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March 26, 2007

By Electronic Filing

Ms. Marlene H. Dortch
Federal Communications Commission
445 12th Street, SW
Washington, DC 20554

**Re: In the Matter of Amendment of Section 90.20(e)(6) of the
Commission's Rules, WT Docket No. 06-142, RM-11135
Ex Parte Presentation**

Dear Ms. Dortch:

Attached, in response to staff inquiries, is information intended to supplement information already filed by LoJack in the above-captioned proceeding.

Please direct questions concerning this matter to the undersigned.

Sincerely,



Henry Goldberg

cc: Dana Schafer
Michael Wilhelm
Bruce Romano
Jeff Cohen
Tom Eng

Overview

LoJack has submitted a conclusive showing that the higher SVRS power levels for base stations and mobile transceivers it is proposing will adequately protect digital Channel 7 television reception and are needed to offset the adverse effects of converting to narrowband operations.

- There will be an improvement of 10 db or more in interference rejection capability as Channel 7 television stations convert from analog operations to digital operations,¹ which more than compensates for the 2.2 dB increase in SVRS base station power and 3 dB increase in mobile transceiver power that LoJack is requesting.
- The 2.2 dB and 3 dB power increases that LoJack has sought will only partially compensate for the degradation of up to 7 dB that will be caused by converting to narrower channels.
- Liberalizing the SVRS duty cycles will give LoJack the additional air time it needs to operate side-by-side 20 kHz and 12.5 kHz channel systems during the multi-year transition from wider channels to narrower channels and will make it possible for LoJack to support additional public safety services.
- Given LoJack's request to activate mobile transceivers using mobile telephone networks in geographic areas where there are no base stations, the only conceivable risk of interference in such areas will be from operation of mobile SVRS mobile transceivers. And, whether activated by base stations or mobile telephone facilities, that risk is negligible since the power is low and the numbers of mobile SVRS transceivers in operation at the same time in the same area is and will remain small, given that they are activated only when the vehicle or item is stolen. In almost all locations, there are no mobile units in operation at any given time.

Power Increase

Compensating for Narrowbanding

LoJack is requesting an increase in maximum base station ERP from 300 watts to 500 watts and an increase in maximum output power for mobile transceivers from 2.5 watts to 5 watts, in order to compensate for the degradation that will be caused by converting to narrowband operations. These proposals amount to a 2.2 dB increase for base stations and a 3 dB increase for mobile transceivers.

¹ *In the Matter of Amendment of Section 90.20(e)(6) of the Commission's Rules*, Comments of LoJack Corporation at Attachment B, p. 5, WT Docket No. 06-142 (Sept. 22, 2006) ("Du Treil 9-06 Study") and Reply Comments of LoJack Corporation at p. 1 of Attachment (Oct. 10, 2006) ("Du Treil 10-06 Study").

Although ABC Owned Television Stations (“ABC”) asserted that power should be reduced because a narrower bandwidth will improve elements of SVRS performance by approximately 2 dB, LoJack submitted a detailed technical analysis showing that, even after the 2 dB noise reduction that is attributable to using a narrower bandwidth is taken into account, the adverse impact on system performance from converting to narrower channels will be up to 7 dB.² No party has submitted a technical analysis that is to the contrary, and the 2.2 dB and 3 dB power increases that LoJack has sought for SVRS base stations and mobile transceivers will only partially offset the degradation of up to 7 dB in system performance as a result of narrowbanding.

Protecting Digital Television Reception

MSTV/NAB questions whether the technical analysis the Commission had relied on previously, based on which it concluded that LoJack’s base stations and mobile transceivers adequately protect analog television reception on Channel 7, is applicable to the protection of digital television reception on that channel. MSTV/NAB suggests that new studies are needed to evaluate the potential for LoJack’s systems to interfere with the reception of digital television signals on Channel 7.

As discussed in LoJack’s Comments, Reply Comments, and accompanying technical studies, however, the Commission already has quantified, based on studies that were conducted, the improvement in receiver interference rejection performance that can be realized from converting from an analog receiver to a digital receiver. Based on the Commission’s findings, LoJack showed it can be determined that the maximum undesired signal permissible from a lower adjacent channel LoJack transmitter should be at least 10 dB higher for DTV reception than for analog TV reception.³ No party submitted a technical analysis that was responsive to this showing. Given that the power increases LoJack is proposing are well below 10 db (see above), it follows that DTV signals will enjoy greater protection under LoJack’s proposed power levels than analog signals enjoy now under the power levels that are currently permitted.

² *In the Matter of Amendment of Section 90.20(e)(6) of the Commission’s Rules*, Comments of LoJack Corporation at Attachment A, p. 1, WT Docket No. 06-142 (Sept. 22, 2006) (“Goodwin Study”).

³ LoJack also demonstrated that this 10 dB figure is conservative, because it is based on having an analog television signal as the undesired signal, and for various reasons a LoJack signal has less potential for interfering with DTV reception than an analog television signal. See Du Treil 9-06 Study at 2 and *Potential for Interference to DTV Reception from LoJack Transmissions*, Carl T. Jones Corporation (May 9, 2000) (“Jones Report”). A lower adjacent channel analog NTSC signal has its frequency modulated (FM) aural carrier removed only 250 kHz from the lower edge of the desired TV station’s channel, whereas a LoJack base station’s signal is removed 925 kHz from the lower edge of the desired Channel 7 TV station’s signal. Furthermore, the TV aural bandwidth is at least 50 kHz whereas the LoJack bandwidth is 20 kHz or less. A DTV receiver should provide better performance in rejecting out-of-band emissions from a 20 kHz or less LoJack signal that is 925 kHz removed from the lower channel edge than in rejecting out-of-band emissions from a 50 kHz or more analog TV aural signal that is only 250 kHz from the lower channel edge.

Duty Cycle Liberalization

Need for Duty Cycle Revisions

LoJack supports the Commission's proposal in the *NPRM* to increase the duty cycle for SVRS base stations from one second per minute to five seconds per minute. It also supports the Commission's proposals to increase the general duty cycle limit for SVRS mobile transceivers from 200 milliseconds every ten seconds to 400 milliseconds every ten seconds; and the duty cycle limit for mobile transceivers that are being actively tracked from 200 milliseconds per second to 400 milliseconds per second. As a refinement to the Commission's proposals, LoJack has suggested that the duty cycle relief for SVRS mobile transceivers apply to both 12.5 kHz channel mobile stations and 20 kHz mobile stations.

LoJack had requested duty cycle relief in its Petition for Rulemaking to compensate for the fact that operating side by side systems with narrower channels and wider channels during the lengthy transition to a narrowband system will require significantly more "air time." LoJack also sought the duty cycle changes so it can support activation, tracking, and location for additional public safety and security services, as discussed in its Petition for Rulemaking.⁴

In addition to the above facts supporting duty cycle relief, a less restrictive duty cycle will facilitate more effective tracking by police of stolen vehicles and other items. For example, LoJack can use extra transmit time to send additional information to police regarding stolen vehicles. Currently, police must enter a special code into their computers to obtain the make and model of a stolen vehicle. An enhanced duty cycle will enable LoJack to send this information directly to police trackers.

Response to Broadcasters

In its Reply Comments, LoJack thoroughly refuted ABC's objections to the proposed duty cycle changes. As shown in the Reply Comments:

- ABC did not even address the impact of the need for side by side operations on LoJack's air time requirements.
- ABC's objections as to whether the current duty cycle adequately protects Channel 7 reception were addressed long ago, when the Commission first

⁴ LoJack notes that it has an incentive to minimize its duty cycle use, as it operates a simplex system that cannot transmit and receive at the same time. It is in LoJack's best interest to minimize base station transmissions because of the importance of maximizing the amount of time that its system can receive transmissions from mobile units, which in turn maximizes the chance of recovering stolen vehicles.

adopted SVRS rules, and are contradicted by LoJack's unbroken record of operating without causing objectionable interference to Channel 7 reception.

- ABC's argument that TV viewers experiencing interference would not know to object to LoJack is beside the point, because the viewers could complain to their local television station or cable operator, which then could register an objection with the Commission.
- ABC claims that duty cycle limits will assume greater significance as television stations convert to digital operations because, in its view, DTV transmissions are more susceptible to interference than analog television transmissions. This claim, however, lacks technical support, is inconsistent with the Commission's own findings, and is contradicted by the 10 dB improvement in interference rejection that LoJack has demonstrated will occur.

Number of Mobile Transceivers

MSTV/NAB and ABC make dire predictions about potential interference from SVRS mobile transceivers based on the maximum numbers of mobile units that are authorized under some SVRS licenses and on the additional mobile units that might be introduced if additional public safety tracking and location services were permitted. These predictions are alarmist and false, because they do not take into account the small number of mobile transceivers that are in operation at any given time.

Virtually all of LoJack's mobile units are in a silent mode virtually all of the time. The only mobile units that transmit are the ones installed in a vehicle that has been reported stolen. On average, only 40 mobile units are activated each day in the entire 26-state and the District of Columbia area served by LoJack's system, which accounts for approximately two thirds of the vehicle sales and vehicle thefts in the country.

The additional public safety uses LoJack has proposed are narrowly circumscribed. Even if the number of activations were to increase to several times the current 40/day figure as a result of an expansion in permissible services, the number of mobile units in operation would remain small, and in almost all locations there would be no mobile units in operation at any given time.

The broadcasters have offered no response to these showings. Accordingly, there is no basis for their suggestion that large numbers of mobile units would be transmitting at the same time in the same area.

Present Duty Cycles

Base Stations:

The Commission has proposed to increase the SVRS base station duty cycle from 1 second per minute to 5 seconds per minute. LoJack presently operates its base stations at a maximum duty cycle of 900 milliseconds out of every 64 seconds when at maximum capacity. This allows LoJack to track 11 cars during any one interval. If LoJack needs to track more than 11 cars, it alternates sending messages to 11 cars during the first interval and to the remaining cars during the next interval. If there are no stolen vehicles within a base station's range, the stations operate at much lower duty cycles, which vary depending on the particular site. In terms of the requested 5 seconds per minute duty cycle proposed by the FCC, LoJack will require 1 second per minute to operate its current system, 1 second per minute to operate its concurrent narrowband system, and the remaining 3 seconds per minute to operate additional services. In terms of historical data, LoJack retains data on base station use for 30 days.

As noted above, the increased duty cycle will assist law enforcement in better tracking of stolen vehicles and other items by allowing LoJack to send additional information. It also will allow LoJack to send additional types of information necessary to operate additional new services.

Mobile Transceivers (VLUs):

Presently, there is a 300 second duty cycle slot between successive mobile transceiver uplink transmissions. For transmissions to police trackers (reply codes), the duty cycle is variable, operating for 0.2 seconds on/1.0 seconds off in "fast" mode and 0.2 seconds on/15 seconds off in "slow" mode.⁵ For transmissions to base stations (uplinks), each burst is 1.8 seconds. Typically, 4-5 uplinks are sent during the recovery process for a stolen vehicle. Additionally, motion alerts (for LoJack's optional Early Warning feature) may be sent once every 300 seconds for a maximum of 8 hours.⁶ On average there are only 40 active VLUs per day, and they are located across 26 states and the District of Columbia.⁷ This underscores the improbability of LoJack VLUs causing harmful interference to Channel 7 reception, whether analog or digital.

⁵ The VLU operates in "fast" mode for the first 30 minutes after it is activated and then slows down to 0.2 seconds on and 15 seconds off. However, the fast mode can be retriggered for another 30 minutes by sending a command over the air to the VLU, and in practice that usually occurs one or more times if the vehicle is not recovered during the first 30 minute period.

⁶ Only a small fraction of VLUs employ this Early Warning system. These uplinks will end before the 8 hour period is over when the vehicle stops moving or the key fob has been detected.

⁷ *In the Matter of Amendment of Section 90.20(e)(6) of the Commission's Rules*, Reply Comments of LoJack Corporation at p. 10, WT Docket No. 06-142 (Oct. 10, 2006).

Rule Changes Required by Narrowbanding

LoJack requires the following rule changes to operate a narrowband SVRS system:

- Increased base station power levels
- Increased duty cycles

LoJack requires the following rule changes to operate both a wideband and narrowband system during the narrowbanding transition period:

- Increased base station power levels
- 1 additional second per minute increased base station duty cycle

Rule Changes Required for More Effective System Operation

LoJack Requires the following rule changes to make its system more effective and to provide additional public safety related services, including homeland security such as tracking stolen hazardous materials:

- 3 additional seconds per minute increased base station duty cycle
- Increased VLU power level to 5 watts ERP
- Licensing by rule