



ROAD MODULE 9 – RADIO PROTOCOL



Purpose

The purpose of this module is to provide the road official with the necessary information and experience needed for correctly managing radio communications. The module serves as part of the training necessary for Level C Road Officials for advancement to Level B Road Official.

Required Reading

1. USA Cycling Race Officials Manual Part 2: Officiating Road Events
 - a. Chapter 1 Individual Road Race
2. Race Radio Protocol (see last section of this document)

Prerequisites

- Level C Official
- Module Pre-Test (see next section)

Goals

After successful completion of this module the Level C Road Official will be able to do the following:

1. Use a radio properly during a road races and criteriums.

Tasks to be Completed

1. Effectively use radio communications during two road races and two criteriums.



ROAD MODULE 9 – RADIO PROTOCOL



Criteria for Successful Completion

1. Use a radio properly during two road races: If you are the only official with a field, your communications will be with the judges and possibly fields in your proximity. If you need to contact others, always state your field and position first and then the person you are calling, e.g., “Cat 3 Follow to the Finish Line”. That way if the first part did not get transmitted then second part more than likely got heard by those you are trying to call. It is good practice to “press, pause, and talk” when using the radio. That way you know that your message will transmit as some radios have some lag time. If there are two officials with a field, less formal communications are necessary since more than likely no one else will be in range unless you are near the finish line or other fields are close to yours.

Communications should always be kept brief and professional. Remember that anybody could be listening to you. Keep your pronunciation clean and precise, and keep your voice calm. The Race Radio Protocol section gives many examples of the types of communication you will be faced with out on the road.

2. Use a radio properly during two criteriums: Most communication at a criterium is between the stage, the motorefs, and the pits. The other modules have focused on the work that goes into these positions. One of the most important things for criteriums is to recognize the timing of your communications. The judges will want to know things about what is happening in the pits, for instance, but the moment they are judging a prime sprint is not the best time to try to contact them. As with any radio communication, be aware of what is happening in the race, and who else may be trying to transmit before you push the button to talk.



ROAD MODULE 9 – RADIO PROTOCOL Pre-Test



Prior to beginning the practical portion of this module, please complete the following pre-test and check your answers in the back of the document.

1. What are three characteristics of a good radio transmission? (Choose all that apply.)
 - a. Brevity
 - b. Dictation
 - c. Clear Delivery
 - d. Elocution
 - e. Accuracy
 - f. Sense of Humor
 - g. Use of Pronouns

2. Why do we read numbers in two formats over the radio if we have the time to do so?
 - a. Because it's what all the cool comms do
 - b. Static can cut you off, and reading a second time gives the listener a second chance to hear it
 - c. It's easier than smoke signals
 - d. To confirm a number that may have been misheard.
 - e. b and d.

3. Why should commissaires in cars read lists of numbers in numerical order when they retransmit the numbers to the caravan?
 - a. That's the order that the break is actually in; you want to read off the break in their current positions.
 - b. It makes it easy for the caravan to look up the riders on the start lists.
 - c. Numerical order indicates team, so it lets the caravan know what teams are in the break.
 - d. It helps confirm the numbers if transmissions are sketchy
 - e. b and d.

4. What is wrong with the communication below? Please circle all that apply.

“Moto 2 to Comm 1: I started my watch when the leaders turned left onto Dumpster street. Please let me know when you get there.”

 - a. He identified who was communicating.
 - b. He indicated whom he was trying to reach.
 - c. No mark or countdown was given.
 - d. Not necessarily the most accurate way to do a split.
 - e. Streets should not be used for marks



ROAD MODULE 9 – RADIO PROTOCOL Pre-Test



5. If a breakaway is 58 seconds up the road from the main field, and you are moto 2 sitting at the front of the main field having just taken a time split, why do you want to report it as 58 seconds instead of rounding up to 1 minute?
 - a. Rounding up is faux pas. You always want to round down when giving splits.
 - b. Make sure that all splits as accurately as possible, so that there is an accurate a view of the race as possible.
 - c. The Chief for the event told you specifically to give all splits without rounding.
 - d. Teams will want to move support vehicles forward to their riders in the break if the riders are a 1:00 min or more up the road.
 - e. Trick question, you should round up to 1:00 min.

6. If you are moto 4 up the road with a breakaway and comm 1 has been requesting a mark for a time split, how do you handle it if at the moment you want to give the three-second countdown and mark, somebody starts talking on the radio and you cannot get back on the radio for 10 seconds?
 - a. Scrap the mark and time split, reset your watch and wait until the radio is free to give a new split.
 - b. Let Comm 1 know what the mark is and have them radio you when they begin to approach the mark.
 - c. Start your watch. When the radio is clear, say, “stand by for mark, 3-2-1, mark plus [X seconds, where X is how long it took before the radio was clear]. The mark is....”
 - d. Stop your group and have them go back and ride past the mark again, so that you can give an accurate split.
 - e. Make a snarky, passive aggressive comment about whoever is tying up the radio and continue with C.



ROAD MODULE 9 – RADIO PROTOCOL Task Completion



The purpose of this document is to show proof that the Regional C Road Official has successfully completed each task required for mastery of the position as required for partial fulfillment for upgrade to Regional B Road Official.

TASK TO BE COMPLETED	CHIEF REFEREE	DATE
Effectively use Radio Communications (RR)	_____	_____
Effectively use Radio Communications (RR)	_____	_____
Effectively use Radio Communications (Crit)	_____	_____
Effectively use Radio Communications (Crit)	_____	_____

When complete, please return to the [National Technical Commission member from your region.](#)



ROAD MODULE 9 – RADIO PROTOCOL

Guide to the Radio Tour



Race Radio Protocol

“The correct use of [radio] requires specific knowledge. It is, amongst others, indispensable to be aware of a series of rules which must be carefully observed.” - UCI Radio Tour Guide

Bike race radio protocol differs from HAM or Military radio protocol. It is important for all officials to develop a uniform method of delivering transmissions so that there is no confusion as to who is speaking, who is being addressed, and whether a reply or confirmation is necessary. It is also essential that transmissions be kept as brief as possible, since radio communication is our best means of controlling the race flow.

Radio Equipment

It is essential that each person with a radio understand its limits, weaknesses, and idiosyncrasies. It's also essential that officials know which channels are used for each type of communication in the race. “Radio Check” should be done when the radios are first picked up. A second radio check is done on the road to ensure communications are working properly for everyone in the race.

FRS: These are the small hand held units available in most electronics departments. Teams often share these channels. FRS radios are limited in their power to transmit, and will be difficult to use in mountainous areas. Assume that teams will hear everything you say. Not reliable when distances between groups are high.

Commercial Band Radios: These units are very sturdy radios with multiple channels. They are capable of Simplex or Repeater communication. Frequencies are “rented” with the radios, so a personal commercial-capable radio must be programmed to accept the race frequencies in order to be used with the race.

Frequency: Frequency refers to the air wave signature that is then assigned to various channels. Two channels can have the same frequency signature. For example, Officials Simplex and Officials Repeater will have the same frequency, but different capabilities.

Simplex: Simplex is direct communication between radios, without the use of a Repeater. If the system is set up correctly, since they have no need to transmit, team vehicles will only use a Simplex channel assigned to the Radio Tour frequency. Officials will have the use of a separate Simplex channel in case the Repeater is not working or they are out of range of the Repeater.

Repeaters: Repeaters are a separate unit that bounces the transmission from one location to another. Repeaters may be located in a helicopter or airplane, at the top of a high stationary location such as a tower, or in a centrally located vehicle that moves with the race. Those not needing to transmit (listen only), such as the team cars, will be equipped only with Simplex radios capable only listening to the one channel assigned to them (locked out of the others). Anyone needing to transmit, such as the Radio Tour operator and all officials, will have the capability of switching



ROAD MODULE 9 – RADIO PROTOCOL

Guide to the Radio Tour



over from Simplex to Repeater when distances are too great for the power of the radio to clearly transmit.

Occasionally, the Repeater will not function correctly or it is out of range. In these cases, Simplex is the channel to use. For example, the Repeater is located in a vehicle that moves with the race. Comm 2 is 15 minutes up the road with a large group of riders and several team cars. They are out of range of the Repeater, but can talk to the team cars in the Comm 2 group on Simplex.

Communicating Clearly

Delivery: Clear radio communications require that the speaker remain calm in delivering information. Even if the situation demands immediate attention, such as a major crash, the information will get across much more clearly if it is spoken in a measured, un-rushed, and calm tone of voice. This takes practice! Remember to speak clearly and loud enough to get through.

Particularly if you will be speaking on a radio exposed to windy conditions, note where the microphone is on the radio. Protect this area from the wind and speak directly into the microphone.

*Note: Don't confuse the *speaker* on the radio with the *microphone pick-up*!*

If you don't get a "go ahead" from the person you are trying to reach, call for them a second time. If you still don't get a response, assume that you may be out of range to reach them, or perhaps their battery is too low to transmit. Request a "relay" of the transmission, then go ahead with your information. If motorefs are at your disposal, ask them to assist in relaying communications (splits, crash information, and other essential information).

Brevity: Keep transmissions brief! Airtime is a scarce commodity. When things get busy, there is a very limited amount of time available to get your message across. Remember, your time is shared with all the other officials and motorefs out there. Often, all the race categories share one frequency. If you have a long transmission, be sure to give a pause occasionally in case others have critical information to report.

An added benefit of brevity is that handheld radios run off of a battery. It takes more power to transmit than to listen. Remember, most of the "action" in a bike race takes place closer to the end of the race. You want your battery to last! It's also advisable to take a spare battery with you if they are available.



ROAD MODULE 9 – RADIO PROTOCOL

Guide to the Radio Tour



Protocol: (See the *UCI Radio Tour Guide* for detailed information.)

General Rules

1. Emergency situations have priority.
2. “Stand by” means don’t talk! More information is coming!
3. If your transmission is long (such as a report of who is in a group of 20 riders), give pauses in case there are other others needing to relay more urgent information.
4. Give the number two ways. For example: (a) “One hundred twenty-three. One two three”; (b) “Seven. Zero seven”; (c) “Twenty-three. Two three.”
5. Key your microphone and pause for a second before speaking. Repeater radios will beep after a delay, indicating when you can begin to transmit. Anything you say prior to the beep will not be transmitted.

Order of Communication

1. Identify who is calling (**always** done first!). Identify yourself by your race title (Comm #, Motor #), not by your name. If there are multiple categories on the road at one time all using the same frequency, identify your group, then your position.
For example: “*Cat 3 Men Comm 1.*”
 - This can add context to where your group is relative to other groups. The information you give becomes more meaningful.
 - By identifying yourself first, then “to _____” (who you are calling), there is not as much concern if the first part of the transmission is “clipped”.
 - Some transmissions are “general information”. The ID should be followed by “reporting ...” or “stand by”.
2. Identify who is being given the information. For example: “*Motor 3 to Comm 3.*”
 - Always use “to” in your transmission. It clarifies the direction of the call.
 - It is essential that the person you are trying to reach is alerted to the transmission.
 - Others should still listen to the information. Sometimes it alerts them to a situation.
 - This item is not needed if the transmission is general information for all officials.
3. If you use the point above, wait for a “go ahead” from the person you are trying to reach. For example: “*Comm 1 ... go ahead.*”
4. Give the action, then the numbers.
For example: “*Motor 3. The following riders have abandoned: 63 (6 – 3), 18 (1 – 8), 29 (2 – 9).*” Note: When possible, report the numbers in numerical order.
5. Numbers called should be repeated back (confirmed) in numerical order.
For example: “*Comm 1 confirming abandoned riders 18, 29, and 63.*”
6. Some transmissions are general information for all officials.
For example: “*Comm 1 – sending Team ABC to the Lead Group*” alerts motors 1, 2 and 4 that they should watch for Team XYZ moving forward and passing groups.”



ROAD MODULE 9 – RADIO PROTOCOL

Guide to the Radio Tour



Terminology

Riders on the Road

- Lead: The very first rider or group on the course.
- Chase (1st chase of 3, 2nd chase of 5, etc.): Riders between the lead and the peloton.
- Break: Riders with a slight advantage over the peloton, but not enough for a follow car to fit in the gap.
- Attack: Riders that are making an escape move at the front of the peloton. A meaningful lead has not yet been established.
- Peloton: The main bunch of riders on the road.
- Riders returning after service (give rider bib numbers).
- Riders moving forward through the caravan (not from service; alerts drivers of the situation).
- Comm 3 group (for example): ID with the commissaire or motor following the group. On the first transmission, establish their location relative to the rest of the race and whether they are supported.
For example, “Comm 3 group of about 20 behind the caravan at 4:10. The group is covered by neutral support.”
- Stragglers: Individual riders struggling to keep up. Generally, watched by Motor 3, if available.
- Laughing Group (rarely reported, other than an occasional reference point. Numbers should be recorded, but not called over the radio.): A group of riders that is soft-pedaling their way to the finish line, and obviously is no longer “racing”.

Riders dropping back

It is not necessary to report bib numbers of riders not able to keep up with the peloton. Simply record the numbers if you pass them. The following riders should be reported:

- Riders dropping out of xxx group (ahead of the peloton).
- Riders absorbed - those falling out of a lead group have been absorbed by another group or by the peloton. Identify which group they are now a part of.
- Riders receiving service.
- Riders dropping back to assist a teammate who has suffered a mechanical.
- Riders involved in a crash.
- Any race category leaders (stage race) who have fallen out of the peloton.



ROAD MODULE 9 – RADIO PROTOCOL

Guide to the Radio Tour



Effective Use of Radio Air Time

Reporting Time and Taking Splits

As noted earlier, always identify yourself first!

1. Give an alert (used when radio is “busy”): *“Stand by for a mark.”*
2. Count-down to the mark: Steady and rhythmic. Always use a count-down. For example: *“On my mark. Three – Two – One – Mark. Dumpster 27, left side.”*
 - If radio transmission is weak or poor, the mark can still be estimated from the count-down.
 - It gives the other officials time to get their watch ready to take note of the mark.
3. Confirmation: *“Comm 1 copies Dumpster 27.”*
4. Information: *“Peloton at 1:20.” “Comm 3 group at 3:15.”*
5. Round times to nearest :05.
 - Our splits are not always precise, unless it’s a standing split.
 - The gap will vary slightly with the terrain. We’re reporting real changes.
6. If it’s a “standing split” report it as such. (still rounded)
7. If no change, Comm 1 confirms “[group] maintaining the gap” or “[group] holding steady at #:##.”
8. Times near 1:00: Remember that Team Managers will want to move forward to the break as soon as they hear the 1:00 mark reported. If the split is between 0:55 and 1:00, report it as :55 (for example, don’t round :58 up to 1:00).
9. All times are reported relative to the leader on the road.
For example: Lead is at Euphoria city limit sign. All officials start their watches on the count-down. All times are then reported relative to that “zero point” when each group arrives at Euphoria. Assume the race looks like this:
Lead → 1:10 → Chase → :1:45 → Peloton
You would **NEVER** report the time of the Peloton over the radio as “at :35” (the time from the chase to the peloton). Comm 1 would make the calculation so they would know where to place vehicles, but the reporting is always done according to the standard. *“The Chase is at 1:10. The Peloton is at 1:45.”*
10. If you are giving a mark but the radio is occupied or radio reception is poor (especially if marks are hard to identify and this is a very clear location), start your watch anyway.
 - When the frequency is free, you can always report back. For example, *“The mark is Dumpster 27 plus :20 in 3-2-1-mark.”* (Start the count-down when the watch shows :17.)
 - This is preferred to “I have a watch running, let me know when you get there.” (What if the radio is occupied when the group reaches the point?)



ROAD MODULE 9 – RADIO PROTOCOL

Guide to the Radio Tour



Reporting action ahead of the peloton

Be patient. Let something actually form. Don't unnecessarily use up bandwidth! In dropping back to get numbers, there must be sufficient room for your vehicle to be in the space. Don't affect the racing!

1. Action at the front.
2. Slight advantage: # of riders. For example: *"5 riders with a slight advantage."*
3. At 100 meters (identify the riders by bib if it's a small group not being chased down)
4. At :15 - :20 a motorcycle can identify the numbers.
5. At :35 - :45 a single car can drop back to get numbers, but should not be in the gap.
6. At :50 All riders in this group should be identified by now.
7. At 1:00 This is a "magical point" for team managers, since it's acceptable for team cars to move forward on request, depending on the terrain, whether a feed zone is coming up, there is room for them, etc. For example, if the Lead is 10 riders representing 10 teams, there is not room for 10 team cars behind this group at 1:00.
8. The number of riders in a group should always be reported when an accurate count is taken. For example: *"Comm 2 with a group of 14. Standing by to report numbers."*

Reporting places in intermediate competitions

The judging crews assigned to the KOM and intermediate sprints report the places in the sprints as soon as possible. Radio protocol still applies.

1. Identify which sprint or KOM is being reported. For example: *"Judges reporting KOM #2."*
2. Wait for a go-ahead. Remember, these numbers need to be recorded!
3. Use "first, second, third" etc. to identify the place. This avoids confusion with calling rider numbers.
4. Call the place, then the number. For example: *"First – 135 (one-three-five), Second – 26 (two-six)," etc.*
5. Comm 1 (or Comm 2, if Comm 1 is out of range) confirms the places and riders.
6. If the numbers come back correctly, report, *"Judges confirm."* Otherwise, re-state the entire order again.

"DON'Ts"

1. Don't use pronouns. Pronouns can cause confusion.
For example: *Don't say, "My group is at 3:15."* Talk about yourself in the 3rd person, *"Comm 3 group is at 3:15 (three-one-five)."*
2. Don't interrupt a pending transmission.
For example: *You hear "stand by for a split." Do not interrupt.* Unless you have an emergency, leave the radio free until the split has been given.
3. Don't give time gaps relative to groups other than the Lead. **All times are reported relative to the Lead.** There is only **one** exception to this rule, and that is when the



ROAD MODULE 9 – RADIO PROTOCOL

Guide to the Radio Tour



Lead radio is out of range to you. For example, the Lead is 10:00 up the road and the repeater is not functioning. Comm 1 may give Comm 3 a Mark to establish how far behind the Comm 3 group is relative to Comm 1's position.

4. Don't answer for someone else just because you have the information. The exceptions:
 - You are relaying information because the person is out of radio range.
 - You know that the person's radio is not working properly.
5. Don't chat, make jokes, or take up unnecessary air time. There may be an emergency. For example, someone may have crashed. (It will also drain your battery!)
6. Don't give meaningless information when more critical things are going on. For example, in the last 5 Km there is a breakaway 30 seconds up the road with a chase group bridging the gap. Comm 2 and the motos are busy giving almost constant time splits as this is the most critical moment in the race. A good way for Comm 4 to become *persona non grata* is to break into the transmissions to tell everyone that the laughing group is an hour behind or that s/he noted that rider #57 just got dropped from the peloton.



ROAD MODULE 9 – RADIO PROTOCOL Pre-Test Answer Key



1. What are three characteristics of a good radio transmission? (Choose all that apply.)
 - a. Brevity
 - c. Clear Delivery
 - e. Accuracy

2. Why do we read numbers in two formats over the radio if we have the time to do so?
 - e. Static can cut you off, and reading a second time gives the listener a second chance to hear it and to confirm a number that may have been misheard

3. Why should commissaires in cars read lists of numbers in numerical order when they retransmit the numbers to the caravan?
 - e. . It makes it easy for the caravan to look up the riders on the start lists and It helps confirm the numbers if transmissions are sketchy

4. What is wrong with the communication below? Please circle all that apply.

“Moto 2 to Comm 1: I started my watch when the leaders turned left onto Dumpster street. Please let me know when you get there.”

 - c. There was no mark or countdown was given.

5. If a breakaway is 58 seconds up the road from the main field, and you are moto 2 sitting at the front of the main field having just taken a time split, why do you want to report it as 58 seconds instead of rounding up to 1 minute?
 - d. Teams will want to move support vehicles forward to their riders in the break if the riders are a 1:00 min or more up the road.

6. If you are moto 4 up the road with a breakaway and comm 1 has been requesting a mark for a time split, how do you handle it if at the moment you want to give the three-second countdown and mark, somebody starts talking on the radio and you cannot get back on the radio for 10 seconds?
 - c. Start your watch. When the radio is clear, say, “stand by for mark, 3-2-1, mark plus [X seconds, where X is how long it took before the radio was clear]. The mark is....”