



Can you hear me now?

... microphone review and comparison for amateur radio purposes

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✓ About the reviewer

Don became a licensed Amateur in 1972 while on active duty in the Navy and operated maritime mobile on his next five ships. In 1998 he became interested in finding ways to improve transmitted audio including the use of external audio processing equipment. He has previously reviewed microphones from Heil Sound. His Amateur Radio web page is at <http://www.k4qky.com/hobbies/amateurradio.htm> .

In 2005, Don reviewed the Heil [PR-30](#) and [PR-40](#) microphones.

✓ The microphones being reviewed and compared



Heil PR 35



Heil PR 781



Electro-Voice
Blue Cardinal

✓ Microphone specifications (Significant differences highlighted in)

	Heil PR 35	Heil PR 781	Electro-Voice Blue Cardinal
<i>Designed application:</i>	Commercial broadcast, recording and live sound	Amateur radio	Commercial voice or instruments
<i>Frequency Response:</i>	40 Hz-18 KHz	50 Hz-16 KHz	35 Hz.- 20 kHz
<i>Polar Pattern:</i>	Cardioid, end fire	Cardioid, end fire	Cardioid, end fire
Generating element	Neodymium magnet structure	Heil PR Dynamic	Pressure-gradient condenser
Diaphragm	1.5 inch low mass	low-mass aluminum	Class-A discrete ultra-low noise circuitry
<i>Bass roll off switch:</i>	3 position (low, -3 db or -6db)	n/a	n/a
<i>Output level:</i>	-52.9 db at 1000 Hz	-55 db at 1000 Hz	21 mV/Pa 31% (2.4dB)
<i>Impedance:</i>	600 ohms balanced, 3 pin XLR	600 ohms balanced, 3 pin XLR	50 ohm low-Z balanced, 3 pin XLR
<i>Power Requirements:</i>	n/a	n/a	Microphone Pre-amp with phantom power 48V ± 5V
<i>Included accessories:</i>	Clip style mount, windscreen and leatherette case	SM 3 mount	integrated mount
<i>Weight:</i>	9 oz	14 oz	12 oz
<i>Finish:</i>	rubberized matte black	Black satin epoxy	cherry wood mic housing with chrome windscreen
<i>Notes:</i>	CC-1 XLR transceiver interface cable is required	CC-1 XLR transceiver interface cable is required	Unique double swivel-mounted design for ideal positioning.
Price	\$249	\$140	\$199 (plus the cost of outboard audio equipment)

✓ Testing setup

	Heil PR 35	Heil PR 781	Electro-Voice Blue Cardinal
<i>Transceiver:</i>	Kenwood TS-870 driving an Ameritron AL-80B	Kenwood TS-870 driving an Ameritron AL-80B	Kenwood TS-870 driving an Ameritron AL-80B
<i>Transceiver settings:</i>	Menu 29 (Bandwidth): 3000 Hz Menu 30 (Bandshift): 100 Menu 31 (TX EQ): High boost Microphone Gain: 40	Menu 29 (Bandwidth): 3000 Hz Menu 30 (Bandshift): 100 Menu 31 (TX EQ): High boost Microphone Gain: 45	Menu 29 (Bandwidth): 3000 Hz Menu 30 (Bandshift): 10 Menu 31 (TX EQ): off Microphone Gain: 21
<i>Microphone settings:</i>	Roll-off switch set to "flat" position	n/a	n/a
Audio chain:	Direct to Kenwood 870's front panel microphone input	Direct to Kenwood 870's front panel microphone input	Microphone > outboard audio equipment such as mic pre-amp and audio processor > Kenwood 870's front panel microphone input as discussed HERE .

✓ Initial impressions

	Heil PR 35	Heil PR 781	Electro-Voice Blue Cardinal
Appearance:	- Typical stage style usually used for hand held or upright stand mounting applications - Rubberized black finish has a comfortable feel to it	- Looks like many pro audio condenser microphones but addressed from the end of the microphone rather than the side.	- Unusual yet attractive "cool" looking retro design with built-in mount and addressed from the end unlike most pro audio condenser microphones that are addressed from the side.

Features/observations:

- Designed primarily for commercial applications especially demanding vocalists who want natural articulate sound over a wide frequency range. Nominated for the [TEC](#) outstanding technical achievement award for 2008.

- Large 1.5-inch diameter dynamic element mounted on an internal Sorbothane shock mount.

- 3 position **roll off switch** unique to this microphone... could prove useful for older transceivers without internal eq capability

- Included leatherette case is a nice accessory

- Somewhat **greater output** than the Heil PR 781

* Self analyzed sound quality

- Clear and even sounding

- Less background noise than the Heil PR 781

** Sound sample

[pr35.mp3](#)

- Designed primarily for Amateur radio, It was first marketed as the PR 780 specifically for Icom's 7800. Hams who operate other transceiver brands contend that the microphone works equally well with their gear.

- SM-3 mount looks good and works well with the microphone.

- Like the Blue Cardinal, this microphone works boom mounted. Foot switch for ptt or VOX works well.

- Hams who are interested in purchasing this microphone may also want to consider the Heil PR 30 or PR 40.

- Heavier, more punchy sounding audio preferable to many hams yet not as pleasant overall.

[pr781.mp3](#)

- Of all the cardioid condenser microphones owned by the reviewer, the Blue Cardinal has received the best on air reports.

- Designed by Electrovoice for live use which may explain why it picks up less background noise than other condenser microphones.

- Well suited for boom mounting. Adjustable positioning works well.

- Good value as compared to many other pro audio condenser microphones... and there are certainly many to choose from.

- Less proximity effect which is appreciated by hams who prefer to "close talk" their microphone.

- Great back of microphone rejection... least background noise pickup of any condenser microphone previously used.

[evbluecardinal.mp3](#)

Sound sample evaluation (to the ear)

Balanced sounding with excellent clarity.

Sounds about the same as the Heil PR 35 sample.

Much more of a "processed audio" sound especially low frequencies. With the 870's TX EQ off, it is understandable that **more low end** prevails.

All three microphones exhibit excellent quality and construction

As expected, the audio sample from the EV Blue Cardinal is characteristically higher fidelity but at the possible expense of reduced clarity. On-air tests will be more meaningful.

* **Listening to TS-870 audio monitor by earphones**

** **Recording with [Audacity](#) .**

✓ **On-air evaluation**

	Heil PR 35	Heil PR 781	Electro-Voice Blue Cardinal
KC0ZZH "Derek"	Best clarity. Overall smoother and more pleasant than the other two microphones. Ranking: 1	Good clarity but not as smooth as the other microphones. Ranking: 3	Smoother than the PR 781 but lacking the clarity of the PR35. Ranking: 2
WA4RZ "Stan"	More high end presence and less "colored" than the other microphones... more communications quality overall. Ranking: 3	Smooth "tube audio" sound which he prefers. (Stan has Collins Radio gear) Ranking: 2	Prefers this microphone over the others but not by a large margin. Ranking: 1
WA4YBP "Greg"	Natural sound with generally flat frequency response... best clarity of all. Ranking: 1	Thought that there was too much low end as compared to the other microphones. Ranking: 3	Nearly as good as the PR 35 Ranking: 2
K8CT Mobile "Bob"	More highs than the other two microphones. Ranking: 1	Somewhat muffled sound. Ranking: 3	About the same sound as the PR-35. Ranking: 2
KR8P "Brad"	More bass response than	Best overall articulation.	Liked the sound quality.

the PR-781.

Ranking: 1

Ranking: 2

Ranking: 3

WB8ZEE mobile "Roger"

Liked the sound but not quite as articulate as the PR 781.

Easiest to hear in noisy conditions in his "18 wheeler".

Nearly as good as the PR 35.

Ranking: 2

Ranking: 1

Ranking: 3

KE5VDT "Roger"

Better low end frequency response than the other two microphones and very good volume. Overall, more broadcast quality and was the easiest to hear above the noise and fading band conditions.

Frequency response seemed flat with equal volume across the voice band.

Less low end response than the PR-35 but more than the PR-781. Volume was slightly less than the PR 35 but more than the PR 781.

Ranking: 1

Ranking: 3

Ranking: 2

Microphone identities were not revealed during he test. Participants desiring to know were provided email notification of the location of this review on the web.

To simplify the evaluation, neither of the Heil microphones were evaluated with external audio processing equipment in line.

All testing was done on the 40 meter band.

✓ Conclusions

Heil PR 35

- Newer than the other two microphones in this test. Therefore, not much experience in the ham community including no reviews in the equipment review section of eham.net.
- Reminiscent of the legendary Shure SM58 and Beta 58A, both previously owned by the reviewer.
- Potentially better than the PR 781 for rejection of unwanted audio at 180 degrees off axis such as fan noise from a linear amplifier.
- Although not primarily marketed for Amateur Radio, this microphone would be an excellent choice for any ham.

Heil PR 781

- Many hams may prefer the external appearance of this microphone over the more conventional look of the PR-35.
- Performed better during on-air testing than initially anticipated.
- Hams who own this microphone or the predecessor PR-780 openly praise its attributes including posting their comments in the [eham.net equipment review](#).
- This microphone presents the best overall value.

Electro-Voice Blue Cardinal

- Comparing this microphone to the Heil PR 35 and PR 781 microphones is largely "apples and oranges" . The Blue Cardinal is designed for pro audio applications in conjunction with outboard audio equipment. Conversely, the Heil microphones deliver great results straight into a Amateur Radio transceiver without the need for expensive and often complex outboard audio

equipment.

- Many hams prefer dynamic over a condenser microphone such as the Blue Cardinal. Both types have their good and not so good attributes.

No clear distinction as to which of the test microphones is best. Participants in the on-air testing phase widely differed in their assessment. The 40 meter band was noisy during the testing which may have been a contributing factor. As expected, Hams simply have our own personal preferences.

Hams who assisted with the on-air portion of this review were not asked to record and analyze audio samples with software such as **SpectraPLUS**. Their use for Amateur Radio application is generally impractical. As such, this microphone review and comparison was largely subjective.

In the final analysis, pro audio microphones such as the Blue Cardinal are a great choice for hams who enjoy learning about and experimenting with outboard audio processing equipment. Hams who simply want great sounding transmit audio at less cost/trouble may wisely prefer a dynamic microphone such as the PR-35 or PR 781 offered by [Heil Sound](#).

✓ Other thoughts and recommendations



Choice of microphone is a matter of personal preference. How we use them is something else. In that regard, we should all insure that our equipment is properly adjusted for optimum transmit audio. A good practice is to routinely self monitor our audio to insure that microphone gain is correct, speech processing (if used) is not excessive and no rf exists in our audio.

Some hams will argue that only so called "communications quality audio" is appropriate for the ham bands. Some will go a step further and contend that "DX quality audio" is ideal. Others, including those who enjoy "rag chewing" may like audio with a more pleasant, natural and balanced sound. Regardless of preference, lets all strive to always operate in a courteous manner.