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**AT&T Mobility • Proposed Base Station (Site No. LAC053)
4937 Las Virgenes Road • Calabasas, California**

Statement of Hammett & Edison, Inc., Consulting Engineers

The firm of Hammett & Edison, Inc., Consulting Engineers, has been retained on behalf of AT&T Mobility, a personal telecommunications carrier, to evaluate its base station (Site No. LAC053) proposed to be located at 4937 Las Virgenes Road in Calabasas, California, for compliance with appropriate guidelines limiting sound levels from the installation.

Executive Summary

AT&T proposes to modify its existing base station at the office building located at 4937 Las Virgenes Road in Calabasas, including the replacement of its antennas above the roof of the building and the installation of additional transmitting equipment within an equipment roof inside the building. Noise levels for the new configuration will be well below the municipal limits.

Prevailing Standard

The City of Calabasas sets forth limits on sound levels in Chapter 17.20.160 (Noise) of its Municipal Code, including the following hourly average limits in Table 3-1 for noise in the following zoning districts, assessed at the adjacent property lines:

Zone	Daytime (7 am to 10 pm)	Nighttime (10 pm to 7 am)
Residential – RR, RC, HM, OS	60 dBA	50 dBA
Residential – RS, RM, RMH	65	50
Residential – weekend*	60	50
Non-Residential	65	60
Recreation (with active areas)	70	60

Mechanical equipment operating during an emergency is not subject to these limits. Figure 1 attached describes the calculation methodology used to determine applicable noise levels for evaluation against the prevailing standard.

General Facility Requirements

Wireless telecommunications facilities (“cell sites”) typically consist of two distinct parts: the electronic base transceiver stations (“BTS”) that are connected to traditional wired telephone lines, and the antennas that send wireless signals created by the BTS out to be received by individual subscriber units. The BTS are often located outdoors and are connected to the antennas by coaxial cables. Fans are often integrated into the BTS and associated equipment cabinets, to cool the electronics inside.

* Daytime limits start and nighttime limits end at 8 am on Saturdays and Sundays, rather than 7 am.

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Site & Facility Description

According to information provided by AT&T, including drawings by Mycom, dated March 12, 2014, that carrier presently has a base station at the two-story office building located in the point of land south of the intersection of Las Virgenes Road with Highway 101, including antennas within a cupola above the roof of the building. A number of equipment cabinets are located inside an equipment room on the second floor, beneath the cupola; the room is cooled by two air conditioners, assumed for this study to be 2-ton Carrier units, with the associated condenser units on the roof, at about 80 feet from the nearest property line, to the northeast. † The units are typically installed as a pair for redundancy and alternate their operation, so that both do not operate simultaneously. The developed areas nearby are commercial; the nearest residential area is about 1,500 feet to the south, based on review of aerial photographs from Google Maps.

In order to upgrade service from this base station, AT&T proposes to install additional radio equipment in one of the cabinets in the room; because that adds a negligible amount to the total heat load, there is anticipated no change in the present noise levels from the operation of AT&T's air conditioners. There are also some nine other air-conditioning condenser units‡ installed on the roof, to cool the offices on the floors below. AT&T also proposes to replace its nine antennas with twelve, at similar mounting locations inside the cupola, but this portion of the base station does not generate noise, nor does AT&T have or propose to install at this site a back-up power generator.

Study Results

Carrier reports that the maximum sound level from the condensing units is 55.0 dBA, presumed to be measured in front of the units at a reference distance of 10 feet. Accounting just for the distance involved, before consideration of attenuating effects of the units' mounting locations on the roof, the maximum calculated noise level at the northeast property line from the AT&T operation is 36.9 dBA, well below the City's applicable limit of 60 dBA. In fact, noise levels are not expected to change as a result of the upgrades proposed by AT&T.

Conclusion

Based on the information and analysis above, it is the undersigned's professional opinion that the proposed operation of the AT&T Mobility base station located at 4937 Las Virgenes Road in Calabasas, California, will comply with that city's requirements for limiting acoustic noise emission levels.

† Estimate based on photographs from Google Maps; property lines not shown on the drawings.

‡ Based on the drawings.

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Authorship

The undersigned author of this statement is a qualified Professional Engineer, holding California Registration Nos. E-13026 and M-20676, which expire on June 30, 2015. This work has been carried out under his direction, and all statements are true and correct of his own knowledge except, where noted, when data has been supplied by others, which data he believes to be correct.



William F. Hammett

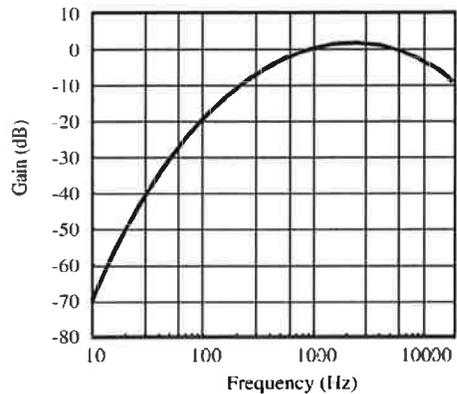
William F. Hammett, P.E.

707/996-5200

April 22, 2014

Noise Level Calculation Methodology

Most municipalities and other agencies specify noise limits in units of dBA, which is intended to mimic the reduced receptivity of the human ear to Sound Pressure (“L_P”) at particularly low or high frequencies. This frequency-sensitive filter shape, shown in the graph to the right as defined in the International Electrotechnical Commission Standard No. 179, the American National Standards Institute Standard No. 5.1, and various other standards, is also incorporated into most calibrated field test equipment for measuring noise levels.



30 dBA	library
40 dBA	rural background
50 dBA	office space
60 dBA	conversation
70 dBA	car radio
80 dBA	traffic corner
90 dBA	lawnmower

The dBA units of measure are referenced to a pressure of 20 μPa (micropascals), which is the threshold of normal hearing. Although noise levels vary greatly by location and noise source, representative levels are shown in the box to the left.

Manufacturers of many types of equipment, such as air conditioners, generators, and telecommunications devices, often test their products in various configurations to determine the acoustical emissions at certain distances. This data, normally expressed in dBA at a known reference distance, can be used to determine the corresponding sound pressure level at any particular distance, such as at a nearby building or property line. The sound pressure drops as the square of the increase in distance, according to the formula:

$$L_P = L_K + 20 \log(D_K/D_P),$$

where L_P is the sound pressure level at distance D_p and L_K is the known sound pressure level at distance D_K.

Individual sound pressure levels at a particular point from several different noise sources cannot be combined directly in units of dBA. Rather, the units need to be converted to scalar sound intensity units in order to be added together, then converted back to decibel units, according to the formula:

where L_T is the total sound pressure level and L₁, L₂, etc are individual sound pressure levels.

$$L_T = 10 \log (10^{L_1/10} + 10^{L_2/10} + \dots),$$

Certain equipment installations may include the placement of barriers and/or absorptive materials to reduce transmission of noise beyond the site. Noise Reduction Coefficients (“NRC”) are published for many different materials, expressed as unitless power factors, with 0 being perfect reflection and 1 being perfect absorption. Unpainted concrete block, for instance, can have an NRC as high as 0.35. However, a barrier’s effectiveness depends on its specific configuration, as well as the materials used and their surface treatment.