

October 12, 2023

Mastec Network Solutions
3443 Airport Road
Sacramento, CA 95834

Subject: AT&T – CCL00550 – Hamilton Parkway-Palm Drive – Noise Review Letter – Novato, CA

MD Acoustics, LLC (MD) has completed a noise assessment for the AT&T - CCL00550 – Hamilton Parkway-Palm Drive project located at 10 Main Gate Road, Novato, CA 94949 under the jurisdiction of the City of Novato. The site plan utilized for the project is located in Exhibit A (page 3 of this report). The project assessed the noise levels of the radio frequency modifications projected to the nearest sensitive receptors and compared them to the City's applicable noise limits as outlined in the City's Municipal Code. The project proposes to install new antennas, new RRUs, a new battery back up cabinet, and new electrical equipment into the existing cabinets. A glossary of acoustical terms is located in Appendix A.

1.0 Acoustics Requirements

The project falls under the jurisdiction of the City of Novato. Section 19.38.120 from the City's Municipal Code (see Appendix B) states that wireless communications facilities shall comply with the noise exposure standards set forth in Section 19.22.070. Per Section 19.22.070 at no time shall equipment noise from any source exceed an exterior noise level of 45 dBA during nighttime hours (10 p.m. to 6 a.m.) or 60 dB during daytime hours (6 a.m. to 10 p.m.) at the property line for residential uses and an exterior noise level of 60 dBA during nighttime hours (10 p.m. to 6 a.m.) or 70 dB during daytime hours (6 a.m. to 10 p.m.) at the property line for commercial uses.

Therefore, this study evaluates the telecommunication's worst-case noise levels and compares the results to the City's nighttime exterior noise standards of 45 dBA for residential uses and 60 dBA for commercial uses.

2.0 Study Method and Procedure

The future telecommunication equipment noise level was modeled using SoundPlan 3D (SP) acoustic modeling software. SP is capable of evaluating stationary noise sources (e.g. point sources such as fan's, and exhaust from cabinets) at various receptor locations. SP's software utilizes algorithms (based on inverse square law and reference equipment noise level data) to calculate the noise projections. The software allows the user to input specific noise sources, spectral content, sound barriers, building placement, topography and noise sensitive receptors.

Of the project equipment listed only the Purcell cabinet will generate noise. Per a conversation with Purcell, all of their cabinets comply with Standard GR-487-CORE which states that acoustical noise from fan cooled cabinets should not exceed 65 dBA at a distance of 5 feet. To represent a worst-case scenario, the cabinet will be modeled as a point source with a noise level of 65 dBA at 5 feet. In addition to the

equipment listed in the plans there is a backup generator on the project site. The generator is a Generac SD030 2.2L diesel generator with a level 2 sound enclosure. The operating reference noise level of the generator is 62 dBA at 23 feet (see Appendix C). The model assumes the implementation of both the Purcell cabinet and the generator. Appendix D provides the model’s inputs and outputs.

3.0 Findings

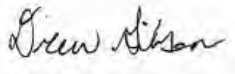
A total of two (2) receptors were modeled to accurately evaluate the future operational noise levels at and/or adjacent to the project site. A receptor is denoted by a yellow dot. The dot represents either a property line, a sensitive receptor such as an outdoor sensitive area/building facade or a calibration point (point where sound pressure levels are confirmed to match manufacturer’s noise data).

MD calculated the noise level projection to the nearest sensitive receptors based on the proposed project design. Receptors 1 and 2 represent the property line of the residential properties closest to the project site. The project generated noise level at Receptors 1 and 2 are 45 and 44 dBA, respectively, when the generator is in operation, which does not exceed the City’s residential nighttime requirement of 45 dBA. When the generator is not in operation, the project generated noise level at Receptors 1 and 2 are 38 and 39 dBA, respectively. Therefore, the equipment changes implemented by the project will not exceed the City’s noise requirements. The modeled noise contour for the project with the generator running is shown in Exhibit B (page 4 of this report). The noise contour with the generator off is shown in Exhibit C (page 5 of this report).

4.0 Conclusion

MD is pleased to provide this noise review for this project. The project equipment complies with the City’s noise requirements. If you have any questions regarding this letter, please call our office at (805) 426-4477.

Sincerely,
MD Acoustics, LLC



Drew Gibson
Acoustical Consultant



Robert Pearson
Acoustical consultant

Exhibit B Future Operational Noise Level Generator Running

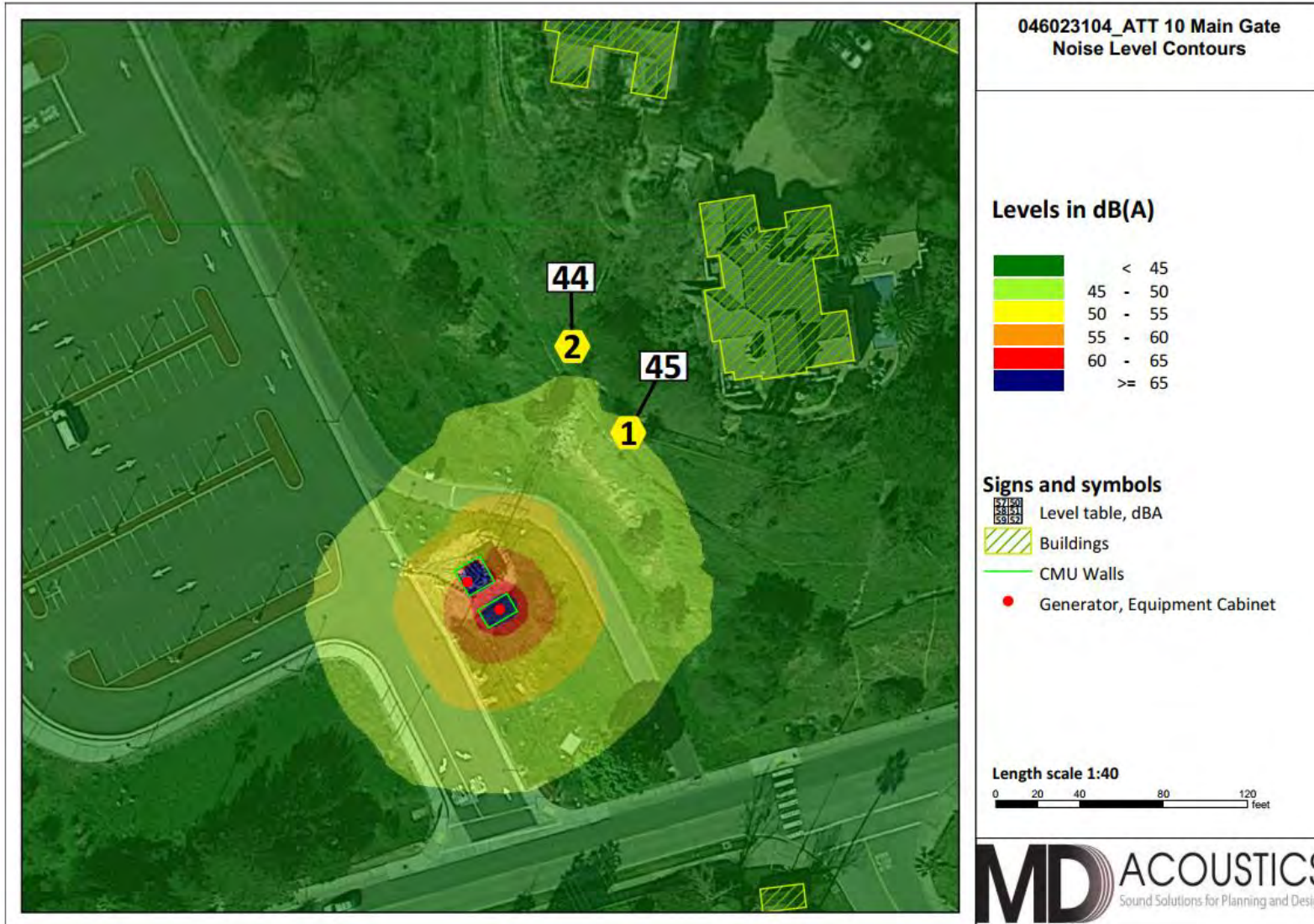
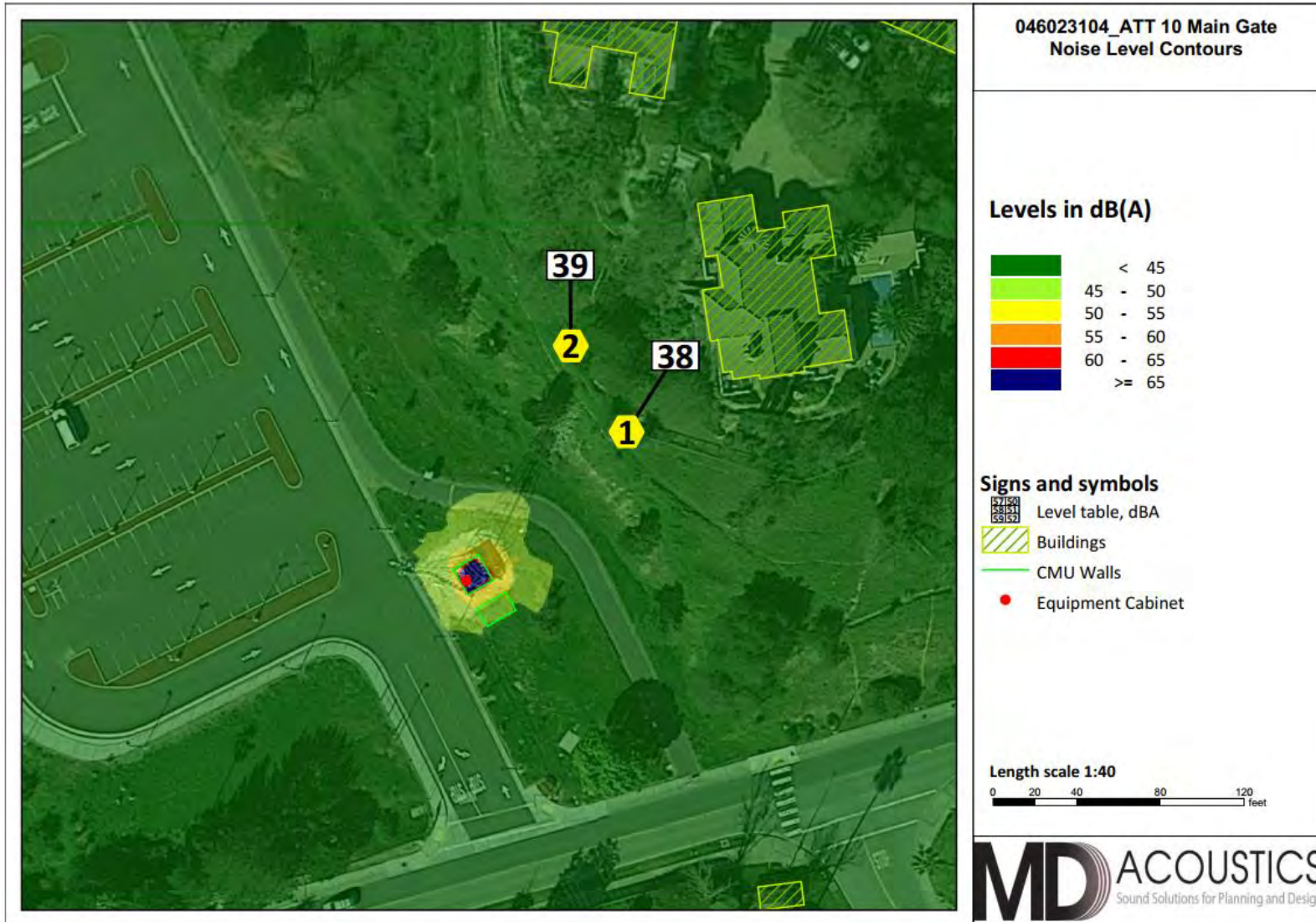


Exhibit C Future Operational Noise Level Generator Off



Appendix A
Glossary of Acoustical Terms

Glossary of Terms

A-Weighted Sound Level: The sound pressure level in decibels as measured on a sound level meter using the A-weighted filter network. The A-weighting filter de-emphasizes the very low and very high frequency components of the sound in a manner similar to the response of the human ear. A numerical method of rating human judgment of loudness.

Ambient or Background Noise Level: The composite of noise from all sources, near and far. In this context, the ambient noise level constitutes the normal or existing level of environmental noise at a given location.

Decibel (dB): A unit for measuring the amplitude of a sound, equal to 20 times the logarithm to the base 10 of the ratio of the pressure of the sound measured to the reference pressure, which is 20 micro-pascals.

dB(A): A-weighted sound level (see definition above).

Equivalent Sound Level (LEQ): The sound level corresponding to a steady noise level over a given sample period with the same amount of acoustic energy as the actual time varying noise level. The energy average noise level during the sample period.

Day-Night Level (LDN or DNL): LDN is the average noise level over a 24-hour period. The noise between the hours of 10PM to 7AM is artificially increased by 10 dB. This noise is weighted to take into account the decrease in community background noise of 10 dB during this period.

Noise: Any unwanted sound or sound which is undesirable because it interferes with speech and hearing, or is intense enough to damage hearing, or is otherwise annoying. The State Noise Control Act defines noise as "...excessive undesirable sound...".

Sound Level (Noise Level): The weighted sound pressure level obtained by use of a sound level meter having a standard frequency-filter for attenuating part of the sound spectrum.

Sound Level Meter: An instrument, including a microphone, an amplifier, an output meter, and frequency weighting networks for the measurement and determination of noise and sound levels.

Appendix B
Novato, CA
Noise Ordinance

19.38.120 Noise and Traffic.

Wireless communications facilities shall be constructed and operated in a manner that minimizes noise and traffic impacts. Noise and traffic reduction shall be accomplished through the following measures:

- A. Wireless communications facilities shall operate in compliance with the noise exposure standards in Section 19.22.070 (Noise).
- B. Normal testing and maintenance activities shall occur between 7:00 a.m. and 5:00 p.m., Monday through Friday, excluding emergency repairs. Normal testing and maintenance activities which do not involve the use or operation of telecommunications and maintenance equipment that is audible from residences and other nearby sensitive receptors may occur at all other times.
- C. Backup generators shall comply with the same noise standards referenced above and shall only be operated during power outages, emergency occurrences, or for testing and maintenance in compliance with Subsection B, above.
- D. Traffic resulting from the operation and maintenance of a wireless communications facility shall be kept to a minimum. Conditions of project approval shall specify a maximum number of trips on a case-by-case basis based upon the carrier's maintenance and testing schedule.

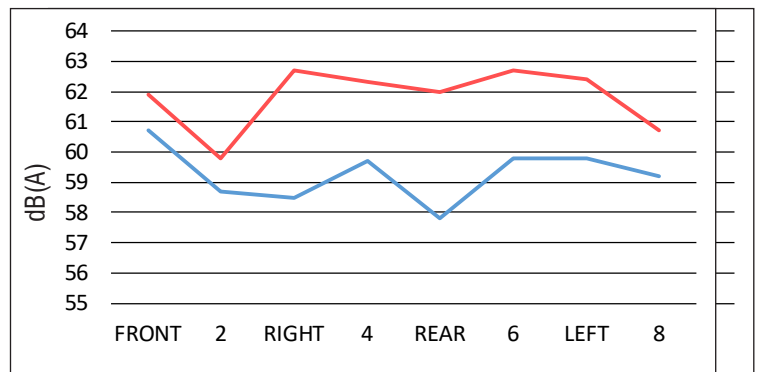
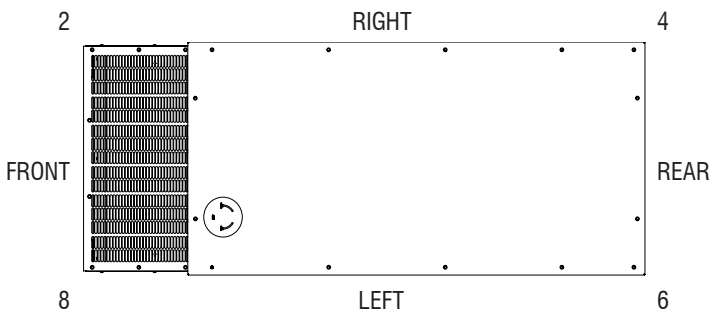
(Ord. No. 1576, § 2 (Exh. A, amd.) , 10-23-2012)

Appendix C
Manufacturer's Cut Sheet

LEVEL 2 SOUND ATTENUATED ENCLOSURE SD030 2.2L GENERAC

		60Hz NO-LOAD, dB(A)									DISTANCE: 7 METERS
MICROPHONE LOCATION	OCTAVE BAND CENTER FREQUENCY (Hz)										
	31.5	63	125	250	500	1,000	2,000	4,000	8,000	dB(A)	
1, FRONT	21	42	50	59	53	52	49	46	36	61	
2	20	37	48	56	53	54	49	45	37	59	
3, RIGHT	19	41	52	55	52	52	49	48	38	59	
4	18	53	48	56	54	51	49	44	34	60	
5, REAR	16	54	49	52	51	50	47	41	31	58	
6	17	55	47	55	52	54	49	45	38	60	
7, LEFT	21	54	50	54	53	53	50	46	38	60	
8	20	46	47	52	55	55	50	44	38	59	
AVERAGE	19	48	49	55	53	53	49	45	36	59	

		60Hz FULL-LOAD, dB(A)									DISTANCE: 7 METERS
MICROPHONE LOCATION	OCTAVE BAND CENTER FREQUENCY (Hz)										
	31.5	63	125	250	500	1,000	2,000	4,000	8,000	dB(A)	
1, FRONT	23	54	52	60	54	52	49	46	36	62	
2	21	48	49	55	55	54	49	46	38	60	
3, RIGHT	20	50	59	59	54	52	50	50	37	63	
4	20	59	49	58	55	52	48	46	35	62	
5, REAR	21	60	51	55	54	51	47	41	31	62	
6	20	60	49	58	53	53	52	46	38	63	
7, LEFT	20	59	55	55	52	54	51	47	39	62	
8	21	54	51	54	55	55	50	45	37	61	
AVERAGE	21	56	52	57	54	53	49	46	36	62	



- All positions at 23 feet (7 meters) from side faces of generator set.
- Test conducted on a 100 foot diameter asphalt surface.
- Sound pressure levels are subject to instrumentation, installation and testing conditions.
- Sound levels are ± 2 dB(A)

Appendix D
SoundPlan Input/Output

ATT 10 Main Gate
Contribution level - 001 - ATT 10 Main Gate: Outdoor SP

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Source group	Source ty	Tr. lane	Leq,d dB(A)	A dB	
Receiver R1 FI G Lr,lim dB(A) Leq,d 45.2 dB(A)					
Default industrial noise	Point		38.0	0.0	
Default industrial noise	Point		44.3	0.0	
Receiver R2 FI G Lr,lim dB(A) Leq,d 44.2 dB(A)					
Default industrial noise	Point		39.0	0.0	
Default industrial noise	Point		42.7	0.0	

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ATT 10 Main Gate

Octave spectra of the sources in dB(A) - 001 - ATT 10 Main Gate: Outdoor SP

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Name	Source type	I or A m,m ²	Li dB(A)	R'w dB	L'w dB(A)	Lw dB(A)	KI dB	KT dB	LwMax dB(A)	DO-Wall dB	Time histogram	Emission spectrum	63Hz dB(A)	125Hz dB(A)	250Hz dB(A)	500Hz dB(A)	1kHz dB(A)	2kHz dB(A)	4kHz dB(A)	8kHz dB(A)	
Equipment Cabinet	Point				78.8	78.8	0.0	0.0		0	100%/24h					78.8					
Generac SD030 30kW 2.2L Level 2 Enclosure	Point				89.1	89.1	0.0	0.0		0	100%/24h	Generac SD030 30kW 2.2L Level 2 Enclosur	79.0	86.0	82.0	79.0	77.0	75.0	70.0	61.0	

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ATT 10 Main Gate
Octave spectra of the sources in dB(A) - 002 - ATT 10 Main Gate - generator off: Outdoor SP

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Name	Source type	I or A m,m ²	Li dB(A)	R'w dB	L'w dB(A)	Lw dB(A)	KI dB	KT dB	LwMax dB(A)	DO-Wall dB	Time histogram	Emission spectrum	500Hz dB(A)
Equipment Cabinet	Point				78.8	78.8	0.0	0.0		0	100%/24h		78.8

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