Appendix B

E-UTRA Band 12

SGS-CSTC Standards Technical Services Co., Ltd. Shenzhen Branch

CONTENT

1   Effective (Isotropic) Radiated Power Output Data

Effective Radiated Power of Transmitter (ERP) for LTE BAND 12

Test Band(LTE)	Test Mode	Test Bandwidth	Test channel	Test RB	Measured (dBm)	ERP (dBm)	limit (dBm)	Verdict
BAND12	LTE/TM1	1.4M	LCH	RB1#0	22.99	16.54	34.77	PASS
				RB1#2	23.1	16.65	34.77	PASS
				RB1#5	22.87	16.42	34.77	PASS
				RB3#0	22.93	16.48	34.77	PASS
				RB3#2	23.07	16.62	34.77	PASS
				RB3#3	22.97	16.52	34.77	PASS
				RB6#0	22.06	15.61	34.77	PASS
			MCH	RB1#0	22.83	16.38	34.77	PASS
				RB1#2	23	16.55	34.77	PASS
				RB1#5	22.86	16.41	34.77	PASS
				RB3#0	23.09	16.64	34.77	PASS
				RB3#2	23.03	16.58	34.77	PASS
				RB3#3	23.04	16.59	34.77	PASS
				RB6#0	22.11	15.66	34.77	PASS
			HCH	RB1#0	22.86	16.41	34.77	PASS
				RB1#2	23.01	16.56	34.77	PASS
				RB1#5	22.98	16.53	34.77	PASS
				RB3#0	22.92	16.47	34.77	PASS
				RB3#2	22.94	16.49	34.77	PASS
				RB3#3	22.96	16.51	34.77	PASS
				RB6#0	22.17	15.72	34.77	PASS

Test Band(LTE)	Test Mode	Test Bandwidth	Test channel	Test RB	Measured (dBm)	ERP (dBm)	limit (dBm)	Verdict
BAND12	LTE/TM2	1.4M	LCH	RB1#0	22.07	15.62	34.77	PASS
				RB1#2	22.47	16.02	34.77	PASS
				RB1#5	22.06	15.61	34.77	PASS
				RB3#0	21.97	15.52	34.77	PASS
				RB3#2	22.1	15.65	34.77	PASS
				RB3#3	22.09	15.64	34.77	PASS
				RB6#0	21.07	14.62	34.77	PASS
			MCH	RB1#0	22.36	15.91	34.77	PASS
				RB1#2	22.37	15.92	34.77	PASS
				RB1#5	22.45	16	34.77	PASS
				RB3#0	22.07	15.62	34.77	PASS
				RB3#2	22.11	15.66	34.77	PASS
				RB3#3	22.02	15.57	34.77	PASS
				RB6#0	21.23	14.78	34.77	PASS
			HCH	RB1#0	22.38	15.93	34.77	PASS
				RB1#2	21.94	15.49	34.77	PASS
				RB1#5	22.13	15.68	34.77	PASS
				RB3#0	22.02	15.57	34.77	PASS
				RB3#2	21.97	15.52	34.77	PASS
				RB3#3	22.09	15.64	34.77	PASS
				RB6#0	21.06	14.61	34.77	PASS

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Test Band(LTE)	Test Mode	Test Bandwidth	Test channel	Test RB	Measured (dBm)	ERP (dBm)	limit (dBm)	Verdict
BAND12	LTE/TM1	3M	LCH	RB1#0	23.01	16.56	34.77	PASS
				RB1#7	23.14	16.69	34.77	PASS
				RB1#14	22.98	16.53	34.77	PASS
				RB8#0	22.05	15.6	34.77	PASS
				RB8#4	22.12	15.67	34.77	PASS
				RB8#7	22.06	15.61	34.77	PASS
				RB15#0	22.05	15.6	34.77	PASS
			MCH	RB1#0	22.87	16.42	34.77	PASS
				RB1#7	23.05	16.6	34.77	PASS
				RB1#14	22.96	16.51	34.77	PASS
				RB8#0	22.05	15.6	34.77	PASS
				RB8#4	22.07	15.62	34.77	PASS
				RB8#7	22.01	15.56	34.77	PASS
				RB15#0	22.1	15.65	34.77	PASS
			HCH	RB1#0	23.01	16.56	34.77	PASS
				RB1#7	23.28	16.83	34.77	PASS
				RB1#14	23.02	16.57	34.77	PASS
				RB8#0	22.09	15.64	34.77	PASS
				RB8#4	22.19	15.74	34.77	PASS
				RB8#7	22.08	15.63	34.77	PASS
				RB15#0	22.06	15.61	34.77	PASS

Test Band(LTE)	Test Mode	Test Bandwidth	Test channel	Test RB	Measured (dBm)	ERP (dBm)	limit (dBm)	Verdict
BAND12	LTE/TM2	3M	LCH	RB1#0	22.05	15.6	34.77	PASS
				RB1#7	22.34	15.89	34.77	PASS
				RB1#14	22.26	15.81	34.77	PASS
				RB8#0	21.04	14.59	34.77	PASS
				RB8#4	21.12	14.67	34.77	PASS
				RB8#7	21.11	14.66	34.77	PASS
				RB15#0	21.06	14.61	34.77	PASS
			MCH	RB1#0	22.51	16.06	34.77	PASS
				RB1#7	22.01	15.56	34.77	PASS
				RB1#14	22.43	15.98	34.77	PASS
				RB8#0	21.14	14.69	34.77	PASS
				RB8#4	21.16	14.71	34.77	PASS
				RB8#7	20.99	14.54	34.77	PASS
				RB15#0	21.12	14.67	34.77	PASS
			HCH	RB1#0	21.93	15.48	34.77	PASS
				RB1#7	22.25	15.8	34.77	PASS
				RB1#14	22.47	16.02	34.77	PASS
				RB8#0	20.97	14.52	34.77	PASS
				RB8#4	21.07	14.62	34.77	PASS
				RB8#7	21.03	14.58	34.77	PASS
				RB15#0	21.06	14.61	34.77	PASS

Test Band(LTE)	Test Mode	Test Bandwidth	Test channel	Test RB	Measured (dBm)	ERP (dBm)	limit (dBm)	Verdict
BAND12	LTE/TM1	5M	LCH	RB1#0	22.9	16.45	34.77	PASS
				RB1#13	23.1	16.65	34.77	PASS
				RB1#24	23.03	16.58	34.77	PASS
				RB12#0	22.14	15.69	34.77	PASS
				RB12#6	22.18	15.73	34.77	PASS
				RB12#13	22.09	15.64	34.77	PASS
				RB25#0	22.08	15.63	34.77	PASS
			MCH	RB1#0	22.83	16.38	34.77	PASS
				RB1#13	22.99	16.54	34.77	PASS
				RB1#24	22.86	16.41	34.77	PASS
				RB12#0	21.98	15.53	34.77	PASS
				RB12#6	22.09	15.64	34.77	PASS
				RB12#13	22.02	15.57	34.77	PASS
				RB25#0	22.16	15.71	34.77	PASS
			HCH	RB1#0	22.78	16.33	34.77	PASS
				RB1#13	22.97	16.52	34.77	PASS
				RB1#24	22.84	16.39	34.77	PASS
				RB12#0	22.11	15.66	34.77	PASS
				RB12#6	22.06	15.61	34.77	PASS
				RB12#13	22.05	15.6	34.77	PASS
				RB25#0	22.14	15.69	34.77	PASS

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Test Band(LTE)	Test Mode	Test Bandwidth	Test channel	Test RB	Measured (dBm)	ERP (dBm)	limit (dBm)	Verdict
BAND12	LTE/TM2	5M	LCH	RB1#0	21.93	15.48	34.77	PASS
				RB1#13	22.11	15.66	34.77	PASS
				RB1#24	22.52	16.07	34.77	PASS
				RB12#0	21.05	14.6	34.77	PASS
				RB12#6	21.1	14.65	34.77	PASS
				RB12#13	21.01	14.56	34.77	PASS
				RB25#0	21.15	14.7	34.77	PASS
			MCH	RB1#0	22.41	15.96	34.77	PASS
				RB1#13	22.49	16.04	34.77	PASS
				RB1#24	22.14	15.69	34.77	PASS
				RB12#0	20.99	14.54	34.77	PASS
				RB12#6	21.04	14.59	34.77	PASS
				RB12#13	21.07	14.62	34.77	PASS
				RB25#0	20.97	14.52	34.77	PASS
			HCH	RB1#0	22.31	15.86	34.77	PASS
				RB1#13	22.36	15.91	34.77	PASS
				RB1#24	21.76	15.31	34.77	PASS
				RB12#0	21.15	14.7	34.77	PASS
				RB12#6	20.94	14.49	34.77	PASS
				RB12#13	20.95	14.5	34.77	PASS
				RB25#0	20.94	14.49	34.77	PASS

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Test Band(LTE)	Test Mode	Test Bandwidth	Test channel	Test RB	Measured (dBm)	ERP (dBm)	limit (dBm)	Verdict
BAND12	LTE/TM1	10M	LCH	RB1#0	22.94	16.49	34.77	PASS
				RB1#25	23.17	16.72	34.77	PASS
				RB1#49	22.98	16.53	34.77	PASS
				RB25#0	22.19	15.74	34.77	PASS
				RB25#13	22.25	15.8	34.77	PASS
				RB25#25	22.4	15.95	34.77	PASS
				RB50#0	22.3	15.85	34.77	PASS
			MCH	RB1#0	22.85	16.4	34.77	PASS
				RB1#25	23.06	16.61	34.77	PASS
				RB1#49	22.98	16.53	34.77	PASS
				RB25#0	22.08	15.63	34.77	PASS
				RB25#13	22.19	15.74	34.77	PASS
				RB25#25	22.1	15.65	34.77	PASS
				RB50#0	22.17	15.72	34.77	PASS
			HCH	RB1#0	22.92	16.47	34.77	PASS
				RB1#25	23.02	16.57	34.77	PASS
				RB1#49	22.93	16.48	34.77	PASS
				RB25#0	22.08	15.63	34.77	PASS
				RB25#13	22.12	15.67	34.77	PASS
				RB25#25	22.12	15.67	34.77	PASS
				RB50#0	22.02	15.57	34.77	PASS

Test Band(LTE)	Test Mode	Test Bandwidth	Test channel	Test RB	Measured (dBm)	ERP (dBm)	limit (dBm)	Verdict
BAND12	LTE/TM2	10M	LCH	RB1#0	21.8	15.35	34.77	PASS
				RB1#25	22.59	16.14	34.77	PASS
				RB1#49	22.51	16.06	34.77	PASS
				RB25#0	21.18	14.73	34.77	PASS
				RB25#13	21.14	14.69	34.77	PASS
				RB25#25	21.35	14.9	34.77	PASS
				RB50#0	21.26	14.81	34.77	PASS
			MCH	RB1#0	22.4	15.95	34.77	PASS
				RB1#25	22.54	16.09	34.77	PASS
				RB1#49	22.17	15.72	34.77	PASS
				RB25#0	21.06	14.61	34.77	PASS
				RB25#13	21.15	14.7	34.77	PASS
				RB25#25	21.11	14.66	34.77	PASS
				RB50#0	21.06	14.61	34.77	PASS
			HCH	RB1#0	22.13	15.68	34.77	PASS
				RB1#25	22.55	16.1	34.77	PASS
				RB1#49	22.22	15.77	34.77	PASS
				RB25#0	21.03	14.58	34.77	PASS
				RB25#13	21.13	14.68	34.77	PASS
				RB25#25	21.08	14.63	34.77	PASS
				RB50#0	20.94	14.49	34.77	PASS

Note:
a: For getting the ERP (Efficient Radiated Power) in substitution method, the following formula should be taken to calculate it,

ERP [dBm] = SGP [dBm] – Cable Loss [dB] + Gain [dBd]

b: SGP=Signal Generator Level

2　Peak-to-Average Ratio

Part Ⅰ - Test Results

Test Band	Test Mode	Test Channel	Measured[dB]	Limit [dB]	Verdict
Band 12	TM1/10M	LCH	4.87	13	PASS
		MCH	4.99	13	PASS
		HCH	4.93	13	PASS
	TM2/10M	LCH	5.80	13	PASS
		MCH	5.97	13	PASS
		HCH	5.83	13	PASS

Part Ⅱ - Test Plots

2.1　For LTE

2.1.1　Test Band = LTE band12

2.1.1.1　Test Mode = LTE/TM1.Bandwidth=10MHz

2.1.1.1.1　Test Channel = LCH
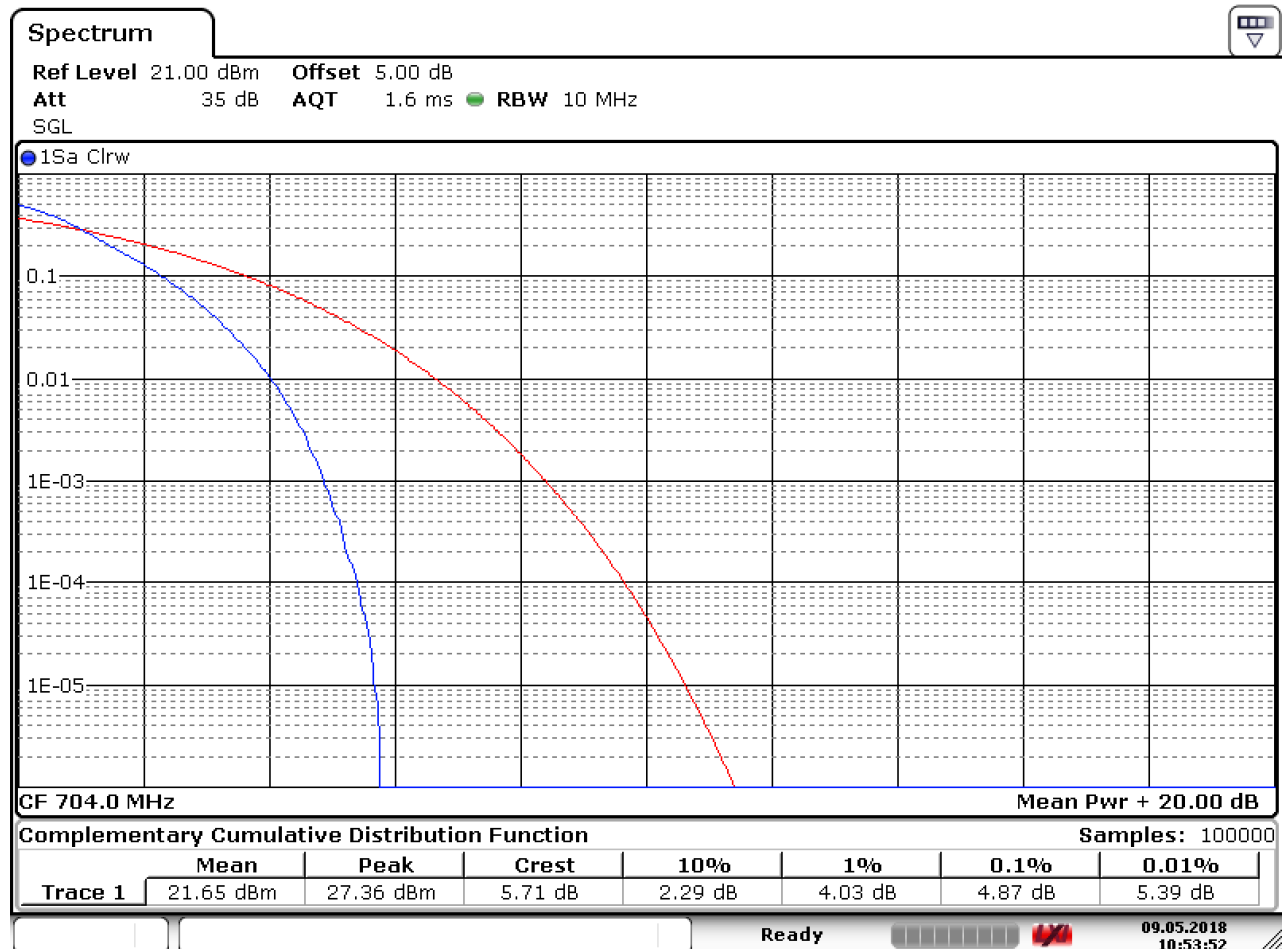
Date: 9.MAY.2018　10:53:52

2.1.1.1.2   Test Channel = MCH


```
Spectrum

Ref Level 21.00 dBm    Offset 5.00 dB
Att          35 dB    AQT      1.6 ms ● RBW 10 MHz
SGL

●1Sa Clrw

0.1

0.01

1E-03

1E-04

1E-05

CF 707.5 MHz                              Mean Pwr + 20.00 dB
```

Complementary Cumulative Distribution Function						Samples: 100000
	Mean	Peak	Crest	10%	1%	0.1%	0.01%
Trace 1	21.72 dBm	27.54 dBm	5.82 dB	2.29 dB	4.09 dB	4.99 dB	5.42 dB

Ready   09.05.2018
                              10:56:27

Date: 9.MAY.2018 10:56:27

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2.1.1.1.3 Test Channel = HCH

Spectrum

Ref Level 21.00 dBm Offset 5.00 dB
Att   35 dB   AQT   1.6 ms   RBW 10 MHz
SGL

1Sa Clrw

0.1

0.01

1E-03

1E-04

1E-05

CF 707.5 MHz   Mean Pwr + 20.00 dB

Complementary Cumulative Distribution Function						Samples: 100000
	Mean	Peak	Crest	10%	1%	0.1%	0.01%
Trace 1	20.60 dBm	26.14 dBm	5.54 dB	2.52 dB	4.17 dB	4.93 dB	5.30 dB

Ready   09.05.2018
                                10:56:50

Date: 9.MAY.2018 10:56:51

2.1.1.2   Test Mode = LTE/TM2.Bandwidth=10MHz

2.1.1.2.1   Test Channel = LCH

	Mean	Peak	Crest	10%	1%	0.1%	0.01%
Trace 1	20.65 dBm	27.12 dBm	6.47 dB	2.93 dB	4.81 dB	5.80 dB	6.35 dB

Date: 9.MAY.2018 10:55:25

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2.1.1.2.2 Test Channel = MCH

Spectrum							
Ref Level 21.00 dBm	Offset 5.00 dB						
Att 35 dB	AQT 1.6 ms ● RBW 10 MHz						
SGL							

● 1Sa Clrw

CF 707.5 MHz

Mean Pwr + 20.00 dB

Complementary Cumulative Distribution Function   Samples: 100000

	Mean	Peak	Crest	10%	1%	0.1%	0.01%
Trace 1	20.59 dBm	27.33 dBm	6.74 dB	2.93 dB	4.93 dB	5.97 dB	6.61 dB

Ready   09.05.2018 10:55:56

Date: 9.MAY.2018 10:55:56

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Test Channel = HCH

Spectrum							
Ref Level 21.00 dBm	Offset 5.00 dB						
Att 35 dB	AQT 1.6 ms	RBW 10 MHz					
SGL							

●1Sa Clrw

0.1
0.01
1E-03
1E-04
1E-05

CF 707.5 MHz　　　　　　　　　　　　　　　　　　　　Mean Pwr + 20.00 dB

Complementary Cumulative Distribution Function　　　　　Samples: 100000

	Mean	Peak	Crest	10%	1%	0.1%	0.01%
Trace 1	19.57 dBm	26.13 dBm	6.55 dB	3.04 dB	4.93 dB	5.83 dB	6.17 dB

Ready　　　　　　09.05.2018 10:57:18

Date: 9.MAY.2018 10:57:18

3 Modulation Characteristics

3.1 For LTE

3.1.1 Test Band = LTE band12

3.1.1.1 Test Mode = LTE /TM1 10MHz

3.1.1.1.1 Test Channel = MCH
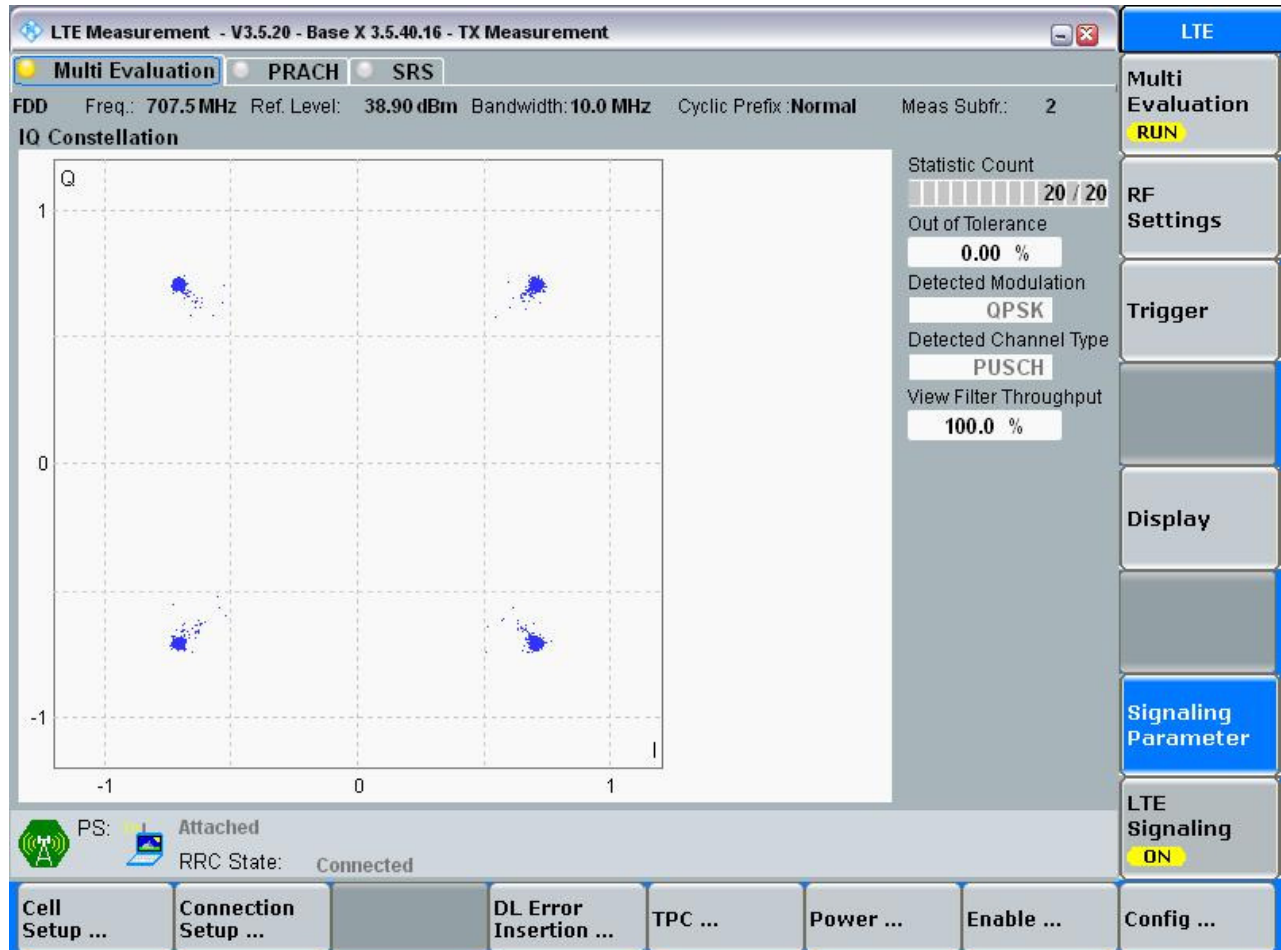
3.1.1.2 Test Mode = LTE /TM2 10MHz

3.1.1.2.1 Test Channel = MCH
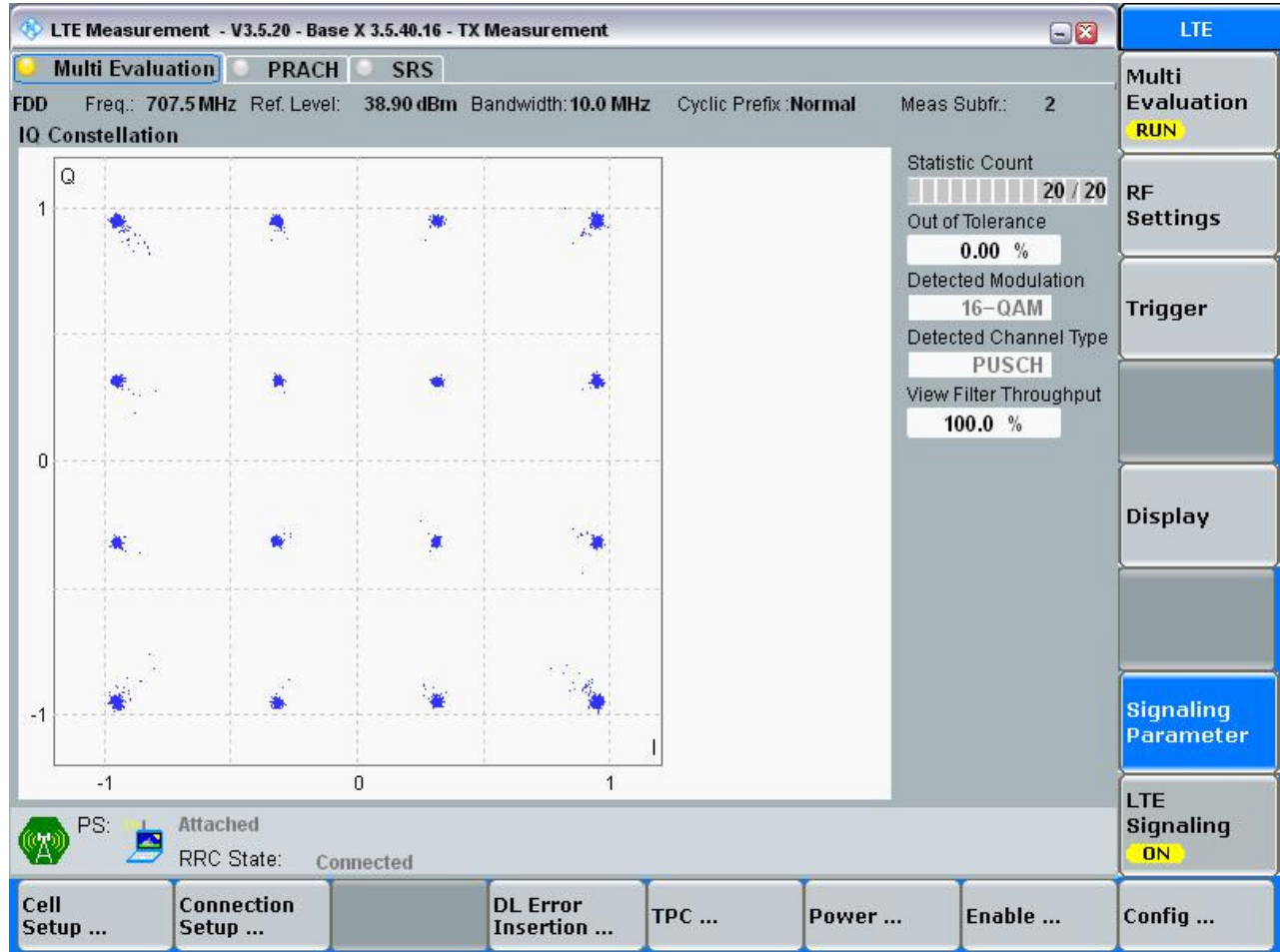
4 Bandwidth

Part Ⅰ - Test Results

Test Band	Test Mode	Test Channel	Occupied Bandwidth [MHz]	Emission Bandwidth [MHz]	Verdict
Band 12	TM1/1.4MHz	LCH	1.08	1.24	PASS
		MCH	1.08	1.24	PASS
		HCH	1.09	1.26	PASS
	TM2/1.4MHz	LCH	1.08	1.26	PASS
		MCH	1.08	1.24	PASS
		HCH	1.08	1.26	PASS
	TM1/ 3MHz	LCH	2.68	2.84	PASS
		MCH	2.67	2.83	PASS
		HCH	2.68	2.83	PASS
	TM2/3MHz	LCH	2.67	2.84	PASS
		MCH	2.67	2.83	PASS
		HCH	2.67	2.84	PASS
	TM1/ 5MHz	LCH	4.47	4.89	PASS
		MCH	4.49	4.92	PASS
		HCH	4.48	4.91	PASS
	TM2/ 5MHz	LCH	4.47	4.90	PASS
		MCH	4.47	4.88	PASS
		HCH	4.48	4.89	PASS
	TM1/10MHz	LCH	8.93	9.64	PASS
		MCH	8.97	9.85	PASS
		HCH	8.91	9.59	PASS
	TM2/ 10MHz	LCH	8.93	9.64	PASS
		MCH	8.95	9.65	PASS
		HCH	8.93	9.54	PASS

Part Ⅱ –Test Plots

4.1 For LTE

4.1.1 Test Band = LTE band12

4.1.1.1   Test Mode = LTE/TM1 1.4MHz

4.1.1.1.1   Test Channel = LCH

Date: 9.MAY.2018 08:01:19

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4.1.1.1.2 Test Channel = MCH

Date: 9.MAY.2018 08:05:03

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4.1.1.1.3   Test Channel = HCH

Date: 9.MAY.2018 08:06:25

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4.1.1.2 Test Mode = LTE/TM2 1.4MHz

4.1.1.2.1 Test Channel = LCH

Date: 9.MAY.2018 08:02:32

4.1.1.2.2   Test Channel = MCH

Spectrum		
Ref Level 30.00 dBm	Offset 5.00 dB ● RBW 30 kHz	
● Att 40 dB ● SWT 1 s ● VBW 300 kHz	Mode Auto Sweep	

● 1Rm Max

D1[1]   0.63 dB
                 1.24380 MHz
Occ Bw   1.084915085 MHz
M1[1]   -18.78 dBm
                 706.87660 MHz

D1 7.630 dBm

D2 -18.370 dBm

CF 707.5 MHz   1001 pts   Span 3.0 MHz

Measuring...   09.05.2018
                      08:03:37

Date: 9.MAY.2018 08:03:37

4.1.1.2.3 Test Channel = HCH
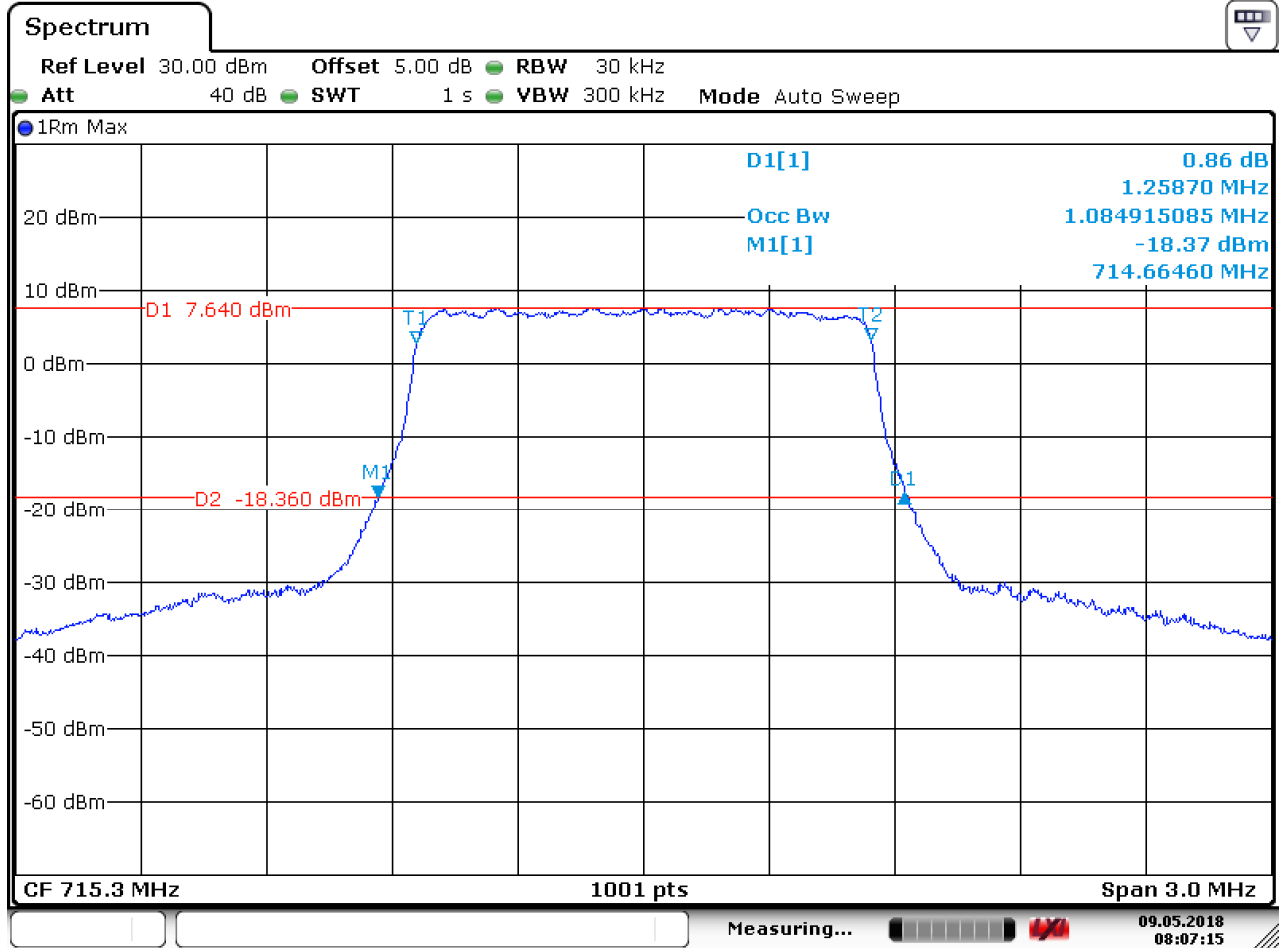
Date: 9.MAY.2018 08:07:16

4.1.1.3   Test Mode = LTE/TM1 3MHz
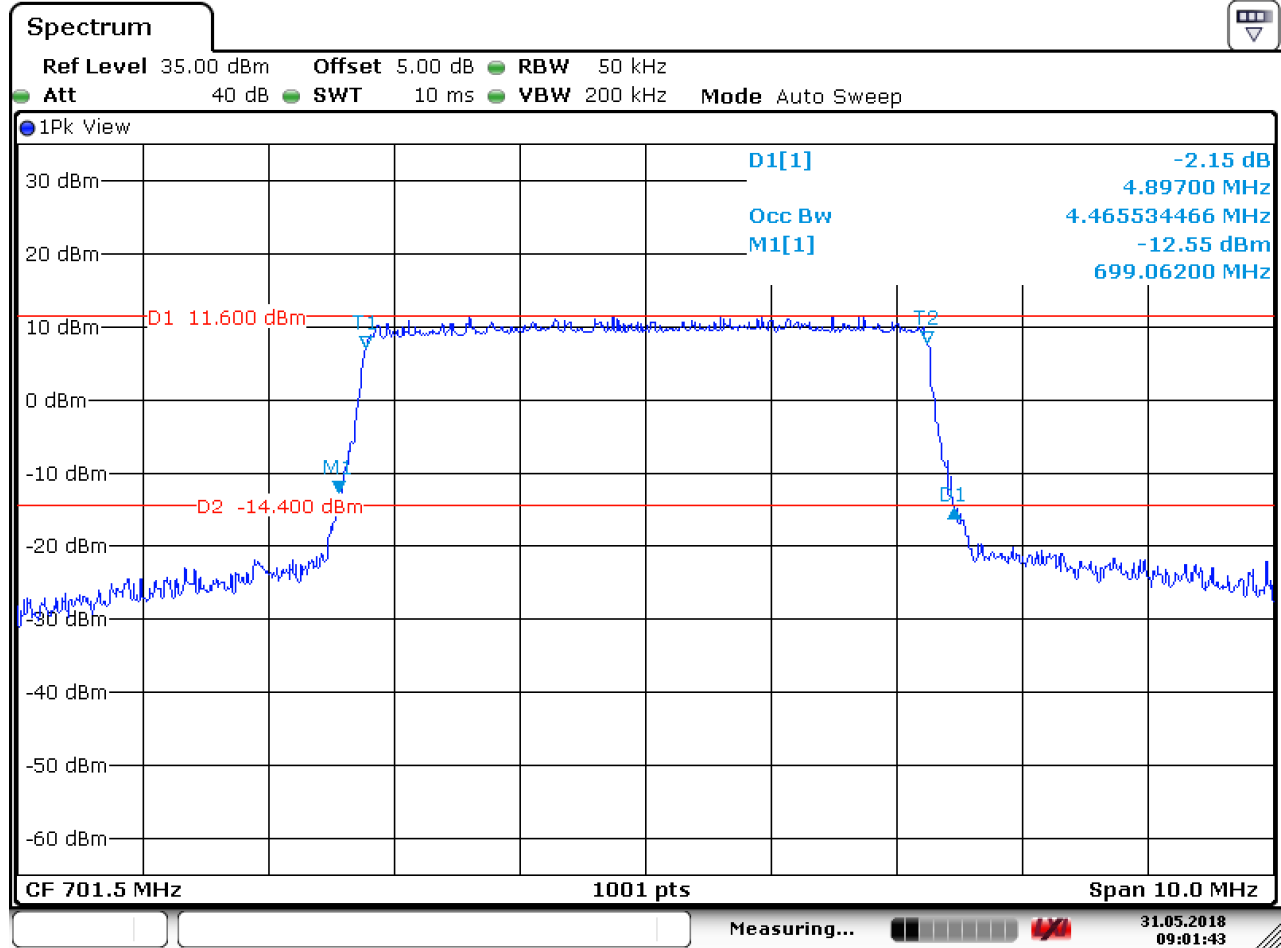
4.1.1.3.1   Test Channel = LCH

Date: 9.MAY.2018 08:08:40

SGS-CSTC Standards Technical Services Co., Ltd. Shenzhen Branch
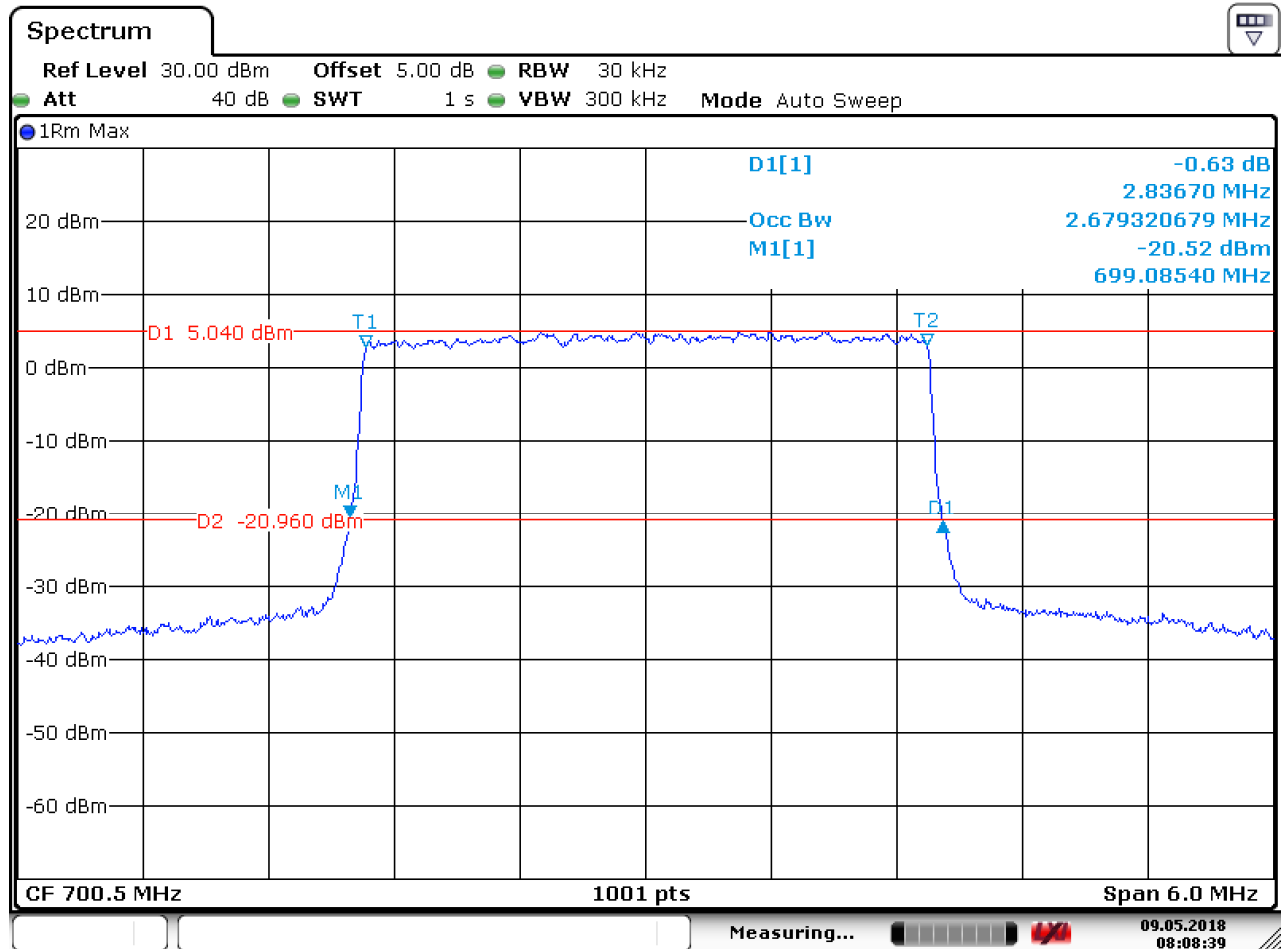
4.1.1.3.2   Test Channel = MCH

Date: 9.MAY.2018 08:11:41

SGS-CSTC Standards Technical Services Co., Ltd. Shenzhen Branch
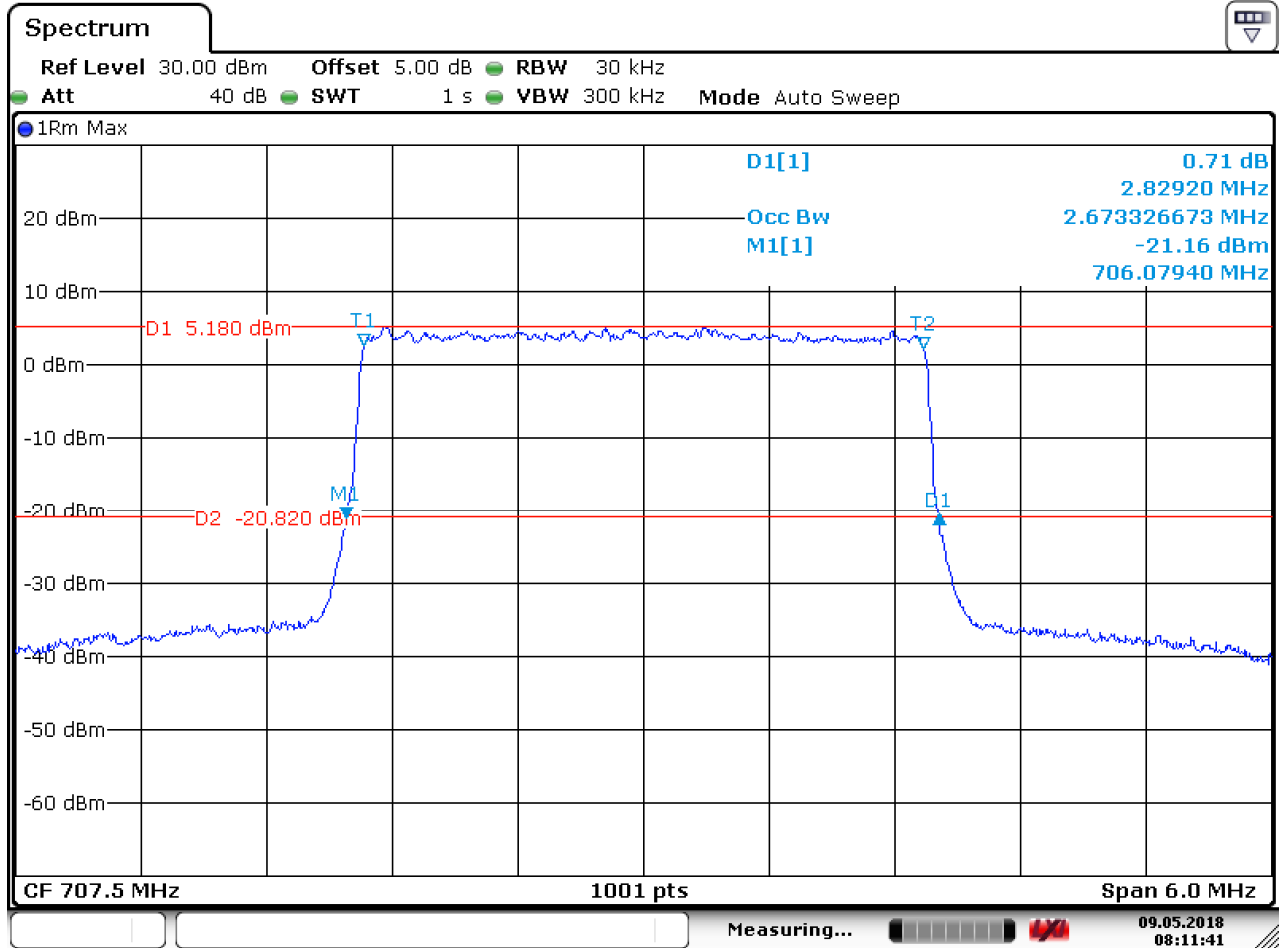
4.1.1.3.3   Test Channel = HCH
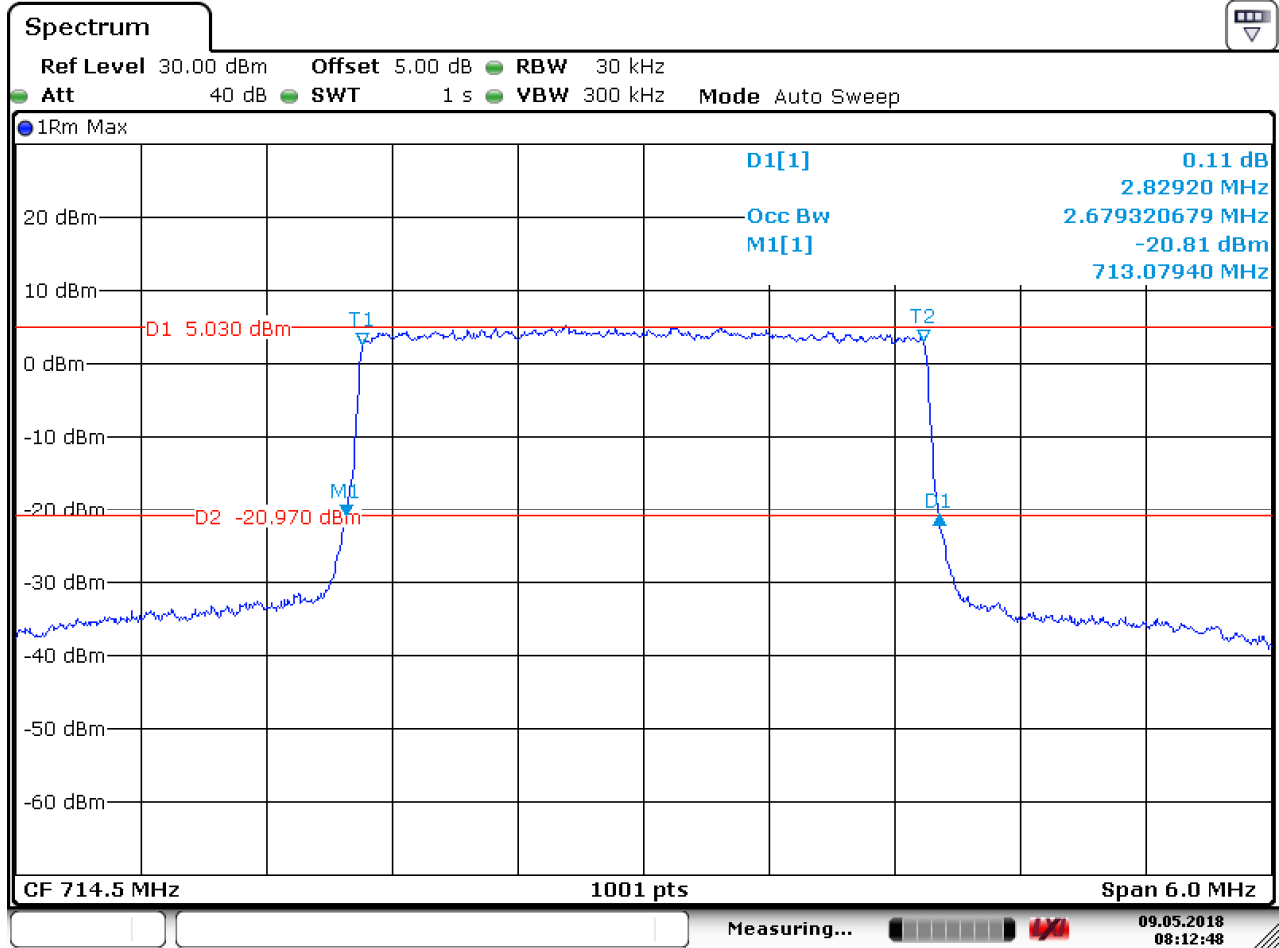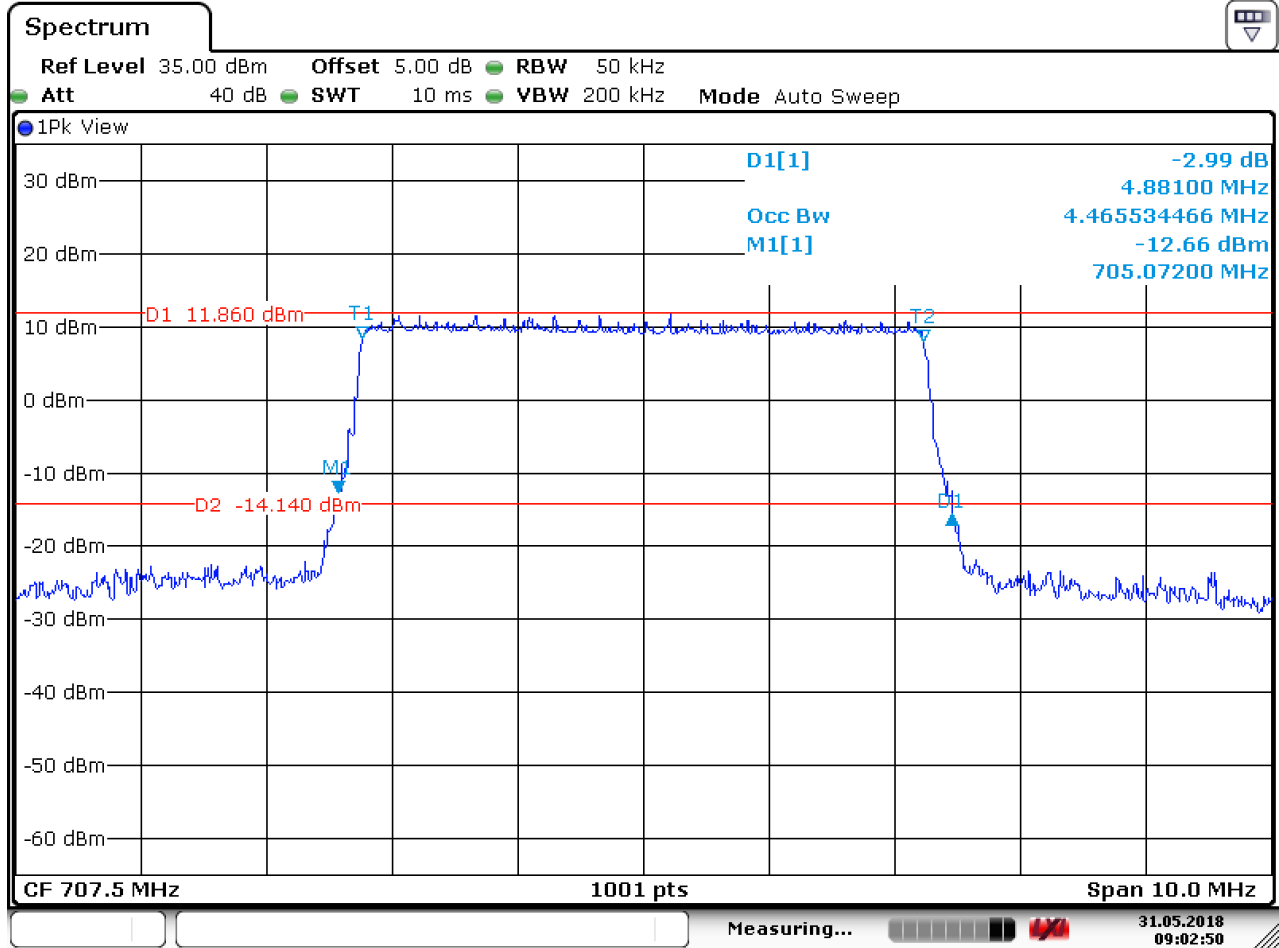

Date: 9.MAY.2018 08:12:48

4.1.1.4   Test Mode = LTE/TM2 3MHz

4.1.1.4.1   Test Channel = LCH
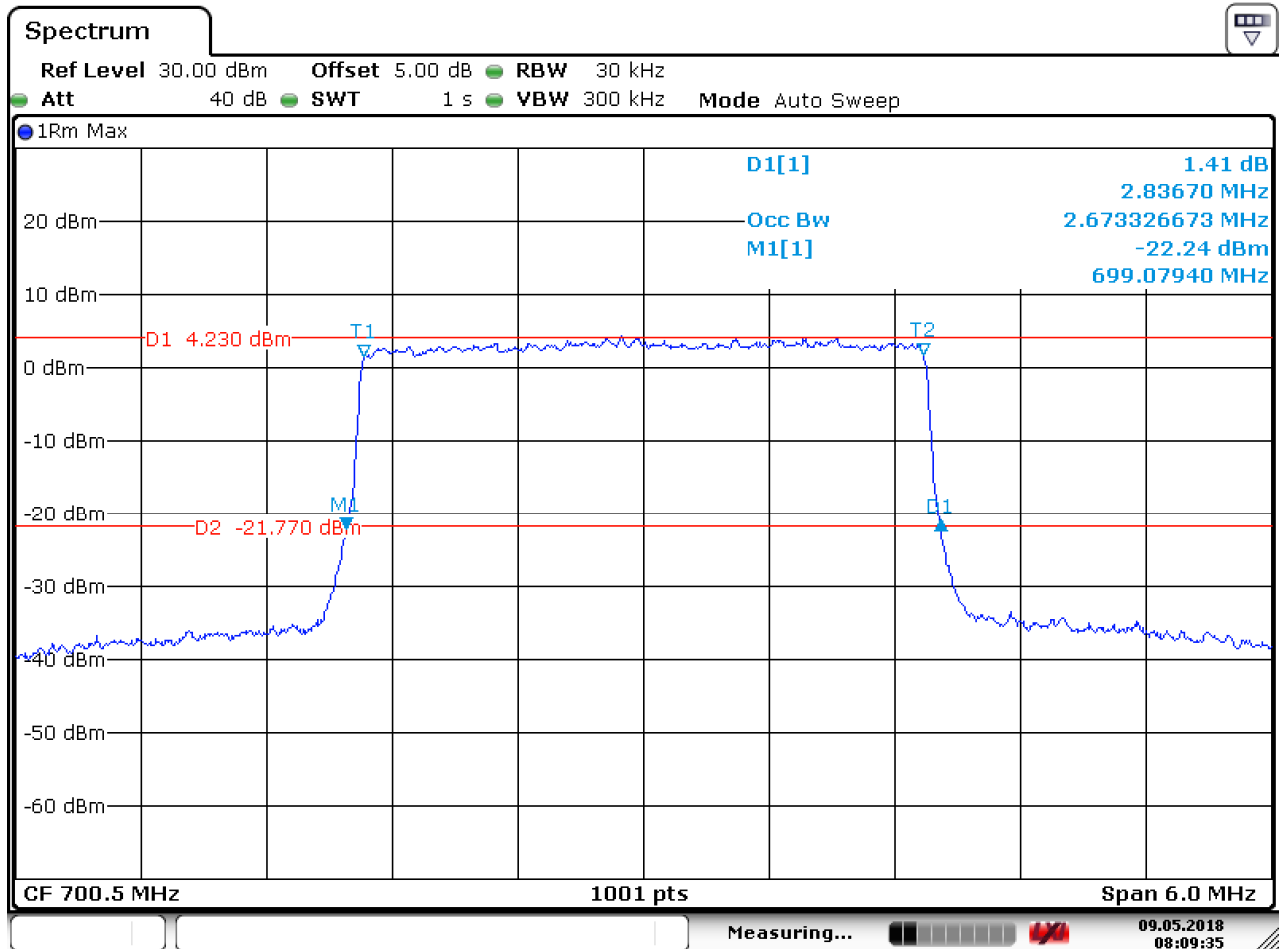
Date: 9.MAY.2018 08:09:35

4.1.1.4.2   Test Channel = MCH

Date: 9.MAY.2018 08:11:01

SGS-CSTC Standards Technical Services Co., Ltd. Shenzhen Branch
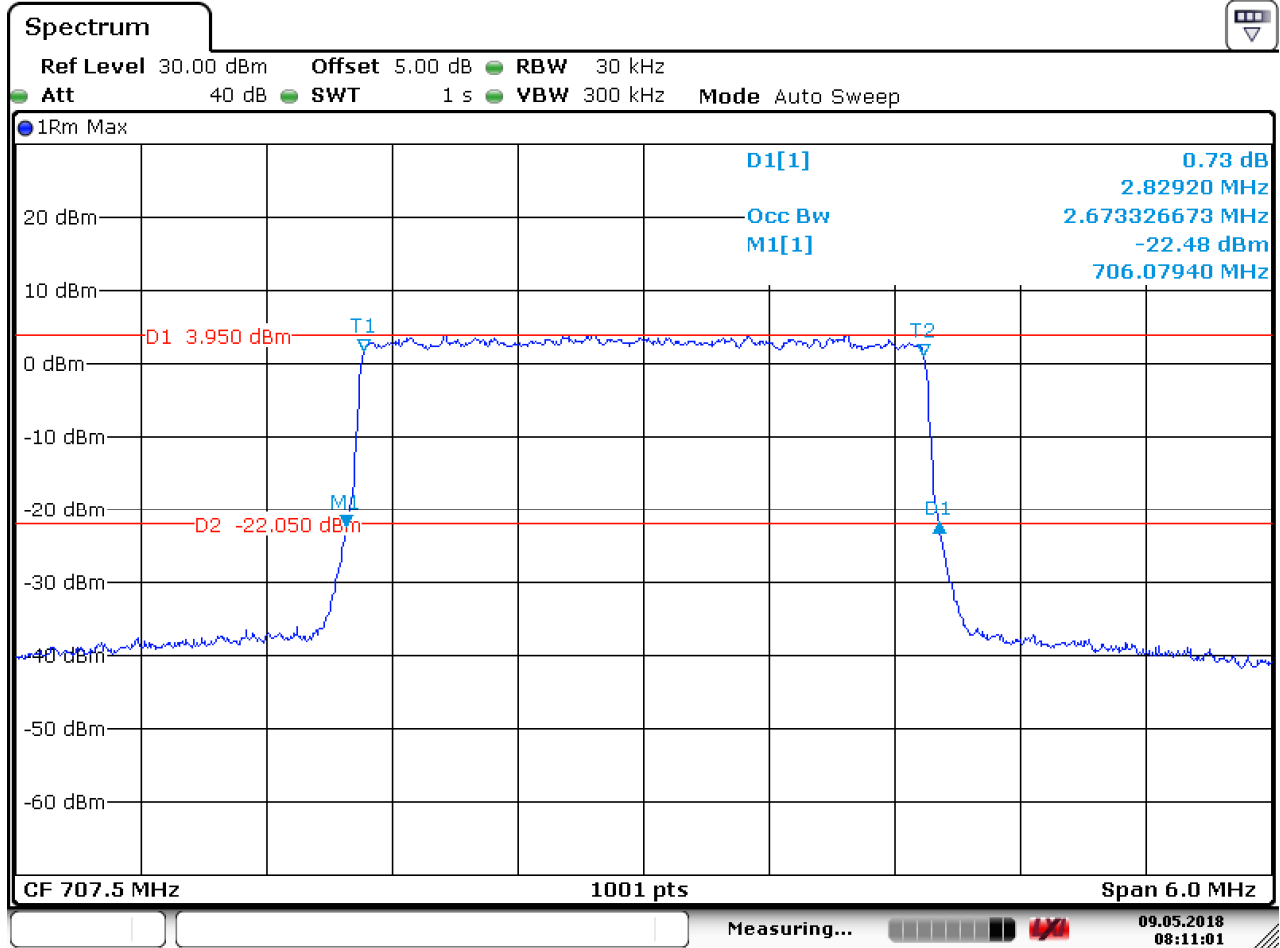
4.1.1.4.3 Test Channel = HCH
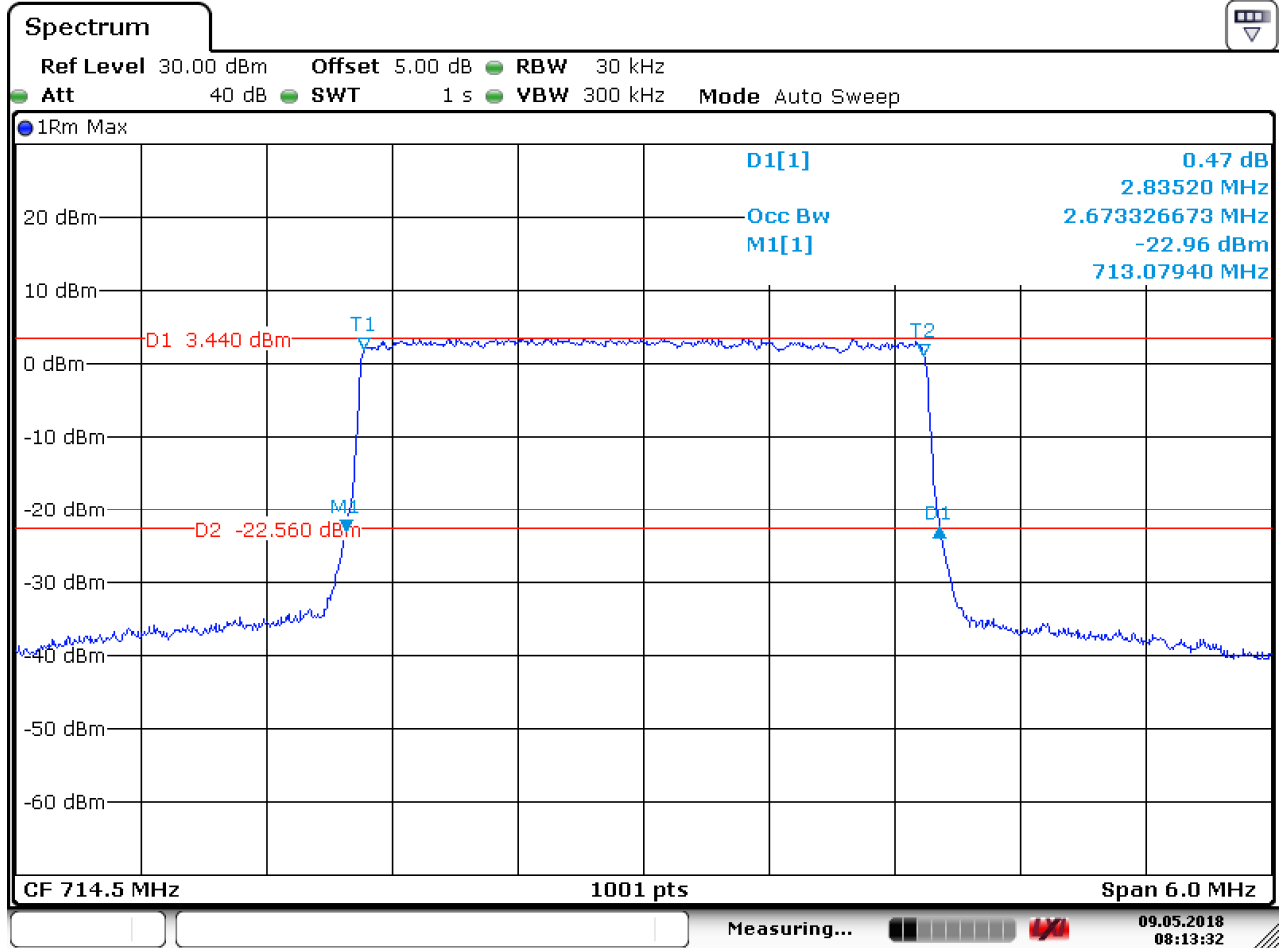
Date: 9.MAY.2018 08:13:32

4.1.1.5   Test Mode = LTE/TM1 5MHz

4.1.1.5.1   Test Channel = LCH

Date: 31.MAY.2018 09:00:52

SGS-CSTC Standards Technical Services Co., Ltd. Shenzhen Branch
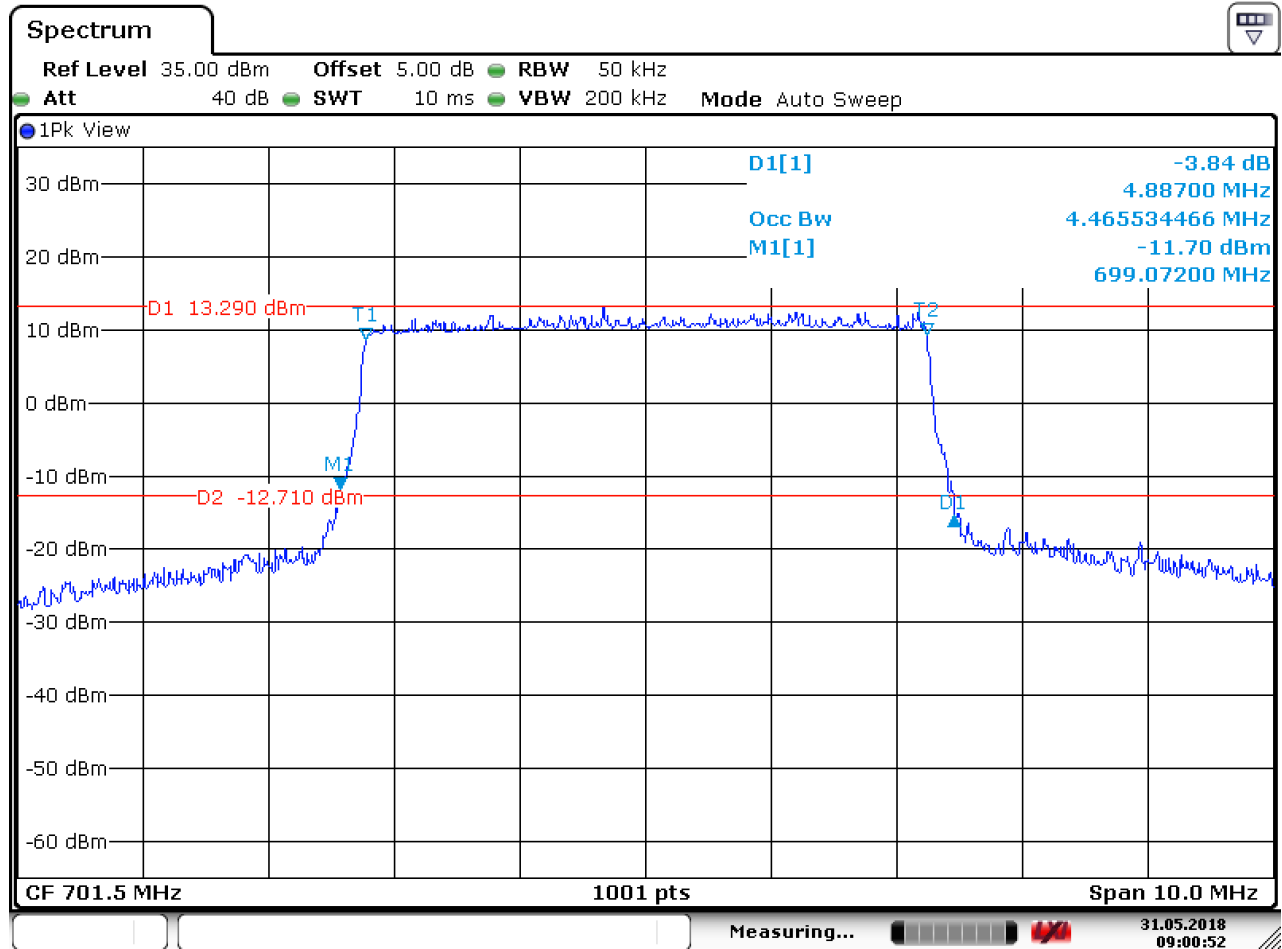
4.1.1.5.2   Test Channel = MCH

Date: 31.MAY.2018 09:03:46

SGS-CSTC Standards Technical Services Co., Ltd. Shenzhen Branch
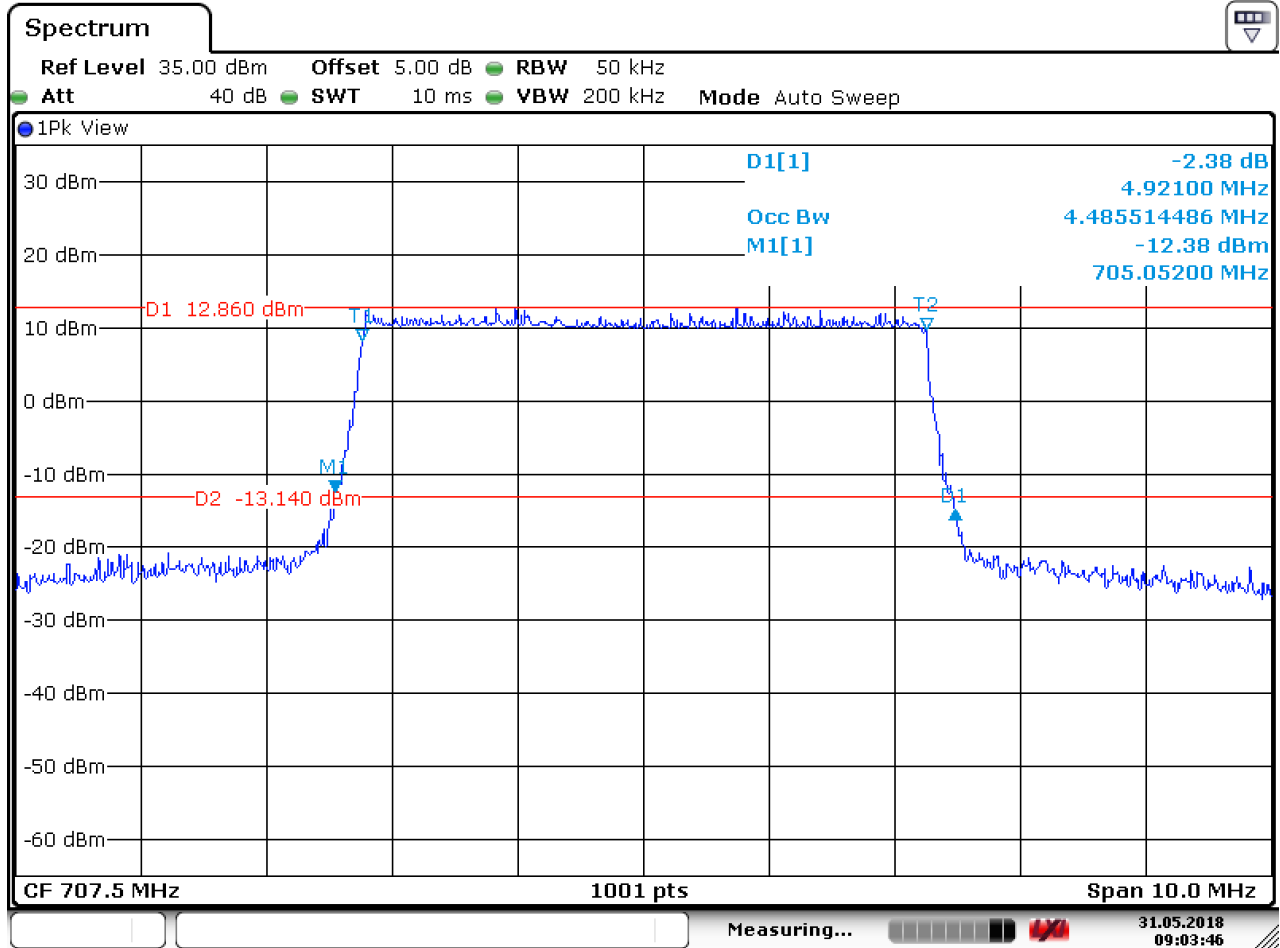
4.1.1.5.3 Test Channel = HCH
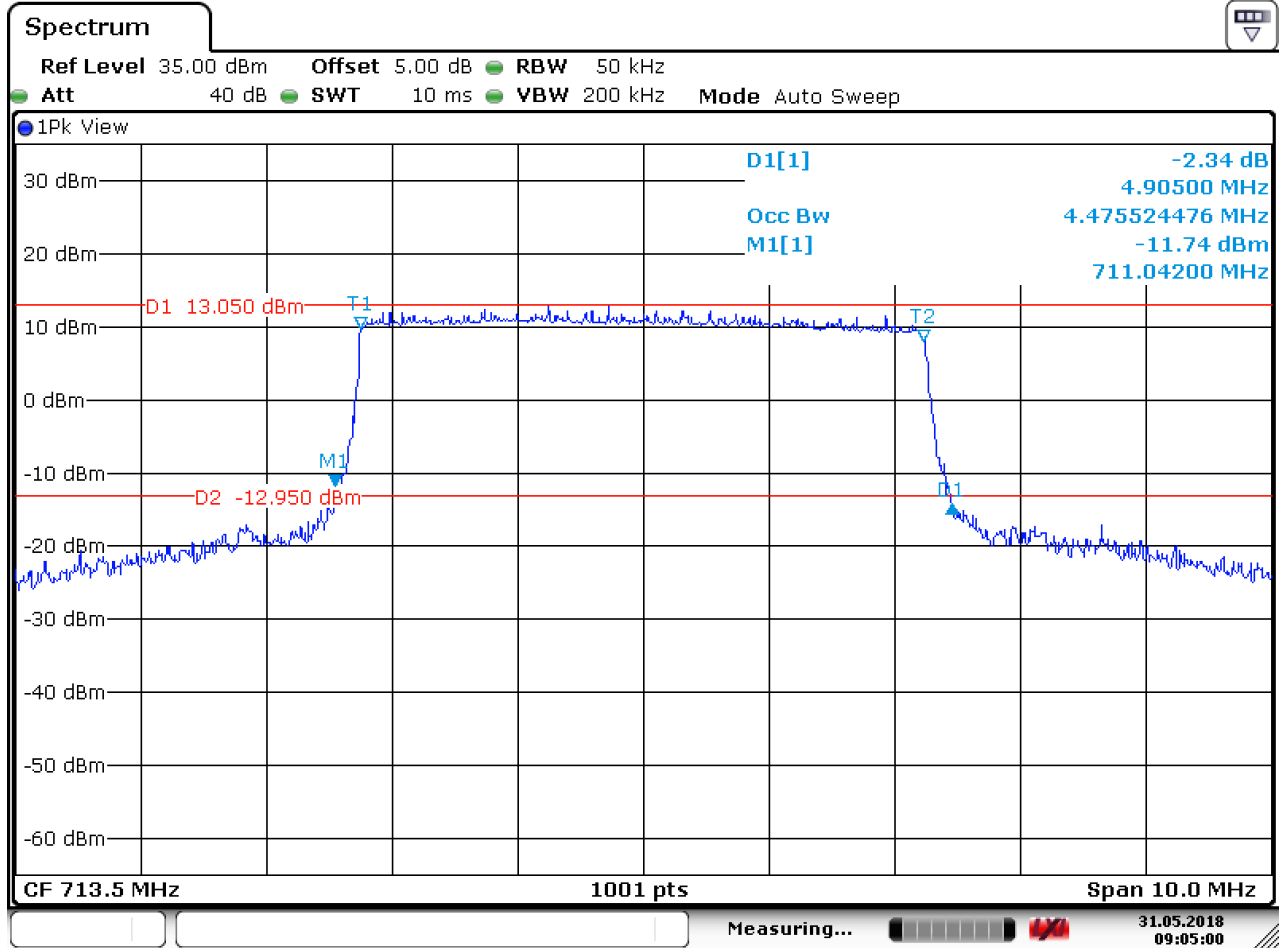
Date: 31.MAY.2018 09:05:00

4.1.1.6   Test Mode = LTE/TM2 5MHz

4.1.1.6.1   Test Channel = LCH
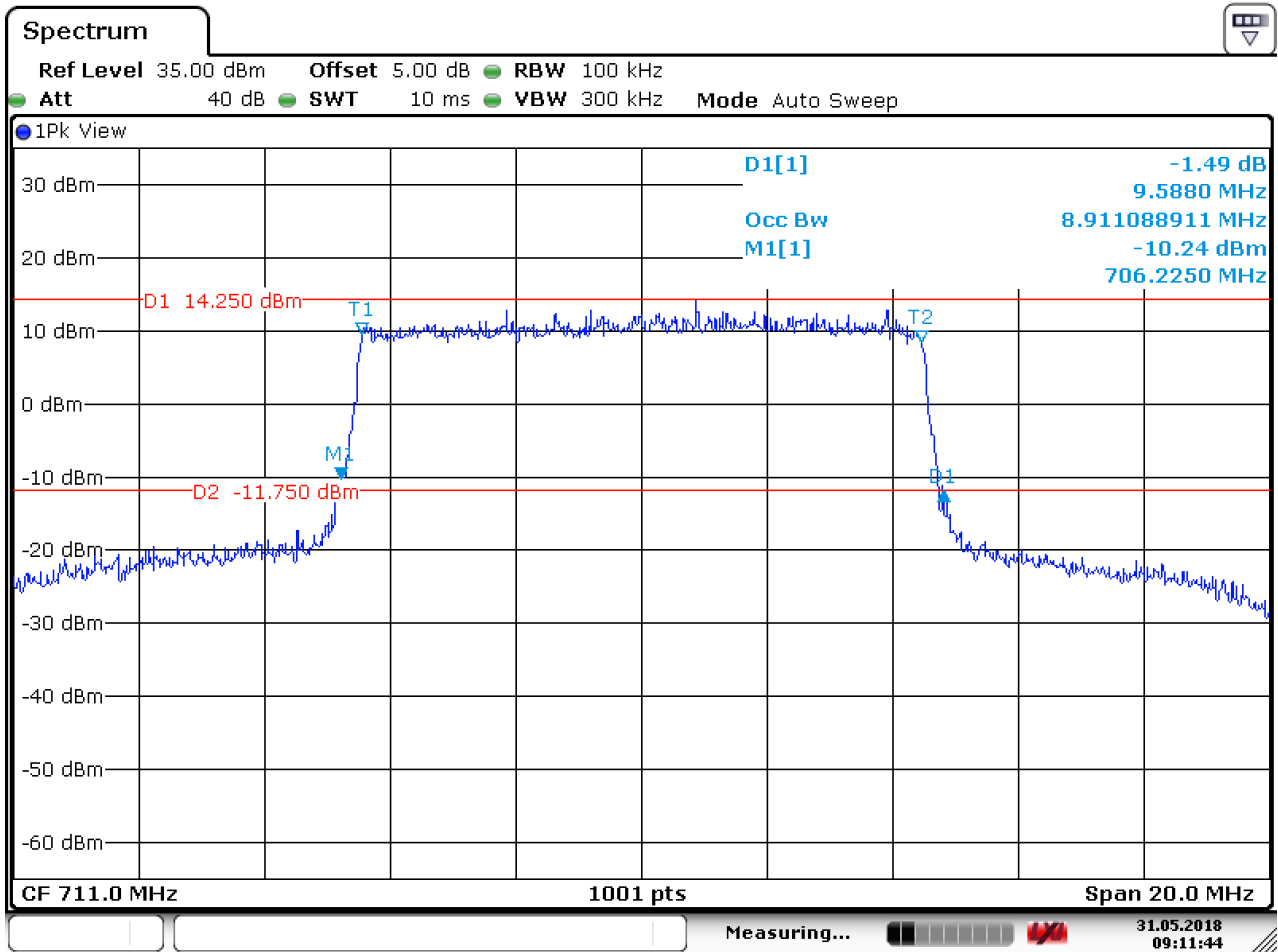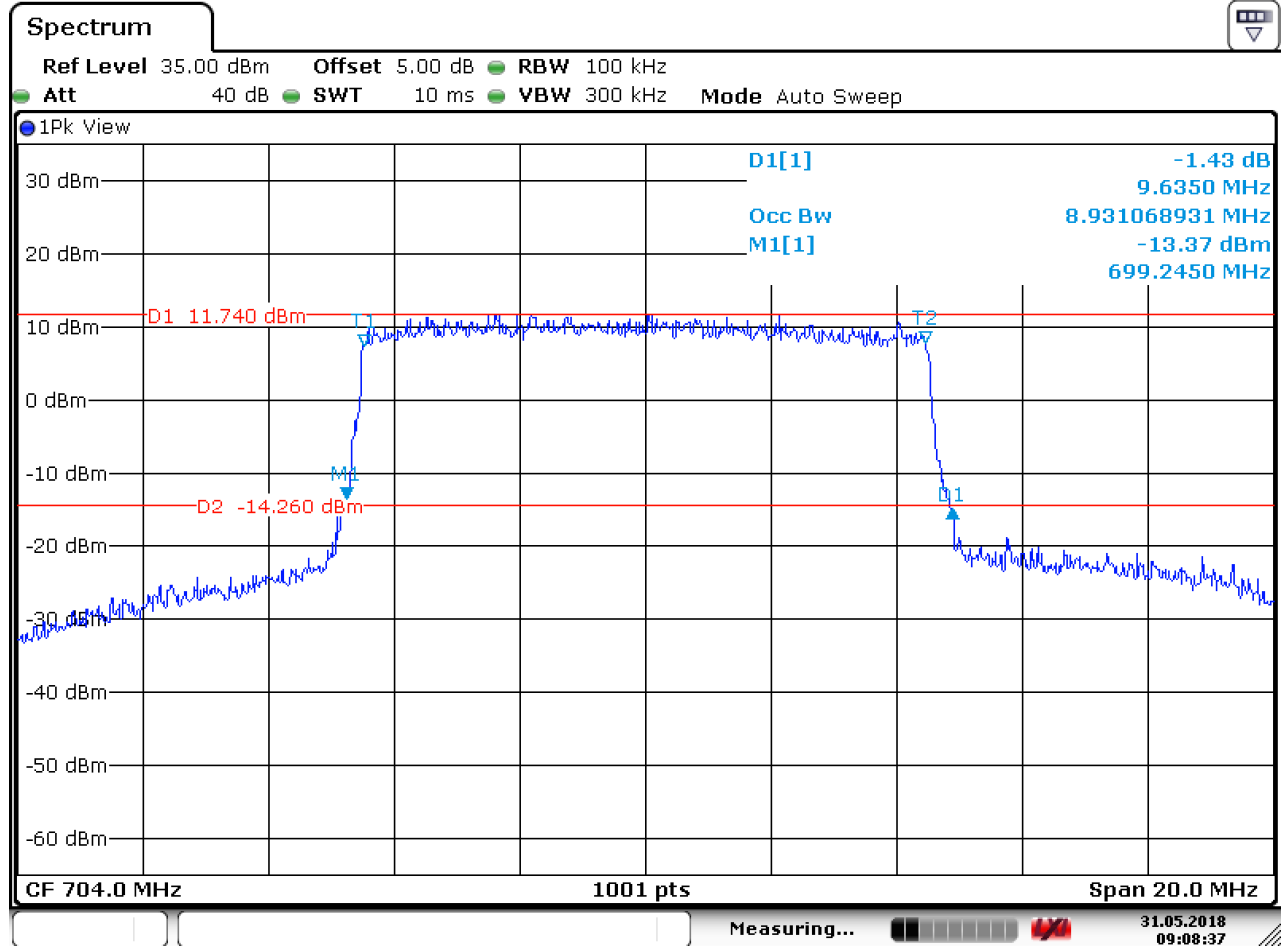

Date: 31.MAY.2018 09:01:43

4.1.1.6.2   Test Channel = MCH

Spectrum

Ref Level 35.00 dBm	Offset 5.00 dB ● RBW 50 kHz	
● Att 40 dB ● SWT 10 ms ● VBW 200 kHz	Mode Auto Sweep	

● 1Pk View

D1[1]   -2.99 dB
                                          4.88100 MHz
Occ Bw   4.465534466 MHz
M1[1]   -12.66 dBm
                                          705.07200 MHz

D1 11.860 dBm

D2 -14.140 dBm

CF 707.5 MHz   1001 pts   Span 10.0 MHz

Measuring...   31.05.2018 09:02:50

Date: 31.MAY.2018 09:02:50

**SGS-CSTC Standards Technical Services Co., Ltd.
Shenzhen Branch**

4.1.1.6.3 Test Channel = HCH

```
Spectrum                                                              ▦▽

  Ref Level  35.00 dBm   Offset  5.00 dB  ● RBW    50 kHz
● Att          40 dB   ● SWT    10 ms  ● VBW  200 kHz   Mode  Auto Sweep
● 1Pk View

                                          D1[1]              -0.77 dB
 30 dBm                                                    4.88500 MHz
                                          Occ Bw      4.475524476 MHz
 20 dBm                                   M1[1]            -13.49 dBm
                                                          711.05200 MHz
        D1 11.800 dBm     T1                      T2
 10 dBm

  0 dBm

-10 dBm                   M1
        D2 -14.200 dBm                            D1
-20 dBm

-30 dBm

-40 dBm

-50 dBm

-60 dBm

 CF 713.5 MHz                  1001 pts              Span 10.0 MHz

                              Measuring...   ▮▮▮▮▮▮▮▮ ⚠      31.05.2018
                                                           09:05:54
```

Date: 31.MAY.2018 09:05:55

SGS-CSTC Standards Technical Services Co., Ltd. Shenzhen Branch

4.1.1.7   Test Mode = LTE/TM1 10MHz

4.1.1.7.1   Test Channel = LCH

Date: 31.MAY.2018 09:07:45

SGS-CSTC Standards Technical Services Co., Ltd. Shenzhen Branch
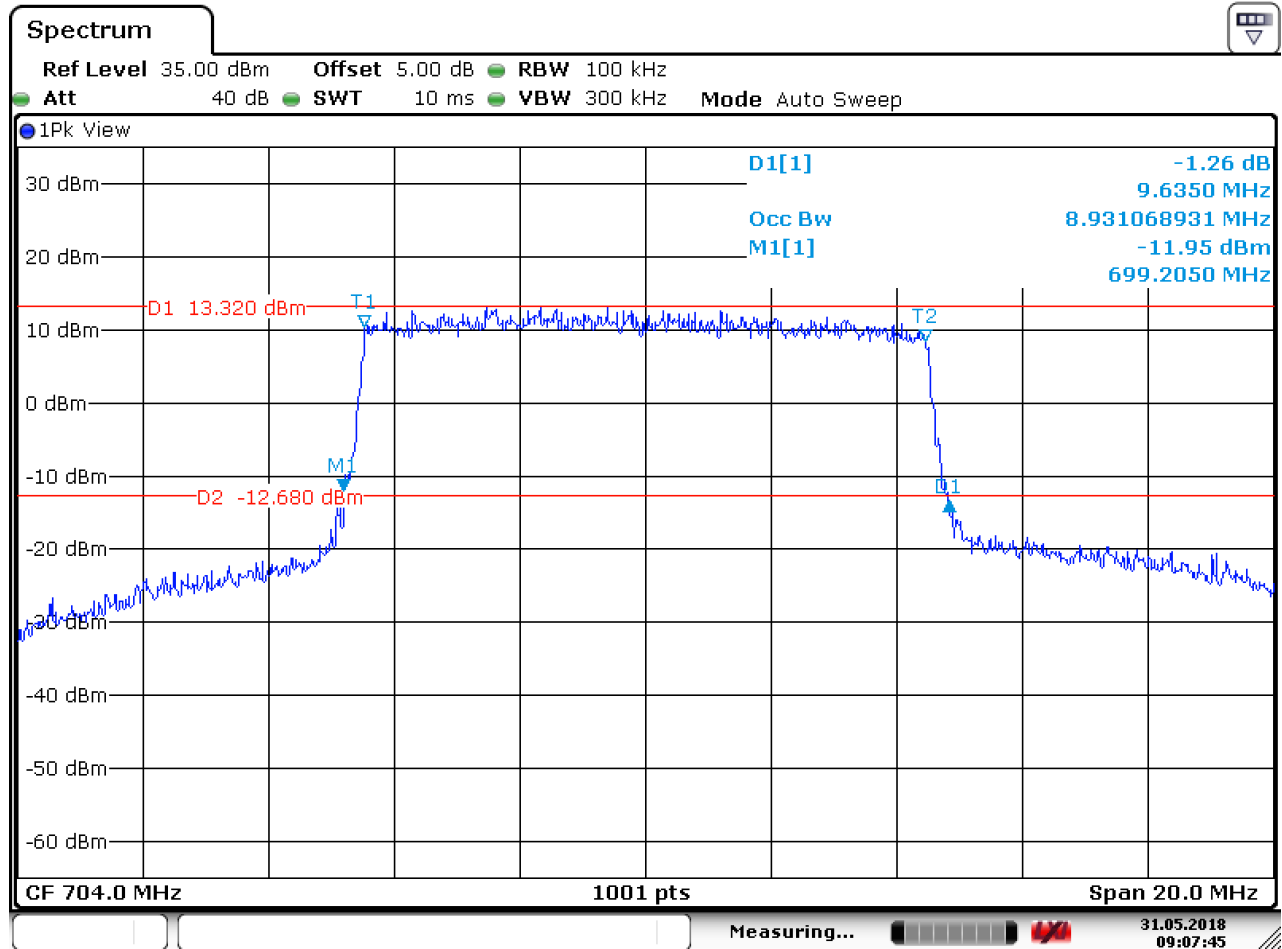
4.1.1.7.2　Test Channel = MCH

Date: 31.MAY.2018　09:10:11

**SGS-CSTC Standards Technical Services Co., Ltd.
Shenzhen Branch**
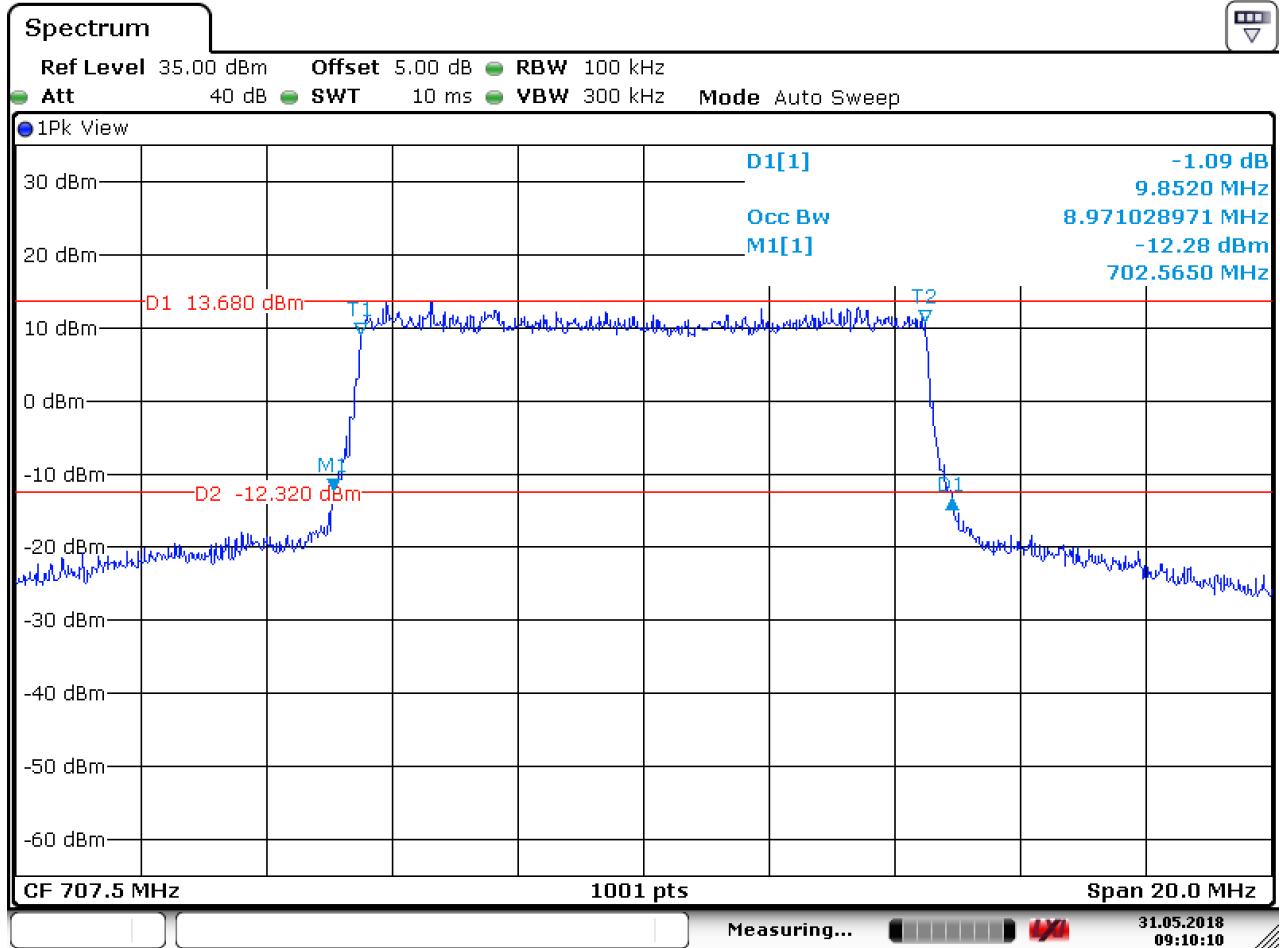
4.1.1.7.3   Test Channel = HCH

Date: 31.MAY.2018 09:11:45

4.1.1.8   Test Mode = LTE/TM2 10MHz

4.1.1.8.1   Test Channel = LCH

Date: 31.MAY.2018 09:08:37

4.1.1.8.2   Test Channel = MCH

Date: 31.MAY.2018 09:09:31

**SGS-CSTC Standards Technical Services Co., Ltd.
Shenzhen Branch**
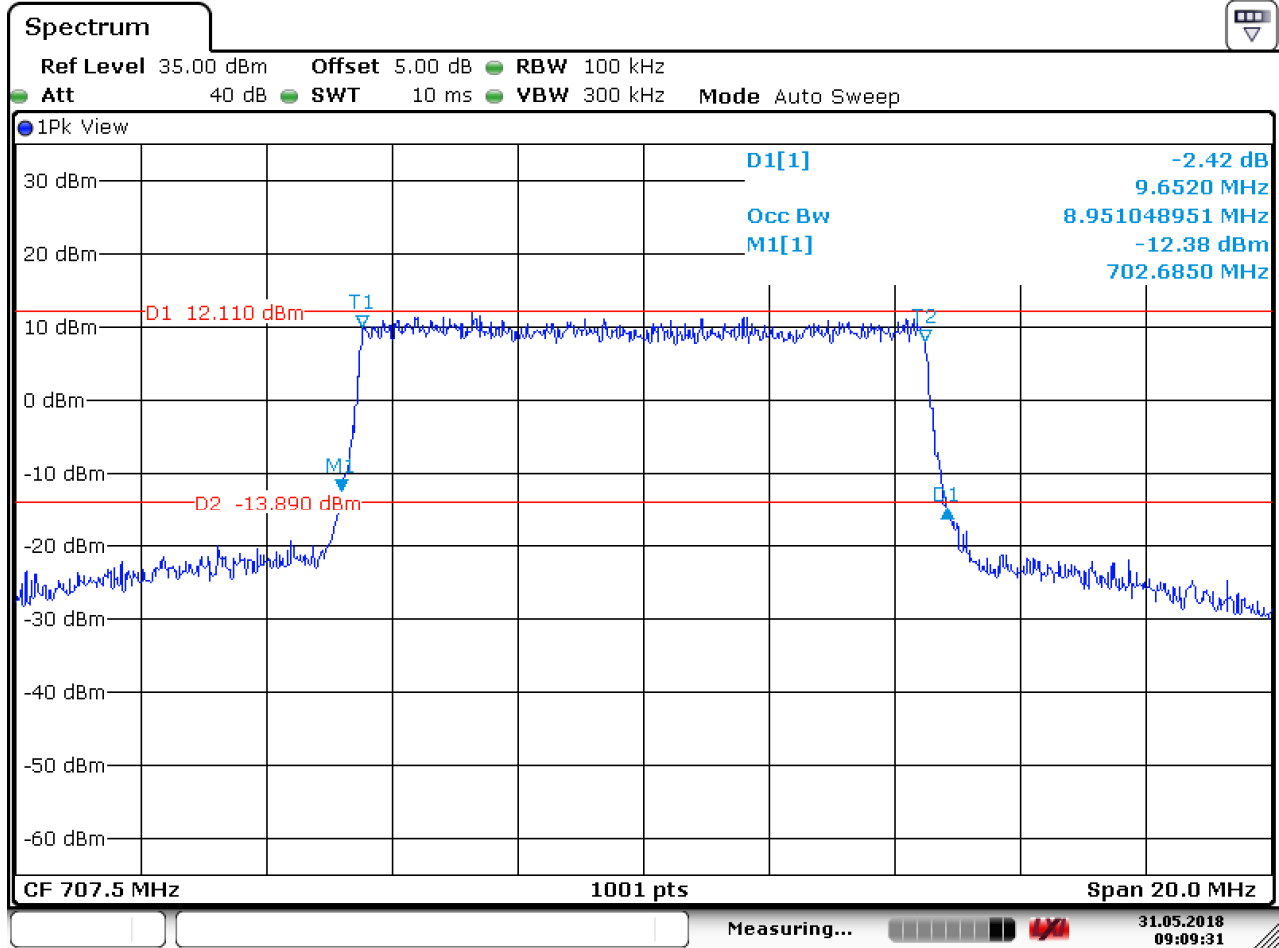
4.1.1.8.3   Test Channel = HCH
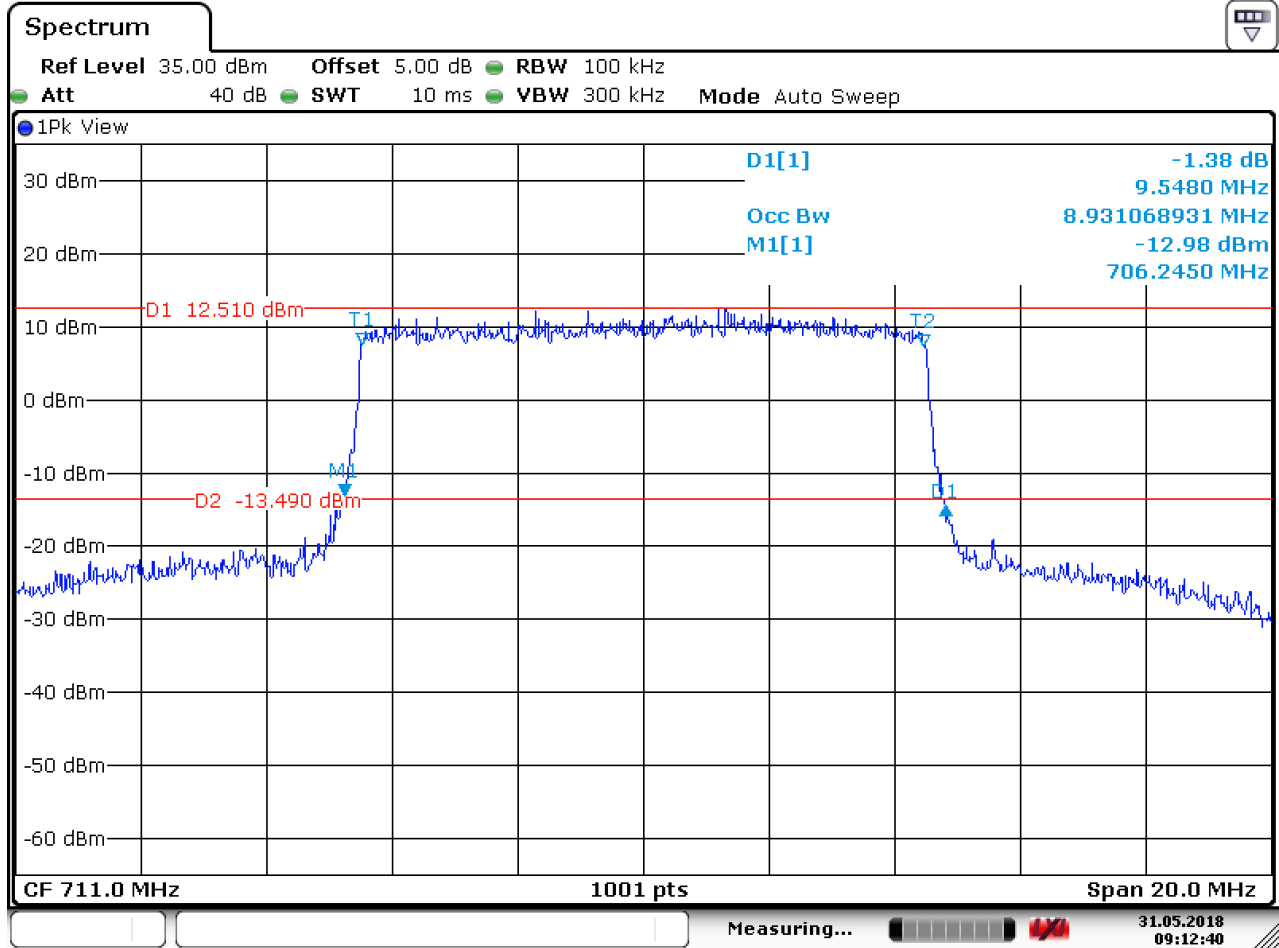
Date: 31.MAY.2018 09:12:40

5   Band Edges Compliance

5.1 For LTE

5.1.1 Test Band = LTE band12

5.1.1.1   Test Mode = LTE/TM1 1.4MHz

5.1.1.1.1   Test Channel = LCH

5.1.1.1.1.1 Test RB=1RB
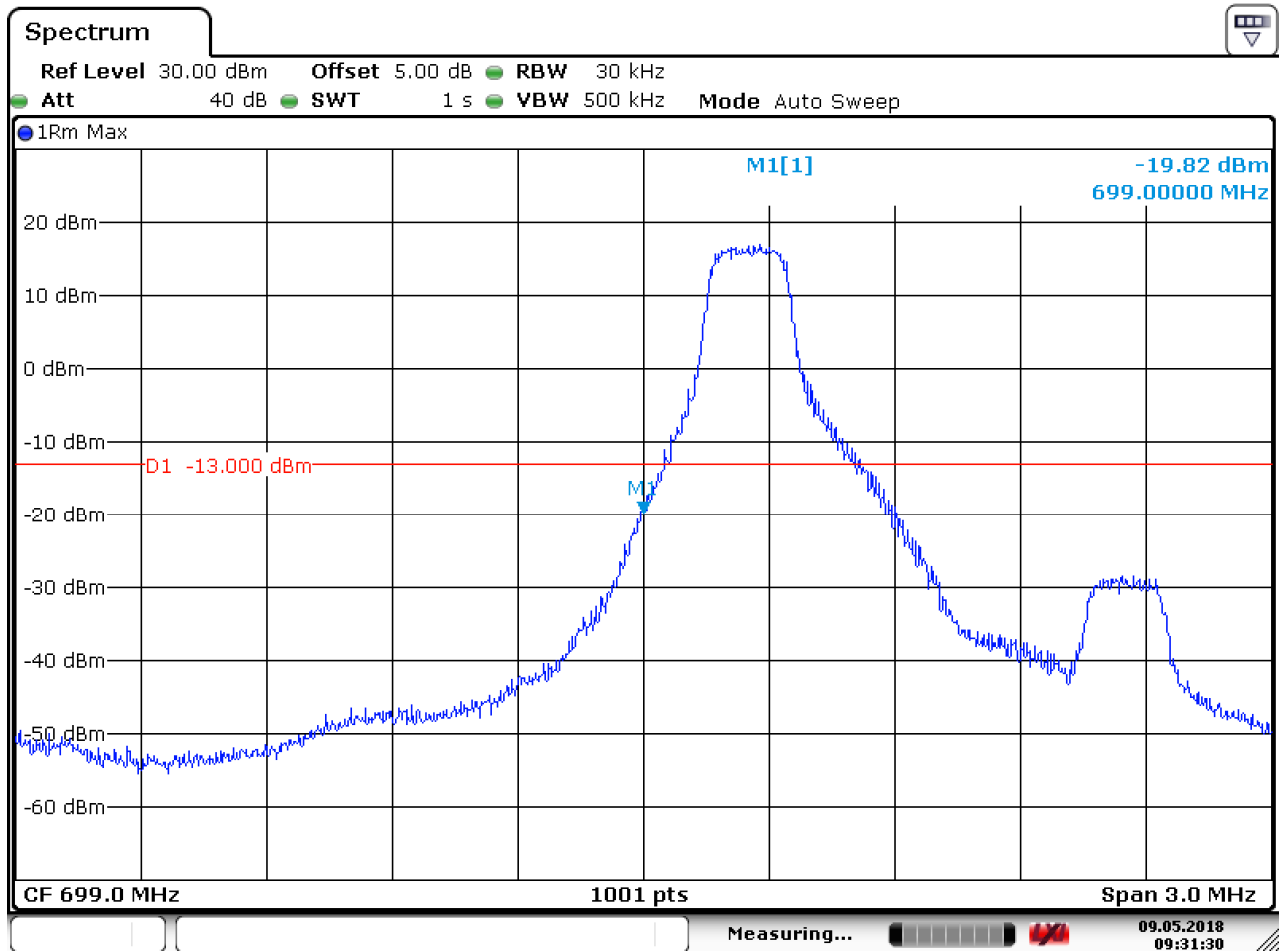
Date: 9.MAY.2018 09:31:30

5.1.1.1.1.2 Test RB=6RB
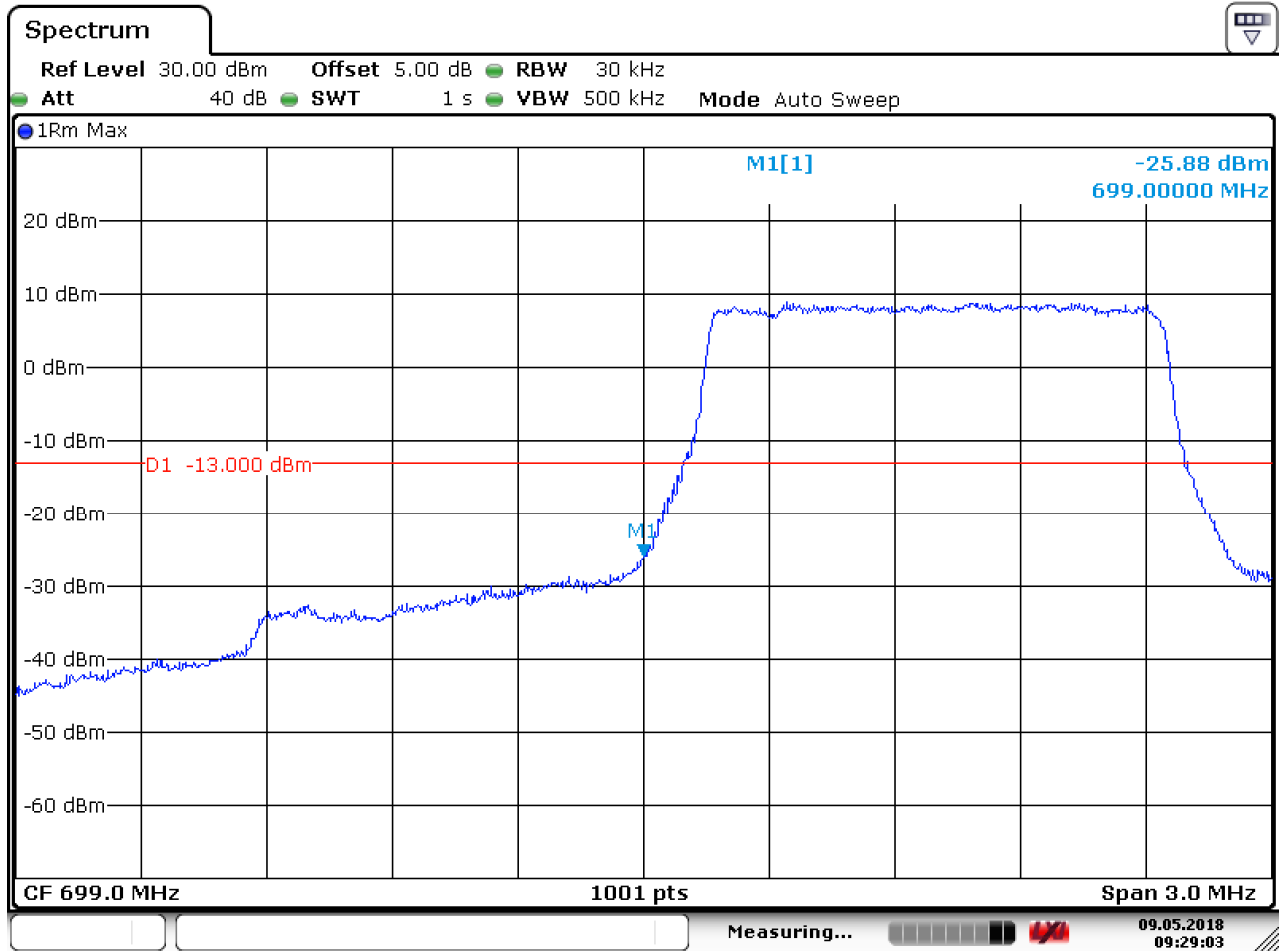
Date: 9.MAY.2018 09:29:04

5.1.1.1.2   Test Channel = HCH

5.1.1.1.2.1 Test RB=1RB
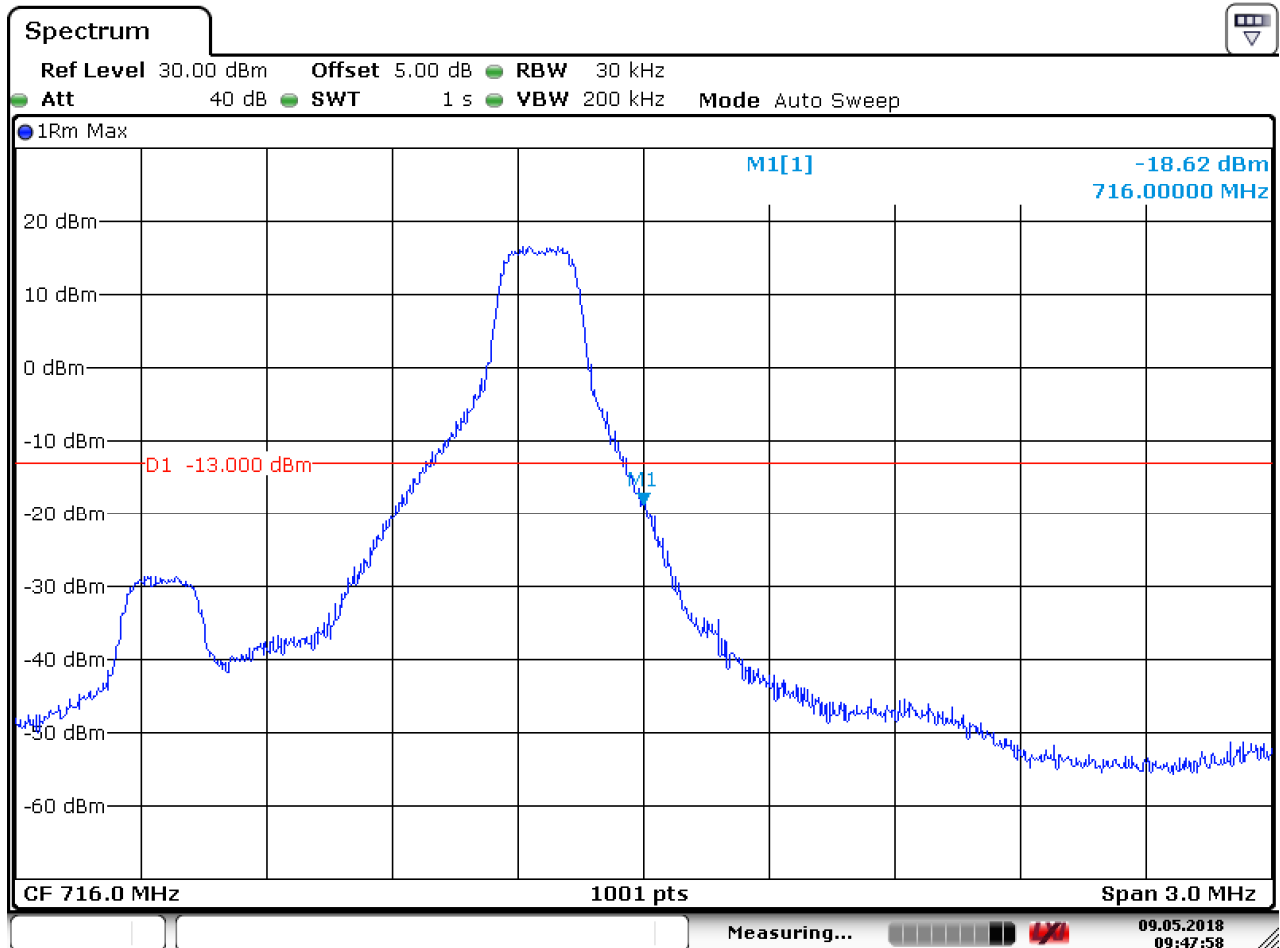
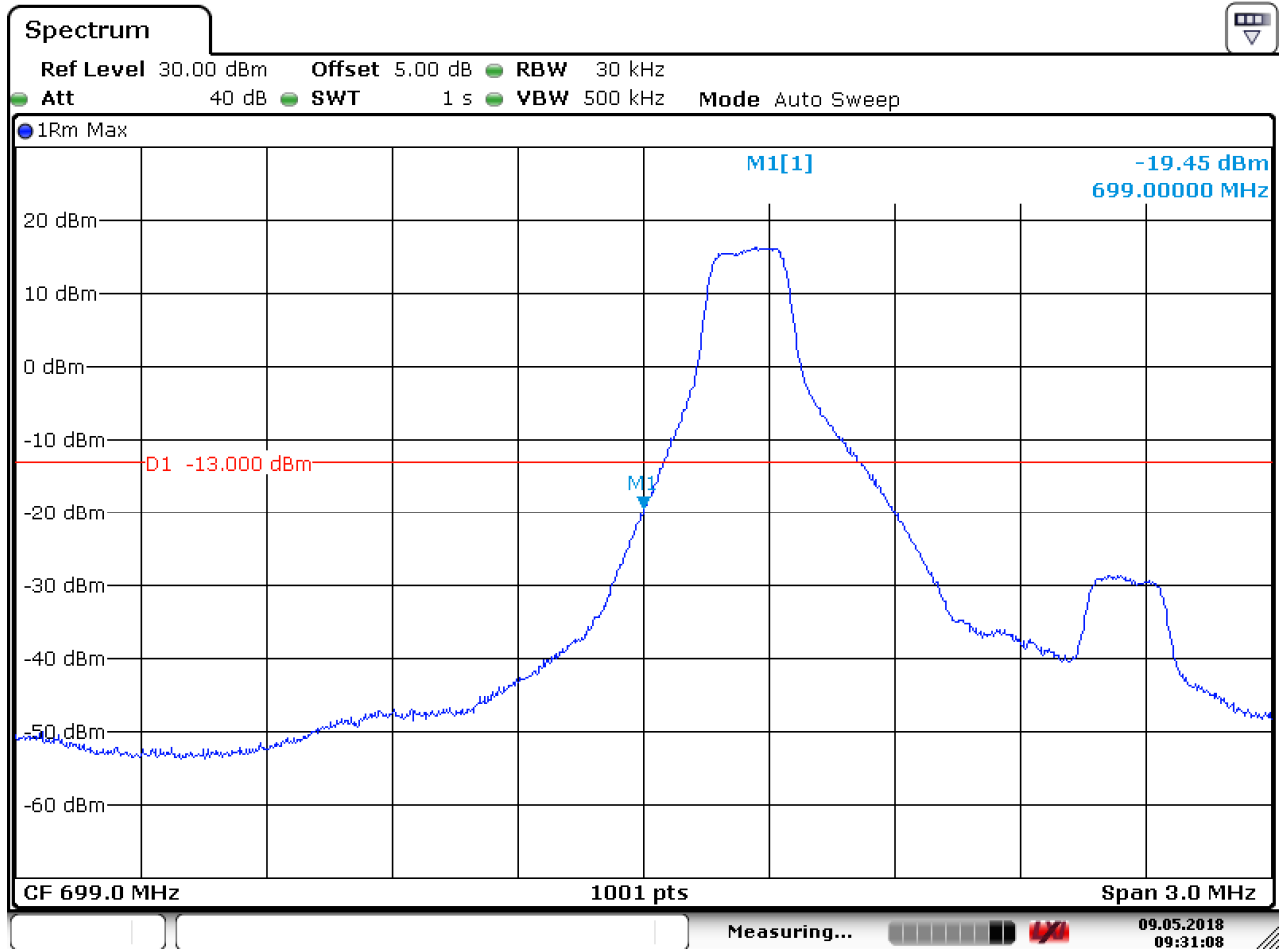Date: 9.MAY.2018 09:47:59

5.1.1.1.2.2 Test RB=6RB
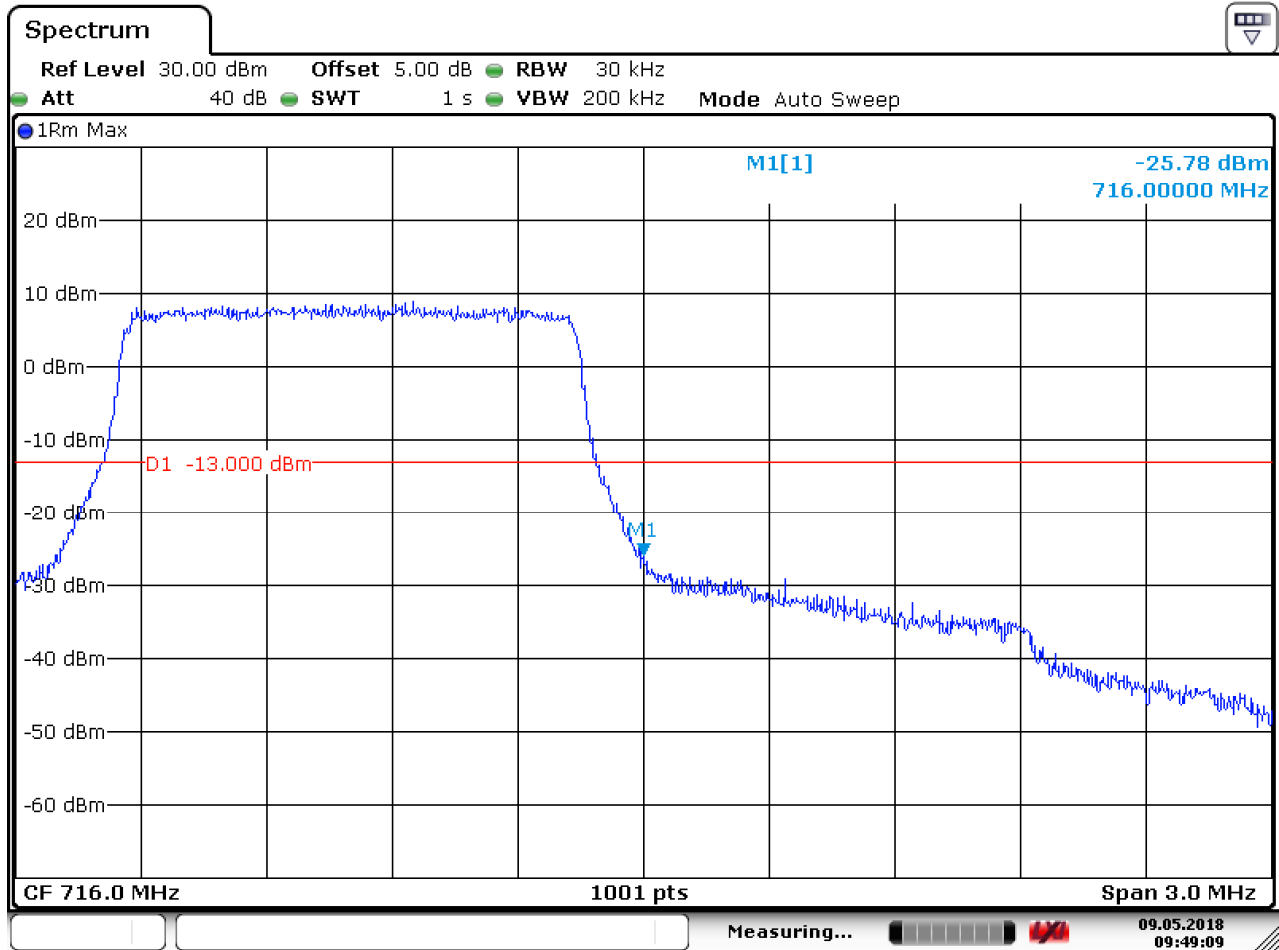
Date: 9.MAY.2018 09:49:09

5.1.1.2   Test Mode = LTE/TM2 1.4MHz
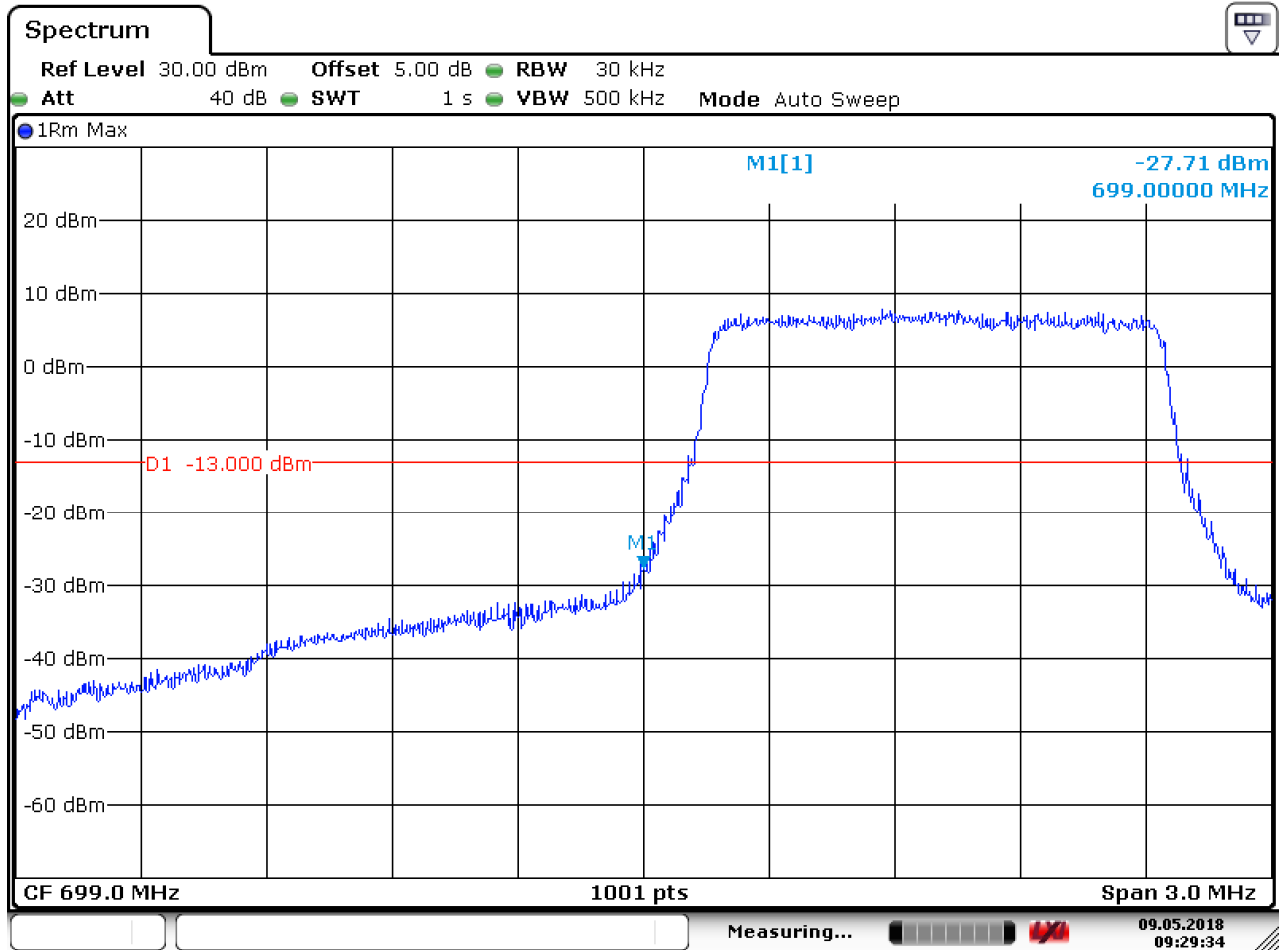
5.1.1.2.1   Test Channel = LCH
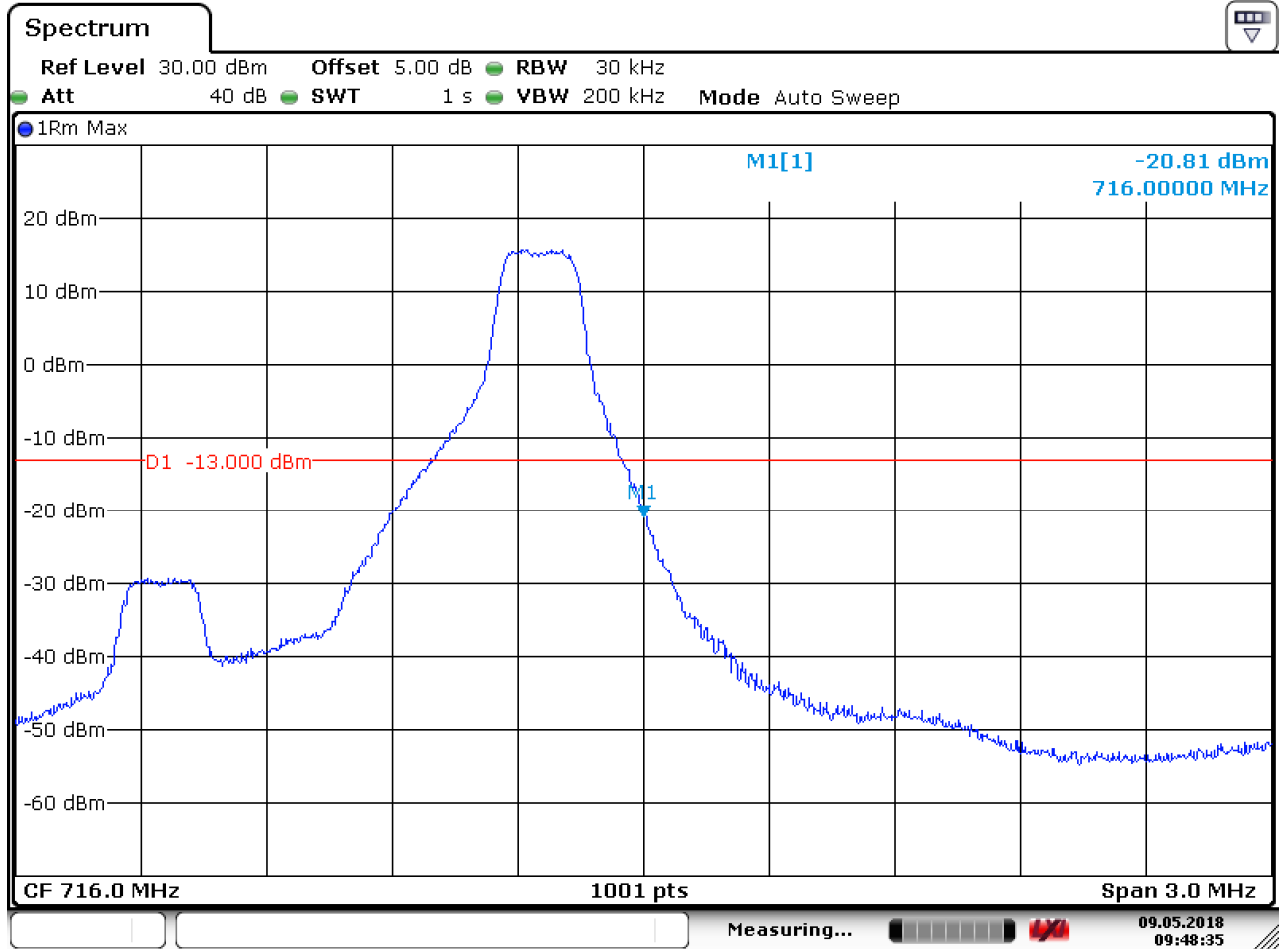
5.1.1.2.1.1 Test RB=1RB

Date: 9.MAY.2018 09:31:08

5.1.1.2.1.2 Test RB=6RB

Spectrum					
Ref Level 30.00 dBm	Offset 5.00 dB	RBW 30 kHz			
Att 40 dB	SWT 1 s	VBW 500 kHz	Mode Auto Sweep		

1Rm Max

M1[1]   -27.71 dBm
699.00000 MHz

20 dBm

10 dBm

0 dBm

-10 dBm
D1 -13.000 dBm

-20 dBm

-30 dBm
M1

-40 dBm

-50 dBm

-60 dBm

CF 699.0 MHz   1001 pts   Span 3.0 MHz

Measuring...   09.05.2018 09:29:34

Date: 9.MAY.2018 09:29:35

SGS-CSTC Standards Technical Services Co., Ltd. Shenzhen Branch

5.1.1.2.2 Test Channel = HCH

5.1.1.2.2.1 Test RB=1RB

Date: 9.MAY.2018 09:48:35

SGS-CSTC Standards Technical Services Co., Ltd. Shenzhen Branch
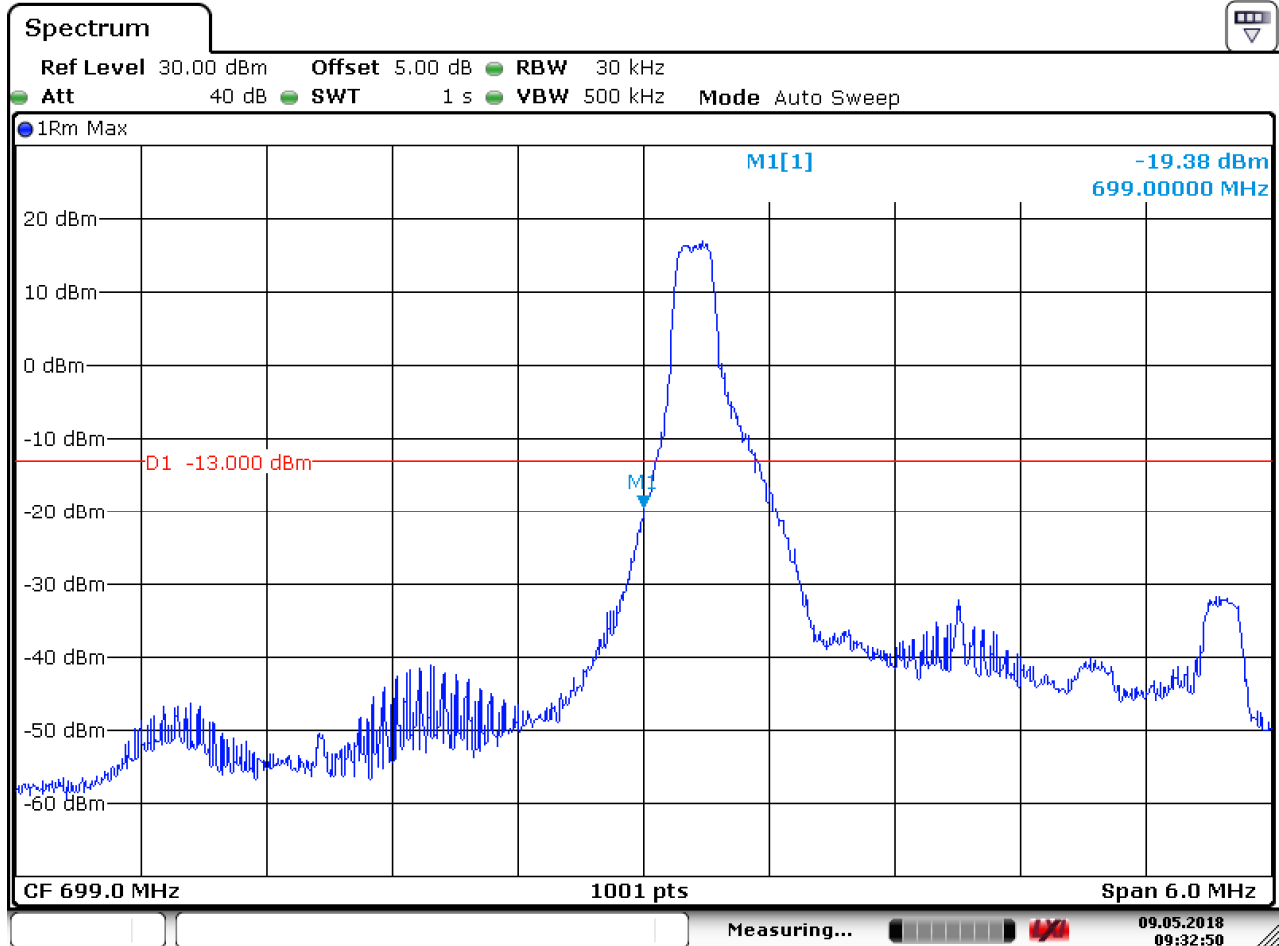
5.1.1.2.2.2 Test RB=6RB
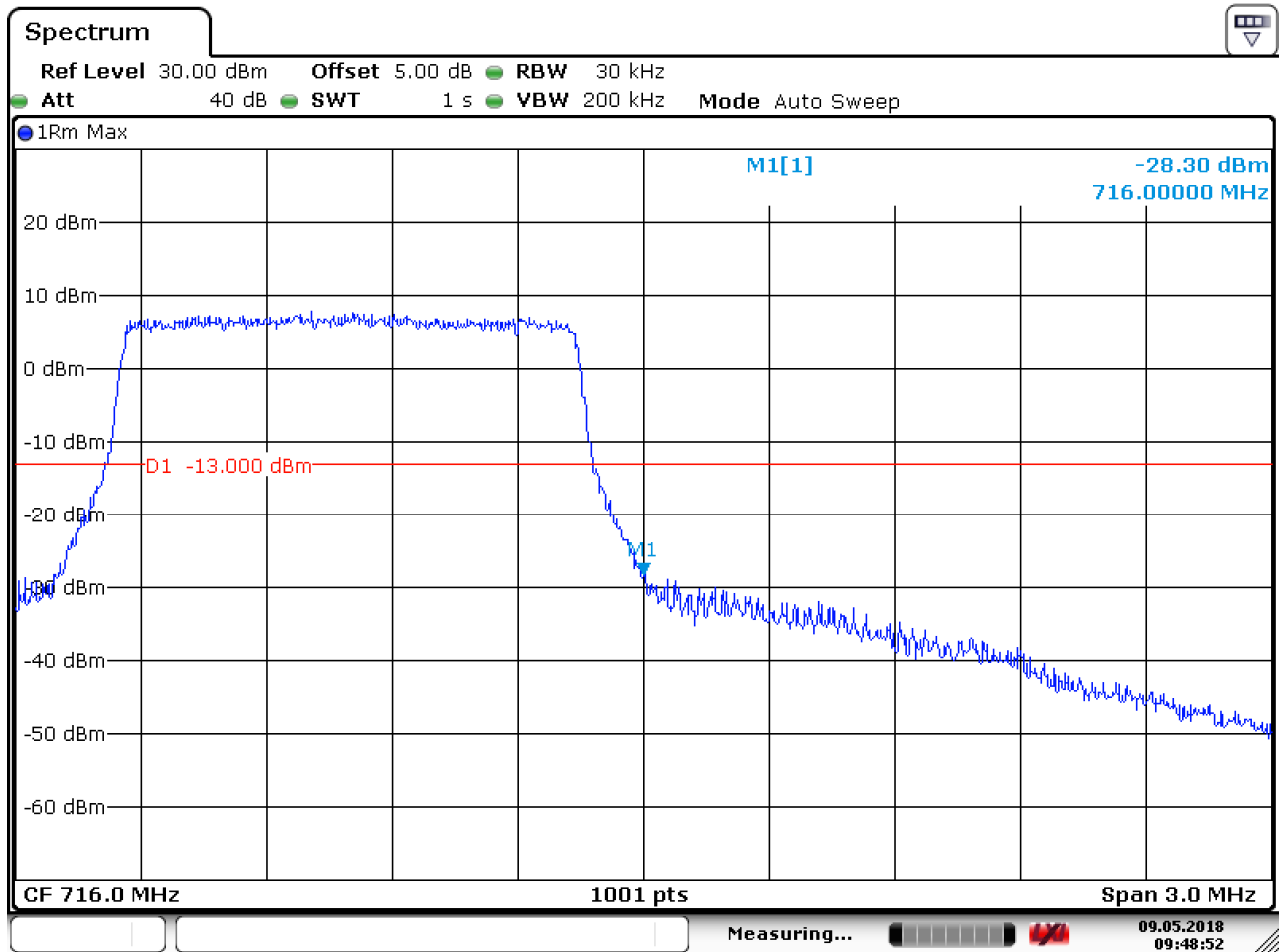
Date: 9.MAY.2018 09:48:52

5.1.1.3   Test Mode = LTE/TM1 3MHz

5.1.1.3.1   Test Channel = LCH

5.1.1.3.1.1 Test RB=1RB
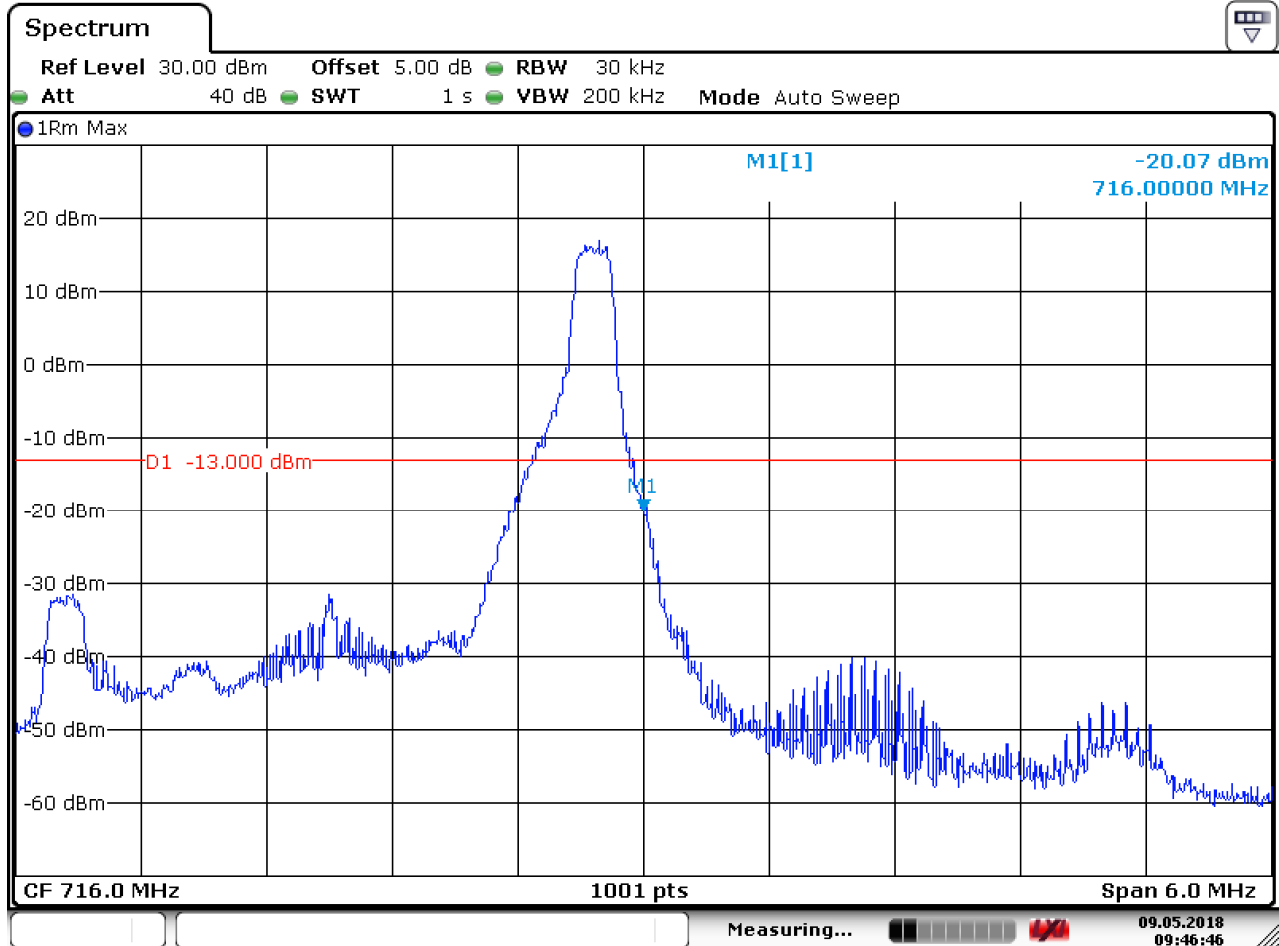

Date: 9.MAY.2018 09:32:50

5.1.1.3.1.2 Test RB=15RB

Spectrum				
Ref Level 30.00 dBm	Offset 5.00 dB	RBW 30 kHz		
Att 40 dB	SWT 1 s	VBW 500 kHz	Mode Auto Sweep	

1Rm Max

M1[1]   -32.08 dBm
699.00000 MHz

20 dBm

10 dBm

0 dBm

-10 dBm

D1 -13.000 dBm

-20 dBm

-30 dBm

M1

-40 dBm

-50 dBm

-60 dBm

CF 699.0 MHz   1001 pts   Span 6.0 MHz

Measuring...   09.05.2018 09:32:31
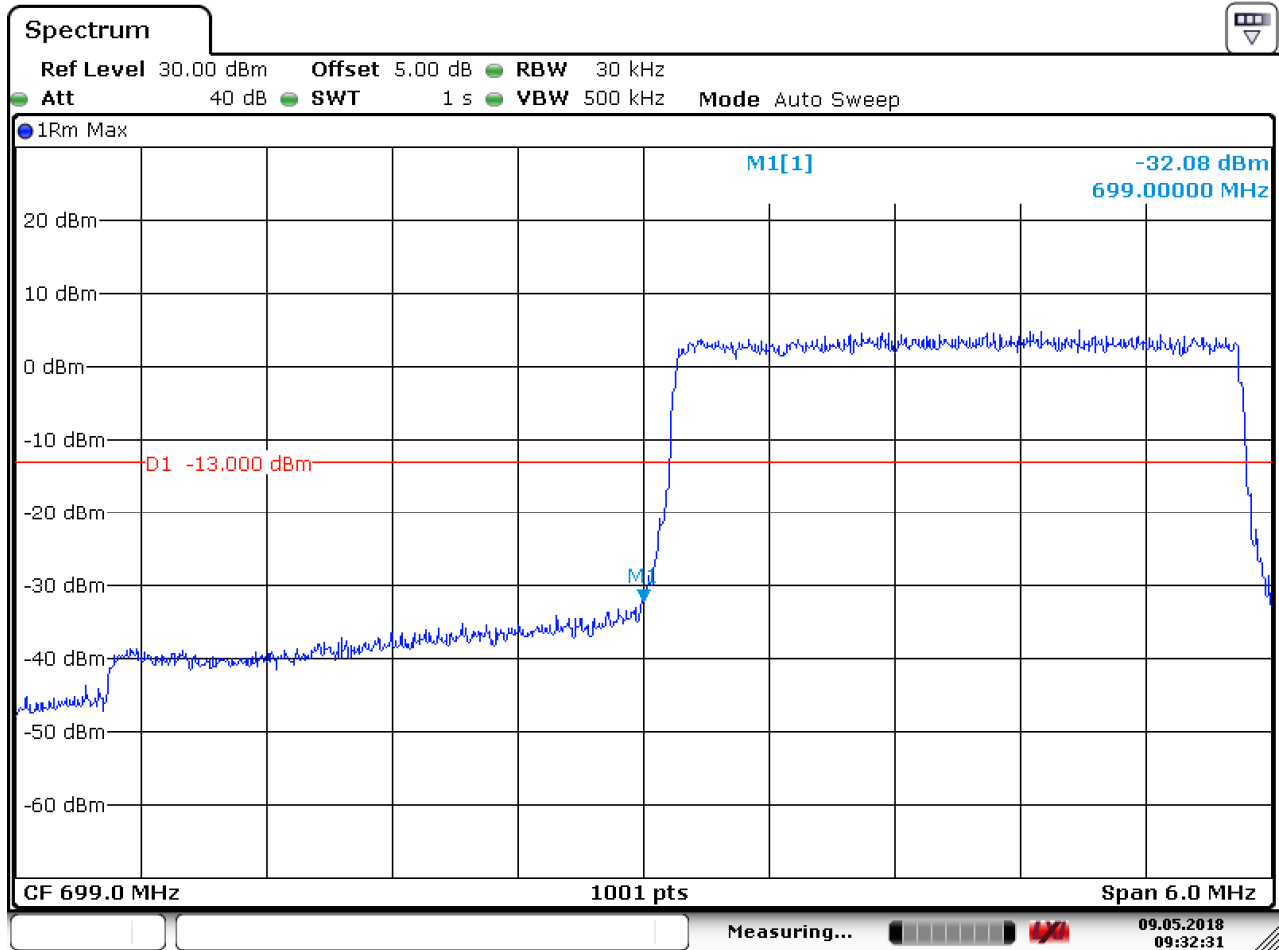
Date: 9.MAY.2018 09:32:31

5.1.1.3.2 Test Channel = HCH

5.1.1.3.2.1 Test RB=1RB

Date: 9.MAY.2018 09:46:47

5.1.1.3.2.2 Test RB=15RB
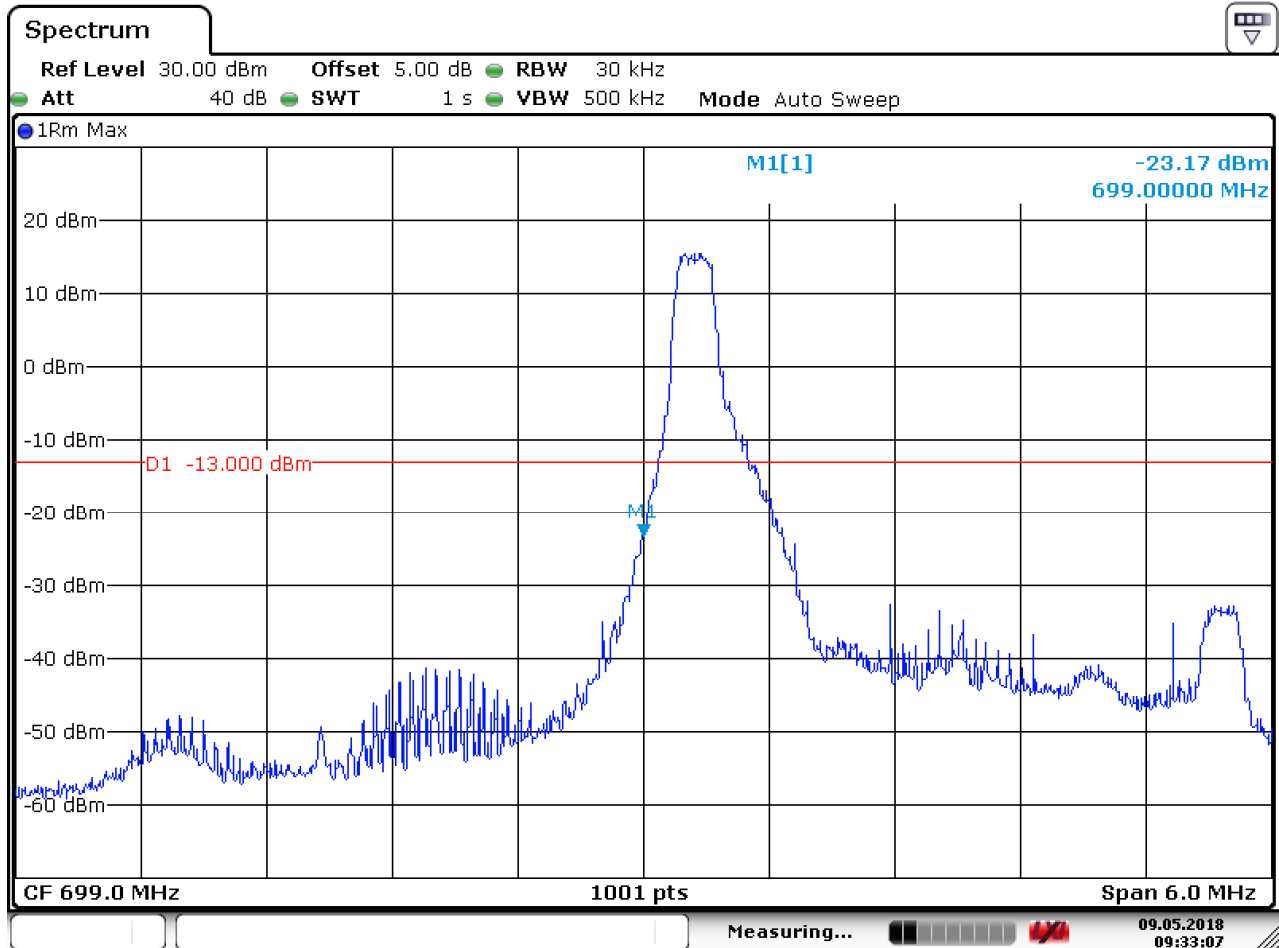
Spectrum				
Ref Level 30.00 dBm	**Offset** 5.00 dB	● **RBW** 30 kHz		
● **Att** 40 dB	● **SWT** 1 s	● **VBW** 200 kHz	**Mode** Auto Sweep	

● 1Rm Max

M1[1]   -32.06 dBm
716.00000 MHz

20 dBm
10 dBm
0 dBm
-10 dBm   D1 -13.000 dBm
-20 dBm
-30 dBm   M1
-40 dBm
-50 dBm
-60 dBm

CF 716.0 MHz   1001 pts   Span 6.0 MHz

Measuring...   09.05.2018 09:47:01
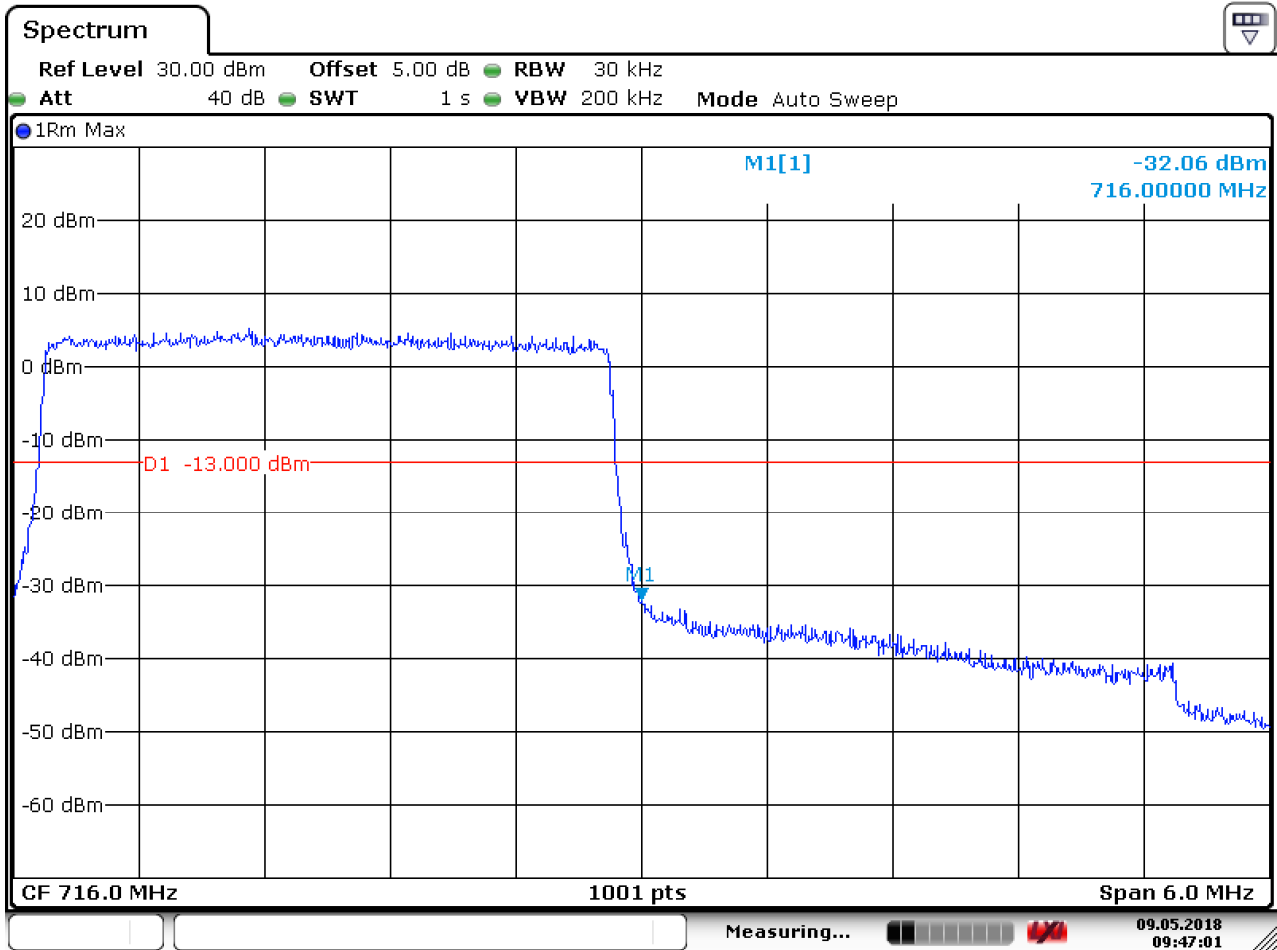
Date: 9.MAY.2018 09:47:01

5.1.1.4   Test Mode = LTE/TM2 3MHz

5.1.1.4.1   Test Channel = LCH

5.1.1.4.1.1 Test RB=1RB
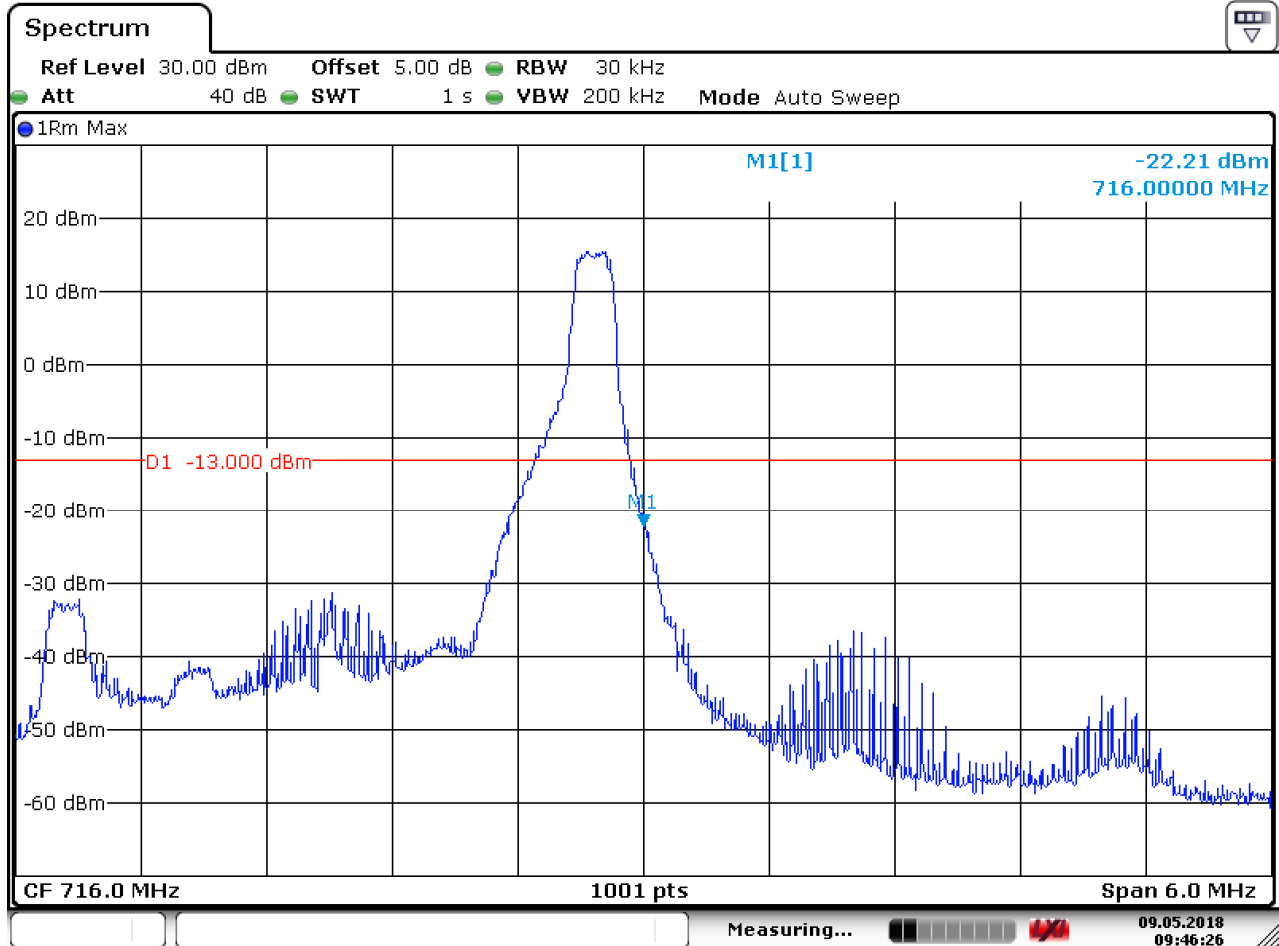

Date: 9.MAY.2018 09:33:08

5.1.1.4.1.2 Test RB=15RB

Spectrum					
Ref Level 30.00 dBm	Offset 5.00 dB	● RBW 30 kHz			
● Att 40 dB	● SWT 1 s	● VBW 500 kHz	Mode Auto Sweep		

● 1Rm Max

M1[1]   -32.71 dBm
699.00000 MHz

D1 -13.000 dBm

CF 699.0 MHz   1001 pts   Span 6.0 MHz

Measuring...   09.05.2018 09:32:05

Date: 9.MAY.2018 09:32:06

SGS-CSTC Standards Technical Services Co., Ltd. Shenzhen Branch
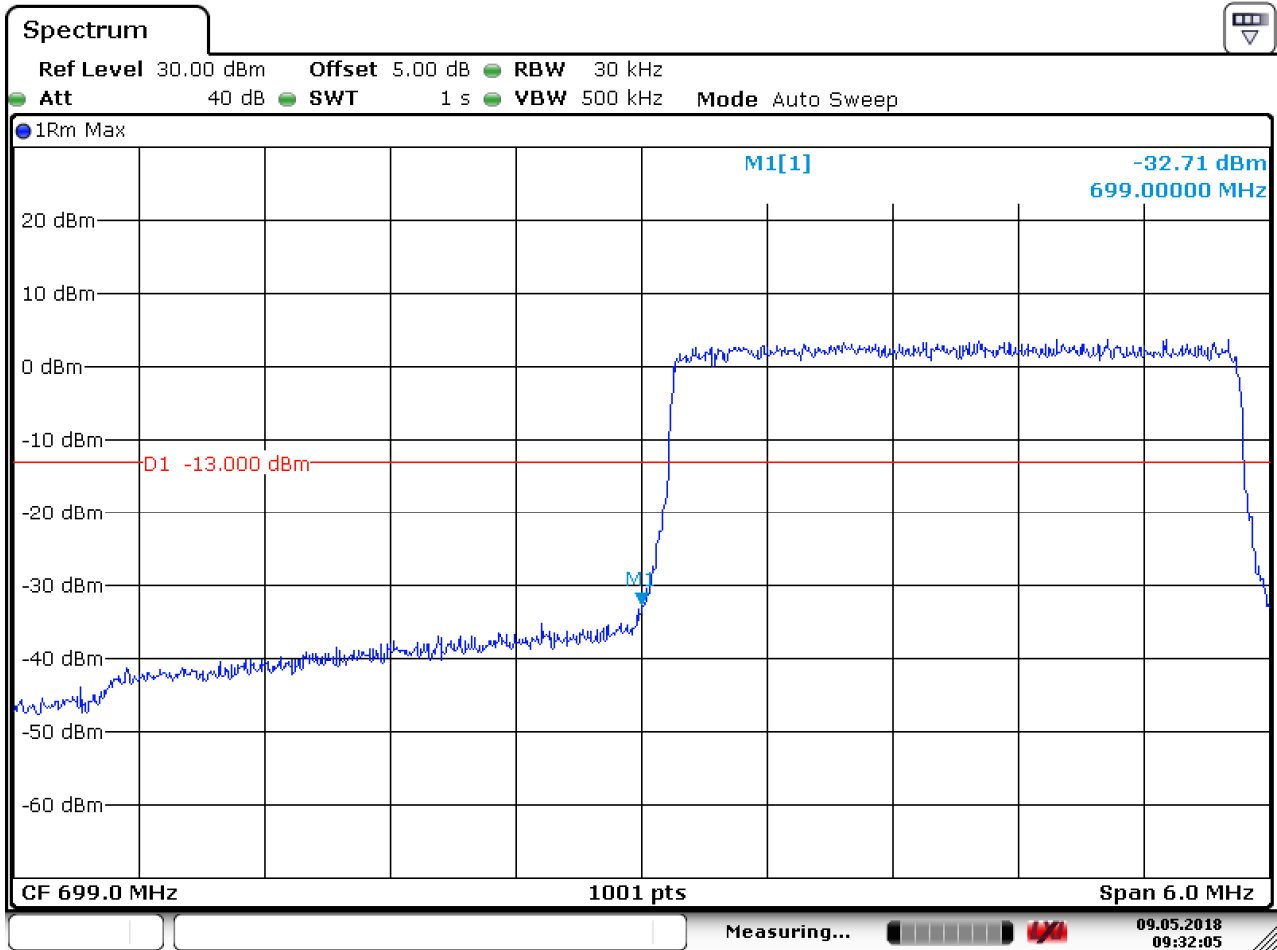
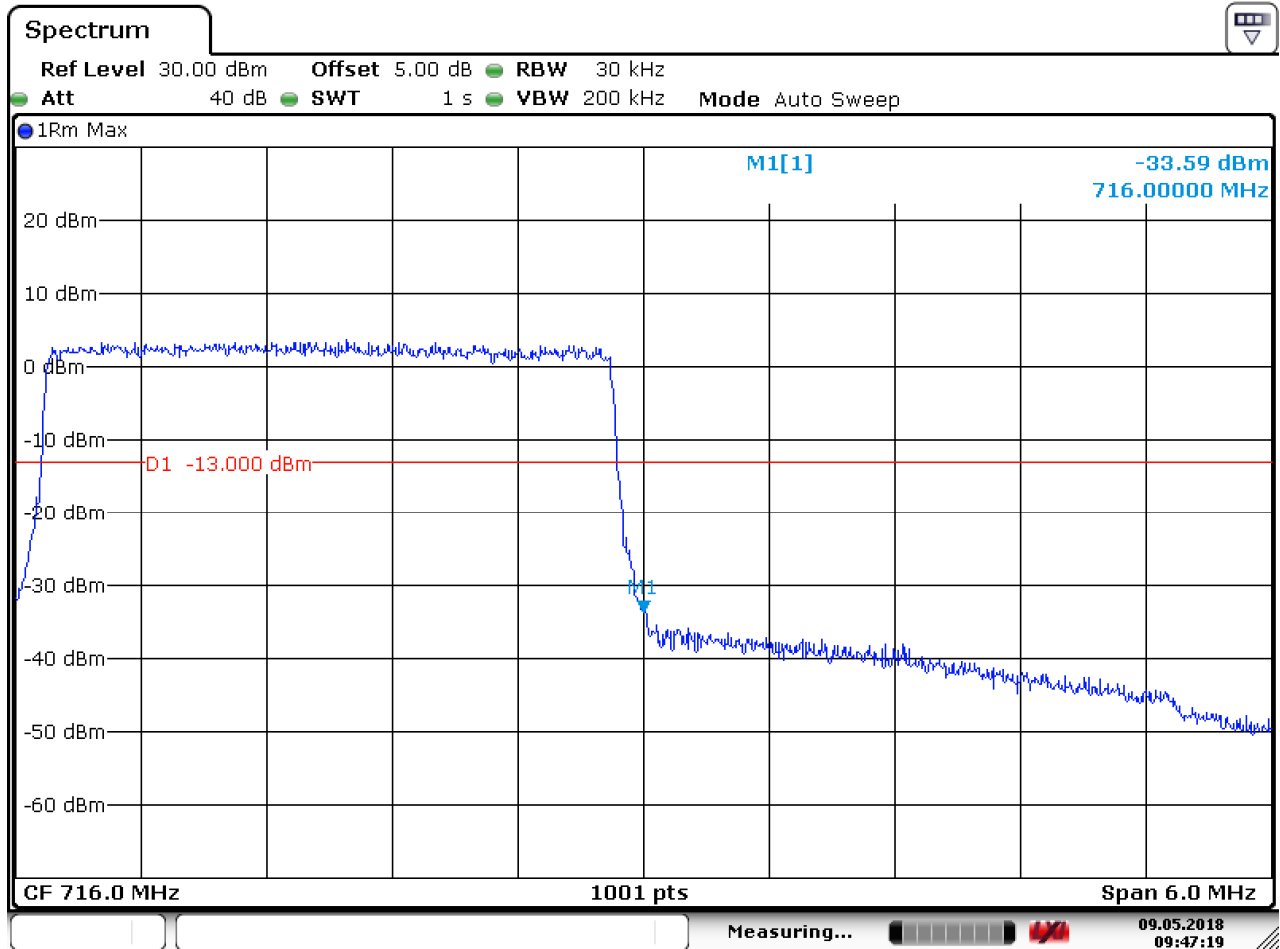### 5.1.1.4.2   Test Channel = HCH

5.1.1.4.2.1 Test RB=1RB

Date: 9.MAY.2018 09:46:26
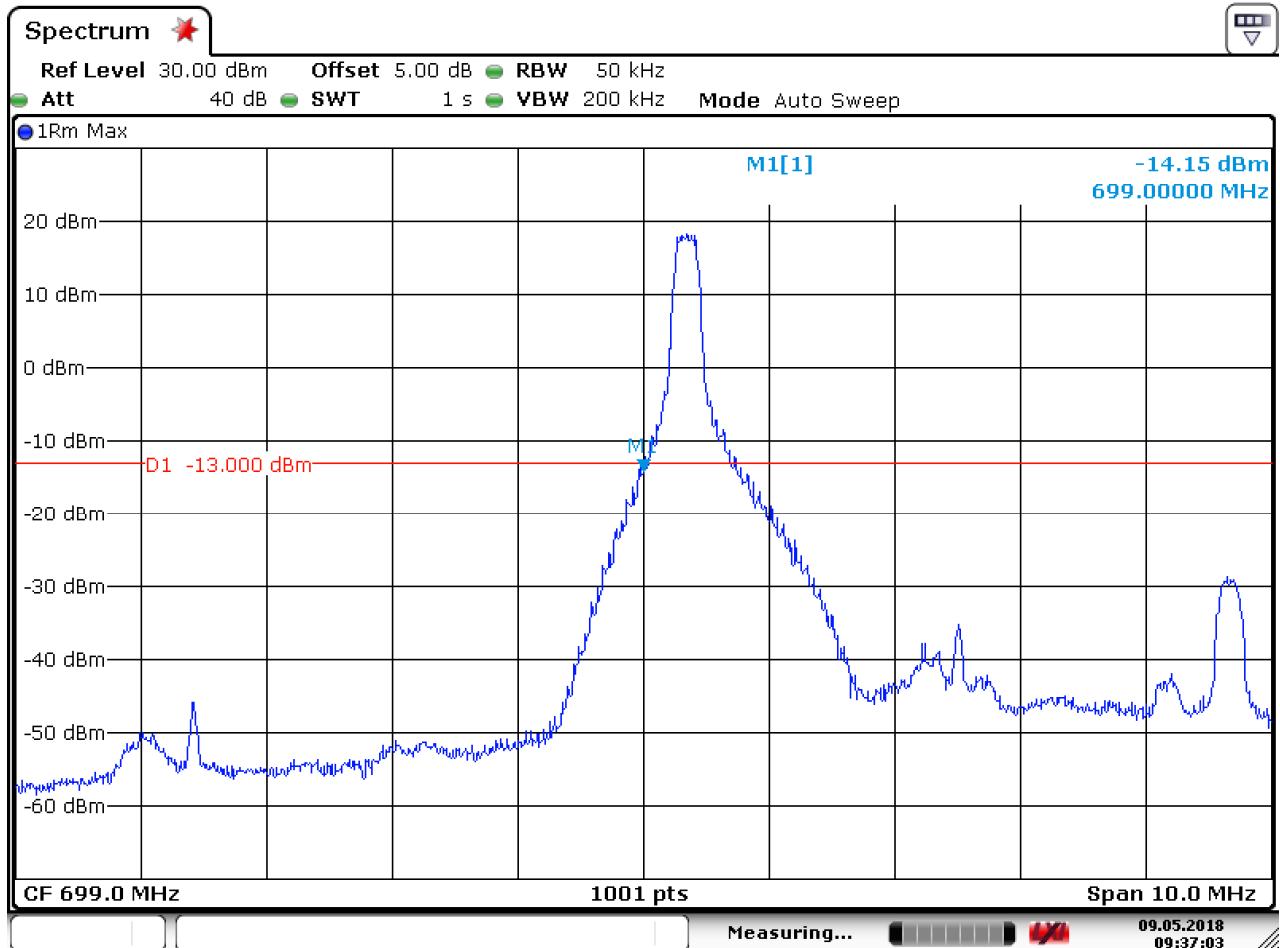
5.1.1.4.3   Test RB=15RB

Date: 9.MAY.2018 09:47:20

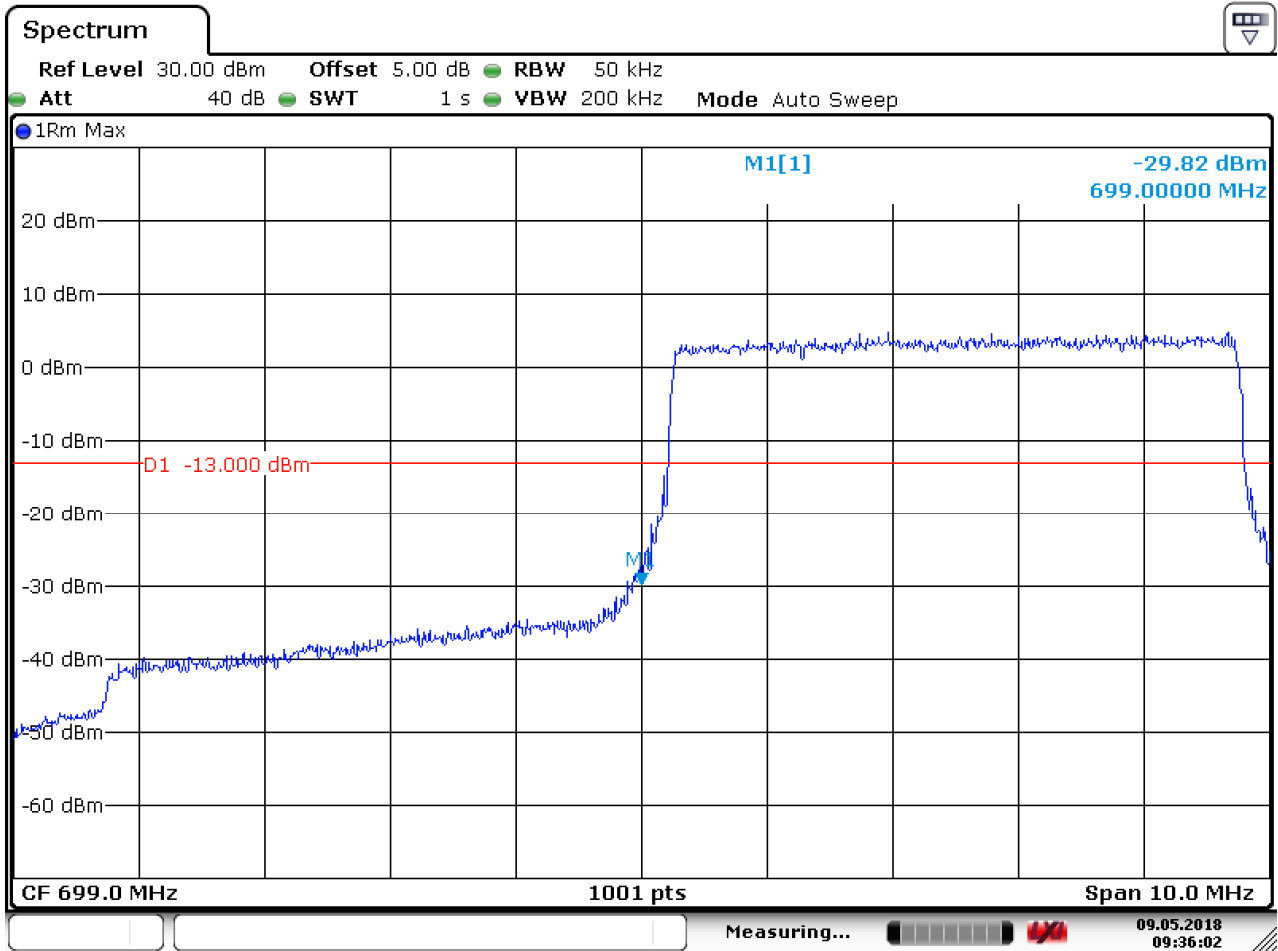### 5.1.1.5   Test Mode = LTE/TM1 5MHz

5.1.1.5.1   Test Channel = LCH

5.1.1.5.1.1 Test RB=1RB

Date: 9.MAY.2018 09:37:04

5.1.1.5.1.2 Test RB=25RB

Spectrum

| Ref Level 30.00 dBm | Offset 5.00 dB | RBW 50 kHz |
| Att 40 dB | SWT 1 s | VBW 200 kHz | Mode Auto Sweep |

1Rm Max

M1[1]   -29.82 dBm
699.00000 MHz

D1 -13.000 dBm

CF 699.0 MHz   1001 pts   Span 10.0 MHz

Measuring...   09.05.2018 09:36:02

Date: 9.MAY.2018 09:36:02

SGS-CSTC Standards Technical Services Co., Ltd.
Shenzhen Branch

5.1.1.5.2   Test Channel = HCH

5.1.1.5.2.1 Test RB=1RB

Date: 9.MAY.2018 09:44:31

5.1.1.5.2.2 Test RB=25RB

Date: 9.MAY.2018 09:45:21

5.1.1.6   Test Mode = LTE/TM2 5MHz

5.1.1.6.1   Test Channel = LCH

5.1.1.6.1.1 Test RB=1RB
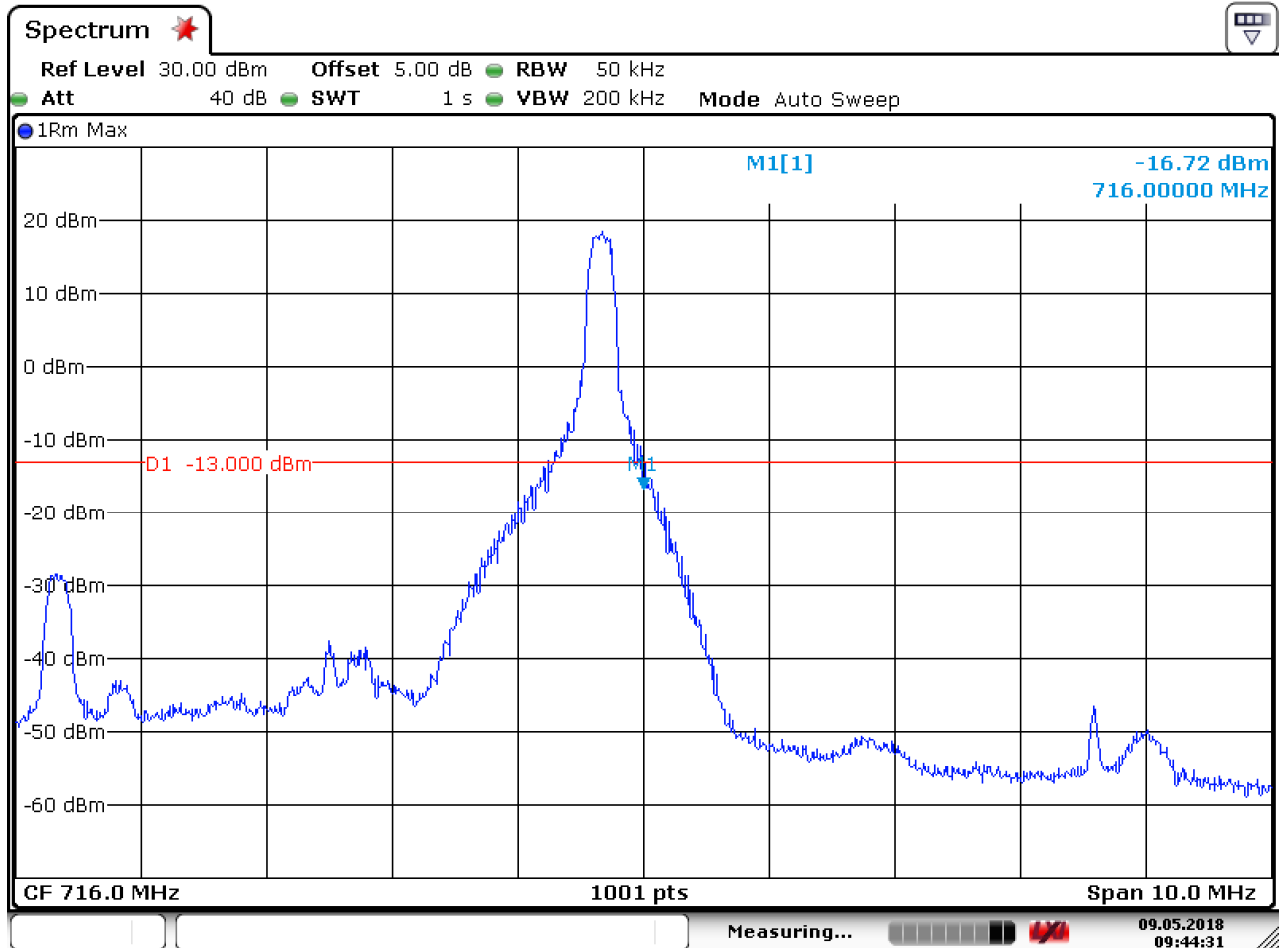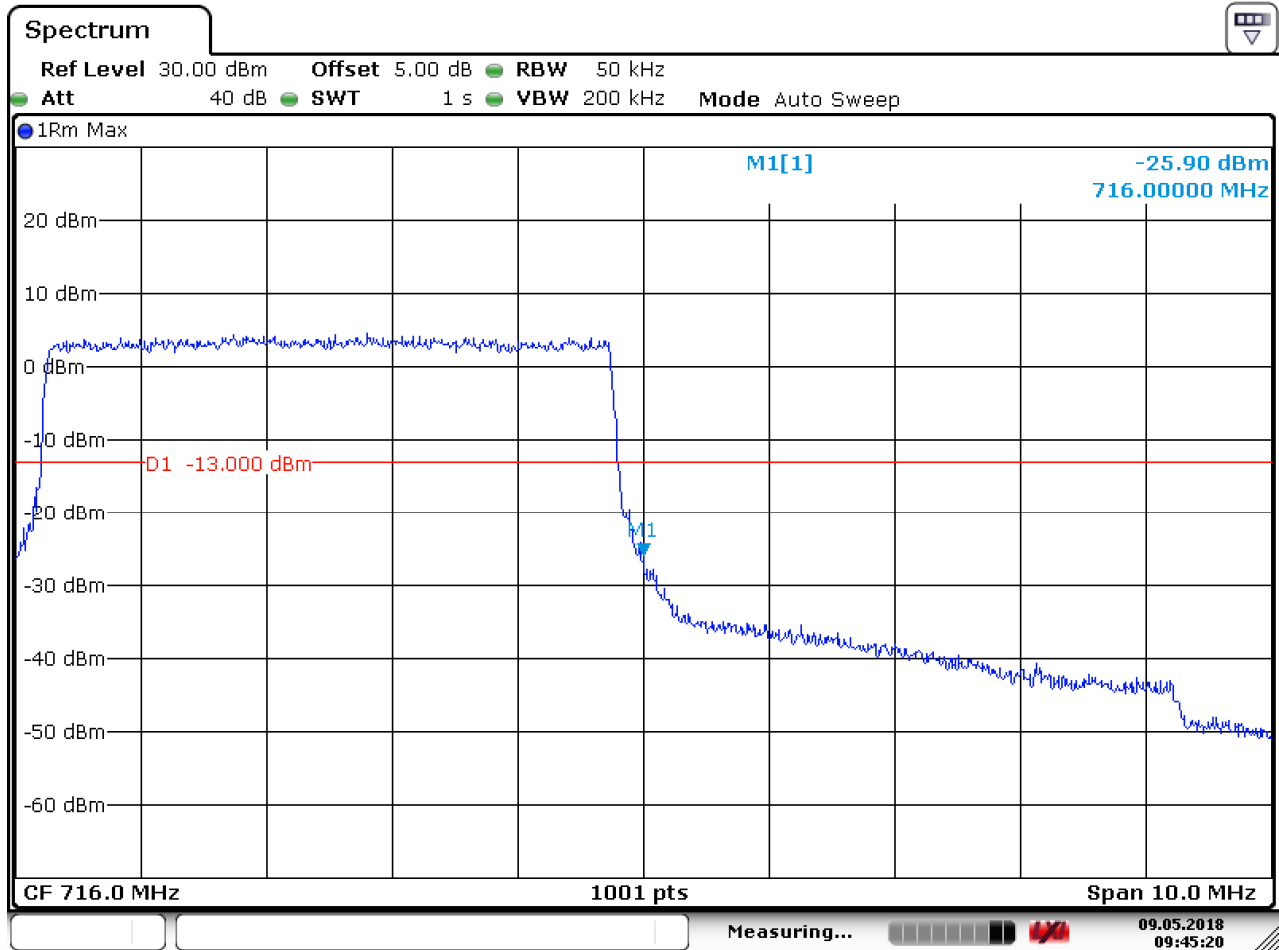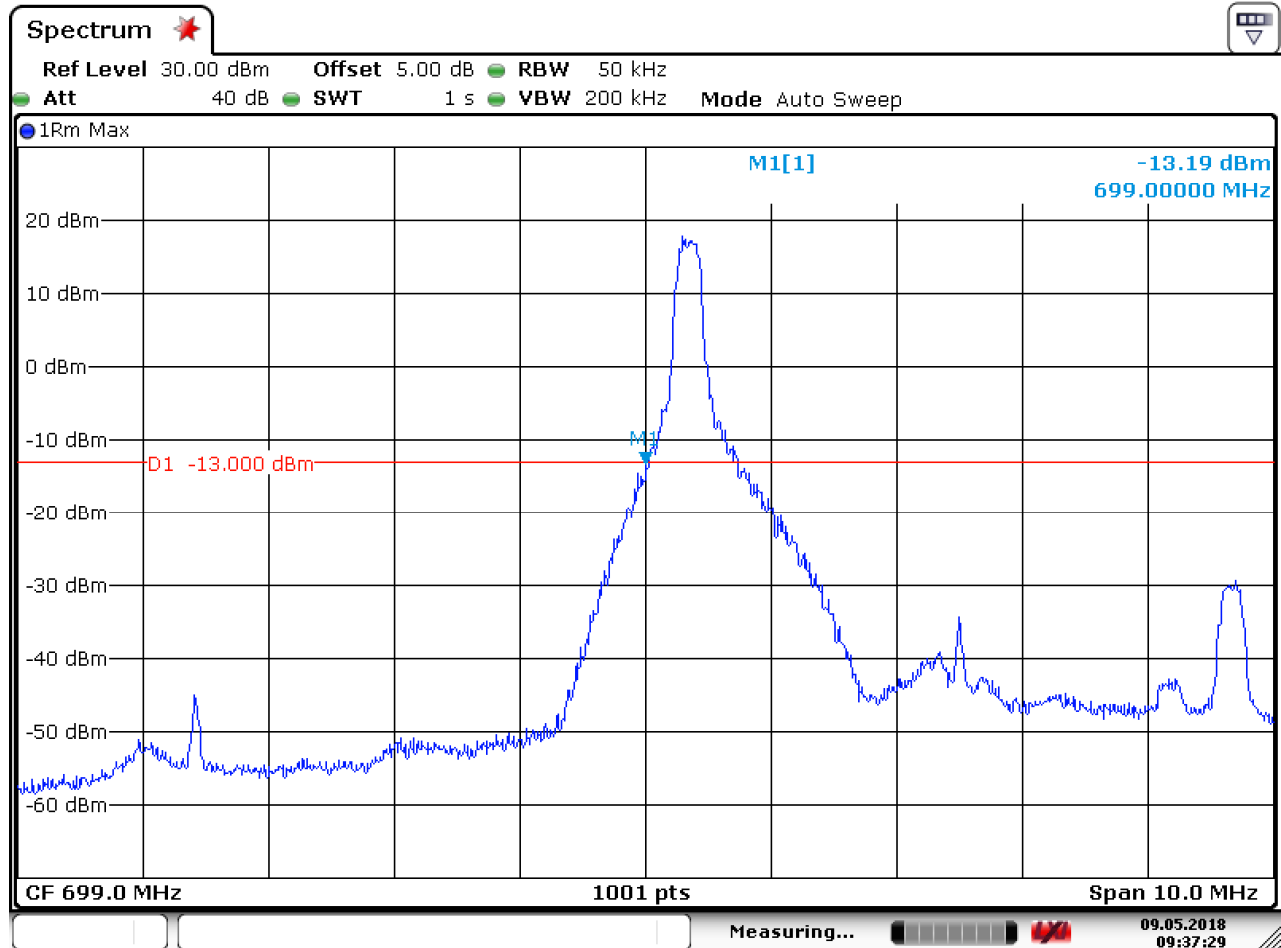

Date: 9.MAY.2018 09:37:29

5.1.1.6.1.2 Test RB=25RB

Spectrum					
Ref Level 30.00 dBm		Offset 5.00 dB	RBW 50 kHz		
Att 40 dB		SWT 1 s	VBW 200 kHz	Mode Auto Sweep	

1Rm Max

M1[1]   -27.15 dBm
699.00000 MHz

20 dBm
10 dBm
0 dBm
-10 dBm
D1 -13.000 dBm
-20 dBm
M1
-30 dBm
-40 dBm
-50 dBm
-60 dBm

CF 699.0 MHz   1001 pts   Span 10.0 MHz

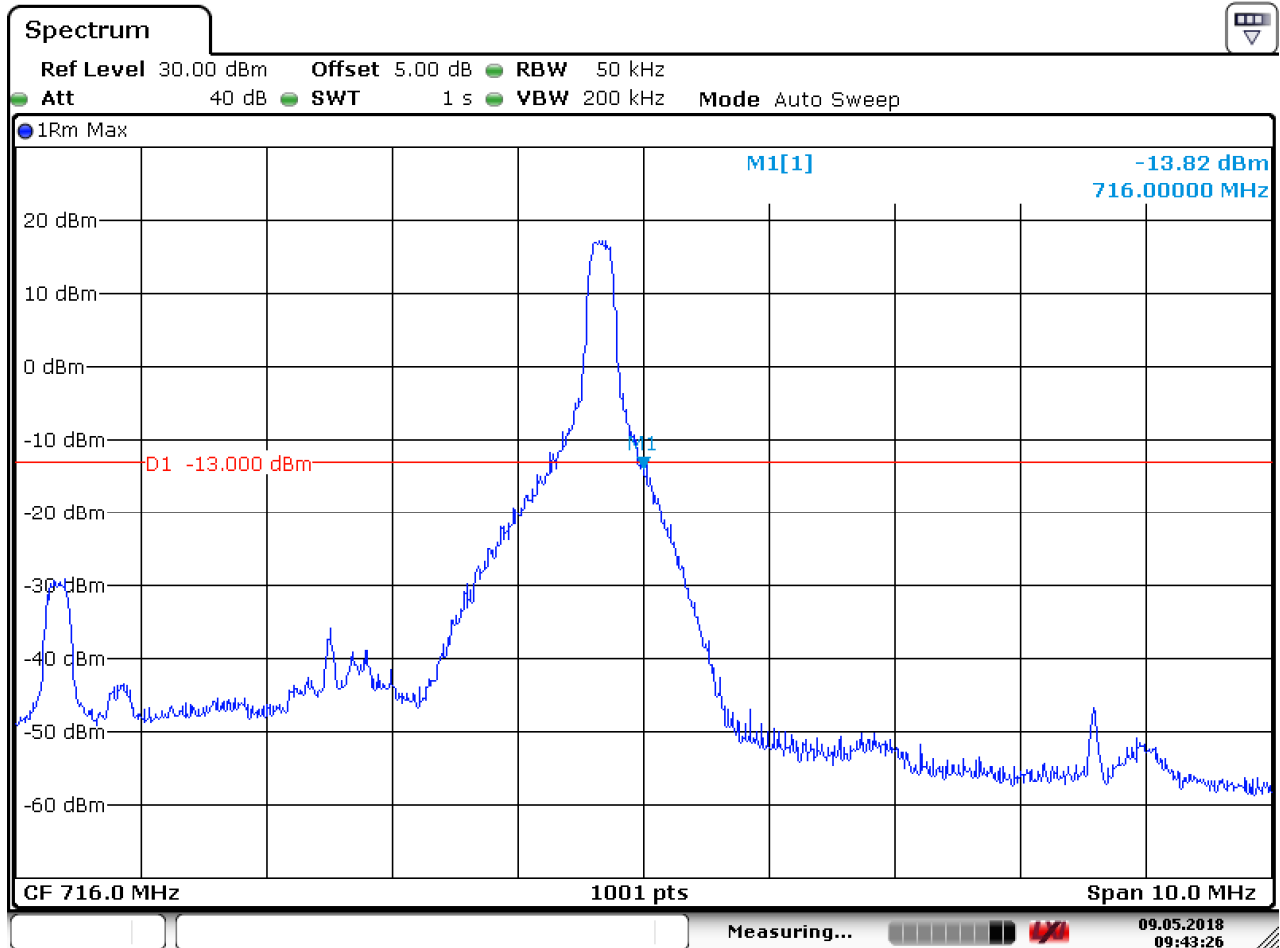Measuring...   09.05.2018 09:35:45
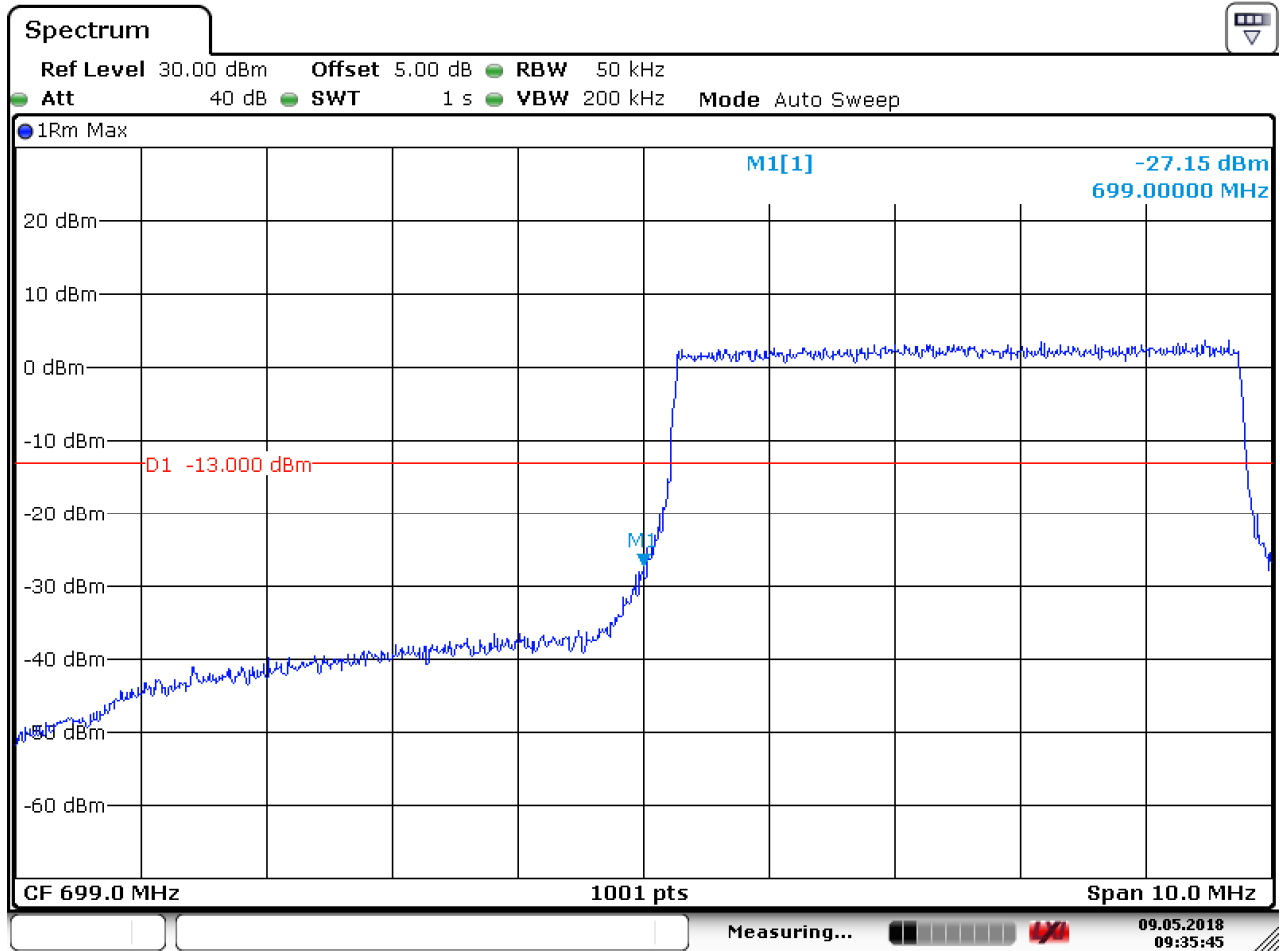
Date: 9.MAY.2018 09:35:45

5.1.1.6.2 Test Channel = HCH

5.1.1.6.2.1 Test RB=1RB

Date: 9.MAY.2018 09:43:26

5.1.1.6.2.2 Test RB=25RB

Spectrum						
Ref Level	30.00 dBm	Offset	5.00 dB	RBW	50 kHz	
Att	40 dB	SWT	1 s	VBW	200 kHz	Mode Auto Sweep

1Rm Max

M1[1]　　　　　　　　-28.41 dBm
　　　　　　　　　716.00000 MHz

20 dBm

10 dBm

0 dBm

-10 dBm　　　D1 -13.000 dBm

-20 dBm

-30 dBm

-40 dBm

-50 dBm

-60 dBm

CF 716.0 MHz　　　　　　1001 pts　　　　　　Span 10.0 MHz

Measuring...　　　09.05.2018　09:45:36

Date: 9.MAY.2018　09:45:37

5.1.1.7 Test Mode = LTE/TM1 10MHz

5.1.1.7.1 Test Channel = LCH

5.1.1.7.1.1 Test RB=1RB

Date: 9.MAY.2018 09:39:30

5.1.1.7.1.2 Test RB=50RB

Spectrum		
Ref Level 30.00 dBm	**Offset** 5.00 dB	● **RBW** 100 kHz
● **Att** 40 dB	● **SWT** 1 s	● **VBW** 200 kHz **Mode** Auto Sweep

● 1Rm Max

M1[1]   -31.05 dBm
              699.0000 MHz

20 dBm

10 dBm

0 dBm

-10 dBm

D1 -13.000 dBm

-20 dBm

-30 dBm

M1

-40 dBm

-50 dBm

-60 dBm

CF 699.0 MHz   1001 pts   Span 20.0 MHz

Measuring...   09.05.2018
                                09:39:14

Date: 9.MAY.2018 09:39:14

5.1.1.7.2 Test Channel = HCH

5.1.1.7.2.1 Test RB=1RB

Date: 9.MAY.2018 09:41:38

5.1.1.7.2.2 Test RB=50RB

Date: 9.MAY.2018 09:42:15

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5.1.1.8   Test Mode = LTE/TM2 10MHz

5.1.1.8.1   Test Channel = LCH

5.1.1.8.1.1 Test RB=1RB
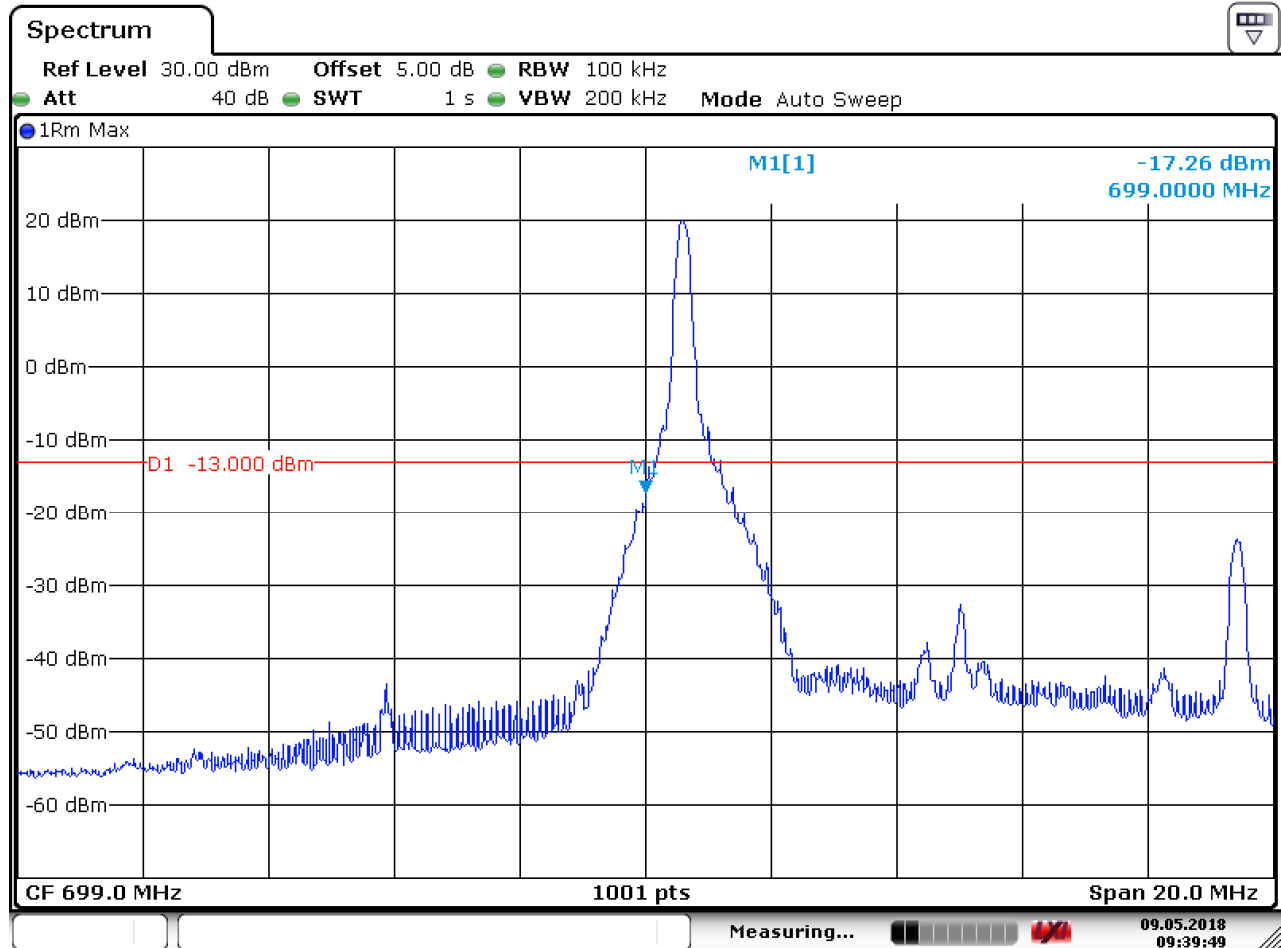
Date: 9.MAY.2018 09:39:49

5.1.1.8.1.2 Test RB=50RB
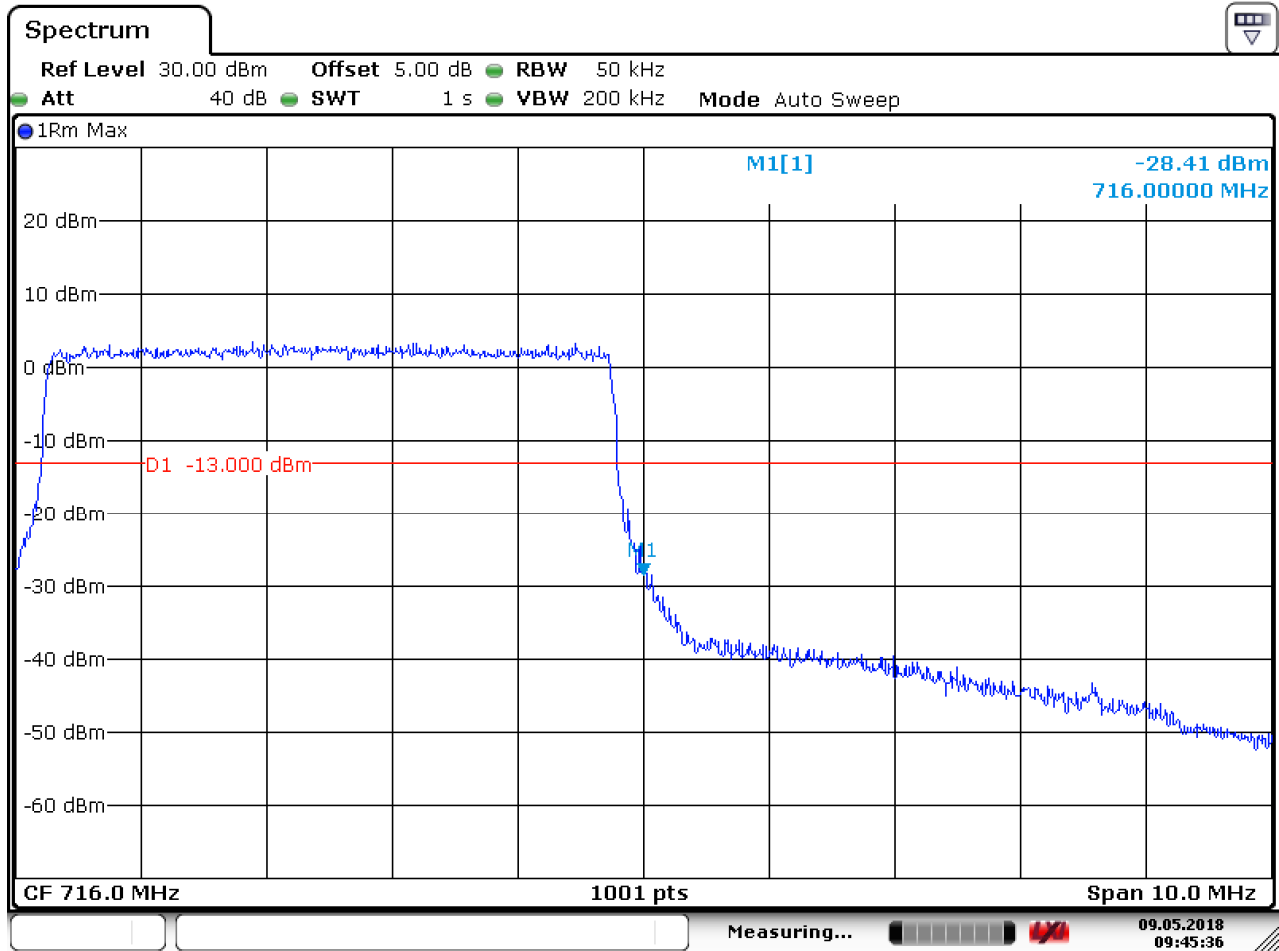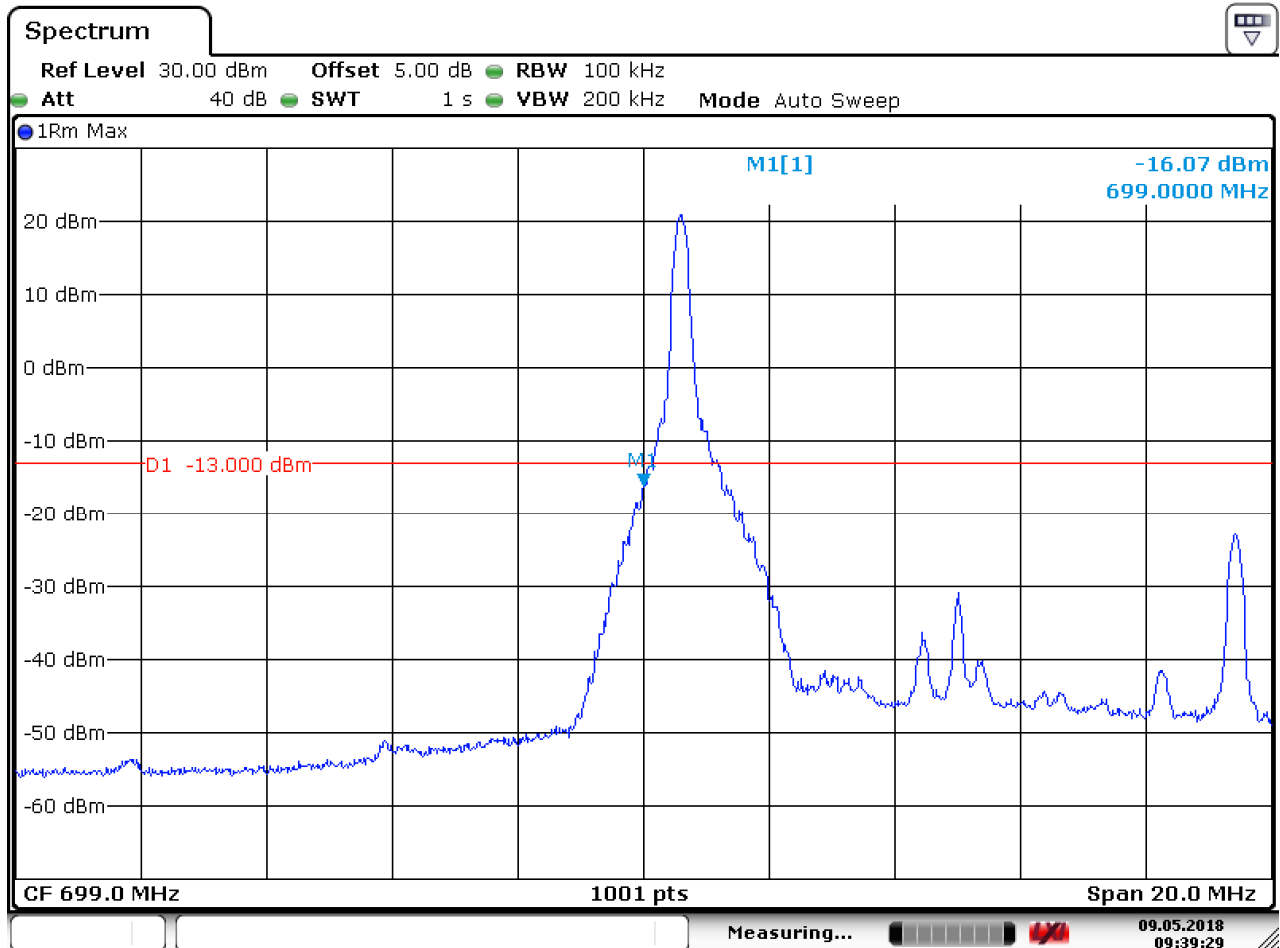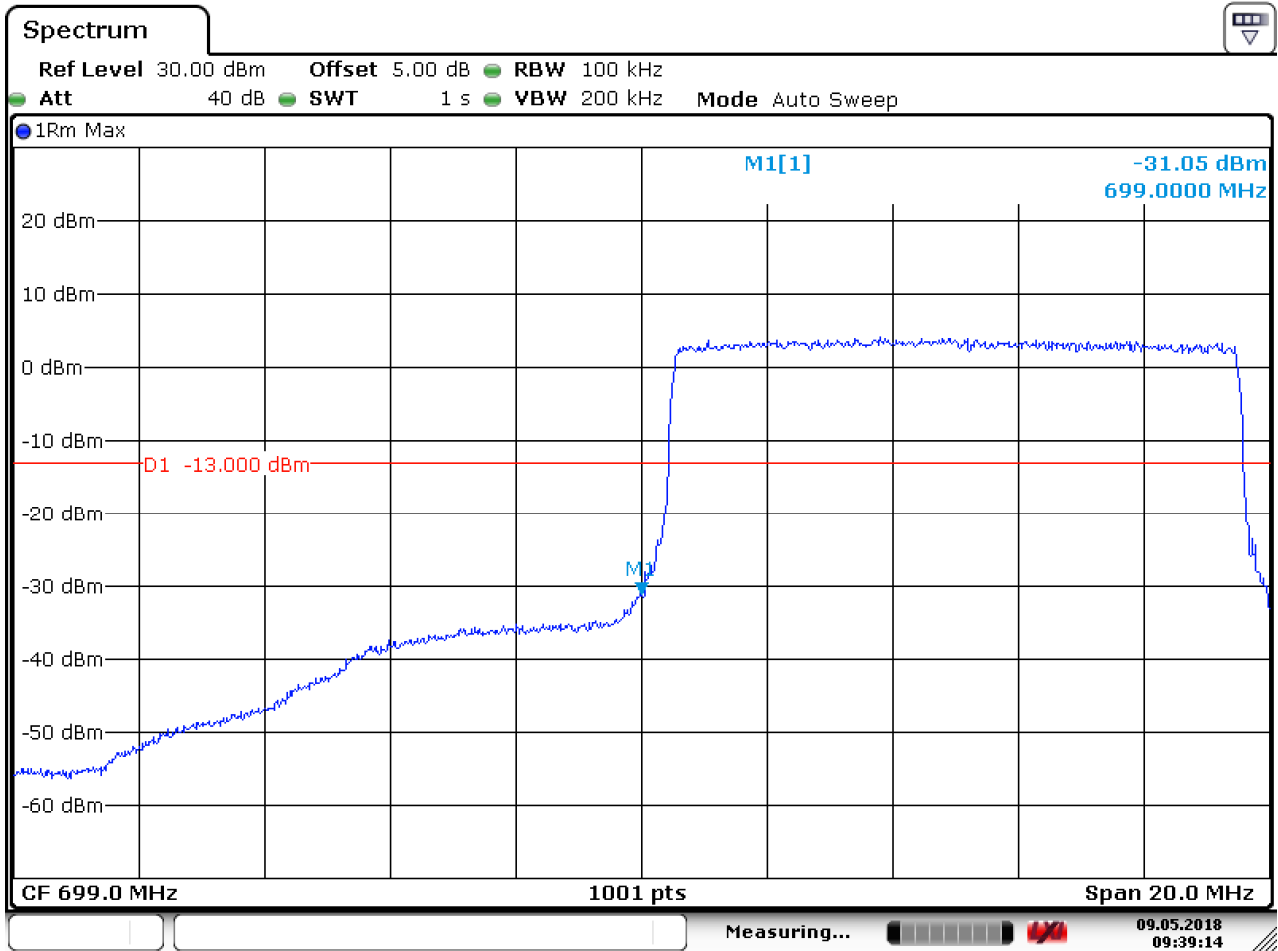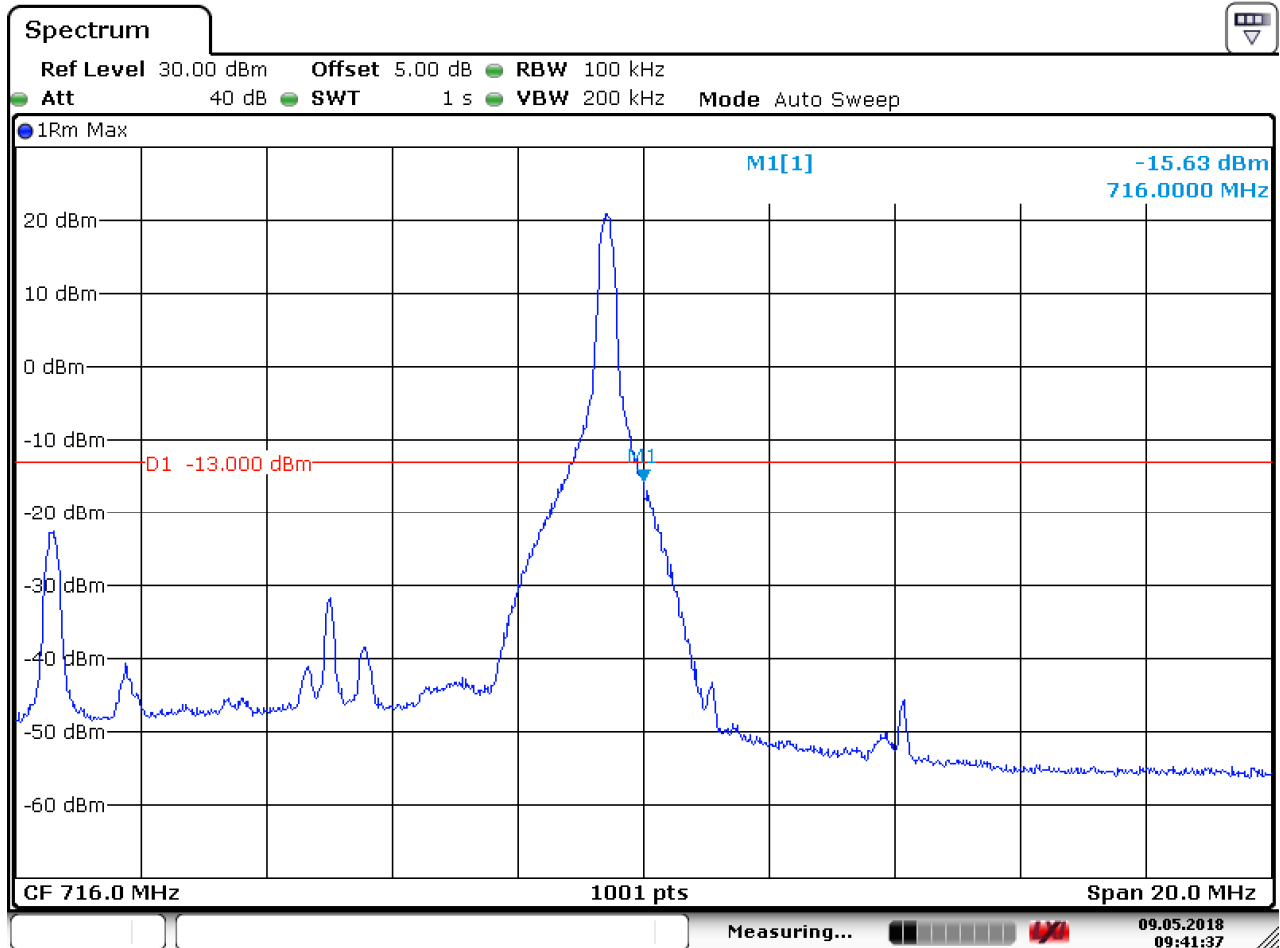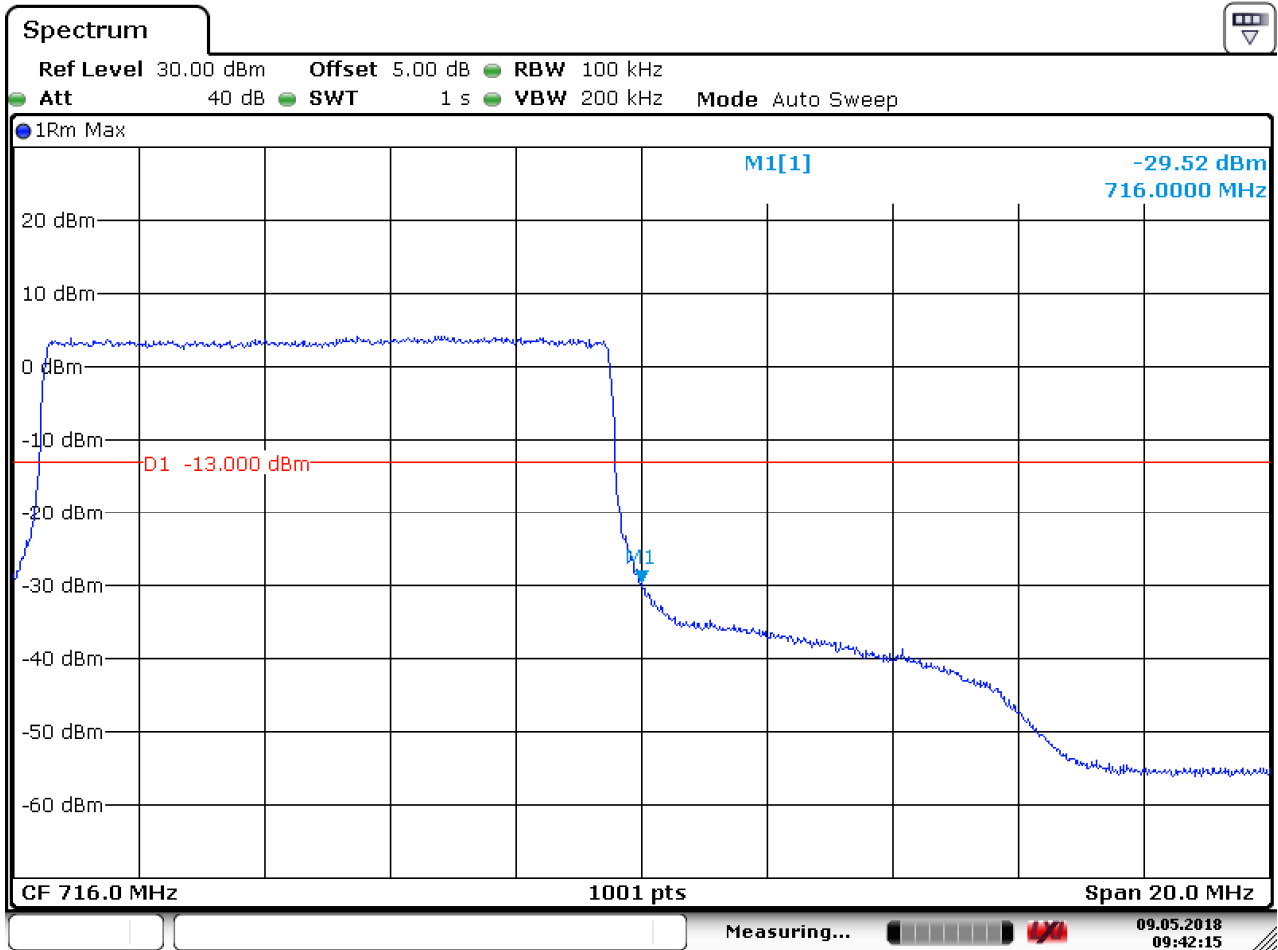

Date: 9.MAY.2018 09:38:53

5.1.1.8.2 Test Channel = HCH
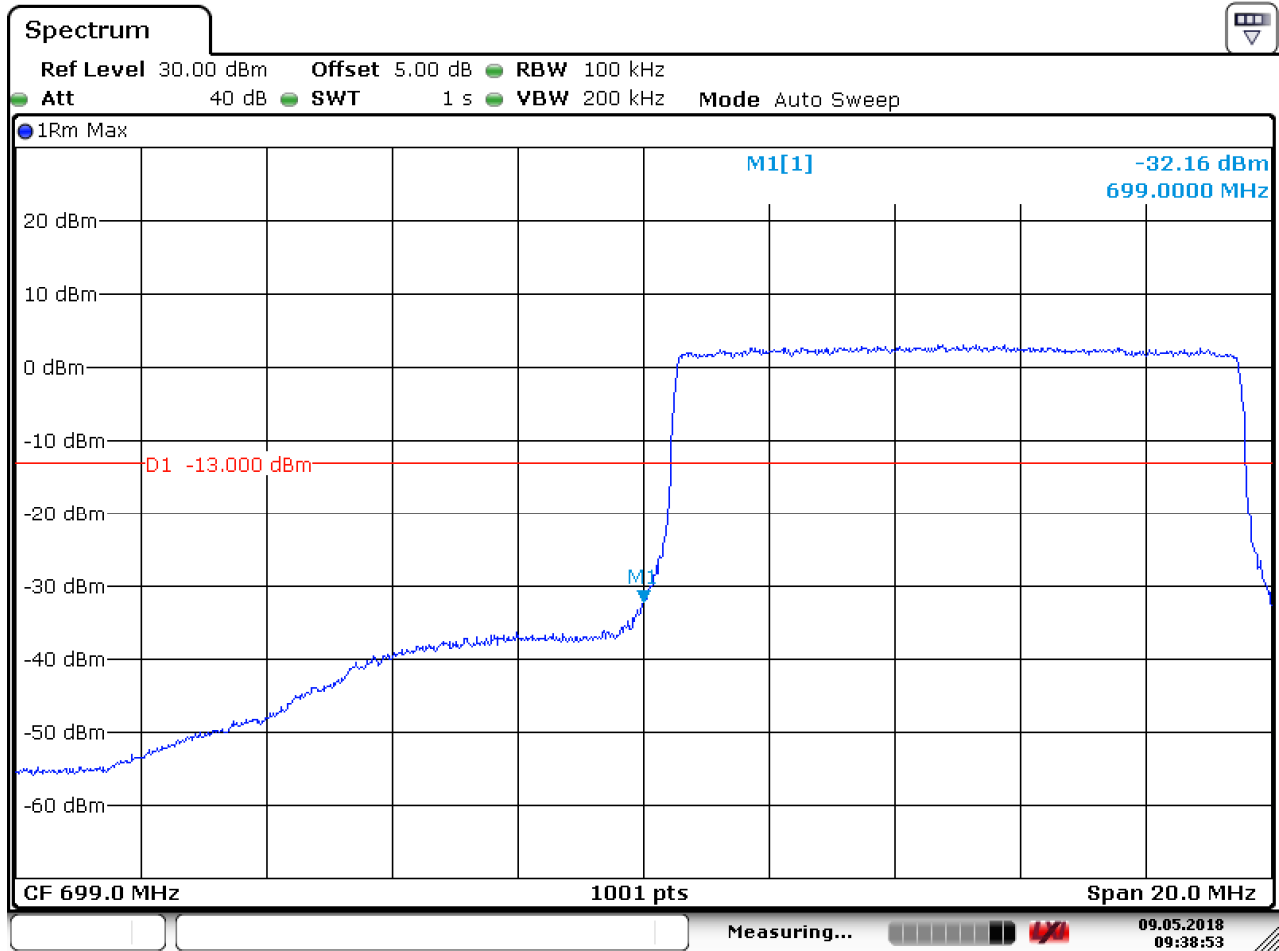
5.1.1.8.2.1 Test RB=1RB

Date: 9.MAY.2018 09:40:33

SGS-CSTC Standards Technical Services Co., Ltd. Shenzhen Branch
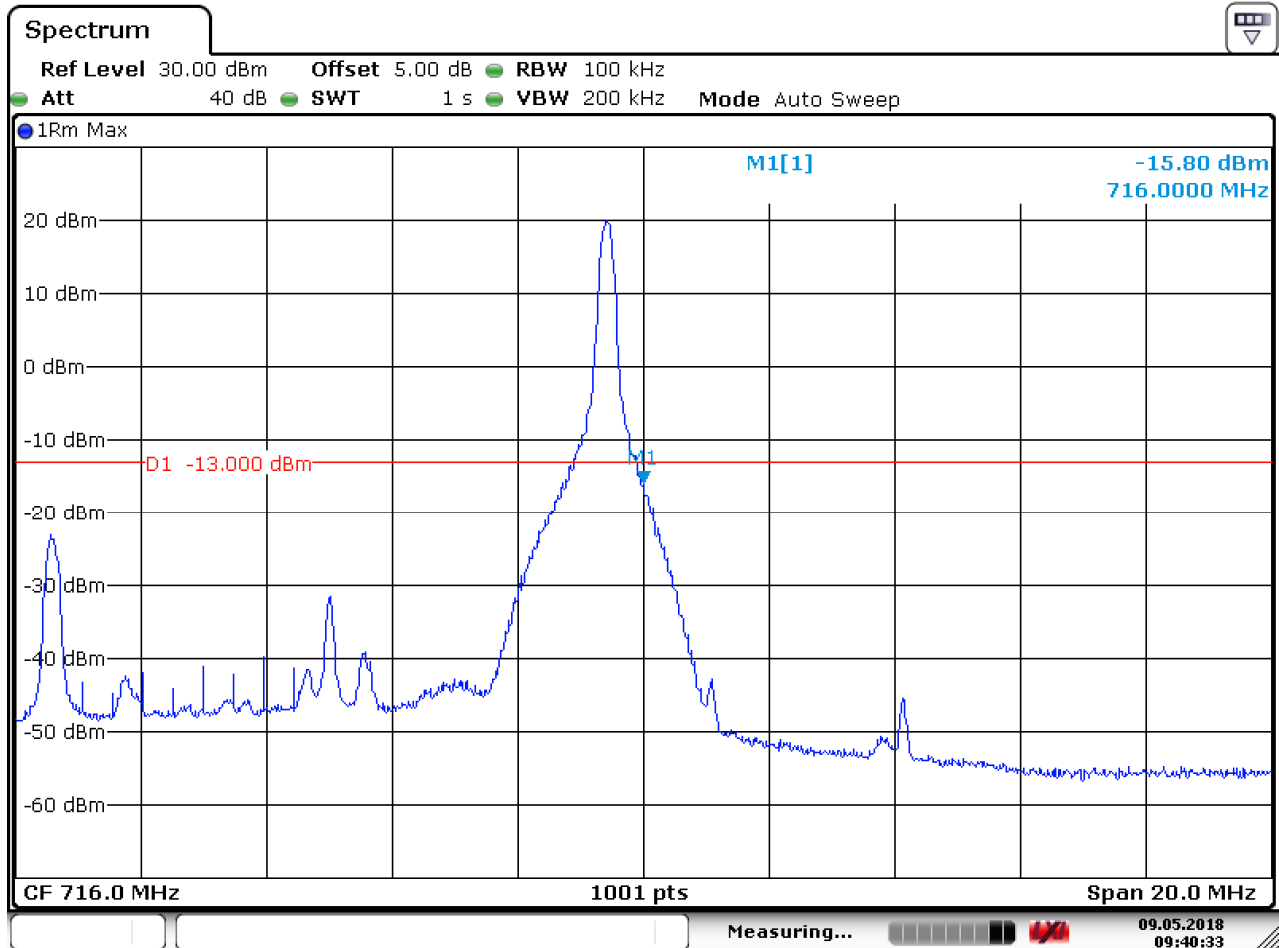
5.1.1.8.2.2 Test RB=50RB

Date: 9.MAY.2018 09:42:32

SGS-CSTC Standards Technical Services Co., Ltd.
Shenzhen Branch
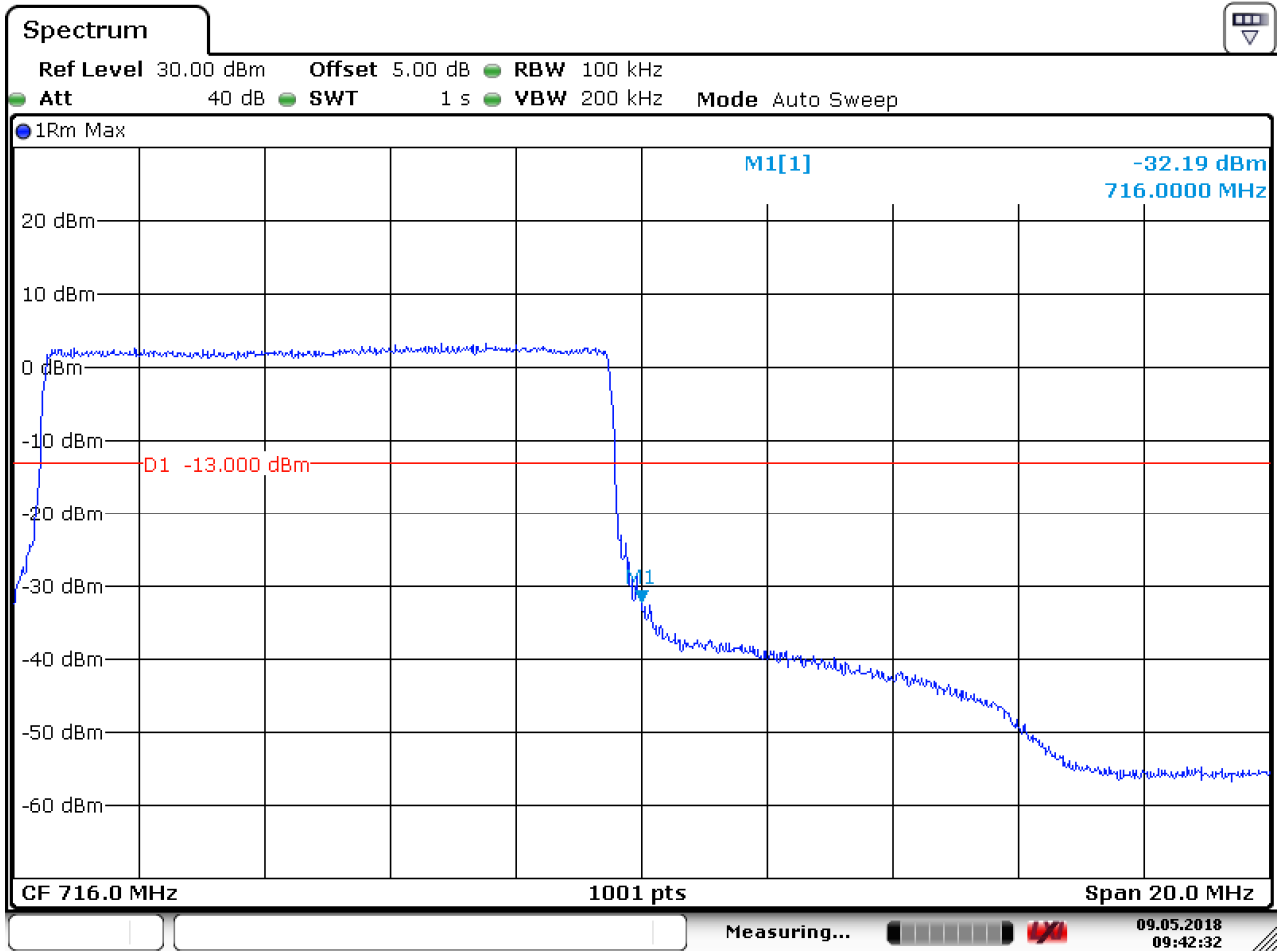
6 Spurious Emission at Antenna Terminal

NOTE: For the averaged unwanted emissions measurements, the measurement points in each sweep is greater than twice the Span/RBW in order to ensure bin-to-bin spacing of < RBW/2 so that narrowband signals are not lost between frequency bins. As to the present test item, the "Measurement Points = k * (Span / RBW)" with k between 4 and 5, which results in an acceptable level error of less than 0.5 dB.

Part I - Test Plots

6.1 For LTE

6.1.1 Test Band = LTE band12

6.1.1.1   Test Mode = LTE / TM1 15MHz RB1#0

6.1.1.1.1   Test Channel = LCH

Date: 9.MAY.2018 11:20:06

SGS-CSTC Standards Technical Services Co., Ltd. Shenzhen Branch
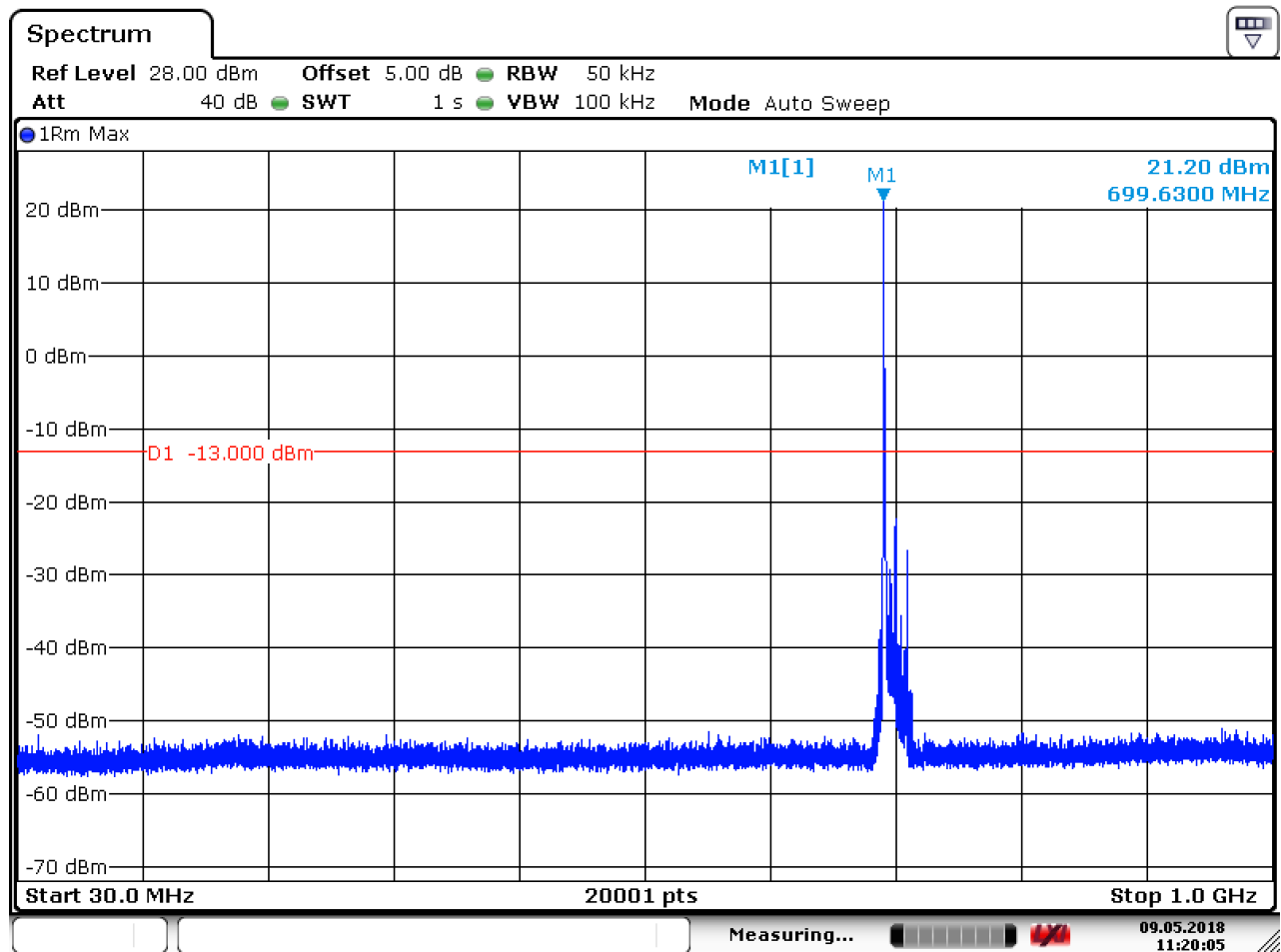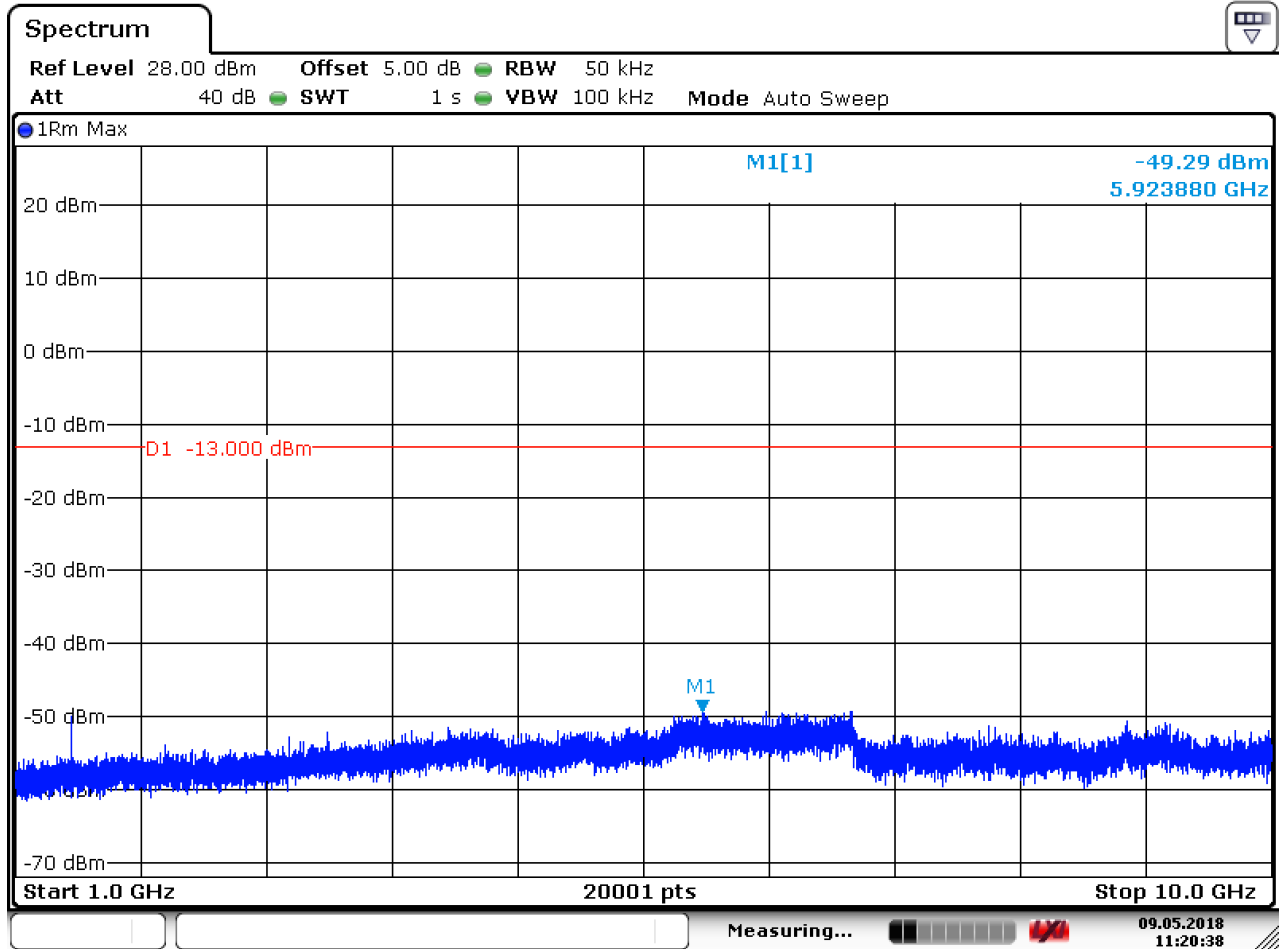
Date: 9.MAY.2018 11:20:38

6.1.1.1.2 Test Channel = MCH

Date: 9.MAY.2018 11:21:05

Spectrum

Ref Level 28.00 dBm	Offset 5.00 dB	RBW 50 kHz
Att 40 dB	SWT 1 s	VBW 100 kHz

Mode Auto Sweep

●1Rm Max

M1[1]   -48.42 dBm
1.406100 GHz

20 dBm

10 dBm

0 dBm

-10 dBm

D1 -13.000 dBm

-20 dBm

-30 dBm

-40 dBm

M1

-50 dBm

-70 dBm

Start 1.0 GHz   20001 pts   Stop 10.0 GHz

Measuring...   09.05.2018 11:21:26
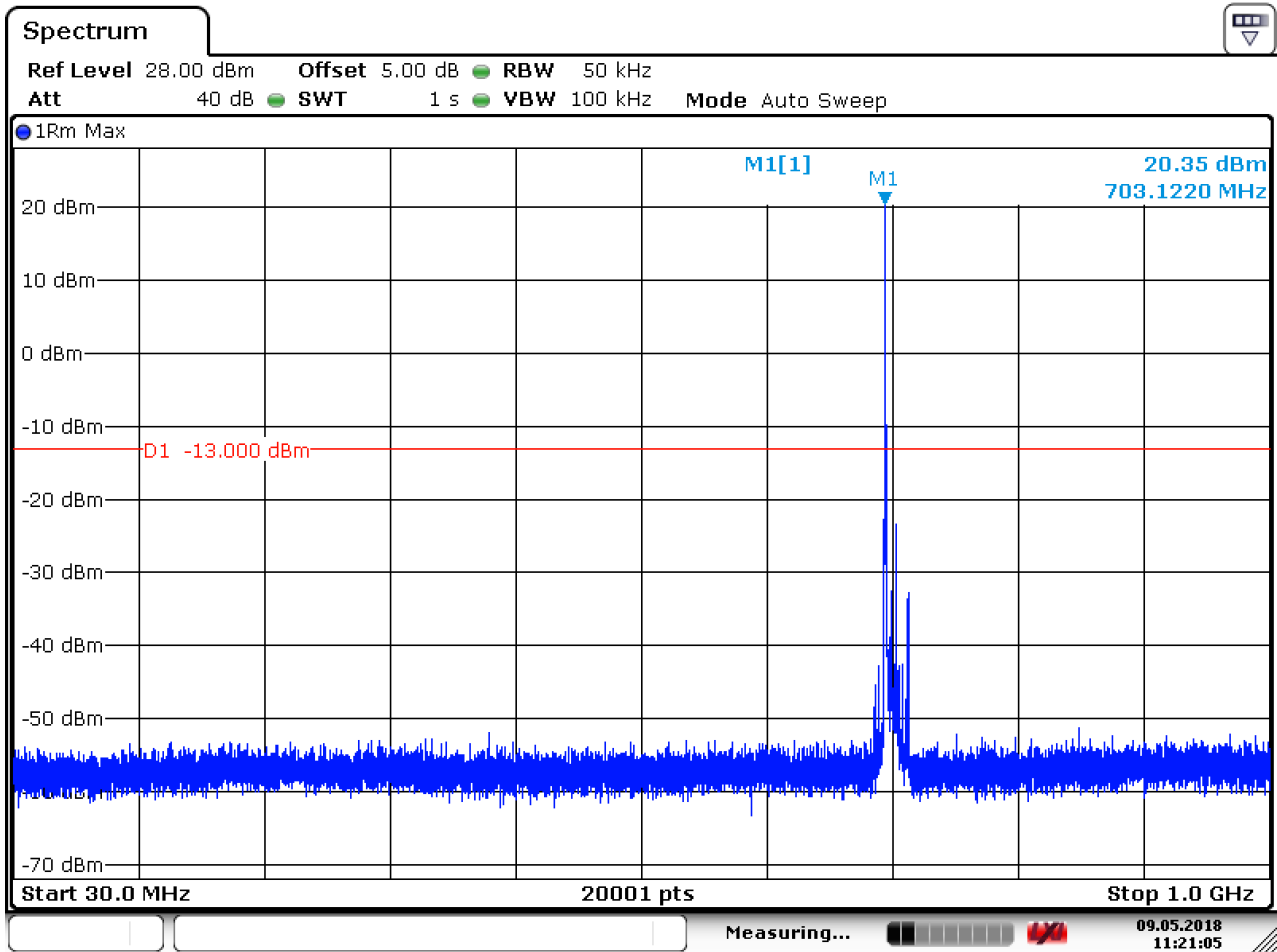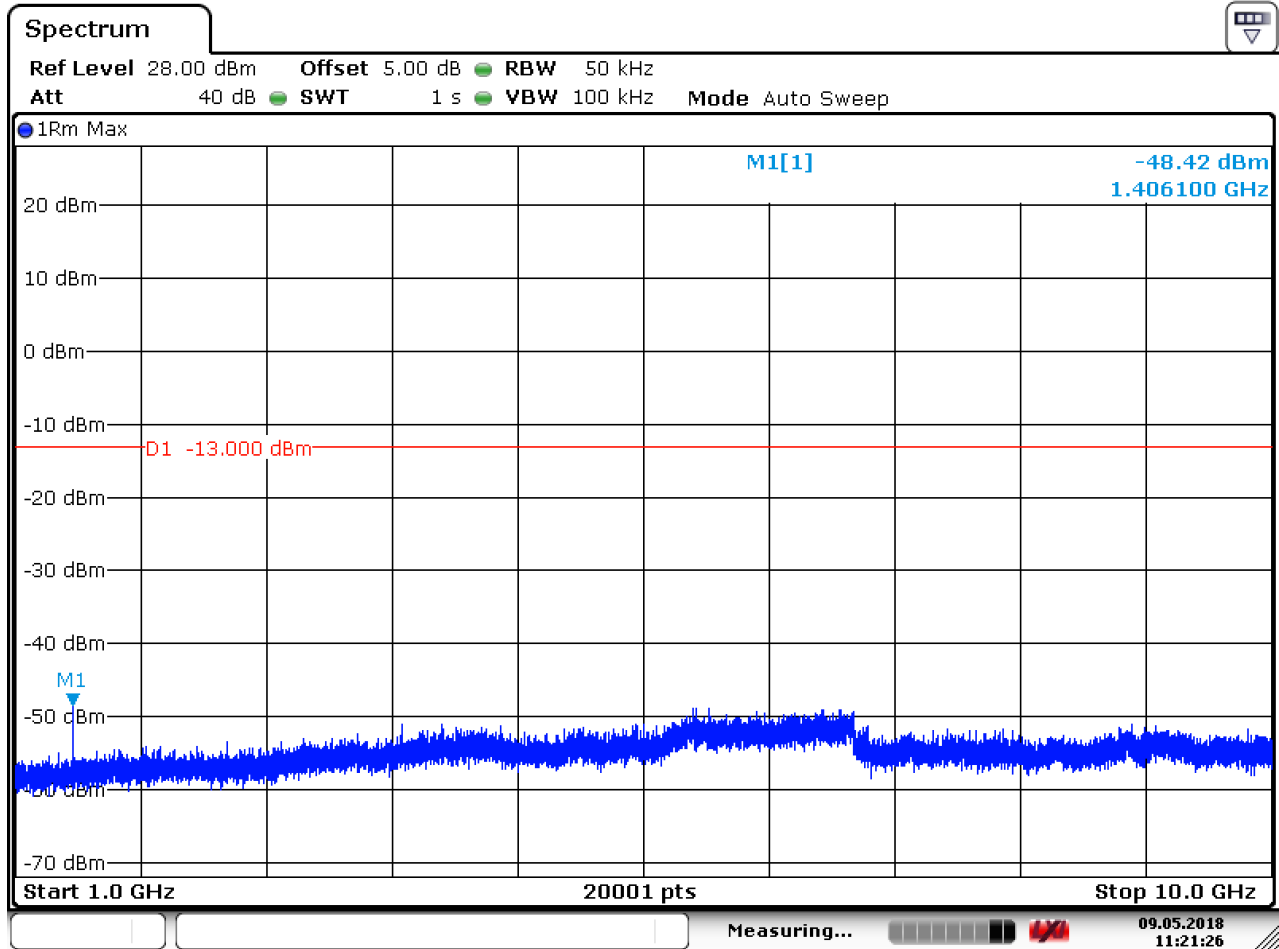
Date: 9.MAY.2018 11:21:27

6.1.1.1.3   Test Channel = HCH

Spectrum

Ref Level 28.00 dBm	Offset 5.00 dB ● RBW 50 kHz	
Att 40 dB ● SWT 1 s ● VBW 100 kHz	Mode Auto Sweep	

● 1Rm Max

M1[1]   18.45 dBm
M1   706.5650 MHz

D1 -13.000 dBm

Start 30.0 MHz   20001 pts   Stop 1.0 GHz

Measuring...   09.05.2018 11:22:00

Date: 9.MAY.2018 11:22:01

Spectrum

Ref Level 28.00 dBm	Offset 5.00 dB	RBW 50 kHz	
Att 40 dB	SWT 1 s	VBW 100 kHz	Mode Auto Sweep

●1Rm Max

M1[1]   -48.93 dBm
1.413300 GHz

D1 -13.000 dBm

M1

Start 1.0 GHz   20001 pts   Stop 10.0 GHz

Measuring...   09.05.2018 11:22:17

Date: 9.MAY.2018 11:22:17

7   Field Strength of Spurious Radiation

7.1 For LTE

7.1.1 Test Band = LTE band12

7.1.1.1   Test Mode =LTE/TM1 10MHz RB1#0

7.1.1.1.1   Test Channel = LCH

Frequency (MHz)	Level (dBm)	Limit Line (dBm)	Over Limit (dB)	Polarization
64.300000	-81.44	-13.00	68.44	Vertical
90.480000	-81.75	-13.00	68.75	Vertical
1399.000000	-66.89	-13.00	53.89	Vertical
2099.000000	-59.98	-13.00	46.98	Vertical
3497.575000	-66.19	-13.00	53.19	Vertical
7865.575000	-64.01	-13.00	51.01	Vertical
64.066667	-77.88	-13.00	64.88	Horizontal
469.525000	-73.41	-13.00	60.41	Horizontal
1399.000000	-65.69	-13.00	52.69	Horizontal
2099.000000	-58.95	-13.00	45.95	Horizontal
3497.575000	-63.63	-13.00	50.63	Horizontal
4897.025000	-65.47	-13.00	52.47	Horizontal

7.1.1.1.2   Test Channel = MCH

Frequency (MHz)	Level (dBm)	Limit Line (dBm)	Over Limit (dB)	Polarization
62.760000	-77.15	-13.00	64.15	Vertical
109.986667	-82.96	-13.00	69.96	Vertical
181.993333	-83.74	-13.00	70.74	Vertical
2109.500000	-61.00	-13.00	48.00	Vertical
3515.125000	-67.16	-13.00	54.16	Vertical
5660.125000	-66.28	-13.00	53.28	Vertical
62.713333	-77.72	-13.00	64.72	Horizontal
183.253333	-82.07	-13.00	69.07	Horizontal
2109.500000	-60.51	-13.00	47.51	Horizontal
3515.125000	-65.38	-13.00	52.38	Horizontal
4218.425000	-65.97	-13.00	52.97	Horizontal
5899.975000	-65.29	-13.00	52.29	Horizontal

7.1.1.1.3   Test Channel = HCH

Frequency (MHz)	Level (dBm)	Limit Line (dBm)	Over Limit (dB)	Polarization
56.506667	-81.74	-13.00	68.74	Vertical
195.013333	-83.02	-13.00	70.02	Vertical
2671.000000	-57.47	-13.00	44.47	Vertical
4117.025000	-67.53	-13.00	54.53	Vertical
6281.525000	-65.63	-13.00	52.63	Vertical
9267.950000	-63.94	-13.00	50.94	Vertical
55.946667	-77.91	-13.00	64.91	Horizontal
109.240000	-81.80	-13.00	68.80	Horizontal
176.393333	-82.08	-13.00	69.08	Horizontal
2120.000000	-61.41	-13.00	48.41	Horizontal
3532.675000	-68.19	-13.00	55.19	Horizontal
5927.925000	-65.19	-13.00	52.19	Horizontal

NOTE:

1) All modes are tested,but the data presented above is the worst case.the disturbance above 13GHz and below 30MHz was very low, and the above harmonics were the highest point could be found when testing, so only the above harmonics had been displayed.

2) We have tested all modulation and all Bandwidth, but only the worst case data presented in this report.

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8   Frequency Stability

8.1 Frequency Error VS. Voltage

Test Band	Test Mode	Test Channel	Test Temp.	Test Volt.	Freq. Error [Hz]	Freq. vs. rated [ppm]	Verdict
LTE band12	LTE/TM1 10MHz	LCH	TN	VL	-0.08	-0.00011	PASS
				VN	7.12	0.01011	PASS
				VH	-9.55	-0.01357	PASS
		MCH	TN	VL	7.27	0.01028	PASS
				VN	5.75	0.00813	PASS
				VH	1.17	0.00166	PASS
		HCH	TN	VL	-7.46	-0.01049	PASS
				VN	1.84	0.00259	PASS
				VH	0.85	0.00120	PASS
	LTE/TM2 10MHz	LCH	TN	VL	1.34	0.00191	PASS
				VN	9.04	0.01283	PASS
				VH	-4.70	-0.00667	PASS
		MCH	TN	VL	-9.31	-0.01316	PASS
				VN	-3.66	-0.00518	PASS
				VH	-5.16	-0.00730	PASS
		HCH	TN	VL	0.25	0.00035	PASS
				VN	-8.48	-0.01193	PASS
				VH	-4.91	-0.00691	PASS

8.2 Frequency Error VS. Temperature

Test Band	Test Mode	Test Channel	Test Volt.	Test Temp.	Freq. Error [Hz]	Freq. vs. rated [ppm]	Verdict
LTE band12	LTE/TM1 10MHz	LCH	VN	-30	-4.86	-0.00690	PASS
				-20	7.66	0.01088	PASS
				-10	-5.27	-0.00748	PASS
				0	3.22	0.00457	PASS
				10	-4.73	-0.00672	PASS
				20	-0.49	-0.00069	PASS
				30	-2.87	-0.00407	PASS
				40	0.68	0.00097	PASS
				50	-0.09	-0.00013	PASS
		MCH	VN	-30	5.01	0.00708	PASS
				-20	-9.73	-0.01375	PASS
				-10	-1.82	-0.00257	PASS
				0	5.17	0.00731	PASS
				10	-5.71	-0.00807	PASS
				20	-4.87	-0.00688	PASS
				30	3.53	0.00498	PASS
				40	9.36	0.01322	PASS
				50	-6.76	-0.00955	PASS
		HCH	VN	-30	6.34	0.00892	PASS
				-20	-9.35	-0.01314	PASS
				-10	-3.90	-0.00549	PASS
				0	-2.38	-0.00335	PASS
				10	-1.63	-0.00229	PASS
				20	-4.11	-0.00578	PASS
				30	1.37	0.00192	PASS
				40	6.09	0.00856	PASS
				50	-2.80	-0.00394	PASS

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Test Band	Test Mode	Test Channel	Test Volt.	Test Temp.	Freq. Error [Hz]	Freq. vs. rated [ppm]	Verdict
LTE band12	LTE/TM2 10MHz	LCH	VN	-30	-6.53	-0.00927	PASS
				-20	8.95	0.01272	PASS
				-10	-0.77	-0.00110	PASS
				0	8.16	0.01159	PASS
				10	-9.31	-0.01322	PASS
				20	-6.62	-0.00940	PASS
				30	2.60	0.00369	PASS
				40	-1.16	-0.00164	PASS
				50	-1.20	-0.00171	PASS
		MCH	VN	-30	-3.73	-0.00527	PASS
				-20	-7.76	-0.01097	PASS
				-10	4.42	0.00624	PASS
				0	-9.44	-0.01335	PASS
				10	6.54	0.00924	PASS
				20	-4.64	-0.00656	PASS
				30	1.08	0.00153	PASS
				40	-8.91	-0.01260	PASS
				50	-0.46	-0.00065	PASS
		HCH	VN	-30	6.42	0.00903	PASS
				-20	8.68	0.01221	PASS
				-10	-3.52	-0.00496	PASS
				0	-7.44	-0.01046	PASS
				10	7.29	0.01025	PASS
				20	-2.02	-0.00284	PASS
				30	1.30	0.00183	PASS
				40	1.51	0.00212	PASS
				50	2.61	0.00367	PASS

The End