TITLE: Technical Inspection Report, CBJ800XX
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Purpose

This avionics inspection was conducted on June 12–14, 2018, as part of the ongoing technical evaluation for the CBJ800 prototype business jet, developed by Chengdu Aircraft Industry Group (AVIC). The objective was to assess the integration and functionality of the onboard avionics suite, including navigation systems, communication modules, primary and secondary flight displays, and the autopilot control architecture. Conducted at the AVIC test facility in Chengdu, this inspection was intended to verify installation quality, software integration, and electrical interfacing in alignment with anticipated CAAC, refinement and support the aircraft's eventual type certification process.

Overview

The CBJ800 "Pegasus" is a long-range business jet under development by Chengdu Aircraft Industry Group (AVIC) in collaboration with AVIC International and Shenyang Aircraft Corporation. As of June 2018, the aircraft remains in its prototype evaluation phase, with limited ground and systems testing complete. This report provides a technical summary of the avionics inspection carried out on Prototype P01 to support certification readiness and system integration milestones.

Objectives

The primary objective of this inspection was to evaluate the status of the CBJ800's integrated avionics suite, including but not limited to:

- **Functional readiness of navigation, communication, and display systems**
- **Software version verification and fault logging**

- **EMI behavior under powered system configuration**

Aircraft Details and Configuration

The CBJ800 “Pegasus” represents China’s first dedicated long-range business jet, developed under the direction of Chengdu Aircraft Industry Group, a subsidiary of the Aviation Industry Corporation of China (AVIC). The program was formally initiated in 2016, following its conceptual unveiling at the 2012 Zhuhai Airshow. By mid-2018, the aircraft had reached its prototype testing phase, with engineering focus on avionics integration, cabin modularity, and propulsion configuration.

Airframe Configuration

The CBJ800 adopts a conventional low-wing, twin-engine monoplane configuration with a T-tail. This aerodynamic layout supports stable cruise performance, enhanced structural efficiency, and simplified cabin pressurization dynamics. The prototype under inspection (P01) retains full-size fuselage mockup fidelity, optimized for executive travel applications.

Cabin & Systems Layout

Designed for flexibility, the CBJ800 accommodates 12 to 29 passengers depending on configuration. The prototype cabin includes:

- **Forward stateroom and work lounge**
- **Rear private suite**
- **Dual lavatories and a fully equipped galley**
- **Ceiling height of approximately** 1.90 m **to allow upright mobilityPressurization, air circulation, and electrical wiring layouts are modular, supporting high-altitude.**
- **2.3 Performance Specifications (Preliminary)**

Estimated specifications as of 2018 are as follows:

- **Cruise Speed:** Mach 0.85
- **Range: Approx.** 8,050 km (4,350 nautical miles)
- **Maximum Payload**: ~2,200 kg
- **Service Ceiling**: **Anticipated** FL450–FL470 **(unconfirmed)**

These parameters place the CBJ800 within the same operational band as legacy Western platforms such as the Gulfstream G450 and Bombardier Global 5000.

Avionics Architecture

- **The aircraft's digital avionics suite is under iterative development. Current prototype installations include:**
- **Primary Flight Displays (PFD) and Multi-Function Displays (MFD) integrated via dual-redundant ARINC** 429 **bus networks**

- **Triple-redundant Inertial Reference System (IRS) and dual GPS/WAAS receivers**
- **ADS-B out capability with Mode S transponder and TCAS integration**

- **Provisional 2-axis autopilot with software hooks for future fly-by-wire implementation**
- **Dual VHF and HF radios; SATCOM and radar-based weather overlay optional**

- **All systems are being developed in accordance with CAAC, FAA, and EASA airworthiness directives under Part** 25**.**

Propulsion & Electrical

Engine selection remains under negotiation, with options including GE and Rolls-Royce turbofan platforms. The current prototype includes test instrumentation only and not final propulsion modules. Electrical distribution is based on a triple-bus (AC/DC) system, isolated and shielded per EMI compliance standards.

Industry Collaboration

Program development is supported by key AVIC affiliates, including Shenyang Aircraft Corporation and Hongwu Aviation Industry Group. Component fabrication, avionics integration, and systems validation are distributed across AVIC's civil aircraft centers. Market entry is targeted for **the 2023–2024** timeframe, pending successful type certification.

Inspection Scope & Methodology

This section outlines the parameters, systems coverage, tools, and procedural standards applied during the avionics inspection of the CBJ800 Prototype P01 at the Chengdu Aircraft Development Facility. The inspection was conducted over a two-week period in May–June 2018**, in accordance with internal AVIC engineering procedures and aligned to early-stage compliance frameworks for CAAC Part 25 certification.**

Inspection Objectives

The purpose of this inspection was to evaluate the avionics systems of the CBJ800 in their installed prototype configuration.

Specific objectives included:

- **Verifying the integrity of wiring harness routing, shielding, and grounding schemes**
- **Functional verification of flight displays (PFDs/MFDs), control panels, and input devices**
- **Power-on testing of radios, transponders, navigation receivers, and standby instruments**
- **Data integrity and fault detection via onboard Built-In Test Equipment (BITE)**
- **Evaluation of system integration architecture for future fly-by-wire and SATCOM upgrades**
- **EMI behavior assessment under sustained load conditions**
- **Recording anomalies requiring rework, retrofit, or deferral prior to ground testing phase**

Systems and Subsystems Inspected

The following avionics systems were included in the inspection scope:

Subsystem	**Description**
Flight Display System	Dual PFDs, MFDs, EFIS controllers
Navigation System	Triple IRS, GPS/WAAS, VOR/ILS receivers
Communication Systems	Dual VHF, HF, SATCOM (interface ports only)

Surveillance Systems	Mode S transponder with ADS B Out capability
Autopilot / FMS	2-axis autopilot stub, FMS shell for integration
Electrical Buses	AC and DC buses, circuit breakers, backup battery interface
Standby Instrumentation	Mechanical altimeter, attitude indicator, airspeed indicator

Constraints & Limitations

Due to the prototype nature of CBJ800 P01, certain subsystems (such as active SATCOM modules and flight control computers) were either absent or operating in passive simulation mode. Some power-on tests were conducted using bench-supplied AC/DC sources rather than engine generators. These limitations are acknowledged and accounted for in the evaluation notes.

Observations & Findings

The following section summarizes the outcomes of the avionics inspection conducted on the CBJ800 Prototype P01 between May 21 and June 2, 2018. Observations are categorized into (a) Functional Results, (b) Installation Quality, and (c) Notable Deficiencies. This section includes both pass/fail findings and conditional notes for retrofit or redesign during subsequent development phases.

System Tested	Status	Remarks
PFD/MFD Display Units	Pass	All units powered on; resolution and brightness within expected ranges
IRS Navigation	Pass	Triple IRS initialized with valid outputs; signal jitter minimal
VHF Radios (COM1/COM2)	Pass	Clarity verified; frequency switching functional
HF Radio	Conditional Pass	Interface present; no antenna loop tested

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GPS/WAAS	Pass	Lock achieved on 5+ satellites; signal integrity consistent
ADS-B Transponder	Pass	Broadcasting Mode S; all static fields populated
Autopilot Stubs	Conditional Pass	2-axis stub logic active; awaiting FMS integration
Backup Instruments	Pass	Mechanical readings responsive; calibration pending

Quality Observations

Wiring Harnesses:

Routing consistent with AVIC spec; strain relief acceptable in most areas. However, three instances of under-secured bundles were noted beneath the avionics bay (left lateral frame, FWD segment).

Display Integration:

Mounts well-secured. Thermal load on central MFD observed at ~4°C above spec during extended idle testing. May require passive airflow addition.
Bus Power Distribution:
Nominal voltage levels observed across AC/DC buses. Breaker panel wiring visually compliant, but label inconsistencies were logged (non-standard abbreviations on B-4 breaker).

Notable Deficiencies & Recommendations						
Issue ID				Description	Severity	Recommendation
AVX-01	HF antenna	Low	Await installati			

	interface absent; only mounting bracket installed		on in next prototype cycle			
AVX-02				EMI leakage at SATCOM stub	Medium	Apply ferrite and retest
AVX-03				Three wire bundles under-secured in avionics bay	Medium	Add tiebacks or P-clamps
AVX-04				Excess heat on central MFD	Medium	Evaluate passive cooling design
AVX-05				Breaker panel label noncompliance	Low	Replace label per AVIC E-2247 standard

No critical failures or system faults were detected during the inspection. The avionics suite, in its 2018 prototype form, demonstrates foundational readiness for integrated bench testing and limited taxi trials.

Compliance Assessment*

This section evaluates the degree to which the avionics systems of the CBJ800 Prototype P01 conform to applicable civil aviation standards and internal AVIC engineering specifications as of June 2018. While the aircraft remains in early-stage prototype development, certain design and integration elements were reviewed against regulatory frameworks to assess certification readiness.

Applicable Regulatory Standards Reviewed

Regulation/Standard	Description
CAAC Part 25	Chinese civil airworthiness standard for transport-category aircraft
FAA 14 CFR Part 25	U.S. Federal Aviation Regulations for airworthiness (referenced for parity)
EASA CS-25	European airworthiness code for large aeroplanes
TSO-C Series (Selected)	Technical Standard Orders for avionics components (e.g., TSO-C112, C145a)
DO-160G / DO-178C	RTCA environmental and software qualification guidance
AVIC E-2247.2017	Internal AVIC electrical routing and EMI standards

Compliance Status Summary

Category	Status	Comments
Display Systems	Partially Compliant	MFD/PFD design aligns with ergonomic & brightness guidelines; EMI review pending
Navigation Systems	Compliant	IRS and GPS systems meet TSO and signal stability thresholds
Communication Systems	Provisionally Compliant	VHF radios fully functional; HF and SATCOM interfaces incomplete

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Surveillance Systems	Compliant	ADS-B Out active and aligned with Mode S requirements
Autopilot System	Partially Compliant	2-axis logic functional; full compliance pending FMS integration
Power Distribution	Compliant	AC/DC buses meet load distribution, breaker logic reviewed
Environmental/EMI	Marginally Compliant	EMI shielding mostly present; localized leakage near SATCOM stub noted

Risk Analysis & Deviation Notes

EMI Leakage Risk (SATCOM):
Localized emissions in high-frequency bands exceed recommended thresholds near one interface port. Risk is minor but must be mitigated prior to integrated flight tests.
Incomplete HF Comm System:
Antenna bracket is installed but no wiring or transceiver unit present. Full evaluation deferred to later prototype cycle.
Software Assurance Gaps:
No formal DO-178C qualification matrix was provided for FMS/autopilot components at the time of inspection. No adverse findings, but compliance tracking is pending.

General Conclusion

The avionics systems of the CBJ800 Prototype P01 demonstrate a high level of design maturity and partial compliance with key regulatory benchmarks. Observed gaps are expected in early-stage integration phases and do not represent structural or certification-blocking issues. System readiness is appropriate for continued development, ground testing, and eventual submission for formal certification audits.

This section outlines specific actions recommended based on the findings from the May–June 2018 avionics inspection of the

CBJ800 Prototype P01. The objective is to ensure system maturity and compliance prior to the integration of production hardware and progression to ground and taxi testing phases.

Immediate Technical Recommendations

Area	Action Item
EMI Shielding (SATCOM Stub)	Apply ferrite suppression or shielding wrap; retest EMI compliance levels
Avionics Bay Wiring	Secure loose harness bundles with AVIC-approved clamps or tie-backs
MFD Heat Profile	Evaluate passive cooling or airflow deflection solutions near central MFD
Breaker Panel Labeling	Standardize all labeling to AVIC E-2247 format
HF Comm System	Install antenna wiring and transceiver unit for full operational testing

6.2 Developmental Milestones

To progress toward a fully certifiable avionics suite, the following milestones are recommended for Q3–Q4 2018:
Flight Management System Integration
Finalize FMS software and link to autopilot stubs; initiate bench simulation and test scripting.
Full Environmental Testing
Begin DO-160G compliance evaluations for thermal, vibration, and EMI standards.

Software Assurance Planning

Develop and submit DO-178C compliance roadmap with defined software levels for all safety-critical components.
Flight Test Instrumentation Readiness
Complete wiring for data acquisition modules; install test interfaces for telemetry and diagnostics.

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Strategic Program Recommendations

Cross-certification Benchmarking:
Consider parallel FAA or EASA shadow certification processes for improved global acceptance.
Vendor Lock Assessment:
Finalize engine, SATCOM, and autopilot vendor selections early to reduce mid-phase integration risk.
Cabin Systems Avionics Synchronization:
Ensure executive features (IFE, lighting control, connectivity) are designed within the main avionics architecture to prevent redundant retrofits.

Comments

The CBJ800 avionics platform, while in prototype stage, shows promising architectural robustness and design foresight. Observed deficiencies are technical in nature and typical of first-article systems. With recommended corrective actions and continued program discipline, the avionics suite is well-positioned for advancement into full systems integration and ground operations by late 2018 to early 2019.

Functional Readiness of Navigation, Communication, and Display Systems

This section outlines the operational status and initial verification results of the CBJ800 Prototype P01's avionics suite, focusing specifically on navigation, communication, and cockpit display subsystems. Functional tests were conducted during May–June 2018 at the Chengdu Avionics Test Facility, in accordance with AVIC internal pre-flight inspection protocols and FAA AC 20-138D reference standards.

Navigation Systems

Inertial Navigation System (INS):
Dual redundant INS units (Honeywell HG8600 series) were powered, aligned, and tested over a 3-hour session.
Alignment time: 7.3 minutes (cold start) — within spec.
No drift observed over 2-hour static hold.

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Output verified over ARINC 429 bus, feeding into the FMS and EFIS.

Global Positioning System (GPS):

Integrated WAAS-capable dual GPS receivers powered successfully and achieved lock on 9+ satellites within 40 seconds.
GPS time data synchronized with cockpit clock and IRU within acceptable tolerances.
SBAS correction integrity displayed as “VALID” throughout test cycle.

FMS & Autopilot Interfacing:

FMS software booted to stable state.
Initial route entry, leg sequencing, and lateral path tracking simulations completed without fault.
Autopilot stubbed-in; full integration pending as of Q3 2018.

Communication Systems

VHF Communication (COM1/COM2):
Dual Collins VHF-2100 radios installed.
Manual and preset tuning verified on all channels; audio clarity rated “Excellent” through cockpit audio panel loopback.
Guard channel monitoring active and stable.

HF Communication:
HF antenna wiring not yet installed as of inspection date.
Transceiver mounts in place; circuit breakers and power buses verified.
Recommendation: complete full HF wiring loop and antenna install for full functional checkout.

SATCOM (Optional):
SATCOM stub present; coaxial cable terminations incomplete (see Section 7E).
LRU slot reserved for Rockwell Collins SAT-2200 unit.
EMI interference from shielding breach noted near SATCOM bay; containment recommended.

Audio Control Panels (ACP):
ACPs in left/right pilot and center console fully operational.
Sidetone feedback functioning properly on all active audio paths.

Fault log shows 0 deferred items.

Display Systems
Primary Flight Display (PFD):
Left/Right PFDs powered and rendered full boot sequence.
Synthetic vision module installed but inactive pending software update.
Artificial horizon and vertical speed indicators cross-checked against INS data: no offset detected.

Multi-Function Display (MFD):
MFD powered normally, displaying nav/eng/fuel overlays as expected.
Minor screen burn noted on lower-left quadrant of co-pilot MFD (cosmetic only).
Touchscreen responsiveness (where applicable) rated acceptable with <400ms latency.

Engine Indication and Crew Alerting System (EICAS):
EICAS screens booted successfully and showed all system diagnostics from simulated inputs.
Audible and visual alerts triggered correctly during simulated fault insertion (fuel low, hydraulic fail).
No delay or dropout observed in display changeover transitions.

Readiness Assessment Summary

System Domain	Status	Comments
INS	Compliant	Aligned quickly and stable during extended hold
GPS	Compliant	Acquired satellites fast; timing and corrections accurate
FMS	Partial Readiness	Basic flight plan logic working; awaiting full AP link
VHF	Compliant	Clear audio and channel performance
HF	Not Installed	Hardware mounts present; wiring incomplete
SATCOM	Incomplete	Stub installed; EMI shielding breach noted

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PFD/MFD Displays	Mostly Compliant	One screen cosmetic blemish; all rendering functional
EICAS	Compliant	All alerts functioning and displaying properly

Summary Statement

The CBJ800's navigation and communication systems demonstrate solid foundational readiness, with all core components operational aside from HF and SATCOM final integration. Display systems are robust and responsive, with minor cosmetic imperfections that do not affect safety or usability. The FMS exhibits correct route management behavior but awaits full autopilot sync for closed-loop control. The system, overall, is well-positioned for progression into the ground integration test phase by Q3 2018.

Installation Quality & Electrical Interfacing

This section evaluates how well avionics systems aboard the CBJ800 Prototype P01 were physically installed and electrically integrated. The inspection was performed at the Chengdu Final Assembly Facility, May 2018, and follows AVIC's internal quality standards along with applicable aerospace best practices.

Harness Layout & Routing Discipline

Harness bundles are routed in accordance with AVIC E-2247.2017, with bend radii, separation from hydraulic lines, and anti-chafe provisions all visibly respected.
Support clamps are placed approximately every 6–8 inches, though a few segments (beneath the RH avionics shelf) show minor slack and require tightening.

All routing avoids high-vibration zones and hot zones (e.g., bleed-air ducts).

Connector Fitment & Mechanical Interfaces

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All circular connectors (MIL-DTL-38999 series) passed torque and fitment checks.
Locking mechanisms were engaged with no evidence of misaligned pins or forced insertions.
One D-sub connector near the FMS rack was observed to be recessed too deeply into its tray, potentially complicating maintenance tool access. A bracket adjustment is advised.

Labeling & Identification Standards

Most wire bundles were tagged using heat-stamped markers, visible and secure.
However, three bundles still use outdated color codes (legacy AVIC spec, pre-2017). These will need re-identification to comply with the latest wiring documentation standards.
Cable sleeve wear was minimal; harness sheathing showed no thermal or friction degradation.

Electrical Interfacing Architecture

Power Distribution: Dual-redundant AC and DC buses are routed from forward bays; breaker panel operation was validated with simulated loads.
Grounding & Bonding: Chassis grounding measured under 0.1 ohm at all avionics racks. One grounding strap, near the APU relay, showed mild abrasion. Recommend replacement.

Signal Buses:

ARINC 429 and MIL-STD-1553 buses were identified and terminated properly. Bus integrity and timing were confirmed with signal analyzers; no reflection or crosstalk detected.

Cabin CAN bus network not yet installed at this phase.

EMI Shielding & Termination Quality

Shielded cables were grounded at designated locations using crimp sleeves and star washers.

Two coaxial cable shields (SATCOM stub area) were flagged for incomplete termination—signal leakage risk minimal but present.

EMI testing showed emissions within spec except at one SATCOM interface (see Section 4.3).

Compliance Summary Table

Evaluation Domain	Status	Comment
Harness Routing	Acceptable	Minor bundling issues near avionics bay
Connector Fitment	Fully Compliant	All connections seated properly, no misalignment
Labeling & Identification	Conditionally Compliant	Three bundles still follow outdated spec
EMI Shielding	Conditionally Compliant	Two incomplete terminations require rework
Signal Bus Integrity	Compliant	All digital buses responded properly during test
Power & Grounding	Compliant	Resistance levels and distribution logic within expected thresholds

The avionics wiring and electrical interfaces aboard the CBJ800 prototype are fundamentally well-executed, showing adherence to critical aerospace installation practices. Minor inconsistencies in shielding and labeling should be addressed before system-level ground testing. No safety-critical flaws were found, and the architecture appears fully capable of scaling into final system integration phases.

Software Version Verification and Fault Logging

This section documents the verification of avionics software versions installed aboard CBJ800 Prototype P01, and summarizes fault log data extracted from onboard LRUs (Line Replaceable Units) during the May–June 2018 avionics systems inspection. The inspection followed internal AVIC procedures and

draws reference from DO-178C/ED-12C compliance categories where applicable.

Software Inventory and Version Control

- FMS Software
- Installed: Rockwell Collins FMS-3000
- Software Version: v3.5.1.3 (as of May 16, 2018)
- Release Date: March 2018, confirmed via TSO authorization sheet.
- Changelog Notes:
- Enhanced vertical navigation logic
- Improved RF leg handling
- Minor UI optimizations for keypad entry

PFD/MFD/EICAS Display Software

- Installed: Pro Line Fusion Core Graphics Engine
- Software Version: v4.2.7 (Build 042718)
- Verified via maintenance panel diagnostic screen (accessed on May 19, 2018)
- Integrity hash confirmed with factory image (CRC match 100%)

Navigation Sensor Firmware

- GPS Receiver (WAAS-enabled): v2.1.9-W, loaded April 2018
- INS (Honeywell HG8600): Firmware Build HG8-8600-CN-122, compiled Feb 2018
- Firmware ID confirmed via ARINC bus polling using ground diagnostic tool AVIC-ElecScan v2.0

Autopilot Control Unit (ACU)

Software present but not activated—system awaiting closed-loop connection with full flight guidance module (planned Q3 2018).
Placeholder version v0.9.4-beta, installed in safe mode for testing.

Fault Logging and Diagnostic Status

Fault Log Extraction Procedure

All LRUs connected via maintenance data bus were polled using AVIC-standard diagnostic harness.

Fault logs retrieved via RS-422 debug lines and stored in secure GSE drive. Snapshot taken at power-on, power-off, and during simulated failover sequences.

Summary of Logged Faults

System	Event Code	Description	Status	Action Required
FMS	FMS-241B	NAV source disagreement (INS1 vs GPS)	Transient	Monitor only
Display Controller	DCS-0874	MFD refresh latency >500ms (co-pilot side)	Repeat x2	Investigate
SATCOM Interface	SAT-1103	Antenna signal loss >1 sec	Persistent	Stub incomplete
Audio Panel	ACP-0091	Sidetone distortion >15dB	Transient	Not repeated
Power Supply	PS-5521	28V DC drop to 24.1V (Momentary)	Transient	Acceptable fluctuation

No critical or blocking errors observed.
100% of events timestamped and traceable to system conditions or known integration gaps.

Version Consistency and Control Chain Integrity

All installed versions matched expected build numbers from factory software loadout sheets.
Secure digital signatures were validated for FMS and display suite using factory-issued validation keys.
Software load history consistent with AVIC integration logs from March–May 2018.

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No unauthorized patches or checksum mismatches detected.

Software Readiness Summary

Category	Result	Comment
Version Match	Compliant	All major systems aligned to factory-stated versions
Load Verification	Compliant	No tampering or load inconsistency detected
Fault Log Volume	Acceptable	All logged faults minor/transient or linked to open items
Diagnostic Traceability	Compliant	Timestamped, recoverable, and tied to known system states

E. Summary Statement

Software versioning and integrity across the CBJ800's avionics suite has been validated against factory baselines, and fault logs show a healthy system with no critical or persistent errors. Minor display refresh lags and incomplete SATCOM linkages are known issues pending physical hardware completion. Version control appears well-documented, secure, and ready for further integration phases.

10. EMI Behavior Under Powered System Configurations

This section assesses the Electromagnetic Interference (EMI) characteristics of the CBJ800 Prototype P01 avionics under normal and redundant power-up conditions. Tests were conducted at the Chengdu EMI & Avionics Lab between May 23–26, 2018, following AVIC EMI Assessment Guidelines and DO-160G Section 20 compliance methods.

A. Test Configuration & Methodology

a. Power-Up Scenarios Evaluated
Normal startup sequence via Left Main Bus (28V DC)
Emergency bus activation via Right Battery Backup

Simulated generator drop and auto-bus transfer event
Simultaneous load with all avionics powered (worst-case scenario)

b. Equipment Involved
EMI field probes, spectrum analyzer, and line injection tools
Dummy load resistors and ground return monitoring harness
Monitoring frequency band: 10 kHz – 2 GHz
Shielding continuity tested at over 20 junction points (cable connectors, rack frames)

B. Key EMI Observations

1. VHF and SATCOM Crosstalk
Noticeable spike at 135–145 MHz during simultaneous SATCOM (stubbed) and VHF radio activation.
Root cause traced to insufficient shielding at the SATCOM antenna pigtail (not terminated or shielded).
VHF clarity degraded by 9% during simultaneous uplink burst simulations.

Mitigation: Recommend full RF shielding sleeve and grounded termination for unused SATCOM coax ends.

2.
MFD Power Induction Noise
Low-level ripple observed in the co-pilot Multi-Function Display refresh when autopilot unit and cabin lighting were powered on the same circuit.
EMI frequency: 28.4 kHz – classic switching noise pattern from unfiltered PWM converters.

Mitigation: Recommend separating lighting control module power feed or filtering PWM converter output.

3. EFIS Data Bus Integrity
ARINC 429 lines tested under high EMI loading showed no data corruption.
Bit error rate < 1e-7 across all trials – within DO-160G limits.

Result: EFIS, EICAS, and GPS data streams showed full tolerance during simulated EMI bursts.

4. Autopilot & FMS Interference Susceptibility

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FMS and autopilot interface showed brief latency (approx. 300ms) when HF antenna cable was energized with signal injection during a simulated storm surge.
Software buffered this input successfully – no system crash.

Note: System handled the surge gracefully, but grounding loops between HF and AP control must be reviewed before live testing.

C. EMI Compliance Summary Table

System	EMI Status	Notes
VHF Radios	Minor Interference	Crosstalk with SATCOM stub wiring
SATCOM Interface (Stub)	Non-compliant	Open-ended coax caused radiated emissions
EFIS / ARINC Bus	Compliant	Full data integrity confirmed under burst testing
MFD / Lighting PWM	Marginal	Ripple noted; hardware fix pending
FMS / Autopilot Sync	Acceptable	Latency manageable; power filter or rerouting recommended

Notes**

The CBJ800 Prototype P01 avionics suite shows good EMI resilience overall, with known issues linked to unshielded SATCOM interfaces and mixed power routing to lighting controllers. ARINC data buses and EFIS systems are robust and meet all EMI tolerance levels. Minor interference patterns are correctable with shielding and grounding improvements, well ahead of flight test deadlines.

Here is the Conclusions and Recommendations section to complete your report:

Conclusions and Recommendations

The avionics inspection of the CBJ800 Prototype P01, conducted between May and June 2018 at AVIC's Chengdu Final Assembly Facility, confirms that the

integrated systems are functionally stable and structurally sound for the current phase of development. Key mission-critical systems—including navigation, communication, and display subsystems—have demonstrated operational readiness under powered ground testing.

Minor deficiencies were noted in shielding, harness organization, and component labeling, all of which are common at the prototype stage and fall within acceptable correction scope.

Key Observations

Navigation and FMS systems aligned with expected route logic and display behavior.
Communication systems (VHF-1, VHF-2) passed diagnostics; SATCOM remains incomplete but prewired.
EMI irregularities were localized to unshielded SATCOM stub and PWM lighting crosstalk.
Software versions matched configuration control baseline; no critical errors logged.
Installation quality met AVIC compliance guidelines, with minor ergonomic and tagging improvements advised.

Recommendations

Implement shielding corrections on SATCOM and lighting circuits.
Retag legacy wire bundles with current labeling standards.
Replace worn APU grounding strap to maintain integrity under engine load.
Finalize SATCOM hardware and retest crosstalk behavior post-installation.
Prepare for full environmental and DO-160G compliance testing in Q3–Q4 2018.

Further Analysis

With corrective actions addressed, CBJ800 P01 is on track for full avionics system integration, functional verification, and subsequent ground and flight test campaigns. The avionics platform demonstrates design maturity suitable for transition toward system-level certification milestones.

Flight Test Readiness Certification

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Following the successful completion of the avionics system inspection and resolution plan for identified discrepancies, CBJ800 Prototype P01 is conditionally approved for transition into the ground-based and initial flight test campaign, pending final integration steps.

Certification Statement:

Based on the findings of the May–June 2018 inspection cycle, the avionics systems aboard CBJ800 P01 meet the baseline configuration and functionality thresholds required for pre-flight operational testing.

All critical systems, including navigation, primary communication, and flight displays, have shown readiness under controlled ground conditions. Pending resolution of minor corrective actions—including shielding of SATCOM lines, harness tag standardization, and grounding strap replacement—this aircraft will be certified for controlled taxi, ramp, and avionics-related airborne evaluation tests.

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