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Procedure for RF Interference Testing between Model Sites

Scope – This procedure outlines the method for performing testing for radio interference between sites for RC modeling activities. This test is required when the sites involved do not meet the standards described in item 5 in the Radio control section of the AMA National Model Aircraft Safety Code.

Equipment

1. Powered aircraft, ready to fly, complete with a transmitter and a payload capacity large enough to carry a second receiver, battery pack and a "glitch" counter. A high wing .40 size trainer style aircraft will work well.
2. **Test** receiver (FM) on a frequency other than the RC aircraft and controlling transmitter.
3. **Test** transmitter (FM) on the same frequency as the test receiver.
4. ***Interfering transmitter*** (FM) on the same frequency (preferably the same brand and style) as the **test receiver** and **test transmitter**.
5. Airborne battery pack for the test receiver. Capacity should be a minimum of 250mAH.
6. Glitch detector.
7. Handi-talkies capable of a 3 mile range for communication between the sites, or cell phones.
8. GPS receiver.

Personnel

1. Pilot
2. Helper for flying the aircraft.
3. Flightline communicator for handling the communications at the flightline.
4. Person for holding the **test transmitter**.
5. Observer for locating the aircraft at the test flying pattern location (if practical).
6. Person for holding the ***Interfering transmitter*** at the second site location.
7. Communicator at the second site location.

Procedure

1. Using the GPS receiver, perform a distance check between the sites to determine the distance between the sites. Continue with the procedure if minimum distance isn't met. Use the center of the flightline for each endpoint between the two sites.
2. Using the GPS receiver, locate the observer between 1700 feet and 2000 feet away from the flightline of the first site, along the imaginary line connecting the two flightlines. The observer should have a handi-talkie or cell phone to communicate with the first site. Note: If the terrain or

other conditions do not allow the observer to safely do their job, then it will be up to the pilot and helper to locate the aircraft at the proper location in the air for testing.

3. Locate two people at the second site flightline. One person will hold the ***Interfering transmitter***, and the second person will do the communicating to the first flightline. Leave the ***interfering transmitter*** off for the calibration flight.

4. Mount the **test receiver**, battery pack, and glitch counter securely on top of the wing of the aircraft, with the **test receiver** antenna running along one wing and secured with tape.

5. Locate a person 20 feet away from the controlling transmitter and the pilot. This person will have the **test transmitter**.

6. Do a normal checkout and start procedure for the calibration flight.

7. Turn on the **test transmitter** and be sure that there's no interference between this transmitter and the aircraft. The person holding the **test transmitter will not move the sticks during any of the tests.** They will just stand at the flightline holding the transmitter as though they were controlling an aircraft.

8. Turn on the **test receiver** and let the glitch counter initialize. The red LED should be ON and the display should read 0.

9. Fly the aircraft to an altitude of about 1100 to 1300 feet, toward the observer's location. The observer should direct the pilot to get the aircraft in the vicinity. At 1100 to 1300 feet, the aircraft will be flying at about a 40 degree up angle from the horizon. 10. Once at that location, start a 2 minute flight, flying the aircraft in a rectangular or circular flight pattern in the vicinity of the observer.

11. Once the 2 minute calibration flight is complete, land the aircraft and record the glitch counter display. The count on the display will serve as the calibration number and this will be considered normal. It should be displaying 10 or less.

12. Prepare the aircraft for another flight.

13. Again, turn on the **test transmitter** and verify that no interference exists. Turn on the **test receiver** and let the glitch counter initialize. The RED LED should be ON and the display should read 0. The ***interfering transmitter*** shall remain OFF until the aircraft is in position.

14. The person holding the ***interfering transmitter*** at the second site should hold the transmitter as though they were controlling an aircraft, but they should move both sticks in a circular motion all the while during the test. Additionally, every 15 seconds, they should turn to the right 90 degrees from the previous 15-second period. This only has to occur during the 2 minute test. This will allow the aircraft to see all orientations of the ***interfering transmitter***. Repeat steps 7, 8 and 9 to get the aircraft back in position. Once in position, the flightline communicator should tell the second flightline to turn the ***interfering transmitter*** on and to begin moving the sticks and rotating every 15 seconds.

15. At the completion of the 2 minute test flight, the flightline communicator should tell the ***interference transmitter*** holder to stop rotating, stop moving the sticks and turn the ***interfering transmitter*** OFF. The aircraft should be landed.

16. Observe and record the glitch counter display.

17. Prepare the aircraft and execute a second test flight, following steps 12 on. Record the results of the display.

18. Repeat the complete series of tests by flipping the sites around. Site two will be the controlling sit for the aircraft and the **test transmitter**, and site one will be the interfering site for the ***interfering transmitter***.

If, at the conclusion of all the tests, a count of 50 or more (after subtracting the calibration count) is found this should be considered enough glitching so as to possibly lose control of the aircraft. If this count is reached, a frequency management agreement between clubs or individuals is required.