**Bit Error data check Summary**

The test was carried out by sending 100 packets of data per batch with each packet containing 1 Byte with the test repeated on 100 batches of random data to determine the Bit error rate. If 100 packets of data are received then each Bit is checked between the sent data and the original data to check for errors, if an error is found then the packet number, the original Byte and the sent/received Byte is printed to the serial monitor. If there is less than 100 packets are received then when an error is found between the original and received Byte then the received byte is checked against the next 2 Bytes in the array to check if the byte was not received, if it 1 or 2 bytes in a row are not received then count is shifted by 1 or 2 as required and the error checks continue whilst reporting the Byte number/s that was not received. If the original Byte and received Byte do not correspond and a received Byte is not dropped, then the details are printed to the serial monitor.

The sent Byte (original data) and received Bytes are printed to the serial monitor at the conclusion of all Byte/Bit checks to verify correctness of the checking ensuring integrity of the program.

**CRC On**

**Coding rate – 4/5**

Batch 5 – Byte 80 sent but not received

Batch 9 – Byte 87 sent but not received

Batch 14 – Byte 82 sent but not received

Batch 37 – Byte 65 sent but not received

Batch 40 – Byte 37 sent but not received

Batch 43 – Byte 18 sent but not received

Batch 58 – Byte 58 sent but not received

Batch 90 – Byte 96 sent but not received

Batch 92 – Byte 79 sent but not received

Batch 100 – Byte 57 sent but not received

**Coding rate – 4/6**

Batch 4 – Byte 34 sent but not received

Batch 8 – Byte 5 sent but not received

Batch 24 – Byte 27 sent but not received

Batch 41 – Byte 18 sent but not received

Batch 44 – Byte 32 sent but not received

Batch 46 – Byte 45 sent but not received

Batch 63 – Byte 71 sent but not received

Batch 69 – Bytes 68,69&70 sent but not received

**Coding rate – 4/7**

Batch 3 – Byte 76 sent but not received

Batch 9 – Byte 99 sent but not received

Batch 15 – Byte 18 sent but not received

Batch 19 – Byte 99 sent but not received

Batch 25 – Byte 49 sent but not received

Batch 68 – Byte 40 sent but not received

Batch 5 – Byte 80 sent but not received

Batch 72 – Byte 12 sent but not received

Batch 75 – Byte 24 sent but not received

Batch 76 – Byte 31 sent but not received

Batch 87 – Byte 84 sent but not received

Batch 94 – Byte 99 sent but not received

Batch 99 – Byte 26 sent but not received

**Coding rate – 4/8**

Batch 12 – Byte 53 sent but not received

Batch 13 – Byte 54 sent but not received

Batch 20 – Byte 26 sent but not received

Batch 28 – Byte 14 sent but not received

Batch 29 – Byte 9 sent but not received

Batch 35 – Byte 69 sent but not received

Batch 37 – Byte 51 sent but not received

Batch 38 – Byte 3 sent but not received

Batch 48 – Byte 90 sent but not received

Batch 65 – Byte 39 sent but not received

Batch 72 – Byte 24 sent but not received

**CRC Off**

**Coding rate – 4/5**

Batch 7 – Byte 27 sent but not received

Batch 10 – Byte 91 sent but not received

Batch 42 – Byte 8 sent but not received

Batch 52 – Byte 81 sent but not received

Batch 93 – Byte 68 sent but not received

**Coding rate – 4/6**

Batch 4 – Byte 78 sent but not received

Batch 8 – Byte 91 sent but not received

Batch 14 – Byte 89 sent but not received

Batch 28 – Byte 30 sent but not received

Batch 42 – Byte 47 sent but not received

Batch 52 – Byte 26 sent but not received

Batch 76 – Byte 6 sent but not received

Batch 78 – Byte 62 sent but not received

Batch 79 – Byte 24 sent but not received

Batch 80 – Byte 96 sent but not received

Batch 90 – Bytes 29 & 73 sent but not received

**Coding rate – 4/7**

Batch 5 – Byte 100 sent 75 but received 0B

Batch 10 – Byte 55 sent but not received

Batch 14 – Byte 82 sent but not received

Batch 15 – Byte 11 sent but not received

Batch 18 – Byte 69 sent but not received

Batch 19 – Byte 21 sent but not received

Batch 28 – Byte 20 sent but not received

Batch 36 – Byte 69 sent but not received

Batch 38 – Byte 50 sent but not received

Batch 45 – Bytes 35 & 36 sent but not received

Batch 50 – Bytes 79 & 80 sent but not received

Batch 56 – Byte 43 sent but not received

Batch 61 – Byte 78 sent but not received

Batch 86 – Byte 69 sent but not received and Byte 100 sent 48 but received 56

**\*When looking at batch 4, the last Byte is 0B and batch 85 last Byte is 56 which shows that the 100th Byte in batch 5 and batch 86 was sent but not received as the 100th Byte is from the previous batch as opposed to the wrong data received as indicated in the test.**

**Coding rate – 4/8**

Batch 9 – Byte 14 sent but not received

Batch 14 – Byte 84 sent but not received

Batch 16 – Byte 77 sent but not received

Batch 22 – Byte 76 sent but not received

Batch 24 – Byte 28 sent but not received

Batch 37 – Bytes 91 & 92 sent but not received

Batch 49 – Byte 78 sent but not received

Batch 53 – Byte 69 sent but not received

Batch 54 – Byte 43 sent but not received

Batch 56 – Byte 42 sent but not received

Batch 69 – Byte 65 sent but not received

Batch 85 – Byte 51 sent but not received

Batch 93 – Byte 74 sent but not received

Batch 97 – Byte 7 sent but not received

**Batch 5 from coding rate 4/7 with CRC off**

05:38:15.510 -> check 5 ->99 Bytes of data received

05:38:15.545 -> Bit error present in Byte number 100 - data sent: B & Original data: 75

05:38:15.648 -> 67 45 58 27 12 E 11 75 10 6C 1E 40 45 66 65 61 51 0 48 75 3B 10 68 5E 13 69 29 5 37 1E 7A 28 60 28 2D 63 4 1A 50 2E 1 50 49 37 6B 22 A 5A A 7B 62 28 74 16 57 6D 48 6F 53 F 4 1C 58 21 4C 8 12 75 F D 23 49 2 7 31 31 3E 4C 79 2B 76 3C 51 7C 49 73 1A 47 29 5F 5A 2F 6E 6C 11 5A 65 4E C 75

05:38:15.923 -> 67 45 58 27 12 E 11 75 10 6C 1E 40 45 66 65 61 51 0 48 75 3B 10 68 5E 13 69 29 5 37 1E 7A 28 60 28 2D 63 4 1A 50 2E 1 50 49 37 6B 22 A 5A A 7B 62 28 74 16 57 6D 48 6F 53 F 4 1C 58 21 4C 8 12 75 F D 23 49 2 7 31 31 3E 4C 79 2B 76 3C 51 7C 49 73 1A 47 29 5F 5A 2F 6E 6C 11 5A 65 4E C B

**Batch 86 from coding rate 4/7 with CRC off**

06:17:02.804 -> check 86 ->98 Bytes of data received

06:17:02.838 -> Bit error present in Byte number 69 - data sent: not rx'ed & Original data: 5A

06:17:02.940 -> Bit error present in Byte number 100 - data sent: 56 & Original data: 48

06:17:03.008 -> 50 6E 15 7B 5A 31 4D 48 6A 3B 6 11 6A 29 41 7C 79 21 5E 20 2B 66 4E 4 5A 28 7D 36 77 2A 16 62 24 5A 42 5 14 F 57 48 1C 60 5D 1B 51 7B 8 D 73 1 23 4E 39 7D 72 15 1D 50 37 7A 71 71 16 9 30 73 53 5F 5A 5C 11 4D 26 16 4F 5E 3F 10 2C 59 7C 3C E 21 12 3D 62 3F 3E 5B 3B 3E 50 27 61 1F 6B 65 33 48

06:17:03.317 -> 50 6E 15 7B 5A 31 4D 48 6A 3B 6 11 6A 29 41 7C 79 21 5E 20 2B 66 4E 4 5A 28 7D 36 77 2A 16 62 24 5A 42 5 14 F 57 48 1C 60 5D 1B 51 7B 8 D 73 1 23 4E 39 7D 72 15 1D 50 37 7A 71 71 16 9 30 73 53 5F 5C 11 4D 26 16 4F 5E 3F 10 2C 59 7C 3C E 21 12 3D 62 3F 3E 5B 3B 3E 50 27 61 1F 6B 65 33 56 1A