AN-28 | ATC radio fault investigation

TECHNICAL REPORT TO ATSIMULATIONS • 26 November 2026
Microsoft Flight Simulator 2020 only | Investigation period: 21–25 November 2026

1. Executive summary

The ATSimulations Antonov An-28 can tune COM frequencies but fails to maintain the standard simulator COM1 transmitter selection. Native ATC interaction is unavailable or unreliable without external intervention. Repeated SimConnect commands partially restore pilot speech and ATC text responses, but controller speech remains absent. The default Cessna 172 behaves normally in comparative testing. No permanent workaround has been found.

Key evidence	Result
Passive AN-28 (22 Nov)	COM1 TX = 0 in all 2,633 samples.
Passive C172 comparison (22 Nov)	COM1 TX = 1 in all 3,245 samples.
Single command (24 Nov)	COM1 TX selected, then deselected approximately 102 ms after the first observed selection.
Full flight (24–25 Nov)	32,922 observed TX transitions despite 668,667 command attempts; controller voice still absent.

2. Reproduction and expected behaviour

Load the AN-28, establish normal electrical power and tune an appropriate ATC frequency. Open native ATC and attempt a request. Monitor COM TRANSMIT:1 and related radio state variables through SimConnect. Expected: stable transmitter selection, pilot speech, controller text and controller speech. Observed: transmitter selection is lost; external forcing restores only part of the interaction.

User observations: overhead Channel 1 is enabled; the SGU-6/intercom selector appears stuck at the reserve position (■■■). The latter may be cosmetic. Electrical and custom radio variables were inspected; no definitive link to the transmitter fault was established. The aircraft version/build number and simulator build were not recorded in the available evidence.

Evidence convention

Numerical results below were recalculated from the supplied CSVs. Cockpit behaviour, audio outcomes and early configuration experiments are drawn from the testing discussion, not independently recorded audio or verified internal aircraft code. All listed log times are UTC (+00:00).

3. Development and workaround history

Stage / date	Intervention	Outcome / limitation
Early tests; exact date unavailable	Inspect electrical supply, custom NAVCOM variables, intercom; modify radio declarations and minimal systems.cfg configuration.	COM frequencies tune; ATC remains faulty. Encrypted model behaviour prevents direct inspection.
V3–V5; before 21 Nov late evening	COM1 selection forcing; external SimConnect and faster polling.	No permanent restoration; led to dual-radio diagnostics.
V6–V7; 21 Nov, approx. 22:42–22:52	Dual COM and state-change monitoring.	Repeated COM1 TX changes observed. COM2 selection did not restore ATC.
V8 / initial V9; 21 Nov 23:02–23:11	Passive/audio and TX diagnostics.	Logs contain no command attempts. These runs cannot establish command effectiveness.
V9 Fixed; 21 Nov 23:15–23:26	Correct command dispatch; test TX alone and TX/RX/Receive All.	Pilot voice and controller text recovered with rapid forcing; no controller voice. User reports 50 ms setting effective, 100 ms insufficient.
V10; 21–22 Nov	Audio diagnostics, volume-related tests, passive comparison; Azure vs offline Windows speech and audio output checks.	Controller speech not restored. Passive AN-28 TX remains off. C172 works normally.
V11; 24 Nov 20:40	Single COM1_TRANSMIT_SELECT, then passive monitoring.	Selection briefly appears, then disappears without further utility commands.
V10 flight; 24–25 Nov	Extended active forcing during normal flight.	Same partial workaround as static tests; persistent TX instability.
GPS toolbar V0.2–0.3; by 25 Nov	Independent in-game JS SimVar monitoring and tuning.	TX instability also observed in toolbar. NAV1 issue separately reported; no demonstrated common cause.
V13; 25 Nov	Expanded passive systems monitor with one-shot command option.	Prepared for further testing; no V13 results assessed in this report.

The workaround utilities are diagnostic experiments, not proposed production fixes. No conclusion is drawn from the early dispatch failures.

4. Recorded test sessions

Date / UTC recording interval	Samples	COM1 TX=1	TX changes	Commands attempted
21 Nov 23:02:55–23:03:27 (V8)	1,754	0	0	0
21 Nov 23:08:37–23:11:10 (V9)	8,370	0	0	0
21 Nov 23:15:12–23:18:23 (V9)	10,288	5,630	1,249	3,282
21 Nov 23:24:48–23:26:13 (V9)	4,682	4,155	567	3,849
21 Nov 23:44:34–23:45:40 (V10)	3,712	2,453	501	1,899
21 Nov 23:55:02–23:55:52 (V10)	2,823	2,349	387	2,319
22 Nov 00:00:35–00:01:25 (AN-28)	2,633	0	0	0
22 Nov 18:27:57–18:28:57 (C172)	3,245	3,245	0	0
24 Nov 20:40:40–20:41:09 (V11)	1,635	2	2	1
24 Nov 23:07:55–25 Nov 01:04:27	386,685	368,976	32,922	668,667

Counts use SAMPLE rows only for TX statistics. Transitions are changes between consecutive sampled values, not a count of every internal simulator event. Command attempts are counted separately from results. Mixed-mode sessions should not be interpreted as constant-rate experiments.

5. Passive comparison

Parameter	AN-28	Default C172
COM1 TX selected	0 / 2,633	3,245 / 3,245
COM1 RX selected	2,633 / 2,633	3,245 / 3,245
Avionics master	On throughout	Initially off; later on
Receive All	On throughout	Off throughout
COM1 active frequencies (MHz)	118.300, 129.330, 131.005	118.300, 121.805

The comparison supports an aircraft-specific difference, but does not identify the code or configuration responsible. Aircraft identity is based on the user's test description, not a field in the CSV.

6. V11 single-command experiment

This is the strongest isolation test: a single standard transmitter-selection event was issued, with no repeated override commands afterwards.

24 Nov 2026 UTC	Recorded event
20:40:48.111	COM1_TRANSMIT_SELECT; id=1; data=0
20:40:48.116	Command result HRESULT=0
20:40:48.123	One-shot marker
20:40:48.137	COM1_TX: 0 -> 1
20:40:48.239	COM1_TX: 1 -> 0
20:41:02.399	User marked ATC test; TX remained deselected.

The observed selected interval is 101.8 ms between change records. Only two samples show TX=1. HRESULT=0 confirms successful API submission, not persistent application of the command. The underlying reset source remains unknown.

7. Full-flight stress test

Metric	Result
Recording interval	24 Nov 23:07:55 to 25 Nov 01:04:27 UTC (~1 h 56 min 32 s)
CSV data rows / telemetry samples	1,757,120 / 386,685
COM1 TX selected / deselected	368,976 (95.42%) / 17,709 (4.58%)
Observed TX transitions	32,922 (~282/min)
COM1 RX and Receive All	386,607 of 386,685 samples enabled (99.98%)
Avionics master	Enabled in every sample
Command attempts / results	668,667 / 668,667; all results report HRESULT=0
Commands by type	222,889 each: COM1_TRANSMIT_SELECT, COM1_RECEIVE_SELECT, COM_RECEIVE_ALL_SET
Average command attempt rate	~95.6 per second

The user reports the same audio outcome as static tests: pilot voice is audible and controller text appears, but no controller voice is heard. The percentages are sample proportions, not exact time occupancy. Continuous forcing could itself affect ATC sequencing; this remains untested.

8. Audio and sequencing observations

The user reports that controller text may appear before the pilot finishes speaking, and sometimes before pilot speech begins. Pilot speech continues uninterrupted. Switching between Azure and offline Windows speech, checking audio output, and attempting COM volume changes did not restore controller voice. The default C172 works in the same simulator environment according to the user.

These observations raise the possibility of an ATC transaction or speech-queue problem, rather than a simple muted output. The logs do not contain audio queue state, speech events or audio recordings, so this is a hypothesis only.

9. Requested developer investigation

Priority	Requested check
1	Identify what clears COM TRANSMIT:1 after a successful COM1_TRANSMIT_SELECT event. Check custom gauge/model behaviour, event handlers and periodic updates.
2	Verify mapping between custom NAVCOM variables, SGU-6 audio selection and standard MSFS COM transmitter/receiver states. Confirm intended reserve and Channel 1 behaviour.
3	Check COM radio electrical availability and configuration, including both radios, audio panel and standard avionics state. Interpret COM STATUS values against the actual implementation.
4	Reproduce native ATC with no external utility, then with one selection event. Compare pilot/controller text and speech sequencing with a stock aircraft.
5	Confirm whether a supported fix or configuration update can maintain standard COM1 selection without repeated external commands.

10. Separate issues (not established as related)

During the extended flight the user reported two fuel-starvation events despite X-FEED being on, suspected auxiliary-tank depletion and high fuel consumption. V10 does not record fuel or engine telemetry. NAV1 also reportedly drops to 0.00 MHz in the independent toolbar. Neither issue is evidence of the ATC root cause; V13 is intended to support separate monitoring.

11. Evidence files available for developer review

AN28_V8_20261121_230248.csv; AN28_V9_20261121_230824.csv, _231506.csv, _232441.csv; AN28_V10_20261121_234419.csv, _235453.csv; AN28_V10_20261122_000025.csv, _182640.csv; AN28_V11_20261124_204029.csv; AN28_V10_20261124_230546.csv (approximately 325 MB). Raw logs are not embedded in this PDF. Earlier configuration and cockpit observations are historical test notes; exact dates are omitted where unavailable.