 3, Anime Hardcore Narrowband and Hardcore J. These stations feature primarily Japanese language music programming targeted to an English speaking audience. REC also operates several websites including the original LPFM Channel Search Tool. REC Networks also represents the interests of independently owned Low Power FM ("LPFM") broadcast stations and their listeners. The owner of REC Networks holds an Advanced Class Amateur Radio license, K7REC.

REC is concerned about this proceeding and it's impact on the Amateur Radio Service in the 33cm band (902 - 928 MHz).

Warren C. Havens and Telesaurus Holdings GB, LLC ("Havens") states that there are a small number of amateur radio repeaters in the 33cm band. FM voice repeaters are only one of many different amateur radio operations. The 33cm band is currently used in many metropolitan areas for amateur television (ATV) operations. ATV operations in the 33cm band mainly consist of inputs or outputs of ATV repeaters.

An ATV repeater is an ATV station that is on a mountaintop that receives an NTSC television signal directed at it and then relays (repeats) the signal on another frequency.

Because of their high elevation, an ATV repeater can serve a large area. An ATV signal is 6 MHz wide, just like a conventional NTSC broadcast television signal.

Since the bandwidth on an ATV signal is so wide and the repeaters are on mountaintops, publications, such as the *ARRL Repeater Directory* would not have a lot of listings for ATV repeaters. The repeaters that are listed are well used.

In addition to ATV, the 33 cm band can also be used for point to point links. These links send either voice or data signals along long distances, usually between mountaintop locations. To protect the integrity of these links, frequency coordinators seldom list the existence of such links in publications such as the *ARRL Repeater Directory*.

Several years ago in Southern California, the Southern California Repeater and Remote Base Association, the recognized frequency coordinator for 33cm had a band planning meeting. I participated in this meeting as a party who had an interest in the 33cm band. Also present at the meeting were representatives from Teletrac. This was to assure that Amateur Radio and LMS could share the same band without causing interference. As a result of the meeting, a new band-plan specific to Southern California was developed. It did cause some systems, including the ATV repeater at Oat Mountain, had to change their operating frequencies.

In addition, REC also utilizes low power 900 MHz wideband devices to feed audio in lieu of running cable. This is used for some of our operations. We have no plans to replace these devices with 2.4 GHz devices and additional services on the 900 MHz band could cause harmful interference to home electronics equipment.

In conclusion, the Amateur Radio Service uses the 33 cm band for purposes other than voice repeaters. The 33 cm band is necessary for Amateur Radio operators to transmit video signals, sometimes from disaster scenes to mountaintop repeaters. Many of these repeaters either use 33 cm for the input where it depends on receiving a weak signal from an individual amateur station or it is an output channel blanketing it's community with ATV coverage. I urge the FCC to not discount the services provided in the 33 cm band by the Amateur Radio Service when considering any decisions to expand LMDS services.

Respectfully Submitted,

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APPENDIX 1

33CM AMATEUR RADIO BANDPLAN FOR SOUTHERN CALIFORNIA

source:
http://www.scrrba.org/BandPlans/33cm.htm

Southern California 33cm Band Plan (902 - 928MHz)

Adopted May 19, 1990

Frequency (MHz)	Useage
902.00	Weak Signal
902.10 - 903.00	Repeater Point-to-Point Link Inputs
903.00	Non-Amateur Automatic Vehicle Monitoring (AVM)
904.00	Non-Amateur Automatic Vehicle Monitoring (AVM)
912.00	Digital
912.10	Digital
912.20	ATV Simplex and ATV Repeater Input
913.25	ATV Visual Carrier
917.75	ATV Aural Carrier
917.90	Digital
918.00	Non-Amateur Automatic Vehicle Monitoring (AVM)
918.00	ATV Repeater Output (coordinated with AVM users on a case-by-case basis)
919.25	ATV Repeater Visual Carrier
923.75	ATV Repeater Aural Carrier
926.00	Non-Amateur Automatic Vehicle Monitoring (AVM)
927.00	Digital
927.10 - 928.00	Repeater and Point-to-Point Link Outputs

APPENDIX 2

33CM AMATEUR RADIO BANDPLAN FOR SOUTHERN CALIFORNIA NOTES/NEWS RELEASE

source:
http://www.scrrba.org/Announcements/1990/33cmBandPlan.htm

Southern California Adopts A New 33cm Band Plan

May 19, 1990 -- At a meeting in Anaheim, CA, on May 19, 1990, sponsored by the Southern California Repeater and Remote Base Association (SCRRBA), representatives of all southern California 33 cmeter band users' groups discussed proposals, debated alternatives, and then unanimously adopted a new 902-928 MHz band utilization plan.

On November 16, 1985, southern California adopted a 33 cmeter band plan. On March 26, 1988, the American Radio Relay League (ARRL) Membership and Services committee met in Torrance, CA and adopted the present ARRL band plan. This plan is only slightly modified from the SCRRBA plan. In November, 1989, International Teletrac Systems (ITS) and Pacific Telesis Group (PACTEL) commenced testing of an AVM system utilizing 904-912 MHz in southern California. This system is to go into commercial operation in 1990. On December 7, 1989, SCRRBA suspended all coordination on the 33 cmeter band. A meeting in January with ITS/PACTEL yielded sufficient information and data for SCRRBA to determine that it was necessary to call a band planning conference.

Unlike other Amateur Radio Service (ARS) bands, 33 cmeters is shared with several services: Military; Industrial, Scientific and Medical
(ISM, Part 18); Government (Non-military); Automatic Vehicle Monitoring (AVM, Part 90); and Radio Frequency Devices (RFD, Part 15). In all cases except RFD, Part 15, the ARS is secondary and/or must tolerate any and all interference.

Research of current licensing and business activities produced numerous, nation wide AVM systems on line or in development for 33 cmeters. It is very apparent to SCRRBA that the 90's will be the decade for the explosion of the AVM service.

Much discussion centered around the AVM, Part 90, service and the secondary status of the ARS as defined by CFR, Title 47, FCC Rules & Regulations, 97.303 (g) (1). Southern California has successfully shared other ARS bands such as 75 cmeters with the military but has no experience with part 90 or ISM. Operating specifications for ITS/PACTEL system and the secondary status of ARS convinced the conference that co-channel sharing was not obtainable. Sharing with the ISM service is not equal. ARS must tolerate ISM interference, but by design will not cause interference to ISM (nonreceiving service).

The conference noted that the RFD service (Part 15) is secondary to the ARS. But in noting this, it was also recognized that practical enforcement was pure fiction. Much information was shared by attendees concerning the voluminous and exponentially expanding Part 15 activities. The conference unanimously agreed that the 90's would also prove to be the decade of the "spread spectrum" (Part 15) device, operated to the determent of the ARS on the 33 cmeter band. The direct effect from these

devices will be interference and the indirect effect will be an ever increasing noise floor.

The adopted plan recognizes the only segments of the band available to the ARS in urban areas are 902-903 and 927-928 MHz. 912-918 is also available but with reduced capabilities. These segments (8 MHz) represent a 60 percent reduction in ARS 33 cmeter spectrum as listed in Part 97 (26 MHz).

901-902 MHz is currently held in reserve and stands a good chance of becoming LMS repeater input spectrum. 928-932 MHz contains LMS high power paging transmitters without spectrum filtering, multiple address systems, one way signaling, point-to-multipoint, and point-to-point. The low end of the band, 902-903 MHz, is most suitable for ARS receivers at communication sites (comm. sites). Also this is the cleanest spectrum available for weak signal applications and is most compatible with repeater and link inputs. It was found that repeater and link transmitters best shared the 927-928 MHz spectrum at comm. sites adjacent to the LMS paging systems. This is identical to the long standing practice in southern California of placing ARS repeater outputs (445 to 450 MHz) adjacent to commercial repeater outputs (450 to 455 MHz) at comm. sites. Part 90, 900 MHz, LMS standards for repeater and link operations were adopted to maximize the channel pairs available (72) within the two 900 kHz subbands that are 25 MHz apart.

912 to 918 MHz is the only spectrum wide enough to support ATV and only as simplex and/or an out of band repeater input (typically repeater output is on 23 cmeters). 33 cmeter ARS amplitude modulated fast scan television transmitters are considered to be comprised of an amplitude modulated visual carrier along with a frequency modulated aural signal. This aural signal may be transmitted as a totally separate RF carrier, a separate RF carrier amplified along with the visual carrier, or a low frequency (4.5 MHz) sub-carrier inserted into the video signal before it is amplitude modulated onto the visual carrier.

The spectrum adjacent to this 6 MHz segment is primarily governed by part 90. Discussion ensued as to how ATV could best use this segment. After the Forum, the Technical Committee pursued this discussion and selected the following standards to be RECOMMENDED as MINIMUMS that should be followed to protect the AVM activity that is in the lower side band of the ATV signal. ITS/PACTEL AVM receivers (904 to 912 MHz, high performance, low noise) are installed and operation at all major southern California comm. sites.

33 cmeter fast scan television transmissions should utilize vestigial sideband emissions.

Frequency Tolerance Description

MHz or Limit

> -40 dBc Output Emissions

909.250----------

> -33 dBc Output Emissions

910.250----------

913.250 +/-25 KHz Visual Carrier

917.750 +/-25 KHz Aural Carrier

918.250----------

> -33 dBc Output Emissions

dBc = Decibel below peak visual carrier. Therefore, > -40 dBc = greater than 40 decibel below peak carrier.

NTSC compatible transmissions are encouraged wherever possible. The visual modulation should not be allowed to go below 10% of peak sync. The aural modulation should not exceed 50 kHz peak deviation.

The conference allocated 400 kHz of spectrum for digital communications. 300 kHz of this spectrum is within the edges of the ATV segment which represents an engineering solution that SCRRBA has successfully employed on other bands. This digital spectrum is to be used in 100 kHz bandwidth segments for 25 kHz or greater bandwidth, high baud rate, backbone type activities, coordinated on a case-by-case basis. This spectrum is not intended for direct use by standard narrow bandwidth (less than 25 kHz) users.

Present at the meeting were a total of 30 persons as representatives for the SCRRBA Technical Committee, ARRL, ATV repeaters, ATV simplex, digital/packet, weak signal, links, remote base, and repeaters.

Bill Kelsey, WA6FVC (W6QC)

Chairman

APPENDIX 3

NATIONWIDE LISTING OF 33cm ATV REPEATERS KNOWN TO REC

Source: ATV Quarterly Magazine

33CM ATV REPEATER LIST

State	Area	Freq / Mode	Use/Comments
AR	PINE BLUFF	910.0 FMTV	REPEATER OUTPUT
CA	BLUE RIDGE	919.25 NTSC	REPEATER OUTPUT
CA	OAT MOUNTAIN	919.25 NTSC	REPEATER OUTPUT-Los Angeles Metro
CA	PALOMAR MOUNTAIN	915.0 FMTV	REPEATER INPUT - San Diego Metro
CA	PALOMAR MOUNTAIN	919.25 NTSC	REPEATER INPUT
CO	COLORADO SPRINGS	911.25 NTSC	REPEATER INPUT
DE	WILMINGTON	910.25 NTSC	REPEATER OUTPUT
FL	HIALEAH	914.25 NTSC	REPEATER INPUT
FL	HOLLIDAY	910.25 NTSC	REPEATER INPUT
FL	JACKSONVILLE	910.25 NTSC	REPEATER INPUT
FL	JACKSONVILLE	923.25 NTSC	REPEATER OUTPUT
FL	MIAMI	910.25 NTSC	REPEATER INPUT
FL	MIAMI	913.25 NTSC	REPEATER INPUT
IA	DAVENPORT	910.25 NTSC	REPEATER INPUT
ID	BOISE	905.00 NTSC	REPEATER INPUT
IL	ALEXIS	910.25 NTSC	REPEATER INPUT
IL	CHICAGO	916.00 FMTV	REPEATER OUTPUT
IL	CHICAGO	910.25 NTSC	REPEATER OUTPUT
IN	EVANSVILLE	910.25 NTSC	REPEATER OUTPUT
IN	INDIANAPOLIS	911.25 NTSC	REPEATER OUTPUT
IN	NOBELSVILLE	911.25 NTSC	REPEATER OUTPUT
KY	BOWLING GREEN	916.25 FMTV	REPEATER INPUT
KY	LEXINGTON	923.25 NTSC	REPEATER OUTPUT
LA	SHREVEPORT	915.00 FMTV	REPEATER INPUT
MD	BALTIMORE	911.25 NTSC	REPEATER OUTPUT
MN	MINNEAPOLIS	910.25 NTSC	REPEATER INPUT
MO	HIGH RIDGE	910.25 NTSC	REPEATER INPUT
MO	ST. LOUIS	923.25 NTSC	REPEATER INPUT
MS	GAUTTER	911.25 NTSC	REPEATER OUTPUT
NE	GRAND ISLAND	923.25 NTSC	REPEATER OUTPUT
NH	GOFFSTOWN	911.25 NTSC	REPEATER INPUT
NH	GOFFSTOWN	923.25 NTSC	REPEATER OUTPUT
NV	UPPER POTOSI	913.00 FMTV	REPEATER INPUT (Las Vegas-very wide)
OH	COLUMBUS	915.00 FMTV	REPEATER INPUT
OH	TOLEDO	923.25 NTSC	REPEATER OUTPUT
OH	VAN WERT	923.25 NTSC	REPEATER INPUT
OR	PORTLAND	910.25 NTSC	REPEATER INPUT
PA	HAZELWOOD	910.25 NTSC	REPEATER INPUT
PA	PHILADELPHIA	923.25 NTSC	REPEATER OUTPUT
PA	YORK	923.25 NTSC	REPEATER OUTPUT
TX	AUSTIN	907.25 NTSC	REPEATER INPUT
TX	BOYD	907.25 NTSC	REPEATER INPUT
TX	DALLAS	910.00 FMTV	REPEATER INPUT
TX	ELMO	923.25 FMTV	REPEATER INPUT
TX	ELMO	910.25 FMTV	REPEATER INPUT
TX	KATY (HOUSTON)	915.00 FMTV	REPEATER OUTPUT
TX	MARSHALL	915.00 FMTV	REPEATER INPUT
TX	WACO	910.25 NTSC	REPEATER INPUT
VA	LYNCHBURG	923.25 NTSC	REPEATER OUTPUT
WI	BARABOO	913.25 NTSC	REPEATER INPUT
WI	WAUSAU	915.00 FMTV	REPEATER OUTPUT

APPENDIX 4

33cm NATIONWIDE BANDPLAN (EXCEPT SOUTHERN CALIFORNIA)

Source: ARRL

902.0-903.0	Narrow-bandwidth, weak-signal communications
902.0-902.8	SSTV, FAX, ACSSB, experimental
902.1	Weak-signal calling frequency
902.8-903.0	Reserved for EME, CW expansion
903.1	Alternate calling frequency
903.0-906.0	Digital communications
906-909	FM repeater outputs
909-915	ATV
915-918	Digital communications
918-921	FM repeater inputs
921-927	ATV
927-928	FM simplex and links

Note: The 902 MHz band plan was adopted by the ARRL Board of Directors in July 1989