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| **Test Num** | **Det Types** | **Condition** | **Description** | **Diagnostic Test** | **Data Used** | **Diagnostic** |
| 1 | ML , HOV, Ramp | Never receive any data samples | PeMS break down this condition into three bins based on the communication infrastructure.  The first bin indicates that none of the detectors on the same communication line as the selected detector are reporting data. Note that information about communication lines is not always available. In this case, this test is omitted. | Number of samples received is equal to zero for all detectors on the same communication line. | 30-sec | Line Down |
| The second bin indicates that none of the detectors attached to the same controller as the selected detector are reporting data. This probably indicates no power at this location or the communication link is broken. | Number of samples received is equal to zero for all detectors attached to the controller. If communication line information is available, then at least one other controller on the same line is reporting data. | 30-sec | Ctlr Down |
| The third bin indicates that the individual detector is not reporting any data, but other detectors on the same controller are sending samples. This most likely indicates a software configuration error or bad wiring. | Number of samples received is equal to zero, but other detectors on the same controller are reporting data. | 30-sec | No Data |
| 2 | ML , HOV, Ramp | Too few data samples | PeMS received some samples but not enough to perform diagnostic tests. Other detectors reported more samples (so the data feed did not die). | # of samples < 60% of the max collected samples during the test period. | 30-sec | Insufficient Data |
| 3 | ML , HOV, Ramp | Zero occ or flow | There are too many samples with an occupancy (ML only) or flow (RM only) of zero. PeMS suspects that the detector card (in the case of standard loop detectors) is off. | ML: # zero occ samples > % of the max collected samples during the test period. RM: # zero flow samples > % of the max collected samples during the test period. | 30-sec | Card Off |
| 4 | ML , HOV, Ramp | High values | There are too many samples with either occupancy above 0% (ML only) or flow above veh/30-sec (ramps only). The detector is probably stuck on. | ML: # high occ samples > % of the max collected samples during the test period. RM: # high flow samples > % of the max collected samples during the test period. | 30-sec | High Val |
| 5 | ML , HOV | Flow-Occ mismatch | There are too many samples where the flow is zero and the occupancy is non- zero. This could be caused by the detector hanging on. | # flow-occ mismatch samples > % of the max collected samples during the test period. | 30-sec | Interm ittent |
| 6 | ML , HOV | Occupancy is constant | The detector is stuck at some value for some reason. PeMS knows that occupancy should have some variation over the day. PeMS count the number of times that the occupancy value is non-zero and repeated from the last sample (is exactly the same as the last sample). | # repeated occupancyvalues > 5-min samples. | 5-min | Constant |
| 7 | ML , HOV, Ramp | Not enough data samples received | Data feed itself died and PeMS could not collect enough data samples during the day to run the tests. On days where this occurs PeMS mark the detectors that were previously good as good and ones that were previouslybad as *Feed Unstable*. | # of raw data samples collected during the test period received is less than 60% of total expected during test period. | 30-sec | Feed Unstable |