

组会报告

徐益

2018 年 11 月 8 日

1 工作内容

1. 解决基于 C 的 5G NR 自适应调制编码参数测试平台中的 Bug;
2. 更新各 CQI 的门限 SNR;
3. 测试通过交换机的 DPDK 传输;
4. 配置服务器编译环境。

2 测试平台 Bug 的解决

2.1 Bug1: 向上取整的错误

```
1 mapped_len = (G + 1) / Q - 1;  
2 改为  
3 mapped_len = (G - 1) / Q + 1;
```

2.2 Bug2: 译码矩阵长度选择偏小

```
1 col_hbg_d = K_b * 1024 / R + 2;  
2 col_hbg_d = col_hbg_d >= (K_b + 4) ? col_hbg_d : (K_b + 4);  
3 col_hbg_d = col_hbg_d <= col_hbg ? col_hbg_d : col_hbg;  
4 改为  
5 col_hbg_d = K_b * 1024 / R + 3;  
6 col_hbg_d = col_hbg_d >= (K_b + 4) ? col_hbg_d : (K_b + 4);  
7 col_hbg_d = col_hbg_d <= col_hbg ? col_hbg_d : col_hbg;
```

2.3 Bug3: 快速解调算法造成的性能损失

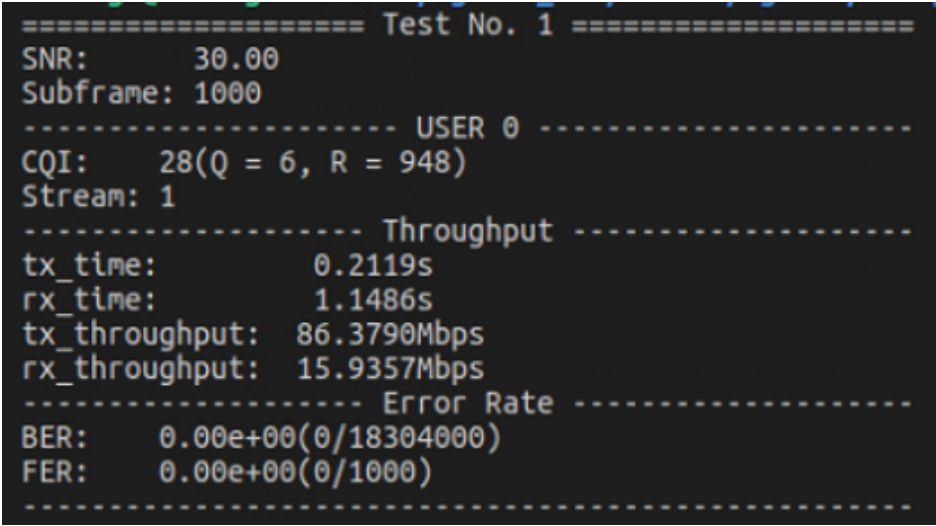


图 1: 理想解调下的时延情况

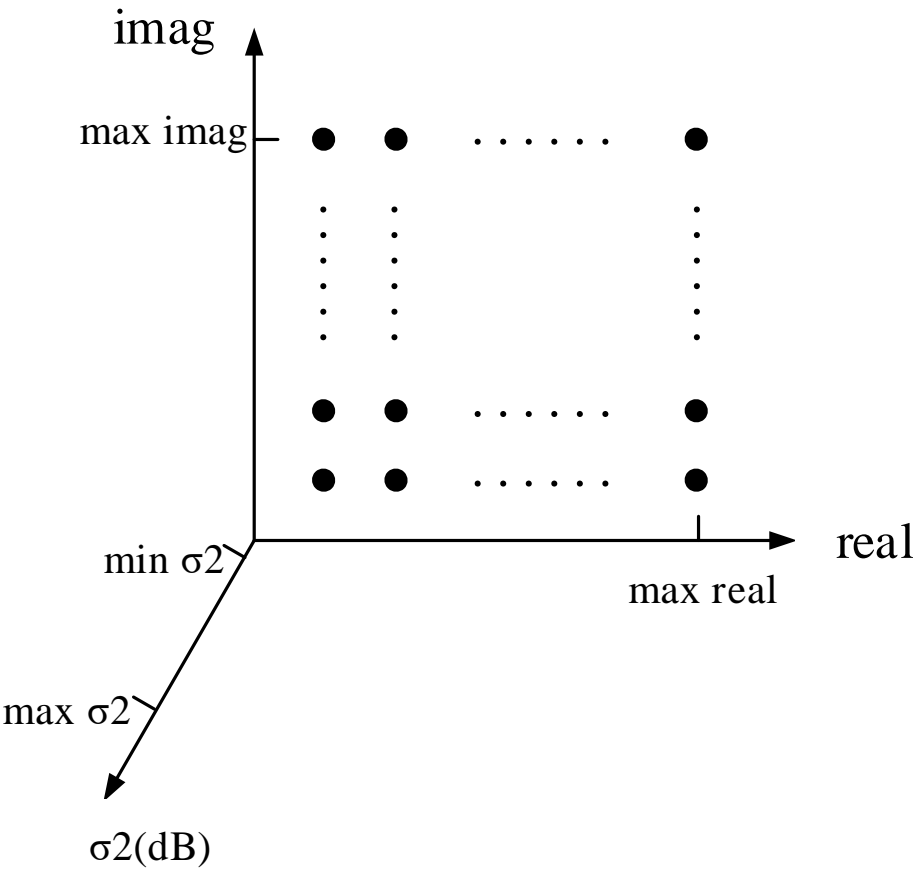


图 2: 快速解调算法原理

```

1  const float symbol_max[3] = {0.7071 * 2, 0.9487 * 2, 1.0801 * 2};
2  float sigma_max = log10(1);
3  int SymbOrder = 6;
4  int SigmaOrder = 4;
5  改为
6  const float symbol_max[3] = {0.7071 * 4, 0.9487 * 4, 1.0801 * 4};
7  float sigma_max = log10(10);
8  int SymbOrder = 7;
9  int SigmaOrder = 5;

```

3 更新后的各 CQI 的门限 SNR

表 1: 不同 CQI 的门限 SNR 值

CQI	Q	R	$SNR_{th}(\text{dB})(\text{理想})$	$SNR_{th}(\text{dB})(\text{调整前})$	$SNR_{th}(\text{dB})(\text{调整后})$
0	2	120	-5.28	-3.00	-5.44
1	2	157	-4.29	-2.45	-4.33
2	2	193	-3.24	-1.94	-3.30
3	2	251	-1.94	-1.26	-2.15
4	2	308	-0.86	-0.61	-1.03
5	2	379	0.22	0.19	0.11
6	2	449	1.09	0.97	0.94
7	2	586	1.98	1.79	1.88
8	2	602	2.85	2.81	2.69
9	2	679	3.73	3.64	3.63
10	4	340	4.38	5.39	4.59
11	4	378	4.98	5.39	5.15
12	4	434	5.89	5.98	6.18
13	4	490	6.75	7.17	6.87
14	4	553	7.64	7.99	7.79
15	4	616	8.59	8.68	8.80
16	4	658	9.20	9.44	9.38
17	6	438	10.41	10.69	10.97
18	6	466	10.89	10.97	11.00
19	6	517	11.77	12.44	12.18
20	6	567	12.60	13.39	12.69
21	6	616	13.55	13.61	13.86
22	6	666	14.34	14.66	14.47
23	6	719	15.35	15.70	15.54
24	6	772	16.22	16.38	16.36
25	6	822	17.08	17.32	17.32
26	6	873	18.06	18.64	18.36
27	6	910	18.89	19.22	19.19
28	6	948	20.11	20.57	20.56

4 测试通过交换机的 DPDK 传输

```
Port statistics =====
Statistics for port 0 -----
Packets sent:                0
Packets received:            8031
Packets dropped:              0
Aggregate statistics =====
Total packets sent:          0
Total packets received:      8031
Total packets dropped:        0
=====
err_pkg_times = 0, err_pkg_num = 0, nvld_pkg_num=0, vld_pkg_num=0
sent_rate = 0.00Gbps, received_rate = 0.00Gbps
```

图 3: 收到交换机中的无效包

```
Port statistics =====
Statistics for port 0 -----
Packets sent:                0
Packets received:            43545121
Packets dropped:              0
Aggregate statistics =====
Total packets sent:          0
Total packets received:      43545121
Total packets dropped:        0
=====
err_pkg_times = 0, err_pkg_num = 0, nvld_pkg_num=39688365, vld_pkg_num=3856692
sent_rate = 0.00Gbps, received_rate = 6.70Gbps
```

图 4: 增加 MAC 地址检测后正常接收